WOOD BUFFALO
ENVIRONMENTAL ASSOCIATION

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Wood Buffalo Environmental Association

SEPTEMBER 2024

MONTHLY REPORT

CONTINUOUS MONITORING

October 31, 2024

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

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October 31, 2024

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 September 2024
Wood Buffalo Environmental Association

Enclosed is the September 2024 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 WBEA works closely with Alberta Environment and Protected Areas (AEPA) and funding for this work was provided by the Oil Sands Monitoring Program (OSM). It is independent of any position of the OSM Program.

The continuous ambient air quality monitoring network stations are:

AMS 01 – Bertha Ganter – Fort McKay	AMS 19 – Firebag
AMS 02 – Mildred Lake	AMS 20 – MacKay River
AMS 03 – Lower Camp (Meteorology)	AMS 21 – Conklin
AMS 04 – Buffalo Viewpoint	AMS 22 – Janvier
AMS 05 – Mannix	AMS 23 – Fort Hills
AMS 06 – Patricia McInnes	AMS 25 – Waskōw ohci Pimâtisiwin
AMS 07 – Athabasca Valley	AMS 26 – Christina Lake
AMS 08 – Fort Chipewyan	AMS 27 – Jackfish 2/3
AMS 09 – Barge Landing	AMS 29 – Surmont 2
AMS 11 – Lower Camp (Air Quality)	AMS 30 – Ells River
AMS 13 – Fort McKay South	AMS 506 – Jackfish 1
AMS 14 – Anzac	AMS 508 – Kirby North
AMS 17 - Wapasu	AMS 512 – Hangingstone Expansion
AMS 18 – Stony Mountain	

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	EPEA Approval No.
Athabasca Oil Corporation	289664-01-00; 241311-01-00
Canadian Natural	153125-01-00; 20809-02-00; 149968-01-05; 224816-01-00; 237382-01-00; 308463-00-00
Cenovus Energy Inc.	48522-02-00; 206355-01-00
Chemtrade Logistics	404827-00-00
CNOOC International	137467-01-00; 236394-01-00
Connacher Oil and Gas Ltd.	240008-01-00
ConocoPhillips	48263-01-00
Greenfire Resources Operating Corporation	153105-01-00
Hammerstone Corporation	189942-01-00
Harvest Operations Corp.	246984-01-00
H.J. Baker Sulphur Canada ULC	426549-00-00
Imperial Oil Ltd.	46586-01-00
Inter Pipeline Ltd.	73203-02-00
IPC Canada Ltd.	301778-00-01
Keyera Energy Ltd.	187-03-03
MEG Energy Corp.	216466-01-00
Parsons Creek Aggregates	231302-00-00
PetroChina Canada Ltd.	254465-00-00
Suncor Energy Inc.	094-03-00; 80105-01-00; 151469-01-00; 48408-02-00
Sunshine Oilsands Ltd.	305529-00-00
Surmont Energy	318401-00-00
Syncrude Canada Ltd.	026-03-00
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	Regional Municipality of Wood Buffalo
Environment and Climate Change Canada	

Indigenous Communities	
Athabasca Chipewyan First Nation	Fort McKay Métis Nation
Chard Métis Nation	Fort McMurray 468 First Nation
Chipewyan Prairie Dene First Nation	Lakeland Métis
Christina River Dene Nation Council	McMurray Métis
Conklin Resource Development Advisory Committee	Mikisew Cree First Nation
Fort McKay First Nation	

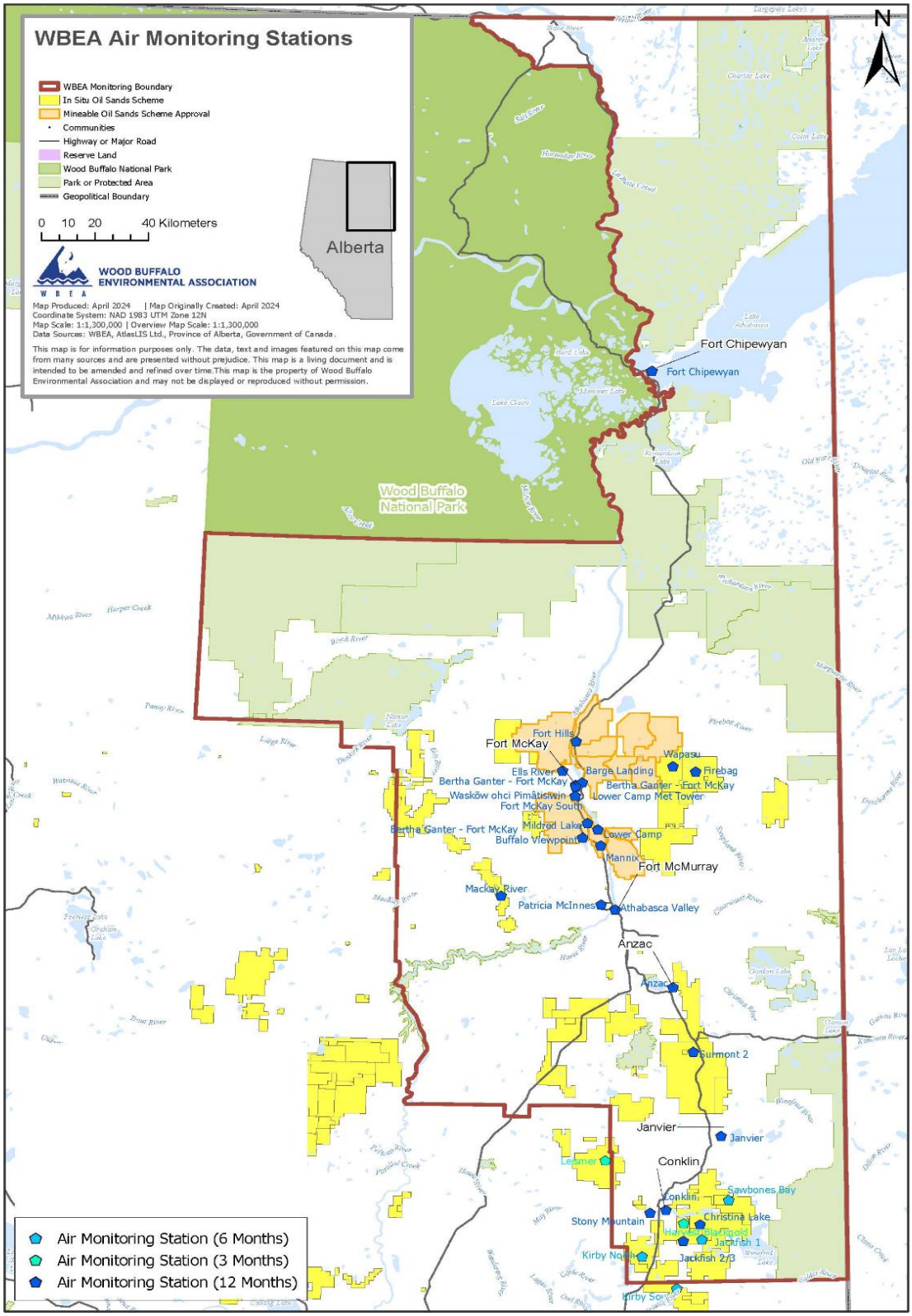

Figure 1. Map of WBEA Continuous Monitoring Network

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 15-F for CO, NH_3, NO_2, O_3, and SO_2.

There were four ground-level concentrations in excess of the 1-hour H_2S/TRS objective reported to AEPA; following data validation and processing, three exceedances were confirmed.

There was one ground-level concentrations in excess of the 24-hour H_2S/TRS objective reported to AEPA; following data validation and processing, the exceedance was confirmed.

There were seventy-three ambient ground-level concentrations in excess of the 24-hour $PM_{2.5}$ objective reported to AEPA; following data validation and processing, all 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.

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, NO_2 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 NO_2 concentration.

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

There were no revisions to historical data stored at the Electronic Transfer System with this monthly report.

3.0 Operational Status

3.1 Continuous Monitoring

In September 2024, there were five instances that resulted in monitoring instruments operating less than 90% of the time.

Station	Parameter	Details
Patricia McInnes	NH_3	The NH3 analyzer at Patricia McInnes air monitoring station (AMS) operated less than 90% of August and September 2024, 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 (AB EPA) on September 18, 2024 (reference number 433165). On August 23, during the daily system check, it was noted that the NH3 span did not reach span target. The WBEA investigated the issue from August 23 to September 3; however, no root cause could be identified. On September 4, the analyzer, converter, and pump were replaced, the analyzer performance was verified through a multi-point calibration, and normal operation resumed. During the data validation process, 235 hours of data were invalidated during this incident.
Stony Mountain	Precipitation Sensor	The precipitation sensor at the Stony Mountain air monitoring station (AMS) operated for less than 90% of September 2024, 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 (AB EPA) on September 26, 2024 (reference number 433509). On September 11, during a routine system check, the WBEA detected a communication failure between the data acquisition system and the precipitation sensor. In response, the data logger was reset on the same day, which successfully restored communication. However, between September 12 and September 20, the data acquisition system continued to experience intermittent failures. To address the ongoing issue, the data logger was replaced on September 20 and communication resumed. During the monthly data validation process a total of 149 hours of data in September were invalidated due to this issue.
Fort Hills	THC/NMHC/CH4	The THC/NMHC/CH4 analyzer at Fort Hills air monitoring station (AMS) operated for less than 90% of September 2024, which is a contravention of the Air Monitoring Directive (2016, as amended), Chapter 6, Clause DQ 4-C. This incident was reported to Alberta Environment and Protected Areas (AB EPA) on October 7, 2024 (reference number 433939). During September, the THC/NMHC/CH4 analyzer displayed an unstable baseline trend. The WBEA completed several maintenance procedures, including multiple adjustments to the window timing, recalibrations to adjust zero and span, and increased pressure in the support gas cylinders. Despite maintenance efforts, the issue remained unresolved. As a result, the analyzer was replaced on September 25, and its operation was subsequently verified. During the data validation process, 126 hours of data were invalidated due to this incident.
Anzac	Relative Humidity	The relative humidity (RH) sensor at the Anzac air monitoring station (AMS) operated less than 90% of September 2024, 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 (AB EPA) on October 11, 2024 (reference number 434118). During routine daily system checks, it was identified that the RH measurements were over-ranging periodically, with the output signal of the sensor displaying values beyond 100%. On September 17, the RH sensor was replaced, and normal operations resumed. Data was invalidated during periods when RH measurements were inconsistent with comparable data in the WBEA ambient network, resulting in a total of 90 hours of invalid data.
Fort Chipewyan	Precipitation Sensor	The precipitation sensor at the Fort Chipewyan air monitoring station (AMS) operated for less than 90% of September 2024, 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 (AB EPA) on September 26, 2024 (reference number 434663). On September 5, during a routine system check, the WBEA detected that there was no data coming in for the precipitation sensor. Initial investigations were conducted on September 4; however, the root cause of the issue remained undetermined. Due to the AMS's remote location, it was decided that further troubleshooting would take place during an upcoming visit from an in-house technician. The issue was not addressed until September 17, when it was confirmed that the sensor was unresponsive. Following a reboot of the sensor, normal operations were restored. During the monthly data validation process a total of 317 hours of data in September were invalidated due to this issue.

3.2 Intermittent Monitoring

The results for time-integrated sampling of dustfall, precipitation, PAH, TSP, VOC, $PM_{2.5}$ ECOC, $PM_{2.5,}$ and PM_{10} will be submitted in the 2024 Annual Report.

3.3 General Network Notes

The Ammonia (NH_3) 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 (CH_4) measurements are collected at some air monitoring stations in the WBEA network using the Thermo Environmental model 55i direct THC/CH_4/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 NH_3 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 NH_3 gas, and this is an inherent behavior in the NH_3 analyzer operations due to the properties of the NH_3 gas. Data for 1 to 2 hours following the daily spans have been reported as invalid for a total of 37 hours this month.

Cleaning of the manifold on September 24 interrupted the normal operations of all gaseous analyzers, except CO_2 analyzer, for 2 hours.

Flatline in the output signal of the wind sensor on September 20 resulted in 1 hour of invalid data.

The daily span check for the CO_2 analyzer was outside the 10% AMD criteria for a few days throughout the month due to an interruption in the station calibrator configuration.

Station 2, Mildred Lake

Cleaning of the manifold on September 18 interrupted the normal operation of the SO_2 and THC/NMHC/CH_4 analyzers for 2 hours.

Station 3, Lower Camp – Meteorology

Failure to record data for the relative humidity and temperature sensor at 20-meter elevation throughout the month resulted in 13 hours of invalid data.

Station 4, Buffalo Viewpoint

Cleaning of the manifold on September 23 interrupted the normal operations of all gaseous analyzers except for H_2S analyzer for 3 hours.

Note: Automated daily zero-response checks of the NO_X/NO/NO_2 analyzer did not meet WBEA's QC acceptance criteria for September. Therefore, the calibrator zeros from the August and September multi-point calibrations were used to validate the analyzer baseline response.

Station 5, Mannix

Unstable operation due to excessive baseline noise of the THC/NMHC/CH_4 analyzer on September 3, 4 and 11 resulted in 17 hours of invalid data. Subsequent maintenance to replace the analyzer on September 11 resulted in additional 2 hours of downtime.

Maintenance to replace the support gas cylinder for the THC/NMHC/CH_4 analyzer on September 13 and 25 resulted in 8 hours of downtime.

The relative humidity sensor at 20-meter elevation operated out of range throughout the month resulting in 45 hours of invalid data.

The relative humidity sensor at 75-meter elevation operated out of range throughout the month resulting in 41 hours of invalid data.

The relative humidity sensor at 90-meter elevation operated out of range throughout the month resulting in 21 hours of invalid data.

Unstable operation due to excessive baseline noise in the output signal of the wind sensor at 90-meter elevation on September 26 resulted in 1 hour of invalid data.

Station 6, Patricia McInnes

The NH_3 analyzer required additional time to stabilize to levels below ambient concentrations following the automated daily spans and routine monthly multipoint calibrations. NH_3 analyzers require additional time for stabilization after being exposed to high concentrations, this is due to the physical properties of the NH_3 gas. Data for 1 hour following each daily span has been reported as invalid for a total of 35 hours this month.

Unstable operation of the THC/NMHC/CH_4 analyzer due to excessive baseline noise through out the month resulted in 67 hours of invalid data. Subsequent maintenance to address the excessive baseline noise on September 2 and 15 resulted in additional 8 hours of downtime.

Unstable operation due to AMD noncompliance of the NH3 analyzer on September 1 to 3 resulted in 58 hours of invalid data. Subsequent maintenance to replace the analyzer on September 3 to 4 resulted in additional 21 hours of downtime.

Station 7, Athabasca Valley

Maintenance to replace the support gas cylinder for the THC/NMHC/CH_4 analyzer on September 26 resulted in 2 hours of invalid data.

The relative humidity sensor operated out of range on September 11, 13, 15 and 23 resulting in 19 hours of invalid data.

Station 8, Fort Chipewyan

Maintenance to troubleshoot station calibrator on September 26 interrupted the normal operations of the O_3 analyzer resulting for 1 hour of invalid data.

Unstable operation due to excessive baseline noise of the CO analyzer on September 28 resulted in 1 hour of invalid data.

Failure to record data of the precipitation collector sensor on September 4 to 17 resulted in 36 hours of invalid data. Subsequent maintenance to reboot the sensor on September 17 resulted in additional 1 hour of downtime.

Station 9, Barge Landing

Maintenance to replace the support gas cylinder for the THC/NMHC/CH_4 analyzer on September 27 resulted in 2 hours of invalid data.

Flatlines in the output signal of the wind sensor at 10-meter elevation throughout the month resulted in 7 hours of invalid data.

Flatline in the output signal of the wind sensor at 20-meter elevation on September 13 resulted in 1 hour of invalid data.

Station 11, Lower Camp

Cleaning of the manifold on September 20 interrupted the normal operations of the H_2S analyzer for 2 hours.

Unstable operation due to flatline in the analyzer output signal of the H2S analyzer on September 25 resulted in 2 hours of invalid data.

The relative humidity sensor operated out of range throughout the month resulting in 33 hours of invalid data.

Intermittent flatlines in the output signal of the wind sensor throughout the month resulted in 4 hours of invalid data.

Station 13, Fort McKay South

Intermittent flatlines in the output signal of the wind sensor throughout the month resulted in 21 hours of invalid data.

Station 14, Anzac

The Station power failure on September 5 interrupted the normal operations of all quality analyzers resulting in 3 hours of invalid data.

Unstable operations due to excessive baseline noise of the THC/NMHC/CH_4 analyzer on September 21 resulted in 7 hours of invalid data. Subsequent maintenance to adjust the retention timing of the THC/NMHC/CH_4 analyzer September 21 resulted in additional 4 hours of downtime.

Cleaning of the manifold on September 23 interrupted the normal operations of all gaseous analyzers for 1 hour.

Maintenance to replace the support gas cylinder for THC/NMHC/CH_4 analyzer on September 27 resulted in 2 hours of downtime.

Flatline in the output signal of the relative humidity (RH) and temperature (T) sensor on September 16 and 17 resulted in 21 hours of invalid data. Subsequent maintenance to replace the RH/T sensor on September 16 and 17 resulted in additional 2 hours of downtime.

The relative humidity sensor periodically operated out of range throughout the month resulting in 90 hours of invalid data.

Failure to record data of the precipitation collector sensor throughout the month resulted in 158 hours of invalid data.

Station 17, Wapasu

Failure to record data of $PM2_{.5}$ analyzer on September 10 resulted in 2 hours of invalid data.

Cleaning of the manifold on September 16 interrupted the normal operations of all gaseous analyzers except for NO_2 analyzer for 1 hour.

The relative humidity sensor periodically operated out of range throughout the month resulting in 22 hours of invalid data.

Station 18, Stony Mountain

Analyzer failure due to sample pump failure of the O_3 analyzer on September 1 through 3 resulted in 57 hours of invalid data.

Maintenance to reset logger/modem on September 14 interrupted the normal operations of all air quality analyzers for 1 hour.

Unstable operations due to excessive baseline drift of the THC/NMHC/CH_4 analyzer on September 17, 18 and 22 resulted in 32 hours of invalid data.

Maintenance to replace the sample pump for NO_X/NO/NO_2 analyzer and subsequent stabilization on September 18 and 19 resulted in 20 hours of downtime.

The relative humidity sensor periodically operated out of range throughout the month resulting in 51 hours of invalid data.

Station 19, Firebag

Cleaning of the manifold on September 20 interrupted the normal operations of all gaseous analyzers except for H_2S analyzer for 2 hours.

Unstable operation due to flatline in analyzer output signal of the THC analyzer on September 8 to 9 resulted in 13 hours of downtime. Subsequent maintenance to reset the analyzer on September 9 resulted in additional 2 hours of downtime.

Station 20, MacKay River

Flatlines in the output signal of the wind sensor throughout the month resulted in 5 hours of invalid data.

Station 21, Conklin

Unstable operation of the TRS analyzer due to flatline in output signal on September 2 resulted in 4 hours of invalid data.

Maintenance to replace the station router on September 5 interrupted the normal operations of all air quality analyzers resulting in 2 hours of downtime.

Unstable operation of the SO_2 analyzer due to flatline in output signal on September 6 through 9 resulted in 60 hours of invalid data. Subsequent maintenance to reboot the SO_2 analyzer on September 9 resulted in additional 1 hour of downtime.

Unstable operation due to excessive baseline drift in the output signal of the THC/NMHC/CH_4 analyzer on September 8 resulted in 2 hours of invalid data.

Note: Automated daily zero-response checks of the O_3 analyzer did not meet WBEA's QC acceptance criteria for September. Therefore, the calibrator zeros from the August, September, and October multi-point calibrations were used to validate the analyzer baseline response.

Station 22, Janvier

Unstable operations of the THC/NMHC/CH_4 analyzer due to interruption in the zero-air generator on September 1 resulted in 9 hours on invalid data.

Unstable operation of the NO_X/NO/NO_2 analyzer due to flatline in output signal on September 1 through 3 resulted in 59 hours of invalid data. Subsequent maintenance to reboot the NO_X/NO/NO_2 analyzer on September 3 resulted in additional 1 hour of downtime.

Maintenance to reset logger/modem on September 3 interrupted the normal operations of all parameters for 1 hour.

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

Note: Automated daily zero-response checks of the O_3 analyzer did not meet WBEA's QC acceptance criteria for August. Therefore, the calibrator zeros from the July and August multi-point calibrations were used to validate the analyzer baseline response.

Station 23, Fort Hills

Note: Please be advised that due to the inability of the on-call technician to access the station on September 22, a remote calibration was conducted to address the unstable baseline of the THC/NMHC/CH_4 analyzer.

Cleaning of the manifold on September 16 interrupted the normal operations of all gaseous analyzers except for TRS analyzer for 1 hour.

Unstable operations of the THC/NMHC/CH_4 analyzer due to excessive baseline noise throughout the month resulted in 82 hours of invalid data. Subsequent maintenances to adjust retention time, adjust zero and span, and recalibrate the analyzer on September 18, 22 and 23 respectively resulted in additional 12 hours of downtime.

Failure to record data of all parameters on September 19 and 22 resulted in 3 hours of invalid data.

Unstable operation of the THC/NMHC/CH_4 analyzer due to analyzer operated within AMD noncompliance on September 24 and 25 resulted in 32 hours if invalid data.

Station 25, Waskōw ohci Pimâtisiwin

The relative humidity sensor operated out of range on September 23, 24, 26 and 27 resulting in 4 hours of invalid data.

Flatlines in the output signal of the wind sensor throughout the month resulted in 7 hours of invalid data.

Station 26, Christina Lake

No operational issues to report.

Station 27, Jackfish 2/3

Cleaning of the manifold on September 18 interrupted the normal operations of NO_X/NO/NO_2 and SO_2 analyzers for 2 hours.

Note: Automated daily zero-response checks of the NO_X/NO/NO_2 analyzer did not meet WBEA's QC acceptance criteria for September. Therefore, the calibrator zeros from the August and September multi-point calibrations were used to validate the analyzer baseline response.

Station 29, Surmont 2

Cleaning of the manifold on September 19 interrupted the normal operations of H_2S, SO_2, and THC analyzers for 1 hour.

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

Station 30, Ells River

Intermittent flatlines in the output signal of the wind sensor throughout the month resulted in 12 hours of invalid data.

Station 506, Jackfish 1

Maintenance to improve linearity and a subsequent stabilization post maintenance of the NO_X/NO/NO_2 analyzer on September 24 and 25 resulted in 20 hours of downtime.

Flatline in the output signal of the wind sensor on September 22 resulted in 2 hours of invalid data.

Station 508, Kirby North

Cleaning of the manifold on September 11 interrupted the normal operations of NO_X/NO/NO_2, SO_2, and THC analyzers for 2 hours.

Maintenance due to station operator activities on September 11 interrupted the normal operations of NO_X/NO/NO_2 analyzer for 1 hour.

Maintenance to zero-air generator on September 25 interrupted the normal operations of the THC analyzer for 3 hours.

Station 512, Hangingstone Expansion

Cleaning of the manifold on September 20 interrupted the normal operations of H_2S, and SO_2 analyzers for 1 hour.

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 Denny Estador of WBEA. The WBEA has retained the services of Air Resource Specialists (ARS) to conduct Level three (L3) review on its behalf. Contact information for WBEA staff is included below.

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Denny Estador, Data Technician
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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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September 2024

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APPROVAL NUMBERS	REPORT DATE MONTH	YEAR
289664-00-00 241311-00-00 20809-02-00 149968-01-00 237382-00-00 48522-01-00 240008-00-00	9	2024

CONTINUOUS AMBIENT MONITORING

PARAMETER	STN. NO.	% TIME OPERATIONAL	ONE-HOUR AVERAGE MAXIMUM CONCENTRATION	ONE-HOUR AVERAGE NO. READINGS > REGULATION	24-HOUR AVERAGE MAXIMUM CONCENTRATION	24-HOUR AVERAGE NO. READINGS > REGULATION
SO2(ppb)	1	100	20	0	4.8	0
SO2(ppb)	2	100	47.4	0	6.7	0
SO2(ppb)	4	100	19.6	0	2.5	0
SO2(ppb)	5	100	37.7	0	7.9	0
SO2(ppb)	6	100	9.9	0	1.7	0
SO2(ppb)	7	100	10.1	0	1.6	0
SO2(ppb)	8	100	2.2	0	0.6	0
SO2(ppb)	9	100	27.2	0	4.1	0
SO2(ppb)	11	100	97.7	0	11.4	0
SO2(ppb)	13	100	22.0	0	4.1	0
SO2(ppb)	14	99	7.7	0	1.4	0
SO2(ppb)	17	100	16.7	0	4.9	0
SO2(ppb)	18	100	3.1	0	0.8	0
SO2(ppb)	19	100	16.5	0	2.6	0
SO2(ppb)	20	100	16.1	0	2.4	0
SO2(ppb)	21	91	1.3	0	0.4	0
SO2(ppb)	22	100	2.5	0	0.4	0
SO2(ppb)	23	99	24.8	0	4.3	0
SO2(ppb)	25	100	18.9	0	3.9	0
SO2(ppb)	26	100	18.7	0	3.6	0
SO2(ppb)	27	100	8.6	0	2.3	0
SO2(ppb)	29	100	6.4	0	1.1	0
SO2(ppb)	30	100	51.5	0	6.3	0
SO2(ppb)	506	100	22.7	0	3.1	0
SO2(ppb)	508	100	8.6	0	2.5	0
SO2(ppb)	512	100	115.4	0	13.9	0
H2S(ppb)	1	100	3.5	0	0.7	0
H2S(ppb)	2	100	6.6	0	1.1	0
H2S(ppb)	4	100	3.0	0	0.9	0
H2S(ppb)	5	100	16.8	3	3.1	1
H2S(ppb)	11	99	9.3	0	2.3	0
H2S(ppb)	17	100	1.9	0	0.4	0
H2S(ppb)	19	100	2.7	0	0.7	0
H2S(ppb)	20	100	2.1	0	0.3	0
H2S(ppb)	25	100	3.1	0	0.7	0
H2S(ppb)	26	100	1.2	0	0.5	0
H2S(ppb)	27	100	1.8	0	0.5	0
H2S(ppb)	29	100	0.6	0	0.3	0
H2S(ppb)	506	100	4.7	0	0.7	0
H2S(ppb)	508	100	2.4	0	0.4	0
H2S(ppb)	512	100	4.1	0	1.1	0
TRS(ppb)	1	100	3.9	0	1.1	0
TRS(ppb)	6	100	2.4	0	0.9	0
TRS(ppb)	7	100	2.7	0	1.0	0
TRS(ppb)	8	100	0.6	0	0.3	0
TRS(ppb)	9	100	6.3	0	1.2	0
TRS(ppb)	13	100	3.5	0	1.0	0
TRS(ppb)	14	99	1.3	0	0.5	0
TRS(ppb)	18	100	0.7	0	0.5	0
TRS(ppb)	21	99	0.4	0	0.2	0
TRS(ppb)	22	100	0.5	0	0.3	0
TRS(ppb)	23	100	2.7	0	0.9	0
TRS(ppb)	30	100	1.6	0	0.7	0
THC(ppm)	1	100	3.6	-	2.4	-
THC(ppm)	2	100	3.5	-	2.3	-
THC(ppm)	4	100	3.6	-	2.6	-
THC(ppm)	5	96	4.0	-	2.7	-
THC(ppm)	6	91	2.8	-	2.3	-
THC(ppm)	7	100	2.7	-	2.3	-
THC(ppm)	9	100	3.5	-	2.3	-
THC(ppm)	11	100	3.0	-	2.4	-
THC(ppm)	13	100	4.1	-	2.5	-

APPROVAL NUMBERS	REPORT DATE MONTH	YEAR
289664-00-00 241311-00-00 20809-02-00 149968-01-00 237382-00-00 48522-01-00	9	2024

CONTINUOUS AMBIENT MONITORING

PARAMETER	STN. NO.	% TIME OPERATIONAL	ONE-HOUR AVERAGE MAXIMUM CONCENTRATION	ONE-HOUR AVERAGE NO. READINGS > REGULATION	24-HOUR AVERAGE MAXIMUM CONCENTRATION	24-HOUR AVERAGE NO. READINGS > REGULATION
THC(ppm)	14	98	2.8	-	2.3	-
THC(ppm)	17	100	3.5	-	2.5	-
THC(ppm)	18	95	2.3	-	2.2	-
THC(ppm)	19	98	3.1	-	2.4	-
THC(ppm)	20	100	3.2	-	2.6	-
THC(ppm)	21	99	2.4	-	2.0	-
THC(ppm)	22	99	2.2	-	2.1	-
THC(ppm)	23	82	4.7	-	2.7	-
THC(ppm)	29	100	2.9	-	2.5	-
THC(ppm)	30	100	7.1	-	3.1	-
THC(ppm)	508	99	2.6	-	2.4	-
O3(ppb)	1	100	42.6	0	21.6	-
O3(ppb)	4	100	41.9	0	28.3	-
O3(ppb)	6	100	46.9	0	29.8	-
O3(ppb)	7	100	47.1	0	25.9	-
O3(ppb)	8	100	51.5	0	30.2	-
O3(ppb)	13	100	39.3	0	21.3	-
O3(ppb)	14	99	49.4	0	27.6	-
O3(ppb)	17	100	55.6	0	36.4	-
O3(ppb)	18	92	53.4	0	39.8	-
O3(ppb)	21	100	55.2	0	33.6	-
O3(ppb)	22	100	51.5	0	33.8	-
NO2(ppb)	1	100	27.6	0	8.8	-
NO2(ppb)	4	100	23.0	0	11.4	-
NO2(ppb)	6	100	18.3	0	9.2	-
NO2(ppb)	7	100	19.4	0	9.4	-
NO2(ppb)	8	100	10.6	0	3.3	-
NO2(ppb)	9	100	23.7	0	11.0	-
NO2(ppb)	13	100	19.8	0	6.4	-
NO2(ppb)	14	99	16.0	0	7.7	-
NO2(ppb)	17	100	17.7	0	4.3	-
NO2(ppb)	18	97	3.1	0	1.4	-
NO2(ppb)	19	100	18.1	0	3.7	-
NO2(ppb)	20	100	14.2	0	3.2	-
NO2(ppb)	21	100	9.6	0	3.2	-
NO2(ppb)	22	92	4.6	0	1.5	-
NO2(ppb)	23	99	46.3	0	15.7	-
NO2(ppb)	26	100	11.5	0	4.6	-
NO2(ppb)	27	100	5.4	0	1.3	-
NO2(ppb)	29	100	9.4	0	4.9	-
NO2(ppb)	30	100	32.2	0	11.2	-
NO2(ppb)	506	97	19.5	0	4.3	-
NO2(ppb)	508	100	8.6	0	2.1	-
NO2(ppb)	512	100	12.6	0	4.2	-
CO(ppm)	1	100	1.0	0	0.7	-
CO(ppm)	7	100	0.8	0	0.6	-
CO(ppm)	8	100	0.4	0	0.2	-
CO(ppm)	18	100	1.1	0	0.8	-
CO2(ppm)	1	100	544.8	-	490.3	-
CO2(ppm)	8	100	487.6	-	442.1	-
CO2(ppm)	18	100	475.1	-	446.0	-
NH3(ppb)	1	95	0.0	0	0.0	-
NH3(ppb)	6	84	0.0	0	0.0	-
PM2.5(ug/m3)	1	100	183.1	0	106.9	6
PM2.5(ug/m3)	4	100	177.5	0	104.6	5
PM2.5(ug/m3)	6	100	182.3	0	104.6	5
PM2.5(ug/m3)	7	100	206.2	0	144.2	6
PM2.5(ug/m3)	8	100	144.9	0	90.0	3
PM2.5(ug/m3)	9	100	167.8	0	104.9	6
PM2.5(ug/m3)	13	100	181.9	0	112.5	6
PM2.5(ug/m3)	14	100	156.3	0	109.3	4
PM2.5(ug/m3)	17	100	170.6	0	99.5	4
PM2.5(ug/m3)	18	100	203.0	0	123.7	5
PM2.5(ug/m3)	21	100	152.3	0	106.7	5

APPROVAL NUMBERS	REPORT DATE MONTH	REPORT DATE YEAR
289664-00-00 241311-00-00 20809-02-00 149968-01-00 237382-00-00 48522-01-00	9	2024

CONTINUOUS AMBIENT MONITORING

PARAMETER	STN. NO.	% TIME OPERATIONAL	ONE-HOUR AVERAGE MAXIMUM CONCENTRATION	ONE-HOUR AVERAGE NO. READINGS > REGULATION	24-HOUR AVERAGE MAXIMUM CONCENTRATION	24-HOUR AVERAGE NO. READINGS > REGULATION
PM2.5(ug/m3)	22	100	179.4	0	104.9	5
PM2.5(ug/m3)	23	100	158.1	0	90.1	5
PM2.5(ug/m3)	29	100	88.9	0	55.3	4
PM2.5(ug/m3)	30	100	138.4	0	86.2	4
WS(km/h)	1	100	-	-	-	-
WS(km/h)	2	100	-	-	-	-
WS(km/h)	4	100	-	-	-	-
WS(km/h)	5	100	-	-	-	-
WS(km/h)	6	100	-	-	-	-
WS(km/h)	7	100	-	-	-	-
WS(km/h)	8	100	-	-	-	-
WS(km/h)	9	100	-	-	-	-
WS(km/h)	11	99	-	-	-	-
WS(km/h)	13	97	-	-	-	-
WS(km/h)	14	100	-	-	-	-
WS(km/h)	17	100	-	-	-	-
WS(km/h)	18	100	-	-	-	-
WS(km/h)	19	100	-	-	-	-
WS(km/h)	20	99	-	-	-	-
WS(km/h)	21	100	-	-	-	-
WS(km/h)	22	99	-	-	-	-
WS(km/h)	23	100	-	-	-	-
WS(km/h)	25	99	-	-	-	-
WS(km/h)	26	100	-	-	-	-
WS(km/h)	27	100	-	-	-	-
WS(km/h)	29	99	-	-	-	-
WS(km/h)	30	98	-	-	-	-
WS(km/h)	506	100	-	-	-	-
WS(km/h)	508	100	-	-	-	-
WS(km/h)	512	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
SEPTEMBER 2024

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

October 31, 2024

WOOD BUFFALO ENVIRONMENTAL ASSOCIATION - FORT McKAY - BERTHA GANTER (AMS01)
SEPTEMBER 2024

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	683	35	37	99.72	19.6	0	4.8	0
H2S(ppb) Average	682	36	38	99.72	3.5	0	0.7	0
TRS(ppb) Average	682	36	38	99.72	3.9	0	1.1	0
THC(ppm) Average	683	35	37	99.72	3.6	-	2.4	-
NMHC(ppm) Average	683	35	37	99.72	0.622	-	0.203	-
CH4(ppm) Average	683	35	37	99.72	3.3	-	2.3	-
O3 (ppb) Average	684	34	36	99.72	42.6	0	21.6	-
NO2 (ppb) Average	683	35	37	99.72	27.6	0	8.8	-
NO (ppb) Average	683	35	37	99.72	68.2	-	11.1	-
NOX (ppb) Average	683	35	37	99.72	80.1	-	16.7	-
NH3 (ppb) Average	639	42	81	94.58	0	0	0	-
PM2.5 (ug/m3) Average	718	2	2	100	183.1	0	106.9	6
CO(ppm) Average	684	34	36	99.72	1	0	0.7	0
CO2(ppm) Average	686	34	34	100	544.8	0	490.3	0
Temperature 2 m (C) Average	720	0	0	100	31.5	-	20.5	-
Temperature 10 m (C) Average	720	0	0	100	30.8	-	20.7	-
Relative Humidity (%) Average	720	0	0	100	99.3	-	87.8	-
Wind Speed 10 m (km/h) Average	719	0	1	99.86	21	-	8	-
Wind Direction 10 m (deg) Average	719	0	1	99.86	-	-	-	-
Precipitation (mm) Total	720	0	0	100	3	-	9.1	-
Leaf Wetness (% of range) Average	720	0	0	100	81.7	-	28.4	-
Global Solar Radiation (W/m2) Average	720	0	0	100	690.4	-	224.2	-

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

WOOD BUFFALO ENVIRONMENTAL ASSOCIATION - BERTHA GANTER FORT McKAY (AMS01)
SEPTEMBER 2024

MONTHLY SUMMARY FOR AIR QUALITY/ METEOROLOGICAL MONITORING MEASUREMENTS

					Percentile						
Parameter	Number	Mean	StnDev	Total	Min	P10	Q1	Median	Q3	P90	Max
SO2 (ppb) Average	683	0.9	2.6	-	0	0	0	0.1	0.3	1.5	19.6
H2S (ppb) Average	682	0.27	0.3	-	0	0.1	0.1	0.2	0.3	0.7	3.5
TRS (ppb) Average	682	0.55	0.4	-	0.2	0.3	0.4	0.4	0.6	1	3.9
THC (ppm) Average	683	2.15	0.3	-	1.9	1.9	2	2.1	2.2	2.5	3.6
NMHC(ppm) Average	683	0.063	0.085	-	0	0	0	0	0.1	0.2	0.622
CH4(ppm) Average	683	2.09	0.2	-	1.9	1.9	2	2	2.1	2.3	
O3 (ppb) Average	684	15.01	10.2	-	0.2	1.4	6.1	14.9	22.9	28.8	42.6
NO2 (ppb) Average	683	4.27	4.5	-	0	0	0.3	3	6.6	11	27.6
NO (ppb) Average	683	3.25	7	-	0	0	0	0.9	2.4	9.5	68.2
NOX (ppb) Average	683	7.52	9.8	-	0	0.4	1.4	3.8	9.9	19.8	80.1
NH3 (ppb) Average	639	0	0	-	0	0	0	0	0	0	0
PM2.5 (ug/m3) Average	718	23.94	32.9	-	0.6	3.9	6.8	11.4	22.8	66.2	183.1
CO(ppm) Average	684	0.4	0.1	-	0.2	0.3	0.3	0.4	0.4	0.5	1
CO2(ppm) Average	686	453.6	23.8	-	420.3	429	434.1	447.7	468.2	487.9	544.8
Temperature 2 m (C) Average	720	12.81	5.9	-	0.4	5.2	8.7	12.4	16.3	20.5	31.5
Temperature 10 m (C) Average	720	13.05	5.5	-	1.2	6	9.2	12.7	16.1	20.2	30.8
Relative Humidity (%) Average	720	73.52	19	-	25.4	44.8	59	75.3	91.3	96.9	99.3
Wind Speed 10 m (km/h) Average	719	5.7	3	-	0	2	3	5	8	11	21
Wind Direction 10 m (deg) Average	719	-	-	-	-	-	-	-	-	-	-
Precipitation (mm) Total	720	-	-	14.13	-	-	-	-	-	-	-
Leaf Wetness (% of range) Average	720	10.93	16.9	-	0.1	1	1.5	2.1	12.4	38.7	81.7
Global Solar Radiation (W/m2) Average	720	136.11	190	-	0	0	0	14.4	228.7	473.4	690.4

WOOD BUFFALO ENVIRONMENTAL ASSOCIATION - BERTHA GANTER FORT McKAY (AMS01)
SEPTEMBER 2024

OPERATIONAL NOTES

Parameter	Period Start	Period End	Duration (Hours)	Notes
ALL GASEOUS ANALYZERS (except CO2)	24 Sep 2024 13:00	24 Sep 2024 14:00	2	Maintenance - sample manifold cleaned
NH3	01 Sep 2024 04:00	30 Sep 2024 03:00	37	Stabilization after daily QA check
Wind Speed, Wind Direction	20 Sep 2024 02:00	20 Sep 2024 02:00	1	Flat line in sensor output signal

Wood Buffalo Environmental Association

Summary of Hour Averages

Sulphur Dioxide (SO_2) - ppb

Fort McKay - Bertha Ganter - September 2024

Number of Exceedences (AAAQO): 1-hr: 0 24-hr: 0
Maximum Value: 19.6 ppb on Sep 1 12:00 Maximum Daily Average: 4.8 ppb on Sep 5

Minimum Value: 0.0 ppb on Sep 2 03:00
Maximum Diurnal Average: 3.4 ppb at hour 12
Monthly Average: 0.90 ppb

Minimum Daily Average: 0.0 ppb on Sep 4
Minimum Diurnal Average: 0.1 ppb at hour 5
Percentiles: P_1 = 0.0 P_{10} = 0.0 Q_1 = 0.0 Median = 0.1 Q_3 = 0.3 P_{90} = 1.5 P_{99} = 14.0

Hours in Service:	720
Hours of Data:	683
Hours of Missing Data:	37
Hours of Calibration:	35
Percent Operational Time:	99.7

Day	Hourly Period Ending At (MST)																								Daily	Daily
	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24	Average	Maximum
1-Sep	0.4	0.4	0.5	0.6	0.9	Z	4.7	2.9	5.0	6.9	11.6	19.6	7.3	0.5	0.2	0.1	0.1	0.0	0.0	0.1	0.2	0.2	0.1	0.1	2.7	19.6
2-Sep	Z	0.0	0.0	0.0	0.0	0.0	0.3	0.4	0.8	2.6	7.8	4.0	0.4	0.2	0.1	0.0	0.1	0.0	0.0	0.0	0.1	0.2	0.1	0.0	0.7	7.8
3-Sep	0.1	Z	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	0.0	0.0	0.0	0.0	0.0	0.1
4-Sep	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
5-Sep	0.0	0.0	0.0	Z	0.0	0.0	0.0	0.0	0.0	4.1	15.2	11.3	16.7	17.3	10.4	7.2	2.7	2.1	1.0	1.1	2.6	7.4	5.0	5.7	4.8	17.3
6-Sep	5.6	1.5	0.9	1.3	Z	1.1	1.6	4.1	0.9	0.4	0.3	0.1	0.2	0.2	0.8	0.3	0.1	0.2	0.2	0.1	0.1	0.0	0.0	0.0	0.9	5.6
7-Sep	0.0	0.0	0.0	0.0	0.0	Z	0.1	0.1	0.8	1.9	17.3	11.4	6.0	0.4	0.1	0.0	0.0	0.1	0.1	0.1	0.1	0.2	0.2	0.1	1.7	17.3
8-Sep	Z	0.2	0.2	0.2	0.1	0.0	0.2	0.4	0.7	1.6	14.4	16.8	12.1	11.7	8.1	8.8	8.8	5.4	3.6	4.0	3.4	2.0	1.1	0.4	4.5	16.8
9-Sep	0.4	Z	0.3	0.2	0.1	0.1	0.1	0.0	0.1	C	C	C	C	C	0.1	0.1	0.1	0.1	0.0	0.0	0.0	0.0	0.1	0.1	0.1	0.4
10-Sep	0.1	0.0	Z	0.0	0.0	0.0	0.1	0.0	0.0	0.0	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	0.1
11-Sep	0.0	0.0	0.1	Z	0.1	0.1	0.2	0.1	0.3	0.2	9.6	6.1	0.9	0.6	0.5	0.6	0.5	0.4	0.4	0.3	0.3	0.3	0.3	0.2	1.0	9.6
12-Sep	0.2	0.1	0.2	0.2	Z	0.3	0.2	0.2	0.2	0.2	0.3	0.2	0.2	0.3	0.3	0.2	0.2	0.5	0.2	0.1	0.2	0.1	0.1	0.2	0.2	0.5
13-Sep	0.1	0.0	0.1	0.2	0.3	Z	0.3	0.1	0.2	0.2	0.2	0.1	0.1	0.0	0.1	0.1	0.2	0.1	0.0	0.1	0.1	0.0	0.0	0.1	0.1	0.3
14-Sep	Z	0.0	0.1	0.0	0.1	0.0	0.0	0.0	0.0	0.0	0.1	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	0.0	0.1
15-Sep	0.0	Z	0.0	0.0	0.0	0.0	0.1	0.0	0.0	0.1	0.1	0.1	0.3	0.3	0.3	0.3	0.3	0.4	0.4	0.2	0.1	0.0	0.0	0.0	0.1	0.4
16-Sep	0.0	0.0	Z	0.3	0.3	0.4	0.3	0.6	1.1	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	0.2	1.1
17-Sep	0.1	0.1	0.1	Z	0.2	0.2	0.0	0.0	0.0	0.0	2.1	5.4	11.1	7.9	1.4	0.4	1.2	7.0	2.6	1.5	0.8	0.3	0.2	0.1	1.9	11.1
18-Sep	0.1	0.0	0.0	0.1	Z	0.2	0.2	0.6	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	0.1	0.6
19-Sep	0.0	0.0	0.0	0.0	0.0	Z	0.2	0.3	0.2	0.5	0.8	1.5	0.8	0.5	0.3	0.2	0.2	1.1	0.4	0.3	0.3	0.2	0.2	0.2	0.4	1.5
20-Sep	Z	0.2	0.2	0.2	0.3	0.2	0.2	0.2	0.1	0.1	0.1	0.2	0.1	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.1	0.0	0.0	0.1	0.3
21-Sep	0.0	Z	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.2	0.8	6.9	9.8	12.5	7.7	3.0	2.1	1.0	0.9	0.6	0.4	0.2	0.5	0.2	2.0	12.5
22-Sep	0.1	0.1	Z	0.1	0.0	0.0	0.0	0.0	0.1	0.4	6.6	12.7	1.6	0.4	0.3	0.9	8.8	1.8	1.3	0.9	0.4	0.3	0.1	0.0	1.6	12.7
23-Sep	0.0	0.0	0.0	Z	0.0	0.0	0.0	0.0	0.0	0.1	0.1	0.2	9.9	13.8	13.9	5.5	3.1	0.6	0.8	0.7	0.3	0.7	0.6	0.2	2.2	13.9
24-Sep	0.2	0.1	0.1	0.1	Z	0.1	0.1	0.1	0.1	0.0	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	0.2
25-Sep	0.1	0.1	0.1	0.1	0.2	Z	0.1	0.1	0.3	0.4	1.3	0.8	0.5	0.2	0.4	0.4	0.1	0.2	0.1	0.1	0.1	0.1	0.0	0.0	0.3	1.3
26-Sep	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
27-Sep	0.0	Z	0.1	0.1	0.1	0.0	0.1	0.0	0.1	0.0	2.8	0.9	0.1	0.1	0.1	0.1	0.1	0.5	0.1	0.3	0.2	0.0	0.1	0.1	0.3	2.8
28-Sep	0.1	0.1	Z	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	0.1	0.1	0.2	0.2	0.1	0.1	0.1	0.2
29-Sep	0.1	0.1	0.1	Z	0.1	0.2	0.4	0.5	0.5	0.4	0.5	0.7	0.7	1.4	1.6	0.8	0.4	0.2	0.2	0.3	0.2	0.2	0.2	0.2	0.4	1.6
30-Sep	0.1	0.2	0.1	0.1	Z	0.2	0.1	0.1	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	0.0	0.0	0.0	0.1	0.2
	0.3	0.1	0.1	0.2	0.1	0.1	0.3	0.4	0.4	0.7	3.2	3.4	2.8	2.5	1.6	1.0	1.0	0.7	0.4	0.4	0.3	0.4	0.3	0.3	Diurnal Average	
	5.6	1.5	0.9	1.3	0.9	1.1	4.7	4.1	5.0	6.9	17.3	19.6	16.7	17.3	13.9	8.8	8.8	7.0	3.6	4.0	3.4	7.4	5.0	5.7	Diurnal Maximum	

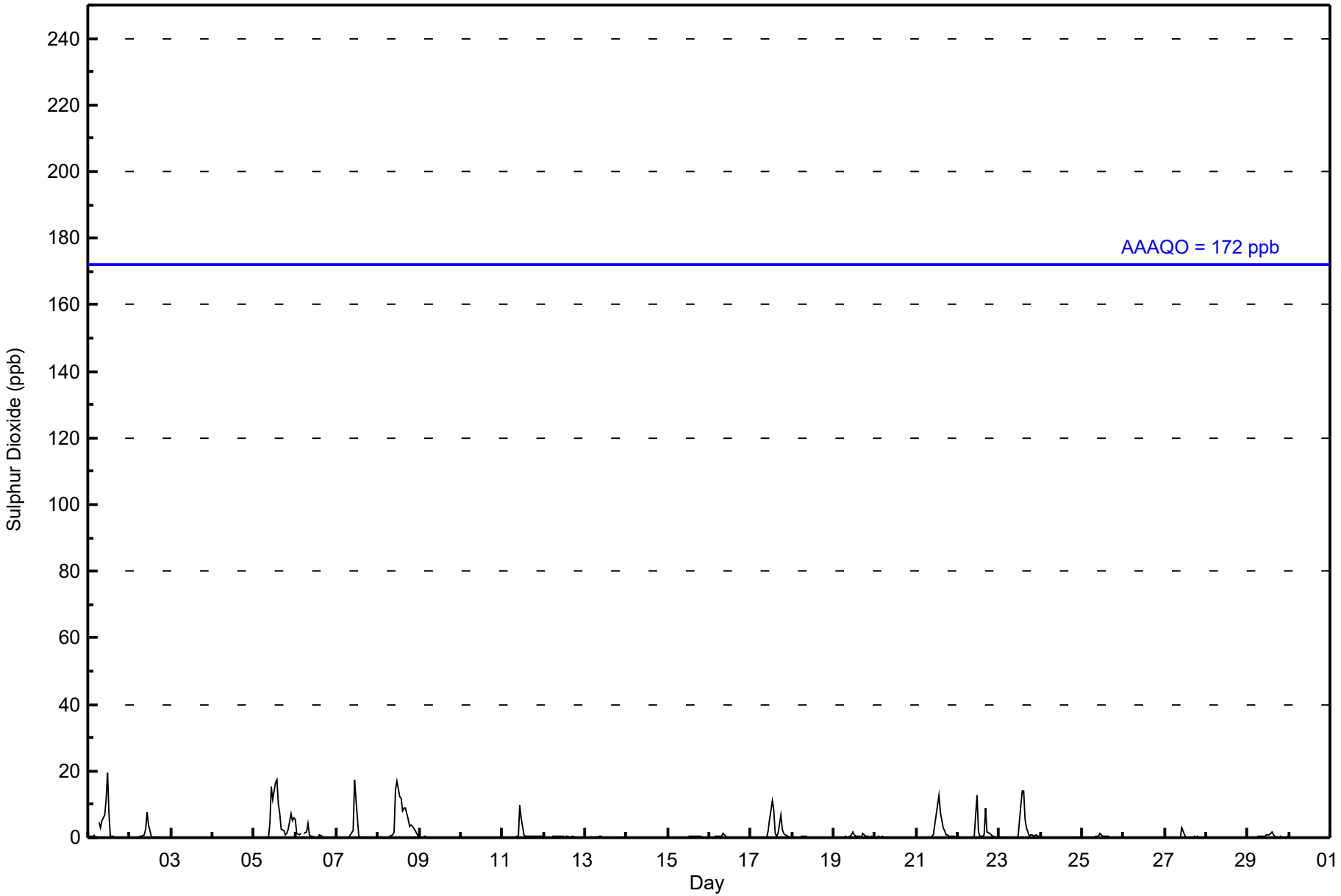
Z - zerospan C - Calibration M - Maintenance
Alberta Ambient Air Quality Objectives (AAAQO): 1-hr 172 ppb 24-hr 48 ppb

Wood Buffalo Environmental Association

Hourly Averages

Sulphur Dioxide (SO_2) - ppb

Fort McKay - Bertha Ganter - September 2024



Sulphur Dioxide (SO_2) - ppb

Fort McKay - Bertha Ganter - September 2024

Concentration Ranges (ppb)	Number of Hours	%	Cumulative %
0 - 10	666	97.51	97.51
11 - 20	17	2.49	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: 683

Total Number of Hours: 720

Wood Buffalo Environmental Association

Frequency Distribution

Sulphur Dioxide (SO_2) - ppb

Fort McKay - Bertha Ganter - September 2024

Concentration Ranges (ppb)	Wind Direction																
	N	NNE	NE	ENE	E	ESE	SE	SSE	S	SSW	SW	WSW	W	WNW	NW	NNW	**Totals**
0 - 10	57	23	6	3	5	7	19	61	105	51	47	39	37	105	58	42	665
11 - 20	0	0	0	0	0	0	0	14	3	0	0	0	0	0	0	0	17
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	57	23	6	3	5	7	19	75	108	51	47	39	37	105	58	42	682

Total Number of Valid Hours: 682

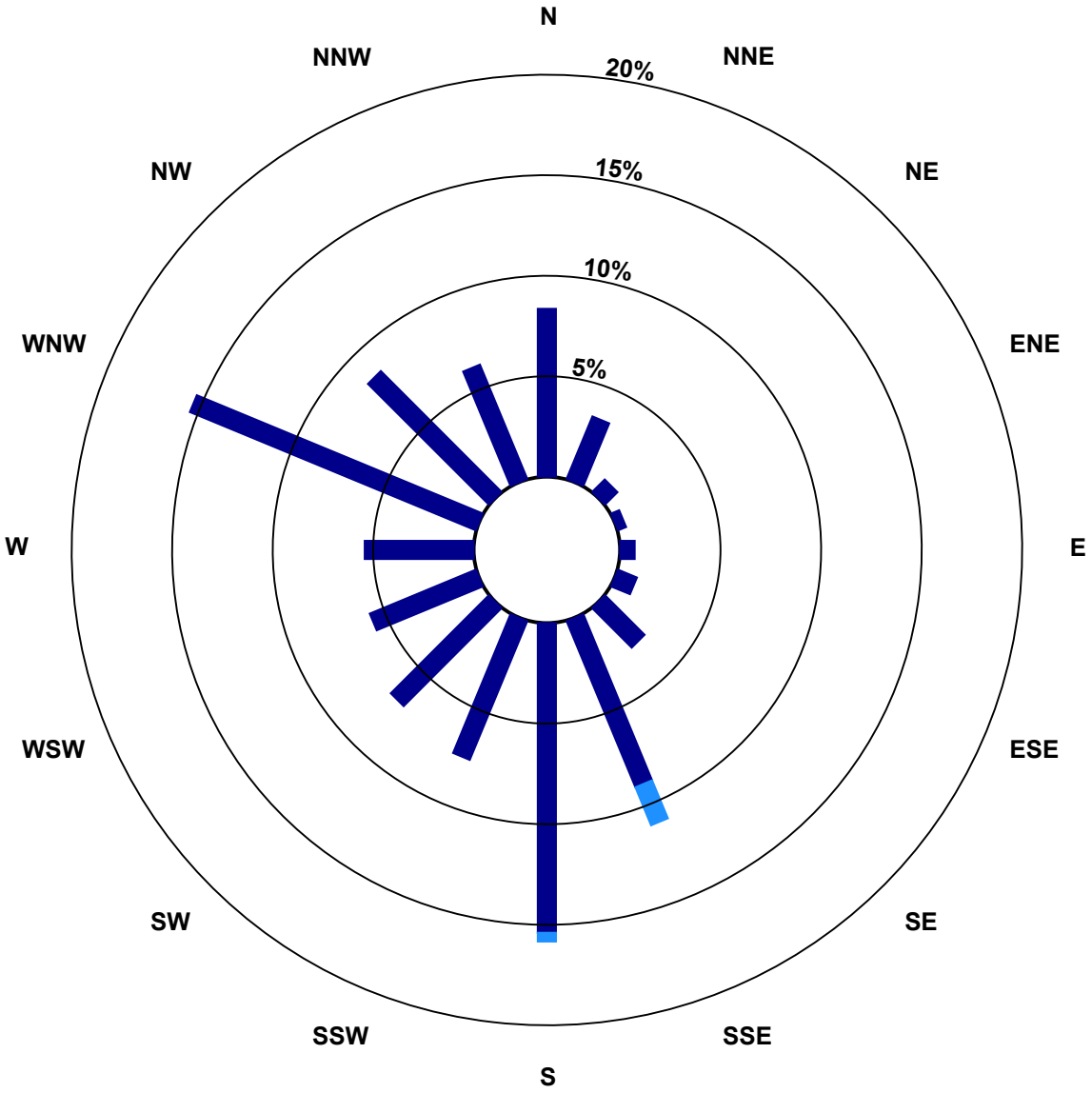
Total Number of Hours: 720

Wood Buffalo Environmental Association

Wind Rose Sep 2024

Sulphur Dioxide (SO_2) - ppb

Fort McKay - Bertha Ganter



Classes (ppb)

0 - 10

11 - 20

21 - 60

61 - 110

111 - 172

> 172

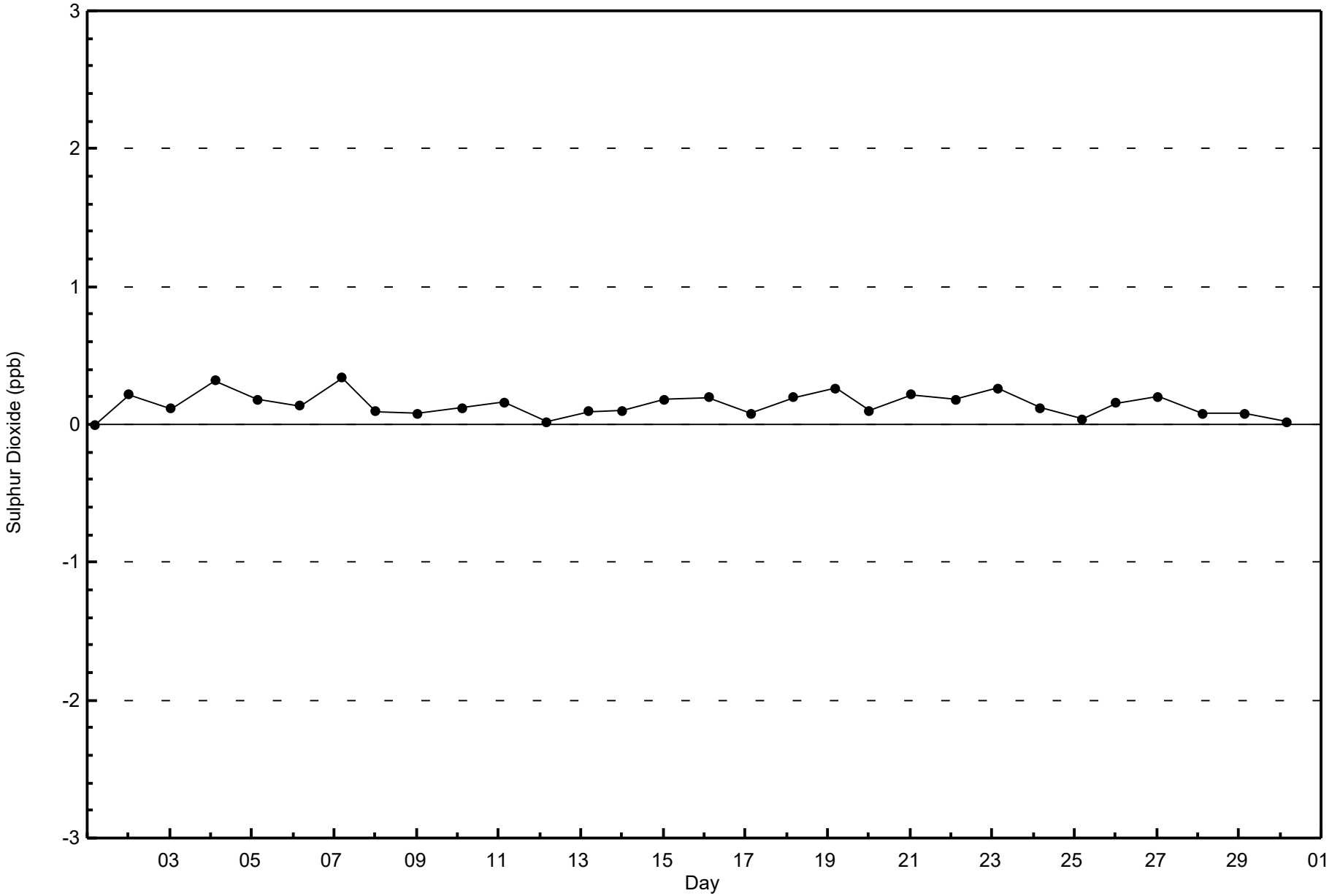
Total Number of Valid Hours: 682

Wood Buffalo Environmental Association

Zero Responses

Sulphur Dioxide (SO_2) - ppb

Fort McKay - Bertha Ganter - September 2024

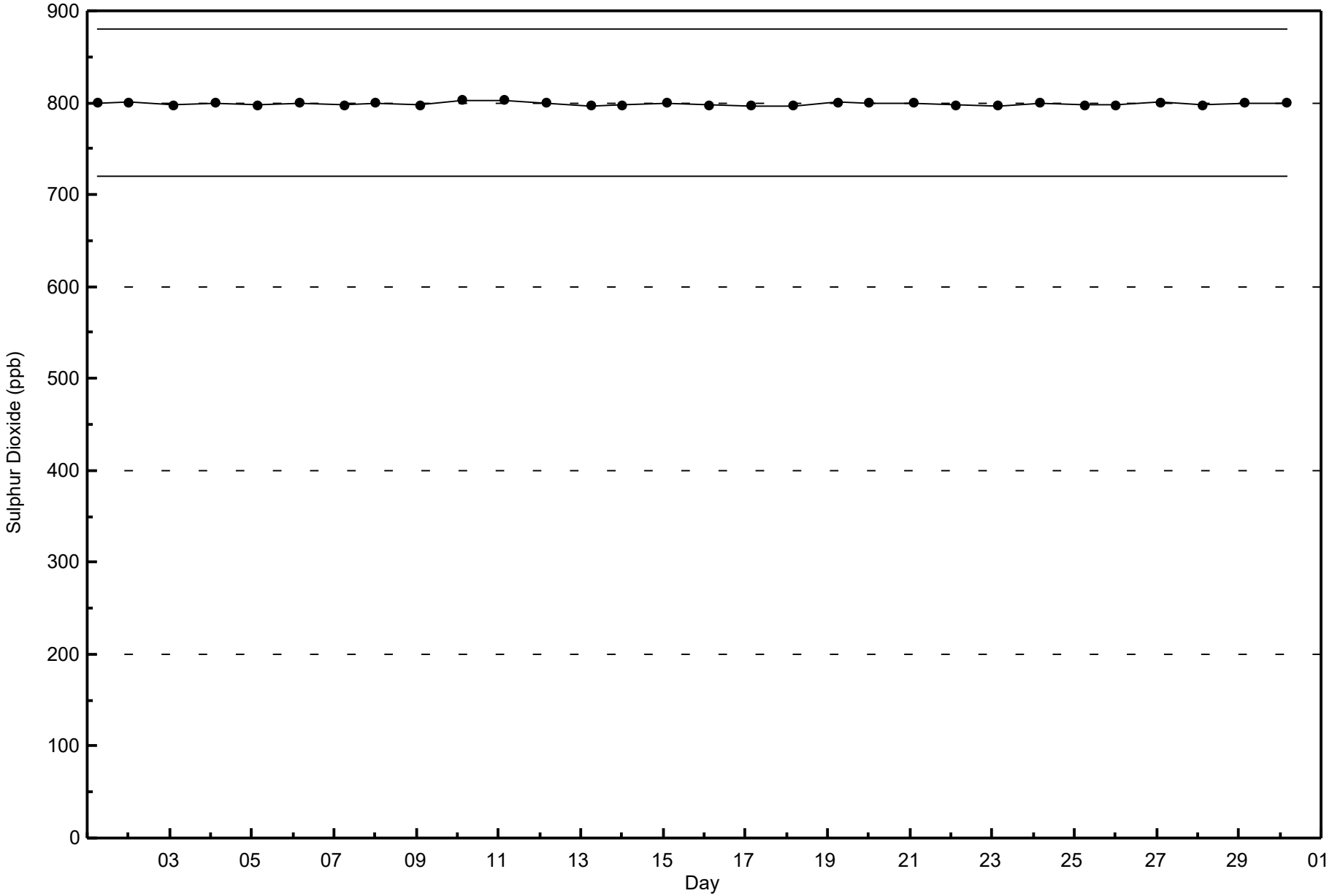


Wood Buffalo Environmental Association

Span Responses

Sulphur Dioxide (SO_2) - ppb

Fort McKay - Bertha Ganter - September 2024



Wood Buffalo Environmental Association

Summary of Hour Averages

Hydrogen Sulphide (H_2S) - ppb

Fort McKay - Bertha Ganter - September 2024

Number of Exceedences (AAAQO): 1-hr: 0 24-hr: 0

Maximum Value: 3.5 ppb on Sep 5 21:00 Maximum Daily Average: 0.7 ppb on Sep 5

Minimum Value: 0.0 ppb on Sep 2 17:00 Minimum Daily Average: 0.1 ppb on Sep 30

Maximum Diurnal Average: 0.5 ppb at hour 11 Minimum Diurnal Average: 0.1 ppb at hour 17

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} = 0.7 P_{99} = 1.4

Hours in Service:	720
Hours of Data:	682
Hours of Missing Data:	38
Hours of Calibration:	36
Percent Operational Time:	99.7

Day	Hourly Period Ending At (MST)																								Daily	Daily
	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24	Average	Maximum
1-Sep	Z	0.7	0.3	0.3	0.5	0.4	0.5	0.7	0.7	0.5	0.7	1.0	0.4	0.1	0.1	0.1	0.0	0.0	0.1	0.1	0.1	0.2	0.2	0.2	0.3	1.0
2-Sep	0.1	Z	0.2	0.1	0.1	0.2	0.8	0.9	0.8	1.2	1.2	0.5	0.1	0.1	0.0	0.0	0.0	0.0	0.0	0.1	0.1	0.2	0.1	0.1	0.3	1.2
3-Sep	0.1	0.1	Z	0.1	0.2	0.2	0.3	0.2	0.1	0.2	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	0.3
4-Sep	0.2	0.2	0.2	Z	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	0.1	0.1	0.2
5-Sep	0.1	0.1	0.1	0.1	Z	0.2	0.2	0.2	0.2	0.4	1.0	0.9	0.5	0.3	0.1	0.1	0.2	0.5	1.4	2.5	3.5	1.2	0.7	0.9	0.7	3.5
6-Sep	0.9	0.5	0.2	0.4	0.4	Z	0.2	0.6	0.3	0.2	0.1	0.1	0.1	0.2	0.3	0.2	0.2	0.2	0.2	0.2	0.1	0.1	0.1	0.1	0.3	0.9
7-Sep	Z	0.2	0.2	0.2	0.6	0.7	0.8	1.4	1.5	1.1	2.6	1.4	0.6	0.2	0.1	0.1	0.0	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.5	2.6
8-Sep	0.1	Z	0.2	0.3	0.3	0.3	0.5	1.3	1.2	1.3	1.8	2.4	0.9	0.5	0.4	0.3	0.2	0.3	0.4	0.7	0.6	0.5	0.4	0.3	0.7	2.4
9-Sep	0.2	0.2	Z	0.5	0.5	0.4	0.4	0.3	0.3	0.3	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	0.2	0.5
10-Sep	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	0.2	0.1	0.1	0.1	0.1	0.1	0.1	0.2
11-Sep	0.1	0.2	0.2	0.2	Z	0.3	0.3	0.5	1.2	0.5	0.7	0.6	0.3	0.4	0.3	0.3	0.2	0.2	0.2	0.2	0.3	0.2	0.1	0.1	0.3	1.2
12-Sep	0.1	0.1	0.1	0.1	0.1	Z	0.3	0.3	0.7	0.5	0.4	0.1	0.1	0.2	0.2	0.1	0.2	0.1	0.2	0.2	0.1	0.1	0.1	0.1	0.2	0.7
13-Sep	Z	0.1	0.2	0.4	0.5	0.6	0.6	0.4	0.5	0.6	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	0.1	0.3	0.6
14-Sep	0.1	Z	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.0	0.0	0.1	0.0	0.1	0.1	0.1	0.1	0.1	0.2	0.1	0.1	0.1	0.1	0.1	0.2
15-Sep	0.2	0.2	Z	0.2	0.2	0.2	0.2	0.2	0.3	0.3	0.2	0.2	0.1	0.1	0.1	0.1	0.1	0.1	0.2	0.2	0.2	0.1	0.1	0.2	0.2	0.3
16-Sep	0.1	0.1	0.2	Z	0.8	1.0	0.7	0.9	0.8	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	1.0
17-Sep	0.1	0.1	0.2	0.4	Z	0.5	0.4	0.7	0.5	0.3	0.3	0.3	0.3	0.2	0.1	0.1	0.1	0.1	0.4	0.4	0.3	0.3	0.3	0.5	0.3	0.7
18-Sep	0.9	0.7	0.5	0.7	0.7	Z	0.5	0.6	0.4	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	0.3	0.9
19-Sep	Z	0.1	0.1	0.1	0.1	0.4	0.6	1.0	1.1	1.2	0.9	0.6	0.4	0.2	0.1	0.1	0.1	0.2	0.2	0.2	0.2	0.2	0.4	0.3	0.4	1.2
20-Sep	0.2	Z	0.3	0.2	0.3	0.3	0.5	0.4	0.4	0.4	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	0.2	0.5
21-Sep	0.2	0.1	Z	0.1	0.1	0.1	0.1	0.1	0.1	0.5	0.9	0.9	0.8	0.4	0.3	0.2	0.1	0.2	0.4	0.7	0.2	0.2	1.4	0.4	0.4	1.4
22-Sep	0.1	0.1	0.1	Z	0.2	0.1	0.2	0.2	0.4	0.5	0.6	0.6	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	0.6
23-Sep	0.3	0.2	0.2	0.2	Z	0.1	0.1	0.2	0.3	C	C	C	C	C	C	0.8	0.6	0.2	0.4	0.5	0.5	0.7	0.7	0.7	--	0.8
24-Sep	0.6	0.4	0.3	0.2	0.2	Z	0.4	0.7	0.4	0.2	0.2	0.2	M	M	0.1	0.1	0.1	0.1	0.2	0.2	0.1	0.1	0.1	0.2	0.2	0.7
25-Sep	Z	0.7	0.4	0.6	0.4	0.7	0.7	0.7	0.8	0.8	0.8	0.7	0.3	0.4	0.4	0.4	0.3	0.3	0.3	0.3	0.3	0.3	0.1	0.1	0.5	0.8
26-Sep	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
27-Sep	0.1	0.1	Z	0.2	0.3	0.5	0.9	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	0.2	0.9
28-Sep	0.1	0.1	0.0	Z	0.1	0.0	0.1	0.1	0.0	0.1	0.0	0.1	0.0	0.0	0.0	0.1	0.0	0.1	0.1	0.1	0.1	0.2	0.2	0.2	0.1	0.2
29-Sep	0.2	0.1	0.1	0.1	Z	0.4	0.7	1.0	0.7	0.7	0.7	0.5	0.4	0.3	0.2	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.3	1.0
30-Sep	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	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.1	0.1
	0.2	0.2	0.2	0.2	0.3	0.3	0.4	0.5	0.5	0.4	0.5	0.4	0.3	0.2	0.1	0.1	0.1	0.1	0.2	0.3	0.3	0.2	0.2	0.2	Diurnal Average	
	0.9	0.7	0.5	0.7	0.8	1.0	0.9	1.4	1.5	1.3	2.6	2.4	0.9	0.5	0.4	0.8	0.6	0.5	1.4	2.5	3.5	1.2	1.4	0.9	Diurnal Maximum	

Z - zerospan C - Calibration M - Maintenance

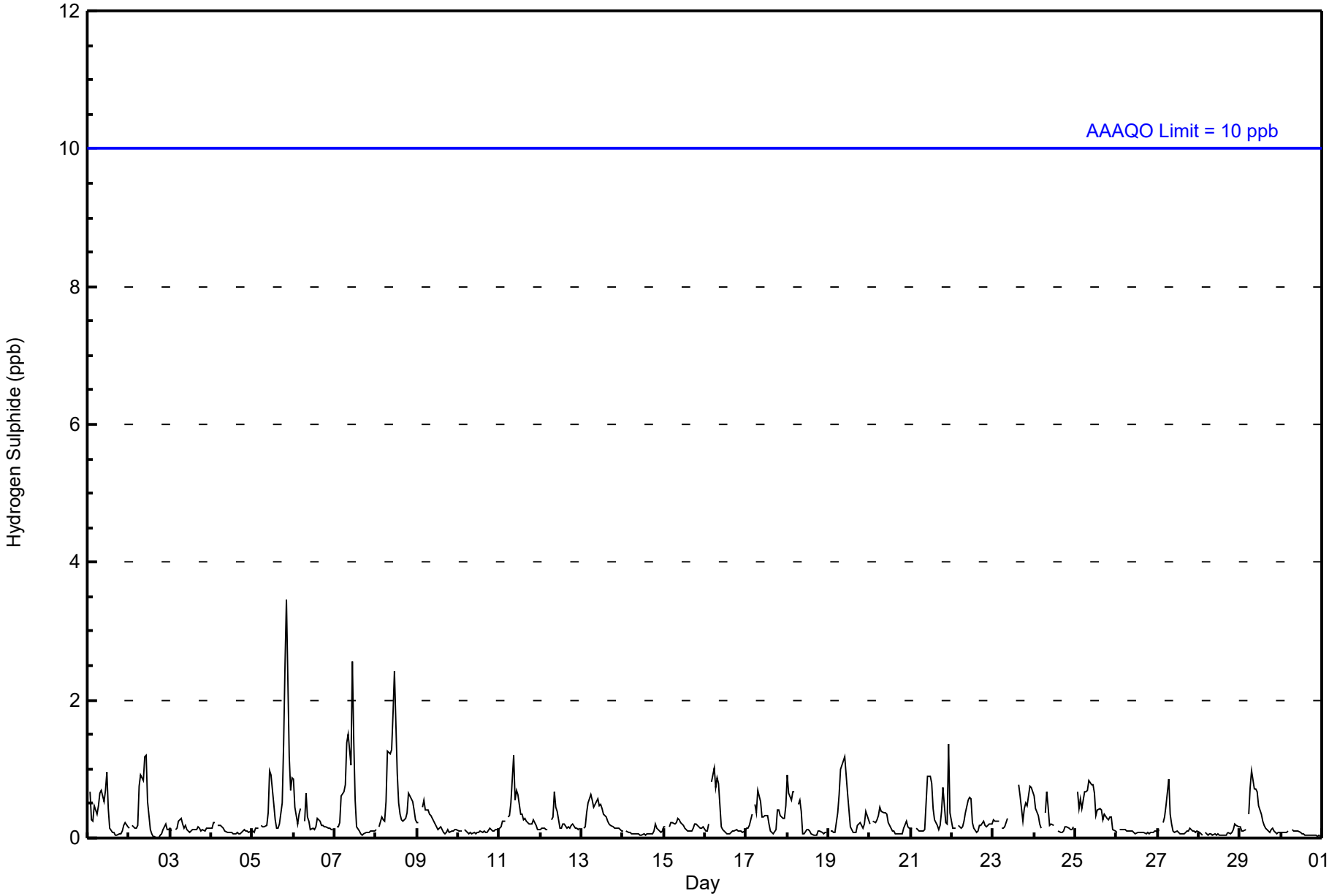
Alberta Ambient Air Quality Objectives (AAAQO): 1-hr 10 ppb 24-hr 3 ppb

Wood Buffalo Environmental Association

Hourly Averages

Hydrogen Sulphide (H_2S) - ppb

Fort McKay - Bertha Ganter - September 2024



Hydrogen Sulphide (H_2S) - ppb

Fort McKay - Bertha Ganter - September 2024

Concentration Ranges (ppb)	Number of Hours	%	Cumulative %
0 - 2	679	99.56	99.56
3 - 4	3	0.44	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: 682

Total Number of Hours: 720

Wood Buffalo Environmental Association

Frequency Distribution

Hydrogen Sulphide (H_2S) - ppb

Fort McKay - Bertha Ganter - September 2024

Concentration Ranges (ppb)	Wind Direction																
	N	NNE	NE	ENE	E	ESE	SE	SSE	S	SSW	SW	WSW	W	WNW	NW	NNW	**Totals**
0 - 2	58	23	6	3	4	7	19	72	103	52	49	37	42	103	60	41	679
3 - 4	0	0	0	0	0	0	0	2	1	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	23	6	3	4	7	19	74	104	52	49	37	42	103	60	41	682

Total Number of Valid Hours: 682

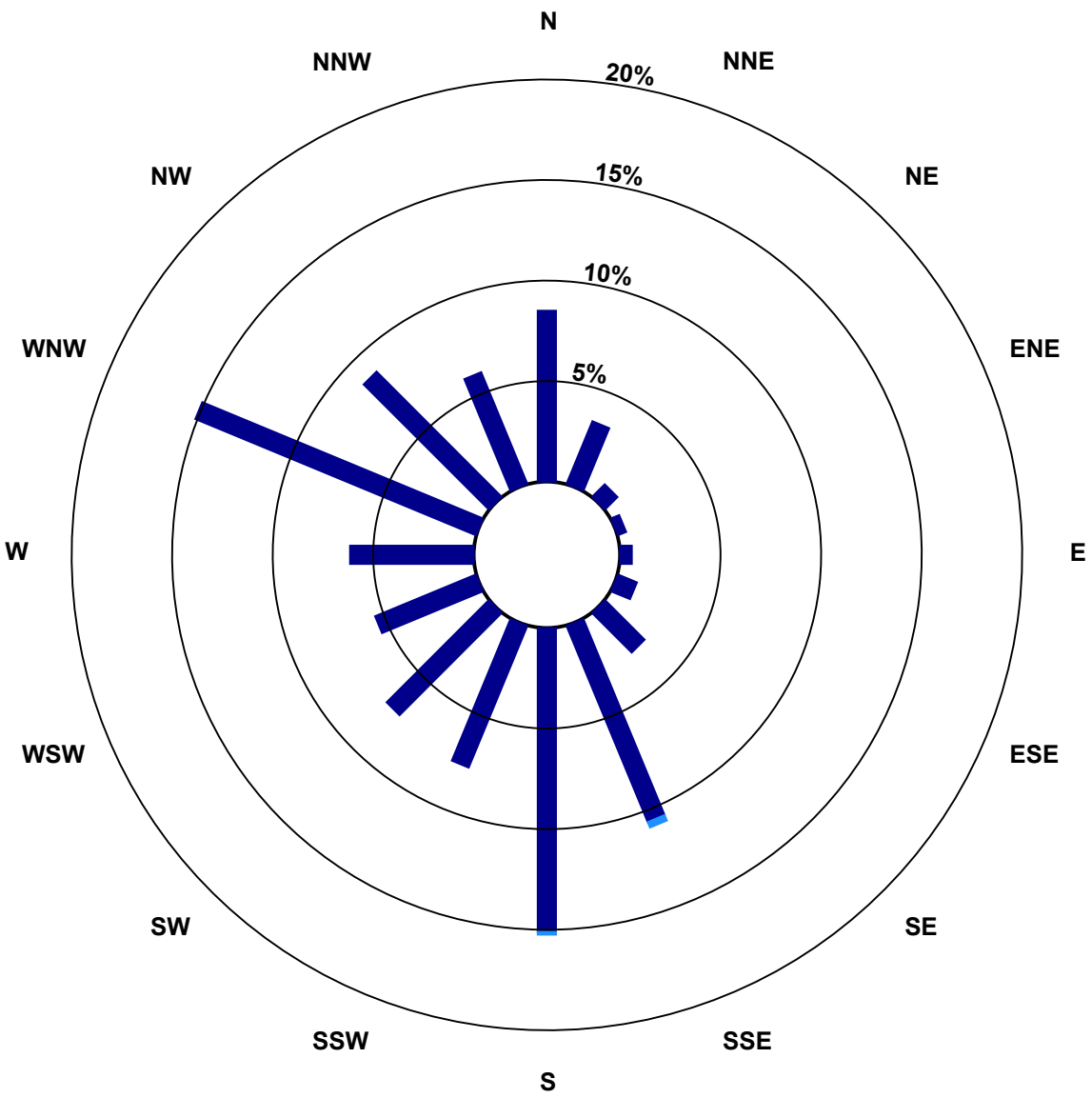
Total Number of Hours: 720

Wood Buffalo Environmental Association

Wind Rose Sep 2024

Hydrogen Sulphide (H_2S) - ppb

Fort McKay - Bertha Ganter



Classes (ppb)

0 - 2

3 - 4

5 - 7

8 - 11

> 11

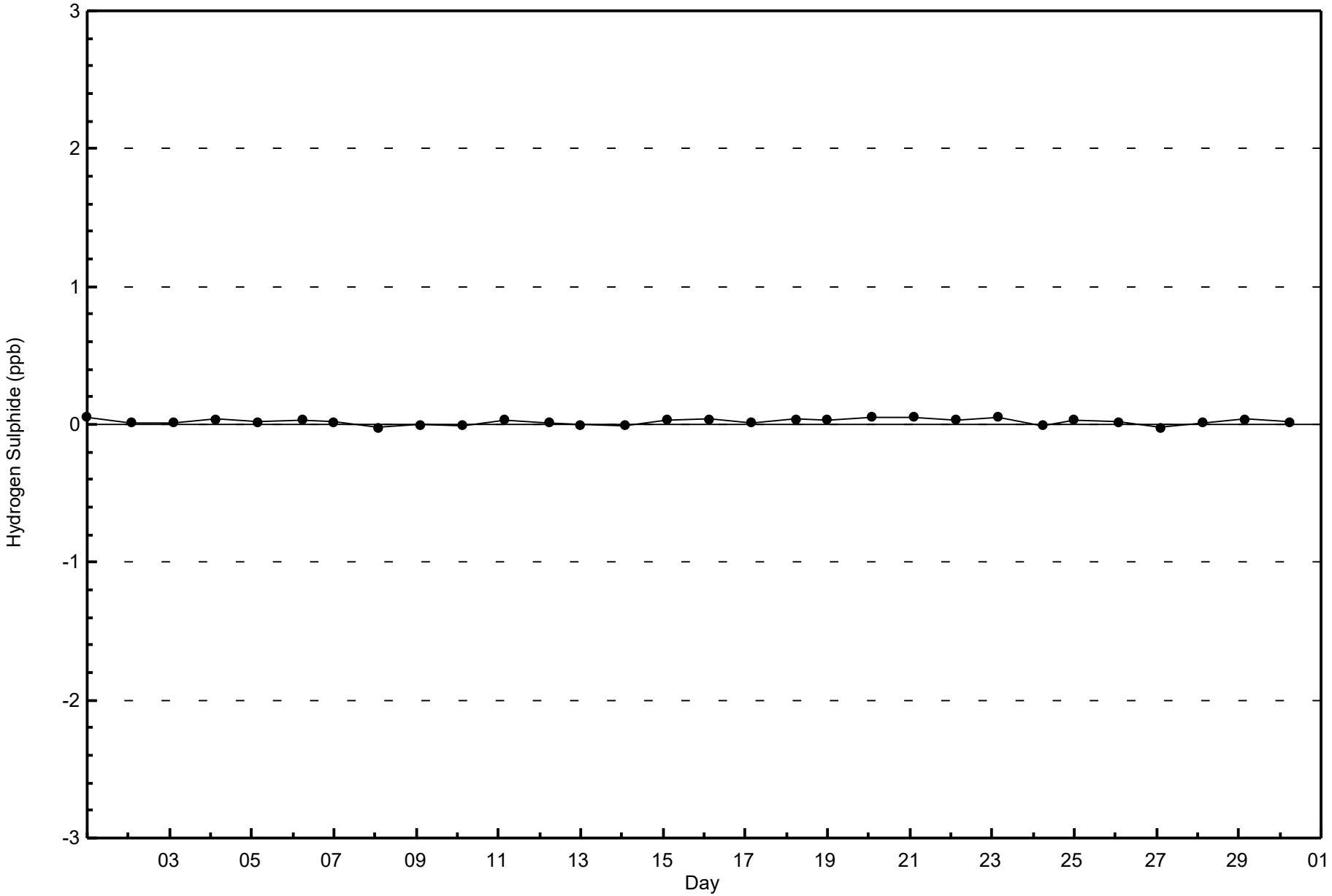
Total Number of Valid Hours: 682

Wood Buffalo Environmental Association

Zero Responses

Hydrogen Sulphide (H_2S) - ppb

Fort McKay - Bertha Ganter - September 2024

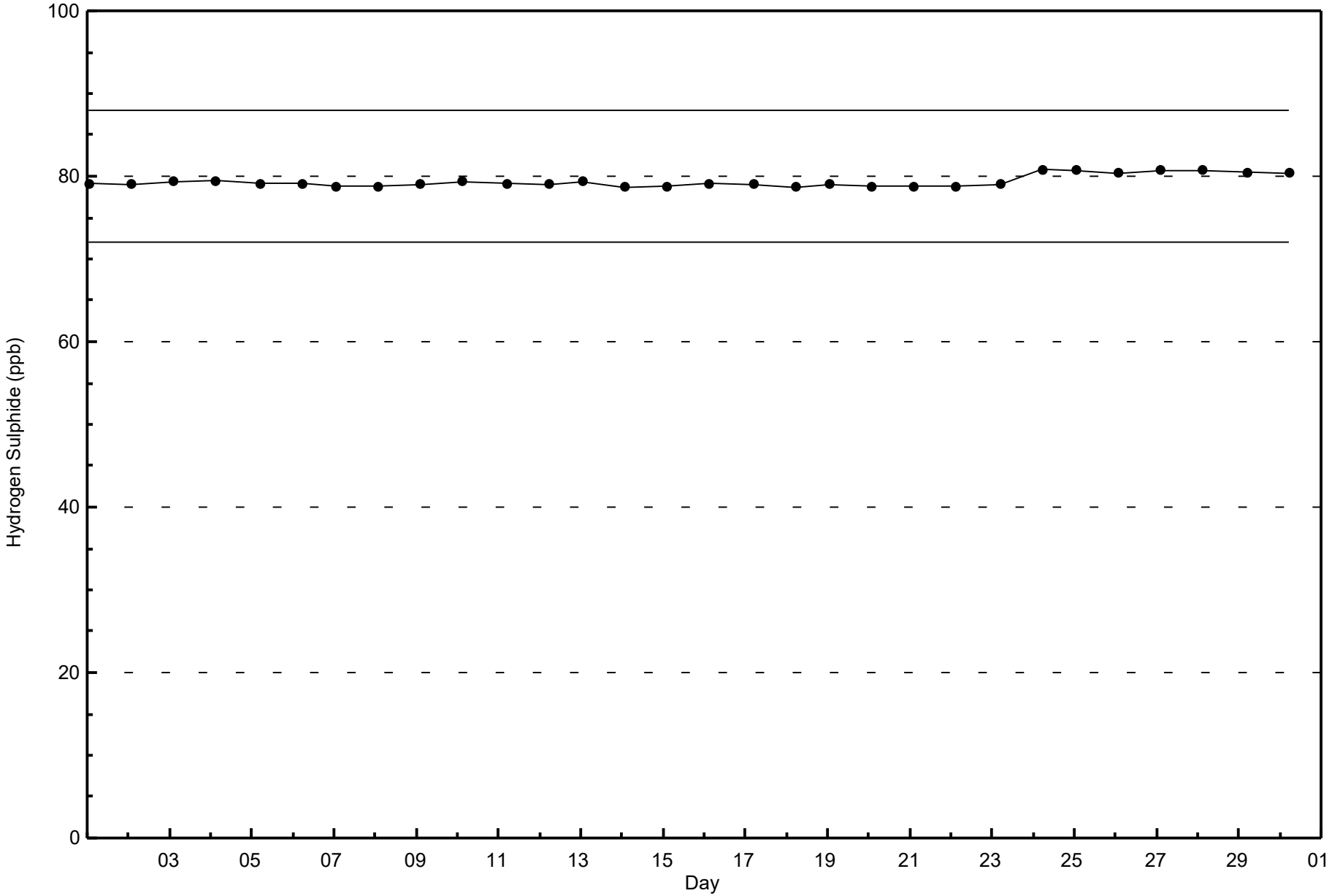


Wood Buffalo Environmental Association

Span Responses

Hydrogen Sulphide (H_2S) - ppb

Fort McKay - Bertha Ganter - September 2024



Wood Buffalo Environmental Association

Summary of Hour Averages

Total Reduced Sulphur (TRS) - ppb

Fort McKay - Bertha Ganter - September 2024

Number of Exceedences (AAAQO): 1-hr: 0 24-hr: 0

Maximum Value: 3.9 ppb on Sep 5 21:00 Maximum Daily Average: 1.1 ppb on Sep 8

Minimum Value: 0.2 ppb on Sep 27 02:00 Minimum Daily Average: 0.3 ppb on Sep 30

Maximum Diurnal Average: 0.8 ppb at hour 11 Minimum Diurnal Average: 0.4 ppb at hour 17

Monthly Average: 0.55 ppb Percentiles: P_1 = 0.3 P_{10} = 0.3 Q_1 = 0.4 Median = 0.4 Q_3 = 0.6 P_{90} = 1.0 P_{99} = 1.8

Hours in Service:	720
Hours of Data:	682
Hours of Missing Data:	38
Hours of Calibration:	36
Percent Operational Time:	99.7

Day	Hourly Period Ending At (MST)																								Daily	Daily
	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24	Average	Maximum
1-Sep	Z	1.0	0.5	0.5	0.8	0.6	0.7	0.9	1.0	0.8	1.0	1.4	0.7	0.4	0.4	0.4	0.4	0.4	0.4	0.4	0.5	0.5	0.5	0.5	0.6	1.4
2-Sep	0.5	Z	0.5	0.4	0.5	0.5	1.1	1.3	1.2	1.6	1.7	0.9	0.5	0.4	0.4	0.4	0.4	0.4	0.4	0.4	0.5	0.6	0.5	0.5	0.7	1.7
3-Sep	0.5	0.4	Z	0.5	0.5	0.6	0.7	0.5	0.5	0.5	0.4	0.4	0.5	0.5	0.5	0.5	0.5	0.5	0.5	0.4	0.4	0.5	0.4	0.5	0.5	0.7
4-Sep	0.4	0.5	0.5	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	0.5
5-Sep	0.4	0.4	0.4	0.5	Z	0.4	0.4	0.4	0.4	0.6	1.3	1.4	0.9	0.6	0.5	0.5	0.5	0.8	1.6	2.8	3.9	1.8	1.2	1.3	1.0	3.9
6-Sep	1.5	0.8	0.4	0.6	0.7	Z	0.5	1.0	0.5	0.4	0.4	0.4	0.4	0.4	0.5	0.4	0.4	0.4	0.4	0.4	0.4	0.4	0.4	0.4	0.5	1.5
7-Sep	Z	0.4	0.5	0.5	1.0	1.1	1.0	1.7	1.9	1.5	3.2	1.9	1.0	0.5	0.4	0.5	0.5	0.4	0.5	0.5	0.5	0.5	0.5	0.5	0.9	3.2
8-Sep	0.6	Z	0.6	0.8	0.7	0.7	0.9	1.7	1.6	1.7	2.3	3.2	1.5	1.0	0.8	0.7	0.7	0.7	0.8	1.1	1.0	0.9	0.7	0.6	1.1	3.2
9-Sep	0.6	0.6	Z	0.8	0.9	0.7	0.7	0.6	0.6	0.5	0.5	0.5	0.2	0.3	0.5	0.4	0.4	0.4	0.5	0.4	0.4	0.4	0.4	0.4	0.5	0.9
10-Sep	0.4	0.4	0.4	Z	0.3	0.3	0.3	0.3	0.3	0.3	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
11-Sep	0.4	0.4	0.4	0.4	Z	0.4	0.5	0.7	1.2	0.7	0.9	0.8	0.6	0.6	0.5	0.5	0.5	0.5	0.5	0.5	0.6	0.5	0.4	0.4	0.6	1.2
12-Sep	0.4	0.4	0.4	0.3	0.4	Z	0.6	0.6	1.0	0.8	0.7	0.5	0.5	0.6	0.6	0.5	0.5	0.5	0.5	0.5	0.4	0.4	0.4	0.4	0.5	1.0
13-Sep	Z	0.4	0.4	0.5	0.6	0.8	0.7	0.6	0.6	0.7	0.6	0.6	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	0.8
14-Sep	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	0.4	0.4	0.3	0.4	0.4	0.5	0.4	0.4	0.4	0.4	0.3	0.5
15-Sep	0.5	0.4	Z	0.4	0.5	0.4	0.4	0.4	0.4	0.5	0.4	0.4	0.4	0.4	0.4	0.4	0.4	0.4	0.5	0.5	0.4	0.4	0.4	0.4	0.4	0.5
16-Sep	0.3	0.3	0.4	Z	1.2	1.5	1.0	1.2	1.1	0.4	0.3	0.3	0.3	0.3	0.3	0.3	0.3	0.3	0.4	0.3	0.4	0.3	0.3	0.3	0.5	1.5
17-Sep	0.4	0.4	0.4	0.6	Z	0.8	0.5	0.8	0.7	0.5	0.6	0.6	0.6	0.5	0.4	0.4	0.3	0.4	0.7	0.8	0.7	0.6	0.6	0.8	0.6	0.8
18-Sep	1.3	1.0	0.9	1.0	1.1	Z	0.8	0.9	0.7	0.4	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	0.3	0.6	1.3
19-Sep	Z	0.4	0.4	0.4	0.3	0.5	0.7	1.0	1.2	1.4	1.2	1.0	0.7	0.4	0.4	0.3	0.3	0.5	0.5	0.4	0.5	0.5	0.6	0.5	0.6	1.4
20-Sep	0.4	Z	0.4	0.4	0.4	0.5	0.6	0.6	0.5	0.5	0.5	0.4	0.4	0.4	0.4	0.3	0.3	0.3	0.3	0.3	0.4	0.6	0.5	0.4	0.4	0.6
21-Sep	0.4	0.4	Z	0.4	0.3	0.3	0.3	0.3	0.3	0.6	1.1	1.3	1.2	0.8	0.6	0.5	0.4	0.5	0.6	1.0	0.6	0.5	1.7	0.7	0.6	1.7
22-Sep	0.4	0.4	0.3	Z	0.3	0.3	0.3	0.4	0.5	0.7	0.8	0.8	0.5	0.4	0.4	0.5	0.5	0.5	0.4	0.5	0.5	0.5	0.5	0.5	0.5	0.8
23-Sep	0.5	0.5	0.4	0.4	Z	0.3	0.3	0.3	0.4	C	C	C	C	C	C	1.0	0.9	0.4	0.7	0.8	0.8	1.2	1.2	1.1	--	1.2
24-Sep	1.1	0.8	0.7	0.5	0.4	Z	0.6	1.0	0.8	0.5	0.5	0.5	M	M	0.4	0.4	0.4	0.5	0.5	0.5	0.5	0.5	0.5	0.5	0.6	1.1
25-Sep	Z	1.0	0.8	0.9	0.7	1.0	1.0	1.0	1.1	1.0	1.0	0.9	0.6	0.7	0.7	0.7	0.6	0.6	0.6	0.6	0.6	0.6	0.4	0.4	0.8	1.1
26-Sep	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	0.4	0.3	0.4	0.3	0.3	0.3	0.3	0.3	0.4	0.4
27-Sep	0.2	0.2	Z	0.3	0.4	0.6	1.0	0.5	0.3	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	1.0
28-Sep	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	0.4	0.4	0.4	0.4	0.3	0.4
29-Sep	0.4	0.3	0.3	0.3	Z	0.5	0.7	0.9	0.7	0.8	0.8	0.6	0.6	0.5	0.4	0.4	0.3	0.3	0.4	0.4	0.3	0.3	0.3	0.3	0.5	0.9
30-Sep	0.3	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	0.4	0.3	0.4	0.3	0.3	0.3	0.3	0.4
	0.5	0.5	0.5	0.5	0.5	0.6	0.6	0.7	0.7	0.7	0.8	0.8	0.5	0.5	0.4	0.4	0.4	0.4	0.5	0.6	0.6	0.5	0.5	0.5	Diurnal Average	
	1.5	1.0	0.9	1.0	1.2	1.5	1.1	1.7	1.9	1.7	3.2	3.2	1.5	1.0	0.8	1.0	0.9	0.8	1.6	2.8	3.9	1.8	1.7	1.3	Diurnal Maximum	

Z - zerospan C - Calibration M - Maintenance

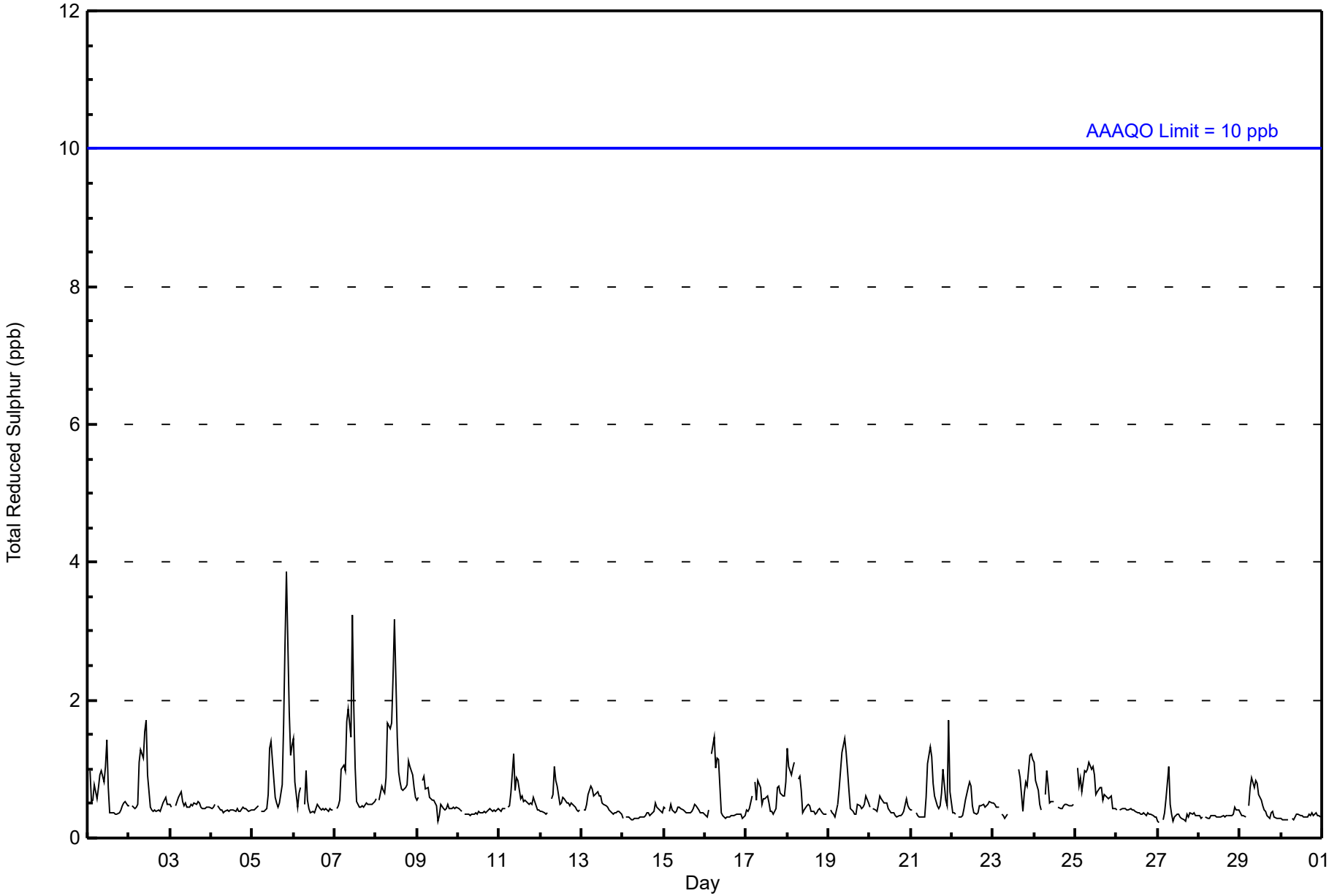
Alberta Ambient Air Quality Objectives (AAAQO): 1-hr 10 ppb 24-hr 3 ppb

Wood Buffalo Environmental Association

Hourly Averages

Total Reduced Sulphur (TRS) - ppb

Fort McKay - Bertha Ganter - September 2024



Total Reduced Sulphur (TRS) - ppb
Fort McKay - Bertha Ganter - September 2024

Concentration Ranges (ppb)	Number of Hours	%	Cumulative %
0 - 2	678	99.41	99.41
3 - 4	4	0.59	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: 682

Total Number of Hours: 720

Wood Buffalo Environmental Association

Frequency Distribution

Total Reduced Sulphur (TRS) - ppb

Fort McKay - Bertha Ganter - September 2024

Concentration Ranges (ppb)	Wind Direction																
	N	NNE	NE	ENE	E	ESE	SE	SSE	S	SSW	SW	WSW	W	WNW	NW	NNW	**Totals**
0 - 2	58	23	6	3	4	7	19	72	102	52	49	37	42	103	60	41	678
3 - 4	0	0	0	0	0	0	0	2	2	0	0	0	0	0	0	0	4
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	23	6	3	4	7	19	74	104	52	49	37	42	103	60	41	682

Total Number of Valid Hours: 682

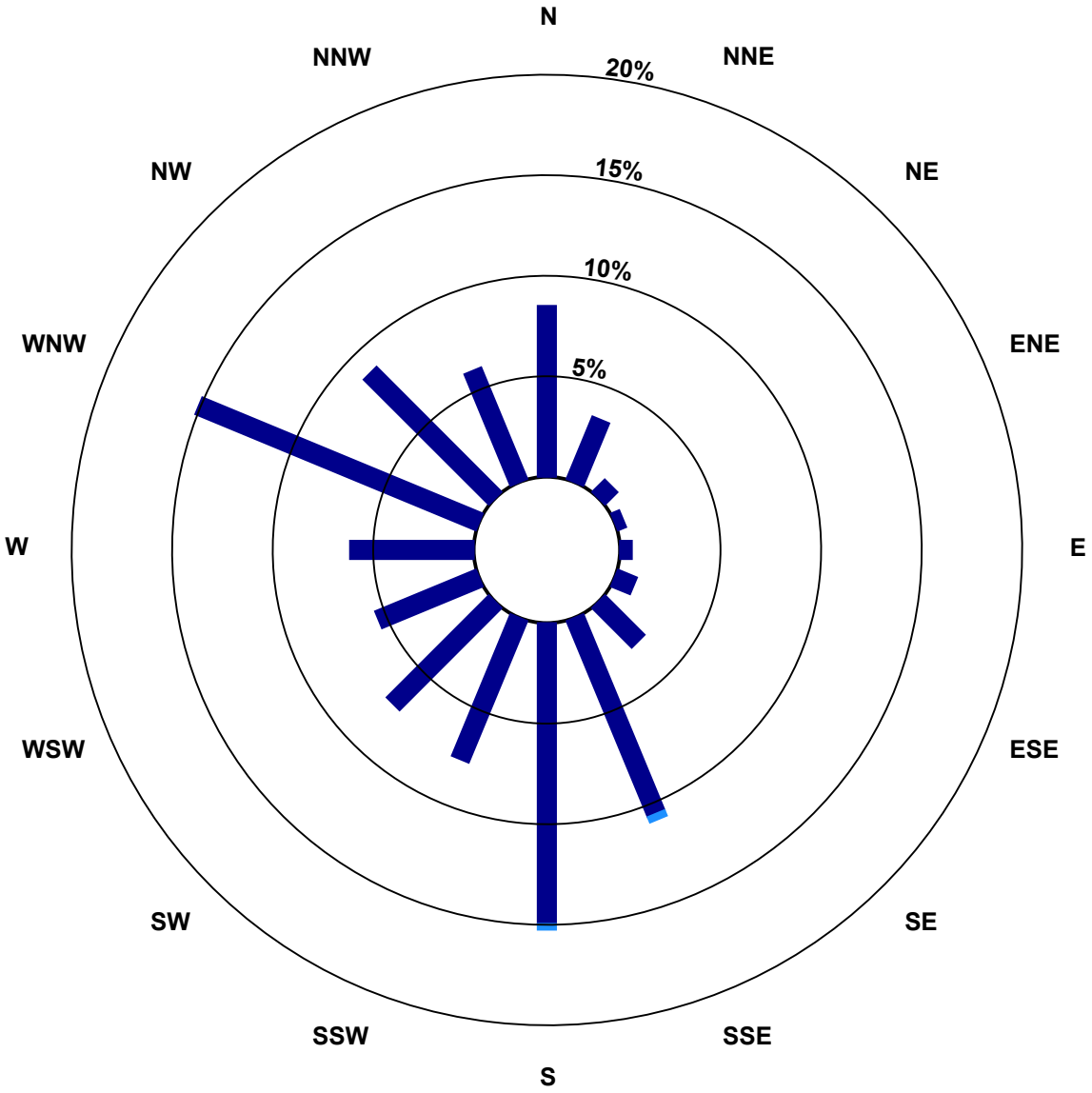
Total Number of Hours: 720

Wood Buffalo Environmental Association

Wind Rose Sep 2024

Total Reduced Sulphur (TRS) - ppb

Fort McKay - Bertha Ganter



Classes (ppb)

0 - 2

3 - 4

5 - 7

8 - 11

> 11

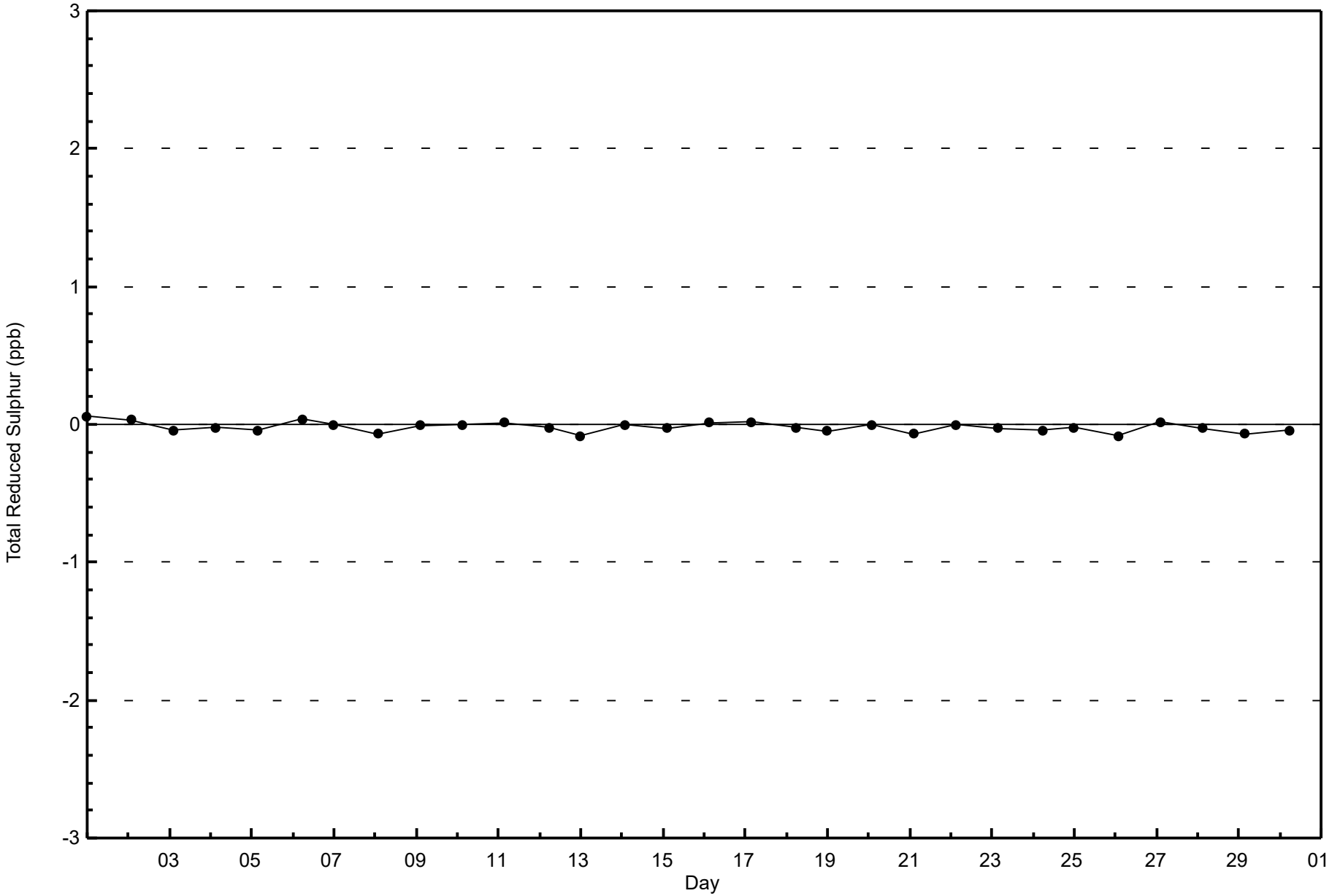
Total Number of Valid Hours: 682

Wood Buffalo Environmental Association

Zero Responses

Total Reduced Sulphur (TRS) - ppb

Fort McKay - Bertha Ganter - September 2024

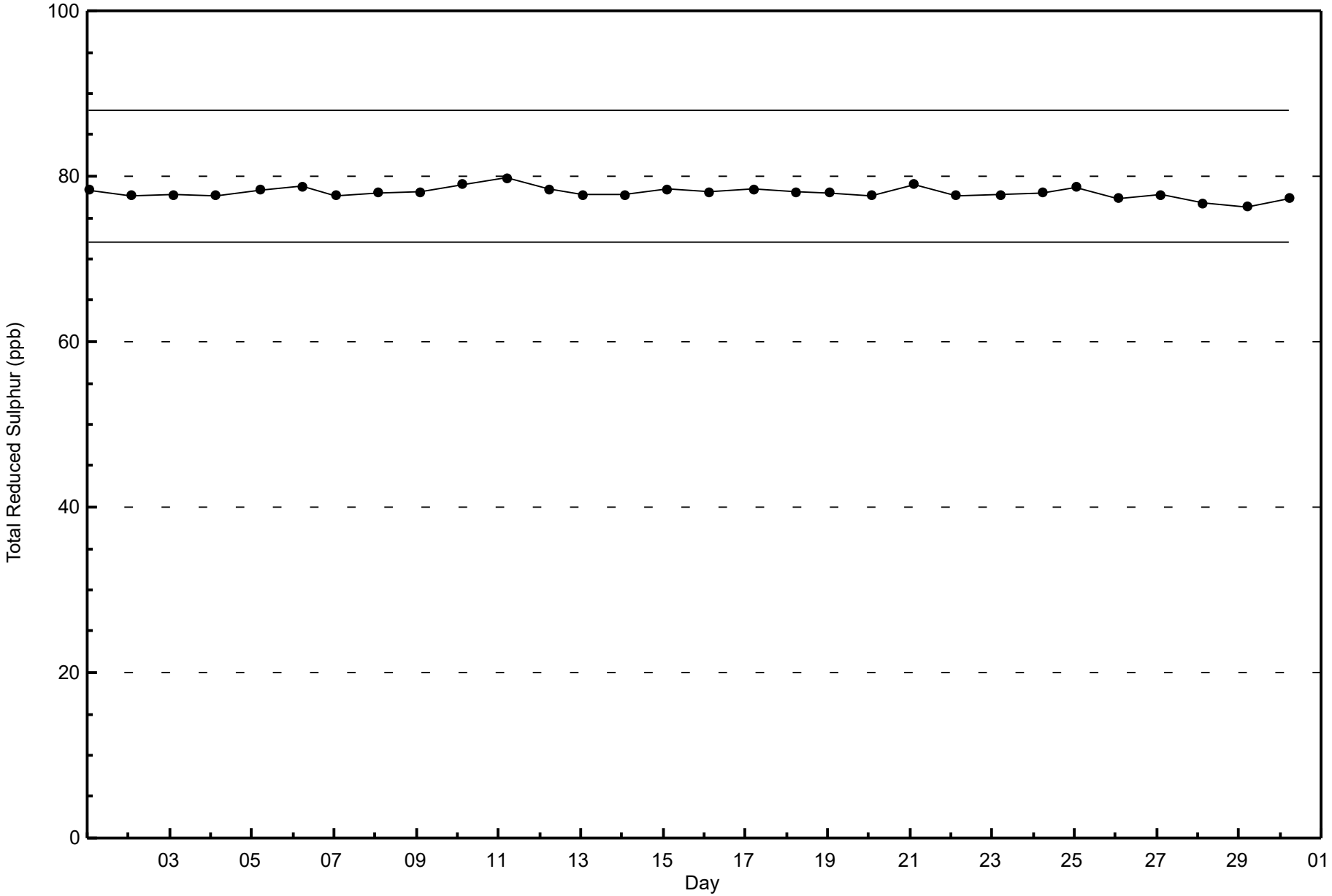


Wood Buffalo Environmental Association

Span Responses

Total Reduced Sulphur (TRS) - ppb

Fort McKay - Bertha Ganter - September 2024



Wood Buffalo Environmental Association

Summary of Hour Averages

Total Hydrocarbons (THC) - ppm

Fort McKay - Bertha Ganter - September 2024

Maximum Value: 3.6 ppm on Sep 25 10:00

Maximum Daily Average: 2.4 ppm on Sep 25

Minimum Value: 1.9 ppm on Sep 24 12:00

Minimum Daily Average: 1.9 ppm on Sep 30

Maximum Diurnal Average: 2.3 ppm at hour 8

Minimum Diurnal Average: 2.0 ppm at hour 17

Monthly Average: 2.15 ppm

Percentiles: P_1 = 1.9 P_{10} = 1.9 Q_1 = 2.0 Median = 2.1 Q_3 = 2.2 P_{90} = 2.5 P_{99} = 3.1

Hours in Service:	720
Hours of Data:	683
Hours of Missing Data:	37
Hours of Calibration:	35
Percent Operational Time:	99.7

Day	Hourly Period Ending At (MST)																								Daily	Daily
	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24	Average	Maximum
1-Sep	2.3	2.2	2.0	2.0	2.1	Z	2.3	2.4	2.5	2.3	2.2	2.2	2.2	2.0	1.9	2.0	1.9	1.9	2.0	2.0	2.2	2.2	2.2	2.1	2.1	2.5
2-Sep	Z	2.2	2.1	2.1	2.1	2.2	2.4	2.6	2.4	2.5	2.4	2.3	2.1	2.0	2.0	1.9	2.0	2.0	2.0	2.0	2.0	2.2	2.1	2.0	2.1	2.6
3-Sep	2.0	Z	2.0	2.0	2.1	2.2	2.3	2.1	2.0	2.2	2.0	2.0	2.0	2.0	2.1	2.2	2.1	2.1	2.2	2.1	2.0	2.0	2.0	2.2	2.1	2.3
4-Sep	2.3	2.4	Z	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	2.0	2.0	2.0	2.0	2.0	2.0	2.4
5-Sep	2.1	2.0	2.1	Z	2.0	2.0	2.0	2.0	2.0	2.1	2.5	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	2.5
6-Sep	2.1	2.2	2.0	2.1	Z	2.1	2.1	2.5	2.4	2.4	2.0	2.0	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	2.5
7-Sep	2.1	2.1	2.2	2.2	2.4	Z	3.0	2.7	2.7	2.6	2.3	2.3	2.3	2.2	2.0	2.0	2.0	2.0	2.1	2.0	2.0	2.0	2.0	2.1	2.2	3.0
8-Sep	Z	2.1	2.1	2.2	2.2	2.2	2.5	2.6	2.6	2.9	2.6	2.4	2.3	2.2	2.2	2.2	2.2	2.2	2.2	2.7	3.0	2.9	2.4	2.2	2.4	3.0
9-Sep	2.2	Z	2.4	3.0	3.0	2.9	2.7	2.2	2.2	C	C	C	C	C	1.9	1.9	1.9	1.9	1.9	1.9	1.9	1.9	2.0	2.0	2.2	3.0
10-Sep	2.0	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	1.9	2.0	2.0	2.1	2.0	2.1	2.2	2.2	2.0	2.2
11-Sep	2.4	2.5	2.7	Z	2.7	2.9	2.8	2.8	3.0	2.2	2.0	2.0	2.1	2.2	2.1	2.1	2.2	2.3	2.2	2.3	2.5	2.2	2.1	2.1	2.4	3.0
12-Sep	2.1	2.1	2.1	2.1	Z	2.1	2.1	2.1	2.1	2.1	2.2	2.0	2.0	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
13-Sep	2.1	2.0	2.1	2.8	3.1	Z	3.0	2.7	2.9	3.2	2.5	2.4	2.2	2.1	2.1	2.1	2.1	2.0	2.0	2.0	2.0	2.1	2.1	2.1	2.3	3.2
14-Sep	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	2.3	2.4	2.3	2.4	2.4	2.1	2.4
15-Sep	2.4	Z	2.4	2.4	2.6	2.7	2.7	2.5	2.6	2.3	2.3	2.3	2.1	2.1	2.1	2.1	2.1	2.2	2.2	2.2	2.2	2.2	2.3	2.4	2.3	2.7
16-Sep	2.2	2.2	Z	2.5	2.4	2.3	2.3	2.2	2.2	2.1	2.1	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	2.5
17-Sep	2.1	2.1	2.2	Z	2.2	2.4	2.4	2.5	2.4	2.2	2.2	2.1	2.2	2.0	2.0	2.0	2.0	1.9	2.0	2.0	2.0	2.0	2.1	2.1	2.1	2.5
18-Sep	2.2	2.2	2.3	2.3	Z	2.4	2.3	2.3	2.3	2.0	1.9	1.9	1.9	1.9	1.9	1.9	1.9	1.9	2.0	2.0	1.9	2.0	2.0	2.0	2.1	2.4
19-Sep	2.0	2.0	2.0	2.0	2.0	Z	2.6	2.9	2.7	2.6	2.5	2.6	2.3	2.1	2.0	2.0	2.0	2.0	2.0	2.1	2.2	2.3	2.6	2.4	2.3	2.9
20-Sep	Z	2.5	2.6	2.6	2.6	2.7	2.7	2.5	2.3	2.3	2.2	2.0	2.0	2.0	2.0	1.9	1.9	1.9	1.9	1.9	2.0	2.4	2.3	2.3	2.2	2.7
21-Sep	2.2	Z	2.1	2.0	2.0	2.0	2.0	2.0	2.0	2.6	2.9	2.4	2.2	2.1	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.1	2.0	2.1	2.9
22-Sep	2.0	2.0	Z	2.0	2.0	2.1	2.0	2.1	2.3	2.3	2.3	2.4	2.2	2.1	2.0	2.0	2.1	2.1	2.1	2.1	2.1	2.2	2.4	2.5	2.1	2.5
23-Sep	2.8	2.8	2.8	Z	2.7	2.3	2.2	2.2	2.5	2.4	2.3	2.1	2.3	2.7	2.4	2.3	2.1	2.0	2.1	2.2	2.2	2.1	2.1	2.1	2.3	2.8
24-Sep	2.2	2.2	2.2	2.1	Z	2.1	2.2	2.4	2.2	1.9	1.9	1.9	M	M	1.9	1.9	1.9	1.9	2.0	2.0	2.1	2.0	2.0	2.0	2.1	2.4
25-Sep	2.1	2.2	2.2	2.2	2.1	Z	2.2	2.3	3.2	3.6	3.0	3.4	2.4	2.5	2.4	2.3	2.2	2.2	2.2	2.2	2.3	2.3	2.0	2.0	2.4	3.6
26-Sep	Z	1.9	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	2.0	2.0	2.0	1.9	2.0
27-Sep	2.0	Z	2.1	2.2	2.4	2.3	2.3	2.4	2.3	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	2.1	2.4
28-Sep	2.0	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	2.0	1.9	2.0	2.0	2.0	1.9	2.0
29-Sep	2.0	2.0	2.0	Z	2.3	2.7	3.2	3.4	2.8	2.5	2.3	2.3	2.2	2.0	2.0	2.0	1.9	1.9	2.0	2.1	2.0	1.9	1.9	1.9	2.2	3.4
30-Sep	1.9	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	2.0	1.9	1.9	1.9	1.9	2.0
	2.2	2.1	2.2	2.2	2.3	2.3	2.3	2.3	2.3	2.3	2.2	2.2	2.1	2.1	2.0	2.0	2.0	2.0	2.0	2.1	2.1	2.1	2.1	2.1	Diurnal Average	
	2.8	2.8	2.8	3.0	3.1	2.9	3.2	3.4	3.2	3.6	3.0	3.4	2.4	2.7	2.4	2.3	2.2	2.3	2.2	2.7	3.0	2.9	2.6	2.5	Diurnal Maximum	

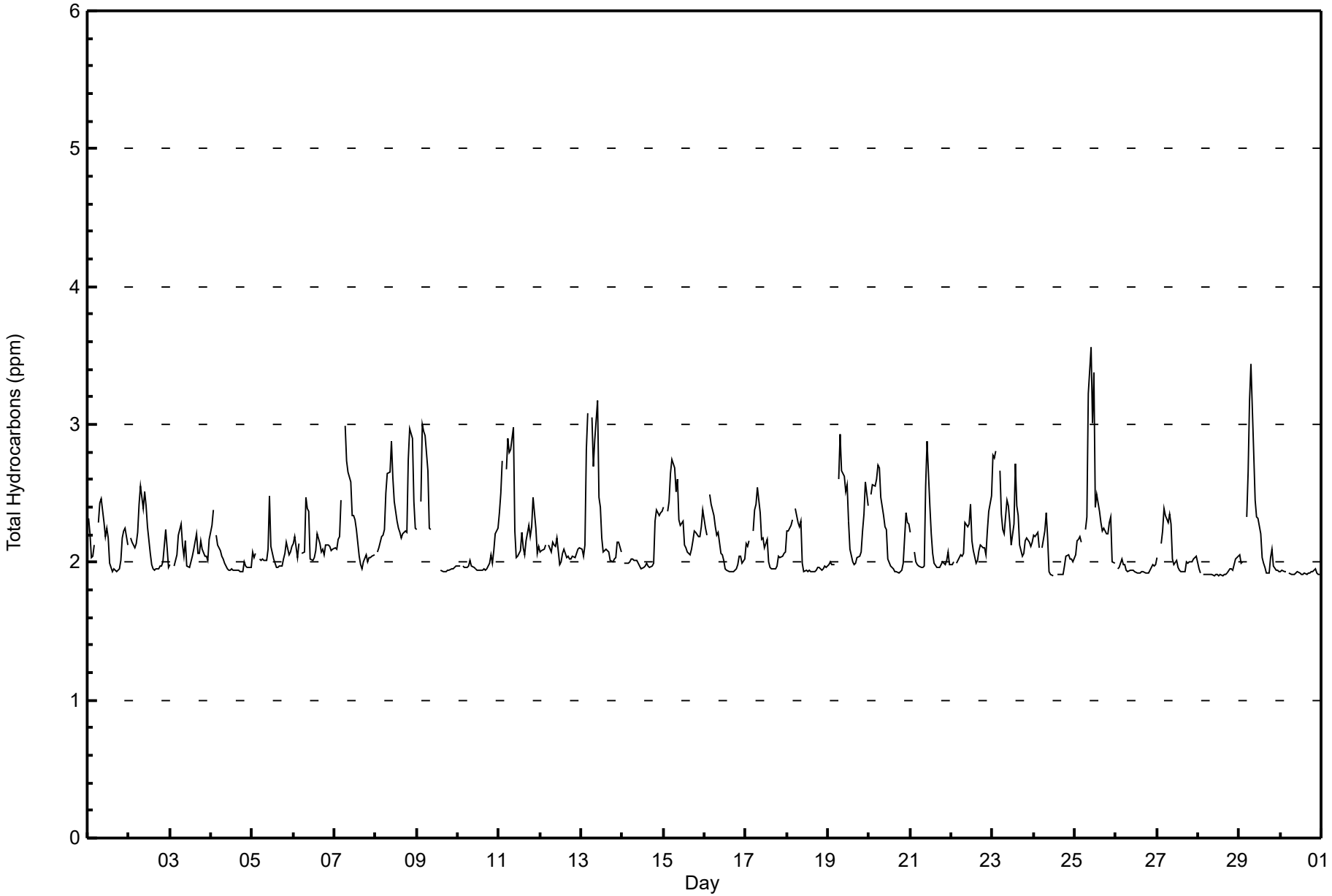
Z - zerospan C - Calibration M - Maintenance

Wood Buffalo Environmental Association

Hourly Averages

Total Hydrocarbons (THC) - ppm

Fort McKay - Bertha Ganter - September 2024



Total Hydrocarbons (THC) - ppm

Fort McKay - Bertha Ganter - September 2024

Concentration Ranges (ppm)	Number of Hours	%	Cumulative %
0 - 2.0	326	47.73	47.73
2.1 - 3.0	350	51.24	98.98
3.1 - 10.0	7	1.02	100.00
> 10.0	0	0.00	100.00

Total Number of Valid Hours: 683

Total Number of Hours: 720

Wood Buffalo Environmental Association

Frequency Distribution

Total Hydrocarbons (THC) - ppm

Fort McKay - Bertha Ganter - September 2024

Concentration Ranges (ppm)	Wind Direction																
	N	NNE	NE	ENE	E	ESE	SE	SSE	S	SSW	SW	WSW	W	WNW	NW	NNW	**Totals**
0 - 2.0	18	7	1	1	2	3	8	22	27	28	35	30	31	61	29	23	326
2.1 - 3.0	36	16	5	2	3	4	11	53	81	23	12	8	6	42	29	18	349
3.1 - 10.0	3	0	0	0	0	0	0	0	0	0	0	1	0	2	0	1	7
> 10.0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Totals	57	23	6	3	5	7	19	75	108	51	47	39	37	105	58	42	682

Total Number of Valid Hours: 682

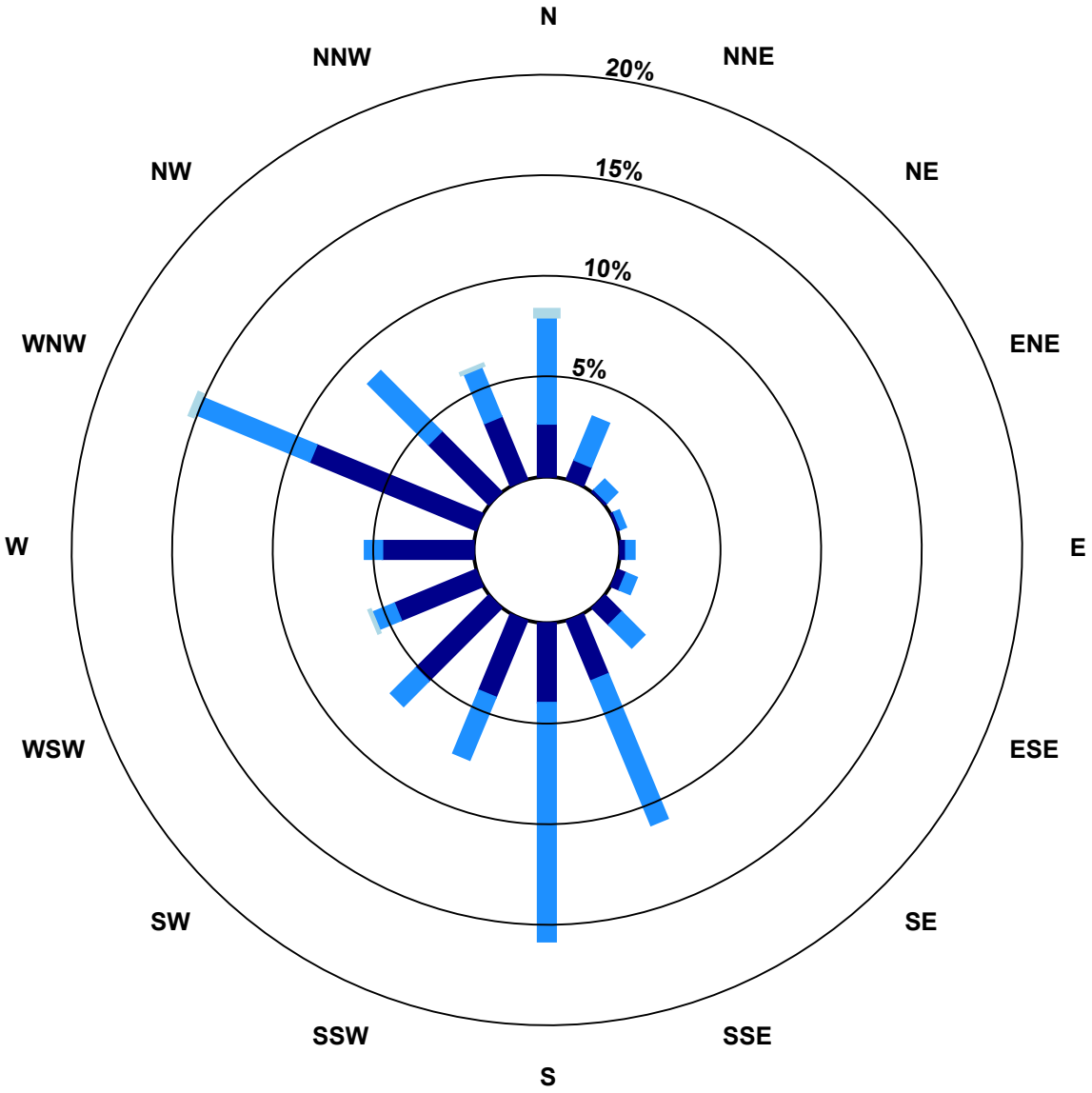
Total Number of Hours: 720

Wood Buffalo Environmental Association

Wind Rose Sep 2024

Total Hydrocarbons (THC) - ppm

Fort McKay - Bertha Ganter



Classes (ppm)

0 - 2.0

2.1 - 3.0

3.1 - 10.0

> 10.0

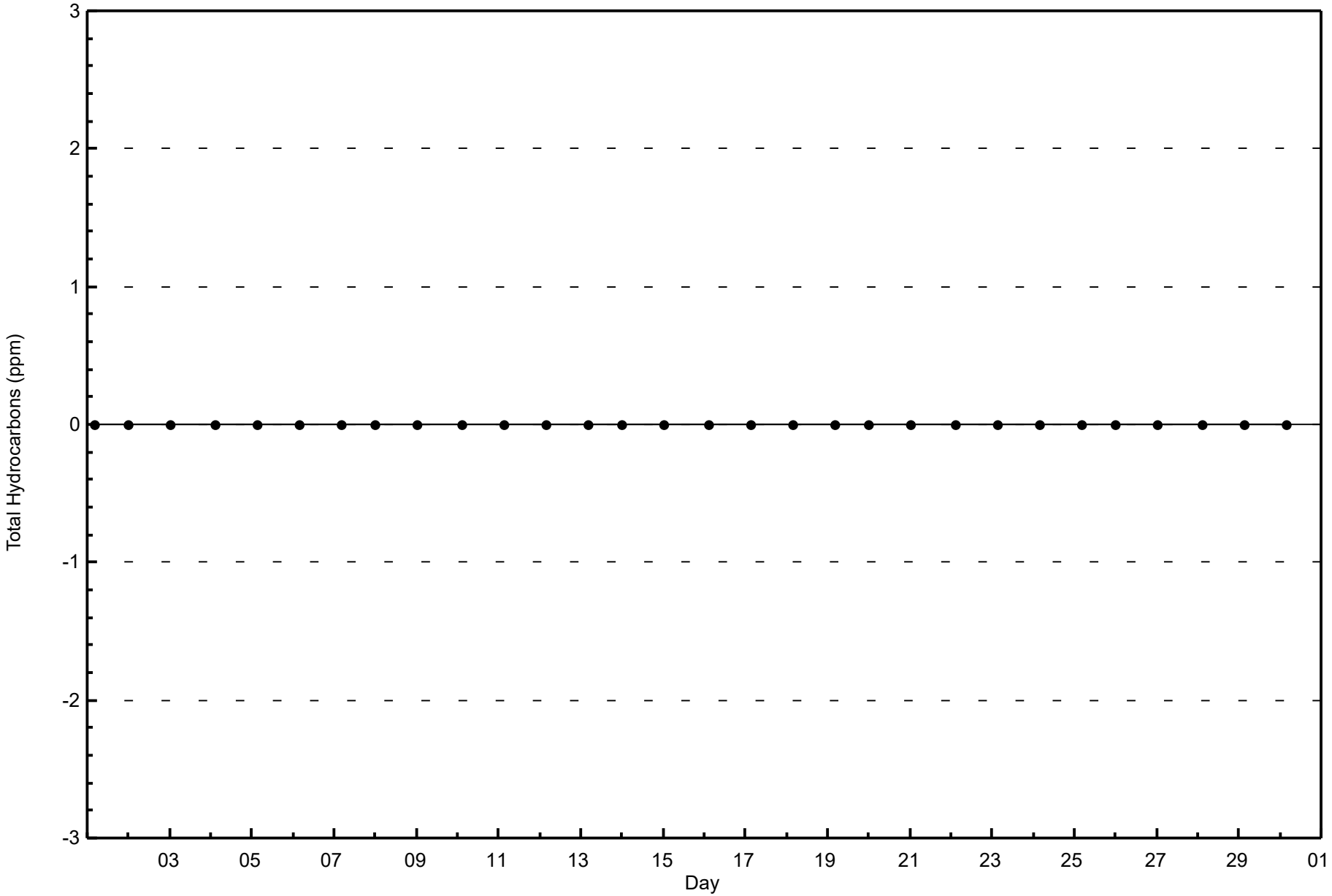
Total Number of Valid Hours: 682

Wood Buffalo Environmental Association

Zero Responses

Total Hydrocarbons (THC) - ppm

Fort McKay - Bertha Ganter - September 2024

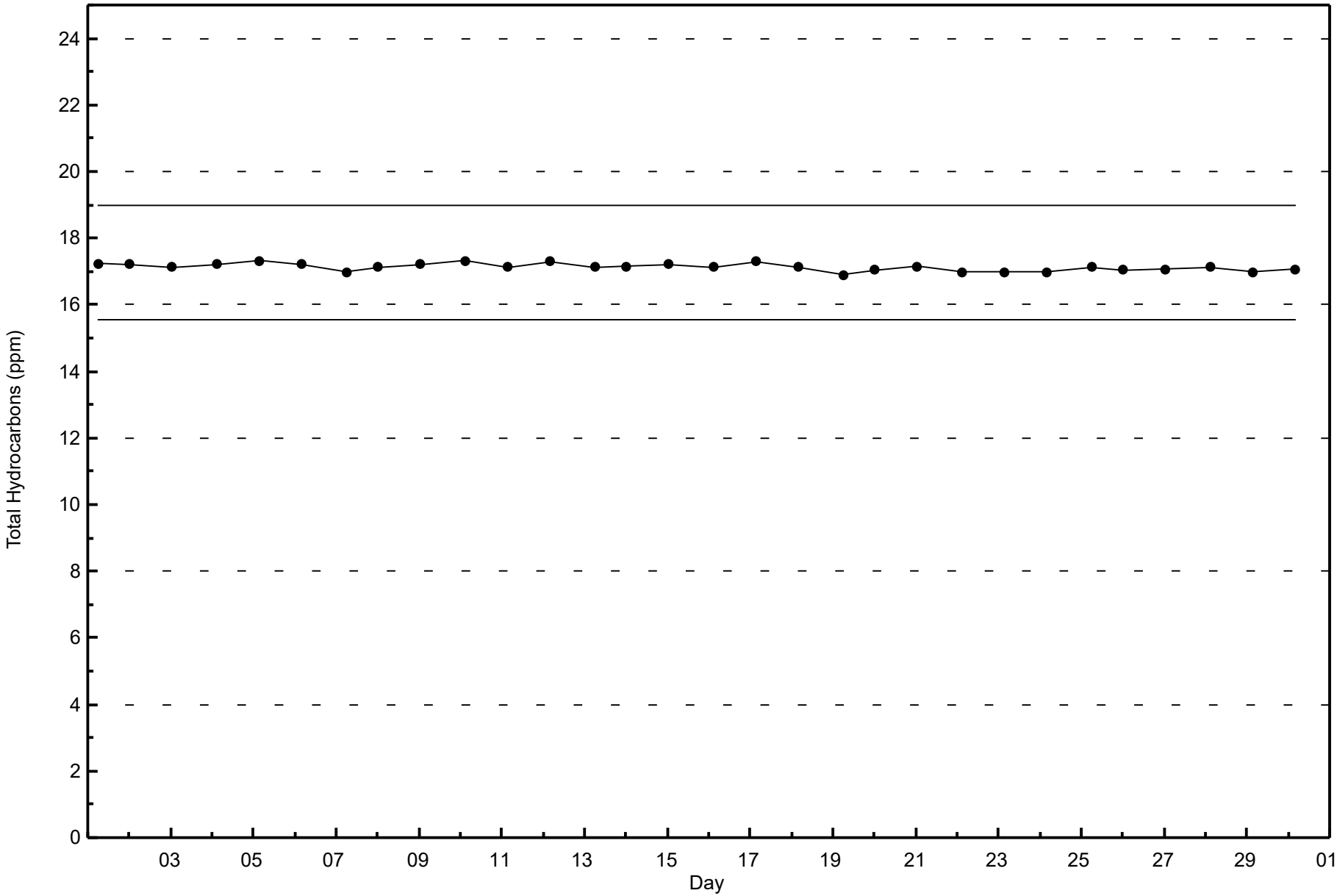


Wood Buffalo Environmental Association

Span Responses

Total Hydrocarbons (THC) - ppm

Fort McKay - Bertha Ganter - September 2024



Wood Buffalo Environmental Association

Summary of Hour Averages

Non Methane Hydrocarbons (NMHC) - ppm

Fort McKay - Bertha Ganter - September 2024

Maximum Value: 0.622 ppm on Sep 9 06:00

Maximum Daily Average: 0.203 ppm on Sep 8

Minimum Value: 0.000 ppm on Sep 3 12:00

Minimum Daily Average: 0.002 ppm on Sep 30

Maximum Diurnal Average: 0.104 ppm at hour 9

Minimum Diurnal Average: 0.023 ppm at hour 17

Monthly Average: 0.063 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} = 0.3

Hours in Service:	720
Hours of Data:	683
Hours of Missing Data:	37
Hours of Calibration:	35
Percent Operational Time:	99.7

Day	Hourly Period Ending At (MST)																								Daily	Daily
	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24	Average	Maximum
1-Sep	0.148	0.064	0.014	0.021	0.042	Z	0.140	0.242	0.242	0.140	0.092	0.116	0.093	0.031	0.006	0.029	0.023	0.015	0.033	0.047	0.059	0.076	0.098	0.050	0.079	0.242
2-Sep	Z	0.037	0.054	0.034	0.042	0.035	0.102	0.154	0.131	0.179	0.177	0.113	0.051	0.024	0.019	0.022	0.028	0.035	0.043	0.034	0.042	0.222	0.109	0.004	0.073	0.222
3-Sep	0.010	Z	0.003	0.016	0.025	0.022	0.033	0.025	0.012	0.091	0.002	0.000	0.008	0.044	0.091	0.188	0.044	0.054	0.162	0.053	0.006	0.015	0.002	0.123	0.045	0.188
4-Sep	0.134	0.030	Z	0.025	0.013	0.013	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	0.040	0.015	0.000	0.000	0.000	0.012	0.134
5-Sep	0.002	0.009	0.005	Z	0.002	0.000	0.000	0.000	0.000	0.036	0.230	0.054	0.015	0.011	0.004	0.000	0.005	0.013	0.027	0.036	0.094	0.021	0.026	0.037	0.027	0.230
6-Sep	0.045	0.043	0.007	0.029	Z	0.009	0.029	0.180	0.107	0.071	0.011	0.024	0.040	0.050	0.085	0.060	0.055	0.052	0.071	0.089	0.090	0.072	0.068	0.065	0.059	0.180
7-Sep	0.079	0.055	0.048	0.045	0.135	Z	0.256	0.259	0.256	0.225	0.165	0.131	0.146	0.147	0.060	0.031	0.013	0.050	0.080	0.040	0.067	0.069	0.077	0.081	0.109	0.259
8-Sep	Z	0.088	0.108	0.084	0.094	0.080	0.166	0.230	0.252	0.337	0.283	0.220	0.175	0.154	0.159	0.131	0.139	0.140	0.117	0.339	0.515	0.545	0.223	0.085	0.203	0.545
9-Sep	0.080	Z	0.178	0.490	0.429	0.622	0.406	0.029	0.097	C	C	C	C	C	0.004	0.001	0.002	0.000	0.003	0.002	0.005	0.000	0.000	0.000	0.130	0.622
10-Sep	0.002	0.001	Z	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.004	0.002	0.002	0.000	0.000	0.025	0.066	0.015	0.036	0.077	0.054	0.012	0.077
11-Sep	0.031	0.020	0.141	Z	0.202	0.258	0.240	0.220	0.293	0.048	0.005	0.011	0.019	0.110	0.049	0.030	0.125	0.233	0.165	0.179	0.254	0.124	0.044	0.046	0.124	0.293
12-Sep	0.019	0.016	0.024	0.030	Z	0.031	0.051	0.054	0.065	0.064	0.063	0.001	0.008	0.037	0.096	0.043	0.048	0.042	0.032	0.031	0.019	0.037	0.040	0.042	0.039	0.096
13-Sep	0.006	0.003	0.014	0.198	0.313	Z	0.393	0.260	0.211	0.248	0.210	0.206	0.069	0.052	0.039	0.040	0.038	0.006	0.000	0.000	0.000	0.000	0.020	0.021	0.102	0.393
14-Sep	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	0.003	0.000	0.000	0.000	0.003	0.099	0.147	0.164	0.240	0.237	0.039	0.240
15-Sep	0.151	Z	0.133	0.089	0.084	0.161	0.144	0.139	0.187	0.064	0.178	0.231	0.091	0.074	0.040	0.015	0.027	0.074	0.081	0.105	0.088	0.071	0.081	0.132	0.106	0.231
16-Sep	0.098	0.071	Z	0.173	0.126	0.078	0.051	0.028	0.040	0.006	0.001	0.002	0.000	0.000	0.000	0.000	0.000	0.000	0.005	0.001	0.020	0.000	0.000	0.000	0.030	0.173
17-Sep	0.022	0.013	0.020	Z	0.041	0.098	0.143	0.203	0.163	0.092	0.131	0.081	0.121	0.018	0.000	0.000	0.002	0.000	0.018	0.054	0.048	0.060	0.070	0.054	0.063	0.203
18-Sep	0.095	0.089	0.103	0.117	Z	0.157	0.113	0.110	0.121	0.000	0.000	0.003	0.000	0.000	0.000	0.000	0.000	0.000	0.010	0.001	0.002	0.000	0.017	0.000	0.041	0.157
19-Sep	0.008	0.017	0.000	0.000	0.000	Z	0.071	0.199	0.201	0.238	0.241	0.283	0.155	0.052	0.005	0.000	0.005	0.025	0.028	0.021	0.106	0.171	0.202	0.105	0.093	0.283
20-Sep	Z	0.162	0.183	0.148	0.170	0.190	0.158	0.142	0.055	0.053	0.127	0.026	0.002	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.095	0.165	0.166	0.080	0.190
21-Sep	0.135	Z	0.050	0.004	0.000	0.000	0.000	0.000	0.000	0.126	0.311	0.217	0.114	0.039	0.006	0.000	0.000	0.000	0.007	0.019	0.002	0.004	0.064	0.003	0.048	0.311
22-Sep	0.000	0.000	Z	0.000	0.000	0.006	0.003	0.005	0.069	0.023	0.051	0.222	0.059	0.006	0.000	0.011	0.048	0.042	0.027	0.027	0.011	0.078	0.167	0.195	0.046	0.222
23-Sep	0.195	0.151	0.172	Z	0.195	0.106	0.074	0.058	0.076	0.134	0.074	0.018	0.084	0.335	0.198	0.148	0.041	0.015	0.020	0.055	0.094	0.040	0.037	0.033	0.102	0.335
24-Sep	0.040	0.041	0.045	0.005	Z	0.037	0.049	0.098	0.057	0.000	0.000	0.000	M	M	0.000	0.000	0.000	0.000	0.048	0.098	0.105	0.074	0.069	0.012	0.037	0.105
25-Sep	0.021	0.090	0.074	0.050	0.028	Z	0.060	0.085	0.199	0.242	0.198	0.217	0.104	0.173	0.098	0.062	0.061	0.110	0.046	0.055	0.101	0.089	0.000	0.002	0.094	0.242
26-Sep	Z	0.000	0.000	0.024	0.007	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	0.017	0.000	0.000	0.002	0.024
27-Sep	0.027	Z	0.031	0.046	0.032	0.046	0.100	0.101	0.012	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.009	0.009	0.038	0.019	0.009	0.000	0.000	0.021	0.101
28-Sep	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	0.016	0.004	0.002	0.011	0.040	0.020	0.004	0.040
29-Sep	0.016	0.000	0.002	Z	0.040	0.068	0.182	0.285	0.285	0.220	0.171	0.207	0.159	0.048	0.014	0.008	0.000	0.000	0.000	0.004	0.006	0.000	0.000	0.000	0.075	0.285
30-Sep	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	0.003	0.009	0.024	0.002	0.000	0.000	0.002	0.024
	0.055	0.040	0.056	0.065	0.081	0.081	0.099	0.104	0.104	0.091	0.094	0.082	0.054	0.050	0.033	0.027	0.023	0.030	0.036	0.051	0.065	0.070	0.065	0.052	Diurnal Average	
	0.195	0.162	0.183	0.490	0.429	0.622	0.406	0.285	0.293	0.337	0.311	0.283	0.175	0.335	0.198	0.188	0.139	0.233	0.165	0.339	0.515	0.545	0.240	0.237	Diurnal Maximum	

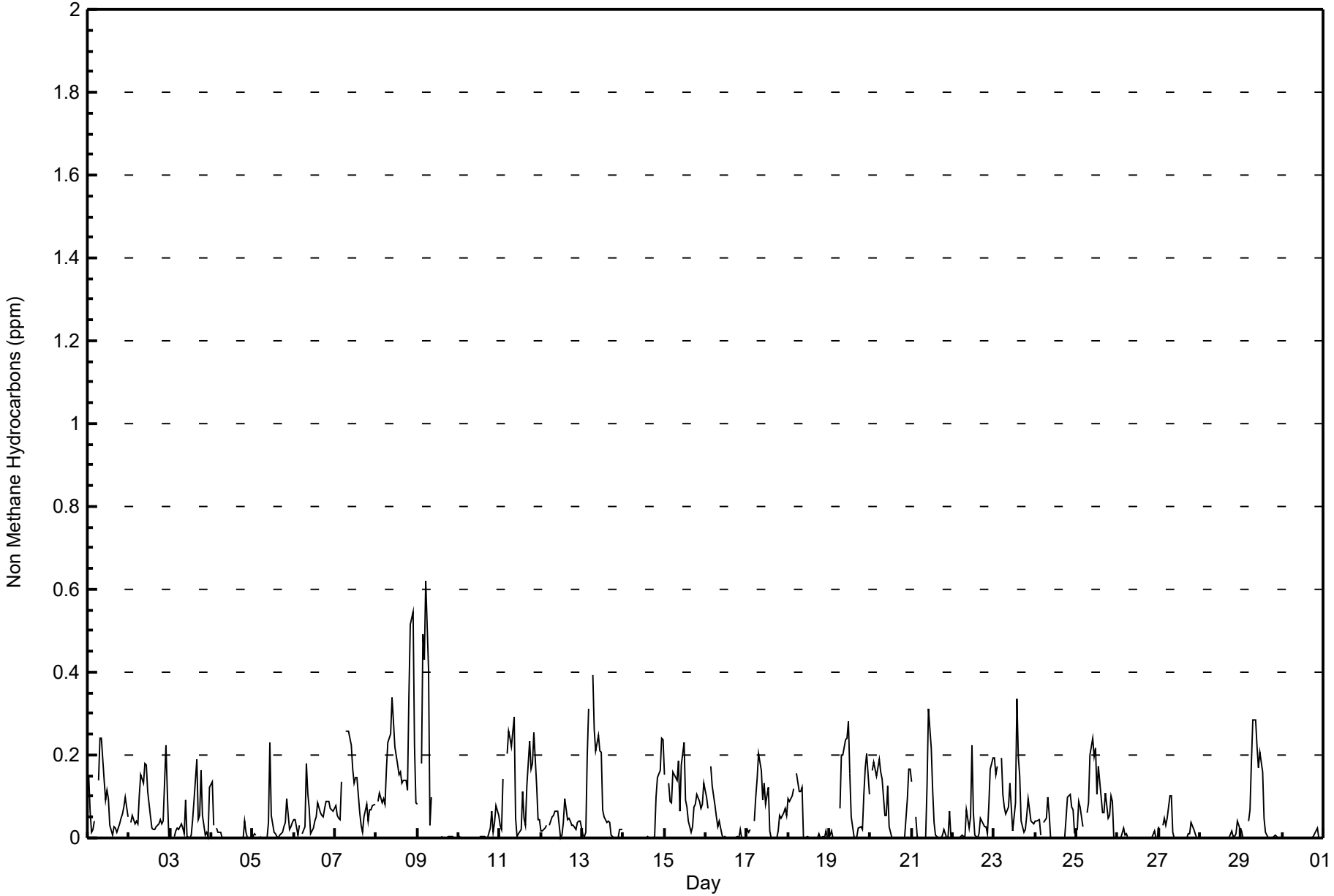
Z - zerospan C - Calibration M - Maintenance

Wood Buffalo Environmental Association

Hourly Averages

Non Methane Hydrocarbons (NMHC) - ppm

Fort McKay - Bertha Ganter - September 2024



Non Methane Hydrocarbons (NMHC) - ppm
Fort McKay - Bertha Ganter - September 2024

Concentration Ranges (ppm)	Number of Hours	%	Cumulative %
0 - 0.005	236	34.55	34.55
0.006 - 0.05	203	29.72	64.28
0.06 - 0.1	144	21.08	85.36
> 0.1	100	14.64	100.00

Total Number of Valid Hours: 683

Total Number of Hours: 720

Wood Buffalo Environmental Association

Frequency Distribution

Non Methane Hydrocarbons (NMHC) - ppm

Fort McKay - Bertha Ganter - September 2024

Concentration Ranges (ppm)	Wind Direction																
	N	NNE	NE	ENE	E	ESE	SE	SSE	S	SSW	SW	WSW	W	WNW	NW	NNW	**Totals**
0 - 0.005	9	1	1	0	2	1	5	16	18	19	22	20	24	55	22	21	236
0.006 - 0.05	17	8	2	2	0	5	8	16	48	16	16	11	5	18	20	11	203
0.06 - 0.1	13	6	1	0	2	1	4	19	34	15	8	7	4	18	8	4	144
> 0.1	18	8	2	1	1	0	2	24	8	1	1	1	4	14	8	6	99
Totals	57	23	6	3	5	7	19	75	108	51	47	39	37	105	58	42	682

Total Number of Valid Hours: 682

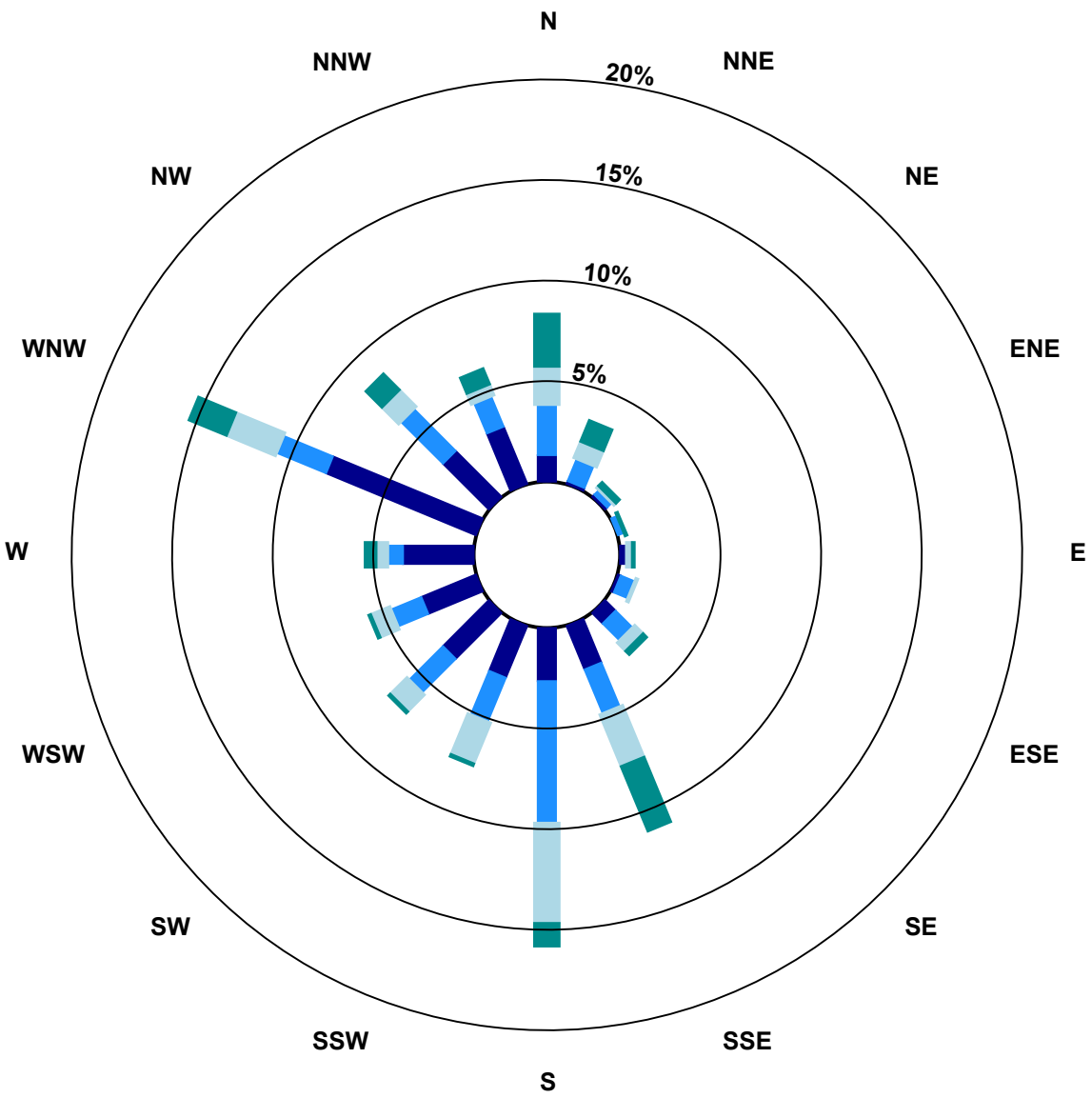
Total Number of Hours: 720

Wood Buffalo Environmental Association

Wind Rose Sep 2024

Non Methane Hydrocarbons (NMHC) - ppm

Fort McKay - Bertha Ganter



Classes (ppm)

0 - 0.005

0.006 - 0.05

0.06 - 0.1

> 0.1

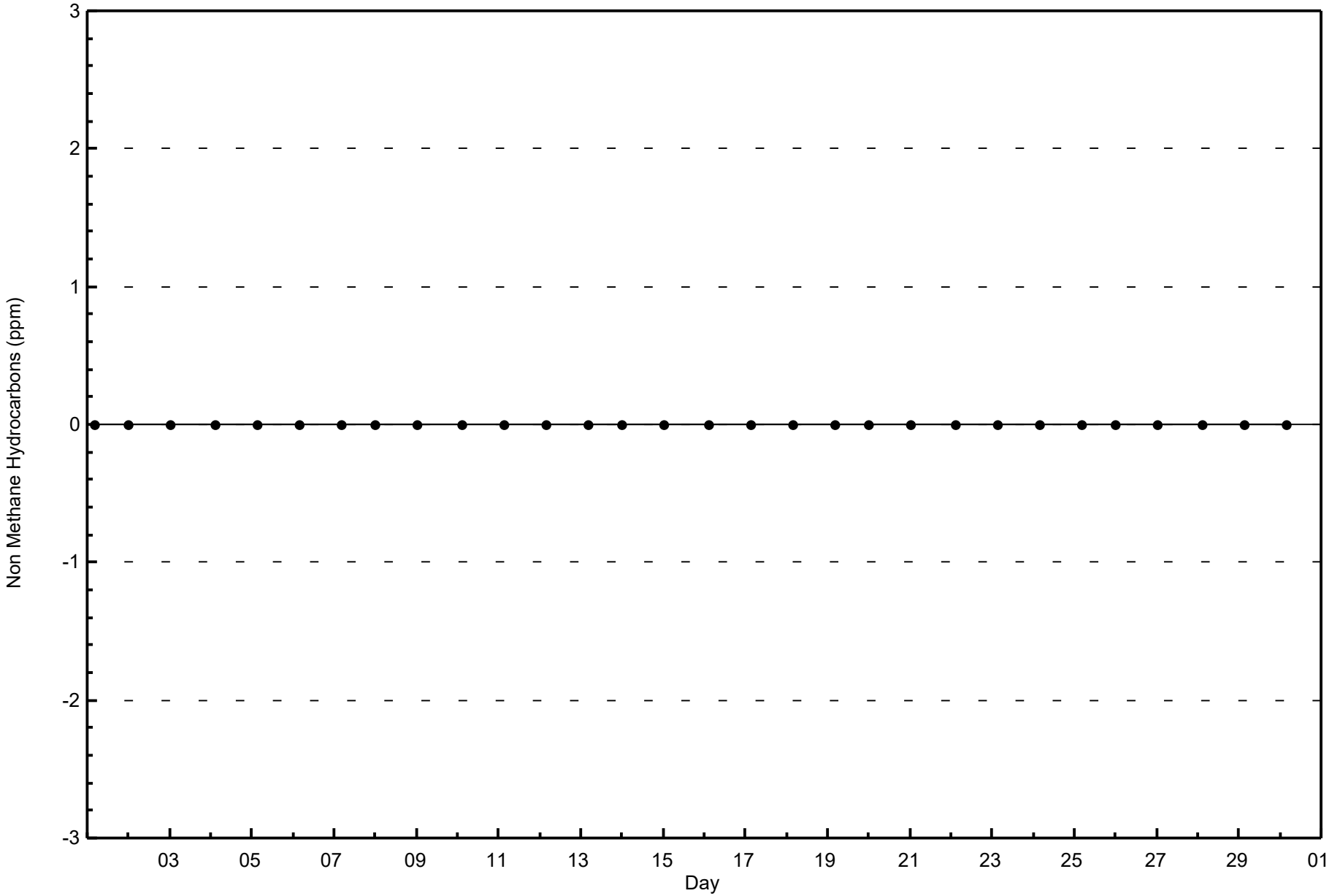
Total Number of Valid Hours: 682

Wood Buffalo Environmental Association

Zero Responses

Non Methane Hydrocarbons (NMHC) - ppm

Fort McKay - Bertha Ganter - September 2024

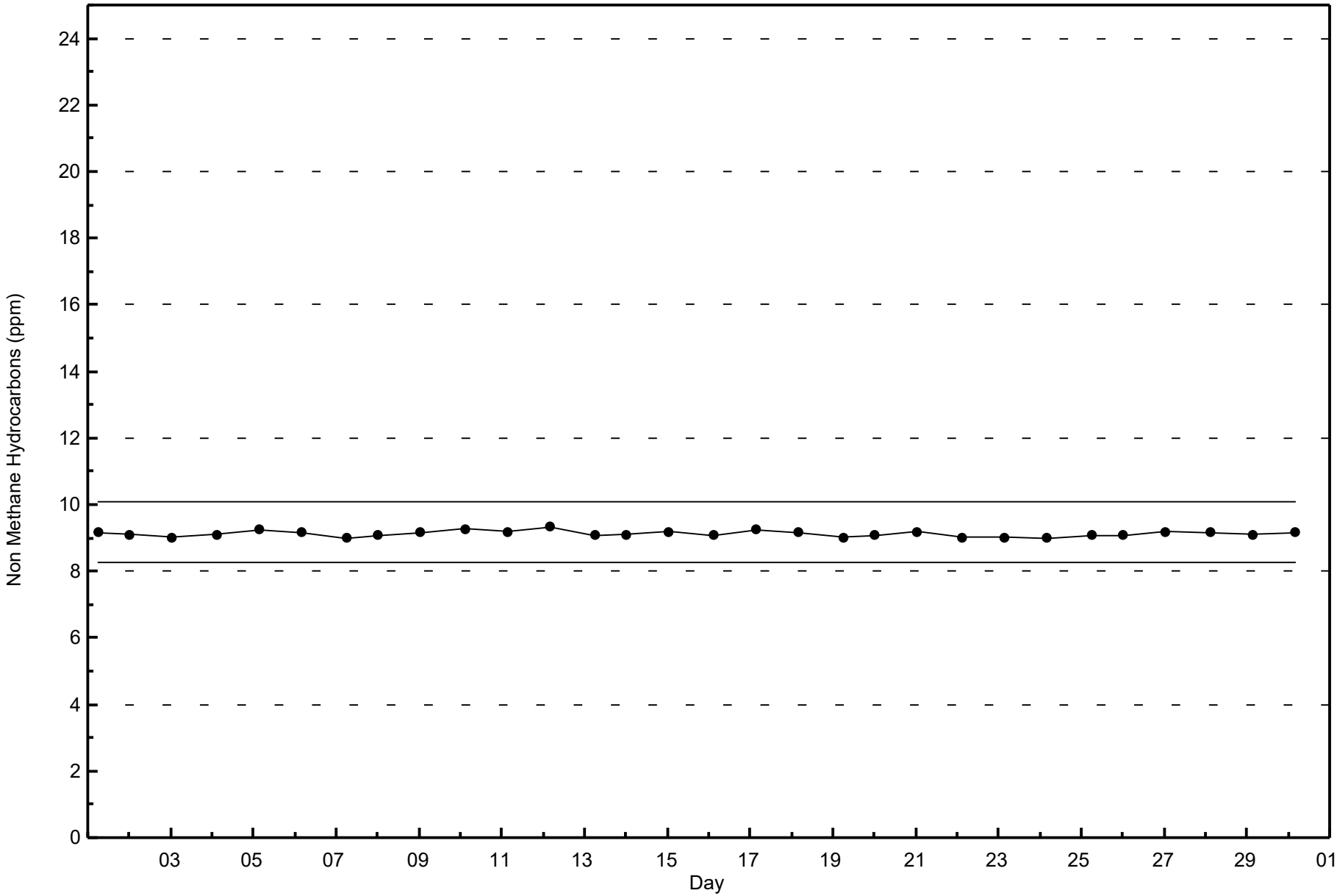


Wood Buffalo Environmental Association

Span Responses

Non Methane Hydrocarbons (NMHC) - ppm

Fort McKay - Bertha Ganter - September 2024



Wood Buffalo Environmental Association

Summary of Hour Averages

Methane (CH_4) - ppm

Fort McKay - Bertha Ganter - September 2024

Number of Exceedences (AAAQO): 1-hr: 0 24-hr: 0

Maximum Value: 3.3 ppm on Sep 25 10:00

Maximum Daily Average: 2.3 ppm on Sep 25

Minimum Value: 1.9 ppm on Sep 24 12:00

Minimum Daily Average: 1.9 ppm on Sep 30

Maximum Diurnal Average: 2.2 ppm at hour 8

Minimum Diurnal Average: 2.0 ppm at hour 17

Monthly Average: 2.09 ppm

Percentiles: P_1 = 1.9 P_{10} = 1.9 Q_1 = 2.0 Median = 2.0 Q_3 = 2.1 P_{90} = 2.3 P_{99} = 2.8

Hours in Service:	720
Hours of Data:	683
Hours of Missing Data:	37
Hours of Calibration:	35
Percent Operational Time:	99.7

Day	Hourly Period Ending At (MST)																								Daily	Daily
	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24	Average	Maximum
1-Sep	2.2	2.1	2.0	2.0	2.1	Z	2.1	2.2	2.2	2.1	2.1	2.1	2.1	2.0	1.9	1.9	1.9	1.9	1.9	2.0	2.1	2.1	2.2	2.1	2.1	2.2
2-Sep	Z	2.1	2.1	2.1	2.1	2.2	2.3	2.4	2.3	2.3	2.2	2.1	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	2.4
3-Sep	2.0	Z	2.0	2.0	2.0	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	2.0	2.0	2.0	2.0	2.0	2.0	2.2
4-Sep	2.1	2.3	Z	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	2.0	2.0	2.0	2.0	2.0	2.0	2.3
5-Sep	2.1	2.0	2.1	Z	2.0	2.0	2.0	2.0	2.0	2.1	2.3	2.1	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.1	2.1	2.0	2.3
6-Sep	2.1	2.1	2.0	2.1	Z	2.1	2.0	2.3	2.3	2.3	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	2.1	2.3
7-Sep	2.0	2.0	2.1	2.1	2.3	Z	2.7	2.5	2.4	2.4	2.2	2.2	2.2	2.1	2.0	2.0	1.9	1.9	2.0	2.0	2.0	2.0	2.0	2.0	2.1	2.7
8-Sep	Z	2.0	2.0	2.1	2.1	2.2	2.3	2.4	2.4	2.5	2.3	2.2	2.1	2.1	2.1	2.0	2.1	2.1	2.1	2.4	2.5	2.3	2.2	2.2	2.2	2.5
9-Sep	2.2	Z	2.3	2.5	2.5	2.3	2.3	2.2	2.1	C	C	C	C	C	1.9	1.9	1.9	1.9	1.9	1.9	1.9	1.9	2.0	2.0	2.1	2.5
10-Sep	2.0	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	1.9	2.0	2.0	2.0	2.0	2.1	2.1	2.2	2.0	2.2
11-Sep	2.3	2.5	2.6	Z	2.5	2.6	2.6	2.6	2.7	2.2	2.0	2.0	2.1	2.1	2.1	2.0	2.0	2.0	2.0	2.1	2.2	2.1	2.0	2.1	2.2	2.7
12-Sep	2.1	2.1	2.1	2.1	Z	2.1	2.0	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	2.1	2.0	2.1
13-Sep	2.1	2.0	2.1	2.6	2.8	Z	2.7	2.4	2.7	2.9	2.3	2.2	2.1	2.0	2.1	2.0	2.0	2.0	2.0	2.0	2.0	2.1	2.1	2.1	2.2	2.9
14-Sep	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	2.2	2.2	2.2	2.1	2.1	2.0	2.2
15-Sep	2.3	Z	2.2	2.4	2.6	2.6	2.5	2.4	2.4	2.2	2.1	2.1	2.0	2.0	2.0	2.0	2.1	2.1	2.1	2.1	2.1	2.1	2.2	2.3	2.2	2.6
16-Sep	2.1	2.1	Z	2.3	2.3	2.3	2.2	2.2	2.2	2.1	2.1	2.0	2.0	1.9	1.9	1.9	1.9	1.9	1.9	2.0	2.0	2.0	2.0	2.0	2.1	2.3
17-Sep	2.1	2.1	2.1	Z	2.2	2.3	2.3	2.3	2.2	2.1	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	2.1	2.3
18-Sep	2.1	2.1	2.2	2.2	Z	2.2	2.2	2.1	2.2	2.0	1.9	1.9	1.9	1.9	1.9	1.9	1.9	1.9	2.0	2.0	1.9	2.0	2.0	2.0	2.0	2.2
19-Sep	2.0	2.0	2.0	2.0	2.0	Z	2.5	2.7	2.5	2.4	2.3	2.3	2.1	2.0	2.0	2.0	2.0	2.0	2.0	2.1	2.1	2.2	2.4	2.3	2.2	2.7
20-Sep	Z	2.3	2.4	2.4	2.4	2.5	2.5	2.3	2.3	2.2	2.1	2.0	2.0	2.0	2.0	1.9	1.9	1.9	1.9	1.9	2.0	2.3	2.1	2.1	2.2	2.5
21-Sep	2.1	Z	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.4	2.6	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	2.6
22-Sep	2.0	2.0	Z	2.0	2.0	2.1	2.0	2.1	2.2	2.2	2.2	2.2	2.1	2.1	2.0	2.0	2.0	2.1	2.1	2.1	2.0	2.1	2.2	2.3	2.1	2.3
23-Sep	2.6	2.6	2.6	Z	2.5	2.2	2.2	2.2	2.4	2.3	2.2	2.1	2.2	2.4	2.2	2.2	2.1	2.0	2.0	2.1	2.1	2.1	2.1	2.1	2.2	2.6
24-Sep	2.2	2.1	2.2	2.1	Z	2.1	2.2	2.3	2.1	1.9	1.9	1.9	M	M	1.9	1.9	1.9	1.9	1.9	1.9	1.9	2.0	2.0	2.0	2.0	2.3
25-Sep	2.0	2.1	2.1	2.1	2.1	Z	2.2	2.2	3.0	3.3	2.8	3.2	2.3	2.3	2.3	2.2	2.2	2.1	2.2	2.1	2.2	2.2	2.0	2.0	2.3	3.3
26-Sep	Z	1.9	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	2.0	2.0	2.0	1.9	2.0
27-Sep	2.0	Z	2.1	2.2	2.4	2.3	2.2	2.3	2.3	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	2.1	2.4
28-Sep	2.0	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	2.0	2.0	2.0	1.9	2.0
29-Sep	2.0	2.0	2.0	Z	2.3	2.6	3.0	3.2	2.5	2.2	2.2	2.1	2.0	2.0	2.0	2.0	1.9	1.9	2.0	2.1	2.0	1.9	1.9	1.9	2.2	3.2
30-Sep	1.9	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
	2.1	2.1	2.1	2.1	2.2	2.2	2.2	2.2	2.2	2.2	2.1	2.1	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.1	2.1	2.1	Diurnal Average	
	2.6	2.6	2.6	2.6	2.8	2.6	3.0	3.2	3.0	3.3	2.8	3.2	2.3	2.4	2.3	2.2	2.2	2.1	2.2	2.4	2.5	2.3	2.4	2.3	Diurnal Maximum	

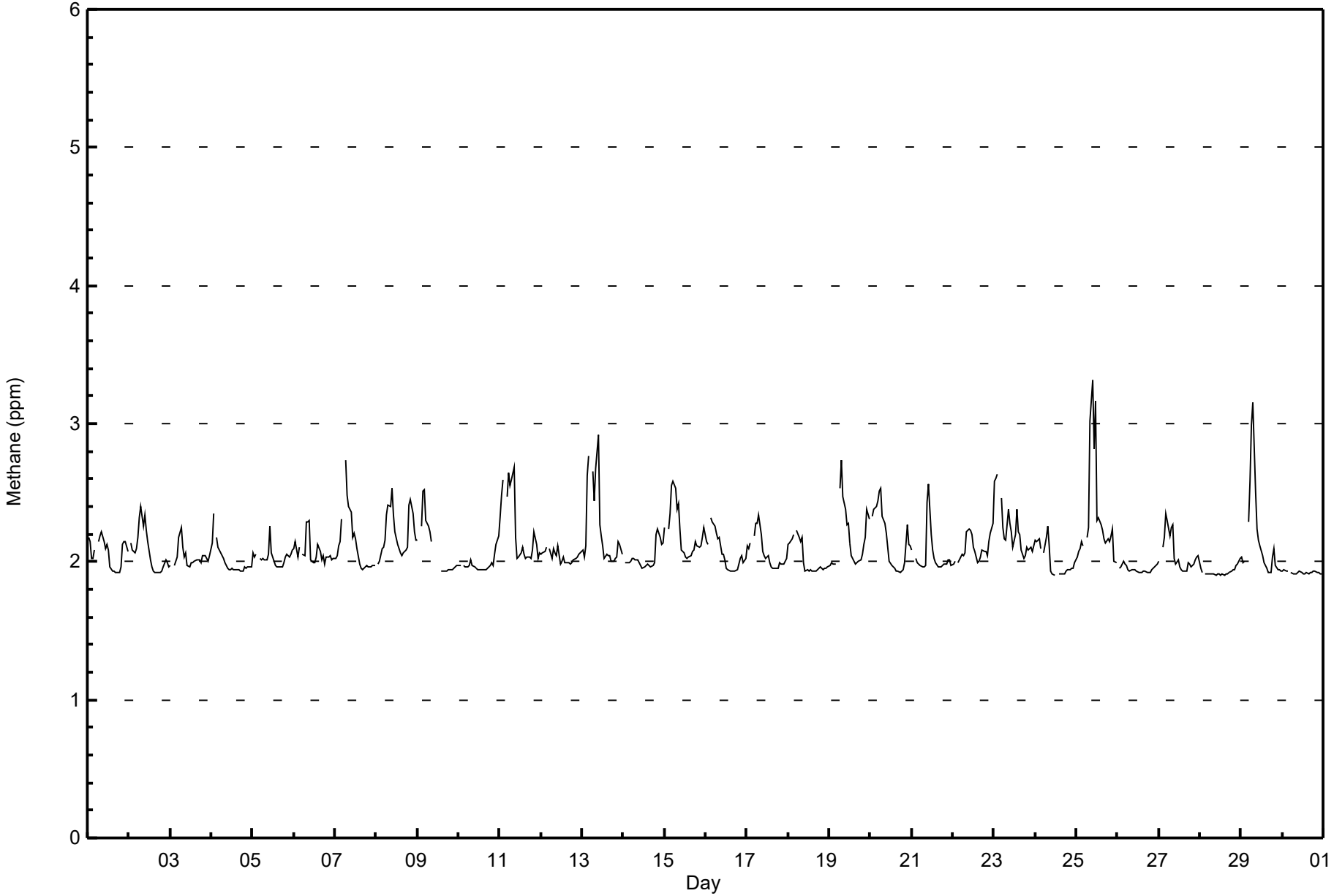
Z - zerospan C - Calibration M - Maintenance

Wood Buffalo Environmental Association

Hourly Averages

Methane (CH_4) - ppm

Fort McKay - Bertha Ganter - September 2024



Concentration Ranges (ppm)	Number of Hours	%	Cumulative %
0 - 2.0	390	57.10	57.10
2.1 - 3.0	290	42.46	99.56
3.1 - 10.0	3	0.44	100.00
> 10.0	0	0.00	100.00

Total Number of Valid Hours: 683

Total Number of Hours: 720

Wood Buffalo Environmental Association

Frequency Distribution

Methane (CH_4) - ppm

Fort McKay - Bertha Ganter - September 2024

Concentration Ranges (ppm)	Wind Direction																
	N	NNE	NE	ENE	E	ESE	SE	SSE	S	SSW	SW	WSW	W	WNW	NW	NNW	**Totals**
0 - 2.0	26	14	1	2	2	6	11	31	43	33	36	30	31	67	32	25	390
2.1 - 3.0	30	9	5	1	3	1	8	44	65	18	11	8	6	37	26	17	289
3.1 - 10.0	1	0	0	0	0	0	0	0	0	0	0	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	57	23	6	3	5	7	19	75	108	51	47	39	37	105	58	42	682

Total Number of Valid Hours: 682

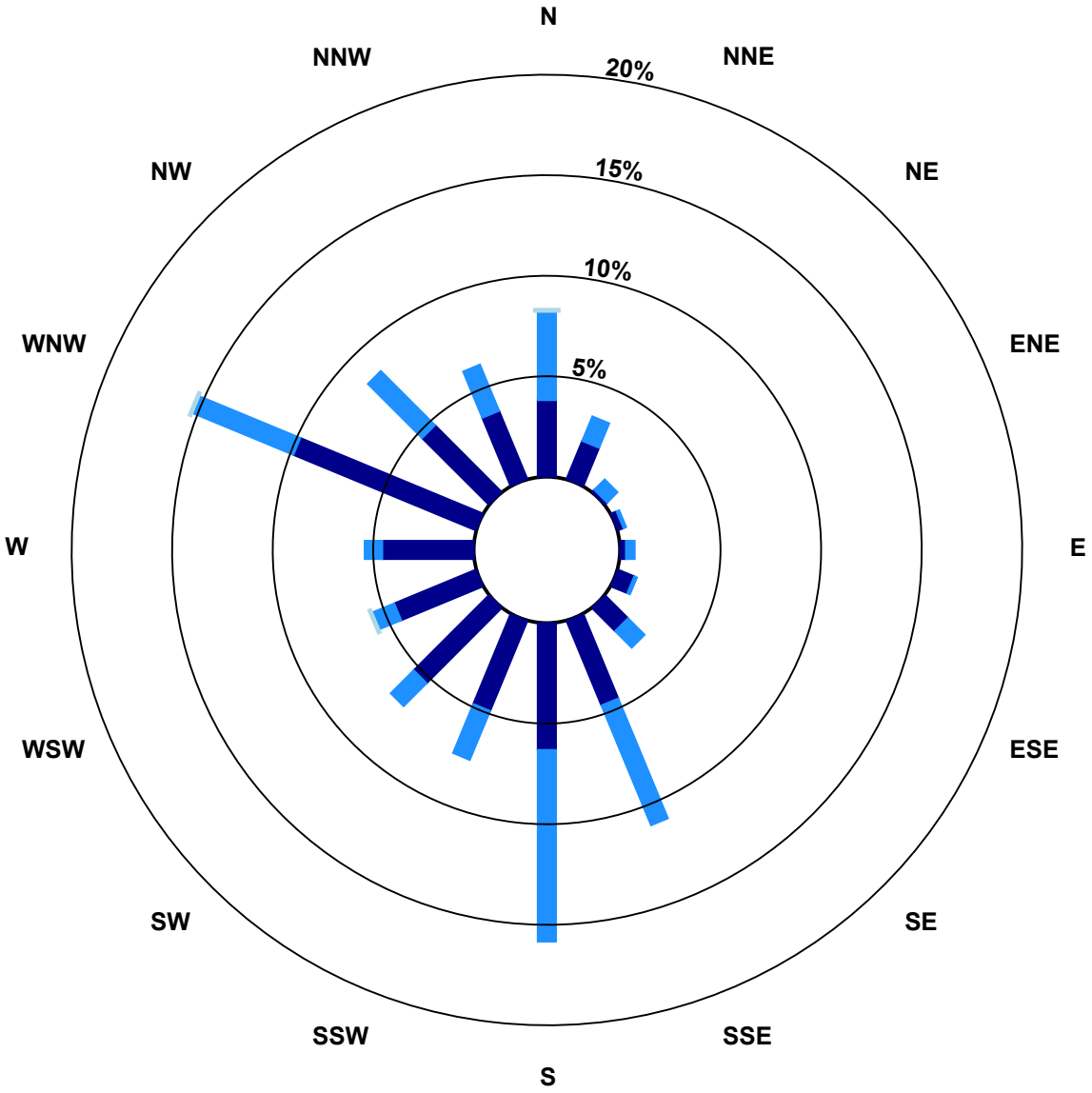
Total Number of Hours: 720

Wood Buffalo Environmental Association

Wind Rose Sep 2024

Methane (CH_4) - ppm

Fort McKay - Bertha Ganter



Classes (ppm)

0 - 2.0

2.1 - 3.0

3.1 - 10.0

> 10.0

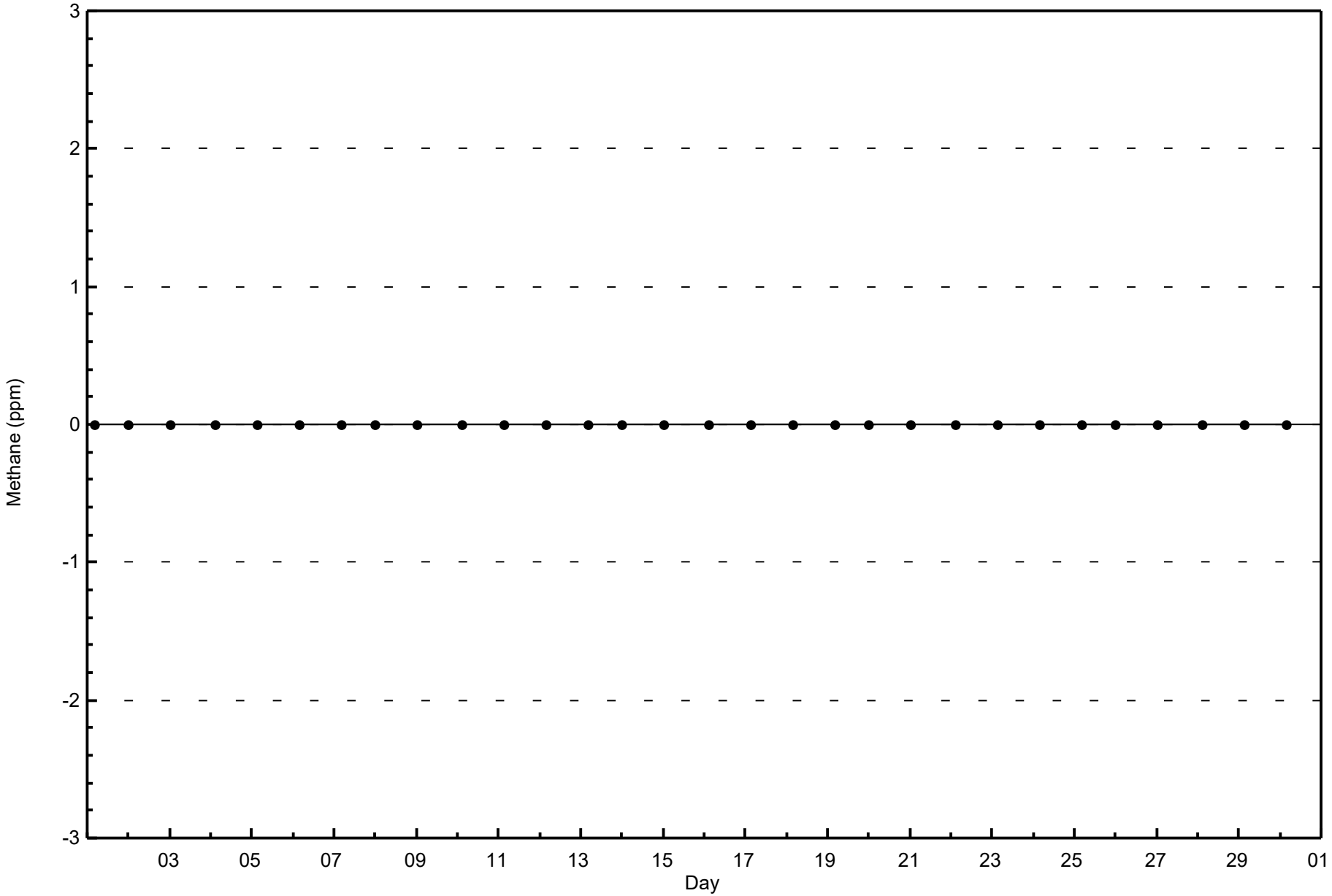
Total Number of Valid Hours: 682

Wood Buffalo Environmental Association

Zero Responses

Methane (CH_4) - ppm

Fort McKay - Bertha Ganter - September 2024

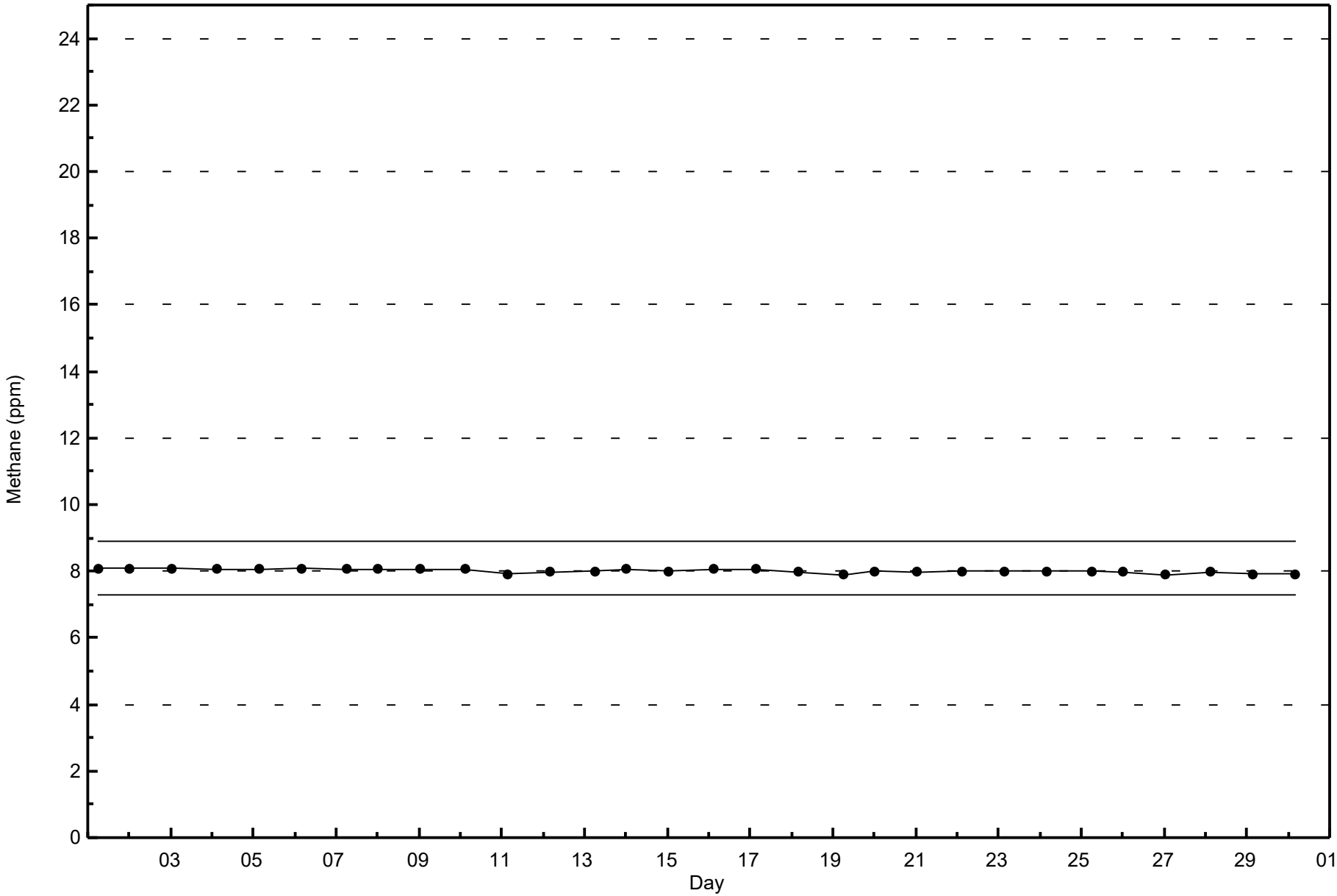


Wood Buffalo Environmental Association

Span Responses

Methane (CH_4) - ppm

Fort McKay - Bertha Ganter - September 2024



Wood Buffalo Environmental Association

Summary of Hour Averages

Nitric Oxide (NO) - ppb

Fort McKay - Bertha Ganter - September 2024

Maximum Value: 68.2 ppb on Sep 29 08:00

Maximum Daily Average: 11.1 ppb on Sep 29

Minimum Value: 0.0 ppb on Sep 1 03:00

Minimum Daily Average: 0.3 ppb on Sep 12

Maximum Diurnal Average: 9.6 ppb at hour 9

Minimum Diurnal Average: 0.5 ppb at hour 20

Monthly Average: 3.25 ppb

Percentiles: P_1 = 0.0 P_{10} = 0.0 Q_1 = 0.0 Median = 0.9 Q_3 = 2.4 P_{90} = 9.5 P_{99} = 37.2

Hours in Service:	720
Hours of Data:	683
Hours of Missing Data:	37
Hours of Calibration:	35
Percent Operational Time:	99.7

Day	Hourly Period Ending At (MST)																								Daily	Daily
	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24	Average	Maximum
1-Sep	0.6	0.5	0.0	Z	0.0	0.0	0.0	3.2	3.3	3.8	3.9	4.8	2.1	0.5	0.0	0.0	0.0	0.7	1.0	1.1	0.4	1.2	1.3	0.0	1.2	4.8
2-Sep	0.0	0.2	0.0	0.0	Z	3.4	9.2	9.2	5.5	4.1	3.3	1.9	1.7	1.0	0.5	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	1.8	9.2
3-Sep	0.0	0.0	0.0	0.0	0.0	Z	0.1	0.0	0.1	4.8	1.4	0.0	0.7	1.5	1.3	1.3	0.9	0.6	0.2	0.0	0.0	0.0	0.0	0.1	0.6	4.8
4-Sep	Z	2.2	2.3	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.4	0.7	0.9	0.9	0.6	0.6	1.0	1.0	0.7	0.1	0.3	0.6	0.7	0.6	2.3
5-Sep	0.5	Z	0.3	0.0	0.0	0.0	0.4	1.1	2.1	5.4	17.5	5.5	3.6	2.3	0.8	1.2	1.2	1.3	0.5	0.0	0.0	0.0	0.0	0.0	1.9	17.5
6-Sep	0.0	0.0	Z	0.1	0.0	0.0	0.7	1.4	6.0	9.0	0.4	0.0	0.0	0.7	0.5	2.0	0.1	0.2	0.0	0.0	0.0	0.0	0.0	0.0	0.9	9.0
7-Sep	0.0	0.2	0.6	Z	3.2	6.2	38.1	18.1	5.8	4.0	4.8	2.9	1.3	1.1	0.4	0.0	0.0	0.2	0.7	1.2	1.8	2.1	2.1	2.1	4.2	38.1
8-Sep	2.1	2.1	2.1	1.6	Z	4.2	16.3	14.7	8.9	5.8	7.4	6.3	2.2	1.1	0.7	0.1	0.0	0.0	0.0	0.0	0.0	0.2	0.4	0.2	3.3	16.3
9-Sep	0.3	0.1	0.3	11.3	9.0	Z	5.6	1.1	3.1	2.6	0.9	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	1.5	11.3
10-Sep	Z	0.3	0.3	0.4	0.4	0.5	0.7	1.3	0.8	1.0	1.1	1.0	1.1	1.1	1.1	1.1	1.2	1.3	1.0	0.5	0.3	0.0	0.5	0.4	0.8	1.3
11-Sep	0.3	Z	10.4	10.4	9.6	17.6	15.9	18.8	41.9	11.1	5.8	4.4	3.5	4.6	2.3	1.0	0.4	0.5	0.1	0.0	0.3	0.3	0.0	0.0	6.9	41.9
12-Sep	0.0	0.0	Z	0.0	0.0	0.0	0.0	2.0	0.4	0.2	1.4	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.2	0.6	0.3	0.5	0.7	0.9	0.3	2.0
13-Sep	0.7	0.5	1.5	Z	34.9	41.1	33.1	13.7	19.6	28.8	C	C	C	C	C	0.4	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	9.7	41.1
14-Sep	0.0	0.0	0.4	0.9	Z	1.1	1.0	1.2	1.2	1.5	1.1	1.2	1.3	1.4	1.5	0.9	1.1	1.3	0.9	0.4	0.0	0.0	0.0	0.0	0.8	1.5
15-Sep	0.3	0.5	3.6	5.2	9.9	Z	12.1	9.5	14.0	9.4	6.1	6.9	4.7	3.0	2.1	1.9	1.1	0.5	0.2	0.2	0.2	0.2	0.6	3.2	4.2	14.0
16-Sep	Z	0.7	10.1	20.1	8.8	4.1	4.1	5.7	6.3	3.0	3.1	2.1	0.2	0.0	0.0	0.1	0.7	1.4	1.4	1.0	0.9	0.1	0.2	1.2	3.3	20.1
17-Sep	0.6	Z	3.2	1.3	1.4	2.5	12.1	15.6	6.5	3.9	2.5	1.8	2.1	1.3	0.7	0.4	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	2.4	15.6
18-Sep	0.0	0.0	Z	0.0	0.0	0.0	0.4	2.9	2.5	0.0	0.0	0.0	0.0	0.0	0.3	0.7	0.9	0.9	0.7	0.2	0.0	0.0	0.0	0.0	0.4	2.9
19-Sep	0.0	0.0	0.0	Z	0.4	16.7	37.0	55.7	29.0	16.2	6.3	2.8	0.8	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	4.9	1.6	7.5	55.7
20-Sep	1.7	3.9	12.6	10.2	Z	17.1	20.2	11.5	10.4	8.7	7.6	2.8	1.9	1.4	0.9	0.6	0.1	0.0	0.0	0.0	0.4	2.8	1.5	0.0	5.1	20.2
21-Sep	0.2	0.4	0.5	0.4	0.2	Z	0.5	0.7	1.3	31.0	34.6	11.9	8.7	5.1	1.6	0.6	0.2	0.6	0.8	0.1	0.0	0.0	0.0	0.0	4.3	34.6
22-Sep	Z	1.7	1.6	1.6	1.4	1.4	1.0	2.4	11.2	10.2	13.5	10.8	4.5	3.8	1.3	0.3	0.5	0.0	0.0	0.0	0.0	0.0	0.4	1.8	3.0	13.5
23-Sep	10.9	Z	9.8	13.8	8.9	2.9	2.2	2.7	12.8	14.2	9.5	5.5	15.9	14.4	8.2	5.5	1.9	0.9	0.3	0.3	0.1	0.0	0.0	0.1	6.1	15.9
24-Sep	0.0	0.1	Z	0.0	0.1	1.2	3.4	8.6	9.7	0.2	0.2	0.2	M	M	1.7	2.3	2.5	2.6	2.1	1.3	0.0	0.0	0.0	0.0	1.7	9.7
25-Sep	0.0	0.0	0.3	Z	3.4	3.8	3.6	4.4	24.8	30.7	21.8	23.4	8.0	12.6	5.1	2.7	6.6	4.7	1.8	1.8	8.1	15.9	1.6	1.4	8.1	30.7
26-Sep	1.1	0.6	0.4	0.0	Z	0.1	0.1	0.6	1.2	1.6	1.8	2.1	2.1	2.2	2.2	2.2	2.2	2.0	2.0	2.1	2.0	1.9	1.8	1.7	1.5	2.2
27-Sep	2.3	1.5	3.4	12.0	15.4	Z	2.7	3.1	8.6	0.0	0.9	2.5	1.0	1.4	2.1	2.2	2.4	2.0	1.4	0.4	0.1	0.1	0.1	0.0	2.9	15.4
28-Sep	Z	1.8	2.3	2.4	2.5	2.5	2.4	2.4	2.4	2.3	2.3	2.3	2.2	2.3	2.2	2.1	2.2	2.0	2.0	1.7	1.7	1.4	1.2	0.9	2.1	2.5
29-Sep	0.5	Z	0.8	0.0	5.5	14.7	40.9	68.2	48.5	23.9	22.8	14.4	8.8	2.9	1.4	1.1	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	11.1	68.2
30-Sep	0.5	0.9	Z	0.9	1.0	1.1	0.9	1.2	1.2	1.0	1.1	0.9	0.9	0.9	0.9	0.9	0.8	0.8	0.9	0.8	0.7	0.6	0.7	0.6	0.9	1.2
	0.9	0.7	2.7	3.7	4.6	5.7	8.8	9.4	9.6	7.9	6.3	4.1	2.9	2.4	1.4	1.1	0.9	0.8	0.6	0.5	0.6	0.9	0.6	0.6	Diurnal Average	
	10.9	3.9	12.6	20.1	34.9	41.1	40.9	68.2	48.5	31.0	34.6	23.4	15.9	14.4	8.2	5.5	6.6	4.7	2.1	2.1	8.1	15.9	4.9	3.2	Diurnal Maximum	

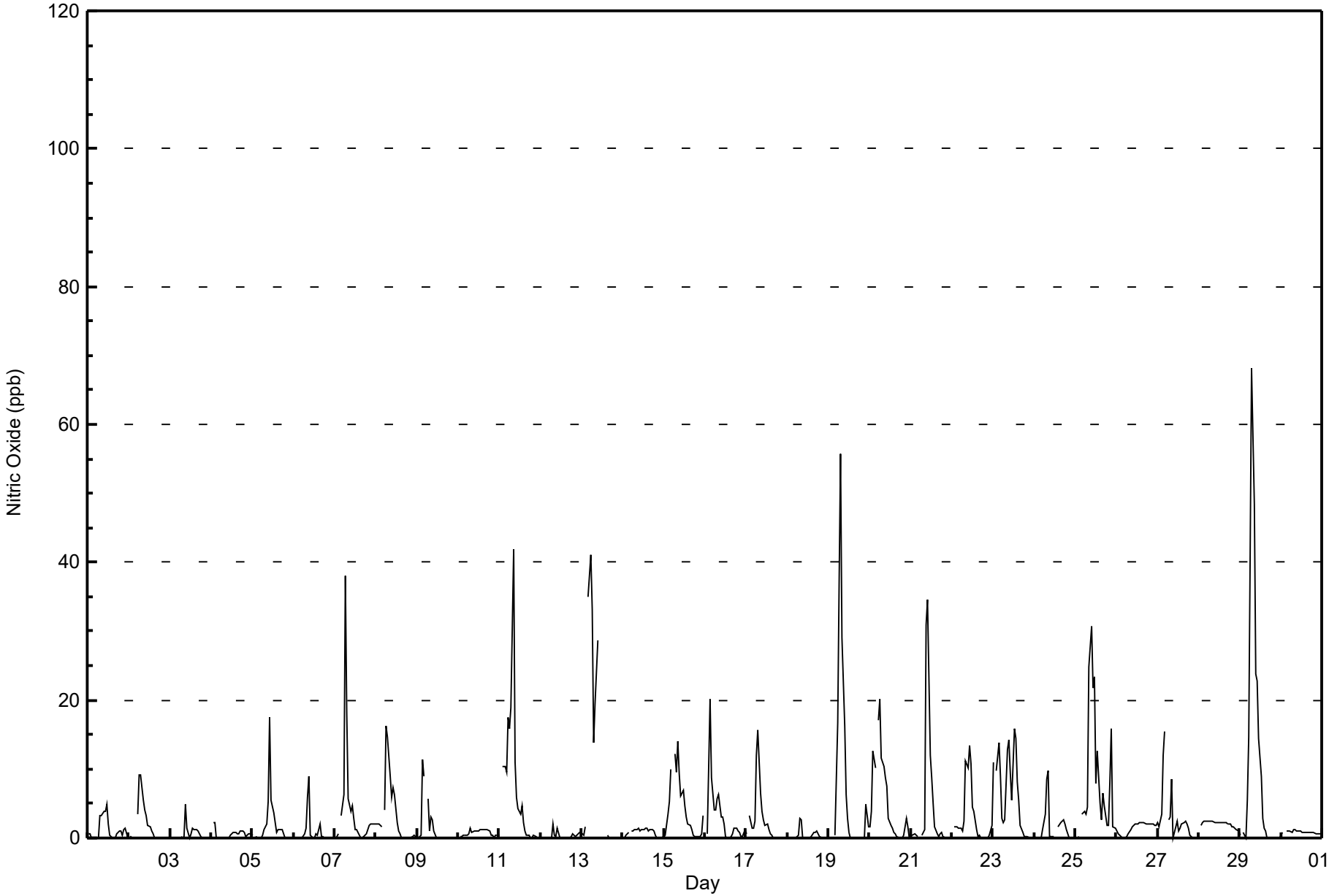
Z - zerospan C - Calibration M - Maintenance

Wood Buffalo Environmental Association

Hourly Averages

Nitric Oxide (NO) - ppb

Fort McKay - Bertha Ganter - September 2024



Concentration Ranges (ppb)	Number of Hours	%	Cumulative %
0 - 20	663	97.07	97.07
21 - 40	14	2.05	99.12
11 - 80	6	0.88	100.00
81 - 159	0	0.00	100.00
> 159	0	0.00	100.00

Total Number of Valid Hours: 683

Total Number of Hours: 720

Wood Buffalo Environmental Association

Frequency Distribution

Nitric Oxide (NO) - ppb

Fort McKay - Bertha Ganter - September 2024

Concentration Ranges (ppb)	Wind Direction																
	N	NNE	NE	ENE	E	ESE	SE	SSE	S	SSW	SW	WSW	W	WNW	NW	NNW	**Totals**
0 - 20	47	22	6	1	4	7	19	73	107	47	49	39	40	100	60	41	662
21 - 40	4	0	0	0	0	0	1	2	2	0	0	1	0	4	0	0	14
11 - 80	1	1	0	1	0	0	0	1	0	0	0	0	0	1	0	1	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	52	23	6	2	4	7	20	76	109	47	49	40	40	105	60	42	682

Total Number of Valid Hours: 682

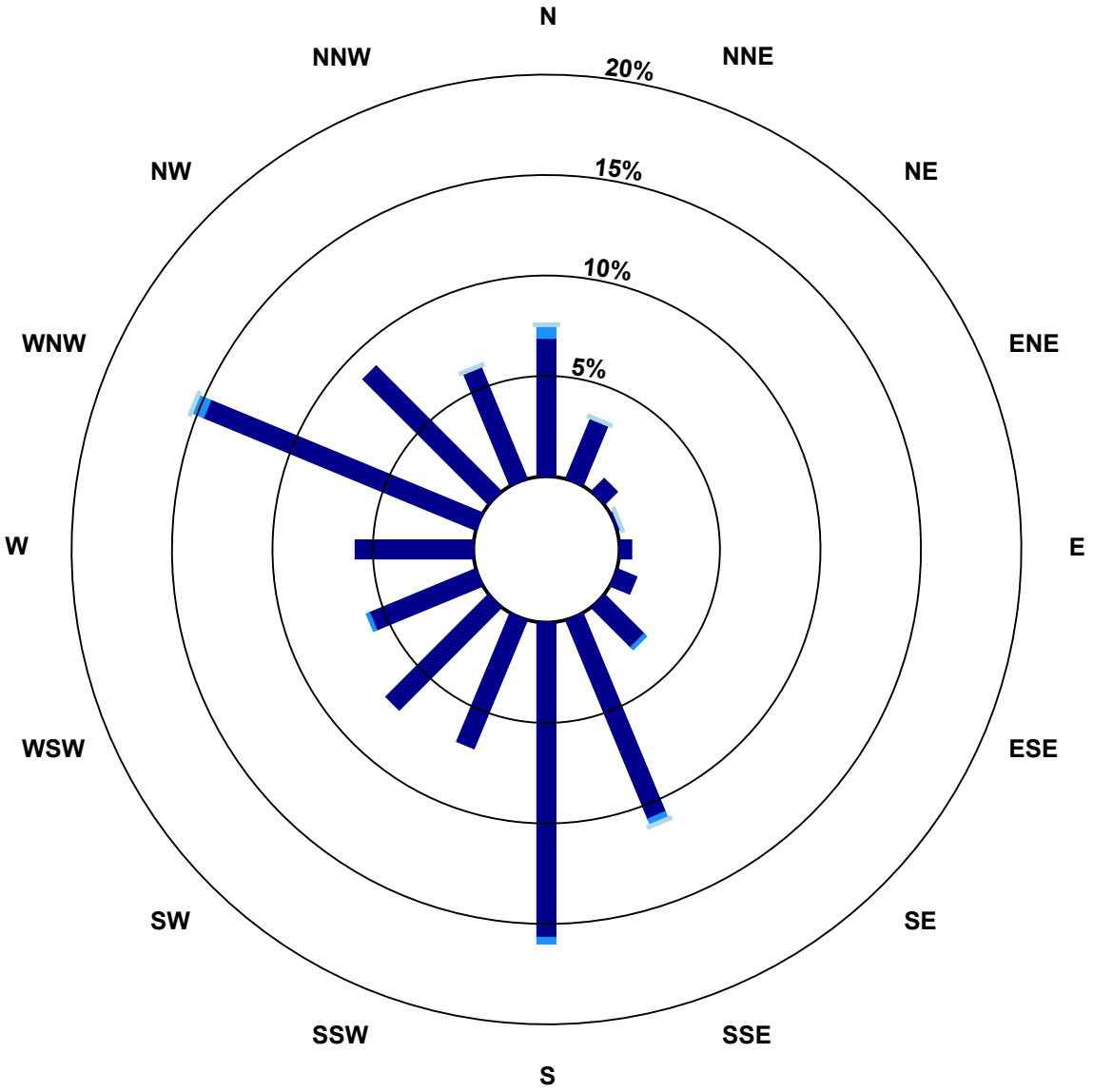
Total Number of Hours: 720

Wood Buffalo Environmental Association

Wind Rose Sep 2024

Nitric Oxide (NO) - ppb

Fort McKay - Bertha Ganter



Classes (ppb)

0 - 20

21 - 40

11 - 80

81 - 159

> 159

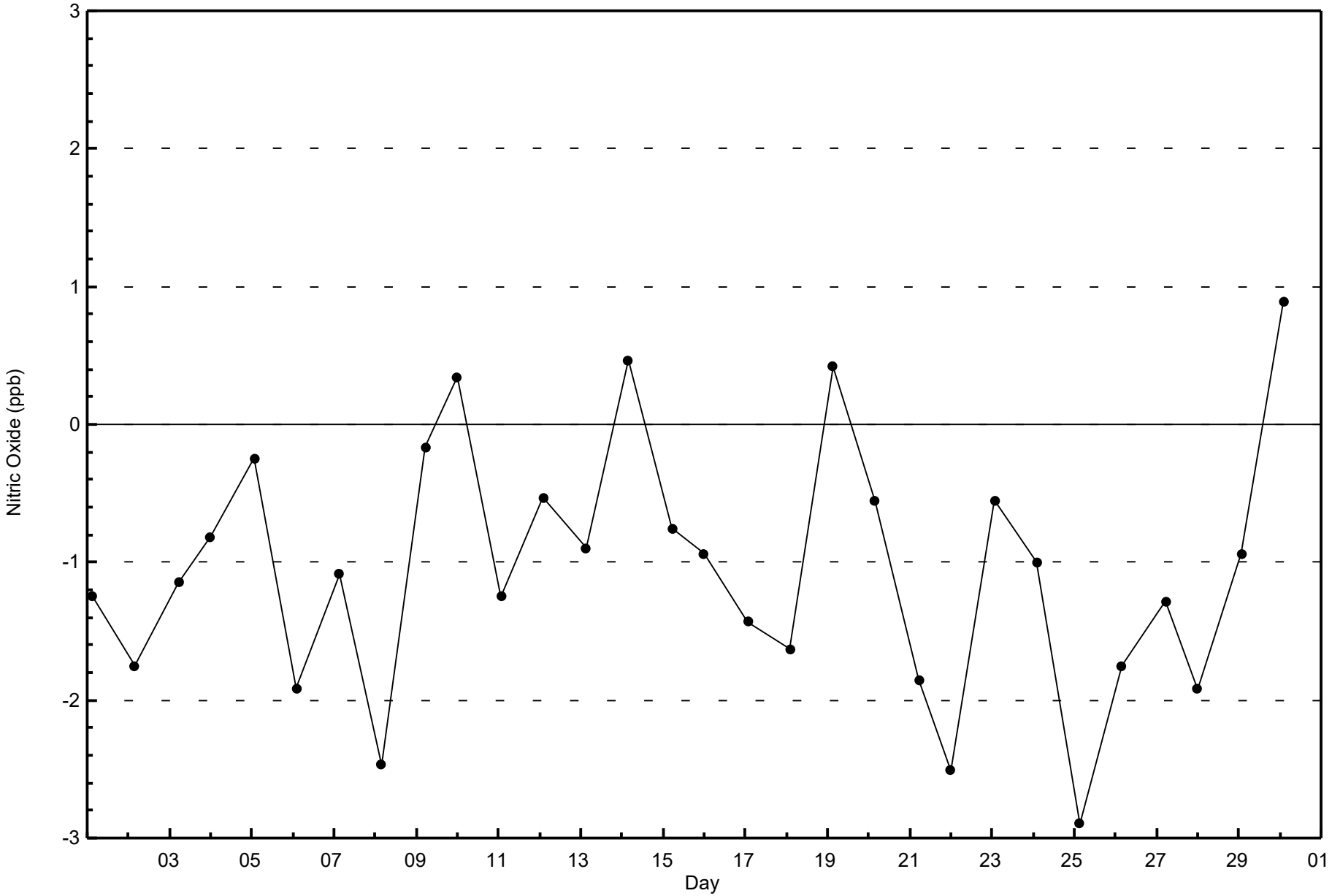
Total Number of Valid Hours: 682

Wood Buffalo Environmental Association

Zero Responses

Nitric Oxide (NO) - ppb

Fort McKay - Bertha Ganter - September 2024

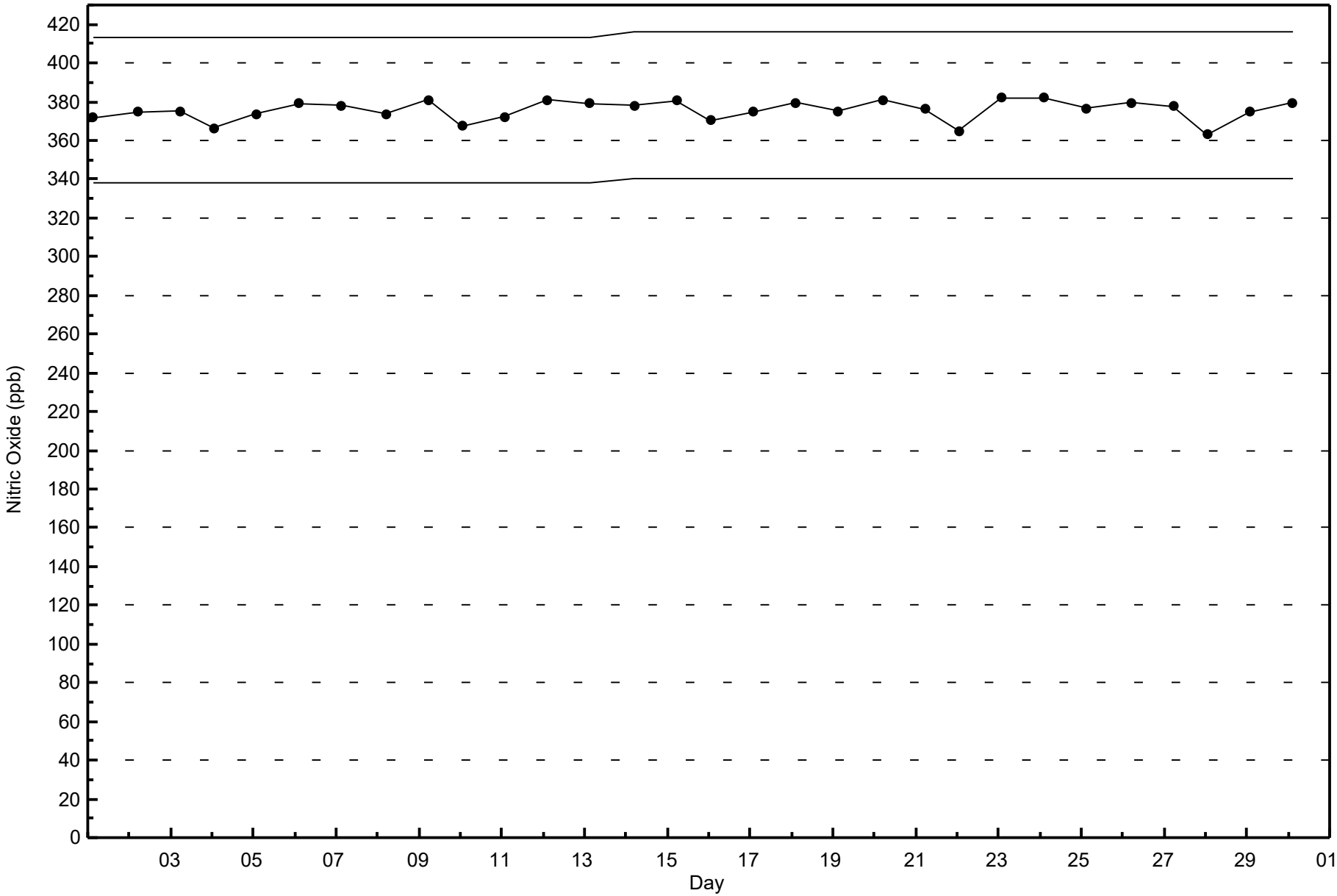


Wood Buffalo Environmental Association

Span Responses

Nitric Oxide (NO) - ppb

Fort McKay - Bertha Ganter - September 2024



Wood Buffalo Environmental Association

Summary of Hour Averages

Nitrogen Dioxide (NO_2) - ppb

Fort McKay - Bertha Ganter - September 2024

Number of Exceedences (AAAQO): 1-hr: 0 24-hr: 0
Maximum Value: 27.6 ppb on Sep 8 22:00 Maximum Daily Average: 8.8 ppb on Sep 20

Minimum Value: 0.0 ppb on Sep 1 15:00
Maximum Diurnal Average: 6.1 ppb at hour 22
Monthly Average: 4.27 ppb

Minimum Daily Average: 0.5 ppb on Sep 30
Minimum Diurnal Average: 2.0 ppb at hour 18
Percentiles: P_1 = 0.0 P_{10} = 0.0 Q_1 = 0.3 Median = 3.0 Q_3 = 6.6 P_{90} = 11.0 P_{99} = 17.3

Hours in Service:	720
Hours of Data:	683
Hours of Missing Data:	37
Hours of Calibration:	35
Percent Operational Time:	99.7

Day	Hourly Period Ending At (MST)																								Daily	Daily
	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24	Average	Maximum
1-Sep	14.6	5.7	2.6	Z	3.6	2.5	3.5	7.2	5.5	5.6	5.4	8.0	4.5	0.5	0.0	0.0	0.0	0.0	0.2	1.3	5.3	15.2	15.0	5.8	4.9	15.2
2-Sep	5.7	8.4	3.4	2.3	Z	8.5	7.7	6.3	5.1	5.3	5.6	3.8	3.5	1.4	0.1	0.1	0.0	0.0	0.0	0.0	1.2	9.2	8.5	2.9	3.9	9.2
3-Sep	3.8	2.9	2.4	4.1	8.3	Z	7.9	3.0	1.9	12.0	4.3	0.8	5.3	5.9	5.3	7.7	6.9	5.3	7.1	8.8	5.5	6.9	4.7	5.7	5.5	12.0
4-Sep	Z	8.9	7.8	3.4	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	1.6	0.5	0.0	0.0	0.0	1.0	8.9
5-Sep	5.0	Z	4.7	5.4	0.6	0.0	0.5	0.0	0.3	3.6	11.2	7.4	6.6	6.0	3.8	3.3	1.8	2.0	3.6	7.8	5.8	6.4	3.2	4.5	4.1	11.2
6-Sep	3.1	1.5	Z	2.1	1.8	3.0	8.4	6.3	9.5	12.6	0.4	0.0	0.0	3.1	5.3	5.1	2.4	5.0	0.3	1.4	0.4	0.0	0.0	0.7	3.1	12.6
7-Sep	0.9	1.2	2.4	Z	5.2	6.3	9.0	6.9	6.3	6.5	10.9	9.1	4.8	4.6	0.9	0.3	0.1	0.2	1.6	0.7	0.5	0.3	0.2	0.3	3.4	10.9
8-Sep	0.4	0.9	0.5	3.2	Z	6.5	7.4	8.1	7.8	8.1	12.9	14.2	6.9	6.8	4.6	3.5	2.6	1.3	1.4	17.8	21.8	27.6	16.4	11.4	8.4	27.6
9-Sep	12.0	11.7	12.1	19.1	17.0	Z	16.2	5.9	7.6	6.1	3.8	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.1	0.2	0.1	4.9	19.1
10-Sep	Z	0.6	0.3	0.2	0.2	0.1	0.2	1.3	0.1	0.1	0.2	0.0	0.0	0.2	0.3	0.2	0.0	0.0	1.4	1.5	1.5	5.7	13.2	16.5	1.9	16.5
11-Sep	14.3	Z	11.1	8.3	6.7	6.0	4.3	6.9	12.3	7.1	6.7	5.6	5.7	8.9	6.5	4.8	5.9	7.3	9.1	12.3	15.0	8.7	3.0	2.2	7.8	15.0
12-Sep	1.8	1.5	Z	1.5	1.5	2.6	2.5	3.1	3.3	2.4	4.9	1.7	1.4	5.1	1.3	0.1	0.3	0.6	1.2	1.0	0.5	0.8	1.2	0.9	1.8	5.1
13-Sep	0.7	0.6	1.2	Z	7.9	9.4	7.8	6.0	8.5	9.1	C	C	C	C	C	6.6	5.1	1.2	0.0	0.0	0.1	3.8	4.4	0.0	4.0	9.4
14-Sep	0.0	0.0	0.0	0.0	Z	0.1	0.0	0.0	0.0	0.1	0.0	0.0	0.0	0.7	2.5	0.5	0.0	0.2	1.5	13.5	12.9	10.6	7.3	7.6	2.5	13.5
15-Sep	10.9	10.5	11.2	8.4	6.8	Z	3.9	3.6	6.5	7.0	7.8	11.2	7.9	5.5	4.8	5.7	6.1	6.2	4.6	5.6	5.1	3.7	4.4	6.6	6.7	11.2
16-Sep	Z	4.2	5.9	6.4	6.3	7.6	6.2	6.3	6.5	5.7	5.1	3.0	0.0	0.0	0.0	0.0	0.0	0.0	1.1	1.5	4.6	7.8	0.9	2.8	3.6	7.8
17-Sep	12.5	Z	17.2	13.3	11.1	9.1	8.0	6.4	5.0	3.6	2.9	2.4	3.4	2.2	1.4	1.1	0.9	2.8	2.7	3.1	4.4	4.4	4.1	5.2	5.5	17.2
18-Sep	8.1	6.0	Z	4.9	3.0	5.3	6.4	7.3	6.4	0.3	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.9	0.5	0.4	0.3	0.8	0.7	2.2	8.1
19-Sep	0.3	0.6	1.0	Z	1.6	9.2	8.2	8.7	7.5	8.3	6.7	6.0	4.2	3.0	2.4	3.1	2.6	2.4	2.8	3.3	7.2	13.3	22.6	17.1	6.2	22.6
20-Sep	17.2	18.1	17.7	16.9	Z	16.4	15.3	13.9	11.3	10.7	11.8	6.0	2.5	1.7	0.7	0.2	0.0	0.0	0.0	0.9	1.6	16.4	15.4	7.8	8.8	18.1
21-Sep	7.0	6.6	3.3	0.5	0.5	Z	0.5	0.4	0.2	6.6	8.8	9.0	7.5	4.8	2.6	1.5	1.4	1.6	3.1	5.1	2.5	2.2	3.1	1.8	3.5	9.0
22-Sep	Z	1.2	1.1	0.9	0.5	1.2	1.3	1.7	5.8	6.2	9.1	10.4	6.5	5.8	2.9	1.0	4.8	2.3	6.8	8.3	5.1	10.0	16.0	13.5	5.3	16.0
23-Sep	15.4	Z	8.9	7.8	4.8	3.6	2.9	1.3	4.2	7.4	6.3	5.8	12.0	16.6	13.8	9.9	7.0	4.6	2.4	3.2	2.2	2.9	4.0	3.4	6.5	16.6
24-Sep	4.1	5.0	Z	2.0	1.7	2.8	3.1	2.9	2.5	0.0	0.0	0.0	M	M	0.0	0.0	0.0	0.0	1.9	4.5	2.6	2.4	1.6	1.8	1.9	5.0
25-Sep	3.0	5.0	5.2	Z	4.7	5.6	4.6	7.4	11.4	11.7	12.1	10.8	14.0	15.5	9.1	5.5	13.2	11.2	6.6	9.0	13.7	11.0	0.7	0.7	8.3	15.5
26-Sep	0.3	0.2	0.1	0.3	Z	0.3	0.3	0.3	0.2	0.2	0.1	0.0	0.0	0.0	0.0	0.1	0.8	0.2	0.3	0.2	1.0	2.0	3.0	1.9	0.5	3.0
27-Sep	3.1	3.0	6.1	6.0	7.4	Z	8.1	7.7	7.9	0.5	1.6	5.3	2.7	0.8	0.1	0.5	1.5	6.5	8.1	2.2	5.0	6.1	7.5	7.5	4.6	8.1
28-Sep	Z	0.6	0.3	0.0	0.0	0.0	0.0	0.3	0.3	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	1.5	3.5	3.8	3.5	3.2	4.7	0.9	4.7
29-Sep	4.4	Z	1.9	3.6	6.3	5.7	8.4	11.9	13.8	12.9	12.8	12.5	11.0	7.0	6.2	4.1	0.4	0.0	1.7	5.1	0.0	0.0	0.0	0.0	5.6	13.8
30-Sep	0.0	0.0	Z	0.0	0.0	0.9	1.1	1.2	0.8	0.2	0.2	0.2	0.0	0.0	0.0	0.0	0.1	0.0	1.1	2.0	1.9	0.9	0.2	0.1	0.5	2.0
	5.9	4.2	5.1	4.8	4.3	4.5	5.1	4.7	5.3	5.3	5.2	4.6	3.9	3.8	2.6	2.2	2.1	2.0	2.4	4.2	4.4	6.1	5.5	4.5	Diurnal Average	
	17.2	18.1	17.7	19.1	17.0	16.4	16.2	13.9	13.8	12.9	12.9	14.2	14.0	16.6	13.8	9.9	13.2	11.2	9.1	17.8	21.8	27.6	22.6	17.1	Diurnal Maximum	

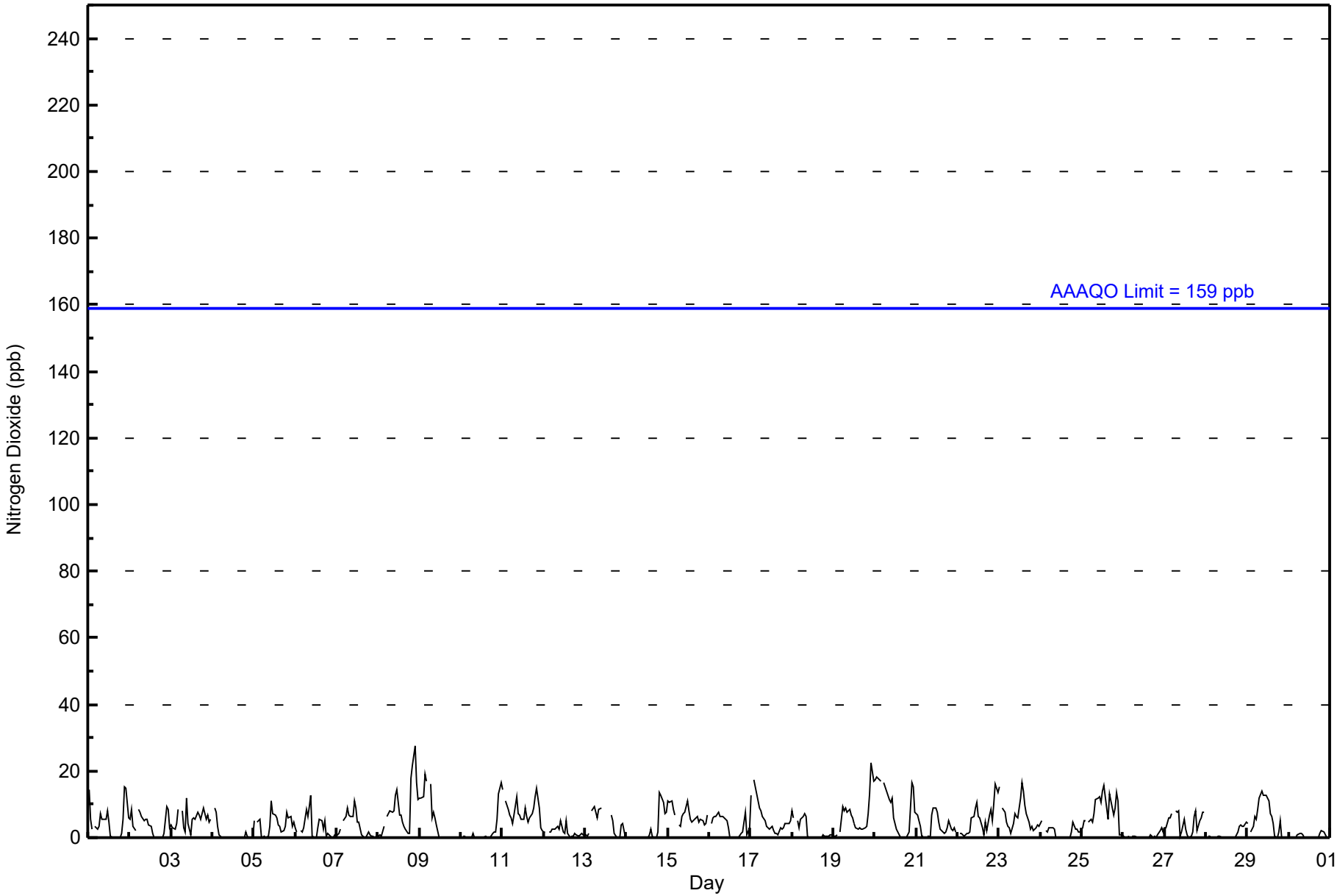
Z - zerospan C - Calibration M - Maintenance
Alberta Ambient Air Quality Objectives (AAAQO): 1-hr 159 ppb

Wood Buffalo Environmental Association

Hourly Averages

Nitrogen Dioxide (NO_2) - ppb

Fort McKay - Bertha Ganter - September 2024



Nitrogen Dioxide (NO_2) - ppb
Fort McKay - Bertha Ganter - September 2024

Concentration Ranges (ppb)	Number of Hours	%	Cumulative %
0 - 20	680	99.56	99.56
21 - 40	3	0.44	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: 683

Total Number of Hours: 720

Wood Buffalo Environmental Association

Frequency Distribution

Nitrogen Dioxide (NO_2) - ppb

Fort McKay - Bertha Ganter - September 2024

Concentration Ranges (ppb)	Wind Direction																
	N	NNE	NE	ENE	E	ESE	SE	SSE	S	SSW	SW	WSW	W	WNW	NW	NNW	**Totals**
0 - 20	50	23	6	2	4	7	20	76	109	47	49	40	40	105	59	42	679
21 - 40	2	0	0	0	0	0	0	0	0	0	0	0	0	0	1	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	52	23	6	2	4	7	20	76	109	47	49	40	40	105	60	42	682

Total Number of Valid Hours: 682

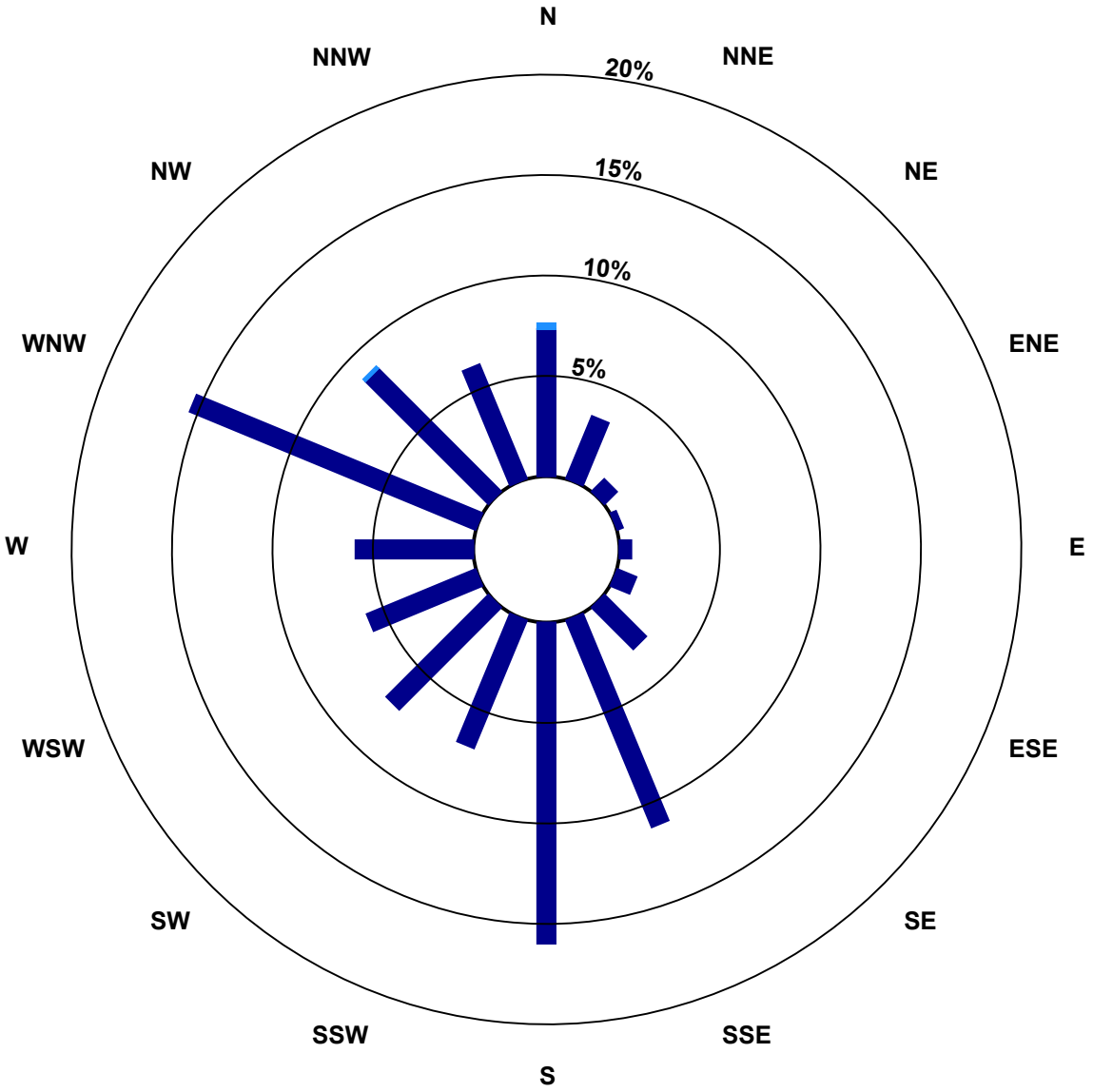
Total Number of Hours: 720

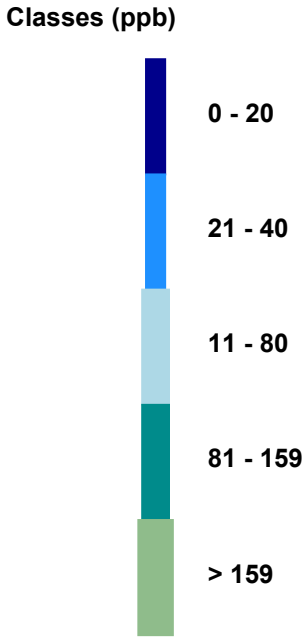
Wood Buffalo Environmental Association

Wind Rose Sep 2024

Nitrogen Dioxide (NO_2) - ppb

Fort McKay - Bertha Ganter





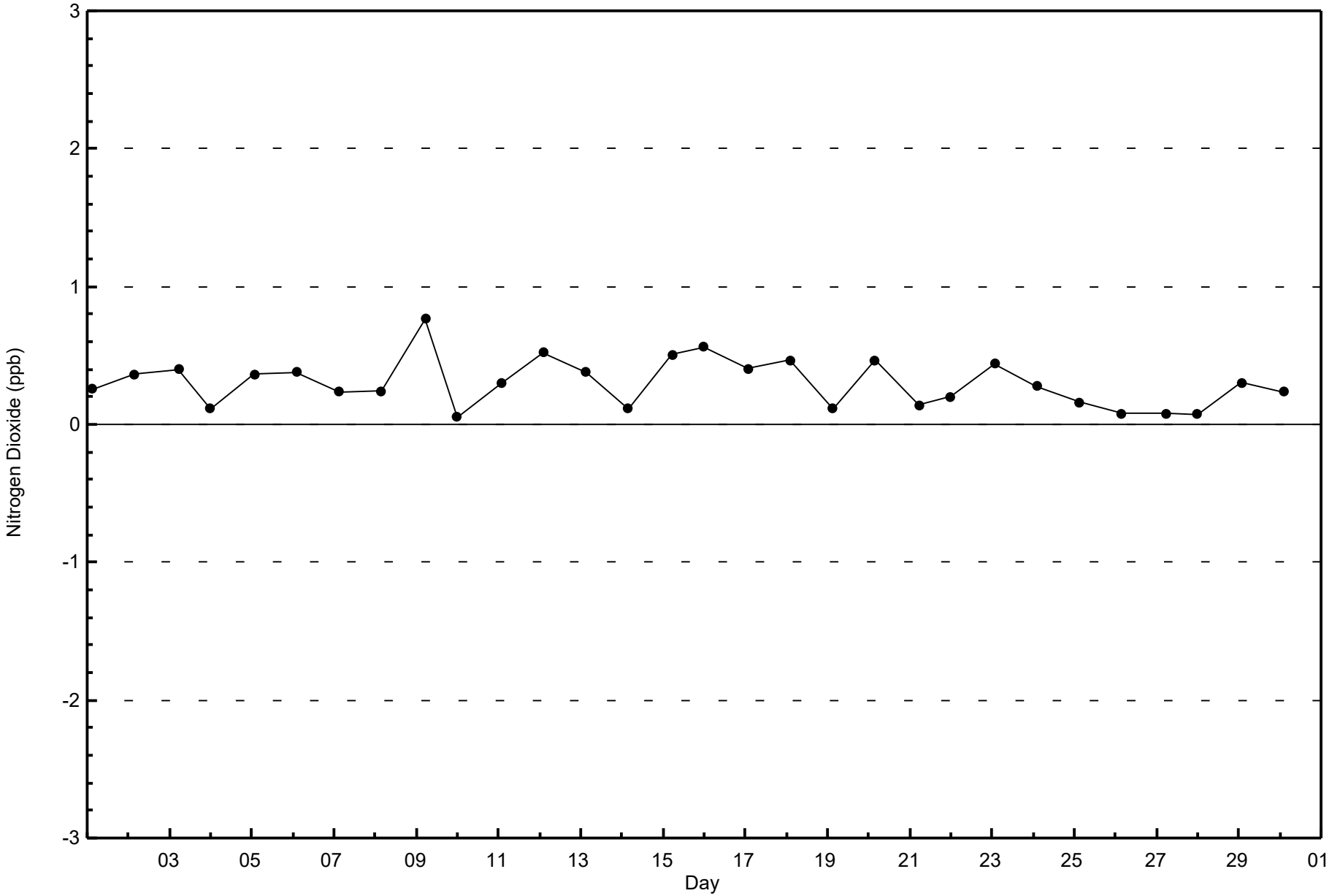
Total Number of Valid Hours: 682

Wood Buffalo Environmental Association

Zero Responses

Nitrogen Dioxide (NO_2) - ppb

Fort McKay - Bertha Ganter - September 2024

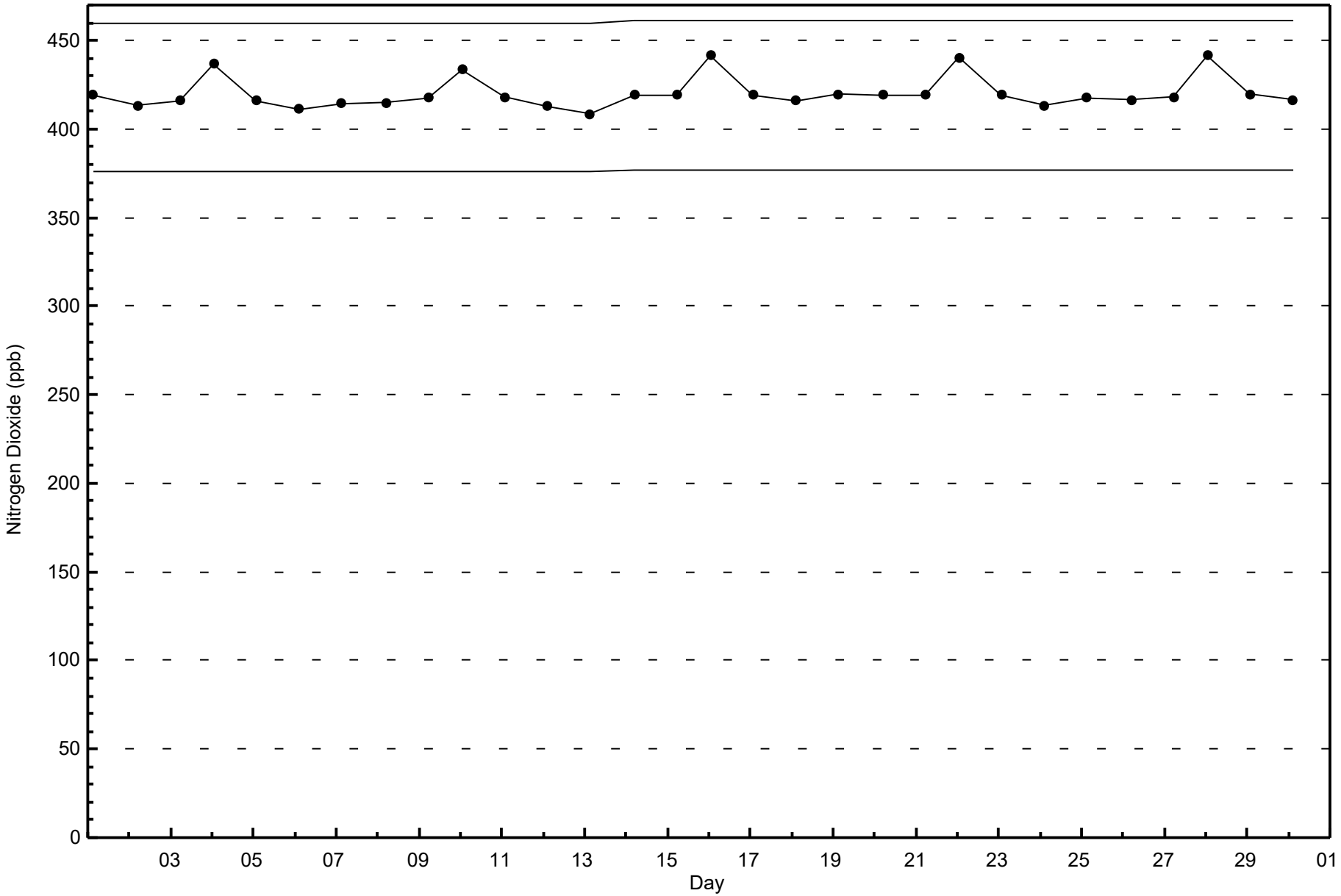


Wood Buffalo Environmental Association

Span Responses

Nitrogen Dioxide (NO_2) - ppb

Fort McKay - Bertha Ganter - September 2024



Wood Buffalo Environmental Association

Summary of Hour Averages

Nitrogen Oxides (NO_X) - ppb

Fort McKay - Bertha Ganter - September 2024

Maximum Value: 80.1 ppb on Sep 29 08:00

Maximum Daily Average: 16.7 ppb on Sep 29

Minimum Value: 0.0 ppb on Sep 1 15:00

Minimum Daily Average: 1.4 ppb on Sep 30

Maximum Diurnal Average: 14.9 ppb at hour 9

Minimum Diurnal Average: 2.9 ppb at hour 18

Monthly Average: 7.52 ppb

Percentiles: P_1 = 0.0 P_{10} = 0.4 Q_1 = 1.4 Median = 3.8 Q_3 = 9.9 P_{90} = 19.8 P_{99} = 45.5

Hours in Service:	720
Hours of Data:	683
Hours of Missing Data:	37
Hours of Calibration:	35
Percent Operational Time:	99.7

Day	Hourly Period Ending At (MST)																								Daily	Daily
	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24	Average	Maximum
1-Sep	15.2	6.2	2.6	Z	3.6	2.5	3.5	10.4	8.8	9.4	9.3	12.8	6.6	1.0	0.0	0.0	0.0	0.7	1.2	2.4	5.7	16.4	16.3	5.8	6.1	16.4
2-Sep	5.7	8.6	3.4	2.3	Z	11.9	16.9	15.5	10.6	9.4	8.9	5.7	5.2	2.4	0.6	0.1	0.0	0.0	0.0	0.0	1.2	9.2	8.5	2.9	5.6	16.9
3-Sep	3.8	2.9	2.4	4.1	8.3	Z	8.0	3.0	2.0	16.8	5.7	0.8	6.0	7.4	6.6	9.0	7.8	5.9	7.3	8.8	5.5	6.9	4.7	5.8	6.1	16.8
4-Sep	Z	11.1	10.1	3.4	0.8	0.2	0.0	0.0	0.0	0.0	0.0	0.4	0.7	0.9	0.9	0.6	0.6	1.0	1.0	2.3	0.6	0.3	0.6	0.7	1.6	11.1
5-Sep	5.5	Z	5.0	5.4	0.6	0.0	0.9	1.1	2.4	9.0	28.7	12.9	10.2	8.3	4.6	4.5	3.0	3.3	4.1	7.8	5.8	6.4	3.2	4.5	6.0	28.7
6-Sep	3.1	1.5	Z	2.2	1.8	3.0	9.1	7.7	15.5	21.6	0.8	0.0	0.0	3.8	5.8	7.1	2.5	5.2	0.3	1.4	0.4	0.0	0.0	0.7	4.1	21.6
7-Sep	0.9	1.4	3.0	Z	8.4	12.5	47.1	25.0	12.1	10.5	15.7	12.0	6.1	5.7	1.3	0.3	0.1	0.4	2.3	1.9	2.3	2.4	2.3	2.4	7.7	47.1
8-Sep	2.5	3.0	2.6	4.8	Z	10.7	23.7	22.8	16.7	13.9	20.3	20.5	9.1	7.9	5.3	3.6	2.6	1.3	1.4	17.8	21.8	27.8	16.8	11.6	11.7	27.8
9-Sep	12.3	11.8	12.4	30.4	26.0	Z	21.8	7.0	10.7	8.7	4.7	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.1	0.2	0.1	6.4	30.4
10-Sep	Z	0.9	0.6	0.6	0.6	0.6	0.9	2.6	0.9	1.1	1.3	1.0	1.1	1.3	1.4	1.3	1.2	1.3	2.4	2.0	1.8	5.7	13.7	16.9	2.7	16.9
11-Sep	14.6	Z	21.5	18.7	16.3	23.6	20.2	25.7	54.2	18.2	12.5	10.0	9.2	13.5	8.8	5.8	6.3	7.8	9.2	12.3	15.3	9.0	3.0	2.2	14.7	54.2
12-Sep	1.8	1.5	Z	1.5	1.5	2.6	2.5	5.1	3.7	2.6	6.3	1.7	1.4	5.1	1.3	0.1	0.3	0.6	1.4	1.6	0.8	1.3	1.9	1.8	2.1	6.3
13-Sep	1.4	1.1	2.7	Z	42.8	50.5	40.9	19.7	28.1	37.9	C	C	C	C	C	7.0	5.1	1.2	0.0	0.0	0.1	3.8	4.4	0.0	13.7	50.5
14-Sep	0.0	0.0	0.4	0.9	Z	1.2	1.0	1.2	1.2	1.6	1.1	1.2	1.3	2.1	4.0	1.4	1.1	1.5	2.4	13.9	12.9	10.6	7.3	7.6	3.3	13.9
15-Sep	11.2	11.0	14.8	13.6	16.7	Z	16.0	13.1	20.5	16.4	13.9	18.1	12.6	8.5	6.9	7.6	7.2	6.7	4.8	5.8	5.3	3.9	5.0	9.8	10.8	20.5
16-Sep	Z	4.9	16.0	26.5	15.1	11.7	10.3	12.0	12.8	8.7	8.2	5.1	0.2	0.0	0.0	0.1	0.7	1.4	2.5	2.5	5.5	7.9	1.1	4.0	6.8	26.5
17-Sep	13.1	Z	20.4	14.6	12.5	11.6	20.1	22.0	11.5	7.5	5.4	4.2	5.5	3.5	2.1	1.5	0.9	2.8	2.7	3.1	4.4	4.4	4.1	5.2	8.0	22.0
18-Sep	8.1	6.0	Z	4.9	3.0	5.3	6.8	10.2	8.9	0.3	0.0	0.0	0.0	0.0	0.3	0.7	0.9	0.9	1.6	0.7	0.4	0.3	0.8	0.7	2.6	10.2
19-Sep	0.3	0.6	1.0	Z	2.0	25.9	45.2	64.4	36.5	24.5	13.0	8.8	5.0	3.0	2.4	3.1	2.6	2.4	2.8	3.3	7.2	13.3	27.5	18.7	13.6	64.4
20-Sep	18.9	22.0	30.3	27.1	Z	33.5	35.5	25.4	21.7	19.4	19.4	8.8	4.4	3.1	1.6	0.8	0.1	0.0	0.0	0.9	2.0	19.2	16.9	7.8	13.9	35.5
21-Sep	7.2	7.0	3.8	0.9	0.7	Z	1.0	1.1	1.5	37.6	43.4	20.9	16.2	9.9	4.2	2.1	1.6	2.2	3.9	5.2	2.5	2.2	3.1	1.8	7.8	43.4
22-Sep	Z	2.9	2.7	2.5	1.9	2.6	2.3	4.1	17.0	16.4	22.6	21.2	11.0	9.6	4.2	1.3	5.3	2.3	6.8	8.3	5.1	10.0	16.4	15.3	8.3	22.6
23-Sep	26.3	Z	18.7	21.6	13.7	6.5	5.1	4.0	17.0	21.6	15.8	11.3	27.9	31.0	22.0	15.4	8.9	5.5	2.7	3.5	2.3	2.9	4.0	3.5	12.7	31.0
24-Sep	4.1	5.1	Z	2.0	1.8	4.0	6.5	11.5	12.2	0.2	0.2	0.2	M	M	1.7	2.3	2.5	2.6	4.0	5.8	2.6	2.4	1.6	1.8	3.6	12.2
25-Sep	3.0	5.0	5.5	Z	8.1	9.4	8.2	11.8	36.2	42.4	33.9	34.2	22.0	28.1	14.2	8.2	19.8	15.9	8.4	10.8	21.8	26.9	2.3	2.1	16.4	42.4
26-Sep	1.4	0.8	0.5	0.3	Z	0.4	0.4	0.9	1.4	1.8	1.9	2.1	2.1	2.2	2.2	2.3	3.0	2.2	2.3	2.3	3.0	3.9	4.8	3.6	2.0	4.8
27-Sep	5.4	4.5	9.5	18.0	22.8	Z	10.8	10.8	16.5	0.5	2.5	7.8	3.7	2.2	2.2	2.7	3.9	8.5	9.5	2.6	5.1	6.2	7.6	7.5	7.4	22.8
28-Sep	Z	2.4	2.6	2.4	2.5	2.5	2.4	2.7	2.7	2.3	2.3	2.3	2.2	2.3	2.2	2.1	2.2	2.0	3.5	5.2	5.5	4.9	4.4	5.6	3.0	5.6
29-Sep	4.9	Z	2.7	3.6	11.8	20.4	49.3	80.1	62.3	36.8	35.6	26.9	19.8	9.9	7.6	5.2	0.4	0.0	1.7	5.1	0.0	0.0	0.0	0.0	16.7	80.1
30-Sep	0.5	0.9	Z	0.9	1.0	2.0	2.0	2.4	2.0	1.2	1.3	1.1	0.9	0.9	0.9	0.9	0.9	0.8	2.0	2.8	2.6	1.5	0.9	0.7	1.4	2.8
	6.9	4.9	7.8	8.5	9.0	10.2	13.9	14.1	14.9	13.3	11.5	8.7	6.8	6.2	4.0	3.2	3.0	2.9	3.1	4.7	5.0	7.0	6.1	5.0	Diurnal Average	
	26.3	22.0	30.3	30.4	42.8	50.5	49.3	80.1	62.3	42.4	43.4	34.2	27.9	31.0	22.0	15.4	19.8	15.9	9.5	17.8	21.8	27.8	27.5	18.7	Diurnal Maximum	

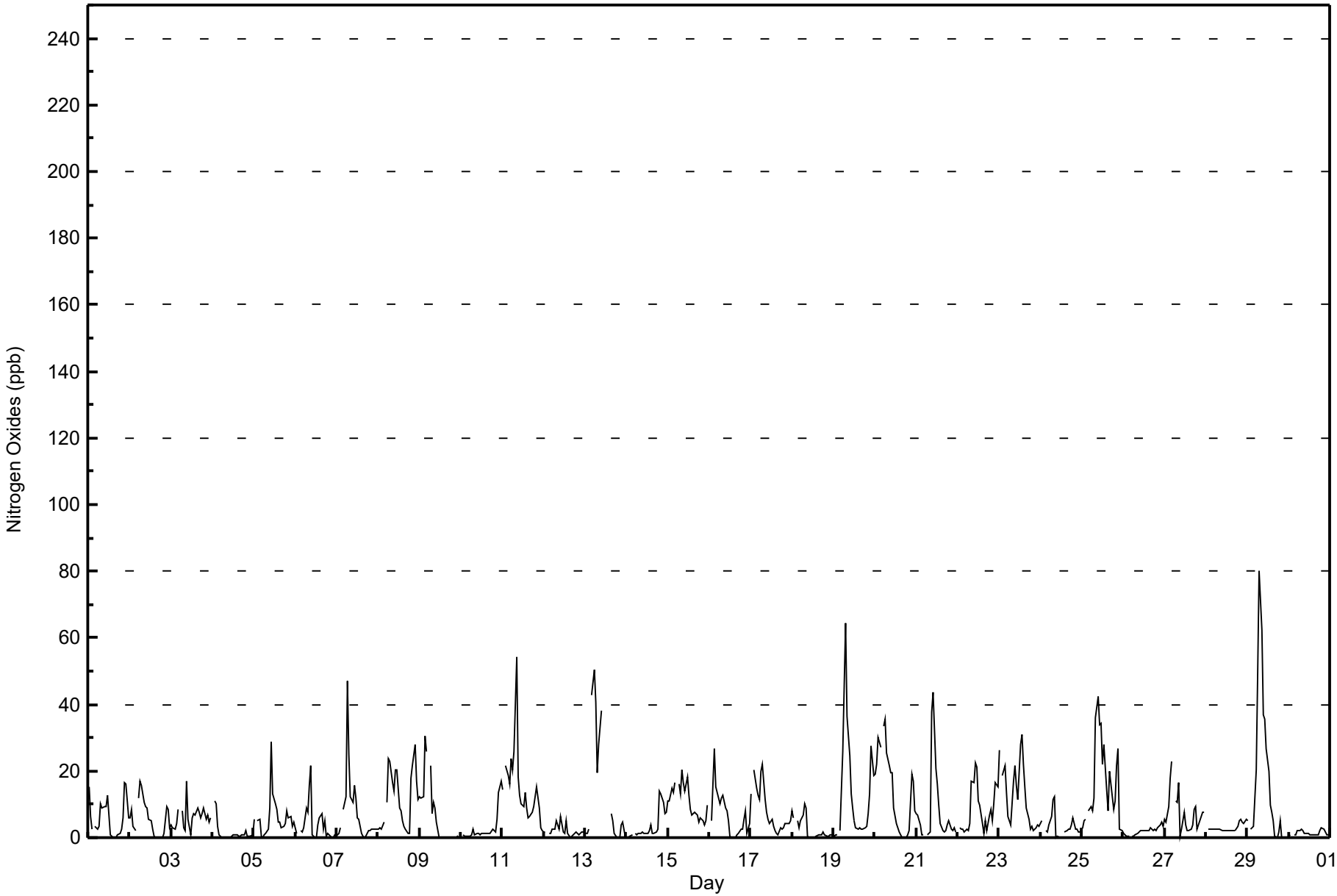
Z - zerospan C - Calibration M - Maintenance

Wood Buffalo Environmental Association

Hourly Averages

Nitrogen Oxides (NO_X) - ppb

Fort McKay - Bertha Ganter - September 2024



Nitrogen Oxides (NO_X) - ppb

Fort McKay - Bertha Ganter - September 2024

Concentration Ranges (ppb)	Number of Hours	%	Cumulative %
0 - 20	621	90.92	90.92
21 - 40	50	7.32	98.24
11 - 80	12	1.76	100.00
81 - 159	0	0.00	100.00
> 159	0	0.00	100.00

Total Number of Valid Hours: 683

Total Number of Hours: 720

Wood Buffalo Environmental Association

Frequency Distribution

Nitrogen Oxides (NO_X) - ppb

Fort McKay - Bertha Ganter - September 2024

Concentration Ranges (ppb)	Wind Direction																
	N	NNE	NE	ENE	E	ESE	SE	SSE	S	SSW	SW	WSW	W	WNW	NW	NNW	**Totals**
0 - 20	43	19	6	1	4	7	18	63	103	45	48	36	37	96	56	39	621
21 - 40	8	3	0	0	0	0	1	12	4	2	1	4	3	5	4	2	49
11 - 80	1	1	0	1	0	0	1	1	2	0	0	0	0	4	0	1	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	52	23	6	2	4	7	20	76	109	47	49	40	40	105	60	42	682

Total Number of Valid Hours: 682

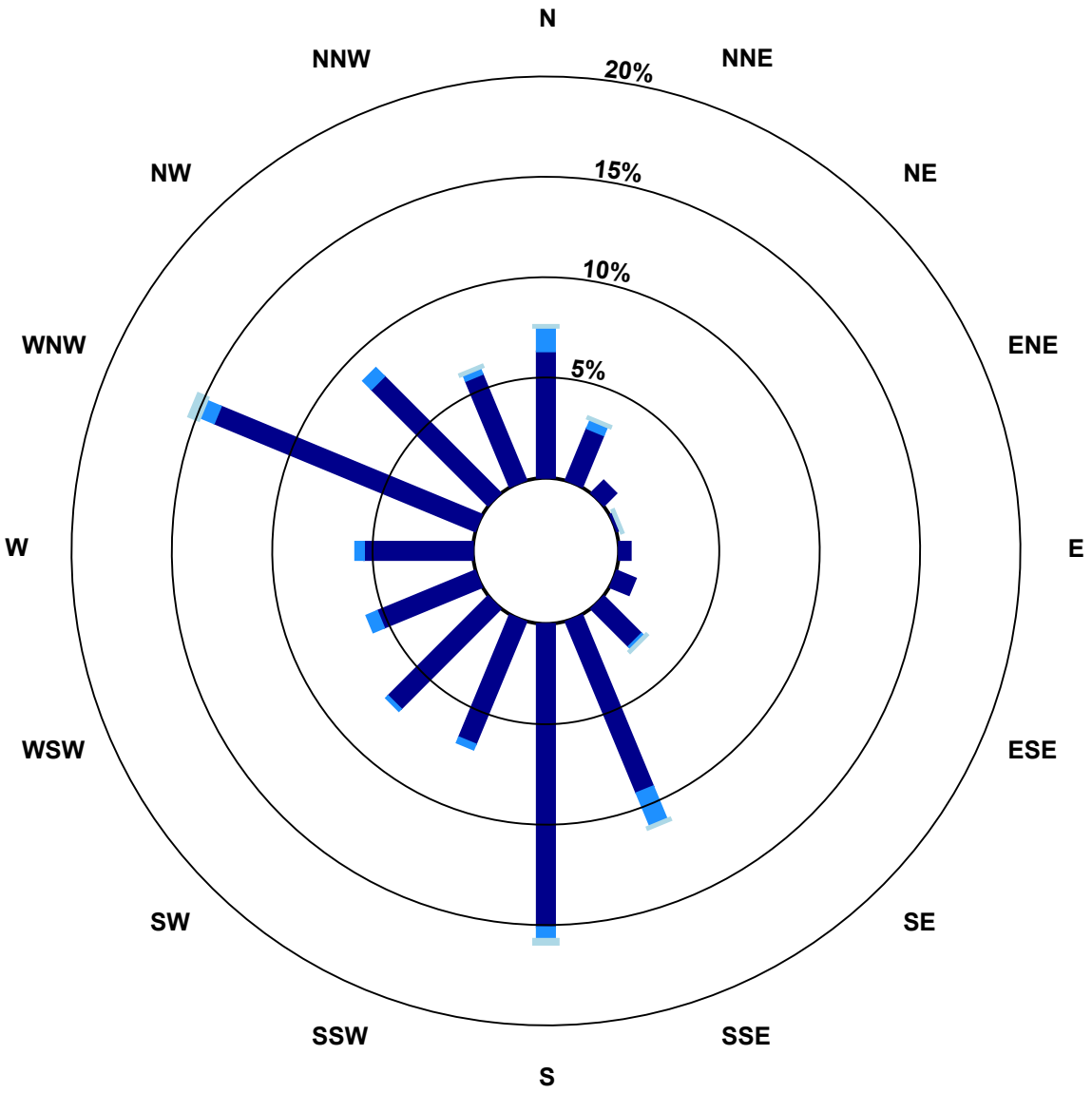
Total Number of Hours: 720

Wood Buffalo Environmental Association

Wind Rose Sep 2024

Nitrogen Oxides (NO_X) - ppb

Fort McKay - Bertha Ganter



Classes (ppb)

0 - 20

21 - 40

11 - 80

81 - 159

> 159

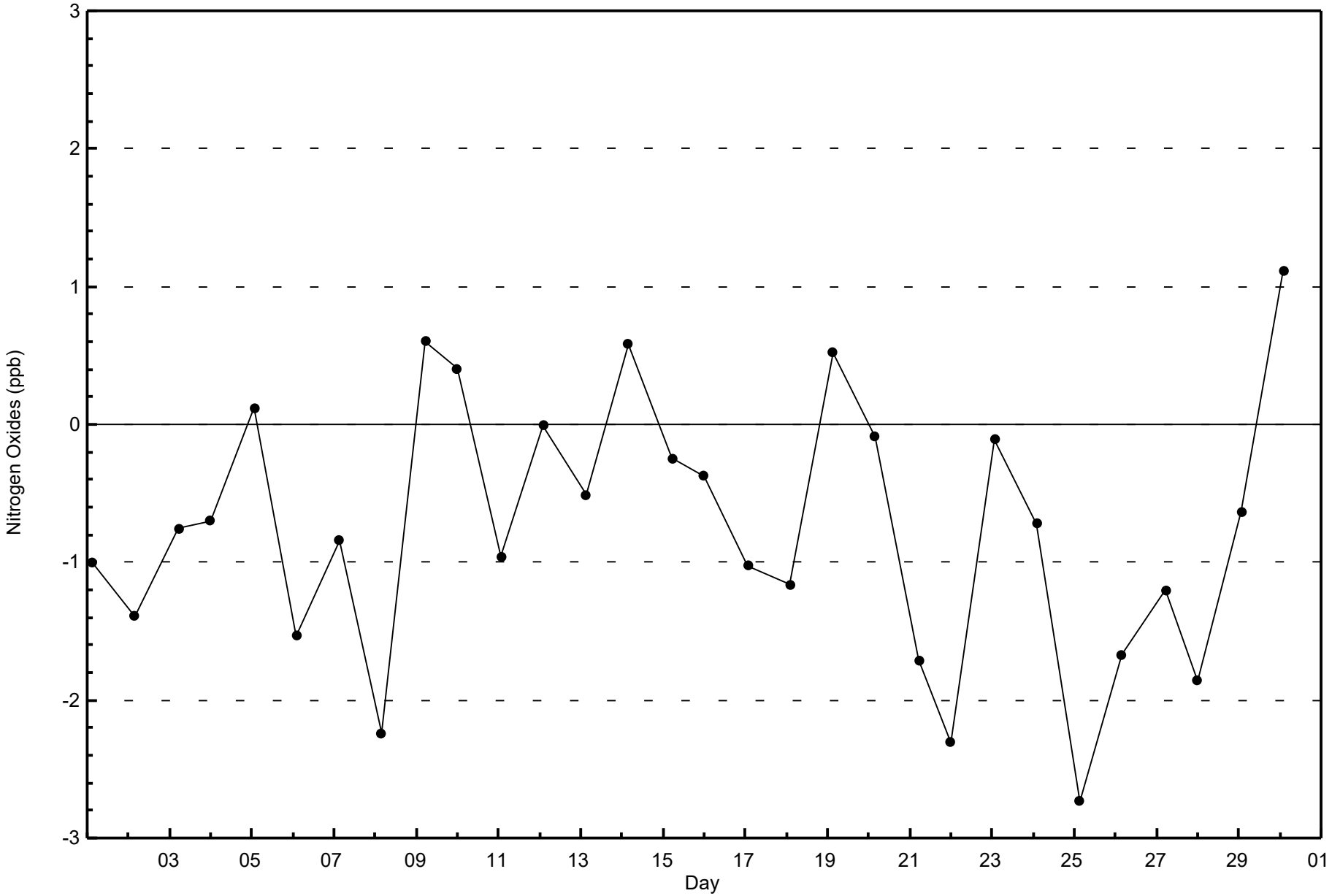
Total Number of Valid Hours: 682

Wood Buffalo Environmental Association

Zero Responses

Nitrogen Oxides (NO_X) - ppb

Fort McKay - Bertha Ganter - September 2024

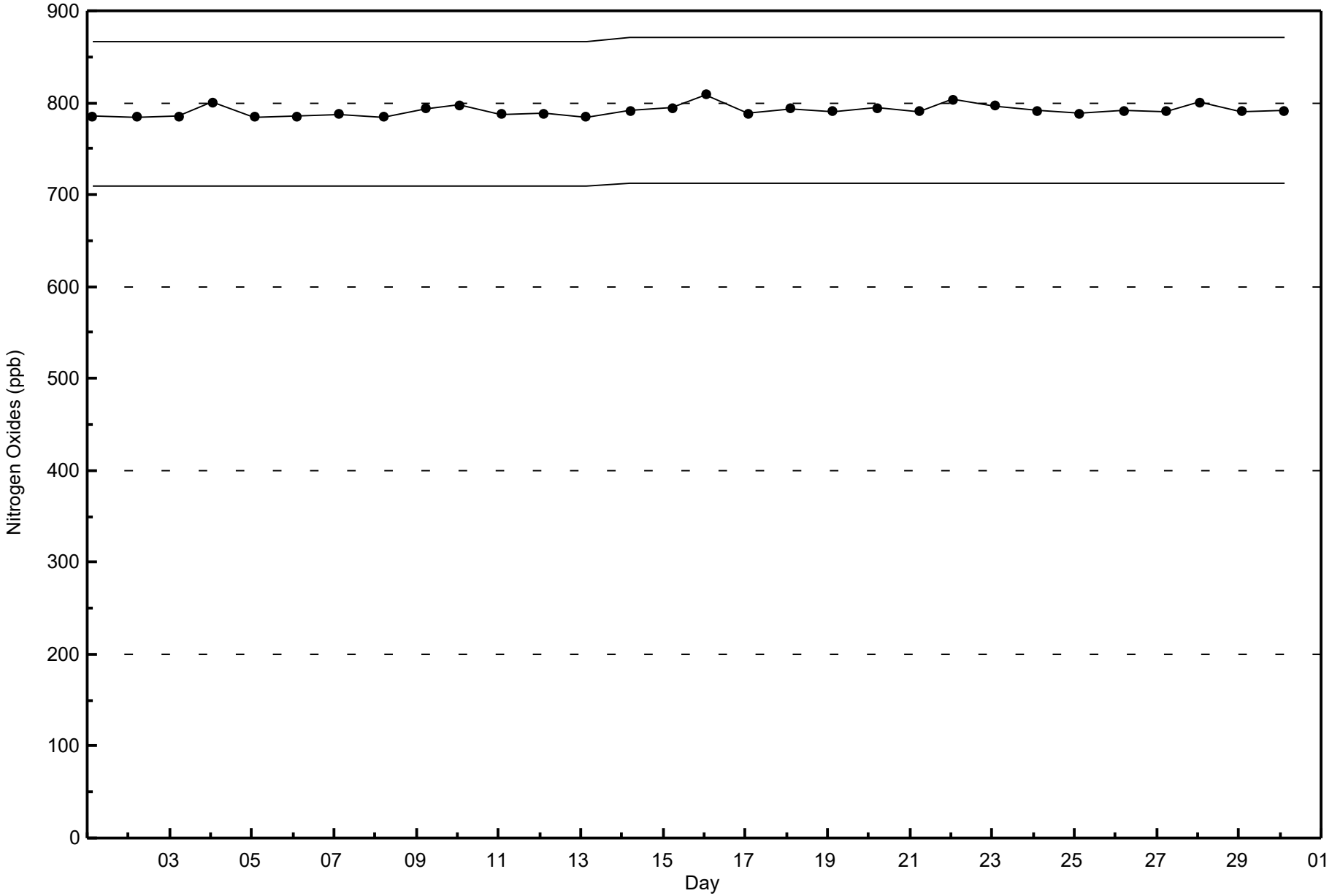


Wood Buffalo Environmental Association

Span Responses

Nitrogen Oxides (NO_X) - ppb

Fort McKay - Bertha Ganter - September 2024



Wood Buffalo Environmental Association

Summary of Hour Averages

Ozone (O_3) - ppb

Fort McKay - Bertha Ganter - September 2024

Number of Exceedences (AAAQO): 1-hr: 0 24-hr: 0

Maximum Value: 42.6 ppb on Sep 8 15:00

Maximum Daily Average: 21.6 ppb on Sep 30

Minimum Value: 0.2 ppb on Sep 19 07:00

Minimum Daily Average: 4.9 ppb on Sep 25

Maximum Diurnal Average: 26.7 ppb at hour 15

Minimum Diurnal Average: 5.7 ppb at hour 5

Monthly Average: 15.01 ppb

Percentiles: P_1 = 0.3 P_{10} = 1.4 Q_1 = 6.1 Median = 14.9 Q_3 = 22.9 P_{90} = 28.8 P_{99} = 37.4

Hours in Service:	720
Hours of Data:	684
Hours of Missing Data:	36
Hours of Calibration:	34
Percent Operational Time:	99.7

Day	Hourly Period Ending At (MST)																								Daily	Daily
	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24	Average	Maximum
1-Sep	1.2	Z	19.7	17.9	15.7	17.1	14.9	13.6	16.5	17.1	20.3	23.4	28.6	26.0	26.5	24.8	26.1	28.5	26.8	21.9	13.4	4.7	5.1	8.5	18.2	28.6
2-Sep	6.1	4.0	Z	6.3	3.4	0.5	1.6	4.8	10.7	17.5	24.4	30.3	32.5	35.0	35.8	35.5	33.2	32.6	30.3	25.2	22.5	18.7	23.2	28.2	20.1	35.8
3-Sep	26.7	31.8	29.8	Z	16.5	14.8	10.3	17.4	19.1	12.7	21.5	22.4	19.7	18.4	19.0	17.1	16.3	17.1	13.3	8.4	10.4	9.2	11.2	6.3	16.9	31.8
4-Sep	2.5	0.5	0.8	3.4	Z	3.8	3.6	4.8	8.6	16.4	19.2	20.0	20.1	25.7	26.0	24.4	24.8	26.5	24.4	16.9	16.6	15.8	15.4	14.9	14.6	26.5
5-Sep	13.1	11.4	8.9	5.8	7.2	Z	6.2	6.9	8.2	11.5	10.3	19.5	23.1	27.8	30.9	30.7	33.9	30.4	28.9	21.9	19.4	18.8	22.5	20.3	18.2	33.9
6-Sep	Z	24.0	23.4	24.9	26.5	25.7	20.7	18.8	15.9	16.4	26.3	28.2	26.2	21.1	18.8	18.8	24.3	20.8	21.3	16.4	15.6	12.9	14.2	11.9	20.6	28.2
7-Sep	8.8	Z	4.5	2.9	0.5	0.5	0.9	3.3	9.8	18.6	24.3	29.8	36.7	34.6	31.7	30.2	31.5	29.0	24.1	23.7	22.3	21.8	20.0	19.6	18.7	36.7
8-Sep	18.4	15.2	Z	7.3	4.1	1.1	0.9	3.2	8.6	14.2	20.8	28.3	37.9	39.8	42.6	39.4	38.3	34.7	26.8	12.3	14.9	8.7	9.1	8.4	18.9	42.6
9-Sep	7.7	5.6	4.6	Z	1.5	3.6	4.9	13.5	11.9	15.9	18.3	21.1	24.4	21.1	20.8	22.5	24.4	21.9	22.4	26.2	24.8	22.3	17.8	15.2	16.2	26.2
10-Sep	13.2	13.2	13.7	11.3	Z	10.2	10.4	9.8	12.4	15.3	C	C	C	C	19.9	19.4	24.5	23.1	17.7	12.0	10.8	6.3	1.0	1.2	12.9	24.5
11-Sep	1.3	0.6	0.3	0.3	0.3	Z	0.8	2.5	3.1	12.5	17.4	19.1	20.9	22.6	27.4	30.8	31.1	27.7	20.0	13.2	6.8	11.1	17.4	13.4	13.1	31.1
12-Sep	Z	9.6	7.4	5.1	2.4	7.1	10.9	3.9	6.4	11.6	15.6	23.2	24.1	24.0	22.4	22.1	22.4	21.0	16.3	8.0	6.3	4.1	1.7	1.9	12.1	24.1
13-Sep	1.1	Z	1.8	0.6	0.6	0.8	0.7	1.1	1.1	1.6	4.1	6.2	9.6	16.9	16.8	15.6	15.3	17.9	17.9	17.2	18.1	15.4	11.3	12.5	8.9	18.1
14-Sep	13.9	13.5	Z	12.1	9.8	8.2	7.9	7.9	10.3	13.6	21.0	29.7	28.6	29.8	27.0	29.1	30.6	30.0	24.6	10.8	10.9	6.3	4.9	2.7	16.7	30.6
15-Sep	1.2	1.5	0.5	Z	0.3	0.4	0.5	1.2	2.5	10.0	18.1	18.6	23.0	26.0	26.4	26.8	27.8	22.5	13.1	9.4	5.5	4.1	1.6	0.8	10.5	27.8
16-Sep	1.8	1.9	0.9	0.8	Z	1.2	2.3	3.6	6.8	12.0	14.9	21.4	26.7	27.7	28.6	28.6	29.2	29.6	25.1	20.2	12.6	14.4	19.9	17.2	15.1	29.6
17-Sep	5.6	2.9	1.0	1.7	1.0	Z	0.7	2.8	9.1	13.9	18.7	23.7	26.5	31.0	34.6	35.1	34.9	31.4	27.3	22.2	17.2	10.3	6.7	6.0	15.8	35.1
18-Sep	Z	4.2	5.3	4.1	4.2	4.4	8.7	11.8	14.5	21.4	21.1	21.3	23.7	26.9	32.7	34.2	35.0	33.8	26.9	22.4	18.9	17.1	15.1	12.7	18.3	35.0
19-Sep	13.1	Z	9.1	8.6	5.5	0.4	0.2	0.6	2.5	7.1	12.7	20.9	27.4	33.5	34.2	29.4	26.2	24.3	19.6	15.1	16.7	9.1	1.6	6.0	14.1	34.2
20-Sep	3.1	1.0	Z	0.9	0.8	1.0	1.0	2.9	5.6	9.1	11.2	18.2	24.4	25.0	25.8	27.9	27.5	27.1	25.6	22.8	20.4	4.0	2.5	7.1	12.8	27.9
21-Sep	6.3	4.8	7.1	Z	7.2	6.6	6.9	7.3	6.9	3.9	4.2	10.0	12.4	15.5	21.7	25.0	26.6	24.7	19.9	17.0	19.7	17.5	16.0	18.0	13.3	26.6
22-Sep	14.9	9.5	8.7	4.4	Z	1.9	2.4	3.3	6.2	7.3	8.9	14.0	19.8	20.9	25.7	27.2	21.8	16.3	16.5	13.8	13.8	7.3	1.4	1.6	11.6	27.2
23-Sep	0.3	0.4	0.3	0.5	0.7	Z	1.6	2.3	3.1	6.4	9.3	11.4	9.8	10.1	9.8	7.5	8.4	7.7	9.1	7.0	8.1	7.4	6.0	4.0	5.7	11.4
24-Sep	Z	1.8	1.0	2.5	1.6	0.7	0.6	1.4	3.5	5.5	9.9	19.9	M	M	36.9	38.8	37.6	34.2	26.3	14.9	12.7	10.4	7.6	5.4	13.0	38.8
25-Sep	2.3	Z	1.1	0.5	0.3	0.4	0.7	2.4	1.6	1.4	2.8	2.1	6.8	4.8	11.9	14.5	6.8	9.8	13.0	8.4	1.1	2.6	9.9	8.5	4.9	14.5
26-Sep	11.3	14.4	Z	11.3	11.4	8.6	14.9	16.1	14.3	13.3	15.1	18.2	25.2	28.1	30.5	28.9	24.6	31.6	25.6	23.5	18.5	10.7	9.1	4.7	17.8	31.6
27-Sep	2.8	2.1	0.7	Z	0.4	0.5	1.8	2.3	7.0	16.6	25.2	32.9	35.4	37.4	37.4	34.3	29.3	23.0	22.1	25.7	19.6	14.4	12.8	10.0	17.1	37.4
28-Sep	14.8	19.4	19.3	18.9	Z	20.3	22.2	21.7	20.3	23.2	25.0	26.4	27.6	29.6	30.6	30.2	28.1	24.0	18.2	15.6	14.1	9.9	5.4	2.5	20.3	30.6
29-Sep	2.6	3.6	3.5	1.7	0.5	Z	0.4	0.6	1.2	2.3	4.7	9.8	13.5	19.4	20.2	21.3	24.9	27.0	21.7	14.9	19.1	20.7	19.7	18.8	11.8	27.0
30-Sep	Z	22.5	22.8	21.7	19.0	14.7	12.4	11.8	13.5	15.3	17.0	24.5	26.9	28.4	28.9	30.0	30.3	29.6	25.6	19.1	18.2	18.2	21.9	23.6	21.6	30.3
	7.8	8.8	7.8	7.0	5.7	6.2	5.7	6.8	8.7	12.1	15.9	20.5	23.6	25.3	26.7	26.7	26.5	25.3	21.7	16.9	15.0	11.8	11.1	10.4	Diurnal Average	
	26.7	31.8	29.8	24.9	26.5	25.7	22.2	21.7	20.3	23.2	26.3	32.9	37.9	39.8	42.6	39.4	38.3	34.7	30.3	26.2	24.8	22.3	23.2	28.2	Diurnal Maximum	

Z - zerospan C - Calibration M - Maintenance

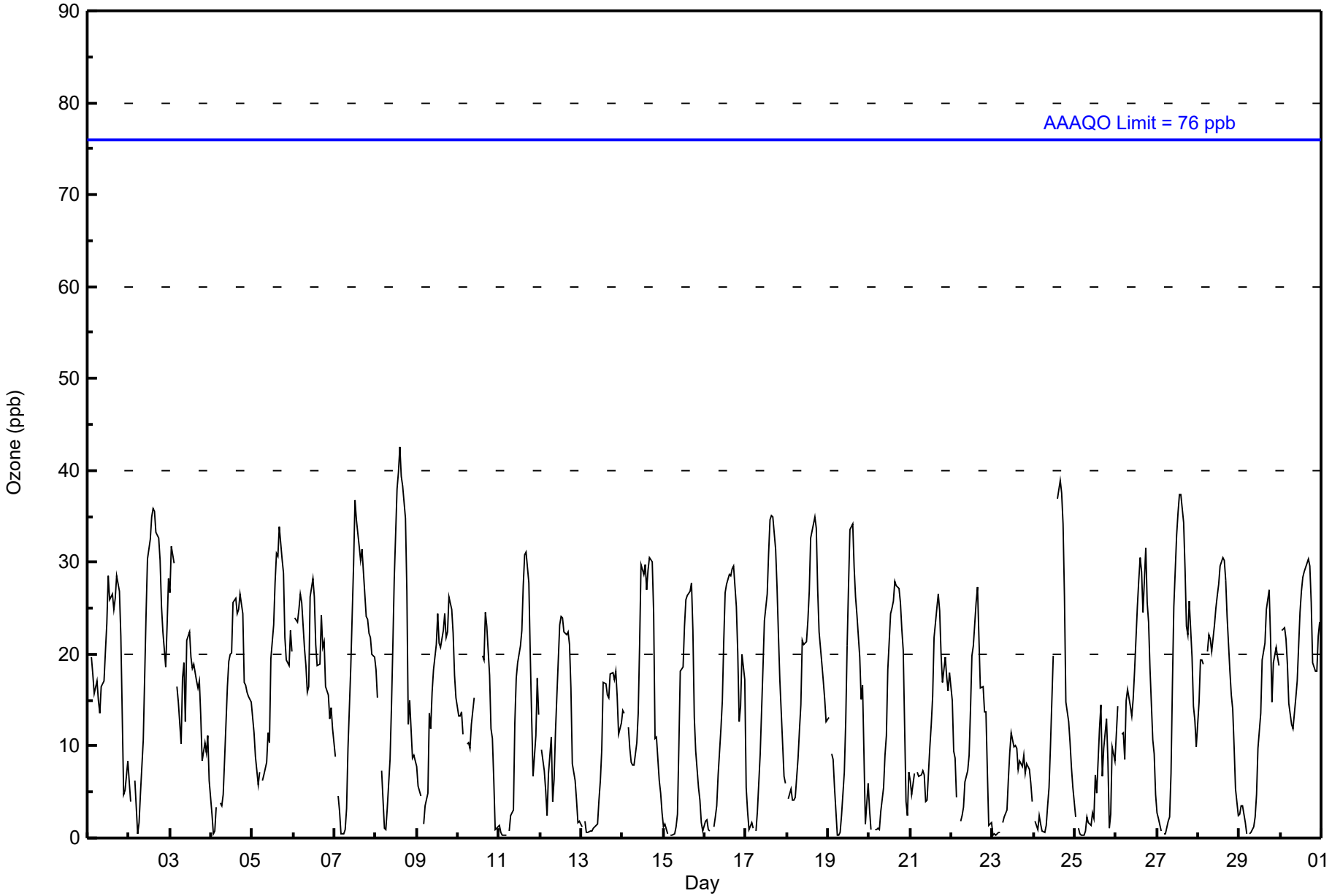
Alberta Ambient Air Quality Objectives (AAAQO): 1-hr 76 ppb

Wood Buffalo Environmental Association

Hourly Averages

Ozone (O_3) - ppb

Fort McKay - Bertha Ganter - September 2024



Concentration Ranges (ppb)	Number of Hours	%	Cumulative %
0 - 20	464	67.84	67.84
21 - 50	220	32.16	100.00
51 - 82	0	0.00	100.00
> 83	0	0.00	100.00

Total Number of Valid Hours: 684

Total Number of Hours: 720

Wood Buffalo Environmental Association | **Ozone (O_3) - ppb**

Frequency Distribution | **Fort McKay - Bertha Ganter - September 2024**

Concentration Ranges (ppb)	Wind Direction																
	N	NNE	NE	ENE	E	ESE	SE	SSE	S	SSW	SW	WSW	W	WNW	NW	NNW	**Totals**
0 - 20	43	17	1	2	4	2	11	41	85	36	30	21	26	78	37	29	463
21 - 50	15	5	5	1	1	5	9	36	22	11	17	17	12	30	20	14	220
51 - 82	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
> 83	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Totals	58	22	6	3	5	7	20	77	107	47	47	38	38	108	57	43	683

Total Number of Valid Hours: 683

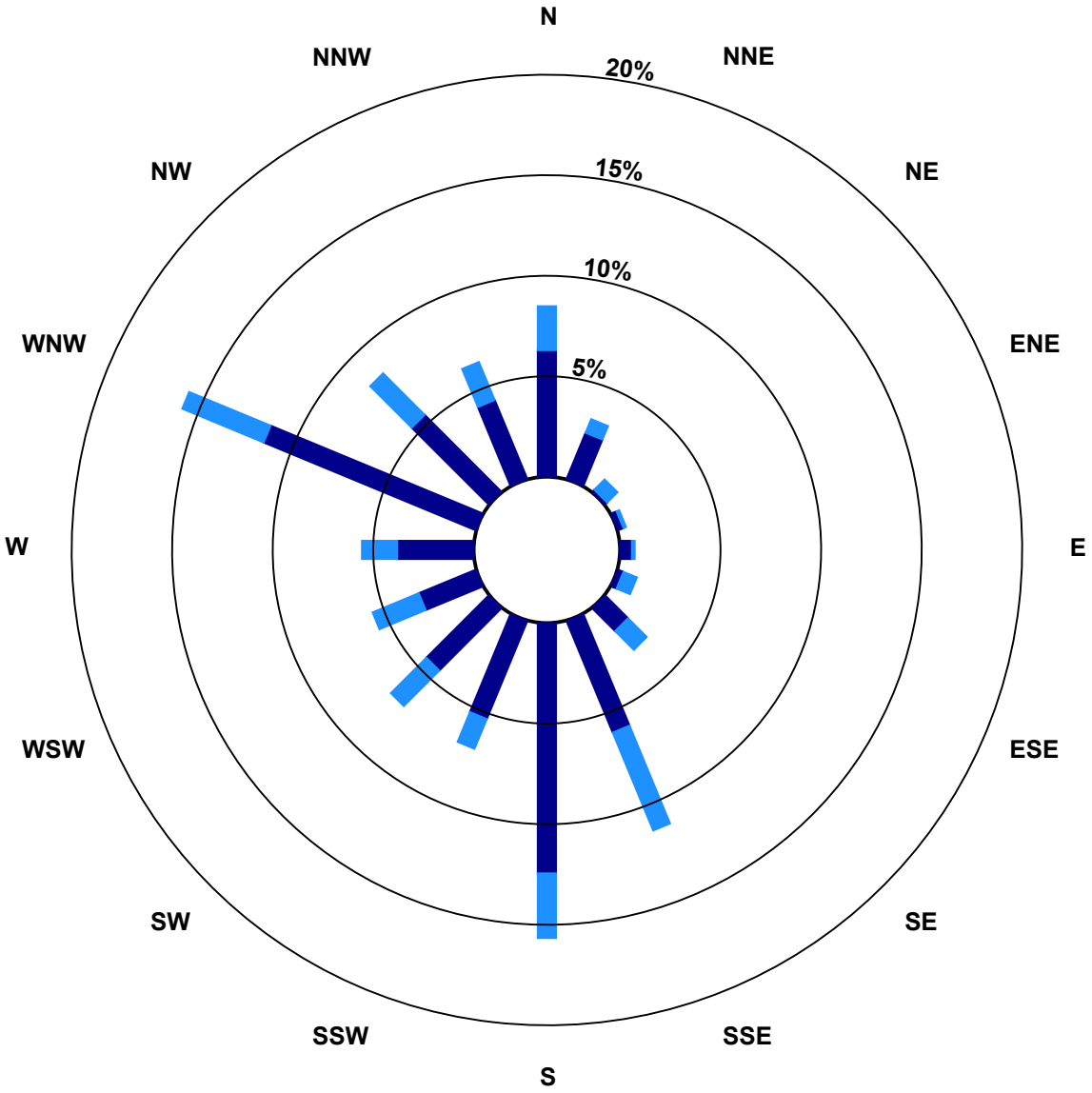
Total Number of Hours: 720

Wood Buffalo Environmental Association

Wind Rose Sep 2024

Ozone (O_3) - ppb

Fort McKay - Bertha Ganter



Classes (ppb)

0 - 20

21 - 50

51 - 82

> 83

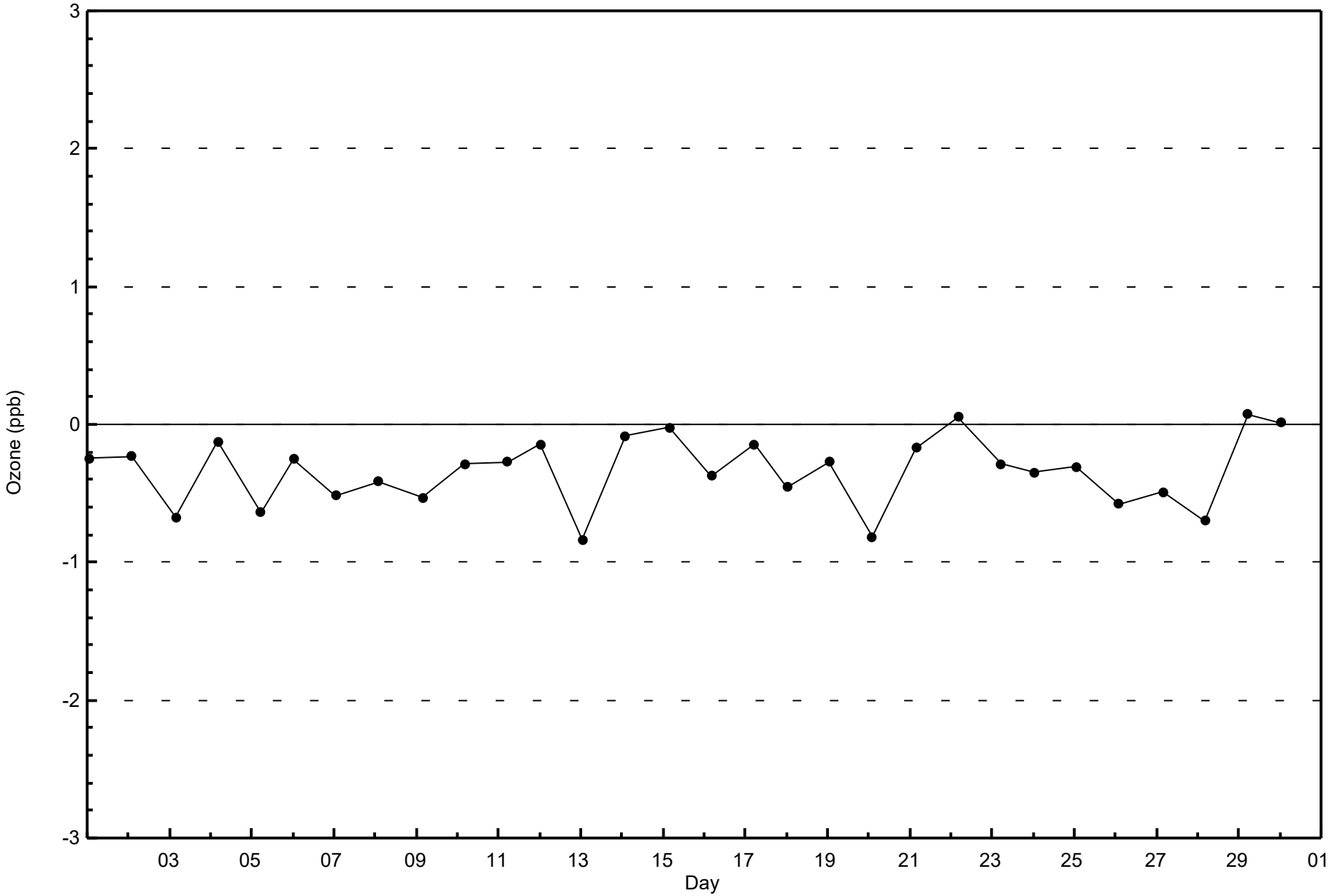
Total Number of Valid Hours: 683

Wood Buffalo Environmental Association

Zero Responses

Ozone (O_3) - ppb

Fort McKay - Bertha Ganter - September 2024

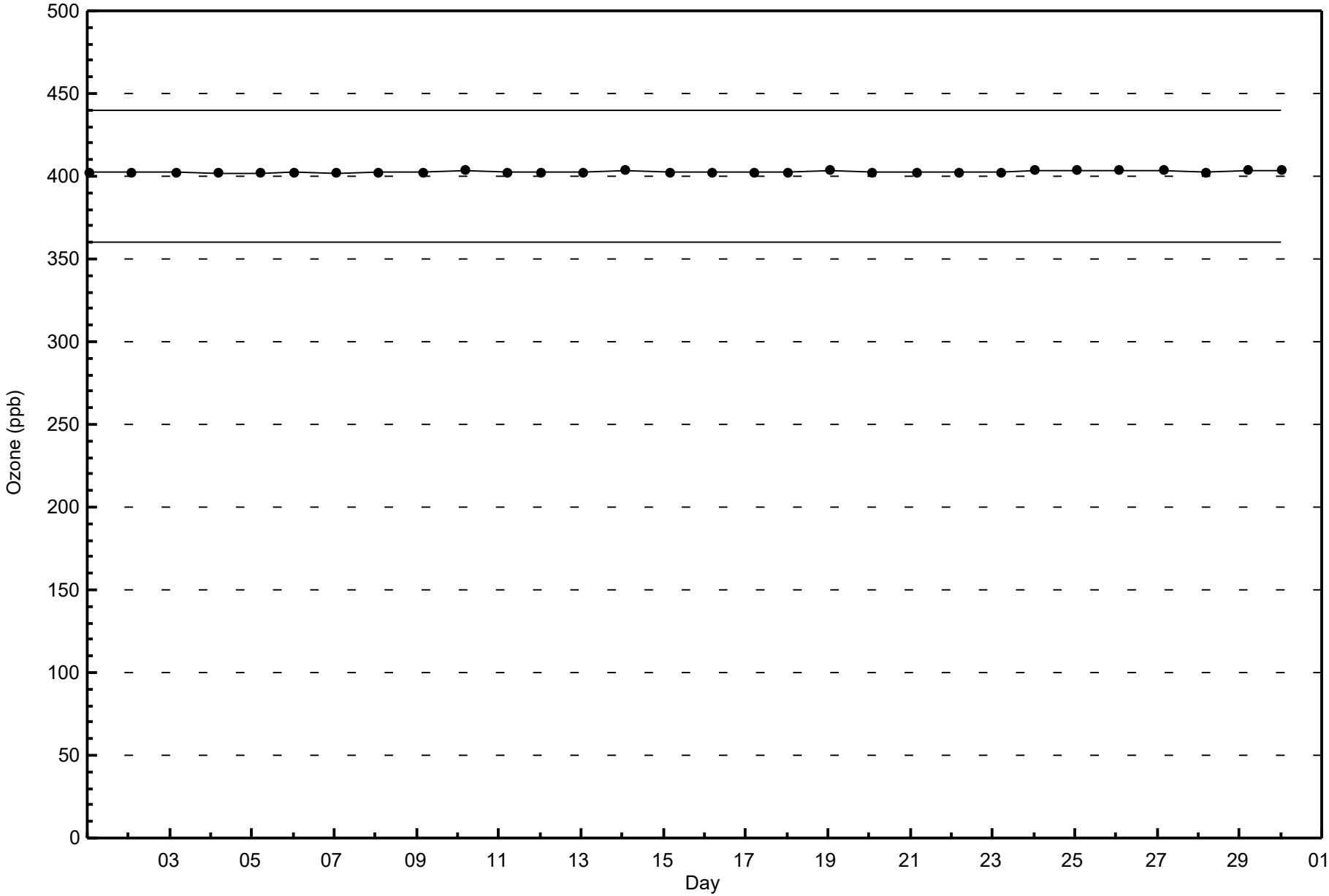


Wood Buffalo Environmental Association

Span Responses

Ozone (O_3) - ppb

Fort McKay - Bertha Ganter - September 2024



Wood Buffalo Environmental Association

Summary of Hour Averages

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

Fort McKay - Bertha Ganter - September 2024

Number of Exceedences (AAAQO): 1-hr: 59 24-hr: 6

Maximum Value: 183.1 $\mu g/m^3$ on Sep 12 15:00

Maximum Daily Average: 106.9 $\mu g/m^3$ on Sep 13

Minimum Value: 0.6 $\mu g/m^3$ on Sep 28 05:00

Minimum Daily Average: 4.4 $\mu g/m^3$ on Sep 27

Maximum Diurnal Average: 30.7 $\mu g/m^3$ at hour 12

Minimum Diurnal Average: 19.7 $\mu g/m^3$ at hour 3

Monthly Average: 23.94 $\mu g/m^3$

Percentiles: P_1 = 1.3 P_{10} = 3.9 Q_1 = 6.8 Median = 11.4 Q_3 = 22.8 P_{90} = 66.2 P_{99} = 151.9

Hours in Service:	720
Hours of Data:	718
Hours of Missing Data:	2
Hours of Calibration:	2
Percent Operational Time:	100.0

Day	Hourly Period Ending At (MST)																								Daily	Daily
	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24	Average	Maximum
1-Sep	14.1	15.5	18.2	19.3	17.9	13.3	18.9	16.0	11.9	11.8	13.8	19.7	15.6	5.3	3.7	3.9	4.0	3.9	6.8	10.2	19.0	32.8	33.5	20.7	14.6	33.5
2-Sep	20.7	23.2	20.3	18.9	19.4	19.9	19.3	20.0	17.4	20.1	21.9	19.8	14.7	9.5	4.6	4.9	6.1	9.4	12.2	15.4	22.1	36.4	16.6	9.7	16.8	36.4
3-Sep	8.8	7.4	8.1	12.3	19.0	18.7	18.9	17.5	15.8	15.2	7.9	8.4	15.9	13.4	13.5	14.4	16.6	14.1	8.2	37.5	8.9	7.9	7.0	9.8	13.5	37.5
4-Sep	14.1	6.9	7.3	6.2	6.4	7.4	8.0	8.2	8.6	7.9	8.4	9.3	8.7	8.1	6.1	4.8	4.5	4.5	4.5	8.2	8.8	6.2	5.5	4.8	7.2	14.1
5-Sep	6.2	7.8	7.6	7.6	6.1	5.6	5.1	5.2	7.5	10.4	27.3	15.9	18.6	21.3	19.5	19.1	16.7	16.3	20.7	26.2	24.6	22.9	16.4	14.6	14.6	27.3
6-Sep	14.1	12.5	8.6	7.6	7.6	8.3	10.1	14.0	13.6	17.3	11.6	13.6	14.9	20.2	27.0	25.3	18.1	24.8	16.4	17.7	18.3	17.2	16.7	17.4	15.5	27.0
7-Sep	19.3	19.9	22.3	27.5	35.1	39.1	49.6	56.6	90.2	107.6	107.3	140.2	162.8	153.7	69.2	44.0	35.8	38.4	44.1	52.4	67.2	75.0	76.7	83.8	67.4	162.8
8-Sep	86.8	88.2	96.1	101.8	98.9	104.9	107.4	110.4	120.6	132.2	143.4	148.8	136.3	128.6	114.8	90.7	87.7	90.1	106.9	99.3	87.0	77.0	53.1	25.2	101.5	148.8
9-Sep	40.4	43.9	45.5	56.5	63.6	77.6	73.0	55.2	49.9	49.6	51.6	47.3	26.4	19.1	14.0	7.7	6.8	8.7	9.7	7.7	7.2	9.2	20.3	40.7	34.7	77.6
10-Sep	43.5	36.3	28.0	25.6	24.2	20.4	17.6	15.6	14.9	14.5	12.6	11.4	16.2	23.3	23.9	25.3	18.6	13.4	18.1	20.4	15.1	13.5	13.6	10.7	19.9	43.5
11-Sep	9.2	8.9	9.7	9.5	8.4	8.6	8.3	14.0	17.2	13.4	19.3	17.4	20.6	23.6	25.1	24.5	27.2	28.0	25.8	31.3	32.6	29.7	33.9	32.4	20.0	33.9
12-Sep	33.4	31.9	29.4	29.0	30.5	41.3	65.8	64.1	68.6	69.5	80.8	92.7	91.3	137.3	183.1	155.4	155.6	153.9	142.2	143.8	143.7	152.1	153.5	151.3	100.0	183.1
13-Sep	140.9	139.9	130.6	124.2	127.9	130.8	127.9	127.8	118.3	120.2	123.3	129.2	122.4	130.1	131.6	105.5	85.3	69.8	70.5	69.3	73.0	59.8	55.0	53.1	106.9	140.9
14-Sep	46.1	40.8	35.4	32.3	32.0	34.9	36.1	34.7	36.4	37.5	36.0	36.7	32.4	36.7	43.9	34.6	24.2	19.9	22.9	37.0	33.8	31.4	30.9	30.6	34.1	46.1
15-Sep	28.5	25.5	22.9	28.5	22.5	20.4	19.9	20.8	19.2	12.7	8.2	9.3	9.9	10.2	11.9	14.4	17.6	18.9	31.8	26.5	21.4	20.0	22.2	19.0	19.3	31.8
16-Sep	14.8	14.8	16.3	18.8	19.8	19.7	16.3	15.0	12.4	6.6	6.3	6.4	3.3	3.3	3.1	2.9	2.6	2.6	3.2	4.8	6.8	7.9	3.9	4.2	9.0	19.8
17-Sep	7.4	7.0	7.2	6.9	7.2	7.4	8.1	10.4	10.0	9.3	13.2	11.7	12.7	11.5	9.9	7.9	7.0	7.1	10.6	8.5	22.0	15.5	24.1	16.2	10.8	24.1
18-Sep	13.0	13.6	8.5	9.5	8.7	9.6	8.7	8.7	8.2	4.6	4.6	16.8	21.5	18.7	10.7	8.5	5.7	5.7	10.7	8.9	6.9	7.0	11.0	14.8	10.2	21.5
19-Sep	10.2	16.2	8.2	7.9	8.1	12.9	15.5	20.2	20.8	26.1	24.9	24.7	21.7	18.5	17.3	18.5	30.5	20.7	37.7	33.6	17.1	16.8	16.9	11.8	19.0	37.7
20-Sep	11.4	10.6	10.3	9.1	8.9	9.8	8.7	8.8	8.4	11.3	17.2	17.5	17.4	19.4	17.3	11.6	6.7	5.9	8.2	4.2	4.0	8.3	8.0	5.8	10.4	19.4
21-Sep	5.2	5.2	5.8	4.0	4.2	4.3	4.5	4.7	4.6	10.0	23.0	20.8	20.5	18.3	19.4	14.3	8.9	11.4	11.3	10.9	8.1	7.0	7.3	5.9	10.0	23.0
22-Sep	5.3	5.5	5.7	5.8	5.5	7.6	6.1	8.5	9.7	9.4	18.4	35.1	16.6	12.0	9.2	8.2	12.9	11.1	9.2	8.3	6.9	8.0	7.4	7.6	10.0	35.1
23-Sep	7.5	7.5	7.6	7.9	7.2	6.9	7.1	6.5	7.0	7.2	C	C	22.7	36.9	23.3	19.7	14.4	5.8	5.1	4.9	4.6	6.1	6.8	6.1	10.4	36.9
24-Sep	5.1	4.6	3.9	3.4	3.4	4.1	4.3	4.6	4.1	2.0	1.9	1.7	2.3	2.3	2.2	2.2	2.0	2.3	9.0	15.1	15.7	4.9	4.0	4.5	4.6	15.7
25-Sep	5.7	9.1	8.2	9.7	8.6	10.0	8.2	8.1	7.3	7.5	7.7	6.6	9.3	9.4	9.2	7.9	8.5	7.9	6.3	8.4	9.2	9.6	2.8	3.0	7.8	10.0
26-Sep	2.9	3.0	2.9	3.9	7.4	8.5	11.6	11.9	11.6	11.5	13.5	7.7	4.4	3.9	3.7	3.8	4.2	4.3	4.3	4.7	4.5	6.6	5.8	5.1	6.3	13.5
27-Sep	11.9	9.3	6.7	5.3	4.9	6.9	6.1	5.3	4.0	3.0	2.8	2.4	2.4	2.3	2.0	2.0	3.0	4.7	6.9	2.9	3.5	3.0	2.8	2.6	4.4	11.9
28-Sep	1.5	1.1	0.9	0.8	0.6	0.8	1.4	1.5	1.4	1.3	1.3	1.3	1.2	1.7	2.9	3.4	3.8	3.8	6.9	9.2	10.6	9.6	31.9	24.9	5.2	31.9
29-Sep	8.2	6.2	6.2	6.3	6.6	7.8	7.4	8.5	8.8	7.8	7.2	6.8	7.3	6.9	6.9	5.9	4.3	4.1	4.9	6.5	4.7	4.1	3.9	3.6	6.3	8.8
30-Sep	3.3	3.2	3.8	4.6	5.1	5.6	6.2	8.2	15.3	20.6	22.5	11.0	5.2	3.6	2.9	3.4	4.0	3.2	3.4	5.7	13.4	3.3	3.6	2.6	6.8	22.5
	21.3	20.8	19.7	20.4	20.9	22.4	23.5	23.7	24.8	25.9	28.9	30.7	29.2	30.3	27.7	23.2	21.4	20.5	22.6	24.7	24.0	23.6	23.2	21.4	Diurnal Average	
	140.9	139.9	130.6	124.2	127.9	130.8	127.9	127.8	120.6	132.2	143.4	148.8	162.8	153.7	183.1	155.4	155.6	153.9	142.2	143.8	143.7	152.1	153.5	151.3	Diurnal Maximum	

C - Calibration

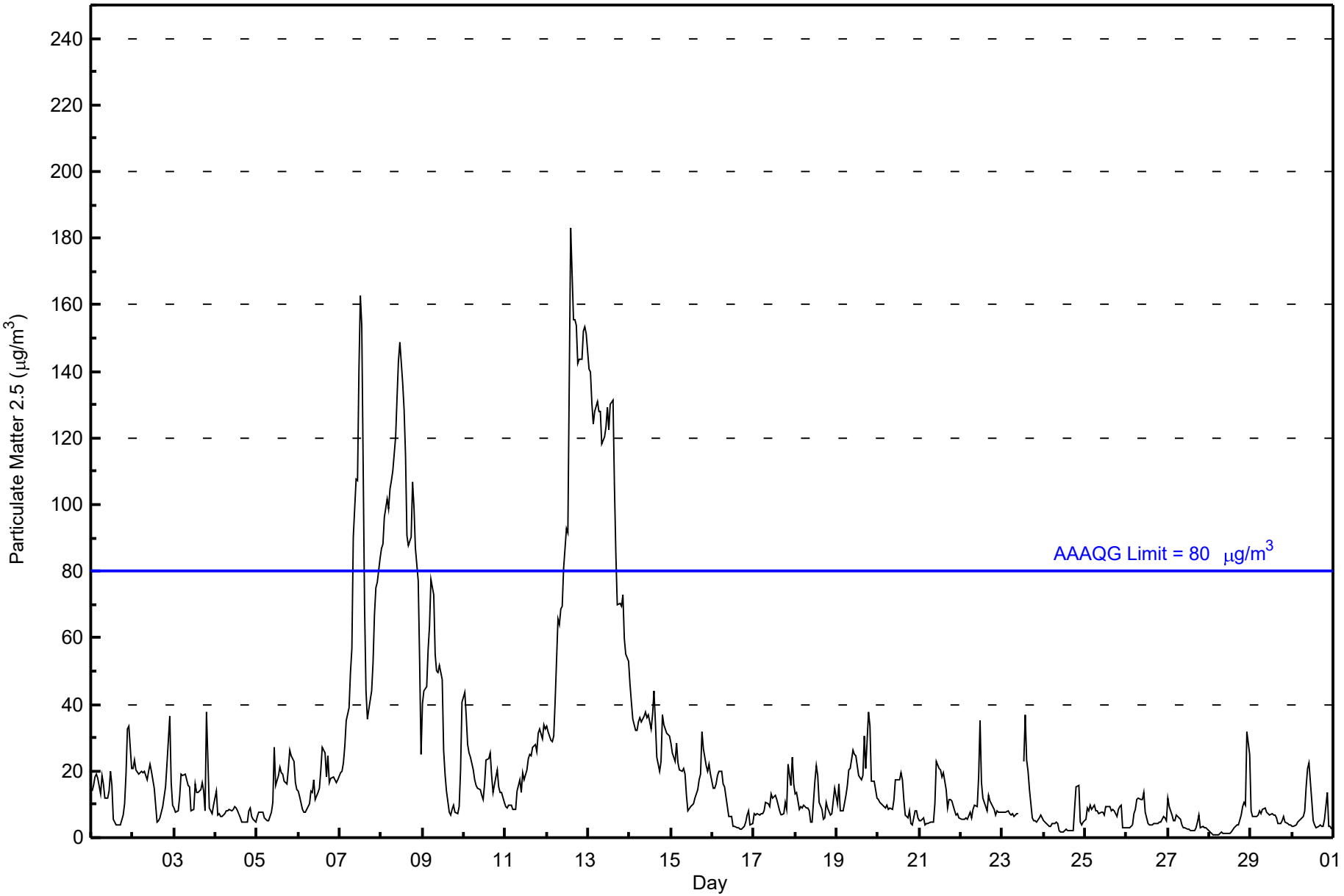
Alberta Ambient Air Quality Guideline/Objectives: 1-hr 80 $\mu g/m^3$ 24-hr 29 $\mu g/m^3$

Wood Buffalo Environmental Association

Hourly Averages

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

Fort McKay - Bertha Ganter - September 2024



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

Fort McKay - Bertha Ganter - September 2024

Concentration Ranges ($\mu g/m^3$)	Number of Hours	%	Cumulative %
0 - 5	135	18.80	18.80
6 - 15	289	40.25	59.05
16 - 25	136	18.94	77.99
26 - 80	99	13.79	91.78
> 81.0	59	8.22	100.00

Total Number of Valid Hours: 718

Total Number of Hours: 720

Wood Buffalo Environmental Association

Frequency Distribution

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

Fort McKay - Bertha Ganter - September 2024

Concentration Ranges ($\mu g/m^3$)	Wind Direction																
	N	NNE	NE	ENE	E	ESE	SE	SSE	S	SSW	SW	WSW	W	WNW	NW	NNW	**Totals**
0 - 5	2	0	1	0	1	0	1	2	14	16	20	15	10	28	17	8	135
6 - 15	24	10	1	1	2	3	6	25	47	24	17	18	18	53	25	14	288
16 - 25	7	4	3	2	0	1	5	30	32	11	5	3	6	13	9	5	136
26 - 80	16	5	0	0	0	1	1	11	10	1	9	4	8	12	8	13	99
> 81.0	10	4	1	0	1	2	6	9	9	1	0	0	0	10	3	3	59
Totals	59	23	6	3	4	7	19	77	112	53	51	40	42	116	62	43	717

Total Number of Valid Hours: 717

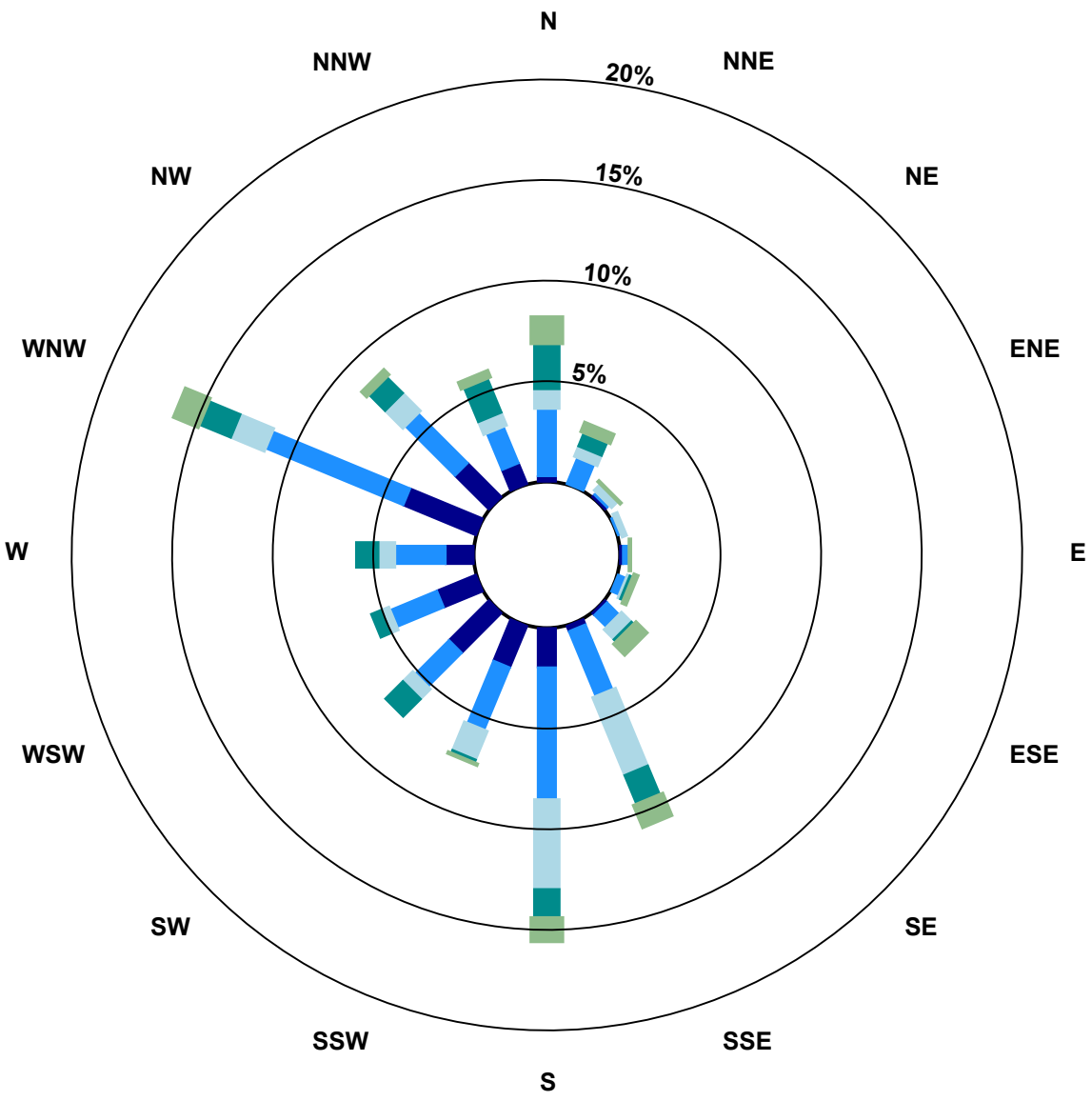
Total Number of Hours: 720

Wood Buffalo Environmental Association

Wind Rose Sep 2024

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

Fort McKay - Bertha Ganter



Classes ($\mu g/m^3$)

0 - 5

6 - 15

16 - 25

26 - 80

> 81.0

Total Number of Valid Hours: 717

Wood Buffalo Environmental Association

Summary of Hour Averages

Carbon Monoxide (CO) - ppm

Fort McKay - Bertha Ganter - September 2024

Number of Exceedences (AAAQO): 1-hr: 0 24-hr: 0
Maximum Value: 1.0 ppm on Sep 12 15:00
Maximum Daily Average: 0.7 ppm on Sep 12

Minimum Value: 0.2 ppm on Sep 30 08:00
Maximum Diurnal Average: 0.4 ppm at hour 14
Monthly Average: 0.40 ppm
Minimum Daily Average: 0.3 ppm on Sep 30
Minimum Diurnal Average: 0.4 ppm at hour 5
Percentiles: P_1 = 0.2 P_{10} = 0.3 Q_1 = 0.3 Median = 0.4 Q_3 = 0.4 P_{90} = 0.5 P_{99} = 0.9

Hours in Service:	720
Hours of Data:	684
Hours of Missing Data:	36
Hours of Calibration:	34
Percent Operational Time:	99.7

Day	Hourly Period Ending At (MST)																								Daily	Daily
	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24	Average	Maximum
1-Sep	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	0.3	0.3	0.4	0.4	0.4	0.4	0.4	0.4	0.4
2-Sep	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	0.3	0.3	0.3	0.3	0.4	0.4	0.4	0.5	0.4	0.4	0.4	0.5
3-Sep	Z	0.4	0.4	0.4	0.5	0.4	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	0.3	0.3	0.3	0.4	0.5
4-Sep	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	0.4	0.3	0.3	0.3	0.3	0.3	0.4	0.4	0.3	0.3	0.3	0.4	0.4
5-Sep	0.4	0.4	Z	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	0.4	0.4	0.4	0.4	0.4	0.4
6-Sep	0.4	0.3	0.3	Z	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	0.5	0.4	0.4	0.4	0.4	0.4	0.4	0.4	0.5
7-Sep	0.4	0.4	0.4	0.4	Z	0.4	0.5	0.5	0.6	0.6	0.7	0.8	0.9	0.8	0.5	0.5	0.4	0.5	0.5	0.5	0.5	0.6	0.6	0.6	0.5	0.9
8-Sep	0.6	0.6	0.6	0.6	0.6	Z	0.6	0.7	0.7	0.7	0.8	0.8	0.8	0.8	0.7	0.7	0.7	0.7	0.7	0.7	0.6	0.6	0.5	0.4	0.7	0.8
9-Sep	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	0.4	0.4	0.4	0.5	0.4	0.4	0.4	0.4	0.5	0.5	0.5
10-Sep	0.5	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	0.3	0.3	0.4	0.5	0.4	0.3	0.3	0.3	0.4	0.5
11-Sep	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	0.4	0.3	0.4	0.4	0.4	0.4	0.4	0.4	0.4	0.4	0.3	0.4
12-Sep	0.4	0.4	0.4	Z	0.4	0.5	0.6	0.6	0.6	0.6	0.6	0.6	0.6	0.8	1.0	0.9	1.0	1.0	0.9	0.9	0.9	0.9	0.9	0.9	0.7	1.0
13-Sep	0.8	0.8	0.8	0.8	Z	0.8	0.8	0.7	0.7	0.7	0.8	0.8	0.8	0.8	0.8	0.7	0.6	0.6	0.6	0.6	0.6	0.5	0.5	0.5	0.7	0.8
14-Sep	0.5	0.5	0.4	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	0.4	0.4	0.4	0.4	0.4	0.4	0.4	0.4	0.4	0.5
15-Sep	Z	0.4	0.4	0.4	0.4	0.3	0.3	0.3	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
16-Sep	0.3	Z	0.4	0.4	0.4	0.4	0.4	0.4	0.4	0.4	C	C	C	C	0.3	0.3	0.3	0.3	0.4	0.4	0.4	0.3	0.3	0.3	0.4	0.4
17-Sep	0.4	0.3	Z	0.3	0.3	0.3	0.3	0.4	0.3	0.3	0.3	0.3	0.4	0.3	0.3	0.3	0.3	0.3	0.3	0.4	0.5	0.5	0.5	0.4	0.4	0.5
18-Sep	0.4	0.4	0.3	Z	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	0.3	0.3	0.4	0.3	0.3	0.4
19-Sep	0.4	0.4	0.3	0.3	Z	0.3	0.3	0.3	0.3	0.4	0.4	0.4	0.3	0.3	0.3	0.4	0.4	0.4	0.4	0.4	0.3	0.3	0.3	0.3	0.3	0.4
20-Sep	0.4	0.4	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	0.4
21-Sep	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	0.3	0.3	0.4	0.4	0.3	0.3	0.3	0.3	0.3	0.3	0.4
22-Sep	0.3	Z	0.3	0.3	0.3	0.3	0.3	0.4	0.3	0.3	0.3	0.3	0.3	0.3	0.3	0.3	0.3	0.4	0.4	0.4	0.4	0.4	0.4	0.3	0.3	0.4
23-Sep	0.4	0.4	Z	0.3	0.3	0.3	0.3	0.3	0.3	0.3	0.4	0.4	0.4	0.4	0.4	0.4	0.4	0.4	0.4	0.4	0.4	0.4	0.4	0.4	0.4	0.4
24-Sep	0.4	0.4	0.4	Z	0.3	0.4	0.3	0.4	0.4	0.4	0.4	0.4	M	M	0.3	0.3	0.3	0.3	0.4	0.5	0.5	0.4	0.3	0.3	0.4	0.5
25-Sep	0.3	0.4	0.4	0.3	Z	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	0.5	0.5	0.3	0.4	0.4	0.5
26-Sep	0.3	0.3	0.4	0.4	0.4	Z	0.4	0.4	0.4	0.4	0.4	0.4	0.4	0.3	0.3	0.3	0.4	0.3	0.3	0.3	0.3	0.4	0.3	0.3	0.4	0.4
27-Sep	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	0.4	0.3	0.3	0.4	0.4	0.3	0.4	0.3	0.4
28-Sep	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	0.4	0.4	0.4	0.4	0.5	0.4	0.3	0.5
29-Sep	0.4	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	0.4
30-Sep	0.2	0.2	0.2	Z	0.2	0.2	0.2	0.2	0.3	0.3	0.3	0.3	0.2	0.2	0.2	0.2	0.3	0.2	0.3	0.3	0.4	0.3	0.2	0.2	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	0.4	0.4	0.4	0.4	0.4	0.4	0.4	0.4	0.4	Diurnal Average	
	0.8	0.8	0.8	0.8	0.6	0.8	0.8	0.7	0.7	0.7	0.8	0.8	0.9	0.8	1.0	0.9	1.0	1.0	0.9	0.9	0.9	0.9	0.9	0.9	Diurnal Maximum	

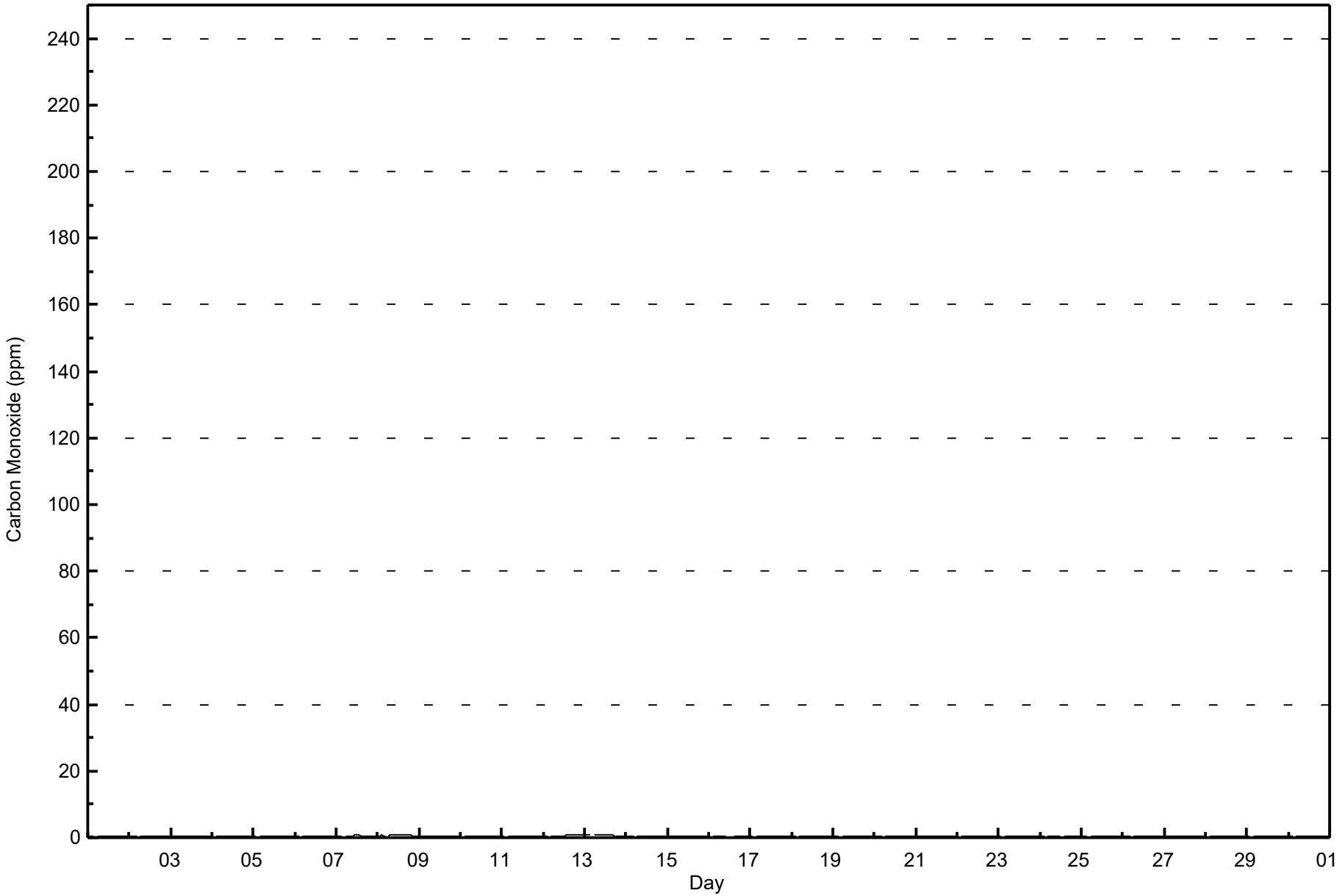
Z - zerospan C - Calibration M - Maintenance
Alberta Ambient Air Quality Objectives (AAAQO): 1-hr 13 ppm

Wood Buffalo Environmental Association

Hourly Averages

Carbon Monoxide (CO) - ppm

Fort McKay - Bertha Ganter - September 2024



Concentration Ranges (ppm)	Number of Hours	%	Cumulative %
0 - 0.3	291	42.54	42.54
0.4 - 0.5	325	47.51	90.06
0.6 - 0.7	39	5.70	95.76
0.8 - 1.4	29	4.24	100.00
1.5 - 10	0	0.00	100.00
> 10	0	0.00	100.00

Total Number of Valid Hours: 684

Total Number of Hours: 720

Wood Buffalo Environmental Association

Frequency Distribution

Carbon Monoxide (CO) - ppm

Fort McKay - Bertha Ganter - September 2024

Concentration							**Wind Direction**										
Ranges (ppm)	N	NNE	NE	ENE	E	ESE	SE	SSE	S	SSW	SW	WSW	W	WNW	NW	NNW	**Totals**
0 - 0.3	24	9	2	2	2	4	9	25	29	21	24	16	14	59	32	19	291
0.4 - 0.5	19	9	3	1	2	1	5	43	65	29	26	19	25	38	22	17	324
0.6 - 0.7	9	4	1	0	1	0	3	5	6	0	0	0	1	2	1	6	39
0.8 - 1.4	5	0	0	0	0	2	3	4	3	1	0	0	0	8	2	1	29
1.5 - 10	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
Totals	57	22	6	3	5	7	20	77	103	51	50	35	40	107	57	43	683

Total Number of Valid Hours: 683

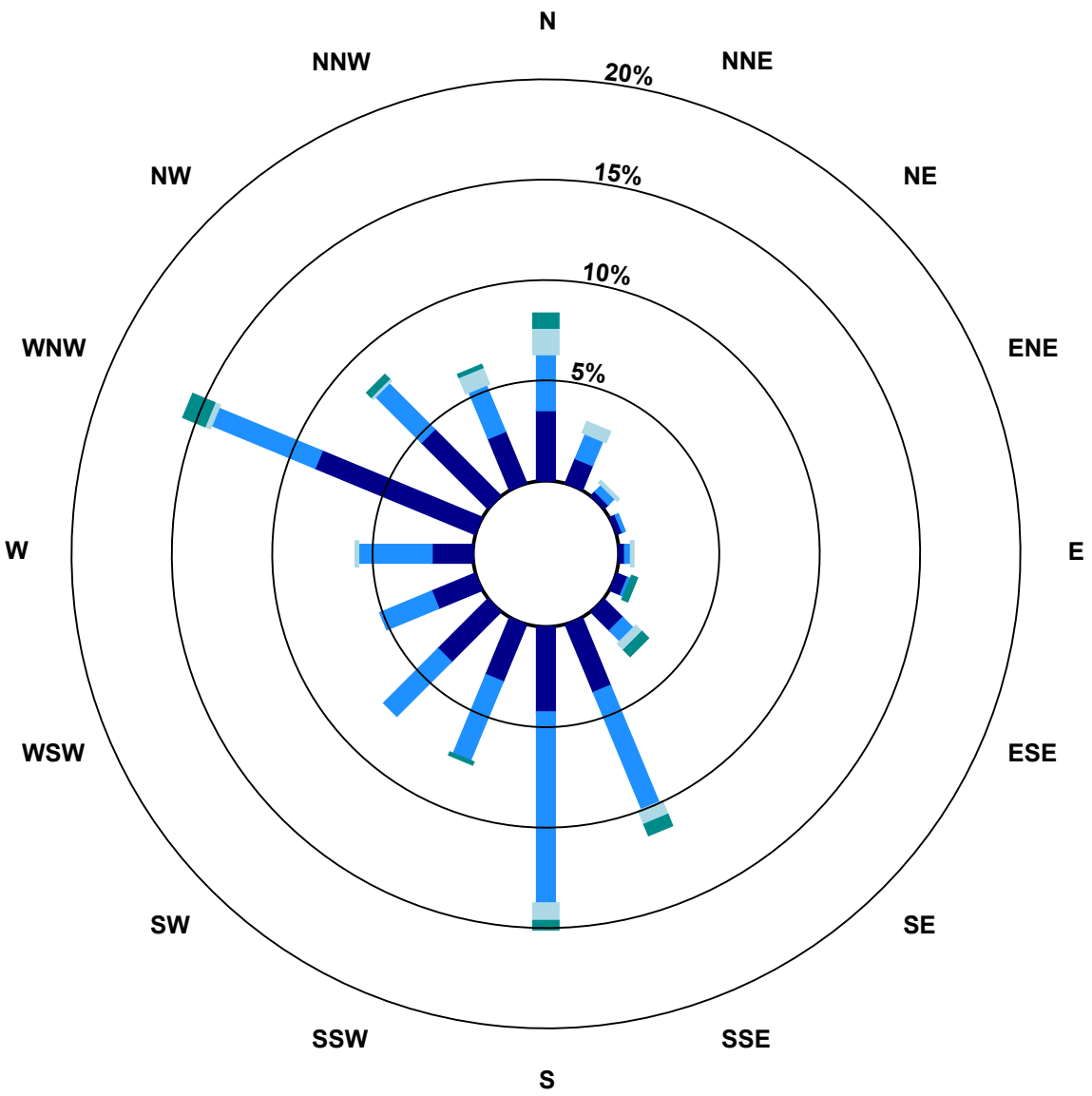
Total Number of Hours: 720

Wood Buffalo Environmental Association

Wind Rose Sep 2024

Carbon Monoxide (CO) - ppm

Fort McKay - Bertha Ganter



Classes (ppm)

0 - 0.3

0.4 - 0.5

0.6 - 0.7

0.8 - 1.4

1.5 - 10

> 10

Total Number of Valid Hours: 683

Wood Buffalo Environmental Association

Summary of Hour Averages

Carbon Dioxide (CO_2) - ppm

Fort McKay - Bertha Ganter - September 2024

Number of Exceedences (AAAQO): 1-hr: 0 24-hr: 0

Maximum Value: 544.8 ppm on Sep 25 07:00

Maximum Daily Average: 490.3 ppm on Sep 25

Minimum Value: 420.3 ppm on Sep 28 16:00

Minimum Daily Average: 431.0 ppm on Sep 28

Maximum Diurnal Average: 483.3 ppm at hour 7

Minimum Diurnal Average: 431.6 ppm at hour 17

Monthly Average: 453.60 ppm

Percentiles: P_1 = 421.4 P_{10} = 429.0 Q_1 = 434.1 Median = 447.7 Q_3 = 468.2 P_{90} = 487.9 P_{99} = 520.0

Hours in Service:	720
Hours of Data:	686
Hours of Missing Data:	34
Hours of Calibration:	34
Percent Operational Time:	100.0

Day	Hourly Period Ending At (MST)																								Daily	Daily
	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24	Average	Maximum
1-Sep	471.5	467.4	449.1	452.8	Z	458.0	461.5	468.2	461.4	459.6	454.8	457.6	439.7	430.4	430.1	431.0	430.5	431.7	432.1	437.8	460.2	457.6	466.0	485.0	451.9	485.0
2-Sep	499.6	508.1	507.3	523.8	528.3	Z	537.4	515.1	486.9	475.5	469.6	454.5	438.6	434.4	433.1	432.5	433.6	433.0	436.9	441.1	442.4	433.2	431.1	432.2	466.4	537.4
3-Sep	Z	434.3	437.5	441.8	445.0	455.0	463.0	450.0	440.9	438.3	431.0	428.4	428.2	428.5	427.6	428.8	428.5	427.8	430.5	439.5	445.2	439.2	438.9	449.1	438.1	463.0
4-Sep	461.0	Z	469.5	473.3	477.3	480.8	478.5	466.4	446.4	429.7	425.4	423.5	421.8	421.7	422.0	421.2	420.9	420.9	421.5	434.2	436.9	439.5	442.3	445.2	442.6	480.8
5-Sep	438.4	442.9	Z	453.0	461.1	465.9	467.9	463.0	454.2	443.7	451.5	433.0	432.3	430.0	426.6	426.2	423.0	421.1	424.6	430.2	431.3	434.1	433.7	436.8	440.2	467.9
6-Sep	437.1	437.6	442.0	Z	443.4	448.1	460.7	453.5	444.7	440.7	434.8	432.0	429.4	426.9	426.5	426.8	427.9	427.6	430.5	439.1	450.7	460.7	453.5	458.0	440.5	460.7
7-Sep	470.7	475.7	487.6	495.0	Z	500.9	497.2	502.2	479.7	468.3	476.0	467.6	452.8	436.4	431.4	430.4	430.5	431.1	435.9	437.5	440.5	441.2	445.6	447.4	460.1	502.2
8-Sep	449.4	460.5	461.4	475.8	483.6	Z	516.1	496.9	483.8	474.6	472.6	463.7	453.5	449.2	442.9	437.1	435.6	438.7	447.7	461.3	465.7	465.9	455.1	447.6	462.6	516.1
9-Sep	Z	466.3	468.2	471.1	480.9	467.4	464.9	453.8	451.1	448.6	447.7	439.2	436.4	441.4	441.4	437.4	432.5	433.0	434.3	435.3	436.9	439.0	443.3	444.0	448.4	480.9
10-Sep	443.9	Z	444.6	446.3	447.3	446.5	446.1	443.3	439.0	434.4	430.6	427.2	426.7	427.7	423.7	422.8	425.3	425.4	431.0	444.8	448.7	453.4	457.4	456.1	438.8	457.4
11-Sep	462.7	473.9	Z	487.6	499.7	504.5	508.4	484.8	474.1	451.1	443.2	442.0	437.6	434.0	431.6	429.8	429.7	429.9	435.0	442.0	454.3	455.8	449.4	470.0	457.9	508.4
12-Sep	469.9	481.5	491.6	Z	531.1	492.5	462.2	480.8	465.1	453.1	443.1	432.2	429.5	434.6	433.7	432.1	433.1	433.6	436.9	449.8	456.4	461.3	480.3	484.1	459.5	531.1
13-Sep	490.3	482.7	493.9	499.7	Z	493.3	492.5	487.5	477.6	472.7	461.4	454.3	444.1	436.9	435.7	435.1	433.4	433.4	434.1	435.9	436.1	436.8	445.5	452.5	459.3	499.7
14-Sep	453.6	453.2	452.9	452.8	459.8	Z	462.0	456.4	447.9	437.4	429.2	427.4	426.9	426.8	425.9	425.6	426.2	428.2	435.2	440.1	442.7	458.6	467.9	474.6	444.0	474.6
15-Sep	Z	471.1	471.5	485.4	498.7	510.6	515.0	495.1	475.6	454.1	439.1	436.2	434.4	432.8	432.1	431.7	430.4	433.8	445.3	449.3	459.9	466.8	476.0	478.6	461.9	515.0
16-Sep	480.8	Z	484.1	502.5	499.9	491.6	490.9	483.6	466.4	445.9	438.4	433.6	431.7	430.9	429.6	428.6	428.4	429.4	431.9	438.6	453.8	443.9	444.6	442.8	454.4	502.5
17-Sep	453.0	452.9	Z	462.5	470.6	480.7	484.9	484.2	464.3	450.4	446.5	443.2	443.0	435.7	431.0	429.3	428.8	431.7	434.9	443.9	452.9	468.7	479.1	476.6	454.3	484.9
18-Sep	480.0	488.5	491.9	Z	517.7	504.8	492.0	475.4	466.3	454.2	442.2	436.1	433.4	431.4	430.2	429.9	429.8	430.5	436.0	443.4	449.2	454.0	459.3	466.3	458.4	517.7
19-Sep	468.1	474.6	477.4	481.1	Z	486.5	498.0	502.3	494.7	480.4	471.4	455.5	441.5	435.6	433.9	433.6	433.1	437.1	443.8	454.8	449.4	456.4	462.0	462.7	462.4	502.3
20-Sep	463.1	472.5	476.4	478.7	482.8	Z	485.8	472.8	463.3	455.8	446.8	437.8	434.3	433.5	433.0	431.1	430.8	431.5	433.7	436.2	438.7	444.7	452.5	453.7	451.7	485.8
21-Sep	Z	460.6	463.4	463.3	470.5	472.8	469.8	463.0	461.3	466.1	473.6	462.2	451.9	449.6	438.3	433.0	431.1	433.4	439.0	439.8	438.1	442.2	443.8	440.9	452.5	473.6
22-Sep	448.7	Z	460.5	471.3	483.7	491.3	485.0	488.2	464.6	459.5	457.4	459.6	440.8	438.0	434.7	434.0	440.7	442.2	445.4	447.1	449.9	458.0	461.5	465.6	457.7	491.3
23-Sep	466.0	468.7	Z	487.4	497.4	495.6	495.3	501.4	485.4	465.5	458.5	451.2	455.8	464.3	459.0	460.3	453.9	448.4	447.9	450.8	450.0	451.0	455.6	461.9	466.6	501.4
24-Sep	466.5	471.9	485.8	Z	495.3	497.7	504.1	499.5	476.4	452.9	C	C	C	C	432.2	432.1	432.7	434.7	441.3	460.5	463.5	469.2	478.3	486.8	467.4	504.1
25-Sep	511.0	509.2	519.6	519.1	Z	532.4	544.8	522.0	511.2	505.6	498.6	490.2	465.5	470.4	461.5	460.0	462.1	461.3	460.1	463.4	479.5	483.7	470.7	474.8	490.3	544.8
26-Sep	474.8	465.9	469.5	471.0	469.0	Z	461.7	459.3	458.3	454.5	448.8	441.2	435.9	434.3	433.8	434.0	435.0	435.9	442.2	446.3	451.4	463.0	462.4	469.6	453.0	474.8
27-Sep	Z	485.7	490.6	503.6	493.0	496.6	492.4	491.5	474.7	460.1	445.2	434.9	431.9	431.0	430.7	430.8	432.6	436.1	435.5	436.7	438.0	434.4	433.2	434.6	455.4	503.6
28-Sep	433.1	Z	428.7	429.1	428.6	429.1	429.3	429.2	427.8	426.2	424.8	423.6	422.8	421.4	421.0	420.3	420.3	421.8	430.7	435.4	435.4	445.2	460.1	469.1	431.0	469.1
29-Sep	469.7	470.7	Z	479.5	478.7	491.0	488.8	486.5	467.0	460.0	454.0	441.0	435.8	433.2	428.4	426.3	424.8	424.8	428.3	435.7	433.7	433.1	434.7	439.3	450.7	491.0
30-Sep	434.4	433.1	432.2	Z	435.7	441.7	444.2	445.0	437.6	433.0	428.2	423.4	422.8	423.1	423.0	423.1	423.4	423.7	427.2	437.2	438.8	442.1	437.9	435.1	432.4	445.0
	463.9	468.4	470.3	476.3	479.2	481.4	483.3	477.4	464.9	455.1	449.8	443.2	437.2	435.3	432.8	431.8	431.6	432.4	436.3	442.9	447.7	451.1	454.1	458.0	Diurnal Average	
	511.0	509.2	519.6	523.8	531.1	532.4	544.8	522.0	511.2	505.6	498.6	490.2	465.5	470.4	461.5	460.3	462.1	461.3	460.1	463.4	479.5	483.7	480.3	486.8	Diurnal Maximum	

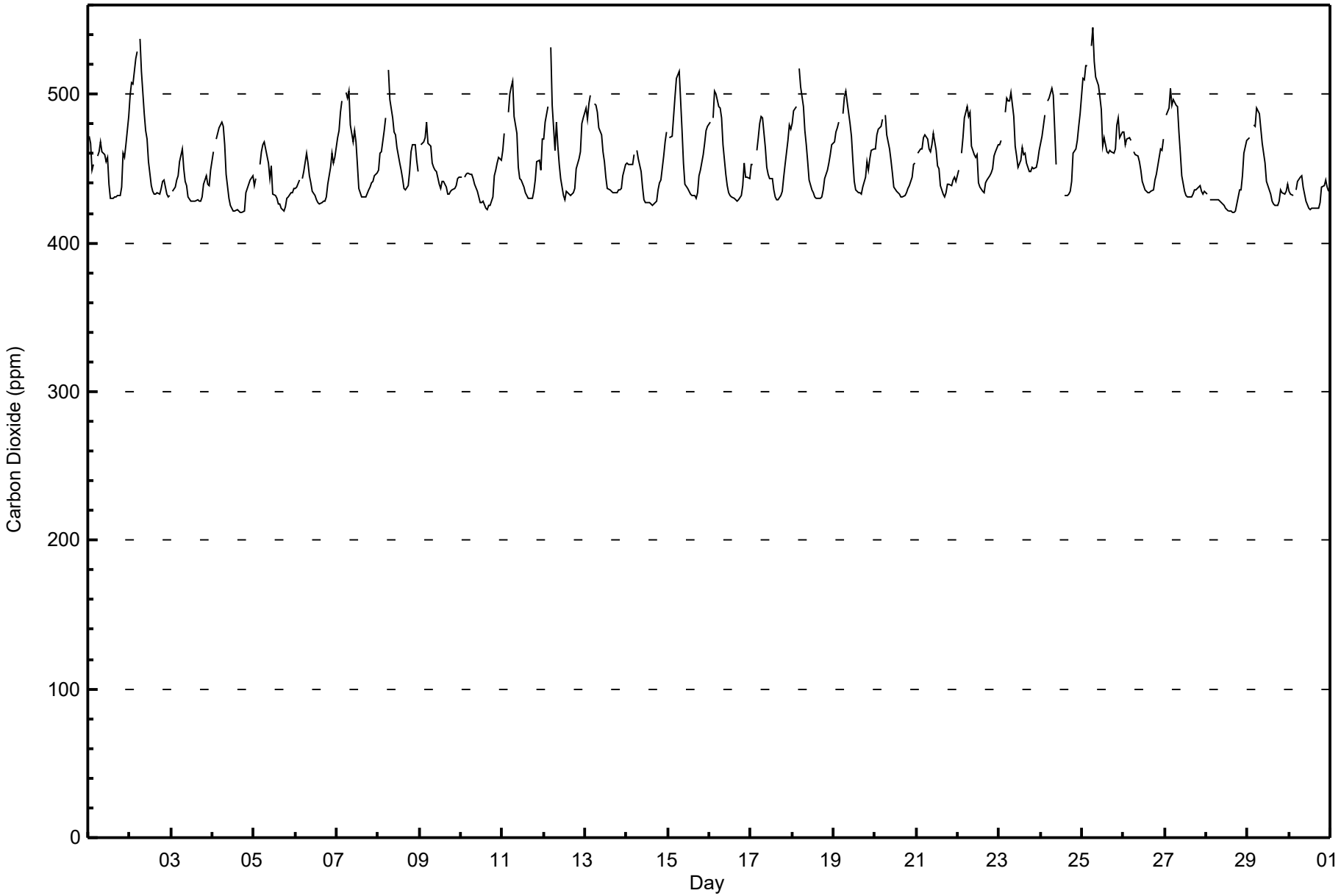
Z - zerospan C - Calibration

Wood Buffalo Environmental Association

Hourly Averages

Carbon Dioxide (CO_2) - ppm

Fort McKay - Bertha Ganter - September 2024



Carbon Dioxide (CO_2) - ppm

Fort McKay - Bertha Ganter - September 2024

Concentration Ranges (ppm)	Number of Hours	%	Cumulative %
400 - 420	2	0.29	0.29
420 - 440	266	38.78	39.07
440 - 460	178	25.95	65.01
460 - 480	137	19.97	84.99
480 - 500	73	10.64	95.63
> 500	30	4.37	100.00

Total Number of Valid Hours: 686

Total Number of Hours: 720

Wood Buffalo Environmental Association

Frequency Distribution

Carbon Dioxide (CO_2) - ppm

Fort McKay - Bertha Ganter - September 2024

Concentration Ranges (ppm)	Wind Direction																
	N	NNE	NE	ENE	E	ESE	SE	SSE	S	SSW	SW	WSW	W	WNW	NW	NNW	**Totals**
400 - 420	0	0	0	0	0	0	0	0	0	0	0	0	0	1	1	0	2
420 - 440	25	13	5	1	2	4	9	28	32	15	26	21	11	33	19	22	266
440 - 460	18	4	1	0	3	3	8	23	26	11	5	5	15	31	15	10	178
460 - 480	8	4	0	2	0	0	3	16	23	19	8	6	7	20	14	6	136
480 - 500	4	1	0	0	0	0	0	7	17	5	7	3	2	16	7	4	73
> 500	2	0	0	0	0	0	0	3	6	2	4	2	3	6	1	1	30
Totals	57	22	6	3	5	7	20	77	104	52	50	37	38	107	57	43	685

Total Number of Valid Hours: 685

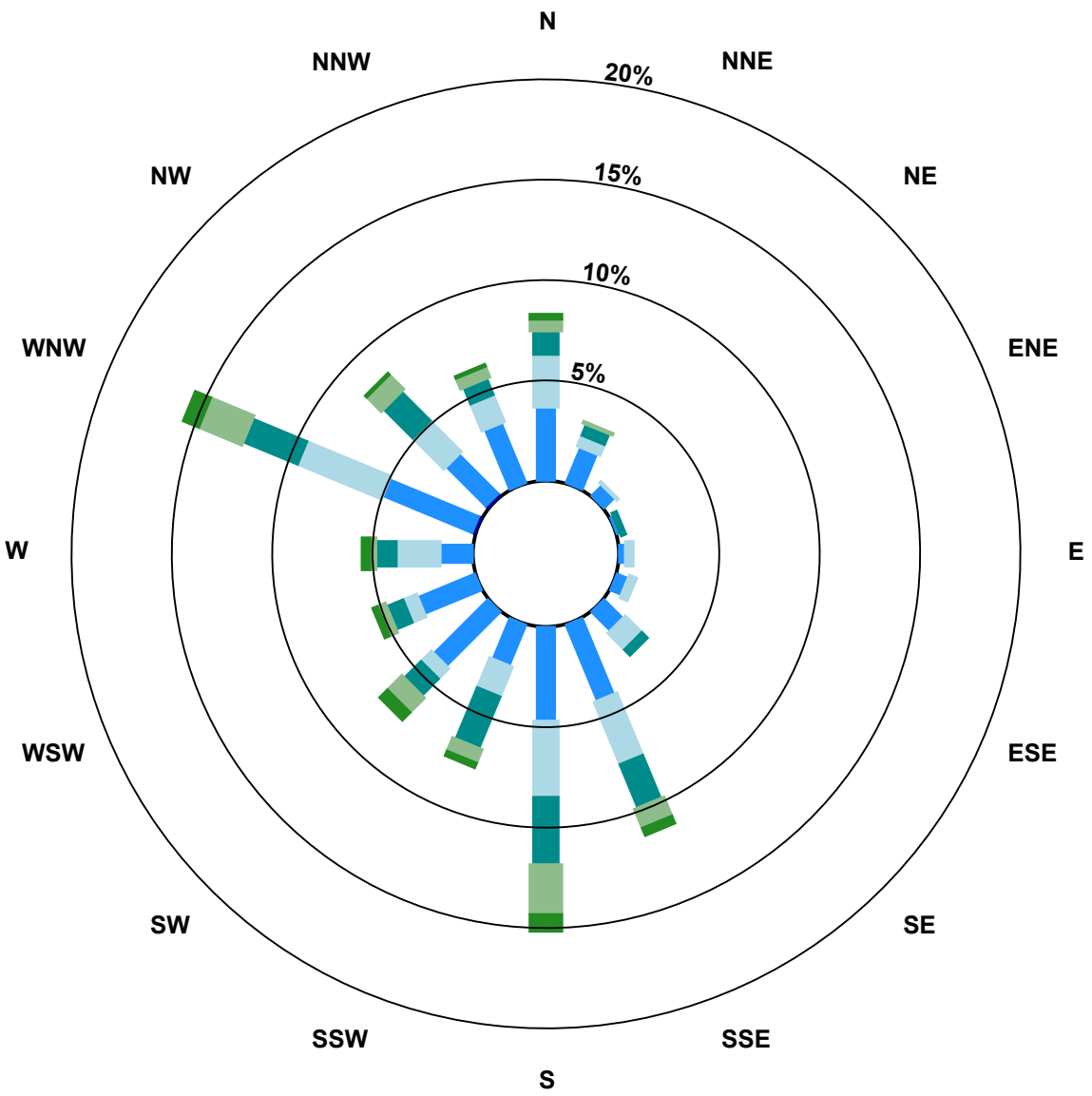
Total Number of Hours: 720

Wood Buffalo Environmental Association

Wind Rose Sep 2024

Carbon Dioxide (CO_2) - ppm

Fort McKay - Bertha Ganter



Classes (ppm)

400 - 420

420 - 440

440 - 460

460 - 480

480 - 500

> 500

Total Number of Valid Hours: 685

Wood Buffalo Environmental Association

Summary of Hour Averages

Ammonia (NH_3) - ppb

Fort McKay - Bertha Ganter - September 2024

Number of Exceedences (AAAQO): 1-hr: 0

Maximum Value: 0.0 ppb on Sep 1 01:00

Maximum Daily Average: 0.0 ppb on Sep 1

Minimum Value: 0.0 ppb on Sep 1 01:00

Minimum Daily Average: 0.0 ppb on Sep 1

Maximum Diurnal Average: 0.0 ppb at hour 1

Minimum Diurnal Average: 0.0 ppb at hour 1

Monthly Average: 0.00 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

Hours in Service:	720
Hours of Data:	639
Hours of Missing Data:	81
Hours of Calibration:	42
Percent Operational Time:	94.6

Day	Hourly Period Ending At (MST)																								Daily	Daily
	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24	Average	Maximum
1-Sep	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
2-Sep	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
3-Sep	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
4-Sep	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
5-Sep	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
6-Sep	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
7-Sep	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
8-Sep	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
9-Sep	0.0	0.0	0.0	0.0	Z	RE	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
10-Sep	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
11-Sep	Z	RE	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	C	C	C	C	C	C	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	--	0.0
12-Sep	0.0	Z	RE	0.0	0.0	0.0	0.0	0.0	0.0	0.0	C	C	C	C	C	C	RE	RE	RE	RE	RE	0.0	0.0	0.0	--	0.0
13-Sep	0.0	0.0	Z	RE	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-Sep	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
15-Sep	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
16-Sep	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
17-Sep	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-Sep	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-Sep	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
20-Sep	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
21-Sep	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
22-Sep	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
23-Sep	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
24-Sep	0.0	Z	RE	0.0	0.0	0.0	0.0	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
25-Sep	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
26-Sep	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
27-Sep	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
28-Sep	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
29-Sep	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
30-Sep	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	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	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	0.0	0.0	0.0	0.0	0.0	0.0	0.0	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	

Z - zerospan C - Calibration M - Maintenance RE - Recovery

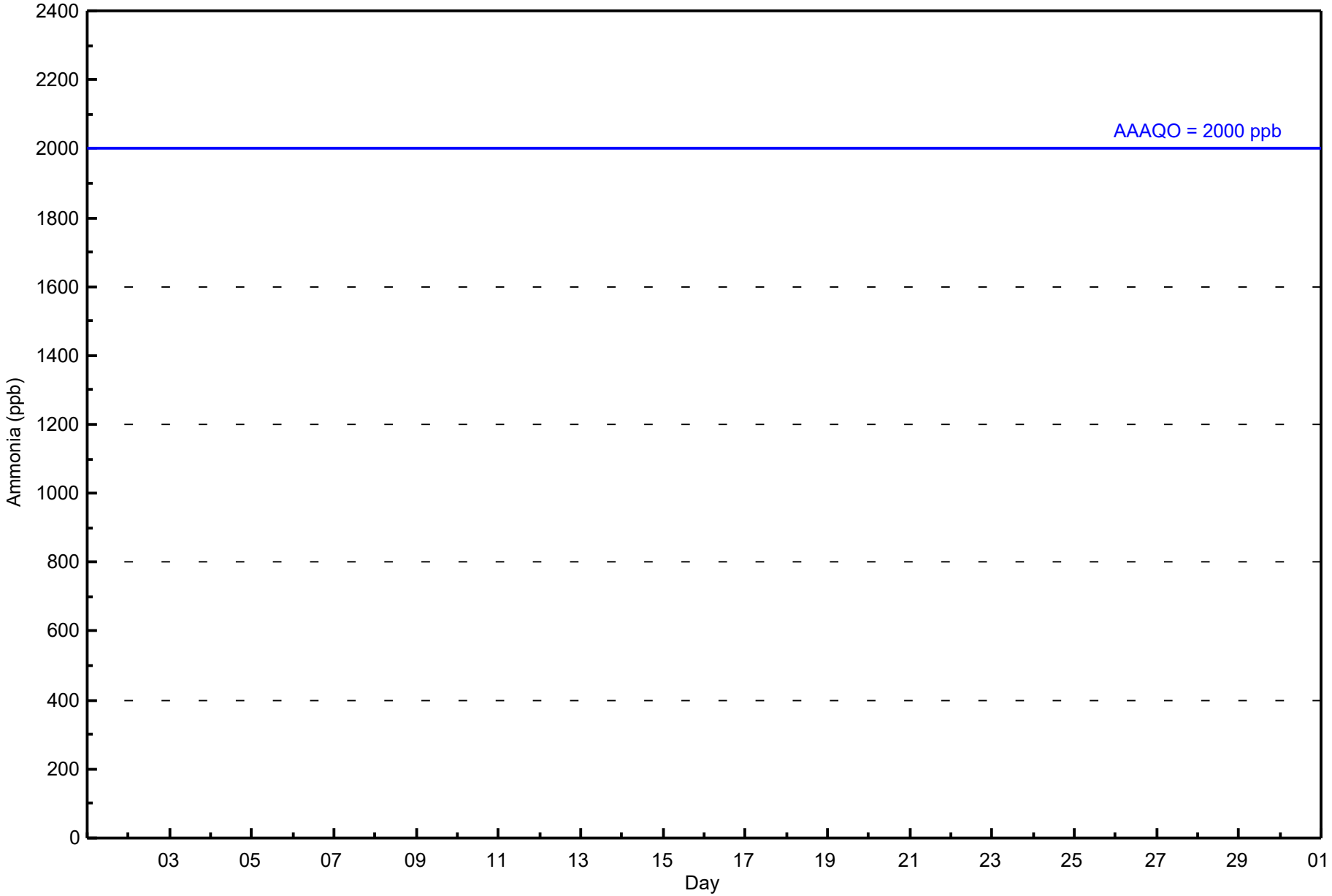
Alberta Ambient Air Quality Objectives (AAAQO): 1-hr 2000 ppb

Wood Buffalo Environmental Association

Hourly Averages

Ammonia (NH_3) - ppb

Fort McKay - Bertha Ganter - September 2024



Ammonia (NH_3) - ppb

Fort McKay - Bertha Ganter - September 2024

Concentration Ranges (ppb)	Number of Hours	%	Cumulative %
0 - 5	639	100.00	100.00
6 - 10	0	0.00	100.00
11 - 15	0	0.00	100.00
16 - 20	0	0.00	100.00
21 - 25	0	0.00	100.00
> 26	0	0.00	100.00

Total Number of Valid Hours: 639

Total Number of Hours: 720

Wood Buffalo Environmental Association

Frequency Distribution

Ammonia (NH_3) - ppb

Fort McKay - Bertha Ganter - September 2024

Concentration Ranges (ppb)	Wind Direction																
	N	NNE	NE	ENE	E	ESE	SE	SSE	S	SSW	SW	WSW	W	WNW	NW	NNW	**Totals**
0 - 5	57	19	3	1	4	4	16	76	100	45	49	38	39	97	53	37	638
6 - 10	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
11 - 15	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
16 - 20	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
21 - 25	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
> 26	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Totals	57	19	3	1	4	4	16	76	100	45	49	38	39	97	53	37	638

Total Number of Valid Hours: 638

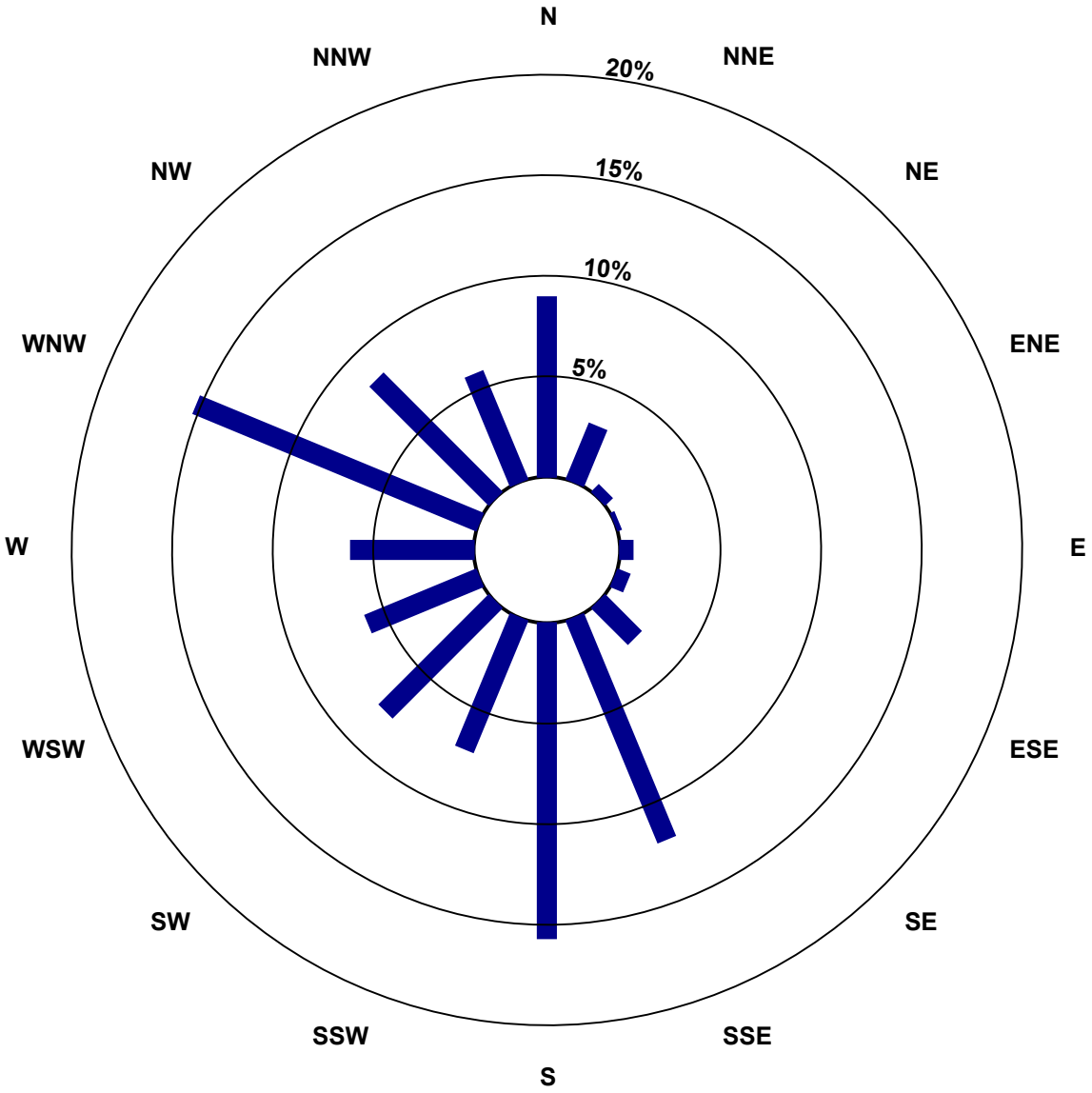
Total Number of Hours: 720

Wood Buffalo Environmental Association

Wind Rose Sep 2024

Ammonia (NH_3) - ppb

Fort McKay - Bertha Ganter



Classes (ppb)

0 - 5

6 - 10

11 - 15

16 - 20

21 - 25

> 26

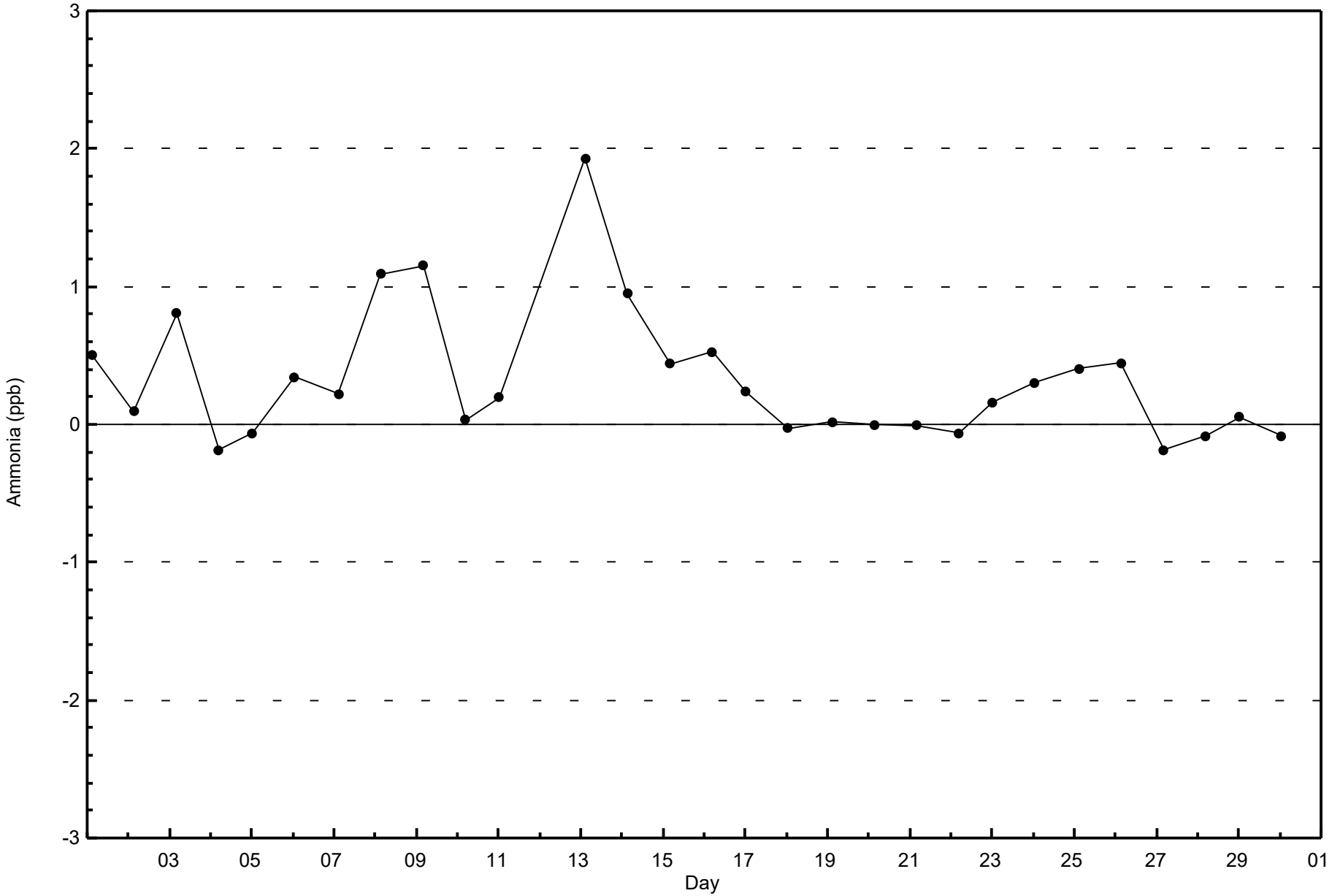
Total Number of Valid Hours: 638

Wood Buffalo Environmental Association

Zero Responses

Ammonia (NH_3) - ppb

Fort McKay - Bertha Ganter - September 2024

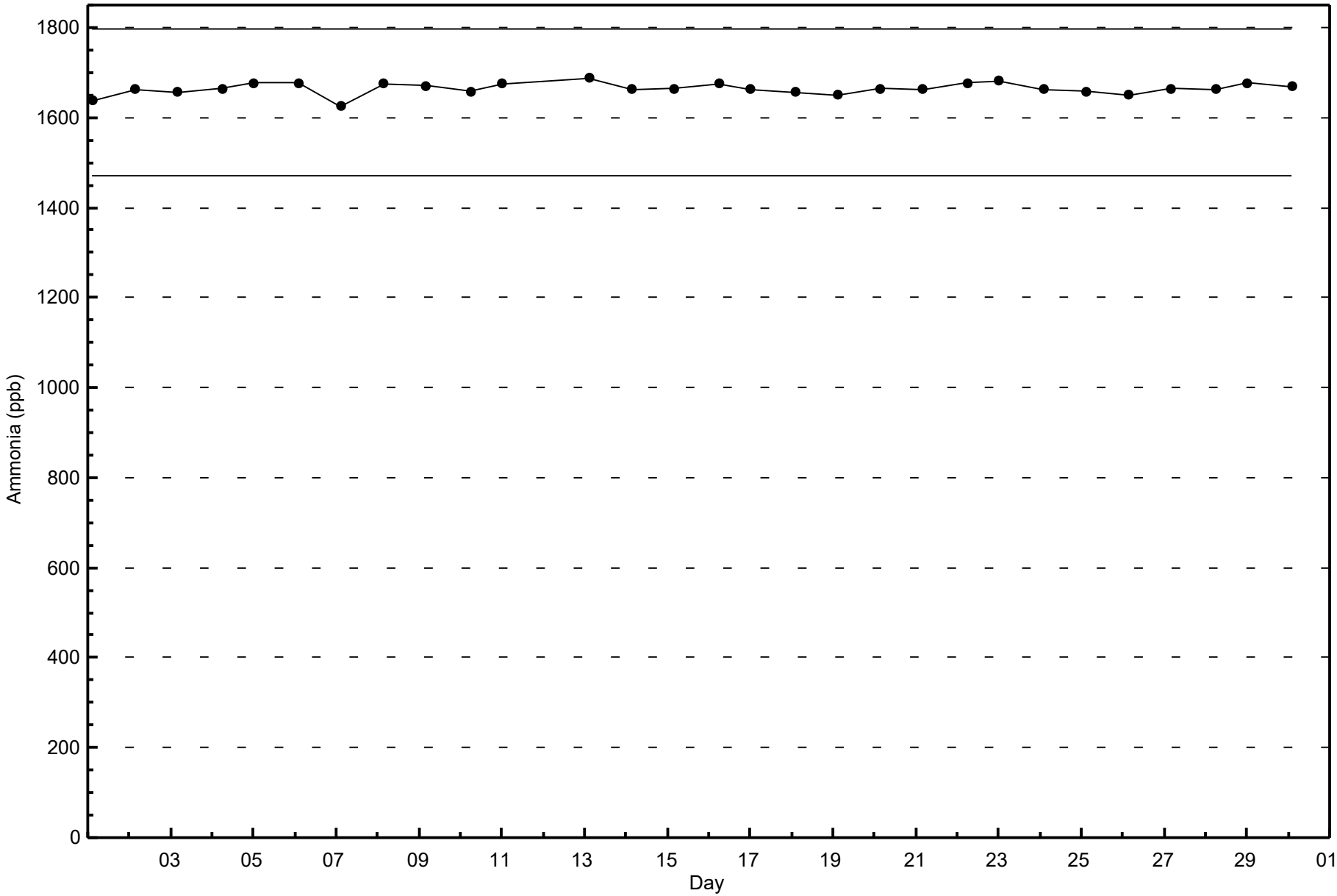


Wood Buffalo Environmental Association

Span Responses

Ammonia (NH_3) - ppb

Fort McKay - Bertha Ganter - September 2024



Maximum Value: 30.8 C on Sep 2 15:00

Maximum Daily Average: 20.7 C on Sep 2

Minimum Value: 1.2 C on Sep 30 07:00

Minimum Daily Average: 7.0 C on Sep 30

Maximum Diurnal Average: 18.8 C at hour 16

Minimum Diurnal Average: 7.8 C at hour 7

Monthly Average: 13.05 C

Percentiles: P_1 = 3.1 P_{10} = 6.0 Q_1 = 9.2 Median = 12.7 Q_3 = 16.1 P_{90} = 20.2 P_{99} = 29.0

Hours in Service:	720
Hours of Data:	720
Hours of Missing Data:	0
Hours of Calibration:	0
Percent Operational Time:	100.0

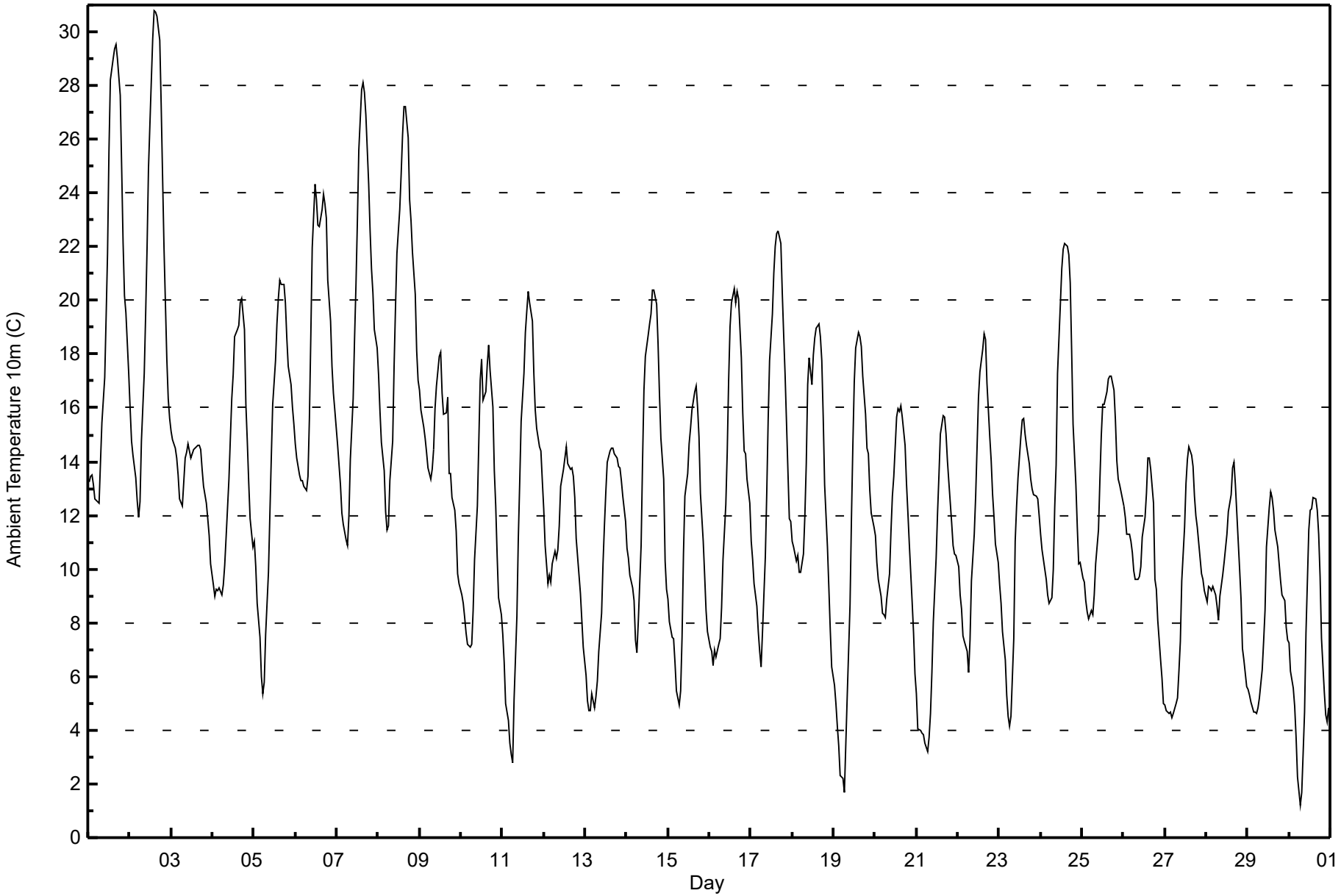
Day	Hourly Period Ending At (MST)																								Daily	Daily
	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24	Average	Maximum
1-Sep	13.2	13.5	13.5	13.1	12.6	12.5	12.5	14.0	15.4	17.2	19.4	21.8	25.5	28.2	29.0	29.4	29.5	29.0	27.7	25.0	22.2	20.2	19.6	17.3	20.0	29.5
2-Sep	16.0	14.8	14.2	13.4	12.6	11.9	12.5	14.7	17.3	19.5	22.0	24.9	28.2	29.7	30.8	30.8	30.6	29.7	27.2	24.6	22.0	17.8	16.3	15.6	20.7	30.8
3-Sep	15.1	14.8	14.5	14.1	13.5	12.6	12.4	13.2	14.1	14.4	14.6	14.1	14.3	14.4	14.5	14.6	14.6	14.4	13.7	13.1	12.4	11.9	11.2	10.2	13.6	15.1
4-Sep	9.4	9.0	9.3	9.2	9.3	9.0	9.4	10.1	11.2	13.3	14.9	16.3	17.2	18.6	18.9	19.1	19.9	20.1	18.9	16.1	14.8	13.2	11.9	10.8	13.7	20.1
5-Sep	11.0	10.1	8.7	7.4	6.0	5.4	5.8	7.6	9.9	12.0	14.1	16.1	17.8	19.1	20.1	20.8	20.6	20.6	19.9	18.6	17.6	16.9	16.0	15.4	14.1	20.8
6-Sep	14.7	14.1	13.5	13.3	13.3	13.1	13.0	13.5	15.6	18.7	22.0	24.3	23.8	22.8	22.8	23.4	23.9	23.6	23.1	20.7	19.2	17.6	16.5	15.9	18.4	24.3
7-Sep	14.6	13.8	13.1	12.1	11.7	11.1	10.9	12.0	14.1	16.4	18.6	20.6	23.0	25.6	27.9	28.1	27.8	26.9	24.3	22.6	21.2	20.3	18.9	18.2	18.9	28.1
8-Sep	17.3	15.9	14.7	13.7	12.1	11.5	11.6	13.3	14.8	17.6	19.7	21.8	23.4	24.7	26.1	27.2	27.2	26.1	23.7	23.0	21.8	20.2	18.1	17.0	19.3	27.2
9-Sep	16.6	15.9	15.3	14.9	14.3	13.8	13.3	13.7	14.5	16.0	16.8	17.9	18.1	16.6	15.7	15.8	16.4	13.6	13.5	12.7	12.2	11.4	9.8	9.5	14.5	18.1
10-Sep	9.0	8.7	8.2	7.6	7.2	7.1	7.2	8.4	10.3	12.4	14.7	17.0	17.8	16.3	16.6	17.6	18.3	17.4	16.0	13.7	12.4	10.5	9.0	8.3	12.2	18.3
11-Sep	7.6	6.5	5.0	4.4	3.5	3.1	2.8	5.1	8.2	11.2	13.3	15.5	17.3	18.8	19.6	20.3	19.9	19.3	17.3	15.9	15.3	14.6	14.4	13.3	12.2	20.3
12-Sep	12.3	10.9	9.5	9.8	9.5	10.2	10.7	10.4	10.7	11.6	13.1	13.7	14.1	14.5	13.9	13.7	13.8	13.5	12.6	11.1	9.8	9.1	8.1	7.1	11.4	14.5
13-Sep	6.0	5.1	4.7	4.7	5.4	4.8	5.3	5.8	6.9	8.4	10.2	11.6	12.9	14.0	14.4	14.5	14.5	14.3	14.1	13.8	13.7	13.3	12.7	11.8	10.1	14.5
14-Sep	10.8	10.4	9.8	9.3	8.8	7.3	6.9	8.0	10.9	14.0	16.7	17.9	18.7	19.1	19.5	20.4	20.4	19.9	18.4	16.5	14.9	13.3	10.3	9.2	13.8	20.4
15-Sep	8.9	8.0	7.4	7.4	6.5	5.5	4.9	5.5	7.5	10.5	12.7	13.6	14.7	15.2	15.9	16.6	16.8	16.0	14.9	12.8	11.0	9.8	8.4	7.6	10.8	16.8
16-Sep	7.1	6.9	6.4	7.0	6.7	7.2	7.4	8.6	10.3	12.4	14.3	17.0	19.0	19.9	20.5	19.9	20.3	20.1	17.9	15.8	14.4	14.3	13.4	12.5	13.3	20.5
17-Sep	11.1	10.4	9.4	8.6	7.7	6.9	6.4	7.7	10.4	12.8	15.6	17.7	19.5	21.0	22.0	22.5	22.6	22.1	20.3	18.7	17.2	13.7	11.9	11.8	14.5	22.6
18-Sep	11.1	10.8	10.3	10.5	9.9	9.9	10.6	12.0	13.9	16.9	17.9	16.9	18.0	18.6	18.9	19.1	18.6	17.8	15.7	13.1	10.8	9.3	7.7	6.4	13.5	19.1
19-Sep	5.7	5.0	4.2	3.4	2.3	2.2	1.7	3.5	5.3	8.6	11.9	14.6	17.0	18.2	18.8	18.7	18.3	17.2	15.8	14.5	14.3	12.9	12.1	11.6	10.7	18.8
20-Sep	11.2	10.2	9.6	9.0	8.3	8.3	8.2	8.9	9.8	11.4	12.7	13.5	15.7	16.0	15.9	16.1	15.6	14.6	13.2	12.1	10.9	8.7	7.6	6.1	11.4	16.1
21-Sep	5.4	4.1	4.0	3.9	3.8	3.5	3.2	3.7	4.6	6.1	8.0	10.4	12.1	13.5	15.0	15.7	15.7	15.0	14.0	13.2	11.7	10.9	10.6	10.5	9.1	15.7
22-Sep	10.1	9.1	8.5	7.5	7.3	6.9	6.2	7.4	9.6	11.3	12.7	14.5	16.4	17.3	18.2	18.7	18.6	16.9	14.9	14.0	12.7	11.9	10.9	10.2	12.2	18.7
23-Sep	9.4	8.7	7.7	6.6	5.3	4.5	4.2	4.5	7.4	11.0	12.3	13.4	14.9	15.5	15.6	15.0	14.6	13.9	13.4	13.0	12.8	12.7	12.6	12.0	10.9	15.6
24-Sep	11.3	10.7	10.0	9.6	9.0	8.7	8.9	10.0	12.3	13.9	17.3	19.8	21.2	21.9	22.1	22.0	21.7	20.6	18.1	15.4	13.1	11.5	10.2	10.3	14.6	22.1
25-Sep	9.7	9.5	8.8	8.4	8.2	8.4	8.3	9.1	10.2	11.4	13.3	15.0	16.2	16.1	16.6	17.1	17.2	17.2	16.6	15.6	14.0	13.4	13.2	12.6	12.7	17.2
26-Sep	12.3	11.9	11.3	11.3	11.1	10.6	9.9	9.6	9.6	9.7	10.1	11.2	11.9	12.8	14.1	14.1	13.7	12.5	9.6	9.3	8.1	6.6	5.9	5.0	10.5	14.1
27-Sep	4.9	4.7	4.6	4.7	4.5	4.6	5.0	5.2	6.2	7.3	9.6	11.5	13.2	14.1	14.6	14.2	13.8	12.7	12.0	11.5	10.4	9.8	9.6	9.2	9.1	14.6
28-Sep	8.8	9.3	9.3	9.2	9.3	9.0	8.6	8.1	9.0	9.8	10.2	10.8	11.3	12.2	12.8	13.7	14.0	13.1	11.0	10.0	8.9	7.0	6.6	5.6	9.9	14.0
29-Sep	5.5	5.3	5.1	4.7	4.7	4.6	4.8	5.2	6.3	7.3	8.5	10.8	12.3	12.9	12.7	12.2	11.4	10.8	10.2	9.5	9.0	8.8	7.8	7.4	8.2	12.9
30-Sep	7.2	6.2	5.6	4.9	3.7	2.3	1.2	1.7	3.1	4.7	7.6	11.5	12.2	12.2	12.6	12.6	12.2	11.3	9.7	7.4	5.4	4.6	4.3	4.8	7.0	12.6
	10.4	9.8	9.2	8.8	8.3	7.9	7.8	8.7	10.3	12.3	14.2	15.9	17.2	18.0	18.5	18.8	18.8	18.0	16.6	15.1	13.8	12.5	11.5	10.8	Diurnal Average	
	17.3	15.9	15.3	14.9	14.3	13.8	13.3	14.7	17.3	19.5	22.0	24.9	28.2	29.7	30.8	30.8	30.6	29.7	27.7	25.0	22.2	20.3	19.6	18.2	Diurnal Maximum	

Wood Buffalo Environmental Association

Hourly Averages

Ambient Temperature 10m (AT10) - C

Fort McKay - Bertha Ganter - September 2024



Concentration Ranges (C)	Number of Hours	%	Cumulative %
-50 - -20	0	0.00	0.00
-20 - 0	0	0.00	0.00
0 - 10	223	30.97	30.97
10 - 20	420	58.33	89.31
> 20	77	10.69	100.00

Total Number of Valid Hours: 720

Total Number of Hours: 720

Maximum Value: 31.5 C on Sep 2 15:00

Maximum Daily Average: 20.5 C on Sep 2

Minimum Value: 0.4 C on Sep 30 07:00

Minimum Daily Average: 6.5 C on Sep 30

Maximum Diurnal Average: 19.3 C at hour 16

Minimum Diurnal Average: 7.2 C at hour 6

Monthly Average: 12.81 C

Percentiles: P_1 = 1.9 P_{10} = 5.2 Q_1 = 8.7 Median = 12.4 Q_3 = 16.3 P_{90} = 20.5 P_{99} = 29.5

Hours in Service:	720
Hours of Data:	720
Hours of Missing Data:	0
Hours of Calibration:	0
Percent Operational Time:	100.0

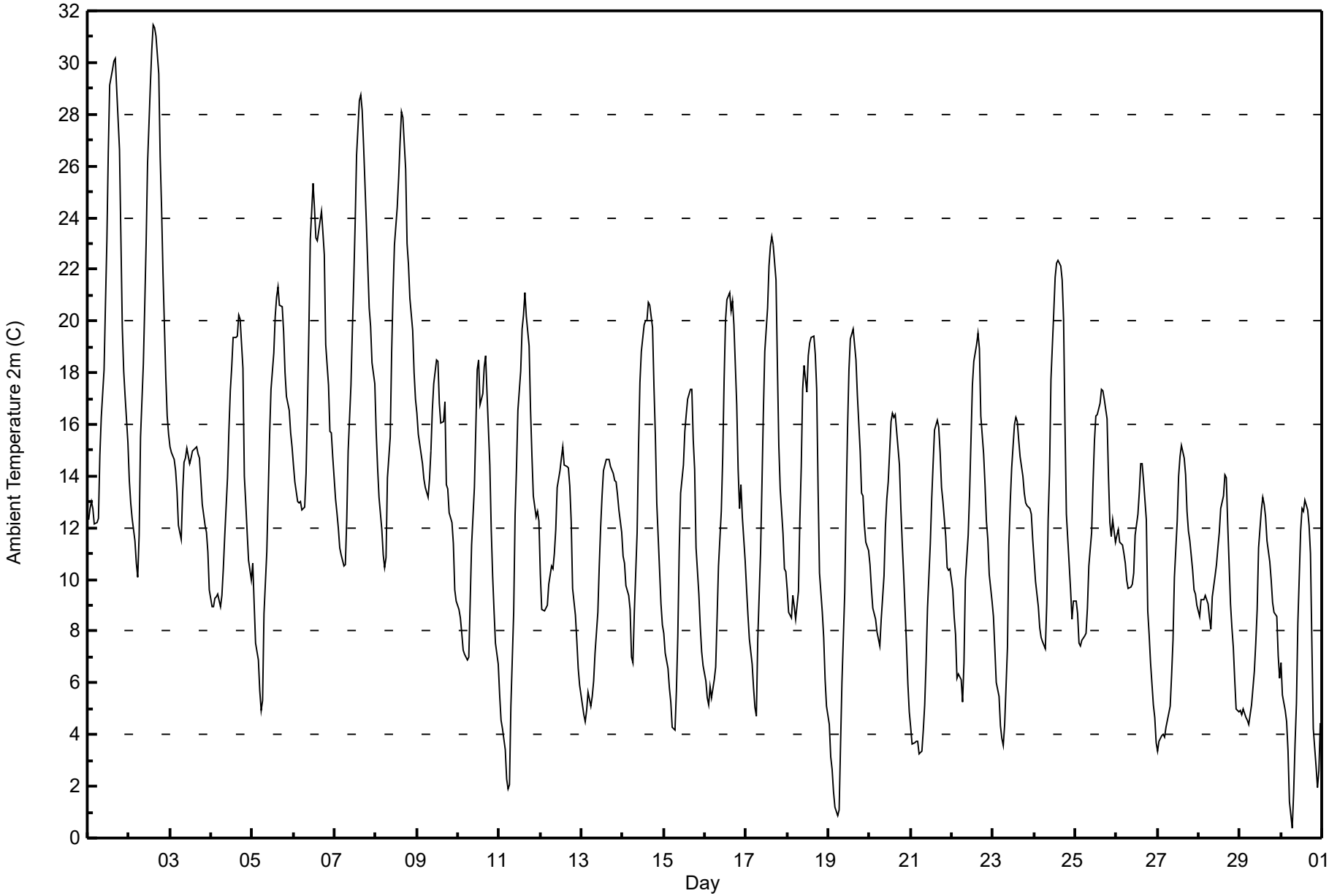
Day	Hourly Period Ending At (MST)																								Daily	Daily
	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24	Average	Maximum
1-Sep	12.3	12.8	13.0	12.8	12.2	12.2	12.4	14.8	16.3	18.1	20.7	23.1	26.5	29.1	29.7	30.0	30.2	29.0	26.6	23.2	19.7	18.1	17.1	15.3	19.8	30.2
2-Sep	13.8	13.0	12.4	11.5	10.7	10.1	11.7	15.5	18.3	20.6	23.1	26.1	29.1	30.5	31.5	31.3	31.0	29.6	26.3	24.3	21.9	17.8	16.3	15.6	20.5	31.5
3-Sep	15.1	14.9	14.6	14.2	13.4	12.1	11.5	13.3	14.5	14.7	15.1	14.5	14.7	14.9	15.0	15.1	14.9	14.7	13.8	12.9	12.1	11.8	11.1	9.6	13.7	15.1
4-Sep	8.9	9.0	9.3	9.3	9.5	8.9	9.4	10.4	11.7	14.0	15.8	17.3	18.2	19.4	19.4	19.4	20.2	20.1	18.2	14.0	13.0	11.8	10.7	10.0	13.7	20.2
5-Sep	10.6	9.1	7.5	6.9	5.7	4.9	5.3	8.7	11.1	13.3	15.6	17.3	18.7	20.2	20.9	21.3	20.6	20.6	19.6	18.0	17.1	16.5	15.7	15.1	14.2	21.3
6-Sep	14.4	13.8	13.0	13.0	13.0	12.7	12.8	14.1	16.6	19.7	23.2	25.3	24.3	23.2	23.1	23.9	24.2	23.5	22.6	19.1	17.5	15.7	15.7	14.7	18.3	25.3
7-Sep	13.1	12.6	12.0	11.2	11.0	10.5	10.6	12.3	15.0	17.5	19.6	21.6	23.8	26.4	28.5	28.7	28.1	26.8	23.8	22.1	20.5	19.8	18.4	17.6	18.8	28.7
8-Sep	15.7	14.3	13.2	11.9	10.9	10.5	10.9	13.9	15.5	18.7	21.1	22.9	24.4	25.5	26.9	28.1	27.9	25.9	23.0	22.2	20.9	19.6	18.0	17.0	19.1	28.1
9-Sep	16.4	15.6	14.9	14.5	13.9	13.6	13.2	13.9	15.0	16.6	17.6	18.5	18.4	16.8	16.1	16.1	16.9	13.7	13.5	12.6	12.2	11.4	9.6	9.2	14.6	18.5
10-Sep	8.8	8.5	7.9	7.3	7.1	6.9	7.0	9.2	11.3	13.6	15.9	18.1	18.5	16.7	17.2	18.2	18.7	17.2	14.4	11.9	10.2	8.8	7.5	6.7	12.0	18.7
11-Sep	5.5	4.5	4.2	3.4	2.3	1.9	2.1	5.1	8.7	12.5	14.3	16.6	18.1	19.7	20.3	21.1	20.2	19.0	16.6	14.8	13.3	12.4	12.6	12.3	11.7	21.1
12-Sep	10.2	8.8	8.8	8.9	9.0	9.8	10.5	10.4	11.0	11.9	13.5	14.2	14.7	15.1	14.4	14.4	14.3	13.6	12.2	9.7	8.6	7.7	6.6	5.9	11.0	15.1
13-Sep	5.2	4.8	4.5	4.9	5.6	5.1	5.5	6.1	7.2	8.7	10.5	12.0	13.2	14.2	14.6	14.7	14.7	14.4	14.1	13.8	13.8	13.3	12.7	11.8	10.2	14.7
14-Sep	10.9	10.6	9.8	9.4	8.8	7.0	6.8	8.7	11.8	15.1	17.6	18.8	19.9	20.0	20.0	20.7	20.6	19.7	17.4	15.6	12.9	10.4	9.1	8.2	13.8	20.7
15-Sep	7.9	7.1	6.6	5.8	5.3	4.3	4.2	5.7	7.8	11.1	13.3	14.4	15.7	16.4	17.0	17.4	17.4	15.4	14.3	11.2	9.5	8.2	7.2	6.7	10.4	17.4
16-Sep	6.1	5.4	5.1	5.9	5.4	6.1	6.6	8.5	10.5	12.6	14.7	17.7	20.0	20.8	21.1	20.4	20.8	19.8	16.8	14.2	12.7	13.7	12.4	10.7	12.8	21.1
17-Sep	9.6	8.6	7.7	6.7	5.8	5.0	4.7	7.7	11.1	13.7	16.5	18.8	20.5	22.1	22.9	23.3	23.0	21.6	18.3	15.2	13.5	11.8	10.4	10.3	13.7	23.3
18-Sep	9.6	8.8	8.5	9.4	8.9	8.5	9.5	12.3	14.4	17.3	18.3	17.2	18.7	19.1	19.4	19.4	18.7	17.4	13.5	10.2	8.7	7.8	6.2	5.1	12.8	19.4
19-Sep	4.4	3.1	2.6	1.8	1.2	0.9	1.1	3.6	6.0	9.5	12.9	15.8	18.1	19.3	19.7	19.1	18.5	17.1	15.0	13.4	13.2	12.1	11.4	11.1	10.5	19.7
20-Sep	10.6	9.6	8.9	8.4	8.0	7.7	7.4	8.5	10.2	12.0	13.1	13.8	16.1	16.5	16.3	16.4	15.7	14.4	12.8	11.4	10.2	7.5	6.0	4.9	11.1	16.5
21-Sep	4.3	3.6	3.7	3.7	3.7	3.2	3.4	4.2	5.1	6.8	8.9	11.4	13.1	14.5	15.8	16.1	15.9	14.9	13.6	13.0	11.6	10.5	10.4	10.4	9.2	16.1
22-Sep	9.6	8.6	7.8	6.2	6.3	6.1	5.3	6.8	10.0	11.7	13.4	15.4	17.5	18.4	19.1	19.5	18.9	16.3	14.8	13.6	12.2	11.6	10.2	9.2	12.0	19.5
23-Sep	8.6	7.3	6.0	5.5	4.3	3.9	3.6	4.4	7.4	11.3	13.0	14.3	16.0	16.3	16.1	15.4	14.8	14.0	13.4	13.0	12.9	12.8	12.5	11.5	10.8	16.3
24-Sep	10.7	9.9	8.9	8.1	7.7	7.6	7.3	9.0	12.3	14.1	17.7	20.3	21.7	22.2	22.4	22.1	21.6	20.1	16.0	12.5	10.6	9.6	8.5	9.2	13.8	22.4
25-Sep	9.2	8.7	7.5	7.4	7.7	7.8	7.9	8.9	10.5	11.8	13.7	15.3	16.3	16.4	16.8	17.3	17.3	17.0	16.2	14.0	12.2	11.7	12.3	11.4	12.3	17.3
26-Sep	11.7	12.0	11.4	11.3	11.0	10.6	10.0	9.7	9.7	9.8	10.2	11.7	12.5	13.4	14.5	14.5	13.8	12.3	8.8	7.9	6.8	5.1	4.6	3.7	10.3	14.5
27-Sep	3.4	3.7	4.0	4.0	3.9	4.3	4.8	5.1	6.3	7.7	10.1	12.3	14.0	14.7	15.2	14.7	14.0	12.6	11.9	11.5	10.4	9.6	9.4	9.0	9.0	15.2
28-Sep	8.5	9.2	9.2	9.2	9.4	9.1	8.5	8.1	9.3	10.2	10.6	11.2	11.8	12.8	13.3	14.1	13.9	12.2	9.0	8.1	7.4	6.1	5.0	4.9	9.6	14.1
29-Sep	5.0	4.8	5.0	4.7	4.6	4.4	4.7	5.2	6.5	7.6	8.8	11.2	12.7	13.2	12.9	12.4	11.5	10.7	10.0	9.1	8.7	8.6	7.0	6.2	8.1	13.2
30-Sep	6.8	5.5	4.9	4.5	3.4	1.4	0.4	1.8	3.7	5.2	8.3	11.9	12.7	12.6	13.1	12.7	12.1	11.0	7.6	4.2	2.8	1.9	2.6	4.4	6.5	13.1
	9.6	8.9	8.4	8.1	7.7	7.2	7.3	8.9	10.8	12.9	14.9	16.6	18.0	18.7	19.1	19.3	19.0	17.8	15.8	13.9	12.6	11.5	10.6	9.9	Diurnal Average	
	16.4	15.6	14.9	14.5	13.9	13.6	13.2	15.5	18.3	20.6	23.2	26.1	29.1	30.5	31.5	31.3	31.0	29.6	26.6	24.3	21.9	19.8	18.4	17.6	Diurnal Maximum	

Wood Buffalo Environmental Association

Hourly Averages

Ambient Temperature 2m (AT2) - C

Fort McKay - Bertha Ganter - September 2024



Concentration Ranges (C)	Number of Hours	%	Cumulative %
-50 - -20	0	0.00	0.00
-20 - 0	0	0.00	0.00
0 - 10	246	34.17	34.17
10 - 20	391	54.31	88.47
> 20	83	11.53	100.00

Total Number of Valid Hours: 720

Total Number of Hours: 720

Wood Buffalo Environmental Association

Summary of Hour Averages

Relative Humidity 2m (RH2) - %

Fort McKay - Bertha Ganter - September 2024

Maximum Value: 99.3 % on Sep 24 08:00

Maximum Daily Average: 87.8 % on Sep 13

Minimum Value: 25.4 % on Sep 2 16:00

Minimum Daily Average: 58.9 % on Sep 30

Maximum Diurnal Average: 92.4 % at hour 7

Minimum Diurnal Average: 48.9 % at hour 16

Monthly Average: 73.52 %

Percentiles: P_1 = 32.0 P_{10} = 44.8 Q_1 = 59.0 Median = 75.3 Q_3 = 91.3 P_{90} = 96.9 P_{99} = 99.0

Hours in Service:	720
Hours of Data:	720
Hours of Missing Data:	0
Hours of Calibration:	0
Percent Operational Time:	100.0

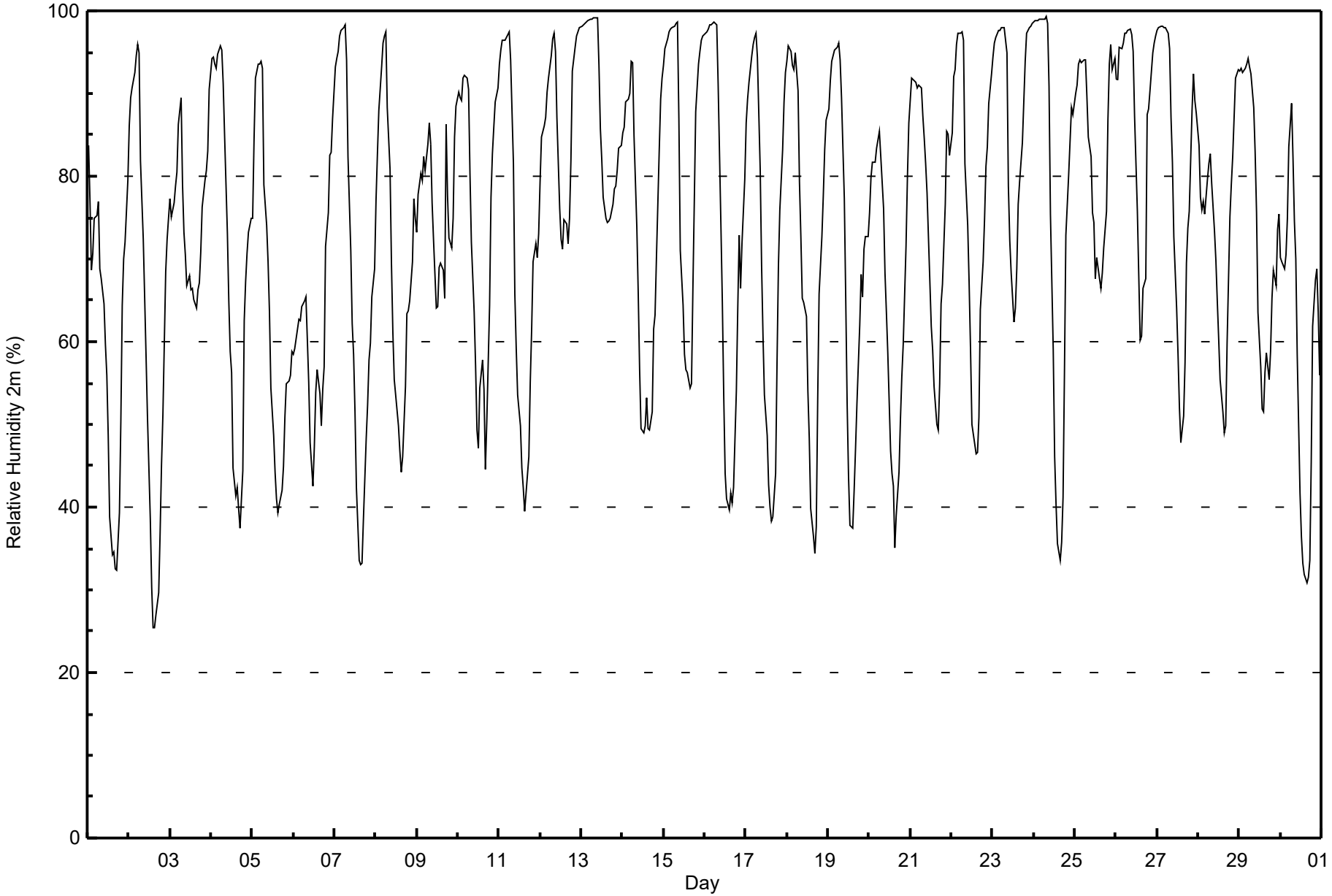
Day	Hourly Period Ending At (MST)																								Daily	Daily
	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24	Average	Maximum
1-Sep	83.7	77.0	68.7	70.6	75.0	75.2	77.0	68.8	67.6	64.6	59.6	55.9	48.6	38.8	34.3	34.5	32.6	32.3	39.3	50.4	64.4	69.9	72.1	79.6	60.0	83.7
2-Sep	86.2	89.5	90.7	92.5	94.7	95.9	94.9	81.9	72.4	65.3	58.1	50.8	38.6	30.3	25.5	25.4	26.9	29.7	36.8	45.1	51.1	68.5	72.3	75.0	62.4	95.9
3-Sep	77.2	75.2	76.8	78.8	80.5	86.2	89.5	79.0	73.3	70.6	66.7	68.0	66.3	66.4	65.1	64.0	66.2	67.0	70.8	76.2	79.4	80.7	83.1	90.5	74.9	90.5
4-Sep	94.3	94.4	93.6	93.0	94.7	95.8	95.3	91.2	84.9	73.1	65.0	58.8	56.3	44.8	41.4	42.3	39.9	37.5	44.4	62.5	67.3	70.8	73.2	74.9	70.4	95.8
5-Sep	75.0	84.5	91.8	93.5	93.6	94.0	93.0	78.9	74.2	69.6	63.6	54.4	48.7	44.3	41.0	39.3	40.4	42.0	44.8	50.9	55.0	55.3	56.0	58.8	64.3	94.0
6-Sep	58.5	59.1	61.5	62.7	62.6	64.3	64.9	65.3	60.4	55.0	47.8	42.6	47.4	53.9	56.5	53.7	49.9	54.2	56.9	71.6	75.7	82.5	82.8	86.9	61.5	86.9
7-Sep	93.2	94.2	95.0	96.9	97.7	98.0	98.3	94.2	82.3	71.0	62.3	58.5	51.5	42.3	33.6	33.1	33.2	38.4	48.4	52.3	57.8	59.9	65.5	68.7	67.8	98.3
8-Sep	77.1	82.7	88.0	93.2	96.1	97.0	97.4	88.4	80.8	69.4	61.1	55.5	51.6	49.8	46.8	44.3	46.1	54.7	63.4	63.8	64.9	69.7	77.3	74.9	70.6	97.4
9-Sep	73.2	77.8	80.3	79.5	82.5	80.6	83.8	86.5	83.9	76.7	72.4	64.0	64.3	68.9	69.5	68.6	65.2	86.2	77.7	72.5	71.3	75.0	84.8	88.5	76.4	88.5
10-Sep	90.1	89.5	89.1	91.9	92.1	91.8	90.5	80.3	72.0	63.6	57.1	49.3	47.1	54.4	57.7	54.3	44.6	50.4	64.4	77.4	82.8	85.9	89.1	90.6	73.2	92.1
11-Sep	93.5	95.3	96.4	96.5	96.8	97.2	97.5	94.0	81.4	65.8	59.2	53.5	49.7	44.8	42.4	39.4	41.7	46.2	55.0	61.5	69.6	71.9	70.2	73.1	70.5	97.5
12-Sep	79.3	84.7	86.1	87.2	90.1	91.9	94.6	96.6	97.2	95.2	87.2	76.0	72.5	71.3	74.8	74.3	71.9	74.9	81.9	92.7	95.7	96.9	97.5	97.9	86.2	97.9
13-Sep	98.1	98.3	98.5	98.7	98.9	98.9	99.1	99.2	99.2	99.1	93.5	85.7	82.0	77.5	74.9	74.4	74.6	74.8	76.6	78.5	78.9	80.6	83.3	83.7	87.8	99.2
14-Sep	85.3	85.9	89.0	89.3	90.1	93.9	93.8	84.9	73.9	65.9	56.6	49.5	49.0	49.8	53.2	49.5	49.4	51.6	61.5	63.2	70.2	83.3	89.3	91.9	71.7	93.9
15-Sep	93.4	95.4	96.7	97.4	97.8	97.9	98.2	98.4	98.6	86.9	71.1	64.4	58.5	56.6	56.3	54.3	54.9	66.5	76.9	87.8	93.6	95.2	96.5	96.9	82.9	98.6
16-Sep	97.3	97.5	97.9	98.3	98.3	98.6	98.5	98.2	91.2	73.8	64.8	53.3	44.0	41.1	39.7	41.7	40.6	42.4	54.1	64.0	72.9	66.4	71.8	79.7	71.9	98.6
17-Sep	86.5	89.4	91.3	94.6	95.9	96.8	97.2	94.4	80.8	69.1	60.7	53.5	48.6	42.6	40.0	38.3	38.8	44.1	57.5	69.2	75.9	83.1	89.1	92.6	72.1	97.2
18-Sep	93.9	95.7	95.0	93.3	92.9	94.9	90.4	79.3	72.7	65.3	64.7	63.0	54.0	48.3	39.8	36.4	34.4	37.6	52.9	65.8	72.8	77.7	83.2	86.8	70.5	95.7
19-Sep	88.1	91.6	94.0	94.6	95.2	95.7	96.2	94.1	89.4	77.4	65.2	52.5	43.7	37.8	37.5	42.0	47.1	52.5	62.0	68.1	65.4	71.2	72.8	72.7	71.1	96.2
20-Sep	75.6	79.8	81.7	81.6	83.4	84.5	85.4	82.4	76.1	68.3	63.6	58.6	46.8	44.1	42.5	35.1	39.0	44.3	50.5	55.8	59.6	71.5	79.9	86.5	65.7	86.5
21-Sep	89.1	91.9	91.5	91.3	90.7	91.1	90.7	87.3	84.7	81.5	78.0	67.2	61.9	59.0	54.6	50.0	49.3	55.0	64.5	66.9	76.7	85.5	85.1	82.5	76.1	91.9
22-Sep	85.3	92.1	92.9	95.9	97.3	97.3	97.4	96.4	81.5	74.0	67.2	59.1	50.0	48.7	46.4	46.6	50.9	64.0	69.6	74.8	81.2	83.5	88.8	92.5	76.4	97.4
23-Sep	94.5	96.1	96.8	97.6	97.6	97.9	98.0	98.0	95.0	78.7	72.2	68.2	62.5	64.1	68.9	76.6	79.3	84.0	89.1	94.0	97.3	98.0	98.2	98.4	87.5	98.4
24-Sep	98.7	98.9	98.9	99.0	99.0	99.1	99.1	99.3	98.5	90.9	75.4	59.0	46.0	40.3	35.6	33.5	35.7	41.2	56.4	72.9	80.2	84.2	88.2	87.4	75.7	99.3
25-Sep	90.1	91.0	93.5	94.0	93.7	94.1	94.0	89.7	84.7	82.3	75.6	74.5	67.6	70.1	67.6	66.5	68.3	71.4	75.8	86.8	93.6	96.0	92.9	94.2	83.7	96.0
26-Sep	91.7	91.8	95.6	95.5	96.1	97.2	97.3	97.7	97.7	97.1	95.0	87.2	75.8	68.0	60.2	60.7	66.5	67.7	87.4	88.1	90.3	94.9	96.1	97.0	87.2	97.7
27-Sep	97.6	97.9	98.1	98.1	98.0	98.0	97.4	95.4	87.2	81.6	72.7	64.0	58.5	52.0	47.7	51.0	57.4	69.5	73.7	75.8	88.0	92.4	89.1	87.6	80.4	98.1
28-Sep	83.8	77.4	75.9	77.0	75.5	79.7	81.6	82.7	79.2	73.4	69.9	64.9	60.3	55.3	51.5	48.9	49.8	59.8	75.1	79.0	82.4	87.1	91.8	92.8	73.1	92.8
29-Sep	92.6	93.0	92.5	93.0	93.5	94.2	93.2	92.4	88.2	82.9	75.6	63.5	56.9	51.8	51.6	56.3	58.6	55.5	58.8	65.3	68.7	66.8	73.6	75.4	74.8	94.2
30-Sep	70.2	69.6	68.8	70.5	74.9	83.6	88.7	82.3	74.6	69.9	58.5	41.7	36.4	33.2	31.9	30.8	31.5	33.5	45.4	61.8	67.5	68.8	63.5	55.9	58.9	88.7
	86.4	87.9	88.9	89.9	90.8	92.0	92.4	88.6	82.8	75.3	68.0	60.6	54.8	51.7	49.6	48.9	49.5	54.3	62.4	69.8	75.0	79.1	81.9	83.8	Diurnal Average	
	98.7	98.9	98.9	99.0	99.0	99.1	99.1	99.3	99.2	99.1	95.0	87.2	82.0	77.5	74.9	76.6	79.3	86.2	89.1	94.0	97.3	98.0	98.2	98.4	Diurnal Maximum	

Wood Buffalo Environmental Association

Hourly Averages

Relative Humidity 2m (RH2) - %

Fort McKay - Bertha Ganter - September 2024



Wood Buffalo Environmental Association

Summary of Hour Averages

Precipitation (PC) - mm

Fort McKay - Bertha Ganter - September 2024

Maximum Value: 3.0 mm on Sep 26 07:00

Maximum Daily Total: 9.1 mm on Sep 26

Minimum Value: 0.0 mm on Sep 1 01:00

Minimum Daily Total: 0.0 mm on Sep 1

Maximum Diurnal Total: 3.1 mm at hour 7

Minimum Diurnal Total: 0.0 mm at hour 1

Monthly Total: 14.13 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 in Service:	720
Hours of Data:	720
Hours of Missing Data:	0
Hours of Calibration:	0
Percent Operational Time:	100.0

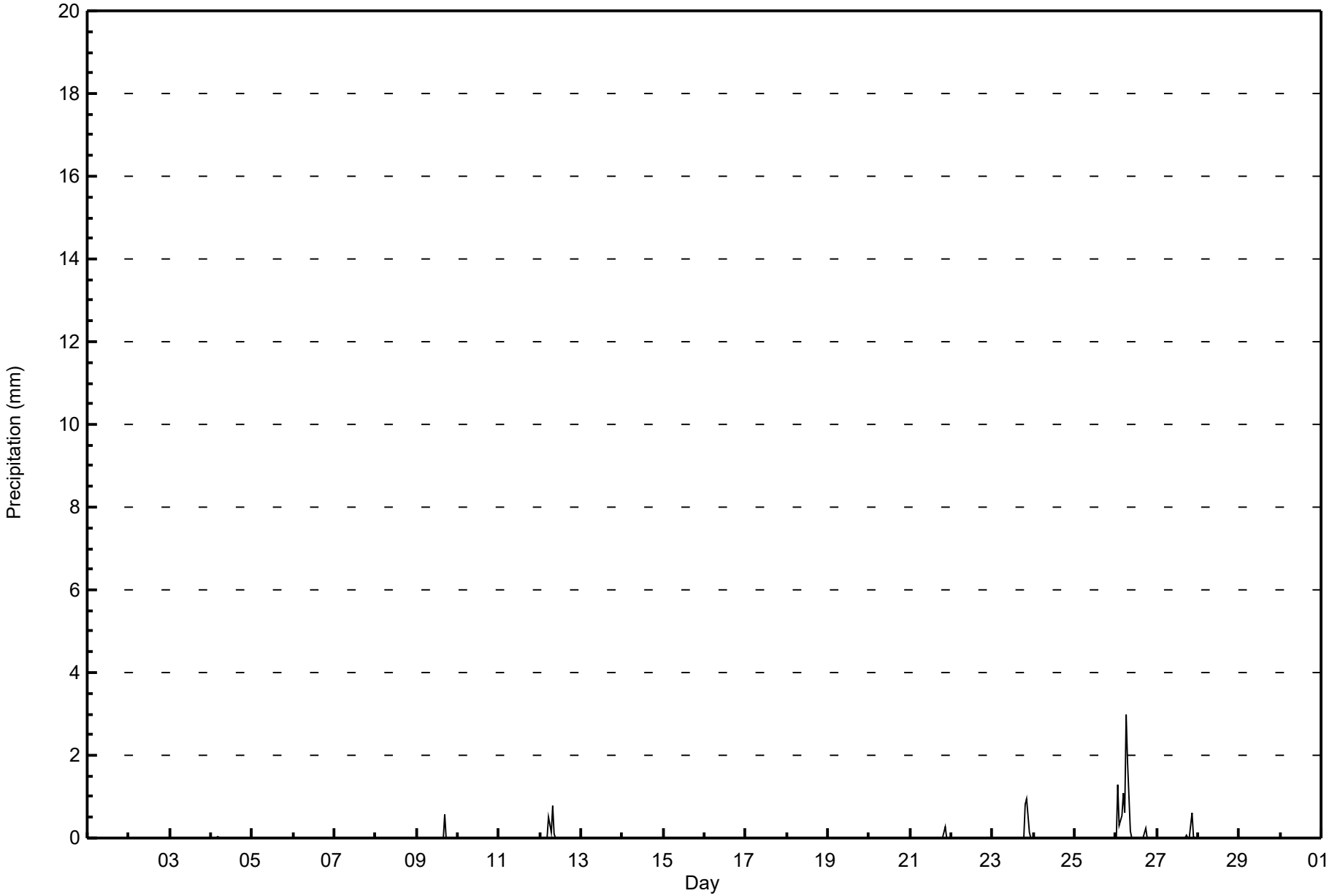
Day	Hourly Period Ending At (MST)																								Daily	Daily
	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24	Total	Maximum
1-Sep	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
2-Sep	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	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-Sep	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	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-Sep	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	0.1	0.1
5-Sep	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	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-Sep	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	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-Sep	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	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-Sep	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	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-Sep	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.6	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.6	0.6
10-Sep	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	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-Sep	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	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-Sep	0.0	0.0	0.0	0.0	0.0	0.5	0.2	0.8	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	1.5	0.8
13-Sep	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	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-Sep	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	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-Sep	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	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-Sep	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	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-Sep	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	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-Sep	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	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-Sep	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	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-Sep	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	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-Sep	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	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	0.3	0.3
22-Sep	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	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-Sep	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.8	1.0	0.1	0.0	0.0	1.9	1.0
24-Sep	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	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-Sep	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	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-Sep	0.0	1.3	0.3	0.5	1.1	0.6	3.0	1.8	0.2	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	9.1	3.0
27-Sep	0.0	0.0	0.0	0.0	0.0	0.0	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	0.6	0.1	0.0	0.0	0.7	0.6
28-Sep	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	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-Sep	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	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-Sep	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	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	0.3	0.5	1.2	1.1	3.1	2.6	0.3	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.6	0.3	0.0	0.8	1.8	0.2	0.0	0.0	Diurnal Average	
	0.0	1.3	0.3	0.5	1.1	0.6	3.0	1.8	0.2	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.6	0.2	0.0	0.8	1.0	0.1	0.0	0.0	Diurnal Maximum	

Wood Buffalo Environmental Association

Hourly Averages

Precipitation (PC) - mm

Fort McKay - Bertha Ganter - September 2024



Concentration Ranges (mm)	Number of Hours	%	Cumulative %
0 - 0.3	708	98.33	98.33
0.4 - 0.5	2	0.28	98.61
0.6 - 0.7	3	0.42	99.03
0.8 - 1.4	5	0.69	99.72
1.5 - 10	2	0.28	100.00
> 10	0	0.00	100.00

Total Number of Valid Hours: 720

Total Number of Hours: 720

Wood Buffalo Environmental Association

Summary of Hour Averages

Leaf Wetness (LW) - %

Fort McKay - Bertha Ganter - September 2024

Maximum Value: 81.7 % on Sep 15 05:00

Maximum Daily Average: 28.4 % on Sep 26

Minimum Value: 0.1 % on Sep 2 15:00

Minimum Daily Average: 1.5 % on Sep 1

Maximum Diurnal Average: 29.2 % at hour 7

Minimum Diurnal Average: 1.1 % at hour 16

Monthly Average: 10.93 %

Percentiles: P_1 = 0.4 P_{10} = 1.0 Q_1 = 1.5 Median = 2.1 Q_3 = 12.4 P_{90} = 38.7 P_{99} = 69.4

Hours in Service:	720
Hours of Data:	720
Hours of Missing Data:	0
Hours of Calibration:	0
Percent Operational Time:	100.0

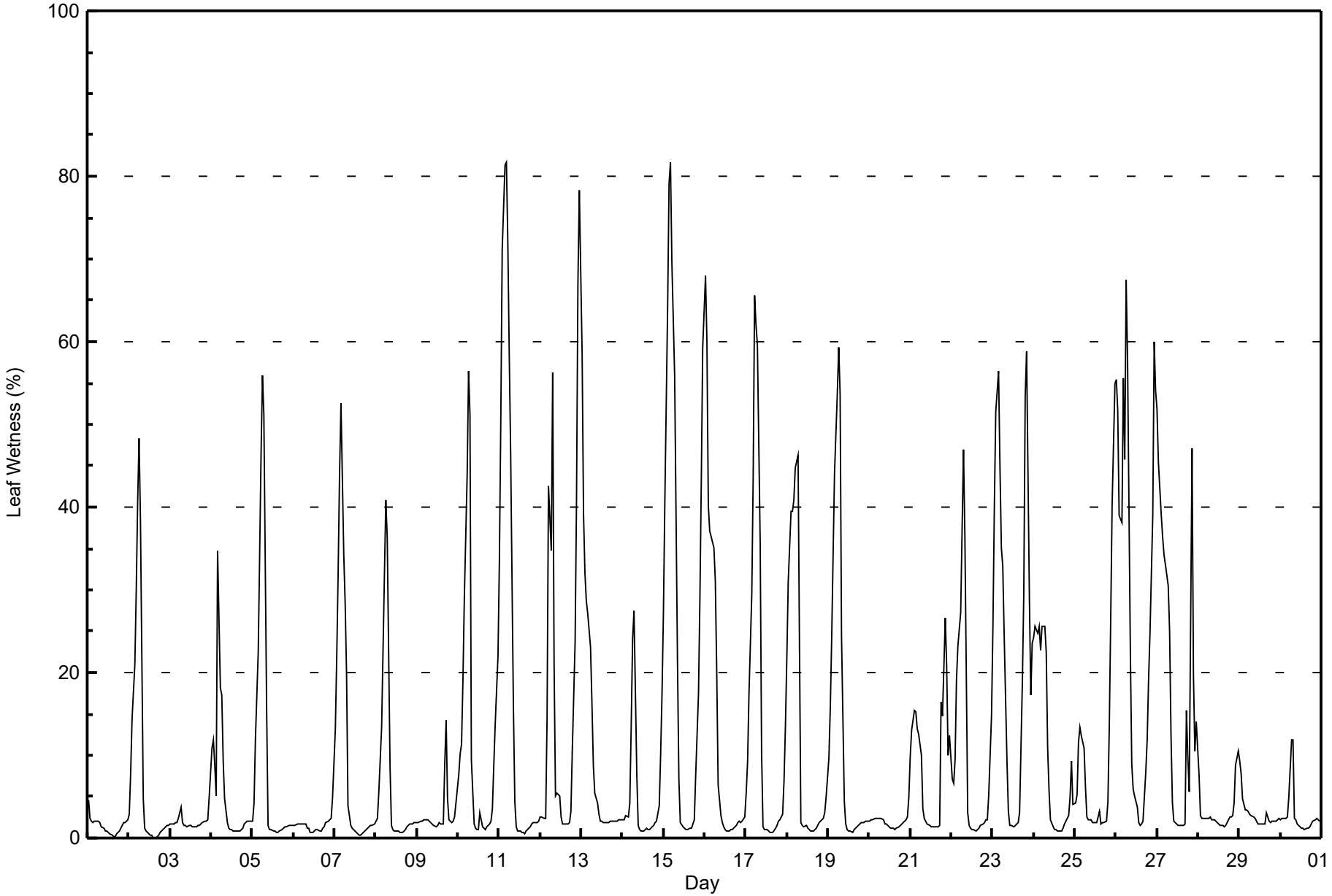
Day	Hourly Period Ending At (MST)																								Daily	Daily
	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24	Average	Maximum
1-Sep	4.6	2.4	2.0	1.9	2.0	2.0	2.1	1.8	1.4	1.2	0.9	0.8	0.6	0.4	0.3	0.2	0.2	0.5	0.9	1.2	1.5	1.8	1.9	2.2	1.5	4.6
2-Sep	2.9	7.8	14.3	21.0	30.0	40.7	48.4	38.3	4.7	1.2	0.9	0.7	0.4	0.3	0.1	0.1	0.1	0.4	0.7	0.9	1.0	1.3	1.5	1.6	9.1	48.4
3-Sep	1.7	1.7	1.7	1.8	1.9	2.4	3.8	1.9	1.6	1.5	1.4	1.5	1.4	1.4	1.3	1.4	1.5	1.5	1.7	1.8	2.0	2.0	2.2	4.9	1.9	4.9
4-Sep	10.9	11.9	8.9	5.0	34.8	18.2	17.4	9.3	4.8	1.8	1.2	1.0	1.0	0.8	0.9	0.9	0.8	0.9	1.2	1.7	1.8	2.0	2.1	2.1	5.9	34.8
5-Sep	2.0	4.3	12.0	22.5	34.2	46.2	55.9	51.2	15.2	1.5	1.1	1.0	0.9	0.8	0.7	0.7	0.9	1.0	1.2	1.3	1.4	1.4	1.5	1.5	10.9	55.9
6-Sep	1.5	1.6	1.7	1.7	1.7	1.7	1.7	1.7	1.2	1.1	0.7	0.6	0.8	1.0	1.0	0.9	0.9	1.1	1.3	1.8	2.1	2.3	2.3	4.8	1.6	4.8
7-Sep	13.2	22.0	32.3	44.0	52.5	34.3	28.3	19.6	3.8	1.6	1.2	1.1	0.9	0.7	0.4	0.4	0.4	0.7	1.1	1.2	1.4	1.5	1.6	1.7	11.1	52.5
8-Sep	2.1	2.4	5.5	13.4	22.8	31.9	40.9	36.3	8.6	1.5	1.0	0.9	0.8	0.9	0.7	0.6	0.7	1.0	1.4	1.6	1.6	1.7	1.8	1.8	7.6	40.9
9-Sep	1.8	1.9	2.0	2.1	2.1	2.1	2.2	2.1	1.9	1.6	1.5	1.3	1.5	1.9	1.7	1.8	8.9	14.3	4.7	2.2	1.9	2.0	2.5	4.2	2.9	14.3
10-Sep	7.6	10.2	11.4	19.1	29.1	43.9	56.5	51.2	9.5	1.6	1.2	1.0	1.0	3.1	1.4	1.2	1.0	1.3	1.7	2.1	3.6	8.8	13.8	22.0	12.6	56.5
11-Sep	33.8	50.7	71.1	81.3	81.7	72.0	58.7	46.8	15.5	4.3	1.4	0.9	0.8	0.7	0.7	0.6	0.8	1.1	1.4	1.6	1.8	1.9	1.9	2.0	22.2	81.7
12-Sep	2.5	2.6	2.4	2.3	14.6	42.5	34.8	56.3	21.0	5.1	5.5	5.1	2.5	1.6	1.7	1.7	1.6	1.9	3.1	10.7	23.7	41.1	67.1	78.3	17.9	78.3
13-Sep	58.4	39.1	32.1	28.7	27.0	23.1	16.3	8.7	5.3	4.3	2.8	2.1	2.0	1.9	1.9	1.9	1.9	2.0	2.0	2.0	2.1	2.1	2.2	2.2	11.3	58.4
14-Sep	2.3	2.3	2.7	2.5	4.2	13.6	24.0	27.4	7.7	1.6	1.1	0.9	0.9	1.0	1.2	1.0	1.1	1.3	1.6	1.8	2.1	3.9	10.1	17.6	5.6	27.4
15-Sep	27.4	40.9	64.4	79.1	81.7	69.7	55.8	38.7	21.4	7.1	1.9	1.3	1.1	1.1	1.1	1.1	1.2	1.7	2.2	7.6	17.5	29.0	43.3	59.4	27.3	81.7
16-Sep	68.0	60.0	40.1	37.1	36.5	35.1	31.0	20.1	6.5	2.7	1.8	1.4	1.0	0.9	0.8	1.0	1.0	1.2	1.6	1.8	2.0	1.9	2.1	2.6	14.9	68.0
17-Sep	5.5	9.1	17.4	29.5	43.7	65.7	62.0	59.7	35.7	10.3	1.4	1.1	1.0	0.8	0.7	0.7	0.7	1.1	1.6	2.0	2.3	2.9	7.0	13.5	15.6	65.7
18-Sep	21.8	31.1	39.4	39.5	40.8	44.7	46.3	23.7	1.9	1.5	1.4	1.5	1.1	1.0	0.9	0.8	0.9	1.2	1.6	1.9	2.2	2.4	3.0	4.9	13.2	46.3
19-Sep	9.6	15.7	24.3	34.2	44.1	53.7	59.4	53.8	24.5	4.5	1.7	1.1	0.9	0.8	0.8	1.1	1.2	1.4	1.6	1.8	1.9	1.9	2.0	2.0	14.3	59.4
20-Sep	2.1	2.2	2.3	2.3	2.4	2.4	2.5	2.4	2.1	1.8	1.7	1.6	1.2	1.2	1.2	1.1	1.1	1.4	1.5	1.7	1.9	2.2	2.6	4.9	2.0	4.9
21-Sep	9.9	13.1	15.4	15.2	13.1	12.5	10.1	3.6	2.3	2.1	1.7	1.5	1.4	1.4	1.3	1.3	1.4	1.6	16.4	14.8	26.6	20.6	9.9	12.4	8.7	26.6
22-Sep	7.1	6.6	9.5	19.1	23.2	27.3	37.3	47.0	36.2	3.1	1.5	1.2	1.0	1.0	0.9	0.9	1.2	1.6	1.7	1.9	2.2	2.2	5.3	14.9	10.6	47.0
23-Sep	25.8	40.0	51.5	56.5	44.8	35.2	32.9	24.6	9.4	3.1	1.6	1.5	1.3	1.5	1.6	1.8	3.1	19.0	29.7	53.4	58.8	29.1	17.3	23.6	23.6	58.8
24-Sep	24.2	25.7	24.8	25.5	22.6	25.6	25.6	22.5	11.0	5.8	2.2	1.3	1.0	1.0	0.8	0.8	0.9	1.2	1.6	2.0	2.8	4.9	9.3	4.1	10.3	25.7
25-Sep	4.2	5.2	11.6	13.3	12.4	10.8	6.0	2.5	2.3	2.3	1.9	1.9	1.8	1.8	3.2	1.7	1.8	1.9	2.1	4.4	13.8	26.6	40.3	54.9	9.5	54.9
26-Sep	55.5	51.6	39.0	38.1	55.6	45.7	67.4	57.7	22.5	9.0	6.0	5.1	3.6	1.9	1.5	1.7	2.1	8.0	11.9	19.2	24.7	39.2	59.9	54.0	28.4	67.4
27-Sep	51.8	45.4	39.2	36.5	34.2	33.1	30.4	25.0	12.3	4.2	2.0	1.6	1.5	1.5	1.5	1.6	1.7	15.4	9.6	5.6	47.1	19.7	10.4	14.0	18.6	51.8
28-Sep	7.6	2.7	2.3	2.3	2.3	2.3	2.4	2.5	2.2	2.1	2.0	1.9	1.7	1.6	1.5	1.4	1.6	1.9	2.5	2.5	2.7	4.2	8.9	10.5	3.1	10.5
29-Sep	9.3	7.8	4.8	3.3	3.4	3.3	2.9	2.7	2.5	2.3	2.1	1.8	1.6	1.6	1.6	1.7	3.1	2.0	1.9	2.0	2.1	2.1	2.3	2.4	2.9	9.3
30-Sep	2.3	2.4	2.4	2.4	2.5	4.9	11.8	11.9	2.3	2.1	1.8	1.3	1.2	1.2	1.1	1.1	1.2	1.4	1.7	2.1	2.3	2.4	2.3	2.0	2.8	11.9
	15.9	17.3	19.6	22.7	26.7	28.2	29.2	25.0	9.9	3.1	1.8	1.5	1.3	1.2	1.1	1.1	1.5	3.0	3.8	5.2	8.6	8.8	11.3	14.2	Diurnal Average	
	68.0	60.0	71.1	81.3	81.7	72.0	67.4	59.7	36.2	10.3	6.0	5.1	3.6	3.1	3.2	1.9	8.9	19.0	29.7	53.4	58.8	41.1	67.1	78.3	Diurnal Maximum	

Wood Buffalo Environmental Association

Hourly Averages

Leaf Wetness (LW) - %

Fort McKay - Bertha Ganter - September 2024



Concentration Ranges (%)	Number of Hours	%	Cumulative %
0 - 0.3	7	0.97	0.97
0.4 - 0.5	7	0.97	1.94
0.6 - 0.7	18	2.50	4.44
0.8 - 1.4	143	19.86	24.31
1.5 - 10	334	46.39	70.69
> 10	200	27.78	98.47

Total Number of Valid Hours: 720

Total Number of Hours: 720

Maximum Value: 690.4 W/m2 on Sep 4 14:00

Maximum Daily Average: 224.2 W/m2 on Sep 1

Minimum Value: 0.0 W/m2 on Sep 1 01:00

Minimum Daily Average: 36.0 W/m2 on Sep 25

Maximum Diurnal Average: 453.9 W/m2 at hour 13

Minimum Diurnal Average: 0.0 W/m2 at hour 3

Monthly Average: 136.11 W/m2

Percentiles: P_1 = 0.0 P_{10} = 0.0 Q_1 = 0.0 Median = 14.4 Q_3 = 228.7 P_{90} = 473.4 P_{99} = 643.6

Hours in Service:	720
Hours of Data:	720
Hours of Missing Data:	0
Hours of Calibration:	0
Percent Operational Time:	100.0

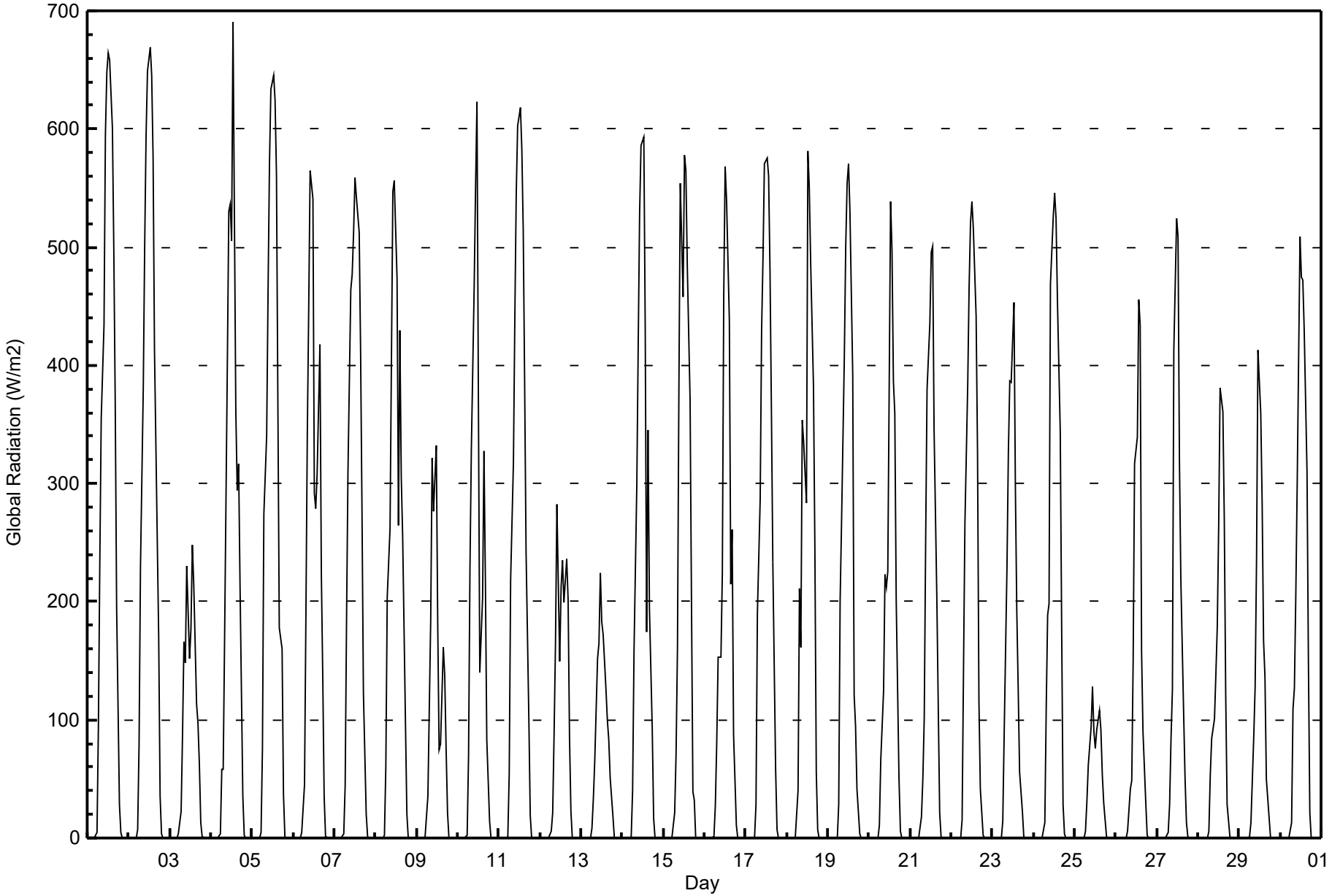
Day	Hourly Period Ending At (MST)																								Daily	Daily
	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24	Average	Maximum
1-Sep	0.0	0.0	0.0	0.0	0.0	5.0	94.9	233.8	355.0	433.8	595.2	648.2	664.2	658.3	600.0	495.7	368.2	195.1	28.6	4.4	0.0	0.0	0.0	0.0	224.2	664.2
2-Sep	0.0	0.0	0.0	0.0	0.0	6.8	79.1	228.4	381.1	500.1	594.3	648.5	669.2	646.0	574.9	413.4	332.4	169.1	36.0	3.5	0.0	0.0	0.0	0.0	220.1	669.2
3-Sep	0.0	0.0	0.0	0.0	0.0	3.5	22.1	87.5	166.3	148.3	230.7	152.3	176.3	248.2	214.9	114.4	96.8	63.4	12.7	0.8	0.0	0.0	0.0	0.0	72.4	248.2
4-Sep	0.0	0.0	0.0	0.0	0.0	3.3	57.8	57.8	167.9	405.6	530.1	536.5	505.0	690.4	361.8	294.7	316.4	215.1	35.6	2.5	0.0	0.0	0.0	0.0	174.2	690.4
5-Sep	0.0	0.0	0.0	0.0	0.0	4.9	75.6	273.8	340.7	462.7	569.4	633.3	646.0	624.0	561.6	367.9	178.3	160.6	36.8	1.7	0.0	0.0	0.0	0.0	205.7	646.0
6-Sep	0.0	0.0	0.0	0.0	0.0	4.4	45.2	188.6	342.6	448.9	564.4	540.8	292.2	278.2	308.4	418.1	224.3	137.6	35.4	1.3	0.0	0.0	0.0	0.0	159.6	564.4
7-Sep	0.0	0.0	0.0	0.0	0.0	3.3	45.4	187.8	310.6	464.3	477.5	512.6	558.8	542.2	512.7	412.1	276.0	123.6	20.4	1.3	0.0	0.0	0.0	0.0	185.4	558.8
8-Sep	0.0	0.0	0.0	0.0	0.0	2.8	60.7	203.9	262.2	405.8	547.5	556.5	473.3	264.5	429.8	304.6	255.2	97.2	20.3	0.2	0.0	0.0	0.0	0.0	161.9	556.5
9-Sep	0.0	0.0	0.0	0.0	0.0	1.0	35.2	110.7	183.8	321.4	276.1	332.4	181.2	75.1	79.2	161.9	137.3	74.6	21.6	0.4	0.0	0.0	0.0	0.0	83.0	332.4
10-Sep	0.0	0.0	0.0	0.0	0.0	2.2	70.5	229.2	329.9	465.8	550.6	622.6	375.4	139.8	202.4	326.9	217.3	83.2	14.6	0.5	0.0	0.0	0.0	0.0	151.3	622.6
11-Sep	0.0	0.0	0.0	0.0	0.0	1.8	54.4	218.2	318.4	440.1	544.7	602.9	618.7	582.9	513.6	384.1	242.7	100.4	18.4	0.0	0.0	0.0	0.0	0.0	193.4	618.7
12-Sep	0.0	0.0	0.0	0.0	0.0	0.1	5.8	21.2	88.4	165.1	281.8	149.9	212.1	235.4	199.3	235.6	201.2	84.9	22.6	0.0	0.0	0.0	0.0	0.0	79.3	281.8
13-Sep	0.0	0.0	0.0	0.0	0.0	0.3	8.8	33.3	64.9	152.1	165.3	223.7	182.9	171.9	125.6	99.7	83.3	51.2	17.8	0.0	0.0	0.0	0.0	0.0	57.5	223.7
14-Sep	0.0	0.0	0.0	0.0	0.0	0.9	40.4	158.1	298.8	417.1	529.3	586.0	593.0	431.2	173.9	345.4	194.5	93.0	16.9	0.0	0.0	0.0	0.0	0.0	161.6	593.0
15-Sep	0.0	0.0	0.0	0.0	0.0	0.4	21.4	71.1	161.3	377.2	554.2	457.9	577.7	564.6	483.9	370.3	197.7	39.2	31.9	0.0	0.0	0.0	0.0	0.0	162.9	577.7
16-Sep	0.0	0.0	0.0	0.0	0.0	1.1	26.9	80.9	152.6	152.7	224.5	459.7	568.0	539.4	437.7	214.3	260.8	88.1	10.8	0.1	0.0	0.0	0.0	0.0	134.1	568.0
17-Sep	0.0	0.0	0.0	0.0	0.0	0.9	28.3	190.4	287.4	429.3	491.2	570.9	576.0	560.1	479.0	361.9	234.1	58.0	7.2	0.0	0.0	0.0	0.0	0.0	178.1	576.0
18-Sep	0.0	0.0	0.0	0.0	0.0	0.2	39.8	210.6	161.5	353.7	334.9	284.1	581.1	550.6	486.4	381.6	244.5	55.4	7.3	0.0	0.0	0.0	0.0	0.0	153.8	581.1
19-Sep	0.0	0.0	0.0	0.0	0.0	0.2	28.7	200.7	266.1	407.3	500.8	554.7	570.6	530.3	391.5	121.2	94.4	41.0	3.6	0.0	0.0	0.0	0.0	0.0	154.6	570.6
20-Sep	0.0	0.0	0.0	0.0	0.0	0.0	10.7	66.8	124.1	223.4	212.1	225.4	538.2	497.2	386.8	360.0	201.5	49.9	6.2	0.0	0.0	0.0	0.0	0.0	120.9	538.2
21-Sep	0.0	0.0	0.0	0.0	0.0	0.0	17.3	49.9	102.1	250.5	379.6	435.1	496.5	500.5	346.3	202.0	110.5	21.7	1.6	0.0	0.0	0.0	0.0	0.0	121.4	500.5
22-Sep	0.0	0.0	0.0	0.0	0.0	0.0	15.3	142.2	265.8	383.7	466.0	521.2	538.9	515.9	441.2	326.7	116.6	41.9	2.3	0.0	0.0	0.0	0.0	0.0	157.4	538.9
23-Sep	0.0	0.0	0.0	0.0	0.0	0.0	14.2	87.3	228.5	326.4	386.4	386.0	453.4	296.6	191.7	126.7	55.6	22.6	1.4	0.0	0.0	0.0	0.0	0.0	107.4	453.4
24-Sep	0.0	0.0	0.0	0.0	0.0	0.0	12.9	110.6	189.0	197.8	468.2	525.7	545.9	525.0	453.8	343.6	179.5	28.0	3.3	0.0	0.0	0.0	0.0	0.0	149.3	545.9
25-Sep	0.0	0.0	0.0	0.0	0.0	0.0	6.2	31.0	61.5	93.6	128.4	90.3	75.9	91.7	108.5	91.6	53.6	29.9	1.7	0.0	0.0	0.0	0.0	0.0	36.0	128.4
26-Sep	0.0	0.0	0.0	0.0	0.0	0.0	0.5	5.5	41.2	48.3	150.1	317.3	339.2	455.3	434.2	157.6	89.9	30.0	2.3	0.0	0.0	0.0	0.0	0.0	86.3	455.3
27-Sep	0.0	0.0	0.0	0.0	0.0	0.0	4.4	28.1	84.4	125.3	412.9	524.2	509.5	319.8	219.7	106.0	51.2	12.7	0.7	0.0	0.0	0.0	0.0	0.0	100.0	524.2
28-Sep	0.0	0.0	0.0	0.0	0.0	0.0	5.8	53.6	84.8	100.7	138.8	179.6	264.3	381.0	360.5	269.4	122.7	28.3	1.3	0.0	0.0	0.0	0.0	0.0	82.9	381.0
29-Sep	0.0	0.0	0.0	0.0	0.0	0.0	1.6	13.6	85.6	127.7	236.1	413.0	359.8	283.9	167.4	136.4	49.5	16.4	0.4	0.0	0.0	0.0	0.0	0.0	78.8	413.0
30-Sep	0.0	0.0	0.0	0.0	0.0	0.0	12.7	109.2	126.4	204.8	300.1	508.7	474.4	472.8	429.7	309.1	147.9	21.9	0.4	0.0	0.0	0.0	0.0	0.0	129.9	508.7
	0.0	0.0	0.0	0.0	0.0	1.4	31.4	122.8	201.1	301.1	394.7	440.0	453.9	422.4	355.9	275.1	177.8	74.5	14.0	0.6	0.0	0.0	0.0	0.0	Diurnal Average	
	0.0	0.0	0.0	0.0	0.0	6.8	94.9	273.8	381.1	500.1	595.2	648.5	669.2	690.4	600.0	495.7	368.2	215.1	36.8	4.4	0.0	0.0	0.0	0.0	Diurnal Maximum	

Wood Buffalo Environmental Association

Hourly Averages

Global Radiation (GR) - W/m2

Fort McKay - Bertha Ganter - September 2024



Concentration Ranges (W/m2)	Number of Hours	%	Cumulative %
0 - 20	369	51.25	51.25
21 - 100	83	11.53	62.78
101 - 300	120	16.67	79.44
301 - 600	135	18.75	98.19
601 - 900	13	1.81	100.00
> 900	0	0.00	100.00

Total Number of Valid Hours: 720

Total Number of Hours: 720

Wood Buffalo Environmental Association

Summary of Hour Averages

Wind Speed 10m (WS10) - km/h

Fort McKay - Bertha Ganter - September 2024

Maximum Speed: 21 km/h on Sep 2 20:00

Maximum Daily Speed Average: 6.7 km/h on Sep 3

Minimum Speed Value: 0 km/h on Sep 23 10:00

Minimum Daily Speed Average: 0.0 km/h on Sep 22

Maximum Diurnal Speed Average: 2.4 km/h at hour 6

Minimum Diurnal Speed Average: 1.5 km/h at hour 8

Monthly Average Velocity: 1.6 km/h 253.2 deg

Percentiles: $P_1 = 0$ $P_{10} = 2$ $Q_1 = 3$ Median = 5 $Q_3 = 8$ $P_{90} = 11$ $P_{99} = 16$

Hours in Service:	720
Hours of Data:	719
Hours of Missing Data:	1
Percent Operational Time:	99.9

Day	Hourly Period Ending At (MST)																								Daily	Daily
	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24	Average	Maximum
1-Sep	SSE4	S6	S6	S5	S5	SSW7	S5	S7	SSE11	SSE10	SSE11	SSE10	S9	SW8	SW9	WSW8	WSW8	WSW7	SSW5	SW5	S3	SSE3	W2	S1	S5.3	SSE11
2-Sep	SSW4	S3	SW1	SSW2	SSW2	S2	S6	SSE6	SSE8	SSE11	SSE12	SSE11	S8	SSW9	SW9	WSW7	WSW8	WSW5	WSW5	NW21	NNW18	NNE16	NNE17	N13	SW1.3	NW21
3-Sep	N12	N12	N7	N7	NNW8	NW3	NNW3	NNW6	NNE6	N7	N11	N11	NNE10	NNE10	NNE6	NNE5	NNE6	NNE7	N6	N3	NNW6	N7	NNW6	WNW4	N6.7	N12
4-Sep	WNW3	NW3	WSW3	WNW1	SW2	SW2	WSW3	W4	WNW5	NW8	WNW6	WSW4	SW4	NNW13	NNW12	NW6	NNW9	NW11	WNW5	W2	W3	WNW4	WNW4	NW7	WNW4.4	NNW13
5-Sep	NNW10	WNW5	WNW5	W3	WNW3	S1	SSW2	S3	SE5	SE6	SSE9	SSE12	SSE12	SSE13	SSE13	SSE13	SSE12	SSE9	S8	SSE8	S9	S10	S10	S12	SSE6.0	SSE13
6-Sep	S12	S8	S7	S9	S8	S9	S9	SSW3	SSW6	SSW8	SSW8	SW10	SSW7	S9	S10	S12	S8	S5	SSW4	SSE3	SSW2	WNW2	NW2	SSW2	S6.4	S12
7-Sep	SSW2	S2	S2	S4	S4	S5	S5	SSE8	SSE7	SSE9	SSE11	SSE10	SSE11	S10	SW8	SW8	SW8	SW6	SW6	WSW6	W5	W6	WNW6	WNW4	SSW4.8	SSE11
8-Sep	SE1	S4	S4	S3	S3	S2	S3	SSE5	SSE5	SE4	SSE7	S9	SSE9	S0	NE2	SE2	NNE5	N5	N5	NNE5	N8	N9	N11	N8	E0.9	N11
9-Sep	N3	N1	NNW4	NNE4	NNE2	N7	NNW7	N9	NNW4	NNW5	SSE3	WNW8	NW13	WNW11	W7	W7	W7	WSW8	WNW11	WNW11	WNW9	WSW5	SW6	SW5	WNW4.8	NW13
10-Sep	W6	WNW7	WNW5	WNW6	W7	W7	W5	WSW6	SW7	SSW7	SSW8	SW9	W8	WSW5	SW5	SW6	WNW7	NNW7	WNW3	NW3	WNW3	WNW6	NW4	WNW3	W4.7	SW9
11-Sep	NW3	WNW4	WNW5	W4	WNW4	W4	WNW3	N2	ENE2	SSE4	SE4	ESE2	NE3	NE3	NE3	ENE2	N6	N7	N6	N3	NNW2	S1	S4	SE3	NNW1.3	N7
12-Sep	NW1	NNW3	NNW4	NW1	SW2	S5	S2	NNW3	N4	N6	NNE5	E3	NNE4	ESE5	SE8	ESE7	SE8	SE6	NNW1	NW4	WNW4	WNW2	WNW2	SSW2	ENE0.8	SE8
13-Sep	WNW4	WNW4	NW5	WNW4	WNW3	WNW3	WNW4	NW4	NNW4	N4	N9	N12	N12	N12	N9	N9	NNW11	N11	NNW9	NNW8	NNW11	NNW9	NW6	WNW6	NNW6.6	N12
14-Sep	WNW5	WNW5	WNW5	WNW3	W3	WSW4	SW3	WSW3	S3	SSE4	W3	W1	SSW5	SSE6	ESE2	NW4	WNW6	NW7	NW6	NNE5	N2	W4	W3	NW5	W2.3	NW7
15-Sep	NW6	WNW4	NNW2	WNW2	WNW3	WNW4	W2	WNW3	W2	E2	NE6	E4	ESE5	SSE8	SSE9	SSE8	SE7	SE4	NNE1	NW3	WNW2	WNW3	WSW3	SW2	S0.4	SSE9
16-Sep	SW2	S3	SSE1	S4	SSW3	S6	S6	S5	S8	S9	S10	SSW8	WSW9	WSW9	SW8	SW7	WSW7	SW5	SW4	SW3	S5	SSW5	SW1	S3	SSW4.9	S10
17-Sep	S4	SSW4	S4	S3	S3	SSW3	WSW2	SSE5	S9	S10	S10	SSE9	SSE11	SE8	SSE10	SSE8	SSE8	SE6	NNE1	NNE0	NW1	S0	S3	S4	SSE4.9	SSE11
18-Sep	SSW1	S3	WNW1	S2	WNW1	SW4	S4	S8	SSW5	NW8	NNW10	NW15	WNW10	NW12	WNW9	WNW9	NW13	NNW8	NW5	WNW3	WNW4	WNW4	W1	W1	WNW4.3	NW15
19-Sep	WNW1	SSW3	SSW4	SSW4	WSW2	S4	S4	SSE3	SSE8	SSE8	SSE8	SSE10	SSE9	SSE10	SSE10	S4	SSE4	SSE4	NNW1	N3	N2	WNW4	NW5	NNW5	SSE3.1	SSE10
20-Sep	WNW2	UO	WNW4	NW4	N2	WNW2	NW3	WNW3	SW1	SSE2	N4	N6	N14	N17	N16	N18	NNW15	NNW13	NNW10	NNW8	NNW6	NW4	NNW6	WNW6	NNW6.5	N18
21-Sep	WNW6	WNW4	NW1	NW2	SSW2	SSW2	SSW2	SW2	SSW2	SSE6	SE7	SSE10	SSE12	SSE12	SSE11	SSE11	S9	SSE6	SSE4	S7	SW2	SE4	SE5	SSE7	SSE4.4	SSE12
22-Sep	E2	NNE4	NW4	WNW3	NW2	WNW1	WNW1	S3	SSW2	ESE3	SE4	SSE8	SSE7	SSE7	SE7	SSE6	ESE2	N5	N13	NW4	WNW4	WNW4	NW4	NW5	ENE0.0	N13
23-Sep	NNE2	WNW3	NW4	W3	WNW3	WNW3	WNW3	WNW3	NW3	WSW0	E2	SE6	SSE8	SSE10	S9	SSE11	S9	S8	S8	S7	SSE7	S8	S5	S4	S3.5	SSE11
24-Sep	SSW3	S4	SSE3	SSW2	SW2	S3	S2	S1	WSW2	WSW4	W7	W11	WNW12	WNW15	WNW13	NW15	NW11	NNW7	W2	SW2	SSW2	SSW0	SW1	N2	W3.7	WNW15
25-Sep	WNW0	SW2	WSW1	NW2	NW2	W2	N4	NNW3	N2	WNW0	W0	WSW2	SSW4	SSE4	S7	S6	SSW6	S6	S5	SSW4	WSW2	WSW4	WNW3	SW2	SW1.8	S7
26-Sep	W5	WNW6	NW6	NW5	ENE1	W3	W4	W3	WNW3	WNW4	WNW5	WNW8	WNW8	WNW9	NW7	SE4	S5	NW10	WNW4	W4	SSW1	SSW1	SSE2	N1	WNW3.5	NW10
27-Sep	WSW3	SW4	SW1	SW2	NW1	SW4	S5	SW3	SSW5	WSW5	SW6	SSW10	S9	SSW6	SW5	WSW3	S3	SSW5	S8	S7	S7	SSW6	S9	SSW8	SSW4.8	SSW10
28-Sep	SSW7	SW10	SW8	WSW8	W8	WNW8	WNW6	SW2	SW4	W6	W7	WSW8	W9	WSW7	WNW8	WNW5	NW1	NE1	S3	S4	S2	NW1	SW2	WNW2	WSW4.5	SW10
29-Sep	NW2	WNW4	W2	NW2	NW2	NW4	NNW4	N6	NNE5	N8	N8	N10	NNE11	N16	N16	N14	NNW14	NNW9	NW8	WNW6	WNW9	NW9	NNW2	WNW5	NNW6.6	N16
30-Sep	WNW7	WNW7	WNW8	WNW9	NW6	WSW4	SSW3	S4	S5	S5	S4	WNW12	WNW11	WNW17	WNW13	WNW16	WNW13	NW12	WNW3	SW4	WSW3	W3	W4	W7	WNW6.1	WNW17
	W1.8	W2.3	W2.2	W2.0	W1.9	WSW2.4	SW2.0	SW1.5	S2.0	S1.9	S1.9	SSW2.3	SW1.9	WSW1.6	SW1.6	WSW1.9	W2.1	WNW2.1	WNW2.0	WNW2.1	WNW2.2	WNW2.0	WNW1.6	W1.8	Diurnal Average	
	N12	N12	SW8	S9	W8	S9	S9	N9	SSE11	SSE11	SSE12	NW15	N14	WNW17	N16	N18	NNW15	NNW13	N13	NW21	NNW18	NNE16	NNE17	N13	Diurnal Maximum	

UO - Unstable Operation

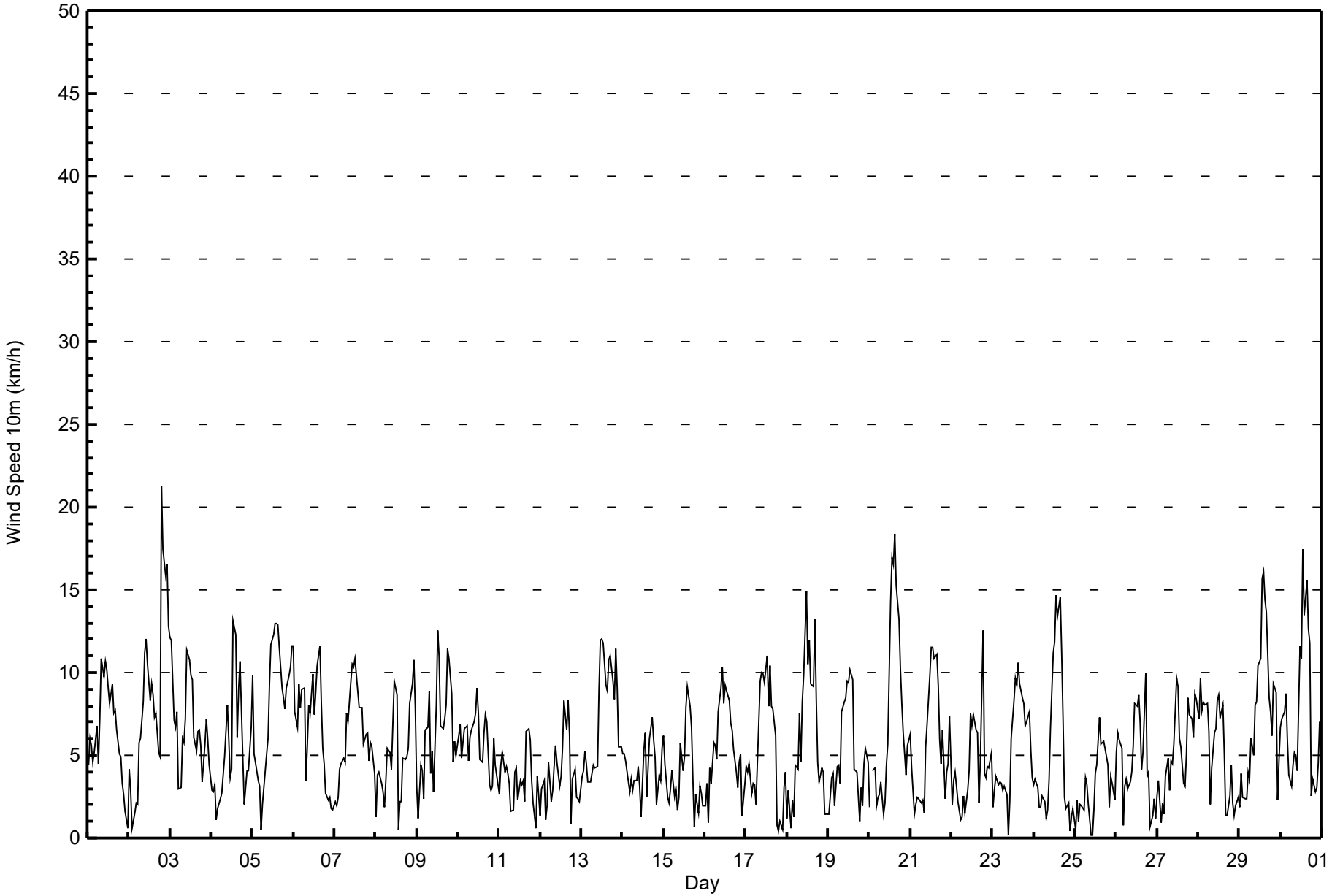
All monthly, daily, and diurnal averages have been calculated using vector methods

Wood Buffalo Environmental Association

Hourly Averages

Wind Speed 10m (WS10) - km/h

Fort McKay - Bertha Ganter - September 2024



Wind Speed Ranges (km/h)	Number of Hours	%	Cumulative %
0 - 5	399	55.49	55.49
6 - 11	271	37.69	93.18
12 - 19	48	6.68	99.86
20 - 28	1	0.14	100.00
29 - 38	0	0.00	100.00
> 38	0	0.00	100.00

Total Number of Valid Hours: 719

Total Number of Hours: 720

Wood Buffalo Environmental Association

Frequency Distribution

Wind Speed 10m (WS10) - km/h

Fort McKay - Bertha Ganter - September 2024

Wind Speed Ranges (km/h)	Wind Direction																
	N	NNE	NE	ENE	E	ESE	SE	SSE	S	SSW	SW	WSW	W	WNW	NW	NNW	**Totals**
0 - 5	19	14	5	3	5	6	11	18	64	37	33	26	28	75	39	16	399
6 - 11	26	7	1	0	0	1	9	50	45	16	18	14	14	33	16	21	271
12 - 19	14	2	0	0	0	0	0	9	3	0	0	0	0	8	6	6	48
20 - 28	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1	0	1
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	59	23	6	3	5	7	20	77	112	53	51	40	42	116	62	43	719

Total Number of Valid Hours: 719

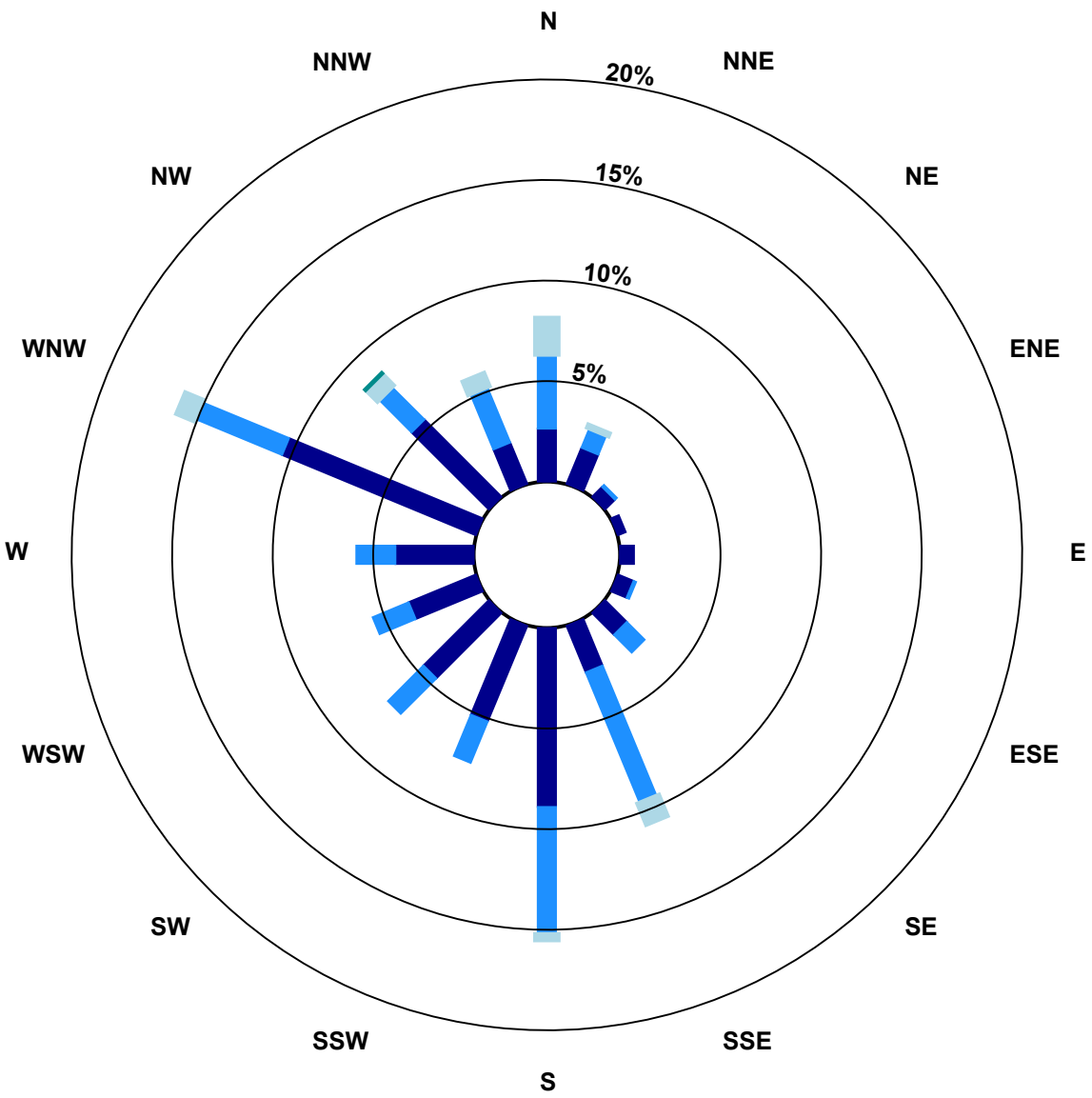
Total Number of Hours: 720

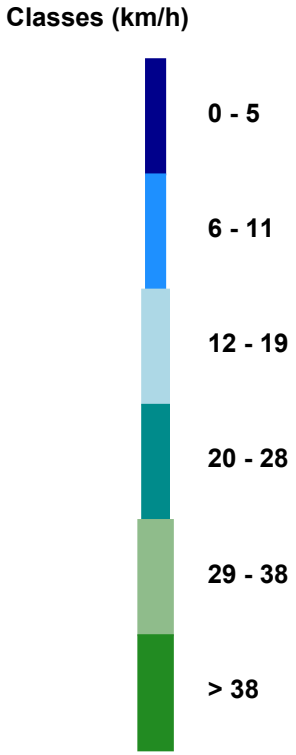
Wood Buffalo Environmental Association

Wind Rose Sep 2024

Wind Speed 10m (WS10) - km/h

Fort McKay - Bertha Ganter





Total Number of Valid Hours: 719

Number of Exceedences (AAAQO): 1-hr: 0 24-hr: 0
Maximum Value: 9 km/h on Sep 26 18:00

Minimum Value: 1 km/h on Sep 15 04:00

Percentiles: P_1 = 1 P_{10} = 1 Q_1 = 1 Median = 2 Q_3 = 2 P_{90} = 3 P_{99} = 6

Hours in Service:	720
Hours of Data:	719
Hours of Missing Data:	1
Hours of Calibration:	0
Percent Operational Time:	99.9

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

UO - Unstable Operation

Wood Buffalo Environmental Association

Summary of Hour Averages

Wind Direction 10m (WD10) - deg

Fort McKay - Bertha Ganter - September 2024

Direction of Maximum Speed: 322 deg on Sep 2 20:00
Direction of Maximum Daily Speed Average: 1.4 deg on Sep 3

Direction of Minimum Speed: 254 deg on Sep 23 10:00
Direction of Minimum Daily Speed Average: 0.0 deg on Sep 22

Monthly Average Direction: 253.2 deg

Hours in Service:	720
Hours of Data:	719
Hours of Missing Data:	1
Percent Operational Time:	99.9

Day	Hourly Period Ending At (MST)																								Daily
	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24	Average
1-Sep	164	169	186	178	181	195	190	179	163	158	160	148	173	225	233	253	244	248	207	215	189	166	266	189	190.8
2-Sep	192	172	225	201	213	183	181	158	161	158	161	155	186	209	220	237	252	245	248	322	339	21	16	11	231.6
3-Sep	7	7	1	3	338	326	329	337	17	6	0	10	14	15	24	22	13	18	8	3	347	352	332	297	1.4
4-Sep	293	308	246	286	230	232	238	269	287	310	298	253	227	334	338	323	338	310	297	275	279	293	284	310	302.5
5-Sep	335	296	286	273	303	173	206	179	142	140	152	166	162	158	154	156	148	147	170	168	170	171	175	173	166.7
6-Sep	175	180	191	184	186	183	184	204	208	202	211	218	204	170	174	184	187	173	193	159	195	285	309	202	190.0
7-Sep	200	189	170	178	184	187	174	168	153	158	164	161	166	181	227	222	227	215	220	255	266	279	290	290	196.8
8-Sep	136	188	191	185	175	171	179	151	151	128	162	173	154	184	45	138	15	8	4	13	7	353	358	358	91.3
9-Sep	9	8	347	15	27	358	342	354	344	344	151	303	314	296	276	276	267	248	287	297	290	253	218	232	302.1
10-Sep	272	284	291	287	280	276	261	246	229	201	202	227	274	243	224	217	298	329	293	313	290	303	307	294	265.5
11-Sep	314	286	288	281	292	276	292	359	63	155	130	123	43	54	38	57	352	0	352	6	348	181	178	145	343.9
12-Sep	321	328	332	311	224	172	186	348	7	2	30	85	28	108	129	116	131	131	344	310	295	290	287	208	75.4
13-Sep	283	286	315	286	283	300	298	309	331	359	1	356	349	1	9	356	348	349	343	341	336	332	308	295	337.5
14-Sep	296	294	292	296	270	250	231	237	189	165	259	269	200	153	108	304	294	314	325	23	7	276	274	311	278.5
15-Sep	313	300	337	300	291	295	259	294	277	79	44	90	103	148	149	151	145	143	22	305	296	299	253	232	183.6
16-Sep	225	188	158	176	206	188	191	181	171	186	183	203	250	239	232	225	246	235	220	222	191	198	236	178	207.3
17-Sep	188	200	189	186	187	205	241	166	172	177	179	157	156	145	148	151	158	146	27	27	307	178	175	190	168.0
18-Sep	192	180	296	185	301	220	187	177	206	307	331	320	296	314	294	299	325	328	304	295	285	301	260	268	296.7
19-Sep	300	210	201	199	239	184	180	158	148	158	148	150	155	152	151	181	162	165	348	354	4	289	326	348	166.5
20-Sep	287	UO	295	323	4	303	324	289	226	160	11	6	11	8	8	359	347	348	346	345	331	319	336	295	348.3
21-Sep	301	295	304	307	194	192	194	235	207	152	145	158	152	157	152	164	175	165	162	174	235	139	146	166	168.4
22-Sep	97	18	311	299	312	283	302	177	208	122	130	149	166	148	145	147	114	4	359	325	283	295	305	326	68.9
23-Sep	20	291	304	277	287	283	303	299	316	254	80	141	152	161	171	168	176	177	173	171	158	170	169	175	177.9
24-Sep	194	180	161	203	215	191	183	182	250	242	260	273	290	298	298	313	318	333	272	220	208	192	224	350	281.2
25-Sep	296	215	251	313	318	274	360	347	3	290	281	244	202	168	178	188	192	187	184	201	244	246	287	236	215.5
26-Sep	259	291	308	306	64	263	270	263	287	287	285	284	289	286	325	126	186	304	282	279	213	197	158	359	284.0
27-Sep	245	223	221	236	314	215	190	229	210	256	225	195	188	213	235	243	169	192	190	179	180	192	188	195	203.1
28-Sep	213	230	234	244	268	283	291	236	229	273	268	256	280	255	284	285	326	55	181	183	173	306	228	295	256.2
29-Sep	324	296	278	325	307	307	332	351	14	1	9	356	12	8	4	356	343	333	324	301	299	311	345	295	342.6
30-Sep	291	291	292	288	315	248	192	183	184	174	184	296	293	301	288	295	290	311	291	222	242	275	270	281	282.5
	275.0	263.3	273.3	262.2	262.8	238.3	230.7	222.6	188.0	184.1	178.8	207.8	221.7	245.0	233.0	241.7	276.7	298.6	287.7	289.3	292.7	293.2	284.6	274.8	
	Diurnal Average																								

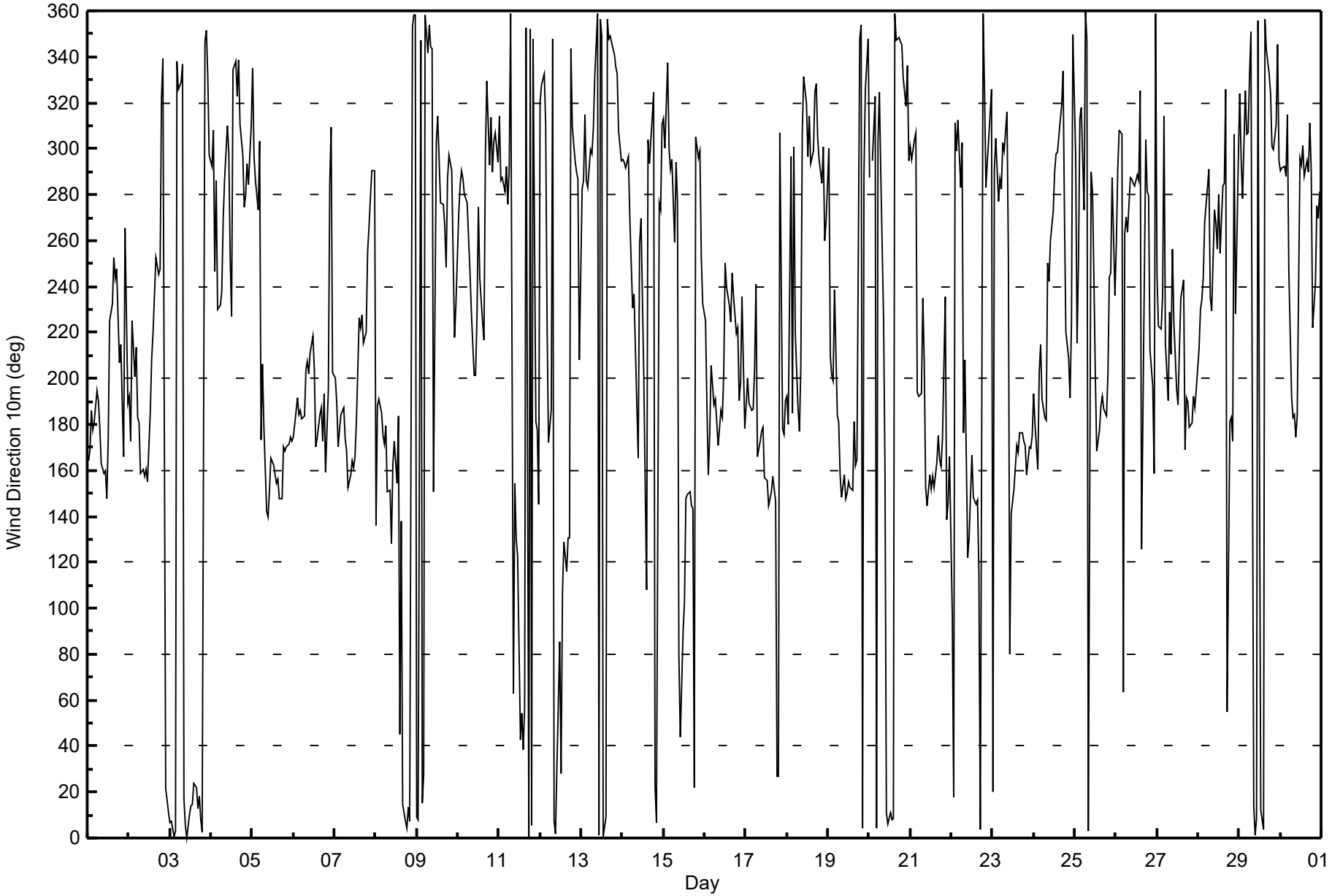
UO - Unstable Operation
All monthly, daily, and diurnal averages have been calculated using vector methods

Wood Buffalo Environmental Association

Hourly Averages

Wind Direction 10m (WD10) - deg

Fort McKay - Bertha Ganter - September 2024



Wood Buffalo Environmental Association

Summary of Hour Standard Deviations

Wind Direction 10m (WD10) - deg

Fort McKay - Bertha Ganter - September 2024

Number of Exceedences (AAAQO): 1-hr: 0 24-hr: 0
Maximum Value: 112 deg on Sep 23 10:00

Minimum Value: 9 deg on Sep 22 18:00

Percentiles: P_1 = 11 P_{10} = 14 Q_1 = 18 Median = 30 Q_3 = 51 P_{90} = 66 P_{99} = 97

Hours in Service:	720
Hours of Data:	719
Hours of Missing Data:	1
Hours of Calibration:	0
Percent Operational Time:	99.9

Day	Hourly Period Ending At (MST)																								Daily
	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24	Maximum
1-Sep	15	17	16	17	14	20	35	25	13	14	17	15	25	55	51	57	56	55	22	15	32	20	57	90	90
2-Sep	25	54	84	66	41	31	12	19	15	12	12	14	33	45	46	55	53	57	49	15	25	18	18	17	84
3-Sep	18	16	16	13	19	77	43	15	25	22	18	20	21	23	27	30	18	20	11	14	10	13	20	14	77
4-Sep	23	22	28	85	67	54	55	58	50	44	51	78	69	35	24	28	22	19	22	34	47	30	39	31	85
5-Sep	11	29	17	37	36	97	84	46	19	20	20	15	18	16	16	13	12	12	13	13	11	12	11	13	97
6-Sep	13	19	16	18	17	15	15	50	55	41	39	41	31	19	13	20	20	23	34	62	76	58	85	68	85
7-Sep	49	59	35	16	14	10	15	15	17	16	14	15	19	23	48	51	43	36	34	54	61	52	27	60	61
8-Sep	60	54	16	39	27	74	17	20	18	30	30	21	18	102	61	60	30	17	14	16	13	18	15	15	102
9-Sep	75	93	86	39	54	16	23	25	45	59	68	29	24	31	52	58	53	49	47	27	34	62	39	44	93
10-Sep	46	43	41	45	46	48	58	55	58	46	43	47	53	53	45	37	39	11	30	39	51	13	18	14	58
11-Sep	26	14	18	25	15	18	16	45	57	27	48	79	56	65	66	80	22	13	10	24	25	95	19	25	95
12-Sep	54	54	24	25	55	19	47	23	23	16	45	44	32	33	17	23	16	14	66	31	11	28	61	56	66
13-Sep	16	24	14	22	43	24	27	18	25	53	17	15	17	16	17	15	13	14	13	11	12	12	17	26	53
14-Sep	38	36	49	77	52	59	64	56	53	59	80	101	73	57	47	64	36	21	22	18	31	18	26	19	101
15-Sep	15	16	27	21	17	13	28	33	76	61	42	64	56	26	18	25	15	45	69	21	44	31	28	44	76
16-Sep	49	22	77	15	43	13	16	17	15	17	19	41	52	51	52	43	48	49	19	44	21	26	91	36	91
17-Sep	22	24	14	17	17	24	43	41	17	20	25	22	16	32	16	21	13	10	62	72	79	89	29	19	89
18-Sep	71	16	73	72	83	29	23	19	52	41	25	23	36	29	41	40	16	11	27	32	13	24	70	76	83
19-Sep	73	19	29	30	53	15	15	29	14	16	16	15	18	16	21	23	27	23	84	37	39	16	21	21	84
20-Sep	64	UO	38	22	31	37	33	35	56	62	28	22	28	21	23	21	19	19	18	16	12	15	14	16	64
21-Sep	14	22	58	30	31	56	39	49	68	23	18	20	17	17	17	20	20	15	17	31	92	28	15	13	92
22-Sep	54	23	21	23	20	50	28	38	81	59	62	23	46	48	33	19	63	9	14	36	36	48	21	13	81
23-Sep	48	20	11	42	21	40	21	19	49	112	73	19	25	18	18	14	19	14	14	20	13	18	17	50	112
24-Sep	67	60	13	77	78	63	64	65	85	89	58	45	41	31	33	22	17	9	54	61	72	97	65	74	97
25-Sep	101	63	81	64	64	64	73	69	51	103	96	65	36	23	20	35	26	18	20	13	57	50	46	64	103
26-Sep	53	30	23	31	82	43	50	49	70	43	48	38	42	47	43	58	20	59	39	32	103	65	36	18	103
27-Sep	42	38	86	29	87	33	27	48	30	57	65	30	35	54	50	54	20	21	16	12	26	31	15	19	87
28-Sep	32	43	48	50	54	38	34	63	52	45	58	55	48	57	43	67	59	53	45	15	52	78	52	72	78
29-Sep	41	11	65	76	70	20	35	12	18	21	20	18	21	18	19	19	16	14	11	18	16	14	34	29	76
30-Sep	23	22	23	25	36	22	34	24	22	28	47	56	38	31	35	29	33	16	34	17	30	43	38	34	56
	101	93	86	85	87	97	84	69	85	112	96	101	73	102	66	80	63	59	84	72	103	97	91	90	
	Diurnal Maximum																								

UO - Unstable Operation

WOOD BUFFALO ENVIRONMENTAL ASSOCIATION

CONTINUOUS AMBIENT AIR QUALITY
MONITORING PROGRAM
MONTHLY REPORT

AMS02
MILDRED LAKE
SEPTEMBER 2024

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

October 31, 2024

WOOD BUFFALO ENVIRONMENTAL ASSOCIATION - MILDRED LAKE (AMS02)
SEPTEMBER 2024

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	683	35	37	99.72	47.4	0	6.7	0
H2S (ppb) Average	684	36	36	100	6.6	0	1.1	0
THC (ppm) Average	683	35	37	99.72	3.5	-	2.3	-
NMHC(ppm) Average	683	35	37	99.72	0.007	-	0	-
CH4(ppm) Average	683	35	37	99.72	3.5	-	2.3	-
Temperature (C) Average	720	0	0	100	31.1	-	21.2	-
Relative Humidity (%) Average	720	0	0	100	100	-	90.4	-
Wind Speed 10 m (km/h) Average	717	3	3	100	21	-	12	-
Wind Direction 10 m (deg) Average	717	3	3	100	-	-	-	-

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

WOOD BUFFALO ENVIRONMENTAL ASSOCIATION - MILDRED LAKE (AMS02)
SEPTEMBER 2024

MONTHLY SUMMARY FOR AIR QUALITY/ METEOROLOGICAL MONITORING MEASUREMENTS

					Percentile						
Parameter	Number	Mean	StnDev	Total	Min	P10	Q1	Median	Q3	P90	Max
SO2 (ppb) Average	683	2.22	5	-	0	0	0.1	0.4	1.5	7	47.4
H2S (ppb) Average	684	0.47	0.7	-	0	0.1	0.1	0.3	0.5	1.1	6.6
THC (ppm) Average	683	2.18	0.2	-	2	2	2	2.1	2.3	2.5	3.5
NMHC(ppm) Average	683	0	0	-	0	0	0	0	0	0	0.007
CH4(ppm) Average	683	2.18	0.2	-	2	2	2	2.1	2.3	2.5	3.5
Temperature 2 m (C) Average	720	13.5	5.3	-	2.5	6.9	10	13.1	16.4	20.4	31.1
Relative Humidity (%) Average	720	70.56	18	-	24.5	44.5	57.8	72.1	84.4	94.2	100
Wind Speed 10 m (km/h) Average	717	7.7	4	-	0	3	5	7	10	13	21
Wind Direction 10 m (deg) Average	717	-	-	-	-	-	-	-	-	-	-

WOOD BUFFALO ENVIRONMENTAL ASSOCIATION - MILDRED LAKE (AMS02)
SEPTEMBER 2024

OPERATIONAL NOTES

Parameter	Period Start	Period End	Duration (Hours)	Notes
SO2/THC/NMHC/CH4	18 Sep 2024 13:00	18 Sep 2024 14:00	2	Maintenance - sample manifold cleaned

Wood Buffalo Environmental Association

Summary of Hour Averages

Sulphur Dioxide (SO_2) - ppb

Mildred Lake - September 2024

Number of Exceedences (AAAQO): 1-hr: 0 24-hr: 0
Maximum Value: 47.4 ppb on Sep 11 11:00 Maximum Daily Average: 6.7 ppb on Sep 16

Minimum Value: 0.0 ppb on Sep 13 15:00 Minimum Daily Average: 0.1 ppb on Sep 26
Maximum Diurnal Average: 4.5 ppb at hour 10 Minimum Diurnal Average: 0.5 ppb at hour 21
Monthly Average: 2.22 ppb Percentiles: P_1 = 0.0 P_{10} = 0.0 Q_1 = 0.1 Median = 0.4 Q_3 = 1.5 P_{90} = 7.0 P_{99} = 23.6

Hours in Service:	720
Hours of Data:	683
Hours of Missing Data:	37
Hours of Calibration:	35
Percent Operational Time:	99.7

Day	Hourly Period Ending At (MST)																								Daily	Daily
	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24	Average	Maximum
1-Sep	0.7	Z	0.4	0.3	2.3	0.5	0.3	0.3	0.3	10.8	8.3	1.1	0.5	0.4	0.5	12.9	6.9	23.1	10.5	1.5	0.7	0.5	0.5	0.4	3.6	23.1
2-Sep	0.5	3.9	Z	1.4	0.7	0.5	0.4	0.5	4.6	11.8	1.9	1.4	0.8	0.6	1.3	15.8	15.1	9.9	38.4	14.8	0.9	0.6	0.4	0.4	5.5	38.4
3-Sep	0.3	0.3	0.2	Z	0.2	0.1	0.1	0.1	0.2	0.1	0.1	0.1	0.1	0.2	0.1	0.2	0.1	0.1	0.1	0.1	0.0	0.1	0.0	0.0	0.1	0.3
4-Sep	0.1	0.1	0.2	0.1	Z	0.3	0.5	0.4	11.8	15.7	1.7	3.6	19.0	2.5	0.2	0.1	1.1	10.0	1.3	0.4	1.4	0.5	0.7	4.2	3.3	19.0
5-Sep	0.2	0.2	0.1	0.2	0.2	Z	0.5	5.9	4.5	4.2	C	C	C	C	C	1.1	0.6	0.7	1.0	0.8	0.3	0.3	0.3	0.4	1.2	5.9
6-Sep	Z	0.5	0.4	0.5	3.2	0.7	0.5	0.6	0.8	0.7	1.5	0.9	0.4	0.3	0.3	0.4	0.4	0.3	0.4	1.1	0.9	1.2	0.5	0.5	0.7	3.2
7-Sep	0.4	Z	0.3	0.2	0.6	0.3	0.3	0.4	2.8	12.6	1.1	2.2	0.7	0.5	0.2	0.2	0.1	0.1	0.1	0.1	1.4	12.4	4.0	3.8	1.9	12.6
8-Sep	2.0	0.9	Z	0.5	0.3	0.2	0.2	0.8	0.9	6.7	2.2	1.0	1.1	0.7	0.7	1.5	1.4	1.7	1.1	0.7	0.7	0.8	0.9	0.7	1.2	6.7
9-Sep	0.5	0.4	0.3	Z	0.2	0.1	0.1	0.1	0.1	0.2	0.2	0.2	0.1	0.1	7.1	8.9	8.0	7.2	6.7	0.6	0.4	2.8	3.1	5.3	2.3	8.9
10-Sep	7.1	4.9	5.3	2.6	Z	2.2	1.9	2.8	6.3	16.2	13.8	26.1	5.5	8.6	0.7	0.5	0.8	0.1	0.4	0.7	0.6	0.3	0.2	0.2	4.7	26.1
11-Sep	0.1	0.1	0.1	0.1	0.0	Z	0.3	0.7	5.4	19.9	47.4	38.6	5.1	1.6	1.3	4.3	0.4	1.6	1.1	0.9	0.5	0.3	5.3	12.4	6.4	47.4
12-Sep	Z	19.2	2.6	1.6	3.0	0.5	4.3	1.3	0.5	0.3	0.3	0.2	0.2	0.2	0.1	0.1	0.2	0.1	0.1	0.2	0.3	0.3	0.2	0.3	1.6	19.2
13-Sep	0.4	Z	0.1	0.1	0.3	0.4	0.3	0.4	0.2	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	0.1	0.4
14-Sep	0.0	0.0	Z	0.0	0.0	0.0	0.1	0.3	1.8	1.3	2.7	1.8	5.4	7.7	6.7	0.8	0.7	0.2	0.2	0.1	0.0	0.0	0.0	0.1	1.3	7.7
15-Sep	0.0	0.0	0.0	Z	0.2	0.2	0.2	0.1	0.2	0.0	0.1	0.0	0.0	1.2	4.2	8.9	8.0	16.6	7.5	1.6	1.0	1.1	0.6	10.8	2.7	16.6
16-Sep	12.0	11.6	10.6	12.3	Z	5.3	5.7	1.9	0.7	0.5	0.4	0.4	9.4	37.6	26.7	12.0	2.2	1.2	0.3	0.2	0.2	0.3	2.9	0.4	6.7	37.6
17-Sep	0.3	0.3	0.2	4.4	1.4	Z	0.4	0.4	0.3	0.3	0.3	1.5	0.8	0.8	0.3	0.3	2.5	3.0	0.6	0.4	0.6	1.8	1.5	2.3	1.1	4.4
18-Sep	Z	3.6	7.6	8.4	7.9	3.3	1.0	0.7	1.3	0.7	0.5	0.4	M	M	0.4	0.2	0.2	0.2	0.2	0.3	0.3	0.2	0.4	0.8	1.8	8.4
19-Sep	1.1	Z	0.6	0.6	0.3	0.3	0.3	0.3	0.2	1.8	0.7	2.4	1.6	1.2	2.2	1.9	1.5	0.0	0.0	0.2	0.5	0.2	0.2	0.2	0.8	2.4
20-Sep	0.1	0.1	Z	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	0.1	0.1	0.1	0.1	0.1	0.1	0.2	0.2	0.2	0.2
21-Sep	0.0	0.1	0.2	Z	0.3	0.1	0.0	0.0	0.1	2.5	7.4	1.2	1.0	2.0	0.1	0.0	0.0	0.2	0.4	0.2	0.0	1.7	0.4	0.3	0.8	7.4
22-Sep	0.6	3.2	2.0	3.8	Z	0.3	0.0	0.0	0.1	0.2	0.7	0.1	0.2	0.1	0.4	3.5	8.7	11.9	9.1	2.3	1.6	0.5	0.1	0.3	2.2	11.9
23-Sep	0.2	0.0	0.0	0.0	0.1	Z	0.2	0.3	0.0	0.2	0.3	8.6	31.9	9.9	2.6	1.0	0.4	0.2	0.0	0.1	0.0	0.1	0.0	0.0	2.4	31.9
24-Sep	Z	0.2	0.5	0.4	1.1	1.0	0.0	0.9	5.5	6.1	2.3	16.8	9.2	0.2	1.1	0.1	0.1	0.0	0.2	0.5	0.4	0.4	6.4	11.2	2.8	16.8
25-Sep	8.6	2.9	Z	4.3	4.2	2.8	1.4	0.6	6.1	7.6	0.6	0.4	0.2	0.3	0.2	0.3	0.3	0.1	0.1	0.1	0.1	0.9	0.2	0.3	1.9	8.6
26-Sep	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	0.0	0.0	0.0	0.0	0.0	0.0	0.4	0.4	0.0	0.0	0.0	0.1	0.4
27-Sep	0.0	0.2	0.0	Z	0.2	1.7	0.2	0.1	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.1	0.0	0.0	0.5	0.1	0.1	0.0	0.1	1.7
28-Sep	0.1	0.4	1.4	22.9	Z	9.8	0.7	4.4	16.1	9.7	5.6	9.2	5.4	20.7	22.4	11.4	2.9	1.3	1.0	1.6	1.0	0.5	0.3	0.6	6.5	22.9
29-Sep	2.7	2.0	2.0	0.6	0.3	Z	0.2	0.3	0.9	0.8	0.8	0.3	0.1	0.1	0.8	0.7	0.3	0.1	0.0	0.2	0.1	0.0	0.0	0.0	0.6	2.7
30-Sep	Z	0.0	0.0	0.0	0.0	0.0	0.0	0.1	0.8	4.7	20.8	2.5	3.5	0.6	0.2	0.0	0.0	0.0	0.1	0.2	0.2	1.4	0.8	3.1	1.7	20.8
	1.5	2.1	1.5	2.6	1.1	1.2	0.7	0.8	2.4	4.5	4.2	4.2	3.7	3.5	2.8	2.9	2.1	3.0	2.7	1.0	0.5	1.0	1.0	2.0	Diurnal Average	
	12.0	19.2	10.6	22.9	7.9	9.8	5.7	5.9	16.1	19.9	47.4	38.6	31.9	37.6	26.7	15.8	15.1	23.1	38.4	14.8	1.6	12.4	6.4	12.4	Diurnal Maximum	

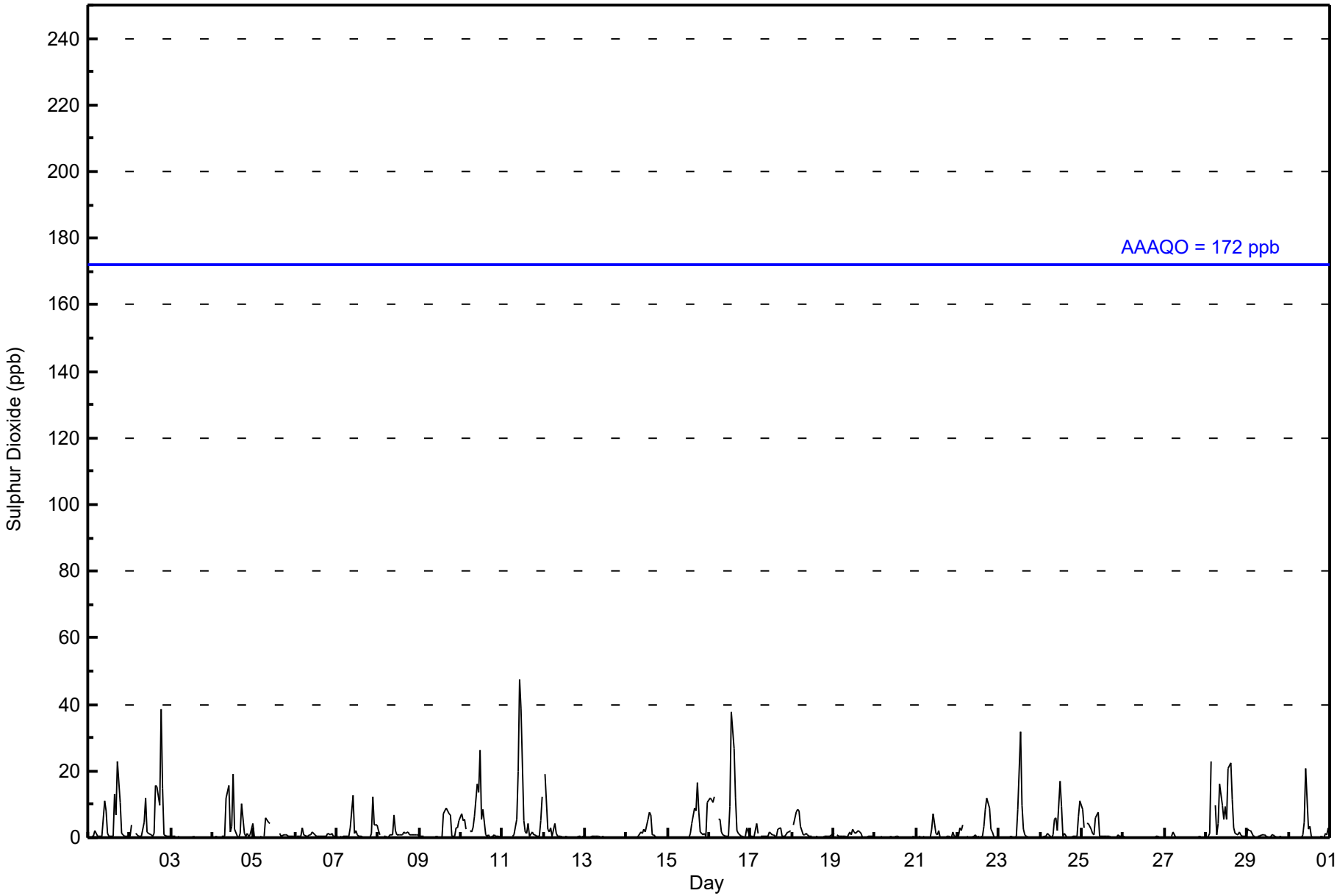
Z - zerospan C - Calibration M - Maintenance
Alberta Ambient Air Quality Objectives (AAAQO): 1-hr 172 ppb 24-hr 48 ppb

Wood Buffalo Environmental Association

Hourly Averages

Sulphur Dioxide (SO_2) - ppb

Mildred Lake - September 2024



Sulphur Dioxide (SO_2) - ppb
Mildred Lake - September 2024

Concentration Ranges (ppb)	Number of Hours	%	Cumulative %
0 - 10	642	94.00	94.00
11 - 20	29	4.25	98.24
21 - 60	12	1.76	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: 683

Total Number of Hours: 720

Wood Buffalo Environmental Association

Frequency Distribution

Sulphur Dioxide (SO_2) - ppb

Mildred Lake - September 2024

Concentration							**Wind Direction**										
Ranges (ppb)	N	NNE	NE	ENE	E	ESE	SE	SSE	S	SSW	SW	WSW	W	WNW	NW	NNW	**Totals**
0 - 10	60	26	10	7	17	12	55	84	68	42	38	19	58	42	39	65	642
11 - 20	0	0	1	0	0	4	6	3	0	1	1	4	7	1	1	0	29
21 - 60	0	0	0	0	0	1	1	1	0	0	2	4	3	0	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	60	26	11	7	17	17	62	88	68	43	41	27	68	43	40	65	683

Total Number of Valid Hours: 683

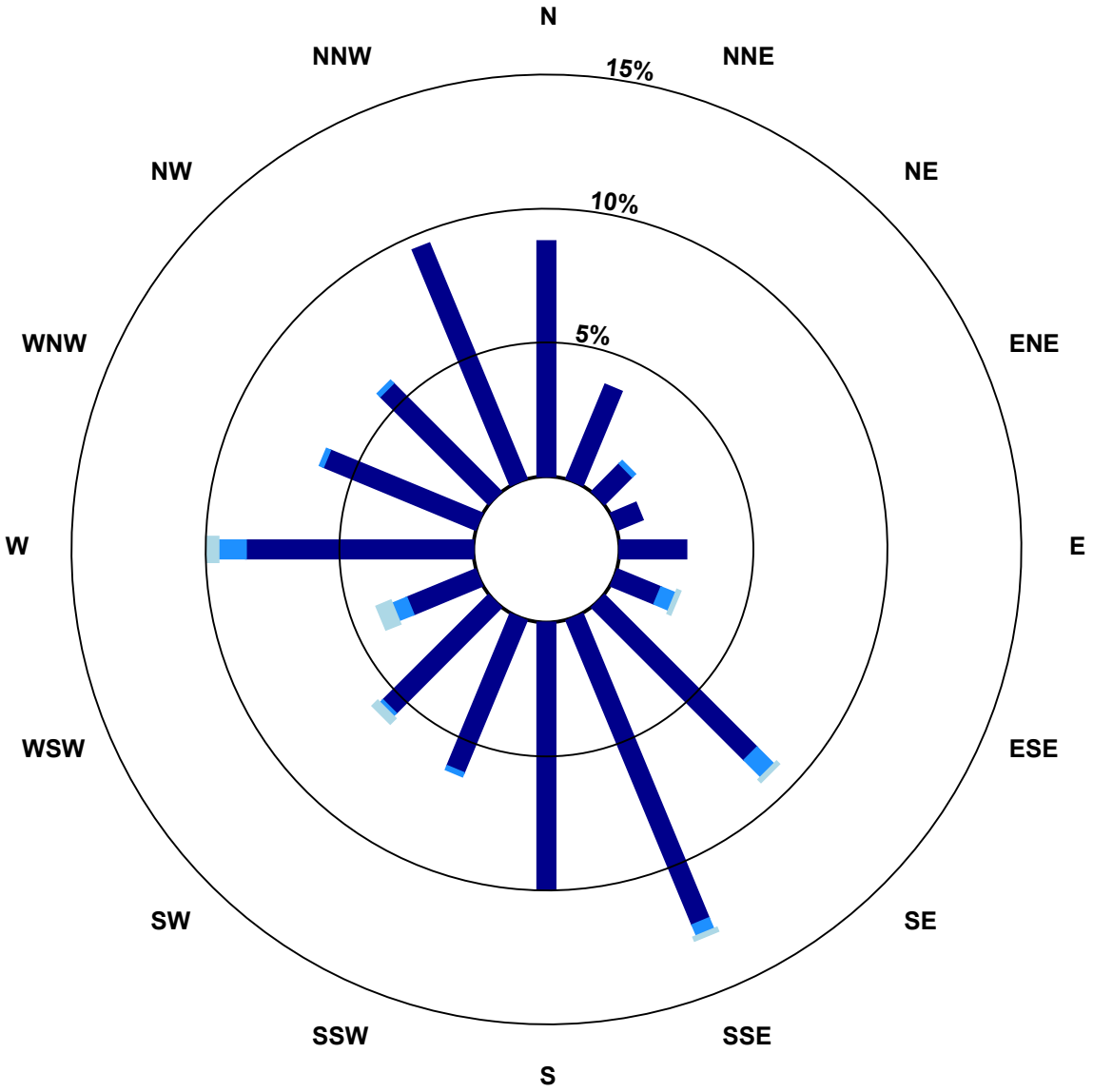
Total Number of Hours: 720

Wood Buffalo Environmental Association

Wind Rose Sep 2024

Sulphur Dioxide (SO_2) - ppb

Mildred Lake



Classes (ppb)

0 - 10

11 - 20

21 - 60

61 - 110

111 - 172

> 172

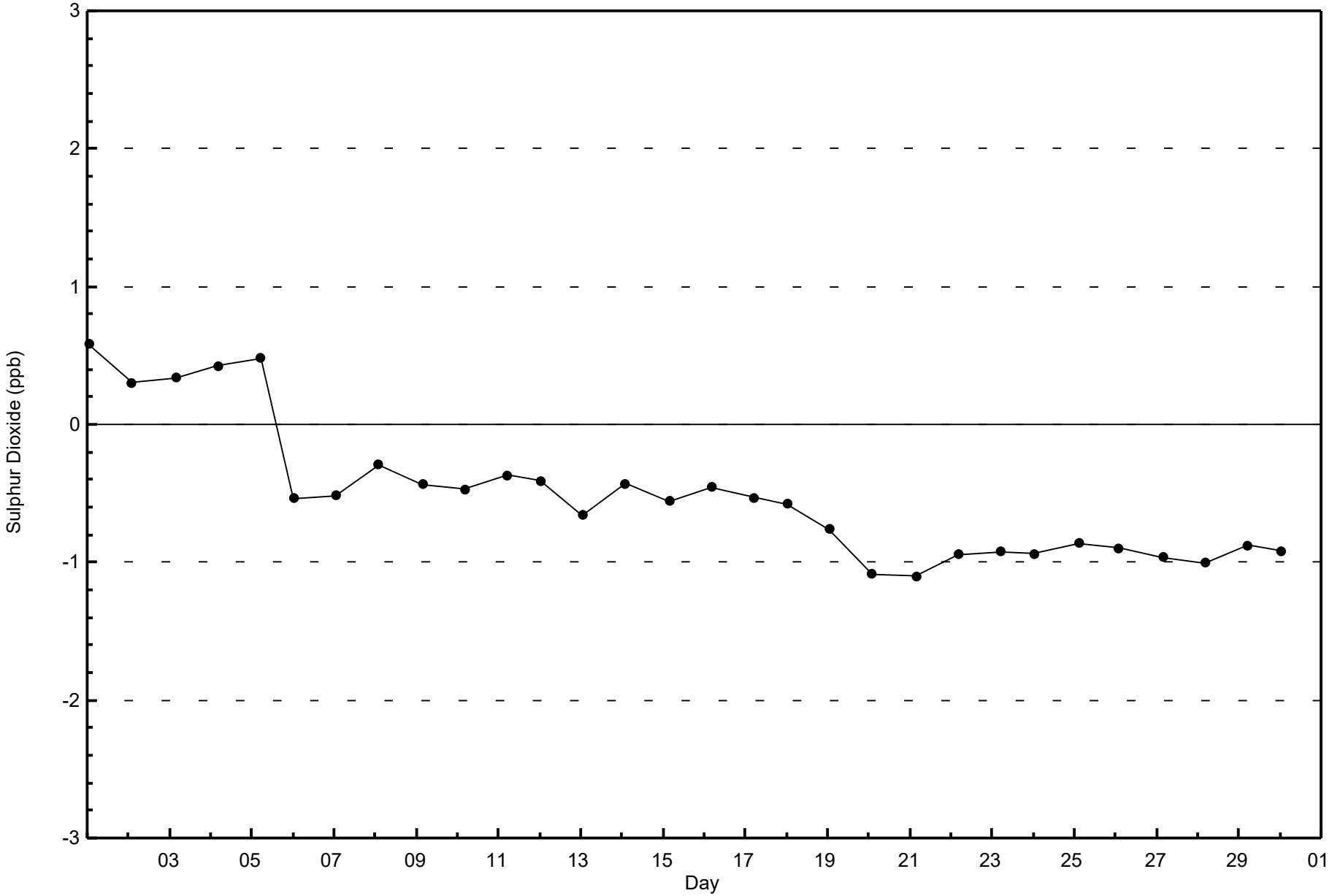
Total Number of Valid Hours: 683

Wood Buffalo Environmental Association

Zero Responses

Sulphur Dioxide (SO_2) - ppb

Mildred Lake - September 2024

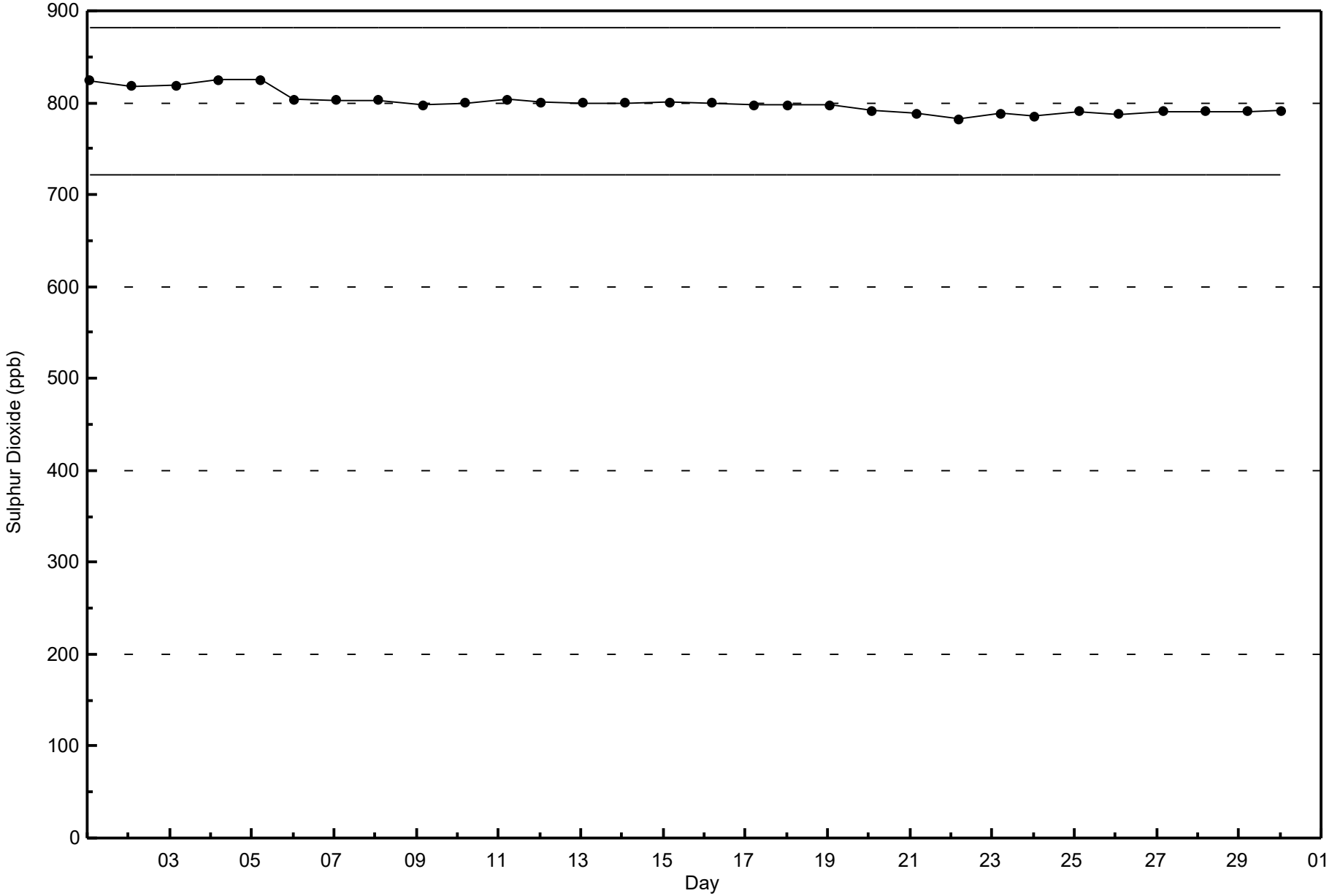


Wood Buffalo Environmental Association

Span Responses

Sulphur Dioxide (SO_2) - ppb

Mildred Lake - September 2024



Wood Buffalo Environmental Association

Summary of Hour Averages

Hydrogen Sulphide (H_2S) - ppb

Mildred Lake - September 2024

Number of Exceedences (AAAQO): 1-hr: 0 24-hr: 0
Maximum Value: 6.6 ppb on Sep 24 23:00 Maximum Daily Average: 1.1 ppb on Sep 11

Minimum Value: 0.0 ppb on Sep 17 15:00 Minimum Daily Average: 0.1 ppb on Sep 27
Maximum Diurnal Average: 0.8 ppb at hour 5 Minimum Diurnal Average: 0.1 ppb at hour 17
Monthly Average: 0.47 ppb Percentiles: P_1 = 0.0 P_{10} = 0.1 Q_1 = 0.1 Median = 0.3 Q_3 = 0.5 P_{90} = 1.1 P_{99} = 3.3

Hours in Service:	720
Hours of Data:	684
Hours of Missing Data:	36
Hours of Calibration:	36
Percent Operational Time:	100.0

Day	Hourly Period Ending At (MST)																								Daily	Daily
	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24	Average	Maximum
1-Sep	0.6	0.6	Z	0.7	1.2	0.8	0.3	0.2	0.2	0.9	0.7	0.2	0.1	0.1	0.0	0.1	0.1	0.2	0.2	0.2	0.2	0.7	1.1	0.4	0.4	1.2
2-Sep	0.5	1.5	2.6	Z	0.5	0.4	0.5	0.4	1.2	1.3	0.3	0.3	0.2	0.2	0.1	0.1	0.1	0.2	0.4	0.3	0.2	0.2	0.1	0.1	0.5	2.6
3-Sep	0.1	0.1	0.1	0.2	Z	0.3	0.4	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	0.1	0.0	0.2	0.4
4-Sep	0.1	0.2	0.3	0.2	0.3	Z	0.5	0.7	0.6	0.5	0.2	0.2	0.3	0.1	0.1	0.0	0.1	0.2	0.2	0.3	0.4	0.4	0.5	2.2	0.4	2.2
5-Sep	Z	0.2	0.3	0.4	0.4	0.5	0.6	1.4	2.7	1.8	0.8	0.3	0.2	0.1	0.1	0.1	0.1	0.1	0.2	0.1	0.5	0.5	0.5	0.4	0.5	2.7
6-Sep	0.4	Z	0.3	0.4	0.7	0.5	0.4	0.2	0.4	0.2	0.2	0.2	0.2	0.1	0.1	0.2	0.1	0.2	0.1	0.2	0.3	0.6	0.9	1.2	0.3	1.2
7-Sep	1.2	1.0	Z	0.4	2.3	0.6	0.5	1.6	1.2	1.8	0.6	0.5	0.2	0.2	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.4	0.3	0.7	0.6	2.3
8-Sep	1.3	1.1	0.8	Z	0.6	0.5	0.5	1.4	0.8	1.4	0.8	0.4	0.3	0.1	0.2	0.4	0.5	0.5	0.3	0.2	0.3	0.4	0.6	0.7	0.6	1.4
9-Sep	0.4	0.3	0.3	0.2	Z	0.3	0.2	0.4	0.4	0.5	0.3	0.2	0.2	0.2	0.8	0.4	0.1	0.1	0.2	0.2	0.1	0.1	0.1	0.2	0.3	0.8
10-Sep	0.3	0.2	0.2	0.3	0.8	Z	0.1	0.2	0.1	0.5	0.1	0.2	0.1	0.1	0.0	0.0	0.0	0.0	0.0	0.2	0.3	0.1	0.1	0.1	0.2	0.8
11-Sep	Z	0.2	0.3	0.3	0.3	0.4	0.5	0.8	3.7	5.3	3.9	2.9	1.1	0.6	0.2	0.5	0.0	0.1	0.1	0.1	0.2	0.1	1.9	2.0	1.1	5.3
12-Sep	2.7	Z	2.2	1.1	0.8	0.6	1.7	1.8	0.6	0.3	0.2	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	0.6	2.7
13-Sep	0.3	0.2	Z	0.2	0.7	0.8	0.8	1.0	0.8	0.8	0.9	0.9	0.9	0.6	0.5	0.3	0.3	0.3	0.2	0.1	0.1	0.1	0.1	0.2	0.5	1.0
14-Sep	0.3	0.3	0.9	Z	0.5	0.7	0.5	0.7	1.1	1.2	0.9	0.5	0.3	0.2	0.3	0.2	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.2	0.4	1.2
15-Sep	0.1	0.2	0.2	0.3	Z	0.3	0.4	0.4	0.4	0.3	0.1	0.1	0.0	0.1	0.2	0.2	0.2	1.7	1.0	0.4	0.4	0.2	0.2	2.2	0.4	2.2
16-Sep	2.4	3.3	3.5	2.5	1.7	Z	1.4	0.6	0.3	0.3	0.2	0.2	0.3	0.4	0.3	0.2	0.2	0.2	0.2	0.1	0.1	0.2	0.4	0.2	0.8	3.5
17-Sep	Z	0.2	0.6	1.9	0.9	0.6	0.6	0.3	0.1	0.2	0.2	0.3	0.1	0.1	0.0	0.0	0.2	0.6	0.4	0.3	0.8	2.5	1.0	0.8	0.5	2.5
18-Sep	0.6	Z	1.4	1.3	1.2	0.7	0.2	0.2	0.2	C	C	C	C	C	C	0.2	0.3	0.2	0.2	0.3	0.3	0.3	0.6	1.5	--	1.5
19-Sep	1.8	1.5	Z	0.9	0.6	0.6	0.6	0.5	0.4	0.7	0.2	0.2	0.2	0.1	0.0	0.0	0.1	0.0	0.0	0.2	0.1	0.0	0.0	0.2	0.4	1.8
20-Sep	0.2	0.3	0.3	Z	0.2	0.3	0.2	0.2	0.4	0.3	0.3	0.3	0.2	0.1	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.2	0.1	0.2	0.4
21-Sep	0.1	0.2	0.3	0.4	Z	0.3	0.3	0.3	0.3	0.9	1.9	0.4	0.3	0.3	0.1	0.0	0.0	0.1	0.1	0.2	0.0	1.1	3.9	3.3	0.7	3.9
22-Sep	2.5	0.5	0.4	0.8	0.7	Z	0.1	0.2	0.1	0.2	0.3	0.1	0.0	0.1	0.1	0.3	0.8	1.3	0.9	0.2	0.4	0.3	0.2	0.3	0.5	2.5
23-Sep	Z	0.3	0.4	0.3	0.3	0.3	0.5	0.6	0.4	0.8	0.6	1.1	1.9	1.2	0.6	0.4	0.2	0.3	0.4	0.1	0.2	0.1	0.2	0.2	0.5	1.9
24-Sep	0.4	Z	0.6	0.9	1.3	1.0	0.6	0.4	0.4	0.5	0.3	0.3	0.2	0.1	0.1	0.0	0.0	0.1	0.2	0.5	0.4	0.6	6.6	3.2	0.8	6.6
25-Sep	2.2	1.1	0.8	Z	3.0	3.7	2.2	0.6	1.1	1.1	0.5	0.3	0.2	0.2	0.1	0.1	0.1	0.1	0.0	0.0	0.2	0.8	0.9	0.6	0.9	3.7
26-Sep	0.2	0.4	0.4	Z	0.3	0.3	0.4	0.4	0.4	0.3	0.3	0.2	0.1	0.0	0.0	0.0	0.0	0.0	0.1	0.0	0.2	0.1	0.1	0.2	0.3	0.2	0.4
27-Sep	0.2	0.3	0.2	0.4	Z	0.4	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	0.0	0.1	0.1	0.0	0.0	0.1	0.4
28-Sep	0.0	0.0	0.0	0.5	0.5	Z	0.2	0.3	0.2	0.2	0.1	0.1	0.1	0.1	0.2	0.1	0.1	0.1	0.2	0.5	0.5	0.2	0.2	0.5	0.2	0.5
29-Sep	Z	0.8	1.0	0.6	0.7	0.7	0.4	0.7	1.5	1.3	1.2	0.7	0.3	0.3	0.3	0.3	0.2	0.1	0.1	0.3	0.3	0.2	0.1	0.2	0.5	1.5
30-Sep	0.2	Z	0.3	0.4	0.4	0.1	0.1	0.2	0.1	0.3	0.2	0.1	0.1	0.0	0.0	0.0	0.0	0.0	0.2	0.4	0.3	0.4	0.1	0.4	0.2	0.4
	0.8	0.6	0.7	0.7	0.8	0.6	0.5	0.6	0.7	0.8	0.6	0.4	0.3	0.2	0.2	0.1	0.1	0.2	0.2	0.2	0.2	0.4	0.7	0.8	Diurnal Average	
	2.7	3.3	3.5	2.5	3.0	3.7	2.2	1.8	3.7	5.3	3.9	2.9	1.9	1.2	0.8	0.5	0.8	1.7	1.0	0.5	0.8	2.5	6.6	3.3	Diurnal Maximum	

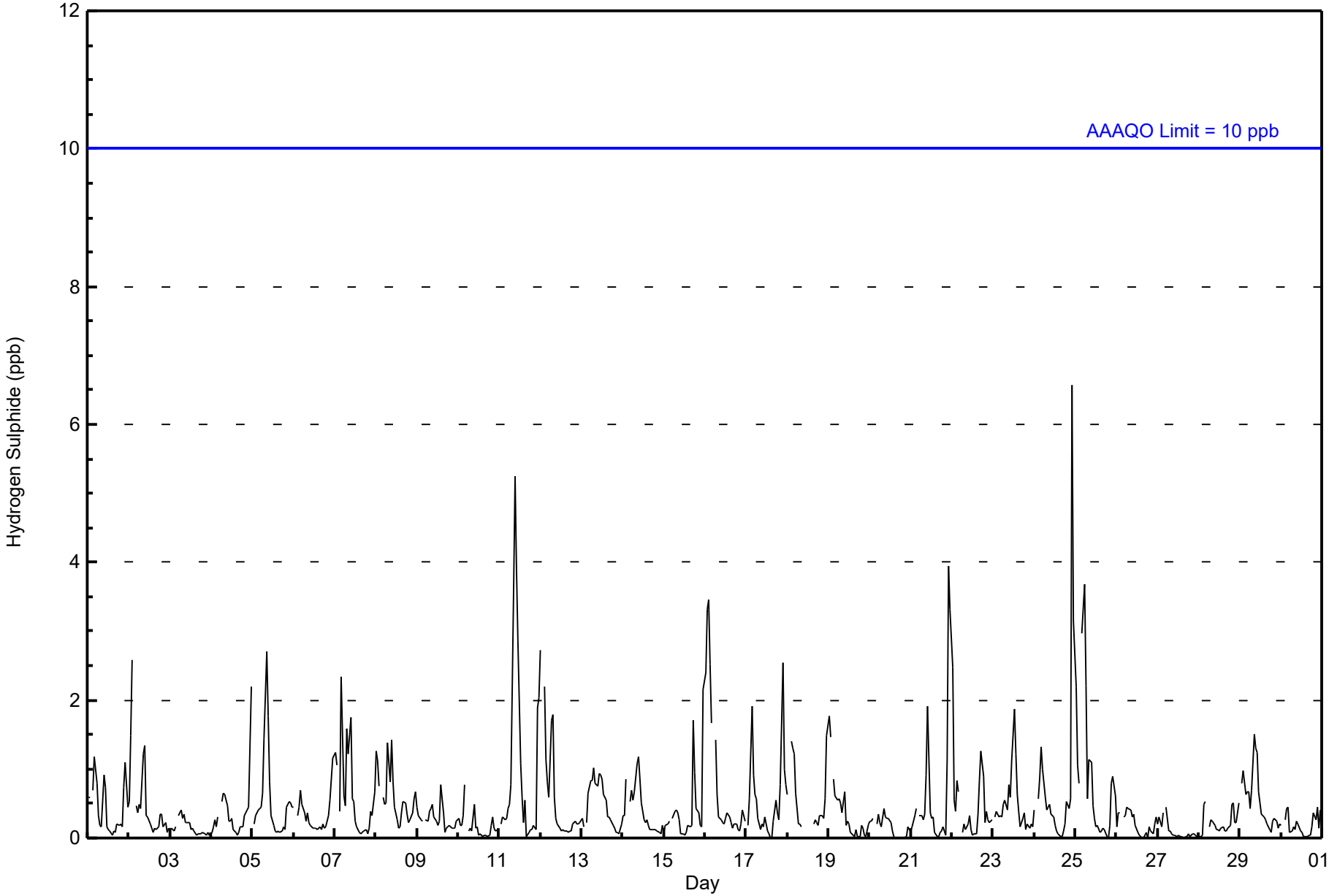
Z - zerospan C - Calibration
Alberta Ambient Air Quality Objectives (AAAQO): 1-hr 10 ppb 24-hr 3 ppb

Wood Buffalo Environmental Association

Hourly Averages

Hydrogen Sulphide (H_2S) - ppb

Mildred Lake - September 2024



Hydrogen Sulphide (H_2S) - ppb
Mildred Lake - September 2024

Concentration Ranges (ppb)	Number of Hours	%	Cumulative %
0 - 2	667	97.51	97.51
3 - 4	15	2.19	99.71
5 - 7	2	0.29	100.00
8 - 11	0	0.00	100.00
> 11	0	0.00	100.00

Total Number of Valid Hours: 684

Total Number of Hours: 720

Wood Buffalo Environmental Association

Frequency Distribution

Hydrogen Sulphide (H_2S) - ppb

Mildred Lake - September 2024

Concentration Ranges (ppb)	Wind Direction																
	N	NNE	NE	ENE	E	ESE	SE	SSE	S	SSW	SW	WSW	W	WNW	NW	NNW	**Totals**
0 - 2	57	28	11	7	18	13	58	82	70	41	40	27	65	41	41	65	664
3 - 4	0	0	0	0	0	4	3	6	0	1	0	0	1	0	0	0	15
5 - 7	0	0	0	0	0	0	1	1	0	0	0	0	0	0	0	0	2
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	57	28	11	7	18	17	62	89	70	42	40	27	66	41	41	65	681

Total Number of Valid Hours: 681

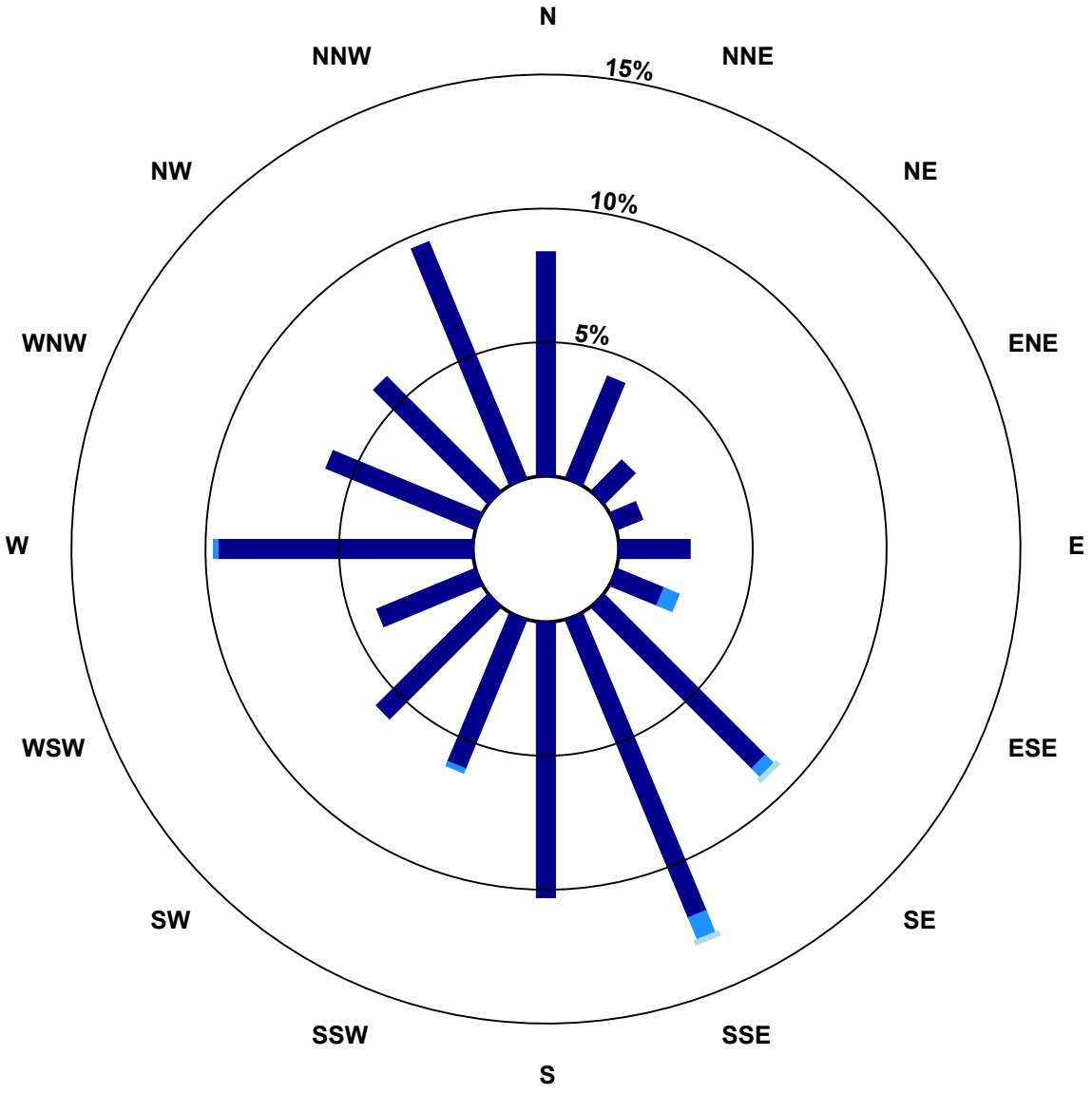
Total Number of Hours: 720

Wood Buffalo Environmental Association

Wind Rose Sep 2024

Hydrogen Sulphide (H_2S) - ppb

Mildred Lake



Classes (ppb)

0 - 2

3 - 4

5 - 7

8 - 11

> 11

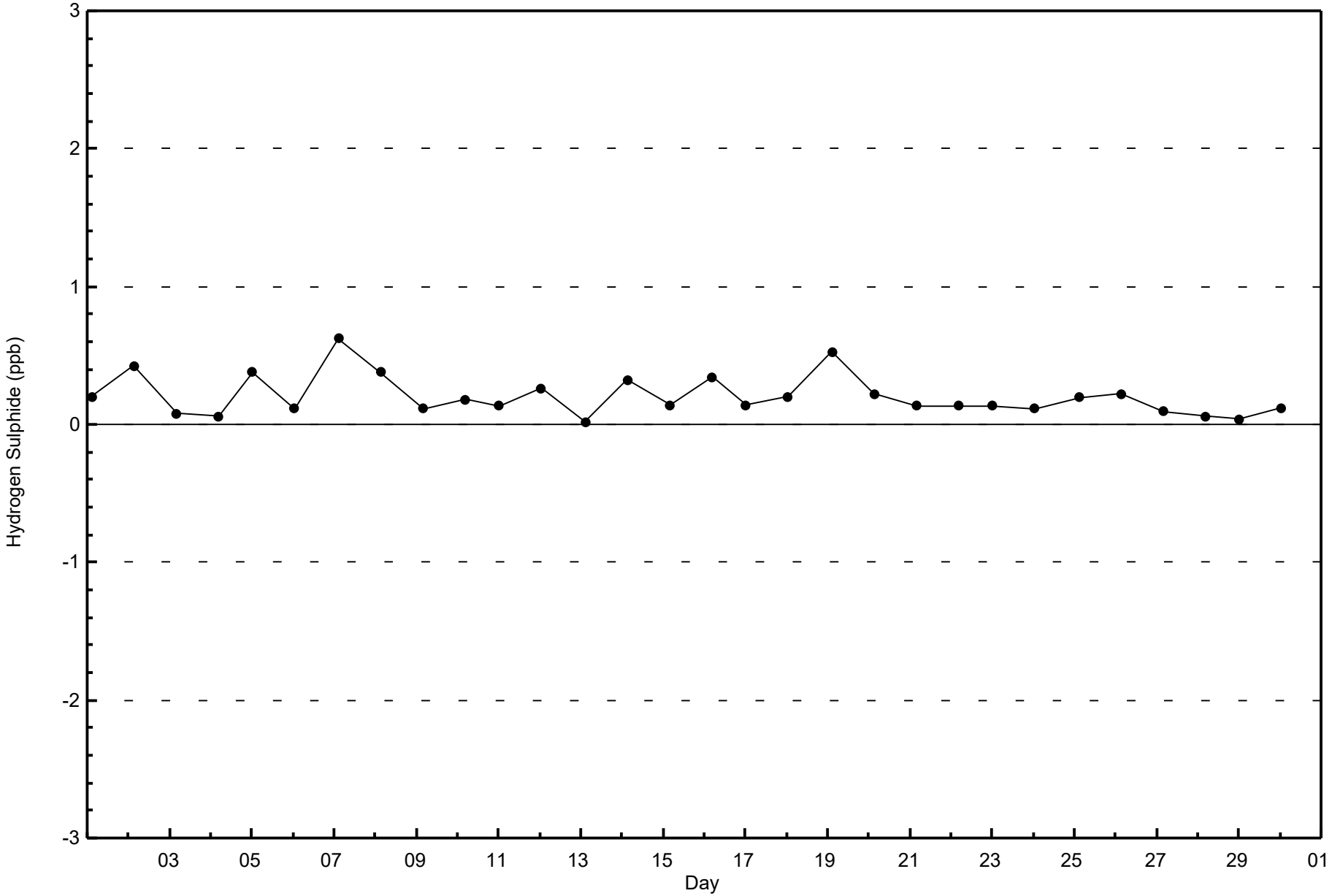
Total Number of Valid Hours: 681

Wood Buffalo Environmental Association

Zero Responses

Hydrogen Sulphide (H_2S) - ppb

Mildred Lake - September 2024

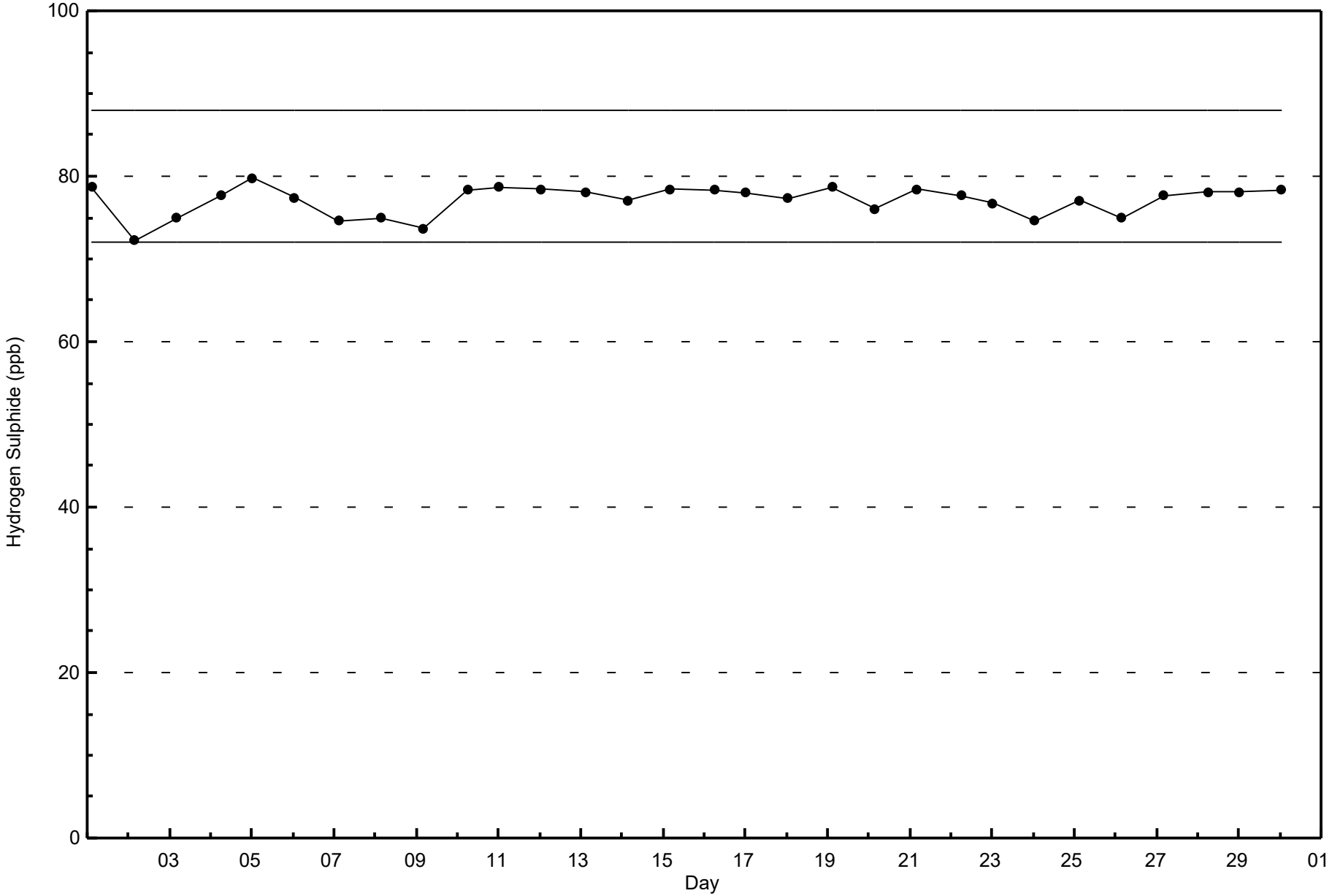


Wood Buffalo Environmental Association

Span Responses

Hydrogen Sulphide (H_2S) - ppb

Mildred Lake - September 2024



Wood Buffalo Environmental Association

Summary of Hour Averages

Total Hydrocarbons (THC) - ppm

Mildred Lake - September 2024

Maximum Value: 3.5 ppm on Sep 19 00:00

Maximum Daily Average: 2.3 ppm on Sep 29

Minimum Value: 2.0 ppm on Sep 2 21:00

Minimum Daily Average: 2.0 ppm on Sep 28

Maximum Diurnal Average: 2.3 ppm at hour 5

Minimum Diurnal Average: 2.0 ppm at hour 15

Monthly Average: 2.18 ppm

Percentiles: P_1 = 2.0 P_{10} = 2.0 Q_1 = 2.0 Median = 2.1 Q_3 = 2.3 P_{90} = 2.5 P_{99} = 2.9

Hours in Service:	720
Hours of Data:	683
Hours of Missing Data:	37
Hours of Calibration:	35
Percent Operational Time:	99.7

Day	Hourly Period Ending At (MST)																								Daily	Daily
	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24	Average	Maximum
1-Sep	2.4	Z	2.5	2.4	2.4	2.4	2.2	2.1	2.1	2.1	2.2	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.1	2.0	2.0	2.0	2.1	2.1	2.1	2.5
2-Sep	2.1	2.2	Z	2.4	2.1	2.1	2.1	2.1	2.5	2.3	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	2.1	2.5
3-Sep	2.0	2.0	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
4-Sep	2.0	2.1	2.1	2.1	Z	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	2.1	2.1	2.1	2.3	2.3	2.1	2.1	2.3
5-Sep	2.1	2.1	2.1	2.1	2.1	Z	2.1	2.2	2.5	2.4	C	C	C	C	C	2.0	2.0	2.0	2.0	2.0	2.2	2.4	2.4	2.4	2.2	2.5
6-Sep	Z	2.3	2.3	2.3	2.4	2.6	2.3	2.3	2.4	2.1	2.0	2.0	2.0	2.0	2.0	2.1	2.1	2.1	2.1	2.1	2.2	2.3	2.7	2.7	2.2	2.7
7-Sep	2.7	Z	2.4	2.2	2.3	2.1	2.1	2.5	2.3	2.3	2.4	2.3	2.1	2.1	2.0	2.0	2.0	2.0	2.0	2.1	2.0	2.1	2.1	2.1	2.2	2.7
8-Sep	2.2	2.2	Z	2.1	2.2	2.1	2.1	2.7	2.4	2.4	2.4	2.3	2.1	2.0	2.1	2.1	2.1	2.1	2.1	2.1	2.1	2.2	2.4	2.4	2.2	2.7
9-Sep	2.3	2.2	2.2	Z	2.2	2.2	2.2	2.3	2.3	2.3	2.2	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	2.1	2.3
10-Sep	2.1	2.1	2.1	2.1	Z	2.0	2.0	2.0	2.1	2.1	2.1	2.0	2.0	2.0	2.1	2.0	2.0	2.0	2.0	2.0	2.5	2.1	2.1	2.1	2.1	2.5
11-Sep	2.2	2.2	2.2	2.3	2.5	Z	2.5	2.4	2.4	2.4	2.3	2.2	2.1	2.0	2.0	2.0	2.0	2.0	2.1	2.0	2.0	2.1	2.1	2.2	2.2	2.5
12-Sep	Z	2.3	2.2	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	2.1	2.1	2.1	2.1	2.1	2.1	2.3
13-Sep	2.1	Z	2.1	2.2	2.9	2.9	2.7	2.8	2.5	2.5	2.7	2.5	2.3	2.2	2.1	2.0	2.1	2.1	2.1	2.1	2.1	2.1	2.2	2.8	2.3	2.9
14-Sep	3.2	3.1	Z	2.5	2.6	2.4	2.2	2.4	2.3	2.3	2.2	2.1	2.0	2.0	2.0	2.1	2.2	2.3	2.1	2.0	2.0	2.1	2.1	2.1	2.3	3.2
15-Sep	2.2	2.3	2.3	Z	2.3	2.4	2.5	2.4	2.2	2.1	2.0	2.0	2.1	2.1	2.2	2.1	2.1	2.2	2.2	2.3	2.4	2.1	2.1	2.4	2.2	2.5
16-Sep	2.5	2.6	2.7	2.5	Z	2.5	2.4	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	2.0	2.2	2.7
17-Sep	2.0	2.1	2.6	2.9	2.9	Z	2.4	2.1	2.1	2.2	2.1	2.2	2.1	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.1	2.6	2.9	2.6	2.3	2.9
18-Sep	Z	2.4	2.3	2.6	2.5	2.5	2.0	2.0	2.1	2.3	2.1	2.1	M	M	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.2	2.4	3.5	2.2	3.5
19-Sep	3.5	Z	2.9	2.7	2.2	2.1	2.1	2.1	2.1	2.3	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	2.2	3.5
20-Sep	2.5	2.4	Z	2.4	2.4	2.4	2.2	2.1	2.5	2.4	2.2	2.2	2.1	2.1	2.0	2.0	2.0	2.0	2.0	2.0	2.1	2.1	2.2	2.2	2.2	2.5
21-Sep	2.2	2.2	2.3	Z	2.5	2.2	2.1	2.1	2.1	2.3	2.3	2.2	2.1	2.1	2.0	2.0	2.0	2.1	2.1	2.1	2.0	2.1	2.2	2.1	2.1	2.5
22-Sep	2.1	2.1	2.2	2.5	Z	2.0	2.0	2.1	2.1	2.1	2.2	2.1	2.0	2.0	2.0	2.1	2.1	2.1	2.1	2.2	2.2	2.1	2.1	2.3	2.1	2.5
23-Sep	2.3	2.5	2.4	2.4	2.4	Z	2.6	2.5	2.3	2.8	2.5	2.4	2.5	2.5	2.3	2.3	2.0	2.2	2.2	2.0	2.0	2.0	2.1	2.1	2.3	2.8
24-Sep	Z	2.3	2.2	2.2	2.2	2.1	2.5	2.1	2.1	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.1	2.5	2.5	2.5	2.4	2.4	2.8	2.8	2.2	2.8
25-Sep	2.6	2.7	Z	2.4	2.3	2.3	2.2	2.1	2.2	2.4	2.6	2.2	2.0	2.0	2.0	2.1	2.2	2.1	2.0	2.1	2.1	2.2	2.5	2.6	2.3	2.7
26-Sep	2.1	2.3	Z	2.4	2.4	2.3	2.1	2.3	2.2	2.2	2.1	2.1	2.0	2.0	2.0	2.0	2.0	2.1	2.0	2.1	2.0	2.0	2.2	2.3	2.1	2.4
27-Sep	2.1	2.3	2.1	Z	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	2.0	2.0	2.0	2.3
28-Sep	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	2.1	2.1	2.0	2.0	2.1	2.0	2.1
29-Sep	2.2	2.3	2.3	2.2	2.2	Z	2.2	2.8	3.5	3.0	2.7	2.3	2.1	2.1	2.1	2.1	2.1	2.0	2.0	2.5	2.4	2.4	2.1	2.5	2.3	3.5
30-Sep	Z	2.2	2.2	2.2	2.2	2.1	2.1	2.1	2.0	2.0	2.0	2.1	2.0	2.0	2.0	2.0	2.1	2.3	2.7	3.0	2.2	2.1	2.0	2.0	2.2	3.0
	2.3	2.3	2.3	2.3	2.3	2.3	2.2	2.2	2.2	2.3	2.2	2.1	2.1	2.1	2.0	2.0	2.0	2.1	2.1	2.1	2.1	2.1	2.2	2.3	Diurnal Average	
	3.5	3.1	2.9	2.9	2.9	2.9	2.7	2.8	3.5	3.0	2.7	2.5	2.5	2.5	2.3	2.3	2.2	2.5	2.7	3.0	2.5	2.6	2.9	3.5	Diurnal Maximum	

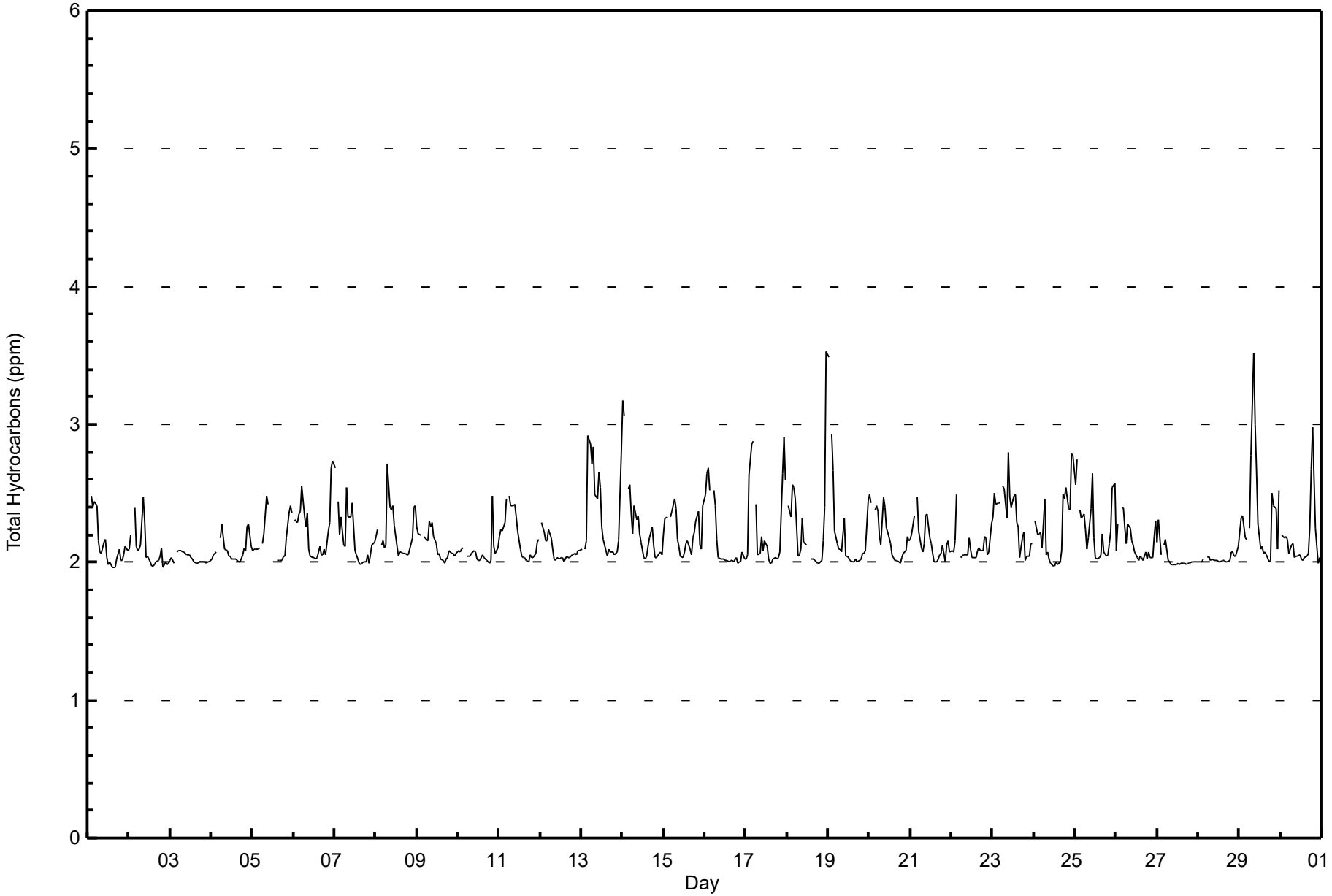
Z - zerospan C - Calibration M - Maintenance

Wood Buffalo Environmental Association

Hourly Averages

Total Hydrocarbons (THC) - ppm

Mildred Lake - September 2024



Total Hydrocarbons (THC) - ppm
Mildred Lake - September 2024

Concentration Ranges (ppm)	Number of Hours	%	Cumulative %
0 - 2.0	238	34.85	34.85
2.1 - 3.0	440	64.42	99.27
3.1 - 10.0	5	0.73	100.00
> 10.0	0	0.00	100.00

Total Number of Valid Hours: 683

Total Number of Hours: 720

Concentration Ranges (ppm)	Wind Direction																
	N	NNE	NE	ENE	E	ESE	SE	SSE	S	SSW	SW	WSW	W	WNW	NW	NNW	**Totals**
0 - 2.0	20	10	4	3	11	1	9	13	32	28	23	16	33	16	5	14	238
2.1 - 3.0	40	16	7	4	6	16	53	75	34	15	18	11	35	25	35	50	440
3.1 - 10.0	0	0	0	0	0	0	0	0	2	0	0	0	0	2	0	1	5
> 10.0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Totals	60	26	11	7	17	17	62	88	68	43	41	27	68	43	40	65	683

Total Number of Valid Hours: 683

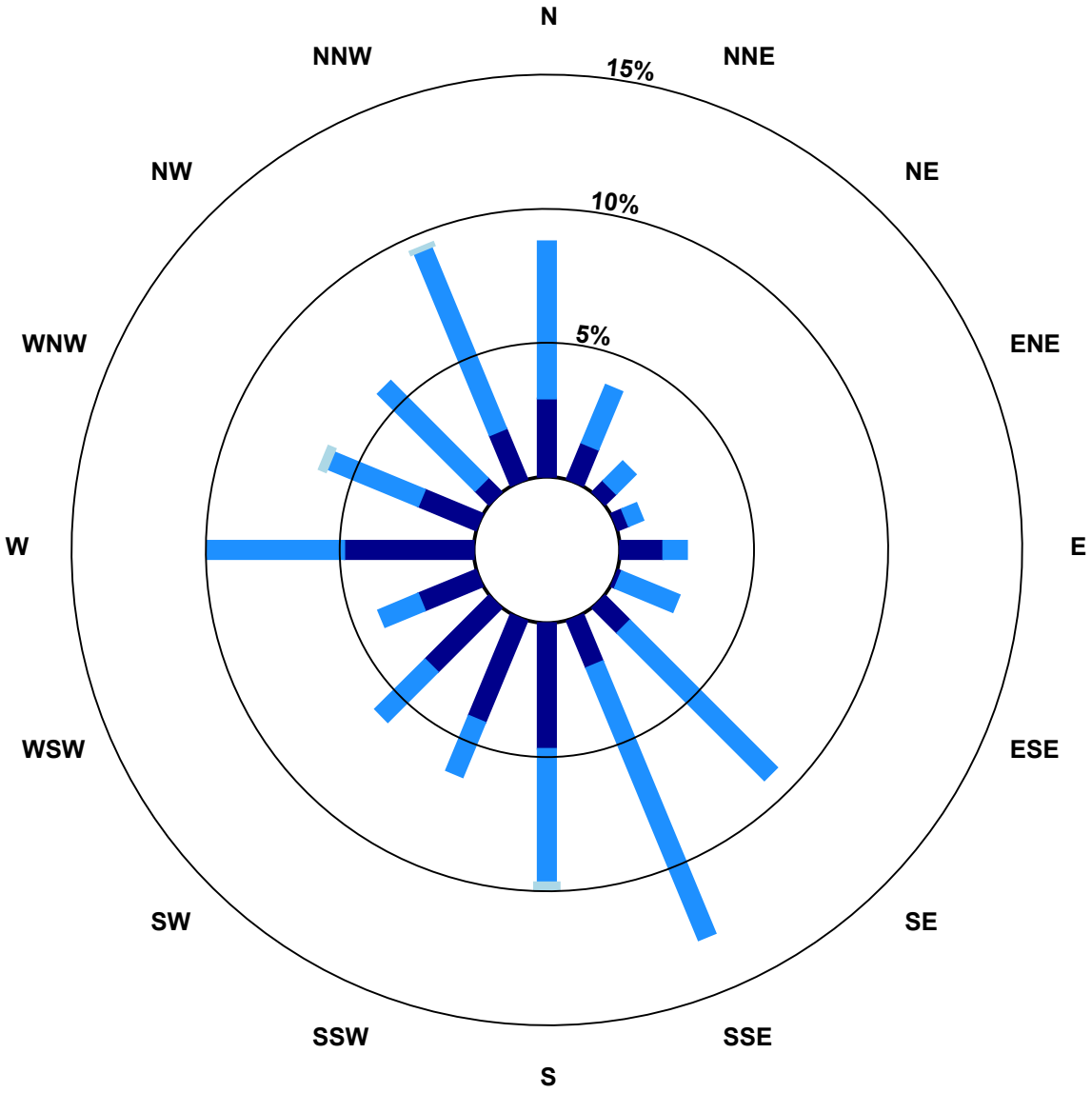
Total Number of Hours: 720

Wood Buffalo Environmental Association

Wind Rose Sep 2024

Total Hydrocarbons (THC) - ppm

Mildred Lake



Classes (ppm)

0 - 2.0

2.1 - 3.0

3.1 - 10.0

> 10.0

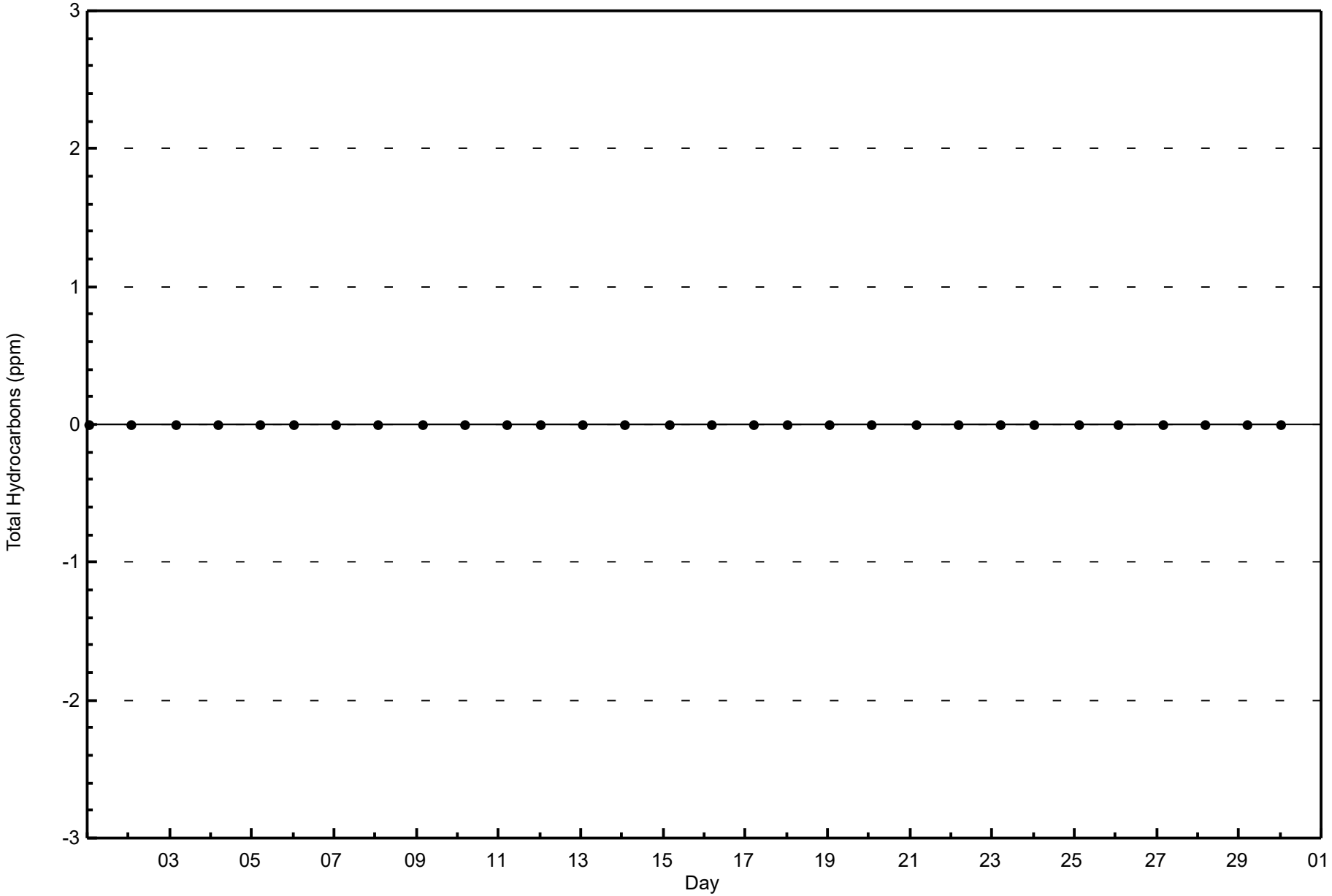
Total Number of Valid Hours: 683

Wood Buffalo Environmental Association

Zero Responses

Total Hydrocarbons (THC) - ppm

Mildred Lake - September 2024

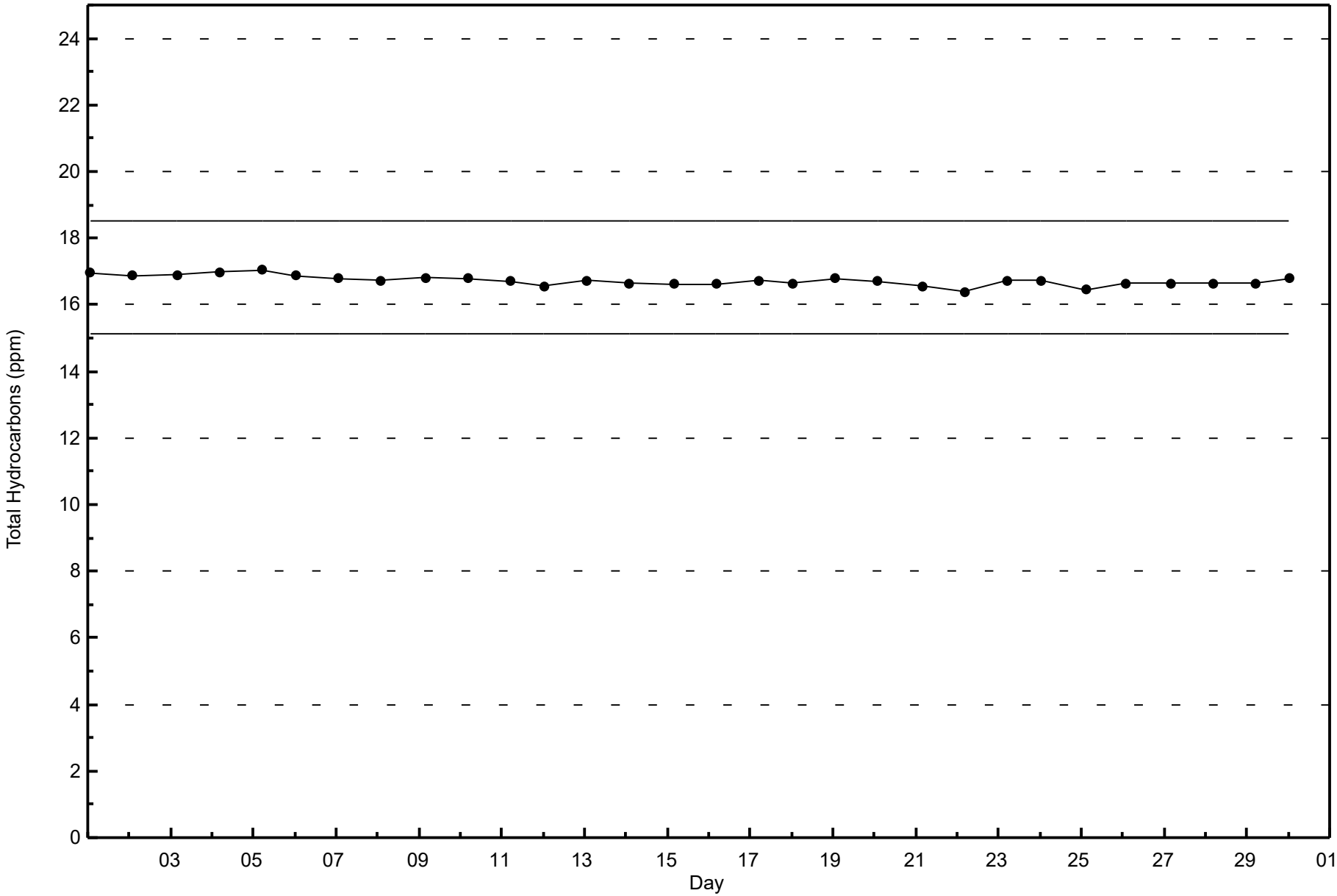


Wood Buffalo Environmental Association

Span Responses

Total Hydrocarbons (THC) - ppm

Mildred Lake - September 2024



Wood Buffalo Environmental Association

Summary of Hour Averages

Non Methane Hydrocarbons (NMHC) - ppm

Mildred Lake - September 2024

Maximum Value: 0.007 ppm on Sep 26 21:00

Maximum Daily Average: 0.000 ppm on Sep 26

Minimum Value: 0.000 ppm on Sep 1 01:00

Minimum Daily Average: 0.000 ppm on Sep 1

Maximum Diurnal Average: 0.000 ppm at hour 21

Minimum Diurnal Average: 0.000 ppm at hour 1

Monthly Average: 0.000 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 in Service:	720
Hours of Data:	683
Hours of Missing Data:	37
Hours of Calibration:	35
Percent Operational Time:	99.7

Day	Hourly Period Ending At (MST)																								Daily	Daily
	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24	Average	Maximum
1-Sep	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
2-Sep	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
3-Sep	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-Sep	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
5-Sep	0.000	0.000	0.000	0.000	0.000	Z	0.000	0.000	0.000	0.000	C	C	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
6-Sep	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-Sep	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-Sep	0.000	0.000	Z	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	0.000	0.000	0.000	0.000	0.002
9-Sep	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
10-Sep	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-Sep	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
12-Sep	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-Sep	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-Sep	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-Sep	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
16-Sep	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
17-Sep	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-Sep	Z	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	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
19-Sep	0.000	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	0.001
20-Sep	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-Sep	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
22-Sep	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-Sep	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-Sep	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-Sep	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
26-Sep	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	0.007	0.000	0.000	0.000	0.000	0.007
27-Sep	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	0.000	0.000	0.002
28-Sep	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-Sep	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-Sep	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
	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	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	
	0.000	0.000	0.000	0.000	0.002	0.000	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	0.007	0.000	0.000	0.000	Diurnal Maximum	

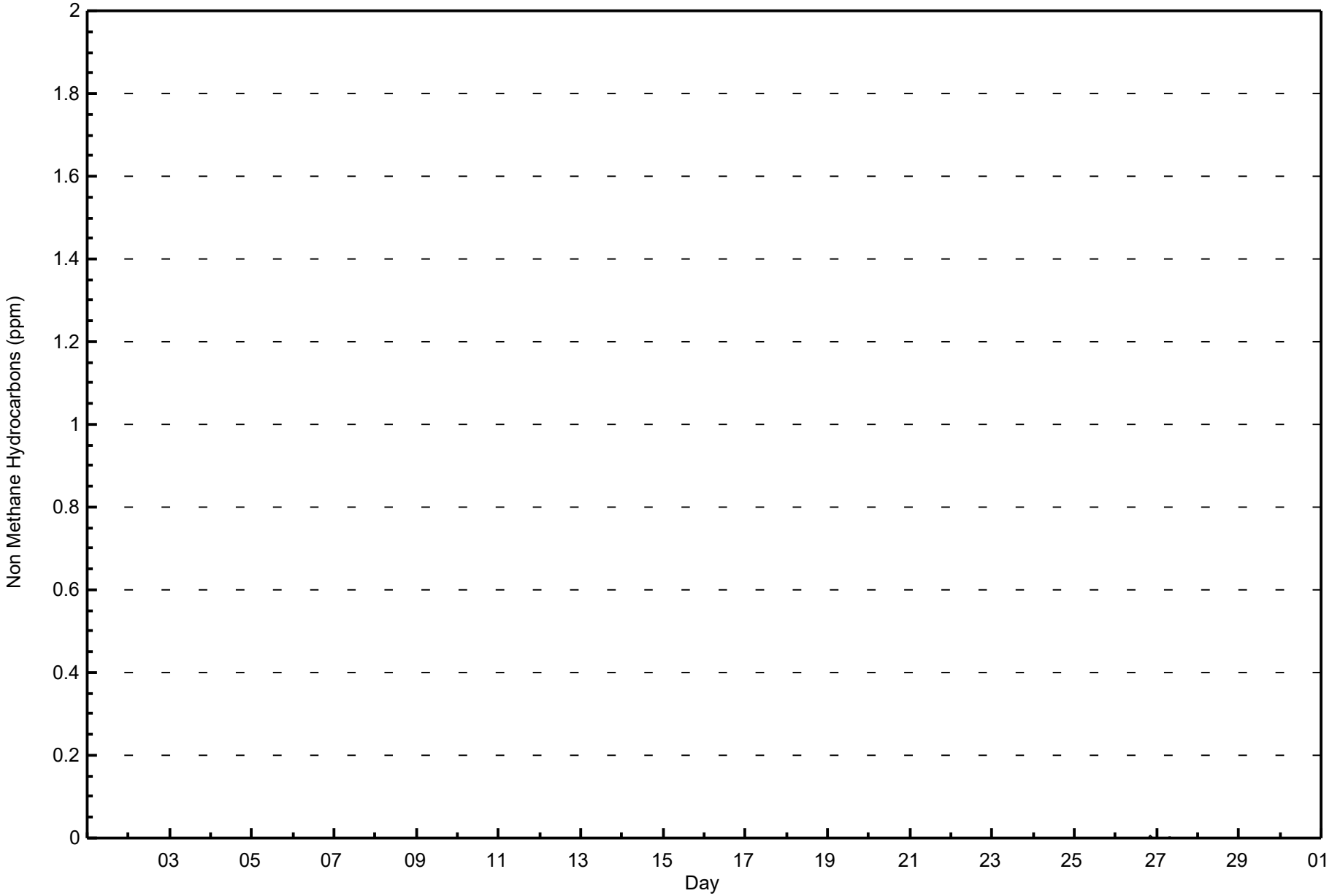
Z - zerospan C - Calibration M - Maintenance

Wood Buffalo Environmental Association

Hourly Averages

Non Methane Hydrocarbons (NMHC) - ppm

Mildred Lake - September 2024



Non Methane Hydrocarbons (NMHC) - ppm
Mildred Lake - September 2024

Concentration Ranges (ppm)	Number of Hours	%	Cumulative %
0 - 0.005	682	99.85	99.85
0.006 - 0.05	1	0.15	100.00
0.06 - 0.1	0	0.00	100.00
> 0.1	0	0.00	100.00

Total Number of Valid Hours: 683

Total Number of Hours: 720

Concentration Ranges (ppm)	Wind Direction																
	N	NNE	NE	ENE	E	ESE	SE	SSE	S	SSW	SW	WSW	W	WNW	NW	NNW	**Totals**
0 - 0.005	60	26	11	7	17	17	62	88	68	42	41	27	68	43	40	65	682
0.006 - 0.05	0	0	0	0	0	0	0	0	0	1	0	0	0	0	0	0	1
0.06 - 0.1	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
Totals	60	26	11	7	17	17	62	88	68	43	41	27	68	43	40	65	683

Total Number of Valid Hours: 683

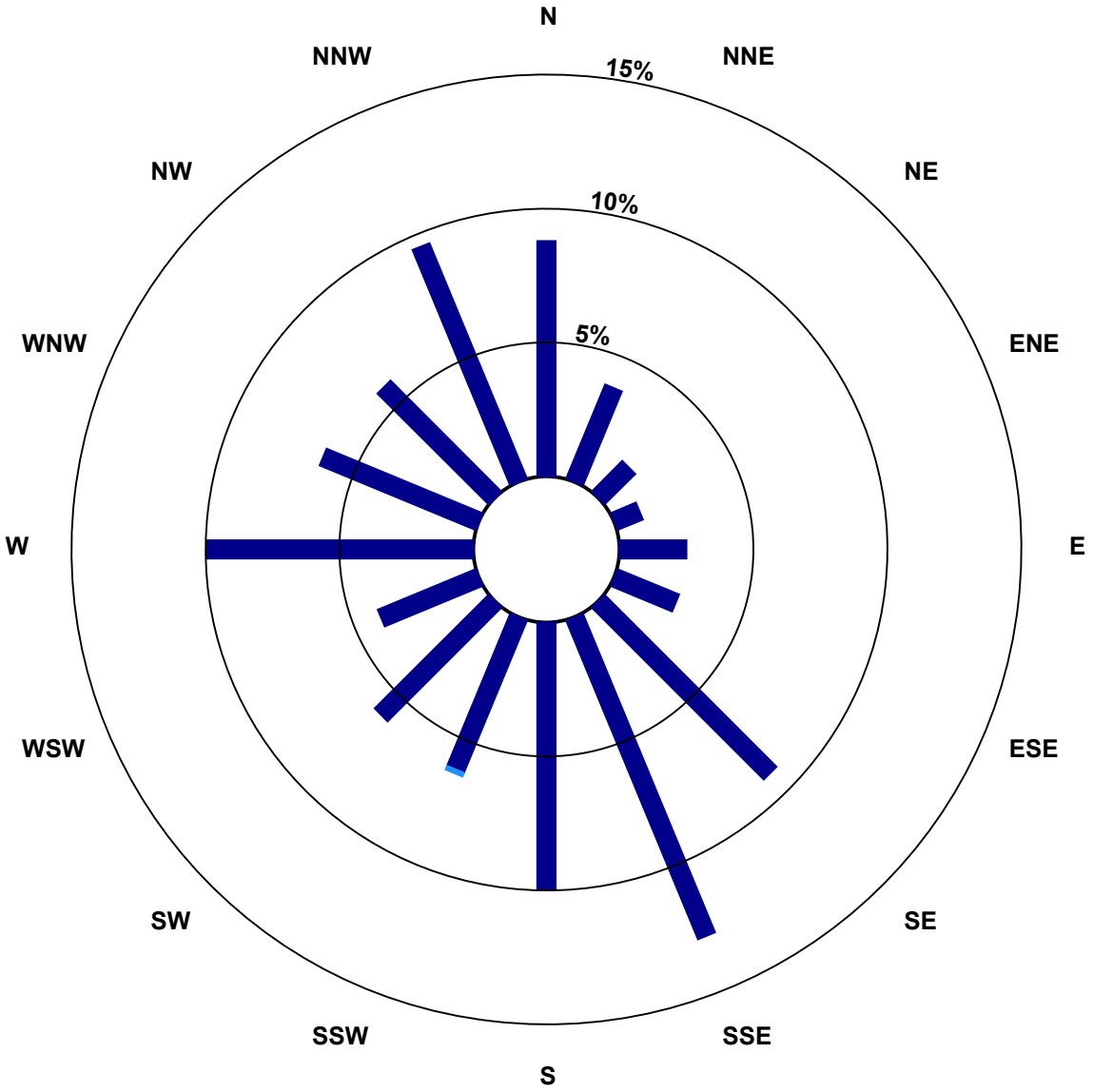
Total Number of Hours: 720

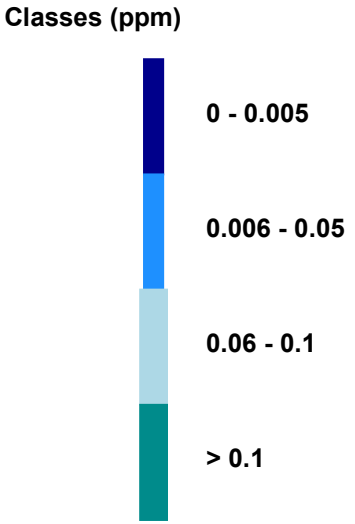
Wood Buffalo Environmental Association

Wind Rose Sep 2024

Non Methane Hydrocarbons (NMHC) - ppm

Mildred Lake





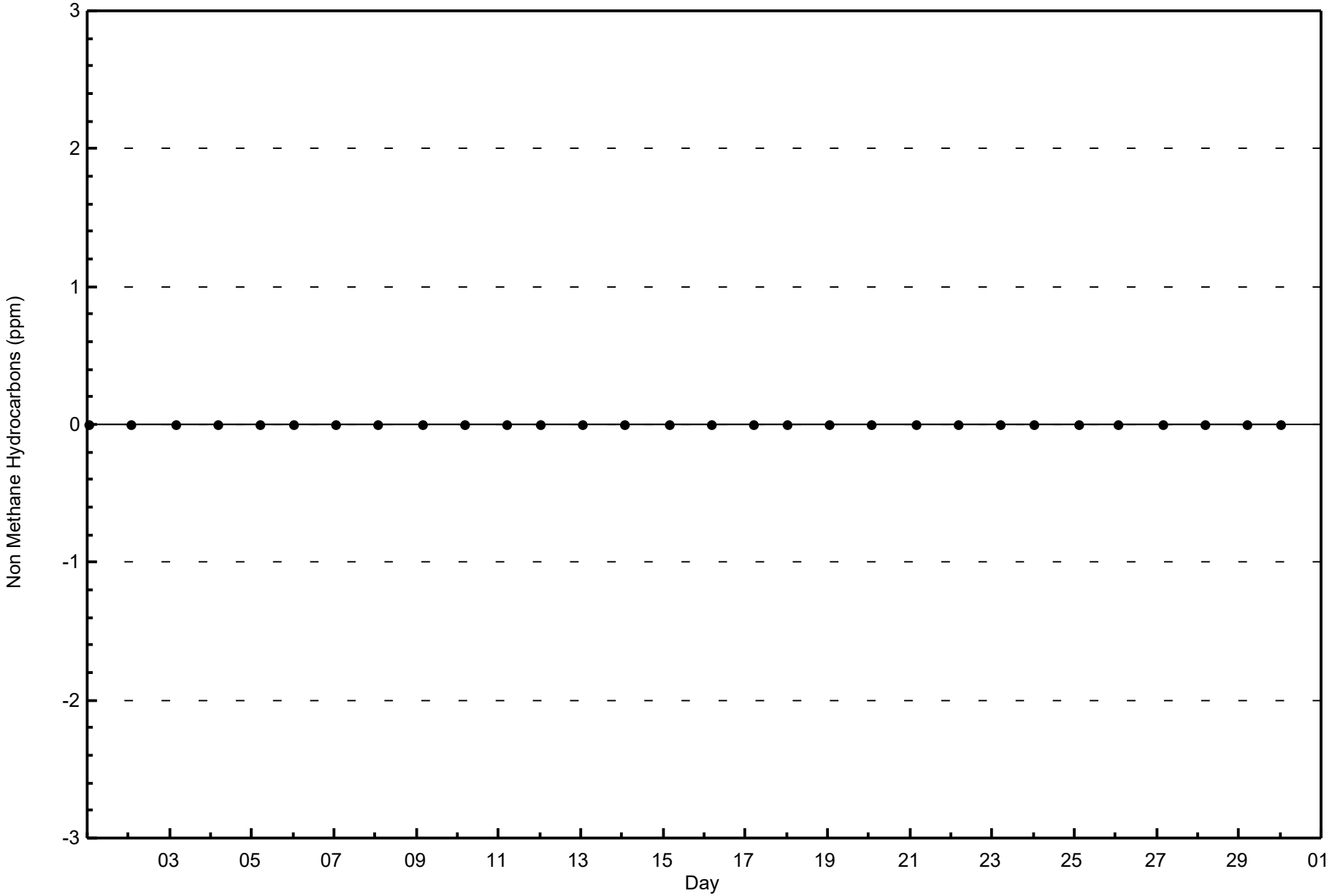
Total Number of Valid Hours: 683

Wood Buffalo Environmental Association

Zero Responses

Non Methane Hydrocarbons (NMHC) - ppm

Mildred Lake - September 2024



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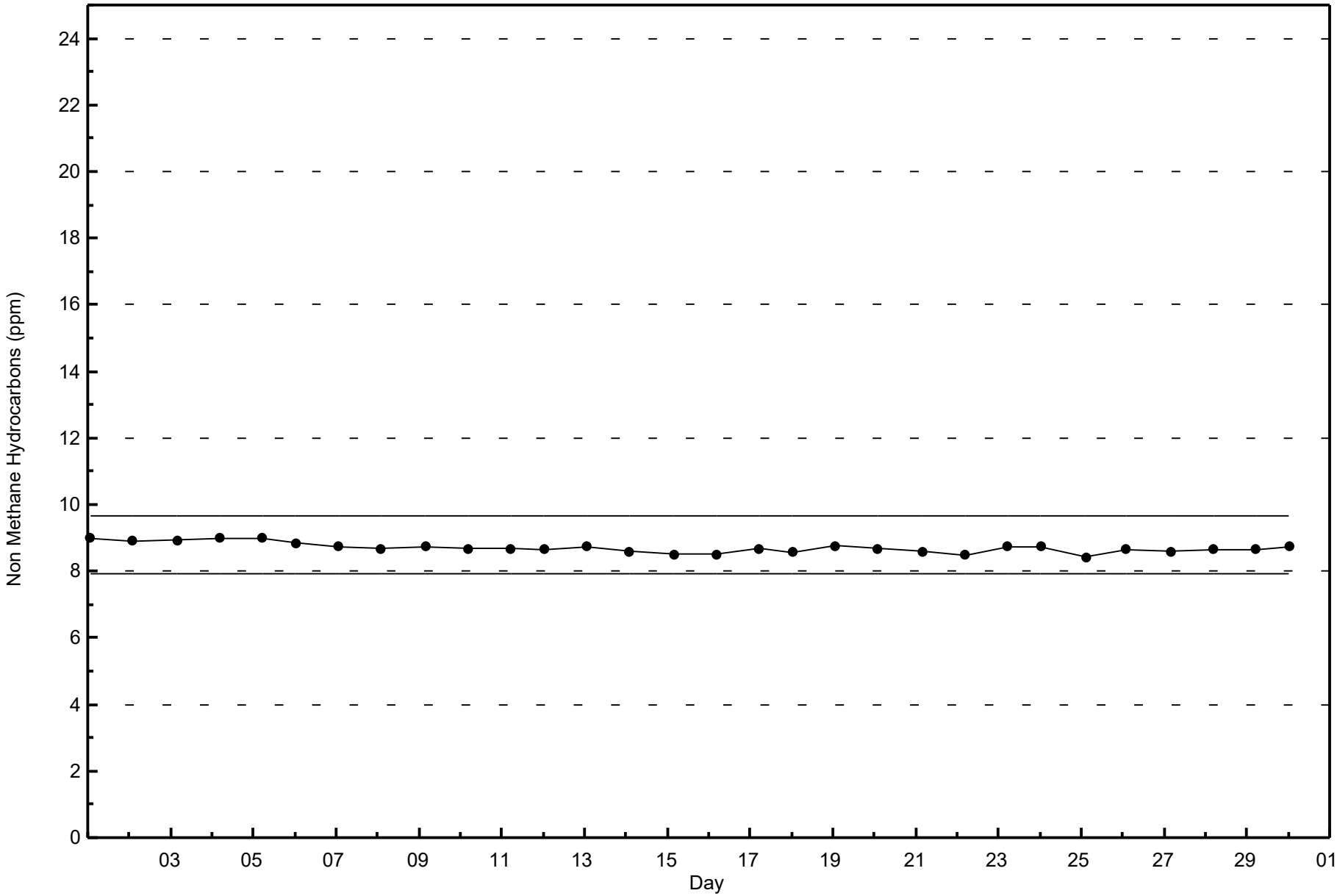
Span Responses

Non Methane Hydrocarbons (NMHC) - ppm

Mildred Lake - September 2024



Wood Buffalo Environmental Association

Summary of Hour Averages

Methane (CH_4) - ppm

Mildred Lake - September 2024

Number of Exceedences (AAAQO): 1-hr: 0 24-hr: 0
Maximum Value: 3.5 ppm on Sep 19 00:00 Maximum Daily Average: 2.3 ppm on Sep 29

Minimum Value: 2.0 ppm on Sep 2 21:00 Minimum Daily Average: 2.0 ppm on Sep 28
Maximum Diurnal Average: 2.3 ppm at hour 5 Minimum Diurnal Average: 2.0 ppm at hour 15
Monthly Average: 2.18 ppm Percentiles: P_1 = 2.0 P_{10} = 2.0 Q_1 = 2.0 Median = 2.1 Q_3 = 2.3 P_{90} = 2.5 P_{99} = 2.9

Hours in Service:	720
Hours of Data:	683
Hours of Missing Data:	37
Hours of Calibration:	35
Percent Operational Time:	99.7

Day	Hourly Period Ending At (MST)																								Daily	Daily
	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24	Average	Maximum
1-Sep	2.4	Z	2.5	2.4	2.4	2.4	2.2	2.1	2.1	2.1	2.2	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.1	2.0	2.0	2.0	2.1	2.1	2.1	2.5
2-Sep	2.1	2.2	Z	2.4	2.1	2.1	2.1	2.1	2.5	2.3	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	2.1	2.5
3-Sep	2.0	2.0	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
4-Sep	2.0	2.1	2.1	2.1	Z	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	2.1	2.1	2.1	2.3	2.3	2.1	2.1	2.3
5-Sep	2.1	2.1	2.1	2.1	2.1	Z	2.1	2.2	2.5	2.4	C	C	C	C	C	2.0	2.0	2.0	2.0	2.0	2.2	2.4	2.4	2.4	2.2	2.5
6-Sep	Z	2.3	2.3	2.3	2.4	2.6	2.3	2.3	2.4	2.1	2.0	2.0	2.0	2.0	2.0	2.1	2.1	2.1	2.1	2.1	2.2	2.3	2.7	2.7	2.2	2.7
7-Sep	2.7	Z	2.4	2.2	2.3	2.1	2.1	2.5	2.3	2.3	2.4	2.3	2.1	2.1	2.0	2.0	2.0	2.0	2.0	2.1	2.0	2.1	2.1	2.1	2.2	2.7
8-Sep	2.2	2.2	Z	2.1	2.2	2.1	2.1	2.7	2.4	2.4	2.4	2.3	2.1	2.0	2.1	2.1	2.1	2.1	2.1	2.1	2.1	2.2	2.4	2.4	2.2	2.7
9-Sep	2.3	2.2	2.2	Z	2.2	2.2	2.2	2.3	2.3	2.3	2.2	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	2.1	2.3
10-Sep	2.1	2.1	2.1	2.1	Z	2.0	2.0	2.0	2.1	2.1	2.1	2.0	2.0	2.0	2.1	2.0	2.0	2.0	2.0	2.0	2.5	2.1	2.1	2.1	2.1	2.5
11-Sep	2.2	2.2	2.2	2.3	2.5	Z	2.5	2.4	2.4	2.4	2.3	2.2	2.1	2.0	2.0	2.0	2.0	2.0	2.1	2.0	2.0	2.1	2.1	2.2	2.2	2.5
12-Sep	Z	2.3	2.2	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	2.1	2.1	2.1	2.1	2.1	2.1	2.3
13-Sep	2.1	Z	2.1	2.2	2.9	2.9	2.7	2.8	2.5	2.5	2.7	2.5	2.3	2.2	2.1	2.0	2.1	2.1	2.1	2.1	2.1	2.1	2.2	2.8	2.3	2.9
14-Sep	3.2	3.1	Z	2.5	2.6	2.4	2.2	2.4	2.3	2.3	2.2	2.1	2.0	2.0	2.0	2.1	2.2	2.3	2.1	2.0	2.0	2.1	2.1	2.1	2.3	3.2
15-Sep	2.2	2.3	2.3	Z	2.3	2.4	2.5	2.4	2.2	2.1	2.0	2.0	2.1	2.1	2.2	2.1	2.1	2.2	2.2	2.3	2.4	2.1	2.1	2.4	2.2	2.5
16-Sep	2.5	2.6	2.7	2.5	Z	2.5	2.4	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	2.0	2.2	2.7
17-Sep	2.0	2.1	2.6	2.9	2.9	Z	2.4	2.1	2.1	2.2	2.1	2.2	2.1	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.1	2.6	2.9	2.6	2.3	2.9
18-Sep	Z	2.4	2.3	2.6	2.5	2.5	2.0	2.0	2.1	2.3	2.1	2.1	M	M	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.2	2.4	3.5	2.2	3.5
19-Sep	3.5	Z	2.9	2.7	2.2	2.1	2.1	2.1	2.1	2.3	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	2.2	3.5
20-Sep	2.5	2.4	Z	2.4	2.4	2.4	2.2	2.1	2.5	2.4	2.2	2.2	2.1	2.1	2.0	2.0	2.0	2.0	2.0	2.0	2.1	2.1	2.2	2.2	2.2	2.5
21-Sep	2.2	2.2	2.3	Z	2.5	2.2	2.1	2.1	2.1	2.3	2.3	2.2	2.1	2.1	2.0	2.0	2.0	2.1	2.1	2.1	2.0	2.1	2.2	2.1	2.1	2.5
22-Sep	2.1	2.1	2.2	2.5	Z	2.0	2.0	2.1	2.1	2.1	2.2	2.1	2.0	2.0	2.0	2.1	2.1	2.1	2.1	2.2	2.2	2.1	2.1	2.3	2.1	2.5
23-Sep	2.3	2.5	2.4	2.4	2.4	Z	2.6	2.5	2.3	2.8	2.5	2.4	2.5	2.5	2.3	2.3	2.0	2.2	2.2	2.0	2.0	2.0	2.1	2.1	2.3	2.8
24-Sep	Z	2.3	2.2	2.2	2.2	2.1	2.5	2.1	2.1	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.1	2.5	2.5	2.5	2.4	2.4	2.8	2.8	2.2	2.8
25-Sep	2.6	2.7	Z	2.4	2.3	2.3	2.2	2.1	2.2	2.4	2.6	2.2	2.0	2.0	2.0	2.1	2.2	2.1	2.0	2.1	2.1	2.2	2.5	2.6	2.3	2.7
26-Sep	2.1	2.3	Z	2.4	2.4	2.3	2.1	2.3	2.2	2.2	2.1	2.1	2.0	2.0	2.0	2.0	2.0	2.1	2.0	2.1	2.0	2.0	2.2	2.3	2.1	2.4
27-Sep	2.1	2.3	2.1	Z	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	2.0	2.0	2.0	2.3
28-Sep	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	2.1	2.1	2.0	2.0	2.1	2.0	2.1
29-Sep	2.2	2.3	2.3	2.2	2.2	Z	2.2	2.8	3.5	3.0	2.7	2.3	2.1	2.1	2.1	2.1	2.1	2.0	2.0	2.5	2.4	2.4	2.1	2.5	2.3	3.5
30-Sep	Z	2.2	2.2	2.2	2.2	2.1	2.1	2.1	2.0	2.0	2.0	2.1	2.0	2.0	2.0	2.0	2.1	2.3	2.7	3.0	2.2	2.1	2.0	2.0	2.2	3.0
	2.3	2.3	2.3	2.3	2.3	2.3	2.2	2.2	2.2	2.3	2.2	2.1	2.1	2.1	2.0	2.0	2.0	2.1	2.1	2.1	2.1	2.1	2.2	2.3	Diurnal Average	
	3.5	3.1	2.9	2.9	2.9	2.9	2.7	2.8	3.5	3.0	2.7	2.5	2.5	2.5	2.3	2.3	2.2	2.5	2.7	3.0	2.5	2.6	2.9	3.5	Diurnal Maximum	

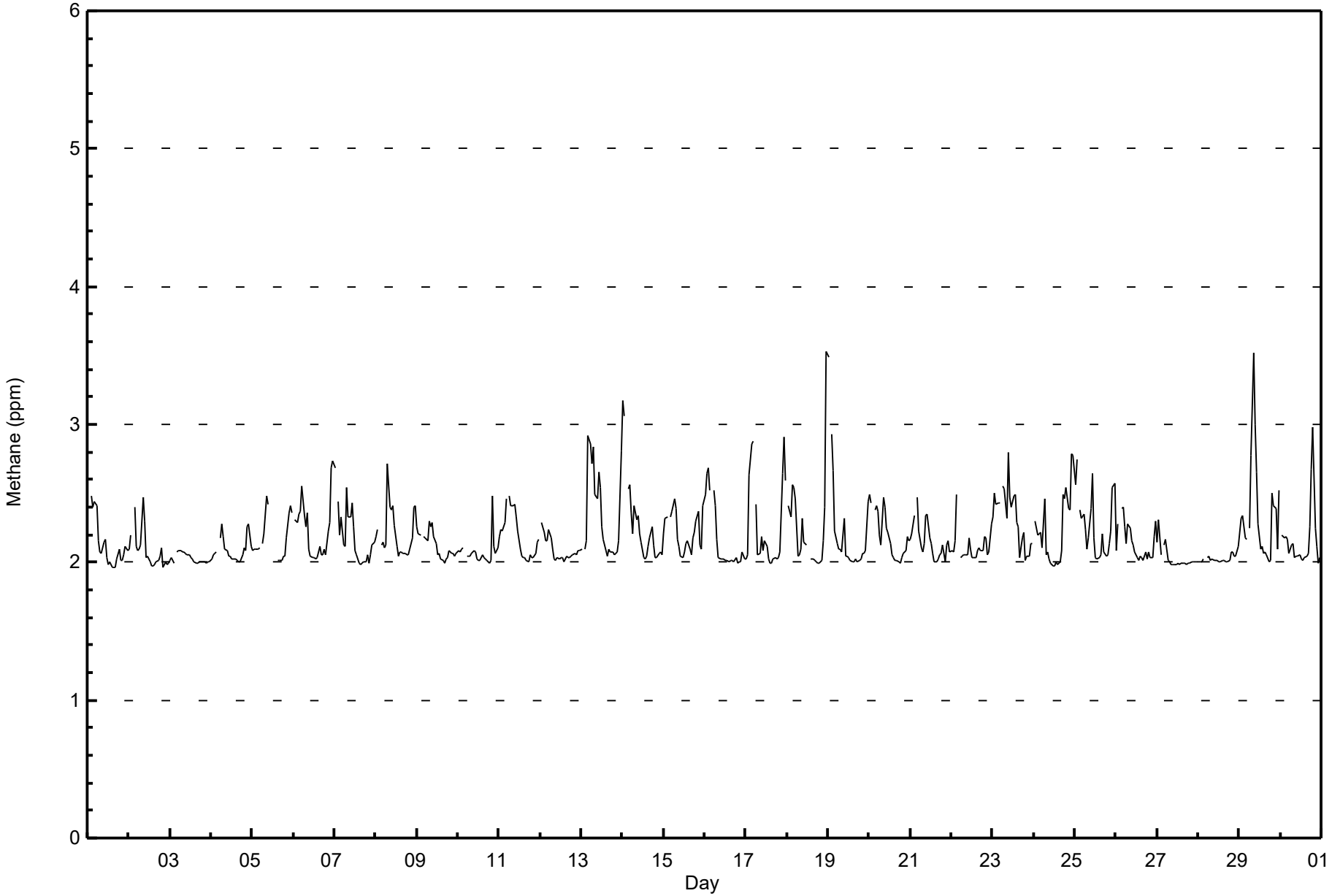
Z - zerospan C - Calibration M - Maintenance

Wood Buffalo Environmental Association

Hourly Averages

Methane (CH_4) - ppm

Mildred Lake - September 2024



Concentration Ranges (ppm)	Number of Hours	%	Cumulative %
0 - 2.0	238	34.85	34.85
2.1 - 3.0	440	64.42	99.27
3.1 - 10.0	5	0.73	100.00
> 10.0	0	0.00	100.00

Total Number of Valid Hours: 683

Total Number of Hours: 720

Wood Buffalo Environmental Association

Frequency Distribution

Methane (CH_4) - ppm

Mildred Lake - September 2024

Concentration Ranges (ppm)	Wind Direction																
	N	NNE	NE	ENE	E	ESE	SE	SSE	S	SSW	SW	WSW	W	WNW	NW	NNW	**Totals**
0 - 2.0	20	10	4	3	11	1	9	13	32	28	23	16	33	16	5	14	238
2.1 - 3.0	40	16	7	4	6	16	53	75	34	15	18	11	35	25	35	50	440
3.1 - 10.0	0	0	0	0	0	0	0	0	2	0	0	0	0	2	0	1	5
> 10.0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Totals	60	26	11	7	17	17	62	88	68	43	41	27	68	43	40	65	683

Total Number of Valid Hours: 683

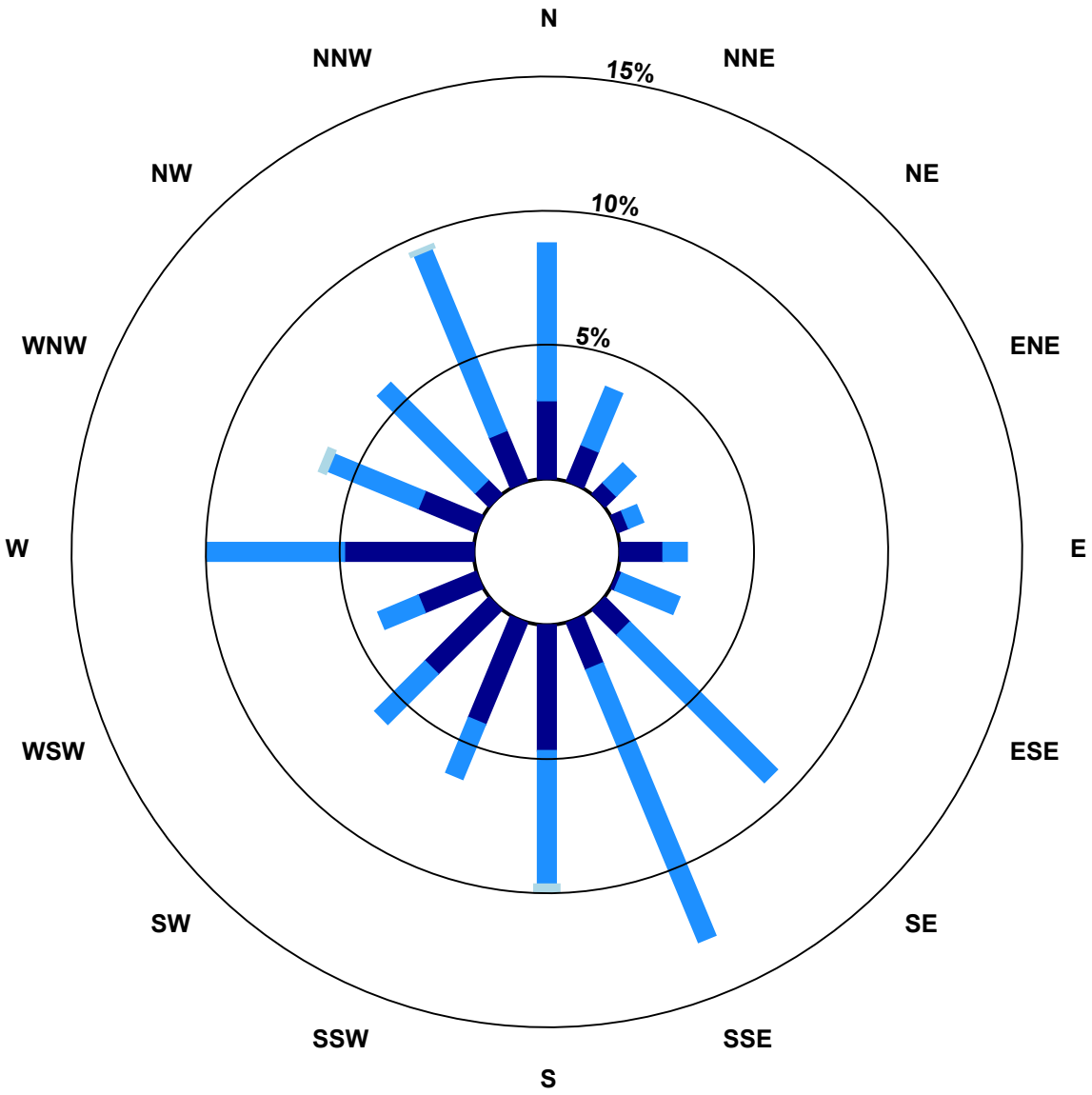
Total Number of Hours: 720

Wood Buffalo Environmental Association

Wind Rose Sep 2024

Methane (CH_4) - ppm

Mildred Lake



Classes (ppm)

0 - 2.0

2.1 - 3.0

3.1 - 10.0

> 10.0

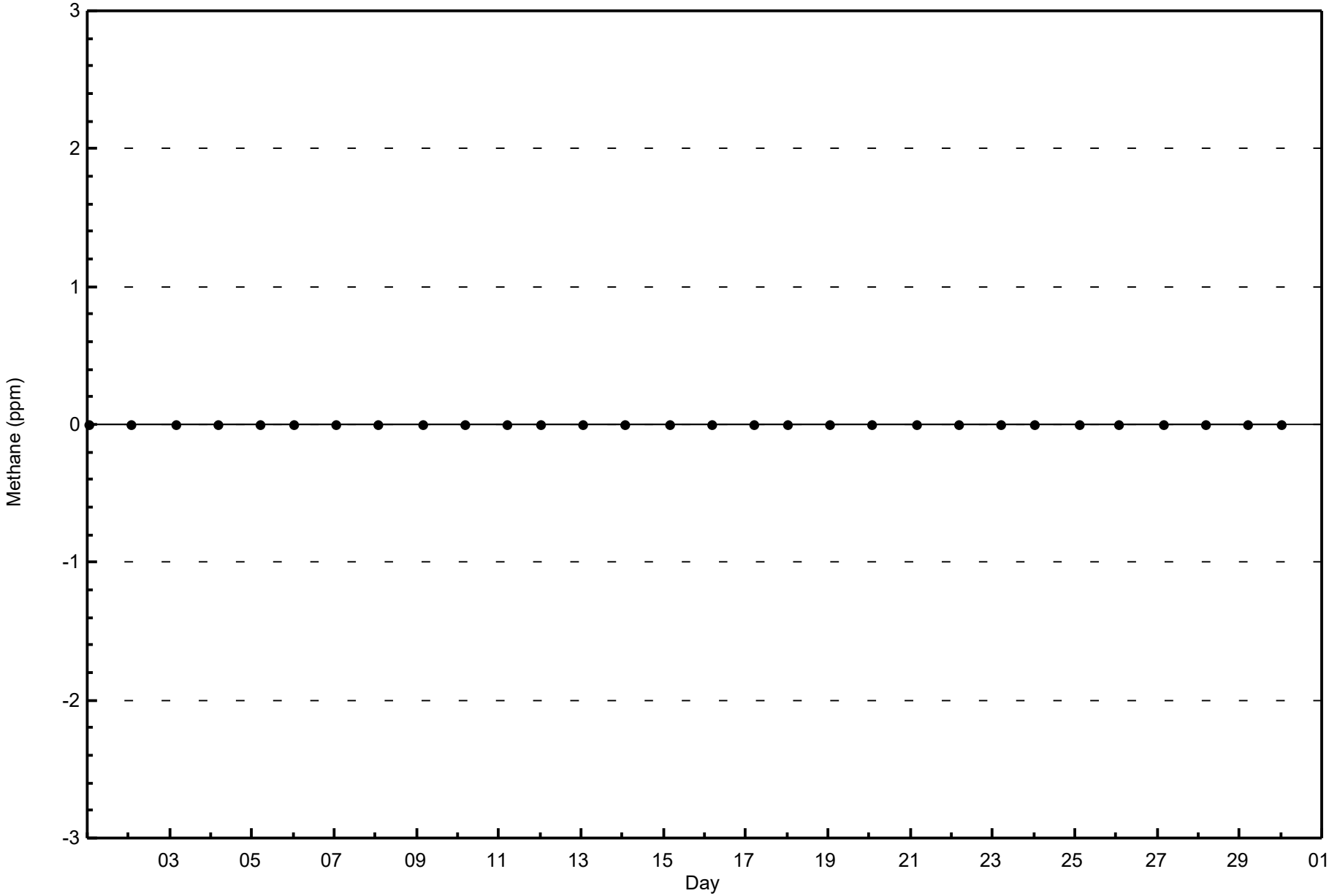
Total Number of Valid Hours: 683

Wood Buffalo Environmental Association

Zero Responses

Methane (CH_4) - ppm

Mildred Lake - September 2024

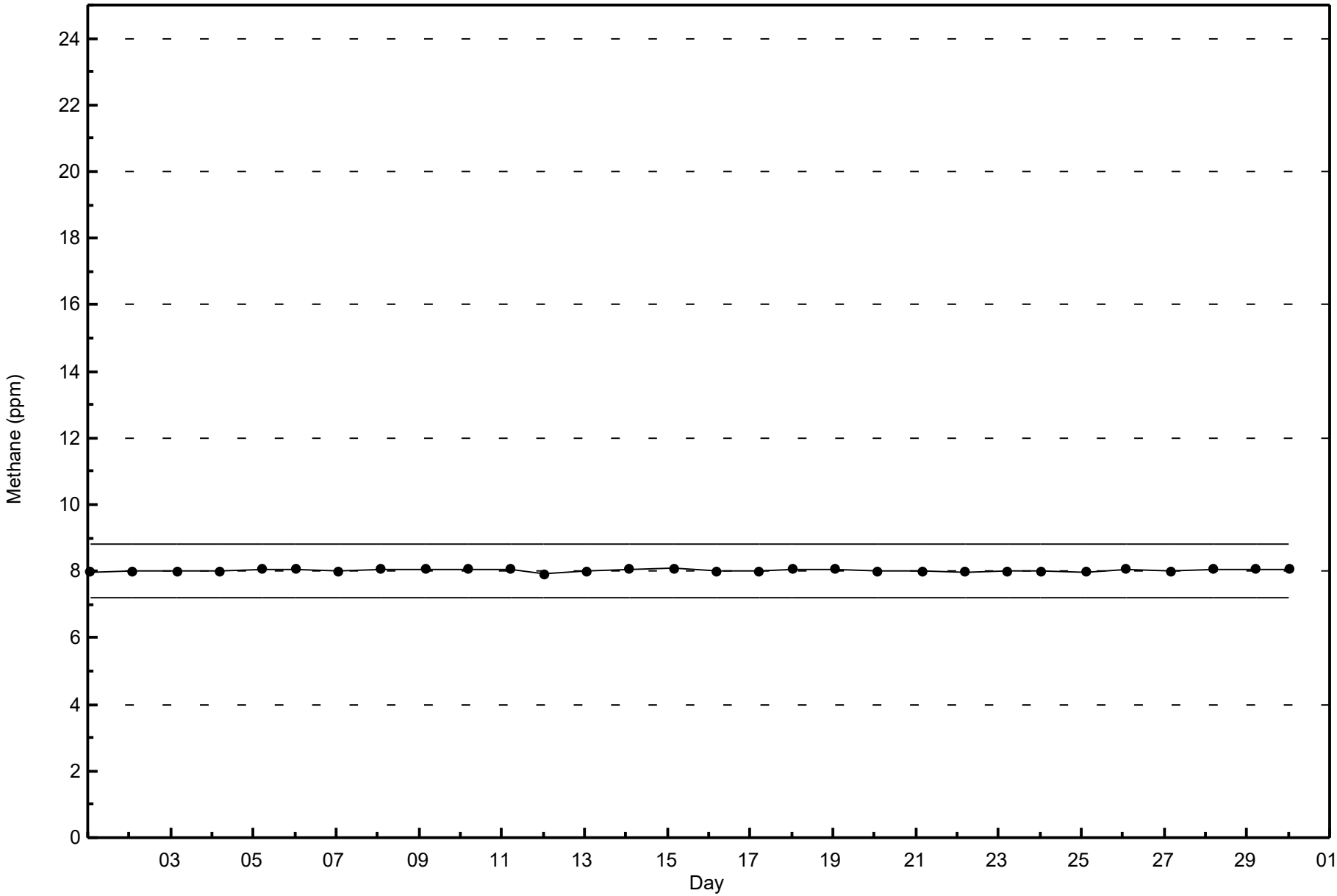


Wood Buffalo Environmental Association

Span Responses

Methane (CH_4) - ppm

Mildred Lake - September 2024



Maximum Value: 31.1 C on Sep 2 15:00

Maximum Daily Average: 21.2 C on Sep 2

Minimum Value: 2.5 C on Sep 19 05:00

Minimum Daily Average: 7.8 C on Sep 30

Maximum Diurnal Average: 18.8 C at hour 16

Minimum Diurnal Average: 8.7 C at hour 7

Monthly Average: 13.50 C

Percentiles: P_1 = 3.5 P_{10} = 6.9 Q_1 = 10.0 Median = 13.1 Q_3 = 16.4 P_{90} = 20.4 P_{99} = 28.9

Hours in Service:	720
Hours of Data:	720
Hours of Missing Data:	0
Hours of Calibration:	0
Percent Operational Time:	100.0

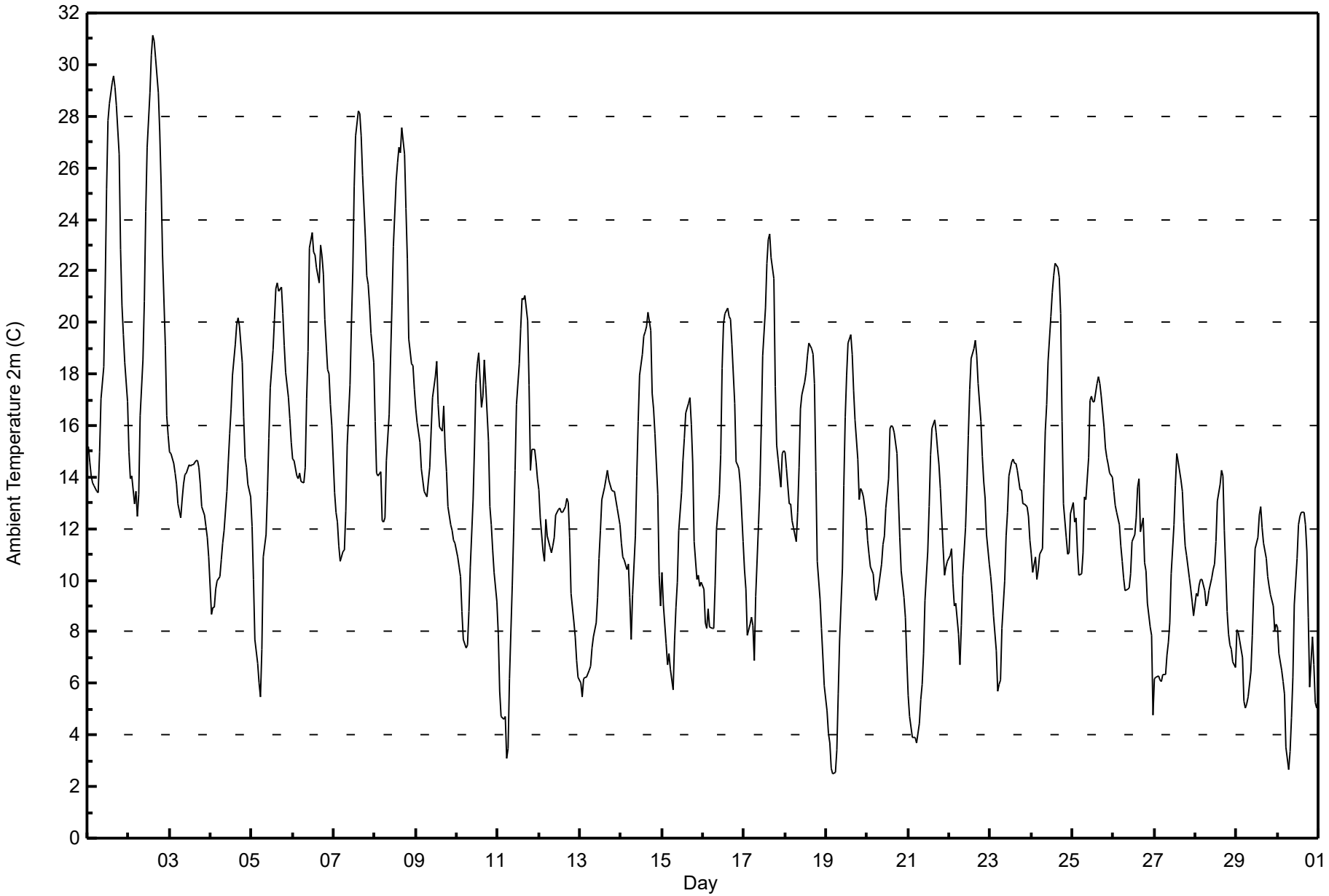
Day	Hourly Period Ending At (MST)																								Daily	Daily
	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24	Average	Maximum
1-Sep	15.2	14.6	14.0	13.8	13.7	13.4	13.4	15.0	17.0	18.3	21.3	25.2	27.8	28.5	29.3	29.6	29.1	28.4	26.5	22.8	20.7	19.5	18.4	16.9	20.5	29.6
2-Sep	14.9	14.0	14.0	13.0	13.5	12.5	13.3	16.4	18.6	20.9	24.3	26.8	28.9	30.4	31.1	30.9	30.3	28.9	27.4	25.3	22.6	19.1	16.4	15.6	21.2	31.1
3-Sep	15.0	14.9	14.5	14.2	13.7	13.0	12.4	13.1	13.7	14.1	14.2	14.5	14.5	14.5	14.5	14.7	14.7	14.4	13.7	12.9	12.5	12.1	11.6	10.9	13.7	15.0
4-Sep	8.7	9.0	9.0	9.6	10.0	10.1	10.8	11.4	11.9	13.5	14.6	15.7	16.6	18.0	19.2	19.9	20.2	19.9	18.4	16.4	14.8	14.4	13.7	13.2	14.1	20.2
5-Sep	12.1	10.0	7.7	6.8	6.0	5.5	7.3	10.9	11.8	13.4	15.5	17.5	18.9	20.1	21.3	21.5	21.2	21.4	20.4	19.1	18.1	17.1	16.3	15.3	14.8	21.5
6-Sep	14.7	14.6	14.1	14.0	14.2	13.8	13.8	14.4	17.0	18.9	22.9	23.5	22.7	22.6	22.1	21.5	23.0	22.6	21.8	20.1	18.2	18.0	16.8	16.0	18.4	23.5
7-Sep	13.4	12.6	12.3	11.3	10.7	11.1	11.1	12.7	15.3	17.6	19.9	22.0	25.3	27.2	28.2	28.1	27.2	25.7	23.2	21.8	21.5	20.7	19.6	18.5	19.0	28.2
8-Sep	16.2	14.2	14.0	14.2	12.3	12.2	12.4	14.6	16.4	18.6	20.7	23.0	25.5	26.2	26.8	26.6	27.5	26.5	24.4	22.5	19.4	18.4	18.3	17.4	19.5	27.5
9-Sep	16.7	16.1	15.3	14.3	13.9	13.4	13.2	13.8	14.4	15.8	17.1	17.9	18.5	16.8	16.0	15.8	16.8	15.1	14.2	12.9	12.1	11.9	11.6	11.5	14.8	18.5
10-Sep	10.9	10.5	10.1	8.8	7.7	7.4	7.5	8.8	10.5	13.1	15.2	17.6	18.4	18.8	16.7	17.2	18.6	17.6	15.4	12.9	12.2	11.2	10.3	9.2	12.8	18.8
11-Sep	7.9	5.7	4.7	4.6	4.7	3.1	3.5	6.2	9.8	11.9	14.3	16.8	18.4	19.7	20.9	20.9	21.1	20.1	17.6	14.3	15.1	15.1	14.6	13.9	12.7	21.1
12-Sep	13.5	12.4	11.1	10.7	12.4	11.7	11.3	11.1	11.3	11.6	12.5	12.7	12.8	12.6	12.6	12.9	13.2	13.0	11.7	9.5	8.4	7.8	6.9	6.3	11.3	13.5
13-Sep	6.0	5.5	6.2	6.2	6.2	6.5	6.7	7.4	7.8	8.4	9.3	10.8	11.9	13.1	13.6	13.9	14.2	13.9	13.5	13.4	13.4	13.1	12.8	12.2	10.3	14.2
14-Sep	11.4	10.9	10.8	10.4	10.6	9.3	7.7	9.4	11.7	14.0	16.2	17.9	18.8	19.5	19.7	19.8	20.4	19.7	17.2	16.7	15.7	13.4	10.2	9.0	14.2	20.4
15-Sep	10.3	9.0	7.6	6.7	7.2	6.6	5.7	7.6	9.0	9.9	11.9	13.4	14.6	15.5	16.5	16.9	17.1	16.1	14.5	11.5	10.0	10.2	9.8	9.9	11.2	17.1
16-Sep	9.7	8.4	8.2	8.9	8.2	8.1	8.1	9.8	12.0	13.3	14.8	18.2	20.0	20.4	20.6	20.2	20.1	19.1	16.9	14.6	14.5	14.3	13.7	11.5	13.9	20.6
17-Sep	10.4	9.6	7.9	8.3	8.6	8.2	6.9	9.4	12.1	13.6	16.0	18.7	20.6	22.3	23.2	23.4	22.5	21.7	17.5	15.2	14.7	13.6	14.9	15.0	14.8	23.4
18-Sep	15.0	14.3	13.0	12.9	12.3	12.0	11.5	12.6	14.4	16.6	17.2	17.7	18.1	18.7	19.2	19.0	18.8	17.6	14.2	10.8	9.3	8.1	7.0	5.9	14.0	19.2
19-Sep	4.9	4.1	3.7	2.7	2.5	2.5	3.4	5.6	7.7	10.4	13.7	16.3	18.0	19.2	19.5	18.8	17.3	16.2	14.7	13.1	13.6	13.4	13.3	12.4	11.1	19.5
20-Sep	11.5	11.0	10.5	10.2	9.6	9.2	9.5	9.8	10.6	11.4	11.7	12.8	13.9	15.9	16.0	16.0	15.8	14.9	13.2	11.6	10.4	9.4	8.6	6.9	11.7	16.0
21-Sep	5.5	4.7	3.9	3.9	3.9	3.7	4.4	5.4	6.0	7.2	9.2	11.1	12.9	14.9	15.9	16.2	15.7	15.1	14.5	13.6	11.3	10.2	10.5	10.7	9.6	16.2
22-Sep	11.0	11.2	9.9	9.0	9.1	7.9	6.7	8.3	10.2	12.0	13.7	15.6	17.4	18.6	19.0	19.3	18.7	17.6	16.1	14.8	13.8	13.2	11.8	10.6	13.2	19.3
23-Sep	10.1	9.5	8.6	7.3	5.7	6.0	6.1	8.1	10.0	11.7	12.6	14.1	14.6	14.7	14.5	14.5	14.3	13.5	13.5	13.0	13.0	12.9	12.4	11.6	11.3	14.7
24-Sep	11.0	10.3	10.9	10.0	10.4	11.0	11.2	13.7	15.8	16.8	18.5	20.2	21.1	21.8	22.3	22.1	21.8	20.4	16.2	13.0	11.7	11.0	11.1	12.6	15.2	22.3
25-Sep	13.0	12.2	12.4	11.1	10.2	10.2	11.0	13.2	13.1	14.8	17.0	17.1	16.9	16.9	17.7	17.9	17.6	17.2	16.0	15.1	14.8	14.5	14.2	14.0	14.5	17.9
26-Sep	13.4	12.9	12.7	12.2	11.4	10.7	10.1	9.6	9.6	9.7	10.3	11.5	11.8	12.4	13.6	13.9	11.9	12.4	10.7	10.4	9.1	8.2	7.9	4.8	10.9	13.9
27-Sep	6.2	6.2	6.3	6.1	6.1	6.4	6.4	7.1	7.6	8.3	10.3	12.2	13.7	14.9	14.6	13.9	13.5	12.2	11.3	11.0	10.1	9.7	9.1	8.6	9.7	14.9
28-Sep	9.5	9.4	9.8	10.0	10.1	9.6	9.0	9.2	9.6	10.1	10.4	10.6	11.5	13.1	13.7	14.3	14.0	11.9	8.8	7.9	7.5	7.3	6.9	6.6	10.0	14.3
29-Sep	8.1	7.9	7.6	7.0	5.3	5.1	5.2	5.5	6.4	7.9	9.7	11.2	11.6	12.5	12.9	12.0	11.4	10.8	10.2	9.8	9.4	9.0	8.0	8.3	8.9	12.9
30-Sep	8.2	7.2	6.5	6.1	5.6	3.5	2.7	3.4	4.7	6.2	9.1	10.8	12.1	12.4	12.6	12.7	12.2	11.1	8.6	5.9	7.8	6.7	5.2	5.0	7.8	12.7
	11.1	10.4	9.9	9.5	9.2	8.8	8.7	10.1	11.5	13.0	14.8	16.5	17.6	18.4	18.8	18.8	18.7	17.8	16.1	14.4	13.5	12.8	12.1	11.3	Diurnal Average	
	16.7	16.1	15.3	14.3	14.2	13.8	13.8	16.4	18.6	20.9	24.3	26.8	28.9	30.4	31.1	30.9	30.3	28.9	27.4	25.3	22.6	20.7	19.6	18.5	Diurnal Maximum	

Wood Buffalo Environmental Association

Hourly Averages

Ambient Temperature 2m (AT2) - C

Mildred Lake - September 2024



Concentration Ranges (C)	Number of Hours	%	Cumulative %
-50 - -20	0	0.00	0.00
-20 - 0	0	0.00	0.00
0 - 10	182	25.28	25.28
10 - 20	455	63.19	88.47
> 20	83	11.53	100.00

Total Number of Valid Hours: 720

Total Number of Hours: 720

Maximum Value: 100.0 % on Sep 13 04:00

Maximum Daily Average: 90.4 % on Sep 13

Minimum Value: 24.5 % on Sep 2 16:00

Minimum Daily Average: 55.0 % on Sep 30

Maximum Diurnal Average: 88.1 % at hour 7

Minimum Diurnal Average: 49.2 % at hour 16

Monthly Average: 70.56 %

Percentiles: P_1 = 31.8 P_{10} = 44.5 Q_1 = 57.8 Median = 72.1 Q_3 = 84.4 P_{90} = 94.2 P_{99} = 99.9

Hours in Service:	720
Hours of Data:	720
Hours of Missing Data:	0
Hours of Calibration:	0
Percent Operational Time:	100.0

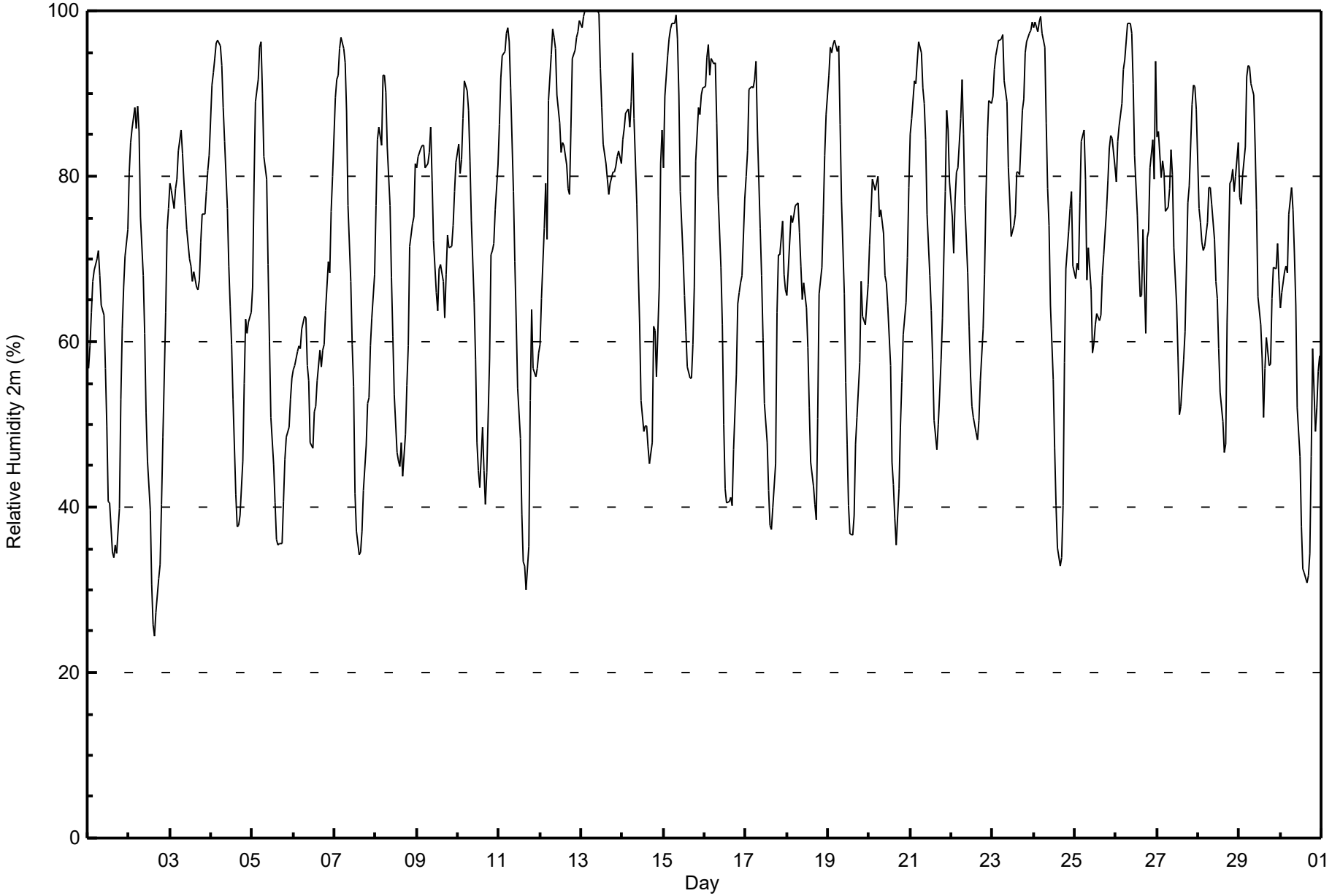
Day	Hourly Period Ending At (MST)																								Daily	Daily
	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24	Average	Maximum
1-Sep	56.8	59.5	63.5	67.2	68.7	70.0	71.0	67.9	64.4	63.2	56.8	49.8	40.7	40.4	34.5	33.9	35.4	34.5	39.8	53.1	61.5	66.7	70.4	73.6	56.0	73.6
2-Sep	80.5	84.1	85.8	88.3	85.7	88.5	85.4	75.0	68.0	61.0	51.4	45.5	39.7	30.7	25.7	24.5	27.3	31.4	33.0	40.4	48.5	63.5	73.5	76.1	58.9	88.5
3-Sep	79.1	78.3	76.1	78.4	79.7	83.0	85.6	82.6	79.3	76.5	73.6	70.0	69.1	67.2	68.5	66.6	66.2	67.5	72.1	75.4	75.5	78.1	80.7	82.6	75.5	85.6
4-Sep	91.1	92.6	94.3	96.1	96.5	95.7	93.4	88.4	84.2	76.2	69.2	64.2	59.7	53.1	41.5	37.5	37.8	38.9	45.5	54.9	62.7	61.1	62.4	63.6	69.2	96.5
5-Sep	66.6	79.2	88.9	91.7	95.7	96.2	89.9	82.4	79.7	69.2	60.0	50.8	45.1	40.5	36.2	35.5	35.6	35.6	40.6	45.7	48.6	49.7	53.0	55.7	61.3	96.2
6-Sep	56.7	57.2	58.9	59.5	59.1	61.6	63.0	62.8	57.1	55.2	47.8	47.2	51.5	52.2	55.2	59.1	57.0	59.0	59.7	63.7	69.6	68.4	75.7	79.9	59.9	79.9
7-Sep	89.6	91.8	92.2	95.5	96.8	95.5	93.7	87.9	76.5	67.2	59.6	54.6	41.7	37.1	34.2	34.5	37.1	42.0	47.4	52.5	53.2	59.5	62.9	68.1	65.5	96.8
8-Sep	76.5	84.3	86.0	83.8	92.2	92.2	90.2	83.6	76.5	67.8	60.6	53.5	46.6	45.7	44.9	47.7	43.7	48.8	54.7	59.5	71.6	74.2	75.1	81.6	68.4	92.2
9-Sep	81.0	82.4	83.4	83.8	83.7	81.0	81.4	82.8	86.0	79.6	72.2	65.9	63.7	68.7	69.3	67.3	62.9	68.1	73.0	71.3	71.6	74.0	78.1	81.7	75.5	86.0
10-Sep	83.8	80.4	82.1	87.0	91.5	90.3	88.0	81.8	74.6	64.7	57.8	47.8	44.5	42.3	49.6	44.5	40.4	44.3	57.9	70.5	71.0	71.9	76.0	81.4	67.7	91.5
11-Sep	86.3	91.8	94.6	95.0	97.3	98.0	96.3	90.7	78.1	69.7	62.4	54.4	48.2	39.1	33.5	32.8	30.0	35.2	52.8	63.9	56.8	55.7	56.7	58.7	65.8	98.0
12-Sep	59.7	65.3	73.8	79.1	72.3	89.1	94.8	97.8	96.9	95.4	89.8	86.5	82.8	84.0	83.8	81.4	78.5	77.8	85.7	94.2	95.3	96.8	97.5	98.8	85.7	98.8
13-Sep	98.0	99.2	99.9	100.0	100.0	100.0	100.0	100.0	100.0	100.0	99.7	93.0	88.4	83.9	81.5	79.7	77.9	79.1	80.5	80.6	81.2	82.3	83.0	81.5	90.4	100.0
14-Sep	84.4	85.7	87.7	88.1	85.9	89.0	94.9	87.0	76.6	68.7	62.2	52.9	49.1	49.9	49.9	47.4	45.3	47.8	61.9	61.4	55.7	66.7	81.5	85.5	69.4	94.9
15-Sep	81.0	89.6	94.6	96.6	97.8	98.5	98.5	99.5	96.6	89.8	78.1	70.3	65.6	61.2	57.0	55.6	55.5	59.6	66.6	81.8	88.2	87.5	89.8	90.7	81.3	99.5
16-Sep	90.9	94.4	96.0	92.3	94.2	93.5	93.7	86.4	77.6	68.9	62.0	50.0	42.3	40.5	40.6	41.2	40.2	46.9	56.1	64.6	66.0	67.1	67.9	77.4	68.8	96.0
17-Sep	80.1	83.0	90.5	90.8	90.7	91.7	93.9	85.7	73.8	68.0	60.5	52.5	47.7	42.0	37.7	37.3	40.0	45.2	63.6	70.5	70.5	74.6	68.1	66.3	67.7	93.9
18-Sep	65.7	68.6	75.2	74.4	75.3	76.5	76.8	73.2	69.2	65.2	67.1	64.1	59.3	52.0	45.4	42.6	40.3	38.5	50.7	65.8	69.0	75.4	82.6	87.5	65.0	87.5
19-Sep	92.2	95.5	94.9	95.9	96.4	95.2	95.8	86.2	76.9	65.7	55.1	47.7	40.2	36.8	36.6	39.0	47.7	50.8	57.5	67.2	63.1	62.6	62.0	67.0	67.8	96.4
20-Sep	71.7	75.5	79.6	78.2	79.1	79.9	75.1	76.0	73.0	68.0	67.1	64.2	57.0	45.4	42.8	38.6	35.4	42.2	49.6	55.1	60.9	64.7	70.1	78.7	63.7	79.9
21-Sep	85.1	87.0	91.5	91.1	93.9	96.3	94.9	90.7	88.8	84.4	75.5	68.0	63.8	57.9	50.4	46.9	50.0	53.8	57.8	62.9	78.1	88.0	85.6	79.3	75.9	96.3
22-Sep	75.0	70.7	77.1	80.5	81.0	87.0	91.7	85.1	76.5	68.3	61.8	55.9	52.3	50.8	49.0	48.1	50.5	55.2	61.6	68.1	77.3	84.7	89.2	88.8	70.3	91.7
23-Sep	89.7	92.9	94.7	96.5	96.4	96.5	97.0	91.6	89.1	81.0	77.1	72.7	74.1	75.3	80.6	80.4	80.2	88.0	89.4	94.9	96.3	97.3	97.6	98.6	88.7	98.6
24-Sep	98.0	98.7	97.4	98.7	99.3	97.2	95.6	86.5	78.5	74.1	64.5	55.5	47.1	40.2	35.0	32.9	34.0	40.2	57.5	68.9	73.5	76.1	78.1	69.1	70.7	99.3
25-Sep	67.7	69.5	68.6	76.8	84.2	85.5	79.6	67.4	71.4	66.3	58.7	59.8	62.1	63.3	62.5	63.2	68.0	70.4	75.9	79.5	83.3	84.9	84.6	81.1	72.3	85.5
26-Sep	79.4	84.3	86.1	88.9	92.9	94.1	96.4	98.4	98.5	97.3	91.3	82.5	75.3	69.9	65.4	65.6	73.5	61.0	72.6	73.3	81.1	84.3	79.7	93.9	82.7	98.5
27-Sep	84.8	85.3	79.8	81.8	80.4	75.7	76.2	78.5	83.1	80.2	71.3	64.4	58.1	51.2	52.2	57.7	61.2	68.8	76.7	78.7	88.6	91.0	90.9	88.1	75.2	91.0
28-Sep	76.0	74.4	72.1	71.0	71.6	74.3	78.6	78.6	76.5	72.4	67.2	65.3	59.2	53.8	50.3	46.7	47.7	62.4	79.1	79.6	80.9	78.2	80.0	84.1	70.0	84.1
29-Sep	77.5	76.5	79.9	83.6	92.0	93.5	93.3	91.2	89.9	83.5	75.9	65.4	62.1	57.9	50.9	56.8	60.4	57.1	57.3	65.3	69.1	68.8	71.9	67.5	72.8	93.5
30-Sep	64.1	65.9	68.5	69.1	68.3	75.5	78.6	75.9	70.6	64.3	52.0	46.2	37.6	32.6	32.1	30.9	31.7	34.5	46.1	59.1	49.2	52.1	56.5	58.4	55.0	78.6
	79.0	81.5	83.8	85.3	86.6	88.0	88.1	84.1	79.6	73.7	67.0	60.7	55.8	52.2	49.9	49.2	49.7	52.8	60.8	67.4	70.6	73.5	76.0	78.2	Diurnal Average	
	98.0	99.2	99.9	100.0	100.0	100.0	100.0	100.0	100.0	100.0	99.7	93.0	88.4	84.0	83.8	81.4	80.2	88.0	89.4	94.9	96.3	97.3	97.6	98.8	Diurnal Maximum	

Wood Buffalo Environmental Association

Hourly Averages

Relative Humidity 2m (RH2) - %

Mildred Lake - September 2024



Wood Buffalo Environmental Association

Summary of Hour Averages

Wind Speed 10m (WS10) - km/h

Mildred Lake - September 2024

Maximum Speed: 21 km/h on Sep 9 18:00

Maximum Daily Speed Average: 10.1 km/h on Sep 30

Minimum Speed Value: 0 km/h on Sep 4 01:00

Minimum Daily Speed Average: 1.4 km/h on Sep 15

Maximum Diurnal Speed Average: 4.2 km/h at hour 15

Minimum Diurnal Speed Average: 0.8 km/h at hour 1

Monthly Average Velocity: 1.9 km/h 245.2 deg

Percentiles: P_1 = 1 P_{10} = 3 Q_1 = 5 Median = 7 Q_3 = 10 P_{90} = 13 P_{99} = 18

Hours in Service:	720
Hours of Data:	717
Hours of Missing Data:	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-Sep	SE9	SSE10	SSE10	SSE11	SSE10	SSE12	SSE13	SSE11	SSE8	ESE8	SE11	SSE12	SW13	SSW13	SW13	WSW10	SW10	W10	WSW6	W3	WSW3	SW4	SW5	SSE4	S6.8	SW13
2-Sep	NW0	E3	SSW2	S6	S8	S5	S6	SSE5	SSE8	SE9	S7	S5	S7	SSW10	SW10	W10	WSW9	WSW7	WSW10	NW14	NNW17	N14	N15	N13	WSW2.5	NNW17
3-Sep	N9	N10	N9	N7	N7	NNE4	N4	NNW6	NNE6	NNE6	N9	NNE10	NNE9	N9	NNE8	NNE7	NNE7	N6	N5	N5	N5	N8	N8	N6	N6.9	N10
4-Sep	NNW0	NNW2	NNE2	SSW1	SSW3	WSW4	W6	W8	W8	W11	WNW10	WNW7	WNW6	W8	WNW11	WNW12	W9	W13	W9	W5	WSW5	W9	W9	W9	W6.5	W13
5-Sep	NNW15	NW7	NW3	NNW5	NE2	E2	ENE2	SSE3	SSE6	SSE6	SE8	SSE12	C	C	C	SE12	SE13	SE15	SE17	SE17	SSE15	SSE17	SSE17	SE15	SE6.9	SSE17
6-Sep	SE17	SSE16	SSE13	SE15	SSE15	SE17	SSE13	SSE10	SSE10	SSE8	SSW9	SSW12	S9	S9	S9	SSE8	S9	SSW8	SW8	SW5	S4	W4	W6	WNW2	S8.4	SE17
7-Sep	SSW3	SW3	SSW4	SSE3	S4	S6	SSE4	SSE6	SE7	SE10	SSE10	SE10	SSW8	SSW10	SW11	SW12	SSW10	SSW9	SW10	SW11	SW11	W11	W10	W4	SSW6.0	SW12
8-Sep	W3	SSE4	SSW5	SW6	S4	S6	SSE5	SE5	S5	ESE6	SSE11	SSE11	SSE12	SSE10	SE6	ENE6	NE5	NNE5	NNE7	N7	N7	NNW6	NNW10	N12	ESE1.8	N12
9-Sep	N7	NNE2	N7	NNE5	N6	N10	N9	NNW10	NNW8	NW9	NW4	WNW11	WNW14	W17	W15	WSW14	WSW18	W21	W19	W17	W16	W15	W17	W14	WNW9.7	W21
10-Sep	W15	W18	W14	WSW7	WSW7	SW8	SW9	SW8	SW7	SW4	SSW5	W9	WNW12	WNW12	NW9	WNW9	WNW9	NW9	NNW5	NNW4	NNW6	NNW7	N8	N7	W6.8	W18
11-Sep	N6	NNE3	NNE4	N5	N5	NNE2	NNE3	NE2	SSE2	SSE2	SSE4	ESE4	ESE4	E6	S7	E6	SE6	E4	N4	E5	E8	ESE7	ESE7	ESE7	E2.8	E8
12-Sep	SE8	ESE5	SE1	NW1	SE10	SSE11	SE5	NNE4	NE5	N5	NE6	NNE5	NE5	E7	E8	ENE5	E7	E7	NNE2	N3	N5	N5	N4	ENE3	ENE3.4	SSE11
13-Sep	N4	NNW4	NNW6	N6	NW7	NNW4	NW6	NW7	NNW6	NNW8	NNW10	NNW11	NNW11	NNW9	NNE7	N7	NNW10	NNW9	NNW9	NNW8	NNW9	NW10	NW9	NW8	NNW7.5	NNW11
14-Sep	WNW7	WNW7	WNW9	WNW5	WNW6	WSW5	SW4	SW5	WNW5	SW4	WSW5	SW4	WSW5	SSW8	W11	WNW11	NW13	NW8	NNW6	N8	NNE7	NE3	WNW0	NNW4	WNW4.4	NW13
15-Sep	NNW11	N8	NNW3	N4	N6	N6	N4	N7	NNE7	N8	NNW7	N4	SW3	SW3	SSW2	SE4	SE6	ESE7	SE7	SE2	S4	S5	S5	SE4	NNE1.4	NNW11
16-Sep	SE6	SSE5	SE7	SE7	SE5	SE7	SE6	SSE7	S7	S9	SSW12	SSW13	WSW13	SW12	WSW10	WSW8	W8	SSW8	SSW8	SSW5	SSW7	SW7	SW6	S5	SSW6.1	WSW13
17-Sep	SSE5	SE3	SSE7	SE7	SSE7	S7	S4	S6	S8	SSE10	SSE9	SE8	SE9	SSE5	S6	SW2	E8	ENE4	NE4	ENE4	ESE5	SSE6	SSE9	SE9	SE5.4	SSE10
18-Sep	SSE11	SSE12	SE8	SE10	SE9	SSE8	SSE8	S8	SW5	W8	W6	WNW10	WNW12	WNW12	WNW11	WNW12	WNW10	NNW9	NNW6	NW7	NNW5	SSW2	WNW3	S1	WSW2.5	SSE12
19-Sep	S1	S3	SSW1	SSE2	S3	SSE2	SSE2	S7	SSE8	SSE7	S6	SSE5	SSE6	S7	SW4	SSE3	SE4	S6	S1	NNE3	NNE4	NNE5	N7	NW5	SSE2.3	SSE8
20-Sep	NNW6	NNW4	NNW5	N8	N3	NNW6	N10	NW5	NW6	NW8	NNW8	NNW10	NNW8	N17	N17	N17	NNW17	NNW12	NNW9	NNW8	NNW8	NNW9	NNW8	NNW8	NNW8.9	NNW17
21-Sep	NW5	NW5	NW4	SSE2	SSW3	S3	SSE2	S5	S4	SSE5	SE7	SE9	SE11	SE10	S9	S12	SSE11	SE12	SE14	SSE13	S7	ESE7	ESE9	ESE9	SSE5.6	SE14
22-Sep	SE8	SE13	SE9	SE7	S4	SSW5	S5	S7	S5	SSE5	SSE6	S6	SSW7	S4	SSE5	SSE6	ESE6	NE4	NNE4	NNW6	S5	S3	NW3	NNW7	SSE3.7	SE13
23-Sep	NNW8	N7	N5	NNW3	NW2	NW5	NW5	NNW4	W1	S1	SE3	SSE7	SE9	SE10	SSE11	SSE10	SSW9	SSE8	SSE10	S7	SSE10	SSE10	SSE7	SSE6	SSE3.1	SSE11
24-Sep	ESE1	SE1	SSW1	ESE1	E4	SW4	S7	SSW5	W14	W15	W17	W20	W18	W18	W16	WNW15	WNW11	WNW5	WSW0	SE2	SE3	SSE4	SE4	SSE5	W5.5	W20
25-Sep	SE5	SSE7	SSE6	SE3	ESE2	W1	E7	NE5	E3	SSE5	SSE10	S8	S7	S6	S7	S7	SSW6	S7	SSW6	SSW5	WSW4	W6	WNW5	WSW6	S3.7	SSE10
26-Sep	SW6	WNW8	WNW10	NW9	NW8	WNW8	W9	WNW7	W6	W9	W11	W12	W13	WNW11	NW10	NNE2	NNW5	WNW12	NW5	WSW5	SSW4	WSW4	NW4	SE3	WNW6.5	W13
27-Sep	SSE4	S6	SSE4	SSE4	SSE4	SSE4	SSW4	SSW6	S8	SSW9	S7	SSW9	SSW10	SSW9	SSW11	S10	S12	S11	S9	S11	SSW8	S11	S8	SSW9	S7.6	S12
28-Sep	SW16	SW14	SW16	WSW20	W19	W16	W14	W12	W12	W12	W12	W12	WSW12	SW11	WSW8	W6	SW5	ESE3	E4	SE3	E1	SE4	SE3	ENE3	WSW8.1	WSW20
29-Sep	SSE6	E3	S2	NE3	N2	NNW3	NNW8	N10	NNW10	NNW9	NNW12	NNW14	NNW14	NNW13	N13	NNW12	NNW14	NNW12	NW10	NW8	NW12	NW11	NW8	NW11	NNW7.9	NNW14
30-Sep	NW12	WNW13	WNW14	W13	WNW10	N5	NW6	SW6	SW6	WSW5	W13	W14	W15	W18	WNW19	WNW20	WNW18	WNW14	WNW6	WNW6	W7	WSW6	SW7	W9	WNW10.1	WNW20
	W0.8	SW1.0	WSW1.4	SW1.0	SSW1.3	SSW1.7	SSW1.2	SW1.8	SW2.1	SW1.8	SW2.2	SW3.1	WSW3.9	WSW4.1	WSW4.2	WSW3.1	W2.9	W2.2	WSW1.6	W1.6	W1.6	W1.5	WNW1.8	WNW1.1	Diurnal Average	
	SE17	W18	SW16	WSW20	W19	SE17	W14	W12	W14	W15	W17	W20	W18	W18	WNW19	WNW20	WSW18	W21	W19	SE17	NNW17	SSE17	SSE17	SE15	Diurnal Maximum	

C - Calibration

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

Number of Exceedences (AAAQO): 1-hr: 0 24-hr: 0
Maximum Value: 8 km/h on Sep 28 04:00

Minimum Value: 1 km/h on Sep 11 08:00

Percentiles: P_1 = 1 P_{10} = 1 Q_1 = 2 Median = 2 Q_3 = 3 P_{90} = 4 P_{99} = 6

Hours in Service:	720
Hours of Data:	717
Hours of Missing Data:	3
Hours of Calibration:	3
Percent Operational Time:	100.0

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

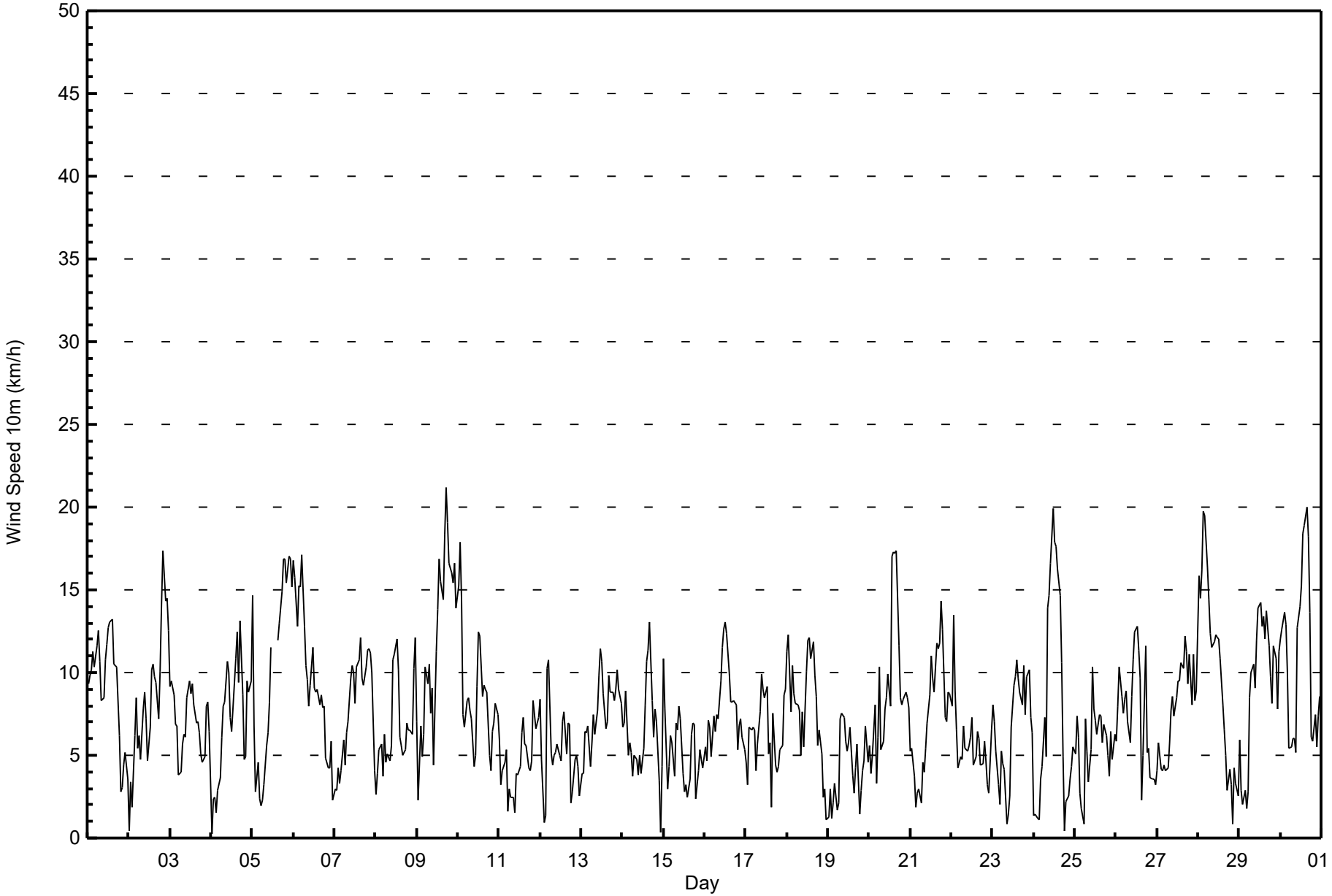
C - Calibration

Wood Buffalo Environmental Association

Hourly Averages

Wind Speed 10m (WS10) - km/h

Mildred Lake - September 2024



Wind Speed Ranges (km/h)	Number of Hours	%	Cumulative %
0 - 5	238	33.19	33.19
6 - 11	362	50.49	83.68
12 - 19	113	15.76	99.44
20 - 28	4	0.56	100.00
29 - 38	0	0.00	100.00
> 38	0	0.00	100.00

Total Number of Valid Hours: 717

Total Number of Hours: 720

Wood Buffalo Environmental Association

Frequency Distribution

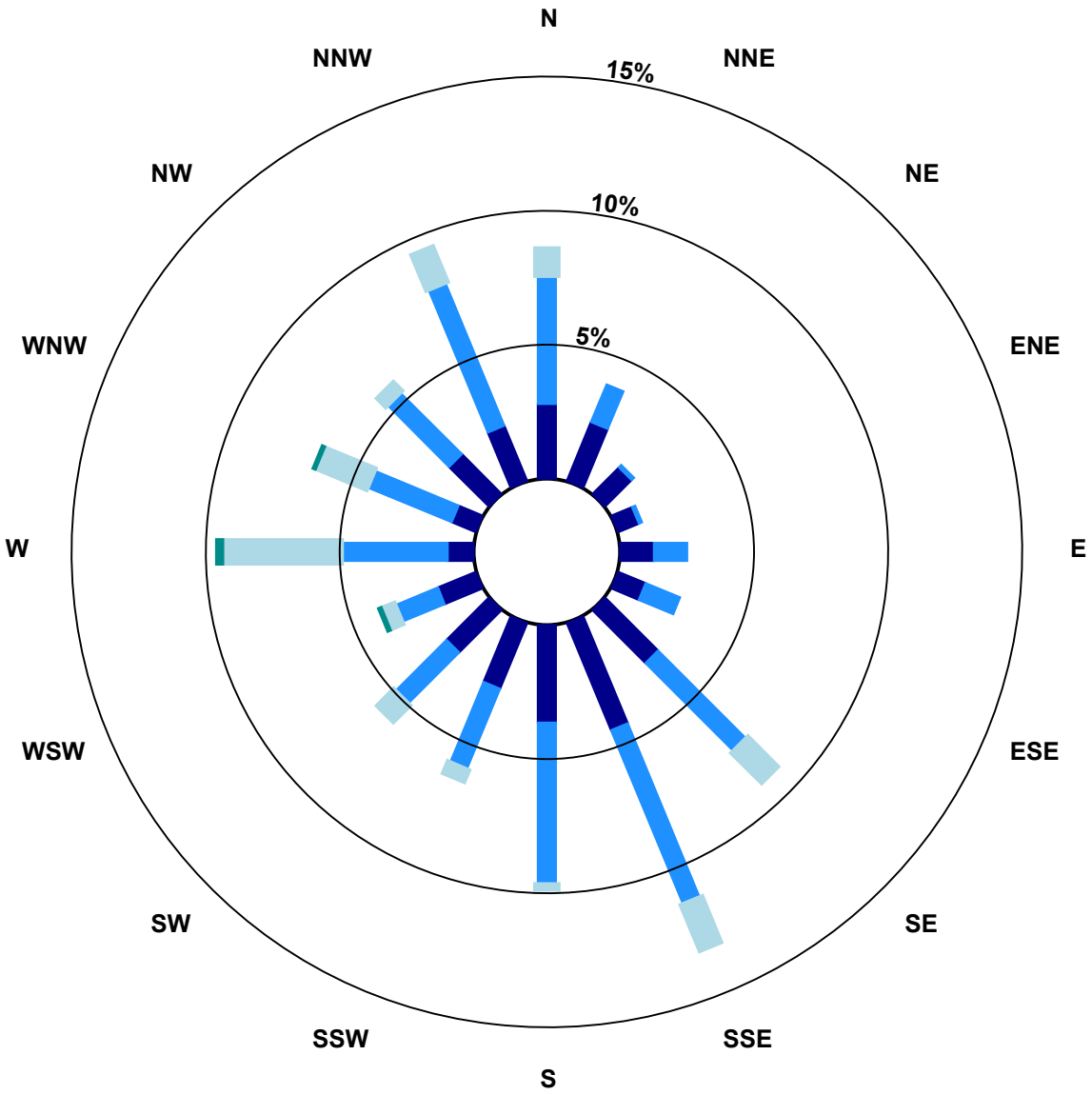
Wind Speed 10m (WS10) - km/h

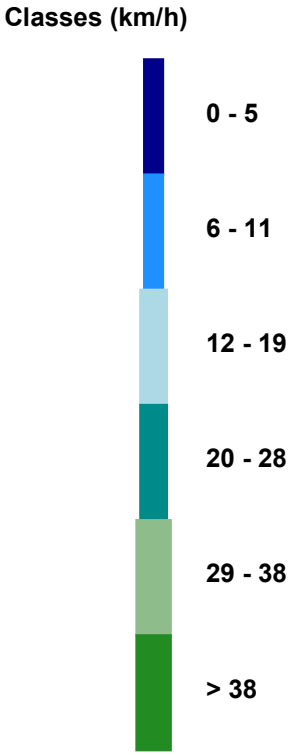
Mildred Lake - September 2024

Wind Speed							**Wind Direction**										
Ranges (km/h)	N	NNE	NE	ENE	E	ESE	SE	SSE	S	SSW	SW	WSW	W	WNW	NW	NNW	**Totals**
0 - 5	20	17	10	6	9	8	20	31	26	19	16	11	7	7	15	16	238
6 - 11	34	11	1	1	9	10	33	50	43	23	19	12	28	24	23	41	362
12 - 19	8	0	0	0	0	0	12	14	2	4	7	4	32	15	4	11	113
20 - 28	0	0	0	0	0	0	0	0	0	0	0	1	2	1	0	0	4
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	62	28	11	7	18	18	65	95	71	46	42	28	69	47	42	68	717

Total Number of Valid Hours: 717

Total Number of Hours: 720





Total Number of Valid Hours: 717

Wood Buffalo Environmental Association

Summary of Hour Averages

Wind Direction 10m (WD10) - deg

Mildred Lake - September 2024

Direction of Maximum Speed: 272 deg on Sep 9 18:00
Direction of Maximum Daily Speed Average: 282.9 deg on Sep 30

Direction of Minimum Speed: 334 deg on Sep 4 01:00
Direction of Minimum Daily Speed Average: 1.4 deg on Sep 15

Monthly Average Direction: 245.2 deg

Hours in Service:	720
Hours of Data:	717
Hours of Missing Data:	3
Percent Operational Time:	100.0

Day	Hourly Period Ending At (MST)																								Daily
	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24	Average
1-Sep	136	153	151	150	150	158	156	158	160	115	137	162	216	210	225	241	231	263	253	262	238	236	216	164	182.3
2-Sep	325	94	193	185	188	177	183	160	147	141	172	170	186	206	216	262	258	254	258	307	329	2	356	358	245.4
3-Sep	0	7	360	3	1	18	7	348	16	24	1	12	22	5	17	32	20	11	1	5	4	358	359	360	7.8
4-Sep	334	347	21	206	196	242	271	270	266	274	296	301	293	280	291	302	280	279	280	264	237	280	273	270	279.5
5-Sep	327	314	321	333	40	88	72	166	152	154	146	153	C	C	C	144	141	142	141	142	151	148	149	145	144.4
6-Sep	140	148	153	145	147	146	156	158	156	162	193	202	184	186	188	155	186	200	215	220	176	264	269	285	169.1
7-Sep	201	235	203	153	171	183	168	157	131	135	151	138	195	195	217	214	211	210	219	226	236	264	277	275	201.7
8-Sep	268	150	202	216	177	177	153	145	183	123	147	147	149	150	135	74	37	18	29	6	351	338	337	349	123.5
9-Sep	1	16	353	16	6	355	354	331	330	318	320	285	290	281	267	240	242	272	275	281	276	275	274	270	289.2
10-Sep	271	271	269	254	237	233	229	225	225	226	200	266	284	294	313	286	283	321	335	327	333	346	353	1	279.3
11-Sep	354	15	25	360	0	17	22	53	150	168	167	123	104	83	169	86	144	84	2	82	96	106	118	119	87.4
12-Sep	141	123	130	313	139	148	126	13	49	11	55	32	44	96	84	75	82	95	31	7	4	8	10	59	78.5
13-Sep	356	344	343	354	325	344	319	322	331	332	345	347	345	341	22	350	331	333	331	339	341	324	324	309	337.1
14-Sep	301	300	284	296	291	254	228	220	284	235	250	235	237	206	274	291	308	311	340	6	29	43	284	345	289.3
15-Sep	348	351	345	349	351	351	350	5	23	356	339	358	224	218	195	129	128	111	142	146	185	176	186	145	16.5
16-Sep	142	154	140	142	125	137	130	161	177	187	197	210	237	235	247	252	271	213	207	199	213	217	233	180	199.7
17-Sep	151	146	148	139	168	170	176	175	175	156	152	145	132	164	175	219	91	73	55	77	119	159	156	133	146.0
18-Sep	150	155	139	142	139	152	168	174	218	280	269	301	292	293	285	291	294	334	342	323	345	209	300	173	250.8
19-Sep	189	181	200	156	178	165	164	180	163	149	170	160	148	172	224	158	141	170	191	21	33	18	357	322	161.5
20-Sep	335	339	337	353	3	348	357	316	311	324	327	328	336	350	357	352	342	338	341	342	335	333	333	328	340.5
21-Sep	314	325	325	158	210	188	155	179	189	152	129	143	144	138	177	174	150	143	143	161	185	108	103	109	150.4
22-Sep	130	141	140	144	170	199	191	173	184	163	148	176	192	178	149	149	106	48	26	341	187	170	314	343	154.6
23-Sep	347	358	355	332	305	314	321	332	278	183	136	166	134	142	153	148	199	148	164	178	162	149	150	147	155.9
24-Sep	118	138	194	115	99	219	185	201	275	274	279	262	273	277	275	289	297	296	250	128	133	147	129	148	263.7
25-Sep	139	152	160	133	107	272	89	46	99	162	154	181	191	172	177	172	194	188	194	200	248	275	296	253	175.1
26-Sep	236	283	302	316	308	300	279	287	278	278	275	279	279	287	306	21	343	302	314	239	193	242	309	144	287.4
27-Sep	166	178	157	168	158	160	195	192	186	202	188	200	204	200	200	189	178	179	170	174	193	177	188	207	185.9
28-Sep	231	230	234	255	260	272	274	275	269	277	279	275	258	236	247	265	219	118	82	143	98	141	143	64	253.6
29-Sep	162	95	188	43	10	348	343	351	347	348	346	346	346	348	356	348	339	334	320	305	304	314	319	305	337.2
30-Sep	312	298	285	278	292	350	318	232	219	240	278	278	280	279	286	285	289	303	300	299	276	252	231	261	282.9
	261.9	218.0	238.4	216.5	198.1	201.2	211.7	219.0	217.3	224.4	222.2	236.1	246.2	246.7	253.3	258.5	259.0	271.7	258.0	270.0	268.7	270.3	289.0	291.6	
	Diurnal Average																								

C - Calibration
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 Sep 11 10:00

Minimum Value: 6 deg on Sep 18 20:00

Percentiles: P_1 = 9 P_{10} = 14 Q_1 = 17 Median = 23 Q_3 = 31 P_{90} = 52 P_{99} = 86

Hours in Service:	720
Hours of Data:	717
Hours of Missing Data:	3
Hours of Calibration:	3
Percent Operational Time:	100.0

Day	Hourly Period Ending At (MST)																								Daily
	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24	Maximum
1-Sep	17	17	15	12	13	15	15	18	23	24	20	31	25	25	26	31	35	23	31	57	34	14	21	61	61
2-Sep	88	27	86	19	11	16	17	25	16	20	25	59	37	27	28	33	30	29	26	28	13	23	18	18	88
3-Sep	19	21	18	19	17	18	18	14	26	29	18	22	26	21	22	28	23	22	15	17	16	15	17	14	29
4-Sep	90	22	45	68	46	31	29	22	27	25	30	35	42	48	25	26	25	21	19	43	28	18	21	24	90
5-Sep	25	18	35	17	27	60	26	28	30	31	27	18	C	C	C	20	15	14	13	13	13	12	12	13	60
6-Sep	14	12	14	11	12	10	15	17	19	21	32	24	18	19	19	17	18	22	27	39	38	48	25	79	79
7-Sep	50	47	27	31	30	18	31	21	21	21	17	20	28	25	27	24	21	22	23	21	27	24	22	56	56
8-Sep	48	58	22	22	25	15	20	12	29	29	16	20	17	14	28	14	24	15	14	22	12	10	10	14	58
9-Sep	28	90	40	38	21	19	19	22	25	28	60	24	22	22	25	28	28	22	24	21	22	22	22	24	90
10-Sep	23	21	26	43	27	22	22	24	30	45	52	37	25	38	28	21	23	19	8	12	16	7	15	13	52
11-Sep	12	36	36	16	24	67	23	25	48	100	63	61	65	48	35	39	46	30	23	39	9	14	16	15	100
12-Sep	11	20	74	75	29	16	31	26	25	24	33	24	26	19	15	26	21	18	52	14	13	15	29	40	75
13-Sep	25	17	12	25	19	29	20	11	15	15	14	15	17	21	28	17	13	12	12	12	13	11	14	14	29
14-Sep	18	17	18	34	18	28	16	35	37	51	55	62	60	36	37	24	17	19	9	27	20	18	87	21	87
15-Sep	10	23	33	18	11	13	10	24	24	24	34	57	74	64	83	59	31	15	17	39	15	11	20	18	83
16-Sep	13	17	12	14	18	9	15	23	20	18	20	27	28	26	30	37	29	26	21	42	24	23	34	25	42
17-Sep	30	34	29	28	29	15	28	18	21	18	17	22	27	56	38	83	21	20	15	14	18	18	20	16	83
18-Sep	10	15	20	17	21	22	14	18	50	26	34	40	29	25	28	22	25	20	20	6	12	49	32	77	77
19-Sep	67	25	74	38	40	77	46	14	20	22	35	36	49	37	67	70	47	23	81	43	27	24	19	34	81
20-Sep	18	32	22	14	43	11	16	60	28	24	16	15	26	22	20	20	17	14	12	11	9	9	9	7	60
21-Sep	8	19	37	67	16	29	64	23	22	25	26	26	20	26	26	20	17	14	12	25	42	19	14	16	67
22-Sep	20	13	13	18	29	16	20	18	27	33	37	39	30	66	50	27	26	19	30	71	28	46	24	11	71
23-Sep	9	16	18	33	63	13	10	23	78	83	68	27	23	20	16	28	25	15	19	25	16	16	15	24	83
24-Sep	80	86	82	89	41	33	25	41	29	23	22	21	24	24	23	20	20	48	96	59	65	23	22	18	96
25-Sep	37	14	15	58	57	92	28	48	54	63	16	25	22	15	23	22	20	15	18	28	31	35	60	28	92
26-Sep	32	30	16	18	19	27	20	28	67	20	22	24	23	24	26	73	68	32	58	39	28	47	57	41	73
27-Sep	30	14	62	50	43	39	40	32	27	22	27	29	30	28	22	20	14	15	14	13	33	14	17	27	62
28-Sep	22	24	25	26	23	23	20	22	25	25	25	29	33	32	39	38	34	32	18	51	72	40	44	48	72
29-Sep	17	64	72	68	56	22	16	12	14	18	15	17	15	16	19	15	14	14	9	15	15	14	13	15	72
30-Sep	15	21	18	21	51	23	17	31	29	45	24	23	24	23	21	21	20	15	13	18	21	26	21	28	51
	90	90	86	89	63	92	64	60	78	100	68	62	74	66	83	83	68	48	96	71	72	49	87	79	
	Diurnal Maximum																								

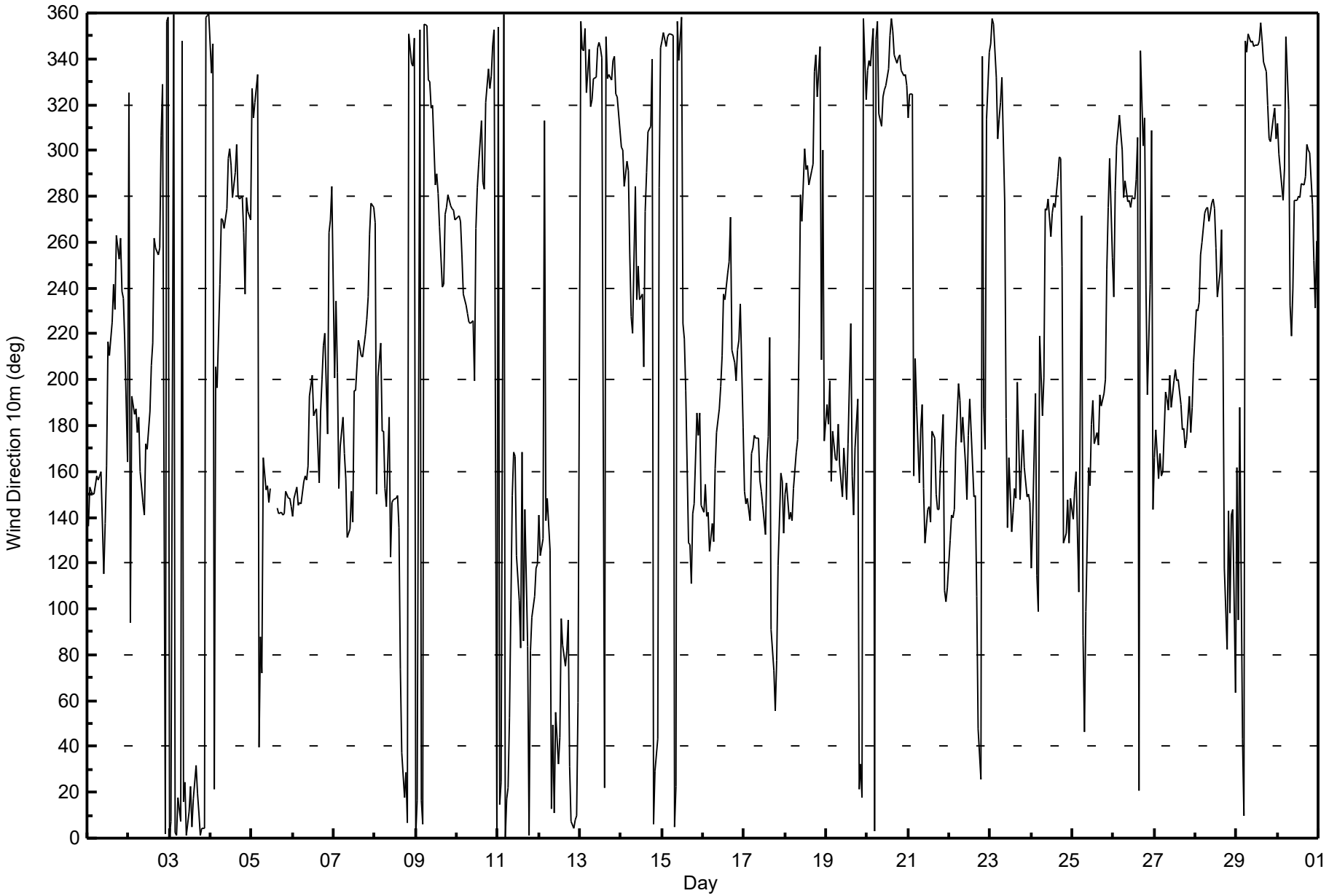
C - Calibration

Wood Buffalo Environmental Association

Hourly Averages

Wind Direction 10m (WD10) - deg

Mildred Lake - September 2024



WOOD BUFFALO ENVIRONMENTAL ASSOCIATION

CONTINUOUS AMBIENT AIR QUALITY
MONITORING PROGRAM
MONTHLY REPORT

AMS03
LOWER CAMP METEOROLOGY
SEPTEMBER 2024

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

October 31, 2024

WOOD BUFFALO ENVIRONMENTAL ASSOCIATION - LOWER CAMP MET TOWER (AMS03)
SEPTEMBER 2024

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	707	0	13	98.19	30.9	-	21.4	-
Temperature 45 m (C) Average	720	0	0	100	30.8	-	21.4	-
Temperature 100 m (C) Average	720	0	0	100	30.1	-	22.1	-
Temperature 163 m (C) Average	720	0	0	100	29.5	-	22.2	-
Relative Humidity 20 m (%) Average	707	0	13	98.19	98.9	-	90.7	-
Relative Humidity 45 m (%) Average	720	0	0	100	98.6	-	89.9	-
Relative Humidity 100 m (%) Average	720	0	0	100	99.6	-	90.3	-
Relative Humidity 163 m (%) Average	720	0	0	100	98.7	-	89.7	-
Wind Speed 20 m (km/h) Average	720	0	0	100	26	-	13.0	-
Wind Speed 45 m (km/h) Average	720	0	0	100	33	-	17.0	-
Wind Speed 100 m (km/h) Average	720	0	0	100	39	-	22.0	-
Wind Speed 163 m (km/h) Average	720	0	0	100	48	-	25.0	-
Wind Direction 20 m (deg) Average	720	0	0	100	-	-	-	-
Wind Direction 45 m (deg) Average	720	0	0	100	-	-	-	-
Wind Direction 100 m (deg) Average	720	0	0	100	-	-	-	-
Wind Direction 163 m (deg) Average	720	0	0	100	-	-	-	-
Vertical Wind Speed 20 m (km/h) Average	720	0	0	100	0.7	-	0.0	-
Vertical Wind Speed 45 m (km/h) Average	720	0	0	100	1.4	-	0.3	-
Vertical Wind Speed 100 m (km/h) Average	720	0	0	100	3	-	0.5	-
Vertical Wind Speed 163 m (km/h) Average	720	0	0	100	4.8	-	1.3	-

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

WOOD BUFFALO ENVIRONMENTAL ASSOCIATION - LOWER CAMP MET TOWER (AMS03)
SEPTEMBER 2024

MONTHLY SUMMARY FOR AIR QUALITY/ METEOROLOGICAL MONITORING MEASUREMENTS

					Percentile						
Parameter	Number	Mean	StnDev	Total	Min	P10	Q1	Median	Q3	P90	Max
Temperature 20 m (C) Average	707	14	5.2	-	3.6	7.6	10.7	13.4	16.8	20.7	30.9
Temperature 45 m (C) Average	720	14.07	5.1	-	3.9	7.9	10.7	13.5	17	20.6	30.8
Temperature 100 m (C) Average	720	14.12	5	-	4.2	8.4	10.6	13.6	16.9	20.4	30.1
Temperature 163 m (C) Average	720	14.08	4.8	-	3.7	8.6	10.5	13.3	16.8	20.3	29.5
Relative Humidity 20 m (%) Average	707	69.22	18.7	-	22.6	41.3	55.2	70.9	84.2	93.3	98.9
Relative Humidity 45 m (%) Average	720	67.45	18.4	-	22.1	40.4	53.7	68.5	81.9	90.9	98.6
Relative Humidity 100 m (%) Average	720	65.32	17.6	-	22.4	40.3	52.1	66.9	80.2	87.2	99.6
Relative Humidity 163 m (%) Average	720	62.31	16.9	-	22.2	39.1	49	63.6	76	83.6	98.7
Wind Speed 20 m (km/h) Average	720	7.6	5	-	0	2	4	6	11	15	26
Wind Speed 45 m (km/h) Average	720	10.7	7	-	0	3	6	9	15	20	33
Wind Speed 100 m (km/h) Average	720	14	8	-	0	5	8	12	19	25	39
Wind Speed 163 m (km/h) Average	720	16.8	9	-	1	6	10	15	22	29	48
Wind Direction 20 m (deg) Average	720	-	-	-	-	-	-	-	-	-	-
Wind Direction 45 m (deg) Average	720	-	-	-	-	-	-	-	-	-	-
Wind Direction 100 m (deg) Average	720	-	-	-	-	-	-	-	-	-	-
Wind Direction 163 m (deg) Average	720	-	-	-	-	-	-	-	-	-	-
Vertical Wind Speed 20 m (km/h) Average	720	-0.22	0.3	-	-1	-0.6	-0.4	-0.2	0	0.1	0.7
Vertical Wind Speed 45 m (km/h) Average	720	0.16	0.3	-	-0.8	-0.1	0	0.2	0.3	0.5	1.4
Vertical Wind Speed 100 m (km/h) Average	720	0.02	0.5	-	-2.2	-0.5	-0.2	0	0.2	0.5	3
Vertical Wind Speed 163 m (km/h) Average	720	0.55	0.8	-	-2.7	-0.2	0.1	0.4	0.9	1.6	4.8

WOOD BUFFALO ENVIRONMENTAL ASSOCIATION - LOWER CAMP MET TOWER (AMS03)
SEPTEMBER 2024

OPERATIONAL NOTES

Parameter	Period Start	Period End	Duration (Hours)	Notes
Relative Humidity, Temperature 20m	01 Sep 2024 09:00	01 Sep 2024 09:00	1	DAS Failure - data not recorded
Relative Humidity, Temperature 20m	04 Sep 2024 20:00	04 Sep 2024 20:00	1	DAS Failure - data not recorded
Relative Humidity, Temperature 20m	12 Sep 2024 16:00	12 Sep 2024 16:00	1	DAS Failure - data not recorded
Relative Humidity, Temperature 20m	26 Sep 2024 23:00	27 Sep 2024 00:00	2	DAS Failure - data not recorded
Relative Humidity, Temperature 20m	27 Sep 2024 02:00	27 Sep 2024 08:00	7	DAS Failure - data not recorded
Relative Humidity, Temperature 20m	30 Sep 2024 20:00	30 Sep 2024 20:00	1	DAS Failure - data not recorded

Wood Buffalo Environmental Association

Summary of Hour Averages

Ambient Temperature 20m (AT20) - C

Lower Camp Met Tower - September 2024

Maximum Value: 30.9 C on Sep 2 16:00

Maximum Daily Average: 21.4 C on Sep 2

Minimum Value: 3.6 C on Sep 19 07:00

Minimum Daily Average: 8.3 C on Sep 30

Maximum Diurnal Average: 19.2 C at hour 16

Minimum Diurnal Average: 9.3 C at hour 7

Monthly Average: 14.00 C

Percentiles: P_1 = 4.4 P_{10} = 7.6 Q_1 = 10.7 Median = 13.4 Q_3 = 16.8 P_{90} = 20.7 P_{99} = 28.9

Hours in Service:	720
Hours of Data:	707
Hours of Missing Data:	13
Hours of Calibration:	0
Percent Operational Time:	98.2

Day	Hourly Period Ending At (MST)																								Daily	Daily
	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24	Average	Maximum
1-Sep	16.0	15.1	14.0	13.7	13.1	12.5	12.5	13.8	DF	17.8	20.9	24.0	27.3	27.9	28.8	29.1	29.2	28.9	27.6	26.0	24.2	21.9	19.3	18.1	20.9	29.2
2-Sep	16.9	16.0	15.5	14.7	14.3	13.8	14.2	15.3	17.3	19.6	22.2	25.3	27.5	29.6	30.6	30.9	30.4	29.6	27.7	25.4	23.3	19.5	16.8	16.1	21.4	30.9
3-Sep	15.4	15.2	15.0	14.4	14.0	13.5	13.2	13.6	14.2	14.8	14.8	14.9	14.9	15.0	14.8	15.1	15.1	14.8	14.3	13.5	13.1	12.8	12.2	11.6	14.2	15.4
4-Sep	10.7	10.2	10.0	10.2	10.6	10.8	11.2	11.9	12.3	13.4	15.0	15.8	16.5	17.5	19.2	20.1	20.3	20.4	19.3	DF	16.3	15.0	13.8	13.5	14.5	20.4
5-Sep	12.5	11.1	9.9	9.1	7.9	7.2	7.4	9.2	10.9	13.1	15.1	16.9	18.3	19.8	20.7	21.1	21.6	21.6	21.1	19.9	19.5	18.6	17.6	16.8	15.3	21.6
6-Sep	15.8	15.0	14.1	14.2	14.7	13.6	13.3	13.3	15.2	17.6	20.5	23.2	23.4	21.6	21.4	21.4	22.5	22.0	22.6	21.4	20.0	18.4	17.6	16.8	18.3	23.4
7-Sep	14.8	14.0	13.3	12.7	12.3	12.0	12.2	12.5	14.5	16.6	18.6	20.4	23.2	26.7	27.8	28.1	27.8	27.2	25.1	23.1	21.8	20.5	19.6	18.6	19.3	28.1
8-Sep	17.8	16.2	15.0	14.2	13.5	12.9	12.9	13.9	16.0	17.8	19.5	22.3	25.0	26.3	26.8	27.5	28.8	27.6	24.8	23.3	20.4	18.5	17.4	16.4	19.8	28.8
9-Sep	16.7	16.5	15.8	15.0	14.5	13.9	13.5	14.2	14.8	15.7	17.2	17.9	18.8	17.5	16.4	16.1	16.8	15.9	14.8	13.7	13.0	12.5	11.9	11.6	15.2	18.8
10-Sep	10.9	10.3	10.0	9.5	9.0	8.8	8.7	9.3	10.3	12.3	14.5	16.8	18.1	18.7	16.2	17.3	18.7	18.3	16.8	14.7	12.8	11.3	10.0	9.2	13.0	18.7
11-Sep	8.6	7.5	6.6	5.9	5.2	4.8	4.7	5.0	6.3	10.3	14.0	16.6	18.7	20.0	20.7	21.1	21.3	20.9	19.2	17.1	16.1	15.9	15.7	15.0	13.2	21.3
12-Sep	13.9	12.7	12.7	11.8	13.2	12.3	11.8	11.7	11.6	12.0	13.1	13.1	12.9	12.7	13.0	DF	13.4	13.4	12.8	11.4	10.2	9.9	8.9	8.3	12.0	13.9
13-Sep	7.4	7.1	6.7	6.4	6.4	6.6	6.9	7.1	7.6	8.0	9.1	10.7	12.1	13.0	13.7	14.1	14.5	14.3	13.9	13.7	13.6	13.4	13.3	12.9	10.5	14.5
14-Sep	12.4	11.8	11.5	10.8	10.6	10.4	9.5	9.8	10.9	12.8	15.1	17.0	18.2	19.0	20.0	20.5	20.8	20.5	18.8	16.7	15.8	14.5	12.4	10.5	14.6	20.8
15-Sep	9.4	9.0	8.2	7.5	6.8	6.3	6.1	6.9	8.3	10.2	12.4	14.4	15.5	15.6	16.2	17.1	17.4	17.1	16.0	14.1	12.1	11.4	11.6	11.7	11.7	17.4
16-Sep	11.4	10.7	10.1	10.1	9.8	9.5	9.2	9.7	11.7	14.1	15.0	17.3	19.3	19.8	20.2	20.4	20.5	20.1	19.0	17.9	16.9	15.7	14.6	14.1	14.9	20.5
17-Sep	12.7	11.5	10.6	9.8	9.3	8.8	8.6	9.3	11.1	13.1	15.2	17.6	19.9	21.4	22.6	23.0	23.0	23.2	21.7	18.6	15.8	15.3	14.5	14.0	15.5	23.2
18-Sep	13.6	13.3	12.2	11.8	11.4	11.4	11.0	11.5	13.4	16.3	17.2	17.6	17.9	18.8	19.4	19.6	19.4	18.4	16.6	13.5	10.9	9.6	8.2	7.4	14.2	19.6
19-Sep	6.3	5.6	4.9	4.4	4.3	3.8	3.6	4.6	6.7	9.2	12.3	15.1	17.1	18.6	19.6	19.0	18.2	17.5	16.5	14.4	14.6	14.4	12.8	12.6	11.5	19.6
20-Sep	11.8	11.5	11.2	10.4	10.1	9.7	9.6	10.0	10.6	11.6	12.0	13.1	14.6	16.3	16.6	16.6	16.5	15.9	14.1	12.2	10.7	9.0	7.9	7.2	12.1	16.6
21-Sep	6.2	5.4	4.8	4.4	4.2	3.9	3.8	4.0	4.7	6.2	8.6	10.5	12.1	14.4	15.7	16.3	16.2	15.8	15.4	14.3	12.2	11.3	11.3	11.6	9.7	16.3
22-Sep	11.8	12.0	11.3	10.3	9.6	9.1	7.9	8.8	10.5	11.6	13.3	15.0	16.6	18.0	18.9	19.2	19.2	18.3	17.2	15.7	14.7	13.9	12.7	11.6	13.6	19.2
23-Sep	10.3	9.4	8.8	8.0	7.2	6.1	5.6	5.7	6.8	8.1	10.4	11.2	12.5	13.8	14.1	14.1	14.8	14.1	14.2	14.0	13.6	13.5	13.3	12.9	10.9	14.8
24-Sep	12.4	12.2	11.3	11.1	11.0	11.1	10.7	11.7	15.5	17.2	18.8	20.2	21.1	22.1	22.4	22.6	22.5	21.9	19.4	16.5	13.7	12.4	12.2	12.5	15.9	22.6
25-Sep	12.6	11.9	11.6	11.0	10.8	10.4	10.3	13.2	11.9	12.5	15.4	17.4	17.9	17.9	18.4	18.5	18.8	18.8	18.0	17.3	15.7	15.0	14.4	14.0	14.7	18.8
26-Sep	14.1	13.9	12.9	12.1	11.9	11.3	10.8	10.5	10.5	10.7	10.8	11.7	12.1	12.8	14.4	14.6	13.2	12.9	11.9	11.0	9.7	9.1	DF	DF	11.9	14.6
27-Sep	7.4	DF	DF	DF	DF	DF	DF	DF	8.1	8.4	10.1	11.4	12.8	13.7	14.4	14.1	14.0	13.2	12.6	12.3	11.3	10.8	10.8	10.2	--	14.4
28-Sep	10.4	10.5	10.8	10.7	10.5	10.1	9.8	9.6	9.9	10.3	10.7	11.0	11.5	12.3	13.6	14.4	14.5	13.5	11.5	11.1	9.8	9.5	8.4	8.0	10.9	14.5
29-Sep	7.8	7.7	7.5	7.1	6.5	5.9	5.6	6.0	6.6	8.2	11.2	12.6	12.4	13.3	13.5	12.6	11.9	11.4	10.9	10.4	10.0	9.6	8.9	8.6	9.4	13.5
30-Sep	8.1	7.6	6.7	6.0	5.6	4.7	4.6	4.5	5.1	6.3	9.0	10.9	12.1	12.5	12.7	13.0	12.7	11.9	10.5	DF	7.2	7.1	6.7	6.1	8.3	13.0
	11.9	11.4	10.8	10.2	9.9	9.5	9.3	9.9	10.8	12.5	14.4	16.1	17.3	18.2	18.8	19.2	19.1	18.6	17.5	16.2	14.6	13.7	12.9	12.3	Diurnal Average	
	17.8	16.5	15.8	15.0	14.7	13.9	14.2	15.3	17.3	19.6	22.2	25.3	27.5	29.6	30.6	30.9	30.4	29.6	27.7	26.0	24.2	21.9	19.6	18.6	Diurnal Maximum	

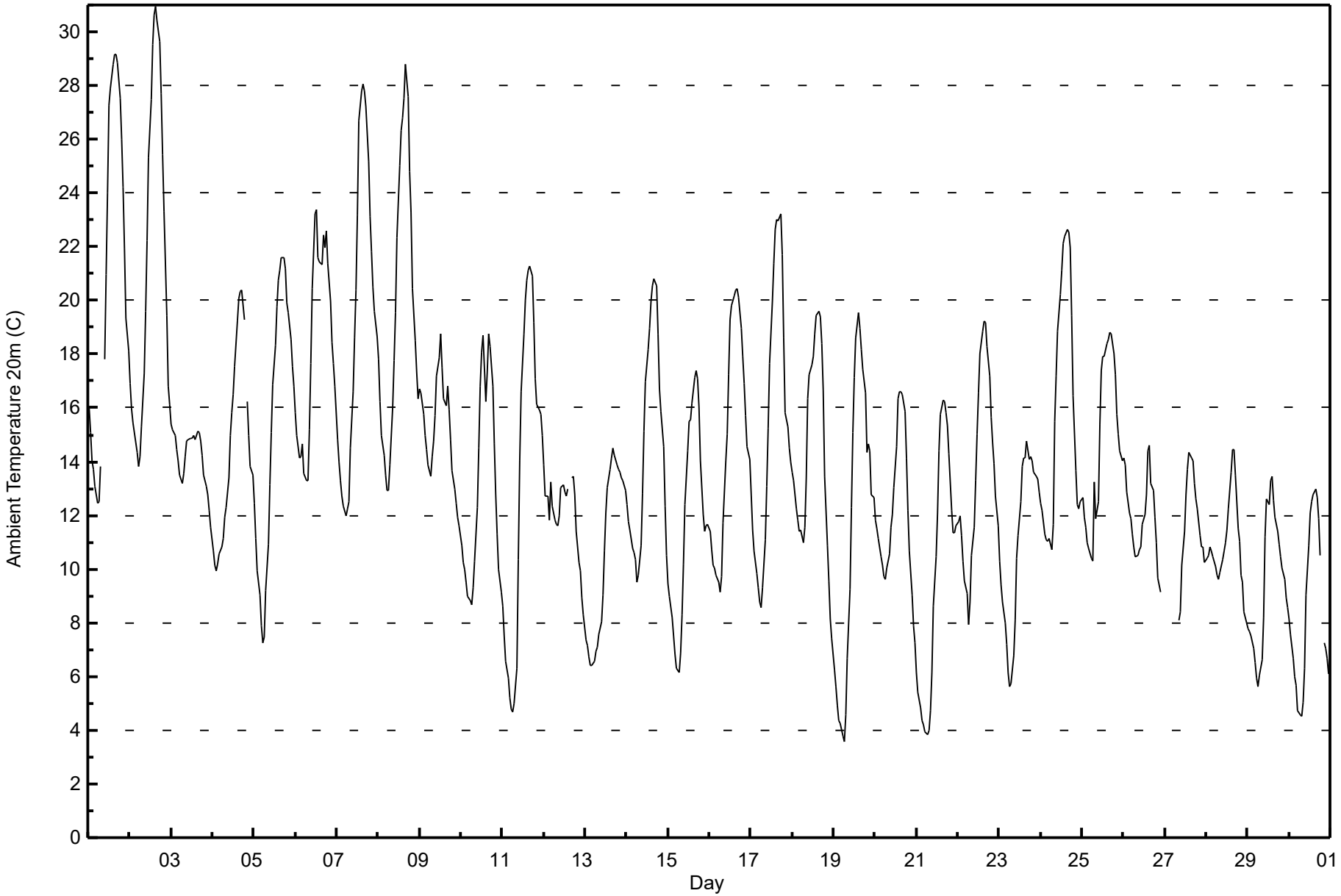
DF - DAS Failure

Wood Buffalo Environmental Association

Hourly Averages

Ambient Temperature 20m (AT20) - C

Lower Camp Met Tower - September 2024



Concentration Ranges (C)	Number of Hours	%	Cumulative %
-50 - -20	0	0.00	0.00
-20 - 0	0	0.00	0.00
0 - 10	138	19.52	19.52
10 - 20	482	68.18	87.69
> 20	87	12.31	100.00

Total Number of Valid Hours: 707

Total Number of Hours: 720

Maximum Value: 30.8 C on Sep 2 16:00 — Maximum Daily Average: 21.4 C on Sep 2

Minimum Value: 3.9 C on Sep 21 08:00 — Minimum Daily Average: 8.5 C on Sep 30

Maximum Diurnal Average: 19.0 C at hour 17 — Minimum Diurnal Average: 9.4 C at hour 7

Monthly Average: 14.07 C — Percentiles: P_1 = 4.7 P_{10} = 7.9 Q_1 = 10.7 Median = 13.5 Q_3 = 17.0 P_{90} = 20.6 P_{99} = 28.8

Hours in Service:	720
Hours of Data:	720
Hours of Missing Data:	0
Hours of Calibration:	0
Percent Operational Time:	100.0

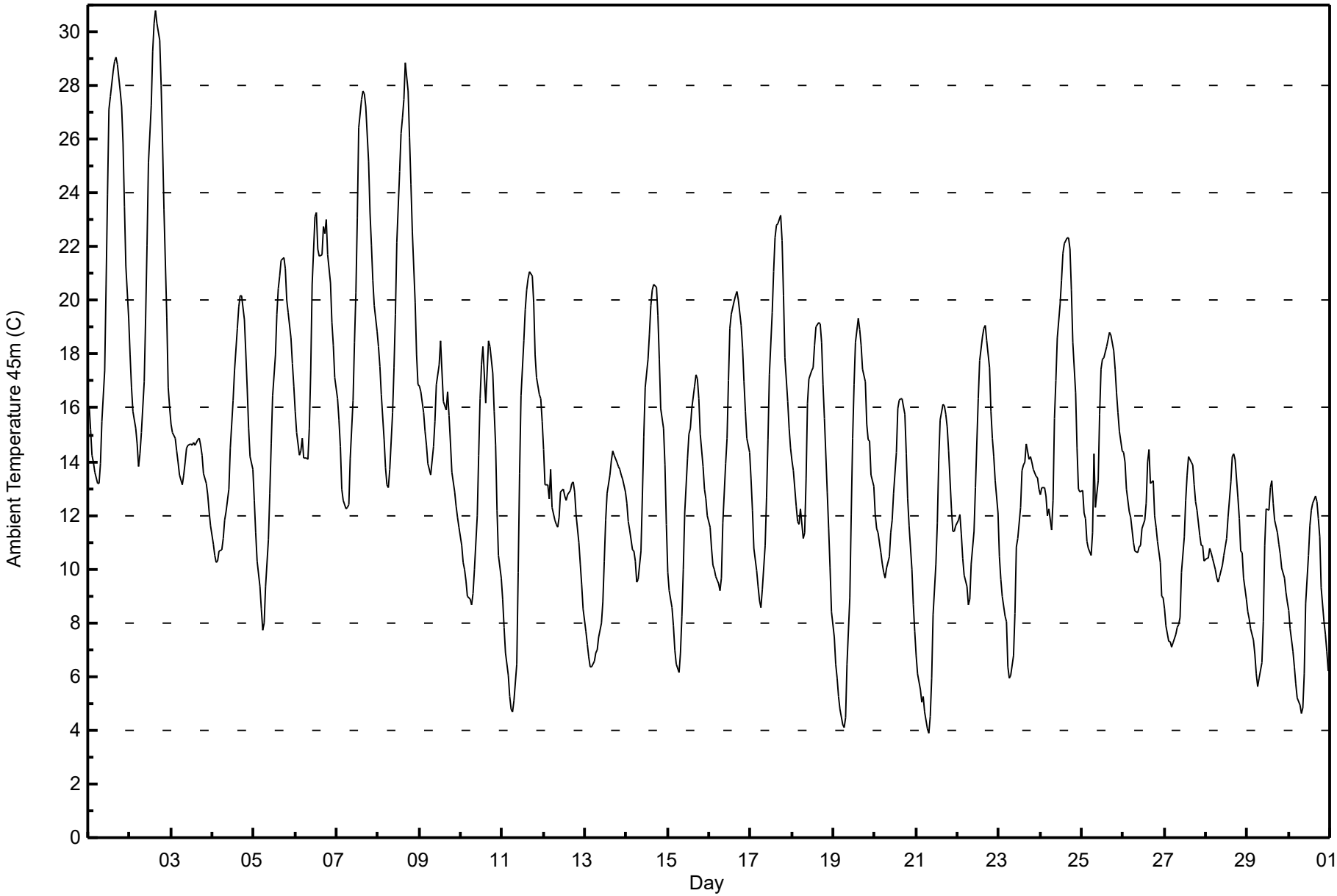
Day	Hourly Period Ending At (MST)																								Daily	Daily
	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24	Average	Maximum
1-Sep	16.1	15.2	14.2	14.0	13.6	13.2	13.2	13.9	15.5	17.4	20.6	24.0	27.1	27.6	28.5	28.9	29.0	28.8	27.8	27.2	25.8	23.5	21.3	19.3	21.1	29.0
2-Sep	18.0	16.7	15.9	15.2	14.7	13.8	14.3	15.1	17.0	19.3	22.1	25.1	27.3	29.2	30.3	30.8	30.3	29.7	28.0	25.8	23.4	19.4	16.8	16.1	21.4	30.8
3-Sep	15.4	15.1	14.9	14.4	14.0	13.5	13.2	13.5	14.0	14.5	14.6	14.6	14.6	14.7	14.6	14.8	14.9	14.6	14.3	13.5	13.2	12.8	12.2	11.6	14.1	15.4
4-Sep	10.9	10.5	10.2	10.3	10.7	10.7	11.2	11.8	12.1	13.0	14.5	15.4	16.3	17.4	18.9	19.8	20.2	20.2	19.3	18.0	16.7	15.3	14.2	13.7	14.6	20.2
5-Sep	12.6	11.3	10.3	9.4	8.5	7.7	8.0	9.3	11.1	12.8	14.6	16.4	18.0	19.5	20.5	20.9	21.5	21.6	21.2	20.0	19.6	18.6	17.7	16.8	15.3	21.6
6-Sep	15.9	15.1	14.2	14.4	14.8	14.2	14.1	14.1	15.2	17.4	20.6	23.1	23.3	21.9	21.7	21.7	22.8	22.5	23.0	21.7	20.7	19.2	18.3	17.1	18.6	23.3
7-Sep	16.3	15.5	14.5	13.0	12.6	12.2	12.3	12.4	14.2	16.3	18.5	20.3	23.0	26.4	27.5	27.8	27.7	27.2	25.2	23.3	22.0	20.7	19.8	18.8	19.5	27.8
8-Sep	18.3	17.6	16.5	14.8	13.8	13.1	13.0	13.7	15.8	17.5	19.5	22.2	24.8	26.2	26.8	27.5	28.9	27.8	26.1	24.3	22.5	19.9	18.0	16.9	20.2	28.9
9-Sep	16.8	16.6	15.8	15.1	14.6	13.9	13.5	14.0	14.6	15.5	16.9	17.6	18.5	17.4	16.2	15.9	16.6	15.7	14.7	13.6	12.9	12.4	11.9	11.6	15.1	18.5
10-Sep	10.9	10.3	10.0	9.5	9.0	8.9	8.7	9.1	10.0	12.0	14.2	16.4	17.6	18.3	16.2	17.3	18.5	18.3	17.3	15.9	14.6	12.2	10.5	9.7	13.1	18.5
11-Sep	8.9	7.8	6.9	6.0	5.2	4.8	4.7	5.1	6.5	9.9	13.6	16.4	18.5	19.7	20.4	20.8	21.1	20.9	19.9	18.0	17.1	16.5	16.3	15.5	13.4	21.1
12-Sep	14.4	13.1	13.1	12.6	13.7	12.3	11.8	11.7	11.6	11.9	12.8	13.0	12.7	12.5	12.8	12.9	13.2	13.3	12.9	12.0	11.0	10.2	9.4	8.5	12.2	14.4
13-Sep	7.7	7.2	6.7	6.4	6.4	6.6	6.9	7.0	7.5	8.0	8.8	10.3	11.8	12.8	13.5	14.0	14.4	14.2	14.0	13.8	13.7	13.5	13.3	12.9	10.5	14.4
14-Sep	12.4	11.7	11.5	10.7	10.7	10.3	9.5	9.6	10.7	12.7	14.9	16.8	17.8	18.7	19.8	20.4	20.6	20.5	19.4	17.8	16.0	15.3	13.9	11.6	14.7	20.6
15-Sep	9.9	9.2	8.6	7.9	7.0	6.5	6.2	6.9	8.2	10.0	12.1	14.1	15.0	15.3	16.0	16.8	17.2	17.1	16.3	15.0	13.8	13.0	12.6	12.0	11.9	17.2
16-Sep	11.6	10.8	10.1	10.0	9.7	9.4	9.2	9.7	11.7	13.9	14.8	17.1	19.0	19.5	19.9	20.2	20.3	20.0	19.1	18.2	17.0	15.9	14.9	14.4	14.9	20.3
17-Sep	13.3	12.2	10.8	9.9	9.4	8.8	8.6	9.2	10.9	12.6	14.8	17.2	19.5	21.1	22.3	22.8	22.9	23.2	22.2	20.2	17.9	16.2	15.2	14.5	15.7	23.2
18-Sep	14.0	13.6	12.4	11.8	11.7	12.3	11.1	11.4	13.3	16.2	17.1	17.4	17.5	18.3	19.0	19.2	19.1	18.4	16.9	15.6	12.9	11.5	10.0	8.4	14.5	19.2
19-Sep	7.5	6.5	5.9	5.3	4.8	4.2	4.1	4.5	6.5	8.9	12.0	14.9	16.8	18.4	19.3	18.9	18.4	17.5	17.0	15.4	14.8	14.8	13.5	13.1	11.8	19.3
20-Sep	12.0	11.5	11.4	10.6	10.2	9.9	9.7	10.0	10.4	11.3	11.8	12.8	14.3	16.0	16.3	16.3	16.3	15.8	14.3	12.6	11.6	10.0	8.7	7.7	12.1	16.3
21-Sep	6.8	6.1	5.5	5.1	5.3	4.7	4.1	3.9	4.5	5.9	8.3	10.2	11.7	14.0	15.6	16.2	16.1	15.7	15.3	14.4	12.2	11.4	11.4	11.6	9.8	16.2
22-Sep	11.8	12.0	11.3	10.4	9.8	9.3	8.7	8.9	10.2	11.4	13.0	14.7	16.3	17.8	18.6	19.0	19.1	18.5	17.5	15.9	14.9	14.2	13.3	12.1	13.7	19.1
23-Sep	10.5	9.6	9.0	8.3	8.1	6.3	5.9	6.0	6.8	8.3	10.8	11.2	12.3	13.7	13.9	14.0	14.7	14.1	14.2	14.0	13.7	13.5	13.4	13.0	11.0	14.7
24-Sep	12.8	13.0	13.0	12.7	12.0	12.3	11.4	12.6	15.6	17.0	18.6	19.9	20.8	21.8	22.1	22.3	22.3	21.9	20.4	18.5	16.5	14.5	13.0	12.9	16.6	22.3
25-Sep	12.9	12.1	11.9	11.0	10.8	10.5	11.4	14.3	12.3	13.3	15.8	17.5	17.8	17.9	18.3	18.6	18.8	18.7	18.1	17.5	16.5	15.8	15.2	14.4	15.0	18.8
26-Sep	14.3	14.0	13.0	12.1	11.9	11.4	11.0	10.7	10.6	10.8	10.9	11.5	11.8	12.4	14.0	14.5	13.2	13.3	12.0	11.6	11.0	10.3	9.0	8.9	11.8	14.5
27-Sep	8.5	7.9	7.3	7.3	7.1	7.3	7.6	7.9	8.0	8.2	9.9	11.2	12.5	13.5	14.2	14.0	13.9	13.1	12.5	12.2	11.3	10.9	10.9	10.3	10.3	14.2
28-Sep	10.4	10.4	10.8	10.6	10.4	10.0	9.7	9.5	9.7	10.1	10.5	10.8	11.1	11.9	13.3	14.2	14.3	14.1	12.7	11.9	10.7	10.6	9.7	8.9	11.1	14.3
29-Sep	8.4	8.2	7.8	7.3	6.8	6.1	5.6	5.9	6.5	8.0	10.9	12.2	12.2	13.0	13.3	12.5	11.8	11.4	10.9	10.5	10.0	9.7	9.2	8.8	9.5	13.3
30-Sep	8.5	7.8	6.9	6.4	5.7	5.2	5.0	4.6	4.9	6.1	8.7	10.5	11.6	12.2	12.4	12.7	12.5	11.9	11.2	9.3	8.0	7.6	6.9	6.2	8.5	12.7
	12.3	11.6	11.0	10.4	10.1	9.6	9.4	9.9	10.9	12.3	14.2	15.8	17.1	18.0	18.5	18.9	19.0	18.7	17.8	16.6	15.4	14.3	13.3	12.6	Diurnal Average	
	18.3	17.6	16.5	15.2	14.8	14.2	14.3	15.1	17.0	19.3	22.1	25.1	27.3	29.2	30.3	30.8	30.3	29.7	28.0	27.2	25.8	23.5	21.3	19.3	Diurnal Maximum	

Wood Buffalo Environmental Association

Hourly Averages

Ambient Temperature 45m (AT45) - C

Lower Camp Met Tower - September 2024



Concentration Ranges (C)	Number of Hours	%	Cumulative %
-50 - -20	0	0.00	0.00
-20 - 0	0	0.00	0.00
0 - 10	145	20.14	20.14
10 - 20	488	67.78	87.92
> 20	87	12.08	100.00

Total Number of Valid Hours: 720

Total Number of Hours: 720

Maximum Value: 30.1 C on Sep 2 16:00
Maximum Daily Average: 22.1 C on Sep 2

Minimum Value: 4.2 C on Sep 30 08:00
Minimum Daily Average: 8.3 C on Sep 30
Maximum Diurnal Average: 18.5 C at hour 17
Minimum Diurnal Average: 9.9 C at hour 7
Monthly Average: 14.12 C
Percentiles: P_1 = 5.3 P_{10} = 8.4 Q_1 = 10.6 Median = 13.6 Q_3 = 16.9 P_{90} = 20.4 P_{99} = 28.4

Hours in Service:	720
Hours of Data:	720
Hours of Missing Data:	0
Hours of Calibration:	0
Percent Operational Time:	100.0

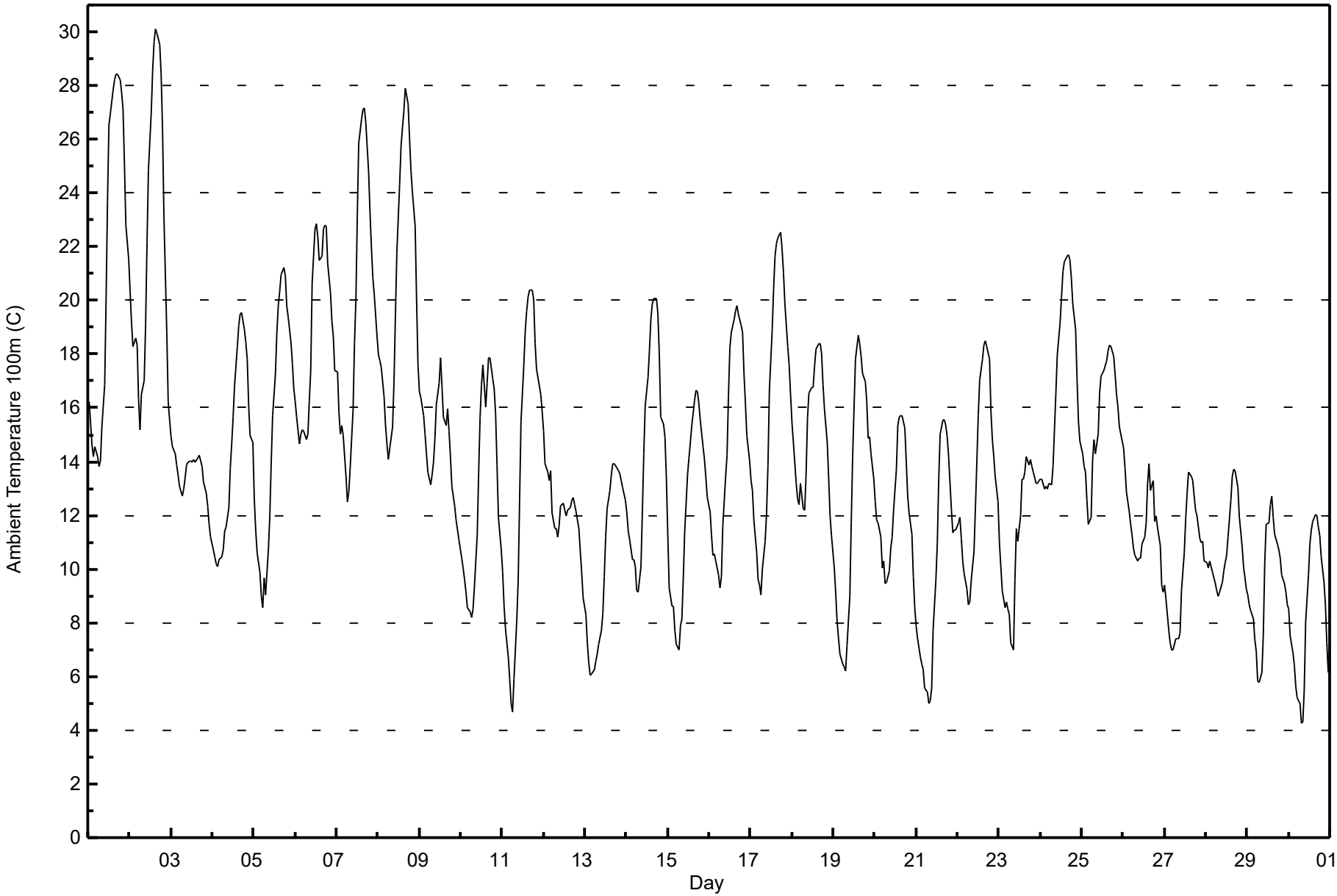
Day	Hourly Period Ending At (MST)																								Daily	Daily
	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24	Average	Maximum
1-Sep	16.2	15.5	14.6	14.2	14.6	14.2	13.8	14.1	15.3	16.9	20.1	23.7	26.5	26.9	27.8	28.2	28.4	28.4	28.2	27.7	27.1	25.1	22.8	21.6	21.3	28.4
2-Sep	20.3	19.2	18.3	18.6	18.4	16.3	15.2	16.5	17.0	19.1	22.2	24.9	27.0	28.6	29.6	30.1	30.0	29.5	28.5	26.3	23.0	18.8	16.3	15.5	22.1	30.1
3-Sep	14.9	14.6	14.3	13.9	13.5	13.1	12.7	13.0	13.4	13.9	14.0	14.0	14.0	14.1	14.0	14.1	14.3	14.0	13.8	13.2	12.8	12.3	11.7	11.2	13.5	14.9
4-Sep	10.7	10.4	10.2	10.1	10.4	10.4	10.7	11.4	11.6	12.3	13.7	14.7	15.7	16.8	18.3	19.1	19.5	19.6	18.9	18.4	17.8	16.2	15.0	14.7	14.4	19.6
5-Sep	12.6	11.4	10.6	9.9	9.0	8.6	9.7	9.1	10.7	12.0	14.0	15.7	17.3	18.8	19.8	20.3	20.9	21.2	20.9	19.8	19.4	18.4	17.6	16.7	15.2	21.2
6-Sep	16.2	15.7	14.7	15.0	15.2	15.1	14.8	15.0	16.3	17.4	20.6	22.6	22.8	22.4	21.5	21.7	22.7	22.8	22.7	21.4	20.3	19.2	18.7	17.4	18.8	22.8
7-Sep	17.4	15.8	15.1	15.4	15.0	13.5	12.5	12.8	13.8	15.9	18.4	20.0	23.1	25.9	26.8	27.1	27.1	26.6	24.8	23.3	21.9	20.9	20.2	18.7	19.7	27.1
8-Sep	18.0	17.7	17.5	16.4	15.4	14.7	14.1	14.5	15.3	17.0	19.4	21.8	24.3	25.8	26.4	27.1	27.9	27.3	26.0	24.9	24.0	22.7	20.0	17.6	20.7	27.9
9-Sep	16.6	16.4	15.7	15.0	14.3	13.6	13.2	13.5	14.0	14.9	16.1	16.9	17.9	16.8	15.7	15.4	16.0	15.1	14.2	13.1	12.4	11.8	11.4	11.1	14.6	17.9
10-Sep	10.4	10.1	9.6	9.1	8.6	8.4	8.2	8.5	9.3	11.3	13.6	15.7	16.9	17.6	16.0	16.9	17.9	17.9	17.1	16.7	15.8	13.9	11.9	10.7	13.0	17.9
11-Sep	9.9	8.6	7.8	6.7	5.9	5.0	4.7	5.9	8.1	9.6	12.6	15.5	17.6	18.9	19.6	20.1	20.4	20.4	20.0	18.4	17.5	16.8	16.5	15.9	13.4	20.4
12-Sep	15.2	13.9	13.6	13.3	13.7	12.1	11.5	11.5	11.2	11.6	12.3	12.4	12.2	12.0	12.2	12.3	12.6	12.7	12.4	12.2	11.5	10.7	9.9	8.9	12.2	15.2
13-Sep	8.3	7.2	6.5	6.0	6.1	6.3	6.6	6.8	7.2	7.7	8.4	9.7	11.2	12.2	13.0	13.5	13.9	13.9	13.8	13.6	13.6	13.3	13.0	12.5	10.2	13.9
14-Sep	12.1	11.4	11.1	10.4	10.3	10.1	9.2	9.1	10.1	12.1	14.3	16.1	17.1	18.1	19.3	19.9	20.1	20.1	19.5	18.0	15.6	15.4	14.9	13.4	14.5	20.1
15-Sep	11.3	9.3	8.6	8.6	7.7	7.2	7.0	7.9	8.1	9.7	11.4	13.5	14.1	14.7	15.4	16.3	16.6	16.6	16.2	15.5	14.6	14.1	13.4	12.7	12.1	16.6
16-Sep	12.1	11.2	10.5	10.6	10.3	9.8	9.3	9.7	11.6	13.5	14.3	16.4	18.3	18.8	19.3	19.6	19.8	19.5	19.1	18.8	17.3	16.2	15.0	14.0	14.8	19.8
17-Sep	13.3	12.9	11.8	10.6	9.6	9.4	9.1	10.0	11.0	12.1	13.9	16.7	18.9	20.5	21.6	22.1	22.3	22.6	21.9	21.0	19.8	18.3	17.6	16.5	16.0	22.6
18-Sep	15.5	14.7	13.2	12.6	12.4	13.2	12.2	12.2	13.5	15.6	16.6	16.8	16.8	17.5	18.2	18.4	18.4	18.0	16.9	16.0	14.7	13.4	12.0	11.2	15.0	18.4
19-Sep	10.0	9.1	8.0	7.4	6.8	6.5	6.4	6.2	7.1	9.0	11.7	14.2	16.0	17.8	18.7	18.4	17.9	17.3	17.0	16.3	14.9	14.9	14.3	13.3	12.5	18.7
20-Sep	12.5	11.8	11.7	11.2	10.0	10.3	9.4	9.5	9.9	10.8	11.2	12.2	13.7	15.3	15.6	15.7	15.7	15.2	14.0	12.7	12.1	11.3	9.7	8.6	12.1	15.7
21-Sep	7.9	7.4	6.7	6.5	6.3	5.6	5.4	5.0	5.1	5.6	7.7	9.6	11.0	13.3	15.0	15.6	15.5	15.3	14.9	14.2	12.2	11.4	11.5	11.4	10.0	15.6
22-Sep	11.7	11.9	11.1	10.3	9.8	9.2	8.7	8.8	9.6	10.7	12.3	14.0	15.7	17.0	17.8	18.3	18.5	18.3	17.8	15.9	14.8	14.2	13.5	12.5	13.4	18.5
23-Sep	11.0	10.1	9.2	8.6	8.8	8.5	8.3	7.3	7.0	9.6	11.5	11.0	12.0	13.3	13.3	13.6	14.2	13.9	14.1	13.8	13.6	13.2	13.2	13.3	11.3	14.2
24-Sep	13.3	13.3	13.0	13.1	13.0	13.2	13.1	13.8	15.2	16.5	18.0	19.2	20.1	21.1	21.4	21.7	21.7	21.5	20.8	19.9	18.9	17.1	15.5	14.8	17.0	21.7
25-Sep	14.3	13.8	13.6	12.6	11.6	11.9	14.0	14.8	14.3	15.1	16.6	17.2	17.3	17.4	17.8	18.1	18.3	18.3	17.9	17.3	16.5	16.0	15.3	14.8	15.6	18.3
26-Sep	14.5	13.7	12.9	12.1	11.7	11.3	10.8	10.5	10.3	10.4	10.4	10.9	11.2	11.7	13.2	13.9	12.9	13.3	11.8	12.0	11.5	10.9	9.4	9.2	11.7	14.5
27-Sep	9.4	8.9	7.7	7.2	7.0	7.0	7.4	7.4	7.4	7.6	9.2	10.6	11.9	12.8	13.6	13.4	13.3	12.7	12.2	12.0	11.1	11.0	11.0	10.3	10.1	13.6
28-Sep	10.3	10.1	10.3	10.1	9.9	9.5	9.2	9.0	9.1	9.5	9.9	10.2	10.5	11.2	12.6	13.5	13.7	13.6	13.0	11.9	11.4	10.8	10.1	9.3	10.8	13.7
29-Sep	9.0	8.6	8.5	8.1	7.4	7.0	5.8	5.8	6.1	7.6	10.2	11.7	11.7	12.4	12.7	11.9	11.3	10.9	10.7	10.4	9.8	9.5	9.1	8.7	9.4	12.7
30-Sep	8.5	7.5	6.9	6.4	5.6	5.2	5.0	4.2	4.3	5.5	8.1	9.8	10.9	11.5	11.8	12.1	12.0	11.5	11.2	10.4	9.5	8.6	7.2	6.2	8.3	12.1
	12.8	12.1	11.4	11.0	10.6	10.2	9.9	10.1	10.8	12.0	13.8	15.3	16.5	17.4	17.9	18.3	18.5	18.3	17.7	16.8	15.9	14.9	13.9	13.1	Diurnal Average	
	20.3	19.2	18.3	18.6	18.4	16.3	15.2	16.5	17.0	19.1	22.2	24.9	27.0	28.6	29.6	30.1	30.0	29.5	28.5	27.7	27.1	25.1	22.8	21.6	Diurnal Maximum	

Wood Buffalo Environmental Association

Hourly Averages

Ambient Temperature 100m (AT100) - C

Lower Camp Met Tower - September 2024



Concentration Ranges (C)	Number of Hours	%	Cumulative %
-50 - -20	0	0.00	0.00
-20 - 0	0	0.00	0.00
0 - 10	143	19.86	19.86
10 - 20	492	68.33	88.19
> 20	85	11.81	100.00

Total Number of Valid Hours: 720

Total Number of Hours: 720

Maximum Value: 29.5 C on Sep 2 16:00

Maximum Daily Average: 22.2 C on Sep 2

Minimum Value: 3.7 C on Sep 30 09:00

Minimum Daily Average: 8.1 C on Sep 30

Maximum Diurnal Average: 17.9 C at hour 17

Minimum Diurnal Average: 10.3 C at hour 8

Monthly Average: 14.08 C

Percentiles: P_1 = 5.6 P_{10} = 8.6 Q_1 = 10.5 Median = 13.3 Q_3 = 16.8 P_{90} = 20.3 P_{99} = 27.9

Hours in Service:	720
Hours of Data:	720
Hours of Missing Data:	0
Hours of Calibration:	0
Percent Operational Time:	100.0

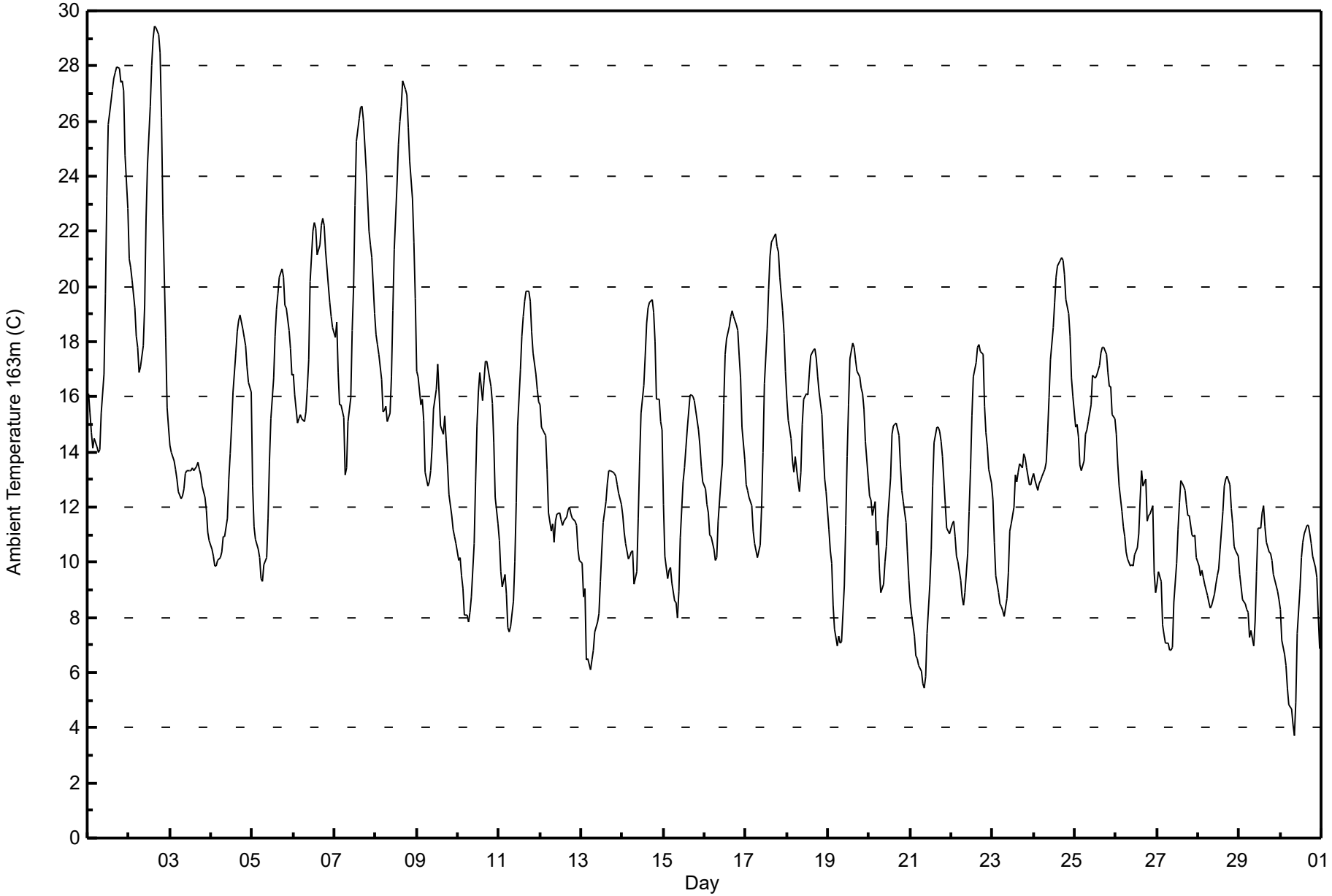
Day	Hourly Period Ending At (MST)																								Daily	Daily
	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24	Average	Maximum
1-Sep	16.1	15.4	14.7	14.2	14.5	14.2	14.0	14.1	15.4	16.8	19.7	23.3	25.9	26.3	27.2	27.6	27.8	28.0	27.9	27.4	27.5	27.1	24.8	22.8	21.4	28.0
2-Sep	21.0	20.7	20.2	19.2	18.2	17.8	16.9	17.1	17.8	19.3	22.5	24.4	26.5	28.0	29.0	29.5	29.4	29.1	28.5	26.1	22.6	18.1	15.6	14.9	22.2	29.5
3-Sep	14.3	14.0	13.7	13.4	13.0	12.6	12.3	12.4	12.7	13.2	13.3	13.3	13.3	13.4	13.3	13.5	13.6	13.4	13.2	12.8	12.4	11.9	11.1	10.8	12.9	14.3
4-Sep	10.5	10.2	9.9	9.9	10.1	10.2	10.4	10.9	10.9	11.6	13.0	13.9	15.0	16.2	17.6	18.4	18.8	18.9	18.4	18.2	17.8	17.1	16.5	16.2	14.2	18.9
5-Sep	12.7	11.3	10.8	10.5	10.2	9.4	9.3	9.9	10.2	11.6	13.7	15.2	16.7	18.2	19.2	19.7	20.3	20.7	20.4	19.3	19.2	18.4	17.8	16.8	15.1	20.7
6-Sep	16.8	16.0	15.0	15.2	15.3	15.2	15.1	15.4	16.3	17.3	20.2	22.0	22.3	22.1	21.2	21.5	22.2	22.5	22.2	21.3	20.0	19.4	18.9	18.5	18.8	22.5
7-Sep	18.2	18.7	16.9	15.7	15.7	15.3	13.2	13.4	15.1	15.9	18.4	20.0	23.0	25.3	26.1	26.5	26.6	26.0	24.3	23.2	22.0	21.5	21.0	19.0	20.0	26.6
8-Sep	18.2	17.9	17.5	16.6	15.4	15.5	15.6	15.1	15.4	16.7	19.1	21.4	23.8	25.2	26.0	26.6	27.5	27.2	26.9	25.8	24.6	23.2	21.6	19.6	20.9	27.5
9-Sep	16.9	16.7	15.7	15.9	15.1	13.3	12.8	12.9	13.3	14.2	15.6	16.3	17.2	16.1	15.0	14.7	15.3	14.5	13.5	12.4	11.7	11.2	10.9	10.7	14.2	17.2
10-Sep	10.1	10.2	9.5	9.1	8.1	8.1	7.8	8.2	8.8	10.7	12.9	15.0	16.2	16.9	15.9	16.6	17.3	17.3	16.7	16.4	15.8	14.3	12.3	11.4	12.7	17.3
11-Sep	10.8	9.7	9.1	9.6	8.8	7.6	7.5	7.7	8.6	10.0	12.1	14.9	17.0	18.2	18.9	19.5	19.8	19.8	19.5	18.3	17.6	16.9	16.3	15.8	13.9	19.8
12-Sep	15.7	14.9	14.7	14.6	13.4	11.8	11.1	11.4	10.8	11.5	11.8	11.8	11.5	11.3	11.5	11.7	11.9	12.0	11.8	11.6	11.5	11.4	10.5	10.0	12.1	15.7
13-Sep	9.9	8.8	9.1	6.4	6.5	6.1	6.5	6.8	7.5	7.9	8.1	9.3	10.4	11.4	12.2	12.8	13.3	13.3	13.3	13.2	13.1	12.8	12.5	12.1	10.1	13.3
14-Sep	11.7	11.1	10.7	10.1	10.2	10.4	10.4	9.2	9.7	11.6	13.7	15.4	16.4	17.5	18.7	19.2	19.4	19.5	19.1	18.0	15.9	15.9	15.1	14.8	14.3	19.5
15-Sep	12.1	10.2	9.4	9.7	9.8	9.3	8.6	8.5	8.0	9.0	10.9	12.9	13.4	14.1	14.9	16.1	16.1	16.0	15.9	15.5	14.8	14.2	13.5	12.9	12.3	16.1
16-Sep	12.7	12.1	11.8	11.0	10.9	10.5	10.1	10.2	11.5	13.0	13.6	15.8	17.6	18.1	18.6	18.9	19.1	18.9	18.6	18.4	17.5	16.7	14.9	13.7	14.7	19.1
17-Sep	12.8	12.6	12.4	12.0	11.1	10.7	10.4	10.2	10.6	12.0	14.0	16.5	18.5	19.9	21.1	21.6	21.7	21.9	21.4	21.3	20.3	19.1	18.3	17.0	16.1	21.9
18-Sep	15.9	15.1	14.5	13.7	13.2	13.8	12.9	12.5	13.3	15.0	15.9	16.1	16.1	16.8	17.5	17.7	17.7	17.4	16.7	16.2	15.4	14.1	13.0	12.6	15.1	17.7
19-Sep	11.2	10.4	10.0	8.4	7.6	7.0	7.3	7.1	7.1	9.1	11.3	13.9	15.7	17.4	17.9	17.8	17.3	16.9	16.7	16.3	16.1	15.5	14.4	13.1	12.7	17.9
20-Sep	12.4	12.2	11.7	12.2	10.6	11.1	9.8	8.9	9.2	10.0	10.6	11.6	13.1	14.6	14.9	15.0	15.0	14.6	13.5	12.6	12.2	11.4	10.4	9.3	12.0	15.0
21-Sep	8.6	8.1	7.3	6.6	6.5	6.2	6.0	5.6	5.5	5.9	7.4	9.2	10.5	12.8	14.4	14.9	14.9	14.7	14.4	13.8	12.1	11.3	11.1	11.0	9.9	14.9
22-Sep	11.4	11.5	10.9	10.2	10.0	9.4	8.8	8.4	8.9	10.3	11.9	13.4	15.3	16.7	17.2	17.8	17.9	17.7	17.6	15.7	14.7	14.2	13.4	12.9	13.2	17.9
23-Sep	12.2	10.7	9.5	8.9	8.5	8.4	8.2	8.0	8.7	9.6	11.1	11.4	12.0	13.2	12.9	13.2	13.6	13.4	13.9	13.8	13.4	12.8	12.8	13.1	11.4	13.9
24-Sep	13.2	13.0	12.6	12.9	13.0	13.1	13.4	13.6	14.7	16.0	17.3	18.5	19.4	20.4	20.7	21.0	21.1	20.9	20.4	19.5	19.0	18.2	16.7	16.0	16.9	21.1
25-Sep	14.9	15.0	14.5	13.5	13.3	13.7	14.7	14.8	15.1	15.7	16.8	16.8	16.7	16.8	17.1	17.6	17.8	17.8	17.5	16.9	16.4	16.4	15.4	15.2	15.8	17.8
26-Sep	14.6	13.6	12.7	11.9	11.3	10.9	10.4	10.1	9.9	9.9	9.9	10.3	10.5	11.0	12.3	13.3	12.8	13.0	11.5	11.7	11.7	12.1	9.6	8.9	11.4	14.6
27-Sep	9.2	9.6	9.3	7.7	7.4	7.1	7.1	6.8	6.8	6.9	8.5	10.0	11.2	12.2	13.0	12.8	12.6	12.1	11.7	11.7	11.0	10.9	11.0	10.2	9.9	13.0
28-Sep	9.9	9.5	9.7	9.4	9.2	8.8	8.5	8.3	8.4	8.8	9.2	9.5	9.7	10.5	11.9	12.8	13.0	13.1	12.8	12.0	11.4	10.6	10.4	10.2	10.3	13.1
29-Sep	9.5	9.1	8.7	8.5	8.3	8.2	7.3	7.5	6.9	7.9	9.7	11.2	11.2	11.8	12.0	11.3	10.7	10.4	10.3	10.1	9.6	9.2	9.0	8.6	9.5	12.0
30-Sep	8.3	7.2	6.7	6.2	5.4	4.8	4.7	4.1	3.7	5.0	7.4	9.0	10.2	10.7	11.1	11.3	11.3	11.0	10.7	10.2	9.8	9.5	8.1	6.9	8.1	11.3
	13.1	12.5	12.0	11.4	11.0	10.7	10.4	10.3	10.7	11.7	13.3	14.7	15.9	16.8	17.3	17.7	17.9	17.7	17.3	16.7	15.9	15.2	14.2	13.5	Diurnal Average	
	21.0	20.7	20.2	19.2	18.2	17.8	16.9	17.1	17.8	19.3	22.5	24.4	26.5	28.0	29.0	29.5	29.4	29.1	28.5	27.4	27.5	27.1	24.8	22.8	Diurnal Maximum	

Wood Buffalo Environmental Association

Hourly Averages

Ambient Temperature 163m (AT163) - C

Lower Camp Met Tower - September 2024



Concentration Ranges (C)	Number of Hours	%	Cumulative %
-50 - -20	0	0.00	0.00
-20 - 0	0	0.00	0.00
0 - 10	140	19.44	19.44
10 - 20	503	69.86	89.31
> 20	77	10.69	100.00

Total Number of Valid Hours: 720

Total Number of Hours: 720

Wood Buffalo Environmental Association

Summary of Hour Averages

Relative Humidity 20m (RH20) - %

Lower Camp Met Tower - September 2024

Maximum Value: 98.9 % on Sep 13 07:00

Maximum Daily Average: 90.7 % on Sep 23

Minimum Value: 22.6 % on Sep 2 16:00

Minimum Daily Average: 53.1 % on Sep 30

Maximum Diurnal Average: 87.4 % at hour 7

Minimum Diurnal Average: 45.9 % at hour 16

Monthly Average: 69.22 %

Percentiles: P_1 = 30.3 P_{10} = 41.3 Q_1 = 55.2 Median = 70.9 Q_3 = 84.2 P_{90} = 93.3 P_{99} = 98.7

Hours in Service:	720
Hours of Data:	707
Hours of Missing Data:	13
Hours of Calibration:	0
Percent Operational Time:	98.2

Day	Hourly Period Ending At (MST)																								Daily	Daily
	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24	Average	Maximum
1-Sep	57.0	61.2	68.1	71.6	73.8	75.8	75.2	71.2	DF	63.3	56.9	51.2	38.2	38.0	33.6	31.9	33.3	33.7	35.9	39.3	45.2	52.7	70.2	76.9	54.5	76.9
2-Sep	82.4	84.9	85.7	86.8	88.0	87.3	84.1	78.4	71.2	64.1	57.3	47.7	44.1	34.7	25.1	22.6	25.5	29.7	34.5	40.2	47.2	62.7	72.1	74.8	59.6	88.0
3-Sep	78.5	78.5	75.3	78.6	80.6	81.4	81.3	80.3	77.1	72.3	70.0	67.9	67.1	66.0	67.2	65.3	64.2	65.4	68.1	74.3	73.7	75.7	78.3	82.0	73.7	82.0
4-Sep	87.4	92.4	88.9	90.5	90.6	90.7	88.5	84.6	80.8	75.3	66.8	62.0	59.0	53.5	40.6	36.2	36.8	37.1	42.2	DF	54.5	62.7	64.5	64.8	67.4	92.4
5-Sep	65.8	74.0	84.2	91.8	93.8	95.3	93.4	87.4	80.4	68.0	60.9	54.3	45.4	37.1	34.8	34.2	32.3	35.1	39.9	44.6	42.2	43.5	46.5	49.0	59.7	95.3
6-Sep	54.5	60.4	61.7	61.2	59.5	65.5	66.0	68.2	63.2	57.9	52.0	44.3	45.2	54.5	54.8	54.6	53.3	57.9	55.4	57.9	61.7	68.4	71.2	74.4	59.3	74.4
7-Sep	87.0	90.9	92.0	92.4	91.8	92.0	89.1	87.0	76.4	69.9	62.3	56.4	48.0	35.6	32.4	32.6	32.1	34.2	39.1	46.5	50.7	58.2	62.6	66.0	63.6	92.4
8-Sep	69.5	78.2	83.7	86.6	89.6	90.9	88.9	84.1	75.9	69.8	64.6	55.2	45.6	42.8	43.6	42.5	43.1	45.9	55.6	58.3	72.6	82.8	85.6	88.1	68.5	90.9
9-Sep	82.3	83.6	84.5	85.5	83.9	80.4	80.4	79.8	81.3	80.3	71.8	65.5	62.0	65.2	66.2	65.4	62.3	61.4	67.9	67.0	66.7	70.4	74.6	78.2	73.6	85.5
10-Sep	81.7	81.3	82.6	84.3	85.7	85.5	85.0	79.5	74.9	67.0	57.5	47.5	43.3	39.8	50.5	43.4	40.2	41.9	50.2	67.6	80.6	87.5	88.7	83.6	67.9	88.7
11-Sep	89.7	95.3	96.6	97.3	98.0	98.3	98.4	98.5	98.3	82.8	65.2	55.8	48.9	36.7	33.5	31.0	29.2	30.9	40.2	48.7	54.8	53.6	52.6	54.4	66.2	98.5
12-Sep	61.4	64.6	65.6	75.7	70.7	84.8	91.0	94.1	93.8	93.3	85.3	80.0	79.6	82.2	81.5	DF	77.1	75.5	80.5	91.2	95.8	97.1	97.5	98.0	83.3	98.0
13-Sep	98.1	98.3	98.6	98.7	98.8	98.8	98.9	98.9	98.9	98.8	98.5	93.3	88.1	84.6	81.3	79.0	78.0	77.7	78.6	79.2	80.8	81.7	80.8	79.3	89.5	98.9
14-Sep	80.0	81.3	83.1	86.2	86.8	86.3	88.0	85.1	79.5	72.8	65.2	57.2	50.0	48.2	46.7	44.1	43.8	45.1	53.2	64.6	58.7	64.0	81.7	90.5	68.4	90.5
15-Sep	93.8	92.4	95.3	96.9	97.6	97.8	98.2	98.5	98.3	89.6	75.8	64.9	61.7	61.1	57.7	52.4	52.3	53.8	60.2	71.6	83.3	86.8	84.8	84.2	79.5	98.5
16-Sep	83.5	84.9	87.0	86.1	85.5	87.0	86.8	83.7	77.0	62.8	56.9	49.0	40.8	39.4	38.5	37.5	37.4	40.9	44.5	46.6	51.5	57.0	63.1	64.5	62.2	87.0
17-Sep	72.7	80.6	84.3	86.7	88.7	89.5	89.7	85.9	77.3	70.2	62.7	53.1	47.6	43.6	38.7	38.2	37.8	37.3	43.6	59.2	71.7	73.4	76.9	76.6	66.1	89.7
18-Sep	77.1	77.4	82.3	84.4	83.2	82.1	83.4	80.5	72.2	64.3	64.7	64.6	59.1	51.6	45.1	41.0	39.3	37.7	40.4	59.8	77.0	82.4	88.9	92.3	67.9	92.3
19-Sep	94.8	94.8	96.1	94.9	96.7	97.0	97.2	92.7	83.6	69.9	58.6	50.1	43.6	36.3	33.4	36.1	41.5	43.5	47.8	66.9	57.8	59.0	75.8	72.5	68.4	97.2
20-Sep	78.5	79.3	80.0	84.0	82.8	81.4	76.7	73.1	72.3	69.1	66.7	63.6	55.0	44.8	41.7	38.4	35.3	39.4	47.3	53.9	63.2	76.5	81.6	85.8	65.4	85.8
21-Sep	90.5	93.8	96.8	96.6	95.8	96.1	95.6	95.8	94.0	86.9	76.2	69.7	65.9	58.0	48.7	43.9	46.3	50.9	53.7	59.6	70.6	81.5	78.6	72.4	75.7	96.8
22-Sep	69.8	67.2	71.0	75.0	79.9	83.5	91.6	83.3	75.4	70.5	62.5	57.1	53.1	49.9	47.6	46.9	46.9	51.2	54.4	63.6	73.2	81.8	87.0	89.4	68.0	91.6
23-Sep	93.2	95.2	96.0	96.4	97.1	98.1	98.5	98.7	98.6	98.5	91.7	88.7	81.3	79.2	81.5	81.0	76.2	83.5	84.4	87.4	91.5	92.9	93.3	95.1	90.7	98.7
24-Sep	96.2	94.7	95.9	95.7	96.0	94.8	96.1	92.4	78.5	70.7	60.8	52.3	45.3	38.1	33.0	30.9	31.8	34.6	43.8	56.5	70.9	76.7	77.4	73.1	68.2	96.2
25-Sep	72.3	75.8	77.2	81.1	82.1	85.7	87.2	69.5	81.1	79.6	67.9	57.4	55.3	57.3	57.0	59.2	60.0	61.7	64.9	69.2	77.1	81.8	84.6	85.1	72.1	87.2
26-Sep	77.7	77.2	85.0	91.5	91.2	92.1	90.9	90.5	89.7	87.8	85.2	77.1	71.0	65.6	61.5	61.1	62.4	62.0	64.5	72.3	80.7	79.6	DF	DF	78.0	92.1
27-Sep	80.3	DF	DF	DF	DF	DF	DF	DF	79.3	78.4	70.3	65.1	61.4	58.2	49.0	54.8	57.0	63.5	69.3	68.8	78.7	82.7	77.8	75.9	--	82.7
28-Sep	69.5	68.6	66.3	66.7	67.9	69.6	73.7	74.2	72.8	68.7	64.3	61.2	57.4	53.9	48.9	44.3	44.3	51.2	65.9	64.7	74.9	72.9	79.6	83.8	65.2	83.8
29-Sep	83.7	84.2	85.5	89.2	91.7	93.8	93.0	90.8	87.9	82.4	68.5	60.4	60.1	55.9	49.9	54.4	59.9	55.1	54.9	57.5	63.5	64.9	67.0	66.5	71.7	93.8
30-Sep	66.5	63.5	66.0	69.8	67.9	69.8	68.7	73.0	69.6	63.5	51.2	44.3	36.6	30.9	30.2	28.9	29.5	31.8	36.6	DF	60.4	56.0	53.2	54.4	53.1	73.0
	79.2	81.2	83.3	85.6	86.0	87.3	87.4	84.8	81.3	74.9	67.3	60.6	55.3	51.4	48.5	45.9	47.0	49.0	53.9	62.0	67.7	72.2	75.7	77.0	Diurnal Average	
	98.1	98.3	98.6	98.7	98.8	98.8	98.9	98.9	98.9	98.8	98.5	93.3	88.1	84.6	81.5	81.0	78.0	83.5	84.4	91.2	95.8	97.1	97.5	98.0	Diurnal Maximum	

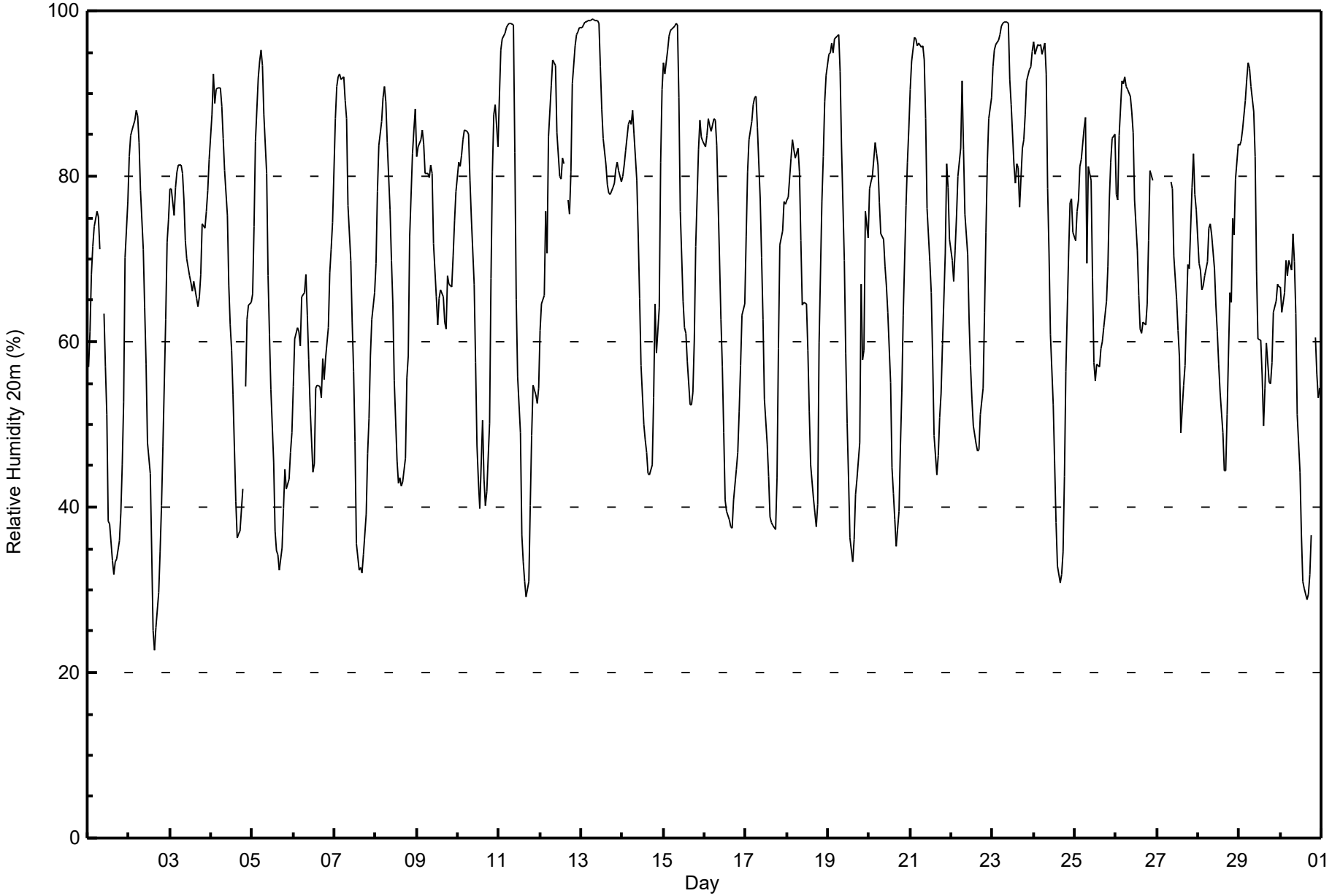
DF - DAS Failure

Wood Buffalo Environmental Association

Hourly Averages

Relative Humidity 20m (RH20) - %

Lower Camp Met Tower - September 2024



Concentration Ranges (%)	Number of Hours	%	Cumulative %
0 - 20	0	0.00	0.00
20 - 40	63	8.91	8.91
40 - 60	157	22.21	31.12
60 - 80	239	33.80	64.92
80 - 100	248	35.08	100.00

Total Number of Valid Hours: 707

Total Number of Hours: 720

Wood Buffalo Environmental Association

Summary of Hour Averages

Relative Humidity 45m (RH45) - %

Lower Camp Met Tower - September 2024

Maximum Value: 98.6 % on Sep 13 07:00

Maximum Daily Average: 89.9 % on Sep 23

Minimum Value: 22.1 % on Sep 2 16:00

Minimum Daily Average: 51.4 % on Sep 30

Maximum Diurnal Average: 85.4 % at hour 7

Minimum Diurnal Average: 46.4 % at hour 17

Monthly Average: 67.45 %

Percentiles: P_1 = 29.4 P_{10} = 40.4 Q_1 = 53.7 Median = 68.5 Q_3 = 81.9 P_{90} = 90.9 P_{99} = 98.3

Hours in Service:	720
Hours of Data:	720
Hours of Missing Data:	0
Hours of Calibration:	0
Percent Operational Time:	100.0

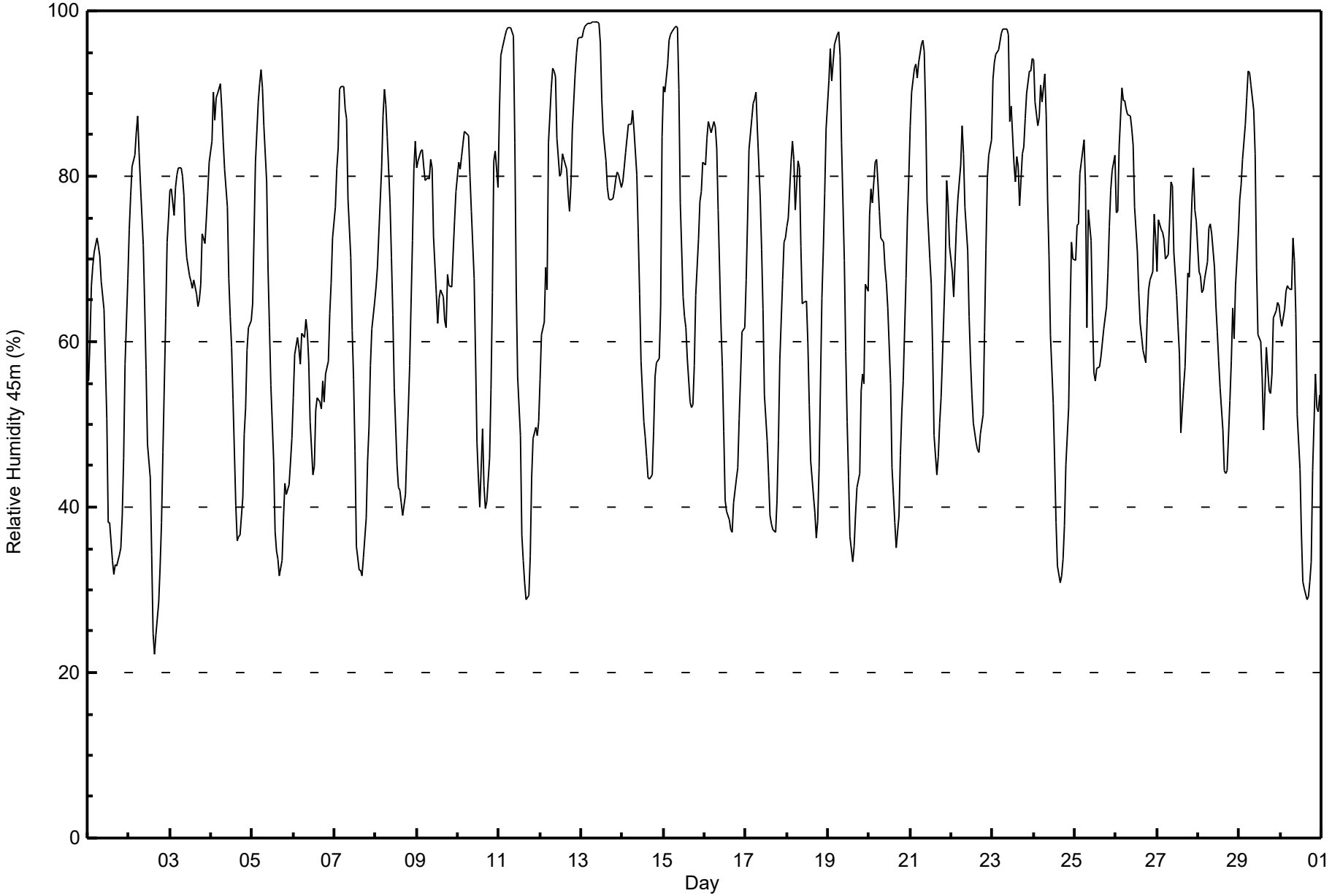
Day	Hourly Period Ending At (MST)																								Daily	Daily
	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24	Average	Maximum
1-Sep	55.2	60.1	66.7	69.1	70.8	72.5	71.6	70.4	67.3	64.0	57.3	50.6	38.1	38.2	33.5	31.8	33.1	32.9	34.3	35.1	39.0	45.8	57.3	67.7	52.6	72.5
2-Sep	73.5	77.7	81.2	82.6	85.2	87.3	82.8	78.9	71.7	64.4	56.6	47.6	43.5	34.3	24.8	22.1	24.5	28.6	32.7	38.1	46.6	62.8	72.1	74.9	58.1	87.3
3-Sep	78.4	78.4	75.2	78.6	80.2	81.0	81.0	80.0	77.6	72.8	70.2	68.0	67.4	66.4	67.4	65.8	64.2	65.2	66.9	73.0	71.9	74.9	78.1	81.7	73.5	81.7
4-Sep	84.2	90.2	86.7	89.4	89.9	91.3	88.1	84.2	80.8	76.2	67.7	63.1	59.2	53.1	40.1	35.9	36.4	36.7	41.2	48.8	52.0	59.1	61.7	62.5	65.8	91.3
5-Sep	64.6	72.8	81.7	89.0	91.2	92.9	90.7	86.1	79.4	68.7	61.6	54.8	45.6	37.1	34.8	33.8	31.6	33.5	38.7	43.0	41.5	42.7	45.5	48.4	58.7	92.9
6-Sep	53.2	58.5	60.5	59.2	57.4	61.1	60.5	62.7	61.1	57.6	50.4	43.8	45.0	51.8	53.3	52.8	51.8	55.2	52.7	56.2	57.5	63.5	67.1	72.6	56.9	72.6
7-Sep	76.3	80.8	83.3	90.5	90.9	90.9	88.1	87.0	77.2	70.1	61.3	55.5	46.9	35.3	32.4	32.5	31.7	33.8	38.7	45.6	49.6	57.1	61.4	64.7	61.7	90.9
8-Sep	66.6	69.0	73.1	81.0	87.2	90.5	88.7	84.7	76.7	70.1	63.3	54.4	45.2	42.4	42.0	40.5	39.0	41.4	46.9	51.8	57.1	72.2	80.8	84.3	64.5	90.5
9-Sep	81.1	81.9	83.1	83.3	81.2	79.5	79.8	79.7	82.0	81.0	72.7	65.8	62.2	65.2	66.3	65.5	62.5	61.7	68.1	66.8	66.6	70.6	74.6	78.1	73.3	83.3
10-Sep	81.6	80.9	82.3	84.0	85.4	85.2	84.9	80.0	75.7	67.6	58.0	47.8	43.6	40.0	49.5	42.5	39.9	40.7	45.9	54.3	66.0	81.9	83.0	78.6	65.8	85.4
11-Sep	87.9	94.5	95.4	96.9	97.7	97.9	98.0	97.9	97.0	84.0	66.5	55.8	48.7	36.6	33.6	30.8	28.8	29.3	34.0	43.6	48.3	49.7	48.6	50.3	64.7	98.0
12-Sep	55.4	60.9	62.3	69.0	66.3	84.1	90.7	93.1	92.7	92.0	84.5	80.0	80.3	82.7	82.0	80.8	77.8	75.7	78.9	85.6	92.3	95.0	96.6	96.8	81.5	96.8
13-Sep	96.8	97.6	98.1	98.3	98.4	98.5	98.6	98.6	98.6	98.6	98.5	96.1	89.3	85.4	81.8	78.7	77.3	77.1	77.3	78.3	79.7	80.5	80.2	78.7	89.2	98.6
14-Sep	79.4	81.1	82.9	86.3	86.3	86.3	87.9	85.6	80.3	73.2	65.7	57.6	50.3	48.5	46.1	43.6	43.5	43.9	49.1	55.7	57.4	58.0	64.3	84.8	66.6	87.9
15-Sep	90.8	90.2	93.5	96.4	97.1	97.5	97.9	98.2	98.0	90.6	76.8	65.5	63.1	61.7	57.9	52.8	52.1	52.3	57.1	65.6	72.4	77.0	78.2	81.6	77.7	98.2
16-Sep	81.4	84.6	86.7	85.9	85.3	86.6	86.0	83.4	75.9	62.3	57.0	49.1	40.9	39.5	38.6	37.3	37.0	40.4	43.4	44.7	50.6	55.8	61.2	61.6	61.5	86.7
17-Sep	67.4	74.9	83.2	86.9	88.9	89.4	90.1	85.5	77.5	71.2	63.8	53.5	48.0	43.8	39.0	38.0	37.3	37.0	40.9	48.1	57.8	67.5	72.0	72.5	63.9	90.1
18-Sep	73.9	75.0	81.7	84.3	82.0	75.9	81.9	81.1	71.6	64.6	64.7	64.9	59.8	52.3	45.6	41.3	39.3	36.2	38.3	44.8	65.3	71.0	77.9	85.8	65.0	85.8
19-Sep	91.5	95.4	91.6	93.7	96.0	97.1	97.4	94.5	84.1	69.8	58.8	50.4	43.7	36.4	33.4	35.2	39.1	42.3	44.1	54.1	56.0	54.9	66.9	66.1	66.3	97.4
20-Sep	75.2	78.4	76.8	81.7	82.0	79.2	75.8	72.6	72.0	69.1	67.1	64.0	55.0	44.7	41.5	38.1	35.1	39.0	46.2	51.5	55.2	67.6	74.9	80.0	63.4	82.0
21-Sep	86.0	90.2	93.1	93.5	91.9	93.7	96.0	96.4	95.2	87.7	76.9	70.0	66.9	58.7	48.7	43.9	46.1	50.2	53.2	58.1	68.8	79.6	76.8	71.5	74.7	96.4
22-Sep	68.5	65.4	69.6	74.3	77.4	81.3	86.2	82.7	76.2	71.0	63.1	57.8	53.6	50.2	47.8	46.9	46.6	48.8	51.3	61.2	71.1	79.8	82.6	84.5	66.6	86.2
23-Sep	91.7	93.7	94.8	95.3	96.2	97.2	97.8	97.9	97.8	97.0	86.7	88.5	81.6	79.2	82.3	81.2	76.4	82.7	83.6	87.0	90.0	92.7	92.7	94.2	89.9	97.9
24-Sep	94.1	89.0	86.2	87.2	91.0	88.9	92.5	87.3	77.2	70.3	60.9	52.6	45.6	38.2	33.0	30.8	31.6	33.7	37.9	45.0	52.0	63.4	72.0	69.9	63.8	94.1
25-Sep	69.8	74.1	74.2	80.3	81.6	84.4	78.7	61.8	76.0	72.3	63.2	56.3	55.3	56.8	56.9	58.2	59.8	61.5	64.3	68.3	73.9	78.2	80.6	82.6	69.5	84.4
26-Sep	75.6	75.7	83.6	90.7	89.2	89.2	88.1	87.5	87.2	85.7	83.7	76.2	70.8	65.9	62.2	60.7	59.0	57.5	62.9	66.2	67.5	68.4	75.4	72.5	75.1	90.7
27-Sep	68.4	74.8	73.5	73.3	72.4	70.0	70.5	74.7	79.4	78.9	70.9	65.5	61.9	58.4	49.0	54.6	57.0	62.7	68.2	67.9	77.4	81.0	76.0	74.5	69.2	81.0
28-Sep	68.5	68.0	65.9	66.3	67.6	69.6	73.7	74.2	73.0	69.0	64.4	61.2	57.7	54.3	49.3	44.4	44.0	44.5	52.8	57.6	64.1	60.3	66.8	73.0	62.1	74.2
29-Sep	77.1	79.0	82.0	86.2	89.5	92.7	92.6	91.0	88.0	82.7	68.9	60.9	60.1	55.8	49.4	54.0	59.4	54.1	53.7	56.1	63.0	63.8	64.8	64.4	70.4	92.7
30-Sep	62.8	61.9	63.9	66.1	66.9	66.5	66.2	72.6	69.8	63.4	51.3	44.6	36.7	30.9	30.1	28.7	29.1	31.1	33.4	44.4	56.1	52.0	51.5	53.5	51.4	72.6
	75.9	78.5	80.4	83.3	84.1	85.3	85.4	83.7	80.6	74.9	67.1	60.7	55.5	51.5	48.4	46.8	46.4	47.7	51.2	56.5	62.2	67.6	71.4	73.7	Diurnal Average	
	96.8	97.6	98.1	98.3	98.4	98.5	98.6	98.6	98.6	98.6	98.5	96.1	89.3	85.4	82.3	81.2	77.8	82.7	83.6	87.0	92.3	95.0	96.6	96.8	Diurnal Maximum	

Wood Buffalo Environmental Association

Hourly Averages

Relative Humidity 45m (RH45) - %

Lower Camp Met Tower - September 2024



Concentration Ranges (%)	Number of Hours	%	Cumulative %
0 - 20	0	0.00	0.00
20 - 40	71	9.86	9.86
40 - 60	171	23.75	33.61
60 - 80	260	36.11	69.72
80 - 100	218	30.28	100.00

Total Number of Valid Hours: 720

Total Number of Hours: 720

Wood Buffalo Environmental Association

Summary of Hour Averages

Relative Humidity 100m (RH100) - %

Lower Camp Met Tower - September 2024

Maximum Value: 99.6 % on Sep 13 08:00

Maximum Daily Average: 90.3 % on Sep 13

Minimum Value: 22.4 % on Sep 2 16:00

Minimum Daily Average: 49.7 % on Sep 1

Maximum Diurnal Average: 81.9 % at hour 7

Minimum Diurnal Average: 47.1 % at hour 17

Monthly Average: 65.32 %

Percentiles: P_1 = 29.6 P_{10} = 40.3 Q_1 = 52.1 Median = 66.9 Q_3 = 80.2 P_{90} = 87.2 P_{99} = 99.2

Hours in Service:	720
Hours of Data:	720
Hours of Missing Data:	0
Hours of Calibration:	0
Percent Operational Time:	100.0

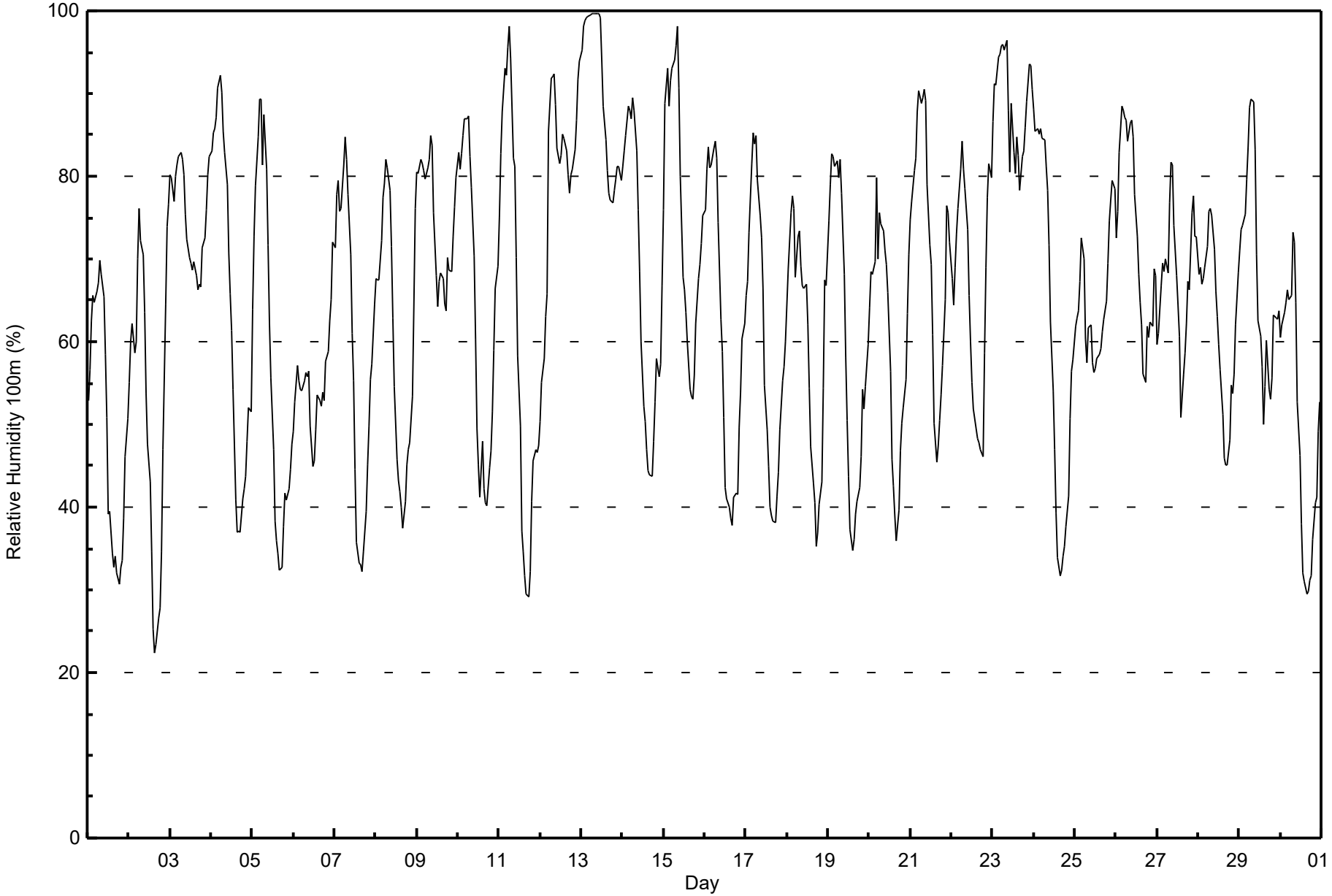
Day	Hourly Period Ending At (MST)																								Daily	Daily
	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24	Average	Maximum
1-Sep	52.8	56.6	62.5	65.6	64.7	66.1	67.1	69.8	68.1	65.5	58.5	50.8	39.2	39.5	34.5	32.8	34.0	32.0	30.7	32.7	33.6	38.6	46.1	50.7	49.7	69.8
2-Sep	55.0	60.0	62.1	58.6	60.0	70.0	76.1	72.1	70.4	63.5	53.7	47.7	43.1	34.7	25.2	22.4	23.5	26.7	27.8	34.6	46.9	64.6	73.9	76.6	52.1	76.6
3-Sep	80.3	79.8	76.9	80.0	81.4	82.3	82.9	82.1	80.2	75.4	72.3	70.1	69.5	68.6	69.6	67.9	66.2	67.0	66.7	71.3	72.5	75.9	80.1	82.4	75.1	82.9
4-Sep	83.0	85.2	85.7	87.1	90.6	92.2	90.2	85.4	83.0	79.1	70.6	65.7	61.4	54.3	40.9	36.9	37.2	37.0	41.0	42.2	43.8	47.9	52.0	51.5	64.3	92.2
5-Sep	63.9	72.7	78.9	84.8	89.4	89.3	81.4	87.5	80.9	71.6	62.3	55.7	47.0	38.3	36.0	34.5	32.4	32.7	37.6	41.7	40.9	42.3	44.6	47.7	58.1	89.4
6-Sep	49.1	52.7	57.1	55.3	54.2	54.1	55.2	56.3	55.7	56.4	49.8	44.9	45.6	49.3	53.5	52.8	52.2	53.9	53.0	57.7	58.9	62.5	65.1	72.0	54.9	72.0
7-Sep	71.3	77.9	79.4	75.8	76.1	81.4	84.7	82.1	77.9	70.5	61.1	55.3	44.6	35.8	33.2	33.0	32.1	34.5	39.5	45.1	49.8	55.4	57.3	64.6	59.1	84.7
8-Sep	67.6	67.4	67.5	72.3	77.5	79.1	82.1	81.1	78.3	71.5	62.9	54.5	45.8	43.3	41.9	40.0	37.5	40.7	45.2	46.9	47.8	53.4	64.5	76.1	60.2	82.1
9-Sep	80.4	80.3	82.0	81.5	80.7	79.6	80.9	82.1	85.0	83.7	75.6	67.9	64.3	67.2	68.3	67.6	64.6	63.7	70.1	68.6	68.5	72.8	76.3	79.9	74.7	85.0
10-Sep	83.0	80.8	82.7	84.9	87.0	87.0	87.3	82.4	78.6	70.4	60.4	49.5	45.2	41.2	48.0	42.2	40.5	40.1	44.8	46.7	51.6	58.9	66.5	69.1	63.7	87.3
11-Sep	75.0	82.8	87.8	93.0	92.2	95.6	98.2	94.2	82.2	81.1	70.1	58.4	49.8	37.1	34.7	31.6	29.5	29.2	32.2	40.8	45.6	47.0	46.6	47.4	61.8	98.2
12-Sep	50.4	55.1	58.0	63.1	65.8	85.4	91.9	92.0	92.5	88.7	83.5	81.5	82.5	85.2	84.6	83.1	80.1	78.0	80.2	80.8	83.2	86.8	91.8	93.8	79.9	93.8
13-Sep	95.3	98.2	98.9	99.2	99.4	99.5	99.6	99.6	99.6	99.6	99.6	99.1	94.1	88.4	84.5	80.7	78.0	77.2	76.8	78.3	79.7	81.2	81.2	79.6	90.3	99.6
14-Sep	81.1	83.0	85.0	88.5	88.0	86.9	89.5	88.0	83.0	76.0	68.4	60.1	52.2	50.3	46.9	44.4	44.0	43.8	48.0	52.8	58.0	55.8	57.3	66.8	66.6	89.5
15-Sep	76.0	88.7	93.0	88.5	91.5	93.0	94.1	95.8	98.1	90.6	80.0	67.9	66.3	63.6	60.0	54.2	53.4	53.1	55.9	62.1	67.7	69.3	71.8	75.2	75.4	98.1
16-Sep	76.0	80.8	83.6	81.0	81.3	83.4	84.2	82.2	74.3	62.7	58.8	50.9	42.4	40.9	40.0	38.6	37.8	41.2	41.7	41.5	49.7	53.8	60.3	62.2	60.4	84.2
17-Sep	65.7	67.2	73.2	81.5	85.3	83.9	84.9	79.6	75.3	72.5	66.5	54.7	49.2	44.9	40.1	39.1	38.3	38.2	41.3	44.2	49.4	55.3	56.9	60.0	60.3	85.3
18-Sep	64.4	68.8	75.5	77.7	76.2	67.8	72.7	73.4	69.2	66.8	66.5	67.0	62.1	54.4	47.3	42.9	40.5	35.2	36.9	40.3	43.0	54.3	67.4	66.7	59.9	77.7
19-Sep	74.6	78.9	82.7	82.3	81.2	81.9	79.9	82.0	77.9	68.2	58.1	50.5	43.7	37.3	34.8	36.0	39.2	40.7	42.3	46.1	54.3	51.9	54.5	59.7	59.9	82.7
20-Sep	64.0	68.5	68.1	69.7	79.9	70.0	75.7	74.2	73.4	70.9	69.3	66.0	56.5	45.7	42.5	38.9	35.8	39.7	46.7	50.2	52.1	55.5	63.4	70.6	60.3	79.9
21-Sep	74.8	77.0	80.6	82.2	87.8	90.3	88.8	89.5	90.4	89.2	79.0	71.8	69.4	60.9	50.1	45.3	47.4	50.5	53.5	57.1	65.1	76.5	75.6	72.0	71.9	90.4
22-Sep	67.7	64.5	69.0	73.1	76.0	80.8	84.3	80.9	78.5	73.6	65.6	59.9	55.1	51.9	49.5	48.3	47.9	46.9	46.2	58.7	69.0	77.5	81.6	79.9	66.1	84.3
23-Sep	86.6	91.2	91.1	94.4	94.7	95.8	95.9	95.3	96.4	88.0	80.5	88.8	83.0	80.3	84.7	82.5	78.2	82.3	83.1	86.0	88.9	93.6	93.3	90.5	88.5	96.4
24-Sep	88.2	85.5	85.8	85.1	85.8	84.5	84.4	81.2	78.4	71.7	62.4	54.1	47.0	39.3	33.9	31.7	32.4	34.0	35.3	37.7	41.4	50.7	56.4	57.7	60.2	88.2
25-Sep	61.9	62.8	63.8	67.3	72.5	70.1	60.3	57.5	61.7	62.0	57.5	56.3	56.8	58.0	58.5	59.2	61.2	62.7	65.0	69.5	74.6	77.2	79.4	78.4	64.8	79.4
26-Sep	72.6	75.8	82.9	88.5	87.9	87.2	86.8	84.2	86.4	86.8	84.7	77.7	72.7	68.1	64.7	62.1	56.1	55.2	61.8	60.6	62.4	61.9	68.7	68.0	73.5	88.5
27-Sep	59.6	60.9	66.7	69.5	68.5	70.0	68.3	76.8	81.7	81.4	74.0	68.0	64.5	60.6	50.8	56.1	58.7	62.2	67.3	66.2	75.6	77.6	72.7	72.8	67.9	81.7
28-Sep	68.1	69.0	67.0	67.6	69.0	71.4	75.8	76.0	75.2	71.2	66.1	63.0	59.7	56.5	51.1	46.0	45.1	45.1	48.2	54.8	53.8	56.0	62.0	68.3	61.9	76.0
29-Sep	71.1	73.5	74.0	75.4	79.7	83.5	88.2	89.3	89.0	83.2	70.5	62.6	60.7	56.9	50.0	54.6	60.2	54.2	53.1	55.6	63.3	62.9	62.7	63.8	68.3	89.3
30-Sep	60.5	62.0	63.6	64.8	66.2	65.1	65.7	73.2	72.0	64.8	52.7	46.4	38.0	32.0	31.0	29.5	29.8	31.1	31.7	36.1	40.5	41.1	49.2	52.7	50.0	73.2
	70.7	73.6	76.2	77.9	79.7	80.9	81.9	81.5	79.8	75.2	68.0	62.2	57.0	52.8	49.7	47.8	47.1	47.6	50.1	53.6	57.7	61.9	66.0	68.6	Diurnal Average	
	95.3	98.2	98.9	99.2	99.4	99.5	99.6	99.6	99.6	99.6	99.6	99.1	94.1	88.4	84.7	83.1	80.1	82.3	83.1	86.0	88.9	93.6	93.3	93.8	Diurnal Maximum	

Wood Buffalo Environmental Association

Hourly Averages

Relative Humidity 100m (RH100) - %

Lower Camp Met Tower - September 2024



Relative Humidity 100m (RH100) - %
Lower Camp Met Tower - September 2024

Concentration Ranges (%)	Number of Hours	%	Cumulative %
0 - 20	0	0.00	0.00
20 - 40	68	9.44	9.44
40 - 60	199	27.64	37.08
60 - 80	269	37.36	74.44
80 - 100	184	25.56	100.00

Total Number of Valid Hours: 720

Total Number of Hours: 720

Wood Buffalo Environmental Association

Summary of Hour Averages

Relative Humidity 163m (RH163) - %

Lower Camp Met Tower - September 2024

Maximum Value: 98.7 % on Sep 13 08:00

Maximum Daily Average: 89.7 % on Sep 13

Minimum Value: 22.2 % on Sep 2 16:00

Minimum Daily Average: 47.1 % on Sep 1

Maximum Diurnal Average: 77.6 % at hour 8

Minimum Diurnal Average: 46.9 % at hour 18

Monthly Average: 62.31 %

Percentiles: P_1 = 29.4 P_{10} = 39.1 Q_1 = 49.0 Median = 63.6 Q_3 = 76.0 P_{90} = 83.6 P_{99} = 98.2

Hours in Service:	720
Hours of Data:	720
Hours of Missing Data:	0
Hours of Calibration:	0
Percent Operational Time:	100.0

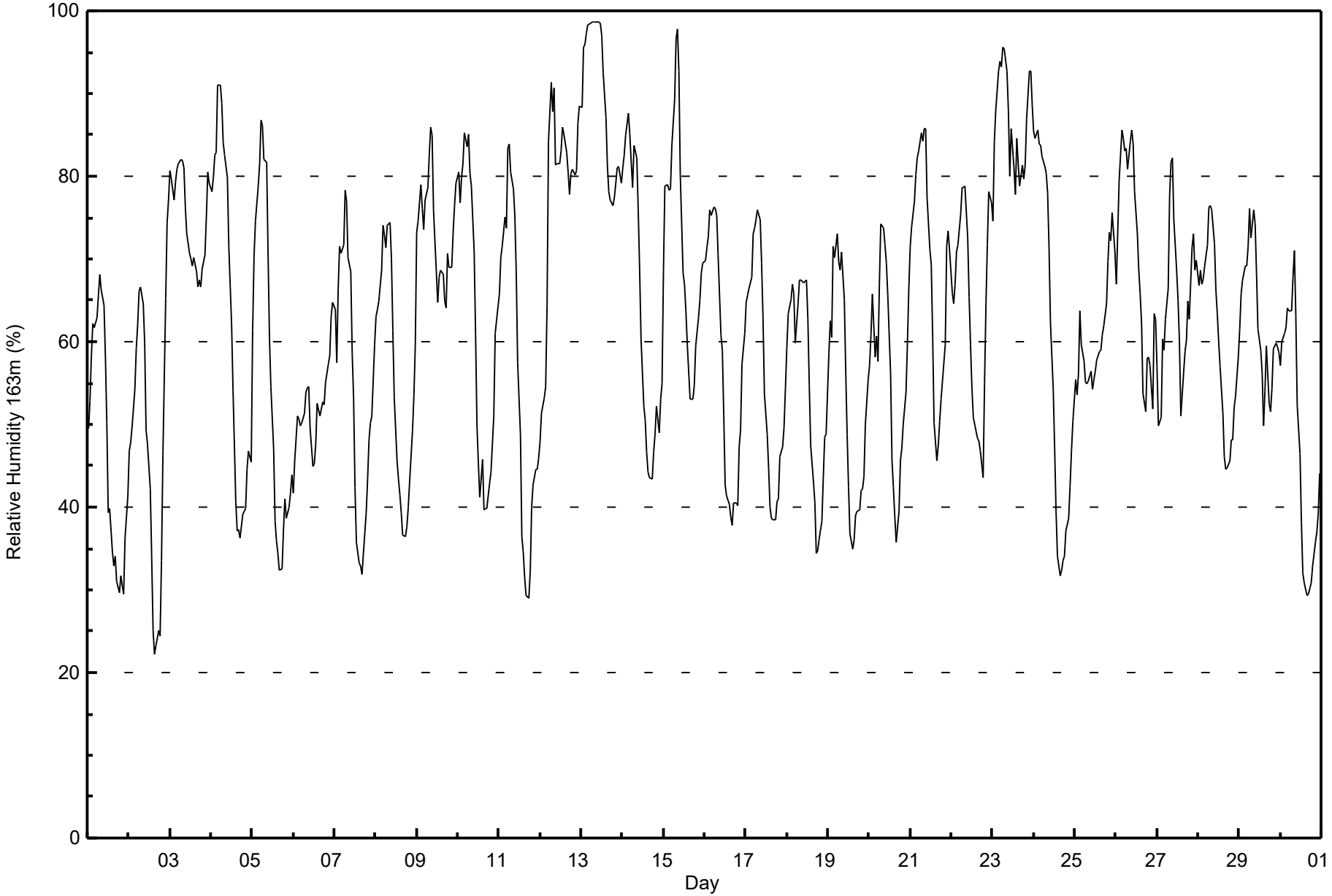
Day	Hourly Period Ending At (MST)																								Daily	Daily
	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24	Average	Maximum
1-Sep	49.4	52.9	58.3	62.2	61.6	62.9	65.6	68.1	66.2	64.4	58.1	50.1	39.2	39.8	34.5	32.9	34.1	31.1	29.6	31.8	30.5	29.4	36.4	41.4	47.1	68.1
2-Sep	46.8	47.9	49.7	54.3	59.1	62.0	66.1	66.5	64.6	59.9	49.3	47.6	42.2	33.9	25.1	22.2	23.2	25.1	24.4	33.6	46.2	65.2	74.5	77.1	48.6	77.1
3-Sep	80.7	79.7	77.2	79.4	80.8	81.6	82.0	81.9	80.9	76.2	73.1	70.7	70.0	69.2	70.2	68.5	66.6	67.4	66.7	68.8	70.6	75.1	80.5	79.2	74.9	82.0
4-Sep	78.2	79.8	82.6	83.0	91.1	91.1	88.7	84.2	82.6	79.8	71.5	66.7	62.0	54.3	40.5	37.1	37.3	36.2	39.1	39.5	39.8	44.6	46.7	45.5	62.6	91.1
5-Sep	61.3	70.4	74.5	78.8	81.6	86.8	86.1	82.1	81.8	70.6	60.5	54.7	47.0	38.4	36.0	34.5	32.4	32.6	37.2	41.0	38.6	40.0	41.6	43.9	56.3	86.8
6-Sep	41.7	45.6	51.0	50.7	49.8	50.2	51.4	53.8	54.4	54.6	49.5	45.0	45.3	47.7	52.5	51.1	51.8	52.8	52.4	55.1	57.3	58.2	63.1	64.8	52.1	64.8
7-Sep	64.0	57.4	66.3	71.6	70.6	71.8	78.4	76.9	70.1	68.5	58.6	53.1	42.4	35.8	33.3	32.9	31.9	34.4	39.4	43.5	48.1	50.2	51.0	59.7	54.6	78.4
8-Sep	63.0	64.0	64.9	68.6	74.0	72.9	71.4	74.1	74.3	70.0	61.4	53.1	45.6	43.3	41.5	39.4	36.5	36.4	37.7	40.0	43.3	49.1	53.4	59.4	55.7	74.3
9-Sep	73.3	74.5	79.0	76.1	73.5	77.1	78.7	82.7	86.0	84.9	75.9	68.5	64.8	67.8	68.7	68.2	64.9	64.1	70.7	69.0	69.0	73.2	76.4	79.2	73.6	86.0
10-Sep	80.5	76.8	79.9	81.5	85.3	83.6	85.0	80.4	78.8	70.8	60.8	49.7	45.3	41.3	45.8	39.6	39.8	39.8	42.9	44.3	47.7	51.0	61.1	64.3	61.5	85.3
11-Sep	65.8	70.2	71.5	75.1	73.6	83.4	83.9	80.6	78.5	75.2	68.5	57.5	48.9	36.4	34.6	31.6	29.4	29.0	32.2	40.0	42.7	44.6	44.6	45.9	56.0	83.9
12-Sep	47.9	51.4	53.3	54.5	64.6	84.3	91.3	87.8	90.8	81.4	81.6	81.6	83.1	85.9	85.0	83.0	80.4	77.8	80.4	80.8	80.1	80.7	86.5	88.4	77.6	91.3
13-Sep	88.3	95.5	95.9	97.3	98.3	98.6	98.6	98.7	98.7	98.6	98.6	98.5	96.9	92.6	87.1	81.4	78.1	77.0	76.4	77.4	79.1	81.1	81.1	79.2	89.7	98.7
14-Sep	81.1	82.6	84.9	87.6	85.2	81.7	78.6	83.8	82.3	76.0	68.8	60.4	52.2	50.6	46.6	44.2	43.5	43.4	46.6	48.9	52.1	49.0	53.1	55.0	64.1	87.6
15-Sep	68.6	78.9	79.0	78.3	78.5	83.7	89.3	96.5	97.9	92.7	80.2	68.3	67.0	63.8	59.7	53.0	53.1	53.1	54.7	59.5	62.9	65.1	68.2	69.6	71.7	97.9
16-Sep	69.8	71.4	72.8	75.9	75.3	76.3	76.2	75.3	70.3	60.9	59.0	51.1	42.7	41.3	40.3	38.8	37.8	40.6	40.5	40.1	47.3	49.3	57.2	61.0	57.1	76.3
17-Sep	64.8	65.6	66.5	67.8	73.0	73.7	74.7	76.0	74.8	69.5	62.9	53.7	48.8	44.7	40.0	38.6	38.4	38.5	40.7	41.0	46.1	47.3	49.6	54.5	56.3	76.0
18-Sep	59.4	63.4	65.1	66.9	65.8	59.9	64.5	67.5	67.5	67.3	67.2	67.5	62.7	54.7	47.5	43.0	40.4	34.4	34.8	36.0	38.3	43.6	48.5	48.8	54.8	67.5
19-Sep	58.7	62.6	60.5	71.5	70.2	73.0	69.7	68.7	70.8	65.1	56.4	48.8	42.3	36.7	34.9	36.1	39.0	39.5	39.7	42.1	42.2	43.7	50.0	55.3	53.2	73.0
20-Sep	57.1	60.8	65.7	58.2	60.6	57.7	67.0	74.2	73.7	71.7	69.5	65.6	56.2	45.6	42.3	38.9	35.8	39.5	45.5	47.1	49.9	54.0	59.8	66.4	56.8	74.2
21-Sep	71.5	73.9	77.0	80.1	82.2	83.0	85.3	84.3	85.8	85.7	77.5	71.1	69.3	60.7	50.1	45.6	47.5	50.3	53.0	55.3	59.7	71.5	73.5	71.1	69.4	85.8
22-Sep	65.9	64.6	67.0	70.8	71.7	75.4	78.7	78.6	78.8	72.5	65.4	59.7	54.4	50.9	49.1	48.2	48.0	46.7	43.6	54.9	64.3	71.8	78.1	76.8	64.0	78.8
23-Sep	74.6	84.3	88.0	92.8	94.0	93.3	95.6	95.4	92.7	88.0	79.9	85.8	81.1	77.9	84.5	81.5	78.9	81.4	79.6	81.4	86.9	92.8	92.7	88.7	86.3	95.6
24-Sep	85.4	84.5	85.6	83.9	83.7	82.3	81.3	80.3	77.9	71.4	62.4	54.2	47.1	39.5	34.0	31.8	32.3	33.5	34.1	37.2	38.6	42.5	46.8	50.3	58.4	85.6
25-Sep	55.5	53.6	56.1	63.7	59.7	57.7	55.1	55.0	55.2	56.4	54.2	55.4	56.4	57.8	58.9	59.0	60.8	61.9	64.5	69.6	73.3	72.2	75.5	70.9	60.8	75.5
26-Sep	67.0	73.3	79.4	85.7	84.6	83.1	83.3	80.9	84.2	85.6	83.9	78.1	73.1	68.6	65.8	62.2	53.7	51.5	58.0	58.2	57.1	51.9	63.4	62.8	70.6	85.7
27-Sep	57.0	49.9	50.8	60.4	59.1	62.8	66.4	77.7	81.7	82.2	74.7	68.6	65.1	60.0	51.0	56.2	58.7	60.2	64.8	62.6	71.3	73.0	68.7	69.8	64.7	82.2
28-Sep	66.7	68.6	67.0	67.7	69.1	71.7	76.3	76.5	76.0	71.8	66.2	63.3	60.1	57.0	51.3	46.0	44.5	44.7	45.6	48.1	48.1	52.0	53.4	58.2	60.4	76.5
29-Sep	61.4	65.7	67.4	69.2	69.1	71.6	76.1	72.6	75.9	74.3	68.2	61.5	59.0	56.2	49.9	54.0	59.5	52.5	51.5	54.3	59.1	59.8	59.4	58.6	62.8	76.1
30-Sep	57.1	60.1	61.0	61.7	64.1	63.8	63.8	67.8	71.0	63.3	52.4	46.5	38.1	32.0	30.9	29.3	29.6	30.2	30.9	32.8	35.7	37.0	39.1	44.1	47.6	71.0
	65.4	67.7	69.9	72.5	73.7	75.2	77.0	77.6	77.5	73.6	67.2	61.9	56.9	52.8	49.7	47.6	46.9	46.9	48.6	51.1	54.2	57.3	61.1	63.0	Diurnal Average	
	88.3	95.5	95.9	97.3	98.3	98.6	98.6	98.7	98.7	98.6	98.6	98.5	96.9	92.6	87.1	83.0	80.4	81.4	80.4	81.4	86.9	92.8	92.7	88.7	Diurnal Maximum	

Wood Buffalo Environmental Association

Hourly Averages

Relative Humidity 163m (RH163) - %

Lower Camp Met Tower - September 2024



Concentration Ranges (%)	Number of Hours	%	Cumulative %
0 - 20	0	0.00	0.00
20 - 40	90	12.50	12.50
40 - 60	227	31.53	44.03
60 - 80	278	38.61	82.64
80 - 100	125	17.36	100.00

Total Number of Valid Hours: 720

Total Number of Hours: 720

Maximum Speed: 26 km/h on Sep 5 23:00

Maximum Daily Speed Average: 10.4 km/h on Sep 6

Minimum Speed Value: 0 km/h on Sep 17 21:00

Minimum Daily Speed Average: 0.8 km/h on Sep 15

Maximum Diurnal Speed Average: 4.1 km/h at hour 15

Minimum Diurnal Speed Average: 1.2 km/h at hour 3

Monthly Average Velocity: 2.0 km/h 210.1 deg

Percentiles: $P_1 = 1$ $P_{10} = 2$ $Q_1 = 4$ Median = 6 $Q_3 = 11$ $P_{90} = 15$ $P_{99} = 22$

Hours in Service:	720
Hours of Data:	720
Hours of Missing Data:	0
Percent Operational Time:	100.0

Day	Hourly Period Ending At (MST)																								Daily	Daily
	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24	Average	Maximum
1-Sep	SE8	SSE7	SE7	SSE8	SE12	SE13	SE14	SE11	SE13	SE10	SE11	SE14	SW18	SW17	WSW17	WSW16	WSW15	WSW10	WSW8	SW6	WSW5	NNE1	SE5	SE6	S6.8	SW18
2-Sep	SE4	SE4	SE4	SE8	SE10	ESE7	SE8	SE8	SE8	SE8	SE8	E4	ESE4	WSW1	WSW12	WSW14	WSW11	WSW11	WSW11	WNW11	NNW15	N16	NNW12	NNW11	SSW1.0	N16
3-Sep	NNW7	N9	N9	NNW6	NNW5	N2	NNW4	NNW3	N5	N6	NNW10	N10	NNE8	N7	NNE6	NNE5	N7	NNE6	N5	NNW3	NNW4	NNW5	NNW5	NNW3	N5.6	NNW10
4-Sep	N2	NE2	ENE2	SSE2	SSE3	SSW4	WSW5	W4	WSW11	W12	WNW9	NW4	SW7	WSW9	WNW10	NW12	NW5	WSW13	W8	WSW10	WSW10	WSW13	WSW12	WSW14	W6.3	WSW14
5-Sep	NNW10	NW5	NNW2	N1	NE1	NE1	N2	NNW0	SE2	SE6	SE9	ESE9	SE12	SSE10	SSE10	SE13	SSE16	SSE16	SSE20	SE17	SSE25	SSE25	SSE26	SSE26	SE9.2	SSE26
6-Sep	SE22	SE14	SE7	SE11	SE12	SE16	SE20	SE21	SE18	SE11	SE10	SSW10	S8	SE10	SSE15	SE15	SE10	ESE10	SE8	SSE5	SE6	SE3	SW6	SW4	SE10.4	SE22
7-Sep	SE5	SE3	SE10	SE8	SE6	SE4	SE5	SE8	ESE7	SE9	SE14	SE15	SE10	SW9	WSW11	WSW13	SW14	SW15	SW15	SW10	SSW1	WSW7	SW6	SSE5	S5.5	SW15
8-Sep	SSE5	SE9	ESE8	SE5	SE6	ESE7	ESE7	ESE6	ESE2	SE6	SE12	SE11	SE13	SE11	ESE6	ENE2	NNW3	N3	NNW2	N4	NNW5	NW4	NW3	NNW5	ESE3.7	SE13
9-Sep	NNW3	SSW1	NW3	NNE2	NNW4	NNW6	NW4	NNW8	NW5	NW8	NW5	NW10	WNW14	W18	W18	WSW21	WSW24	W23	W21	WNW20	WNW19	W13	WSW14	WSW15	W10.3	WSW24
10-Sep	WSW16	WSW15	WSW14	WSW13	W10	W10	WSW10	WSW14	WSW13	WSW7	SW9	WSW12	W13	W13	NNW4	W8	W7	NW7	NNW4	SSW0	NNW3	NNW2	NNW4	N3	W7.9	WSW16
11-Sep	NNW2	N2	NNW1	NNW1	NNW3	NW2	ENE0	WNW2	WNW2	NNW3	NNW2	N4	N4	ESE5	SE6	SE6	ESE5	SE5	NE2	NE1	ESE3	ESE5	ESE7	ESE10	E1.7	ESE10
12-Sep	SE6	ESE2	WSW1	NNW4	SE13	SE12	ESE4	N3	N2	NW3	NNE3	N3	NNE2	E5	E3	NE2	E4	E4	NNE3	NNW3	N1	WNW1	NNW1	NNW2	E1.6	SE13
13-Sep	N3	NW4	NW5	N2	NNW3	NW4	NW4	NW4	NNW5	NNW5	NW6	NNW7	NNW6	NNW3	NNE5	NNW3	NW6	NW6	NW7	NNW5	NNW5	NW6	NW8	NW7	NW4.8	NW8
14-Sep	NW4	WNW6	W4	W5	WSW5	W5	WSW5	SW6	SW7	SSW7	SSW7	SW6	WSW9	SW10	WSW12	WNW11	NW10	NW6	NNW3	NNW3	NW3	N2	NNW2	NNW3	W4.5	WSW12
15-Sep	NNW4	NW3	NNW2	NNW3	NNW2	NNW1	NW2	NW3	WNW2	NW5	W4	NNW4	NNW5	WSW1	SSE3	NE4	ESE5	SE6	SE7	NNE3	NNW3	W1	SSE3	SE7	N0.8	SE7
16-Sep	SE13	SE10	SE13	SE13	SE15	SE11	ESE12	ESE10	SE9	S12	S16	SSW16	WSW20	SW18	WSW17	WSW17	WSW12	SW12	SW13	SSW13	SW16	SW13	S3	SSE8	S9.0	WSW20
17-Sep	SE7	SE9	SE7	ESE7	ESE6	ESE7	ESE7	SE9	SE10	SE9	SE7	SE9	SE10	SE11	SSE5	E4	SE6	ESE2	NE2	ESE2	ESE0	SE1	SE5	SE3	SE5.9	SE11
18-Sep	SSE3	SE7	SE3	SE4	ESE4	SE12	SE8	SE8	SE6	SW1	W2	W8	WNW12	WNW12	WNW9	WNW9	WNW9	NW7	WNW2	NW1	NNW2	NNW2	NNW3	SSE2	WSW1.2	SE12
19-Sep	NNE2	SE2	ENE1	ESE2	ESE1	SE2	ESE5	ESE7	SE8	SE9	SE7	ESE6	ESE6	ESE3	SW3	SE6	SSE7	S8	NNE1	NNW4	NNE1	NW2	NNW4	NNW3	SE2.6	SE9
20-Sep	NNW3	WNW2	NNW4	NNW3	NW4	NNW5	NW4	WNW7	NNW5	NNW6	NW6	NW6	NW6	NNW13	NNW16	NNW16	NNW15	NNW12	NNW7	NW4	NNW4	NNW4	NNW4	NW1	NNW6.3	NNW16
21-Sep	NNW2	NNW1	ESE1	SSE1	ESE2	SE7	ESE7	SE8	ESE5	SE6	SE9	SE9	SE11	SE10	SSE12	S15	SSE15	SSE14	SSE17	SSE19	S13	SE9	ESE10	ESE10	SE8.0	SSE19
22-Sep	ESE8	SE13	SE11	SE3	NE2	E1	N0	SE2	ESE3	ESE5	SE5	ESE5	ESE4	ENE3	SE4	ESE6	ESE5	ENE2	NNW1	WNW6	SSE5	E3	NNW4	NNW4	ESE3.1	SE13
23-Sep	NW3	NNW4	NW3	NNW2	NNW3	NW4	WNW4	WNW2	ESE2	SSE1	SE5	SE11	SE13	SE12	SE10	SE14	S11	SE10	SSE16	SSE14	SE17	SE14	SE8	SE8	SSE5.6	SE17
24-Sep	SE7	SE2	SE2	SE4	SE7	ESE7	ESE8	SE8	SW6	W13	W16	W20	W20	WNW19	W18	WNW13	W10	W5	WSW6	S1	SE1	SE2	SE5	ESE6	WSW4.3	W20
25-Sep	SE6	SE7	SE7	SE5	ESE2	N1	ESE0	NNE4	NW1	NNW4	ESE2	S9	SSW9	SSE6	SSE10	SSE9	S6	SSE9	S7	SE4	S1	WSW3	W4	SW3	SSE3.4	SSE10
26-Sep	SW7	W7	NW5	NNW4	NW4	WNW7	W8	WNW7	W4	W9	W12	WNW14	WNW14	NW12	NNW7	NE2	N7	W1	W3	WSW2	ENE1	SE3	NW2	SE6	WNW4.7	WNW14
27-Sep	ESE6	ESE6	ESE6	SE6	SE7	SE6	SSE5	SSW4	S9	SW9	SSW5	S9	SSW6	SSE7	SSW12	S13	S18	S16	S12	SSE17	S12	S15	S18	S17	S9.2	S18
28-Sep	SW19	SW19	SW23	WSW22	WSW21	W18	W15	WSW15	WSW16	WSW17	WSW15	W15	W14	WSW12	WSW7	W6	W2	E2	ESE1	E2	WSW0	SE1	ESE1	N3	WSW10.2	SW23
29-Sep	NE1	NNW4	NNW3	N3	NNW3	NNW4	NNW6	NNW5	NNW4	NNW4	NNW7	NW9	NW10	NNW10	N12	NNW15	NNW10	NNW10	NW6	NW6	NW7	NW8	NW7	NNW7	NNW6.6	NNW15
30-Sep	NNW6	NNW5	NNW7	NNW4	NW4	WNW6	WNW6	W7	SW12	WSW10	W11	W14	W16	WNW19	WNW21	WNW22	WNW18	NW12	WNW8	NW1	WSW5	WSW11	SW17	WSW15	W9.3	WNW22
	SSE1.6	SSE1.5	SSE1.2	SSE1.3	SE1.8	SSE1.8	SSE1.8	SSE1.7	S2.3	SSW2.1	SSW2.4	SW2.8	SW4.0	WSW3.6	WSW4.1	WSW3.5	WSW3.5	SW2.9	SW2.9	SW2.2	SW2.0	SSW1.6	SSW1.9	S1.8	Diurnal Average	
	SE22	SW19	SW23	WSW22	WSW21	W18	SE20	SE21	SE18	WSW17	W16	W20	W20	WNW19	WNW21	WNW22	WSW24	W23	W21	WNW20	SSE25	SSE25	SSE26	SSE26	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: 9 km/h on Sep 12 05:00

Minimum Value: 1 km/h on Sep 21 01:00

Percentiles: P_1 = 1 P_{10} = 1 Q_1 = 2 Median = 3 Q_3 = 4 P_{90} = 5 P_{99} = 7

Hours in Service:	720
Hours of Data:	720
Hours of Missing Data:	0
Hours of Calibration:	0
Percent Operational Time:	100.0

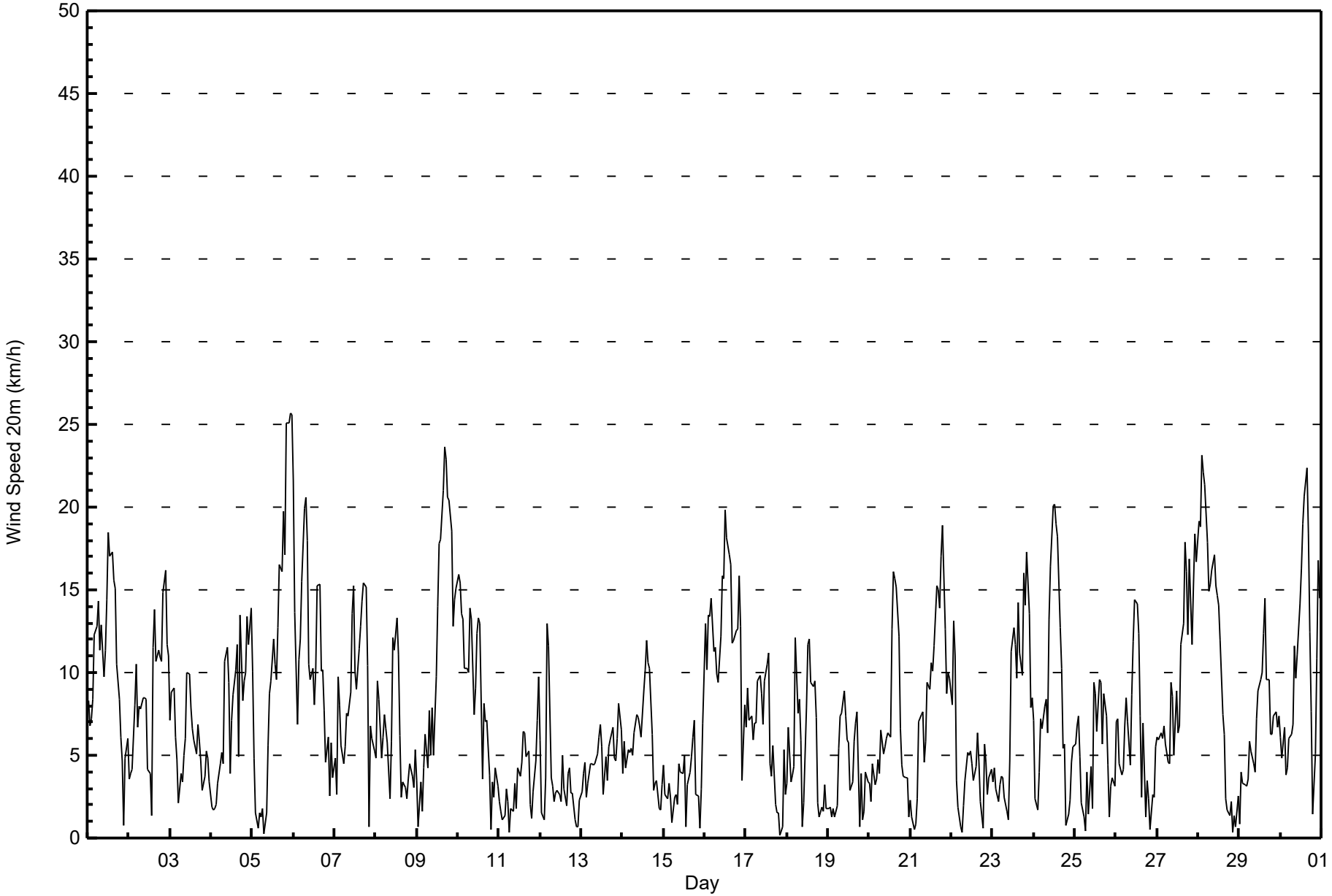
Day	Hourly Period Ending At (MST)																								Daily
	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24	Maximum
1-Sep	4	4	3	4	3	3	3	4	4	3	4	4	5	5	5	4	4	3	2	1	2	1	2	2	5
2-Sep	1	1	2	3	3	2	3	2	2	3	4	2	2	4	4	4	4	2	2	5	6	6	5	4	6
3-Sep	3	3	4	3	3	1	2	2	2	3	4	4	3	3	3	3	3	3	2	1	1	2	2	2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

Wood Buffalo Environmental Association

Hourly Averages

Wind Speed 20m (WS20) - km/h

Lower Camp Met Tower - September 2024



Wind Speed Ranges (km/h)	Number of Hours	%	Cumulative %
0 - 5	307	42.64	42.64
6 - 11	253	35.14	77.78
12 - 19	139	19.31	97.08
20 - 28	21	2.92	100.00
29 - 38	0	0.00	100.00
> 38	0	0.00	100.00

Total Number of Valid Hours: 720

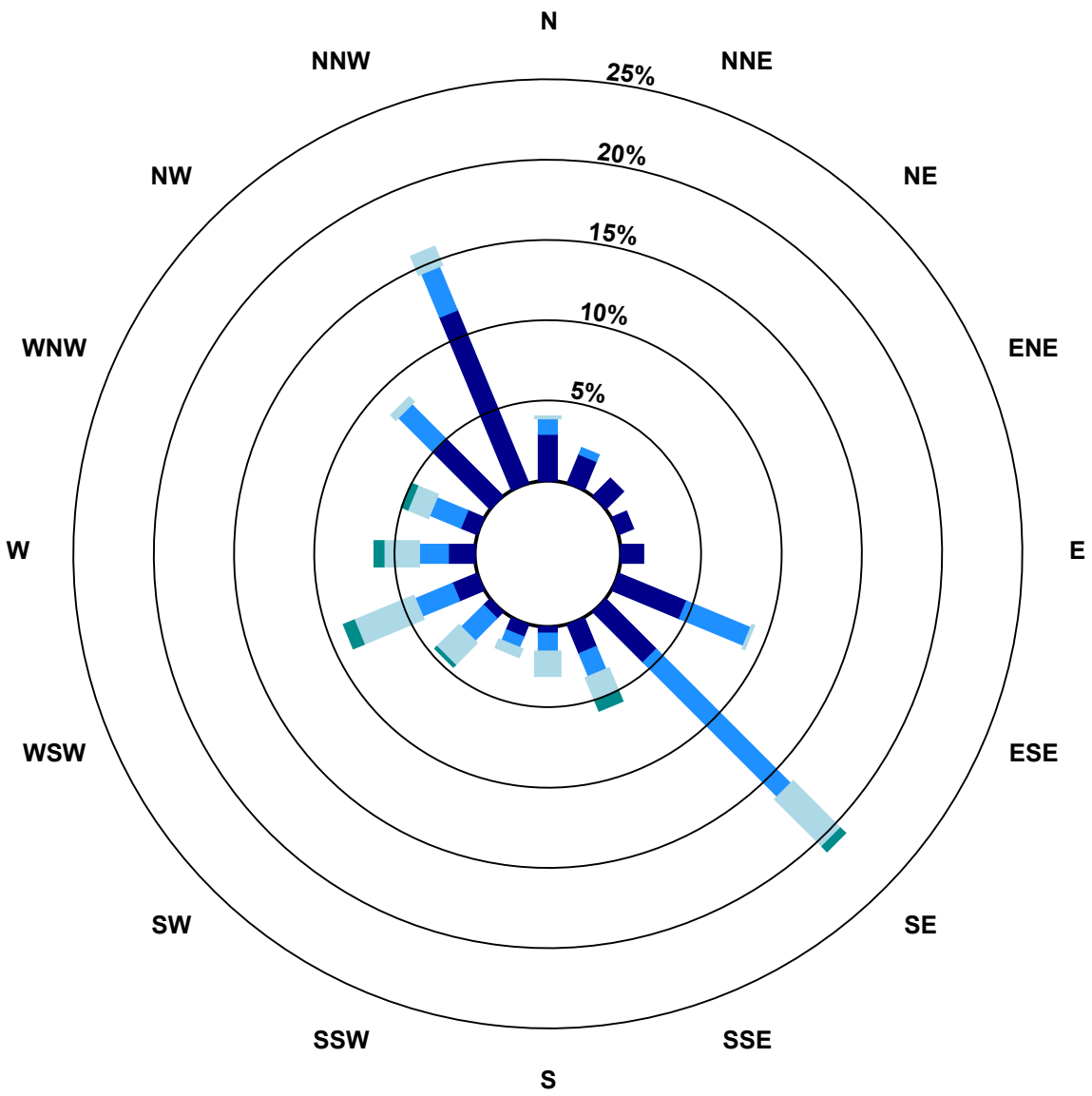
Total Number of Hours: 720

Wood Buffalo Environmental Association

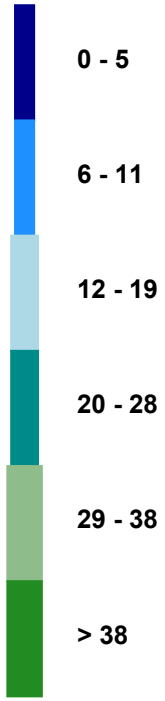
Wind Rose Sep 2024

Wind Speed 20m (WS20) - km/h

Lower Camp Met Tower



Classes (km/h)



Total Number of Valid Hours: 720

Wood Buffalo Environmental Association

Summary of Hour Averages

Wind Speed 45m (WS45) - km/h

Lower Camp Met Tower - September 2024

Maximum Speed: 33 km/h on Sep 9 18:00

Maximum Daily Speed Average: 14.6 km/h on Sep 9

Minimum Speed Value: 0 km/h on Sep 5 04:00

Minimum Daily Speed Average: 1.1 km/h on Sep 2

Maximum Diurnal Speed Average: 5.1 km/h at hour 15

Minimum Diurnal Speed Average: 1.5 km/h at hour 3

Monthly Average Velocity: 2.3 km/h 219.6 deg

Percentiles: P_1 = 1 P_{10} = 3 Q_1 = 6 Median = 9 Q_3 = 15 P_{90} = 20 P_{99} = 29

Hours in Service:	720
Hours of Data:	720
Hours of Missing Data:	0
Percent Operational Time:	100.0

Day	Hourly Period Ending At (MST)																								Daily	Daily
	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24	Average	Maximum
1-Sep	SE15	SE10	SE10	SE11	SE15	SE16	SE16	SE14	SE16	SE13	SE17	SE17	SW21	SW20	WSW21	WSW19	WSW18	WSW15	WSW13	SW13	SW12	SSE2	SE9	SE12	S9.4	SW21
2-Sep	SE7	SE8	SE9	SE14	SE15	SE11	SE10	SE11	ESE11	ESE11	ESE10	ESE5	ESE4	WSW3	WSW14	WSW18	WSW16	WSW15	WSW16	WNW17	NNW25	N24	NNW18	NNW17	SSW1.1	NNW25
3-Sep	N11	N14	N14	N10	N8	N4	NNW6	N5	N7	N9	N14	N15	NNE11	NNE9	NNE9	NNE7	NNE9	NNE10	NNE8	N5	NNW7	NNW9	NNW9	NNW6	N8.8	N15
4-Sep	NNW3	NE1	ENE2	S4	S4	SSW6	WSW8	W8	WSW15	W15	WNW13	NW5	WSW8	W11	WNW14	NW16	NW7	WSW19	W13	WSW14	WSW15	WSW19	WSW19	WSW21	W9.4	WSW21
5-Sep	NW17	NW10	NNW3	NW0	ENE1	ENE0	NNW2	ENE1	ESE2	ESE7	SE11	ESE12	SE14	SSE12	SSE11	SE16	SSE19	SE20	SE25	SE24	SSE29	SSE29	SSE31	SSE29	SE10.6	SSE31
6-Sep	SE27	SE20	ESE12	SE17	SE17	SE21	SE25	SE24	SE23	SE14	SE10	SW12	S9	SE13	SSE17	SE17	SSE9	SE12	SSE6	SSW5	SSE6	SW3	WSW9	WSW7	SE12.4	SE27
7-Sep	SSW4	SW4	SE8	SE12	SE10	SE8	SE7	SE10	ESE10	SE12	SE18	SE22	SE14	SW12	WSW16	WSW18	SW18	SW18	SW19	SW15	SW4	WSW11	WSW11	S4	S7.2	SE22
8-Sep	S4	SSE7	SE7	SE9	SE10	SE11	SE10	SE8	ESE4	ESE7	SE15	SE15	SE16	SE14	ESE9	ENE5	N4	N6	N5	NNE5	NNW7	NNW8	NNW6	NNW11	ESE4.6	SE16
9-Sep	NNW7	N1	NNW6	N4	N8	NNW11	NNW8	NNW12	NW7	NW11	NW6	NW14	WNW20	W26	W26	WSW29	WSW30	W33	W30	WNW30	WNW27	W18	WSW22	WSW23	W14.6	W33
10-Sep	WSW25	WSW24	WSW21	WSW21	WSW18	WSW18	WSW15	WSW20	WSW16	WSW9	SW9	WSW16	W18	W18	NNW6	W12	W10	NW12	NNW8	NW2	NNW5	NNW7	N8	N7	W11.6	WSW25
11-Sep	N5	N4	N3	NW3	NNW4	NNW3	N1	NNW2	NW2	NW3	NW2	N4	N4	ESE6	ESE8	ESE8	ESE7	ESE8	E7	ESE5	ESE9	ESE10	ESE13	ESE19	E3.3	ESE19
12-Sep	ESE13	ESE6	ESE4	NNW2	SE18	SE17	SE6	NNE4	N4	NNW5	NNE4	N4	NNE3	E7	E4	ENE2	E6	E7	NE4	N6	NNW6	N2	N2	NNE2	E3.4	SE18
13-Sep	N4	NW5	NNW7	N3	NNW5	NW6	NW7	NNW7	NNW6	NNW8	NNW9	NNW11	NNW9	NNW4	NNE8	NNW6	NW9	NW11	NW12	NNW11	NNW10	NW11	NW13	NW10	NNW7.8	NW13
14-Sep	NW7	WNW8	WNW6	WSW8	WSW8	WSW8	WSW7	WSW9	WSW9	SW7	SW7	SW6	WSW10	SW11	WSW17	WNW16	NW15	NW11	NNW9	N8	NNW5	NNE4	NNE2	NNW7	W6.3	WSW17
15-Sep	NNW9	NNW6	NW5	NNW7	NNW5	NNW4	NNW4	NNW4	NNW3	NNW6	WNW6	NNW5	NNW6	WNW1	SSE3	NE4	ESE6	ESE8	SE11	ESE4	SSE2	SSE5	SE8	SE10	NNE1.2	SE11
16-Sep	SE16	SE14	SE19	SE18	SE18	SE17	ESE16	ESE15	SE13	S14	S17	SSW17	WSW24	SW21	WSW20	WSW20	WSW15	SW15	SW17	SW18	SW21	SW18	SSW6	SSE9	S11.3	WSW24
17-Sep	SE9	SE13	SE12	SE12	ESE9	SE10	SE10	SE12	SE12	SE11	ESE9	SE12	SE14	SE14	SSE5	E4	SE7	ESE3	E2	ESE6	ESE8	SE6	SE11	ESE8	SE9.0	SE14
18-Sep	SE9	SE11	SE7	SE6	SE7	SE17	SE12	SE12	SE6	W2	WNW4	W11	WNW16	WNW16	WNW12	WNW13	WNW13	NW11	NNW5	W3	NW4	WNW2	NW5	ENE1	WSW1.6	SE17
19-Sep	W1	S1	SE3	SE6	SE5	SE3	SE10	SE11	ESE9	SE11	ESE7	ESE6	ESE6	SE3	SW3	SE6	SE9	S10	ESE2	N5	NE3	NNW4	NNW8	NW6	SE3.3	SE11
20-Sep	N6	NNW3	NNW7	NNW7	NW6	NNW9	NNW7	NW10	NNW8	NNW8	NW8	NW8	NW8	NNW19	N23	NNW23	NNW22	NNW20	NNW13	NNW11	NNW11	NNW9	NNW9	NW3	NNW10.5	NNW23
21-Sep	NW3	NNW2	WSW1	SE2	SE5	SE10	SE9	SE10	ESE6	ESE7	SE12	SE10	SE13	SE13	SSE13	S16	SSE17	SE17	SE20	SSE23	S15	ESE13	ESE17	ESE16	SE10.1	SSE23
22-Sep	ESE14	SE22	SE17	SE7	ESE4	SE4	SE2	SE4	ESE4	ESE5	SE5	ESE6	ESE5	ENE4	ESE4	ESE8	ESE6	ENE7	E2	NW9	S7	ESE4	NNW7	NNW9	ESE4.6	SE22
23-Sep	NNW7	NNW8	NNW6	NNW5	NW4	NNW6	NNW4	NNW3	E2	E1	SE3	SE11	SE14	SE13	SE13	SE18	S13	SE13	SSE20	SSE17	SSE21	SE18	SE13	SE14	SE6.4	SSE21
24-Sep	SE10	S3	E1	S5	SE11	SE8	SE12	SE7	WSW10	W19	W24	W29	W28	WNW26	W26	WNW18	W15	W9	W9	WSW4	SE4	SE8	SE10	ESE10	WSW6.7	W29
25-Sep	SE9	SE11	SE11	SE7	SE3	NNE2	E5	ENE6	NNW1	NNE2	ESE7	SSE11	SSW9	SSE8	SSE11	SSE11	S7	S10	SSW11	S5	SSW2	W6	W6	SW7	SSE4.8	SSE11
26-Sep	SW12	W12	NW8	NNW6	NW8	WNW11	W15	WNW13	W8	W13	W18	WNW21	WNW19	WNW16	NNW9	NE3	NNW10	W5	W6	SW6	S2	SSW5	WNW4	SSE5	WNW8.0	WNW21
27-Sep	SE8	SE10	SE10	SE8	SE9	SE8	SE6	SSW6	S11	SW9	SSW5	S9	SSW6	SSE7	SSW12	S14	S19	S18	S15	SSE19	SSW14	S19	S23	SSW21	S11.0	S23
28-Sep	SW24	SW23	WSW28	WSW32	WSW31	W26	W22	WSW23	WSW23	WSW25	WSW22	W20	W19	WSW14	WSW9	W8	W3	E1	ESE5	E4	ESE2	SSE2	ESE5	ENE1	WSW13.8	WSW32
29-Sep	SE2	N2	NNW4	N5	N3	NNW7	NNW11	NNW8	NNW7	NNW6	NNW9	NNW12	NNW14	NNW15	N19	N22	NNW15	NNW16	NNW12	NW11	NW12	NW13	NW12	NW12	NNW10.0	N22
30-Sep	NW11	NW9	NNW10	WNW9	NW8	WNW11	WNW9	WSW12	WSW13	WSW12	W16	W19	W22	WNW26	WNW28	WNW31	WNW26	NW18	WNW15	WNW5	WSW11	WSW17	WSW23	WSW21	W14.3	WNW31
	SSE1.8	SSE1.8	SSE1.5	SSE1.9	SSE2.6	SSE2.4	SSE2.3	S2.0	S2.5	SW2.2	SSW2.5	SW3.1	WSW4.8	WSW4.6	WSW5.1	WSW4.5	WSW4.5	WSW3.4	SW3.4	SW3.1	SW2.8	SW2.0	SW2.2	SSW2.1	Diurnal Average	
	SE27	WSW24	WSW28	WSW32	WSW31	W26	SE25	SE24	SE23	WSW25	W24	W29	W28	WNW26	WNW28	WNW31	WSW30	W33	W30	WNW30	SSE29	SSE29	SSE31	SSE29	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: 9 km/h on Sep 20 14:00

Minimum Value: 1 km/h on Sep 5 04:00

Percentiles: P_1 = 1 P_{10} = 2 Q_1 = 2 Median = 3 Q_3 = 4 P_{90} = 5 P_{99} = 7

Hours in Service:	720
Hours of Data:	720
Hours of Missing Data:	0
Hours of Calibration:	0
Percent Operational Time:	100.0

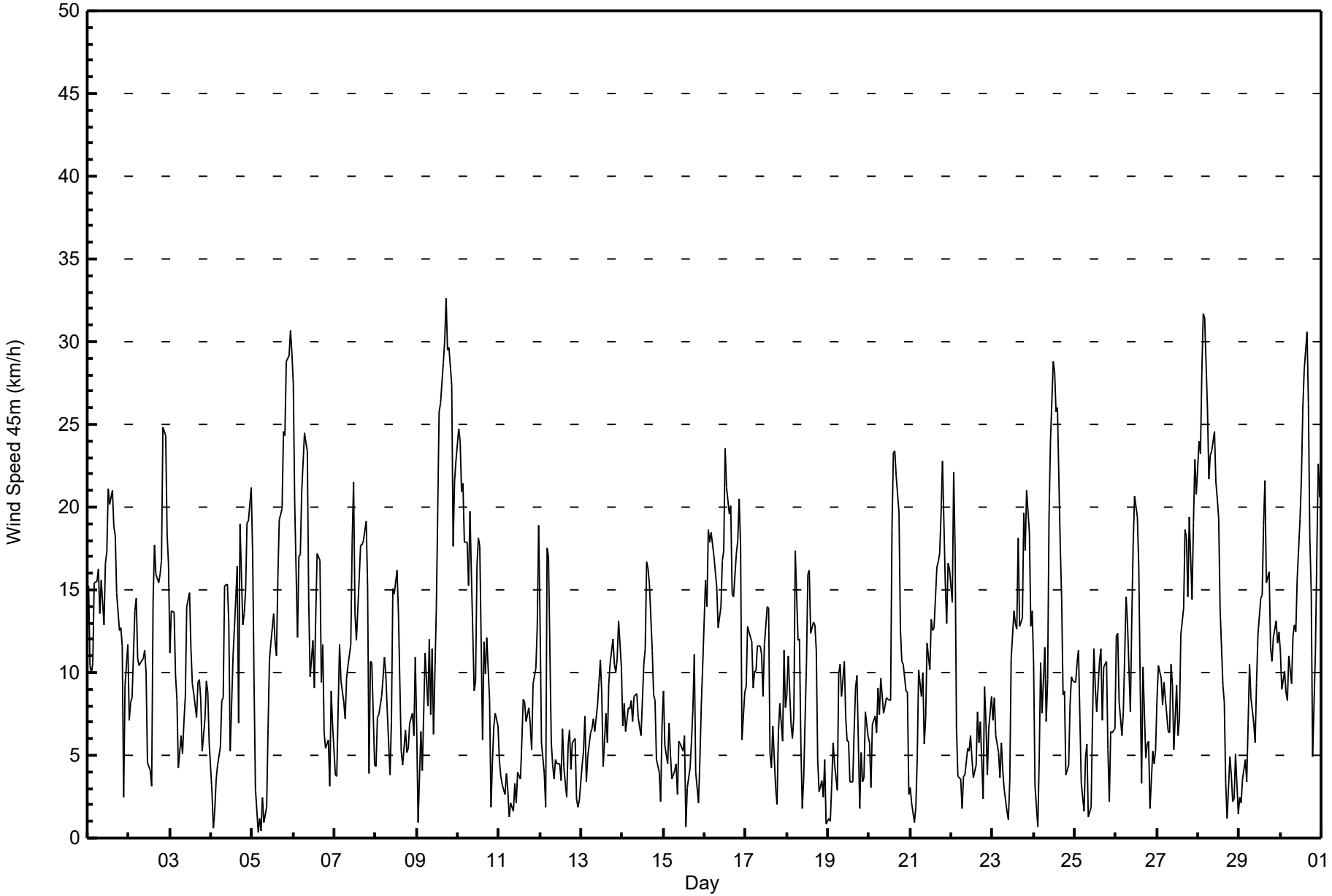
Day	Hourly Period Ending At (MST)																								Daily
	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24	Maximum
1-Sep	5	5	3	4	3	4	3	4	3	3	4	4	5	5	4	4	3	3	2	2	2	2	2	2	5
2-Sep	1	1	2	2	2	2	2	3	2	4	4	4	2	5	3	3	3	2	2	6	6	6	5	4	6
3-Sep	3	4	4	3	4	2	2	2	2	3	4	4	3	3	3	3	3	3	2	2	2	2	3	2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

Wood Buffalo Environmental Association

Hourly Averages

Wind Speed 45m (WS45) - km/h

Lower Camp Met Tower - September 2024



Wind Speed Ranges (km/h)	Number of Hours	%	Cumulative %
0 - 5	167	23.19	23.19
6 - 11	283	39.31	62.50
12 - 19	192	26.67	89.17
20 - 28	65	9.03	98.19
29 - 38	13	1.81	100.00
> 38	0	0.00	100.00

Total Number of Valid Hours: 720

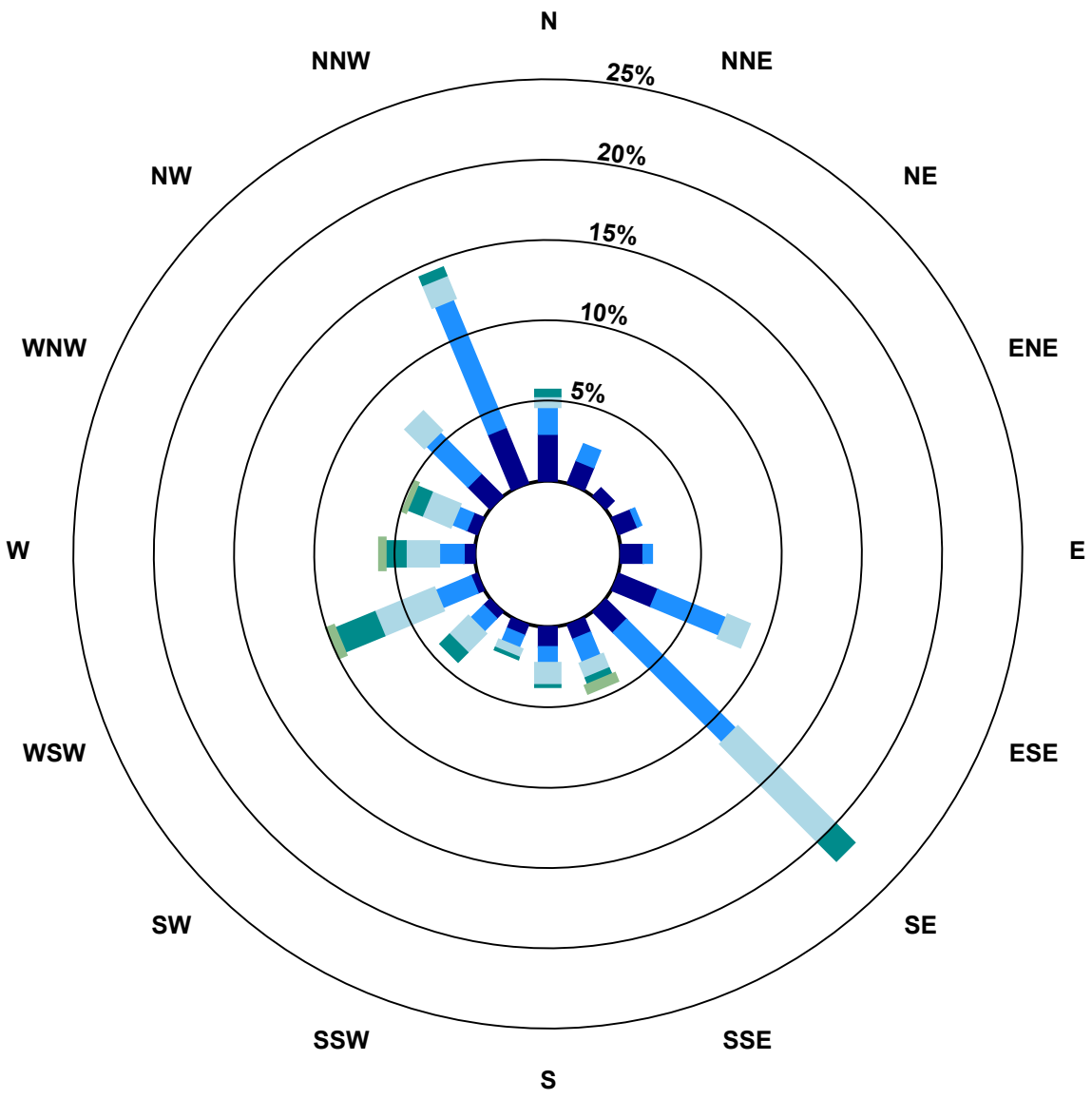
Total Number of Hours: 720

Wood Buffalo Environmental Association

Wind Rose Sep 2024

Wind Speed 45m (WS45) - km/h

Lower Camp Met Tower



Classes (km/h)

- 0 - 5
- 6 - 11
- 12 - 19
- 20 - 28
- 29 - 38
- > 38

Total Number of Valid Hours: 720

Wood Buffalo Environmental Association

Summary of Hour Averages

Wind Speed 100m (WS100) - km/h

Lower Camp Met Tower - September 2024

Maximum Speed: 39 km/h on Sep 28 05:00

Maximum Daily Speed Average: 20.0 km/h on Sep 30

Minimum Speed Value: 0 km/h on Sep 11 09:00

Minimum Daily Speed Average: 2.1 km/h on Sep 15

Maximum Diurnal Speed Average: 6.7 km/h at hour 15

Minimum Diurnal Speed Average: 2.2 km/h at hour 3

Monthly Average Velocity: 3.9 km/h 233.7 deg

Percentiles: P_1 = 1 P_{10} = 5 Q_1 = 8 Median = 12 Q_3 = 19 P_{90} = 25 P_{99} = 36

Hours in Service:	720
Hours of Data:	720
Hours of Missing Data:	0
Percent Operational Time:	100.0

Day	Hourly Period Ending At (MST)																								Daily	Daily
	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24	Average	Maximum
1-Sep	SE20	SE18	SE17	SE17	SE20	SSE21	SSE24	SSE18	SE16	SE16	SE21	SSE19	SW23	SW22	WSW24	WSW21	SW20	WSW21	WSW21	SW19	SW21	SW12	S7	SSE7	S13.1	SSE24
2-Sep	SSE3	SSE7	SSE8	S12	S15	SSE13	SSE11	SSE7	SE11	SE13	SE10	SE4	SE3	SW6	WSW17	WSW20	WSW21	WSW21	WSW25	WNW27	NNW35	N29	N25	N22	WSW4.1	NNW35
3-Sep	N16	N20	N18	N16	N14	N8	N8	N7	N9	N11	N16	N17	NNE14	NNE11	NNE10	NNE9	NNE10	NNE11	NNE12	N10	N10	N13	N12	N9	N11.9	N20
4-Sep	NNW5	NNW2	NNE1	SSW5	SSW7	WSW10	WSW11	W12	WSW18	W18	WNW15	WNW6	WSW9	W13	WNW18	NW19	NW9	W23	W16	W15	WSW22	W25	WSW24	W29	W12.7	W29
5-Sep	NNW26	NNW17	NNW10	NNW7	N3	ENE3	E1	SE3	ESE2	ESE7	SE11	SE13	SE14	SSE13	SSE13	SE17	SSE21	SE25	SE31	SE31	SSE35	SSE37	SSE38	SE38	SE12.0	SSE38
6-Sep	SSE36	SSE29	SE18	SE22	SE23	SSE27	SSE32	SSE28	SSE21	SE13	S8	SW14	S10	SSE9	SSE17	SSE18	SSW10	S9	SW9	SW10	SSW5	WSW14	W8	W7	SSE14.0	SSE36
7-Sep	WSW8	WSW9	SW7	S5	S8	SSE9	SSE7	SSE8	SE12	SE16	SE17	SE23	SSE14	SW14	WSW19	WSW22	SW21	SW20	SW25	SW25	SW12	WSW20	W17	WSW10	SSW10.4	SW25
8-Sep	SW7	SSW9	SW11	SSW6	S6	S10	SSE8	SE9	SE8	ESE11	SE15	SE18	SSE17	SSE15	SE11	E7	NE5	NE10	NE10	E9	SSE4	E1	NNW14	NNW18	SE4.6	SE18
9-Sep	N9	NNE3	N10	NNE7	N10	NNW16	N11	NNW15	NNW9	NW14	NW7	NW17	WNW23	W31	W32	WSW33	WSW34	W39	W36	WNW36	W32	W23	WSW29	WSW29	WNW17.4	W39
10-Sep	WSW32	W31	WSW28	WSW27	WSW25	WSW24	WSW20	WSW23	WSW18	WSW9	SW10	WSW19	W21	W20	NW11	W16	W12	NW17	NNW12	NW6	NW8	N8	NNE8	NNE10	W14.5	WSW32
11-Sep	NNE7	N5	N6	NNW5	NNW5	NNW3	N3	NE2	WNW0	WNW3	WNW2	NNW2	NE2	ESE7	ESE10	ESE10	ESE8	SE11	ESE14	ESE15	ESE17	ESE19	SE21	SE27	ESE5.7	SE27
12-Sep	SE23	ESE14	ESE12	ESE8	SE24	SE20	SE10	E4	NE4	NNE7	NE6	NNE6	NE5	ESE9	E5	ENE4	E6	E7	ENE5	N7	N8	NNE6	NNE5	E3	E6.2	SE24
13-Sep	N4	NNW7	NNW11	N4	NW6	NNW7	NW9	NW9	NNW7	NNW11	NNW13	NNW15	NNW11	NNW7	NNE9	NNW9	NNW14	NNW15	NNW18	NNW17	NNW17	NW17	NW20	NW15	NNW11.1	NW20
14-Sep	NW9	NW9	WNW9	W8	W8	W13	WSW11	WSW12	WSW9	SW7	SW7	SW7	WSW12	SW13	WSW22	WNW21	NW21	NW16	NNW15	N15	NE8	ENE8	ESE4	NW4	WNW7.7	WSW22
15-Sep	NNW17	NNW12	NNW9	NNW10	N10	NNW8	NNW6	N12	NNE7	N8	NW6	NNW6	NW6	W1	SSE3	NE3	ESE6	ESE9	SE15	SE12	SE11	SE14	SSE15	SSE14	NE2.1	NNW17
16-Sep	SSE18	SSE16	SE19	SSE19	SSE20	SE21	SE19	SE17	SSE17	SSW19	SSW18	SSW19	WSW26	SW24	WSW21	WSW22	WSW17	SW19	SW25	SW26	SW30	WSW27	SW12	S10	SSW15.4	SW30
17-Sep	S9	S9	SSE13	SE16	SSE13	SSE13	SSE13	SSE10	SSE10	SE12	SE11	SE12	SE15	SE14	SSE5	E4	ESE7	SE4	ESE3	ESE14	SE17	SE17	SE21	SE19	SE11.3	SSE21
18-Sep	SSE17	SSE15	SE17	SE13	SE16	SSE25	SSE20	SSE15	SW8	W5	WNW6	W13	WNW19	WNW19	WNW14	WNW16	WNW16	NW17	NNW10	NW4	NNW7	WNW4	W8	W2	SW3.1	SSE25
19-Sep	WSW2	S4	SSW3	S5	S6	S6	S8	S8	SSE7	SE9	SSE7	SE5	ESE6	SE3	WSW3	SE5	SSE10	SSW14	S3	NE6	NE11	NNE9	N12	NNW9	SSE2.8	SSW14
20-Sep	NNW8	N4	NW7	N9	NNW8	N9	NNW11	NW11	NW9	NNW10	NW10	NNW10	NNW10	N22	N27	NNW28	NNW27	NNW26	NNW18	NNW18	NNW19	NNW20	NNW18	NNW14	NNW14.6	NNW28
21-Sep	NW11	NW10	NW5	WSW2	WSW7	SSW5	SSW4	S5	SE3	SE8	SE12	SE10	SE15	SE14	S13	S18	SSE19	SE22	SE24	SSE27	S20	SE17	SE22	ESE20	SSE9.7	SSE27
22-Sep	SE20	SE28	SE21	SE15	SE10	SE8	SSE5	SSE10	SSE5	SE5	SE5	SE6	SE4	E3	ESE5	ESE7	ESE7	ENE9	ENE7	NNW10	S11	SSE5	NW6	NNW12	SE6.4	SE28
23-Sep	NNW14	N13	N10	NNW10	NW6	NW10	NW9	NNW7	N1	SSW2	SSE1	ESE8	ESE12	SSE12	SE16	SE19	SSW15	SSE15	S26	S26	SSE26	SSE22	SSE19	SSE15	SSE5.9	S26
24-Sep	S7	WSW10	WSW4	WSW7	SSE6	SW9	S9	SW8	WSW15	W25	W30	W36	W33	WNW30	W30	WNW22	W18	W12	WNW12	W6	SSE6	SSE11	SE17	SE18	WSW11.3	W36
25-Sep	SE15	SSE14	SE15	SE15	ESE11	SE5	ESE19	ESE12	ESE8	SE13	SE19	SSE16	SSW10	S8	S11	SSE12	SSW11	S16	SSW19	SSW10	WSW8	W16	WNW11	WSW12	SSE8.8	SE19
26-Sep	WSW22	W18	NW13	NW10	NW13	WNW16	WNW20	WNW19	W11	W16	W22	WNW24	WNW21	WNW20	NW11	NNE4	NNW13	W11	WNW9	WSW13	SW8	SW16	W8	SSW4	W12.6	WNW24
27-Sep	SSE7	SSE12	SSE11	SSE10	SSE11	SSE11	SSE9	SSW11	S13	SSW10	SSW6	S10	SSW7	SSE7	SSW13	S15	S20	S22	S19	S25	SSW20	SSW26	SSW29	SW28	S13.6	SSW29
28-Sep	SW33	WSW30	WSW35	WSW39	WSW39	W33	W26	WSW28	WSW27	WSW28	WSW25	W24	W22	WSW16	WSW11	W11	W6	SSW1	ESE7	SE4	S5	S5	SE9	SE8	WSW17.4	WSW39
29-Sep	SSE7	SE7	SSW2	ENE3	ESE6	NW3	NNW13	N15	N13	NNW9	NNW12	NNW14	NNW17	NNW19	N23	N27	NNW21	NNW23	NNW19	NW17	NW18	NW21	NW19	NW18	NNW12.2	N27
30-Sep	NW20	NW16	NW17	WNW18	WNW16	NW16	WNW13	WSW16	WSW14	WSW16	W20	W22	W25	WNW30	WNW34	WNW37	WNW32	NW25	NW20	WNW13	W19	WSW23	WSW27	WSW27	WNW20.0	WNW37
	SW2.6	SSW2.6	SSW2.2	SSW2.7	S3.8	SSW4.0	SSW3.6	SW3.8	SSW3.5	SW3.1	SW3.4	WSW4.3	WSW5.7	WSW6.1	W6.7	WSW6.1	WSW6.0	WSW5.3	WSW4.7	WSW4.2	WSW4.7	SW4.2	SW3.6	SW3.6	Diurnal Average	
	SSE36	W31	WSW35	WSW39	WSW39	W33	SSE32	WSW28	WSW27	WSW28	W30	W36	W33	W31	WNW34	WNW37	WSW34	W39	W36	WNW36	SSE35	SSE37	SSE38	SE38	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 100m (WS100) - km/h

Lower Camp Met Tower - September 2024

Number of Exceedences (AAAQO): 1-hr: 0 24-hr: 0
Maximum Value: 10 km/h on Sep 25 08:00

Minimum Value: 1 km/h on Sep 23 06:00

Percentiles: P_1 = 1 P_{10} = 2 Q_1 = 2 Median = 3 Q_3 = 4 P_{90} = 5 P_{99} = 8

Hours in Service:	720
Hours of Data:	720
Hours of Missing Data:	0
Hours of Calibration:	0
Percent Operational Time:	100.0

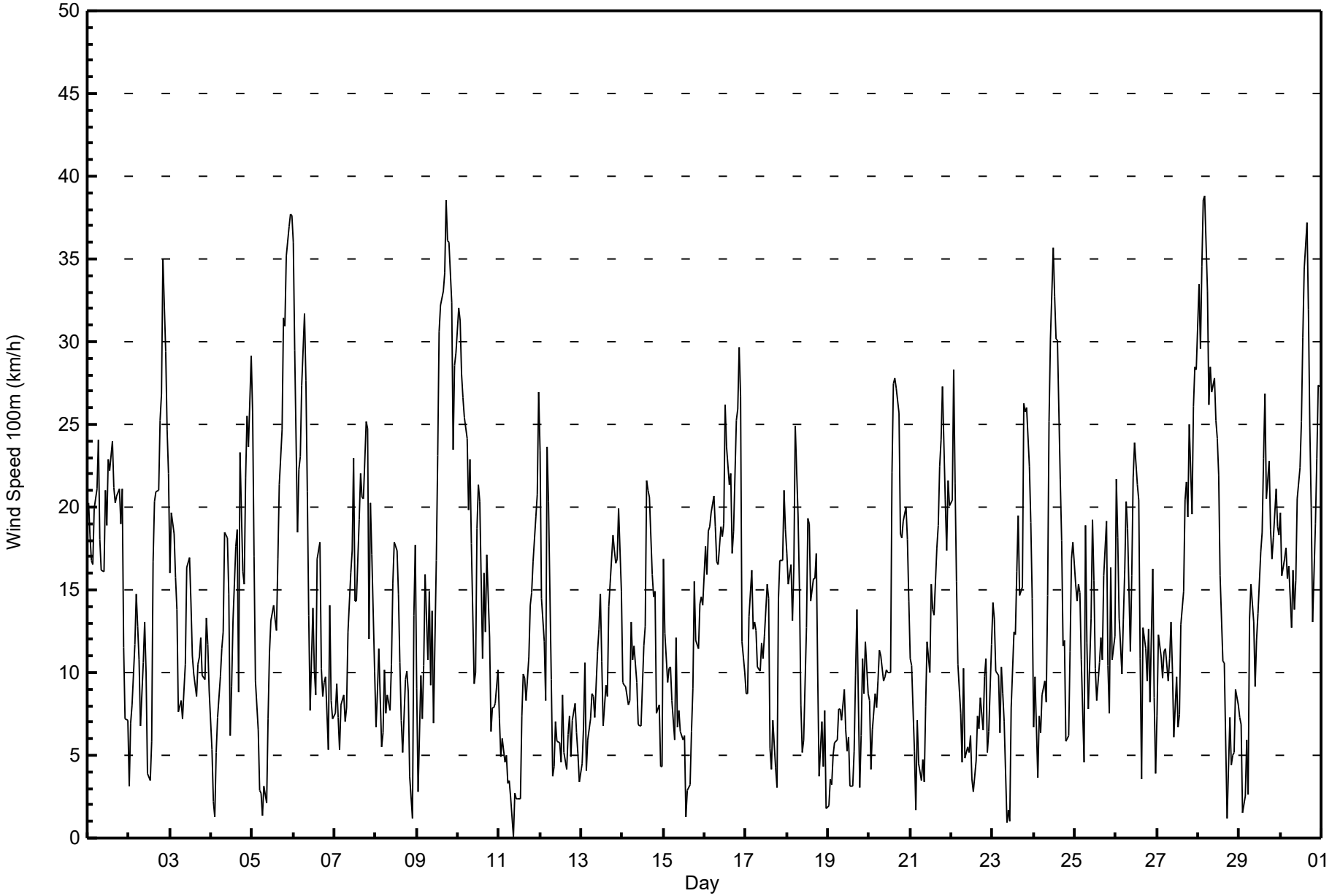
Day	Hourly Period Ending At (MST)																								Daily
	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24	Maximum
1-Sep	3	3	3	3	2	2	3	3	2	2	3	4	5	4	4	4	3	3	3	1	1	4	3	1	5
2-Sep	2	3	2	3	1	2	3	3	4	5	4	4	2	6	3	3	2	2	2	6	6	6	5	4	6
3-Sep	3	3	4	3	4	2	2	2	2	3	3	2	3	3	2	3	2	2	2	3	3	3	2	2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

Wood Buffalo Environmental Association

Hourly Averages

Wind Speed 100m (WS100) - km/h

Lower Camp Met Tower - September 2024



Wind Speed Ranges (km/h)	Number of Hours	%	Cumulative %
0 - 5	90	12.50	12.50
6 - 11	242	33.61	46.11
12 - 19	222	30.83	76.94
20 - 28	125	17.36	94.31
29 - 38	38	5.28	99.58
> 38	3	0.42	100.00

Total Number of Valid Hours: 720

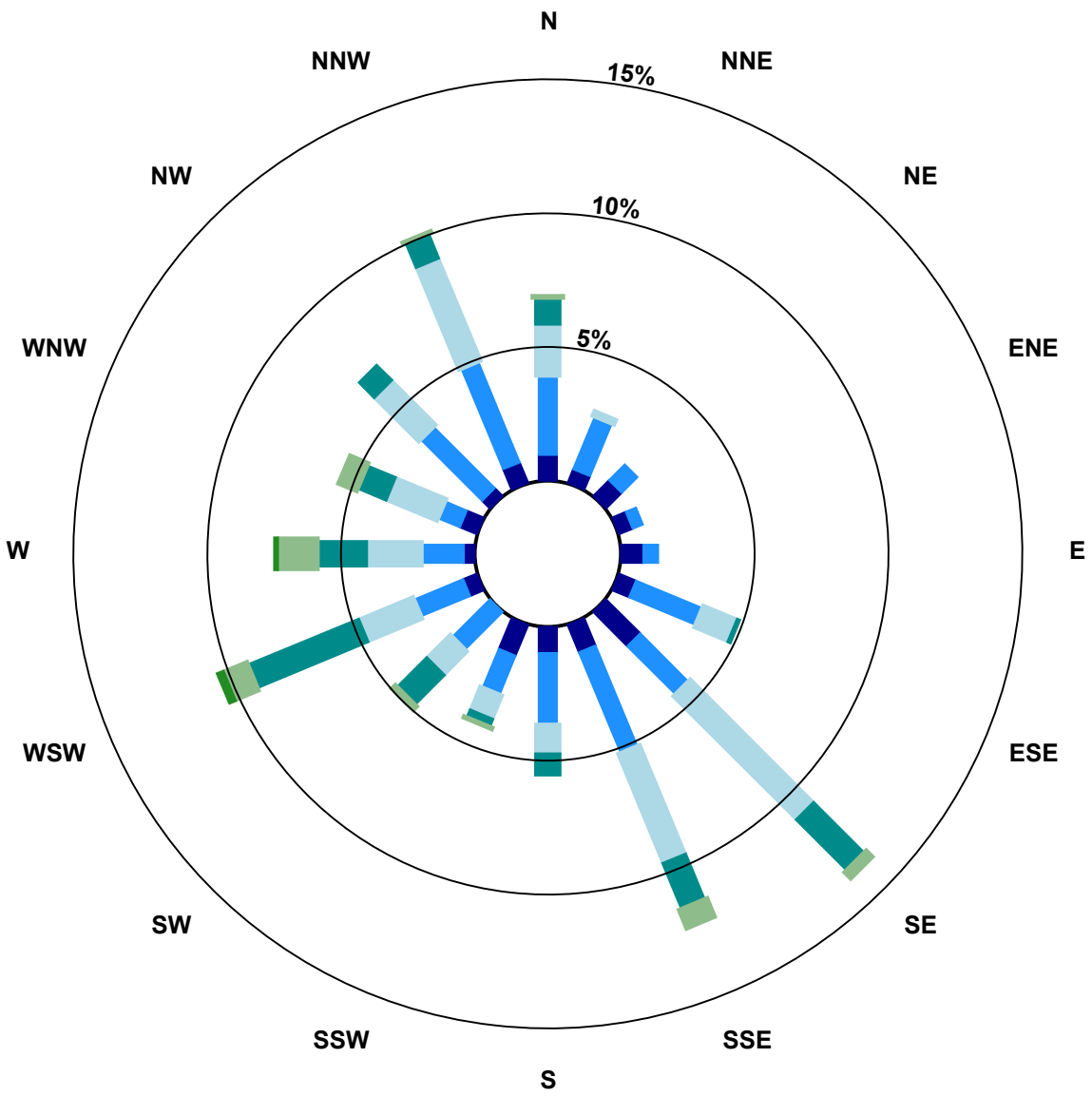
Total Number of Hours: 720

Wood Buffalo Environmental Association

Wind Rose Sep 2024

Wind Speed 100m (WS100) - km/h

Lower Camp Met Tower



Classes (km/h)

- 0 - 5
- 6 - 11
- 12 - 19
- 20 - 28
- 29 - 38
- > 38

Total Number of Valid Hours: 720

Wood Buffalo Environmental Association

Summary of Hour Averages

Wind Speed 163m (WS163) - km/h

Lower Camp Met Tower - September 2024

Maximum Speed: 48 km/h on Sep 6 01:00

Maximum Daily Speed Average: 24.2 km/h on Sep 30

Minimum Speed Value: 1 km/h on Sep 11 12:00

Minimum Daily Speed Average: 1.9 km/h on Sep 19

Maximum Diurnal Speed Average: 8.0 km/h at hour 15

Minimum Diurnal Speed Average: 2.8 km/h at hour 2

Monthly Average Velocity: 5.0 km/h 242.5 deg

Percentiles: P_1 = 2 P_{10} = 6 Q_1 = 10 Median = 15 Q_3 = 22 P_{90} = 29 P_{99} = 42

Hours in Service: 720

Hours of Data: 720

Hours of Missing Data: 0

Percent Operational Time: 100.0

Day	Hourly Period Ending At (MST)																								Daily	Daily
	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24	Average	Maximum
1-Sep	SSE26	SSE22	SSE24	SSE23	SSE25	SSE29	S32	S23	SSE15	SE14	SSE20	S22	SW24	SW23	WSW25	WSW22	WSW21	WSW24	W25	WSW21	WSW21	WSW17	SW15	SSW12	SSW16.5	S32
2-Sep	SSW7	S6	SSW9	SSW10	SSW15	SSW13	S16	SSW8	SSE7	SSE13	S10	S5	S4	SW8	WSW18	WSW22	WSW22	WSW23	W32	NW34	NNW41	NNE33	N29	N26	W7.2	NNW41
3-Sep	N22	N24	N22	N23	N19	NNE13	NNE14	N10	NNE10	N11	N17	N17	NNE15	NNE11	NNE10	NNE9	NNE11	NNE11	NNE13	NNE13	NNE14	NNE17	N14	N13	NNE14.7	N24
4-Sep	N9	N6	ENE2	SSW5	SW10	W10	W13	W15	W21	W19	WNW15	WNW8	WSW10	W14	WNW19	NW19	WNW11	W26	WNW20	WNW16	W23	WNW26	WNW27	WNW33	WNW14.2	WNW33
5-Sep	NNW32	N22	N15	N11	NNE7	NNE5	ENE2	SW1	SSE4	SE7	SSE11	SE14	SSE14	SSE14	SSE13	SSE17	SSE22	SSE26	SE34	SE34	SSE41	SSE45	SSE45	SSE46	SE12.7	SSE46
6-Sep	SSE48	SSE44	SSE32	SSE31	SSE33	SSE37	S37	S25	S20	S12	SW10	SW16	SSW10	SSW7	S16	SSW19	SW13	SW12	SW16	WSW20	WSW15	W19	WNW15	NW14	S16.7	SSE48
7-Sep	WNW8	NW11	W11	SW8	SSW6	S8	SSE8	S9	SSE7	SE15	SSE17	SSE21	S16	SW15	WSW21	WSW24	WSW22	SW23	SW30	WSW33	WSW25	W30	W27	W18	SW13.2	WSW33
8-Sep	W15	WSW7	SW15	SW11	SW8	SSW11	SSW10	S8	SSE7	SE13	SSE17	SSE19	SSE17	SSE16	SSE11	ESE7	ENE5	NE10	ENE14	ESE16	SSE12	SSE10	WSW3	N10	SSE6.4	SSE19
9-Sep	NNE13	E4	N9	NE9	NE15	N20	N15	NNW16	NNW11	NW14	NW8	NW18	WNW25	W33	W35	WSW35	WSW36	W42	W39	WNW39	WNW36	W29	W34	W35	WNW18.3	W42
10-Sep	W38	W36	W33	W30	W29	WSW29	W26	W25	WSW19	W10	WSW11	WSW20	W22	W22	NW17	W21	WNW14	NW19	NNW14	NW10	NNW14	ENE9	ENE7	ENE6	W16.8	W38
11-Sep	NE9	NE6	ENE4	SE5	ESE8	SSE6	ESE5	ESE5	SE4	S2	SW2	SSE1	ESE3	ESE9	SE11	SE10	ESE9	SE13	ESE16	ESE23	SE26	SE25	SE28	SE32	SE9.9	SE32
12-Sep	SE25	SE21	SE19	SE21	SSE30	SSE24	SE15	ESE10	ENE8	ENE11	ENE8	NE7	ENE5	ESE11	E7	E6	E6	ESE8	E5	NNE6	NNE11	NE11	NE9	ENE8	ESE9.1	SSE30
13-Sep	NE6	NNE3	N11	NNW8	NNW12	N10	NNW10	NNW13	NNW12	NNW15	N16	NNW18	N13	N9	NNE10	N11	NNW17	N18	NNW22	N22	N21	NNW20	NNW25	NNW20	NNW13.8	NNW25
14-Sep	NNW14	NW11	WNW14	WNW9	WNW11	WNW15	WNW15	W15	W9	WSW7	WSW7	WSW7	WSW12	SW14	WSW24	WNW24	NW23	NW18	NNW19	NNE21	NE20	ENE16	E7	SE3	WNW8.6	WSW24
15-Sep	NNW19	NNE12	NE6	NNE9	NE14	NE15	NE10	NNE21	NE15	N10	NNW6	NNW6	NNW6	WSW2	SSE2	E2	SE7	SE10	SSE19	SSE18	SSE17	SSE19	S19	S18	E3.8	NNE21
16-Sep	SSW20	SSW18	S19	S22	S24	S23	S22	S21	S24	SSW24	SSW21	SSW20	WSW27	WSW25	WSW22	WSW22	WSW19	SW22	WSW29	WSW26	WSW35	WSW36	WSW21	SW14	SW20.8	WSW36
17-Sep	SW11	SSW9	SSW11	S11	SSE16	SSE14	S12	SSW10	S10	SSE13	SSE11	SSE11	SE15	SE14	S6	E4	ESE7	SE5	ESE6	ESE20	SE18	SSE22	SSE30	SSE28	SSE11.9	SSE30
18-Sep	SSE22	SSE21	SE22	SSE21	SSE26	SSE34	S27	S16	WSW14	WNW9	WNW8	WNW14	WNW20	NW20	WNW16	WNW17	WNW16	NNW19	NNW14	NNW12	N13	NNW6	NW9	NW4	SW4.4	SSE34
19-Sep	WNW3	SW3	WSW5	SW9	SW10	SW7	SSW5	SSW7	SSW8	S9	SSW8	S5	SE5	SSE3	WSW4	SE5	SSE10	SSW14	S5	NE5	NE22	NE21	NE17	NNE7	SSE1.9	NE22
20-Sep	NE5	SE6	WNW7	NNE9	NNE3	NNE14	NNE18	NNW10	NW12	NNW11	NNW11	NNW11	NNW12	N24	N30	N29	NNW29	NNW29	N24	N29	N28	NNW27	N26	N21	N16.7	N30
21-Sep	N17	N12	N9	NW4	WSW6	SW4	SW3	S4	S4	SSE7	SSE12	SSE10	SE16	SE14	S14	S18	SSE20	SE25	SSE27	SSE31	SSW24	SE20	SE23	SE22	SSE9.9	SSE31
22-Sep	SE24	SE28	SSE25	SE19	SE16	SSE14	SSE11	S15	S6	SSE5	SSE5	S7	S3	ESE2	ESE4	SE7	ESE7	ENE7	ENE8	N9	S13	S11	WNW4	NW9	SSE8.1	SE28
23-Sep	N14	NNE17	NNE17	N14	N10	NNW9	N13	NNW10	NW8	W3	WSW2	S6	SE10	S11	SSE16	SSE19	SSW16	SSE17	S33	SSW32	S30	S27	S21	SSW14	S5.8	S33
24-Sep	WSW11	WSW16	WSW10	WSW14	SSW8	WSW16	SSW11	WSW16	W21	W30	W34	W38	W34	WNW32	WNW32	WNW24	W20	W15	WNW16	NW3	SSE4	SSE12	SSE19	SSE18	W15.2	W38
25-Sep	SSE17	SSE19	SSE18	SE15	SE17	ESE19	ESE28	SE19	SE20	SSE21	SE26	SSE19	SSW13	SSW10	S11	S12	SSW16	SSW21	SW24	SW15	WSW15	W26	WNW19	W18	S11.7	ESE28
26-Sep	W25	WNW23	NW21	NW16	NW19	NW20	WNW24	NW19	WNW13	W18	W23	WNW25	WNW22	WNW21	NW11	NE3	NNW15	WNW16	NW15	WSW15	WSW13	WSW22	W13	WSW7	WNW16.0	W25
27-Sep	SSE6	SSE10	SSE10	SSE11	SSE15	SSE15	S14	SSW14	S16	SSW11	SSW7	SSW10	SSW8	S8	SW13	SSW15	S22	S23	S22	S27	SW24	SW27	SW32	SW35	SSW15.2	SW35
28-Sep	WSW40	WSW34	WSW38	WSW42	W42	W39	W29	W31	WSW28	W29	W27	W25	W23	WSW17	W12	W12	W8	SSW3	SSE9	S12	SSW13	S11	S13	SSE12	WSW20.4	W42
29-Sep	SSE15	SSE11	S8	SE3	ESE14	SE12	N3	N18	N25	N16	N15	N15	N19	N20	N24	N29	NNW25	NNW28	NNW24	NNW22	NW24	NW28	NNW25	NW28	N13.2	N29
30-Sep	NW28	NW24	WNW27	WNW25	WNW21	NW20	WNW17	WNW15	WSW14	W19	W23	W24	W26	WNW32	WNW37	WNW41	WNW35	NW30	NW22	NW18	WNW20	WNW23	W28	W34	WNW24.2	WNW41
	SW3.2	SSW2.8	SW3.8	SW4.0	SSW5.0	SSW5.3	SSW4.8	WSW4.9	SW4.3	SW4.2	SW4.8	WSW5.6	WSW6.7	W7.0	W8.0	W7.3	W7.1	W6.6	WSW6.1	WSW5.0	WSW5.6	WSW4.9	WSW4.8	WSW5.2	Diurnal Average	
	SSE48	SSE44	WSW38	WSW42	W42	W39	S37	W31	WSW28	W30	W34	W38	W34	W33	WNW37	WNW41	WSW36	W42	W39	WNW39	NNW41	SSE45	SSE45	SSE46	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: 13 km/h on Sep 25 08:00

Minimum Value: 1 km/h on Sep 15 06:00

Percentiles: P_1 = 1 P_{10} = 1 Q_1 = 2 Median = 3 Q_3 = 4 P_{90} = 5 P_{99} = 9

Hours in Service:	720
Hours of Data:	720
Hours of Missing Data:	0
Hours of Calibration:	0
Percent Operational Time:	100.0

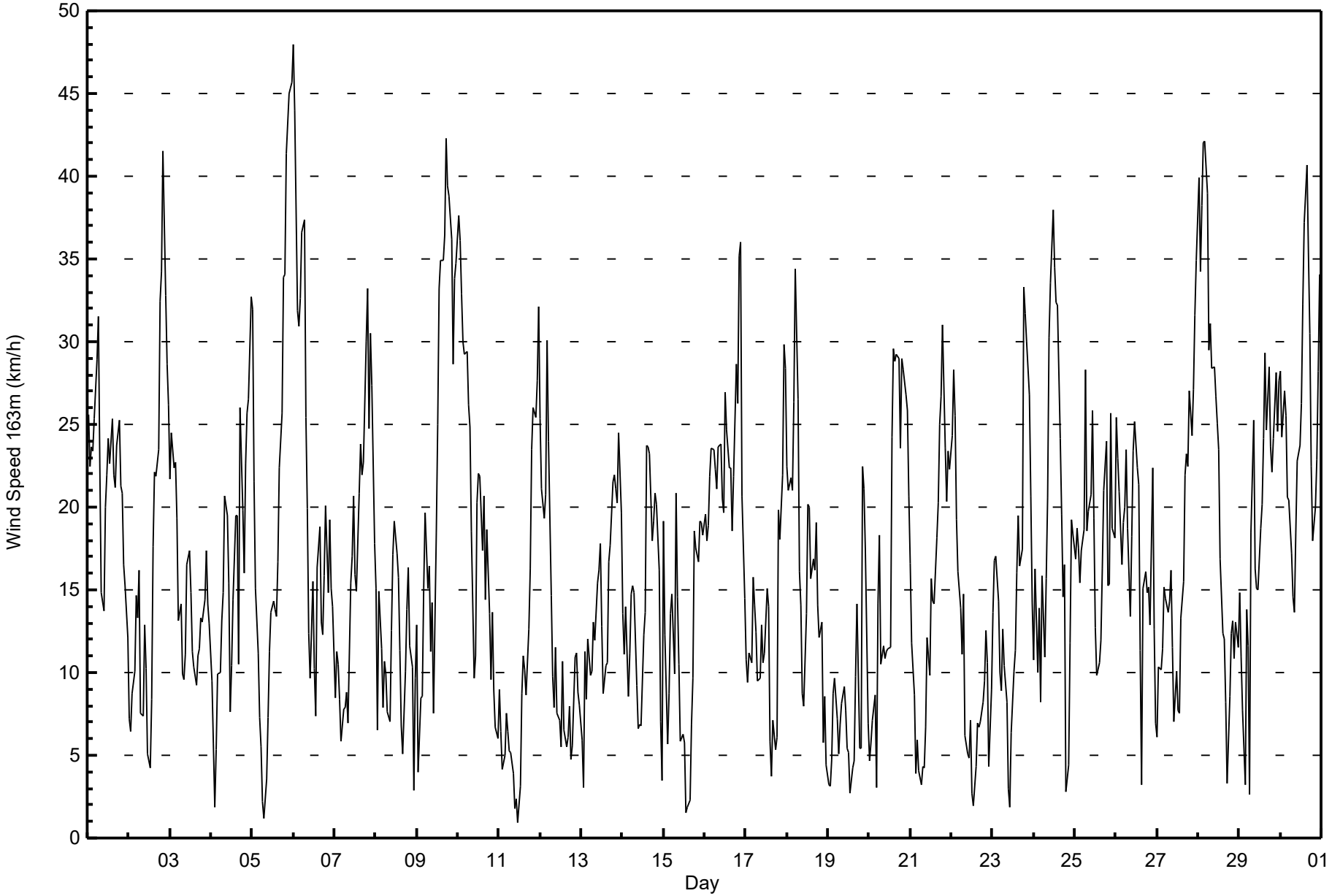
Day	Hourly Period Ending At (MST)																								Daily
	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24	Maximum
1-Sep	6	4	3	3	3	2	3	3	3	2	3	4	4	4	3	4	3	3	3	1	1	2	3	3	6
2-Sep	3	2	1	2	2	2	4	2	2	3	3	3	2	5	3	3	2	3	3	7	6	7	5	5	7
3-Sep	3	3	4	2	4	3	3	2	2	2	3	2	3	3	2	2	2	2	1	1	2	3	3	2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

Wood Buffalo Environmental Association

Hourly Averages

Wind Speed 163m (WS163) - km/h

Lower Camp Met Tower - September 2024



Wind Speed Ranges (km/h)	Number of Hours	%	Cumulative %
0 - 5	62	8.61	8.61
6 - 11	183	25.42	34.03
12 - 19	219	30.42	64.44
20 - 28	174	24.17	88.61
29 - 38	67	9.31	97.92
> 38	15	2.08	100.00

Total Number of Valid Hours: 720

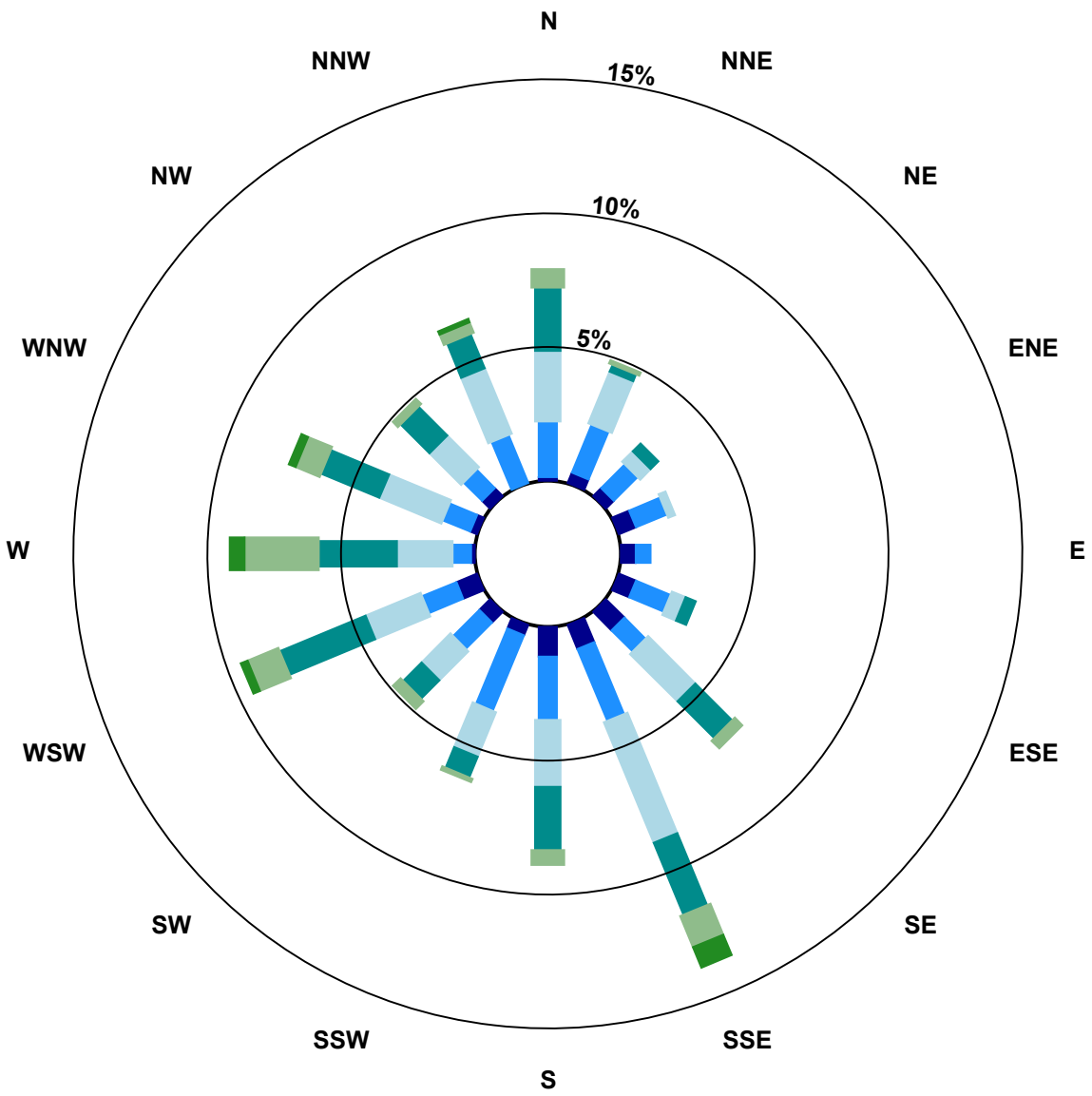
Total Number of Hours: 720

Wood Buffalo Environmental Association

Wind Rose Sep 2024

Wind Speed 163m (WS163) - km/h

Lower Camp Met Tower



Classes (km/h)

- 0 - 5
- 6 - 11
- 12 - 19
- 20 - 28
- 29 - 38
- > 38

Total Number of Valid Hours: 720

Direction of Maximum Speed: 150 deg on Sep 5 23:00
Direction of Maximum Daily Speed Average: 142.5 deg on Sep 6

Direction of Minimum Speed: 105 deg on Sep 17 21:00
Direction of Minimum Daily Speed Average: 0.8 deg on Sep 15

Monthly Average Direction: 210.1 deg

Hours in Service:	720
Hours of Data:	720
Hours of Missing Data:	0
Percent Operational Time:	100.0

Day	Hourly Period Ending At (MST)																								Daily
	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24	Average
1-Sep	136	151	133	147	130	127	129	132	135	133	129	141	215	233	237	239	238	247	239	223	242	19	145	140	176.7
2-Sep	129	127	135	127	130	120	126	126	129	131	126	95	114	246	243	243	251	240	243	296	327	358	341	340	205.3
3-Sep	344	359	359	347	347	8	339	338	352	360	347	359	12	6	22	22	10	19	7	338	333	340	332	341	356.5
4-Sep	353	45	59	162	153	208	242	265	251	262	297	305	232	256	290	304	321	258	271	246	242	239	238	245	259.1
5-Sep	329	316	341	11	54	39	4	346	134	126	127	121	142	160	151	139	150	149	150	141	150	151	150	151	145.3
6-Sep	145	139	124	131	136	135	135	137	132	129	134	212	191	131	147	140	138	122	136	166	145	132	219	228	142.5
7-Sep	131	124	125	125	127	126	133	129	121	134	138	136	135	233	253	248	236	224	218	222	195	238	232	147	179.6
8-Sep	155	136	120	132	130	123	121	122	117	129	142	141	143	141	110	58	339	350	336	349	343	325	320	343	123.7
9-Sep	332	198	322	30	345	331	320	328	318	324	321	306	295	276	264	248	243	266	273	289	282	266	256	257	278.2
10-Sep	258	256	253	254	261	259	244	247	242	241	224	249	262	279	329	262	274	312	331	204	337	333	346	354	262.2
11-Sep	329	6	348	336	336	326	63	285	294	348	346	11	11	105	126	124	102	126	51	39	114	104	115	120	85.0
12-Sep	126	102	242	335	146	135	115	3	354	325	19	1	19	101	84	54	80	89	33	339	353	291	345	346	84.6
13-Sep	353	309	326	350	335	310	316	326	327	328	326	330	329	344	14	329	314	316	316	327	338	315	313	311	325.2
14-Sep	307	289	270	260	256	270	241	231	233	209	209	219	244	225	245	288	312	321	330	346	320	356	346	344	263.6
15-Sep	342	325	331	337	336	329	326	321	302	321	281	344	338	248	150	42	120	126	138	20	347	263	149	135	7.5
16-Sep	137	127	132	134	131	130	122	113	129	175	186	199	237	234	237	238	244	228	217	213	218	229	175	148	188.6
17-Sep	137	129	126	117	114	121	120	126	130	130	128	131	129	131	157	93	129	117	49	117	105	128	125	135	126.3
18-Sep	156	140	124	127	118	135	136	126	133	229	273	272	286	299	290	285	296	310	302	318	337	346	333	157	255.2
19-Sep	14	145	78	116	120	128	122	122	126	133	133	121	118	116	217	137	149	191	26	333	16	316	344	334	128.9
20-Sep	347	289	336	337	314	328	308	301	330	336	313	317	318	343	345	342	337	333	334	326	336	337	337	305	331.8
21-Sep	329	342	113	147	114	128	120	126	118	128	131	137	132	134	164	173	156	152	151	156	180	131	118	104	143.2
22-Sep	123	129	138	128	54	88	7	124	115	122	130	123	113	76	133	114	115	65	343	297	158	90	347	338	117.2
23-Sep	321	327	305	332	347	315	293	296	115	154	142	138	140	140	138	140	190	137	151	164	145	136	134	134	146.7
24-Sep	129	142	124	126	127	122	122	128	235	259	265	263	262	290	281	288	275	273	248	190	143	132	134	121	249.6
25-Sep	128	124	125	127	118	1	102	33	326	346	114	170	193	154	161	147	182	166	188	144	170	256	263	233	158.8
26-Sep	229	279	316	336	316	286	279	290	263	261	266	285	291	304	334	53	351	276	259	248	72	145	317	130	287.8
27-Sep	122	120	118	129	134	136	148	205	169	224	201	181	194	163	206	183	174	175	171	164	183	169	179	191	172.8
28-Sep	223	231	236	253	257	263	263	254	256	257	255	260	260	241	249	270	260	82	121	94	250	130	118	357	250.3
29-Sep	48	342	343	349	340	334	328	331	329	330	340	326	324	331	349	345	339	331	323	317	324	326	312	332	332.8
30-Sep	336	336	343	333	316	291	301	261	236	242	259	278	267	290	286	296	295	311	303	324	245	237	235	247	279.0
	163.0	165.0	150.8	154.6	145.4	153.1	155.8	165.6	183.2	209.7	199.4	216.6	233.8	244.8	245.5	243.8	240.0	231.1	216.4	220.7	220.1	211.7	211.3	186.7	
	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: 106 deg on Sep 28 21:00

Minimum Value: 7 deg on Sep 5 23:00

Percentiles: P_1 = 8 P_{10} = 13 Q_1 = 17 Median = 24 Q_3 = 40 P_{90} = 67 P_{99} = 101

Hours in Service:	720
Hours of Data:	720
Hours of Missing Data:	0
Hours of Calibration:	0
Percent Operational Time:	100.0

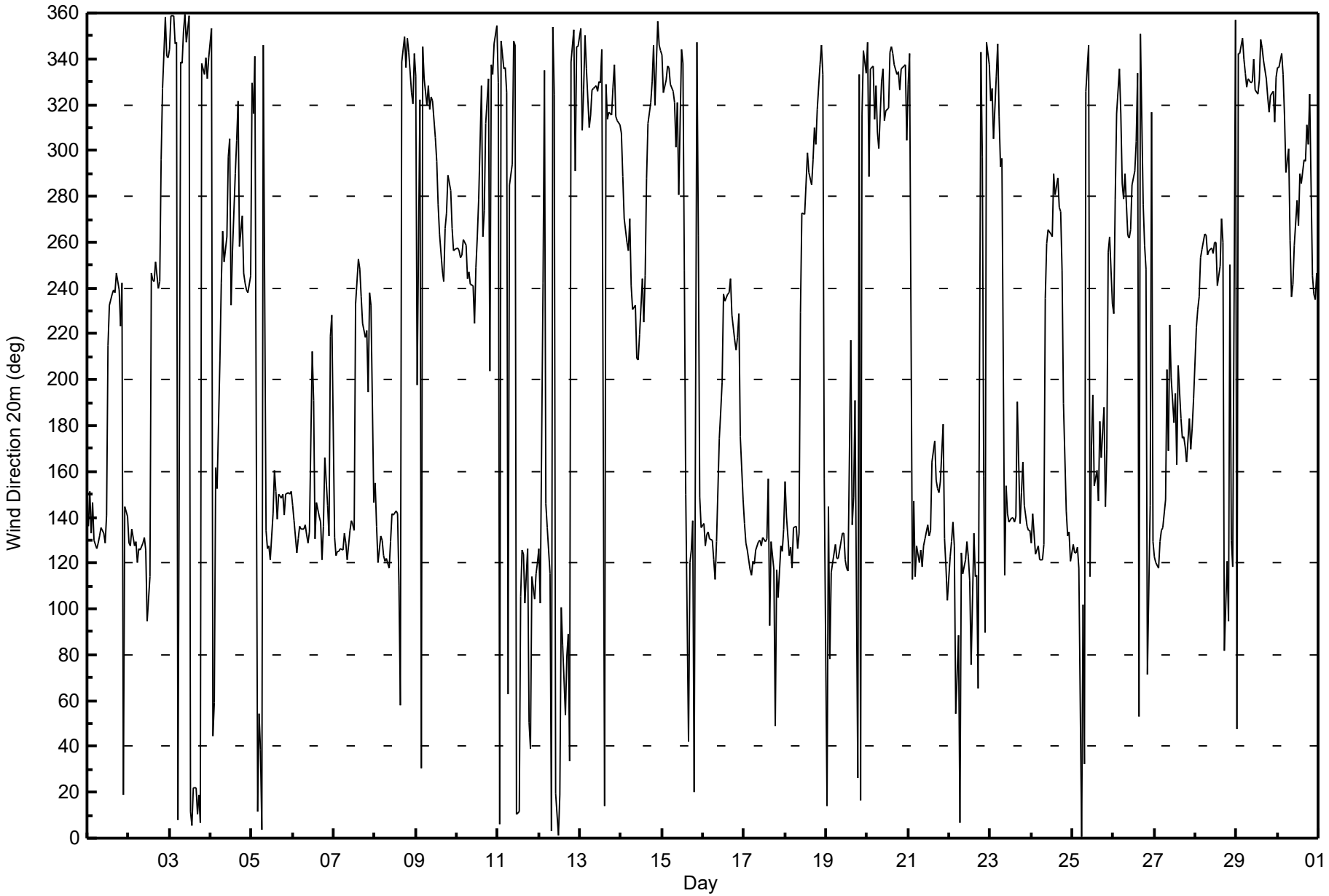
Day	Hourly Period Ending At (MST)																								Daily
	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24	Maximum
1-Sep	25	39	26	44	13	12	11	22	12	17	21	15	23	19	16	14	13	14	16	11	21	90	17	21	90
2-Sep	25	12	18	13	12	16	20	16	15	19	21	40	37	101	21	17	17	10	10	35	18	21	22	19	101
3-Sep	21	20	21	24	30	41	29	39	29	31	20	24	27	33	36	38	24	26	24	32	19	23	26	29	41
4-Sep	62	45	69	59	43	26	50	59	19	24	32	64	39	39	27	30	63	21	18	11	11	10	16	19	69
5-Sep	28	30	71	91	62	67	40	100	69	34	18	20	16	27	27	18	12	11	11	13	8	7	7	7	100
6-Sep	11	15	33	16	13	10	8	8	13	18	27	34	44	14	11	10	16	19	16	37	24	71	25	38	71
7-Sep	23	38	9	10	14	18	14	16	18	27	12	13	20	41	21	17	11	12	9	13	95	60	40	24	95
8-Sep	24	19	12	32	12	11	12	16	47	25	12	13	15	16	20	49	22	23	64	31	21	34	43	23	64
9-Sep	39	104	70	75	33	33	22	26	37	33	43	29	22	21	20	17	17	22	22	19	20	23	19	17	104
10-Sep	18	19	20	19	31	27	34	18	17	32	25	26	27	35	70	27	33	21	16	84	29	23	37	26	84
11-Sep	72	60	84	67	26	49	88	41	61	36	81	35	40	42	38	35	40	21	54	69	35	26	13	15	88
12-Sep	33	74	71	34	58	16	42	31	38	44	46	72	67	20	40	43	25	37	38	19	56	90	97	67	97
13-Sep	35	22	25	41	31	21	23	21	30	23	22	22	23	52	39	31	21	15	12	16	16	18	14	13	52
14-Sep	29	17	27	20	23	33	32	47	29	15	19	33	26	19	24	27	19	15	41	40	26	43	71	29	71
15-Sep	15	28	22	16	26	67	41	72	74	33	65	67	43	91	51	31	37	15	19	30	38	96	82	12	96
16-Sep	9	13	13	12	12	17	14	18	24	14	12	24	15	15	18	13	16	13	8	10	10	15	62	20	62
17-Sep	20	10	17	17	19	15	16	15	13	18	25	18	18	18	61	29	18	54	54	58	102	105	28	65	105
18-Sep	51	26	61	47	36	11	33	28	42	105	88	39	34	26	33	33	27	20	60	75	61	43	35	60	105
19-Sep	41	42	59	39	32	40	14	15	16	12	15	21	22	65	52	57	33	52	98	43	96	71	55	63	98
20-Sep	26	56	22	70	70	19	36	21	31	26	24	28	34	33	19	20	17	18	17	12	22	17	17	50	70
21-Sep	33	45	101	103	28	15	12	14	20	19	21	17	19	25	22	19	11	13	10	17	37	17	16	16	103
22-Sep	25	17	15	53	50	77	93	50	28	23	28	30	41	47	37	19	28	60	98	32	53	68	42	16	98
23-Sep	32	23	32	74	16	16	19	29	56	92	21	9	11	11	22	13	29	13	12	19	9	16	22	17	92
24-Sep	15	74	58	36	15	23	17	12	50	22	22	20	21	22	22	27	25	20	15	90	63	19	28	13	90
25-Sep	42	17	20	26	36	94	91	64	96	41	79	25	16	20	17	16	30	14	17	23	83	48	68	83	96
26-Sep	71	36	32	39	33	30	25	32	87	16	16	20	18	21	35	55	49	90	55	81	91	67	63	20	91
27-Sep	16	16	20	52	27	31	56	38	61	16	48	22	46	61	19	18	10	10	7	8	22	10	8	15	61
28-Sep	11	11	13	17	18	20	20	17	16	18	17	20	24	21	28	31	39	54	87	48	106	55	86	46	106
29-Sep	81	29	54	47	20	19	18	26	28	33	24	23	20	18	19	15	19	18	14	13	16	15	14	17	81
30-Sep	18	27	17	81	93	48	15	29	15	24	34	25	25	23	23	21	19	13	11	79	27	23	8	15	93
	81	104	101	103	93	94	93	100	96	105	88	72	67	101	70	57	63	90	98	90	106	105	97	83	
	Diurnal Maximum																								

Wood Buffalo Environmental Association

Hourly Averages

Wind Direction 20m (WD20) - deg

Lower Camp Met Tower - September 2024



Direction of Maximum Speed: 266 deg on Sep 9 18:00
Direction of Maximum Daily Speed Average: 280.5 deg on Sep 9

Direction of Minimum Speed: 308 deg on Sep 5 04:00

Direction of Minimum Daily Speed Average: 1.1 deg on Sep 2

Monthly Average Direction: 219.6 deg

Hours in Service:	720
Hours of Data:	720
Hours of Missing Data:	0
Percent Operational Time:	100.0

Day	Hourly Period Ending At (MST)																								Daily
	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24	Average
1-Sep	127	141	135	136	129	131	138	138	131	125	126	142	216	234	238	239	237	246	243	214	215	149	141	131	174.2
2-Sep	129	127	133	130	131	126	132	124	122	123	119	103	116	238	245	242	251	238	239	294	329	2	347	348	196.8
3-Sep	351	359	0	352	354	7	347	350	359	4	353	1	14	14	24	28	16	20	12	0	343	347	338	345	1.1
4-Sep	346	34	62	180	182	211	247	262	251	262	298	306	237	263	291	305	316	257	272	249	237	242	238	245	259.3
5-Sep	326	325	330	308	61	71	344	62	120	119	126	121	137	156	149	136	149	141	140	135	147	148	147	147	140.8
6-Sep	141	133	121	126	131	133	136	136	131	127	140	215	185	134	152	145	152	125	162	197	163	219	240	242	144.4
7-Sep	194	225	137	125	129	131	135	128	122	126	132	129	132	234	251	247	235	224	219	223	219	244	245	189	185.5
8-Sep	182	164	144	128	131	130	129	124	113	121	135	132	142	142	114	75	356	7	8	31	346	340	329	341	115.9
9-Sep	340	351	346	11	352	338	334	331	323	324	323	305	296	275	263	247	243	266	271	288	282	264	255	256	280.5
10-Sep	256	255	251	252	255	252	246	247	242	247	228	252	263	277	335	261	278	314	330	323	329	341	356	4	264.7
11-Sep	350	350	353	325	336	330	3	327	311	324	316	0	5	104	121	119	103	121	91	110	112	109	118	120	93.0
12-Sep	120	110	120	348	140	129	128	17	11	347	30	6	22	100	86	59	79	89	51	354	346	358	10	21	83.1
13-Sep	3	324	336	354	332	318	324	330	332	330	331	333	332	339	18	334	322	325	324	329	338	319	318	311	329.9
14-Sep	307	295	283	258	252	258	248	238	238	217	220	227	249	228	247	286	308	317	330	0	343	30	25	337	274.9
15-Sep	344	345	322	338	346	336	327	338	336	332	291	338	330	282	152	44	113	115	136	117	156	153	138	135	27.9
16-Sep	133	128	131	130	128	128	123	112	137	180	188	200	237	235	237	239	245	228	219	214	218	226	199	158	187.2
17-Sep	141	131	129	126	123	127	130	126	127	125	122	125	124	129	153	91	125	122	88	118	120	130	130	123	126.3
18-Sep	142	136	132	132	126	133	132	125	146	268	288	277	286	299	290	286	296	320	327	271	326	298	324	78	254.7
19-Sep	278	170	139	136	137	145	133	128	120	125	123	118	109	124	227	132	145	191	111	3	41	347	342	323	126.9
20-Sep	351	327	333	342	322	331	327	306	331	337	316	320	326	347	349	345	339	336	340	333	330	337	344	319	335.8
21-Sep	308	328	257	124	134	133	131	129	117	123	127	134	126	131	164	173	157	142	145	154	179	123	116	107	139.9
22-Sep	116	125	130	128	111	125	138	124	116	115	124	123	107	73	118	112	106	62	89	310	174	121	333	336	113.3
23-Sep	341	342	332	331	305	337	343	342	96	98	139	124	129	138	129	134	190	136	156	168	148	136	137	133	139.3
24-Sep	131	180	79	170	131	137	128	141	250	261	263	262	262	289	281	287	274	277	262	239	134	129	127	123	248.7
25-Sep	125	126	126	127	124	16	95	69	345	15	122	163	194	159	163	150	186	173	198	177	210	266	270	230	158.9
26-Sep	234	274	317	337	315	288	277	283	262	262	265	284	289	303	330	41	346	272	277	232	176	193	299	152	283.2
27-Sep	131	133	128	131	133	135	145	206	171	221	203	182	197	159	208	184	174	177	173	168	192	176	187	199	174.4
28-Sep	226	232	237	252	255	263	263	254	255	256	255	259	261	245	253	273	266	79	108	101	112	161	116	76	249.4
29-Sep	133	6	347	7	350	339	333	338	337	335	340	331	329	333	354	350	343	335	328	318	321	323	320	325	335.8
30-Sep	323	326	329	299	305	299	300	255	238	244	260	276	270	288	284	294	293	308	300	283	245	237	237	248	278.6
	161.6	165.4	149.6	158.4	152.5	157.1	161.2	175.4	187.0	218.5	208.8	230.9	244.4	253.2	255.4	253.9	252.7	248.7	232.4	230.4	228.5	218.4	218.2	194.9	
	Diurnal Average																								

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

Number of Exceedences (AAAQO): 1-hr: 0 24-hr: 0
Maximum Value: 107 deg on Sep 9 02:00

Minimum Value: 4 deg on Sep 30 23:00

Percentiles: P_1 = 5 P_{10} = 8 Q_1 = 10 Median = 16 Q_3 = 27 P_{90} = 48 P_{99} = 91

Hours in Service:	720
Hours of Data:	720
Hours of Missing Data:	0
Hours of Calibration:	0
Percent Operational Time:	100.0

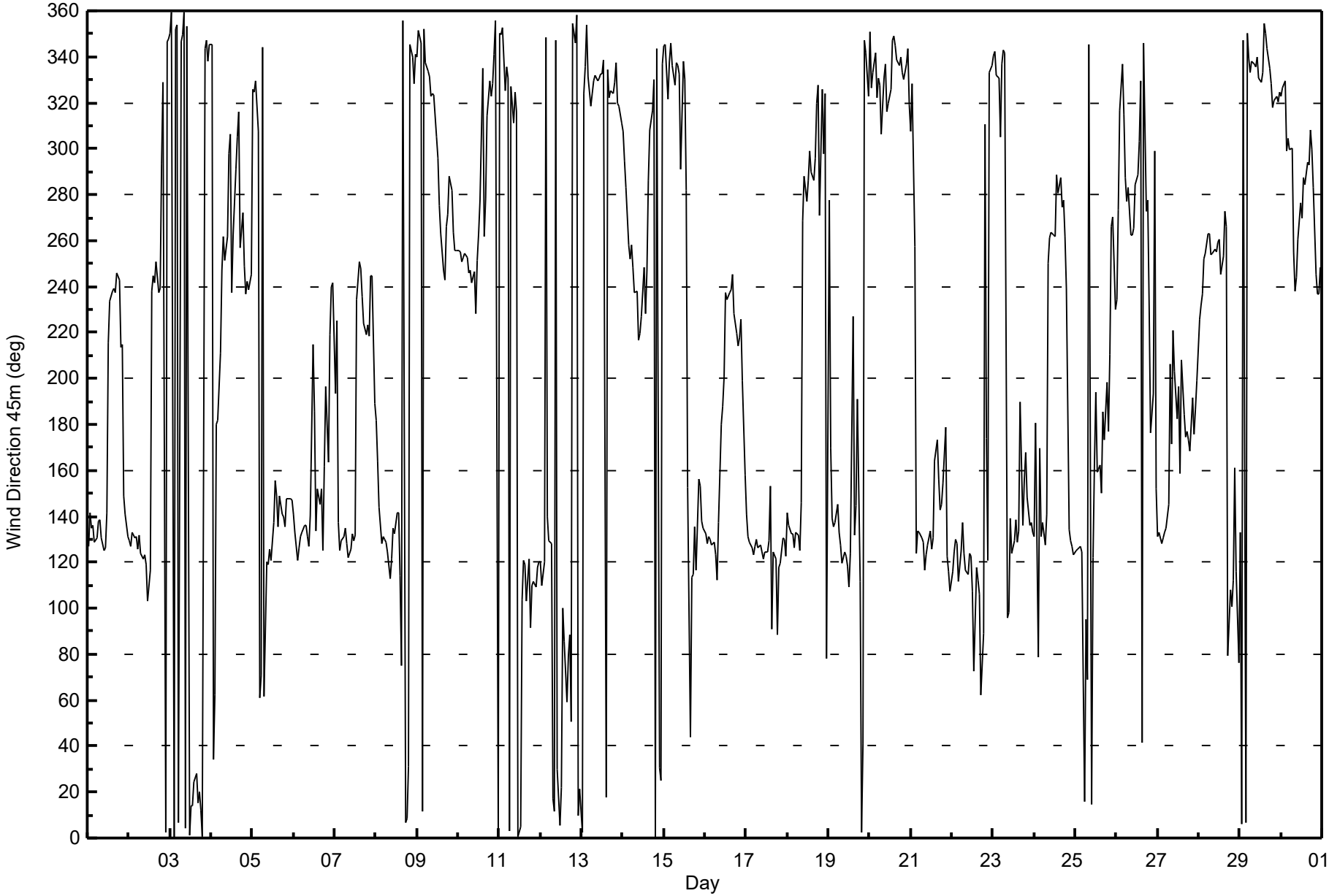
Day	Hourly Period Ending At (MST)																								Daily
	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24	Maximum
1-Sep	12	23	16	21	8	8	12	19	9	11	13	14	21	15	12	10	9	10	13	8	7	57	14	6	57
2-Sep	7	5	7	5	6	8	13	10	8	11	16	46	30	92	15	10	11	7	7	35	11	14	13	13	92
3-Sep	14	12	13	15	16	21	17	25	21	22	14	15	18	22	23	26	17	14	11	18	11	15	13	14	26
4-Sep	62	88	69	37	26	22	33	29	11	15	25	54	38	36	20	24	54	15	13	8	8	5	5	9	88
5-Sep	26	15	45	87	68	92	24	71	57	22	11	12	14	23	22	15	11	11	10	10	8	7	6	7	92
6-Sep	9	11	15	7	8	5	6	5	6	10	27	27	42	14	9	8	27	17	27	42	27	55	10	14	55
7-Sep	35	38	22	5	6	8	10	10	12	19	6	6	21	33	12	11	7	10	8	10	92	32	17	37	92
8-Sep	29	17	22	12	7	6	6	10	38	14	7	8	12	16	15	23	27	19	24	27	8	8	16	9	38
9-Sep	25	107	41	53	24	20	11	18	24	27	39	21	16	13	13	11	12	14	16	11	12	16	11	9	107
10-Sep	9	9	10	8	13	12	18	9	11	24	26	19	18	31	72	17	28	17	8	54	27	8	22	15	72
11-Sep	27	32	30	31	15	47	63	40	53	28	76	42	45	36	26	28	28	13	19	24	9	12	7	5	76
12-Sep	9	26	35	101	23	10	28	23	30	30	34	42	48	15	26	45	16	25	29	11	11	32	68	47	101
13-Sep	19	13	11	43	17	13	14	10	16	10	12	13	15	40	30	15	14	8	7	7	8	12	8	8	43
14-Sep	20	14	22	15	17	19	19	34	23	15	21	35	20	15	20	22	14	10	6	19	27	22	46	7	46
15-Sep	8	19	7	9	13	34	32	22	54	29	44	56	37	87	51	25	29	12	11	24	61	23	19	8	87
16-Sep	5	6	6	7	6	8	7	10	23	12	11	21	12	11	13	9	12	11	7	8	8	10	56	23	56
17-Sep	18	5	8	8	10	8	9	11	9	12	16	12	11	14	56	33	15	44	70	15	10	16	8	20	70
18-Sep	17	14	22	19	20	7	18	16	49	97	79	34	29	21	27	26	22	13	55	44	11	26	18	67	97
19-Sep	50	69	31	8	7	13	4	9	11	9	12	18	18	54	54	53	32	44	69	35	61	45	13	30	69
20-Sep	13	34	22	31	69	10	28	19	23	20	16	17	25	27	13	13	13	11	10	5	6	6	7	32	69
21-Sep	24	30	77	37	10	7	15	9	15	13	13	13	13	20	23	19	10	14	9	17	35	11	7	7	77
22-Sep	13	8	8	22	36	23	36	19	32	18	22	23	34	43	32	14	24	16	52	28	41	58	15	8	58
23-Sep	12	8	19	47	32	13	14	17	56	79	30	8	10	11	16	9	28	11	13	19	7	12	14	8	79
24-Sep	9	64	101	37	11	26	9	25	35	14	13	12	14	16	16	20	21	12	17	34	21	5	7	7	101
25-Sep	14	10	10	17	21	74	53	65	103	78	27	25	16	18	17	14	22	13	13	20	83	34	62	37	103
26-Sep	32	26	17	26	23	26	15	17	79	11	9	12	11	15	28	46	28	64	43	26	71	33	59	22	79
27-Sep	12	8	12	30	11	25	41	27	39	14	45	21	48	62	20	17	9	8	6	6	21	10	8	14	62
28-Sep	9	9	10	10	9	12	13	9	9	9	10	13	19	18	17	23	34	83	16	20	51	48	14	54	83
29-Sep	79	59	75	33	38	8	10	15	19	21	16	15	13	12	11	9	16	10	9	10	10	10	7	10	79
30-Sep	11	16	16	36	66	14	9	15	13	16	27	20	20	17	17	14	13	9	5	24	10	8	4	10	66
	79	107	101	101	69	92	63	71	103	97	79	56	48	92	72	53	54	83	70	54	92	58	68	67	
	Diurnal Maximum																								

Wood Buffalo Environmental Association

Hourly Averages

Wind Direction 45m (WD45) - deg

Lower Camp Met Tower - September 2024



Wood Buffalo Environmental Association

Summary of Hour Averages

Wind Direction 100m (WD100) - deg

Lower Camp Met Tower - September 2024

Direction of Maximum Speed: 255 deg on Sep 28 05:00
Direction of Maximum Daily Speed Average: 281.5 deg on Sep 30

Direction of Minimum Speed: 295 deg on Sep 11 09:00

Direction of Minimum Daily Speed Average: 2.1 deg on Sep 15

Monthly Average Direction: 233.7 deg

Hours in Service:	720
Hours of Data:	720
Hours of Missing Data:	0
Percent Operational Time:	100.0

Day	Hourly Period Ending At (MST)																								Daily
	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24	Average
1-Sep	138	140	145	144	146	153	158	158	141	130	134	159	217	232	239	241	236	249	255	233	234	219	182	168	187.2
2-Sep	164	156	157	172	179	167	165	149	127	137	139	139	136	233	244	242	253	245	253	299	331	7	356	354	255.7
3-Sep	357	0	1	359	359	7	5	355	2	7	356	3	15	15	26	27	18	20	13	11	1	357	353	359	5.2
4-Sep	342	331	30	198	213	239	254	263	254	265	299	296	244	266	293	308	306	259	276	270	254	263	257	262	267.7
5-Sep	328	334	329	336	4	69	98	138	108	117	133	127	140	157	154	142	151	142	139	138	147	148	148	146	140.9
6-Sep	147	147	142	139	144	149	153	153	152	141	177	217	186	161	168	168	195	176	218	234	209	244	272	267	164.6
7-Sep	247	254	217	174	169	168	162	161	129	134	138	136	154	233	248	245	236	226	225	233	230	253	259	243	211.3
8-Sep	230	213	222	210	176	175	167	146	135	121	140	138	147	153	133	92	46	35	50	85	157	94	328	341	140.2
9-Sep	351	14	353	16	5	347	349	331	329	324	323	306	297	275	263	247	245	267	271	287	281	265	258	256	283.1
10-Sep	257	262	256	256	253	249	251	248	245	252	231	254	265	276	321	263	278	316	336	324	326	4	21	23	268.4
11-Sep	13	358	0	340	346	332	353	51	295	301	299	345	53	109	122	119	112	125	105	110	120	119	129	128	105.4
12-Sep	127	122	119	122	143	139	138	82	50	28	56	25	38	106	96	69	83	94	70	6	5	23	24	101	100.0
13-Sep	353	346	336	349	323	333	325	319	330	333	338	336	342	342	17	342	333	338	334	338	341	326	325	315	334.8
14-Sep	314	304	283	268	266	263	257	249	251	231	235	236	249	231	252	288	308	313	335	9	34	71	122	304	281.8
15-Sep	344	341	335	345	353	348	332	7	17	350	304	342	326	268	155	54	116	116	142	136	137	146	148	152	43.2
16-Sep	158	150	144	149	149	145	142	139	163	194	197	204	239	236	240	239	247	230	230	232	229	237	229	190	201.9
17-Sep	175	170	152	145	150	154	156	162	148	137	126	130	131	134	156	93	120	131	113	108	129	136	146	144	140.9
18-Sep	149	148	131	136	135	147	152	155	224	281	289	281	286	300	288	289	297	325	338	323	346	291	275	270	232.1
19-Sep	243	188	207	174	190	170	177	181	156	138	153	135	111	140	251	133	151	200	169	46	51	28	4	336	147.7
20-Sep	347	359	321	358	337	355	348	314	325	336	323	328	336	349	351	348	341	340	347	345	340	331	330	330	340.1
21-Sep	322	322	322	237	241	192	195	175	145	125	136	138	129	131	172	174	158	141	146	158	187	127	124	117	150.1
22-Sep	127	132	138	135	137	140	155	160	147	125	133	141	130	84	114	116	110	67	74	331	182	166	315	334	129.4
23-Sep	338	349	357	339	315	318	325	337	2	197	164	115	120	152	137	144	197	151	170	182	163	150	147	161	157.1
24-Sep	189	250	257	243	153	234	172	233	256	261	266	263	264	289	281	288	276	274	284	267	154	147	142	142	254.7
25-Sep	142	149	136	128	122	132	110	104	122	142	132	159	194	176	172	162	193	187	211	211	245	263	286	249	165.0
26-Sep	243	276	309	317	308	293	284	288	268	266	267	284	288	301	322	33	337	278	302	238	232	229	279	204	281.2
27-Sep	150	155	148	151	153	147	158	206	172	212	199	190	196	160	213	191	179	183	180	177	211	194	208	216	185.8
28-Sep	233	237	240	254	255	264	265	255	254	257	256	260	261	249	258	269	261	206	121	142	186	170	143	132	248.1
29-Sep	147	140	192	58	113	316	339	351	350	345	344	338	340	340	357	351	344	340	331	323	314	318	325	311	338.2
30-Sep	310	313	309	285	297	307	299	255	241	248	263	276	273	289	283	293	292	306	305	296	262	257	248	253	281.5
	216.7	211.2	210.1	197.9	189.9	199.4	196.7	217.1	208.8	218.8	221.8	238.1	248.4	257.7	258.9	258.3	257.9	256.5	246.6	244.5	236.6	229.6	234.7	224.7	
	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 Sep 11 09:00

Minimum Value: 2 deg on Sep 12 00:00

Percentiles: P_1 = 3 P_{10} = 6 Q_1 = 8 Median = 13 Q_3 = 20 P_{90} = 36 P_{99} = 74

Hours in Service:	720
Hours of Data:	720
Hours of Missing Data:	0
Hours of Calibration:	0
Percent Operational Time:	100.0

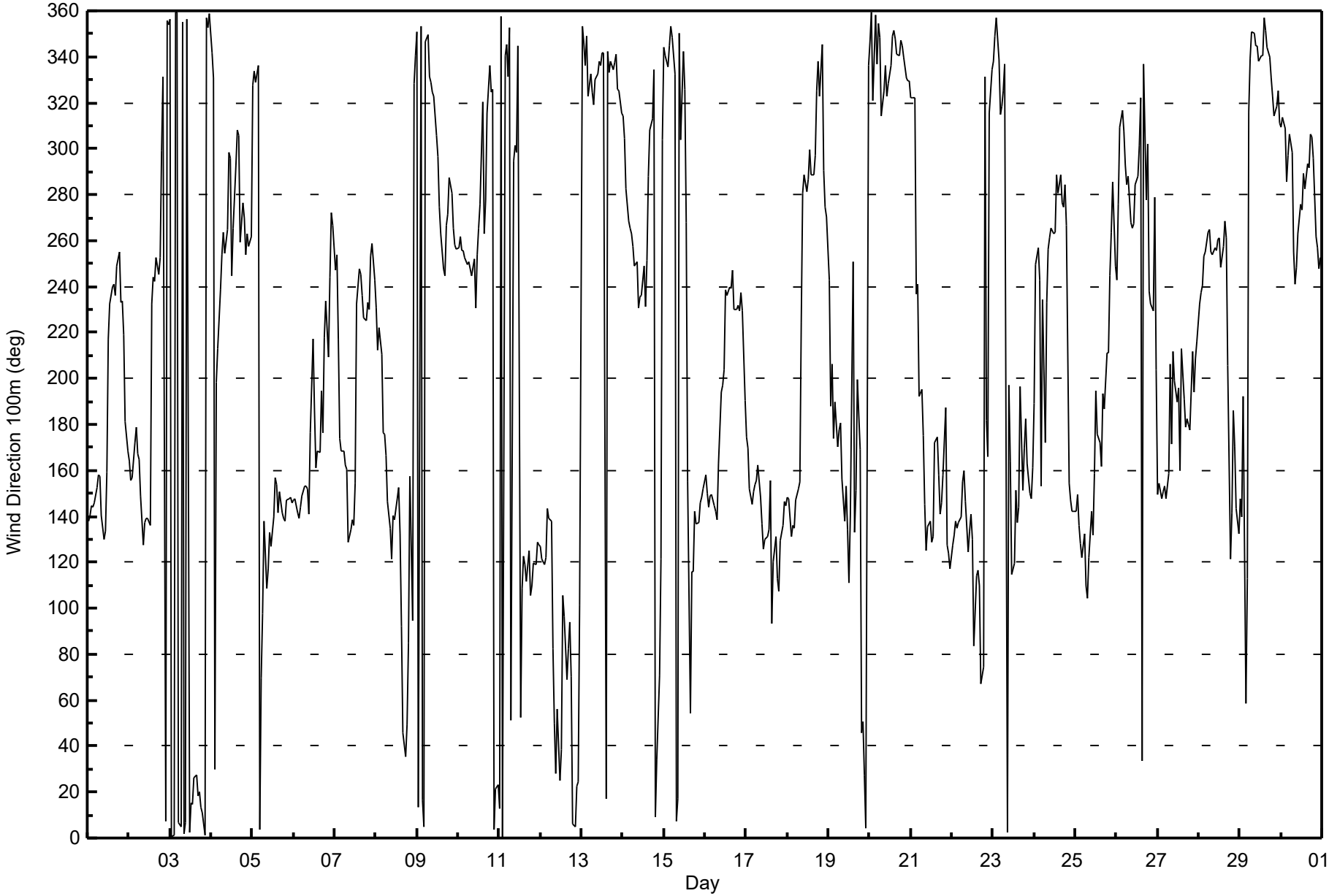
Day	Hourly Period Ending At (MST)																								Daily
	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24	Maximum
1-Sep	7	7	8	12	7	7	7	11	11	5	9	16	16	12	10	7	8	10	8	7	3	16	21	13	21
2-Sep	33	15	16	7	7	7	15	18	6	14	31	73	52	74	12	8	8	5	6	30	8	11	10	9	74
3-Sep	9	6	8	7	8	10	12	16	12	17	7	11	12	17	17	20	12	9	6	8	12	10	10	8	20
4-Sep	15	35	62	20	17	11	20	15	8	11	20	53	30	33	15	21	42	11	13	9	6	3	5	6	62
5-Sep	26	8	9	11	16	21	51	38	55	16	9	9	14	20	19	14	10	9	6	7	6	5	4	5	55
6-Sep	5	8	11	8	9	7	6	5	10	12	39	14	34	32	9	10	23	31	15	17	57	10	16	27	57
7-Sep	9	12	21	17	10	13	11	13	11	8	7	7	27	17	7	6	6	8	7	5	22	19	7	19	27
8-Sep	22	15	12	17	18	5	15	10	16	8	8	8	10	16	15	11	27	12	15	10	44	82	6	15	82
9-Sep	17	98	24	42	19	15	9	13	17	23	39	16	13	10	10	8	10	11	13	8	10	11	7	5	98
10-Sep	5	7	6	4	5	5	7	6	7	15	21	17	14	29	31	14	25	16	5	15	24	12	31	21	31
11-Sep	17	14	11	14	20	23	21	32	100	37	56	63	69	26	19	18	24	8	9	9	6	6	4	2	100
12-Sep	2	5	7	15	11	7	14	28	31	18	26	36	35	14	36	36	24	22	22	13	8	14	31	61	61
13-Sep	22	15	9	26	17	11	8	6	11	9	8	8	13	28	22	9	9	7	3	4	4	8	4	7	28
14-Sep	14	14	15	17	15	11	11	15	12	15	24	29	13	12	16	18	10	9	6	23	29	20	46	27	46
15-Sep	8	6	5	9	5	8	26	12	22	21	31	44	34	84	53	32	22	11	12	10	10	10	13	7	84
16-Sep	10	11	8	8	11	8	8	9	20	9	10	19	9	10	10	7	12	9	4	6	7	6	50	21	50
17-Sep	18	11	11	6	11	9	9	21	15	11	9	8	10	15	52	37	15	29	62	16	4	6	7	8	62
18-Sep	10	8	5	8	9	7	9	11	29	58	51	31	24	16	23	20	18	13	8	40	13	38	9	59	59
19-Sep	34	18	26	13	16	19	12	8	19	15	16	20	12	52	72	66	34	31	70	41	14	23	14	20	72
20-Sep	17	36	31	17	22	16	26	16	15	12	11	14	20	20	10	11	10	8	7	5	5	3	3	3	36
21-Sep	4	6	27	39	12	30	24	17	27	14	13	16	8	19	23	18	9	12	9	17	29	14	3	4	39
22-Sep	8	4	6	7	10	12	14	9	24	18	19	24	45	57	21	16	21	11	23	27	20	57	25	5	57
23-Sep	3	9	13	7	14	8	4	13	99	58	73	9	9	14	10	9	23	8	11	13	6	11	9	12	99
24-Sep	40	24	73	36	30	31	22	18	23	10	10	8	13	13	12	17	18	13	13	18	38	9	7	8	73
25-Sep	8	10	9	6	9	43	8	60	67	17	7	21	13	16	18	14	13	9	7	12	57	17	26	22	67
26-Sep	8	18	10	13	13	19	12	13	32	11	7	9	9	11	22	38	31	43	37	9	23	11	36	46	46
27-Sep	23	10	15	18	13	15	18	18	34	14	53	21	46	63	19	13	7	7	4	5	22	9	8	9	63
28-Sep	6	7	8	6	6	9	11	5	5	6	7	10	16	13	16	17	18	60	17	37	58	34	10	8	60
29-Sep	17	31	72	84	13	77	7	6	8	16	11	11	9	9	9	5	11	6	6	6	7	6	6	7	84
30-Sep	8	12	14	22	51	14	10	9	12	9	18	15	17	13	13	12	13	7	5	18	9	7	4	6	51
	40	98	73	84	51	77	51	60	100	58	73	73	69	84	72	66	42	60	70	41	58	82	50	61	
	Diurnal Maximum																								

Wood Buffalo Environmental Association

Hourly Averages

Wind Direction 100m (WD100) - deg

Lower Camp Met Tower - September 2024



Direction of Maximum Speed: 156 deg on Sep 6 01:00

Direction of Maximum Daily Speed Average: 289.9 deg on Sep 30

Direction of Minimum Speed: 148 deg on Sep 11 12:00

Direction of Minimum Daily Speed Average: 1.9 deg on Sep 19

Monthly Average Direction: 242.5 deg

Hours in Service:	720
Hours of Data:	720
Hours of Missing Data:	0
Percent Operational Time:	100.0

Day	Hourly Period Ending At (MST)																								Daily
	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24	Average
1-Sep	150	151	158	159	160	166	174	176	168	141	147	176	220	234	242	245	239	254	260	244	245	246	227	211	198.6
2-Sep	203	179	197	211	213	203	190	197	162	162	179	189	173	236	245	246	257	254	263	307	335	16	6	2	267.2
3-Sep	3	5	7	4	6	14	14	358	15	11	360	8	24	20	30	32	25	26	19	22	15	13	9	11	12.2
4-Sep	10	9	59	197	236	260	272	273	264	272	302	288	247	272	299	311	300	265	287	287	269	286	286	283	281.4
5-Sep	338	356	356	5	13	21	67	217	165	142	154	139	148	163	163	149	154	147	143	143	150	155	158	153	144.7
6-Sep	156	155	154	152	157	163	176	183	183	178	216	220	199	202	188	193	215	214	234	252	250	260	298	304	186.0
7-Sep	297	305	261	236	195	171	166	175	150	146	160	156	179	232	247	246	239	231	234	242	241	259	272	262	230.6
8-Sep	266	244	232	236	219	205	207	181	162	137	150	148	157	163	151	107	64	56	76	111	150	153	257	6	162.2
9-Sep	32	93	356	40	35	3	11	336	339	326	322	308	299	278	266	251	249	270	275	290	285	271	266	265	288.4
10-Sep	267	278	272	271	263	258	259	263	255	260	237	257	268	278	312	270	282	320	336	324	333	57	78	64	275.9
11-Sep	36	42	58	131	117	166	119	111	146	173	234	148	102	116	128	125	123	131	112	122	125	131	137	137	124.3
12-Sep	141	140	138	138	149	150	139	114	75	66	78	48	63	109	97	87	91	102	92	14	12	36	41	76	112.3
13-Sep	53	25	357	336	344	351	336	336	344	343	352	346	352	355	20	352	342	349	345	351	352	337	336	329	346.8
14-Sep	329	321	289	302	295	293	301	269	276	253	249	247	253	236	258	291	311	314	338	23	55	58	93	141	303.7
15-Sep	347	12	34	28	40	40	45	27	34	11	327	345	328	239	165	82	125	124	151	155	154	162	175	178	80.9
16-Sep	194	193	188	186	189	188	182	177	189	208	205	209	242	240	244	241	252	236	237	243	239	249	245	225	219.0
17-Sep	217	213	192	171	163	167	190	201	176	165	165	152	146	144	170	89	122	136	108	120	146	155	153	155	159.2
18-Sep	152	148	146	151	152	167	173	183	241	291	285	288	286	304	290	294	298	330	343	338	0	348	322	326	232.1
19-Sep	295	233	238	233	226	230	200	210	192	179	196	179	136	160	245	139	159	205	189	48	48	43	39	17	166.7
20-Sep	40	124	287	19	13	25	16	328	326	338	336	344	346	353	356	353	346	346	353	355	354	348	349	357	352.3
21-Sep	358	355	355	315	258	236	215	174	177	165	155	152	142	140	180	177	161	144	150	165	199	142	132	129	155.7
22-Sep	138	142	149	143	145	153	160	171	177	164	157	171	185	104	115	127	119	77	70	359	185	175	286	326	147.0
23-Sep	5	23	30	4	5	347	350	337	324	278	240	169	136	172	156	163	201	161	187	199	184	170	173	202	176.6
24-Sep	247	255	256	253	208	249	213	248	267	267	270	266	267	291	283	292	280	273	282	310	165	155	156	156	260.3
25-Sep	154	158	158	144	131	121	122	126	134	147	139	160	196	193	187	173	197	197	222	232	254	268	293	279	174.5
26-Sep	260	292	316	317	311	306	300	308	284	280	278	288	289	301	317	40	327	282	317	252	251	247	270	244	289.9
27-Sep	165	168	162	167	164	162	174	202	169	203	197	195	200	170	218	199	185	190	187	189	231	214	229	231	196.7
28-Sep	241	244	246	258	259	269	272	261	258	261	261	263	264	254	262	269	261	208	149	184	203	183	174	156	249.9
29-Sep	165	149	179	139	121	137	353	6	10	10	359	352	356	352	2	356	348	347	341	337	321	326	331	313	349.3
30-Sep	311	308	303	290	303	312	303	282	254	259	268	277	277	293	284	296	294	308	311	306	289	284	268	264	289.9
	235.7	213.1	224.8	216.7	194.2	203.4	208.0	236.7	234.2	234.5	233.4	241.4	250.2	261.6	262.8	262.6	261.0	260.6	256.0	255.8	255.6	243.0	248.0	240.6	
	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 Sep 11 12:00

Minimum Value: 2 deg on Sep 5 00:00

Percentiles: P_1 = 3 P_{10} = 5 Q_1 = 7 Median = 11 Q_3 = 17 P_{90} = 29 P_{99} = 67

Hours in Service:	720
Hours of Data:	720
Hours of Missing Data:	0
Hours of Calibration:	0
Percent Operational Time:	100.0

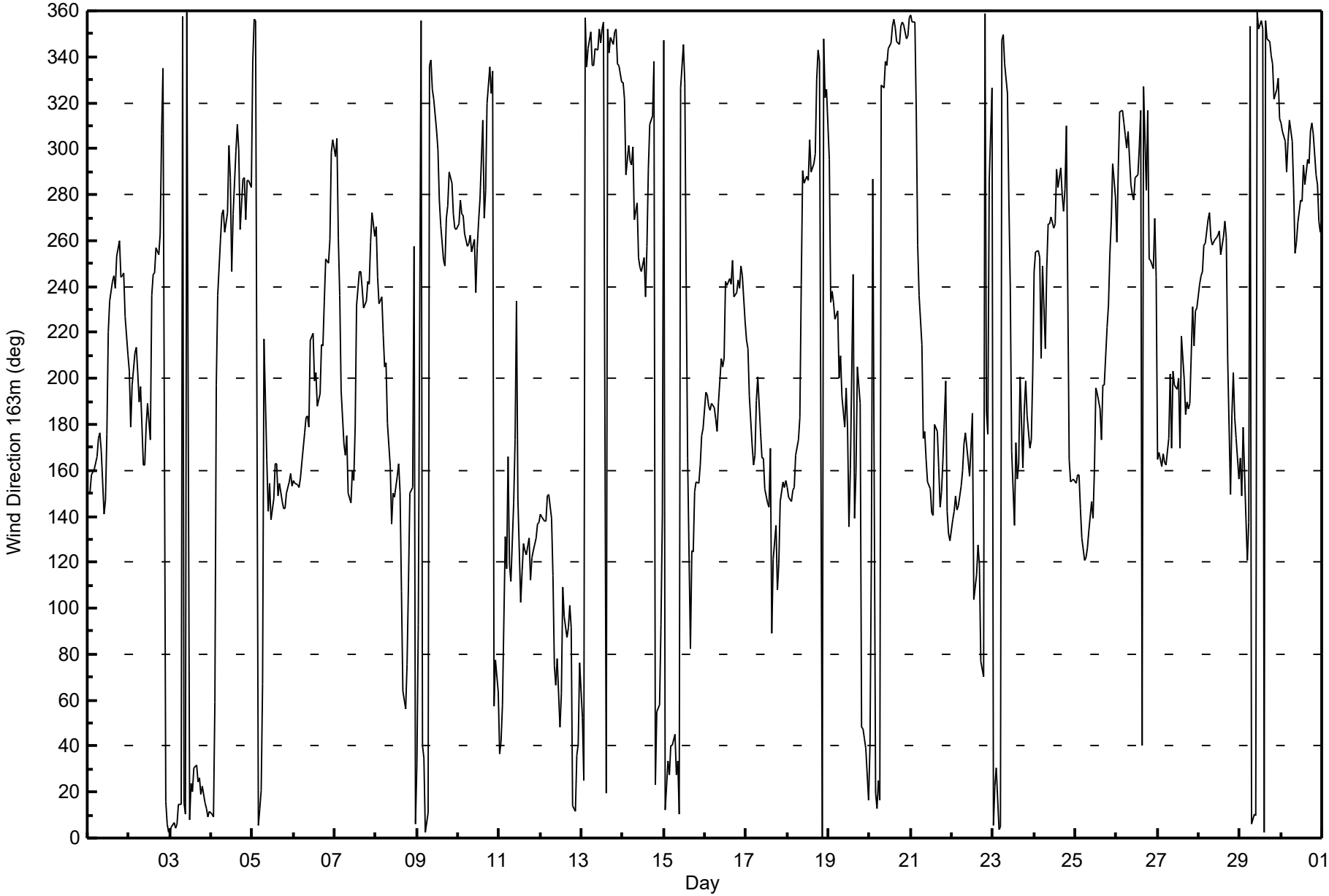
Day	Hourly Period Ending At (MST)																								Daily
	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24	Maximum
1-Sep	7	9	6	9	6	5	7	9	11	7	11	13	13	11	10	6	7	10	6	4	3	5	12	18	18
2-Sep	14	11	16	7	7	13	19	23	20	21	25	46	39	47	9	7	7	6	6	26	8	9	9	8	47
3-Sep	6	5	7	3	5	7	10	11	13	15	6	11	11	15	15	15	11	8	4	3	7	6	10	8	15
4-Sep	4	10	36	54	15	11	23	12	6	9	18	34	26	30	14	17	38	8	14	7	10	4	4	2	54
5-Sep	27	8	7	7	6	7	22	62	34	16	10	10	15	16	19	15	8	9	6	6	5	5	4	4	62
6-Sep	4	5	8	8	7	6	5	6	10	15	29	12	26	31	9	11	14	18	9	6	9	8	7	7	31
7-Sep	13	11	7	14	15	20	15	12	24	9	12	10	22	17	6	4	5	7	6	3	6	10	3	7	24
8-Sep	6	24	11	8	13	8	15	22	19	7	7	9	11	15	11	14	25	5	17	12	14	16	47	38	47
9-Sep	12	76	32	36	17	9	9	12	15	20	38	13	12	9	7	6	9	9	12	6	8	9	5	5	76
10-Sep	5	4	5	6	5	4	5	7	7	14	18	16	13	28	22	9	21	17	5	10	19	18	31	26	31
11-Sep	15	14	25	29	8	22	15	6	32	60	56	100	61	22	16	17	21	8	8	6	4	6	4	3	100
12-Sep	4	4	4	7	8	6	9	16	12	10	17	36	38	13	20	22	17	18	15	22	6	9	19	11	38
13-Sep	14	32	11	15	7	8	8	4	8	4	5	5	12	23	19	6	8	6	3	4	3	8	3	7	32
14-Sep	8	10	10	18	11	9	6	14	13	22	19	28	12	12	13	17	8	9	6	29	7	12	13	66	66
15-Sep	7	20	22	9	7	6	14	6	10	16	30	38	32	89	75	51	19	11	12	9	9	9	18	9	89
16-Sep	9	9	9	7	9	7	6	9	13	7	10	17	8	8	8	8	11	7	4	6	6	4	31	14	31
17-Sep	13	13	9	8	5	8	13	15	15	10	16	13	12	20	52	35	14	26	53	12	6	6	4	5	53
18-Sep	5	6	5	6	7	6	8	13	15	31	26	29	20	12	23	18	17	12	4	3	11	29	11	17	31
19-Sep	17	25	21	7	7	13	17	13	17	12	11	26	43	68	64	66	34	15	23	59	4	5	9	26	68
20-Sep	23	50	29	24	41	19	20	16	10	13	11	12	17	17	10	11	8	7	6	4	4	4	5	4	50
21-Sep	5	8	8	43	8	35	32	12	10	17	14	17	11	20	23	16	8	12	8	17	20	16	3	4	43
22-Sep	8	5	7	7	6	6	7	8	16	23	21	26	66	67	19	19	24	12	13	35	29	14	35	26	67
23-Sep	6	10	14	9	12	18	9	13	16	55	75	21	14	10	10	7	17	6	10	7	6	11	10	14	75
24-Sep	19	11	52	10	22	16	27	11	17	9	8	6	10	12	10	15	17	10	14	74	58	9	8	3	74
25-Sep	4	4	9	5	5	5	4	25	13	8	5	15	10	14	19	14	7	5	8	11	13	13	13	16	25
26-Sep	7	13	6	10	10	17	12	18	29	10	6	8	11	9	19	47	26	35	31	7	10	4	38	15	47
27-Sep	20	12	17	24	8	8	14	15	27	13	37	19	40	60	19	9	7	7	4	4	22	9	6	7	60
28-Sep	5	6	6	6	5	8	10	4	5	5	7	8	14	10	16	15	12	29	17	17	11	21	12	6	29
29-Sep	11	10	32	53	9	11	75	9	4	11	8	8	9	7	9	4	7	4	5	6	7	4	5	6	75
30-Sep	6	10	10	12	38	11	7	10	14	8	13	14	15	12	12	10	11	5	4	5	8	6	11	9	38
	27	76	52	54	41	35	75	62	34	60	75	100	66	89	75	66	38	35	53	74	58	29	47	66	
	Diurnal Maximum																								

Wood Buffalo Environmental Association

Hourly Averages

Wind Direction 163m (WD163) - deg

Lower Camp Met Tower - September 2024



Wood Buffalo Environmental Association

Summary of Hour Averages

Vertical Wind Speed 20m (VW20) - km/h

Lower Camp Met Tower - September 2024

Maximum Value: 0.7 km/h on Sep 17 11:00

Maximum Daily Average: 0.0 km/h on Sep 11

Minimum Value: -1.0 km/h on Sep 28 05:00

Minimum Daily Average: -0.5 km/h on Sep 9

Maximum Diurnal Average: -0.1 km/h at hour 21

Minimum Diurnal Average: -0.4 km/h at hour 14

Monthly Average: -0.22 km/h

Percentiles: P_1 = -0.9 P_{10} = -0.6 Q_1 = -0.4 Median = -0.2 Q_3 = 0.0 P_{90} = 0.1 P_{99} = 0.3

Hours in Service:	720
Hours of Data:	720
Hours of Missing Data:	0
Hours of Calibration:	0
Percent Operational Time:	100.0

Day	Hourly Period Ending At (MST)																								Daily	Daily
	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24	Average	Maximum
1-Sep	-0.3	-0.2	-0.4	-0.2	-0.4	-0.6	-0.4	-0.4	-0.5	-0.3	-0.3	-0.6	-0.7	-0.6	-0.6	-0.7	-0.7	-0.5	-0.2	0.0	-0.1	0.1	0.0	0.1	-0.4	0.1
2-Sep	0.1	0.0	0.0	0.2	0.1	0.0	-0.2	-0.2	-0.2	-0.1	-0.2	0.1	0.2	0.0	-0.5	-0.7	-0.4	-0.4	-0.4	-0.6	-0.4	-0.8	-0.3	-0.6	-0.2	0.2
3-Sep	-0.2	-0.4	-0.6	-0.2	-0.2	-0.1	-0.1	-0.3	-0.2	-0.3	-0.6	-0.4	-0.4	-0.4	-0.2	-0.3	-0.2	-0.3	0.0	-0.1	-0.2	-0.1	-0.1	-0.2	-0.3	0.0
4-Sep	0.0	0.0	0.0	0.0	0.0	-0.1	-0.2	0.0	-0.5	-0.4	-0.4	-0.5	-0.2	-0.3	-0.4	-0.7	-0.2	-0.7	-0.3	-0.3	-0.2	-0.2	0.1	-0.3	-0.2	0.1
5-Sep	-0.1	-0.1	0.0	0.0	0.1	0.0	0.0	-0.1	0.1	0.0	-0.1	-0.3	-0.6	-0.3	-0.2	-0.5	-0.4	-0.5	-0.8	-0.7	-0.5	-0.3	-0.2	-0.2	-0.2	0.1
6-Sep	-0.4	-0.5	-0.7	-0.6	-0.4	-0.5	-0.6	-0.8	-0.8	-0.3	-0.1	-0.2	-0.4	-0.3	-0.1	-0.2	0.0	0.0	0.1	0.0	0.1	0.2	-0.1	-0.1	-0.3	0.2
7-Sep	0.1	0.0	0.2	0.2	0.1	0.1	0.0	-0.3	-0.1	-0.5	-0.8	-0.8	-0.4	-0.3	-0.4	-0.6	-0.5	-0.4	-0.2	-0.1	0.1	-0.3	-0.2	0.1	-0.2	0.2
8-Sep	0.0	0.1	0.2	0.1	0.2	0.1	0.0	-0.1	0.0	-0.2	-0.6	-0.6	-0.5	-0.4	-0.2	-0.1	-0.1	0.0	0.0	0.0	0.1	-0.1	-0.2	-0.1	-0.1	0.2
9-Sep	-0.2	-0.3	-0.3	-0.1	-0.1	-0.3	-0.1	-0.4	-0.1	-0.3	-0.3	-0.4	-0.7	-0.8	-0.9	-0.8	-0.9	-0.8	-1.0	-0.7	-0.7	-0.7	-0.8	-0.7	-0.5	-0.1
10-Sep	-0.7	-0.6	-0.6	-0.3	-0.3	-0.3	-0.1	-0.3	-0.4	-0.2	-0.3	-0.4	-0.5	-0.7	-0.1	-0.4	-0.4	-0.1	0.0	0.0	0.1	0.0	-0.1	0.1	-0.3	0.1
11-Sep	0.0	0.1	0.0	0.0	-0.1	-0.1	-0.2	-0.1	0.0	0.3	0.4	0.1	0.3	-0.1	-0.2	-0.2	-0.3	-0.2	0.0	0.0	0.1	-0.1	-0.1	-0.4	0.0	0.4
12-Sep	-0.2	0.1	0.1	0.0	-0.2	-0.5	-0.2	-0.1	0.0	-0.1	-0.1	0.1	-0.2	-0.3	0.0	0.0	-0.3	-0.2	-0.1	0.0	0.0	0.0	0.0	0.1	-0.1	0.1
13-Sep	-0.1	-0.3	0.0	-0.2	-0.2	-0.2	-0.2	-0.1	-0.2	0.0	-0.1	0.0	-0.2	-0.1	-0.3	-0.1	-0.1	-0.1	-0.2	0.0	0.0	-0.2	-0.3	-0.3	-0.1	0.0
14-Sep	-0.1	-0.4	-0.2	-0.3	-0.3	-0.5	-0.3	-0.3	-0.1	-0.4	-0.3	-0.3	-0.3	-0.5	-0.5	-0.3	-0.3	-0.2	0.0	0.2	-0.3	0.0	0.1	0.0	-0.2	0.2
15-Sep	-0.1	-0.1	0.0	0.0	0.0	0.0	0.0	-0.1	-0.2	-0.3	-0.1	-0.3	-0.2	-0.2	-0.3	-0.3	-0.1	-0.2	-0.1	0.1	0.0	0.1	0.2	0.0	-0.1	0.2
16-Sep	-0.1	-0.3	-0.5	-0.2	-0.6	-0.4	-0.6	-0.9	-0.2	-0.2	-0.5	-0.6	-0.8	-0.5	-0.6	-0.7	-0.5	-0.2	-0.1	0.0	-0.2	-0.1	-0.2	0.0	-0.4	0.0
17-Sep	0.3	0.2	-0.1	-0.5	-0.4	-0.4	-0.2	-0.1	-0.5	-0.1	0.7	-0.2	-0.2	-0.5	0.0	0.0	-0.3	0.1	0.1	0.0	0.0	0.0	0.2	0.1	-0.1	0.7
18-Sep	0.0	0.0	-0.1	-0.2	-0.1	-0.2	-0.3	-0.4	-0.2	0.0	-0.1	-0.4	-0.6	-0.7	-0.3	-0.2	-0.5	-0.3	0.0	0.0	0.0	0.0	-0.1	0.0	-0.2	0.0
19-Sep	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	-0.2	-0.4	0.3	0.1	-0.1	-0.1	0.0	-0.1	-0.1	0.1	0.0	-0.1	0.0	-0.1	0.0	0.0	0.3
20-Sep	0.0	-0.1	-0.1	-0.2	-0.2	-0.2	-0.2	-0.3	-0.2	0.0	-0.1	-0.4	-0.3	-0.4	-0.8	-0.5	-0.7	-0.3	-0.3	-0.2	-0.1	-0.1	0.0	0.0	-0.2	0.0
21-Sep	0.0	0.0	0.1	0.0	0.1	0.0	0.1	-0.1	0.1	-0.1	-0.3	-0.2	-0.2	-0.2	-0.3	-0.6	-0.5	-0.4	-0.6	-0.6	-0.3	-0.3	-0.3	-0.4	-0.2	0.1
22-Sep	-0.3	-0.3	-0.3	-0.1	0.0	0.1	0.1	0.0	-0.1	-0.1	0.1	0.2	-0.3	-0.1	0.1	-0.4	-0.1	0.0	0.0	-0.2	0.0	-0.1	-0.1	-0.1	-0.1	0.2
23-Sep	-0.2	-0.2	-0.1	0.0	0.0	-0.3	-0.3	-0.2	0.1	-0.2	-0.1	-0.6	-0.6	-0.4	-0.2	-0.5	-0.2	-0.4	-0.2	-0.3	-0.2	-0.4	-0.2	-0.2	-0.2	0.1
24-Sep	0.1	0.0	0.0	0.1	0.1	0.2	0.0	0.2	-0.3	-0.5	-0.7	-0.6	-1.0	-1.0	-0.8	-0.6	-0.5	-0.3	-0.2	0.0	0.0	0.0	0.0	0.0	-0.2	0.2
25-Sep	0.0	-0.1	-0.2	-0.1	0.0	0.0	-0.1	-0.1	-0.1	-0.1	0.0	-0.2	-0.3	-0.1	-0.3	-0.2	-0.1	-0.2	0.1	0.1	0.0	0.0	-0.2	-0.1	-0.1	0.1
26-Sep	0.0	-0.1	-0.1	-0.1	-0.2	-0.3	-0.3	-0.1	-0.2	-0.5	-0.6	-0.6	-0.9	-0.6	-0.1	0.0	-0.2	-0.1	-0.2	0.0	0.1	0.1	0.0	0.1	-0.2	0.1
27-Sep	0.3	0.3	-0.2	-0.2	-0.3	-0.3	0.0	-0.1	-0.4	-0.1	-0.2	-0.5	-0.4	-0.5	-0.5	-0.2	-0.7	-0.6	-0.4	-0.6	-0.3	-0.4	-0.8	-0.7	-0.3	0.3
28-Sep	-0.6	-0.4	-1.0	-1.0	-1.0	-0.9	-0.6	-0.5	-0.8	-0.8	-0.7	-0.7	-0.5	-0.6	-0.3	-0.1	-0.1	0.1	0.0	0.0	0.1	0.1	0.0	0.1	-0.4	0.1
29-Sep	-0.1	-0.1	-0.1	-0.2	0.0	-0.1	-0.1	-0.2	-0.1	0.1	-0.2	0.1	-0.4	-0.3	-0.5	-0.6	-0.3	-0.1	-0.1	-0.2	-0.2	-0.1	-0.2	-0.2	-0.2	0.1
30-Sep	-0.1	-0.1	-0.2	0.1	0.1	-0.4	-0.2	-0.1	-0.7	-0.4	-0.3	-0.4	-0.6	-0.9	-1.0	-0.9	-0.7	-0.5	-0.3	0.0	-0.1	-0.1	-0.2	-0.6	-0.4	0.1
	-0.1	-0.1	-0.2	-0.1	-0.1	-0.2	-0.2	-0.2	-0.2	-0.2	-0.2	-0.3	-0.4	-0.4	-0.4	-0.4	-0.3	-0.3	-0.2	-0.1	-0.1	-0.1	-0.1	-0.1	Diurnal Average	
	0.3	0.3	0.2	0.2	0.2	0.2	0.1	0.2	0.1	0.3	0.7	0.3	0.3	0.0	0.1	0.0	0.0	0.1	0.1	0.2	0.1	0.2	0.2	0.1	Diurnal Maximum	

Number of Exceedences (AAAQO): 1-hr: 0 24-hr: 0
Maximum Value: 4.5 km/h on Sep 9 18:00

Minimum Value: 0.1 km/h on Sep 21 04:00

Percentiles: P_1 = 0.2 P_{10} = 0.4 Q_1 = 0.7 Median = 1.3 Q_3 = 1.9 P_{90} = 2.5 P_{99} = 3.9

Hours in Service:	720
Hours of Data:	720
Hours of Missing Data:	0
Hours of Calibration:	0
Percent Operational Time:	100.0

Day	Hourly Period Ending At (MST)																								Daily
	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24	Maximum
1-Sep	2.0	1.2	1.2	1.1	1.4	1.4	1.3	1.5	2.0	2.1	2.7	2.1	2.3	2.4	2.4	2.1	1.9	1.6	1.0	0.5	0.7	0.6	0.5	0.6	2.7
2-Sep	0.3	0.2	0.5	1.0	1.4	1.2	1.3	1.5	1.8	2.0	1.8	1.5	1.3	1.8	2.0	2.0	1.9	1.2	1.1	2.3	3.1	3.6	2.7	2.3	3.6
3-Sep	1.5	1.8	1.9	1.4	1.2	0.5	0.8	0.8	1.3	1.5	2.0	2.3	1.8	1.7	1.7	1.5	1.6	1.5	1.1	0.6	0.6	1.2	1.2	0.8	2.3
4-Sep	0.3	0.3	0.3	0.5	0.6	0.9	1.2	1.4	2.0	2.5	2.4	1.7	1.6	1.7	2.3	2.5	1.6	2.7	1.6	0.9	1.1	1.4	1.7	2.0	2.7
5-Sep	2.3	1.1	0.3	0.2	0.3	0.3	0.3	0.4	1.0	1.7	2.1	2.3	2.0	1.9	1.9	2.2	1.8	2.0	2.6	2.6	2.5	2.3	2.2	2.3	2.6
6-Sep	2.7	2.6	1.7	2.0	1.8	1.9	2.2	2.3	2.9	2.3	1.6	1.6	1.3	1.7	1.4	1.4	1.3	1.1	1.0	0.6	0.4	0.6	0.5	0.7	2.9
7-Sep	0.7	0.5	1.0	0.8	0.7	0.7	0.7	1.3	1.7	2.1	2.2	2.8	2.1	2.0	2.4	2.3	1.7	1.6	1.7	1.3	0.8	1.5	1.5	0.8	2.8
8-Sep	0.7	0.9	0.9	0.5	0.6	0.9	0.9	1.0	1.0	1.4	1.7	1.8	1.9	1.8	1.2	0.7	0.6	0.5	0.4	0.6	0.5	0.5	0.4	0.9	1.9
9-Sep	0.7	1.0	0.9	0.7	0.8	1.3	0.8	1.7	1.4	1.8	1.5	2.1	2.9	3.5	3.6	3.5	3.3	4.5	4.2	4.0	3.6	2.5	2.7	2.7	4.5
10-Sep	3.2	2.9	2.5	2.7	2.6	2.4	2.0	2.5	2.1	1.7	1.7	2.5	2.8	3.1	1.3	1.8	1.6	1.4	0.4	0.1	0.3	0.2	0.7	0.5	3.2
11-Sep	0.3	0.3	0.2	0.4	0.7	0.6	0.5	0.7	1.1	1.3	1.5	1.5	1.5	1.6	1.8	1.7	1.4	1.0	0.5	0.5	0.5	0.9	1.0	1.8	1.8
12-Sep	1.1	0.5	0.4	0.5	1.9	2.0	0.9	0.5	0.6	0.7	1.1	1.1	1.0	1.1	1.1	0.8	1.1	1.1	0.6	0.2	0.2	0.1	0.2	0.3	2.0
13-Sep	0.5	0.6	1.1	0.8	0.7	0.8	0.9	0.9	1.1	1.2	1.4	1.8	1.3	1.0	1.3	0.8	1.1	1.0	1.0	0.9	0.8	0.9	1.2	1.0	1.8
14-Sep	0.7	0.8	0.9	1.0	0.9	1.3	1.1	1.7	1.5	1.2	1.3	1.7	1.9	1.5	2.3	2.3	2.1	1.1	0.4	0.9	0.7	0.5	0.3	0.3	2.3
15-Sep	0.6	0.5	0.2	0.3	0.4	0.4	0.7	0.7	0.8	1.4	1.8	1.9	1.9	1.5	1.4	1.4	1.2	0.9	1.0	0.4	0.6	0.4	0.6	0.8	1.9
16-Sep	1.4	1.3	2.1	2.2	2.0	2.2	2.0	2.0	1.9	1.7	1.9	2.2	2.5	2.4	2.1	2.1	1.7	1.4	1.2	1.3	1.7	1.5	0.9	0.9	2.5
17-Sep	0.7	0.8	1.3	1.3	1.2	1.0	1.1	1.7	1.7	1.9	2.0	2.2	2.3	2.1	1.9	1.2	1.1	0.6	0.5	0.4	0.3	0.5	0.9	0.8	2.3
18-Sep	0.8	0.9	1.1	0.9	0.8	1.6	1.5	1.8	1.4	1.3	1.1	1.8	2.6	2.6	2.4	2.3	2.0	1.4	0.4	0.2	0.2	0.2	0.4	0.1	2.6
19-Sep	0.2	0.2	0.2	0.2	0.1	0.2	0.8	1.4	1.5	1.8	1.6	1.8	1.7	1.4	1.4	0.9	0.9	1.1	0.3	0.7	0.6	0.5	0.8	0.6	1.8
20-Sep	0.5	0.3	0.6	0.7	0.6	0.8	0.8	1.1	1.2	1.4	1.3	1.4	1.5	3.0	3.2	3.2	2.9	2.6	1.3	0.6	0.5	0.3	0.4	0.2	3.2
21-Sep	0.2	0.2	0.2	0.1	0.3	0.8	0.9	1.3	1.0	1.3	2.0	1.6	2.2	2.0	1.7	1.7	1.5	1.8	1.9	1.9	1.6	1.4	1.9	1.9	2.2
22-Sep	1.9	2.6	2.1	1.0	0.6	0.5	0.2	0.6	1.1	1.5	1.7	1.9	1.6	1.6	1.5	1.5	1.0	0.7	0.4	1.0	1.1	0.7	0.6	0.5	2.6
23-Sep	0.5	0.6	0.4	0.4	0.4	0.5	0.4	0.6	0.9	0.7	1.3	1.6	1.8	1.6	2.1	2.3	1.7	1.5	1.7	1.6	1.6	2.1	1.7	1.7	2.3
24-Sep	1.0	0.8	0.4	0.6	0.7	1.1	1.0	1.1	2.0	2.8	3.4	4.1	3.8	3.6	3.8	2.8	2.2	0.9	0.6	0.3	0.3	0.1	0.6	0.8	4.1
25-Sep	1.0	1.3	1.3	0.9	0.4	0.4	0.4	1.3	0.7	0.8	0.9	1.3	1.0	0.8	1.1	1.1	0.8	1.0	1.1	0.6	0.4	0.7	0.7	0.9	1.3
26-Sep	1.4	1.7	0.8	0.7	0.7	1.4	1.7	1.7	1.3	1.4	2.0	2.8	2.6	2.6	2.0	1.2	1.6	1.4	0.9	0.6	0.4	0.7	0.8	0.5	2.8
27-Sep	0.5	0.7	1.1	1.1	1.1	1.2	0.9	1.0	1.5	1.3	1.5	1.6	1.7	1.7	1.6	1.4	1.6	1.4	1.0	1.3	1.4	1.4	1.7	1.8	1.8
28-Sep	2.3	2.2	2.9	3.9	4.1	3.6	2.8	2.9	2.9	3.0	2.9	2.7	2.6	2.2	1.8	1.6	0.7	0.3	0.4	0.4	0.3	0.4	0.2	0.3	4.1
29-Sep	0.3	0.5	0.5	0.6	0.4	0.6	1.1	1.3	1.1	1.3	1.9	2.2	2.0	2.2	2.4	2.7	2.0	2.1	1.1	0.9	1.2	1.4	0.9	1.2	2.7
30-Sep	1.2	1.1	1.2	1.6	2.3	0.8	0.7	1.7	1.6	1.9	2.7	3.1	3.4	3.6	4.0	4.3	3.6	2.0	0.9	0.3	0.9	1.4	1.6	2.1	4.3
	3.2	2.9	2.9	3.9	4.1	3.6	2.8	2.9	2.9	3.0	3.4	4.1	3.8	3.6	4.0	4.3	3.6	4.5	4.2	4.0	3.6	3.6	2.7	2.7	
	Diurnal Maximum																								

Vertical Wind Speed 45m (VW45) - km/h
Lower Camp Met Tower - September 2024

Maximum Value: 1.4 km/h on Sep 4 23:00

Maximum Daily Average: 0.3 km/h on Sep 19

Minimum Value: -0.8 km/h on Sep 16 08:00

Minimum Daily Average: -0.1 km/h on Sep 9

Maximum Diurnal Average: 0.3 km/h at hour 1

Minimum Diurnal Average: 0.0 km/h at hour 14

Monthly Average: 0.16 km/h

Percentiles: P_1 = -0.5 P_{10} = -0.1 Q_1 = 0.0 Median = 0.2 Q_3 = 0.3 P_{90} = 0.5 P_{99} = 1.0

Hours in Service:	720
Hours of Data:	720
Hours of Missing Data:	0
Hours of Calibration:	0
Percent Operational Time:	100.0

Day	Hourly Period Ending At (MST)																								Daily	Daily
	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24	Average	Maximum
1-Sep	0.1	0.2	-0.1	0.2	-0.1	-0.5	-0.7	-0.3	0.0	0.2	0.1	-0.1	0.2	0.2	0.2	0.1	0.1	0.1	0.2	0.4	0.3	0.3	0.5	1.0	0.1	1.0
2-Sep	0.6	0.5	0.4	0.9	1.0	0.4	0.3	0.3	0.1	0.1	0.1	0.4	0.1	0.2	0.1	0.1	0.0	0.3	0.2	0.1	-0.4	-0.2	0.2	0.1	0.2	1.0
3-Sep	0.2	0.1	0.1	0.4	0.3	0.0	0.0	0.0	0.3	0.1	0.0	-0.1	0.3	0.1	0.0	0.1	-0.1	-0.1	0.3	0.2	0.0	0.2	0.1	0.1	0.1	0.4
4-Sep	0.1	0.1	0.2	0.3	0.2	0.2	0.2	0.4	0.3	0.1	0.2	-0.4	0.2	0.2	0.0	-0.6	0.3	0.2	0.2	0.2	0.4	0.5	1.4	1.1	0.3	1.4
5-Sep	0.2	0.2	0.2	0.2	0.2	0.2	0.1	0.0	0.2	0.4	0.2	0.0	-0.2	0.3	0.2	0.1	0.0	0.5	0.8	0.6	0.7	0.7	0.6	0.8	0.3	0.8
6-Sep	0.7	0.3	-0.2	0.0	0.1	0.2	0.1	0.1	0.0	0.2	0.2	0.6	0.1	0.1	0.3	0.3	0.5	0.4	0.2	0.2	0.2	0.4	0.2	0.0	0.2	0.7
7-Sep	0.2	0.1	0.7	1.1	0.8	0.7	0.2	0.1	0.2	-0.2	-0.1	-0.1	-0.1	0.3	0.0	0.1	0.2	0.4	0.4	0.6	0.3	0.2	0.3	0.1	0.3	1.1
8-Sep	0.2	0.2	0.6	0.7	0.8	0.9	0.3	0.2	0.2	-0.1	0.2	-0.1	0.2	0.0	0.1	0.1	0.2	0.3	0.2	0.3	0.3	0.2	0.0	0.1	0.2	0.9
9-Sep	0.0	0.0	0.0	0.1	0.1	0.0	0.2	-0.2	0.3	-0.1	-0.2	-0.1	-0.3	-0.4	-0.4	0.2	0.2	-0.1	-0.5	-0.4	-0.3	-0.1	-0.2	-0.3	-0.1	0.3
10-Sep	0.1	0.2	0.3	0.4	0.5	0.8	1.3	0.6	0.7	0.3	0.2	0.0	-0.2	-0.5	0.3	0.0	-0.1	0.0	0.1	0.2	0.3	0.2	0.2	0.3	0.3	1.3
11-Sep	0.1	0.2	0.1	0.2	0.0	-0.1	-0.1	0.0	0.1	0.5	1.1	0.7	1.0	0.0	0.2	0.1	0.1	0.2	0.3	0.3	0.5	0.3	0.2	0.5	0.3	1.1
12-Sep	0.3	0.5	0.3	0.1	0.6	0.2	-0.2	0.0	0.3	0.1	0.1	0.1	-0.3	-0.1	0.1	0.2	-0.1	-0.1	0.0	0.3	0.2	0.2	0.2	0.3	0.1	0.6
13-Sep	0.2	0.1	0.2	0.0	0.1	0.1	0.0	0.1	0.1	0.0	0.0	0.2	0.1	0.2	0.0	0.0	0.1	0.0	0.1	0.1	0.0	-0.1	-0.2	-0.2	0.0	0.2
14-Sep	0.0	-0.2	0.1	-0.1	0.0	-0.5	-0.3	0.0	0.3	-0.2	0.1	0.1	0.2	-0.3	0.3	0.0	-0.2	-0.1	0.2	0.3	0.0	0.2	0.2	0.2	0.0	0.3
15-Sep	0.1	0.1	0.0	0.2	0.2	0.2	0.0	0.0	0.1	0.0	0.1	0.1	0.3	0.1	-0.1	-0.3	0.1	0.2	0.4	0.2	0.2	0.3	0.5	0.3	0.1	0.5
16-Sep	0.5	0.2	-0.1	0.2	-0.2	0.2	-0.3	-0.8	0.3	0.4	0.3	0.1	0.1	0.4	0.2	0.0	0.2	0.3	0.5	0.9	0.7	0.6	0.2	0.3	0.2	0.9
17-Sep	0.6	1.0	0.5	-0.4	-0.2	0.0	0.0	0.2	0.0	0.3	0.9	0.1	0.3	-0.1	0.3	0.3	0.1	0.1	0.1	0.4	0.4	0.2	1.1	0.6	0.3	1.1
18-Sep	0.5	0.6	0.2	0.0	0.0	0.3	0.2	-0.3	0.1	0.4	0.1	0.2	-0.2	-0.4	0.4	0.3	0.0	0.0	0.2	0.2	0.2	0.2	0.1	0.2	0.1	0.6
19-Sep	0.1	0.2	0.2	0.3	0.3	0.2	0.8	0.5	0.3	0.0	-0.1	1.0	0.6	0.2	0.4	0.4	0.4	0.4	0.3	0.2	-0.1	0.2	0.1	0.1	0.3	1.0
20-Sep	0.2	0.1	0.1	0.0	-0.1	0.0	0.1	-0.3	-0.1	0.1	-0.1	0.0	-0.3	0.0	-0.1	0.0	-0.5	-0.2	0.2	0.2	0.1	0.1	0.2	0.1	0.0	0.2
21-Sep	0.0	0.1	0.2	0.2	0.5	0.6	0.6	0.3	0.4	0.1	0.1	0.3	0.3	0.3	0.5	-0.2	0.1	0.4	0.6	0.1	0.1	0.2	0.2	-0.1	0.3	0.6
22-Sep	0.4	0.5	0.4	0.2	0.2	0.3	0.2	0.2	0.2	0.2	0.2	0.8	0.5	0.1	0.4	0.1	0.2	0.2	0.2	0.0	0.4	0.1	0.1	0.1	0.2	0.8
23-Sep	0.1	0.1	0.0	0.1	0.1	-0.1	-0.1	0.1	0.4	0.0	0.2	-0.2	0.0	0.0	0.4	0.3	0.3	0.1	0.1	0.2	0.4	0.3	0.1	0.7	0.2	0.7
24-Sep	0.8	0.4	0.2	0.3	0.6	0.5	0.6	0.5	0.2	0.0	-0.1	-0.1	-0.3	-0.5	-0.3	0.0	-0.2	0.1	0.2	0.2	0.4	0.4	0.4	0.3	0.2	0.8
25-Sep	0.2	0.0	0.2	0.2	0.3	0.2	0.2	0.0	0.1	0.1	0.1	0.4	0.2	0.2	0.2	0.3	0.3	0.1	0.6	0.2	0.3	0.1	0.2	0.1	0.2	0.6
26-Sep	0.8	0.3	0.2	0.0	-0.1	0.0	0.1	0.1	0.2	0.0	-0.2	-0.4	-0.5	-0.3	0.2	0.1	-0.1	0.0	0.0	0.3	0.2	0.3	0.1	0.3	0.1	0.8
27-Sep	0.7	0.7	0.1	0.1	0.1	-0.1	0.3	0.3	-0.1	0.5	0.0	-0.1	0.3	0.0	0.1	0.6	0.1	-0.1	0.0	-0.2	0.1	0.2	0.1	0.1	0.2	0.7
28-Sep	0.2	0.3	0.2	-0.1	-0.4	-0.3	0.1	0.1	-0.3	-0.4	-0.1	-0.4	0.0	-0.1	-0.2	0.4	0.2	0.3	0.5	0.1	0.3	0.1	0.4	0.2	0.0	0.5
29-Sep	0.2	0.1	0.0	0.1	0.2	0.1	0.0	0.1	0.2	0.3	0.0	0.4	-0.2	-0.1	0.2	0.1	0.1	-0.1	0.0	-0.1	-0.1	-0.2	0.0	-0.2	0.0	0.4
30-Sep	-0.1	0.1	0.0	0.3	0.6	-0.3	-0.1	0.5	0.0	0.2	0.4	0.4	-0.1	-0.4	-0.5	-0.4	-0.4	-0.4	-0.3	0.2	0.5	0.9	0.7	0.2	0.1	0.9
	0.3	0.2	0.2	0.2	0.2	0.1	0.1	0.1	0.2	0.1	0.1	0.1	0.1	0.0	0.1	0.1	0.1	0.1	0.2	0.2	0.2	0.2	0.3	0.2	Diurnal Average	
	0.8	1.0	0.7	1.1	1.0	0.9	1.3	0.6	0.7	0.5	1.1	1.0	1.0	0.4	0.5	0.6	0.5	0.5	0.8	0.9	0.7	0.9	1.4	1.1	Diurnal Maximum	

Number of Exceedences (AAAQO): 1-hr: 0 24-hr: 0
Maximum Value: 4.5 km/h on Sep 9 18:00

Minimum Value: 0.2 km/h on Sep 19 01:00

Percentiles: P_1 = 0.2 P_{10} = 0.5 Q_1 = 0.8 Median = 1.3 Q_3 = 1.9 P_{90} = 2.5 P_{99} = 3.7

Hours in Service:	720
Hours of Data:	720
Hours of Missing Data:	0
Hours of Calibration:	0
Percent Operational Time:	100.0

Day	Hourly Period Ending At (MST)																								Daily
	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24	Maximum
1-Sep	1.9	1.5	1.5	1.3	1.2	1.2	1.6	1.6	1.5	1.9	2.4	2.2	2.6	2.5	2.4	1.9	1.8	1.6	1.0	0.8	1.0	1.0	0.7	0.5	2.6
2-Sep	0.4	0.4	0.6	0.8	1.1	1.1	1.0	1.1	1.4	1.6	1.3	1.5	1.3	1.8	2.1	2.0	1.5	1.2	1.0	2.6	3.2	3.3	2.7	2.4	3.3
3-Sep	1.6	1.8	1.8	1.5	1.3	0.7	1.0	0.9	1.3	1.7	1.7	1.9	1.8	1.7	1.6	1.5	1.3	1.3	1.0	0.8	0.7	1.2	1.4	0.9	1.9
4-Sep	0.3	0.3	0.3	0.7	0.9	1.1	1.3	1.4	1.9	2.5	2.5	2.0	1.9	1.9	2.5	2.5	1.8	2.5	1.7	0.6	0.9	1.0	1.1	1.5	2.5
5-Sep	2.6	1.0	0.3	0.3	0.3	0.3	0.3	0.6	1.0	1.6	1.8	2.0	2.1	2.4	2.0	2.0	1.8	1.9	2.5	2.3	2.9	2.7	2.3	2.7	2.9
6-Sep	2.7	2.6	1.8	1.5	1.7	1.4	1.6	1.1	1.7	1.9	1.7	2.1	1.8	1.5	1.3	1.2	1.6	1.3	1.5	0.9	0.6	1.1	0.5	1.0	2.7
7-Sep	0.6	0.6	1.0	0.5	0.5	0.7	0.7	1.1	1.6	1.9	1.5	2.0	1.9	2.2	2.3	2.2	1.5	1.7	1.9	1.5	1.0	1.6	1.5	1.2	2.3
8-Sep	1.0	0.8	1.1	0.6	0.5	0.7	0.8	1.0	1.0	1.2	1.1	1.5	1.9	1.9	1.1	0.7	0.5	0.6	0.7	0.9	0.7	0.7	0.5	0.7	1.9
9-Sep	0.6	0.9	0.9	0.7	0.9	1.3	0.9	1.6	1.5	1.7	1.5	2.1	2.8	3.3	3.4	3.0	3.3	4.5	4.3	3.7	3.4	2.8	2.6	2.5	4.5
10-Sep	2.8	2.6	2.3	2.2	2.6	2.2	1.9	2.2	2.1	1.9	2.1	2.6	2.8	2.9	1.3	1.8	1.8	1.4	0.4	0.2	0.4	0.3	0.8	0.8	2.9
11-Sep	0.5	0.4	0.3	0.5	0.7	0.7	0.6	0.8	1.0	1.4	1.7	1.8	1.6	1.9	1.9	1.7	1.5	0.9	0.7	0.8	0.9	1.2	1.0	1.1	1.9
12-Sep	0.9	0.9	0.7	0.6	2.4	1.9	1.0	0.6	0.7	0.7	1.1	1.4	1.2	1.1	1.1	1.0	1.0	1.0	0.4	0.2	0.2	0.2	0.3	0.4	2.4
13-Sep	0.5	0.6	1.2	0.9	0.8	0.8	0.9	0.9	1.0	1.1	1.5	1.8	1.4	1.2	1.2	0.8	1.3	1.0	1.0	1.0	0.8	0.9	1.2	1.0	1.8
14-Sep	0.7	0.7	1.0	1.2	0.9	1.6	1.5	1.8	1.6	1.4	1.5	1.9	2.1	1.8	2.2	2.3	2.2	1.1	0.4	1.2	1.2	0.8	0.4	0.3	2.3
15-Sep	0.4	0.7	0.2	0.3	0.5	0.7	0.8	0.7	0.8	1.6	1.9	2.2	2.4	1.6	1.6	1.3	1.2	0.7	1.1	0.7	0.8	0.9	1.1	0.9	2.4
16-Sep	0.9	1.0	1.6	1.6	1.4	1.9	1.4	1.6	2.0	2.1	2.5	2.7	2.4	2.3	2.2	1.8	1.6	1.6	1.3	1.6	1.8	1.3	1.0	1.3	2.7
17-Sep	1.1	0.7	1.2	1.0	1.2	0.8	1.2	1.3	1.2	1.7	2.2	1.9	2.0	1.9	1.8	1.2	1.0	0.8	0.7	0.7	0.5	0.7	0.9	0.9	2.2
18-Sep	1.2	1.0	1.2	1.2	1.1	1.4	1.5	1.7	1.3	1.4	1.1	2.0	2.7	2.7	2.6	2.5	2.1	1.4	0.4	0.3	0.2	0.3	0.3	0.2	2.7
19-Sep	0.2	0.2	0.2	0.3	0.3	0.3	0.5	1.1	1.4	1.4	1.6	1.9	1.7	1.5	1.6	1.0	0.9	1.4	0.5	0.7	0.9	0.7	0.9	0.6	1.9
20-Sep	0.4	0.3	0.5	0.7	0.6	0.5	0.9	1.0	1.1	1.4	1.4	1.6	1.6	2.8	2.7	2.9	2.8	2.5	1.4	0.6	0.6	0.4	0.4	0.5	2.9
21-Sep	0.3	0.2	0.2	0.2	0.5	0.6	0.6	1.0	1.0	1.2	1.8	1.5	2.2	2.2	2.0	2.1	1.9	2.1	2.2	2.1	1.8	1.3	1.4	1.5	2.2
22-Sep	1.8	2.1	1.8	1.4	0.7	0.6	0.2	0.8	1.4	1.7	1.8	2.2	1.8	1.6	1.7	1.4	1.0	0.8	0.7	1.0	1.5	0.8	0.4	0.4	2.2
23-Sep	0.5	0.4	0.6	0.5	0.3	0.4	0.3	0.5	1.0	0.7	1.2	1.1	1.3	1.3	2.2	1.9	1.6	1.0	1.8	1.7	1.6	1.8	2.0	1.5	2.2
24-Sep	1.1	1.4	0.7	1.0	0.7	1.3	0.9	0.9	2.3	3.0	3.7	4.0	3.6	3.7	3.7	3.0	2.4	1.0	0.8	0.6	0.3	0.3	0.6	0.8	4.0
25-Sep	1.0	1.3	1.1	0.8	0.5	0.4	0.5	1.1	0.6	0.8	1.2	1.6	1.3	0.9	1.2	1.0	1.0	1.4	1.6	0.8	0.6	1.1	0.8	1.0	1.6
26-Sep	1.5	1.6	1.0	0.6	0.8	1.3	1.6	1.6	1.3	1.4	2.1	2.4	2.2	2.6	2.2	1.2	1.4	1.7	1.0	0.8	0.6	1.3	0.9	0.5	2.6
27-Sep	0.5	0.8	0.9	1.2	0.9	1.3	1.0	1.3	1.8	1.7	1.6	2.0	2.0	2.1	2.0	2.0	1.9	1.5	1.1	1.3	1.7	1.6	1.7	2.1	2.1
28-Sep	2.5	2.4	3.0	3.7	3.5	3.4	2.7	2.5	2.3	2.6	2.6	2.6	2.6	2.2	2.0	1.9	0.8	0.4	0.7	0.5	0.6	0.7	0.5	0.2	3.7
29-Sep	0.5	0.5	0.4	0.5	0.4	0.6	1.1	1.3	1.3	1.3	1.9	2.2	1.9	2.1	2.1	2.2	2.0	2.1	1.1	0.8	1.3	1.5	0.9	1.2	2.2
30-Sep	1.5	1.5	1.6	2.0	2.7	0.7	0.6	1.7	1.7	1.9	2.9	3.2	3.5	3.9	4.0	4.5	3.5	2.1	0.6	0.4	1.1	0.9	1.0	2.0	4.5
	2.8	2.6	3.0	3.7	3.5	3.4	2.7	2.5	2.3	3.0	3.7	4.0	3.6	3.9	4.0	4.5	3.5	4.5	4.3	3.7	3.4	3.3	2.7	2.7	
	Diurnal Maximum																								

Maximum Value: 3.0 km/h on Sep 5 19:00

Maximum Daily Average: 0.5 km/h on Sep 5

Minimum Value: -2.2 km/h on Sep 1 07:00

Minimum Daily Average: -0.3 km/h on Sep 9

Maximum Diurnal Average: 0.2 km/h at hour 19

Minimum Diurnal Average: -0.2 km/h at hour 14

Monthly Average: 0.02 km/h

Percentiles: P_1 = -1.0 P_{10} = -0.5 Q_1 = -0.2 Median = 0.0 Q_3 = 0.2 P_{90} = 0.5 P_{99} = 1.6

Hours in Service:	720
Hours of Data:	720
Hours of Missing Data:	0
Hours of Calibration:	0
Percent Operational Time:	100.0

Day	Hourly Period Ending At (MST)																								Daily	Daily
	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24	Average	Maximum
1-Sep	0.8	0.2	-0.8	-0.6	-0.3	-1.7	-2.2	-0.9	-0.8	0.0	0.5	0.0	0.6	-0.1	-0.1	-0.1	-0.2	-0.1	0.0	0.4	0.6	0.5	0.0	0.1	-0.2	0.8
2-Sep	-0.1	0.0	0.1	-0.2	0.3	-0.1	-0.2	0.0	-0.4	0.0	0.0	0.0	-0.4	0.0	-0.2	-0.1	-0.1	0.0	-0.2	-0.6	-0.9	-0.1	0.1	0.2	-0.1	0.3
3-Sep	0.0	0.2	0.1	0.6	0.1	0.0	-0.3	0.0	0.9	0.2	0.3	-0.2	0.9	0.4	0.2	0.3	0.0	-0.3	0.3	0.4	-0.2	0.2	0.1	0.0	0.2	0.9
4-Sep	-0.1	-0.1	0.1	0.0	-0.2	0.3	0.4	1.0	0.5	-0.3	0.4	0.0	0.0	-0.4	0.0	-1.0	0.4	0.2	0.3	-0.1	0.2	0.4	1.3	1.1	0.2	1.3
5-Sep	0.4	-0.1	-0.2	0.0	0.0	0.0	0.0	0.1	0.0	0.3	-0.3	-0.4	-0.5	0.3	0.1	0.2	0.1	1.6	3.0	1.7	2.0	0.8	0.9	1.1	0.5	3.0
6-Sep	1.4	1.5	0.5	0.1	-0.1	0.3	-0.5	0.1	-0.2	-0.1	-0.1	0.7	0.4	0.0	-0.1	-0.4	0.3	-0.2	0.2	0.0	0.0	0.3	-0.2	-0.2	0.2	1.5
7-Sep	-0.2	0.0	0.0	0.0	0.0	0.0	-0.3	0.0	0.0	-0.2	-0.1	0.2	0.0	0.0	-0.1	-0.2	-0.2	0.5	0.4	0.9	0.4	0.2	0.9	0.2	0.1	0.9
8-Sep	-0.2	-0.3	0.0	0.0	0.0	-0.1	-0.2	0.0	0.3	-0.6	0.4	0.3	0.1	0.2	-0.1	0.0	0.0	0.1	-0.1	0.4	0.0	0.1	-0.2	0.1	0.0	0.4
9-Sep	-0.1	-0.1	-0.2	-0.1	-0.3	-0.1	-0.1	-0.3	0.0	-0.6	-0.5	-0.6	-0.6	-0.5	-0.7	0.3	0.0	-0.1	-0.5	-1.1	-0.4	-0.4	-0.4	-0.2	-0.3	0.3
10-Sep	0.2	0.2	0.5	0.5	1.6	1.7	1.8	0.9	1.1	0.2	0.0	-0.5	-0.6	-0.8	0.1	-0.1	-0.3	-0.5	-0.2	0.0	-0.1	0.1	-0.1	0.0	0.2	1.8
11-Sep	0.1	0.1	0.1	-0.1	0.0	-0.1	-0.1	-0.1	0.1	-0.1	0.8	0.3	0.6	-0.6	0.5	-0.1	0.2	0.1	0.5	0.4	0.5	0.2	-0.1	0.1	0.1	0.8
12-Sep	0.3	0.9	0.4	0.3	1.2	0.5	-0.4	-0.2	0.1	-0.1	-0.2	-0.4	-0.8	0.1	0.1	-0.1	-0.2	0.0	-0.1	0.1	0.1	0.0	0.0	0.0	0.1	1.2
13-Sep	0.0	-0.2	0.0	0.4	0.0	0.0	-0.3	-0.2	-0.2	-0.4	-0.3	-0.3	0.0	-0.2	-0.1	0.1	-0.2	-0.1	-0.1	-0.1	-0.2	-0.3	-0.5	-0.5	-0.2	0.4
14-Sep	-0.1	-0.5	0.6	0.0	-0.1	-0.7	-0.3	-0.4	0.1	-0.3	-0.1	0.3	-0.3	-0.7	-0.2	-0.4	-0.7	-0.6	-0.1	0.2	-0.2	-0.1	0.1	0.0	-0.2	0.6
15-Sep	-0.2	-0.1	-0.1	-0.1	-0.1	0.0	-0.2	-0.1	0.1	-0.2	0.3	0.1	0.3	0.1	-0.6	-0.6	0.0	0.3	1.3	0.6	0.4	0.2	-0.4	-0.3	0.0	1.3
16-Sep	-0.2	-0.2	-0.7	-0.5	-1.0	-0.1	-1.0	-1.0	0.7	0.7	0.3	-0.3	-0.1	0.3	0.1	-0.5	0.1	0.0	0.4	0.9	0.8	0.8	0.1	-0.1	0.0	0.9
17-Sep	0.0	-0.2	0.2	-0.6	-0.3	0.0	-0.4	-0.1	0.0	0.1	0.4	-0.1	0.0	-0.3	-0.2	0.3	0.0	-0.4	-0.3	0.4	0.6	0.9	2.3	1.2	0.1	2.3
18-Sep	0.6	1.2	0.8	-0.2	-0.6	0.2	0.4	0.1	0.1	0.0	-0.2	-0.2	-0.4	-0.9	0.4	0.1	-0.3	-0.2	0.1	0.0	0.0	0.0	-0.2	0.0	0.0	1.2
19-Sep	0.0	0.0	0.0	-0.1	-0.1	-0.1	-0.1	-0.2	0.0	-0.3	-0.1	0.3	-0.1	0.0	0.4	0.3	0.5	0.5	0.1	0.3	-0.6	-0.2	-0.2	-0.1	0.0	0.5
20-Sep	0.0	0.0	-0.1	0.0	0.0	-0.2	-0.1	-0.4	-0.5	-0.2	-0.3	-0.2	-0.5	-0.4	-0.2	-0.4	-0.7	-0.4	0.2	-0.2	-0.3	-0.4	-0.3	-0.1	-0.2	0.2
21-Sep	-0.2	-0.2	0.0	0.0	0.0	0.0	0.0	-0.1	0.1	-0.1	-0.3	-0.1	0.0	0.1	1.1	-0.2	0.0	1.5	1.9	0.8	0.2	0.1	0.1	-0.2	0.2	1.9
22-Sep	0.8	0.8	1.1	0.6	0.4	0.2	0.0	0.0	0.2	-0.2	-0.2	0.3	0.9	-0.3	0.2	-0.4	-0.1	0.2	0.3	-0.2	0.4	-0.3	0.0	-0.1	0.2	1.1
23-Sep	-0.1	-0.1	-0.1	-0.1	-0.2	-0.4	-0.3	-0.2	0.1	0.0	-0.1	-0.7	-0.4	-0.5	1.3	1.3	0.1	0.3	0.0	-0.1	-0.4	0.5	0.1	0.1	0.0	1.3
24-Sep	0.0	-0.2	0.1	-0.1	0.2	0.1	0.1	-0.2	-0.1	-0.4	-0.3	-0.2	-0.1	-0.6	-0.9	0.0	-0.6	0.0	-0.3	0.0	0.1	0.2	0.7	0.6	-0.1	0.7
25-Sep	0.3	0.0	0.2	0.3	0.3	0.0	0.4	-0.1	0.3	0.3	0.1	0.4	0.1	0.1	0.3	0.2	0.2	0.0	0.9	0.1	0.1	-0.4	0.0	0.3	0.2	0.9
26-Sep	1.4	0.5	0.0	-0.4	-0.7	-0.3	-0.1	-0.1	0.2	0.2	-0.3	-0.6	-0.6	-0.8	-0.5	-0.1	-0.3	-0.3	-0.2	0.2	0.0	0.4	0.1	-0.2	-0.1	1.4
27-Sep	0.3	0.2	0.1	-0.1	0.0	-0.2	0.2	-0.2	-0.1	0.5	-0.1	0.1	0.6	0.5	0.3	0.6	0.0	-0.2	-0.2	-0.3	0.2	0.5	0.1	0.1	0.1	0.6
28-Sep	0.1	0.2	0.3	-0.3	-0.3	-0.4	0.2	0.0	-0.6	-0.5	-0.3	-0.7	-0.4	-0.4	-0.6	0.2	0.0	0.0	0.3	-0.1	0.2	-0.2	0.3	0.3	-0.1	0.3
29-Sep	0.1	0.3	0.1	0.0	0.2	-0.1	-0.1	-0.1	-0.2	0.0	-0.2	0.1	-0.1	-0.5	0.1	0.0	0.0	-0.4	-0.1	-0.4	-0.7	-1.1	-0.2	-1.2	-0.2	0.3
30-Sep	-0.5	-0.3	-0.4	0.8	1.5	-1.0	-0.5	0.9	0.2	0.5	0.1	0.7	0.0	-0.7	-0.7	-1.1	-0.9	-1.0	-0.8	-0.1	0.4	0.8	0.2	0.0	-0.1	1.5
	0.2	0.1	0.1	0.0	0.0	-0.1	-0.1	-0.1	0.1	-0.1	0.0	-0.1	0.0	-0.2	0.0	-0.1	-0.1	0.0	0.2	0.1	0.1	0.1	0.1	0.1	Diurnal Average	
	1.4	1.5	1.1	0.8	1.6	1.7	1.8	1.0	1.1	0.7	0.8	0.7	0.9	0.5	1.3	1.3	0.5	1.6	3.0	1.7	2.0	0.9	2.3	1.2	Diurnal Maximum	

Wood Buffalo Environmental Association

Summary of Hour Standard Deviations

Vertical Wind Speed 100m (VW100) - km/h

Lower Camp Met Tower - September 2024

Number of Exceedences (AAAQO): 1-hr: 0 24-hr: 0
Maximum Value: 4.6 km/h on Sep 9 18:00

Minimum Value: 0.1 km/h on Sep 5 07:00

Percentiles: P_1 = 0.2 P_{10} = 0.5 Q_1 = 0.8 Median = 1.3 Q_3 = 1.9 P_{90} = 2.5 P_{99} = 3.8

Hours in Service:	720
Hours of Data:	720
Hours of Missing Data:	0
Hours of Calibration:	0
Percent Operational Time:	100.0

Day	Hourly Period Ending At (MST)																								Daily
	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24	Maximum
1-Sep	1.8	1.9	2.0	1.7	1.8	1.6	1.8	1.9	1.2	1.3	2.0	2.6	3.2	2.9	2.4	2.0	2.0	1.3	0.5	0.4	0.5	1.6	0.9	0.5	3.2
2-Sep	0.4	0.5	0.6	0.6	0.9	0.9	1.1	0.7	0.6	1.1	1.1	1.2	1.0	1.9	2.1	1.9	1.0	0.8	0.7	2.8	2.9	3.5	2.9	2.4	3.5
3-Sep	1.8	1.6	1.6	1.3	1.2	0.9	1.1	1.0	1.6	1.9	1.9	1.8	2.3	2.2	1.9	2.0	1.7	1.5	0.7	0.8	1.1	1.2	1.4	1.0	2.3
4-Sep	0.3	0.5	0.2	0.7	1.1	0.7	1.4	1.3	1.7	2.3	3.1	2.3	2.4	2.2	2.9	2.8	2.3	2.3	2.0	0.8	0.6	0.7	0.8	1.1	3.1
5-Sep	2.4	0.9	0.5	0.3	0.3	0.3	0.1	0.5	0.9	1.3	1.1	1.6	2.1	2.9	2.8	2.4	2.4	1.8	2.1	2.3	3.2	2.8	2.3	2.7	3.2
6-Sep	2.8	3.1	2.6	2.3	2.4	2.3	2.2	1.5	1.7	1.5	1.8	2.7	2.1	1.4	1.2	1.2	2.0	1.7	1.7	1.2	1.2	1.4	0.7	0.9	3.1
7-Sep	0.5	0.8	1.0	0.3	0.4	0.6	0.7	0.7	0.7	1.4	1.3	1.7	2.1	2.6	2.0	1.7	1.2	1.7	1.6	1.2	1.3	1.5	1.4	1.5	2.6
8-Sep	1.2	0.6	0.9	0.5	0.5	0.5	0.5	0.6	1.1	0.9	1.2	1.5	2.2	2.2	1.1	0.8	0.7	0.8	1.0	0.7	1.1	0.9	0.7	0.7	2.2
9-Sep	0.5	0.9	0.8	0.9	1.1	1.0	0.8	1.5	1.7	1.4	1.9	2.3	3.1	3.2	2.8	2.5	3.1	4.6	4.1	3.2	3.7	2.8	2.3	2.0	4.6
10-Sep	2.0	2.1	1.7	1.3	1.8	1.6	2.0	1.9	2.1	2.2	2.5	2.7	3.1	3.0	1.5	1.8	1.9	1.3	0.3	0.3	0.5	0.5	1.1	1.0	3.1
11-Sep	0.5	0.5	0.3	0.2	0.4	0.4	0.6	0.6	0.6	1.0	1.5	1.7	1.6	2.0	2.3	2.0	1.7	1.2	0.6	1.0	1.2	1.4	1.2	0.8	2.3
12-Sep	0.7	0.6	0.7	1.1	2.9	1.9	1.3	0.5	1.0	0.9	1.2	1.9	1.4	1.3	1.4	1.2	1.1	1.2	0.5	0.3	0.3	0.3	0.3	0.5	2.9
13-Sep	0.3	0.5	0.8	1.2	0.8	0.8	0.6	0.6	0.7	0.7	1.2	1.7	1.3	1.1	1.4	0.9	1.1	0.8	0.6	0.6	0.6	0.8	1.0	1.0	1.7
14-Sep	0.7	0.7	1.3	1.1	0.8	1.5	1.7	1.9	1.5	1.5	1.7	2.2	2.3	2.0	1.9	2.5	2.3	0.9	0.5	1.4	1.8	1.4	0.6	0.2	2.5
15-Sep	0.4	0.4	0.3	0.3	0.3	0.4	0.5	0.7	1.0	1.7	2.4	2.4	2.9	1.8	1.7	0.9	1.4	0.8	1.6	1.3	1.5	1.6	1.9	1.3	2.9
16-Sep	1.3	1.1	1.2	1.6	1.6	1.7	1.6	1.6	2.2	2.1	2.6	3.5	2.7	2.6	2.7	1.8	1.8	1.6	0.6	0.7	1.0	0.7	1.3	1.7	3.5
17-Sep	1.4	0.7	0.8	1.0	1.0	1.0	0.9	0.8	1.0	1.2	1.2	1.2	1.8	2.1	2.0	1.3	1.2	0.9	1.1	0.8	0.6	0.8	1.3	1.7	2.1
18-Sep	1.4	1.3	1.1	1.2	1.7	2.1	1.9	1.2	1.3	1.6	1.5	1.8	2.7	3.0	2.9	2.6	2.0	1.3	0.5	0.5	0.3	0.4	0.5	0.1	3.0
19-Sep	0.3	0.3	0.4	0.4	0.5	0.3	0.4	0.5	0.7	0.7	1.0	1.2	1.2	1.5	1.7	1.3	1.3	1.3	0.7	0.7	1.3	1.4	1.6	1.0	1.7
20-Sep	0.4	0.6	0.6	0.7	0.5	0.6	0.9	1.1	1.1	1.5	1.3	1.6	2.0	2.7	2.9	2.9	2.6	2.2	1.4	1.0	0.5	0.5	0.4	0.3	2.9
21-Sep	0.4	0.3	0.2	0.2	0.3	0.5	0.4	0.5	0.5	0.9	1.6	1.3	2.0	2.2	2.5	2.7	2.2	2.1	2.5	2.6	1.4	1.2	0.9	1.1	2.7
22-Sep	1.7	1.7	1.7	1.6	0.9	0.7	0.4	1.1	1.4	1.2	1.2	2.1	1.8	1.5	1.7	1.4	1.4	0.6	0.7	1.0	1.7	1.1	0.5	0.4	2.1
23-Sep	0.3	0.4	1.0	0.4	0.5	0.2	0.3	0.4	0.8	0.5	0.7	0.5	0.8	1.6	1.7	2.0	1.5	1.3	1.7	1.2	1.6	1.9	2.1	1.6	2.1
24-Sep	1.4	1.9	1.2	1.3	0.9	1.4	1.2	1.3	2.7	3.0	3.7	3.5	3.7	3.9	3.8	3.0	2.1	1.5	1.2	0.7	0.3	0.4	0.8	0.9	3.9
25-Sep	1.1	1.3	1.1	0.7	0.8	0.8	0.6	1.1	1.1	1.2	1.4	2.0	1.4	1.3	1.6	1.2	1.3	1.4	1.5	1.1	1.0	1.4	1.2	1.1	2.0
26-Sep	1.3	1.8	1.2	0.8	1.1	1.0	1.4	1.2	1.1	1.6	1.8	2.4	2.3	2.4	2.1	1.4	1.4	2.1	1.0	0.7	0.9	1.3	1.0	0.8	2.4
27-Sep	0.7	0.9	1.0	1.1	1.0	1.5	1.4	1.7	2.0	1.7	1.8	2.4	2.4	2.4	2.4	2.2	2.0	1.4	0.8	1.0	1.7	1.3	1.4	1.7	2.4
28-Sep	2.3	2.1	2.8	3.0	2.8	3.3	2.5	1.8	2.0	2.1	2.3	2.3	2.6	2.3	2.1	2.1	1.1	0.3	1.0	0.8	1.2	1.0	0.8	0.5	3.3
29-Sep	0.8	0.8	0.7	0.6	0.7	0.8	0.6	0.9	1.1	1.2	1.8	2.2	1.6	2.0	1.8	1.7	1.8	1.8	0.8	0.8	1.4	1.3	0.6	1.4	2.2
30-Sep	1.6	2.1	2.6	3.0	3.1	0.9	0.7	1.3	1.7	1.8	2.9	3.3	4.0	3.9	4.1	4.3	3.6	2.0	0.6	0.5	0.9	0.7	0.7	1.4	4.3
	2.8	3.1	2.8	3.0	3.1	3.3	2.5	1.9	2.7	3.0	3.7	3.5	4.0	3.9	4.1	4.3	3.6	4.6	4.1	3.2	3.7	3.5	2.9	2.7	
	Diurnal Maximum																								

Vertical Wind Speed 163m (VW163) - km/h

Lower Camp Met Tower - September 2024

Maximum Value: 4.8 km/h on Sep 10 06:00

Maximum Daily Average: 1.3 km/h on Sep 10

Minimum Value: -2.7 km/h on Sep 1 07:00

Minimum Daily Average: 0.0 km/h on Sep 20

Maximum Diurnal Average: 1.0 km/h at hour 19

Minimum Diurnal Average: 0.2 km/h at hour 7

Monthly Average: 0.55 km/h

Percentiles: P_1 = -1.0 P_{10} = -0.2 Q_1 = 0.1 Median = 0.4 Q_3 = 0.9 P_{90} = 1.6 P_{99} = 2.8

Hours in Service:	720
Hours of Data:	720
Hours of Missing Data:	0
Hours of Calibration:	0
Percent Operational Time:	100.0

Day	Hourly Period Ending At (MST)																								Daily	Daily
	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24	Average	Maximum
1-Sep	1.7	-0.1	-1.3	-0.6	0.0	-2.0	-2.7	-1.0	-0.8	-0.2	0.9	0.4	1.4	0.6	0.8	0.8	0.8	1.3	1.2	1.2	1.4	1.1	0.9	0.7	0.3	1.7
2-Sep	0.3	0.2	0.3	0.4	0.7	0.4	0.3	0.2	0.2	0.5	0.5	0.0	-0.5	0.4	0.5	0.8	1.0	1.1	1.3	0.6	-0.1	0.2	0.2	0.3	0.4	1.3
3-Sep	0.0	0.1	0.1	0.5	0.3	0.2	0.0	0.2	1.1	0.4	0.4	-0.2	1.0	0.6	0.3	0.3	-0.2	-0.1	0.4	0.9	0.1	0.6	0.2	0.1	0.3	1.1
4-Sep	0.4	0.1	0.1	0.2	0.5	0.9	1.4	2.8	1.8	1.2	1.3	0.6	0.9	0.2	0.8	-0.1	1.4	1.7	1.5	0.5	1.3	1.1	1.9	2.1	1.0	2.8
5-Sep	1.1	0.1	0.0	0.1	0.2	0.2	0.1	0.2	0.3	0.3	-0.3	-0.7	-0.3	0.8	0.6	0.4	-0.1	2.2	4.4	2.2	2.4	1.3	1.5	1.8	0.8	4.4
6-Sep	2.2	2.2	1.7	0.5	0.3	0.4	-0.7	-0.2	-0.3	0.2	0.4	1.1	1.2	0.2	0.5	0.2	0.9	0.9	1.1	1.1	1.1	1.9	0.2	0.3	0.7	2.2
7-Sep	0.2	0.2	0.7	0.5	0.2	0.3	-0.1	0.3	0.0	0.3	0.4	0.6	0.4	1.0	0.4	0.7	0.8	1.3	1.9	2.5	2.2	2.1	2.8	2.0	0.9	2.8
8-Sep	0.7	0.3	0.7	0.6	0.4	0.3	0.5	0.4	0.4	-0.3	0.8	0.7	0.1	0.5	0.0	-0.1	0.0	-0.1	0.0	0.7	0.3	0.6	0.2	0.3	0.3	0.8
9-Sep	-0.1	0.1	0.1	-0.1	-0.4	-0.1	-0.1	0.2	0.2	-0.2	-0.3	-0.2	0.2	1.4	1.2	2.2	1.8	2.0	1.7	0.5	1.2	1.2	1.2	1.2	0.6	2.2
10-Sep	2.1	1.8	2.3	2.4	4.6	4.8	3.9	2.5	2.1	0.7	0.5	0.3	0.2	0.2	0.7	0.8	0.5	0.2	0.2	0.2	0.3	-0.1	0.0	0.1	1.3	4.8
11-Sep	0.0	0.1	0.0	0.2	0.2	0.2	0.2	0.5	0.2	0.2	0.5	0.0	0.3	-1.4	0.5	-0.3	0.5	0.2	0.3	0.3	0.5	0.1	-0.2	0.5	0.1	0.5
12-Sep	1.1	1.6	1.1	1.1	1.6	0.8	-0.4	0.1	0.0	-0.4	-0.2	-0.4	-0.7	0.0	0.0	-0.1	-0.1	-0.1	0.0	0.2	0.3	0.1	0.1	-0.1	0.2	1.6
13-Sep	0.0	0.0	0.2	0.2	0.2	0.0	0.0	0.2	0.2	0.1	0.0	-0.1	0.4	0.0	0.0	0.3	0.3	0.1	0.1	0.0	0.0	0.2	0.2	0.1	0.1	0.4
14-Sep	0.4	0.1	1.3	0.6	0.5	0.3	0.2	-0.4	0.5	-0.1	0.4	0.8	0.2	-0.2	1.1	0.7	-0.1	-0.1	0.3	0.3	-0.9	-0.5	0.1	0.2	0.2	1.3
15-Sep	0.0	-0.1	0.0	0.1	-0.2	-0.1	0.0	0.1	0.0	-0.1	0.6	0.2	0.5	0.4	-0.6	-0.5	0.2	0.3	2.7	1.2	0.7	0.1	-0.5	-0.5	0.2	2.7
16-Sep	0.0	0.1	-0.7	-0.8	-1.3	-0.7	-1.3	-0.9	2.0	2.1	1.2	0.4	1.2	1.2	1.0	0.3	1.0	1.0	1.6	1.8	2.3	2.4	1.8	0.7	0.7	2.4
17-Sep	0.5	0.2	0.3	-0.3	0.4	0.2	-0.1	0.4	0.2	0.5	1.2	0.0	0.1	-0.1	0.0	0.1	-0.1	-0.4	0.5	0.3	0.9	1.2	2.8	1.5	0.4	2.8
18-Sep	1.5	1.7	1.5	0.1	-0.5	0.1	0.6	0.5	1.1	0.8	-0.2	0.5	0.7	-0.2	1.9	1.4	0.7	0.3	0.5	0.5	0.2	0.3	0.0	0.1	0.6	1.9
19-Sep	0.2	0.2	0.4	0.5	0.4	0.5	0.2	0.3	0.3	0.2	0.5	0.1	-0.2	-0.1	0.5	0.4	0.8	1.0	0.5	0.4	-1.0	-0.7	-0.3	0.0	0.2	1.0
20-Sep	0.1	0.5	0.6	0.1	0.1	0.2	0.1	0.0	-0.2	0.1	0.0	0.3	-0.4	-0.2	0.0	-0.2	-0.3	-0.1	0.4	-0.3	-0.2	0.0	-0.1	0.1	0.0	0.6
21-Sep	0.0	0.1	0.1	0.2	0.4	0.3	0.3	0.1	0.2	0.2	-0.3	-0.2	0.2	0.0	2.0	0.2	0.2	2.5	3.2	1.2	1.2	0.1	-0.1	-0.4	0.5	3.2
22-Sep	1.3	1.0	1.8	1.1	1.0	0.6	0.5	0.3	0.3	-0.1	-0.1	0.2	0.6	0.0	0.0	-0.6	-0.1	0.3	0.2	0.2	1.0	0.2	0.4	0.2	0.4	1.8
23-Sep	-0.1	0.1	-0.2	0.0	0.0	0.0	0.1	0.1	0.1	0.2	0.2	-0.3	-0.2	-0.3	1.9	1.6	1.0	0.7	0.9	1.0	0.2	0.9	0.4	0.5	0.4	1.9
24-Sep	0.5	0.6	0.5	0.6	0.3	1.0	0.6	0.5	1.0	1.5	1.2	1.7	1.4	1.1	0.4	1.4	0.7	1.0	0.9	0.3	0.1	0.6	0.8	1.0	0.8	1.7
25-Sep	0.8	0.8	1.1	0.9	0.5	0.2	0.1	0.0	0.8	1.2	1.2	1.3	0.9	0.6	0.9	0.5	0.7	1.2	2.2	1.2	1.2	1.1	0.8	1.6	0.9	2.2
26-Sep	3.3	1.5	0.5	0.1	0.0	0.4	1.1	0.7	1.1	1.6	1.1	0.7	0.5	0.1	0.0	0.0	0.3	0.5	0.3	1.2	0.8	1.8	1.0	0.4	0.8	3.3
27-Sep	0.2	0.3	0.6	0.4	0.7	0.1	0.3	0.4	0.8	0.8	0.5	0.5	1.4	1.6	1.1	1.1	0.4	0.5	0.3	0.5	1.2	1.6	1.5	1.5	0.8	1.6
28-Sep	1.7	1.9	2.0	2.1	2.1	1.2	1.6	1.6	1.0	1.0	1.1	0.5	0.7	0.4	0.2	0.8	0.2	0.1	0.5	0.2	0.9	0.0	0.2	0.6	0.9	2.1
29-Sep	0.5	0.7	0.4	0.2	0.3	0.4	0.1	0.0	-0.4	0.3	0.0	0.2	-0.1	-0.1	0.2	0.0	0.5	-0.2	0.3	0.2	-0.1	-0.4	0.4	-0.6	0.1	0.7
30-Sep	0.5	1.0	0.8	2.7	3.3	-0.5	0.0	1.5	1.3	2.0	1.4	2.8	2.2	1.0	1.4	0.2	0.5	-0.1	-0.1	0.6	1.0	1.4	1.3	2.1	1.2	3.3
	0.7	0.6	0.6	0.5	0.6	0.4	0.2	0.4	0.5	0.5	0.5	0.4	0.5	0.3	0.6	0.4	0.5	0.6	1.0	0.7	0.7	0.7	0.7	0.6	Diurnal Average	
	3.3	2.2	2.3	2.7	4.6	4.8	3.9	2.8	2.1	2.1	1.4	2.8	2.2	1.6	2.0	2.2	1.8	2.5	4.4	2.5	2.4	2.4	2.8	2.1	Diurnal Maximum	

Number of Exceedences (AAAQO): 1-hr: 0 24-hr: 0
Maximum Value: 4.5 km/h on Sep 30 14:00

Minimum Value: 0.2 km/h on Sep 19 00:00

Percentiles: P_1 = 0.2 P_{10} = 0.5 Q_1 = 0.8 Median = 1.3 Q_3 = 1.9 P_{90} = 2.6 P_{99} = 3.7

Hours in Service:	720
Hours of Data:	720
Hours of Missing Data:	0
Hours of Calibration:	0
Percent Operational Time:	100.0

Day	Hourly Period Ending At (MST)																								Daily
	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24	Maximum
1-Sep	2.2	2.3	2.5	1.9	2.0	1.8	2.1	2.2	1.2	1.1	2.0	2.7	3.6	3.2	2.5	1.8	1.9	1.3	0.5	0.4	0.4	1.2	1.2	0.7	3.6
2-Sep	0.6	0.6	0.6	0.7	1.1	1.0	1.5	0.6	0.6	1.0	1.3	1.3	1.4	2.4	2.0	1.6	1.1	0.9	0.8	2.6	2.1	3.4	3.6	2.5	3.6
3-Sep	1.8	1.6	1.5	0.8	1.1	0.9	1.3	1.1	1.8	2.1	2.1	2.0	2.6	2.2	2.1	2.3	1.5	1.5	0.7	0.5	1.1	1.4	1.6	0.7	2.6
4-Sep	0.4	0.4	0.3	0.5	1.0	0.7	1.7	1.4	1.5	2.1	3.6	2.6	2.7	2.4	3.0	3.0	2.6	2.2	1.9	1.1	0.9	1.1	0.9	1.0	3.6
5-Sep	2.6	0.8	0.5	0.4	0.6	0.3	0.2	0.3	0.7	1.1	1.3	1.7	2.4	3.5	3.1	2.8	2.6	1.8	2.4	2.8	3.2	2.0	1.5	1.7	3.5
6-Sep	1.8	2.8	3.2	3.1	2.6	2.1	1.5	1.5	1.9	1.6	2.1	2.7	2.5	1.6	1.3	1.2	2.2	1.9	1.5	1.1	1.4	1.2	0.8	0.7	3.2
7-Sep	0.5	0.5	0.6	0.3	0.5	0.5	0.7	0.6	0.5	1.4	1.4	1.8	2.9	2.9	1.6	1.3	1.0	1.8	1.7	1.3	1.5	1.1	0.9	1.5	2.9
8-Sep	1.1	0.6	0.7	0.5	0.5	0.6	0.7	0.5	0.7	0.8	1.4	1.7	2.2	2.4	1.4	1.0	0.7	0.6	0.8	0.9	1.6	1.3	0.9	0.8	2.4
9-Sep	0.9	1.2	1.0	1.1	1.3	1.3	0.9	1.2	1.6	1.4	1.8	2.3	3.3	2.8	2.4	2.3	3.0	4.3	3.9	3.2	3.5	2.6	1.7	1.6	4.3
10-Sep	1.5	1.5	1.5	1.1	1.4	1.1	1.8	1.3	1.6	1.9	2.5	2.7	3.0	3.2	1.7	1.8	2.1	1.4	0.3	0.3	0.6	0.6	1.3	1.0	3.2
11-Sep	0.5	0.3	0.3	0.4	0.3	0.4	0.4	0.4	0.4	0.7	1.2	1.4	1.5	2.0	2.8	2.4	2.2	1.4	0.6	0.7	1.3	1.5	1.6	1.2	2.8
12-Sep	1.5	0.8	0.8	1.6	3.3	2.3	1.7	0.7	1.0	1.0	1.2	2.0	1.7	1.3	1.5	1.2	1.1	1.2	0.4	0.4	0.4	0.3	0.5	0.6	3.3
13-Sep	0.3	0.2	0.4	1.0	0.4	0.6	0.4	0.4	0.5	0.6	0.9	1.1	1.2	1.2	1.4	0.9	1.0	0.9	0.6	1.0	0.7	0.5	0.7	0.9	1.4
14-Sep	0.8	0.7	1.3	1.7	1.0	1.1	1.2	1.8	1.2	1.3	1.7	2.3	2.3	2.3	1.7	2.3	2.2	0.8	0.5	0.9	1.7	1.1	0.8	0.4	2.3
15-Sep	0.4	0.3	0.3	0.5	0.3	0.2	0.3	0.8	1.1	1.5	2.3	2.6	2.8	2.0	1.8	0.9	1.3	1.0	2.1	1.9	2.1	1.9	1.9	1.0	2.8
16-Sep	1.1	1.0	1.1	1.4	1.2	1.2	1.2	1.7	2.1	1.8	2.5	3.7	3.0	2.7	2.7	2.0	2.0	1.3	0.5	0.7	0.8	0.6	1.7	1.6	3.7
17-Sep	1.4	0.8	0.8	0.9	1.2	1.0	0.9	0.9	1.2	1.1	1.2	1.4	1.9	2.2	2.2	1.5	1.4	1.0	1.2	0.6	1.1	1.3	1.5	1.7	2.2
18-Sep	1.6	1.8	1.5	1.8	2.1	1.6	1.7	1.3	1.7	1.9	1.7	1.8	2.6	3.0	3.1	2.7	2.2	0.9	0.4	0.3	0.4	0.4	0.3	0.2	3.1
19-Sep	0.2	0.2	0.3	0.3	0.5	0.5	0.5	0.4	0.5	0.7	0.9	0.9	1.0	1.7	2.1	1.8	1.5	1.1	0.8	0.8	0.9	1.0	1.7	1.2	2.1
20-Sep	0.5	0.7	1.0	0.8	0.5	0.8	1.1	1.3	1.1	1.4	1.2	1.5	1.9	3.0	2.8	2.9	2.5	2.2	1.6	1.1	0.6	0.4	0.3	0.4	3.0
21-Sep	0.4	0.4	0.3	0.3	0.3	0.3	0.3	0.4	0.3	0.5	1.5	1.4	2.0	2.3	2.8	2.8	2.3	2.2	2.8	2.5	1.2	1.3	1.2	1.4	2.8
22-Sep	2.1	2.3	2.2	1.8	1.1	0.9	0.9	1.1	1.1	0.9	1.0	1.7	2.1	1.3	1.3	1.6	1.5	0.6	0.6	1.4	1.6	1.1	0.7	0.6	2.3
23-Sep	0.4	0.5	1.2	0.6	0.5	0.2	0.2	0.3	0.4	0.3	0.5	0.6	0.8	1.7	1.7	2.0	1.7	1.0	1.1	0.7	1.2	1.6	1.7	1.4	2.0
24-Sep	2.0	2.1	1.7	1.4	0.9	1.3	1.8	1.8	2.7	2.8	3.4	3.6	3.7	4.1	3.6	3.4	1.9	1.6	1.3	1.1	0.4	0.4	1.1	0.9	4.1
25-Sep	1.1	1.5	1.0	0.6	0.7	0.9	0.7	1.0	1.3	1.7	1.7	2.4	1.3	1.3	1.7	1.3	1.1	0.9	1.0	0.9	1.2	1.0	2.1	1.6	2.4
26-Sep	1.3	1.7	1.4	1.1	1.3	1.3	1.5	1.4	1.3	1.5	1.5	2.4	2.5	2.5	2.3	1.5	1.6	2.3	0.9	0.9	0.6	0.9	1.4	0.8	2.5
27-Sep	0.8	0.9	1.1	1.2	1.2	1.7	1.9	1.7	2.0	1.8	1.8	2.7	2.5	2.6	2.7	2.1	1.7	1.3	0.7	0.9	1.8	1.3	1.3	1.6	2.7
28-Sep	2.3	2.3	2.8	2.9	2.9	2.8	2.4	1.7	2.0	2.3	2.6	2.3	2.3	2.6	2.2	2.1	0.9	0.4	1.0	1.0	1.7	1.2	1.2	0.7	2.9
29-Sep	0.9	0.8	0.8	0.7	0.6	1.3	0.5	0.5	0.8	1.0	1.5	1.7	1.6	1.8	1.9	1.5	1.6	1.4	0.6	0.7	1.2	1.1	0.4	1.3	1.9
30-Sep	2.0	2.6	2.7	3.2	3.5	1.0	1.2	1.2	1.5	1.8	3.1	3.5	4.3	4.5	4.3	3.9	3.2	1.9	0.6	0.7	1.1	0.9	0.8	1.1	4.5
	2.6	2.8	3.2	3.2	3.5	2.8	2.4	2.2	2.7	2.8	3.6	3.7	4.3	4.5	4.3	3.9	3.2	4.3	3.9	3.2	3.5	3.4	3.6	2.5	
	Diurnal Maximum																								

WOOD BUFFALO ENVIRONMENTAL ASSOCIATION

CONTINUOUS AMBIENT AIR QUALITY
MONITORING PROGRAM
MONTHLY REPORT

AMS04
BUFFALO VIEWPOINT
SEPTEMBER 2024

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

October 31, 2024

WOOD BUFFALO ENVIRONMENTAL ASSOCIATION - BUFFALO VIEWPOINT (AMS04)
SEPTEMBER 2024

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	684	33	36	99.58	19.6	0	2.5	0
H2S (ppb) Average	685	35	35	100	3	0	0.9	0
THC (ppm) Average	684	33	36	99.58	3.6	-	2.6	-
NMHC(ppm) Average	684	33	36	99.58	0	-	0	-
CH4(ppm) Average	684	33	36	99.58	3.6	-	2.6	-
O3(ppb) Average	684	33	36	99.58	41.9	0	28.3	-
NO2(ppb) Average	681	36	39	99.58	23	0	11.4	-
NO(ppb) Average	681	36	39	99.58	139	-	19.1	-
NOX(ppb) Average	681	36	39	99.58	159.4	-	29	-
PM2.5(ug/m3) Average	717	3	3	100	177.5	0	104.6	5
Temperature (C) Average	720	0	0	100	30.9	-	20.9	-
Relative Humidity (%) Average	720	0	0	100	98.4	-	90.2	-
Wind Speed 10 m (km/h) Average	720	0	0	100	24	-	13	-
Wind Direction 10 m (deg) Average	720	0	0	100	-	-	-	-

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

WOOD BUFFALO ENVIRONMENTAL ASSOCIATION - BUFFALO VIEWPOINT (AMS04)
SEPTEMBER 2024

MONTHLY SUMMARY FOR AIR QUALITY/ METEOROLOGICAL MONITORING MEASUREMENTS

					Percentile						
Parameter	Number	Mean	StnDev	Total	Min	P10	Q1	Median	Q3	P90	Max
SO2 (ppb) Average	684	0.37	1.3	-	0	0	0	0.1	0.3	0.6	19.6
H2S (ppb) Average	685	0.25	0.4	-	0	0	0.1	0.1	0.3	0.5	3
THC (ppm) Average	684	2.15	0.2	-	2	2	2.1	2.1	2.2	2.3	3.6
NMHC(ppm) Average	684	0	0	-	0	0	0	0	0	0	0
CH4(ppm) Average	684	2.15	0.2	-	2	2	2.1	2.1	2.2	2.3	3.6
O3(ppb) Average	684	20.54	9.3	-	2.3	7.2	14.1	21.2	27.2	32.5	41.9
NO2(ppb) Average	681	3.24	4.5	-	0	0	0.3	1.1	4.4	10.1	23
NO(ppb) Average	681	2.38	9.6	-	0	0	0	0.1	0.5	3.6	139
NOX(ppb) Average	681	5.61	12.6	-	0	0	0.3	1.2	5.5	14.2	159.4
PM2.5(ug/m3) Average	717	20.94	32.1	-	0.5	2.3	4.3	8.2	19.3	65.7	177.5
Temperature 2 m (C) Average	720	13.33	5.4	-	2	7.2	9.7	12.6	16.3	20.5	30.9
Relative Humidity (%) Average	720	70.75	17.9	-	24.5	44.3	58.2	73.5	85.2	93.6	98.4
Wind Speed 10 m (km/h) Average	720	7.8	4	-	0	4	5	7	9	13	24
Wind Direction 10 m (deg) Average	720	-	-	-	-	-	-	-	-	-	-

WOOD BUFFALO ENVIRONMENTAL ASSOCIATION - BUFFALO VIEWPOINT (AMS04)
SEPTEMBER 2024

OPERATIONAL NOTES

Parameter	Period Start	Period End	Duration (Hours)	Notes
ALL GASEOUS ANALYZERS	23 Sep 2024 13:00	23 Sep 2024 15:00	3	Maintenance - sample manifold cleaned

Wood Buffalo Environmental Association

Summary of Hour Averages

Sulphur Dioxide (SO_2) - ppb

Buffalo Viewpoint - September 2024

Number of Exceedences (AAAQO): 1-hr: 0 24-hr: 0
Maximum Value: 19.6 ppb on Sep 15 13:00 Maximum Daily Average: 2.5 ppb on Sep 15

Minimum Value: 0.0 ppb on Sep 1 18:00 Minimum Daily Average: 0.0 ppb on Sep 24
Maximum Diurnal Average: 1.1 ppb at hour 12 Minimum Diurnal Average: 0.1 ppb at hour 7
Monthly Average: 0.37 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} = 5.0

Hours in Service:	720
Hours of Data:	684
Hours of Missing Data:	36
Hours of Calibration:	33
Percent Operational Time:	99.6

Day	Hourly Period Ending At (MST)																								Daily	Daily
	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24	Average	Maximum
1-Sep	0.0	0.1	0.2	0.0	Z	0.1	0.1	0.1	0.0	0.1	0.2	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	0.1	0.2
2-Sep	0.0	0.0	0.0	0.0	0.0	Z	0.0	0.0	0.0	0.1	0.0	0.0	0.0	0.1	0.0	0.0	0.0	0.0	0.0	0.0	1.1	1.0	0.0	0.0	0.1	1.1
3-Sep	Z	0.0	0.0	0.0	0.0	0.1	0.1	0.1	0.3	0.1	0.1	0.1	0.1	0.3	0.2	0.2	0.2	0.2	0.2	0.4	0.2	0.2	0.3	0.2	0.2	0.4
4-Sep	0.2	Z	0.3	0.3	0.3	0.2	0.2	0.2	0.2	0.2	0.1	0.2	0.0	0.0	0.1	0.3	0.1	0.2	0.2	0.1	0.1	0.1	0.1	0.3	0.2	0.3
5-Sep	2.6	1.4	Z	0.3	0.2	0.2	0.1	0.1	1.1	0.5	0.8	2.6	3.1	1.4	0.7	0.4	0.4	0.3	0.3	0.4	0.3	0.5	0.6	0.4	0.8	3.1
6-Sep	0.6	0.4	0.3	Z	0.5	0.4	0.5	0.5	0.7	0.5	0.6	0.3	0.4	0.5	0.3	0.2	0.3	0.2	0.2	0.3	0.3	0.3	0.2	0.1	0.4	0.7
7-Sep	0.1	0.1	0.1	0.0	Z	0.0	0.0	0.0	0.0	0.1	0.0	0.1	0.1	0.0	0.0	0.2	0.1	0.4	0.2	0.0	0.0	0.0	0.0	0.0	0.1	0.4
8-Sep	0.0	0.0	0.0	0.2	0.3	Z	0.1	0.0	0.0	0.0	0.1	0.5	0.5	0.1	0.2	0.3	4.1	1.8	1.4	11.1	2.9	1.5	1.1	0.6	1.2	11.1
9-Sep	Z	0.4	0.2	0.2	0.1	0.1	0.1	2.0	3.3	0.7	2.2	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	0.4	3.3
10-Sep	0.0	Z	0.0	0.0	0.0	0.0	C	C	C	0.1	0.1	0.0	0.1	0.1	1.4	0.0	0.0	0.2	0.4	0.2	0.3	0.1	0.0	0.0	0.2	1.4
11-Sep	0.0	0.1	Z	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.4	0.2	0.2	0.1	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.1	0.4
12-Sep	0.0	0.0	0.0	Z	0.0	0.0	0.0	0.0	1.1	1.3	1.3	1.7	0.3	1.1	0.1	0.0	0.2	0.1	0.2	0.6	0.0	0.0	0.0	0.2	0.4	1.7
13-Sep	0.6	0.2	0.5	0.6	Z	0.3	0.3	0.4	0.3	0.3	0.2	0.2	0.1	0.0	0.1	0.0	0.4	1.7	0.1	0.2	0.0	0.4	0.7	0.1	0.3	1.7
14-Sep	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	0.2	0.1	0.1	0.2	0.1	0.0	0.2
15-Sep	Z	0.1	0.2	0.1	0.2	0.2	0.1	0.2	0.1	0.0	2.0	3.8	19.6	1.5	0.7	0.7	2.1	4.7	6.7	7.6	3.3	1.7	1.0	0.6	2.5	19.6
16-Sep	0.5	Z	0.3	0.3	0.2	0.3	0.2	0.2	0.3	0.3	0.2	0.3	0.1	0.2	0.2	0.2	0.1	0.2	0.2	0.2	0.2	0.2	0.2	0.3	0.2	0.5
17-Sep	0.1	0.1	Z	0.1	0.1	0.1	0.1	0.1	0.0	0.1	0.0	0.0	0.1	0.2	0.1	0.0	0.0	0.0	0.2	0.1	0.0	0.0	0.0	0.1	0.1	0.2
18-Sep	0.0	0.1	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	0.0	0.0	0.0	0.0	0.0	0.1
19-Sep	0.0	0.0	0.0	0.0	Z	0.0	0.0	0.0	0.0	0.0	0.1	0.1	0.0	0.1	0.1	0.1	0.1	0.0	0.0	0.0	0.4	0.6	0.2	0.0	0.1	0.6
20-Sep	0.1	0.2	0.1	0.2	0.0	Z	0.1	0.4	0.7	4.5	6.5	3.3	0.5	0.3	0.2	0.2	0.2	0.4	0.3	0.1	0.2	0.2	0.6	0.7	0.9	6.5
21-Sep	Z	0.4	0.3	0.3	0.4	0.4	0.3	0.4	0.4	0.5	0.8	0.6	0.4	0.3	0.3	0.3	0.3	0.3	0.3	0.3	0.3	0.3	0.3	0.3	0.4	0.8
22-Sep	0.3	Z	0.3	0.3	0.1	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	0.8	1.3	1.0	0.3	0.2	0.2	0.4	1.3
23-Sep	0.6	0.2	Z	0.2	0.2	0.3	0.2	0.2	0.3	0.4	2.9	16.9	M	M	M	0.4	0.2	0.3	0.0	0.1	0.2	0.1	0.0	0.0	1.2	16.9
24-Sep	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
25-Sep	0.0	0.0	0.0	0.0	Z	0.0	0.0	0.0	0.2	0.1	0.0	0.0	0.0	0.0	0.1	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.2	0.0	0.2
26-Sep	0.2	0.0	0.0	0.1	0.1	Z	0.1	0.1	0.0	0.0	0.0	0.0	0.1	0.0	0.1	0.1	0.9	1.2	0.2	0.0	0.0	0.0	0.1	0.0	0.1	1.2
27-Sep	Z	0.0	0.0	0.0	0.2	0.1	0.1	0.1	0.0	0.1	0.1	0.1	0.0	0.1	0.2	0.2	0.1	0.1	0.1	0.1	0.0	0.1	0.1	0.1	0.1	0.2
28-Sep	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	0.2	0.2	0.3	0.3	0.2	0.2	0.2	0.2	0.2	0.2	0.3
29-Sep	0.2	0.2	Z	0.1	0.1	0.1	0.2	0.4	0.9	0.8	1.0	0.5	0.1	0.2	0.6	0.8	1.0	8.2	1.0	0.7	0.3	0.2	0.2	0.1	0.8	8.2
30-Sep	0.0	0.1	0.1	Z	0.1	0.1	0.1	0.1	0.1	0.0	0.1	0.0	0.0	0.0	0.0	0.1	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.1
	0.2	0.2	0.1	0.1	0.1	0.1	0.1	0.2	0.4	0.4	0.7	1.1	0.9	0.2	0.2	0.2	0.4	0.7	0.4	0.8	0.4	0.3	0.2	0.2	Diurnal Average	
	2.6	1.4	0.5	0.6	0.5	0.4	0.5	2.0	3.3	4.5	6.5	16.9	19.6	1.5	1.4	0.8	4.1	8.2	6.7	11.1	3.3	1.7	1.1	0.7	Diurnal Maximum	

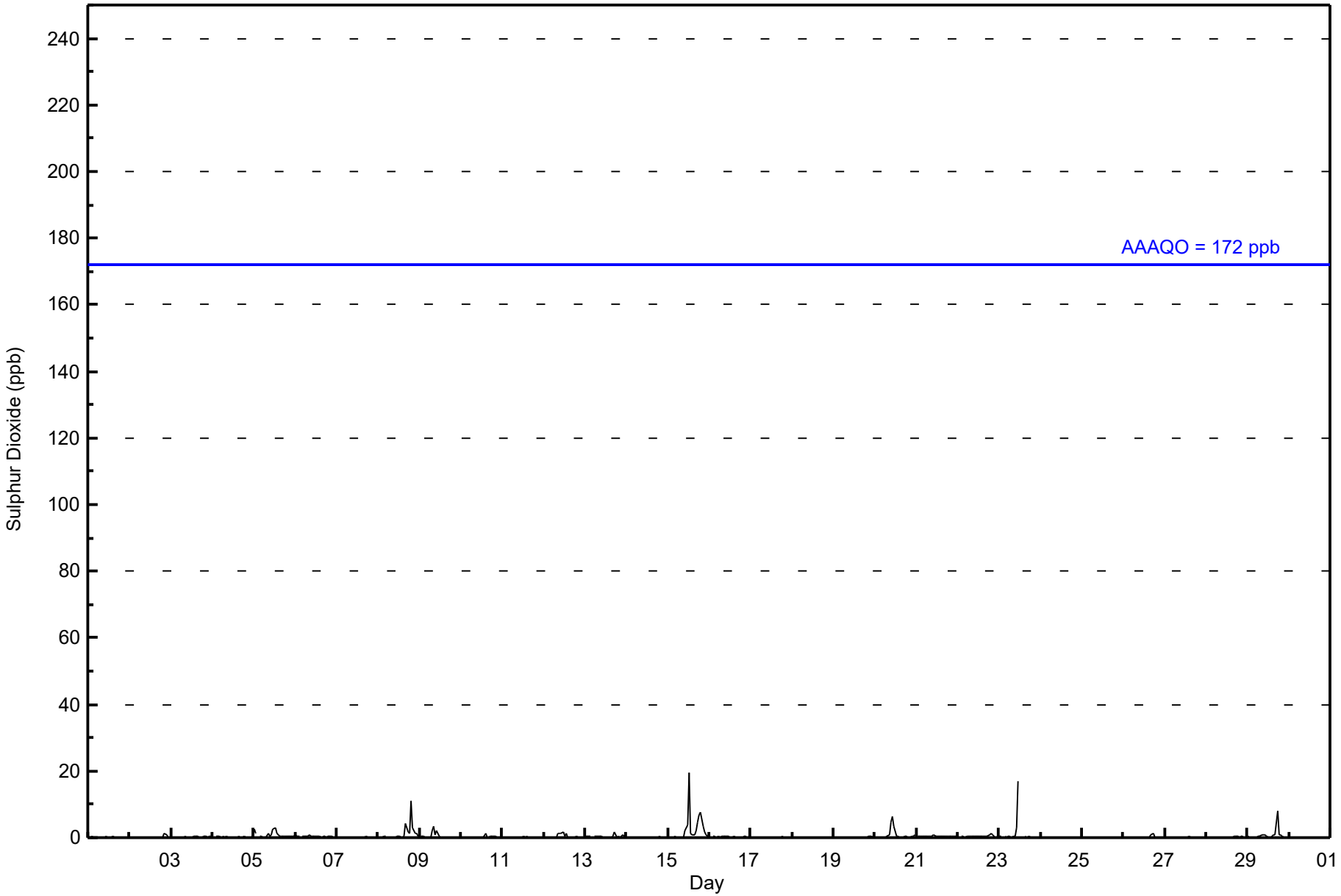
Z - zerospan C - Calibration M - Maintenance
Alberta Ambient Air Quality Objectives (AAAQO): 1-hr 172 ppb 24-hr 48 ppb

Wood Buffalo Environmental Association

Hourly Averages

Sulphur Dioxide (SO_2) - ppb

Buffalo Viewpoint - September 2024



Sulphur Dioxide (SO_2) - ppb
Buffalo Viewpoint - September 2024

Concentration Ranges (ppb)	Number of Hours	%	Cumulative %
0 - 10	681	99.56	99.56
11 - 20	3	0.44	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: 684

Total Number of Hours: 720

Wood Buffalo Environmental Association

Frequency Distribution

Sulphur Dioxide (SO_2) - ppb

Buffalo Viewpoint - September 2024

Concentration Ranges (ppb)	Wind Direction																
	N	NNE	NE	ENE	E	ESE	SE	SSE	S	SSW	SW	WSW	W	WNW	NW	NNW	**Totals**
0 - 10	56	31	11	6	8	20	46	120	74	30	29	59	71	46	44	30	681
11 - 20	0	0	1	0	0	0	0	0	0	1	0	0	0	0	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	56	31	12	6	8	20	46	120	74	31	29	59	71	46	45	30	684

Total Number of Valid Hours: 684

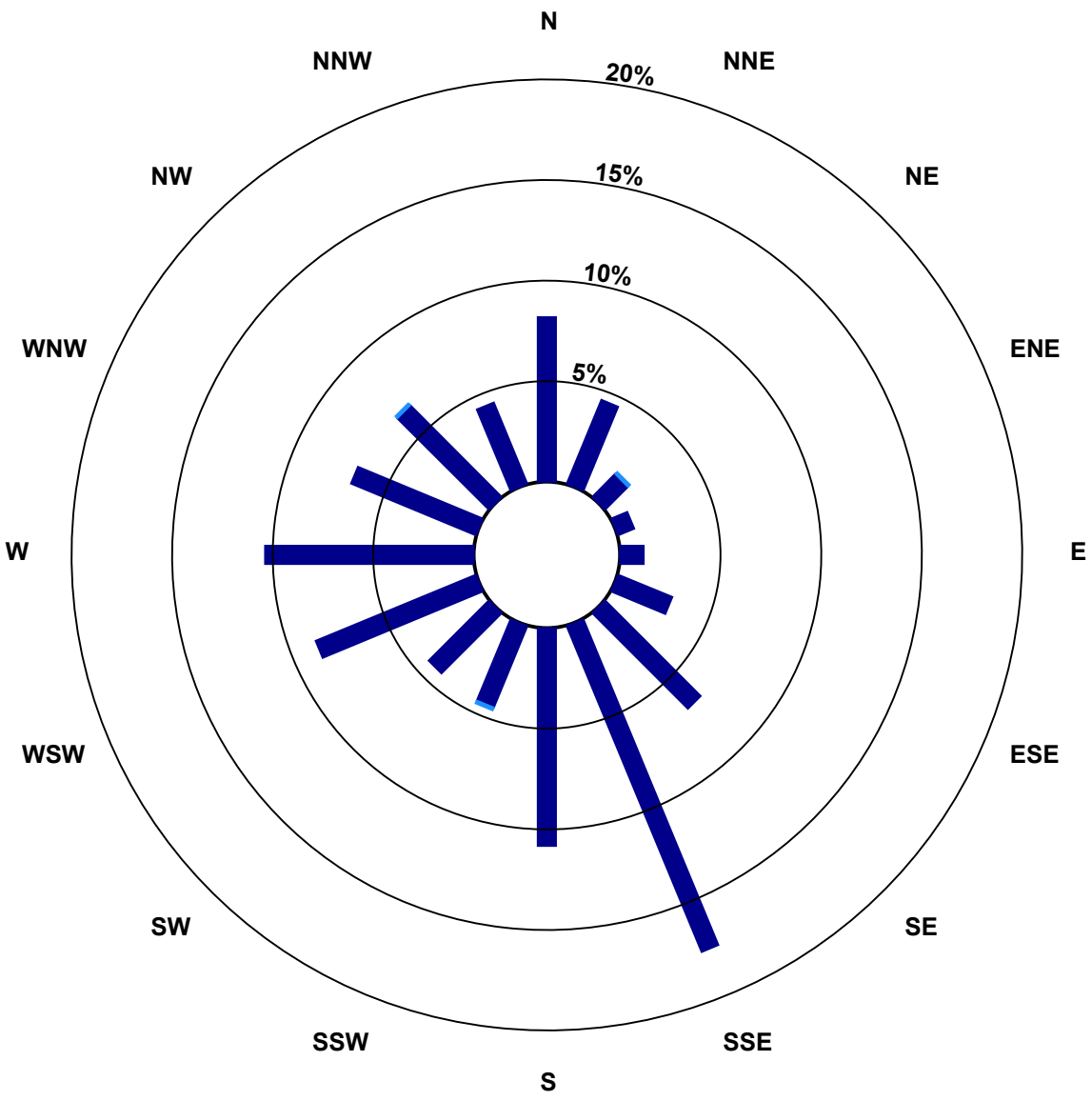
Total Number of Hours: 720

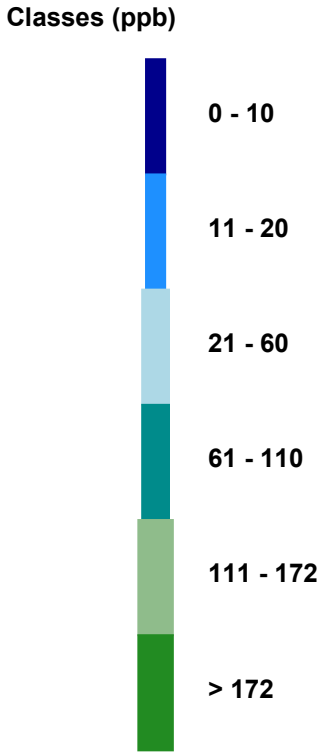
Wood Buffalo Environmental Association

Wind Rose Sep 2024

Sulphur Dioxide (SO_2) - ppb

Buffalo Viewpoint





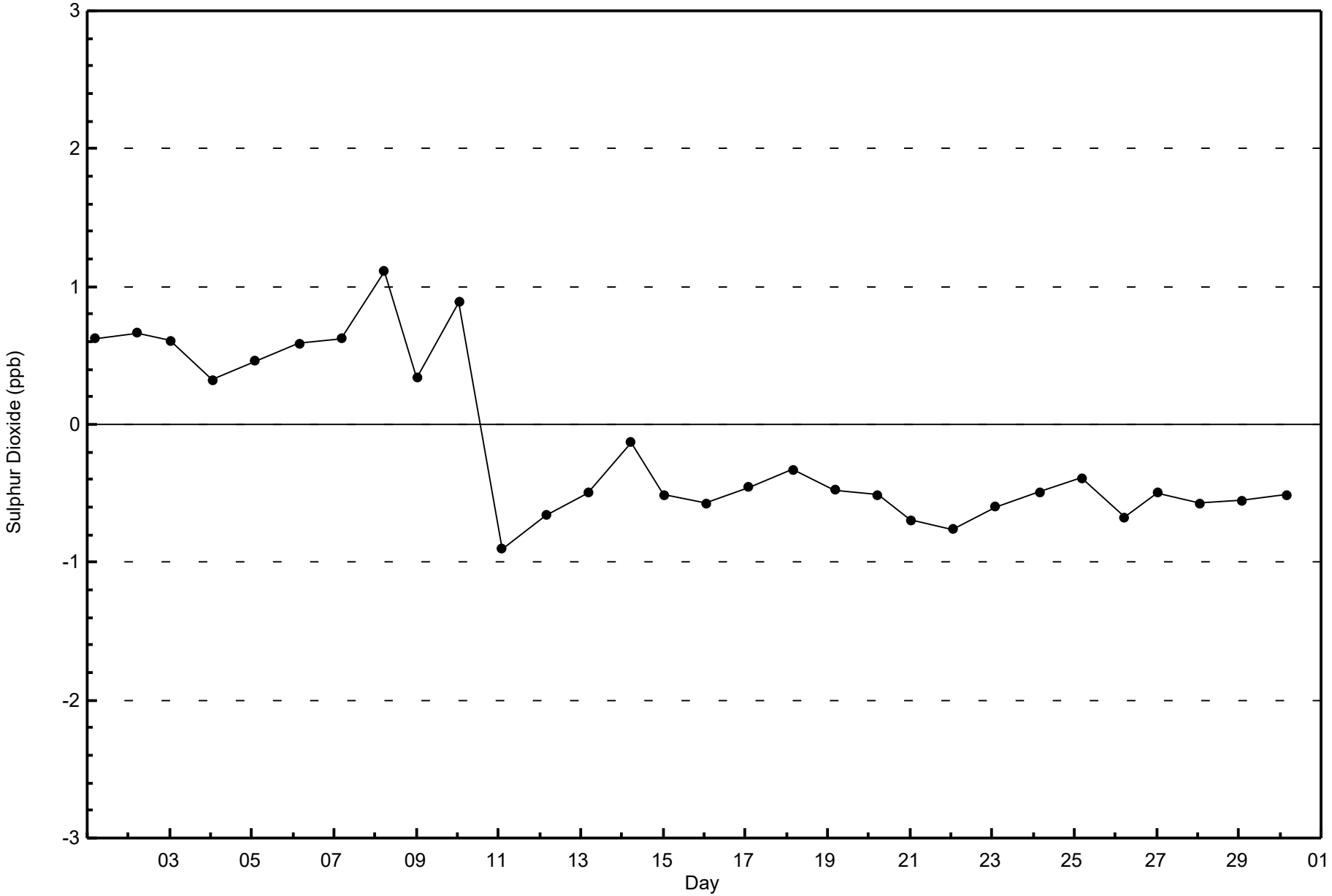
Total Number of Valid Hours: 684

Wood Buffalo Environmental Association

Zero Responses

Sulphur Dioxide (SO_2) - ppb

Buffalo Viewpoint - September 2024

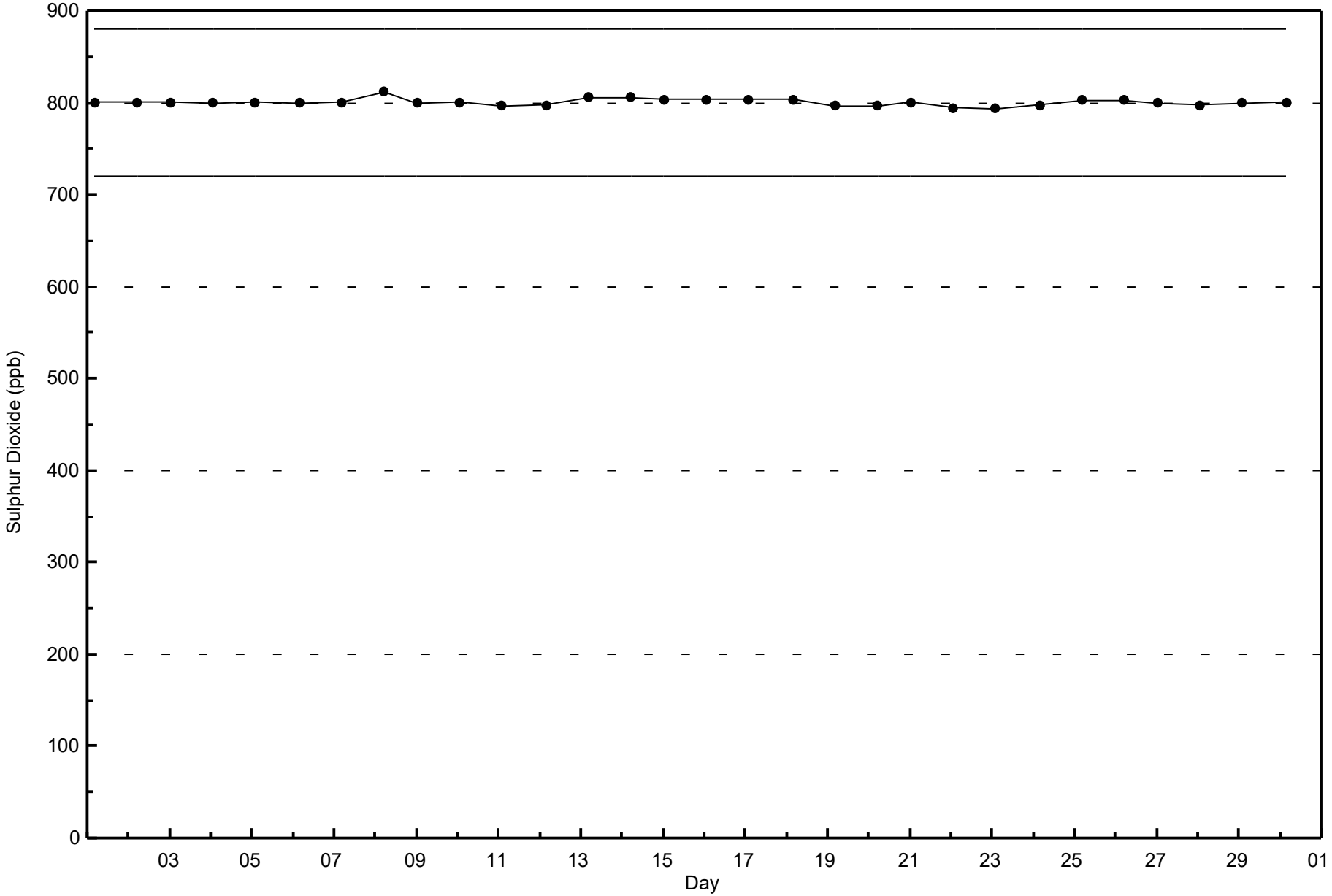


Wood Buffalo Environmental Association

Span Responses

Sulphur Dioxide (SO_2) - ppb

Buffalo Viewpoint - September 2024



Wood Buffalo Environmental Association

Summary of Hour Averages

Hydrogen Sulphide (H_2S) - ppb

Buffalo Viewpoint - September 2024

Number of Exceedences (AAAQO): 1-hr: 0 24-hr: 0
Maximum Value: 3.0 ppb on Sep 17 20:00 Maximum Daily Average: 0.9 ppb on Sep 12

Minimum Value: 0.0 ppb on Sep 2 15:00
Maximum Diurnal Average: 0.4 ppb at hour 9
Monthly Average: 0.25 ppb

Minimum Daily Average: 0.1 ppb on Sep 28
Minimum Diurnal Average: 0.1 ppb at hour 13
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} = 2.2

Hours in Service:	720
Hours of Data:	685
Hours of Missing Data:	35
Hours of Calibration:	35
Percent Operational Time:	100.0

Day	Hourly Period Ending At (MST)																								Daily	Daily
	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24	Average	Maximum
1-Sep	0.1	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	0.0	0.0	0.0	0.1	0.1	0.1	0.2	0.2	0.2	0.2	0.1	0.2
2-Sep	Z	0.4	0.4	0.4	0.2	0.1	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	0.1	0.3	0.5	0.1	0.1	0.2	0.5
3-Sep	0.1	Z	0.2	0.2	0.3	0.3	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	0.2	0.2	0.2	0.2	0.2	0.2	0.3
4-Sep	0.1	0.2	Z	1.1	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	0.1	0.1	0.0	0.0	0.0	0.2	1.1
5-Sep	0.4	0.4	0.4	Z	0.9	0.8	0.5	1.0	2.5	0.9	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	0.4	2.5
6-Sep	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	0.3	0.2	0.1	0.3
7-Sep	0.2	0.2	0.3	0.3	0.2	Z	0.3	0.3	0.2	0.2	0.2	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	0.3
8-Sep	Z	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	0.1	0.8	0.6	0.4	1.1	0.9	0.7	0.5	0.7	0.3	1.1
9-Sep	0.5	Z	0.5	0.4	0.5	0.3	0.2	0.8	1.0	0.4	0.3	0.1	0.1	0.1	0.1	0.1	0.0	0.1	0.1	0.3	0.3	0.1	0.1	0.1	0.3	1.0
10-Sep	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	0.1	0.1	0.1	0.1	0.4	0.2	0.6	0.5	0.4	0.2	0.2	0.6
11-Sep	0.2	0.3	0.3	Z	0.4	0.6	0.9	0.9	0.9	0.7	0.5	0.4	0.3	0.2	0.1	0.0	0.0	0.0	0.1	0.4	0.3	0.2	0.1	0.1	0.4	0.9
12-Sep	0.1	0.1	0.2	0.2	Z	0.2	0.2	0.2	1.9	0.5	0.8	0.8	0.1	2.2	2.4	2.7	2.5	2.5	1.2	1.6	0.3	0.1	0.1	0.3	0.9	2.7
13-Sep	0.7	1.1	1.3	1.2	0.6	Z	1.0	1.0	1.2	1.3	1.0	1.1	0.7	0.6	0.5	0.3	0.3	0.3	0.2	0.2	0.1	0.3	0.3	0.4	0.7	1.3
14-Sep	Z	0.3	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	0.0	0.1	0.1	0.1	0.4	0.2	0.2	0.3	0.4	0.1	0.4
15-Sep	0.6	Z	0.5	0.5	0.4	0.4	0.5	0.5	0.3	0.3	0.3	0.3	0.4	0.2	0.1	0.1	0.1	0.1	0.2	0.2	0.2	0.2	0.2	0.2	0.3	0.6
16-Sep	0.1	0.1	Z	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.0	0.1	0.0	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1
17-Sep	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	0.2	1.9	3.0	1.2	2.8	0.3	0.2	0.5	3.0
18-Sep	0.1	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	0.2	0.3	0.5	0.3	0.3	0.3	0.2	0.5
19-Sep	0.2	0.2	0.3	0.1	0.2	Z	0.1	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	0.2	0.3	0.3	0.6	0.1	0.6
20-Sep	Z	0.7	0.8	0.8	0.6	0.4	0.3	0.4	0.5	0.5	0.6	0.5	0.3	0.2	0.1	0.0	0.0	0.0	0.0	0.0	0.0	0.1	0.6	0.6	0.3	0.8
21-Sep	0.5	Z	0.3	0.3	0.3	0.2	0.2	0.2	0.2	0.3	0.3	0.2	0.1	0.1	0.0	0.0	0.0	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.2	0.5
22-Sep	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	0.5	0.4	0.3	0.1	0.1	0.4	0.1	0.5
23-Sep	1.0	0.5	0.4	Z	0.4	0.7	0.4	0.5	0.5	0.5	C	C	C	C	C	0.3	0.2	0.2	0.2	0.2	0.1	0.1	0.1	0.1	0.4	1.0
24-Sep	0.1	0.1	0.1	0.1	Z	0.8	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	0.1	0.3	0.3	0.2	0.2	0.2	0.8
25-Sep	0.2	0.1	0.1	0.1	0.2	Z	0.3	0.3	0.4	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	0.4
26-Sep	Z	0.2	0.3	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	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.2	0.1	0.3
27-Sep	0.3	Z	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	0.1	0.1	0.1	0.1	0.1	0.1	0.3
28-Sep	0.1	0.0	Z	0.1	0.1	0.1	0.1	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	0.1	0.1	0.1	0.1	0.1	0.1
29-Sep	0.1	0.1	0.2	Z	0.2	0.2	0.6	0.7	1.8	1.4	1.2	0.8	0.4	0.3	0.3	0.3	0.2	0.3	0.2	0.2	0.2	0.1	0.2	0.1	0.4	1.8
30-Sep	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	0.0	0.0	0.1	0.1	0.2	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.2
	0.2	0.2	0.3	0.3	0.3	0.3	0.3	0.3	0.4	0.3	0.2	0.2	0.1	0.2	0.2	0.2	0.2	0.2	0.2	0.3	0.3	0.3	0.2	0.2	Diurnal Average	
	1.0	1.1	1.3	1.2	0.9	0.8	1.0	1.0	2.5	1.4	1.2	1.1	0.7	2.2	2.4	2.7	2.5	2.5	1.9	3.0	1.2	2.8	0.6	0.7	Diurnal Maximum	

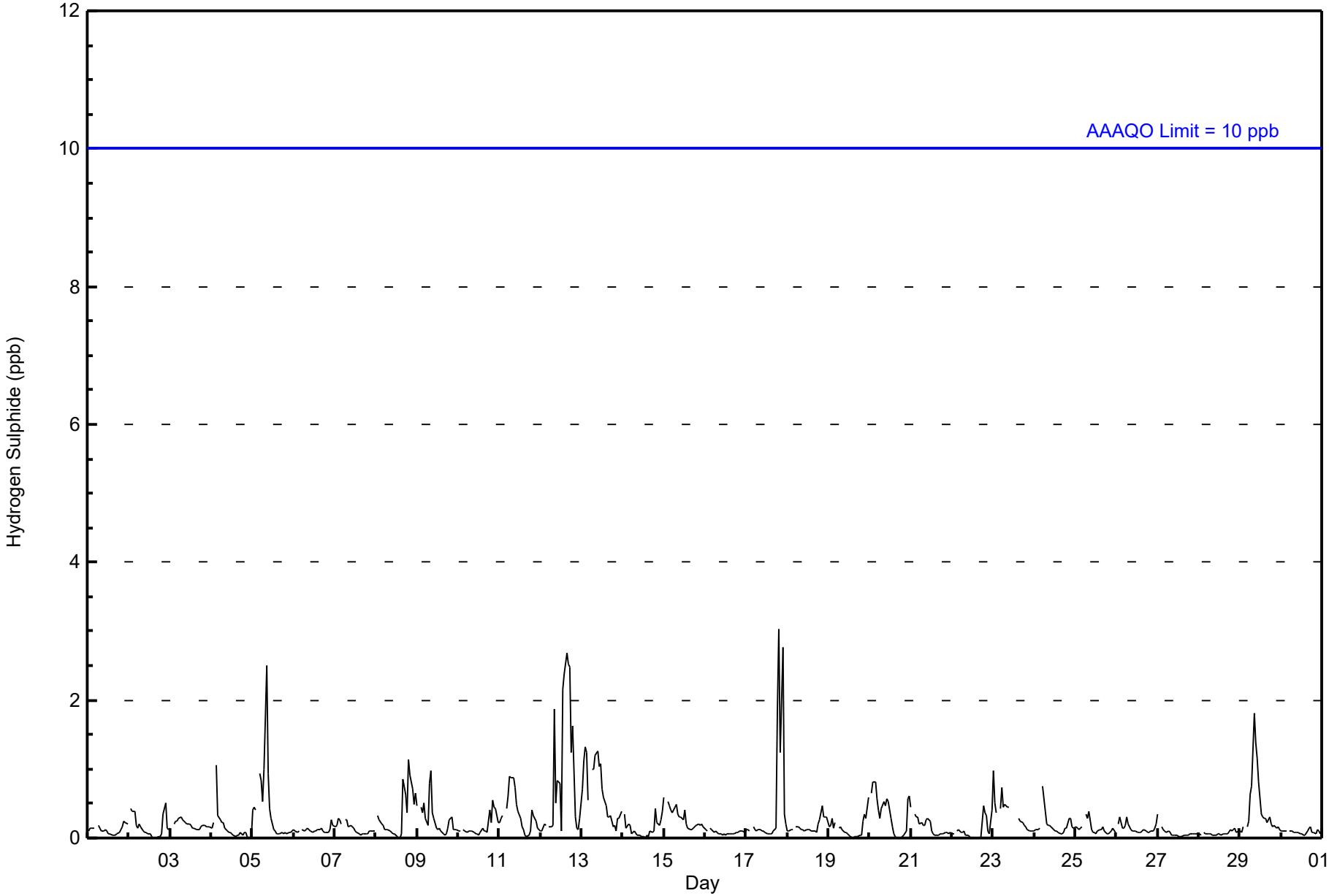
Z - zerospan C - Calibration
Alberta Ambient Air Quality Objectives (AAAQO): 1-hr 10 ppb 24-hr 3 ppb

Wood Buffalo Environmental Association

Hourly Averages

Hydrogen Sulphide (H_2S) - ppb

Buffalo Viewpoint - September 2024



Wood Buffalo Environmental Association

Cumulative Frequency Distribution

Hydrogen Sulphide (H_2S) - ppb

Buffalo Viewpoint - September 2024

Concentration Ranges (ppb)	Number of Hours	%	Cumulative %
0 - 2	681	99.42	99.42
3 - 4	4	0.58	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: 685

Total Number of Hours: 720

Wood Buffalo Environmental Association

Frequency Distribution

Hydrogen Sulphide (H_2S) - ppb

Buffalo Viewpoint - September 2024

Concentration Ranges (ppb)	Wind Direction																
	N	NNE	NE	ENE	E	ESE	SE	SSE	S	SSW	SW	WSW	W	WNW	NW	NNW	**Totals**
0 - 2	57	29	12	6	7	18	44	121	73	31	32	60	72	44	45	30	681
3 - 4	0	0	0	0	0	2	2	0	0	0	0	0	0	0	0	0	4
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	57	29	12	6	7	20	46	121	73	31	32	60	72	44	45	30	685

Total Number of Valid Hours: 685

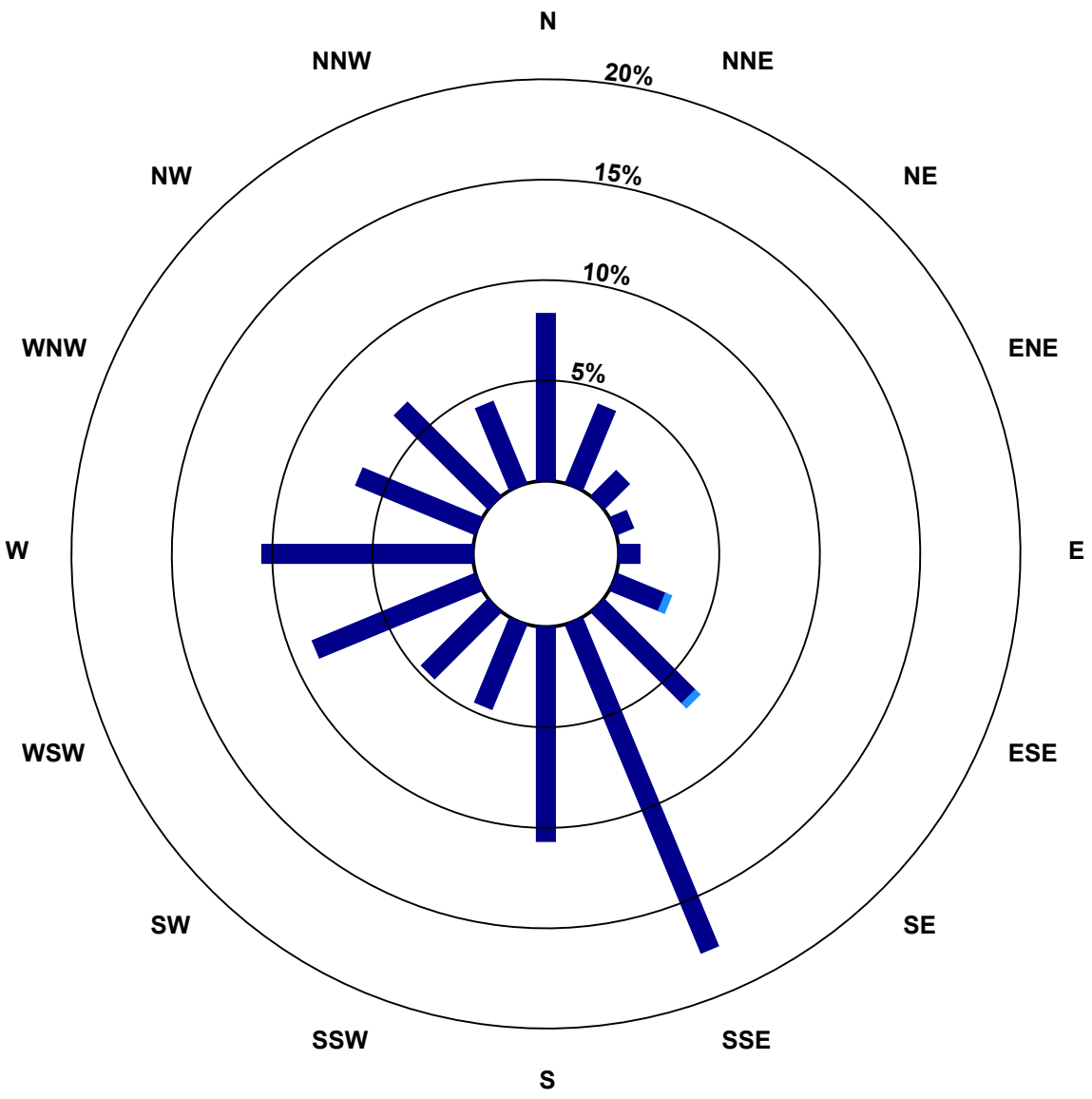
Total Number of Hours: 720

Wood Buffalo Environmental Association

Wind Rose Sep 2024

Hydrogen Sulphide (H_2S) - ppb

Buffalo Viewpoint



Classes (ppb)

0 - 2

3 - 4

5 - 7

8 - 11

> 11

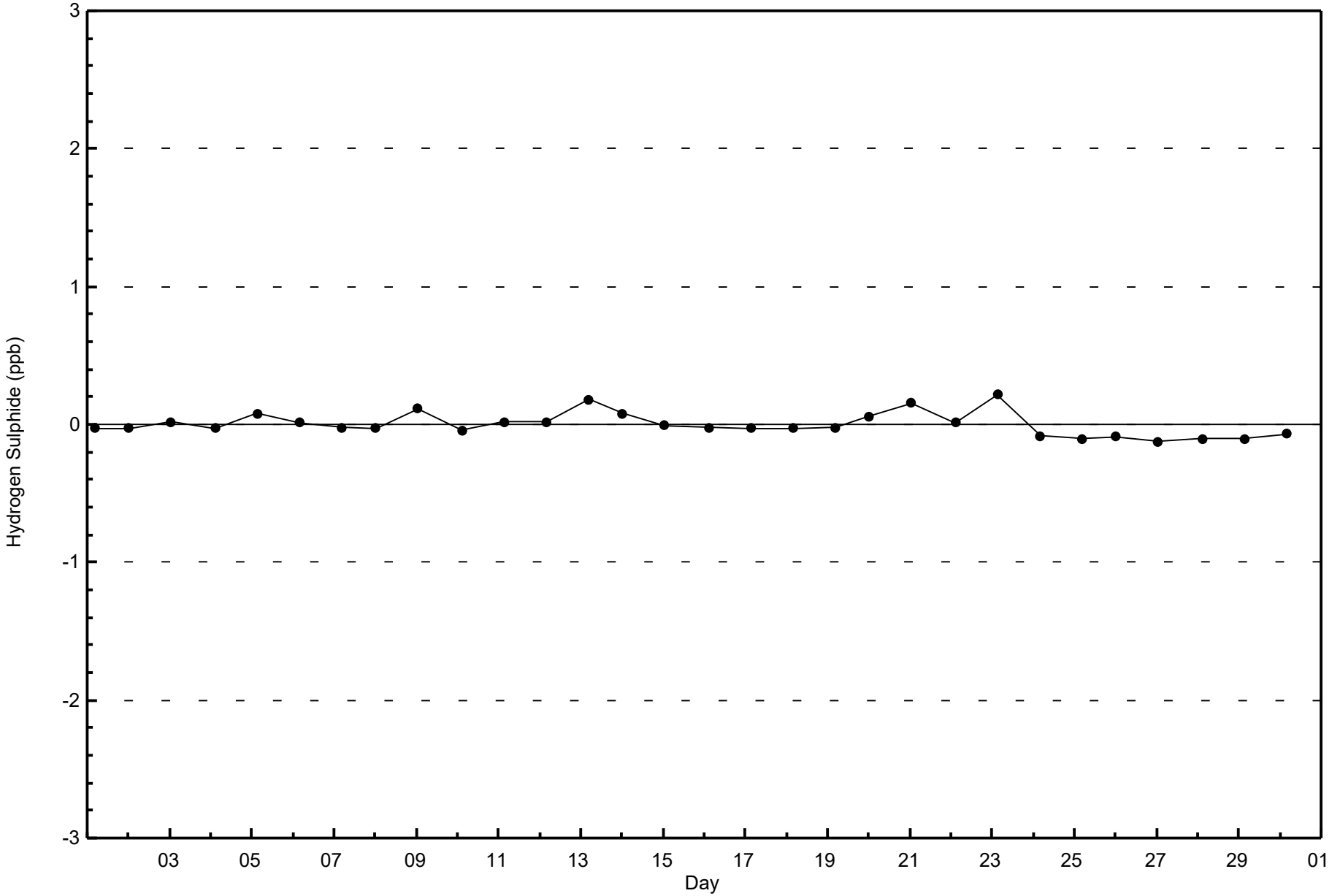
Total Number of Valid Hours: 685

Wood Buffalo Environmental Association

Zero Responses

Hydrogen Sulphide (H_2S) - ppb

Buffalo Viewpoint - September 2024

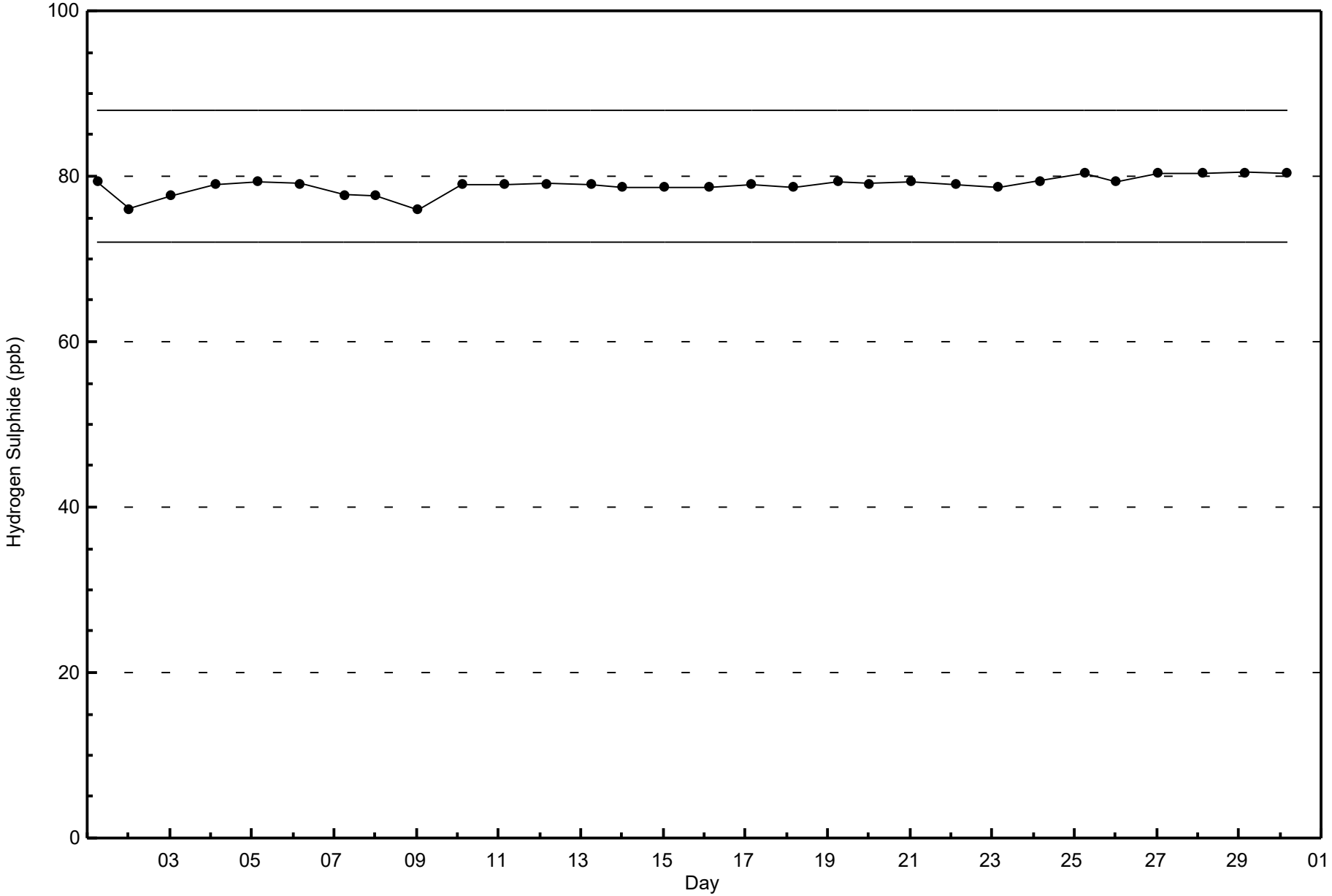


Wood Buffalo Environmental Association

Span Responses

Hydrogen Sulphide (H_2S) - ppb

Buffalo Viewpoint - September 2024



Wood Buffalo Environmental Association

Summary of Hour Averages

Total Hydrocarbons (THC) - ppm

Buffalo Viewpoint - September 2024

Maximum Value: 3.6 ppm on Sep 23 01:00

Maximum Daily Average: 2.6 ppm on Sep 13

Minimum Value: 2.0 ppm on Sep 1 18:00

Minimum Daily Average: 2.0 ppm on Sep 28

Maximum Diurnal Average: 2.3 ppm at hour 4

Minimum Diurnal Average: 2.1 ppm at hour 15

Monthly Average: 2.15 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} = 3.1

Hours in Service:	720
Hours of Data:	684
Hours of Missing Data:	36
Hours of Calibration:	33
Percent Operational Time:	99.6

Day	Hourly Period Ending At (MST)																								Daily	Daily
	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24	Average	Maximum
1-Sep	2.1	2.1	2.1	2.1	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	2.1	2.2	2.2	2.2	2.3	2.1	2.3
2-Sep	2.3	2.3	2.3	2.3	2.2	Z	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	2.1	2.3
3-Sep	Z	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	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.1	2.0	2.0	2.1	2.1
4-Sep	2.0	Z	2.3	2.3	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	2.0	2.0	2.0	2.0	2.0	2.0	2.1	2.3
5-Sep	2.1	2.2	Z	2.2	2.4	2.3	2.4	2.4	2.4	2.2	2.1	2.1	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.1	2.0	2.0	2.0	2.0	2.1	2.4
6-Sep	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	2.1	2.1
7-Sep	2.1	2.1	2.2	2.2	Z	2.2	2.2	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	2.1	2.1	2.1	2.2
8-Sep	2.1	2.1	2.2	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	2.2	2.2	2.2	2.3	2.3	2.4	2.3	2.5	2.2	2.5
9-Sep	Z	2.3	2.3	2.3	2.3	2.2	2.2	2.6	2.4	2.3	2.3	2.1	2.1	2.1	2.0	2.0	2.0	2.0	2.0	2.1	2.1	2.1	2.1	2.1	2.2	2.6
10-Sep	2.1	Z	2.1	2.1	2.1	2.1	C	C	C	2.0	2.0	2.0	2.0	2.0	2.1	2.0	2.0	2.1	2.1	2.1	2.2	2.3	2.3	2.1	2.1	2.3
11-Sep	2.2	2.2	Z	2.4	2.4	2.5	2.6	2.6	2.4	2.2	2.2	2.2	2.1	2.1	2.1	2.0	2.0	2.1	2.1	2.2	2.2	2.3	2.2	2.1	2.2	2.6
12-Sep	2.1	2.1	2.2	Z	2.1	2.1	2.1	2.1	2.2	2.1	2.1	2.1	2.1	2.2	2.2	2.3	2.3	2.3	2.2	2.2	2.1	2.1	2.1	2.2	2.2	2.3
13-Sep	2.3	2.5	3.5	3.4	Z	3.3	3.3	2.9	3.0	3.0	2.6	2.6	2.3	2.2	2.2	2.1	2.2	2.2	2.2	2.2	2.2	2.2	2.4	2.2	2.6	3.5
14-Sep	2.2	2.2	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	2.2	2.4	2.1	2.1	2.1	2.2	2.1	2.4
15-Sep	Z	2.3	2.4	2.5	2.4	2.4	2.4	2.4	2.2	2.1	2.1	2.1	2.2	2.1	2.1	2.1	2.1	2.1	2.1	2.1	2.2	2.1	2.1	2.1	2.2	2.5
16-Sep	2.1	Z	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	2.0	2.1	2.1	2.1	2.1	2.1	2.1	2.1
17-Sep	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	2.0	2.0	2.0	2.1	2.1	3.0	2.9	2.3	2.7	2.2	2.2	2.2	3.0
18-Sep	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	2.1	2.2	2.2	2.2	2.1	2.1	2.1	2.1	2.2
19-Sep	2.2	2.3	2.3	2.2	Z	2.1	2.2	2.2	2.2	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	2.2	2.5	2.1	2.5
20-Sep	2.8	2.9	2.7	2.9	2.5	Z	2.2	2.4	2.6	2.5	2.3	2.3	2.2	2.1	2.1	2.1	2.0	2.1	2.1	2.1	2.1	2.1	2.6	2.6	2.3	2.9
21-Sep	Z	2.4	2.3	2.3	2.2	2.2	2.2	2.2	2.2	2.2	2.2	2.1	2.1	2.1	2.0	2.0	2.0	2.1	2.1	2.0	2.1	2.1	2.1	2.1	2.1	2.4
22-Sep	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	2.2	2.2	2.2	2.2	2.5	2.1	2.5
23-Sep	3.6	2.7	Z	2.3	2.5	2.8	2.7	2.4	2.4	2.3	2.3	2.2	M	M	M	2.1	2.1	2.1	2.1	2.1	2.1	2.1	2.1	2.1	2.3	3.6
24-Sep	2.1	2.1	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	2.1	2.1	2.2	2.1	2.1	2.1	2.2
25-Sep	2.1	2.1	2.1	2.1	Z	2.1	2.2	2.2	2.3	2.2	2.1	2.1	2.1	2.1	2.1	2.1	2.2	2.1	2.1	2.1	2.2	2.2	2.1	2.1	2.1	2.3
26-Sep	2.1	2.1	2.1	2.3	2.1	Z	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	2.1	2.1	2.1	2.1	2.3
27-Sep	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	2.1	2.1	2.1	2.1	2.1	2.1
28-Sep	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	2.1	2.1	2.1	2.0	2.1
29-Sep	2.1	2.1	Z	2.1	2.1	2.2	2.4	2.7	3.6	3.1	2.7	2.4	2.1	2.2	2.1	2.1	2.1	2.1	2.1	2.3	2.2	2.2	2.3	2.1	2.3	3.6
30-Sep	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	2.1	2.1	2.1	2.1	2.1	2.1	2.1	2.1	2.1
	2.2	2.2	2.2	2.3	2.2	2.2	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	2.1	2.1	2.2	Diurnal Average	
	3.6	2.9	3.5	3.4	2.5	3.3	3.3	2.9	3.6	3.1	2.7	2.6	2.3	2.2	2.2	2.3	2.3	2.3	3.0	2.9	2.3	2.7	2.6	2.6	Diurnal Maximum	

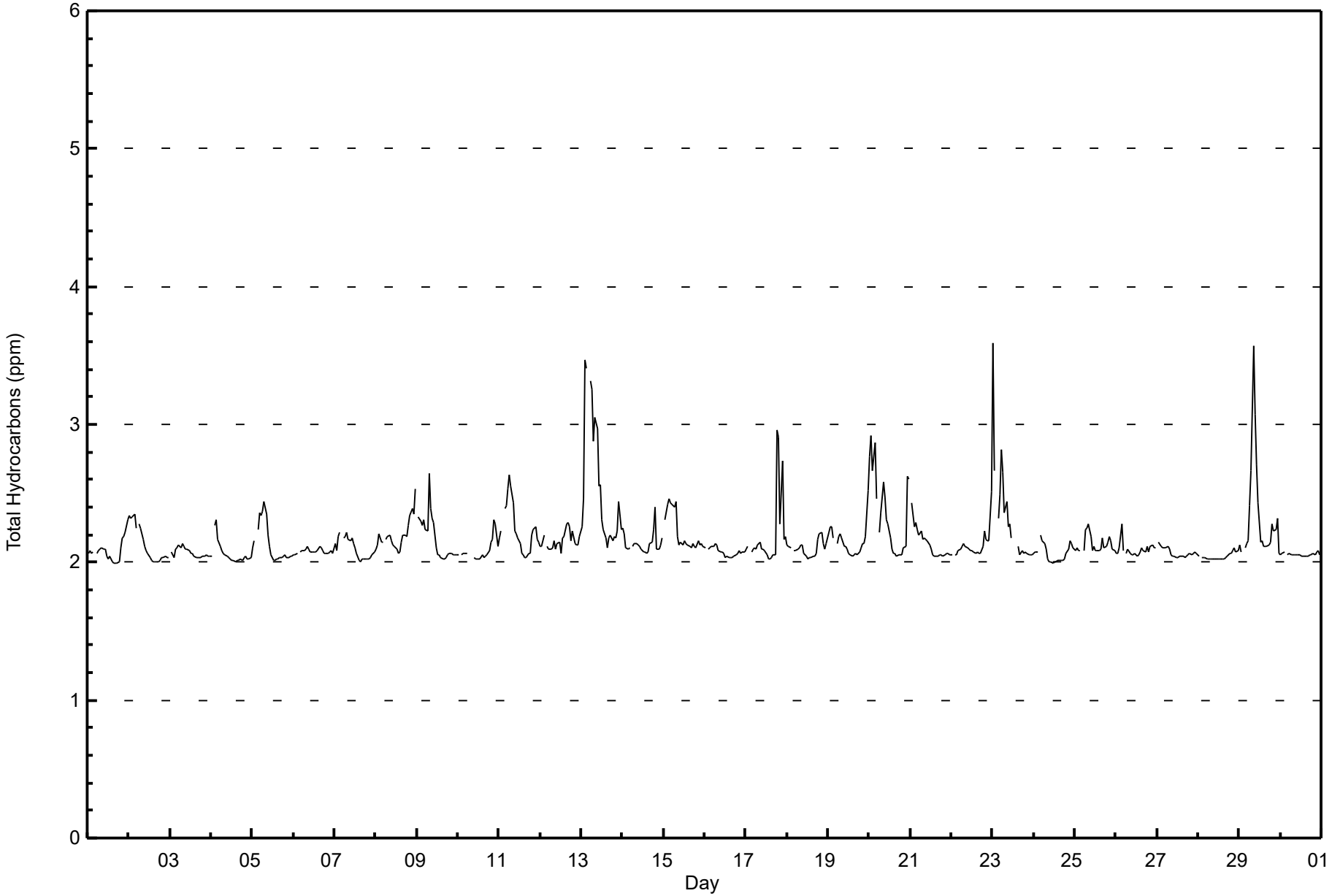
Z - zerospan C - Calibration M - Maintenance

Wood Buffalo Environmental Association

Hourly Averages

Total Hydrocarbons (THC) - ppm

Buffalo Viewpoint - September 2024



Concentration Ranges (ppm)	Number of Hours	%	Cumulative %
0 - 2.0	146	21.35	21.35
2.1 - 3.0	531	77.63	98.98
3.1 - 10.0	7	1.02	100.00
> 10.0	0	0.00	100.00

Total Number of Valid Hours: 684

Total Number of Hours: 720

Wood Buffalo Environmental Association

Frequency Distribution

Total Hydrocarbons (THC) - ppm

Buffalo Viewpoint - September 2024

Concentration Ranges (ppm)	Wind Direction																
	N	NNE	NE	ENE	E	ESE	SE	SSE	S	SSW	SW	WSW	W	WNW	NW	NNW	**Totals**
0 - 2.0	7	6	3	0	0	2	5	7	7	8	14	32	33	18	3	1	146
2.1 - 3.0	47	25	9	6	8	18	41	113	67	23	15	27	38	28	40	26	531
3.1 - 10.0	2	0	0	0	0	0	0	0	0	0	0	0	0	0	2	3	7
> 10.0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Totals	56	31	12	6	8	20	46	120	74	31	29	59	71	46	45	30	684

Total Number of Valid Hours: 684

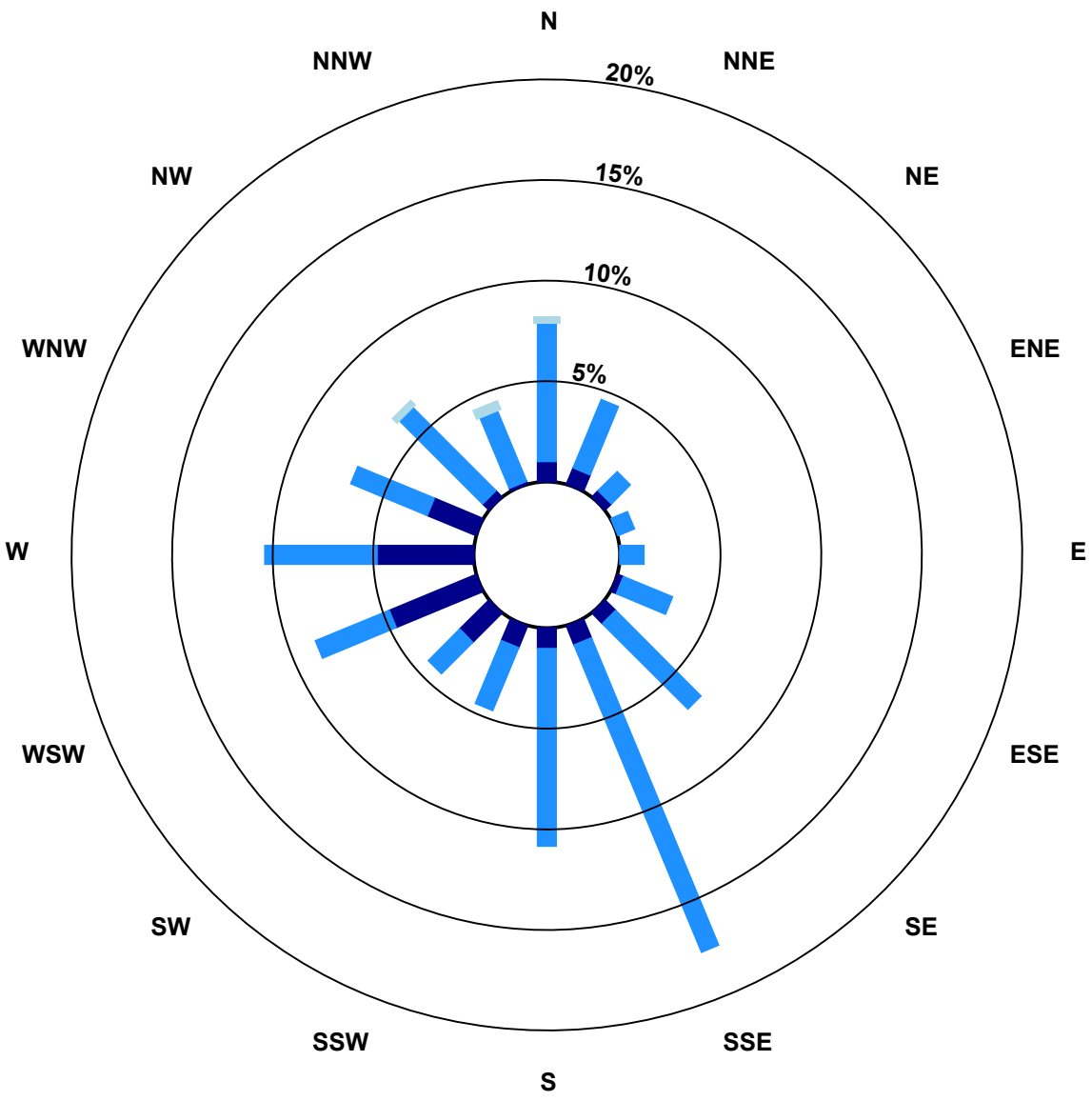
Total Number of Hours: 720

Wood Buffalo Environmental Association

Wind Rose Sep 2024

Total Hydrocarbons (THC) - ppm

Buffalo Viewpoint



Classes (ppm)

0 - 2.0

2.1 - 3.0

3.1 - 10.0

> 10.0

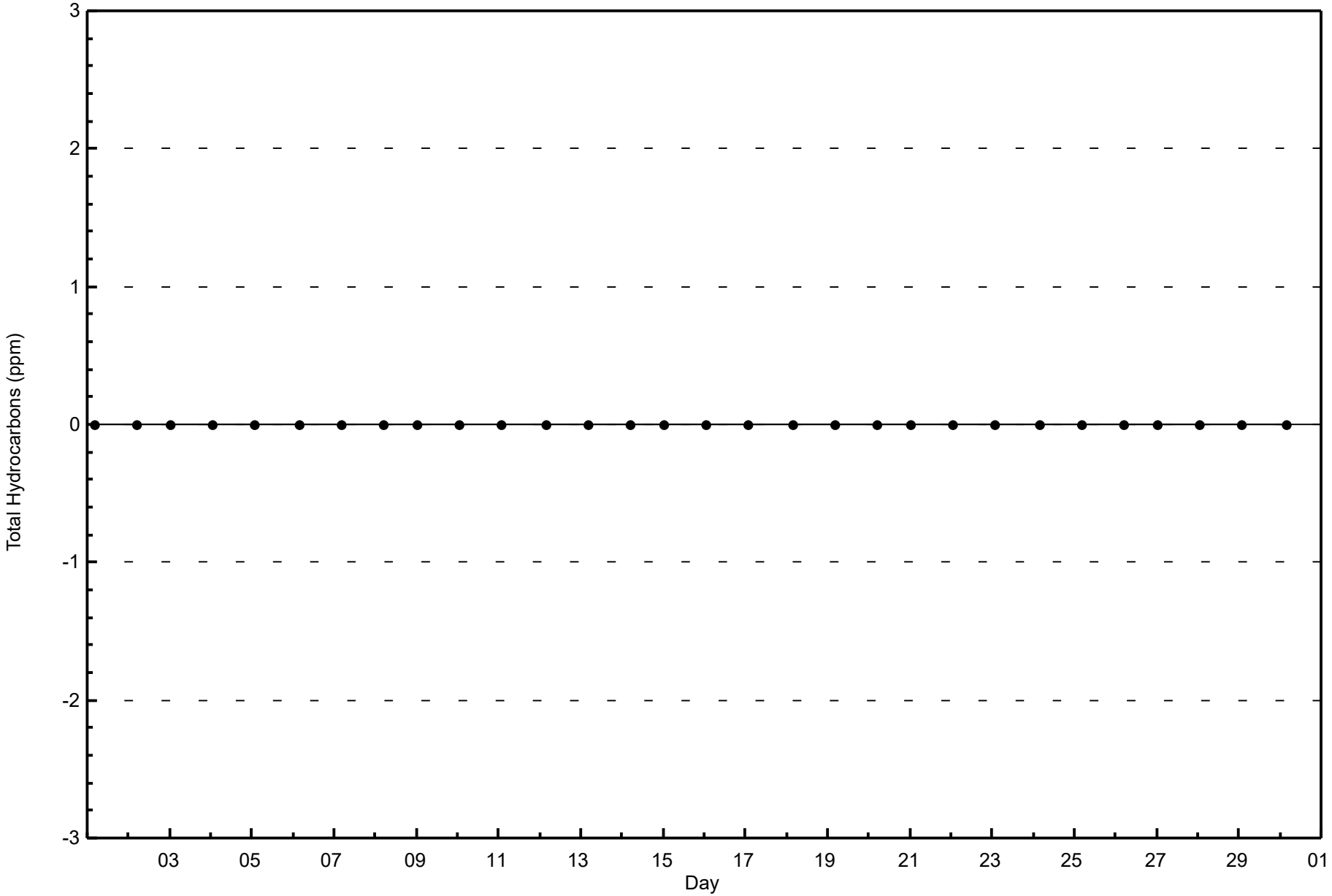
Total Number of Valid Hours: 684

Wood Buffalo Environmental Association

Zero Responses

Total Hydrocarbons (THC) - ppm

Buffalo Viewpoint - September 2024

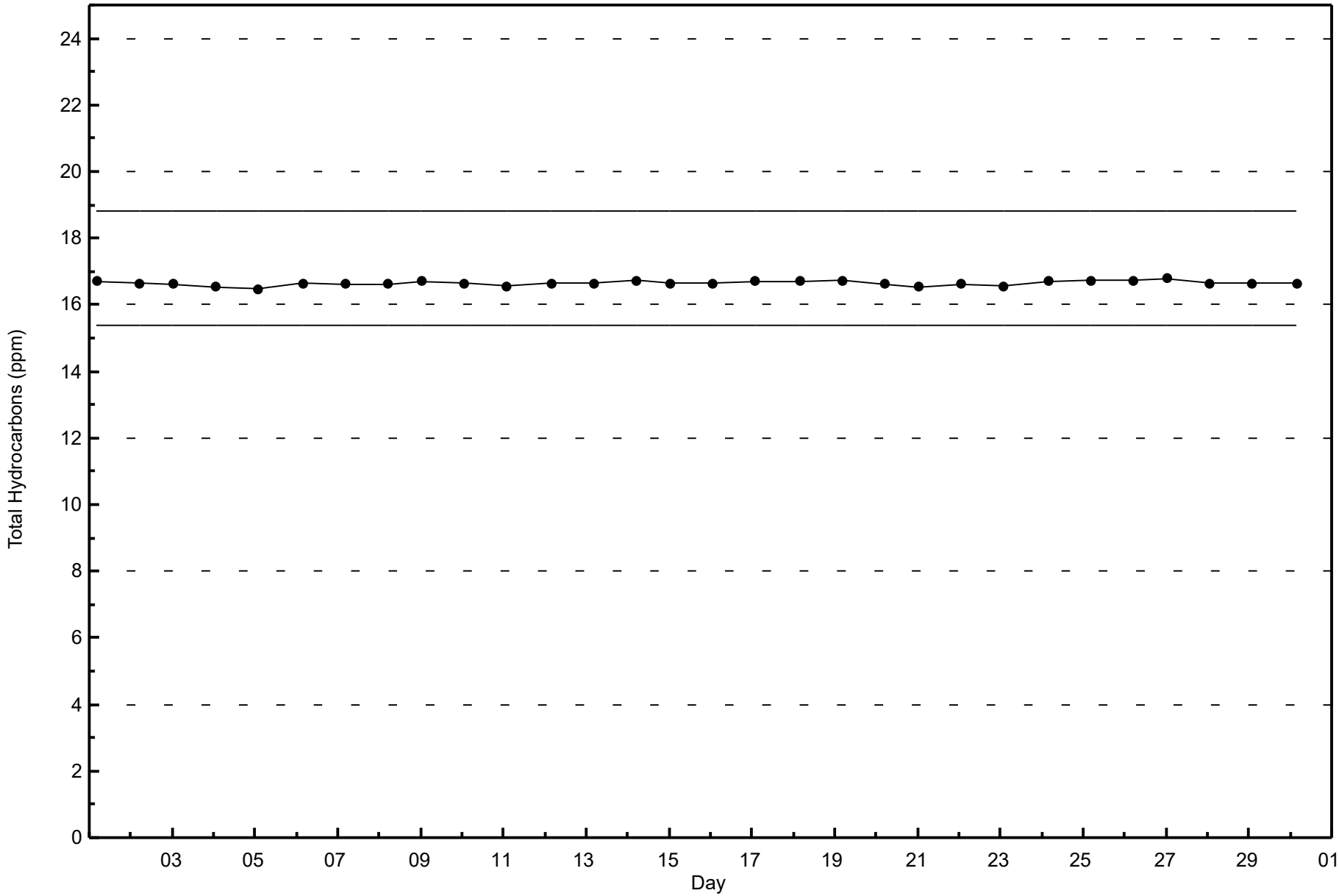


Wood Buffalo Environmental Association

Span Responses

Total Hydrocarbons (THC) - ppm

Buffalo Viewpoint - September 2024



Wood Buffalo Environmental Association

Summary of Hour Averages

Non Methane Hydrocarbons (NMHC) - ppm

Buffalo Viewpoint - September 2024

Maximum Value: 0.000 ppm on Sep 1 01:00

Maximum Daily Average: 0.000 ppm on Sep 1

Minimum Value: 0.000 ppm on Sep 1 01:00

Minimum Daily Average: 0.000 ppm on Sep 1

Maximum Diurnal Average: 0.000 ppm at hour 1

Minimum Diurnal Average: 0.000 ppm at hour 1

Monthly Average: 0.000 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 in Service:	720
Hours of Data:	684
Hours of Missing Data:	36
Hours of Calibration:	33
Percent Operational Time:	99.6

Day	Hourly Period Ending At (MST)																								Daily	Daily
	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24	Average	Maximum
1-Sep	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
2-Sep	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
3-Sep	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
4-Sep	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
5-Sep	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
6-Sep	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
7-Sep	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
8-Sep	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
9-Sep	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
10-Sep	0.000	Z	0.000	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	0.000	0.000	0.000	0.000	0.000
11-Sep	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
12-Sep	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
13-Sep	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
14-Sep	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
15-Sep	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
16-Sep	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
17-Sep	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
18-Sep	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
19-Sep	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
20-Sep	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
21-Sep	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
22-Sep	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
23-Sep	0.000	0.000	Z	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	M	M	M	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000
24-Sep	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
25-Sep	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
26-Sep	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
27-Sep	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
28-Sep	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
29-Sep	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
30-Sep	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
	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	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	
	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	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 Maximum	

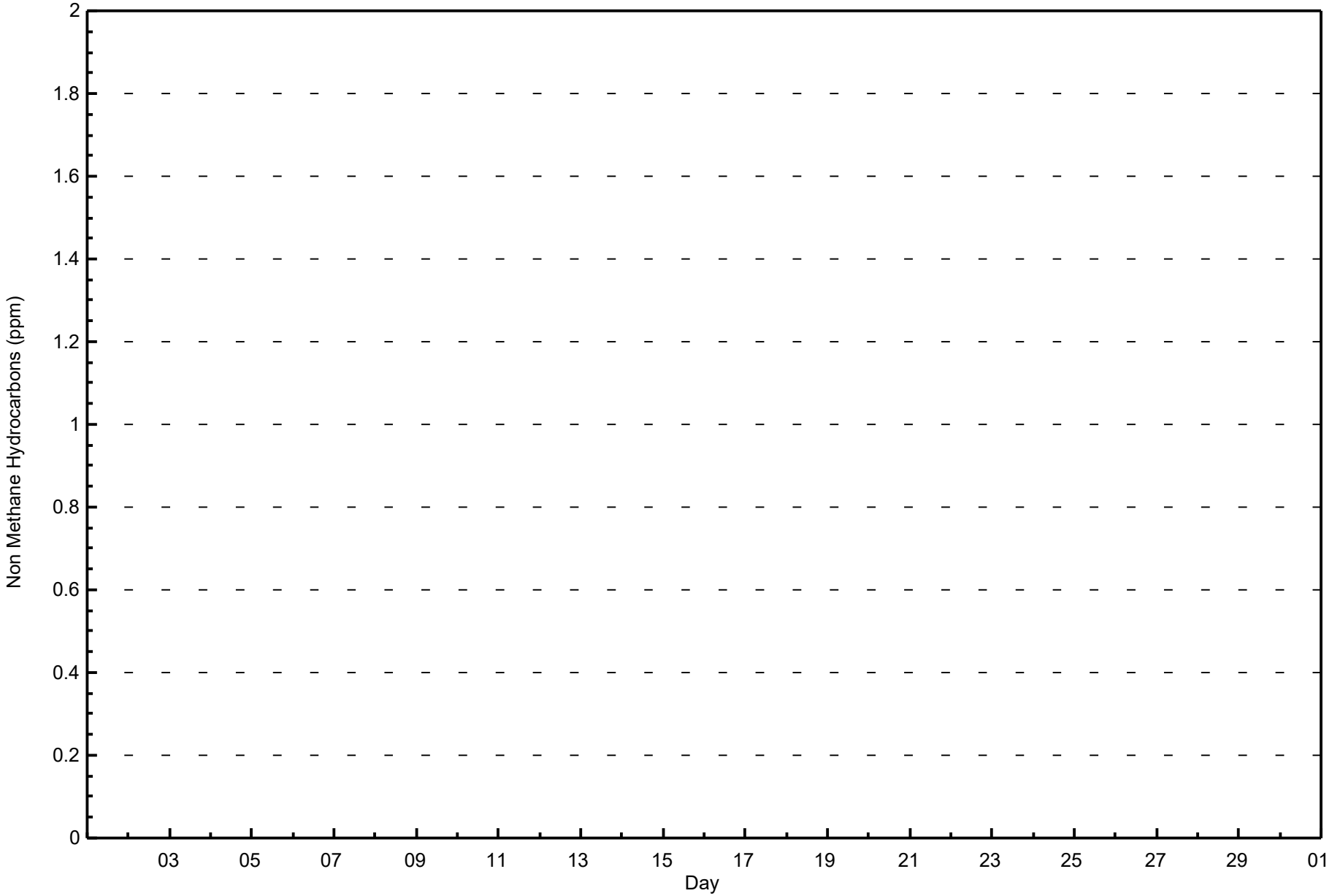
Z - zerospan C - Calibration M - Maintenance

Wood Buffalo Environmental Association

Hourly Averages

Non Methane Hydrocarbons (NMHC) - ppm

Buffalo Viewpoint - September 2024



Concentration Ranges (ppm)	Number of Hours	%	Cumulative %
0 - 0.005	684	100.00	100.00
0.006 - 0.05	0	0.00	100.00
0.06 - 0.1	0	0.00	100.00
> 0.1	0	0.00	100.00

Total Number of Valid Hours: 684

Total Number of Hours: 720

Concentration	Wind Direction																
Ranges (ppm)	N	NNE	NE	ENE	E	ESE	SE	SSE	S	SSW	SW	WSW	W	WNW	NW	NNW	**Totals**
0 - 0.005	56	31	12	6	8	20	46	120	74	31	29	59	71	46	45	30	684
0.006 - 0.05	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
0.06 - 0.1	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
Totals	56	31	12	6	8	20	46	120	74	31	29	59	71	46	45	30	684

Total Number of Valid Hours: 684

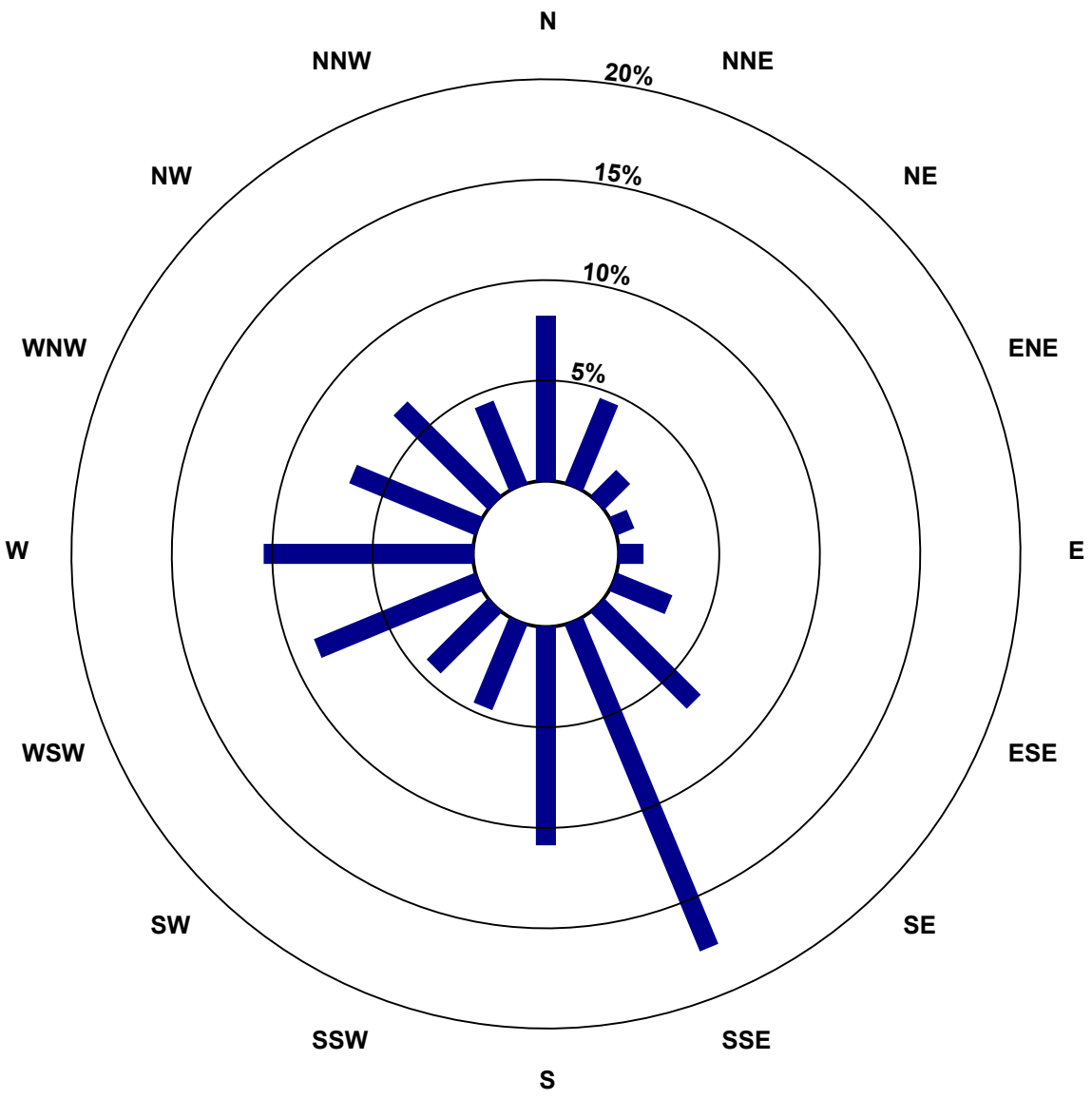
Total Number of Hours: 720

Wood Buffalo Environmental Association

Wind Rose Sep 2024

Non Methane Hydrocarbons (NMHC) - ppm

Buffalo Viewpoint



Classes (ppm)

0 - 0.005

0.006 - 0.05

0.06 - 0.1

> 0.1

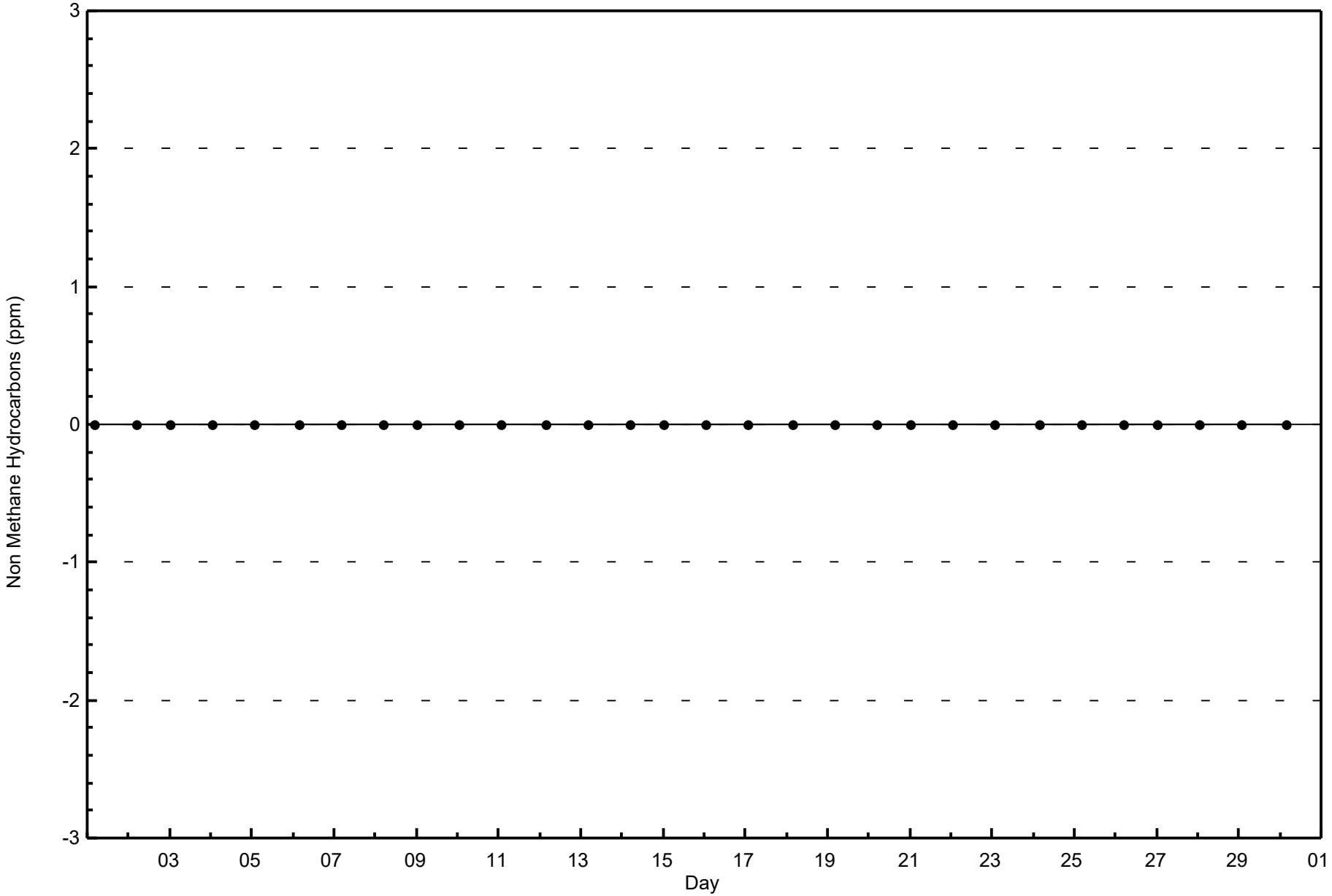
Total Number of Valid Hours: 684

Wood Buffalo Environmental Association

Zero Responses

Non Methane Hydrocarbons (NMHC) - ppm

Buffalo Viewpoint - September 2024

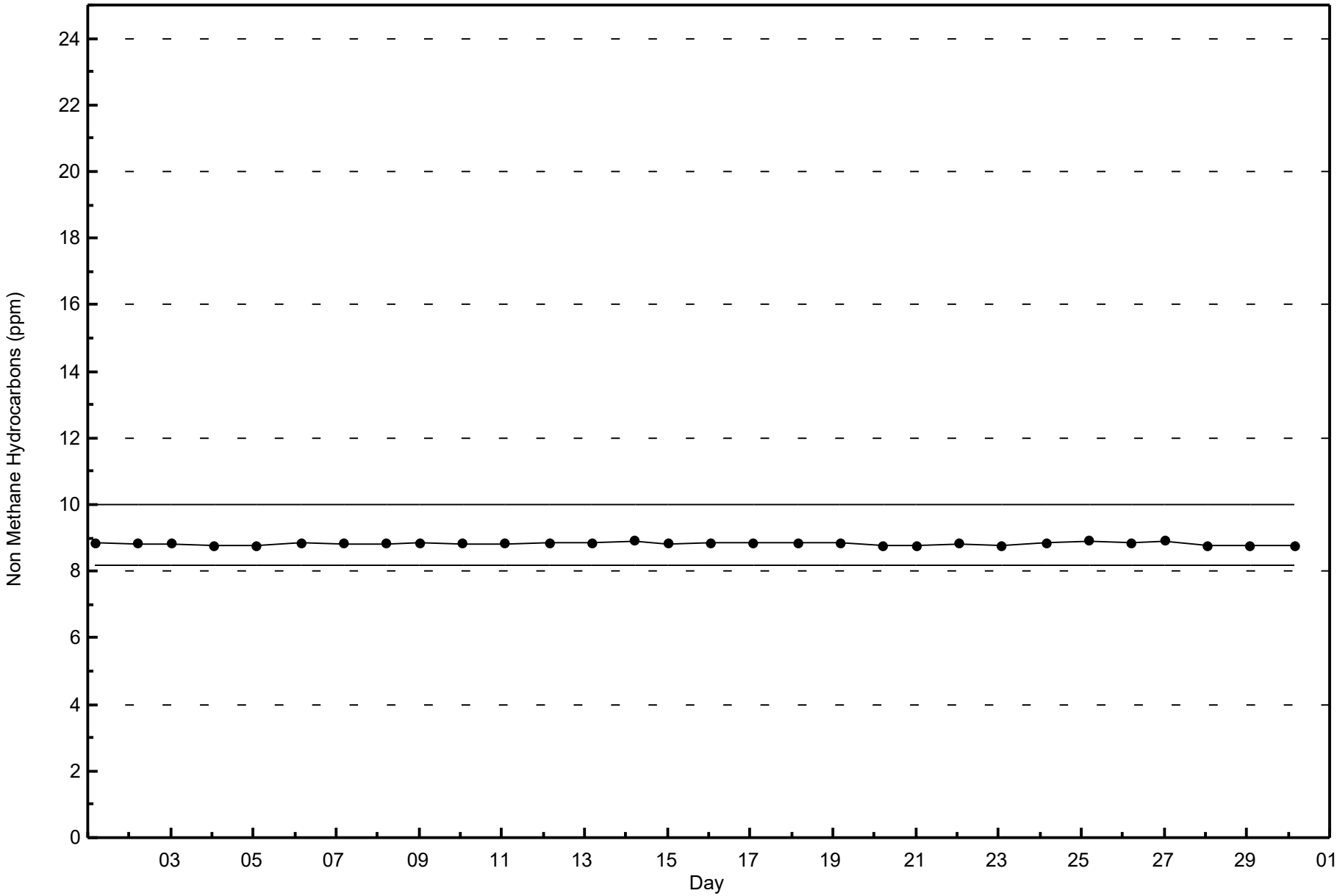


Wood Buffalo Environmental Association

Span Responses

Non Methane Hydrocarbons (NMHC) - ppm

Buffalo Viewpoint - September 2024



Wood Buffalo Environmental Association

Summary of Hour Averages

Methane (CH_4) - ppm

Buffalo Viewpoint - September 2024

Number of Exceedences (AAAQO): 1-hr: 0 24-hr: 0

Maximum Value: 3.6 ppm on Sep 23 01:00

Maximum Daily Average: 2.6 ppm on Sep 13

Minimum Value: 2.0 ppm on Sep 1 18:00

Minimum Daily Average: 2.0 ppm on Sep 28

Maximum Diurnal Average: 2.3 ppm at hour 4

Minimum Diurnal Average: 2.1 ppm at hour 15

Monthly Average: 2.15 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} = 3.1

Hours in Service:	720
Hours of Data:	684
Hours of Missing Data:	36
Hours of Calibration:	33
Percent Operational Time:	99.6

Day	Hourly Period Ending At (MST)																								Daily	Daily
	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24	Average	Maximum
1-Sep	2.1	2.1	2.1	2.1	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	2.1	2.2	2.2	2.2	2.3	2.1	2.3
2-Sep	2.3	2.3	2.3	2.3	2.2	Z	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	2.1	2.3
3-Sep	Z	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	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.1	2.0	2.0	2.1	2.1
4-Sep	2.0	Z	2.3	2.3	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	2.0	2.0	2.0	2.0	2.0	2.0	2.1	2.3
5-Sep	2.1	2.2	Z	2.2	2.4	2.3	2.4	2.4	2.4	2.2	2.1	2.1	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.1	2.0	2.0	2.0	2.0	2.1	2.4
6-Sep	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	2.1	2.1
7-Sep	2.1	2.1	2.2	2.2	Z	2.2	2.2	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	2.1	2.1	2.1	2.2
8-Sep	2.1	2.1	2.2	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	2.2	2.2	2.2	2.3	2.3	2.4	2.3	2.5	2.2	2.5
9-Sep	Z	2.3	2.3	2.3	2.3	2.2	2.2	2.6	2.4	2.3	2.3	2.1	2.1	2.1	2.0	2.0	2.0	2.0	2.0	2.1	2.1	2.1	2.1	2.1	2.2	2.6
10-Sep	2.1	Z	2.1	2.1	2.1	2.1	C	C	C	2.0	2.0	2.0	2.0	2.0	2.1	2.0	2.0	2.1	2.1	2.1	2.2	2.3	2.3	2.1	2.1	2.3
11-Sep	2.2	2.2	Z	2.4	2.4	2.5	2.6	2.6	2.4	2.2	2.2	2.2	2.1	2.1	2.1	2.0	2.0	2.1	2.1	2.2	2.2	2.3	2.2	2.1	2.2	2.6
12-Sep	2.1	2.1	2.2	Z	2.1	2.1	2.1	2.1	2.2	2.1	2.1	2.1	2.1	2.2	2.2	2.3	2.3	2.3	2.2	2.2	2.1	2.1	2.1	2.2	2.2	2.3
13-Sep	2.3	2.5	3.5	3.4	Z	3.3	3.3	2.9	3.0	3.0	2.6	2.6	2.3	2.2	2.2	2.1	2.2	2.2	2.2	2.2	2.2	2.2	2.4	2.2	2.6	3.5
14-Sep	2.2	2.2	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	2.2	2.4	2.1	2.1	2.1	2.2	2.1	2.4
15-Sep	Z	2.3	2.4	2.5	2.4	2.4	2.4	2.4	2.2	2.1	2.1	2.1	2.2	2.1	2.1	2.1	2.1	2.1	2.1	2.1	2.2	2.1	2.1	2.1	2.2	2.5
16-Sep	2.1	Z	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	2.0	2.1	2.1	2.1	2.1	2.1	2.1	2.1
17-Sep	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	2.0	2.0	2.0	2.1	2.1	3.0	2.9	2.3	2.7	2.2	2.2	2.2	3.0
18-Sep	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	2.1	2.2	2.2	2.2	2.1	2.1	2.1	2.1	2.2
19-Sep	2.2	2.3	2.3	2.2	Z	2.1	2.2	2.2	2.2	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	2.2	2.5	2.1	2.5
20-Sep	2.8	2.9	2.7	2.9	2.5	Z	2.2	2.4	2.6	2.5	2.3	2.3	2.2	2.1	2.1	2.1	2.0	2.1	2.1	2.1	2.1	2.1	2.6	2.6	2.3	2.9
21-Sep	Z	2.4	2.3	2.3	2.2	2.2	2.2	2.2	2.2	2.2	2.2	2.1	2.1	2.1	2.0	2.0	2.0	2.1	2.1	2.0	2.1	2.1	2.1	2.1	2.1	2.4
22-Sep	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	2.2	2.2	2.2	2.2	2.5	2.1	2.5
23-Sep	3.6	2.7	Z	2.3	2.5	2.8	2.7	2.4	2.4	2.3	2.3	2.2	M	M	M	2.1	2.1	2.1	2.1	2.1	2.1	2.1	2.1	2.1	2.3	3.6
24-Sep	2.1	2.1	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	2.1	2.1	2.2	2.1	2.1	2.1	2.2
25-Sep	2.1	2.1	2.1	2.1	Z	2.1	2.2	2.2	2.3	2.2	2.1	2.1	2.1	2.1	2.1	2.1	2.2	2.1	2.1	2.1	2.2	2.2	2.1	2.1	2.1	2.3
26-Sep	2.1	2.1	2.1	2.3	2.1	Z	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	2.1	2.1	2.1	2.1	2.3
27-Sep	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	2.1	2.1	2.1	2.1	2.1	2.1
28-Sep	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	2.1	2.1	2.1	2.0	2.1
29-Sep	2.1	2.1	Z	2.1	2.1	2.2	2.4	2.7	3.6	3.1	2.7	2.4	2.1	2.2	2.1	2.1	2.1	2.1	2.1	2.3	2.2	2.2	2.3	2.1	2.3	3.6
30-Sep	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	2.1	2.1	2.1	2.1	2.1	2.1	2.1	2.1	2.1
	2.2	2.2	2.2	2.3	2.2	2.2	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	2.1	2.1	2.2	Diurnal Average	
	3.6	2.9	3.5	3.4	2.5	3.3	3.3	2.9	3.6	3.1	2.7	2.6	2.3	2.2	2.2	2.3	2.3	2.3	3.0	2.9	2.3	2.7	2.6	2.6	Diurnal Maximum	

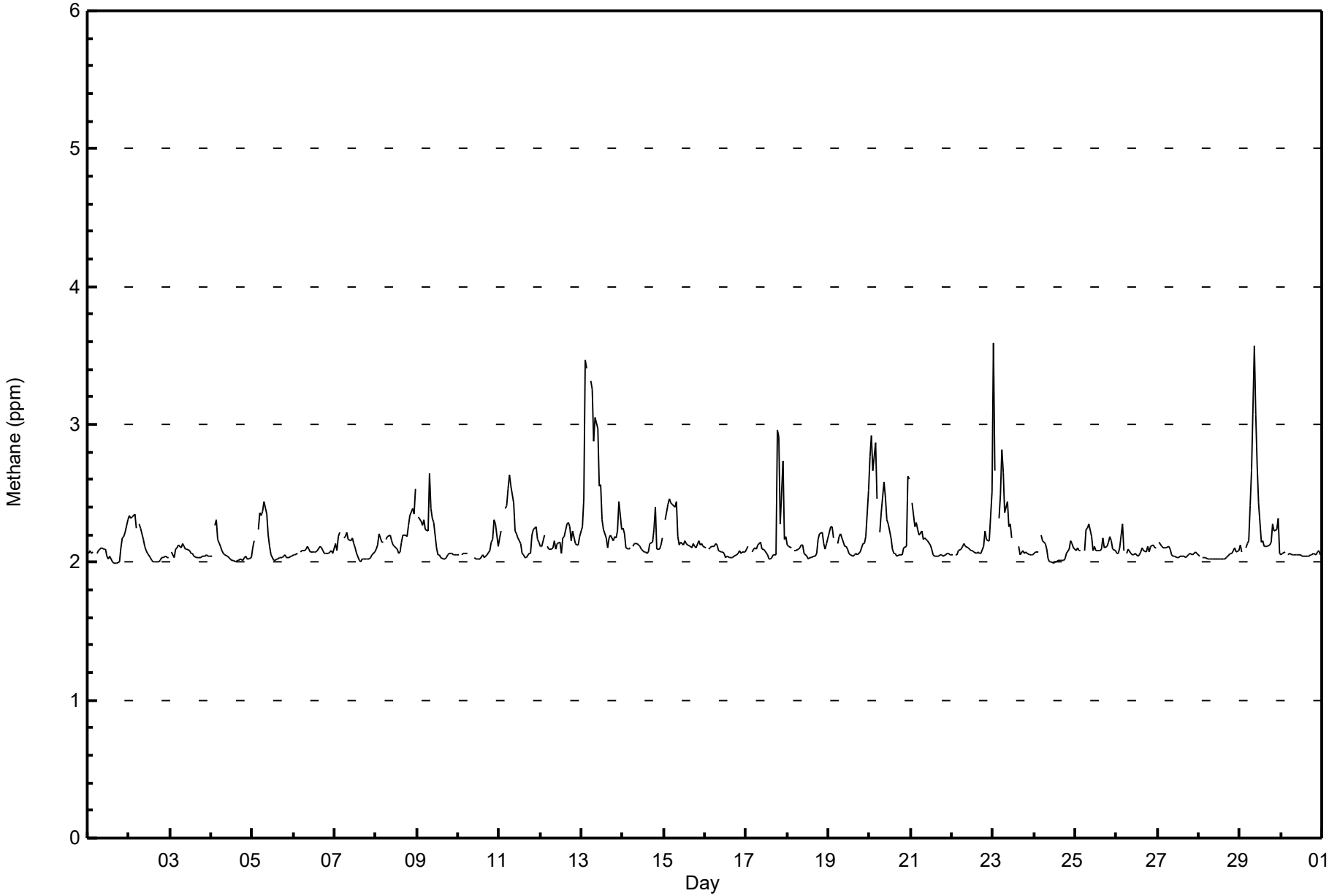
Z - zerospan C - Calibration M - Maintenance

Wood Buffalo Environmental Association

Hourly Averages

Methane (CH_4) - ppm

Buffalo Viewpoint - September 2024



Concentration Ranges (ppm)	Number of Hours	%	Cumulative %
0 - 2.0	146	21.35	21.35
2.1 - 3.0	531	77.63	98.98
3.1 - 10.0	7	1.02	100.00
> 10.0	0	0.00	100.00

Total Number of Valid Hours: 684

Total Number of Hours: 720

Wood Buffalo Environmental Association

Frequency Distribution

Methane (CH_4) - ppm

Buffalo Viewpoint - September 2024

Concentration							**Wind Direction**										
Ranges (ppm)	N	NNE	NE	ENE	E	ESE	SE	SSE	S	SSW	SW	WSW	W	WNW	NW	NNW	**Totals**
0 - 2.0	7	6	3	0	0	2	5	7	7	8	14	32	33	18	3	1	146
2.1 - 3.0	47	25	9	6	8	18	41	113	67	23	15	27	38	28	40	26	531
3.1 - 10.0	2	0	0	0	0	0	0	0	0	0	0	0	0	0	2	3	7
> 10.0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Totals	56	31	12	6	8	20	46	120	74	31	29	59	71	46	45	30	684

Total Number of Valid Hours: 684

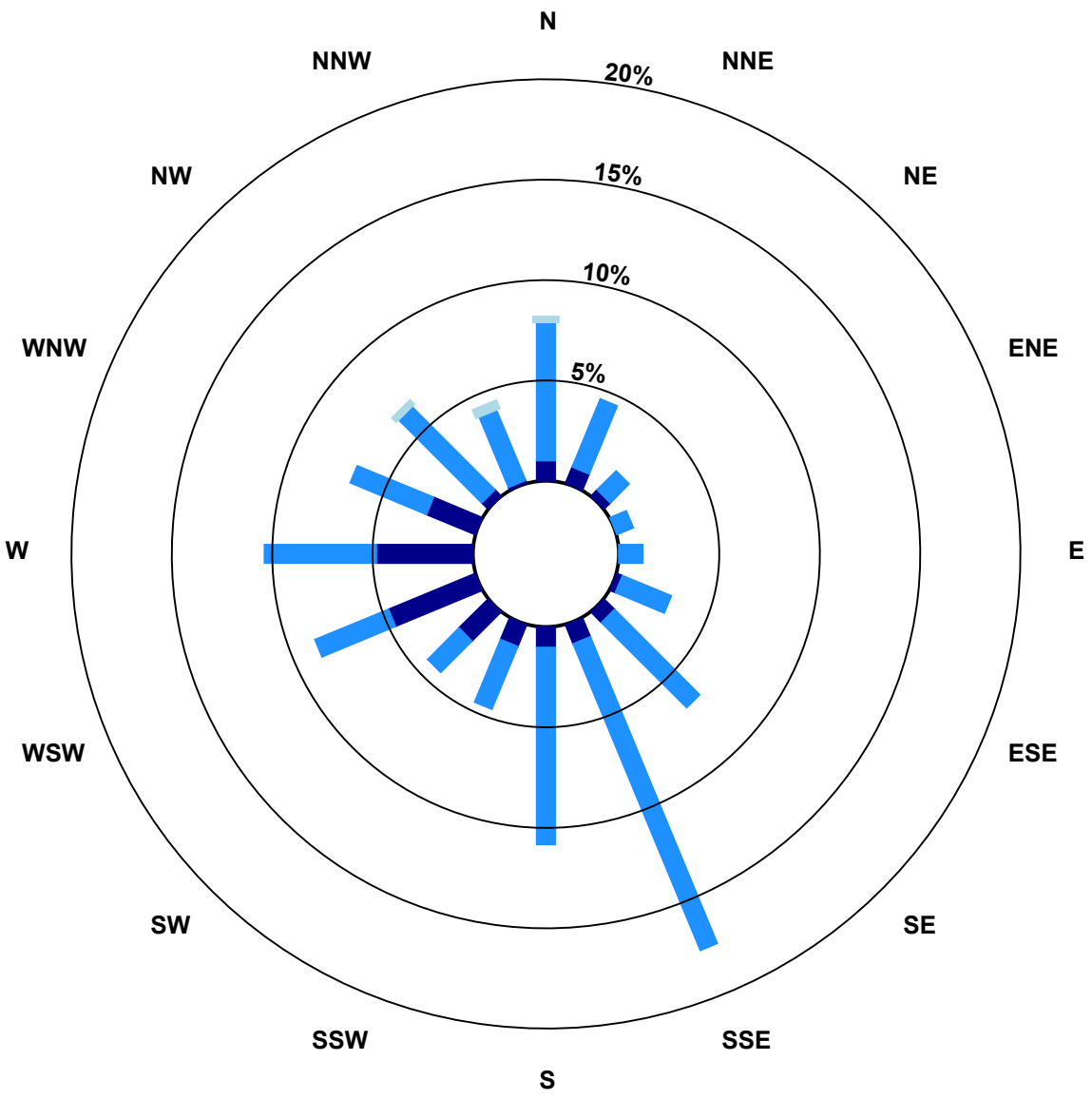
Total Number of Hours: 720

Wood Buffalo Environmental Association

Wind Rose Sep 2024

Methane (CH_4) - ppm

Buffalo Viewpoint



Classes (ppm)

0 - 2.0

2.1 - 3.0

3.1 - 10.0

> 10.0

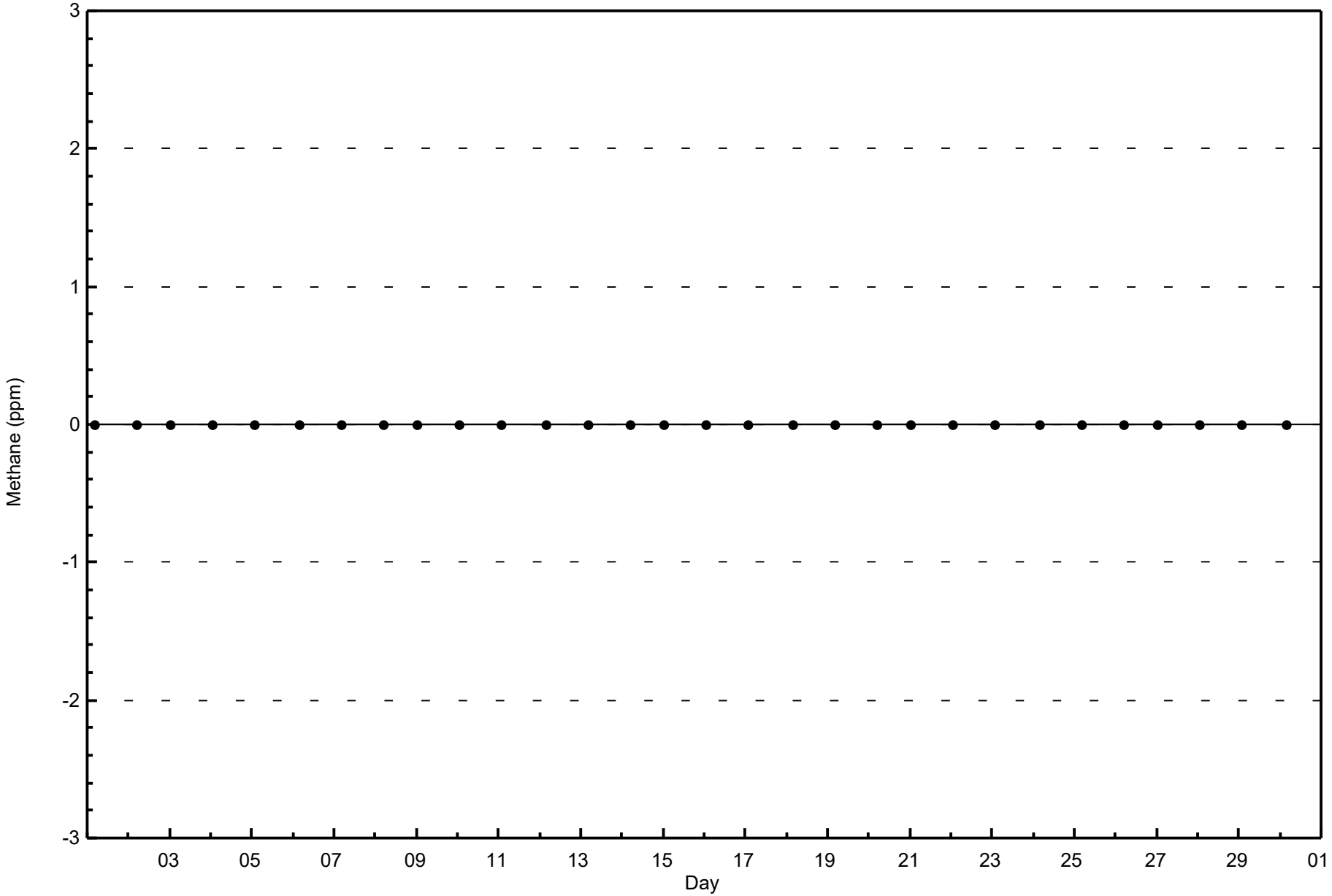
Total Number of Valid Hours: 684

Wood Buffalo Environmental Association

Zero Responses

Methane (CH_4) - ppm

Buffalo Viewpoint - September 2024

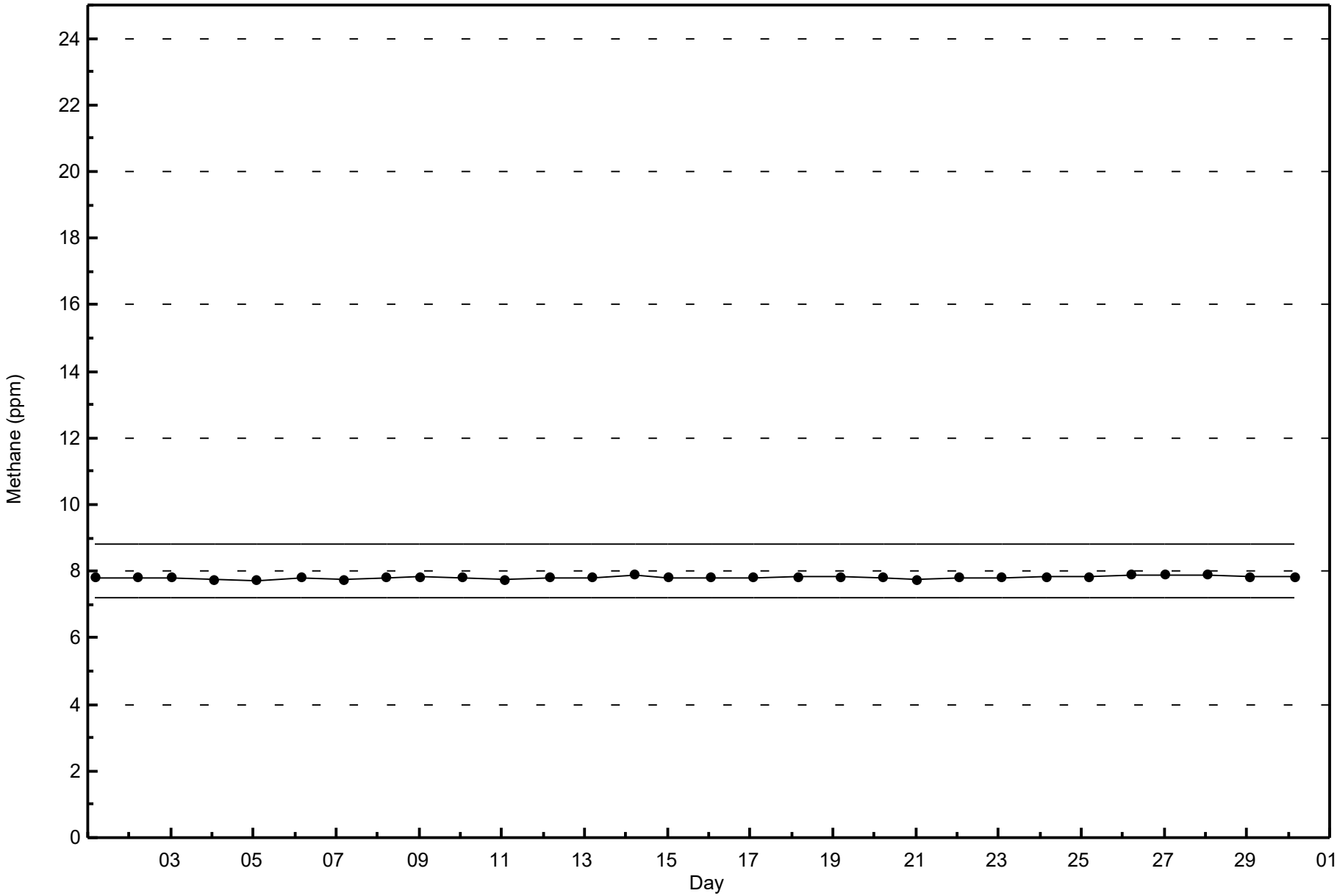


Wood Buffalo Environmental Association

Span Responses

Methane (CH_4) - ppm

Buffalo Viewpoint - September 2024



Wood Buffalo Environmental Association

Summary of Hour Averages

Nitric Oxide (NO) - ppb

Buffalo Viewpoint - September 2024

Maximum Value: 139.0 ppb on Sep 29 09:00

Maximum Daily Average: 19.1 ppb on Sep 13

Minimum Value: 0.0 ppb on Sep 1 01:00

Minimum Daily Average: 0.0 ppb on Sep 27

Maximum Diurnal Average: 8.3 ppb at hour 9

Minimum Diurnal Average: 0.1 ppb at hour 19

Monthly Average: 2.38 ppb

Percentiles: P_1 = 0.0 P_{10} = 0.0 Q_1 = 0.0 Median = 0.1 Q_3 = 0.5 P_{90} = 3.6 P_{99} = 45.7

Hours in Service:	720
Hours of Data:	681
Hours of Missing Data:	39
Hours of Calibration:	36
Percent Operational Time:	99.6

Day	Hourly Period Ending At (MST)																								Daily	Daily
	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24	Average	Maximum
1-Sep	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
2-Sep	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
3-Sep	0.0	0.0	0.0	Z	0.0	0.0	0.2	0.5	0.4	1.0	0.9	0.9	0.5	0.3	0.3	0.1	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.2	1.0
4-Sep	0.0	0.0	0.3	0.6	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	0.0	0.0	0.0	0.0	0.0	0.0	0.6
5-Sep	2.3	0.5	0.2	1.5	7.9	Z	5.5	6.4	15.4	11.4	4.7	2.0	0.2	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	2.5	15.4
6-Sep	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	0.0	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-Sep	0.0	Z	0.1	0.0	0.0	0.0	0.3	0.2	0.7	1.2	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	1.2
8-Sep	0.0	0.0	Z	0.1	0.0	0.0	0.0	0.4	0.3	0.3	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	0.4	0.1	0.4
9-Sep	0.2	0.1	0.1	Z	0.4	0.2	0.2	5.9	3.9	4.7	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	0.8	5.9
10-Sep	0.0	0.0	0.0	0.0	Z	0.2	0.0	0.1	0.0	0.1	0.1	0.0	0.0	0.0	0.0	0.1	0.0	0.0	0.0	0.0	0.0	0.9	3.5	0.0	0.2	3.5
11-Sep	0.5	1.8	0.8	5.2	6.4	Z	15.9	17.0	13.0	8.0	5.2	4.6	2.8	1.7	0.8	0.1	0.0	0.0	0.2	0.3	0.3	0.5	0.2	0.0	3.7	17.0
12-Sep	Z	0.3	0.0	0.0	0.0	0.0	0.0	0.2	1.0	0.5	0.6	0.5	0.2	0.5	0.2	0.2	0.2	0.1	0.1	0.0	0.0	0.1	0.1	0.0	0.2	1.0
13-Sep	0.7	Z	69.0	74.9	18.3	45.5	46.5	27.7	32.0	36.5	23.2	31.5	12.8	7.6	2.9	0.3	1.4	1.9	0.8	1.3	0.1	0.2	4.6	0.2	19.1	74.9
14-Sep	0.1	0.1	Z	0.3	0.0	0.1	0.2	0.4	0.3	0.4	0.3	0.1	0.1	0.0	0.0	0.1	0.6	0.4	0.3	0.2	0.0	0.2	0.0	0.0	0.2	0.6
15-Sep	0.8	1.0	2.8	Z	14.0	12.4	14.6	21.1	3.3	1.8	2.8	2.1	3.0	2.4	1.4	0.9	0.5	0.4	0.3	0.2	0.1	0.2	0.1	0.1	3.8	21.1
16-Sep	0.0	0.1	0.0	0.1	Z	0.3	0.2	0.1	0.1	0.0	0.1	0.0	0.1	0.1	0.1	0.1	0.0	0.0	0.1	0.1	0.1	0.2	0.0	0.0	0.1	0.3
17-Sep	0.0	0.1	0.0	0.2	0.1	Z	0.5	0.9	1.3	1.0	0.5	0.3	0.3	0.0	0.0	0.1	0.1	0.3	0.3	0.3	0.1	0.2	0.2	0.1	0.3	1.3
18-Sep	Z	0.4	0.0	0.1	0.2	0.1	0.3	0.2	0.4	0.2	0.1	0.1	0.1	0.2	0.0	0.0	0.0	0.2	0.2	0.1	0.3	0.2	0.1	0.2	0.2	0.4
19-Sep	0.1	Z	0.5	0.1	0.2	0.2	0.6	2.0	1.3	0.9	0.8	0.5	0.4	0.2	0.1	0.0	0.2	0.2	0.1	0.1	0.3	0.3	0.3	1.4	0.5	2.0
20-Sep	15.5	28.8	Z	27.2	6.7	6.2	1.3	5.2	11.9	13.5	8.5	4.7	2.6	1.7	0.9	0.9	0.5	0.6	0.2	0.2	0.5	0.6	28.3	30.8	8.6	30.8
21-Sep	20.5	27.1	1.6	Z	0.9	0.6	0.6	1.8	3.5	4.8	5.4	2.9	1.0	0.2	0.3	0.1	0.2	0.2	0.1	0.2	0.2	0.1	0.1	0.2	3.2	27.1
22-Sep	0.1	0.2	0.2	0.3	Z	0.6	0.5	3.5	0.9	0.6	0.3	0.4	0.3	0.2	0.2	0.3	0.3	0.2	0.2	0.5	0.3	0.3	0.2	11.6	1.0	11.6
23-Sep	79.2	20.8	14.5	2.7	14.6	Z	15.5	4.8	17.3	6.9	10.7	9.7	M	M	M	1.0	0.2	0.2	0.3	0.2	0.3	0.3	0.3	0.2	10.0	79.2
24-Sep	Z	0.5	0.3	0.3	0.8	1.2	2.8	3.8	0.4	0.5	0.3	0.4	0.3	0.2	0.2	0.1	0.2	0.3	0.2	0.1	0.4	0.3	0.3	0.4	0.6	3.8
25-Sep	0.4	Z	0.6	0.3	0.3	0.3	0.7	1.6	3.6	1.1	0.8	0.3	0.3	0.4	0.5	0.4	0.3	0.3	0.3	0.2	0.3	0.2	0.3	0.2	0.6	3.6
26-Sep	0.3	0.4	Z	0.6	0.4	0.4	0.3	0.3	0.3	C	C	C	C	C	C	0.7	0.1	0.0	0.0	0.0	0.0	0.0	0.0	0.0	--	0.7
27-Sep	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
28-Sep	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
29-Sep	0.0	0.0	0.0	0.0	0.0	Z	16.0	25.6	139.0	79.8	51.8	30.6	3.1	2.8	1.5	0.9	0.5	0.9	0.0	0.6	3.0	0.8	1.3	0.0	15.6	139.0
30-Sep	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
	4.8	3.3	3.6	4.6	2.8	2.7	4.1	4.3	8.3	6.0	4.1	3.2	1.0	0.7	0.3	0.2	0.2	0.2	0.1	0.2	0.2	0.2	1.3	1.5	Diurnal Average	
	79.2	28.8	69.0	74.9	18.3	45.5	46.5	27.7	139.0	79.8	51.8	31.5	12.8	7.6	2.9	1.0	1.4	1.9	0.8	1.3	3.0	0.9	28.3	30.8	Diurnal Maximum	

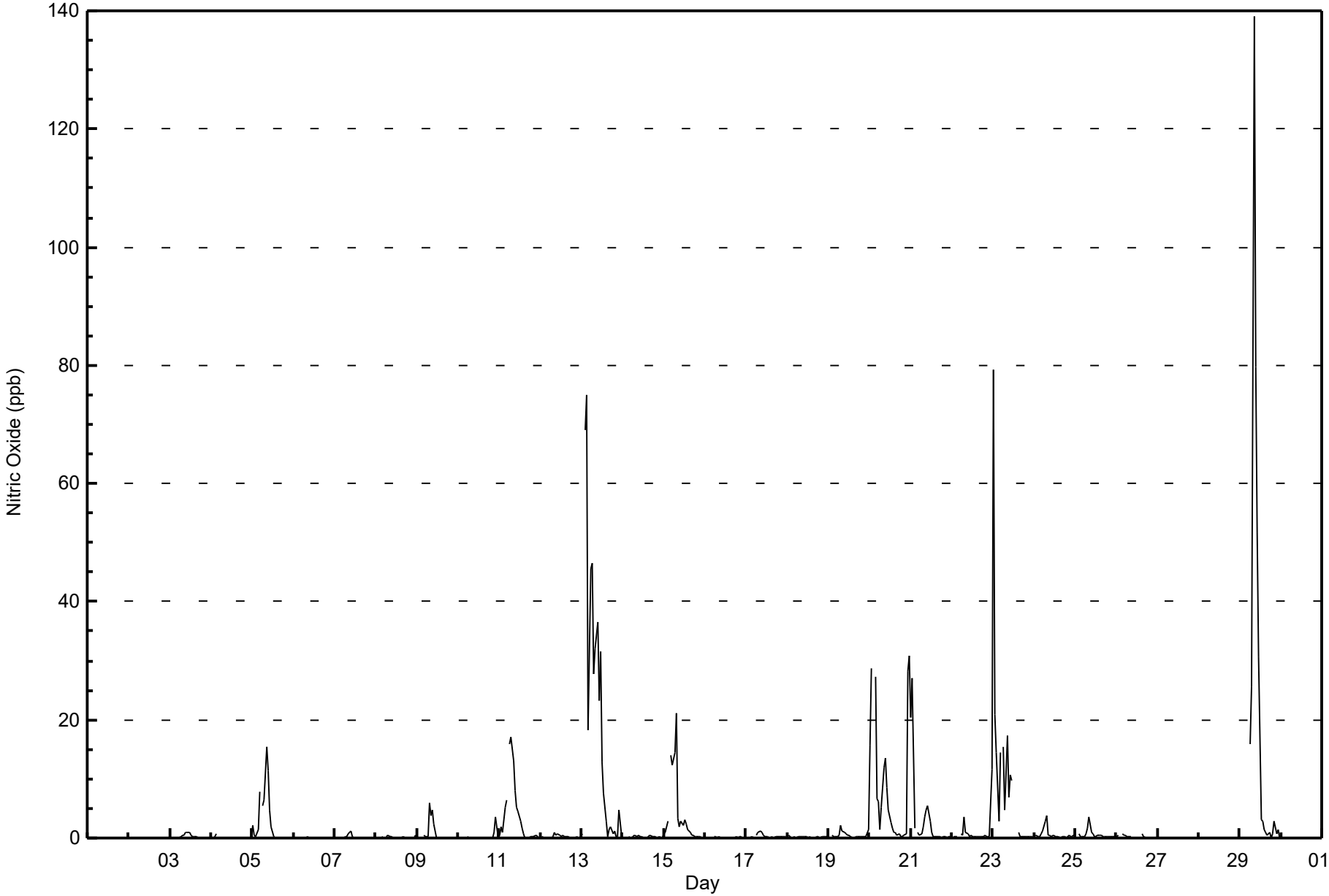
Z - zerospan C - Calibration M - Maintenance

Wood Buffalo Environmental Association

Hourly Averages

Nitric Oxide (NO) - ppb

Buffalo Viewpoint - September 2024



Concentration Ranges (ppb)	Number of Hours	%	Cumulative %
0 - 20	659	96.77	96.77
21 - 40	14	2.06	98.83
11 - 80	7	1.03	99.85
81 - 159	1	0.15	100.00
> 159	0	0.00	100.00

Total Number of Valid Hours: 681

Total Number of Hours: 720

Wood Buffalo Environmental Association

Frequency Distribution

Nitric Oxide (NO) - ppb

Buffalo Viewpoint - September 2024

Concentration							**Wind Direction**										
Ranges (ppb)	N	NNE	NE	ENE	E	ESE	SE	SSE	S	SSW	SW	WSW	W	WNW	NW	NNW	**Totals**
0 - 20	50	29	12	6	8	20	47	122	71	31	30	61	68	42	36	26	659
21 - 40	6	0	0	0	0	0	0	0	0	0	0	0	0	0	6	2	14
11 - 80	2	0	0	0	0	0	0	0	0	0	0	0	0	0	2	3	7
81 - 159	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1
> 159	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Totals	59	29	12	6	8	20	47	122	71	31	30	61	68	42	44	31	681

Total Number of Valid Hours: 681

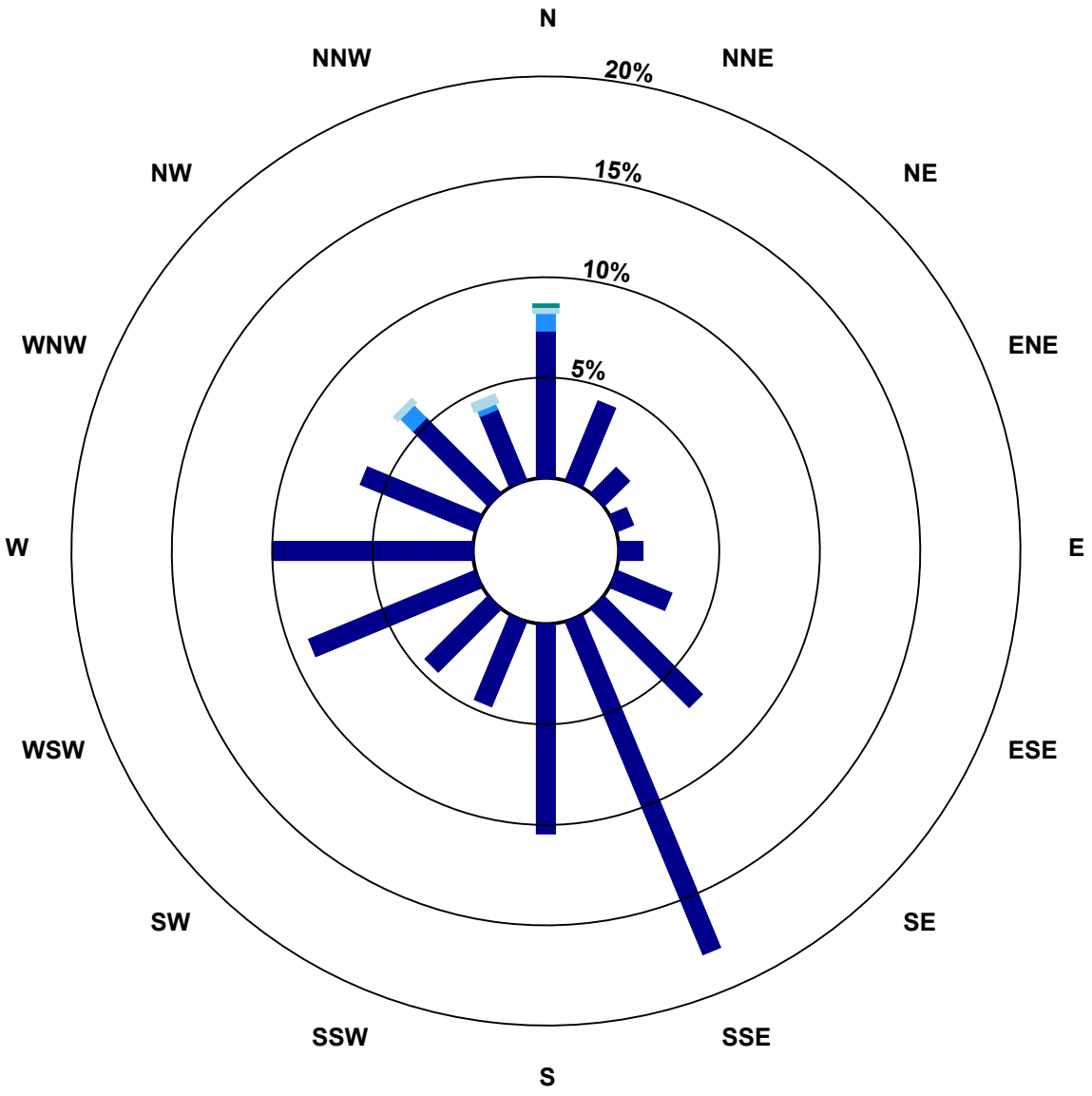
Total Number of Hours: 720

Wood Buffalo Environmental Association

Wind Rose Sep 2024

Nitric Oxide (NO) - ppb

Buffalo Viewpoint



Classes (ppb)

0 - 20

21 - 40

11 - 80

81 - 159

> 159

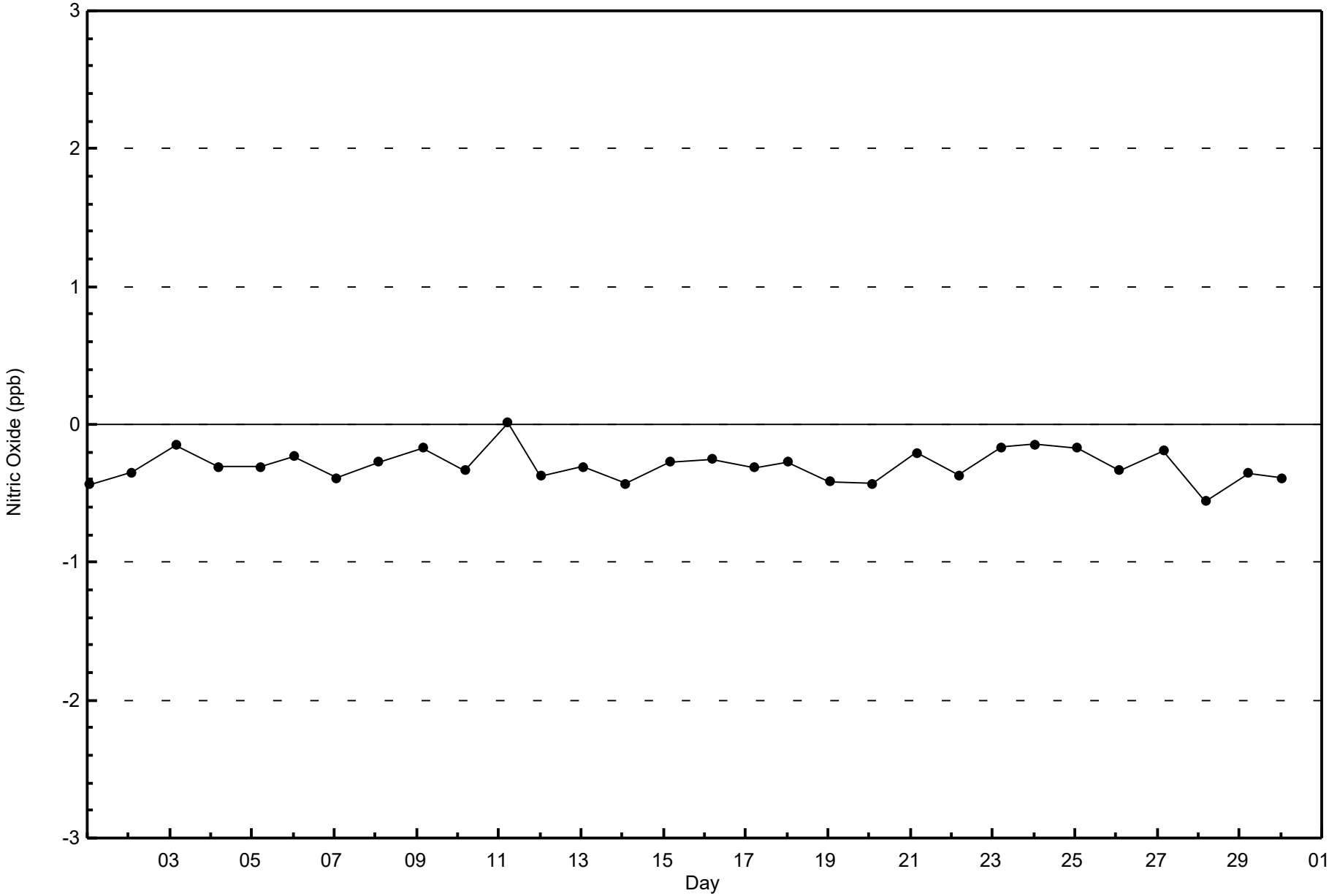
Total Number of Valid Hours: 681

Wood Buffalo Environmental Association

Zero Responses

Nitric Oxide (NO) - ppb

Buffalo Viewpoint - September 2024

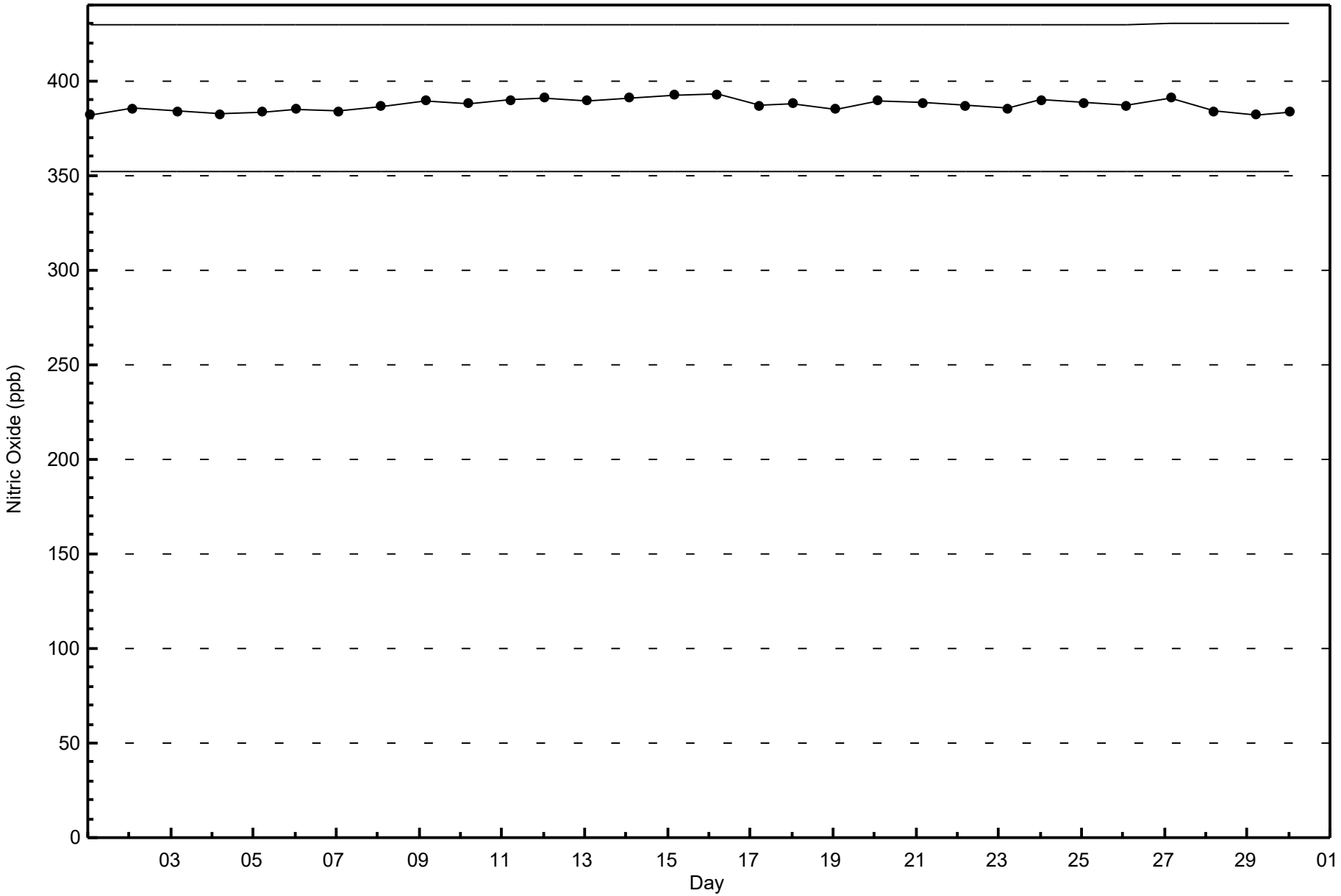


Wood Buffalo Environmental Association

Span Responses

Nitric Oxide (NO) - ppb

Buffalo Viewpoint - September 2024



Wood Buffalo Environmental Association

Summary of Hour Averages

Nitrogen Dioxide (NO_2) - ppb

Buffalo Viewpoint - September 2024

Number of Exceedences (AAAQO): 1-hr: 0 24-hr: 0
Maximum Value: 23.0 ppb on Sep 20 01:00 Maximum Daily Average: 11.4 ppb on Sep 20

Minimum Value: 0.0 ppb on Sep 1 01:00 Minimum Daily Average: 0.2 ppb on Sep 30
Maximum Diurnal Average: 4.9 ppb at hour 2 Minimum Diurnal Average: 1.1 ppb at hour 16
Monthly Average: 3.24 ppb Percentiles: P_1 = 0.0 P_{10} = 0.0 Q_1 = 0.3 Median = 1.1 Q_3 = 4.4 P_{90} = 10.1 P_{99} = 18.5

Hours in Service:	720
Hours of Data:	681
Hours of Missing Data:	39
Hours of Calibration:	36
Percent Operational Time:	99.6

Day	Hourly Period Ending At (MST)																								Daily	Daily
	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24	Average	Maximum
1-Sep	0.0	Z	0.4	0.1	0.2	0.1	0.3	0.5	0.3	0.4	0.9	0.4	0.0	0.0	0.0	0.0	0.0	0.0	0.0	3.0	3.5	2.9	2.4	0.7	0.7	3.5
2-Sep	0.8	2.3	Z	1.4	1.3	0.7	1.2	0.3	1.2	1.0	0.1	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	1.7	2.8	0.6	0.3	0.9	0.7	2.8
3-Sep	4.0	5.5	1.3	Z	7.9	9.2	7.6	7.3	4.6	6.1	7.3	6.6	5.1	3.9	2.8	1.8	1.2	2.5	2.2	2.9	2.1	1.1	0.5	0.3	4.1	9.2
4-Sep	0.7	2.3	4.8	4.3	Z	0.4	0.0	0.3	0.2	0.1	0.0	0.0	0.0	0.0	0.0	0.0	0.1	0.0	0.0	0.3	0.0	0.0	0.0	0.0	0.6	4.8
5-Sep	7.4	13.0	11.4	14.2	14.2	Z	4.9	2.8	8.8	8.0	5.4	3.5	1.2	0.2	0.3	0.3	0.4	0.6	0.6	0.4	0.4	0.3	0.5	0.7	4.3	14.2
6-Sep	Z	0.7	1.2	1.2	0.6	0.9	1.5	1.8	1.8	1.2	0.6	0.4	0.5	0.3	0.6	0.5	0.7	0.4	0.3	0.4	0.4	0.5	0.4	0.2	0.7	1.8
7-Sep	0.6	Z	0.8	0.6	0.9	1.6	2.3	1.3	1.8	3.6	2.5	1.6	0.7	0.3	0.1	0.0	0.0	0.0	0.1	0.2	0.2	1.3	0.6	0.7	0.9	3.6
8-Sep	0.7	1.4	Z	2.3	1.7	1.3	0.7	1.6	1.7	2.4	1.8	1.1	0.9	0.7	0.7	1.9	4.5	5.1	5.7	8.8	8.6	7.6	13.9	18.7	4.1	18.7
9-Sep	13.6	7.7	6.9	Z	7.5	9.1	4.3	12.4	10.3	8.5	5.4	0.3	0.3	0.1	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.2	0.0	3.8	13.6
10-Sep	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	0.1	2.0	1.7	0.7	0.4	2.0	2.4	2.7	14.1	13.2	6.0	2.0	14.1
11-Sep	9.3	15.2	12.9	7.5	10.9	Z	4.2	5.0	6.2	6.2	5.8	5.5	5.4	4.1	2.9	0.4	0.1	0.2	5.0	17.1	17.5	18.1	7.7	1.8	7.3	18.1
12-Sep	Z	1.2	1.5	1.0	0.8	0.7	1.1	2.2	7.6	3.2	3.2	3.7	2.2	3.6	2.5	2.6	2.3	2.1	3.9	7.0	5.6	5.0	5.0	3.4	3.1	7.6
13-Sep	3.8	Z	8.5	9.1	7.3	11.0	11.9	11.9	11.4	11.9	16.6	17.2	13.9	13.1	8.6	2.2	8.4	10.1	9.5	9.5	4.3	6.1	16.8	3.1	9.8	17.2
14-Sep	2.7	2.1	Z	1.1	0.4	0.4	0.6	0.6	0.4	0.5	0.5	0.3	0.3	0.3	0.5	0.5	3.3	3.6	7.0	7.1	3.7	4.8	2.8	3.0	2.0	7.1
15-Sep	8.4	13.9	15.4	Z	11.4	10.4	11.0	13.0	8.3	4.6	4.7	3.8	6.5	5.7	4.1	3.3	2.8	4.4	5.6	8.3	6.6	5.4	3.9	2.3	7.1	15.4
16-Sep	1.3	0.7	0.5	0.3	Z	0.3	0.6	0.7	0.5	0.2	0.2	0.2	0.1	0.1	0.0	0.0	0.1	0.1	0.1	0.7	1.0	0.1	0.4	0.3	0.4	1.3
17-Sep	0.2	0.2	0.3	0.6	0.8	Z	1.8	1.5	1.4	1.3	0.9	0.7	0.8	0.2	0.2	0.1	0.7	2.0	6.2	9.1	2.9	7.7	2.5	2.0	1.9	9.1
18-Sep	Z	1.1	1.1	0.9	0.7	0.9	0.9	1.8	1.2	0.8	0.6	0.4	0.1	0.1	0.2	0.2	0.1	0.3	2.4	4.8	7.3	1.2	1.1	1.8	1.3	7.3
19-Sep	2.1	Z	1.1	0.3	0.9	1.3	1.9	2.6	1.2	1.0	1.0	0.8	0.4	0.2	0.1	0.4	0.3	0.2	1.2	1.2	8.9	6.5	6.4	13.4	2.3	13.4
20-Sep	23.0	22.4	Z	18.5	17.9	17.2	12.6	11.0	15.6	15.8	14.8	10.6	6.4	3.9	2.4	2.5	1.7	2.7	2.2	5.4	9.5	5.9	20.1	19.1	11.4	23.0
21-Sep	16.9	15.5	9.2	Z	3.1	2.7	1.6	2.7	3.7	4.0	4.0	2.6	0.8	0.3	0.0	0.0	0.0	0.4	0.8	1.0	0.2	0.5	0.8	0.5	3.1	16.9
22-Sep	0.7	0.2	0.6	0.9	Z	1.8	2.2	4.1	1.0	0.6	0.6	0.4	0.3	0.3	0.2	0.3	0.5	0.7	4.9	10.3	7.2	3.6	3.1	7.5	2.3	10.3
23-Sep	17.2	14.5	12.9	11.0	11.7	Z	9.5	5.4	7.5	5.7	8.2	8.4	M	M	M	2.2	0.0	0.2	0.2	0.3	0.0	0.4	0.4	0.3	5.8	17.2
24-Sep	Z	0.3	0.3	0.9	3.3	2.9	6.2	3.2	0.4	0.3	0.1	0.0	0.0	0.0	0.0	0.0	0.0	0.1	0.2	2.1	6.8	7.0	2.9	3.3	1.8	7.0
25-Sep	2.2	Z	1.1	0.7	0.4	0.8	6.3	11.5	10.5	4.1	2.3	0.8	0.7	1.3	1.0	0.8	0.5	0.4	0.3	0.7	0.9	0.4	0.2	0.3	2.1	11.5
26-Sep	0.0	0.0	Z	5.0	1.1	3.8	0.1	0.3	0.3	C	C	C	C	C	C	2.3	3.1	2.7	4.4	0.7	3.8	0.5	0.4	1.0	--	5.0
27-Sep	4.0	2.0	1.1	Z	0.5	0.4	1.0	0.9	0.3	0.1	0.1	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.3	0.2	0.0	0.1	0.0	0.0	0.5	4.0
28-Sep	0.0	0.0	0.0	0.0	Z	0.1	0.1	0.2	0.2	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	2.4	7.3	3.9	7.4	4.1	1.4	2.5	1.3	7.4
29-Sep	2.0	1.1	1.1	1.9	2.1	Z	5.1	10.8	20.5	19.6	17.4	15.5	7.2	8.2	8.4	10.2	9.0	12.5	8.9	15.0	13.1	12.4	18.0	3.5	9.7	20.5
30-Sep	Z	0.2	0.0	0.0	0.0	0.0	0.0	0.0	0.5	0.3	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.4	0.1	0.0	2.0	0.7	0.0	0.2	2.0
	4.9	4.9	3.8	3.4	4.3	3.1	3.4	3.9	4.3	3.8	3.6	2.9	1.9	1.7	1.3	1.1	1.4	1.8	2.7	4.2	4.2	4.0	4.2	3.2	Diurnal Average	
	23.0	22.4	15.4	18.5	17.9	17.2	12.6	13.0	20.5	19.6	17.4	17.2	13.9	13.1	8.6	10.2	9.0	12.5	9.5	17.1	17.5	18.1	20.1	19.1	Diurnal Maximum	

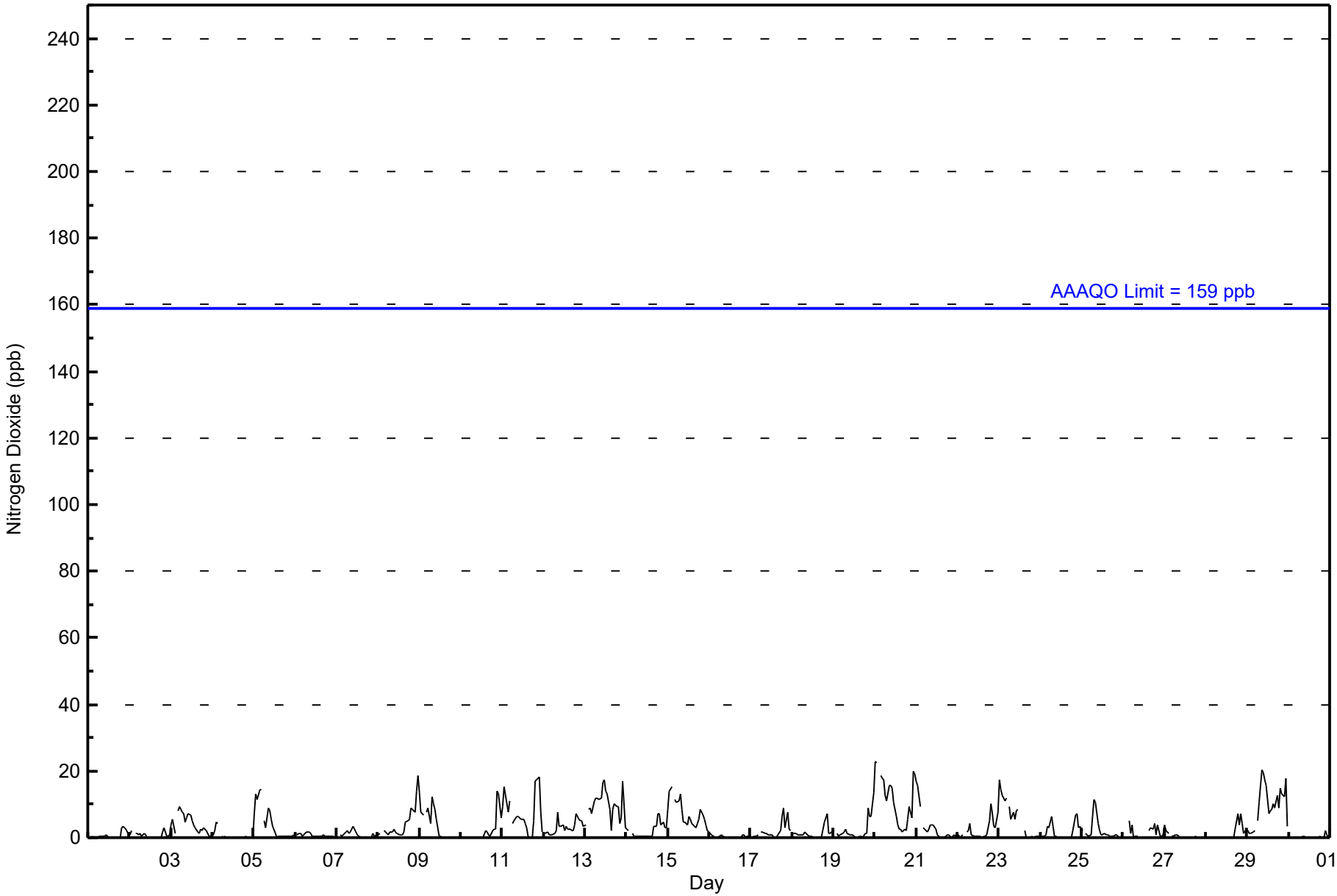
Z - zerospan C - Calibration M - Maintenance
Alberta Ambient Air Quality Objectives (AAAQO): 1-hr 159 ppb

Wood Buffalo Environmental Association

Hourly Averages

Nitrogen Dioxide (NO_2) - ppb

Buffalo Viewpoint - September 2024



Nitrogen Dioxide (NO_2) - ppb
Buffalo Viewpoint - September 2024

Concentration Ranges (ppb)	Number of Hours	%	Cumulative %
0 - 20	678	99.56	99.56
21 - 40	3	0.44	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: 681

Total Number of Hours: 720

Wood Buffalo Environmental Association

Frequency Distribution

Nitrogen Dioxide (NO_2) - ppb

Buffalo Viewpoint - September 2024

Concentration Ranges (ppb)	Wind Direction																
	N	NNE	NE	ENE	E	ESE	SE	SSE	S	SSW	SW	WSW	W	WNW	NW	NNW	**Totals**
0 - 20	58	29	12	6	8	20	47	122	71	31	30	61	68	42	42	31	678
21 - 40	1	0	0	0	0	0	0	0	0	0	0	0	0	0	2	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	59	29	12	6	8	20	47	122	71	31	30	61	68	42	44	31	681

Total Number of Valid Hours: 681

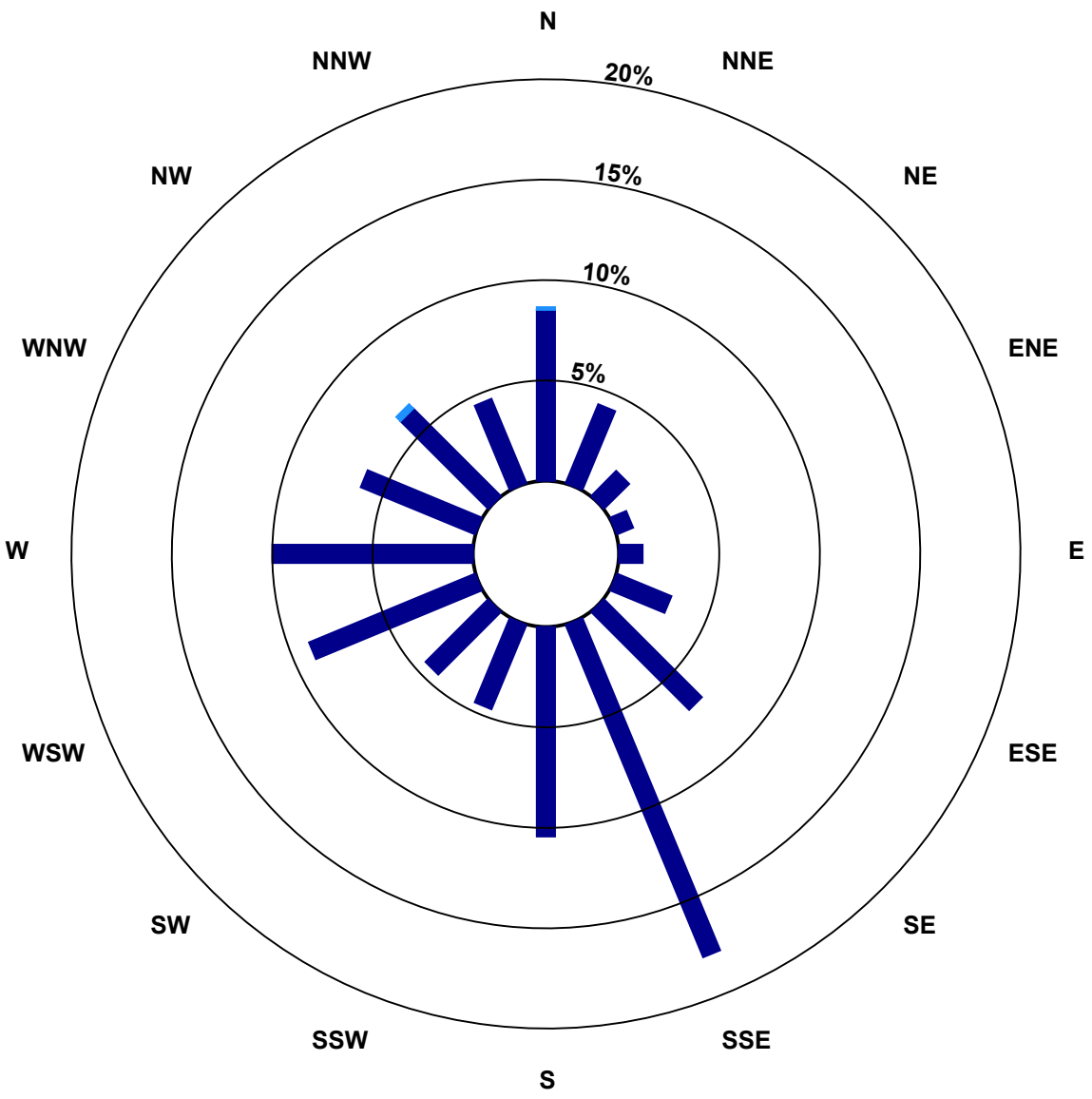
Total Number of Hours: 720

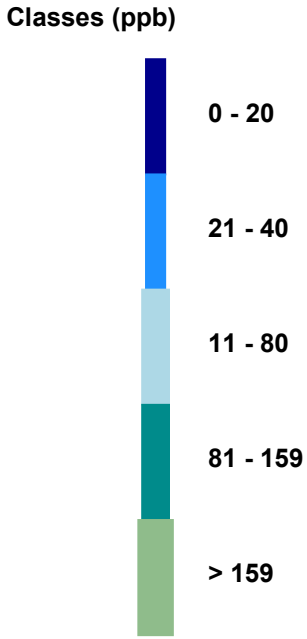
Wood Buffalo Environmental Association

Wind Rose Sep 2024

Nitrogen Dioxide (NO_2) - ppb

Buffalo Viewpoint





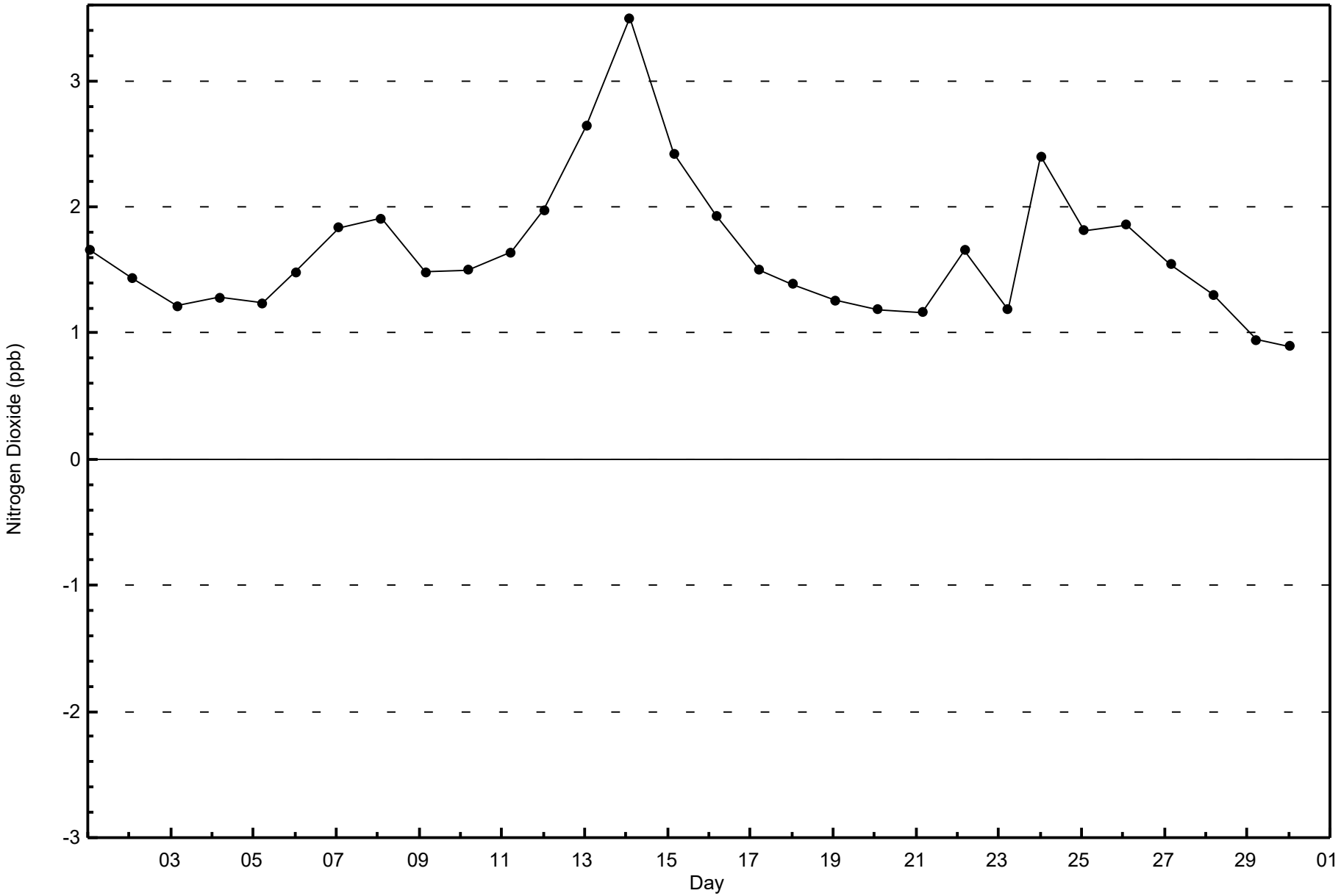
Total Number of Valid Hours: 681

Wood Buffalo Environmental Association

Zero Responses

Nitrogen Dioxide (NO_2) - ppb

Buffalo Viewpoint - September 2024

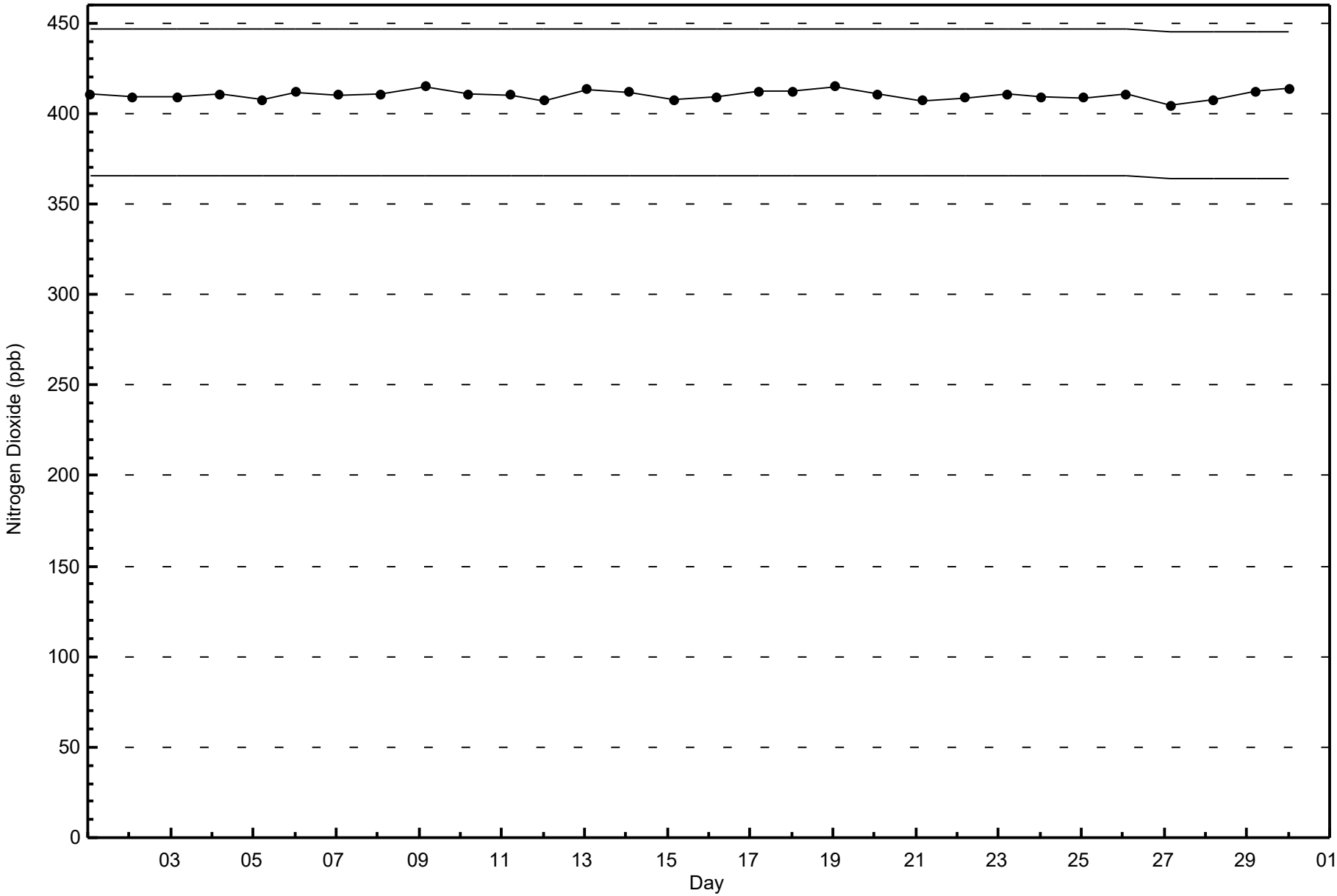


Wood Buffalo Environmental Association

Span Responses

Nitrogen Dioxide (NO_2) - ppb

Buffalo Viewpoint - September 2024



Wood Buffalo Environmental Association

Summary of Hour Averages

Nitrogen Oxides (NO_X) - ppb

Buffalo Viewpoint - September 2024

Number of Exceedences (AAAQO): 1-hr: 0 24-hr: 0

Maximum Value: 159.4 ppb on Sep 29 09:00

Maximum Daily Average: 29.0 ppb on Sep 13

Minimum Value: 0.0 ppb on Sep 1 01:00

Minimum Daily Average: 0.2 ppb on Sep 30

Maximum Diurnal Average: 12.7 ppb at hour 9

Minimum Diurnal Average: 1.4 ppb at hour 16

Monthly Average: 5.61 ppb

Percentiles: P_1 = 0.0 P_{10} = 0.0 Q_1 = 0.3 Median = 1.2 Q_3 = 5.5 P_{90} = 14.2 P_{99} = 56.9

Hours in Service:	720
Hours of Data:	681
Hours of Missing Data:	39
Hours of Calibration:	36
Percent Operational Time:	99.6

Day	Hourly Period Ending At (MST)																								Daily	Daily
	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24	Average	Maximum
1-Sep	0.0	Z	0.4	0.1	0.2	0.1	0.3	0.5	0.3	0.4	0.9	0.4	0.0	0.0	0.0	0.0	0.0	0.0	0.0	3.0	3.5	2.9	2.4	0.7	0.7	3.5
2-Sep	0.8	2.3	Z	1.4	1.3	0.7	1.2	0.3	1.3	1.0	0.1	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	1.7	2.8	0.6	0.3	0.9	0.7	2.8
3-Sep	4.0	5.5	1.3	Z	7.9	9.2	7.8	7.8	5.0	7.1	8.2	7.5	5.6	4.2	3.1	1.9	1.2	2.5	2.2	2.9	2.1	1.1	0.5	0.3	4.3	9.2
4-Sep	0.7	2.3	5.1	4.9	Z	0.4	0.0	0.4	0.2	0.1	0.0	0.0	0.0	0.0	0.0	0.0	0.1	0.0	0.0	0.3	0.0	0.0	0.0	0.0	0.6	5.1
5-Sep	9.7	13.5	11.6	15.7	22.1	Z	10.4	9.2	24.2	19.4	10.1	5.5	1.4	0.2	0.3	0.3	0.4	0.6	0.6	0.4	0.4	0.3	0.5	0.7	6.8	24.2
6-Sep	Z	0.7	1.2	1.2	0.6	0.9	1.5	1.8	2.0	1.2	0.6	0.4	0.5	0.3	0.6	0.5	0.7	0.4	0.3	0.4	0.4	0.5	0.4	0.2	0.8	2.0
7-Sep	0.6	Z	0.9	0.6	0.9	1.6	2.6	1.5	2.5	4.8	2.6	1.6	0.7	0.3	0.1	0.0	0.0	0.0	0.1	0.2	0.2	1.3	0.6	0.7	1.1	4.8
8-Sep	0.7	1.4	Z	2.4	1.7	1.3	0.7	2.0	2.0	2.7	1.8	1.1	0.9	0.7	0.7	1.9	4.7	5.2	5.7	8.8	8.6	7.6	13.9	19.1	4.2	19.1
9-Sep	13.8	7.8	7.0	Z	7.9	9.3	4.5	18.3	14.2	13.2	7.8	0.3	0.3	0.1	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.2	0.0	4.6	18.3
10-Sep	0.0	0.0	0.0	0.0	Z	0.2	0.0	0.1	0.0	0.1	0.1	0.0	0.0	0.1	2.0	1.8	0.7	0.4	2.0	2.4	2.7	15.0	16.7	6.0	2.2	16.7
11-Sep	9.8	17.0	13.7	12.7	17.3	Z	20.1	22.0	19.2	14.2	11.0	10.1	8.2	5.8	3.7	0.5	0.1	0.2	5.2	17.4	17.8	18.6	7.9	1.8	11.1	22.0
12-Sep	Z	1.5	1.5	1.0	0.8	0.7	1.1	2.4	8.6	3.7	3.8	4.2	2.4	4.1	2.7	2.8	2.5	2.2	4.0	7.0	5.6	5.1	5.1	3.4	3.3	8.6
13-Sep	4.5	Z	77.5	84.0	25.6	56.5	58.4	39.6	43.4	48.4	39.8	48.7	26.7	20.7	11.5	2.5	9.8	12.0	10.3	10.8	4.4	6.3	21.4	3.3	29.0	84.0
14-Sep	2.8	2.2	Z	1.4	0.4	0.5	0.8	1.0	0.7	0.9	0.8	0.4	0.4	0.3	0.5	0.6	3.9	4.0	7.3	7.3	3.7	5.0	2.8	3.0	2.2	7.3
15-Sep	9.2	14.9	18.2	Z	25.4	22.8	25.6	34.1	11.6	6.4	7.5	5.9	9.5	8.1	5.5	4.2	3.3	4.8	5.9	8.5	6.7	5.6	4.0	2.4	10.9	34.1
16-Sep	1.3	0.8	0.5	0.4	Z	0.6	0.8	0.8	0.6	0.2	0.3	0.2	0.2	0.2	0.1	0.1	0.1	0.1	0.2	0.8	1.1	0.3	0.4	0.3	0.5	1.3
17-Sep	0.2	0.3	0.3	0.8	0.9	Z	2.3	2.4	2.7	2.3	1.4	1.0	1.1	0.2	0.2	0.2	0.8	2.3	6.5	9.4	3.0	7.9	2.7	2.1	2.2	9.4
18-Sep	Z	1.5	1.1	1.0	0.9	1.0	1.2	2.0	1.6	1.0	0.7	0.5	0.2	0.3	0.2	0.2	0.1	0.5	2.6	4.9	7.6	1.4	1.2	2.0	1.5	7.6
19-Sep	2.2	Z	1.6	0.4	1.1	1.5	2.5	4.6	2.5	1.9	1.8	1.3	0.8	0.4	0.2	0.4	0.5	0.4	1.3	1.3	9.2	6.8	6.7	14.8	2.8	14.8
20-Sep	38.5	51.2	Z	45.7	24.6	23.4	13.9	16.2	27.5	29.3	23.3	15.3	9.0	5.6	3.3	3.4	2.2	3.3	2.4	5.6	10.0	6.5	48.4	49.9	19.9	51.2
21-Sep	37.4	42.6	10.8	Z	4.0	3.3	2.2	4.5	7.2	8.8	9.4	5.5	1.8	0.5	0.3	0.1	0.2	0.6	0.9	1.2	0.4	0.6	0.9	0.7	6.3	42.6
22-Sep	0.8	0.4	0.8	1.2	Z	2.4	2.7	7.6	1.9	1.2	0.9	0.8	0.6	0.5	0.4	0.6	0.8	0.9	5.1	10.8	7.5	3.9	3.3	19.1	3.2	19.1
23-Sep	96.4	35.3	27.4	13.7	26.3	Z	25.0	10.2	24.8	12.6	18.9	18.1	M	M	M	3.2	0.2	0.4	0.5	0.5	0.3	0.7	0.7	0.5	15.8	96.4
24-Sep	Z	0.8	0.6	1.2	4.1	4.1	9.0	7.0	0.8	0.8	0.4	0.4	0.3	0.2	0.2	0.1	0.2	0.4	0.4	2.2	7.2	7.3	3.2	3.7	2.4	9.0
25-Sep	2.6	Z	1.7	1.0	0.7	1.1	7.0	13.1	14.1	5.2	3.1	1.1	1.0	1.7	1.5	1.2	0.8	0.7	0.6	0.9	1.2	0.6	0.5	0.5	2.7	14.1
26-Sep	0.3	0.4	Z	5.6	1.5	4.2	0.4	0.6	0.6	C	C	C	C	C	C	3.0	3.2	2.7	4.4	0.7	3.8	0.5	0.4	1.0	--	5.6
27-Sep	4.0	2.0	1.1	Z	0.5	0.4	1.0	0.9	0.3	0.1	0.1	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.3	0.2	0.0	0.1	0.0	0.0	0.5	4.0
28-Sep	0.0	0.0	0.0	0.0	Z	0.1	0.1	0.2	0.2	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	2.4	7.3	3.9	7.4	4.1	1.4	2.5	1.3	7.4
29-Sep	2.0	1.1	1.1	1.9	2.1	Z	21.1	36.4	159.4	99.4	69.2	46.1	10.3	11.0	9.9	11.1	9.5	13.4	8.9	15.6	16.1	13.2	19.3	3.5	25.3	159.4
30-Sep	Z	0.2	0.0	0.0	0.0	0.0	0.0	0.0	0.5	0.3	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.4	0.1	0.0	2.0	0.7	0.0	0.2	2.0
	9.7	8.2	7.4	7.9	7.2	5.8	7.5	8.2	12.7	9.9	7.7	6.1	2.9	2.3	1.7	1.4	1.5	2.0	2.9	4.3	4.5	4.2	5.5	4.8	Diurnal Average	
	96.4	51.2	77.5	84.0	26.3	56.5	58.4	39.6	159.4	99.4	69.2	48.7	26.7	20.7	11.5	11.1	9.8	13.4	10.3	17.4	17.8	18.6	48.4	49.9	Diurnal Maximum	

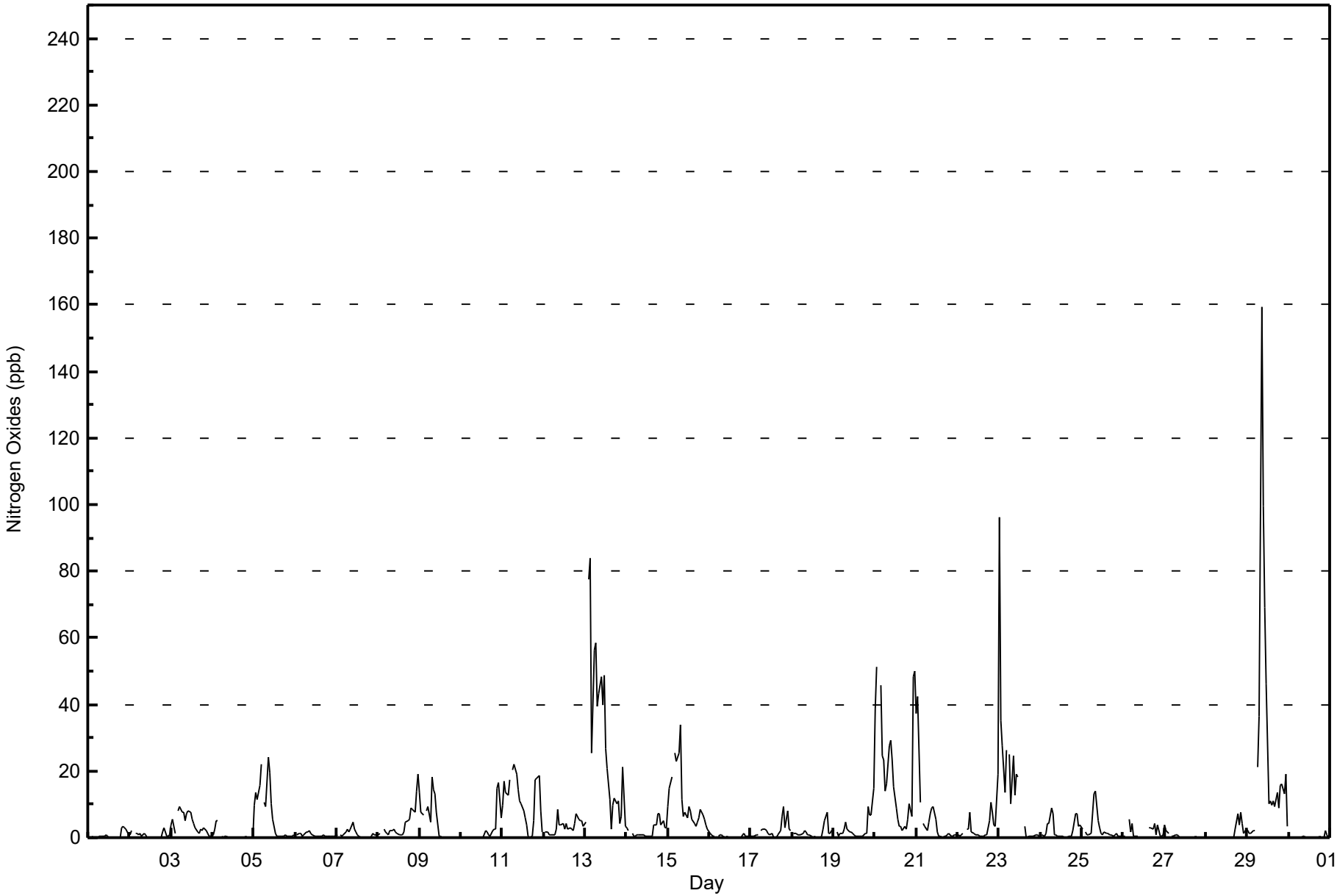
Z - zerospan C - Calibration M - Maintenance

Wood Buffalo Environmental Association

Hourly Averages

Nitrogen Oxides (NO_X) - ppb

Buffalo Viewpoint - September 2024



Nitrogen Oxides (NO_X) - ppb
Buffalo Viewpoint - September 2024

Concentration Ranges (ppb)	Number of Hours	%	Cumulative %
0 - 20	637	93.54	93.54
21 - 40	27	3.96	97.50
11 - 80	13	1.91	99.41
81 - 159	4	0.59	100.00
> 159	0	0.00	100.00

Total Number of Valid Hours: 681

Total Number of Hours: 720

Nitrogen Oxides (NO_X) - ppb
Buffalo Viewpoint - September 2024

Concentration Ranges (ppb)	Wind Direction																
	N	NNE	NE	ENE	E	ESE	SE	SSE	S	SSW	SW	WSW	W	WNW	NW	NNW	**Totals**
0 - 20	43	29	12	6	8	19	47	122	70	31	30	60	68	41	29	22	637
21 - 40	11	0	0	0	0	1	0	0	1	0	0	1	0	1	8	4	27
11 - 80	3	0	0	0	0	0	0	0	0	0	0	0	0	0	7	3	13
81 - 159	2	0	0	0	0	0	0	0	0	0	0	0	0	0	0	2	4
> 159	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Totals	59	29	12	6	8	20	47	122	71	31	30	61	68	42	44	31	681

Total Number of Valid Hours: 681

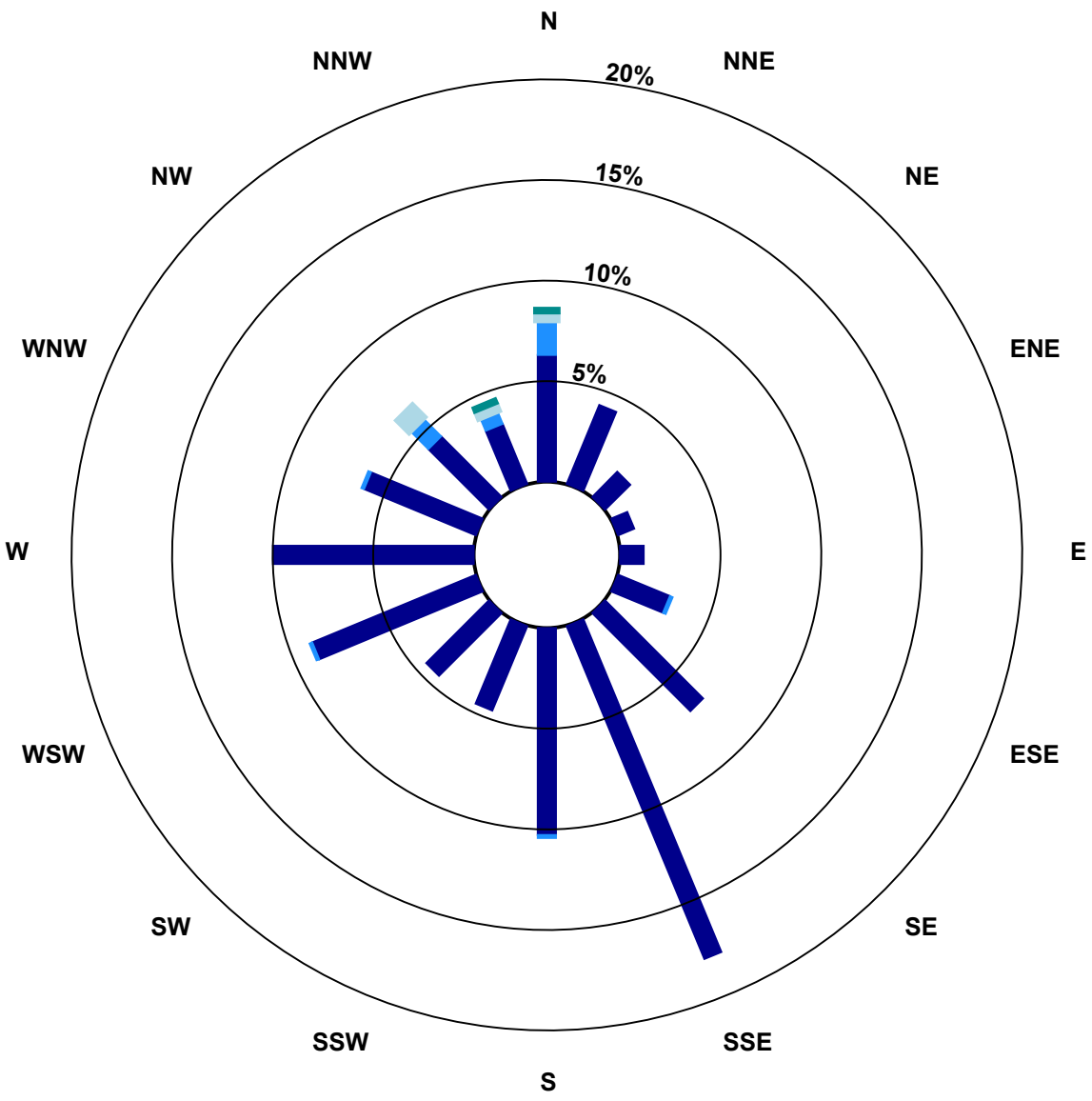
Total Number of Hours: 720

Wood Buffalo Environmental Association

Wind Rose Sep 2024

Nitrogen Oxides (NO_X) - ppb

Buffalo Viewpoint



Classes (ppb)

0 - 20

21 - 40

11 - 80

81 - 159

> 159

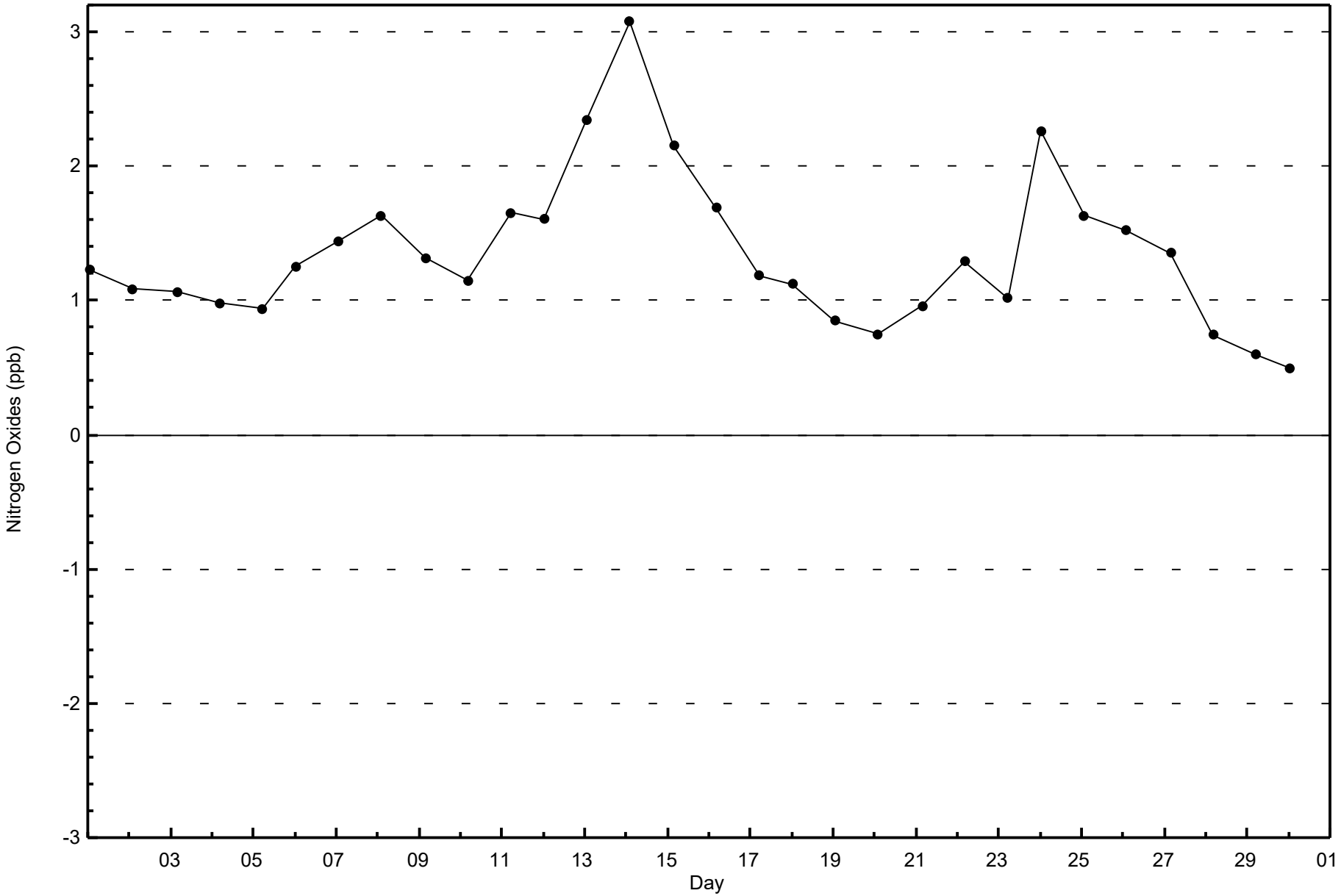
Total Number of Valid Hours: 681

Wood Buffalo Environmental Association

Zero Responses

Nitrogen Oxides (NO_X) - ppb

Buffalo Viewpoint - September 2024

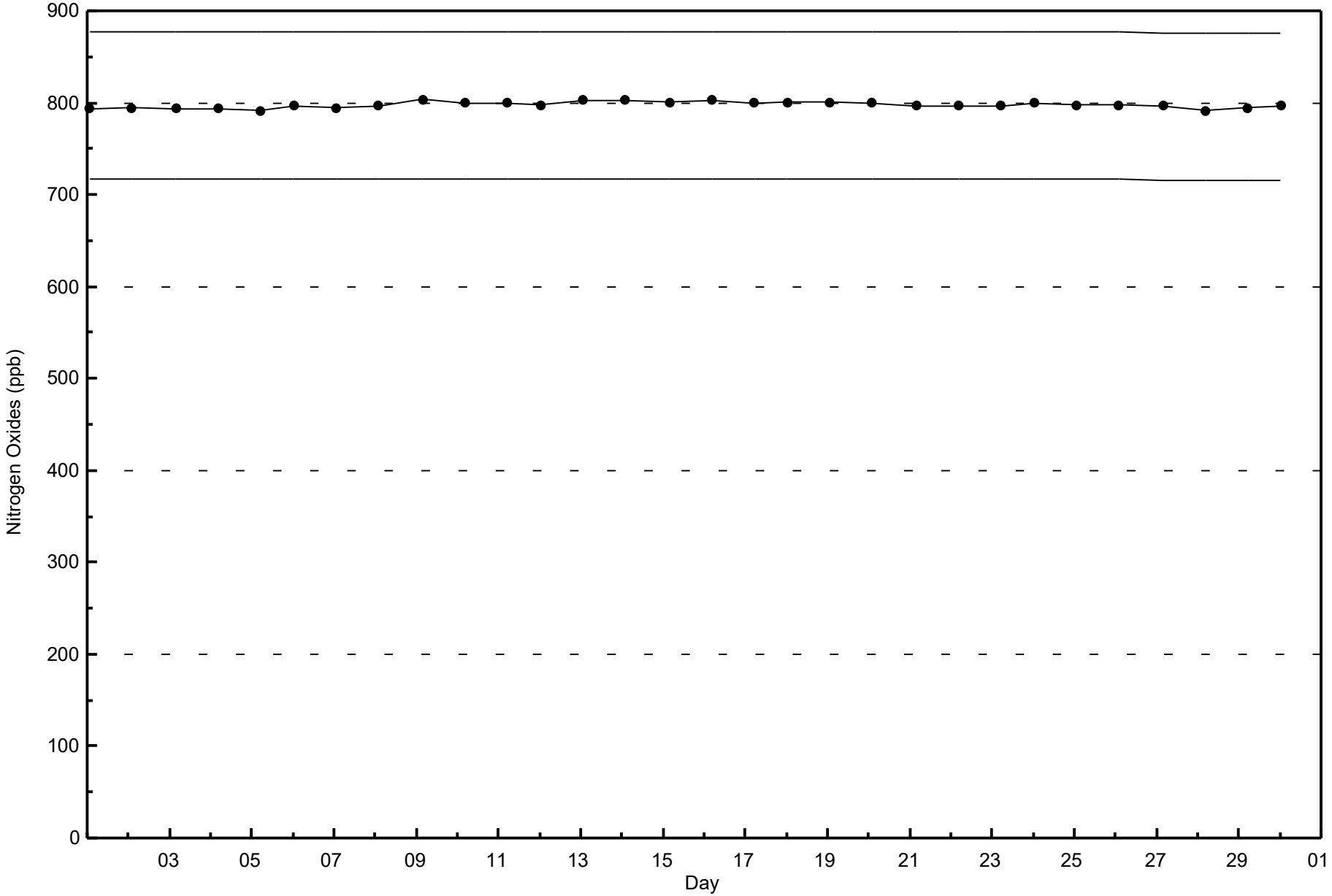


Wood Buffalo Environmental Association

Span Responses

Nitrogen Oxides (NO_X) - ppb

Buffalo Viewpoint - September 2024



Wood Buffalo Environmental Association

Summary of Hour Averages

Ozone (O_3) - ppb

Buffalo Viewpoint - September 2024

Number of Exceedences (AAAQO): 1-hr: 0 24-hr: 0
Maximum Value: 41.9 ppb on Sep 24 16:00 Maximum Daily Average: 28.3 ppb on Sep 27

Minimum Value: 2.3 ppb on Sep 15 06:00 Minimum Daily Average: 7.9 ppb on Sep 13
Maximum Diurnal Average: 29.9 ppb at hour 15 Minimum Diurnal Average: 11.9 ppb at hour 6
Monthly Average: 20.54 ppb Percentiles: P_1 = 2.6 P_{10} = 7.2 Q_1 = 14.1 Median = 21.2 Q_3 = 27.2 P_{90} = 32.5 P_{99} = 40.4

Hours in Service:	720
Hours of Data:	684
Hours of Missing Data:	36
Hours of Calibration:	33
Percent Operational Time:	99.6

Day	Hourly Period Ending At (MST)																								Daily	Daily
	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24	Average	Maximum
1-Sep	Z	24.6	24.8	23.4	23.3	22.6	21.5	21.0	21.1	22.0	24.3	30.0	34.4	32.8	31.6	29.6	28.6	30.8	30.9	22.0	17.0	16.2	15.1	13.7	24.4	34.4
2-Sep	15.2	Z	12.6	11.6	13.8	14.4	12.1	13.3	17.7	21.0	22.6	24.3	31.7	38.4	40.8	40.5	37.6	33.8	33.7	28.6	24.0	26.5	31.9	31.4	25.1	40.8
3-Sep	26.3	24.0	Z	26.7	19.3	14.6	15.5	16.6	20.7	18.1	15.7	17.0	21.2	22.6	23.8	23.9	24.3	21.8	19.1	14.9	14.2	15.3	17.0	17.8	19.6	26.7
4-Sep	19.0	13.1	4.6	Z	6.9	7.5	9.9	10.9	12.7	16.1	21.2	23.1	23.3	24.6	28.4	28.3	27.4	26.9	25.2	20.0	18.9	23.1	22.8	21.7	18.9	28.4
5-Sep	12.9	7.8	8.3	6.3	Z	2.8	3.6	4.7	8.2	12.4	17.5	24.0	32.7	34.5	35.3	37.5	35.3	35.0	33.3	30.0	28.5	29.1	28.0	27.8	21.5	37.5
6-Sep	27.0	26.7	25.6	26.7	30.4	Z	30.8	29.2	29.2	30.5	34.0	32.2	30.0	27.3	23.8	21.3	21.6	23.8	26.5	27.0	25.6	24.5	22.4	22.5	26.9	34.0
7-Sep	Z	19.8	12.0	8.4	9.4	9.7	9.8	11.1	14.5	20.7	26.1	28.5	31.8	33.0	32.3	32.4	33.4	32.8	30.1	27.9	27.5	25.7	25.8	25.0	22.9	33.4
8-Sep	22.9	Z	14.1	14.7	13.0	12.7	12.5	11.3	16.1	22.8	27.6	32.8	35.9	35.1	34.9	38.0	38.7	32.9	35.2	29.4	27.6	21.9	14.5	6.8	24.0	38.7
9-Sep	8.3	12.3	Z	8.5	6.6	8.5	15.7	10.5	12.9	15.8	18.0	23.8	26.7	25.7	27.3	27.9	31.0	31.5	25.8	27.6	28.4	27.5	24.3	21.4	20.3	31.5
10-Sep	19.4	17.5	15.8	Z	15.4	15.8	15.1	14.8	15.7	C	C	C	25.9	27.8	24.7	28.4	26.6	26.5	21.9	19.6	15.7	7.0	7.4	10.6	18.6	28.4
11-Sep	5.8	2.9	3.4	2.5	Z	2.4	2.6	3.8	7.4	13.2	16.6	18.4	25.9	29.8	32.1	34.6	36.3	33.1	27.3	14.3	9.8	7.8	18.7	24.2	16.2	36.3
12-Sep	22.5	22.4	19.5	19.1	20.4	Z	15.0	11.0	13.9	17.5	22.4	20.2	20.5	19.0	21.1	22.2	22.4	23.0	18.6	13.1	11.4	10.6	7.6	7.1	17.4	23.0
13-Sep	Z	2.7	2.7	3.0	3.3	2.8	2.9	3.0	3.3	3.6	4.9	5.5	6.8	9.5	12.3	16.9	14.3	11.8	11.7	11.7	15.4	14.8	5.2	14.6	7.9	16.9
14-Sep	16.2	Z	15.3	14.9	15.2	14.9	12.9	13.5	16.7	19.5	22.4	27.4	32.5	33.9	34.2	33.5	31.0	31.7	25.1	22.2	23.6	22.2	18.2	12.0	22.1	34.2
15-Sep	6.2	4.1	Z	2.6	2.4	2.3	2.6	3.6	12.6	17.3	20.8	24.7	27.1	29.1	30.7	32.6	34.0	29.7	26.8	23.3	18.2	18.8	19.3	19.9	17.8	34.0
16-Sep	18.8	16.6	14.6	Z	14.7	14.8	14.3	14.9	16.8	23.5	23.4	27.9	31.8	31.7	32.3	32.5	31.6	30.1	28.5	25.0	23.1	26.4	25.4	24.6	23.6	32.5
17-Sep	20.5	17.9	18.1	17.0	Z	14.8	12.9	11.8	14.1	19.3	21.9	25.3	31.8	36.4	36.7	36.4	36.5	33.8	29.0	18.2	17.6	10.3	18.5	23.6	22.7	36.7
18-Sep	26.3	28.6	24.9	22.9	24.1	Z	20.6	20.6	22.9	26.3	23.5	22.9	24.4	26.7	29.7	31.1	32.8	32.9	30.4	22.1	16.8	21.0	24.0	18.5	25.0	32.9
19-Sep	Z	9.2	9.4	13.2	8.1	12.8	10.0	9.3	12.6	18.8	22.5	26.5	32.4	36.6	37.4	36.3	34.7	36.2	34.5	32.0	17.6	19.4	20.0	7.4	21.6	37.4
20-Sep	2.6	Z	2.7	2.7	2.5	2.5	8.8	9.3	6.4	8.6	9.6	14.4	19.8	25.2	26.8	26.2	28.0	25.5	24.4	18.5	13.1	16.9	2.5	2.7	13.0	28.0
21-Sep	2.9	3.1	Z	4.7	6.4	6.2	5.7	7.2	6.3	8.6	10.6	12.2	15.7	24.6	29.5	31.3	29.8	27.9	26.1	26.0	26.4	21.0	22.8	23.8	16.5	31.3
22-Sep	23.6	24.5	23.1	Z	20.3	17.6	14.5	12.1	16.6	18.6	22.9	24.6	24.4	25.1	26.7	27.6	28.5	26.1	23.1	15.1	15.2	16.9	19.3	9.5	20.7	28.5
23-Sep	2.9	2.7	2.6	3.4	Z	2.8	3.1	6.2	6.3	10.7	10.9	12.7	M	M	M	14.7	15.3	11.2	10.8	11.0	11.3	11.6	11.1	10.5	8.6	15.3
24-Sep	12.1	14.4	12.8	12.0	7.0	Z	3.4	7.1	11.6	14.5	20.5	27.6	31.8	35.1	39.7	41.9	41.3	40.3	37.5	27.8	15.2	12.9	18.0	19.7	21.9	41.9
25-Sep	Z	24.5	25.2	24.5	24.4	23.3	17.2	13.0	13.8	18.3	22.6	26.0	25.6	22.7	23.5	23.6	23.0	24.0	25.1	23.3	18.9	19.4	18.5	21.2	21.8	26.0
26-Sep	26.9	Z	22.4	16.1	19.6	18.3	24.0	26.4	25.0	20.1	19.8	23.7	29.1	28.9	28.6	28.0	29.3	34.8	33.7	30.0	19.6	19.0	22.2	21.5	24.7	34.8
27-Sep	13.8	16.2	Z	19.8	19.9	18.8	18.7	25.8	34.2	36.6	39.5	41.2	41.3	41.6	40.1	36.9	36.7	33.4	28.3	26.3	24.4	19.9	18.3	19.1	28.3	41.6
28-Sep	23.7	24.2	24.3	Z	25.3	24.1	22.7	22.8	23.9	27.2	29.5	31.3	32.3	31.6	32.6	32.4	31.2	25.2	14.8	16.2	10.8	13.4	18.8	15.1	24.1	32.6
29-Sep	15.7	17.7	15.1	13.5	Z	10.0	7.1	2.6	2.7	3.5	5.3	7.6	15.7	16.7	19.1	17.4	18.4	17.3	18.8	11.4	12.9	11.4	6.7	21.7	12.5	21.7
30-Sep	25.1	25.2	24.5	23.4	21.3	Z	20.6	19.1	19.3	19.7	23.5	25.2	28.4	31.4	31.8	33.1	32.4	31.1	29.1	29.3	28.6	20.0	24.4	28.6	25.9	33.1
	16.7	16.1	15.1	13.7	14.9	11.9	12.9	12.9	15.2	18.1	20.7	23.5	27.3	28.9	29.9	29.9	29.7	28.5	26.2	22.1	19.2	18.3	18.3	18.1	Diurnal Average	
	27.0	28.6	25.6	26.7	30.4	24.1	30.8	29.2	34.2	36.6	39.5	41.2	41.3	41.6	40.8	41.9	41.3	40.3	37.5	32.0	28.6	29.1	31.9	31.4	Diurnal Maximum	

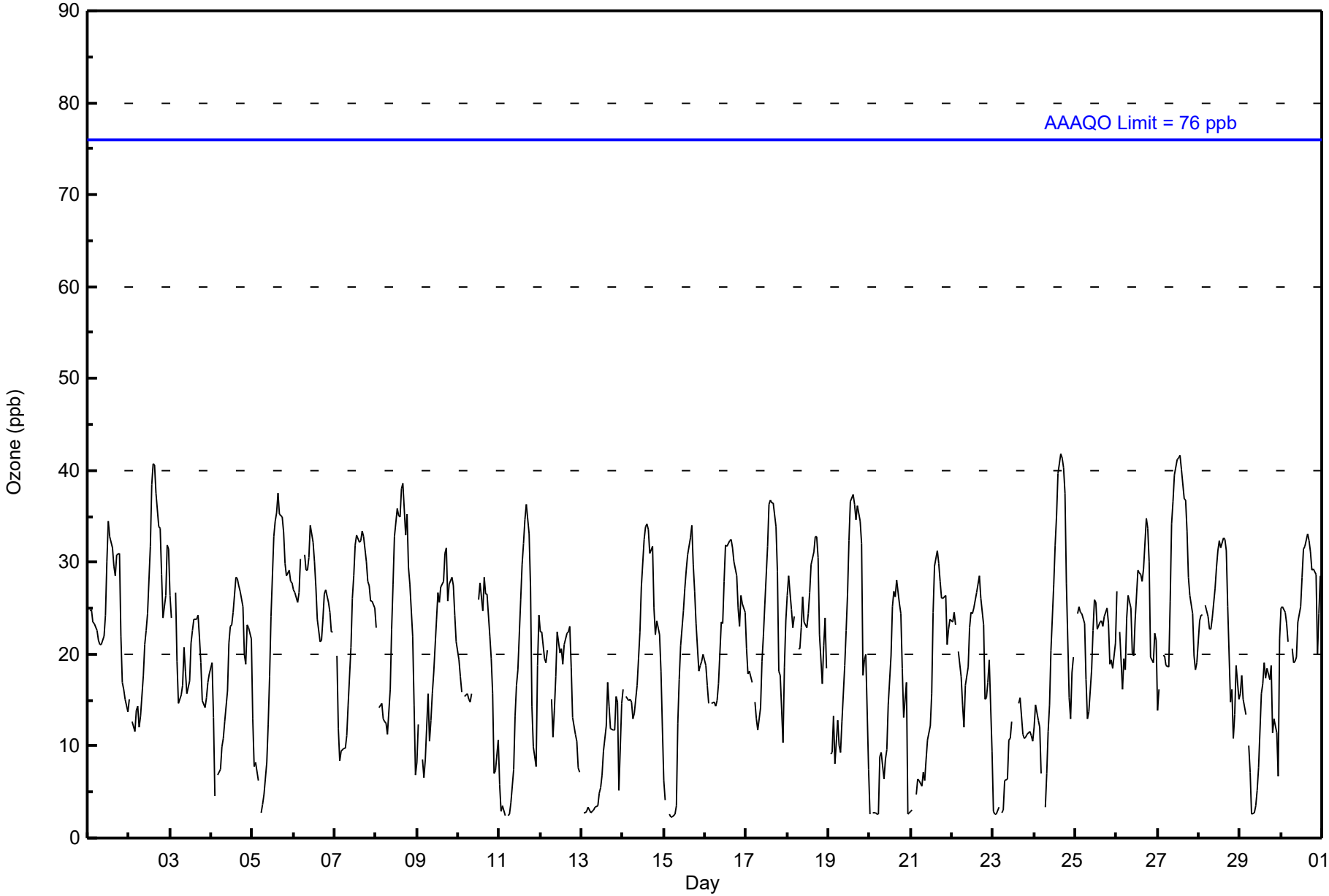
Z - zerospan C - Calibration M - Maintenance
Alberta Ambient Air Quality Objectives (AAAQO): 1-hr 76 ppb

Wood Buffalo Environmental Association

Hourly Averages

Ozone (O_3) - ppb

Buffalo Viewpoint - September 2024



Concentration Ranges (ppb)	Number of Hours	%	Cumulative %
0 - 20	327	47.81	47.81
21 - 50	357	52.19	100.00
51 - 82	0	0.00	100.00
> 83	0	0.00	100.00

Total Number of Valid Hours: 684

Total Number of Hours: 720

Concentration Ranges (ppb)	Wind Direction																
	N	NNE	NE	ENE	E	ESE	SE	SSE	S	SSW	SW	WSW	W	WNW	NW	NNW	**Totals**
0 - 20	47	20	4	3	3	6	24	68	35	10	10	12	19	12	30	24	327
21 - 50	12	9	8	3	5	14	23	53	37	21	22	45	50	34	14	7	357
51 - 82	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
> 83	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Totals	59	29	12	6	8	20	47	121	72	31	32	57	69	46	44	31	684

Total Number of Valid Hours: 684

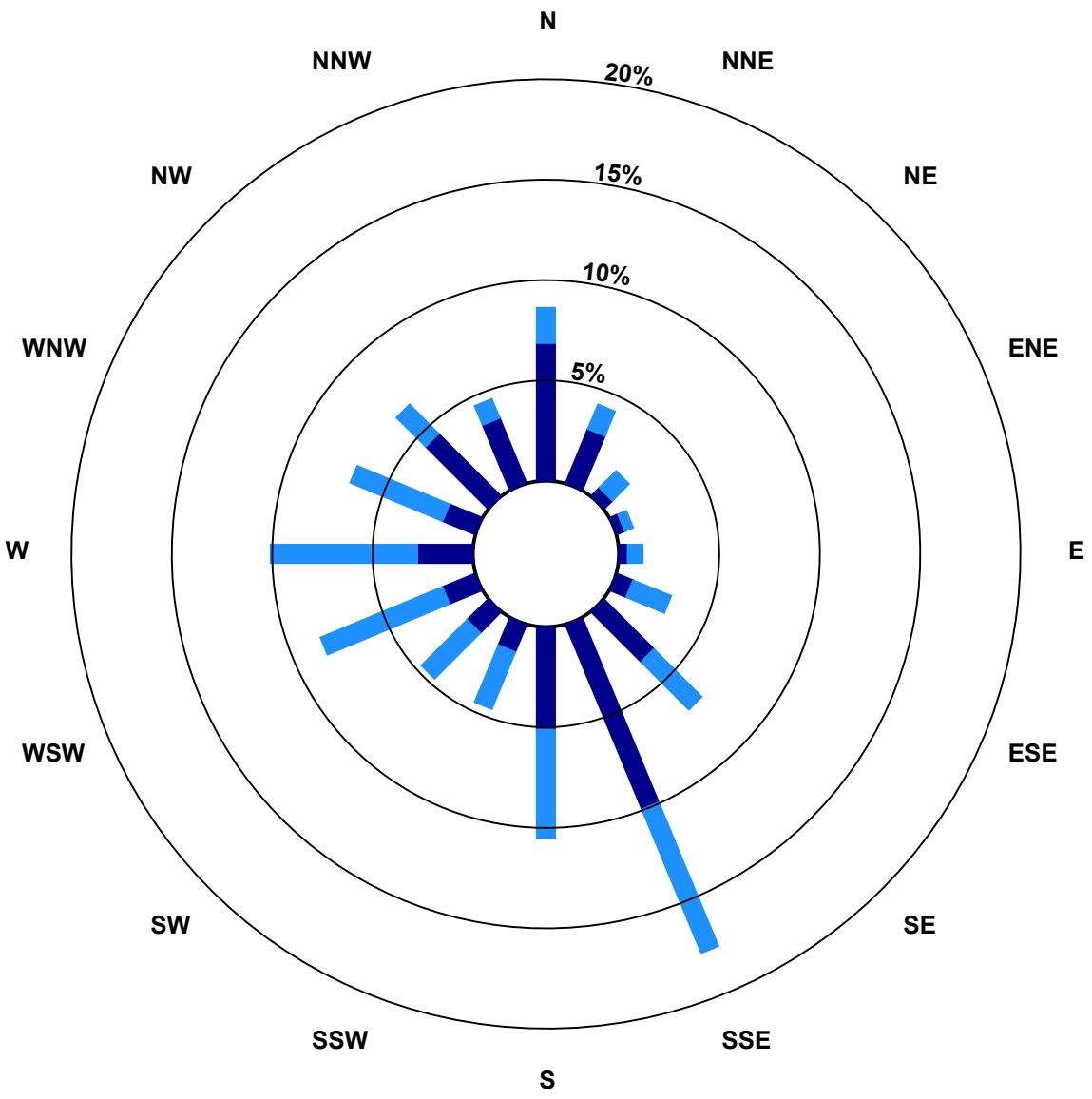
Total Number of Hours: 720

Wood Buffalo Environmental Association

Wind Rose Sep 2024

Ozone (O_3) - ppb

Buffalo Viewpoint



Classes (ppb)

0 - 20

21 - 50

51 - 82

> 83

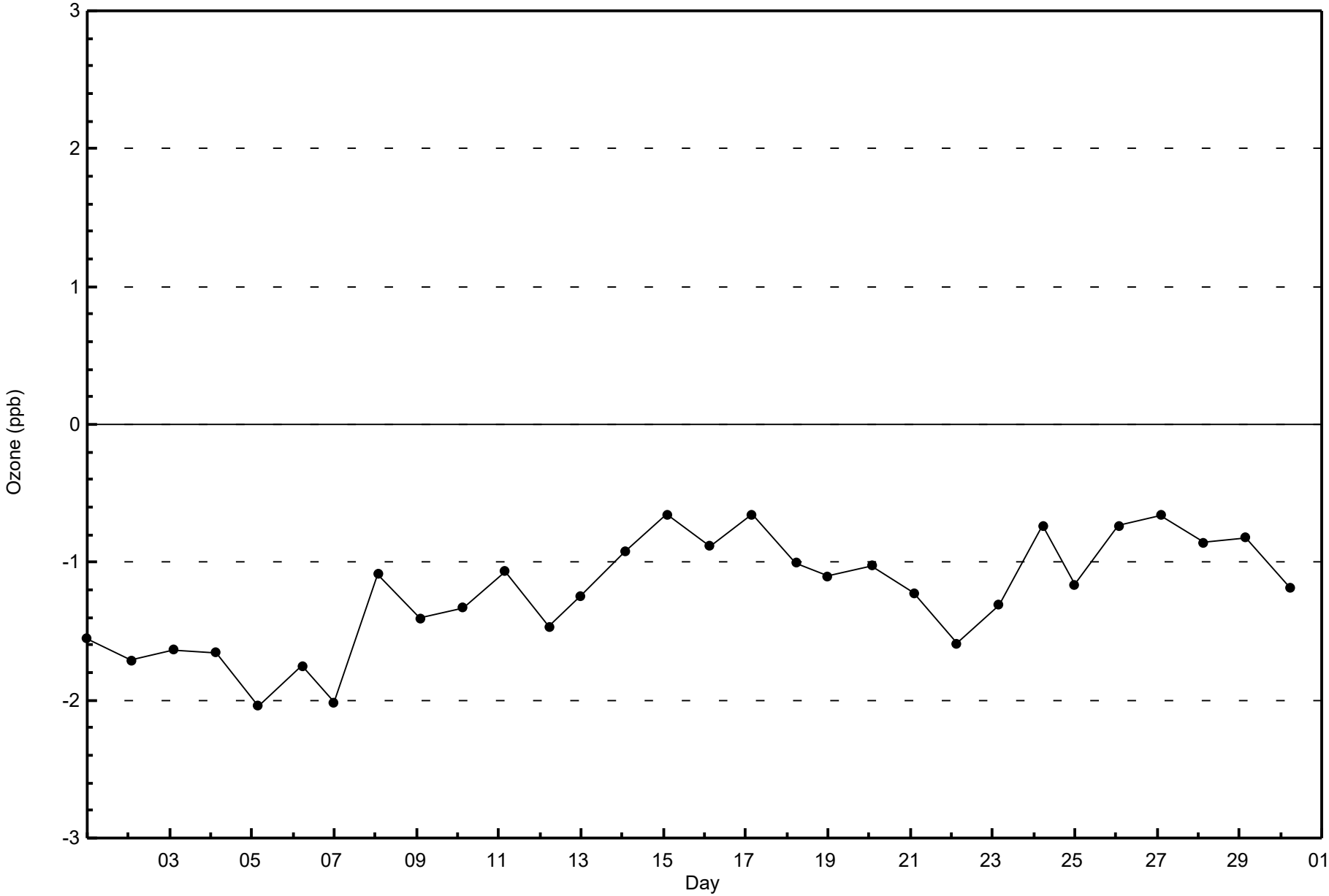
Total Number of Valid Hours: 684

Wood Buffalo Environmental Association

Zero Responses

Ozone (O_3) - ppb

Buffalo Viewpoint - September 2024

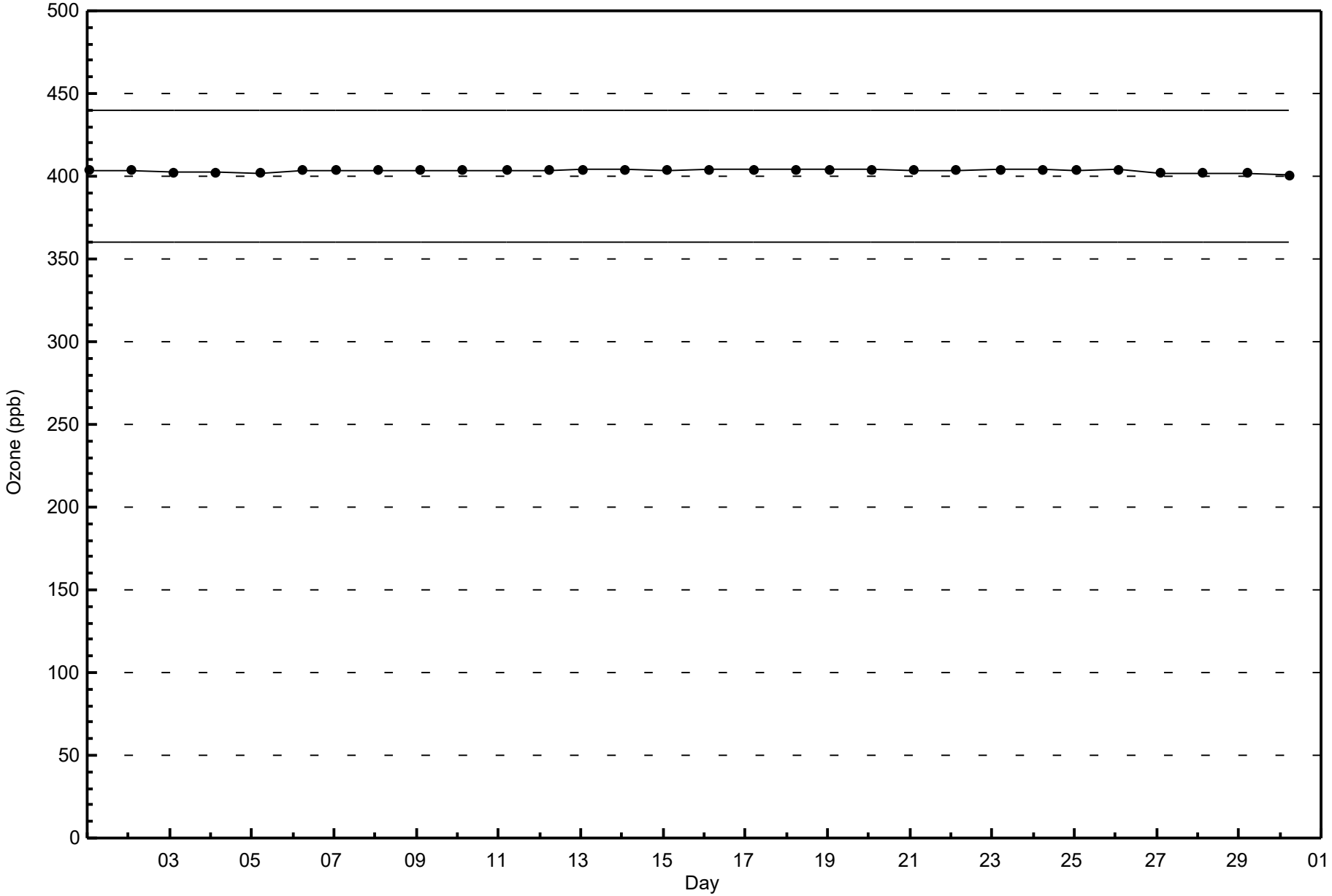


Wood Buffalo Environmental Association

Span Responses

Ozone (O_3) - ppb

Buffalo Viewpoint - September 2024



Wood Buffalo Environmental Association

Summary of Hour Averages

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

Buffalo Viewpoint - September 2024

Number of Exceedences (AAAQO): 1-hr: 57 24-hr: 5

Maximum Value: 177.5 $\mu g/m^3$ on Sep 7 12:00

Maximum Daily Average: 104.6 $\mu g/m^3$ on Sep 13

Minimum Value: 0.5 $\mu g/m^3$ on Sep 28 07:00

Minimum Daily Average: 1.5 $\mu g/m^3$ on Sep 28

Maximum Diurnal Average: 26.7 $\mu g/m^3$ at hour 12

Minimum Diurnal Average: 17.1 $\mu g/m^3$ at hour 19

Monthly Average: 20.94 $\mu g/m^3$

Percentiles: P_1 = 0.6 P_{10} = 2.3 Q_1 = 4.3 Median = 8.2 Q_3 = 19.3 P_{90} = 65.7 P_{99} = 137.6

Hours in Service:	720
Hours of Data:	717
Hours of Missing Data:	3
Hours of Calibration:	3
Percent Operational Time:	100.0

Day	Hourly Period Ending At (MST)																								Daily	Daily
	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24	Average	Maximum
1-Sep	8.8	9.7	11.8	11.1	13.8	14.1	13.4	6.7	4.5	4.3	5.0	4.1	3.6	3.9	4.3	4.3	4.6	6.7	8.3	9.1	9.8	10.5	12.4	11.2	8.2	14.1
2-Sep	10.8	12.6	11.5	11.4	12.0	15.9	15.8	12.6	8.6	8.4	6.7	6.1	7.3	7.4	5.4	4.6	6.0	7.0	8.0	19.0	23.3	28.7	22.2	10.6	11.7	28.7
3-Sep	8.8	7.7	5.9	8.1	23.4	29.4	26.0	21.9	23.5	24.4	20.6	12.7	11.4	15.7	10.0	9.8	7.7	15.3	5.7	5.4	5.5	5.1	4.0	3.8	13.0	29.4
4-Sep	3.9	4.4	5.6	5.8	6.2	6.4	6.6	7.2	7.2	7.0	7.1	8.2	7.6	7.3	7.8	7.3	4.8	12.1	5.0	4.8	5.1	4.9	3.4	2.8	6.2	12.1
5-Sep	13.0	12.3	9.7	10.7	10.8	9.5	10.8	8.5	14.0	11.9	9.3	8.3	8.2	10.4	10.7	11.1	11.0	11.3	9.8	9.3	8.2	7.7	6.8	6.7	10.0	14.0
6-Sep	6.8	6.0	5.7	5.5	5.6	7.1	5.7	6.6	5.7	7.1	13.5	14.0	12.9	12.4	11.8	11.8	11.8	12.1	15.8	27.3	33.1	41.9	41.2	33.8	14.8	41.9
7-Sep	29.3	34.0	33.0	32.6	35.5	45.6	55.6	69.9	83.3	97.5	120.8	177.5	147.0	78.3	47.2	37.9	35.9	31.0	42.8	56.1	69.3	85.8	98.0	110.8	68.9	177.5
8-Sep	113.8	116.9	109.7	105.3	100.5	105.8	114.5	111.7	125.4	125.3	117.5	121.1	104.3	86.1	74.9	80.1	84.1	82.2	71.3	72.7	71.8	69.6	70.2	68.6	96.0	125.4
9-Sep	49.0	34.0	34.1	29.9	34.8	45.3	60.0	61.8	48.5	50.1	46.6	41.4	28.8	20.9	11.2	7.3	5.0	22.6	21.9	8.3	6.9	16.7	34.8	36.4	31.5	61.8
10-Sep	29.5	24.7	22.0	19.5	15.4	13.6	12.9	15.0	15.0	13.4	10.5	9.2	14.4	30.8	27.5	30.7	20.1	20.0	17.7	15.9	14.8	24.4	23.7	12.0	18.9	30.8
11-Sep	11.4	10.8	10.0	9.1	9.3	9.3	8.7	9.8	11.5	14.3	14.6	17.8	20.4	15.9	12.7	6.7	5.7	7.0	9.6	16.7	31.3	40.3	33.1	31.3	15.3	40.3
12-Sep	30.4	30.5	29.0	29.7	45.3	60.3	65.0	67.9	66.7	75.4	86.9	107.7	109.6	138.4	152.5	146.4	156.4	151.9	129.8	132.6	133.4	130.9	129.8	126.4	97.2	156.4
13-Sep	126.1	122.4	130.9	132.4	120.2	115.0	120.2	119.7	123.7	127.3	139.3	124.3	122.8	124.0	119.4	101.7	98.6	84.0	62.8	67.4	68.2	61.4	50.2	49.3	104.6	139.3
14-Sep	47.9	41.4	37.1	36.9	34.3	34.1	33.4	33.2	34.1	33.6	26.5	25.9	28.2	32.9	22.4	21.2	19.2	15.2	15.3	21.3	22.4	24.0	21.8	22.1	28.5	47.9
15-Sep	24.7	22.1	20.6	21.8	18.5	19.6	20.6	17.1	9.6	7.5	9.2	11.2	14.0	14.7	11.7	11.2	12.1	13.3	16.6	20.9	19.6	18.6	16.2	15.8	16.1	24.7
16-Sep	14.3	13.7	13.5	11.8	10.3	8.4	6.7	5.4	4.4	3.5	3.5	3.3	3.0	3.1	2.7	2.7	2.3	2.5	2.6	2.5	2.7	2.7	2.7	2.8	5.5	14.3
17-Sep	3.1	3.2	3.4	3.8	3.9	4.0	4.1	4.3	5.2	5.4	4.5	4.5	4.7	3.8	4.0	4.2	4.6	5.1	8.4	10.7	8.0	10.6	6.1	5.4	5.2	10.7
18-Sep	4.7	4.6	4.9	5.1	5.0	5.5	6.0	6.0	5.8	7.9	8.3	12.4	16.4	17.3	16.3	17.1	19.3	14.3	14.7	16.7	16.7	9.3	8.7	8.3	10.5	19.3
19-Sep	8.1	7.7	7.1	6.3	6.4	7.6	11.1	13.5	12.0	8.3	8.1	7.3	7.5	8.7	9.3	7.6	7.6	5.9	6.3	7.6	18.8	14.2	11.7	16.5	9.4	18.8
20-Sep	14.8	19.7	12.5	13.9	10.4	9.5	8.0	8.5	10.5	18.4	26.6	17.4	9.5	11.6	15.9	17.7	7.7	7.2	5.1	7.0	6.7	4.2	25.0	24.0	13.0	26.6
21-Sep	10.5	9.7	4.7	4.7	4.0	4.2	5.0	7.4	8.5	6.9	7.0	6.6	6.8	12.8	9.1	6.4	6.7	8.1	8.8	7.8	4.7	4.7	5.4	5.1	6.9	12.8
22-Sep	4.5	4.4	4.3	4.4	4.5	4.9	5.0	5.2	5.2	5.2	5.2	4.4	4.2	4.4	3.3	3.6	3.6	3.4	5.4	8.6	7.2	5.7	5.5	7.4	5.0	8.6
23-Sep	10.0	6.8	6.7	6.3	6.6	7.1	6.5	6.1	8.2	6.8	C	C	C	9.9	8.9	5.5	2.4	2.3	2.3	2.5	2.5	2.7	2.7	2.8	5.5	10.0
24-Sep	2.7	2.3	2.2	2.2	2.5	2.3	2.7	2.1	1.2	1.3	1.7	4.1	7.2	7.1	5.3	3.2	2.1	1.7	0.9	1.4	2.4	2.6	2.1	2.5	2.7	7.2
25-Sep	2.5	2.2	2.2	2.0	1.9	2.7	3.6	4.1	4.9	3.0	2.6	1.7	2.0	1.9	1.9	1.9	1.6	1.7	1.6	1.6	1.9	1.8	1.8	1.8	2.3	4.9
26-Sep	1.4	1.8	1.7	3.0	6.0	6.9	8.4	8.0	7.5	8.8	8.7	6.5	3.5	2.8	2.9	3.0	4.6	5.4	3.5	3.4	4.0	3.6	2.8	2.4	4.6	8.8
27-Sep	3.2	2.8	2.8	2.4	2.0	2.0	2.0	1.8	1.3	1.2	1.3	1.1	1.0	1.0	1.1	1.2	1.1	1.2	1.4	1.6	1.6	1.3	1.0	0.9	1.6	3.2
28-Sep	0.8	0.6	0.6	0.7	0.7	0.6	0.5	0.5	0.6	0.6	0.6	0.6	0.7	1.1	2.3	2.7	2.7	3.0	3.7	3.2	3.1	2.6	1.8	2.5	1.5	3.7
29-Sep	2.7	2.5	2.5	2.6	2.6	2.8	4.5	7.1	7.1	7.1	6.7	6.1	3.5	3.9	4.6	6.1	6.0	24.3	5.6	9.2	7.6	7.1	7.5	3.9	6.0	24.3
30-Sep	2.8	2.5	2.8	3.2	3.6	5.4	8.2	9.7	12.9	11.7	12.5	8.0	4.6	7.0	10.6	11.4	6.3	3.4	2.5	1.9	1.5	2.0	1.5	1.3	5.7	12.9
	20.0	19.1	18.3	18.1	18.5	20.2	21.7	22.0	22.6	23.5	25.2	26.7	24.7	23.2	20.9	19.5	18.7	19.4	17.1	19.1	20.4	21.5	21.8	21.0	Diurnal Average	
	126.1	122.4	130.9	132.4	120.2	115.0	120.2	119.7	125.4	127.3	139.3	177.5	147.0	138.4	152.5	146.4	156.4	151.9	129.8	132.6	133.4	130.9	129.8	126.4	Diurnal Maximum	

C - Calibration

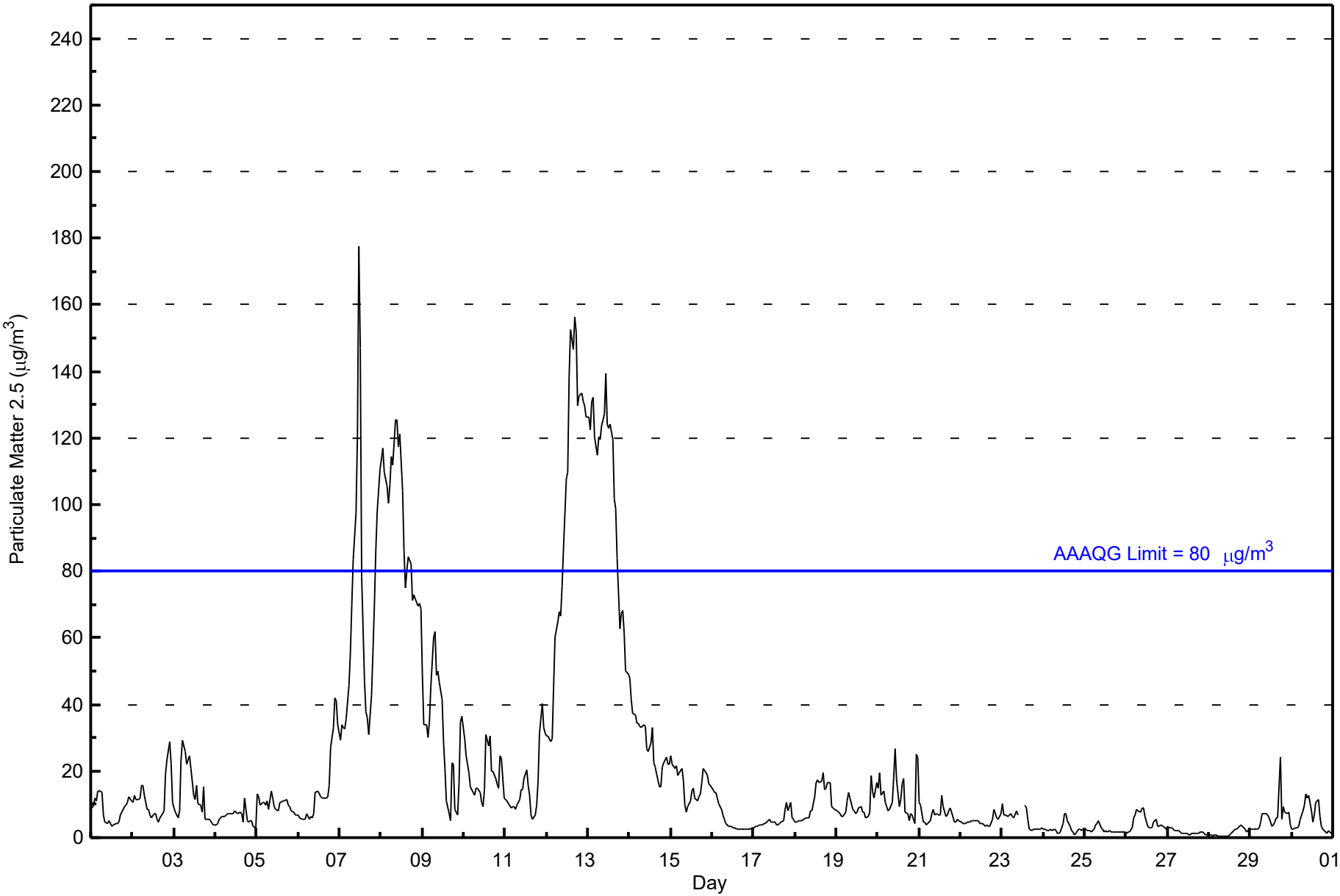
Alberta Ambient Air Quality Guideline/Objectives: 1-hr 80 $\mu g/m^3$ 24-hr 29 $\mu g/m^3$

Wood Buffalo Environmental Association

Hourly Averages

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

Buffalo Viewpoint - September 2024



Wood Buffalo Environmental Association
Cumulative Frequency Distribution

Particulate Matter 2.5 ($PM_{2.5}$) - $\mu g/m^3$
Buffalo Viewpoint - September 2024

Concentration Ranges ($\mu g/m^3$)	Number of Hours	%	Cumulative %
0 - 5	244	34.03	34.03
6 - 15	263	36.68	70.71
16 - 25	68	9.48	80.20
26 - 80	86	11.99	92.19
> 81.0	56	7.81	100.00

Total Number of Valid Hours: 717

Total Number of Hours: 720

Wood Buffalo Environmental Association

Frequency Distribution

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

Buffalo Viewpoint - September 2024

Concentration Ranges ($\mu g/m^3$)	Wind Direction																
	N	NNE	NE	ENE	E	ESE	SE	SSE	S	SSW	SW	WSW	W	WNW	NW	NNW	**Totals**
0 - 5	8	3	2	1	2	6	17	56	36	21	17	29	26	11	6	3	244
6 - 15	22	13	3	1	2	7	23	50	32	9	8	17	25	20	23	8	263
16 - 25	15	4	2	0	0	3	0	5	3	0	1	6	8	5	9	7	68
26 - 80	10	5	3	2	1	0	5	10	3	0	6	11	12	8	4	6	86
> 81.0	5	6	2	2	3	4	5	9	2	1	0	0	2	3	5	7	56
Totals	60	31	12	6	8	20	50	130	76	31	32	63	73	47	47	31	717

Total Number of Valid Hours: 717

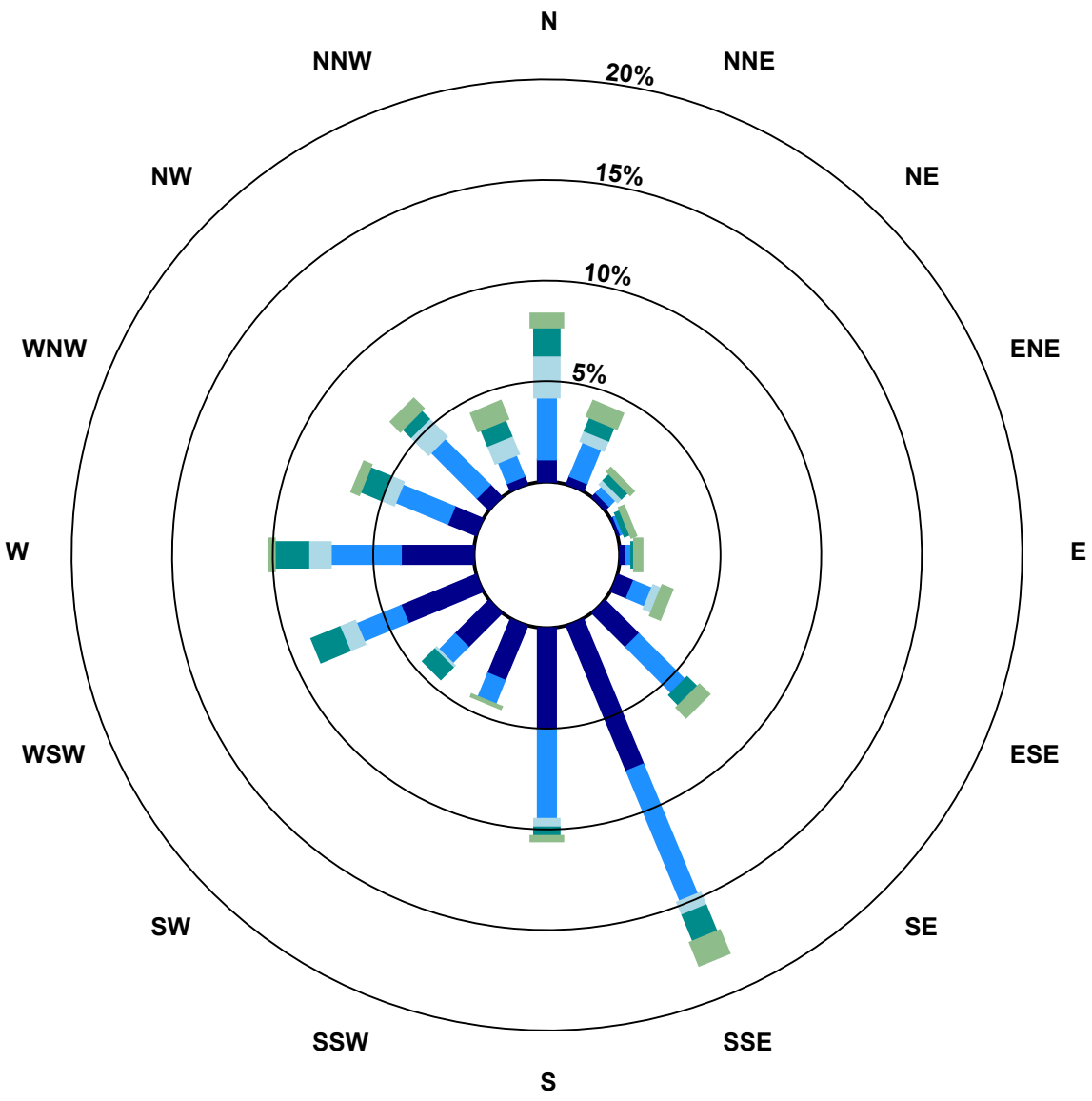
Total Number of Hours: 720

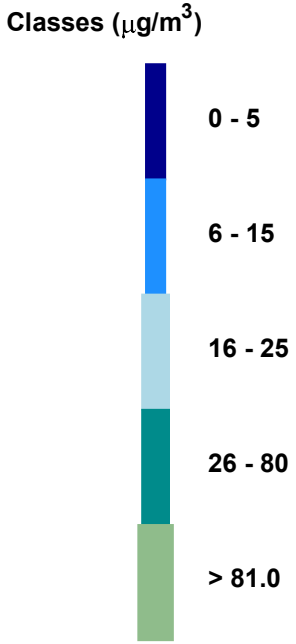
Wood Buffalo Environmental Association

Wind Rose Sep 2024

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

Buffalo Viewpoint





Total Number of Valid Hours: 717

Maximum Value: 30.9 C on Sep 2 15:00

Maximum Daily Average: 20.9 C on Sep 2

Minimum Value: 2.0 C on Sep 19 07:00

Minimum Daily Average: 7.6 C on Sep 30

Maximum Diurnal Average: 18.8 C at hour 15

Minimum Diurnal Average: 8.2 C at hour 7

Monthly Average: 13.33 C

Percentiles: P_1 = 2.9 P_{10} = 7.2 Q_1 = 9.7 Median = 12.6 Q_3 = 16.3 P_{90} = 20.5 P_{99} = 28.8

Hours in Service:	720
Hours of Data:	720
Hours of Missing Data:	0
Hours of Calibration:	0
Percent Operational Time:	100.0

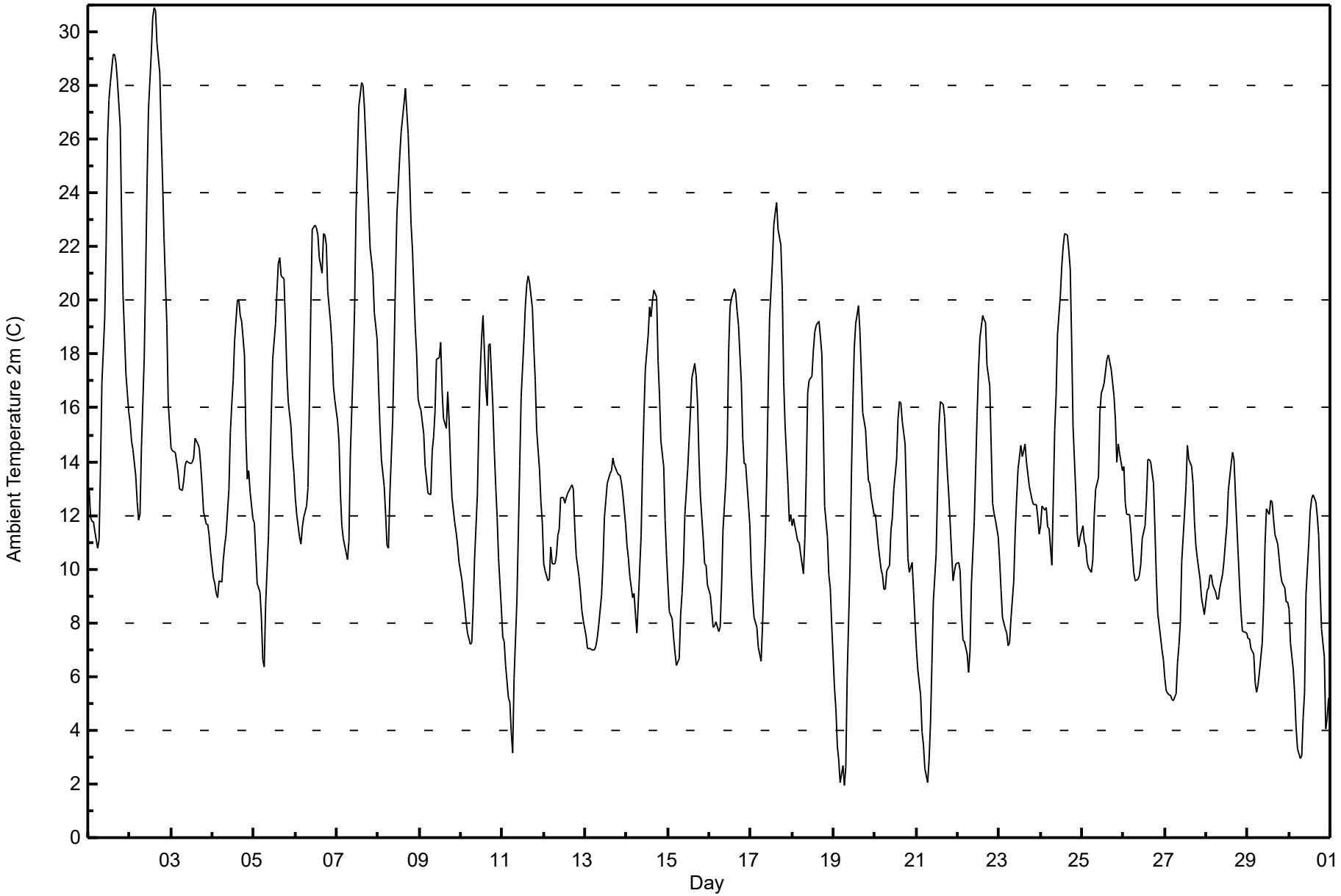
Day	Hourly Period Ending At (MST)																								Daily	Daily
	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24	Average	Maximum
1-Sep	13.0	11.9	11.8	11.8	11.4	10.7	11.1	13.7	16.9	19.3	22.1	26.0	27.5	28.1	29.1	29.2	28.9	28.2	26.5	23.0	20.2	18.7	17.3	15.9	19.7	29.2
2-Sep	15.5	14.8	14.4	13.4	12.5	11.8	12.0	14.5	17.9	21.0	24.4	27.1	29.2	30.5	30.9	30.8	29.6	28.5	26.3	24.4	22.3	19.2	16.2	15.3	20.9	30.9
3-Sep	14.5	14.4	14.3	14.0	13.5	13.0	12.9	13.3	13.9	14.0	14.0	13.9	14.0	14.2	14.9	14.6	14.5	13.9	13.1	12.1	11.7	11.6	11.2	10.6	13.4	14.9
4-Sep	9.7	9.5	9.1	8.9	9.6	9.5	10.3	10.9	11.3	13.0	15.1	16.1	17.0	18.5	20.0	20.0	19.4	19.2	18.0	15.0	13.4	13.7	12.9	11.9	13.8	20.0
5-Sep	11.7	10.6	9.5	9.2	8.2	6.6	6.3	8.7	11.2	13.5	15.7	17.8	19.1	20.4	21.4	21.6	20.9	20.8	19.2	17.4	16.2	15.3	14.2	13.6	14.5	21.6
6-Sep	12.6	12.0	11.2	10.9	11.5	12.0	12.3	13.0	16.2	19.7	22.6	22.8	22.7	22.4	21.6	21.0	22.5	22.5	22.1	20.3	19.2	18.3	16.8	16.3	17.6	22.8
7-Sep	15.5	14.7	12.8	11.6	11.1	10.6	10.3	11.0	14.3	17.6	19.7	23.2	25.3	27.2	28.1	28.0	27.2	25.9	23.4	22.0	21.5	21.0	19.5	18.5	19.2	28.1
8-Sep	16.8	15.3	14.1	13.1	12.0	10.9	10.8	12.8	15.5	18.0	20.8	23.2	25.4	26.3	26.8	27.3	27.9	26.2	24.7	22.9	21.9	18.9	18.0	16.4	19.4	27.9
9-Sep	16.1	15.9	15.0	13.8	13.3	12.8	12.8	14.4	14.9	15.8	17.8	17.9	18.4	16.7	15.6	15.3	16.6	15.5	13.9	12.6	11.7	11.4	10.9	10.3	14.6	18.4
10-Sep	9.6	9.1	8.6	8.1	7.6	7.2	7.2	8.6	10.3	12.8	15.3	17.3	18.6	19.4	16.7	16.1	18.3	18.4	16.0	14.4	13.1	11.9	10.4	8.5	12.6	19.4
11-Sep	7.5	7.3	6.4	5.2	5.0	3.9	3.1	5.9	8.8	11.3	13.8	16.4	18.5	19.8	20.6	20.9	20.6	19.7	18.3	17.0	15.2	13.7	12.5	11.7	12.6	20.9
12-Sep	10.2	9.9	9.6	9.6	10.8	10.2	10.2	10.5	11.2	11.5	12.7	12.7	12.5	12.7	12.8	13.0	13.1	13.0	11.5	10.5	9.7	9.2	8.5	8.1	11.0	13.1
13-Sep	7.5	7.1	7.0	7.0	7.0	7.0	7.1	7.4	7.9	9.1	10.2	11.9	12.6	13.2	13.5	13.7	14.1	13.9	13.6	13.5	13.5	13.2	12.8	11.7	10.7	14.1
14-Sep	10.9	10.4	9.7	8.9	9.1	8.3	7.6	8.8	11.2	13.8	15.8	17.4	18.7	19.8	19.4	20.0	20.4	20.1	17.7	16.5	14.8	13.8	11.8	10.5	14.0	20.4
15-Sep	9.4	8.4	8.1	7.5	6.9	6.4	6.7	8.3	9.1	10.2	12.0	13.7	14.8	15.9	17.1	17.7	17.2	16.1	14.2	12.7	11.1	10.2	10.1	9.4	11.4	17.7
16-Sep	9.1	8.5	7.8	7.9	8.0	7.7	7.8	9.3	11.4	13.2	14.6	18.1	19.7	20.1	20.4	20.3	19.6	19.1	16.9	14.9	13.9	13.9	13.2	11.7	13.6	20.4
17-Sep	10.0	8.9	8.2	7.8	7.1	6.8	6.6	7.9	11.1	13.5	16.6	19.3	21.4	22.8	23.3	23.6	22.7	22.1	20.4	17.0	15.4	13.1	11.8	12.1	14.6	23.6
18-Sep	11.6	11.9	11.3	11.0	11.0	10.6	9.8	11.2	13.6	16.6	17.0	17.2	18.1	18.8	19.1	19.2	18.7	18.0	15.5	12.4	11.2	9.8	9.3	7.9	13.8	19.2
19-Sep	5.5	4.8	3.4	2.9	2.0	2.7	2.0	2.6	6.0	10.1	13.6	16.2	18.2	19.1	19.8	18.9	17.3	15.8	15.2	14.2	13.3	13.2	12.7	12.0	10.9	19.8
20-Sep	12.0	11.5	10.9	10.0	9.8	9.3	9.3	9.9	10.1	11.5	11.9	13.0	14.1	15.6	16.3	16.2	15.5	14.7	12.7	10.4	9.9	10.3	9.2	8.1	11.7	16.3
21-Sep	7.0	6.2	5.3	4.0	3.5	2.6	2.1	2.9	4.3	6.4	8.8	10.5	12.9	15.3	16.2	16.1	15.7	14.5	13.6	12.7	10.6	9.6	10.0	10.2	9.2	16.2
22-Sep	10.2	9.9	8.3	7.3	7.3	6.8	6.1	6.9	9.5	11.8	13.7	15.7	17.4	18.6	19.5	19.3	19.2	17.6	16.8	14.6	12.5	12.1	11.8	11.2	12.7	19.5
23-Sep	10.3	9.2	8.2	7.8	7.6	7.1	7.3	8.1	9.6	11.3	12.6	13.7	14.6	14.2	14.4	14.7	14.0	13.1	12.8	12.6	12.4	12.4	11.9	11.3	11.3	14.7
24-Sep	11.6	12.3	12.2	12.3	11.6	11.5	10.1	12.7	15.2	16.5	18.7	20.2	21.3	22.0	22.5	22.5	21.9	21.2	18.5	15.3	12.8	11.3	10.8	11.2	15.7	22.5
25-Sep	11.6	11.0	10.9	10.3	10.0	9.9	10.3	12.0	13.0	13.4	15.8	16.5	16.7	16.9	17.8	18.0	17.7	17.4	16.4	15.5	14.0	14.6	14.3	13.6	14.1	18.0
26-Sep	13.8	12.5	12.0	12.0	11.4	10.6	9.9	9.6	9.6	9.8	10.2	11.1	11.6	12.6	14.1	14.1	14.0	13.2	11.5	9.7	8.3	7.5	7.0	6.6	10.9	14.1
27-Sep	6.0	5.5	5.3	5.3	5.2	5.1	5.3	6.5	7.1	8.0	10.3	12.1	13.1	14.6	14.1	13.8	13.2	11.8	10.9	10.4	9.6	8.9	8.6	8.3	9.1	14.6
28-Sep	9.2	9.3	9.8	9.7	9.4	9.1	8.9	8.9	9.3	9.8	10.3	11.0	11.7	12.9	13.9	14.4	14.1	12.8	10.5	9.4	8.4	7.7	7.6	7.6	10.2	14.4
29-Sep	7.4	7.4	7.0	6.8	5.8	5.4	5.7	6.1	7.2	8.7	10.9	12.2	12.0	12.6	12.5	11.9	11.3	10.9	10.4	9.8	9.5	9.3	8.8	8.8	9.1	12.6
30-Sep	8.5	7.3	6.3	5.4	4.1	3.3	2.9	3.1	4.4	5.4	9.0	11.0	12.1	12.6	12.8	12.5	12.0	11.2	9.4	7.8	6.7	4.0	4.4	5.2	7.6	12.8
	10.8	10.2	9.6	9.1	8.8	8.3	8.2	9.3	11.1	12.9	14.9	16.5	17.6	18.5	18.8	18.8	18.6	17.8	16.3	14.7	13.5	12.6	11.8	11.1	Diurnal Average	
	16.8	15.9	15.0	14.0	13.5	13.0	12.9	14.5	17.9	21.0	24.4	27.1	29.2	30.5	30.9	30.8	29.6	28.5	26.5	24.4	22.3	21.0	19.5	18.5	Diurnal Maximum	

Wood Buffalo Environmental Association

Hourly Averages

Ambient Temperature 2m (AT2) - C

Buffalo Viewpoint - September 2024



Concentration Ranges (C)	Number of Hours	%	Cumulative %
-50 - -20	0	0.00	0.00
-20 - 0	0	0.00	0.00
0 - 10	200	27.78	27.78
10 - 20	436	60.56	88.33
> 20	84	11.67	100.00

Total Number of Valid Hours: 720

Total Number of Hours: 720

Wood Buffalo Environmental Association

Summary of Hour Averages

Relative Humidity 2m (RH2) - %

Buffalo Viewpoint - September 2024

Maximum Value: 98.4 % on Sep 13 09:00

Maximum Daily Average: 90.2 % on Sep 23

Minimum Value: 24.5 % on Sep 2 16:00

Minimum Daily Average: 55.2 % on Sep 30

Maximum Diurnal Average: 88.6 % at hour 7

Minimum Diurnal Average: 49.3 % at hour 16

Monthly Average: 70.75 %

Percentiles: P_1 = 32.7 P_{10} = 44.3 Q_1 = 58.2 Median = 73.5 Q_3 = 85.2 P_{90} = 93.6 P_{99} = 98.1

Hours in Service:	720
Hours of Data:	720
Hours of Missing Data:	0
Hours of Calibration:	0
Percent Operational Time:	100.0

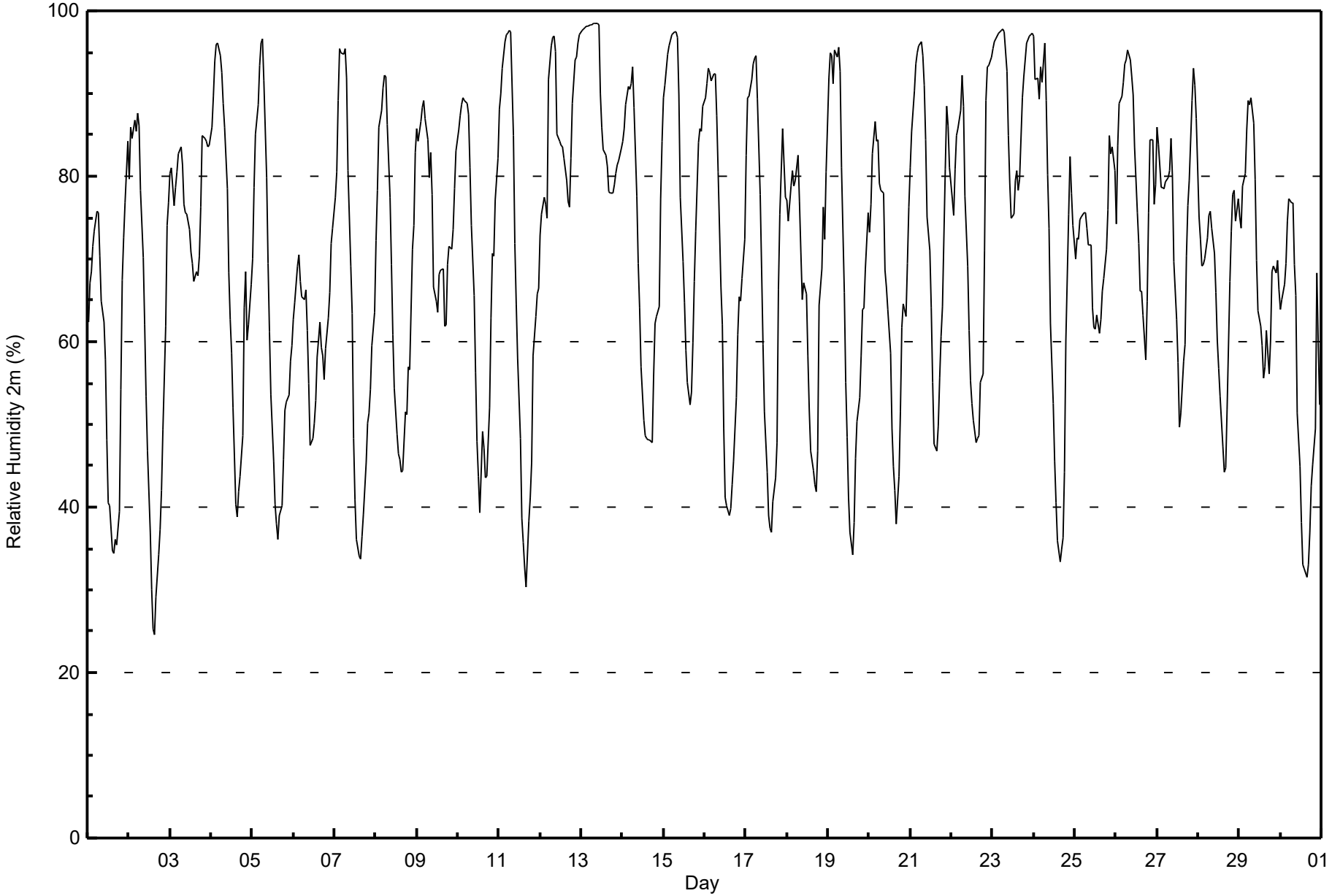
Day	Hourly Period Ending At (MST)																								Daily	Daily
	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24	Average	Maximum
1-Sep	62.3	67.2	68.4	71.6	73.5	75.8	75.6	70.4	65.0	62.3	57.7	48.1	40.5	40.2	34.7	34.3	36.1	35.4	39.5	54.2	67.4	72.5	76.8	84.2	58.9	84.2
2-Sep	79.6	85.9	84.6	86.8	85.5	87.6	86.2	78.4	70.1	62.0	53.4	46.8	37.0	30.0	25.2	24.5	29.1	34.3	37.4	42.0	49.3	61.9	74.1	76.9	59.5	87.6
3-Sep	80.3	81.1	76.4	78.6	80.4	82.7	83.5	81.4	76.6	75.6	75.4	73.6	70.9	69.6	67.3	68.4	68.0	70.4	76.3	84.9	84.6	84.2	83.6	83.8	77.4	84.9
4-Sep	86.0	89.7	93.9	96.0	96.2	94.6	92.6	88.9	85.9	78.4	68.2	62.7	58.6	52.0	40.3	38.8	41.8	43.7	48.7	64.1	68.4	60.2	62.0	66.9	69.9	96.2
5-Sep	70.1	78.6	85.2	88.7	93.4	96.1	96.7	91.6	79.8	69.5	61.2	53.5	45.5	40.3	38.0	36.1	38.9	40.1	45.7	51.7	52.8	53.6	57.5	59.5	63.5	96.7
6-Sep	62.8	64.8	69.2	70.4	67.2	65.5	65.1	66.3	61.4	54.9	47.4	48.4	50.2	53.0	58.1	62.4	59.4	58.3	55.4	59.1	62.8	66.0	71.8	73.7	61.4	73.7
7-Sep	77.5	80.5	89.1	95.4	94.8	94.8	95.5	91.8	80.6	69.1	63.4	48.3	40.9	36.1	34.1	33.7	36.5	39.1	45.4	50.1	51.4	54.3	59.5	63.6	63.6	95.5
8-Sep	72.1	78.3	86.0	88.0	90.7	92.1	92.0	86.2	77.4	69.4	60.8	54.4	48.8	46.5	45.8	44.2	44.4	51.5	51.1	56.9	56.6	71.1	74.0	82.8	67.5	92.1
9-Sep	85.8	84.3	86.6	88.4	89.2	86.9	84.4	79.9	82.8	77.8	66.7	64.9	63.6	68.1	68.6	68.8	61.9	62.0	69.4	71.5	71.2	73.5	78.5	83.1	75.7	89.2
10-Sep	85.7	87.4	88.6	89.5	89.2	88.8	87.4	81.0	74.1	65.6	56.3	48.0	43.8	39.3	49.2	47.1	43.5	43.7	52.1	62.9	70.7	70.3	77.2	82.3	67.6	89.5
11-Sep	88.2	90.1	93.1	96.2	97.2	97.3	97.6	97.4	85.0	71.8	64.5	58.0	48.3	38.7	35.7	32.7	30.4	38.4	41.2	45.5	58.3	63.1	65.8	66.4	66.7	97.6
12-Sep	72.9	75.4	77.5	76.6	74.9	91.7	95.8	96.7	96.9	95.1	85.2	84.2	83.7	83.6	82.3	79.5	77.0	76.3	82.2	88.8	94.1	94.4	96.1	97.2	85.7	97.2
13-Sep	97.6	97.8	98.0	98.1	98.2	98.3	98.4	98.4	98.4	98.4	98.3	90.0	86.0	83.2	82.6	81.2	78.2	77.9	78.0	78.9	80.3	81.3	81.9	83.4	89.3	98.4
14-Sep	84.2	85.7	88.7	90.9	90.6	91.2	93.3	88.3	77.6	69.4	64.1	56.9	50.5	48.7	48.3	48.1	48.1	47.9	55.9	62.3	63.1	64.2	77.3	84.2	70.0	93.3
15-Sep	89.4	91.0	94.8	95.7	96.5	97.1	97.4	97.5	96.8	89.8	77.5	69.7	64.7	59.0	55.0	52.4	53.9	59.9	67.3	73.4	84.0	85.7	85.4	88.6	80.1	97.5
16-Sep	89.6	91.2	93.1	92.6	91.5	92.3	92.4	87.3	80.5	66.5	62.1	49.4	41.1	40.2	39.0	39.8	42.7	45.5	53.3	60.9	65.4	64.9	67.6	72.3	67.6	93.1
17-Sep	82.5	89.5	89.6	91.7	93.5	94.2	94.6	89.3	77.8	68.8	59.7	51.6	44.3	38.9	37.5	36.9	40.7	43.6	47.8	66.3	75.4	85.8	81.6	77.5	69.1	94.6
18-Sep	77.0	74.5	78.8	80.7	78.8	79.5	82.6	77.0	70.8	65.1	67.2	65.8	58.3	51.6	46.7	44.3	42.7	41.9	46.7	64.4	68.9	76.2	72.4	80.6	66.4	82.6
19-Sep	91.8	94.9	94.6	91.2	95.2	94.4	95.7	92.7	81.0	66.0	55.2	48.5	41.1	37.0	34.3	38.2	45.9	50.4	53.3	58.3	63.8	64.0	68.8	75.6	68.0	95.7
20-Sep	73.2	76.6	82.7	86.6	84.2	84.5	79.2	78.3	78.0	68.6	66.6	63.8	58.6	49.4	44.9	42.1	38.0	43.7	51.5	61.7	64.6	63.0	69.5	76.2	66.1	86.6
21-Sep	81.0	85.5	90.4	93.6	94.9	95.7	96.3	94.5	91.0	84.3	75.1	71.0	64.0	55.0	47.6	46.7	49.9	55.5	60.7	64.2	80.9	88.5	86.2	81.0	76.4	96.3
22-Sep	77.4	75.2	80.8	84.8	85.8	88.0	92.3	88.4	77.6	69.2	61.4	55.3	52.6	50.4	47.7	48.3	48.6	55.1	56.0	71.0	89.2	93.2	93.5	94.5	72.4	94.5
23-Sep	95.4	96.3	96.6	97.3	97.4	97.6	97.8	97.4	92.7	85.0	79.2	75.0	75.4	79.4	80.7	78.3	79.7	89.4	92.0	94.1	96.1	96.9	97.1	97.4	90.2	97.8
24-Sep	97.0	91.7	91.9	89.4	93.3	91.4	96.2	89.2	80.2	73.7	62.2	52.6	45.7	40.4	36.0	33.5	34.9	36.2	44.3	60.2	75.4	82.3	78.0	74.0	68.7	97.0
25-Sep	70.1	72.6	72.3	74.7	75.1	75.6	75.6	73.7	71.7	71.7	64.1	61.6	61.5	63.2	61.1	62.7	66.1	67.6	71.1	75.9	84.8	82.7	83.6	80.7	71.7	84.8
26-Sep	74.3	83.7	88.8	89.7	91.3	93.6	94.1	95.2	94.1	92.1	89.8	83.6	75.7	71.9	66.1	66.2	63.2	57.8	64.9	75.7	84.5	84.4	76.6	78.9	80.7	95.2
27-Sep	86.0	83.9	78.6	78.6	78.5	79.4	79.8	80.8	84.5	80.0	69.7	62.7	57.5	49.7	51.4	57.7	59.7	70.3	76.5	79.4	89.2	93.1	91.0	86.9	75.2	93.1
28-Sep	75.0	72.4	69.2	69.2	70.1	72.6	75.3	75.7	73.7	70.7	66.0	60.2	56.8	53.5	47.4	44.3	44.8	51.9	67.2	73.5	77.9	78.4	74.6	77.3	66.6	78.4
29-Sep	75.1	73.8	78.7	80.3	85.6	89.1	88.7	89.5	86.4	79.6	69.8	63.7	61.8	59.5	55.6	56.9	61.4	56.1	60.2	68.5	69.2	68.3	69.8	66.2	71.4	89.5
30-Sep	64.0	65.1	67.0	69.4	74.5	77.4	76.8	76.8	69.3	65.6	51.4	45.0	38.1	33.0	32.5	31.5	33.1	37.0	42.6	45.2	49.5	68.2	59.8	52.4	55.2	77.4
	80.1	82.2	84.4	86.0	86.9	88.2	88.6	86.0	80.6	73.9	66.7	60.6	55.5	52.1	49.8	49.3	50.0	52.7	57.8	65.5	71.7	74.9	76.4	78.3	Diurnal Average	
	97.6	97.8	98.0	98.1	98.2	98.3	98.4	98.4	98.4	98.4	98.3	90.0	86.0	83.6	82.6	81.2	79.7	89.4	92.0	94.1	96.1	96.9	97.1	97.4	Diurnal Maximum	

Wood Buffalo Environmental Association

Hourly Averages

Relative Humidity 2m (RH2) - %

Buffalo Viewpoint - September 2024



Wood Buffalo Environmental Association

Summary of Hour Averages

Wind Speed 10m (WS10) - km/h

Buffalo Viewpoint - September 2024

Maximum Speed: 24 km/h on Sep 30 16:00

Maximum Daily Speed Average: 11.7 km/h on Sep 30

Minimum Speed Value: 0 km/h on Sep 11 03:00

Minimum Daily Speed Average: 1.2 km/h on Sep 23

Maximum Diurnal Speed Average: 4.8 km/h at hour 15

Minimum Diurnal Speed Average: 1.4 km/h at hour 21

Monthly Average Velocity: 2.5 km/h 251.2 deg

Percentiles: P_1 = 1 P_{10} = 4 Q_1 = 5 Median = 7 Q_3 = 9 P_{90} = 13 P_{99} = 21

Hours in Service: 720

Hours of Data: 720

Hours of Missing Data: 0

Percent Operational Time: 100.0

Day	Hourly Period Ending At (MST)																								Daily	Daily
	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24	Average	Maximum
1-Sep	SSE9	SSE9	SSE9	SSE8	SSE9	SSE10	SSE11	SSE8	SSE5	ESE6	SE9	S9	SW13	SW13	WSW14	WSW12	WSW11	WSW11	SW6	S6	SSE7	SSE7	SSE8	SSE8	S6.5	WSW14
2-Sep	E2	SE6	SE6	SSE7	S8	SSE7	S6	SSE6	SE5	S7	S6	SSW5	WSW5	WSW8	WSW12	WSW12	WSW10	WSW8	SW9	WNW13	NNW19	N18	N18	N17	W2.3	NNW19
3-Sep	N11	NNE10	NNE12	NNE10	N8	N4	NNE3	N5	N6	NNE7	NNE7	NNE8	NNE10	NNE7	NNE8	NE7	NE6	NNE5	NNE5	N5	NNE5	N6	N6	NNE6	NNE6.8	NNE12
4-Sep	NE3	SW2	S3	S4	SW4	SW4	W9	W11	W12	W14	WNW10	WNW7	W9	W9	WNW13	WNW10	WSW8	W9	WSW8	SSW6	SSW8	WSW10	WSW7	W9	W6.8	W14
5-Sep	NW12	NNW8	NW5	N3	WSW2	SSE3	S3	S3	S3	SSE4	SE6	SSE7	SSE8	S8	SSE8	SE9	SE8	SE9	SE9	SE9	SSE9	SSE11	SSE11	SSE12	SSE4.5	NW12
6-Sep	SSE13	SSE11	S7	SSE7	SSE9	SSE11	SSE9	SSE7	SE7	S4	WSW9	SW10	SW8	S5	S6	SSE6	SSW6	SSW7	WSW9	WSW10	WSW9	W8	W9	W8	SSW5.8	SSE13
7-Sep	WSW6	W6	SSE6	SE8	S6	S6	SSE6	SSE5	SE7	SE8	ESE7	S8	SSW8	SW7	WSW11	WSW13	WSW8	SW10	SW10	SW11	WSW11	W18	W13	W11	SW6.1	W18
8-Sep	WNW6	SSE3	S5	SSE7	SSE7	SSE7	SSE7	SSE5	SSE4	SE6	SE9	SE9	SSE8	SSE7	SE4	ENE4	NNE5	NNE6	NE10	NE8	E4	NNW1	NNE5	N8	ESE3.0	NE10
9-Sep	N6	NNE1	N4	NNE5	N5	N10	NNW8	NNW11	NNW8	NW9	NW9	WNW13	WNW15	W18	W19	WSW18	WSW18	W23	W24	W18	W18	W17	W16	WSW14	WNW10.7	W24
10-Sep	WSW17	WSW15	WSW12	WSW13	WSW12	WSW9	SW9	WSW9	W10	WSW8	WSW9	W11	W13	WNW12	NW10	W9	W7	NW8	NNW7	WSW3	WNW2	NNW6	N6	NNE7	W7.8	WSW17
11-Sep	NNE6	N4	S0	WNW1	NNE4	SSW3	SSE2	ESE1	S3	ESE3	ENE3	NW4	ESE4	ESE8	SE7	SE6	ESE6	ESE5	ESE5	ESE5	SE4	SE5	SE5	SSE5	ESE2.6	ESE8
12-Sep	SSE4	S4	SSE4	SSE5	SSE8	SSE8	SSE5	NNE2	ENE4	NE6	ENE6	NE6	NE6	E6	ESE6	ESE5	ESE6	E5	E2	NNE4	NNE5	NNE3	NNW3	ENE2	E2.9	SSE8
13-Sep	NW4	NW4	NW6	NNW4	NNW6	NNW6	NW7	NW8	NW6	NNW8	N12	N12	N11	N12	NNE9	N8	NNW10	NNW12	N14	N13	N14	NNW10	NW8	WNW9	NNW8.5	N14
14-Sep	WNW9	W10	WNW10	WNW9	W9	WSW7	SW5	SW6	W7	W6	W8	W6	W7	WSW8	W12	WNW9	NW9	NW8	NW5	NNW4	NE7	NE3	SW3	WSW3	W5.9	W12
15-Sep	N6	N6	N5	N5	N6	N6	N5	N7	NE7	N7	NNW4	NNW4	NW5	WNW7	W3	S3	SE6	SE5	SSE6	S4	S5	SSE4	SSE6	SSE6	NNE1.4	N7
16-Sep	SSE6	SSE6	SSE8	SSE8	SSE8	SSE7	SE9	SSE7	S6	SSW10	SSW10	SW13	WSW14	WSW14	WSW13	SW11	SW9	SW8	SW7	S7	S7	SW7	SSW7	S8	SSW7.1	WSW14
17-Sep	SSE8	SE8	SE5	SSE5	SSE5	SSE6	SSE6	SSE5	SSE5	SSE8	SSE7	SSE6	S6	SSW8	WSW2	N1	ESE5	ESE5	E6	SE5	S4	SE6	SSE4	SSE6	SSE5.0	SSE8
18-Sep	SSE5	SSE7	SSE6	SSE8	SSE9	SSE9	S7	S6	WSW4	WNW7	WNW8	WNW11	WNW14	WNW13	NW11	NW12	NW10	NW7	NW4	W2	W2	WSW5	W5	SW3	W3.3	WNW14
19-Sep	S3	S4	SSE5	SSE7	SSE6	SE7	S7	S7	SSE6	S6	S5	SE5	SSW2	S4	SSW4	S6	SSW7	SSE4	SSE4	SSW2	NNE5	NNE3	NW3	WNW6	S3.5	S7
20-Sep	NW6	NW3	NW6	N4	N3	NNW7	NNW5	NW6	NW7	NNW8	NNW7	N8	N8	N14	N18	N18	N18	N15	N14	N11	N12	NNW12	NW9	NW7	NNW9.0	N18
21-Sep	NW7	NW5	WSW3	S4	SSW5	SSE5	SSE6	SSE7	S5	SSE5	S5	ESE6	ESE8	SE5	SSW9	S10	SSE7	SE7	SE7	S9	S5	SE6	SE6	SE7	SSE4.5	S10
22-Sep	SSE8	SSE7	SSE6	S5	S5	S6	S6	SSE6	S4	SSW2	SW4	SSW5	S1	NE0	WSW4	ESE5	SSE4	SE3	E5	N7	SSE5	S5	WSW4	NW5	S3.0	SSE8
23-Sep	NNW5	N6	N6	N6	NW3	NW6	NW6	WNW5	WNW5	NW4	NW2	SSW5	ESE7	SE7	SE6	S5	SSW7	SE6	SSE8	SSE6	SSE7	SSE8	S6	SSE6	S1.2	SSE8
24-Sep	SW3	NW4	NNW4	SW3	SSE4	SSW2	SSE6	S4	W15	W19	W18	W24	W19	W18	W16	W14	WNW11	W11	WSW5	SSE7	SE7	SE7	SSE7	SSE6	WSW6.8	W24
25-Sep	SSE7	SSE6	SSE7	SSE6	SSE5	SSE2	ESE4	SSE1	SE3	S5	SSE5	SSW6	SSW6	S5	S6	S6	SSW5	S7	S6	S5	S2	W10	W12	W7	S4.1	W12
26-Sep	WSW8	W11	WNW10	NW9	WNW8	WNW11	WNW9	W7	W8	W11	W13	W14	WNW13	NW10	NNW7	ENE0	NNE2	WNW8	W6	SSW4	SSE6	SSW7	WSW4	E3	W6.4	W14
27-Sep	SE5	S5	SSE6	S5	SSE8	SSE7	SSE3	SW4	S7	SW6	S7	SSW7	SW7	SSW10	SW8	S9	S10	S6	SSE6	SSE6	S6	S6	S6	SSW9	S6.1	SSW10
28-Sep	SW15	WSW15	WSW17	W23	WSW24	W22	W17	W15	WSW17	W18	W15	W17	W15	WNW9	W11	W9	WSW5	ESE4	SE5	SSE5	SSE3	SE6	SSE6	SE4	WSW10.4	WSW24
29-Sep	SSE6	SE3	SW3	SE4	S4	W2	NW4	N9	N11	N10	N10	NNW10	N11	N14	N16	N16	N16	NNW16	NNW12	NW12	NW12	NW13	NW11	NW13	NNW7.8	N16
30-Sep	WNW14	WNW14	WNW12	W13	W12	WNW6	W7	WSW6	W12	WSW13	W17	W16	WNW16	W20	WNW21	WNW24	WNW20	NW13	WNW5	WSW6	WSW7	S6	SW9	WSW13	W11.7	WNW24
	WSW1.8	WSW2.1	SW1.9	SSW2.1	SSW2.7	SSW2.4	SSW2.3	SW2.0	WSW2.3	WSW3.1	WSW3.1	WSW4.1	W4.4	W4.5	W4.8	W3.8	W3.0	W2.6	WSW1.7	WSW1.6	WSW1.4	WSW1.9	WSW2.3	WSW2.0	Diurnal Average	
	WSW17	WSW15	WSW17	W23	WSW24	W22	W17	W15	WSW17	W19	W18	W24	W19	WNW20	WNW21	WNW24	WNW20	W23	W24	W18	NNW19	N18	N18	N17	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: 7 km/h on Sep 30 16:00

Minimum Value: 1 km/h on Sep 19 19:00

Percentiles: P_1 = 1 P_{10} = 1 Q_1 = 1 Median = 2 Q_3 = 3 P_{90} = 4 P_{99} = 6

Hours in Service:	720
Hours of Data:	720
Hours of Missing Data:	0
Hours of Calibration:	0
Percent Operational Time:	100.0

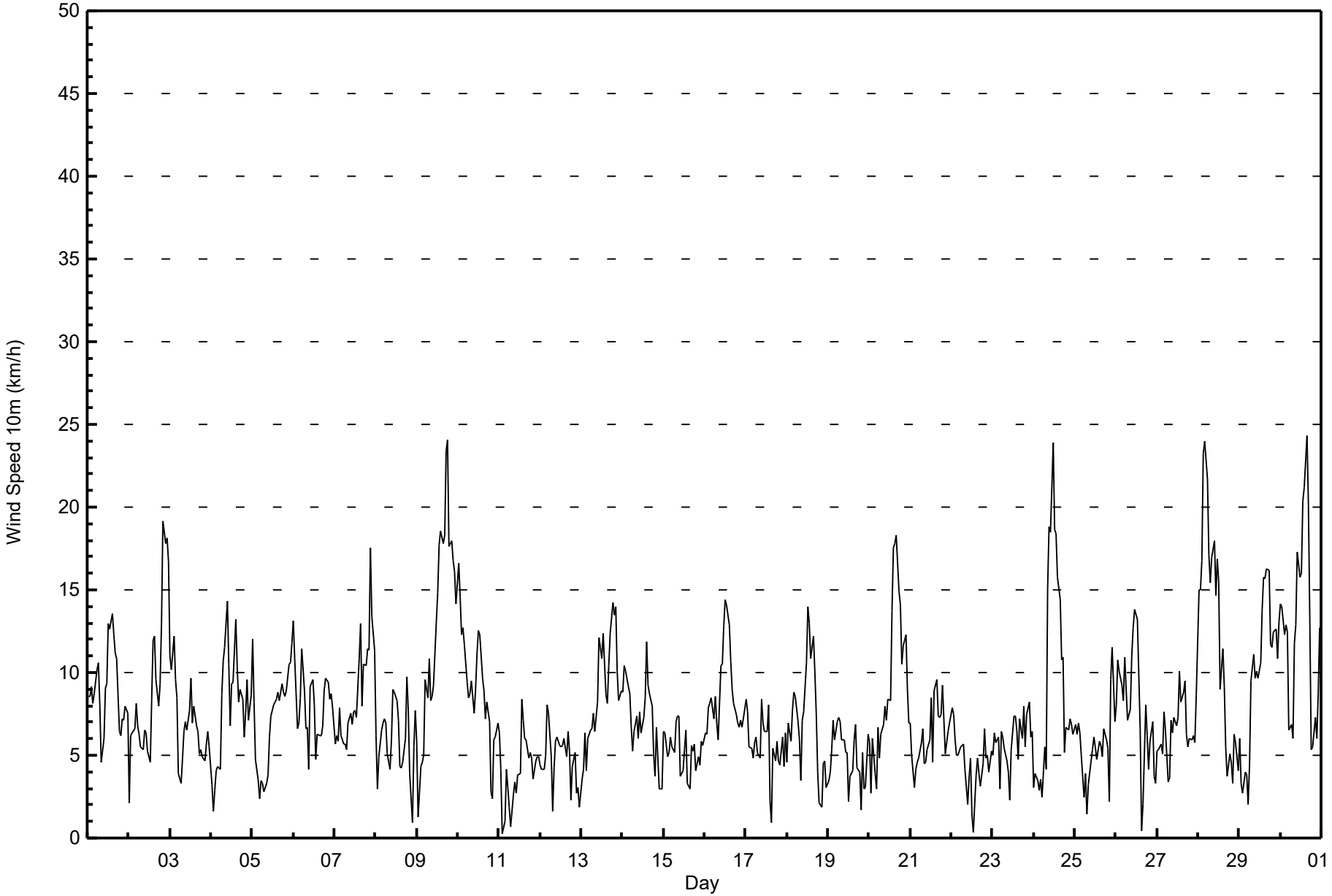
Day	Hourly Period Ending At (MST)																								Daily
	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24	Maximum
1-Sep	3	2	2	2	2	3	3	3	2	2	3	3	4	3	4	4	4	3	1	1	1	1	1	2	4
2-Sep	2	1	1	1	2	1	2	2	1	2	2	2	2	3	3	4	3	2	2	7	5	5	5	4	7
3-Sep	4	3	3	3	3	1	1	1	2	2	3	2	3	2	2	3	2	2	1	1	1	2	2	1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

Wood Buffalo Environmental Association

Hourly Averages

Wind Speed 10m (WS10) - km/h

Buffalo Viewpoint - September 2024



Wind Speed Ranges (km/h)	Number of Hours	%	Cumulative %
0 - 5	215	29.86	29.86
6 - 11	390	54.17	84.03
12 - 19	105	14.58	98.61
20 - 28	10	1.39	100.00
29 - 38	0	0.00	100.00
> 38	0	0.00	100.00

Total Number of Valid Hours: 720

Total Number of Hours: 720

Wood Buffalo Environmental Association

Frequency Distribution

Wind Speed 10m (WS10) - km/h

Buffalo Viewpoint - September 2024

Wind Speed Ranges (km/h)	Wind Direction																
	N	NNE	NE	ENE	E	ESE	SE	SSE	S	SSW	SW	WSW	W	WNW	NW	NNW	**Totals**
0 - 5	12	16	3	5	6	12	17	36	36	13	10	13	5	6	14	11	215
6 - 11	28	14	9	1	2	9	33	92	40	19	19	27	31	24	26	16	390
12 - 19	20	1	0	0	0	0	0	2	0	0	3	22	32	13	7	5	105
20 - 28	0	0	0	0	0	0	0	0	0	0	0	1	5	4	0	0	10
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	60	31	12	6	8	21	50	130	76	32	32	63	73	47	47	32	720

Total Number of Valid Hours: 720

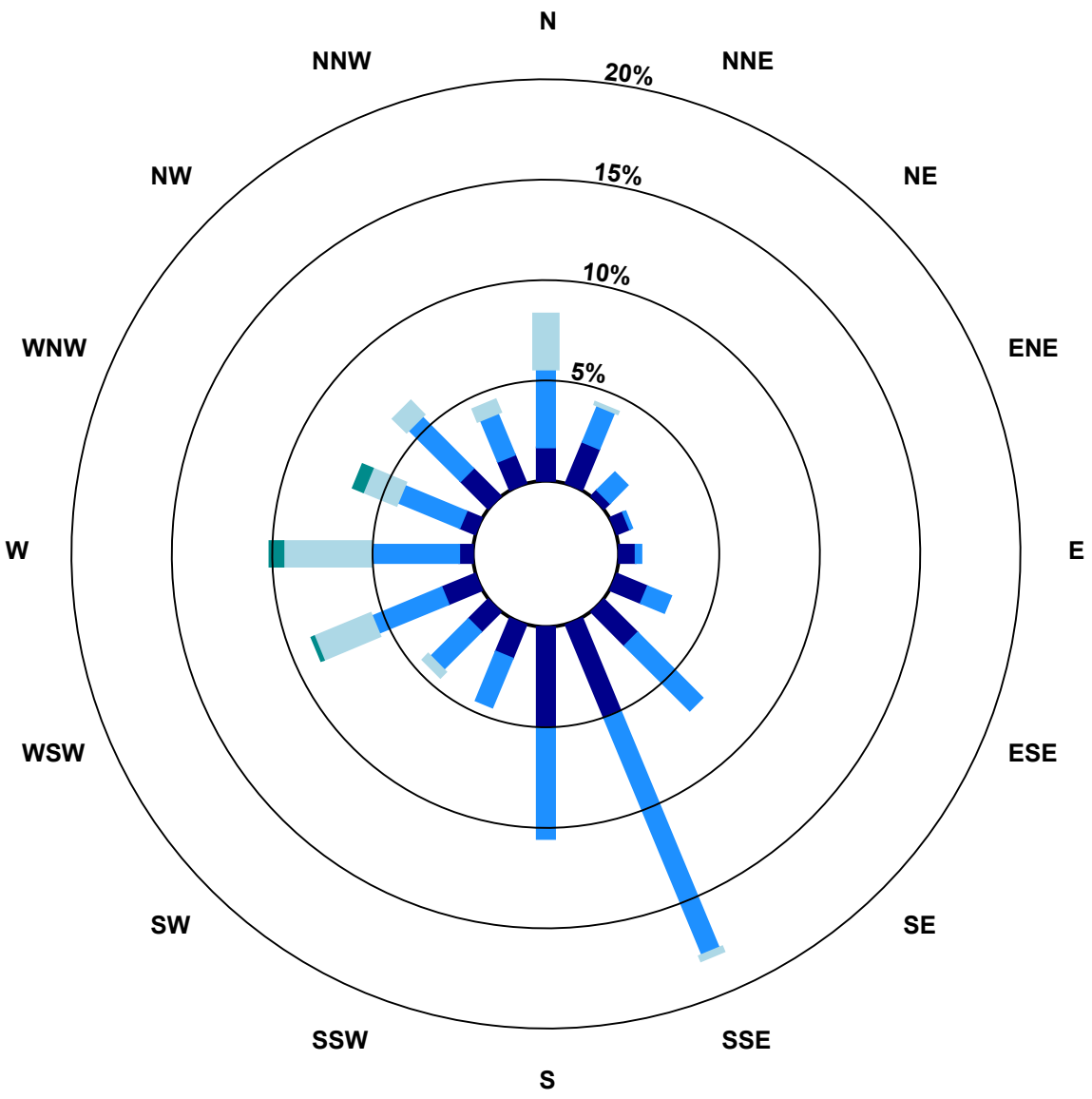
Total Number of Hours: 720

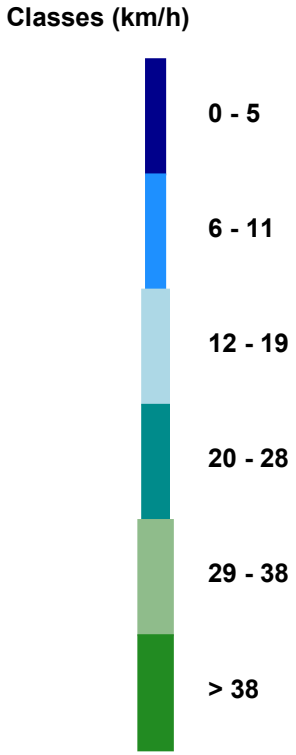
Wood Buffalo Environmental Association

Wind Rose Sep 2024

Wind Speed 10m (WS10) - km/h

Buffalo Viewpoint





Total Number of Valid Hours: 720

Wood Buffalo Environmental Association

Summary of Hour Averages

Wind Direction 10m (WD10) - deg

Buffalo Viewpoint - September 2024

Direction of Maximum Speed: 298 deg on Sep 30 16:00
Direction of Maximum Daily Speed Average: 278.5 deg on Sep 30

Direction of Minimum Speed: 187 deg on Sep 11 03:00

Direction of Minimum Daily Speed Average: 1.2 deg on Sep 23

Monthly Average Direction: 251.2 deg

Hours in Service:	720
Hours of Data:	720
Hours of Missing Data:	0
Percent Operational Time:	100.0

Day	Hourly Period Ending At (MST)																								Daily
	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24	Average
1-Sep	164	157	154	161	159	157	152	157	153	117	133	186	225	228	257	253	247	254	232	173	158	151	147	147	185.0
2-Sep	82	137	143	158	170	168	170	149	137	171	185	212	249	250	258	253	258	240	236	300	332	357	9	9	261.3
3-Sep	8	12	13	15	10	355	14	7	11	19	13	25	30	28	14	41	38	23	26	11	15	357	11	24	17.0
4-Sep	36	229	187	185	221	234	278	271	273	263	291	289	265	280	296	296	255	263	254	213	213	244	254	280	264.6
5-Sep	326	327	324	349	258	158	188	187	170	154	145	153	155	170	168	144	132	134	146	146	155	155	159	155	156.2
6-Sep	154	166	179	157	153	149	163	159	142	189	238	227	216	191	171	154	198	211	242	247	257	273	281	266	198.2
7-Sep	242	269	157	140	173	169	166	168	132	137	120	173	213	225	245	255	240	226	229	231	238	259	270	281	221.4
8-Sep	288	154	174	157	153	163	159	167	152	130	146	142	150	161	125	74	21	26	53	40	83	336	25	4	121.4
9-Sep	356	15	354	24	357	357	348	330	331	311	307	296	289	280	264	254	252	269	270	279	275	265	259	251	284.0
10-Sep	258	258	257	253	258	249	235	255	261	255	253	263	266	282	316	261	271	315	328	256	297	338	2	27	271.2
11-Sep	14	4	187	298	23	210	159	109	169	106	67	323	103	117	130	124	113	119	103	102	141	142	144	149	112.2
12-Sep	166	184	167	147	156	160	157	14	69	39	78	44	40	94	107	102	102	95	88	25	17	31	348	73	97.0
13-Sep	318	304	325	341	334	328	323	324	321	332	357	0	2	359	14	5	348	345	350	351	352	337	318	297	342.8
14-Sep	290	274	284	283	276	248	234	236	276	276	270	260	266	255	265	288	324	319	323	337	41	56	236	258	279.9
15-Sep	11	3	349	356	2	6	360	7	37	8	333	336	307	298	269	171	131	129	157	171	178	163	164	161	11.8
16-Sep	158	161	150	150	147	153	139	147	172	206	205	215	252	251	240	233	229	227	217	186	189	217	205	178	200.2
17-Sep	151	145	145	147	168	151	160	167	157	156	156	147	170	208	252	357	104	107	95	139	183	144	166	148	152.7
18-Sep	147	150	155	155	149	166	170	174	240	290	303	289	285	302	307	313	309	314	320	260	270	250	274	217	265.1
19-Sep	186	180	162	158	168	146	175	171	152	172	177	145	205	176	198	177	202	167	147	212	22	13	313	300	172.6
20-Sep	319	308	308	6	351	347	345	326	308	328	329	351	358	358	6	2	352	351	354	359	355	345	324	321	346.6
21-Sep	309	318	256	176	212	159	150	161	172	152	179	118	111	145	208	186	156	139	145	178	176	125	137	143	162.5
22-Sep	155	148	163	175	180	174	177	167	178	203	217	198	184	55	242	117	147	138	88	11	148	172	255	309	168.8
23-Sep	338	350	352	353	310	316	319	294	297	309	326	198	119	135	128	186	197	145	156	151	151	150	169	151	170.3
24-Sep	218	311	342	225	162	213	148	174	266	260	273	264	276	281	277	279	284	264	237	164	140	141	156	162	255.8
25-Sep	157	161	156	164	154	153	106	168	130	174	166	195	194	173	173	173	194	185	174	171	181	277	273	259	184.9
26-Sep	245	280	298	311	289	292	285	281	262	261	267	279	292	313	332	71	17	292	277	200	164	207	246	101	279.1
27-Sep	140	172	157	177	164	168	164	218	187	229	191	201	214	209	215	191	187	173	156	160	187	175	170	210	186.1
28-Sep	236	241	244	259	258	268	267	262	258	266	264	268	268	283	261	269	243	122	143	160	155	141	149	143	253.1
29-Sep	162	142	214	134	169	271	313	8	1	355	355	345	354	356	357	351	352	346	328	314	315	319	319	308	340.4
30-Sep	302	288	289	271	269	303	280	251	260	256	274	281	285	281	283	298	296	304	293	258	254	173	226	253	278.5
	251.4	239.6	231.4	207.9	210.0	209.1	206.6	231.4	247.4	254.9	256.7	256.6	265.9	269.8	272.4	268.9	267.6	274.7	255.8	241.9	251.0	248.6	257.8	253.1	
	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: 105 deg on Sep 9 02:00

Minimum Value: 7 deg on Sep 11 06:00

Percentiles: P_1 = 11 P_{10} = 16 Q_1 = 19 Median = 24 Q_3 = 31 P_{90} = 49 P_{99} = 88

Hours in Service:	720
Hours of Data:	720
Hours of Missing Data:	0
Hours of Calibration:	0
Percent Operational Time:	100.0

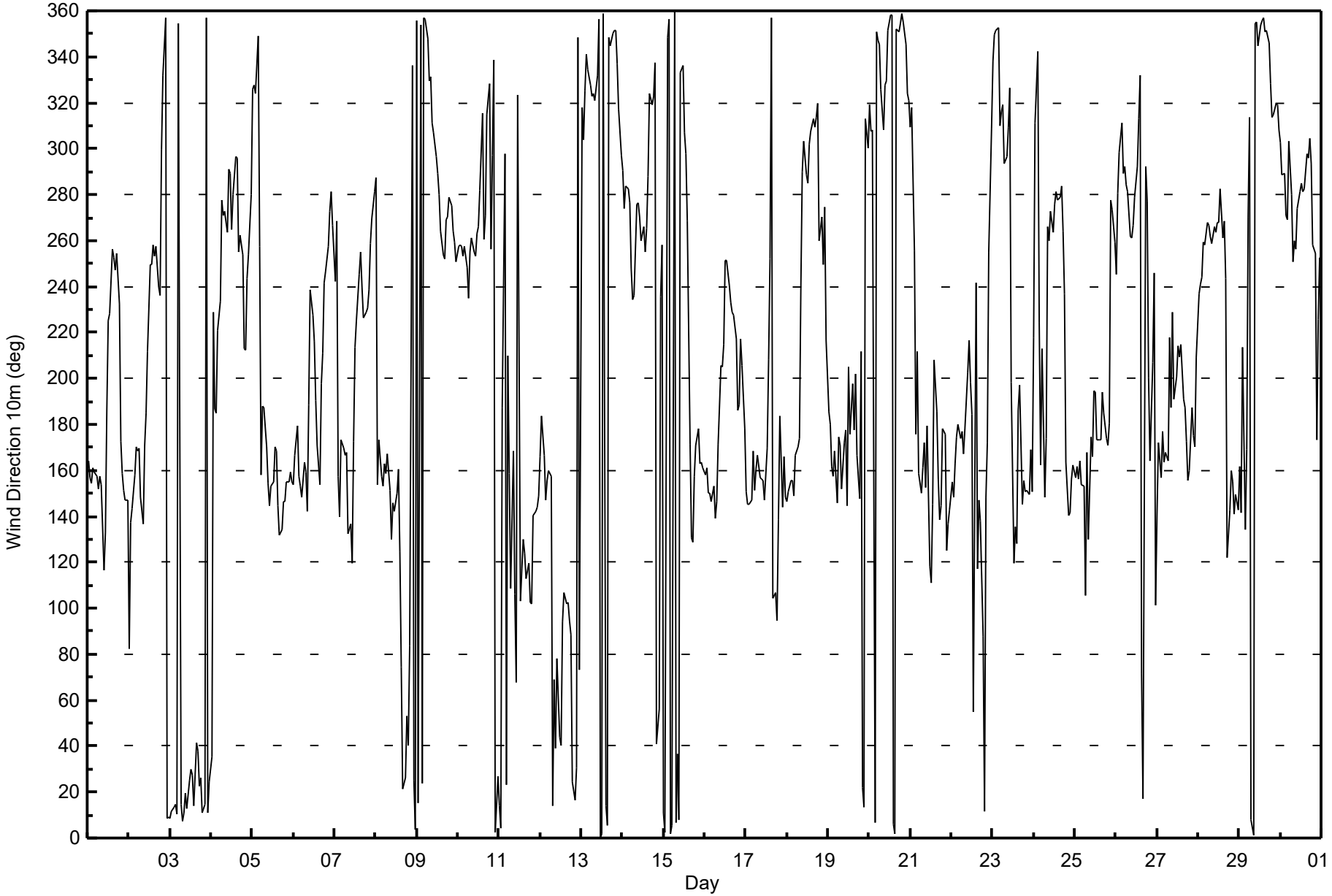
Day	Hourly Period Ending At (MST)																								Daily
	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24	Maximum
1-Sep	28	22	21	25	28	25	25	30	50	26	31	38	23	22	21	22	19	17	25	15	9	11	12	17	50
2-Sep	75	17	13	17	9	14	23	23	28	29	34	41	51	32	21	20	15	17	15	42	17	25	21	22	75
3-Sep	19	19	19	20	19	27	40	26	24	23	25	22	22	27	24	26	25	24	18	16	11	23	20	15	40
4-Sep	18	67	46	39	30	41	18	14	17	18	30	47	28	31	24	33	22	22	15	20	24	22	35	40	67
5-Sep	27	16	55	55	46	34	25	22	43	65	42	42	41	39	39	35	27	28	28	28	31	27	28	31	65
6-Sep	29	28	29	30	29	27	33	36	29	42	26	21	16	39	29	26	21	23	18	18	20	17	21	14	42
7-Sep	18	24	33	11	18	14	21	21	21	26	28	33	24	35	24	19	21	19	17	18	19	14	23	25	35
8-Sep	23	85	31	26	20	14	12	20	37	29	31	32	37	33	32	26	27	18	12	10	14	99	27	15	99
9-Sep	32	105	67	41	23	22	18	20	25	25	31	22	24	22	17	18	20	19	17	19	18	15	16	19	105
10-Sep	14	14	16	17	17	22	24	19	19	28	27	26	27	28	31	19	23	23	13	64	77	18	17	19	77
11-Sep	17	26	88	73	63	7	65	65	49	58	80	65	81	32	34	40	28	21	16	16	28	19	25	31	88
12-Sep	23	17	25	27	31	27	29	73	24	21	21	23	23	23	26	29	22	24	50	8	19	27	31	31	73
13-Sep	33	15	15	36	25	17	17	19	19	20	19	21	20	19	25	21	20	19	19	18	19	20	21	20	36
14-Sep	19	15	18	17	19	21	20	25	22	27	27	42	37	29	18	26	21	17	30	43	21	59	18	30	59
15-Sep	29	12	16	13	12	11	10	20	22	28	66	57	53	41	72	66	33	22	31	26	17	23	21	19	72
16-Sep	18	18	16	21	21	22	20	27	34	19	20	25	23	23	23	21	19	18	14	23	20	19	44	15	44
17-Sep	22	15	17	17	26	16	20	29	37	28	34	39	49	31	85	100	46	20	12	29	28	19	28	28	100
18-Sep	38	33	33	31	32	28	21	22	58	30	25	25	23	25	23	22	20	23	31	66	71	25	19	48	71
19-Sep	31	28	21	13	14	15	12	14	27	28	42	49	88	68	70	33	35	27	16	77	25	37	44	20	88
20-Sep	16	51	24	65	71	18	79	22	29	21	20	25	20	22	23	23	20	19	18	16	15	20	16	19	79
21-Sep	18	41	33	17	20	36	20	18	26	33	40	33	28	61	27	29	29	30	30	34	42	26	30	28	61
22-Sep	30	27	28	25	21	20	16	16	28	88	70	53	103	100	58	31	40	27	12	39	43	35	41	19	103
23-Sep	23	15	13	19	30	17	18	18	22	37	65	42	30	30	29	53	27	25	25	30	30	30	25	16	65
24-Sep	61	40	45	80	60	72	34	49	18	15	20	15	21	22	24	22	21	13	38	21	9	11	17	15	80
25-Sep	20	16	20	21	29	43	37	87	54	43	32	26	28	26	30	28	27	22	23	22	76	21	18	22	87
26-Sep	19	20	19	21	26	27	18	38	25	15	16	21	24	24	30	88	100	46	27	40	22	18	65	77	100
27-Sep	27	22	21	61	16	22	56	58	33	27	36	36	34	27	27	26	25	25	23	26	36	26	19	28	61
28-Sep	20	19	20	14	15	15	14	14	16	15	20	17	21	32	22	23	24	37	21	17	68	18	16	34	68
29-Sep	20	63	71	44	42	53	51	17	17	19	22	24	22	22	21	20	20	21	22	18	18	19	20	20	71
30-Sep	20	20	20	18	24	42	19	38	17	20	19	23	24	23	22	22	22	22	32	23	18	26	17	16	42
	75	105	88	80	71	72	79	87	58	88	80	65	103	100	85	100	100	46	50	77	77	99	65	77	
	Diurnal Maximum																								

Wood Buffalo Environmental Association

Hourly Averages

Wind Direction 10m (WD10) - deg

Buffalo Viewpoint - September 2024



WOOD BUFFALO ENVIRONMENTAL ASSOCIATION

CONTINUOUS AMBIENT AIR QUALITY
MONITORING PROGRAM
MONTHLY REPORT

AMS05
MANNIX
SEPTEMBER 2024

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

October 31, 2024

WOOD BUFFALO ENVIRONMENTAL ASSOCIATION - MANNIX (AMS05)
SEPTEMBER 2024

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	686	34	34	100	37.7	0	7.9	0
H2S (ppb) Average	684	36	36	100	17	3	3.1	1
THC (ppm) Average	658	35	62	96.25	4	-	2.7	-
NMHC(ppm) Average	658	35	62	96.25	1.884	-	0.121	-
CH4(ppm) Average	658	35	62	96.25	3.8	-	2.7	-
Temperature 2 m (C) Average	720	0	0	100	31	-	20.4	-
Temperature 20 m (C) Average	720	0	0	100	30.4	-	21.3	-
Temperature 45 m (C) Average	720	0	0	100	30	-	21.7	-
Temperature 75 m (C) Average	720	0	0	100	29.7	-	22.1	-
Temperature 90 m (C) Average	720	0	0	100	29.6	-	22.3	-
Relative Humidity 2 m (%) Average	720	0	0	100	98	-	94	-
Relative Humidity 20 m (%) Average	675	0	45	93.75	99	-	79	-
Relative Humidity 45 m (%) Average	720	0	0	100	99	-	92	-
Relative Humidity 75 m (%) Average	679	0	41	94.31	99	-	80	-
Relative Humidity 90 m (%) Average	699	0	21	97.08	99	-	79	-
Wind Speed 20 m (km/h) Average	720	0	0	100	32	-	16	-
Wind Speed 45 m (km/h) Average	720	0	0	100	39	-	22	-
Wind Speed 75 m (km/h) Average	720	0	0	100	41	-	25	-
Wind Speed 90 m (km/h) Average	719	0	1	99.86	41	-	26	-
Wind Direction 20 m (deg) Average	720	0	0	100	-	-	-	-
Wind Direction 45 m (deg) Average	720	0	0	100	-	-	-	-
Wind Direction 75 m (deg) Average	720	0	0	100	-	-	-	-
Wind Direction 90 m (deg) Average	719	0	1	99.86	-	-	-	-
Vertical Wind Speed 20 m (km/h) Average	720	0	0	100	1	-	0.5	-
Vertical Wind Speed 45 m (km/h) Average	720	0	0	100	1.7	-	0.5	-
Vertical Wind Speed 75 m (km/h) Average	720	0	0	100	2.4	-	0.5	-
Vertical Wind Speed 90 m (km/h) Average	719	0	1	99.86	2.8	-	0.5	-

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

WOOD BUFFALO ENVIRONMENTAL ASSOCIATION - MANNIX (AMS05)
SEPTEMBER 2024

MONTHLY SUMMARY FOR AIR QUALITY/ METEOROLOGICAL MONITORING MEASUREMENTS

					Percentile						
Parameter	Number	Mean	StnDev	Total	Min	P10	Q1	Median	Q3	P90	Max
SO2 (ppb) Average	686	1.04	3.7	-	0	0	0	0.1	0.3	1.9	37.7
H2S (ppb) Average	684	0.55	1.3	-	0	0	0.1	0.2	0.4	1.4	16.8
THC (ppm) Average	658	2.2	0.3	-	1.9	2	2.1	2.1	2.2	2.5	4
NMHC(ppm) Average	658	0.019	0.101	-	0	0	0	0	0	0	1.884
CH4(ppm) Average	658	2.18	0.2	-	1.9	2	2.1	2.1	2.2	2.4	3.8
Temperature 2 m (C) Average	720	13	5.4	-	2.1	6.8	9.3	12.4	16.1	20.3	31
Temperature 20 m (C) Average	720	13.73	5.1	-	3.1	8	10.2	13	16.6	20.3	30.4
Temperature 45 m (C) Average	720	13.77	5	-	2.9	8.3	10.2	13.1	16.6	20.1	30
Temperature 75 m (C) Average	720	13.88	4.9	-	2.9	8.4	10.3	13.2	16.6	20.3	29.7
Temperature 90 m (C) Average	720	14.04	4.8	-	3.1	8.6	10.5	13.3	16.8	20.4	29.6
Relative Humidity 2 m (%) Average	720	72.9	18	-	27	46	59	75	89	96	98
Relative Humidity 20 m (%) Average	675	66.2	17	-	23	42	53	68	80	89	99
Relative Humidity 45 m (%) Average	720	65.8	17	-	22	41	52	67	80	88	99
Relative Humidity 75 m (%) Average	679	63.4	17	-	23	40	51	64	77	85	99
Relative Humidity 90 m (%) Average	699	63.1	16	-	22	40	51	64	76	85	99
Wind Speed 20 m (km/h) Average	720	9.4	5	-	0	4	6	9	12	16	32
Wind Speed 45 m (km/h) Average	720	13.9	7	-	0	6	9	13	18	23	39
Wind Speed 75 m (km/h) Average	720	15.9	8	-	0	6	10	15	22	27	41
Wind Speed 90 m (km/h) Average	719	16.5	9	-	0	6	10	16	22	28	41
Wind Direction 20 m (deg) Average	720	-	-	-	-	-	-	-	-	-	-
Wind Direction 45 m (deg) Average	720	-	-	-	-	-	-	-	-	-	-
Wind Direction 75 m (deg) Average	720	-	-	-	-	-	-	-	-	-	-
Wind Direction 90 m (deg) Average	719	-	-	-	-	-	-	-	-	-	-
Vertical Wind Speed 20 m (km/h) Average	720	0.11	0.3	-	-1	-0.3	-0.1	0	0.4	0.6	1
Vertical Wind Speed 45 m (km/h) Average	720	0.03	0.5	-	-1.1	-0.5	-0.4	-0.1	0.4	0.7	1.7
Vertical Wind Speed 75 m (km/h) Average	720	0.26	0.3	-	-0.7	-0.1	0.1	0.2	0.4	0.7	2.4
Vertical Wind Speed 90 m (km/h) Average	719	0.05	0.4	-	-1	-0.5	-0.2	0	0.3	0.6	2.8

WOOD BUFFALO ENVIRONMENTAL ASSOCIATION - MANNIX (AMS05)
SEPTEMBER 2024

OPERATIONAL NOTES

Parameter	Period Start	Period End	Duration (Hours)	Notes
THC/NMHC/CH4	03 Sep 2024 19:00	03 Sep 2024 21:00	3	Unstable Operation - excessive baseline noise
THC/NMHC/CH4	03 Sep 2024 23:00	04 Sep 2024 04:00	6	Unstable Operation - excessive baseline noise
THC/NMHC/CH4	04 Sep 2024 07:00	04 Sep 2024 09:00	3	Unstable Operation - excessive baseline noise
THC/NMHC/CH4	11 Sep 2024 03:00	11 Sep 2024 04:00	2	Unstable Operation - excessive baseline noise
THC/NMHC/CH4	11 Sep 2024 07:00	11 Sep 2024 09:00	3	Unstable Operation - excessive baseline noise
THC/NMHC/CH4	11 Sep 2024 10:00	11 Sep 2024 11:00	2	Maintenance - replaced analyzer
THC/NMHC/CH4	13 Sep 2024 10:00	13 Sep 2024 12:00	3	Maintenance - replaced support gas cylinder
THC/NMHC/CH4	25 Sep 2024 10:00	25 Sep 2024 14:00	5	Maintenance - replaced support gas cylinder
Relative Humidity, 20m	04 Sep 2024 04:00	04 Sep 2024 07:00	4	Sensor operated out of range
Relative Humidity, 20m	11 Sep 2024 06:00	11 Sep 2024 08:00	3	Sensor operated out of range
Relative Humidity, 20m	12 Sep 2024 08:00	12 Sep 2024 08:00	1	Sensor operated out of range
Relative Humidity, 20m	13 Sep 2024 00:00	13 Sep 2024 12:00	13	Sensor operated out of range
Relative Humidity, 20m	15 Sep 2024 08:00	15 Sep 2024 10:00	3	Sensor operated out of range
Relative Humidity, 20m	21 Sep 2024 07:00	21 Sep 2024 09:00	3	Sensor operated out of range
Relative Humidity, 20m	23 Sep 2024 05:00	23 Sep 2024 12:00	8	Sensor operated out of range
Relative Humidity, 20m	23 Sep 2024 21:00	24 Sep 2024 01:00	5	Sensor operated out of range
Relative Humidity, 20m	24 Sep 2024 07:00	24 Sep 2024 07:00	1	Sensor operated out of range
Relative Humidity, 20m	26 Sep 2024 07:00	26 Sep 2024 10:00	4	Sensor operated out of range
Relative Humidity, 75m	04 Sep 2024 05:00	04 Sep 2024 08:00	4	Sensor operated out of range
Relative Humidity, 75m	13 Sep 2024 01:00	13 Sep 2024 14:00	14	Sensor operated out of range
Relative Humidity, 75m	15 Sep 2024 08:00	15 Sep 2024 10:00	3	Sensor operated out of range
Relative Humidity, 75m	21 Sep 2024 09:00	21 Sep 2024 09:00	1	Sensor operated out of range
Relative Humidity, 75m	23 Sep 2024 05:00	23 Sep 2024 13:00	9	Sensor operated out of range
Relative Humidity, 75m	23 Sep 2024 20:00	24 Sep 2024 00:00	5	Sensor operated out of range
Relative Humidity, 75m	26 Sep 2024 06:00	26 Sep 2024 08:00	3	Sensor operated out of range
Relative Humidity, 75m	26 Sep 2024 10:00	26 Sep 2024 11:00	2	Sensor operated out of range
Relative Humidity, 90m	13 Sep 2024 04:00	13 Sep 2024 14:00	11	Sensor operated out of range
Relative Humidity, 90m	15 Sep 2024 08:00	15 Sep 2024 10:00	3	Sensor operated out of range
Relative Humidity, 90m	23 Sep 2024 08:00	23 Sep 2024 12:00	5	Sensor operated out of range
Relative Humidity, 90m	23 Sep 2024 22:00	23 Sep 2024 23:00	2	Sensor operated out of range
Wind Speed, Wind Direction, Vertical Wind Speed, 90m	26 Sep 2024 07:00	26 Sep 2024 07:00	1	Unstable Operation - excessive baseline noise

Wood Buffalo Environmental Association

Summary of Hour Averages

Sulphur Dioxide (SO_2) - ppb

Mannix - September 2024

Number of Exceedences (AAAQO): 1-hr: 0 24-hr: 0
Maximum Value: 37.7 ppb on Sep 29 10:00 Maximum Daily Average: 7.9 ppb on Sep 15

Minimum Value: 0.0 ppb on Sep 1 17:00 Minimum Daily Average: 0.0 ppb on Sep 28
Maximum Diurnal Average: 2.9 ppb at hour 11 Minimum Diurnal Average: 0.2 ppb at hour 4
Monthly Average: 1.04 ppb Percentiles: P_1 = 0.0 P_{10} = 0.0 Q_1 = 0.0 Median = 0.1 Q_3 = 0.3 P_{90} = 1.9 P_{99} = 18.7

Hours in Service:	720
Hours of Data:	686
Hours of Missing Data:	34
Hours of Calibration:	34
Percent Operational Time:	100.0

Day	Hourly Period Ending At (MST)																								Daily	Daily
	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24	Average	Maximum
1-Sep	Z	0.1	0.1	0.0	0.0	0.0	0.1	0.3	0.3	0.2	0.3	0.3	0.1	0.1	0.1	0.0	0.0	0.0	0.0	0.0	0.0	0.1	0.0	0.0	0.1	0.3
2-Sep	0.0	Z	0.0	0.0	0.0	0.1	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	0.2	0.2	0.3	27.9	19.9	2.2	27.9
3-Sep	14.7	4.2	4.2	Z	1.6	0.6	0.5	1.9	1.1	0.9	2.8	1.0	0.5	0.3	0.4	0.2	0.3	0.2	0.1	0.1	0.1	0.2	0.5	2.3	1.7	14.7
4-Sep	0.3	0.5	0.2	Z	0.1	0.1	0.1	0.0	0.1	C	C	C	C	0.0	1.9	5.6	0.1	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.5	5.6
5-Sep	0.0	3.1	0.2	0.5	Z	0.2	0.2	0.2	0.3	0.4	0.6	2.7	1.3	0.4	0.4	0.2	0.2	0.2	0.3	0.1	0.1	0.1	0.2	0.2	0.5	3.1
6-Sep	0.2	0.1	0.1	0.2	0.2	Z	0.2	0.4	0.6	0.5	0.5	0.3	0.2	0.2	0.2	0.2	0.2	0.2	0.2	0.2	0.1	0.1	0.0	0.0	0.2	0.6
7-Sep	Z	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.1	0.1	0.1	0.2	0.1	0.1	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.2
8-Sep	0.0	Z	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.1	0.1	0.3	0.7	0.5	0.5	0.5	0.5	0.5	0.3	0.3	0.2	0.1	0.1	2.6	0.3	2.6
9-Sep	5.6	0.8	Z	1.2	1.2	7.9	15.0	6.6	1.7	2.7	14.4	2.3	0.8	0.4	0.3	0.2	0.3	0.2	0.1	0.1	0.1	0.1	0.1	0.1	2.7	15.0
10-Sep	0.1	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	5.4	0.9	0.4	0.2	0.3	0.5	0.2	0.8	0.3	1.6	0.5	5.4
11-Sep	0.9	0.5	0.5	0.3	Z	0.6	0.3	0.3	0.4	0.3	0.4	0.5	0.5	0.4	0.2	0.1	0.1	0.1	0.2	0.2	0.1	0.1	0.1	0.1	0.3	0.9
12-Sep	0.0	0.1	0.1	0.1	0.0	Z	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	0.3	0.0	0.0	0.0	0.0	0.3
13-Sep	Z	0.0	0.0	0.4	0.4	0.7	0.3	0.2	0.5	0.3	0.4	1.0	3.0	1.8	5.9	7.5	2.4	0.9	0.6	0.4	1.8	3.9	0.7	0.5	1.5	7.5
14-Sep	0.5	Z	0.2	0.1	0.1	0.1	0.1	0.1	0.2	0.1	0.4	0.1	0.0	0.1	0.0	0.0	1.8	2.0	0.3	0.3	0.2	0.2	0.1	0.2	0.3	2.0
15-Sep	0.6	3.4	Z	0.2	2.4	1.2	1.4	6.9	0.6	6.3	16.5	10.9	8.6	35.0	30.5	16.4	16.1	7.0	8.8	5.5	2.2	1.0	0.5	0.3	7.9	35.0
16-Sep	0.2	0.2	0.1	Z	0.1	0.2	0.2	0.2	0.2	0.2	0.3	0.3	0.2	0.1	0.1	0.1	0.1	0.2	0.1	0.2	0.2	0.1	0.1	0.1	0.2	0.3
17-Sep	0.1	0.1	0.1	0.1	Z	0.1	0.1	0.1	0.2	0.2	0.2	0.2	0.2	0.2	0.2	0.2	0.2	0.3	0.4	0.3	0.3	0.1	0.1	0.1	0.2	0.4
18-Sep	0.1	0.1	0.1	0.1	0.1	Z	0.2	0.3	0.3	0.2	0.2	1.5	0.2	0.2	0.1	0.1	0.1	0.1	0.1	0.2	0.4	0.1	0.1	0.2	0.2	1.5
19-Sep	Z	0.1	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	0.1	0.1	0.1	0.1	0.1	0.8	0.3	0.2	0.8	0.2	0.8
20-Sep	0.4	Z	0.2	1.1	0.8	2.7	5.3	0.7	0.6	1.0	0.5	0.6	2.2	2.6	1.7	3.4	3.0	2.2	6.1	11.7	6.4	0.8	0.5	0.3	2.4	11.7
21-Sep	0.1	0.1	Z	0.0	0.0	0.0	0.0	0.0	0.0	0.1	0.2	0.2	0.2	0.1	0.0	0.0	0.0	0.1	0.1	0.1	0.0	0.0	0.0	0.1	0.1	0.2
22-Sep	0.1	0.1	0.1	Z	0.1	0.1	0.1	0.1	0.2	0.2	0.1	0.1	0.1	0.1	0.1	0.1	0.0	0.1	0.1	0.4	0.3	0.0	0.0	0.0	0.1	0.4
23-Sep	0.1	0.5	0.5	1.2	Z	0.2	0.1	0.3	0.1	10.1	12.8	10.7	3.1	1.6	1.6	0.6	0.4	0.1	0.1	0.0	0.0	0.0	0.0	0.0	1.9	12.8
24-Sep	0.0	0.0	0.0	0.1	0.0	Z	0.1	0.0	0.1	0.1	0.0	0.1	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.1
25-Sep	Z	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	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.1
26-Sep	0.0	Z	0.0	0.0	0.0	0.1	0.1	0.2	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	3.0	0.3	1.2	0.1	0.0	0.0	0.0	0.1	0.2	3.0
27-Sep	0.1	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	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.1
28-Sep	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
29-Sep	0.0	0.0	0.0	0.0	Z	0.1	0.2	5.9	24.5	37.7	32.6	18.5	4.3	6.9	2.6	4.6	2.3	1.2	0.5	0.4	1.0	6.3	1.2	2.6	6.7	37.7
30-Sep	0.7	0.3	0.2	0.1	0.2	Z	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	0.0	0.1	0.1	0.7
	1.0	0.6	0.3	0.2	0.3	0.6	0.8	0.8	1.1	2.1	2.9	1.8	0.9	1.7	1.8	1.4	1.1	0.5	0.7	0.7	0.5	0.5	1.1	1.1	Diurnal Average	
	14.7	4.2	4.2	1.2	2.4	7.9	15.0	6.9	24.5	37.7	32.6	18.5	8.6	35.0	30.5	16.4	16.1	7.0	8.8	11.7	6.4	6.3	27.9	19.9	Diurnal Maximum	

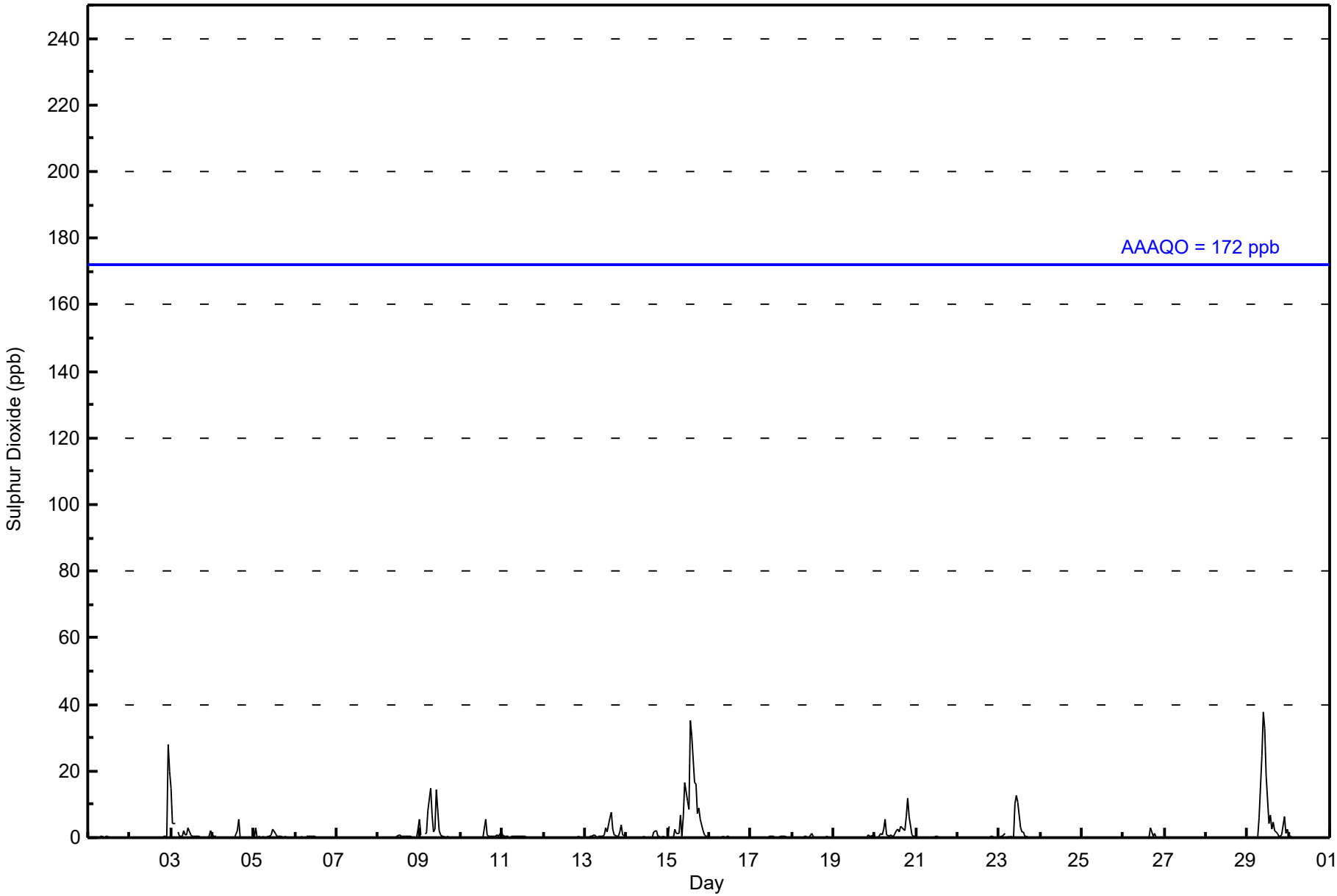
Z - zerospan C - Calibration
Alberta Ambient Air Quality Objectives (AAAQO): 1-hr 172 ppb 24-hr 48 ppb

Wood Buffalo Environmental Association

Hourly Averages

Sulphur Dioxide (SO_2) - ppb

Mannix - September 2024



Sulphur Dioxide (SO_2) - ppb

Mannix - September 2024

Concentration Ranges (ppb)	Number of Hours	%	Cumulative %
0 - 10	668	97.38	97.38
11 - 20	12	1.75	99.13
21 - 60	6	0.87	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: 686

Total Number of Hours: 720

Wood Buffalo Environmental Association

Frequency Distribution

Sulphur Dioxide (SO_2) - ppb

Mannix - September 2024

Concentration Ranges (ppb)	Wind Direction																
	N	NNE	NE	ENE	E	ESE	SE	SSE	S	SSW	SW	WSW	W	WNW	NW	NNW	**Totals**
0 - 10	20	32	8	10	12	19	72	136	46	21	36	63	79	41	31	42	668
11 - 20	0	2	0	0	0	1	1	1	0	0	0	0	0	0	3	4	12
21 - 60	3	1	0	0	0	0	0	0	0	0	0	0	1	0	1	0	6
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	35	8	10	12	20	73	137	46	21	36	63	80	41	35	46	686

Total Number of Valid Hours: 686

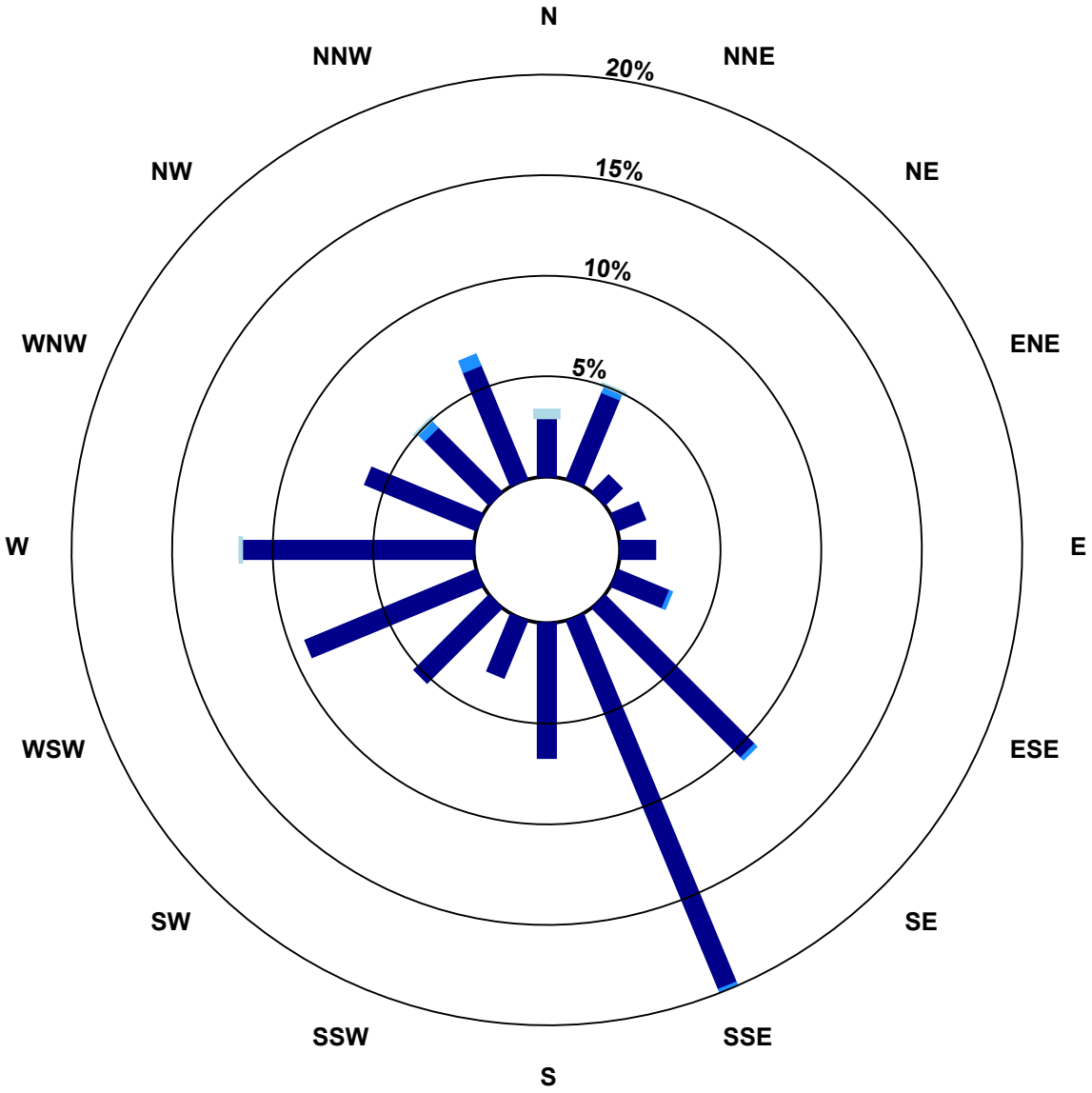
Total Number of Hours: 720

Wood Buffalo Environmental Association

Wind Rose Sep 2024

Sulphur Dioxide (SO_2) - ppb

Mannix



Classes (ppb)

0 - 10

11 - 20

21 - 60

61 - 110

111 - 172

> 172

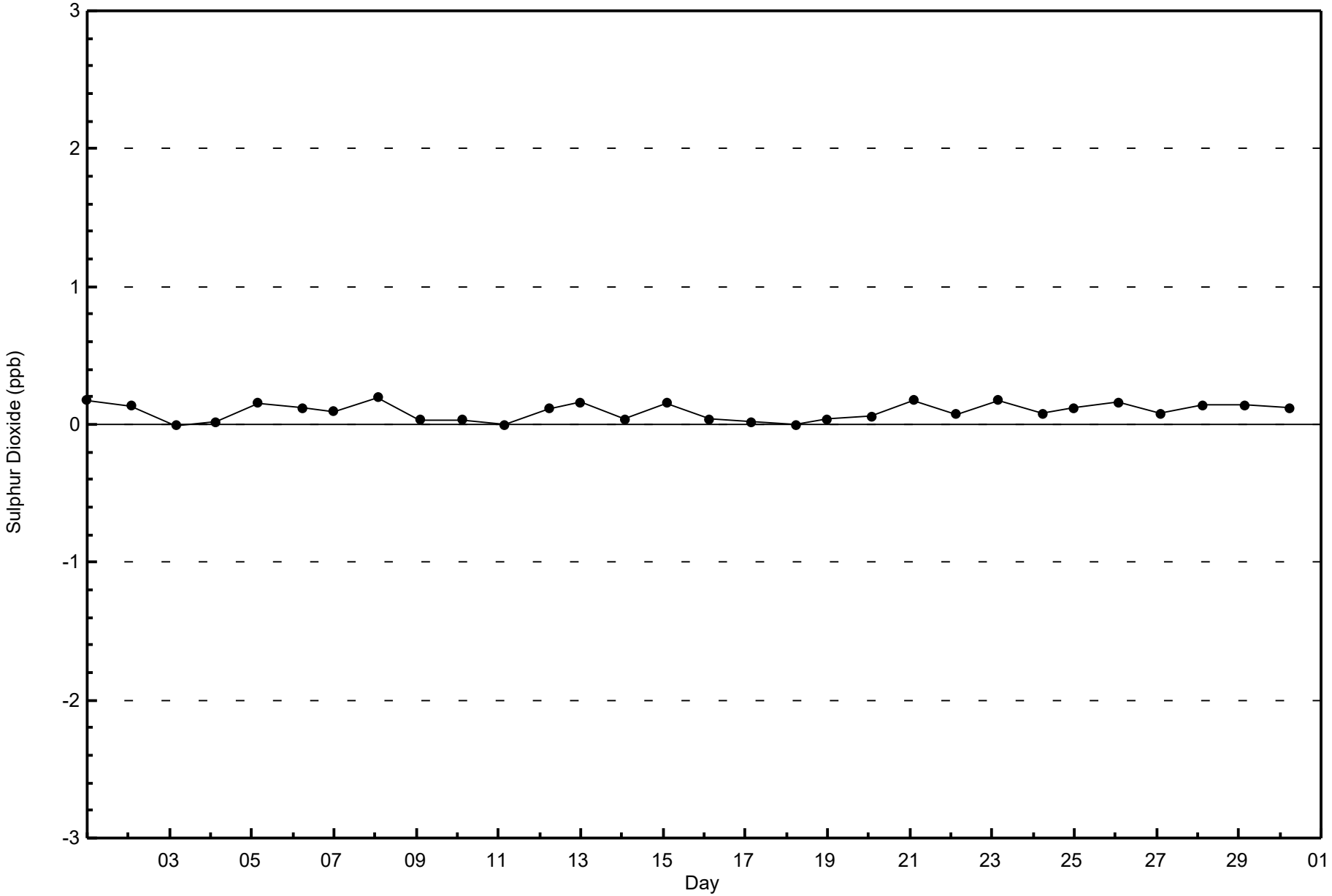
Total Number of Valid Hours: 686

Wood Buffalo Environmental Association

Zero Responses

Sulphur Dioxide (SO_2) - ppb

Mannix - September 2024

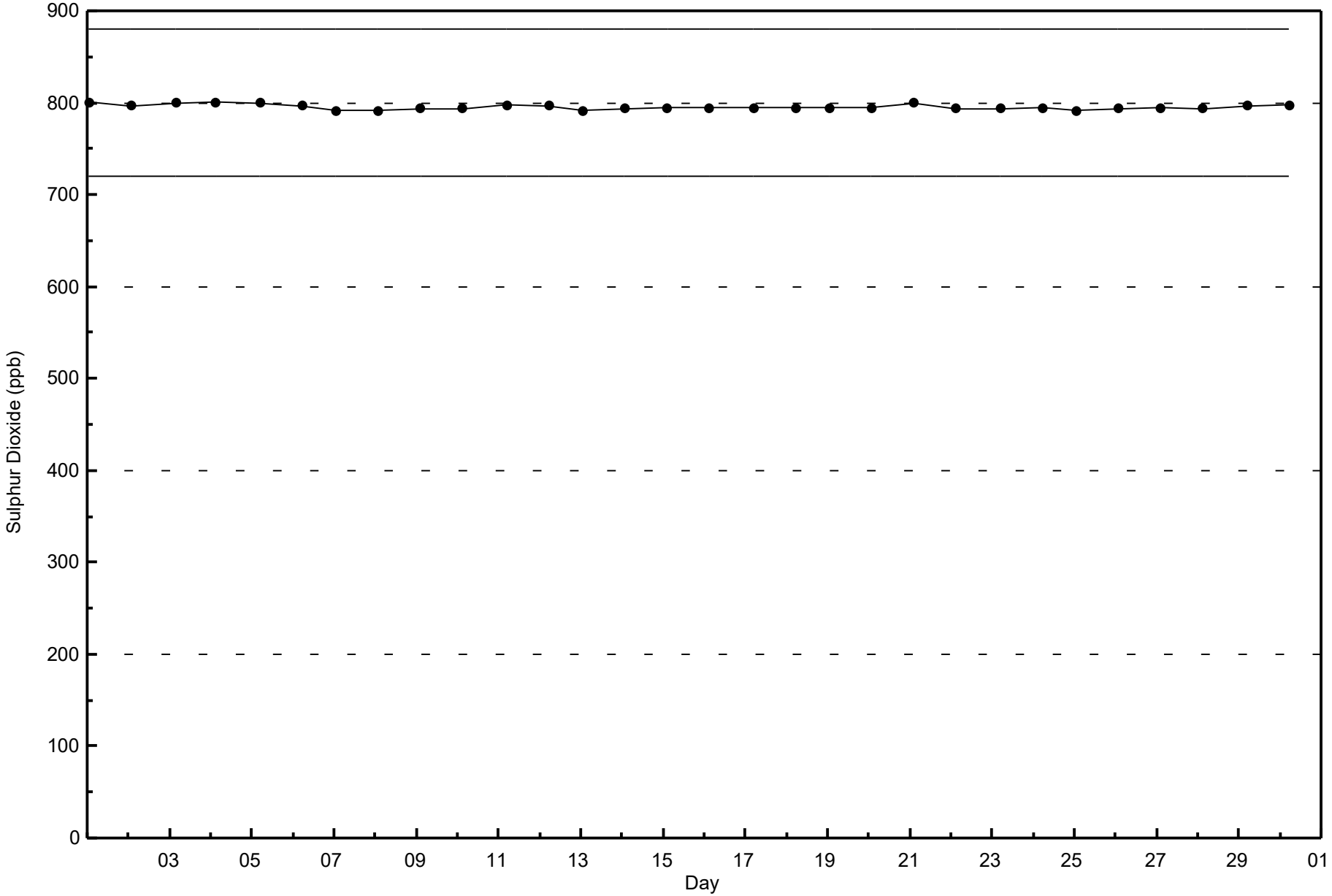


Wood Buffalo Environmental Association

Span Responses

Sulphur Dioxide (SO_2) - ppb

Mannix - September 2024



Wood Buffalo Environmental Association

Summary of Hour Averages

Hydrogen Sulphide (H_2S) - ppb

Mannix - September 2024

Number of Exceedences (AAAQO): 1-hr: 3 24-hr: 1
Maximum Value: 16.8 ppb on Sep 13 00:00 Maximum Daily Average: 3.1 ppb on Sep 12

Minimum Value: 0.0 ppb on Sep 8 21:00 Minimum Daily Average: 0.1 ppb on Sep 28
Maximum Diurnal Average: 1.2 ppb at hour 5 Minimum Diurnal Average: 0.1 ppb at hour 15
Monthly Average: 0.55 ppb Percentiles: P_1 = 0.0 P_{10} = 0.0 Q_1 = 0.1 Median = 0.2 Q_3 = 0.4 P_{90} = 1.4 P_{99} = 8.1

Hours in Service:	720
Hours of Data:	684
Hours of Missing Data:	36
Hours of Calibration:	36
Percent Operational Time:	100.0

Day	Hourly Period Ending At (MST)																								Daily	Daily
	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24	Average	Maximum
1-Sep	0.1	Z	0.2	0.2	0.3	0.4	0.3	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	0.2	0.2	0.1	0.2	0.2	0.4
2-Sep	0.1	0.2	Z	0.2	0.3	0.3	0.2	0.2	0.2	0.1	0.2	0.1	0.1	0.1	0.1	0.0	0.0	0.1	0.1	0.4	0.8	0.5	2.1	2.1	0.4	2.1
3-Sep	2.2	0.5	0.3	0.2	Z	0.2	0.3	0.8	0.4	0.3	0.3	0.3	0.5	0.4	0.3	0.4	0.3	0.2	0.2	0.3	0.2	0.2	0.2	0.6	0.4	2.2
4-Sep	0.3	0.5	0.8	0.4	Z	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	0.0	0.0	0.2	0.8
5-Sep	0.3	1.0	0.6	1.1	1.6	Z	0.9	0.3	0.4	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	0.4	1.6
6-Sep	Z	0.1	0.1	0.1	0.1	0.2	0.1	0.1	0.1	0.2	C	C	C	C	C	C	0.2	0.2	0.2	0.2	0.1	0.2	0.3	0.2	--	0.3
7-Sep	0.2	Z	0.2	0.3	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	0.2	0.2	0.3
8-Sep	0.2	0.4	Z	0.2	0.3	0.4	0.2	0.1	0.1	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.7	2.1	1.5	1.7	0.0	0.0	0.1	2.4	0.5	2.4
9-Sep	3.0	1.0	1.6	Z	2.7	2.9	3.5	1.5	0.6	0.5	1.0	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	3.5
10-Sep	0.1	0.1	0.1	0.1	Z	0.1	0.1	0.1	0.0	0.0	0.0	0.0	0.0	0.0	0.5	0.1	0.0	0.0	0.1	0.2	0.2	0.5	0.2	2.5	0.2	2.5
11-Sep	1.0	0.9	1.2	0.5	2.7	Z	1.9	2.0	1.6	1.2	0.8	0.5	0.4	0.7	0.1	0.0	0.0	0.0	0.3	0.2	0.3	0.3	0.2	0.1	0.7	2.7
12-Sep	Z	0.3	0.2	0.2	0.1	0.2	0.3	2.7	11.3	5.4	4.8	8.5	8.0	1.4	0.3	0.9	0.6	0.4	1.6	3.7	1.5	0.8	0.6	16.8	3.1	16.8
13-Sep	8.5	0.8	Z	2.1	1.7	1.7	0.8	1.3	1.6	1.0	1.0	1.5	1.9	1.0	0.7	0.7	0.5	0.5	0.5	0.5	1.0	1.5	0.4	0.8	1.4	8.5
14-Sep	0.6	0.3	Z	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	0.1	0.6	1.3	8.0	9.5	0.8	0.9	9.5
15-Sep	1.8	1.6	1.4	0.3	Z	1.6	1.5	3.0	0.3	0.3	0.7	0.4	0.2	0.2	0.1	0.1	0.1	0.1	0.1	0.2	0.2	0.3	0.3	0.2	0.6	3.0
16-Sep	0.2	0.2	0.2	0.1	Z	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	0.1	0.1	0.1	0.3
17-Sep	0.2	0.3	0.2	0.1	0.1	Z	0.1	0.2	0.2	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.4	2.5	2.9	0.2	0.1	0.1	0.2	0.4	2.9
18-Sep	Z	0.1	0.2	0.2	0.2	0.3	0.2	0.2	0.1	0.1	0.1	0.1	0.1	0.1	0.2	0.1	0.1	0.1	0.4	0.9	0.9	0.3	0.2	0.5	0.2	0.9
19-Sep	0.3	Z	0.3	0.3	0.3	0.3	0.3	0.3	0.2	0.1	0.1	0.1	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.4	3.2	2.4	0.9	0.9	0.5	3.2
20-Sep	0.6	0.8	Z	4.8	10.9	2.2	1.6	0.4	0.4	0.5	0.3	0.4	0.4	0.3	0.1	0.2	0.3	0.2	0.6	1.2	0.8	0.4	0.4	0.8	1.2	10.9
21-Sep	0.8	0.5	0.5	Z	0.2	0.3	0.3	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	0.8
22-Sep	0.1	0.1	0.1	0.1	Z	0.2	0.3	0.2	0.1	0.1	0.1	0.1	0.1	0.1	0.2	0.1	0.1	0.1	0.1	1.1	1.9	0.2	0.1	0.3	0.3	1.9
23-Sep	1.2	1.9	1.5	1.9	1.1	Z	0.9	1.4	1.0	1.3	1.8	1.2	0.5	0.4	0.3	0.2	0.2	0.2	0.2	0.2	0.2	0.2	0.1	0.2	0.8	1.9
24-Sep	Z	0.3	5.1	9.5	1.4	0.5	0.3	0.3	0.2	0.2	0.2	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.2	0.2	0.8	0.3	0.2	0.2	0.9	9.5
25-Sep	0.2	Z	0.2	0.2	0.2	0.4	0.3	0.2	0.1	0.1	0.1	0.1	0.1	0.2	0.2	0.2	0.2	0.1	0.1	0.2	0.1	0.2	0.2	0.2	0.2	0.4
26-Sep	0.1	0.1	Z	0.3	0.4	0.6	0.2	0.2	0.2	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.4	0.3	0.2	0.1	0.1	0.1	0.1	0.3	0.2	0.6
27-Sep	0.3	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	0.0	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.3
28-Sep	0.1	0.1	0.1	0.1	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	0.0	0.1	0.0	0.1	0.1
29-Sep	0.0	0.0	0.0	0.1	3.4	Z	0.9	3.2	3.3	3.8	2.7	1.9	0.6	0.8	0.2	0.5	0.2	0.1	0.1	0.3	0.3	0.3	0.4	0.3	1.0	3.8
30-Sep	Z	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	0.1	0.1	0.1	0.1	0.2	0.2	0.1	0.1	0.1	0.1	0.2
	0.9	0.5	0.6	0.9	1.2	0.6	0.6	0.7	0.8	0.6	0.5	0.6	0.5	0.2	0.1	0.2	0.2	0.2	0.3	0.5	0.5	0.6	0.6	1.0	Diurnal Average	
	8.5	1.9	5.1	9.5	10.9	2.9	3.5	3.2	11.3	5.4	4.8	8.5	8.0	1.4	0.7	0.9	0.7	2.1	2.5	3.7	3.2	8.0	9.5	16.8	Diurnal Maximum	

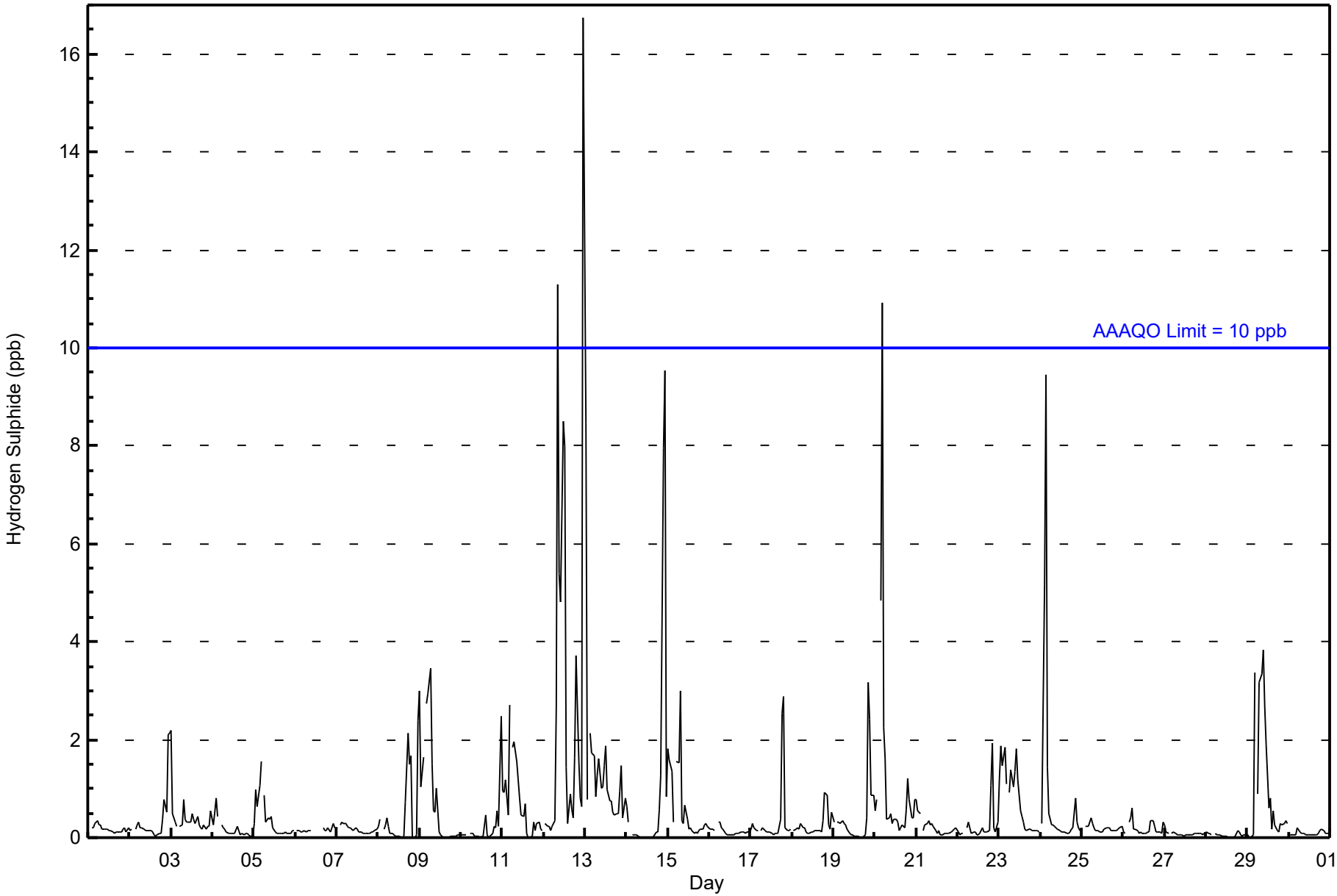
Z - zerospan C - Calibration
Alberta Ambient Air Quality Objectives (AAAQO): 1-hr 10 ppb 24-hr 3 ppb

Wood Buffalo Environmental Association

Hourly Averages

Hydrogen Sulphide (H_2S) - ppb

Mannix - September 2024



Hydrogen Sulphide (H_2S) - ppb

Mannix - September 2024

Concentration Ranges (ppb)	Number of Hours	%	Cumulative %
0 - 2	655	95.76	95.76
3 - 4	16	2.34	98.10
5 - 7	4	0.58	98.68
8 - 11	6	0.88	99.56
> 11	3	0.44	100.00

Total Number of Valid Hours: 684

Total Number of Hours: 720

Wood Buffalo Environmental Association

Frequency Distribution

Hydrogen Sulphide (H_2S) - ppb

Mannix - September 2024

Concentration Ranges (ppb)	Wind Direction																
	N	NNE	NE	ENE	E	ESE	SE	SSE	S	SSW	SW	WSW	W	WNW	NW	NNW	**Totals**
0 - 2	18	30	6	3	9	18	75	131	44	21	34	65	80	44	34	43	655
3 - 4	5	2	1	1	1	2	0	0	0	0	0	0	1	0	0	3	16
5 - 7	0	0	0	2	2	0	0	0	0	0	0	0	0	0	0	0	4
8 - 11	0	0	1	3	0	1	0	0	0	0	0	0	0	0	1	0	6
> 11	0	0	1	1	0	0	0	0	0	0	0	0	0	1	0	0	3
Totals	23	32	9	10	12	21	75	131	44	21	34	65	81	45	35	46	684

Total Number of Valid Hours: 684

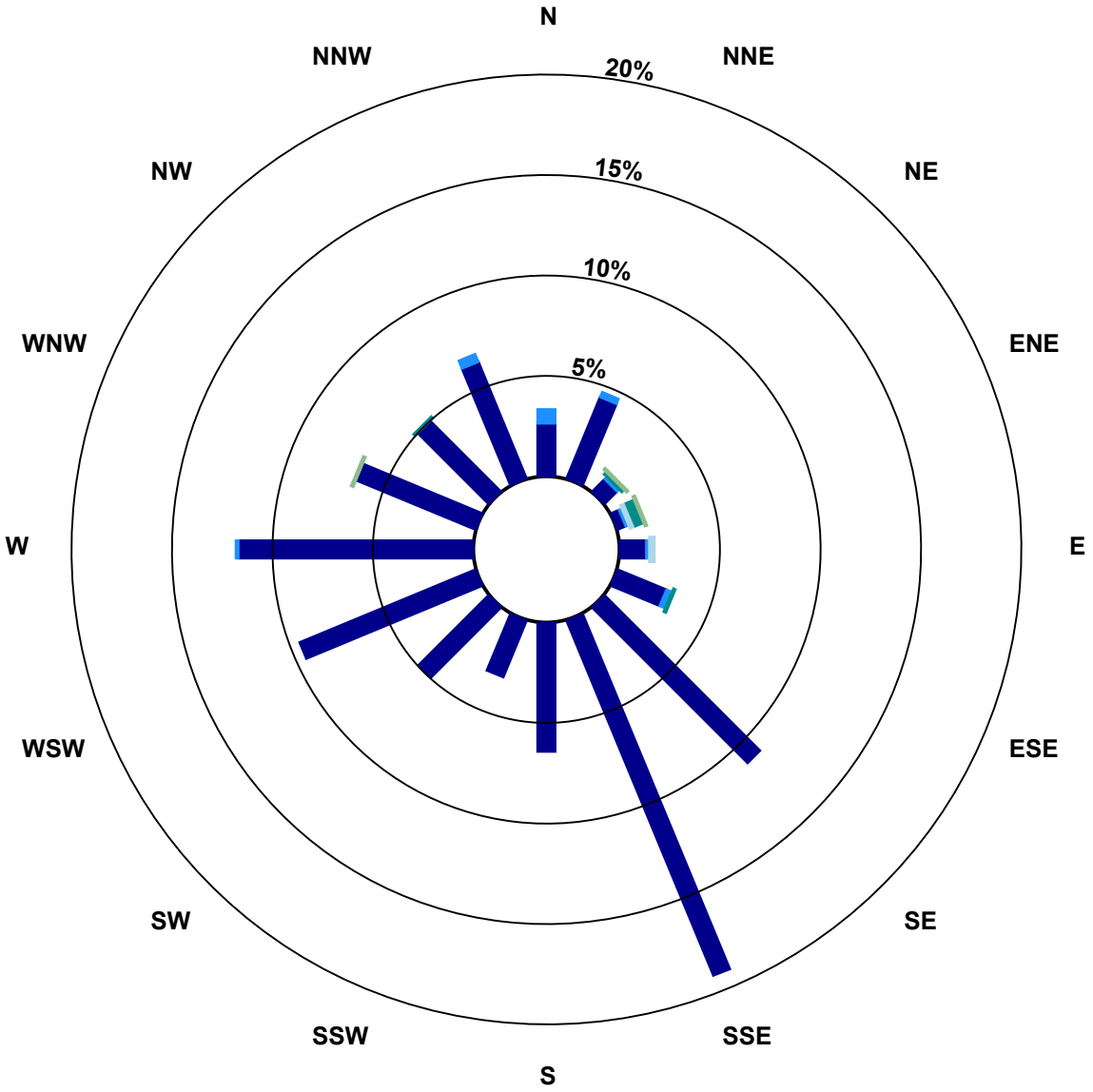
Total Number of Hours: 720

Wood Buffalo Environmental Association

Wind Rose Sep 2024

Hydrogen Sulphide (H_2S) - ppb

Mannix



Classes (ppb)

0 - 2

3 - 4

5 - 7

8 - 11

> 11

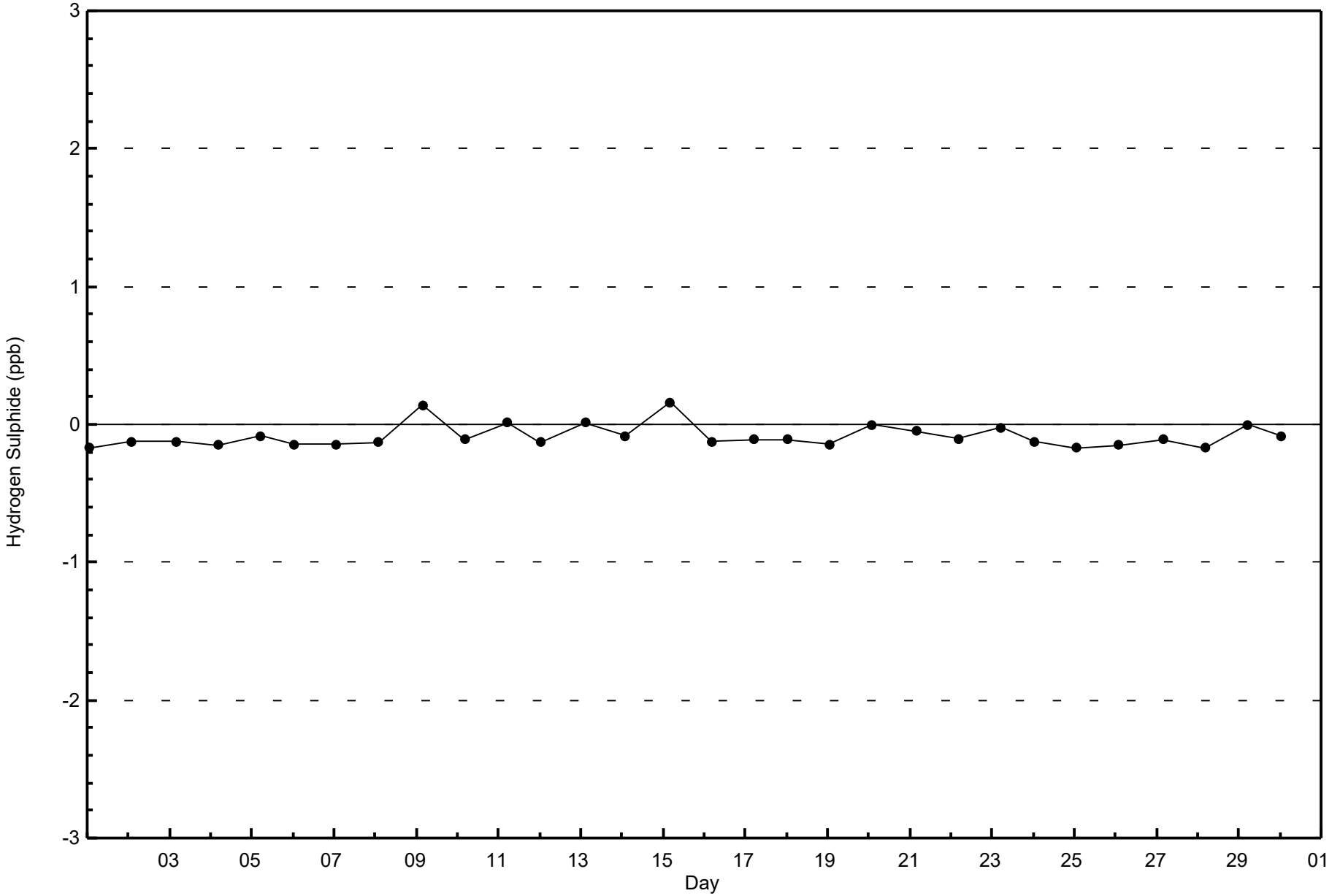
Total Number of Valid Hours: 684

Wood Buffalo Environmental Association

Zero Responses

Hydrogen Sulphide (H_2S) - ppb

Mannix - September 2024

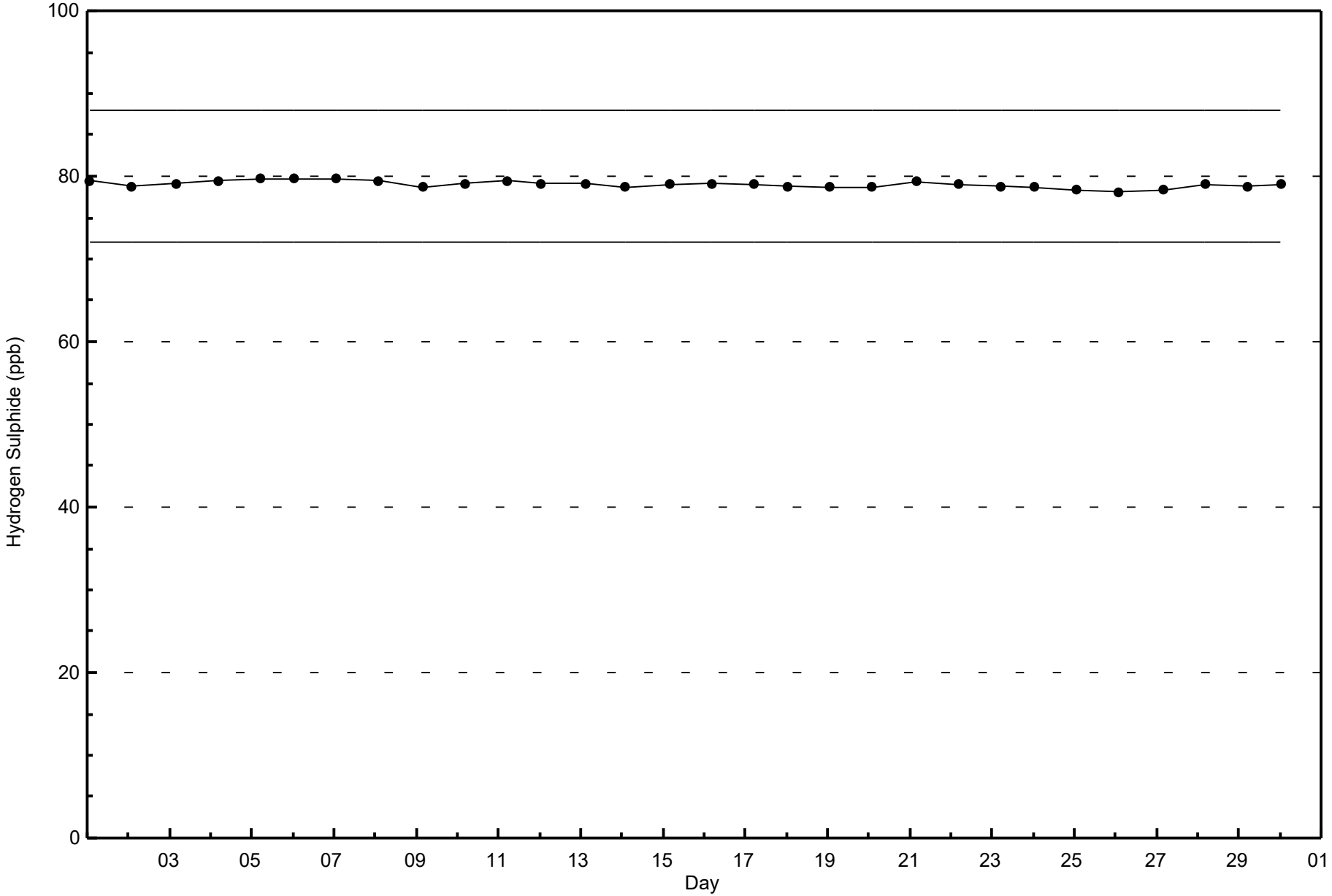


Wood Buffalo Environmental Association

Span Responses

Hydrogen Sulphide (H_2S) - ppb

Mannix - September 2024



Wood Buffalo Environmental Association

Summary of Hour Averages

Total Hydrocarbons (THC) - ppm

Mannix - September 2024

Maximum Value: 4.0 ppm on Sep 19 20:00

Maximum Daily Average: 2.7 ppm on Sep 13

Minimum Value: 1.9 ppm on Sep 1 16:00

Minimum Daily Average: 2.0 ppm on Sep 1

Maximum Diurnal Average: 2.4 ppm at hour 4

Minimum Diurnal Average: 2.1 ppm at hour 16

Monthly Average: 2.20 ppm

Percentiles: P_1 = 2.0 P_{10} = 2.0 Q_1 = 2.1 Median = 2.1 Q_3 = 2.2 P_{90} = 2.5 P_{99} = 3.5

Hours in Service:	720
Hours of Data:	658
Hours of Missing Data:	62
Hours of Calibration:	35
Percent Operational Time:	96.3

Day	Hourly Period Ending At (MST)																								Daily	Daily
	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24	Average	Maximum
1-Sep	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	1.9	1.9	1.9	1.9	2.0	2.0	2.0	2.0	2.0	2.0	2.1
2-Sep	2.0	Z	2.1	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	2.1	2.2	2.0	2.0	2.0	2.0	2.2
3-Sep	2.0	2.0	2.0	Z	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	UO	UO	UO	1.9	UO	UO	2.0	2.1
4-Sep	UO	UO	UO	UO	2.1	2.0	UO	UO	UO	C	C	C	C	2.0	2.1	2.1	2.0	2.1	2.0	2.1	2.1	2.1	2.1	2.1	--	2.1
5-Sep	2.2	2.4	2.7	2.6	Z	2.4	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	2.1	2.2	2.7
6-Sep	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	2.4	2.1	2.4	2.1	2.1	2.4
7-Sep	Z	2.1	2.1	2.1	2.2	2.1	2.1	2.2	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	2.1	2.2	2.1	2.2
8-Sep	2.4	Z	2.1	2.1	2.1	2.1	2.2	2.2	2.2	2.2	2.1	2.1	2.1	2.1	2.1	2.1	2.3	2.7	2.5	2.5	2.1	2.0	2.1	3.2	2.2	3.2
9-Sep	3.6	3.3	Z	3.5	2.8	2.4	2.3	2.6	2.9	2.7	2.7	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	2.4	3.6
10-Sep	2.1	2.1	2.1	Z	2.1	2.1	2.0	2.1	2.1	2.1	2.0	2.0	2.0	2.0	2.1	2.0	2.0	2.0	2.2	2.3	2.1	2.5	2.2	2.7	2.1	2.7
11-Sep	2.3	2.2	UO	UO	Z	2.6	UO	UO	UO	M	M	C	C	2.2	2.1	2.1	2.1	2.1	2.3	2.2	2.2	2.3	2.1	2.1	--	2.6
12-Sep	2.1	2.2	2.2	2.2	2.1	Z	2.2	2.2	2.8	2.6	2.3	2.3	2.5	2.2	2.1	2.1	2.2	2.1	2.2	2.3	2.3	2.3	2.2	2.8	2.3	2.8
13-Sep	Z	2.5	3.4	2.5	2.7	2.8	3.6	3.8	3.8	M	M	M	2.5	2.4	2.2	2.2	2.4	2.4	2.6	2.6	2.4	2.6	2.8	2.6	2.7	3.8
14-Sep	2.4	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	2.5	3.3	2.1	2.7	2.6	2.2	2.2	3.3
15-Sep	2.3	2.3	Z	3.0	2.7	2.3	2.3	2.4	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	2.1	2.3	3.0
16-Sep	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	2.0	2.0	2.1	2.1	2.1	2.1	2.1	2.1	2.1	2.1
17-Sep	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	2.0	2.0	2.1	2.2	2.3	2.1	2.1	2.1	2.1	2.1	2.3
18-Sep	2.1	2.1	2.1	2.1	2.1	Z	2.1	2.1	2.1	2.1	2.1	2.1	2.0	2.0	2.1	2.1	2.1	2.1	2.6	3.8	2.8	2.1	2.1	2.2	2.2	3.8
19-Sep	Z	2.1	2.1	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	4.0	2.3	2.3	2.2	2.5	2.2	4.0
20-Sep	2.6	Z	3.0	2.7	2.7	2.9	2.5	2.4	2.4	2.6	2.4	2.4	2.2	2.2	2.1	2.1	2.1	2.1	2.1	2.2	2.2	2.3	2.3	2.6	2.4	3.0
21-Sep	2.7	2.4	Z	2.2	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	2.1	2.1	2.1	2.1	2.1	2.1	2.1	2.2	2.7
22-Sep	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	2.2	2.1	2.1	2.1	2.1	2.2	2.2	2.1	2.1	2.3	2.1	2.3
23-Sep	3.2	3.0	2.5	2.4	Z	2.5	2.9	2.5	2.6	3.1	2.7	2.5	2.4	2.3	2.2	2.1	2.1	2.1	2.1	2.1	2.1	2.1	2.1	2.1	2.4	3.2
24-Sep	2.1	2.1	2.6	3.1	2.3	Z	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	2.1	2.1	2.1	2.1	2.1	3.1
25-Sep	Z	2.1	2.1	2.1	2.1	2.2	2.2	2.1	2.1	M	M	M	M	M	2.1	2.1	2.1	2.1	2.1	2.1	2.1	2.1	2.1	2.1	2.1	2.2
26-Sep	2.1	Z	2.1	2.5	2.3	2.6	2.1	2.1	2.1	2.1	2.1	2.1	2.1	2.1	2.2	2.1	2.1	2.2	2.1	2.1	2.1	2.1	2.1	2.1	2.2	2.6
27-Sep	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	2.1	2.1	2.1	2.1	2.2
28-Sep	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	2.1	2.1
29-Sep	2.1	2.1	2.1	2.1	Z	2.3	2.5	2.6	2.8	2.6	2.5	2.4	2.3	2.2	2.1	2.1	2.2	2.2	2.4	2.9	2.5	2.4	2.9	2.3	2.4	2.9
30-Sep	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
	2.3	2.2	2.2	2.4	2.2	2.3	2.2	2.2	2.3	2.2	2.2	2.1	2.1	2.1	2.1	2.1	2.1	2.1	2.2	2.3	2.2	2.2	2.2	2.2	Diurnal Average	
	3.6	3.3	3.4	3.5	2.8	2.9	3.6	3.8	3.8	3.1	2.7	2.5	2.5	2.4	2.2	2.2	2.4	2.7	2.6	4.0	2.8	2.7	2.9	3.2	Diurnal Maximum	

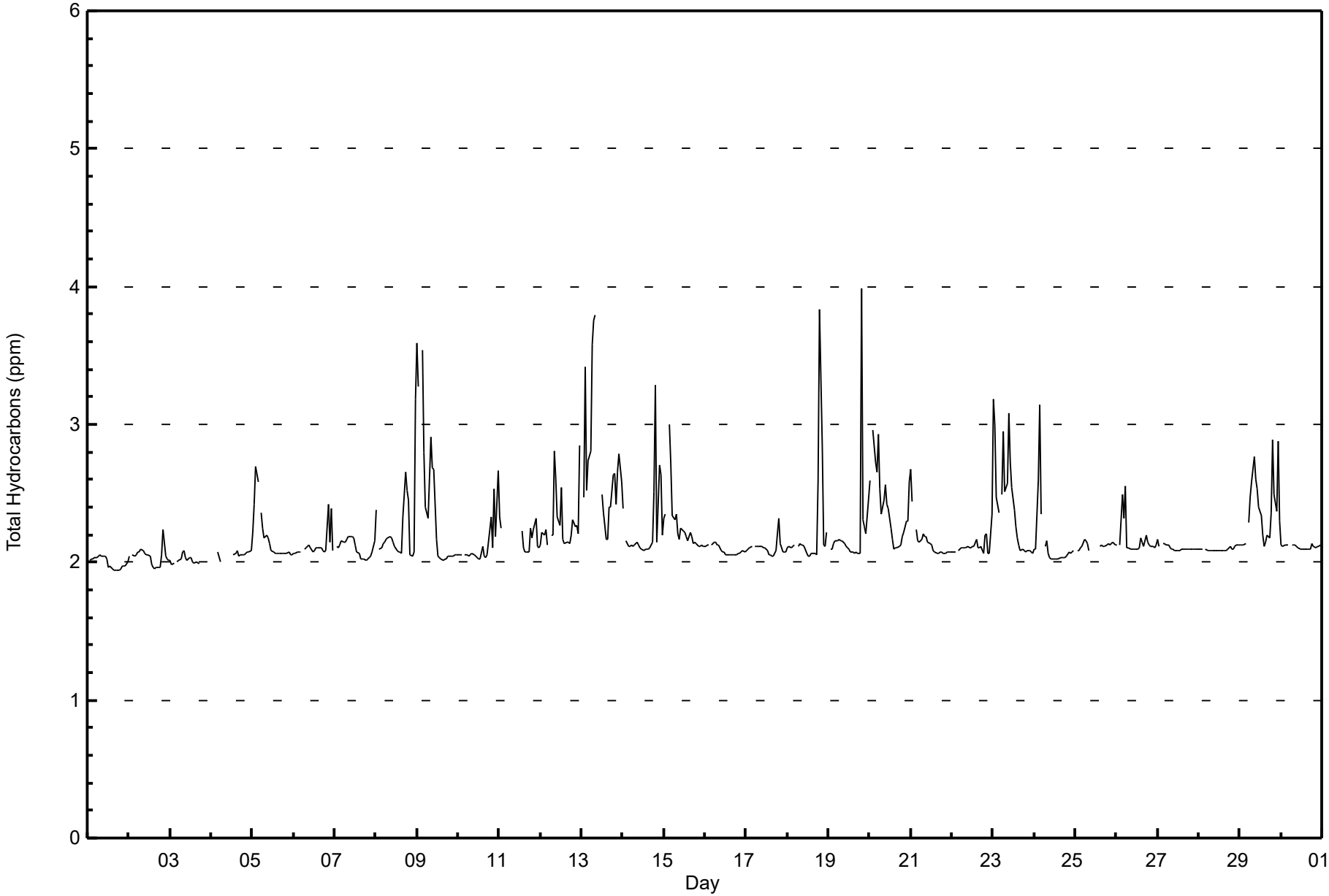
Z - zerospan C - Calibration M - Maintenance UO - Unstable Operation

Wood Buffalo Environmental Association

Hourly Averages

Total Hydrocarbons (THC) - ppm

Mannix - September 2024



Concentration Ranges (ppm)	Number of Hours	%	Cumulative %
0 - 2.0	98	14.89	14.89
2.1 - 3.0	546	82.98	97.87
3.1 - 10.0	14	2.13	100.00
> 10.0	0	0.00	100.00

Total Number of Valid Hours: 658

Total Number of Hours: 720

Wood Buffalo Environmental Association

Frequency Distribution

Total Hydrocarbons (THC) - ppm

Mannix - September 2024

Concentration Ranges (ppm)	Wind Direction																
	N	NNE	NE	ENE	E	ESE	SE	SSE	S	SSW	SW	WSW	W	WNW	NW	NNW	**Totals**
0 - 2.0	2	14	2	0	1	1	3	12	1	3	11	17	28	2	0	1	98
2.1 - 3.0	18	15	6	9	10	15	70	122	43	17	22	43	49	39	29	39	546
3.1 - 10.0	1	1	0	0	0	2	0	0	1	0	0	0	1	0	5	3	14
> 10.0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Totals	21	30	8	9	11	18	73	134	45	20	33	60	78	41	34	43	658

Total Number of Valid Hours: 658

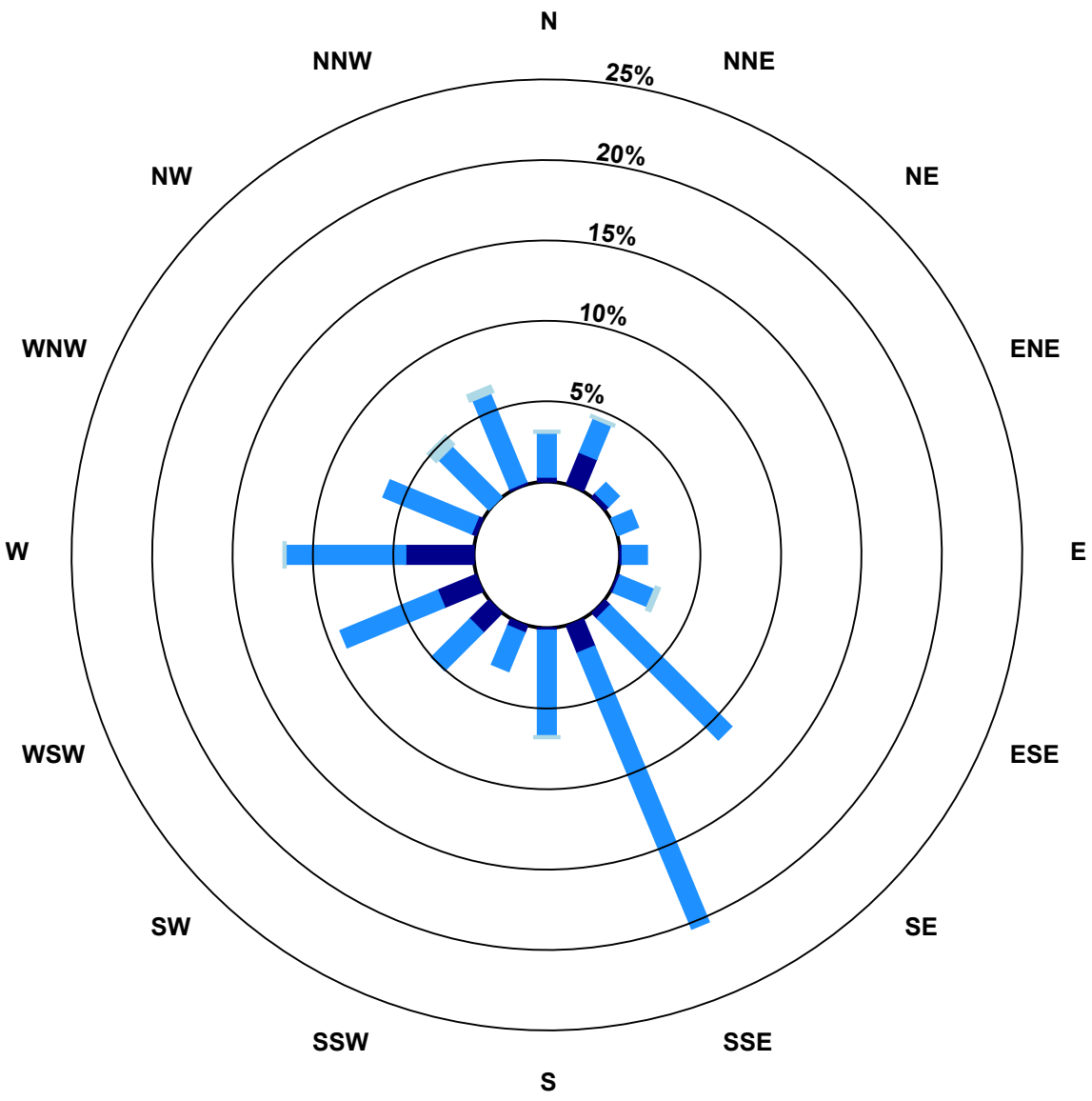
Total Number of Hours: 720

Wood Buffalo Environmental Association

Wind Rose Sep 2024

Total Hydrocarbons (THC) - ppm

Mannix



Classes (ppm)

0 - 2.0

2.1 - 3.0

3.1 - 10.0

> 10.0

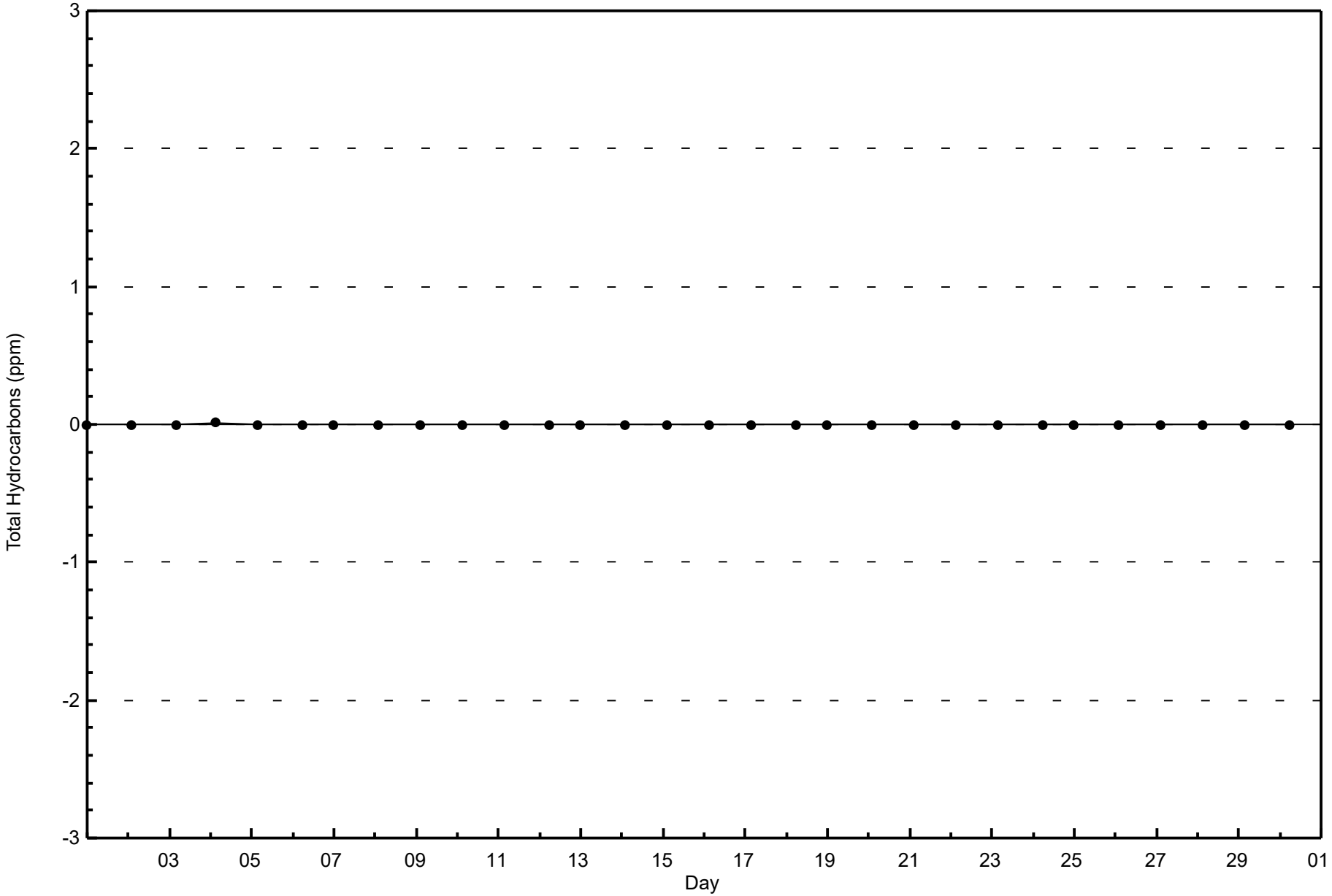
Total Number of Valid Hours: 658

Wood Buffalo Environmental Association

Zero Responses

Total Hydrocarbons (THC) - ppm

Mannix - September 2024

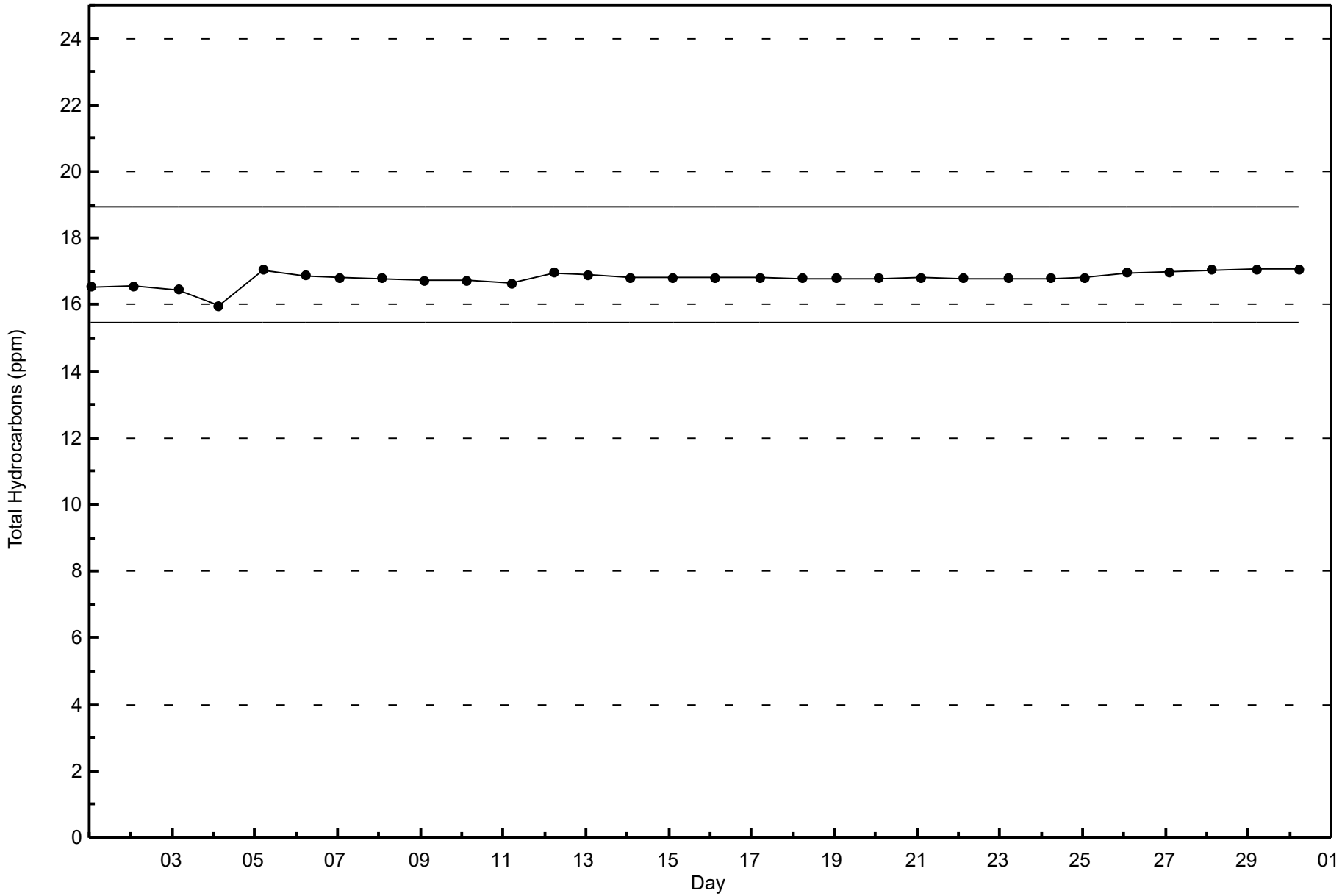


Wood Buffalo Environmental Association

Span Responses

Total Hydrocarbons (THC) - ppm

Mannix - September 2024



Wood Buffalo Environmental Association

Summary of Hour Averages

Non Methane Hydrocarbons (NMHC) - ppm

Mannix - September 2024

Maximum Value: 1.884 ppm on Sep 19 20:00

Maximum Daily Average: 0.121 ppm on Sep 9

Minimum Value: 0.000 ppm on Sep 1 02:00

Minimum Daily Average: 0.000 ppm on Sep 1

Maximum Diurnal Average: 0.076 ppm at hour 20

Minimum Diurnal Average: 0.000 ppm at hour 16

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} = 0.0 P_{99} = 0.4

Hours in Service:	720
Hours of Data:	658
Hours of Missing Data:	62
Hours of Calibration:	35
Percent Operational Time:	96.3

Day	Hourly Period Ending At (MST)																								Daily	Daily
	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24	Average	Maximum
1-Sep	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
2-Sep	0.000	Z	0.000	0.000	0.000	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	0.002	0.000	0.000	0.000	0.009
3-Sep	0.000	0.000	0.000	Z	0.000	0.000	0.000	0.000	0.046	0.000	0.000	0.000	0.023	0.000	0.000	0.000	0.000	0.000	UO	UO	UO	0.000	UO	UO	0.004	0.046
4-Sep	UO	UO	UO	UO	0.000	0.000	UO	UO	UO	C	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
5-Sep	0.024	0.083	0.164	0.150	Z	0.056	0.008	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.021	0.164
6-Sep	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	0.316	0.035	0.277	0.000	0.027	0.316
7-Sep	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	0.003	0.071	0.003	0.071
8-Sep	0.283	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	0.221	0.479	0.320	0.187	0.000	0.000	0.000	0.435	0.084	0.479
9-Sep	0.545	0.453	Z	0.507	0.298	0.018	0.000	0.102	0.313	0.239	0.290	0.011	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.121	0.545
10-Sep	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	0.009	0.000	0.000	0.000	0.005	0.052	0.000	0.171	0.000	0.332	0.025	0.332
11-Sep	0.189	0.137	UO	UO	Z	0.206	UO	UO	UO	M	M	C	C	0.039	0.018	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	--	0.206
12-Sep	0.000	0.000	0.000	0.000	0.000	Z	0.000	0.000	0.479	0.359	0.118	0.000	0.251	0.000	0.000	0.000	0.009	0.000	0.032	0.002	0.000	0.068	0.008	0.194	0.066	0.479
13-Sep	Z	0.000	0.011	0.078	0.000	0.019	0.270	0.000	0.000	M	M	M	0.000	0.000	0.024	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.020	0.270
14-Sep	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	0.404	0.290	0.000	0.030	0.404
15-Sep	0.000	0.000	Z	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.008	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.008
16-Sep	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
17-Sep	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	0.015	0.037	0.069	0.000	0.000	0.000	0.000	0.005	0.069
18-Sep	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
19-Sep	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	0.005	0.000	0.000	0.000	0.000	1.884	0.052	0.000	0.000	0.000	0.084	1.884
20-Sep	0.000	Z	0.000	0.000	0.000	0.000	0.011	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.011
21-Sep	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
22-Sep	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	0.053	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.002	0.053
23-Sep	0.000	0.000	0.000	0.000	Z	0.000	0.000	0.000	0.000	0.000	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	0.001	0.013
24-Sep	0.000	0.000	0.308	0.389	0.089	Z	0.000	0.052	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.023	0.000	0.000	0.000	0.037	0.389
25-Sep	Z	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	M	M	M	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
26-Sep	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
27-Sep	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
28-Sep	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
29-Sep	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
30-Sep	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
	0.043	0.028	0.020	0.049	0.015	0.012	0.011	0.005	0.030	0.023	0.016	0.000	0.011	0.001	0.004	0.000	0.008	0.016	0.014	0.076	0.013	0.023	0.020	0.036	Diurnal Average	
	0.545	0.453	0.308	0.507	0.298	0.206	0.270	0.102	0.479	0.359	0.290	0.011	0.251	0.039	0.053	0.000	0.221	0.479	0.320	1.884	0.316	0.404	0.290	0.435	Diurnal Maximum	

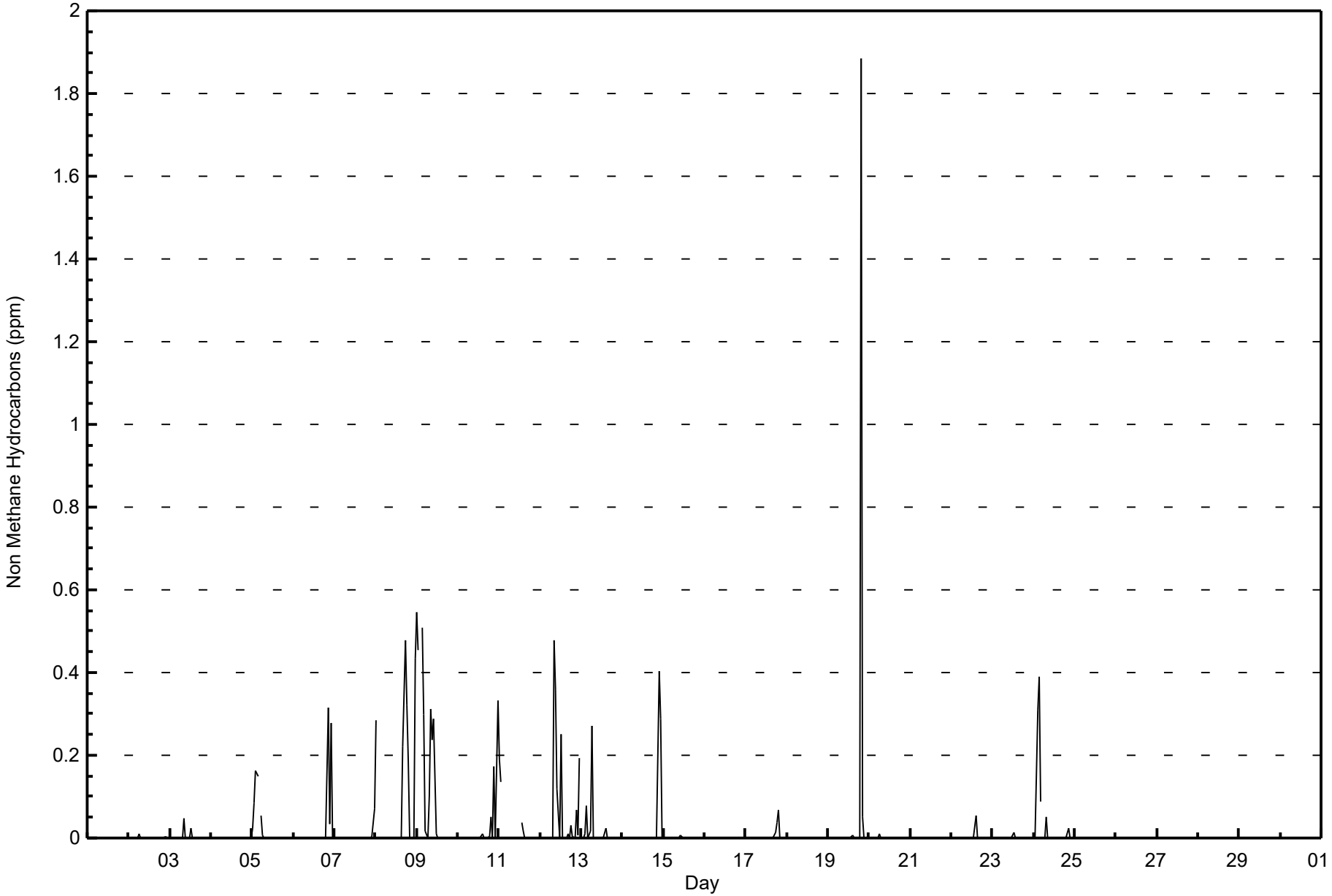
Z - zerospan C - Calibration M - Maintenance UO - Unstable Operation

Wood Buffalo Environmental Association

Hourly Averages

Non Methane Hydrocarbons (NMHC) - ppm

Mannix - September 2024



Non Methane Hydrocarbons (NMHC) - ppm

Mannix - September 2024

Concentration Ranges (ppm)	Number of Hours	%	Cumulative %
0 - 0.005	590	89.67	89.67
0.006 - 0.05	27	4.10	93.77
0.06 - 0.1	11	1.67	95.44
> 0.1	30	4.56	100.00

Total Number of Valid Hours: 658

Total Number of Hours: 720

Wood Buffalo Environmental Association

Frequency Distribution

Non Methane Hydrocarbons (NMHC) - ppm

Mannix - September 2024

Concentration Ranges (ppm)	Wind Direction																
	N	NNE	NE	ENE	E	ESE	SE	SSE	S	SSW	SW	WSW	W	WNW	NW	NNW	**Totals**
0 - 0.005	17	20	4	3	6	12	68	132	42	17	33	59	76	38	26	37	590
0.006 - 0.05	1	5	0	0	4	2	3	2	0	2	0	0	1	2	4	1	27
0.06 - 0.1	2	2	0	1	0	2	0	0	1	0	0	0	0	0	1	2	11
> 0.1	1	3	4	5	1	2	2	0	2	1	0	1	1	1	3	3	30
Totals	21	30	8	9	11	18	73	134	45	20	33	60	78	41	34	43	658

Total Number of Valid Hours: 658

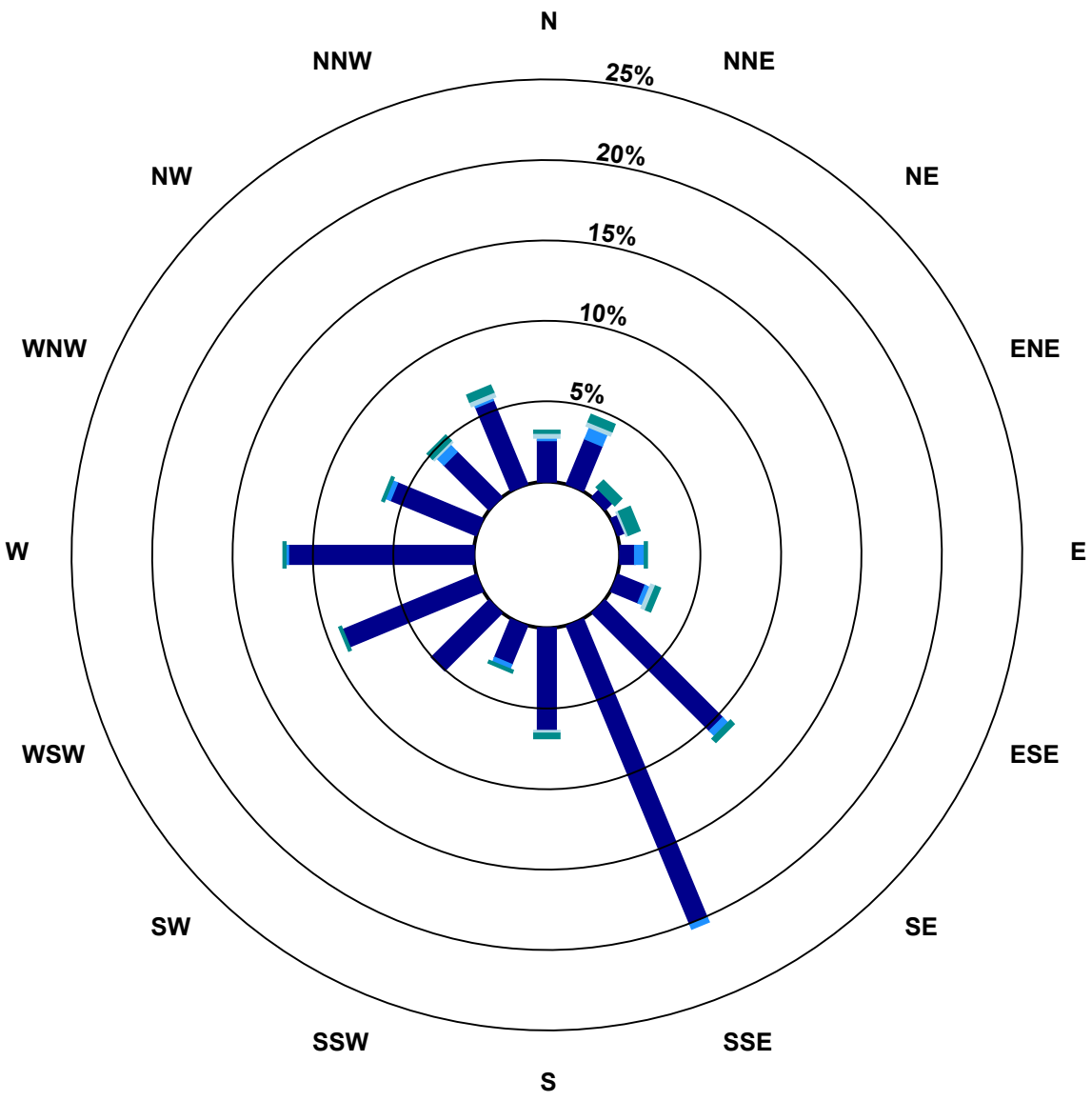
Total Number of Hours: 720

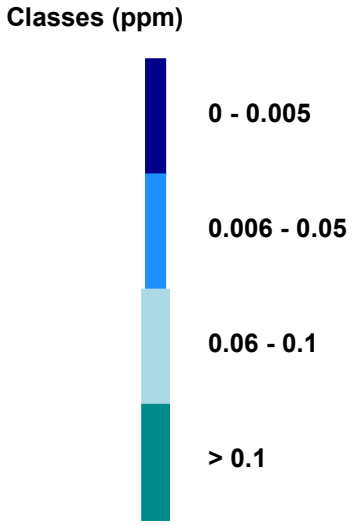
Wood Buffalo Environmental Association

Wind Rose Sep 2024

Non Methane Hydrocarbons (NMHC) - ppm

Mannix





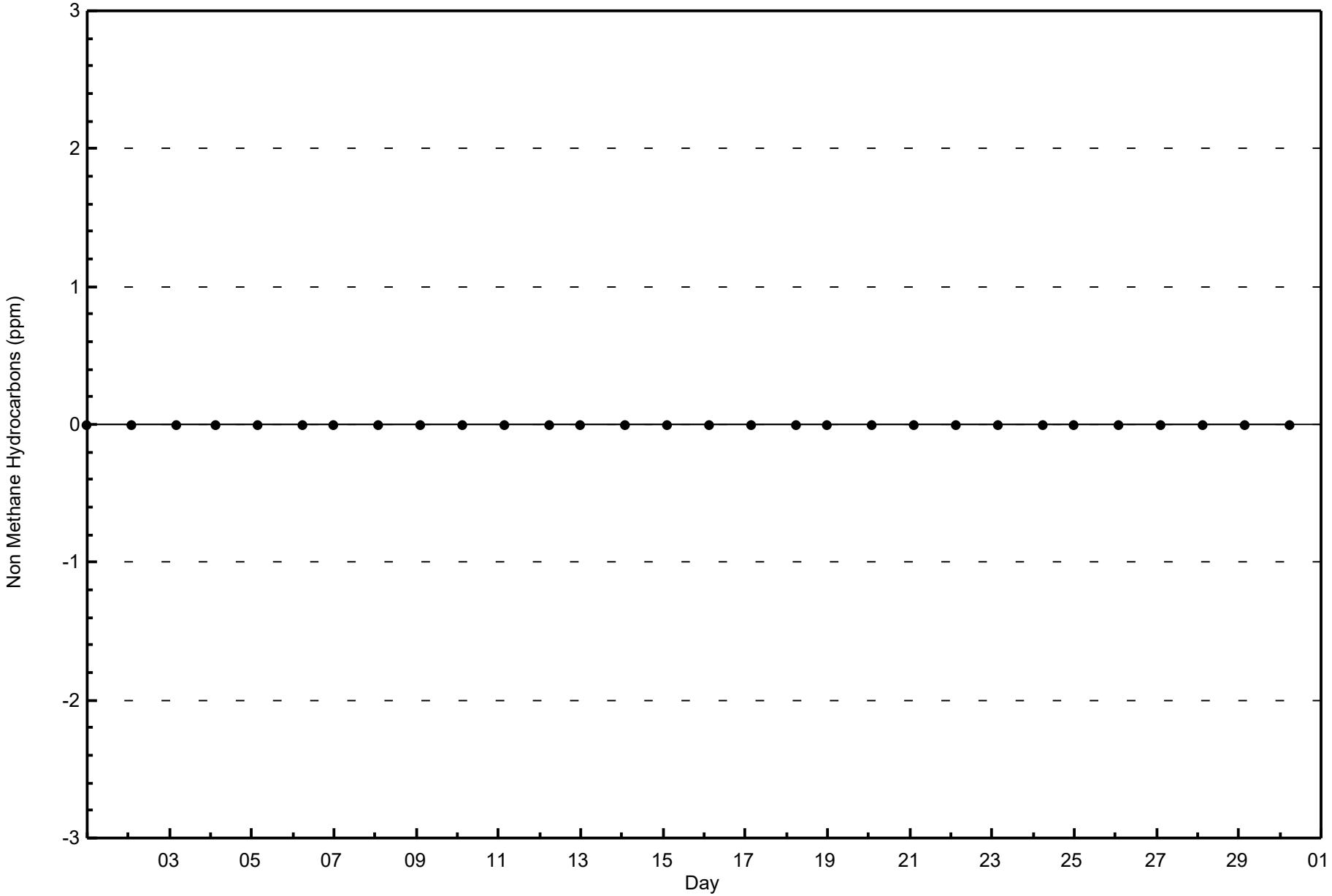
Total Number of Valid Hours: 658

Wood Buffalo Environmental Association

Zero Responses

Non Methane Hydrocarbons (NMHC) - ppm

Mannix - September 2024

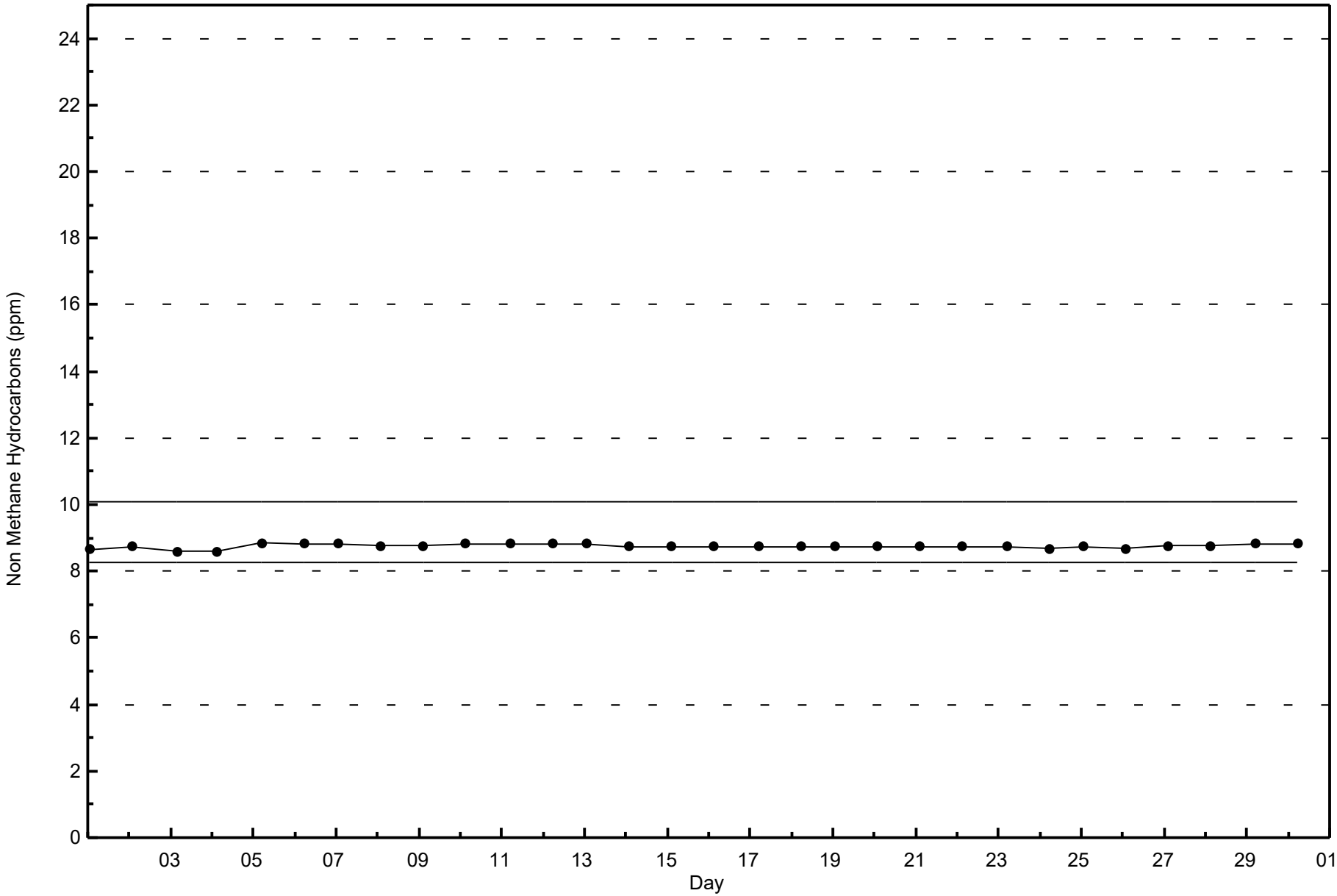


Wood Buffalo Environmental Association

Span Responses

Non Methane Hydrocarbons (NMHC) - ppm

Mannix - September 2024



Wood Buffalo Environmental Association

Summary of Hour Averages

Methane (CH_4) - ppm

Mannix - September 2024

Number of Exceedences (AAAQO): 1-hr: 0 24-hr: 0
Maximum Value: 3.8 ppm on Sep 18 20:00 Maximum Daily Average: 2.7 ppm on Sep 13

Minimum Value: 1.9 ppm on Sep 1 16:00 Minimum Daily Average: 2.0 ppm on Sep 1
Maximum Diurnal Average: 2.3 ppm at hour 4 Minimum Diurnal Average: 2.1 ppm at hour 16
Monthly Average: 2.18 ppm Percentiles: P_1 = 2.0 P_{10} = 2.0 Q_1 = 2.1 Median = 2.1 Q_3 = 2.2 P_{90} = 2.4 P_{99} = 3.1

Hours in Service:	720
Hours of Data:	658
Hours of Missing Data:	62
Hours of Calibration:	35
Percent Operational Time:	96.3

Day	Hourly Period Ending At (MST)																								Daily	Daily
	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24	Average	Maximum
1-Sep	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	1.9	1.9	1.9	1.9	2.0	2.0	2.0	2.0	2.0	2.0	2.1
2-Sep	2.0	Z	2.1	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	2.1	2.2	2.0	2.0	2.0	2.0	2.2
3-Sep	2.0	2.0	2.0	Z	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	UO	UO	UO	1.9	UO	UO	2.0	2.1
4-Sep	UO	UO	UO	UO	2.1	2.0	UO	UO	UO	C	C	C	C	2.0	2.1	2.1	2.0	2.1	2.0	2.1	2.1	2.1	2.1	2.1	--	2.1
5-Sep	2.2	2.3	2.5	2.4	Z	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	2.1	2.1	2.1	2.2	2.5
6-Sep	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
7-Sep	Z	2.1	2.1	2.1	2.2	2.1	2.1	2.2	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	2.1	2.1	2.1	2.2
8-Sep	2.1	Z	2.1	2.1	2.1	2.1	2.2	2.2	2.2	2.2	2.1	2.1	2.1	2.1	2.1	2.1	2.1	2.2	2.2	2.3	2.1	2.0	2.1	2.8	2.2	2.8
9-Sep	3.0	2.8	Z	3.0	2.5	2.4	2.3	2.5	2.6	2.4	2.4	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	2.3	3.0
10-Sep	2.1	2.1	2.1	Z	2.1	2.1	2.0	2.1	2.1	2.1	2.0	2.0	2.0	2.0	2.1	2.0	2.0	2.0	2.2	2.3	2.1	2.4	2.2	2.3	2.1	2.4
11-Sep	2.1	2.1	UO	UO	Z	2.4	UO	UO	UO	M	M	C	C	2.2	2.1	2.1	2.1	2.1	2.3	2.2	2.2	2.3	2.1	2.1	--	2.4
12-Sep	2.1	2.2	2.2	2.2	2.1	Z	2.2	2.2	2.3	2.2	2.2	2.3	2.3	2.2	2.1	2.1	2.1	2.1	2.2	2.3	2.3	2.2	2.2	2.7	2.2	2.7
13-Sep	Z	2.5	3.4	2.4	2.7	2.8	3.3	3.8	3.8	M	M	M	2.5	2.4	2.1	2.2	2.4	2.4	2.6	2.6	2.4	2.6	2.8	2.6	2.7	3.8
14-Sep	2.4	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	2.5	3.3	2.1	2.3	2.3	2.2	2.2	3.3
15-Sep	2.3	2.3	Z	3.0	2.7	2.3	2.3	2.4	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	2.1	2.3	3.0
16-Sep	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	2.0	2.0	2.1	2.1	2.1	2.1	2.1	2.1	2.1	2.1
17-Sep	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	2.0	2.0	2.1	2.2	2.2	2.1	2.1	2.1	2.1	2.1	2.2
18-Sep	2.1	2.1	2.1	2.1	2.1	Z	2.1	2.1	2.1	2.1	2.1	2.1	2.0	2.0	2.1	2.1	2.1	2.1	2.6	3.8	2.8	2.1	2.1	2.2	2.2	3.8
19-Sep	Z	2.1	2.1	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	2.3	2.3	2.2	2.5	2.1	2.5
20-Sep	2.6	Z	3.0	2.7	2.7	2.9	2.5	2.4	2.4	2.6	2.4	2.4	2.2	2.2	2.1	2.1	2.1	2.1	2.1	2.2	2.2	2.3	2.3	2.6	2.4	3.0
21-Sep	2.7	2.4	Z	2.2	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	2.1	2.1	2.1	2.1	2.1	2.1	2.1	2.2	2.7
22-Sep	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	2.2	2.2	2.1	2.1	2.3	2.1	2.3
23-Sep	3.2	3.0	2.5	2.4	Z	2.5	2.9	2.5	2.6	3.1	2.7	2.5	2.4	2.3	2.2	2.1	2.1	2.1	2.1	2.1	2.1	2.1	2.1	2.1	2.4	3.2
24-Sep	2.1	2.1	2.3	2.8	2.3	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	2.1	2.1	2.1	2.1	2.8
25-Sep	Z	2.1	2.1	2.1	2.1	2.2	2.2	2.1	2.1	M	M	M	M	M	2.1	2.1	2.1	2.1	2.1	2.1	2.1	2.1	2.1	2.1	2.1	2.2
26-Sep	2.1	Z	2.1	2.5	2.3	2.6	2.1	2.1	2.1	2.1	2.1	2.1	2.1	2.1	2.2	2.1	2.1	2.2	2.1	2.1	2.1	2.1	2.1	2.1	2.2	2.6
27-Sep	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	2.1	2.1	2.1	2.1	2.2
28-Sep	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	2.1	2.1
29-Sep	2.1	2.1	2.1	2.1	Z	2.3	2.5	2.6	2.8	2.6	2.5	2.4	2.3	2.2	2.1	2.1	2.2	2.2	2.4	2.9	2.5	2.4	2.9	2.3	2.4	2.9
30-Sep	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
	2.3	2.2	2.2	2.3	2.2	2.2	2.2	2.2	2.3	2.2	2.2	2.1	2.1	2.1	2.1	2.1	2.1	2.1	2.2	2.3	2.2	2.1	2.2	2.2	Diurnal Average	
	3.2	3.0	3.4	3.0	2.7	2.9	3.3	3.8	3.8	3.1	2.7	2.5	2.5	2.4	2.2	2.2	2.4	2.4	2.6	3.8	2.8	2.6	2.9	2.8	Diurnal Maximum	

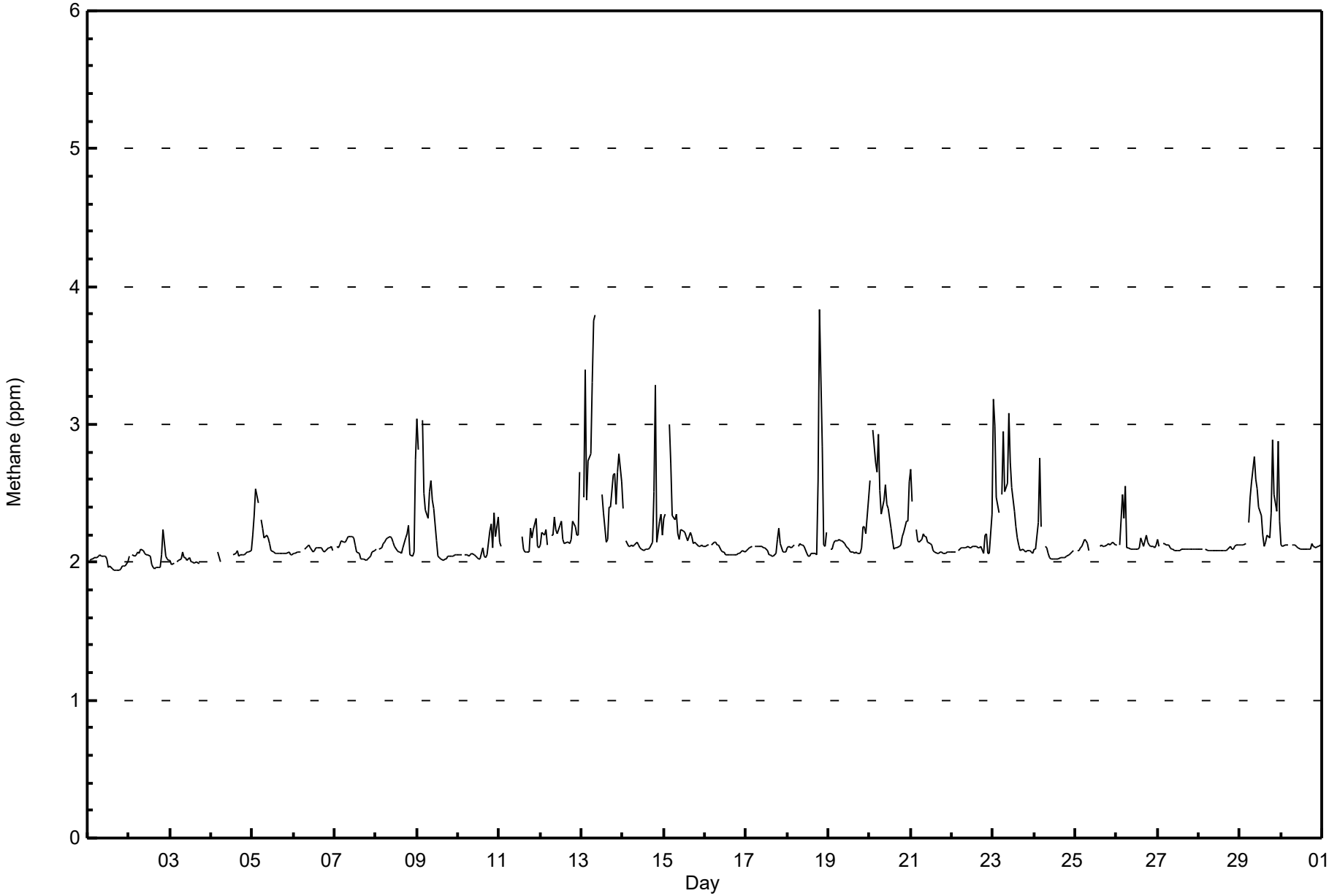
Z - zerospan C - Calibration M - Maintenance UO - Unstable Operation

Wood Buffalo Environmental Association

Hourly Averages

Methane (CH_4) - ppm

Mannix - September 2024



Concentration Ranges (ppm)	Number of Hours	%	Cumulative %
0 - 2.0	99	15.05	15.05
2.1 - 3.0	551	83.74	98.78
3.1 - 10.0	8	1.22	100.00
> 10.0	0	0.00	100.00

Total Number of Valid Hours: 658

Total Number of Hours: 720

Wood Buffalo Environmental Association

Frequency Distribution

Methane (CH_4) - ppm

Mannix - September 2024

Concentration Ranges (ppm)	Wind Direction																
	N	NNE	NE	ENE	E	ESE	SE	SSE	S	SSW	SW	WSW	W	WNW	NW	NNW	**Totals**
0 - 2.0	2	15	2	0	1	1	3	12	1	3	11	17	28	2	0	1	99
2.1 - 3.0	19	15	6	9	10	17	70	122	44	17	22	43	50	39	29	39	551
3.1 - 10.0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	5	3	8
> 10.0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Totals	21	30	8	9	11	18	73	134	45	20	33	60	78	41	34	43	658

Total Number of Valid Hours: 658

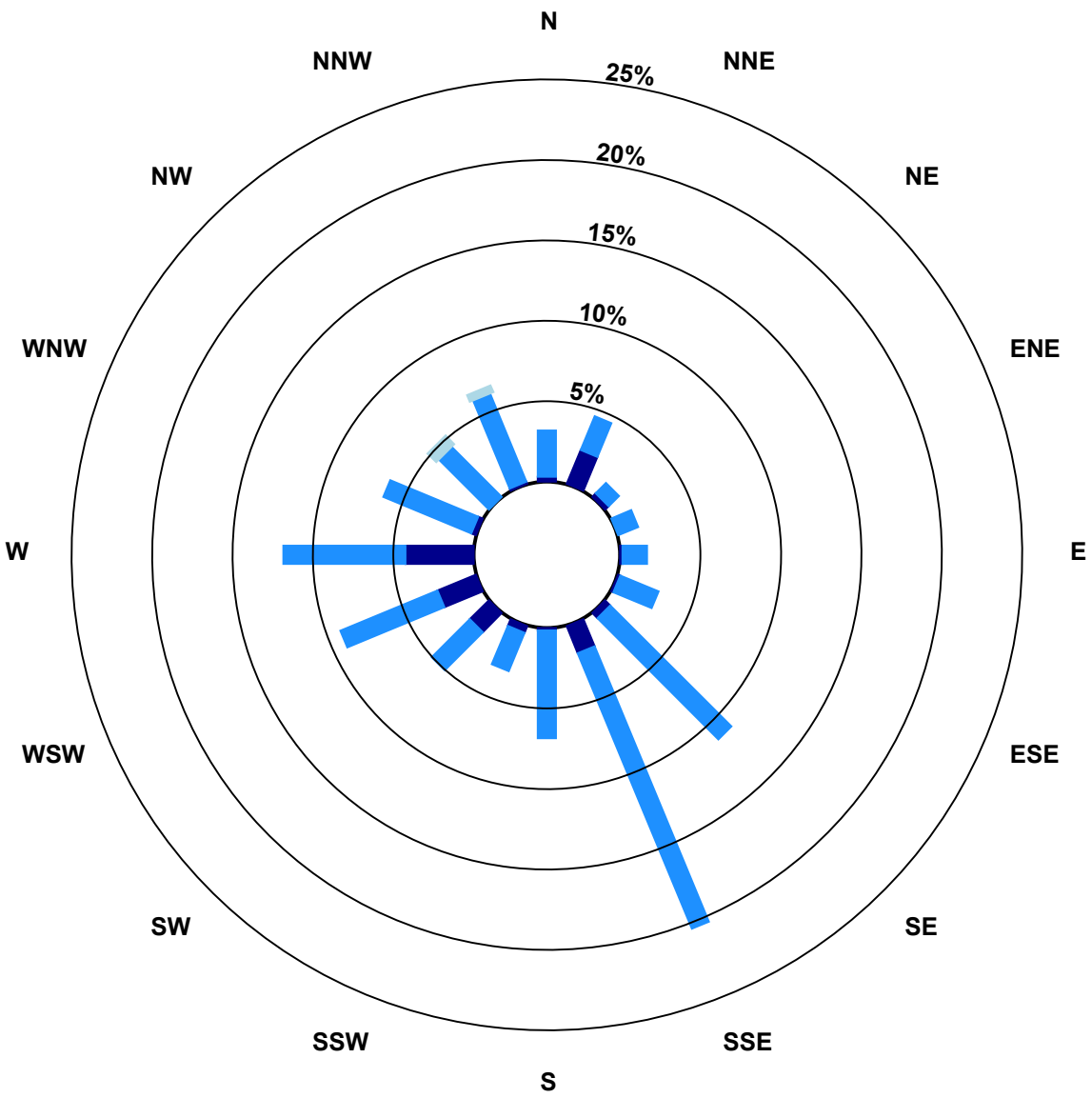
Total Number of Hours: 720

Wood Buffalo Environmental Association

Wind Rose Sep 2024

Methane (CH_4) - ppm

Mannix



Classes (ppm)

0 - 2.0

2.1 - 3.0

3.1 - 10.0

> 10.0

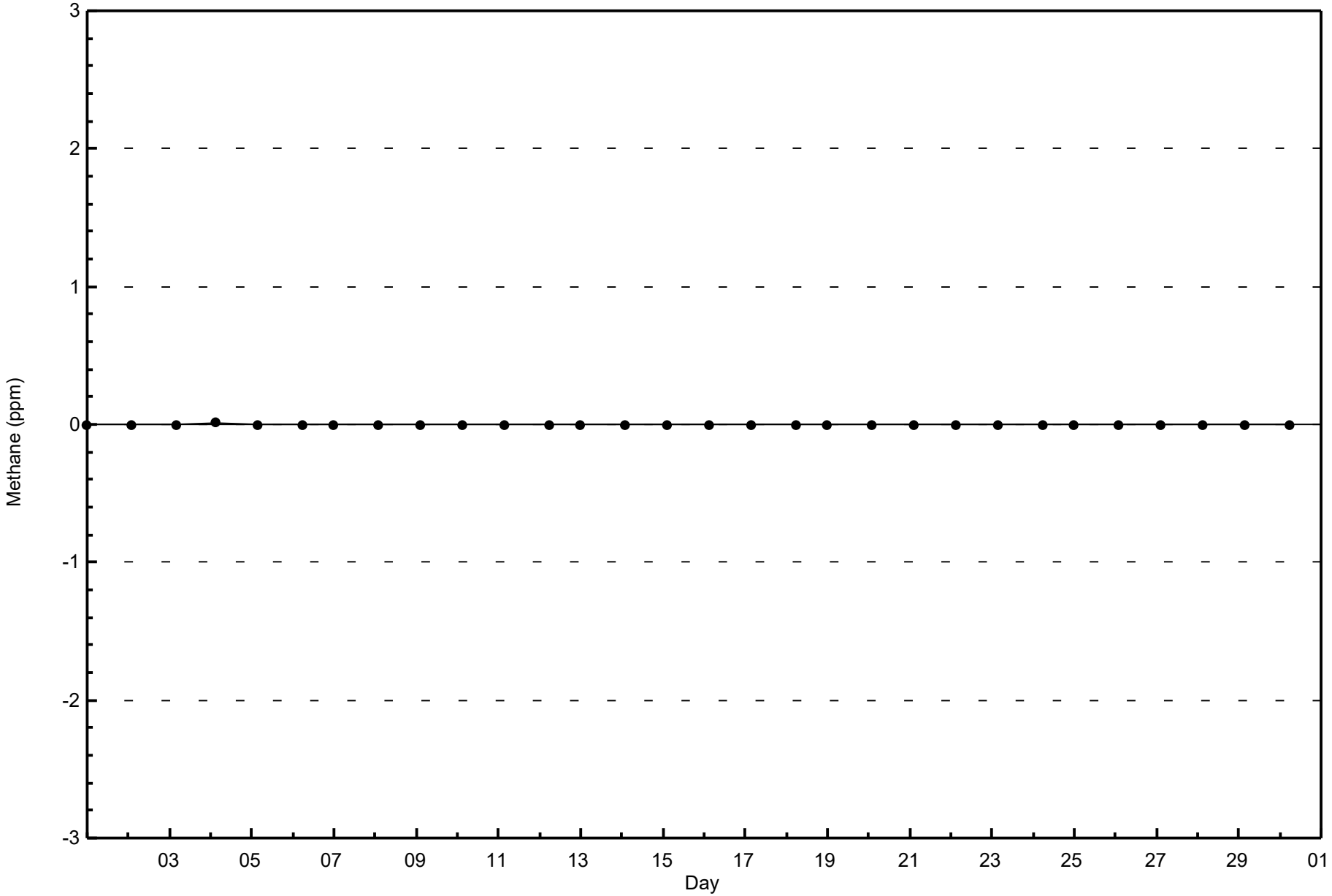
Total Number of Valid Hours: 658

Wood Buffalo Environmental Association

Zero Responses

Methane (CH_4) - ppm

Mannix - September 2024

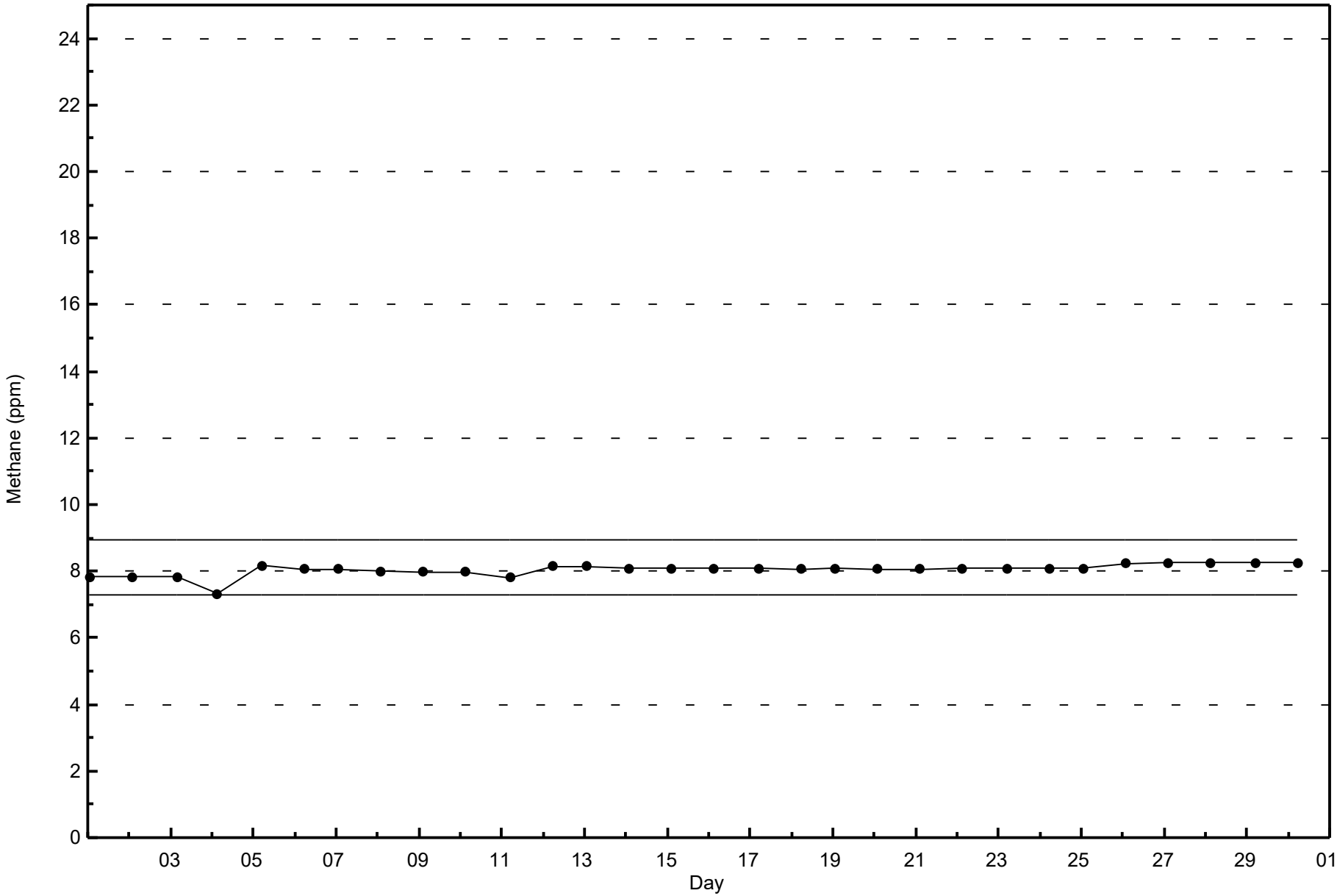


Wood Buffalo Environmental Association

Span Responses

Methane (CH_4) - ppm

Mannix - September 2024



Maximum Value: 31.0 C on Sep 2 15:00

Maximum Daily Average: 20.4 C on Sep 2

Minimum Value: 2.1 C on Sep 19 06:00

Minimum Daily Average: 7.0 C on Sep 30

Maximum Diurnal Average: 18.7 C at hour 15

Minimum Diurnal Average: 7.9 C at hour 6

Monthly Average: 13.00 C

Percentiles: P_1 = 2.7 P_{10} = 6.8 Q_1 = 9.3 Median = 12.4 Q_3 = 16.1 P_{90} = 20.3 P_{99} = 28.8

Hours in Service:	720
Hours of Data:	720
Hours of Missing Data:	0
Hours of Calibration:	0
Percent Operational Time:	100.0

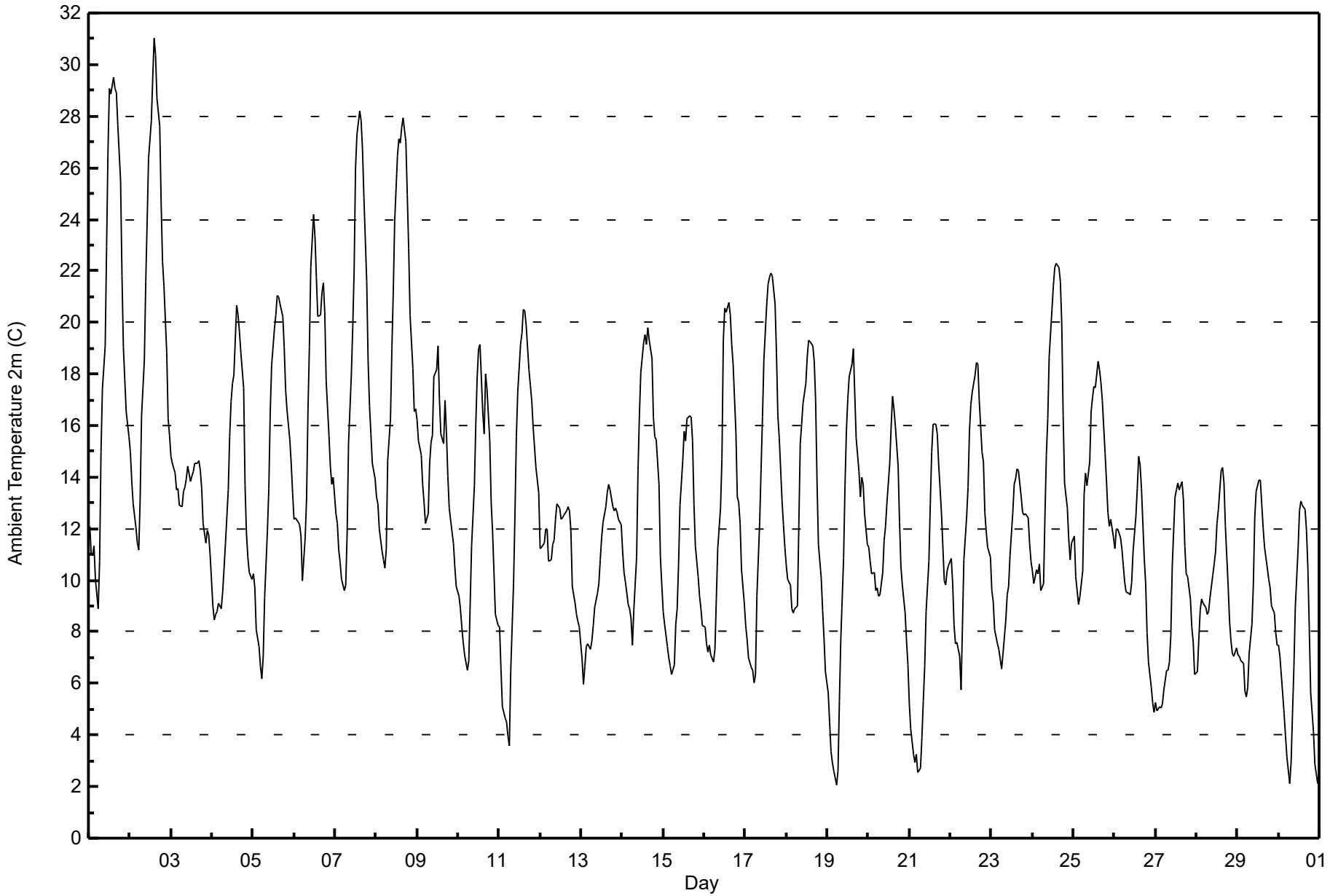
Day	Hourly Period Ending At (MST)																								Daily	Daily
	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24	Average	Maximum
1-Sep	12.1	11.0	10.9	11.3	10.0	8.9	10.7	15.0	17.4	19.1	22.9	26.7	29.1	28.9	29.5	29.1	28.9	27.7	25.5	21.8	19.0	17.8	16.5	15.6	19.4	29.5
2-Sep	15.0	13.8	13.0	12.0	11.5	11.2	13.2	16.4	18.5	21.6	23.9	26.4	27.8	29.5	31.0	30.4	28.7	27.6	24.6	22.3	21.4	18.8	16.3	15.6	20.4	31.0
3-Sep	14.8	14.6	14.2	13.5	13.6	12.9	12.9	13.5	13.6	14.0	14.4	13.8	14.1	14.2	14.5	14.6	14.6	14.3	13.5	12.2	11.4	11.9	11.8	11.0	13.5	14.8
4-Sep	9.0	8.4	8.7	8.8	9.1	8.9	9.6	10.5	11.5	13.5	15.6	16.9	17.6	17.9	20.7	20.3	19.6	18.8	17.5	13.7	11.8	10.9	10.3	10.0	13.3	20.7
5-Sep	10.2	9.7	8.1	7.4	6.7	6.2	7.0	9.3	11.9	13.6	16.5	18.3	19.7	20.3	21.0	21.0	20.7	20.2	19.0	17.4	16.6	15.5	14.5	13.4	14.4	21.0
6-Sep	12.3	12.4	12.2	12.2	11.7	10.0	11.7	13.2	16.6	19.0	22.1	24.2	23.3	21.7	20.2	20.3	21.2	21.5	20.4	17.8	15.6	14.4	13.7	14.0	16.7	24.2
7-Sep	12.6	12.2	11.2	10.7	10.1	9.6	9.8	11.8	15.3	18.0	19.8	22.0	26.0	27.3	28.2	27.8	26.7	24.9	21.6	18.5	16.8	15.7	14.6	13.9	17.7	28.2
8-Sep	13.2	13.0	12.0	11.1	10.8	10.5	11.2	14.6	16.3	19.0	21.2	23.9	26.5	27.1	27.0	27.6	27.9	27.0	24.9	22.9	20.3	18.2	16.5	16.7	19.1	27.9
9-Sep	16.2	15.4	14.8	13.7	13.0	12.2	12.6	14.5	15.4	15.6	17.9	18.2	19.1	17.0	15.7	15.3	17.0	15.7	14.0	12.8	11.9	11.4	10.5	9.7	14.6	19.1
10-Sep	9.4	8.9	8.2	7.6	7.1	6.5	6.9	9.1	11.3	13.7	16.1	17.9	19.0	19.2	16.5	15.7	18.0	17.4	15.4	13.0	11.9	10.3	8.7	8.3	12.3	19.2
11-Sep	8.2	6.5	5.1	4.7	4.5	3.9	3.6	6.5	9.9	12.5	15.6	17.3	19.1	19.6	20.5	20.4	19.9	18.1	17.6	17.0	16.0	14.4	13.9	13.4	12.8	20.5
12-Sep	11.2	11.3	11.4	12.0	12.0	10.7	10.8	11.4	11.6	12.4	13.0	12.8	12.4	12.4	12.6	12.7	12.9	12.7	11.9	9.8	9.1	8.7	8.4	8.2	11.3	13.0
13-Sep	6.9	6.0	6.6	7.4	7.5	7.3	7.6	8.2	9.0	9.5	9.9	10.8	11.7	12.3	12.9	13.4	13.7	13.5	12.8	12.7	12.8	12.7	12.4	12.1	10.4	13.7
14-Sep	11.1	10.3	9.9	9.1	8.9	8.5	7.5	8.8	10.9	14.3	16.4	18.1	19.2	19.5	19.2	19.8	19.3	18.6	16.3	15.5	15.5	13.7	10.9	9.8	13.8	19.8
15-Sep	8.8	8.3	7.4	7.0	6.7	6.4	6.7	8.3	8.9	10.6	12.9	14.7	15.8	15.4	16.3	16.4	16.3	15.4	13.0	11.4	10.2	9.4	8.9	8.3	11.0	16.4
16-Sep	8.2	7.6	7.2	7.5	7.1	6.9	7.3	9.3	11.2	12.8	14.7	19.3	20.6	20.4	20.8	20.3	19.1	18.4	15.8	13.2	13.0	12.2	10.4	9.1	13.0	20.8
17-Sep	8.3	7.7	7.0	6.6	6.5	6.0	6.3	9.4	12.3	14.3	16.3	18.5	20.7	21.5	21.7	21.9	21.8	20.7	18.8	16.4	15.5	13.1	12.2	11.3	14.0	21.9
18-Sep	10.6	10.0	9.8	8.9	8.7	8.9	9.0	12.1	15.3	16.1	16.9	17.6	18.7	19.3	19.3	19.1	18.5	17.0	13.8	11.4	10.1	8.8	7.8	6.5	13.1	19.3
19-Sep	5.7	4.5	3.4	2.9	2.6	2.1	2.6	5.3	7.7	10.8	13.7	15.8	17.0	17.9	18.4	19.0	17.2	15.5	14.2	13.2	14.0	13.7	12.6	11.4	10.9	19.0
20-Sep	11.3	10.7	10.2	10.3	9.6	9.7	9.4	9.4	10.3	11.6	12.1	13.0	14.6	16.0	17.2	16.7	16.0	14.4	12.3	10.5	9.8	8.7	7.7	6.7	11.6	17.2
21-Sep	5.2	4.2	3.2	2.9	3.3	2.5	2.7	3.9	5.3	6.7	8.8	10.7	12.9	15.0	16.1	16.0	15.7	14.5	13.6	12.6	10.0	9.8	10.4	10.6	9.0	16.1
22-Sep	10.8	9.9	8.2	7.6	7.6	7.0	5.8	8.2	10.8	12.5	13.6	15.8	16.8	17.3	17.9	18.5	18.4	17.0	15.0	14.6	12.6	11.9	11.3	10.9	12.5	18.5
23-Sep	9.6	9.2	8.1	7.5	7.3	7.0	6.6	7.1	8.5	9.5	9.8	11.0	12.6	13.7	13.9	14.3	14.3	13.2	12.6	12.5	12.6	12.4	11.4	10.7	10.6	14.3
24-Sep	10.3	9.9	10.4	10.2	10.6	9.6	9.9	12.5	14.8	16.3	18.6	20.5	21.4	22.1	22.3	22.1	21.6	19.9	16.4	13.8	12.8	11.6	10.8	11.4	15.0	22.3
25-Sep	11.7	10.2	9.6	9.1	9.4	10.4	13.4	14.2	13.7	14.6	16.6	17.1	17.5	17.5	18.5	18.2	17.7	17.0	14.9	13.9	12.7	12.1	12.4	11.7	13.9	18.5
26-Sep	11.2	12.0	12.0	11.7	11.2	10.6	9.9	9.5	9.5	9.4	9.9	11.1	12.5	13.6	14.8	14.5	13.6	10.9	9.9	8.0	6.8	5.9	5.3	4.9	10.4	14.8
27-Sep	5.2	4.9	5.1	5.0	5.2	5.8	6.5	6.5	6.8	7.9	10.5	13.3	13.5	13.8	13.5	13.8	13.1	11.3	10.3	10.1	9.3	8.2	7.6	6.3	8.9	13.8
28-Sep	6.5	7.7	8.8	9.3	9.1	9.0	8.7	8.8	9.3	10.2	10.6	11.1	12.2	12.7	14.3	14.4	13.8	12.1	9.8	8.4	7.6	7.1	7.1	7.4	9.8	14.4
29-Sep	7.1	7.0	6.9	6.8	5.7	5.5	5.9	7.2	8.3	9.8	12.4	13.4	13.9	13.9	13.0	12.0	11.3	10.4	10.0	9.7	9.0	8.7	8.0	7.5	9.3	13.9
30-Sep	7.5	7.1	5.6	4.8	4.0	3.1	2.1	3.0	4.8	6.6	9.0	11.2	12.7	13.1	12.9	12.8	11.9	10.5	8.1	5.6	4.1	2.9	2.5	2.1	7.0	13.1
	10.0	9.5	9.0	8.7	8.4	7.9	8.3	9.9	11.6	13.2	15.1	16.7	17.9	18.3	18.7	18.6	18.3	17.2	15.4	13.8	12.7	11.7	10.8	10.3	Diurnal Average	
	16.2	15.4	14.8	13.7	13.6	12.9	13.4	16.4	18.5	21.6	23.9	26.7	29.1	29.5	31.0	30.4	28.9	27.7	25.5	22.9	21.4	18.8	16.5	16.7	Diurnal Maximum	

Wood Buffalo Environmental Association

Hourly Averages

Ambient Temperature 2m (AT2) - C

Mannix - September 2024



Concentration Ranges (C)	Number of Hours	%	Cumulative %
-50 - -20	0	0.00	0.00
-20 - 0	0	0.00	0.00
0 - 10	223	30.97	30.97
10 - 20	422	58.61	89.58
> 20	75	10.42	100.00

Total Number of Valid Hours: 720

Total Number of Hours: 720

Maximum Value: 30.4 C on Sep 2 16:00
Maximum Daily Average: 21.3 C on Sep 2

Minimum Value: 3.1 C on Sep 30 08:00
Minimum Daily Average: 7.6 C on Sep 30
Maximum Diurnal Average: 18.4 C at hour 17
Minimum Diurnal Average: 9.1 C at hour 7
Monthly Average: 13.73 C
Percentiles: P_1 = 4.1 P_{10} = 8.0 Q_1 = 10.2 Median = 13.0 Q_3 = 16.6 P_{90} = 20.3 P_{99} = 28.5

Hours in Service:	720
Hours of Data:	720
Hours of Missing Data:	0
Hours of Calibration:	0
Percent Operational Time:	100.0

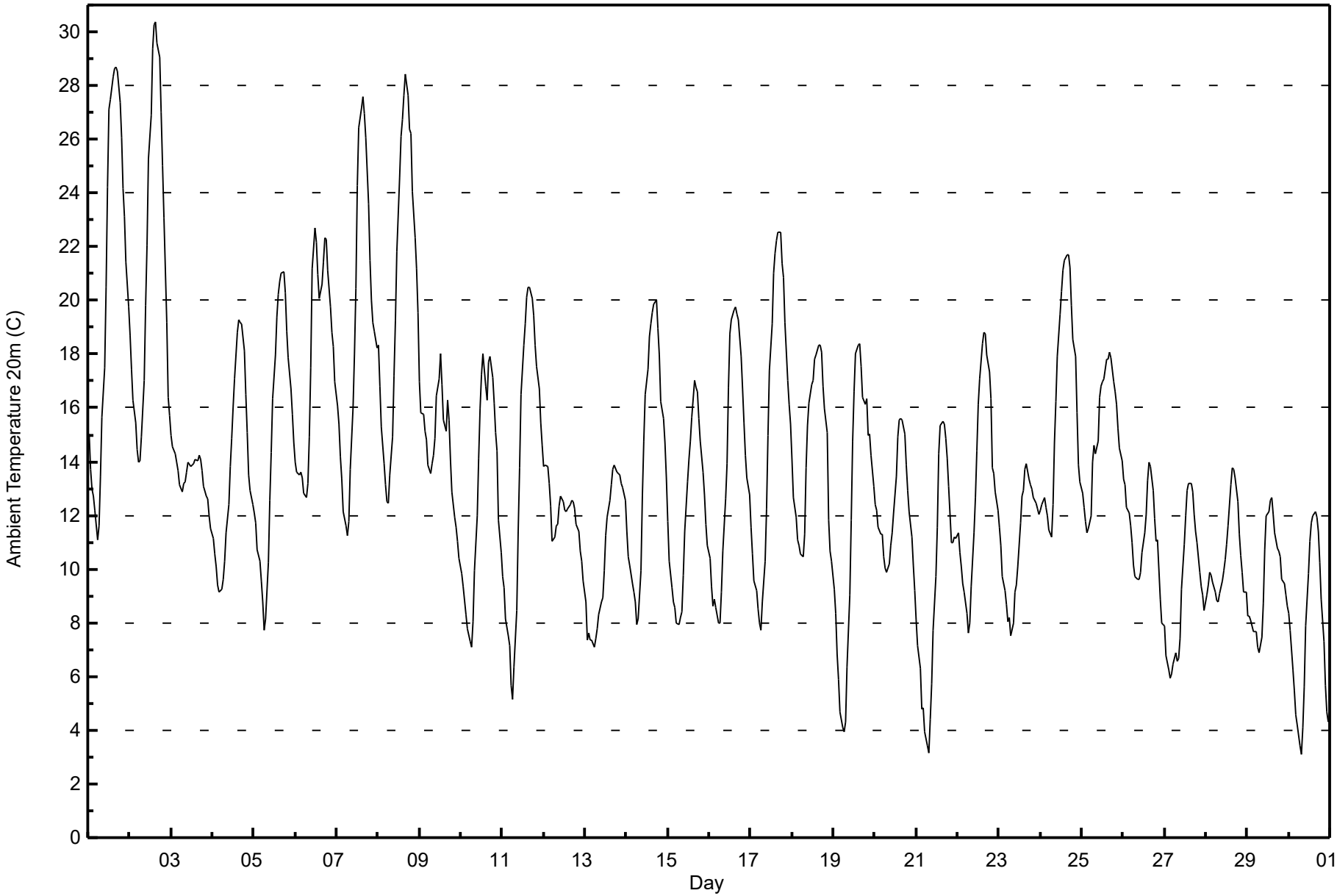
Day	Hourly Period Ending At (MST)																								Daily	Daily
	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24	Average	Maximum
1-Sep	15.0	13.7	13.0	12.7	12.2	11.1	11.6	13.5	15.7	17.5	20.5	24.2	27.1	27.5	28.3	28.6	28.7	28.5	27.4	26.1	24.1	23.1	21.4	19.7	20.5	28.7
2-Sep	18.7	17.5	16.3	15.5	14.4	14.0	14.0	14.9	17.0	19.8	22.1	25.3	26.9	29.4	30.3	30.4	29.6	29.1	27.0	25.0	23.1	19.2	16.4	15.7	21.3	30.4
3-Sep	15.0	14.6	14.3	14.0	13.7	13.2	12.9	13.2	13.3	13.6	14.0	13.8	13.9	13.9	14.1	14.0	14.2	14.1	13.7	13.1	12.7	12.6	12.0	11.5	13.5	15.0
4-Sep	11.1	10.6	10.1	9.4	9.2	9.2	9.6	10.3	11.3	12.4	13.8	14.9	16.0	17.1	18.8	19.3	19.2	19.1	18.1	16.5	15.1	13.5	12.9	12.4	13.7	19.3
5-Sep	12.1	11.7	10.7	10.3	9.6	8.8	7.7	8.1	10.3	12.5	14.4	16.3	18.0	19.4	20.2	20.7	21.0	21.0	20.3	18.9	17.9	16.7	15.8	14.7	14.9	21.0
6-Sep	14.0	13.6	13.5	13.6	13.4	12.8	12.7	13.2	14.9	17.5	21.2	22.7	22.2	21.0	20.1	20.6	21.4	22.3	22.3	21.1	19.8	18.8	18.3	17.0	17.8	22.7
7-Sep	16.1	15.4	14.2	13.3	12.2	11.6	11.3	11.8	13.7	16.0	18.0	20.4	24.3	26.4	27.2	27.6	27.0	26.1	23.6	21.5	20.0	19.2	18.8	18.3	18.9	27.6
8-Sep	18.3	16.8	15.3	13.9	13.1	12.5	12.5	13.5	14.9	17.2	19.2	21.8	24.6	26.1	26.7	27.6	28.4	27.6	26.4	26.2	24.1	22.4	21.2	19.5	20.4	28.4
9-Sep	17.0	15.8	15.8	15.2	14.8	13.9	13.6	13.9	14.2	14.9	16.5	17.1	18.0	16.9	15.5	15.1	16.3	15.6	14.1	12.9	11.9	11.5	11.1	10.4	14.7	18.0
10-Sep	9.8	9.3	8.8	8.3	7.8	7.3	7.1	8.1	9.9	12.0	14.1	16.0	17.2	18.0	16.8	16.3	17.7	17.9	17.1	16.2	15.1	14.4	11.8	10.6	12.8	18.0
11-Sep	9.7	9.3	8.2	7.5	7.1	5.7	5.2	6.3	8.5	11.4	13.8	16.5	18.3	19.1	20.1	20.5	20.5	20.1	19.4	18.4	17.5	16.7	15.5	14.6	13.7	20.5
12-Sep	13.8	13.9	13.8	13.2	12.3	11.0	11.2	11.6	11.6	12.4	12.7	12.5	12.2	12.1	12.2	12.4	12.6	12.5	12.3	11.7	11.4	10.7	10.3	9.6	12.1	13.9
13-Sep	8.8	7.3	7.6	7.4	7.4	7.1	7.4	7.8	8.3	8.8	8.9	9.9	11.2	11.9	12.5	13.1	13.7	13.9	13.6	13.5	13.5	13.2	13.0	12.5	10.5	13.9
14-Sep	11.4	10.4	10.1	9.4	9.1	8.8	7.9	8.2	9.9	12.7	14.8	16.5	17.5	18.7	19.1	19.6	19.9	20.0	19.0	18.0	16.2	15.6	14.7	13.4	14.2	20.0
15-Sep	11.8	10.3	9.3	8.8	8.5	8.0	7.9	8.2	8.4	9.8	11.4	13.2	14.1	14.8	15.6	17.0	16.8	16.6	15.6	14.8	13.6	12.8	11.6	10.9	12.1	17.0
16-Sep	10.4	9.4	8.6	8.9	8.6	8.0	8.0	9.1	10.7	12.6	13.9	16.8	18.7	19.3	19.7	19.7	19.5	19.3	17.9	16.7	15.5	14.3	13.4	12.8	13.8	19.7
17-Sep	11.6	10.6	9.6	9.2	8.5	8.0	7.7	8.8	10.3	12.2	15.0	17.4	19.1	21.0	21.7	22.2	22.6	22.6	21.4	20.8	19.2	17.0	16.1	15.4	15.3	22.6
18-Sep	14.1	12.7	11.9	11.1	10.9	10.5	10.5	11.3	13.7	15.3	16.2	16.9	17.1	17.8	18.0	18.3	18.3	18.1	16.8	16.0	15.1	11.8	10.7	10.3	14.3	18.3
19-Sep	9.2	8.4	6.8	5.9	4.7	4.1	3.9	4.3	6.4	9.1	11.8	14.7	16.6	18.0	18.3	18.4	17.5	16.4	16.1	16.3	15.0	15.0	14.3	13.1	11.9	18.4
20-Sep	12.4	12.2	11.5	11.3	11.3	10.5	10.1	9.9	10.2	10.9	11.3	12.1	13.4	14.9	15.6	15.6	15.6	15.0	13.9	12.9	12.1	11.2	10.2	9.2	12.2	15.6
21-Sep	8.1	7.2	6.3	4.8	4.8	4.0	3.4	3.2	4.4	5.7	7.7	9.7	11.6	14.3	15.3	15.5	15.4	14.9	14.1	13.1	11.0	11.0	11.2	11.1	9.5	15.5
22-Sep	11.3	10.6	10.1	9.4	9.2	8.3	7.6	8.0	9.4	11.3	12.7	14.4	16.1	17.1	18.4	18.8	18.8	18.0	17.3	16.3	13.8	13.6	12.9	12.2	13.2	18.8
23-Sep	11.6	10.9	9.7	9.2	8.7	8.1	8.2	7.5	8.0	9.1	9.4	10.1	11.7	12.7	12.9	13.7	13.9	13.3	13.1	13.0	12.7	12.5	12.3	12.1	11.0	13.9
24-Sep	12.2	12.4	12.7	12.3	12.0	11.5	11.2	12.4	14.7	16.2	17.9	19.5	20.3	21.1	21.5	21.7	21.7	21.2	19.8	18.5	17.9	15.8	13.9	13.3	16.3	21.7
25-Sep	12.8	12.3	11.8	11.3	11.5	12.0	14.0	14.6	14.3	14.7	16.4	16.8	17.0	17.1	17.8	17.8	18.1	17.9	17.0	16.6	16.1	15.2	14.5	14.1	15.1	18.1
26-Sep	13.4	13.1	12.3	12.1	11.6	11.0	10.1	9.7	9.6	9.6	9.9	10.6	11.3	12.0	13.3	14.0	13.8	12.9	11.9	11.0	11.1	8.9	8.0	7.9	11.2	14.0
27-Sep	7.9	6.8	6.3	6.0	6.1	6.4	6.9	6.6	6.7	7.4	9.2	10.9	12.0	12.9	13.2	13.2	12.9	12.0	11.4	11.0	9.9	9.3	9.0	8.5	9.3	13.2
28-Sep	9.1	9.4	9.9	9.8	9.5	9.2	8.9	8.8	9.1	9.6	10.0	10.3	10.9	11.6	13.1	13.8	13.7	13.4	12.5	11.3	10.5	9.9	9.2	9.1	10.5	13.8
29-Sep	8.3	8.3	8.1	7.7	7.7	7.7	7.1	6.9	7.5	8.7	10.7	12.0	12.2	12.6	12.6	12.0	11.4	10.8	10.7	10.4	9.6	9.5	9.0	8.6	9.6	12.6
30-Sep	8.4	7.7	6.3	5.5	4.6	4.2	3.4	3.1	4.1	5.6	7.9	9.8	11.0	11.7	12.0	12.2	11.9	11.4	10.2	8.9	7.3	5.7	4.7	4.3	7.6	12.2
	12.1	11.4	10.8	10.2	9.8	9.3	9.1	9.6	10.7	12.2	13.8	15.4	16.7	17.6	18.0	18.3	18.4	18.0	17.1	16.2	15.1	14.0	13.1	12.4	Diurnal Average	
	18.7	17.5	16.3	15.5	14.8	14.0	14.0	14.9	17.0	19.8	22.1	25.3	27.1	29.4	30.3	30.4	29.6	29.1	27.4	26.2	24.1	23.1	21.4	19.7	Diurnal Maximum	

Wood Buffalo Environmental Association

Hourly Averages

Ambient Temperature 20m (AT20) - C

Mannix - September 2024



Concentration Ranges (C)	Number of Hours	%	Cumulative %
-50 - -20	0	0.00	0.00
-20 - 0	0	0.00	0.00
0 - 10	172	23.89	23.89
10 - 20	469	65.14	89.03
> 20	79	10.97	100.00

Total Number of Valid Hours: 720

Total Number of Hours: 720

Maximum Value: 30.0 C on Sep 2 16:00
Maximum Daily Average: 21.7 C on Sep 2

Minimum Value: 2.9 C on Sep 30 08:00
Minimum Daily Average: 7.5 C on Sep 30
Maximum Diurnal Average: 18.1 C at hour 17
Minimum Diurnal Average: 9.4 C at hour 7
Monthly Average: 13.77 C
Percentiles: P_1 = 4.4 P_{10} = 8.3 Q_1 = 10.2 Median = 13.1 Q_3 = 16.6 P_{90} = 20.1 P_{99} = 28.2

Hours in Service:	720
Hours of Data:	720
Hours of Missing Data:	0
Hours of Calibration:	0
Percent Operational Time:	100.0

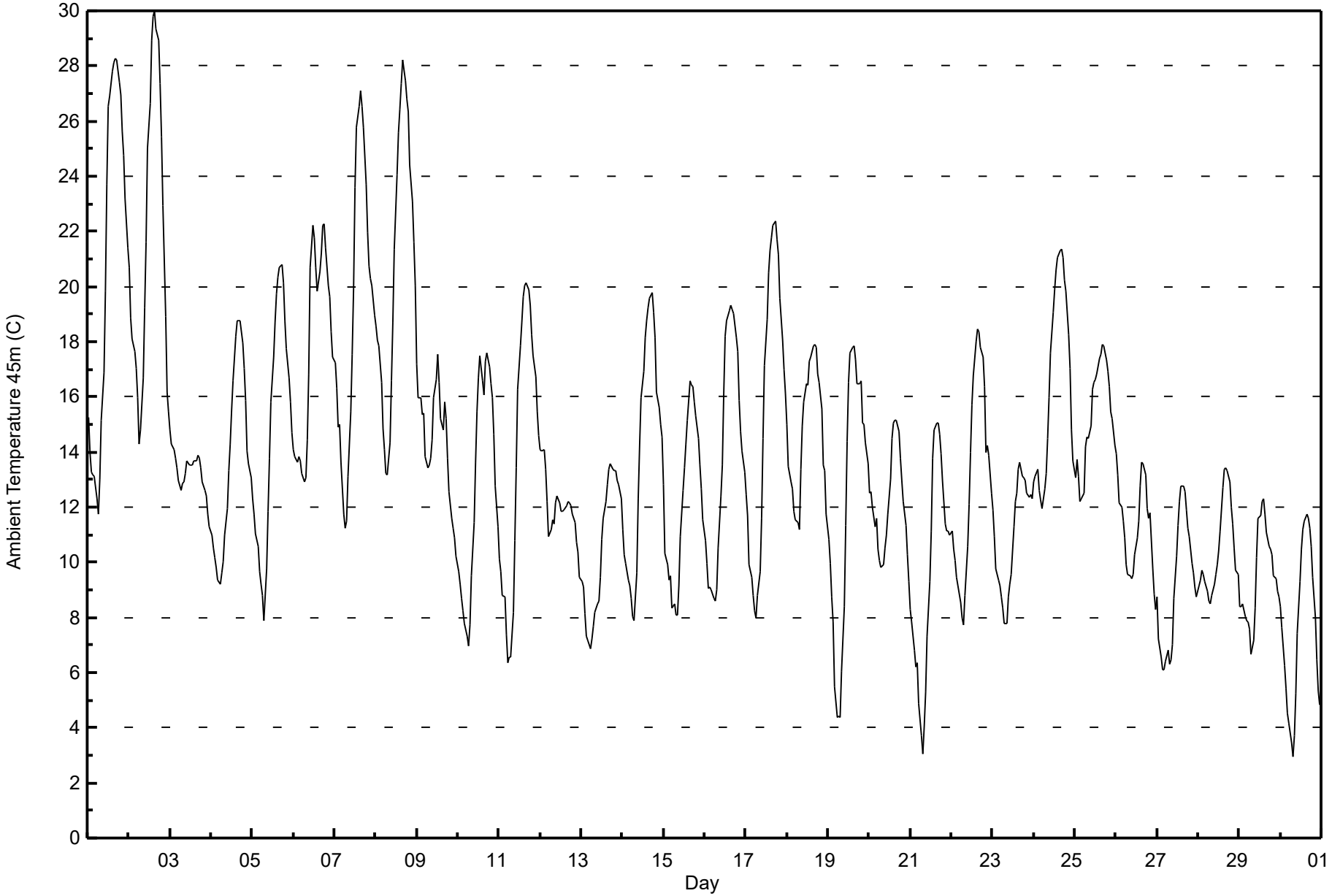
Day	Hourly Period Ending At (MST)																								Daily	Daily
	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24	Average	Maximum
1-Sep	15.3	14.0	13.3	13.2	13.1	12.3	11.7	13.0	15.1	16.9	19.8	23.7	26.5	26.9	27.8	28.1	28.3	28.2	27.4	27.0	25.6	24.8	23.2	21.4	20.7	28.3
2-Sep	20.7	18.9	18.1	17.7	17.0	16.0	14.3	14.8	16.7	19.2	21.6	25.0	26.6	28.9	29.8	30.0	29.3	28.9	27.3	25.4	22.9	18.9	16.2	15.4	21.7	30.0
3-Sep	14.8	14.3	14.1	13.8	13.4	13.0	12.6	12.9	12.9	13.2	13.7	13.5	13.5	13.5	13.7	13.7	13.9	13.8	13.4	12.9	12.6	12.4	11.8	11.3	13.3	14.8
4-Sep	11.0	10.5	10.2	9.8	9.3	9.2	9.6	10.0	11.0	11.9	13.3	14.3	15.5	16.6	18.2	18.8	18.8	18.8	17.9	17.1	15.8	14.1	13.6	13.0	13.7	18.8
5-Sep	12.3	11.8	11.0	10.6	9.7	9.2	8.8	7.9	9.7	11.8	13.8	15.8	17.4	18.7	19.7	20.4	20.7	20.8	20.1	18.8	17.8	16.7	15.8	14.7	14.7	20.8
6-Sep	14.1	13.8	13.6	13.9	13.7	13.2	12.9	13.1	14.4	16.8	20.7	22.2	21.8	20.7	19.9	20.5	21.2	22.2	22.3	21.4	20.0	19.6	18.4	17.5	17.8	22.3
7-Sep	17.2	16.3	14.9	15.0	13.6	11.8	11.3	11.5	13.1	15.5	17.6	19.9	23.6	25.8	26.5	27.1	26.5	25.8	23.7	22.0	20.7	20.3	20.0	19.0	19.1	27.1
8-Sep	18.5	18.1	17.8	16.5	14.8	14.1	13.2	13.2	14.4	16.6	18.7	21.4	24.0	25.6	26.5	27.4	28.2	27.4	26.8	26.3	24.4	23.1	21.6	20.0	20.8	28.2
9-Sep	17.2	16.0	16.0	15.4	15.4	13.8	13.4	13.5	13.8	14.4	16.0	16.6	17.6	16.5	15.2	14.8	15.8	15.2	13.8	12.6	11.6	11.3	10.9	10.2	14.5	17.6
10-Sep	9.6	9.2	8.7	8.2	7.8	7.3	7.0	7.7	9.5	11.5	13.6	15.4	16.7	17.5	16.6	16.1	17.3	17.6	17.1	16.5	16.0	14.6	12.8	11.3	12.7	17.6
11-Sep	10.1	9.7	8.8	8.8	7.4	6.4	6.6	6.6	8.2	10.8	13.4	16.2	17.8	18.7	19.6	20.0	20.1	19.9	19.3	18.3	17.5	16.7	15.4	14.6	13.8	20.1
12-Sep	14.1	14.0	14.1	13.4	12.2	10.9	11.2	11.5	11.4	12.2	12.4	12.2	11.9	11.8	11.9	12.1	12.2	12.2	12.0	11.7	11.5	10.7	10.4	9.5	12.0	14.1
13-Sep	9.3	9.1	8.1	7.3	7.2	6.9	7.2	7.7	8.2	8.5	8.6	9.5	10.9	11.6	12.2	12.8	13.4	13.6	13.4	13.3	13.3	13.0	12.8	12.3	10.4	13.6
14-Sep	11.2	10.2	9.9	9.3	9.1	8.7	8.1	7.9	9.6	12.3	14.3	16.0	16.9	18.1	18.8	19.2	19.6	19.8	19.1	18.2	16.1	15.6	15.0	14.6	14.1	19.8
15-Sep	12.8	10.3	9.9	9.4	9.5	8.3	8.5	8.1	8.1	9.2	10.9	12.6	13.4	14.3	15.2	16.6	16.4	16.4	15.8	15.3	14.5	13.5	12.6	11.5	12.2	16.6
16-Sep	10.8	10.0	9.1	9.1	9.0	8.7	8.6	9.0	10.5	12.4	13.5	16.1	18.2	18.8	19.1	19.3	19.2	19.0	18.1	17.7	15.8	14.8	14.0	13.3	13.9	19.3
17-Sep	12.5	11.7	9.9	9.5	8.8	8.3	8.0	8.8	9.7	11.6	14.5	17.1	18.8	20.5	21.3	21.8	22.2	22.4	21.7	21.2	19.6	18.1	17.0	16.1	15.5	22.4
18-Sep	15.0	13.5	12.9	12.7	11.8	11.5	11.4	11.2	13.4	14.9	15.8	16.5	16.4	17.3	17.4	17.8	17.9	17.8	16.8	16.5	15.6	13.5	13.3	11.7	14.7	17.9
19-Sep	10.9	10.0	8.8	7.8	5.5	4.4	4.4	4.4	6.0	8.4	11.3	14.4	16.5	17.6	17.8	17.9	17.3	16.5	16.5	16.6	15.0	15.0	14.4	13.6	12.1	17.9
20-Sep	12.5	12.6	12.0	11.3	11.6	10.5	10.1	9.8	9.9	10.5	11.0	11.7	13.0	14.5	15.1	15.1	15.2	14.7	13.8	13.0	12.2	11.3	10.3	9.3	12.1	15.2
21-Sep	8.3	7.8	6.8	6.2	6.3	4.9	3.7	3.1	4.1	5.3	7.3	9.3	11.2	13.8	14.8	15.0	15.1	14.6	13.9	13.0	11.4	11.1	11.1	11.0	9.5	15.1
22-Sep	11.2	10.5	10.1	9.4	9.1	8.5	8.0	7.7	8.8	10.6	12.1	14.0	15.7	16.8	18.0	18.5	18.4	17.8	17.5	16.4	14.0	14.2	13.9	12.5	13.1	18.5
23-Sep	11.9	10.9	9.8	9.4	9.1	8.7	8.4	7.8	7.8	8.8	9.2	9.6	11.3	12.2	12.5	13.3	13.6	13.1	13.1	12.9	12.5	12.3	12.4	12.3	11.0	13.6
24-Sep	12.9	13.1	13.4	12.6	12.3	12.0	12.7	13.2	14.5	16.0	17.6	19.1	19.9	20.6	21.1	21.3	21.4	21.1	20.2	19.8	18.3	17.0	14.8	13.7	16.6	21.4
25-Sep	13.1	13.7	13.1	12.2	12.3	12.5	14.2	14.5	14.5	15.0	16.3	16.5	16.6	16.8	17.4	17.6	17.9	17.8	17.4	16.9	16.4	15.5	15.2	14.2	15.3	17.9
26-Sep	13.9	13.2	12.2	12.0	11.5	10.9	9.9	9.6	9.5	9.4	9.6	10.3	10.9	11.5	12.8	13.6	13.6	13.2	12.0	11.6	11.8	9.8	8.9	8.3	11.2	13.9
27-Sep	8.7	7.2	6.5	6.1	6.1	6.4	6.8	6.3	6.4	7.0	8.7	10.2	11.3	12.2	12.7	12.7	12.6	11.9	11.3	10.9	10.0	9.6	9.1	8.7	9.2	12.7
28-Sep	9.2	9.3	9.7	9.6	9.3	8.9	8.6	8.5	8.8	9.2	9.6	9.9	10.4	11.1	12.7	13.4	13.4	13.3	12.9	12.0	11.4	10.5	9.7	9.5	10.5	13.4
29-Sep	8.4	8.4	8.5	8.0	7.9	7.8	7.6	6.7	7.2	8.3	10.2	11.6	11.7	12.2	12.3	11.7	11.1	10.6	10.5	10.3	9.5	9.4	8.9	8.7	9.5	12.3
30-Sep	8.4	7.6	6.3	5.5	4.5	4.2	3.5	2.9	3.7	5.2	7.4	9.3	10.5	11.2	11.5	11.7	11.6	11.2	10.6	9.4	8.0	6.4	5.3	4.8	7.5	11.7
	12.5	11.9	11.2	10.8	10.3	9.6	9.4	9.4	10.4	11.8	13.4	15.0	16.2	17.1	17.6	17.9	18.1	17.9	17.2	16.5	15.4	14.5	13.6	12.8	Diurnal Average	
	20.7	18.9	18.1	17.7	17.0	16.0	14.3	14.8	16.7	19.2	21.6	25.0	26.6	28.9	29.8	30.0	29.3	28.9	27.4	27.0	25.6	24.8	23.2	21.4	Diurnal Maximum	

Wood Buffalo Environmental Association

Hourly Averages

Ambient Temperature 45m (AT45) - C

Mannix - September 2024



Concentration Ranges (C)	Number of Hours	%	Cumulative %
-50 - -20	0	0.00	0.00
-20 - 0	0	0.00	0.00
0 - 10	176	24.44	24.44
10 - 20	466	64.72	89.17
> 20	78	10.83	100.00

Total Number of Valid Hours: 720

Total Number of Hours: 720

Maximum Value: 29.7 C on Sep 2 16:00
Maximum Daily Average: 22.1 C on Sep 2

Minimum Value: 2.9 C on Sep 30 08:00
Minimum Daily Average: 7.5 C on Sep 30
Maximum Diurnal Average: 17.8 C at hour 17
Minimum Diurnal Average: 9.8 C at hour 8
Monthly Average: 13.88 C
Percentiles: P_1 = 4.9 P_{10} = 8.4 Q_1 = 10.3 Median = 13.2 Q_3 = 16.6 P_{90} = 20.3 P_{99} = 27.9

Hours in Service:	720
Hours of Data:	720
Hours of Missing Data:	0
Hours of Calibration:	0
Percent Operational Time:	100.0

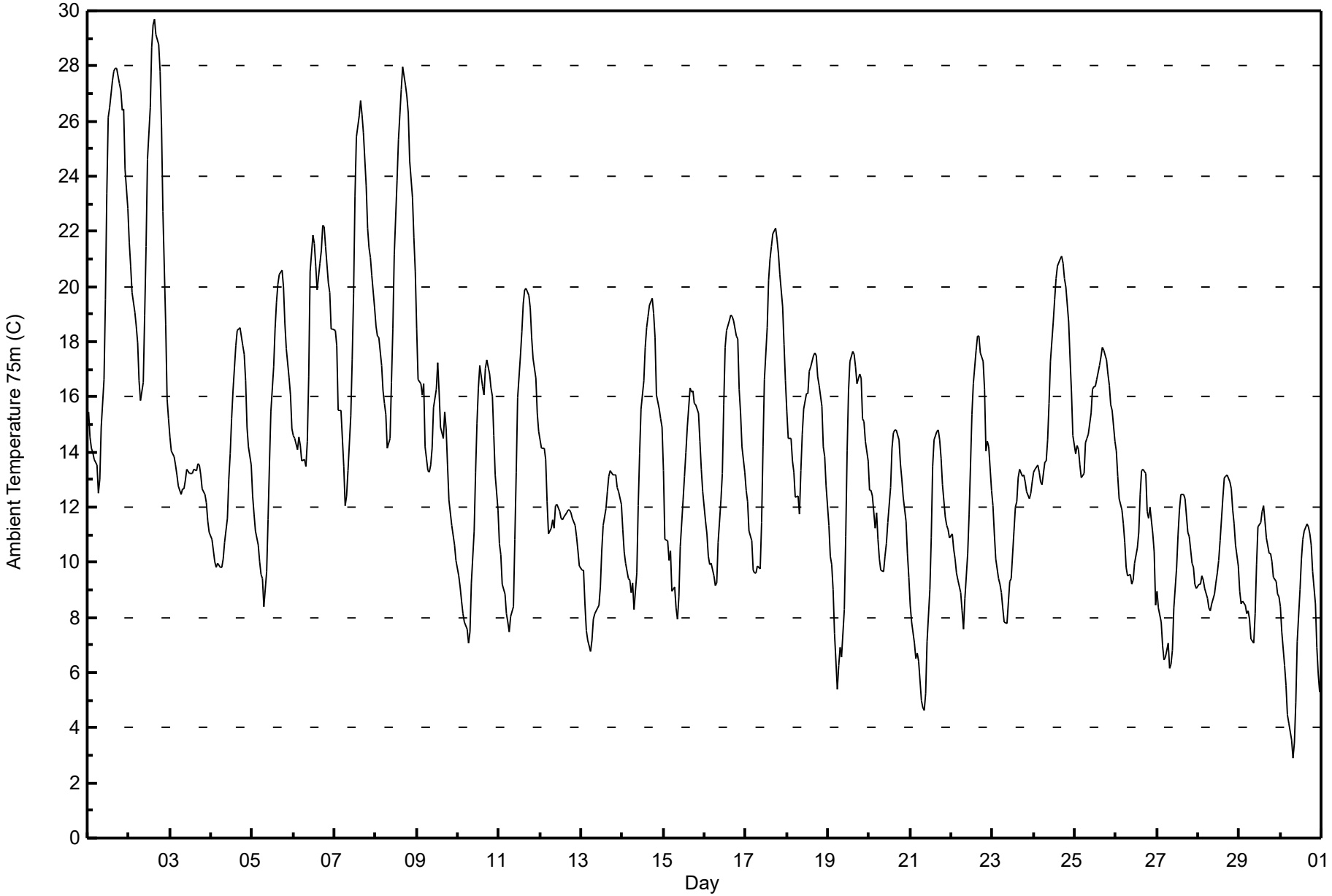
Day	Hourly Period Ending At (MST)																								Daily	Daily
	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24	Average	Maximum
1-Sep	15.4	14.5	14.1	14.0	13.7	13.5	12.5	13.0	14.9	16.6	19.5	23.4	26.1	26.5	27.5	27.8	27.9	27.9	27.3	27.1	26.4	26.4	24.3	22.8	21.0	27.9
2-Sep	21.6	20.8	19.8	19.1	18.5	17.9	16.6	15.9	16.5	19.0	21.5	24.6	26.5	28.7	29.5	29.7	29.1	28.8	27.8	25.8	22.7	18.6	15.9	15.2	22.1	29.7
3-Sep	14.5	14.0	13.8	13.5	13.2	12.8	12.4	12.6	12.7	13.0	13.4	13.2	13.2	13.2	13.4	13.3	13.6	13.5	13.2	12.7	12.5	12.1	11.5	11.1	13.0	14.5
4-Sep	10.8	10.4	10.0	9.8	10.0	9.8	9.8	10.1	10.7	11.6	13.0	13.9	15.2	16.2	17.9	18.4	18.4	18.5	17.8	17.5	16.6	14.9	14.2	13.5	13.7	18.5
5-Sep	12.4	11.7	11.1	10.6	10.0	9.6	9.4	8.4	9.7	11.5	13.6	15.4	17.1	18.4	19.4	20.1	20.4	20.6	20.0	18.7	17.7	16.7	16.1	14.9	14.7	20.6
6-Sep	14.6	14.5	14.1	14.5	14.2	13.7	13.7	13.5	14.4	16.7	20.6	21.9	21.6	20.8	19.9	20.8	21.3	22.2	22.2	21.5	20.1	19.8	18.4	18.5	18.1	22.2
7-Sep	18.4	17.9	15.5	15.5	15.5	13.5	12.0	12.4	13.3	15.3	17.3	19.7	23.3	25.4	26.2	26.7	26.2	25.6	23.7	22.1	21.4	21.1	20.4	19.2	19.5	26.7
8-Sep	18.6	18.2	18.1	17.1	16.2	15.7	15.3	14.1	14.5	16.5	18.5	21.1	23.8	25.3	26.3	27.1	28.0	27.3	26.9	26.3	24.6	23.3	21.8	20.6	21.1	28.0
9-Sep	18.5	16.6	16.5	16.1	16.5	14.2	13.3	13.3	13.5	14.1	15.6	16.3	17.2	16.2	14.9	14.5	15.4	14.9	13.5	12.3	11.3	11.0	10.6	10.1	14.4	18.5
10-Sep	9.5	9.1	8.6	8.1	7.8	7.6	7.0	7.5	9.2	11.1	13.3	15.1	16.3	17.2	16.4	16.1	17.0	17.3	16.9	16.3	16.0	14.6	13.2	11.9	12.6	17.3
11-Sep	10.7	10.3	9.2	8.8	8.2	7.9	7.5	8.0	8.4	10.8	13.3	15.9	17.5	18.4	19.4	19.9	19.9	19.7	19.2	18.1	17.4	16.7	15.4	14.8	14.0	19.9
12-Sep	14.5	14.2	14.1	13.8	12.2	11.0	11.3	11.5	11.2	12.1	12.1	11.9	11.6	11.6	11.6	11.8	11.9	11.9	11.8	11.6	11.3	10.9	10.4	9.9	11.9	14.5
13-Sep	9.7	9.7	8.5	7.5	7.2	6.7	7.2	7.9	8.1	8.4	8.4	9.1	10.4	11.3	12.0	12.6	13.1	13.3	13.2	13.2	13.2	12.7	12.6	12.1	10.3	13.3
14-Sep	11.2	10.4	10.0	9.4	9.3	8.9	9.2	8.3	9.6	12.0	13.9	15.6	16.6	17.8	18.5	18.9	19.3	19.6	19.0	18.2	16.1	15.6	15.2	14.9	14.1	19.6
15-Sep	13.3	10.8	10.8	10.1	10.4	9.0	9.1	8.3	7.9	8.8	10.6	12.3	13.1	14.0	14.9	16.3	16.2	16.2	15.8	15.7	15.4	14.4	13.4	12.5	12.5	16.3
16-Sep	11.5	11.0	10.2	9.9	10.0	9.5	9.2	9.2	10.7	12.3	13.2	15.7	17.8	18.4	18.8	19.0	18.9	18.8	18.2	18.1	16.3	15.4	14.2	13.3	14.1	19.0
17-Sep	12.6	12.2	11.1	10.8	9.7	9.6	9.6	9.9	9.8	11.4	14.2	16.6	18.5	20.3	21.0	21.4	21.9	22.1	21.7	21.2	20.5	19.3	17.9	16.6	15.8	22.1
18-Sep	15.5	14.5	14.5	13.7	13.3	12.4	12.4	11.7	13.3	14.6	15.6	16.1	16.1	16.9	17.1	17.5	17.6	17.5	16.7	16.4	15.7	14.2	13.8	12.8	15.0	17.6
19-Sep	11.3	10.2	9.9	9.0	7.4	5.4	6.3	6.9	6.5	8.3	10.9	14.0	16.2	17.3	17.7	17.6	17.1	16.5	16.8	16.7	15.2	15.1	14.4	13.7	12.5	17.7
20-Sep	12.6	12.6	12.4	11.2	11.8	10.8	10.1	9.7	9.6	10.2	10.7	11.5	12.7	14.1	14.7	14.8	14.8	14.5	13.6	13.0	12.4	11.5	10.3	9.4	12.0	14.8
21-Sep	8.4	7.9	7.1	6.5	6.7	6.4	5.0	4.7	4.6	5.3	7.1	9.0	10.9	13.5	14.5	14.7	14.8	14.4	13.8	12.8	11.6	11.4	11.2	10.9	9.7	14.8
22-Sep	11.0	10.5	10.1	9.6	9.3	8.9	8.2	7.6	8.7	10.3	11.8	13.5	15.4	16.5	17.7	18.2	18.2	17.6	17.3	16.3	14.0	14.4	14.2	12.6	13.0	18.2
23-Sep	12.0	11.0	10.1	9.4	9.2	8.9	8.3	7.8	7.8	8.5	9.3	9.4	11.1	12.0	12.2	13.1	13.4	13.1	13.2	12.9	12.5	12.3	12.5	12.9	11.0	13.4
24-Sep	13.3	13.3	13.5	13.3	12.9	12.8	13.6	13.7	14.4	15.7	17.3	18.7	19.5	20.3	20.7	21.0	21.1	20.9	20.3	20.0	18.7	17.4	16.2	14.6	16.8	21.1
25-Sep	13.9	14.2	14.1	13.5	13.1	13.2	14.4	14.5	14.6	15.4	16.3	16.4	16.4	16.6	17.1	17.4	17.8	17.7	17.3	16.8	16.4	15.7	15.5	14.4	15.5	17.8
26-Sep	14.0	13.1	12.3	11.9	11.4	10.7	9.8	9.5	9.6	9.2	9.4	10.0	10.5	11.1	12.5	13.3	13.4	13.2	11.8	11.6	12.0	11.0	10.4	8.4	11.3	14.0
27-Sep	9.0	8.4	7.8	6.9	6.4	6.6	7.1	6.2	6.3	6.8	8.3	9.8	11.0	11.9	12.5	12.4	12.3	11.7	11.1	11.0	10.0	9.8	9.2	9.1	9.2	12.5
28-Sep	9.2	9.2	9.5	9.4	9.1	8.7	8.4	8.2	8.5	8.9	9.3	9.6	10.1	10.8	12.4	13.1	13.1	13.1	12.9	12.7	11.9	11.4	10.6	9.9	10.4	13.1
29-Sep	8.9	8.5	8.6	8.5	8.2	8.2	7.9	7.2	7.1	8.1	9.9	11.3	11.4	11.9	12.0	11.5	10.9	10.3	10.3	10.0	9.5	9.3	8.8	8.7	9.5	12.0
30-Sep	8.4	7.5	6.3	5.5	4.5	4.2	3.5	2.9	3.5	4.9	7.1	9.0	10.1	10.8	11.1	11.4	11.3	11.0	10.6	9.7	8.5	6.9	6.0	5.3	7.5	11.4
	12.8	12.2	11.7	11.2	10.9	10.3	10.0	9.8	10.3	11.6	13.2	14.7	15.9	16.8	17.3	17.7	17.8	17.7	17.1	16.5	15.6	14.8	13.9	13.1	Diurnal Average	
	21.6	20.8	19.8	19.1	18.5	17.9	16.6	15.9	16.5	19.0	21.5	24.6	26.5	28.7	29.5	29.7	29.1	28.8	27.8	27.1	26.4	26.4	24.3	22.8	Diurnal Maximum	

Wood Buffalo Environmental Association

Hourly Averages

Ambient Temperature 75m (AT75) - C

Mannix - September 2024



Concentration Ranges (C)	Number of Hours	%	Cumulative %
-50 - -20	0	0.00	0.00
-20 - 0	0	0.00	0.00
0 - 10	165	22.92	22.92
10 - 20	478	66.39	89.31
> 20	77	10.69	100.00

Total Number of Valid Hours: 720

Total Number of Hours: 720

Maximum Value: 29.6 C on Sep 2 16:00
Maximum Daily Average: 22.3 C on Sep 2

Minimum Value: 3.1 C on Sep 30 08:00
Minimum Daily Average: 7.6 C on Sep 30
Maximum Diurnal Average: 17.8 C at hour 17
Minimum Diurnal Average: 10.1 C at hour 8
Monthly Average: 14.04 C
Percentiles: P_1 = 5.5 P_{10} = 8.6 Q_1 = 10.5 Median = 13.3 Q_3 = 16.8 P_{90} = 20.4 P_{99} = 27.9

Hours in Service:	720
Hours of Data:	720
Hours of Missing Data:	0
Hours of Calibration:	0
Percent Operational Time:	100.0

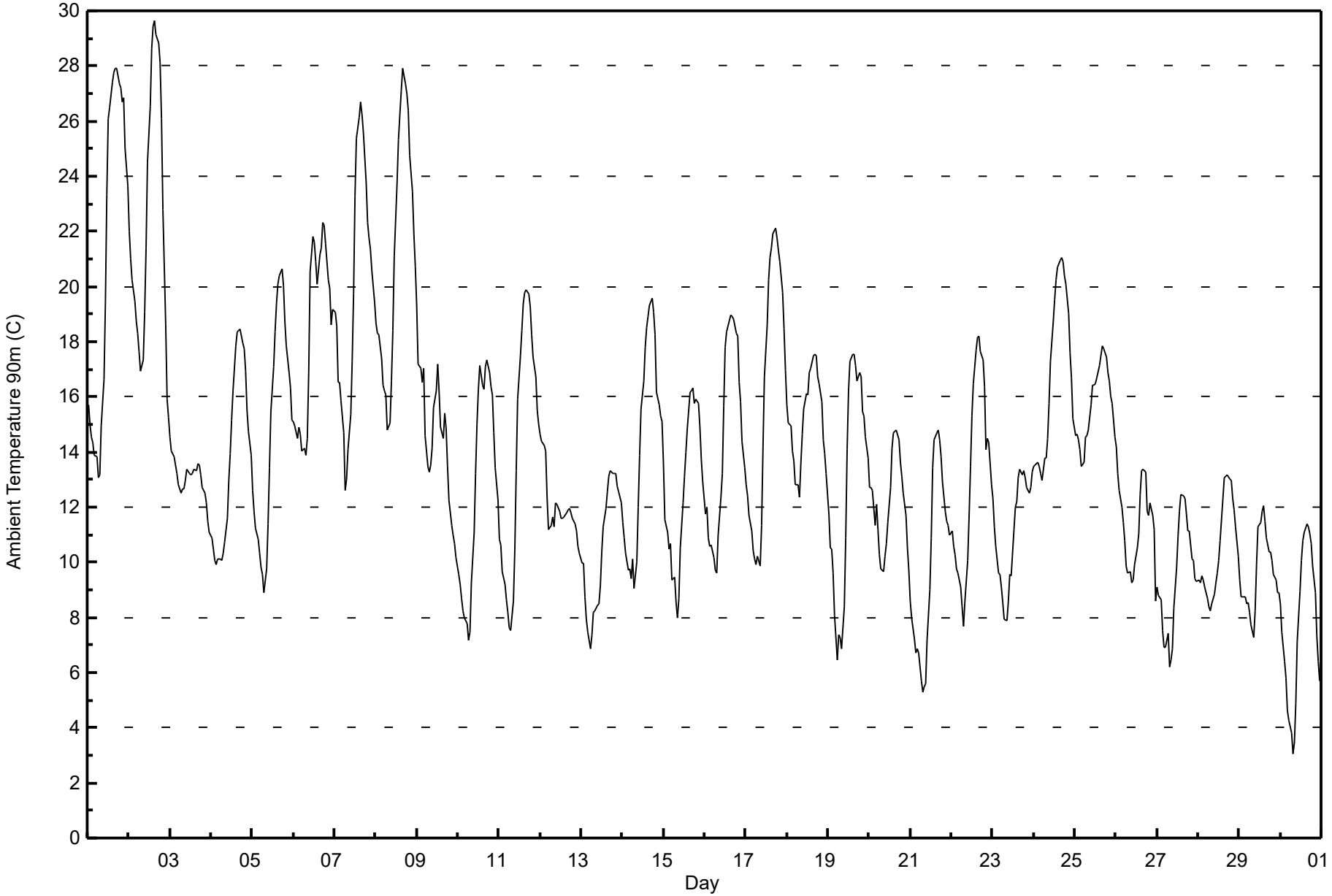
Day	Hourly Period Ending At (MST)																								Daily	Daily
	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24	Average	Maximum
1-Sep	15.7	15.0	14.5	14.3	13.9	13.8	13.1	13.2	14.9	16.6	19.4	23.4	26.1	26.5	27.4	27.8	27.9	27.9	27.4	27.2	26.7	26.9	25.0	23.7	21.2	27.9
2-Sep	22.0	21.0	20.3	19.5	18.8	18.3	17.6	16.9	17.3	19.1	21.4	24.5	26.5	28.6	29.4	29.6	29.1	28.8	28.1	26.1	22.8	18.6	15.9	15.2	22.3	29.6
3-Sep	14.5	14.1	13.8	13.5	13.2	12.8	12.5	12.6	12.6	12.9	13.4	13.2	13.2	13.2	13.4	13.3	13.6	13.5	13.1	12.7	12.5	12.1	11.5	11.1	13.0	14.5
4-Sep	10.9	10.5	10.1	9.9	10.1	10.1	10.1	10.3	10.7	11.6	13.0	13.9	15.2	16.2	17.8	18.4	18.4	18.5	17.9	17.7	16.9	15.5	14.8	13.9	13.8	18.5
5-Sep	12.6	11.9	11.2	10.8	10.3	9.8	9.6	8.9	9.8	11.4	13.4	15.5	17.1	18.4	19.4	20.1	20.4	20.6	20.0	18.7	17.8	16.9	16.3	15.2	14.8	20.6
6-Sep	15.1	15.0	14.5	14.9	14.7	14.0	14.1	13.9	14.5	16.9	20.6	21.8	21.6	20.9	20.1	21.2	21.4	22.3	22.2	21.6	20.3	19.9	18.6	19.1	18.3	22.3
7-Sep	19.1	18.6	16.5	16.5	15.9	14.7	12.6	13.0	14.1	15.4	17.3	19.7	23.3	25.4	26.1	26.7	26.2	25.6	23.7	22.3	21.8	21.3	20.6	19.4	19.8	26.7
8-Sep	18.7	18.3	18.2	17.4	16.4	16.2	16.1	14.8	15.1	16.6	18.4	21.1	23.8	25.3	26.2	27.1	27.9	27.3	27.0	26.4	24.8	23.5	21.9	20.7	21.2	27.9
9-Sep	19.3	17.2	17.0	16.5	17.1	14.6	13.5	13.3	13.5	14.1	15.6	16.2	17.2	16.2	14.9	14.5	15.4	14.9	13.5	12.3	11.3	11.0	10.7	10.1	14.6	19.3
10-Sep	9.6	9.2	8.7	8.2	8.0	7.8	7.2	7.5	9.2	11.1	13.2	15.0	16.3	17.1	16.4	16.3	17.1	17.3	16.9	16.4	16.1	14.7	13.4	12.3	12.7	17.3
11-Sep	10.8	10.6	9.7	9.2	8.7	8.2	7.6	7.5	8.6	10.5	13.3	15.9	17.5	18.4	19.4	19.8	19.9	19.7	19.3	18.2	17.4	16.7	15.5	15.0	14.1	19.9
12-Sep	14.7	14.4	14.3	14.0	12.3	11.2	11.3	11.6	11.3	12.1	12.1	11.9	11.6	11.6	11.7	11.8	11.9	11.9	11.8	11.6	11.4	11.1	10.6	10.3	12.0	14.7
13-Sep	10.0	10.0	8.8	8.0	7.5	6.8	7.4	8.2	8.2	8.4	8.5	9.2	10.4	11.3	12.0	12.6	13.1	13.3	13.2	13.2	13.2	12.7	12.6	12.1	10.4	13.3
14-Sep	11.4	10.9	10.3	9.7	9.7	9.4	10.1	9.0	10.0	12.0	13.9	15.6	16.6	17.8	18.5	18.9	19.3	19.6	19.1	18.3	16.2	15.7	15.3	15.1	14.3	19.6
15-Sep	13.6	11.6	11.1	10.5	10.7	9.4	9.5	8.6	8.0	8.7	10.5	12.2	13.1	14.0	14.8	16.2	16.2	16.3	15.8	15.9	15.8	14.9	13.7	12.9	12.7	16.3
16-Sep	11.8	12.0	10.9	10.6	10.6	10.2	9.7	9.6	11.0	12.3	13.2	15.7	17.8	18.4	18.7	19.0	18.9	18.8	18.3	18.2	16.5	15.8	14.4	13.4	14.4	19.0
17-Sep	12.8	12.4	11.7	11.1	10.4	10.1	9.9	10.2	9.9	11.3	14.2	16.7	18.6	20.2	21.1	21.4	21.9	22.1	21.8	21.3	20.9	19.8	18.5	17.0	16.1	22.1
18-Sep	15.7	15.1	15.0	14.0	13.7	12.8	12.8	12.4	13.6	14.6	15.6	16.1	16.1	16.9	17.1	17.5	17.6	17.5	16.7	16.5	15.8	14.4	13.9	13.2	15.2	17.6
19-Sep	11.8	10.5	10.5	9.6	8.1	6.5	7.4	7.3	6.9	8.4	10.9	14.1	16.2	17.3	17.5	17.5	17.1	16.6	16.9	16.7	15.5	15.3	14.5	13.8	12.8	17.5
20-Sep	12.7	12.7	12.6	11.3	12.1	11.2	10.3	9.8	9.7	10.2	10.7	11.5	12.7	14.1	14.7	14.7	14.8	14.4	13.6	13.1	12.5	11.7	10.5	9.7	12.1	14.8
21-Sep	8.6	8.0	7.2	6.7	6.9	6.7	5.7	5.3	5.5	5.6	7.2	9.0	10.9	13.4	14.4	14.7	14.8	14.4	13.8	12.9	11.8	11.5	11.3	11.0	9.9	14.8
22-Sep	11.1	10.6	10.2	9.8	9.6	9.1	8.4	7.7	8.6	10.1	11.7	13.5	15.3	16.5	17.7	18.2	18.2	17.6	17.3	16.4	14.1	14.5	14.3	12.8	13.1	18.2
23-Sep	12.3	11.3	10.6	9.6	9.5	9.1	8.5	7.9	7.9	8.6	9.6	9.5	11.2	12.0	12.2	13.1	13.4	13.2	13.3	13.1	12.7	12.5	12.7	13.3	11.1	13.4
24-Sep	13.5	13.5	13.6	13.5	13.2	13.0	13.8	13.8	14.5	15.8	17.3	18.7	19.5	20.3	20.7	21.0	21.1	20.9	20.4	20.1	19.0	17.6	16.7	15.2	16.9	21.1
25-Sep	14.6	14.7	14.4	14.1	13.4	13.6	14.5	14.6	14.8	15.7	16.4	16.4	16.5	16.7	17.1	17.5	17.8	17.7	17.4	16.9	16.6	16.0	15.7	14.5	15.7	17.8
26-Sep	14.2	13.2	12.6	12.0	11.4	10.8	9.9	9.6	9.7	9.3	9.4	9.9	10.5	11.0	12.4	13.3	13.4	13.3	11.9	11.7	12.2	11.7	11.2	8.6	11.4	14.2
27-Sep	9.1	8.8	8.7	7.5	6.9	6.9	7.4	6.2	6.4	6.9	8.3	9.8	10.9	11.9	12.5	12.4	12.3	11.7	11.1	11.1	10.1	10.0	9.4	9.3	9.4	12.5
28-Sep	9.3	9.3	9.5	9.4	9.1	8.7	8.4	8.2	8.5	8.9	9.3	9.6	10.1	10.8	12.3	13.1	13.1	13.2	13.0	13.0	12.3	11.9	11.3	10.2	10.5	13.2
29-Sep	9.4	8.8	8.7	8.7	8.5	8.6	8.2	7.7	7.3	8.2	9.9	11.3	11.4	11.9	12.0	11.5	10.9	10.3	10.4	10.1	9.6	9.3	8.9	8.9	9.6	12.0
30-Sep	8.5	7.5	6.4	5.8	4.6	4.3	3.8	3.1	3.5	4.9	7.1	9.0	10.1	10.8	11.1	11.4	11.3	11.1	10.7	9.9	8.9	7.3	6.4	5.7	7.6	11.4
	13.1	12.5	12.1	11.6	11.2	10.6	10.4	10.1	10.5	11.6	13.2	14.7	15.9	16.8	17.3	17.7	17.8	17.7	17.2	16.6	15.8	15.0	14.2	13.4	Diurnal Average	
	22.0	21.0	20.3	19.5	18.8	18.3	17.6	16.9	17.3	19.1	21.4	24.5	26.5	28.6	29.4	29.6	29.1	28.8	28.1	27.2	26.7	26.9	25.0	23.7	Diurnal Maximum	

Wood Buffalo Environmental Association

Hourly Averages

Ambient Temperature 90m (AT90) - C

Mannix - September 2024



Concentration Ranges (C)	Number of Hours	%	Cumulative %
-50 - -20	0	0.00	0.00
-20 - 0	0	0.00	0.00
0 - 10	149	20.69	20.69
10 - 20	490	68.06	88.75
> 20	81	11.25	100.00

Total Number of Valid Hours: 720

Total Number of Hours: 720

Maximum Value: 98 % on Sep 13 09:00

Maximum Daily Average: 93.8 % on Sep 23

Minimum Value: 27 % on Sep 2 16:00

Minimum Daily Average: 57.9 % on Sep 30

Maximum Diurnal Average: 91.0 % at hour 6

Minimum Diurnal Average: 51.1 % at hour 16

Monthly Average: 72.9 %

Percentiles: P_1 = 34 P_{10} = 46 Q_1 = 59 Median = 75 Q_3 = 89 P_{90} = 96 P_{99} = 98

Hours in Service:	720
Hours of Data:	720
Hours of Missing Data:	0
Hours of Calibration:	0
Percent Operational Time:	100.0

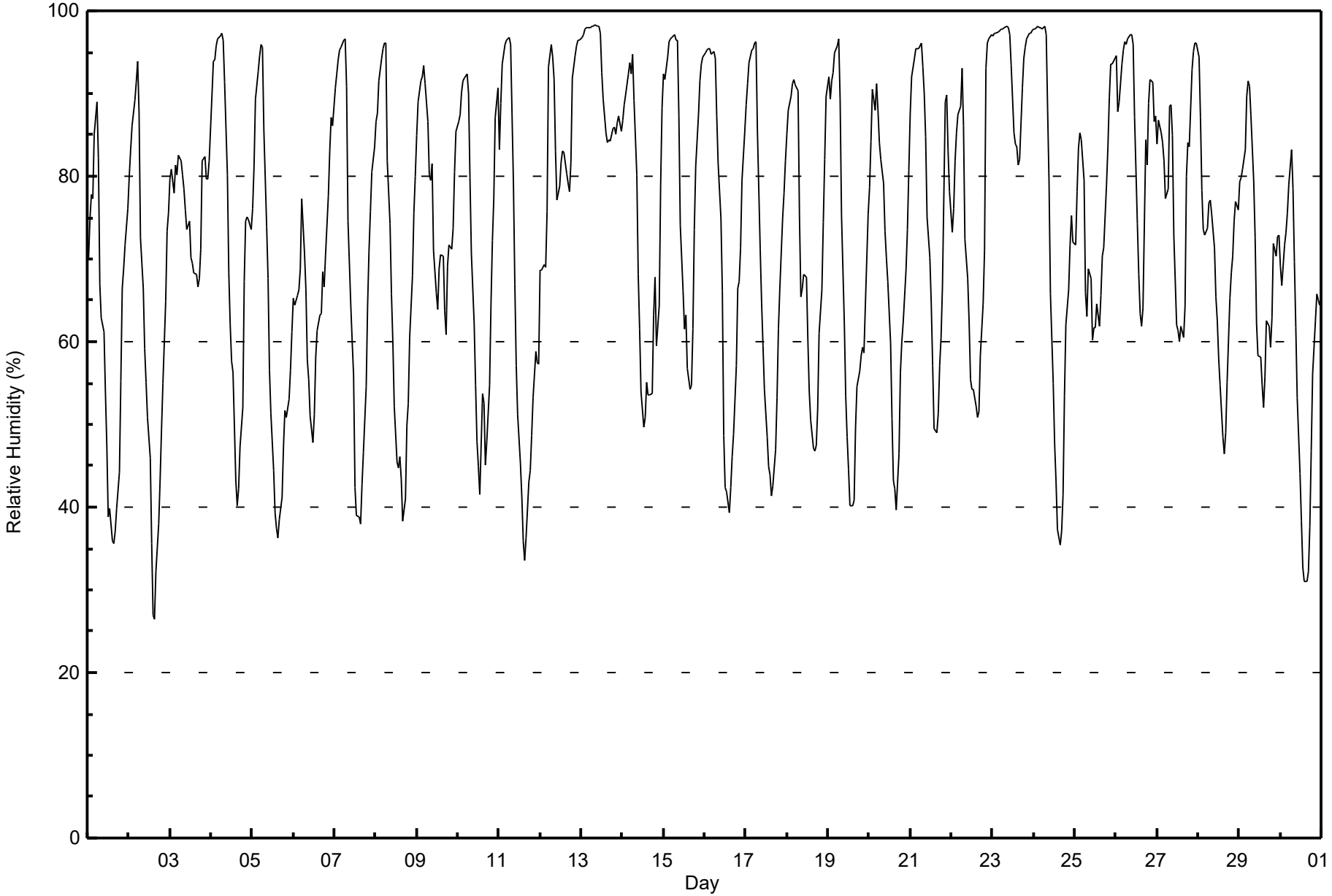
Day	Hourly Period Ending At (MST)																								Daily	Daily
	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24	Average	Maximum
1-Sep	70	75	78	77	85	89	82	67	63	61	54	47	39	40	36	36	37	40	44	55	66	69	72	76	60.8	89
2-Sep	80	83	86	89	91	94	88	73	66	59	55	51	46	36	27	27	32	38	43	49	55	65	73	76	61.8	94
3-Sep	80	81	78	81	80	83	82	80	79	76	73	75	70	70	68	68	67	68	71	82	82	80	80	82	76.4	83
4-Sep	90	94	94	96	97	97	97	96	91	80	68	62	58	56	43	40	42	47	52	67	75	75	75	74	73.6	97
5-Sep	76	81	89	93	95	96	96	86	74	68	57	51	44	39	38	36	39	41	47	52	51	53	57	61	63.3	96
6-Sep	65	64	66	66	69	77	71	66	58	55	51	48	51	58	61	63	63	68	67	71	78	83	87	86	66.4	87
7-Sep	91	92	94	95	96	96	97	91	75	64	60	56	42	39	39	38	43	47	55	64	71	76	80	84	70.2	97
8-Sep	87	88	92	94	95	96	96	82	74	66	60	52	45	45	46	43	38	41	50	52	61	68	76	80	67.8	96
9-Sep	85	89	91	92	93	91	87	80	80	82	71	66	64	69	71	70	64	61	69	72	71	74	80	85	77.4	93
10-Sep	87	88	90	92	92	92	90	80	71	62	55	48	45	42	54	53	45	48	55	65	72	77	87	91	69.9	92
11-Sep	83	89	94	96	96	97	97	96	79	67	57	51	45	41	36	33	36	43	44	49	53	59	57	57	64.9	97
12-Sep	69	69	69	69	76	93	96	94	92	83	77	79	82	83	83	80	79	78	82	92	95	96	96	96	83.6	96
13-Sep	97	97	98	98	98	98	98	98	98	98	98	97	93	89	85	84	84	84	86	86	85	87	87	86	92.1	98
14-Sep	87	89	90	92	94	92	95	89	80	68	62	54	50	51	55	53	54	54	63	68	59	64	79	88	72.1	95
15-Sep	92	92	94	96	97	97	97	97	96	87	74	66	61	63	57	54	55	61	74	81	87	92	94	94	81.6	97
16-Sep	95	95	95	95	95	95	94	87	82	75	66	49	42	42	39	42	46	49	57	66	67	71	79	85	71.3	95
17-Sep	89	91	94	95	95	96	96	86	71	65	59	54	49	45	44	41	43	47	53	62	66	75	78	82	69.8	96
18-Sep	85	88	90	91	92	91	90	75	65	66	68	68	60	54	50	47	47	47	52	61	66	74	82	90	70.9	92
19-Sep	92	89	92	93	95	96	97	89	75	62	53	49	45	40	40	41	50	55	56	58	59	59	64	75	67.6	97
20-Sep	79	84	90	88	91	88	84	82	79	73	70	67	60	51	43	42	40	46	56	60	62	69	74	81	69.2	91
21-Sep	88	92	94	95	95	95	96	93	90	85	75	70	65	57	49	49	51	57	61	67	89	90	83	78	77.7	96
22-Sep	73	76	82	85	87	88	93	86	72	68	62	55	54	54	52	51	52	58	65	71	93	96	97	97	73.7	97
23-Sep	97	97	97	97	98	98	98	98	98	98	97	93	85	84	83	81	82	91	94	96	97	97	97	98	93.8	98
24-Sep	98	98	98	98	98	98	98	97	88	79	66	55	48	43	37	35	37	41	53	62	66	72	75	72	71.4	98
25-Sep	72	78	83	85	84	79	66	63	69	68	60	62	62	65	62	66	70	71	79	84	89	94	94	94	74.9	94
26-Sep	95	88	89	93	95	96	96	97	97	97	96	87	74	68	63	62	64	84	81	89	92	91	87	87	86.2	97
27-Sep	84	87	85	84	82	77	79	88	89	85	73	62	61	60	62	61	64	80	84	84	93	95	96	96	79.6	96
28-Sep	94	87	78	74	73	74	77	77	75	71	65	63	58	55	49	46	49	55	65	68	70	75	77	76	68.8	94
29-Sep	79	80	81	83	90	91	91	87	79	73	62	58	58	55	52	56	63	62	59	63	72	70	73	73	71.3	91
30-Sep	69	67	72	73	76	79	83	78	70	62	53	44	38	33	31	31	32	38	47	56	63	66	65	64	57.9	83
	84.2	85.6	87.4	88.6	90.0	91.0	90.2	85.3	79.2	73.4	66.7	61.3	56.5	54.2	51.9	51.1	52.2	56.7	62.2	68.3	73.6	77.0	80.0	82.2	Diurnal Average	
	98	98	98	98	98	98	98	98	98	98	98	97	93	89	85	84	84	91	94	96	97	97	97	98	Diurnal Maximum	

Wood Buffalo Environmental Association

Hourly Averages

Relative Humidity (RH) - %

Mannix - September 2024



Concentration Ranges (%)	Number of Hours	%	Cumulative %
0 - 20	0	0.00	0.00
20 - 40	33	4.58	4.58
40 - 60	151	20.97	25.56
60 - 80	235	32.64	58.19
80 - 100	301	41.81	100.00

Total Number of Valid Hours: 720

Total Number of Hours: 720

Wood Buffalo Environmental Association

Summary of Hour Averages

Relative Humidity 20m (RH20) - %

Mannix - September 2024

Maximum Value: 99 % on Sep 12 07:00

Maximum Daily Average: 79.4 % on Sep 12

Minimum Value: 23 % on Sep 2 16:00

Minimum Daily Average: 53.0 % on Sep 30

Maximum Diurnal Average: 84.2 % at hour 6

Minimum Diurnal Average: 48.9 % at hour 17

Monthly Average: 66.2 %

Percentiles: P_1 = 31 P_{10} = 42 Q_1 = 53 Median = 68 Q_3 = 80 P_{90} = 89 P_{99} = 96

Hours in Service:	720
Hours of Data:	675
Hours of Missing Data:	45
Hours of Calibration:	0
Percent Operational Time:	93.8

Day	Hourly Period Ending At (MST)																								Daily	Daily
	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24	Average	Maximum
1-Sep	54	61	67	69	72	76	76	72	68	64	59	51	39	39	35	33	34	34	35	40	45	45	50	58	53.2	76
2-Sep	62	65	69	72	77	81	81	78	72	64	59	53	47	34	24	23	26	31	35	40	48	63	73	76	56.4	81
3-Sep	80	81	78	79	80	82	82	81	80	77	73	72	71	70	69	69	67	67	69	74	72	74	78	79	75.3	82
4-Sep	80	83	88	OR	OR	OR	OR	97	88	81	71	66	61	56	42	37	39	42	47	54	58	61	61	62	63.6	97
5-Sep	66	71	78	81	86	90	94	91	81	71	62	55	46	39	37	34	34	35	41	46	46	48	51	55	59.9	94
6-Sep	57	59	60	60	60	63	65	65	62	58	51	47	51	58	59	58	59	59	55	55	60	63	66	72	59.2	72
7-Sep	75	78	82	85	89	90	90	87	80	70	64	58	43	37	37	34	37	39	45	52	57	60	62	64	63.1	90
8-Sep	64	70	77	83	88	90	90	85	80	72	65	57	48	45	44	41	36	39	45	41	46	52	56	68	61.7	90
9-Sep	81	89	89	87	85	81	80	80	83	84	76	68	65	68	70	70	64	60	69	71	71	73	78	83	76.0	89
10-Sep	85	86	88	89	90	90	89	84	76	67	59	51	46	41	47	45	42	43	45	49	55	58	73	80	65.7	90
11-Sep	75	78	86	93	91	OR	OR	OR	84	71	63	53	46	41	35	32	31	33	37	44	47	48	51	52	56.7	93
12-Sep	55	56	57	61	72	93	99	OR	92	81	77	79	82	84	84	81	80	78	81	85	87	89	93	OR	79.4	99
13-Sep	OR	OR	OR	OR	OR	OR	OR	OR	OR	OR	OR	OR	93	91	87	84	80	79	80	80	80	83	82	82	--	93
14-Sep	85	88	89	93	93	94	97	93	84	73	66	58	52	51	51	50	47	45	50	55	56	57	60	69	69.0	97
15-Sep	78	82	90	95	92	93	96	OR	OR	OR	80	71	67	65	58	52	53	54	60	65	71	76	80	83	74.3	96
16-Sep	85	88	91	89	89	92	91	86	82	71	65	52	43	40	39	39	41	43	48	51	55	61	66	68	65.6	92
17-Sep	73	78	84	86	89	90	91	86	79	72	63	57	51	45	43	40	40	40	44	45	51	57	60	62	63.6	91
18-Sep	69	76	80	82	81	82	82	78	70	68	68	69	64	56	51	45	43	41	39	41	43	59	69	71	63.5	82
19-Sep	70	71	73	83	93	92	91	90	81	68	58	51	45	39	39	39	42	46	46	44	54	52	55	64	61.9	93
20-Sep	73	73	78	77	76	80	78	76	75	71	68	66	59	50	42	41	36	41	49	49	52	58	63	69	62.5	80
21-Sep	76	81	86	90	91	93	OR	OR	OR	89	79	74	69	58	49	48	50	54	57	62	78	79	75	73	72.1	93
22-Sep	68	72	73	76	79	82	86	85	78	71	65	59	56	54	51	49	49	52	54	61	81	81	87	95	69.4	95
23-Sep	93	90	94	96	OR	OR	OR	OR	OR	OR	OR	OR	89	89	88	83	82	89	93	96	OR	OR	OR	OR	--	96
24-Sep	OR	94	92	93	94	96	OR	91	83	76	65	55	48	43	37	34	34	36	40	43	44	52	59	61	62.3	96
25-Sep	64	66	70	73	71	71	62	60	62	62	58	60	61	63	62	65	65	66	69	72	76	80	84	83	67.7	84
26-Sep	80	79	87	92	94	93	OR	OR	OR	OR	94	85	74	69	66	62	58	61	64	67	63	69	68	67	74.7	94
27-Sep	66	71	72	73	71	69	74	87	88	85	76	70	65	61	60	60	62	69	74	75	88	91	88	85	74.2	91
28-Sep	75	72	69	69	69	72	75	76	75	72	66	63	59	56	49	45	45	48	50	54	56	60	65	64	62.6	76
29-Sep	71	71	73	77	81	78	83	86	81	75	67	61	61	56	52	54	59	58	54	58	69	65	67	67	67.5	86
30-Sep	64	63	68	70	72	74	76	77	71	62	54	45	39	33	31	30	30	34	38	41	45	51	53	53	53.0	77
	72.3	75.6	79.0	81.1	82.5	84.2	83.8	82.1	78.2	72.2	66.9	60.8	58.0	54.3	51.2	49.3	48.9	50.4	53.7	56.9	60.5	64.4	68.0	70.2	Diurnal Average	
	93	94	94	96	94	96	99	97	92	89	94	85	93	91	88	84	82	89	93	96	88	91	93	95	Diurnal Maximum	

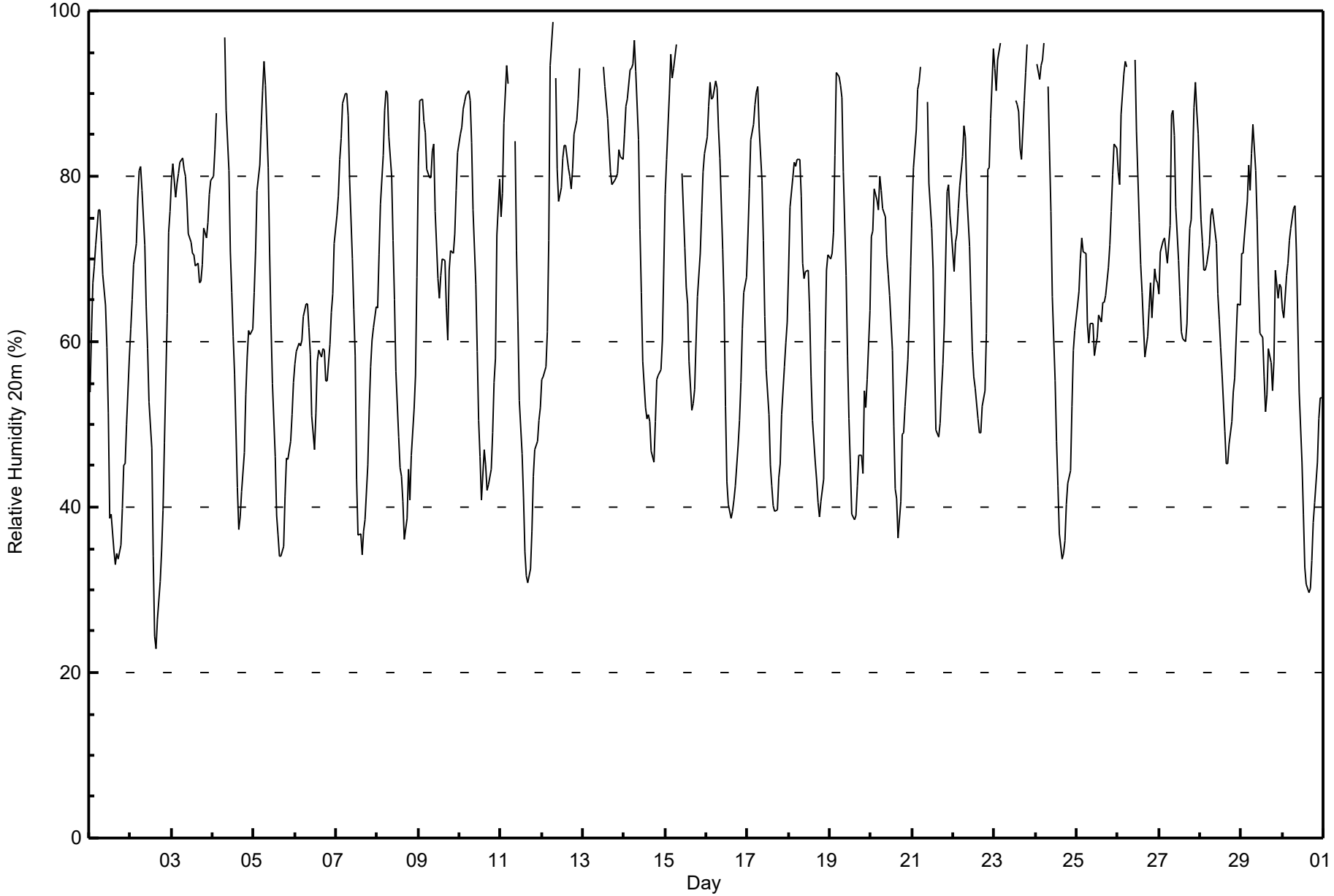
OR - Out of Range

Wood Buffalo Environmental Association

Hourly Averages

Relative Humidity 20m (RH20) - %

Mannix - September 2024



Relative Humidity 20m (RH20) - %

Mannix - September 2024

Concentration Ranges (%)	Number of Hours	%	Cumulative %
0 - 20	0	0.00	0.00
20 - 40	54	8.00	8.00
40 - 60	190	28.15	36.15
60 - 80	260	38.52	74.67
80 - 100	171	25.33	100.00

Total Number of Valid Hours: 675

Total Number of Hours: 720

Wood Buffalo Environmental Association

Summary of Hour Averages

Relative Humidity 45m (RH45) - %

Mannix - September 2024

Maximum Value: 99 % on Sep 13 08:00

Maximum Daily Average: 91.6 % on Sep 23

Minimum Value: 22 % on Sep 2 16:00

Minimum Daily Average: 50.4 % on Sep 1

Maximum Diurnal Average: 83.7 % at hour 8

Minimum Diurnal Average: 48.3 % at hour 17

Monthly Average: 65.8 %

Percentiles: P_1 = 31 P_{10} = 41 Q_1 = 52 Median = 67 Q_3 = 80 P_{90} = 88 P_{99} = 98

Hours in Service:	720
Hours of Data:	720
Hours of Missing Data:	0
Hours of Calibration:	0
Percent Operational Time:	100.0

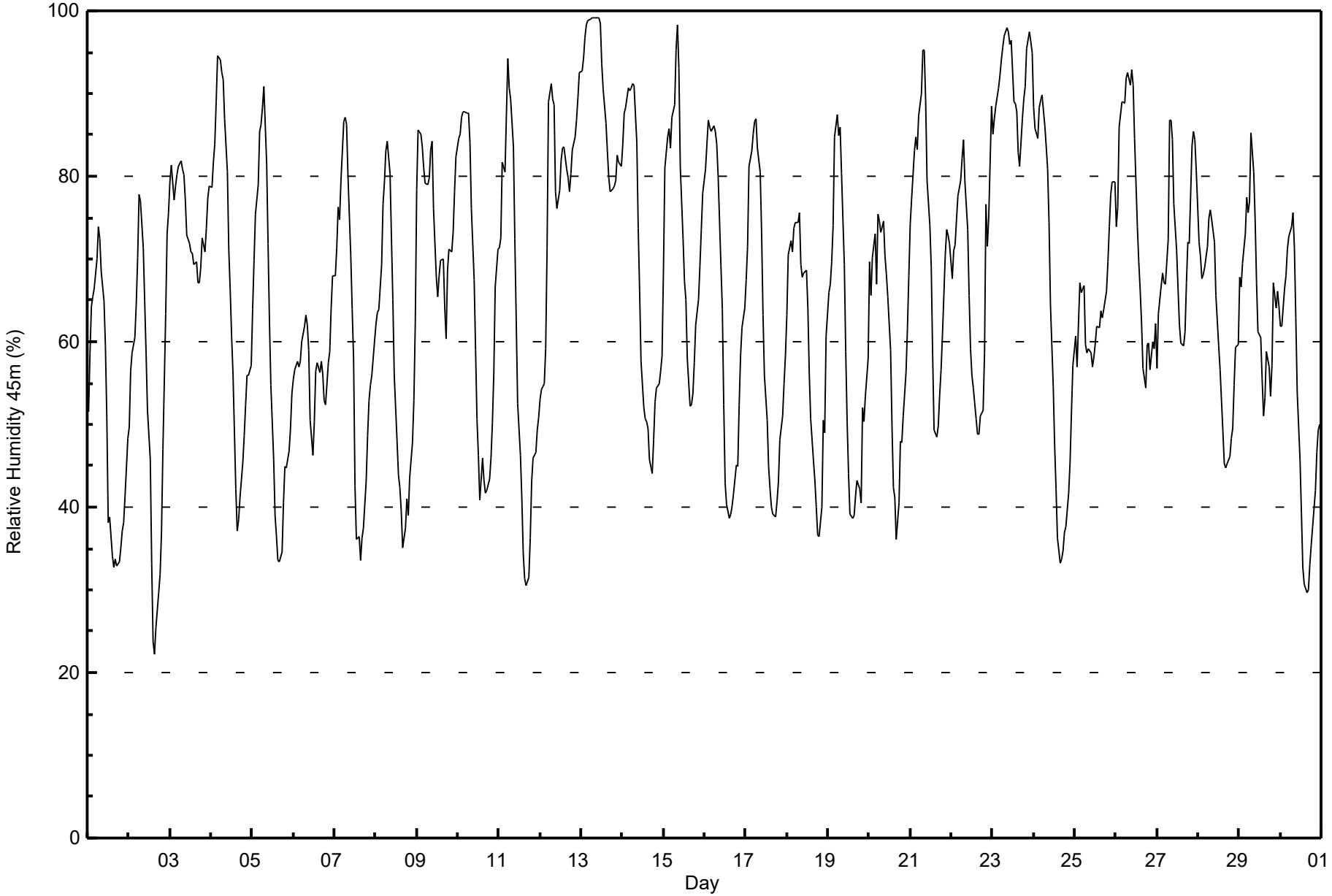
Day	Hourly Period Ending At (MST)																								Daily	Daily
	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24	Average	Maximum
1-Sep	51	59	64	65	66	70	74	72	69	65	59	51	38	39	34	33	34	33	33	35	37	38	41	48	50.4	74
2-Sep	50	57	59	61	65	70	78	77	71	65	59	52	46	33	24	22	25	30	32	37	47	63	73	76	52.9	78
3-Sep	79	81	77	79	80	81	82	81	80	77	73	72	71	71	69	70	67	67	69	72	71	74	77	79	75.0	82
4-Sep	79	82	84	89	95	94	93	92	87	81	71	66	61	56	42	37	38	41	45	49	52	56	56	57	66.8	95
5-Sep	64	70	75	79	85	86	88	91	82	72	62	55	46	39	36	34	33	35	40	45	45	47	50	54	58.8	91
6-Sep	55	57	58	57	58	60	62	63	62	59	51	46	50	56	58	56	58	56	53	52	57	59	64	68	57.3	68
7-Sep	68	71	76	75	80	87	87	86	80	70	64	58	43	36	36	34	36	37	43	49	53	55	56	60	60.0	87
8-Sep	62	64	64	69	77	79	83	84	80	73	65	56	48	44	42	40	35	37	41	39	44	48	53	62	57.9	84
9-Sep	78	86	85	84	81	79	79	80	83	84	76	68	65	68	70	70	64	60	69	71	71	73	78	82	75.2	86
10-Sep	85	85	87	88	88	88	88	84	76	67	59	51	46	41	46	43	42	42	43	46	50	56	67	71	64.1	88
11-Sep	71	72	82	81	88	94	91	89	84	72	63	53	46	41	34	31	31	32	36	43	46	47	49	51	59.4	94
12-Sep	53	54	55	59	71	89	91	89	89	78	76	78	82	83	83	81	80	78	80	83	85	87	90	93	78.7	93
13-Sep	93	94	97	98	99	99	99	99	99	99	99	98	93	90	86	83	80	78	79	79	80	82	82	81	90.3	99
14-Sep	84	88	88	91	90	91	91	91	84	74	66	58	52	51	50	50	46	44	48	53	54	55	56	58	67.2	91
15-Sep	69	81	85	86	83	87	89	95	98	93	81	72	67	65	58	52	52	54	57	62	65	69	73	78	73.9	98
16-Sep	81	84	87	86	85	86	85	84	80	69	64	52	43	40	39	39	40	42	45	45	52	58	62	64	63.0	87
17-Sep	67	72	81	83	85	87	87	83	80	73	63	56	51	45	42	40	39	39	41	43	48	51	55	58	61.2	87
18-Sep	63	71	72	71	74	74	74	76	69	68	68	69	64	56	51	46	43	40	37	36	40	50	49	61	59.2	76
19-Sep	66	67	70	74	85	87	85	86	80	69	59	50	44	39	39	39	41	43	42	40	52	50	53	58	59.2	87
20-Sep	70	66	70	73	67	75	75	73	75	70	68	65	59	50	42	41	36	41	48	48	51	56	61	68	60.4	75
21-Sep	74	77	83	85	83	87	90	95	95	89	80	74	69	58	49	48	50	54	57	61	70	73	73	72	72.8	95
22-Sep	68	71	72	75	78	79	82	84	79	74	66	59	56	54	51	49	49	51	52	59	77	72	75	88	67.4	88
23-Sep	85	87	88	91	92	94	96	97	98	98	96	96	89	89	88	83	81	87	89	91	95	97	96	95	91.6	98
24-Sep	88	86	84	88	89	90	86	84	81	74	65	55	47	42	36	33	34	35	37	38	42	45	51	57	61.2	90
25-Sep	61	57	62	67	66	67	60	59	59	59	57	58	60	62	62	64	63	64	66	70	74	78	79	79	64.6	79
26-Sep	74	76	86	89	89	89	92	92	91	93	91	85	74	70	66	62	57	54	60	60	57	60	59	62	74.5	93
27-Sep	57	63	67	68	67	67	72	87	87	84	77	71	66	62	60	60	61	67	72	72	84	85	84	81	71.7	87
28-Sep	72	70	68	68	69	71	75	76	75	72	66	63	60	57	49	45	45	45	46	48	49	55	59	60	60.9	76
29-Sep	68	67	69	73	78	76	77	85	81	75	67	61	61	55	51	53	59	57	53	57	67	64	66	64	66.0	85
30-Sep	62	62	66	68	71	73	74	76	71	63	54	46	39	33	31	30	30	33	36	38	42	47	49	50	51.7	76
	69.9	72.5	75.4	77.3	79.4	81.9	82.8	83.7	80.8	75.3	68.8	63.1	57.9	54.2	50.9	48.9	48.3	49.2	51.7	54.0	58.6	61.7	64.6	67.9	Diurnal Average	
	93	94	97	98	99	99	99	99	99	99	99	98	93	90	88	83	81	87	89	91	95	97	96	95	Diurnal Maximum	

Wood Buffalo Environmental Association

Hourly Averages

Relative Humidity 45m (RH45) - %

Mannix - September 2024



Relative Humidity 45m (RH45) - %

Mannix - September 2024

Concentration Ranges (%)	Number of Hours	%	Cumulative %
0 - 20	0	0.00	0.00
20 - 40	65	9.03	9.03
40 - 60	216	30.00	39.03
60 - 80	255	35.42	74.44
80 - 100	184	25.56	100.00

Total Number of Valid Hours: 720

Total Number of Hours: 720

Wood Buffalo Environmental Association

Summary of Hour Averages

Relative Humidity 75m (RH75) - %

Mannix - September 2024

Maximum Value: 99 % on Sep 23 14:00

Maximum Daily Average: 80.1 % on Sep 12

Minimum Value: 23 % on Sep 2 16:00

Minimum Daily Average: 49.0 % on Sep 1

Maximum Diurnal Average: 80.1 % at hour 8

Minimum Diurnal Average: 49.2 % at hour 17

Monthly Average: 63.4 %

Percentiles: $P_1 = 31$ $P_{10} = 40$ $Q_1 = 51$ Median = 64 $Q_3 = 77$ $P_{90} = 85$ $P_{99} = 97$

Hours in Service:	720
Hours of Data:	679
Hours of Missing Data:	41
Hours of Calibration:	0
Percent Operational Time:	94.3

Day	Hourly Period Ending At (MST)																								Daily	Daily
	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24	Average	Maximum
1-Sep	50	56	61	62	64	65	71	73	70	66	60	52	39	40	35	33	34	33	33	34	34	33	38	41	49.0	73
2-Sep	46	49	53	56	59	63	68	72	71	65	59	53	46	34	24	23	25	29	29	35	47	65	74	77	50.9	77
3-Sep	81	83	78	80	81	82	83	82	82	79	74	73	72	72	71	71	68	68	70	72	71	75	79	80	76.2	83
4-Sep	79	82	85	90	OR	OR	OR	OR	95	83	72	68	62	57	43	38	39	41	45	45	47	51	53	55	61.5	95
5-Sep	63	70	74	79	84	85	86	96	84	73	63	56	47	40	37	34	34	35	41	45	44	46	48	52	59.0	96
6-Sep	52	53	55	53	55	58	58	61	62	60	51	47	51	55	57	55	57	55	52	52	57	58	64	64	55.8	64
7-Sep	63	62	73	72	71	78	83	82	79	71	65	59	43	37	37	34	37	38	43	48	50	52	55	59	57.9	83
8-Sep	62	63	63	67	70	72	74	79	80	72	66	56	49	45	43	40	35	37	40	39	43	47	52	58	56.2	80
9-Sep	70	81	82	81	77	78	80	81	86	88	78	69	67	69	71	71	65	61	70	72	72	75	79	84	75.4	88
10-Sep	86	87	90	92	89	88	89	86	77	69	60	52	47	42	46	42	42	42	44	46	49	56	62	67	64.6	92
11-Sep	68	69	77	79	83	82	83	80	82	72	63	54	47	42	35	32	31	32	36	43	46	47	49	50	57.5	83
12-Sep	52	54	55	57	71	91	99	94	93	77	77	79	83	85	85	82	82	79	82	84	85	86	94	96	80.1	99
13-Sep	OR	OR	OR	OR	OR	OR	OR	OR	OR	OR	OR	OR	OR	OR	95	91	86	83	83	84	85	90	88	87	--	95
14-Sep	90	95	96	99	97	97	91	96	88	77	68	59	53	52	51	50	46	44	48	52	54	54	55	56	69.4	99
15-Sep	65	79	74	82	78	86	94	OR	OR	OR	88	76	69	66	59	53	53	54	57	60	60	63	70	73	69.6	94
16-Sep	77	78	81	82	81	83	83	83	77	68	64	53	44	41	39	40	41	42	44	43	51	56	60	64	61.5	83
17-Sep	67	68	74	75	80	80	79	78	80	74	64	58	52	46	43	41	40	40	40	43	44	46	51	57	59.1	80
18-Sep	61	66	63	65	66	69	68	71	69	69	69	70	65	57	52	46	44	40	36	36	39	46	46	52	57.0	71
19-Sep	61	68	64	65	73	81	74	71	75	69	60	51	45	40	39	40	42	42	39	39	50	49	52	56	56.0	81
20-Sep	67	62	63	71	63	70	72	72	75	71	69	66	60	51	43	42	37	41	48	47	50	56	61	67	59.4	75
21-Sep	73	77	82	85	83	80	88	94	OR	96	81	75	70	59	50	49	50	54	57	61	66	69	71	71	71.4	96
22-Sep	67	70	71	73	76	77	80	85	80	74	67	61	57	55	52	50	49	51	52	58	76	69	71	89	67.1	89
23-Sep	83	86	85	97	OR	OR	OR	OR	OR	OR	OR	OR	OR	99	99	90	88	93	97	OR	OR	OR	OR	OR	--	99
24-Sep	93	90	89	91	93	92	87	86	85	78	66	55	48	43	37	34	34	35	36	37	40	43	45	53	62.1	93
25-Sep	56	53	56	59	62	63	59	58	58	56	56	58	60	61	62	63	63	64	66	71	74	77	78	77	63.0	78
26-Sep	72	76	85	93	94	OR	OR	OR	96	OR	OR	90	75	71	67	63	57	53	59	59	55	53	51	62	70.1	96
27-Sep	55	55	56	61	63	64	70	90	88	86	79	73	68	63	60	60	62	67	72	70	83	84	83	78	70.4	90
28-Sep	71	70	68	69	70	72	76	77	76	73	67	64	61	58	50	46	45	45	45	43	46	49	53	57	60.4	77
29-Sep	63	65	69	69	74	73	74	80	81	75	68	62	61	56	51	54	59	57	53	57	65	63	66	62	64.8	81
30-Sep	61	62	65	66	70	72	72	75	72	64	55	47	40	33	31	30	30	33	34	37	40	45	47	48	51.2	75
	67.4	70.0	72.0	74.9	75.1	77.0	78.5	80.1	79.3	73.3	67.0	61.9	56.4	54.1	52.1	49.9	49.2	49.7	51.7	52.1	56.0	58.7	61.9	65.3	Diurnal Average	
	93	95	96	99	97	97	99	96	96	96	88	90	83	99	99	91	88	93	97	84	85	90	94	96	Diurnal Maximum	

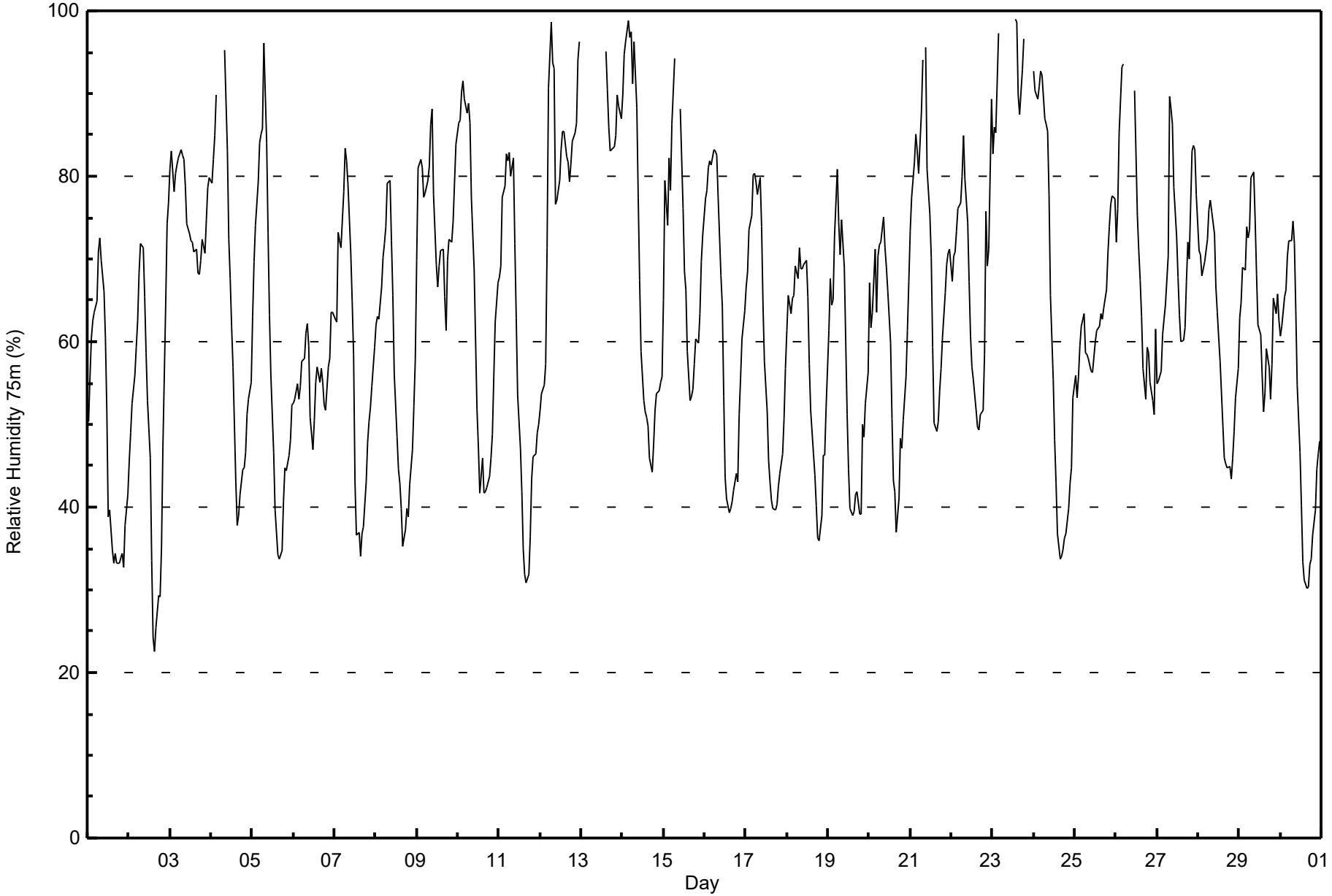
OR - Out of Range

Wood Buffalo Environmental Association

Hourly Averages

Relative Humidity 75m (RH75) - %

Mannix - September 2024



Relative Humidity 75m (RH75) - %

Mannix - September 2024

Concentration Ranges (%)	Number of Hours	%	Cumulative %
0 - 20	0	0.00	0.00
20 - 40	68	10.01	10.01
40 - 60	219	32.25	42.27
60 - 80	264	38.88	81.15
80 - 100	128	18.85	100.00

Total Number of Valid Hours: 679

Total Number of Hours: 720

Wood Buffalo Environmental Association

Summary of Hour Averages

Relative Humidity 90m (RH90) - %

Mannix - September 2024

Maximum Value: 99 % on Sep 23 07:00

Maximum Daily Average: 78.6 % on Sep 12

Minimum Value: 22 % on Sep 2 16:00

Minimum Daily Average: 48.4 % on Sep 1

Maximum Diurnal Average: 78.6 % at hour 8

Minimum Diurnal Average: 48.8 % at hour 17

Monthly Average: 63.1 %

Percentiles: P_1 = 31 P_{10} = 40 Q_1 = 51 Median = 64 Q_3 = 76 P_{90} = 85 P_{99} = 93

Hours in Service:	720
Hours of Data:	699
Hours of Missing Data:	21
Hours of Calibration:	0
Percent Operational Time:	97.1

Day	Hourly Period Ending At (MST)																								Daily	Daily
	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24	Average	Maximum
1-Sep	49	54	59	62	63	64	69	72	70	66	61	52	39	40	35	33	34	33	33	33	33	31	36	39	48.4	72
2-Sep	44	48	51	55	59	61	65	67	67	65	59	53	46	34	24	22	25	29	28	34	47	65	74	77	50.0	77
3-Sep	81	83	78	80	81	82	83	82	82	79	74	73	72	72	71	71	69	68	70	72	70	75	79	80	76.1	83
4-Sep	79	81	84	87	90	92	93	91	90	83	73	68	62	57	43	38	39	41	44	43	45	49	51	54	65.6	93
5-Sep	62	69	73	77	80	82	82	88	82	74	64	56	46	40	37	34	34	34	40	44	44	46	47	51	57.8	88
6-Sep	50	51	53	51	53	56	56	59	62	59	51	47	50	54	57	54	56	54	52	51	57	57	63	61	54.9	63
7-Sep	60	59	68	68	70	73	81	79	75	70	65	58	43	37	37	34	37	37	43	47	49	51	54	59	56.5	81
8-Sep	62	63	63	66	70	70	71	76	77	72	66	56	49	45	43	40	35	37	39	39	42	46	52	57	55.6	77
9-Sep	65	78	78	79	75	77	79	81	86	88	78	70	67	69	71	71	66	62	70	73	72	75	79	83	74.7	88
10-Sep	85	85	88	89	88	86	87	86	78	69	60	52	47	42	46	41	42	42	44	46	48	55	62	65	63.9	89
11-Sep	67	67	74	77	80	79	81	83	82	74	63	54	47	42	35	32	31	32	36	43	46	46	49	49	56.9	83
12-Sep	51	53	54	56	71	88	93	88	89	76	77	79	83	85	85	82	82	79	81	83	84	85	91	90	78.6	93
13-Sep	93	94	97	OR	OR	OR	OR	OR	OR	OR	OR	OR	OR	OR	90	85	82	79	79	80	81	85	84	82	--	97
14-Sep	84	86	88	90	88	88	82	86	82	75	68	59	53	52	51	50	46	44	47	51	53	53	54	55	66.0	90
15-Sep	64	75	72	79	78	85	92	OR	OR	OR	84	75	69	66	59	53	53	54	57	59	59	62	68	71	68.2	92
16-Sep	76	74	78	79	78	79	80	80	75	67	64	54	44	41	39	40	41	42	43	43	51	54	59	63	60.2	80
17-Sep	66	68	71	73	76	78	78	77	79	75	65	57	51	46	43	41	40	39	40	42	42	44	49	55	58.1	79
18-Sep	61	63	61	64	63	67	66	69	68	69	69	70	66	57	52	46	44	40	36	36	38	45	46	48	55.9	70
19-Sep	59	67	62	62	69	75	70	69	71	68	60	51	44	40	39	40	41	41	39	39	48	47	51	55	54.5	75
20-Sep	66	60	61	70	61	68	70	72	75	71	69	66	60	51	43	42	37	41	48	47	50	55	61	66	58.7	75
21-Sep	73	77	81	83	82	81	83	88	89	88	81	76	70	59	50	49	50	54	56	60	64	68	69	70	70.9	89
22-Sep	67	70	70	72	74	75	79	84	80	76	68	61	57	55	51	50	49	51	52	58	75	68	70	86	66.6	86
23-Sep	81	84	82	92	90	94	99	OR	OR	OR	OR	OR	90	92	92	85	83	87	89	92	97	OR	OR	91	--	99
24-Sep	86	84	84	84	85	86	82	82	81	75	65	56	48	43	37	34	34	35	36	36	39	42	43	51	59.5	86
25-Sep	54	52	54	56	60	62	58	58	57	56	56	58	60	61	62	63	62	64	66	71	73	75	76	76	62.0	76
26-Sep	71	75	82	90	90	90	93	93	89	96	94	87	75	71	68	63	57	53	59	58	54	51	49	61	73.7	96
27-Sep	54	53	52	57	60	62	68	87	85	85	78	73	68	63	60	60	62	67	71	68	82	81	81	76	69.0	87
28-Sep	70	70	68	69	70	72	76	77	76	73	67	64	61	58	50	46	45	44	44	42	44	47	49	55	59.8	77
29-Sep	60	63	68	66	71	71	71	76	79	74	68	62	60	56	51	54	59	57	52	57	64	63	65	61	63.6	79
30-Sep	60	61	64	65	69	72	70	74	72	64	55	47	40	33	31	30	30	33	33	36	38	43	45	46	50.4	74
	66.6	68.9	70.6	72.4	73.9	76.3	77.8	78.6	77.7	73.6	67.9	61.8	57.6	53.8	51.7	49.5	48.8	49.1	50.9	52.8	56.3	57.3	60.6	64.5	Diurnal Average	
	93	94	97	92	90	94	99	93	90	96	94	87	90	92	92	85	83	87	89	92	97	85	91	91	Diurnal Maximum	

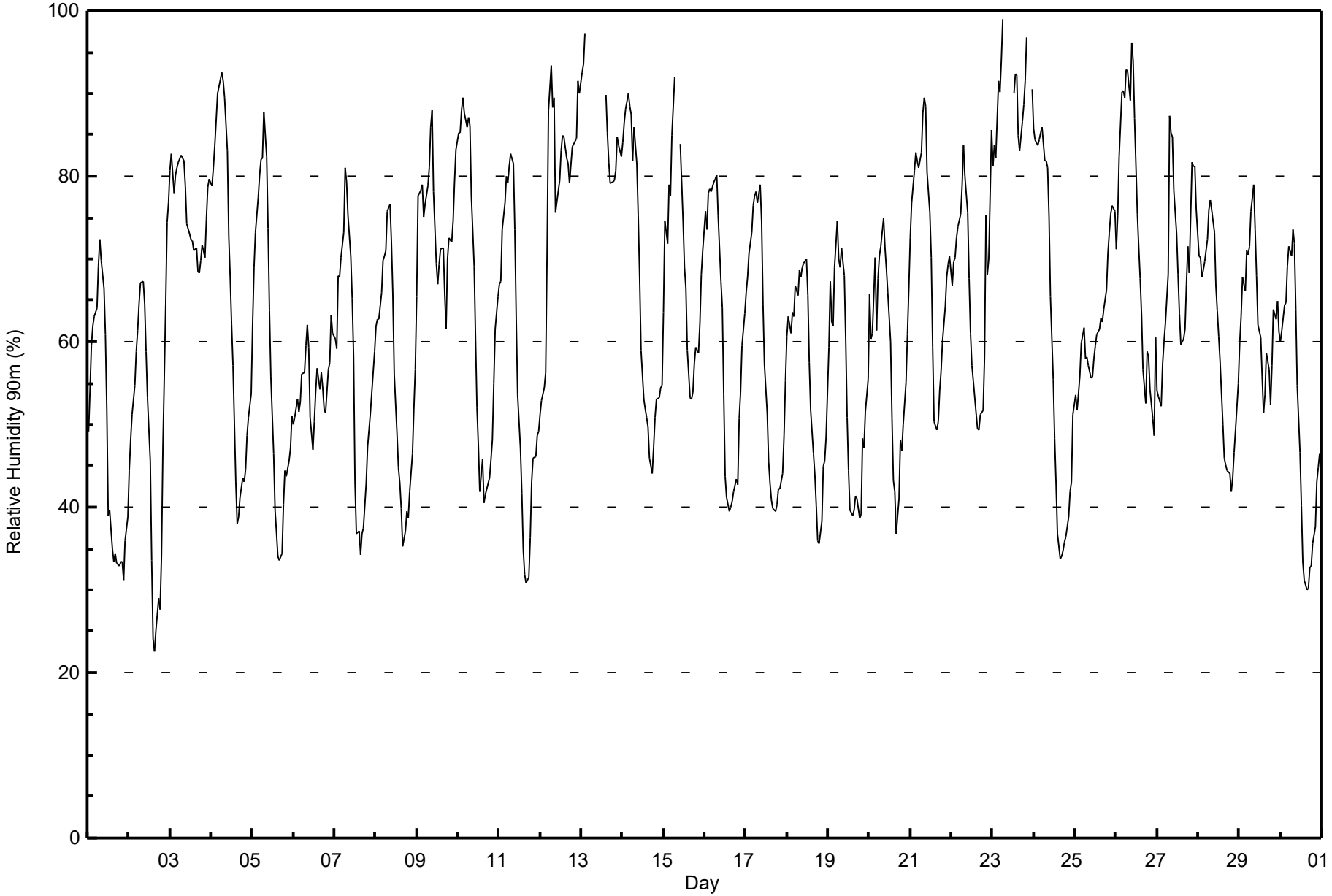
OR - Out of Range

Wood Buffalo Environmental Association

Hourly Averages

Relative Humidity 90m (RH90) - %

Mannix - September 2024



Relative Humidity 90m (RH90) - %

Mannix - September 2024

Concentration Ranges (%)	Number of Hours	%	Cumulative %
0 - 20	0	0.00	0.00
20 - 40	69	9.87	9.87
40 - 60	229	32.76	42.63
60 - 80	271	38.77	81.40
80 - 100	130	18.60	100.00

Total Number of Valid Hours: 699

Total Number of Hours: 720

Wood Buffalo Environmental Association

Summary of Hour Averages

Wind Speed 20m (WS20) - km/h

Mannix - September 2024

Maximum Speed: 32 km/h on Sep 9 18:00

Maximum Daily Speed Average: 15.7 km/h on Sep 30

Minimum Speed Value: 0 km/h on Sep 11 08:00

Minimum Daily Speed Average: 0.5 km/h on Sep 15

Maximum Diurnal Speed Average: 5.3 km/h at hour 14

Minimum Diurnal Speed Average: 1.9 km/h at hour 24

Monthly Average Velocity: 3.1 km/h 229.1 deg

Percentiles: $P_1 = 1$ $P_{10} = 4$ $Q_1 = 6$ Median = 9 $Q_3 = 12$ $P_{90} = 16$ $P_{99} = 26$

Hours in Service:	720
Hours of Data:	720
Hours of Missing Data:	0
Percent Operational Time:	100.0

Day	Hourly Period Ending At (MST)																								Daily	Daily
	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24	Average	Maximum
1-Sep	SSE11	SSE9	SSE10	SSE11	SSE10	SSE10	SSE9	SSE10	SE8	SE8	SSE12	SSE13	SW19	SW17	WSW18	WSW19	WSW17	WSW13	WSW8	SSW9	SW8	SW7	S6	SSE7	SSW8.0	WSW19
2-Sep	SSE9	SSE10	SSE7	SSE8	SSE10	SSE10	SSE6	SSE7	SSE4	SE5	SSE6	SE4	SE5	WSW5	WSW15	W16	W13	WSW12	WSW11	WNW12	NNW17	NNE21	NNE25	NNE24	WSW1.4	NNE25
3-Sep	NNE15	NNE13	N15	N12	NNE15	NNE11	NNE11	NNE7	NNE7	NNE8	N7	N8	NNE10	NE8	NNE9	NE9	NNE7	NNE7	NNE8	NNE6	N7	NNE9	NNE8	NNE7	NNE9.2	NNE15
4-Sep	N5	SW1	SW1	WSW5	SW7	SW8	WSW9	WSW7	W11	W15	WNW15	WNW11	W10	W10	WNW14	WNW13	WSW12	WSW12	W12	WSW8	SW9	W10	W12	WSW11	W8.7	WNW15
5-Sep	NW13	NNW9	NW6	NNW3	SE1	NNE1	SSW3	SSW3	SSE4	SE5	SE8	SE9	SSE8	SSE9	SSE9	SE11	SE12	SE13	SE13	SE16	SE16	SSE15	SSE16	SSE13	SSE6.3	SE16
6-Sep	SSE14	SE16	SSE15	SE16	SSE13	SSE11	SSE14	SSE12	SE10	SE7	S5	SW8	SSE8	SSE7	SSE11	SSE7	SSE5	SSW7	SW8	SW6	SSW4	SSW5	WSW5	W9	SSE7.8	SE16
7-Sep	WSW7	W6	S6	SSE8	SSE8	SSE6	SSE6	SSE7	SE7	SSE12	SE10	SE9	S10	SW12	SW11	SW14	SSW11	SW14	SSW9	SW10	SW9	SW8	SSW5	S2	SSW6.9	SW14
8-Sep	S3	SE5	S8	S7	SSE7	SSE9	SSE6	SSE8	SE5	SSE7	SE11	SSE12	SSE13	S9	SE5	ESE2	ENE4	NE8	NE8	SE10	SSE9	SSE7	WNW3	N5	SE5.5	SSE13
9-Sep	W6	S1	WNW3	NNE5	NNW5	N8	NNW6	NW9	NW10	WNW11	NNW4	WNW17	WNW21	W25	W26	WSW21	WSW23	W32	W29	W27	W26	W19	W18	WSW15	W13.9	W32
10-Sep	W22	W19	WSW16	WSW13	WSW14	WSW13	WSW11	WSW8	W8	W7	WSW9	W15	W17	W17	NW10	W11	W11	W9	NNW7	WNW4	W6	NNW4	WNW3	NNE9	W9.8	W22
11-Sep	NNE8	NNE4	W1	NW4	NE2	SE2	E2	ESE0	SW2	NNE1	WSW3	ENE3	ESE5	E6	SE8	SSE5	SSE6	SE8	ESE8	ESE7	SE10	SE12	SE14	SE16	SE4.1	SE16
12-Sep	SSE10	SE6	SE9	SE12	SE15	SSE12	SE10	ENE7	ENE9	ENE12	ENE7	ENE7	ENE7	E10	E10	E9	E7	E8	E6	NNW4	N7	N4	NNE4	NE4	E6.1	SE15
13-Sep	NW1	WNW6	NW3	N3	NNW6	NNW5	NW5	NW7	NNW5	NNW9	NNW9	NNW10	N7	N6	NNE10	N8	NW9	NNW11	NW10	NNW9	NNW9	NW7	NW10	NW10	NNW6.8	NNW11
14-Sep	WNW11	W12	W12	W8	WSW7	WSW7	WSW9	WSW9	W8	W5	WNW5	WSW4	W8	WSW10	WSW11	WSW11	WNW9	WNW8	NW6	NNW6	NE8	NE6	ENE1	W5	W6.3	W12
15-Sep	NNW7	N7	WNW4	NW6	N7	N7	N5	NNE7	NNE9	NNE8	NW4	NW3	NW5	W6	NW3	NW1	ESE6	SSE6	SSE10	SSE10	SSE9	SSE11	SSE11	SSE12	NE0.5	SSE12
16-Sep	SSE10	SSE11	SSE13	SSE12	SSE13	SSE13	SSE14	SSE13	SSE10	S9	SSW10	SSW15	WSW17	WSW19	WSW17	WSW15	WSW13	WSW11	SW10	SW11	SW11	WSW10	SSW7	S6	SSW9.7	WSW19
17-Sep	SSE8	SSE9	SSE9	SSE10	SSE9	SSE9	SSE11	SSE8	SE8	SSE10	SE6	SE7	SE12	SE8	ESE7	E6	ESE5	ESE5	E4	ESE7	SSE9	SSE11	SSE12	SSE12	SE8.1	SE12
18-Sep	SSE10	SSE10	SSE12	SSE10	SSE13	SSE10	SSE12	SSE10	SW3	WSW5	WSW5	W12	W19	WNW16	NW12	WNW13	WNW13	WNW9	NW4	NW6	NNW5	W8	WNW9	NNE1	WSW4.0	W19
19-Sep	WSW6	WSW1	SW4	SSE6	S6	S6	SSE6	SSE5	SSE5	SSE6	S5	SE4	ESE4	ESE4	SE5	S7	S6	SSW7	S2	ESE2	NNE7	NE5	NNW3	WNW4	SSE2.7	S7
20-Sep	WNW5	NW4	NW8	E4	WNW2	NNW6	W5	WNW9	NW11	NW11	NW9	NW8	NNW7	NNW11	NNW19	NNW17	NNW17	NNW15	NNW11	NNW15	NNW13	NNW9	NNW8	NNW7	NNW8.8	NNW19
21-Sep	WNW3	WNW4	WSW2	WSW5	WSW5	SSW4	SSW4	SSE5	S4	SSE5	SE7	SE7	SE10	SSE8	S8	SSE10	SSE11	SE12	SE12	SSE13	SSE8	SE12	SE14	SE15	SSE6.6	SE15
22-Sep	SE15	SE11	SE11	SE10	SE9	SSE7	SSE7	S5	S5	SE3	SE5	SSE5	ESE4	ENE6	ESE4	SE5	SE4	SSE5	SSE5	WNW4	SW2	S7	WSW5	NW2	SSE5.0	SE15
23-Sep	NW5	NNW6	N8	NNW6	WNW5	WNW7	NNW4	SSE1	S3	NW1	SE5	SE6	SE7	SSE9	SE10	SSE9	S7	SSE8	SSE11	S9	SSE10	SSE11	SSE10	SSE9	SSE3.5	SSE11
24-Sep	SE5	ESE4	E5	ESE4	ESE4	SE6	SSE8	SE6	W9	W19	W23	W26	W25	W25	W27	W21	W15	W11	WSW6	SW8	SSE1	SSE11	SSE10	SE8	WSW7.4	W27
25-Sep	SE9	SSE10	SSE9	SSE8	SSE9	ESE4	ESE14	SE10	SE8	SSE10	SE12	S7	SSW6	SSE5	S6	SSE7	SSW6	SSW9	SW8	S6	SW6	W3	W10	WSW6	SSE5.9	ESE14
26-Sep	SW11	W11	WNW14	WNW9	WNW9	WNW10	W15	W11	WSW8	WSW11	W15	W18	W19	WNW12	NW8	NW3	NNE2	WNW6	W8	WSW7	SW7	SW9	WSW7	SE4	W8.6	W19
27-Sep	SE5	SSE9	SE7	SSE8	SSE7	SSE11	SSE17	S9	S11	S9	S5	SSW6	S10	SSW8	SSE6	S10	S11	S9	S8	S11	S7	S11	S9	SSW11	S8.7	SSE17
28-Sep	SW15	SW16	WSW20	WSW23	WSW24	W25	W21	W18	WSW18	W21	W20	W18	W18	W12	WSW15	W10	W5	SSE3	SSE7	S8	S8	S9	SSE8	SE7	WSW12.3	W25
29-Sep	SSE6	SE8	S6	N2	ESE4	SE4	WNW3	N8	N12	N9	N10	NNW8	NNW10	NNW13	NNE17	N15	NNW15	NNW15	NNW13	NW11	WNW12	WNW13	NW12	WNW13	NNW6.9	NNE17
30-Sep	W14	WNW16	W17	W19	W18	WNW10	W10	WSW12	WSW9	WSW13	W18	W25	W20	W25	W30	WNW28	WNW28	WNW15	W10	WSW8	SW10	SW12	WSW13	WSW12	W15.7	W30
	SSW2.7	SSW2.3	SSW3.2	SSW3.0	SSW3.2	SSW3.1	SSW3.4	SSW2.9	SW2.1	SW2.6	SW3.0	WSW4.6	WSW5.0	WSW5.3	W4.9	W4.6	WSW4.5	WSW4.1	WSW3.1	SW3.4	SW2.6	SSW2.8	SW2.4	SSW1.9	Diurnal Average	
	W22	W19	WSW20	WSW23	WSW24	W25	W21	W18	WSW18	W21	W23	W26	W25	W25	W30	WNW28	WNW28	W32	W29	W27	W26	NNE21	NNE25	NNE24	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: 9 km/h on Sep 9 17:00

Minimum Value: 1 km/h on Sep 21 05:00

Percentiles: P_1 = 1 P_{10} = 2 Q_1 = 2 Median = 3 Q_3 = 4 P_{90} = 5 P_{99} = 7

Hours in Service:	720
Hours of Data:	720
Hours of Missing Data:	0
Hours of Calibration:	0
Percent Operational Time:	100.0

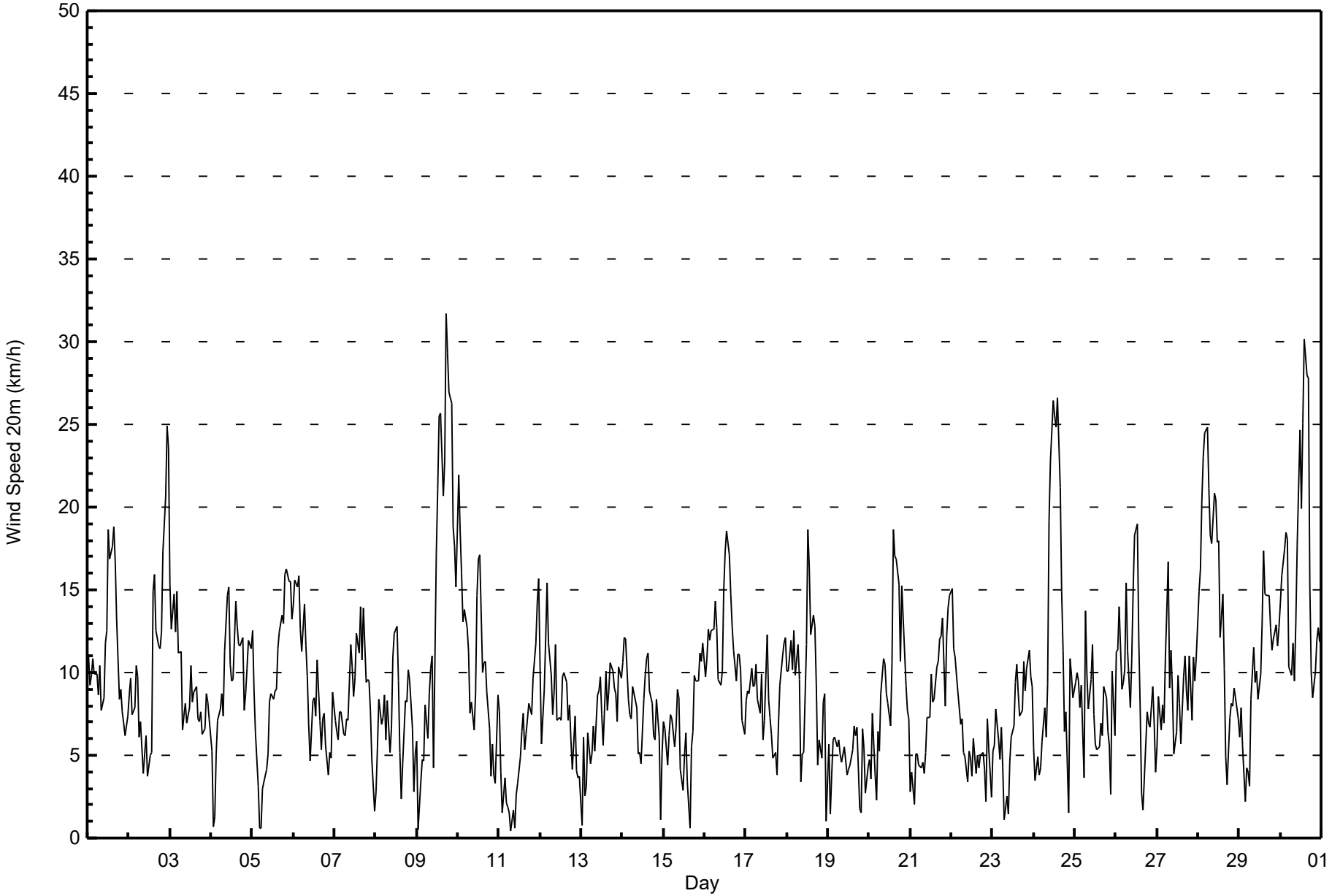
Day	Hourly Period Ending At (MST)																								Daily
	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24	Maximum
1-Sep	3	3	3	3	2	2	3	4	3	3	5	6	6	6	6	5	5	3	2	1	1	3	2	1	6
2-Sep	1	1	2	1	2	2	4	3	3	3	3	2	2	5	4	5	3	3	2	6	6	6	7	6	7
3-Sep	5	4	5	4	5	4	3	3	2	3	3	3	3	3	3	3	3	3	2	2	2	3	3	2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

Wood Buffalo Environmental Association

Hourly Averages

Wind Speed 20m (WS20) - km/h

Mannix - September 2024



Wind Speed Ranges (km/h)	Number of Hours	%	Cumulative %
0 - 5	154	21.39	21.39
6 - 11	384	53.33	74.72
12 - 19	150	20.83	95.56
20 - 28	29	4.03	99.58
29 - 38	3	0.42	100.00
> 38	0	0.00	100.00

Total Number of Valid Hours: 720

Total Number of Hours: 720

Wood Buffalo Environmental Association

Frequency Distribution

Wind Speed 20m (WS20) - km/h

Mannix - September 2024

Wind Speed							**Wind Direction**										
Ranges (km/h)	N	NNE	NE	ENE	E	ESE	SE	SSE	S	SSW	SW	WSW	W	WNW	NW	NNW	**Totals**
0 - 5	6	7	3	3	4	15	20	15	11	7	6	12	6	14	15	10	154
6 - 11	14	21	6	6	8	5	40	100	35	13	22	28	27	15	19	25	384
12 - 19	4	4	0	1	0	1	19	29	0	1	8	24	30	15	3	11	150
20 - 28	0	3	0	0	0	0	0	0	0	0	0	5	18	3	0	0	29
29 - 38	0	0	0	0	0	0	0	0	0	0	0	0	3	0	0	0	3
> 38	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Totals	24	35	9	10	12	21	79	144	46	21	36	69	84	47	37	46	720

Total Number of Valid Hours: 720

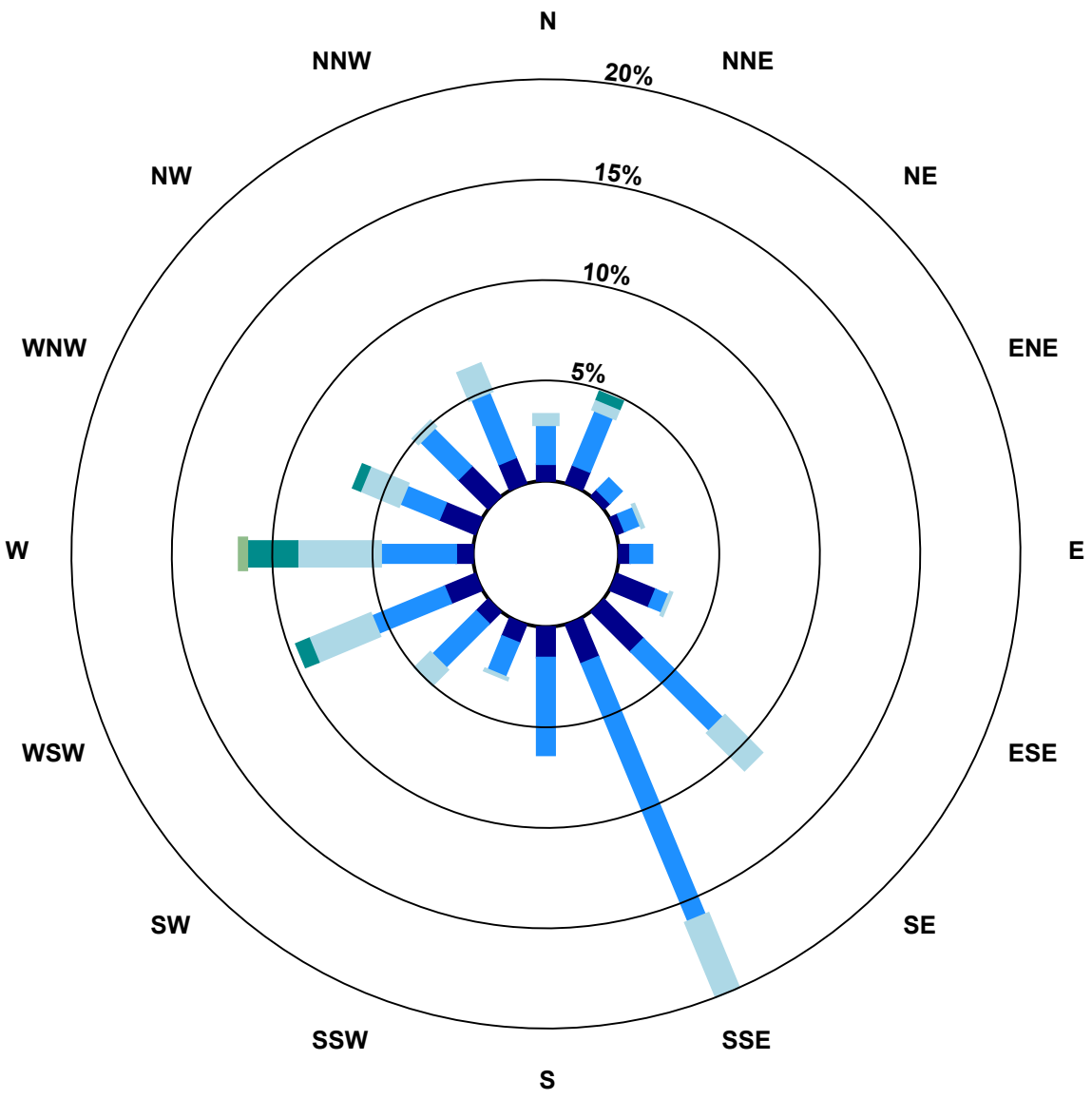
Total Number of Hours: 720

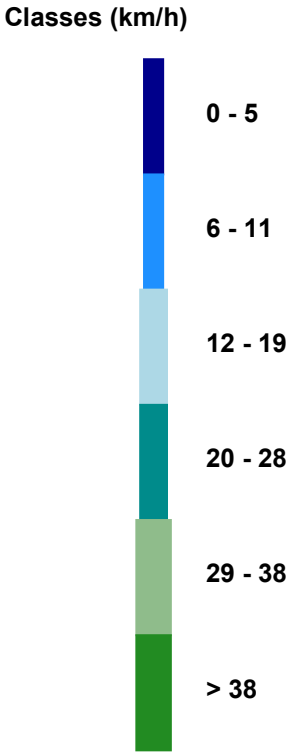
Wood Buffalo Environmental Association

Wind Rose Sep 2024

Wind Speed 20m (WS20) - km/h

Mannix





Total Number of Valid Hours: 720

Wood Buffalo Environmental Association

Summary of Hour Averages

Wind Speed 45m (WS45) - km/h

Mannix - September 2024

Maximum Speed: 39 km/h on Sep 9 18:00

Maximum Daily Speed Average: 21.3 km/h on Sep 30

Minimum Speed Value: 0 km/h on Sep 9 02:00

Minimum Daily Speed Average: 1.6 km/h on Sep 15

Maximum Diurnal Speed Average: 6.8 km/h at hour 14

Minimum Diurnal Speed Average: 2.8 km/h at hour 9

Monthly Average Velocity: 4.2 km/h 220.9 deg

Percentiles: P_1 = 1 P_{10} = 6 Q_1 = 9 Median = 13 Q_3 = 18 P_{90} = 23 P_{99} = 32

Hours in Service: 720

Hours of Data: 720

Hours of Missing Data: 0

Percent Operational Time: 100.0

Day	Hourly Period Ending At (MST)																								Daily	Daily
	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24	Average	Maximum
1-Sep	SSE18	SSE17	SSE19	SSE20	SE18	SE18	SSE15	SSE16	SE11	SE12	SSE17	SSE17	SW26	SW22	WSW22	WSW23	WSW21	WSW17	WSW13	SW15	SW16	SW16	SSW11	SSE14	S12.8	SW26
2-Sep	SSE12	SSE18	SSE16	SSE15	SSE19	SSE21	SSE12	SSE10	SE5	SSE6	SSE8	SE4	SE6	SW7	WSW18	WSW19	WSW15	WSW17	WSW20	W21	NW27	N28	N34	N33	SW2.6	N34
3-Sep	N22	N18	N21	N18	NNE21	N15	NNE15	N9	NNE9	N11	NNW10	N12	NNE14	NE10	NNE11	NNE12	NNE9	NNE9	NNE10	NNE9	N10	N12	N12	NNE10	NNE12.7	N22
4-Sep	N7	NNE1	ENE1	WSW7	WSW10	WSW12	W13	WSW10	W14	W17	W19	W13	W11	W12	WNW19	WNW18	WSW14	WSW15	WSW16	WSW15	SW17	W17	WSW20	WSW19	W12.1	WSW20
5-Sep	NW20	NNW14	NNW9	N8	NNE3	NE4	SE2	S4	SSE5	SE6	SE11	SE12	SE12	SSE12	SE12	SE15	SE18	SE19	SE20	SE24	SE25	SE24	SE25	SE21	SE9.0	SE25
6-Sep	SE23	SE26	SE25	SE27	SE22	SSE19	SSE24	SSE19	SE15	SE10	S7	SSW12	SSE12	SSE10	SSE17	SSE12	S10	SSW14	SW13	SW11	SW8	SW10	W9	W15	SSE12.1	SE27
7-Sep	W12	W11	SW8	S8	SSE15	SSE13	SSE12	SSE11	SE10	SE16	SE14	SE13	S15	SSW17	SSW15	SW19	SSW16	SW20	SSW16	SW17	SW18	WSW16	WSW12	WSW6	SSW10.4	SW20
8-Sep	SW4	SE4	S9	S10	SSE13	SSE16	SSE12	SE11	SE7	SE9	SE15	SE16	SSE17	SSE14	SE8	ESE3	ENE5	NE11	NE12	ESE15	SE16	SSE13	WSW3	N5	SE8.1	SSE17
9-Sep	W7	SW0	NW6	NNE8	N8	N14	NNW11	NW14	NW15	WNW16	NW6	W22	W27	W31	W31	WSW26	WSW29	W39	W35	W32	W32	W23	WSW23	WSW21	W17.3	W39
10-Sep	WSW27	WSW25	WSW23	WSW20	WSW22	WSW20	WSW17	WSW9	WSW10	WSW8	WSW11	WSW18	WSW20	W21	NW15	W15	W13	W11	NW12	NW8	WNW10	N7	NNW4	NNE12	W12.8	WSW27
11-Sep	NNE12	NNE7	ENE1	N3	NE4	ESE3	E2	S1	SSW2	N0	WSW3	ENE3	ESE6	E8	SE10	SE7	SSE8	SE12	ESE11	ESE9	ESE13	SE16	SE20	SE22	ESE5.9	SE22
12-Sep	SE16	ESE8	ESE13	SE19	SE24	SE18	SE13	ENE10	ENE12	ENE16	ENE9	ENE9	ENE9	E11	E11	E11	ENE8	ENE9	ENE7	N6	N10	NNE7	NE7	ENE6	E8.5	SE24
13-Sep	NE3	NW9	NW8	NNW6	NNW11	NNW7	NW9	NW13	NNW9	NNW13	NW14	NW15	NNW11	N8	NNE14	N11	NW15	NNW17	NW17	NNW16	NNW15	NW12	NW17	WNW15	NNW11.3	NW17
14-Sep	WNW15	W16	W16	W13	W11	WSW11	W14	WSW13	W9	W6	W6	WSW5	W11	WSW12	WSW14	WSW14	WNW14	WNW13	NW11	NNW12	NE13	NE10	E4	WSW2	W8.4	W16
15-Sep	NNW11	N11	NNW6	NW11	N15	NNE12	N10	N11	NNE12	NNE11	NW5	NW4	NW7	W7	WNW5	WNW1	E6	SE8	SE16	SSE17	SSE19	SSE19	SSE20	SSE22	ENE1.6	SSE22
16-Sep	SSE19	SSE20	SSE22	SSE21	SSE23	SSE23	SSE25	SSE21	S16	S18	S17	SSW22	SW22	WSW23	WSW21	SW19	WSW17	SW16	SW16	SW21	SW20	SW18	SSW13	SSW12	SSW16.1	SSE25
17-Sep	S10	SSE14	SSE15	SSE18	SE18	SE17	SSE19	SSE12	SSE11	SSE12	SE7	SE9	SE16	SE11	ESE9	E7	ESE6	ESE6	E10	ESE12	SE17	SSE20	SSE21	SSE21	SE12.5	SSE21
18-Sep	SSE19	SSE20	SE23	SSE20	SSE23	SSE18	SSE21	SSE16	SW5	WSW6	WSW7	W15	W24	WNW21	WNW18	WNW19	WNW19	WNW13	NW9	NW11	NNW8	W10	WNW13	N4	SW5.0	W24
19-Sep	SW1	W2	W3	SSE6	SSE11	SSE9	SSE10	S7	SSE5	SSE6	SSE6	SE4	ESE4	ESE4	SE7	SSE10	S8	SSW12	S6	SE3	NNE11	NE9	NNE5	NNW8	SSE3.6	SSW12
20-Sep	WNW7	NNW4	WNW13	ENE5	NW2	NNW11	W7	WNW13	WNW17	NW16	NW14	NW12	NNW10	NW14	NNW26	NNW25	NNW25	NNW23	NNW17	NNW26	NNW23	NNW18	NNW14	NNW13	NNW13.9	NNW26
21-Sep	NNW7	NW8	NNW1	WSW4	W10	WSW4	SSW7	SSE6	S6	SE7	SE9	SE10	SE13	SE12	S13	SSE14	SE15	SE17	SE19	SSE21	SSE15	SE19	SE21	SE20	SSE8.7	SSE21
22-Sep	SE22	SE18	SE18	SE16	SE15	SSE12	SSE12	S9	S7	SE4	SE6	SSE6	SE4	ENE6	E4	SE6	SE6	SSE7	SSE9	NW6	SSW3	SSE10	SW10	NNW5	SE7.4	SE22
23-Sep	NNW10	N10	N12	NNW11	NNW8	NW12	NNW9	NW2	S3	NW2	SE5	SSE8	SE8	SSE13	SE15	SSE13	S13	SSE13	SSE18	S17	SSE17	SSE18	SSE17	SSE15	SSE4.6	SSE18
24-Sep	S8	SSE1	ENE6	ESE6	ESE6	SE11	SSE14	SSE9	WSW13	WSW24	W27	WSW32	W30	W30	W31	W26	W18	W15	WSW12	SW13	SSW4	SE16	SE18	SE16	WSW10.0	WSW32
25-Sep	SE18	SE17	SE18	SE14	SE14	ESE7	ESE17	SE15	SE12	SE17	SE18	SSE12	SSW9	SSE8	S8	SSE11	S13	SSW17	SW16	SSW12	WSW10	W8	W18	WSW11	SSE9.3	SE18
26-Sep	WSW17	W17	WNW22	WNW16	WNW15	WNW16	W21	W15	W11	WSW15	W18	W21	W23	WNW17	NW11	NW4	NNW2	WNW10	WNW12	SW11	SW11	SW16	WSW15	ESE3	W12.9	W23
27-Sep	SE9	SSE16	SE12	SSE16	SSE13	SSE17	SSE27	S15	SSE18	SSE15	S7	SSW8	S14	S12	S8	S16	S17	S15	S13	SSE19	S13	S20	S18	SSW20	S14.4	SSE27
28-Sep	SW22	SW23	WSW27	WSW30	WSW32	W30	W26	WSW23	WSW23	WSW25	W25	W22	W22	W14	WSW18	W13	WSW7	S5	SSE12	S17	S16	SSE19	SSE15	SE13	WSW16.1	WSW32
29-Sep	SSE11	SE14	SSE10	NNE3	E7	ESE6	NW3	N13	N15	N13	N13	NNW11	NNW15	NNW18	N24	N21	NNW22	NW20	NW18	WNW19	WNW21	NW19	WNW21		NNW10.0	N24
30-Sep	W21	W23	W23	W25	W24	WNW15	W15	WSW17	WSW11	WSW16	W22	W29	W25	W31	W37	WNW37	W36	WNW22	WNW16	WSW13	WSW14	WSW17	WSW20	WSW19	W21.3	WNW37
	SSW3.6	S3.2	S3.9	S4.2	S4.7	S4.5	S5.6	SSW4.1	SW2.8	SW3.3	SW3.9	WSW5.8	WSW6.4	WSW6.8	WSW6.2	WSW6.0	WSW6.1	WSW5.8	WSW4.6	SW5.4	SW4.5	SSW4.4	SW4.1	SSW2.9	Diurnal Average	
	WSW27	SE26	WSW27	WSW30	WSW32	W30	SSE27	WSW23	WSW23	WSW25	W27	WSW32	W30	W31	W37	WNW37	W36	W39	W35	W32	W32	N28	N34	NNE33	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 Sep 9 17:00

Minimum Value: 1 km/h on Sep 26 20:00

Percentiles: P_1 = 1 P_{10} = 2 Q_1 = 2 Median = 3 Q_3 = 4 P_{90} = 5 P_{99} = 7

Hours in Service:	720
Hours of Data:	720
Hours of Missing Data:	0
Hours of Calibration:	0
Percent Operational Time:	100.0

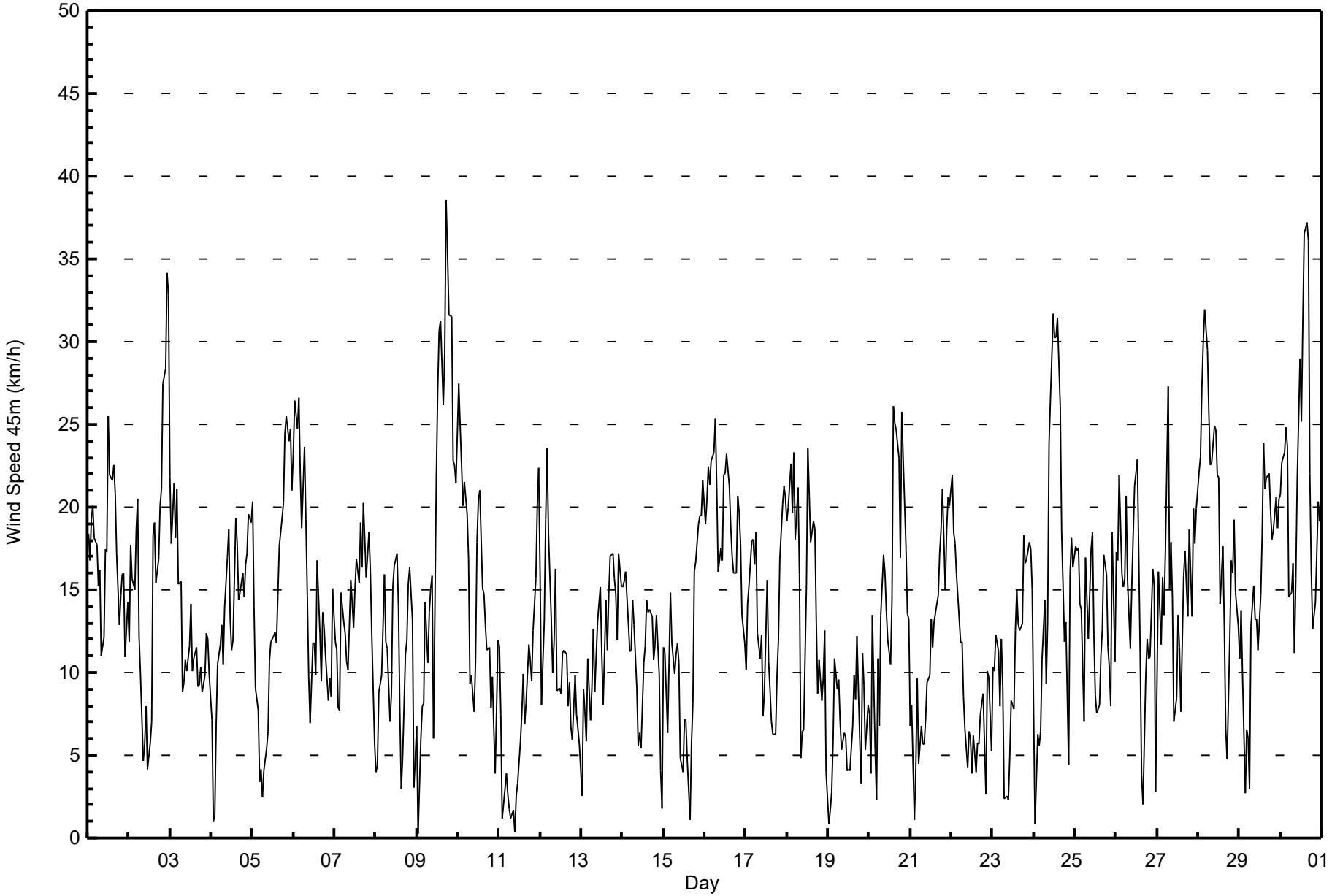
Day	Hourly Period Ending At (MST)																								Daily
	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24	Maximum
1-Sep	3	3	4	4	2	2	3	4	3	3	4	5	5	6	6	4	4	3	2	1	2	4	2	3	6
2-Sep	2	1	2	2	2	2	7	2	3	4	3	2	2	6	4	4	3	3	2	7	5	6	6	5	7
3-Sep	5	5	6	4	5	3	3	3	2	3	4	3	3	3	3	3	2	3	2	2	2	2	2	3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

Wood Buffalo Environmental Association

Hourly Averages

Wind Speed 45m (WS45) - km/h

Mannix - September 2024



Wind Speed Ranges (km/h)	Number of Hours	%	Cumulative %
0 - 5	69	9.58	9.58
6 - 11	208	28.89	38.47
12 - 19	305	42.36	80.83
20 - 28	117	16.25	97.08
29 - 38	20	2.78	99.86
> 38	1	0.14	100.00

Total Number of Valid Hours: 720

Total Number of Hours: 720

Wood Buffalo Environmental Association

Frequency Distribution

Wind Speed 45m (WS45) - km/h

Mannix - September 2024

Wind Speed Ranges (km/h)	Wind Direction																
	N	NNE	NE	ENE	E	ESE	SE	SSE	S	SSW	SW	WSW	W	WNW	NW	NNW	**Totals**
0 - 5	4	4	3	5	3	5	8	4	4	3	4	6	2	2	7	5	69
6 - 11	15	12	5	10	8	11	26	27	14	4	8	15	16	3	14	20	208
12 - 19	13	8	2	2	0	6	52	66	19	11	14	36	23	23	18	12	305
20 - 28	5	1	0	0	0	0	18	21	1	2	8	23	21	6	3	8	117
29 - 38	1	1	0	0	0	0	0	0	0	0	0	5	12	1	0	0	20
> 38	0	0	0	0	0	0	0	0	0	0	0	0	1	0	0	0	1
Totals	38	26	10	17	11	22	104	118	38	20	34	85	75	35	42	45	720

Total Number of Valid Hours: 720

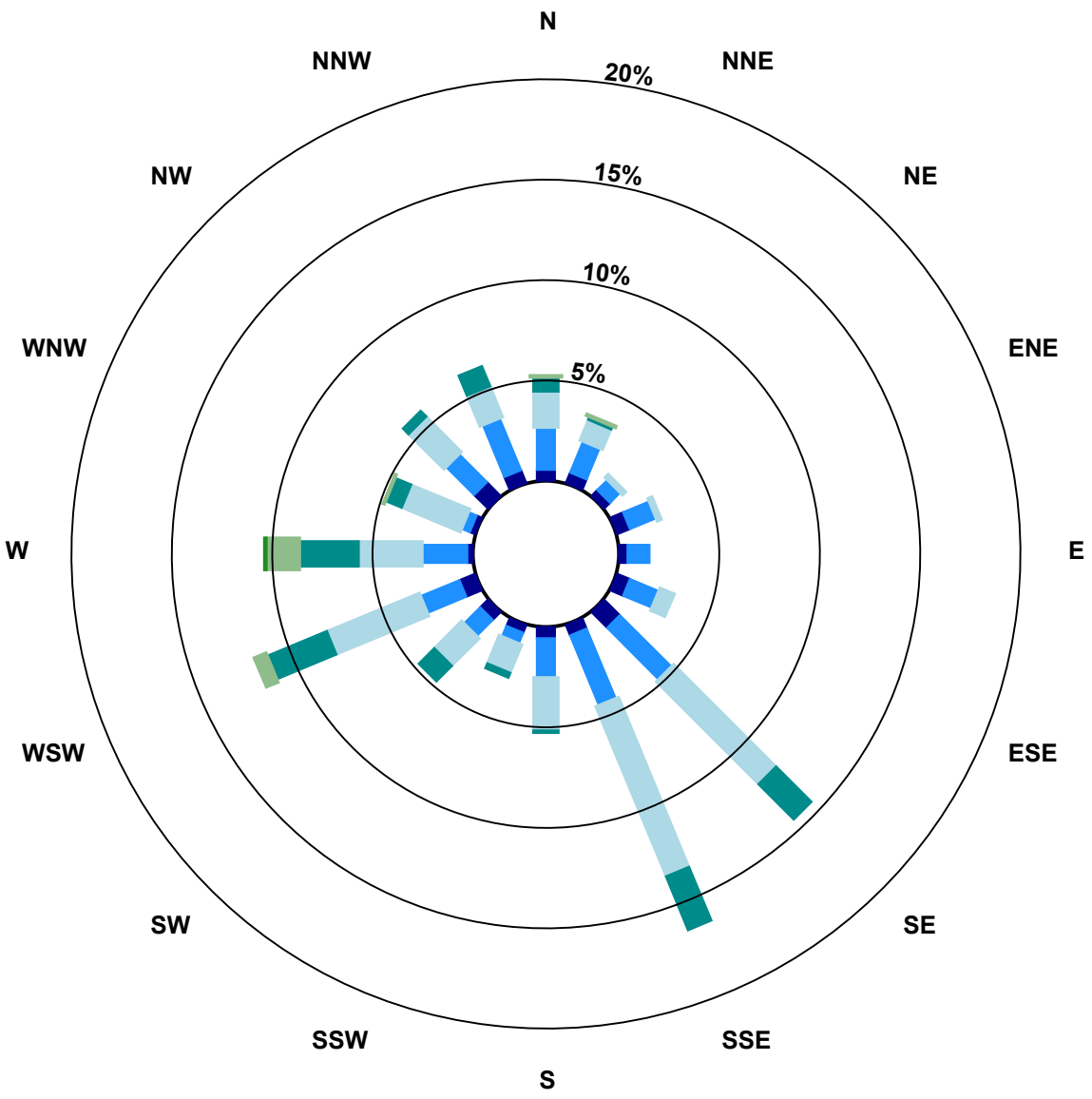
Total Number of Hours: 720

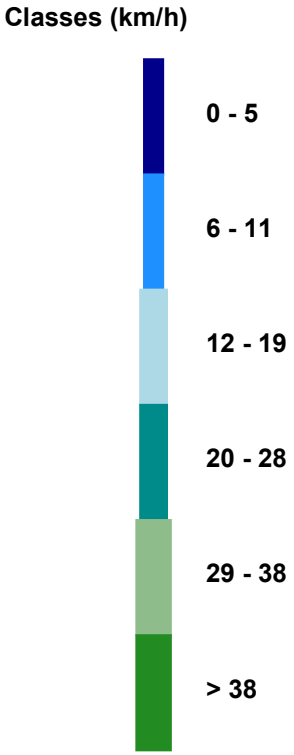
Wood Buffalo Environmental Association

Wind Rose Sep 2024

Wind Speed 45m (WS45) - km/h

Mannix





Total Number of Valid Hours: 720

Wood Buffalo Environmental Association

Summary of Hour Averages

Wind Speed 75m (WS75) - km/h

Mannix - September 2024

Maximum Speed: 41 km/h on Sep 9 18:00

Maximum Daily Speed Average: 24.3 km/h on Sep 30

Minimum Speed Value: 0 km/h on Sep 11 10:00

Minimum Daily Speed Average: 2.9 km/h on Sep 15

Maximum Diurnal Speed Average: 7.3 km/h at hour 14

Minimum Diurnal Speed Average: 3.4 km/h at hour 9

Monthly Average Velocity: 5.0 km/h 226.0 deg

Percentiles: P_1 = 1 P_{10} = 6 Q_1 = 10 Median = 15 Q_3 = 22 P_{90} = 27 P_{99} = 36

Hours in Service: 720

Hours of Data: 720

Hours of Missing Data: 0

Percent Operational Time: 100.0

Day	Hourly Period Ending At (MST)																								Daily	Daily
	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24	Average	Maximum
1-Sep	SSE24	SSE25	SSE28	SSE28	SE24	SSE26	SSE24	SSE21	SSE13	SE13	SSE19	SSE19	SW28	SW23	WSW23	WSW24	WSW23	WSW19	WSW16	SW17	SW21	SW17	SSW15	S12	S15.8	SSE28
2-Sep	SSW10	S12	S11	S9	S12	SSE15	S18	SSE10	SSE5	SSE6	SSE8	SSE4	SE5	SW8	WSW20	WSW20	WSW18	WSW20	WSW27	WNW27	NNW32	N32	NNE37	NNE37	WSW4.4	NNE37
3-Sep	N25	N21	N25	N21	NNE25	NNE19	NNE17	N9	NNE10	NNE11	N11	N13	NNE15	NE11	NNE11	NNE12	NNE10	NNE10	NNE12	NNE11	NNE12	NNE14	N13	NNE11	NNE14.3	NNE25
4-Sep	N8	NNE3	ENE3	SW5	WSW10	WSW15	W17	W14	W15	W18	WNW19	W13	W12	W13	WNW20	WNW19	WSW16	WSW17	W19	WSW18	WSW22	W26	W26	W25	W14.3	W26
5-Sep	NW24	NNW18	N10	N9	NNE6	NE5	ESE3	SSE7	SSE5	SE6	SE11	SE12	SSE12	SSE13	SSE11	SE13	SE19	SE21	SE24	SE29	SE32	SSE31	SSE32	SSE29	SE10.5	SSE32
6-Sep	SSE31	SSE36	SSE33	SE36	SSE31	SSE27	SSE31	SSE27	SSE17	SSE11	S9	SSW13	S13	SSE10	SSE21	S18	SSW13	SW17	SW16	WSW16	WSW13	WSW14	W13	WNW21	S15.5	SE36
7-Sep	WNW15	WNW15	WSW10	SW6	SE10	SSE18	SSE17	SSE13	SE10	SE17	SE15	SSE14	S16	SW18	SSW17	SW21	SSW18	SW23	SW19	SW22	WSW26	WSW22	WSW19	W12	SSW12.0	WSW26
8-Sep	WSW9	S3	SSW6	SW7	S6	S8	S6	SE13	SSE7	SE9	SSE16	SSE18	SSE17	S15	SE9	ESE3	ENE5	NE13	ENE12	SE15	SSE21	SSE19	S5	N1	SSE7.8	SSE21
9-Sep	NW4	ESE1	NNW5	NNE9	N7	N17	N13	NW15	NW15	WNW16	NNW7	W22	W28	W32	W34	WSW29	WSW32	W41	W37	W33	W33	W25	W26	WSW26	W17.9	W41
10-Sep	W31	W29	WSW27	WSW25	WSW27	WSW26	WSW22	WSW12	WSW10	WSW8	WSW11	WSW19	WSW22	W22	NW17	W18	W14	W13	NW13	NW9	NW11	N8	NNE5	NE10	W14.7	W31
11-Sep	NE12	NNE9	E3	NE3	NE5	SE9	SE4	ESE1	S2	ESE0	SW2	E3	ESE6	E8	SE10	SE7	SSE8	SE13	ESE10	ESE8	ESE10	SE14	SE18	SE18	ESE6.3	SE18
12-Sep	SE15	ESE7	ESE8	SE21	SE29	SE24	SE10	ENE10	ENE14	ENE19	ENE10	ENE10	ENE10	E11	E11	E11	ENE8	E9	ENE7	N6	N11	NE12	NE9	ENE10	E9.4	SE29
13-Sep	N4	NNW8	NNW8	NNW8	NNW14	NNW9	NW11	NNW15	NNW10	NNW14	NNW15	NNW16	N12	N9	NNE16	N13	NW16	NNW19	NNW20	NNW20	NNW19	NW14	NW20	NW18	NNW13.3	NNW20
14-Sep	WNW17	WNW18	W20	W18	W16	W15	W16	W18	W12	W6	W7	WSW6	W11	WSW12	WSW16	WSW16	WNW15	WNW15	NW13	N16	NE18	ENE13	E6	ESE2	WNW9.6	W20
15-Sep	N12	N14	NNE7	N10	NNE19	NE15	NNE13	NNE16	NNE14	NNE11	NW4	NW3	NW7	W7	WNW5	WNW1	ESE5	SE8	SE18	SSE22	SSE27	SSE27	S25	SSE27	E2.9	SSE27
16-Sep	SSE24	S23	S25	S26	S26	S26	S27	S25	S22	S22	SSW19	SSW24	SW24	WSW25	WSW22	SW20	WSW19	SW18	SW21	SW25	SW28	WSW26	SW17	SSW16	SSW20.1	SW28
17-Sep	SSW13	S13	SSE17	SSE15	SSE23	SSE15	SSE16	SSE10	SSE12	SSE12	SSE8	SE9	SE15	SE10	ESE8	E6	SE6	ESE6	E11	ESE11	SSE22	SSE27	SSE29	SSE27	SSE13.2	SSE29
18-Sep	SSE26	SSE27	SSE29	SSE26	SSE32	SSE26	S28	S20	WSW8	W8	W7	W16	W24	WNW21	WNW18	WNW20	WNW19	WNW14	NNW11	NW12	NNW11	NW6	NW9	NNW7	SW5.8	SSE32
19-Sep	NNW1	WSW0	W3	SW3	SSE9	SSE12	SSE4	SSE5	SSE5	SSE5	S6	SSE4	SE4	ESE4	SSE7	SSE11	S9	SSW13	S7	SE2	NE16	NE15	NE7	NNW8	SE3.0	NE16
20-Sep	NW8	NNE4	NW11	ENE6	N2	NNW14	WNW6	WNW14	NW18	NW17	NW14	NNW13	NNW12	NNW15	NNW28	N27	NNW27	NNW26	N20	N32	N30	NNW24	NNW18	NNW18	NNW16.1	N32
21-Sep	NNW11	NNW10	NNW5	WNW3	WNW6	WSW4	SSW6	SE8	SSE10	SSE9	SSE10	SE10	SE14	SSE12	S15	SSE15	SSE16	SE19	SE23	SSE26	S20	SE18	SE18	SE18	SSE9.3	SSE26
22-Sep	SE25	SE23	SE23	SE21	SE20	SE17	SSE14	S13	S7	SSE5	SSE6	SSE6	SE4	E6	E4	SE6	SE6	SSE9	SSE9	NW5	SSW3	S10	SW10	NNW6	SSE9.0	SE25
23-Sep	NNW13	N13	NNE15	N14	N10	NNW12	NNW12	NNW6	SSW1	NW3	SE4	SSE8	SE7	SSE13	SE16	SSE15	S14	SSE16	S24	S23	SSE22	SSE23	S22	S18	SSE5.3	S24
24-Sep	SW11	W5	ENE2	SE6	SE6	SSE8	S13	SSW8	W17	WSW27	W28	WSW34	W32	W32	W33	W28	W20	W18	W14	WSW13	SW6	SE14	SSE22	SSE24	WSW12.4	WSW34
25-Sep	SSE25	SSE23	SE20	SE11	ESE9	ESE6	ESE13	SE15	SE13	SE24	SE24	SSE15	SSW10	S9	S9	SSE13	SSW16	SSW20	SW20	SSW14	WSW15	W15	W25	W15	S10.8	SSE25
26-Sep	WSW21	W21	WNW27	NW20	WNW18	WNW19	W24	WNW18	W13	WSW18	W21	W22	W24	WNW17	NW12	NW4	NW3	WNW12	WNW13	WSW12	WSW14	WSW23	WSW23	NNE1	W15.5	WNW27
27-Sep	SE5	SSE17	SSE14	SSE20	SSE20	SSE23	SSE35	S20	SSE22	SSE18	S8	SSW9	S14	S12	S9	S17	S20	S19	S17	S24	SSW17	S25	SSW23	SSW26	S17.3	SSE35
28-Sep	SW28	SW27	WSW31	WSW34	WSW37	W32	W28	WSW25	WSW25	W26	W26	W24	W23	W15	WSW19	W13	WSW7	S6	S15	SSW24	S20	S25	S19	SSE17	WSW19.1	WSW37
29-Sep	SSE16	SE15	SE12	ENE3	E7	ESE5	N4	N16	N18	N15	N14	NNW12	NNW16	NNW21	NNE27	N25	NNW25	NNW26	NNW24	NW21	WNW22	NW24	NW22	WNW25	NNW11.7	NNE27
30-Sep	WNW25	WNW26	W27	W30	W28	WNW15	W18	W20	WSW12	WSW17	W23	W30	W26	W33	W38	WNW40	WNW39	WNW25	WNW20	W14	W20	WSW22	WSW26	WSW26	W24.3	WNW40
	SW4.2	SSW3.5	SSW4.3	SSW4.3	S4.8	S5.1	SSW6.2	SSW4.7	SW3.4	SW3.7	SW4.4	WSW6.3	WSW6.9	WSW7.3	WSW6.7	WSW6.8	WSW7.0	WSW6.7	WSW5.7	SW6.6	SW5.8	SW5.5	SW5.9	SW4.3	Diurnal Average	
	SSE31	SSE36	SSE33	SE36	WSW37	W32	SSE35	SSE27	WSW25	WSW27	W28	WSW34	W32	W33	W38	WNW40	WNW39	W41	W37	W33	W33	N32	NNE37	NNE37	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 Sep 9 17:00

Minimum Value: 1 km/h on Sep 19 02:00

Percentiles: P_1 = 1 P_{10} = 2 Q_1 = 2 Median = 3 Q_3 = 4 P_{90} = 5 P_{99} = 8

Hours in Service:	720
Hours of Data:	720
Hours of Missing Data:	0
Hours of Calibration:	0
Percent Operational Time:	100.0

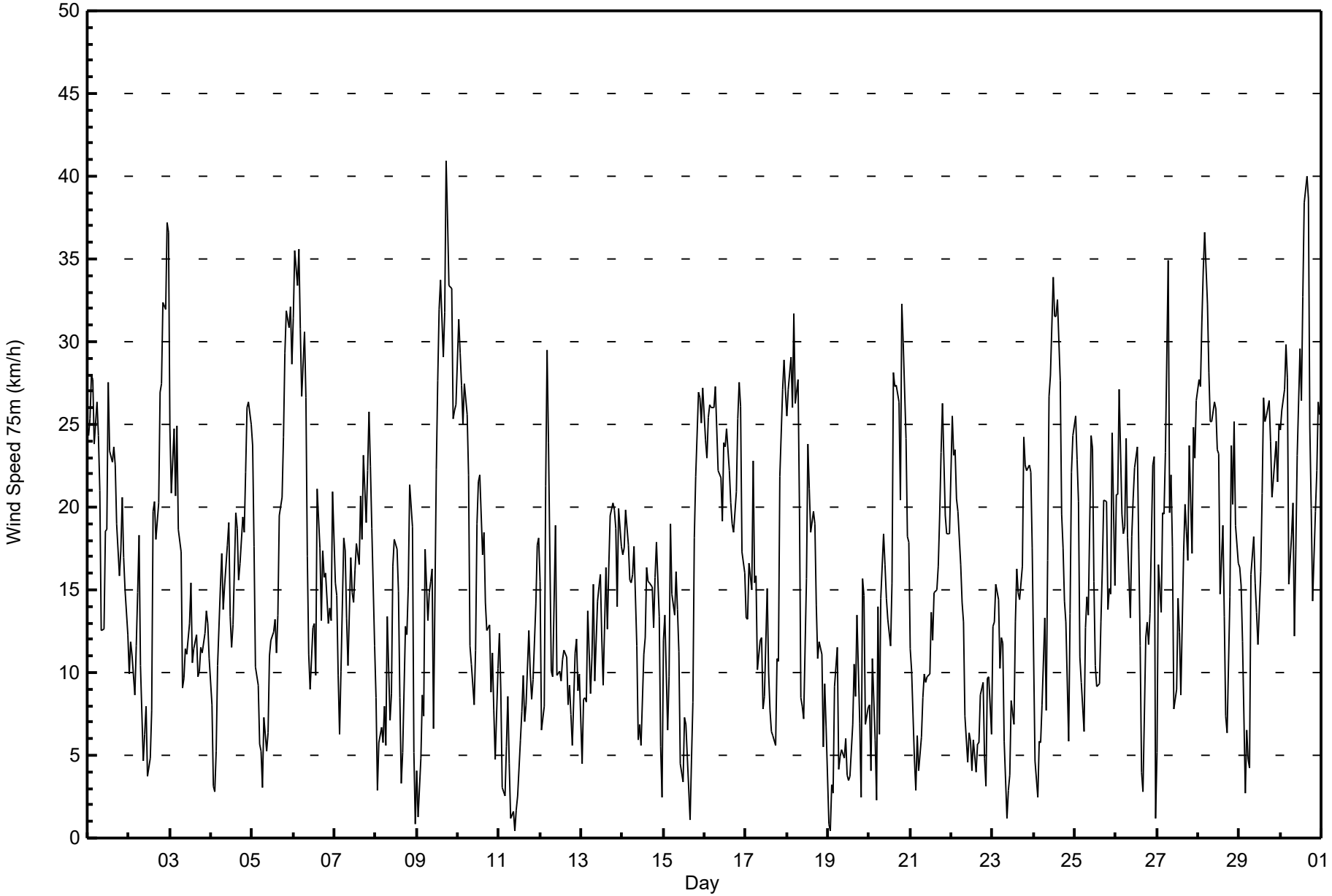
Day	Hourly Period Ending At (MST)																								Daily
	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24	Maximum
1-Sep	3	2	3	3	1	2	3	4	3	3	4	5	5	6	6	4	4	3	2	1	1	2	2	4	6
2-Sep	2	2	2	2	2	3	8	4	4	5	3	2	2	7	5	4	2	4	2	5	5	5	5	5	8
3-Sep	6	5	6	4	4	3	2	3	2	3	4	3	3	3	3	2	2	3	2	2	3	2	2	2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

Wood Buffalo Environmental Association

Hourly Averages

Wind Speed 75m (WS75) - km/h

Mannix - September 2024



Wind Speed Ranges (km/h)	Number of Hours	%	Cumulative %
0 - 5	68	9.44	9.44
6 - 11	169	23.47	32.92
12 - 19	251	34.86	67.78
20 - 28	186	25.83	93.61
29 - 38	43	5.97	99.58
> 38	3	0.42	100.00

Total Number of Valid Hours: 720

Total Number of Hours: 720

Wood Buffalo Environmental Association

Frequency Distribution

Wind Speed 75m (WS75) - km/h

Mannix - September 2024

Wind Speed							**Wind Direction**										
Ranges (km/h)	N	NNE	NE	ENE	E	ESE	SE	SSE	S	SSW	SW	WSW	W	WNW	NW	NNW	**Totals**
0 - 5	4	4	3	4	3	9	7	9	3	2	3	2	2	3	7	3	68
6 - 11	12	12	4	8	10	11	21	24	16	6	6	9	6	2	8	14	169
12 - 19	15	13	7	4	0	1	27	36	21	13	7	25	30	20	13	19	251
20 - 28	7	2	0	0	0	0	14	35	21	6	13	31	28	13	6	10	186
29 - 38	3	2	0	0	0	0	4	12	0	0	0	6	15	0	0	1	43
> 38	0	0	0	0	0	0	0	0	0	0	0	0	1	2	0	0	3
Totals	41	33	14	16	13	21	73	116	61	27	29	73	82	40	34	47	720

Total Number of Valid Hours: 720

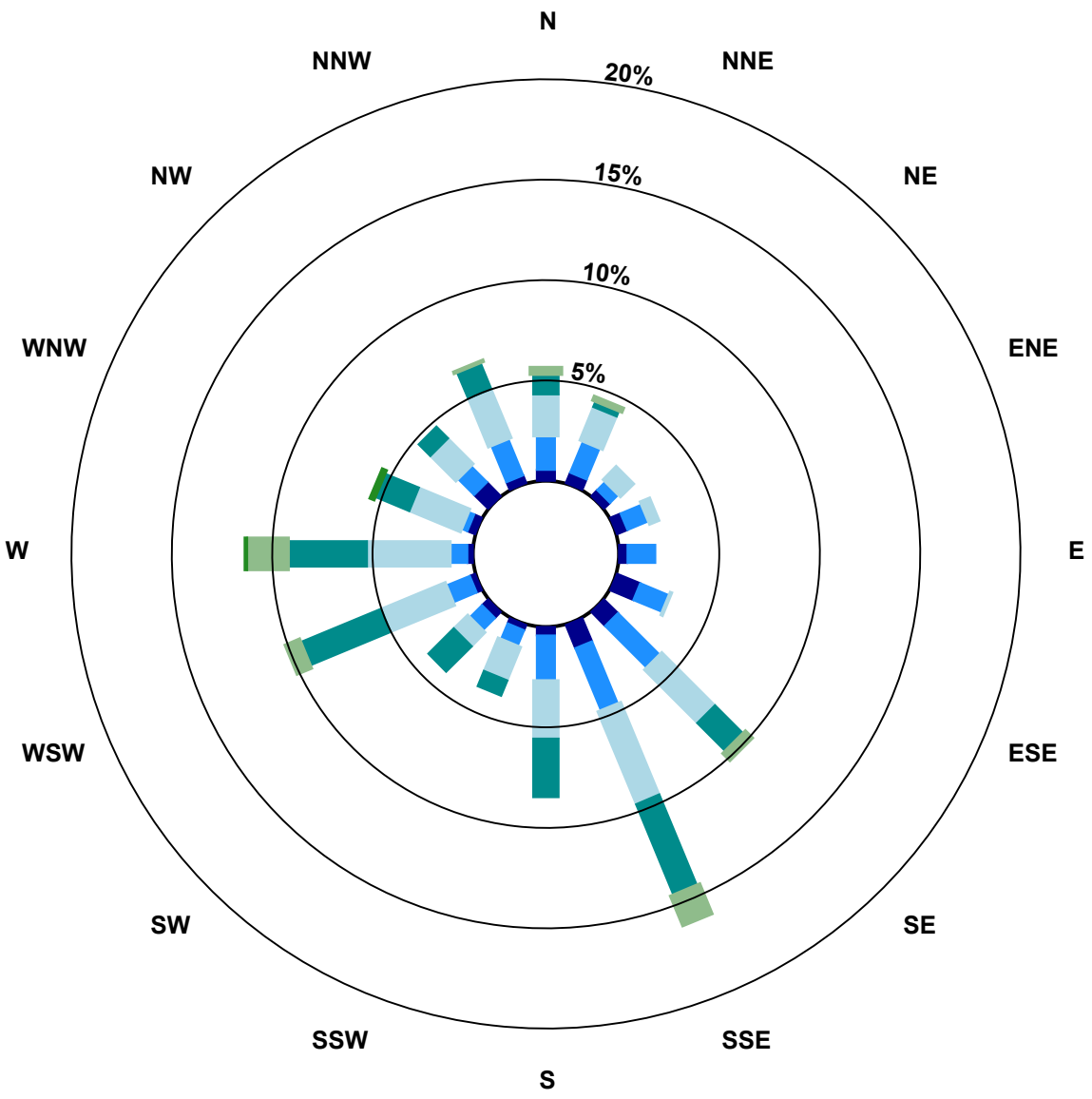
Total Number of Hours: 720

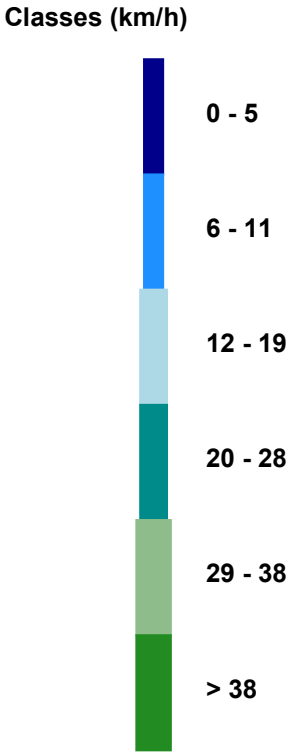
Wood Buffalo Environmental Association

Wind Rose Sep 2024

Wind Speed 75m (WS75) - km/h

Mannix





Total Number of Valid Hours: 720

Wood Buffalo Environmental Association

Summary of Hour Averages

Wind Speed 90m (WS90) - km/h

Mannix - September 2024

Maximum Speed: 41 km/h on Sep 9 18:00

Maximum Daily Speed Average: 25.7 km/h on Sep 30

Minimum Speed Value: 0 km/h on Sep 11 10:00

Minimum Daily Speed Average: 2.1 km/h on Sep 19

Maximum Diurnal Speed Average: 7.5 km/h at hour 14

Minimum Diurnal Speed Average: 3.4 km/h at hour 2

Monthly Average Velocity: 5.2 km/h 231.8 deg

Percentiles: P_1 = 1 P_{10} = 6 Q_1 = 10 Median = 16 Q_3 = 22 P_{90} = 28 P_{99} = 37

Hours in Service: 720

Hours of Data: 719

Hours of Missing Data: 1

Percent Operational Time: 99.9

Day	Hourly Period Ending At (MST)																								Daily	Daily
	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24	Average	Maximum
1-Sep	SSE26	SSE28	SSE29	SSE28	SSE25	SSE28	SSE27	SSE22	SSE13	SE13	SSE19	S18	SW28	SW23	WSW23	WSW24	WSW23	WSW19	WSW17	SW18	WSW22	WSW16	SW18	SSW12	SSW16.5	SSE29
2-Sep	SW11	S9	S8	SSW7	S10	SSE11	S18	SSE10	SSE5	S7	SSE7	S3	SE5	SW8	WSW20	WSW21	WSW19	WSW22	WSW29	WNW30	NNW35	N33	N37	N37	W5.7	N37
3-Sep	N26	N22	N26	N21	NNE26	N20	N18	N9	N10	N12	NNW12	N14	NNE16	NNE11	NNE11	NNE12	NNE10	NNE10	NNE12	NNE13	NNE13	N14	N13	N11	NNE14.8	NNE26
4-Sep	N8	NNE4	ENE3	SW5	WSW10	W15	W19	W15	W16	W18	W19	W14	W12	W13	WNW20	WNW19	WSW16	WSW17	W21	W19	WSW23	W30	W29	W28	W15.0	W30
5-Sep	NW26	N19	N11	N9	NNE6	NE6	E4	SSE7	SSE5	SE6	SE11	SE12	SSE12	SSE13	SE11	SE14	SE20	SE21	SE25	SE30	SE34	SSE33	SSE34	SSE31	SE10.7	SSE34
6-Sep	SSE34	SSE38	SSE36	SSE37	SSE33	SSE30	SSE32	SSE28	SSE18	S12	SSW10	SSW13	S13	S9	SSE21	S18	SSW14	SW19	WSW17	WSW18	WSW15	WSW16	W15	WNW22	S16.3	SSE38
7-Sep	WNW15	WNW15	W13	WSW6	SE7	SSE14	SSE15	SSE11	SE9	SE17	SSE15	SSE15	S16	SW18	SSW17	SW21	SSW18	SW24	SW20	SW25	WSW29	WSW25	W21	W15	SW12.1	WSW29
8-Sep	WSW10	SW3	SW5	WSW6	SSW4	SSW7	S6	SE12	SSE8	SE9	SSE17	SSE18	SSE17	S15	SE8	SE3	ENE5	NE13	E13	SE17	SSE22	SSE21	S7	S1	SSE7.7	SSE22
9-Sep	NW1	SE2	N3	NNE8	N5	N18	N15	NW15	NW16	WNW17	NNW7	W22	W28	W32	W34	WSW30	WSW32	W41	W38	W34	W34	W26	W27	WSW28	W18.1	W41
10-Sep	W33	W31	W29	WSW27	WSW29	WSW27	WSW23	WSW13	WSW11	WSW8	WSW11	WSW19	W22	W22	NW18	W20	W15	W13	NW14	NW9	NW12	N8	NNE5	NE9	W15.6	W33
11-Sep	NE12	NNE9	E4	ENE4	ENE6	SE9	SE7	ENE2	SSE2	E0	SW1	E2	ESE6	E8	SE10	SE7	SSE8	SE12	ESE13	ESE11	ESE12	SE17	SE20	SE21	ESE7.3	SE21
12-Sep	SE17	ESE10	ESE11	SE23	SE31	SE25	ESE13	E12	ENE15	ENE19	ENE10	ENE10	ENE10	E11	E12	E12	ENE8	E10	ENE8	N5	N12	NNE13	NE10	NE11	E10.4	SE31
13-Sep	NNE6	NNW8	NNW9	NNW9	NNW15	NNW10	NNW12	NNW16	NNW10	NNW15	NNW16	NNW17	N13	N10	NNE17	N13	NW17	NNW21	NNW22	NNW22	NNW21	NW15	NW21	NW19	NNW14.3	NNW22
14-Sep	NW18	WNW19	WNW22	WNW20	WNW18	W16	WNW16	W19	W14	W6	W7	WSW6	W11	WSW12	WSW17	WSW16	WNW16	WNW16	NW14	N18	NE19	NE15	E7	ESE4	WNW10.4	WNW22
15-Sep	NNW11	N14	NNE7	N10	NNE20	NE17	NNE16	NNE18	NNE15	NNE11	NNW5	NW4	NW7	W6	WNW5	NW2	ESE5	SE8	SE18	SSE22	S27	SSE27	S25	S26	E2.7	SSE27
16-Sep	S23	S21	S23	S26	S25	S25	S26	S26	S25	SSW22	SSW19	SSW24	SW24	WSW25	WSW22	WSW20	WSW20	WSW20	WSW23	SW26	SW30	WSW30	SW19	SW18	SSW21.1	SW30
17-Sep	SW15	S12	S14	SSE11	SSE18	S12	SSE13	S7	SSE11	SSE12	SSE8	SE9	SE16	SE10	ESE8	E7	SE6	ESE6	E12	ESE13	SSE22	SSE28	SSE31	SSE29	SSE12.4	SSE31
18-Sep	SSE25	SSE28	SSE28	SSE27	SSE33	SSE29	S28	S19	WSW11	W9	W8	W16	W24	WNW21	WNW19	WNW20	WNW19	WNW15	NNW12	NW12	NNW13	NW6	NW9	NNW7	SW6.2	SSE33
19-Sep	NW2	S1	WSW3	WSW4	SE5	SSE7	SSW1	S3	S5	SSE4	S6	SSE3	SE4	ESE4	SSE7	S10	S8	SSW13	S6	SE2	NNE17	NE17	NE7	N8	SE2.1	NNE17
20-Sep	NW8	NNE4	NW10	NE6	NNW2	NNW15	WNW6	NW15	NW19	NW17	NW15	NNW14	NNW12	NNW16	NNW29	NNW28	NNW29	NNW28	NNW22	N35	N32	NNW27	NNW21	N20	NNW17.1	N35
21-Sep	NNW13	NNW11	NNW6	NW3	WNW5	SW2	SW5	SE7	SSE11	SSE11	SSE10	SE10	SE14	SSE12	S15	SSE15	SSE16	SE20	SE24	SSE27	S20	SE19	SE21	SE20	SSE9.4	SSE27
22-Sep	SE27	SE24	SE24	SE22	SE21	SE17	SSE15	S15	S7	SSE4	SSE6	S6	SE4	ENE6	E4	SE6	SE5	SSE8	SSE9	NW5	SSW3	S9	SW10	NW7	SSE9.2	SE27
23-Sep	NNW13	N14	NNE16	N16	N12	NNW12	NNW13	NNW7	WNW1	NW3	SSE3	SSE8	SE7	SSE13	SE16	S15	S14	SSE16	S26	S24	SSE24	SSE24	S24	SSW18	SSE5.1	S26
24-Sep	SW13	W7	NE0	SE5	SSE4	SSE6	S12	SW8	W18	WSW28	W28	WSW34	W32	W32	W33	W28	W20	W18	W16	WSW13	SW7	SSE12	SSE22	SSE24	WSW13.4	WSW34
25-Sep	SSE26	SSE23	SE21	SE15	ESE13	ESE11	ESE21	SE18	SE16	SE26	SE25	SSE16	SSW11	S9	S9	SSE13	SSW17	SSW21	SW22	SW15	WSW17	W18	W27	W17	S11.6	W27
26-Sep	WSW22	W23	WNW29	NW21	WNW20	WNW20	UO	WNW20	W14	WSW19	W22	W23	W24	WNW18	NW12	WNW4	NNW4	WNW13	WNW14	WSW12	WSW14	WSW24	WSW24	NNW2	W16.1	WNW29
27-Sep	SE4	SSE14	SSE12	SSE18	SSE20	SSE25	S37	S21	SSE23	SSE19	S8	SSW9	S14	S12	S9	S17	S20	S19	S18	S25	SSW18	SSW26	SSW24	SW29	S17.4	S37
28-Sep	SW30	WSW29	WSW32	WSW35	WSW37	W33	W29	WSW26	WSW26	W27	W26	W24	W23	W15	WSW19	W13	WSW8	S6	S15	SSW24	SSW21	S25	S19	SSE16	WSW19.9	WSW37
29-Sep	SSE17	SSE14	SE12	ENE3	E8	ESE7	NNE5	N16	N20	N17	N14	NNW12	NNW17	NNW22	N27	N27	NNW27	NNW28	NNW26	NW22	WNW23	NW25	NW23	WNW27	NNW12.4	NNW28
30-Sep	WNW27	WNW28	W29	W32	W30	WNW16	WNW19	W22	WSW13	WSW18	W24	W30	W27	W33	W39	WNW41	WNW40	WNW26	WNW21	W15	W22	WSW24	WSW29	WSW28	W25.7	WNW41
	SW4.4	SSW3.4	SSW4.1	SSW3.9	S4.4	S4.6	SSW6.0	SSW4.5	SW3.5	SW3.9	SW4.5	WSW6.5	WSW7.1	WSW7.5	W7.0	WSW7.2	WSW7.4	WSW7.2	WSW6.1	WSW6.8	WSW6.5	SW5.8	SW6.4	SW4.8	Diurnal Average	
	SSE34	SSE38	SSE36	SSE37	WSW37	W33	S37	SSE28	WSW26	WSW28	W28	WSW34	W32	W33	W39	WNW41	WNW40	W41	W38	N35	NNW35	N33	N37	N37	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 90m (WS90) - km/h

Mannix - September 2024

Number of Exceedences (AAAQO): 1-hr: 0 24-hr: 0
Maximum Value: 10 km/h on Sep 9 17:00

Minimum Value: 1 km/h on Sep 14 07:00

Percentiles: P_1 = 1 P_{10} = 2 Q_1 = 2 Median = 3 Q_3 = 4 P_{90} = 5 P_{99} = 8

Hours in Service:	720
Hours of Data:	719
Hours of Missing Data:	1
Hours of Calibration:	0
Percent Operational Time:	99.9

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

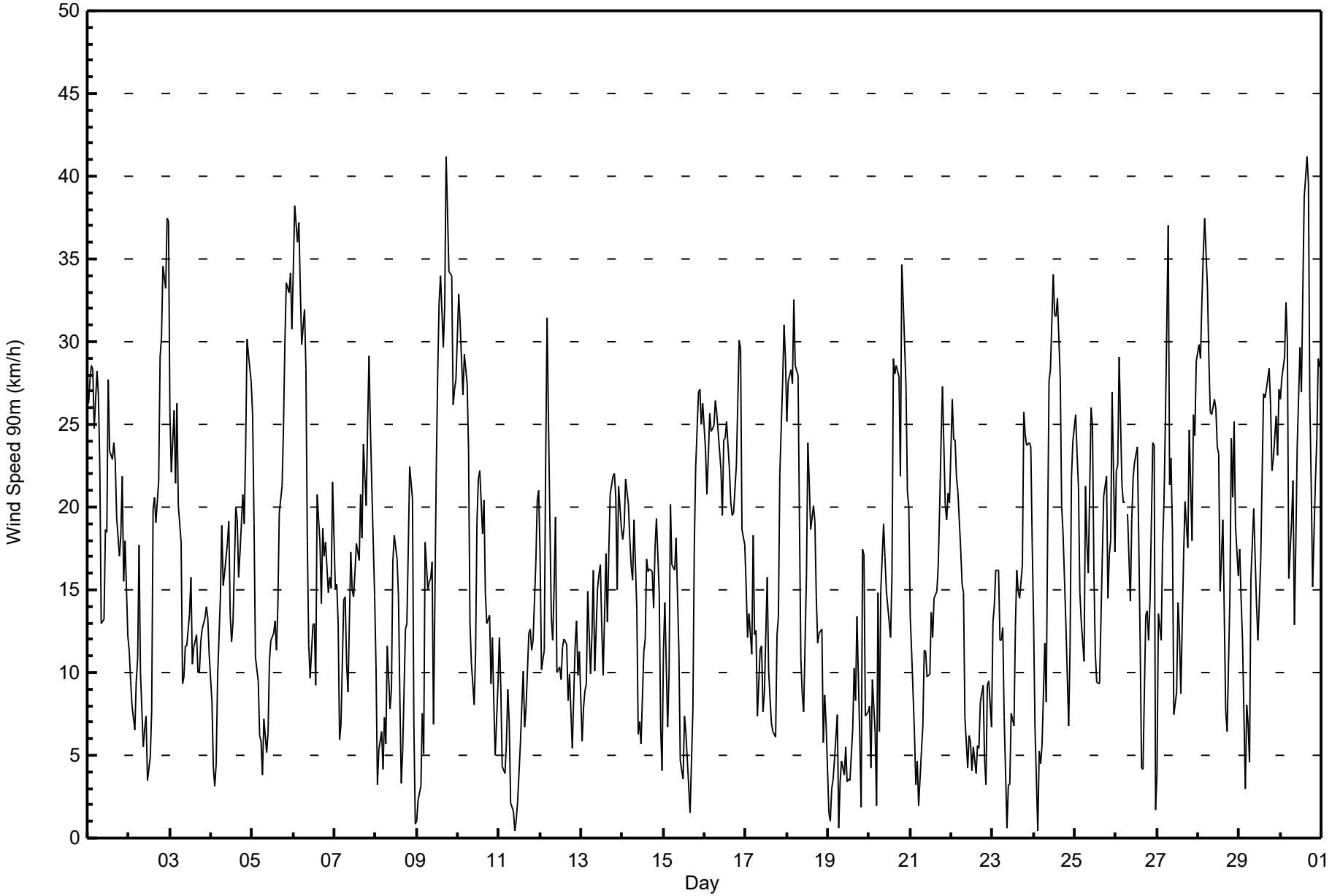
UO - Unstable Operation

Wood Buffalo Environmental Association

Hourly Averages

Wind Speed 90m (WS90) - km/h

Mannix - September 2024



Wind Speed Ranges (km/h)	Number of Hours	%	Cumulative %
0 - 5	70	9.74	9.74
6 - 11	152	21.14	30.88
12 - 19	244	33.94	64.81
20 - 28	185	25.73	90.54
29 - 38	64	8.90	99.44
> 38	4	0.56	100.00

Total Number of Valid Hours: 719

Total Number of Hours: 720

Wood Buffalo Environmental Association

Frequency Distribution

Wind Speed 90m (WS90) - km/h

Mannix - September 2024

Wind Speed							**Wind Direction**										
Ranges (km/h)	N	NNE	NE	ENE	E	ESE	SE	SSE	S	SSW	SW	WSW	W	WNW	NW	NNW	**Totals**
0 - 5	3	4	1	5	5	3	10	8	5	3	6	2	0	4	7	4	70
6 - 11	9	10	6	7	6	8	19	20	20	5	5	10	7	1	6	13	152
12 - 19	18	13	6	2	5	5	19	31	23	10	9	23	27	18	16	19	244
20 - 28	8	3	0	0	0	1	19	30	20	7	9	27	26	16	6	13	185
29 - 38	5	0	0	0	0	0	3	15	1	0	3	12	20	2	0	3	64
> 38	0	0	0	0	0	0	0	0	0	0	0	0	2	2	0	0	4
Totals	43	30	13	14	16	17	70	104	69	25	32	74	82	43	35	52	719

Total Number of Valid Hours: 719

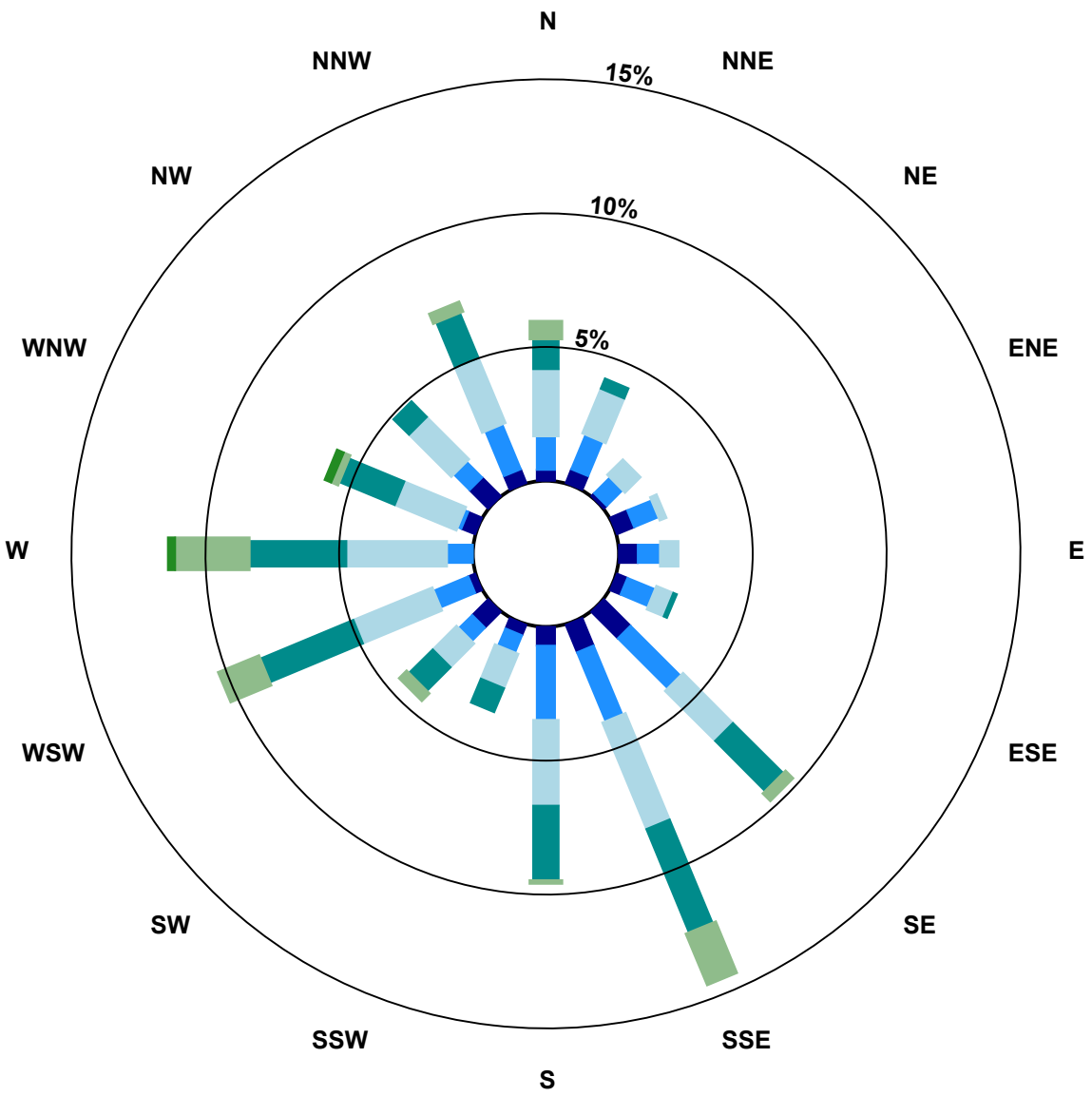
Total Number of Hours: 720

Wood Buffalo Environmental Association

Wind Rose Sep 2024

Wind Speed 90m (WS90) - km/h

Mannix



Classes (km/h)

0 - 5

6 - 11

12 - 19

20 - 28

29 - 38

> 38

Total Number of Valid Hours: 719

Direction of Maximum Speed: 266 deg on Sep 9 18:00
Direction of Maximum Daily Speed Average: 270.8 deg on Sep 30

Direction of Minimum Speed: 114 deg on Sep 11 08:00

Direction of Minimum Daily Speed Average: 0.5 deg on Sep 15

Monthly Average Direction: 229.1 deg

Hours in Service:	720
Hours of Data:	720
Hours of Missing Data:	0
Percent Operational Time:	100.0

Day	Hourly Period Ending At (MST)																								Daily
	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24	Average
1-Sep	158	151	149	154	154	157	153	153	142	137	152	166	224	231	246	257	248	251	247	212	234	229	176	154	196.3
2-Sep	151	155	152	152	162	162	159	149	147	146	148	143	140	238	254	259	262	245	250	288	328	12	17	16	242.4
3-Sep	12	13	8	1	18	12	20	18	17	18	349	357	31	46	33	39	26	20	20	19	10	16	14	16	16.7
4-Sep	5	227	221	239	233	232	257	242	266	265	284	284	271	273	295	300	253	253	260	252	236	263	260	254	264.8
5-Sep	308	327	305	343	129	16	213	207	158	141	145	142	150	161	150	138	146	138	141	141	144	150	148	150	149.5
6-Sep	148	145	147	143	151	154	156	152	140	142	180	216	161	151	160	156	168	203	227	221	213	206	251	261	165.7
7-Sep	257	263	186	153	154	151	153	155	143	149	140	141	178	219	216	232	213	220	202	216	226	230	209	177	194.1
8-Sep	173	145	171	170	156	165	149	149	143	155	144	150	159	171	143	109	76	43	46	128	152	160	291	10	144.2
9-Sep	261	183	297	24	343	352	340	318	314	297	331	283	284	274	264	255	251	266	267	272	274	265	262	256	275.4
10-Sep	264	261	256	255	252	253	252	252	265	263	252	262	261	268	313	273	271	271	327	295	276	337	299	20	268.2
11-Sep	30	16	269	312	55	141	81	114	230	19	253	78	119	98	138	147	160	145	119	118	128	142	135	136	125.8
12-Sep	150	132	139	145	144	148	134	75	67	65	64	71	65	87	88	95	88	84	82	341	5	11	27	53	96.9
13-Sep	318	289	312	351	333	336	312	326	328	332	328	328	350	357	18	358	319	329	321	327	342	324	317	304	330.4
14-Sep	284	276	272	264	254	248	257	252	269	265	282	257	278	248	250	258	297	296	304	342	39	52	76	280	274.9
15-Sep	341	351	294	313	354	5	352	14	23	20	307	309	311	270	310	326	103	147	153	157	162	159	160	160	48.4
16-Sep	158	158	158	159	162	160	162	162	167	187	192	210	239	244	252	241	242	239	235	219	224	237	193	183	202.7
17-Sep	162	155	153	150	149	150	155	156	146	152	134	133	134	141	119	99	119	121	80	123	147	156	152	160	143.8
18-Sep	150	151	147	159	152	162	155	158	224	253	249	279	281	289	304	303	303	290	307	305	329	263	283	26	247.8
19-Sep	257	249	222	159	169	176	159	161	147	156	170	131	111	107	146	174	177	201	187	110	33	35	336	303	162.5
20-Sep	284	324	311	100	291	333	260	292	304	311	322	325	332	328	342	347	339	337	346	344	343	340	347	327	330.5
21-Sep	298	299	248	242	255	201	197	158	173	149	141	142	139	150	187	155	148	143	143	164	164	136	136	140	157.0
22-Sep	140	141	145	143	146	162	165	169	180	144	137	160	121	74	105	131	143	164	157	300	220	172	238	322	150.7
23-Sep	323	346	355	331	301	296	335	164	184	319	129	146	132	153	142	161	188	149	167	173	156	157	161	155	161.2
24-Sep	144	106	85	102	111	136	152	145	262	260	270	261	271	271	268	272	274	264	253	222	153	151	148	144	248.6
25-Sep	144	148	160	160	148	120	103	131	138	154	146	172	213	165	173	155	196	197	220	184	224	274	276	248	166.9
26-Sep	236	279	287	302	292	287	278	273	255	249	267	269	280	303	310	319	12	301	280	239	227	228	244	130	272.7
27-Sep	142	159	143	162	162	161	168	190	171	175	183	201	174	192	168	186	177	174	171	169	181	178	185	199	174.2
28-Sep	231	236	242	253	253	264	265	261	255	264	266	269	265	270	257	270	260	161	156	176	170	171	160	145	247.7
29-Sep	152	144	189	3	108	136	291	1	354	351	359	330	332	344	16	353	340	335	327	312	294	303	310	294	335.0
30-Sep	280	284	270	270	279	283	273	257	258	253	266	270	276	278	273	291	285	291	281	244	233	235	238	245	270.8
	212.6	207.1	208.4	195.5	192.3	197.5	194.1	196.8	223.3	230.8	234.5	244.4	248.2	253.8	262.1	260.5	254.0	247.6	241.4	227.1	231.7	205.2	215.6	198.9	
	Diurnal Average																								

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

Number of Exceedences (AAAQO): 1-hr: 0 24-hr: 0

Maximum Value: 108 deg on Sep 9 02:00

Minimum Value: 5 deg on Sep 30 23:00

Percentiles: P_1 = 7 P_{10} = 10 Q_1 = 12 Median = 17 Q_3 = 26 P_{90} = 45 P_{99} = 87

Hours in Service:	720
Hours of Data:	720
Hours of Missing Data:	0
Hours of Calibration:	0
Percent Operational Time:	100.0

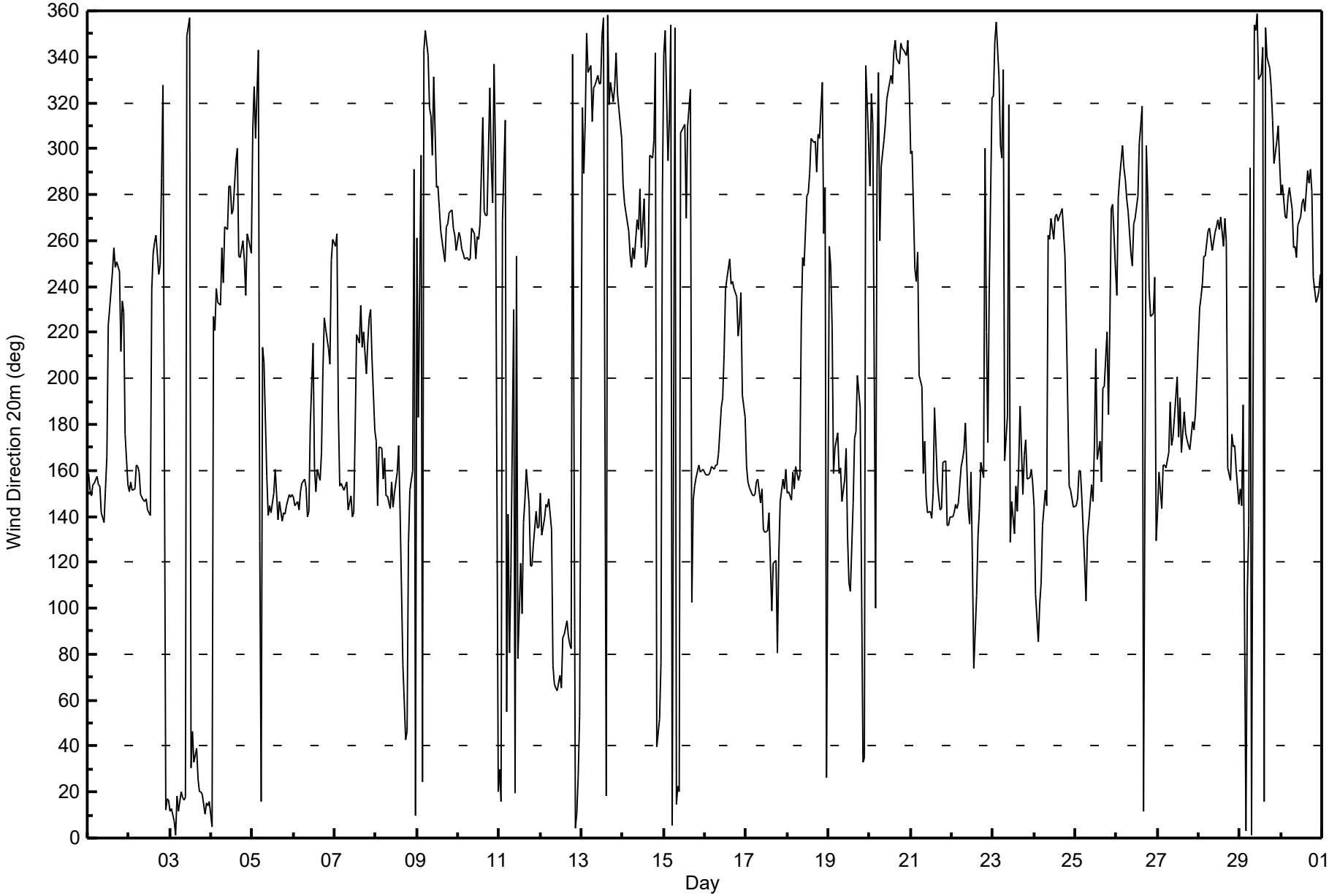
Day	Hourly Period Ending At (MST)																								Daily
	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24	Maximum
1-Sep	13	12	12	9	8	7	13	17	18	17	17	24	21	19	20	17	16	15	17	7	12	34	11	9	34
2-Sep	7	7	10	8	7	8	40	15	27	45	26	39	25	72	21	16	11	12	10	29	14	22	13	13	72
3-Sep	14	16	14	17	13	13	14	21	18	23	30	26	15	23	19	18	21	20	13	13	14	15	14	12	30
4-Sep	12	88	76	18	13	11	14	17	12	12	19	20	24	24	26	31	15	13	10	11	13	6	6	7	88
5-Sep	33	26	23	65	83	91	20	26	31	28	18	21	30	28	23	17	14	12	12	11	13	10	11	11	91
6-Sep	11	11	11	11	12	10	10	12	15	17	51	28	21	14	12	13	20	19	14	20	61	50	54	9	61
7-Sep	19	35	15	8	11	12	18	16	17	15	14	17	25	25	23	26	25	19	15	15	9	14	38	85	85
8-Sep	53	36	10	15	12	8	16	14	22	18	15	16	15	22	21	52	38	13	21	22	8	12	52	52	53
9-Sep	57	108	75	44	30	22	21	25	19	20	61	15	14	11	12	12	15	11	12	9	9	11	11	11	108
10-Sep	8	10	10	12	10	8	11	17	18	25	26	21	18	18	30	15	15	19	17	42	33	52	41	8	52
11-Sep	15	25	78	50	52	48	45	92	82	98	63	57	41	40	31	35	28	13	18	17	17	15	11	11	98
12-Sep	11	14	14	10	12	12	13	23	17	15	28	28	21	12	12	15	16	23	58	29	10	31	47	34	58
13-Sep	82	9	99	57	23	27	21	15	20	16	19	19	22	24	20	20	17	15	15	17	20	27	16	19	99
14-Sep	13	8	8	11	14	14	8	14	14	32	32	52	25	26	20	14	15	15	23	36	16	19	86	11	86
15-Sep	32	17	39	19	19	10	14	22	17	26	55	76	37	37	66	99	25	12	8	7	8	8	8	9	99
16-Sep	10	11	10	12	11	10	10	12	16	16	20	22	21	20	18	17	14	12	12	8	10	8	32	20	32
17-Sep	9	10	9	10	14	11	9	14	16	16	24	18	14	27	27	25	31	24	36	21	11	7	8	10	36
18-Sep	8	11	9	9	9	11	10	15	45	37	27	15	15	22	19	18	17	15	25	12	51	14	6	71	71
19-Sep	32	81	35	16	12	16	19	13	33	20	37	36	29	44	36	27	39	22	65	53	30	18	52	20	81
20-Sep	23	44	25	42	77	38	80	15	17	17	21	18	27	31	16	20	17	15	19	14	14	16	17	13	80
21-Sep	46	44	71	59	18	34	38	20	26	21	18	17	17	29	30	21	13	12	12	26	19	11	11	11	71
22-Sep	12	12	11	10	11	11	8	18	32	46	25	42	52	35	40	36	25	17	34	78	74	14	42	49	78
23-Sep	17	19	16	24	28	12	24	79	34	71	24	20	26	16	16	23	20	12	13	24	13	12	11	10	79
24-Sep	14	32	18	48	31	24	10	19	49	12	10	13	13	14	11	14	12	10	15	7	72	11	10	11	72
25-Sep	11	9	11	13	12	43	11	51	19	15	12	18	31	16	24	22	19	16	12	16	19	74	11	58	74
26-Sep	16	13	11	16	15	32	11	14	17	11	11	10	13	21	31	59	91	48	36	20	13	12	65	37	91
27-Sep	13	13	23	37	18	31	13	28	14	25	36	39	28	44	46	20	16	14	14	13	33	15	13	21	46
28-Sep	12	13	13	13	12	10	10	10	12	11	14	15	17	18	19	25	26	32	10	9	13	10	12	13	32
29-Sep	29	13	32	69	18	28	64	16	15	20	20	28	17	20	14	22	14	14	14	13	11	12	14	10	69
30-Sep	12	11	9	9	35	18	9	10	14	15	16	12	18	15	14	12	11	11	15	9	7	7	5	6	35
	82	108	99	69	83	91	80	92	82	98	63	76	52	72	66	99	91	48	65	78	74	74	86	85	
	Diurnal Maximum																								

Wood Buffalo Environmental Association

Hourly Averages

Wind Direction 20m (WD20) - deg

Mannix - September 2024



Direction of Maximum Speed: 261 deg on Sep 9 18:00
Direction of Maximum Daily Speed Average: 268.5 deg on Sep 30

Direction of Minimum Speed: 225 deg on Sep 9 02:00

Direction of Minimum Daily Speed Average: 1.6 deg on Sep 15

Monthly Average Direction: 220.9 deg

Hours in Service:	720
Hours of Data:	720
Hours of Missing Data:	0
Percent Operational Time:	100.0

Day	Hourly Period Ending At (MST)																								Daily
	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24	Average
1-Sep	152	147	148	149	141	146	153	152	142	133	148	162	217	225	240	251	242	246	245	220	222	221	193	159	187.5
2-Sep	161	153	150	152	156	156	162	147	137	151	147	146	135	228	249	254	256	241	247	281	324	8	11	11	219.6
3-Sep	8	10	4	357	14	9	12	9	12	11	346	351	26	36	27	30	24	18	17	20	10	10	8	12	11.7
4-Sep	3	31	70	240	242	239	260	246	262	259	279	279	266	269	292	298	249	250	257	246	235	259	258	256	262.2
5-Sep	306	334	327	352	20	39	130	185	150	137	141	139	145	157	146	132	141	132	137	136	140	145	145	146	139.4
6-Sep	144	143	144	139	144	149	153	151	142	142	178	207	161	150	156	155	177	208	227	235	235	236	262	271	165.6
7-Sep	269	273	214	172	148	149	149	150	141	143	137	142	176	213	209	225	205	215	205	220	230	242	250	252	198.0
8-Sep	234	141	179	175	158	167	153	143	144	144	141	145	154	168	137	108	65	38	54	123	145	154	240	355	144.2
9-Sep	278	225	322	12	1	352	348	318	311	294	325	279	279	269	259	250	246	261	262	268	269	260	257	251	274.0
10-Sep	258	258	254	252	249	252	247	249	257	255	248	257	257	263	310	268	267	269	322	319	303	350	344	28	266.9
11-Sep	27	23	66	356	42	123	95	173	209	0	243	72	118	96	133	143	148	135	112	112	120	130	127	127	115.3
12-Sep	134	119	123	135	140	141	124	72	61	58	60	60	57	81	80	86	77	78	71	353	2	25	35	57	90.8
13-Sep	48	309	319	332	332	327	314	325	331	330	325	326	347	352	14	353	317	327	320	327	337	320	315	303	328.6
14-Sep	286	275	271	267	265	255	261	250	268	262	274	246	272	245	244	252	295	293	309	342	35	52	79	256	276.7
15-Sep	343	352	333	324	4	13	10	9	20	17	314	309	309	262	297	300	100	139	144	149	160	154	157	155	75.9
16-Sep	155	157	154	157	158	161	162	161	173	184	187	204	233	238	247	236	238	234	233	221	222	236	204	201	196.5
17-Sep	187	156	149	147	145	145	150	155	147	148	139	130	129	137	116	95	118	113	80	113	143	149	147	153	141.2
18-Sep	155	153	141	147	148	149	158	159	228	252	252	276	276	285	299	298	297	285	320	315	338	276	299	356	232.4
19-Sep	232	272	267	149	159	161	159	169	149	151	164	136	113	105	142	166	169	194	174	135	29	34	13	333	149.7
20-Sep	303	346	302	75	325	337	267	294	302	312	318	322	328	326	339	345	336	334	345	342	340	335	340	332	329.6
21-Sep	328	314	328	258	278	245	195	153	170	145	138	138	135	145	185	153	145	136	140	161	164	131	128	130	150.9
22-Sep	134	135	138	136	138	149	158	171	173	142	136	161	132	72	98	126	137	157	148	308	198	164	225	335	145.8
23-Sep	327	350	0	343	333	314	332	311	189	311	130	147	131	148	139	160	185	148	164	171	153	154	163	163	157.6
24-Sep	183	160	71	113	115	137	163	158	258	256	265	255	265	266	264	267	269	259	253	225	192	140	145	138	237.2
25-Sep	143	134	140	136	128	114	102	128	128	144	139	165	202	165	173	153	190	192	217	198	239	273	271	258	163.1
26-Sep	241	276	286	299	292	290	276	274	260	249	264	265	275	298	306	308	337	294	284	235	228	234	247	116	271.4
27-Sep	135	154	145	156	159	154	164	184	163	167	180	194	173	185	171	181	172	170	170	166	185	179	186	201	170.8
28-Sep	228	233	238	250	249	260	261	256	251	258	261	264	260	264	251	266	256	169	161	182	173	168	157	136	238.5
29-Sep	148	136	153	27	98	123	313	355	353	349	354	331	330	342	11	350	337	331	324	311	292	303	308	291	333.5
30-Sep	280	281	269	268	276	283	273	257	255	248	261	266	272	274	268	285	280	287	287	249	248	241	239	244	268.5
	207.6	191.1	190.5	180.3	173.7	179.4	184.4	194.6	216.7	221.5	225.8	237.5	242.4	247.6	257.2	255.3	247.7	241.5	236.3	226.8	227.9	204.3	214.2	200.5	
	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: 102 deg on Sep 15 16:00

Minimum Value: 3 deg on Sep 2 05:00

Percentiles: P_1 = 3 P_{10} = 6 Q_1 = 8 Median = 11 Q_3 = 20 P_{90} = 36 P_{99} = 87

Hours in Service:	720
Hours of Data:	720
Hours of Missing Data:	0
Hours of Calibration:	0
Percent Operational Time:	100.0

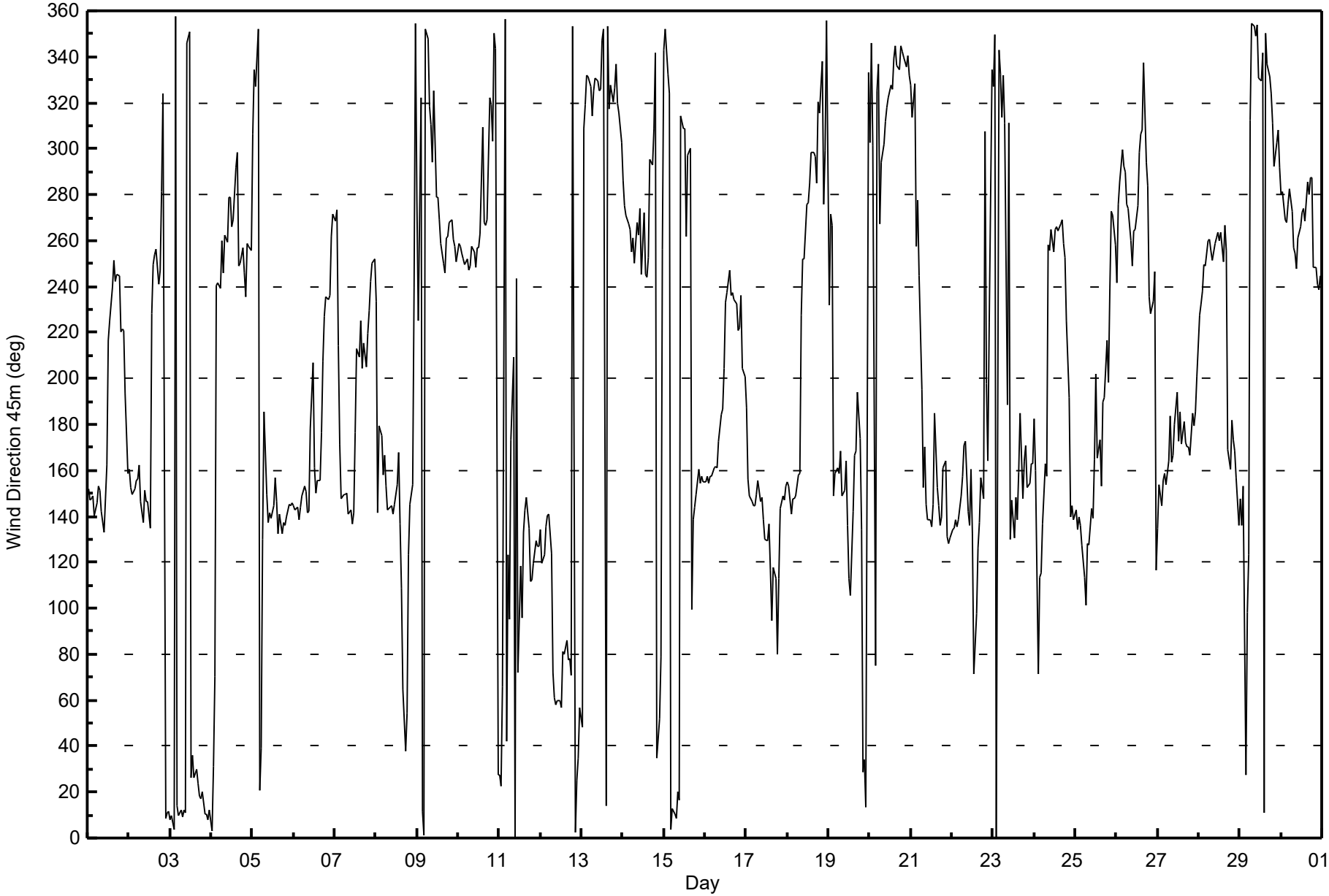
Day	Hourly Period Ending At (MST)																								Daily
	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24	Maximum
1-Sep	9	6	6	4	4	6	9	9	13	8	10	18	16	15	18	14	13	11	11	6	4	15	13	9	18
2-Sep	10	4	9	6	3	3	28	9	23	48	20	38	21	59	16	13	8	7	4	28	9	19	8	7	59
3-Sep	9	11	9	12	8	8	8	13	12	18	21	21	10	19	12	12	14	16	8	10	11	8	9	9	21
4-Sep	8	84	74	16	8	6	5	12	8	9	16	18	19	20	22	28	10	8	8	8	7	4	3	4	84
5-Sep	30	18	16	25	52	29	23	25	21	18	12	13	22	22	21	13	8	7	7	7	7	7	5	6	52
6-Sep	6	5	6	6	7	6	4	6	9	12	46	23	17	10	6	8	14	9	11	11	16	24	19	9	46
7-Sep	9	12	14	15	8	4	6	11	9	8	8	8	18	19	17	21	20	15	9	12	5	11	19	57	57
8-Sep	73	37	14	11	7	3	14	7	14	11	8	9	9	14	12	47	67	9	23	17	4	8	61	59	73
9-Sep	54	98	59	34	27	15	12	21	13	15	51	12	10	9	10	9	11	9	9	7	7	9	8	7	98
10-Sep	6	7	6	7	6	4	6	11	14	18	17	17	15	13	27	10	10	15	13	17	13	18	27	7	27
11-Sep	11	9	70	56	34	31	32	72	70	102	69	53	39	34	23	19	19	9	15	14	13	12	6	5	102
12-Sep	8	10	7	7	8	7	8	23	14	10	22	21	17	10	11	12	17	18	46	26	7	20	33	22	46
13-Sep	23	13	83	55	13	20	12	8	15	10	10	11	13	18	13	15	10	9	8	11	13	23	9	14	83
14-Sep	11	5	5	9	10	8	3	8	12	24	23	47	20	23	16	11	10	9	19	26	10	12	32	83	83
15-Sep	29	9	33	17	11	6	7	18	11	16	49	56	25	27	55	102	23	8	4	3	6	5	6	5	102
16-Sep	4	4	4	6	5	3	3	5	10	7	11	16	16	17	16	14	10	7	6	5	7	5	25	11	25
17-Sep	11	8	5	4	7	4	3	10	8	10	18	12	9	18	22	23	28	24	7	18	7	3	3	3	28
18-Sep	4	4	6	6	4	5	5	9	36	35	24	11	12	20	13	14	12	10	14	4	55	21	8	49	55
19-Sep	56	64	44	10	6	9	9	12	27	17	25	34	38	65	30	22	38	18	29	52	21	10	37	19	65
20-Sep	18	39	21	36	94	29	62	12	10	12	15	13	23	22	12	14	11	10	16	8	9	9	10	8	94
21-Sep	21	22	72	83	8	44	39	24	17	13	12	10	11	21	20	19	8	7	7	24	15	10	6	7	83
22-Sep	8	6	6	6	6	5	5	12	20	31	20	32	54	32	35	31	19	12	28	87	88	11	23	28	88
23-Sep	8	13	10	16	20	5	12	67	45	55	18	12	19	9	9	17	12	8	7	17	8	6	6	5	67
24-Sep	19	89	38	21	25	22	14	14	37	8	9	10	11	10	10	11	9	7	9	6	49	3	9	6	89
25-Sep	6	6	5	7	7	18	9	39	11	8	7	12	19	11	17	16	10	10	5	11	14	40	6	18	40
26-Sep	10	10	6	10	11	26	9	12	21	7	8	8	10	16	26	41	96	35	26	8	10	8	43	71	96
27-Sep	8	11	16	11	9	16	7	21	7	17	23	29	21	38	52	10	9	7	8	7	20	10	6	16	52
28-Sep	8	9	9	10	9	8	8	7	8	8	11	12	14	14	16	21	19	24	10	5	12	3	8	5	24
29-Sep	7	7	24	68	12	12	88	10	9	13	14	23	11	15	10	19	10	9	9	8	7	8	8	5	88
30-Sep	8	8	5	6	31	12	6	6	12	11	12	10	15	13	11	9	9	8	9	9	6	8	4	6	31
	73	98	83	83	94	44	88	72	70	102	69	56	54	65	55	102	96	35	46	87	88	40	61	83	
	Diurnal Maximum																								

Wood Buffalo Environmental Association

Hourly Averages

Wind Direction 45m (WD45) - deg

Mannix - September 2024



Wood Buffalo Environmental Association

Summary of Hour Averages

Wind Direction 75m (WD75) - deg

Mannix - September 2024

Direction of Maximum Speed: 262 deg on Sep 9 18:00
Direction of Maximum Daily Speed Average: 272.4 deg on Sep 30

Direction of Minimum Speed: 109 deg on Sep 11 10:00

Direction of Minimum Daily Speed Average: 2.9 deg on Sep 15

Monthly Average Direction: 226.0 deg

Hours in Service:	720
Hours of Data:	720
Hours of Missing Data:	0
Percent Operational Time:	100.0

Day	Hourly Period Ending At (MST)																								Daily
	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24	Average
1-Sep	152	151	154	154	145	151	158	158	154	141	152	167	217	227	241	252	242	247	248	229	232	235	211	182	189.4
2-Sep	200	174	172	179	171	157	180	159	148	161	156	158	142	227	249	256	257	243	251	283	328	11	13	13	258.6
3-Sep	10	11	7	1	16	14	14	8	13	14	349	354	29	36	29	32	29	24	21	25	16	12	9	14	14.2
4-Sep	6	22	63	230	244	257	267	262	264	261	282	280	265	271	294	302	252	254	262	258	245	259	260	259	266.3
5-Sep	311	348	349	2	20	47	110	162	152	142	145	144	149	158	148	135	144	136	140	140	143	149	148	148	139.9
6-Sep	148	147	149	145	148	154	164	160	154	159	190	207	172	166	161	169	199	219	234	243	246	252	269	285	174.2
7-Sep	289	287	247	217	145	159	160	160	144	145	146	152	180	214	209	226	204	218	214	229	237	253	258	265	209.4
8-Sep	251	182	209	215	180	189	185	144	154	141	147	150	156	170	144	120	74	46	71	130	148	156	183	352	150.6
9-Sep	314	102	340	16	4	0	0	326	316	298	330	281	281	270	260	251	247	262	263	271	271	263	259	254	276.3
10-Sep	260	261	258	255	253	254	250	252	255	251	249	258	258	263	310	270	270	273	326	322	315	358	18	48	268.1
11-Sep	44	28	83	43	55	135	127	117	176	109	234	92	118	99	134	146	148	136	114	113	119	129	131	129	116.2
12-Sep	131	119	121	134	143	142	126	76	66	65	67	61	63	84	83	84	78	80	71	4	8	34	48	57	91.0
13-Sep	11	331	336	338	338	330	326	337	345	336	332	332	352	357	17	355	323	333	328	336	344	326	322	308	336.0
14-Sep	299	289	279	277	279	268	279	262	275	262	272	241	270	247	245	256	299	297	317	350	40	57	86	114	285.8
15-Sep	350	2	19	349	24	37	30	16	24	18	325	316	308	262	292	293	105	139	145	155	165	161	170	167	99.7
16-Sep	168	174	170	173	172	176	173	173	183	191	192	205	234	237	248	236	238	236	236	230	225	240	220	213	204.5
17-Sep	212	176	166	156	155	161	160	165	152	152	151	138	136	140	118	97	126	112	89	118	154	156	148	155	150.6
18-Sep	157	154	148	153	151	152	169	173	242	262	261	278	278	286	300	300	298	288	330	323	348	309	321	344	218.6
19-Sep	327	242	265	228	157	165	156	155	162	156	177	153	125	110	148	168	176	198	182	140	36	38	37	347	146.2
20-Sep	320	18	307	63	350	345	289	302	306	318	326	329	335	332	344	349	340	338	350	350	349	344	345	346	337.9
21-Sep	342	333	345	292	293	251	212	138	164	155	149	142	141	153	186	155	148	138	143	164	173	138	130	132	152.6
22-Sep	138	137	140	138	140	143	151	171	174	154	147	167	143	80	94	126	141	160	152	319	193	170	230	327	147.5
23-Sep	339	1	17	358	360	331	337	330	197	320	143	160	137	153	144	166	188	156	170	176	159	162	173	186	162.1
24-Sep	221	260	77	135	138	154	181	202	261	258	267	257	266	267	265	269	269	260	260	237	216	146	156	148	242.1
25-Sep	151	148	141	129	122	113	106	130	133	144	139	162	199	176	180	161	192	194	218	212	247	267	272	266	172.8
26-Sep	249	280	293	306	298	297	281	283	271	255	267	268	278	299	307	305	316	292	292	241	239	242	252	20	276.3
27-Sep	137	155	155	160	161	157	168	180	161	162	178	193	175	188	180	183	175	173	175	172	197	191	196	212	175.4
28-Sep	232	236	240	251	251	261	263	258	253	260	262	265	261	263	249	266	254	181	173	195	185	176	170	147	238.4
29-Sep	153	144	143	69	93	120	355	1	0	357	358	339	338	347	14	354	343	336	331	319	299	310	313	297	340.3
30-Sep	288	285	275	273	278	291	278	264	256	250	263	268	273	275	271	288	282	290	295	261	261	250	246	248	272.4
	218.1	199.5	196.7	192.0	177.7	182.6	196.6	203.5	218.7	220.3	227.0	238.0	243.6	248.4	257.3	256.2	248.5	243.8	239.9	234.9	235.0	216.6	222.2	219.3	
	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: 106 deg on Sep 11 10:00

Minimum Value: 2 deg on Sep 17 23:00

Percentiles: P_1 = 3 P_{10} = 5 Q_1 = 7 Median = 11 Q_3 = 18 P_{90} = 31 P_{99} = 85

Hours in Service:	720
Hours of Data:	720
Hours of Missing Data:	0
Hours of Calibration:	0
Percent Operational Time:	100.0

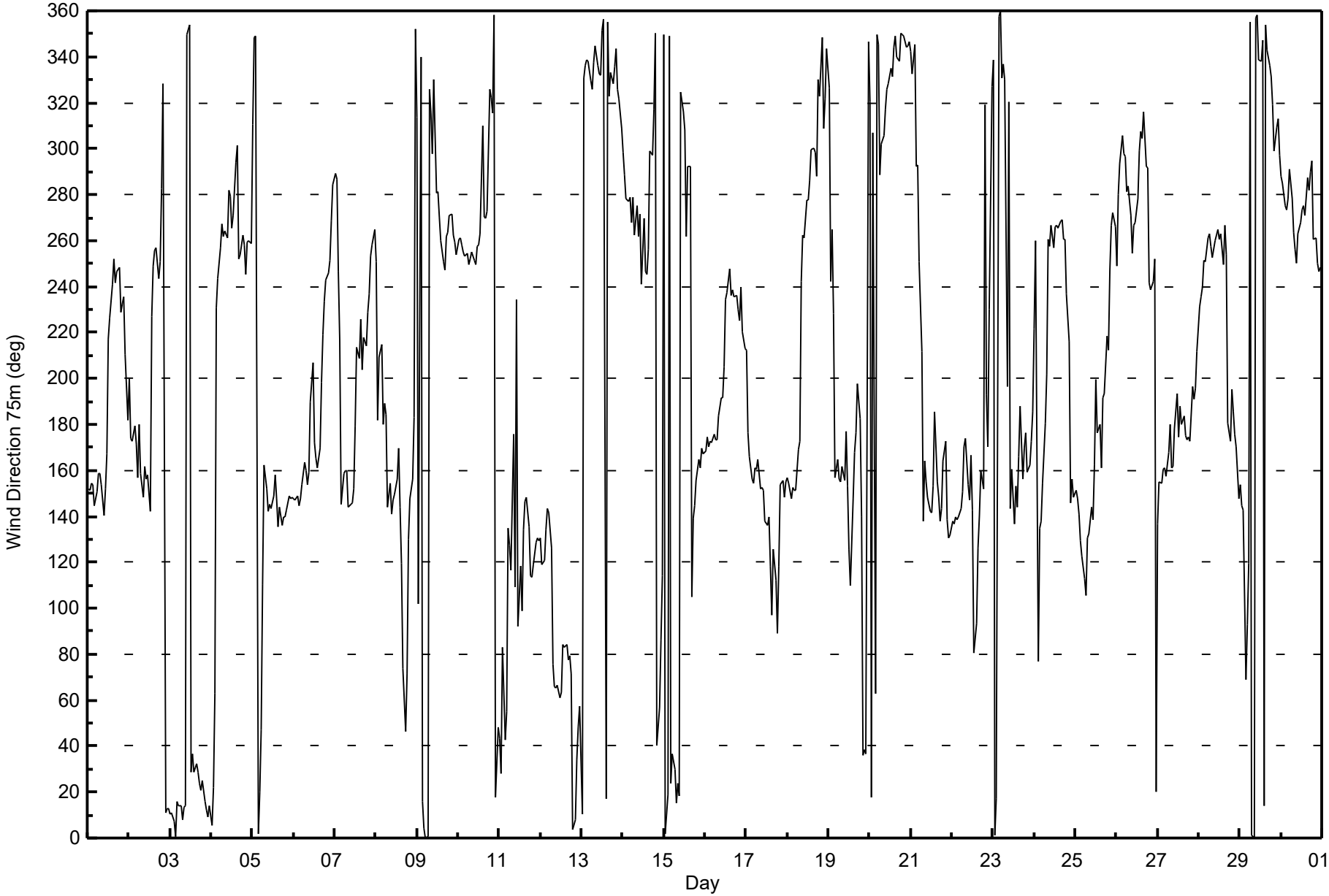
Day	Hourly Period Ending At (MST)																								Daily
	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24	Maximum
1-Sep	7	3	3	3	2	4	5	7	12	9	10	16	15	14	17	14	12	11	10	4	4	13	10	16	17
2-Sep	20	6	15	14	10	4	18	16	32	48	19	44	22	51	16	12	8	6	4	28	7	17	6	6	51
3-Sep	8	10	7	10	6	7	6	11	11	15	21	20	8	19	10	10	11	12	7	7	10	7	8	8	21
4-Sep	6	55	49	26	14	6	4	6	8	9	15	18	19	18	23	27	10	8	7	8	4	3	3	4	55
5-Sep	33	14	12	9	17	20	30	15	18	19	10	12	20	18	21	13	7	6	5	5	5	5	4	4	33
6-Sep	3	3	3	3	5	5	5	4	9	10	38	22	13	13	5	10	10	7	10	7	11	10	12	11	38
7-Sep	9	16	10	15	9	4	4	7	11	8	8	9	15	19	15	20	19	14	7	9	4	8	9	13	20
8-Sep	26	76	18	12	12	14	35	6	18	12	7	8	8	12	10	41	46	7	21	16	4	6	41	86	86
9-Sep	59	94	69	32	26	11	8	20	13	17	46	11	9	9	9	9	10	8	9	7	7	9	8	5	94
10-Sep	6	6	5	4	3	3	3	10	14	17	14	15	14	13	25	7	9	14	13	15	13	13	30	8	30
11-Sep	9	10	33	65	30	6	18	49	68	106	79	61	35	30	24	19	22	8	15	15	14	12	9	7	106
12-Sep	9	14	12	8	6	5	11	24	11	9	20	19	15	10	11	10	15	16	35	19	8	15	23	14	35
13-Sep	18	14	69	38	9	17	11	5	14	10	10	10	12	19	11	15	9	8	7	9	9	21	7	12	69
14-Sep	10	6	5	6	6	7	4	7	9	27	23	43	17	20	15	12	8	7	22	23	8	9	18	46	46
15-Sep	45	5	24	20	8	4	9	11	9	15	48	62	25	26	50	101	24	6	4	5	4	3	7	5	101
16-Sep	3	6	5	5	4	4	3	4	8	6	9	15	15	16	15	13	9	6	4	4	7	4	19	8	19
17-Sep	9	11	6	4	4	7	4	17	7	8	18	14	9	19	21	21	26	25	7	18	11	5	2	2	26
18-Sep	3	4	4	4	2	4	6	8	29	30	22	11	10	19	12	13	11	10	12	4	25	26	9	23	30
19-Sep	72	76	27	31	9	5	31	13	20	23	24	38	38	68	25	20	36	16	12	29	16	7	26	18	76
20-Sep	16	33	18	32	71	23	57	13	9	11	14	11	22	22	11	12	10	8	15	5	6	7	9	6	71
21-Sep	13	20	21	60	15	37	34	11	14	13	12	11	10	20	17	17	8	6	5	24	10	13	8	8	60
22-Sep	6	4	4	5	3	4	5	8	16	26	22	31	55	41	36	31	17	12	23	99	88	15	22	27	99
23-Sep	9	10	12	12	11	7	9	28	86	51	21	12	17	8	7	14	11	6	7	13	7	5	5	13	86
24-Sep	13	35	85	22	36	49	21	20	23	8	9	9	10	10	9	10	9	6	7	5	44	7	9	5	85
25-Sep	5	5	7	7	14	15	12	22	10	5	4	12	15	9	16	13	7	9	4	10	9	19	6	11	22
26-Sep	7	9	6	9	11	25	9	13	28	6	6	8	9	14	24	37	86	28	22	6	8	5	18	78	86
27-Sep	17	14	12	8	5	8	6	17	7	14	20	27	19	35	44	9	7	5	6	7	19	10	6	13	44
28-Sep	8	9	8	9	7	8	7	6	7	8	11	10	12	14	15	20	19	18	12	5	15	5	10	4	20
29-Sep	7	7	15	79	15	16	62	14	6	10	11	20	11	13	9	16	8	6	7	7	7	7	8	4	79
30-Sep	7	7	5	5	28	10	6	4	12	11	10	8	15	12	10	8	8	7	5	11	5	7	6	5	28
	72	94	85	79	71	49	62	49	86	106	79	62	55	68	50	101	86	28	35	99	88	26	41	86	
	Diurnal Maximum																								

Wood Buffalo Environmental Association

Hourly Averages

Wind Direction 75m (WD75) - deg

Mannix - September 2024



Number of Exceedences (AAAQO): 1-hr: 0 24-hr: 0
Maximum Value: 107 deg on Sep 11 10:00

Minimum Value: 2 deg on Sep 18 00:00

Percentiles: P_1 = 3 P_{10} = 5 Q_1 = 7 Median = 10 Q_3 = 18 P_{90} = 29 P_{99} = 89

Hours in Service:	720
Hours of Data:	719
Hours of Missing Data:	1
Hours of Calibration:	0
Percent Operational Time:	99.9

Day	Hourly Period Ending At (MST)																								Daily
	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24	Maximum
1-Sep	6	3	3	4	2	4	4	7	11	9	10	16	14	13	17	13	12	11	9	3	5	11	10	15	17
2-Sep	16	8	20	19	14	9	19	18	29	41	21	53	27	52	15	12	8	6	5	26	7	16	6	6	53
3-Sep	7	9	6	9	5	6	6	11	11	15	20	19	7	20	8	9	10	11	6	6	10	6	7	7	20
4-Sep	6	21	43	31	14	8	4	4	8	8	14	18	17	17	21	26	9	7	7	8	4	3	3	4	43
5-Sep	32	12	10	9	10	17	29	18	21	19	10	12	21	17	21	13	7	6	5	5	4	4	3	3	32
6-Sep	3	3	3	3	4	4	5	4	8	11	35	21	12	14	6	11	9	6	9	7	10	8	11	14	35
7-Sep	11	15	8	12	13	9	6	9	15	8	8	9	14	18	14	19	19	14	7	8	4	6	7	10	19
8-Sep	16	65	17	14	20	15	27	8	20	15	7	8	9	13	10	42	43	7	22	14	3	6	28	89	89
9-Sep	92	84	89	37	57	10	7	18	14	16	42	10	9	9	9	9	10	8	9	7	7	9	8	5	92
10-Sep	5	5	5	4	3	2	3	8	13	20	14	15	14	13	23	7	9	13	13	13	13	12	33	8	33
11-Sep	9	10	27	30	30	9	11	40	52	107	91	62	34	29	24	21	23	8	12	11	11	11	8	4	107
12-Sep	6	10	8	7	6	5	7	24	10	9	20	19	17	10	11	11	15	16	25	19	8	13	21	15	25
13-Sep	12	11	45	9	6	14	10	6	14	11	9	9	11	18	11	14	8	7	7	8	8	19	6	11	45
14-Sep	8	6	6	6	6	6	5	7	7	27	20	35	18	19	15	12	7	7	21	23	7	9	14	26	35
15-Sep	52	6	21	16	7	4	6	8	8	14	44	52	21	27	49	83	26	6	4	4	4	2	7	4	83
16-Sep	5	8	7	7	7	5	3	4	6	6	9	15	14	15	15	12	9	5	3	3	7	4	16	8	16
17-Sep	8	13	9	8	7	12	6	25	7	9	19	14	10	20	20	18	25	22	4	13	13	6	2	2	25
18-Sep	2	5	3	4	3	4	7	12	23	26	19	10	10	17	11	12	10	9	11	4	19	22	10	15	26
19-Sep	24	58	39	18	23	11	94	21	25	26	25	44	38	70	25	20	35	16	12	30	13	5	40	19	94
20-Sep	14	32	14	32	83	20	53	12	7	10	14	11	20	21	10	11	9	8	14	4	5	5	9	6	83
21-Sep	12	15	16	49	18	57	23	15	13	11	13	11	11	20	18	17	8	5	4	24	9	15	7	7	57
22-Sep	6	3	3	4	2	3	3	8	15	25	23	33	54	42	33	33	19	13	21	90	82	18	21	24	90
23-Sep	12	9	12	11	10	7	6	19	102	44	23	13	20	8	6	13	10	6	6	12	6	5	5	13	102
24-Sep	10	24	99	32	47	72	25	18	19	8	8	8	10	9	9	10	9	6	6	5	41	7	8	7	99
25-Sep	7	4	10	4	10	8	7	16	8	4	4	12	13	9	17	13	6	9	5	9	7	15	7	10	17
26-Sep	7	9	7	9	10	24	UO	13	29	6	5	8	9	13	22	31	79	25	19	7	6	5	11	77	79
27-Sep	27	18	12	9	5	8	6	15	7	14	20	26	19	33	44	10	7	5	6	7	19	10	6	11	44
28-Sep	7	8	7	8	7	7	7	6	7	7	10	10	12	14	14	19	17	16	13	5	16	4	10	3	19
29-Sep	9	9	11	72	12	13	54	16	6	10	9	18	10	12	9	15	8	5	7	6	8	7	7	4	72
30-Sep	6	7	5	5	25	10	7	4	12	10	10	8	14	11	10	7	7	7	4	12	5	7	6	4	25
	92	84	99	72	83	72	94	40	102	107	91	62	54	70	49	83	79	25	25	90	82	22	40	89	
	Diurnal Maximum																								

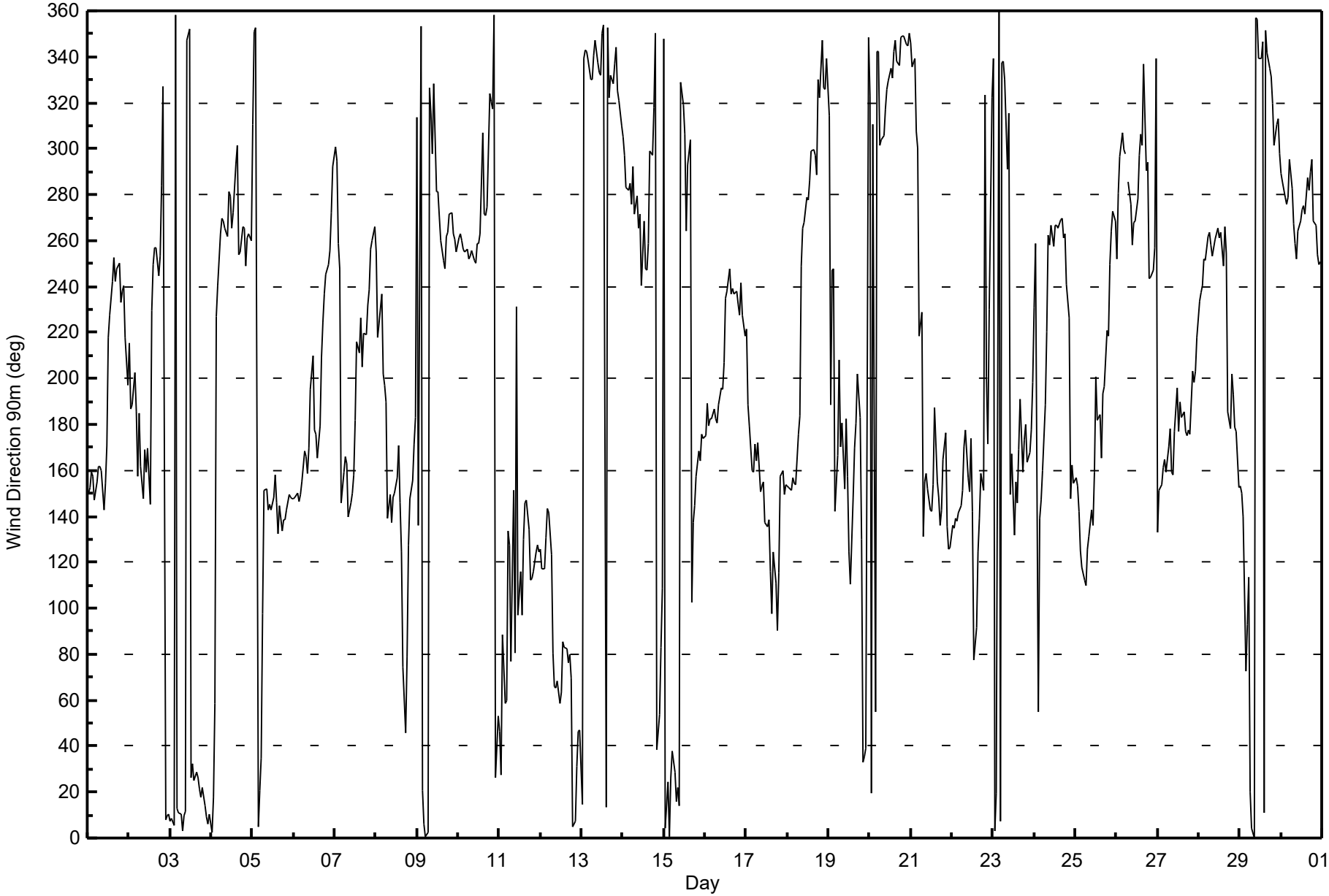
UO - Unstable Operation

Wood Buffalo Environmental Association

Hourly Averages

Wind Direction 90m (WD90) - deg

Mannix - September 2024



Maximum Value: 1.0 km/h on Sep 1 11:00

Maximum Daily Average: 0.5 km/h on Sep 17

Minimum Value: -1.0 km/h on Sep 2 23:00

Minimum Daily Average: -0.3 km/h on Sep 20

Maximum Diurnal Average: 0.2 km/h at hour 7

Minimum Diurnal Average: 0.0 km/h at hour 20

Monthly Average: 0.11 km/h

Percentiles: P_1 = -0.6 P_{10} = -0.3 Q_1 = -0.1 Median = 0.0 Q_3 = 0.4 P_{90} = 0.6 P_{99} = 0.8

Hours in Service:	720
Hours of Data:	720
Hours of Missing Data:	0
Hours of Calibration:	0
Percent Operational Time:	100.0

Day	Hourly Period Ending At (MST)																								Daily	Daily
	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24	Average	Maximum
1-Sep	0.6	0.5	0.5	0.6	0.5	0.5	0.4	0.5	0.6	0.7	1.0	0.7	0.1	0.1	0.0	0.0	0.1	0.1	0.0	-0.1	0.0	0.1	0.1	0.2	0.3	1.0
2-Sep	0.3	0.5	0.3	0.4	0.4	0.4	0.4	0.3	0.4	0.3	0.3	0.3	0.2	0.2	0.0	0.0	-0.1	0.0	-0.1	-0.3	-0.7	-0.8	-1.0	-1.0	0.0	0.5
3-Sep	-0.6	-0.4	-0.6	-0.5	-0.5	-0.6	-0.3	-0.2	-0.1	-0.2	-0.2	-0.3	-0.2	0.1	-0.3	0.0	0.1	0.0	-0.2	-0.1	-0.3	-0.3	-0.2	-0.2	-0.3	0.1
4-Sep	-0.2	0.0	0.0	0.0	-0.1	-0.1	-0.1	0.0	0.0	-0.2	-0.3	-0.1	-0.3	-0.2	-0.1	-0.3	0.1	0.0	0.0	0.0	0.0	0.0	-0.1	-0.2	-0.1	0.1
5-Sep	-0.4	-0.5	-0.1	-0.2	0.0	0.0	0.0	0.1	0.3	0.2	0.2	0.6	0.7	0.5	0.6	0.7	0.8	0.6	0.7	0.7	0.9	0.8	0.7	0.8	0.4	0.9
6-Sep	0.7	0.8	0.7	0.7	0.7	0.7	0.8	0.6	0.7	0.5	0.3	0.3	0.5	0.5	0.6	0.4	0.3	0.1	0.0	-0.1	0.0	-0.1	-0.1	-0.1	0.4	0.8
7-Sep	0.0	0.0	-0.1	0.2	0.4	0.4	0.3	0.4	0.7	0.7	0.7	0.8	0.4	0.1	0.2	0.1	0.2	0.1	0.0	0.0	0.0	-0.1	0.0	0.1	0.2	0.8
8-Sep	0.0	0.1	0.2	0.2	0.3	0.4	0.2	0.4	0.5	0.3	0.7	0.6	0.7	0.4	0.3	0.3	0.3	-0.1	0.1	0.6	0.5	0.3	-0.2	-0.2	0.3	0.7
9-Sep	0.0	0.1	-0.1	0.0	-0.2	-0.3	-0.2	0.0	-0.4	-0.2	0.0	-0.3	-0.3	-0.2	-0.1	-0.1	0.2	-0.3	-0.2	-0.1	-0.1	0.0	0.0	0.1	-0.1	0.2
10-Sep	0.0	0.1	0.1	0.1	0.0	-0.1	0.0	0.0	-0.2	-0.1	0.1	-0.1	0.0	-0.1	-0.3	0.0	0.0	0.0	-0.2	-0.2	-0.1	-0.1	-0.2	-0.3	-0.1	0.1
11-Sep	-0.3	-0.1	-0.1	-0.4	0.0	0.0	0.0	0.1	0.0	0.1	0.0	0.0	0.5	0.1	0.3	0.0	0.2	0.4	0.7	0.7	0.7	0.7	0.6	0.8	0.2	0.8
12-Sep	0.5	0.6	1.0	0.7	0.9	0.6	0.4	0.3	0.4	0.4	0.1	0.4	0.3	0.4	0.5	0.5	0.3	0.4	0.4	-0.2	-0.3	-0.2	-0.1	0.0	0.4	1.0
13-Sep	0.0	-0.1	0.0	0.0	-0.2	-0.1	0.0	-0.2	-0.1	-0.4	-0.2	-0.3	-0.1	0.1	-0.2	-0.3	-0.2	-0.4	-0.4	-0.3	-0.2	-0.2	-0.3	-0.3	-0.2	0.1
14-Sep	-0.1	-0.1	0.0	0.0	-0.1	-0.2	-0.1	0.1	-0.2	-0.2	0.1	0.1	0.0	-0.2	0.2	0.0	0.0	-0.1	-0.2	-0.3	-0.1	0.0	0.1	-0.1	-0.1	0.2
15-Sep	-0.4	-0.3	-0.2	-0.1	-0.4	-0.4	-0.3	-0.1	-0.2	-0.1	0.0	0.4	0.3	-0.4	0.0	-0.1	0.3	0.2	0.5	0.6	0.6	0.7	0.6	0.6	0.1	0.7
16-Sep	0.6	0.6	0.7	0.7	0.7	0.7	0.7	0.6	0.5	0.2	0.2	0.1	0.1	0.1	0.1	0.0	0.0	0.1	0.0	-0.1	-0.1	0.0	0.2	0.0	0.3	0.7
17-Sep	0.2	0.4	0.4	0.6	0.5	0.4	0.7	0.4	0.6	0.4	0.3	0.3	0.5	0.4	0.6	0.6	0.5	0.3	0.3	0.3	0.5	0.7	0.6	0.6	0.5	0.7
18-Sep	0.6	0.6	0.6	0.5	0.7	0.5	0.7	0.5	0.0	-0.1	0.1	0.0	-0.2	-0.5	-0.3	-0.4	-0.2	-0.1	-0.2	-0.2	-0.1	-0.2	-0.1	-0.1	0.1	0.7
19-Sep	-0.1	0.1	0.0	0.0	0.2	0.1	0.2	0.1	0.4	0.3	0.2	0.4	0.3	0.6	0.4	0.4	0.3	0.1	0.1	0.1	-0.1	-0.1	-0.2	-0.1	0.2	0.6
20-Sep	0.0	-0.1	-0.2	0.2	-0.1	-0.2	0.0	-0.1	-0.2	-0.2	-0.2	-0.4	0.0	-0.3	-0.8	-0.5	-0.6	-0.7	-0.5	-0.5	-0.4	-0.2	-0.2	-0.3	-0.3	0.2
21-Sep	0.0	0.0	0.0	-0.1	-0.3	-0.1	0.1	0.2	0.2	0.5	0.3	0.4	0.5	0.6	0.3	0.6	0.6	0.5	0.6	0.5	0.4	0.5	0.6	0.5	0.3	0.6
22-Sep	0.6	0.5	0.6	0.4	0.5	0.3	0.3	0.5	0.3	0.4	0.3	0.4	0.5	0.1	0.3	0.2	0.2	0.2	0.3	-0.1	-0.1	0.2	0.0	-0.1	0.3	0.6
23-Sep	-0.1	-0.3	-0.4	-0.3	-0.1	-0.1	-0.1	0.1	0.1	0.2	0.2	0.5	0.6	0.5	0.6	0.5	0.2	0.5	0.5	0.2	0.5	0.6	0.5	0.4	0.2	0.6
24-Sep	0.1	0.1	0.3	0.3	0.2	0.2	0.2	0.1	-0.2	-0.3	-0.3	-0.2	-0.3	-0.2	-0.3	-0.3	0.0	0.0	0.1	0.0	0.2	0.6	0.6	0.4	0.0	0.6
25-Sep	0.5	0.4	0.4	0.5	0.6	0.2	0.9	0.5	0.5	0.5	0.5	0.3	0.2	0.3	0.4	0.4	0.2	0.0	0.0	0.1	0.0	0.0	0.0	-0.1	0.3	0.9
26-Sep	0.0	-0.1	-0.2	-0.2	-0.2	-0.2	-0.2	-0.1	0.0	0.0	0.0	-0.1	-0.2	-0.1	-0.1	-0.1	0.0	-0.1	-0.2	0.0	0.0	-0.1	-0.1	0.2	-0.1	0.2
27-Sep	0.3	0.6	0.4	0.4	0.4	0.5	0.6	0.2	0.4	0.4	0.2	0.3	0.3	0.3	0.3	0.3	0.3	0.3	0.3	0.5	0.2	0.2	0.1	0.0	0.3	0.6
28-Sep	0.0	0.1	0.2	0.0	-0.1	-0.2	0.0	-0.1	0.0	0.0	-0.2	-0.1	0.0	-0.2	-0.1	-0.1	0.1	0.1	0.4	0.2	0.4	0.4	0.5	0.4	0.1	0.5
29-Sep	0.4	0.4	0.1	0.0	0.3	0.1	0.0	-0.2	-0.5	-0.2	-0.3	-0.1	-0.2	-0.5	-0.5	-0.4	-0.4	-0.5	-0.6	-0.4	-0.4	-0.4	-0.4	-0.4	-0.2	0.4
30-Sep	-0.1	-0.3	0.0	-0.1	-0.2	-0.2	0.0	-0.2	-0.2	0.1	0.0	-0.3	-0.3	-0.2	-0.2	-0.6	-0.4	-0.2	-0.1	-0.1	-0.1	-0.1	-0.1	-0.2	-0.2	0.1
	0.1	0.1	0.1	0.2	0.2	0.1	0.2	0.2	0.1	0.1	0.1	0.2	0.2	0.1	0.1	0.1	0.1	0.1	0.1	0.0	0.1	0.1	0.1	0.1	Diurnal Average	
	0.7	0.8	1.0	0.7	0.9	0.7	0.9	0.6	0.7	0.7	1.0	0.8	0.7	0.6	0.6	0.7	0.8	0.6	0.7	0.7	0.9	0.8	0.7	0.8	Diurnal Maximum	

Wood Buffalo Environmental Association

Summary of Hour Standard Deviations

Vertical Wind Speed 20m (VW20) - km/h

Mannix - September 2024

Number of Exceedences (AAAQO): 1-hr: 0 24-hr: 0
Maximum Value: 3.4 km/h on Sep 30 16:00

Minimum Value: 0.3 km/h on Sep 21 03:00

Percentiles: P_1 = 0.3 P_{10} = 0.5 Q_1 = 0.8 Median = 1.3 Q_3 = 1.7 P_{90} = 2.2 P_{99} = 3.1

Hours in Service:	720
Hours of Data:	720
Hours of Missing Data:	0
Hours of Calibration:	0
Percent Operational Time:	100.0

Day	Hourly Period Ending At (MST)																								Daily
	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24	Maximum
1-Sep	1.4	1.2	1.5	1.4	0.9	0.8	1.2	1.8	1.5	1.7	2.1	2.2	2.9	2.7	2.3	2.4	2.2	1.8	0.8	0.7	0.4	0.3	0.5	0.6	2.9
2-Sep	0.7	0.7	0.7	0.6	0.9	1.0	1.2	1.2	1.1	1.2	1.4	1.4	1.5	1.7	2.2	1.9	1.3	1.5	1.3	2.0	2.9	3.1	3.4	3.4	3.4
3-Sep	2.3	2.2	2.4	2.0	2.3	1.5	1.6	1.1	1.2	1.4	1.5	1.5	1.7	1.5	1.5	1.6	1.3	1.2	1.1	0.8	0.7	1.3	1.2	1.0	2.4
4-Sep	0.5	0.3	0.3	0.5	0.7	0.8	0.9	0.9	1.4	1.8	2.2	1.9	1.7	1.7	2.5	2.3	1.7	1.5	1.2	0.5	0.7	0.5	0.7	0.9	2.5
5-Sep	2.0	1.5	0.6	0.5	0.4	0.3	0.3	0.9	1.2	1.5	1.6	1.9	1.9	1.9	1.7	1.9	1.8	1.9	2.0	2.4	2.6	2.0	2.1	1.8	2.6
6-Sep	1.9	2.2	2.2	2.2	1.7	1.2	1.7	1.6	1.8	1.3	1.6	1.7	1.3	1.1	1.5	1.1	1.0	1.3	1.0	0.7	0.7	0.7	0.7	0.6	2.2
7-Sep	0.4	0.3	0.4	0.5	0.9	0.8	0.9	1.2	1.5	1.8	1.8	1.7	2.0	2.1	2.1	2.2	1.8	2.2	1.3	1.0	0.9	0.6	0.7	0.5	2.2
8-Sep	0.6	0.5	0.6	0.7	0.6	0.8	0.8	1.2	1.3	1.4	1.8	1.9	2.0	1.7	1.0	0.8	1.1	0.9	0.9	1.7	1.0	0.6	0.4	0.7	2.0
9-Sep	0.6	1.0	0.8	0.8	0.7	1.4	1.1	1.7	1.7	1.8	1.7	2.1	2.6	2.6	2.7	2.7	3.2	3.2	3.0	2.6	2.6	2.1	1.9	2.0	3.2
10-Sep	2.1	2.1	2.0	1.8	1.8	1.4	1.4	1.3	1.4	1.5	1.8	2.1	2.4	2.2	1.8	1.4	1.4	1.1	1.1	0.5	0.5	0.5	0.4	0.5	2.4
11-Sep	0.7	0.4	0.3	0.4	0.3	0.4	0.3	0.6	0.9	1.2	1.4	1.5	1.5	1.7	1.6	1.4	1.1	1.1	1.4	1.4	1.7	1.7	2.0	2.3	2.3
12-Sep	1.2	1.2	1.6	1.6	2.4	1.6	1.5	1.0	1.4	1.7	1.5	1.5	1.3	1.2	1.3	1.3	1.2	1.0	0.8	0.4	0.4	0.5	0.5	0.7	2.4
13-Sep	0.4	0.6	1.0	0.8	1.3	1.0	1.1	1.3	1.0	1.5	1.7	1.9	1.6	1.3	1.8	1.3	1.7	1.8	1.8	1.7	1.7	1.4	1.8	1.6	1.9
14-Sep	1.1	1.0	1.1	1.0	0.8	0.8	0.8	1.2	1.0	1.2	1.4	1.7	1.7	1.7	1.7	1.5	1.5	1.2	0.7	1.1	1.4	0.8	0.5	0.3	1.7
15-Sep	0.9	0.9	0.5	0.7	0.8	0.7	0.7	1.2	1.5	1.8	1.6	1.6	1.7	1.7	1.6	1.2	1.2	0.8	1.0	0.8	1.0	1.0	1.1	1.3	1.8
16-Sep	1.3	1.4	1.6	1.6	1.6	1.6	1.8	1.9	1.6	1.7	2.1	2.8	2.7	2.5	2.4	2.2	1.7	1.5	0.9	0.9	1.1	0.7	0.8	0.7	2.8
17-Sep	0.6	0.8	0.9	1.1	1.2	1.1	1.2	1.3	1.5	1.6	1.4	1.6	1.9	1.8	1.7	1.3	1.1	0.8	0.7	1.1	1.1	0.9	1.1	1.1	1.9
18-Sep	0.9	1.2	1.4	1.0	1.4	1.2	1.3	1.5	1.1	1.1	1.1	1.7	2.3	2.3	2.0	2.1	2.0	1.2	0.6	0.4	0.5	0.3	0.4	0.4	2.3
19-Sep	0.3	0.3	0.3	0.5	0.6	0.6	0.6	0.7	1.1	1.3	1.5	1.5	1.4	1.5	1.4	1.5	1.1	1.1	0.5	0.4	1.1	0.9	0.6	0.6	1.5
20-Sep	0.4	0.3	1.0	0.8	0.6	1.1	1.0	1.2	1.7	1.8	1.6	1.5	1.5	2.2	3.1	3.1	2.9	2.6	1.7	2.6	2.2	1.6	1.1	1.0	3.1
21-Sep	0.6	0.5	0.3	0.4	0.5	0.5	0.7	0.9	0.9	1.1	1.3	1.4	1.8	1.8	1.9	1.7	1.5	1.7	1.8	2.3	1.1	1.6	2.0	1.9	2.3
22-Sep	2.3	1.8	1.5	1.3	1.2	0.7	0.7	1.1	1.2	1.3	1.4	1.6	1.6	1.5	1.3	1.3	0.9	0.6	0.6	1.0	0.6	0.7	0.5	0.4	2.3
23-Sep	0.5	0.7	0.8	0.9	0.7	0.8	0.7	0.5	0.8	0.9	1.2	1.4	1.4	1.5	1.8	1.6	1.3	1.1	1.5	1.6	1.4	1.5	1.3	1.1	1.8
24-Sep	0.7	0.6	0.7	0.7	0.7	0.8	0.8	0.9	1.6	2.3	2.4	3.0	2.7	2.8	2.6	2.3	1.6	1.1	0.3	0.4	0.3	0.9	1.1	1.1	3.0
25-Sep	1.3	0.9	0.9	1.0	0.9	0.8	1.6	1.9	1.1	1.3	1.7	1.2	1.0	0.7	1.1	1.1	1.1	1.5	0.9	0.6	0.4	0.6	0.9	0.5	1.9
26-Sep	0.7	1.2	1.8	1.4	1.5	1.6	1.6	1.4	1.1	1.3	1.5	1.9	2.2	2.0	1.8	1.0	1.4	1.0	1.1	0.4	0.3	0.5	0.5	0.5	2.2
27-Sep	0.7	1.1	1.0	1.3	1.1	1.8	2.4	1.7	1.7	1.8	1.6	1.8	2.0	1.9	1.3	1.9	1.8	1.3	1.1	1.5	1.1	1.5	1.4	1.6	2.4
28-Sep	1.9	2.2	2.7	3.1	3.3	2.4	2.1	1.9	2.2	2.1	2.1	2.0	2.2	1.8	2.0	1.6	0.8	0.4	0.6	0.8	0.8	1.1	1.0	0.7	3.3
29-Sep	0.8	1.0	0.7	0.5	0.5	0.7	0.7	1.4	1.8	1.7	1.9	1.7	1.8	2.3	2.6	2.4	2.4	2.4	2.0	1.7	1.4	1.7	1.7	1.3	2.6
30-Sep	1.5	2.1	1.5	1.6	1.8	1.0	0.7	1.3	1.3	1.8	2.1	2.5	2.6	2.7	3.1	3.4	3.3	2.0	0.9	0.3	0.3	0.4	0.6	0.7	3.4
	2.3	2.2	2.7	3.1	3.3	2.4	2.4	1.9	2.2	2.3	2.4	3.0	2.9	2.8	3.1	3.4	3.3	3.2	3.0	2.6	2.9	3.1	3.4	3.4	
	Diurnal Maximum																								

Maximum Value: 1.7 km/h on Sep 12 03:00

Maximum Daily Average: 0.5 km/h on Sep 17

Minimum Value: -1.1 km/h on Sep 20 15:00

Minimum Daily Average: -0.5 km/h on Sep 30

Maximum Diurnal Average: 0.1 km/h at hour 3

Minimum Diurnal Average: -0.1 km/h at hour 18

Monthly Average: 0.03 km/h

Percentiles: P_1 = -0.8 P_{10} = -0.5 Q_1 = -0.4 Median = -0.1 Q_3 = 0.4 P_{90} = 0.7 P_{99} = 1.2

Hours in Service:	720
Hours of Data:	720
Hours of Missing Data:	0
Hours of Calibration:	0
Percent Operational Time:	100.0

Day	Hourly Period Ending At (MST)																								Daily	Daily
	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24	Average	Maximum
1-Sep	0.6	0.6	0.8	0.7	0.4	0.5	0.4	0.9	0.5	0.7	1.4	0.6	-0.6	-0.4	-0.3	-0.3	-0.2	-0.4	-0.4	-0.4	-0.5	-0.4	-0.2	0.1	0.2	1.4
2-Sep	0.0	0.4	0.5	0.4	0.3	0.5	0.4	0.3	0.2	0.5	0.1	0.2	0.0	0.0	-0.3	-0.2	-0.3	-0.6	-0.6	-0.5	-0.7	-0.3	-0.7	-0.5	0.0	0.5
3-Sep	-0.1	0.4	-0.3	-0.4	0.0	-0.4	-0.3	-0.1	0.0	0.1	-0.1	-0.2	0.0	0.3	-0.1	0.0	0.5	0.5	-0.1	-0.1	-0.3	-0.2	-0.1	-0.1	-0.1	0.5
4-Sep	-0.3	0.1	0.1	-0.2	-0.4	-0.5	-0.5	-0.5	-0.1	-0.3	-0.2	-0.5	-0.4	-0.3	0.2	-0.3	-0.2	-0.3	-0.4	-0.5	-0.5	-0.6	-0.6	-0.6	-0.3	0.2
5-Sep	-0.7	-0.5	-0.3	-0.2	-0.1	0.1	0.1	0.3	0.1	0.2	0.1	0.5	0.9	0.6	1.0	0.9	0.8	0.6	0.9	1.0	1.3	1.1	1.0	0.9	0.4	1.3
6-Sep	0.9	1.0	1.2	1.2	1.0	0.7	0.8	0.8	0.9	0.5	0.3	0.2	0.6	0.5	0.6	0.3	0.1	-0.2	-0.4	-0.4	-0.3	-0.2	-0.4	-0.6	0.4	1.2
7-Sep	-0.3	-0.4	-0.3	0.0	0.5	0.5	0.4	0.5	0.7	0.9	0.9	1.2	0.7	-0.1	0.1	-0.4	0.0	-0.4	-0.5	-0.5	-0.5	-0.6	-0.2	-0.2	0.1	1.2
8-Sep	-0.2	0.0	-0.1	0.0	0.2	0.0	0.2	0.5	0.3	0.3	0.9	0.5	0.7	0.5	0.3	0.3	0.4	0.0	0.6	0.9	0.5	0.4	-0.2	-0.1	0.3	0.9
9-Sep	-0.3	0.0	-0.2	-0.2	-0.1	-0.2	-0.2	-0.2	-0.3	-0.4	-0.1	-0.5	-0.7	-0.5	-0.6	-0.6	-0.4	-0.7	-0.8	-0.4	-0.6	-0.3	-0.5	-0.5	-0.4	0.0
10-Sep	-0.5	-0.5	-0.5	-0.4	-0.6	-0.7	-0.6	0.1	-0.3	-0.3	0.1	-0.6	-0.3	-0.3	-0.4	-0.4	-0.2	-0.2	-0.3	-0.4	-0.3	-0.2	-0.1	0.0	-0.3	0.1
11-Sep	-0.2	0.0	0.0	-0.1	0.0	0.0	0.1	0.1	0.1	0.1	0.3	0.1	1.5	0.0	0.2	-0.2	0.3	0.5	1.5	1.5	1.2	0.7	0.5	0.9	0.4	1.5
12-Sep	0.6	0.8	1.7	0.8	1.1	0.9	0.6	0.2	0.5	0.6	0.3	0.6	0.6	0.2	0.4	0.4	0.6	0.2	0.3	-0.2	-0.2	-0.1	0.0	-0.1	0.4	1.7
13-Sep	-0.1	-0.3	-0.1	-0.2	-0.4	-0.3	-0.1	-0.3	-0.3	-0.6	-0.5	-0.6	0.1	0.3	0.2	-0.2	-0.3	-0.5	-0.6	-0.4	-0.2	-0.2	-0.5	-0.4	-0.3	0.3
14-Sep	-0.4	-0.4	-0.3	-0.3	-0.4	-0.9	-0.4	-0.2	-0.6	-0.3	-0.1	0.2	0.0	-0.3	-0.1	-0.4	-0.2	-0.3	-0.4	-0.3	0.0	0.1	0.1	-0.1	-0.2	0.2
15-Sep	-0.3	-0.2	-0.2	-0.2	-0.3	-0.2	-0.1	0.0	0.0	0.3	0.3	0.8	0.2	-0.5	-0.3	-0.6	0.4	0.0	0.5	0.6	0.7	0.7	0.7	0.8	0.1	0.8
16-Sep	0.8	0.8	0.8	0.9	0.7	0.9	0.9	0.8	0.6	0.0	0.1	0.2	-0.3	-0.5	-0.5	-0.5	-0.5	-0.4	-0.5	-0.6	-0.7	-0.7	-0.2	-0.3	0.1	0.9
17-Sep	-0.1	0.3	0.3	0.6	0.8	0.4	0.7	0.5	0.8	0.2	0.4	0.2	0.3	0.7	0.8	0.6	0.7	0.6	0.7	0.6	0.6	0.7	0.7	0.7	0.5	0.8
18-Sep	0.6	0.7	1.1	0.7	0.9	0.6	0.8	0.6	-0.1	-0.3	-0.1	-0.1	-0.6	-0.6	-0.6	-0.5	-0.3	-0.2	-0.4	-0.4	-0.2	-0.5	-0.3	-0.1	0.0	1.1
19-Sep	-0.1	0.0	-0.1	0.0	0.2	0.1	0.2	-0.1	0.3	0.3	0.1	0.1	0.5	1.0	0.7	0.7	0.2	-0.2	0.2	0.0	-0.1	0.0	0.1	0.0	0.2	1.0
20-Sep	-0.3	-0.1	-0.2	0.2	-0.1	-0.3	-0.3	-0.3	-0.4	-0.2	-0.2	-0.5	0.1	-0.1	-1.1	-0.6	-0.7	-0.7	-0.5	-0.8	-0.6	-0.2	-0.2	-0.4	-0.4	0.2
21-Sep	-0.3	-0.2	-0.1	-0.2	-0.6	-0.3	-0.2	-0.1	0.1	0.5	0.2	0.4	0.5	0.8	0.4	0.6	0.6	0.4	0.8	0.6	0.3	0.6	0.3	0.4	0.2	0.8
22-Sep	0.8	0.6	0.6	0.5	0.5	0.3	0.3	0.2	0.4	0.8	0.3	0.7	0.6	0.1	0.6	0.2	0.2	0.2	0.3	-0.3	-0.3	0.1	-0.1	-0.2	0.3	0.8
23-Sep	-0.2	-0.4	-0.4	-0.4	-0.2	-0.5	-0.3	0.0	0.1	0.2	0.2	0.4	1.0	0.6	0.9	0.6	0.1	0.6	0.4	0.4	0.6	0.7	0.5	0.2	0.2	1.0
24-Sep	-0.1	0.0	0.2	0.1	0.0	0.5	0.0	0.0	-0.3	-0.4	-0.6	-0.4	-0.7	-0.5	-0.7	-0.7	-0.2	-0.4	-0.3	-0.4	0.0	0.6	0.7	0.6	-0.1	0.7
25-Sep	0.7	0.7	0.7	0.9	0.8	0.2	0.7	0.3	0.6	0.6	0.6	0.3	0.0	0.2	0.2	0.5	0.0	-0.2	-0.5	-0.3	-0.3	-0.3	-0.3	-0.5	0.2	0.9
26-Sep	-0.6	-0.4	-0.6	-0.3	-0.4	-0.5	-0.3	-0.3	-0.4	-0.5	-0.3	-0.2	-0.2	0.1	-0.2	-0.2	0.1	-0.3	-0.3	-0.4	-0.3	-0.6	-0.7	0.1	-0.3	0.1
27-Sep	0.6	1.0	0.3	0.6	0.5	0.6	0.9	0.2	0.4	0.4	-0.1	0.4	0.5	0.1	1.0	0.3	0.3	0.2	0.2	0.6	0.0	0.0	-0.1	-0.3	0.4	1.0
28-Sep	-0.5	-0.6	-0.6	-0.7	-0.8	-0.7	-0.3	-0.6	-0.5	-0.4	-0.7	-0.2	-0.4	-0.4	-0.4	-0.1	-0.1	0.0	0.2	0.0	0.3	0.4	0.6	0.5	-0.2	0.6
29-Sep	0.2	0.5	0.2	0.0	0.2	0.0	-0.1	-0.3	-0.5	-0.3	-0.4	0.0	-0.5	-0.3	-0.2	-0.3	-0.4	-0.8	-0.8	-0.4	-0.5	-0.5	-0.6	-0.6	-0.3	0.5
30-Sep	-0.4	-0.5	-0.4	-0.4	-0.5	-0.5	-0.4	-0.5	-0.6	-0.3	-0.1	-0.6	-0.5	-0.5	-0.7	-0.8	-0.8	-0.5	-0.5	-0.4	-0.5	-0.7	-0.8	-0.8	-0.5	-0.1
	0.0	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	-0.1	0.0	-0.1	-0.1	-0.1	-0.1	0.0	-0.1	0.0	Diurnal Average	
	0.9	1.0	1.7	1.2	1.1	0.9	0.9	0.9	0.9	0.9	1.4	1.2	1.5	1.0	1.0	0.9	0.8	0.6	1.5	1.5	1.3	1.1	1.0	0.9	Diurnal Maximum	

Wood Buffalo Environmental Association

Summary of Hour Standard Deviations

Vertical Wind Speed 45m (VW45) - km/h

Mannix - September 2024

Number of Exceedences (AAAQO): 1-hr: 0 24-hr: 0
Maximum Value: 3.8 km/h on Sep 28 05:00

Minimum Value: 0.1 km/h on Sep 19 03:00

Percentiles: P_1 = 0.2 P_{10} = 0.4 Q_1 = 0.7 Median = 1.3 Q_3 = 1.9 P_{90} = 2.4 P_{99} = 3.2

Hours in Service:	720
Hours of Data:	720
Hours of Missing Data:	0
Hours of Calibration:	0
Percent Operational Time:	100.0

Day	Hourly Period Ending At (MST)																								Daily
	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24	Maximum
1-Sep	1.4	1.3	1.4	1.1	0.6	0.6	1.2	1.9	1.5	1.7	2.4	2.4	2.9	2.9	2.6	2.7	2.4	1.8	0.7	0.2	0.2	0.3	0.4	0.4	2.9
2-Sep	0.4	0.4	0.4	0.4	0.4	0.5	0.9	1.0	1.1	1.4	1.6	1.6	1.6	2.1	2.7	2.2	1.5	1.4	1.0	2.0	3.0	3.0	3.2	3.0	3.2
3-Sep	2.5	2.5	2.3	1.9	2.3	1.5	1.4	1.1	1.4	1.8	1.7	1.5	1.6	1.5	1.7	1.7	1.8	1.5	1.1	1.1	0.8	1.2	1.3	1.0	2.5
4-Sep	0.5	0.4	0.4	0.2	0.4	0.5	0.7	0.8	1.5	1.9	2.4	2.2	2.3	2.0	3.0	2.3	2.0	1.5	1.1	0.3	0.5	0.6	0.5	0.7	3.0
5-Sep	1.9	1.7	0.5	0.6	0.4	0.2	0.2	1.0	1.3	1.9	1.9	2.3	2.4	2.6	2.5	2.4	1.9	1.8	1.9	2.4	2.6	2.2	2.0	1.8	2.6
6-Sep	1.8	2.0	2.0	2.1	1.8	1.4	1.3	1.6	1.6	1.3	1.6	1.7	1.3	0.9	1.2	1.1	0.9	1.2	1.1	0.9	1.0	1.0	1.0	0.4	2.1
7-Sep	0.3	0.3	0.2	0.2	0.5	0.6	0.8	1.1	1.4	1.9	1.8	1.8	2.2	2.2	2.4	2.3	1.7	1.8	1.1	0.7	0.5	0.5	1.0	1.1	2.4
8-Sep	0.9	0.6	0.3	0.3	0.3	0.4	0.7	1.2	1.1	1.4	2.0	2.1	2.2	2.0	1.1	0.9	1.0	0.8	1.3	1.8	1.0	0.7	0.4	0.7	2.2
9-Sep	0.5	0.8	0.7	0.7	0.5	1.2	1.0	1.8	1.6	1.7	2.0	2.0	2.5	2.4	2.8	2.8	3.5	3.5	3.4	2.7	2.6	2.3	2.1	2.1	3.5
10-Sep	2.2	2.1	1.8	1.6	1.5	1.0	1.3	1.6	1.8	1.9	2.4	2.6	2.7	2.5	1.9	1.3	1.5	1.2	1.1	0.3	0.4	0.5	0.4	0.4	2.7
11-Sep	0.7	0.3	0.2	0.2	0.2	0.3	0.2	0.6	1.0	1.3	1.6	1.7	1.8	2.1	2.2	1.9	1.4	1.2	1.7	1.9	2.1	2.2	1.7	1.8	2.2
12-Sep	1.4	1.5	1.7	1.4	2.3	1.6	1.1	1.0	1.3	1.5	1.7	1.8	1.5	1.3	1.6	1.6	1.6	1.1	0.9	0.4	0.4	0.6	0.4	0.6	2.3
13-Sep	0.3	0.3	0.7	0.5	1.2	1.1	1.0	0.9	0.9	1.5	1.7	2.1	1.9	1.5	1.8	1.3	1.5	1.8	1.7	1.9	1.8	1.3	1.8	1.3	2.1
14-Sep	0.7	0.7	0.9	0.8	0.6	0.7	0.5	1.1	1.1	1.5	1.8	2.2	2.2	2.3	1.8	1.7	1.4	1.1	0.7	1.2	1.5	0.8	0.5	0.3	2.3
15-Sep	0.7	0.6	0.3	0.2	0.7	0.5	0.3	1.2	1.7	2.1	1.9	1.9	2.1	2.3	2.0	1.7	1.4	0.8	0.5	0.5	0.7	0.7	0.8	0.9	2.3
16-Sep	0.9	0.9	1.0	1.0	0.9	0.6	0.7	1.2	1.5	1.4	2.0	2.9	2.9	2.7	2.5	2.3	1.7	1.4	0.7	0.4	1.0	0.5	0.8	0.7	2.9
17-Sep	0.6	0.5	0.7	0.7	0.9	0.9	0.7	0.9	1.5	1.4	1.7	1.7	1.9	2.2	2.2	1.6	1.5	0.9	0.8	1.0	0.8	0.7	0.9	0.8	2.2
18-Sep	0.5	0.7	0.9	0.6	0.9	1.1	0.7	1.1	1.2	1.4	1.1	1.7	2.3	2.4	2.0	2.1	1.8	1.1	0.6	0.3	0.6	0.3	0.3	0.2	2.4
19-Sep	0.2	0.2	0.1	0.2	0.3	0.3	0.5	0.6	1.2	1.5	1.7	1.8	1.8	1.9	1.8	1.8	1.0	0.8	0.4	0.4	1.1	1.0	0.9	0.6	1.9
20-Sep	0.3	0.3	0.6	0.9	0.4	0.9	1.0	1.0	1.5	1.8	1.6	1.7	1.9	2.7	3.0	3.3	3.1	2.7	1.8	2.4	2.1	1.8	1.5	1.0	3.3
21-Sep	0.8	0.4	0.3	0.3	0.2	0.3	0.5	0.8	1.0	1.2	1.4	1.6	2.0	2.4	2.5	1.9	1.7	1.8	1.9	2.3	0.8	1.0	1.7	1.9	2.5
22-Sep	2.2	1.7	1.5	1.1	1.0	0.4	0.3	1.0	1.5	1.6	1.8	2.2	2.2	2.0	1.9	1.6	1.2	0.7	0.4	0.9	0.6	0.4	0.3	0.4	2.2
23-Sep	0.4	0.7	0.7	0.8	0.7	0.4	0.4	0.4	0.9	1.3	1.1	1.4	1.7	1.4	1.9	1.6	1.1	1.0	1.1	1.5	1.3	1.2	0.8	0.7	1.9
24-Sep	0.8	0.7	1.0	0.9	0.9	0.8	0.7	0.9	2.0	2.6	2.5	3.3	3.0	2.9	3.0	2.4	1.7	1.1	0.3	0.2	0.5	0.5	0.7	0.9	3.3
25-Sep	1.1	0.4	0.6	0.7	0.9	0.9	1.7	2.1	1.1	1.2	1.7	1.1	1.0	0.7	1.2	0.9	0.9	1.1	0.6	0.7	0.5	0.8	0.8	0.6	2.1
26-Sep	0.6	1.1	1.5	1.3	1.4	1.4	1.4	1.2	0.9	1.1	1.6	2.0	2.4	2.3	2.0	1.4	1.4	1.3	0.9	0.3	0.2	0.3	0.6	0.6	2.4
27-Sep	0.7	0.8	0.7	1.0	0.9	1.6	2.1	1.9	1.4	1.7	1.9	2.3	2.5	2.1	1.7	1.7	1.5	1.1	0.9	1.3	0.9	1.1	1.1	1.5	2.5
28-Sep	2.0	2.5	3.1	3.6	3.8	2.7	2.2	2.1	2.4	2.4	2.4	2.2	2.4	2.1	2.4	1.9	1.1	0.4	0.3	0.6	0.6	0.6	0.6	0.5	3.8
29-Sep	0.8	0.8	0.5	0.4	0.5	0.8	0.4	1.2	1.7	1.8	2.2	2.1	1.9	2.7	2.3	2.6	2.5	2.4	2.0	1.6	1.1	1.5	1.2	1.1	2.7
30-Sep	1.6	2.1	1.4	1.4	1.7	1.0	0.6	1.0	1.4	2.0	2.5	2.6	2.6	3.0	3.3	3.2	3.1	1.9	0.7	0.2	0.4	0.4	0.5	0.6	3.3
	2.5	2.5	3.1	3.6	3.8	2.7	2.2	2.1	2.4	2.6	2.5	3.3	3.0	3.0	3.3	3.3	3.5	3.5	3.4	2.7	3.0	3.0	3.2	3.0	
	Diurnal Maximum																								

Maximum Value: 2.4 km/h on Sep 11 13:00

Maximum Daily Average: 0.5 km/h on Sep 27

Minimum Value: -0.7 km/h on Sep 2 23:00

Minimum Daily Average: 0.1 km/h on Sep 20

Maximum Diurnal Average: 0.4 km/h at hour 13

Minimum Diurnal Average: 0.1 km/h at hour 23

Monthly Average: 0.26 km/h

Percentiles: P_1 = -0.5 P_{10} = -0.1 Q_1 = 0.1 Median = 0.2 Q_3 = 0.4 P_{90} = 0.7 P_{99} = 1.1

Hours in Service:	720
Hours of Data:	720
Hours of Missing Data:	0
Hours of Calibration:	0
Percent Operational Time:	100.0

Day	Hourly Period Ending At (MST)																								Daily	Daily
	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24	Average	Maximum
1-Sep	0.5	0.5	1.0	0.8	0.1	0.3	0.6	0.9	0.4	0.4	1.0	0.5	-0.3	0.1	0.4	0.2	0.5	0.2	0.1	-0.1	-0.1	0.1	-0.1	0.1	0.3	1.0
2-Sep	0.0	0.2	0.4	0.3	0.2	0.5	0.5	0.2	0.1	0.5	0.0	0.2	-0.1	0.5	0.5	0.3	0.2	0.1	0.1	0.2	0.0	0.0	-0.7	-0.6	0.2	0.5
3-Sep	0.5	0.7	0.1	0.1	0.2	-0.2	-0.3	0.1	0.2	0.4	0.2	0.1	0.1	0.6	-0.1	-0.1	0.6	0.9	0.0	0.4	0.0	0.0	0.1	0.0	0.2	0.9
4-Sep	-0.1	0.2	0.3	0.1	0.1	0.1	0.0	0.0	0.4	0.3	0.6	-0.1	-0.1	0.0	0.9	0.4	0.2	0.2	0.2	0.1	-0.1	-0.1	-0.1	-0.1	0.1	0.9
5-Sep	-0.1	-0.1	0.0	0.1	0.2	0.2	0.2	0.4	0.0	-0.1	-0.1	0.2	0.4	0.7	0.9	0.2	0.2	-0.3	0.0	-0.2	0.3	0.7	0.3	0.5	0.2	0.9
6-Sep	0.5	0.4	0.6	0.3	0.4	0.6	0.9	1.0	0.8	0.5	0.4	0.5	0.8	0.4	0.8	0.4	0.2	0.1	0.1	0.1	0.1	0.4	0.0	0.1	0.4	1.0
7-Sep	0.2	0.4	0.1	0.1	0.3	0.9	0.7	0.6	0.2	0.5	0.7	0.9	0.7	0.1	0.4	0.0	0.3	-0.2	-0.2	-0.1	0.0	0.1	0.4	0.1	0.3	0.9
8-Sep	0.1	0.1	0.1	0.1	0.2	0.1	0.2	0.3	0.3	0.2	0.4	0.2	0.5	0.7	0.2	0.4	0.6	0.1	0.6	0.3	0.3	0.6	0.2	0.1	0.3	0.7
9-Sep	0.1	0.2	0.2	0.1	0.2	0.2	0.2	0.5	0.1	0.3	0.1	0.2	0.1	0.5	0.2	0.1	0.6	0.3	0.2	0.4	0.5	0.4	0.2	0.2	0.2	0.6
10-Sep	0.3	0.3	0.4	0.4	0.3	0.0	0.1	0.4	0.1	-0.1	0.7	0.0	0.4	0.4	0.3	0.2	0.4	0.2	0.1	0.0	0.1	0.1	0.1	0.1	0.2	0.7
11-Sep	0.0	0.2	0.1	0.1	0.2	0.1	0.2	0.4	0.7	0.5	0.4	0.5	2.4	-0.1	0.0	-0.5	0.6	0.0	1.9	1.5	1.2	-0.1	-0.5	-0.1	0.4	2.4
12-Sep	0.0	0.7	1.2	0.0	0.3	0.2	0.0	0.2	0.5	0.5	0.1	0.4	0.6	-0.2	0.1	-0.1	0.5	-0.1	0.2	0.1	-0.1	0.3	0.1	-0.1	0.2	1.2
13-Sep	-0.1	0.1	0.3	0.0	0.1	0.0	0.4	0.2	-0.1	-0.1	-0.2	-0.3	0.3	0.6	0.5	0.2	0.1	0.0	-0.2	-0.2	0.5	0.3	0.0	0.3	0.1	0.6
14-Sep	0.2	0.0	0.4	0.2	-0.1	-0.5	0.2	0.7	-0.1	0.0	-0.1	0.5	0.6	0.2	0.5	0.1	0.4	0.5	0.0	0.0	0.2	0.1	0.0	0.2	0.2	0.7
15-Sep	0.2	0.3	0.2	0.0	0.2	0.2	0.2	0.2	0.1	0.2	0.9	1.3	0.4	-0.3	-0.4	-0.3	0.5	-0.2	0.1	0.6	0.9	0.7	0.6	0.7	0.3	1.3
16-Sep	0.8	0.7	0.7	0.7	0.5	0.6	0.5	0.5	0.5	0.0	0.2	0.2	0.2	0.2	-0.1	0.0	-0.1	0.0	-0.1	-0.2	-0.3	-0.3	0.0	-0.1	0.2	0.8
17-Sep	-0.1	0.1	0.3	0.4	0.8	0.3	0.6	0.5	0.6	0.3	0.3	0.0	-0.4	0.5	0.6	0.8	0.6	0.8	0.5	0.4	0.4	0.7	0.3	0.7	0.4	0.8
18-Sep	0.9	1.0	0.8	0.7	0.7	0.4	0.7	0.5	0.1	0.0	0.2	0.4	0.0	0.5	0.0	0.1	0.6	0.5	0.0	-0.1	0.2	0.1	0.1	0.0	0.3	1.0
19-Sep	0.1	0.1	0.3	0.1	0.4	0.3	0.1	0.2	0.1	0.3	-0.1	0.2	0.5	1.1	0.7	0.8	0.3	0.0	0.4	0.2	0.0	0.1	0.4	0.4	0.3	1.1
20-Sep	0.1	0.1	0.3	0.3	0.2	0.0	0.3	0.2	0.2	0.2	0.2	0.0	0.7	0.3	-0.6	-0.5	-0.2	-0.3	0.1	-0.4	0.0	0.4	0.4	0.1	0.1	0.7
21-Sep	0.2	0.1	0.1	0.1	0.0	0.1	0.1	0.1	0.2	0.4	0.1	0.0	0.0	0.7	0.5	0.3	0.3	-0.4	0.1	0.2	0.2	-0.1	-0.5	-0.4	0.1	0.7
22-Sep	-0.1	-0.1	0.0	-0.1	0.1	0.2	0.4	0.4	0.6	1.0	0.0	0.9	0.4	0.1	0.9	0.2	0.0	0.3	0.4	0.1	-0.2	0.2	0.2	0.1	0.2	1.0
23-Sep	0.2	0.0	0.0	0.0	0.2	-0.1	0.1	0.3	0.2	0.3	0.2	0.3	0.8	0.5	0.6	0.5	0.3	0.7	0.5	0.5	0.6	0.8	0.6	0.1	0.3	0.8
24-Sep	-0.1	0.1	0.2	0.3	0.1	0.4	0.1	0.0	0.4	0.4	0.4	0.6	0.6	0.3	0.3	0.3	0.5	0.2	0.2	0.0	0.2	0.4	0.7	0.5	0.3	0.7
25-Sep	0.7	0.3	0.2	0.2	0.2	0.2	0.2	0.0	0.2	0.2	0.0	0.4	0.2	0.3	0.5	0.6	0.1	0.1	-0.2	-0.1	0.1	0.2	0.5	-0.1	0.2	0.7
26-Sep	-0.1	0.2	0.5	0.5	0.4	0.2	0.4	0.3	0.1	0.1	0.4	0.8	0.5	0.8	0.3	0.1	0.5	0.3	0.3	0.0	0.0	-0.2	-0.1	0.2	0.3	0.8
27-Sep	0.3	0.9	0.5	0.7	0.9	0.7	1.1	0.5	0.7	0.9	-0.2	0.7	0.5	0.4	1.4	0.5	0.4	0.3	0.4	0.6	0.1	0.0	-0.2	-0.2	0.5	1.4
28-Sep	-0.1	-0.1	0.0	0.2	0.0	0.3	0.6	0.2	0.2	0.2	0.2	0.5	0.3	0.1	0.3	0.6	0.2	0.2	0.4	-0.1	0.3	0.7	0.7	0.3	0.3	0.7
29-Sep	0.3	0.3	0.2	0.2	0.2	0.0	0.2	0.0	-0.4	0.1	0.1	0.5	0.0	0.2	0.0	0.2	0.1	-0.5	-0.5	0.0	0.4	0.2	0.0	0.5	0.1	0.5
30-Sep	0.5	0.4	0.6	0.3	0.1	0.2	0.2	0.2	-0.2	0.2	0.6	0.4	0.5	0.8	0.5	0.6	0.3	0.4	0.4	0.1	0.0	-0.2	-0.3	-0.3	0.3	0.8
	0.2	0.3	0.3	0.2	0.3	0.2	0.3	0.3	0.2	0.3	0.3	0.4	0.4	0.4	0.4	0.2	0.3	0.1	0.2	0.1	0.2	0.2	0.1	0.1	Diurnal Average	
	0.9	1.0	1.2	0.8	0.9	0.9	1.1	1.0	0.8	1.0	1.0	1.3	2.4	1.1	1.4	0.8	0.6	0.9	1.9	1.5	1.2	0.8	0.7	0.7	Diurnal Maximum	

Number of Exceedences (AAAQO): 1-hr: 0 24-hr: 0

Maximum Value: 3.7 km/h on Sep 30 15:00

Minimum Value: 0.2 km/h on Sep 19 00:00

Percentiles: P_1 = 0.2 P_{10} = 0.4 Q_1 = 0.7 Median = 1.2 Q_3 = 1.9 P_{90} = 2.6 P_{99} = 3.4

Hours in Service:	720
Hours of Data:	720
Hours of Missing Data:	0
Hours of Calibration:	0
Percent Operational Time:	100.0

Day	Hourly Period Ending At (MST)																								Daily
	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24	Maximum
1-Sep	1.3	1.0	0.9	0.8	0.4	0.8	1.0	1.6	1.4	1.5	2.2	2.6	2.9	3.2	2.9	2.7	2.5	1.7	0.7	0.2	0.2	0.3	0.6	0.5	3.2
2-Sep	0.7	0.6	0.5	0.4	0.7	0.5	0.9	0.6	0.9	1.2	1.5	1.7	1.6	2.6	3.0	2.4	1.5	1.4	0.7	1.8	2.8	2.8	3.4	3.1	3.4
3-Sep	2.6	2.6	2.2	1.8	1.9	1.5	1.4	1.2	1.4	2.1	1.8	1.5	1.6	1.7	1.7	1.6	2.0	1.6	1.0	1.1	0.7	1.2	1.4	1.0	2.6
4-Sep	0.5	0.4	0.4	0.2	0.4	0.3	0.4	0.6	1.5	2.0	2.8	2.4	2.6	2.1	3.4	2.8	2.0	1.5	1.1	0.3	0.4	0.5	0.5	0.8	3.4
5-Sep	1.9	2.0	0.5	0.6	0.5	0.3	0.4	0.9	1.2	1.7	2.0	2.4	2.5	2.9	2.7	2.7	1.7	1.6	1.7	2.1	2.2	1.9	1.5	1.4	2.9
6-Sep	1.3	1.4	1.5	1.3	1.4	1.5	1.1	1.2	1.4	1.1	1.8	2.0	1.4	0.7	0.8	1.1	1.0	1.2	1.1	1.1	1.2	1.4	1.1	0.4	2.0
7-Sep	0.4	0.4	0.4	0.2	0.4	0.4	0.5	0.7	0.9	1.6	1.7	1.4	2.3	2.3	2.6	2.3	1.9	1.6	1.0	0.9	0.6	0.8	1.1	1.4	2.6
8-Sep	1.0	0.7	0.4	0.4	0.3	0.3	0.2	0.7	0.8	1.2	1.7	1.9	2.3	2.3	1.1	1.1	1.2	0.5	1.5	2.0	0.8	0.7	0.7	0.5	2.3
9-Sep	0.6	0.9	0.8	0.6	0.4	1.0	0.9	1.8	1.6	1.7	2.3	2.1	2.7	2.6	2.8	2.9	3.7	3.6	3.6	3.0	2.7	2.6	2.3	1.9	3.7
10-Sep	2.1	2.0	1.6	1.4	1.1	0.7	0.8	1.5	1.9	2.2	2.6	2.8	3.0	2.9	2.0	1.3	1.6	1.3	1.1	0.3	0.5	0.6	0.5	0.3	3.0
11-Sep	0.6	0.4	0.4	0.2	0.4	0.5	0.7	0.6	1.1	1.4	1.7	1.9	2.0	2.4	2.7	2.0	1.7	1.3	2.4	2.5	2.6	2.5	1.9	1.7	2.7
12-Sep	1.4	1.8	2.0	1.4	2.0	1.1	1.4	1.5	1.3	1.7	2.1	2.1	1.6	1.8	2.0	1.9	1.8	1.4	1.0	0.3	0.4	0.4	0.4	0.4	2.1
13-Sep	0.3	0.3	0.8	0.5	1.0	1.0	0.9	0.9	1.0	1.6	1.8	2.1	2.0	1.6	1.8	1.2	1.5	1.6	1.6	1.9	1.9	1.4	1.6	1.3	2.1
14-Sep	0.6	0.5	0.7	0.7	0.7	0.5	0.6	0.8	0.9	1.6	1.9	2.4	2.5	2.5	2.1	1.6	1.4	1.2	0.9	1.2	1.4	0.8	0.7	0.5	2.5
15-Sep	0.5	0.5	0.3	0.3	0.7	0.4	0.4	1.0	1.9	2.2	2.0	2.1	2.5	2.7	2.4	1.9	1.6	0.7	0.4	0.4	0.5	0.6	0.7	0.8	2.7
16-Sep	0.7	0.6	0.7	0.7	0.6	0.5	0.4	0.8	1.6	1.3	2.0	3.0	3.2	2.9	2.7	2.5	1.8	1.4	0.6	0.2	0.7	0.4	0.7	0.9	3.2
17-Sep	0.8	0.7	0.7	0.5	0.6	0.8	0.5	0.8	1.2	1.4	1.7	1.8	2.1	2.5	2.4	1.9	1.8	1.1	0.9	1.6	0.5	0.6	0.6	0.6	2.5
18-Sep	0.4	0.6	0.5	0.5	0.7	1.1	0.7	0.8	1.2	1.4	1.1	1.8	2.5	2.8	2.1	2.3	2.0	1.1	0.6	0.3	0.7	0.4	0.3	0.2	2.8
19-Sep	0.2	0.2	0.3	0.3	0.3	0.4	0.4	0.3	0.7	1.2	1.5	1.6	1.7	2.1	2.1	1.9	1.0	0.8	0.5	0.4	1.0	1.0	0.9	0.6	2.1
20-Sep	0.3	0.4	0.6	1.0	0.5	0.8	1.1	0.9	1.4	2.0	1.4	1.6	2.0	2.9	3.1	3.2	3.0	2.5	1.7	1.9	1.8	1.7	1.6	1.1	3.2
21-Sep	0.9	0.5	0.4	0.2	0.2	0.2	0.3	0.7	0.9	1.0	1.3	1.5	1.9	2.6	2.7	1.9	1.5	1.6	1.5	2.1	0.5	1.1	1.7	1.8	2.7
22-Sep	2.2	1.3	1.0	0.8	0.5	0.3	0.3	0.9	1.4	1.9	1.8	2.3	2.3	2.4	2.1	1.8	1.4	0.8	0.4	1.2	0.9	0.5	0.3	0.6	2.4
23-Sep	0.5	0.8	0.7	1.1	0.8	0.5	0.5	0.5	0.8	1.4	0.9	1.2	1.6	1.3	1.6	1.5	0.9	0.6	1.0	1.3	1.1	1.0	0.9	0.8	1.6
24-Sep	1.0	1.1	1.3	1.2	1.2	0.9	0.9	1.2	2.2	2.7	2.8	3.5	3.5	3.3	3.2	2.8	1.9	1.3	0.4	0.3	0.7	0.5	0.6	0.6	3.5
25-Sep	0.7	0.5	0.6	1.1	1.4	1.6	2.9	2.4	1.3	0.8	1.4	1.0	1.0	0.8	1.2	0.7	0.8	0.9	0.6	0.7	0.7	0.9	0.9	0.6	2.9
26-Sep	0.7	1.2	1.0	1.1	1.3	1.3	1.3	1.1	0.7	0.9	1.4	2.3	2.6	2.3	2.4	1.5	1.8	1.6	0.9	0.3	0.3	0.3	0.5	0.8	2.6
27-Sep	0.6	0.7	0.6	0.7	0.9	1.5	1.7	2.1	1.3	1.7	1.9	2.5	2.8	2.4	2.0	1.7	1.4	0.9	0.9	1.2	0.9	0.8	0.8	1.4	2.8
28-Sep	2.2	2.6	3.1	3.6	3.4	3.0	2.4	2.2	2.4	2.7	2.5	2.4	2.6	2.4	2.5	2.4	1.2	0.4	0.4	0.4	0.7	0.4	0.6	0.4	3.6
29-Sep	0.7	0.6	0.6	0.5	0.9	1.1	0.6	1.0	1.6	1.7	2.2	2.2	1.9	2.6	1.9	2.2	2.4	2.2	1.8	1.5	1.0	1.6	1.0	1.2	2.6
30-Sep	1.7	2.2	1.4	1.3	1.8	1.2	0.6	0.7	1.4	2.0	2.6	2.9	2.7	3.3	3.7	3.5	3.0	2.1	0.7	0.3	0.3	0.3	0.4	0.5	3.7
	2.6	2.6	3.1	3.6	3.4	3.0	2.9	2.4	2.4	2.7	2.8	3.5	3.5	3.3	3.7	3.5	3.7	3.6	3.6	3.0	2.8	2.8	3.4	3.1	
	Diurnal Maximum																								

Wood Buffalo Environmental Association

Summary of Hour Averages

Vertical Wind Speed 90m (VW90) - km/h

Mannix - September 2024

Maximum Value: 2.8 km/h on Sep 11 13:00

Maximum Daily Average: 0.5 km/h on Sep 3

Minimum Value: -1.0 km/h on Sep 16 21:00

Minimum Daily Average: -0.4 km/h on Sep 16

Maximum Diurnal Average: 0.2 km/h at hour 3

Minimum Diurnal Average: -0.1 km/h at hour 18

Monthly Average: 0.05 km/h

Percentiles: P_1 = -0.9 P_{10} = -0.5 Q_1 = -0.2 Median = 0.0 Q_3 = 0.3 P_{90} = 0.6 P_{99} = 1.1

Hours in Service:	720
Hours of Data:	719
Hours of Missing Data:	1
Hours of Calibration:	0
Percent Operational Time:	99.9

Day	Hourly Period Ending At (MST)																								Daily	Daily
	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24	Average	Maximum
1-Sep	0.4	0.4	0.4	0.2	0.4	0.1	0.0	0.4	0.1	0.4	0.6	0.2	-0.9	-0.6	-0.2	-0.5	0.0	-0.3	-0.3	-0.6	-0.7	-0.4	-0.6	-0.4	-0.1	0.6
2-Sep	-0.4	-0.2	0.0	-0.1	-0.2	0.0	0.0	0.1	0.0	0.2	-0.2	-0.1	-0.4	0.2	-0.1	-0.3	-0.4	-0.5	-0.5	-0.2	0.1	0.9	0.2	0.4	-0.1	0.9
3-Sep	1.3	1.4	0.8	0.7	0.9	0.3	0.1	0.2	0.3	0.6	0.4	0.4	0.4	0.8	0.0	0.1	0.7	1.2	0.1	0.6	0.3	0.2	0.3	0.1	0.5	1.4
4-Sep	0.0	0.3	0.3	-0.2	-0.3	-0.2	-0.4	-0.3	-0.1	-0.1	0.2	-0.6	-0.5	-0.5	0.6	0.3	-0.2	-0.3	-0.2	-0.3	-0.5	-0.7	-0.7	-0.6	-0.2	0.6
5-Sep	-0.1	0.4	0.0	0.2	0.3	0.2	0.1	0.2	-0.1	-0.2	-0.1	0.1	0.3	0.5	0.8	0.2	0.2	-0.1	0.5	0.5	1.0	0.7	0.4	0.7	0.3	1.0
6-Sep	0.7	0.7	0.7	0.9	0.6	0.3	-0.1	0.2	0.4	0.1	0.1	0.0	0.3	0.0	0.1	-0.2	-0.3	-0.4	-0.3	-0.4	-0.2	0.1	-0.4	-0.2	0.1	0.9
7-Sep	0.1	0.1	-0.2	0.0	0.2	0.2	0.1	0.2	0.2	0.5	0.5	0.6	0.1	-0.5	-0.2	-0.7	-0.3	-0.9	-0.8	-0.8	-0.7	-0.4	0.0	-0.2	-0.1	0.6
8-Sep	-0.1	0.0	-0.1	-0.1	-0.1	-0.2	0.0	0.5	0.2	0.2	0.3	0.0	0.1	0.1	0.1	0.3	0.6	0.3	0.7	0.4	0.5	0.3	0.0	-0.1	0.2	0.7
9-Sep	0.1	0.0	0.0	0.1	0.2	0.6	0.5	0.5	0.0	0.0	-0.1	-0.4	-0.6	-0.2	-0.5	-0.7	-0.2	-0.6	-0.7	-0.3	-0.2	-0.1	-0.5	-0.4	-0.1	0.6
10-Sep	-0.5	-0.3	-0.2	-0.1	-0.3	-0.7	-0.4	0.0	-0.3	-0.4	0.4	-0.7	-0.1	-0.1	0.1	-0.3	0.0	-0.2	0.2	-0.1	0.0	0.2	0.2	0.3	-0.1	0.4
11-Sep	0.3	0.4	0.1	0.1	0.2	0.1	0.2	0.2	0.5	0.3	0.1	0.3	2.8	-0.3	-0.1	-0.9	0.6	0.0	2.0	1.5	1.0	-0.1	-0.7	-0.8	0.3	2.8
12-Sep	-0.3	0.5	1.0	0.3	0.7	0.7	-0.4	0.2	0.9	1.1	0.2	0.5	0.8	0.0	0.2	0.0	0.7	0.0	0.3	0.1	0.2	0.6	0.3	0.1	0.4	1.1
13-Sep	0.0	0.1	0.4	0.0	0.2	-0.1	0.4	0.3	0.0	0.0	-0.3	-0.2	0.5	0.8	1.0	0.4	0.0	0.1	-0.2	0.1	1.1	0.4	0.0	0.2	0.2	1.1
14-Sep	0.1	-0.2	0.0	-0.1	-0.4	-0.8	0.0	0.4	-0.4	-0.6	-0.4	0.1	0.3	-0.2	0.0	-0.4	0.1	0.2	0.0	0.3	0.8	0.4	0.2	0.1	0.0	0.8
15-Sep	0.2	0.7	0.3	0.2	0.8	0.6	0.7	0.8	0.5	0.4	1.0	1.3	0.1	-0.9	-0.7	-0.5	0.4	-0.2	0.2	0.1	0.2	0.0	0.0	0.0	0.3	1.3
16-Sep	0.2	-0.1	0.1	0.0	0.0	-0.2	-0.2	-0.2	-0.2	-0.7	-0.3	-0.5	-0.5	-0.4	-0.7	-0.5	-0.7	-0.6	-0.7	-0.9	-1.0	-1.0	-0.5	-0.7	-0.4	0.2
17-Sep	-0.5	-0.4	-0.3	0.0	0.2	-0.2	0.0	0.1	0.3	0.0	0.1	-0.1	-0.4	0.4	0.6	0.8	0.6	0.8	0.8	0.4	0.2	0.1	0.5	0.3	0.2	0.8
18-Sep	0.4	0.7	1.0	0.4	0.5	0.3	-0.1	-0.2	-0.4	-0.4	-0.2	0.0	-0.5	0.1	-0.4	-0.3	0.4	0.2	0.0	-0.2	0.4	0.1	0.0	0.0	0.1	1.0
19-Sep	0.0	0.0	0.1	0.0	0.1	0.0	0.0	0.0	-0.2	0.1	-0.5	0.0	0.2	1.1	0.5	0.5	0.1	-0.5	0.1	0.1	0.5	0.5	0.6	0.4	0.2	1.1
20-Sep	-0.1	0.1	0.1	0.3	0.1	0.1	0.3	0.0	-0.1	0.0	0.1	0.1	0.8	0.4	-0.2	-0.1	0.0	0.0	0.5	0.4	0.8	1.1	0.9	0.6	0.3	1.1
21-Sep	0.5	0.1	0.0	0.0	-0.1	0.0	-0.1	-0.1	0.2	0.3	0.0	-0.1	-0.1	0.4	0.0	0.1	0.2	-0.1	0.4	0.1	-0.4	-0.2	-0.8	-0.6	0.0	0.5
22-Sep	0.4	0.8	0.8	0.6	0.8	0.5	0.3	0.0	0.4	0.8	-0.3	0.6	0.0	0.0	0.5	0.1	-0.4	0.1	0.1	0.0	-0.6	-0.1	-0.2	0.0	0.2	0.8
23-Sep	0.2	0.3	0.5	0.4	0.5	-0.1	0.1	0.2	0.1	0.1	-0.1	0.0	0.6	0.2	0.6	0.2	-0.2	0.2	-0.2	-0.2	0.0	0.0	-0.1	-0.6	0.1	0.6
24-Sep	-0.5	-0.1	-0.1	0.2	0.0	0.2	-0.3	-0.3	-0.1	-0.2	-0.3	-0.1	0.1	-0.3	-0.3	-0.2	0.0	-0.3	-0.2	-0.4	0.1	0.3	0.3	0.5	-0.1	0.5
25-Sep	0.5	0.3	0.5	-0.2	0.0	0.1	0.6	-0.1	0.4	0.8	0.8	0.1	-0.2	-0.1	0.1	0.3	-0.4	-0.5	-0.8	-0.5	-0.3	-0.3	0.0	-0.4	0.0	0.8
26-Sep	-0.6	-0.2	0.1	0.3	0.2	-0.1	UO	-0.3	-0.2	-0.3	-0.2	0.2	0.0	0.5	0.0	-0.1	0.5	-0.1	0.1	-0.4	-0.4	-0.7	-0.5	0.1	-0.1	0.5
27-Sep	0.2	0.4	0.3	0.3	0.4	0.3	0.3	0.2	0.3	0.6	-0.4	0.3	0.0	-0.1	1.1	0.0	-0.2	-0.2	-0.2	-0.1	-0.4	-0.8	-1.0	-1.0	0.0	1.1
28-Sep	-0.9	-0.9	-0.8	-0.6	-0.9	-0.5	0.0	-0.4	-0.5	-0.4	-0.5	-0.1	-0.2	-0.3	-0.2	0.2	-0.1	0.0	0.0	-0.8	-0.2	0.1	0.1	0.3	-0.3	0.3
29-Sep	0.2	0.3	0.3	0.1	0.1	-0.2	0.1	0.4	-0.1	0.5	0.3	0.7	0.1	0.6	0.7	0.8	0.6	-0.3	-0.3	-0.1	0.2	0.0	-0.1	0.1	0.2	0.8
30-Sep	0.1	-0.1	0.0	-0.2	-0.3	0.0	-0.1	-0.3	-0.6	-0.3	0.2	-0.2	0.0	0.2	-0.2	0.0	-0.4	-0.1	0.1	-0.2	-0.4	-0.7	-0.9	-0.9	-0.2	0.2
	0.1	0.2	0.2	0.1	0.2	0.0	0.1	0.1	0.0	0.1	0.0	0.1	0.1	0.1	0.1	0.0	0.1	-0.1	0.0	-0.1	0.0	0.0	-0.1	-0.1	Diurnal Average	
	1.3	1.4	1.0	0.9	0.9	0.7	0.7	0.8	0.9	1.1	1.0	1.3	2.8	1.1	1.1	0.8	0.7	1.2	2.0	1.5	1.1	1.1	0.9	0.7	Diurnal Maximum	

UO - Unstable Operation

Wood Buffalo Environmental Association

Summary of Hour Standard Deviations

Vertical Wind Speed 90m (VW90) - km/h

Mannix - September 2024

Number of Exceedences (AAAQO): 1-hr: 0 24-hr: 0
Maximum Value: 3.8 km/h on Sep 28 04:00

Minimum Value: 0.1 km/h on Sep 19 01:00

Percentiles: P_1 = 0.2 P_{10} = 0.4 Q_1 = 0.7 Median = 1.2 Q_3 = 2.0 P_{90} = 2.7 P_{99} = 3.6

Hours in Service:	720
Hours of Data:	719
Hours of Missing Data:	1
Hours of Calibration:	0
Percent Operational Time:	99.9

Day	Hourly Period Ending At (MST)																								Daily
	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24	Maximum
1-Sep	1.2	0.9	0.9	0.7	0.4	0.7	0.8	1.6	1.4	1.4	2.2	2.7	3.0	3.4	3.1	2.9	2.7	1.7	0.7	0.2	0.2	0.3	0.6	0.6	3.4
2-Sep	0.8	0.6	0.4	0.5	0.7	0.6	0.7	0.5	0.7	1.3	1.6	1.7	1.7	2.8	3.3	2.5	1.4	1.4	0.6	1.8	2.7	2.8	3.6	3.5	3.6
3-Sep	2.8	2.7	2.1	1.9	1.9	1.7	1.5	1.4	1.5	2.2	2.0	1.5	1.5	1.8	1.7	1.6	2.1	1.7	1.0	0.9	0.7	1.3	1.5	1.1	2.8
4-Sep	0.6	0.5	0.4	0.2	0.3	0.4	0.3	0.5	1.6	2.1	3.0	2.6	2.8	2.3	3.6	3.0	2.0	1.4	1.0	0.2	0.3	0.4	0.4	0.9	3.6
5-Sep	1.9	2.0	0.6	0.7	0.5	0.3	0.4	0.8	1.2	1.7	2.2	2.6	2.7	3.2	2.9	2.8	1.7	1.5	1.7	2.1	2.1	1.7	1.2	1.3	3.2
6-Sep	1.1	1.2	1.3	1.2	1.5	1.6	1.0	1.1	1.4	1.0	1.9	2.0	1.4	0.8	0.7	1.0	1.0	1.3	1.2	1.1	1.3	1.5	1.2	0.4	2.0
7-Sep	0.5	0.4	0.4	0.1	0.4	0.3	0.4	0.5	0.8	1.5	1.5	1.4	2.5	2.6	2.7	2.5	2.0	1.6	1.2	1.0	0.5	0.9	1.1	1.4	2.7
8-Sep	1.0	1.0	0.5	0.4	0.4	0.2	0.3	0.8	0.8	1.2	1.7	1.9	2.5	2.5	1.2	1.1	1.2	0.5	1.3	2.2	0.8	0.7	0.7	0.6	2.5
9-Sep	0.6	0.9	1.0	0.7	0.4	0.8	1.0	1.8	1.6	1.7	2.6	2.1	2.7	2.7	3.0	2.9	3.8	3.6	3.5	3.0	2.7	2.6	2.3	1.9	3.8
10-Sep	2.1	1.9	1.6	1.2	1.0	0.7	0.7	1.4	2.0	2.4	2.8	2.9	3.3	3.2	2.0	1.3	1.7	1.3	1.2	0.4	0.6	0.7	0.6	0.4	3.3
11-Sep	0.7	0.5	0.4	0.4	0.3	0.4	0.6	0.5	1.2	1.5	1.9	2.2	2.2	2.6	3.1	2.3	2.0	1.7	2.4	2.5	2.6	2.7	2.1	1.3	3.1
12-Sep	1.2	1.7	2.0	1.3	2.1	0.9	1.4	1.1	1.4	1.8	2.1	2.3	1.6	1.7	2.0	1.9	1.9	1.4	1.0	0.4	0.4	0.4	0.4	0.3	2.3
13-Sep	0.4	0.3	0.9	0.6	0.9	0.9	0.9	0.9	1.0	1.6	1.8	2.1	2.2	1.7	1.8	1.3	1.5	1.6	1.5	1.9	1.9	1.5	1.5	1.2	2.2
14-Sep	0.6	0.4	0.6	0.6	0.7	0.4	0.6	0.8	0.8	1.7	2.2	2.8	2.8	2.7	2.2	1.6	1.4	1.2	0.8	1.1	1.5	0.8	0.6	0.4	2.8
15-Sep	0.5	0.6	0.4	0.3	0.8	0.4	0.5	1.1	1.8	2.4	2.4	2.4	2.8	3.1	2.7	2.1	1.8	0.7	0.4	0.3	0.3	0.5	0.6	0.6	3.1
16-Sep	0.6	0.7	0.6	0.7	0.6	0.6	0.5	0.9	1.5	1.3	2.1	3.2	3.4	3.1	2.9	2.7	1.9	1.5	0.6	0.2	0.6	0.3	0.7	0.9	3.4
17-Sep	0.9	0.8	0.8	0.5	0.6	0.9	0.4	0.9	0.9	1.4	1.7	1.9	2.2	2.7	2.6	2.0	1.9	1.2	0.6	1.4	0.5	0.5	0.4	0.5	2.7
18-Sep	0.3	0.5	0.5	0.5	0.6	1.1	0.7	0.7	1.3	1.6	1.2	1.7	2.7	2.8	2.1	2.4	2.2	1.2	0.7	0.4	0.8	0.4	0.3	0.2	2.8
19-Sep	0.1	0.2	0.3	0.3	0.3	0.3	0.4	0.3	0.5	1.0	1.6	1.8	1.9	2.3	2.4	2.1	1.1	0.8	0.5	0.3	1.0	0.9	1.1	0.6	2.4
20-Sep	0.4	0.4	0.7	1.0	0.6	0.7	1.3	0.9	1.3	2.0	1.4	1.6	2.1	3.2	3.2	3.3	2.8	2.3	1.8	1.8	1.7	1.6	1.7	1.1	3.3
21-Sep	1.0	0.5	0.4	0.2	0.1	0.2	0.3	0.6	0.9	0.9	1.3	1.6	2.0	3.0	3.0	2.1	1.5	1.7	1.4	2.2	0.5	0.9	1.8	2.0	3.0
22-Sep	2.3	1.2	1.0	0.7	0.6	0.4	0.3	0.9	1.4	2.0	2.0	2.4	2.4	2.7	2.3	1.9	1.7	0.9	0.5	1.4	0.9	0.6	0.3	0.7	2.7
23-Sep	0.4	0.8	0.7	1.3	0.8	0.5	0.5	0.5	0.8	1.5	0.9	1.1	1.6	1.3	1.6	1.5	0.8	0.5	1.0	1.2	1.1	0.9	0.9	0.9	1.6
24-Sep	1.2	1.2	1.6	1.4	1.2	1.1	1.0	1.5	2.5	2.8	2.9	3.7	3.7	3.5	3.3	2.9	1.9	1.3	0.4	0.4	0.7	0.6	0.5	0.5	3.7
25-Sep	0.6	0.4	0.4	0.9	1.2	1.3	2.0	2.2	1.4	0.8	1.3	1.0	1.1	0.8	1.3	0.8	0.8	0.9	0.6	0.8	0.7	0.9	0.9	0.7	2.2
26-Sep	0.8	1.1	0.8	1.0	1.3	1.2	UO	1.2	0.8	0.9	1.4	2.3	2.7	2.3	2.6	1.8	1.7	1.8	0.9	0.4	0.4	0.4	0.5	1.0	2.7
27-Sep	0.6	0.6	0.6	0.8	0.8	1.5	1.6	2.1	1.4	1.8	2.1	2.7	3.0	2.6	2.1	1.8	1.3	0.9	0.9	1.1	1.0	0.7	0.8	1.5	3.0
28-Sep	2.3	2.7	3.2	3.8	3.4	3.2	2.5	2.2	2.5	2.7	2.6	2.4	2.7	2.5	2.7	2.6	1.3	0.4	0.4	0.3	0.7	0.3	0.5	0.3	3.8
29-Sep	0.7	0.5	0.5	0.5	0.5	1.0	0.6	0.9	1.6	1.9	2.1	2.4	1.9	2.6	2.0	2.2	2.3	1.9	1.6	1.5	1.0	1.5	1.0	1.1	2.6
30-Sep	1.8	2.2	1.4	1.2	1.9	1.2	0.6	0.6	1.4	2.0	2.8	3.0	2.9	3.4	3.8	3.5	3.1	2.0	0.7	0.3	0.3	0.3	0.3	0.5	3.8
	2.8	2.7	3.2	3.8	3.4	3.2	2.5	2.2	2.5	2.8	3.0	3.7	3.7	3.5	3.8	3.5	3.8	3.6	3.5	3.0	2.7	2.8	3.6	3.5	
	Diurnal Maximum																								

UO - Unstable Operation

WOOD BUFFALO ENVIRONMENTAL ASSOCIATION

CONTINUOUS AMBIENT AIR QUALITY
MONITORING PROGRAM
MONTHLY REPORT

AMS06
PATRICIA MCINNES
SEPTEMBER 2024

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

October 31, 2024

WOOD BUFFALO ENVIRONMENTAL ASSOCIATION - PATRICIA McINNES (AMS06)
SEPTEMBER 2024

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	685	35	35	100	9.9	0	1.7	0
TRS (ppb) Average	685	35	35	100	2.4	0	0.9	0
THC (ppm) Average	612	33	108	89.58	2.8	-	2.3	-
NMHC(ppm) Average	612	33	108	89.58	0.116	-	0.047	-
CH4(ppm) Average	612	33	108	89.58	2.8	-	2.3	-
O3 (ppb) Average	685	35	35	100	46.9	0	29.8	-
NO2 (ppb) Average	684	36	36	100	18.3	0	9.2	-
NO (ppb) Average	684	36	36	100	30.3	-	5.4	-
NOX (ppb) Average	684	36	36	100	45.3	-	13.7	-
NH3 (ppb) Average	563	43	157	84.17	0	0	0	-
PM2.5 (ug/m3) Average	718	2	2	100	182.3	0	104.6	5
Temperature 2 m (C) Average	720	0	0	100	30.9	-	21.3	-
Relative Humidity (%) Average	720	0	0	100	98.7	-	92.9	-
Wind Speed 10 m (km/h) Average	720	0	0	100	28	-	15	-
Wind Direction 10 m (deg) Average	720	0	0	100	-	-	-	-

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

WOOD BUFFALO ENVIRONMENTAL ASSOCIATION - PATRICIA McINNES (AMS06)
SEPTEMBER 2024

MONTHLY SUMMARY FOR AIR QUALITY/ METEOROLOGICAL MONITORING MEASUREMENTS

					Percentile						
Parameter	Number	Mean	StnDev	Total	Min	P10	Q1	Median	Q3	P90	Max
SO2 (ppb) Average	685	0.41	0.9	-	0	0	0.1	0.2	0.3	0.8	9.9
TRS (ppb) Average	685	0.24	0.3	-	0.1	0.1	0.1	0.2	0.2	0.5	2.4
THC (ppm) Average	612	2.08	0.1	-	1.8	2	2	2	2.1	2.3	2.8
NMHC(ppm) Average	612	0.016	0.017	-	0	0	0	0	0	0	0.116
CH4(ppm) Average	612	2.06	0.1	-	1.8	2	2	2	2.1	2.3	2.8
O3 (ppb) Average	685	21.47	9.1	-	2.5	9	14.7	21.8	27.8	32.6	46.9
NO2 (ppb) Average	684	3.09	3.6	-	0	0	0.5	1.8	4.5	8.1	18.3
NO (ppb) Average	684	1.24	2.9	-	0	0	0.1	0.4	1.1	2.6	30.3
NOX (ppb) Average	684	4.33	5.9	-	0	0.1	0.6	2.2	5.5	11.3	45.3
NH3 (ppb) Average	563	0	0	-	0	0	0	0	0	0	0
PM2.5 (ug/m3) Average	718	20.64	33	-	0.3	2.3	3.7	7.5	15.8	60.3	182.3
Temperature 2 m (C) Average	720	12.91	5.7	-	0.2	6.7	9	12	16.1	20.4	30.9
Relative Humidity (%) Average	720	71.14	18.4	-	26.3	43	58.3	73.4	87	93.7	98.7
Wind Speed 10 m (km/h) Average	720	8.6	5	-	0	3	5	8	11	15	28
Wind Direction 10 m (deg) Average	720	-	-	-	-	-	-	-	-	-	-

WOOD BUFFALO ENVIRONMENTAL ASSOCIATION - PATRICIA MCINNES (AMS06)
SEPTEMBER 2024

OPERATIONAL NOTES

Parameter	Period Start	Period End	Duration (Hours)	Notes
THC/NMHC/CH4	01 Sep 2024 07:00	02 Sep 2024 10:00	28	Unstable Operation - excessive baseline noise
THC/NMHC/CH4	02 Sep 2024 11:00	02 Sep 2024 11:00	1	Maintenance - replaced support gas cylinder
THC/NMHC/CH4	04 Sep 2024 04:00	05 Sep 2024 03:00	24	Unstable Operation - excessive baseline noise
THC/NMHC/CH4	05 Sep 2024 05:00	05 Sep 2024 09:00	5	Unstable Operation - excessive baseline noise
THC/NMHC/CH4	14 Sep 2024 18:00	14 Sep 2024 18:00	1	Unstable Operation - excessive baseline noise
THC/NMHC/CH4	14 Sep 2024 20:00	14 Sep 2024 20:00	1	Unstable Operation - excessive baseline noise
THC/NMHC/CH4	14 Sep 2024 22:00	15 Sep 2024 01:00	4	Unstable Operation - excessive baseline noise
THC/NMHC/CH4	15 Sep 2024 08:00	15 Sep 2024 08:00	1	Unstable Operation - excessive baseline noise
THC/NMHC/CH4	15 Sep 2024 11:00	15 Sep 2024 17:00	7	Maintenance - span adjustment
THC/NMHC/CH4	30 Sep 2024 12:00	30 Sep 2024 13:00	2	Unstable Operation - excessive baseline noise
THC/NMHC/CH4	30 Sep 2024 15:00	30 Sep 2024 15:00	1	Unstable Operation - excessive baseline noise
NH3	01 Sep 2024 01:00	03 Sep 2024 10:00	58	Unstable Operation - AMD noncompliance
NH3	03 Sep 2024 13:00	04 Sep 2024 09:00	21	Maintenance - analyzer replaced
NH3	01 Sep 2024 01:00	30 Sep 2024 03:00	35	Stabilization after daily span

Wood Buffalo Environmental Association

Summary of Hour Averages

Sulphur Dioxide (SO_2) - ppb

Patricia McInnes - September 2024

Number of Exceedences (AAAQO): 1-hr: 0 24-hr: 0
Maximum Value: 9.9 ppb on Sep 29 11:00 Maximum Daily Average: 1.7 ppb on Sep 29

Minimum Value: 0.0 ppb on Sep 4 02:00 Minimum Daily Average: 0.0 ppb on Sep 28
Maximum Diurnal Average: 0.9 ppb at hour 10 Minimum Diurnal Average: 0.1 ppb at hour 4
Monthly Average: 0.41 ppb Percentiles: P_1 = 0.0 P_{10} = 0.0 Q_1 = 0.1 Median = 0.2 Q_3 = 0.3 P_{90} = 0.8 P_{99} = 5.0

Hours in Service:	720
Hours of Data:	685
Hours of Missing Data:	35
Hours of Calibration:	35
Percent Operational Time:	100.0

Day	Hourly Period Ending At (MST)																								Daily	Daily
	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24	Average	Maximum
1-Sep	0.1	0.1	0.1	0.1	0.1	Z	0.1	0.4	0.3	0.5	0.6	0.4	0.6	0.3	0.2	0.1	0.1	0.2	0.2	0.2	0.3	0.2	0.3	0.2	0.2	0.6
2-Sep	Z	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	0.2	0.1	0.2	0.1	0.2	0.1	0.1	0.1	0.2	0.2
3-Sep	0.1	Z	0.1	0.1	0.1	0.1	0.1	0.3	3.6	3.9	3.4	1.8	2.0	0.7	0.4	2.3	1.6	1.4	1.7	0.4	0.2	0.3	0.1	0.1	1.1	3.9
4-Sep	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	0.0	0.0	0.0	0.0	0.1	0.0	0.0	0.0	0.1	0.1	0.0	0.1
5-Sep	0.0	1.5	1.5	Z	0.3	0.1	0.2	0.6	C	C	C	C	C	0.2	0.1	0.1	0.2	0.4	0.2	0.1	0.1	0.1	0.1	0.5	0.4	1.5
6-Sep	0.3	0.3	0.2	0.2	Z	0.2	0.5	0.7	0.9	0.7	0.2	0.3	0.2	0.1	0.1	0.1	0.1	0.2	0.1	0.1	0.2	0.0	0.0	0.0	0.3	0.9
7-Sep	0.0	0.0	0.1	0.1	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	0.1
8-Sep	Z	0.1	0.0	0.0	0.0	0.0	0.0	0.0	0.1	0.0	0.2	1.1	1.2	0.8	0.2	0.1	0.4	0.5	0.9	0.6	0.2	0.1	0.0	0.0	0.3	1.2
9-Sep	0.3	Z	0.5	0.3	0.5	1.4	0.9	1.1	7.2	4.7	0.3	0.0	0.0	0.0	0.1	0.1	0.1	0.2	0.1	0.1	0.1	0.1	0.2	0.1	0.8	7.2
10-Sep	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	0.0	0.0	0.0	0.1	0.1	0.2	0.2	0.2	0.2	0.2	0.2	0.1	0.2
11-Sep	0.2	0.1	0.1	Z	0.2	0.2	0.2	0.3	0.3	0.2	0.3	0.2	0.2	0.1	0.3	0.3	0.2	0.2	0.2	0.1	0.2	0.2	0.2	0.2	0.2	0.3
12-Sep	0.1	0.1	0.2	0.2	Z	0.2	0.2	0.1	0.0	0.1	0.0	0.0	0.1	0.1	0.0	0.2	0.2	0.2	0.2	0.3	0.2	0.2	0.5	0.4	0.2	0.5
13-Sep	0.2	0.2	0.5	0.2	0.5	Z	0.3	0.3	0.5	2.5	2.8	2.7	1.7	1.9	3.9	1.1	1.3	1.7	1.3	1.2	1.0	0.8	0.7	0.5	1.2	3.9
14-Sep	Z	0.2	0.2	0.1	0.2	0.1	0.0	0.1	0.1	0.1	0.1	0.1	0.1	0.0	0.0	0.0	0.0	0.1	0.1	0.1	0.1	0.2	0.2	0.2	0.1	0.2
15-Sep	0.1	Z	0.2	0.3	0.5	0.3	0.3	1.1	1.2	0.4	0.3	1.6	5.6	3.9	3.3	5.0	5.0	3.3	2.2	1.4	0.8	0.4	0.3	0.3	1.6	5.6
16-Sep	0.1	0.1	Z	0.1	0.1	0.2	0.2	0.2	0.2	0.1	0.2	0.2	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
17-Sep	0.2	0.1	0.1	Z	0.2	0.2	0.2	0.3	0.3	0.3	0.4	0.3	0.3	0.5	0.7	0.7	0.5	0.4	0.4	0.3	0.2	0.1	0.3	0.2	0.3	0.7
18-Sep	0.2	0.1	0.2	0.2	Z	0.2	0.2	0.4	0.2	0.4	0.3	0.3	0.2	0.2	0.3	0.2	0.1	0.2	0.2	0.2	0.3	0.2	0.1	0.1	0.2	0.4
19-Sep	0.1	0.1	0.2	0.2	0.2	Z	0.2	0.1	0.2	0.2	0.2	0.2	0.2	0.2	0.2	0.1	0.0	0.0	0.6	0.4	0.3	0.4	0.2	0.2	0.2	0.6
20-Sep	Z	0.2	0.3	0.3	0.3	0.5	0.8	0.7	2.2	1.8	1.8	3.3	3.6	3.1	4.1	1.9	1.8	0.1	0.8	0.7	0.3	0.2	0.2	0.2	1.3	4.1
21-Sep	0.1	Z	0.1	0.1	0.2	0.1	0.0	0.0	0.2	0.2	0.1	0.2	0.1	0.1	0.1	0.1	0.2	0.4	0.1	0.2	0.3	0.3	0.2	0.2	0.1	0.4
22-Sep	0.4	0.2	Z	0.3	0.3	0.3	0.3	0.4	0.5	0.3	0.3	0.3	0.3	0.3	0.4	0.3	0.3	0.3	0.3	0.2	0.2	0.3	0.2	0.2	0.3	0.5
23-Sep	0.1	0.2	0.3	Z	0.4	0.2	0.2	0.5	0.8	1.4	1.4	6.1	4.2	0.6	0.3	0.2	0.2	0.2	0.2	0.2	0.2	0.2	0.1	0.1	0.8	6.1
24-Sep	0.1	0.1	0.1	0.0	Z	0.0	0.1	0.0	0.0	0.1	0.1	0.0	0.1	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.1
25-Sep	0.2	0.3	0.3	0.2	0.2	Z	0.3	0.2	0.2	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	0.0	0.2	0.3
26-Sep	Z	0.1	0.2	0.1	0.1	0.0	0.0	0.0	0.1	0.0	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.2	0.2	0.1	0.2	0.1	0.1	0.1	0.1	0.2
27-Sep	0.1	Z	0.1	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	0.0	0.0	0.0	0.2
28-Sep	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	0.1	0.0	0.0	0.0	0.0	0.1
29-Sep	0.0	0.0	0.1	Z	0.0	0.0	0.0	0.0	1.2	7.4	9.9	1.6	1.7	4.5	1.6	0.4	0.8	2.2	5.0	1.7	0.8	0.2	0.1	0.1	1.7	9.9
30-Sep	0.1	0.1	0.0	0.0	Z	0.0	0.1	0.2	0.3	0.3	0.1	0.0	0.0	0.0	0.1	0.1	0.1	0.1	0.1	0.1	0.2	0.2	0.2	0.2	0.1	0.3
	0.1	0.2	0.2	0.1	0.2	0.2	0.2	0.3	0.7	0.9	0.8	0.7	0.8	0.6	0.6	0.5	0.5	0.4	0.5	0.3	0.2	0.2	0.2	0.2	Diurnal Average	
	0.4	1.5	1.5	0.3	0.5	1.4	0.9	1.1	7.2	7.4	9.9	6.1	5.6	4.5	4.1	5.0	5.0	3.3	5.0	1.7	1.0	0.8	0.7	0.5	Diurnal Maximum	

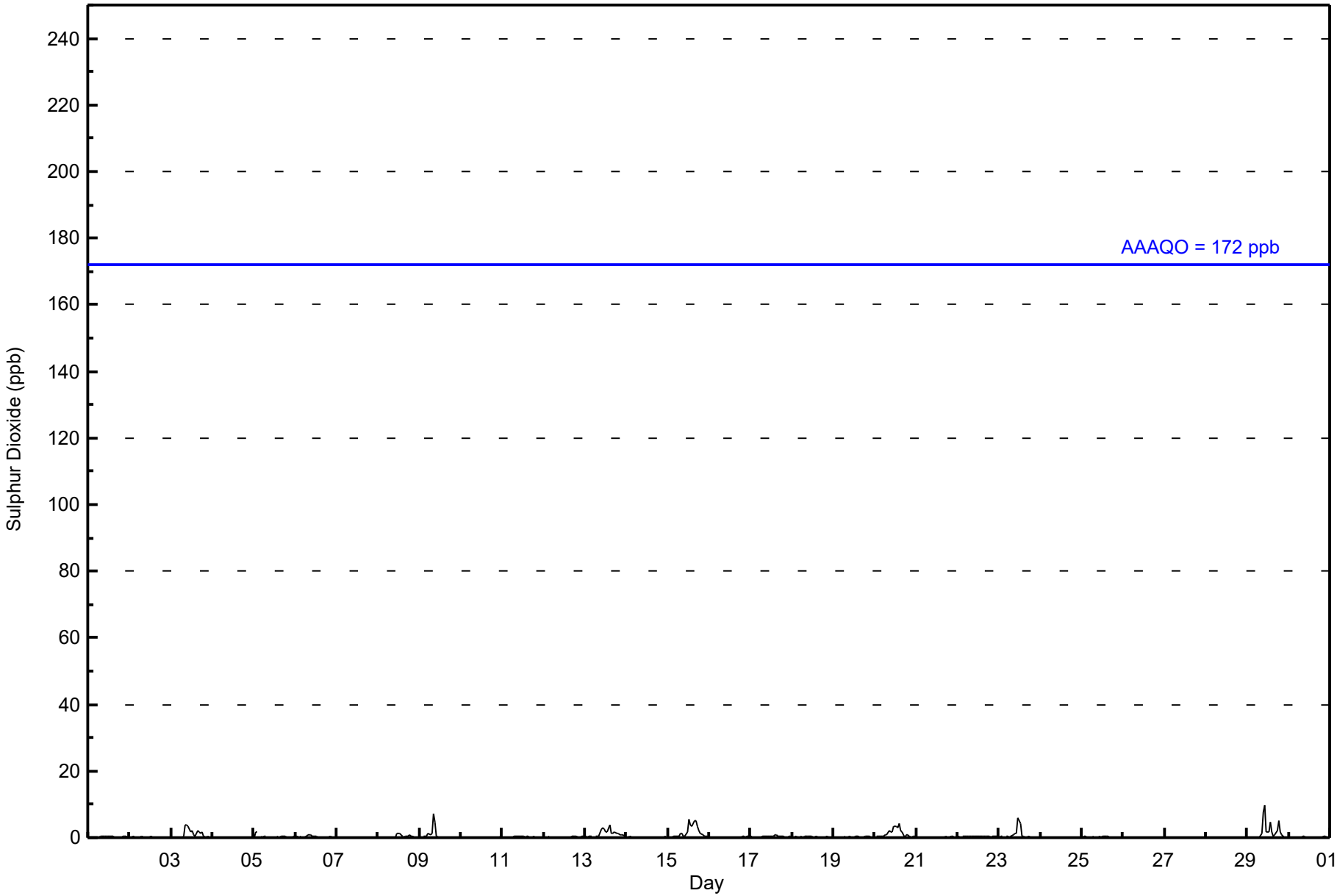
Z - zerospan C - Calibration
Alberta Ambient Air Quality Objectives (AAAQO): 1-hr 172 ppb 24-hr 48 ppb

Wood Buffalo Environmental Association

Hourly Averages

Sulphur Dioxide (SO_2) - ppb

Patricia McInnes - September 2024



Concentration Ranges (ppb)	Number of Hours	%	Cumulative %
0 - 10	685	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: 685

Total Number of Hours: 720

Wood Buffalo Environmental Association

Frequency Distribution

Sulphur Dioxide (SO_2) - ppb

Patricia McInnes - September 2024

Concentration Ranges (ppb)	Wind Direction																
	N	NNE	NE	ENE	E	ESE	SE	SSE	S	SSW	SW	WSW	W	WNW	NW	NNW	**Totals**
0 - 10	34	13	5	13	13	26	44	36	57	70	76	75	66	63	52	42	685
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	34	13	5	13	13	26	44	36	57	70	76	75	66	63	52	42	685

Total Number of Valid Hours: 685

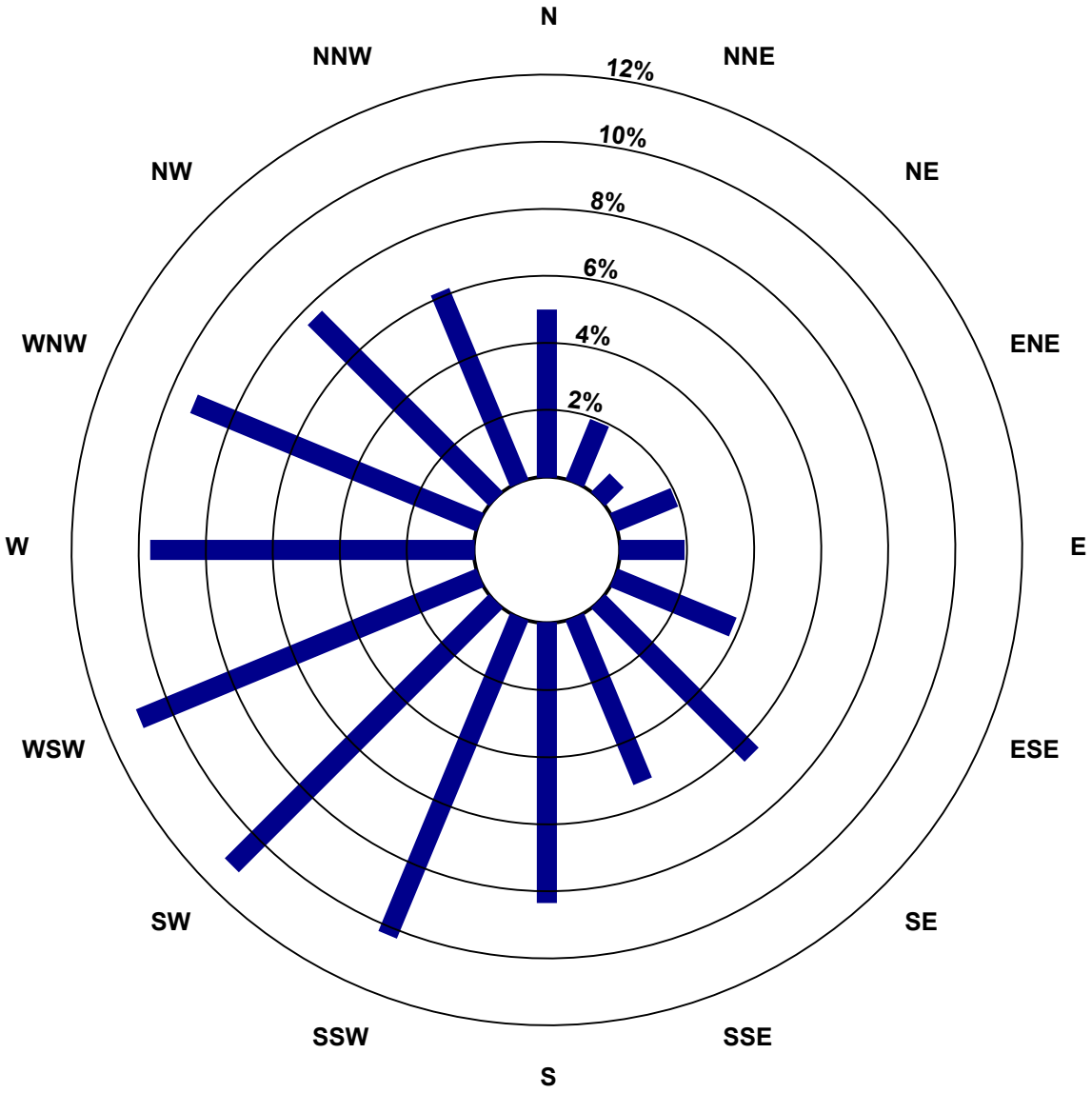
Total Number of Hours: 720

Wood Buffalo Environmental Association

Wind Rose Sep 2024

Sulphur Dioxide (SO_2) - ppb

Patricia McInnes



Classes (ppb)

0 - 10

11 - 20

21 - 60

61 - 110

111 - 172

> 172

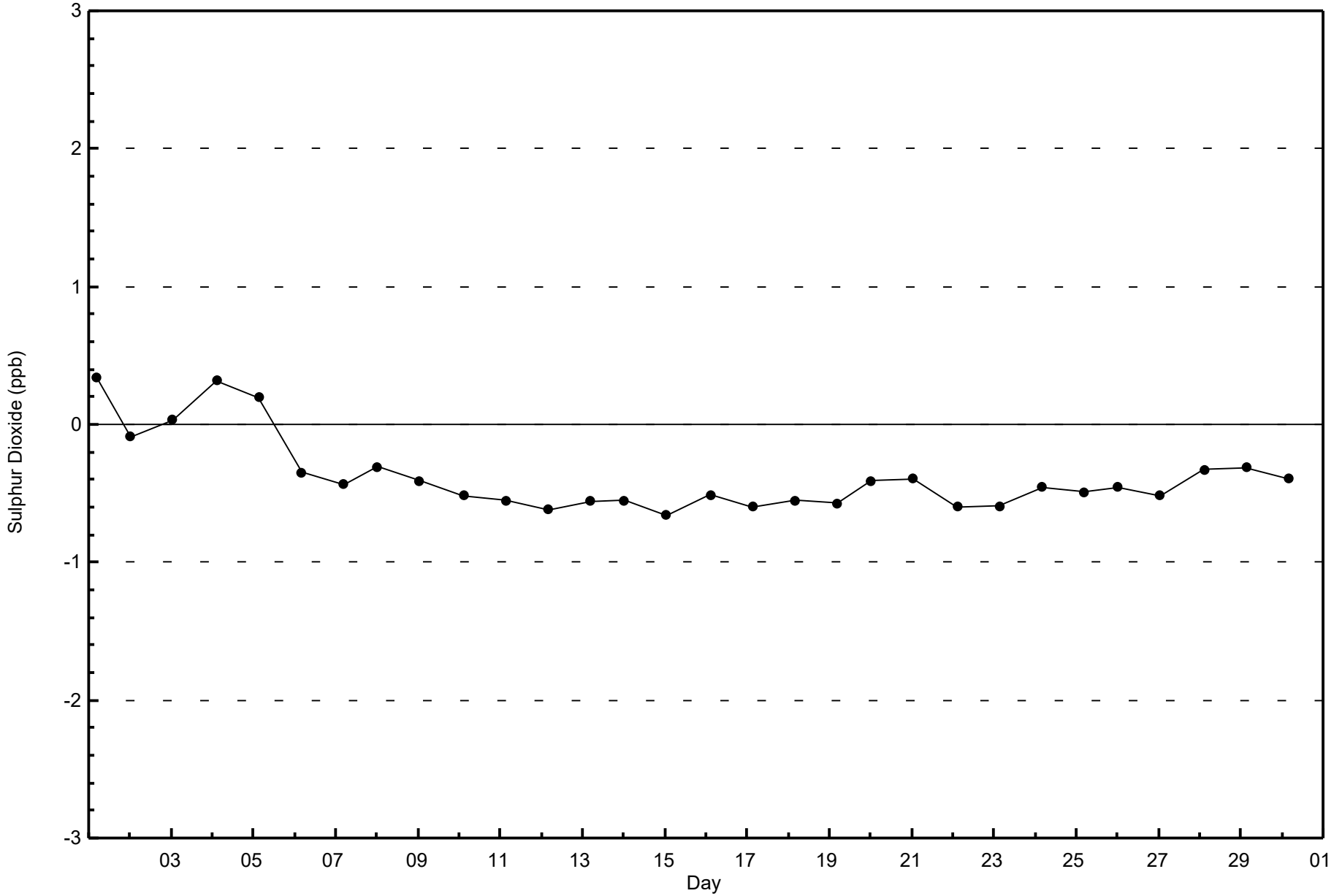
Total Number of Valid Hours: 685

Wood Buffalo Environmental Association

Zero Responses

Sulphur Dioxide (SO_2) - ppb

Patricia McInnes - September 2024

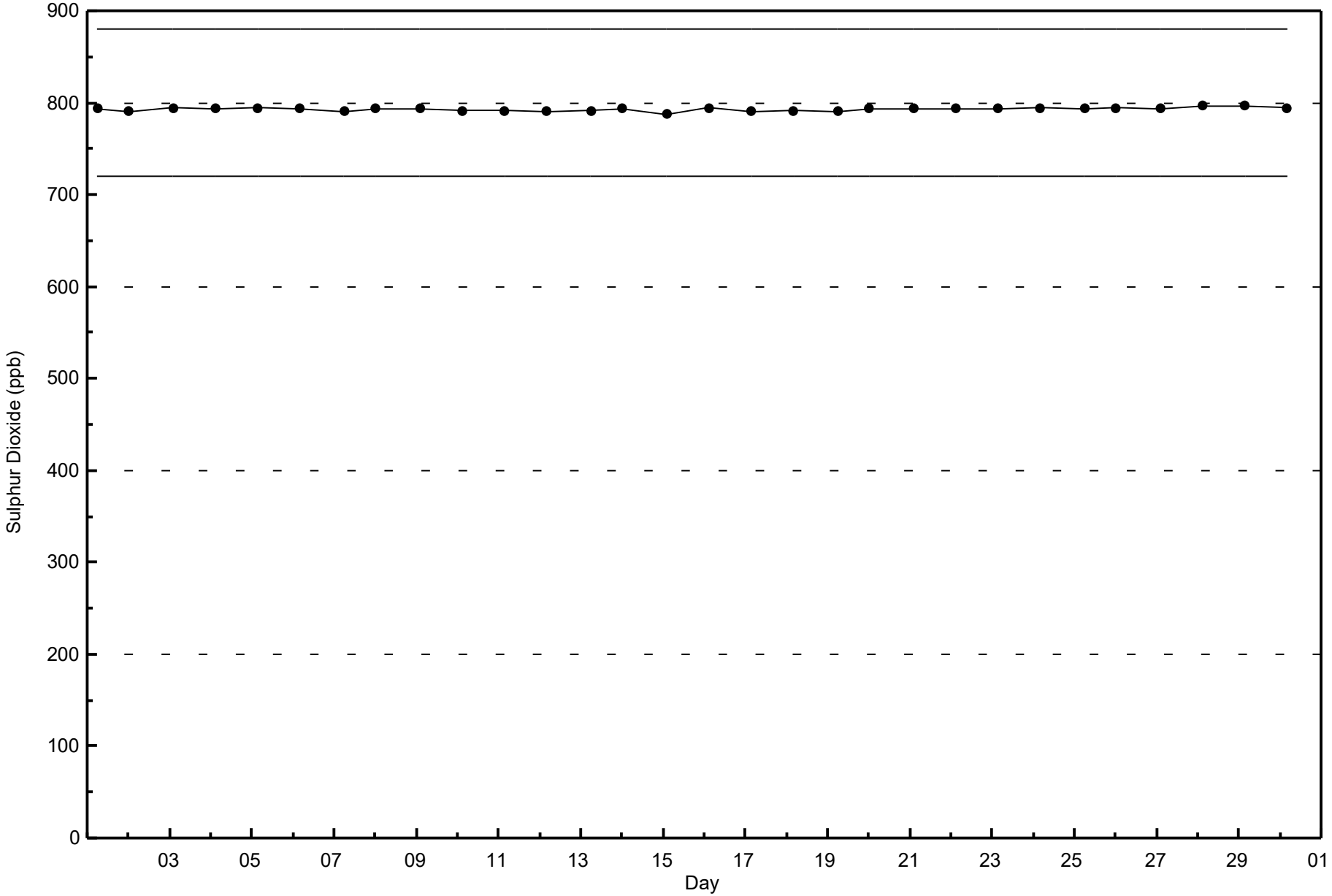


Wood Buffalo Environmental Association

Span Responses

Sulphur Dioxide (SO_2) - ppb

Patricia McInnes - September 2024



Wood Buffalo Environmental Association

Summary of Hour Averages

Total Reduced Sulphur (TRS) - ppb

Patricia McInnes - September 2024

Number of Exceedences (AAAQO): 1-hr: 0 24-hr: 0

Maximum Value: 2.4 ppb on Sep 3 08:00

Maximum Daily Average: 0.9 ppb on Sep 3

Minimum Value: 0.1 ppb on Sep 2 17:00

Minimum Daily Average: 0.1 ppb on Sep 28

Maximum Diurnal Average: 0.4 ppb at hour 8

Minimum Diurnal Average: 0.2 ppb at hour 18

Monthly Average: 0.24 ppb

Percentiles: P_1 = 0.1 P_{10} = 0.1 Q_1 = 0.1 Median = 0.2 Q_3 = 0.2 P_{90} = 0.5 P_{99} = 1.3

Hours in Service:	720
Hours of Data:	685
Hours of Missing Data:	35
Hours of Calibration:	35
Percent Operational Time:	100.0

Day	Hourly Period Ending At (MST)																								Daily	Daily
	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24	Average	Maximum
1-Sep	Z	0.2	0.2	0.2	0.2	0.3	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	0.2	0.2	0.2	0.1	0.1	0.1	0.3
2-Sep	0.1	Z	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	0.1	0.1	0.1	0.1	0.3	1.2	1.1	0.2	1.2
3-Sep	0.5	1.1	Z	0.6	1.2	0.6	1.8	2.4	1.4	0.8	0.8	0.5	0.6	1.1	0.5	1.0	0.9	0.4	0.8	1.4	0.7	0.3	0.3	0.2	0.9	2.4
4-Sep	0.2	0.3	0.3	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	0.1	0.1	0.1	0.2	0.1	0.1	0.1	0.1	0.2	0.3
5-Sep	0.1	0.2	0.2	0.3	Z	0.3	0.2	0.3	0.3	0.3	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	0.2	0.3
6-Sep	0.2	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	0.2	0.2	0.2	0.2
7-Sep	Z	0.2	0.3	0.2	0.2	0.2	0.2	0.2	0.2	0.2	0.2	0.2	0.2	0.1	0.1	0.1	0.1	0.1	0.2	0.2	0.2	0.2	0.2	0.2	0.2	0.3
8-Sep	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	0.1	0.1	0.1	0.1	0.2	0.2	0.2	0.1	0.2	0.2	0.2	0.2	0.2
9-Sep	0.2	0.4	Z	0.5	0.8	1.0	0.8	0.8	1.0	0.5	0.3	0.2	0.2	0.2	0.1	0.1	0.1	0.1	0.2	0.2	0.2	0.2	0.2	0.2	0.4	1.0
10-Sep	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	0.1	0.1	0.1	0.1	0.1	0.2	0.1	0.2	0.2	0.2	0.3	0.1	0.3
11-Sep	0.4	0.3	0.5	0.6	Z	1.3	1.2	0.9	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	0.2	0.2	0.2	0.3	1.3
12-Sep	0.2	0.2	0.2	0.2	0.2	Z	0.3	0.3	C	C	C	C	C	0.5	0.3	0.3	0.3	0.2	0.2	0.2	0.2	0.3	0.7	1.0	0.3	1.0
13-Sep	Z	1.3	1.2	0.6	0.5	0.6	0.7	0.7	0.8	0.9	0.9	0.8	0.7	0.8	1.0	1.1	0.6	0.4	0.3	0.3	0.3	0.4	0.3	0.2	0.7	1.3
14-Sep	0.2	Z	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	0.1	0.1	0.1	0.3	0.3	0.4	0.2	0.4
15-Sep	0.4	0.4	Z	0.7	0.6	0.6	0.7	1.3	1.6	0.9	1.1	1.0	0.5	0.4	0.3	0.5	0.4	0.3	0.3	0.3	0.2	0.2	0.2	0.2	0.6	1.6
16-Sep	0.1	0.1	0.1	Z	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	0.1	0.1	0.2
17-Sep	0.1	0.1	0.1	0.1	Z	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	0.1	0.1	0.2
18-Sep	0.1	0.1	0.2	0.2	0.2	Z	0.3	0.2	0.1	0.1	0.2	0.2	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	0.3
19-Sep	Z	0.2	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	0.1	0.2	0.1	0.2
20-Sep	0.5	Z	0.5	0.4	0.4	0.4	0.3	0.3	0.4	0.5	0.3	0.3	0.3	0.3	0.3	0.2	0.2	0.1	0.1	0.2	0.1	0.1	0.2	0.2	0.3	0.5
21-Sep	0.2	0.3	Z	0.2	0.2	0.2	0.4	0.4	0.3	0.2	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.2	0.1	0.2	0.1	0.1	0.2	0.2	0.4
22-Sep	0.2	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	0.1	0.1	0.1	0.1	0.2	0.2	0.2	0.2	0.1	0.2
23-Sep	0.1	0.2	0.2	0.3	Z	0.3	0.4	0.4	0.4	0.4	0.3	0.4	0.3	0.2	0.1	0.1	0.1	0.2	0.1	0.1	0.1	0.2	0.2	0.1	0.2	0.4
24-Sep	0.2	0.1	0.2	0.2	0.2	Z	0.3	0.2	0.2	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	0.2	0.2	0.3
25-Sep	Z	0.2	0.3	0.2	0.2	0.2	0.2	0.2	0.1	0.1	0.1	0.1	0.1	0.2	0.2	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.2	0.3
26-Sep	0.1	Z	0.2	0.1	0.2	0.1	0.1	0.2	0.1	0.1	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
27-Sep	0.1	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	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.2
28-Sep	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	0.2	0.2	0.2	0.1	0.2
29-Sep	0.1	0.1	0.1	0.1	Z	0.2	0.2	0.1	1.0	1.0	1.3	0.8	0.4	0.5	0.3	0.5	0.2	0.2	0.2	0.1	0.1	0.1	0.1	0.1	0.3	1.3
30-Sep	0.1	0.1	0.1	0.1	0.1	Z	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
	0.2	0.3	0.2	0.3	0.3	0.3	0.3	0.4	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	0.2	0.2	Diurnal Average	
	0.5	1.3	1.2	0.7	1.2	1.3	1.8	2.4	1.6	1.0	1.3	1.0	0.7	1.1	1.0	1.1	0.9	0.4	0.8	1.4	0.7	0.4	1.2	1.1	Diurnal Maximum	

Z - zerospan C - Calibration

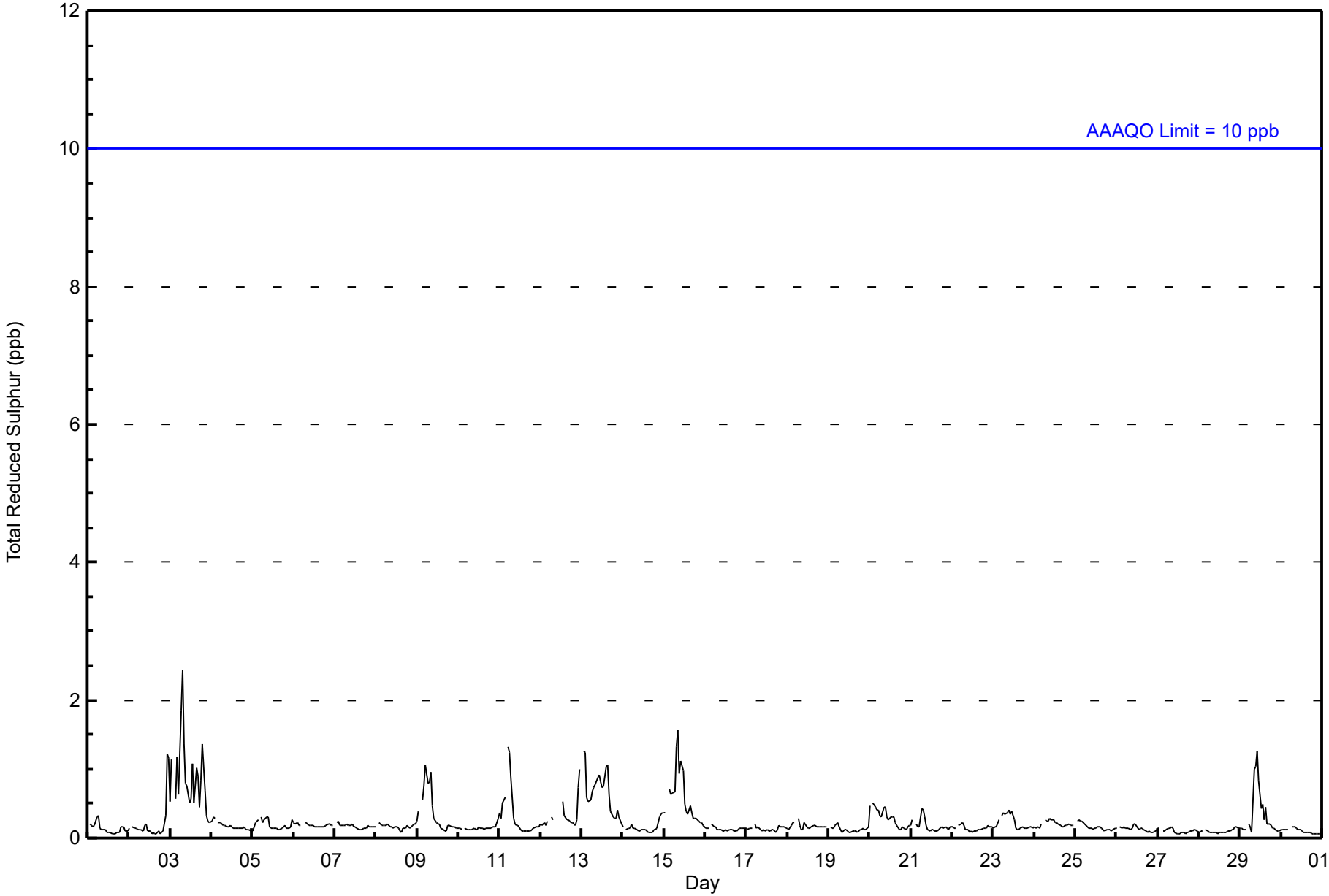
Alberta Ambient Air Quality Objectives (AAAQO): 1-hr 10 ppb 24-hr 3 ppb

Wood Buffalo Environmental Association

Hourly Averages

Total Reduced Sulphur (TRS) - ppb

Patricia McInnes - September 2024



Concentration Ranges (ppb)	Number of Hours	%	Cumulative %
0 - 2	685	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: 685

Total Number of Hours: 720

Wood Buffalo Environmental Association

Frequency Distribution

Total Reduced Sulphur (TRS) - ppb

Patricia McInnes - September 2024

Concentration Ranges (ppb)	Wind Direction																
	N	NNE	NE	ENE	E	ESE	SE	SSE	S	SSW	SW	WSW	W	WNW	NW	NNW	**Totals**
0 - 2	34	12	5	10	12	29	47	37	57	70	74	73	67	64	51	43	685
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	34	12	5	10	12	29	47	37	57	70	74	73	67	64	51	43	685

Total Number of Valid Hours: 685

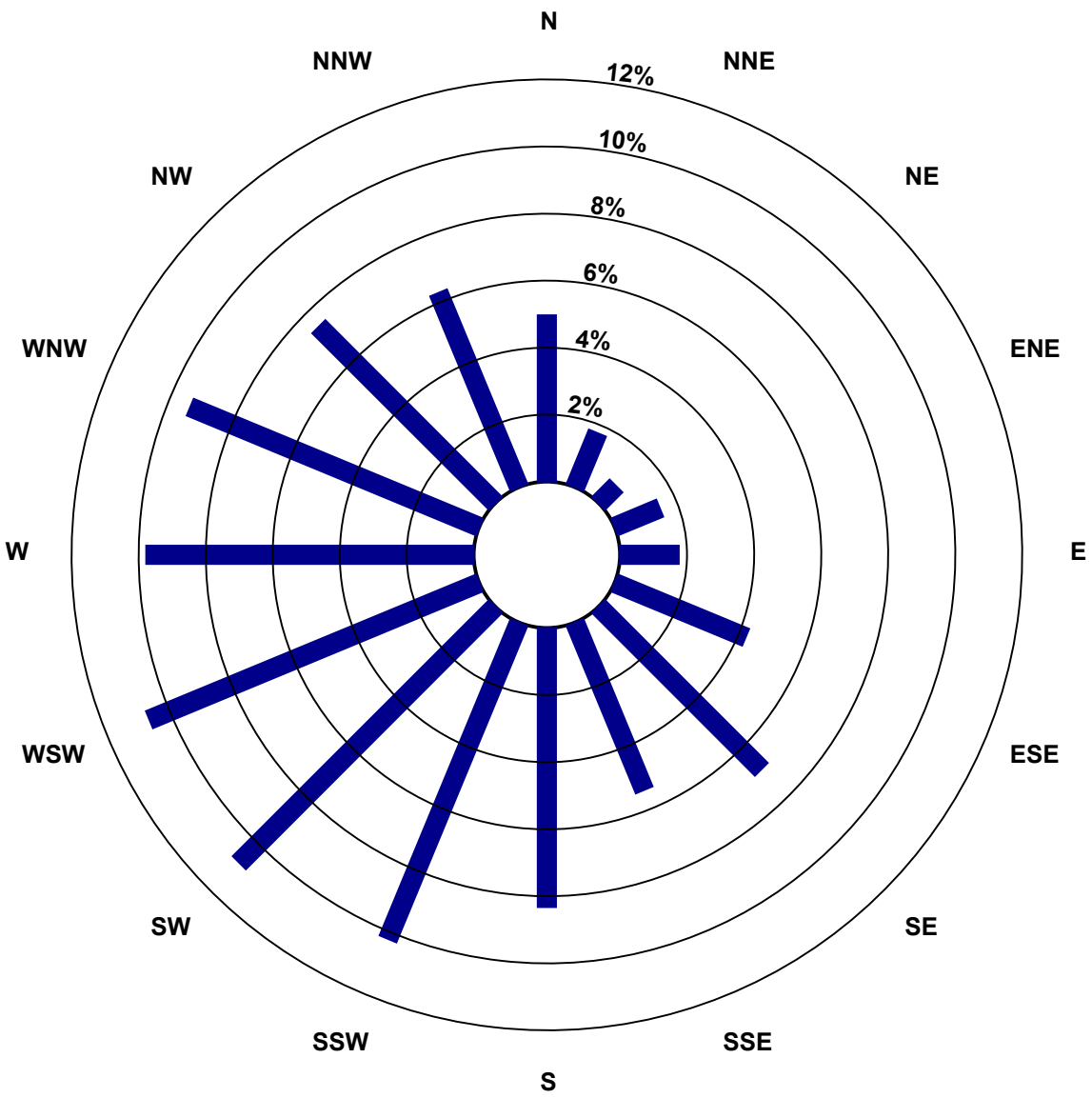
Total Number of Hours: 720

Wood Buffalo Environmental Association

Wind Rose Sep 2024

Total Reduced Sulphur (TRS) - ppb

Patricia McInnes



Classes (ppb)

- 0 - 2
- 3 - 4
- 5 - 7
- 8 - 11
- > 11

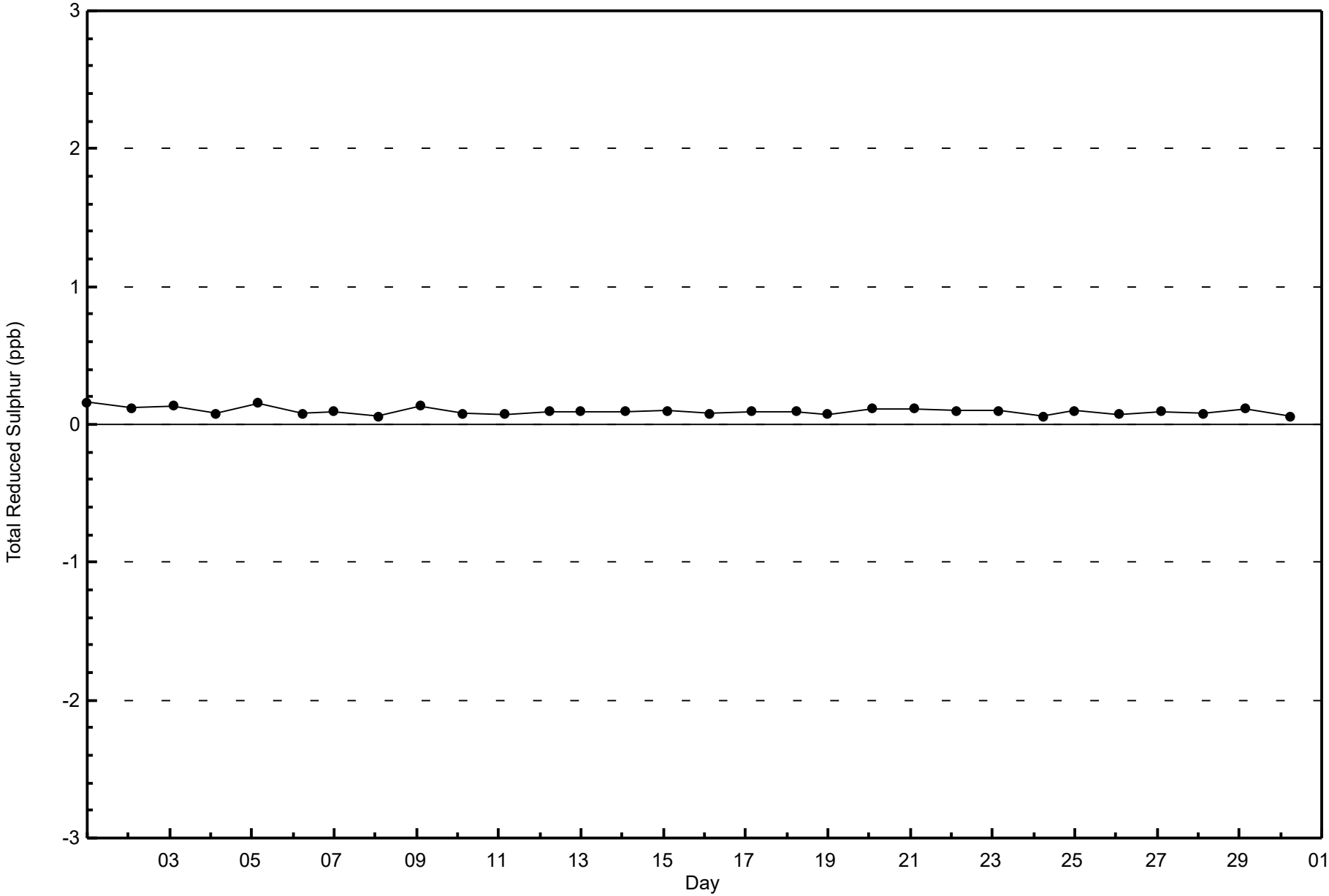
Total Number of Valid Hours: 685

Wood Buffalo Environmental Association

Zero Responses

Total Reduced Sulphur (TRS) - ppb

Patricia McInnes - September 2024

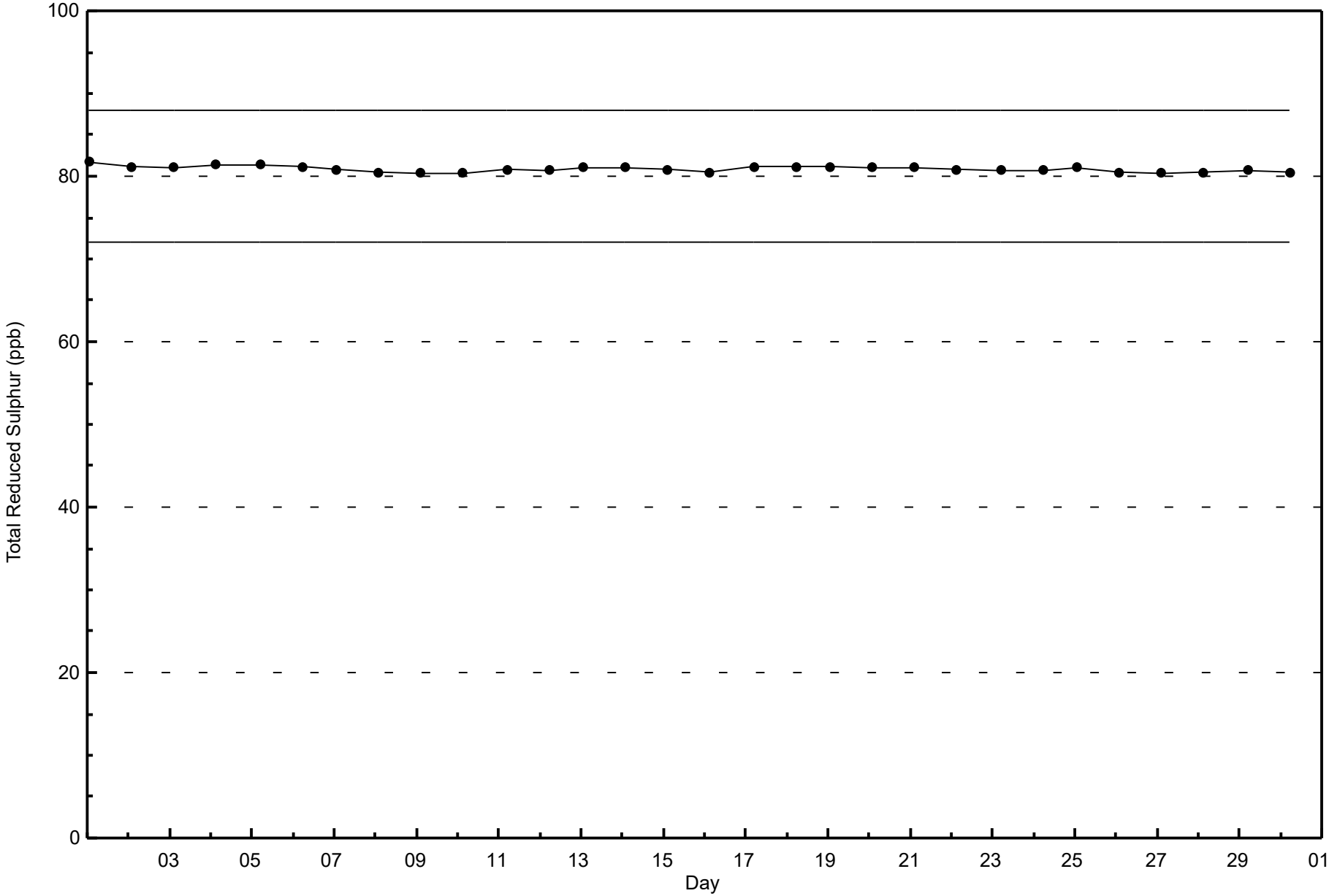


Wood Buffalo Environmental Association

Span Responses

Total Reduced Sulphur (TRS) - ppb

Patricia McInnes - September 2024



Wood Buffalo Environmental Association

Summary of Hour Averages

Total Hydrocarbons (THC) - ppm

Patricia McInnes - September 2024

Maximum Value: 2.8 ppm on Sep 8 23:00

Maximum Daily Average: 2.3 ppm on Sep 13

Minimum Value: 1.8 ppm on Sep 2 14:00

Minimum Daily Average: 1.9 ppm on Sep 3

Maximum Diurnal Average: 2.2 ppm at hour 6

Minimum Diurnal Average: 2.0 ppm at hour 16

Monthly Average: 2.08 ppm

Percentiles: P_1 = 1.8 P_{10} = 2.0 Q_1 = 2.0 Median = 2.0 Q_3 = 2.1 P_{90} = 2.3 P_{99} = 2.6

Hours in Service:	720
Hours of Data:	612
Hours of Missing Data:	108
Hours of Calibration:	33
Percent Operational Time:	89.6

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-Sep	1.9	1.9	1.9	2.0	2.0	Z	UO	UO	UO	UO	UO	UO	UO	UO	UO	UO	UO	UO	UO	UO	UO	UO	UO	UO	--	2.0
2-Sep	UO	UO	UO	UO	UO	UO	UO	UO	UO	UO	M	1.8	1.8	1.8	1.8	1.8	1.8	1.9	1.9	1.9	1.8	1.9	1.9	1.9	--	1.9
3-Sep	1.9	Z	1.9	1.9	1.9	1.9	1.9	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	2.0
4-Sep	2.0	2.1	Z	UO	UO	UO	UO	UO	UO	UO	UO	UO	UO	UO	UO	UO	UO	UO	UO	UO	UO	UO	UO	UO	--	2.1
5-Sep	UO	UO	UO	Z	UO	UO	UO	UO	UO	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
6-Sep	2.0	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	2.1	2.1	2.1	2.0	2.1	2.2	2.1	2.2	2.1	2.2
7-Sep	2.2	2.1	2.1	2.1	2.1	Z	2.1	2.1	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	2.2
8-Sep	Z	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	2.0	2.0	2.0	2.0	2.1	2.1	2.3	2.5	2.8	2.7	2.2	2.8
9-Sep	2.5	Z	2.5	2.8	2.6	2.6	2.5	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	2.2	2.8
10-Sep	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	2.2	2.2	2.1	2.4	2.0	2.4
11-Sep	2.4	2.3	2.5	Z	2.4	2.5	2.5	2.3	2.0	2.0	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	2.5
12-Sep	2.4	2.4	2.4	2.1	Z	2.0	2.1	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.1	2.1	2.0	2.1	2.1	2.1	2.3	2.3	2.4	2.1	2.4
13-Sep	2.2	2.2	2.3	2.3	2.3	Z	2.4	2.4	2.4	2.3	2.3	2.3	2.4	2.4	2.3	2.2	2.1	2.1	2.1	2.1	2.1	2.1	2.1	2.1	2.3	2.4
14-Sep	Z	2.0	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	2.0	2.0	UO	2.2	UO	2.1	UO	UO	UO	2.0	2.2
15-Sep	UO	Z	2.2	2.6	2.5	2.5	2.6	UO	2.3	2.1	M	M	M	M	M	M	M	2.1	2.1	2.2	2.3	2.4	2.2	2.1	--	2.6
16-Sep	2.1	2.1	Z	2.1	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
17-Sep	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	2.1	2.3	2.4	2.5	2.4	2.5	2.1	2.5
18-Sep	2.4	2.4	2.2	2.2	Z	2.3	2.4	2.2	2.1	2.1	2.1	2.1	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.2	2.1	2.1	2.1	2.2	2.1	2.4
19-Sep	2.2	2.2	2.1	2.1	2.1	Z	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	2.2	2.1	2.1	2.2	2.2	2.1	2.2
20-Sep	Z	2.3	2.3	2.4	2.4	2.3	2.3	2.2	2.3	2.3	2.2	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	2.4
21-Sep	2.2	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	2.1	2.0	2.0	2.1	2.0	2.0	2.1	2.3
22-Sep	2.0	2.0	Z	2.1	2.1	2.1	2.1	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	2.0	2.0	2.0	2.0	2.1	2.2
23-Sep	2.1	2.1	2.1	Z	2.4	2.5	2.4	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	2.0	2.1	2.5
24-Sep	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	2.2	2.2	2.2	2.2	2.1	2.0	2.2
25-Sep	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	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.1
26-Sep	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
27-Sep	2.1	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	2.0	2.0	2.0	2.0	2.0	2.1
28-Sep	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	2.2	2.2	2.0	2.2
29-Sep	2.1	2.1	2.0	Z	2.2	2.2	2.1	2.0	2.3	2.5	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	2.0	2.1	2.5
30-Sep	2.0	2.0	2.0	2.0	Z	2.0	2.0	2.0	2.0	2.0	2.0	UO	UO	1.9	UO	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	2.2	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	2.1	2.1	2.1	2.1	2.1	Diurnal Average	
	2.5	2.4	2.5	2.8	2.6	2.6	2.6	2.4	2.4	2.5	2.4	2.3	2.4	2.4	2.3	2.2	2.1	2.1	2.2	2.3	2.4	2.5	2.8	2.7	Diurnal Maximum	

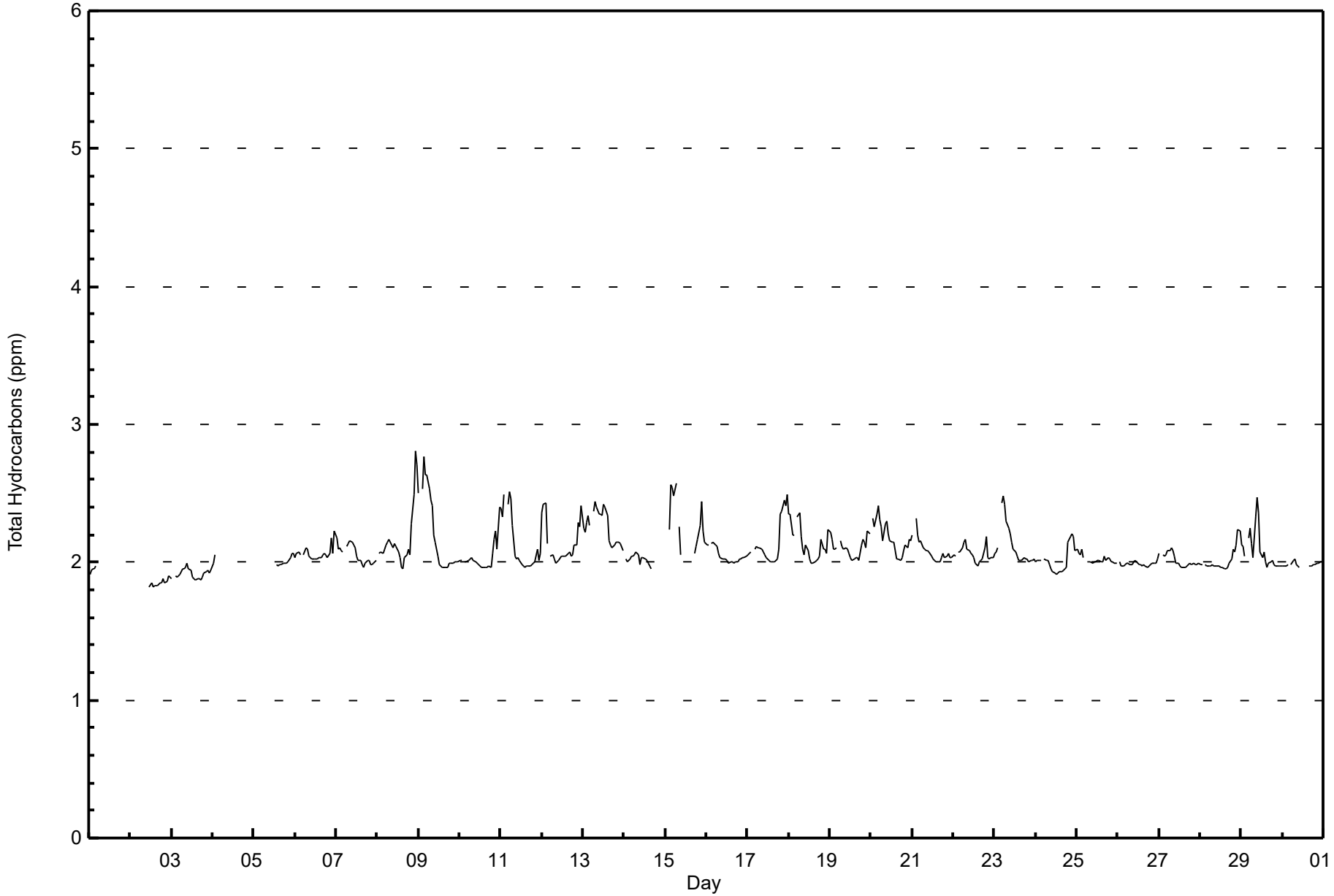
Z - zerospan C - Calibration M - Maintenance UO - Unstable Operation

Wood Buffalo Environmental Association

Hourly Averages

Total Hydrocarbons (THC) - ppm

Patricia McInnes - September 2024



Concentration Ranges (ppm)	Number of Hours	%	Cumulative %
0 - 2.0	347	56.70	56.70
2.1 - 3.0	265	43.30	100.00
3.1 - 10.0	0	0.00	100.00
> 10.0	0	0.00	100.00

Total Number of Valid Hours: 612

Total Number of Hours: 720

Wood Buffalo Environmental Association

Frequency Distribution

Total Hydrocarbons (THC) - ppm

Patricia McInnes - September 2024

Concentration Ranges (ppm)	Wind Direction																
	N	NNE	NE	ENE	E	ESE	SE	SSE	S	SSW	SW	WSW	W	WNW	NW	NNW	**Totals**
0 - 2.0	20	4	3	8	7	21	20	9	21	24	43	47	51	37	22	10	347
2.1 - 3.0	11	7	0	4	4	5	23	22	31	40	24	13	5	21	25	30	265
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	11	3	12	11	26	43	31	52	64	67	60	56	58	47	40	612

Total Number of Valid Hours: 612

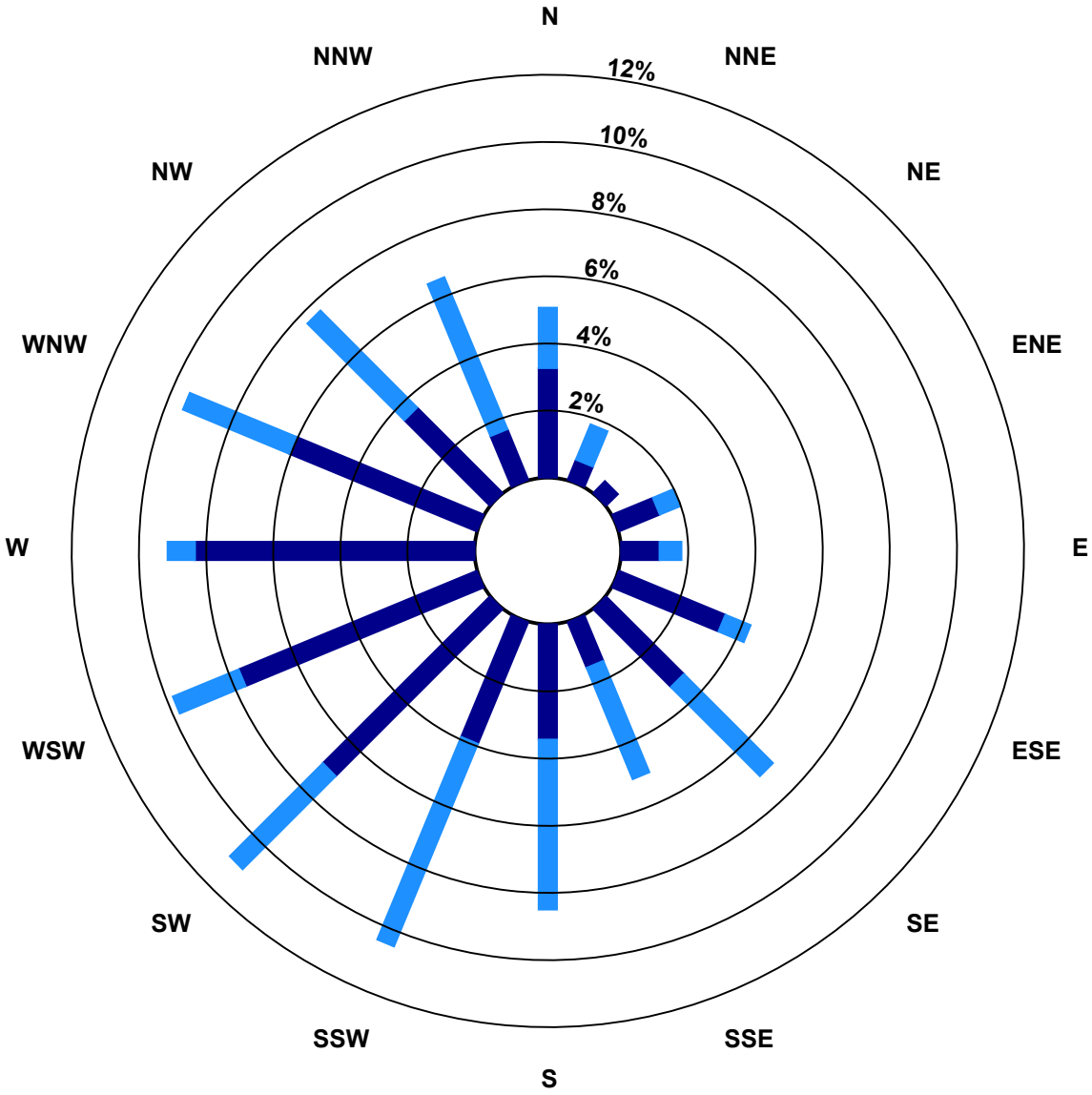
Total Number of Hours: 720

Wood Buffalo Environmental Association

Wind Rose Sep 2024

Total Hydrocarbons (THC) - ppm

Patricia McInnes



Classes (ppm)

0 - 2.0

2.1 - 3.0

3.1 - 10.0

> 10.0

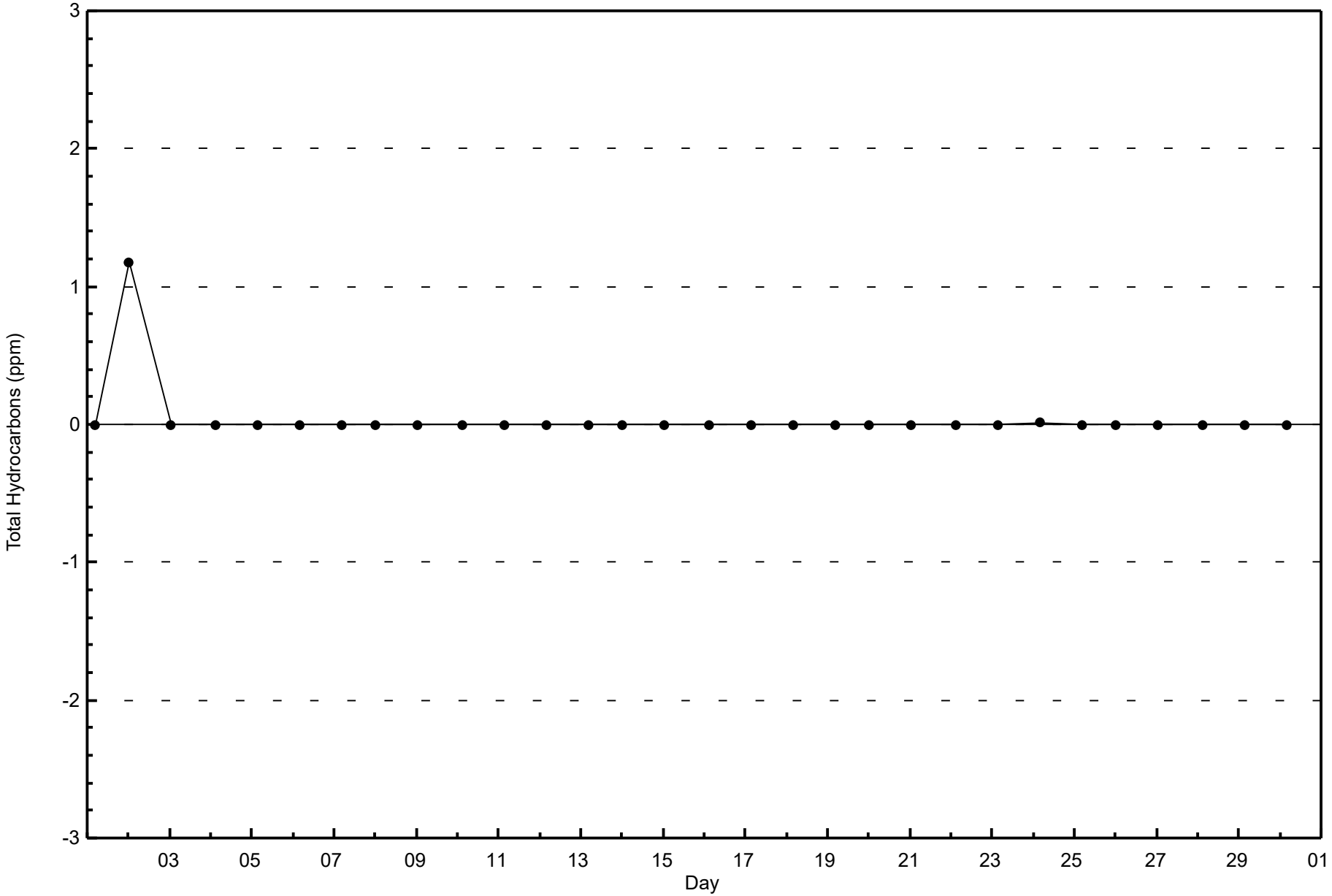
Total Number of Valid Hours: 612

Wood Buffalo Environmental Association

Zero Responses

Total Hydrocarbons (THC) - ppm

Patricia McInnes - September 2024

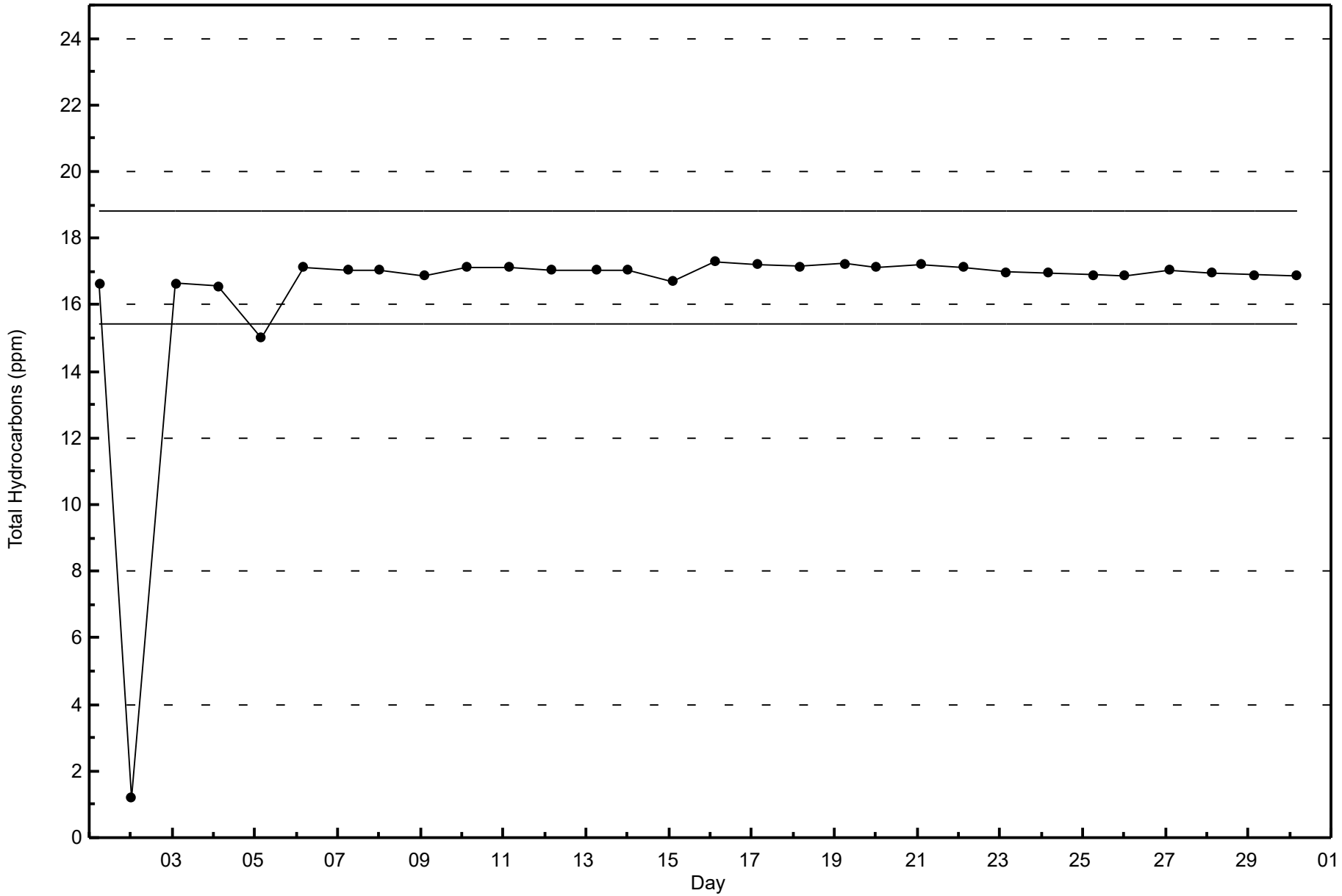


Wood Buffalo Environmental Association

Span Responses

Total Hydrocarbons (THC) - ppm

Patricia McInnes - September 2024



Maximum Value: 0.116 ppm on Sep 18 06:00

Maximum Daily Average: 0.047 ppm on Sep 18

Minimum Value: 0.000 ppm on Sep 2 23:00

Minimum Daily Average: 0.000 ppm on Sep 13

Maximum Diurnal Average: 0.024 ppm at hour 20

Minimum Diurnal Average: 0.011 ppm at hour 14

Monthly Average: 0.016 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} = 0.1

Hours in Service:	720
Hours of Data:	612
Hours of Missing Data:	108
Hours of Calibration:	33
Percent Operational Time:	89.6

Day	Hourly Period Ending At (MST)																								Daily	Daily
	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24	Average	Maximum
1-Sep	0.018	0.035	0.041	0.032	0.030	Z	UO	UO	UO	UO	UO	UO	UO	UO	UO	UO	UO	UO	UO	UO	UO	UO	UO	UO	--	0.041
2-Sep	UO	UO	UO	UO	UO	UO	UO	UO	UO	UO	M	0.023	0.011	0.001	0.003	0.004	0.004	0.016	0.006	0.001	0.001	0.001	0.000	0.000	--	0.023
3-Sep	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	0.001	0.001	0.000	0.000	0.005	0.030	0.000	0.000	0.000	0.000	0.002	0.030
4-Sep	0.000	0.000	Z	UO	UO	UO	UO	UO	UO	UO	UO	UO	UO	UO	UO	UO	UO	UO	UO	UO	UO	UO	UO	UO	--	0.000
5-Sep	UO	UO	UO	Z	UO	UO	UO	UO	UO	C	C	C	C	0.000	0.000	0.000	0.000	0.001	0.003	0.001	0.000	0.000	0.007	0.034	--	0.034
6-Sep	0.015	0.021	0.023	0.007	Z	0.011	0.018	0.002	0.000	0.001	0.000	0.001	0.001	0.002	0.010	0.008	0.012	0.016	0.015	0.011	0.012	0.040	0.009	0.021	0.011	0.040
7-Sep	0.012	0.011	0.021	0.010	0.009	Z	0.007	0.014	0.019	0.032	0.031	0.037	0.021	0.007	0.006	0.005	0.003	0.012	0.017	0.016	0.006	0.002	0.004	0.006	0.013	0.037
8-Sep	Z	0.009	0.012	0.014	0.014	0.012	0.018	0.019	0.018	0.020	0.034	0.042	0.050	0.034	0.009	0.012	0.063	0.074	0.095	0.059	0.046	0.049	0.031	0.048	0.034	0.095
9-Sep	0.026	Z	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.001	0.001	0.001	0.000	0.000	0.000	0.000	0.000	0.001	0.000	0.000	0.001	0.000	0.001	0.026
10-Sep	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
11-Sep	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	0.004	0.008	0.002	0.001	0.001	0.008
12-Sep	0.000	0.000	0.001	0.000	Z	0.012	0.017	0.007	0.001	0.007	0.012	0.017	0.014	0.016	0.016	0.033	0.042	0.015	0.013	0.013	0.009	0.002	0.000	0.000	0.011	0.042
13-Sep	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
14-Sep	Z	0.000	0.000	0.000	0.001	0.001	0.000	0.000	0.002	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	UO	0.001	UO	0.000	UO	UO	UO	0.000	0.002
15-Sep	UO	Z	0.000	0.000	0.000	0.000	0.000	UO	0.000	0.000	M	M	M	M	M	M	M	0.019	0.051	0.056	0.038	0.030	0.036	0.023	--	0.056
16-Sep	0.022	0.022	Z	0.025	0.024	0.022	0.026	0.025	0.025	0.024	0.023	0.020	0.019	0.014	0.018	0.012	0.013	0.016	0.018	0.027	0.022	0.023	0.022	0.024	0.021	0.027
17-Sep	0.025	0.027	0.020	Z	0.025	0.021	0.021	0.021	0.022	0.021	0.026	0.027	0.029	0.023	0.022	0.025	0.026	0.039	0.056	0.049	0.061	0.039	0.057	0.039	0.031	0.061
18-Sep	0.034	0.032	0.069	0.083	Z	0.116	0.110	0.058	0.027	0.030	0.055	0.042	0.035	0.028	0.029	0.026	0.028	0.029	0.044	0.100	0.027	0.024	0.022	0.027	0.047	0.116
19-Sep	0.026	0.023	0.021	0.024	0.024	Z	0.019	0.016	0.015	0.010	0.011	0.014	0.015	0.013	0.018	0.020	0.018	0.016	0.035	0.024	0.035	0.029	0.020	0.015	0.020	0.035
20-Sep	Z	0.009	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	0.001	0.001	0.000	0.004	0.003	0.001	0.000	0.000	0.000	0.001	0.009
21-Sep	0.000	Z	0.000	0.001	0.000	0.002	0.002	0.003	0.003	0.004	0.017	0.009	0.014	0.014	0.013	0.016	0.017	0.035	0.040	0.028	0.036	0.038	0.031	0.038	0.016	0.040
22-Sep	0.045	0.033	Z	0.044	0.046	0.057	0.060	0.045	0.024	0.025	0.024	0.028	0.028	0.018	0.015	0.031	0.040	0.042	0.048	0.038	0.023	0.001	0.008	0.024	0.033	0.060
23-Sep	0.028	0.009	0.000	Z	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.001	0.000	0.005	0.020	0.028	0.027	0.041	0.038	0.036	0.038	0.040	0.043	0.045	0.017	0.045
24-Sep	0.033	0.038	0.038	0.032	Z	0.042	0.033	0.030	0.029	0.033	0.026	0.022	0.020	0.022	0.017	0.015	0.013	0.015	0.022	0.028	0.033	0.036	0.027	0.035	0.028	0.042
25-Sep	0.039	0.045	0.047	0.053	0.037	Z	0.021	0.020	0.021	0.023	0.030	0.033	0.035	0.035	0.034	0.035	0.031	0.032	0.034	0.030	0.034	0.036	0.036	0.028	0.033	0.053
26-Sep	Z	0.029	0.034	0.031	0.033	0.032	0.035	0.028	0.033	0.034	0.038	0.033	0.026	0.024	0.024	0.028	0.021	0.017	0.015	0.017	0.012	0.014	0.011	0.024	0.026	0.038
27-Sep	0.035	Z	0.032	0.025	0.019	0.022	0.026	0.035	0.032	0.027	0.024	0.017	0.014	0.013	0.017	0.018	0.018	0.023	0.027	0.020	0.025	0.021	0.020	0.020	0.023	0.035
28-Sep	0.015	0.011	Z	0.015	0.010	0.015	0.013	0.018	0.011	0.013	0.011	0.011	0.011	0.012	0.013	0.010	0.011	0.024	0.033	0.046	0.024	0.050	0.055	0.038	0.021	0.055
29-Sep	0.031	0.031	0.025	Z	0.015	0.023	0.016	0.015	0.000	0.000	0.000	0.000	0.002	0.000	0.001	0.002	0.001	0.000	0.000	0.001	0.005	0.009	0.010	0.007	0.008	0.031
30-Sep	0.008	0.008	0.007	0.006	Z	0.010	0.018	0.029	0.015	0.011	0.007	UO	UO	0.003	UO	0.003	0.003	0.002	0.003	0.003	0.003	0.002	0.003	0.002	0.007	0.029
	0.018	0.017	0.017	0.017	0.013	0.018	0.018	0.015	0.011	0.012	0.015	0.015	0.014	0.011	0.011	0.012	0.014	0.018	0.022	0.024	0.018	0.018	0.017	0.018	Diurnal Average	
	0.045	0.045	0.069	0.083	0.046	0.116	0.110	0.058	0.033	0.034	0.055	0.042	0.050	0.035	0.034	0.035	0.063	0.074	0.095	0.100	0.061	0.050	0.057	0.048	Diurnal Maximum	

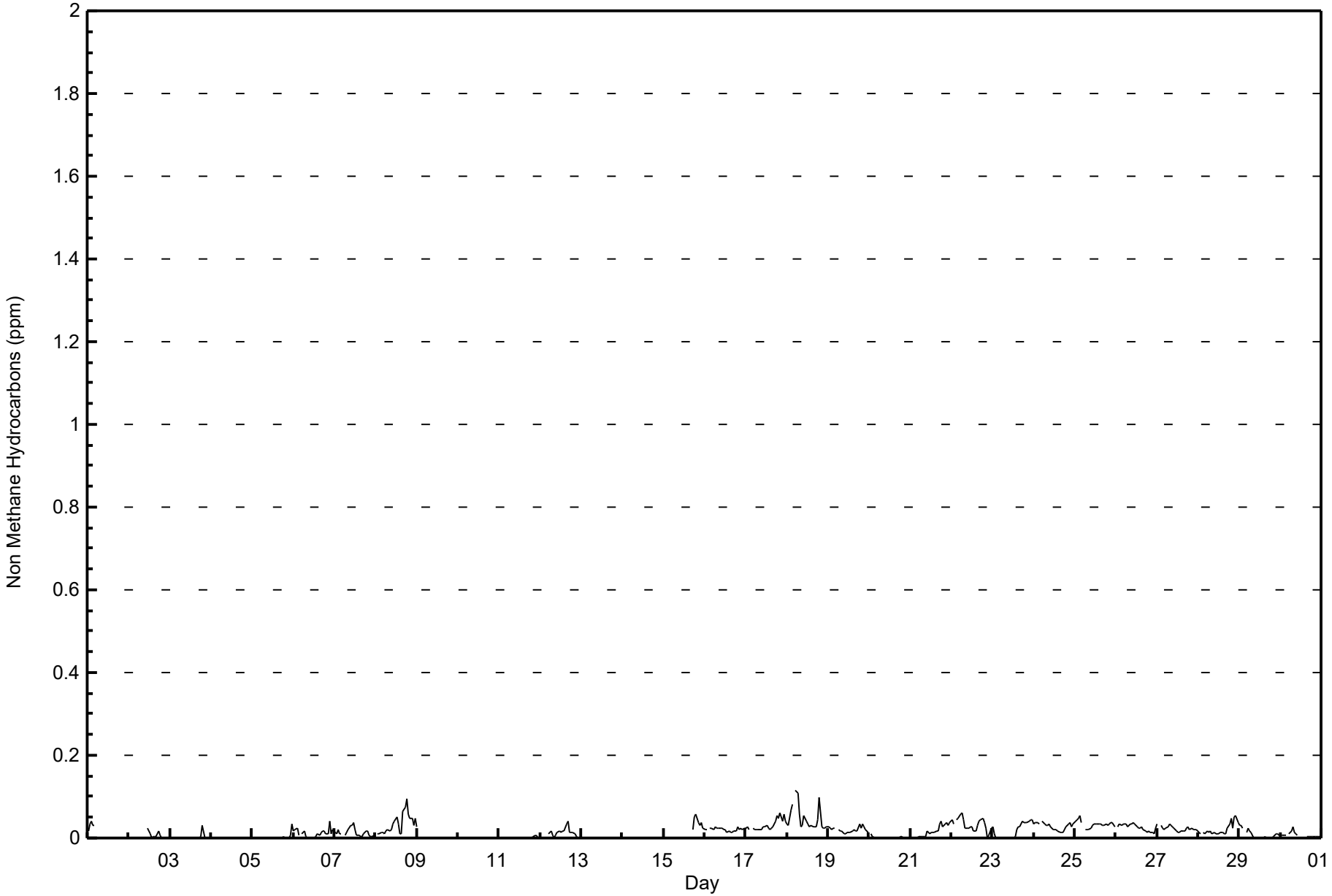
Z - zerospan C - Calibration M - Maintenance UO - Unstable Operation

Wood Buffalo Environmental Association

Hourly Averages

Non Methane Hydrocarbons (NMHC) - ppm

Patricia McInnes - September 2024



Concentration Ranges (ppm)	Number of Hours	%	Cumulative %
0 - 0.005	242	39.54	39.54
0.006 - 0.05	354	57.84	97.39
0.06 - 0.1	16	2.61	100.00
> 0.1	0	0.00	100.00

Total Number of Valid Hours: 612

Total Number of Hours: 720

Concentration Ranges (ppm)	Wind Direction																
	N	NNE	NE	ENE	E	ESE	SE	SSE	S	SSW	SW	WSW	W	WNW	NW	NNW	**Totals**
0 - 0.005	28	7	2	1	7	9	9	3	8	9	19	19	28	32	30	31	242
0.006 - 0.05	3	4	1	11	4	14	30	25	41	53	48	41	27	26	17	9	354
0.06 - 0.1	0	0	0	0	0	3	4	3	3	2	0	0	1	0	0	0	16
> 0.1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Totals	31	11	3	12	11	26	43	31	52	64	67	60	56	58	47	40	612

Total Number of Valid Hours: 612

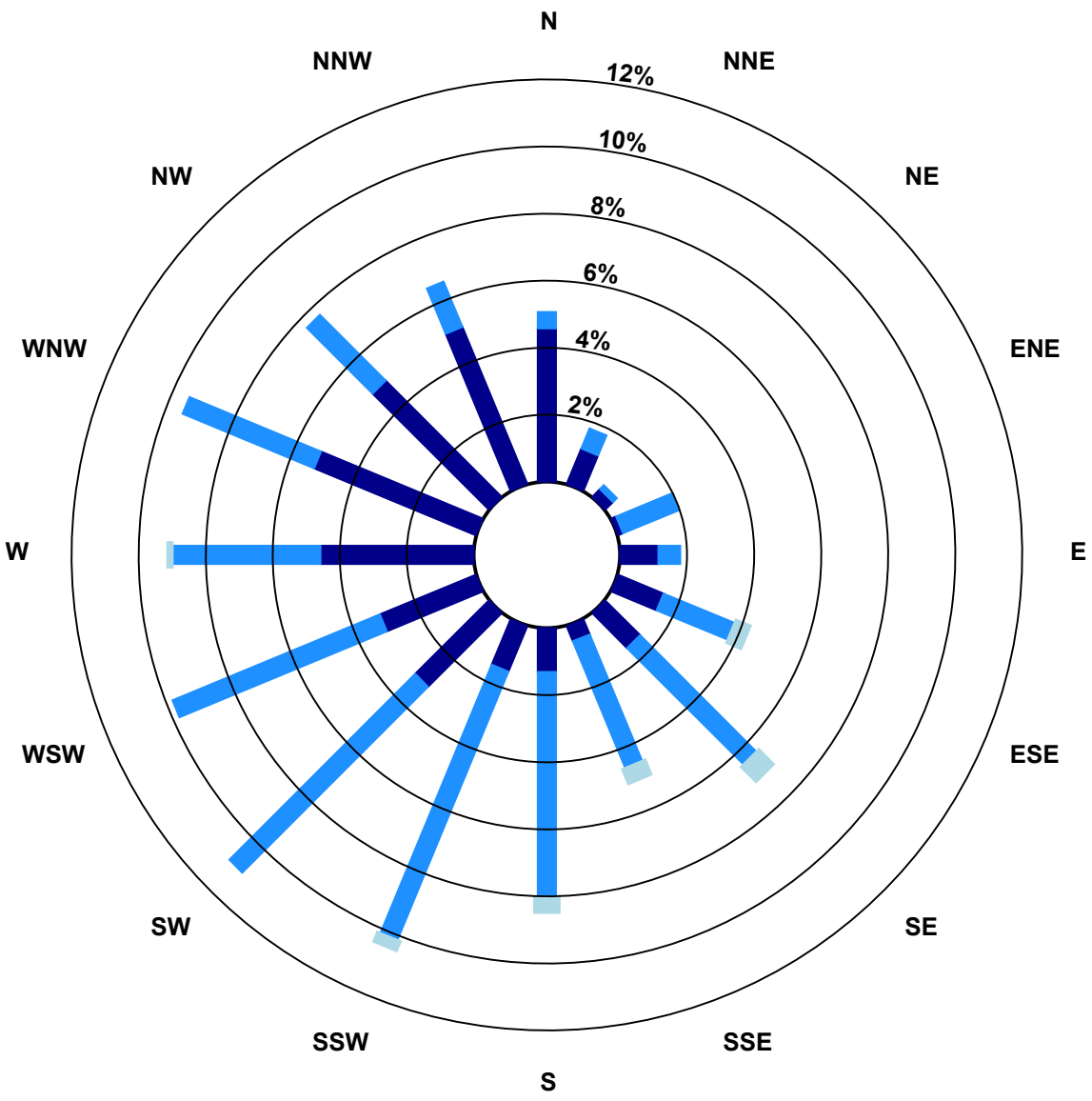
Total Number of Hours: 720

Wood Buffalo Environmental Association

Wind Rose Sep 2024

Non Methane Hydrocarbons (NMHC) - ppm

Patricia McInnes



Classes (ppm)

0 - 0.005

0.006 - 0.05

0.06 - 0.1

> 0.1

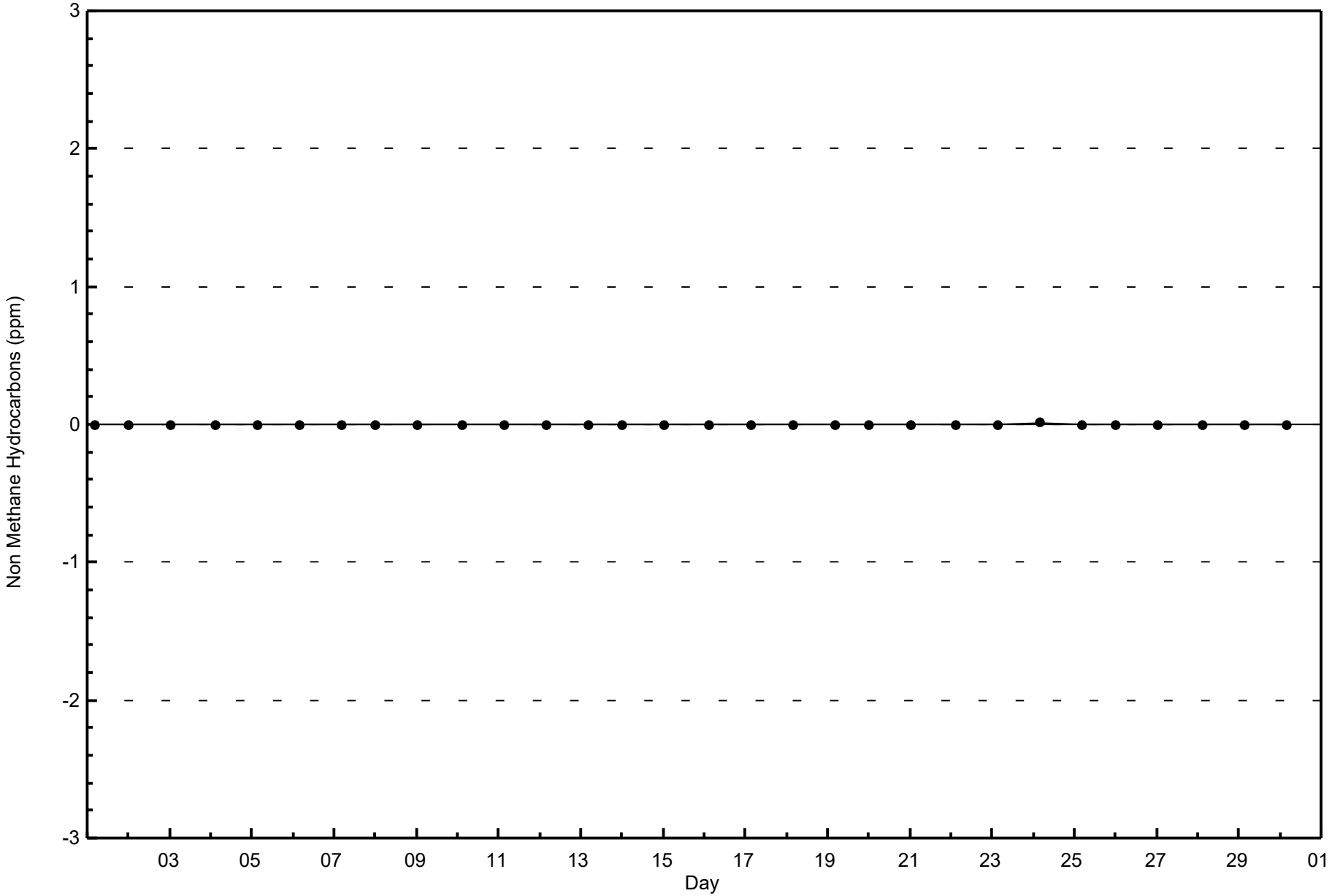
Total Number of Valid Hours: 612

Wood Buffalo Environmental Association

Zero Responses

Non Methane Hydrocarbons (NMHC) - ppm

Patricia McInnes - September 2024

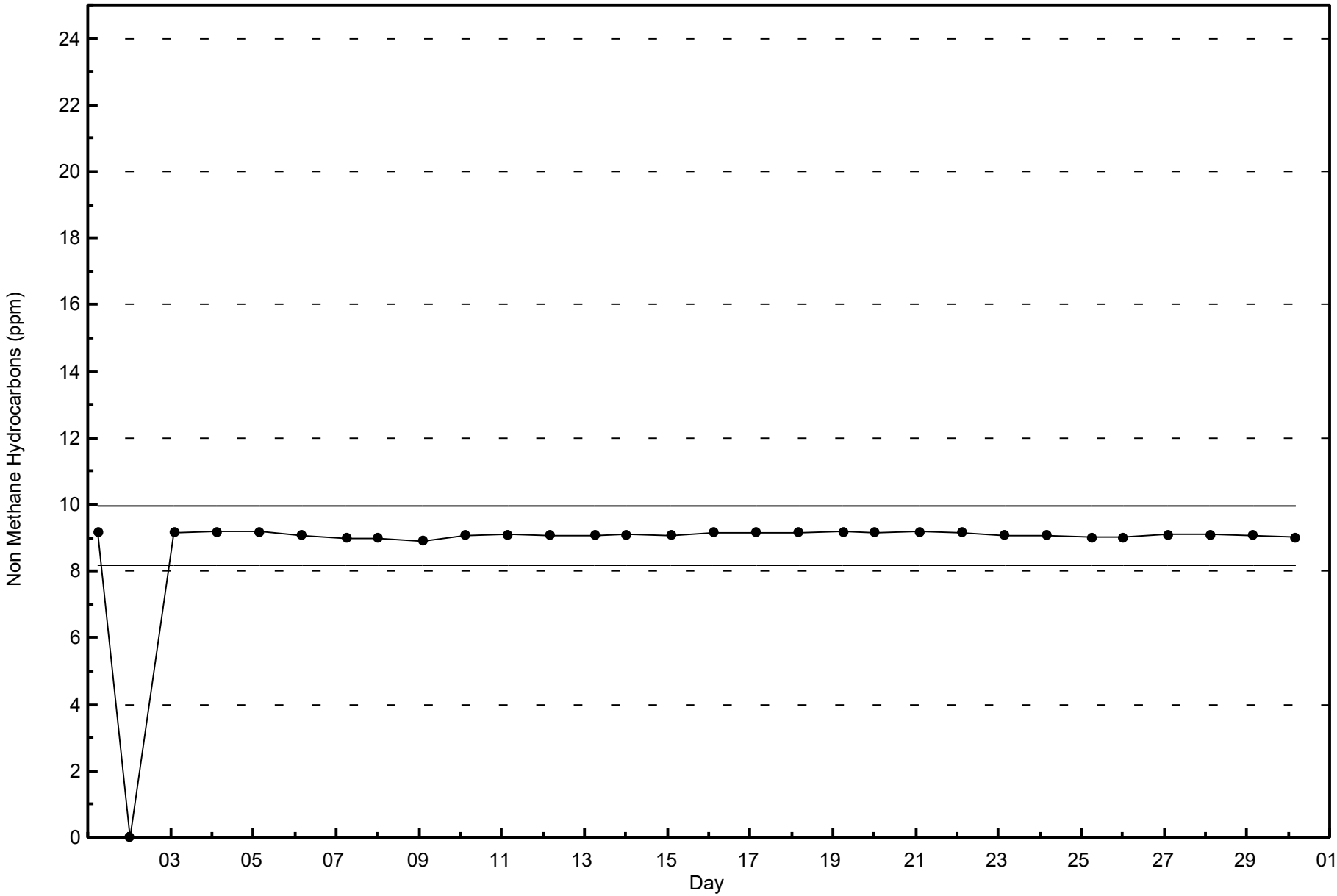


Wood Buffalo Environmental Association

Span Responses

Non Methane Hydrocarbons (NMHC) - ppm

Patricia McInnes - September 2024



Wood Buffalo Environmental Association

Summary of Hour Averages

Methane (CH_4) - ppm

Patricia McInnes - September 2024

Number of Exceedences (AAAQO): 1-hr: 0 24-hr: 0

Maximum Value: 2.8 ppm on Sep 8 23:00

Maximum Daily Average: 2.3 ppm on Sep 13

Minimum Value: 1.8 ppm on Sep 2 12:00

Minimum Daily Average: 1.9 ppm on Sep 3

Maximum Diurnal Average: 2.2 ppm at hour 6

Minimum Diurnal Average: 2.0 ppm at hour 16

Monthly Average: 2.06 ppm

Percentiles: $P_1 = 1.8$ $P_{10} = 2.0$ $Q_1 = 2.0$ Median = 2.0 $Q_3 = 2.1$ $P_{90} = 2.3$ $P_{99} = 2.6$

Hours in Service:	720
Hours of Data:	612
Hours of Missing Data:	108
Hours of Calibration:	33
Percent Operational Time:	89.6

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-Sep	1.9	1.9	1.9	1.9	1.9	Z	UO	UO	UO	UO	UO	UO	UO	UO	UO	UO	UO	UO	UO	UO	UO	UO	UO	UO	--	1.9
2-Sep	UO	UO	UO	UO	UO	UO	UO	UO	UO	UO	M	1.8	1.8	1.8	1.8	1.8	1.8	1.8	1.8	1.9	1.8	1.9	1.9	1.9	--	1.9
3-Sep	1.9	Z	1.9	1.9	1.9	1.9	1.9	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	2.0
4-Sep	2.0	2.1	Z	UO	UO	UO	UO	UO	UO	UO	UO	UO	UO	UO	UO	UO	UO	UO	UO	UO	UO	UO	UO	UO	--	2.1
5-Sep	UO	UO	UO	Z	UO	UO	UO	UO	UO	C	C	C	C	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.1	2.0	--	2.1
6-Sep	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	2.1	2.1	2.1	2.2	2.1	2.2
7-Sep	2.2	2.1	2.1	2.1	2.1	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	2.2
8-Sep	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	1.9	2.0	2.0	2.0	2.0	2.2	2.4	2.8	2.7	2.1	2.8
9-Sep	2.5	Z	2.5	2.8	2.6	2.6	2.5	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	2.2	2.8
10-Sep	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	2.2	2.2	2.1	2.4	2.0	2.4
11-Sep	2.4	2.3	2.5	Z	2.4	2.5	2.5	2.3	2.0	2.0	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	2.5
12-Sep	2.4	2.4	2.4	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	2.1	2.1	2.3	2.3	2.4	2.1	2.4
13-Sep	2.2	2.2	2.3	2.3	2.3	Z	2.4	2.4	2.4	2.3	2.3	2.3	2.4	2.4	2.3	2.2	2.1	2.1	2.1	2.1	2.1	2.1	2.1	2.1	2.3	2.4
14-Sep	Z	2.0	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	2.0	2.0	UO	2.2	UO	2.1	UO	UO	UO	2.0	2.2
15-Sep	UO	Z	2.2	2.6	2.5	2.5	2.6	UO	2.3	2.1	M	M	M	M	M	M	M	2.0	2.1	2.1	2.2	2.4	2.2	2.1	--	2.6
16-Sep	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	2.0	2.1
17-Sep	2.0	2.0	2.1	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	2.3	2.3	2.4	2.4	2.5	2.1	2.5
18-Sep	2.3	2.3	2.1	2.1	Z	2.2	2.3	2.1	2.1	2.0	2.1	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.1	2.1	2.1	2.0	2.2	2.1	2.3
19-Sep	2.2	2.1	2.1	2.1	2.1	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	2.1	2.1	2.1	2.1	2.2	2.2	2.1	2.2
20-Sep	Z	2.3	2.3	2.4	2.4	2.3	2.3	2.2	2.3	2.3	2.2	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	2.4
21-Sep	2.2	Z	2.3	2.2	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	2.1	2.3
22-Sep	2.0	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	2.1	2.1	2.0	2.0	2.0	2.0	2.0	2.1
23-Sep	2.0	2.1	2.1	Z	2.4	2.5	2.4	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	2.0	2.1	2.5
24-Sep	2.0	2.0	2.0	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	2.1	2.1	2.2	2.2	2.1	2.0	2.2
25-Sep	2.1	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	2.1
26-Sep	Z	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	1.9	1.9	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0
27-Sep	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	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
28-Sep	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	2.0	2.0	2.0	2.0	2.0	2.1	2.2	2.2	2.0	2.2
29-Sep	2.1	2.1	2.0	Z	2.2	2.2	2.1	2.0	2.3	2.5	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	2.0	2.1	2.5
30-Sep	2.0	2.0	2.0	2.0	Z	2.0	2.0	2.0	2.0	2.0	2.0	UO	UO	1.9	UO	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	2.2	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	2.1	2.1	2.1	2.1	Diurnal Average	
	2.5	2.4	2.5	2.8	2.6	2.6	2.6	2.4	2.4	2.5	2.4	2.3	2.4	2.4	2.3	2.2	2.1	2.1	2.2	2.3	2.3	2.4	2.8	2.7	Diurnal Maximum	

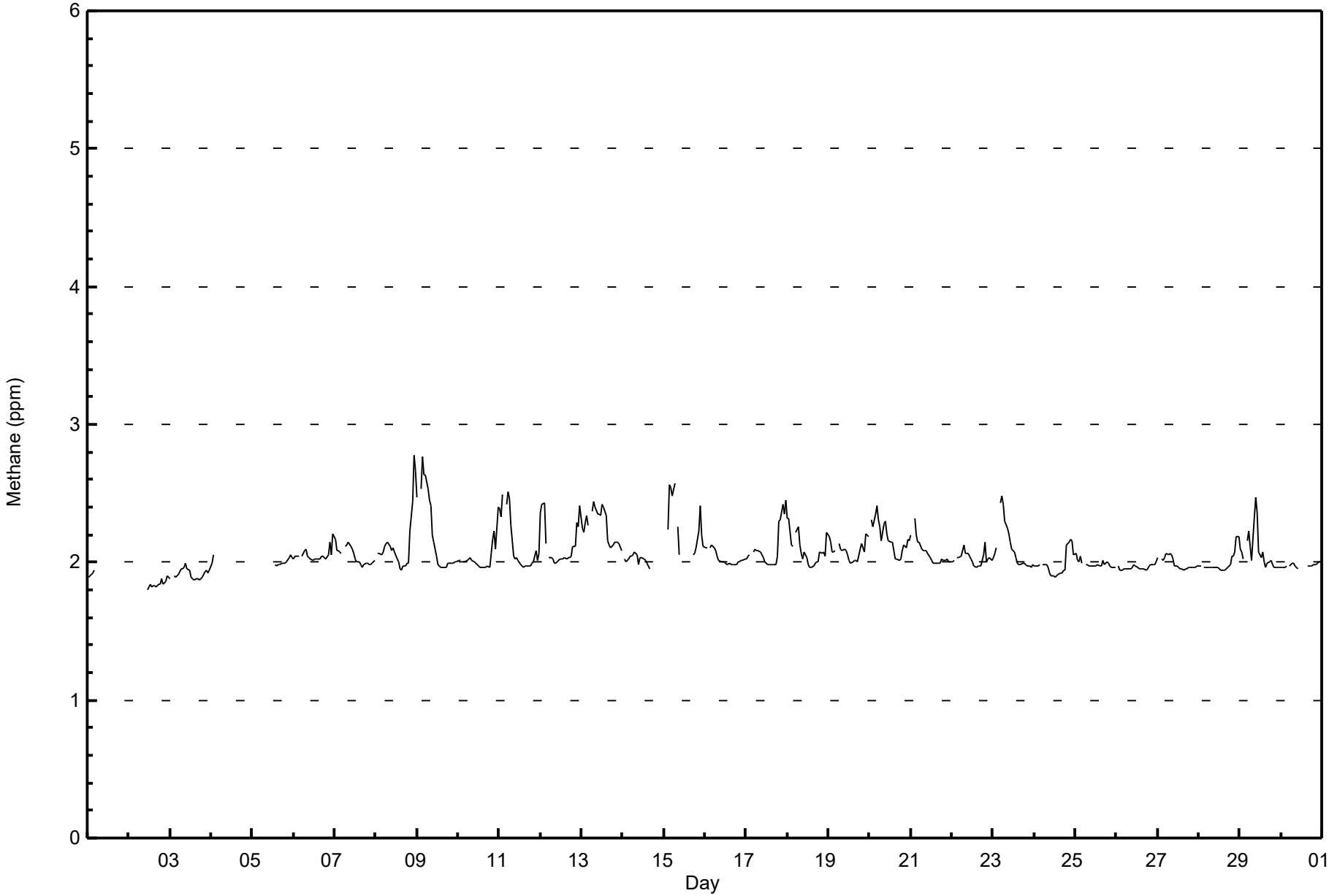
Z - zerospan C - Calibration M - Maintenance UO - Unstable Operation

Wood Buffalo Environmental Association

Hourly Averages

Methane (CH_4) - ppm

Patricia McInnes - September 2024



Concentration Ranges (ppm)	Number of Hours	%	Cumulative %
0 - 2.0	387	63.24	63.24
2.1 - 3.0	225	36.76	100.00
3.1 - 10.0	0	0.00	100.00
> 10.0	0	0.00	100.00

Total Number of Valid Hours: 612

Total Number of Hours: 720

Wood Buffalo Environmental Association

Frequency Distribution

Methane (CH_4) - ppm

Patricia McInnes - September 2024

Concentration Ranges (ppm)	Wind Direction																
	N	NNE	NE	ENE	E	ESE	SE	SSE	S	SSW	SW	WSW	W	WNW	NW	NNW	**Totals**
0 - 2.0	20	6	3	11	8	23	31	15	23	29	48	47	51	37	24	11	387
2.1 - 3.0	11	5	0	1	3	3	12	16	29	35	19	13	5	21	23	29	225
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	11	3	12	11	26	43	31	52	64	67	60	56	58	47	40	612

Total Number of Valid Hours: 612

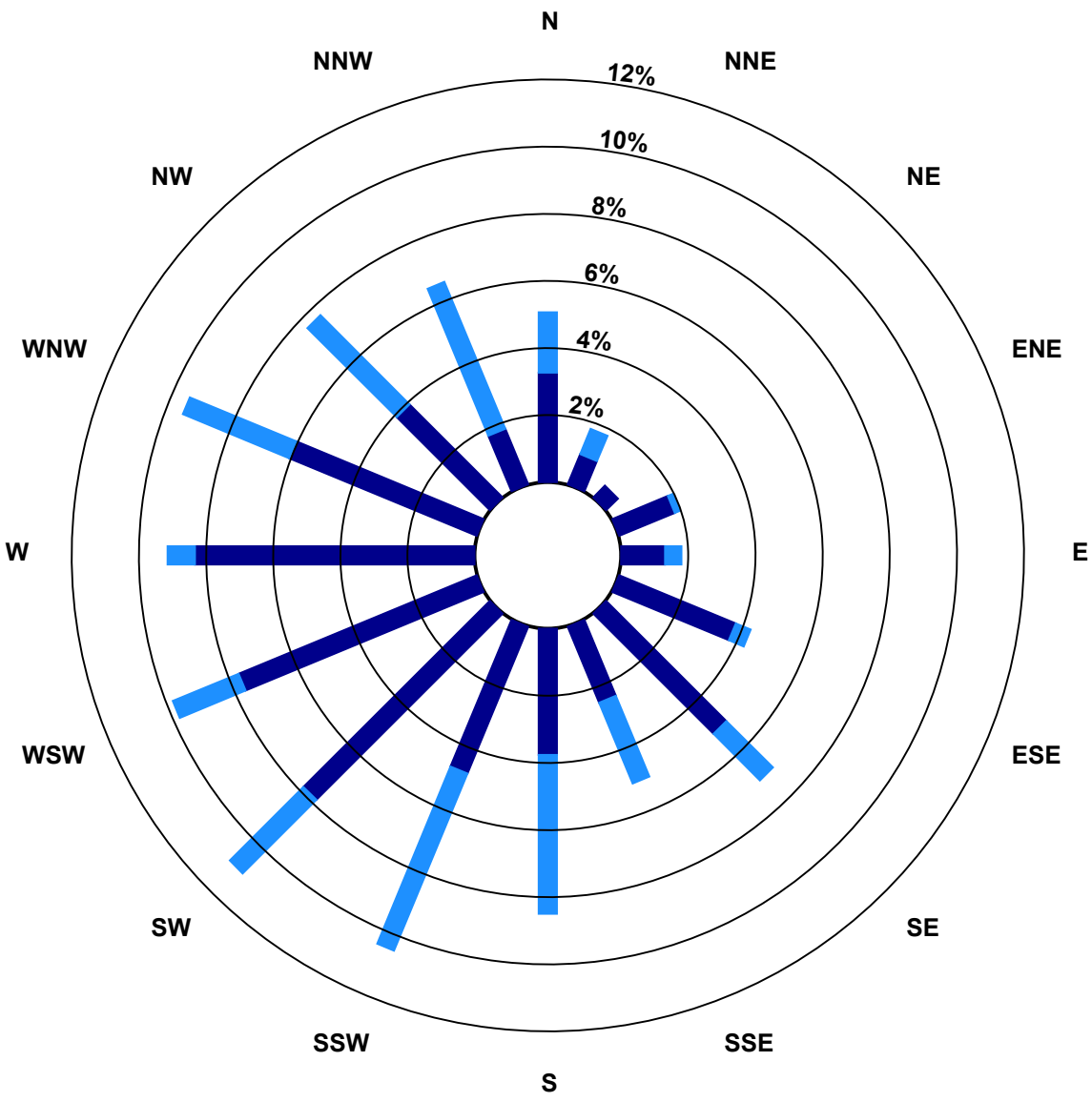
Total Number of Hours: 720

Wood Buffalo Environmental Association

Wind Rose Sep 2024

Methane (CH_4) - ppm

Patricia McInnes



Classes (ppm)

0 - 2.0

2.1 - 3.0

3.1 - 10.0

> 10.0

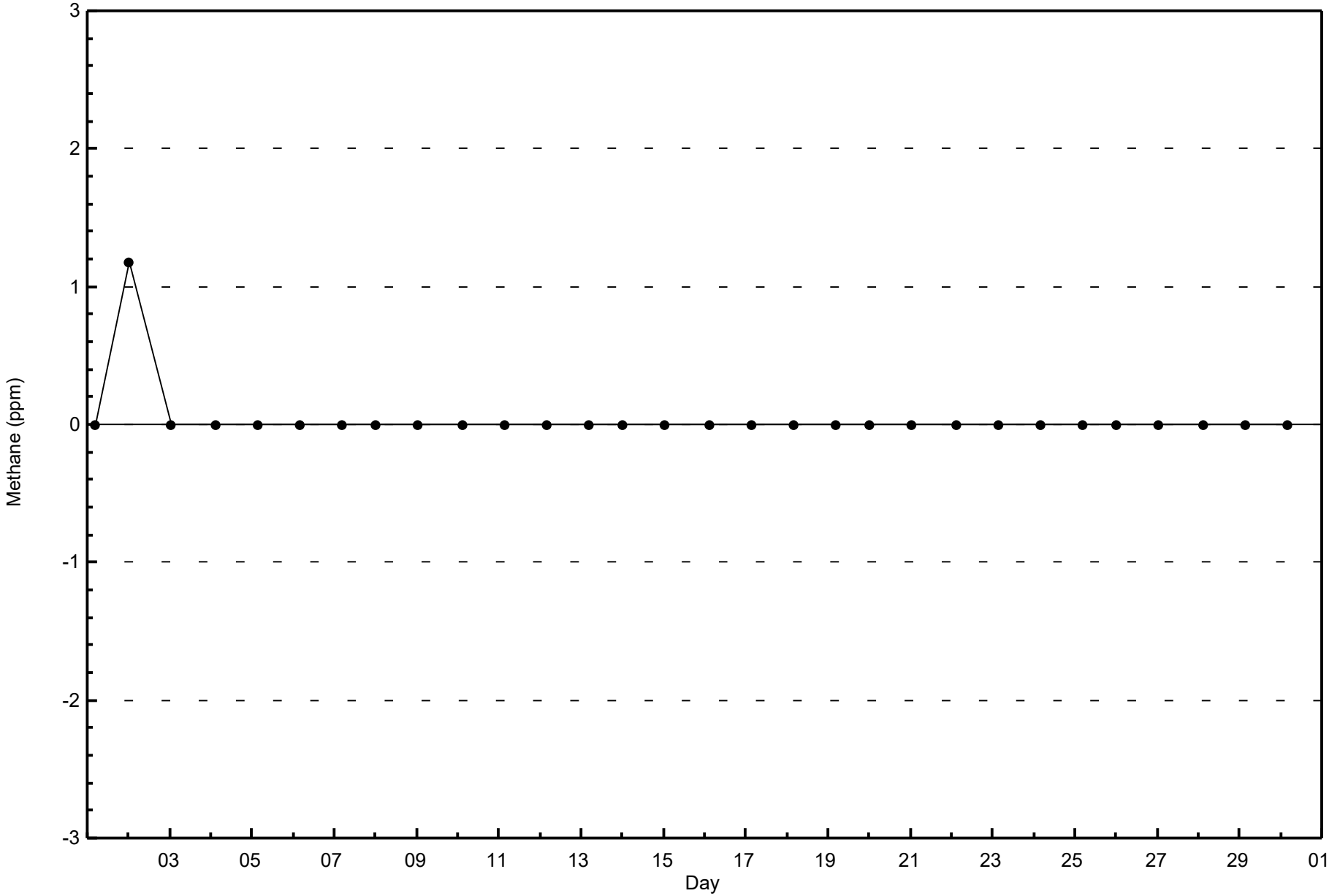
Total Number of Valid Hours: 612

Wood Buffalo Environmental Association

Zero Responses

Methane (CH_4) - ppm

Patricia McInnes - September 2024

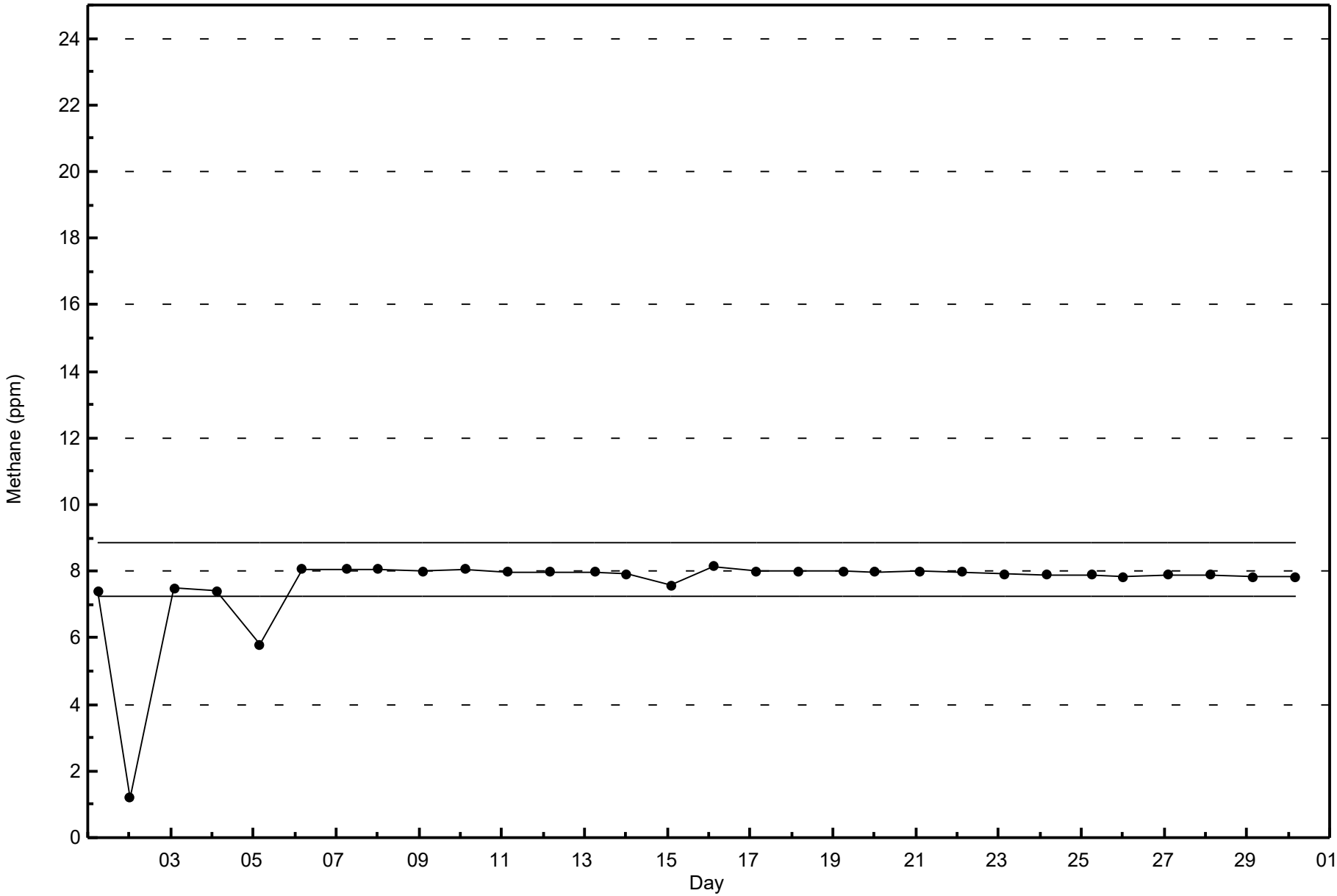


Wood Buffalo Environmental Association

Span Responses

Methane (CH_4) - ppm

Patricia McInnes - September 2024



Wood Buffalo Environmental Association

Summary of Hour Averages

Ozone (O_3) - ppb

Patricia McInnes - September 2024

Number of Exceedences (AAAQO): 1-hr: 0 24-hr: 0
Maximum Value: 46.9 ppb on Sep 8 17:00 Maximum Daily Average: 29.8 ppb on Sep 26

Minimum Value: 2.5 ppb on Sep 20 05:00 Minimum Daily Average: 8.4 ppb on Sep 13
Maximum Diurnal Average: 30.7 ppb at hour 16 Minimum Diurnal Average: 12.9 ppb at hour 7
Monthly Average: 21.47 ppb Percentiles: P_1 = 3.2 P_{10} = 9.0 Q_1 = 14.7 Median = 21.8 Q_3 = 27.8 P_{90} = 32.6 P_{99} = 42.1

Hours in Service:	720
Hours of Data:	685
Hours of Missing Data:	35
Hours of Calibration:	35
Percent Operational Time:	100.0

Day	Hourly Period Ending At (MST)																								Daily	Daily
	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24	Average	Maximum
1-Sep	25.8	Z	22.4	22.2	16.8	10.7	11.7	19.9	21.2	22.7	27.5	37.4	42.0	39.0	34.8	31.4	31.7	31.5	29.6	18.6	12.3	17.1	25.6	26.0	25.1	42.0
2-Sep	19.0	22.4	Z	19.6	14.8	13.2	14.4	15.8	17.4	21.5	22.1	25.3	30.9	37.8	40.1	40.8	40.5	35.7	35.0	33.1	28.4	27.5	31.3	33.5	27.0	40.8
3-Sep	31.9	31.1	27.6	Z	32.1	27.9	22.9	19.8	19.1	21.4	19.7	21.5	22.8	25.2	24.4	24.9	23.7	22.6	20.1	19.9	17.2	14.5	13.2	12.7	22.4	32.1
4-Sep	11.0	9.2	8.2	11.3	Z	7.0	8.8	10.1	12.3	14.3	22.6	24.3	25.3	25.5	24.9	23.8	26.3	25.2	25.9	22.3	23.6	22.9	22.8	22.7	18.7	26.3
5-Sep	21.6	17.8	15.3	12.7	7.4	Z	8.7	9.2	14.2	17.6	20.9	27.3	32.4	37.1	36.1	36.1	37.6	35.7	30.4	28.1	29.2	28.3	25.0	28.4	24.2	37.6
6-Sep	Z	26.0	25.4	26.0	26.4	24.1	19.7	23.2	C	C	C	C	C	28.0	25.7	19.9	19.8	19.8	20.5	21.8	16.2	9.9	19.0	13.4	21.4	28.0
7-Sep	14.7	Z	16.2	18.1	18.8	17.5	15.1	14.3	15.8	20.6	25.3	31.3	35.8	32.8	32.6	32.6	30.6	26.4	23.2	21.3	22.7	24.5	24.8	25.1	23.5	35.8
8-Sep	19.6	19.4	Z	21.2	19.7	17.6	17.6	16.5	17.4	22.1	28.9	38.5	41.7	43.7	44.1	45.2	46.9	43.2	42.1	37.6	25.6	14.6	14.6	15.1	28.4	46.9
9-Sep	15.4	10.3	7.8	Z	4.1	4.0	6.8	12.2	13.0	18.0	19.5	22.5	27.2	24.0	27.8	28.5	30.5	31.7	27.6	28.7	29.6	28.6	25.0	22.0	20.2	31.7
10-Sep	19.4	17.0	17.2	18.4	Z	15.6	15.0	15.4	16.6	19.6	21.0	27.6	29.7	29.7	30.3	31.1	29.6	23.8	24.0	19.4	15.2	12.2	11.1	6.1	20.2	31.1
11-Sep	8.6	7.6	5.3	3.3	2.8	Z	3.9	6.1	14.6	18.2	20.3	24.2	30.0	32.7	34.8	35.4	33.5	32.1	30.0	26.7	20.7	19.6	29.5	26.1	20.3	35.4
12-Sep	Z	13.9	11.1	20.6	21.6	19.3	17.0	18.8	28.7	29.1	27.0	22.8	21.1	20.3	20.2	21.0	20.6	20.7	18.6	15.5	15.2	13.3	12.0	6.8	18.9	29.1
13-Sep	6.5	Z	5.3	3.3	3.4	3.9	3.2	3.6	4.6	5.2	7.1	8.2	7.2	5.7	6.0	10.7	13.1	15.8	13.7	13.6	13.3	12.8	13.1	15.1	8.4	15.8
14-Sep	16.1	18.0	Z	17.8	12.2	9.2	10.1	11.5	15.9	25.8	19.1	20.9	25.6	29.7	35.4	39.2	38.5	35.5	25.6	19.4	16.8	22.3	17.5	13.1	21.5	39.2
15-Sep	8.4	7.4	6.2	Z	2.7	2.7	3.3	7.4	11.7	17.9	22.5	25.2	27.4	31.2	32.4	29.7	30.6	31.2	20.3	11.3	11.9	8.1	12.1	17.8	16.5	32.4
16-Sep	15.7	13.3	12.5	13.9	Z	10.8	10.2	13.7	16.6	21.7	24.8	28.3	30.9	32.2	31.4	32.5	32.4	31.7	30.2	26.5	26.0	25.6	25.7	24.1	23.1	32.5
17-Sep	22.8	21.8	19.5	19.0	16.3	Z	13.7	10.9	15.8	21.4	25.4	29.5	34.1	37.2	39.0	39.2	38.0	31.3	18.2	8.1	7.2	12.2	15.1	12.9	22.1	39.2
18-Sep	Z	12.9	16.5	15.3	12.4	9.0	11.1	15.6	26.1	29.9	14.4	21.9	23.6	23.7	25.5	29.3	30.7	32.0	27.8	20.4	25.9	25.0	28.2	20.6	21.6	32.0
19-Sep	14.5	Z	19.2	18.8	16.0	8.9	11.6	15.2	16.8	18.4	22.0	26.3	32.6	35.5	34.2	32.6	33.1	34.7	28.6	22.5	15.7	20.9	19.1	18.0	22.4	35.5
20-Sep	12.9	10.4	Z	4.6	2.5	5.7	10.5	17.1	12.0	9.8	11.6	14.7	15.1	18.4	23.3	29.9	28.1	27.2	24.4	18.3	17.1	15.1	12.4	7.3	15.2	29.9
21-Sep	4.6	6.2	6.7	Z	6.6	4.9	6.6	5.1	6.8	8.9	12.5	19.4	24.8	29.4	31.2	30.5	28.3	26.3	23.4	26.3	21.2	20.5	24.6	26.1	17.4	31.2
22-Sep	25.8	24.9	21.0	17.0	Z	13.9	8.3	11.2	17.0	17.3	19.3	21.8	23.8	26.8	28.6	26.2	25.4	20.2	13.2	17.2	23.1	22.0	23.3	25.2	20.5	28.6
23-Sep	22.1	17.6	11.8	4.0	2.7	Z	3.0	6.7	8.7	10.2	9.0	11.2	14.0	17.1	16.3	16.0	14.8	10.7	12.3	14.6	15.8	16.1	14.1	12.7	12.2	22.1
24-Sep	Z	14.7	14.2	12.5	9.5	9.0	11.0	10.8	12.2	18.0	26.4	31.9	34.9	37.1	39.0	42.4	42.2	41.4	33.7	21.0	14.2	15.8	18.5	21.5	23.1	42.4
25-Sep	21.0	Z	25.0	20.1	22.0	23.0	24.6	25.1	25.4	25.1	24.7	24.6	24.9	23.7	27.9	28.1	27.2	27.5	19.9	28.4	27.0	25.2	27.1	30.6	25.1	30.6
26-Sep	28.5	25.0	Z	27.5	24.3	27.6	28.6	36.5	32.3	21.8	20.4	25.4	29.7	30.0	31.6	33.9	36.7	36.8	34.7	30.8	32.3	31.2	31.4	27.4	29.8	36.8
27-Sep	22.0	20.8	21.7	Z	21.4	18.0	19.2	15.3	19.9	25.8	33.9	36.1	39.3	40.1	41.0	38.6	35.0	31.7	28.7	29.9	26.8	25.4	22.1	21.6	27.6	41.0
28-Sep	22.9	23.1	22.9	22.9	Z	25.4	26.2	23.8	22.3	26.2	26.9	30.4	31.4	31.5	31.5	31.2	29.6	25.8	18.0	11.7	8.3	9.3	6.1	10.3	22.5	31.5
29-Sep	12.1	11.6	15.7	12.4	10.2	Z	9.3	13.6	6.0	5.9	9.0	19.3	24.5	19.8	21.2	28.1	23.0	20.5	23.7	26.0	26.4	26.3	25.4	25.6	18.1	28.1
30-Sep	Z	24.9	25.1	24.7	23.8	22.2	15.7	14.2	19.6	23.4	24.5	27.7	29.3	30.9	32.9	33.6	34.0	32.4	30.1	29.3	29.4	29.3	28.4	27.7	26.7	34.0
	17.7	17.1	16.0	16.3	14.0	14.0	12.9	14.6	16.6	19.2	21.0	25.0	28.0	29.2	30.1	30.7	30.4	28.7	25.1	22.3	20.5	19.9	20.6	19.9	Diurnal Average	
	31.9	31.1	27.6	27.5	32.1	27.9	28.6	36.5	32.3	29.9	33.9	38.5	42.0	43.7	44.1	45.2	46.9	43.2	42.1	37.6	32.3	31.2	31.4	33.5	Diurnal Maximum	

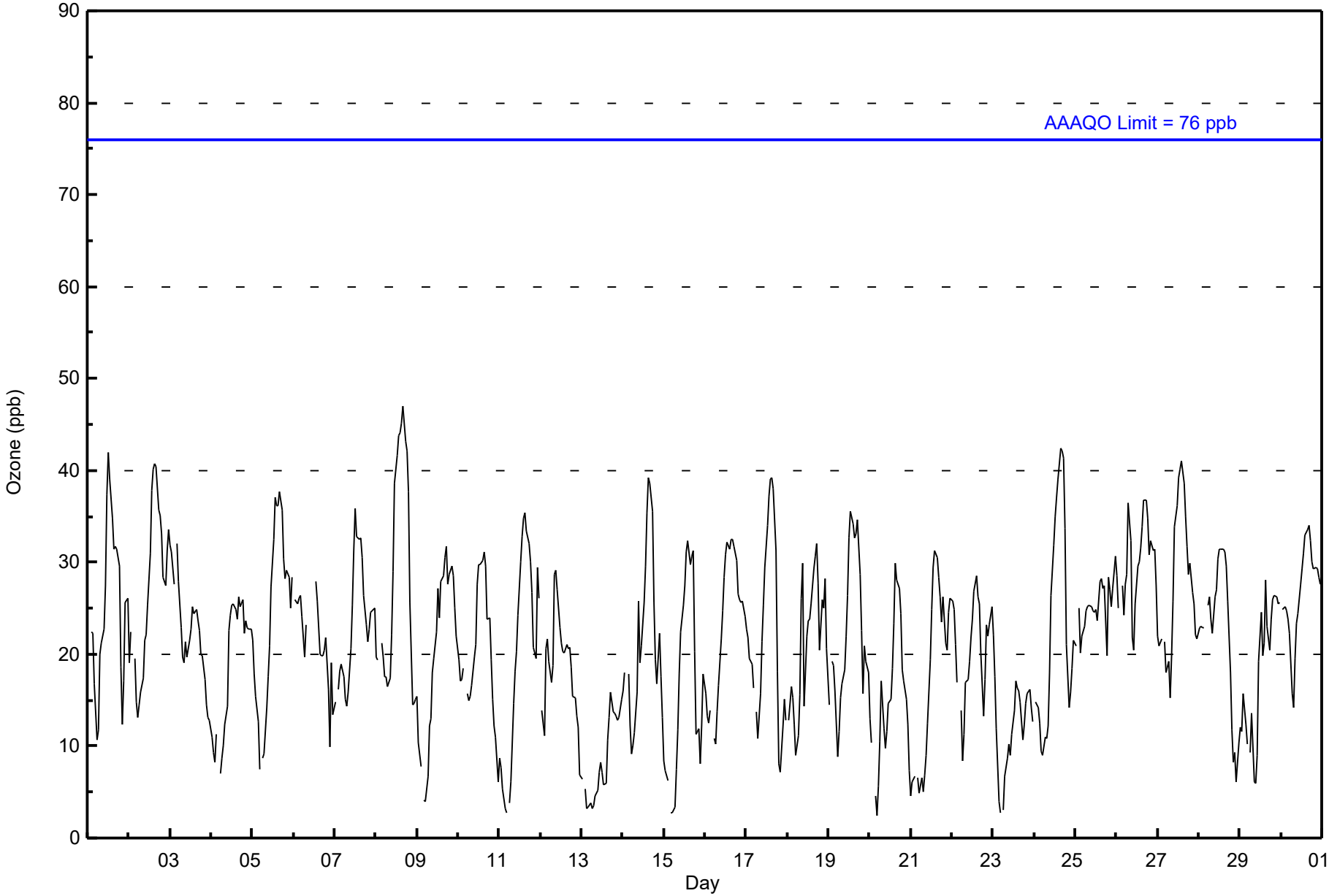
Z - zerospan C - Calibration
Alberta Ambient Air Quality Objectives (AAAQO): 1-hr 76 ppb

Wood Buffalo Environmental Association

Hourly Averages

Ozone (O_3) - ppb

Patricia McInnes - September 2024



Concentration Ranges (ppb)	Number of Hours	%	Cumulative %
0 - 20	308	44.96	44.96
21 - 50	377	55.04	100.00
51 - 82	0	0.00	100.00
> 83	0	0.00	100.00

Total Number of Valid Hours: 685

Total Number of Hours: 720

Wood Buffalo Environmental Association

Frequency Distribution

Ozone (O_3) - ppb

Patricia McInnes - September 2024

Concentration Ranges (ppb)	Wind Direction																
	N	NNE	NE	ENE	E	ESE	SE	SSE	S	SSW	SW	WSW	W	WNW	NW	NNW	**Totals**
0 - 20	14	7	0	3	3	7	14	23	37	47	31	24	15	24	28	31	308
21 - 50	18	6	5	9	10	23	30	18	21	21	41	45	54	41	25	10	377
51 - 82	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
> 83	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Totals	32	13	5	12	13	30	44	41	58	68	72	69	69	65	53	41	685

Total Number of Valid Hours: 685

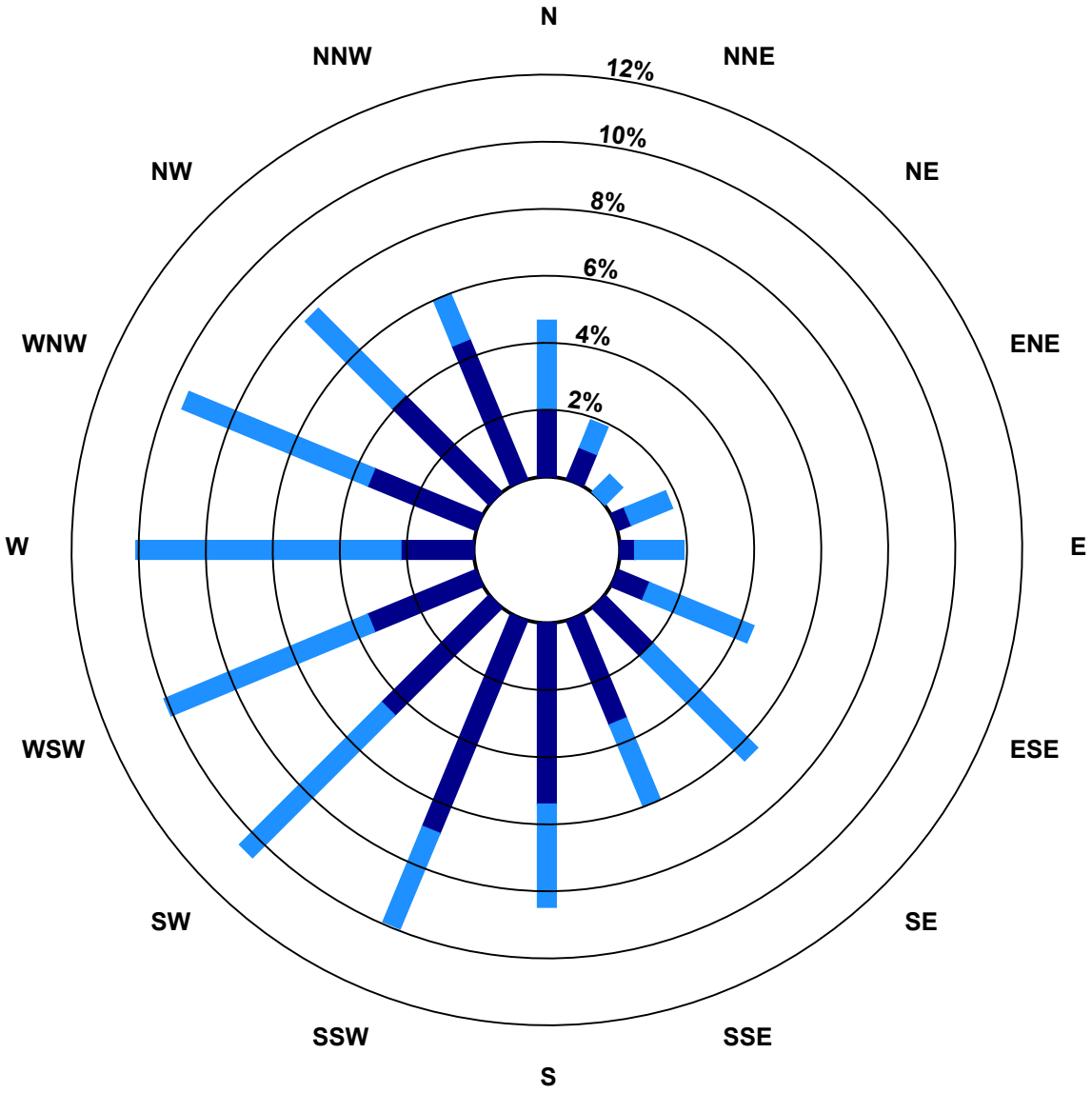
Total Number of Hours: 720

Wood Buffalo Environmental Association

Wind Rose Sep 2024

Ozone (O_3) - ppb

Patricia McInnes



Classes (ppb)

- 0 - 20
- 21 - 50
- 51 - 82
- > 83

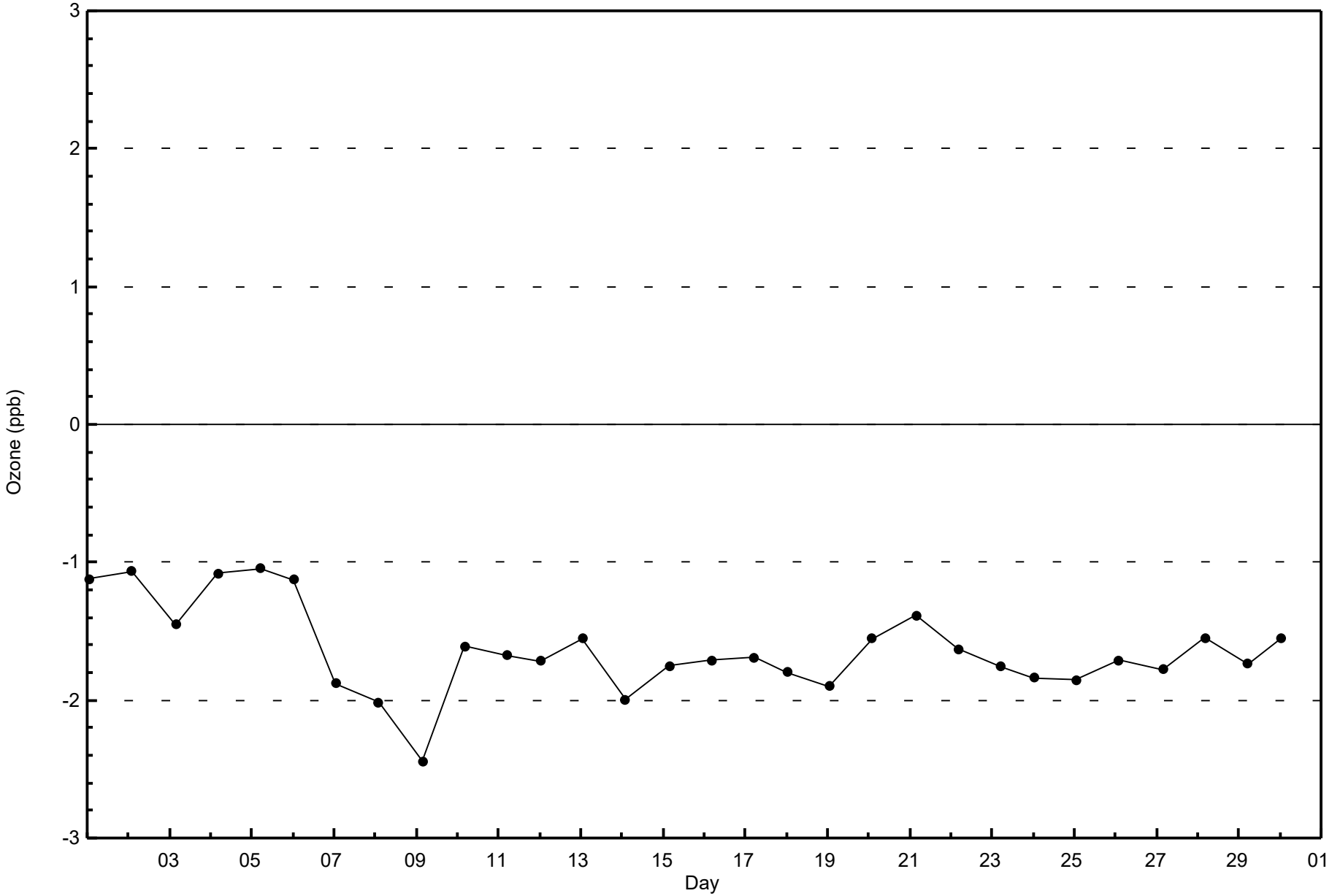
Total Number of Valid Hours: 685

Wood Buffalo Environmental Association

Zero Responses

Ozone (O_3) - ppb

Patricia McInnes - September 2024

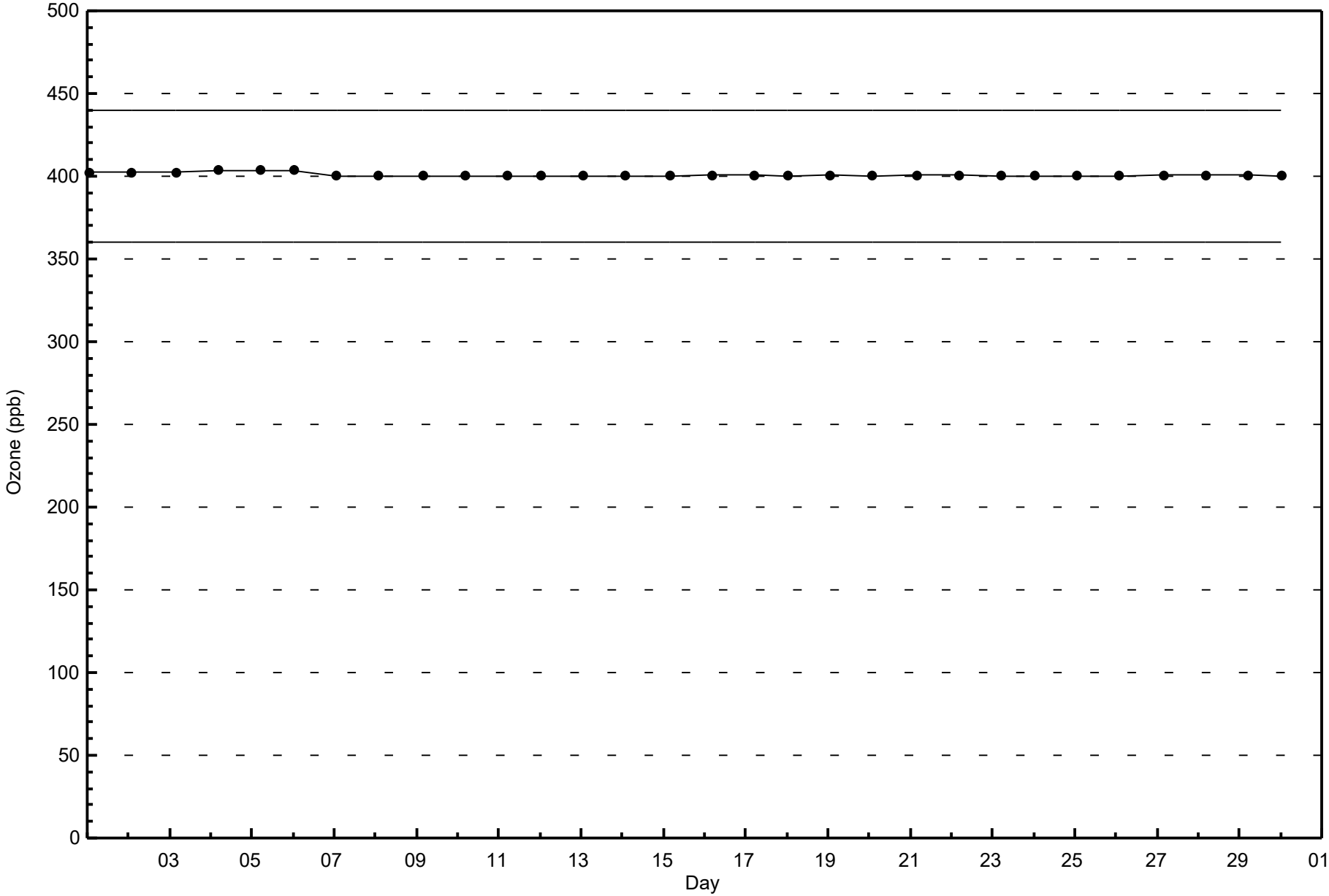


Wood Buffalo Environmental Association

Span Responses

Ozone (O_3) - ppb

Patricia McInnes - September 2024



Wood Buffalo Environmental Association

Summary of Hour Averages

Nitric Oxide (NO) - ppb

Patricia McInnes - September 2024

Maximum Value: 30.3 ppb on Sep 29 10:00

Maximum Daily Average: 5.4 ppb on Sep 15

Minimum Value: 0.0 ppb on Sep 1 01:00

Minimum Daily Average: 0.1 ppb on Sep 2

Maximum Diurnal Average: 3.0 ppb at hour 8

Minimum Diurnal Average: 0.2 ppb at hour 2

Monthly Average: 1.24 ppb

Percentiles: P_1 = 0.0 P_{10} = 0.0 Q_1 = 0.1 Median = 0.4 Q_3 = 1.1 P_{90} = 2.6 P_{99} = 14.1

Hours in Service:	720
Hours of Data:	684
Hours of Missing Data:	36
Hours of Calibration:	36
Percent Operational Time:	100.0

Day	Hourly Period Ending At (MST)																								Daily	Daily
	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24	Average	Maximum
1-Sep	0.0	0.4	0.0	Z	0.3	1.3	1.5	0.7	0.2	0.2	0.8	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.7	3.0	0.7	0.3	0.0	0.4	3.0
2-Sep	0.1	0.1	0.1	0.0	Z	1.2	0.3	0.2	0.2	0.0	0.1	0.2	0.0	0.0	0.0	0.1	0.1	0.1	0.1	0.1	0.0	0.1	0.0	0.1	0.1	1.2
3-Sep	0.1	0.1	0.2	0.4	0.1	Z	0.4	1.0	2.3	2.3	3.2	1.7	0.8	0.9	1.2	1.2	1.5	0.8	0.4	0.2	0.1	0.1	0.1	0.1	0.8	3.2
4-Sep	Z	0.1	0.1	0.1	0.2	0.8	0.2	0.1	0.2	1.2	0.7	0.2	0.1	0.0	0.2	0.0	0.0	0.0	0.0	0.5	0.1	0.0	0.0	0.0	0.2	1.2
5-Sep	0.0	Z	0.0	0.0	0.4	0.5	1.4	6.9	4.9	2.6	1.4	1.4	0.6	0.5	0.3	0.6	1.1	0.9	0.6	0.6	0.5	0.4	0.5	0.2	1.2	6.9
6-Sep	0.1	0.0	Z	0.2	0.3	0.4	1.1	1.9	0.7	0.4	0.1	2.6	0.2	0.3	0.2	0.8	0.5	0.4	0.5	0.3	1.7	3.1	0.3	0.2	0.7	3.1
7-Sep	0.2	0.2	0.4	Z	0.3	0.4	0.3	0.9	0.4	0.1	0.0	0.1	0.0	0.0	0.0	0.1	0.1	0.1	0.2	0.8	0.6	0.1	0.1	0.0	0.2	0.9
8-Sep	0.3	0.1	0.1	0.0	Z	0.2	0.2	0.5	0.6	0.2	0.3	0.2	0.3	0.1	0.0	0.4	0.4	1.6	1.1	1.2	2.6	1.4	1.4	0.1	0.6	2.6
9-Sep	0.1	0.1	0.2	0.2	1.1	Z	3.3	2.5	6.4	2.2	0.4	0.1	0.0	0.0	1.9	0.2	0.0	0.0	0.1	0.1	0.3	0.1	0.1	0.0	0.8	6.4
10-Sep	Z	0.1	0.1	0.1	0.2	0.2	0.3	0.3	0.2	0.1	0.2	0.2	0.1	0.0	0.0	0.0	0.1	0.5	0.4	0.3	0.5	1.4	1.3	0.9	0.3	1.4
11-Sep	0.2	Z	0.3	0.5	1.6	4.5	6.3	11.5	4.3	1.3	1.0	0.9	0.9	0.6	0.4	1.1	1.9	2.3	1.6	1.8	3.7	2.0	0.5	0.9	2.2	11.5
12-Sep	0.0	0.0	Z	0.1	0.2	0.8	1.1	0.4	0.2	0.4	0.6	0.6	0.9	0.3	1.1	0.6	0.7	1.6	0.5	0.3	0.0	0.0	0.0	0.2	0.5	1.6
13-Sep	0.0	0.5	1.1	Z	1.9	2.4	6.0	13.7	11.9	9.8	9.1	10.2	11.5	13.8	8.2	1.8	0.9	1.1	0.4	0.2	0.5	0.3	0.2	0.2	4.6	13.8
14-Sep	0.2	0.0	0.0	0.1	Z	2.2	1.0	1.6	1.2	0.1	0.7	0.3	0.1	0.0	0.0	0.0	0.0	0.0	0.0	0.5	0.5	0.0	0.0	0.0	0.4	2.2
15-Sep	0.0	0.0	5.7	26.0	19.8	Z	19.7	12.4	9.0	1.6	2.4	2.1	2.5	1.5	1.4	2.5	1.8	1.3	2.4	4.2	2.3	5.0	1.0	0.1	5.4	26.0
16-Sep	Z	0.1	0.1	0.3	1.2	1.2	2.0	2.1	C	C	C	C	C	C	0.1	0.1	0.3	0.3	0.3	0.7	0.5	0.2	0.2	0.1	--	2.1
17-Sep	0.2	Z	0.1	0.1	0.5	1.6	1.8	4.8	2.2	0.8	1.0	0.4	0.4	0.5	0.5	0.9	1.4	2.3	4.8	10.4	4.9	0.3	0.3	0.1	1.8	10.4
18-Sep	0.1	0.2	Z	0.2	1.3	2.4	2.6	4.2	0.6	0.1	4.6	1.7	0.3	0.1	0.5	0.1	0.0	0.0	0.4	1.0	0.3	0.3	0.1	0.2	0.9	4.6
19-Sep	0.2	0.0	0.1	Z	0.7	3.3	1.4	0.9	1.1	1.7	0.7	0.6	0.2	0.3	0.2	0.2	0.4	0.0	0.6	1.0	1.7	0.5	0.0	0.0	0.7	3.3
20-Sep	1.3	0.2	0.1	3.2	Z	1.4	0.6	0.9	2.3	4.7	2.6	2.0	4.1	3.8	2.7	0.9	0.8	0.4	0.2	0.7	0.4	0.5	0.2	1.8	1.6	4.7
21-Sep	0.9	0.4	0.3	0.7	0.9	Z	2.3	5.7	5.7	1.6	0.9	0.5	0.3	0.4	0.3	0.4	0.9	1.4	0.7	0.5	0.5	0.6	0.2	0.1	1.1	5.7
22-Sep	Z	0.6	0.5	0.8	0.9	0.9	2.0	2.1	0.9	0.8	0.7	0.5	0.4	0.3	0.3	1.0	1.8	2.4	2.1	1.5	0.5	0.3	0.3	0.3	0.9	2.4
23-Sep	0.3	Z	0.3	7.9	15.6	10.6	11.3	8.7	7.6	6.4	6.7	5.0	3.4	0.6	0.3	0.6	0.7	2.5	1.5	0.9	0.3	0.2	0.2	0.3	4.0	15.6
24-Sep	0.1	0.1	Z	0.2	1.2	2.1	0.4	0.3	0.2	0.1	0.5	1.1	0.7	0.4	0.4	0.3	0.2	0.0	0.4	1.0	2.9	2.2	0.2	0.2	0.7	2.9
25-Sep	0.2	0.1	0.1	Z	0.6	0.9	0.6	0.6	0.6	1.0	1.5	1.1	0.6	0.9	1.1	0.8	0.3	0.6	1.7	0.2	0.3	0.2	0.1	0.3	0.6	1.7
26-Sep	0.2	0.1	0.1	0.1	Z	0.0	0.1	0.0	0.1	0.1	0.0	0.0	0.1	0.1	0.1	0.2	0.4	0.3	0.2	0.8	0.1	0.5	0.0	0.0	0.2	0.8
27-Sep	0.2	0.2	0.1	0.1	0.5	Z	0.9	1.6	0.7	1.2	0.6	0.3	0.1	0.1	0.0	0.1	0.3	0.4	1.7	0.3	0.5	0.0	0.0	0.0	0.4	1.7
28-Sep	Z	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.1	0.2	0.1	0.1	0.0	0.2	0.4	0.6	4.6	4.5	3.9	2.1	0.6	0.8	4.6
29-Sep	0.2	Z	0.4	0.3	0.2	2.5	0.4	1.1	16.9	30.3	23.9	5.6	3.7	4.7	0.7	0.6	0.4	0.5	0.4	0.3	0.2	0.2	0.0	0.0	4.1	30.3
30-Sep	0.1	0.1	Z	0.3	0.3	0.3	2.2	2.8	0.7	0.1	0.1	0.1	0.1	0.0	0.1	0.1	0.0	0.0	0.1	0.3	0.2	0.2	0.0	0.0	0.4	2.8
	0.2	0.2	0.4	1.7	2.0	1.7	2.4	3.0	2.8	2.5	2.2	1.4	1.1	1.0	0.7	0.5	0.6	0.7	0.8	1.2	1.1	0.8	0.3	0.2	Diurnal Average	
	1.3	0.6	5.7	26.0	19.8	10.6	19.7	13.7	16.9	30.3	23.9	10.2	11.5	13.8	8.2	2.5	1.9	2.5	4.8	10.4	4.9	5.0	2.1	1.8	Diurnal Maximum	

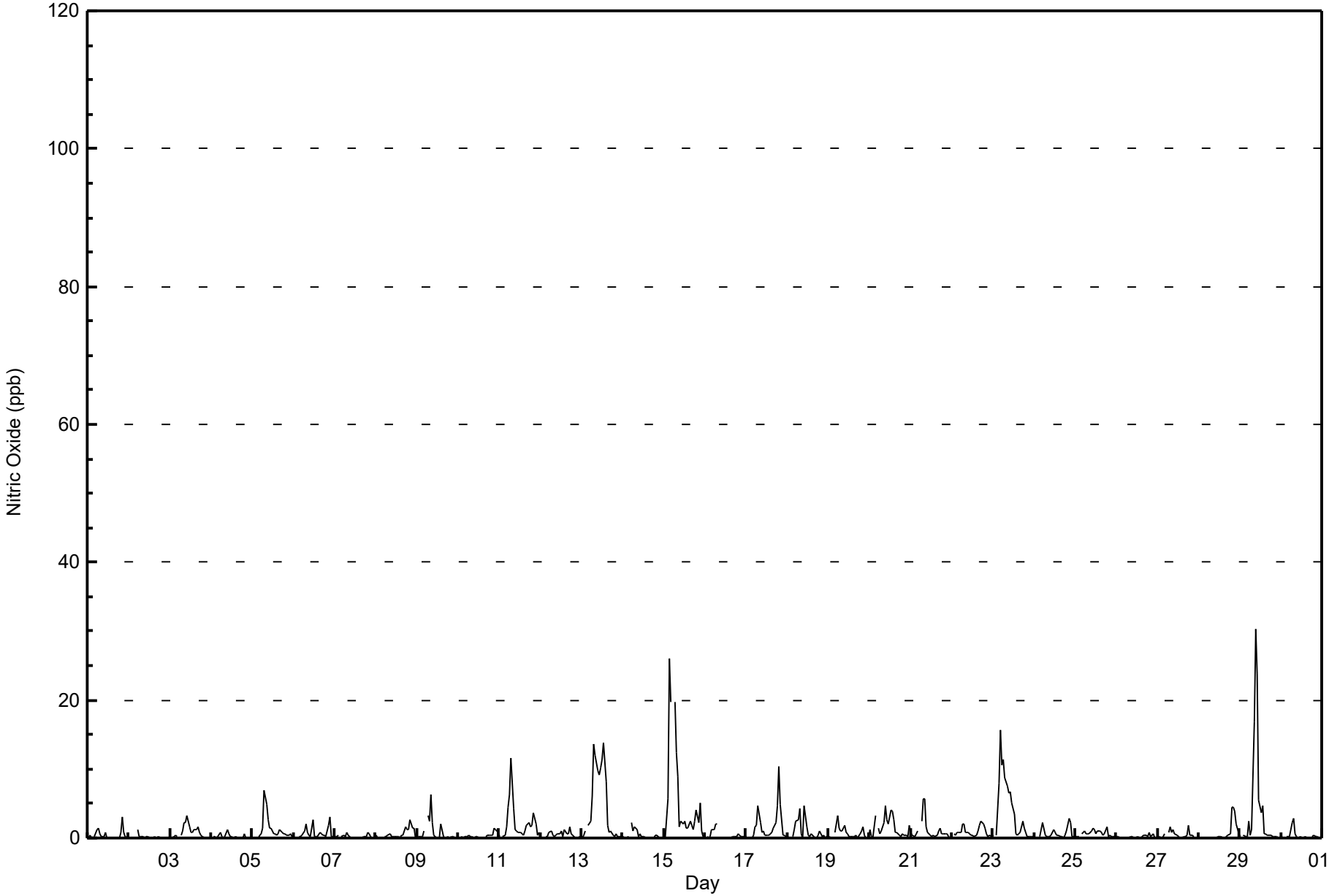
Z - zerospan C - Calibration

Wood Buffalo Environmental Association

Hourly Averages

Nitric Oxide (NO) - ppb

Patricia McInnes - September 2024



Concentration Ranges (ppb)	Number of Hours	%	Cumulative %
0 - 20	681	99.56	99.56
21 - 40	3	0.44	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: 684

Total Number of Hours: 720

Wood Buffalo Environmental Association

Frequency Distribution

Nitric Oxide (NO) - ppb

Patricia McInnes - September 2024

Concentration Ranges (ppb)	Wind Direction																
	N	NNE	NE	ENE	E	ESE	SE	SSE	S	SSW	SW	WSW	W	WNW	NW	NNW	**Totals**
0 - 20	35	12	5	13	12	30	42	40	58	70	70	72	68	64	51	39	681
21 - 40	0	1	0	0	0	0	0	0	0	0	0	0	0	0	0	2	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	35	13	5	13	12	30	42	40	58	70	70	72	68	64	51	41	684

Total Number of Valid Hours: 684

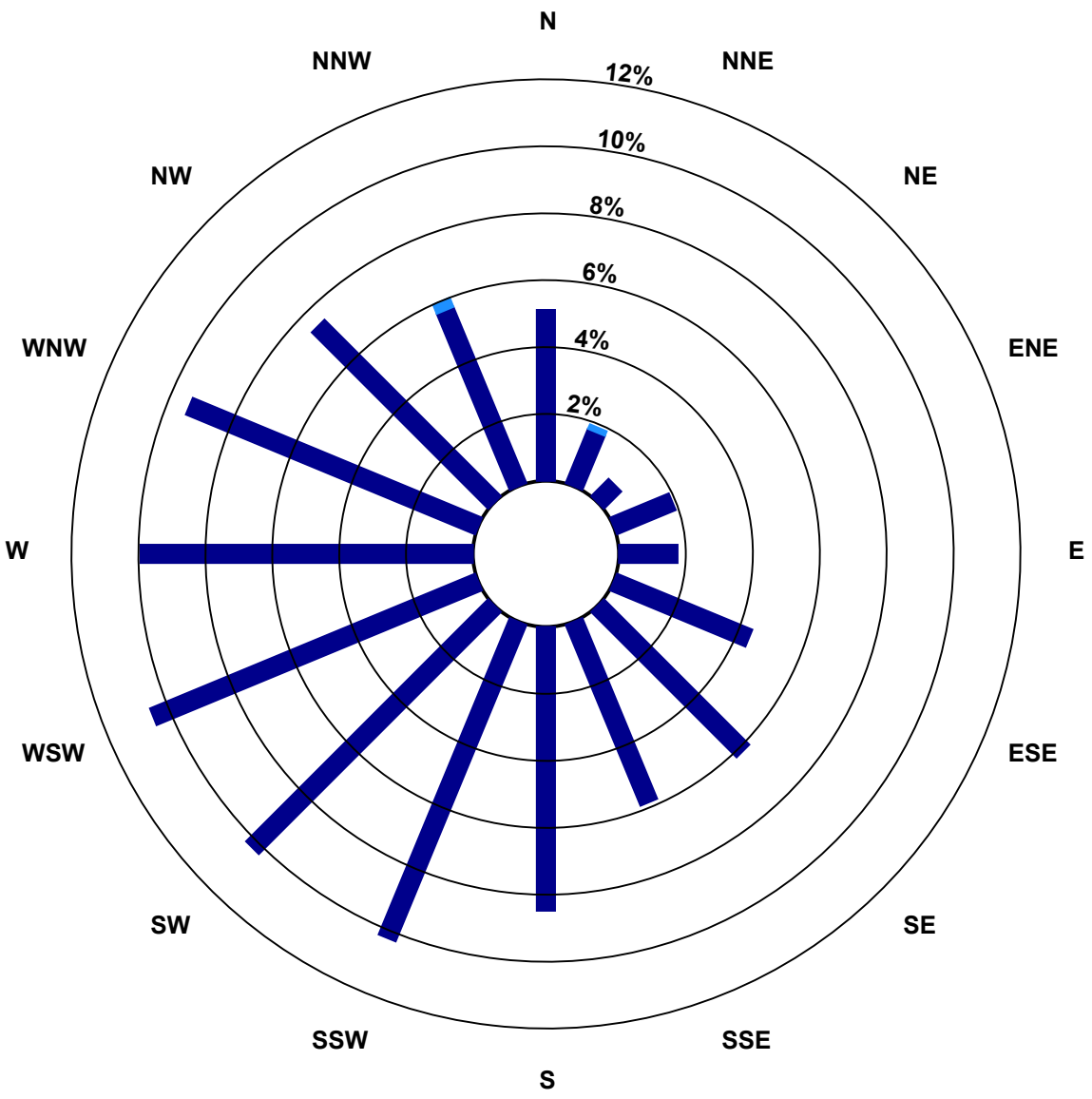
Total Number of Hours: 720

Wood Buffalo Environmental Association

Wind Rose Sep 2024

Nitric Oxide (NO) - ppb

Patricia McInnes



Classes (ppb)

- 0 - 20
- 21 - 40
- 11 - 80
- 81 - 159
- > 159

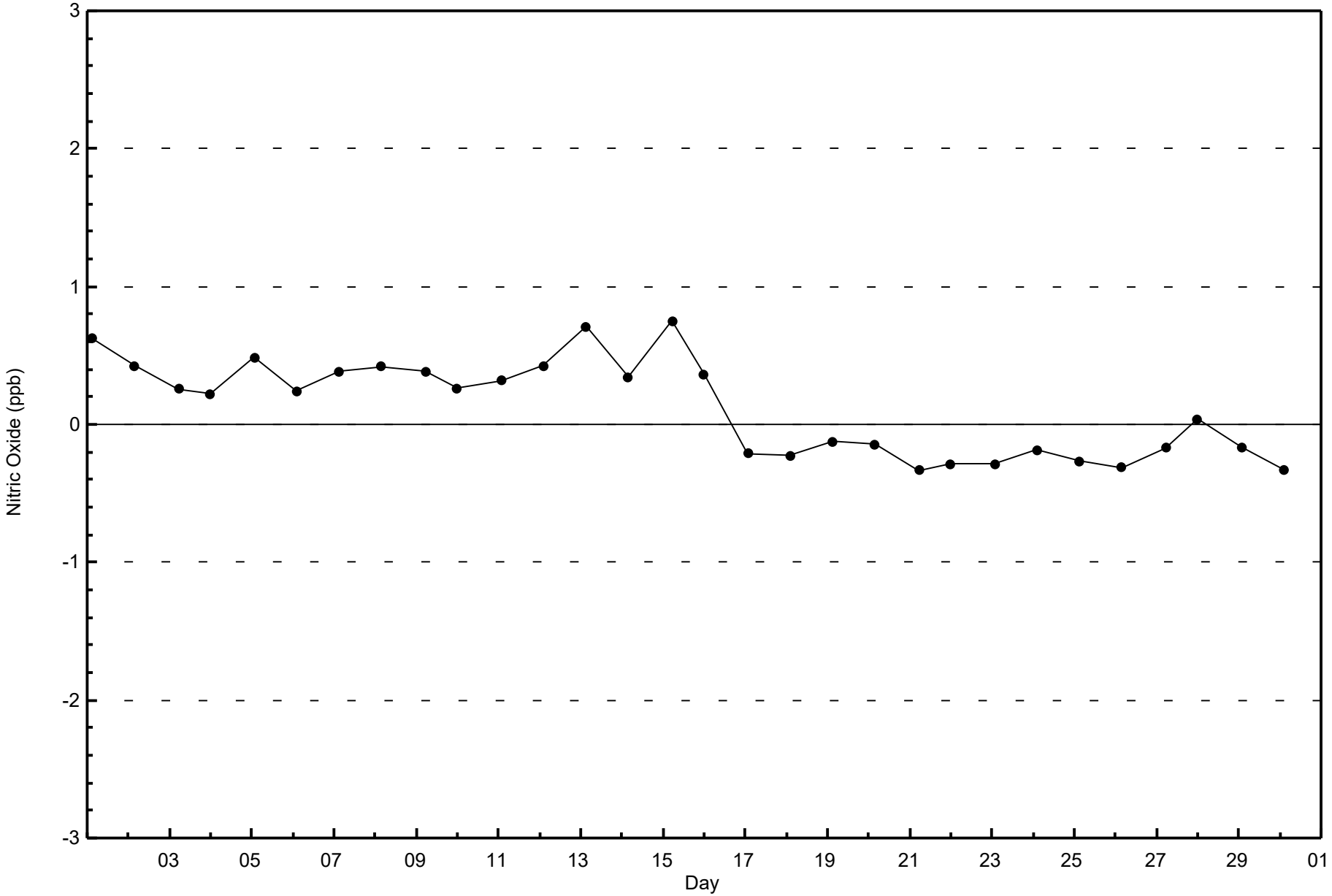
Total Number of Valid Hours: 684

Wood Buffalo Environmental Association

Zero Responses

Nitric Oxide (NO) - ppb

Patricia McInnes - September 2024

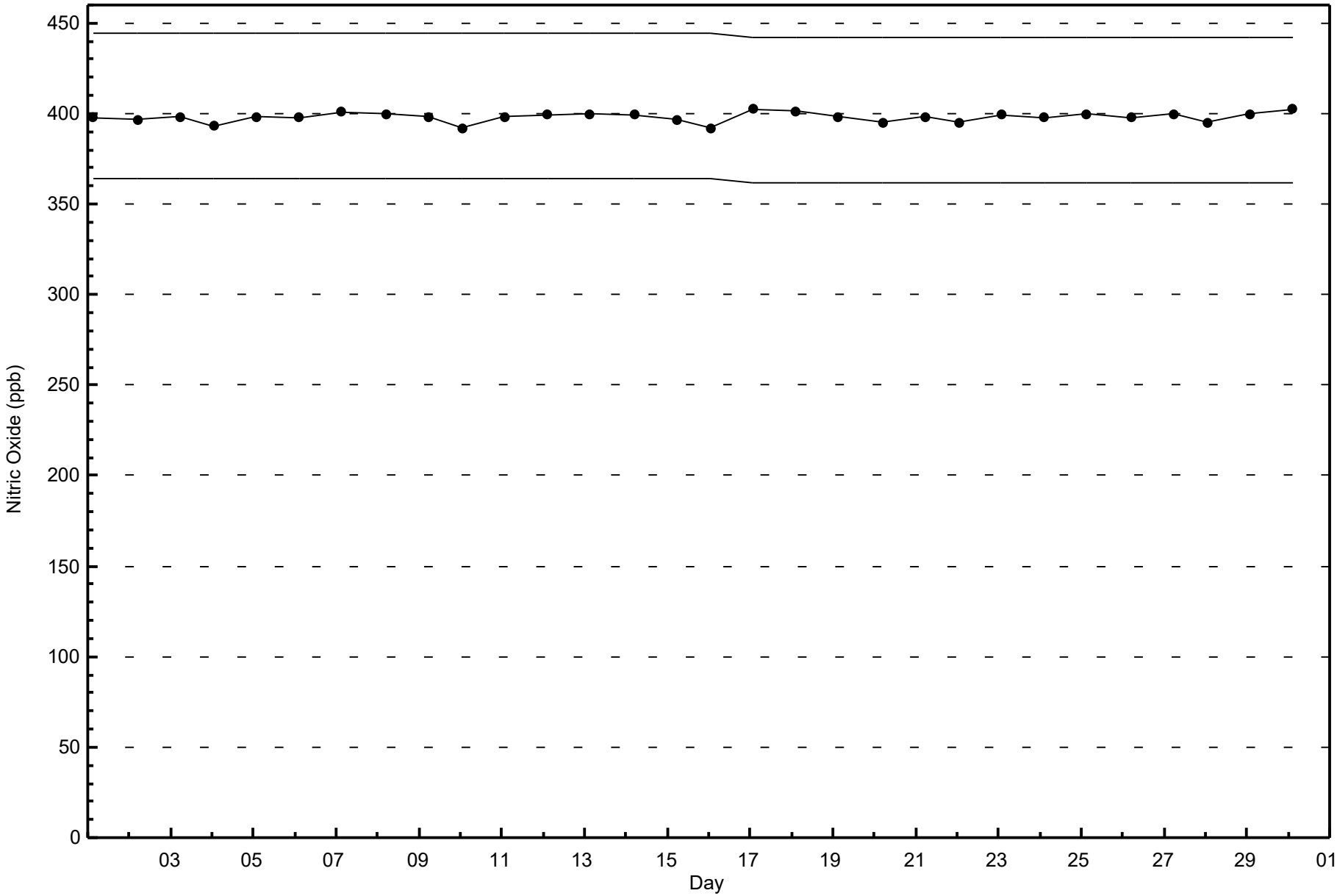


Wood Buffalo Environmental Association

Span Responses

Nitric Oxide (NO) - ppb

Patricia McInnes - September 2024



Wood Buffalo Environmental Association

Summary of Hour Averages

Nitrogen Dioxide (NO_2) - ppb

Patricia McInnes - September 2024

Number of Exceedences (AAAQO): 1-hr: 0 24-hr: 0
Maximum Value: 18.3 ppb on Sep 15 20:00 Maximum Daily Average: 9.2 ppb on Sep 13

Minimum Value: 0.0 ppb on Sep 1 15:00 Minimum Daily Average: 0.5 ppb on Sep 26
Maximum Diurnal Average: 4.9 ppb at hour 5 Minimum Diurnal Average: 1.5 ppb at hour 15
Monthly Average: 3.09 ppb Percentiles: P_1 = 0.0 P_{10} = 0.0 Q_1 = 0.5 Median = 1.8 Q_3 = 4.5 P_{90} = 8.1 P_{99} = 15.8

Hours in Service:	720
Hours of Data:	684
Hours of Missing Data:	36
Hours of Calibration:	36
Percent Operational Time:	100.0

Day	Hourly Period Ending At (MST)																								Daily	Daily
	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24	Average	Maximum
1-Sep	1.3	3.2	1.9	Z	5.0	8.0	5.3	2.0	0.8	0.9	1.7	0.6	0.2	0.2	0.0	0.0	0.0	0.0	0.8	4.8	8.0	5.2	3.0	1.2	2.4	8.0
2-Sep	1.8	0.7	0.6	0.6	Z	3.5	0.6	0.4	0.6	0.3	0.4	0.3	0.0	0.1	0.1	0.3	0.2	0.5	0.5	0.5	0.0	0.2	1.0	0.5	0.6	3.5
3-Sep	1.6	2.0	3.4	1.2	2.4	Z	3.1	4.4	8.0	6.9	8.1	6.7	4.1	2.5	3.4	4.2	4.6	4.9	5.3	2.9	1.7	1.0	1.6	2.7	3.8	8.1
4-Sep	Z	2.0	2.5	2.1	1.5	1.2	0.2	0.0	0.1	0.7	0.2	0.0	0.0	0.0	0.7	0.0	0.0	0.0	0.1	2.1	0.6	0.0	0.0	0.0	0.6	2.5
5-Sep	0.0	Z	4.4	5.2	6.0	3.7	3.1	6.3	5.0	2.7	1.7	2.0	1.5	1.0	0.4	0.8	1.7	2.1	3.1	3.2	1.9	1.7	4.0	2.6	2.8	6.3
6-Sep	1.2	2.0	Z	2.4	3.4	5.0	9.1	7.5	1.9	0.9	0.8	2.2	1.0	0.9	2.0	6.4	4.2	2.6	1.7	1.4	5.4	9.9	1.6	2.8	3.3	9.9
7-Sep	1.7	0.9	0.9	Z	1.3	1.3	1.8	1.9	1.2	1.0	1.3	1.2	0.9	0.2	0.2	0.1	0.1	0.9	1.5	2.1	1.4	0.4	0.3	0.5	1.0	2.1
8-Sep	2.1	1.2	0.8	0.8	Z	1.7	0.9	1.3	1.4	0.7	1.3	1.9	1.5	0.9	0.4	1.2	2.8	5.1	9.4	8.0	9.5	10.4	3.7	3.3	3.1	10.4
9-Sep	5.4	15.7	15.7	16.6	16.1	Z	10.3	7.2	11.3	6.0	0.8	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	4.6	16.6
10-Sep	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	0.1	0.0	0.0	0.1	3.0	1.7	0.7	1.0	1.2	2.5	3.0	0.6	3.0
11-Sep	0.2	Z	1.7	4.0	5.4	6.8	4.8	6.1	3.3	1.1	1.1	0.8	0.9	0.6	0.6	1.9	2.0	4.5	5.3	5.1	9.5	7.8	1.3	1.6	3.3	9.5
12-Sep	0.6	0.6	Z	0.7	1.1	2.5	4.7	4.0	2.1	2.6	2.5	3.4	4.0	2.9	3.8	2.5	3.5	3.9	3.2	2.2	1.2	1.2	2.7	2.8	2.6	4.7
13-Sep	5.2	7.5	9.5	Z	12.8	10.6	9.8	11.0	10.9	12.1	11.5	12.6	15.2	17.8	14.6	8.4	4.6	5.5	8.6	5.6	4.6	4.6	4.6	2.9	9.2	17.8
14-Sep	0.7	0.1	0.2	0.3	Z	6.3	2.8	1.8	1.2	0.1	0.6	0.3	0.3	0.0	0.0	0.0	0.0	0.2	0.6	2.8	1.8	4.2	7.3	6.1	1.6	7.3
15-Sep	5.5	3.9	14.2	17.5	15.6	Z	10.9	12.8	10.5	5.3	3.5	3.1	4.1	3.2	3.3	5.9	6.2	6.3	14.2	18.3	8.3	8.8	4.9	2.3	8.2	18.3
16-Sep	Z	1.8	1.2	2.1	5.0	4.9	7.4	5.4	C	C	C	C	C	C	0.0	0.0	0.4	0.3	1.2	2.5	1.4	0.7	0.3	0.5	--	7.4
17-Sep	0.8	Z	0.9	1.1	2.6	6.3	4.4	4.9	2.1	0.9	1.1	0.5	0.5	0.7	0.9	2.3	3.2	8.9	16.0	11.0	8.8	3.0	7.9	2.8	4.0	16.0
18-Sep	1.2	1.3	Z	3.5	6.5	10.8	8.0	7.1	1.0	0.1	9.8	4.1	0.5	0.0	0.1	0.0	0.0	0.0	2.8	2.8	0.7	2.3	0.1	1.9	2.8	10.8
19-Sep	1.1	0.2	0.6	Z	5.6	9.4	4.2	1.3	1.3	2.1	1.1	0.9	0.6	0.8	1.1	0.7	1.3	1.3	5.1	4.8	6.1	5.0	1.1	0.8	2.5	9.4
20-Sep	4.8	4.4	4.9	16.4	Z	15.1	13.4	9.5	12.3	13.1	9.3	7.1	8.1	7.1	5.2	2.2	2.7	2.9	2.8	2.7	2.4	5.8	6.9	9.5	7.3	16.4
21-Sep	7.6	4.4	2.8	3.8	4.1	Z	3.4	3.5	2.4	0.7	0.5	0.4	0.3	0.3	0.2	1.2	2.2	3.3	4.6	2.3	6.0	5.6	2.3	0.9	2.7	7.6
22-Sep	Z	2.2	2.8	4.1	3.3	4.9	7.5	3.4	0.8	0.5	0.3	0.2	0.2	0.1	0.1	1.9	4.0	7.5	11.7	6.8	2.8	1.6	1.5	0.5	3.0	11.7
23-Sep	0.5	Z	5.4	11.6	13.5	9.0	7.9	8.2	6.7	6.8	5.5	4.9	3.2	1.1	0.2	0.9	1.8	4.5	3.7	2.5	1.1	0.8	1.7	1.9	4.5	13.5
24-Sep	0.1	0.0	Z	0.1	2.9	3.1	0.3	0.1	0.0	0.0	0.0	0.5	0.9	0.0	0.2	0.3	0.3	0.3	4.6	5.6	7.2	7.0	2.6	2.9	1.7	7.2
25-Sep	4.0	2.7	1.1	Z	3.3	3.3	1.8	1.8	2.8	3.3	3.8	3.4	1.8	2.8	2.2	2.9	1.5	4.3	10.8	0.7	1.2	0.2	0.0	0.0	2.6	10.8
26-Sep	0.3	0.1	0.0	0.0	Z	0.0	0.0	0.0	0.9	0.6	0.0	0.0	0.0	0.0	0.0	0.0	0.1	0.1	0.7	3.5	0.9	1.8	0.5	1.5	0.5	3.5
27-Sep	3.9	3.3	2.7	2.9	3.9	Z	4.5	9.7	7.7	6.2	2.6	1.1	0.6	0.5	0.4	1.2	2.2	3.5	5.7	1.9	1.6	1.0	0.6	0.5	3.0	9.7
28-Sep	Z	0.3	0.2	0.1	0.0	0.0	0.0	0.2	0.1	0.0	0.0	0.2	0.1	0.1	0.1	0.1	0.6	5.0	11.1	8.4	7.7	10.1	10.2	6.5	2.7	11.1
29-Sep	4.2	Z	2.5	1.7	1.3	3.3	1.8	3.0	11.5	15.0	15.4	8.0	5.2	8.4	4.3	2.1	5.5	8.2	6.0	3.5	0.8	0.1	0.1	0.0	4.9	15.4
30-Sep	0.0	0.0	Z	0.0	0.0	0.8	6.1	6.3	1.5	0.3	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	1.2	1.6	0.6	0.1	0.0	0.0	0.8	6.3
	2.2	2.4	3.2	4.0	4.9	4.9	4.6	4.4	3.8	3.1	2.9	2.3	1.9	1.8	1.5	1.6	1.9	3.0	4.8	4.0	3.5	3.4	2.5	2.1	Diurnal Average	
	7.6	15.7	15.7	17.5	16.1	15.1	13.4	12.8	12.3	15.0	15.4	12.6	15.2	17.8	14.6	8.4	6.2	8.9	16.0	18.3	9.5	10.4	10.2	9.5	Diurnal Maximum	

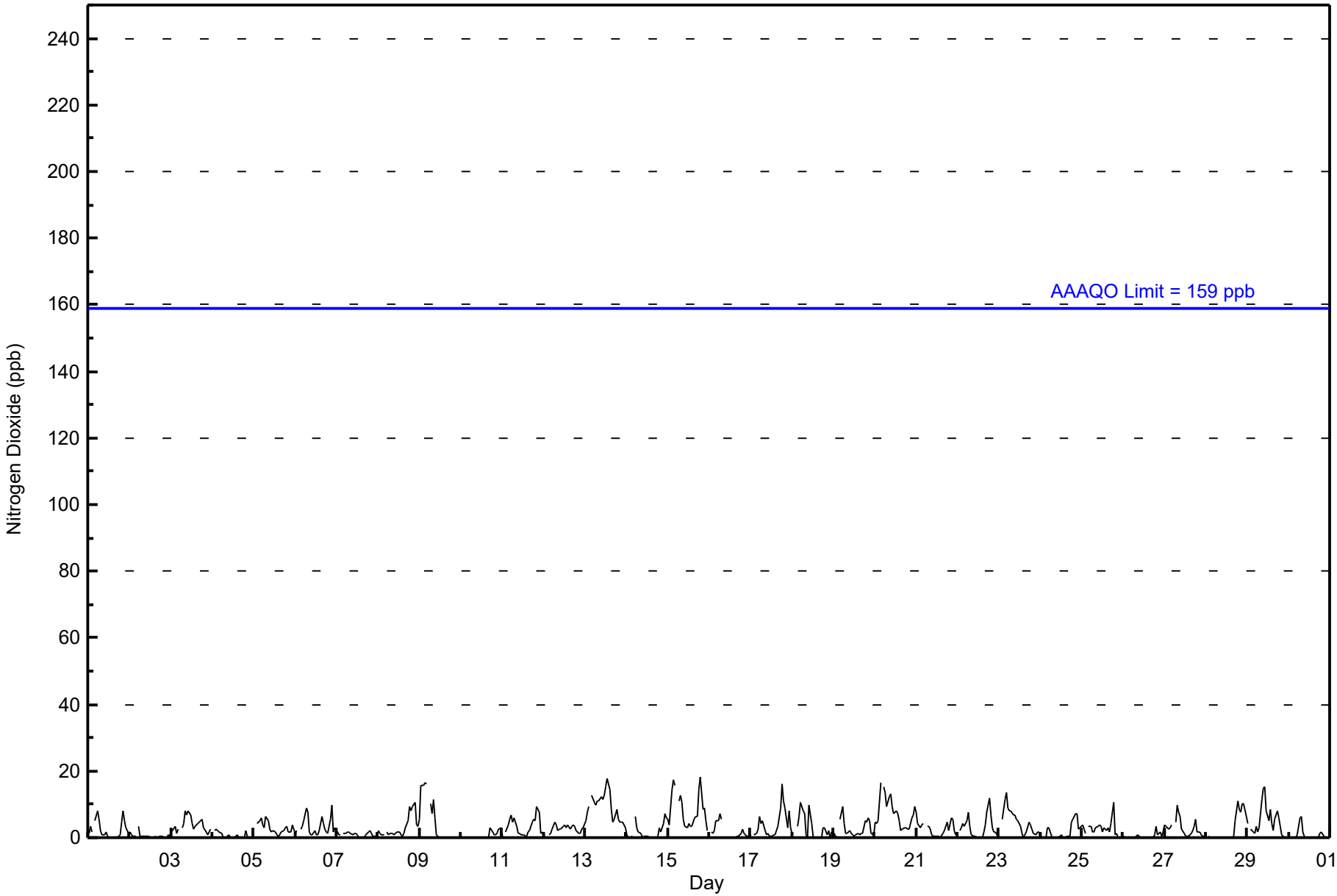
Z - zerospan C - Calibration
Alberta Ambient Air Quality Objectives (AAAQO): 1-hr 159 ppb

Wood Buffalo Environmental Association

Hourly Averages

Nitrogen Dioxide (NO_2) - ppb

Patricia McInnes - September 2024



Nitrogen Dioxide (NO_2) - ppb

Patricia McInnes - September 2024

Concentration Ranges (ppb)	Number of Hours	%	Cumulative %
0 - 20	684	100.00	100.00
21 - 40	0	0.00	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: 684

Total Number of Hours: 720

Wood Buffalo Environmental Association

Frequency Distribution

Nitrogen Dioxide (NO_2) - ppb

Patricia McInnes - September 2024

Concentration Ranges (ppb)	Wind Direction																
	N	NNE	NE	ENE	E	ESE	SE	SSE	S	SSW	SW	WSW	W	WNW	NW	NNW	**Totals**
0 - 20	35	13	5	13	12	30	42	40	58	70	70	72	68	64	51	41	684
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	35	13	5	13	12	30	42	40	58	70	70	72	68	64	51	41	684

Total Number of Valid Hours: 684

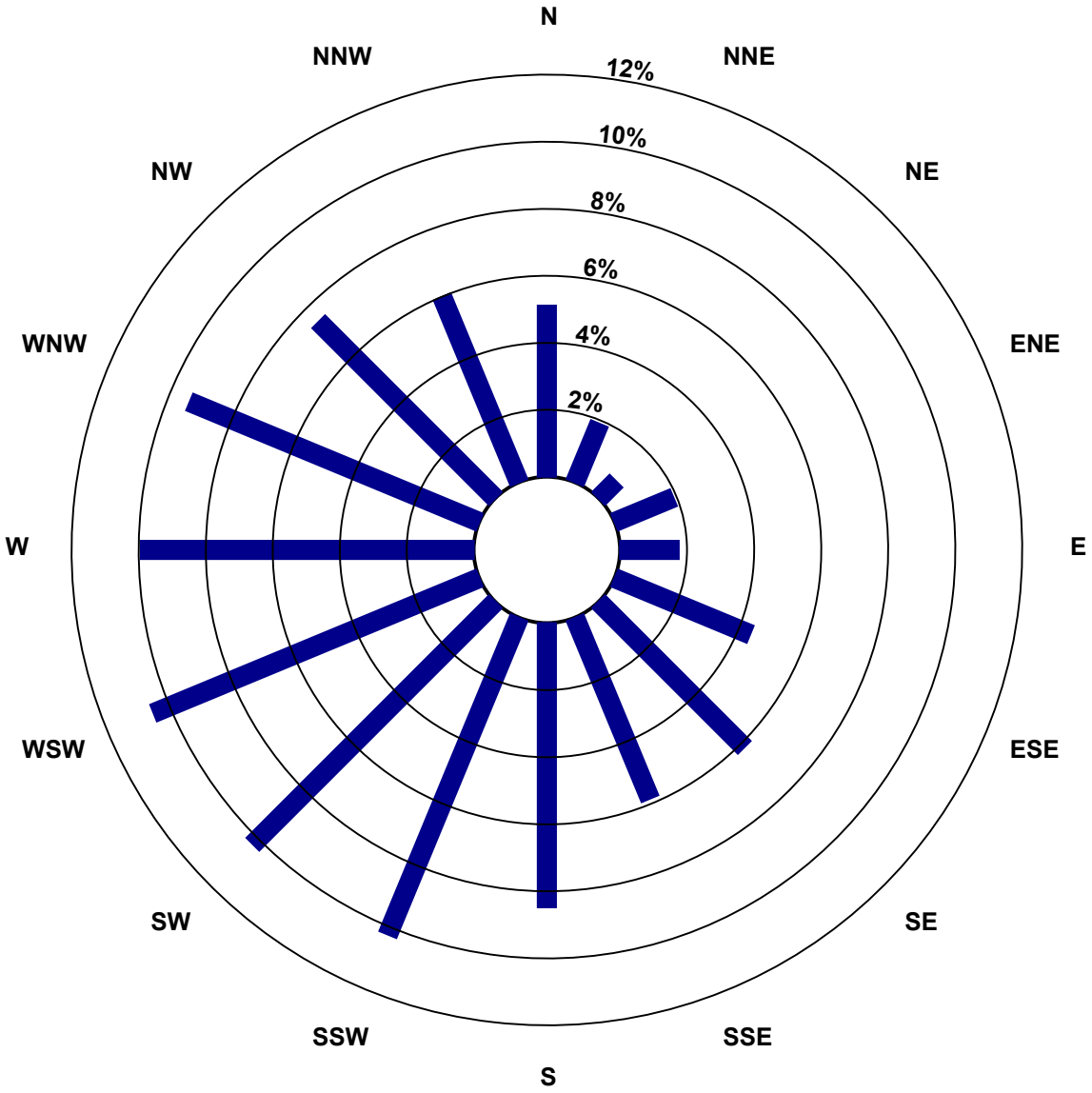
Total Number of Hours: 720

Wood Buffalo Environmental Association

Wind Rose Sep 2024

Nitrogen Dioxide (NO_2) - ppb

Patricia McInnes



Classes (ppb)

0 - 20

21 - 40

11 - 80

81 - 159

> 159

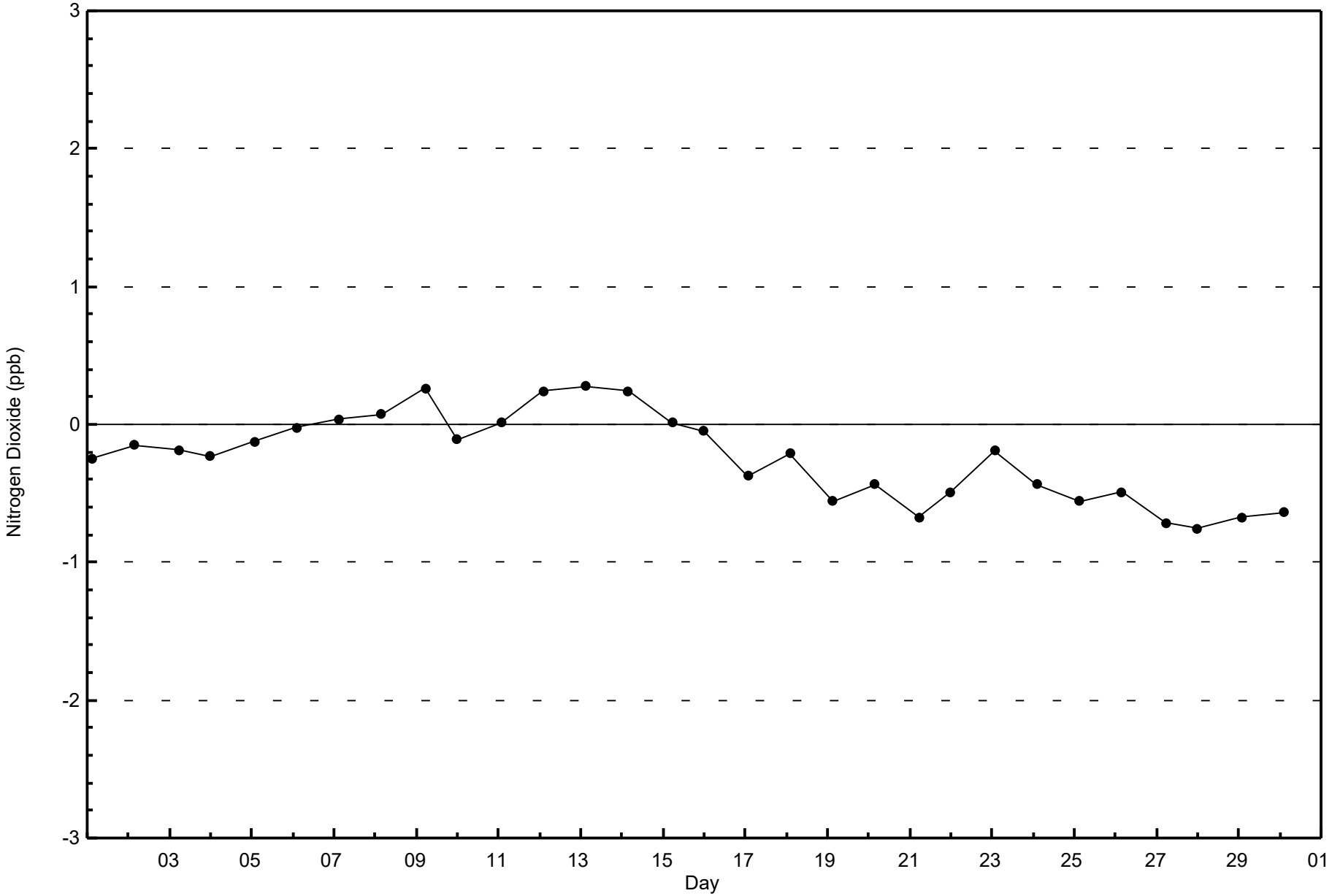
Total Number of Valid Hours: 684

Wood Buffalo Environmental Association

Zero Responses

Nitrogen Dioxide (NO_2) - ppb

Patricia McInnes - September 2024

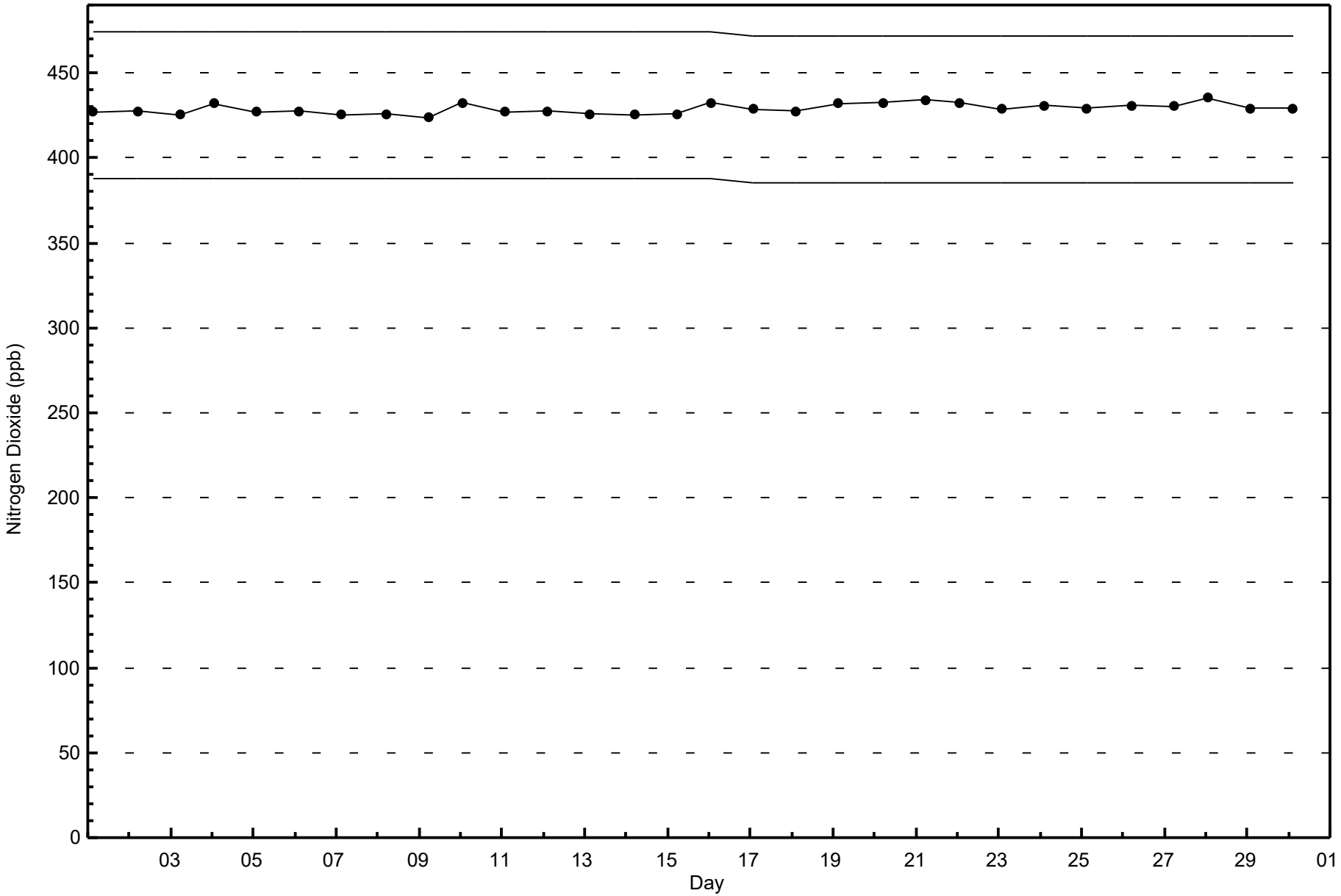


Wood Buffalo Environmental Association

Span Responses

Nitrogen Dioxide (NO_2) - ppb

Patricia McInnes - September 2024



Wood Buffalo Environmental Association

Summary of Hour Averages

Nitrogen Oxides (NO_X) - ppb

Patricia McInnes - September 2024

Maximum Value: 45.3 ppb on Sep 29 10:00

Maximum Daily Average: 13.7 ppb on Sep 13

Minimum Value: 0.0 ppb on Sep 1 15:00

Minimum Daily Average: 0.6 ppb on Sep 26

Maximum Diurnal Average: 7.4 ppb at hour 8

Minimum Diurnal Average: 2.1 ppb at hour 16

Monthly Average: 4.33 ppb

Percentiles: P_1 = 0.0 P_{10} = 0.1 Q_1 = 0.6 Median = 2.2 Q_3 = 5.5 P_{90} = 11.3 P_{99} = 28.5

Hours in Service:	720
Hours of Data:	684
Hours of Missing Data:	36
Hours of Calibration:	36
Percent Operational Time:	100.0

Day	Hourly Period Ending At (MST)																								Daily	Daily
	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24	Average	Maximum
1-Sep	1.3	3.6	1.9	Z	5.3	9.3	6.8	2.7	1.0	1.1	2.5	0.6	0.2	0.2	0.0	0.0	0.0	0.0	0.8	5.5	11.0	5.9	3.3	1.2	2.8	11.0
2-Sep	1.9	0.8	0.7	0.6	Z	4.7	0.9	0.6	0.8	0.3	0.5	0.5	0.0	0.1	0.1	0.4	0.3	0.6	0.6	0.6	0.0	0.3	1.0	0.6	0.7	4.7
3-Sep	1.7	2.1	3.6	1.6	2.5	Z	3.5	5.4	10.3	9.2	11.3	8.4	4.9	3.4	4.6	5.4	6.1	5.7	5.7	3.1	1.8	1.1	1.7	2.8	4.6	11.3
4-Sep	Z	2.1	2.6	2.2	1.7	2.0	0.4	0.1	0.3	1.9	0.9	0.2	0.1	0.0	0.9	0.0	0.0	0.0	0.1	2.6	0.7	0.0	0.0	0.0	0.8	2.6
5-Sep	0.0	Z	4.4	5.2	6.4	4.2	4.5	13.2	9.9	5.3	3.1	3.4	2.1	1.5	0.7	1.4	2.8	3.0	3.7	3.8	2.4	2.1	4.5	2.8	3.9	13.2
6-Sep	1.3	2.0	Z	2.6	3.7	5.4	10.2	9.4	2.6	1.3	0.9	4.8	1.2	1.2	2.2	7.2	4.7	3.0	2.2	1.7	7.1	13.0	1.9	3.0	4.0	13.0
7-Sep	1.9	1.1	1.3	Z	1.6	1.7	2.1	2.8	1.6	1.1	1.3	1.3	0.9	0.2	0.2	0.2	0.2	1.0	1.7	2.9	2.0	0.5	0.4	0.5	1.2	2.9
8-Sep	2.4	1.3	0.9	0.8	Z	1.9	1.1	1.8	2.0	0.9	1.6	2.1	1.8	1.0	0.4	1.6	3.2	6.7	10.5	9.2	12.1	11.8	5.1	3.4	3.6	12.1
9-Sep	5.5	15.8	15.9	16.8	17.2	Z	13.6	9.7	17.7	8.2	1.2	0.1	0.0	0.0	2.1	0.2	0.0	0.0	0.1	0.1	0.3	0.1	0.1	0.0	5.4	17.7
10-Sep	Z	0.1	0.1	0.1	0.2	0.2	0.5	0.3	0.2	0.1	0.2	0.2	0.1	0.1	0.0	0.0	0.2	3.5	2.1	1.0	1.5	2.6	3.8	3.9	0.9	3.9
11-Sep	0.4	Z	2.0	4.5	7.0	11.3	11.1	17.6	7.6	2.4	2.1	1.7	1.8	1.2	1.0	3.0	3.9	6.8	6.9	6.9	13.2	9.8	1.8	2.5	5.5	17.6
12-Sep	0.6	0.6	Z	0.8	1.3	3.3	5.8	4.4	2.3	3.0	3.1	4.0	4.9	3.2	4.9	3.1	4.2	5.5	3.7	2.5	1.2	1.2	2.7	3.0	3.0	5.8
13-Sep	5.2	8.0	10.6	Z	14.7	13.0	15.8	24.6	22.8	21.9	20.6	22.8	26.7	31.6	22.8	10.2	5.5	6.6	9.0	5.8	5.1	4.9	4.8	3.1	13.7	31.6
14-Sep	0.9	0.1	0.2	0.4	Z	8.5	3.8	3.4	2.4	0.2	1.3	0.6	0.4	0.0	0.0	0.0	0.0	0.2	0.6	3.3	2.3	4.2	7.3	6.1	2.0	8.5
15-Sep	5.5	3.9	19.9	43.5	35.4	Z	30.6	25.2	19.5	6.9	5.9	5.2	6.6	4.7	4.7	8.4	8.0	7.6	16.6	22.5	10.6	13.8	5.9	2.4	13.6	43.5
16-Sep	Z	1.9	1.3	2.4	6.2	6.1	9.4	7.5	C	C	C	C	C	C	0.1	0.1	0.7	0.6	1.5	3.2	1.9	0.9	0.5	0.6	--	9.4
17-Sep	1.0	Z	1.0	1.2	3.1	7.9	6.2	9.7	4.3	1.7	2.1	0.9	0.9	1.2	1.4	3.2	4.6	11.2	20.8	21.4	13.7	3.3	8.2	2.9	5.7	21.4
18-Sep	1.3	1.5	Z	3.7	7.8	13.2	10.6	11.3	1.6	0.2	14.4	5.8	0.8	0.1	0.6	0.1	0.0	0.0	3.2	3.8	1.0	2.6	0.2	2.1	3.7	14.4
19-Sep	1.3	0.2	0.7	Z	6.3	12.7	5.6	2.2	2.4	3.8	1.8	1.5	0.8	1.1	1.3	0.9	1.7	1.3	5.7	5.8	7.8	5.5	1.1	0.8	3.2	12.7
20-Sep	6.1	4.6	5.0	19.6	Z	16.5	14.0	10.4	14.6	17.8	11.9	9.1	12.2	10.9	7.9	3.1	3.5	3.3	3.0	3.4	2.8	6.3	7.1	11.3	8.9	19.6
21-Sep	8.5	4.8	3.1	4.5	5.0	Z	5.7	9.2	8.1	2.3	1.4	0.9	0.6	0.7	0.5	1.6	3.1	4.7	5.3	2.8	6.5	6.2	2.5	1.0	3.9	9.2
22-Sep	Z	2.8	3.3	4.9	4.2	5.8	9.5	5.5	1.7	1.3	1.0	0.7	0.6	0.4	0.4	2.9	5.8	9.9	13.8	8.3	3.3	1.9	1.8	0.8	3.9	13.8
23-Sep	0.8	Z	5.7	19.5	29.1	19.6	19.2	16.9	14.3	13.2	12.2	9.9	6.6	1.7	0.5	1.5	2.5	7.0	5.2	3.4	1.4	1.0	1.9	2.2	8.5	29.1
24-Sep	0.2	0.1	Z	0.3	4.1	5.2	0.7	0.4	0.2	0.1	0.5	1.6	1.6	0.4	0.6	0.6	0.5	0.3	5.0	6.6	10.1	9.2	2.8	3.1	2.4	10.1
25-Sep	4.2	2.8	1.2	Z	3.9	4.2	2.4	2.4	3.4	4.3	5.3	4.5	2.4	3.7	3.3	3.7	1.8	4.9	12.5	0.9	1.5	0.4	0.1	0.3	3.2	12.5
26-Sep	0.5	0.2	0.1	0.1	Z	0.0	0.1	0.0	1.0	0.7	0.0	0.0	0.1	0.1	0.1	0.2	0.5	0.4	0.9	4.3	1.0	2.3	0.5	1.5	0.6	4.3
27-Sep	4.1	3.5	2.8	3.0	4.4	Z	5.4	11.3	8.4	7.4	3.2	1.4	0.7	0.6	0.4	1.3	2.5	3.9	7.4	2.2	2.1	1.0	0.6	0.5	3.4	11.3
28-Sep	Z	0.3	0.2	0.1	0.0	0.0	0.0	0.2	0.1	0.0	0.0	0.3	0.3	0.2	0.2	0.1	0.8	5.4	11.7	13.0	12.2	14.0	12.3	7.1	3.4	14.0
29-Sep	4.4	Z	2.9	2.0	1.5	5.8	2.2	4.1	28.4	45.3	39.3	13.6	8.9	13.1	5.0	2.7	5.9	8.7	6.4	3.8	1.0	0.3	0.1	0.0	8.9	45.3
30-Sep	0.1	0.1	Z	0.3	0.3	1.1	8.3	9.1	2.2	0.4	0.1	0.1	0.1	0.0	0.1	0.1	0.0	0.0	1.3	1.9	0.8	0.3	0.0	0.0	1.2	9.1
	2.4	2.6	3.7	5.6	6.9	6.5	7.0	7.4	6.6	5.6	5.2	3.7	3.0	2.9	2.2	2.1	2.4	3.7	5.6	5.2	4.6	4.2	2.8	2.3	Diurnal Average	
	8.5	15.8	19.9	43.5	35.4	19.6	30.6	25.2	28.4	45.3	39.3	22.8	26.7	31.6	22.8	10.2	8.0	11.2	20.8	22.5	13.7	14.0	12.3	11.3	Diurnal Maximum	

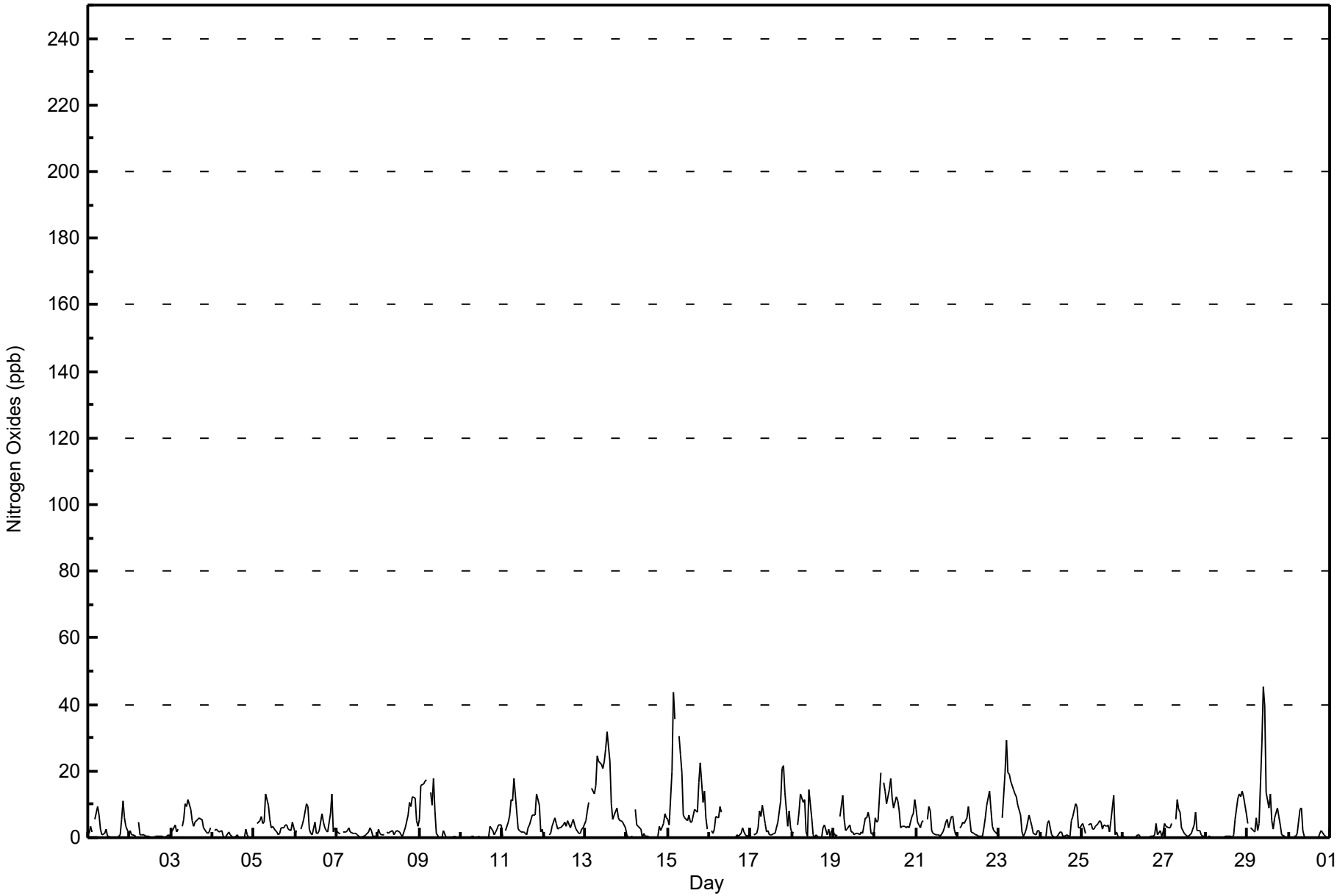
Z - zerospan C - Calibration

Wood Buffalo Environmental Association

Hourly Averages

Nitrogen Oxides (NO_X) - ppb

Patricia McInnes - September 2024



Concentration Ranges (ppb)	Number of Hours	%	Cumulative %
0 - 20	665	97.22	97.22
21 - 40	17	2.49	99.71
11 - 80	2	0.29	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: 720

Nitrogen Oxides (NO_X) - ppb

Patricia McInnes - September 2024

Concentration Ranges (ppb)	Wind Direction																
	N	NNE	NE	ENE	E	ESE	SE	SSE	S	SSW	SW	WSW	W	WNW	NW	NNW	**Totals**
0 - 20	30	11	5	13	12	30	41	40	57	70	69	72	68	63	51	33	665
21 - 40	5	2	0	0	0	0	1	0	1	0	1	0	0	1	0	6	17
11 - 80	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	2	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	35	13	5	13	12	30	42	40	58	70	70	72	68	64	51	41	684

Total Number of Valid Hours: 684

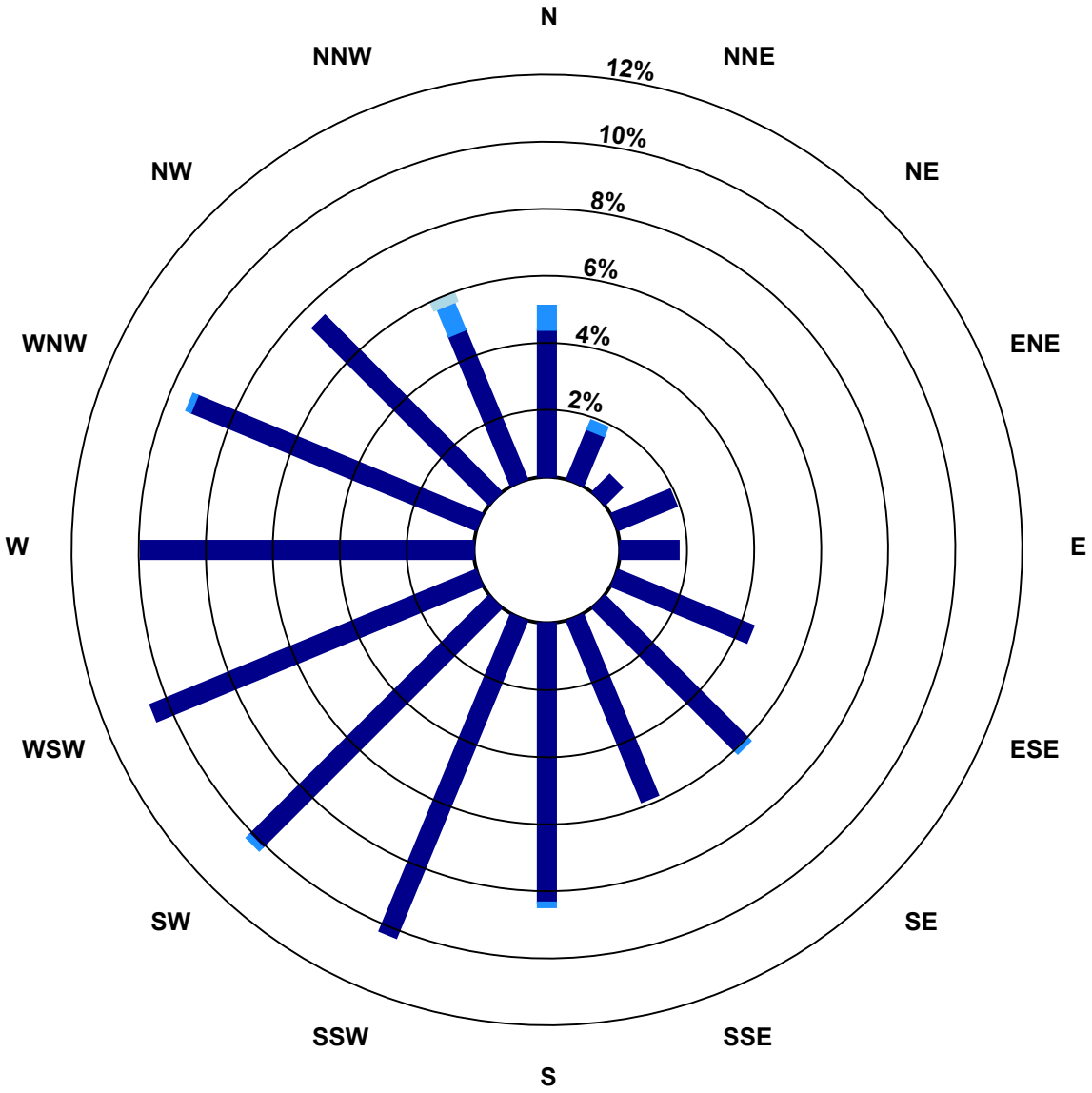
Total Number of Hours: 720

Wood Buffalo Environmental Association

Wind Rose Sep 2024

Nitrogen Oxides (NO_X) - ppb

Patricia McInnes



Classes (ppb)

0 - 20

21 - 40

11 - 80

81 - 159

> 159

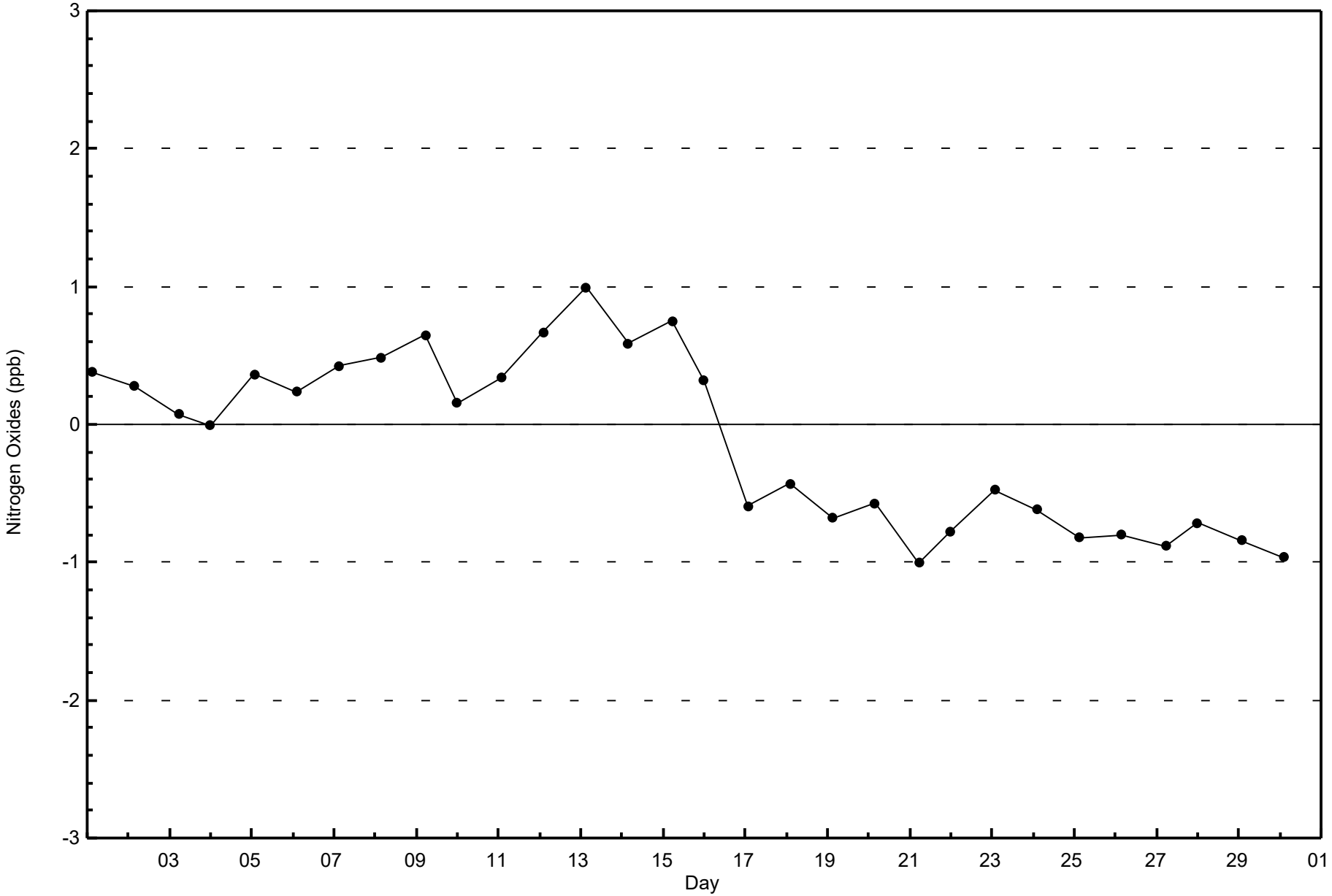
Total Number of Valid Hours: 684

Wood Buffalo Environmental Association

Zero Responses

Nitrogen Oxides (NO_X) - ppb

Patricia McInnes - September 2024

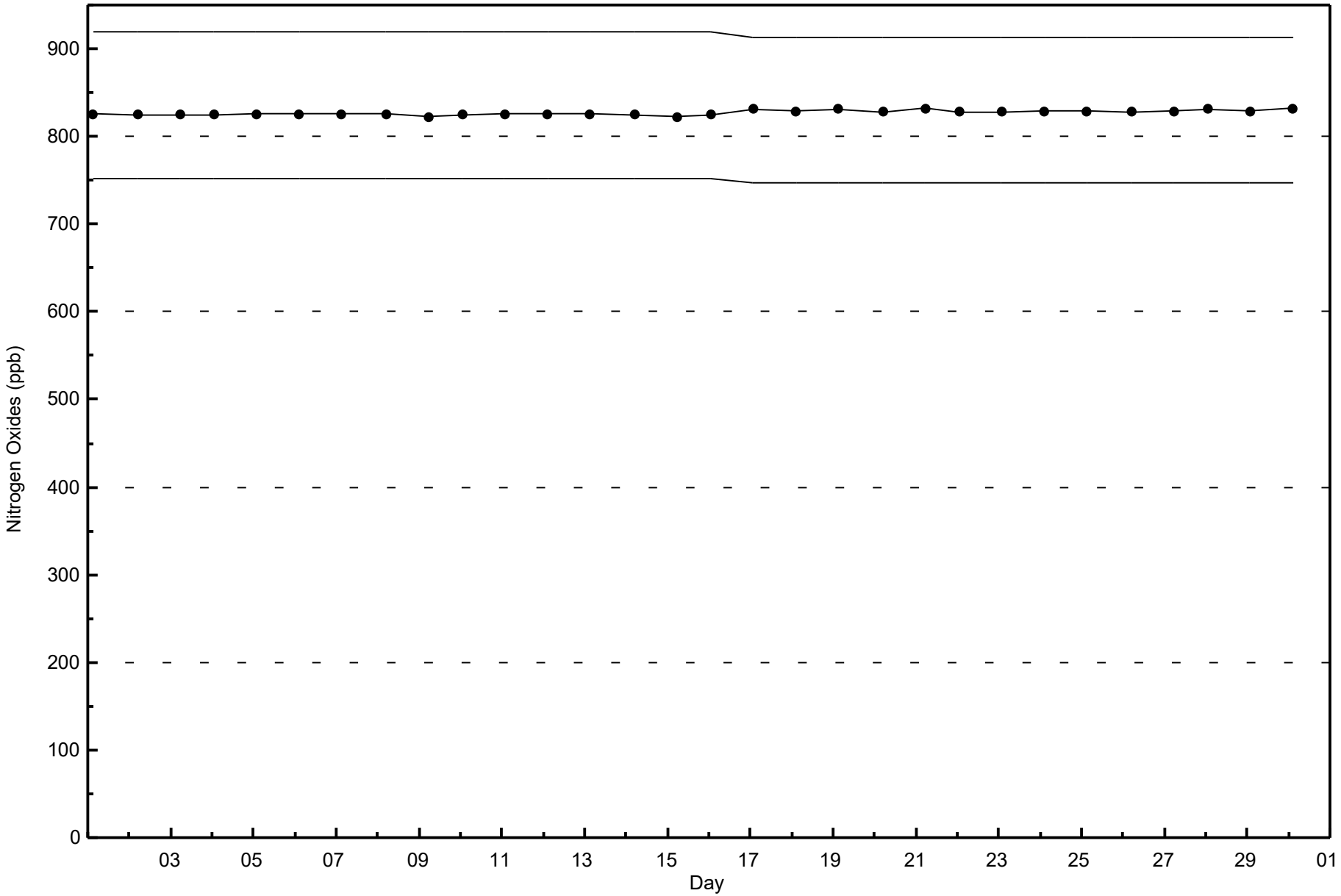


Wood Buffalo Environmental Association

Span Responses

Nitrogen Oxides (NO_X) - ppb

Patricia McInnes - September 2024



Wood Buffalo Environmental Association

Summary of Hour Averages

Ammonia (NH_3) - ppb

Patricia McInnes - September 2024

Number of Exceedences (AAAQO): 1-hr: 0

Maximum Value: 0.0 ppb on Sep 5 04:00

Maximum Daily Average: 0.0 ppb on Sep 5

Minimum Value: 0.0 ppb on Sep 5 04:00

Minimum Daily Average: 0.0 ppb on Sep 5

Maximum Diurnal Average: 0.0 ppb at hour 1

Minimum Diurnal Average: 0.0 ppb at hour 1

Monthly Average: 0.00 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

Hours in Service:	720
Hours of Data:	563
Hours of Missing Data:	157
Hours of Calibration:	43
Percent Operational Time:	84.2

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-Sep	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-Sep	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-Sep	UO	UO	UO	UO	UO	UO	UO	UO	UO	UO	C	C	M	M	M	M	M	M	M	M	M	M	M	M	--	--
4-Sep	M	M	M	M	M	M	M	M	M	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	--	--
5-Sep	Z	RE	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
6-Sep	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
7-Sep	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
8-Sep	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
9-Sep	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
10-Sep	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
11-Sep	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
12-Sep	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
13-Sep	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
14-Sep	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
15-Sep	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
16-Sep	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
17-Sep	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-Sep	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-Sep	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
20-Sep	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
21-Sep	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
22-Sep	0.0	0.0	0.0	0.0	0.0	Z	RE	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
23-Sep	Z	RE	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
24-Sep	0.0	Z	RE	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
25-Sep	0.0	0.0	Z	RE	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
26-Sep	0.0	0.0	0.0	Z	RE	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
27-Sep	0.0	0.0	0.0	0.0	Z	RE	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
28-Sep	0.0	0.0	0.0	0.0	0.0	Z	RE	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
29-Sep	Z	RE	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
30-Sep	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	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	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	0.0	0.0	0.0	0.0	0.0	0.0	0.0	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	

Z - zerospan C - Calibration M - Maintenance UO - Unstable Operation RE - Recovery

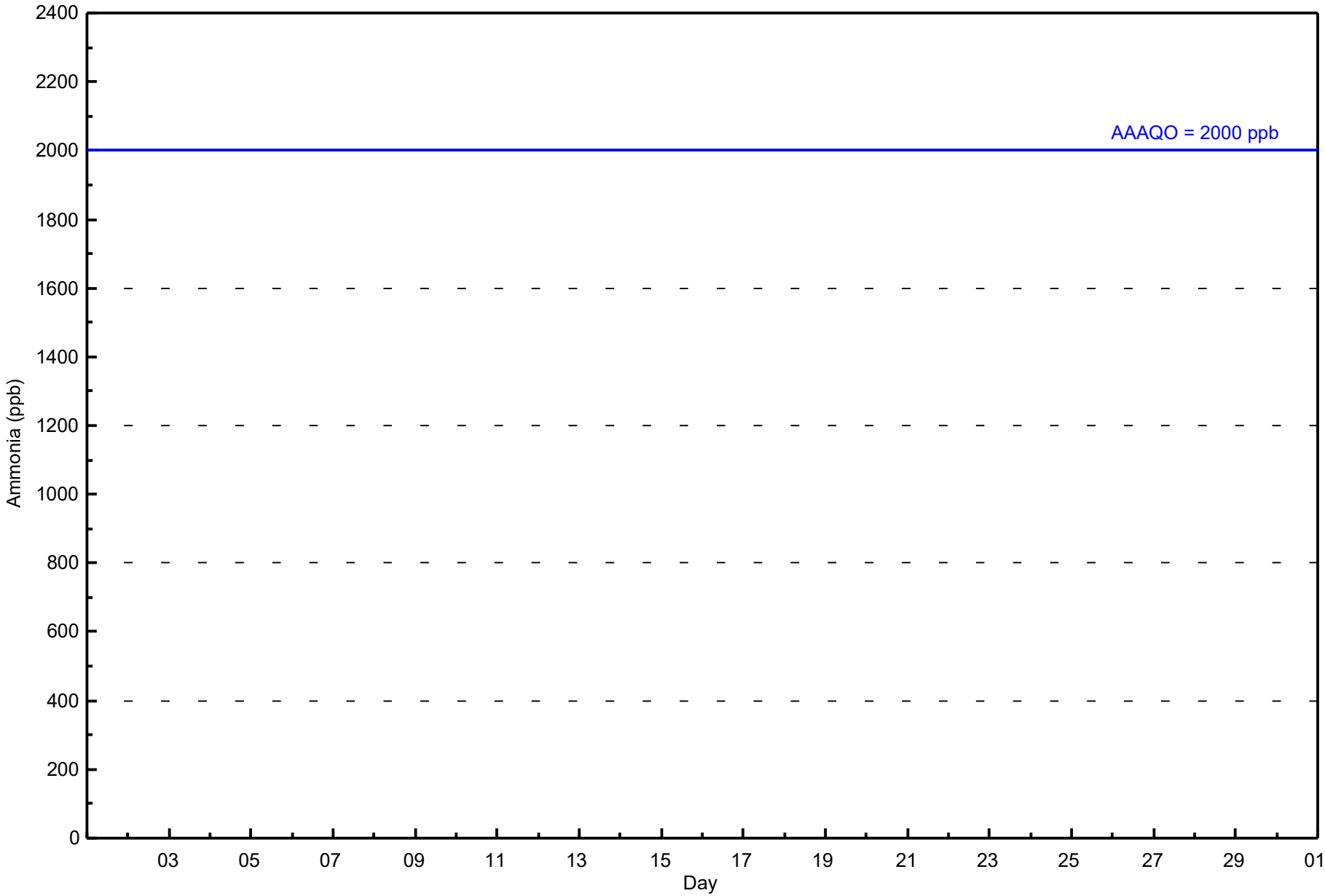
Alberta Ambient Air Quality Objectives (AAAQO): 1-hr 2000 ppb

Wood Buffalo Environmental Association

Hourly Averages

Ammonia (NH_3) - ppb

Patricia McInnes - September 2024



Concentration Ranges (ppb)	Number of Hours	%	Cumulative %
0 - 5	563	100.00	100.00
6 - 10	0	0.00	100.00
11 - 15	0	0.00	100.00
16 - 20	0	0.00	100.00
21 - 25	0	0.00	100.00
> 26	0	0.00	100.00

Total Number of Valid Hours: 563

Total Number of Hours: 720

Concentration Ranges (ppb)	Wind Direction																
	N	NNE	NE	ENE	E	ESE	SE	SSE	S	SSW	SW	WSW	W	WNW	NW	NNW	**Totals**
0 - 5	19	10	3	13	11	29	38	30	49	61	64	53	53	56	40	34	563
6 - 10	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
11 - 15	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
16 - 20	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
21 - 25	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
> 26	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Totals	19	10	3	13	11	29	38	30	49	61	64	53	53	56	40	34	563

Total Number of Valid Hours: 563

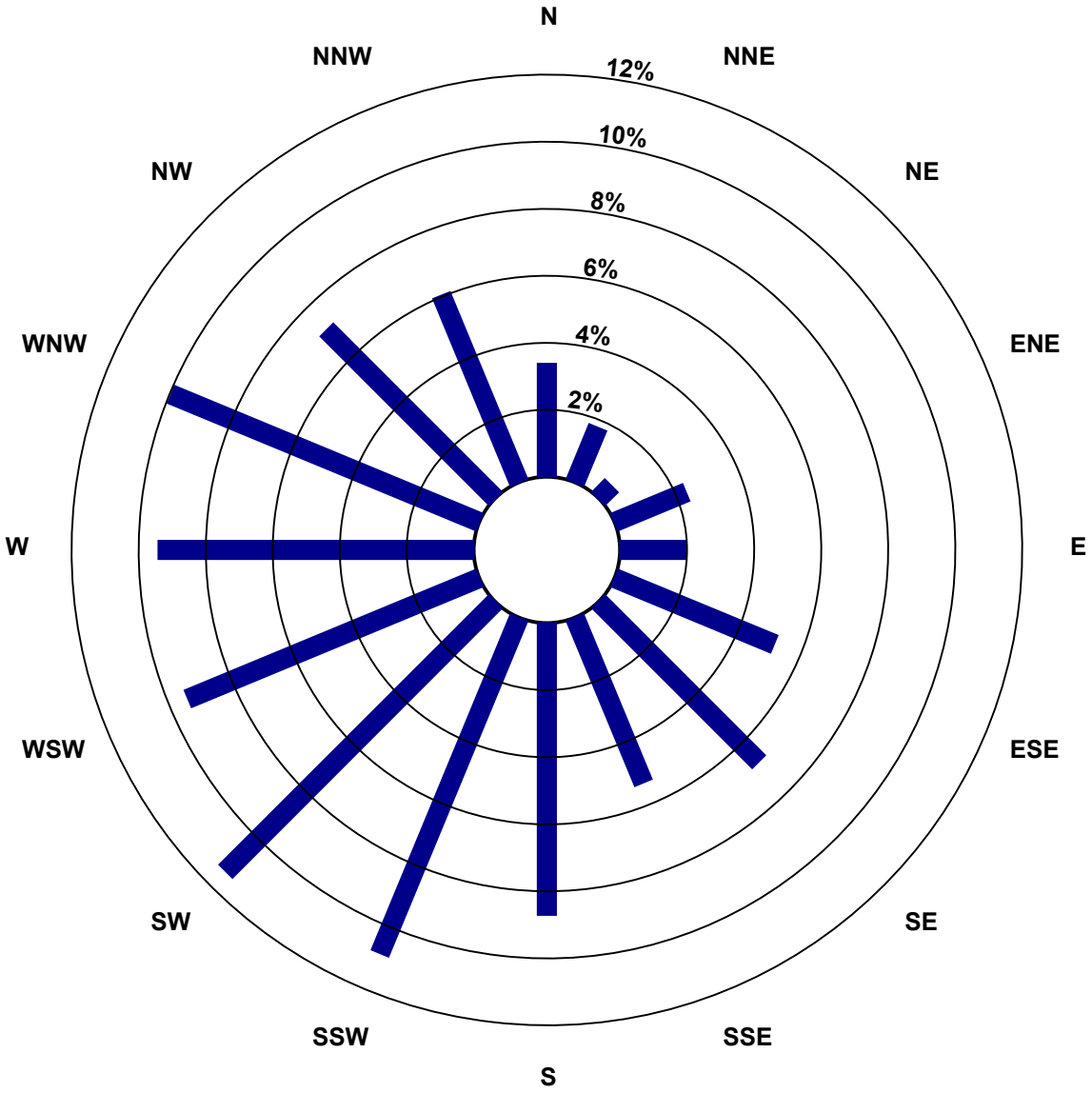
Total Number of Hours: 720

Wood Buffalo Environmental Association

Wind Rose Sep 2024

Ammonia (NH_3) - ppb

Patricia McInnes



Classes (ppb)

0 - 5

6 - 10

11 - 15

16 - 20

21 - 25

> 26

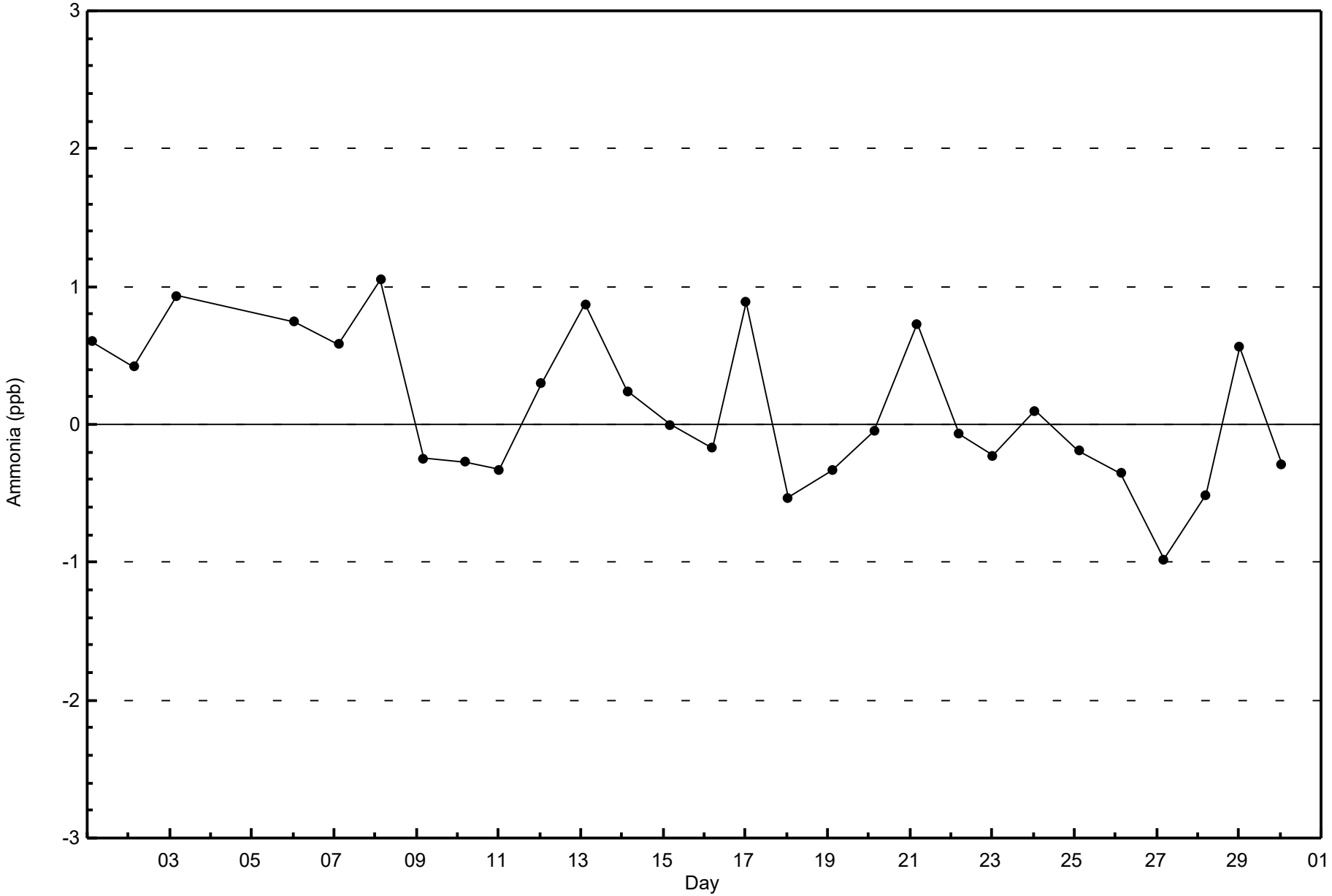
Total Number of Valid Hours: 563

Wood Buffalo Environmental Association

Zero Responses

Ammonia (NH_3) - ppb

Patricia McInnes - September 2024

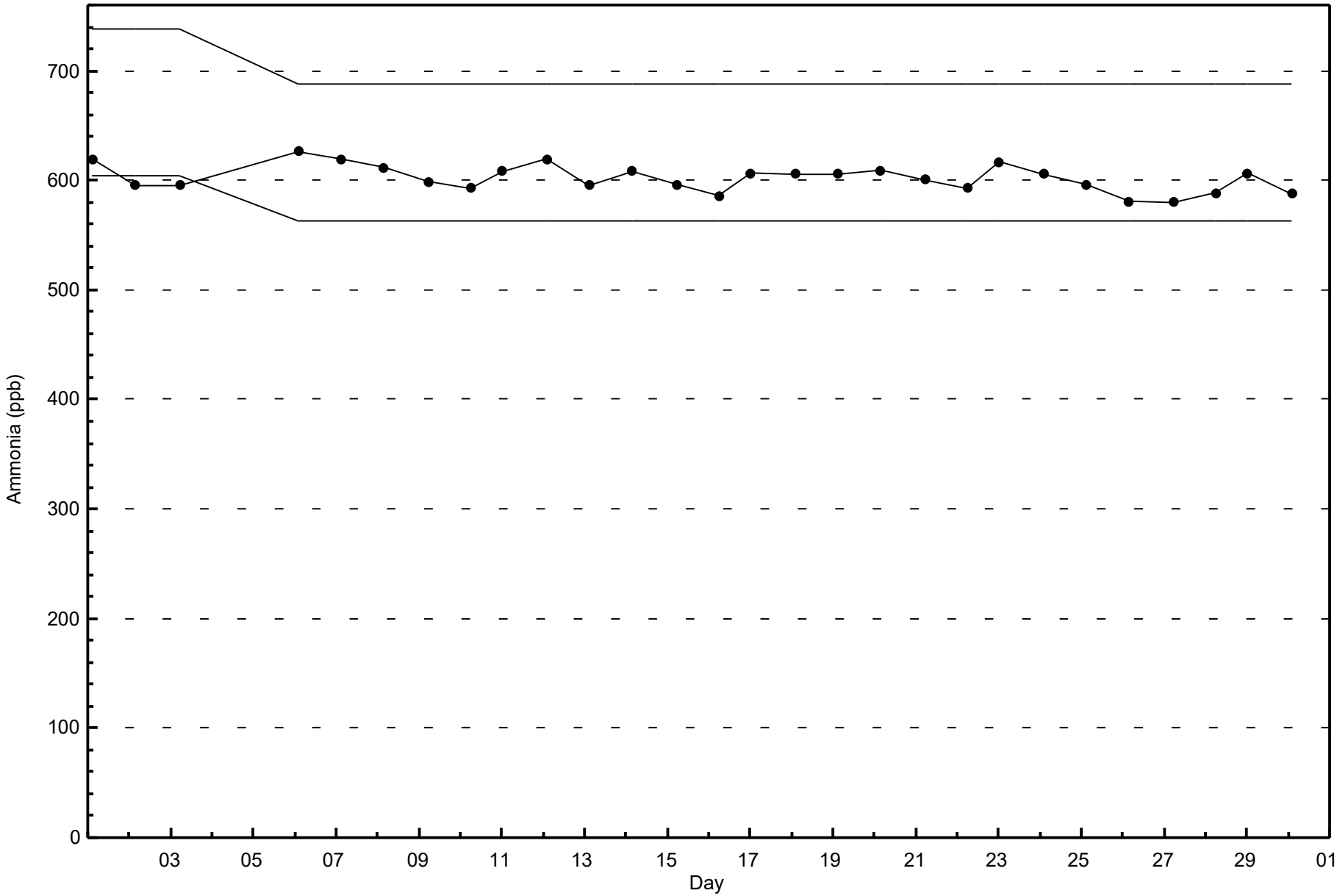


Wood Buffalo Environmental Association

Span Responses

Ammonia (NH_3) - ppb

Patricia McInnes - September 2024



Wood Buffalo Environmental Association

Summary of Hour Averages

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

Patricia McInnes - September 2024

Number of Exceedences (AAAQO): 1-hr: 58 24-hr: 5

Maximum Value: 182.3 $\mu g/m^3$ on Sep 7 12:00

Maximum Daily Average: 104.6 $\mu g/m^3$ on Sep 13

Minimum Value: 0.3 $\mu g/m^3$ on Sep 28 07:00

Minimum Daily Average: 2.2 $\mu g/m^3$ on Sep 27

Maximum Diurnal Average: 26.6 $\mu g/m^3$ at hour 12

Minimum Diurnal Average: 16.8 $\mu g/m^3$ at hour 21

Monthly Average: 20.64 $\mu g/m^3$

Percentiles: P_1 = 0.7 P_{10} = 2.3 Q_1 = 3.7 Median = 7.5 Q_3 = 15.8 P_{90} = 60.3 P_{99} = 140.6

Hours in Service:	720
Hours of Data:	718
Hours of Missing Data:	2
Hours of Calibration:	2
Percent Operational Time:	100.0

Day	Hourly Period Ending At (MST)																								Daily	Daily
	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24	Average	Maximum
1-Sep	15.4	15.6	13.9	14.3	13.8	12.7	12.0	7.2	5.5	5.8	7.1	4.9	4.3	5.1	5.0	4.2	4.6	8.0	12.7	19.2	21.2	29.4	21.6	17.5	11.7	29.4
2-Sep	19.6	14.7	13.7	12.4	13.9	15.2	13.6	10.8	9.1	8.3	7.6	6.8	6.8	6.3	6.9	7.2	9.0	7.9	9.4	11.8	15.3	18.7	38.3	19.0	12.6	38.3
3-Sep	14.8	10.8	11.3	8.7	11.0	16.2	24.6	27.3	25.6	24.2	22.5	20.4	12.8	10.0	10.3	12.7	14.7	12.7	13.8	12.7	9.8	9.0	8.7	11.2	14.8	27.3
4-Sep	10.4	8.9	8.4	8.0	7.1	6.8	7.3	7.1	7.6	8.1	7.4	11.5	11.3	7.8	7.1	7.0	5.4	5.4	7.6	7.0	4.3	3.7	3.1	2.7	7.1	11.5
5-Sep	2.7	5.8	8.3	8.8	9.2	7.5	8.3	12.1	11.5	9.3	7.2	7.8	7.8	13.5	12.9	12.7	13.7	10.9	12.4	10.2	8.4	6.9	9.3	23.8	10.0	23.8
6-Sep	28.6	38.0	26.8	25.4	13.3	8.8	11.9	8.0	8.0	10.8	15.0	14.5	C	C	11.1	12.7	14.4	12.7	13.3	20.5	21.3	33.7	45.7	57.4	20.5	57.4
7-Sep	54.5	58.1	63.2	79.1	86.7	91.1	95.4	101.4	125.3	152.5	166.2	182.3	149.6	87.4	71.4	49.5	36.0	45.8	52.0	49.3	44.0	50.3	67.7	91.2	85.4	182.3
8-Sep	92.5	102.7	111.5	120.4	128.0	126.8	128.2	129.7	113.1	111.3	117.7	115.1	99.6	76.6	54.0	47.9	69.2	64.8	83.7	57.5	53.4	49.7	46.3	46.5	89.4	129.7
9-Sep	47.5	59.6	60.7	63.7	47.9	40.2	36.3	44.1	57.0	48.7	32.7	34.5	24.7	13.6	4.5	3.4	2.5	3.3	17.1	11.3	6.7	14.2	28.1	27.4	30.4	63.7
10-Sep	24.2	21.2	17.0	13.3	11.5	11.5	11.3	11.4	12.1	12.0	9.5	9.2	21.0	14.5	9.9	9.8	12.6	10.7	5.0	4.9	6.3	6.9	7.3	7.2	11.7	24.2
11-Sep	7.1	7.9	7.6	7.9	8.9	6.9	7.0	7.4	11.2	13.6	17.7	13.6	7.4	6.8	6.8	5.8	5.4	6.1	8.0	17.6	24.0	38.5	38.7	40.1	13.4	40.1
12-Sep	36.4	31.3	29.7	35.1	60.1	66.6	78.5	63.1	57.8	71.3	103.2	143.9	135.6	137.9	141.9	139.0	143.6	140.9	134.3	129.4	126.0	123.6	123.5	107.2	98.3	143.9
13-Sep	109.1	117.1	117.3	123.6	112.4	109.9	111.6	114.0	122.8	130.1	132.9	135.7	128.9	122.0	124.7	120.8	110.5	91.6	83.3	66.6	59.6	59.4	59.8	46.9	104.6	135.7
14-Sep	46.0	45.2	33.9	27.8	26.6	28.7	25.8	29.2	27.2	18.0	23.5	27.9	36.1	39.2	24.6	16.0	11.7	13.4	12.7	13.4	13.6	17.3	26.2	24.8	25.4	46.0
15-Sep	18.7	18.5	23.9	24.9	20.6	19.0	18.3	15.9	13.8	9.1	6.8	6.5	7.5	9.5	10.8	12.7	14.3	13.4	15.9	23.9	16.8	16.9	17.1	14.3	15.4	24.9
16-Sep	12.2	11.4	9.7	9.7	8.9	7.0	6.2	5.1	4.0	3.1	3.2	3.1	2.6	2.1	2.3	2.0	1.8	1.8	1.7	2.5	2.6	2.8	2.7	2.8	4.6	12.2
17-Sep	2.8	2.9	3.2	3.2	3.4	3.6	3.8	4.0	3.7	4.1	3.9	3.6	3.4	3.3	3.4	4.1	3.7	3.8	5.7	6.6	6.2	5.7	6.1	4.9	4.1	6.6
18-Sep	4.5	4.1	4.0	4.2	4.4	4.7	4.7	5.6	3.7	3.1	5.0	4.1	6.4	6.0	6.7	8.3	11.8	13.6	12.9	11.8	8.8	7.5	6.2	6.2	6.6	13.6
19-Sep	6.1	5.9	5.5	5.6	6.3	7.8	7.3	6.5	7.3	8.3	7.8	7.0	6.3	6.7	8.4	8.7	8.4	6.6	6.9	6.6	13.2	7.9	6.3	6.4	7.2	13.2
20-Sep	8.6	9.0	10.4	12.0	12.3	12.1	10.1	9.0	12.2	12.2	6.6	6.5	9.0	9.7	9.2	8.2	7.4	6.3	6.5	6.3	5.5	5.4	5.3	7.6	8.7	12.3
21-Sep	8.0	5.7	4.1	3.8	3.7	3.6	2.7	2.4	3.3	3.5	4.5	5.0	6.7	6.4	5.5	5.3	5.5	6.3	7.3	6.3	6.6	7.2	6.0	6.2	5.2	8.0
22-Sep	8.0	6.6	6.5	8.7	10.2	9.6	5.6	5.1	4.3	4.1	3.7	3.3	2.9	2.4	2.1	2.8	3.8	4.8	5.3	4.3	3.2	3.7	3.2	2.4	4.9	10.2
23-Sep	2.3	3.2	4.1	5.4	5.3	3.9	3.6	4.2	5.7	9.3	9.2	9.1	7.4	6.1	3.2	2.9	3.0	4.1	3.8	3.1	2.9	4.4	6.5	3.2	4.8	9.3
24-Sep	2.7	2.5	2.4	2.5	2.4	2.3	1.8	1.5	1.2	1.0	1.0	1.1	1.1	1.2	1.2	1.1	1.0	0.9	2.0	5.9	6.6	4.1	3.9	4.2	2.3	6.6
25-Sep	3.0	2.6	2.5	2.6	2.9	2.8	3.0	3.2	2.8	2.6	2.3	2.1	2.3	2.3	2.4	2.3	2.3	2.7	4.0	2.0	2.1	1.9	1.8	1.6	2.5	4.0
26-Sep	1.6	1.8	1.8	2.2	5.2	6.7	8.3	5.6	5.0	7.5	9.4	8.8	5.5	5.7	6.0	10.1	6.1	2.4	2.3	2.2	2.5	2.6	1.8	1.8	4.7	10.1
27-Sep	2.9	2.6	3.7	2.5	2.3	2.4	2.4	2.8	2.5	2.2	1.9	1.4	1.5	1.5	1.4	1.7	1.9	2.3	3.5	2.4	3.1	1.4	1.3	1.1	2.2	3.7
28-Sep	0.7	0.8	0.7	0.7	0.6	0.5	0.3	0.5	0.7	0.6	0.6	0.7	0.8	1.2	1.9	1.9	2.4	5.3	8.1	8.0	6.0	8.5	9.4	5.9	2.8	9.4
29-Sep	4.6	3.6	2.9	2.7	2.5	3.2	2.5	2.5	6.0	5.5	5.3	3.9	3.1	4.2	3.3	3.0	4.0	4.9	5.7	4.0	3.2	2.8	2.8	2.5	3.7	6.0
30-Sep	2.4	2.4	2.6	3.4	4.6	7.1	7.7	11.2	11.3	12.9	9.0	3.0	1.9	1.7	1.5	1.3	1.1	1.0	1.4	1.3	1.4	1.3	1.2	1.3	3.9	12.9
	19.9	20.7	20.4	21.4	21.5	21.5	22.0	21.9	22.7	23.8	25.0	26.6	24.6	21.1	18.7	17.5	17.7	17.2	18.6	17.6	16.8	18.2	20.2	19.8	Diurnal Average	
	109.1	117.1	117.3	123.6	128.0	126.8	128.2	129.7	125.3	152.5	166.2	182.3	149.6	137.9	141.9	139.0	143.6	140.9	134.3	129.4	126.0	123.6	123.5	107.2	Diurnal Maximum	

C - Calibration

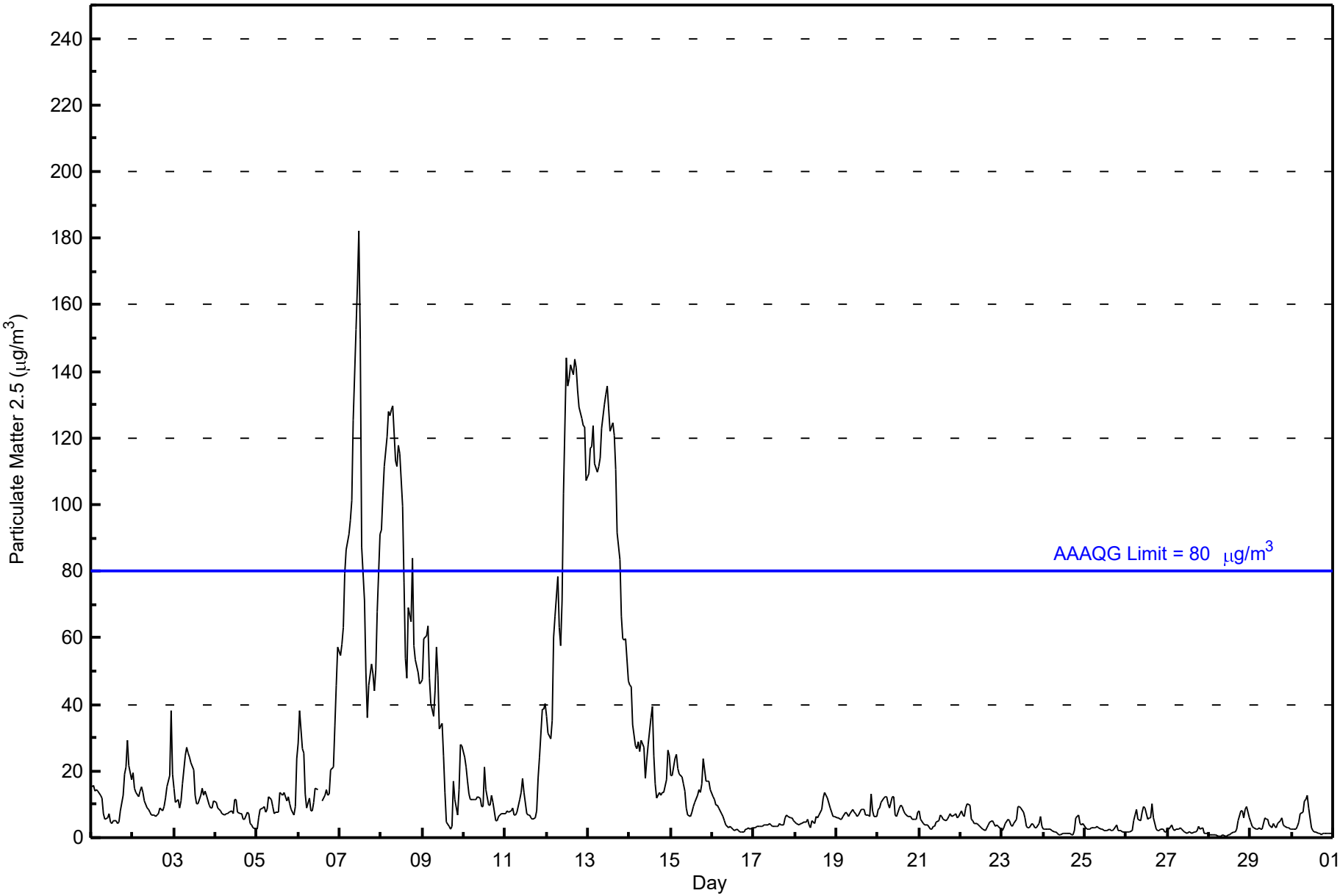
Alberta Ambient Air Quality Guideline/Objectives: 1-hr 80 $\mu g/m^3$ 24-hr 29 $\mu g/m^3$

Wood Buffalo Environmental Association

Hourly Averages

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

Patricia McInnes - September 2024



Concentration Ranges ($\mu g/m^3$)	Number of Hours	%	Cumulative %
0 - 5	255	35.52	35.52
6 - 15	282	39.28	74.79
16 - 25	45	6.27	81.06
26 - 80	78	10.86	91.92
> 81.0	58	8.08	100.00

Total Number of Valid Hours: 718

Total Number of Hours: 720

Wood Buffalo Environmental Association

Frequency Distribution

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

Patricia McInnes - September 2024

Concentration Ranges ($\mu g/m^3$)	Wind Direction																
	N	NNE	NE	ENE	E	ESE	SE	SSE	S	SSW	SW	WSW	W	WNW	NW	NNW	**Totals**
0 - 5	4	3	0	3	3	8	9	12	31	27	31	42	34	24	15	9	255
6 - 15	18	5	4	1	7	12	26	20	21	27	23	26	24	32	27	9	282
16 - 25	7	0	0	0	0	3	3	2	2	3	5	1	9	2	0	8	45
26 - 80	3	3	0	3	2	6	9	2	1	9	14	4	2	9	8	3	78
> 81.0	3	2	1	6	1	1	1	6	4	8	2	3	0	0	4	16	58
Totals	35	13	5	13	13	30	48	42	59	74	75	76	69	67	54	45	718

Total Number of Valid Hours: 718

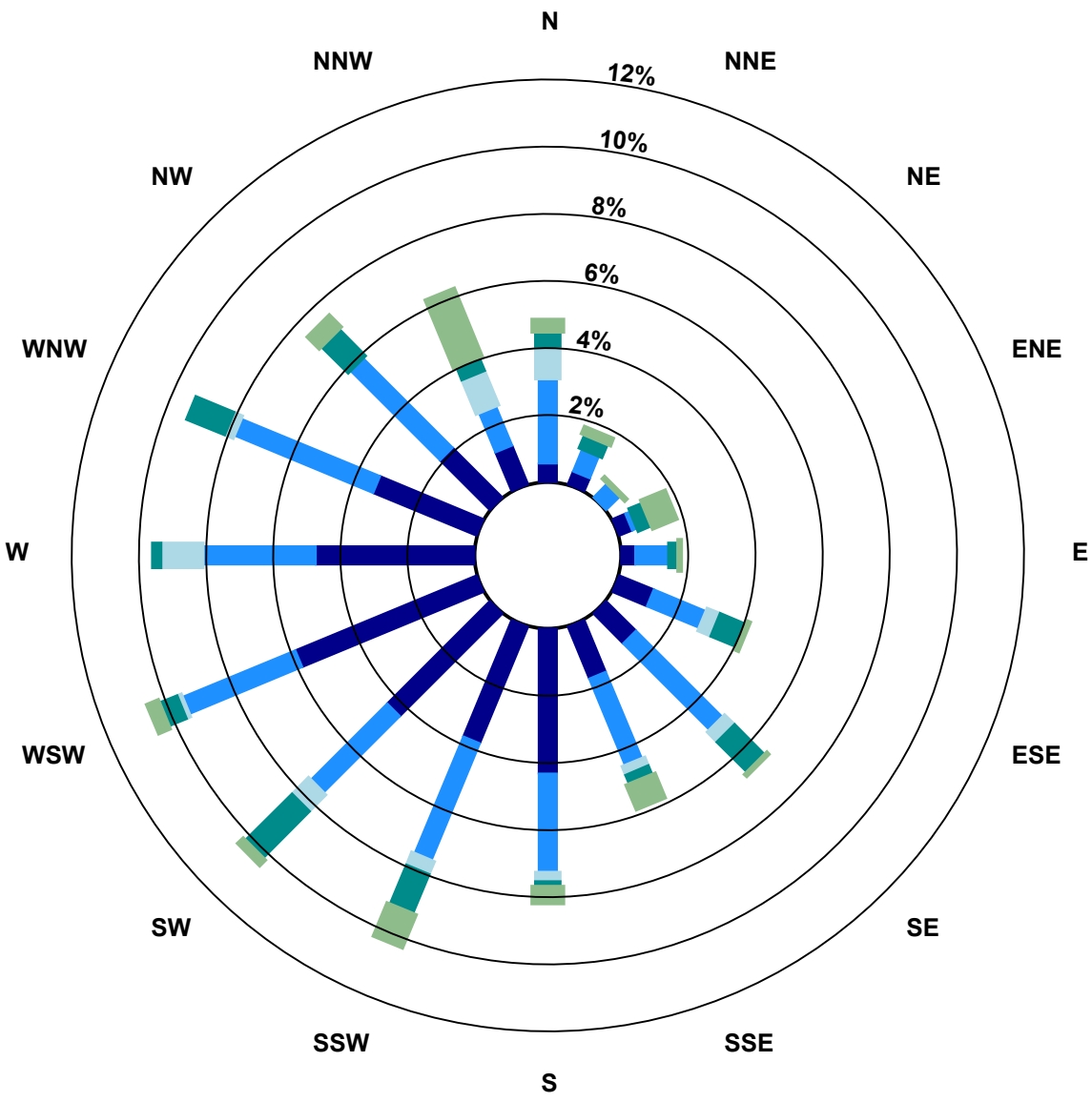
Total Number of Hours: 720

Wood Buffalo Environmental Association

Wind Rose Sep 2024

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

Patricia McInnes



Classes ($\mu g/m^3$)

0 - 5

6 - 15

16 - 25

26 - 80

> 81.0

Total Number of Valid Hours: 718

Maximum Value: 30.9 C on Sep 2 16:00

Maximum Daily Average: 21.3 C on Sep 2

Minimum Value: 0.2 C on Sep 21 06:00

Minimum Daily Average: 7.5 C on Sep 30

Maximum Diurnal Average: 18.7 C at hour 16

Minimum Diurnal Average: 7.8 C at hour 7

Monthly Average: 12.91 C

Percentiles: P_1 = 1.6 P_{10} = 6.7 Q_1 = 9.0 Median = 12.0 Q_3 = 16.1 P_{90} = 20.4 P_{99} = 28.9

Hours in Service:	720
Hours of Data:	720
Hours of Missing Data:	0
Hours of Calibration:	0
Percent Operational Time:	100.0

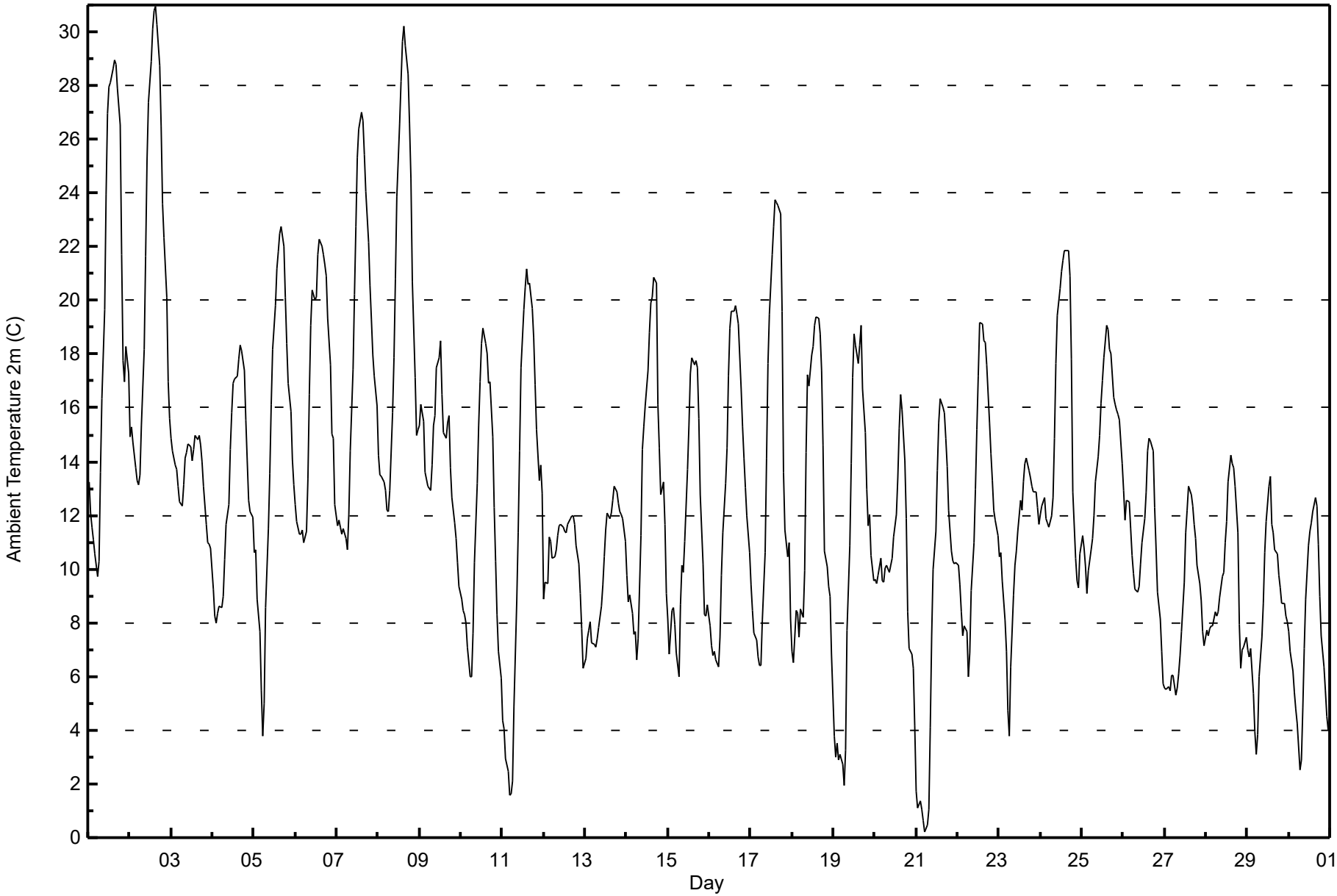
Day	Hourly Period Ending At (MST)																								Daily	Daily
	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24	Average	Maximum
1-Sep	13.2	12.1	11.6	11.1	10.5	9.7	10.3	13.6	16.3	19.7	24.0	26.9	27.9	28.1	28.6	28.9	28.8	27.9	26.5	21.7	17.8	17.0	18.3	17.3	19.5	28.9
2-Sep	14.9	15.3	14.7	13.8	13.3	13.2	13.5	15.3	18.2	21.7	25.2	27.4	28.9	30.1	30.8	30.9	30.3	28.7	26.5	23.6	22.3	20.1	17.0	15.6	21.3	30.9
3-Sep	14.9	14.4	13.9	13.7	13.1	12.5	12.4	13.1	14.1	14.4	14.7	14.5	14.0	14.4	15.0	14.8	14.9	14.6	14.0	13.1	11.7	11.0	10.9	10.8	13.5	15.0
4-Sep	9.2	8.2	8.0	8.4	8.6	8.6	9.0	10.3	11.7	12.4	14.4	15.8	16.9	17.1	17.2	17.8	18.4	18.1	17.4	15.6	14.0	12.6	12.2	11.9	13.1	18.4
5-Sep	10.6	10.7	8.9	7.6	5.5	3.8	5.0	8.6	11.5	13.5	16.1	18.2	19.8	21.2	21.8	22.5	22.7	22.0	20.1	18.4	16.9	15.9	14.1	13.1	14.5	22.7
6-Sep	12.4	11.8	11.3	11.3	11.4	11.0	11.4	13.4	16.5	19.1	20.4	20.0	20.1	21.7	22.3	22.0	21.7	21.4	20.9	19.4	17.6	15.0	14.9	12.4	16.6	22.3
7-Sep	11.6	11.8	11.6	11.3	11.5	11.1	10.7	12.0	14.4	17.5	20.2	22.7	25.3	26.4	27.0	26.7	25.5	24.1	22.2	20.5	19.3	18.0	17.2	16.1	18.1	27.0
8-Sep	14.2	13.5	13.5	13.2	12.9	12.2	12.1	12.9	15.8	17.9	20.8	23.9	26.6	28.2	29.6	30.2	29.5	28.4	26.6	24.6	20.7	17.1	15.0	15.2	19.8	30.2
9-Sep	15.3	16.2	15.5	13.6	13.3	13.1	12.9	13.9	15.3	15.7	17.5	17.9	18.5	16.5	15.1	14.9	15.5	15.7	13.8	12.6	11.7	11.1	10.2	9.4	14.4	18.5
10-Sep	8.9	8.5	8.3	8.0	7.1	6.0	6.0	7.6	10.2	13.2	15.4	17.0	18.4	19.0	18.4	18.0	16.9	16.9	14.9	12.3	10.3	8.3	6.9	5.9	11.8	19.0
11-Sep	4.4	4.0	2.9	2.5	1.6	1.6	2.1	4.9	8.8	11.4	14.4	17.5	19.7	20.5	21.2	20.6	20.6	19.7	18.6	16.8	15.2	13.3	13.9	12.8	12.0	21.2
12-Sep	8.9	9.5	9.4	11.2	11.0	10.4	10.5	10.7	11.3	11.6	11.7	11.6	11.4	11.4	11.6	11.9	12.0	12.0	11.6	10.9	10.2	9.1	7.8	6.3	10.6	12.0
13-Sep	6.7	7.4	7.7	8.0	7.3	7.2	7.1	7.4	7.8	8.6	9.4	10.4	11.4	12.1	11.9	12.1	12.5	13.1	12.9	12.4	12.2	12.0	11.9	11.0	10.0	13.1
14-Sep	9.8	8.8	9.0	8.3	7.6	7.7	6.6	7.4	11.2	14.5	15.3	16.1	17.4	18.8	19.9	20.1	20.8	20.7	16.1	14.5	12.8	13.3	11.6	9.1	13.2	20.8
15-Sep	8.1	6.8	8.5	8.6	7.9	6.9	6.0	8.7	10.1	9.9	11.1	13.7	15.4	17.3	17.9	17.6	17.7	17.5	15.6	12.8	10.2	8.3	8.3	8.7	11.4	17.9
16-Sep	7.9	7.1	6.8	7.0	6.6	6.3	7.4	9.8	11.4	13.2	14.5	17.2	19.0	19.6	19.6	19.8	19.5	19.1	16.7	15.3	14.1	13.0	12.0	10.6	13.1	19.8
17-Sep	9.4	8.5	7.6	7.4	6.7	6.4	6.4	8.1	10.6	14.1	17.6	19.5	21.7	22.7	23.8	23.6	23.5	23.2	19.6	13.6	11.4	10.4	11.0	8.2	14.0	23.8
18-Sep	7.0	6.5	8.5	8.4	7.4	8.5	8.2	9.9	14.3	17.2	16.8	18.0	18.3	19.1	19.4	19.4	18.7	17.4	14.6	10.7	10.1	9.3	9.0	6.8	12.6	19.4
19-Sep	3.8	3.0	3.5	2.9	3.1	2.7	1.9	3.3	7.7	10.9	13.9	17.1	18.8	18.3	17.7	18.3	19.1	16.7	15.1	13.0	11.6	12.0	10.5	9.6	10.6	19.1
20-Sep	9.6	9.5	9.8	10.4	9.6	9.5	10.1	10.1	9.9	10.1	10.4	11.2	12.0	13.4	15.2	16.5	15.9	14.0	11.9	8.4	7.1	6.8	6.3	4.2	10.5	16.5
21-Sep	1.7	1.1	1.4	1.0	0.6	0.2	0.5	1.1	4.1	7.5	10.0	11.4	13.7	15.5	16.4	16.0	15.8	14.9	13.8	12.2	10.6	10.3	10.2	10.2	8.3	16.4
22-Sep	10.1	9.4	8.4	7.5	7.9	7.7	6.0	6.9	9.2	11.0	13.0	15.2	17.2	19.2	19.1	18.5	18.4	17.6	15.5	14.3	13.3	12.2	11.8	11.3	12.5	19.2
23-Sep	10.5	10.6	9.6	8.1	7.0	4.7	3.8	6.3	9.0	10.1	10.7	11.4	12.5	12.2	13.2	13.9	14.2	13.7	13.4	13.1	12.9	12.9	12.3	11.7	10.7	14.2
24-Sep	12.0	12.3	12.6	11.9	11.7	11.5	12.0	12.7	14.9	17.6	19.4	20.4	21.1	21.5	21.9	21.8	21.9	20.9	17.8	12.9	10.4	9.6	9.3	10.5	15.4	21.9
25-Sep	11.2	10.8	10.1	9.1	9.9	10.7	11.1	12.0	13.2	14.2	15.0	16.2	17.0	17.9	19.1	18.9	18.2	18.0	16.4	16.1	15.9	15.7	15.5	13.9	14.4	19.1
26-Sep	12.9	11.8	12.6	12.5	11.5	10.5	9.8	9.2	9.1	9.4	10.2	11.0	11.9	12.9	14.4	14.9	14.8	14.4	12.3	10.8	9.1	8.2	6.9	5.7	11.1	14.9
27-Sep	5.5	5.5	5.6	5.5	6.0	6.1	5.3	5.6	6.1	6.8	7.7	9.5	11.4	12.2	13.1	12.8	12.3	11.7	11.2	10.2	9.5	8.8	7.7	7.2	8.5	13.1
28-Sep	7.7	7.5	7.8	7.9	7.9	8.4	8.2	8.4	8.9	9.7	9.9	11.0	11.8	13.3	14.3	13.9	13.8	13.1	11.4	7.9	6.3	7.0	7.1	7.4	9.6	14.3
29-Sep	7.0	6.7	7.0	5.4	4.0	3.1	3.8	6.0	7.5	8.7	10.6	11.8	13.1	13.5	11.7	11.3	10.7	10.6	9.8	9.3	8.7	8.7	8.3	8.0	8.6	13.5
30-Sep	7.7	6.9	6.2	5.4	4.8	4.2	2.5	2.9	4.8	7.1	8.9	10.9	11.4	11.7	12.1	12.6	12.3	10.9	9.0	7.5	6.3	5.4	4.5	4.0	7.5	12.6
	9.6	9.2	9.1	8.7	8.2	7.9	7.8	9.1	11.1	13.0	14.6	16.2	17.4	18.2	18.6	18.7	18.6	17.9	16.2	14.1	12.7	11.7	11.1	10.2	Diurnal Average	
	15.3	16.2	15.5	13.8	13.3	13.2	13.5	15.3	18.2	21.7	25.2	27.4	28.9	30.1	30.8	30.9	30.3	28.7	26.6	24.6	22.3	20.1	18.3	17.3	Diurnal Maximum	

Wood Buffalo Environmental Association

Hourly Averages

Ambient Temperature 2m (AT2) - C

Patricia McInnes - September 2024



Concentration Ranges (C)	Number of Hours	%	Cumulative %
-50 - -20	0	0.00	0.00
-20 - 0	0	0.00	0.00
0 - 10	225	31.25	31.25
10 - 20	416	57.78	89.03
> 20	79	10.97	100.00

Total Number of Valid Hours: 720

Total Number of Hours: 720

Wood Buffalo Environmental Association

Summary of Hour Averages

Relative Humidity 2m (RH2) - %

Patricia McInnes - September 2024

Maximum Value: 98.7 % on Sep 13 08:00

Maximum Daily Average: 92.9 % on Sep 13

Minimum Value: 26.3 % on Sep 2 17:00

Minimum Daily Average: 53.3 % on Sep 30

Maximum Diurnal Average: 88.9 % at hour 7

Minimum Diurnal Average: 49.8 % at hour 16

Monthly Average: 71.14 %

Percentiles: P_1 = 31.5 P_{10} = 43.0 Q_1 = 58.3 Median = 73.4 Q_3 = 87.0 P_{90} = 93.7 P_{99} = 98.5

Hours in Service:	720
Hours of Data:	720
Hours of Missing Data:	0
Hours of Calibration:	0
Percent Operational Time:	100.0

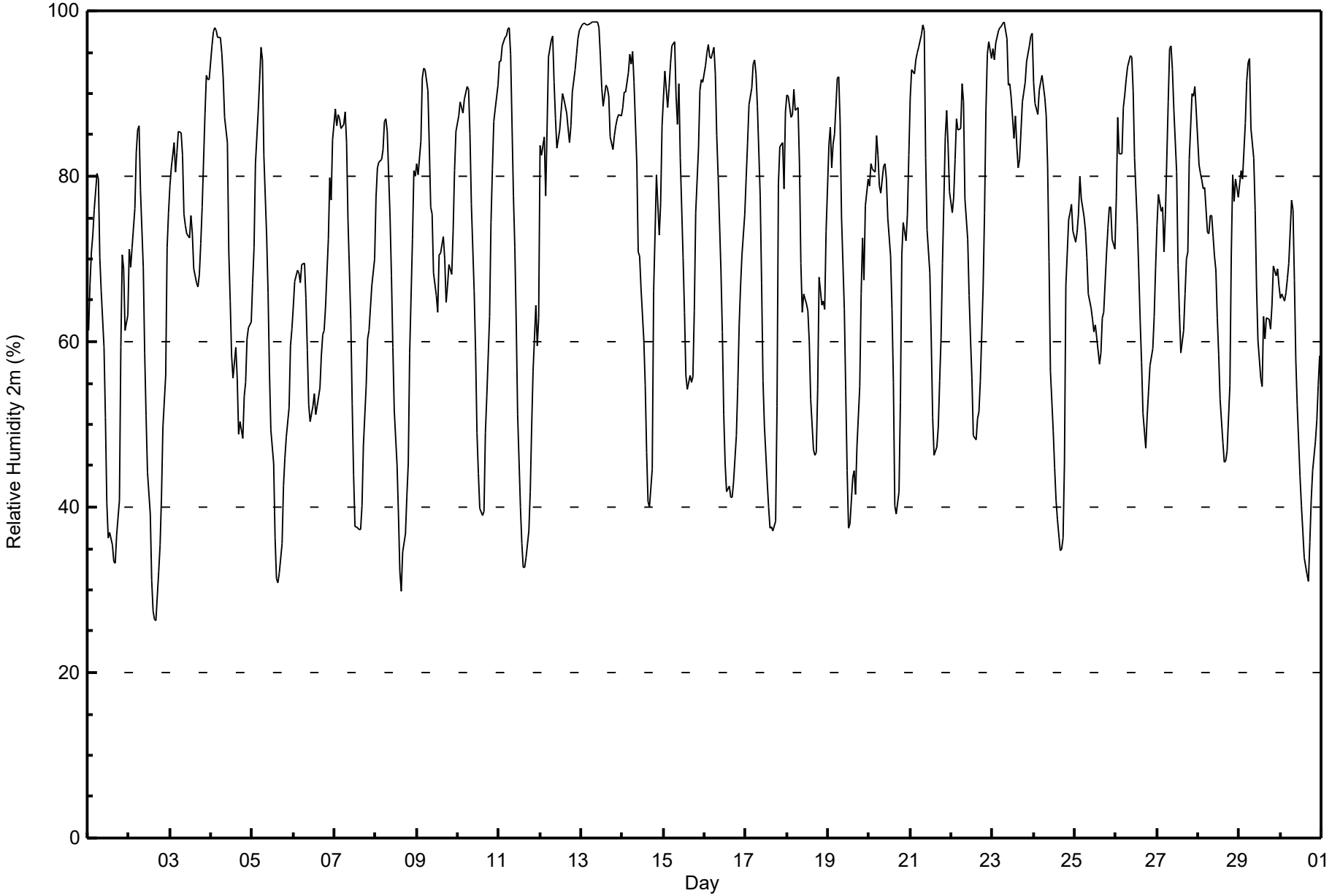
Day	Hourly Period Ending At (MST)																								Daily	Daily
	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24	Average	Maximum
1-Sep	61.4	66.9	70.8	72.9	75.9	80.3	79.7	70.2	66.1	59.4	50.8	40.6	36.3	37.0	35.4	33.4	33.1	36.6	40.8	59.3	70.5	68.8	61.3	63.2	57.1	80.3
2-Sep	71.2	69.1	71.3	76.0	82.8	85.6	86.0	78.2	68.9	58.6	51.0	44.3	39.1	31.2	27.4	26.4	26.3	32.1	35.4	41.3	49.6	56.0	71.3	75.7	56.5	86.0
3-Sep	78.8	81.0	84.0	80.5	82.8	85.5	85.2	82.5	75.5	74.1	73.0	72.6	75.3	73.0	68.9	67.1	66.5	68.1	71.8	76.2	87.4	92.3	91.8	91.6	78.6	92.3
4-Sep	95.7	97.4	97.9	97.6	96.8	96.8	94.9	91.8	87.1	84.2	70.8	65.0	58.3	55.6	59.3	55.5	48.7	50.3	48.4	53.4	55.1	60.3	61.7	62.4	72.7	97.9
5-Sep	67.1	71.3	81.5	88.0	91.7	95.5	94.1	82.5	72.7	65.9	56.2	49.3	45.2	36.3	31.4	30.8	32.0	35.6	42.5	45.9	48.5	52.1	59.5	61.5	59.9	95.5
6-Sep	64.2	67.3	68.6	68.3	67.1	69.4	69.6	65.2	59.0	52.4	50.4	52.2	53.8	51.1	52.3	54.5	58.2	60.9	61.4	64.2	72.4	79.8	77.1	84.5	63.5	84.5
7-Sep	88.1	86.2	87.4	87.0	85.7	86.3	87.8	84.1	74.8	62.8	52.5	43.9	37.6	37.7	37.2	37.2	40.2	47.4	54.7	60.3	61.4	64.0	66.8	70.0	64.2	88.1
8-Sep	77.5	81.1	81.8	82.1	83.3	86.6	87.0	85.5	75.1	67.9	59.2	51.8	45.0	39.2	32.2	29.8	34.6	36.8	41.4	45.2	58.7	72.4	80.7	80.0	63.1	87.0
9-Sep	81.6	80.2	84.2	91.8	93.1	92.9	90.4	83.6	76.2	75.4	68.4	65.6	63.6	70.5	70.6	72.8	70.0	64.8	66.8	69.2	68.1	73.3	80.7	85.4	76.6	93.1
10-Sep	87.4	89.0	88.3	87.7	89.3	90.8	90.5	85.1	76.6	66.0	58.7	48.9	44.0	39.9	39.0	39.4	48.9	53.4	63.0	74.5	80.8	86.7	88.2	91.1	71.1	91.1
11-Sep	93.9	94.0	95.8	96.8	97.0	97.8	97.9	94.8	77.6	71.3	62.2	51.2	39.9	35.6	32.6	32.7	34.0	37.2	41.9	49.6	56.4	64.5	59.5	63.0	65.7	97.9
12-Sep	83.8	82.6	84.8	77.7	85.8	94.4	96.5	96.9	91.4	87.0	83.3	85.6	87.9	90.0	89.3	87.6	85.7	84.0	86.1	90.2	93.0	94.7	96.5	97.6	88.8	97.6
13-Sep	98.2	98.5	98.6	98.3	98.2	98.5	98.6	98.7	98.7	98.6	98.0	94.6	90.8	88.5	91.0	90.6	89.7	84.8	83.3	85.0	86.1	87.0	87.4	87.4	92.9	98.7
14-Sep	88.4	90.2	90.1	92.5	94.7	93.6	95.0	91.3	81.5	70.8	70.3	66.4	60.1	54.8	46.5	40.6	39.9	44.5	66.0	73.0	80.2	72.9	76.7	86.2	73.6	95.0
15-Sep	89.4	92.7	88.3	90.7	93.5	95.7	96.3	89.7	86.3	91.2	82.1	70.2	63.6	56.0	54.2	56.0	55.1	55.7	63.7	75.6	83.5	90.3	91.7	91.4	79.3	96.3
16-Sep	93.3	94.9	95.9	94.4	94.2	95.6	92.5	85.0	79.9	68.7	61.2	51.2	45.3	41.8	42.6	41.1	41.1	43.1	48.6	54.6	62.0	66.8	70.5	75.5	68.3	95.9
17-Sep	79.8	84.0	88.6	90.7	93.6	94.1	92.4	88.4	77.6	67.1	55.2	49.8	43.1	40.0	37.5	37.6	37.2	38.3	52.2	79.1	83.6	84.1	78.5	87.7	69.2	94.1
18-Sep	89.8	89.6	87.2	87.4	90.5	88.0	88.4	81.6	69.5	63.5	65.7	64.6	63.8	60.0	53.1	47.0	46.3	46.5	54.3	67.7	64.4	65.0	64.0	73.4	69.6	90.5
19-Sep	83.8	86.0	80.9	83.8	85.2	91.9	92.0	86.6	75.0	63.9	54.0	44.3	37.5	38.0	43.5	44.3	41.5	47.3	54.5	65.7	72.6	67.4	76.4	79.6	66.5	92.0
20-Sep	78.8	81.6	80.8	80.4	84.9	82.6	78.8	78.0	81.2	81.5	79.6	74.9	70.3	63.9	55.0	40.2	39.1	41.9	52.8	70.4	74.3	72.2	75.4	82.5	70.9	84.9
21-Sep	89.4	92.8	92.4	94.1	94.8	95.6	97.1	98.3	97.6	82.1	73.5	68.4	60.2	50.8	46.2	47.3	49.6	55.3	60.6	69.5	84.7	88.0	83.8	78.2	77.1	98.3
22-Sep	75.6	77.5	82.0	87.0	85.7	85.8	91.2	89.0	77.3	72.4	65.6	60.4	55.7	48.6	48.2	50.7	51.5	55.2	66.6	75.7	87.9	94.7	96.3	94.2	73.9	96.3
23-Sep	95.5	94.1	96.2	97.6	98.0	98.2	98.4	98.7	96.6	91.1	91.2	89.4	84.6	87.4	83.7	81.1	82.0	89.1	90.2	91.4	93.9	95.8	97.0	97.3	92.4	98.7
24-Sep	91.3	88.8	87.4	90.4	91.3	92.2	89.4	87.3	81.2	69.6	56.5	49.2	44.7	40.9	38.5	34.7	34.9	36.3	45.2	66.8	74.7	75.5	76.6	73.4	67.4	92.2
25-Sep	72.0	73.3	75.5	80.0	77.3	75.1	73.4	70.2	65.8	64.0	62.8	61.2	62.0	60.5	57.3	58.7	62.9	63.6	70.6	73.8	76.2	76.3	72.4	71.3	69.0	80.0
26-Sep	77.4	87.1	82.8	82.7	88.2	89.8	91.8	93.2	94.6	94.4	90.3	82.2	74.1	68.4	62.5	57.5	51.3	47.1	51.0	54.1	57.2	59.1	63.0	69.0	73.7	94.6
27-Sep	74.0	77.8	75.8	76.3	70.9	75.4	89.0	95.4	95.7	92.9	88.1	80.4	69.4	63.4	58.6	61.4	65.8	70.1	70.8	82.1	89.9	89.6	90.8	87.9	78.8	95.7
28-Sep	81.3	80.3	79.5	78.5	78.6	73.1	73.0	75.2	75.2	70.4	68.6	62.9	58.4	53.0	47.8	45.4	45.6	46.7	54.8	70.6	80.2	77.0	79.7	77.5	68.1	81.3
29-Sep	79.2	80.6	79.6	86.4	91.5	93.7	94.2	85.8	82.3	76.0	66.5	60.2	55.6	54.5	63.0	60.4	63.0	62.7	61.5	64.4	69.2	67.9	68.8	66.7	72.2	94.2
30-Sep	65.3	65.7	64.9	65.9	67.7	69.5	77.2	75.9	67.5	57.8	52.4	43.8	40.1	37.2	33.8	31.9	31.1	35.8	40.8	44.5	48.0	50.5	54.8	58.3	53.3	77.2
	81.8	83.4	84.1	85.5	87.0	88.3	88.9	85.6	79.5	73.4	67.3	61.5	56.8	53.5	51.3	49.8	50.2	52.4	58.1	66.4	72.3	74.8	76.6	78.8	Diurnal Average	
	98.2	98.5	98.6	98.3	98.2	98.5	98.6	98.7	98.7	98.6	98.0	94.6	90.8	90.0	91.0	90.6	89.7	89.1	90.2	91.4	93.9	95.8	97.0	97.6	Diurnal Maximum	

Wood Buffalo Environmental Association

Hourly Averages

Relative Humidity 2m (RH2) - %

Patricia McInnes - September 2024



Wood Buffalo Environmental Association

Summary of Hour Averages

Wind Speed 10m (WS10) - km/h

Patricia McInnes - September 2024

Maximum Speed: 28 km/h on Sep 30 15:00

Maximum Daily Speed Average: 14.5 km/h on Sep 30

Minimum Speed Value: 0 km/h on Sep 30 07:00

Minimum Daily Speed Average: 1.9 km/h on Sep 15

Maximum Diurnal Speed Average: 7.5 km/h at hour 14

Minimum Diurnal Speed Average: 2.5 km/h at hour 5

Monthly Average Velocity: 3.8 km/h 256.2 deg

Percentiles: P_1 = 1 P_{10} = 3 Q_1 = 5 Median = 8 Q_3 = 11 P_{90} = 15 P_{99} = 25

Hours in Service: 720

Hours of Data: 720

Hours of Missing Data: 0

Percent Operational Time: 100.0

Day	Hourly Period Ending At (MST)																								Daily	Daily
	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24	Average	Maximum
1-Sep	SSE7	SSE6	SSE7	SE7	SSE5	SSE5	S5	SSE8	S9	SSE8	SE7	SSW15	SW22	WSW20	WSW18	WSW17	W15	WSW13	WSW7	WSW4	SW5	SW6	SW8	SW7	SW7.3	SW22
2-Sep	SSW6	SSW8	SSW9	S6	SSE7	SSW6	S7	S6	SSW7	SSW7	SSE7	S10	SW9	WSW13	W12	W11	WNW13	W11	W11	WNW11	NW19	NNW17	N18	N12	WSW4.6	NW19
3-Sep	N9	N12	N11	N15	N9	NNW7	N6	N7	N10	NNW11	N8	N8	NNE10	N8	NNE8	NE8	NE9	N8	N7	NNW7	NW6	WNW6	NW7	NW7	N8.0	N15
4-Sep	NW6	WNW5	W3	WSW4	WSW3	SW4	WSW8	W10	WSW10	WSW10	W15	WNW17	WNW17	NW11	N7	NW7	NW9	W8	W8	WSW9	WSW11	W10	W11	WSW13	W8.0	WNW17
5-Sep	W13	NW11	NW6	NW4	SW2	SW4	SW2	SSE2	SSE4	SSE6	SE6	ESE8	ESE9	SE10	S7	SSE9	ESE13	SE12	SE11	SE13	SE9	SSE9	SE6	SE11	SE4.5	W13
6-Sep	SE11	SE9	SE8	SE9	SE10	SSE9	SSE7	S7	SSW11	SW17	SW19	WSW13	SW8	SW9	SSW5	S4	SW6	SSW8	SW10	SW11	SW3	SSW4	SW8	SW2	SSW6.7	SW19
7-Sep	SSW4	SSW6	SSW5	SW6	SSW8	SSW8	SSW7	S8	S8	S10	SSW11	SSW12	SW15	WSW15	SW15	SW16	SW17	SW11	SW9	SW10	SW12	WSW13	WSW14	WSW10	SW9.9	SW17
8-Sep	SSE4	SSE7	SSW6	WSW9	SW7	SW7	SSW6	SSE5	SE6	S6	SSE7	SE7	SSE6	SSW5	S5	SE7	ESE11	ESE9	ESE8	SSE7	SE4	SSE4	WSW2	ESE3	SSE4.9	ESE11
9-Sep	WNW6	ESE2	NW3	NNW5	NNW8	NNW4	NW7	NW7	NW14	NW13	WNW14	WNW18	WNW18	W24	W22	W22	W21	W22	W25	WNW23	WNW20	W15	W15	W18	WNW13.2	W25
10-Sep	W19	W16	W17	W16	WSW15	WSW13	WSW13	WSW12	WSW11	SW9	SSW9	W13	W16	W17	WNW17	WNW12	WSW7	SW5	SW7	WNW7	WNW6	NW5	WSW3	W1	W10.5	W19
11-Sep	NW3	WNW1	N3	NNW2	SW1	N3	WSW1	WNW2	SE4	ESE7	ESE8	E8	E10	E10	ESE11	ESE10	E11	E9	ESE8	ESE8	ESE6	SE7	SE11	ESE5	ESE5.0	ESE11
12-Sep	ENE2	E2	E3	SE9	SE11	ESE7	ENE5	NNE7	NNE8	ENE8	ENE10	ENE9	E7	ENE6	ENE8	ENE6	ENE7	NE5	NNE4	NNW5	NNW5	NNW6	NNW4	NW5	ENE4.4	SE11
13-Sep	NW6	NNW2	NNW8	NNW10	NNW9	NNW8	NNW8	N7	NNW10	NNW11	NNW13	NNW14	NNW11	N9	NNE9	N9	NW8	NW9	NNW8	NW6	NW7	NW8	WNW9	WNW9	NNW8.2	NNW14
14-Sep	WNW10	WNW10	WNW9	WNW7	SSW3	SSW3	SW3	SSW5	SW5	W10	SSW9	SSW12	SW13	WSW14	W14	W13	WNW6	NNW6	NW3	WSW4	W5	N8	NNE6	N4	W5.3	WSW14
15-Sep	W3	NNW5	NNW9	NNW5	NNW6	WNW1	N2	N6	N10	NNW9	NNE9	NE5	WNW5	NE2	ENE3	E7	E6	ESE5	SE5	S4	SSW2	SSE2	S5	SSW6	NNE1.9	N10
16-Sep	SSW6	SSW6	SSW6	SSW6	SSW5	SSW5	S6	SSW6	SSW7	SW10	SW14	SW16	WSW20	WSW19	WSW19	W15	W11	W9	WSW6	SW9	WSW7	SW8	SW9	SW7	SW8.9	WSW20
17-Sep	SW7	SW8	SSW6	SSW7	SSW6	S7	SSW6	SSE5	SSE7	SSW6	S7	S7	S6	SSE5	ENE1	E7	ENE7	ESE5	SE3	SW2	SSW4	SE1	SE3	S2	S3.9	SW8
18-Sep	SSW3	S2	SE8	SSE5	SSE6	S5	SSW5	S5	WSW10	NW8	E2	NNE2	NW14	W14	W14	WNW15	NW13	WNW11	W6	W8	WNW8	NW9	NW8	N1	W4.7	WNW15
19-Sep	SW2	WSW5	SSW4	SSW6	S4	S4	SW5	SW5	SSW4	S5	SSE5	SSE4	SE6	S5	SW7	SW4	SSE2	N10	NW1	WNW2	WSW3	NNE2	NW3	WNW3	SSW2.2	N10
20-Sep	W2	WSW1	N0	NNE6	WSW3	WSW9	WNW8	SW4	WNW4	NW8	NNW6	NNW8	NW12	NW11	NW11	N18	N18	NNW12	NW7	WNW7	WNW8	NW7	NW6	W2	NW6.1	N18
21-Sep	SW3	WNW4	WNW5	SW3	SW4	S3	SSW5	S3	S5	SSE7	S9	SSW10	SSW11	SSW11	S10	S9	SE9	SE11	SE9	SSW8	SE3	E7	ESE8	SE13	S5.4	ESE13
22-Sep	SE12	SE10	SE6	SE6	SE7	SE6	S4	S4	S5	S6	SSW8	SW10	SW9	NNW6	WNW4	ENE6	ESE6	SE4	S3	WNW2	NW6	NW4	WSW3	WNW2	SSE2.8	SE12
23-Sep	NNW4	NNW5	W5	WNW6	WNW4	WSW2	SW3	WSW4	SSW1	S2	SE4	S7	S8	SW10	SW11	SW9	SW7	S6	S6	S6	SSW7	S7	S7	SSW5	SSW4.0	SW11
24-Sep	WSW12	WSW17	WSW16	WSW11	SSE3	S4	WSW14	WSW16	WSW17	W21	W27	W27	W25	W26	WNW22	WNW22	WNW15	W9	WSW6	WSW3	SW5	SSW4	SSW5	S4	W12.4	W27
25-Sep	SSE5	SE6	SE6	SSE4	ESE4	ESE12	ESE19	ESE18	ESE9	ESE8	SE11	SSE5	WNW4	SSW2	SW4	SSW4	SW9	SW8	SW6	WSW10	WSW9	W12	WNW13	W8	S3.6	ESE19
26-Sep	SW9	W8	NW13	NW10	NW13	NW13	NW13	WNW8	WSW8	WSW8	W10	WNW14	WNW15	WNW15	NW12	WNW14	WNW10	W11	W10	W7	W9	WSW10	WSW10	WSW3	WNW9.5	WNW15
27-Sep	S5	S3	SSE6	SE5	SSE7	SE2	SW3	S2	SSW2	S2	S6	SSW8	SSW8	SW8	SW10	SSW9	S9	S7	S6	SSW8	SSW7	SSW8	SW7	SW12	SSW5.7	SW12
28-Sep	SW14	WSW14	WSW14	WSW16	WSW16	W19	W15	WSW13	WSW14	W18	W17	WSW15	WSW16	WSW13	WSW14	WSW13	WSW7	SW5	S4	SSW3	SSW4	S2	ESE2	SSE4	WSW10.6	W19
29-Sep	S2	SE5	SE4	NW3	NNW2	NNW2	NNW6	N8	N12	NNW14	NNE12	NNE11	N12	N17	NNW19	N12	NNW14	NNW16	NNW13	NW14	NW11	NW13	NW12	NW13	NNW8.8	NNW19
30-Sep	WNW15	WNW19	WNW21	WNW17	WNW18	NW10	ESE0	SSW3	SW4	W11	W17	WNW22	W22	W26	WNW28	WNW26	WNW24	WNW13	W8	WSW11	W10	W11	W15	WSW15	WNW14.5	WNW28
	WSW3.3	WSW2.9	WSW3.0	WSW2.6	SW2.5	SW2.6	SW3.0	SW2.7	WSW3.0	WSW3.9	WSW3.5	WSW4.9	W6.6	W7.5	W6.8	W5.2	W3.6	W3.0	WSW3.3	WSW4.5	W4.5	W3.8	W3.8	WSW3.4	Diurnal Average	
	W19	WNW19	WNW21	WNW17	WNW18	W19	ESE19	ESE18	WSW17	W21	WNW27	W27	W25	WNW26	WNW28	WNW26	WNW24	W22	W25	WNW23	WNW20	NNW17	N18	W18	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: 7 km/h on Sep 1 12:00

Minimum Value: 0 km/h on Sep 17 21:00

Percentiles: P_1 = 1 P_{10} = 1 Q_1 = 1 Median = 2 Q_3 = 3 P_{90} = 4 P_{99} = 6

Hours in Service:	720
Hours of Data:	720
Hours of Missing Data:	0
Hours of Calibration:	0
Percent Operational Time:	100.0

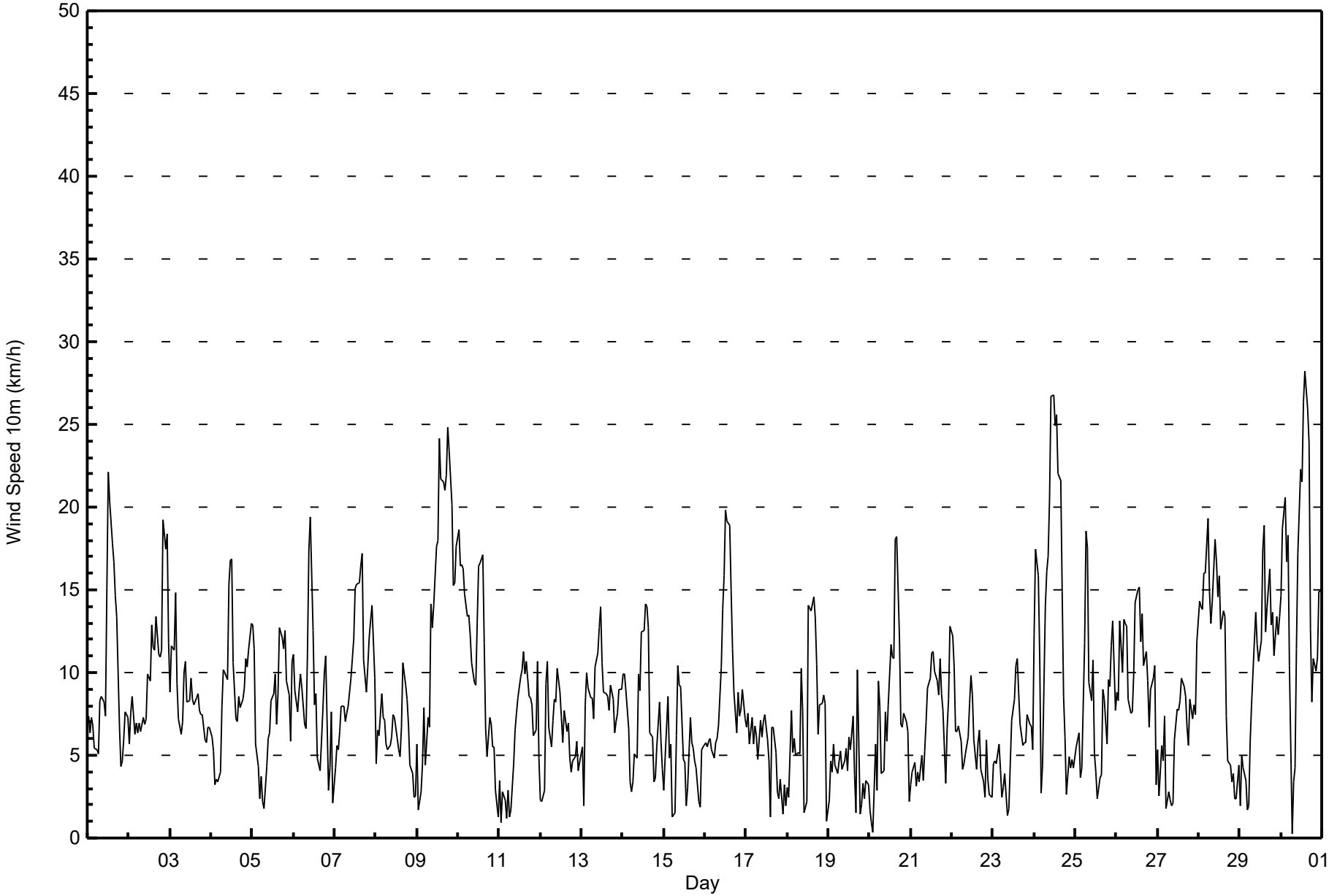
Day	Hourly Period Ending At (MST)																								Daily
	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24	Maximum
1-Sep	2	1	1	1	1	1	1	2	2	2	2	7	6	5	4	4	4	3	1	1	1	1	1	1	7
2-Sep	2	1	2	2	1	2	2	2	3	3	2	3	4	4	3	3	3	2	2	4	4	4	5	3	5
3-Sep	3	3	3	3	2	2	2	1	2	2	2	2	2	2	2	2	2	2	2	1	1	1	1	1	3
4-Sep	1	1	1	2	1	1	1	2	2	3	3	4	4	3	2	2	4	3	1	1	1	1	1	2	4
5-Sep	4	3	1	1	1	1	1	1	2	2	2	3	3	3	3	3	3	3	3	3	3	2	1	2	4
6-Sep	2	1	1	1	2	2	1	1	5	5	5	4	2	3	2	1	1	2	2	2	3	2	2	1	5
7-Sep	1	2	1	2	2	2	2	2	2	2	3	3	4	4	4	4	4	3	2	1	2	2	2	2	4
8-Sep	1	2	2	3	2	2	2	1	1	1	2	2	3	2	2	3	2	2	2	3	2	1	1	1	3
9-Sep	3	3	3	2	2	3	2	2	4	3	3	3	4	6	5	5	5	6	6	5	4	4	4	3	6
10-Sep	3	3	3	3	2	2	2	2	2	3	3	4	4	4	4	3	3	2	3	1	1	1	1	1	4
11-Sep	1	1	1	1	1	2	1	1	1	2	2	2	3	3	3	2	2	2	2	2	1	1	2	3	3
12-Sep	1	2	2	5	3	2	1	2	2	2	3	3	2	2	2	2	2	1	1	1	1	1	1	1	5
13-Sep	1	1	3	2	2	2	1	2	3	3	3	3	2	2	2	2	2	2	1	1	1	2	2	2	3
14-Sep	1	1	2	1	1	1	1	1	2	3	3	3	4	4	5	3	3	2	1	1	2	2	1	2	5
15-Sep	2	3	1	2	2	1	2	2	2	2	2	2	3	2	2	2	2	1	1	1	2	1	1	1	3
16-Sep	1	1	1	1	1	1	1	1	2	3	4	4	5	5	4	3	3	3	1	2	1	1	2	1	5
17-Sep	1	1	1	1	1	1	2	1	2	2	2	2	2	3	3	2	2	1	2	1	0	2	3	2	3
18-Sep	1	2	1	1	2	1	1	1	3	3	1	3	6	4	3	3	3	4	2	1	1	1	2	1	6
19-Sep	1	1	2	1	1	1	1	1	1	1	2	2	2	2	2	2	2	4	2	2	1	3	1	1	4
20-Sep	1	2	1	2	2	2	2	2	1	2	2	2	2	2	2	4	4	3	2	1	1	1	1	1	4
21-Sep	1	1	2	2	1	1	1	1	1	2	2	3	3	3	3	3	2	3	2	4	2	1	2	3	4
22-Sep	3	2	1	1	1	1	1	1	1	2	2	3	3	3	3	2	1	1	1	3	4	2	2	2	4
23-Sep	2	2	1	1	1	1	1	2	1	2	2	2	2	3	3	2	2	1	1	1	2	2	2	2	3
24-Sep	3	3	3	2	2	3	2	3	3	6	5	6	6	5	6	5	3	3	2	1	1	1	1	1	6
25-Sep	1	1	2	2	2	6	6	6	4	4	3	3	2	1	2	3	2	3	2	2	2	2	3	2	6
26-Sep	2	3	2	3	3	3	3	3	3	1	3	3	3	3	3	3	3	2	2	1	2	2	2	3	3
27-Sep	2	1	2	1	2	1	2	1	2	1	2	2	2	3	3	2	2	2	1	3	2	2	2	4	4
28-Sep	4	3	3	3	3	6	3	3	3	4	4	4	5	4	4	4	2	1	1	1	1	1	1	2	6
29-Sep	2	3	2	2	2	1	2	2	3	3	3	2	3	4	4	4	3	4	2	2	2	2	2	3	4
30-Sep	3	4	4	3	3	6	1	2	1	4	7	5	5	6	7	6	6	4	1	1	2	2	2	3	7
	4	4	4	5	3	6	6	6	5	6	7	7	6	6	7	6	6	6	6	5	4	4	5	4	
	Diurnal Maximum																								

Wood Buffalo Environmental Association

Hourly Averages

Wind Speed 10m (WS10) - km/h

Patricia McInnes - September 2024



Wind Speed Ranges (km/h)	Number of Hours	%	Cumulative %
0 - 5	203	28.19	28.19
6 - 11	354	49.17	77.36
12 - 19	138	19.17	96.53
20 - 28	25	3.47	100.00
29 - 38	0	0.00	100.00
> 38	0	0.00	100.00

Total Number of Valid Hours: 720

Total Number of Hours: 720

Wood Buffalo Environmental Association

Frequency Distribution

Wind Speed 10m (WS10) - km/h

Patricia McInnes - September 2024

Wind Speed							**Wind Direction**										
Ranges (km/h)	N	NNE	NE	ENE	E	ESE	SE	SSE	S	SSW	SW	WSW	W	WNW	NW	NNW	**Totals**
0 - 5	5	3	3	4	3	8	13	20	29	27	26	16	7	15	10	14	203
6 - 11	20	9	2	9	10	17	32	22	30	44	38	24	25	21	29	22	354
12 - 19	10	1	0	0	0	5	3	0	0	3	12	34	26	20	15	9	138
20 - 28	0	0	0	0	0	0	0	0	0	0	1	2	11	11	0	0	25
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	35	13	5	13	13	30	48	42	59	74	77	76	69	67	54	45	720

Total Number of Valid Hours: 720

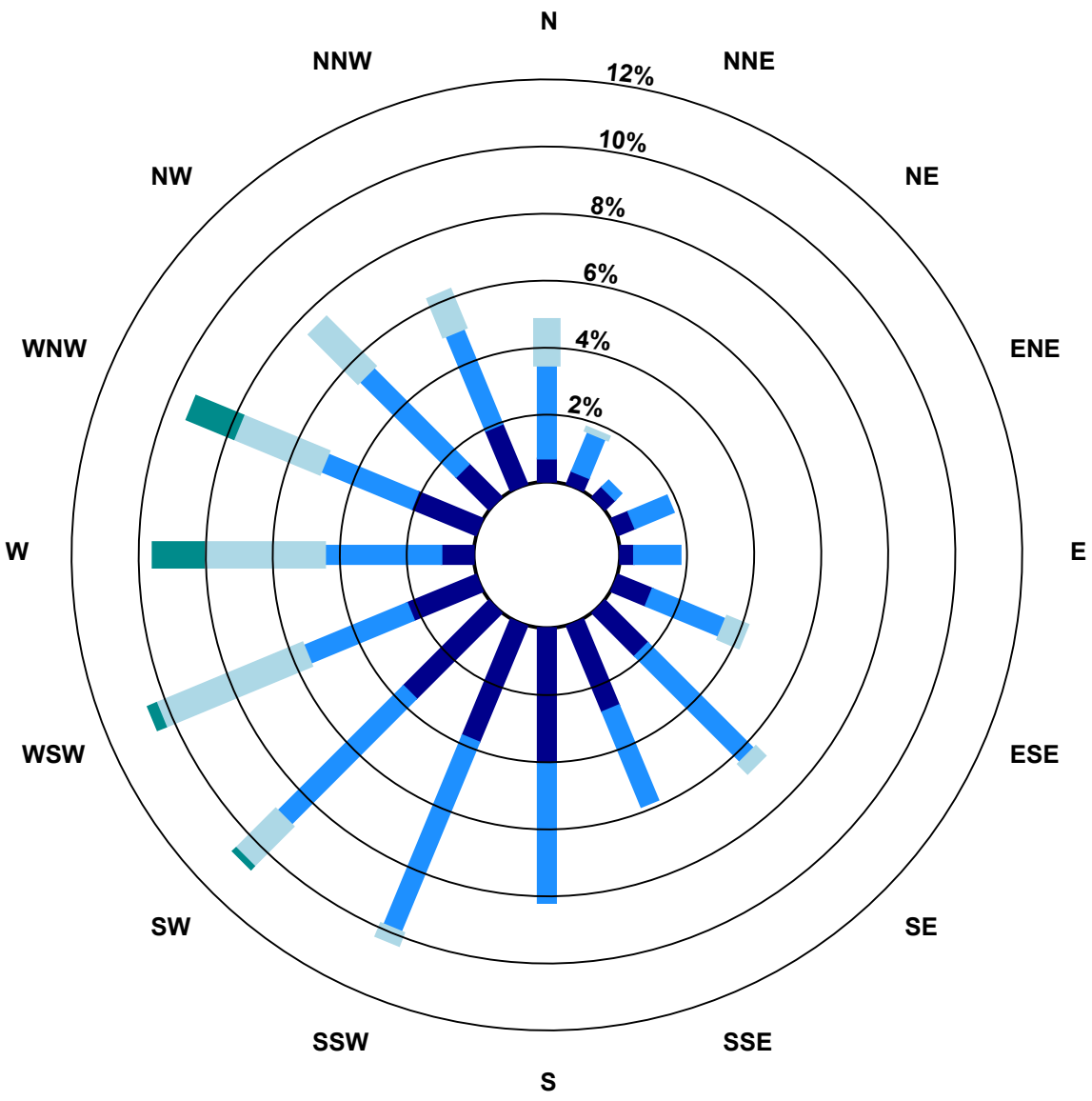
Total Number of Hours: 720

Wood Buffalo Environmental Association

Wind Rose Sep 2024

Wind Speed 10m (WS10) - km/h

Patricia McInnes



Classes (km/h)

- 0 - 5
- 6 - 11
- 12 - 19
- 20 - 28
- 29 - 38
- > 38

Total Number of Valid Hours: 720

Wood Buffalo Environmental Association

Summary of Hour Averages

Wind Direction 10m (WD10) - deg

Patricia McInnes - September 2024

Direction of Maximum Speed: 289 deg on Sep 30 15:00
Direction of Maximum Daily Speed Average: 282.8 deg on Sep 30

Direction of Minimum Speed: 122 deg on Sep 30 07:00

Direction of Minimum Daily Speed Average: 1.9 deg on Sep 15

Monthly Average Direction: 256.2 deg

Hours in Service:	720
Hours of Data:	720
Hours of Missing Data:	0
Percent Operational Time:	100.0

Day	Hourly Period Ending At (MST)																								Daily
	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24	Average
1-Sep	147	152	149	144	154	166	173	166	171	160	138	211	230	245	249	253	262	252	254	250	223	224	224	220	215.1
2-Sep	193	195	192	183	158	198	185	186	192	199	165	175	235	243	260	262	282	280	280	291	325	342	9	1	256.7
3-Sep	357	7	7	9	360	343	357	353	8	348	357	351	13	349	22	34	37	7	359	348	314	302	310	325	358.1
4-Sep	308	301	264	239	248	231	252	262	253	254	271	286	292	321	11	323	310	274	270	251	254	262	270	258	275.7
5-Sep	276	323	325	326	223	236	219	154	151	153	138	105	116	126	186	157	119	134	139	134	138	162	139	134	144.9
6-Sep	134	141	136	139	142	151	160	179	207	229	236	243	231	223	206	187	217	210	234	233	215	197	231	233	200.9
7-Sep	198	213	207	217	202	204	196	178	175	189	204	206	220	243	235	228	225	217	222	233	235	243	246	244	220.4
8-Sep	166	168	195	237	219	214	211	166	146	172	153	127	161	194	180	129	113	110	121	148	142	148	238	123	161.9
9-Sep	288	108	317	345	330	347	321	326	325	304	295	297	286	268	264	268	262	265	275	284	288	272	270	264	282.9
10-Sep	266	269	268	271	257	252	244	246	249	235	212	264	268	273	282	294	255	214	233	285	293	304	258	271	262.3
11-Sep	324	298	1	344	216	3	247	299	141	123	111	93	88	99	110	107	96	98	106	102	111	133	125	118	104.2
12-Sep	65	95	90	132	128	115	77	26	26	64	60	71	81	58	67	57	63	50	13	345	338	329	343	318	59.1
13-Sep	321	334	329	345	346	345	337	352	341	348	343	345	345	357	12	4	323	322	330	317	306	313	298	295	336.0
14-Sep	302	300	291	300	205	196	223	211	225	266	212	206	217	243	274	274	301	327	323	243	281	354	13	349	267.7
15-Sep	276	338	338	338	343	298	5	5	355	342	25	37	303	46	67	83	93	111	143	185	198	149	183	197	13.3
16-Sep	203	198	203	200	193	200	191	194	204	218	226	228	249	249	240	261	269	264	257	232	237	225	233	227	232.3
17-Sep	222	214	194	195	197	187	196	161	167	200	169	180	172	151	59	84	76	103	133	219	209	131	135	172	173.3
18-Sep	203	190	143	168	168	170	193	181	250	308	96	19	314	278	277	295	312	302	266	271	302	304	311	354	277.6
19-Sep	221	238	210	204	187	181	219	231	210	172	151	152	127	170	215	232	157	359	306	295	245	29	325	292	208.3
20-Sep	269	242	2	24	244	247	289	223	292	325	329	329	325	320	323	355	5	343	324	286	301	305	309	278	321.4
21-Sep	218	282	287	220	223	189	209	179	183	159	172	199	208	202	182	187	136	137	143	204	133	100	118	124	173.9
22-Sep	127	134	142	138	130	145	169	182	184	181	193	215	219	331	298	63	106	136	186	294	325	314	258	295	166.7
23-Sep	343	346	272	294	285	249	227	240	195	174	132	188	182	215	219	217	216	169	183	174	194	169	169	195	206.8
24-Sep	245	255	254	241	152	179	240	243	250	271	281	281	279	277	283	283	286	278	255	251	215	204	205	172	263.6
25-Sep	150	138	131	168	108	115	117	122	110	117	124	161	286	213	219	201	231	227	225	253	239	268	287	276	173.0
26-Sep	235	274	304	325	321	307	305	290	239	241	277	291	295	295	305	282	299	270	269	266	269	239	237	237	283.3
27-Sep	181	175	155	138	163	132	226	169	212	169	173	201	196	214	219	201	186	185	173	203	211	211	217	230	195.7
28-Sep	234	238	238	246	253	265	263	248	252	261	260	254	256	251	248	252	239	214	189	195	207	182	114	164	246.9
29-Sep	177	132	139	322	332	337	342	8	351	344	12	17	7	350	341	355	340	344	336	323	308	317	312	305	341.6
30-Sep	303	300	298	295	284	314	122	200	214	272	276	286	273	281	289	293	296	295	261	248	263	273	259	258	282.8
	244.5	251.6	254.3	257.0	231.7	228.7	232.8	221.1	238.6	250.6	238.8	252.6	261.0	265.4	268.5	275.1	281.0	269.8	251.7	254.6	265.7	269.5	264.1	252.0	
	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: 106 deg on Sep 9 02:00

Minimum Value: 6 deg on Sep 20 22:00

Percentiles: P_1 = 7 P_{10} = 11 Q_1 = 13 Median = 18 Q_3 = 26 P_{90} = 46 P_{99} = 83

Hours in Service:	720
Hours of Data:	720
Hours of Missing Data:	0
Hours of Calibration:	0
Percent Operational Time:	100.0

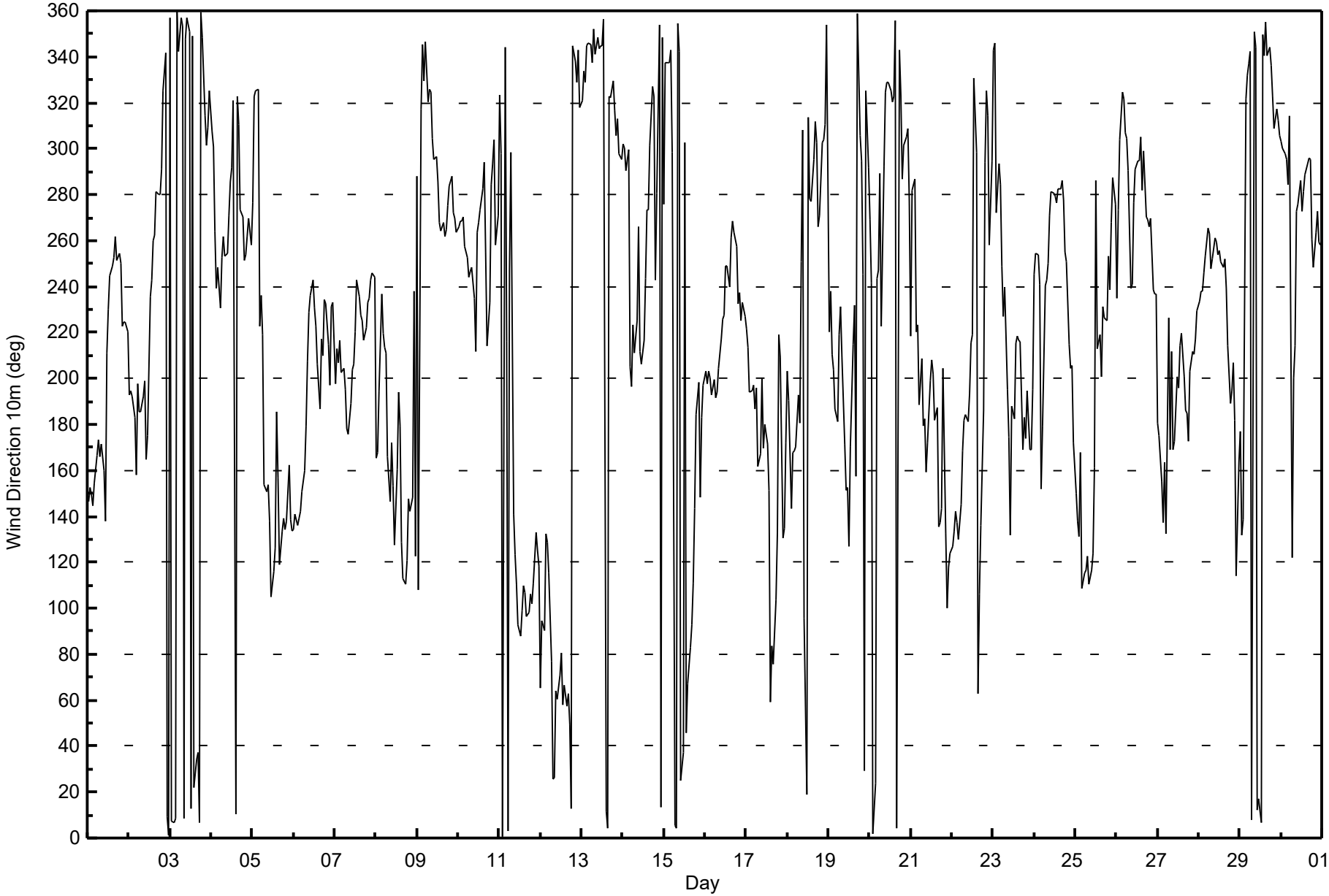
Day	Hourly Period Ending At (MST)																								Daily
	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24	Maximum
1-Sep	10	10	13	11	11	10	16	14	18	19	28	28	15	16	17	17	20	11	12	25	11	8	12	12	28
2-Sep	17	16	18	45	14	17	23	20	32	33	24	26	40	22	30	25	16	11	10	8	12	20	17	18	45
3-Sep	17	14	13	14	16	17	26	18	16	17	23	19	26	16	23	23	22	18	16	17	18	9	10	10	26
4-Sep	9	6	40	26	24	26	14	11	12	15	16	17	19	28	24	14	21	12	11	7	7	11	8	11	40
5-Sep	26	11	15	45	28	20	56	78	30	28	29	28	27	22	50	36	20	15	13	12	17	14	17	12	78
6-Sep	13	11	10	8	11	11	13	16	21	14	13	17	21	25	28	23	19	14	12	12	66	32	23	60	66
7-Sep	36	19	25	20	19	17	18	16	17	18	19	18	18	18	17	16	15	15	14	8	10	9	8	15	36
8-Sep	33	19	30	22	21	18	19	21	21	23	22	22	46	38	52	40	14	13	14	13	11	28	49	59	59
9-Sep	51	106	84	43	16	61	16	20	14	18	16	13	15	12	12	12	14	14	13	12	13	13	12	10	106
10-Sep	10	10	11	11	10	10	10	14	18	19	25	33	21	24	17	28	19	35	33	18	11	13	50	73	73
11-Sep	31	77	30	32	48	45	75	44	32	23	25	24	29	24	22	20	16	18	11	11	9	13	12	55	77
12-Sep	42	69	15	32	13	18	25	16	18	23	17	17	16	23	20	23	18	25	34	37	12	6	11	7	69
13-Sep	8	68	14	17	19	16	12	19	15	15	14	15	14	20	17	16	13	11	10	12	13	15	10	9	68
14-Sep	10	8	11	10	44	42	20	23	30	25	34	21	25	19	22	18	32	12	23	16	25	23	14	34	44
15-Sep	31	23	11	16	15	73	88	16	14	17	27	67	71	87	81	30	28	17	10	14	13	57	20	13	88
16-Sep	15	12	16	18	13	12	13	18	20	16	14	19	18	18	19	19	13	11	20	11	11	18	9	11	20
17-Sep	11	13	29	21	18	14	23	19	23	27	30	29	50	65	98	31	29	13	36	19	25	49	41	33	98
18-Sep	23	55	8	17	18	25	25	24	25	20	76	79	27	27	22	25	15	11	13	7	20	8	10	74	79
19-Sep	36	12	18	17	22	23	31	14	37	33	30	58	39	53	32	41	94	24	74	39	29	76	21	34	94
20-Sep	74	79	88	17	67	16	20	58	48	15	19	13	12	14	17	23	17	13	29	11	7	6	11	39	88
21-Sep	13	35	23	23	14	27	20	24	19	25	24	23	29	28	27	21	24	15	12	32	40	12	16	12	40
22-Sep	13	13	10	8	12	11	11	17	23	33	28	23	36	45	61	31	16	25	15	74	79	63	73	62	79
23-Sep	42	44	27	9	9	23	23	23	59	71	46	23	27	22	18	18	23	14	17	18	19	22	13	22	71
24-Sep	13	10	11	12	66	48	11	10	12	14	12	14	14	14	15	14	15	21	18	46	10	21	23	15	66
25-Sep	13	13	18	27	39	20	14	15	29	22	15	36	42	68	60	53	12	14	24	11	11	13	14	31	68
26-Sep	15	30	10	17	16	17	13	24	23	12	15	14	14	18	25	20	22	10	22	19	24	10	13	74	74
27-Sep	20	40	24	22	14	74	74	57	59	49	33	24	26	31	25	21	16	17	20	20	15	15	14	12	74
28-Sep	13	13	12	11	12	12	10	12	13	16	13	17	21	27	26	14	20	15	12	14	13	50	17	23	50
29-Sep	73	21	46	56	73	71	24	23	14	13	15	13	18	19	13	17	14	14	11	10	12	10	11	9	73
30-Sep	9	10	10	10	10	46	98	53	26	23	17	15	16	18	16	15	12	10	12	10	30	19	9	8	98
	74	106	88	56	73	74	98	78	59	71	76	79	71	87	98	53	94	35	74	74	79	76	73	74	
	Diurnal Maximum																								

Wood Buffalo Environmental Association

Hourly Averages

Wind Direction 10m (WD10) - deg

Patricia McInnes - September 2024



WOOD BUFFALO ENVIRONMENTAL ASSOCIATION

CONTINUOUS AMBIENT AIR QUALITY
MONITORING PROGRAM
MONTHLY REPORT

AMS07
ATHABASCA VALLEY
SEPTEMBER 2024

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

October 31, 2024

WOOD BUFFALO ENVIRONMENTAL ASSOCIATION - ATHABASCA VALLEY (AMS07)
SEPTEMBER 2024

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	686	34	34	100	10.1	0	1.6	0
TRS (ppb) Average	684	36	36	100	2.7	0	1	0
THC (ppm) Average	684	34	36	99.72	2.7	-	2.3	-
NMHC (ppm) Average	684	34	36	99.72	0.267	-	0.029	-
CH4(ppm) Average	684	34	36	99.72	2.7	-	2.3	-
O3 (ppb) Average	686	34	34	100	47.1	0	25.9	-
NO2 (ppb) Average	685	35	35	100	19.4	0	9.4	-
NO (ppb) Average	685	35	35	100	24.4	-	7.1	-
NOX (ppb) Average	685	35	35	100	36.9	-	16.4	-
PM2.5 (ug/m3) Average	718	2	2	100	206.2	0	144.2	6
CO(ppm) Average	686	34	34	100	0.8	0	0.6	-
Temperature 2 m (C) Average	720	0	0	100	32.1	-	21.2	-
Relative Humidity (%) Average	701	0	19	97.36	99.9	-	91.6	-
Barometric Pressure (inHg) Average	720	0	0	100	29.4	-	29.3	-
Wind Speed 10 m (km/h) Average	720	0	0	100	33	-	15	-
Wind Direction 10 m (deg) Average	720	0	0	100	-	-	-	-

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

WOOD BUFFALO ENVIRONMENTAL ASSOCIATION - ATHABASCA VALLEY (AMS07)
SEPTEMBER 2024

MONTHLY SUMMARY FOR AIR QUALITY/ METEOROLOGICAL MONITORING MEASUREMENTS

					Percentile						
Parameter	Number	Mean	StnDev	Total	Min	P10	Q1	Median	Q3	P90	Max
SO2 (ppb) Average	686	0.29	0.8	-	0	0	0	0.1	0.2	0.6	10.1
TRS (ppb) Average	684	0.3	0.3	-	0.1	0.1	0.2	0.2	0.3	0.6	2.7
THC (ppm) Average	684	2.11	0.1	-	2	2	2	2.1	2.1	2.2	2.7
NMHC (ppm) Average	684	0.003	0.017	-	0	0	0	0	0	0	0.267
CH4(ppm) Average	684	2.1	0.1	-	1.9	2	2	2.1	2.1	2.2	2.7
O3 (ppb) Average	686	18.85	9.8	-	3.7	6.7	10.4	17.8	26.3	32.3	47.1
NO2 (ppb) Average	685	4.85	3.5	-	0.4	1.1	2.1	4	6.9	9.6	19.4
NO (ppb) Average	685	2.29	3.5	-	0	0.1	0.4	0.9	2.6	6.2	24.4
NOX (ppb) Average	685	7.14	6.2	-	0.5	1.6	2.7	5.3	9.6	14.8	36.9
PM2.5 (ug/m3) Average	718	27.01	41.2	-	1.2	3.8	5.7	10.1	22	82.4	206.2
CO(ppm) Average	686	0.23	0.1	-	0.1	0.1	0.1	0.2	0.2	0.4	0.8
Temperature 2 m (C) Average	720	13.51	5.5	-	1.9	7.3	9.8	12.6	16.6	20.9	32.1
Relative Humidity (%) Average	701	71.69	18.4	-	24.3	43.5	58.3	76	87.2	92.3	99.9
Barometric Pressure (inHg) Average	720	28.88	0.2	-	28.4	28.7	28.8	28.9	29	29.1	29.4
Wind Speed 10 m (km/h) Average	720	7.7	5	-	0	2	4	6	10	15	33
Wind Direction 10 m (deg) Average	720	-	-	-	-	-	-	-	-	-	-

WOOD BUFFALO ENVIRONMENTAL ASSOCIATION - ATHABASCA VALLEY (AMS07)
SEPTEMBER 2024

OPERATIONAL NOTES

Parameter	Period Start	Period End	Duration (Hours)	Notes
THC/NMHC/CH4	26 Sep 2024 11:00	26 Sep 2024 12:00	2	Maintenance - replaced support gas cylinder
Relative Humidity	11 Sep 2024 07:00	11 Sep 2024 09:00	3	Sensor operated out of range
Relative Humidity	13 Sep 2024 02:00	13 Sep 2024 03:00	2	Sensor operated out of range
Relative Humidity	13 Sep 2024 05:00	13 Sep 2024 11:00	7	Sensor operated out of range
Relative Humidity	15 Sep 2024 09:00	15 Sep 2024 10:00	2	Sensor operated out of range
Relative Humidity	23 Sep 2024 07:00	23 Sep 2024 11:00	5	Sensor operated out of range

Wood Buffalo Environmental Association

Summary of Hour Averages

Sulphur Dioxide (SO_2) - ppb

Athabasca Valley - September 2024

Number of Exceedences (AAAQO): 1-hr: 0 24-hr: 0
Maximum Value: 10.1 ppb on Sep 13 14:00 Maximum Daily Average: 1.6 ppb on Sep 13

Minimum Value: 0.0 ppb on Sep 4 15:00 Minimum Daily Average: 0.0 ppb on Sep 28
Maximum Diurnal Average: 0.8 ppb at hour 14 Minimum Diurnal Average: 0.1 ppb at hour 4
Monthly Average: 0.29 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} = 3.4

Hours in Service:	720
Hours of Data:	686
Hours of Missing Data:	34
Hours of Calibration:	34
Percent Operational Time:	100.0

Day	Hourly Period Ending At (MST)																								Daily	Daily
	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24	Average	Maximum
1-Sep	0.0	0.0	0.1	0.0	Z	0.1	0.1	0.1	0.2	0.2	0.3	0.4	0.6	0.4	0.2	0.1	0.1	0.1	0.1	0.2	0.1	0.1	0.1	0.1	0.2	0.6
2-Sep	0.1	0.1	0.1	0.1	0.1	Z	0.1	0.1	0.1	0.2	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	0.0	0.1	0.3
3-Sep	Z	0.1	0.0	0.1	0.0	0.0	0.0	0.0	0.0	2.3	1.9	2.7	1.1	0.3	0.2	0.7	0.9	1.2	0.9	0.3	0.1	0.1	0.2	0.1	0.6	2.7
4-Sep	0.1	Z	0.0	0.0	0.0	0.0	0.1	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	0.0	0.0	0.1
5-Sep	0.0	0.4	Z	0.3	0.1	0.1	0.1	0.1	0.2	0.5	0.9	1.7	0.7	0.4	0.2	0.3	0.4	0.4	0.2	0.1	0.1	0.1	0.2	0.2	0.3	1.7
6-Sep	0.2	0.2	0.3	Z	0.4	0.3	0.3	0.3	0.4	0.5	0.7	0.5	0.5	0.4	0.4	0.3	0.2	0.2	0.2	0.3	0.2	0.1	0.1	0.1	0.3	0.7
7-Sep	0.1	0.1	0.1	0.1	Z	0.1	0.1	0.1	0.2	0.4	0.5	0.5	0.4	0.2	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.2	0.5
8-Sep	0.1	0.1	0.0	0.0	0.0	Z	0.1	0.0	0.1	0.3	1.0	1.2	0.9	0.7	0.5	0.5	0.5	0.5	0.7	0.5	0.3	0.2	0.1	0.1	0.4	1.2
9-Sep	Z	0.1	0.1	0.1	0.2	0.3	0.5	0.9	4.3	5.9	1.1	0.4	0.2	0.1	0.1	0.1	0.1	0.0	0.1	0.0	0.0	0.0	0.0	0.0	0.6	5.9
10-Sep	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	0.1	0.1	0.1	0.1	0.0	0.0	0.0	0.0	0.1
11-Sep	0.0	0.0	Z	0.1	0.1	0.0	0.1	0.1	0.1	0.1	0.1	0.1	0.3	0.2	0.3	0.2	0.2	0.3	0.2	0.1	0.1	0.1	0.1	0.1	0.1	0.3
12-Sep	0.1	0.1	0.1	Z	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	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.1	0.1
13-Sep	0.0	0.0	0.3	0.2	Z	1.2	1.2	0.8	0.5	0.5	0.7	3.2	9.7	10.1	2.0	0.8	0.6	0.9	0.9	1.0	0.8	0.8	0.5	0.7	1.6	10.1
14-Sep	0.5	0.3	0.2	0.2	0.1	Z	0.1	0.2	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	0.2	0.5
15-Sep	Z	0.1	0.1	0.0	0.1	0.1	0.1	0.1	0.1	0.2	0.1	0.1	0.6	2.7	3.3	3.1	3.2	2.5	1.2	0.5	0.3	0.3	0.2	0.2	0.8	3.3
16-Sep	0.2	Z	0.2	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.2	0.2	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.0	0.1	0.2
17-Sep	0.0	0.0	Z	0.0	0.0	0.0	0.0	0.0	0.1	0.2	0.2	0.2	0.2	0.3	0.5	0.4	0.3	0.2	0.2	0.1	0.1	0.1	0.0	0.0	0.1	0.5
18-Sep	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	0.0	0.0	0.0	0.0	0.0	0.0	0.3	0.0	0.1	0.3
19-Sep	0.0	0.0	0.0	0.0	Z	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	0.7	0.2	0.1	0.1	0.1	0.1	0.1	0.7
20-Sep	0.1	0.1	0.1	0.1	0.1	Z	0.1	0.1	0.2	0.7	3.6	3.4	3.2	3.2	2.9	2.1	2.1	1.0	0.2	0.2	0.6	0.4	0.2	0.1	1.1	3.6
21-Sep	Z	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.4	0.7	0.4	0.1	0.1	0.1	0.2	0.2	0.2	0.1	0.1	0.0	0.0	0.0	0.1	0.7
22-Sep	0.1	Z	0.1	0.1	0.0	0.1	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	0.0	0.0	0.0	0.1	0.2
23-Sep	0.0	0.0	Z	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.8	1.7	3.8	0.7	0.3	0.2	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.4	3.8
24-Sep	0.0	0.0	0.0	Z	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	0.1	0.1	0.1	0.1	0.1	0.0	0.1	0.1
25-Sep	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	0.2	0.2	0.2	0.1	0.1	0.1	0.1	0.1	0.1	0.0	0.0	0.1	0.2
26-Sep	0.0	0.0	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	0.0	0.0	0.0	0.1
27-Sep	Z	0.1	0.0	0.0	0.0	0.0	0.1	0.0	0.0	0.0	0.1	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	0.1
28-Sep	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	0.1	0.1	0.0	0.0	0.0	0.0	0.0	0.0	0.1
29-Sep	0.0	0.0	Z	0.0	0.0	0.0	0.0	0.0	0.2	2.3	2.3	0.6	0.4	3.8	2.2	0.3	1.0	1.5	0.5	0.8	1.6	0.4	0.3	0.2	0.8	3.8
30-Sep	0.1	0.1	0.1	Z	0.1	0.1	0.1	0.1	0.1	0.1	0.2	0.1	0.1	0.1	0.1	0.0	0.0	0.0	0.8	0.1	0.0	0.1	0.0	0.0	0.1	0.8
	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.3	0.5	0.6	0.6	0.8	0.8	0.5	0.3	0.4	0.3	0.3	0.2	0.2	0.1	0.1	0.1	Diurnal Average	
	0.5	0.4	0.3	0.3	0.4	1.2	1.2	0.9	4.3	5.9	3.6	3.4	9.7	10.1	3.3	3.1	3.2	2.5	1.2	1.0	1.6	0.8	0.5	0.7	Diurnal Maximum	

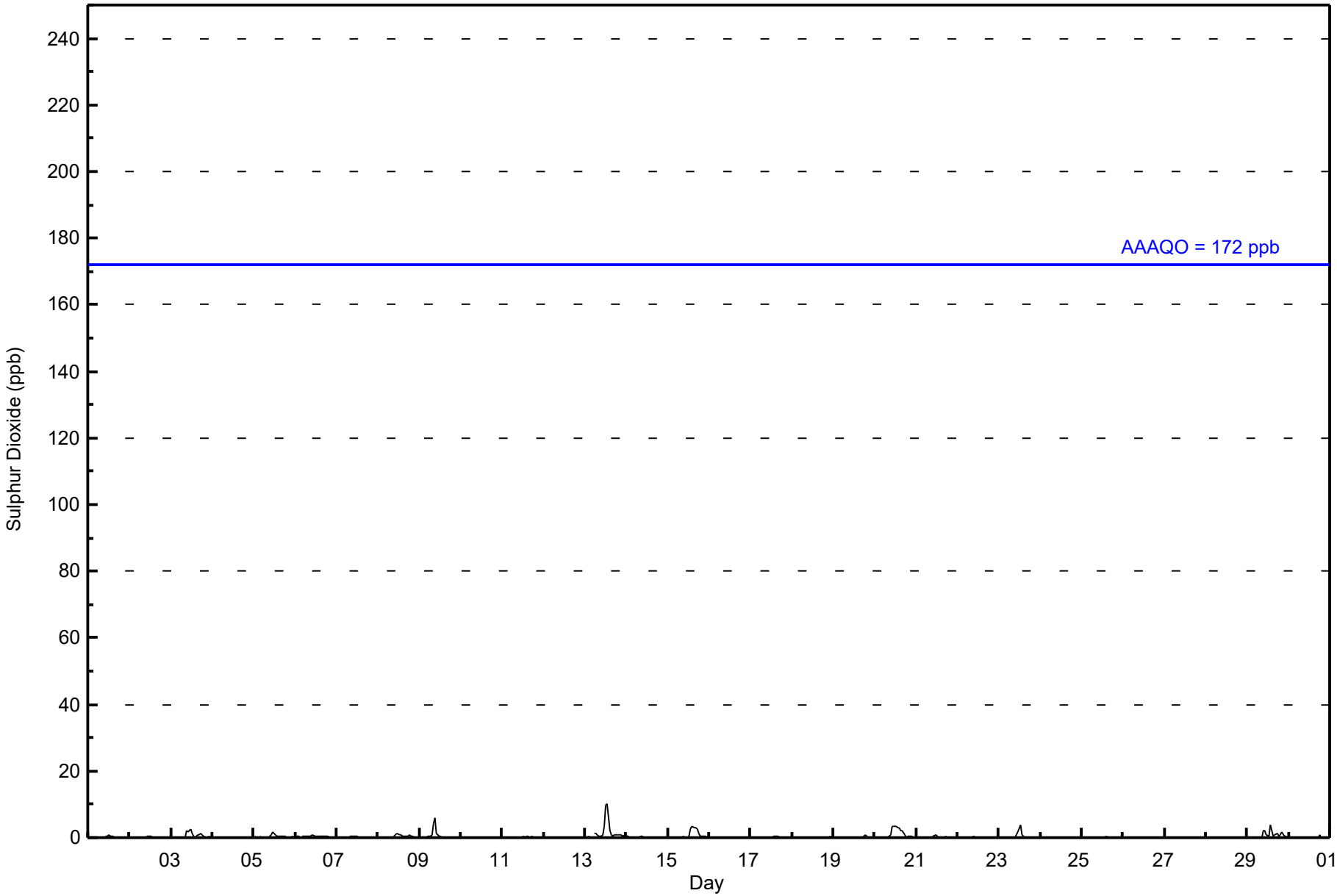
Z - zerospan C - Calibration
Alberta Ambient Air Quality Objectives (AAAQO): 1-hr 172 ppb 24-hr 48 ppb

Wood Buffalo Environmental Association

Hourly Averages

Sulphur Dioxide (SO_2) - ppb

Athabasca Valley - September 2024



Sulphur Dioxide (SO_2) - ppb
Athabasca Valley - September 2024

Concentration Ranges (ppb)	Number of Hours	%	Cumulative %
0 - 10	686	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: 686

Total Number of Hours: 720

Wood Buffalo Environmental Association

Frequency Distribution

Sulphur Dioxide (SO_2) - ppb

Athabasca Valley - September 2024

Concentration Ranges (ppb)	Wind Direction																
	N	NNE	NE	ENE	E	ESE	SE	SSE	S	SSW	SW	WSW	W	WNW	NW	NNW	**Totals**
0 - 10	25	7	8	20	43	98	118	34	20	35	55	48	44	36	30	65	686
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	25	7	8	20	43	98	118	34	20	35	55	48	44	36	30	65	686

Total Number of Valid Hours: 686

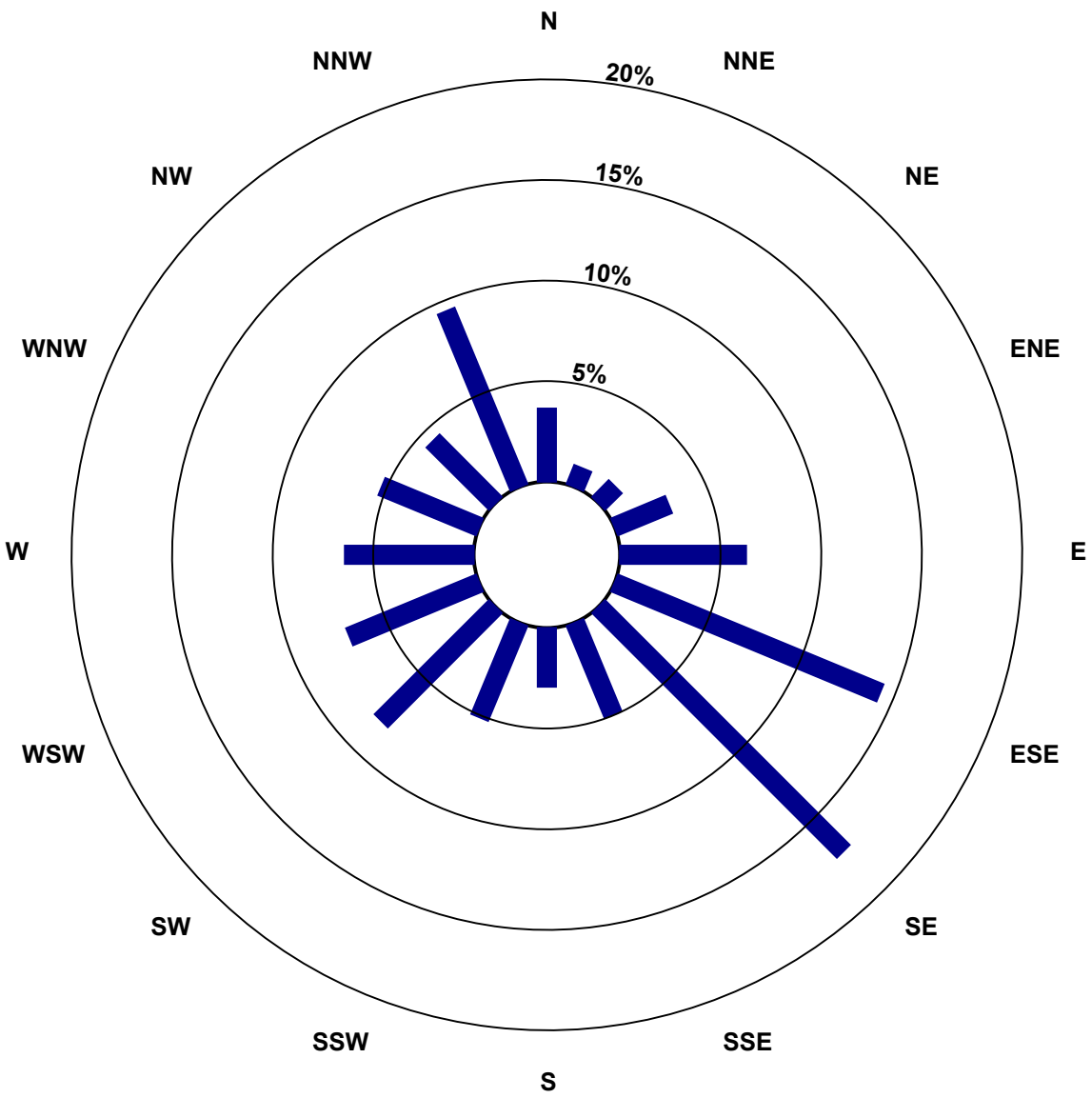
Total Number of Hours: 720

Wood Buffalo Environmental Association

Wind Rose Sep 2024

Sulphur Dioxide (SO_2) - ppb

Athabasca Valley



Classes (ppb)

0 - 10

11 - 20

21 - 60

61 - 110

111 - 172

> 172

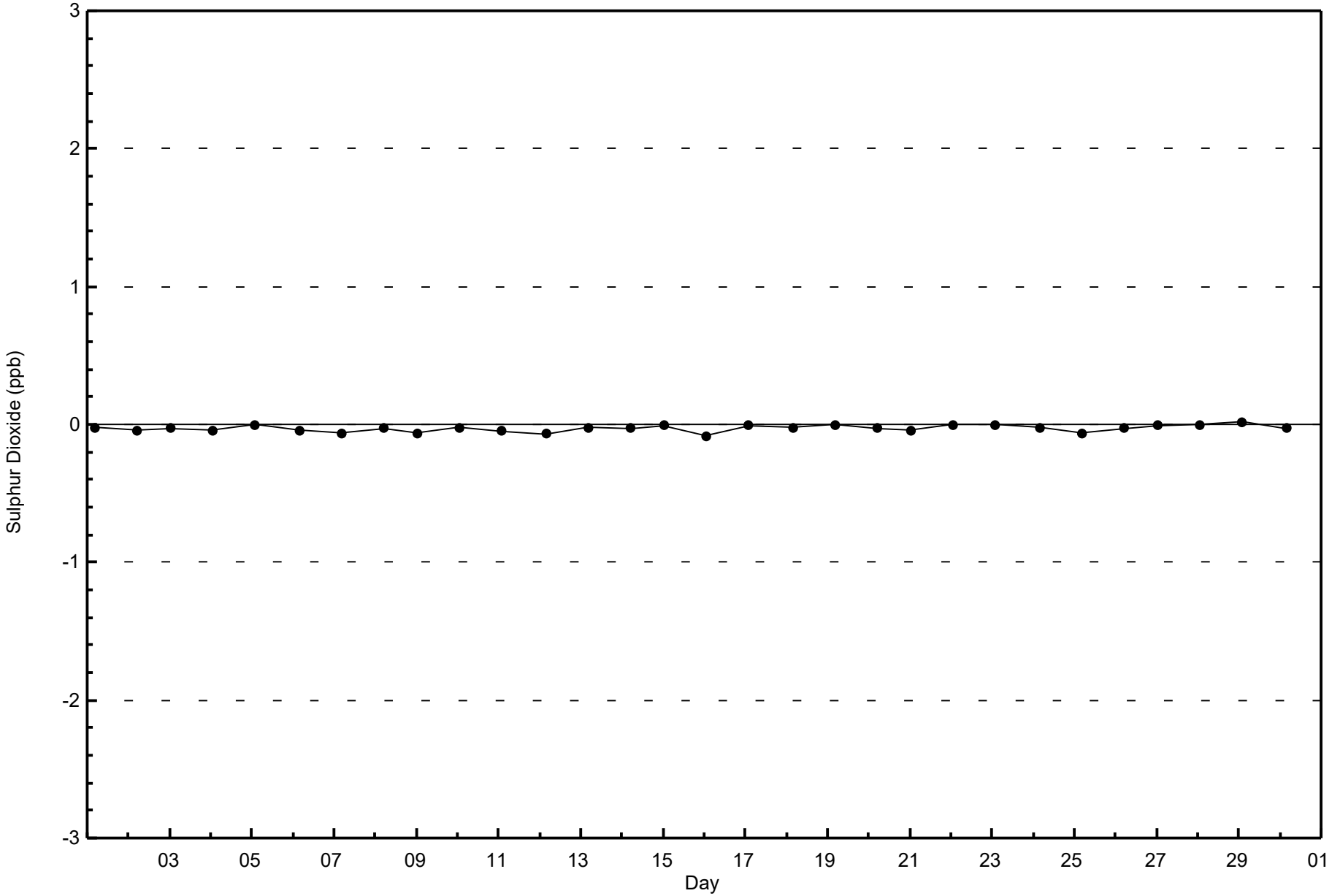
Total Number of Valid Hours: 686

Wood Buffalo Environmental Association

Zero Responses

Sulphur Dioxide (SO_2) - ppb

Athabasca Valley - September 2024

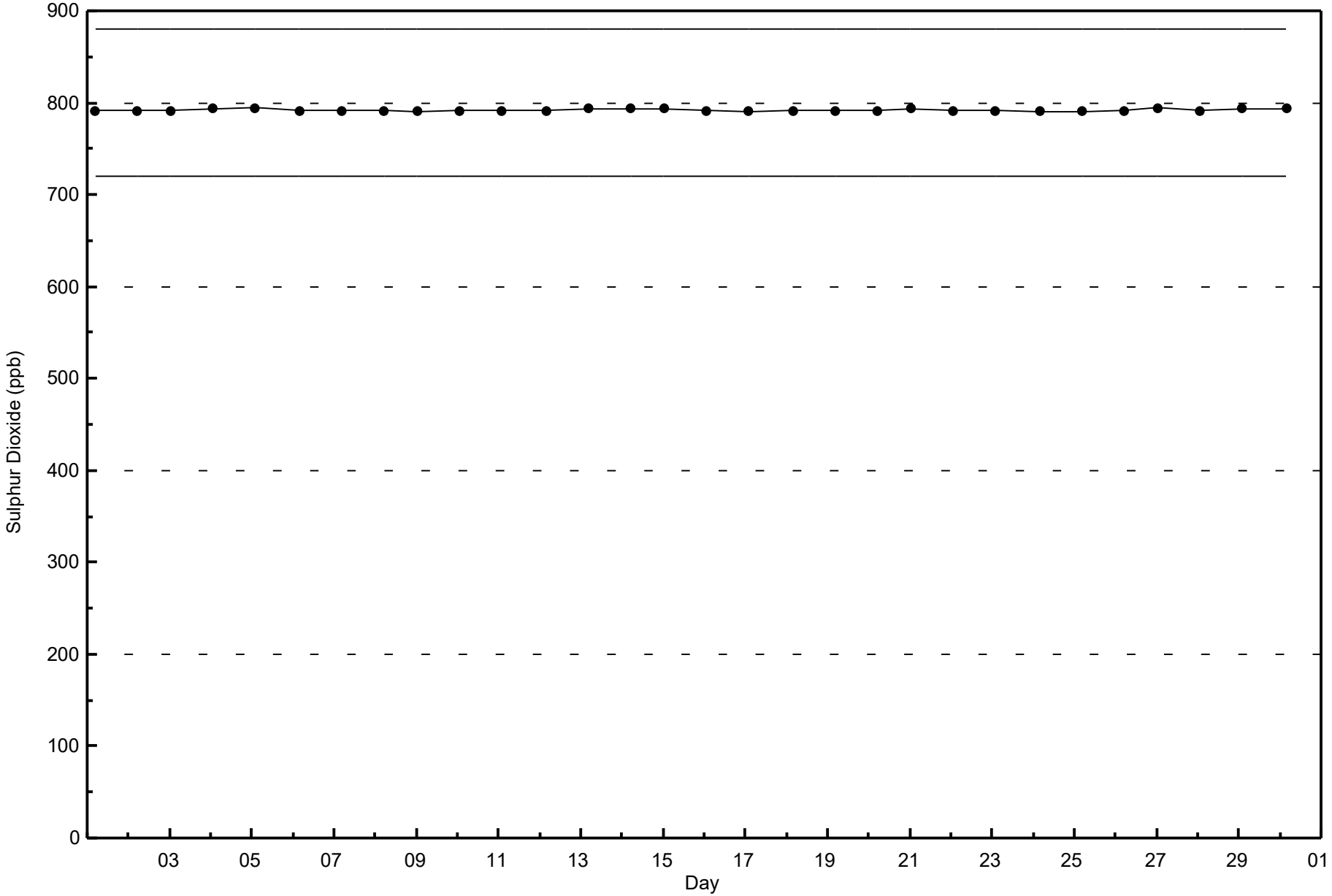


Wood Buffalo Environmental Association

Span Responses

Sulphur Dioxide (SO_2) - ppb

Athabasca Valley - September 2024



Wood Buffalo Environmental Association

Summary of Hour Averages

Total Reduced Sulphur (TRS) - ppb

Athabasca Valley - September 2024

Number of Exceedences (AAAQO): 1-hr: 0 24-hr: 0
Maximum Value: 2.7 ppb on Sep 29 12:00 Maximum Daily Average: 1.0 ppb on Sep 13

Minimum Value: 0.1 ppb on Sep 27 14:00 Minimum Daily Average: 0.1 ppb on Sep 28
Maximum Diurnal Average: 0.4 ppb at hour 10 Minimum Diurnal Average: 0.2 ppb at hour 16
Monthly Average: 0.30 ppb Percentiles: P_1 = 0.1 P_{10} = 0.1 Q_1 = 0.2 Median = 0.2 Q_3 = 0.3 P_{90} = 0.6 P_{99} = 1.8

Hours in Service:	720
Hours of Data:	684
Hours of Missing Data:	36
Hours of Calibration:	36
Percent Operational Time:	100.0

Day	Hourly Period Ending At (MST)																								Daily	Daily
	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24	Average	Maximum
1-Sep	0.2	0.2	0.3	0.3	0.3	Z	0.4	0.3	0.3	0.2	0.2	0.2	0.2	0.1	0.1	0.1	0.1	0.1	0.2	0.2	0.3	0.3	0.3	0.3	0.2	0.4
2-Sep	Z	0.3	0.3	0.3	0.3	0.4	0.4	0.4	0.3	0.3	0.2	0.2	0.2	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.3	0.3	0.8	0.7	0.3	0.8
3-Sep	0.3	Z	0.3	1.1	0.2	0.5	0.6	0.3	0.4	1.2	1.8	1.4	1.2	0.7	0.3	0.3	0.4	0.3	0.6	1.3	1.3	1.0	0.5	0.9	0.7	1.8
4-Sep	1.4	1.2	Z	0.3	0.2	0.2	0.2	0.1	0.2	0.2	0.2	0.2	0.2	0.1	0.2	0.2	0.2	0.2	0.2	0.2	0.2	0.2	0.2	0.2	0.3	1.4
5-Sep	0.2	0.2	0.3	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	0.2	0.2	0.2	0.2	0.2	0.2	0.2	0.2	0.3
6-Sep	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	0.3	0.3	0.3	0.4	0.4	0.3	0.3	0.3	0.3	0.4
7-Sep	0.3	0.2	0.2	0.2	0.2	Z	0.3	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	0.2	0.2	0.2	0.2	0.2	0.3
8-Sep	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	0.1	0.1	0.2	0.2	0.2	0.2	0.2	0.3	0.3	0.3	0.2	0.3
9-Sep	0.3	Z	0.4	1.5	1.9	1.8	1.6	1.0	1.2	0.6	0.4	0.3	0.2	0.2	0.2	0.2	0.1	0.1	0.2	0.2	0.2	0.2	0.2	0.2	0.6	1.9
10-Sep	0.2	0.2	Z	0.2	0.2	0.1	0.1	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	0.2	0.2	0.2	0.2	0.2
11-Sep	0.2	0.2	0.2	Z	0.2	0.2	0.2	0.3	0.3	0.3	0.2	0.2	0.2	0.1	0.1	0.1	0.1	0.1	0.2	0.2	0.2	0.2	0.2	0.2	0.2	0.3
12-Sep	0.2	0.2	0.2	0.2	Z	0.3	0.3	0.6	0.5	0.2	0.2	0.2	0.2	0.2	0.2	0.2	0.2	0.2	0.1	0.4	0.8	0.4	0.9	0.6	0.3	0.9
13-Sep	0.5	1.9	1.8	0.8	0.9	Z	1.0	1.1	1.1	1.1	1.0	1.5	1.8	1.5	1.0	0.7	2.0	1.5	1.0	0.3	0.3	0.4	0.4	0.2	1.0	2.0
14-Sep	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	0.3	0.2	0.6	0.8	1.2	0.2	1.2
15-Sep	0.4	Z	1.4	0.3	0.2	0.3	0.3	1.2	1.3	1.5	1.0	0.7	0.7	0.6	0.5	0.4	0.3	0.2	0.3	0.3	0.3	0.3	0.2	0.2	0.6	1.5
16-Sep	0.2	0.3	Z	0.4	0.3	0.3	0.3	0.3	0.3	0.3	0.3	0.2	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	0.4
17-Sep	0.2	0.2	0.2	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	0.1	0.2	0.2	0.3	0.2	0.2	0.2	0.2	0.3
18-Sep	0.2	0.2	0.2	0.2	Z	0.4	0.3	0.3	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	0.2	0.2	0.4
19-Sep	0.2	0.2	0.2	0.2	0.2	Z	0.3	0.2	0.2	0.2	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.2	0.1	0.2	0.2	0.2	0.2	0.2	0.2	0.3
20-Sep	Z	0.2	0.2	0.2	0.3	0.3	0.3	0.4	0.4	C	C	C	C	C	C	0.7	0.4	0.3	0.2	0.3	0.3	0.2	0.5	0.9	--	0.9
21-Sep	0.6	Z	0.3	0.3	0.2	0.2	0.2	0.2	0.2	0.2	0.2	0.3	0.2	0.2	0.2	0.2	0.2	0.2	0.2	0.2	0.2	0.2	0.2	0.2	0.2	0.6
22-Sep	0.2	0.2	Z	0.3	0.2	0.2	0.2	0.3	0.3	0.2	0.2	0.1	0.1	0.1	0.1	0.1	0.2	0.2	0.2	0.3	0.6	0.8	0.4	0.3	0.3	0.8
23-Sep	0.5	0.4	0.3	Z	0.3	0.3	0.3	0.3	0.2	0.3	0.3	0.4	0.3	0.2	0.1	0.1	0.1	0.2	0.2	0.2	0.2	0.2	0.2	0.2	0.3	0.5
24-Sep	0.2	0.2	0.2	0.2	Z	0.3	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	0.3	0.3	0.3	0.2	0.2	0.2	0.3
25-Sep	0.2	0.3	0.3	0.4	0.4	Z	0.4	0.4	0.3	0.3	0.2	0.2	0.2	0.2	0.2	0.1	0.1	0.2	0.2	0.2	0.2	0.3	0.3	0.2	0.3	0.4
26-Sep	Z	0.2	0.2	0.3	0.3	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	0.3
27-Sep	0.1	Z	0.2	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	0.2
28-Sep	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	0.2	0.2	0.2	0.2	0.2	0.1	0.1	0.1	0.2
29-Sep	0.2	0.2	0.2	Z	0.4	0.3	0.8	0.4	0.7	1.8	2.1	2.7	1.5	0.9	0.8	0.2	0.6	0.5	0.5	0.4	0.3	0.2	0.3	0.3	0.7	2.7
30-Sep	0.6	0.5	0.2	0.2	Z	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	0.2	0.1	0.1	0.1	0.1	0.1	0.2	0.6
	0.3	0.3	0.3	0.3	0.3	0.3	0.4	0.3	0.3	0.4	0.4	0.4	0.3	0.3	0.2	0.2	0.2	0.2	0.2	0.3	0.3	0.3	0.3	0.3	Diurnal Average	
	1.4	1.9	1.8	1.5	1.9	1.8	1.6	1.2	1.3	1.8	2.1	2.7	1.8	1.5	1.0	0.7	2.0	1.5	1.0	1.3	1.3	1.0	0.9	1.2	Diurnal Maximum	

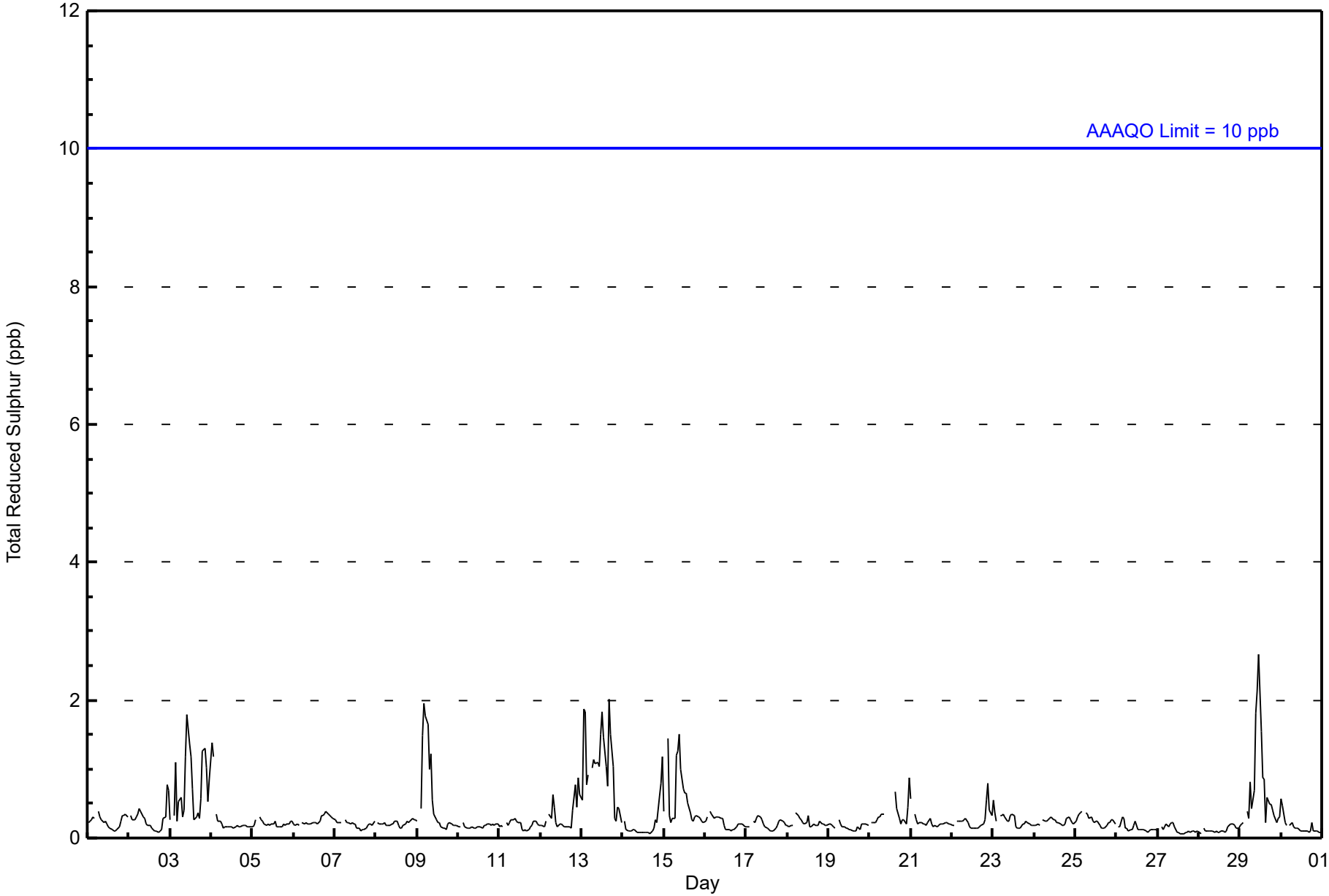
Z - zerospan C - Calibration
Alberta Ambient Air Quality Objectives (AAAQO): 1-hr 10 ppb 24-hr 3 ppb

Wood Buffalo Environmental Association

Hourly Averages

Total Reduced Sulphur (TRS) - ppb

Athabasca Valley - September 2024



Total Reduced Sulphur (TRS) - ppb
Athabasca Valley - September 2024

Concentration Ranges (ppb)	Number of Hours	%	Cumulative %
0 - 2	683	99.85	99.85
3 - 4	1	0.15	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: 684

Total Number of Hours: 720

Wood Buffalo Environmental Association

Frequency Distribution

Total Reduced Sulphur (TRS) - ppb

Athabasca Valley - September 2024

Concentration Ranges (ppb)	Wind Direction																
	N	NNE	NE	ENE	E	ESE	SE	SSE	S	SSW	SW	WSW	W	WNW	NW	NNW	**Totals**
0 - 2	25	6	7	21	43	97	118	32	20	35	55	49	48	37	28	62	683
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	25	6	7	21	43	97	118	32	20	35	55	49	48	37	28	63	684

Total Number of Valid Hours: 684

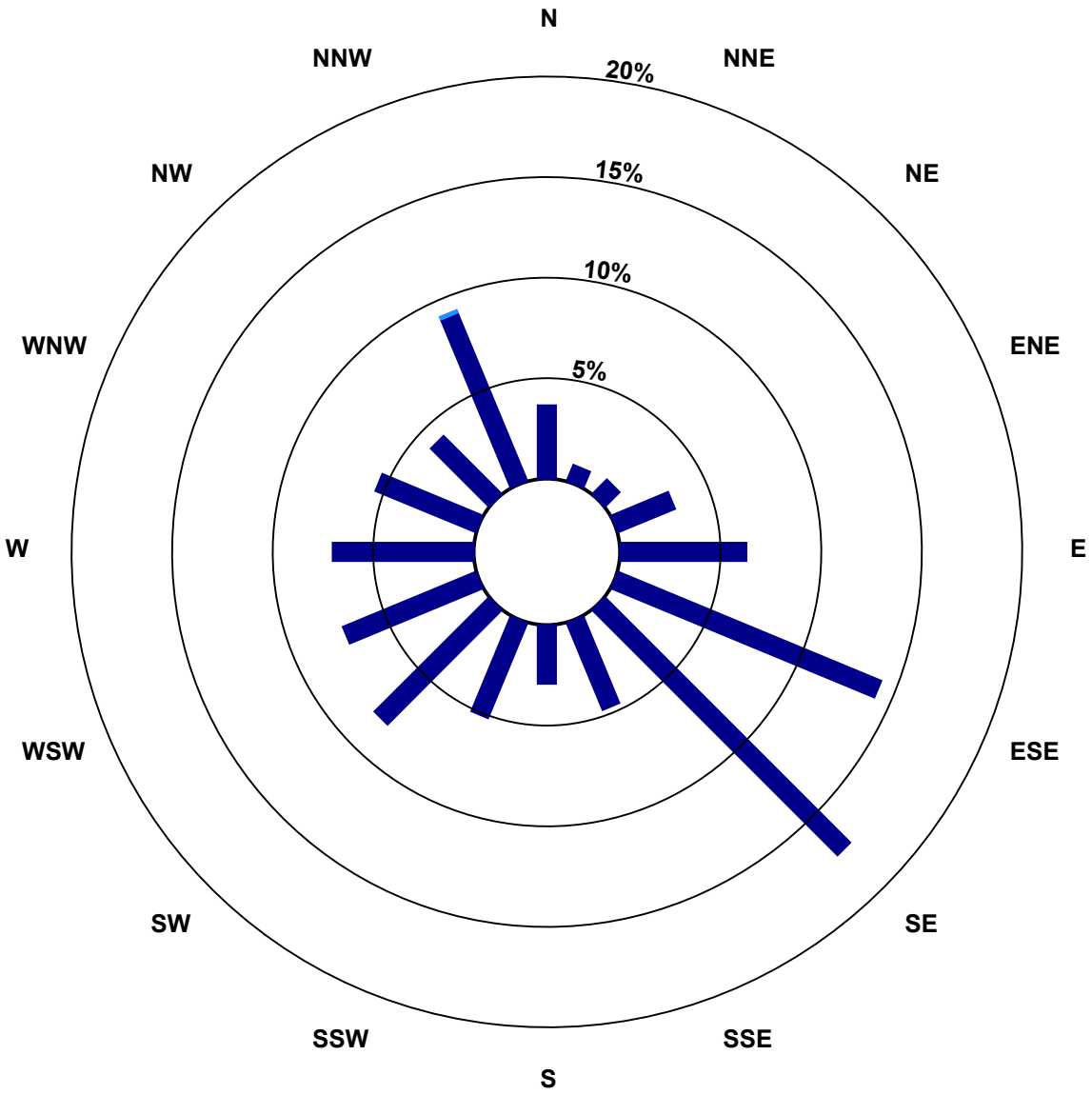
Total Number of Hours: 720

Wood Buffalo Environmental Association

Wind Rose Sep 2024

Total Reduced Sulphur (TRS) - ppb

Athabasca Valley



Classes (ppb)

0 - 2

3 - 4

5 - 7

8 - 11

> 11

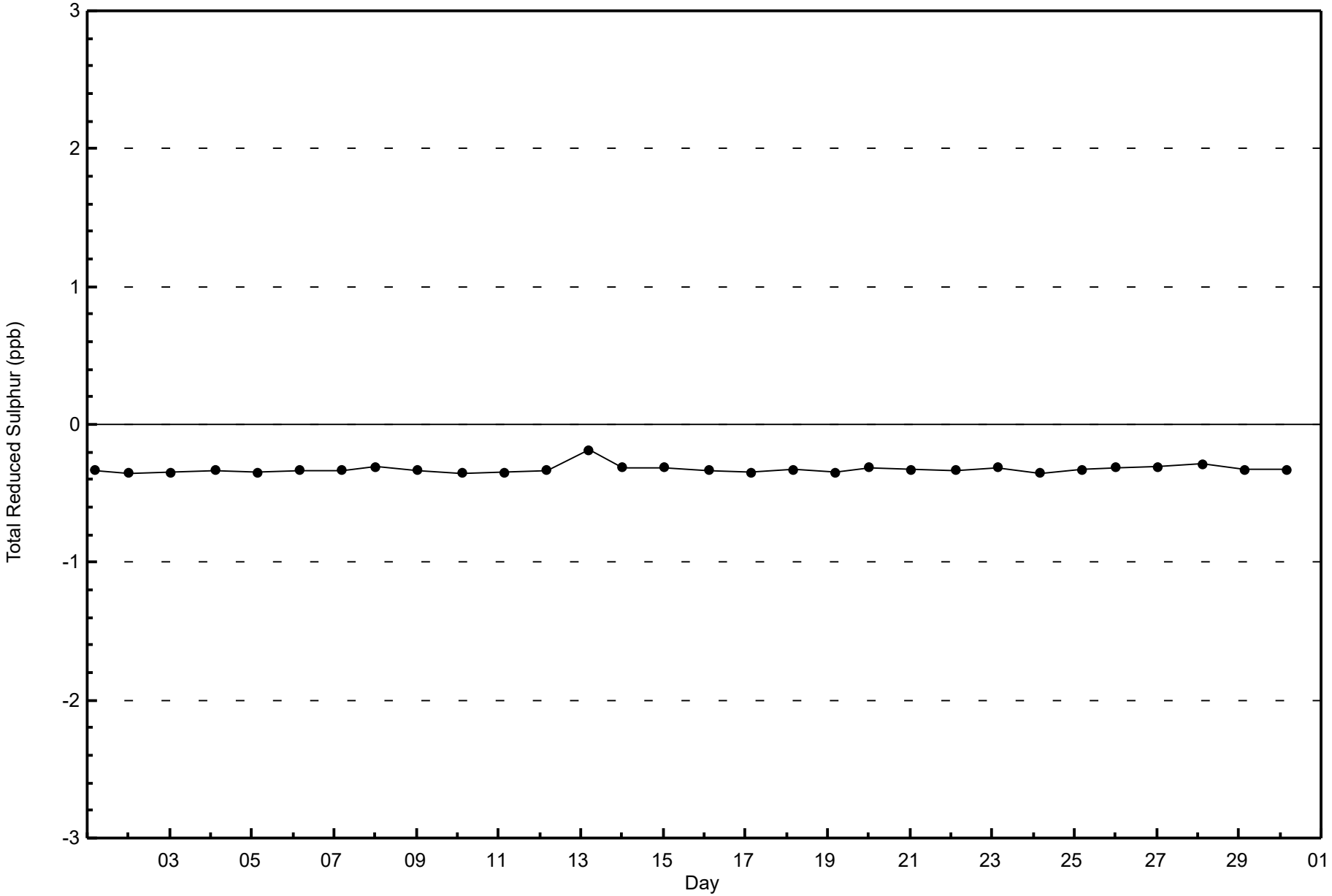
Total Number of Valid Hours: 684

Wood Buffalo Environmental Association

Zero Responses

Total Reduced Sulphur (TRS) - ppb

Athabasca Valley - September 2024

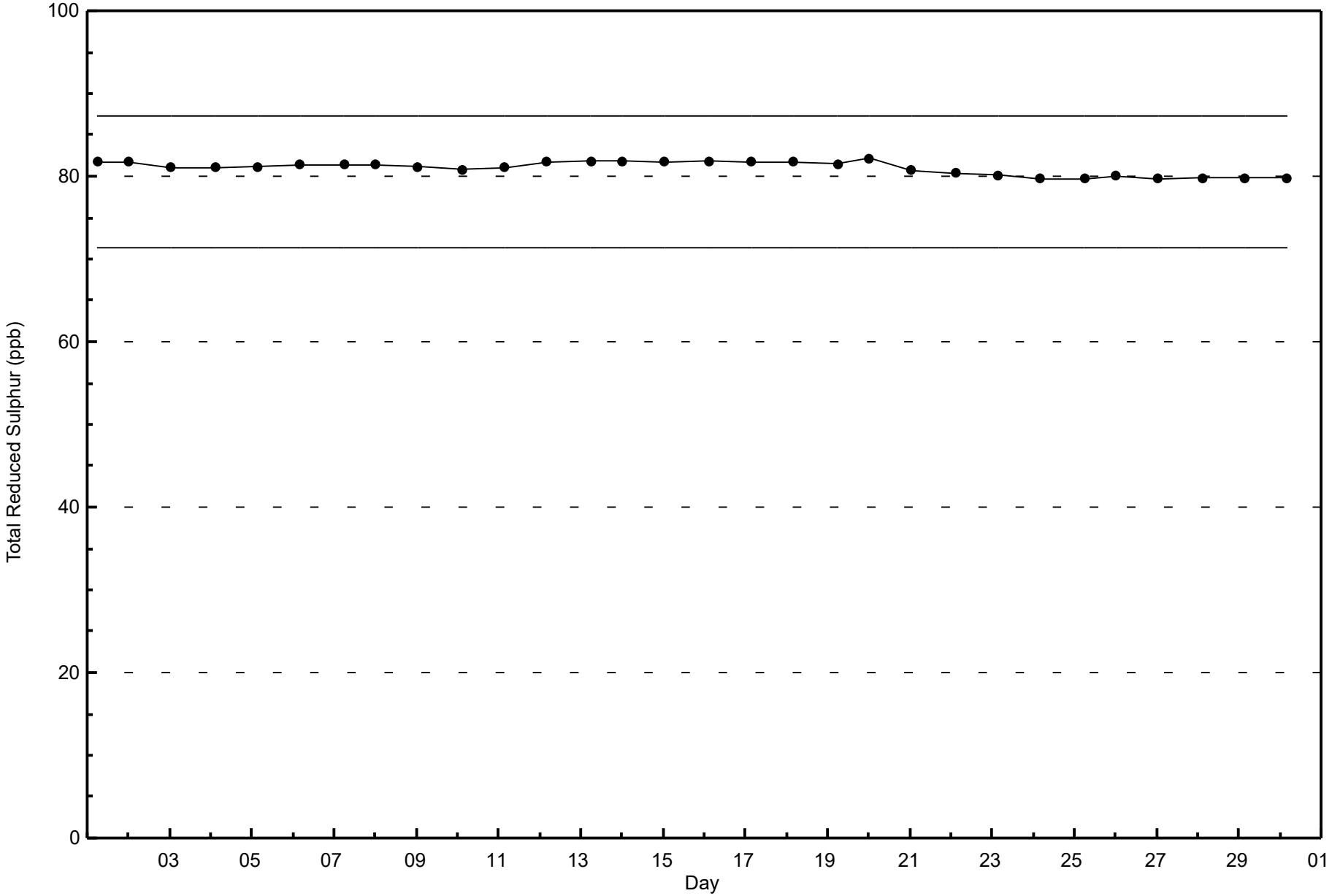


Wood Buffalo Environmental Association

Span Responses

Total Reduced Sulphur (TRS) - ppb

Athabasca Valley - September 2024



Wood Buffalo Environmental Association

Summary of Hour Averages

Total Hydrocarbons (THC) - ppm

Athabasca Valley - September 2024

Maximum Value: 2.7 ppm on Sep 13 09:00

Maximum Daily Average: 2.3 ppm on Sep 13

Minimum Value: 2.0 ppm on Sep 24 11:00

Minimum Daily Average: 2.0 ppm on Sep 26

Maximum Diurnal Average: 2.2 ppm at hour 6

Minimum Diurnal Average: 2.0 ppm at hour 16

Monthly Average: 2.11 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} = 2.6

Hours in Service:	720
Hours of Data:	684
Hours of Missing Data:	36
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-Sep	2.1	2.1	2.1	2.1	Z	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	2.1	2.2	2.2	2.3	2.4	2.1	2.4
2-Sep	2.4	2.3	2.3	2.2	2.2	Z	2.2	2.1	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	2.1	2.1	2.1	2.4
3-Sep	Z	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	2.1	2.1	2.1	2.1	2.1	2.1	2.1
4-Sep	2.1	Z	2.1	2.1	2.1	2.2	2.2	2.1	2.1	2.1	C	C	C	C	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.1	2.2
5-Sep	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	2.1	2.1	2.1	2.1	2.1
6-Sep	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	2.2	2.1	2.1	2.3	2.2	2.3	2.4	2.5	2.1	2.5
7-Sep	2.4	2.4	2.3	2.2	Z	2.2	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	2.1	2.1	2.1	2.2	2.1	2.4
8-Sep	2.1	2.1	2.1	2.2	2.3	Z	2.2	2.1	2.1	2.2	2.1	2.2	2.2	2.0	2.0	2.0	2.1	2.2	2.2	2.1	2.1	2.2	2.2	2.1	2.1	2.3
9-Sep	Z	2.2	2.3	2.3	2.5	2.6	2.6	2.4	2.4	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	2.2	2.6
10-Sep	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	2.1	2.1	2.0	2.1
11-Sep	2.1	2.2	Z	2.2	2.2	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	2.1	2.1	2.1	2.1	2.1	2.1	2.1	2.2
12-Sep	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	2.2	2.1	2.1	2.2
13-Sep	2.2	2.2	2.3	2.6	Z	2.6	2.5	2.6	2.7	2.6	2.6	2.6	2.6	2.5	2.2	2.1	2.1	2.1	2.2	2.2	2.2	2.2	2.2	2.1	2.3	2.7
14-Sep	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	2.0	2.0	2.0	2.0	2.1	2.0	2.1	2.1	2.1	2.1	2.1
15-Sep	Z	2.2	2.1	2.1	2.3	2.4	2.4	2.4	2.5	2.4	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	2.5
16-Sep	2.2	Z	2.1	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	2.0	2.1	2.1	2.1	2.1	2.2
17-Sep	2.1	2.1	Z	2.1	2.1	2.1	2.2	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	2.1	2.1	2.1	2.1	2.2
18-Sep	2.1	2.2	2.3	Z	2.3	2.4	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	2.1	2.4
19-Sep	2.3	2.5	2.5	2.3	Z	2.2	2.2	2.2	2.2	2.2	2.1	2.1	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.1	2.1	2.1	2.1	2.1	2.1	2.5
20-Sep	2.1	2.1	2.1	2.1	2.1	Z	2.2	2.2	2.2	2.4	2.3	2.3	2.2	2.2	2.1	2.1	2.0	2.0	2.0	2.0	2.1	2.1	2.1	2.1	2.1	2.4
21-Sep	Z	2.1	2.3	2.3	2.2	2.2	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	2.1	2.1	2.1	2.1	2.3
22-Sep	2.1	Z	2.0	2.1	2.1	2.1	2.2	2.2	2.1	2.1	2.1	2.1	2.1	2.1	2.0	2.0	2.0	2.1	2.2	2.1	2.0	2.1	2.0	2.0	2.1	2.2
23-Sep	2.0	2.0	Z	2.1	2.2	2.3	2.3	2.2	2.2	2.1	2.2	2.2	2.1	2.1	2.0	2.0	2.0	2.1	2.1	2.1	2.1	2.1	2.0	2.0	2.1	2.3
24-Sep	2.1	2.1	2.2	Z	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	2.0	2.1	2.2	2.2	2.1	2.1	2.2
25-Sep	2.1	2.0	2.0	2.0	Z	2.0	2.0	2.1	2.1	2.1	2.4	2.1	2.1	2.1	2.1	2.1	2.1	2.1	2.1	2.1	2.2	2.4	2.4	2.4	2.1	2.4
26-Sep	2.3	2.1	2.0	2.1	2.0	Z	2.0	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	2.1	2.1	2.2	2.0	2.3
27-Sep	Z	2.1	2.1	2.1	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	2.1	2.1	2.0	2.0	2.0	2.0	2.0	2.1
28-Sep	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	2.2	2.2	2.1	2.2	2.1	2.2
29-Sep	2.1	2.1	Z	2.0	2.1	2.1	2.1	2.1	2.2	2.5	2.4	2.3	2.1	2.1	2.1	2.0	2.1	2.1	2.0	2.0	2.0	2.0	2.0	2.0	2.1	2.5
30-Sep	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	2.0	2.0	2.1	2.1	2.1	2.0	2.1
	2.1	2.1	2.1	2.2	2.1	2.2	2.2	2.2	2.1	2.1	2.1	2.1	2.1	2.1	2.0	2.0	2.0	2.0	2.1	2.1	2.1	2.1	2.1	2.1	Diurnal Average	
	2.4	2.5	2.5	2.6	2.5	2.6	2.6	2.6	2.7	2.6	2.6	2.6	2.6	2.5	2.2	2.1	2.2	2.2	2.2	2.3	2.2	2.4	2.4	2.5	Diurnal Maximum	

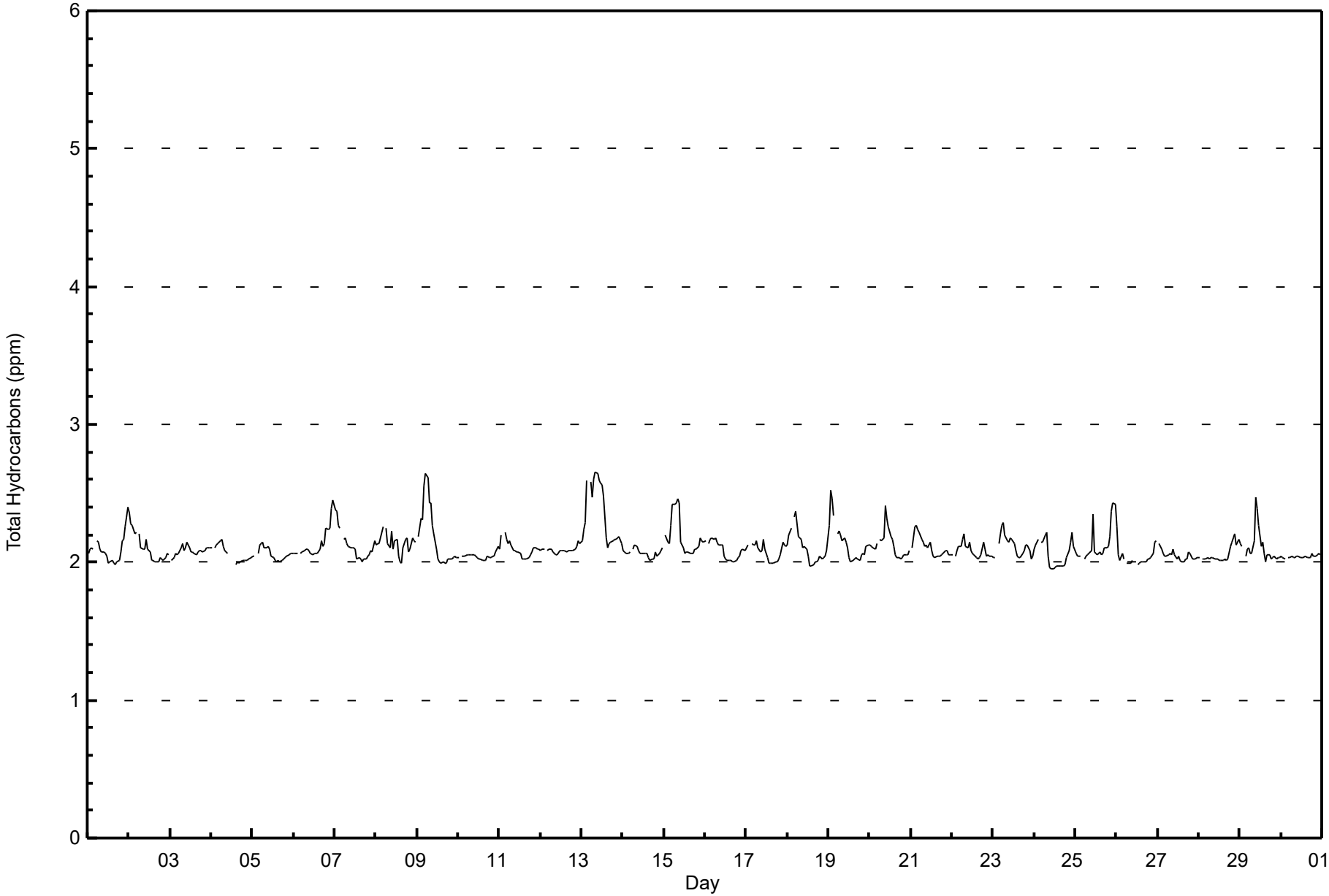
Z - zerospan C - Calibration M - Maintenance

Wood Buffalo Environmental Association

Hourly Averages

Total Hydrocarbons (THC) - ppm

Athabasca Valley - September 2024



Concentration Ranges (ppm)	Number of Hours	%	Cumulative %
0 - 2.0	240	35.09	35.09
2.1 - 3.0	444	64.91	100.00
3.1 - 10.0	0	0.00	100.00
> 10.0	0	0.00	100.00

Total Number of Valid Hours: 684

Total Number of Hours: 720

Wood Buffalo Environmental Association

Frequency Distribution

Total Hydrocarbons (THC) - ppm

Athabasca Valley - September 2024

Concentration Ranges (ppm)	Wind Direction																
	N	NNE	NE	ENE	E	ESE	SE	SSE	S	SSW	SW	WSW	W	WNW	NW	NNW	**Totals**
0 - 2.0	6	1	2	6	10	12	9	9	12	13	34	38	38	25	12	13	240
2.1 - 3.0	19	6	6	14	33	86	109	25	8	22	21	9	5	11	18	52	444
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	25	7	8	20	43	98	118	34	20	35	55	47	43	36	30	65	684

Total Number of Valid Hours: 684

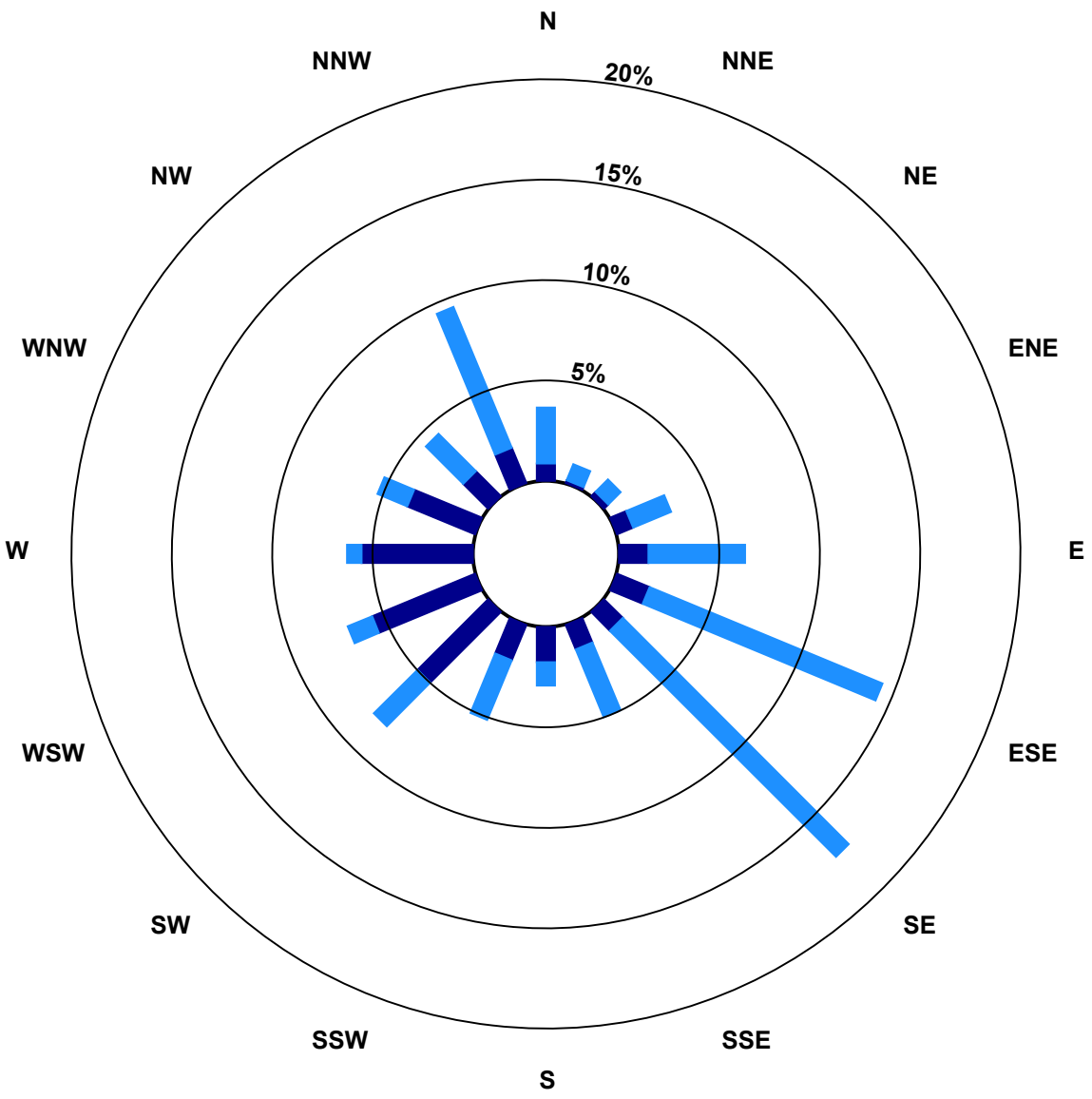
Total Number of Hours: 720

Wood Buffalo Environmental Association

Wind Rose Sep 2024

Total Hydrocarbons (THC) - ppm

Athabasca Valley



Classes (ppm)

0 - 2.0

2.1 - 3.0

3.1 - 10.0

> 10.0

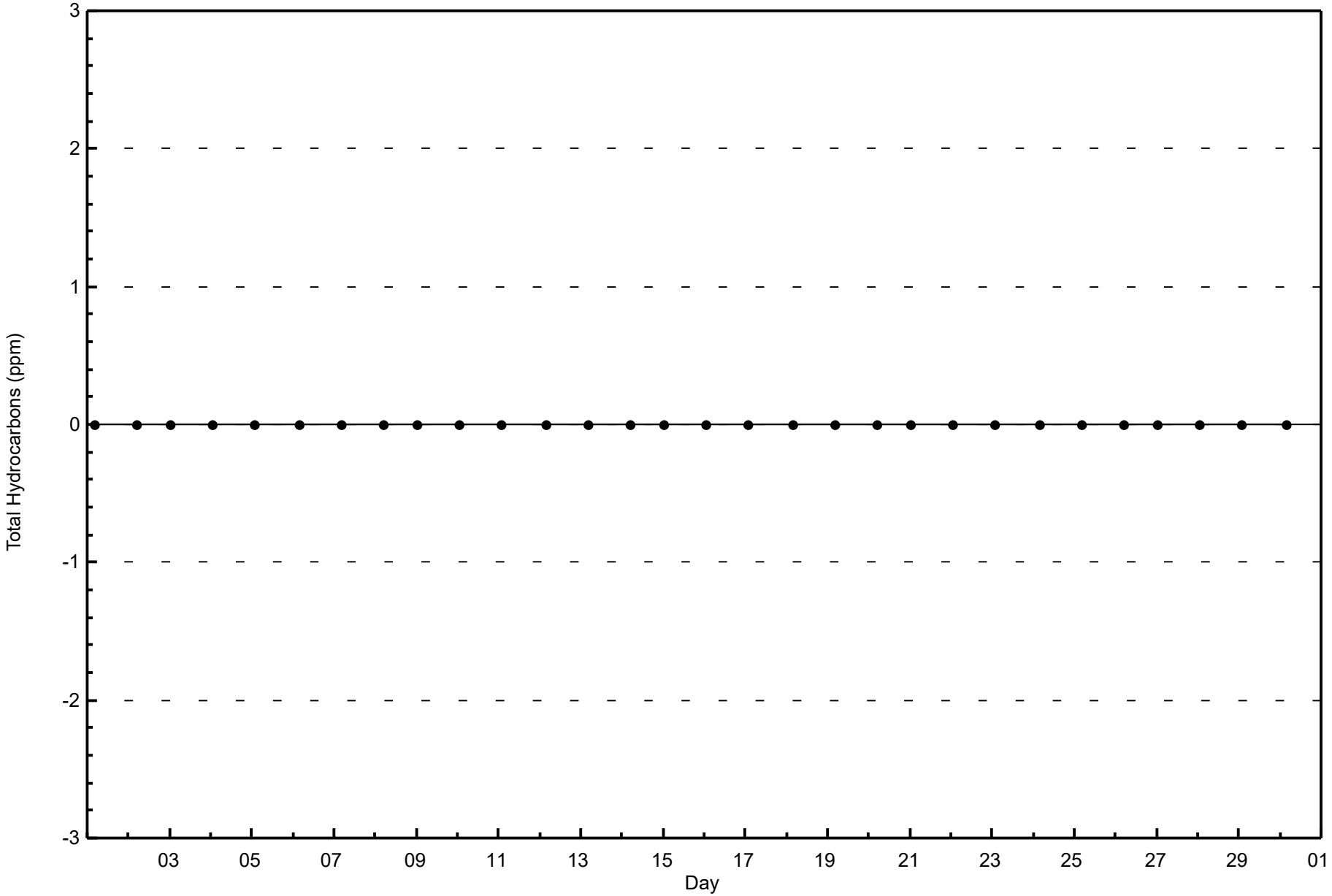
Total Number of Valid Hours: 684

Wood Buffalo Environmental Association

Zero Responses

Total Hydrocarbons (THC) - ppm

Athabasca Valley - September 2024

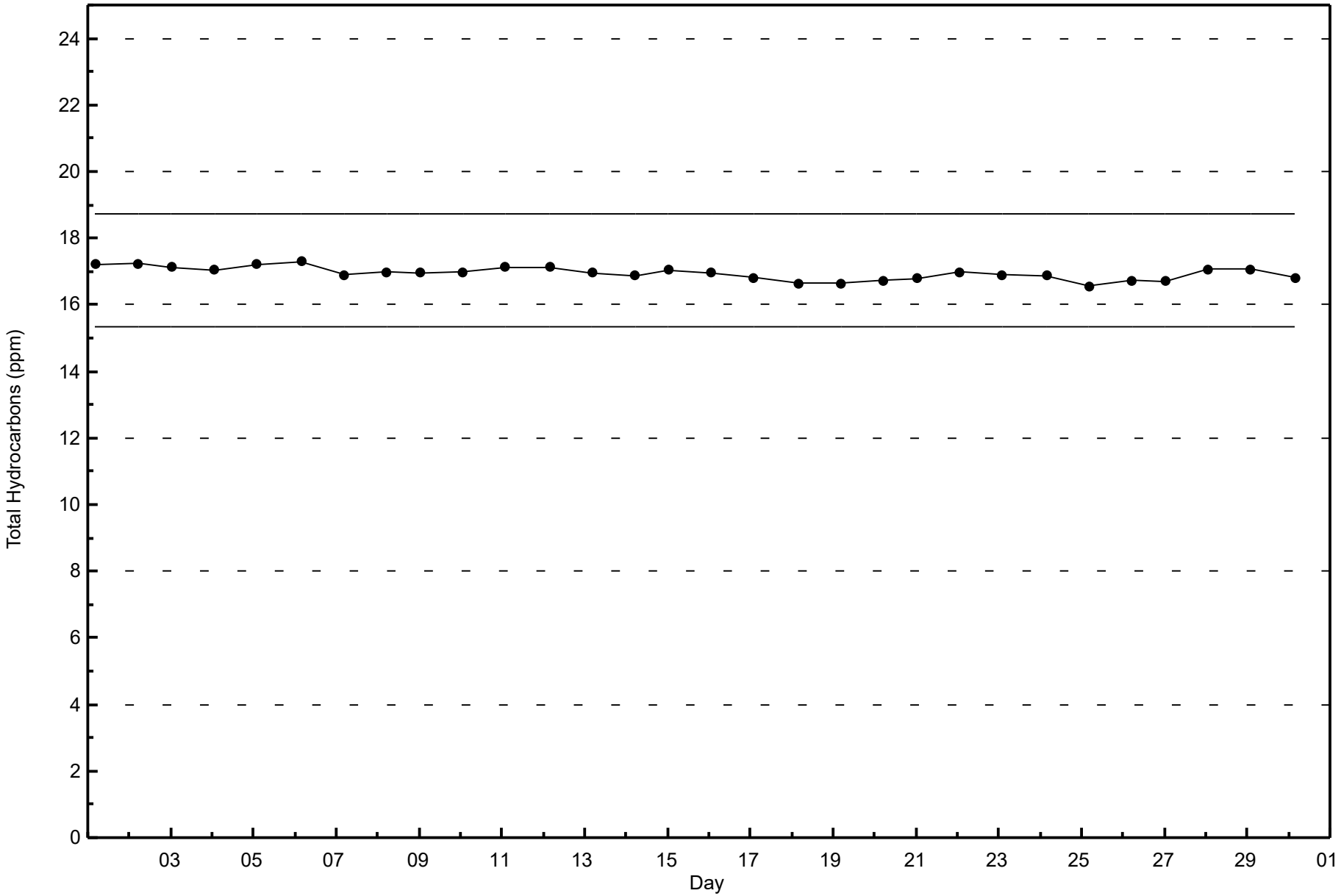


Wood Buffalo Environmental Association

Span Responses

Total Hydrocarbons (THC) - ppm

Athabasca Valley - September 2024



Wood Buffalo Environmental Association

Summary of Hour Averages

Non Methane Hydrocarbons (NMHC) - ppm

Athabasca Valley - September 2024

Maximum Value: 0.267 ppm on Sep 25 11:00

Maximum Daily Average: 0.029 ppm on Sep 8

Minimum Value: 0.000 ppm on Sep 1 01:00

Minimum Daily Average: 0.000 ppm on Sep 3

Maximum Diurnal Average: 0.014 ppm at hour 11

Minimum Diurnal Average: 0.000 ppm at hour 1

Monthly Average: 0.003 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} = 0.1

Hours in Service:	720
Hours of Data:	684
Hours of Missing Data:	36
Hours of Calibration:	34
Percent Operational Time:	99.7

Day	Hourly Period Ending At (MST)																								Daily	Daily
	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24	Average	Maximum
1-Sep	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	0.019	0.024	0.004	0.000	0.000	0.002	0.024
2-Sep	0.000	0.000	0.000	0.000	0.000	Z	0.000	0.000	0.000	0.000	0.048	0.000	0.000	0.000	0.000	0.000	0.000	0.002	0.018	0.008	0.000	0.000	0.000	0.000	0.003	0.048
3-Sep	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
4-Sep	0.000	Z	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	C	C	C	C	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000
5-Sep	0.000	0.000	Z	0.000	0.000	0.000	0.000	0.000	0.000	0.008	0.006	0.000	0.002	0.000	0.000	0.002	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.001	0.008
6-Sep	0.000	0.000	0.000	Z	0.000	0.000	0.000	0.002	0.005	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.029	0.019	0.044	0.128	0.075	0.031	0.024	0.022	0.017	0.128
7-Sep	0.000	0.000	0.000	0.000	Z	0.000	0.009	0.006	0.002	0.000	0.000	0.000	0.001	0.000	0.000	0.000	0.000	0.000	0.000	0.008	0.000	0.000	0.000	0.000	0.001	0.009
8-Sep	0.000	0.000	0.000	0.000	0.000	Z	0.000	0.000	0.000	0.147	0.000	0.063	0.085	0.004	0.002	0.000	0.086	0.117	0.114	0.030	0.017	0.003	0.000	0.004	0.029	0.147
9-Sep	Z	0.049	0.115	0.053	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.009	0.115
10-Sep	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
11-Sep	0.000	0.000	Z	0.000	0.000	0.000	0.000	0.002	0.000	0.000	0.000	0.000	0.010	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.001	0.010
12-Sep	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
13-Sep	0.000	0.000	0.000	0.000	Z	0.000	0.000	0.000	0.000	0.000	0.000	0.004	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.004
14-Sep	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	0.005	0.000	0.000	0.000	0.000	0.000	0.005
15-Sep	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
16-Sep	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
17-Sep	0.000	0.000	Z	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.077	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	0.004	0.077
18-Sep	0.000	0.000	0.000	Z	0.000	0.048	0.000	0.002	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	0.002	0.048
19-Sep	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
20-Sep	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
21-Sep	Z	0.000	0.000	0.000	0.000	0.000	0.000	0.000	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	0.009
22-Sep	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	0.004	0.092	0.004	0.000	0.000	0.000	0.000	0.004	0.092
23-Sep	0.000	0.000	Z	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	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.001
24-Sep	0.000	0.000	0.000	Z	0.000	0.000	0.000	0.000	0.000	0.000	0.005	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	0.005
25-Sep	0.000	0.000	0.000	0.000	Z	0.000	0.000	0.000	0.000	0.002	0.267	0.008	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.015	0.010	0.002	0.002	0.013	0.267
26-Sep	0.000	0.000	0.000	0.000	0.000	Z	0.000	0.000	0.000	0.000	M	M	0.000	0.000	0.000	0.000	0.000	0.000	0.003	0.002	0.000	0.000	0.000	0.000	0.000	0.003
27-Sep	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
28-Sep	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	0.011	0.000	0.000	0.000	0.000	0.000	0.000	0.011
29-Sep	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
30-Sep	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	0.015	0.000	0.000	0.000	0.000	0.000	0.001	0.015
	0.000	0.002	0.005	0.002	0.000	0.002	0.000	0.000	0.000	0.006	0.014	0.003	0.003	0.000	0.000	0.000	0.004	0.005	0.010	0.007	0.004	0.002	0.001	0.001	Diurnal Average	
	0.000	0.049	0.115	0.053	0.000	0.048	0.009	0.006	0.005	0.147	0.267	0.063	0.085	0.004	0.002	0.002	0.086	0.117	0.114	0.128	0.075	0.031	0.024	0.022	Diurnal Maximum	

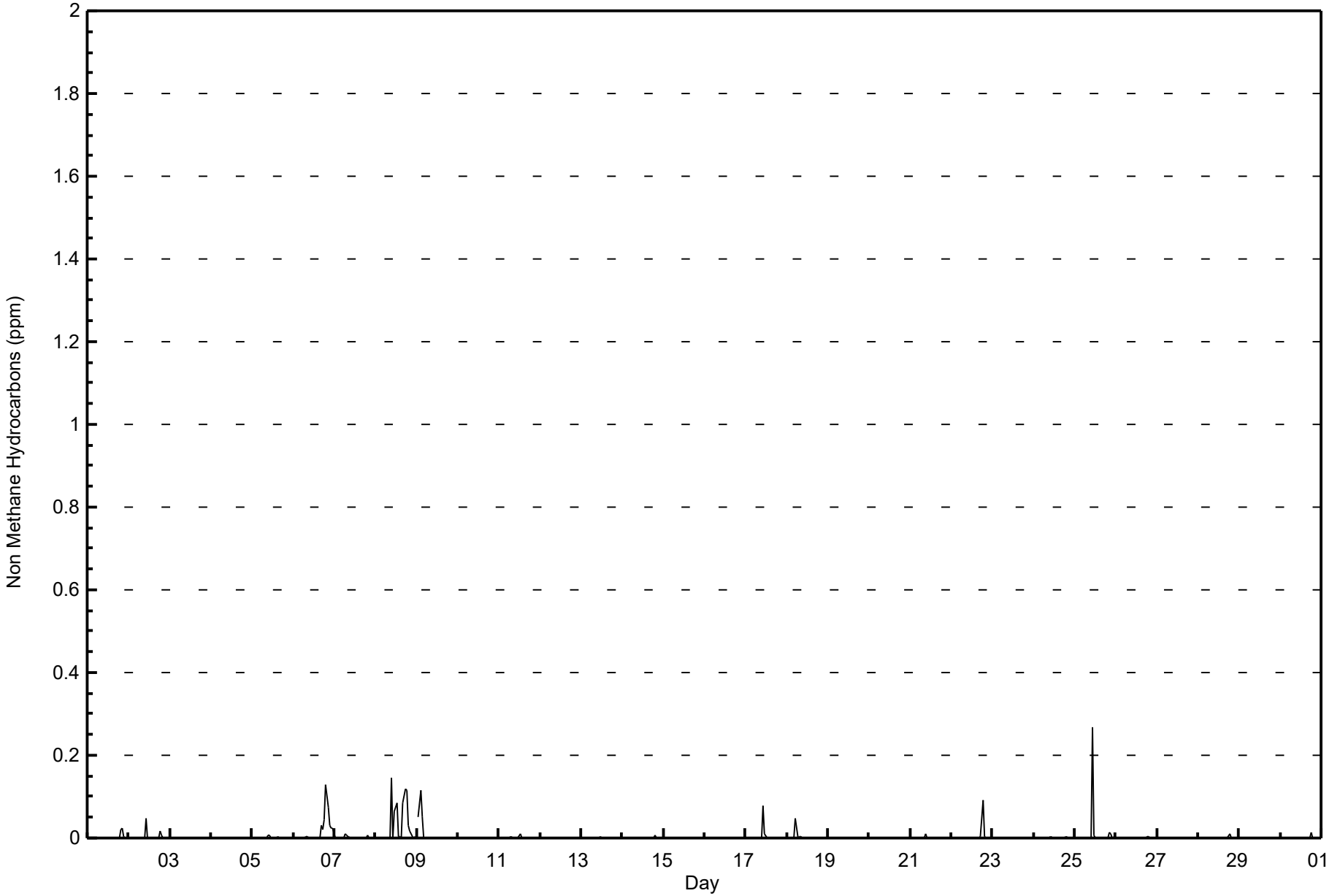
Z - zerospan C - Calibration M - Maintenance

Wood Buffalo Environmental Association

Hourly Averages

Non Methane Hydrocarbons (NMHC) - ppm

Athabasca Valley - September 2024



Non Methane Hydrocarbons (NMHC) - ppm
Athabasca Valley - September 2024

Concentration Ranges (ppm)	Number of Hours	%	Cumulative %
0 - 0.005	643	94.01	94.01
0.006 - 0.05	29	4.24	98.25
0.06 - 0.1	11	1.61	99.85
> 0.1	1	0.15	100.00

Total Number of Valid Hours: 684

Total Number of Hours: 720

Non Methane Hydrocarbons (NMHC) - ppm
Athabasca Valley - September 2024

Concentration Ranges (ppm)	Wind Direction																
	N	NNE	NE	ENE	E	ESE	SE	SSE	S	SSW	SW	WSW	W	WNW	NW	NNW	**Totals**
0 - 0.005	24	6	8	20	39	84	109	30	17	34	55	46	41	36	29	65	643
0.006 - 0.05	1	1	0	0	2	8	6	3	3	1	0	1	2	0	1	0	29
0.06 - 0.1	0	0	0	0	2	6	2	1	0	0	0	0	0	0	0	0	11
> 0.1	0	0	0	0	0	0	1	0	0	0	0	0	0	0	0	0	1
Totals	25	7	8	20	43	98	118	34	20	35	55	47	43	36	30	65	684

Total Number of Valid Hours: 684

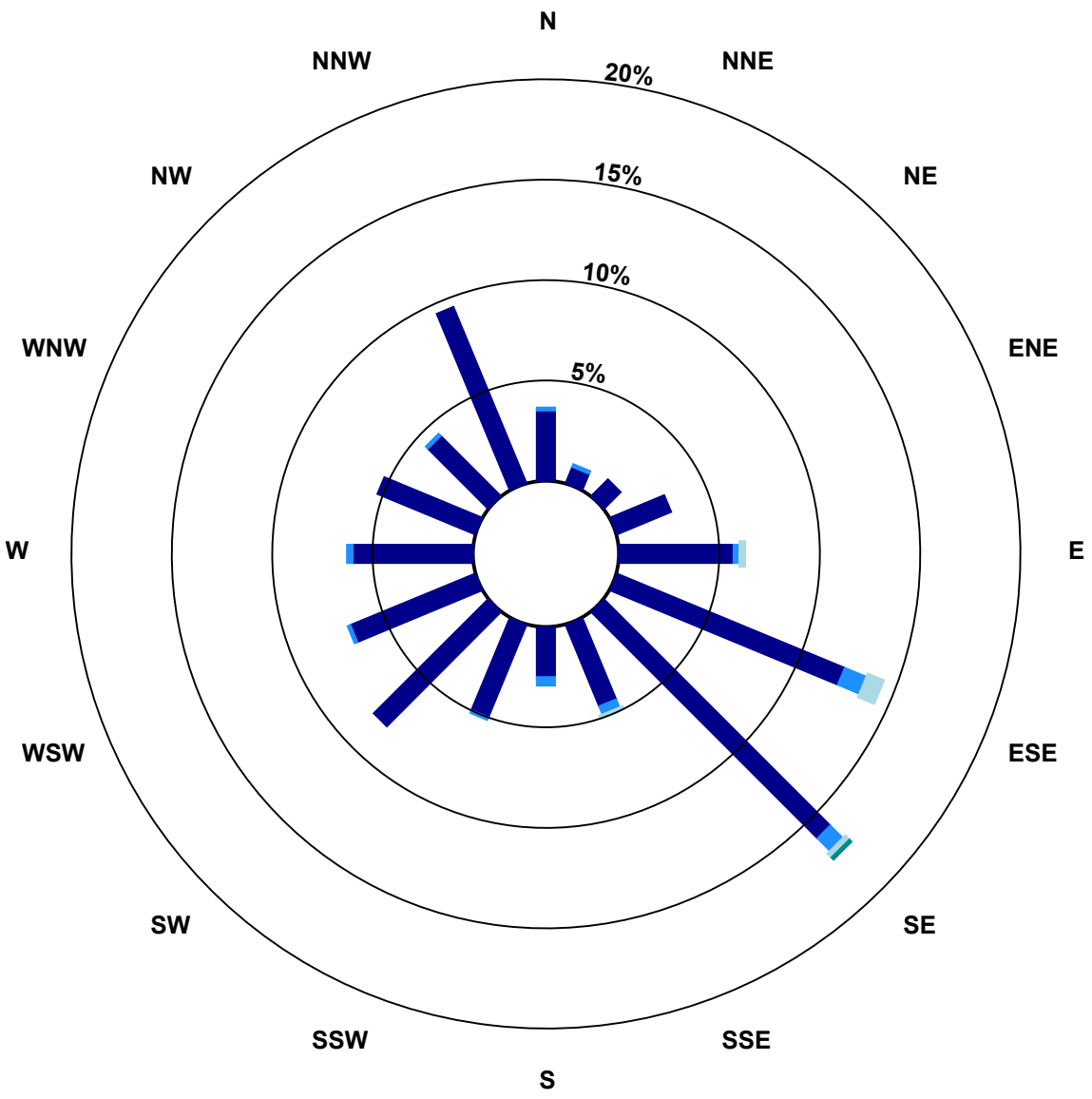
Total Number of Hours: 720

Wood Buffalo Environmental Association

Wind Rose Sep 2024

Non Methane Hydrocarbons (NMHC) - ppm

Athabasca Valley



Classes (ppm)

0 - 0.005

0.006 - 0.05

0.06 - 0.1

> 0.1

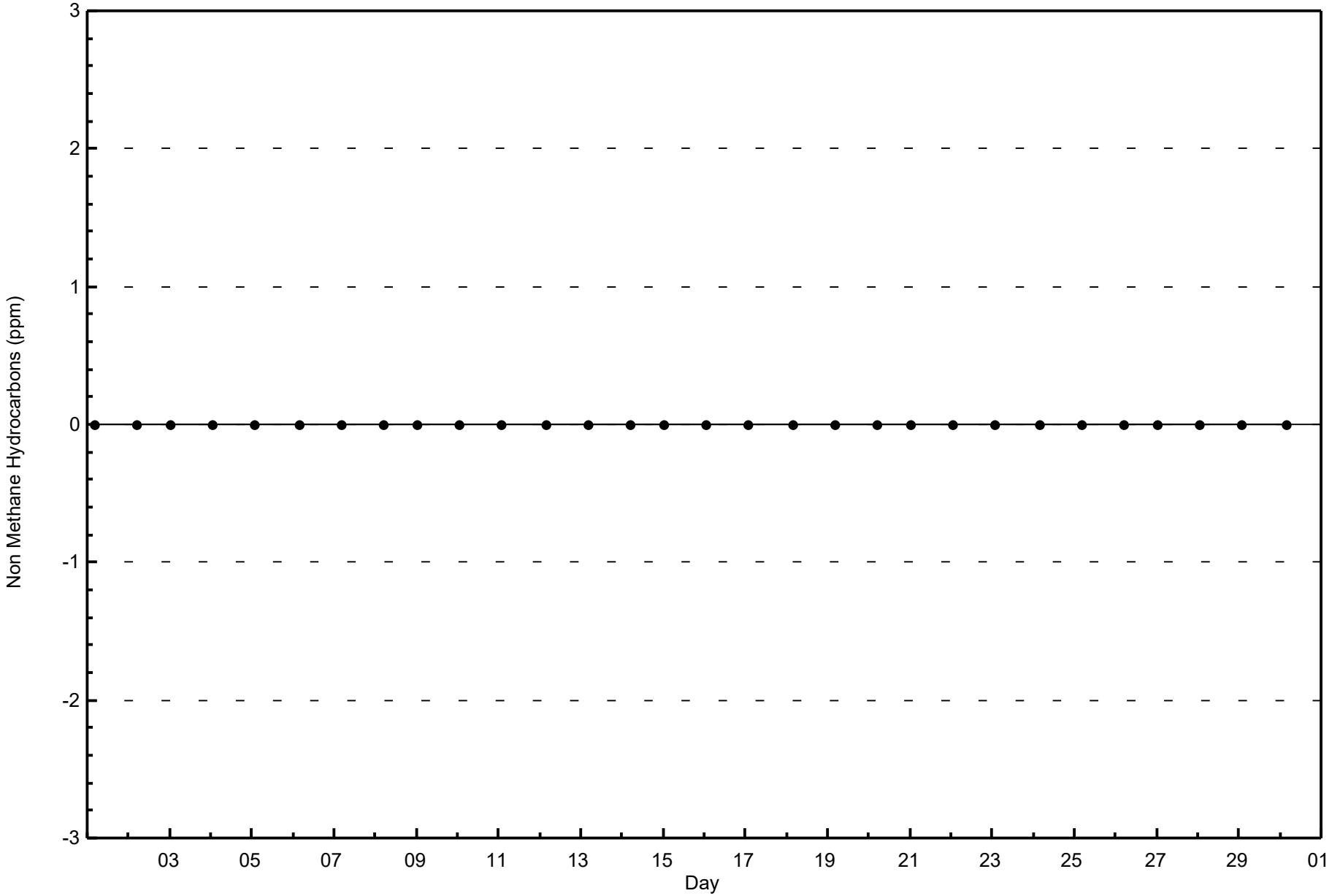
Total Number of Valid Hours: 684

Wood Buffalo Environmental Association

Zero Responses

Non Methane Hydrocarbons (NMHC) - ppm

Athabasca Valley - September 2024

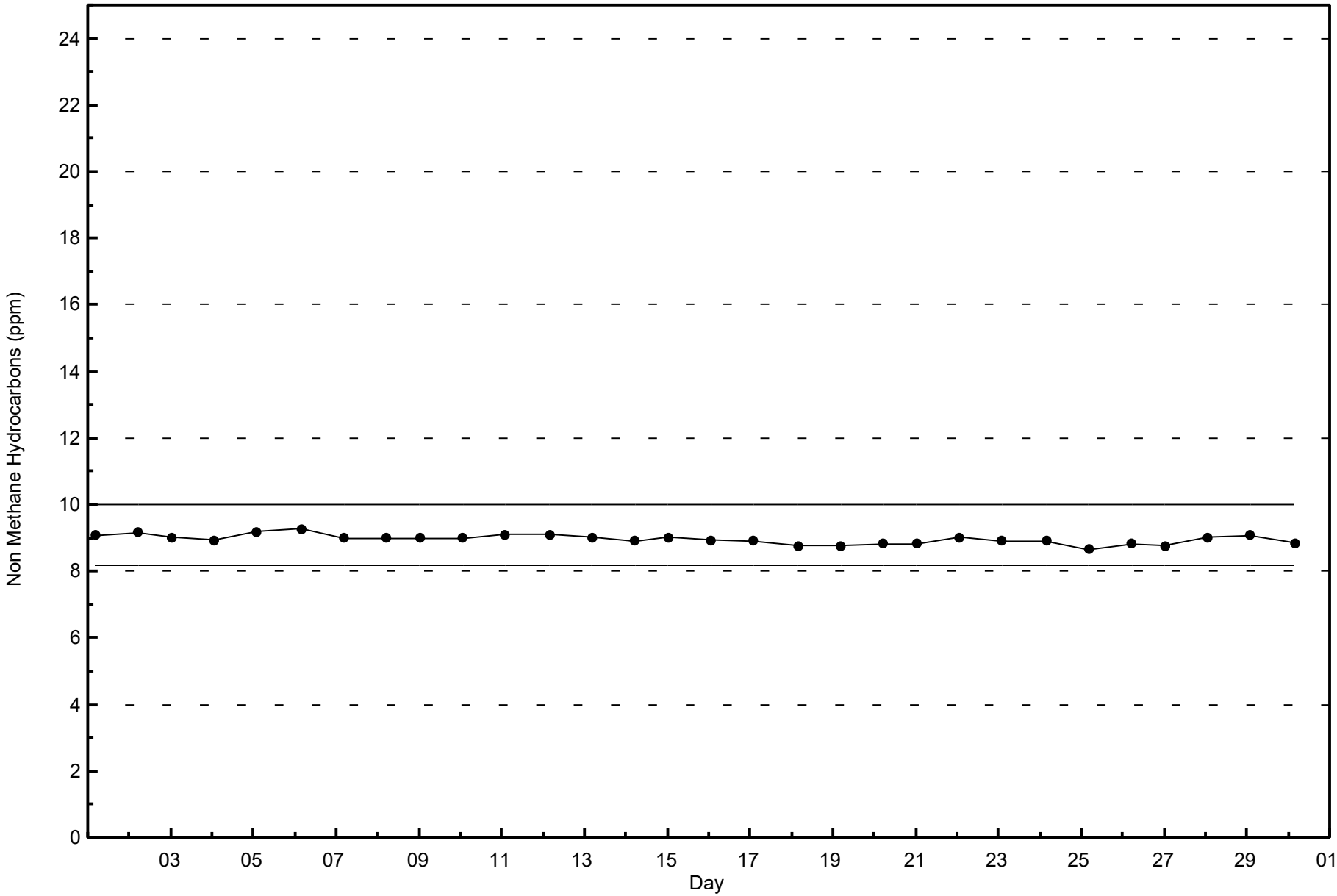


Wood Buffalo Environmental Association

Span Responses

Non Methane Hydrocarbons (NMHC) - ppm

Athabasca Valley - September 2024



Wood Buffalo Environmental Association

Summary of Hour Averages

Methane (CH_4) - ppm

Athabasca Valley - September 2024

Number of Exceedences (AAAQO): 1-hr: 0 24-hr: 0
Maximum Value: 2.7 ppm on Sep 13 09:00
Maximum Daily Average: 2.3 ppm on Sep 13

Minimum Value: 1.9 ppm on Sep 24 11:00
Minimum Daily Average: 2.0 ppm on Sep 26
Maximum Diurnal Average: 2.2 ppm at hour 6
Minimum Diurnal Average: 2.0 ppm at hour 16
Monthly Average: 2.10 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} = 2.6

Hours in Service:	720
Hours of Data:	684
Hours of Missing Data:	36
Hours of Calibration:	34
Percent Operational Time:	99.7

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

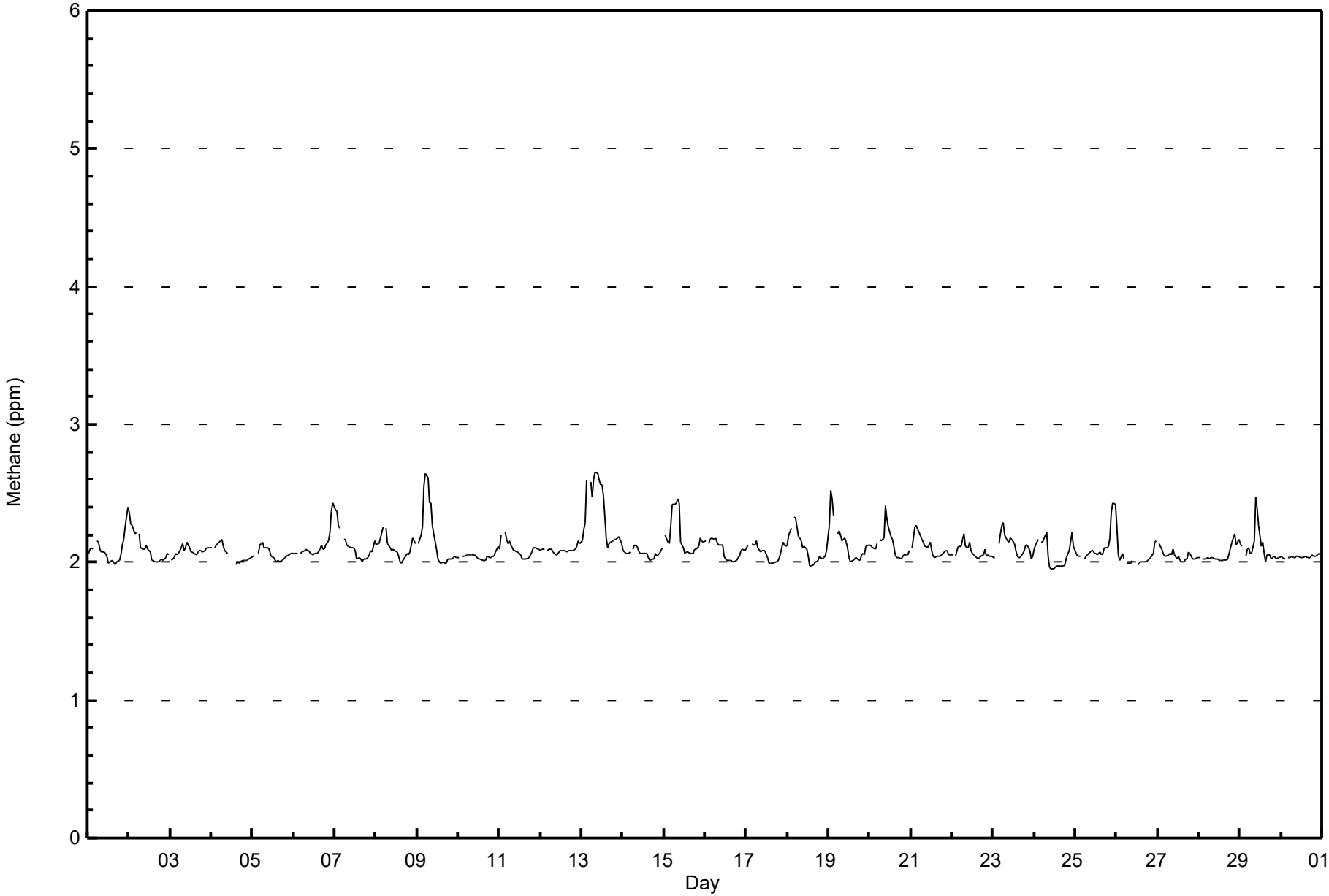
Z - zerospan C - Calibration M - Maintenance

Wood Buffalo Environmental Association

Hourly Averages

Methane (CH_4) - ppm

Athabasca Valley - September 2024



Concentration Ranges (ppm)	Number of Hours	%	Cumulative %
0 - 2.0	244	35.67	35.67
2.1 - 3.0	440	64.33	100.00
3.1 - 10.0	0	0.00	100.00
> 10.0	0	0.00	100.00

Total Number of Valid Hours: 684

Total Number of Hours: 720

Methane (CH_4) - ppm
Athabasca Valley - September 2024

Concentration Ranges (ppm)	Wind Direction																
	N	NNE	NE	ENE	E	ESE	SE	SSE	S	SSW	SW	WSW	W	WNW	NW	NNW	**Totals**
0 - 2.0	6	1	2	6	10	15	10	9	12	13	34	38	38	25	12	13	244
2.1 - 3.0	19	6	6	14	33	83	108	25	8	22	21	9	5	11	18	52	440
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	25	7	8	20	43	98	118	34	20	35	55	47	43	36	30	65	684

Total Number of Valid Hours: 684

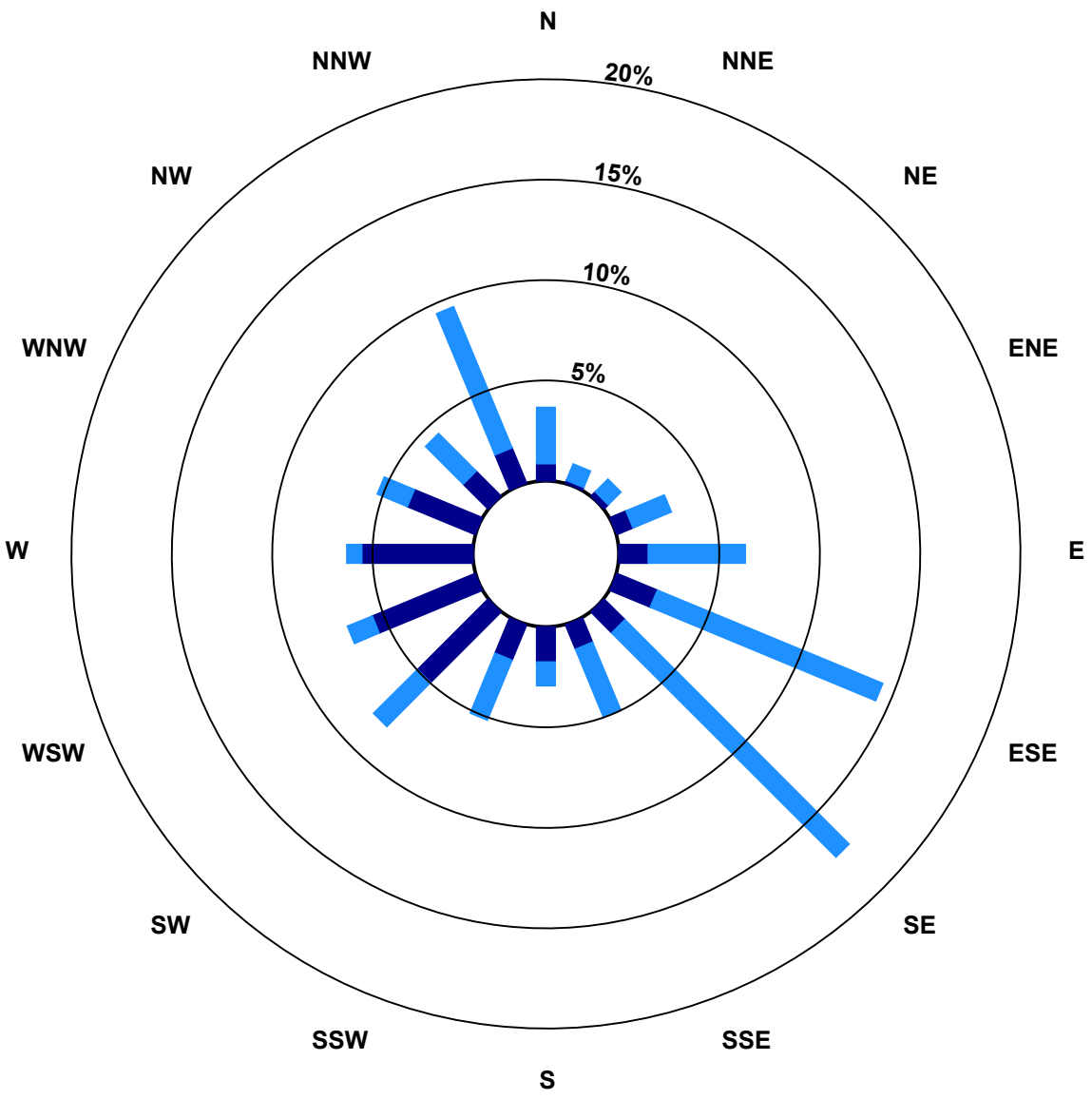
Total Number of Hours: 720

Wood Buffalo Environmental Association

Wind Rose Sep 2024

Methane (CH_4) - ppm

Athabasca Valley



Classes (ppm)

0 - 2.0

2.1 - 3.0

3.1 - 10.0

> 10.0

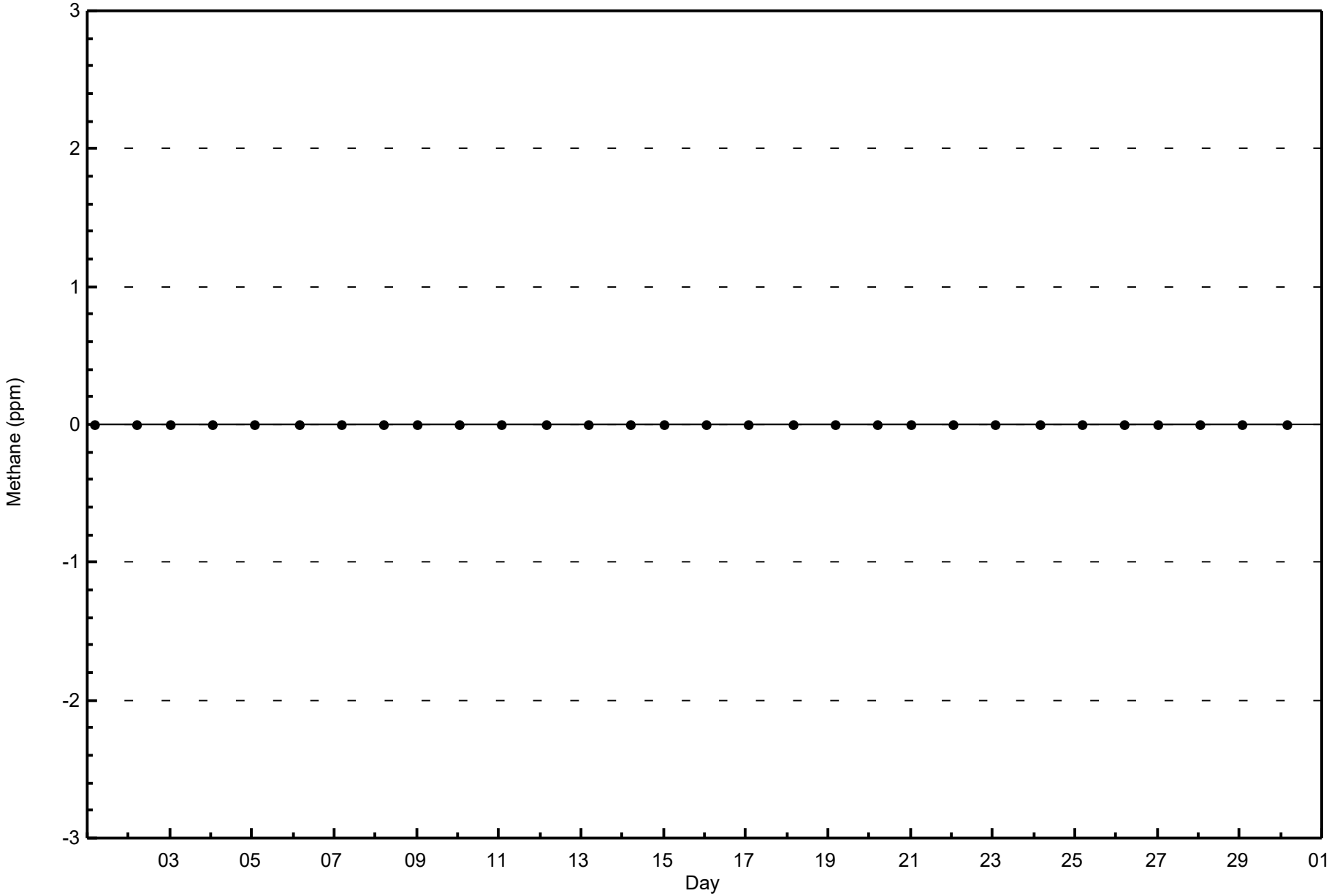
Total Number of Valid Hours: 684

Wood Buffalo Environmental Association

Zero Responses

Methane (CH_4) - ppm

Athabasca Valley - September 2024

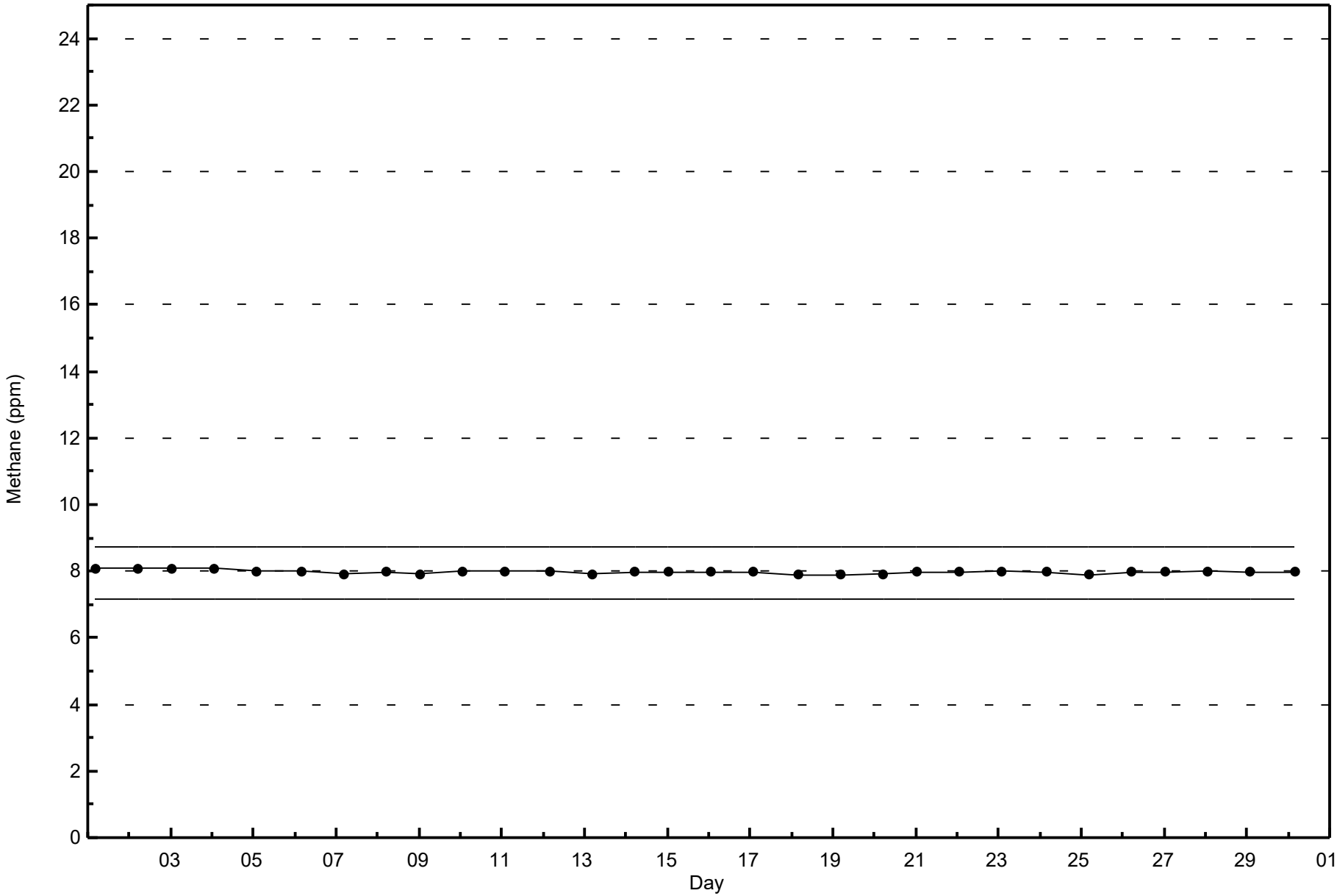


Wood Buffalo Environmental Association

Span Responses

Methane (CH_4) - ppm

Athabasca Valley - September 2024



Wood Buffalo Environmental Association

Summary of Hour Averages

Ozone (O_3) - ppb

Athabasca Valley - September 2024

Number of Exceedences (AAAQO): 1-hr: 0 24-hr: 0
Maximum Value: 47.1 ppb on Sep 8 16:00 Maximum Daily Average: 25.9 ppb on Sep 30

Minimum Value: 3.7 ppb on Sep 9 06:00 Minimum Daily Average: 7.3 ppb on Sep 13
Maximum Diurnal Average: 30.5 ppb at hour 16 Minimum Diurnal Average: 9.7 ppb at hour 6
Monthly Average: 18.85 ppb Percentiles: P_1 = 4.1 P_{10} = 6.7 Q_1 = 10.4 Median = 17.8 Q_3 = 26.3 P_{90} = 32.3 P_{99} = 41.6

Hours in Service:	720
Hours of Data:	686
Hours of Missing Data:	34
Hours of Calibration:	34
Percent Operational Time:	100.0

Day	Hourly Period Ending At (MST)																								Daily	Daily
	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24	Average	Maximum
1-Sep	Z	18.7	20.5	17.5	12.4	11.0	14.4	18.2	20.0	21.8	24.7	32.5	41.7	40.8	38.0	33.5	32.0	32.2	28.2	14.8	11.4	8.1	8.1	8.7	22.1	41.7
2-Sep	12.7	Z	11.7	12.4	11.1	7.8	10.0	12.8	15.0	19.1	27.6	30.3	33.9	35.4	39.4	40.3	41.1	37.6	34.7	31.2	29.5	27.3	30.5	32.0	25.4	41.1
3-Sep	33.3	32.2	Z	32.4	29.5	26.7	21.1	18.4	21.3	20.9	20.5	21.2	23.9	23.3	24.4	25.4	23.9	22.9	21.9	19.6	16.5	15.4	16.0	15.5	22.9	33.3
4-Sep	14.5	11.8	10.3	Z	12.5	9.2	8.4	10.5	12.2	13.4	22.8	25.9	26.5	26.7	26.3	23.9	25.2	20.3	23.4	19.3	18.4	20.2	19.8	19.7	18.3	26.7
5-Sep	19.3	19.6	16.1	10.5	Z	4.5	5.2	8.4	10.6	14.0	20.0	28.6	32.3	36.7	36.8	38.6	35.8	35.1	29.2	26.8	25.6	22.2	24.6	26.0	22.9	38.6
6-Sep	24.5	24.7	25.0	26.1	25.4	Z	21.7	20.5	23.1	24.4	34.5	30.9	28.6	29.2	26.4	15.2	8.3	8.8	8.0	5.8	8.5	6.6	6.0	5.6	19.0	34.5
7-Sep	Z	6.5	6.6	7.3	5.6	5.5	7.0	9.6	11.6	17.6	21.1	28.4	32.8	32.8	31.6	32.1	29.8	23.8	18.4	12.9	13.2	12.4	11.6	9.1	16.8	32.8
8-Sep	12.5	Z	9.3	8.4	6.5	5.0	6.3	8.9	13.6	19.8	26.7	32.2	40.3	46.9	46.4	47.1	45.5	41.5	39.9	35.9	28.0	22.0	19.6	16.0	25.2	47.1
9-Sep	16.2	13.9	Z	12.7	4.0	3.7	4.4	8.4	12.2	14.9	C	C	C	C	26.6	26.8	29.5	31.3	27.1	27.5	29.7	28.9	26.1	23.2	19.3	31.3
10-Sep	20.8	18.1	15.9	Z	16.7	16.1	17.4	16.6	17.3	18.5	20.2	23.2	26.6	28.5	30.2	30.7	24.6	17.8	16.8	20.9	11.9	8.5	7.2	7.5	18.8	30.7
11-Sep	6.8	5.8	4.6	4.6	Z	4.5	4.5	5.6	7.5	9.8	13.5	18.4	28.5	31.8	34.0	33.8	33.5	34.5	24.1	20.1	7.9	8.4	12.9	15.6	16.1	34.5
12-Sep	16.1	12.5	13.1	15.6	17.9	Z	14.4	13.9	18.8	25.1	26.0	22.4	20.4	20.0	18.8	21.7	21.3	20.6	19.2	13.6	13.4	12.0	10.5	10.3	17.3	26.0
13-Sep	Z	5.3	5.1	4.0	4.1	3.9	4.0	4.3	4.5	4.9	5.9	6.7	6.7	6.8	11.3	10.8	8.8	8.1	8.6	9.0	9.0	10.2	10.0	14.9	7.3	14.9
14-Sep	18.2	Z	19.1	17.3	14.3	13.4	11.6	12.6	15.9	18.3	20.6	25.4	30.1	30.5	32.9	36.7	37.7	33.2	18.6	10.8	10.0	9.3	11.3	9.6	19.9	37.7
15-Sep	5.8	4.9	Z	5.5	4.1	4.0	4.3	5.6	6.4	7.9	17.1	21.8	28.3	29.2	31.3	33.2	34.8	27.6	14.9	8.5	9.6	9.9	10.2	12.5	14.7	34.8
16-Sep	11.2	11.2	10.4	Z	7.7	6.3	5.9	6.9	8.6	9.3	7.5	23.1	30.7	32.1	31.0	32.3	32.3	31.1	22.7	17.5	14.5	13.2	14.8	17.3	17.3	32.3
17-Sep	15.3	16.2	12.4	11.1	Z	6.5	5.9	8.1	10.1	12.7	18.4	27.8	33.7	37.8	39.3	39.6	39.5	26.9	18.3	13.3	9.8	10.5	11.6	12.1	19.0	39.6
18-Sep	12.2	11.5	9.3	9.8	6.8	Z	6.5	10.4	11.9	14.1	11.4	14.1	20.5	24.2	25.2	28.9	30.6	31.5	22.2	15.4	12.8	13.0	9.9	10.0	15.7	31.5
19-Sep	Z	6.6	7.5	6.4	7.2	5.2	4.8	6.6	9.2	13.0	15.9	22.1	32.7	38.1	35.5	33.5	33.9	32.9	29.1	20.1	17.5	15.7	12.3	13.3	18.2	38.1
20-Sep	14.6	Z	13.1	13.4	9.3	6.8	5.5	5.7	9.3	7.5	8.6	9.6	14.6	19.0	23.4	28.1	29.1	25.4	25.8	22.4	19.3	14.7	9.7	6.4	14.8	29.1
21-Sep	6.2	5.0	Z	4.4	4.5	4.4	4.3	6.6	7.6	8.8	11.2	13.6	19.9	25.9	28.5	28.8	27.2	26.2	20.1	20.7	16.7	19.3	20.9	21.2	15.3	28.8
22-Sep	22.7	23.0	20.6	Z	11.7	9.7	7.6	9.4	13.7	17.2	18.6	20.5	21.5	25.2	27.5	27.7	26.7	17.1	9.5	12.8	18.1	21.0	23.8	19.2	18.5	27.7
23-Sep	18.6	16.7	13.8	9.1	Z	4.3	4.8	6.7	7.3	8.7	9.5	9.8	14.0	17.2	16.1	14.7	13.6	9.0	5.1	7.8	8.5	10.4	14.8	15.9	11.1	18.6
24-Sep	12.5	10.9	8.0	8.4	6.7	Z	5.2	5.1	11.8	16.0	27.1	32.7	36.2	38.5	39.4	42.1	41.9	35.0	26.3	14.9	10.0	10.1	12.0	18.2	20.4	42.1
25-Sep	Z	18.2	16.5	14.4	14.7	14.6	16.7	15.6	15.9	10.7	13.4	18.2	16.9	18.4	19.8	26.9	24.7	21.2	13.8	12.4	10.1	5.6	6.2	10.4	15.4	26.9
26-Sep	17.7	Z	26.4	17.9	20.2	25.5	27.6	36.0	33.3	25.9	19.8	25.7	30.1	31.1	31.1	34.0	36.6	30.8	30.7	29.6	19.3	17.0	13.4	15.8	25.9	36.6
27-Sep	18.2	19.1	Z	16.8	14.9	15.5	15.3	11.4	11.7	9.5	18.1	29.3	34.5	37.5	40.3	37.4	31.0	29.9	20.2	27.2	26.1	24.3	22.7	21.2	23.1	40.3
28-Sep	23.8	24.5	24.9	Z	24.1	23.1	23.4	23.1	22.9	25.7	28.4	30.3	31.1	31.3	31.2	30.7	25.1	13.9	8.3	8.1	8.8	9.2	13.2	12.4	21.6	31.3
29-Sep	12.2	12.6	12.9	11.5	Z	6.3	6.2	7.8	6.9	7.5	10.8	12.5	22.5	19.7	22.5	27.9	21.3	20.9	25.6	24.8	25.9	26.3	24.7	23.3	17.1	27.9
30-Sep	21.9	22.1	24.5	22.0	17.7	Z	12.7	17.7	18.7	21.3	23.8	28.0	29.7	30.8	33.2	33.6	34.0	31.8	29.0	29.4	30.6	28.3	28.6	27.3	25.9	34.0
	16.3	14.9	14.3	12.8	12.4	9.7	10.2	11.7	13.6	15.3	18.7	22.9	27.2	29.2	30.0	30.5	29.3	26.0	21.3	18.4	16.4	15.3	15.4	15.7	Diurnal Average	
	33.3	32.2	26.4	32.4	29.5	26.7	27.6	36.0	33.3	25.9	34.5	32.7	41.7	46.9	46.4	47.1	45.5	41.5	39.9	35.9	30.6	28.9	30.5	32.0	Diurnal Maximum	

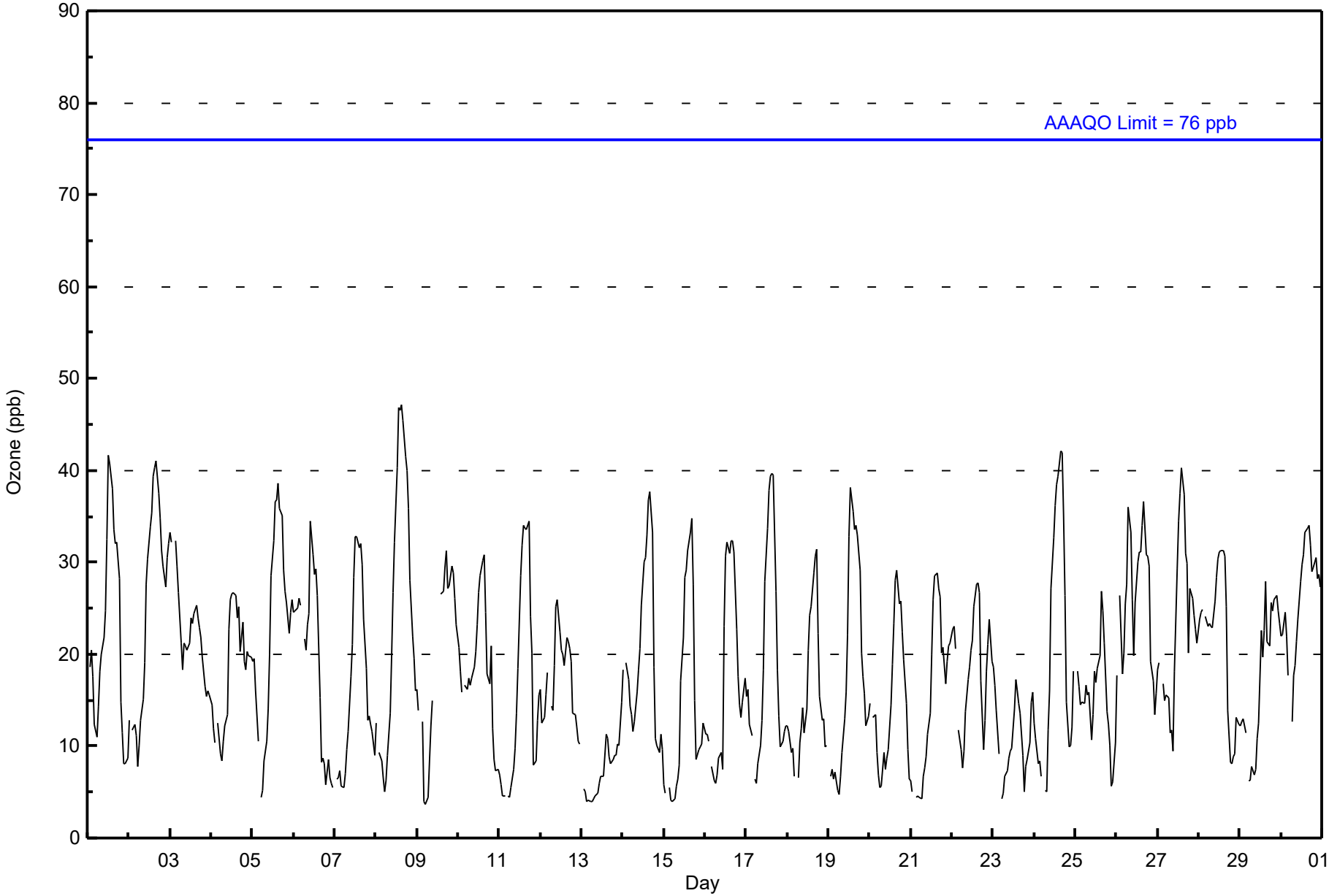
Z - zerospan C - Calibration
Alberta Ambient Air Quality Objectives (AAAQO): 1-hr 76 ppb

Wood Buffalo Environmental Association

Hourly Averages

Ozone (O_3) - ppb

Athabasca Valley - September 2024



Concentration Ranges (ppb)	Number of Hours	%	Cumulative %
0 - 20	408	59.48	59.48
21 - 50	278	40.52	100.00
51 - 82	0	0.00	100.00
> 83	0	0.00	100.00

Total Number of Valid Hours: 686

Total Number of Hours: 720

Wood Buffalo Environmental Association

Frequency Distribution

Ozone (O_3) - ppb

Athabasca Valley - September 2024

Concentration Ranges (ppb)	Wind Direction																
	N	NNE	NE	ENE	E	ESE	SE	SSE	S	SSW	SW	WSW	W	WNW	NW	NNW	**Totals**
0 - 20	11	2	3	13	27	78	102	24	15	24	20	16	9	7	19	38	408
21 - 50	12	5	5	8	14	19	18	7	6	13	35	32	37	28	12	27	278
51 - 82	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
> 83	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Totals	23	7	8	21	41	97	120	31	21	37	55	48	46	35	31	65	686

Total Number of Valid Hours: 686

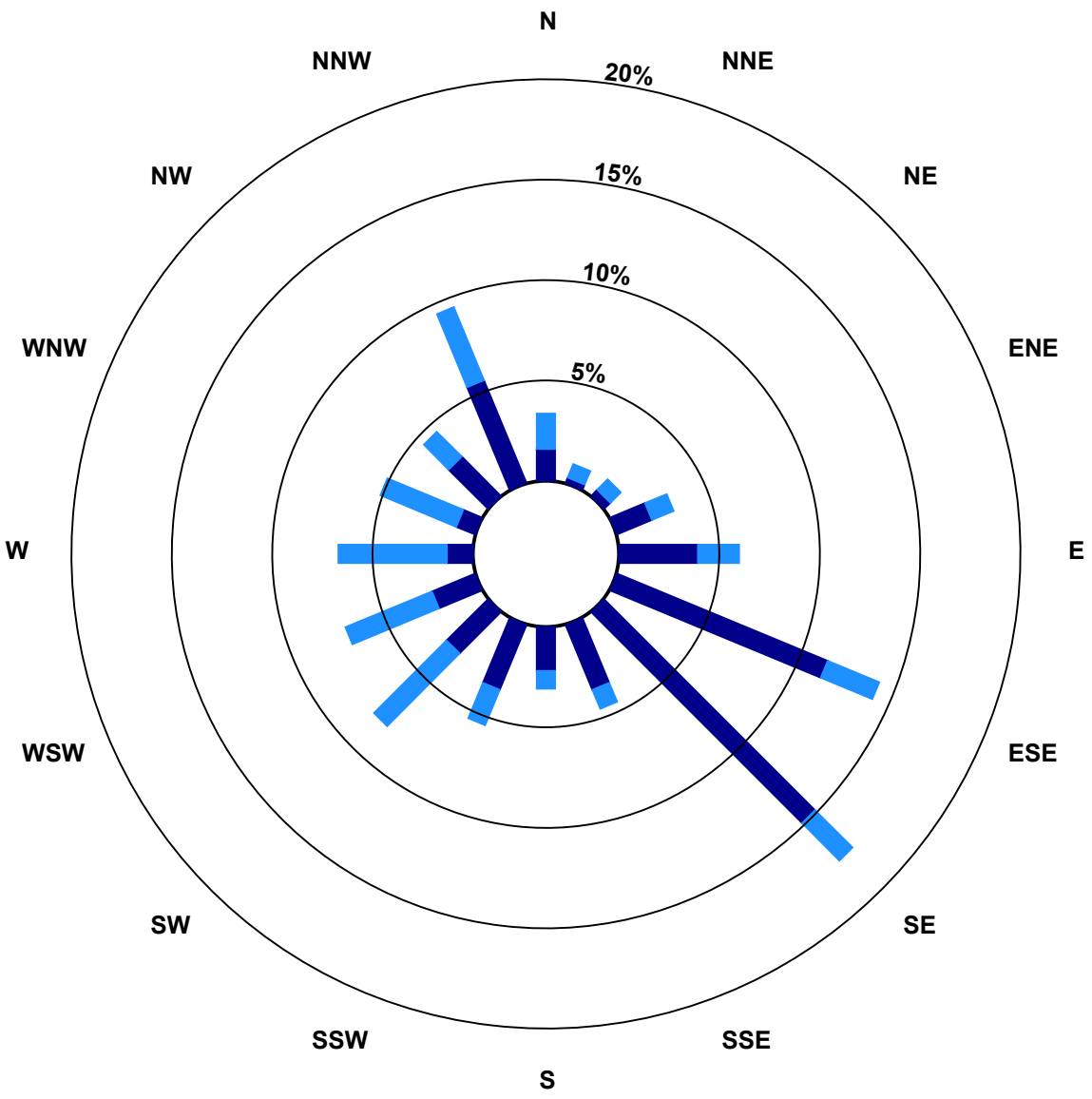
Total Number of Hours: 720

Wood Buffalo Environmental Association

Wind Rose Sep 2024

Ozone (O_3) - ppb

Athabasca Valley



Classes (ppb)

0 - 20

21 - 50

51 - 82

> 83

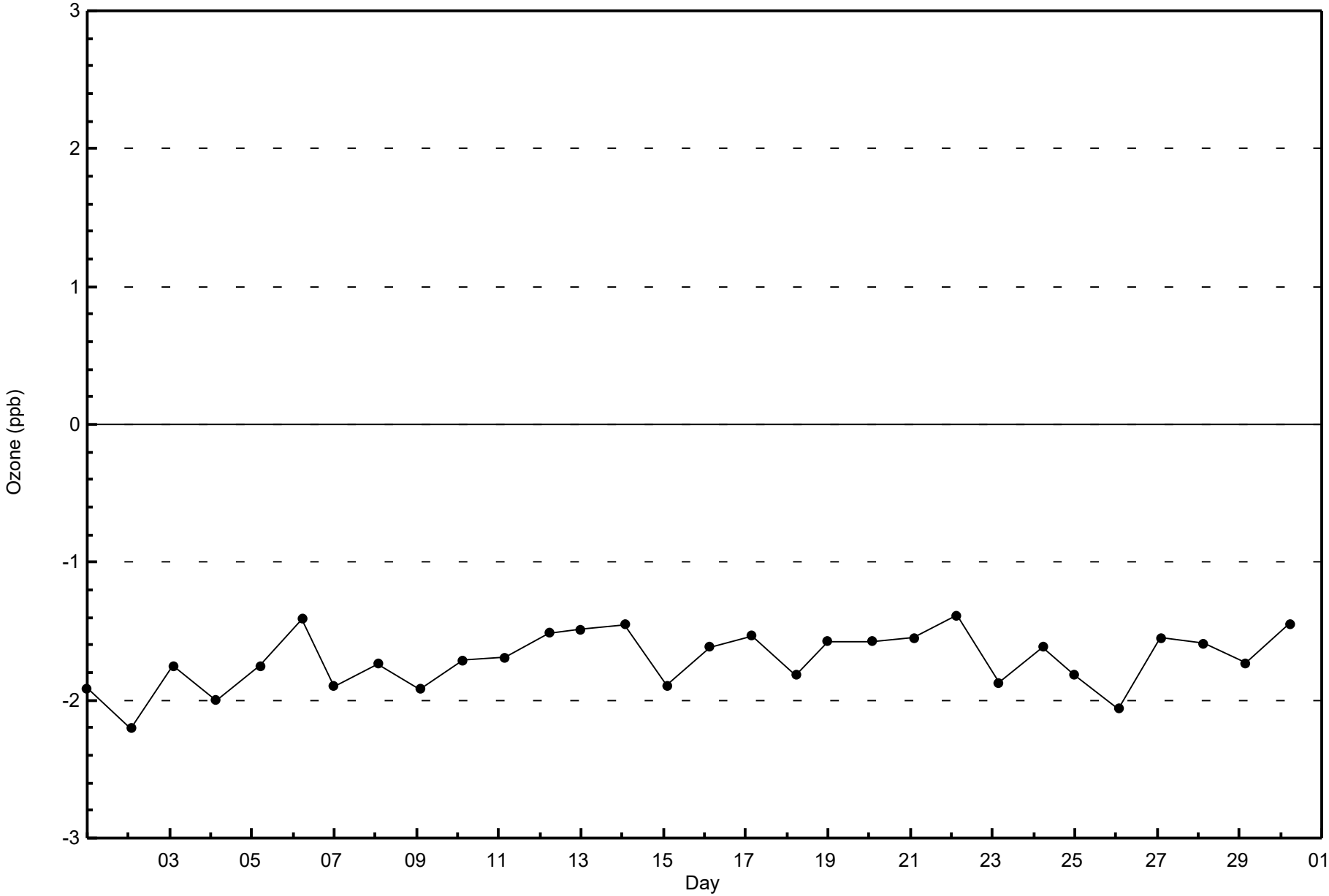
Total Number of Valid Hours: 686

Wood Buffalo Environmental Association

Zero Responses

Ozone (O_3) - ppb

Athabasca Valley - September 2024

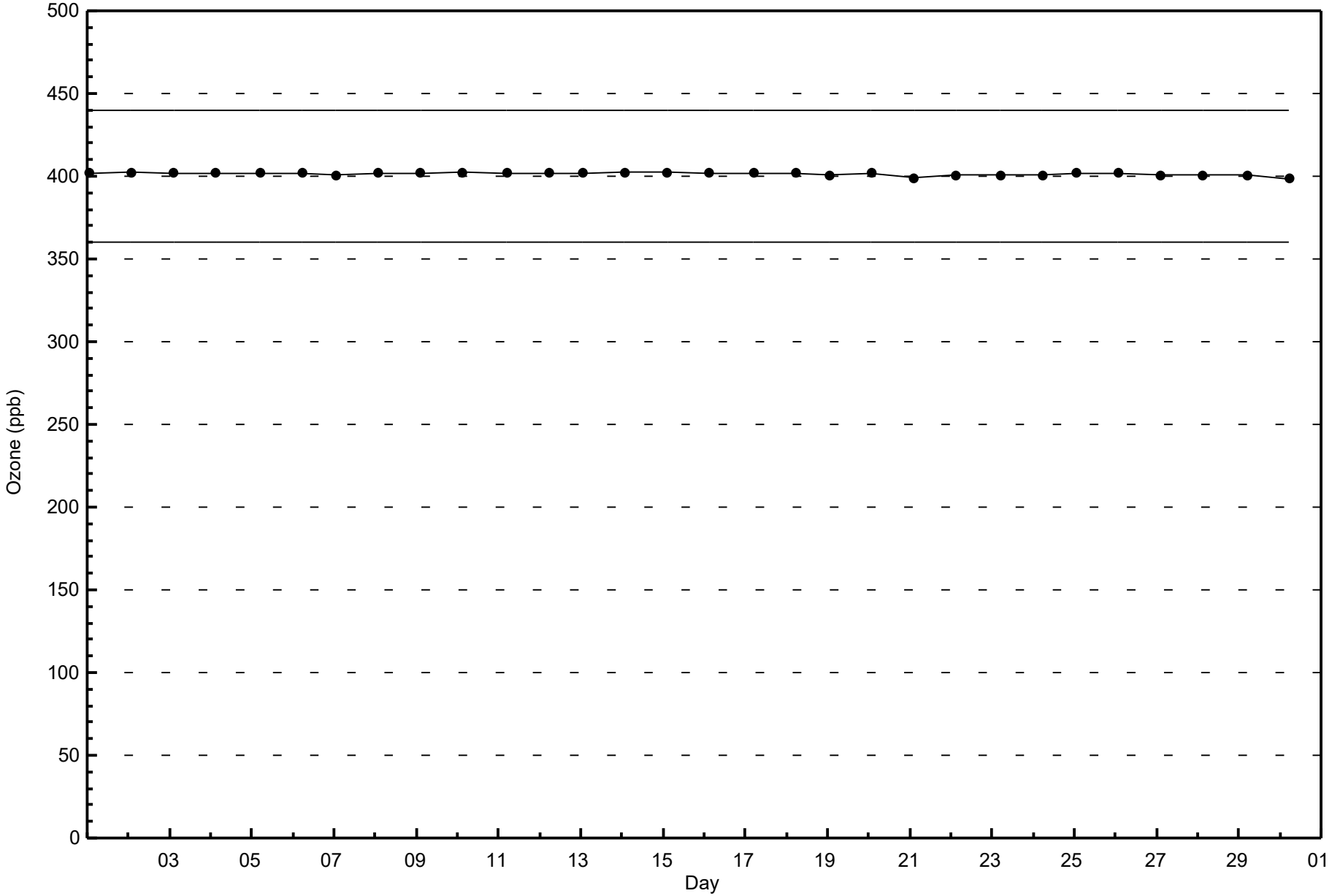


Wood Buffalo Environmental Association

Span Responses

Ozone (O_3) - ppb

Athabasca Valley - September 2024



Wood Buffalo Environmental Association

Summary of Hour Averages

Nitric Oxide (NO) - ppb

Athabasca Valley - September 2024

Maximum Value: 24.4 ppb on Sep 13 09:00

Maximum Daily Average: 7.1 ppb on Sep 13

Minimum Value: 0.0 ppb on Sep 4 00:00

Minimum Daily Average: 0.5 ppb on Sep 12

Maximum Diurnal Average: 5.5 ppb at hour 8

Minimum Diurnal Average: 0.3 ppb at hour 1

Monthly Average: 2.29 ppb

Percentiles: P_1 = 0.0 P_{10} = 0.1 Q_1 = 0.4 Median = 0.9 Q_3 = 2.6 P_{90} = 6.2 P_{99} = 18.1

Hours in Service:	720
Hours of Data:	685
Hours of Missing Data:	35
Hours of Calibration:	35
Percent Operational Time:	100.0

Day	Hourly Period Ending At (MST)																								Daily	Daily
	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24	Average	Maximum
1-Sep	0.0	0.1	Z	0.3	1.7	1.7	2.1	1.2	1.4	1.0	1.1	0.6	0.3	0.5	0.3	0.4	0.5	0.4	0.3	3.3	1.2	0.7	0.2	1.5	0.9	3.3
2-Sep	0.4	1.4	0.8	Z	0.6	4.2	2.7	1.3	1.9	1.6	1.2	0.7	0.6	0.6	0.6	0.6	0.3	0.2	0.1	0.1	0.0	0.0	0.0	0.0	0.9	4.2
3-Sep	0.1	0.0	0.0	0.1	Z	0.1	0.7	1.9	1.4	1.8	3.1	1.6	0.6	1.5	1.4	0.8	1.5	0.8	0.4	0.1	0.0	0.0	0.0	0.0	0.8	3.1
4-Sep	0.0	0.0	0.1	0.3	1.1	Z	4.0	2.8	2.0	2.4	0.8	0.4	0.2	0.1	0.3	0.8	0.9	1.6	0.4	0.8	0.5	0.3	0.3	0.1	0.9	4.0
5-Sep	Z	0.0	0.1	0.3	4.7	8.1	10.4	7.6	6.6	5.9	3.4	1.1	1.8	1.5	1.6	0.6	3.1	1.5	0.7	0.4	0.4	0.8	0.2	0.1	2.6	10.4
6-Sep	0.0	Z	0.0	0.2	0.3	0.4	5.2	9.6	5.2	4.9	0.9	1.0	0.9	0.6	0.7	2.4	7.8	8.0	10.0	18.7	5.6	3.8	3.0	3.5	4.0	18.7
7-Sep	1.8	1.5	Z	1.4	10.3	7.0	9.0	9.2	16.5	6.8	5.8	1.8	1.3	0.8	1.2	0.6	0.8	1.0	2.6	6.2	1.7	2.8	3.2	0.5	4.1	16.5
8-Sep	1.0	1.6	1.9	Z	3.7	10.5	6.7	1.7	1.8	1.2	1.7	1.0	0.8	0.2	0.2	0.2	0.3	0.6	0.6	0.4	0.3	0.3	0.3	0.1	1.6	10.5
9-Sep	0.0	0.2	0.1	0.1	Z	15.8	14.0	5.4	6.2	3.5	1.1	0.1	0.2	0.4	0.3	0.4	0.4	0.4	0.1	0.0	0.0	0.0	0.1	0.0	2.1	15.8
10-Sep	0.0	0.1	0.3	0.3	0.6	Z	1.9	2.1	1.6	1.0	1.2	1.5	1.2	1.0	0.5	0.4	5.3	7.4	3.3	0.4	0.7	1.0	0.4	0.6	1.4	7.4
11-Sep	Z	1.5	1.8	2.4	6.6	6.9	14.3	14.1	7.4	7.9	4.4	1.8	1.2	1.5	1.5	1.1	0.8	0.8	1.6	2.0	4.4	1.4	0.2	0.0	3.7	14.3
12-Sep	0.0	Z	0.0	0.1	0.4	2.6	0.5	0.8	0.7	0.3	0.2	0.4	0.8	0.1	0.5	0.8	0.5	0.4	0.4	0.4	0.2	0.3	0.2	0.1	0.5	2.6
13-Sep	0.3	0.6	Z	20.5	19.4	17.6	13.5	19.5	24.4	C	C	C	C	C	1.1	1.1	2.9	2.5	1.2	0.4	0.5	0.7	0.8	0.0	7.1	24.4
14-Sep	0.0	0.1	0.0	Z	0.9	1.5	2.7	2.5	1.3	0.7	0.8	0.8	0.7	0.8	0.4	0.2	0.4	0.3	1.1	1.6	1.6	0.8	0.1	0.2	0.8	2.7
15-Sep	1.0	2.1	0.4	1.4	Z	6.2	8.9	14.3	18.0	17.7	5.4	4.2	1.5	2.1	2.0	1.3	0.8	2.4	4.9	5.3	2.1	3.0	1.9	0.5	4.7	18.0
16-Sep	0.4	0.4	0.4	0.8	1.4	Z	4.4	5.4	3.6	3.6	11.6	3.9	0.9	0.7	1.0	0.6	0.5	0.3	1.3	1.5	1.7	1.3	0.5	0.2	2.0	11.6
17-Sep	Z	0.3	0.4	0.6	1.1	2.7	4.8	4.2	3.4	3.9	2.9	1.5	0.4	0.2	0.2	0.1	0.2	1.6	1.0	1.8	2.2	1.5	0.4	0.1	1.5	4.8
18-Sep	0.2	Z	1.4	3.0	5.5	15.6	4.8	5.3	4.9	3.6	5.3	4.4	2.7	0.3	0.3	0.2	0.1	0.2	0.8	1.0	1.4	0.5	0.6	0.1	2.7	15.6
19-Sep	0.9	1.0	Z	3.1	3.7	6.4	14.1	9.7	8.1	5.7	4.2	2.7	0.4	0.4	0.5	0.3	0.3	0.3	0.6	1.2	0.4	0.6	1.5	0.1	2.9	14.1
20-Sep	0.2	0.2	0.0	Z	1.3	1.8	6.0	6.4	4.4	10.4	7.3	7.1	4.9	3.7	2.6	1.3	0.5	0.5	0.3	0.3	0.5	0.5	0.5	0.2	2.6	10.4
21-Sep	0.1	0.5	3.5	3.5	Z	7.2	7.3	5.2	5.5	3.6	3.5	3.4	1.8	0.7	0.9	1.7	1.0	0.7	1.0	0.9	1.4	0.4	0.6	0.3	2.4	7.3
22-Sep	0.2	0.2	0.3	0.8	1.8	Z	3.2	5.1	3.8	2.4	1.6	1.1	1.1	0.6	0.3	0.4	1.0	9.1	7.3	2.0	2.3	0.6	0.2	0.3	2.0	9.1
23-Sep	Z	0.2	0.4	1.4	6.2	8.9	10.1	8.3	8.4	5.4	6.5	8.6	4.8	1.6	1.3	1.7	1.7	7.7	9.9	4.1	3.4	1.8	0.9	0.4	4.5	10.1
24-Sep	0.6	Z	1.4	1.0	1.8	2.6	5.5	9.8	3.4	1.3	0.2	0.3	0.3	0.2	0.4	0.2	0.3	0.4	0.5	1.9	2.2	4.2	2.2	0.4	1.8	9.8
25-Sep	0.3	0.3	Z	0.4	0.6	0.5	0.6	1.2	2.2	6.3	4.5	3.3	2.6	3.1	4.3	2.1	1.8	3.3	6.0	3.9	6.7	7.0	2.6	1.4	2.8	7.0
26-Sep	0.1	0.0	0.0	Z	0.1	0.0	0.1	0.1	0.7	0.8	1.1	0.3	0.1	0.2	0.2	0.4	0.2	0.8	0.2	0.5	1.5	1.3	1.7	0.5	0.5	1.7
27-Sep	0.5	0.5	0.4	0.5	Z	1.2	1.2	2.3	3.1	5.4	5.4	1.9	1.3	1.0	0.6	1.0	1.6	1.2	2.5	1.0	0.8	0.6	0.4	0.4	1.5	5.4
28-Sep	0.1	0.1	0.1	0.0	0.1	Z	0.5	0.7	0.5	0.4	0.3	0.4	0.4	0.5	0.7	0.5	1.2	12.7	11.2	4.9	2.7	5.8	0.9	0.7	2.0	12.7
29-Sep	Z	0.5	0.3	0.5	1.7	1.5	4.1	6.0	10.0	18.4	19.7	11.1	3.8	4.8	0.8	0.6	0.6	0.3	0.0	0.0	0.0	0.0	0.0	0.0	3.7	19.7
30-Sep	0.0	Z	0.0	1.3	1.8	0.4	2.2	2.1	2.0	0.9	0.6	0.3	0.4	0.4	0.2	0.2	0.2	0.1	2.6	0.4	0.2	0.2	0.2	0.1	0.7	2.6
	0.3	0.5	0.6	1.8	3.1	5.3	5.5	5.5	5.3	4.4	3.7	2.3	1.3	1.0	0.9	0.8	1.3	2.2	2.4	2.2	1.6	1.4	0.8	0.4	Diurnal Average	
	1.8	2.1	3.5	20.5	19.4	17.6	14.3	19.5	24.4	18.4	19.7	11.1	4.9	4.8	4.3	2.4	7.8	12.7	11.2	18.7	6.7	7.0	3.2	3.5	Diurnal Maximum	

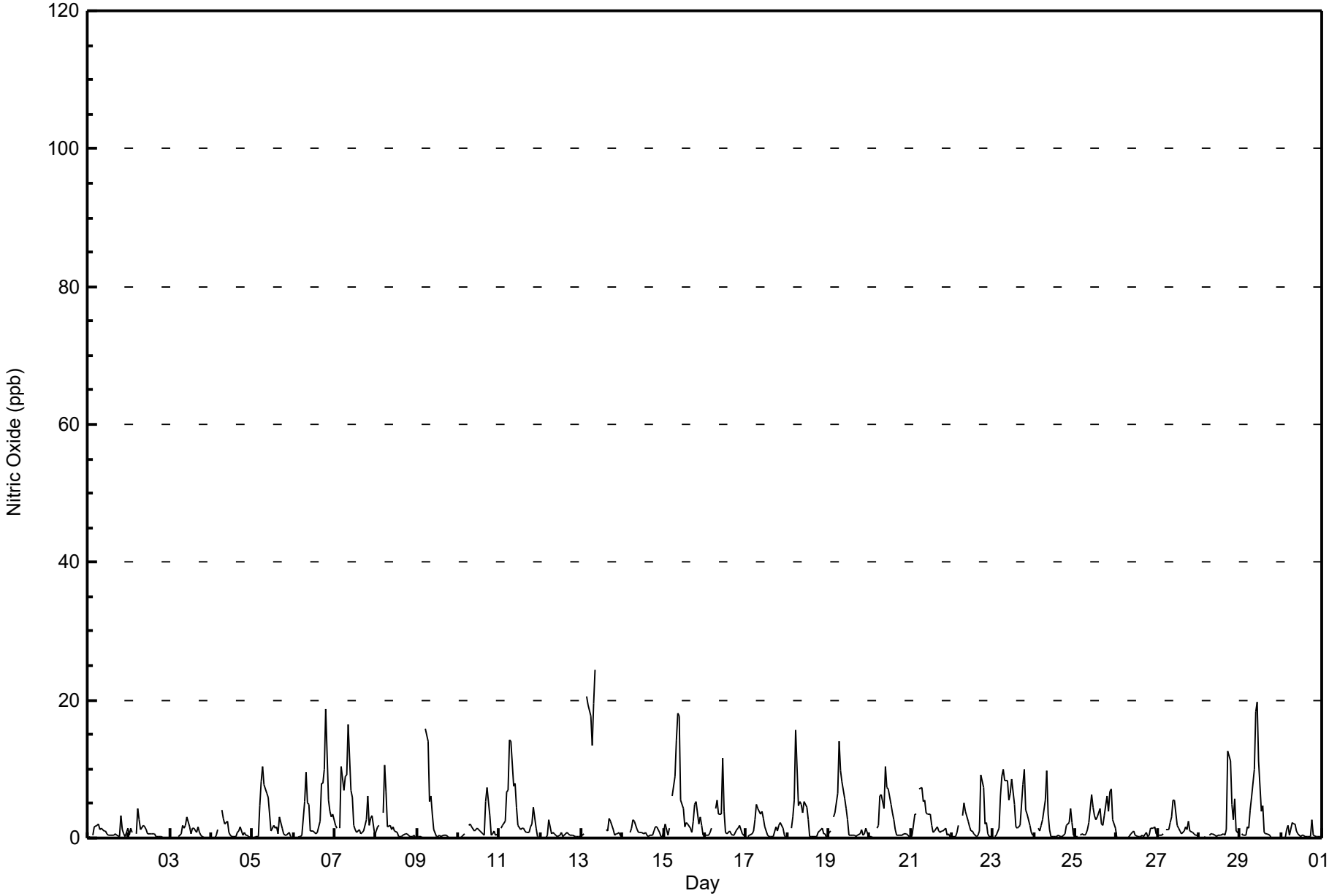
Z - zerospan C - Calibration

Wood Buffalo Environmental Association

Hourly Averages

Nitric Oxide (NO) - ppb

Athabasca Valley - September 2024



Concentration Ranges (ppb)	Number of Hours	%	Cumulative %
0 - 20	683	99.71	99.71
21 - 40	2	0.29	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: 685

Total Number of Hours: 720

Wood Buffalo Environmental Association

Frequency Distribution

Nitric Oxide (NO) - ppb

Athabasca Valley - September 2024

Concentration							**Wind Direction**										
Ranges (ppb)	N	NNE	NE	ENE	E	ESE	SE	SSE	S	SSW	SW	WSW	W	WNW	NW	NNW	**Totals**
0 - 20	25	7	8	19	44	97	117	34	21	35	54	49	47	38	32	56	683
21 - 40	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	2	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	25	7	8	19	44	97	117	34	21	35	54	49	47	38	32	58	685

Total Number of Valid Hours: 685

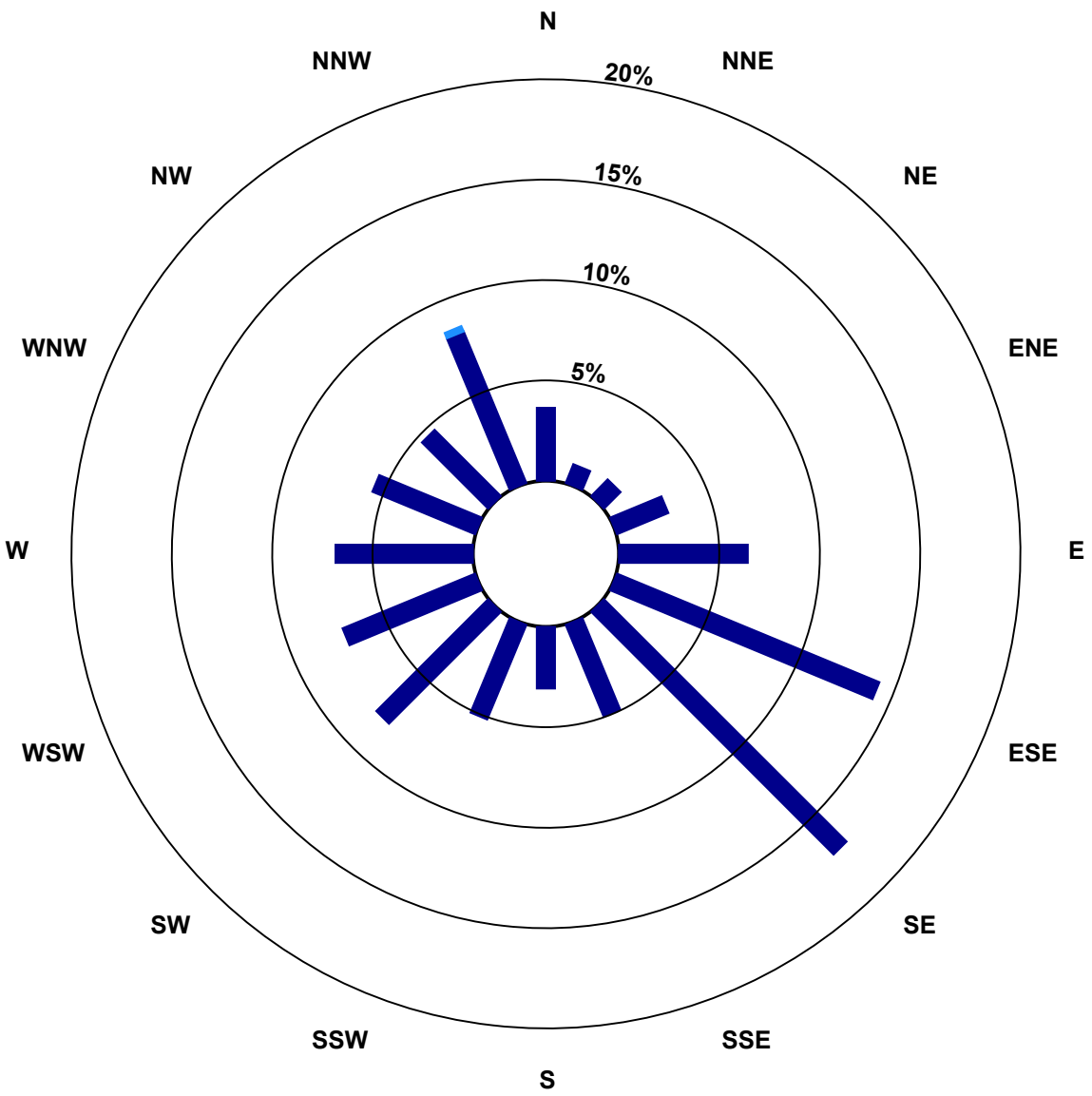
Total Number of Hours: 720

Wood Buffalo Environmental Association

Wind Rose Sep 2024

Nitric Oxide (NO) - ppb

Athabasca Valley



Classes (ppb)

0 - 20

21 - 40

11 - 80

81 - 159

> 159

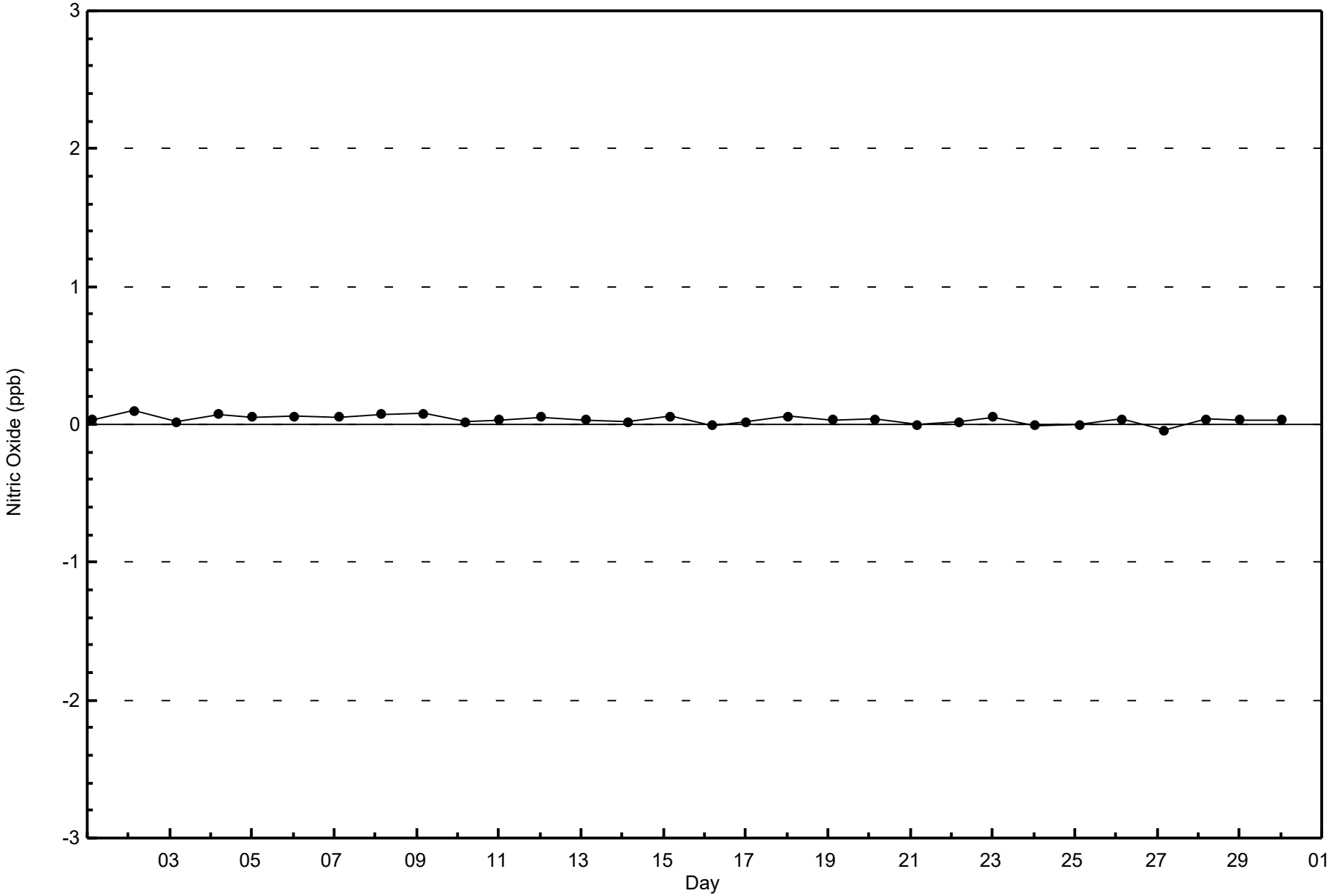
Total Number of Valid Hours: 685

Wood Buffalo Environmental Association

Zero Responses

Nitric Oxide (NO) - ppb

Athabasca Valley - September 2024

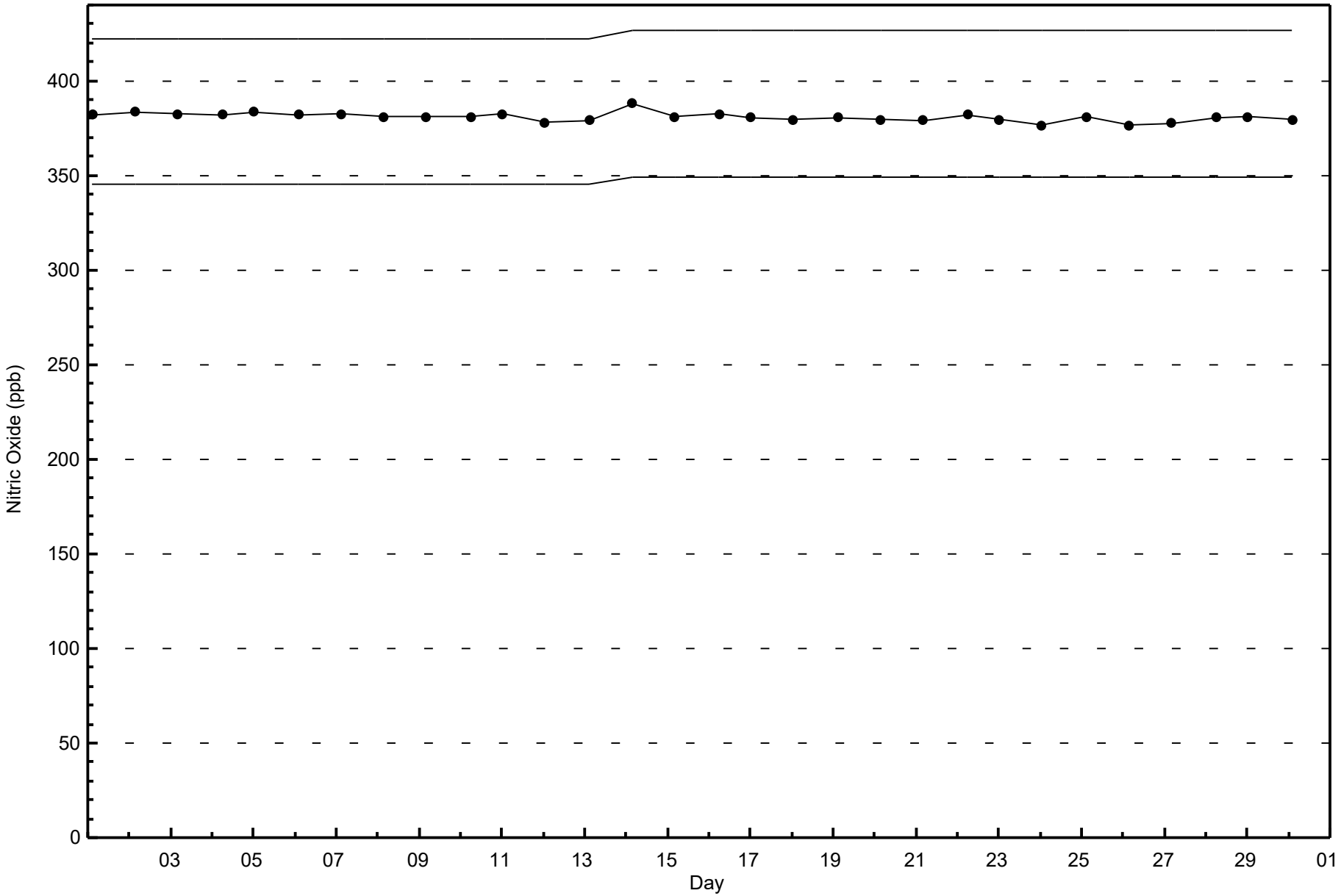


Wood Buffalo Environmental Association

Span Responses

Nitric Oxide (NO) - ppb

Athabasca Valley - September 2024



Wood Buffalo Environmental Association

Summary of Hour Averages

Nitrogen Dioxide (NO_2) - ppb

Athabasca Valley - September 2024

Number of Exceedences (AAAQO): 1-hr: 0 24-hr: 0
Maximum Value: 19.4 ppb on Sep 28 19:00 Maximum Daily Average: 9.4 ppb on Sep 13

Minimum Value: 0.4 ppb on Sep 26 13:00 Minimum Daily Average: 2.0 ppb on Sep 4
Maximum Diurnal Average: 8.8 ppb at hour 19 Minimum Diurnal Average: 2.5 ppb at hour 14
Monthly Average: 4.85 ppb Percentiles: P_1 = 0.6 P_{10} = 1.1 Q_1 = 2.1 Median = 4.0 Q_3 = 6.9 P_{90} = 9.6 P_{99} = 15.5

Hours in Service:	720
Hours of Data:	685
Hours of Missing Data:	35
Hours of Calibration:	35
Percent Operational Time:	100.0

Day	Hourly Period Ending At (MST)																								Daily	Daily
	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24	Average	Maximum
1-Sep	1.3	2.2	Z	2.3	5.2	5.8	3.9	2.2	2.0	1.9	2.2	2.2	1.6	1.8	1.3	1.2	1.6	1.8	2.9	8.8	5.2	7.2	6.5	7.4	3.4	8.8
2-Sep	6.2	6.7	4.5	Z	3.0	5.7	3.6	2.0	2.6	2.5	3.1	2.5	2.4	1.9	1.9	2.0	1.9	2.0	2.5	3.5	1.1	1.8	2.5	2.4	3.0	6.7
3-Sep	2.4	3.1	2.6	3.0	Z	5.5	6.9	7.3	5.3	6.9	7.9	6.7	3.5	4.4	3.8	3.7	5.1	5.9	5.9	5.6	7.6	7.5	3.8	3.2	5.1	7.9
4-Sep	3.4	3.4	2.8	2.8	2.0	Z	2.5	1.5	1.5	1.8	1.1	0.9	0.6	0.6	0.7	2.5	3.3	6.0	3.5	2.2	1.3	0.8	0.9	0.7	2.0	6.0
5-Sep	Z	1.9	3.4	3.2	7.0	7.6	6.7	5.2	4.1	4.4	3.9	2.1	2.6	2.6	2.5	1.9	4.5	3.1	3.9	4.1	5.0	7.5	4.6	1.9	4.1	7.6
6-Sep	1.7	Z	2.4	2.6	4.0	5.4	8.7	10.4	6.9	6.7	3.0	4.0	4.4	3.6	5.6	13.3	15.5	11.7	14.8	18.2	10.1	9.3	8.4	7.4	7.7	18.2
7-Sep	6.0	6.2	Z	5.8	9.2	9.3	8.1	6.0	5.5	4.1	6.1	5.4	4.9	2.4	2.3	1.8	2.2	4.3	8.7	11.9	6.9	5.6	6.9	7.0	5.9	11.9
8-Sep	5.6	6.5	5.3	Z	6.7	7.6	5.4	2.1	2.5	3.1	4.1	4.1	4.3	2.5	1.5	1.7	2.6	4.8	8.1	6.6	7.6	4.3	2.9	3.2	4.5	8.1
9-Sep	2.6	3.4	3.1	7.5	Z	15.7	13.0	9.7	11.8	9.7	3.6	0.9	1.0	1.4	1.8	2.0	1.6	1.3	1.1	0.9	0.7	0.9	0.6	0.5	4.1	15.7
10-Sep	0.5	0.7	0.7	1.6	1.6	Z	2.1	2.6	1.6	1.1	1.0	1.6	1.9	1.6	1.4	1.7	7.5	12.6	10.0	4.1	5.5	4.3	4.9	4.1	3.2	12.6
11-Sep	Z	4.3	4.6	4.1	4.3	4.5	6.4	5.6	3.4	3.6	3.2	2.2	2.6	2.0	3.1	1.8	1.5	3.5	10.7	8.8	13.4	10.7	5.9	2.8	4.9	13.4
12-Sep	2.6	Z	3.2	2.8	3.6	8.8	6.0	8.0	7.4	3.1	2.1	2.1	3.3	2.1	2.0	1.6	1.9	2.3	3.3	7.5	7.0	7.8	7.9	3.9	4.4	8.8
13-Sep	4.5	8.7	Z	13.2	12.5	11.0	9.6	10.3	11.8	C	C	C	C	C	6.9	6.8	9.0	9.6	11.1	12.2	11.1	8.7	6.5	5.4	9.4	13.2
14-Sep	2.4	1.1	1.0	Z	1.2	2.6	4.2	2.9	1.5	1.0	1.0	1.2	1.5	1.5	1.4	1.6	2.5	4.1	10.7	9.1	7.5	9.2	8.6	8.6	3.8	10.7
15-Sep	6.5	7.1	7.8	5.1	Z	4.7	4.1	8.8	9.6	10.4	7.8	5.4	3.1	4.4	4.7	4.3	3.9	10.9	17.9	15.7	10.3	10.7	8.3	4.4	7.6	17.9
16-Sep	3.4	2.3	2.5	2.3	2.9	Z	3.8	3.0	2.7	3.5	6.6	2.8	1.3	1.2	1.5	1.6	2.2	2.7	6.1	6.0	6.1	10.4	6.3	3.8	3.7	10.4
17-Sep	Z	4.5	4.0	2.7	3.3	4.5	4.5	2.8	2.2	2.9	3.2	3.3	1.5	1.1	0.8	0.9	1.0	10.3	12.5	9.0	6.5	10.4	5.1	3.0	4.3	12.5
18-Sep	2.8	Z	4.4	5.9	8.2	9.4	8.1	5.3	4.1	6.4	8.0	7.2	4.1	0.9	0.8	0.8	1.0	2.0	9.1	6.5	7.5	3.5	5.3	2.9	5.0	9.4
19-Sep	6.3	7.2	Z	6.0	6.5	9.5	9.0	5.1	4.1	4.0	2.7	3.2	1.1	1.7	2.2	2.2	1.4	3.1	8.3	9.6	5.5	7.2	8.1	4.1	5.1	9.6
20-Sep	2.4	3.0	1.6	Z	5.5	7.2	8.9	8.6	9.9	15.4	14.3	12.7	9.8	7.9	5.5	3.0	1.8	5.2	4.2	6.3	4.2	4.8	4.9	5.0	6.6	15.4
21-Sep	3.8	5.3	6.6	6.3	Z	5.5	4.3	3.5	2.8	1.6	2.1	3.5	2.1	1.3	1.7	3.1	3.3	4.9	8.5	5.9	6.5	5.1	4.1	2.7	4.1	8.5
22-Sep	2.0	2.3	3.7	5.3	6.1	Z	6.9	5.2	3.8	2.6	1.7	1.4	1.6	1.0	0.9	1.8	1.7	14.1	15.7	5.0	8.3	3.7	2.7	5.5	4.5	15.7
23-Sep	Z	2.6	4.6	7.7	9.7	11.2	9.9	7.6	6.4	5.2	6.5	6.6	5.7	3.0	1.8	2.7	3.4	7.2	12.2	7.6	8.3	6.8	4.2	2.5	6.2	12.2
24-Sep	3.1	Z	3.9	2.6	3.7	3.9	4.4	4.0	1.7	1.0	0.6	0.6	0.7	0.8	1.3	1.1	1.9	6.4	7.9	8.8	10.4	13.0	11.3	3.8	4.2	13.0
25-Sep	2.2	1.8	Z	2.3	2.6	2.3	3.4	5.9	7.5	12.6	11.4	6.6	5.2	7.6	9.4	6.3	7.5	8.9	12.6	7.6	11.5	15.3	9.6	5.9	7.2	15.3
26-Sep	3.0	1.5	1.2	Z	3.8	2.0	2.1	2.7	4.6	2.7	2.3	1.0	0.4	0.5	0.9	1.3	1.7	5.9	6.0	5.3	9.1	10.4	12.8	8.9	3.9	12.8
27-Sep	7.6	5.8	2.9	2.9	Z	3.1	5.3	6.4	6.6	9.4	8.5	3.6	2.9	2.4	2.1	4.0	7.5	7.2	14.4	5.8	5.2	4.0	2.5	1.9	5.3	14.4
28-Sep	0.7	0.6	0.8	0.5	0.8	Z	1.1	1.2	1.1	1.0	1.1	1.1	1.1	1.1	1.4	1.8	6.3	17.8	19.4	14.1	11.9	11.8	5.7	5.4	4.7	19.4
29-Sep	Z	3.1	2.2	2.5	4.9	5.8	6.5	7.1	9.3	11.2	12.7	13.1	7.4	8.8	5.3	3.4	8.0	8.8	4.5	5.4	3.2	1.3	1.6	2.0	6.0	13.1
30-Sep	2.2	Z	0.7	3.2	6.8	4.5	10.1	2.6	1.9	1.5	1.2	0.5	0.7	0.7	0.5	0.7	0.9	2.1	8.8	1.6	1.1	2.0	0.6	0.6	2.4	10.1
	3.4	3.8	3.2	4.2	5.0	6.5	6.0	5.2	4.9	4.9	4.6	3.7	2.9	2.5	2.6	2.8	3.8	6.4	8.8	7.5	6.9	6.9	5.5	4.0	Diurnal Average	
	7.6	8.7	7.8	13.2	12.5	15.7	13.0	10.4	11.8	15.4	14.3	13.1	9.8	8.8	9.4	13.3	15.5	17.8	19.4	18.2	13.4	15.3	12.8	8.9	Diurnal Maximum	

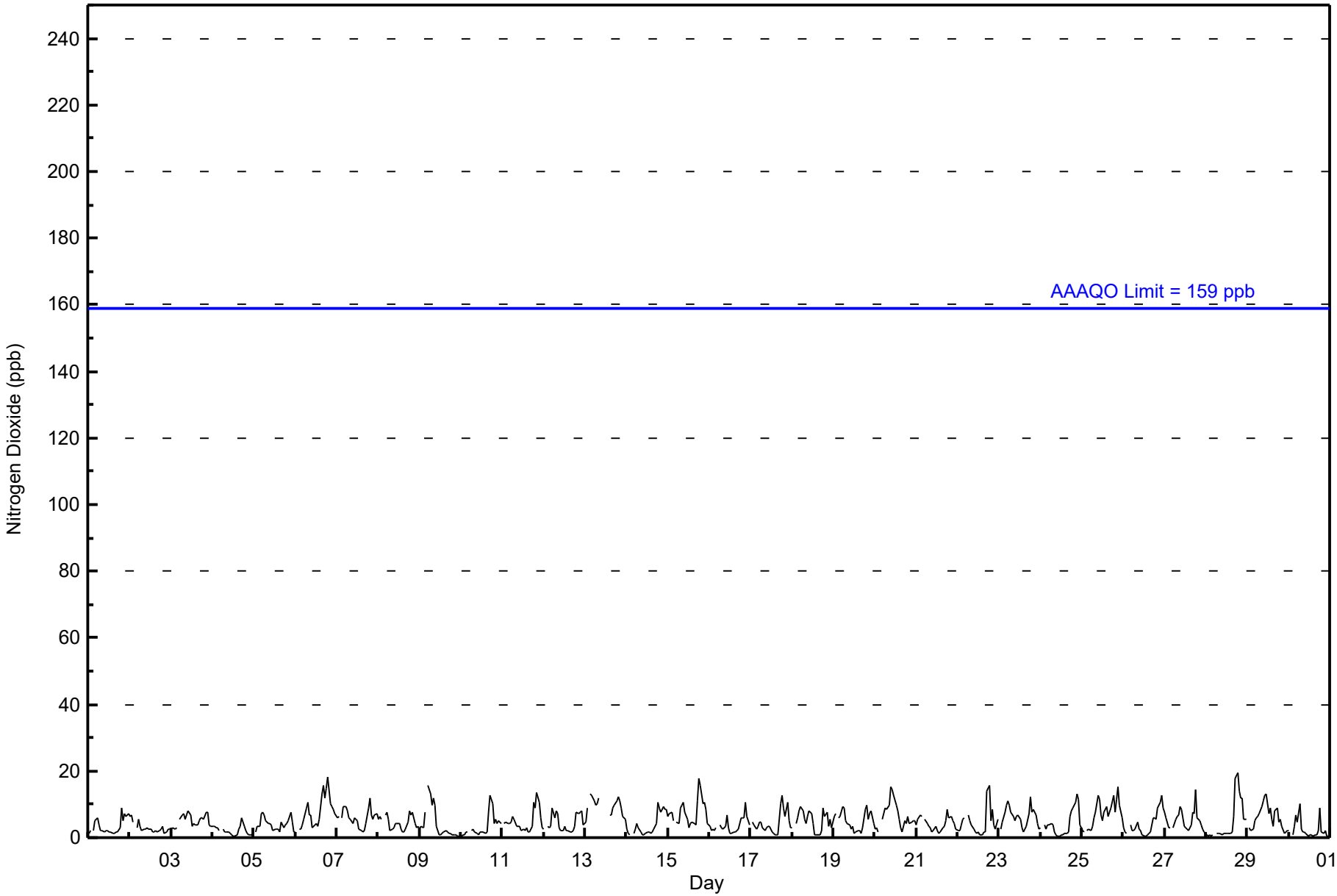
Z - zerospan C - Calibration
Alberta Ambient Air Quality Objectives (AAAQO): 1-hr 159 ppb

Wood Buffalo Environmental Association

Hourly Averages

Nitrogen Dioxide (NO_2) - ppb

Athabasca Valley - September 2024



Nitrogen Dioxide (NO_2) - ppb
Athabasca Valley - September 2024

Concentration Ranges (ppb)	Number of Hours	%	Cumulative %
0 - 20	685	100.00	100.00
21 - 40	0	0.00	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: 685

Total Number of Hours: 720

Wood Buffalo Environmental Association

Frequency Distribution

Nitrogen Dioxide (NO_2) - ppb

Athabasca Valley - September 2024

Concentration Ranges (ppb)	Wind Direction																
	N	NNE	NE	ENE	E	ESE	SE	SSE	S	SSW	SW	WSW	W	WNW	NW	NNW	**Totals**
0 - 20	25	7	8	19	44	97	117	34	21	35	54	49	47	38	32	58	685
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	25	7	8	19	44	97	117	34	21	35	54	49	47	38	32	58	685

Total Number of Valid Hours: 685

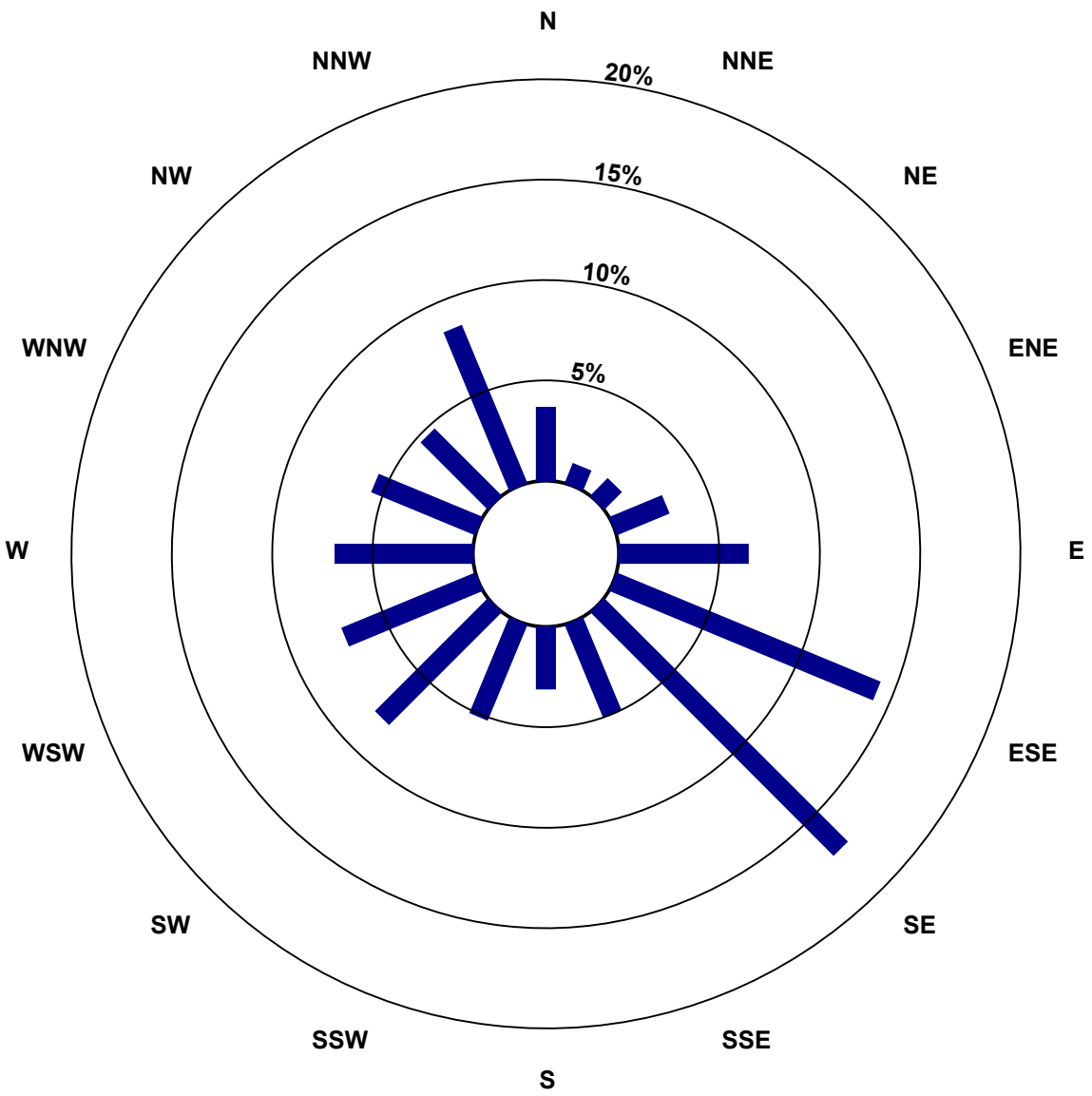
Total Number of Hours: 720

Wood Buffalo Environmental Association

Wind Rose Sep 2024

Nitrogen Dioxide (NO_2) - ppb

Athabasca Valley



Classes (ppb)

0 - 20

21 - 40

11 - 80

81 - 159

> 159

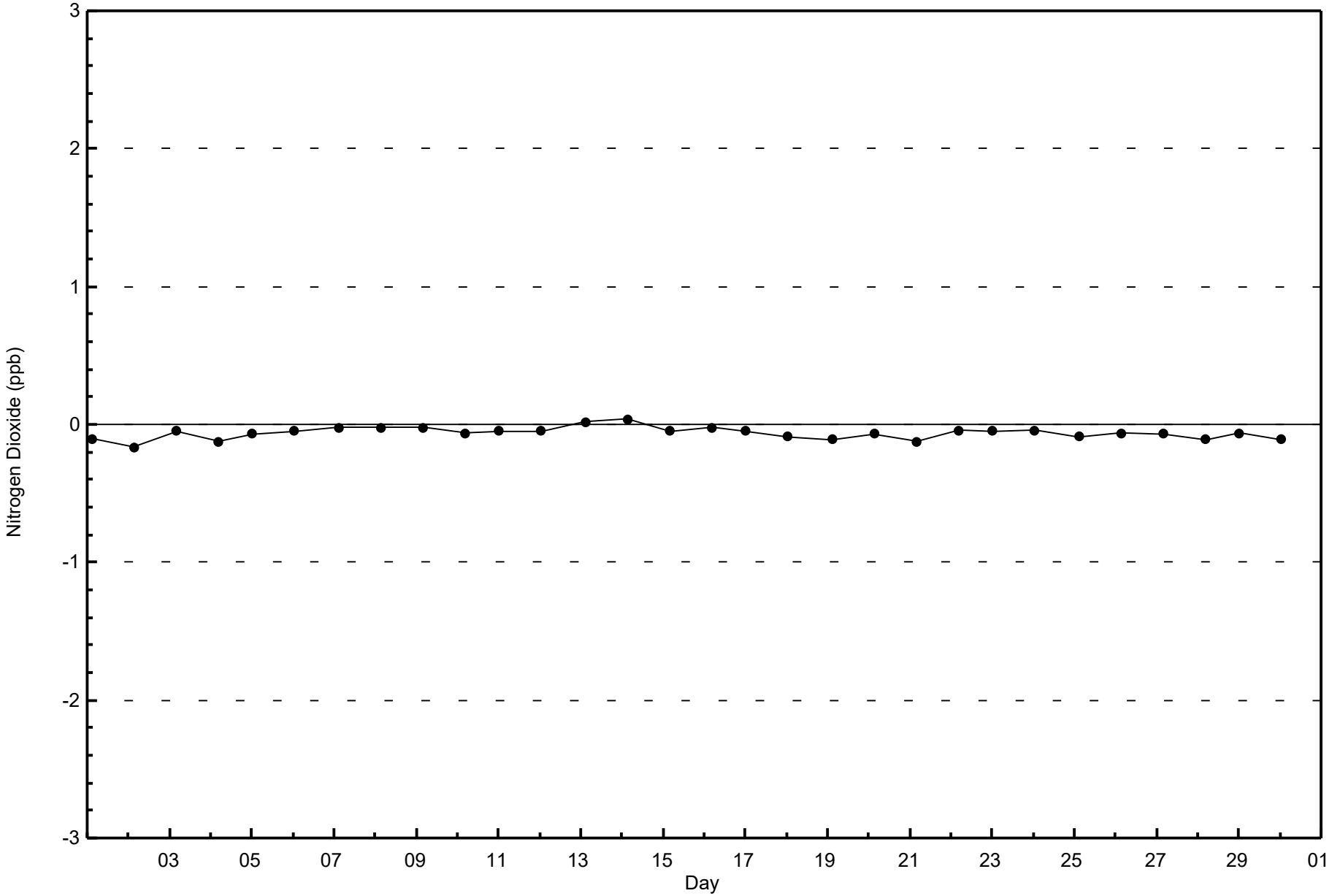
Total Number of Valid Hours: 685

Wood Buffalo Environmental Association

Zero Responses

Nitrogen Dioxide (NO_2) - ppb

Athabasca Valley - September 2024

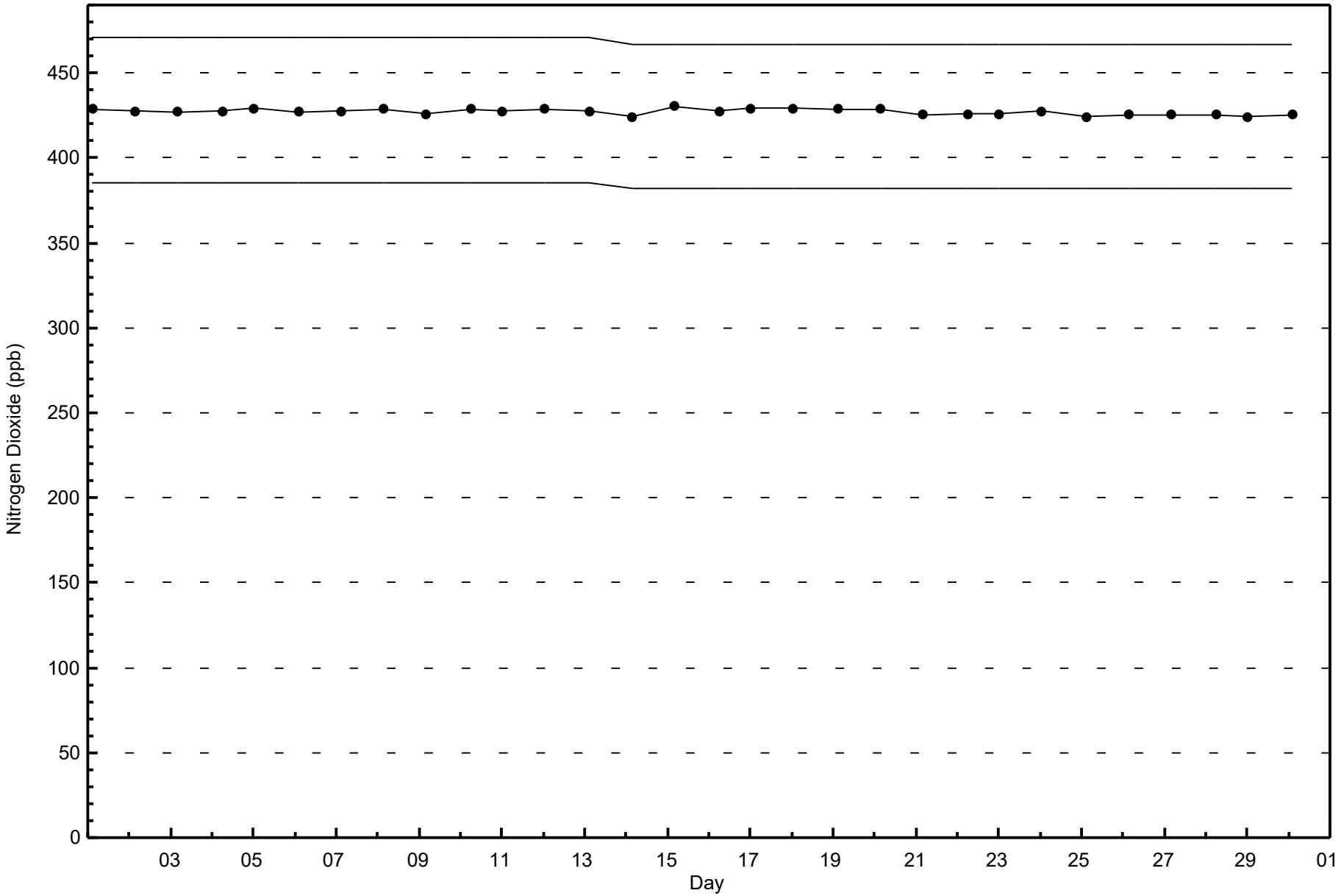


Wood Buffalo Environmental Association

Span Responses

Nitrogen Dioxide (NO_2) - ppb

Athabasca Valley - September 2024



Wood Buffalo Environmental Association

Summary of Hour Averages

Nitrogen Oxides (NO_X) - ppb

Athabasca Valley - September 2024

Maximum Value: 36.9 ppb on Sep 6 20:00

Maximum Daily Average: 16.4 ppb on Sep 13

Minimum Value: 0.5 ppb on Sep 10 01:00

Minimum Daily Average: 2.9 ppb on Sep 4

Maximum Diurnal Average: 11.8 ppb at hour 6

Minimum Diurnal Average: 3.5 ppb at hour 15

Monthly Average: 7.14 ppb

Percentiles: P_1 = 0.7 P_{10} = 1.6 Q_1 = 2.7 Median = 5.3 Q_3 = 9.6 P_{90} = 14.8 P_{99} = 30.6

Hours in Service:	720
Hours of Data:	685
Hours of Missing Data:	35
Hours of Calibration:	35
Percent Operational Time:	100.0

Day	Hourly Period Ending At (MST)																								Daily	Daily
	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24	Average	Maximum
1-Sep	1.3	2.3	Z	2.6	6.9	7.5	6.0	3.4	3.4	2.9	3.3	2.8	1.9	2.3	1.6	1.6	2.1	2.2	3.2	12.1	6.4	7.9	6.7	8.9	4.3	12.1
2-Sep	6.6	8.1	5.3	Z	3.6	9.9	6.3	3.3	4.5	4.1	4.3	3.2	3.0	2.5	2.5	2.6	2.2	2.2	2.6	3.6	1.1	1.8	2.5	2.4	3.8	9.9
3-Sep	2.5	3.1	2.6	3.1	Z	5.6	7.6	9.2	6.7	8.7	11.0	8.3	4.1	5.9	5.2	4.5	6.6	6.7	6.3	5.7	7.6	7.5	3.8	3.2	5.9	11.0
4-Sep	3.4	3.4	2.9	3.1	3.1	Z	6.5	4.3	3.5	4.2	1.9	1.3	0.8	0.7	1.0	3.3	4.2	7.6	3.9	3.0	1.8	1.1	1.2	0.8	2.9	7.6
5-Sep	Z	1.9	3.5	3.5	11.7	15.7	17.1	12.8	10.7	10.3	7.3	3.2	4.4	4.1	4.1	2.5	7.6	4.6	4.6	4.5	5.4	8.3	4.8	2.0	6.7	17.1
6-Sep	1.7	Z	2.4	2.8	4.3	5.8	13.9	20.0	12.1	11.6	3.9	5.0	5.3	4.2	6.3	15.7	23.3	19.7	24.8	36.9	15.7	13.1	11.4	10.9	11.8	36.9
7-Sep	7.8	7.7	Z	7.2	19.5	16.3	17.1	15.2	22.0	10.9	11.9	7.2	6.2	3.2	3.5	2.4	3.0	5.3	11.3	18.1	8.6	8.4	10.1	7.5	10.0	22.0
8-Sep	6.6	8.1	7.2	Z	10.4	18.1	12.1	3.8	4.3	4.3	5.8	5.1	5.1	2.7	1.7	1.9	2.9	5.4	8.7	7.0	7.9	4.6	3.2	3.3	6.1	18.1
9-Sep	2.6	3.6	3.2	7.6	Z	31.5	27.0	15.1	18.0	13.2	4.7	1.0	1.2	1.8	2.1	2.4	2.0	1.7	1.2	0.9	0.7	0.9	0.7	0.5	6.3	31.5
10-Sep	0.5	0.8	1.0	1.9	2.2	Z	4.0	4.7	3.2	2.1	2.2	3.1	3.1	2.6	1.9	2.1	12.8	20.0	13.3	4.5	6.2	5.3	5.3	4.7	4.7	20.0
11-Sep	Z	5.8	6.4	6.5	10.9	11.4	20.7	19.7	10.8	11.5	7.6	4.0	3.8	3.5	4.6	2.9	2.3	4.3	12.3	10.8	17.8	12.1	6.1	2.8	8.6	20.7
12-Sep	2.6	Z	3.2	2.9	4.0	11.4	6.5	8.8	8.1	3.4	2.3	2.5	4.1	2.2	2.5	2.4	2.4	2.7	3.7	7.9	7.2	8.1	8.1	4.0	4.8	11.4
13-Sep	4.8	9.3	Z	33.7	31.9	28.6	23.1	29.8	36.2	C	C	C	C	C	8.0	7.9	11.9	12.1	12.3	12.6	11.6	9.4	7.3	5.4	16.4	36.2
14-Sep	2.4	1.2	1.0	Z	2.1	4.1	6.9	5.4	2.8	1.7	1.8	2.0	2.2	2.3	1.8	1.8	2.9	4.4	11.8	10.7	9.1	10.0	8.7	8.8	4.6	11.8
15-Sep	7.5	9.2	8.2	6.5	Z	10.9	13.0	23.1	27.6	28.1	13.2	9.6	4.6	6.5	6.7	5.6	4.7	13.3	22.8	21.0	12.4	13.7	10.2	4.9	12.3	28.1
16-Sep	3.8	2.7	2.9	3.1	4.3	Z	8.2	8.4	6.3	7.1	18.2	6.7	2.2	1.9	2.5	2.2	2.7	3.0	7.4	7.5	7.8	11.7	6.8	4.0	5.7	18.2
17-Sep	Z	4.8	4.4	3.3	4.4	7.2	9.3	7.0	5.6	6.8	6.1	4.8	1.9	1.3	1.0	1.0	1.2	11.9	13.5	10.8	8.7	11.9	5.5	3.1	5.9	13.5
18-Sep	3.0	Z	5.8	8.9	13.7	25.0	12.9	10.6	9.0	10.0	13.3	11.6	6.8	1.2	1.1	1.0	1.1	2.2	9.9	7.5	8.9	4.0	5.9	3.0	7.7	25.0
19-Sep	7.2	8.2	Z	9.1	10.2	15.9	23.1	14.8	12.2	9.7	6.9	5.9	1.5	2.1	2.7	2.5	1.7	3.4	8.9	10.8	5.9	7.8	9.6	4.2	8.0	23.1
20-Sep	2.6	3.2	1.6	Z	6.8	9.0	14.9	15.0	14.3	25.8	21.6	19.8	14.7	11.6	8.1	4.3	2.3	5.7	4.5	6.6	4.7	5.3	5.4	5.2	9.3	25.8
21-Sep	3.9	5.8	10.1	9.8	Z	12.7	11.6	8.7	8.3	5.2	5.6	6.9	3.9	2.0	2.6	4.8	4.3	5.6	9.5	6.8	7.9	5.5	4.7	3.0	6.5	12.7
22-Sep	2.2	2.5	4.0	6.1	7.9	Z	10.1	10.3	7.6	5.0	3.3	2.5	2.7	1.6	1.2	2.2	2.7	23.2	23.0	7.0	10.6	4.3	2.9	5.8	6.5	23.2
23-Sep	Z	2.8	5.0	9.1	15.9	20.1	20.0	15.9	14.8	10.6	13.0	15.2	10.5	4.6	3.1	4.4	5.1	14.9	22.1	11.7	11.7	8.6	5.1	2.9	10.7	22.1
24-Sep	3.7	Z	5.3	3.6	5.5	6.5	9.9	13.8	5.1	2.3	0.8	0.9	1.0	1.0	1.7	1.3	2.2	6.8	8.4	10.7	12.6	17.2	13.5	4.2	6.0	17.2
25-Sep	2.5	2.1	Z	2.7	3.2	2.8	4.0	7.1	9.7	18.9	15.9	9.9	7.8	10.7	13.7	8.4	9.3	12.2	18.6	11.5	18.2	22.3	12.2	7.3	10.0	22.3
26-Sep	3.1	1.5	1.2	Z	3.9	2.0	2.2	2.8	5.3	3.5	3.4	1.3	0.5	0.7	1.1	1.7	1.9	6.7	6.2	5.8	10.6	11.7	14.5	9.4	4.4	14.5
27-Sep	8.1	6.3	3.3	3.4	Z	4.3	6.5	8.7	9.7	14.8	13.9	5.5	4.2	3.4	2.7	5.0	9.1	8.4	16.9	6.8	6.0	4.6	2.9	2.3	6.8	16.9
28-Sep	0.8	0.7	0.9	0.5	0.9	Z	1.6	1.9	1.6	1.4	1.4	1.5	1.5	1.6	2.1	2.3	7.5	30.5	30.6	19.0	14.6	17.6	6.6	6.1	6.7	30.6
29-Sep	Z	3.6	2.5	3.0	6.6	7.3	10.6	13.1	19.3	29.6	32.4	24.2	11.2	13.6	6.1	4.0	8.6	9.1	4.5	5.4	3.2	1.3	1.6	2.0	9.7	32.4
30-Sep	2.2	Z	0.7	4.5	8.6	4.9	12.3	4.7	3.9	2.4	1.8	0.8	1.1	1.1	0.7	0.9	1.1	2.2	11.4	2.0	1.3	2.2	0.8	0.7	3.1	12.3
	3.7	4.3	3.8	5.9	8.1	11.8	11.5	10.7	10.2	9.3	8.2	6.1	4.2	3.5	3.5	3.5	5.1	8.6	11.3	9.6	8.4	8.3	6.3	4.4	Diurnal Average	
	8.1	9.3	10.1	33.7	31.9	31.5	27.0	29.8	36.2	29.6	32.4	24.2	14.7	13.6	13.7	15.7	23.3	30.5	30.6	36.9	18.2	22.3	14.5	10.9	Diurnal Maximum	

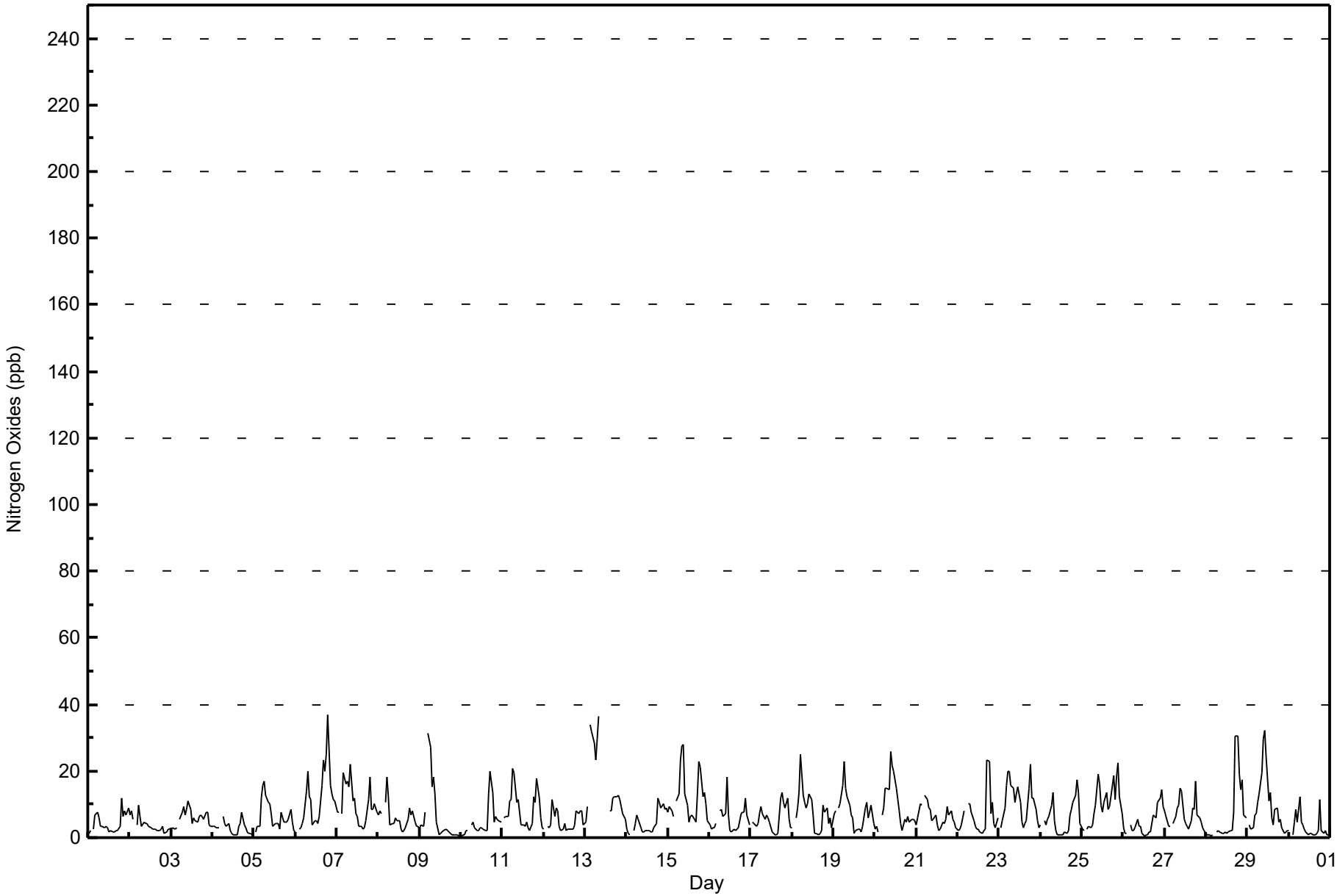
Z - zerospan C - Calibration

Wood Buffalo Environmental Association

Hourly Averages

Nitrogen Oxides (NO_X) - ppb

Athabasca Valley - September 2024



Nitrogen Oxides (NO_X) - ppb
Athabasca Valley - September 2024

Concentration Ranges (ppb)	Number of Hours	%	Cumulative %
0 - 20	654	95.47	95.47
21 - 40	31	4.53	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: 685

Total Number of Hours: 720

Nitrogen Oxides (NO_X) - ppb
Athabasca Valley - September 2024

Concentration Ranges (ppb)	Wind Direction																
	N	NNE	NE	ENE	E	ESE	SE	SSE	S	SSW	SW	WSW	W	WNW	NW	NNW	**Totals**
0 - 20	23	7	8	19	44	96	108	30	20	35	54	49	47	38	29	47	654
21 - 40	2	0	0	0	0	1	9	4	1	0	0	0	0	0	3	11	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	25	7	8	19	44	97	117	34	21	35	54	49	47	38	32	58	685

Total Number of Valid Hours: 685

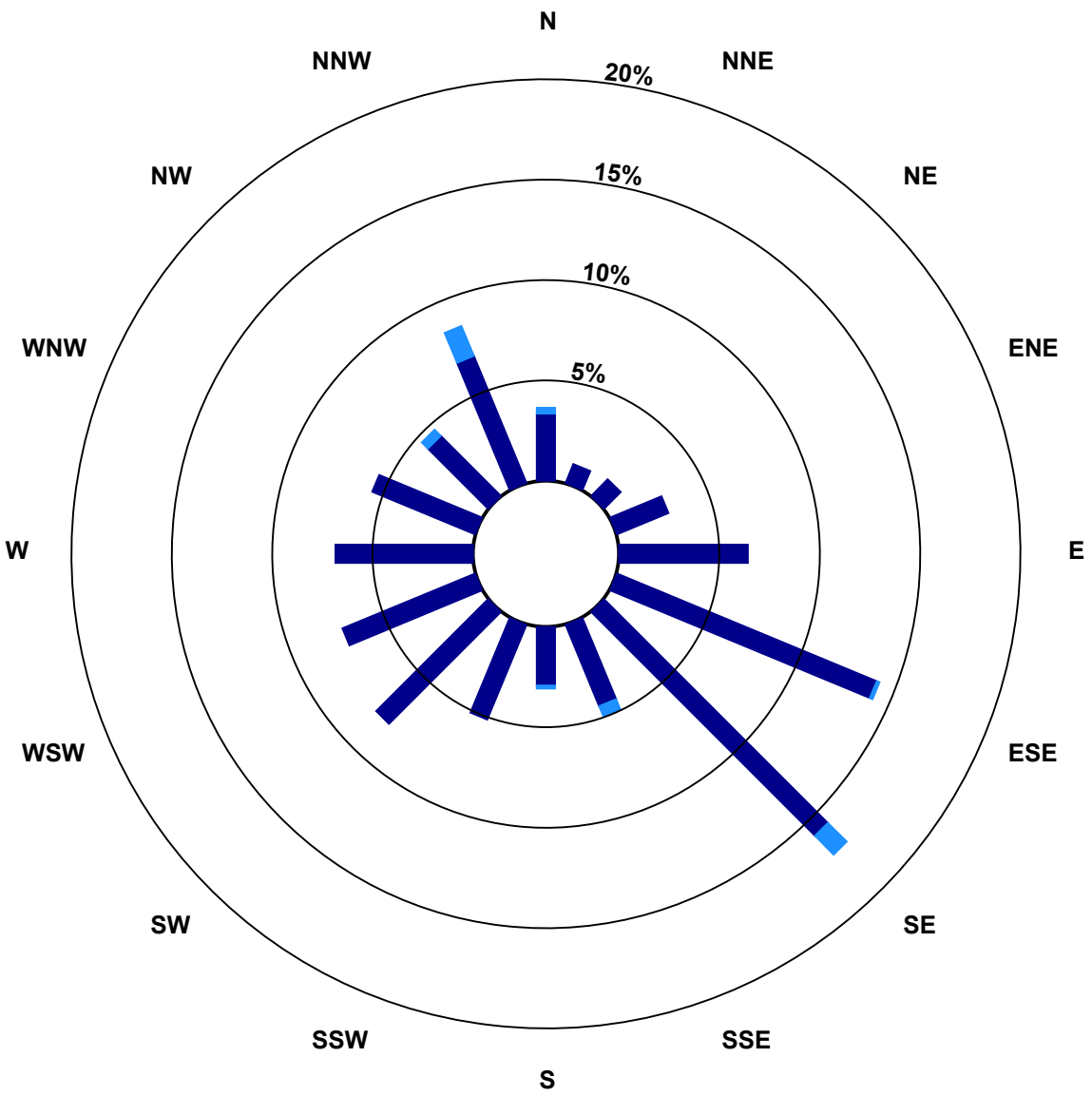
Total Number of Hours: 720

Wood Buffalo Environmental Association

Wind Rose Sep 2024

Nitrogen Oxides (NO_X) - ppb

Athabasca Valley



Classes (ppb)

0 - 20

21 - 40

11 - 80

81 - 159

> 159

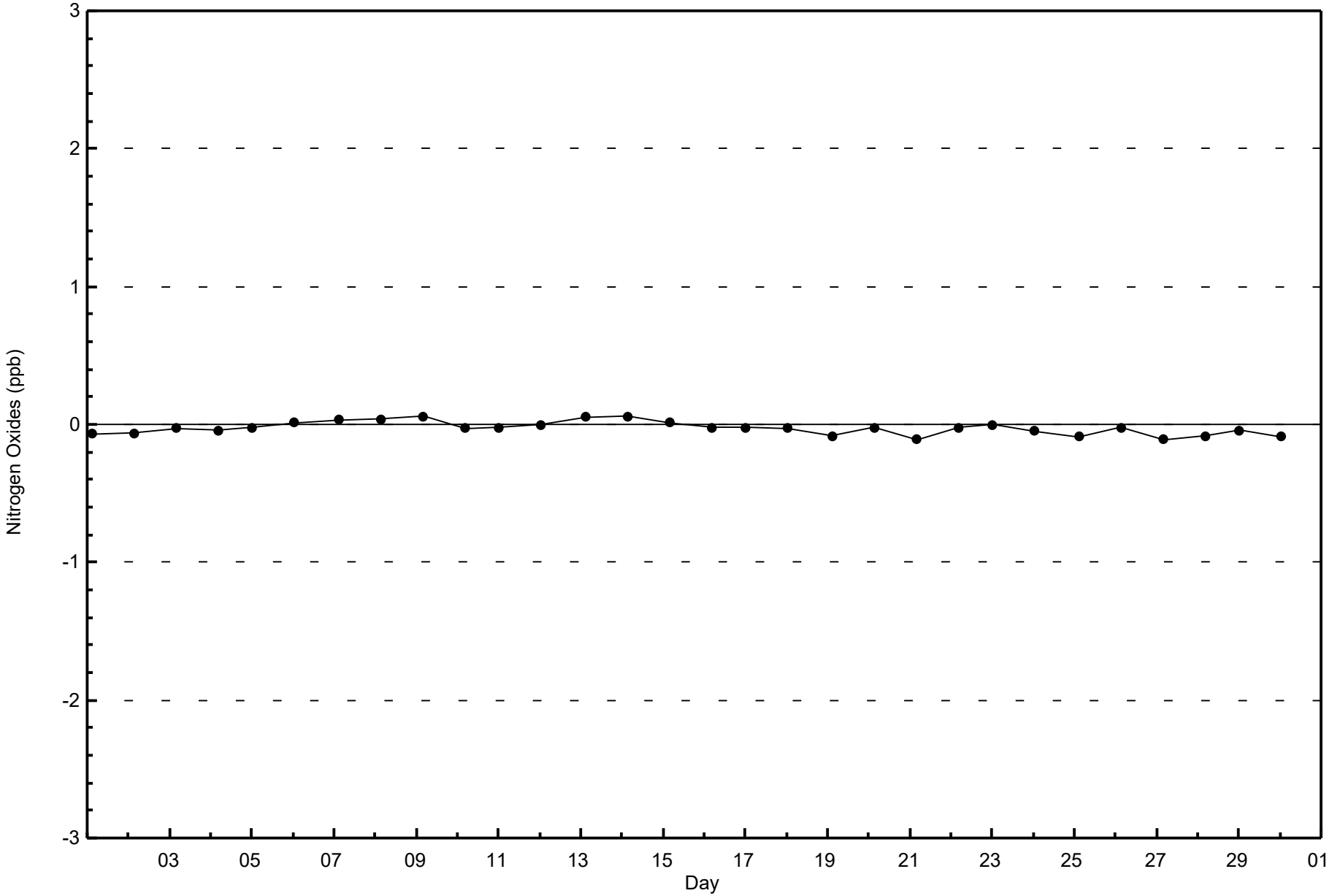
Total Number of Valid Hours: 685

Wood Buffalo Environmental Association

Zero Responses

Nitrogen Oxides (NO_X) - ppb

Athabasca Valley - September 2024

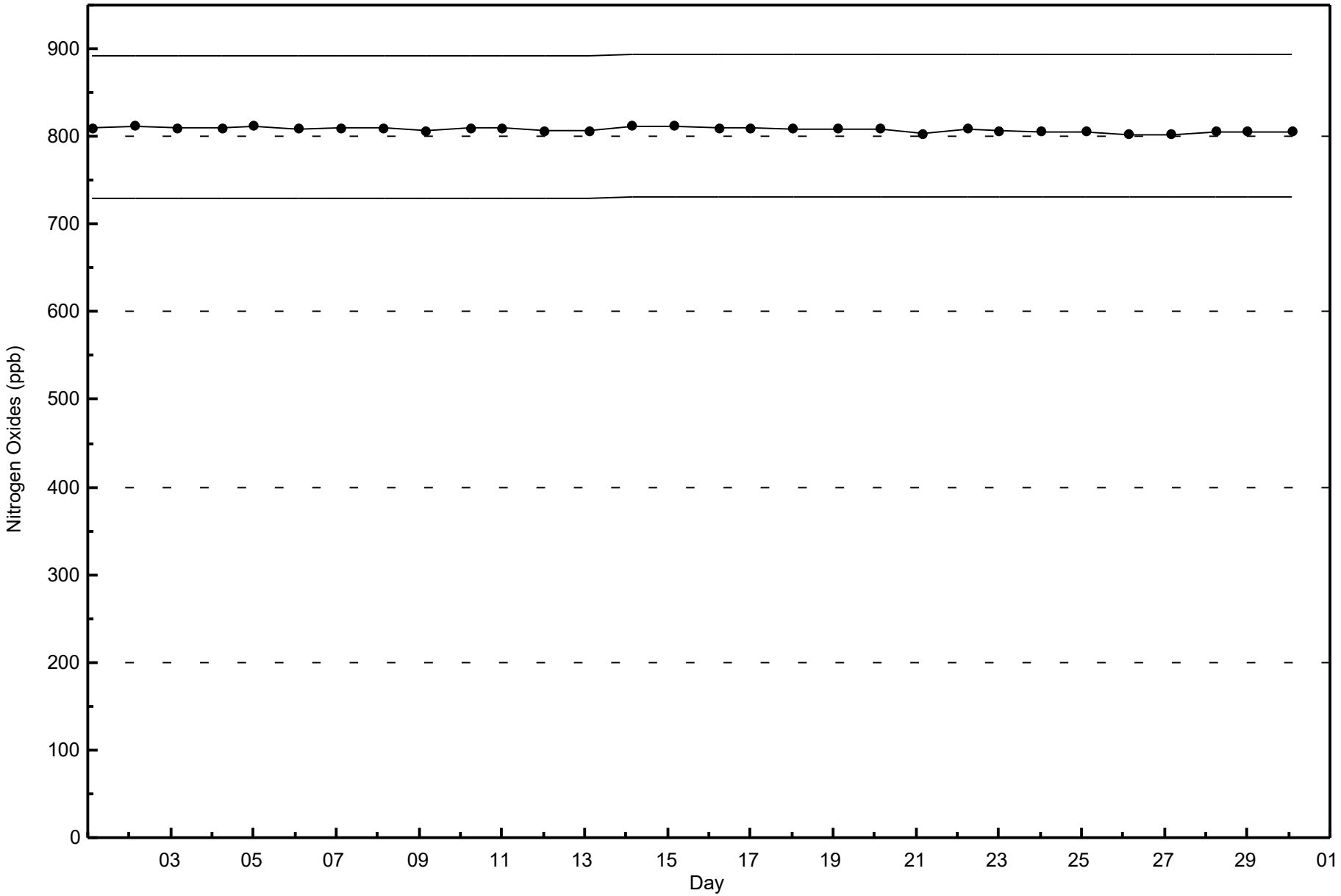


Wood Buffalo Environmental Association

Span Responses

Nitrogen Oxides (NO_X) - ppb

Athabasca Valley - September 2024



Wood Buffalo Environmental Association

Summary of Hour Averages

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

Athabasca Valley - September 2024

Number of Exceedences (AAAQO): 1-hr: 73 24-hr: 6

Maximum Value: 206.2 $\mu g/m^3$ on Sep 12 13:00

Maximum Daily Average: 144.2 $\mu g/m^3$ on Sep 13

Minimum Value: 1.2 $\mu g/m^3$ on Sep 28 04:00

Minimum Daily Average: 3.6 $\mu g/m^3$ on Sep 28

Maximum Diurnal Average: 34.0 $\mu g/m^3$ at hour 13

Minimum Diurnal Average: 23.7 $\mu g/m^3$ at hour 17

Monthly Average: 27.01 $\mu g/m^3$

Percentiles: P_1 = 1.3 P_{10} = 3.8 Q_1 = 5.7 Median = 10.1 Q_3 = 22.0 P_{90} = 82.4 P_{99} = 185.0

Hours in Service:	720
Hours of Data:	718
Hours of Missing Data:	2
Hours of Calibration:	2
Percent Operational Time:	100.0

Day	Hourly Period Ending At (MST)																								Daily	Daily
	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24	Average	Maximum
1-Sep	10.6	22.6	31.7	26.7	22.9	18.6	14.4	11.8	9.9	8.5	7.7	6.7	4.7	5.0	5.3	4.9	5.3	8.0	11.9	16.7	18.2	21.4	21.9	21.1	14.0	31.7
2-Sep	19.7	18.7	18.3	18.3	17.8	18.1	17.8	16.5	16.6	16.0	14.3	11.3	9.3	7.3	5.9	6.7	7.5	7.4	8.5	11.6	14.1	25.8	47.2	26.3	15.9	47.2
3-Sep	15.1	10.3	9.3	10.6	12.8	17.6	24.5	23.9	20.9	18.7	20.7	15.1	12.0	9.6	8.9	10.7	12.6	12.1	12.4	12.7	11.7	11.9	9.7	9.2	13.9	24.5
4-Sep	10.1	10.3	10.4	9.2	7.6	7.2	7.7	7.4	7.8	8.2	7.9	11.5	12.7	8.8	7.6	8.4	6.9	6.6	8.3	8.4	7.4	5.7	4.7	3.9	8.1	12.7
5-Sep	3.8	4.0	6.3	6.4	7.1	7.2	7.0	6.1	6.4	7.4	7.6	7.7	10.0	15.4	17.1	15.9	15.2	14.2	13.6	11.9	11.6	11.5	10.8	11.9	9.8	17.1
6-Sep	12.5	11.1	8.9	7.4	6.7	6.4	6.8	6.9	7.1	8.2	15.3	16.3	16.2	16.0	17.2	20.0	23.1	20.5	21.8	26.0	25.5	25.9	29.8	36.1	16.3	36.1
7-Sep	50.3	67.3	83.4	96.8	108.3	116.9	124.4	123.7	110.5	117.7	120.3	128.4	180.3	123.7	92.5	71.5	49.0	64.5	66.5	68.3	68.8	69.8	73.0	74.6	93.8	180.3
8-Sep	83.7	90.6	101.1	112.3	126.5	131.9	123.6	108.4	112.5	122.4	143.4	153.0	140.7	114.5	82.3	79.5	95.6	84.7	83.4	82.8	78.0	73.6	68.4	65.6	102.4	153.0
9-Sep	68.5	63.9	68.6	72.9	77.5	65.0	61.6	59.2	79.0	75.4	54.6	50.1	41.5	23.7	7.2	5.6	3.7	4.0	25.0	19.2	11.1	17.2	38.1	41.8	43.1	79.0
10-Sep	37.5	33.7	29.5	23.9	19.7	18.4	17.7	18.0	18.9	18.0	15.6	14.3	24.4	24.5	14.6	15.9	17.0	16.4	14.4	7.5	8.9	9.8	18.1	11.0	18.6	37.5
11-Sep	10.2	9.9	8.9	8.1	8.0	8.2	10.6	12.5	15.3	18.3	19.9	20.2	28.4	17.1	10.4	9.1	8.7	12.2	13.5	22.0	27.4	35.8	42.4	45.4	17.6	45.4
12-Sep	46.8	45.6	44.9	42.7	55.3	67.6	85.1	89.6	84.6	96.4	131.6	193.0	206.2	191.9	191.0	185.9	191.4	191.4	186.6	180.9	174.9	174.1	174.6	173.9	133.6	206.2
13-Sep	172.4	169.6	162.5	162.2	155.5	157.7	157.9	154.5	153.2	162.1	169.6	173.8	168.1	159.3	164.7	151.3	144.3	141.8	132.1	105.7	92.8	88.3	87.9	73.7	144.2	173.8
14-Sep	66.4	67.2	60.6	55.4	52.8	51.5	51.1	52.5	50.3	42.2	35.1	42.0	57.8	62.9	49.3	29.8	19.1	19.9	21.8	26.8	24.4	27.3	25.6	26.8	42.4	67.2
15-Sep	28.4	30.8	31.6	28.9	29.2	27.7	26.0	27.5	29.1	27.2	15.2	11.8	9.5	13.2	15.8	16.9	18.7	19.8	23.3	27.4	27.7	25.2	22.8	20.8	23.1	31.6
16-Sep	20.2	20.5	20.3	19.8	19.5	17.8	15.5	14.6	13.6	12.5	13.6	7.9	4.2	3.4	3.4	3.2	3.1	3.1	3.9	5.0	5.7	7.1	6.6	5.7	10.4	20.5
17-Sep	5.7	4.9	5.1	5.1	5.1	5.2	5.2	5.0	4.8	5.3	5.7	6.7	6.1	4.9	4.5	4.5	4.5	5.5	6.5	7.0	8.1	10.7	9.2	7.7	6.0	10.7
18-Sep	7.4	8.0	8.7	7.0	7.7	12.2	9.1	7.8	7.5	7.3	7.4	7.6	9.2	9.2	9.1	12.3	16.7	19.7	22.4	21.7	19.9	18.9	59.4	22.7	14.1	59.4
19-Sep	18.2	16.2	15.2	14.6	14.8	16.2	16.8	15.5	14.9	15.4	14.7	13.3	10.1	10.5	11.9	12.5	13.4	10.6	9.7	12.9	13.2	12.6	14.5	13.1	13.8	18.2
20-Sep	12.1	11.7	12.2	11.7	12.0	12.4	12.6	13.0	13.6	17.9	15.4	13.0	13.7	C	C	13.7	10.5	8.6	9.5	9.4	9.5	8.8	9.2	10.1	11.8	17.9
21-Sep	9.8	10.3	9.2	8.6	7.5	7.1	6.7	6.4	6.3	5.9	6.1	6.5	7.6	8.8	9.1	8.5	9.0	9.1	9.9	8.9	8.9	8.3	6.8	6.3	8.0	10.3
22-Sep	5.7	5.4	5.9	6.4	7.0	7.4	7.7	7.9	7.4	6.9	5.8	5.2	4.6	3.9	3.7	3.6	3.7	5.0	5.9	6.7	5.2	4.6	4.5	4.7	5.6	7.9
23-Sep	4.5	4.2	4.7	5.7	6.8	6.9	6.5	5.9	6.9	8.3	13.7	15.8	14.8	10.6	5.7	4.6	4.4	5.9	8.5	7.8	5.7	4.6	4.1	4.0	7.1	15.8
24-Sep	4.4	4.6	4.3	3.5	3.6	3.5	3.8	4.1	3.0	2.0	1.7	1.4	1.5	2.0	1.8	1.4	1.4	2.1	3.9	5.7	8.6	8.2	6.8	4.3	3.6	8.6
25-Sep	3.8	3.9	3.9	4.0	3.9	3.8	3.8	4.2	4.0	4.9	4.7	3.9	3.9	4.6	4.8	3.6	3.4	3.6	5.1	4.7	7.4	11.0	9.0	6.4	4.8	11.0
26-Sep	4.7	2.8	2.7	3.2	4.2	8.6	11.4	8.0	6.4	9.6	12.8	13.4	8.1	7.4	8.4	13.1	9.7	6.3	3.9	3.6	5.3	5.8	6.8	5.5	7.2	13.4
27-Sep	4.3	4.5	4.1	4.0	4.5	4.3	3.9	4.3	4.3	5.2	4.4	2.8	3.0	2.9	2.6	2.8	3.9	3.7	5.7	3.4	2.6	2.2	1.9	1.7	3.6	5.7
28-Sep	1.5	1.2	1.2	1.2	1.2	1.2	1.2	1.4	1.7	1.2	1.2	1.4	1.6	2.2	2.8	3.1	3.2	4.5	9.0	12.5	11.3	9.2	5.8	5.3	3.6	12.5
29-Sep	5.0	4.6	4.2	4.4	5.0	5.0	5.0	5.8	6.5	9.5	7.3	7.6	7.4	6.0	5.5	3.4	4.9	5.7	5.3	5.7	5.6	4.0	4.0	3.7	5.5	9.5
30-Sep	3.8	3.5	3.4	4.4	5.6	7.8	12.7	11.7	11.7	14.5	16.0	4.9	3.0	2.8	2.6	2.3	2.1	2.1	31.9	7.8	2.1	2.6	2.1	2.3	6.8	31.9
	24.9	25.4	26.0	26.2	27.2	28.0	28.6	27.8	27.8	29.1	30.3	32.2	34.0	30.1	26.4	24.2	23.7	24.0	26.2	25.0	24.1	24.7	27.5	24.9	Diurnal Average	
	172.4	169.6	162.5	162.2	155.5	157.7	157.9	154.5	153.2	162.1	169.6	193.0	206.2	191.9	191.0	185.9	191.4	191.4	186.6	180.9	174.9	174.1	174.6	173.9	Diurnal Maximum	

C - Calibration

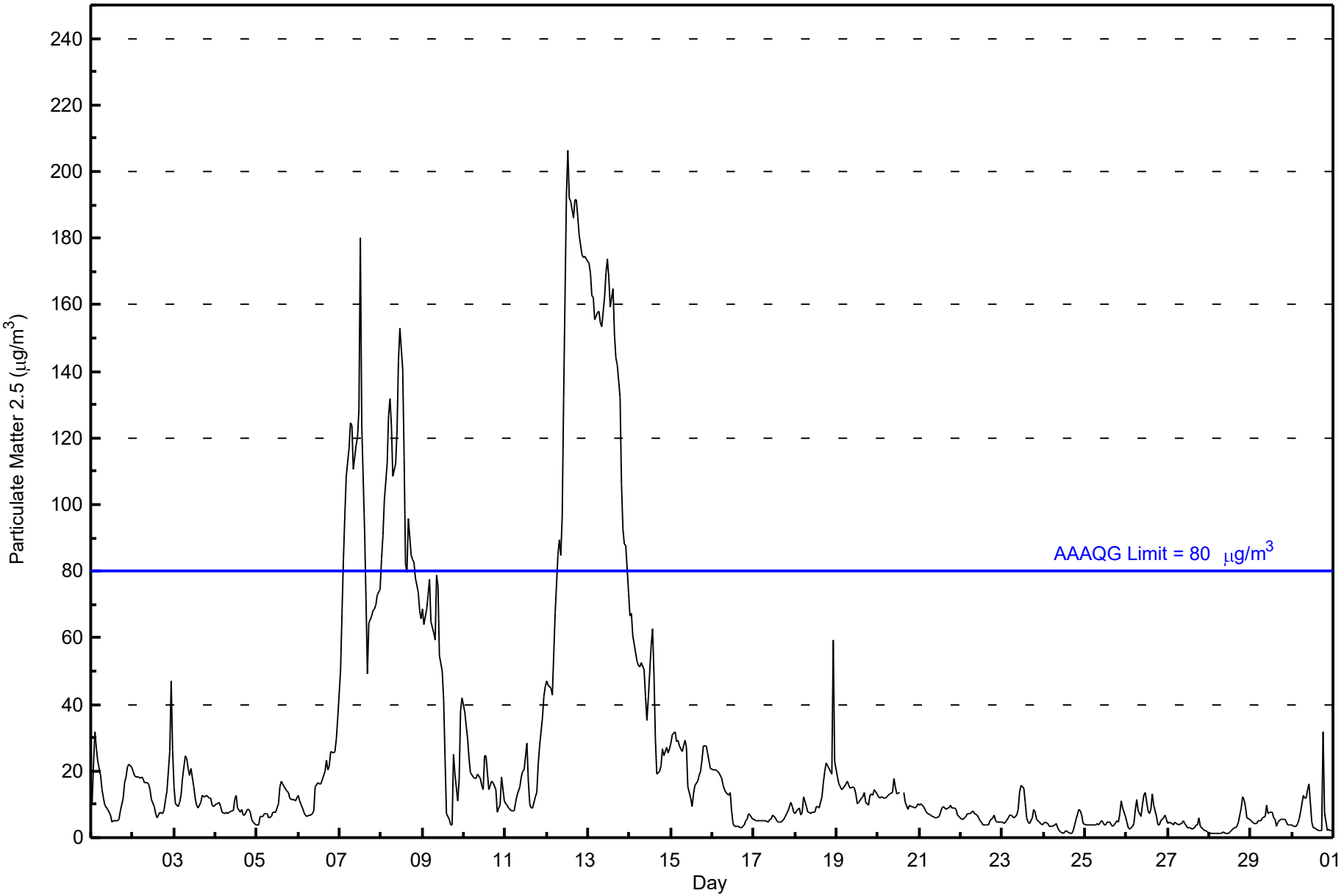
Alberta Ambient Air Quality Guideline/Objectives: 1-hr 80 $\mu g/m^3$ 24-hr 29 $\mu g/m^3$

Wood Buffalo Environmental Association

Hourly Averages

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

Athabasca Valley - September 2024



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

Athabasca Valley - September 2024

Concentration Ranges ($\mu g/m^3$)	Number of Hours	%	Cumulative %
0 - 5	172	23.96	23.96
6 - 15	293	40.81	64.76
16 - 25	91	12.67	77.44
26 - 80	89	12.40	89.83
> 81.0	73	10.17	100.00

Total Number of Valid Hours: 718

Total Number of Hours: 720

Wood Buffalo Environmental Association

Frequency Distribution

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

Athabasca Valley - September 2024

Concentration Ranges ($\mu g/m^3$)	**Wind Direction** N	NNE	NE	ENE	E	ESE	SE	SSE	S	SSW	SW	WSW	W	WNW	NW	NNW	**Totals**
0 - 5	4	1	3	3	10	20	26	3	8	8	18	26	19	13	6	4	172
6 - 15	10	3	1	5	22	57	55	18	7	10	23	14	17	16	9	26	293
16 - 25	2	1	1	2	6	11	20	9	4	7	4	5	7	3	4	5	91
26 - 80	5	1	0	11	2	8	11	3	2	11	9	4	4	4	6	8	89
> 81.0	5	1	3	0	5	6	16	2	0	1	2	1	1	2	6	22	73
Totals	26	7	8	21	45	102	128	35	21	37	56	50	48	38	31	65	718

Total Number of Valid Hours: 718

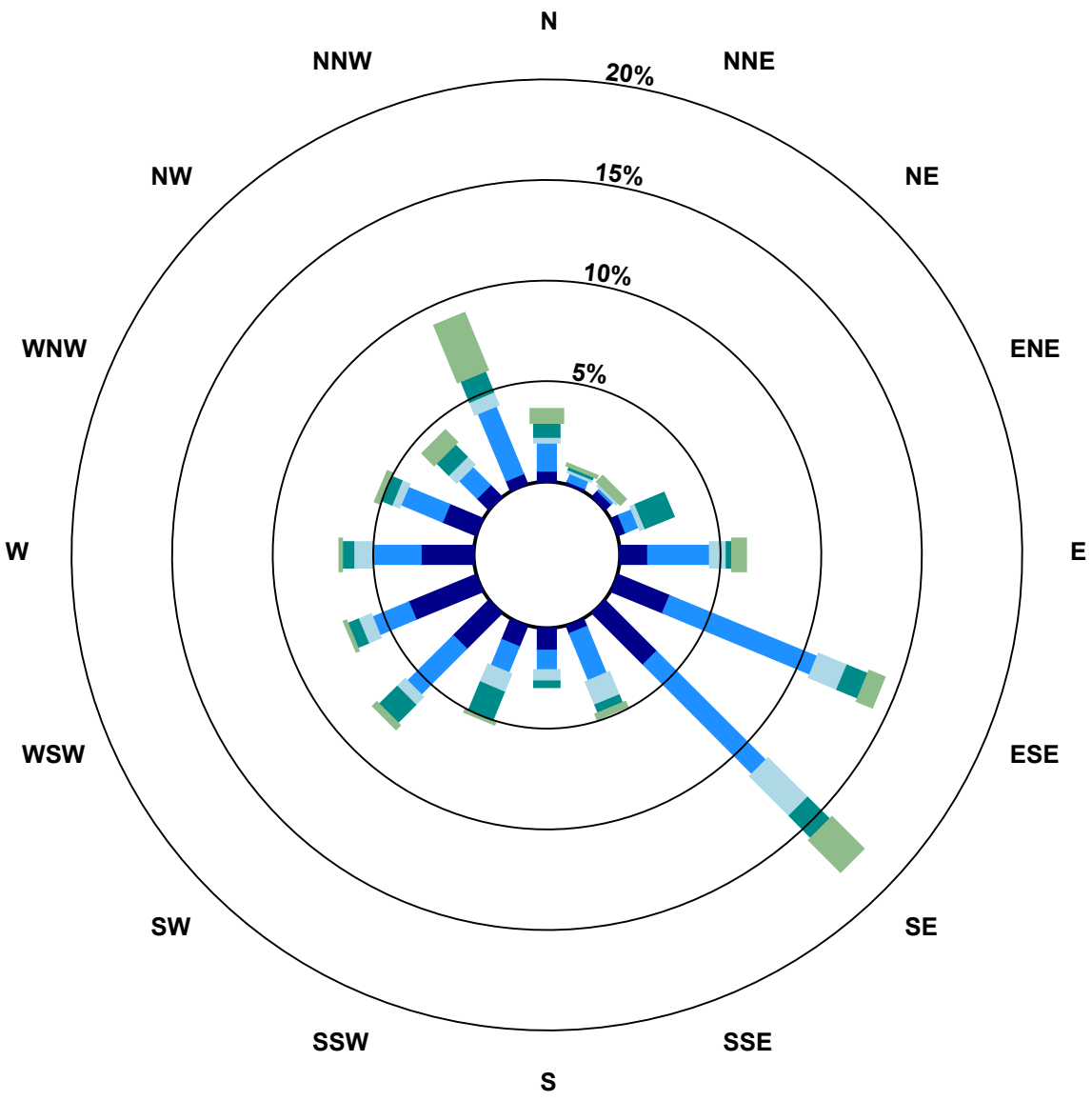
Total Number of Hours: 720

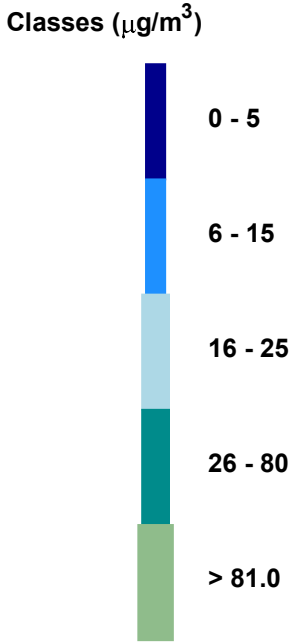
Wood Buffalo Environmental Association

Wind Rose Sep 2024

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

Athabasca Valley





Total Number of Valid Hours: 718

Wood Buffalo Environmental Association

Summary of Hour Averages

Carbon Monoxide (CO) - ppm

Athabasca Valley - September 2024

Number of Exceedences (AAAQO): 1-hr: 0 24-hr: 0
Maximum Value: 0.8 ppm on Sep 12 18:00
Maximum Daily Average: 0.6 ppm on Sep 13

Minimum Value: 0.1 ppm on Sep 6 10:00
Minimum Daily Average: 0.1 ppm on Sep 30
Maximum Diurnal Average: 0.3 ppm at hour 20
Minimum Diurnal Average: 0.2 ppm at hour 4
Monthly Average: 0.23 ppm
Percentiles: P_1 = 0.1 P_{10} = 0.1 Q_1 = 0.1 Median = 0.2 Q_3 = 0.2 P_{90} = 0.4 P_{99} = 0.8

Hours in Service:	720
Hours of Data:	686
Hours of Missing Data:	34
Hours of Calibration:	34
Percent Operational Time:	100.0

Day	Hourly Period Ending At (MST)																								Daily	Daily
	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24	Average	Maximum
1-Sep	0.2	0.2	0.2	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	0.2	0.2	0.2	0.2	0.2	0.2	0.2	0.2
2-Sep	0.2	0.2	0.1	0.1	Z	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	0.1	0.2	0.3	0.2	0.2	0.3
3-Sep	0.2	0.1	0.1	0.2	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	0.2	0.2	0.2	0.2	0.1	0.1	0.2	0.2
4-Sep	Z	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	0.2	0.2	0.2	0.2	0.2	0.1	0.1	0.1	0.2	0.2
5-Sep	0.1	Z	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	0.2	0.2	0.2	0.2	0.2	0.2	0.2	0.2	0.2	0.2
6-Sep	0.2	0.2	Z	0.1	0.1	0.1	0.1	0.1	0.1	0.1	C	C	C	C	0.2	0.3	0.4	0.3	0.3	0.4	0.3	0.3	0.3	0.3	0.2	0.4
7-Sep	0.3	0.3	0.3	Z	0.4	0.4	0.4	0.4	0.4	0.4	0.5	0.5	0.6	0.4	0.4	0.3	0.3	0.3	0.4	0.4	0.4	0.4	0.4	0.4	0.4	0.6
8-Sep	0.4	0.4	0.4	0.4	Z	0.5	0.4	0.4	0.4	0.5	0.6	0.6	0.6	0.5	0.4	0.4	0.4	0.4	0.4	0.4	0.4	0.4	0.3	0.3	0.4	0.6
9-Sep	0.3	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	0.2	0.2	0.2	0.2	0.3	0.3	0.3	0.3	0.3	0.3	0.3	0.3
10-Sep	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	0.2	0.2	0.2	0.2	0.2	0.2	0.2	0.2	0.2
11-Sep	0.2	Z	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	0.2	0.2	0.3	0.3	0.3	0.3	0.3	0.3	0.2	0.3
12-Sep	0.3	0.3	Z	0.3	0.3	0.4	0.5	0.5	0.4	0.4	0.5	0.8	0.8	0.8	0.8	0.8	0.8	0.8	0.8	0.8	0.8	0.8	0.8	0.8	0.6	0.8
13-Sep	0.8	0.7	0.7	Z	0.7	0.7	0.7	0.7	0.7	0.7	0.7	0.7	0.7	0.7	0.7	0.6	0.6	0.6	0.6	0.5	0.4	0.4	0.4	0.4	0.6	0.8
14-Sep	0.3	0.3	0.3	0.3	Z	0.3	0.3	0.3	0.3	0.3	0.3	0.3	0.4	0.4	0.3	0.2	0.2	0.2	0.3	0.5	0.3	0.3	0.2	0.2	0.3	0.5
15-Sep	0.3	0.3	0.2	0.2	0.3	Z	0.3	0.2	0.2	0.2	0.2	0.2	0.2	0.2	0.2	0.2	0.2	0.3	0.3	0.4	0.3	0.3	0.2	0.2	0.2	0.4
16-Sep	Z	0.2	0.2	0.2	0.2	0.2	0.2	0.2	0.2	0.2	0.3	0.2	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	0.3
17-Sep	0.2	Z	0.1	0.1	0.1	0.1	0.2	0.2	0.2	0.2	0.2	0.2	0.2	0.2	0.1	0.1	0.1	0.2	0.2	0.2	0.2	0.2	0.2	0.2	0.2	0.2
18-Sep	0.2	0.2	Z	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	0.2	0.2	0.3	0.3	0.3	0.2	0.2	0.2	0.2	0.3
19-Sep	0.3	0.2	0.2	Z	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	0.2	0.2	0.2	0.2	0.2	0.2	0.2	0.2	0.3
20-Sep	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	0.2	0.1	0.1	0.2	0.2
21-Sep	0.1	0.2	0.2	0.2	0.2	Z	0.2	0.2	0.2	0.1	0.2	0.2	0.2	0.2	0.2	0.2	0.2	0.2	0.2	0.2	0.2	0.2	0.2	0.2	0.2	0.2
22-Sep	Z	0.1	0.1	0.2	0.2	0.2	0.2	0.2	0.2	0.2	0.1	0.1	0.2	0.1	0.1	0.1	0.1	0.2	0.3	0.2	0.2	0.1	0.1	0.1	0.2	0.3
23-Sep	0.1	Z	0.1	0.1	0.1	0.1	0.1	0.1	0.2	0.1	0.2	0.2	0.1	0.1	0.1	0.1	0.1	0.2	0.3	0.2	0.2	0.2	0.1	0.1	0.2	0.3
24-Sep	0.1	0.1	Z	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	0.2	0.2	0.3	0.2	0.2	0.1	0.1	0.3
25-Sep	0.1	0.1	0.1	Z	0.1	0.1	0.1	0.1	0.2	0.2	0.2	0.2	0.2	0.2	0.2	0.1	0.2	0.2	0.2	0.2	0.3	0.3	0.2	0.2	0.2	0.3
26-Sep	0.1	0.1	0.1	0.1	Z	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	0.2	0.1	0.2	0.2	0.2	0.2	0.2	0.2
27-Sep	0.2	0.2	0.1	0.1	0.1	Z	0.1	0.2	0.2	0.2	0.2	0.1	0.1	0.1	0.1	0.1	0.2	0.2	0.2	0.2	0.2	0.1	0.1	0.1	0.2	0.2
28-Sep	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	0.2	0.3	0.4	0.3	0.3	0.2	0.2	0.2	0.2	0.4
29-Sep	0.2	Z	0.1	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	0.2
30-Sep	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	0.1	0.3	0.1	0.1	0.1	0.1	0.1	0.1	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	0.2	0.2	0.2	0.2	0.2	0.2	0.3	0.3	0.3	0.2	0.2	0.2	Diurnal Average	
	0.8	0.7	0.7	0.4	0.7	0.7	0.7	0.7	0.7	0.7	0.7	0.8	0.8	0.8	0.8	0.8	0.8	0.8	0.8	0.8	0.8	0.8	0.8	0.8	Diurnal Maximum	

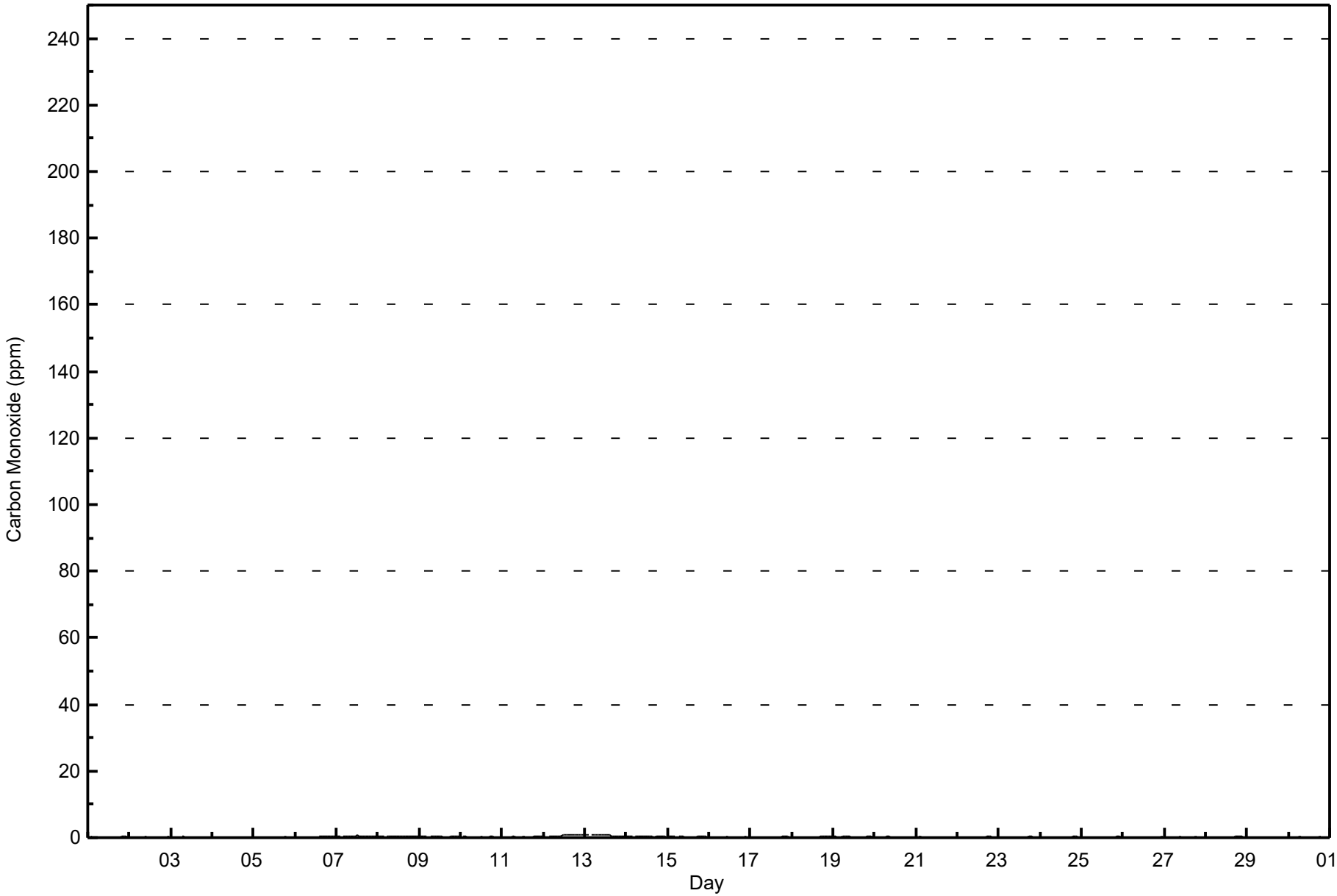
Z - zerospan C - Calibration
Alberta Ambient Air Quality Objectives (AAAQO): 1-hr 13 ppm

Wood Buffalo Environmental Association

Hourly Averages

Carbon Monoxide (CO) - ppm

Athabasca Valley - September 2024



Concentration Ranges (ppm)	Number of Hours	%	Cumulative %
0 - 0.3	599	87.32	87.32
0.4 - 0.5	52	7.58	94.90
0.6 - 0.7	21	3.06	97.96
0.8 - 1.4	14	2.04	100.00
1.5 - 10	0	0.00	100.00
> 10	0	0.00	100.00

Total Number of Valid Hours: 686

Total Number of Hours: 720

Wood Buffalo Environmental Association

Frequency Distribution

Carbon Monoxide (CO) - ppm

Athabasca Valley - September 2024

Concentration							**Wind Direction**										
Ranges (ppm)	N	NNE	NE	ENE	E	ESE	SE	SSE	S	SSW	SW	WSW	W	WNW	NW	NNW	**Totals**
0 - 0.3	20	6	5	18	40	91	95	30	20	30	51	47	45	36	25	40	599
0.4 - 0.5	1	1	0	1	2	7	18	5	1	2	3	1	2	3	2	3	52
0.6 - 0.7	0	0	0	0	1	0	2	0	0	1	0	0	0	0	4	13	21
0.8 - 1.4	4	0	3	0	2	0	0	0	0	0	0	0	0	0	0	5	14
1.5 - 10	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
Totals	25	7	8	19	45	98	115	35	21	33	54	48	47	39	31	61	686

Total Number of Valid Hours: 686

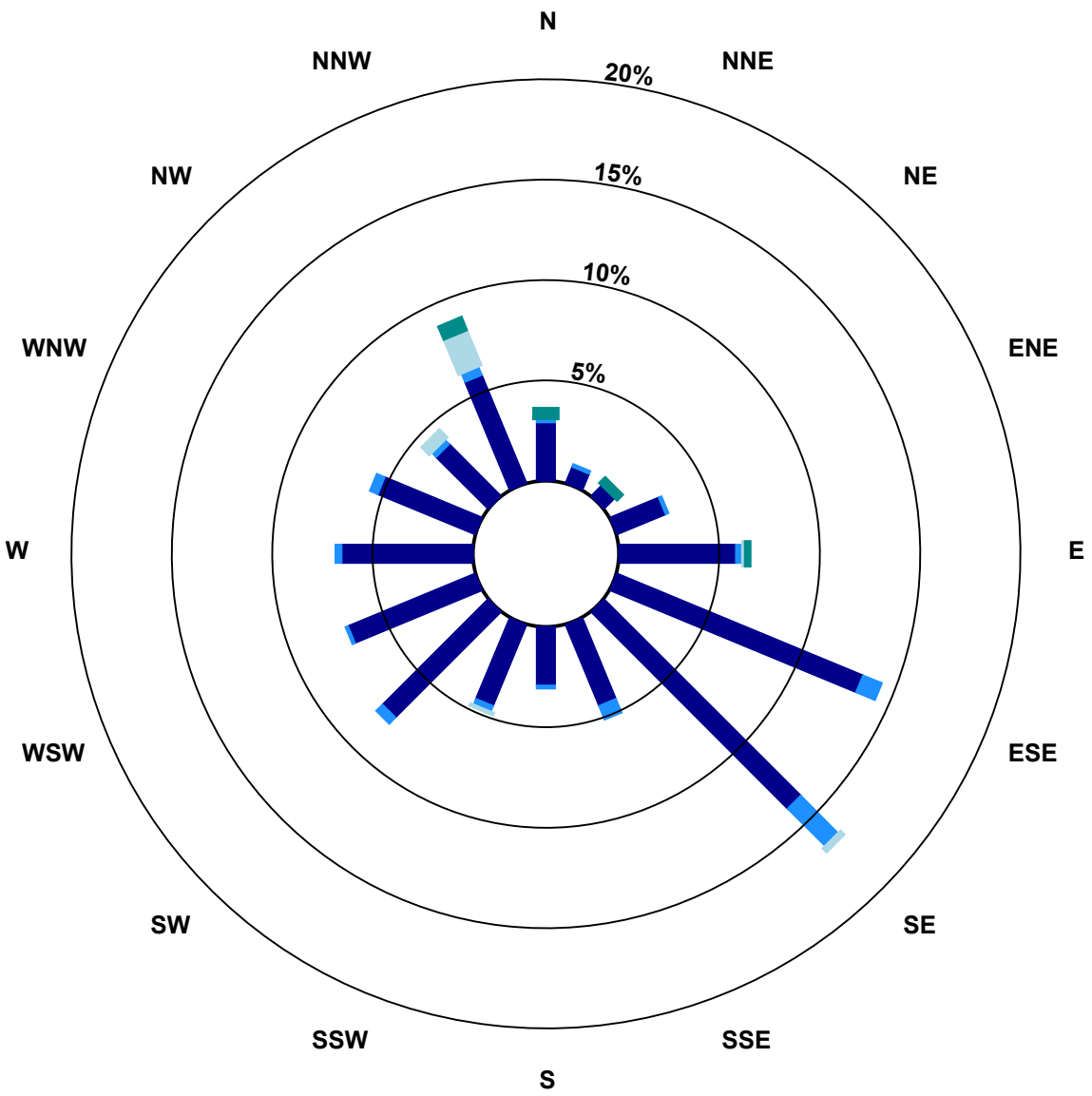
Total Number of Hours: 720

Wood Buffalo Environmental Association

Wind Rose Sep 2024

Carbon Monoxide (CO) - ppm

Athabasca Valley



Classes (ppm)

0 - 0.3

0.4 - 0.5

0.6 - 0.7

0.8 - 1.4

1.5 - 10

> 10

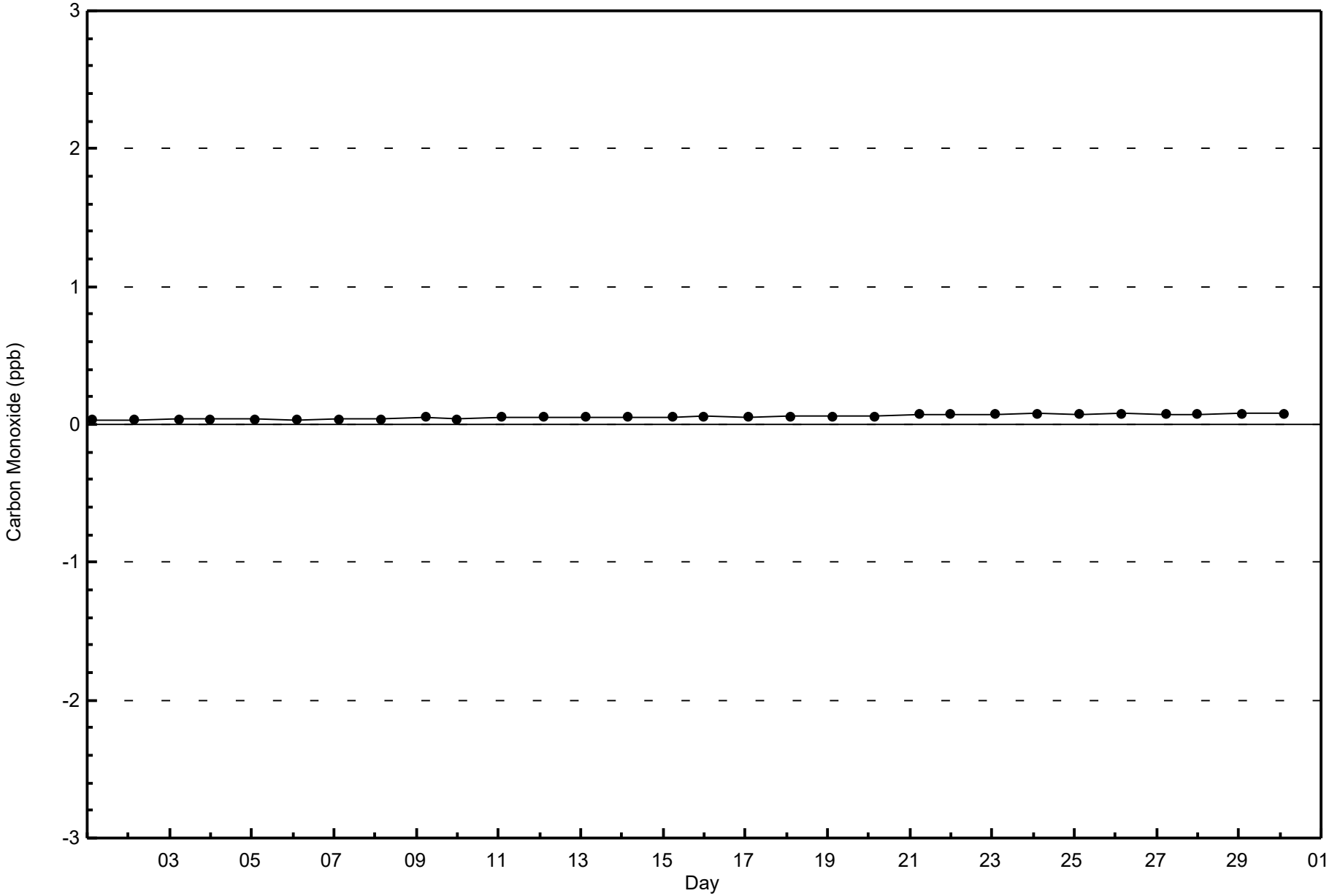
Total Number of Valid Hours: 686

Wood Buffalo Environmental Association

Zero Responses

Carbon Monoxide (CO) - ppb

Athabasca Valley - September 2024

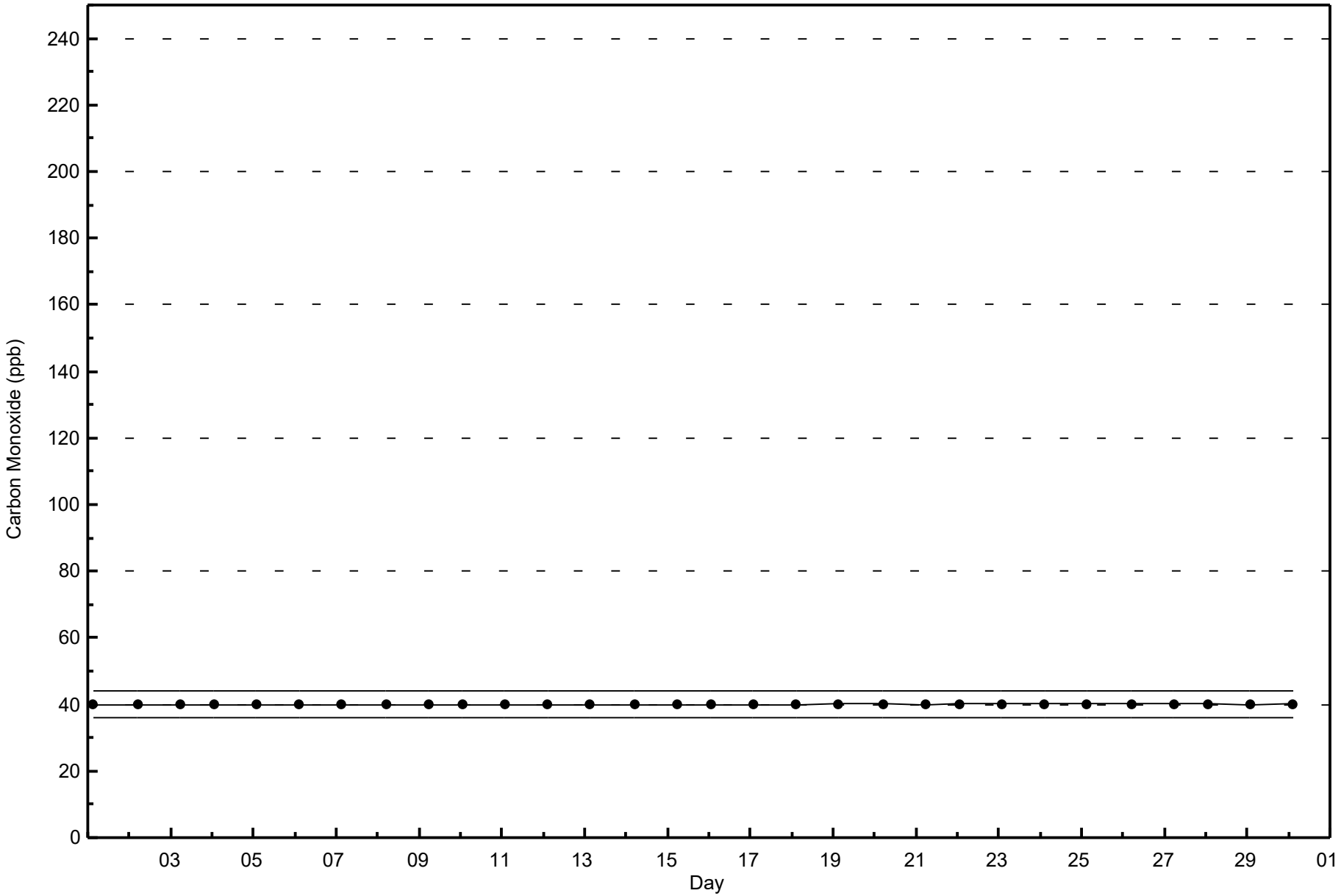


Wood Buffalo Environmental Association

Span Responses

Carbon Monoxide (CO) - ppb

Athabasca Valley - September 2024



Maximum Value: 32.1 C on Sep 2 16:00

Maximum Daily Average: 21.2 C on Sep 2

Minimum Value: 1.9 C on Sep 21 07:00

Minimum Daily Average: 8.8 C on Sep 30

Maximum Diurnal Average: 19.6 C at hour 16

Minimum Diurnal Average: 8.3 C at hour 7

Monthly Average: 13.51 C

Percentiles: P_1 = 3.1 P_{10} = 7.3 Q_1 = 9.8 Median = 12.6 Q_3 = 16.6 P_{90} = 20.9 P_{99} = 30.0

Hours in Service:	720
Hours of Data:	720
Hours of Missing Data:	0
Hours of Calibration:	0
Percent Operational Time:	100.0

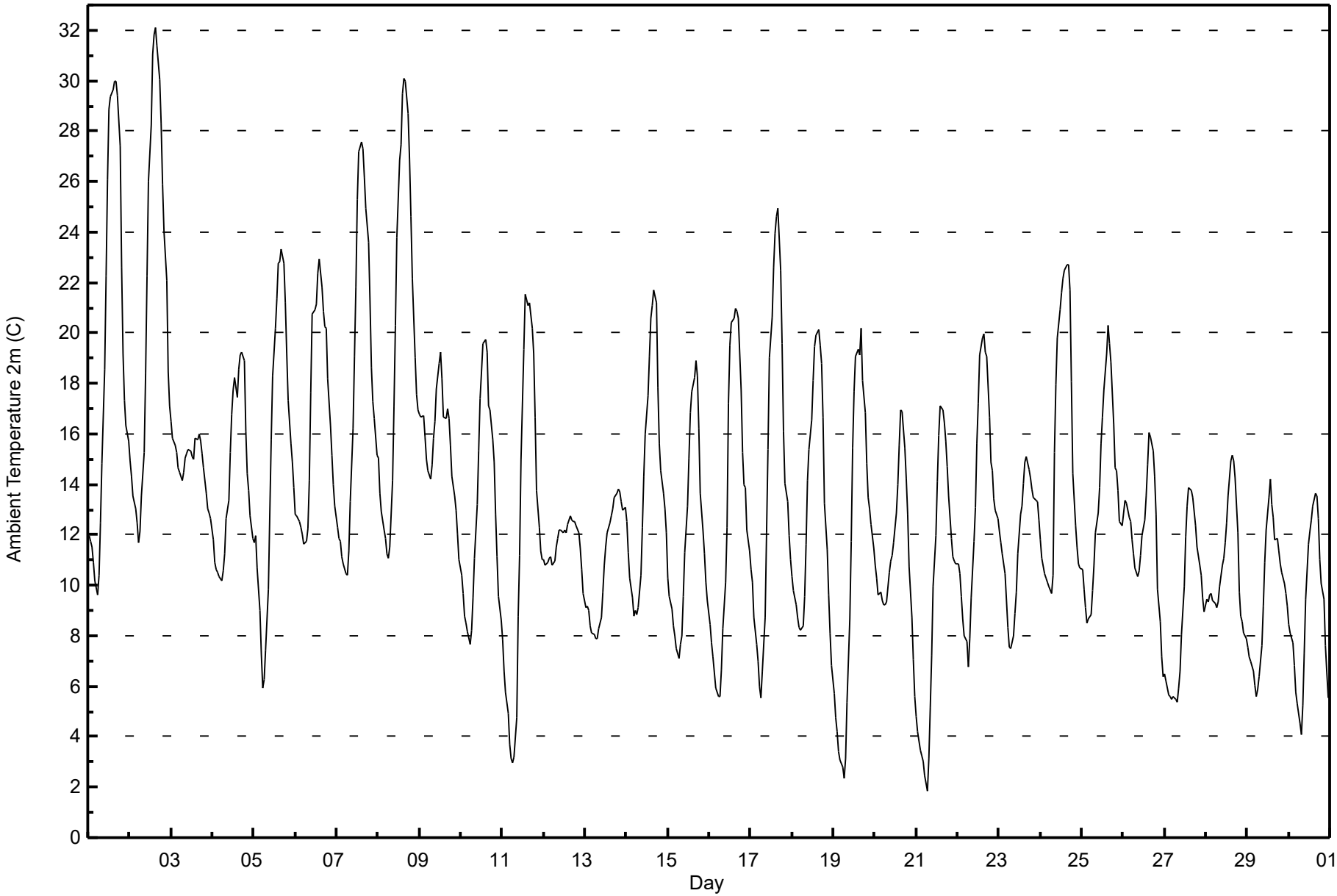
Day	Hourly Period Ending At (MST)																								Daily	Daily
	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24	Average	Maximum
1-Sep	12.0	11.7	11.5	10.9	10.2	9.6	10.4	12.4	14.8	18.6	22.3	26.1	28.8	29.4	29.7	30.0	30.0	29.4	27.4	22.6	19.2	17.3	16.4	15.7	19.4	30.0
2-Sep	14.9	14.3	13.5	13.0	12.5	11.7	12.1	13.6	15.3	18.4	22.3	26.0	28.2	31.0	31.9	32.1	31.4	30.0	28.3	25.9	24.1	22.1	18.5	17.1	21.2	32.1
3-Sep	16.5	15.8	15.5	15.3	14.7	14.5	14.2	14.5	15.1	15.2	15.4	15.3	15.1	15.0	15.8	15.8	16.0	15.7	15.2	14.7	13.6	13.0	12.9	12.6	14.9	16.5
4-Sep	11.8	10.9	10.6	10.5	10.3	10.2	10.6	11.3	12.6	13.4	15.3	16.8	17.7	18.2	17.5	18.6	19.1	19.3	18.9	16.1	14.4	13.8	12.7	11.8	14.3	19.3
5-Sep	11.7	12.0	10.7	9.0	7.3	6.0	6.3	7.4	9.8	12.9	15.8	18.3	20.2	21.4	22.7	22.8	23.3	22.8	21.2	19.2	17.4	15.6	14.9	13.8	15.1	23.3
6-Sep	12.8	12.7	12.5	12.3	12.0	11.7	11.8	12.3	14.1	17.6	20.8	20.9	21.1	22.3	23.0	21.8	20.9	20.2	20.2	18.2	16.3	15.2	14.0	13.2	16.6	23.0
7-Sep	12.3	11.8	11.7	11.1	10.9	10.5	10.4	11.4	13.3	16.2	19.1	21.8	25.3	27.2	27.6	27.3	26.2	24.9	23.6	21.3	18.6	17.3	16.6	15.1	18.0	27.6
8-Sep	15.0	13.7	12.9	12.2	11.9	11.3	11.1	11.5	14.2	17.1	20.3	23.8	26.9	27.5	29.5	30.1	30.0	28.7	26.9	24.6	22.2	19.0	17.6	16.9	19.8	30.1
9-Sep	16.8	16.7	16.7	15.9	15.0	14.5	14.2	14.7	15.8	16.5	17.8	18.8	19.3	18.2	16.7	16.6	17.0	16.6	15.6	14.3	13.5	13.0	12.0	11.0	15.7	19.3
10-Sep	10.4	9.7	8.8	8.5	8.2	7.6	8.2	9.5	11.1	13.2	15.3	17.4	18.5	19.6	19.8	19.2	17.1	16.9	15.7	14.9	12.8	11.1	9.5	8.6	13.0	19.8
11-Sep	7.8	6.6	5.8	4.9	3.7	3.1	3.0	3.2	4.8	8.8	11.2	15.0	19.4	21.5	21.3	21.1	21.2	20.2	19.2	16.7	13.7	12.3	11.4	11.0	12.0	21.5
12-Sep	11.0	10.8	10.9	11.1	11.1	10.8	11.0	11.5	11.9	12.2	12.2	12.1	12.2	12.1	12.4	12.7	12.6	12.6	12.5	12.4	12.1	11.5	10.6	9.7	11.7	12.7
13-Sep	9.1	9.2	9.0	8.4	8.1	8.1	7.9	7.9	8.3	8.7	9.7	10.8	11.5	12.1	12.5	12.7	13.0	13.5	13.6	13.8	13.7	13.3	13.0	13.1	10.9	13.8
14-Sep	12.5	11.3	10.3	9.5	8.8	9.0	8.8	9.1	10.4	12.3	14.3	16.0	17.5	19.1	20.6	21.1	21.7	21.2	17.9	15.6	14.5	13.6	13.0	12.1	14.2	21.7
15-Sep	10.3	9.5	9.1	8.4	8.0	7.5	7.1	7.7	8.0	9.6	11.3	13.1	15.0	16.8	17.7	18.3	18.9	18.3	16.2	13.7	12.1	11.2	10.1	9.4	12.0	18.9
16-Sep	8.4	7.7	7.2	6.5	6.0	5.6	5.6	6.6	8.3	10.1	12.3	17.2	19.5	20.4	20.6	21.0	20.9	20.6	17.7	15.2	14.0	13.9	12.2	11.4	12.9	21.0
17-Sep	10.7	10.1	8.7	7.7	7.0	6.0	5.5	6.6	8.7	12.1	15.4	19.0	20.7	22.6	23.9	24.6	25.0	22.5	19.6	16.1	14.0	13.3	12.0	11.0	14.3	25.0
18-Sep	10.3	9.8	9.2	8.7	8.3	8.2	8.4	9.6	11.6	14.1	15.4	16.6	18.1	19.5	19.9	20.1	19.5	18.8	16.7	13.2	11.4	9.6	8.1	6.8	13.0	20.1
19-Sep	5.7	4.8	4.2	3.4	3.1	2.8	2.4	3.1	5.4	8.7	11.8	15.4	17.7	19.1	19.3	19.1	20.2	18.1	16.8	14.8	13.5	13.0	12.4	11.5	11.1	20.2
20-Sep	10.8	10.3	9.6	9.8	9.4	9.3	9.2	9.3	10.5	10.9	11.2	11.7	12.9	14.0	15.6	16.9	16.9	15.5	14.2	12.8	10.8	8.7	7.0	5.6	11.4	16.9
21-Sep	4.8	4.2	3.4	3.2	3.0	2.5	1.9	3.1	5.1	7.2	9.9	12.0	14.1	16.0	17.1	16.9	16.5	15.7	14.7	13.5	11.9	11.1	10.9	10.8	9.6	17.1
22-Sep	10.9	10.4	9.6	8.7	8.0	7.8	6.8	7.9	9.5	11.7	13.1	15.6	17.2	19.1	19.8	20.0	19.3	19.1	16.7	14.9	14.6	13.4	13.0	12.6	13.3	20.0
23-Sep	12.1	11.7	11.2	10.5	9.4	8.3	7.5	7.5	8.0	8.9	9.7	11.2	12.8	13.2	14.1	14.9	15.1	14.6	14.3	13.8	13.5	13.4	13.3	12.6	11.7	15.1
24-Sep	11.8	11.1	10.4	10.3	10.1	10.0	9.7	10.4	15.3	17.9	19.8	20.9	21.6	22.1	22.5	22.7	22.7	21.7	18.0	14.4	12.4	11.5	10.9	10.7	15.4	22.7
25-Sep	10.6	9.9	9.1	8.5	8.7	8.8	9.8	10.8	12.1	12.9	13.9	15.6	16.7	17.7	19.2	20.3	19.6	18.8	16.4	14.7	14.5	13.7	12.5	12.3	13.6	20.3
26-Sep	12.9	13.4	13.3	12.7	12.6	11.8	11.2	10.7	10.3	10.6	11.2	12.0	12.6	13.5	14.7	16.0	15.9	15.4	14.3	12.8	9.9	8.5	7.2	6.4	12.1	16.0
27-Sep	6.5	6.2	5.6	5.6	5.5	5.6	5.5	5.3	5.9	6.6	8.1	9.9	11.9	13.1	13.9	13.7	13.5	12.9	12.4	11.5	10.8	10.4	9.5	8.9	9.1	13.9
28-Sep	9.4	9.3	9.6	9.7	9.4	9.3	9.1	9.3	10.0	10.8	11.1	11.7	12.5	13.5	15.0	15.2	14.9	14.2	12.1	9.8	8.8	8.6	8.1	7.9	10.8	15.2
29-Sep	7.6	7.2	7.0	6.6	6.1	5.6	5.9	6.3	7.6	9.2	10.9	12.2	13.5	14.2	13.2	12.7	11.8	11.9	11.3	10.9	10.5	10.1	9.7	9.2	9.6	14.2
30-Sep	8.5	8.1	7.7	6.8	5.7	5.3	4.5	4.1	5.2	7.3	9.5	11.6	12.2	12.6	13.2	13.6	13.5	12.6	11.0	10.1	9.4	7.6	6.6	5.6	8.8	13.6
	10.9	10.4	9.9	9.3	8.8	8.4	8.3	9.0	10.4	12.3	14.2	16.2	17.7	18.7	19.3	19.6	19.5	18.8	17.3	15.4	13.9	12.9	11.9	11.2	Diurnal Average	
	16.8	16.7	16.7	15.9	15.0	14.5	14.2	14.7	15.8	18.6	22.3	26.1	28.8	31.0	31.9	32.1	31.4	30.0	28.3	25.9	24.1	22.1	18.5	17.1	Diurnal Maximum	

Wood Buffalo Environmental Association

Hourly Averages

Ambient Temperature 2m (AT2) - C

Athabasca Valley - September 2024



Concentration Ranges (C)	Number of Hours	%	Cumulative %
-50 - -20	0	0.00	0.00
-20 - 0	0	0.00	0.00
0 - 10	190	26.39	26.39
10 - 20	442	61.39	87.78
> 20	88	12.22	100.00

Total Number of Valid Hours: 720

Total Number of Hours: 720

Maximum Value: 29.4 inHg on Sep 5 11:00

Maximum Daily Average: 29.3 inHg on Sep 5

Minimum Value: 28.4 inHg on Sep 25 16:00

Minimum Daily Average: 28.5 inHg on Sep 25

Maximum Diurnal Average: 28.9 inHg at hour 10

Minimum Diurnal Average: 28.9 inHg at hour 17

Monthly Average: 28.88 inHg

Percentiles: P_1 = 28.4 P_{10} = 28.7 Q_1 = 28.8 Median = 28.9 Q_3 = 29.0 P_{90} = 29.1 P_{99} = 29.4

Hours in Service:	720
Hours of Data:	720
Hours of Missing Data:	0
Hours of Calibration:	0
Percent Operational Time:	100.0

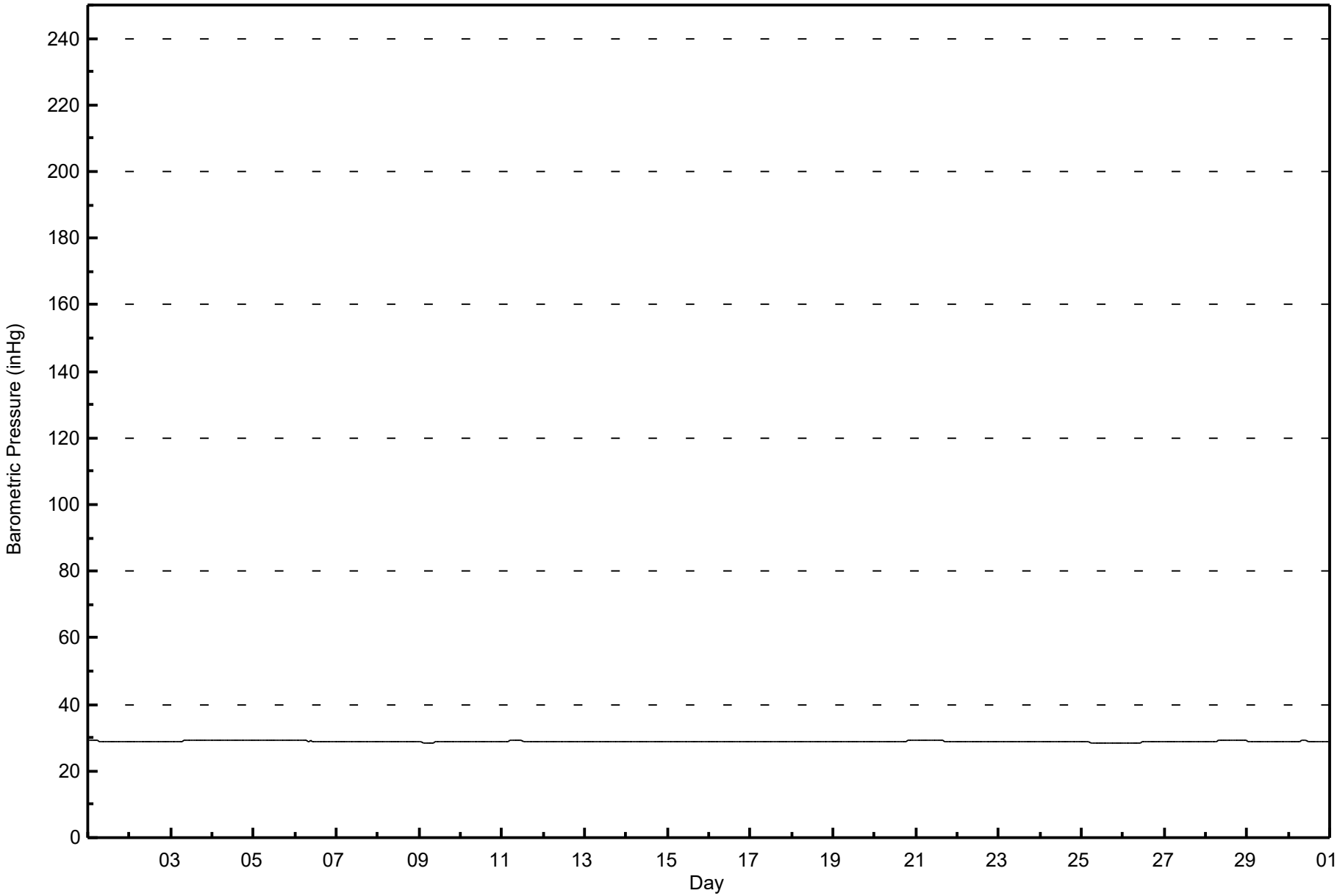
Day	Hourly Period Ending At (MST)																								Daily	Daily
	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24	Average	Maximum
1-Sep	29.1	29.1	29.1	29.1	29.1	29.0	29.0	29.0	29.0	29.0	28.9	28.9	28.9	28.9	28.8	28.8	28.8	28.8	28.8	28.8	28.8	28.8	28.8	28.8	28.9	29.1
2-Sep	28.8	28.8	28.8	28.8	28.8	28.8	28.8	28.8	28.8	28.8	28.8	28.8	28.8	28.8	28.7	28.7	28.7	28.7	28.8	28.8	28.8	28.8	28.9	28.9	28.8	28.9
3-Sep	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	29.1	29.1	29.1	29.1	29.1	29.1	29.1	29.1	29.1	29.2	29.1	29.2
4-Sep	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	29.3	29.3	29.3	29.3	29.3	29.3	29.3	29.3	29.3	29.3	29.3	29.3
5-Sep	29.3	29.3	29.3	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	29.2	29.2	29.2	29.2	29.2	29.2	29.2	29.2	29.3	29.4
6-Sep	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	29.0	29.0	29.0	29.0	29.1
7-Sep	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	28.9	28.9	28.9	28.9	28.9	28.9	28.9	28.9	28.9	29.0
8-Sep	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	28.8	28.8	28.8	28.7	28.7	28.7	28.7	28.7	28.7	28.7	28.7	28.8	28.9
9-Sep	28.7	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	28.8	28.8	28.8	28.8	28.8	28.9	28.9	28.9	28.9	28.7	28.9
10-Sep	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	28.9	28.9	28.9	29.0	29.0	28.9	29.0	29.0	29.0	29.0	29.0	29.0	29.0
11-Sep	29.0	29.0	29.0	29.0	29.0	29.0	29.1	29.1	29.1	29.1	29.0	29.0	29.0	29.0	29.0	28.9	28.9	29.0	29.0	29.0	29.0	29.0	29.0	29.0	29.0	29.1
12-Sep	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	28.9	28.9	28.9	28.9	28.9	28.9	28.9	28.9	28.9	29.0
13-Sep	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	28.8	28.8	28.7	28.7	28.7	28.7	28.7	28.7	28.7	28.7	28.7	28.8	28.9
14-Sep	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	28.8
15-Sep	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	28.9	28.9	28.9	28.9	28.9	28.9	28.9	28.9	28.9	28.9	28.9	28.9	28.9
16-Sep	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	28.8	28.8	28.8	28.8	28.8	28.8	28.8	28.8	28.8	28.8	28.9
17-Sep	28.8	28.8	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	28.8	28.8	28.9
18-Sep	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	28.8
19-Sep	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	28.7	28.7	28.7	28.7	28.7	28.7	28.7	28.7	28.7	28.7	28.8	28.8
20-Sep	28.7	28.7	28.8	28.7	28.8	28.8	28.8	28.8	28.8	28.8	28.9	28.9	28.9	28.9	28.9	28.9	29.0	29.0	29.0	29.0	29.0	29.1	29.1	29.1	28.9	29.1
21-Sep	29.1	29.1	29.1	29.1	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	28.9	28.9	29.1	29.2
22-Sep	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	28.8	28.8	28.8	28.8	28.8	28.8	28.8	28.8	28.8	28.8	28.8	28.9
23-Sep	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	28.7	28.7	28.7	28.7	28.7	28.7	28.6	28.8	28.8
24-Sep	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	28.7	28.7	28.7	28.7	28.7	28.7	28.7	28.7	28.7	28.7	28.7
25-Sep	28.7	28.7	28.7	28.6	28.6	28.6	28.5	28.5	28.5	28.5	28.5	28.4	28.5	28.4	28.4	28.4	28.4	28.4	28.4	28.4	28.4	28.4	28.4	28.5	28.5	28.7
26-Sep	28.5	28.5	28.5	28.5	28.5	28.5	28.6	28.6	28.6	28.6	28.6	28.6	28.6	28.7	28.7	28.7	28.7	28.7	28.7	28.7	28.7	28.7	28.7	28.7	28.6	28.7
27-Sep	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	28.8	28.8	28.8	28.8	28.9	28.9	28.9	28.9	28.9	28.8	28.9
28-Sep	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	29.1	29.1	29.1	29.1	29.1	29.1	29.1	29.0	29.0	29.0	29.1
29-Sep	29.0	29.0	29.0	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	28.9	28.9	28.9	28.9	28.9	28.9	28.9	29.0
30-Sep	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	29.0	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	28.9	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	Diurnal Average	
	29.3	29.3	29.3	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	29.3	29.3	29.3	29.3	Diurnal Maximum	

Wood Buffalo Environmental Association

Hourly Averages

Barometric Pressure (BP) - inHg

Athabasca Valley - September 2024



Wood Buffalo Environmental Association

Summary of Hour Averages

Relative Humidity 2m (RH2) - %

Athabasca Valley - September 2024

Maximum Value: 99.9 % on Sep 13 04:00

Maximum Daily Average: 91.6 % on Sep 23

Minimum Value: 24.3 % on Sep 2 16:00

Minimum Daily Average: 52.5 % on Sep 30

Maximum Diurnal Average: 88.4 % at hour 6

Minimum Diurnal Average: 49.0 % at hour 16

Monthly Average: 71.69 %

Percentiles: P_1 = 30.6 P_{10} = 43.5 Q_1 = 58.3 Median = 76.0 Q_3 = 87.2 P_{90} = 92.3 P_{99} = 97.7

Hours in Service:	720
Hours of Data:	701
Hours of Missing Data:	19
Hours of Calibration:	0
Percent Operational Time:	97.4

Day	Hourly Period Ending At (MST)																								Daily	Daily
	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24	Average	Maximum
1-Sep	80.2	75.1	72.2	76.7	80.3	82.7	79.1	71.8	66.1	58.7	52.7	46.3	34.8	34.3	32.7	30.5	30.2	32.7	40.7	63.4	81.1	86.1	87.2	84.1	61.7	87.2
2-Sep	78.8	80.1	83.1	85.2	86.7	88.8	85.6	79.4	73.7	64.8	55.9	49.1	44.7	31.9	25.6	24.3	24.4	29.0	33.4	38.4	46.4	52.3	68.4	72.4	58.4	88.8
3-Sep	73.5	76.5	77.4	76.1	77.5	79.4	79.1	77.8	73.6	71.5	71.0	70.1	71.0	74.3	68.4	66.0	64.2	65.7	67.4	72.6	79.1	83.2	84.2	83.3	74.3	84.2
4-Sep	85.2	89.9	92.5	92.1	90.6	90.2	88.7	87.2	83.4	80.8	67.9	61.3	56.7	52.7	61.1	57.5	49.8	51.4	48.8	63.6	69.1	67.1	68.8	69.8	71.9	92.5
5-Sep	69.0	68.7	76.2	90.2	91.7	91.6	88.7	81.6	73.6	66.1	57.6	49.7	43.6	37.2	30.3	31.5	31.2	34.8	40.3	45.3	48.1	53.3	56.3	60.1	59.0	91.7
6-Sep	65.7	65.3	65.7	65.2	65.8	66.8	66.5	66.1	62.7	57.2	48.5	49.3	50.0	48.7	49.6	58.6	68.2	73.0	70.7	76.7	85.3	88.9	91.1	91.3	66.5	91.3
7-Sep	92.1	91.1	89.6	90.4	89.4	89.0	88.3	85.7	79.4	69.5	63.4	56.9	44.2	34.9	35.6	36.2	39.2	46.4	50.4	59.2	71.4	76.9	76.0	84.5	68.3	92.1
8-Sep	80.8	85.6	88.3	89.6	89.2	90.8	89.8	88.4	79.7	70.4	60.9	52.8	46.6	44.5	35.4	33.7	35.0	39.7	43.9	49.7	57.6	74.3	80.5	83.9	66.3	90.8
9-Sep	83.1	85.1	80.3	85.8	90.2	92.3	92.5	83.9	75.7	73.8	68.4	63.4	61.8	65.0	65.3	65.9	63.6	64.8	61.9	66.2	63.6	66.6	74.0	79.4	73.8	92.5
10-Sep	81.8	83.8	86.2	86.8	85.0	85.6	83.1	77.8	72.5	65.9	59.0	51.0	46.2	40.3	36.9	38.0	54.7	57.5	67.0	67.9	83.0	91.3	94.4	94.2	70.4	94.4
11-Sep	95.7	94.6	94.9	95.9	96.1	99.4	OR	OR	OR	79.7	74.5	66.9	47.4	34.0	32.0	36.3	36.4	38.3	43.5	58.3	77.4	83.3	84.1	83.0	69.1	99.4
12-Sep	82.8	88.0	86.0	82.6	86.4	93.0	95.9	95.6	93.3	88.8	84.5	87.4	88.7	89.9	90.6	87.6	86.5	85.8	85.7	87.4	87.7	89.5	91.9	93.2	88.7	95.9
13-Sep	95.3	OR	OR	99.9	OR	OR	OR	OR	OR	OR	OR	95.4	91.9	90.6	90.3	89.9	89.9	88.9	87.2	83.0	82.4	85.5	87.2	82.6	--	99.9
14-Sep	80.5	83.1	85.7	88.7	91.5	89.7	90.2	88.5	83.9	78.5	73.9	65.7	58.0	53.5	47.4	41.1	37.6	42.8	60.9	80.4	84.5	85.3	84.1	85.3	73.4	91.5
15-Sep	93.8	94.7	93.8	96.8	97.6	96.0	96.0	96.8	OR	OR	85.9	75.0	65.7	60.3	56.6	54.8	52.5	54.2	66.7	81.3	86.1	84.3	87.7	89.2	80.3	97.6
16-Sep	91.3	91.9	92.4	93.6	95.0	97.7	96.2	91.5	87.5	83.3	79.3	56.1	44.2	40.7	41.1	38.9	38.3	39.6	53.5	67.3	73.7	69.8	77.0	77.1	71.5	97.7
17-Sep	79.6	81.0	85.3	89.1	90.7	93.4	93.8	89.0	82.6	72.6	63.0	53.3	48.7	42.0	37.5	35.6	36.0	45.6	59.3	80.6	88.8	84.7	89.7	92.8	71.4	93.8
18-Sep	92.3	91.6	92.6	90.4	91.5	90.7	91.3	85.1	80.2	72.4	74.1	72.3	66.2	59.7	54.5	47.3	46.9	45.6	51.4	73.7	80.9	88.0	89.5	93.8	75.9	93.8
19-Sep	91.6	88.3	87.4	89.1	89.0	87.7	88.1	85.3	78.8	69.9	63.1	50.7	41.2	34.9	38.2	40.4	38.6	45.7	49.0	65.1	74.7	75.3	76.4	81.2	67.9	91.6
20-Sep	81.3	79.7	86.0	83.9	84.2	85.7	84.2	86.4	85.9	82.0	79.2	77.4	70.2	63.4	56.3	46.7	43.0	45.4	49.6	57.1	66.5	78.2	88.0	94.5	73.1	94.5
21-Sep	97.6	98.1	93.8	92.9	92.1	94.1	91.6	86.6	78.8	76.2	69.1	64.1	59.2	53.7	48.9	47.2	50.4	52.8	57.8	65.4	82.6	86.6	82.7	80.8	75.1	98.1
22-Sep	76.6	75.5	77.8	84.5	89.0	87.6	91.9	84.9	77.4	68.9	65.8	59.1	56.7	51.0	47.7	47.0	51.7	50.9	65.2	80.2	85.0	91.0	94.4	96.3	73.2	96.3
23-Sep	97.6	98.4	98.0	95.9	95.9	99.1	OR	OR	OR	OR	OR	94.5	85.3	85.4	82.7	79.8	80.0	87.2	89.2	93.0	94.4	95.1	93.9	95.2	91.6	99.1
24-Sep	96.8	97.3	98.1	97.4	97.1	96.8	96.2	94.5	81.6	71.1	56.1	48.5	43.3	39.2	37.5	34.9	34.3	37.5	53.4	74.2	83.1	79.2	77.7	77.8	71.0	98.1
25-Sep	78.4	81.6	84.6	87.8	86.4	87.3	82.8	79.0	75.1	73.5	70.0	65.7	67.2	63.3	59.3	54.4	58.3	62.5	74.7	85.7	85.0	87.4	92.4	92.0	76.4	92.4
26-Sep	86.6	81.8	82.4	88.5	89.3	88.4	88.2	88.2	90.1	90.1	88.6	79.9	72.9	66.3	62.3	55.0	51.5	51.0	49.5	52.8	69.9	71.3	73.7	76.0	74.8	90.1
27-Sep	71.8	71.3	77.3	80.1	84.1	85.3	89.5	94.2	94.1	95.5	91.8	83.2	73.0	64.3	56.6	57.2	61.2	63.4	67.6	75.9	82.1	81.1	81.6	82.2	77.7	95.5
28-Sep	77.2	74.0	72.8	70.0	71.5	72.5	72.3	72.1	70.7	66.9	63.1	60.1	56.6	52.8	46.2	43.9	43.8	45.3	58.7	74.3	77.9	75.0	76.9	78.9	65.6	78.9
29-Sep	81.4	84.5	86.2	89.0	92.1	92.9	93.1	89.9	84.8	78.6	68.7	64.1	57.1	54.7	58.3	57.1	64.9	61.1	59.6	58.9	62.8	66.0	66.6	68.6	72.5	93.1
30-Sep	71.4	71.2	66.1	64.9	65.6	68.1	74.7	76.1	69.2	60.0	50.9	42.9	38.6	36.5	33.1	31.8	30.6	33.7	40.8	40.1	41.3	46.2	50.6	55.0	52.5	76.1
	83.7	83.7	84.6	86.6	87.3	88.4	87.3	84.6	79.0	73.6	68.1	63.7	57.7	53.3	50.6	49.0	49.8	52.4	58.3	67.9	75.0	78.1	80.9	82.6	Diurnal Average	
	97.6	98.4	98.1	99.9	97.6	99.4	96.2	96.8	94.1	95.5	91.8	95.4	91.9	90.6	90.6	89.9	89.9	88.9	89.2	93.0	94.4	95.1	94.4	96.3	Diurnal Maximum	

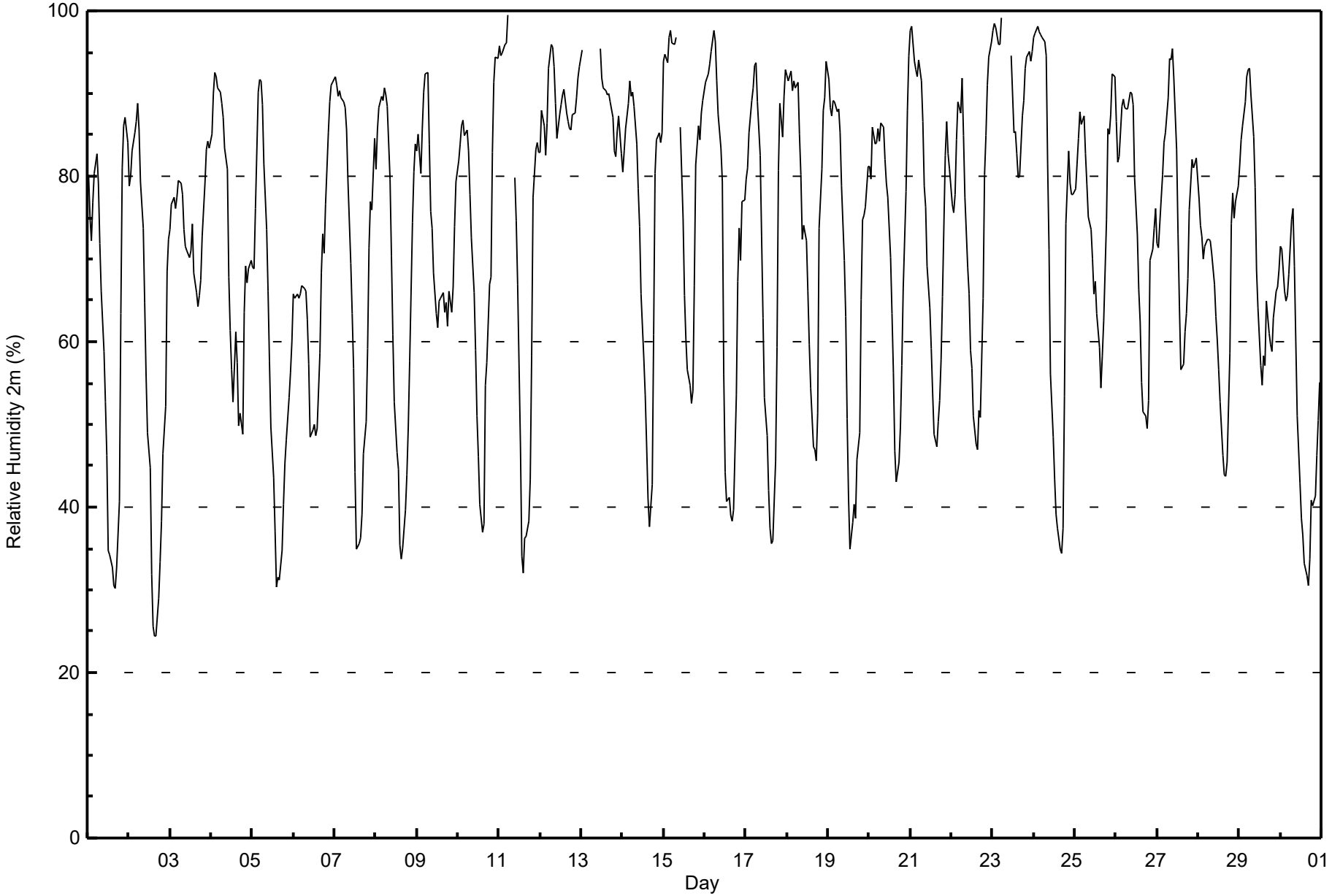
OR - Out of Range

Wood Buffalo Environmental Association

Hourly Averages

Relative Humidity 2m (RH2) - %

Athabasca Valley - September 2024



Wood Buffalo Environmental Association

Summary of Hour Averages

Wind Speed 10m (WS10) - km/h

Athabasca Valley - September 2024

Maximum Speed: 33 km/h on Sep 24 11:00

Maximum Daily Speed Average: 13.2 km/h on Sep 9

Minimum Speed Value: 0 km/h on Sep 18 20:00

Minimum Daily Speed Average: 1.9 km/h on Sep 22

Maximum Diurnal Speed Average: 7.3 km/h at hour 14

Minimum Diurnal Speed Average: 1.2 km/h at hour 22

Monthly Average Velocity: 1.8 km/h 236.1 deg

Percentiles: P_1 = 1 P_{10} = 2 Q_1 = 4 Median = 6 Q_3 = 10 P_{90} = 15 P_{99} = 28

Hours in Service: 720

Hours of Data: 720

Hours of Missing Data: 0

Percent Operational Time: 100.0

Day	Hourly Period Ending At (MST)																								Daily	Daily
	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24	Average	Maximum
1-Sep	ESE4	ESE7	SE11	SE7	SE5	SE5	SE7	SE10	SE12	SE9	SE9	WSW2	SW19	SW17	SW17	SW17	WSW15	WSW12	WSW7	S1	E2	ESE2	ESE2	SSE3	S5.0	SW19
2-Sep	S5	SSE5	SSE5	SE6	SE9	SSE5	SE8	SE9	SE8	ESE9	ESE9	ESE7	E5	SW10	SW11	SW12	WSW13	WNW15	W15	WSW11	NW20	NNW19	NNW17	NNW13	WSW1.9	NW20
3-Sep	N12	N12	N13	N16	N10	N8	N5	NNW7	NNW11	NNW13	NNW12	NNW9	N9	NW10	NNW9	N7	NNE6	NNW7	N7	NNW8	NW8	WNW5	WNW6	NW10	NNW8.7	N16
4-Sep	NNW5	NW1	SSW3	SW5	SSW8	SW7	SSW5	SW10	SW10	SW9	W17	W18	WNW18	WNW14	NNW3	WNW3	WNW9	W7	W10	SW10	SW11	WSW12	SW10	SSW9	WSW7.4	WNW18
5-Sep	ESE3	W7	WSW6	SE1	ESE4	ESE5	E5	ESE7	ESE5	ESE5	E5	E7	ESE8	E9	SSE2	E9	ESE11	ESE15	SE12	ESE14	SE10	SSE7	SE7	ESE5	ESE5.8	ESE15
6-Sep	ESE7	ESE11	SE13	SE16	SE18	SE17	SE13	SE13	SE10	SE6	SSW18	SSW12	SSW8	SSW6	S3	SE2	SE1	SSW4	SSE4	SE3	ESE3	SE3	ESE2	SE3	SSE6.8	SE18
7-Sep	E4	ESE4	SE4	SE4	SE5	SE5	SE7	SE10	SE9	SE8	E5	E5	SSW4	SW14	SW16	SW17	SW15	SSW6	SSW5	S6	SSE3	ESE4	SSE5	SE5	S4.7	SW17
8-Sep	SE8	SSE4	SSE4	SE5	SE5	SE4	SE8	SE10	SE9	ESE7	SE4	SE5	E3	NW5	NNW3	ENE4	ESE9	ESE6	ESE7	ESE9	SE2	SE2	SSW2	SSE2	ESE4.3	SE10
9-Sep	W2	ESE3	E1	N5	NNW7	NNW6	NW5	NW4	NNW12	NW14	WNW12	WNW20	WNW20	W30	W23	W21	W22	WSW17	W28	W26	W25	W18	WSW16	WSW17	W13.2	W30
10-Sep	WSW17	SSW4	SSW7	SSE6	S7	SSW11	SW12	WSW3	SW8	SSW11	SSW13	SSW13	SW15	SW17	W18	WNW15	W3	SSE5	S5	NNW3	SW0	SSE1	E3	SE2	SW6.6	W18
11-Sep	SE1	ESE4	E4	ESE4	SE5	ESE4	SE5	SE5	E3	E3	WNW4	NW5	NW2	ESE7	ESE9	E7	E9	E6	ESE4	ESE4	ESE4	ESE3	ENE5	ENE4	ESE3.5	E9
12-Sep	ENE3	ENE4	ENE3	ESE5	SE7	SE2	N3	NNW7	NNW6	NNE2	NW1	E4	E3	N4	N3	NE3	NE3	NNW3	N4	NNW4	NNW5	NNW5	NNW5	NE4	NNE2.4	SE7
13-Sep	N3	NNW7	NNW12	NNW11	NW13	NNW12	NNW12	NNW11	NNW13	NNW14	NNW12	NNW10	NNW10	NNW9	NNW11	NNW9	NW7	NW4	NW2	WNW5	W5	WNW3	WSW5	WNW8	NNW8.2	NNW14
14-Sep	NW7	W7	SW6	SW9	SW10	SSW6	SSW5	SSW7	SSW9	SSW12	SW14	SW15	SW15	SSW15	SW13	WSW11	W7	NW4	WSW2	W0	ESE1	N4	NNW3	NW4	SW6.3	SSW15
15-Sep	ENE2	NNE2	N4	ENE3	ENE3	ENE2	ENE3	N5	N6	NNW2	NNW8	NNW6	NNW6	NE4	ENE5	NNE5	NE3	SSE3	SE4	SE3	ESE2	SE5	SE5	ESE9	NE1.9	ESE9
16-Sep	ESE11	SE13	SE13	SE11	SE12	SE12	SE11	SE13	SE11	SE8	ESE5	SW9	SW19	WSW18	SW17	W15	W14	W11	SW5	SSW4	SE3	SE5	E4	ESE3	S6.0	SW19
17-Sep	SE5	SE6	SE9	SE9	SE10	ESE8	SE8	SE9	ESE8	E7	ESE7	NNE3	NNW7	N6	NE5	ENE4	ENE1	WNW3	WSW2	S1	SE1	SE1	ESE2	SSW1	ESE3.3	SE10
18-Sep	S3	SSW2	SE1	S3	ESE2	SSE3	E2	SSE6	ESE4	ESE6	ESE0	NNW3	NNW9	WNW12	W16	WNW17	NW16	WNW13	WSW8	NW0	WSW2	WSW2	S1	E2	W2.8	WNW17
19-Sep	E2	ESE4	SE4	SE6	SE8	SE6	SE5	ESE6	ESE7	ESE6	ENE6	ENE2	WNW3	SW5	SW6	SW2	WSW2	NNW6	S2	SSE2	ESE2	ENE2	ESE4	ESE2	SE2.4	SE8
20-Sep	ESE6	SE5	E5	E2	ESE5	E5	SE7	ESE4	NNE1	NNW4	NW7	WNW5	NW10	NW11	NW9	NNW14	NNW15	NNW11	N9	W6	SW8	SW6	SSW2	E3	NNW2.5	NNW15
21-Sep	E4	E2	E4	ESE4	ESE6	SE7	ESE7	ESE6	ESE4	ESE1	E6	E5	SE1	ENE2	ENE3	SSE4	ESE8	SE12	SE9	SSE6	ESE4	E4	ESE8	ESE7	ESE4.9	SE12
22-Sep	SE7	SE7	SSE5	SE5	ESE4	SE4	ESE2	ESE4	SE6	SE4	W4	SSW4	SW6	E3	E2	E2	ENE4	SE4	SSE2	SE1	NW5	NNW7	NNE2	N1	SE1.9	NNW7
23-Sep	W3	WSW2	WSW5	WSW6	WSW6	SW6	SSW3	S4	SSE3	ESE2	E3	ENE4	SSE5	SW7	SW6	SW3	S2	SE4	SE6	ESE5	SE5	SE8	SE10	ESE9	S2.9	SE10
24-Sep	SE8	ESE9	SE9	SE10	ESE9	ESE8	ESE9	ESE4	WSW10	WSW17	W33	WNW30	W31	W30	W26	WNW22	WNW18	WNW8	WSW6	SSE2	SE2	SSE3	SE4	SE7	W6.6	WNW33
25-Sep	SE8	SE8	ESE5	ESE5	ESE6	E6	E8	ESE3	E3	ESE3	SE8	ESE6	NE2	W1	ESE2	WSW3	SW6	SSW4	WSW3	WSW1	S4	ESE4	ESE2	SSE3	SE3.0	E8
26-Sep	SSE2	WNW3	W5	SSE3	NW8	WNW15	WNW18	W14	SW8	SW10	WSW10	W18	WNW17	WNW16	NW9	W14	WNW7	W9	W11	W9	S1	SSE3	SE6	SE6	W7.4	W18
27-Sep	SE7	SE7	SE9	ESE9	SE13	SE16	ESE5	SE7	E2	E4	S4	SW6	WSW4	SSE3	SW9	SSW7	S7	S8	SSE6	S8	SSW6	SSW8	S8	SSW8	SSE5.7	SE16
28-Sep	SW9	SW9	SW10	WSW17	WSW14	WSW14	WSW17	WSW16	WSW14	WSW18	W19	W14	W14	WSW10	WSW12	WSW10	SW4	S5	SSE4	ESE5	ESE3	SE5	SE8	SE5	WSW8.7	W19
29-Sep	SE6	SE9	SE6	NE2	ESE3	E3	N5	N7	NNW11	NNW14	NNW12	NNW12	NNW13	NNW16	NNW17	N13	NW12	NNW16	NNW17	NNW12	NNW12	NW11	NW11	NW8	NNW8.2	NNW17
30-Sep	WNW5	WNW4	NNW4	W1	SSE5	NW2	W7	SW11	SSW10	WSW10	W12	W26	W26	W28	WNW32	WNW28	WNW26	WNW16	W10	WSW14	WSW15	WSW11	WSW13	SW13	W12.4	WNW32
	SE1.8	SE2.5	SE2.6	SE2.8	SE3.5	SSE2.7	SSE2.4	SSE2.7	S1.6	SSW1.3	W3.2	W4.6	W6.4	W7.3	W6.8	W5.8	W4.3	W3.0	WSW2.7	SW2.0	W1.8	WSW1.2	S1.3	S1.2	Diurnal Average	
	WSW17	SE13	SE13	WSW17	SE18	SE17	WNW18	WSW16	WSW14	WSW18	WNW33	WNW30	W31	W30	WNW32	WNW28	WNW26	WSW17	W28	W26	W25	NNW19	NNW17	WSW17	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: 8 km/h on Sep 30 15:00

Minimum Value: 1 km/h on Sep 11 12:00

Percentiles: P_1 = 1 P_{10} = 1 Q_1 = 2 Median = 2 Q_3 = 3 P_{90} = 4 P_{99} = 6

Hours in Service:	720
Hours of Data:	720
Hours of Missing Data:	0
Hours of Calibration:	0
Percent Operational Time:	100.0

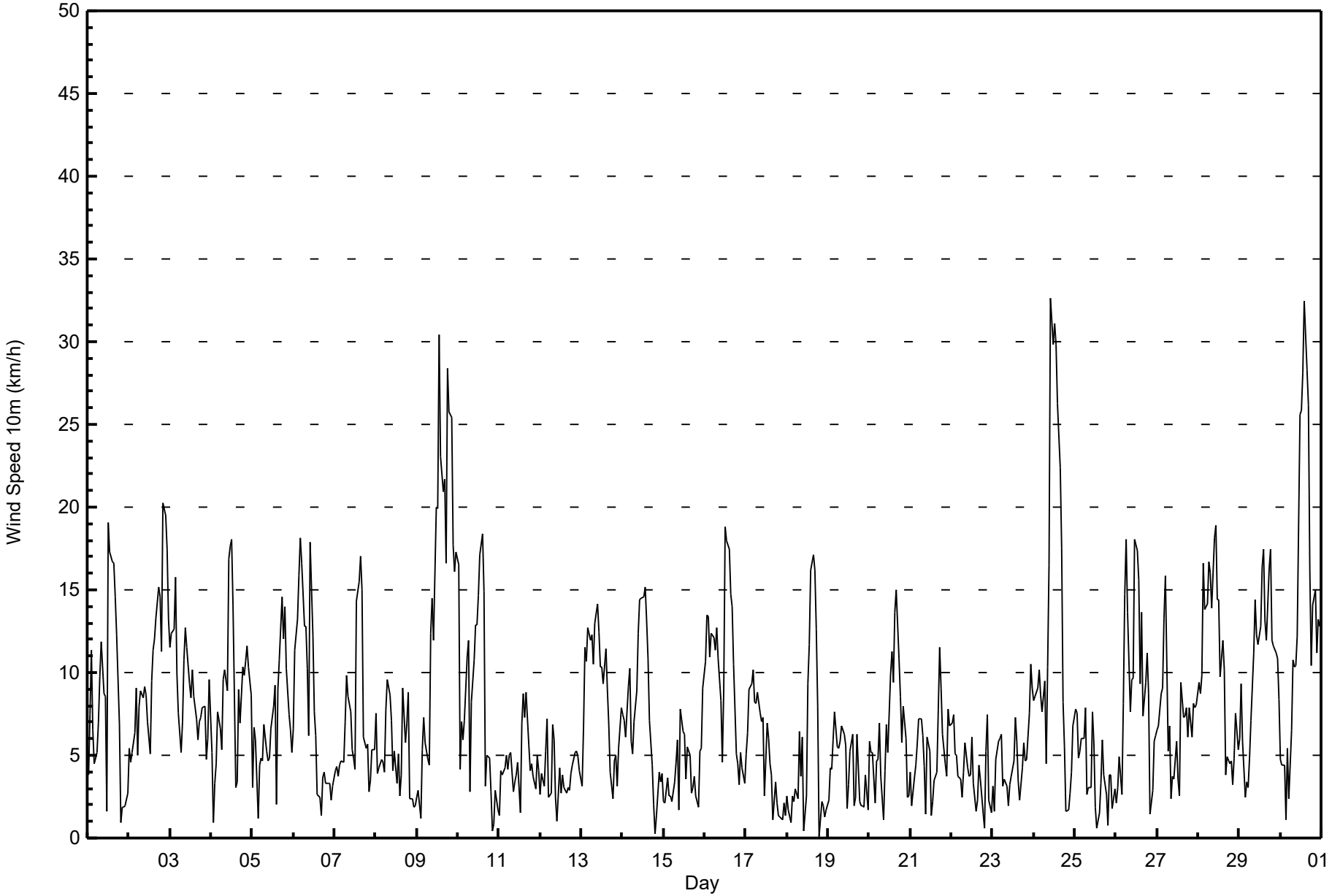
Day	Hourly Period Ending At (MST)																								Daily
	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24	Maximum
1-Sep	1	2	3	2	1	2	3	2	2	2	2	3	5	5	4	4	4	4	2	1	2	2	1	1	5
2-Sep	1	1	1	2	2	2	3	3	3	3	2	2	2	3	3	4	3	3	2	1	5	5	5	3	5
3-Sep	3	3	3	4	3	3	2	2	3	3	3	3	2	2	2	3	2	2	3	3	2	1	1	1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

Wood Buffalo Environmental Association

Hourly Averages

Wind Speed 10m (WS10) - km/h

Athabasca Valley - September 2024



Wind Speed Ranges (km/h)	Number of Hours	%	Cumulative %
0 - 5	319	44.31	44.31
6 - 11	253	35.14	79.44
12 - 19	126	17.50	96.94
20 - 28	16	2.22	99.17
29 - 38	6	0.83	100.00
> 38	0	0.00	100.00

Total Number of Valid Hours: 720

Total Number of Hours: 720

Wood Buffalo Environmental Association

Frequency Distribution

Wind Speed 10m (WS10) - km/h

Athabasca Valley - September 2024

Wind Speed							**Wind Direction**										
Ranges (km/h)	N	NNE	NE	ENE	E	ESE	SE	SSE	S	SSW	SW	WSW	W	WNW	NW	NNW	**Totals**
0 - 5	12	6	8	20	35	59	50	30	15	15	7	14	9	11	14	14	319
6 - 11	9	1	0	1	10	41	62	5	6	16	30	14	12	6	13	27	253
12 - 19	5	0	0	0	0	2	16	0	0	6	19	22	14	14	4	24	126
20 - 28	0	0	0	0	0	0	0	0	0	0	0	0	10	5	1	0	16
29 - 38	0	0	0	0	0	0	0	0	0	0	0	0	3	3	0	0	6
> 38	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Totals	26	7	8	21	45	102	128	35	21	37	56	50	48	39	32	65	720

Total Number of Valid Hours: 720

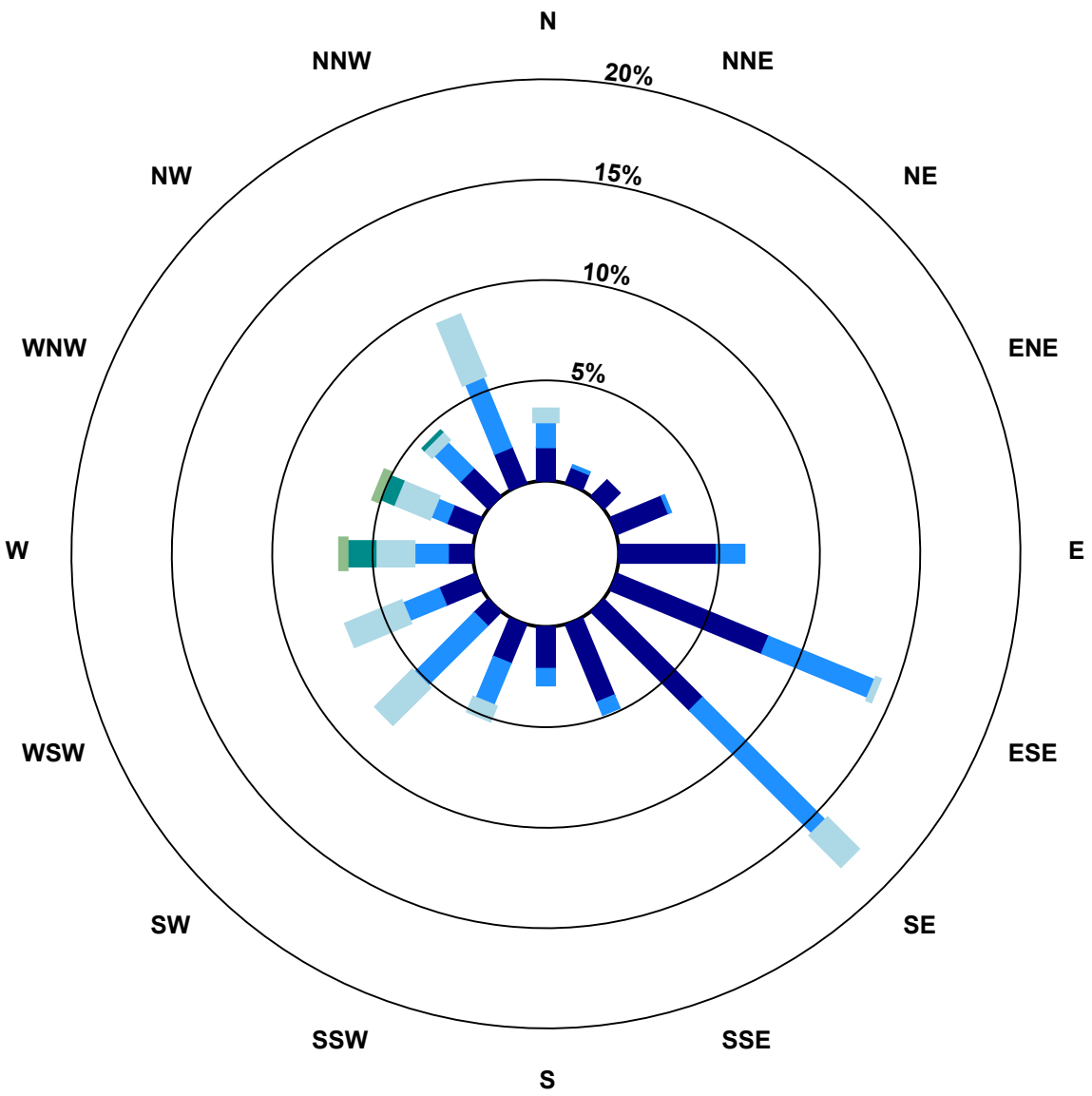
Total Number of Hours: 720

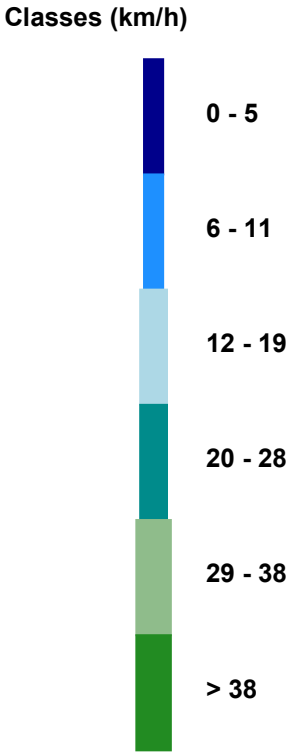
Wood Buffalo Environmental Association

Wind Rose Sep 2024

Wind Speed 10m (WS10) - km/h

Athabasca Valley





Total Number of Valid Hours: 720

Direction of Maximum Speed: 281 deg on Sep 24 11:00
Direction of Maximum Daily Speed Average: 277.2 deg on Sep 9

Direction of Minimum Speed: 306 deg on Sep 18 20:00

Direction of Minimum Daily Speed Average: 1.9 deg on Sep 22

Monthly Average Direction: 236.1 deg

Hours in Service:	720
Hours of Data:	720
Hours of Missing Data:	0
Percent Operational Time:	100.0

Day	Hourly Period Ending At (MST)																								Daily
	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24	Average
1-Sep	103	123	132	130	140	140	142	139	135	132	130	256	229	233	234	235	239	248	238	181	98	106	105	152	188.6
2-Sep	172	160	149	128	134	152	131	128	125	122	117	107	97	216	227	234	254	284	279	258	318	331	340	342	248.4
3-Sep	349	351	356	354	358	356	354	344	343	336	334	346	349	325	339	352	31	347	352	341	321	300	291	324	343.4
4-Sep	327	312	212	229	213	224	198	221	226	227	268	279	288	296	335	284	295	263	270	234	228	239	224	205	253.1
5-Sep	117	269	244	144	104	116	99	122	119	104	99	101	113	93	156	92	123	121	127	122	136	161	140	123	122.1
6-Sep	104	120	125	130	133	133	136	132	128	129	213	208	205	210	175	126	144	198	158	139	107	133	119	134	146.7
7-Sep	100	116	129	127	144	135	134	127	135	129	96	82	212	223	217	227	228	212	193	187	164	104	160	130	172.2
8-Sep	137	150	155	128	127	124	133	130	126	118	129	126	79	321	334	72	102	103	122	121	134	143	204	167	123.2
9-Sep	264	103	87	355	337	341	306	309	327	309	286	302	288	267	263	265	263	240	270	279	278	263	256	250	277.2
10-Sep	256	198	196	153	189	213	232	237	226	203	204	213	236	236	260	284	268	152	180	334	217	165	91	137	226.1
11-Sep	131	108	98	110	133	113	130	132	82	88	293	306	324	116	123	85	80	97	123	109	102	104	75	58	102.0
12-Sep	58	73	70	107	134	136	358	341	342	25	326	81	97	349	11	46	51	348	353	340	345	339	336	51	24.2
13-Sep	356	336	337	339	320	327	327	333	329	333	335	343	346	344	334	336	312	320	323	289	281	303	249	289	327.3
14-Sep	318	261	236	217	219	196	195	200	206	209	216	224	221	212	231	257	260	311	244	281	103	357	332	324	230.3
15-Sep	77	27	6	64	69	61	66	351	349	340	328	335	339	52	65	25	44	168	136	136	119	139	136	122	48.7
16-Sep	123	131	130	134	133	133	138	135	137	128	106	217	216	237	229	259	270	262	223	194	134	137	100	104	174.0
17-Sep	137	139	130	131	129	121	128	124	113	100	117	25	335	350	41	59	64	295	244	181	146	128	110	207	114.1
18-Sep	178	195	130	183	109	167	100	149	118	121	107	331	328	290	277	289	308	296	254	306	244	247	170	96	279.0
19-Sep	98	122	125	135	133	136	136	122	118	113	70	64	295	221	228	232	243	340	188	155	123	69	110	118	131.8
20-Sep	117	133	84	92	110	101	126	103	27	348	319	301	306	309	304	340	343	336	358	272	235	234	210	94	331.4
21-Sep	80	84	86	116	116	127	111	120	114	121	80	81	142	63	69	152	107	125	127	151	105	100	123	116	112.6
22-Sep	126	137	161	145	118	145	106	112	136	142	263	208	214	92	79	92	76	134	162	135	304	335	17	353	134.5
23-Sep	260	258	240	247	239	218	213	178	163	106	93	71	168	233	216	219	181	126	136	105	127	132	135	122	171.3
24-Sep	130	123	132	126	116	115	122	102	238	257	281	282	277	278	270	287	284	286	241	147	137	147	142	131	260.6
25-Sep	126	126	120	122	121	84	92	113	80	111	125	118	41	272	106	237	215	208	240	256	171	122	107	166	128.4
26-Sep	160	302	270	161	307	294	282	278	233	233	253	279	283	288	310	275	303	266	274	269	190	158	138	136	273.4
27-Sep	134	132	124	121	134	134	119	135	88	93	178	216	246	157	221	211	178	172	158	177	192	195	190	204	162.2
28-Sep	218	228	229	247	250	246	244	238	246	254	262	259	259	256	241	253	223	176	154	123	122	133	132	133	238.0
29-Sep	126	128	127	40	107	86	355	350	336	335	337	332	337	340	336	4	323	334	330	330	332	323	315	316	339.3
30-Sep	291	296	340	274	167	320	265	219	211	238	267	281	273	275	283	284	292	294	260	245	257	251	240	229	268.0
	135.1	134.8	137.5	136.2	143.9	148.0	153.8	152.5	170.2	210.3	263.0	277.0	271.4	268.3	265.1	276.8	278.0	267.7	248.6	234.3	259.7	243.2	188.5	171.4	
	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: 103 deg on Sep 30 06:00

Minimum Value: 7 deg on Sep 2 19:00

Percentiles: P_1 = 9 P_{10} = 13 Q_1 = 16 Median = 24 Q_3 = 44 P_{90} = 71 P_{99} = 93

Hours in Service:	720
Hours of Data:	720
Hours of Missing Data:	0
Hours of Calibration:	0
Percent Operational Time:	100.0

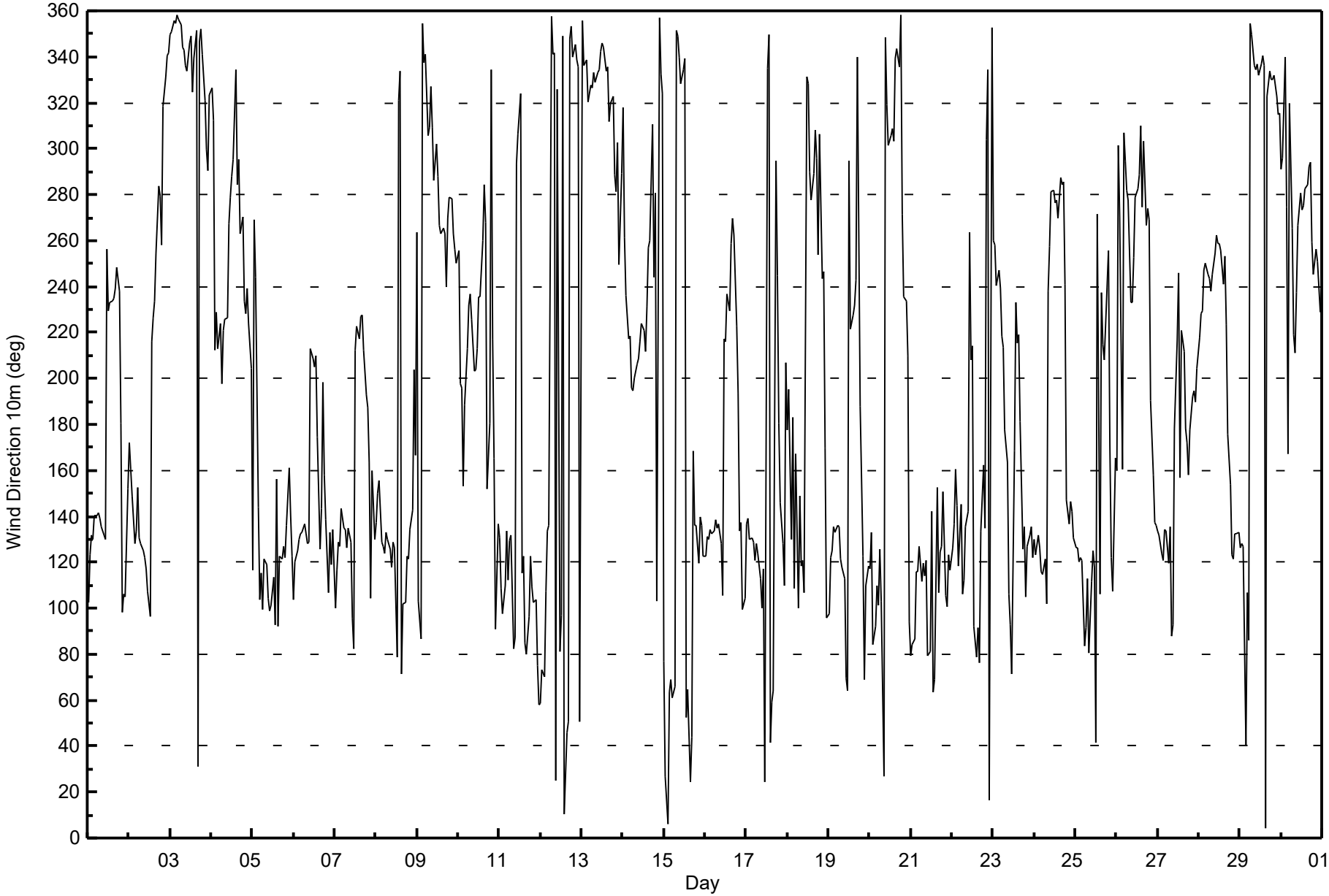
Day	Hourly Period Ending At (MST)																								Daily
	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24	Maximum
1-Sep	31	20	15	22	28	25	23	18	12	17	20	90	16	16	20	13	16	14	16	81	69	69	60	50	90
2-Sep	17	12	23	22	15	32	23	16	17	20	17	30	44	34	19	17	19	11	7	13	21	19	19	19	44
3-Sep	19	19	19	19	20	28	31	28	20	17	16	19	22	12	18	29	38	23	21	21	11	26	27	11	38
4-Sep	26	75	55	31	14	17	30	15	14	18	17	20	21	22	74	43	19	15	15	8	11	11	22	46	75
5-Sep	88	30	18	73	33	26	28	20	29	42	40	37	38	31	85	44	28	17	15	14	19	20	28	44	88
6-Sep	26	16	12	12	11	14	16	13	15	40	13	14	17	21	51	50	89	41	52	47	71	60	65	46	89
7-Sep	37	36	36	28	22	32	16	13	15	19	28	31	82	13	12	12	11	18	16	19	85	54	13	22	85
8-Sep	21	31	43	27	42	36	18	14	17	22	48	36	55	23	57	60	19	17	29	20	67	52	76	69	76
9-Sep	88	76	102	30	32	42	44	44	18	16	25	16	14	12	14	15	16	15	13	12	11	16	14	11	102
10-Sep	14	63	43	32	27	18	15	93	24	13	11	13	16	17	23	29	86	40	52	75	90	62	64	70	93
11-Sep	66	33	33	28	26	26	23	24	45	31	25	13	88	45	23	18	15	16	29	17	19	26	27	17	88
12-Sep	53	9	21	20	19	72	58	29	21	55	94	51	41	24	30	76	57	44	27	21	18	15	26	39	94
13-Sep	50	14	14	18	10	13	10	14	11	10	11	17	18	19	10	20	13	44	67	22	20	35	25	19	67
14-Sep	25	43	39	9	9	37	33	29	14	13	14	13	13	11	27	24	29	19	53	95	92	52	82	58	95
15-Sep	78	72	30	34	27	46	34	47	24	65	19	29	41	63	38	42	55	82	25	62	72	24	31	16	82
16-Sep	15	11	11	18	15	13	13	11	16	13	22	58	13	19	13	19	14	17	23	58	57	27	33	47	58
17-Sep	17	14	12	14	14	17	22	17	21	26	28	66	25	33	45	45	79	28	42	76	64	75	37	72	79
18-Sep	60	71	78	36	67	65	74	39	61	25	91	37	14	35	17	23	12	15	9	97	77	95	70	78	97
19-Sep	54	22	22	18	12	15	15	18	17	22	19	84	24	37	22	43	54	78	81	68	66	66	37	66	84
20-Sep	24	29	10	73	24	24	13	44	86	28	17	15	13	14	19	21	18	18	40	36	11	56	84	43	86
21-Sep	22	61	32	21	18	16	19	20	37	80	37	35	80	84	74	73	21	16	17	40	29	54	18	22	84
22-Sep	21	19	21	19	49	47	47	27	23	50	29	68	24	80	77	66	22	40	53	93	74	28	78	83	93
23-Sep	68	86	20	17	16	18	63	35	36	77	67	47	57	16	21	33	47	28	20	19	35	19	14	15	86
24-Sep	15	16	13	19	21	25	21	36	65	17	11	13	14	13	14	15	14	20	14	61	75	49	35	21	75
25-Sep	21	22	30	24	30	26	33	83	71	57	28	38	85	96	88	59	29	65	57	93	56	44	82	72	96
26-Sep	79	78	57	53	29	22	13	15	33	16	16	12	12	23	27	27	27	15	17	31	89	61	24	27	89
27-Sep	25	15	19	18	17	15	47	20	47	23	55	25	59	71	16	30	17	14	31	26	30	18	27	25	71
28-Sep	31	34	25	12	13	14	10	9	13	15	13	18	18	31	25	22	32	14	26	32	61	39	17	24	61
29-Sep	29	17	29	61	46	46	25	21	15	10	15	14	12	15	14	22	23	13	8	16	12	11	14	18	61
30-Sep	25	27	35	83	28	103	34	10	14	30	42	14	14	15	14	16	15	11	13	10	28	22	14	18	103
	88	86	102	83	67	103	74	93	86	80	94	90	88	96	88	76	89	82	81	97	92	95	84	83	
	Diurnal Maximum																								

Wood Buffalo Environmental Association

Hourly Averages

Wind Direction 10m (WD10) - deg

Athabasca Valley - September 2024



WOOD BUFFALO ENVIRONMENTAL ASSOCIATION

CONTINUOUS AMBIENT AIR QUALITY
MONITORING PROGRAM
MONTHLY REPORT

AMS08
FORT CHIPEWYAN
SEPTEMBER 2024

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

October 31, 2024

WOOD BUFFALO ENVIRONMENTAL ASSOCIATION - FORT CHIPEWYAN (AMS08)
SEPTEMBER 2024

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	687	33	33	100	2.2	0	0.6	0
TRS (ppb) Average	684	36	36	100	0.6	0	0.3	0
O3(ppb) Average	686	33	34	99.86	51.5	0	30.2	-
NO2(ppb) Average	684	36	36	100	10.6	0	3.3	-
NO(ppb) Average	684	36	36	100	4.8	-	0.6	-
NOX(ppb) Average	684	36	36	100	11.6	-	3.7	-
PM2.5(ug/m3) Average	718	2	2	100	144.9	0	90	3
CO(ppm) Average	685	34	35	99.86	0.4	0	0.2	-
CO2(ppm) Average	686	34	34	100	487.6	-	442.1	-
Temperature 2 m (C) Average	720	0	0	100	28.3	-	18.4	-
Relative Humidity (%) Average	720	0	0	100	99.7	-	90.4	-
Wind Speed 10 m (km/h) Average	717	3	3	100	34	-	17	-
Wind Direction 10 m (deg) Average	717	3	3	100	-	-	-	-
PC(mm) Total	403	0	317	55.97	4.7	-	5.2	-
Leaf Wetness (% of range) Average	720	0	0	100	50.2	-	13.4	-
Global Solar Radiation (W/m2) Average	720	0	0	100	670.8	-	209.8	-

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

WOOD BUFFALO ENVIRONMENTAL ASSOCIATION - FORT CHIPEWYAN (AMS08)
SEPTEMBER 2024

MONTHLY SUMMARY FOR AIR QUALITY/ METEOROLOGICAL MONITORING MEASUREMENTS

					Percentile						
Parameter	Number	Mean	StnDev	Total	Min	P10	Q1	Median	Q3	P90	Max
SO2(ppb) Average	687	0.12	0.3	-	0	0	0	0	0.1	0.3	2.2
TRS (ppb) Average	684	0.17	0.1	-	0	0.1	0.1	0.2	0.2	0.3	0.6
O3(ppb) Average	686	23.73	6.3	-	5.1	16.2	19.3	23.5	28.4	32.1	51.5
NO2(ppb) Average	684	0.71	1.4	-	0	0	0.1	0.3	0.6	1.8	10.6
NO(ppb) Average	684	0.15	0.3	-	0	0	0	0	0.2	0.4	4.8
NOX(ppb) Average	684	0.86	1.6	-	0	0	0.1	0.4	0.8	2	11.6
PM2.5(ug/m3) Average	718	13.2	23.8	-	0.4	2.5	3.5	5.5	10.9	23.3	144.9
CO(ppm) Average	685	0.03	0.1	-	0	0	0	0	0	0.1	0.4
CO2(ppm) Average	686	432.29	10.1	-	412.2	421.7	425.8	430.5	436.2	446.3	487.6
Temperature 2 m (C) Average	720	12.13	4.3	-	0.5	6.7	9.3	12	14.7	17.4	28.3
Relative Humidity (%) Average	720	77.42	13.4	-	36.9	58.6	69	78.4	88.9	93.7	99.7
Wind Speed 10 m (km/h) Average	717	11.5	6	-	1	5	7	10	15	19	34
Wind Direction 10 m (deg) Average	717	-	-	-	-	-	-	-	-	-	-
Precipitation (mm) Total	403	-	-	17.21	-	-	-	-	-	-	-
Leaf Wetness (% of range) Average	720	4.95	7.9	-	0.5	1.1	1.3	1.6	3.3	15.4	50.2
Global Solar Radiation (W/m2) Average	720	124.32	178.3	-	0	0	0	13.6	197.8	446	670.8

WOOD BUFFALO ENVIRONMENTAL ASSOCIATION - FORT CHIPEWYAN (AMS08)
SEPTEMBER 2024

OPERATIONAL NOTES

Parameter	Period Start	Period End	Duration (Hours)	Notes
O3	26 Sep 2024 16:00	26 Sep 2024 16:00	1	Maintenance - troubleshooting station calibrator
CO	28 Sep 2024 09:00	28 Sep 2024 09:00	1	Unstable Operation - excessive baseline noise
Precipitation Collector	04 Sep 2024 10:00	17 Sep 2024 13:00	316	DAS Failure - data not recorded
Precipitation Collector	17 Sep 2024 14:00	17 Sep 2024 14:00	1	Maintenance - sensor rebooted

Wood Buffalo Environmental Association

Summary of Hour Averages

Sulphur Dioxide (SO_2) - ppb

Fort Chipewyan - September 2024

Number of Exceedences (AAAQO): 1-hr: 0 24-hr: 0
Maximum Value: 2.2 ppb on Sep 7 16:00 Maximum Daily Average: 0.6 ppb on Sep 7

Minimum Value: 0.0 ppb on Sep 2 16:00 Minimum Daily Average: 0.0 ppb on Sep 11
Maximum Diurnal Average: 0.2 ppb at hour 8 Minimum Diurnal Average: 0.1 ppb at hour 2
Monthly Average: 0.12 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} = 1.4

Hours in Service:	720
Hours of Data:	687
Hours of Missing Data:	33
Hours of Calibration:	33
Percent Operational Time:	100.0

Day	Hourly Period Ending At (MST)																								Daily	Daily
	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24	Average	Maximum
1-Sep	0.0	0.2	0.4	0.3	Z	0.2	0.5	1.1	1.6	1.4	1.2	1.1	1.2	1.1	0.4	0.2	0.1	0.1	0.1	0.4	0.5	0.6	0.4	0.3	0.6	1.6
2-Sep	0.3	0.2	0.1	0.1	0.0	Z	0.0	0.0	0.0	0.0	0.0	0.0	C	C	C	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.3
3-Sep	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
4-Sep	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
5-Sep	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	0.1	0.0	0.0	0.0	0.0	0.1	0.1	0.0	0.0	0.0	0.1
6-Sep	0.1	0.4	0.7	Z	1.0	1.6	2.1	2.1	1.1	0.2	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	0.4	2.1
7-Sep	0.0	0.0	0.0	0.0	Z	0.0	0.0	0.0	0.0	0.0	0.0	0.1	1.1	0.8	0.8	2.2	1.5	1.9	0.8	0.9	1.4	1.2	0.8	0.5	0.6	2.2
8-Sep	0.1	0.0	0.0	0.0	0.0	Z	0.1	0.1	0.1	0.1	0.1	0.0	0.1	0.1	0.1	0.1	0.2	0.3	0.2	0.1	0.1	0.1	0.0	0.0	0.1	0.3
9-Sep	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
10-Sep	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
11-Sep	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
12-Sep	0.0	0.0	0.0	Z	0.1	0.1	0.1	0.1	0.5	0.9	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	0.1	0.9
13-Sep	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
14-Sep	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
15-Sep	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-Sep	0.0	Z	0.4	0.7	0.8	0.6	0.5	0.7	0.4	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	0.2	0.8
17-Sep	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	0.1	0.1	0.1	0.1	0.1	0.2	0.2	0.1	0.2
18-Sep	0.4	0.3	0.4	Z	1.0	1.1	0.7	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	0.2	1.1
19-Sep	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	0.0	0.0	0.0	0.0	0.1	0.1	0.0	0.0	0.0	0.1
20-Sep	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
21-Sep	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	0.2	0.0	0.2
22-Sep	0.1	Z	0.1	0.1	0.1	0.0	0.0	0.0	0.0	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.1	0.1
23-Sep	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	0.2	0.9	0.9	0.1	0.9
24-Sep	0.6	0.3	0.1	Z	0.0	0.0	0.0	0.0	0.0	0.1	0.0	0.0	0.0	0.0	0.1	0.1	0.1	0.1	0.0	0.1	0.0	0.0	0.0	0.0	0.1	0.6
25-Sep	0.0	0.0	0.0	0.1	Z	0.1	0.1	0.0	0.1	0.1	0.1	0.1	0.1	0.1	0.6	1.0	0.8	0.6	1.0	1.2	1.2	0.6	0.3	0.2	0.4	1.2
26-Sep	0.1	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	0.1
27-Sep	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	0.6	0.4	1.1	0.2	0.1	0.2	0.8	1.1	0.6	0.2	0.2	1.1
28-Sep	0.2	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	0.0	0.0	0.0	0.0	0.2
29-Sep	0.0	0.1	Z	0.2	0.2	0.2	0.2	0.2	0.1	0.3	0.3	0.3	0.2	0.3	0.2	0.1	0.1	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.1	0.3
30-Sep	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
	0.1	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	0.2	0.1	0.1	0.1	0.1	0.2	0.1	0.1	0.1	Diurnal Average	
	0.6	0.4	0.7	0.7	1.0	1.6	2.1	2.1	1.6	1.4	1.2	1.1	1.2	1.1	0.8	2.2	1.5	1.9	1.0	1.2	1.4	1.2	0.9	0.9	Diurnal Maximum	

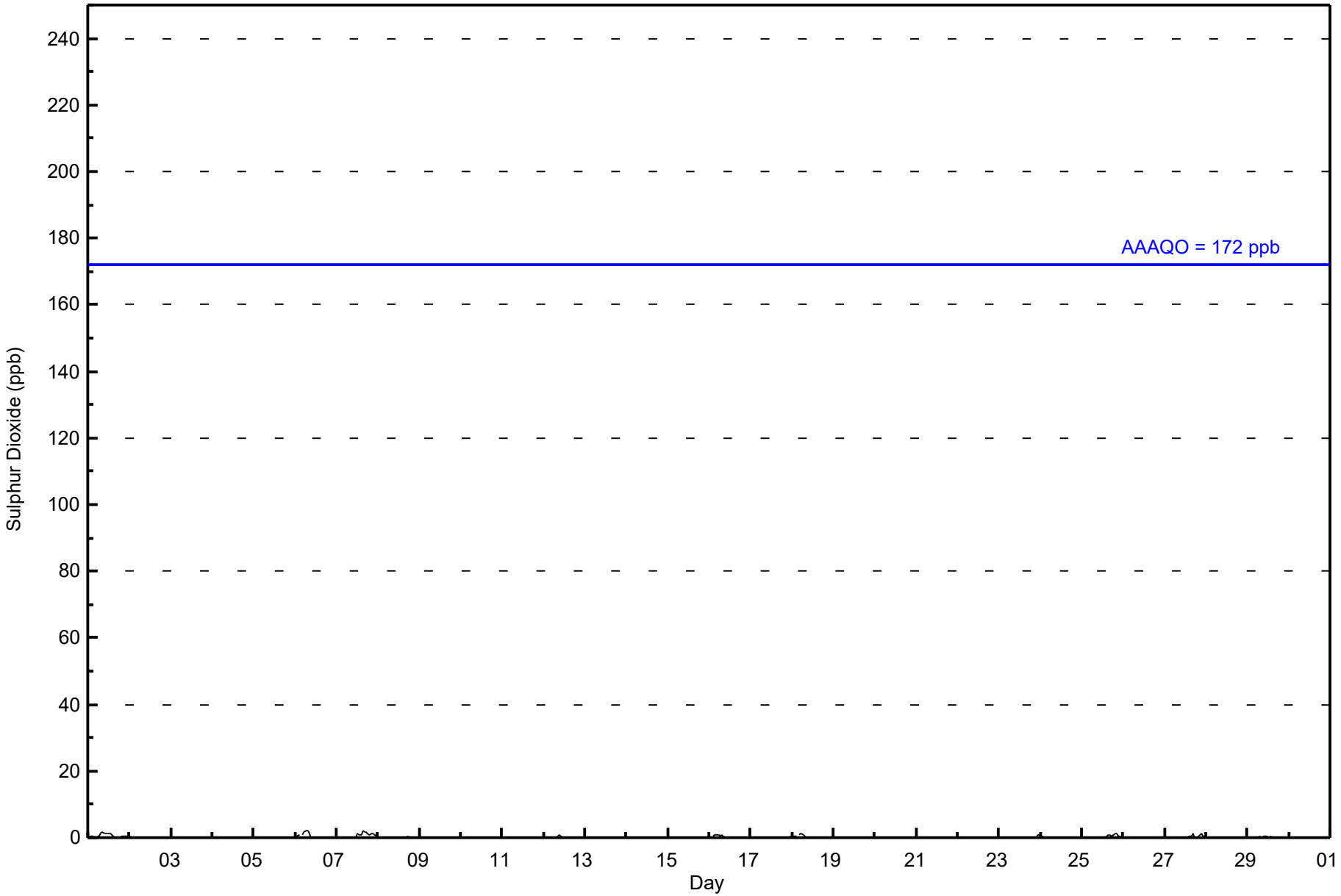
Z - zerospan C - Calibration
Alberta Ambient Air Quality Objectives (AAAQO): 1-hr 172 ppb 24-hr 48 ppb

Wood Buffalo Environmental Association

Hourly Averages

Sulphur Dioxide (SO_2) - ppb

Fort Chipewyan - September 2024



Concentration Ranges (ppb)	Number of Hours	%	Cumulative %
0 - 10	687	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: 687

Total Number of Hours: 720

Wood Buffalo Environmental Association

Frequency Distribution

Sulphur Dioxide (SO_2) - ppb

Fort Chipewyan - September 2024

Concentration Ranges (ppb)	Wind Direction																
	N	NNE	NE	ENE	E	ESE	SE	SSE	S	SSW	SW	WSW	W	WNW	NW	NNW	**Totals**
0 - 10	6	10	26	49	83	47	23	27	17	29	55	57	70	83	57	45	684
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	6	10	26	49	83	47	23	27	17	29	55	57	70	83	57	45	684

Total Number of Valid Hours: 684

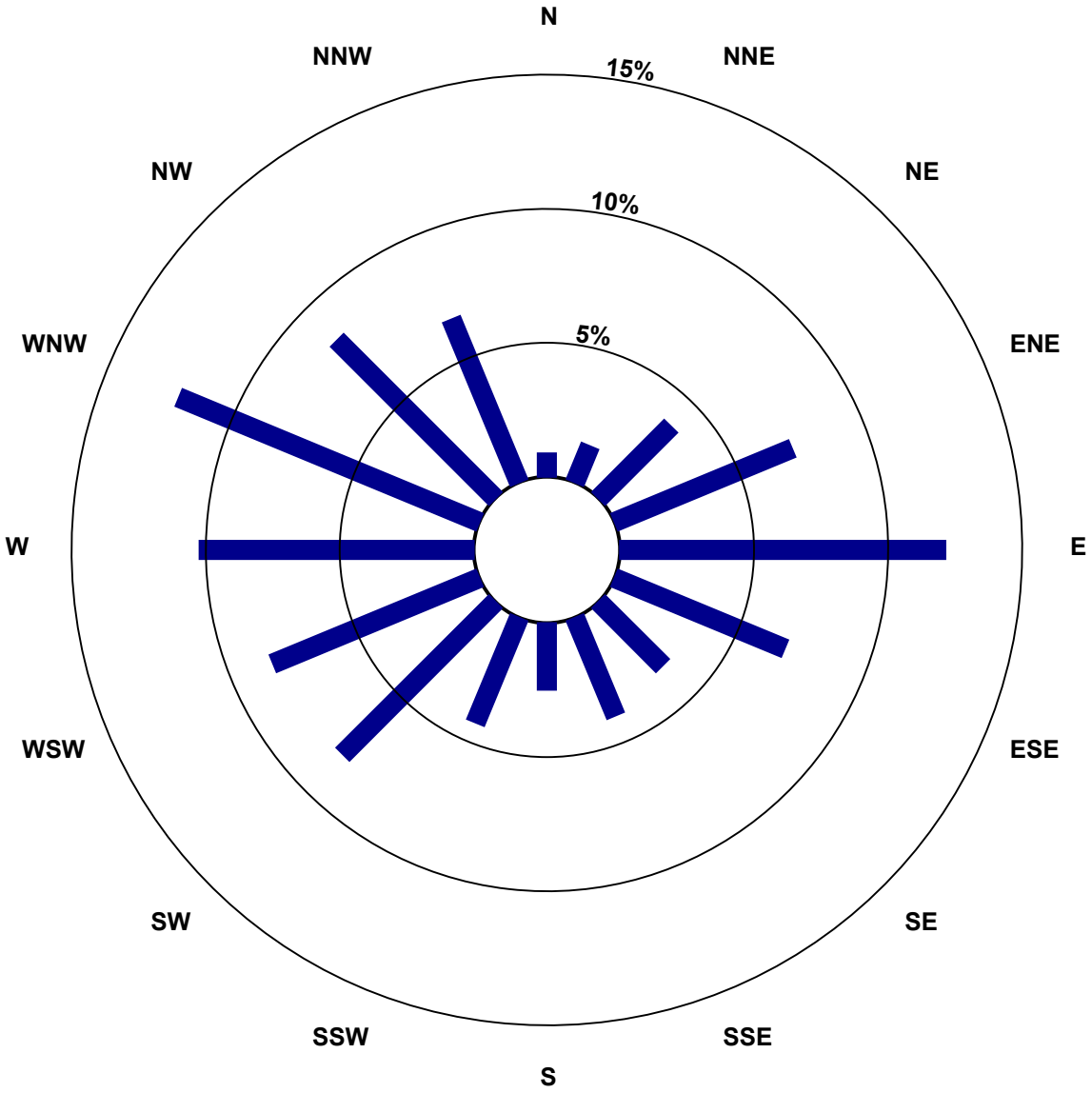
Total Number of Hours: 720

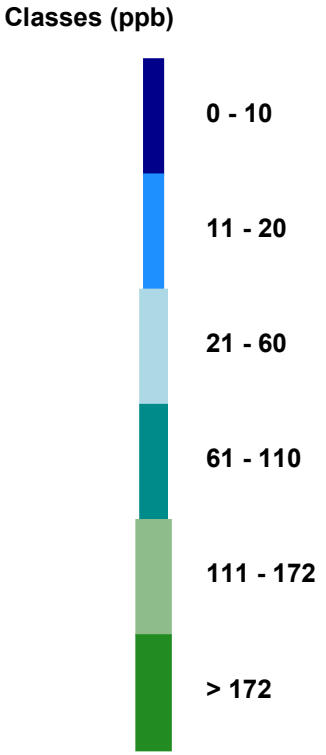
Wood Buffalo Environmental Association

Wind Rose Sep 2024

Sulphur Dioxide (SO_2) - ppb

Fort Chipewyan





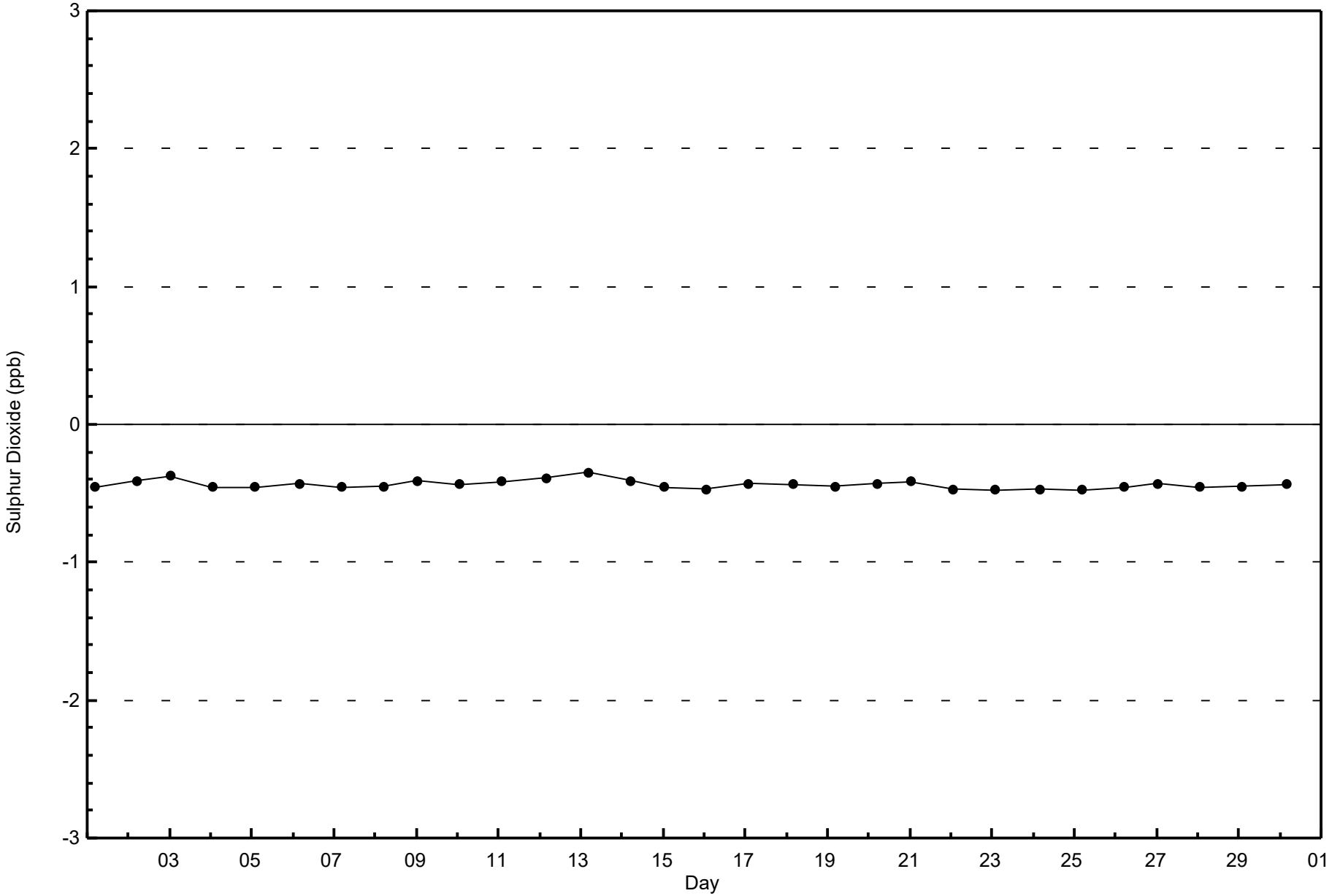
Total Number of Valid Hours: 684

Wood Buffalo Environmental Association

Zero Responses

Sulphur Dioxide (SO_2) - ppb

Fort Chipewyan - September 2024



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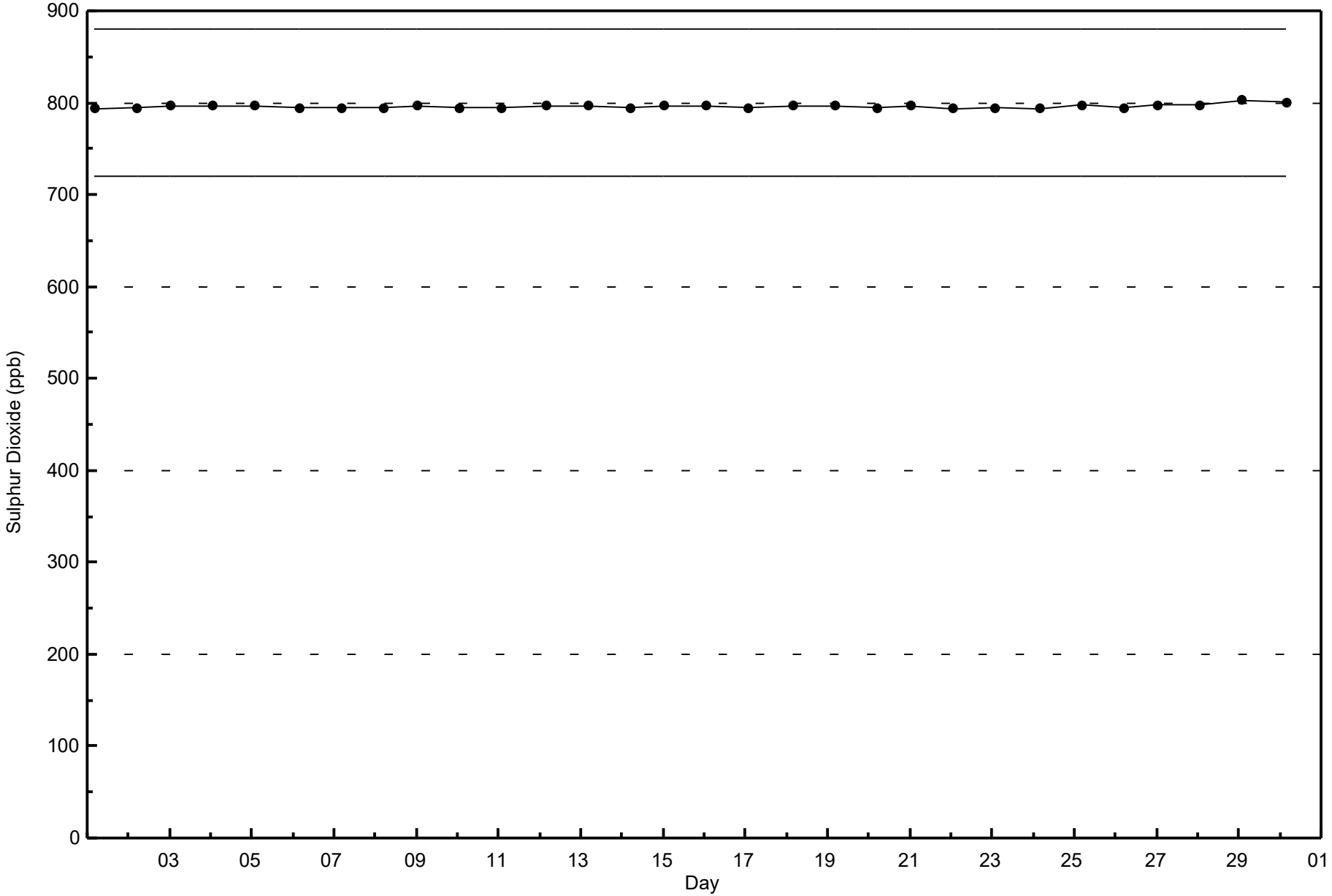
Span Responses

Sulphur Dioxide (SO_2) - ppb

Fort Chipewyan - September 2024



Wood Buffalo Environmental Association

Summary of Hour Averages

Total Reduced Sulphur (TRS) - ppb

Fort Chipewyan - September 2024

Number of Exceedences (AAAQO): 1-hr: 0 24-hr: 0

Maximum Value: 0.6 ppb on Sep 6 07:00 Maximum Daily Average: 0.3 ppb on Sep 6

Minimum Value: 0.0 ppb on Sep 23 08:00 Minimum Daily Average: 0.1 ppb on Sep 23

Maximum Diurnal Average: 0.2 ppb at hour 6 Minimum Diurnal Average: 0.1 ppb at hour 16

Monthly Average: 0.17 ppb Percentiles: P_1 = 0.1 P_{10} = 0.1 Q_1 = 0.1 Median = 0.2 Q_3 = 0.2 P_{90} = 0.3 P_{99} = 0.5

Hours in Service:	720
Hours of Data:	684
Hours of Missing Data:	36
Hours of Calibration:	36
Percent Operational Time:	100.0

Day	Hourly Period Ending At (MST)																								Daily	Daily
	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24	Average	Maximum
1-Sep	0.1	0.2	0.3	0.3	0.2	Z	0.2	0.3	0.3	0.3	0.4	0.4	0.4	0.3	0.3	0.2	0.2	0.2	0.2	0.2	0.2	0.2	0.2	0.2	0.2	0.4
2-Sep	Z	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	0.2	0.2	0.2	0.3	0.2	0.2	0.2	0.2	0.2	0.3	0.2	0.3
3-Sep	0.3	Z	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	0.2	0.2	0.2	0.2	0.2	0.2	0.1	0.1	0.2	0.3
4-Sep	0.2	0.2	Z	0.2	0.2	0.3	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	0.2	0.2	0.2	0.2	0.3
5-Sep	0.2	0.2	0.2	Z	0.2	0.2	0.2	0.2	0.2	0.3	0.3	0.2	0.2	0.2	0.2	0.2	0.2	0.2	0.2	0.2	0.2	0.2	0.2	0.2	0.2	0.3
6-Sep	0.2	0.2	0.2	0.2	Z	0.4	0.6	0.5	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	0.2	0.2	0.2	0.3	0.6
7-Sep	0.2	0.2	0.2	0.2	0.2	Z	0.3	0.3	0.2	0.2	0.2	0.2	0.3	0.3	0.2	0.2	0.2	0.2	0.2	0.2	0.2	0.2	0.2	0.2	0.2	0.3
8-Sep	Z	0.3	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	0.2	0.2	0.2	0.2	0.3	0.2	0.2	0.2	0.2	0.2	0.3
9-Sep	0.2	Z	0.2	0.2	0.2	0.2	0.2	0.2	0.1	0.1	0.2	0.1	0.2	0.2	0.2	0.2	0.3	0.3	0.3	0.2	0.3	0.2	0.2	0.2	0.2	0.3
10-Sep	0.2	0.2	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	0.1	0.1	0.1	0.1	0.1	0.2	0.2	0.2	0.2	0.1	0.2
11-Sep	0.2	0.2	0.2	Z	0.3	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	0.1	0.1	0.1	0.1	0.1	0.2	0.3
12-Sep	0.1	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	0.1	0.1	0.2	0.1	0.1	0.1	0.2	0.1	0.1	0.1	0.2	0.2
13-Sep	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-Sep	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
15-Sep	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	0.2	0.2	0.2	0.2	0.1	0.2
16-Sep	0.1	0.1	Z	0.2	0.3	0.5	0.5	0.5	0.4	0.4	0.3	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	0.5
17-Sep	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	C	C	C	C	C	C	0.3	0.2	0.1	--	0.3
18-Sep	0.1	0.1	0.2	0.2	Z	0.5	0.5	0.5	0.3	0.2	0.2	0.2	0.2	0.2	0.1	0.1	0.1	0.1	0.2	0.2	0.2	0.2	0.2	0.2	0.2	0.5
19-Sep	0.2	0.2	0.2	0.1	0.2	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	0.2
20-Sep	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
21-Sep	0.1	Z	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	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.2
22-Sep	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
23-Sep	0.1	0.1	0.1	Z	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	0.2	0.3	0.1	0.3
24-Sep	0.4	0.5	0.3	0.2	Z	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	0.2	0.2	0.2	0.2	0.2	0.2	0.5
25-Sep	0.2	0.2	0.2	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	0.3	0.3	0.4	0.4	0.4	0.3	0.3	0.3	0.2	0.4
26-Sep	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	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.2	0.2	0.2	0.2	0.3
27-Sep	0.2	Z	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	0.2	0.2	0.1	0.1	0.2
28-Sep	0.1	0.1	Z	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	0.1	0.1	0.1	0.1	0.2	0.1	0.1	0.1	0.1	0.2
29-Sep	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	0.2	0.2	0.1	0.2	0.1	0.2
30-Sep	0.2	0.1	0.1	0.1	Z	0.2	0.2	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	0.1	0.1	0.1	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	0.2	0.2	0.1	0.1	0.1	0.2	0.2	0.2	0.2	0.2	0.2	0.2	Diurnal Average	
	0.4	0.5	0.3	0.3	0.3	0.5	0.6	0.5	0.4	0.4	0.4	0.4	0.4	0.3	0.3	0.2	0.3	0.3	0.4	0.4	0.4	0.3	0.3	0.3	Diurnal Maximum	

Z - zerospan C - Calibration

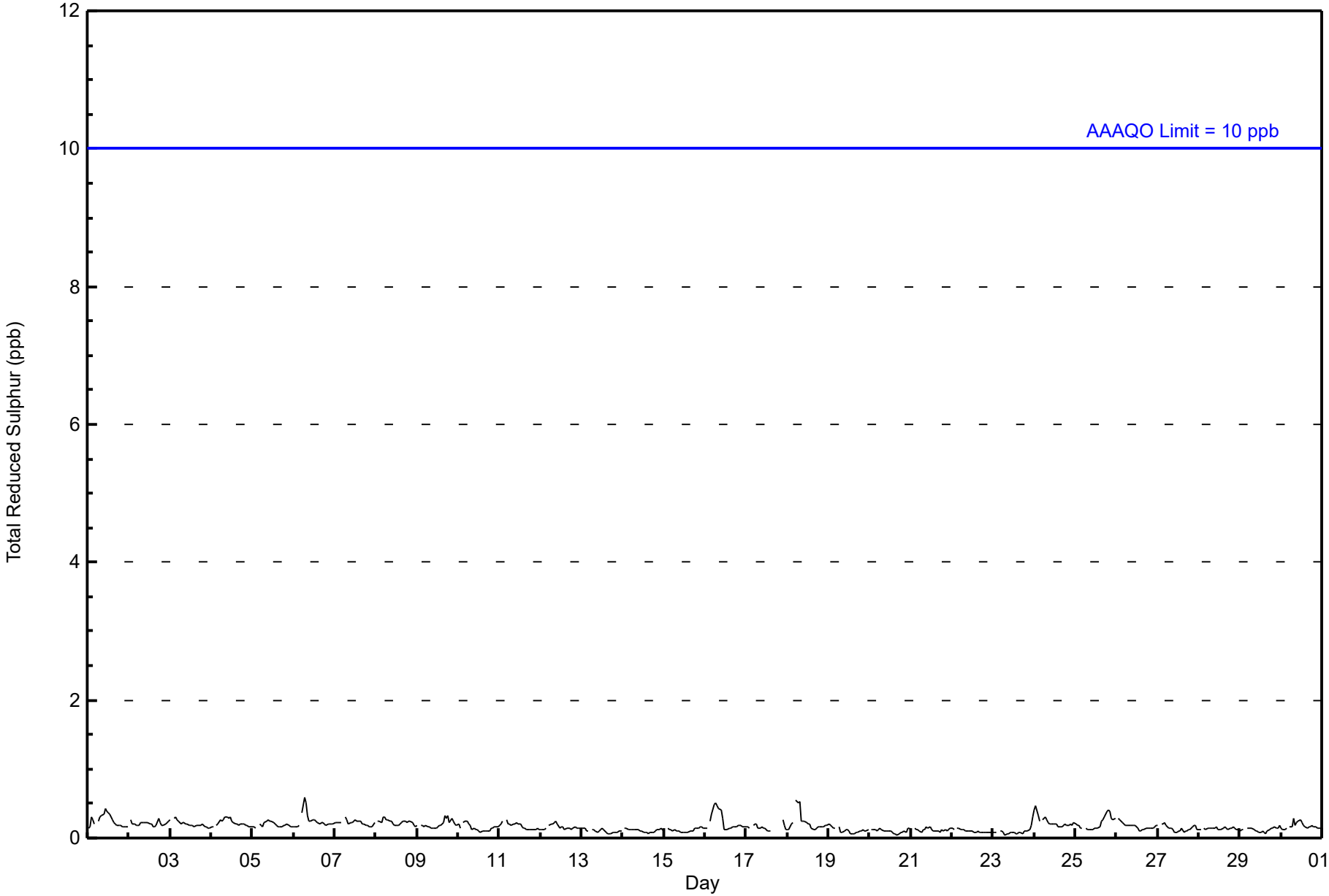
Alberta Ambient Air Quality Objectives (AAAQO): 1-hr 10 ppb 24-hr 3 ppb

Wood Buffalo Environmental Association

Hourly Averages

Total Reduced Sulphur (TRS) - ppb

Fort Chipewyan - September 2024



Concentration Ranges (ppb)	Number of Hours	%	Cumulative %
0 - 2	684	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: 684

Total Number of Hours: 720

Wood Buffalo Environmental Association

Frequency Distribution

Total Reduced Sulphur (TRS) - ppb

Fort Chipewyan - September 2024

Concentration Ranges (ppb)	Wind Direction																
	N	NNE	NE	ENE	E	ESE	SE	SSE	S	SSW	SW	WSW	W	WNW	NW	NNW	**Totals**
0 - 2	6	10	26	46	82	47	22	26	19	30	54	57	72	81	59	46	683
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	6	10	26	46	82	47	22	26	19	30	54	57	72	81	59	46	683

Total Number of Valid Hours: 683

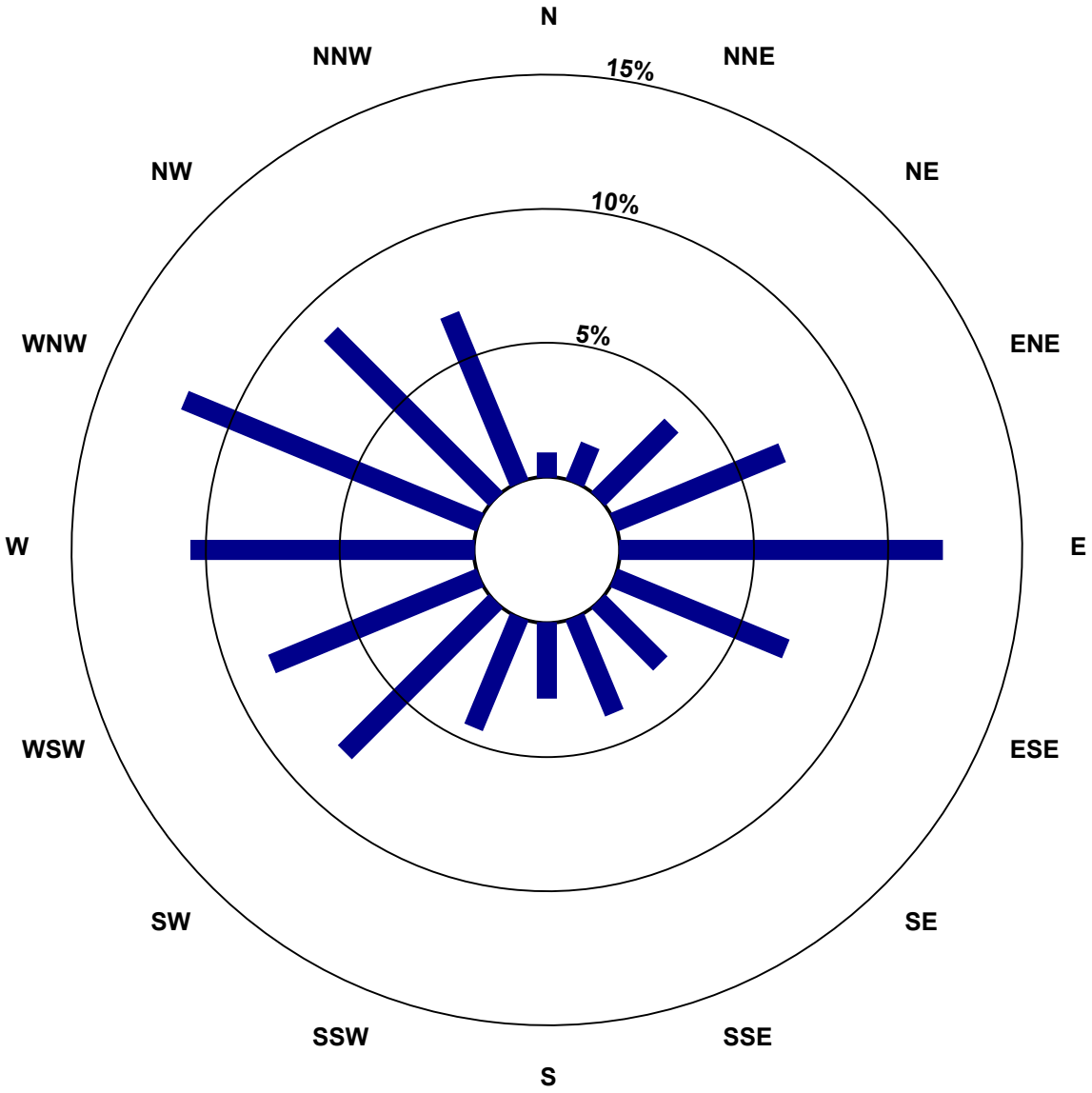
Total Number of Hours: 720

Wood Buffalo Environmental Association

Wind Rose Sep 2024

Total Reduced Sulphur (TRS) - ppb

Fort Chipewyan



Classes (ppb)

0 - 2

3 - 4

5 - 7

8 - 11

> 11

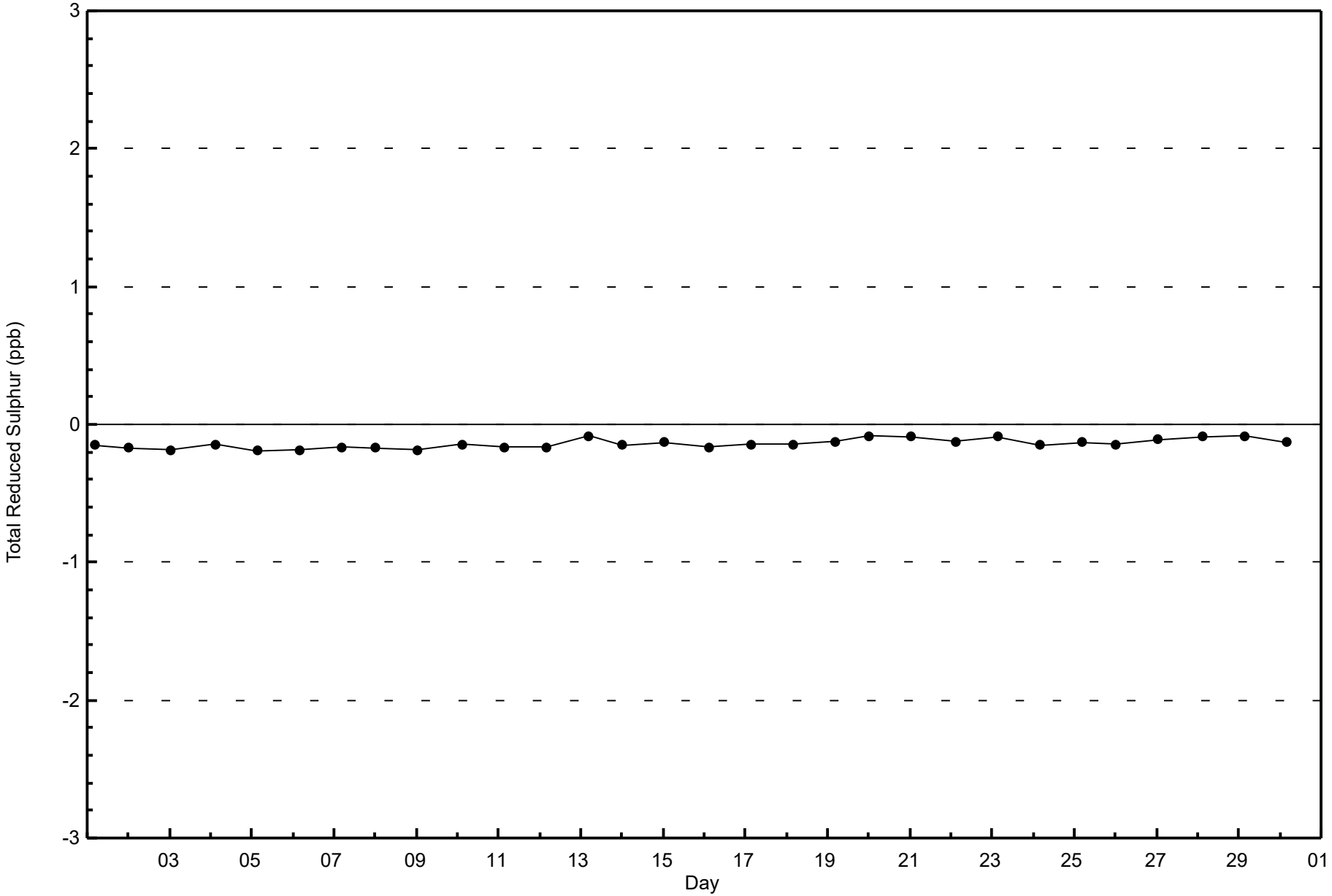
Total Number of Valid Hours: 683

Wood Buffalo Environmental Association

Zero Responses

Total Reduced Sulphur (TRS) - ppb

Fort Chipewyan - September 2024

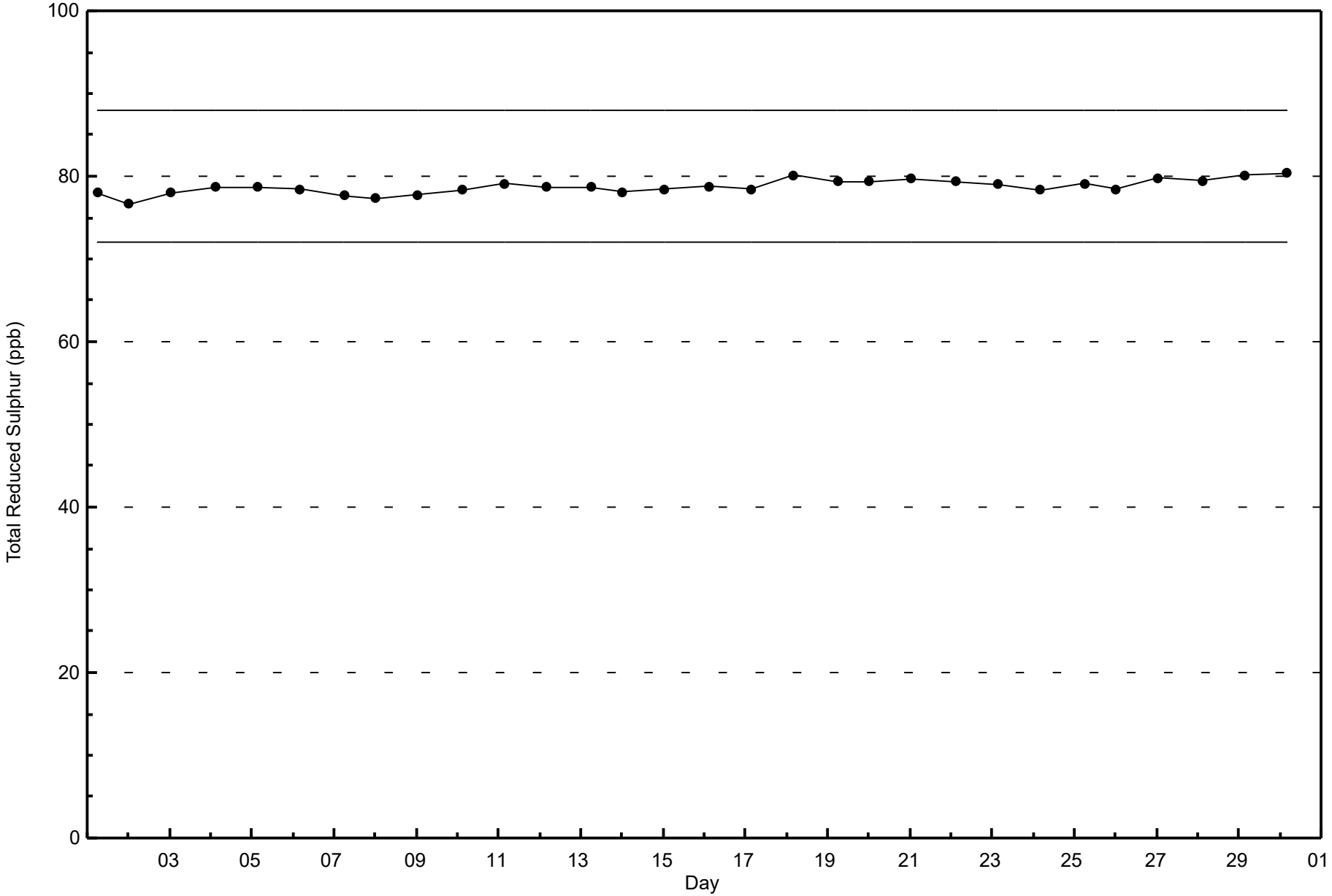


Wood Buffalo Environmental Association

Span Responses

Total Reduced Sulphur (TRS) - ppb

Fort Chipewyan - September 2024



Wood Buffalo Environmental Association

Summary of Hour Averages

Nitric Oxide (NO) - ppb

Fort Chipewyan - September 2024

Maximum Value: 4.8 ppb on Sep 16 09:00

Maximum Daily Average: 0.6 ppb on Sep 16

Minimum Value: 0.0 ppb on Sep 1 05:00

Minimum Daily Average: 0.0 ppb on Sep 12

Maximum Diurnal Average: 0.4 ppb at hour 9

Minimum Diurnal Average: 0.1 ppb at hour 4

Monthly Average: 0.15 ppb

Percentiles: P_1 = 0.0 P_{10} = 0.0 Q_1 = 0.0 Median = 0.0 Q_3 = 0.2 P_{90} = 0.4 P_{99} = 1.8

Hours in Service:	720
Hours of Data:	684
Hours of Missing Data:	36
Hours of Calibration:	36
Percent Operational Time:	100.0

Day	Hourly Period Ending At (MST)																								Daily	Daily
	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24	Average	Maximum
1-Sep	0.2	0.3	Z	0.2	0.0	0.0	0.3	0.4	0.5	0.6	1.3	1.0	0.5	1.0	0.2	0.1	0.0	0.2	0.0	0.1	0.0	0.1	0.1	0.1	0.3	1.3
2-Sep	0.2	0.2	0.0	Z	0.2	0.0	0.0	0.2	0.2	0.1	0.1	0.1	0.2	0.4	0.0	0.1	0.0	0.1	0.0	0.0	0.2	0.1	0.0	0.2	0.1	0.4
3-Sep	0.1	0.2	0.1	0.2	Z	0.1	0.0	0.3	0.4	0.0	0.0	0.1	0.1	0.3	0.2	0.3	0.2	0.3	0.2	0.2	0.1	0.2	0.2	0.2	0.2	0.4
4-Sep	0.1	0.3	0.2	0.1	0.2	Z	0.1	0.0	0.0	0.3	0.3	0.1	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	0.3
5-Sep	Z	0.0	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	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.1
6-Sep	0.0	Z	0.0	0.0	0.0	0.0	0.7	1.3	0.6	0.2	0.1	0.0	0.0	0.0	0.2	0.2	0.2	0.2	0.0	0.3	0.2	0.1	0.1	0.0	0.2	1.3
7-Sep	0.1	0.1	Z	0.0	0.1	0.0	0.1	0.0	0.2	0.0	0.2	0.4	0.3	0.3	0.5	0.2	0.3	0.1	0.0	0.0	0.0	0.1	0.2	0.0	0.1	0.5
8-Sep	0.0	0.0	0.0	Z	0.2	0.2	0.1	0.0	0.0	0.0	0.0	0.1	0.0	0.0	0.0	0.0	0.1	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.2
9-Sep	0.0	0.0	0.0	0.0	Z	0.0	0.0	0.0	0.0	0.1	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	0.3
10-Sep	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	0.1	0.0	0.0	0.0	0.0	0.0	0.0	0.1
11-Sep	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	0.0	0.0	0.0	0.0	0.0	0.0	0.2
12-Sep	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
13-Sep	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	0.0	0.0	0.1	0.0	0.1	0.2	0.0	0.0	0.0	0.0	0.2
14-Sep	0.1	0.1	0.2	Z	0.5	0.2	0.0	0.1	0.2	0.2	0.1	0.2	0.2	0.1	0.1	0.0	0.3	0.3	0.3	0.0	0.1	0.1	0.0	0.1	0.1	0.5
15-Sep	0.1	0.1	0.2	0.1	Z	0.2	0.2	0.1	0.0	0.0	0.2	0.1	0.0	0.1	0.1	0.1	0.0	0.0	0.0	0.1	0.1	0.0	0.2	0.0	0.1	0.2
16-Sep	0.0	0.0	0.0	0.0	0.0	Z	0.7	2.4	4.8	3.3	2.1	0.2	0.1	0.0	0.0	0.0	0.0	0.0	0.2	0.0	0.1	0.1	0.1	0.0	0.6	4.8
17-Sep	Z	0.0	0.0	0.0	0.0	0.0	0.2	1.4	1.9	1.8	C	C	C	C	C	C	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.1	--	1.9
18-Sep	0.1	Z	0.0	0.0	0.1	0.0	0.2	0.6	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	0.6
19-Sep	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	0.0	0.0	0.0	0.0	0.0	0.2	0.0	0.1	0.0	0.0	0.2
20-Sep	0.2	0.2	0.3	Z	0.1	0.1	0.2	0.3	0.4	0.1	0.2	0.1	0.2	0.1	0.1	0.0	0.1	0.2	0.1	0.1	0.1	0.0	0.2	0.2	0.2	0.4
21-Sep	0.0	0.1	0.0	0.1	Z	0.2	0.2	0.3	0.0	0.2	0.3	0.1	0.3	0.3	0.4	0.1	0.1	0.1	0.2	0.0	0.1	0.3	0.2	0.1	0.2	0.4
22-Sep	0.1	0.1	0.0	0.0	0.1	Z	0.3	0.0	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	0.1	0.3
23-Sep	Z	0.0	0.0	0.0	0.1	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	0.1	0.1	0.0	0.1	0.0	0.0	0.4
24-Sep	0.0	Z	0.0	0.0	0.0	0.0	0.2	0.2	0.6	0.4	0.1	0.2	0.1	0.2	0.2	0.4	0.4	0.0	0.0	0.0	0.0	0.0	0.1	0.0	0.1	0.6
25-Sep	0.1	0.1	Z	0.2	0.1	0.3	0.3	0.2	0.3	0.3	0.1	0.4	0.4	0.4	0.7	1.2	1.2	0.5	0.5	0.5	0.6	0.4	0.5	0.4	0.4	1.2
26-Sep	0.5	0.6	0.3	Z	0.6	0.4	0.4	0.5	0.4	0.5	0.3	0.5	0.2	0.4	0.1	0.1	0.1	0.1	0.1	0.0	0.1	0.0	0.0	0.0	0.3	0.6
27-Sep	0.0	0.0	0.0	0.0	Z	0.0	0.0	0.0	0.0	0.5	0.0	0.0	0.0	0.4	1.0	0.5	0.0	0.0	0.1	0.0	0.0	0.0	0.2	0.1	0.1	1.0
28-Sep	0.1	0.0	0.1	0.2	0.1	Z	0.2	0.3	0.1	0.2	0.4	0.4	0.2	0.4	0.4	0.4	0.4	0.1	0.3	0.5	0.4	0.4	0.3	0.3	0.3	0.5
29-Sep	Z	0.4	0.2	0.2	0.4	0.2	0.2	0.5	0.7	2.0	2.6	1.5	0.6	0.5	0.5	0.0	0.0	0.0	0.0	0.0	0.2	0.0	0.0	0.0	0.5	2.6
30-Sep	0.0	Z	0.0	0.0	0.0	0.0	0.0	0.3	0.4	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	0.4
	0.1	0.1	0.1	0.1	0.1	0.1	0.2	0.3	0.4	0.4	0.3	0.2	0.1	0.2	0.2	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	Diurnal Average	
	0.5	0.6	0.3	0.2	0.6	0.4	0.7	2.4	4.8	3.3	2.6	1.5	0.6	1.0	1.0	1.2	1.2	0.5	0.5	0.5	0.6	0.4	0.5	0.4	Diurnal Maximum	

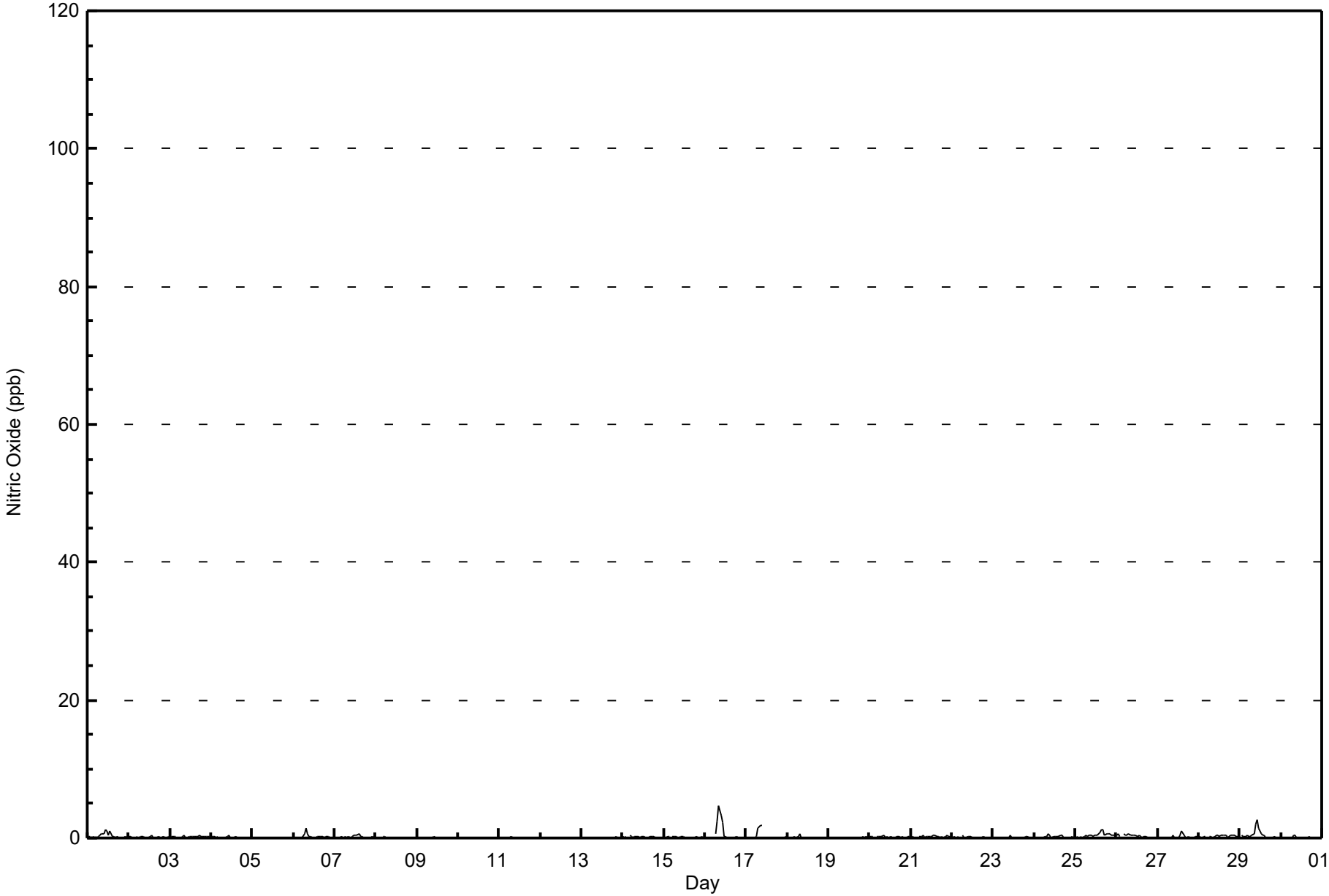
Z - zerospan C - Calibration

Wood Buffalo Environmental Association

Hourly Averages

Nitric Oxide (NO) - ppb

Fort Chipewyan - September 2024



Concentration Ranges (ppb)	Number of Hours	%	Cumulative %
0 - 20	684	100.00	100.00
21 - 40	0	0.00	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: 684

Total Number of Hours: 720

Wood Buffalo Environmental Association

Frequency Distribution

Nitric Oxide (NO) - ppb

Fort Chipewyan - September 2024

Concentration Ranges (ppb)	Wind Direction																
	N	NNE	NE	ENE	E	ESE	SE	SSE	S	SSW	SW	WSW	W	WNW	NW	NNW	**Totals**
0 - 20	7	10	26	49	83	46	21	25	19	31	53	58	71	83	58	43	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	7	10	26	49	83	46	21	25	19	31	53	58	71	83	58	43	683

Total Number of Valid Hours: 683

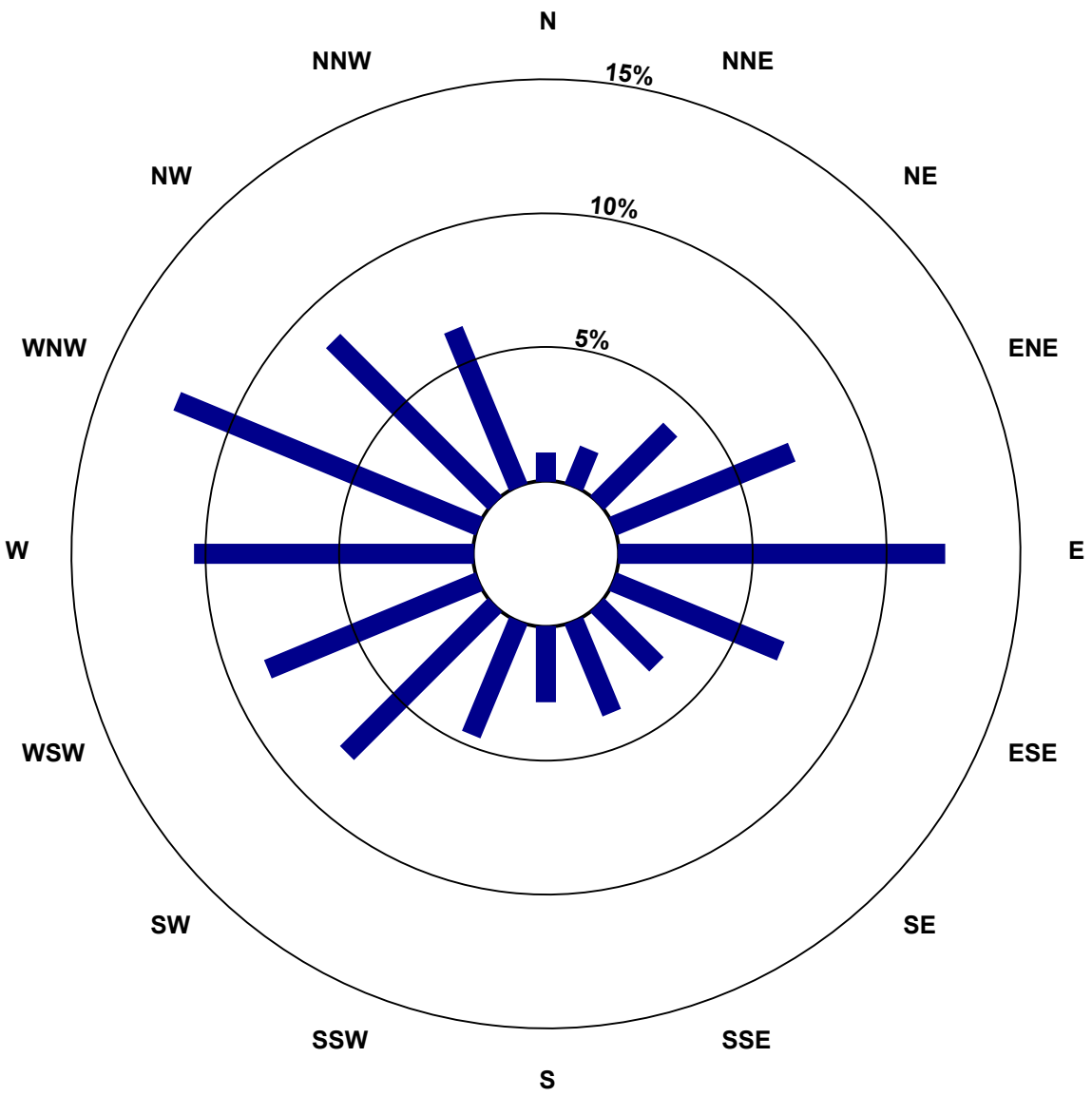
Total Number of Hours: 720

Wood Buffalo Environmental Association

Wind Rose Sep 2024

Nitric Oxide (NO) - ppb

Fort Chipewyan



Classes (ppb)

0 - 20

21 - 40

11 - 80

81 - 159

> 159

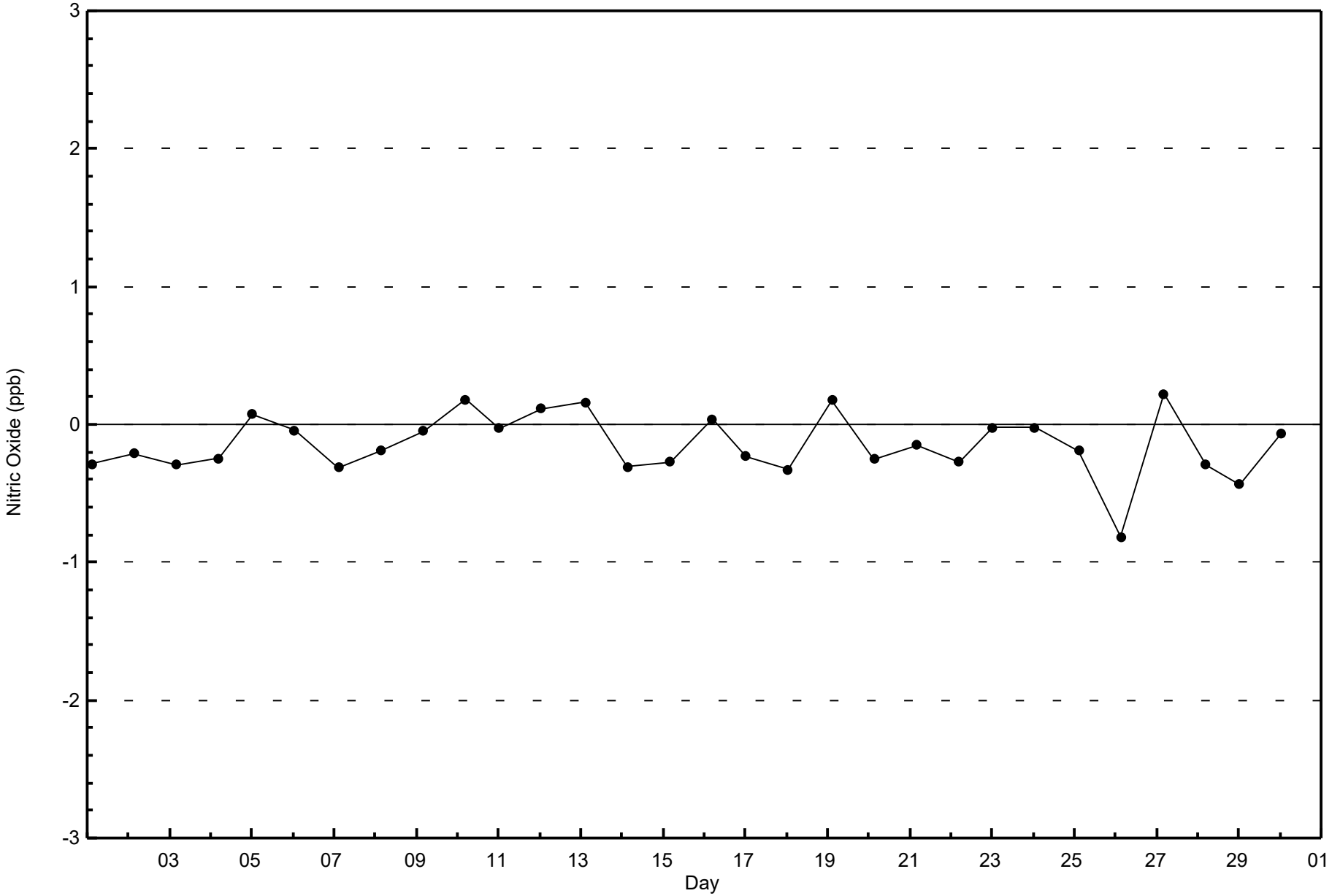
Total Number of Valid Hours: 683

Wood Buffalo Environmental Association

Zero Responses

Nitric Oxide (NO) - ppb

Fort Chipewyan - September 2024

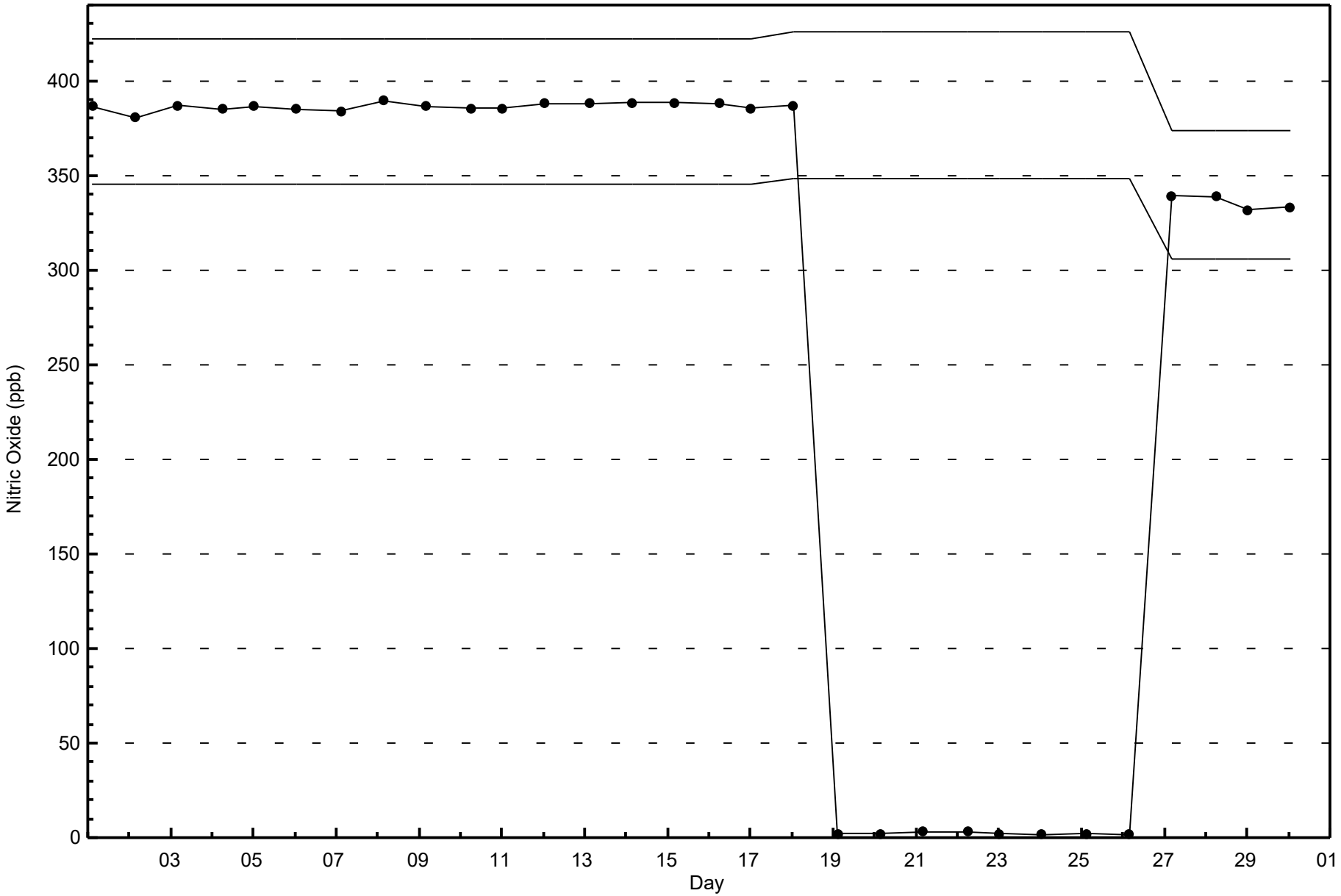


Wood Buffalo Environmental Association

Span Responses

Nitric Oxide (NO) - ppb

Fort Chipewyan - September 2024



Wood Buffalo Environmental Association

Summary of Hour Averages

Nitrogen Dioxide (NO_2) - ppb

Fort Chipewyan - September 2024

Number of Exceedences (AAAQO): 1-hr: 0 24-hr: 0
Maximum Value: 10.6 ppb on Sep 25 20:00 Maximum Daily Average: 3.3 ppb on Sep 25

Minimum Value: 0.0 ppb on Sep 1 01:00 Minimum Daily Average: 0.1 ppb on Sep 5
Maximum Diurnal Average: 1.5 ppb at hour 7 Minimum Diurnal Average: 0.4 ppb at hour 15
Monthly Average: 0.71 ppb Percentiles: P_1 = 0.0 P_{10} = 0.0 Q_1 = 0.1 Median = 0.3 Q_3 = 0.6 P_{90} = 1.8 P_{99} = 7.8

Hours in Service:	720
Hours of Data:	684
Hours of Missing Data:	36
Hours of Calibration:	36
Percent Operational Time:	100.0

Day	Hourly Period Ending At (MST)																								Daily	Daily
	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24	Average	Maximum
1-Sep	0.0	0.5	Z	4.8	2.3	1.7	1.8	2.1	2.1	2.2	2.5	1.8	1.7	2.4	1.1	0.7	0.3	0.0	0.1	0.4	0.8	0.5	0.4	0.4	1.3	4.8
2-Sep	0.3	0.4	0.0	Z	0.6	0.2	0.0	0.1	0.2	0.4	0.6	0.6	1.1	1.6	0.0	0.2	0.0	0.3	0.3	0.2	0.2	0.2	0.2	0.4	0.4	1.6
3-Sep	0.3	0.1	0.2	0.2	Z	0.5	0.3	0.4	0.3	0.3	0.2	0.4	0.4	0.2	0.3	0.5	0.4	0.3	0.3	0.2	0.3	0.3	0.3	0.2	0.3	0.5
4-Sep	0.3	0.3	0.2	0.2	0.3	Z	1.0	0.3	0.2	0.1	0.4	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	0.2	1.0
5-Sep	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	0.2	0.1	0.2	0.6	0.4	0.1	0.1	0.1	0.6
6-Sep	0.3	Z	1.2	1.4	2.0	4.6	8.0	5.7	2.3	0.9	0.4	0.4	0.1	0.1	0.0	0.0	0.3	0.4	0.1	0.5	0.4	0.0	0.0	0.1	1.3	8.0
7-Sep	0.1	0.1	Z	0.4	0.0	0.1	0.3	0.4	0.1	0.0	0.2	0.2	0.9	0.6	0.9	1.5	1.4	2.0	1.3	1.0	1.3	0.7	0.4	0.5	0.6	2.0
8-Sep	0.0	0.3	0.2	Z	0.4	0.1	0.2	0.0	0.2	0.1	0.2	0.1	0.3	0.2	0.3	0.5	0.6	1.5	2.7	0.6	0.1	0.1	0.0	0.0	0.4	2.7
9-Sep	0.1	0.0	0.1	0.3	Z	0.5	0.4	0.5	0.1	0.4	0.5	0.3	0.3	0.4	0.7	0.3	0.1	0.1	0.3	0.2	0.1	0.1	0.1	0.2	0.3	0.7
10-Sep	0.3	0.1	0.0	0.1	0.2	Z	0.5	0.5	0.4	0.2	0.3	0.0	0.1	0.1	0.0	0.2	0.2	0.1	0.2	0.0	0.0	0.1	0.0	0.0	0.2	0.5
11-Sep	Z	0.4	0.2	0.0	0.0	0.2	0.1	0.9	0.5	0.0	0.0	0.0	0.0	0.1	0.1	0.1	0.2	0.1	0.1	0.1	0.0	0.0	0.0	0.0	0.1	0.9
12-Sep	0.0	Z	0.3	0.3	0.7	0.6	0.8	0.7	1.7	2.0	1.4	0.9	0.9	1.1	0.7	0.6	0.9	0.8	0.5	0.7	0.5	0.5	0.8	0.5	0.8	2.0
13-Sep	0.6	1.0	Z	0.9	0.7	0.7	0.6	0.5	0.4	0.2	0.7	0.8	1.3	0.8	0.2	0.1	0.0	0.2	0.8	0.4	1.0	0.2	0.1	0.3	0.5	1.3
14-Sep	0.6	0.2	0.2	Z	0.3	0.2	0.4	0.5	0.2	0.2	0.1	0.3	0.1	0.1	0.2	0.2	0.1	0.2	0.3	0.4	0.3	0.2	0.3	0.3	0.3	0.6
15-Sep	0.4	0.2	0.1	0.3	Z	0.5	0.2	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	0.0	0.0	0.0	0.0	0.1	0.5
16-Sep	0.0	0.0	0.0	3.1	9.0	Z	7.6	6.5	6.8	6.5	4.5	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	1.9	9.0
17-Sep	Z	0.3	0.1	0.1	0.1	0.8	3.9	4.4	4.7	3.5	C	C	C	C	C	C	1.9	0.9	1.0	0.8	0.8	0.7	0.5	0.4	--	4.7
18-Sep	0.3	Z	2.2	2.5	5.1	9.7	7.7	8.3	1.3	0.2	0.2	0.0	0.5	0.0	0.0	0.1	0.1	0.0	0.2	0.2	0.0	0.0	0.0	0.0	1.7	9.7
19-Sep	0.1	0.0	Z	2.6	0.9	0.4	0.4	0.3	0.3	0.2	0.2	0.1	0.1	0.0	0.3	0.4	0.4	0.2	0.8	0.6	0.8	0.2	0.6	0.0	0.4	2.6
20-Sep	0.1	0.0	0.2	Z	2.7	1.0	0.6	0.5	0.5	0.2	0.4	0.3	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.5	0.2	0.1	0.2	0.0	0.4	2.7
21-Sep	0.2	0.1	0.1	0.0	Z	2.7	1.2	0.8	0.4	0.2	0.2	0.3	0.2	0.5	0.2	0.2	0.3	0.2	0.1	0.1	0.1	0.1	0.2	0.3	0.4	2.7
22-Sep	0.2	0.2	0.2	0.2	0.2	Z	2.8	1.1	0.6	0.6	0.5	0.4	0.3	0.3	0.3	0.1	0.3	0.4	1.3	1.0	0.2	0.4	0.2	0.1	0.5	2.8
23-Sep	Z	2.8	1.1	0.8	0.5	0.2	0.4	0.0	0.1	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	1.2	3.1	0.5	3.1
24-Sep	4.3	Z	5.3	2.2	1.4	1.8	2.3	1.7	0.9	1.2	0.6	0.1	0.1	0.3	0.1	0.7	0.5	0.2	0.2	0.2	0.3	0.3	0.5	0.4	1.1	5.3
25-Sep	0.6	0.5	Z	3.5	1.3	0.9	0.9	0.6	0.7	0.8	0.8	0.7	0.7	0.7	1.9	4.0	6.7	7.6	9.6	10.6	10.4	6.0	3.6	2.7	3.3	10.6
26-Sep	1.2	0.7	0.4	Z	3.5	1.4	0.8	0.9	0.6	0.7	0.4	0.4	0.4	0.3	0.3	0.3	0.3	0.4	0.3	0.4	0.4	0.0	0.1	0.2	0.6	3.5
27-Sep	0.3	0.1	0.0	0.0	Z	0.1	0.0	0.1	0.7	1.5	0.5	0.3	0.3	1.3	2.4	1.5	0.5	0.4	1.0	0.4	2.0	3.1	2.4	1.5	0.9	3.1
28-Sep	0.8	0.7	0.3	0.2	0.1	Z	0.2	0.0	0.2	0.2	0.0	0.0	0.1	0.0	0.0	0.1	0.0	0.1	0.1	0.0	0.3	0.0	0.0	0.0	0.1	0.8
29-Sep	Z	1.6	2.1	1.8	1.2	0.9	0.9	2.2	2.1	3.9	4.4	3.2	1.6	1.1	0.8	0.6	1.2	0.5	0.4	0.1	0.5	0.2	0.0	0.0	1.4	4.4
30-Sep	0.1	Z	0.4	0.2	0.1	0.1	0.5	1.3	0.8	0.0	0.3	0.2	0.2	0.1	0.0	0.0	0.1	0.2	0.0	0.0	0.0	0.0	0.0	0.0	0.2	1.3
	0.5	0.4	0.6	1.0	1.3	1.2	1.5	1.4	1.0	0.9	0.7	0.4	0.4	0.4	0.4	0.5	0.6	0.6	0.7	0.7	0.7	0.5	0.4	0.4	Diurnal Average	
	4.3	2.8	5.3	4.8	9.0	9.7	8.0	8.3	6.8	6.5	4.5	3.2	1.7	2.4	2.4	4.0	6.7	7.6	9.6	10.6	10.4	6.0	3.6	3.1	Diurnal Maximum	

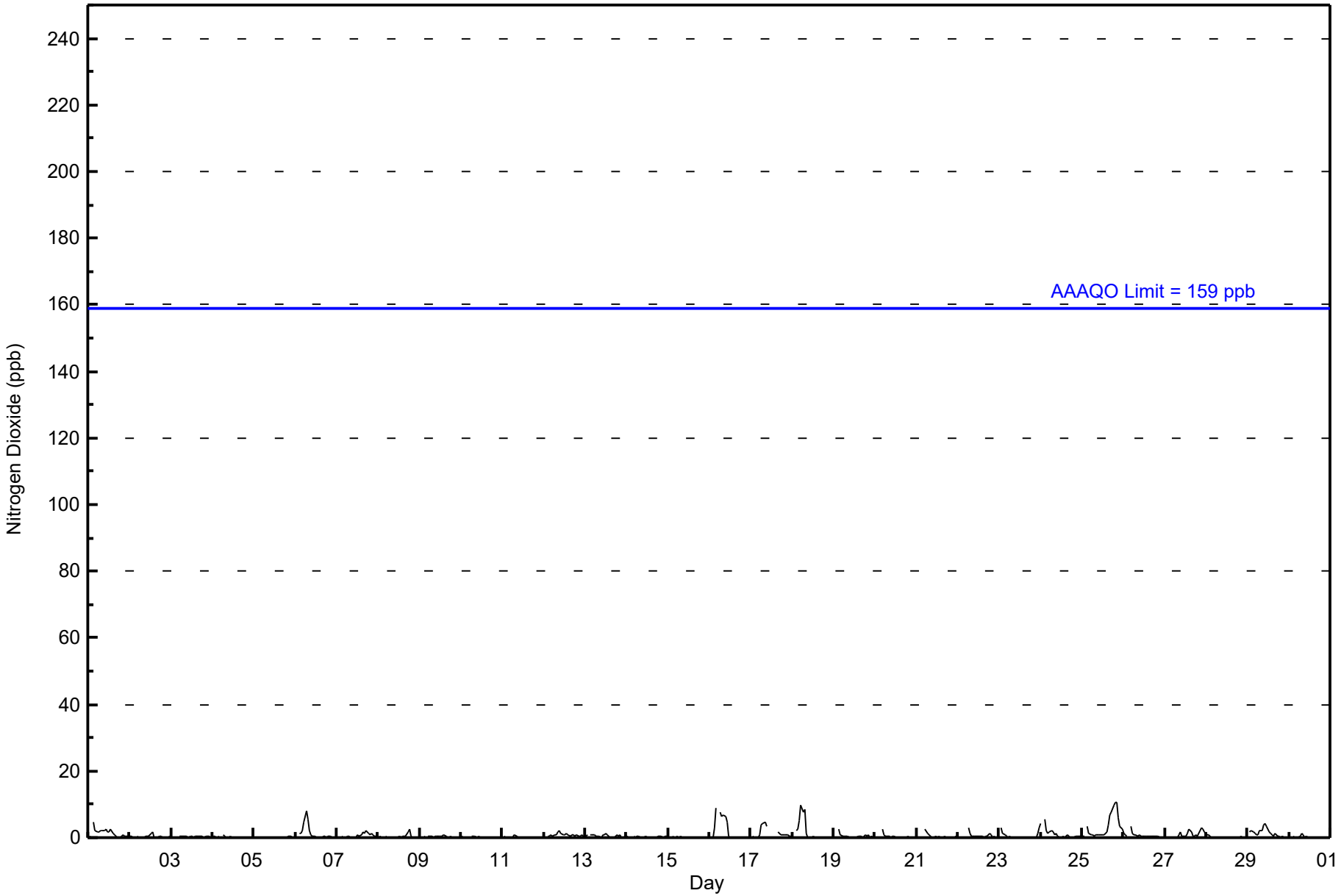
Z - zerospan C - Calibration
Alberta Ambient Air Quality Objectives (AAAQO): 1-hr 159 ppb

Wood Buffalo Environmental Association

Hourly Averages

Nitrogen Dioxide (NO_2) - ppb

Fort Chipewyan - September 2024



Nitrogen Dioxide (NO_2) - ppb
Fort Chipewyan - September 2024

Concentration Ranges (ppb)	Number of Hours	%	Cumulative %
0 - 20	684	100.00	100.00
21 - 40	0	0.00	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: 684

Total Number of Hours: 720

Wood Buffalo Environmental Association

Frequency Distribution

Nitrogen Dioxide (NO_2) - ppb

Fort Chipewyan - September 2024

Concentration Ranges (ppb)	Wind Direction																
	N	NNE	NE	ENE	E	ESE	SE	SSE	S	SSW	SW	WSW	W	WNW	NW	NNW	**Totals**
0 - 20	7	10	26	49	83	46	21	25	19	31	53	58	71	83	58	43	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	7	10	26	49	83	46	21	25	19	31	53	58	71	83	58	43	683

Total Number of Valid Hours: 683

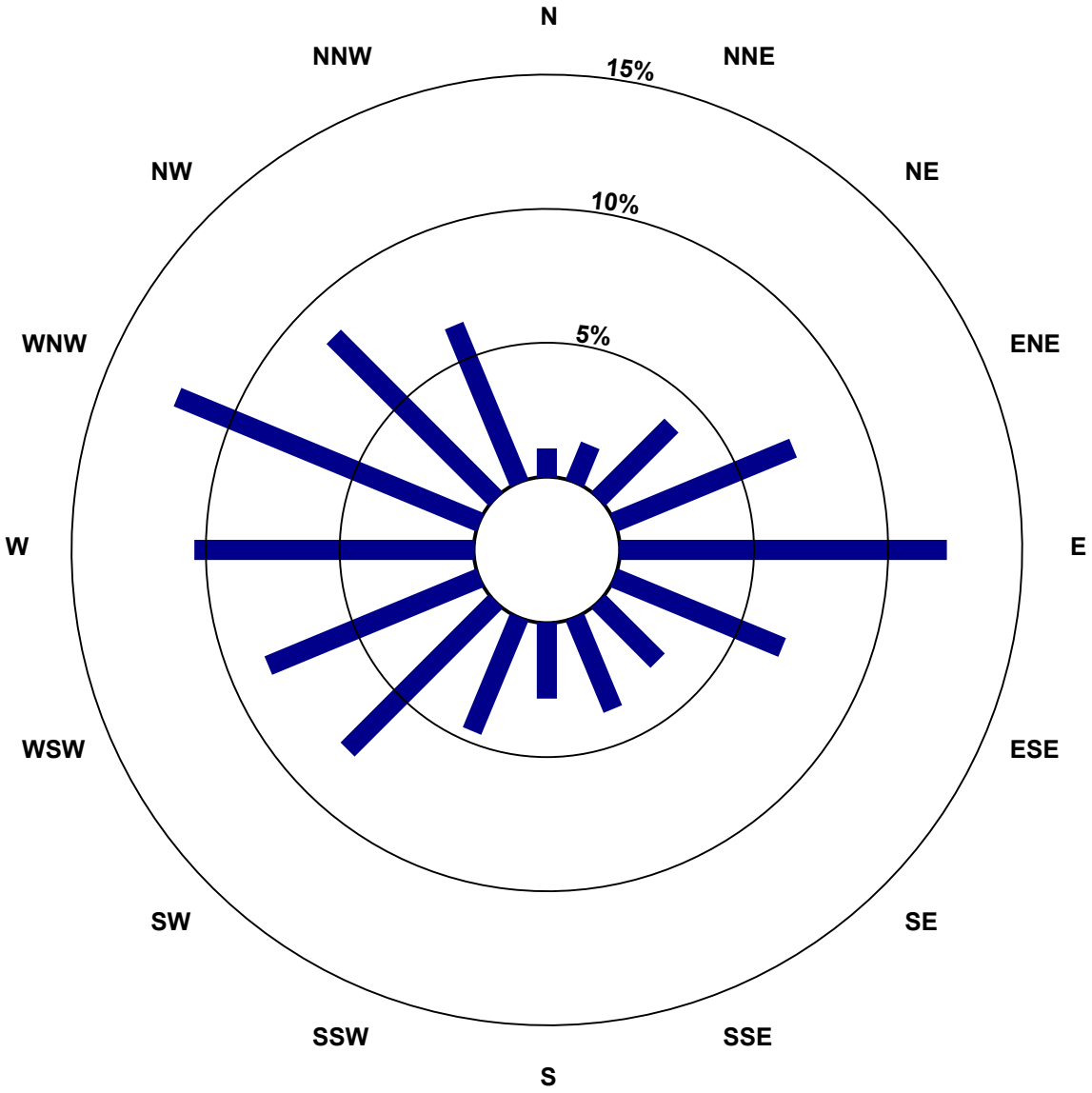
Total Number of Hours: 720

Wood Buffalo Environmental Association

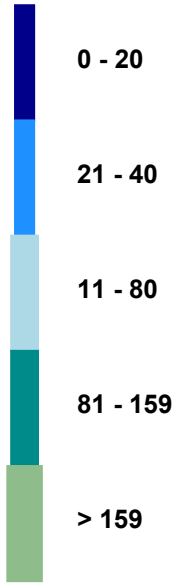
Wind Rose Sep 2024

Nitrogen Dioxide (NO_2) - ppb

Fort Chipewyan



Classes (ppb)



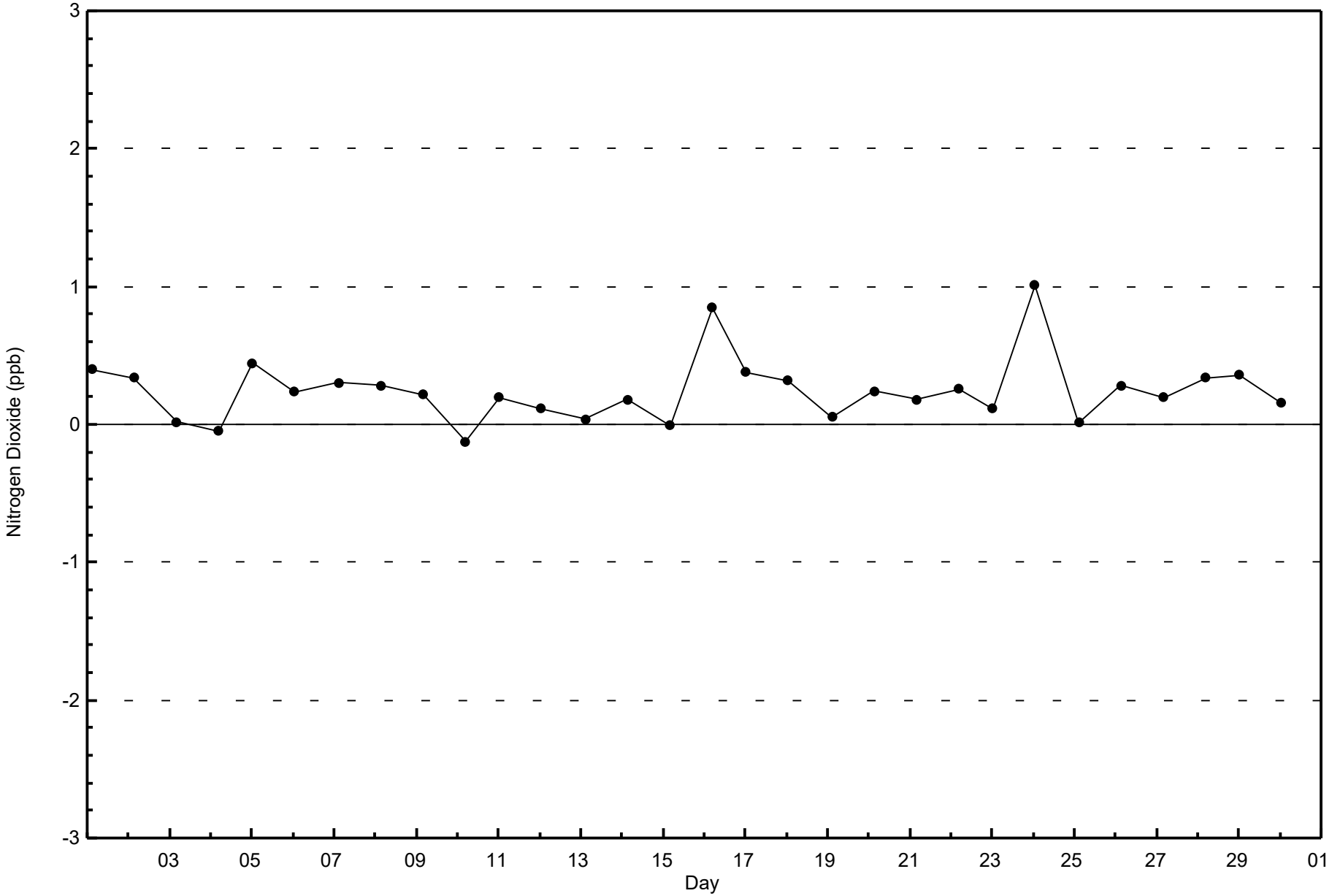
Total Number of Valid Hours: 683

Wood Buffalo Environmental Association

Zero Responses

Nitrogen Dioxide (NO_2) - ppb

Fort Chipewyan - September 2024

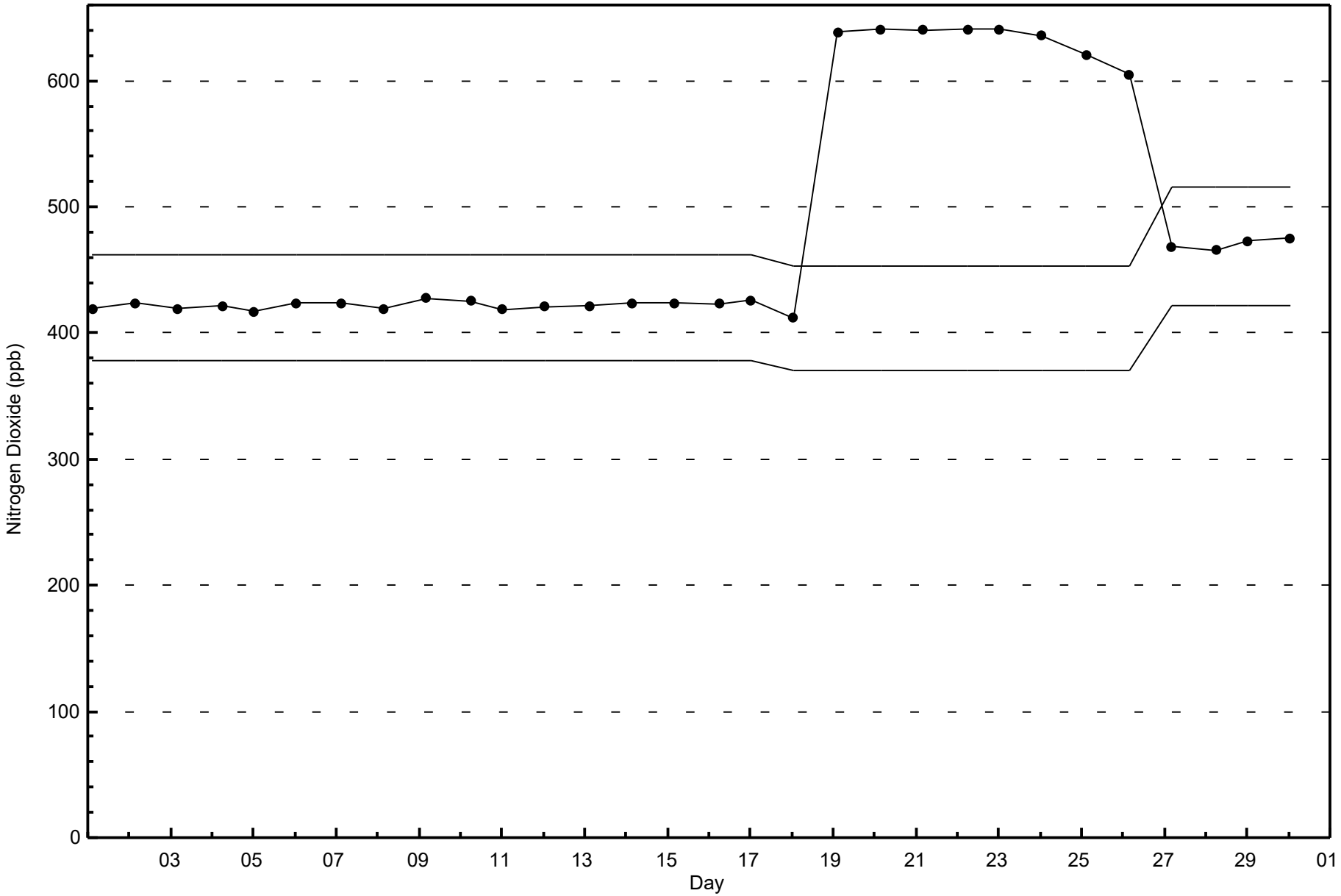


Wood Buffalo Environmental Association

Span Responses

Nitrogen Dioxide (NO_2) - ppb

Fort Chipewyan - September 2024



Wood Buffalo Environmental Association

Summary of Hour Averages

Nitrogen Oxides (NO_X) - ppb

Fort Chipewyan - September 2024

Maximum Value: 11.6 ppb on Sep 16 09:00

Maximum Daily Average: 3.7 ppb on Sep 25

Minimum Value: 0.0 ppb on Sep 2 03:00

Minimum Daily Average: 0.1 ppb on Sep 5

Maximum Diurnal Average: 1.7 ppb at hour 8

Minimum Diurnal Average: 0.5 ppb at hour 24

Monthly Average: 0.86 ppb

Percentiles: P_1 = 0.0 P_{10} = 0.0 Q_1 = 0.1 Median = 0.4 Q_3 = 0.8 P_{90} = 2.0 P_{99} = 8.9

Hours in Service:	720
Hours of Data:	684
Hours of Missing Data:	36
Hours of Calibration:	36
Percent Operational Time:	100.0

Day	Hourly Period Ending At (MST)																								Daily	Daily
	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24	Average	Maximum
1-Sep	0.2	0.8	Z	5.0	2.3	1.7	2.1	2.5	2.6	2.8	3.8	2.8	2.2	3.4	1.3	0.8	0.3	0.2	0.1	0.5	0.8	0.6	0.5	0.5	1.6	5.0
2-Sep	0.5	0.6	0.0	Z	0.8	0.2	0.0	0.3	0.4	0.5	0.7	0.7	1.3	2.0	0.0	0.3	0.0	0.4	0.3	0.2	0.4	0.3	0.2	0.6	0.5	2.0
3-Sep	0.4	0.3	0.3	0.4	Z	0.6	0.3	0.7	0.7	0.3	0.2	0.5	0.5	0.5	0.5	0.8	0.6	0.6	0.5	0.4	0.4	0.5	0.5	0.4	0.5	0.8
4-Sep	0.4	0.6	0.4	0.3	0.5	Z	1.1	0.3	0.2	0.4	0.7	0.2	0.0	0.1	0.2	0.1	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.2	1.1
5-Sep	Z	0.0	0.0	0.0	0.0	0.0	0.0	0.3	0.1	0.0	0.0	0.0	0.1	0.0	0.0	0.0	0.0	0.2	0.1	0.2	0.6	0.4	0.1	0.1	0.1	0.6
6-Sep	0.3	Z	1.2	1.4	2.0	4.6	8.7	7.0	2.9	1.1	0.5	0.4	0.1	0.1	0.2	0.2	0.5	0.6	0.1	0.8	0.6	0.1	0.1	0.1	1.5	8.7
7-Sep	0.2	0.2	Z	0.4	0.1	0.1	0.4	0.4	0.3	0.0	0.4	0.6	1.2	0.9	1.4	1.7	1.7	2.1	1.3	1.0	1.3	0.8	0.6	0.5	0.8	2.1
8-Sep	0.0	0.3	0.2	Z	0.6	0.3	0.3	0.0	0.2	0.1	0.2	0.2	0.3	0.2	0.3	0.5	0.7	1.5	2.7	0.6	0.1	0.1	0.0	0.0	0.4	2.7
9-Sep	0.1	0.0	0.1	0.3	Z	0.5	0.4	0.5	0.1	0.5	0.8	0.4	0.4	0.4	0.7	0.3	0.1	0.1	0.3	0.2	0.1	0.1	0.1	0.2	0.3	0.8
10-Sep	0.3	0.1	0.0	0.1	0.2	Z	0.5	0.5	0.4	0.2	0.3	0.0	0.1	0.1	0.0	0.2	0.2	0.1	0.3	0.0	0.0	0.1	0.0	0.0	0.2	0.5
11-Sep	Z	0.4	0.2	0.0	0.0	0.2	0.1	1.1	0.5	0.0	0.0	0.0	0.0	0.1	0.1	0.1	0.2	0.1	0.1	0.1	0.0	0.0	0.0	0.0	0.1	1.1
12-Sep	0.0	Z	0.3	0.3	0.7	0.6	0.8	0.7	1.7	2.0	1.4	0.9	0.9	1.1	0.7	0.6	0.9	0.8	0.5	0.7	0.5	0.5	0.8	0.5	0.8	2.0
13-Sep	0.6	1.0	Z	0.9	0.7	0.7	0.6	0.5	0.4	0.2	0.7	0.8	1.4	0.8	0.2	0.1	0.0	0.3	0.8	0.5	1.2	0.2	0.1	0.3	0.6	1.4
14-Sep	0.7	0.3	0.4	Z	0.8	0.4	0.4	0.6	0.4	0.4	0.2	0.5	0.3	0.2	0.3	0.2	0.4	0.5	0.6	0.4	0.4	0.3	0.3	0.4	0.4	0.8
15-Sep	0.5	0.3	0.3	0.4	Z	0.7	0.4	0.4	0.2	0.0	0.2	0.1	0.1	0.1	0.1	0.1	0.0	0.0	0.0	0.1	0.1	0.0	0.2	0.0	0.2	0.7
16-Sep	0.0	0.0	0.0	3.1	9.0	Z	8.3	8.9	11.6	9.8	6.6	0.5	0.1	0.0	0.0	0.0	0.0	0.0	0.2	0.0	0.1	0.1	0.1	0.0	2.5	11.6
17-Sep	Z	0.3	0.1	0.1	0.1	0.8	4.1	5.8	6.6	5.3	C	C	C	C	C	C	1.9	0.9	1.0	0.8	0.8	0.7	0.5	0.5	--	6.6
18-Sep	0.4	Z	2.2	2.5	5.2	9.7	7.9	8.9	1.3	0.2	0.3	0.0	0.5	0.0	0.0	0.1	0.1	0.0	0.2	0.2	0.0	0.0	0.0	0.0	1.7	9.7
19-Sep	0.1	0.0	Z	2.6	0.9	0.4	0.4	0.3	0.3	0.2	0.2	0.1	0.1	0.0	0.4	0.4	0.4	0.2	0.8	0.6	1.0	0.2	0.7	0.0	0.5	2.6
20-Sep	0.3	0.2	0.5	Z	2.8	1.1	0.8	0.8	0.9	0.3	0.6	0.4	0.3	0.2	0.2	0.1	0.2	0.3	0.2	0.6	0.3	0.1	0.4	0.2	0.5	2.8
21-Sep	0.2	0.2	0.1	0.1	Z	2.9	1.4	1.1	0.4	0.4	0.5	0.4	0.5	0.8	0.6	0.3	0.4	0.3	0.3	0.1	0.2	0.4	0.4	0.4	0.5	2.9
22-Sep	0.3	0.3	0.2	0.2	0.3	Z	3.1	1.1	0.7	0.7	0.6	0.5	0.3	0.3	0.3	0.1	0.3	0.4	1.4	1.0	0.2	0.4	0.2	0.1	0.6	3.1
23-Sep	Z	2.8	1.1	0.8	0.6	0.2	0.4	0.0	0.1	0.0	0.6	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.1	0.1	0.0	1.3	3.1	0.5	3.1
24-Sep	4.3	Z	5.3	2.2	1.4	1.8	2.5	1.9	1.5	1.6	0.7	0.3	0.2	0.5	0.3	1.1	0.9	0.2	0.2	0.2	0.3	0.3	0.6	0.4	1.2	5.3
25-Sep	0.7	0.6	Z	3.7	1.4	1.2	1.2	0.8	1.0	1.1	0.9	1.1	1.1	1.1	2.6	5.2	7.9	8.1	10.1	11.1	11.0	6.4	4.1	3.1	3.7	11.1
26-Sep	1.7	1.3	0.7	Z	4.1	1.8	1.2	1.4	1.0	1.2	0.7	0.9	0.6	0.7	0.4	0.4	0.4	0.5	0.4	0.4	0.5	0.0	0.1	0.2	0.9	4.1
27-Sep	0.3	0.1	0.0	0.0	Z	0.1	0.0	0.1	0.7	2.0	0.5	0.3	0.3	1.7	3.4	2.0	0.5	0.4	1.1	0.4	2.0	3.1	2.6	1.6	1.0	3.4
28-Sep	0.9	0.7	0.4	0.4	0.2	Z	0.4	0.3	0.3	0.4	0.4	0.4	0.3	0.4	0.4	0.5	0.4	0.2	0.4	0.5	0.7	0.4	0.3	0.3	0.4	0.9
29-Sep	Z	2.0	2.3	2.0	1.6	1.1	1.1	2.7	2.8	5.9	7.0	4.7	2.2	1.6	1.3	0.6	1.2	0.5	0.4	0.1	0.7	0.2	0.0	0.0	1.8	7.0
30-Sep	0.1	Z	0.4	0.2	0.1	0.1	0.5	1.6	1.2	0.0	0.3	0.2	0.2	0.1	0.0	0.0	0.2	0.2	0.0	0.0	0.0	0.0	0.0	0.0	0.2	1.6
	0.5	0.5	0.7	1.1	1.4	1.3	1.6	1.7	1.4	1.3	1.0	0.6	0.5	0.6	0.6	0.6	0.7	0.7	0.8	0.7	0.8	0.5	0.5	0.5	Diurnal Average	
	4.3	2.8	5.3	5.0	9.0	9.7	8.7	8.9	11.6	9.8	7.0	4.7	2.2	3.4	3.4	5.2	7.9	8.1	10.1	11.1	11.0	6.4	4.1	3.1	Diurnal Maximum	

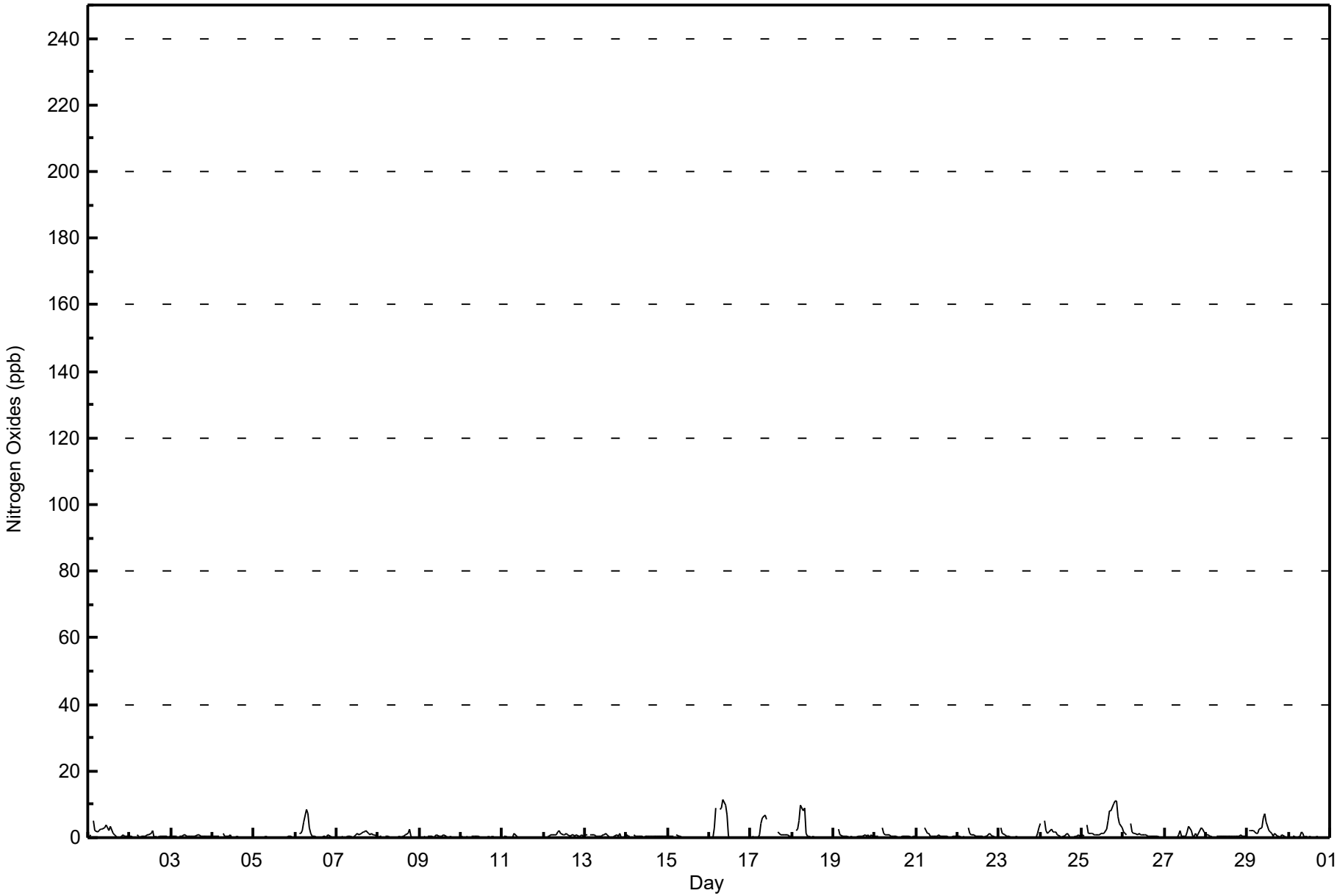
Z - zerospan C - Calibration

Wood Buffalo Environmental Association

Hourly Averages

Nitrogen Oxides (NO_X) - ppb

Fort Chipewyan - September 2024



Nitrogen Oxides (NO_X) - ppb
Fort Chipewyan - September 2024

Concentration Ranges (ppb)	Number of Hours	%	Cumulative %
0 - 20	684	100.00	100.00
21 - 40	0	0.00	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: 684

Total Number of Hours: 720

Wood Buffalo Environmental Association

Frequency Distribution

Nitrogen Oxides (NO_X) - ppb

Fort Chipewyan - September 2024

Concentration Ranges (ppb)	Wind Direction																
	N	NNE	NE	ENE	E	ESE	SE	SSE	S	SSW	SW	WSW	W	WNW	NW	NNW	**Totals**
0 - 20	7	10	26	49	83	46	21	25	19	31	53	58	71	83	58	43	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	7	10	26	49	83	46	21	25	19	31	53	58	71	83	58	43	683

Total Number of Valid Hours: 683

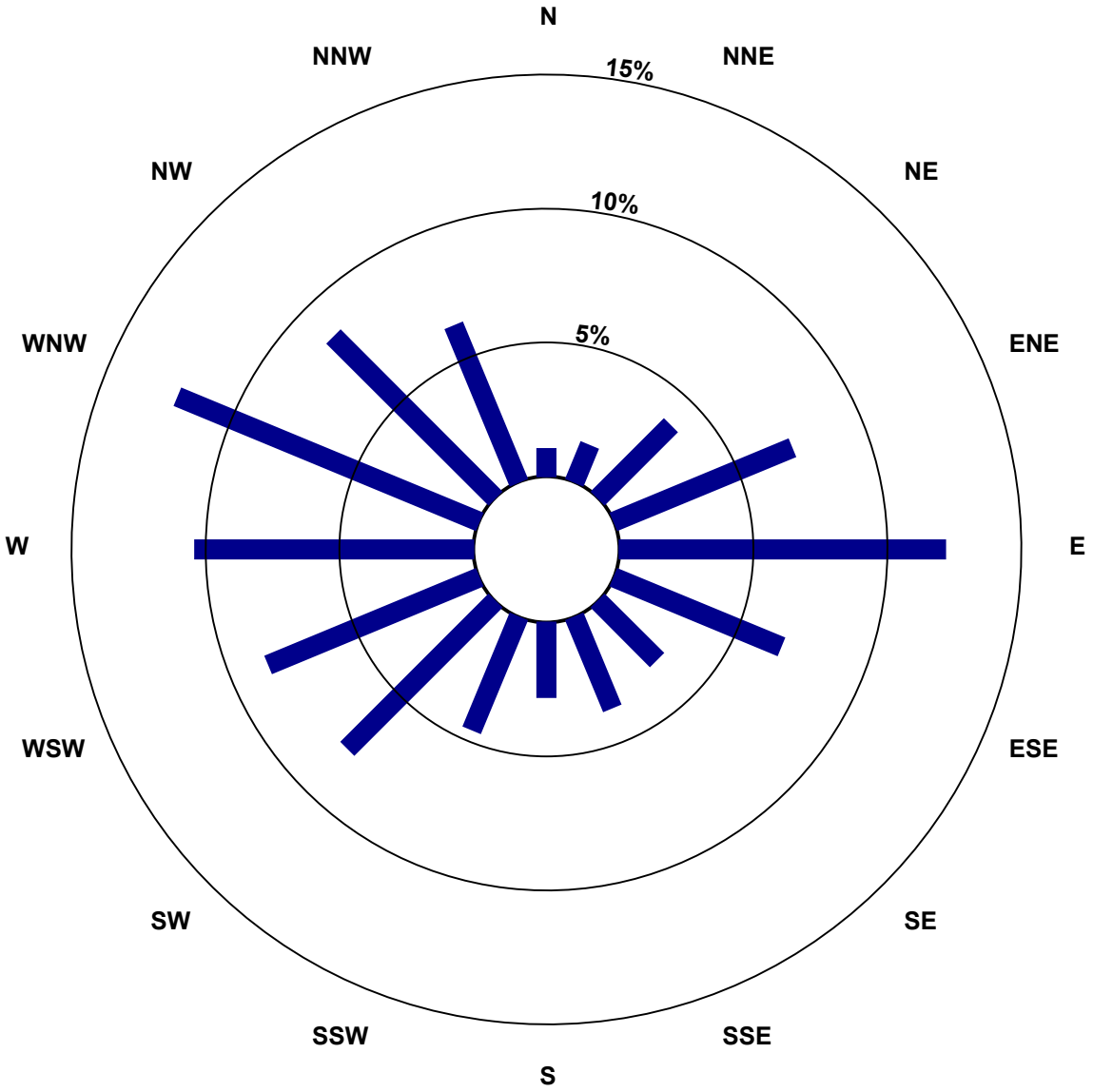
Total Number of Hours: 720

Wood Buffalo Environmental Association

Wind Rose Sep 2024

Nitrogen Oxides (NO_X) - ppb

Fort Chipewyan



Classes (ppb)

0 - 20

21 - 40

11 - 80

81 - 159

> 159

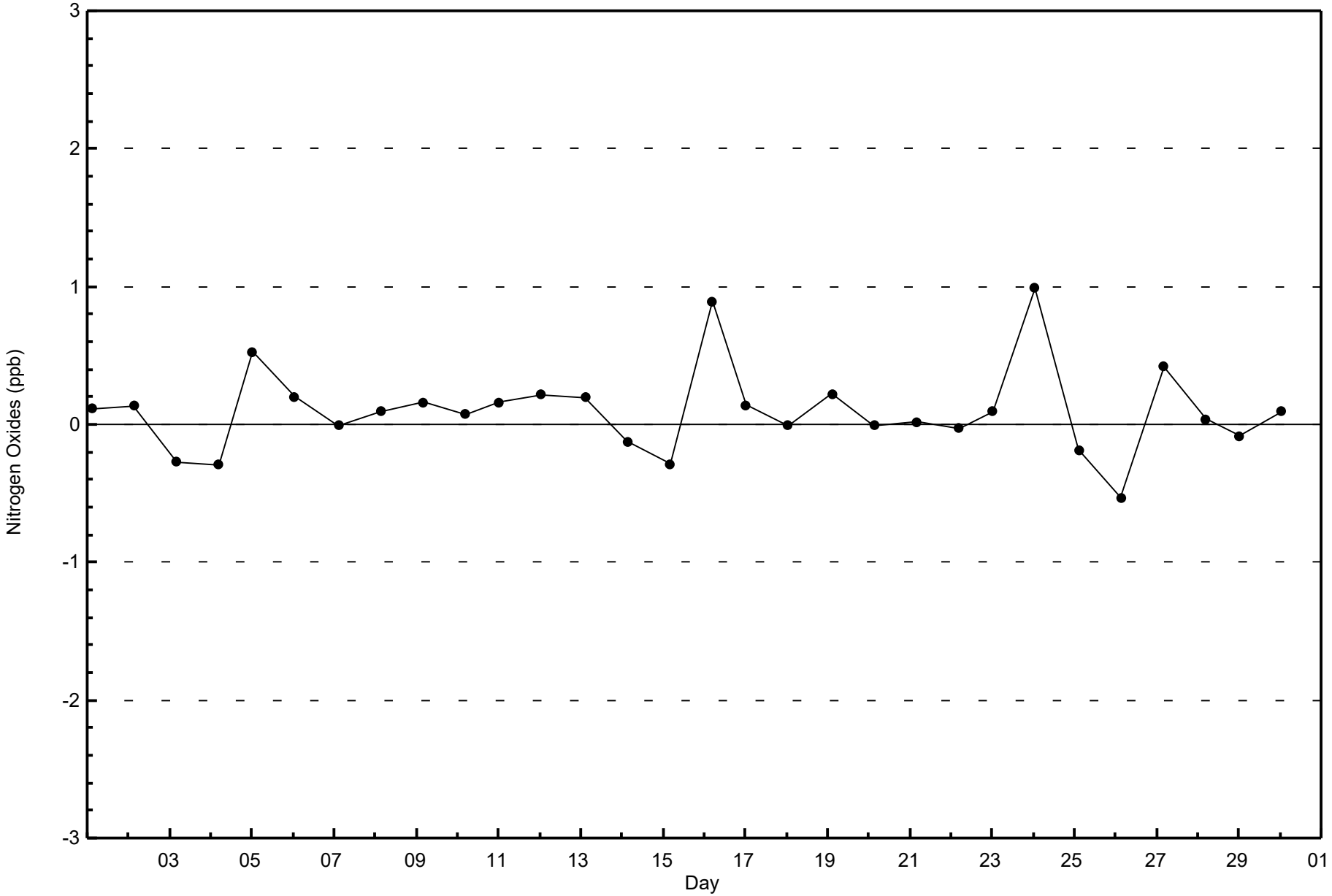
Total Number of Valid Hours: 683

Wood Buffalo Environmental Association

Zero Responses

Nitrogen Oxides (NO_X) - ppb

Fort Chipewyan - September 2024

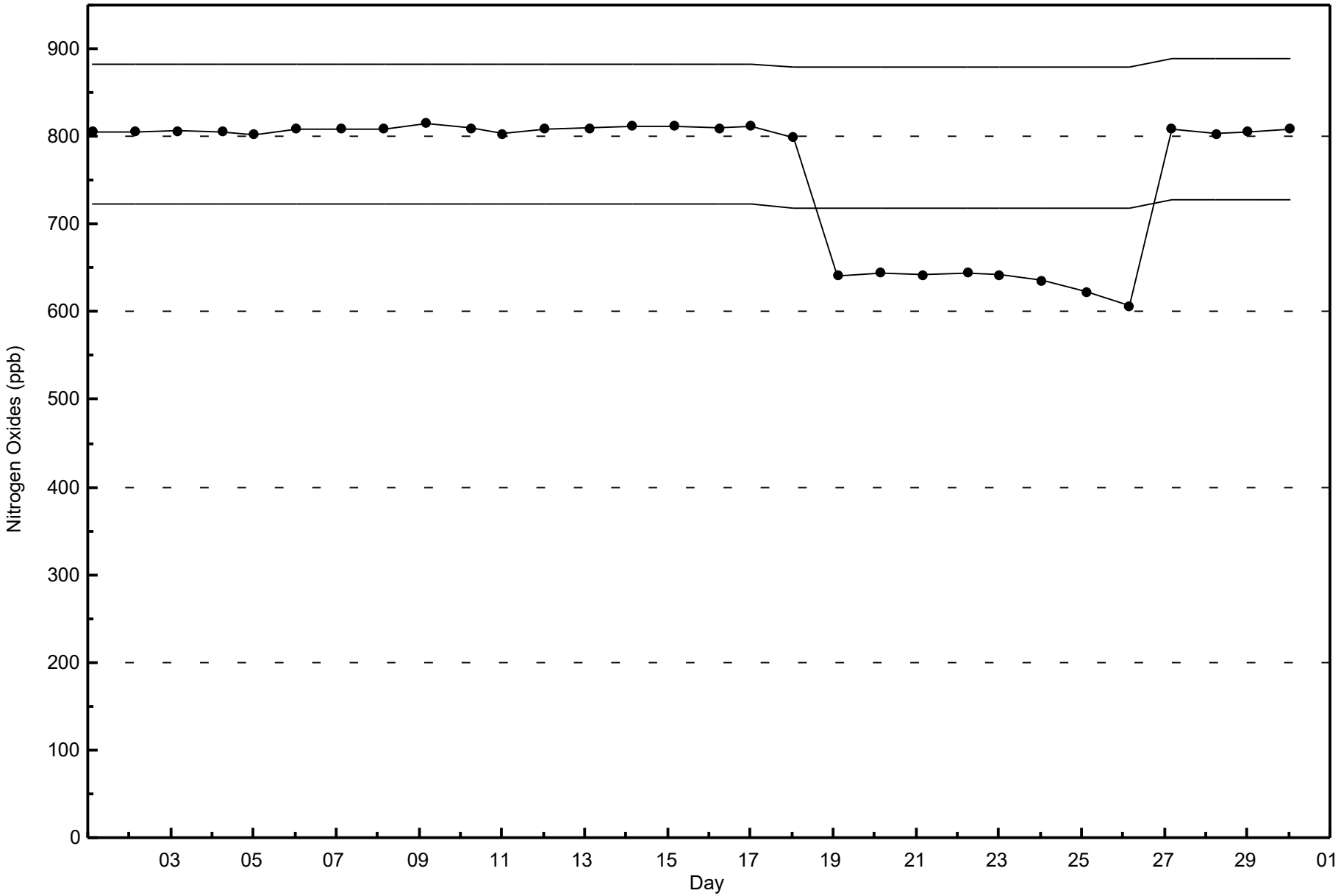


Wood Buffalo Environmental Association

Span Responses

Nitrogen Oxides (NO_X) - ppb

Fort Chipewyan - September 2024



Wood Buffalo Environmental Association

Summary of Hour Averages

Ozone (O_3) - ppb

Fort Chipewyan - September 2024

Number of Exceedences (AAAQO): 1-hr: 0 24-hr: 0
Maximum Value: 51.5 ppb on Sep 7 18:00 Maximum Daily Average: 30.2 ppb on Sep 12

Minimum Value: 5.1 ppb on Sep 16 06:00 Minimum Daily Average: 16.7 ppb on Sep 24
Maximum Diurnal Average: 28.4 ppb at hour 16 Minimum Diurnal Average: 18.3 ppb at hour 8
Monthly Average: 23.73 ppb Percentiles: P_1 = 8.5 P_{10} = 16.2 Q_1 = 19.3 Median = 23.5 Q_3 = 28.4 P_{90} = 32.1 P_{99} = 36.7

Hours in Service:	720
Hours of Data:	686
Hours of Missing Data:	34
Hours of Calibration:	33
Percent Operational Time:	99.9

Day	Hourly Period Ending At (MST)																								Daily	Daily
	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24	Average	Maximum
1-Sep	Z	26.8	21.6	19.0	22.0	23.0	22.6	22.7	22.6	21.1	20.8	25.5	31.2	36.2	34.4	30.8	25.1	22.6	24.2	33.9	33.3	33.7	30.3	27.7	26.6	36.2
2-Sep	25.6	Z	21.2	19.9	18.6	17.5	16.7	13.0	12.7	C	C	C	27.0	34.3	28.7	26.0	25.7	29.3	30.5	33.7	34.4	35.5	32.2	25.9	25.4	35.5
3-Sep	21.1	19.8	Z	17.4	18.6	20.7	23.6	22.7	24.1	23.8	23.7	23.6	24.5	25.1	25.8	26.1	24.6	24.6	22.2	21.0	19.5	18.4	19.4	19.0	22.1	26.1
4-Sep	17.6	17.7	17.9	Z	18.7	16.3	16.3	16.9	14.0	14.5	19.5	18.0	21.0	24.2	28.7	27.3	27.2	26.1	23.7	22.6	20.9	22.6	28.8	23.7	21.1	28.8
5-Sep	22.0	22.6	20.8	19.7	Z	27.2	20.6	16.4	23.6	26.9	29.8	28.7	28.1	31.4	33.7	33.3	32.1	32.1	29.8	30.7	31.1	30.7	29.6	29.6	27.4	33.7
6-Sep	29.0	28.0	27.3	27.0	26.7	Z	20.5	22.8	26.8	27.3	26.0	26.8	28.0	29.6	33.0	34.2	31.2	29.3	29.5	28.1	27.5	27.6	25.4	23.9	27.6	34.2
7-Sep	Z	22.2	22.9	20.7	20.7	17.6	16.8	16.9	15.2	17.4	19.3	20.0	27.4	26.6	26.3	44.2	45.4	51.5	38.5	35.1	36.9	34.5	29.0	27.8	27.5	51.5
8-Sep	22.3	Z	19.3	18.8	18.6	18.8	20.0	21.1	22.4	26.7	29.8	32.1	32.6	33.6	33.4	30.8	33.7	33.8	31.2	27.8	27.9	29.1	33.0	32.9	27.4	33.8
9-Sep	30.3	32.4	Z	34.1	32.3	32.3	29.5	23.5	22.1	22.6	22.9	24.0	23.2	19.5	19.4	20.0	20.8	24.7	24.8	19.8	16.3	19.4	19.9	18.9	24.0	34.1
10-Sep	18.5	19.3	18.1	Z	16.6	15.6	15.0	16.9	21.8	24.7	25.1	26.8	30.8	32.1	29.0	29.0	29.8	29.1	29.2	29.2	29.2	25.5	26.5	23.1	24.4	32.1
11-Sep	25.7	23.9	19.2	20.1	Z	17.5	14.8	14.8	19.8	22.2	23.2	27.0	28.5	30.2	30.3	30.0	30.6	32.2	32.1	33.2	31.2	29.1	28.9	29.5	25.8	33.2
12-Sep	29.6	28.8	27.8	27.8	28.9	Z	25.6	24.9	24.7	28.7	35.0	36.8	36.6	36.7	35.5	35.1	34.3	33.5	31.4	29.0	27.1	27.1	25.8	23.9	30.2	36.8
13-Sep	Z	20.4	19.1	17.3	13.2	10.7	8.0	15.6	22.7	21.2	21.7	23.2	26.1	27.5	29.9	31.4	30.3	26.5	23.8	24.4	23.4	24.6	21.4	23.5	22.0	31.4
14-Sep	23.9	Z	17.7	15.6	14.8	13.5	12.4	12.0	12.6	13.8	15.2	16.2	21.8	23.6	22.9	24.7	25.0	24.1	23.2	22.4	22.0	19.6	17.6	17.5	18.8	25.0
15-Sep	22.6	23.5	Z	23.6	23.8	21.6	17.2	19.5	23.9	23.3	23.6	23.3	23.9	23.2	24.1	25.9	23.9	25.2	23.7	22.2	20.6	20.4	22.4	23.5	22.8	25.9
16-Sep	22.9	20.7	18.5	Z	9.2	5.1	11.1	12.5	13.3	14.2	17.5	26.1	27.8	28.3	28.9	28.5	28.9	29.7	27.9	25.6	25.0	26.0	25.8	24.6	21.7	29.7
17-Sep	23.7	22.9	21.4	21.2	Z	18.7	15.4	16.5	13.3	15.4	21.7	24.0	26.6	28.2	29.6	30.6	30.9	31.7	31.2	32.1	30.6	28.2	29.6	31.4	25.0	32.1
18-Sep	32.6	29.6	27.0	25.5	22.0	Z	15.7	14.3	17.8	21.2	22.7	23.5	25.4	24.8	31.0	32.1	33.7	32.6	29.6	29.1	29.7	28.8	27.2	26.1	26.2	33.7
19-Sep	Z	22.6	20.2	20.6	22.2	24.0	23.6	24.4	21.9	21.6	25.0	30.6	31.0	32.3	33.7	35.6	32.9	29.0	28.2	27.5	27.8	28.2	24.6	26.5	26.7	35.6
20-Sep	26.4	Z	21.6	20.5	19.2	18.6	17.1	16.4	16.7	18.5	22.5	25.1	26.4	28.3	27.6	24.9	24.0	23.8	23.1	21.6	20.2	19.7	19.2	18.0	21.7	28.3
21-Sep	16.1	14.4	Z	12.1	10.7	9.5	7.7	9.6	10.3	10.5	13.7	15.8	19.3	19.4	20.7	21.9	21.4	23.0	22.5	23.0	23.5	22.2	22.2	22.1	17.0	23.5
22-Sep	22.2	21.4	20.5	Z	19.9	18.8	19.0	19.0	18.9	18.6	18.1	18.2	18.6	19.9	21.3	21.3	21.1	21.4	19.3	18.7	19.0	18.7	18.0	18.1	19.6	22.2
23-Sep	17.4	16.3	16.7	16.7	Z	16.4	16.0	18.3	18.1	16.2	15.6	16.6	18.5	19.4	20.5	20.6	20.8	20.2	20.5	21.9	20.4	18.7	16.0	12.0	18.0	21.9
24-Sep	8.5	7.0	9.1	10.7	10.8	Z	8.8	8.0	7.9	8.0	9.0	11.4	12.9	15.8	18.7	18.2	19.0	18.7	24.9	29.8	29.8	31.0	33.2	32.6	16.7	33.2
25-Sep	Z	27.5	30.6	28.9	29.1	31.0	32.9	32.6	31.7	29.7	29.4	30.7	30.8	29.6	26.3	24.2	20.2	16.9	14.9	14.2	14.9	18.0	19.0	17.0	25.2	32.9
26-Sep	17.0	Z	14.1	18.2	22.5	24.1	25.0	23.1	23.2	25.2	28.2	29.2	32.0	35.3	36.2	M	36.6	31.8	35.6	38.8	33.6	32.2	32.4	28.6	28.3	38.8
27-Sep	26.3	25.9	Z	23.2	22.0	21.2	20.8	20.5	21.1	23.3	25.0	29.0	27.4	25.5	28.2	34.3	36.2	32.4	28.6	29.1	29.5	28.3	23.8	21.0	26.2	36.2
28-Sep	22.5	23.5	23.2	Z	19.5	19.4	20.7	18.5	16.2	18.2	20.5	22.1	24.7	24.5	22.1	24.1	25.7	24.5	21.8	20.5	19.0	18.2	18.9	18.6	21.2	25.7
29-Sep	19.8	20.5	19.0	19.2	Z	18.2	18.6	17.1	11.8	13.7	14.6	21.3	24.1	24.5	29.3	32.1	29.7	30.0	25.0	23.2	23.6	25.4	26.2	26.1	22.3	32.1
30-Sep	24.9	25.2	26.2	25.0	23.1	Z	19.6	19.2	19.0	21.2	22.5	22.2	23.0	24.8	25.3	27.4	28.0	25.1	23.7	25.1	22.1	22.9	23.1	22.4	23.5	28.0
	22.7	22.5	20.8	20.9	20.1	19.1	18.4	18.3	19.0	20.3	22.1	24.1	26.0	27.1	27.8	28.4	28.3	27.8	26.5	26.4	25.7	25.5	25.0	23.9	Diurnal Average	
	32.6	32.4	30.6	34.1	32.3	32.3	32.9	32.6	31.7	29.7	35.0	36.8	36.6	36.7	36.2	44.2	45.4	51.5	38.5	38.8	36.9	35.5	33.2	32.9	Diurnal Maximum	

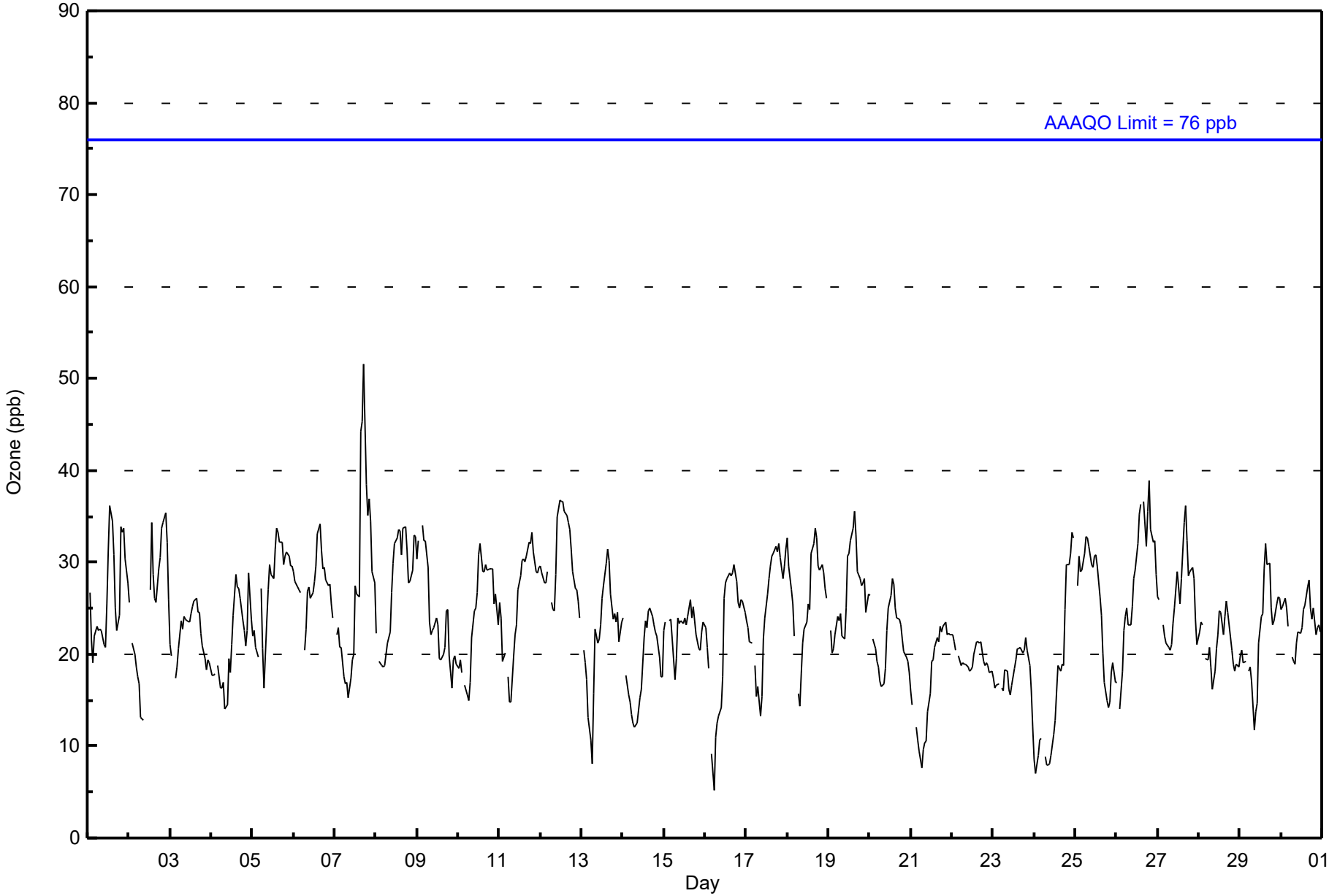
Z - zerospan C - Calibration M - Maintenance
Alberta Ambient Air Quality Objectives (AAAQO): 1-hr 76 ppb

Wood Buffalo Environmental Association

Hourly Averages

Ozone (O_3) - ppb

Fort Chipewyan - September 2024



Concentration Ranges (ppb)	Number of Hours	%	Cumulative %
0 - 20	209	30.47	30.47
21 - 50	476	69.39	99.85
51 - 82	1	0.15	100.00
> 83	0	0.00	100.00

Total Number of Valid Hours: 686

Total Number of Hours: 720

Concentration Ranges (ppb)	Wind Direction																
	N	NNE	NE	ENE	E	ESE	SE	SSE	S	SSW	SW	WSW	W	WNW	NW	NNW	**Totals**
0 - 20	0	2	9	15	24	16	3	6	5	13	19	11	21	36	20	9	209
21 - 50	7	7	17	35	54	29	20	20	15	18	36	45	49	46	39	36	473
51 - 82	0	0	0	0	1	0	0	0	0	0	0	0	0	0	0	0	1
> 83	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Totals	7	9	26	50	79	45	23	26	20	31	55	56	70	82	59	45	683

Total Number of Valid Hours: 683

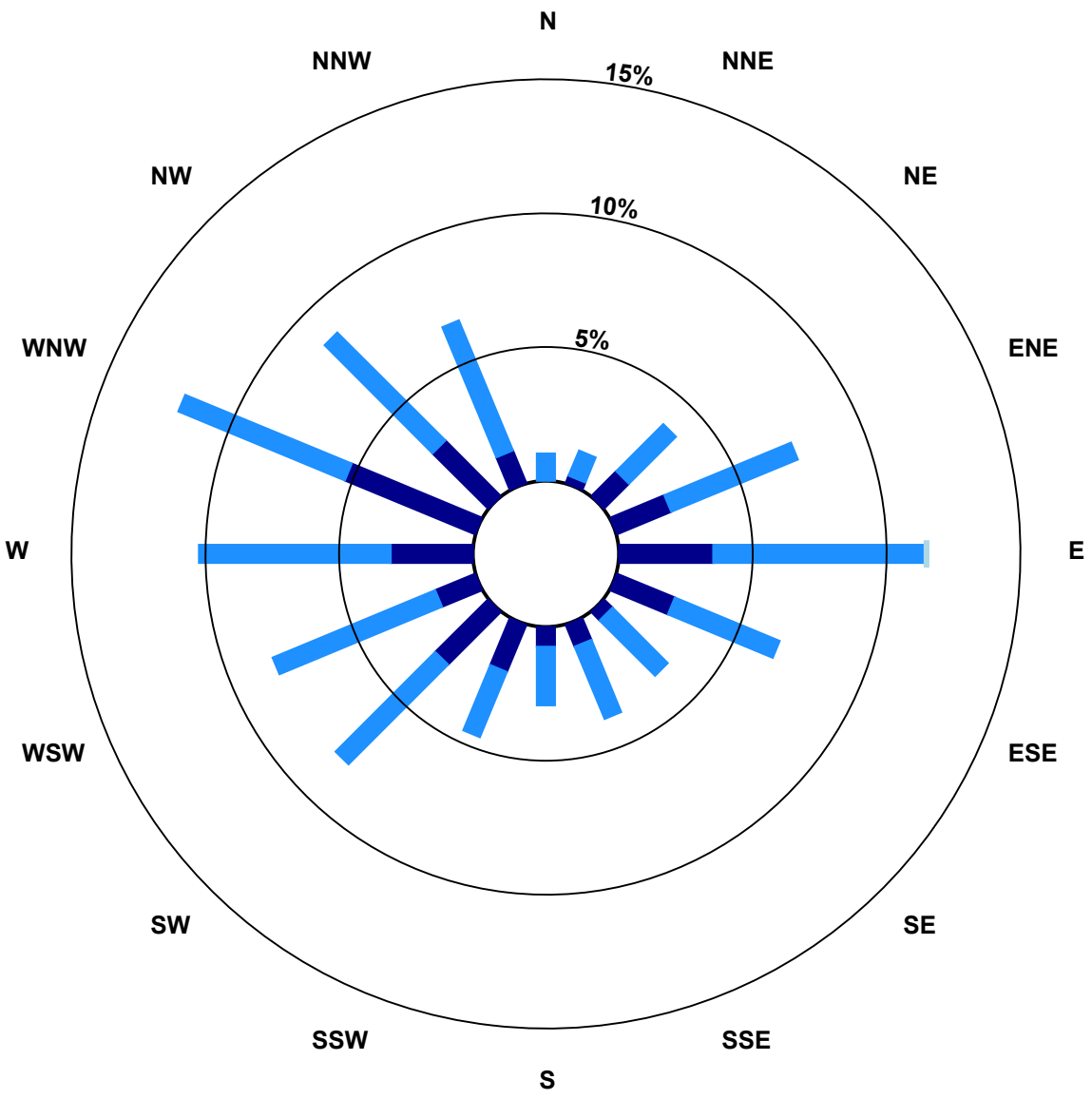
Total Number of Hours: 720

Wood Buffalo Environmental Association

Wind Rose Sep 2024

Ozone (O_3) - ppb

Fort Chipewyan



Classes (ppb)

0 - 20

21 - 50

51 - 82

> 83

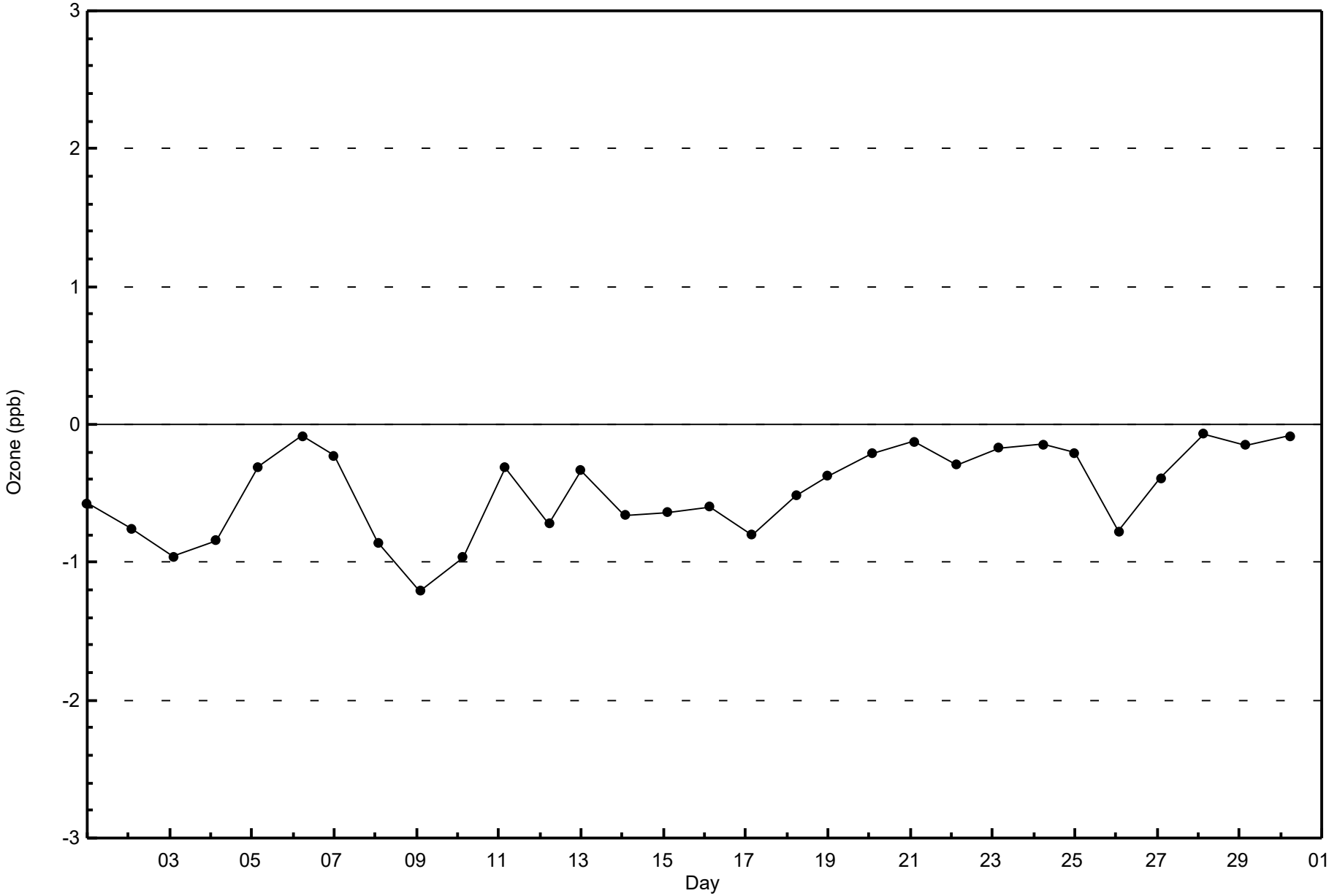
Total Number of Valid Hours: 683

Wood Buffalo Environmental Association

Zero Responses

Ozone (O_3) - ppb

Fort Chipewyan - September 2024

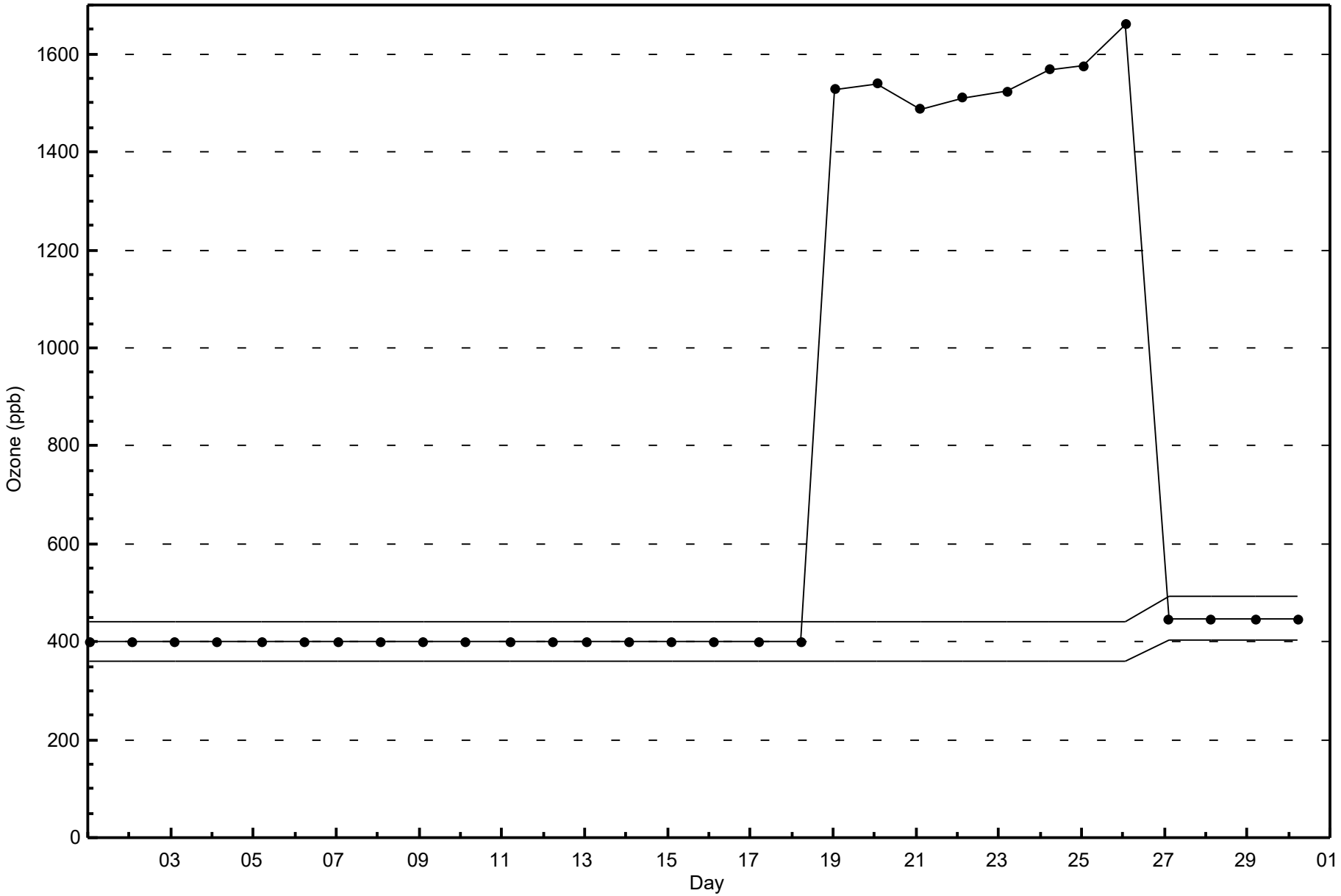


Wood Buffalo Environmental Association

Span Responses

Ozone (O_3) - ppb

Fort Chipewyan - September 2024



Wood Buffalo Environmental Association

Summary of Hour Averages

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

Fort Chipewyan - September 2024

Number of Exceedences (AAAQO): 1-hr: 32 24-hr: 3

Maximum Value: 144.9 $\mu g/m^3$ on Sep 13 01:00

Maximum Daily Average: 90.0 $\mu g/m^3$ on Sep 12

Minimum Value: 0.4 $\mu g/m^3$ on Sep 21 09:00

Minimum Daily Average: 1.5 $\mu g/m^3$ on Sep 21

Maximum Diurnal Average: 15.9 $\mu g/m^3$ at hour 6

Minimum Diurnal Average: 10.2 $\mu g/m^3$ at hour 16

Monthly Average: 13.20 $\mu g/m^3$

Percentiles: P_1 = 0.8 P_{10} = 2.5 Q_1 = 3.5 Median = 5.5 Q_3 = 10.9 P_{90} = 23.3 P_{99} = 134.4

Hours in Service:	720
Hours of Data:	718
Hours of Missing Data:	2
Hours of Calibration:	2
Percent Operational Time:	100.0

Day	Hourly Period Ending At (MST)																								Daily	Daily
	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24	Average	Maximum
1-Sep	3.3	5.3	7.2	7.7	7.1	6.7	7.7	8.6	8.6	7.8	7.9	8.0	8.5	8.7	7.0	5.5	4.0	3.3	3.6	6.9	8.2	8.2	7.0	7.0	6.8	8.7
2-Sep	6.8	6.7	8.1	13.0	16.6	17.5	13.2	5.6	5.9	7.0	7.8	9.9	9.0	10.3	3.9	3.9	3.8	28.1	20.2	9.6	6.3	5.5	10.2	14.8	10.2	28.1
3-Sep	11.1	7.4	6.1	6.1	5.2	4.5	4.5	4.4	3.9	3.3	2.9	2.6	2.4	2.4	2.6	2.4	2.3	3.3	2.6	2.0	2.1	2.7	2.5	2.7	3.8	11.1
4-Sep	2.7	2.7	2.7	2.5	2.5	2.5	2.4	2.7	3.6	5.6	6.9	9.1	9.6	11.0	8.2	7.6	7.7	8.3	8.4	10.0	8.7	8.1	4.7	4.4	5.9	11.0
5-Sep	4.4	4.5	4.3	4.2	4.2	4.2	4.1	6.5	4.0	3.9	3.9	4.0	4.3	4.3	5.0	5.6	5.6	7.2	7.5	10.3	13.4	15.3	13.0	13.2	6.5	15.3
6-Sep	9.7	8.2	8.1	9.3	8.8	9.0	10.9	10.4	9.6	11.6	11.9	13.9	13.6	13.0	10.9	9.1	9.7	9.0	7.9	7.2	6.7	6.9	7.3	7.4	9.6	13.9
7-Sep	7.8	8.1	7.8	8.0	8.5	8.4	8.8	9.3	9.5	10.1	10.0	10.6	13.2	13.0	12.8	19.3	22.8	24.2	17.8	17.0	18.9	16.9	15.7	19.6	13.3	24.2
8-Sep	15.9	16.8	16.7	18.0	20.1	19.9	20.0	12.7	12.9	9.6	9.0	10.8	16.1	17.8	41.2	40.1	80.4	109.5	78.6	72.8	43.5	43.6	28.9	30.5	32.7	109.5
9-Sep	35.6	36.2	32.8	38.7	45.8	49.1	50.0	39.8	28.3	25.8	22.5	22.8	23.5	17.9	18.6	11.6	7.8	12.6	12.6	17.3	6.9	6.8	10.4	19.3	24.7	50.0
10-Sep	24.6	18.3	18.1	20.9	25.6	23.2	19.8	19.6	15.3	16.4	15.0	10.9	7.9	8.3	10.5	9.2	8.4	8.9	11.8	13.3	13.4	13.5	14.0	14.1	15.0	25.6
11-Sep	15.3	15.2	14.1	13.3	13.3	12.4	9.8	8.2	7.9	7.4	8.8	13.3	12.8	12.7	13.1	12.3	10.5	9.0	9.5	9.7	12.4	11.6	10.4	9.5	11.4	15.3
12-Sep	14.1	23.9	28.6	40.4	62.8	87.3	100.2	118.9	107.4	90.9	91.9	91.9	108.7	119.9	77.5	83.1	100.8	106.4	99.4	90.1	113.6	126.2	136.4	138.9	90.0	138.9
13-Sep	144.9	144.0	143.2	139.5	139.4	126.5	110.6	96.0	72.6	71.7	101.7	116.8	136.0	100.2	22.2	13.5	12.2	21.8	24.6	23.2	22.4	20.7	20.4	18.6	76.8	144.9
14-Sep	13.5	15.8	19.4	23.6	27.7	31.4	31.7	31.1	30.5	28.0	28.2	30.5	17.0	10.5	8.8	5.4	5.1	6.1	6.2	6.2	6.1	6.1	6.1	5.7	16.7	31.7
15-Sep	3.1	2.2	2.3	2.6	2.1	2.7	3.5	3.5	2.2	1.9	1.7	1.5	1.2	1.2	1.3	1.5	1.5	2.0	1.9	1.9	1.4	2.3	2.7	2.2	2.1	3.5
16-Sep	2.0	2.3	3.8	6.7	10.0	14.9	17.3	16.1	13.0	10.4	8.2	4.5	4.5	5.2	5.2	5.2	4.9	4.0	3.1	3.0	3.0	2.9	2.9	3.1	6.5	17.3
17-Sep	3.1	3.2	3.1	3.0	3.1	3.3	4.4	4.5	4.7	4.4	3.7	3.6	3.9	3.9	4.4	4.3	4.6	4.6	4.6	5.1	5.1	5.4	4.8	4.0	4.1	5.4
18-Sep	4.1	4.7	5.4	5.7	6.7	7.7	7.0	C	C	7.3	14.0	14.9	12.0	13.9	7.6	7.1	7.2	7.0	7.2	7.3	7.1	6.7	6.3	5.8	7.8	14.9
19-Sep	4.9	5.2	5.0	4.7	4.2	3.8	3.6	3.5	3.3	3.0	2.7	2.8	3.1	3.9	5.4	6.0	5.2	5.5	6.0	5.9	8.0	6.3	6.1	4.5	4.7	8.0
20-Sep	4.4	4.4	4.5	4.7	4.9	6.0	7.6	9.2	9.8	9.3	7.1	6.3	5.7	3.5	1.8	1.0	0.7	0.7	0.7	0.9	1.9	0.9	1.2	0.9	4.1	9.8
21-Sep	0.9	0.9	0.8	0.9	0.9	0.8	0.9	0.7	0.4	0.8	0.9	0.8	0.7	0.9	1.2	1.6	1.9	2.2	2.5	2.6	2.7	2.6	3.2	3.8	1.5	3.8
22-Sep	4.2	3.9	3.9	4.2	4.2	4.1	4.0	4.0	4.0	4.1	4.1	4.2	4.3	4.5	4.5	4.4	3.9	3.7	3.3	3.4	3.5	3.6	3.8	3.6	4.0	4.5
23-Sep	3.3	3.1	3.0	3.0	3.0	3.6	3.3	2.9	2.6	2.8	3.2	3.6	3.5	3.5	3.3	3.0	2.5	2.5	2.8	3.8	4.1	4.1	5.2	6.5	3.4	6.5
24-Sep	7.2	7.6	6.4	4.0	2.8	2.6	2.4	2.8	2.9	3.6	3.0	2.4	2.1	2.2	2.3	2.7	3.1	3.4	4.3	5.7	6.0	5.7	5.5	5.3	4.0	7.6
25-Sep	5.4	4.7	3.5	3.2	3.1	3.0	2.9	2.8	2.7	2.7	2.7	2.2	2.3	2.0	2.4	2.9	3.2	3.3	4.0	4.5	4.8	3.9	3.6	3.6	3.3	5.4
26-Sep	3.1	3.0	3.3	6.3	9.4	7.7	6.5	6.3	6.1	5.6	4.5	4.0	3.3	3.0	3.7	3.0	3.5	4.4	3.6	2.1	2.5	2.9	3.4	4.5	4.4	9.4
27-Sep	5.2	5.6	5.6	5.3	5.0	4.9	4.7	4.7	4.7	4.7	4.7	4.8	4.7	5.0	5.1	4.9	4.3	4.5	4.6	4.9	6.4	6.8	8.0	6.0	5.2	8.0
28-Sep	5.6	4.9	5.1	4.1	3.3	2.9	2.4	2.6	2.9	3.3	3.8	4.2	3.6	3.3	5.5	16.4	17.7	13.1	11.6	10.4	13.5	10.4	7.3	6.2	6.8	17.7
29-Sep	5.6	5.0	4.8	4.5	4.1	3.7	3.7	4.6	7.0	4.2	4.5	5.1	5.0	4.8	5.0	4.6	5.0	4.8	5.5	4.4	5.0	4.6	4.2	3.9	4.7	7.0
30-Sep	3.7	3.4	3.1	3.0	3.1	3.0	3.1	3.4	4.1	4.7	13.2	18.5	15.6	8.9	8.2	8.2	3.7	3.4	4.3	3.4	3.5	3.5	2.6	1.8	5.6	18.5
	12.5	12.6	12.7	13.7	15.2	15.9	15.7	15.4	13.5	12.4	13.7	14.6	15.3	14.0	10.3	10.2	11.8	14.2	12.7	12.2	12.0	12.1	11.9	12.4	Diurnal Average	
	144.9	144.0	143.2	139.5	139.4	126.5	110.6	118.9	107.4	90.9	101.7	116.8	136.0	119.9	77.5	83.1	100.8	109.5	99.4	90.1	113.6	126.2	136.4	138.9	Diurnal Maximum	

C - Calibration

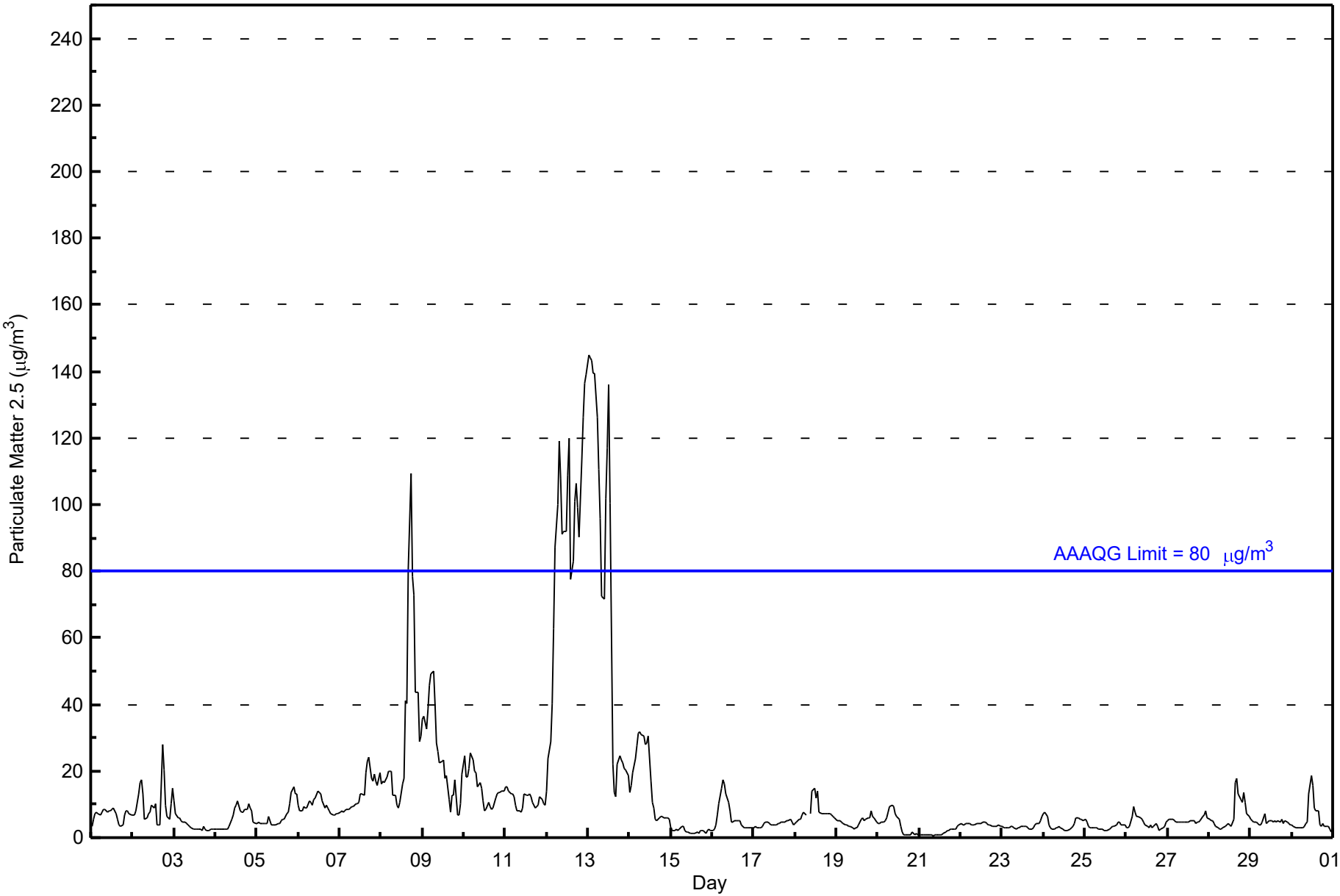
Alberta Ambient Air Quality Guideline/Objectives: 1-hr 80 $\mu g/m^3$ 24-hr 29 $\mu g/m^3$

Wood Buffalo Environmental Association

Hourly Averages

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

Fort Chipewyan - September 2024



Concentration Ranges ($\mu g/m^3$)	Number of Hours	%	Cumulative %
0 - 5	358	49.86	49.86
6 - 15	239	33.29	83.15
16 - 25	55	7.66	90.81
26 - 80	35	4.87	95.68
> 81.0	31	4.32	100.00

Total Number of Valid Hours: 718

Total Number of Hours: 720

Wood Buffalo Environmental Association

Frequency Distribution

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

Fort Chipewyan - September 2024

Concentration Ranges ($\mu g/m^3$)	Wind Direction																
	N	NNE	NE	ENE	E	ESE	SE	SSE	S	SSW	SW	WSW	W	WNW	NW	NNW	**Totals**
0 - 5	4	5	11	27	37	26	13	13	7	17	33	24	36	37	39	26	355
6 - 15	1	1	5	11	29	10	9	11	8	15	20	31	29	30	12	17	239
16 - 25	0	3	2	1	9	2	0	1	2	0	2	3	8	12	7	3	55
26 - 80	2	0	10	7	2	2	0	0	0	0	0	0	0	7	4	1	35
> 81.0	0	1	0	4	9	10	1	2	3	0	1	0	0	0	0	0	31
Totals	7	10	28	50	86	50	23	27	20	32	56	58	73	86	62	47	715

Total Number of Valid Hours: 715

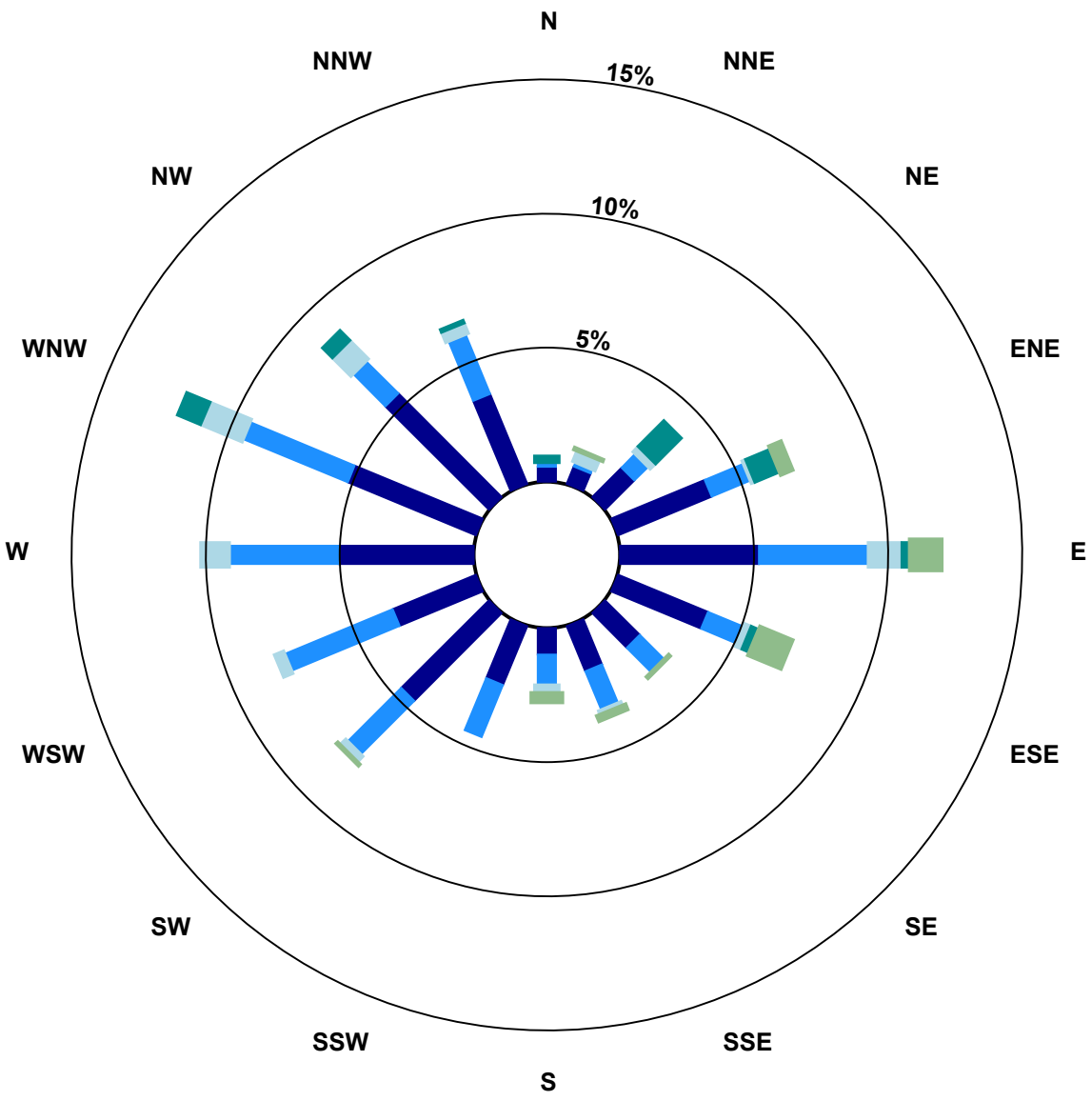
Total Number of Hours: 720

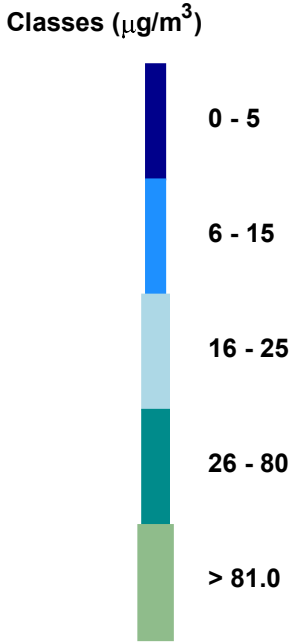
Wood Buffalo Environmental Association

Wind Rose Sep 2024

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

Fort Chipewyan





Total Number of Valid Hours: 715

Wood Buffalo Environmental Association

Summary of Hour Averages

Carbon Monoxide (CO) - ppm

Fort Chipewyan - September 2024

Number of Exceedences (AAAQO): 1-hr: 0 24-hr: 0

Maximum Value: 0.4 ppm on Sep 13 02:00

Maximum Daily Average: 0.2 ppm on Sep 12

Minimum Value: 0.0 ppm on Sep 1 01:00

Minimum Daily Average: 0.0 ppm on Sep 1

Maximum Diurnal Average: 0.0 ppm at hour 6

Minimum Diurnal Average: 0.0 ppm at hour 4

Monthly Average: 0.03 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} = 0.4

Hours in Service:	720
Hours of Data:	685
Hours of Missing Data:	35
Hours of Calibration:	34
Percent Operational Time:	99.9

Day	Hourly Period Ending At (MST)																								Daily	Daily
	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24	Average	Maximum
1-Sep	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
2-Sep	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	0.0	0.0	0.0	0.1	0.0	0.1
3-Sep	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
4-Sep	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
5-Sep	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
6-Sep	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-Sep	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-Sep	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	0.1	0.1	0.1	0.2	0.3	0.2	0.2	0.1	0.1	0.0	0.0	0.1	0.3
9-Sep	0.0	0.0	0.0	0.0	0.0	Z	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	0.0	0.0	0.0	0.0	0.1	0.0	0.1
10-Sep	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	0.1	0.0	0.0	0.0	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1
11-Sep	0.1	Z	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	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.1
12-Sep	0.0	0.1	Z	0.1	0.2	0.2	0.3	0.3	0.3	0.2	0.2	0.2	0.2	0.3	0.2	0.2	0.3	0.3	0.2	0.2	0.3	0.4	0.4	0.4	0.2	0.4
13-Sep	0.4	0.4	0.4	Z	0.4	0.4	0.4	0.3	0.2	0.2	0.3	0.3	0.3	0.2	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.2	0.4
14-Sep	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
15-Sep	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
16-Sep	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
17-Sep	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-Sep	0.0	0.0	Z	0.0	0.0	C	C	C	C	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-Sep	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	0.1	0.0	0.0	0.0	0.0	0.1
20-Sep	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
21-Sep	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
22-Sep	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
23-Sep	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
24-Sep	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
25-Sep	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
26-Sep	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
27-Sep	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
28-Sep	Z	0.0	0.0	0.0	0.0	0.0	0.0	0.0	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	0.0
29-Sep	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	0.0	0.0	0.1
30-Sep	0.0	0.0	Z	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.1	0.1	0.1	0.1	0.1	0.0	0.0	0.0	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	0.0	0.0	0.0	0.0	0.0	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	
	0.4	0.4	0.4	0.1	0.4	0.4	0.4	0.3	0.3	0.2	0.3	0.3	0.3	0.3	0.2	0.2	0.3	0.3	0.2	0.2	0.3	0.4	0.4	0.4	Diurnal Maximum	

Z - zerospan C - Calibration UO - Unstable Operation

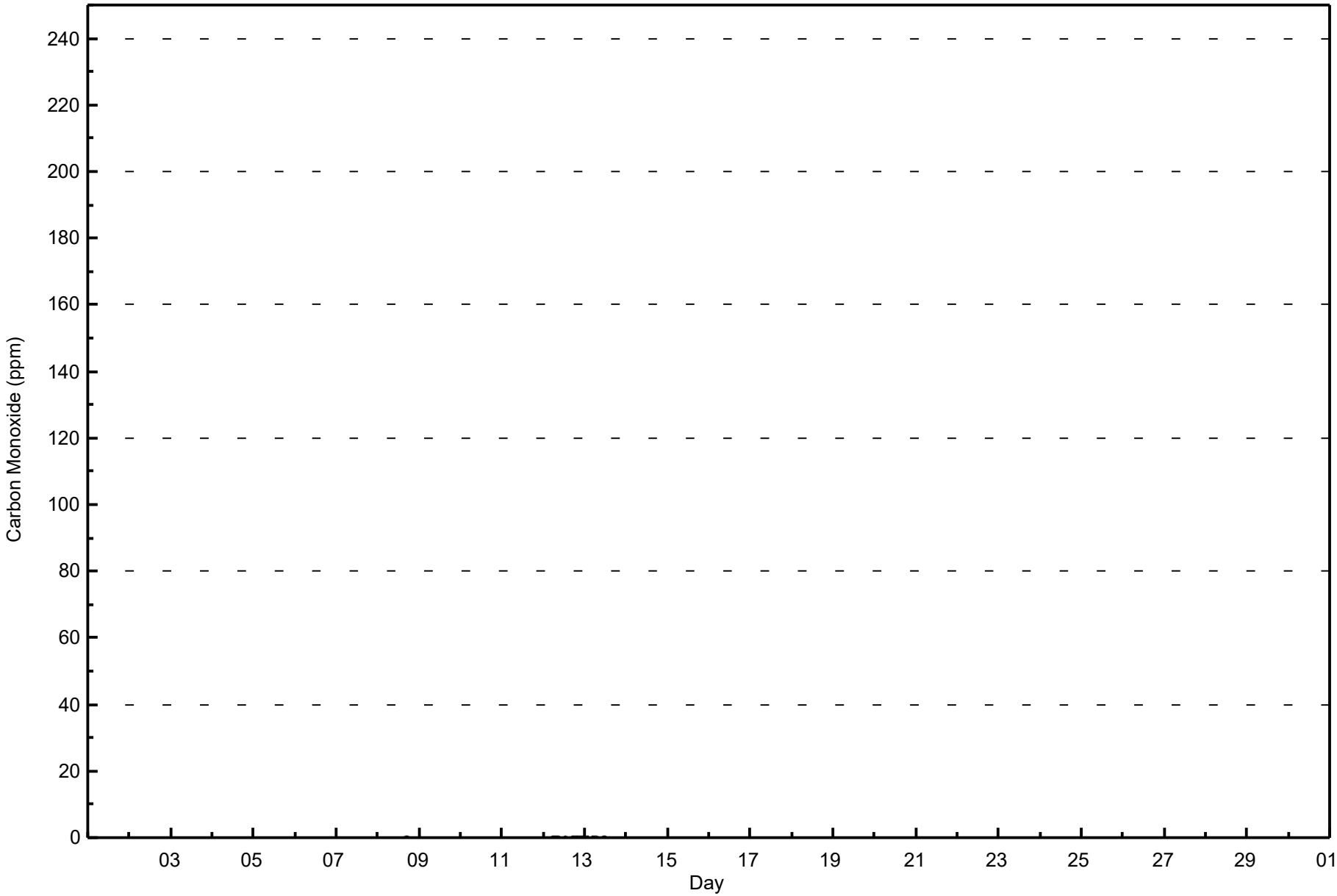
Alberta Ambient Air Quality Objectives (AAAQO): 1-hr 13 ppm

Wood Buffalo Environmental Association

Hourly Averages

Carbon Monoxide (CO) - ppm

Fort Chipewyan - September 2024



Concentration Ranges (ppm)	Number of Hours	%	Cumulative %
0 - 0.3	676	98.69	98.69
0.4 - 0.5	9	1.31	100.00
0.6 - 0.7	0	0.00	100.00
0.8 - 1.4	0	0.00	100.00
1.5 - 10	0	0.00	100.00
> 10	0	0.00	100.00

Total Number of Valid Hours: 685

Total Number of Hours: 720

Wood Buffalo Environmental Association

Frequency Distribution

Carbon Monoxide (CO) - ppm

Fort Chipewyan - September 2024

Concentration Ranges (ppm)	Wind Direction																
	N	NNE	NE	ENE	E	ESE	SE	SSE	S	SSW	SW	WSW	W	WNW	NW	NNW	**Totals**
0 - 0.3	7	10	25	47	81	45	22	24	19	28	53	56	72	82	58	44	673
0.4 - 0.5	0	0	0	1	5	2	0	0	0	0	1	0	0	0	0	0	9
0.6 - 0.7	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
0.8 - 1.4	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
1.5 - 10	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
Totals	7	10	25	48	86	47	22	24	19	28	54	56	72	82	58	44	682

Total Number of Valid Hours: 682

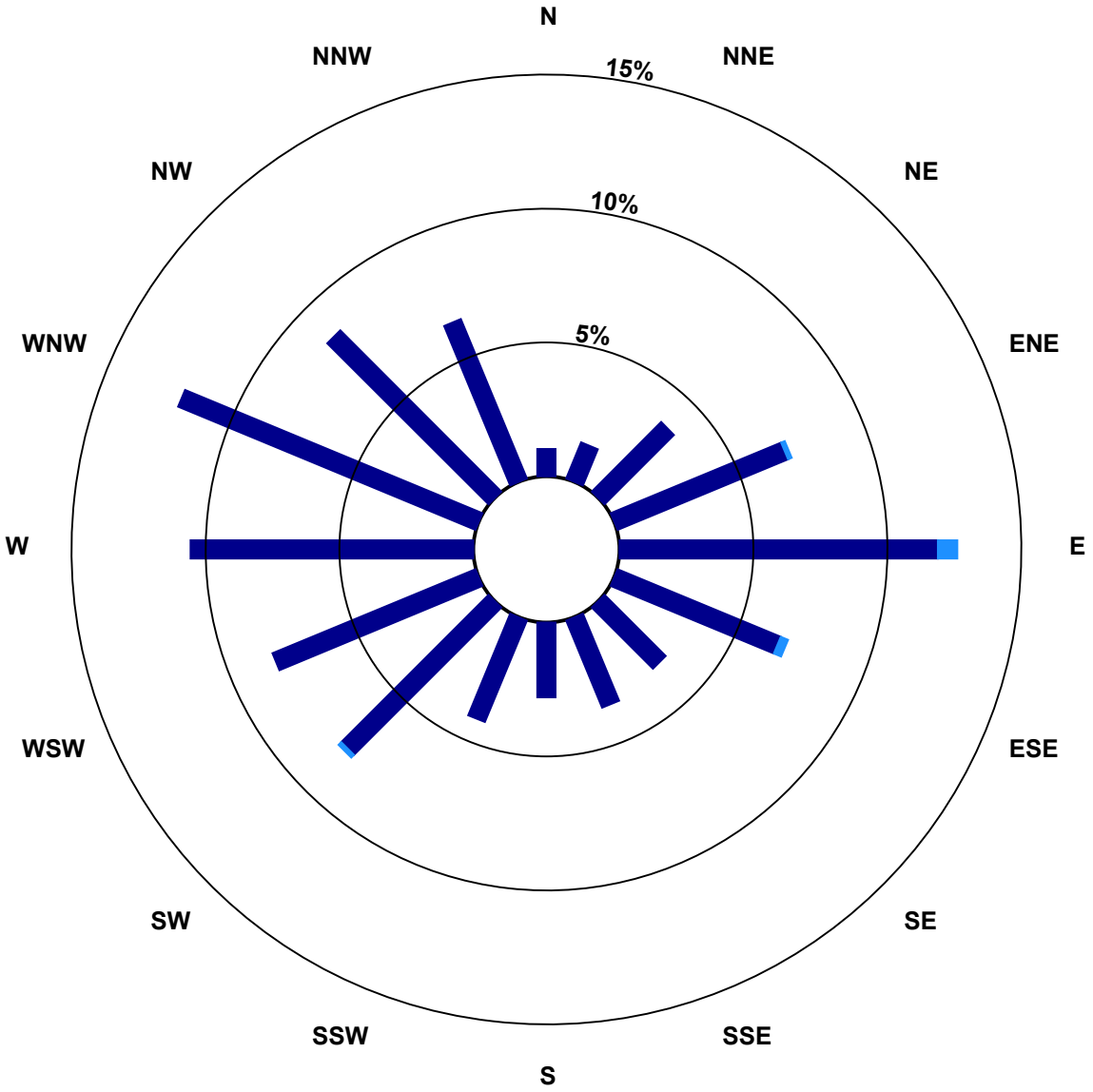
Total Number of Hours: 720

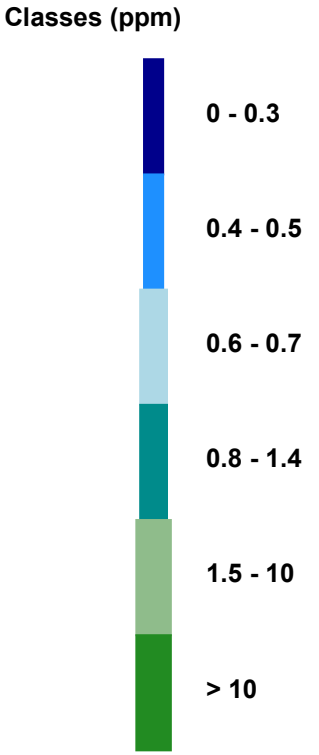
Wood Buffalo Environmental Association

Wind Rose Sep 2024

Carbon Monoxide (CO) - ppm

Fort Chipewyan





Total Number of Valid Hours: 682

Wood Buffalo Environmental Association

Summary of Hour Averages

Carbon Dioxide (CO_2) - ppm

Fort Chipewyan - September 2024

Number of Exceedences (AAAQO): 1-hr: 0 24-hr: 0

Maximum Value: 487.6 ppm on Sep 2 08:00

Maximum Daily Average: 442.1 ppm on Sep 24

Minimum Value: 412.2 ppm on Sep 6 18:00

Minimum Daily Average: 421.8 ppm on Sep 5

Maximum Diurnal Average: 443.5 ppm at hour 7

Minimum Diurnal Average: 424.4 ppm at hour 17

Monthly Average: 432.29 ppm

Percentiles: P_1 = 414.7 P_{10} = 421.7 Q_1 = 425.8 Median = 430.5 Q_3 = 436.2 P_{90} = 446.3 P_{99} = 462.5

Hours in Service:	720
Hours of Data:	686
Hours of Missing Data:	34
Hours of Calibration:	34
Percent Operational Time:	100.0

Day	Hourly Period Ending At (MST)																								Daily	Daily
	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24	Average	Maximum
1-Sep	425.8	430.6	434.8	Z	435.1	434.5	434.5	433.2	433.4	432.6	430.1	427.3	425.8	425.0	423.6	421.7	422.0	423.5	424.8	424.7	427.8	427.9	431.2	436.2	429.0	436.2
2-Sep	434.8	435.6	432.4	430.9	Z	435.8	449.9	487.6	483.5	468.4	462.4	455.9	449.8	437.4	425.8	426.7	427.1	428.5	425.4	423.8	424.6	425.1	427.7	431.0	440.4	487.6
3-Sep	430.8	429.2	429.0	430.6	428.3	Z	423.7	424.5	422.5	421.1	419.2	417.5	416.8	416.3	416.9	416.6	416.3	418.0	418.7	420.8	422.6	426.9	425.9	427.7	422.6	430.8
4-Sep	Z	431.4	430.7	429.8	430.0	434.9	436.0	434.6	436.9	432.0	424.4	425.9	422.2	417.7	417.1	414.6	413.9	414.3	415.8	420.3	423.8	423.0	419.1	423.6	424.9	436.9
5-Sep	426.1	Z	429.4	437.2	426.8	422.9	430.4	438.8	426.5	419.2	415.9	414.8	414.6	414.8	415.7	415.3	414.5	414.4	415.0	418.4	421.9	424.6	422.7	421.8	421.8	438.8
6-Sep	421.9	423.4	Z	426.8	429.4	432.9	436.1	434.3	430.5	431.1	429.2	425.3	422.9	421.2	419.5	417.4	414.7	412.2	417.5	422.3	425.5	427.0	433.3	437.2	425.7	437.2
7-Sep	443.6	447.2	442.7	Z	450.1	462.8	474.0	462.3	458.6	442.3	437.3	433.4	426.4	431.0	427.9	427.0	426.9	426.9	426.1	428.8	432.4	432.7	439.9	446.8	440.3	474.0
8-Sep	451.8	453.9	459.6	462.9	Z	455.8	453.4	450.2	443.8	432.7	427.4	424.4	425.0	426.9	427.3	431.6	428.5	429.4	430.2	430.8	429.5	429.4	428.7	428.2	437.4	462.9
9-Sep	430.7	430.0	430.2	430.0	431.6	Z	434.3	438.3	437.5	434.7	433.5	432.0	432.4	437.4	438.3	437.2	436.8	433.7	432.4	433.3	434.7	432.8	432.6	433.4	433.8	438.3
10-Sep	Z	432.7	433.9	434.6	435.8	436.8	435.7	433.2	427.8	424.3	423.3	422.2	421.1	420.8	420.4	419.8	419.6	420.3	422.1	423.0	423.3	431.2	428.8	435.1	427.2	436.8
11-Sep	429.3	Z	444.6	442.0	441.7	445.7	459.1	451.2	439.3	435.2	432.2	427.1	423.9	422.1	421.5	420.6	420.2	420.5	421.6	422.0	420.7	421.4	422.2	423.1	430.8	459.1
12-Sep	424.7	427.7	Z	432.0	432.0	434.8	438.1	436.3	432.1	429.1	423.5	421.3	421.1	420.1	419.4	421.0	420.8	420.9	420.6	422.0	425.9	427.5	428.1	429.2	426.4	438.1
13-Sep	431.5	432.7	435.1	Z	446.2	456.2	476.0	447.1	427.8	429.0	427.8	429.7	429.0	426.8	421.6	422.9	423.4	423.9	427.3	428.2	430.3	431.2	439.3	436.7	433.9	476.0
14-Sep	440.6	445.9	450.5	452.5	Z	457.3	457.0	452.8	447.6	442.1	438.3	434.6	427.1	425.6	424.6	424.0	423.5	424.8	427.1	431.5	433.6	439.3	442.4	440.9	438.4	457.3
15-Sep	431.5	428.7	428.9	429.2	428.9	Z	438.7	433.9	425.5	425.4	424.6	423.8	423.3	422.6	421.4	421.2	422.8	422.9	423.7	425.3	426.4	429.1	431.9	434.2	427.1	438.7
16-Sep	Z	439.2	438.6	439.5	441.4	446.0	447.0	446.3	444.4	440.4	435.1	428.3	427.2	427.3	426.6	424.8	422.5	422.4	424.7	430.2	433.1	431.2	431.2	435.2	434.0	447.0
17-Sep	440.2	Z	447.0	445.9	447.3	448.8	449.6	444.5	447.2	440.3	434.6	432.7	430.9	429.6	429.8	428.1	429.2	426.6	427.9	428.2	427.1	428.5	429.0	430.5	435.8	449.6
18-Sep	433.2	438.6	Z	440.2	443.6	447.8	452.7	453.6	445.6	433.8	430.7	430.1	427.8	428.8	425.9	425.4	424.9	424.4	426.6	429.0	431.0	433.3	438.5	440.5	435.0	453.6
19-Sep	441.2	448.5	452.1	Z	447.6	444.8	444.9	442.5	443.6	441.7	436.2	427.8	426.6	426.1	426.3	426.6	426.8	429.3	431.5	431.6	433.3	432.0	438.2	433.9	436.2	452.1
20-Sep	434.5	434.1	445.0	448.7	Z	455.1	454.1	449.1	442.7	436.1	429.1	426.9	425.7	425.2	425.5	426.4	426.1	426.4	427.2	428.7	431.3	432.6	435.4	435.7	434.8	455.1
21-Sep	436.3	437.1	437.8	438.6	441.0	Z	446.2	438.3	437.3	438.3	432.4	429.9	427.1	427.3	427.0	426.6	426.2	425.8	425.2	425.1	425.9	427.6	428.3	429.8	432.0	446.2
22-Sep	Z	431.3	432.5	432.3	433.2	435.2	435.2	435.5	434.9	434.3	434.5	433.6	432.9	432.0	431.0	429.8	428.8	428.2	428.3	427.9	428.1	429.5	429.7	428.1	431.6	435.5
23-Sep	426.9	Z	428.7	429.5	429.9	430.6	432.2	429.5	430.3	431.9	432.0	430.9	C	C	C	C	420.2	420.3	420.2	421.6	425.2	428.8	432.8	438.8	428.4	438.8
24-Sep	444.2	448.1	Z	454.8	451.8	451.2	446.8	450.9	451.5	446.8	447.9	445.4	444.0	441.6	437.5	436.8	434.9	435.2	434.5	431.0	431.9	433.3	433.3	435.7	442.1	454.8
25-Sep	442.7	447.9	441.4	Z	439.7	439.2	436.1	435.7	435.8	435.8	433.2	430.0	427.9	428.4	435.2	439.5	442.3	445.9	451.1	454.5	455.0	451.9	451.3	455.6	441.6	455.6
26-Sep	453.8	455.8	459.4	452.2	Z	441.9	437.8	441.1	438.7	434.5	432.3	430.0	426.8	424.2	424.2	423.1	425.2	428.5	426.5	424.9	429.4	430.2	431.2	431.2	434.9	459.4
27-Sep	432.4	433.2	432.8	439.4	444.0	Z	446.2	444.6	441.3	435.5	433.5	430.0	430.9	432.0	430.6	425.5	424.0	424.5	426.5	427.0	428.7	431.3	439.2	442.9	433.7	446.2
28-Sep	Z	441.3	429.6	434.1	429.9	429.2	427.6	429.6	432.0	430.3	427.9	427.5	425.6	424.9	425.0	423.8	422.9	423.2	425.9	430.1	434.2	436.2	433.8	433.2	429.5	441.3
29-Sep	431.8	Z	432.4	432.5	434.6	436.2	435.3	435.4	439.8	432.9	428.2	421.5	420.2	421.6	422.3	421.4	422.3	421.7	426.5	428.2	428.8	429.4	430.7	430.8	428.9	439.8
30-Sep	431.9	430.2	Z	429.5	431.6	434.7	436.8	434.9	433.6	431.9	431.4	431.2	430.9	428.7	427.9	424.7	423.1	424.2	425.8	426.3	429.6	429.0	425.0	423.6	429.4	436.8
	434.9	437.4	438.4	438.2	437.3	442.0	443.5	442.3	439.1	434.8	431.6	429.0	427.1	426.3	425.4	424.8	424.4	424.7	425.9	427.3	429.2	430.5	432.0	433.7	Diurnal Average	
	453.8	455.8	459.6	462.9	451.8	462.8	476.0	487.6	483.5	468.4	462.4	455.9	449.8	441.6	438.3	439.5	442.3	445.9	451.1	454.5	455.0	451.9	451.3	455.6	Diurnal Maximum	

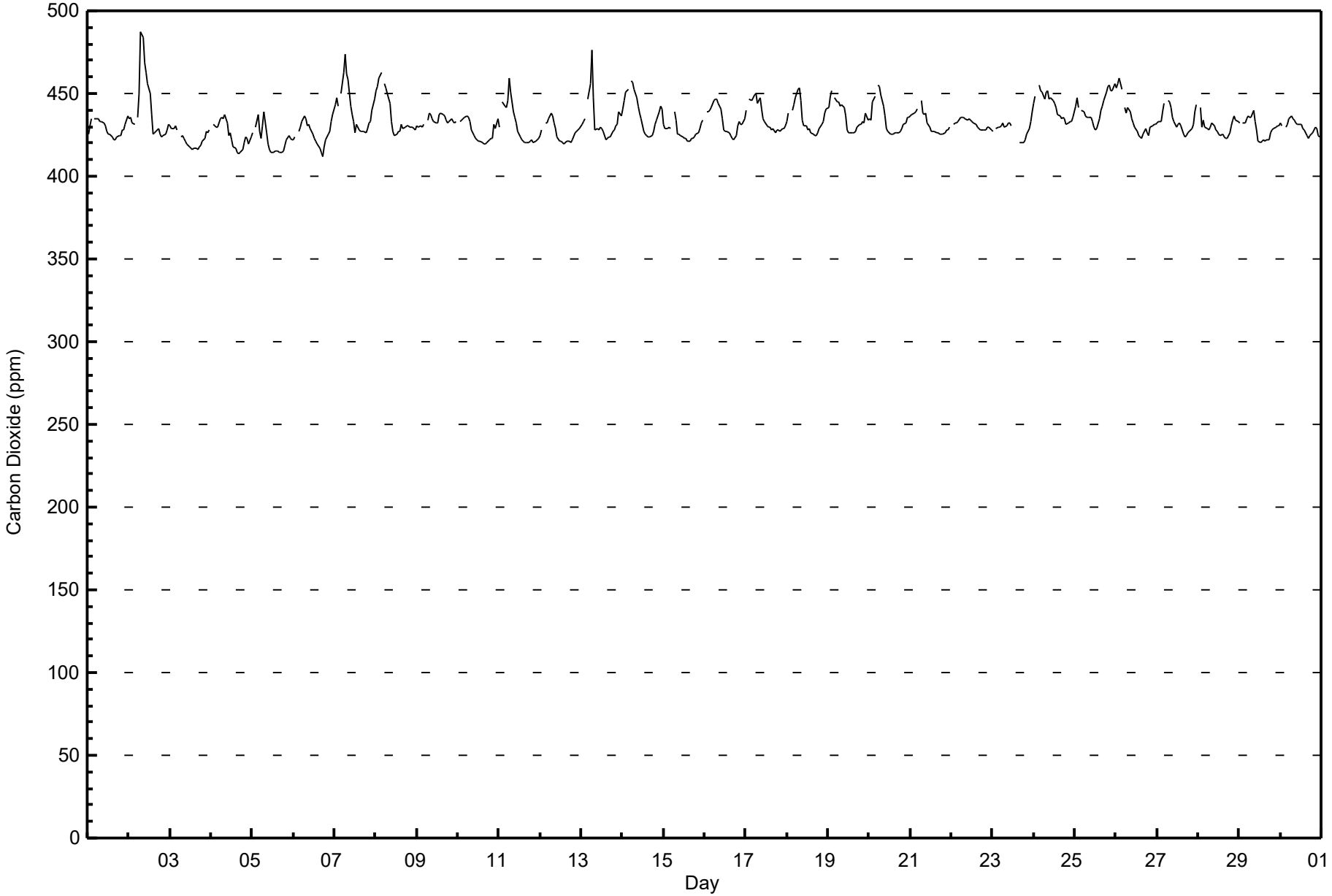
Z - zerospan C - Calibration

Wood Buffalo Environmental Association

Hourly Averages

Carbon Dioxide (CO_2) - ppm

Fort Chipewyan - September 2024



Carbon Dioxide (CO_2) - ppm
Fort Chipewyan - September 2024

Concentration Ranges (ppm)	Number of Hours	%	Cumulative %
400 - 420	45	6.56	6.56
420 - 440	524	76.38	82.94
440 - 460	108	15.74	98.69
460 - 480	7	1.02	99.71
480 - 500	2	0.29	100.00
> 500	0	0.00	100.00

Total Number of Valid Hours: 686

Total Number of Hours: 720

Wood Buffalo Environmental Association

Frequency Distribution

Carbon Dioxide (CO_2) - ppm

Fort Chipewyan - September 2024

Concentration							**Wind Direction**										
Ranges (ppm)	N	NNE	NE	ENE	E	ESE	SE	SSE	S	SSW	SW	WSW	W	WNW	NW	NNW	**Totals**
400 - 420	0	0	0	5	2	1	8	2	1	0	2	6	4	9	3	2	45
420 - 440	6	10	25	39	71	39	12	19	12	17	30	42	60	56	48	35	521
440 - 460	1	0	0	1	8	7	2	4	6	10	21	9	7	18	7	7	108
460 - 480	0	0	0	0	2	0	0	0	0	1	3	0	1	0	0	0	7
480 - 500	0	0	0	0	2	0	0	0	0	0	0	0	0	0	0	0	2
> 500	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Totals	7	10	25	45	85	47	22	25	19	28	56	57	72	83	58	44	683

Total Number of Valid Hours: 683

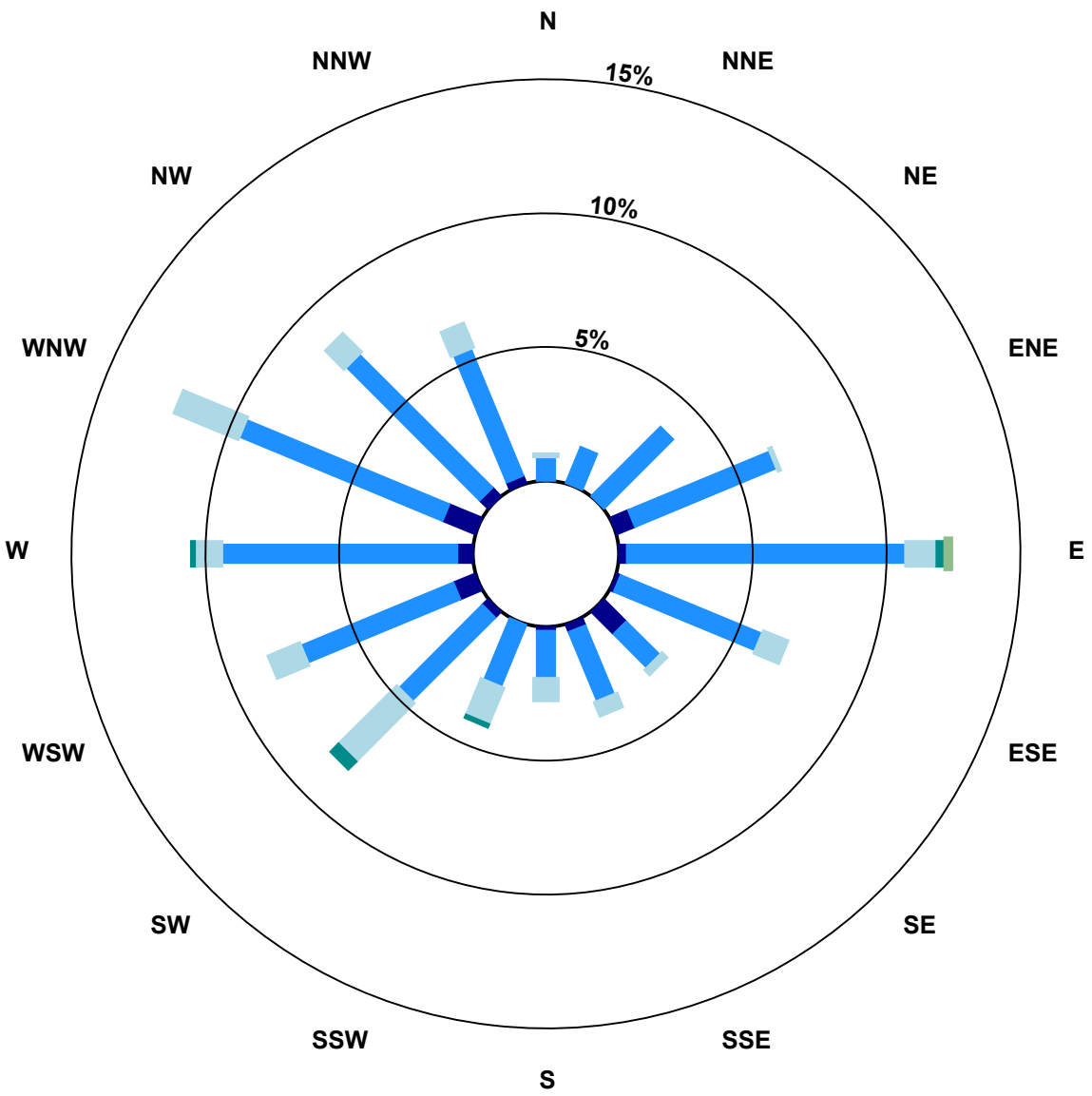
Total Number of Hours: 720

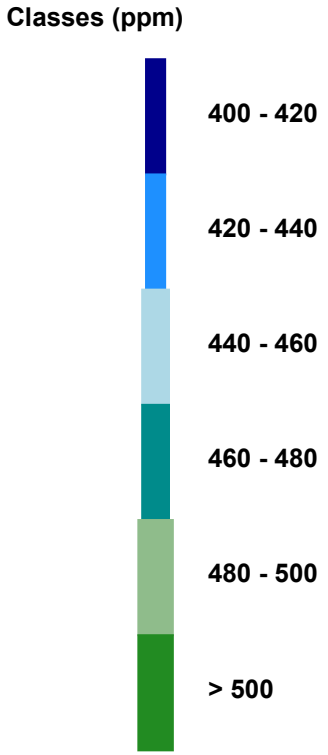
Wood Buffalo Environmental Association

Wind Rose Sep 2024

Carbon Dioxide (CO_2) - ppm

Fort Chipewyan





Total Number of Valid Hours: 683

Ambient Temperature 2m (AT2) - C
Fort Chipewyan - September 2024

Maximum Value: 28.3 C on Sep 2 15:00

Maximum Daily Average: 18.4 C on Sep 2

Minimum Value: 0.5 C on Sep 30 06:00

Minimum Daily Average: 4.4 C on Sep 30

Maximum Diurnal Average: 15.7 C at hour 16

Minimum Diurnal Average: 9.0 C at hour 7

Monthly Average: 12.13 C

Percentiles: P_1 = 2.6 P_{10} = 6.7 Q_1 = 9.3 Median = 12.0 Q_3 = 14.7 P_{90} = 17.4 P_{99} = 24.7

Hours in Service:	720
Hours of Data:	720
Hours of Missing Data:	0
Hours of Calibration:	0
Percent Operational Time:	100.0

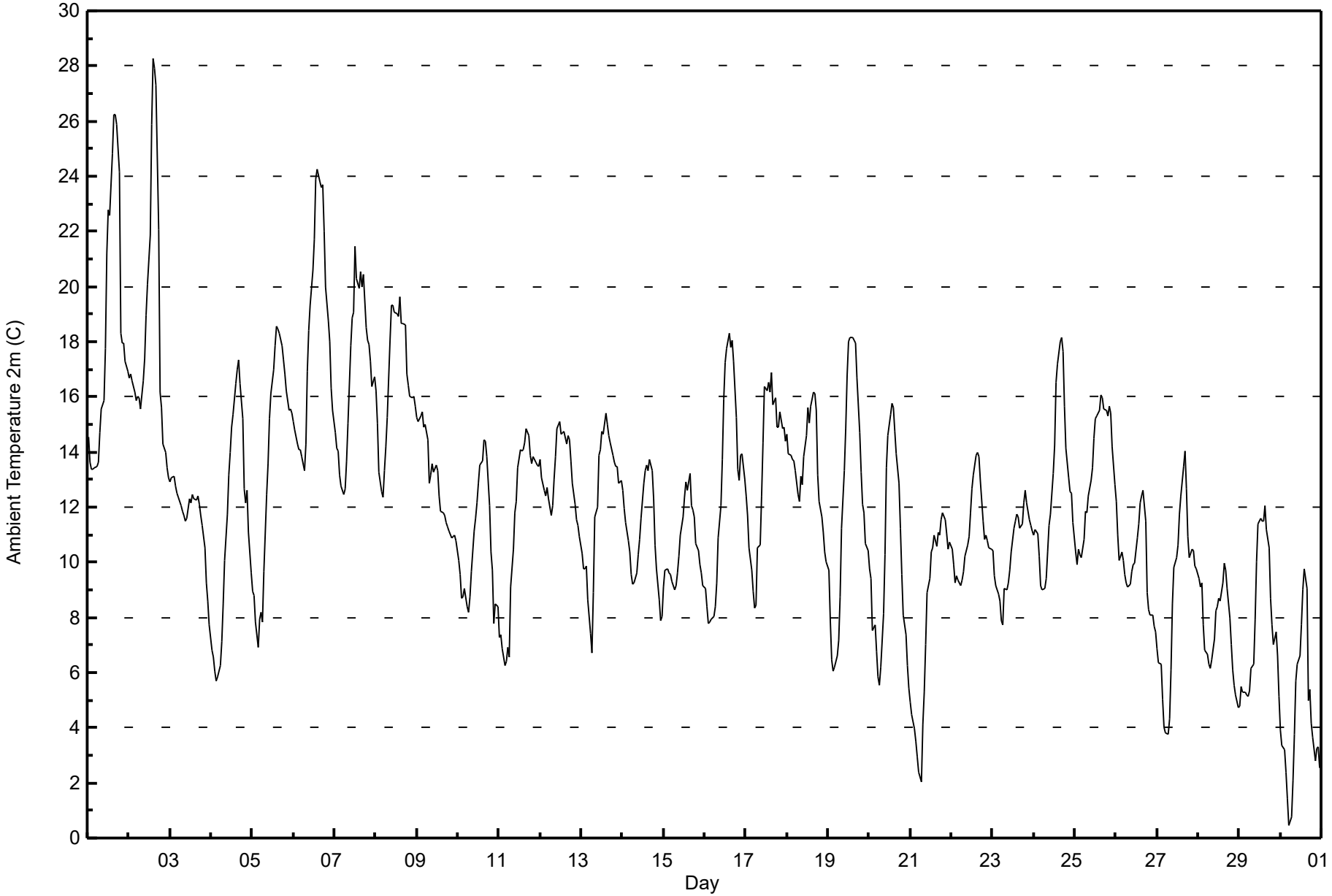
Day	Hourly Period Ending At (MST)																								Daily	Daily
	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24	Average	Maximum
1-Sep	14.5	13.6	13.4	13.3	13.4	13.5	13.6	14.7	15.6	15.9	17.7	21.2	22.8	22.6	24.8	26.2	26.2	25.9	24.2	18.3	17.9	17.9	17.3	16.9	18.4	26.2
2-Sep	16.7	16.8	16.6	16.2	15.9	16.0	16.0	15.6	16.6	17.4	18.9	20.1	21.9	25.9	28.3	27.9	27.3	22.1	16.2	15.6	14.3	14.0	13.4	13.1	18.4	28.3
3-Sep	12.9	13.1	13.1	12.8	12.5	12.4	12.1	11.9	11.7	11.5	11.6	12.3	12.2	12.5	12.3	12.3	12.4	12.1	11.7	11.3	10.5	9.2	8.6	7.7	11.7	13.1
4-Sep	6.8	6.6	6.0	5.7	5.8	6.2	7.1	8.5	10.1	11.8	13.2	14.0	14.9	15.4	16.5	17.0	17.3	16.5	15.2	12.7	12.2	12.6	11.1	9.6	11.4	17.3
5-Sep	9.0	8.8	7.8	6.9	8.0	8.2	7.8	9.7	12.4	13.6	15.2	16.1	17.0	17.9	18.6	18.4	18.3	17.9	17.3	16.8	16.2	15.5	15.5	15.4	13.7	18.6
6-Sep	15.1	14.8	14.3	14.1	14.1	13.8	13.3	14.3	16.9	18.4	19.3	20.6	21.7	23.9	24.3	23.8	23.6	23.7	22.0	20.0	18.7	18.0	16.3	15.5	18.4	24.3
7-Sep	14.7	14.1	14.0	13.2	12.8	12.5	12.7	13.7	15.1	17.9	18.9	19.0	21.4	20.3	19.9	20.6	20.0	20.5	18.5	18.0	17.9	17.3	16.4	16.7	16.9	21.4
8-Sep	16.2	15.1	13.3	12.6	12.4	13.3	14.2	15.3	18.1	19.3	19.3	19.1	19.0	18.9	19.6	18.7	18.7	18.6	16.8	16.4	16.0	16.0	16.0	15.7	16.6	19.6
9-Sep	15.2	15.1	15.3	15.4	14.9	15.0	14.4	12.8	13.2	13.6	13.3	13.5	13.3	12.4	11.9	11.8	11.7	11.4	11.3	11.2	10.9	10.9	11.0	10.8	12.9	15.4
10-Sep	10.0	9.6	8.7	8.8	9.1	8.4	8.2	8.7	9.7	11.2	11.6	12.1	12.9	13.5	13.7	14.4	14.4	13.8	12.0	10.4	9.7	7.8	8.5	8.4	10.6	14.4
11-Sep	7.3	7.4	6.8	6.3	6.4	6.9	6.5	9.1	10.5	11.8	12.2	13.4	14.1	14.0	14.1	14.3	14.8	14.6	13.9	13.6	13.8	13.6	13.5	13.5	11.4	14.8
12-Sep	13.7	13.1	12.6	12.4	12.7	12.3	11.7	12.1	13.0	13.8	14.8	15.1	14.6	14.7	14.7	14.3	14.6	14.5	13.7	12.9	12.1	11.5	11.3	10.9	13.2	15.1
13-Sep	10.3	9.8	9.8	9.9	8.6	7.4	6.7	8.9	11.7	12.0	13.9	14.1	14.7	14.6	15.4	15.0	14.6	14.4	13.9	13.6	13.5	13.5	12.8	13.0	12.2	15.4
14-Sep	12.6	12.0	11.5	10.8	10.4	9.6	9.2	9.3	9.6	10.3	10.9	11.6	12.9	13.3	13.5	13.3	13.7	13.3	12.3	10.6	9.7	8.7	7.9	8.0	11.0	13.7
15-Sep	9.1	9.7	9.8	9.6	9.6	9.3	9.0	9.2	9.6	10.2	11.0	11.6	12.3	12.9	12.6	13.2	12.0	11.9	11.6	10.7	10.4	9.9	9.6	9.2	10.6	13.2
16-Sep	9.0	8.4	7.8	7.8	7.9	8.0	8.4	9.2	10.9	12.0	13.7	15.9	17.2	17.8	18.3	17.8	18.1	17.3	15.2	13.4	13.0	13.9	14.0	13.0	12.8	18.3
17-Sep	12.4	11.7	10.5	9.7	9.0	8.3	8.4	10.5	10.6	12.4	14.3	16.4	16.2	16.5	16.2	16.9	15.7	15.9	14.9	14.9	15.5	14.8	14.9	14.4	13.4	16.9
18-Sep	14.6	13.9	13.9	13.7	13.7	13.3	12.4	12.2	13.1	12.8	13.8	14.6	15.6	15.0	15.7	16.2	16.1	15.5	13.2	12.2	11.7	11.1	10.4	10.0	13.5	16.2
19-Sep	9.7	7.9	6.4	6.1	6.2	6.6	7.2	8.7	11.2	13.3	14.9	16.8	18.0	18.2	18.2	18.1	17.9	16.7	14.7	13.3	12.1	11.8	10.7	10.4	12.3	18.2
20-Sep	9.8	9.4	7.5	7.7	6.8	5.9	5.5	6.2	8.1	10.3	13.4	14.6	15.3	15.8	15.6	14.7	13.9	12.9	11.2	9.6	8.1	7.3	6.2	5.4	10.1	15.8
21-Sep	4.9	4.5	4.0	3.5	3.0	2.4	2.0	4.1	5.3	7.0	8.9	9.4	10.4	10.5	11.0	10.6	11.1	11.0	11.6	11.8	11.5	11.0	10.5	10.7	7.9	11.8
22-Sep	10.5	9.9	9.3	9.5	9.3	9.2	9.3	9.7	10.2	10.6	11.0	11.8	12.7	13.1	13.9	14.0	13.8	13.0	11.5	10.8	11.0	10.8	10.5	10.5	11.1	14.0
23-Sep	10.4	9.5	9.1	8.9	8.6	7.9	7.7	9.1	9.0	9.3	9.7	10.4	11.2	11.5	11.8	11.6	11.3	11.4	12.2	12.6	12.1	11.5	11.4	11.1	10.4	12.6
24-Sep	11.0	11.2	11.0	10.2	9.1	9.0	9.0	9.4	10.4	11.4	11.8	13.2	14.2	16.5	17.2	18.0	18.2	17.7	15.7	14.2	13.1	12.6	12.5	11.5	12.8	18.2
25-Sep	10.4	9.9	10.5	10.3	10.2	10.8	11.9	11.8	12.4	12.9	13.4	14.5	15.2	15.3	15.5	16.1	15.9	15.6	15.5	15.3	15.7	15.4	14.2	12.8	13.4	16.1
26-Sep	12.2	11.0	10.1	10.4	10.1	9.6	9.3	9.1	9.2	9.6	9.9	10.0	10.9	11.4	12.1	12.4	12.6	11.5	8.9	8.3	8.1	8.1	7.7	7.5	10.0	12.6
27-Sep	6.9	6.4	6.3	5.0	4.0	3.8	3.8	4.3	6.1	8.5	9.8	10.2	10.6	11.8	12.4	13.5	14.0	12.7	10.9	10.2	10.5	10.4	9.9	9.8	8.8	14.0
28-Sep	9.4	9.1	9.3	7.7	6.8	6.7	6.3	6.1	6.5	7.2	8.3	8.4	8.7	8.6	9.2	10.0	9.7	9.0	8.0	7.0	6.1	5.5	5.2	4.7	7.6	10.0
29-Sep	4.8	5.5	5.3	5.3	5.2	5.1	5.3	6.2	6.3	7.9	10.0	11.4	11.6	11.5	11.5	12.1	11.2	10.5	8.7	7.7	7.0	7.5	6.6	5.1	7.9	12.1
30-Sep	3.9	3.4	3.2	2.4	1.4	0.5	0.8	2.1	3.8	5.7	6.3	6.6	7.7	9.0	9.7	9.1	5.0	5.4	4.2	3.7	2.8	3.3	3.3	2.5	4.4	9.7
	10.8	10.4	9.9	9.5	9.3	9.1	9.0	9.7	10.9	12.0	13.0	13.9	14.7	15.2	15.6	15.7	15.5	14.9	13.6	12.6	12.1	11.7	11.2	10.8	Diurnal Average	
	16.7	16.8	16.6	16.2	15.9	16.0	16.0	15.6	18.1	19.3	19.3	21.2	22.8	25.9	28.3	27.9	27.3	25.9	24.2	20.0	18.7	18.0	17.3	16.9	Diurnal Maximum	

Wood Buffalo Environmental Association

Hourly Averages

Ambient Temperature 2m (AT2) - C

Fort Chipewyan - September 2024



Concentration Ranges (C)	Number of Hours	%	Cumulative %
-50 - -20	0	0.00	0.00
-20 - 0	0	0.00	0.00
0 - 10	225	31.25	31.25
10 - 20	468	65.00	96.25
> 20	27	3.75	100.00

Total Number of Valid Hours: 720

Total Number of Hours: 720

Wood Buffalo Environmental Association

Summary of Hour Averages

Relative Humidity 2m (RH2) - %

Fort Chipewyan - September 2024

Maximum Value: 99.7 % on Sep 24 09:00

Maximum Daily Average: 90.4 % on Sep 28

Minimum Value: 36.9 % on Sep 2 15:00

Minimum Daily Average: 60.9 % on Sep 6

Maximum Diurnal Average: 87.8 % at hour 7

Minimum Diurnal Average: 62.9 % at hour 16

Monthly Average: 77.42 %

Percentiles: P_1 = 42.5 P_{10} = 58.6 Q_1 = 69.0 Median = 78.4 Q_3 = 88.9 P_{90} = 93.7 P_{99} = 99.1

Hours in Service:	720
Hours of Data:	720
Hours of Missing Data:	0
Hours of Calibration:	0
Percent Operational Time:	100.0

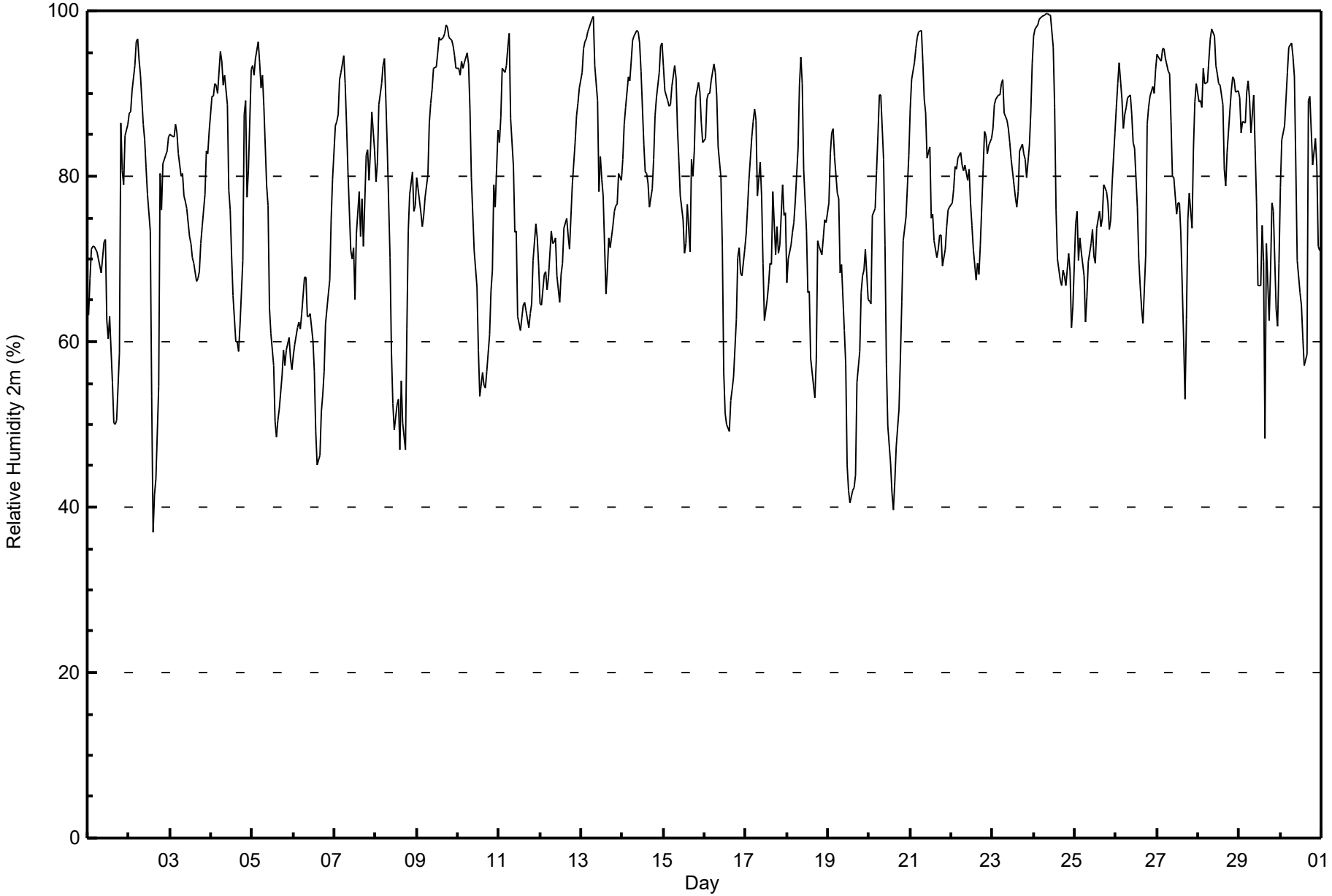
Day	Hourly Period Ending At (MST)																								Daily	Daily
	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24	Average	Maximum
1-Sep	63.2	67.7	71.1	71.5	71.5	70.8	69.9	69.1	68.2	72.0	72.3	62.6	60.3	63.1	55.0	50.1	50.0	50.5	58.6	86.4	80.7	78.9	85.0	86.2	68.1	86.4
2-Sep	87.7	87.8	90.4	93.4	96.3	96.7	94.1	92.2	86.2	84.5	81.0	77.8	73.3	53.4	36.9	41.5	43.3	54.6	80.3	75.9	81.6	82.5	83.1	84.8	77.5	96.7
3-Sep	85.1	84.8	84.8	86.3	85.2	82.7	80.1	80.4	77.6	76.9	76.1	72.7	71.9	70.1	69.5	67.3	67.7	68.4	71.8	74.0	77.7	83.1	82.7	85.3	77.6	86.3
4-Sep	89.6	89.7	91.2	91.1	90.1	95.2	93.8	91.0	92.3	88.6	78.4	75.9	70.3	65.6	60.1	60.0	58.8	62.1	69.8	87.5	89.1	77.5	80.8	92.9	80.9	95.2
5-Sep	93.4	92.2	94.2	96.3	93.7	90.7	92.2	88.4	78.9	76.5	64.0	61.0	57.2	50.3	48.4	50.5	51.8	55.9	59.0	57.1	58.9	60.5	58.0	56.7	70.2	96.3
6-Sep	58.3	59.7	61.8	62.4	61.6	63.4	67.8	67.9	63.1	63.1	63.4	60.2	56.4	49.2	45.1	46.3	51.4	53.5	56.4	62.1	65.8	67.4	74.7	79.6	60.9	79.6
7-Sep	86.1	86.7	87.5	91.7	92.5	94.6	91.1	86.1	80.5	71.1	70.0	71.3	65.1	73.1	78.2	72.7	77.3	71.5	82.6	83.2	79.5	83.1	87.9	83.0	81.1	94.6
8-Sep	79.4	81.7	88.6	91.2	93.4	94.3	89.3	83.6	70.3	58.6	52.5	49.3	52.3	53.1	46.9	55.3	50.1	47.0	61.5	73.3	77.8	80.4	75.8	76.4	70.1	94.3
9-Sep	79.8	78.4	75.6	73.8	75.3	77.4	80.2	86.5	88.7	90.5	93.0	93.2	94.9	96.7	96.4	96.8	97.3	98.2	98.0	96.7	96.4	95.7	94.6	93.1	89.5	98.2
10-Sep	93.1	92.2	93.8	93.1	93.8	94.9	93.5	88.1	79.8	71.0	68.8	66.6	59.0	53.4	56.3	54.8	54.4	56.5	60.8	66.1	68.7	79.0	76.2	85.6	75.0	94.9
11-Sep	84.0	87.2	93.1	92.6	93.4	95.6	97.3	87.0	81.1	73.2	73.4	63.1	61.3	62.9	64.4	64.7	63.7	61.7	63.3	64.5	69.8	74.2	72.6	69.2	75.6	97.3
12-Sep	64.6	64.4	68.1	68.4	66.3	67.8	73.4	71.8	72.1	72.5	68.0	64.7	68.1	69.5	73.7	74.9	72.9	71.3	75.1	79.0	84.0	87.3	88.9	90.6	73.2	90.6
13-Sep	92.5	95.4	96.3	96.7	97.5	98.6	99.0	99.3	93.3	89.2	78.2	82.3	79.6	77.6	65.8	68.6	72.6	71.3	74.1	75.8	76.5	76.5	80.3	79.5	84.0	99.3
14-Sep	82.0	86.3	88.3	92.0	91.6	93.9	96.4	96.9	97.6	97.5	96.2	92.7	83.8	80.4	80.4	79.1	76.3	78.4	82.0	87.3	89.5	92.6	95.7	96.2	88.9	97.6
15-Sep	93.2	90.4	89.2	88.5	88.6	90.9	93.4	91.8	85.8	81.9	77.6	74.8	70.7	71.8	76.7	70.9	82.1	79.9	83.0	89.6	91.4	90.1	86.4	84.1	84.3	93.4
16-Sep	84.7	89.3	90.0	90.0	91.6	93.5	92.6	89.6	83.6	79.8	71.4	56.2	51.4	50.0	49.2	52.9	54.2	55.7	62.6	70.2	71.3	68.3	68.0	71.3	72.4	93.5
17-Sep	73.0	76.3	79.7	84.7	86.7	88.2	86.7	77.6	81.7	77.6	69.5	62.5	65.0	67.0	69.4	69.2	78.1	70.5	74.0	70.6	71.7	79.0	75.2	75.6	75.4	88.2
18-Sep	67.0	70.0	71.7	73.2	74.4	76.9	83.5	91.0	94.4	91.2	80.8	73.3	65.9	66.0	57.9	54.7	53.2	57.8	72.1	71.6	70.5	72.5	74.8	74.5	72.5	94.4
19-Sep	76.8	82.7	85.3	85.8	82.4	78.0	77.2	68.4	69.4	61.3	57.2	45.1	42.0	40.5	42.0	42.4	43.9	55.2	58.8	65.9	68.0	68.6	71.3	65.0	63.9	85.8
20-Sep	64.9	64.6	75.3	76.1	80.6	85.1	89.8	89.8	82.0	71.8	57.3	49.8	45.3	41.7	39.6	43.0	47.3	51.8	58.1	64.9	72.2	75.1	78.9	82.5	66.2	89.8
21-Sep	88.1	91.7	93.7	95.5	96.8	97.5	97.7	93.7	89.4	87.6	82.1	83.6	74.9	75.5	72.3	70.1	71.2	72.8	72.9	69.1	71.2	73.9	75.9	76.3	82.2	97.7
22-Sep	76.8	78.4	81.2	80.8	82.2	82.8	81.3	80.7	81.4	79.5	80.9	76.8	74.0	71.3	67.4	69.5	68.1	71.7	80.8	85.4	85.0	82.8	83.7	84.6	78.6	85.4
23-Sep	85.8	88.6	89.3	89.8	89.9	91.1	91.8	87.7	86.8	85.8	84.1	82.0	79.0	77.4	76.2	78.2	83.0	83.9	82.8	82.1	79.9	83.8	87.8	93.5	85.0	93.5
24-Sep	96.9	97.8	98.4	99.0	99.2	99.4	99.5	99.6	99.7	99.6	99.5	95.5	88.4	75.9	70.0	67.5	66.7	68.7	67.9	66.8	70.7	68.5	61.7	64.2	84.2	99.7
25-Sep	74.2	75.7	69.8	72.6	70.8	68.0	62.3	65.4	69.6	71.9	73.6	70.3	69.6	73.7	75.8	73.9	75.0	79.0	78.1	76.8	73.5	74.7	79.1	85.3	73.3	85.3
26-Sep	88.2	91.2	93.8	89.3	85.8	87.4	88.3	89.6	89.8	87.4	84.0	83.5	76.3	70.1	66.7	64.1	62.2	70.6	86.3	88.2	89.6	90.9	90.0	92.9	83.6	93.8
27-Sep	94.8	94.5	94.0	95.4	95.4	94.2	92.7	92.4	86.6	80.0	79.8	75.5	76.7	76.7	73.0	60.4	53.1	62.8	74.7	77.9	73.7	83.3	89.0	91.2	82.0	95.4
28-Sep	89.0	89.2	88.3	93.1	91.2	91.4	94.1	96.7	97.8	97.0	93.4	92.4	91.2	91.0	88.7	80.9	78.7	83.0	88.0	90.3	92.1	91.6	90.1	90.4	90.4	97.8
29-Sep	89.4	85.2	86.5	86.5	90.2	91.5	89.3	85.3	89.9	83.2	76.8	66.7	66.7	74.1	69.7	48.4	71.9	62.5	68.6	76.8	75.7	63.8	61.9	69.5	76.3	91.5
30-Sep	78.6	84.4	86.1	89.4	92.5	95.6	96.1	94.5	92.1	81.4	69.9	66.0	64.4	60.6	57.1	58.5	89.2	89.7	85.5	81.4	84.6	81.2	71.5	71.0	80.1	96.1
	82.0	83.5	85.2	86.3	86.7	87.6	87.8	86.1	83.6	80.1	75.8	71.6	68.5	66.7	64.3	62.9	65.5	67.2	72.9	76.5	77.9	78.9	79.4	81.0	Diurnal Average	
	96.9	97.8	98.4	99.0	99.2	99.4	99.5	99.6	99.7	99.6	99.5	95.5	94.9	96.7	96.4	96.8	97.3	98.2	98.0	96.7	96.4	95.7	95.7	96.2	Diurnal Maximum	

Wood Buffalo Environmental Association

Hourly Averages

Relative Humidity 2m (RH2) - %

Fort Chipewyan - September 2024



Concentration Ranges (%)	Number of Hours	%	Cumulative %
0 - 20	0	0.00	0.00
20 - 40	2	0.28	0.28
40 - 60	78	10.83	11.11
60 - 80	309	42.92	54.03
80 - 100	331	45.97	100.00

Total Number of Valid Hours: 720

Total Number of Hours: 720

Maximum Value: 50.2 % on Sep 13 07:00

Maximum Daily Average: 13.4 % on Sep 27

Minimum Value: 0.5 % on Sep 19 12:00

Minimum Daily Average: 1.1 % on Sep 6

Maximum Diurnal Average: 12.4 % at hour 7

Minimum Diurnal Average: 2.1 % at hour 12

Monthly Average: 4.95 %

Percentiles: P_1 = 0.7 P_{10} = 1.1 Q_1 = 1.3 Median = 1.6 Q_3 = 3.3 P_{90} = 15.4 P_{99} = 38.1

Hours in Service:	720
Hours of Data:	720
Hours of Missing Data:	0
Hours of Calibration:	0
Percent Operational Time:	100.0

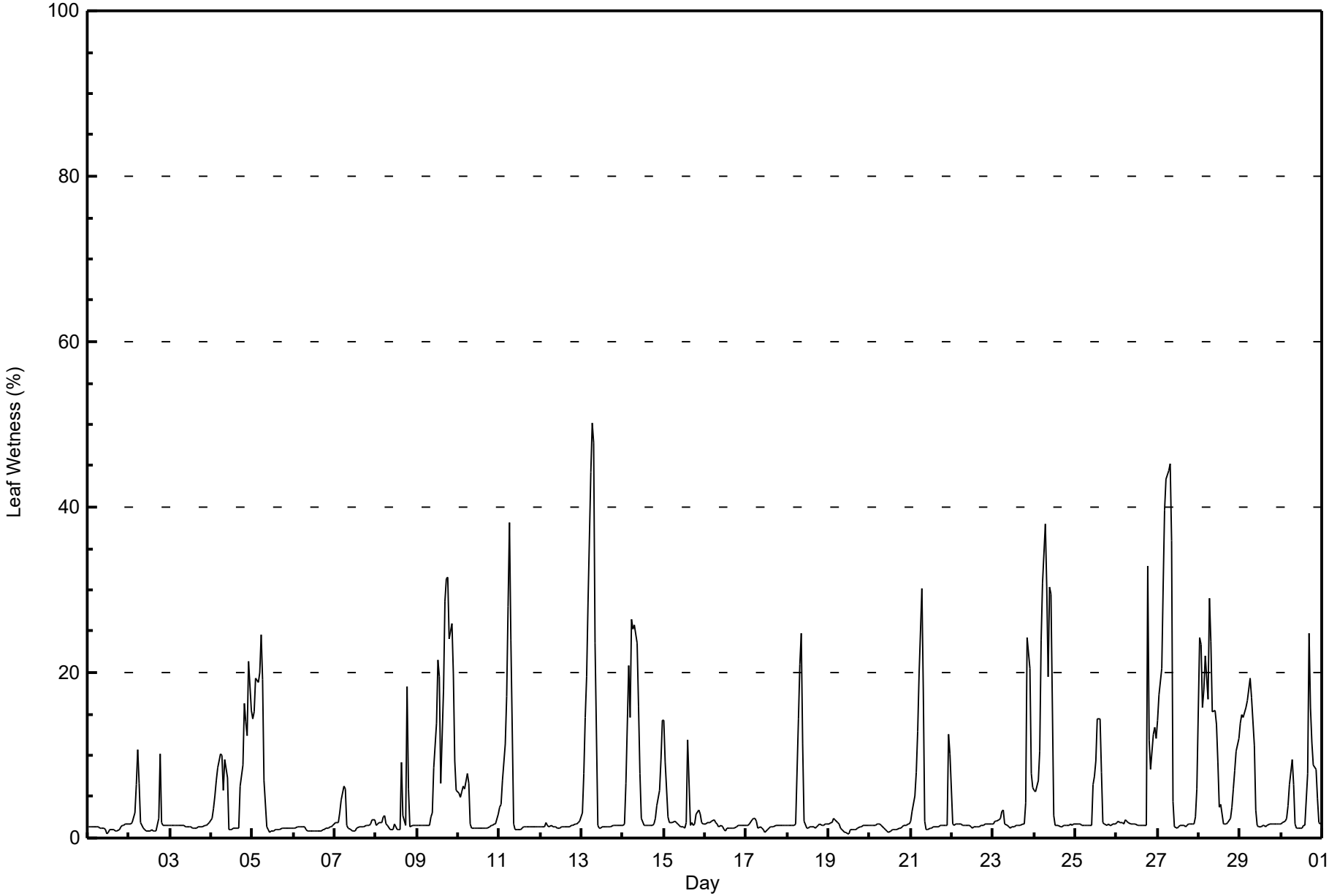
Day	Hourly Period Ending At (MST)																								Daily	Daily
	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24	Average	Maximum
1-Sep	1.3	1.3	1.4	1.4	1.4	1.4	1.4	1.2	1.2	1.3	1.0	0.5	0.6	1.0	1.0	1.0	0.9	0.9	1.1	1.4	1.5	1.5	1.7	1.7	1.2	1.7
2-Sep	1.7	1.7	1.9	3.1	6.5	10.7	6.6	1.8	1.1	1.0	0.9	0.8	0.9	1.0	0.8	0.8	0.8	2.3	10.1	1.8	1.4	1.5	1.5	1.5	2.6	10.7
3-Sep	1.5	1.5	1.5	1.5	1.5	1.5	1.5	1.5	1.4	1.4	1.4	1.3	1.3	1.2	1.3	1.3	1.3	1.3	1.4	1.4	1.5	1.6	1.6	1.8	1.4	1.8
4-Sep	2.5	3.5	5.1	6.9	8.5	10.2	10.1	5.7	9.5	7.2	1.0	1.0	0.9	1.2	1.2	1.2	1.2	6.3	8.9	16.3	14.0	12.4	21.4	15.4	7.1	21.4
5-Sep	14.3	15.3	19.3	18.7	20.0	24.6	19.2	6.9	1.4	1.0	0.7	0.8	0.9	1.0	1.0	1.1	1.1	1.1	1.2	1.2	1.2	1.2	1.2	1.2	6.5	24.6
6-Sep	1.2	1.2	1.3	1.3	1.3	1.3	1.3	1.0	0.9	0.8	0.9	0.8	0.8	0.9	0.9	0.9	0.9	1.0	1.1	1.2	1.3	1.3	1.4	1.5	1.1	1.5
7-Sep	1.8	1.8	1.9	3.0	4.6	6.2	6.0	1.5	1.2	1.0	0.8	0.8	0.8	1.1	1.3	1.3	1.3	1.3	1.5	1.6	1.6	1.6	2.2	2.2	2.0	6.2
8-Sep	1.6	1.6	1.8	1.9	2.5	2.7	1.7	1.6	1.0	1.0	1.1	1.6	1.0	1.0	1.0	9.2	2.6	1.6	18.4	5.9	1.4	1.5	1.4	1.5	2.8	18.4
9-Sep	1.5	1.5	1.5	1.4	1.5	1.5	1.5	1.5	2.6	3.0	8.4	13.9	21.5	19.5	6.6	18.0	28.6	31.3	31.5	24.0	26.0	19.8	9.4	5.7	11.7	31.5
10-Sep	5.4	5.0	5.5	6.3	5.9	7.8	6.5	1.7	1.2	1.1	1.1	1.2	1.2	1.2	1.2	1.2	1.2	1.2	1.4	1.5	1.6	1.7	1.7	2.8	2.8	7.8
11-Sep	3.7	4.1	7.0	11.4	17.1	28.0	38.1	23.9	1.7	1.0	1.0	0.9	1.0	1.2	1.3	1.3	1.3	1.3	1.3	1.4	1.4	1.4	1.4	1.4	6.4	38.1
12-Sep	1.4	1.4	1.4	1.9	1.6	1.4	1.5	1.4	1.4	1.4	1.2	1.2	1.3	1.3	1.3	1.4	1.4	1.4	1.5	1.5	1.6	1.7	1.9	2.0	1.5	2.0
13-Sep	3.1	7.8	14.5	19.5	28.4	44.3	50.2	47.8	23.6	1.5	1.2	1.3	1.3	1.4	1.3	1.3	1.4	1.4	1.5	1.5	1.5	1.5	1.5	1.6	10.8	50.2
14-Sep	1.6	1.6	6.6	20.8	14.6	26.4	25.2	25.8	23.6	15.9	7.8	2.4	1.6	1.5	1.5	1.5	1.5	1.6	1.8	2.4	3.9	5.7	9.5	14.3	9.1	26.4
15-Sep	14.2	9.2	2.6	1.8	1.8	1.8	2.0	1.8	1.6	1.6	1.4	1.3	1.2	1.9	11.8	1.5	1.8	1.6	1.7	2.9	3.3	2.8	1.8	1.8	3.1	14.2
16-Sep	1.8	1.8	1.9	1.9	2.0	2.2	1.9	1.7	1.4	1.5	1.4	1.0	0.9	1.2	1.2	1.2	1.2	1.2	1.4	1.5	1.5	1.5	1.5	1.5	1.5	2.2
17-Sep	1.6	1.6	1.7	2.2	2.3	2.4	2.0	1.3	1.4	1.2	1.1	0.7	1.0	1.2	1.3	1.3	1.4	1.4	1.5	1.5	1.5	1.5	1.5	1.5	1.5	2.4
18-Sep	1.5	1.5	1.5	1.6	1.6	1.8	14.4	21.0	24.8	11.3	2.1	1.2	1.1	1.3	1.3	1.3	1.2	1.3	1.5	1.6	1.6	1.6	1.6	1.6	4.2	24.8
19-Sep	1.8	1.9	1.9	2.4	2.1	1.9	1.7	1.2	0.9	0.7	0.6	0.5	0.5	1.0	1.0	1.0	1.0	1.2	1.3	1.4	1.5	1.5	1.5	1.5	1.3	2.4
20-Sep	1.5	1.5	1.6	1.6	1.6	1.7	1.7	1.6	1.2	1.1	0.8	0.7	0.8	1.0	1.0	1.0	1.1	1.2	1.3	1.4	1.5	1.6	1.6	1.7	1.3	1.7
21-Sep	2.1	3.2	5.1	8.0	12.8	19.9	30.3	17.9	2.1	1.0	1.0	1.1	1.2	1.4	1.4	1.4	1.4	1.4	1.5	1.5	1.4	1.5	12.6	10.1	5.9	30.3
22-Sep	1.7	1.6	1.6	1.6	1.6	1.6	1.6	1.6	1.6	1.5	1.5	1.3	1.2	1.4	1.4	1.4	1.4	1.4	1.6	1.7	1.7	1.7	1.7	1.7	1.5	1.7
23-Sep	1.7	2.0	2.0	2.1	2.4	3.3	3.3	1.6	1.5	1.3	1.2	1.3	1.3	1.5	1.5	1.5	1.6	1.6	1.6	4.3	24.3	20.5	7.9	6.2	4.1	24.3
24-Sep	5.7	5.6	7.0	10.5	23.8	30.9	38.0	30.4	19.4	30.3	29.4	2.6	1.5	1.5	1.5	1.4	1.4	1.5	1.6	1.5	1.6	1.6	1.6	1.6	10.5	38.0
25-Sep	1.7	1.7	1.6	1.6	1.6	1.6	1.5	1.5	1.5	1.6	6.4	7.4	9.3	14.4	14.4	8.0	1.8	1.6	1.6	1.6	1.6	1.6	1.7	1.7	3.7	14.4
26-Sep	1.8	2.0	1.9	1.8	1.8	2.2	2.0	1.8	1.8	1.7	1.7	1.7	1.5	1.5	1.4	1.4	1.5	1.6	32.9	11.8	8.4	12.6	13.4	12.0	5.1	32.9
27-Sep	14.3	17.2	20.5	30.5	39.6	43.4	44.3	45.2	36.0	4.4	1.3	1.2	1.3	1.5	1.5	1.5	1.4	1.5	1.7	1.8	1.7	1.7	2.5	6.0	13.4	45.2
28-Sep	24.2	23.3	15.7	18.0	22.0	16.7	29.0	23.7	15.3	15.4	13.8	9.2	3.8	4.0	1.8	1.7	1.7	1.8	2.3	3.8	6.0	8.2	10.4	12.1	11.8	29.0
29-Sep	13.9	14.9	14.6	15.8	16.6	18.0	19.3	16.9	11.3	3.3	1.6	1.4	1.4	1.5	1.6	1.4	1.6	1.7	1.7	1.7	1.8	1.7	1.6	1.7	7.0	19.3
30-Sep	1.8	1.9	2.0	2.5	3.9	6.4	9.5	6.5	1.7	1.2	1.1	1.2	1.2	1.5	1.4	7.8	24.8	15.8	11.5	8.8	8.2	4.8	1.9	1.7	5.4	24.8
	4.5	4.7	5.1	6.8	8.4	10.8	12.4	10.0	6.5	3.9	3.2	2.1	2.1	2.4	2.2	2.5	3.1	3.1	5.0	3.7	4.2	4.0	4.1	4.0	Diurnal Average	
	24.2	23.3	20.5	30.5	39.6	44.3	50.2	47.8	36.0	30.3	29.4	13.9	21.5	19.5	14.4	18.0	28.6	31.3	32.9	24.0	26.0	20.5	21.4	15.4	Diurnal Maximum	

Wood Buffalo Environmental Association

Hourly Averages

Leaf Wetness (LW) - %

Fort Chipewyan - September 2024



Concentration Ranges (%)	Number of Hours	%	Cumulative %
0 - 0.3	0	0.00	0.00
0.4 - 0.5	3	0.42	0.42
0.6 - 0.7	6	0.83	1.25
0.8 - 1.4	240	33.33	34.58
1.5 - 10	304	42.22	76.81
> 10	110	15.28	92.08

Total Number of Valid Hours: 720

Total Number of Hours: 720

Wood Buffalo Environmental Association

Summary of Hour Averages

Precipitation (PC) - mm

Fort Chipewyan - September 2024

Maximum Value: 4.7 mm on Sep 26 19:00

Maximum Daily Total: 5.2 mm on Sep 26

Minimum Value: 0.0 mm on Sep 1 01:00

Minimum Daily Total: 0.0 mm on Sep 1

Maximum Diurnal Total: 6.2 mm at hour 19

Minimum Diurnal Total: 0.0 mm at hour 3

Monthly Total: 17.21 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} = 1.5

Hours in Service:	720
Hours of Data:	403
Hours of Missing Data:	317
Hours of Calibration:	0
Percent Operational Time:	56.0

Day	Hourly Period Ending At (MST)																								Daily	Daily
	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24	Average	Maximum
1-Sep	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	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-Sep	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	1.5	0.0	0.0	0.0	0.0	0.0	1.5	1.5
3-Sep	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	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-Sep	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	DF	DF	DF	DF	DF	DF	DF	DF	DF	DF	DF	DF	DF	DF	DF	--	0.0
5-Sep	DF	DF	DF	DF	DF	DF	DF	DF	DF	DF	DF	DF	DF	DF	DF	DF	DF	DF	DF	DF	DF	DF	DF	DF	--	--
6-Sep	DF	DF	DF	DF	DF	DF	DF	DF	DF	DF	DF	DF	DF	DF	DF	DF	DF	DF	DF	DF	DF	DF	DF	DF	--	--
7-Sep	DF	DF	DF	DF	DF	DF	DF	DF	DF	DF	DF	DF	DF	DF	DF	DF	DF	DF	DF	DF	DF	DF	DF	DF	--	--
8-Sep	DF	DF	DF	DF	DF	DF	DF	DF	DF	DF	DF	DF	DF	DF	DF	DF	DF	DF	DF	DF	DF	DF	DF	DF	--	--
9-Sep	DF	DF	DF	DF	DF	DF	DF	DF	DF	DF	DF	DF	DF	DF	DF	DF	DF	DF	DF	DF	DF	DF	DF	DF	--	--
10-Sep	DF	DF	DF	DF	DF	DF	DF	DF	DF	DF	DF	DF	DF	DF	DF	DF	DF	DF	DF	DF	DF	DF	DF	DF	--	--
11-Sep	DF	DF	DF	DF	DF	DF	DF	DF	DF	DF	DF	DF	DF	DF	DF	DF	DF	DF	DF	DF	DF	DF	DF	DF	--	--
12-Sep	DF	DF	DF	DF	DF	DF	DF	DF	DF	DF	DF	DF	DF	DF	DF	DF	DF	DF	DF	DF	DF	DF	DF	DF	--	--
13-Sep	DF	DF	DF	DF	DF	DF	DF	DF	DF	DF	DF	DF	DF	DF	DF	DF	DF	DF	DF	DF	DF	DF	DF	DF	--	--
14-Sep	DF	DF	DF	DF	DF	DF	DF	DF	DF	DF	DF	DF	DF	DF	DF	DF	DF	DF	DF	DF	DF	DF	DF	DF	--	--
15-Sep	DF	DF	DF	DF	DF	DF	DF	DF	DF	DF	DF	DF	DF	DF	DF	DF	DF	DF	DF	DF	DF	DF	DF	DF	--	--
16-Sep	DF	DF	DF	DF	DF	DF	DF	DF	DF	DF	DF	DF	DF	DF	DF	DF	DF	DF	DF	DF	DF	DF	DF	DF	--	--
17-Sep	DF	DF	DF	DF	DF	DF	DF	DF	DF	DF	DF	DF	DF	M	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	--	0.0
18-Sep	0.0	0.0	0.0	0.0	0.0	0.0	0.1	0.5	0.8	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	1.5	0.8
19-Sep	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	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-Sep	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	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-Sep	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	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-Sep	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	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-Sep	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	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-Sep	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	2.5	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	4.5	2.5
25-Sep	0.0	0.0	0.0	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	0.1	0.1
26-Sep	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	4.7	0.5	0.0	0.0	0.0	0.0	5.2	4.7
27-Sep	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	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-Sep	0.1	0.1	0.0	0.0	0.0	0.0	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	0.0	0.0	0.0	1.0	0.5
29-Sep	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	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-Sep	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	1.5	2.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	3.6	2.0
	0.1	0.1	0.0	0.0	0.0	0.0	0.7	0.8	0.8	2.6	2.0	0.0	0.0	0.0	0.1	1.5	2.0	0.0	6.2	0.5	0.0	0.0	0.0	0.0	Diurnal Average	
	0.1	0.1	0.0	0.0	0.0	0.0	0.5	0.5	0.8	2.5	2.0	0.0	0.0	0.0	0.1	1.5	2.0	0.0	4.7	0.5	0.0	0.0	0.0	0.0	Diurnal Maximum	

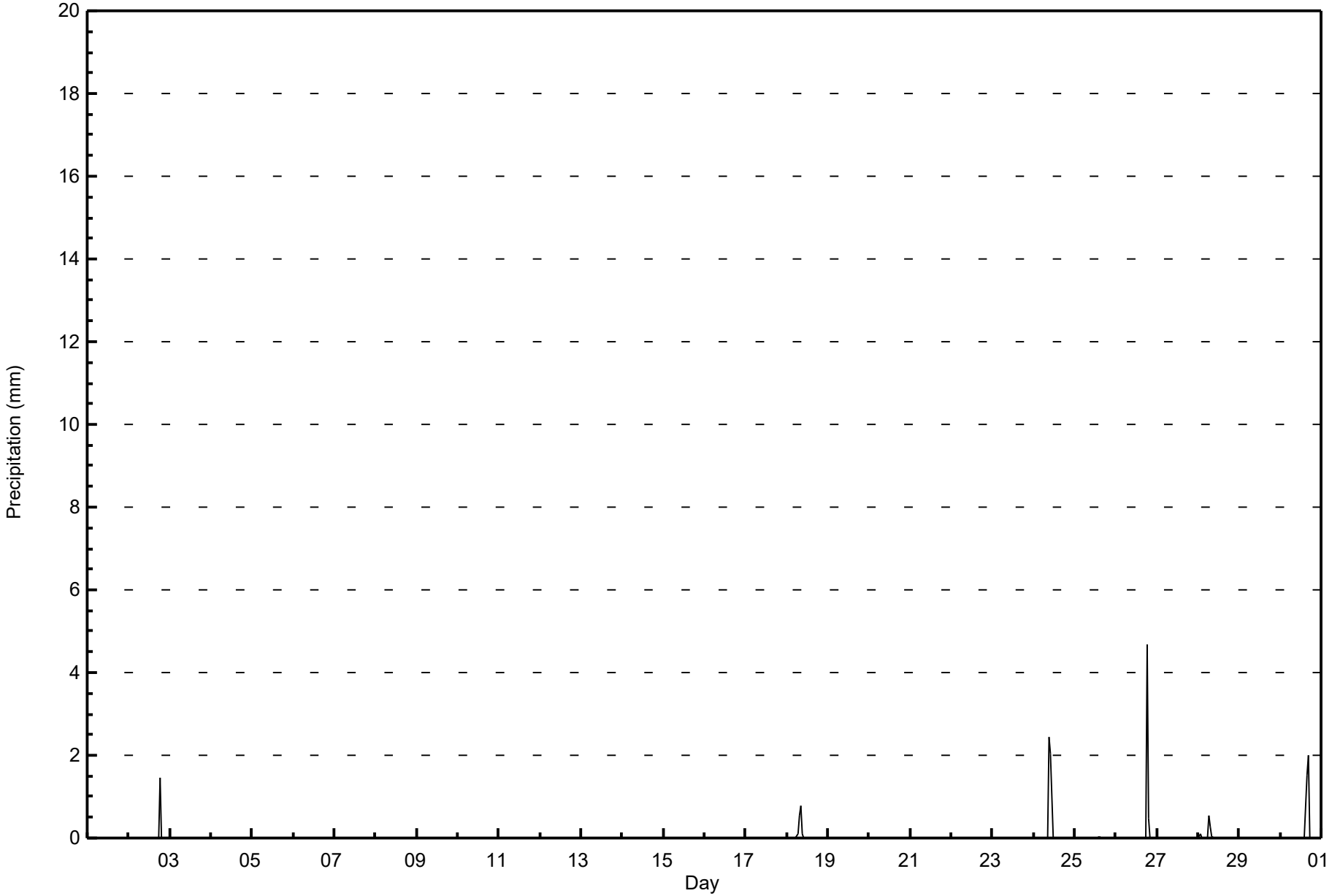
M - Maintenance DF - DAS Failure

Wood Buffalo Environmental Association

Hourly Averages

Precipitation (PC) - mm

Fort Chipewyan - September 2024



Concentration Ranges (mm)	Number of Hours	%	Cumulative %
0 - 0.3	393	97.52	97.52
0.4 - 0.5	3	0.74	98.26
0.6 - 0.7	0	0.00	98.26
0.8 - 1.4	1	0.25	98.51
1.5 - 10	5	1.24	99.75
> 10	0	0.00	99.75

Total Number of Valid Hours: 403

Total Number of Hours: 720

Wood Buffalo Environmental Association

Summary of Hour Averages

Global Radiation (GR) - W/m2

Fort Chipewyan - September 2024

Maximum Value: 670.8 W/m2 on Sep 5 13:00

Maximum Daily Average: 209.8 W/m2 on Sep 2

Minimum Value: 0.0 W/m2 on Sep 1 01:00

Minimum Daily Average: 31.7 W/m2 on Sep 9

Maximum Diurnal Average: 429.8 W/m2 at hour 13

Minimum Diurnal Average: 0.0 W/m2 at hour 1

Monthly Average: 124.32 W/m2

Percentiles: P_1 = 0.0 P_{10} = 0.0 Q_1 = 0.0 Median = 13.6 Q_3 = 197.8 P_{90} = 446.0 P_{99} = 635.1

Hours in Service:	720
Hours of Data:	720
Hours of Missing Data:	0
Hours of Calibration:	0
Percent Operational Time:	100.0

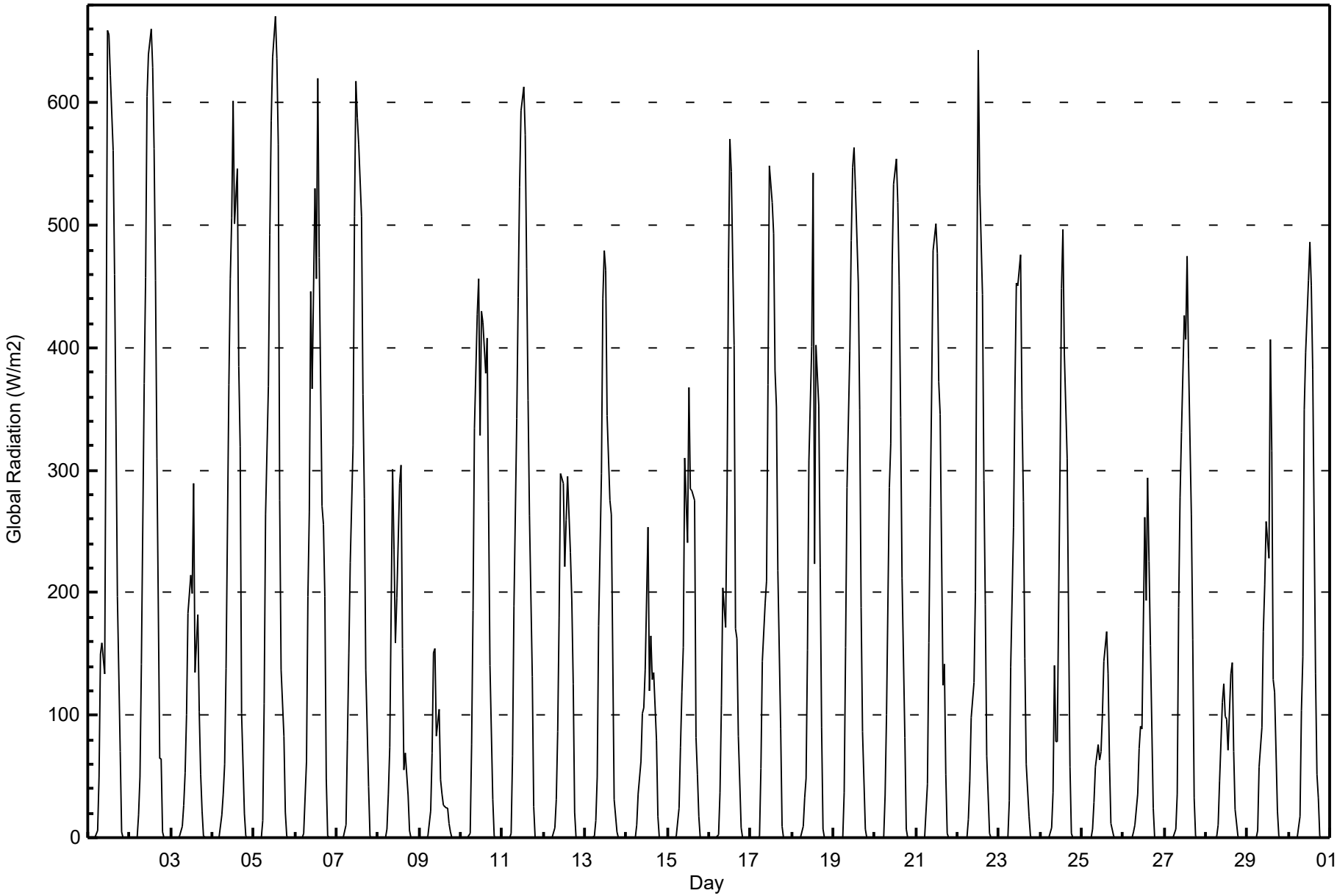
Day	Hourly Period Ending At (MST)																								Daily	Daily
	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24	Average	Maximum
1-Sep	0.0	0.0	0.0	0.0	0.0	5.4	50.1	150.4	158.5	133.5	378.6	658.8	655.6	622.1	561.8	460.3	338.2	197.4	70.7	4.5	0.0	0.0	0.0	0.0	185.2	658.8
2-Sep	0.0	0.0	0.0	0.0	0.0	18.9	49.7	141.7	371.6	457.2	605.1	639.9	660.6	628.8	562.7	455.0	310.3	64.6	64.3	4.2	0.0	0.0	0.0	0.0	209.8	660.6
3-Sep	0.0	0.0	0.0	0.0	0.0	1.3	9.3	26.7	53.3	100.6	182.9	214.0	199.1	289.2	134.7	182.5	102.9	52.3	22.2	1.0	0.0	0.0	0.0	0.0	65.5	289.2
4-Sep	0.0	0.1	0.1	0.1	0.2	18.3	35.5	60.1	138.8	369.9	456.5	506.1	601.6	501.1	546.4	385.5	318.9	101.6	19.8	1.2	0.0	0.0	0.0	0.0	169.2	601.6
5-Sep	0.0	0.0	0.0	0.0	0.0	13.5	109.0	263.9	368.3	492.5	585.6	636.9	670.8	636.6	566.1	276.0	137.0	83.3	20.5	0.9	0.0	0.0	0.0	0.0	202.5	670.8
6-Sep	0.0	0.0	0.0	0.0	0.0	3.4	62.7	196.6	265.8	446.2	366.9	530.5	456.3	619.8	474.0	270.6	255.8	196.5	48.2	1.5	0.0	0.0	0.0	0.0	174.8	619.8
7-Sep	0.0	0.0	0.0	0.0	0.0	10.3	79.3	150.4	225.1	320.9	506.8	617.5	587.5	566.4	506.7	362.3	277.0	137.4	41.3	1.1	0.0	0.0	0.0	0.0	182.9	617.5
8-Sep	0.0	0.0	0.0	0.0	0.0	6.9	35.8	73.3	300.5	235.0	159.1	196.0	289.2	303.9	154.5	54.8	69.3	34.1	5.5	0.3	0.0	0.0	0.0	0.0	79.9	303.9
9-Sep	0.0	0.0	0.0	0.0	0.0	1.2	21.5	69.1	151.1	154.5	83.3	105.4	47.0	35.6	26.0	24.5	24.6	11.7	4.4	0.0	0.0	0.0	0.0	0.0	31.7	154.5
10-Sep	0.0	0.0	0.0	0.0	0.0	3.3	76.2	185.7	334.2	428.0	455.9	328.0	430.1	420.6	379.0	407.5	274.4	141.2	30.9	0.9	0.1	0.0	0.0	0.0	162.3	455.9
11-Sep	0.0	0.0	0.0	0.0	0.0	3.6	66.6	189.1	342.8	441.8	531.2	593.9	612.7	573.8	465.0	357.4	262.9	130.9	25.0	0.4	0.0	0.0	0.0	0.0	191.5	612.7
12-Sep	0.0	0.0	0.0	0.0	0.0	0.3	7.7	31.6	86.0	179.9	297.1	289.8	221.3	259.5	295.2	233.1	193.6	125.2	21.1	0.2	0.0	0.0	0.0	0.0	93.4	297.1
13-Sep	0.0	0.0	0.0	0.0	0.0	1.0	13.6	49.8	172.3	297.2	440.3	479.0	463.0	345.2	275.5	264.0	149.4	30.9	4.3	0.0	0.0	0.0	0.0	0.0	124.4	479.0
14-Sep	0.0	0.0	0.0	0.0	0.0	0.4	10.9	35.9	62.3	101.4	106.5	137.6	254.0	119.4	164.7	129.5	134.6	79.3	17.1	0.1	0.0	0.0	0.0	0.0	56.4	254.0
15-Sep	0.0	0.0	0.0	0.0	0.0	0.9	23.9	74.1	118.7	156.1	310.4	240.9	367.9	284.4	283.4	275.8	81.4	52.0	17.5	0.1	0.0	0.0	0.0	0.0	95.3	367.9
16-Sep	0.0	0.0	0.0	0.0	0.0	2.0	36.7	108.5	204.5	171.5	279.6	464.9	570.6	543.8	402.7	170.9	162.4	83.1	7.5	0.0	0.0	0.0	0.0	0.0	133.7	570.6
17-Sep	0.0	0.0	0.0	0.0	0.0	1.3	56.9	144.3	191.2	209.6	370.4	548.8	519.1	493.2	381.4	351.7	217.8	88.6	9.1	0.0	0.0	0.0	0.0	0.0	149.3	548.8
18-Sep	0.0	0.0	0.0	0.0	0.0	0.2	9.4	32.0	48.6	153.6	308.1	401.2	543.1	223.8	402.7	353.2	220.3	89.8	6.8	0.0	0.0	0.0	0.0	0.0	116.4	543.1
19-Sep	0.0	0.0	0.0	0.0	0.0	0.4	36.8	155.8	285.9	398.1	487.9	547.5	563.9	529.3	452.9	348.8	187.7	86.6	6.4	0.0	0.1	0.1	0.0	0.0	170.3	563.9
20-Sep	0.0	0.0	0.0	0.0	0.0	0.4	34.4	100.4	285.6	321.3	468.1	533.5	554.2	519.1	450.4	343.5	211.6	81.5	7.5	0.1	0.1	0.1	0.1	0.0	163.0	554.2
21-Sep	0.0	0.0	0.0	0.0	0.0	0.3	44.3	158.5	270.1	366.3	479.9	501.9	477.1	372.3	345.5	124.1	142.3	51.8	3.2	0.0	0.0	0.0	0.0	0.0	139.1	501.9
22-Sep	0.0	0.0	0.0	0.0	0.0	0.2	15.5	46.6	98.0	127.2	200.4	446.0	643.4	533.1	443.3	291.9	189.7	66.7	3.7	0.0	0.0	0.0	0.0	0.0	129.4	643.4
23-Sep	0.0	0.0	0.0	0.0	0.0	0.2	29.8	139.6	253.4	366.0	452.5	450.1	476.3	349.6	274.0	146.3	60.4	17.1	1.5	0.0	0.0	0.0	0.0	0.0	125.7	476.3
24-Sep	0.0	0.0	0.0	0.0	0.0	0.0	7.6	36.6	140.2	78.1	77.9	308.1	448.8	496.4	395.5	309.7	178.2	57.7	3.3	0.0	0.0	0.0	0.0	0.0	105.8	496.4
25-Sep	0.0	0.0	0.0	0.0	0.0	0.1	6.9	28.5	57.2	75.5	63.8	70.4	101.4	143.7	168.3	133.6	61.4	11.7	0.6	0.0	0.0	0.0	0.0	0.0	38.5	168.3
26-Sep	0.0	0.0	0.0	0.0	0.0	0.0	4.9	10.3	35.4	72.5	91.6	89.1	261.3	194.1	293.4	225.5	156.6	24.0	0.1	0.0	0.0	0.0	0.0	0.0	60.8	293.4
27-Sep	0.0	0.0	0.0	0.0	0.0	0.0	6.9	35.9	187.8	277.6	331.2	427.0	406.9	475.3	390.9	264.3	161.0	32.4	1.2	0.0	0.0	0.0	0.0	0.0	124.9	475.3
28-Sep	0.0	0.0	0.0	0.0	0.0	0.0	1.3	10.1	45.9	110.1	125.3	99.1	96.4	71.3	134.3	142.8	69.9	23.2	1.7	0.0	0.0	0.0	0.0	0.0	38.8	142.8
29-Sep	0.0	0.0	0.0	0.0	0.0	0.0	5.6	57.5	89.5	168.1	206.3	257.8	228.4	406.8	315.8	129.5	118.7	21.8	1.2	0.0	0.0	0.0	0.0	0.1	83.6	406.8
30-Sep	0.0	0.0	0.0	0.0	0.0	0.0	17.8	104.2	147.8	349.0	396.2	455.0	486.0	450.7	382.7	134.0	51.4	32.4	0.8	0.0	0.0	0.0	0.0	0.0	125.3	486.0
	0.0	0.0	0.0	0.0	0.0	3.1	32.2	95.6	183.0	252.0	326.8	392.5	429.8	400.3	354.3	253.6	170.7	73.6	15.6	0.6	0.0	0.0	0.0	0.0	Diurnal Average	
	0.0	0.1	0.1	0.1	0.2	18.9	109.0	263.9	371.6	492.5	605.1	658.8	670.8	636.6	566.1	460.3	338.2	197.4	70.7	4.5	0.1	0.1	0.1	0.1	Diurnal Maximum	

Wood Buffalo Environmental Association

Hourly Averages

Global Radiation (GR) - W/m2

Fort Chipewyan - September 2024



Concentration Ranges (W/m2)	Number of Hours	%	Cumulative %
0 - 20	370	51.39	51.39
21 - 100	92	12.78	64.17
101 - 300	129	17.92	82.08
301 - 600	114	15.83	97.92
601 - 900	15	2.08	100.00
> 900	0	0.00	100.00

Total Number of Valid Hours: 720

Total Number of Hours: 720

Wood Buffalo Environmental Association

Summary of Hour Averages

Wind Speed 10m (WS10) - km/h

Fort Chipewyan - September 2024

Maximum Speed: 34 km/h on Sep 21 20:00

Maximum Daily Speed Average: 15.6 km/h on Sep 23

Minimum Speed Value: 1 km/h on Sep 27 20:00

Minimum Daily Speed Average: 0.5 km/h on Sep 29

Maximum Diurnal Speed Average: 2.5 km/h at hour 10

Minimum Diurnal Speed Average: 0.0 km/h at hour 24

Monthly Average Velocity: 0.4 km/h 261.3 deg

Percentiles: $P_1 = 2$ $P_{10} = 5$ $Q_1 = 7$ Median = 10 $Q_3 = 15$ $P_{90} = 19$ $P_{99} = 28$

Hours in Service:	720
Hours of Data:	717
Hours of Missing Data:	3
Percent Operational Time:	100.0

Day	Hourly Period Ending At (MST)																								Daily	Daily
	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24	Average	Maximum
1-Sep	ESE18	SE12	SE13	SSE18	S19	SSE12	SE9	SSE12	S12	S11	SSW9	SSE7	SE4	ESE6	SSW7	W9	W10	WNW7	NNE4	ENE13	ENE10	E8	E7	E6	SE6.0	S19
2-Sep	E9	E10	ENE8	ENE9	ENE10	E10	ESE8	E9	E9	E9	E9	E9	E8	SSW5	W14	W11	WNW14	NNW21	NNW16	NNW16	NW12	NW12	NW10	NW11	NNE3.8	NNW21
3-Sep	NW10	WNW11	WNW11	NW12	NW13	NW13	NW11	NW10	NW9	NW9	WNW10	NW10	WNW12	NW11	WNW10	WNW12	WNW9	WNW9	WNW8	WNW8	WNW7	WNW7	NW7	WNW7	NW9.8	NW13
4-Sep	WNW7	NW7	NW8	NW8	WNW9	WNW7	W7	WSW7	WSW9	WSW9	W13	WSW13	WSW17	W15	W18	WSW16	WSW16	WSW12	W7	WSW10	W7	N11	NNW9	NW6	W8.8	W18
5-Sep	NNW8	NNW7	W6	WNW11	WNW8	NW3	WNW4	ENE1	SE4	SE7	S11	SE12	SE15	SSE18	SE20	SE19	SE21	SE23	SE23	SE20	SE20	SSE23	SSE23	SSE29	SSE10.2	SSE29
6-Sep	SSE33	S33	S32	S28	S26	SSW22	SSW16	SSW15	SW15	W17	WSW16	W17	W14	WSW14	WSW15	WSW11	SW9	SW9	W10	W10	WNW10	WNW7	W6	W8	SW12.3	SSE33
7-Sep	WSW7	W8	WNW8	WSW7	W7	SW5	SW7	SSW4	S3	SSW4	E6	E10	E7	E10	E9	E12	E13	E7	E7	ESE8	E8	E6	S5	W10	ESE2.2	E13
8-Sep	WNW10	WNW8	WNW8	W10	WNW11	WNW11	WNW10	WNW7	WNW4	WNW6	NW5	NNE3	E9	E13	ENE12	NE12	NE17	NNE13	NE17	ENE31	ENE26	ENE27	ENE27	NE22	NE7.5	ENE31
9-Sep	NE21	NE15	NE17	NE18	NE11	NE11	N10	WNW13	N13	NW17	NW13	NW9	W13	W13	WNW13	W12	W11	W13	WNW16	WNW19	WNW23	WNW23	W19	WNW18	NW9.6	WNW23
10-Sep	W17	WNW17	W13	WNW15	WNW15	W15	W15	W17	WNW17	WNW19	WNW20	WNW18	WNW21	WNW19	WNW15	WNW13	NW11	NW9	NNW8	NNW4	WNW5	W9	WNW7	WSW4	WNW13.0	WNW21
11-Sep	WSW5	WSW6	WSW6	WSW3	SW1	SSW1	SSW3	ESE2	ESE4	ESE5	E8	E10	E12	E16	E17	E17	E16	ENE15	ENE17	ENE20	ENE28	E28	E24	E23	E9.8	ENE28
12-Sep	E18	ESE14	ESE13	E10	ESE12	ESE14	ESE10	SSE18	S29	S26	S22	SSE18	SE17	ESE15	E16	E19	ESE18	ESE18	ESE16	ESE15	ESE14	ESE14	E12	E13	SE14.0	S29
13-Sep	E8	E4	E8	ENE5	ENE4	ESE2	SW4	E6	ENE17	ENE19	ENE10	E18	E18	ENE19	NE17	NE20	NE19	NE11	NNE7	NNE8	NNW8	NW7	NNW5	NNE7	ENE8.8	NE20
14-Sep	NNW4	NW6	NW8	NW7	NW7	NW7	NW7	WNW7	WNW8	WNW11	WNW12	WNW11	NW13	NNW10	NNW9	NNW8	N9	NNW7	NW5	WNW6	NW7	WNW7	WNW8	NW7	NW7.4	NW13
15-Sep	NW9	NW8	NW9	NW9	NW9	NW8	WNW8	NW9	NW10	NW10	NW9	WNW11	W9	NW2	W7	WNW11	ENE4	NW4	S6	SSE6	SSE11	SSE11	SSE13	SSE15	WNW3.6	SSE15
16-Sep	SE17	ESE15	ESE13	ESE11	ESE11	ESE12	SSE9	S10	S11	SSW12	SSW14	SW21	SW22	WSW23	WSW19	WSW15	SW14	SW14	SW9	SW10	WSW10	SW10	WSW8	SW7	SSW8.6	WSW23
17-Sep	SW7	SSW8	SW10	SSW7	SW10	SW9	SW7	SSW5	SW7	SSW6	SSW7	S4	E6	E9	C	C	C	E12	ENE13	ENE16	ENE23	ENE18	E18	E17	ESE4.6	ENE23
18-Sep	ESE16	SSE19	SSE19	S19	SSW10	SSE6	SW10	SW12	WSW16	W22	W22	W20	WSW21	WNW11	WSW18	WSW17	WSW15	WSW9	SW7	SW8	WSW10	W10	SSW7	SW9	SW10.7	W22
19-Sep	WSW8	SW8	SW10	SSW8	SSW8	SW6	SSW3	SW5	S3	SW4	SSE5	SSW9	SSW10	SW11	SW12	WSW9	WSW7	SW9	SW6	W6	NW5	NW7	NNW8	NNW5	SW5.5	SW12
20-Sep	N3	NNE2	NNW4	NNW9	NNW13	NNW13	NNW12	NNW13	NNW13	NNW13	NNW13	NNW15	NNW15	NNW15	NNW16	NNW16	NNW16	NNW13	NNW9	NNW5	WNW7	NW7	NW9	NW10	NNW10.6	NNW16
21-Sep	NW9	NW9	NNW11	NNW12	NW9	NW7	WNW4	NW3	W1	SSW6	SE6	ESE10	E12	E16	E20	ENE21	ENE23	ENE24	E27	E34	E31	ENE27	E16	ESE15	ENE10.1	E34
22-Sep	ESE23	ESE22	E16	ESE18	ESE19	ESE16	E16	E17	E17	ENE14	ENE18	ENE19	E21	E19	ENE16	ENE16	ENE17	NE13	NNE13	NNE15	NE15	NE14	NE15	ENE15	ENE15.1	ESE23
23-Sep	NE15	NE11	NE12	ENE12	NE10	NE11	NE12	E26	E27	E17	E15	E18	E20	ENE20	ENE21	ENE18	ENE20	ENE19	ENE20	E20	ESE19	ESE17	ESE10	ESE7	ENE15.6	E27
24-Sep	E6	ESE4	SSW6	SW7	SW5	E3	SE5	SSE4	E5	SSE2	S6	WSW11	WNW15	W15	W17	W14	W9	WSW7	W12	W11	WSW9	WSW10	WSW7	SSW4	WSW5.2	W17
25-Sep	E6	ESE7	SE8	ESE15	ESE14	E18	ESE19	ESE18	E19	E21	E22	E24	ENE17	ESE9	SE9	S13	S9	SSW9	SW10	SW8	WSW13	WSW12	W9	WNW11	ESE7.1	E24
26-Sep	WNW11	W9	W11	WNW12	WNW10	WNW12	WNW8	W9	WNW11	WNW12	W12	W13	W15	W13	W15	W13	WSW12	SW9	WSW16	WSW8	W6	SW8	WSW13	WSW12	W10.7	WSW16
27-Sep	WSW12	WSW11	WSW10	SW11	SW7	SW6	SW6	SW2	SSW4	WSW3	SE4	ESE7	E6	ESE7	ESE9	SE4	W7	W5	WSW3	NNW1	ENE6	NE5	ENE5	E4	SSW1.9	WSW12
28-Sep	NE4	N2	NE10	NNW10	NNW10	NNW8	NW7	W6	WNW8	W9	W11	WSW10	WSW12	SW15	SW13	SW15	SW13	SW12	SW11	SW9	SW11	SW13	SW11	SW11	WSW6.9	SW15
29-Sep	SW9	SSW8	SSW7	SE3	ESE5	ESE3	SSE1	NE2	NE4	ENE4	E2	N5	ENE3	ESE9	E12	NNE4	E5	SSW4	W9	WNW12	WNW7	NW9	NW10	NNW11	NW0.5	E12
30-Sep	NNW13	NNW12	NNW11	NNW9	WNW6	W8	W7	W9	WNW8	W12	WSW14	WSW16	WSW16	W16	W15	W12	W12	W8	NW10	WNW8	W9	W13	WNW12	WNW11	WNW9.9	WSW16
	ESE1.3	SSE0.9	SSW1.0	SW0.8	WSW1.5	W0.5	WSW1.4	SW1.5	S0.9	WSW2.5	WSW2.3	WSW1.5	WSW1.1	SW0.2	W1.5	NW1.9	NNW1.0	N1.0	N1.2	ENE1.7	NE1.8	NE1.1	NNE0.6	NNW0.0	Diurnal Average	
	SSE33	SSE33	S32	S28	S26	SSW22	ESE19	E26	S29	S26	S22	E24	SW22	WSW23	ENE21	ENE21	ENE23	ENE24	E27	E34	E31	E28	ENE27	SSE29	Diurnal Maximum	

C - Calibration

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

Wood Buffalo Environmental Association

Summary of Hour Standard Deviations

Wind Speed 10m (WS10) - km/h

Fort Chipewyan - September 2024

Number of Exceedences (AAAQO): 1-hr: 0 24-hr: 0
Maximum Value: 7 km/h on Sep 2 18:00

Minimum Value: 1 km/h on Sep 27 23:00

Percentiles: P_1 = 1 P_{10} = 1 Q_1 = 2 Median = 2 Q_3 = 3 P_{90} = 4 P_{99} = 6

Hours in Service:	720
Hours of Data:	717
Hours of Missing Data:	3
Hours of Calibration:	3
Percent Operational Time:	100.0

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

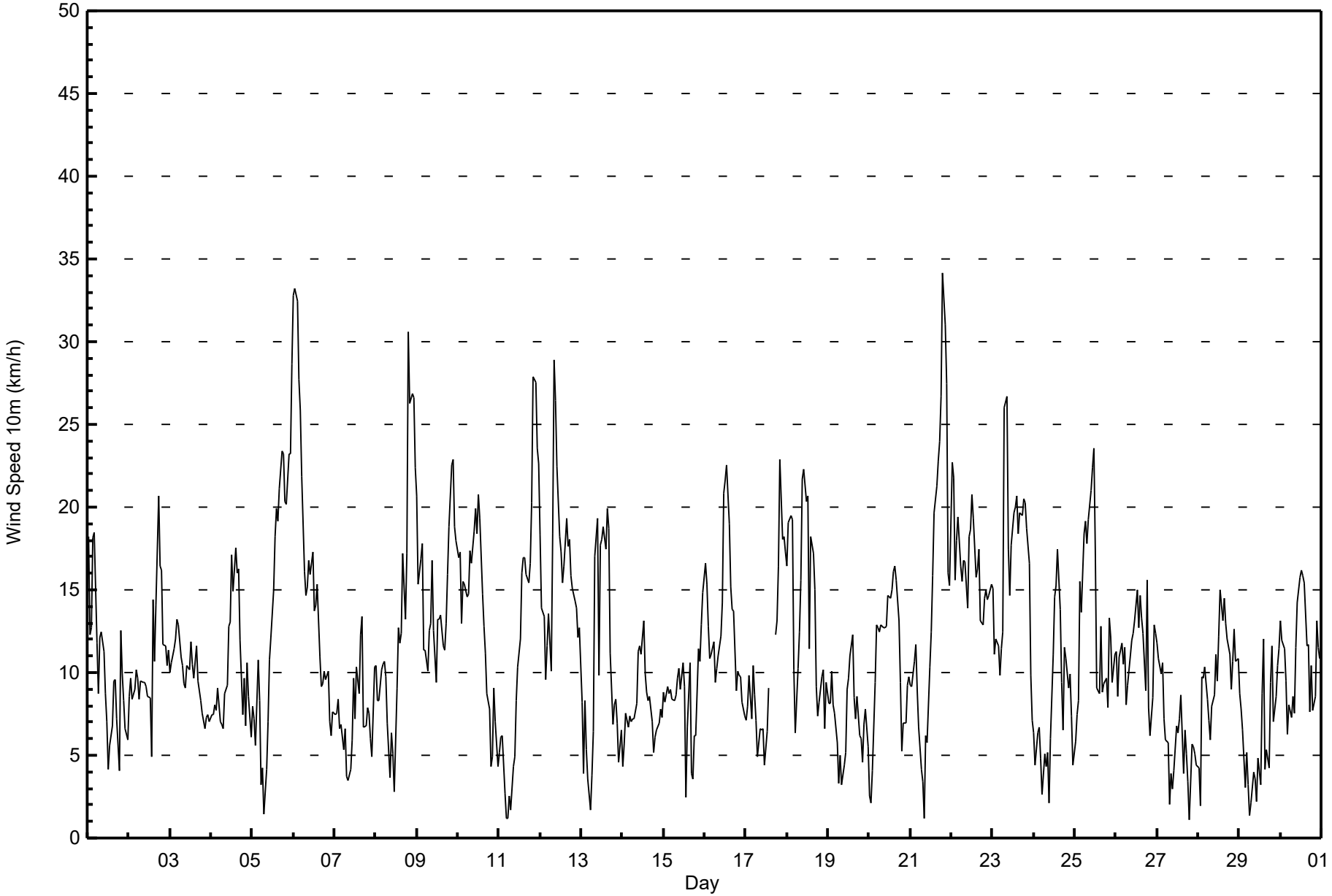
C - Calibration

Wood Buffalo Environmental Association

Hourly Averages

Wind Speed 10m (WS10) - km/h

Fort Chipewyan - September 2024



Wind Speed Ranges (km/h)	Number of Hours	%	Cumulative %
0 - 5	87	12.13	12.13
6 - 11	322	44.91	57.04
12 - 19	243	33.89	90.93
20 - 28	57	7.95	98.88
29 - 38	8	1.12	100.00
> 38	0	0.00	100.00

Total Number of Valid Hours: 717

Total Number of Hours: 720

Wood Buffalo Environmental Association

Frequency Distribution

Wind Speed 10m (WS10) - km/h

Fort Chipewyan - September 2024

Wind Speed Ranges (km/h)	Wind Direction																
	N	NNE	NE	ENE	E	ESE	SE	SSE	S	SSW	SW	WSW	W	WNW	NW	NNW	**Totals**
0 - 5	3	4	4	7	6	7	6	4	4	10	7	5	2	4	7	7	87
6 - 11	3	3	7	6	33	15	4	7	7	17	37	27	36	53	47	20	322
12 - 19	1	3	14	22	32	26	7	11	3	4	11	25	32	25	8	19	243
20 - 28	0	0	3	14	13	2	6	2	4	1	2	2	3	4	0	1	57
29 - 38	0	0	0	1	2	0	0	3	2	0	0	0	0	0	0	0	8
> 38	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Totals	7	10	28	50	86	50	23	27	20	32	57	59	73	86	62	47	717

Total Number of Valid Hours: 717

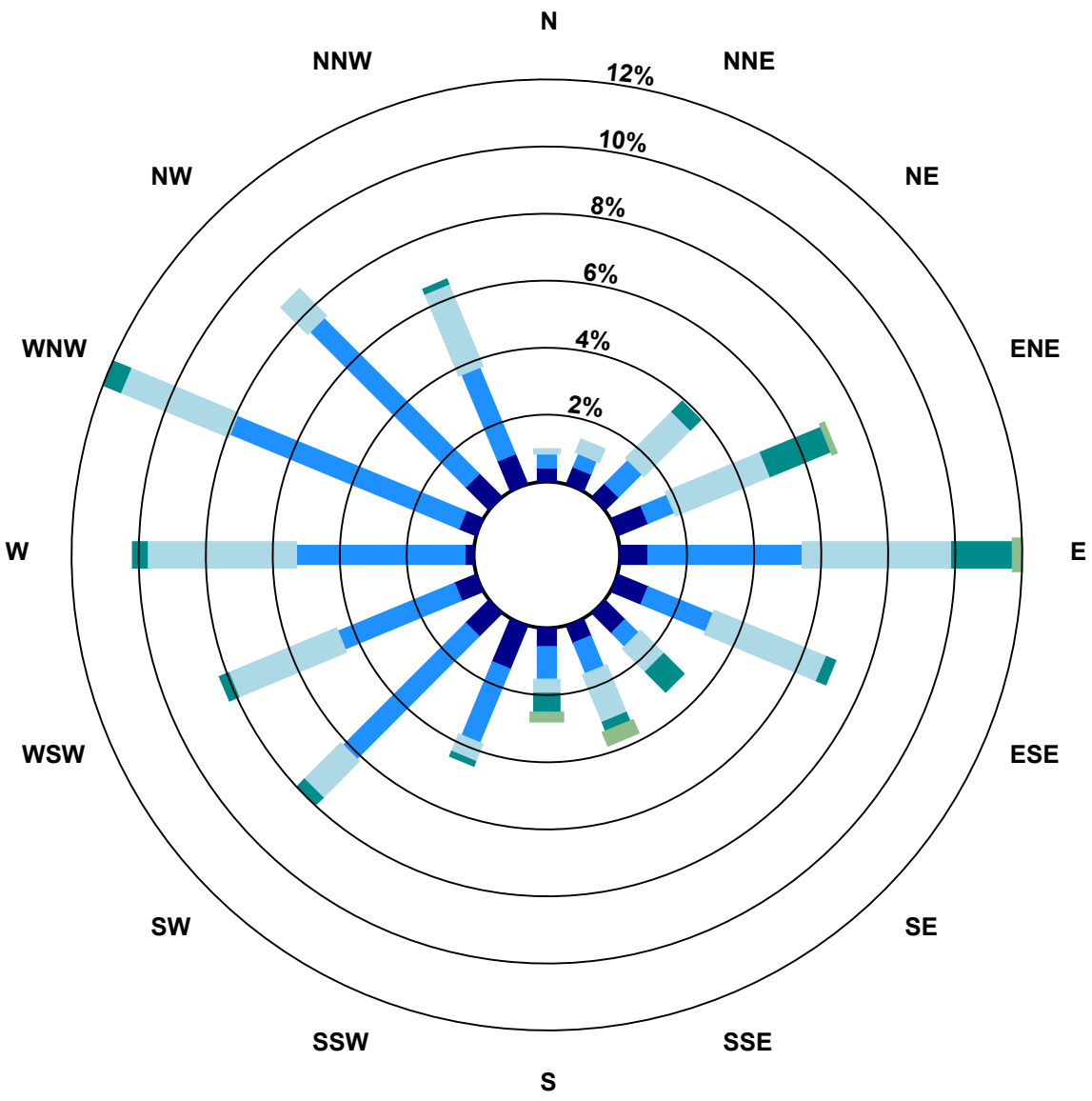
Total Number of Hours: 720

Wood Buffalo Environmental Association

Wind Rose Sep 2024

Wind Speed 10m (WS10) - km/h

Fort Chipewyan



Classes (km/h)

- 0 - 5
- 6 - 11
- 12 - 19
- 20 - 28
- 29 - 38
- > 38

Total Number of Valid Hours: 717

Wood Buffalo Environmental Association

Summary of Hour Averages

Wind Direction 10m (WD10) - deg

Fort Chipewyan - September 2024

Direction of Maximum Speed: 91 deg on Sep 21 20:00
Direction of Maximum Daily Speed Average: 77.6 deg on Sep 23

Direction of Minimum Speed: 329 deg on Sep 27 20:00

Direction of Minimum Daily Speed Average: 0.5 deg on Sep 29

Monthly Average Direction: 261.3 deg

Hours in Service:	720
Hours of Data:	717
Hours of Missing Data:	3
Percent Operational Time:	100.0

Day	Hourly Period Ending At (MST)																								Daily
	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24	Average
1-Sep	104	127	137	151	178	158	140	167	169	172	194	164	129	107	212	273	281	295	29	74	70	81	88	84	143.3
2-Sep	85	83	78	73	77	82	108	100	89	84	85	90	87	203	261	280	283	334	333	335	325	326	315	304	14.8
3-Sep	305	303	300	307	306	306	317	310	323	314	293	310	301	311	300	298	292	302	296	291	302	297	304	302	304.2
4-Sep	303	320	307	309	301	285	259	253	238	257	259	258	239	259	259	254	245	247	270	244	271	352	337	318	269.7
5-Sep	337	342	263	284	298	311	295	68	146	146	172	145	142	150	143	137	129	125	129	145	143	147	158	165	147.6
6-Sep	167	169	171	177	185	192	206	211	232	261	256	262	267	250	251	251	228	235	269	279	288	288	271	268	217.1
7-Sep	251	269	288	257	281	235	222	194	186	213	94	85	86	91	94	90	93	90	96	102	89	93	189	259	123.3
8-Sep	287	291	286	279	291	282	298	286	297	286	321	26	92	83	59	45	44	24	44	68	61	62	60	55	34.9
9-Sep	50	45	37	50	39	39	3	302	350	309	323	317	278	280	282	270	276	279	286	289	287	285	280	285	315.4
10-Sep	280	286	278	283	282	272	273	276	291	282	287	287	284	289	297	297	324	326	332	331	297	268	287	238	287.4
11-Sep	251	255	240	244	223	199	198	107	120	118	86	86	86	88	85	81	82	73	67	70	77	81	79	81	83.0
12-Sep	97	107	105	87	109	110	114	160	173	179	177	163	126	108	85	82	111	121	119	119	119	116	97	100	124.8
13-Sep	94	85	87	65	73	105	218	80	70	70	60	88	83	74	40	45	54	45	29	28	337	324	342	33	58.7
14-Sep	347	319	315	317	321	323	310	293	296	282	286	287	306	329	342	344	349	335	320	290	313	283	287	309	310.8
15-Sep	323	313	310	317	312	305	289	319	315	314	305	289	277	308	279	284	64	322	172	166	149	155	149	148	285.6
16-Sep	126	102	114	118	117	117	164	191	180	194	208	228	235	246	247	238	231	233	236	234	237	232	249	231	205.8
17-Sep	231	205	217	207	219	217	220	213	223	211	210	182	92	96	C	C	C	81	75	71	74	78	87	87	121.0
18-Sep	123	167	163	171	207	165	215	231	250	261	260	259	248	284	257	253	251	239	218	226	241	261	212	231	229.9
19-Sep	238	214	217	212	207	214	205	221	173	235	150	204	209	227	232	254	252	222	236	273	310	312	333	343	232.7
20-Sep	6	27	329	335	336	339	335	336	344	335	340	335	333	333	339	342	344	335	334	328	303	314	305	313	334.1
21-Sep	319	326	327	327	316	316	301	321	279	198	134	102	91	81	81	72	71	70	85	91	80	77	93	115	72.9
22-Sep	122	118	97	102	108	102	86	85	89	78	77	69	80	80	75	70	57	37	24	27	40	46	51	57	77.3
23-Sep	56	48	53	58	49	39	56	82	89	91	83	86	85	74	71	67	65	67	75	88	107	122	109	113	77.6
24-Sep	92	103	202	223	217	89	133	158	79	153	178	257	286	279	278	281	278	246	265	267	258	250	246	199	252.9
25-Sep	80	106	138	123	117	100	109	103	92	81	80	80	77	105	137	173	182	209	230	236	248	256	261	282	116.8
26-Sep	290	281	276	288	295	300	296	267	283	285	280	275	280	279	275	267	256	229	249	250	277	235	249	255	271.9
27-Sep	248	257	249	226	235	229	216	231	205	255	139	104	93	105	103	130	260	265	255	329	68	51	74	85	206.7
28-Sep	55	8	45	338	331	329	317	263	282	271	269	258	238	226	222	236	235	222	222	224	218	219	228	225	249.2
29-Sep	219	202	201	127	103	105	167	40	54	70	88	1	74	114	100	21	97	203	275	283	296	309	315	330	315.7
30-Sep	333	334	336	331	283	277	273	279	282	260	249	249	255	271	265	281	275	274	308	288	260	278	292	285	281.9
	103.2	158.1	197.6	226.4	255.3	262.9	244.8	220.0	186.6	249.3	243.5	240.5	236.4	218.8	276.5	310.0	344.6	351.4	358.2	57.7	55.9	42.2	17.7	331.4	
	Diurnal Average																								

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

Wood Buffalo Environmental Association

Summary of Hour Standard Deviations

Wind Direction 10m (WD10) - deg

Fort Chipewyan - September 2024

Number of Exceedences (AAAQO): 1-hr: 0 24-hr: 0
Maximum Value: 85 deg on Sep 15 14:00

Minimum Value: 4 deg on Sep 12 18:00

Percentiles: P_1 = 5 P_{10} = 7 Q_1 = 11 Median = 16 Q_3 = 22 P_{90} = 29 P_{99} = 74

Hours in Service:	720
Hours of Data:	717
Hours of Missing Data:	3
Hours of Calibration:	3
Percent Operational Time:	100.0

Day	Hourly Period Ending At (MST)																								Daily
	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24	Maximum
1-Sep	6	12	12	10	10	23	19	22	22	28	23	35	35	21	48	27	19	28	52	7	8	10	9	12	52
2-Sep	7	5	10	6	5	7	17	7	9	8	9	11	13	61	20	20	16	27	24	24	24	25	19	19	61
3-Sep	18	20	17	19	20	19	24	21	26	26	21	26	22	23	24	19	19	19	20	16	17	12	17	11	26
4-Sep	8	13	7	7	5	26	17	15	15	19	19	24	18	19	20	21	18	16	19	21	39	23	23	30	39
5-Sep	18	40	55	11	9	44	45	70	21	22	14	18	16	18	14	9	6	5	8	8	8	9	11	9	70
6-Sep	7	7	7	8	10	9	15	11	16	17	16	16	17	20	21	19	16	15	16	12	12	17	12	11	21
7-Sep	11	19	11	17	15	24	12	48	40	29	17	9	7	7	13	9	7	20	16	10	13	36	42	22	48
8-Sep	15	13	11	13	13	13	18	17	51	20	29	54	15	6	14	10	11	19	20	9	10	10	11	11	54
9-Sep	13	16	13	18	30	17	28	33	35	22	30	34	17	20	18	17	17	17	16	16	15	15	16	15	35
10-Sep	14	15	13	14	14	15	15	17	19	17	16	17	18	21	23	25	28	29	23	16	25	16	19	15	29
11-Sep	18	23	13	59	63	70	61	30	22	26	9	7	7	6	6	6	6	9	8	7	6	5	6	6	70
12-Sep	14	10	8	13	17	9	14	10	8	9	9	17	7	6	6	6	18	4	5	6	6	5	14	7	18
13-Sep	10	15	19	13	33	75	77	29	10	11	23	7	11	18	14	16	13	12	16	17	22	16	19	23	77
14-Sep	40	21	12	16	22	17	14	15	16	15	16	19	20	27	27	27	25	23	21	12	22	22	11	22	40
15-Sep	23	22	19	23	20	18	17	26	22	24	32	24	21	85	28	21	77	24	49	26	6	6	6	8	85
16-Sep	11	9	13	12	12	12	32	13	11	11	12	15	17	18	17	15	12	14	15	13	13	13	19	18	32
17-Sep	12	17	11	10	11	15	14	24	14	15	25	44	12	7	C	C	C	8	8	7	6	8	7	6	44
18-Sep	26	11	11	9	42	13	15	17	15	15	15	17	17	29	17	19	17	17	12	11	12	13	22	12	42
19-Sep	24	11	10	10	18	24	56	24	55	42	31	26	21	24	20	26	25	10	22	29	7	14	16	75	75
20-Sep	54	56	30	18	14	15	16	21	23	24	27	27	31	27	28	28	27	27	25	24	13	17	13	15	56
21-Sep	15	14	12	15	22	28	48	41	80	25	26	10	11	7	6	8	8	7	14	5	9	7	11	9	80
22-Sep	7	5	9	5	6	10	10	10	9	7	6	11	8	8	12	15	11	13	16	14	9	8	9	9	16
23-Sep	10	8	8	9	13	9	10	7	6	9	7	6	5	10	8	9	9	9	6	7	6	6	13	9	13
24-Sep	7	13	24	15	11	70	19	28	15	64	51	36	19	18	16	17	18	16	21	14	13	13	18	21	70
25-Sep	18	24	29	21	23	8	15	7	6	6	6	6	10	20	31	11	11	26	12	18	14	13	12	18	31
26-Sep	15	15	13	16	19	17	18	17	15	17	16	16	17	19	18	19	16	17	19	19	22	11	14	13	22
27-Sep	14	13	12	11	17	18	22	39	25	46	26	11	14	12	10	62	17	12	39	72	22	10	20	15	72
28-Sep	57	78	17	20	17	18	22	16	16	14	15	17	16	12	12	15	14	10	9	13	11	12	13	15	78
29-Sep	14	17	20	52	36	30	75	19	17	16	40	29	52	7	18	41	12	46	22	12	15	18	16	17	75
30-Sep	18	18	18	19	13	11	29	16	25	17	19	19	18	18	18	41	21	27	17	24	18	13	17	15	41
	57	78	55	59	63	75	77	70	80	64	51	54	52	85	48	62	77	46	52	72	39	36	42	75	
	Diurnal Maximum																								

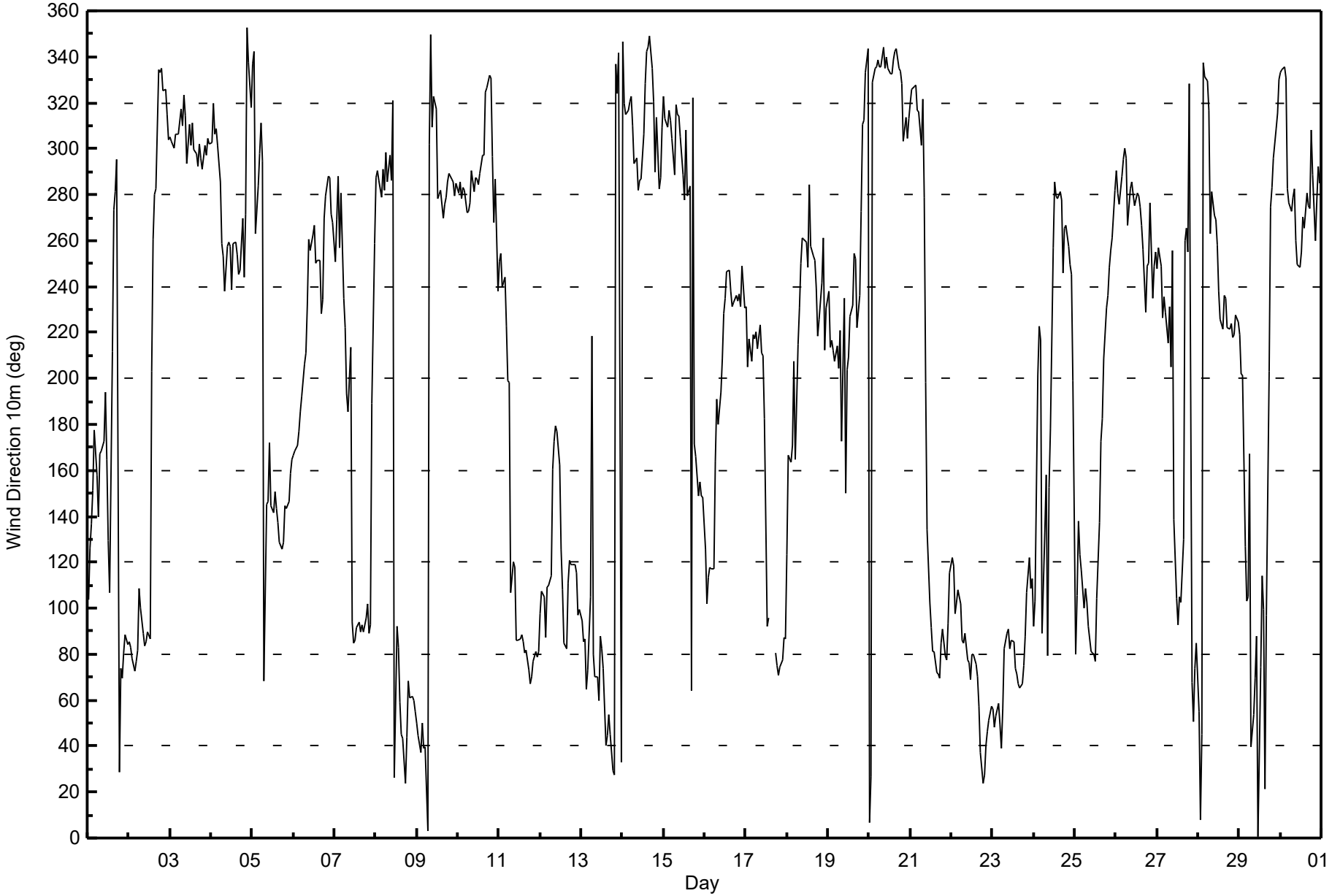
C - Calibration

Wood Buffalo Environmental Association

Hourly Averages

Wind Direction 10m (WD10) - deg

Fort Chipewyan - September 2024



WOOD BUFFALO ENVIRONMENTAL ASSOCIATION

CONTINUOUS AMBIENT AIR QUALITY
MONITORING PROGRAM
MONTHLY REPORT

AMS09
BARGE LANDING
SEPTEMBER 2024

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

October 31, 2024

WOOD BUFFALO ENVIRONMENTAL ASSOCIATION - BARGE LANDING (AMS09)
SEPTEMBER 2024

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	686	34	34	100	27.2	0	4.1	0
TRS(ppb) Average	685	35	35	100	6.3	0	1.2	0
THC(ppm) Average	684	34	36	99.72	3.5	-	2.3	-
NMHC(ppm) Average	684	34	36	99.72	0.229	-	0.03	-
CH4(ppm) Average	684	34	36	99.72	3.5	-	2.3	-
NO2 (ppb) Average	685	35	35	100	23.7	0	11	-
NO (ppb) Average	685	35	35	100	87.8	-	11.8	-
NOX (ppb) Average	685	35	35	100	95.6	-	20	-
PM2.5(ug/m3) Average	719	1	1	100	167.8	0	104.9	6
Temperature (C) Average	720	0	0	100	31.4	-	21	-
Relative Humidity (%) Average	720	0	0	100	100	-	90.1	-
Barometric Pressure (inHg) Average	720	0	0	100	29.3	-	29.2	-
Wind Speed 10 m (km/h) Average	713	0	7	99.03	13	-	7	-
Wind Direction 10 m (deg) Average	713	0	7	99.03	-	-	-	-
Wind Speed 20 m (km/h) Average	719	0	1	99.86	24	-	12	-
Wind Direction 20 m (deg) Average	719	0	1	99.86	-	-	-	-

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

WOOD BUFFALO ENVIRONMENTAL ASSOCIATION - BARGE LANDING (AMS09)
SEPTEMBER 2024

MONTHLY SUMMARY FOR AIR QUALITY/ METEOROLOGICAL MONITORING MEASUREMENTS

						Percentile					
Parameter	Number	Mean	StnDev	Total	Min	P10	Q1	Median	Q3	P90	Max
SO2 (ppb) Average	686	0.8	2.5	-	0	0	0	0.1	0.3	1.5	27.2
TRS(ppb) Average	685	0.57	0.6	-	0.1	0.2	0.3	0.4	0.6	1.1	6.3
THC(ppm) Average	684	2.07	0.2	-	1.9	1.9	2	2	2.1	2.3	3.5
NMHC(ppm) Average	684	0.003	0.015	-	0	0	0	0	0	0	0.229
CH4(ppm) Average	684	2.06	0.2	-	1.9	1.9	2	2	2.1	2.3	3.5
NO2 (ppb) Average	685	6.39	5	-	0.1	0.3	1.9	6.2	9.5	13.4	23.7
NO (ppb) Average	685	5.7	10.4	-	0	0	0.1	0.9	6.4	17.5	87.8
NOX (ppb) Average	685	12.09	13.1	-	0.1	0.3	2.1	8.4	17.5	29.7	95.6
PM2.5(ug/m3) Average	719	24.25	31.6	-	0.7	4.7	7.4	12.7	23.6	64.4	167.8
Temperature (C) Average	720	13.03	6	-	0.7	5.7	8.9	12.6	16.6	20.9	31.4
Relative Humidity (%) Average	720	74.26	20.1	-	25.5	44.2	59.2	76.1	93	99.1	100
Barometric Pressure (inHg) Average	720	28.77	0.2	-	28.3	28.6	28.7	28.8	28.9	29	29.3
Wind Speed 10 m (km/h) Average	713	4.6	3	-	0	2	3	4	6	8	13
Wind Direction 10 m (deg) Average	713	228	-	-	-	-	-	-	-	-	-
Wind Speed 20 m (km/h) Average	719	8.5	4	-	1	4	6	8	11	14	24
Wind Direction 20 m (deg) Average	719	237.5	-	-	-	-	-	-	-	-	-

WOOD BUFFALO ENVIRONMENTAL ASSOCIATION - BARGE LANDING (AMS09)
SEPTEMBER 2024

OPERATIONAL NOTES

Parameter	Period Start	Period End	Duration (Hours)	Notes
THC/ NMHC/ CH4	27 Sep 2024 13:00	27 Sep 2024 14:00	2	Maintenance - replaced support gas cylinder
Wind Speed, Wind Direction, 10m	04 Sep 2024 00:00	04 Sep 2024 00:00	1	Flat line in sensor output signal
Wind Speed, Wind Direction, 10m	04 Sep 2024 02:00	04 Sep 2024 02:00	1	Flat line in sensor output signal
Wind Speed, Wind Direction, 10m	11 Sep 2024 07:00	11 Sep 2024 07:00	1	Flat line in sensor output signal
Wind Speed, Wind Direction, 10m	12 Sep 2024 23:00	12 Sep 2024 23:00	1	Flat line in sensor output signal
Wind Speed, Wind Direction, 10m	15 Sep 2024 21:00	15 Sep 2024 21:00	1	Flat line in sensor output signal
Wind Speed, Wind Direction, 10m	18 Sep 2024 22:00	18 Sep 2024 22:00	1	Flat line in sensor output signal
Wind Speed, Wind Direction, 10m	24 Sep 2024 19:00	24 Sep 2024 19:00	1	Flat line in sensor output signal
Wind Speed, Wind Direction, 20m	13 Sep 2024 01:00	13 Sep 2024 01:00	1	Flat line in sensor output signal

Wood Buffalo Environmental Association

Summary of Hour Averages

Sulphur Dioxide (SO_2) - ppb

Barge Landing - September 2024

Number of Exceedences (AAAQO): 1-hr: 0 24-hr: 0
Maximum Value: 27.2 ppb on Sep 1 12:00 Maximum Daily Average: 4.1 ppb on Sep 8

Minimum Value: 0.0 ppb on Sep 1 01:00
Maximum Diurnal Average: 4.0 ppb at hour 12
Monthly Average: 0.80 ppb

Minimum Daily Average: 0.0 ppb on Sep 14
Minimum Diurnal Average: 0.1 ppb at hour 6
Percentiles: P_1 = 0.0 P_{10} = 0.0 Q_1 = 0.0 Median = 0.1 Q_3 = 0.3 P_{90} = 1.5 P_{99} = 12.8

Hours in Service:	720
Hours of Data:	686
Hours of Missing Data:	34
Hours of Calibration:	34
Percent Operational Time:	100.0

Day	Hourly Period Ending At (MST)																								Daily	Daily
	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24	Average	Maximum
1-Sep	0.0	0.1	0.3	1.5	1.2	Z	1.5	2.0	4.7	5.0	15.2	27.2	6.1	0.6	0.3	0.2	0.1	0.2	0.1	0.2	0.3	0.3	0.3	0.3	2.9	27.2
2-Sep	Z	0.5	0.3	0.3	0.3	0.4	0.4	0.6	0.5	1.0	6.8	3.5	0.6	0.3	0.1	0.2	0.1	0.1	0.0	0.1	0.2	0.2	0.1	0.1	0.7	6.8
3-Sep	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	0.0	0.0	0.1
4-Sep	0.0	0.1	Z	0.0	0.0	0.0	0.0	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	0.0	0.0	0.0	0.1
5-Sep	0.0	0.0	0.1	Z	0.1	0.1	0.0	0.1	0.0	0.5	3.6	11.6	19.1	12.9	9.2	4.0	2.4	0.7	0.4	0.4	0.3	0.3	1.8	1.9	3.0	19.1
6-Sep	1.3	2.3	3.7	3.0	5.3	Z	4.2	3.0	1.7	0.8	0.3	0.2	0.2	0.2	0.9	0.6	0.2	0.2	0.2	0.1	0.2	0.1	0.0	0.0	1.3	5.3
7-Sep	0.0	0.1	0.0	0.0	0.0	Z	0.2	0.2	1.5	2.0	12.7	16.3	7.0	0.8	0.1	0.0	0.1	0.1	0.1	0.1	0.1	0.0	0.1	0.0	1.8	16.3
8-Sep	Z	0.0	0.1	0.0	0.2	0.2	0.2	0.8	1.7	2.7	7.5	14.4	12.5	10.9	6.5	8.3	9.6	5.8	3.7	3.5	2.4	1.2	1.0	0.6	4.1	14.4
9-Sep	0.5	Z	0.3	0.4	0.2	0.2	0.2	0.2	0.2	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	0.1	0.5
10-Sep	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	0.1	0.0	0.0	0.1
11-Sep	0.0	0.1	0.0	Z	0.1	0.2	0.3	0.1	0.2	0.1	0.3	0.3	0.4	0.4	0.4	0.4	0.4	0.3	0.2	0.1	0.1	0.1	0.0	0.1	0.2	0.4
12-Sep	0.1	0.0	0.0	0.0	Z	0.1	0.2	0.0	0.1	0.1	0.2	0.1	0.1	0.2	0.1	0.1	0.1	0.2	0.2	0.2	0.1	0.2	0.2	0.2	0.1	0.2
13-Sep	0.2	0.2	0.2	0.1	0.3	Z	0.4	0.3	0.2	0.2	0.1	0.2	0.1	0.0	0.1	0.1	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.1	0.4
14-Sep	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
15-Sep	0.0	Z	0.0	0.0	0.0	0.0	0.1	0.0	0.0	0.0	0.0	0.0	0.1	0.1	0.2	0.1	0.1	0.0	0.0	0.0	0.0	0.1	0.2	0.2	0.1	0.2
16-Sep	0.1	0.2	Z	0.2	0.3	0.3	0.3	0.4	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	0.1	0.1	0.2	0.5
17-Sep	0.2	0.2	0.1	Z	0.3	0.3	0.4	0.3	0.3	0.2	4.3	10.9	10.2	7.1	1.5	0.7	2.7	7.3	2.4	1.8	0.8	0.4	0.4	0.2	2.3	10.9
18-Sep	0.2	0.2	0.2	0.2	Z	0.5	1.1	1.9	0.9	0.4	0.2	0.1	0.1	0.1	0.0	0.0	0.0	0.1	0.1	0.0	0.1	0.1	0.1	0.0	0.3	1.9
19-Sep	0.0	0.0	0.0	0.0	0.1	Z	0.1	0.4	0.3	0.5	1.2	1.0	0.4	0.2	0.2	0.1	0.1	0.5	0.3	0.3	0.1	0.1	0.0	0.0	0.3	1.2
20-Sep	Z	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	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.1	0.0	0.0	0.1
21-Sep	0.0	Z	0.0	0.1	0.1	0.1	0.0	0.0	0.1	0.1	0.4	8.5	10.9	11.4	7.4	2.8	0.8	0.6	0.4	0.3	0.2	0.0	0.0	0.0	1.9	11.4
22-Sep	0.0	0.0	Z	0.0	0.0	0.0	0.1	0.0	0.0	0.3	5.8	14.1	2.7	0.5	0.3	0.8	8.1	11.1	1.8	0.8	0.4	0.3	0.2	0.1	2.1	14.1
23-Sep	0.0	0.1	0.1	Z	0.1	0.1	0.3	0.1	0.1	0.1	0.1	0.4	3.9	8.8	9.9	4.0	1.9	0.7	0.5	0.4	0.3	0.3	0.3	0.2	1.4	9.9
24-Sep	0.1	0.2	0.2	0.1	Z	0.2	0.3	0.2	0.1	0.1	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	0.0	0.1	0.3
25-Sep	0.1	0.1	0.1	0.2	0.2	Z	0.2	0.1	0.1	0.2	0.2	1.0	0.5	0.3	0.4	0.9	0.6	0.3	0.2	0.2	0.2	0.1	0.0	0.0	0.3	1.0
26-Sep	Z	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	0.0	0.0	0.1
27-Sep	0.0	Z	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	1.7	4.6	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	4.6
28-Sep	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
29-Sep	0.0	0.0	0.0	Z	0.0	0.0	0.0	0.0	0.0	0.0	0.1	0.1	0.1	0.7	0.7	0.3	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.1	0.7
30-Sep	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
	0.1	0.2	0.2	0.3	0.3	0.1	0.4	0.4	0.5	0.5	2.1	4.0	2.6	1.9	1.3	0.8	0.9	0.9	0.4	0.3	0.2	0.1	0.2	0.1	Diurnal Average	
	1.3	2.3	3.7	3.0	5.3	0.5	4.2	3.0	4.7	5.0	15.2	27.2	19.1	12.9	9.9	8.3	9.6	11.1	3.7	3.5	2.4	1.2	1.8	1.9	Diurnal Maximum	

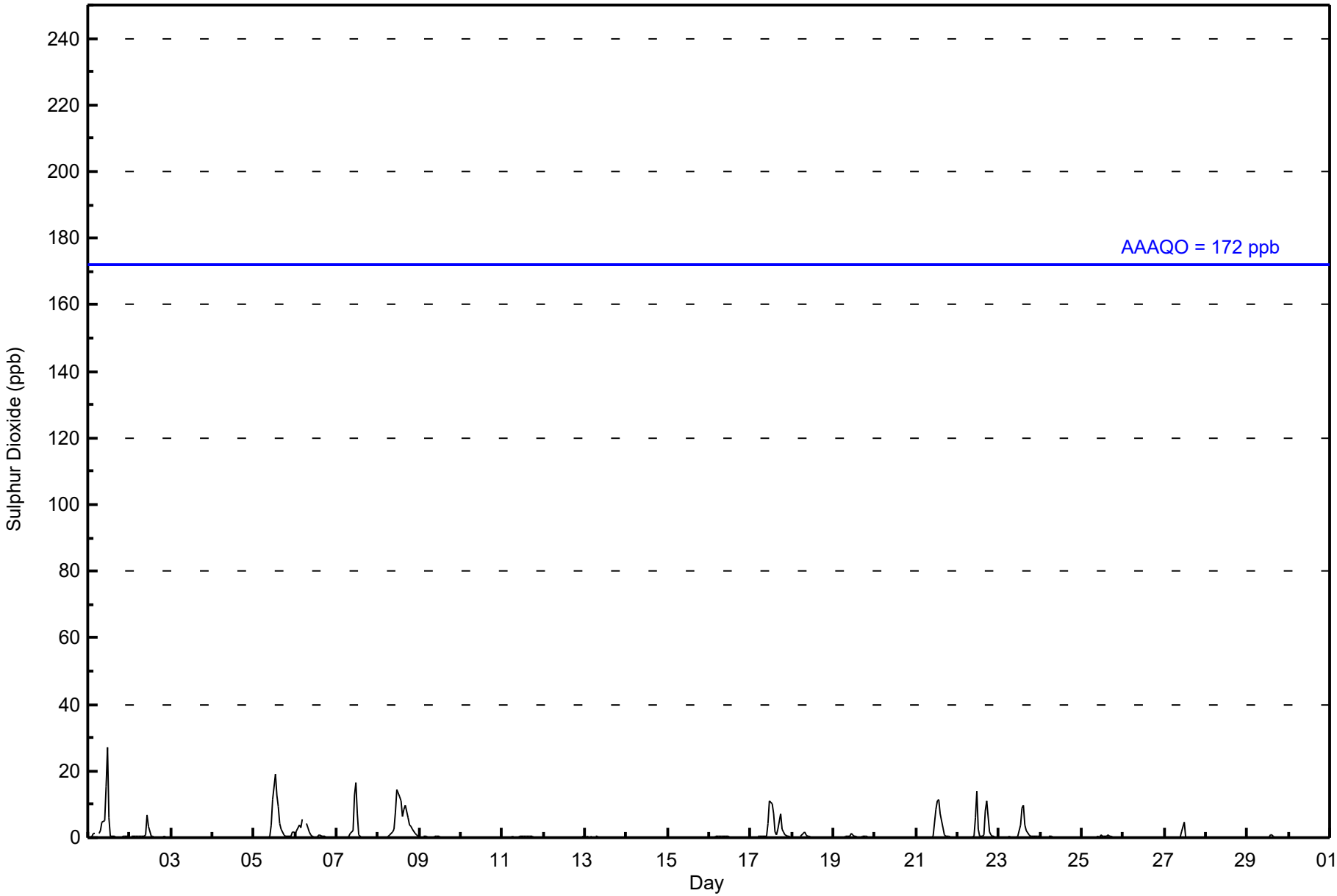
Z - zerospan C - Calibration
Alberta Ambient Air Quality Objectives (AAAQO): 1-hr 172 ppb 24-hr 48 ppb

Wood Buffalo Environmental Association

Hourly Averages

Sulphur Dioxide (SO_2) - ppb

Barge Landing - September 2024



Sulphur Dioxide (SO_2) - ppb
Barge Landing - September 2024

Concentration Ranges (ppb)	Number of Hours	%	Cumulative %
0 - 10	671	97.81	97.81
11 - 20	14	2.04	99.85
21 - 60	1	0.15	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: 686

Total Number of Hours: 720

Wood Buffalo Environmental Association

Frequency Distribution

Sulphur Dioxide (SO_2) - ppb

Barge Landing - September 2024

Concentration Ranges (ppb)	Wind Direction																
	N	NNE	NE	ENE	E	ESE	SE	SSE	S	SSW	SW	WSW	W	WNW	NW	NNW	**Totals**
0 - 10	40	18	12	4	13	20	47	86	58	52	64	58	54	35	44	65	670
11 - 20	0	1	0	0	0	0	0	7	4	1	0	1	0	0	0	0	14
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	40	19	12	4	13	20	47	93	63	53	64	59	54	35	44	65	685

Total Number of Valid Hours: 685

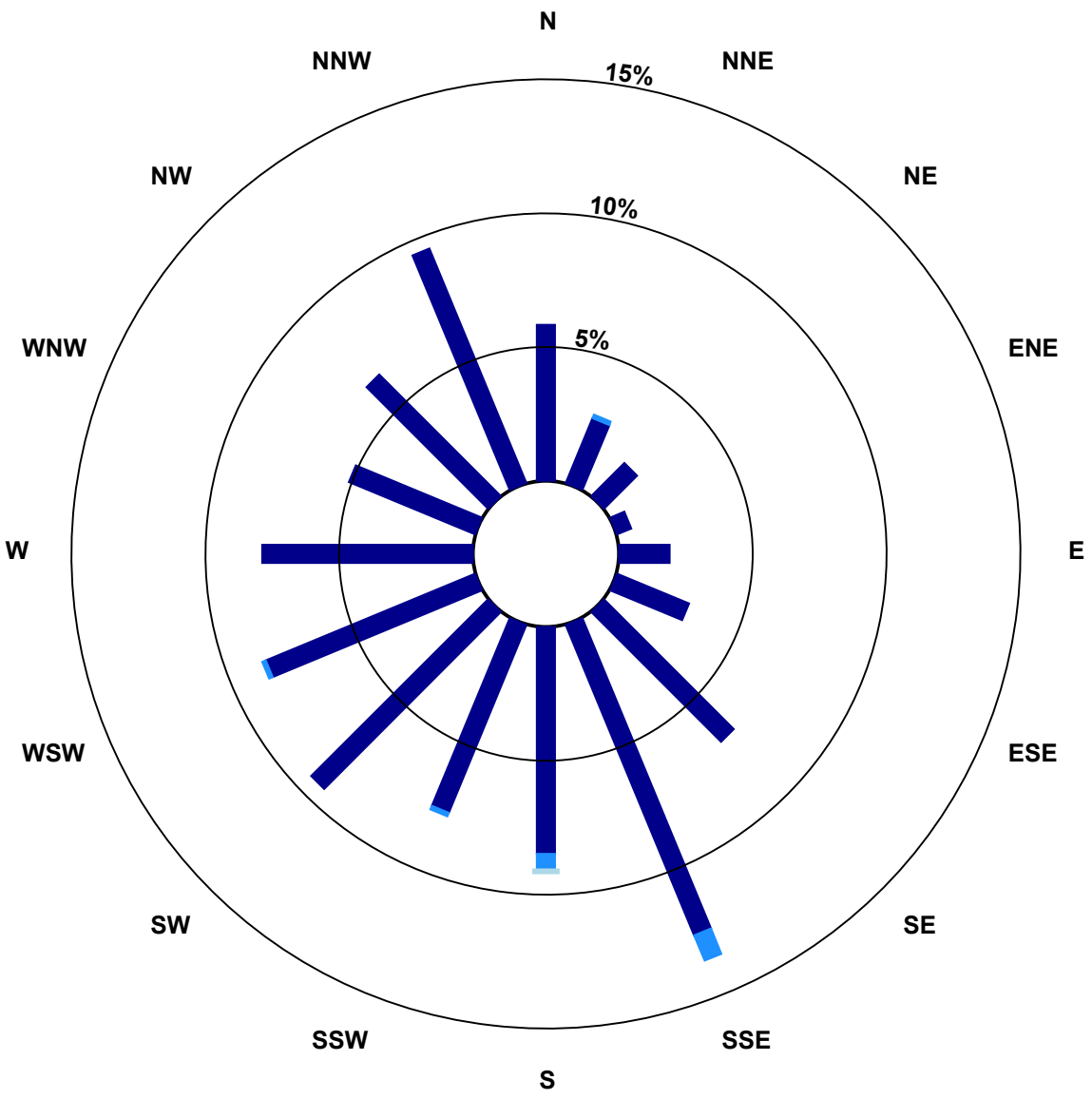
Total Number of Hours: 720

Wood Buffalo Environmental Association

Wind Rose Sep 2024

Sulphur Dioxide (SO_2) - ppb

Barge Landing



Classes (ppb)

0 - 10

11 - 20

21 - 60

61 - 110

111 - 172

> 172

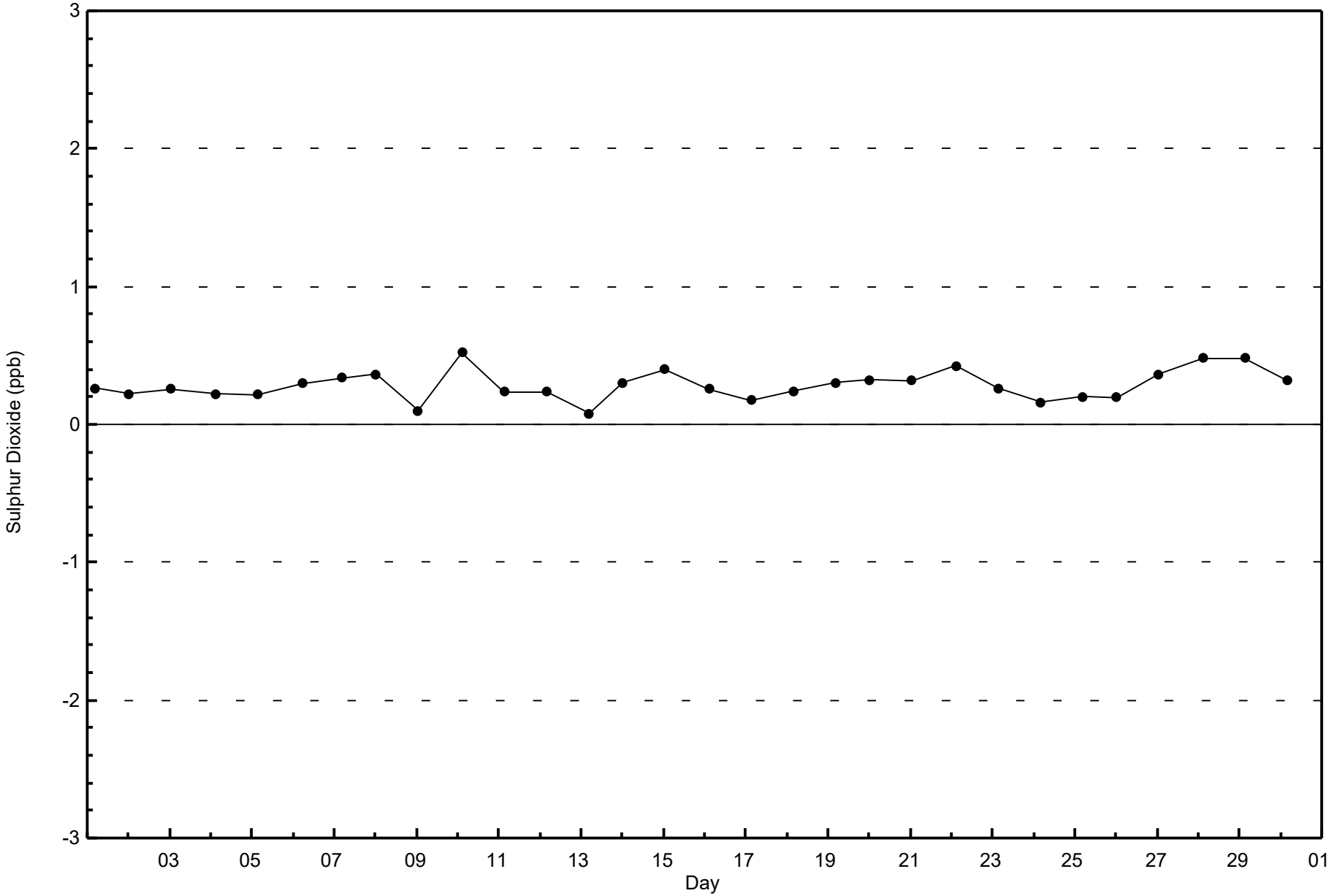
Total Number of Valid Hours: 685

Wood Buffalo Environmental Association

Zero Responses

Sulphur Dioxide (SO_2) - ppb

Barge Landing - September 2024

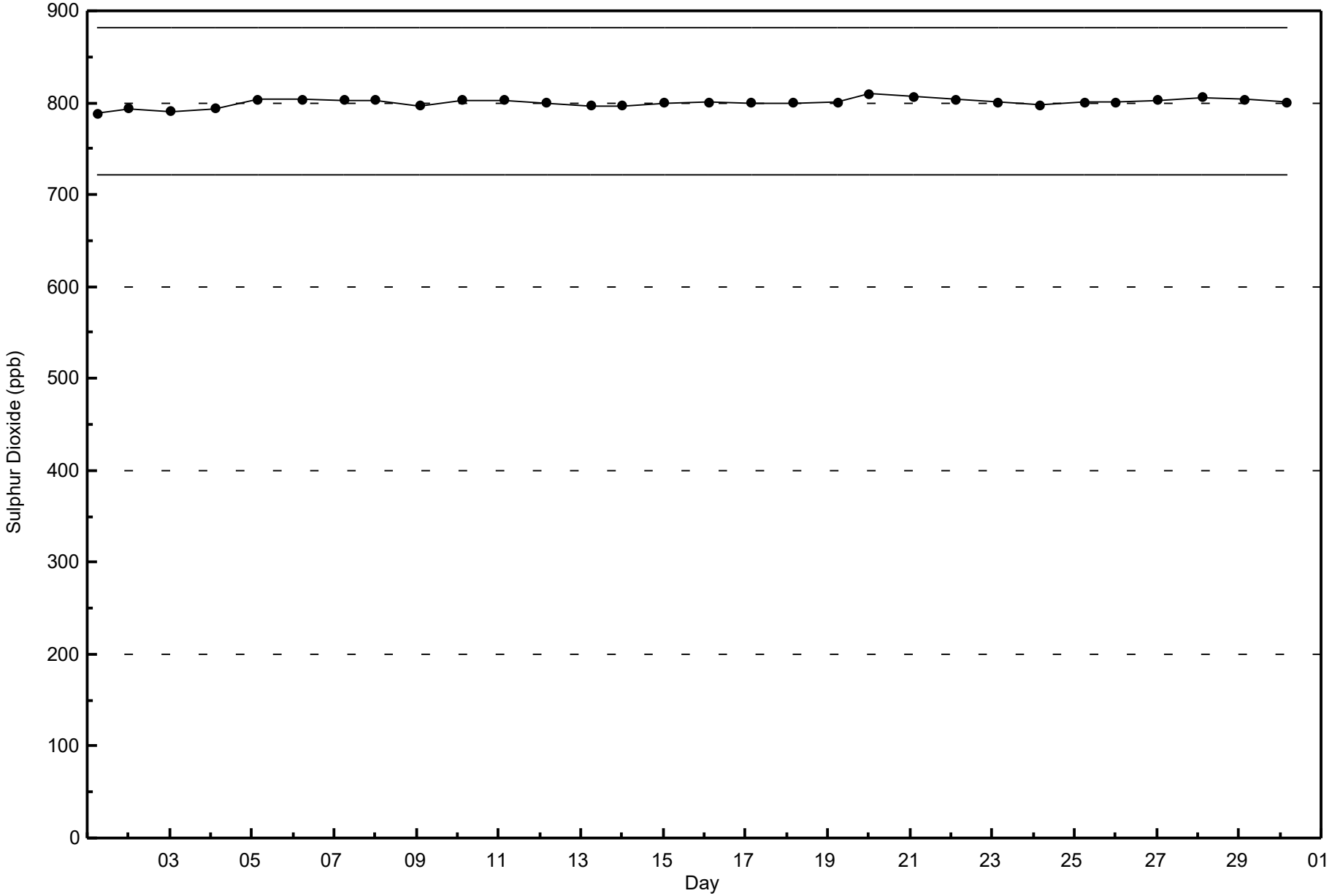


Wood Buffalo Environmental Association

Span Responses

Sulphur Dioxide (SO_2) - ppb

Barge Landing - September 2024



Wood Buffalo Environmental Association

Summary of Hour Averages

Total Reduced Sulphur (TRS) - ppb

Barge Landing - September 2024

Number of Exceedences (AAAQO): 1-hr: 0 24-hr: 0

Maximum Value: 6.3 ppb on Sep 6 01:00

Maximum Daily Average: 1.2 ppb on Sep 8

Minimum Value: 0.1 ppb on Sep 1 18:00

Minimum Daily Average: 0.2 ppb on Sep 30

Maximum Diurnal Average: 1.0 ppb at hour 6

Minimum Diurnal Average: 0.3 ppb at hour 17

Monthly Average: 0.57 ppb

Percentiles: P_1 = 0.2 P_{10} = 0.2 Q_1 = 0.3 Median = 0.4 Q_3 = 0.6 P_{90} = 1.1 P_{99} = 3.3

Hours in Service:	720
Hours of Data:	685
Hours of Missing Data:	35
Hours of Calibration:	35
Percent Operational Time:	100.0

Day	Hourly Period Ending At (MST)																								Daily	Daily
	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24	Average	Maximum
1-Sep	Z	1.2	1.5	2.6	1.9	2.0	1.7	1.1	0.9	0.7	1.0	1.1	0.5	0.2	0.2	0.2	0.2	0.1	0.2	0.2	0.3	0.4	0.6	0.7	0.9	2.6
2-Sep	0.9	Z	1.6	1.8	3.0	3.8	2.9	1.6	0.9	1.1	1.6	0.8	0.4	0.3	0.2	0.2	0.2	0.2	0.2	0.3	0.4	0.4	0.4	0.4	1.0	3.8
3-Sep	0.4	0.3	Z	0.4	0.5	0.5	0.5	0.5	0.5	C	C	C	C	C	0.6	0.5	0.4	0.4	0.5	0.3	0.3	0.4	0.3	0.4	0.4	0.6
4-Sep	0.3	0.4	0.4	Z	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	0.3	0.3	0.3	0.3	0.3	0.3	0.4
5-Sep	0.3	0.3	0.3	0.3	Z	0.4	0.6	0.6	0.4	0.6	1.2	1.6	1.1	0.5	0.4	0.4	0.5	0.6	0.4	0.4	0.9	3.5	6.0	4.0	1.1	6.0
6-Sep	6.3	3.3	1.4	1.3	1.4	1.3	Z	1.5	0.7	0.5	0.3	0.3	0.3	0.4	0.5	0.5	0.3	0.4	0.3	0.3	0.3	0.3	0.3	0.3	1.0	6.3
7-Sep	Z	0.4	0.4	0.4	0.8	1.6	2.3	2.5	1.7	1.4	2.4	2.2	1.0	0.4	0.3	0.3	0.3	0.3	0.3	0.3	0.3	0.3	0.3	0.3	0.9	2.5
8-Sep	0.3	Z	0.4	0.6	0.9	1.5	2.4	3.3	2.8	2.2	2.7	2.5	1.3	0.9	0.6	0.4	0.4	0.4	0.6	0.6	1.0	0.7	0.7	0.6	1.2	3.3
9-Sep	0.7	0.7	Z	1.2	0.7	0.8	0.5	0.5	0.7	0.5	0.4	0.3	0.3	0.3	0.3	0.2	0.2	0.2	0.3	0.2	0.3	0.3	0.3	0.3	0.4	1.2
10-Sep	0.3	0.3	0.3	Z	0.3	0.3	0.2	0.3	0.2	0.3	0.3	0.2	0.3	0.3	0.3	0.3	0.3	0.3	0.3	0.3	0.4	0.4	0.4	0.3	0.3	0.4
11-Sep	0.5	0.6	0.4	0.4	Z	0.5	0.7	0.8	1.0	0.9	0.5	0.6	0.7	0.6	0.5	0.5	0.4	0.4	0.4	0.4	0.3	0.3	0.3	0.2	0.5	1.0
12-Sep	0.3	0.2	0.2	0.3	0.4	Z	1.1	0.8	0.8	0.9	0.6	0.3	0.3	0.5	0.4	0.4	0.4	0.4	0.4	0.4	0.3	0.4	0.4	0.4	0.5	1.1
13-Sep	Z	0.3	0.3	0.4	0.5	0.6	0.8	0.8	0.7	0.8	0.7	0.7	0.6	0.6	0.5	0.5	0.4	0.4	0.4	0.3	0.3	0.3	0.3	0.3	0.5	0.8
14-Sep	0.3	Z	0.3	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	0.3	0.3	0.3	0.3	0.3	0.3	0.3	0.3	0.3	0.3
15-Sep	0.3	0.4	Z	0.4	0.5	0.5	0.5	0.4	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	0.4	0.4	0.4	0.5
16-Sep	0.4	0.7	1.2	Z	1.2	1.3	1.2	1.2	0.9	0.4	0.3	0.3	0.2	0.2	0.2	0.3	0.3	0.3	0.3	0.3	0.4	0.4	0.3	0.3	0.5	1.3
17-Sep	0.3	0.4	0.4	1.1	Z	3.9	3.0	2.1	1.1	0.5	0.7	0.7	0.6	0.4	0.3	0.3	0.3	0.4	0.7	0.5	0.4	0.3	0.3	0.4	0.8	3.9
18-Sep	1.0	0.7	1.1	1.8	1.9	Z	1.4	1.9	0.8	0.3	0.3	0.4	0.4	0.3	0.3	0.2	0.2	0.2	0.3	0.3	0.2	0.3	0.3	0.3	0.6	1.9
19-Sep	Z	0.3	0.3	0.3	0.3	0.5	1.1	2.0	1.8	1.4	1.0	0.8	0.5	0.4	0.3	0.3	0.3	0.6	0.6	0.6	0.4	0.4	0.4	0.4	0.6	2.0
20-Sep	0.3	Z	0.3	0.4	0.4	0.7	0.8	0.7	0.6	0.6	0.5	0.5	0.3	0.3	0.3	0.2	0.2	0.2	0.2	0.3	0.3	0.4	0.3	0.3	0.4	0.8
21-Sep	0.3	0.3	Z	0.4	0.3	0.4	0.3	0.3	0.5	0.7	1.4	1.4	1.0	0.6	0.5	0.3	0.3	0.8	0.7	0.4	0.5	0.7	1.1	0.3	0.6	1.4
22-Sep	0.3	0.3	0.3	Z	0.3	0.3	0.4	0.3	0.4	0.6	0.7	0.7	0.4	0.3	0.2	0.2	0.3	0.4	0.3	0.4	0.4	0.3	0.3	0.4	0.4	0.7
23-Sep	0.4	0.4	0.4	0.4	Z	0.3	0.4	0.3	0.4	0.4	0.4	0.3	0.4	1.0	1.4	1.0	0.9	0.4	0.6	0.8	0.6	0.9	0.8	0.9	0.6	1.4
24-Sep	0.9	0.5	0.3	0.3	0.3	Z	0.8	1.0	0.6	0.4	0.4	0.4	0.4	0.4	0.3	0.3	0.3	0.3	0.4	0.4	0.4	0.5	0.4	0.4	0.4	1.0
25-Sep	Z	0.4	0.6	0.9	0.6	0.6	0.6	0.7	0.7	0.9	0.9	1.2	0.7	0.6	0.8	0.6	0.7	0.8	0.7	0.7	0.8	0.5	0.3	0.3	0.7	1.2
26-Sep	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	0.2	0.2	0.2	0.2	0.3	0.2	0.3	0.3
27-Sep	0.3	0.3	Z	0.9	1.5	1.5	1.4	1.3	0.6	0.3	0.3	0.3	0.3	0.2	0.2	0.2	0.2	0.3	0.3	0.3	0.3	0.3	0.3	0.3	0.5	1.5
28-Sep	0.3	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	0.3	0.4	0.3	0.5	0.7	0.7	0.8	0.3	0.8
29-Sep	0.8	0.8	0.4	0.3	Z	0.5	0.6	0.6	0.5	0.8	0.8	0.5	0.6	0.5	0.4	0.4	0.3	0.3	0.2	0.3	0.3	0.2	0.2	0.2	0.4	0.8
30-Sep	0.2	0.2	0.2	0.2	0.2	Z	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	0.2	0.2	0.3
	0.7	0.6	0.5	0.7	0.8	1.0	1.0	0.9	0.7	0.6	0.7	0.7	0.5	0.4	0.4	0.3	0.3	0.4	0.4	0.4	0.4	0.5	0.6	0.5	Diurnal Average	
	6.3	3.3	1.6	2.6	3.0	3.9	3.0	3.3	2.8	2.2	2.7	2.5	1.3	1.0	1.4	1.0	0.9	0.8	0.7	0.8	1.0	3.5	6.0	4.0	Diurnal Maximum	

Z - zerospan C - Calibration

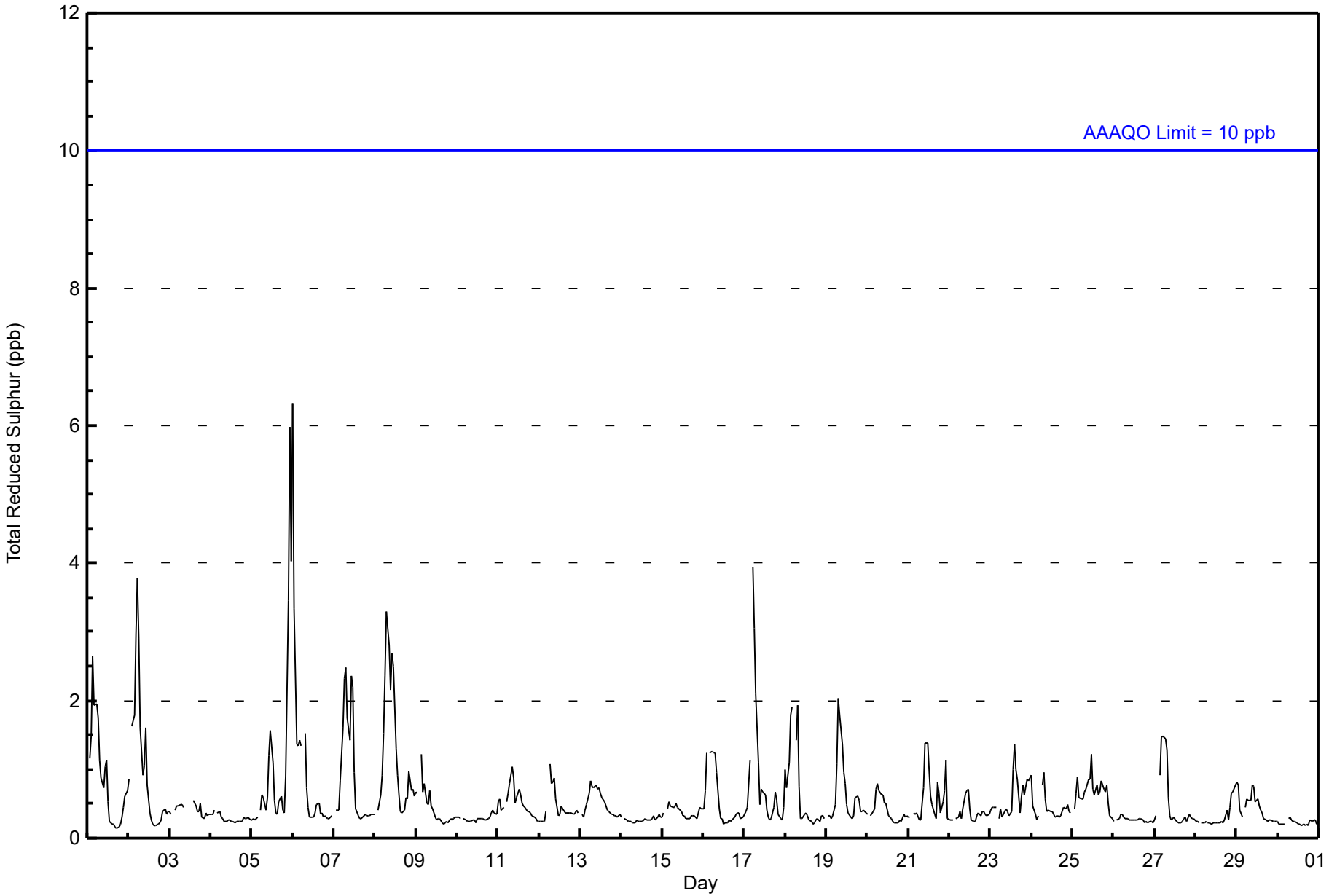
Alberta Ambient Air Quality Objectives (AAAQO): 1-hr 10 ppb 24-hr 3 ppb

Wood Buffalo Environmental Association

Hourly Averages

Total Reduced Sulphur (TRS) - ppb

Barge Landing - September 2024



Wood Buffalo Environmental Association

Cumulative Frequency Distribution

Total Reduced Sulphur (TRS) - ppb

Barge Landing - September 2024

Concentration Ranges (ppb)	Number of Hours	%	Cumulative %
0 - 2	671	97.96	97.96
3 - 4	12	1.75	99.71
5 - 7	2	0.29	100.00
8 - 11	0	0.00	100.00
> 11	0	0.00	100.00

Total Number of Valid Hours: 685

Total Number of Hours: 720

Wood Buffalo Environmental Association

Frequency Distribution

Total Reduced Sulphur (TRS) - ppb

Barge Landing - September 2024

Concentration Ranges (ppb)	Wind Direction																
	N	NNE	NE	ENE	E	ESE	SE	SSE	S	SSW	SW	WSW	W	WNW	NW	NNW	**Totals**
0 - 2	36	17	12	5	14	18	48	81	63	56	60	57	55	39	44	66	671
3 - 4	0	0	0	0	0	0	2	8	2	0	0	0	0	0	0	0	12
5 - 7	0	0	0	0	0	0	1	1	0	0	0	0	0	0	0	0	2
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	36	17	12	5	14	18	51	90	65	56	60	57	55	39	44	66	685

Total Number of Valid Hours: 685

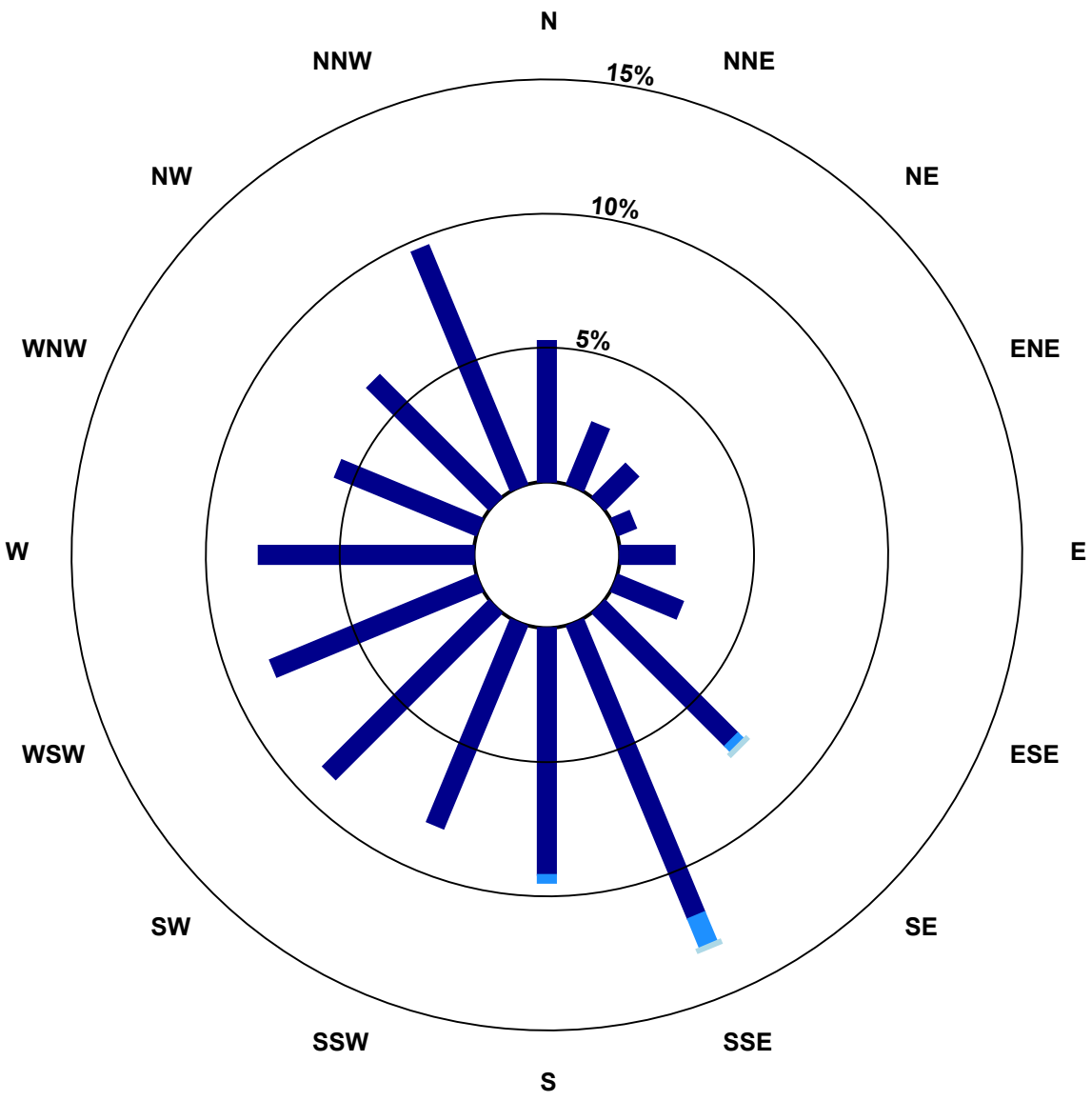
Total Number of Hours: 720

Wood Buffalo Environmental Association

Wind Rose Sep 2024

Total Reduced Sulphur (TRS) - ppb

Barge Landing



Classes (ppb)

- 0 - 2
- 3 - 4
- 5 - 7
- 8 - 11
- > 11

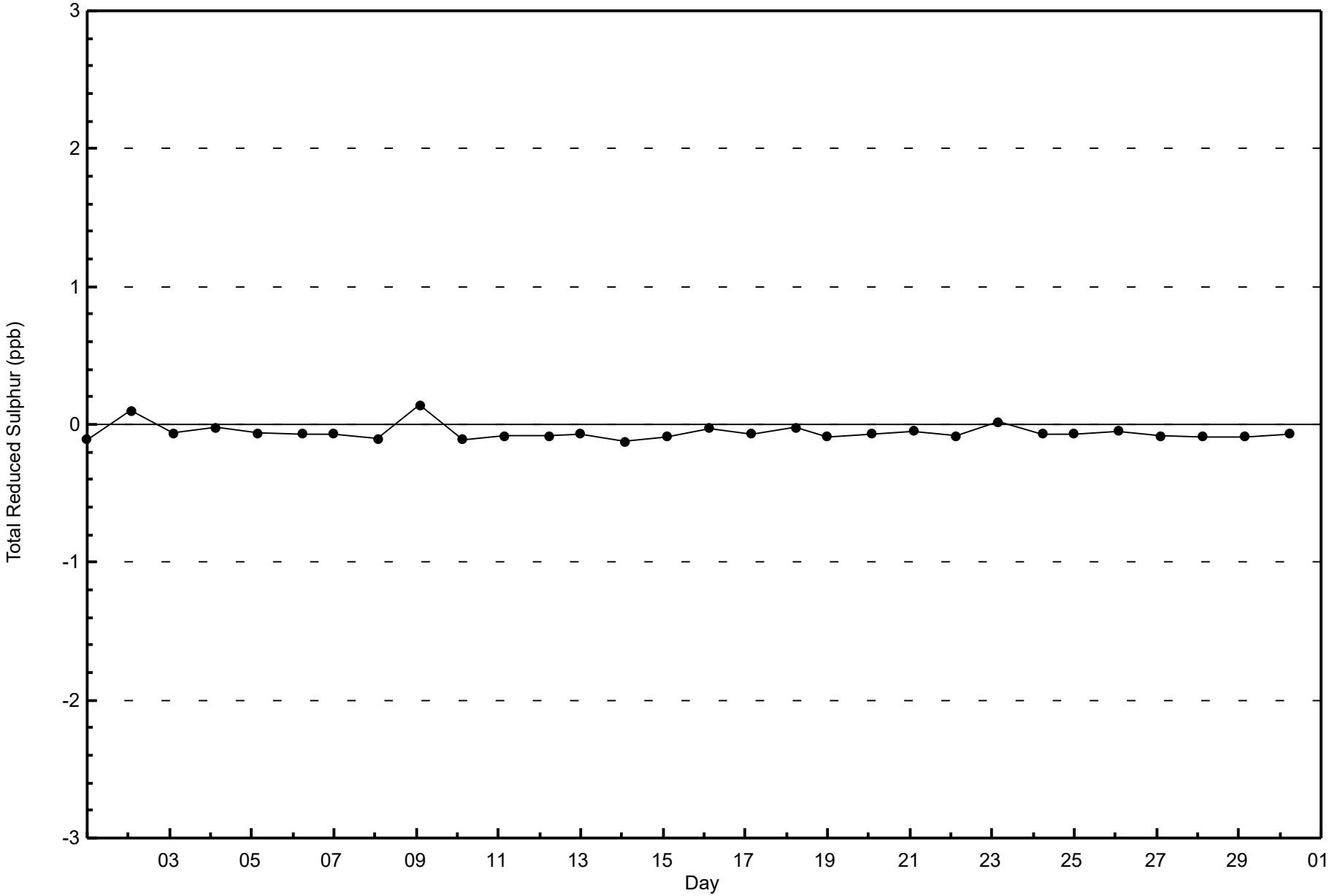
Total Number of Valid Hours: 685

Wood Buffalo Environmental Association

Zero Responses

Total Reduced Sulphur (TRS) - ppb

Barge Landing - September 2024



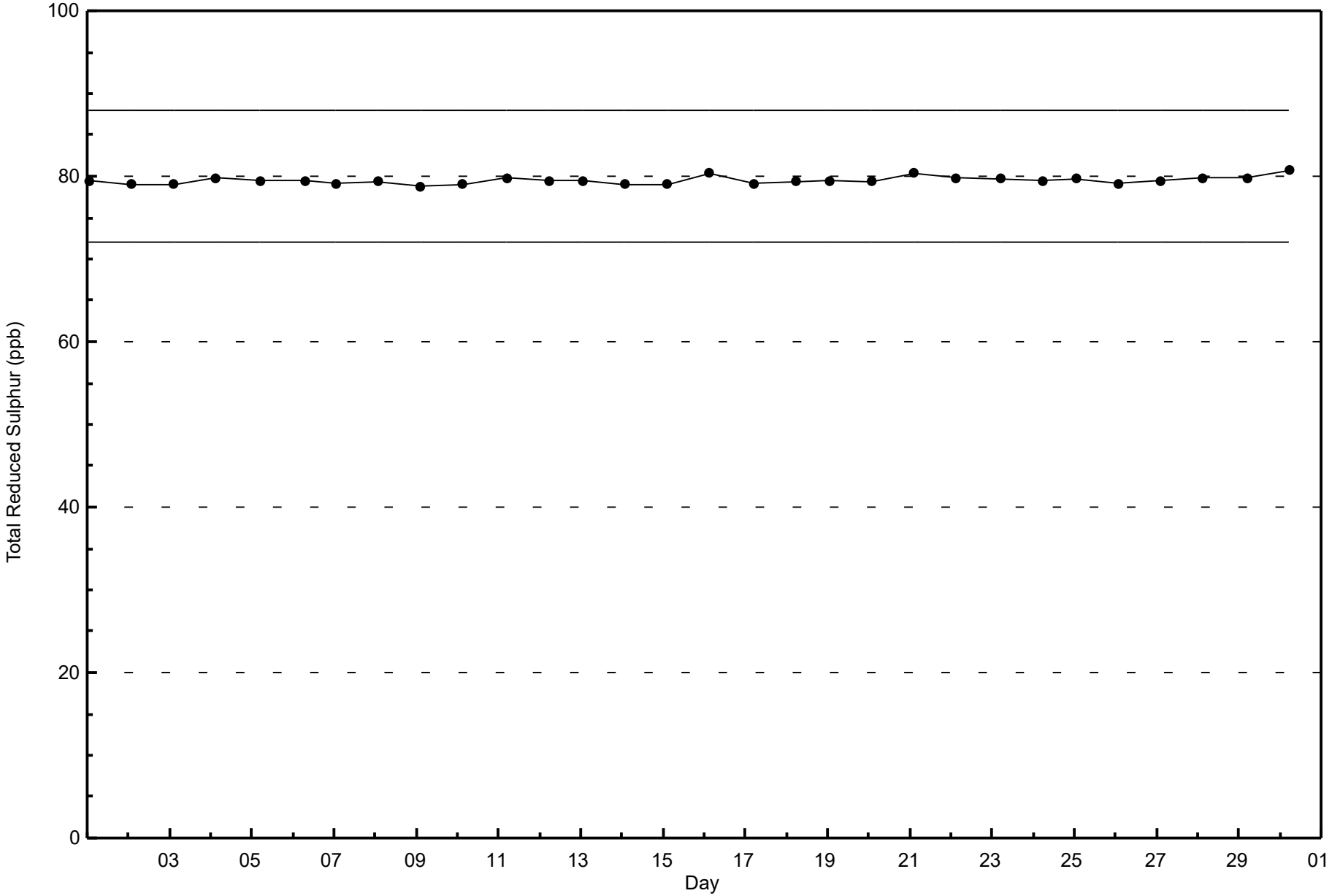
09 - 17

Wood Buffalo Environmental Association

Span Responses

Total Reduced Sulphur (TRS) - ppb

Barge Landing - September 2024



Wood Buffalo Environmental Association

Summary of Hour Averages

Total Hydrocarbons (THC) - ppm

Barge Landing - September 2024

Maximum Value: 3.5 ppm on Sep 13 07:00

Maximum Daily Average: 2.3 ppm on Sep 13

Minimum Value: 1.9 ppm on Sep 24 13:00

Minimum Daily Average: 1.9 ppm on Sep 28

Maximum Diurnal Average: 2.2 ppm at hour 7

Minimum Diurnal Average: 2.0 ppm at hour 17

Monthly Average: 2.07 ppm

Percentiles: P_1 = 1.9 P_{10} = 1.9 Q_1 = 2.0 Median = 2.0 Q_3 = 2.1 P_{90} = 2.3 P_{99} = 2.7

Hours in Service:	720
Hours of Data:	684
Hours of Missing Data:	36
Hours of Calibration:	34
Percent Operational Time:	99.7

Day	Hourly Period Ending At (MST)																								Daily	Daily
	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24	Average	Maximum
1-Sep	1.9	2.0	2.0	2.1	2.1	Z	2.1	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	2.0	2.1	2.2	2.2	2.0	2.2
2-Sep	Z	2.2	2.2	2.3	2.3	2.4	2.4	2.3	2.2	2.2	2.2	2.1	2.0	1.9	1.9	1.9	1.9	1.9	1.9	1.9	2.0	2.0	2.0	2.1	2.1	2.4
3-Sep	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	2.1	2.0	2.0	2.0	2.0	1.9	2.2	2.1	2.0	2.0	2.2
4-Sep	2.0	2.1	Z	2.2	2.1	2.1	2.0	2.0	2.0	C	C	C	C	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
5-Sep	2.0	2.1	2.0	Z	2.1	2.0	2.0	2.0	2.0	2.0	2.2	2.0	2.0	2.0	1.9	1.9	1.9	2.0	2.0	1.9	2.0	2.0	2.1	2.1	2.0	2.2
6-Sep	2.1	2.1	2.0	2.0	2.0	Z	2.1	2.1	2.1	2.1	2.0	1.9	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
7-Sep	2.0	2.0	2.0	2.0	2.2	Z	2.3	2.3	2.3	2.2	2.1	2.1	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	2.3
8-Sep	Z	2.0	2.0	2.0	2.1	2.2	2.2	2.3	2.3	2.4	2.3	2.2	2.0	2.1	2.0	2.0	2.0	2.0	2.1	2.1	2.5	2.4	2.3	2.2	2.2	2.5
9-Sep	2.3	Z	2.3	2.8	2.2	2.3	2.2	2.1	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	1.9	1.9	2.0	2.1	2.8
10-Sep	2.0	1.9	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	1.9	1.9	2.0	2.0	2.1	2.1	2.2	2.2	2.0	2.2
11-Sep	2.2	2.2	2.2	Z	2.5	2.6	2.5	2.5	2.5	2.3	2.1	2.1	2.2	2.2	2.1	2.0	2.1	2.1	2.1	2.1	2.1	2.1	2.0	2.0	2.2	2.6
12-Sep	2.0	2.0	2.0	2.0	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	2.1	2.3	2.3	2.0	2.3
13-Sep	2.1	2.1	2.2	2.5	2.8	Z	3.5	2.9	2.8	2.9	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	2.1	2.3	3.5
14-Sep	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	1.9	2.0	2.0	2.0	2.1	2.1	2.1	2.2	2.0	2.2
15-Sep	2.1	Z	2.2	2.2	2.5	2.3	2.3	2.5	2.5	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	2.1	2.1	2.2	2.5
16-Sep	2.1	2.1	Z	2.1	2.1	2.1	2.1	2.1	2.1	2.1	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	2.0	2.0	2.1
17-Sep	2.1	2.1	2.2	Z	2.1	2.2	2.2	2.2	2.2	2.1	2.1	2.1	2.0	2.0	1.9	1.9	1.9	1.9	1.9	1.9	1.9	2.0	2.0	2.0	2.1	2.2
18-Sep	2.0	2.0	2.0	2.0	Z	2.1	2.1	2.2	2.2	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	2.2
19-Sep	2.0	2.0	2.0	2.0	2.0	Z	2.3	2.3	2.4	2.4	2.1	2.2	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.1	2.2	2.2	2.2	2.2	2.1	2.4
20-Sep	Z	2.1	2.2	2.3	2.4	2.4	2.5	2.3	2.2	2.2	2.0	2.0	1.9	2.0	1.9	1.9	1.9	1.9	1.9	2.0	2.0	2.0	2.0	2.1	2.1	2.5
21-Sep	2.1	Z	2.1	2.1	2.1	2.1	2.0	2.1	2.1	2.4	2.5	2.1	2.1	2.0	2.0	1.9	1.9	2.0	2.0	1.9	2.0	2.0	2.0	1.9	2.1	2.5
22-Sep	1.9	1.9	Z	2.0	2.0	2.0	2.0	2.0	2.1	2.3	2.2	2.2	2.1	2.0	2.0	2.0	2.0	2.0	2.1	2.1	2.1	2.1	2.2	2.3	2.1	2.3
23-Sep	2.3	2.4	2.4	Z	2.5	2.4	2.4	2.2	2.5	2.4	2.1	2.1	2.1	2.3	2.2	2.2	2.1	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.2	2.5
24-Sep	2.1	2.0	2.0	2.0	Z	2.1	2.1	2.2	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	2.2
25-Sep	2.0	2.0	2.0	2.0	2.1	Z	2.1	2.2	2.4	2.7	2.6	2.5	2.5	2.2	2.2	2.0	2.2	2.3	2.2	2.2	2.3	2.2	2.0	2.0	2.2	2.7
26-Sep	Z	1.9	1.9	2.0	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	1.9	1.9	2.0	2.0	2.3	2.0	2.3
27-Sep	2.4	Z	2.2	2.4	2.3	2.2	2.1	2.1	2.2	2.2	2.0	2.0	M	M	1.9	1.9	1.9	2.0	2.0	1.9	2.0	2.0	2.0	2.0	2.1	2.4
28-Sep	2.0	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	2.0	2.0	2.0	2.0	1.9	2.0
29-Sep	2.1	2.1	2.1	Z	2.2	2.5	2.9	2.7	2.3	2.3	2.2	2.2	2.1	2.0	2.0	2.0	1.9	1.9	1.9	2.0	2.1	2.0	2.0	2.0	2.1	2.9
30-Sep	1.9	1.9	1.9	1.9	Z	1.9	1.9	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	1.9	2.0
	2.1	2.1	2.1	2.1	2.2	2.2	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	Diurnal Average	
	2.4	2.4	2.4	2.8	2.8	2.6	3.5	2.9	2.8	2.9	2.6	2.5	2.5	2.3	2.2	2.2	2.2	2.3	2.2	2.2	2.5	2.4	2.3	2.3	Diurnal Maximum	

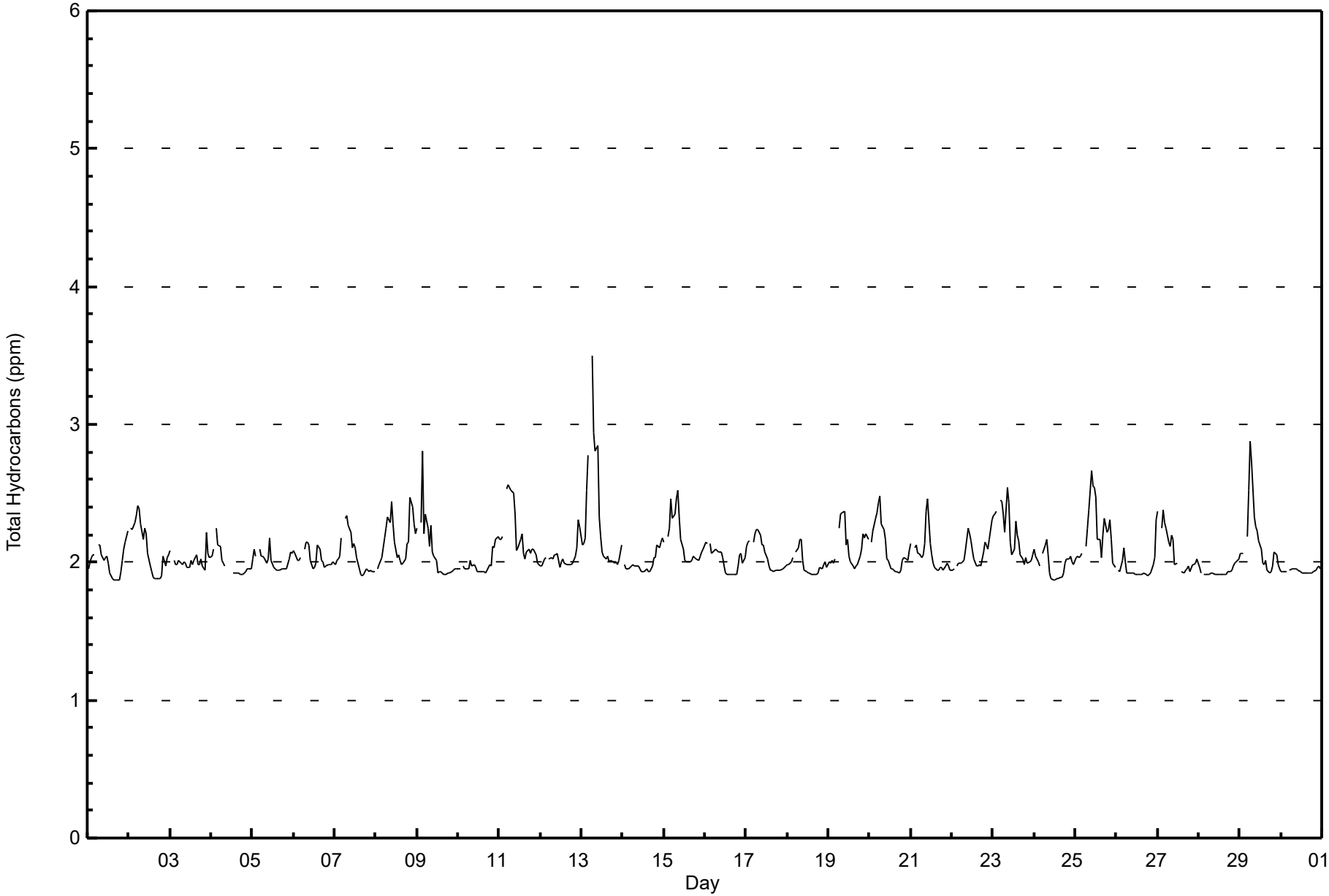
Z - zerospan C - Calibration M - Maintenance

Wood Buffalo Environmental Association

Hourly Averages

Total Hydrocarbons (THC) - ppm

Barge Landing - September 2024



Wood Buffalo Environmental Association

Cumulative Frequency Distribution

Total Hydrocarbons (THC) - ppm

Barge Landing - September 2024

Concentration Ranges (ppm)	Number of Hours	%	Cumulative %
0 - 2.0	421	61.55	61.55
2.1 - 3.0	262	38.30	99.85
3.1 - 10.0	1	0.15	100.00
> 10.0	0	0.00	100.00

Total Number of Valid Hours: 684

Total Number of Hours: 720

Wood Buffalo Environmental Association

Frequency Distribution

Total Hydrocarbons (THC) - ppm

Barge Landing - September 2024

Concentration Ranges (ppm)	Wind Direction																
	N	NNE	NE	ENE	E	ESE	SE	SSE	S	SSW	SW	WSW	W	WNW	NW	NNW	**Totals**
0 - 2.0	20	9	5	1	10	17	37	39	29	35	54	45	44	25	25	26	421
2.1 - 3.0	20	10	7	3	3	3	10	54	34	16	10	14	10	9	19	39	261
3.1 - 10.0	0	0	0	0	0	0	0	0	0	0	0	0	0	1	0	0	1
> 10.0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Totals	40	19	12	4	13	20	47	93	63	51	64	59	54	35	44	65	683

Total Number of Valid Hours: 683

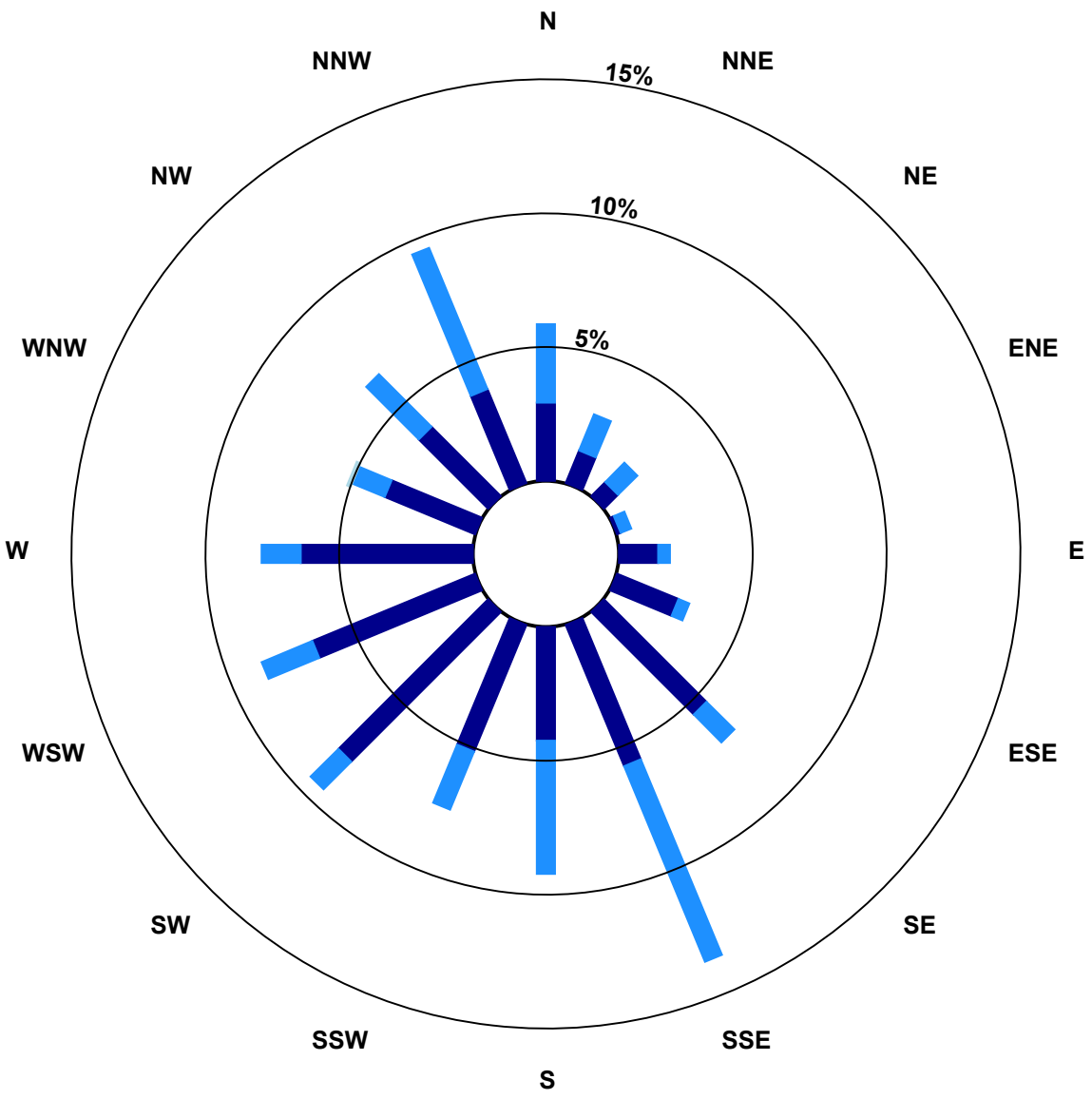
Total Number of Hours: 720

Wood Buffalo Environmental Association

Wind Rose Sep 2024

Total Hydrocarbons (THC) - ppm

Barge Landing



Classes (ppm)

0 - 2.0

2.1 - 3.0

3.1 - 10.0

> 10.0

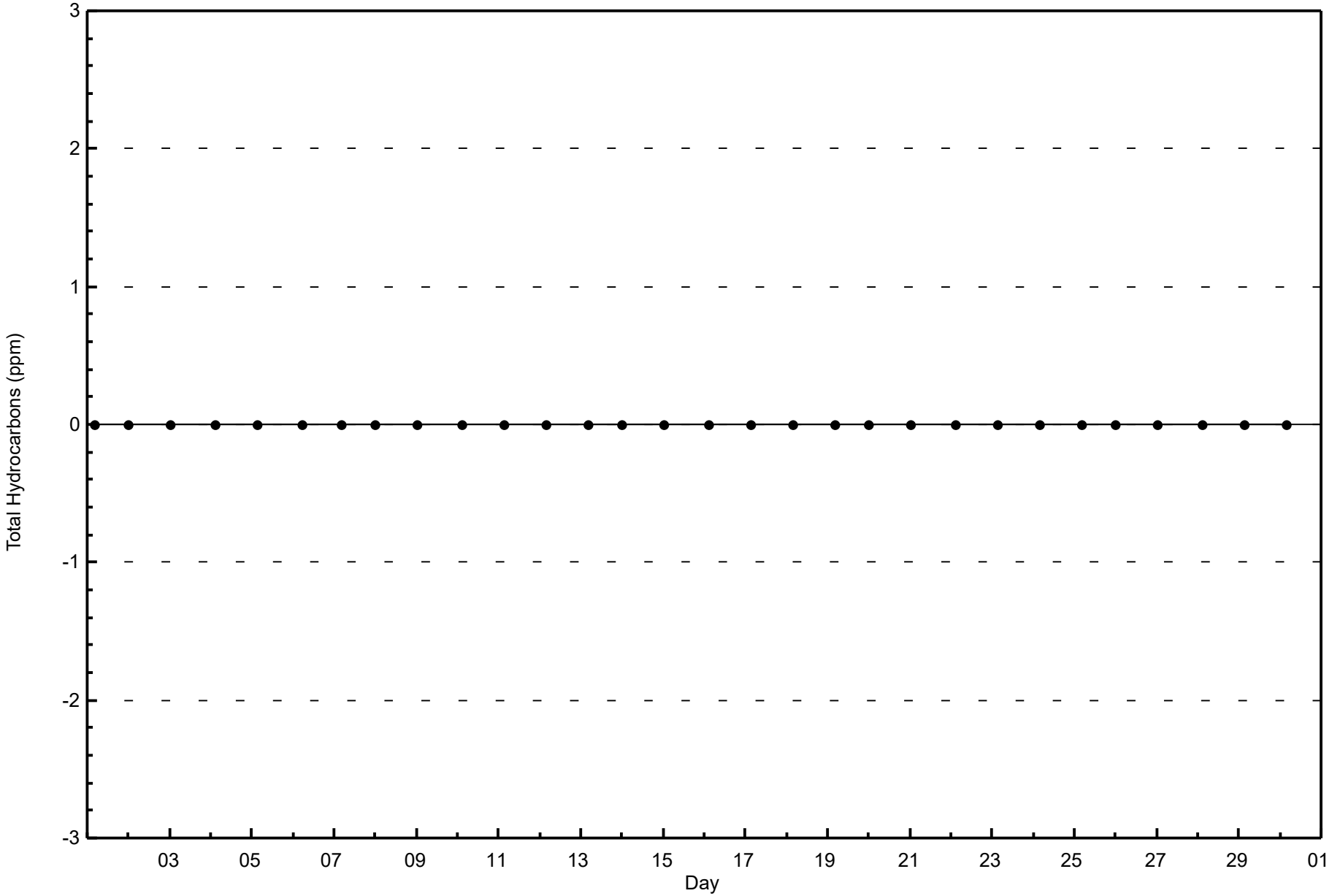
Total Number of Valid Hours: 683

Wood Buffalo Environmental Association

Zero Responses

Total Hydrocarbons (THC) - ppm

Barge Landing - September 2024



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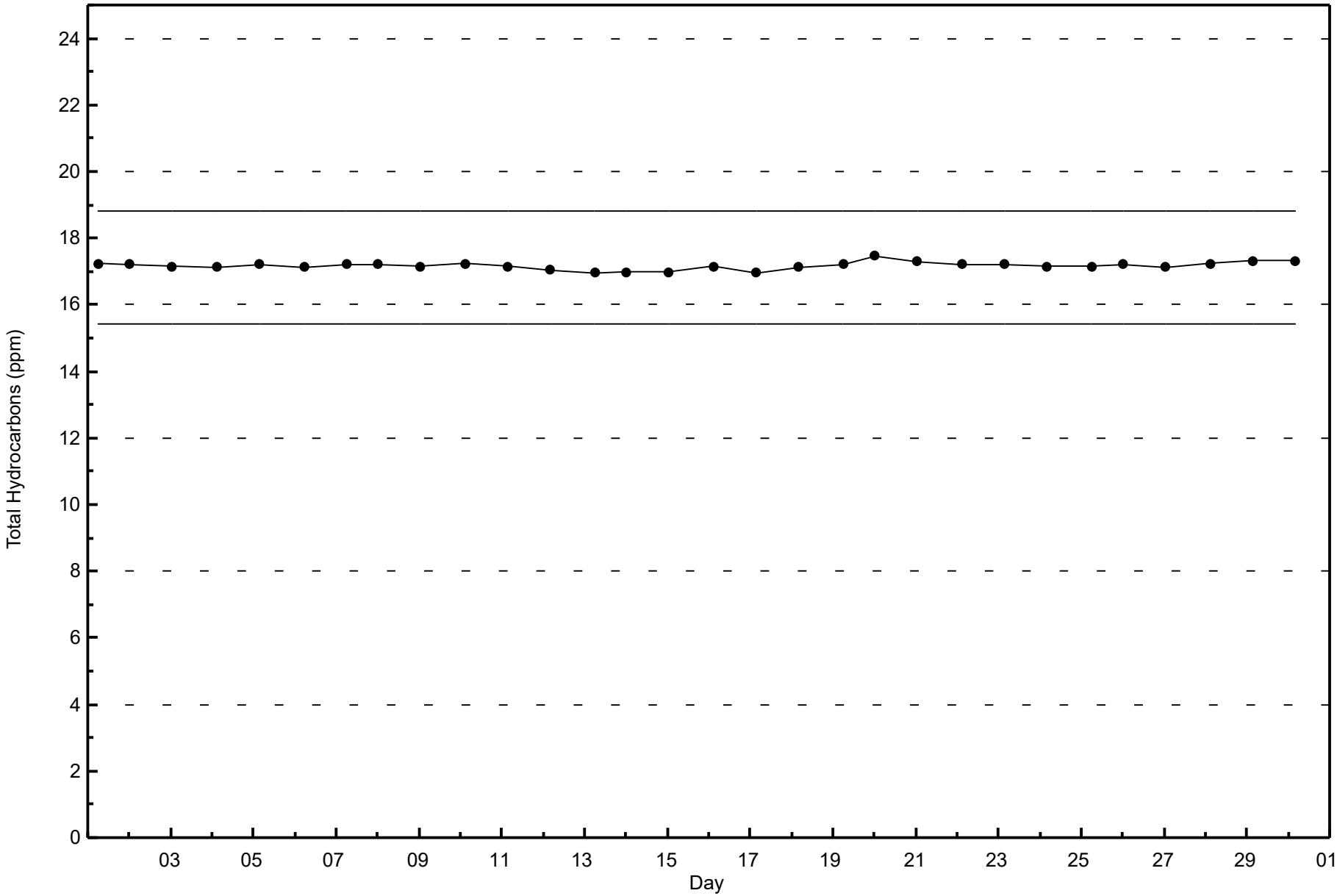
Wood Buffalo Environmental Association

Span Responses

Total Hydrocarbons (THC) - ppm

Barge Landing - September 2024



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Wood Buffalo Environmental Association

Summary of Hour Averages

Non Methane Hydrocarbons (NMHC) - ppm

Barge Landing - September 2024

Maximum Value: 0.229 ppm on Sep 3 22:00

Maximum Daily Average: 0.030 ppm on Sep 3

Minimum Value: 0.000 ppm on Sep 1 01:00

Minimum Daily Average: 0.000 ppm on Sep 1

Maximum Diurnal Average: 0.009 ppm at hour 22

Minimum Diurnal Average: 0.000 ppm at hour 8

Monthly Average: 0.003 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} = 0.1

Hours in Service:	720
Hours of Data:	684
Hours of Missing Data:	36
Hours of Calibration:	34
Percent Operational Time:	99.7

Day	Hourly Period Ending At (MST)																								Daily	Daily
	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24	Average	Maximum
1-Sep	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
2-Sep	Z	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.001	0.001	0.001	0.000	0.001	0.000	0.000	0.000	0.000	0.000	0.042	0.000	0.097	0.086	0.010	0.097
3-Sep	0.140	Z	0.055	0.000	0.000	0.000	0.000	0.000	0.004	0.005	0.000	0.000	0.033	0.023	0.027	0.038	0.017	0.000	0.000	0.006	0.001	0.229	0.087	0.018	0.030	0.229
4-Sep	0.007	0.005	Z	0.000	0.000	0.000	0.000	0.000	0.000	C	C	C	C	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.001	0.007
5-Sep	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
6-Sep	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	0.001	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.001
7-Sep	0.000	0.000	0.000	0.000	0.000	Z	0.000	0.000	0.000	0.000	0.001	0.006	0.004	0.000	0.000	0.000	0.000	0.001	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.006
8-Sep	Z	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.002	0.007	0.001	0.013	0.003	0.002	0.015	0.027	0.058	0.042	0.060	0.050	0.000	0.000	0.012	0.060
9-Sep	0.000	Z	0.011	0.045	0.000	0.000	0.109	0.000	0.050	0.010	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.010	0.109
10-Sep	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	0.024	0.005	0.000	0.000	0.001	0.024
11-Sep	0.000	0.000	0.000	Z	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.004	0.061	0.000	0.006	0.061	0.088	0.029	0.004	0.000	0.000	0.000	0.000	0.011	0.088
12-Sep	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	0.036	0.006	0.002	0.036
13-Sep	0.000	0.000	0.000	0.000	0.001	Z	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.003	0.000	0.041	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.002	0.041
14-Sep	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	0.006	0.000	0.000	0.000	0.019	0.001	0.019
15-Sep	0.000	Z	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.032	0.050	0.002	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.004	0.050
16-Sep	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
17-Sep	0.000	0.000	0.000	Z	0.000	0.013	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	0.000	0.001	0.019
18-Sep	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
19-Sep	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
20-Sep	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
21-Sep	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
22-Sep	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	0.001	0.000	0.000	0.000	0.000	0.000	0.000	0.001
23-Sep	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	0.001	0.000	0.000	0.000	0.000	0.000	0.001
24-Sep	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
25-Sep	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
26-Sep	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
27-Sep	0.000	Z	0.000	0.000	0.000	0.000	0.000	0.000	0.000	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
28-Sep	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
29-Sep	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
30-Sep	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
	0.006	0.000	0.003	0.002	0.000	0.001	0.004	0.000	0.002	0.001	0.001	0.002	0.002	0.003	0.001	0.003	0.003	0.004	0.003	0.002	0.004	0.009	0.007	0.004	Diurnal Average	
	0.140	0.005	0.055	0.045	0.001	0.013	0.109	0.000	0.050	0.010	0.032	0.050	0.033	0.061	0.027	0.041	0.061	0.088	0.058	0.042	0.060	0.229	0.097	0.086	Diurnal Maximum	

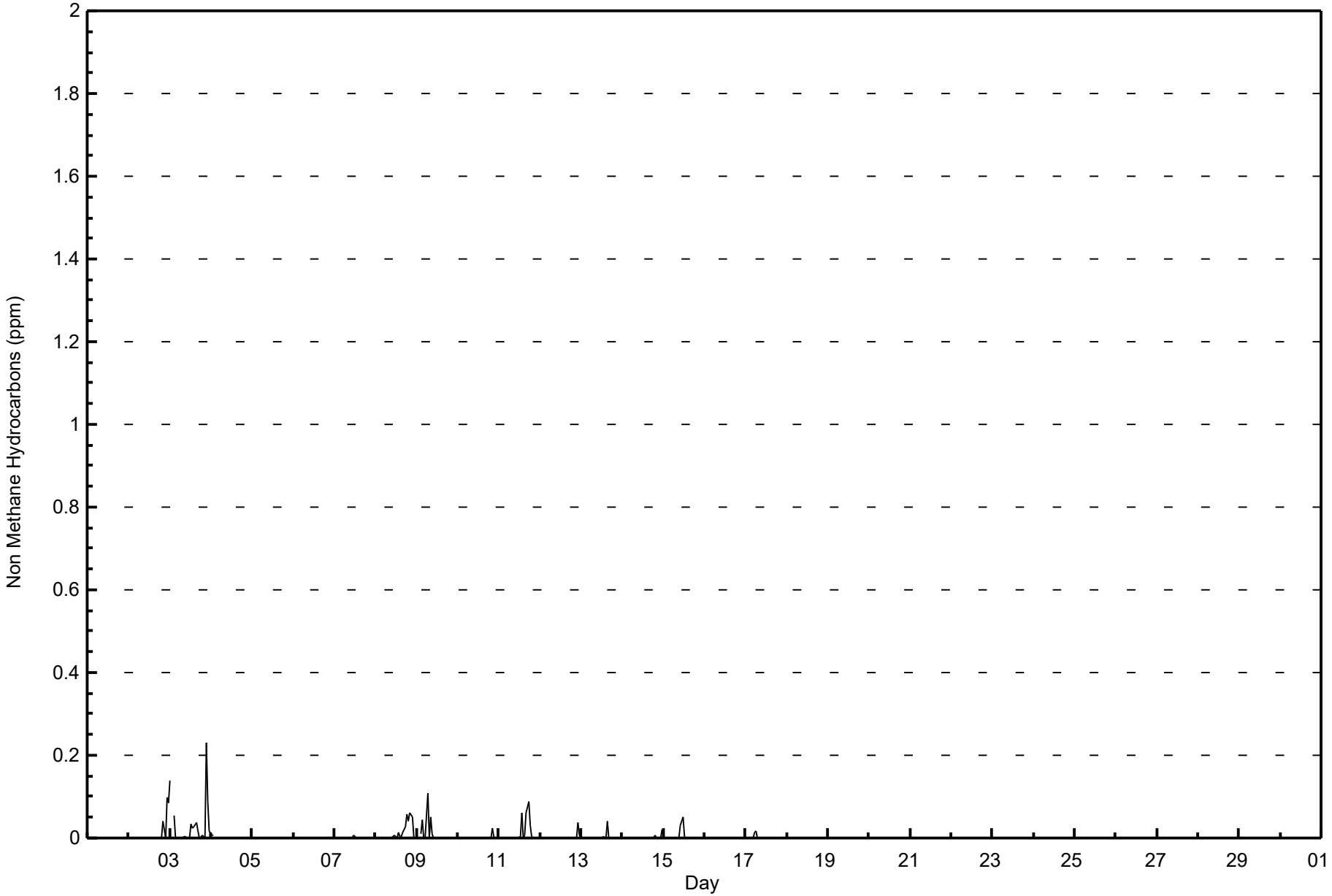
Z - zerospan C - Calibration M - Maintenance

Wood Buffalo Environmental Association

Hourly Averages

Non Methane Hydrocarbons (NMHC) - ppm

Barge Landing - September 2024



09 - 27

Wood Buffalo Environmental Association

Cumulative Frequency Distribution

Non Methane Hydrocarbons (NMHC) - ppm

Barge Landing - September 2024

Concentration Ranges (ppm)	Number of Hours	%	Cumulative %
0 - 0.005	641	93.71	93.71
0.006 - 0.05	32	4.68	98.39
0.06 - 0.1	10	1.46	99.85
> 0.1	1	0.15	100.00

Total Number of Valid Hours: 684

Total Number of Hours: 720

Wood Buffalo Environmental Association

Frequency Distribution

Non Methane Hydrocarbons (NMHC) - ppm

Barge Landing - September 2024

Concentration Ranges (ppm)	Wind Direction																
	N	NNE	NE	ENE	E	ESE	SE	SSE	S	SSW	SW	WSW	W	WNW	NW	NNW	**Totals**
0 - 0.005	30	10	5	4	12	20	47	90	62	51	64	58	54	34	40	59	640
0.006 - 0.05	5	8	6	0	1	0	0	3	1	0	0	1	0	1	3	3	32
0.06 - 0.1	4	1	1	0	0	0	0	0	0	0	0	0	0	0	1	3	10
> 0.1	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1
Totals	40	19	12	4	13	20	47	93	63	51	64	59	54	35	44	65	683

Total Number of Valid Hours: 683

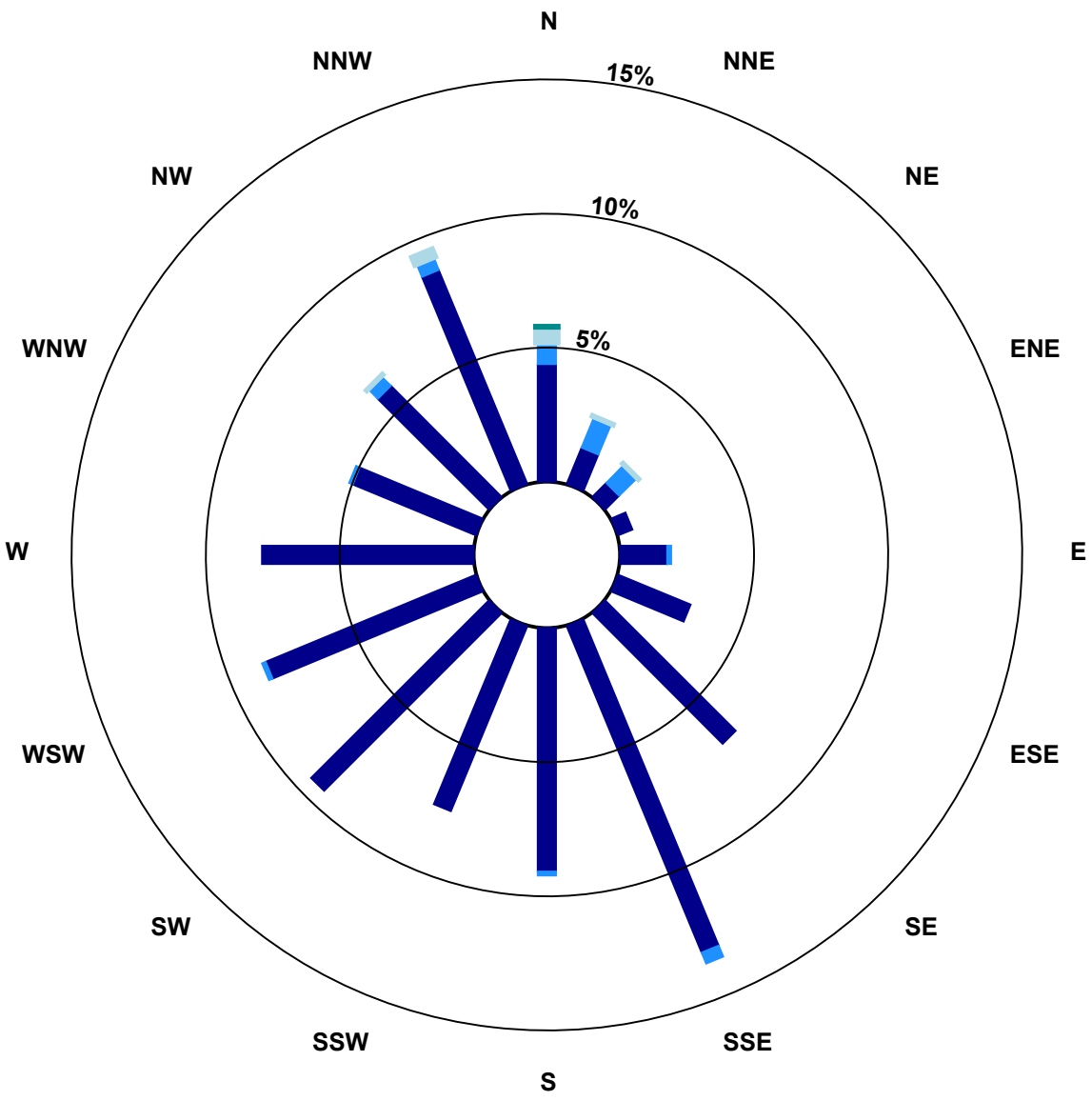
Total Number of Hours: 720

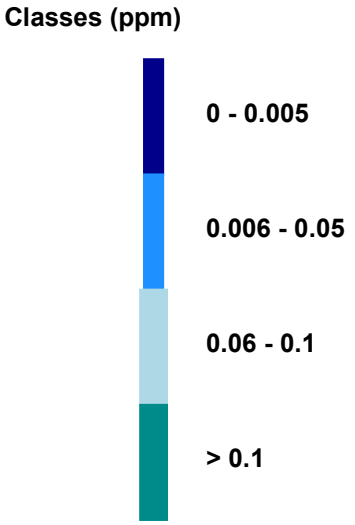
Wood Buffalo Environmental Association

Wind Rose Sep 2024

Non Methane Hydrocarbons (NMHC) - ppm

Barge Landing





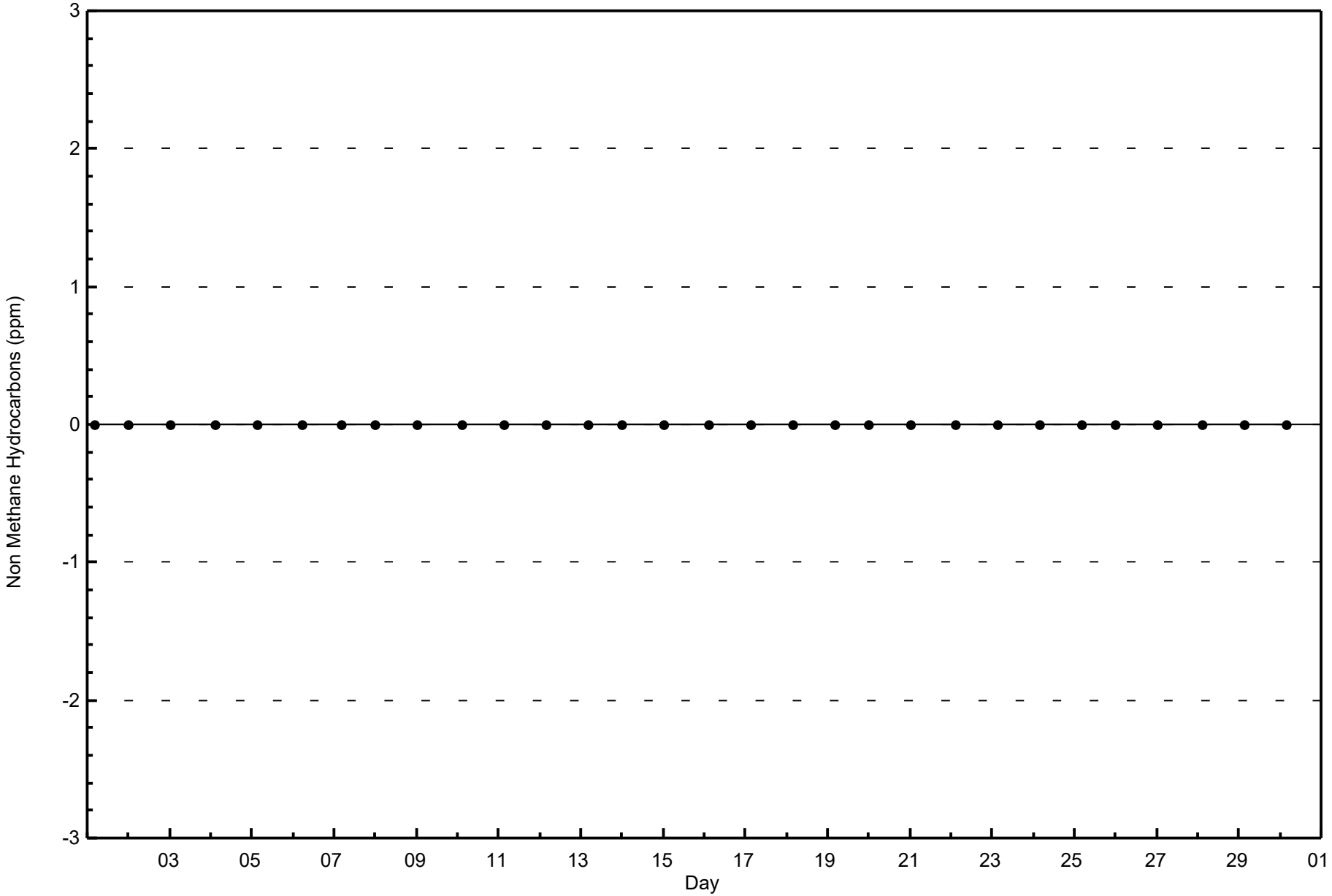
Total Number of Valid Hours: 683

Wood Buffalo Environmental Association

Zero Responses

Non Methane Hydrocarbons (NMHC) - ppm

Barge Landing - September 2024

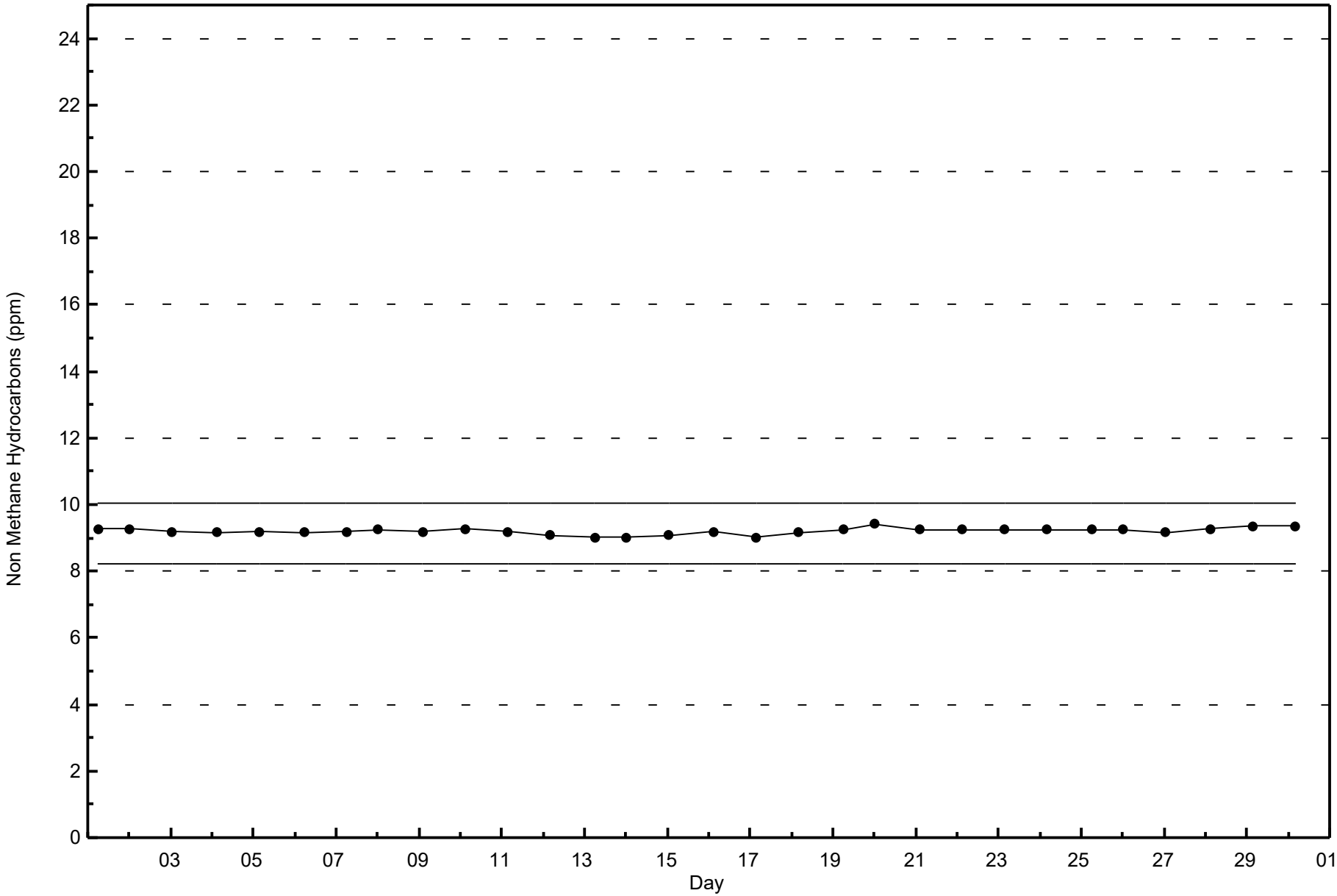


Wood Buffalo Environmental Association

Span Responses

Non Methane Hydrocarbons (NMHC) - ppm

Barge Landing - September 2024



Wood Buffalo Environmental Association

Summary of Hour Averages

Methane (CH_4) - ppm

Barge Landing - September 2024

Number of Exceedences (AAAQO): 1-hr: 0 24-hr: 0
Maximum Value: 3.5 ppm on Sep 13 07:00
Maximum Daily Average: 2.3 ppm on Sep 13

Minimum Value: 1.9 ppm on Sep 24 13:00
Minimum Daily Average: 1.9 ppm on Sep 28
Maximum Diurnal Average: 2.2 ppm at hour 7
Minimum Diurnal Average: 2.0 ppm at hour 17
Monthly Average: 2.06 ppm
Percentiles: P_1 = 1.9 P_{10} = 1.9 Q_1 = 2.0 Median = 2.0 Q_3 = 2.1 P_{90} = 2.3 P_{99} = 2.7

Hours in Service:	720
Hours of Data:	684
Hours of Missing Data:	36
Hours of Calibration:	34
Percent Operational Time:	99.7

Day	Hourly Period Ending At (MST)																								Daily	Daily
	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24	Average	Maximum
1-Sep	1.9	2.0	2.0	2.1	2.1	Z	2.1	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	2.0	2.1	2.2	2.2	2.0	2.2
2-Sep	Z	2.2	2.2	2.3	2.3	2.4	2.4	2.3	2.2	2.2	2.2	2.1	2.0	1.9	1.9	1.9	1.9	1.9	1.9	1.9	2.0	2.0	1.9	2.0	2.1	2.4
3-Sep	1.9	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
4-Sep	2.0	2.1	Z	2.2	2.1	2.1	2.0	2.0	2.0	C	C	C	C	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
5-Sep	2.0	2.1	2.0	Z	2.1	2.0	2.0	2.0	2.0	2.0	2.2	2.0	2.0	2.0	1.9	1.9	1.9	2.0	2.0	1.9	2.0	2.0	2.1	2.1	2.0	2.2
6-Sep	2.1	2.1	2.0	2.0	2.0	Z	2.1	2.1	2.1	2.1	2.0	1.9	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
7-Sep	2.0	2.0	2.0	2.0	2.2	Z	2.3	2.3	2.3	2.2	2.1	2.1	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	2.3
8-Sep	Z	2.0	2.0	2.0	2.1	2.2	2.2	2.3	2.3	2.4	2.3	2.1	2.0	2.0	2.0	2.0	2.0	2.0	2.1	2.1	2.4	2.3	2.3	2.2	2.1	2.4
9-Sep	2.3	Z	2.3	2.8	2.2	2.3	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	2.0	2.1	2.8
10-Sep	2.0	1.9	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	1.9	1.9	2.0	2.0	2.1	2.1	2.2	2.2	2.0	2.2
11-Sep	2.2	2.2	2.2	Z	2.5	2.6	2.5	2.5	2.5	2.3	2.1	2.1	2.2	2.1	2.1	2.0	2.0	2.0	2.0	2.1	2.1	2.1	2.0	2.0	2.2	2.6
12-Sep	2.0	2.0	2.0	2.0	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	2.1	2.3	2.2	2.0	2.3
13-Sep	2.1	2.1	2.2	2.5	2.8	Z	3.5	2.9	2.8	2.9	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	2.1	2.3	3.5
14-Sep	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	1.9	2.0	2.0	2.0	2.1	2.1	2.1	2.2	2.0	2.2
15-Sep	2.1	Z	2.2	2.2	2.5	2.3	2.3	2.5	2.5	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	2.2	2.5
16-Sep	2.1	2.1	Z	2.1	2.1	2.1	2.1	2.1	2.1	2.1	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	2.0	2.0	2.1
17-Sep	2.1	2.1	2.2	Z	2.1	2.2	2.2	2.2	2.2	2.1	2.1	2.1	2.0	2.0	1.9	1.9	1.9	1.9	1.9	1.9	1.9	2.0	2.0	2.0	2.1	2.2
18-Sep	2.0	2.0	2.0	2.0	Z	2.1	2.1	2.2	2.2	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	2.2
19-Sep	2.0	2.0	2.0	2.0	2.0	Z	2.3	2.3	2.4	2.4	2.1	2.2	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.1	2.2	2.2	2.2	2.2	2.1	2.4
20-Sep	Z	2.1	2.2	2.3	2.4	2.4	2.5	2.3	2.2	2.2	2.0	2.0	1.9	2.0	1.9	1.9	1.9	1.9	1.9	2.0	2.0	2.0	2.0	2.1	2.1	2.5
21-Sep	2.1	Z	2.1	2.1	2.1	2.1	2.0	2.1	2.1	2.4	2.5	2.1	2.1	2.0	2.0	1.9	1.9	2.0	2.0	1.9	2.0	2.0	2.0	1.9	2.1	2.5
22-Sep	1.9	1.9	Z	2.0	2.0	2.0	2.0	2.0	2.1	2.3	2.2	2.2	2.1	2.0	2.0	2.0	2.0	2.0	2.1	2.1	2.1	2.1	2.2	2.3	2.1	2.3
23-Sep	2.3	2.4	2.4	Z	2.5	2.4	2.4	2.2	2.5	2.4	2.1	2.1	2.1	2.3	2.2	2.2	2.1	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.2	2.5
24-Sep	2.1	2.0	2.0	2.0	Z	2.1	2.1	2.2	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	2.2
25-Sep	2.0	2.0	2.0	2.0	2.1	Z	2.1	2.2	2.4	2.7	2.6	2.5	2.5	2.2	2.2	2.0	2.2	2.3	2.2	2.2	2.3	2.2	2.0	2.0	2.2	2.7
26-Sep	Z	1.9	1.9	2.0	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	1.9	1.9	2.0	2.0	2.3	2.0	2.3
27-Sep	2.4	Z	2.2	2.4	2.3	2.2	2.1	2.1	2.2	2.2	2.0	2.0	M	M	1.9	1.9	1.9	2.0	2.0	1.9	2.0	2.0	2.0	2.0	2.1	2.4
28-Sep	2.0	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	2.0	2.0	2.0	2.0	1.9	2.0
29-Sep	2.1	2.1	2.1	Z	2.2	2.5	2.9	2.7	2.3	2.3	2.2	2.2	2.1	2.0	2.0	2.0	1.9	1.9	1.9	2.0	2.1	2.0	2.0	2.0	2.1	2.9
30-Sep	1.9	1.9	1.9	1.9	Z	1.9	1.9	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	1.9	2.0
	2.1	2.1	2.1	2.1	2.2	2.2	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	Diurnal Average	
	2.4	2.4	2.4	2.8	2.8	2.6	3.5	2.9	2.8	2.9	2.6	2.5	2.5	2.3	2.2	2.2	2.2	2.3	2.2	2.2	2.4	2.3	2.3	2.3	Diurnal Maximum	

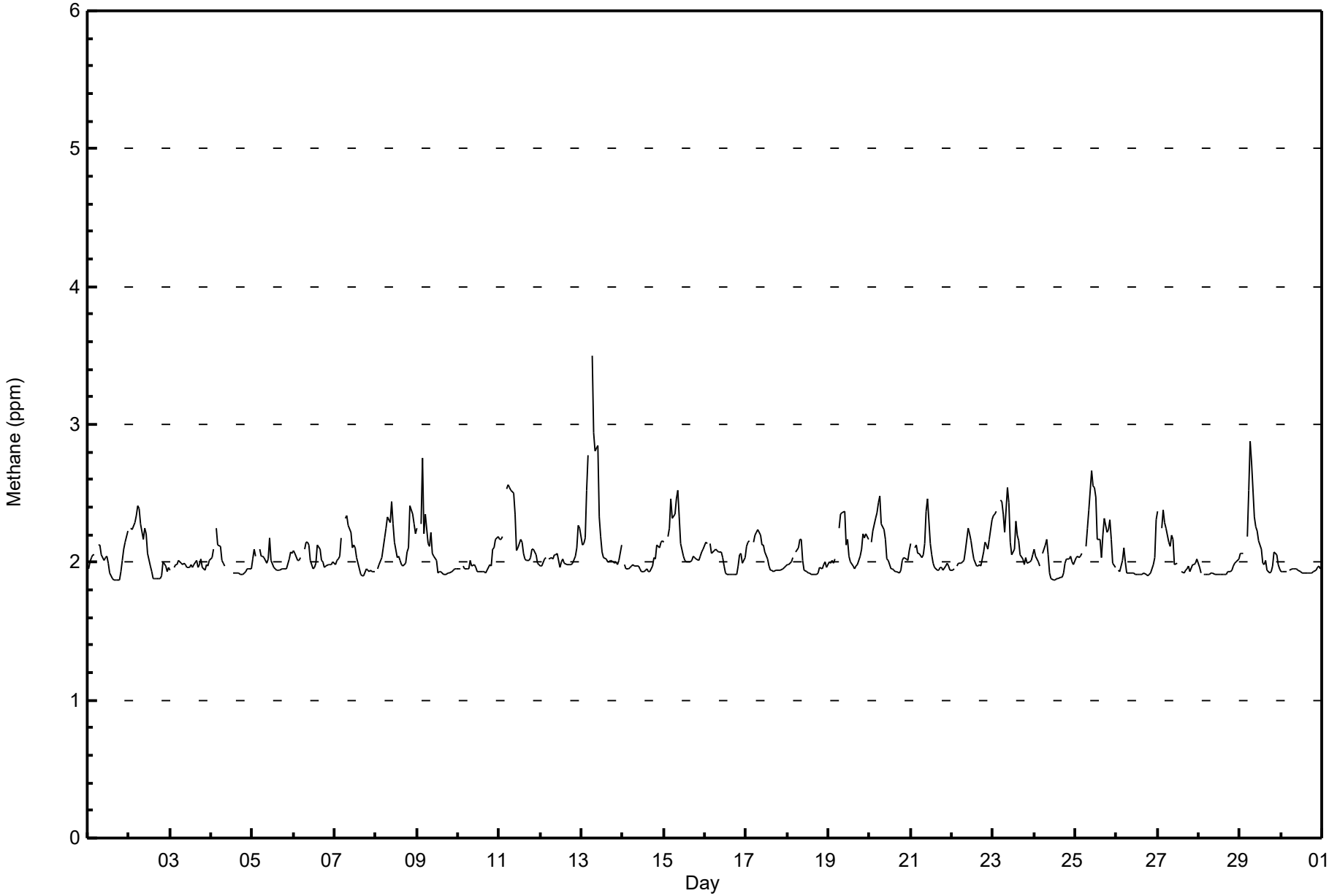
Z - zerospan C - Calibration M - Maintenance

Wood Buffalo Environmental Association

Hourly Averages

Methane (CH_4) - ppm

Barge Landing - September 2024



Concentration Ranges (ppm)	Number of Hours	%	Cumulative %
0 - 2.0	431	63.01	63.01
2.1 - 3.0	252	36.84	99.85
3.1 - 10.0	1	0.15	100.00
> 10.0	0	0.00	100.00

Total Number of Valid Hours: 684

Total Number of Hours: 720

Wood Buffalo Environmental Association

Frequency Distribution

Methane (CH_4) - ppm

Barge Landing - September 2024

Concentration							**Wind Direction**										
Ranges (ppm)	N	NNE	NE	ENE	E	ESE	SE	SSE	S	SSW	SW	WSW	W	WNW	NW	NNW	**Totals**
0 - 2.0	25	10	6	1	10	17	37	39	29	35	54	46	44	25	26	27	431
2.1 - 3.0	15	9	6	3	3	3	10	54	34	16	10	13	10	9	18	38	251
3.1 - 10.0	0	0	0	0	0	0	0	0	0	0	0	0	0	1	0	0	1
> 10.0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Totals	40	19	12	4	13	20	47	93	63	51	64	59	54	35	44	65	683

Total Number of Valid Hours: 683

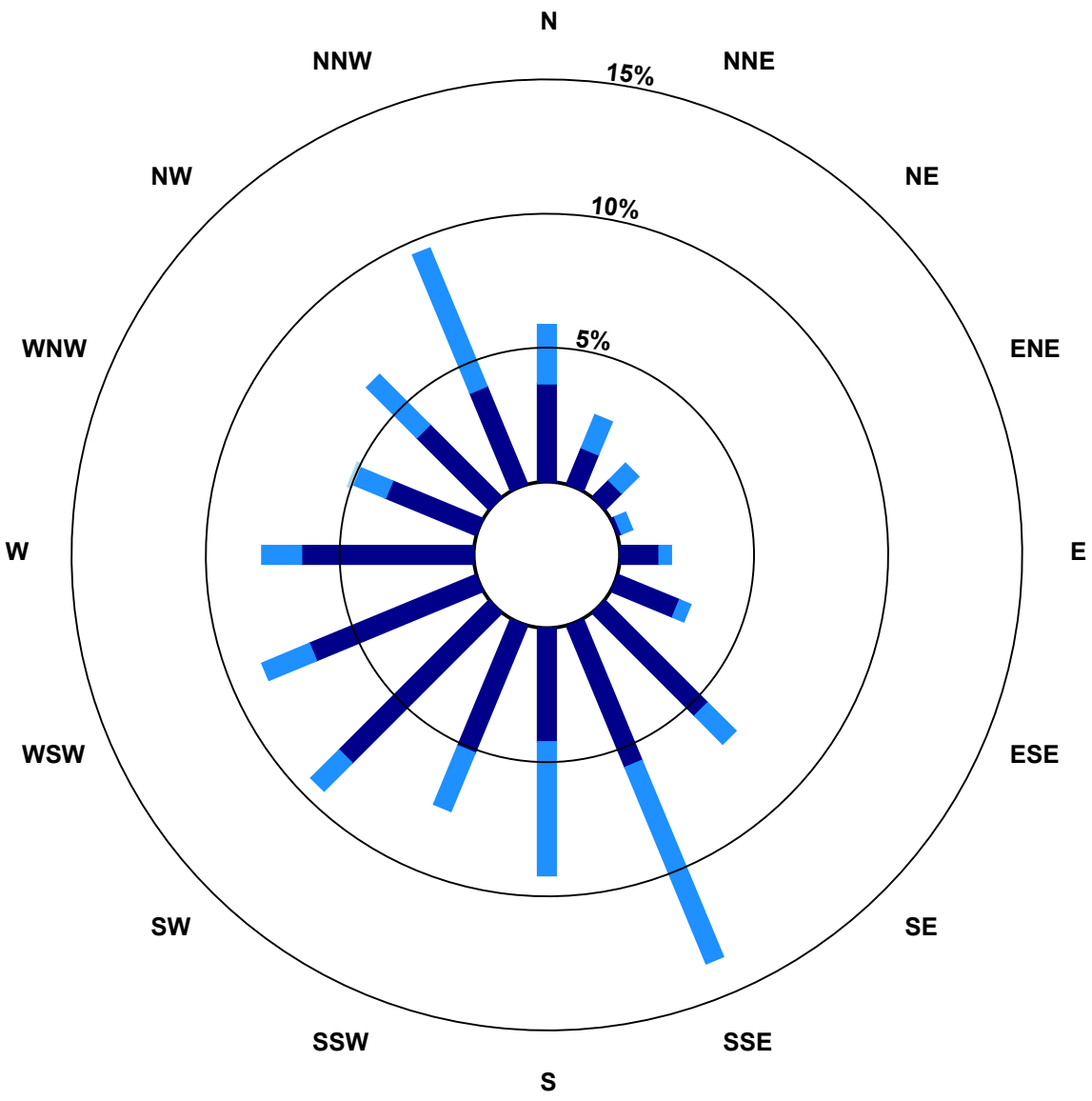
Total Number of Hours: 720

Wood Buffalo Environmental Association

Wind Rose Sep 2024

Methane (CH_4) - ppm

Barge Landing



Classes (ppm)

0 - 2.0

2.1 - 3.0

3.1 - 10.0

> 10.0

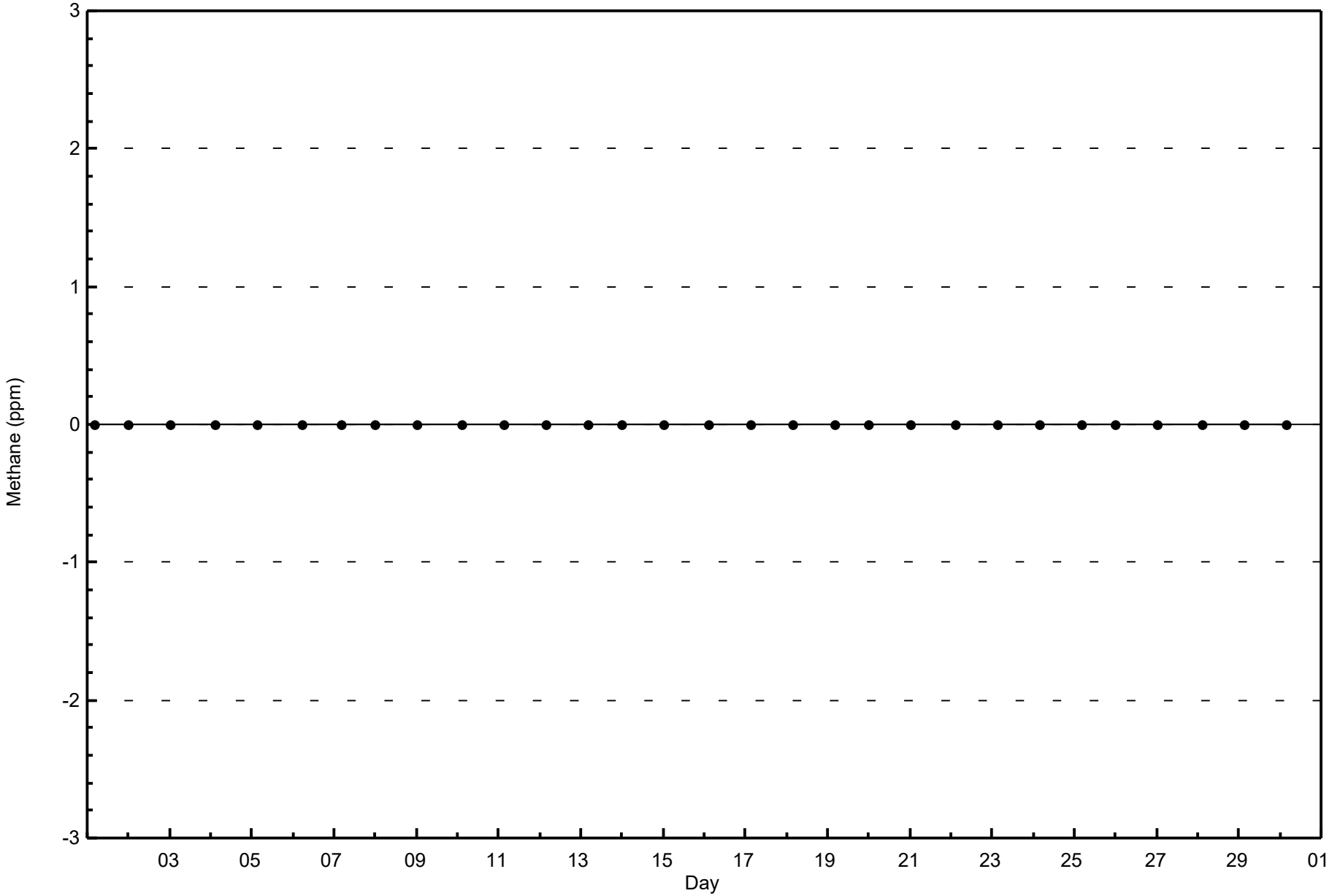
Total Number of Valid Hours: 683

Wood Buffalo Environmental Association

Zero Responses

Methane (CH_4) - ppm

Barge Landing - September 2024

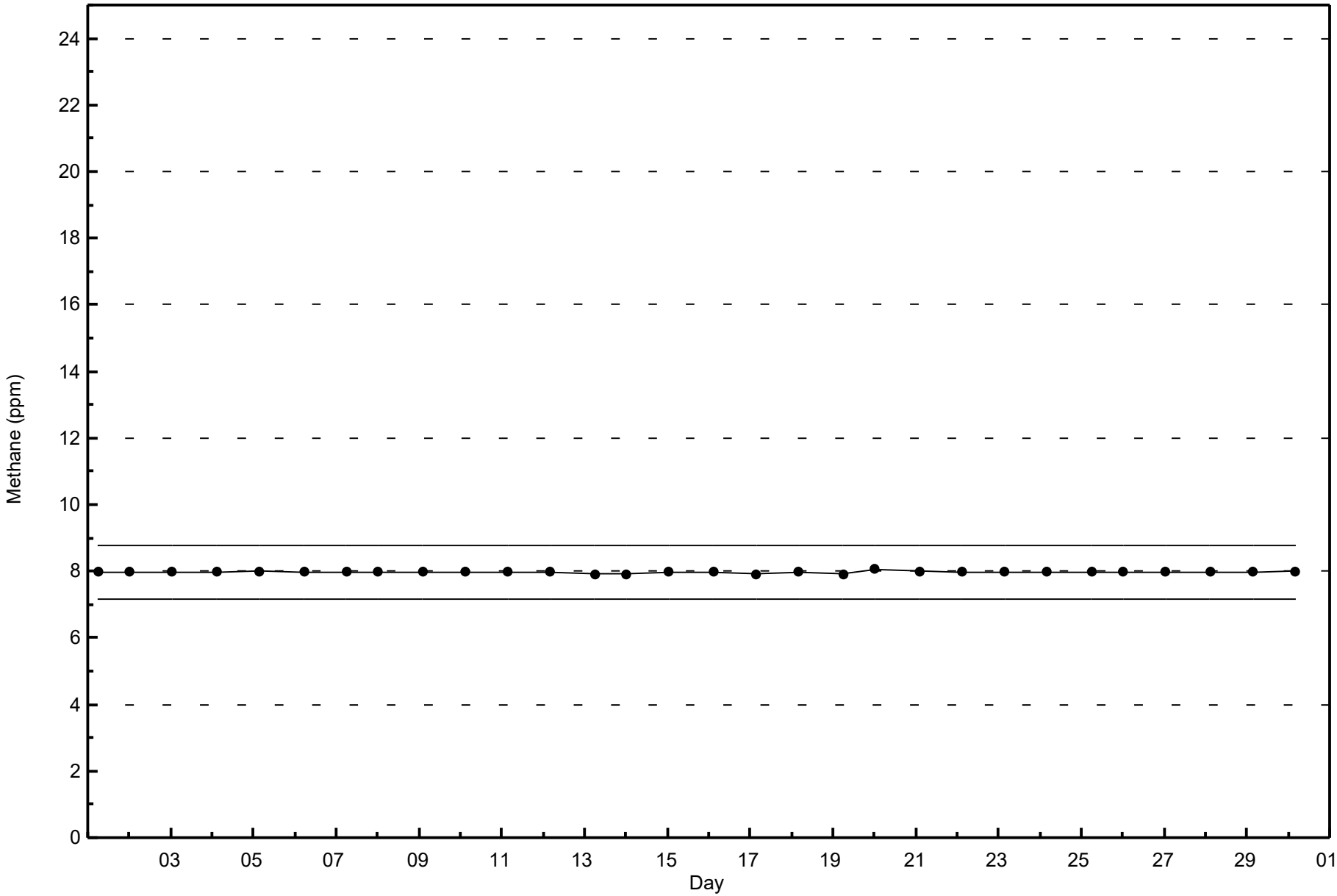


Wood Buffalo Environmental Association

Span Responses

Methane (CH_4) - ppm

Barge Landing - September 2024



Wood Buffalo Environmental Association

Summary of Hour Averages

Nitric Oxide (NO) - ppb

Barge Landing - September 2024

Maximum Value: 87.8 ppb on Sep 11 07:00

Maximum Daily Average: 11.8 ppb on Sep 19

Minimum Value: 0.0 ppb on Sep 1 15:00

Minimum Daily Average: 0.4 ppb on Sep 10

Maximum Diurnal Average: 23.8 ppb at hour 7

Minimum Diurnal Average: 0.3 ppb at hour 17

Monthly Average: 5.70 ppb

Percentiles: P_1 = 0.0 P_{10} = 0.0 Q_1 = 0.1 Median = 0.9 Q_3 = 6.4 P_{90} = 17.5 P_{99} = 50.0

Hours in Service:	720
Hours of Data:	685
Hours of Missing Data:	35
Hours of Calibration:	35
Percent Operational Time:	100.0

Day	Hourly Period Ending At (MST)																								Daily	Daily
	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24	Average	Maximum
1-Sep	1.4	1.8	1.5	Z	4.7	7.8	7.6	2.2	2.9	2.8	4.1	5.6	0.8	0.1	0.0	0.0	0.0	0.0	0.0	5.6	19.6	13.8	16.6	28.9	5.6	28.9
2-Sep	16.1	16.4	3.7	17.6	Z	49.8	31.9	7.6	5.5	3.6	2.6	0.9	0.8	0.3	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	6.8	49.8
3-Sep	0.0	0.0	0.0	0.0	0.0	Z	0.7	0.3	3.0	2.2	1.5	1.8	2.4	2.0	2.0	1.9	0.6	0.4	0.2	0.0	0.0	4.4	1.9	0.4	1.1	4.4
4-Sep	Z	7.1	15.6	1.8	0.1	5.1	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	0.4	3.1	3.7	8.4	2.1	2.1	15.6
5-Sep	0.1	Z	0.1	4.3	13.9	34.5	31.8	2.3	0.9	3.7	9.0	4.9	4.8	2.3	1.4	0.7	0.5	0.7	0.3	0.2	0.4	0.4	0.8	0.8	5.2	34.5
6-Sep	0.9	0.7	0.0	Z	0.0	0.3	0.8	2.1	0.9	2.1	1.0	0.0	0.2	1.0	1.0	1.3	1.2	0.8	0.1	0.3	0.1	0.0	4.4	3.9	1.0	4.4
7-Sep	3.7	11.6	22.2	Z	29.1	26.5	55.8	10.9	4.6	3.7	4.7	3.2	0.7	0.6	0.1	0.1	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	7.7	55.8
8-Sep	0.3	6.0	8.2	7.5	Z	37.8	32.6	11.5	9.4	4.9	5.8	4.4	1.2	0.5	0.4	0.3	0.2	0.1	0.1	0.0	0.1	0.2	1.3	3.9	5.9	37.8
9-Sep	18.5	1.8	2.1	18.5	0.5	Z	1.2	2.2	8.8	2.6	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	2.5	18.5
10-Sep	Z	0.0	0.0	0.8	0.0	0.0	0.5	1.4	0.5	1.4	0.6	0.0	0.0	0.0	0.0	0.1	0.0	0.0	0.0	0.0	1.8	0.4	0.6	0.4	0.4	1.8
11-Sep	2.1	Z	1.5	13.5	12.3	29.1	87.8	24.4	22.8	22.0	5.4	6.3	7.4	7.6	3.1	1.4	0.8	0.5	0.3	0.2	0.1	2.4	0.3	0.6	11.0	87.8
12-Sep	0.7	0.0	Z	1.0	36.2	4.6	10.1	4.1	1.1	2.0	1.9	0.3	0.4	0.9	0.3	0.1	0.1	0.4	0.1	0.1	0.0	10.6	14.1	24.9	5.0	36.2
13-Sep	6.9	4.1	3.2	Z	26.0	40.5	61.7	35.7	22.4	24.1	13.4	11.3	4.7	2.8	1.7	1.4	1.0	0.4	0.1	0.0	0.0	0.0	0.0	0.0	11.4	61.7
14-Sep	0.0	0.0	0.0	0.0	Z	0.0	1.9	0.2	0.1	0.1	0.0	0.0	0.0	0.1	0.2	0.1	0.0	0.2	0.0	0.0	0.3	0.1	9.1	0.1	0.5	9.1
15-Sep	0.1	0.1	1.9	12.7	28.4	Z	29.0	17.0	17.5	11.5	7.0	5.3	3.3	2.6	1.5	1.3	0.8	3.5	4.5	4.2	7.6	10.1	30.0	33.0	10.1	33.0
16-Sep	Z	11.6	6.5	11.3	14.1	13.1	10.6	6.5	5.3	2.7	2.8	1.3	0.0	0.2	0.0	0.0	0.0	0.0	0.0	20.6	19.3	5.1	0.4	7.6	6.1	20.6
17-Sep	3.8	Z	5.0	2.6	14.6	39.4	64.1	19.0	C	C	C	C	C	0.6	0.3	0.3	0.3	1.1	0.0	2.1	0.0	2.5	0.7	1.2	8.8	64.1
18-Sep	1.0	3.9	Z	5.1	11.8	6.7	6.5	5.1	2.0	0.4	0.4	0.1	0.0	0.0	0.0	0.0	0.0	0.0	0.0	2.0	0.0	18.3	8.0	0.4	3.1	18.3
19-Sep	10.3	13.8	18.0	Z	27.9	56.0	35.8	51.5	27.3	13.6	7.0	4.5	1.2	0.7	0.6	0.2	0.5	1.4	0.6	0.9	0.0	0.0	0.1	0.0	11.8	56.0
20-Sep	0.0	1.3	5.5	12.0	Z	17.0	17.1	13.1	11.1	11.4	3.4	3.1	1.1	0.7	0.5	0.4	0.1	0.0	0.0	0.0	0.0	0.0	0.0	0.3	4.3	17.1
21-Sep	1.6	11.7	9.3	30.2	17.1	Z	11.1	2.5	13.1	32.7	26.4	11.2	7.9	4.2	1.5	0.7	0.2	0.6	0.2	0.2	0.0	0.2	0.2	0.2	8.0	32.7
22-Sep	Z	0.0	0.0	6.4	7.5	21.4	43.6	11.8	5.7	12.1	13.5	9.7	2.6	2.6	1.3	0.3	0.7	0.8	0.1	1.9	0.4	0.0	0.1	1.5	6.3	43.6
23-Sep	4.2	Z	26.2	16.3	17.5	10.0	53.9	9.3	18.6	18.3	8.7	4.1	9.2	10.5	7.6	4.8	1.7	1.2	0.6	0.8	1.0	0.2	0.7	2.5	9.9	53.9
24-Sep	6.3	2.4	Z	1.9	12.8	43.4	46.9	34.9	5.3	0.6	0.1	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.9	9.2	16.1	18.0	11.2	0.8	9.2	46.9
25-Sep	6.0	16.7	12.3	Z	12.3	21.4	35.4	6.2	15.5	17.0	19.8	10.4	6.4	7.7	2.9	1.6	0.4	3.7	0.2	10.6	10.0	1.1	0.0	1.9	9.5	35.4
26-Sep	1.4	0.1	0.0	0.0	Z	0.0	0.0	0.0	0.1	0.0	0.0	0.0	0.0	0.0	0.0	0.2	0.4	0.2	0.0	0.1	1.3	5.5	0.8	1.6	0.5	5.5
27-Sep	4.8	2.9	0.7	5.1	7.7	Z	7.6	11.6	6.2	3.7	1.0	2.7	0.9	0.5	0.1	0.0	0.1	0.2	0.0	0.0	0.0	0.0	0.0	0.1	2.4	11.6
28-Sep	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	2.1	41.3	2.2	3.3	3.7	0.3	18.5	3.1	41.3
29-Sep	20.7	Z	2.7	0.2	0.4	11.5	28.9	49.4	30.3	22.9	27.5	15.6	13.0	4.0	2.2	3.2	0.3	0.0	0.0	0.0	0.0	0.0	0.0	0.0	10.1	49.4
30-Sep	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	0.0	0.0	0.0	0.0	0.1	13.8	11.6	11.9	14.0	0.7	2.3	14.0
	4.4	4.6	5.6	7.0	11.8	19.0	23.8	11.4	8.3	7.7	5.8	3.7	2.4	1.8	1.0	0.7	0.3	0.6	1.7	2.5	3.2	3.8	4.1	4.6	Diurnal Average	
	20.7	16.7	26.2	30.2	36.2	56.0	87.8	51.5	30.3	32.7	27.5	15.6	13.0	10.5	7.6	4.8	1.7	3.7	41.3	20.6	19.6	18.3	30.0	33.0	Diurnal Maximum	

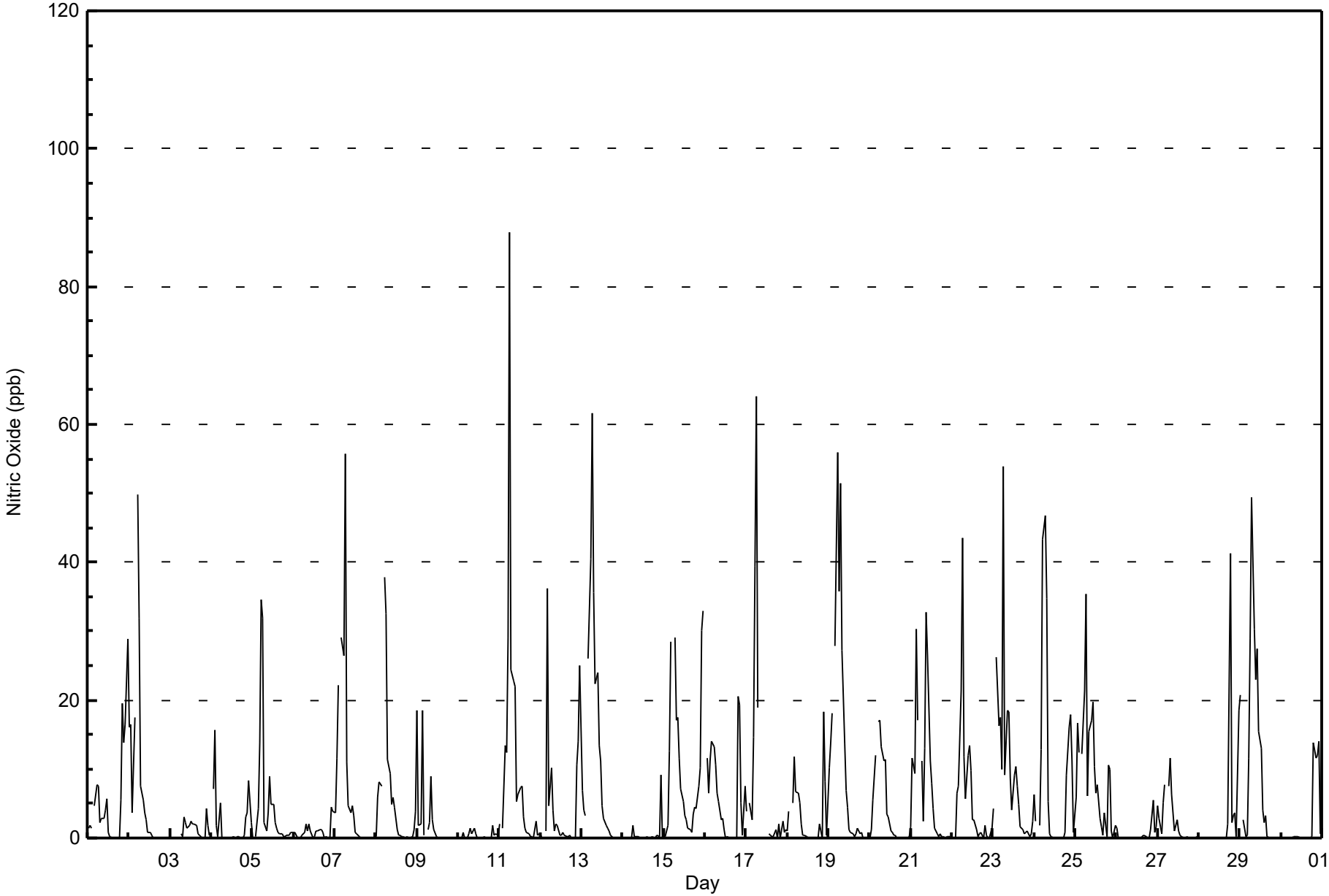
Z - zerospan C - Calibration

Wood Buffalo Environmental Association

Hourly Averages

Nitric Oxide (NO) - ppb

Barge Landing - September 2024



Concentration Ranges (ppb)	Number of Hours	%	Cumulative %
0 - 20	630	91.97	91.97
21 - 40	41	5.99	97.96
11 - 80	13	1.90	99.85
81 - 159	1	0.15	100.00
> 159	0	0.00	100.00

Total Number of Valid Hours: 685

Total Number of Hours: 720

Wood Buffalo Environmental Association

Frequency Distribution

Nitric Oxide (NO) - ppb

Barge Landing - September 2024

Concentration Ranges (ppb)	Wind Direction																
	N	NNE	NE	ENE	E	ESE	SE	SSE	S	SSW	SW	WSW	W	WNW	NW	NNW	**Totals**
0 - 20	36	18	12	5	11	18	43	75	56	51	61	59	53	32	38	61	629
21 - 40	2	1	0	0	2	0	4	10	2	4	2	1	3	3	3	4	41
11 - 80	0	0	0	0	0	2	1	3	3	0	0	0	1	2	0	1	13
81 - 159	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1	0	1
> 159	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Totals	38	19	12	5	13	20	48	88	61	55	63	60	57	37	42	66	684

Total Number of Valid Hours: 684

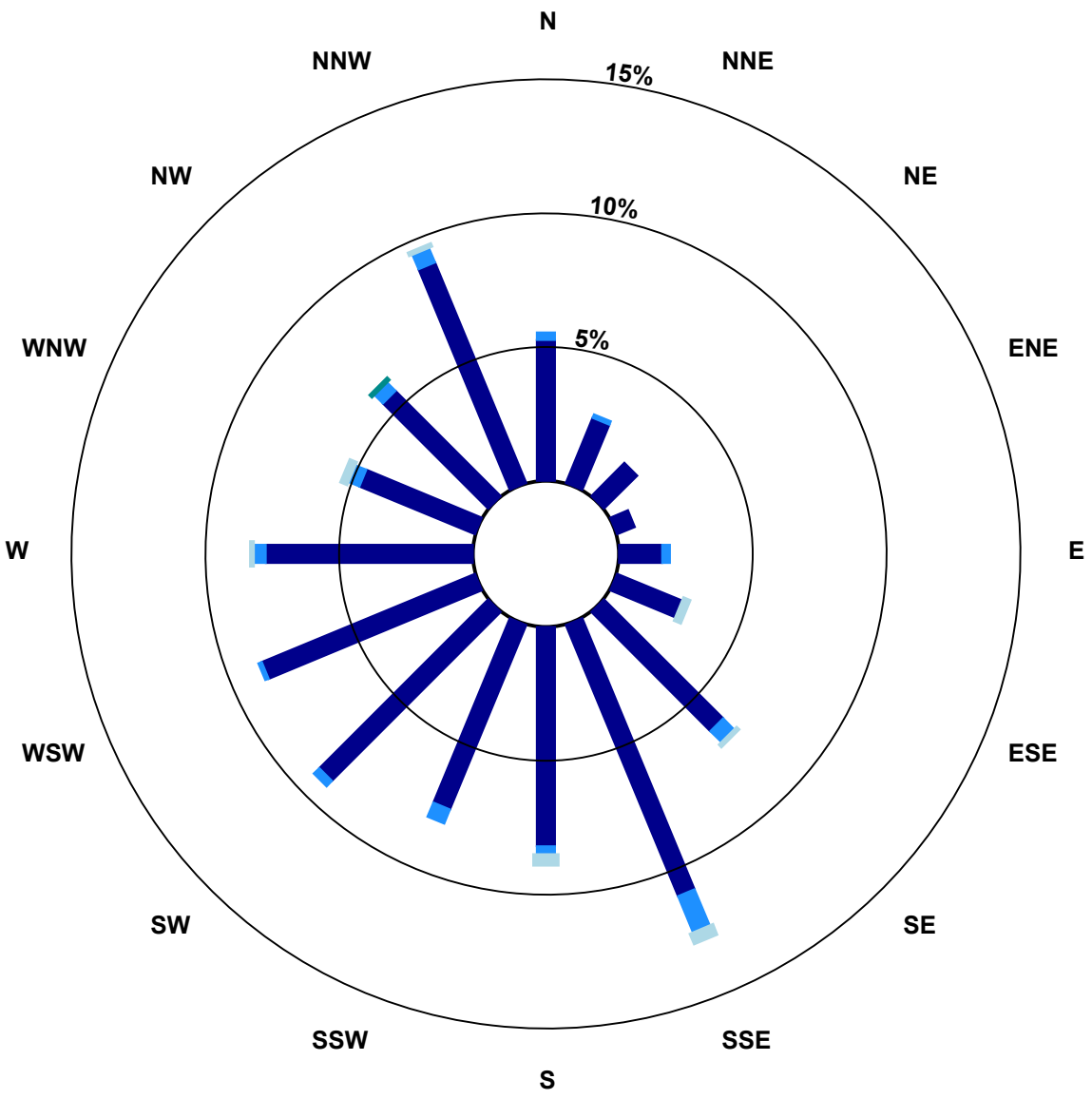
Total Number of Hours: 720

Wood Buffalo Environmental Association

Wind Rose Sep 2024

Nitric Oxide (NO) - ppb

Barge Landing



Classes (ppb)

0 - 20

21 - 40

11 - 80

81 - 159

> 159

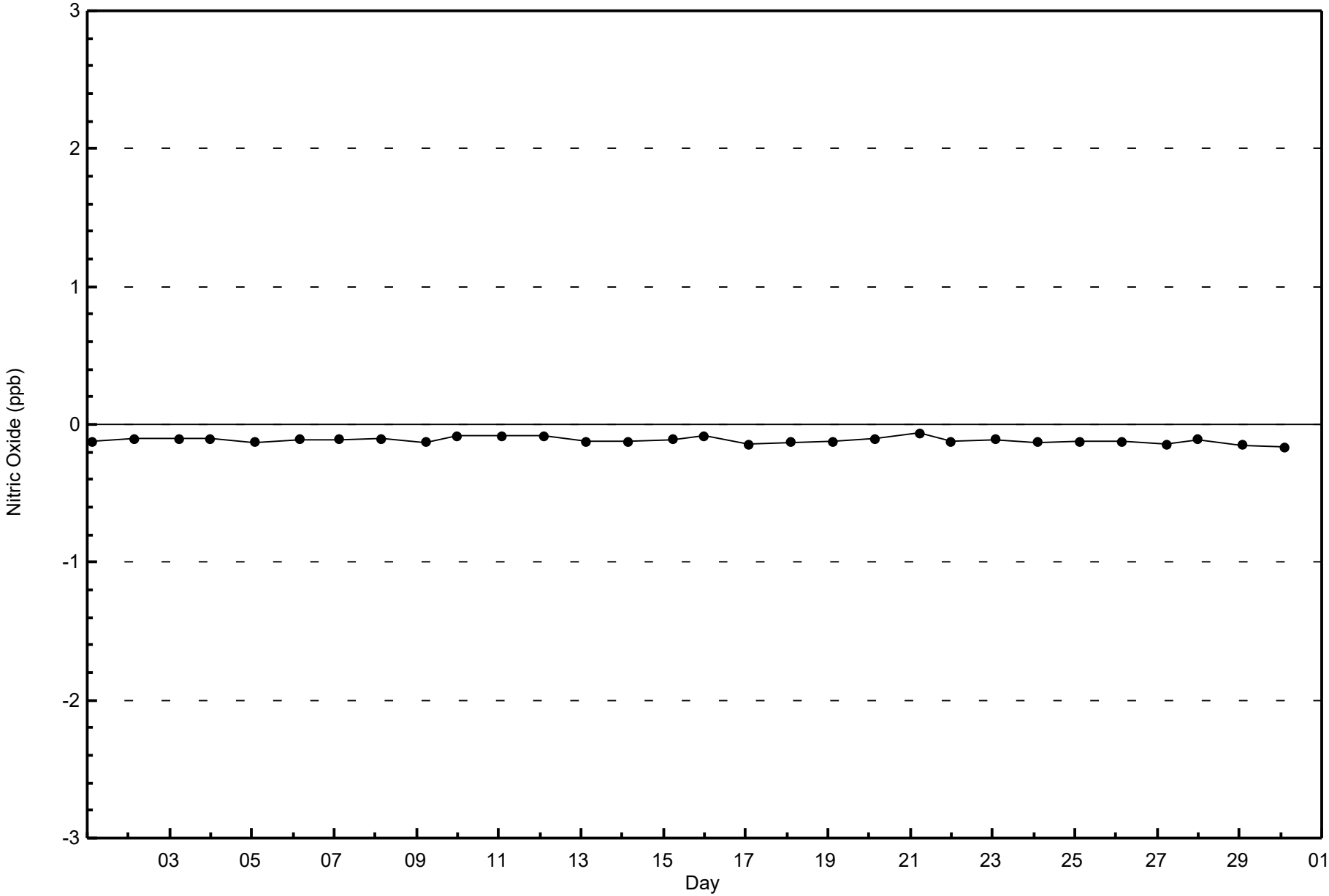
Total Number of Valid Hours: 684

Wood Buffalo Environmental Association

Zero Responses

Nitric Oxide (NO) - ppb

Barge Landing - September 2024



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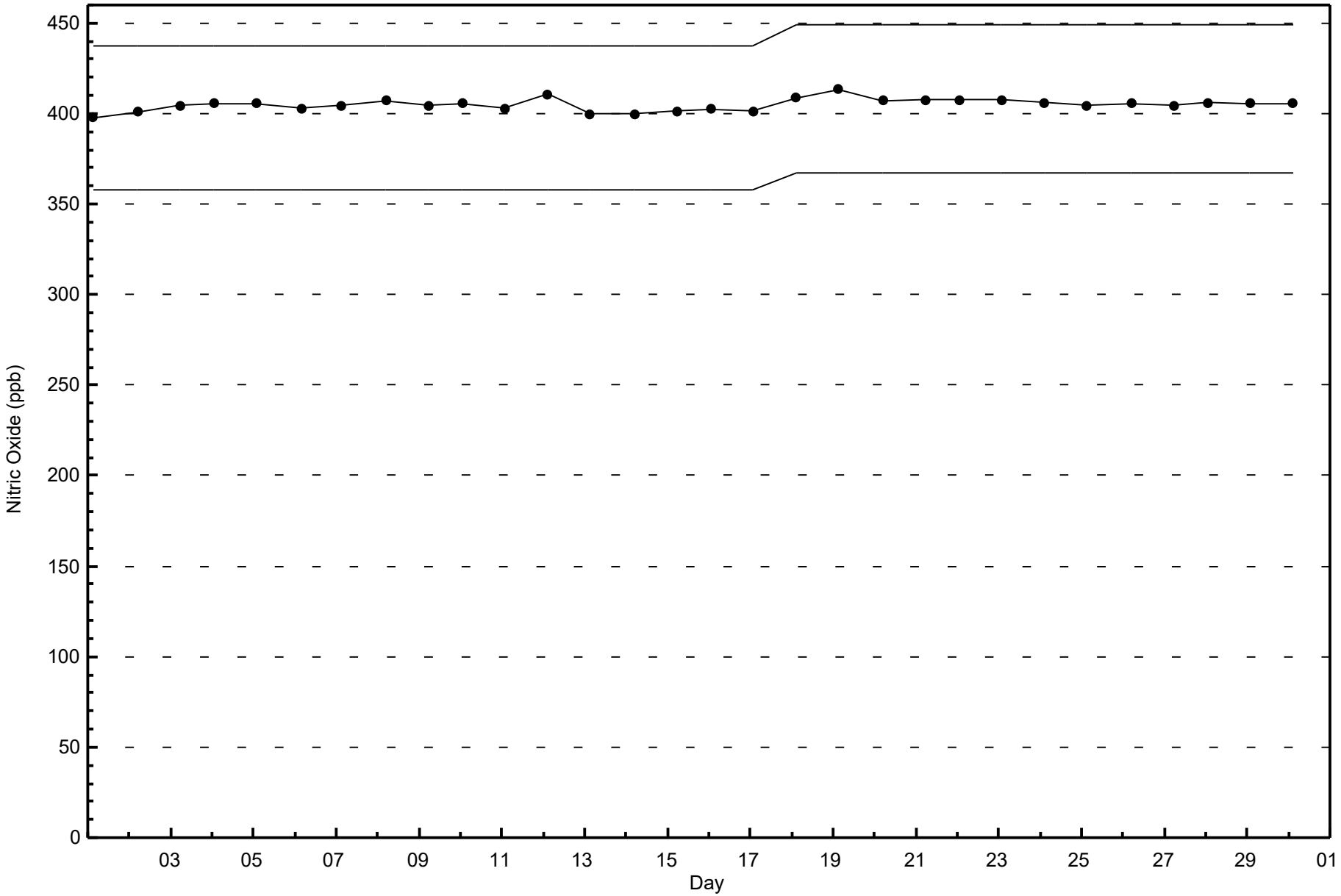
Span Responses

Nitric Oxide (NO) - ppb

Barge Landing - September 2024



Wood Buffalo Environmental Association

Summary of Hour Averages

Nitrogen Dioxide (NO_2) - ppb

Barge Landing - September 2024

Number of Exceedences (AAAQO): 1-hr: 0 24-hr: 0
Maximum Value: 23.7 ppb on Sep 8 23:00 Maximum Daily Average: 11.0 ppb on Sep 8

Minimum Value: 0.1 ppb on Sep 1 17:00
Maximum Diurnal Average: 9.6 ppb at hour 22
Monthly Average: 6.39 ppb

Minimum Daily Average: 2.2 ppb on Sep 26
Minimum Diurnal Average: 2.6 ppb at hour 17
Percentiles: P_1 = 0.1 P_{10} = 0.3 Q_1 = 1.9 Median = 6.2 Q_3 = 9.5 P_{90} = 13.4 P_{99} = 19.7

Hours in Service:	720
Hours of Data:	685
Hours of Missing Data:	35
Hours of Calibration:	35
Percent Operational Time:	100.0

Day	Hourly Period Ending At (MST)																								Daily	Daily
	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24	Average	Maximum
1-Sep	6.3	13.4	13.2	Z	13.5	14.1	10.2	6.2	6.0	5.5	7.3	10.1	3.3	1.0	0.3	0.2	0.1	0.1	0.1	5.6	19.9	20.0	19.7	17.8	8.4	20.0
2-Sep	14.2	14.6	12.2	9.6	Z	12.5	10.5	7.8	7.1	6.9	7.4	4.1	4.2	2.4	0.3	0.2	0.1	0.2	0.3	0.9	6.3	6.7	5.5	11.7	6.3	14.6
3-Sep	9.8	6.4	8.5	7.6	8.4	Z	8.8	2.6	8.0	8.9	6.2	6.8	8.9	6.8	7.2	9.5	5.0	4.8	7.0	6.5	8.3	15.1	14.5	10.3	8.1	15.1
4-Sep	Z	8.5	8.2	6.9	2.5	3.6	0.4	0.3	0.2	0.2	0.2	0.4	0.3	0.5	0.4	0.6	0.6	0.3	0.3	2.3	5.4	6.9	8.9	5.1	2.7	8.9
5-Sep	4.1	Z	7.8	8.8	6.5	6.3	6.2	2.1	1.0	3.6	9.4	7.6	8.5	6.1	4.7	3.4	4.2	5.4	5.0	5.6	5.0	7.4	13.5	13.3	6.3	13.5
6-Sep	17.4	17.8	8.3	Z	13.6	14.4	11.8	9.7	4.0	5.7	2.9	0.6	2.3	5.3	5.5	4.5	5.8	6.3	2.1	5.9	3.7	1.8	4.8	6.9	7.0	17.8
7-Sep	7.8	7.4	7.9	Z	8.0	7.6	8.3	7.4	7.2	8.1	12.2	11.9	5.7	4.6	1.4	0.5	0.3	0.3	2.6	1.1	1.0	1.8	1.8	0.8	5.0	12.2
8-Sep	5.5	8.6	9.9	9.8	Z	10.1	9.9	9.7	11.4	9.5	14.6	14.9	8.0	7.1	4.7	3.9	4.0	3.9	9.2	11.6	22.7	23.3	23.7	16.8	11.0	23.7
9-Sep	18.5	11.2	11.9	19.4	9.7	Z	10.4	8.6	14.4	6.8	4.5	1.4	0.3	0.3	0.3	0.2	0.2	0.2	0.2	0.3	0.2	0.2	0.2	0.3	5.2	19.4
10-Sep	Z	0.3	0.6	1.8	0.2	0.2	1.1	2.4	0.9	1.8	1.1	0.2	0.2	0.4	0.6	0.9	0.2	0.7	1.9	2.0	11.0	11.4	10.1	11.1	2.7	11.4
11-Sep	15.3	Z	7.1	7.4	6.6	5.6	7.8	6.1	7.1	9.3	5.8	7.4	10.7	13.5	8.9	6.5	6.7	8.1	11.3	16.0	11.0	15.2	8.0	4.2	8.9	16.0
12-Sep	6.3	2.1	Z	4.7	13.5	10.9	12.8	10.0	3.8	4.8	5.7	2.8	3.0	6.2	2.5	1.7	1.8	3.2	3.2	4.3	2.5	3.8	9.0	6.5	5.4	13.5
13-Sep	6.5	3.4	2.8	Z	5.8	9.8	9.5	9.1	8.8	10.6	9.7	11.4	9.0	9.2	10.1	8.1	6.7	5.5	3.5	2.6	2.0	0.6	2.0	7.6	6.7	11.4
14-Sep	1.8	0.7	0.5	0.2	Z	0.5	1.3	0.6	0.5	0.5	0.5	0.4	0.5	1.0	2.2	0.8	0.5	3.0	3.6	5.4	14.1	15.5	16.9	8.5	3.5	16.9
15-Sep	7.6	6.6	8.5	9.0	8.8	Z	4.5	4.9	6.6	7.0	9.4	10.8	8.6	6.0	4.5	4.9	5.5	12.2	18.8	14.9	13.9	14.1	13.9	10.9	9.2	18.8
16-Sep	Z	8.2	10.1	11.1	8.4	9.1	9.0	7.1	7.9	7.0	6.5	3.1	0.3	0.4	0.3	0.5	0.2	0.2	1.4	17.1	18.6	15.0	7.0	16.0	7.2	18.6
17-Sep	12.7	Z	11.2	8.6	12.2	14.3	13.6	9.4	C	C	C	C	C	2.5	1.8	2.0	2.7	10.1	5.9	8.9	8.0	13.5	8.3	9.8	8.6	14.3
18-Sep	11.0	13.3	Z	16.1	13.3	15.3	17.0	10.9	6.9	1.4	1.5	1.1	0.3	0.3	0.2	0.2	0.1	0.2	2.8	9.1	3.0	10.9	10.3	4.3	6.5	17.0
19-Sep	4.5	6.1	8.0	Z	6.7	7.6	6.5	8.6	10.2	9.5	8.0	7.6	3.6	3.0	3.4	2.7	6.0	11.4	8.9	12.1	9.9	13.5	17.4	11.9	8.1	17.4
20-Sep	6.3	13.3	14.5	14.3	Z	15.4	18.1	17.3	12.3	13.1	7.4	8.2	2.8	2.0	1.7	1.4	0.8	0.7	3.8	9.6	13.2	4.9	3.5	5.3	8.3	18.1
21-Sep	8.8	8.0	7.0	7.5	5.8	Z	4.3	3.9	6.4	7.3	9.2	9.7	8.3	5.6	3.7	2.8	1.9	5.8	3.6	4.0	3.5	5.3	5.9	2.4	5.7	9.7
22-Sep	Z	2.6	1.8	6.2	11.8	13.4	13.2	9.1	5.3	7.8	9.4	10.4	4.8	5.4	3.7	1.7	5.8	10.0	9.6	17.8	12.7	7.9	12.3	12.5	8.5	17.8
23-Sep	11.4	Z	8.8	7.9	6.8	4.6	5.6	2.8	7.4	7.6	7.6	5.4	9.5	15.0	13.7	9.7	7.4	5.0	3.0	5.1	3.3	4.0	5.0	5.9	7.1	15.0
24-Sep	6.9	5.8	Z	2.7	4.7	5.9	7.1	6.4	3.6	0.7	0.3	0.2	0.1	0.1	0.1	0.1	0.1	1.2	13.6	20.5	15.9	15.5	13.0	9.1	5.8	20.5
25-Sep	9.6	11.7	12.4	Z	9.2	8.2	7.6	6.7	8.2	9.9	12.4	12.7	9.7	12.2	9.1	7.0	4.4	11.5	5.5	12.6	13.9	10.1	1.7	2.3	9.1	13.9
26-Sep	3.2	0.6	0.2	2.9	Z	1.5	0.4	0.3	1.0	0.3	0.2	0.1	0.1	0.2	0.1	1.3	2.8	2.4	0.3	2.6	6.9	7.7	8.5	7.6	2.2	8.5
27-Sep	9.1	7.3	5.7	8.1	11.7	Z	9.9	9.5	7.8	6.0	2.3	6.3	3.1	2.1	0.7	0.4	1.7	6.3	3.7	3.2	4.1	4.4	6.3	10.1	5.6	11.7
28-Sep	Z	0.3	0.2	0.2	0.2	0.2	0.1	0.3	0.8	0.2	0.2	0.2	0.1	0.2	0.2	0.2	0.2	4.2	19.7	11.7	10.9	12.5	8.4	9.4	3.5	19.7
29-Sep	9.1	Z	4.9	4.3	4.6	6.2	7.3	9.0	10.5	10.7	14.1	11.5	13.3	9.3	8.7	11.6	3.5	1.0	0.8	1.9	5.7	4.5	1.1	0.5	6.7	14.1
30-Sep	0.2	0.1	Z	0.2	0.2	0.2	0.3	0.4	0.4	0.4	0.5	0.2	0.1	0.1	0.1	0.1	0.1	0.1	2.0	17.1	15.2	13.8	12.0	2.5	2.9	17.1
	8.6	7.1	7.4	7.3	7.7	7.9	7.8	6.3	6.1	5.9	6.1	5.8	4.5	4.3	3.4	2.9	2.6	4.1	5.1	7.9	9.1	9.6	9.1	8.0	Diurnal Average	
	18.5	17.8	14.5	19.4	13.6	15.4	18.1	17.3	14.4	13.1	14.6	14.9	13.3	15.0	13.7	11.6	7.4	12.2	19.7	20.5	22.7	23.3	23.7	17.8	Diurnal Maximum	

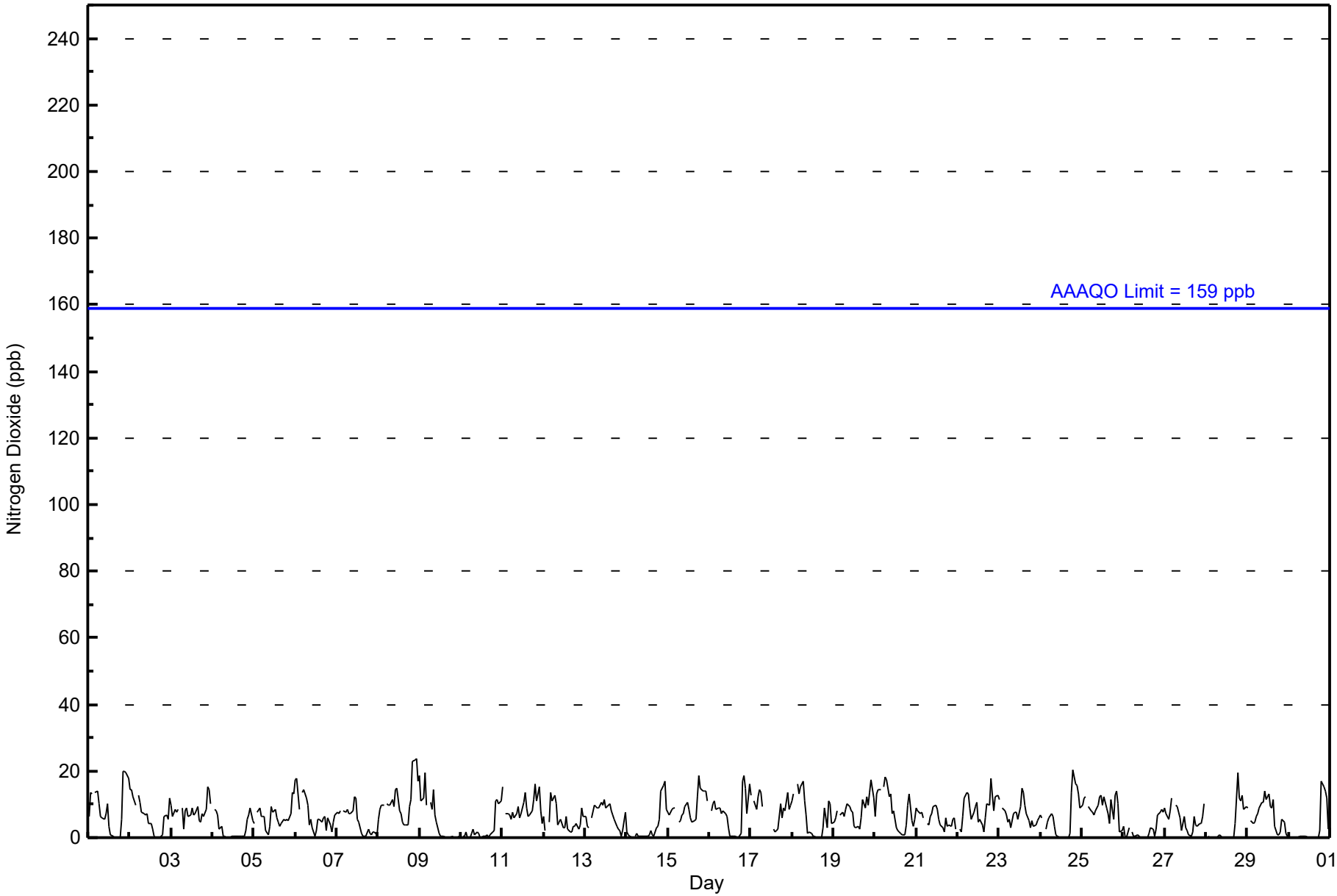
Z - zerospan C - Calibration
Alberta Ambient Air Quality Objectives (AAAQO): 1-hr 159 ppb

Wood Buffalo Environmental Association

Hourly Averages

Nitrogen Dioxide (NO_2) - ppb

Barge Landing - September 2024



Nitrogen Dioxide (NO_2) - ppb
Barge Landing - September 2024

Concentration Ranges (ppb)	Number of Hours	%	Cumulative %
0 - 20	681	99.42	99.42
21 - 40	4	0.58	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: 685

Total Number of Hours: 720

Wood Buffalo Environmental Association

Frequency Distribution

Nitrogen Dioxide (NO_2) - ppb

Barge Landing - September 2024

Concentration Ranges (ppb)	Wind Direction																
	N	NNE	NE	ENE	E	ESE	SE	SSE	S	SSW	SW	WSW	W	WNW	NW	NNW	**Totals**
0 - 20	36	19	12	5	13	19	48	88	61	55	63	60	57	37	42	65	680
21 - 40	2	0	0	0	0	1	0	0	0	0	0	0	0	0	0	1	4
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	38	19	12	5	13	20	48	88	61	55	63	60	57	37	42	66	684

Total Number of Valid Hours: 684

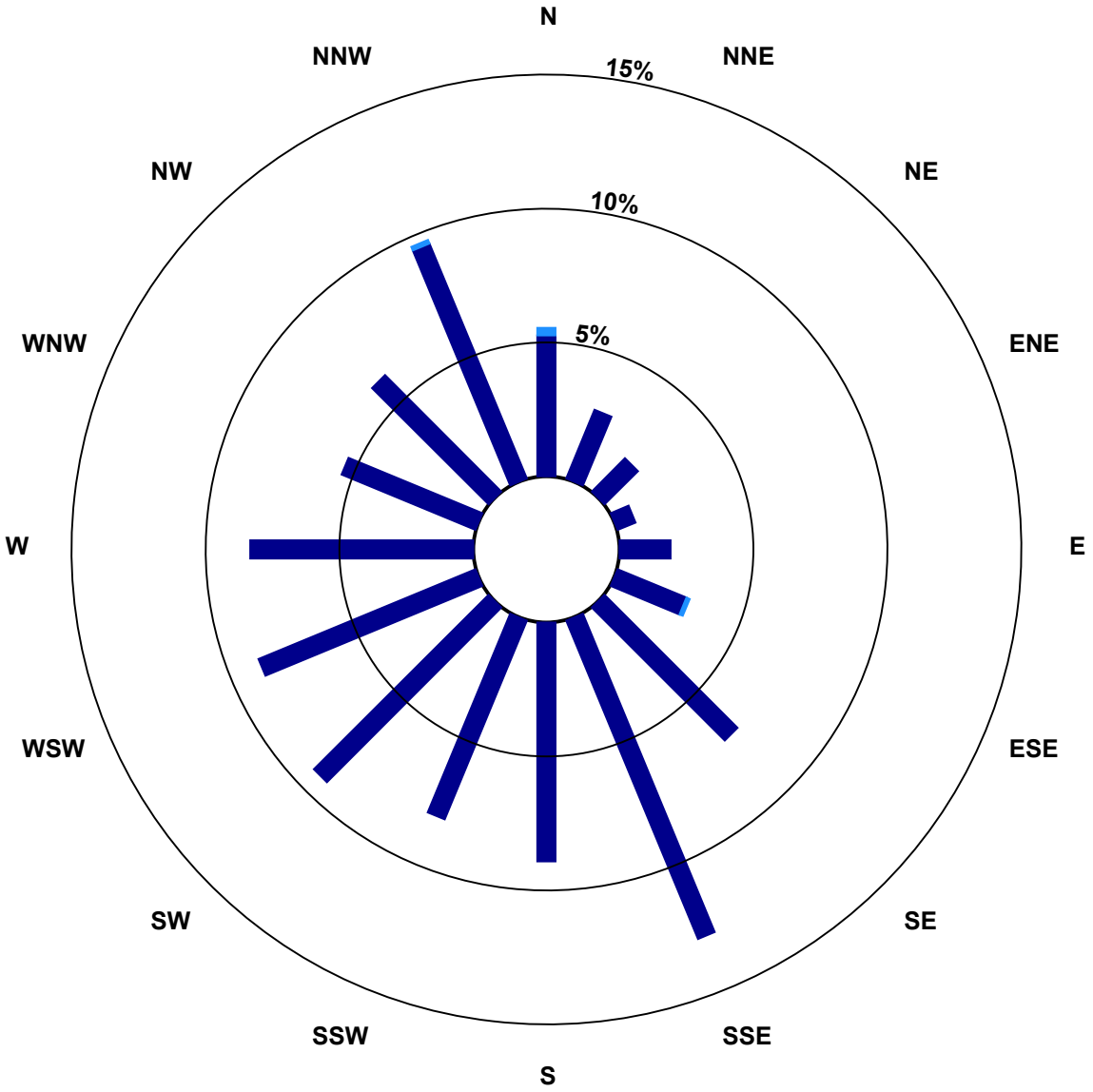
Total Number of Hours: 720

Wood Buffalo Environmental Association

Wind Rose Sep 2024

Nitrogen Dioxide (NO_2) - ppb

Barge Landing



Classes (ppb)

0 - 20

21 - 40

11 - 80

81 - 159

> 159

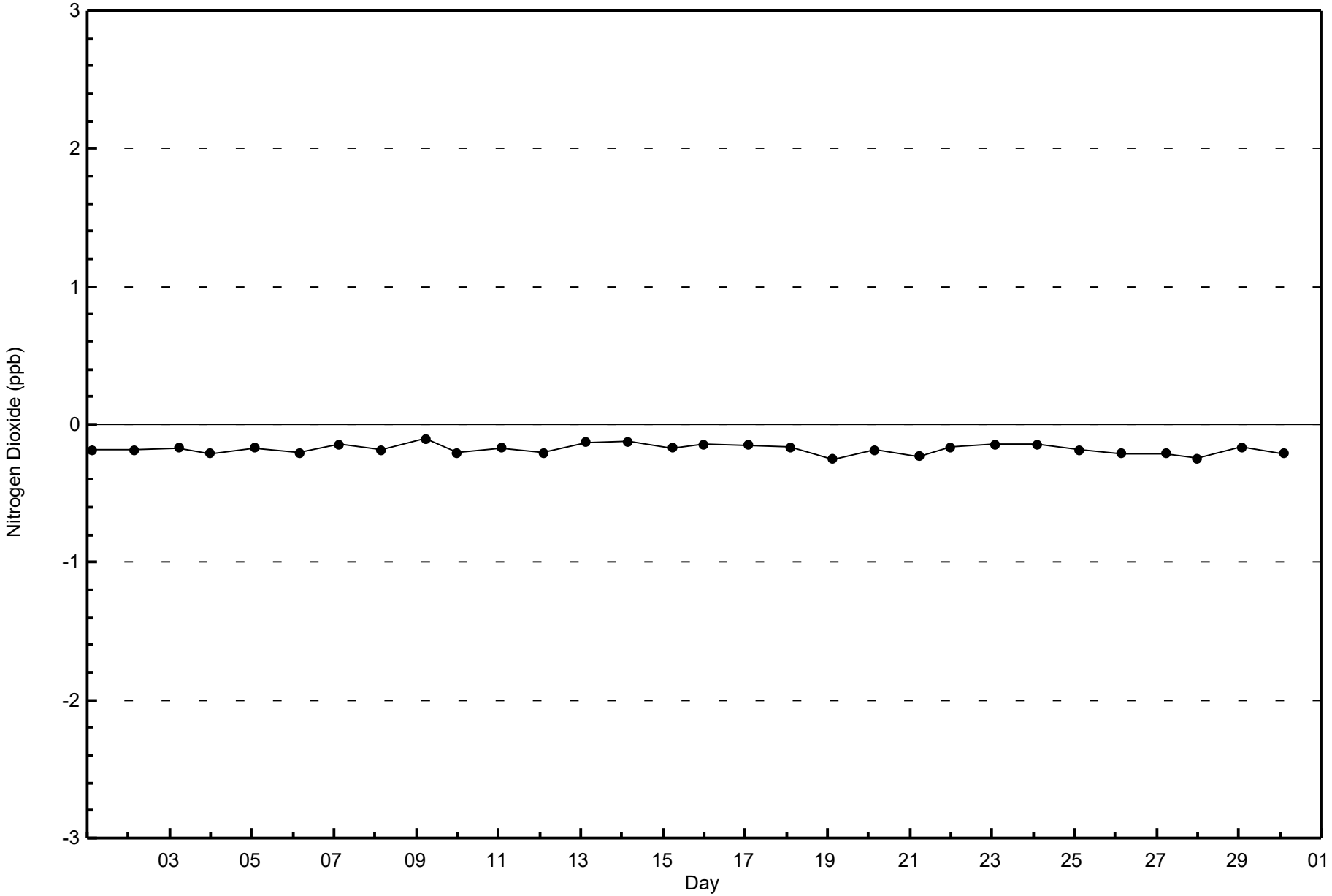
Total Number of Valid Hours: 684

Wood Buffalo Environmental Association

Zero Responses

Nitrogen Dioxide (NO_2) - ppb

Barge Landing - September 2024

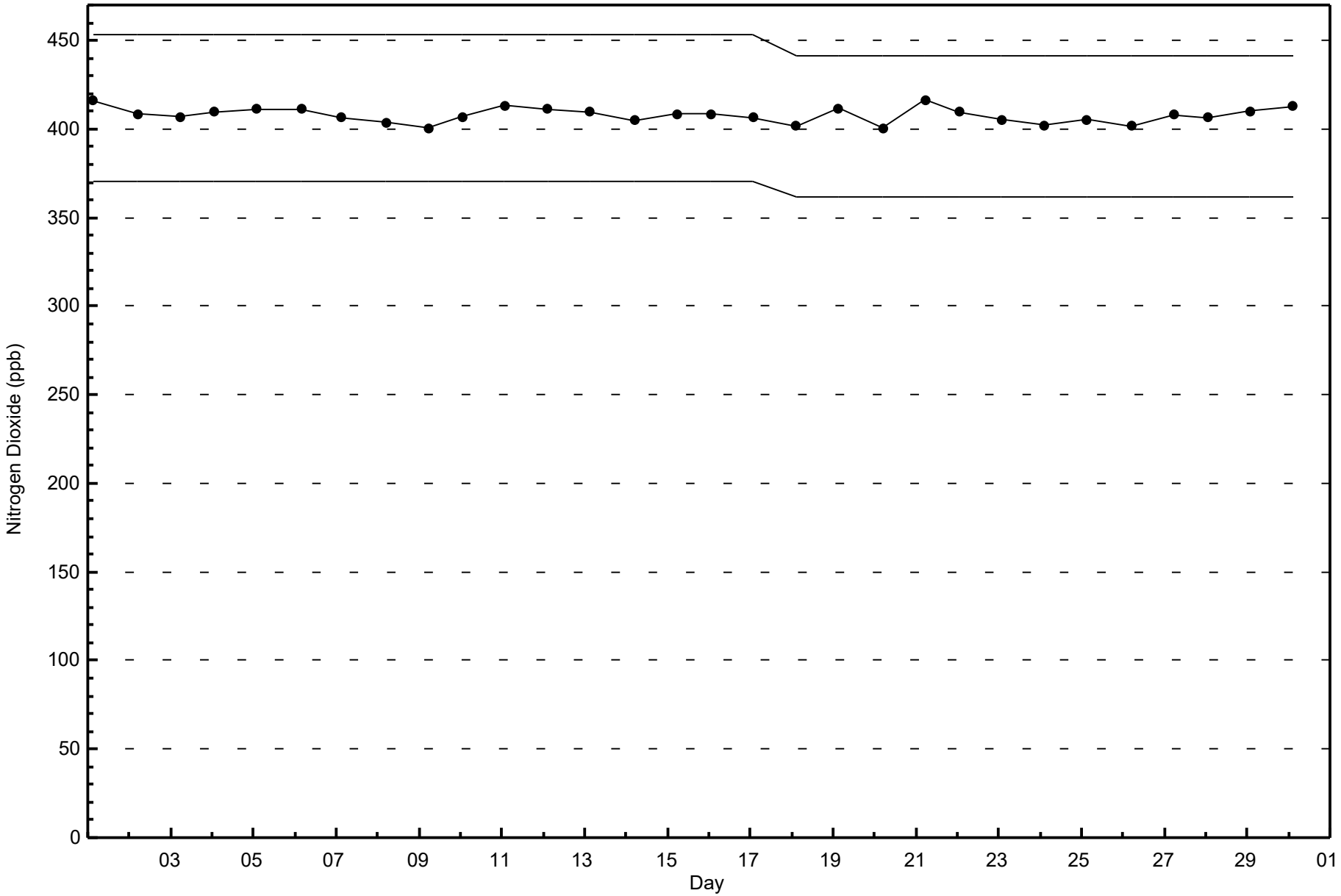


Wood Buffalo Environmental Association

Span Responses

Nitrogen Dioxide (NO_2) - ppb

Barge Landing - September 2024



Wood Buffalo Environmental Association

Summary of Hour Averages

Nitrogen Oxides (NO_X) - ppb

Barge Landing - September 2024

Maximum Value: 95.6 ppb on Sep 11 07:00

Maximum Daily Average: 20.0 ppb on Sep 19

Minimum Value: 0.1 ppb on Sep 24 14:00

Minimum Daily Average: 2.7 ppb on Sep 26

Maximum Diurnal Average: 31.6 ppb at hour 7

Minimum Diurnal Average: 3.0 ppb at hour 17

Monthly Average: 12.09 ppb

Percentiles: P_1 = 0.1 P_{10} = 0.3 Q_1 = 2.1 Median = 8.4 Q_3 = 17.5 P_{90} = 29.7 P_{99} = 60.2

Hours in Service:	720
Hours of Data:	685
Hours of Missing Data:	35
Hours of Calibration:	35
Percent Operational Time:	100.0

Day	Hourly Period Ending At (MST)																								Daily	Daily
	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24	Average	Maximum
1-Sep	7.7	15.2	14.7	Z	18.2	21.9	17.8	8.4	8.9	8.3	11.4	15.7	4.1	1.1	0.3	0.2	0.1	0.1	0.1	11.2	39.5	33.8	36.3	46.7	14.0	46.7
2-Sep	30.3	31.0	15.9	27.2	Z	62.3	42.4	15.4	12.6	10.5	10.0	5.0	5.0	2.7	0.3	0.2	0.1	0.2	0.3	0.9	6.3	6.7	5.5	11.7	13.1	62.3
3-Sep	9.8	6.4	8.5	7.6	8.4	Z	9.5	2.9	11.0	11.1	7.7	8.6	11.3	8.8	9.2	11.4	5.6	5.2	7.2	6.5	8.3	19.5	16.4	10.7	9.2	19.5
4-Sep	Z	15.6	23.8	8.7	2.6	8.7	0.5	0.4	0.3	0.2	0.3	0.5	0.4	0.6	0.5	0.7	0.7	0.3	0.3	2.7	8.5	10.6	17.3	7.2	4.8	23.8
5-Sep	4.2	Z	7.9	13.1	20.4	40.8	38.0	4.4	1.9	7.3	18.4	12.5	13.3	8.4	6.1	4.1	4.7	6.1	5.3	5.8	5.4	7.8	14.3	14.1	11.5	40.8
6-Sep	18.3	18.5	8.3	Z	13.6	14.7	12.6	11.8	4.9	7.8	3.9	0.6	2.5	6.3	6.5	5.8	7.0	7.1	2.2	6.2	3.8	1.8	9.2	10.8	8.0	18.5
7-Sep	11.5	19.0	30.1	Z	37.1	34.1	64.1	18.3	11.8	11.8	16.9	15.1	6.4	5.2	1.5	0.6	0.3	0.3	2.6	1.1	1.0	1.8	1.8	0.8	12.7	64.1
8-Sep	5.8	14.6	18.1	17.3	Z	47.9	42.5	21.2	20.8	14.4	20.4	19.3	9.2	7.6	5.1	4.2	4.2	4.0	9.3	11.6	22.8	23.5	25.0	20.7	16.9	47.9
9-Sep	37.0	13.0	14.0	37.9	10.2	Z	11.6	10.8	23.2	9.4	5.7	1.7	0.3	0.3	0.3	0.2	0.2	0.2	0.2	0.3	0.2	0.2	0.2	0.3	7.7	37.9
10-Sep	Z	0.3	0.6	2.6	0.2	0.2	1.6	3.8	1.4	3.2	1.7	0.2	0.2	0.4	0.6	1.0	0.2	0.7	1.9	2.0	12.8	11.8	10.7	11.5	3.0	12.8
11-Sep	17.4	Z	8.6	20.9	18.9	34.7	95.6	30.5	29.9	31.3	11.2	13.7	18.1	21.1	12.0	7.9	7.5	8.6	11.6	16.2	11.1	17.6	8.3	4.8	19.9	95.6
12-Sep	7.0	2.1	Z	5.7	49.7	15.5	22.9	14.1	4.9	6.8	7.6	3.1	3.4	7.1	2.8	1.8	1.9	3.6	3.3	4.4	2.5	14.4	23.1	31.4	10.4	49.7
13-Sep	13.4	7.5	6.0	Z	31.8	50.3	71.2	44.8	31.2	34.7	23.1	22.7	13.7	12.0	11.8	9.5	7.7	5.9	3.6	2.6	2.0	0.6	2.0	7.6	18.1	71.2
14-Sep	1.8	0.7	0.5	0.2	Z	0.5	3.2	0.8	0.6	0.6	0.5	0.4	0.5	1.1	2.4	0.9	0.5	3.2	3.6	5.4	14.4	15.6	26.0	8.6	4.0	26.0
15-Sep	7.7	6.7	10.4	21.7	37.2	Z	33.5	21.9	24.1	18.5	16.4	16.1	11.9	8.6	6.0	6.2	6.3	15.7	23.3	19.1	21.5	24.2	43.9	43.9	19.3	43.9
16-Sep	Z	19.8	16.6	22.4	22.5	22.2	19.6	13.6	13.2	9.7	9.3	4.4	0.3	0.6	0.3	0.5	0.2	0.2	1.4	37.7	37.9	20.1	7.4	23.6	13.2	37.9
17-Sep	16.5	Z	16.2	11.2	26.8	53.7	77.7	28.4	C	C	C	C	C	3.1	2.1	2.3	3.0	11.2	5.9	11.0	8.0	16.0	9.0	11.0	17.4	77.7
18-Sep	12.0	17.2	Z	21.2	25.1	22.0	23.5	16.0	8.9	1.8	1.9	1.2	0.3	0.3	0.2	0.2	0.1	0.2	2.8	11.1	3.0	29.2	18.3	4.7	9.6	29.2
19-Sep	14.8	19.9	26.0	Z	34.6	63.6	42.3	60.1	37.5	23.1	15.0	12.1	4.8	3.7	4.0	2.9	6.5	12.8	9.5	13.0	9.9	13.5	17.5	11.9	20.0	63.6
20-Sep	6.3	14.6	20.0	26.3	Z	32.4	35.2	30.4	23.4	24.5	10.8	11.3	3.9	2.7	2.2	1.8	0.9	0.7	3.8	9.6	13.2	4.9	3.5	5.6	12.5	35.2
21-Sep	10.4	19.7	16.3	37.7	22.9	Z	15.4	6.4	19.5	40.0	35.6	20.9	16.2	9.8	5.2	3.5	2.1	6.4	3.8	4.2	3.5	5.5	6.1	2.6	13.6	40.0
22-Sep	Z	2.6	1.8	12.6	19.3	34.8	56.8	20.9	11.0	19.9	22.9	20.1	7.4	8.0	5.0	2.0	6.5	10.8	9.7	19.7	13.1	7.9	12.4	14.0	14.8	56.8
23-Sep	15.6	Z	35.0	24.2	24.3	14.6	59.5	12.1	26.0	25.9	16.3	9.5	18.7	25.5	21.3	14.5	9.1	6.2	3.6	5.9	4.3	4.2	5.7	8.4	17.0	59.5
24-Sep	13.2	8.2	Z	4.6	17.5	49.3	54.0	41.3	8.9	1.3	0.4	0.2	0.1	0.1	0.1	0.1	0.1	1.2	14.5	29.7	32.0	33.5	24.2	9.9	15.0	54.0
25-Sep	15.6	28.4	24.7	Z	21.5	29.6	43.0	12.9	23.7	26.9	32.2	23.1	16.1	19.9	12.0	8.6	4.8	15.2	5.7	23.2	23.9	11.2	1.7	4.2	18.6	43.0
26-Sep	4.6	0.7	0.2	2.9	Z	1.5	0.4	0.3	1.1	0.3	0.2	0.1	0.1	0.2	0.1	1.5	3.2	2.6	0.3	2.7	8.2	13.2	9.3	9.2	2.7	13.2
27-Sep	13.9	10.2	6.4	13.2	19.4	Z	17.5	21.1	14.0	9.7	3.3	9.0	4.0	2.6	0.8	0.4	1.8	6.5	3.7	3.2	4.1	4.4	6.3	10.2	8.1	21.1
28-Sep	Z	0.3	0.2	0.2	0.2	0.2	0.1	0.3	0.9	0.2	0.2	0.2	0.1	0.2	0.2	0.2	0.2	6.3	61.0	13.9	14.2	16.2	8.7	27.9	6.6	61.0
29-Sep	29.8	Z	7.6	4.5	5.0	17.7	36.2	58.4	40.8	33.6	41.6	27.1	26.3	13.3	10.9	14.8	3.8	1.0	0.8	1.9	5.7	4.5	1.1	0.5	16.8	58.4
30-Sep	0.2	0.1	Z	0.2	0.2	0.2	0.3	0.5	0.5	0.5	0.6	0.2	0.1	0.1	0.1	0.1	0.1	0.1	2.1	30.9	26.8	25.7	26.0	3.2	5.2	30.9
	13.0	11.7	13.0	14.3	19.5	26.9	31.6	17.7	14.4	13.6	11.9	9.5	6.9	6.0	4.3	3.6	3.0	4.8	6.8	10.5	12.3	13.3	13.2	12.6	Diurnal Average	
	37.0	31.0	35.0	37.9	49.7	63.6	95.6	60.1	40.8	40.0	41.6	27.1	26.3	25.5	21.3	14.8	9.1	15.7	61.0	37.7	39.5	33.8	43.9	46.7	Diurnal Maximum	

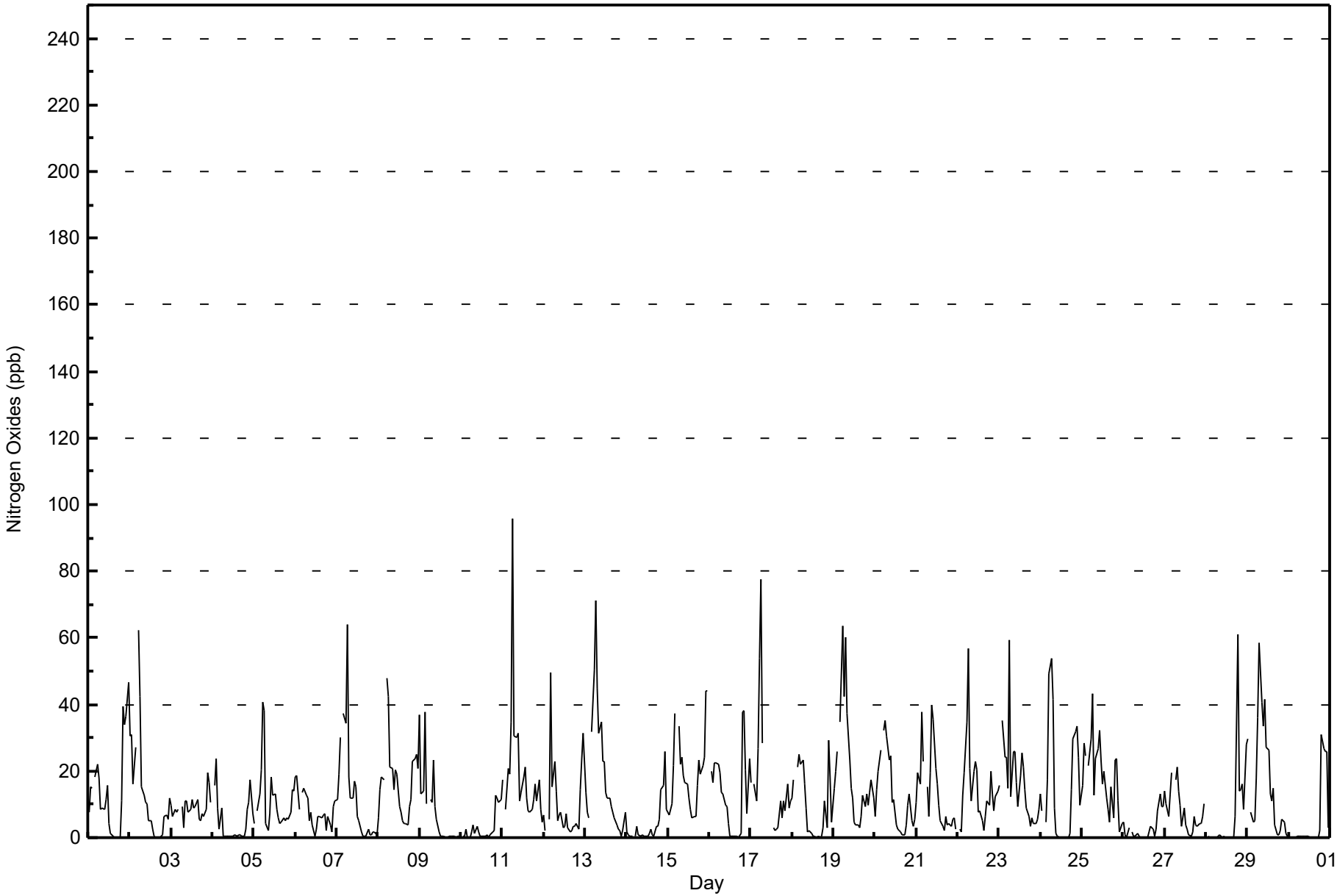
Z - zerospan C - Calibration

Wood Buffalo Environmental Association

Hourly Averages

Nitrogen Oxides (NO_X) - ppb

Barge Landing - September 2024



Nitrogen Oxides (NO_X) - ppb
Barge Landing - September 2024

Concentration Ranges (ppb)	Number of Hours	%	Cumulative %
0 - 20	549	80.15	80.15
21 - 40	107	15.62	95.77
11 - 80	28	4.09	99.85
81 - 159	1	0.15	100.00
> 159	0	0.00	100.00

Total Number of Valid Hours: 685

Total Number of Hours: 720

Wood Buffalo Environmental Association

Frequency Distribution

Nitrogen Oxides (NO_X) - ppb

Barge Landing - September 2024

Concentration Ranges (ppb)	Wind Direction																
	N	NNE	NE	ENE	E	ESE	SE	SSE	S	SSW	SW	WSW	W	WNW	NW	NNW	**Totals**
0 - 20	30	12	11	5	10	16	33	61	46	47	54	53	50	29	37	54	548
21 - 40	7	7	1	0	3	2	13	17	12	6	9	6	6	5	4	9	107
11 - 80	1	0	0	0	0	2	2	10	3	2	0	1	1	3	0	3	28
81 - 159	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1	0	1
> 159	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Totals	38	19	12	5	13	20	48	88	61	55	63	60	57	37	42	66	684

Total Number of Valid Hours: 684

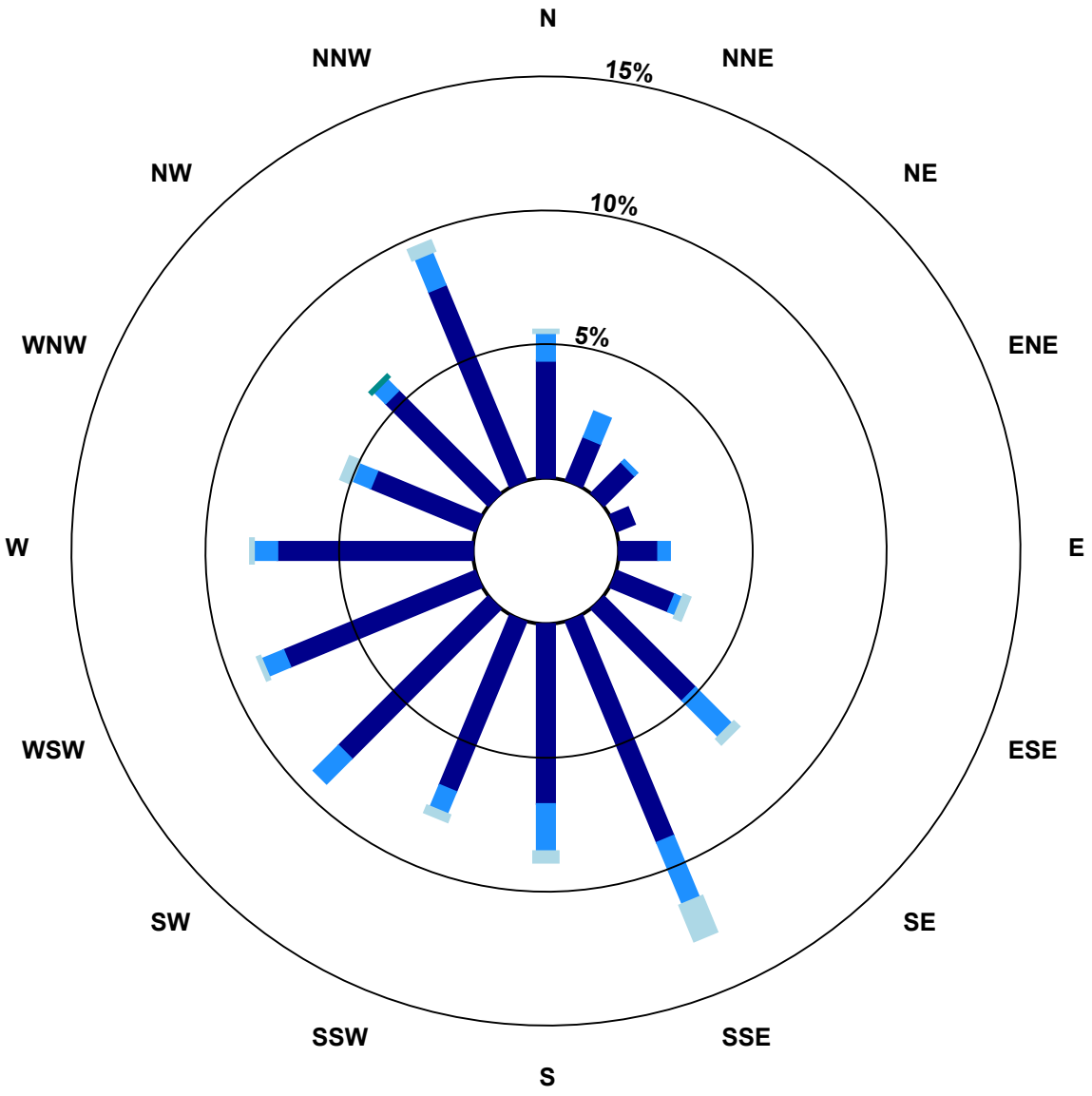
Total Number of Hours: 720

Wood Buffalo Environmental Association

Wind Rose Sep 2024

Nitrogen Oxides (NO_X) - ppb

Barge Landing



Classes (ppb)

0 - 20

21 - 40

11 - 80

81 - 159

> 159

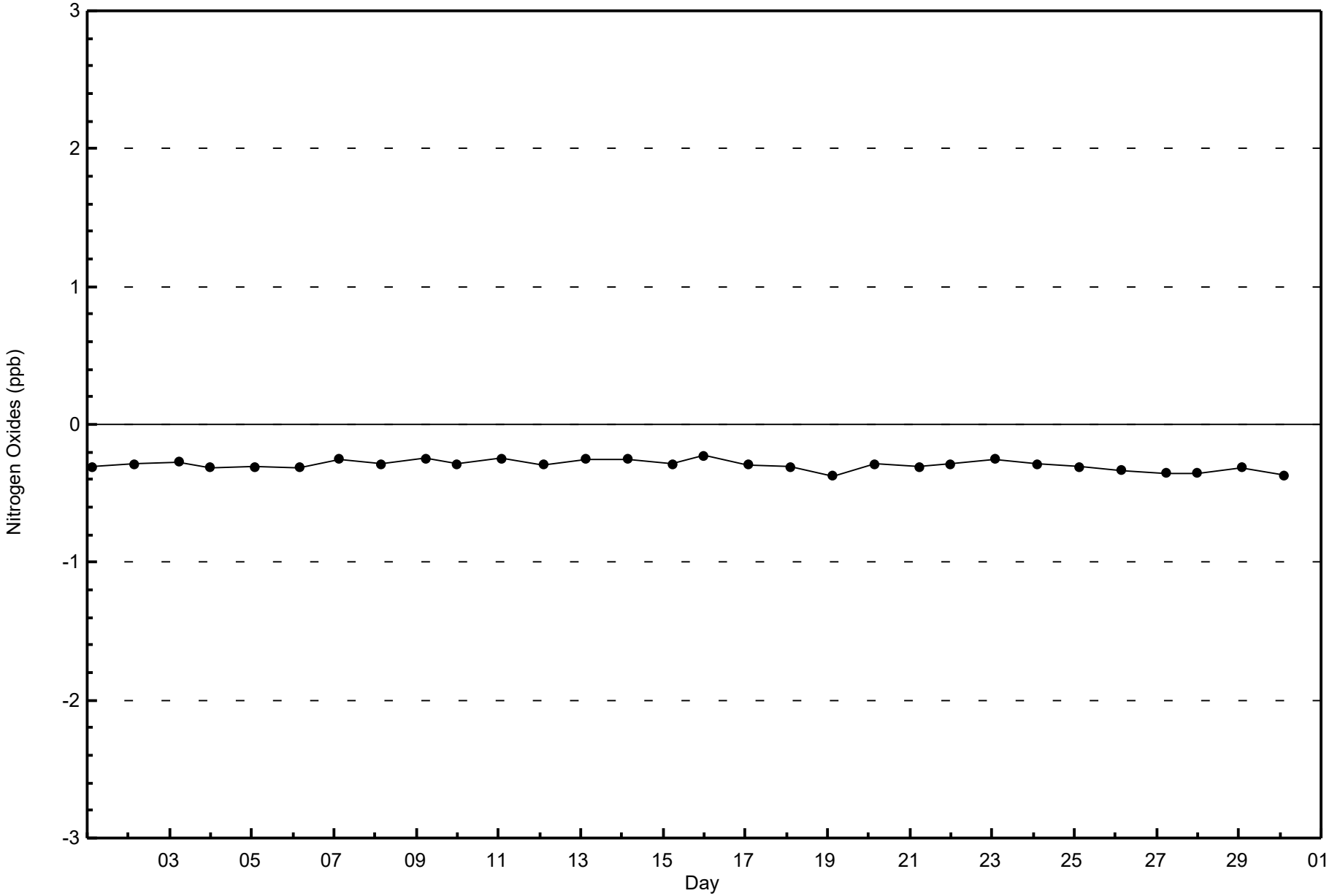
Total Number of Valid Hours: 684

Wood Buffalo Environmental Association

Zero Responses

Nitrogen Oxides (NO_X) - ppb

Barge Landing - September 2024

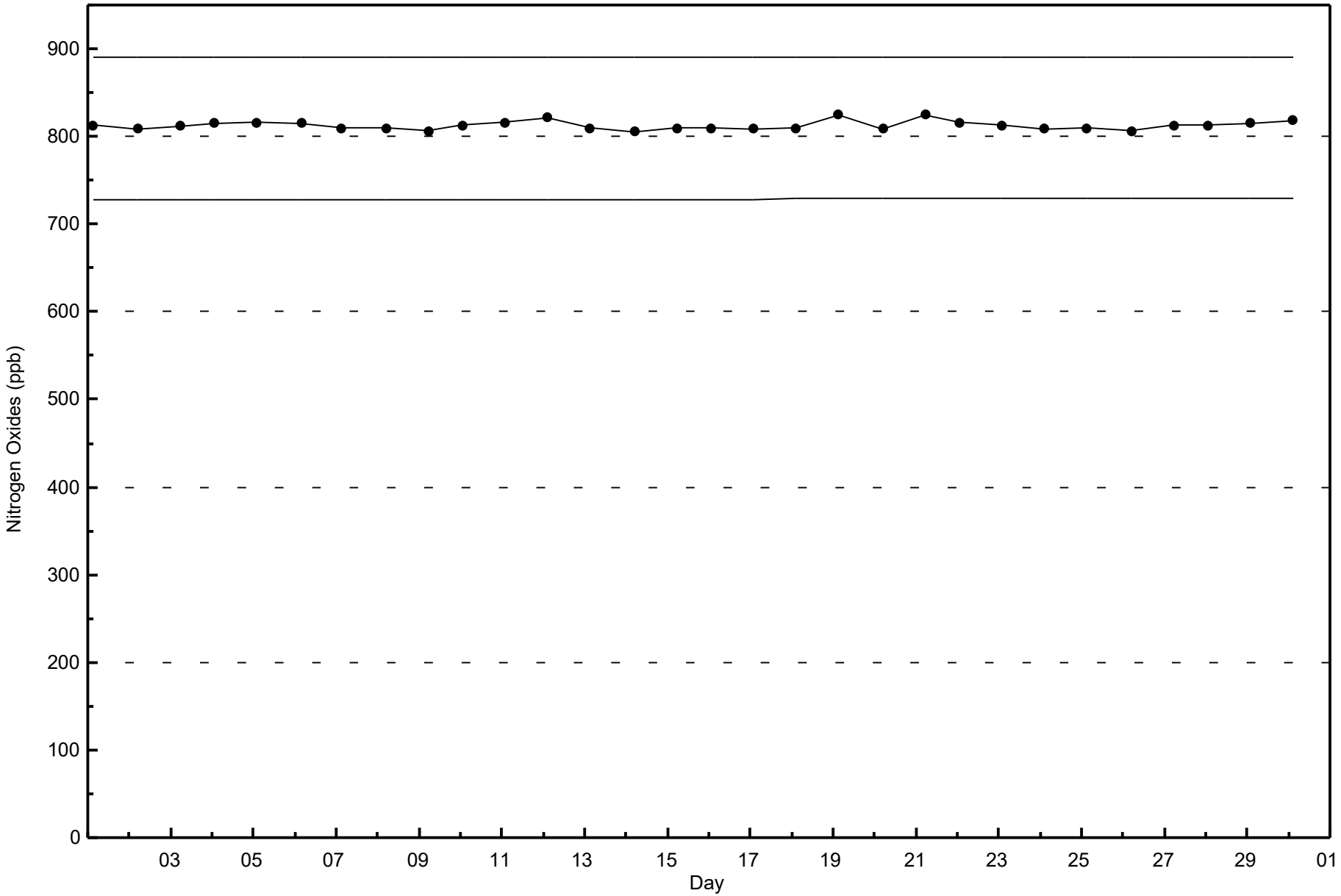


Wood Buffalo Environmental Association

Span Responses

Nitrogen Oxides (NO_X) - ppb

Barge Landing - September 2024



Wood Buffalo Environmental Association

Summary of Hour Averages

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

Barge Landing - September 2024

Number of Exceedences (AAAQO): 1-hr: 57 24-hr: 6

Maximum Value: 167.8 $\mu g/m^3$ on Sep 12 15:00

Maximum Daily Average: 104.9 $\mu g/m^3$ on Sep 13

Minimum Value: 0.7 $\mu g/m^3$ on Sep 28 05:00

Minimum Daily Average: 5.4 $\mu g/m^3$ on Sep 27

Maximum Diurnal Average: 29.8 $\mu g/m^3$ at hour 14

Minimum Diurnal Average: 20.2 $\mu g/m^3$ at hour 18

Monthly Average: 24.25 $\mu g/m^3$

Percentiles: P_1 = 1.3 P_{10} = 4.7 Q_1 = 7.4 Median = 12.7 Q_3 = 23.6 P_{90} = 64.4 P_{99} = 143.3

Hours in Service:	720
Hours of Data:	719
Hours of Missing Data:	1
Hours of Calibration:	1
Percent Operational Time:	100.0

Day	Hourly Period Ending At (MST)																								Daily	Daily
	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24	Average	Maximum
1-Sep	6.7	15.2	20.2	22.7	23.5	26.1	23.3	15.1	13.3	12.0	16.5	23.3	12.9	6.2	5.4	4.6	4.0	5.1	6.8	10.1	31.6	41.8	36.7	37.5	17.5	41.8
2-Sep	35.9	29.2	22.8	25.0	25.9	33.1	30.1	19.5	15.8	19.9	22.7	17.8	15.3	11.7	5.1	7.8	6.8	10.0	10.8	12.9	26.8	43.5	30.8	9.3	20.3	43.5
3-Sep	8.9	6.8	7.8	13.7	21.5	20.0	18.4	19.6	14.2	10.9	10.0	6.8	7.9	7.6	8.5	8.9	7.1	6.4	6.1	8.0	7.5	7.9	6.8	5.9	10.3	21.5
4-Sep	5.8	7.0	9.8	6.0	6.1	7.2	7.2	7.4	7.8	7.9	8.6	9.6	8.9	7.2	5.4	7.4	4.5	7.8	7.1	5.8	5.8	8.2	10.1	5.4	7.2	10.1
5-Sep	6.7	7.0	7.6	8.1	9.7	12.8	21.9	6.9	5.8	7.5	13.6	14.4	15.2	19.7	18.1	15.2	14.3	18.2	15.9	16.4	15.5	21.5	22.3	17.8	13.8	22.3
6-Sep	20.9	19.0	11.5	10.2	13.3	14.2	15.5	15.9	10.7	13.2	12.7	12.7	17.9	19.6	21.8	22.4	25.9	24.9	17.7	16.9	17.0	15.4	16.5	16.7	16.8	25.9
7-Sep	16.7	19.2	22.4	25.6	33.1	48.2	49.8	64.3	90.6	102.6	101.4	132.2	160.8	161.9	82.3	48.4	40.1	39.5	45.0	55.6	66.2	75.0	73.6	79.6	68.1	161.9
8-Sep	85.1	83.1	91.6	98.8	108.5	112.2	107.6	114.3	132.5	130.0	137.6	130.0	125.8	121.9	108.6	87.0	86.0	85.3	93.3	81.0	74.1	85.4	67.3	29.3	99.0	137.6
9-Sep	30.8	34.7	39.2	59.4	63.5	68.3	61.8	52.0	45.7	41.8	41.2	45.8	30.8	19.0	13.1	8.2	6.9	7.9	8.4	7.1	6.6	8.1	16.0	34.6	31.3	68.3
10-Sep	38.0	33.1	25.1	23.6	20.8	17.7	15.7	13.6	13.5	14.0	11.4	10.3	15.9	22.7	22.5	22.6	17.1	14.4	14.2	15.0	13.4	13.5	12.3	10.4	18.0	38.0
11-Sep	9.4	8.2	8.6	7.6	7.0	10.1	12.7	7.3	9.4	13.1	14.3	15.1	19.1	22.4	23.2	24.3	22.8	23.4	22.4	25.5	23.2	26.8	31.1	30.4	17.4	31.1
12-Sep	30.5	29.0	29.2	32.0	40.6	46.3	59.8	64.8	60.9	62.5	75.6	78.9	91.7	132.9	167.8	152.0	157.7	136.1	141.2	138.0	138.4	140.3	149.0	143.7	95.8	167.8
13-Sep	147.9	136.1	123.5	126.0	124.2	124.2	124.0	128.5	123.6	114.0	119.5	124.8	119.5	127.0	116.1	102.3	81.4	70.8	74.6	67.9	73.6	59.1	57.8	51.3	104.9	147.9
14-Sep	45.4	37.7	36.3	31.1	30.1	33.1	32.0	32.3	33.3	31.8	31.2	31.9	30.2	31.6	37.8	32.7	22.3	22.9	20.8	27.2	26.1	24.1	27.1	26.4	30.6	45.4
15-Sep	26.2	24.3	21.8	20.9	28.3	16.8	17.0	16.6	17.8	14.4	9.5	7.4	11.1	8.5	9.5	11.1	14.3	17.5	28.0	22.1	18.9	26.0	26.4	24.2	18.3	28.3
16-Sep	21.9	23.4	23.1	19.3	18.2	17.9	14.8	13.3	11.4	6.9	6.2	7.5	5.0	7.0	8.3	8.7	3.0	5.8	3.1	15.8	21.8	15.9	5.6	11.9	12.3	23.4
17-Sep	11.6	10.2	10.7	9.2	11.2	17.7	22.3	14.7	9.3	C	18.0	17.6	15.3	10.9	8.5	8.2	8.1	8.4	12.4	7.9	7.3	10.0	6.4	7.1	11.4	22.3
18-Sep	7.4	8.3	7.4	9.1	9.2	10.6	11.8	12.3	8.2	6.8	7.3	22.0	25.3	20.9	12.8	9.4	6.3	9.1	6.3	11.0	8.1	16.8	16.1	9.6	11.3	25.3
19-Sep	11.5	14.1	19.4	14.4	16.3	25.1	23.7	26.8	25.3	30.0	23.1	25.2	19.1	18.4	17.4	16.5	18.9	16.5	20.2	20.9	17.2	16.7	16.6	12.6	19.4	30.0
20-Sep	10.9	10.7	10.8	10.9	10.0	11.9	9.8	12.6	11.7	15.3	11.9	18.0	15.2	14.5	12.1	8.1	6.6	5.9	5.7	7.5	8.1	5.5	5.3	5.0	10.2	18.0
21-Sep	5.8	8.2	9.2	10.9	8.2	10.9	11.8	5.8	9.6	22.6	26.6	24.3	27.4	21.8	22.3	17.2	11.5	11.7	10.0	7.4	8.1	7.9	7.3	5.9	13.0	27.4
22-Sep	5.5	5.6	5.5	9.3	14.3	24.5	35.1	14.8	10.3	11.4	20.3	37.6	19.8	12.9	9.1	8.3	11.1	14.6	11.2	12.9	10.4	8.2	7.8	7.8	13.7	37.6
23-Sep	7.3	9.1	10.4	7.3	6.2	7.0	19.4	11.3	9.2	9.3	8.8	7.6	15.7	31.2	21.9	18.0	14.3	6.4	5.6	5.6	6.4	6.3	6.3	6.7	10.7	31.2
24-Sep	6.7	5.1	3.7	3.6	4.3	10.5	19.6	14.5	3.6	2.6	1.8	2.0	2.2	2.6	2.4	2.5	2.2	2.7	7.8	13.1	21.2	26.8	17.0	7.9	7.8	26.8
25-Sep	12.6	18.5	19.7	17.0	16.5	17.0	24.2	6.2	6.9	6.9	10.2	9.2	8.1	12.0	9.5	10.4	8.3	9.8	6.9	6.8	9.5	5.3	3.2	3.6	10.8	24.2
26-Sep	4.2	3.5	3.1	3.6	6.7	8.3	11.2	12.4	12.1	12.0	11.0	7.9	4.6	3.9	4.1	4.4	5.5	4.9	3.9	4.7	7.9	11.7	7.1	8.3	7.0	12.4
27-Sep	8.7	8.8	11.1	11.9	9.1	10.4	7.5	12.1	5.3	3.5	3.1	4.7	2.4	2.6	1.9	1.9	2.4	4.5	3.6	4.3	3.3	2.9	2.2	1.7	5.4	12.1
28-Sep	1.4	1.1	0.9	0.8	0.7	0.8	1.3	1.6	1.5	1.3	1.3	1.3	1.2	1.6	3.0	3.4	3.8	8.5	67.4	17.1	13.2	19.2	10.9	22.9	7.8	67.4
29-Sep	26.4	27.0	10.1	7.0	6.5	6.7	7.4	8.3	8.4	7.8	7.6	8.0	9.8	8.1	8.6	8.9	6.1	4.8	4.6	5.2	5.9	4.7	4.1	3.6	8.6	27.0
30-Sep	3.4	3.4	3.8	4.9	5.6	5.7	6.2	9.2	16.9	21.5	23.8	11.9	5.2	4.6	3.8	4.1	4.3	3.4	3.3	11.5	12.5	13.4	12.0	4.7	8.3	23.8
	22.0	21.6	20.9	21.7	23.3	25.8	27.4	25.1	24.8	26.0	26.9	28.9	28.6	29.8	26.4	22.8	20.8	20.2	22.8	22.0	23.5	25.6	23.7	21.4	Diurnal Average	
	147.9	136.1	123.5	126.0	124.2	124.2	124.0	128.5	132.5	130.0	137.6	132.2	160.8	161.9	167.8	152.0	157.7	136.1	141.2	138.0	138.4	140.3	149.0	143.7	Diurnal Maximum	

C - Calibration

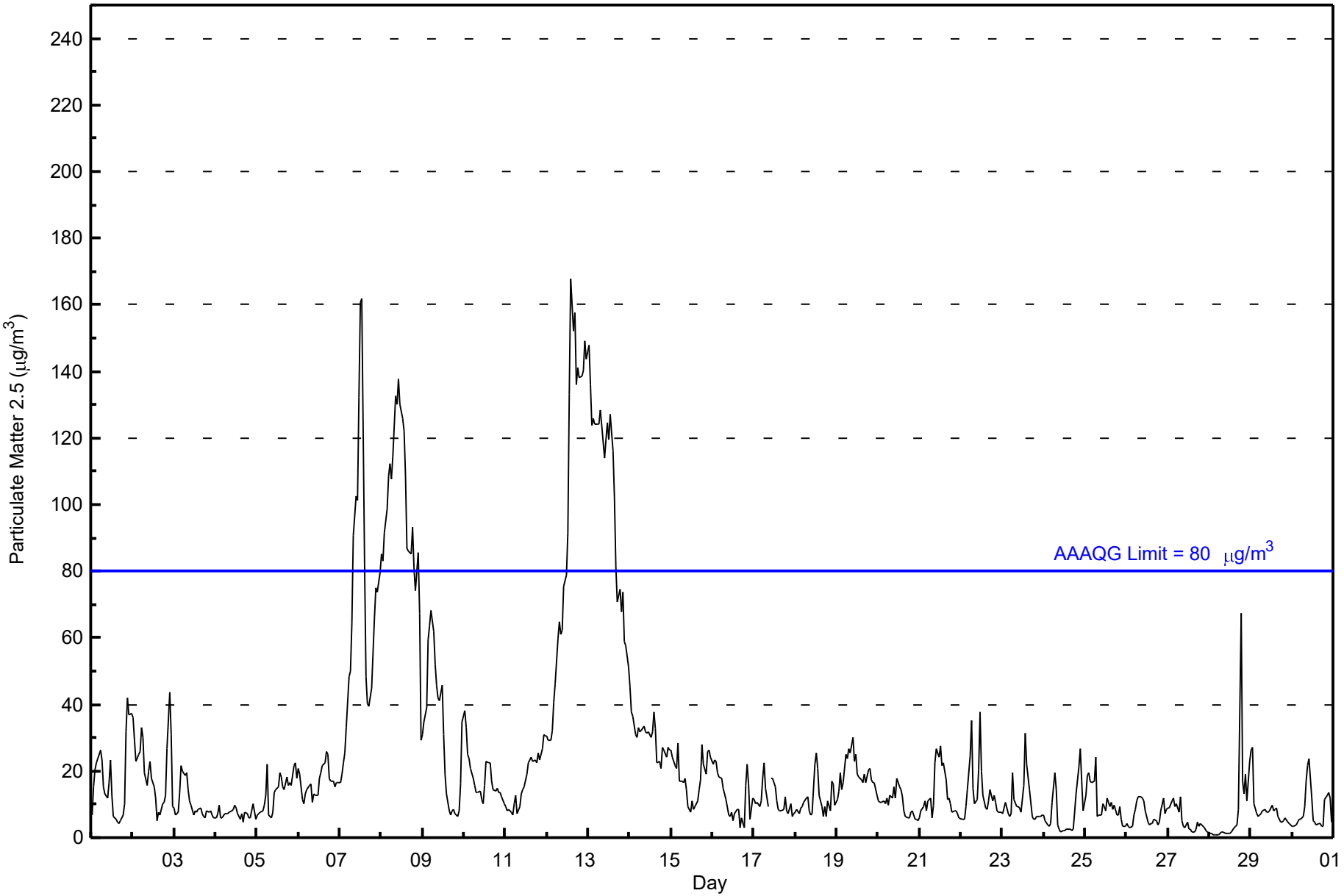
Alberta Ambient Air Quality Guideline/Objectives: 1-hr 80 $\mu g/m^3$ 24-hr 29 $\mu g/m^3$

Wood Buffalo Environmental Association

Hourly Averages

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

Barge Landing - September 2024



Wood Buffalo Environmental Association

Cumulative Frequency Distribution

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

Barge Landing - September 2024

Concentration Ranges ($\mu g/m^3$)	Number of Hours	%	Cumulative %
0 - 5	92	12.80	12.80
6 - 15	321	44.65	57.44
16 - 25	144	20.03	77.47
26 - 80	105	14.60	92.07
> 81.0	57	7.93	100.00

Total Number of Valid Hours: 719

Total Number of Hours: 720

Wood Buffalo Environmental Association

Frequency Distribution

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

Barge Landing - September 2024

Concentration Ranges ($\mu g/m^3$)	Wind Direction																
	N	NNE	NE	ENE	E	ESE	SE	SSE	S	SSW	SW	WSW	W	WNW	NW	NNW	**Totals**
0 - 5	0	0	0	0	0	0	2	3	5	8	14	15	16	15	12	2	92
6 - 15	27	11	4	0	5	10	22	41	27	25	26	29	21	17	20	36	321
16 - 25	3	1	0	3	0	6	16	29	23	13	11	8	9	3	5	14	144
26 - 80	8	6	3	2	5	2	8	14	6	9	11	7	9	2	4	9	105
> 81.0	3	1	5	0	4	2	4	9	5	1	2	3	2	3	4	8	56
Totals	41	19	12	5	14	20	52	96	66	56	64	62	57	40	45	69	718

Total Number of Valid Hours: 718

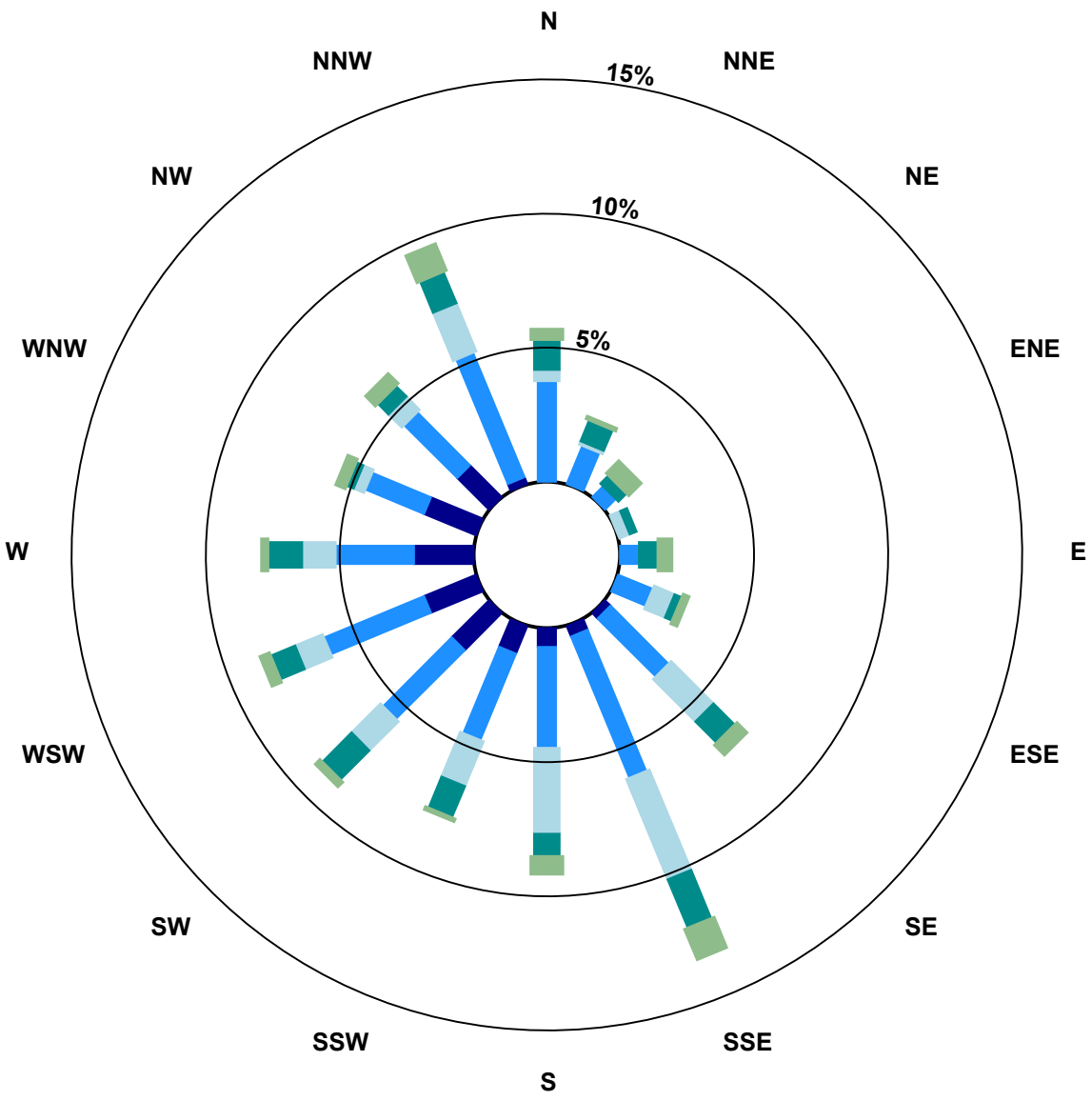
Total Number of Hours: 720

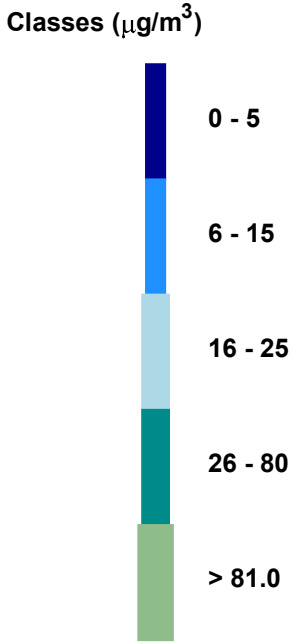
Wood Buffalo Environmental Association

Wind Rose Sep 2024

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

Barge Landing





Total Number of Valid Hours: 718

Maximum Value: 31.4 C on Sep 2 15:00

Maximum Daily Average: 21.0 C on Sep 2

Minimum Value: 0.7 C on Sep 30 23:00

Minimum Daily Average: 6.7 C on Sep 30

Maximum Diurnal Average: 19.6 C at hour 16

Minimum Diurnal Average: 7.5 C at hour 6

Monthly Average: 13.03 C

Percentiles: P_1 = 2.2 P_{10} = 5.7 Q_1 = 8.9 Median = 12.6 Q_3 = 16.6 P_{90} = 20.9 P_{99} = 29.5

Hours in Service:	720
Hours of Data:	720
Hours of Missing Data:	0
Hours of Calibration:	0
Percent Operational Time:	100.0

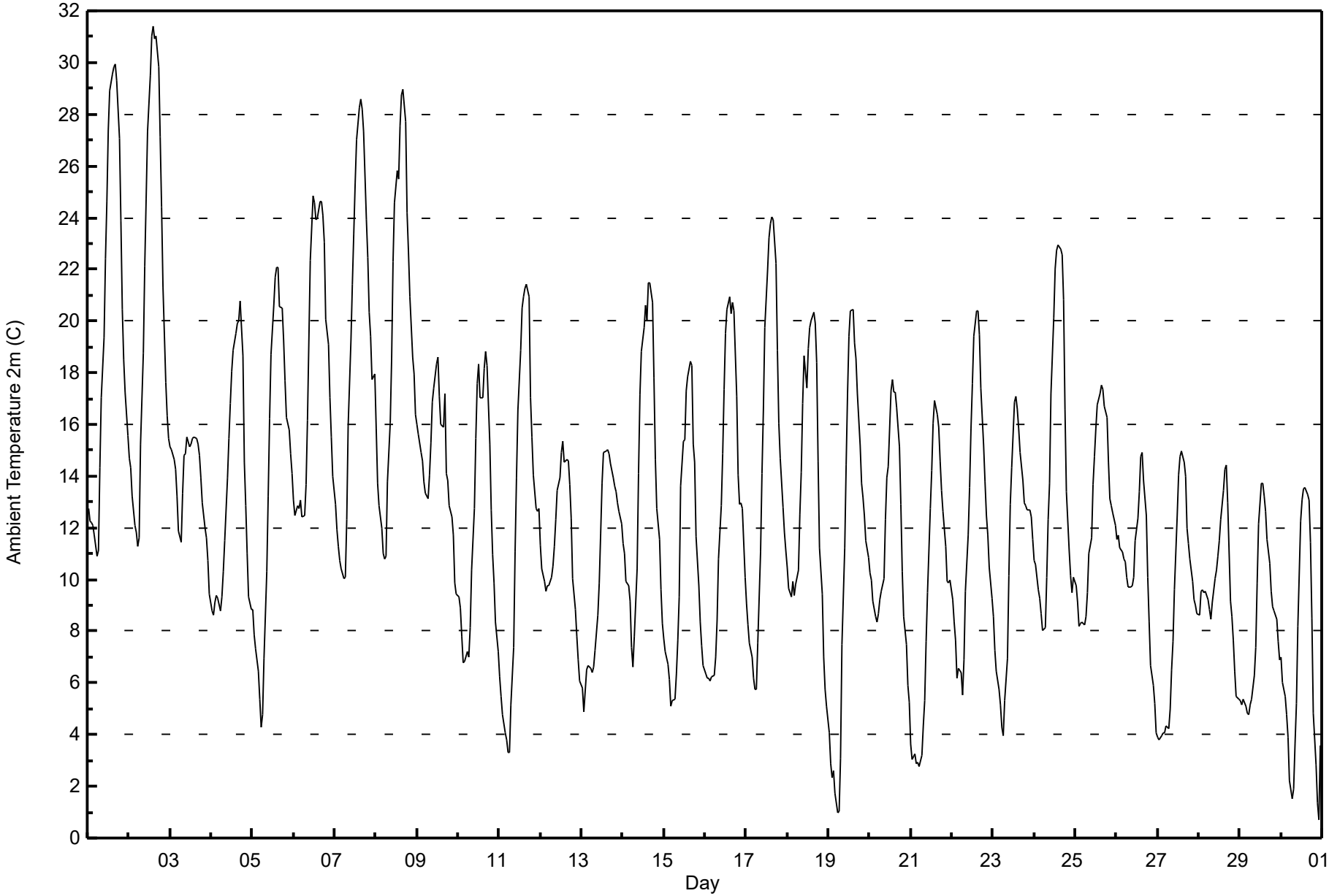
Day	Hourly Period Ending At (MST)																								Daily	Daily
	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24	Average	Maximum
1-Sep	12.8	12.2	12.2	12.1	11.7	10.9	11.1	14.3	17.0	19.4	22.4	24.6	27.4	28.9	29.5	29.8	30.0	29.3	27.1	23.9	20.5	18.5	17.3	15.6	19.9	30.0
2-Sep	14.7	14.3	13.3	12.1	11.8	11.3	11.6	15.2	18.8	22.1	24.7	27.3	29.5	31.0	31.4	30.9	31.0	29.9	27.1	24.4	21.3	17.6	16.3	15.5	21.0	31.4
3-Sep	15.2	15.0	14.7	14.2	13.2	11.9	11.4	13.4	14.8	14.9	15.5	15.1	15.2	15.5	15.5	15.5	15.2	14.8	13.9	12.9	12.0	11.6	10.7	9.4	13.8	15.5
4-Sep	8.8	8.6	9.1	9.4	9.3	8.8	9.3	10.3	11.5	14.0	15.5	16.8	18.0	18.9	19.5	19.9	20.0	20.8	18.6	14.5	12.9	11.0	9.3	8.9	13.5	20.8
5-Sep	8.8	7.9	7.3	6.4	5.4	4.3	4.8	6.9	10.3	13.2	16.2	18.7	20.6	21.7	22.1	22.1	20.6	20.5	19.2	17.7	16.3	15.8	14.9	14.1	14.0	22.1
6-Sep	13.1	12.5	12.8	12.7	13.1	12.4	12.5	13.6	16.2	19.2	22.3	24.8	24.6	23.9	24.0	24.6	24.6	24.1	23.0	20.1	19.1	17.0	15.5	14.0	18.3	24.8
7-Sep	12.9	12.0	11.3	10.7	10.4	10.1	10.1	12.3	15.9	19.2	21.4	23.4	25.3	27.0	28.2	28.6	28.2	27.3	23.9	22.4	20.3	19.4	17.7	18.0	19.0	28.6
8-Sep	15.8	13.7	12.9	12.0	11.0	10.8	10.9	13.8	16.1	18.5	22.3	24.6	25.8	25.5	27.5	28.8	29.0	27.7	24.2	22.7	20.9	18.6	18.0	16.4	19.5	29.0
9-Sep	16.0	15.6	14.9	14.6	13.8	13.3	13.1	14.0	15.3	16.9	17.4	18.3	18.6	17.1	16.0	15.9	17.2	14.1	13.8	12.8	12.4	11.7	9.9	9.5	14.7	18.6
10-Sep	9.3	8.9	7.8	6.8	6.8	7.2	7.0	8.1	10.4	12.7	15.4	17.6	18.3	17.1	17.0	18.2	18.8	18.3	15.2	12.7	10.9	9.9	8.4	7.2	12.1	18.8
11-Sep	6.2	5.5	4.8	4.1	3.8	3.3	3.3	5.1	7.4	11.1	14.0	16.6	18.9	20.5	20.9	21.3	21.4	21.0	17.0	15.5	14.1	12.7	12.6	12.7	12.2	21.4
12-Sep	11.3	10.4	9.9	9.6	9.8	9.8	10.1	10.5	11.3	12.3	13.5	13.9	14.9	15.3	14.6	14.6	14.6	13.7	12.3	10.1	8.9	7.8	6.9	6.1	11.3	15.3
13-Sep	5.8	4.9	5.7	6.5	6.7	6.5	6.4	6.6	7.3	8.6	9.9	11.8	13.7	14.9	15.0	15.0	14.9	14.5	14.0	13.6	13.4	13.0	12.7	12.2	10.6	15.0
14-Sep	11.4	11.0	9.9	9.8	9.2	7.4	6.6	7.8	10.4	14.1	17.1	18.8	19.7	20.6	20.0	21.5	21.5	20.7	17.8	14.6	12.8	11.6	9.6	8.3	13.8	21.5
15-Sep	7.7	7.2	6.7	6.1	5.1	5.3	5.4	6.4	7.7	9.3	13.6	15.3	15.4	17.3	17.8	18.4	18.3	15.3	14.5	11.6	9.8	8.4	7.4	6.7	10.7	18.4
16-Sep	6.3	6.2	6.2	6.1	6.2	6.3	7.0	8.4	10.8	12.8	14.9	17.3	19.5	20.4	20.9	20.3	20.7	20.4	17.1	14.0	12.9	12.9	12.8	10.1	12.9	20.9
17-Sep	9.0	8.3	7.5	7.0	6.2	5.8	5.7	7.5	11.1	14.1	16.5	19.8	22.0	23.2	23.7	24.0	23.9	22.2	18.9	16.0	14.7	12.8	11.8	11.1	14.3	24.0
18-Sep	10.5	9.6	9.4	9.9	9.4	9.8	10.4	12.5	14.2	16.8	18.7	17.4	18.9	19.7	20.0	20.3	19.9	18.4	14.6	11.2	9.5	7.0	5.8	5.1	13.3	20.3
19-Sep	4.1	2.9	2.3	2.6	1.7	1.0	1.0	3.1	7.5	11.3	14.4	17.2	19.4	20.4	20.4	19.1	18.6	17.2	15.2	13.7	13.2	12.5	11.5	10.9	10.9	20.4
20-Sep	10.2	10.0	9.2	8.6	8.4	8.7	9.2	9.6	10.0	12.3	13.9	14.4	17.3	17.7	17.3	17.2	16.6	15.1	12.9	10.3	8.5	7.5	5.9	5.3	11.5	17.7
21-Sep	3.6	3.1	3.3	2.9	2.9	2.8	3.2	4.3	5.3	7.6	9.5	12.7	14.2	16.1	16.9	16.4	15.9	14.6	13.4	12.6	11.3	9.9	9.9	10.0	9.3	16.9
22-Sep	9.2	8.4	7.6	6.2	6.5	6.4	5.5	6.9	9.5	11.7	13.5	15.9	17.6	19.4	20.4	20.4	19.5	17.4	15.2	13.8	12.5	11.7	10.4	9.3	12.3	20.4
23-Sep	8.5	7.2	6.4	5.7	5.2	4.3	3.9	5.3	6.9	10.1	12.9	14.3	16.9	17.1	16.6	15.8	14.9	13.8	13.0	12.8	12.7	12.7	12.4	11.5	10.9	17.1
24-Sep	10.8	10.6	9.6	9.3	8.7	8.0	8.1	10.1	12.3	13.7	17.2	20.1	22.0	22.7	22.9	22.8	22.6	20.8	16.6	13.4	11.1	10.1	9.5	10.1	14.3	22.9
25-Sep	9.8	9.1	8.2	8.3	8.4	8.3	8.5	9.5	11.0	11.6	13.7	14.7	15.9	16.8	17.2	17.5	17.4	16.7	16.3	14.5	13.1	12.9	12.6	12.1	12.7	17.5
26-Sep	11.5	11.7	11.2	11.1	10.8	10.7	10.1	9.7	9.7	9.8	10.1	11.5	12.3	13.4	14.8	14.9	13.9	12.4	10.1	8.3	6.6	5.9	5.2	4.1	10.4	14.9
27-Sep	3.9	3.8	4.0	4.1	4.1	4.3	4.3	5.0	6.5	7.6	9.6	12.5	14.0	14.7	15.0	14.5	14.0	12.0	11.4	10.8	9.9	9.2	9.0	8.7	8.9	15.0
28-Sep	8.6	9.5	9.6	9.5	9.5	9.2	8.8	8.4	9.1	10.0	10.4	10.9	11.5	12.3	13.4	14.3	14.4	13.0	9.1	8.6	7.6	6.5	5.5	5.4	9.8	14.4
29-Sep	5.3	5.2	5.4	5.1	4.8	4.8	5.2	5.4	6.3	7.4	9.9	12.2	13.7	13.7	13.2	12.7	11.6	10.6	9.5	9.0	8.8	8.5	7.6	6.9	8.4	13.7
30-Sep	7.0	6.0	5.5	4.8	3.9	2.2	1.5	1.9	3.6	5.2	8.2	12.2	13.0	13.5	13.5	13.3	13.1	11.4	8.5	4.8	2.8	1.4	0.7	3.6	6.7	13.5
	9.6	9.0	8.6	8.3	7.9	7.5	7.5	8.9	10.8	12.9	15.2	17.0	18.5	19.2	19.5	19.6	19.4	18.3	16.1	14.1	12.7	11.5	10.6	9.9	Diurnal Average	
	16.0	15.6	14.9	14.6	13.8	13.3	13.1	15.2	18.8	22.1	24.7	27.3	29.5	31.0	31.4	30.9	31.0	29.9	27.1	24.4	21.3	19.4	18.0	18.0	Diurnal Maximum	

Wood Buffalo Environmental Association

Hourly Averages

Ambient Temperature 2m (AT2) - C

Barge Landing - September 2024



Concentration Ranges (C)	Number of Hours	%	Cumulative %
-50 - -20	0	0.00	0.00
-20 - 0	0	0.00	0.00
0 - 10	245	34.03	34.03
10 - 20	378	52.50	86.53
> 20	97	13.47	100.00

Total Number of Valid Hours: 720

Total Number of Hours: 720

Wood Buffalo Environmental Association

Summary of Hour Averages

Relative Humidity 2m (RH2) - %

Barge Landing - September 2024

Maximum Value: 100.0 % on Sep 13 04:00

Maximum Daily Average: 90.1 % on Sep 13

Minimum Value: 25.5 % on Sep 2 16:00

Minimum Daily Average: 59.9 % on Sep 1

Maximum Diurnal Average: 94.4 % at hour 7

Minimum Diurnal Average: 48.5 % at hour 16

Monthly Average: 74.26 %

Percentiles: P_1 = 31.8 P_{10} = 44.2 Q_1 = 59.2 Median = 76.1 Q_3 = 93.0 P_{90} = 99.1 P_{99} = 100.0

Hours in Service:	720
Hours of Data:	720
Hours of Missing Data:	0
Hours of Calibration:	0
Percent Operational Time:	100.0

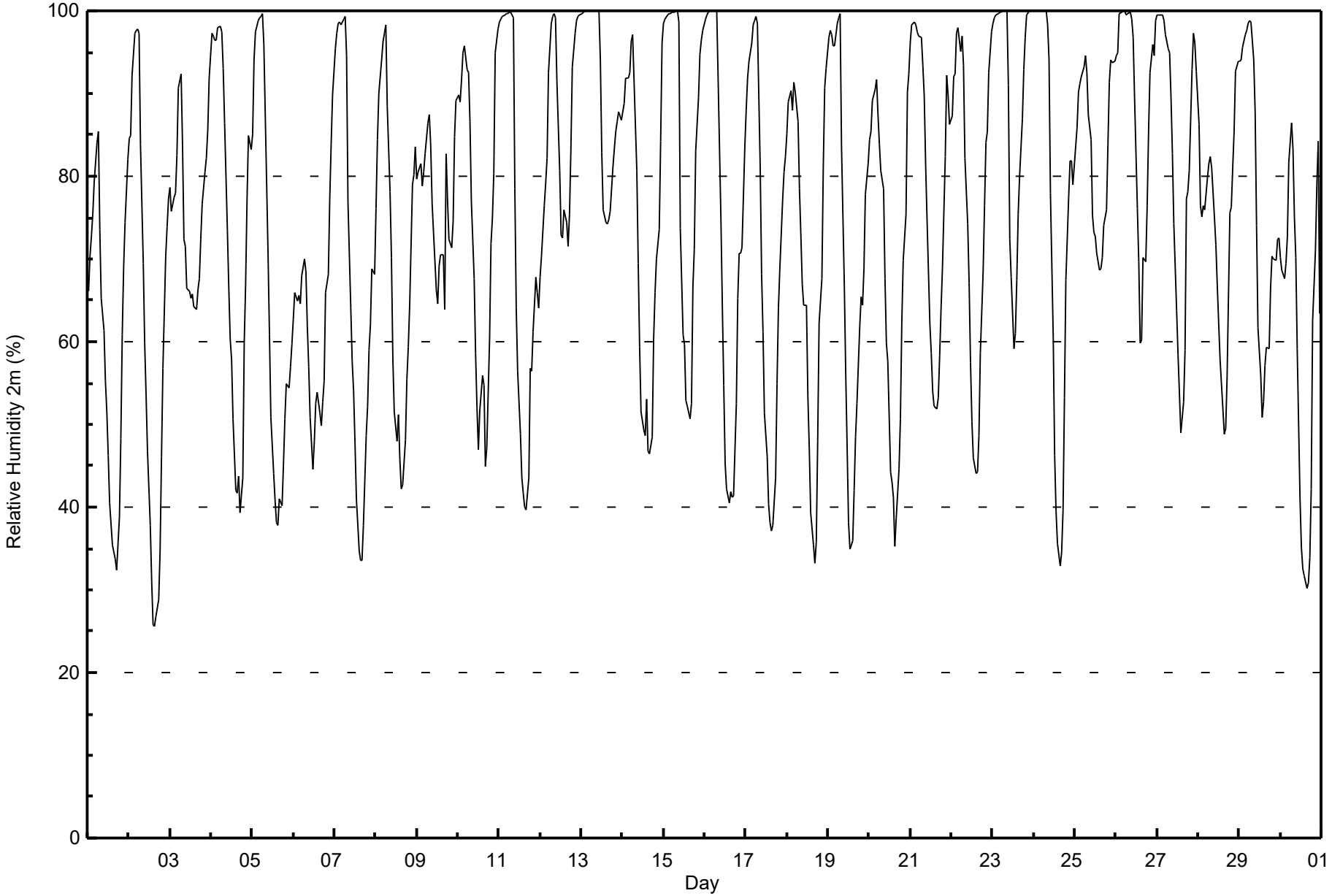
Day	Hourly Period Ending At (MST)																								Daily	Daily
	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24	Average	Maximum
1-Sep	66.1	70.4	72.7	75.5	79.3	84.1	85.4	73.5	65.3	61.3	55.3	51.5	46.2	40.4	35.4	34.7	33.8	32.3	38.9	48.3	60.9	69.1	74.4	82.1	59.9	85.4
2-Sep	84.5	85.0	92.1	97.3	97.6	97.8	97.3	83.8	69.6	59.8	53.6	46.9	37.8	31.0	25.8	25.5	26.8	28.9	34.8	46.1	56.8	70.3	73.9	77.3	62.5	97.8
3-Sep	78.6	75.8	77.4	77.9	82.6	90.7	92.3	83.7	72.3	71.5	66.5	66.2	65.3	65.7	64.2	64.0	66.2	67.7	72.3	76.6	80.6	82.2	85.6	91.9	75.7	92.3
4-Sep	97.2	96.9	96.4	96.4	98.0	98.1	97.5	93.0	86.5	73.4	66.4	60.4	57.8	50.7	42.1	41.6	43.6	39.3	43.5	59.9	67.0	77.2	84.9	83.2	73.0	98.1
5-Sep	85.1	94.1	97.5	98.9	99.1	99.3	99.6	95.9	79.0	70.6	60.9	50.8	44.0	40.8	38.2	37.8	41.0	40.1	45.2	50.6	54.9	54.5	57.0	59.7	66.4	99.6
6-Sep	62.7	66.0	64.9	65.6	64.6	67.9	70.0	68.4	61.9	57.0	50.8	44.5	47.9	52.5	53.9	51.4	49.8	52.7	55.2	65.9	68.1	77.2	83.9	89.9	62.2	89.9
7-Sep	95.4	97.3	98.5	98.6	98.3	99.1	99.4	94.5	76.8	64.1	57.7	54.1	47.9	41.0	34.8	33.5	33.6	37.7	48.6	52.1	59.0	62.1	68.8	68.1	67.5	99.4
8-Sep	76.2	84.4	90.0	94.1	96.3	97.4	98.3	88.5	78.2	70.1	58.0	51.5	47.9	51.1	45.8	42.2	42.6	48.1	55.5	59.4	64.5	79.0	80.2	83.5	70.1	98.3
9-Sep	79.7	80.4	81.5	78.8	80.5	82.7	86.4	87.4	83.8	76.7	73.3	66.3	64.6	69.1	70.4	70.5	64.0	82.7	77.1	72.3	71.4	74.6	84.7	89.2	77.0	89.2
10-Sep	89.8	89.0	91.7	94.9	95.8	92.9	92.5	86.7	76.9	67.6	58.7	52.0	46.9	51.7	55.9	54.7	44.9	47.4	60.3	71.9	74.9	80.4	94.9	97.8	73.7	97.8
11-Sep	98.7	99.0	99.3	99.5	99.7	99.7	99.8	99.9	99.1	78.5	64.0	56.4	48.8	43.6	41.7	40.1	39.7	43.6	56.7	56.4	61.2	67.8	66.0	64.0	71.8	99.9
12-Sep	67.8	70.4	76.4	79.1	82.3	92.6	98.5	99.3	99.7	99.2	91.6	80.6	72.8	72.5	75.9	74.4	71.6	75.4	83.4	93.1	97.2	98.8	99.3	99.5	85.5	99.7
13-Sep	99.7	99.8	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	94.0	82.9	75.9	74.4	74.2	74.8	75.8	81.2	83.5	85.4	86.6	87.8	86.7	90.1	100.0
14-Sep	87.8	88.9	91.8	91.8	92.6	96.2	97.1	91.7	80.7	69.4	59.3	51.6	49.4	48.6	53.0	46.8	46.5	48.5	60.4	65.9	70.0	73.6	84.2	96.1	72.6	97.1
15-Sep	98.4	99.0	99.4	99.6	99.7	99.9	99.9	100.0	100.0	98.7	73.7	60.8	59.7	52.9	52.2	50.8	52.5	66.6	71.1	83.1	89.5	94.7	96.4	97.7	83.2	100.0
16-Sep	99.0	99.5	99.8	99.9	100.0	100.0	100.0	100.0	91.6	74.8	64.2	54.7	45.2	42.2	40.4	41.9	41.1	41.3	52.5	65.3	70.7	70.8	71.4	83.4	72.9	100.0
17-Sep	88.0	91.8	93.8	96.2	98.3	98.9	99.3	98.4	81.2	68.1	61.1	51.4	46.2	40.3	38.1	37.2	37.9	43.6	54.9	64.1	68.9	77.2	80.5	82.4	70.7	99.3
18-Sep	85.0	88.9	90.3	88.1	91.4	90.2	86.5	78.5	72.8	66.9	64.5	64.4	53.3	47.2	39.4	35.5	33.2	35.7	47.9	62.2	67.7	81.1	90.6	93.0	68.9	93.0
19-Sep	96.8	97.7	97.2	95.8	95.8	98.6	99.2	99.6	83.5	66.8	56.0	47.3	38.1	35.0	35.9	42.1	48.5	52.6	61.8	65.3	64.4	68.9	77.9	81.6	71.1	99.6
20-Sep	84.4	85.4	89.1	90.5	91.7	87.4	83.9	80.7	78.4	67.6	59.8	57.6	44.3	43.0	41.2	35.3	38.6	44.6	50.6	62.3	69.7	75.5	90.2	92.4	68.5	92.4
21-Sep	96.1	98.3	98.7	98.3	97.4	97.0	96.7	93.4	89.7	81.4	74.7	62.3	58.6	54.1	52.2	51.9	53.3	58.2	64.1	69.0	82.3	92.2	89.9	86.2	79.0	98.7
22-Sep	87.3	92.0	92.3	97.3	98.0	95.1	96.9	93.4	82.1	74.3	67.2	57.4	50.3	45.9	44.0	44.3	48.6	58.7	68.5	76.5	84.1	85.4	92.5	97.4	76.2	98.0
23-Sep	98.5	99.1	99.5	99.7	99.8	99.8	99.9	100.0	100.0	91.0	72.4	67.8	59.2	61.1	67.4	75.5	80.0	87.0	92.9	96.8	99.6	100.0	100.0	100.0	89.4	100.0
24-Sep	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	98.2	94.1	78.0	60.5	46.3	39.5	35.6	33.0	34.6	39.7	53.2	67.5	77.4	81.8	81.9	79.0	75.0	100.0
25-Sep	83.6	85.9	90.2	91.1	92.1	93.2	94.7	92.5	87.5	84.4	75.2	73.3	72.6	70.7	68.7	68.8	70.2	74.0	76.0	83.8	91.3	94.1	93.7	94.0	83.4	94.7
26-Sep	94.5	94.9	99.6	99.9	100.0	100.0	99.5	99.6	99.8	99.0	96.8	89.4	76.0	69.7	59.9	60.2	70.2	69.7	76.4	85.5	92.6	95.9	94.6	98.9	88.4	100.0
27-Sep	99.5	99.5	99.5	99.5	98.8	97.1	95.5	94.9	89.4	82.8	74.3	63.7	58.5	53.7	48.9	52.6	59.0	77.2	78.1	80.6	93.0	97.3	96.1	92.8	82.6	99.5
28-Sep	86.2	76.5	75.0	76.5	75.9	79.9	81.6	82.4	81.0	74.9	71.7	66.8	62.2	57.7	51.8	48.9	49.4	55.8	75.6	76.3	81.0	85.5	92.8	93.9	73.3	93.9
29-Sep	93.9	94.1	95.5	97.1	97.6	98.4	98.9	98.6	94.1	87.7	74.0	61.6	55.9	50.8	52.8	57.1	59.4	59.1	66.4	70.4	69.9	69.8	72.4	72.5	77.0	98.9
30-Sep	70.2	68.7	67.6	69.5	72.7	81.7	86.4	83.2	75.1	70.1	59.2	41.0	35.1	32.6	31.7	30.1	30.8	34.0	42.2	62.5	71.0	78.8	84.2	63.5	60.1	86.4
	87.7	88.9	90.6	91.6	92.5	93.8	94.4	91.4	84.5	76.7	68.0	60.2	54.1	51.0	49.1	48.5	49.5	53.9	61.5	69.1	74.8	80.1	84.3	85.9	Diurnal Average	
	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	94.0	82.9	75.9	75.9	75.5	80.0	87.0	92.9	96.8	99.6	100.0	100.0	100.0	Diurnal Maximum	

Wood Buffalo Environmental Association

Hourly Averages

Relative Humidity 2m (RH2) - %

Barge Landing - September 2024



Summary of Hour Averages

Barge Landing - September 2024

Maximum Value: 29.3 inHg on Sep 5 08:00

Maximum Daily Average: 29.2 inHg on Sep 5

Minimum Value: 28.3 inHg on Sep 25 16:00

Minimum Daily Average: 28.4 inHg on Sep 25

Maximum Diurnal Average: 28.8 inHg at hour 9

Minimum Diurnal Average: 28.8 inHg at hour 18

Monthly Average: 28.77 inHg

Percentiles: P_1 = 28.3 P_{10} = 28.6 Q_1 = 28.7 Median = 28.8 Q_3 = 28.9 P_{90} = 29.0 P_{99} = 29.3

Hours in Service:	720
Hours of Data:	720
Hours of Missing Data:	0
Hours of Calibration:	0
Percent Operational Time:	100.0

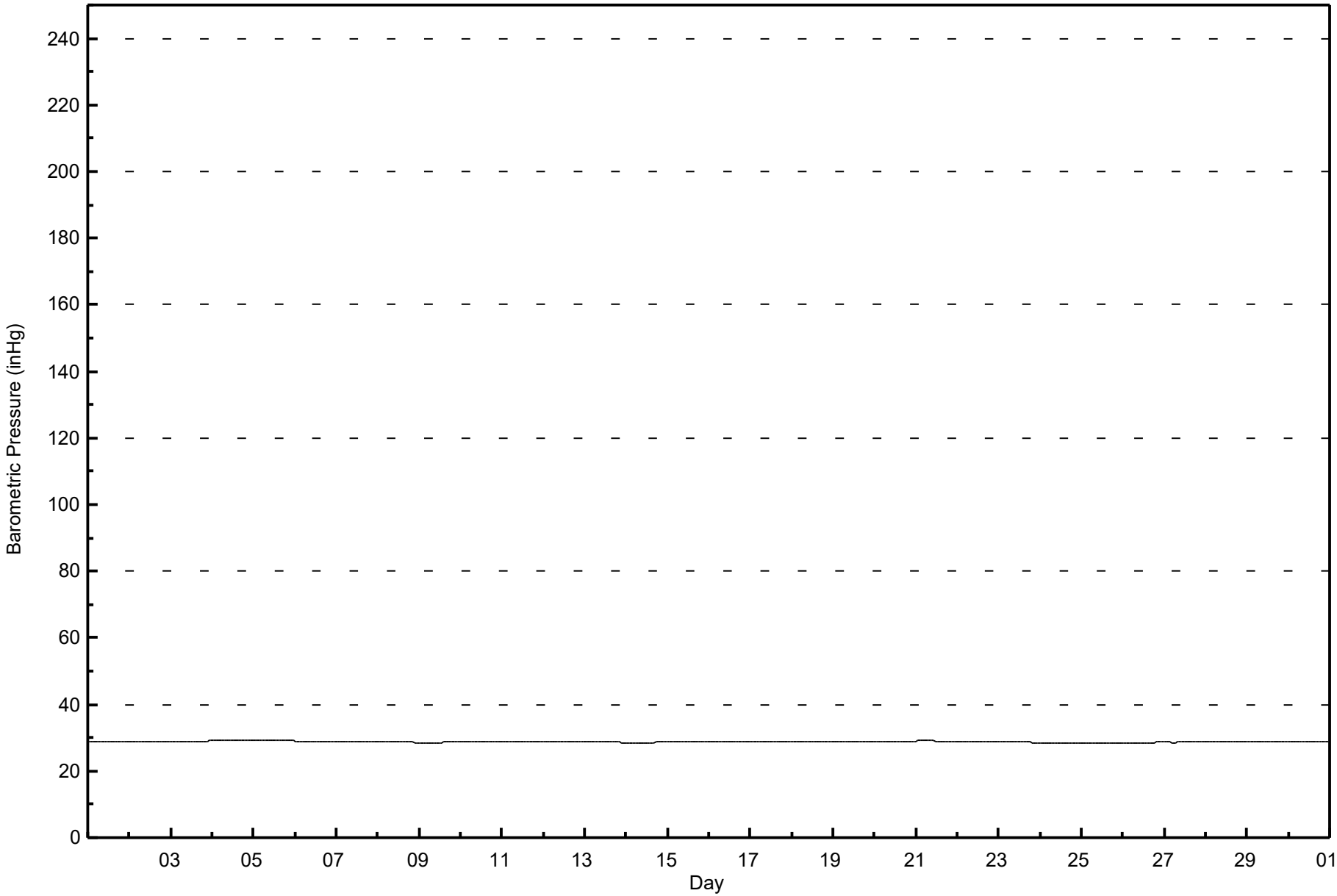
Day	Hourly Period Ending At (MST)																								Daily	Daily
	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24	Average	Maximum
1-Sep	29.0	29.0	29.0	29.0	28.9	28.9	28.9	28.9	28.9	28.8	28.8	28.8	28.8	28.8	28.7	28.7	28.7	28.7	28.7	28.7	28.7	28.7	28.7	28.7	28.8	29.0
2-Sep	28.7	28.7	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	28.8
3-Sep	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	29.0	29.0	29.0	29.0	29.0	29.0	29.0	29.0	29.0	29.1	29.0	29.1
4-Sep	29.1	29.1	29.1	29.1	29.1	29.1	29.1	29.2	29.2	29.2	29.2	29.2	29.2	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
5-Sep	29.2	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	29.1	29.1	29.1	29.1	29.1	29.0	29.0	29.2	29.3
6-Sep	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	28.9	28.9	28.8	28.8	28.8	28.8	28.8	28.8	28.9	28.9	28.9	29.0
7-Sep	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	28.8	28.8	28.7	28.7	28.7	28.7	28.8	28.8	28.8	28.8	28.8	28.9
8-Sep	28.8	28.8	28.8	28.8	28.8	28.8	28.8	28.8	28.8	28.8	28.8	28.8	28.7	28.7	28.7	28.7	28.7	28.6	28.6	28.6	28.6	28.6	28.6	28.6	28.7	28.8
9-Sep	28.6	28.6	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	28.6	28.6	28.6	28.7	28.7	28.7	28.8	28.8	28.8	28.6	28.8
10-Sep	28.8	28.8	28.8	28.8	28.8	28.8	28.8	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	28.9	28.9	28.9	28.9	28.8	28.9
11-Sep	28.9	28.9	28.9	28.9	28.9	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	28.9	28.9	28.9	28.9	28.9	28.9	28.9	29.0
12-Sep	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	28.8	28.8	28.8	28.8	28.8	28.8	28.8	28.8	28.8	28.8	28.8	28.9	28.9
13-Sep	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	28.7	28.7	28.6	28.6	28.6	28.6	28.6	28.6	28.6	28.6	28.6	28.7	28.8
14-Sep	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	28.7	28.6	28.7
15-Sep	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	28.8	28.8	28.8	28.8	28.8	28.8
16-Sep	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	28.7	28.7	28.7	28.7	28.7	28.7	28.7	28.7	28.7	28.7	28.8
17-Sep	28.7	28.7	28.7	28.7	28.7	28.7	28.7	28.7	28.7	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	28.7	28.8
18-Sep	28.7	28.7	28.7	28.7	28.7	28.7	28.6	28.6	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
19-Sep	28.7	28.7	28.7	28.7	28.7	28.7	28.7	28.7	28.7	28.7	28.7	28.7	28.6	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
20-Sep	28.6	28.7	28.7	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	28.9	28.9	28.9	28.9	29.0	29.0	29.0	29.0	28.8	29.0
21-Sep	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	28.9	28.9	28.9	28.9	28.9	28.9	28.9	28.8	28.8	28.8	29.0	29.1
22-Sep	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	28.7	28.7	28.7	28.7	28.7	28.7	28.7	28.8
23-Sep	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	28.6	28.6	28.6	28.6	28.6	28.6	28.5	28.5	28.7	28.7
24-Sep	28.5	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	28.6	28.6	28.6	28.6	28.6	28.6	28.6	28.6	28.5	28.6
25-Sep	28.6	28.6	28.6	28.5	28.5	28.5	28.5	28.4	28.4	28.4	28.4	28.3	28.4	28.3	28.3	28.3	28.3	28.3	28.3	28.3	28.3	28.3	28.3	28.3	28.4	28.6
26-Sep	28.4	28.4	28.4	28.4	28.4	28.4	28.5	28.5	28.5	28.5	28.5	28.5	28.5	28.6	28.6	28.6	28.6	28.6	28.6	28.6	28.6	28.6	28.6	28.6	28.5	28.6
27-Sep	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	28.7	28.7	28.7	28.7	28.7	28.7	28.7	28.8	28.7	28.8
28-Sep	28.8	28.8	28.8	28.8	28.8	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	28.9	28.9	29.0	28.9	28.9	28.9	28.9	29.0
29-Sep	28.9	28.9	28.9	28.9	28.8	28.8	28.8	28.8	28.8	28.8	28.8	28.7	28.7	28.7	28.7	28.7	28.8	28.8	28.8	28.8	28.8	28.8	28.8	28.8	28.8	28.9
30-Sep	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	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	28.8	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	
	29.2	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	Diurnal Maximum	

Wood Buffalo Environmental Association

Hourly Averages

Barometric Pressure (BP) - inHg

Barge Landing - September 2024



Wood Buffalo Environmental Association

Summary of Hour Averages

Wind Speed 10m (WS10) - km/h

Barge Landing - September 2024

Maximum Speed: 13 km/h on Sep 30 16:00

Maximum Daily Speed Average: 5.4 km/h on Sep 28

Minimum Speed Value: 0 km/h on Sep 19 19:00

Minimum Daily Speed Average: 0.2 km/h on Sep 15

Maximum Diurnal Speed Average: 3.6 km/h at hour 13

Minimum Diurnal Speed Average: 0.4 km/h at hour 21

Monthly Average Velocity: 1.5 km/h 222.3 deg

Percentiles: $P_1 = 1$ $P_{10} = 2$ $Q_1 = 3$ Median = 4 $Q_3 = 6$ $P_{90} = 8$ $P_{99} = 12$

Hours in Service:	720
Hours of Data:	713
Hours of Missing Data:	7
Percent Operational Time:	99.0

Day	Hourly Period Ending At (MST)																								Daily	Daily
	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24	Average	Maximum
1-Sep	SE5	SE5	SE4	SE4	SE4	SSE3	SSE3	S5	S7	SSE6	S6	S7	SSW7	SW9	SW11	WSW10	SW10	WSW10	SW5	SSW4	SSE3	ESE4	NE1	SE3	SSW4.3	SW11
2-Sep	SE4	SSE4	SW1	ESE3	SE4	SE3	SE5	SSE5	S6	SSE7	S7	S7	SSW8	SSW8	SW9	SW10	WSW10	WSW9	WSW7	NW10	N7	NNE11	NNE10	N7	SW2.2	NNE11
3-Sep	N7	N7	N5	N5	NNW4	NNW1	NNW2	NW3	N4	N4	N5	N6	N5	NNE5	NNE4	NNE3	NE4	NE4	NNE3	N3	NNW3	N4	NNW3	UO	N3.8	N7
4-Sep	NW1	UO	SSW2	SW3	SSW3	S2	SW4	WSW4	W6	WNW8	W5	NNW2	SW1	NW4	NW7	WNW4	NW4	WNW6	WNW4	SW2	SSW3	SW3	ESE3	N1	W2.6	WNW8
5-Sep	NW4	W2	W2	SW1	WSW2	SSW1	SSW2	SSW3	SW4	WSW4	SSW7	S7	SSE8	SSE8	SSE8	SSE9	SE8	ESE8	SE9	SE10	SE8	SE8	SE8	SE8	SSE4.5	SE10
6-Sep	SE6	SSE5	S6	SSE8	S6	S7	S6	S5	SSW7	SSW8	SW8	SW9	SSW7	S6	S7	S9	SSW7	SSW5	SSW4	SSE3	SSW3	WSW3	WSW2	SSE1	S5.4	SW9
7-Sep	SSW2	SE2	SSE2	SE3	SE4	ESE4	SE4	SE6	SSE4	SSE6	S6	SSE7	S8	SSW8	SW9	SW10	WSW10	SW6	SSW6	SW8	SW4	SW4	W2	W4	SSW4.1	WSW10
8-Sep	WSW2	SSE2	S3	ESE3	ESE4	SE3	SE3	SE4	S3	SW1	SSE4	S7	SSE6	WSW2	SE2	S2	NW2	N2	NE4	NNE5	NNW3	NNW4	N6	NNW3	SE0.8	S7
9-Sep	E1	ENE2	N3	NNE3	NE3	N3	NNW3	NNW5	N3	NW4	SW3	WSW8	WNW8	W9	WSW9	WSW9	WSW9	WSW12	W11	W10	W9	WSW5	SSW5	SW6	W4.3	WSW12
10-Sep	WSW7	W4	WSW2	SSW2	WSW5	SW6	SSW4	SW7	SW8	SW7	SSW8	SW10	W9	WSW6	SW7	SW7	W7	NW5	WNW2	WNW1	ENE1	NNW2	NNW3	NNW2	WSW4.2	SW10
11-Sep	NNW2	NW1	NW2	NNW1	NW2	ESE1	UO	NW2	WSW3	WSW4	W4	NW4	NW5	NNW2	NNW3	WNW4	NW4	NNW3	N3	ENE4	E1	SE2	SSE3	SE5	NW1.2	NW5
12-Sep	ESE4	ESE3	N2	E0	SE4	SE5	SE4	NE1	NNW2	NNW2	NE3	E3	NE3	E5	ESE7	E5	ESE8	ESE5	NNE1	N0	NNW1	E1	UO	E3	E2.3	ESE8
13-Sep	NNW1	W1	NW3	NW3	WSW2	WNW2	WNW2	NW4	NW3	NW4	NW3	NW5	NNW5	N5	N5	N5	NNW6	NNW6	NNW4	NNW5	NW5	NW4	NW3	WNW3	NNW3.5	NNW6
14-Sep	WNW4	WNW3	W4	WNW3	WSW5	SW4	SW4	SW4	SW4	SSW4	SW5	WSW4	SSW7	SSW6	SSW3	W5	W6	NW5	N2	NNE3	NNW2	NNE1	WSW1	WNW2	WSW2.7	SSW7
15-Sep	NW3	NNW2	NNW3	ENE1	E1	NNW2	SE1	WSW2	WSW3	WSW4	N3	NE3	S1	S2	SSW3	SE4	SSE3	ESE3	E3	E1	UO	N1	SE2	S1	SSE0.2	SE4
16-Sep	SE2	SE4	ESE4	SE4	SE5	SE5	SE5	SE5	SSE5	S7	S8	SSW8	WSW12	WSW11	SW11	SW8	WSW9	WSW7	SSW4	SSE3	SSE4	S4	S3	ESE3	SSW4.3	WSW12
17-Sep	ESE4	ESE4	ESE5	ESE4	ESE4	SE4	ESE4	SE5	S7	S7	SSW7	SSE6	SSE7	S5	S5	SSE5	SSE5	SE5	E3	E4	ESE2	ESE5	ESE5	ESE5	SE4.3	SSW7
18-Sep	SE3	ESE5	ESE4	SE2	SE1	SSE5	SSE3	SSE6	SSW6	W4	NW6	NW7	WNW8	W10	W9	W7	NW7	NW5	NW2	NNW1	WNW1	UO	S1	W2	W1.9	W10
19-Sep	WSW1	SW2	S3	SSW3	S2	SE4	SE3	SE3	SSE5	SSE5	S5	SSE5	S5	SSW5	SSW4	S4	SSE3	SE3	NNE0	E2	ENE3	NW2	NNW4	NNW3	S2.1	SSE5
20-Sep	NW2	NW2	NW2	NNW3	N2	N3	NNW3	N4	SW2	NW2	N5	N3	N9	NNW9	N9	NNW9	NNW9	NNW7	NNW6	NNW4	NNW3	NW3	NNW3	NW2	NNW4.2	NNW9
21-Sep	WNW1	WSW0	SW2	SSE1	S2	SE3	SW2	SW2	SSW2	SE4	S4	SSE6	S7	SSE7	SSE7	SE8	SE6	SE6	SE7	SE8	SSW3	ESE5	ESE7	SE8	SSE3.8	SE8
22-Sep	ESE3	NE2	NNE1	E2	SE3	ESE3	ESE4	SE3	SSW4	WSW4	WSW5	SW6	SW6	SSW3	S2	SSW4	ESE2	NNE2	NNW6	NW2	WNW2	W2	NNW3	NNW4	SSW0.8	SW6
23-Sep	NNW2	ESE1	N1	SSW1	WSW2	W2	SSE1	WNW3	WNW2	WSW3	NW3	SSW4	S5	S6	S6	SE7	SSE6	SSE6	SE6	SSE5	SE6	SE7	SSE4	SE4	S2.6	SE7
24-Sep	SE3	S3	ESE3	SSW2	SE2	SE3	ESE2	SE3	SW4	SW4	WSW8	W13	W13	W13	WNW11	NW10	NW7	NNW4	UO	ESE2	ESE5	ESE4	ESE5	NNE1	WSW2.1	W13
25-Sep	SE1	ESE3	ESE2	N0	E1	ESE1	NNW3	NNW3	WNW1	WNW1	W2	WSW3	SSW2	SSE4	SSE4	S4	S5	SSE4	S4	SSE4	SE2	SW4	W4	SW3	S1.4	S5
26-Sep	S3	WNW3	NW4	NW3	WSW1	WSW4	WSW4	WSW3	W3	WSW5	WSW6	W7	W9	W8	NW5	SE2	S4	WNW6	WSW4	SSW3	ESE2	S4	SE3	ESE3	WSW2.7	W9
27-Sep	ESE2	SE3	SE2	ESE3	E3	SE5	SE4	S3	S3	WSW5	WSW6	SSW8	SSW7	SSW6	SW6	SW4	SSE3	SSE5	S6	SSE5	SSE5	S4	S7	SSW8	S3.8	SSW8
28-Sep	SW8	SW12	WSW11	WSW12	WSW11	W11	W8	WSW6	SW6	WSW7	WSW9	WSW12	WSW11	WSW9	W8	W5	W1	ESE2	E4	E4	ESE4	ENE1	WNW0	ESE2	WSW5.4	SW12
29-Sep	SE1	ENE1	NNW1	NNW2	NW1	NNW2	NNW4	NW3	NNW5	NNW5	N4	NNE6	N6	N9	N8	NNW9	NNW8	NNW5	NW4	WNW4	NW4	NW4	NW4	WNW4	NNW4.0	N9
30-Sep	W4	NW4	NW5	W6	WNW5	WSW5	WSW6	SW7	SW6	S4	SW6	WNW9	WNW12	WNW12	WNW13	WNW13	WNW10	NW8	WNW3	SE3	SSE3	ESE3	SE3	WNW4	W4.7	WNW13
	S0.6	S0.7	SW0.5	S0.7	S1.1	S1.6	S1.4	SSW1.6	SW2.7	SW2.8	SW3.2	SW3.4	WSW3.6	WSW3.5	WSW3.1	WSW2.8	WSW2.2	WSW1.4	SW0.7	SSE0.5	SSE0.4	SE0.4	SE0.4	S0.5	Diurnal Average	
	SW8	SW12	WSW11	WSW12	WSW11	W11	W8	SW7	SW8	SSW8	WSW9	W13	W13	W13	WNW13	WNW13	WSW10	WSW12	W11	NW10	W9	NNE11	NNE10	SE8	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 10m (WS10) - km/h

Barge Landing - September 2024

Number of Exceedences (AAAQO): 1-hr: 0 24-hr: 0
Maximum Value: 5 km/h on Sep 26 18:00

Minimum Value: 0 km/h on Sep 1 22:00

Percentiles: P_1 = 1 P_{10} = 1 Q_1 = 1 Median = 2 Q_3 = 2 P_{90} = 3 P_{99} = 5

Hours in Service:	720
Hours of Data:	713
Hours of Missing Data:	7
Hours of Calibration:	0
Percent Operational Time:	99.0

Day	Hourly Period Ending At (MST)																								Daily
	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24	Maximum
1-Sep	1	1	1	1	1	1	1	2	3	3	2	3	3	3	4	4	3	4	2	1	1	0	1	1	4
2-Sep	1	1	1	1	1	1	1	2	2	2	3	3	3	3	3	3	4	3	2	4	3	4	4	3	4
3-Sep	2	2	1	2	1	1	1	1	2	1	2	2	2	2	1	1	2	2	1	1	1	1	1	UO	2
4-Sep	1	UO	1	1	1	2	1	2	2	3	2	1	1	3	3	2	2	3	2	2	1	2	1	2	3
5-Sep	1	1	1	1	2	1	1	1	1	2	2	2	3	3	3	3	2	2	2	2	2	2	2	2	3
6-Sep	2	2	2	3	2	2	2	2	3	3	3	3	3	2	3	4	3	2	2	2	2	2	1	1	4
7-Sep	1	1	1	1	1	1	1	2	2	2	2	3	3	3	3	3	3	2	2	2	2	2	2	2	3
8-Sep	2	1	1	1	1	1	1	2	1	1	2	3	2	1	1	2	1	1	1	2	1	1	1	1	3
9-Sep	2	3	2	1	1	1	2	2	2	2	2	4	3	4	3	3	4	4	5	4	3	2	2	3	5
10-Sep	3	2	2	2	2	3	2	2	3	2	3	3	4	2	2	3	3	2	1	1	1	1	1	1	4
11-Sep	1	1	1	1	1	1	UO	1	1	1	2	2	2	2	2	1	1	1	1	1	1	1	1	1	2
12-Sep	1	2	1	1	2	2	1	1	1	1	2	2	1	2	2	2	2	1	1	1	1	1	UO	2	2
13-Sep	1	1	1	1	1	1	1	1	1	1	1	2	2	2	2	2	2	2	1	1	1	1	1	1	2
14-Sep	1	1	1	1	1	1	2	1	1	1	2	2	3	3	1	3	3	2	2	1	1	1	1	1	3
15-Sep	1	1	1	1	1	1	1	1	1	1	2	1	2	2	2	2	1	1	1	1	UO	1	1	1	2
16-Sep	2	1	1	1	1	1	1	1	2	3	3	4	4	4	3	3	3	3	1	1	1	2	1	1	4
17-Sep	1	1	1	1	1	1	1	2	3	3	3	2	3	3	2	2	2	1	1	1	1	1	1	1	3
18-Sep	1	1	1	1	2	2	1	2	2	2	3	3	3	3	4	3	3	2	1	1	1	UO	1	2	4
19-Sep	1	1	1	1	1	1	1	1	2	2	2	2	2	2	2	1	1	1	1	1	2	1	1	1	2
20-Sep	1	1	1	1	1	1	1	1	2	1	2	2	3	4	4	3	3	2	2	1	1	1	1	1	4
21-Sep	2	1	1	1	1	1	2	1	1	1	2	3	3	3	3	3	2	2	2	3	3	1	2	2	3
22-Sep	2	1	1	1	1	1	1	1	1	2	2	2	2	2	2	2	1	0	2	2	1	1	1	1	2
23-Sep	2	1	1	1	1	2	1	1	1	1	1	1	2	2	2	2	2	2	2	2	2	2	1	1	2
24-Sep	1	1	1	1	2	1	2	1	2	2	3	5	5	5	4	4	3	1	UO	1	1	1	1	1	5
25-Sep	1	2	1	1	1	1	2	1	2	2	1	1	1	1	2	2	2	1	2	1	2	1	3	2	3
26-Sep	1	1	1	1	1	3	2	2	2	2	2	3	3	3	3	2	1	5	2	1	1	1	1	1	5
27-Sep	1	1	1	1	1	1	1	1	1	1	2	3	3	3	2	2	1	2	2	2	2	2	2	3	3
28-Sep	3	4	3	4	4	4	3	2	2	3	3	4	4	3	4	3	1	1	1	1	1	1	1	1	4
29-Sep	1	1	1	1	1	1	1	1	1	2	2	2	2	3	3	3	3	2	1	1	1	2	1	1	3
30-Sep	1	1	2	2	2	2	1	1	2	1	2	4	4	5	5	5	4	4	1	1	1	1	1	2	5
	3	4	3	4	4	4	3	2	3	3	3	5	5	5	5	5	4	5	5	4	3	4	4	3	
	Diurnal Maximum																								

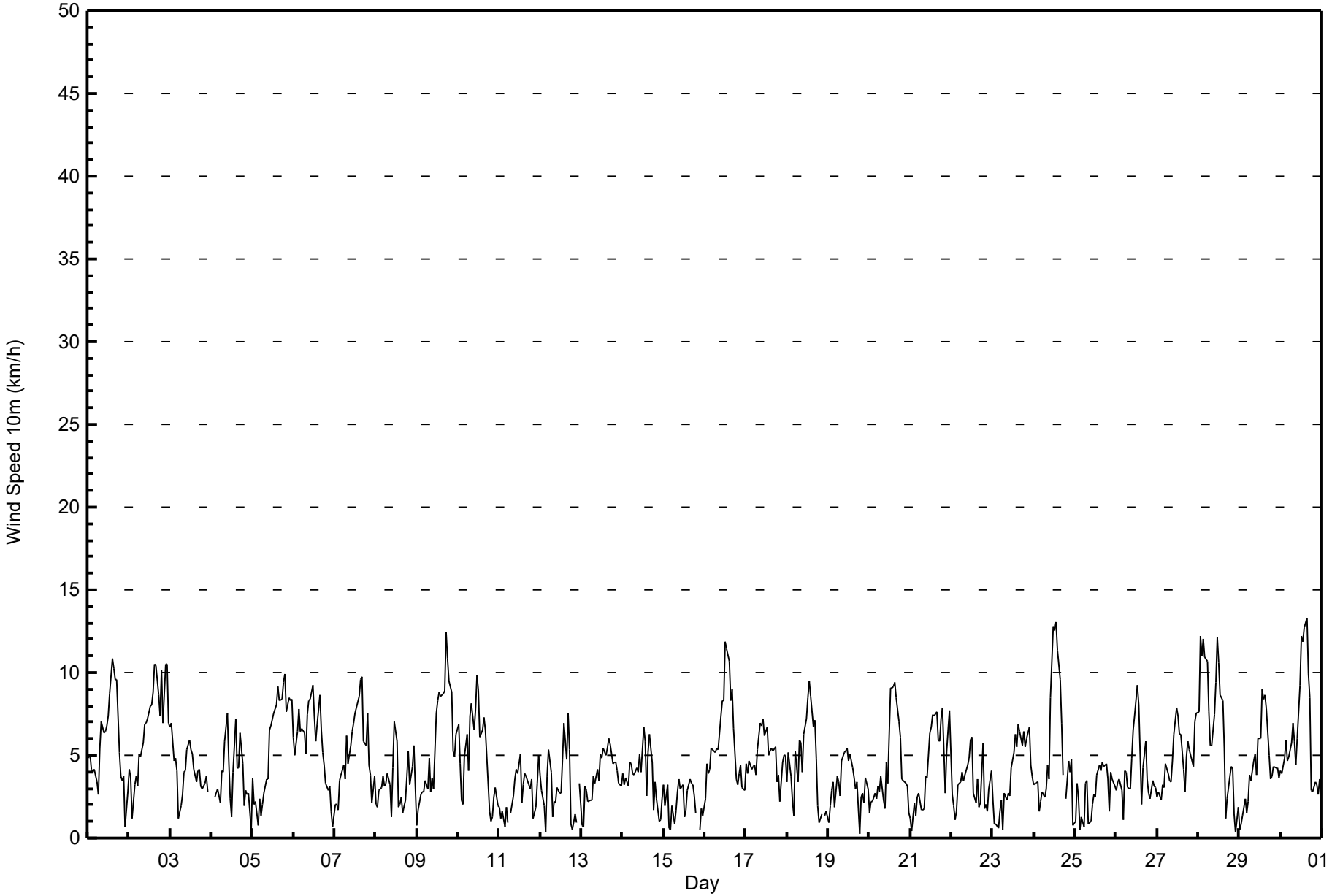
UO - Unstable Operation

Wood Buffalo Environmental Association

Hourly Averages

Wind Speed 10m (WS10) - km/h

Barge Landing - September 2024



Wind Speed Ranges (km/h)	Number of Hours	%	Cumulative %
0 - 5	501	70.27	70.27
6 - 11	200	28.05	98.32
12 - 19	12	1.68	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: 713

Total Number of Hours: 720

Wood Buffalo Environmental Association

Frequency Distribution

Wind Speed 10m (WS10) - km/h

Barge Landing - September 2024

Wind Speed Ranges (km/h)	Wind Direction																
	N	NNE	NE	ENE	E	ESE	SE	SSE	S	SSW	SW	WSW	W	WNW	NW	NNW	**Totals**
0 - 5	29	14	10	7	19	48	63	38	34	31	28	34	20	26	48	52	501
6 - 11	11	3	0	0	0	4	19	18	26	20	28	27	18	8	8	10	200
12 - 19	0	0	0	0	0	0	0	0	0	0	1	4	3	4	0	0	12
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	40	17	10	7	19	52	82	56	60	51	57	65	41	38	56	62	713

Total Number of Valid Hours: 713

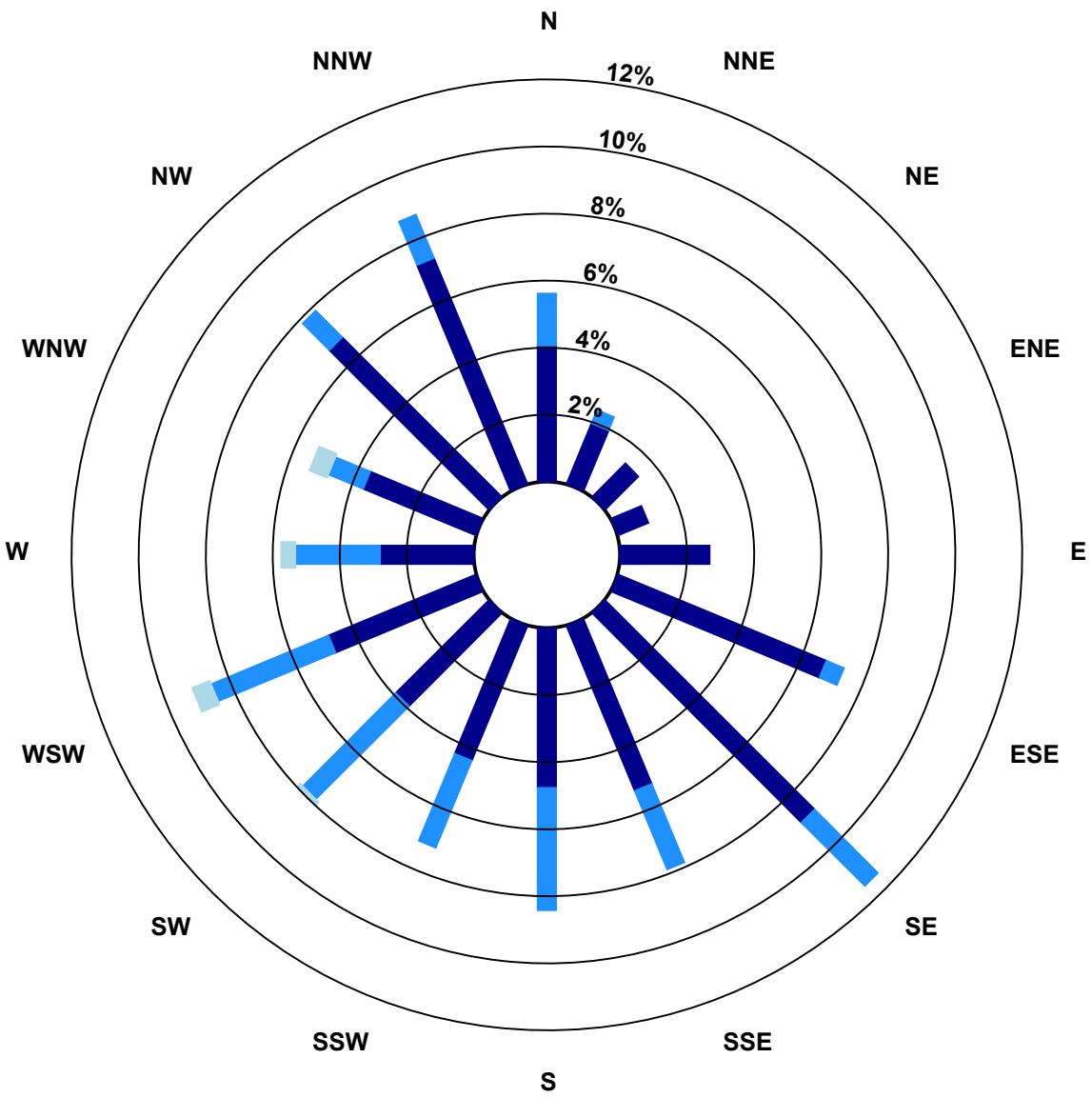
Total Number of Hours: 720

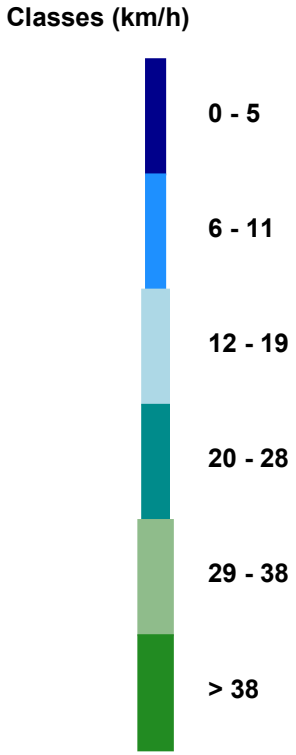
Wood Buffalo Environmental Association

Wind Rose Sep 2024

Wind Speed 10m (WS10) - km/h

Barge Landing





Total Number of Valid Hours: 713

Wood Buffalo Environmental Association

Summary of Hour Averages

Wind Direction 10m (WD10) - deg

Barge Landing - September 2024

Direction of Maximum Speed: 300 deg on Sep 30 16:00
Direction of Maximum Daily Speed Average: 243.2 deg on Sep 28

Direction of Minimum Speed: 24 deg on Sep 19 19:00

Direction of Minimum Daily Speed Average: 0.2 deg on Sep 15

Monthly Average Direction: 222.3 deg

Hours in Service:	720
Hours of Data:	713
Hours of Missing Data:	7
Percent Operational Time:	99.0

Day	Hourly Period Ending At (MST)																								Daily
	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24	Average
1-Sep	141	136	143	140	143	154	166	170	172	163	176	175	209	226	234	243	235	244	223	199	162	117	36	134	191.9
2-Sep	134	151	229	112	136	129	141	163	187	168	172	177	204	208	230	236	240	246	246	312	351	19	14	3	213.8
3-Sep	1	2	350	353	334	333	337	323	358	356	352	356	11	20	33	28	51	42	25	3	345	349	341	UO	2.8
4-Sep	323	UO	198	234	209	189	226	238	259	283	263	328	224	318	310	290	304	303	287	226	207	233	121	10	267.7
5-Sep	319	263	269	235	254	200	197	203	217	238	200	174	166	163	154	152	125	120	129	130	139	135	135	137	155.1
6-Sep	144	167	179	162	180	171	171	186	198	211	219	218	202	180	179	184	192	194	206	168	212	258	251	160	189.8
7-Sep	197	136	167	139	141	123	137	129	158	166	180	163	172	192	230	233	237	222	195	236	215	216	276	269	193.8
8-Sep	244	159	177	111	119	130	124	129	177	224	162	174	168	253	125	170	318	2	37	18	346	341	351	344	129.5
9-Sep	84	61	349	23	44	360	337	336	0	312	214	256	293	278	258	250	255	241	271	281	270	250	200	232	271.6
10-Sep	250	269	240	201	240	231	207	221	219	220	205	230	263	238	235	229	278	316	290	294	63	343	335	332	242.7
11-Sep	344	319	319	347	325	112	UO	317	254	257	270	323	310	329	339	302	322	330	351	70	87	135	153	132	318.1
12-Sep	114	123	360	97	124	145	125	51	334	348	35	80	35	98	109	95	114	120	27	10	334	96	UO	99	97.6
13-Sep	339	268	326	308	251	300	286	304	319	318	326	324	331	351	4	351	344	343	330	337	324	316	311	301	326.8
14-Sep	284	289	280	285	257	235	228	219	218	206	225	240	209	201	209	266	277	311	351	32	345	32	250	293	251.8
15-Sep	322	329	343	66	88	333	144	243	250	252	357	46	175	181	212	142	168	104	95	87	UO	4	132	179	159.6
16-Sep	126	125	115	124	133	145	142	139	159	186	190	213	239	238	234	230	242	238	197	162	152	179	191	114	192.8
17-Sep	123	118	118	118	119	126	120	138	173	181	199	164	155	187	172	152	148	125	84	82	111	111	118	123	141.5
18-Sep	128	120	111	146	136	157	163	164	210	274	320	306	300	278	275	275	316	313	325	328	290	UO	174	265	267.7
19-Sep	239	231	181	192	188	133	132	142	158	167	175	167	190	201	192	188	150	146	24	91	63	312	332	333	171.2
20-Sep	313	319	320	329	350	2	335	358	227	326	0	349	353	343	349	346	345	341	346	343	338	326	331	308	342.1
21-Sep	300	255	222	158	189	138	220	234	201	144	191	148	170	161	156	145	144	125	124	134	199	112	112	130	149.0
22-Sep	113	54	12	95	125	121	105	132	212	251	247	219	216	194	176	193	105	24	337	317	283	279	329	330	211.4
23-Sep	344	107	353	208	247	273	161	287	300	243	306	213	173	183	174	146	162	165	145	162	139	138	164	140	170.2
24-Sep	129	174	119	192	125	138	108	138	228	214	244	261	263	275	302	307	307	330	UO	115	111	111	119	14	254.7
25-Sep	143	123	108	3	94	113	339	331	293	283	264	250	209	154	165	173	187	159	177	154	128	219	263	228	186.1
26-Sep	190	285	314	305	243	247	243	244	259	252	250	269	266	262	311	135	170	285	252	202	110	190	131	105	251.7
27-Sep	122	128	124	121	100	131	131	186	191	241	238	207	207	209	228	217	167	166	180	154	159	187	185	197	184.1
28-Sep	222	235	237	242	254	259	266	251	233	256	245	244	256	241	261	263	262	113	100	100	108	62	283	102	243.2
29-Sep	126	71	335	334	324	330	330	326	333	328	358	13	8	0	353	347	340	331	320	303	310	317	323	299	339.1
30-Sep	278	312	310	271	295	243	239	233	216	185	230	289	296	282	291	300	288	304	293	141	157	121	124	287	274.9
	182.8	176.5	227.8	190.2	184.8	177.2	181.3	200.1	214.3	227.0	228.0	229.9	240.2	239.2	246.2	239.5	246.6	257.2	232.6	149.0	162.1	145.5	126.2	169.1	
	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 10m (WD10) - deg

Barge Landing - September 2024

Number of Exceedences (AAAQO): 1-hr: 0 24-hr: 0
Maximum Value: 98 deg on Sep 15 13:00

Minimum Value: 7 deg on Sep 17 23:00

Percentiles: P_1 = 9 P_{10} = 16 Q_1 = 23 Median = 32 Q_3 = 44 P_{90} = 64 P_{99} = 89

Hours in Service:	720
Hours of Data:	713
Hours of Missing Data:	7
Hours of Calibration:	0
Percent Operational Time:	99.0

Day	Hourly Period Ending At (MST)																								Daily
	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24	Maximum
1-Sep	17	15	18	15	17	27	47	33	33	37	41	39	42	36	27	27	25	22	22	20	32	7	71	33	71
2-Sep	13	24	51	14	12	13	22	29	31	32	35	39	34	41	27	24	28	21	21	26	37	24	23	22	51
3-Sep	22	23	22	22	18	57	33	24	30	30	31	28	29	32	41	33	29	33	22	21	14	16	21	UO	57
4-Sep	69	UO	47	18	25	55	28	26	28	36	47	86	97	78	33	47	29	29	32	15	35	70	40	91	97
5-Sep	15	60	25	80	40	59	44	50	35	55	42	42	41	39	40	33	16	13	13	14	18	15	15	15	80
6-Sep	18	29	27	27	31	26	27	36	34	32	30	28	33	34	32	37	32	28	31	44	45	44	75	96	96
7-Sep	41	58	39	22	14	8	20	17	42	35	38	36	35	37	27	27	22	28	27	23	29	70	86	72	86
8-Sep	75	58	40	20	12	18	27	28	46	87	52	41	46	62	81	63	78	43	23	23	46	12	16	24	87
9-Sep	89	96	73	62	43	30	47	31	67	60	67	36	34	35	28	25	32	24	37	32	29	37	31	30	96
10-Sep	32	64	73	71	30	46	44	24	28	37	33	32	38	36	21	28	37	23	38	48	74	45	14	33	74
11-Sep	28	27	60	84	17	89	UO	36	40	40	46	54	37	87	74	47	29	15	22	31	56	48	22	15	89
12-Sep	11	17	25	70	15	17	14	55	55	38	54	43	44	25	17	21	17	16	32	29	19	80	UO	43	80
13-Sep	17	92	15	32	42	36	53	20	26	26	26	23	29	26	27	24	25	20	19	19	19	16	33	20	92
14-Sep	27	23	26	38	19	19	39	24	30	36	46	64	44	44	42	44	34	26	37	50	34	84	72	35	84
15-Sep	20	55	12	60	63	9	89	36	42	29	74	55	98	86	74	63	49	15	23	53	UO	59	41	38	98
16-Sep	32	12	10	14	12	14	16	17	31	30	33	33	30	27	29	23	26	22	26	26	28	33	30	34	34
17-Sep	20	16	10	9	10	10	13	22	30	40	41	41	37	51	51	42	36	19	13	8	44	8	7	10	51
18-Sep	18	9	19	43	88	32	30	36	31	55	31	34	32	36	41	43	25	25	50	46	44	UO	66	74	88
19-Sep	46	36	30	42	58	19	14	43	36	39	41	45	54	53	76	32	29	17	84	43	44	46	16	29	84
20-Sep	61	28	32	26	44	50	40	31	51	69	40	37	27	28	28	26	25	22	17	14	12	21	16	48	69
21-Sep	62	81	64	43	31	31	75	33	48	42	53	38	43	38	39	31	24	11	13	24	88	15	13	14	88
22-Sep	42	37	32	48	16	18	9	33	42	44	39	44	37	76	78	57	64	21	19	42	42	69	15	11	78
23-Sep	22	64	41	73	65	38	89	25	39	49	62	49	49	35	35	25	29	29	22	27	18	21	25	24	89
24-Sep	28	25	24	68	56	44	34	51	35	46	28	31	36	35	31	29	30	18	UO	32	12	14	12	62	68
25-Sep	84	14	46	56	69	87	48	44	87	90	65	45	44	27	37	39	31	23	28	17	58	39	43	60	90
26-Sep	45	42	20	37	75	23	38	63	64	31	24	33	32	33	43	72	27	62	44	58	41	29	36	25	75
27-Sep	31	40	43	19	40	13	20	29	39	27	27	39	40	48	33	32	25	24	26	20	35	42	27	27	48
28-Sep	28	22	23	22	25	25	28	23	23	27	25	23	29	33	38	39	77	40	11	13	11	62	50	48	77
29-Sep	86	70	52	67	62	26	18	16	19	32	35	29	34	23	23	20	19	17	14	19	20	25	14	26	86
30-Sep	35	26	26	29	32	23	14	13	28	39	26	39	33	36	36	31	32	29	31	50	30	24	56	54	56
	89	96	73	84	88	89	89	63	87	90	74	86	98	87	81	72	78	62	84	58	88	84	86	96	
	Diurnal Maximum																								

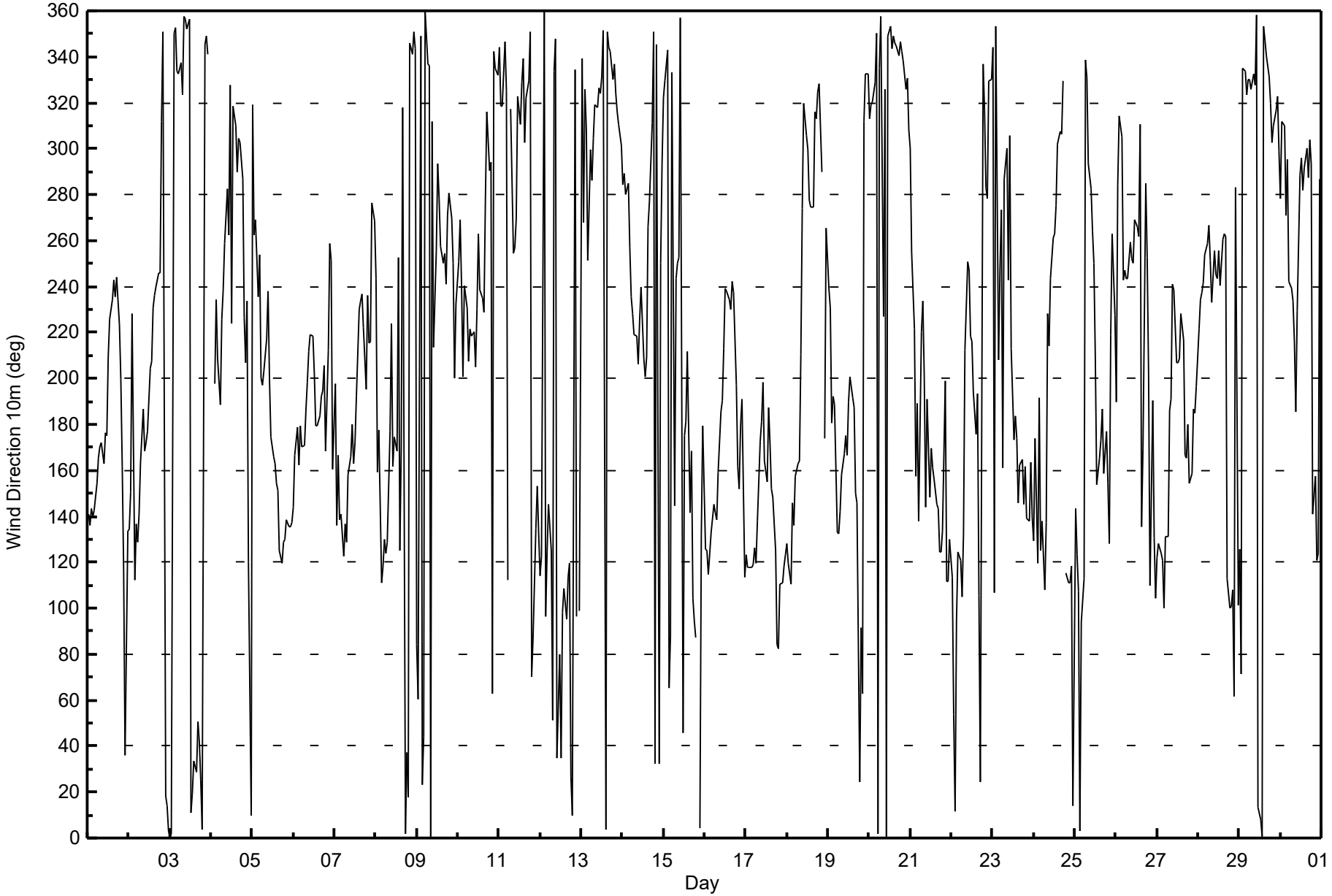
UO - Unstable Operation

Wood Buffalo Environmental Association

Hourly Averages

Wind Direction 10m (WD10) - deg

Barge Landing - September 2024



Wood Buffalo Environmental Association

Summary of Hour Averages

Wind Speed 20m (WS20) - km/h

Barge Landing - September 2024

Maximum Speed: 24 km/h on Sep 2 22:00

Maximum Daily Speed Average: 9.6 km/h on Sep 30

Minimum Speed Value: 1 km/h on Sep 19 19:00

Minimum Daily Speed Average: 0.2 km/h on Sep 15

Maximum Diurnal Speed Average: 5.3 km/h at hour 13

Minimum Diurnal Speed Average: 0.6 km/h at hour 20

Monthly Average Velocity: 2.6 km/h 228.5 deg

Percentiles: $P_1 = 2$ $P_{10} = 4$ $Q_1 = 6$ Median = 8 $Q_3 = 11$ $P_{90} = 14$ $P_{99} = 20$

Hours in Service:	720
Hours of Data:	719
Hours of Missing Data:	1
Percent Operational Time:	99.9

Day	Hourly Period Ending At (MST)																								Daily	Daily
	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24	Average	Maximum
1-Sep	SSE10	SSE11	SSE9	SSE9	SSE9	S8	S6	SSE9	S12	SSE10	S10	S10	SSW11	SW12	SW16	WSW15	SW14	WSW14	SW10	SSW9	SSW8	S7	SW2	SSW4	SSW8.2	SW16
2-Sep	SSE10	SSE10	SSW6	SSE7	SSE8	S6	SSE11	S8	S8	SSE10	S11	S11	SSW11	SSW12	SW13	WSW16	WSW16	WSW14	WSW14	NW19	NNW15	NNE24	NNE23	N14	SW3.9	NNE24
3-Sep	N14	N14	N10	N10	NNW9	NNW5	N6	NNW5	N7	N8	N11	N12	NNE10	NNE10	NNE8	NNE7	NE8	NE9	NNE8	NNE7	N8	N8	N7	NW4	N8.1	N14
4-Sep	WNW3	WNW2	SSW4	SW5	SW6	SSW5	SW7	WSW7	W8	WNW12	W7	NNW4	SSW1	NW7	NW12	WNW7	NW7	WNW11	W9	WSW8	SW8	WSW8	S4	NW3	W5.2	NW12
5-Sep	NNW10	WNW5	WNW6	W4	WSW6	WSW5	SSW5	S3	SSW4	SW4	SSW9	S11	SSE12	SSE13	SSE13	SSE16	SE13	SE13	SE15	SE16	SSE14	SE15	SE15	SE16	SSE7.1	SE16
6-Sep	SSE12	S11	S13	SSE16	S13	S14	S12	S8	SSW12	SSW12	SW12	SW14	SSW12	S11	S12	S14	SSW10	SSW9	SSW8	S7	SW7	W8	W5	W2	S9.6	SSE16
7-Sep	SW6	SW5	SW5	S7	SSE8	SSE8	SSE8	SE9	SSE7	SSE8	S9	SSE12	S12	S13	SW12	SW14	WSW15	SW10	SSW11	WSW13	SW10	WSW9	W5	W8	SSW7.6	WSW15
8-Sep	WSW5	SW6	SSW8	SE6	SSE7	SSE8	SSE7	SE5	S5	WSW1	SSE6	S11	SSE9	WSW2	SE3	SSE4	NNW2	NNE6	NE11	NE13	N8	NNW11	N12	N8	SE1.0	NE13
9-Sep	NNE2	ENE4	N7	NNE7	NE7	N8	NNW7	NNW10	NNE6	NW6	SW3	W11	WNW14	W15	W14	WSW14	WSW14	WSW19	W19	W16	W15	WSW9	SSW9	SW11	W7.1	WSW19
10-Sep	WSW11	W9	WSW4	SW4	WSW8	WSW11	SW7	SW12	SW12	SSW9	SSW11	SW14	W14	WSW10	WSW10	SW10	W11	NW10	WNW5	NW5	NE6	N7	NNW9	NNW7	WSW6.6	W14
11-Sep	N5	NNW4	NW5	NW5	NW5	WNW2	NW3	NW3	WNW3	W4	W5	NW6	NW8	NNW3	NNW5	NW6	NW7	NNW8	N8	ENE10	ESE6	SE5	SSE8	SE10	NNW2.4	ENE10
12-Sep	SE8	SE6	N2	E2	SE8	SSE12	SE8	E3	NNW5	N4	NE5	ENE5	NE5	E7	ESE10	E7	ESE11	SE8	E3	NE4	NNW7	NNW3	NE3	E7	E3.9	SSE12
13-Sep	UO	W2	NW7	NW6	W4	WNW4	WNW4	WNW6	NW6	NW7	NNW6	NNW10	NNW10	N11	N10	N10	NNW12	NNW12	NNW10	NNW11	NNW10	NW9	NW7	WNW6	NNW7.3	NNW12
14-Sep	W7	W6	W7	W6	WSW8	WSW8	SW7	SW6	SW6	S5	SW6	SW5	SSW9	SSW9	SSW4	W8	W10	NW9	NNW6	NE10	NNE6	NNE5	W2	NW7	W3.9	W10
15-Sep	NNW9	NNW7	NNW9	NNW4	N1	NNW5	W2	WSW2	WSW3	WSW4	N5	NE5	SE2	S3	SSW4	SE5	SSE5	ESE7	E6	ESE6	SE5	SSE2	SSE3	SSW5	ENE0.2	NNW9
16-Sep	S7	SSE10	SE9	SSE9	SSE12	SSE12	SSE11	SSE11	SSE9	S12	S14	SSW13	WSW18	WSW17	SW15	SW13	WSW14	WSW10	SSW8	S7	S9	SSW10	SSW7	SSE5	SSW9.1	WSW18
17-Sep	SSE9	SSE8	SSE9	SE9	SE9	SSE9	SSE7	SSE9	S12	S11	S11	S9	SSE10	S7	S8	SSE8	SSE8	SE9	E10	E12	ESE8	SE9	SE10	SE10	SSE8.4	E12
18-Sep	SSE8	SE10	SE8	SSE7	S7	SSE12	S8	SSE10	SSW9	W6	NW11	WNW13	WNW14	W15	W14	W11	NW13	NW9	NW6	NNW5	N7	WNW4	SW1	W5	W3.8	W15
19-Sep	W4	WSW7	SSW6	SSW9	SSW6	S6	SSE8	SSE5	SSE7	SSE8	S7	SSE7	SSW6	SSW7	SSW6	S6	SSE6	SSE7	NW1	ENE7	ENE9	NNW5	NNW9	NNW8	S3.3	ENE9
20-Sep	NNW4	NNW5	NNW6	NNW7	N7	N8	N6	N8	SW3	NNW2	N9	N6	N17	NNW18	N19	NNW19	NNW17	NNW16	N14	N10	NNW10	NNW10	NNW10	NW7	NNW9.5	N19
21-Sep	NW7	WNW6	WSW4	SW4	SW6	S6	SW5	SW3	SSW2	SE5	S5	SSE9	SSE10	SSE12	SSE12	SSE13	SSE11	SE10	SE12	SE13	SSW5	ESE10	ESE12	SE13	SSE5.9	SE13
22-Sep	SE7	E6	E6	ESE7	SE7	SE7	ESE8	SE6	SSW5	WSW5	WSW6	SSW7	SW8	S3	S3	S5	E3	NE7	NNW12	NNW4	NW5	W4	NNW8	NNW11	SSE0.8	NNW12
23-Sep	NNW9	NW2	NNE4	WNW2	WSW2	WSW6	W2	W5	WNW3	W3	NW3	SSW5	S7	S10	S9	SSE11	SSE12	SSE11	SSE12	SSE11	SE10	SE12	SSE9	SSE8	S4.3	SSE12
24-Sep	SSE7	SSW7	SSE6	SW6	SE5	S7	SE6	SSE6	SW6	SW6	WSW12	W20	W20	W22	WNW19	WNW17	WNW12	NW8	NNW3	ESE5	SE9	SE8	SE10	ESE4	WSW4.4	W22
25-Sep	ESE5	SE7	SE7	SE2	ESE5	SE3	NNW5	NNW8	NNE2	W2	WSW3	WSW5	SSW6	SSE7	SSE8	S7	S8	SSE9	S9	S9	SSW5	SW9	W7	SW7	S3.5	S9
26-Sep	SSW7	WNW8	NW8	NW7	WNW2	WSW7	WSW7	WSW6	W5	WSW8	WSW10	W12	W15	W12	NW8	SE3	S8	W11	WSW8	SW6	SSE5	SSW8	S6	SE6	WSW5.6	W15
27-Sep	SSE5	SSE7	SSE6	SE7	ESE7	SE8	SSE9	S8	SSW6	WSW7	WSW8	SSW11	SSW10	SSW9	SW9	SW6	S6	S10	S11	SSE11	SSE9	S9	S14	SSW14	S7.5	SSW14
28-Sep	SW13	SW19	WSW17	WSW19	WSW18	W17	W13	WSW9	SW8	W11	WSW14	WSW18	W16	WSW12	W13	W8	W3	ESE5	ESE9	ESE9	ESE8	ESE4	SW3	SSE4	WSW8.4	WSW19
29-Sep	E3	E4	NNW3	NNW5	NNW3	NNW5	NNW8	NNW8	NNW9	NNW9	N7	NNE11	NNE10	N16	N16	NNW16	NNW15	NNW11	NW8	NW8	NW8	NW9	NW9	WNW8	NNW7.7	N16
30-Sep	WNW8	NW8	NW9	W10	WNW9	WSW9	SW10	SW11	SW9	S7	SW7	WNW15	WNW20	W20	WNW21	WNW23	WNW17	WNW15	WNW8	SW5	SW8	SW6	SW6	W8	W9.6	WNW23
	SW1.7	SSW2.1	SW1.6	SSW2.1	SSW2.8	SSW3.8	SSW3.2	SSW2.9	SSW3.7	SW3.8	SW4.1	SW4.7	WSW5.3	WSW5.1	WSW4.7	WSW4.4	WSW3.8	W2.6	WSW1.4	SSE0.6	SSW0.6	WSW1.0	WSW0.8	SW1.5	Diurnal Average	
	N14	SW19	WSW17	WSW19	WSW18	W17	W13	SW12	SW12	S12	WSW14	W20	W20	W22	WNW21	WNW23	WNW17	WSW19	W19	NW19	NNW15	NNE24	NNE23	SSE16	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 20m (WS20) - km/h

Barge Landing - September 2024

Number of Exceedences (AAAQO): 1-hr: 0 24-hr: 0
Maximum Value: 9 km/h on Sep 26 18:00

Minimum Value: 1 km/h on Sep 11 07:00

Percentiles: P_1 = 1 P_{10} = 1 Q_1 = 2 Median = 2 Q_3 = 3 P_{90} = 4 P_{99} = 7

Hours in Service:	720
Hours of Data:	719
Hours of Missing Data:	1
Hours of Calibration:	0
Percent Operational Time:	99.9

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

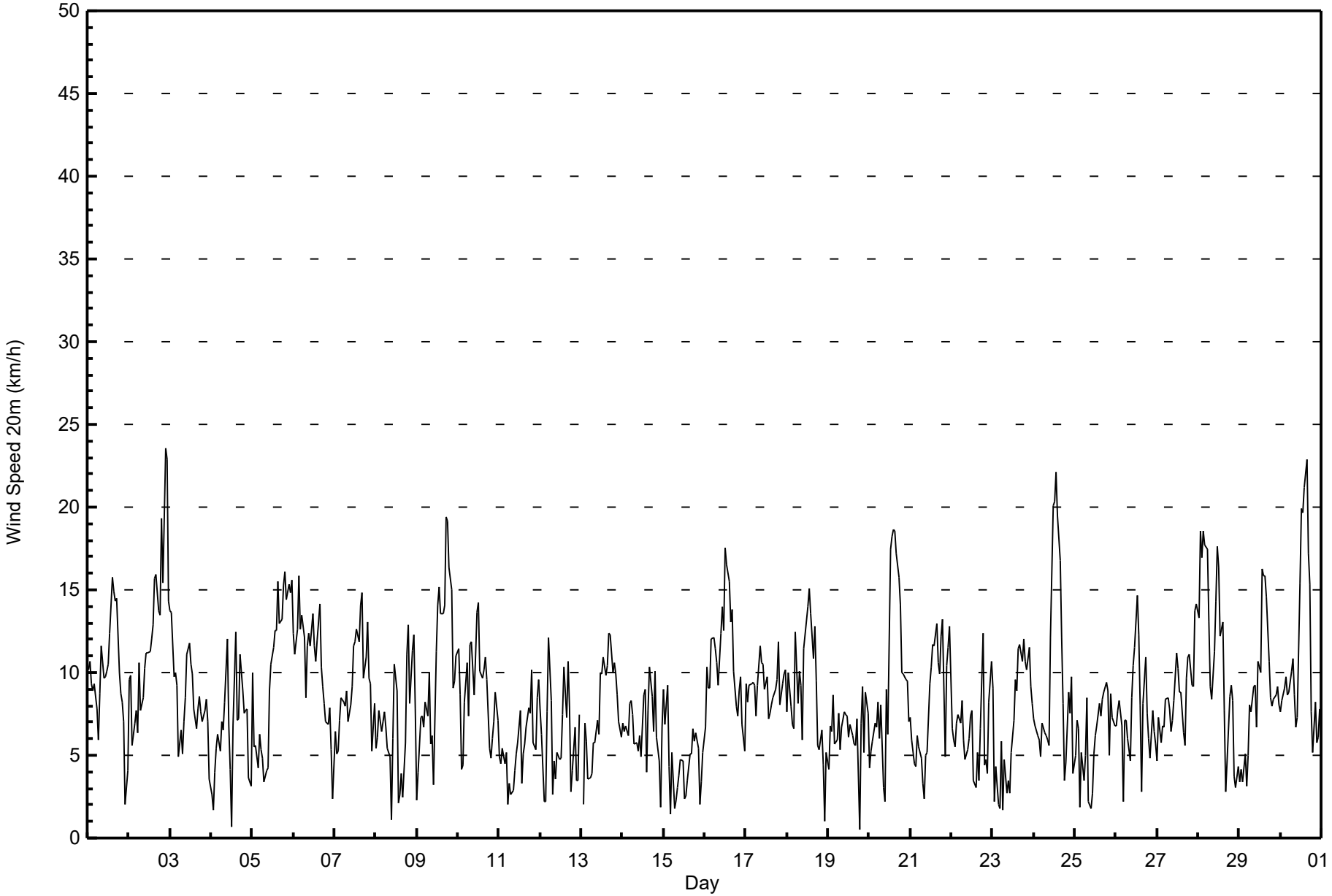
UO - Unstable Operation

Wood Buffalo Environmental Association

Hourly Averages

Wind Speed 20m (WS20) - km/h

Barge Landing - September 2024



Wind Speed Ranges (km/h)	Number of Hours	%	Cumulative %
0 - 5	165	22.95	22.95
6 - 11	411	57.16	80.11
12 - 19	134	18.64	98.75
20 - 28	9	1.25	100.00
29 - 38	0	0.00	100.00
> 38	0	0.00	100.00

Total Number of Valid Hours: 719

Total Number of Hours: 720

Wood Buffalo Environmental Association

Frequency Distribution

Wind Speed 20m (WS20) - km/h

Barge Landing - September 2024

Wind Speed Ranges (km/h)	Wind Direction																
	N	NNE	NE	ENE	E	ESE	SE	SSE	S	SSW	SW	WSW	W	WNW	NW	NNW	**Totals**
0 - 5	5	4	5	2	6	6	11	9	8	15	15	13	18	13	12	23	165
6 - 11	27	13	6	3	7	13	31	69	46	35	34	28	20	14	30	35	411
12 - 19	9	0	1	0	1	1	10	18	13	6	15	21	15	10	3	11	134
20 - 28	0	2	0	0	0	0	0	0	0	0	0	0	4	3	0	0	9
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	19	12	5	14	20	52	96	67	56	64	62	57	40	45	69	719

Total Number of Valid Hours: 719

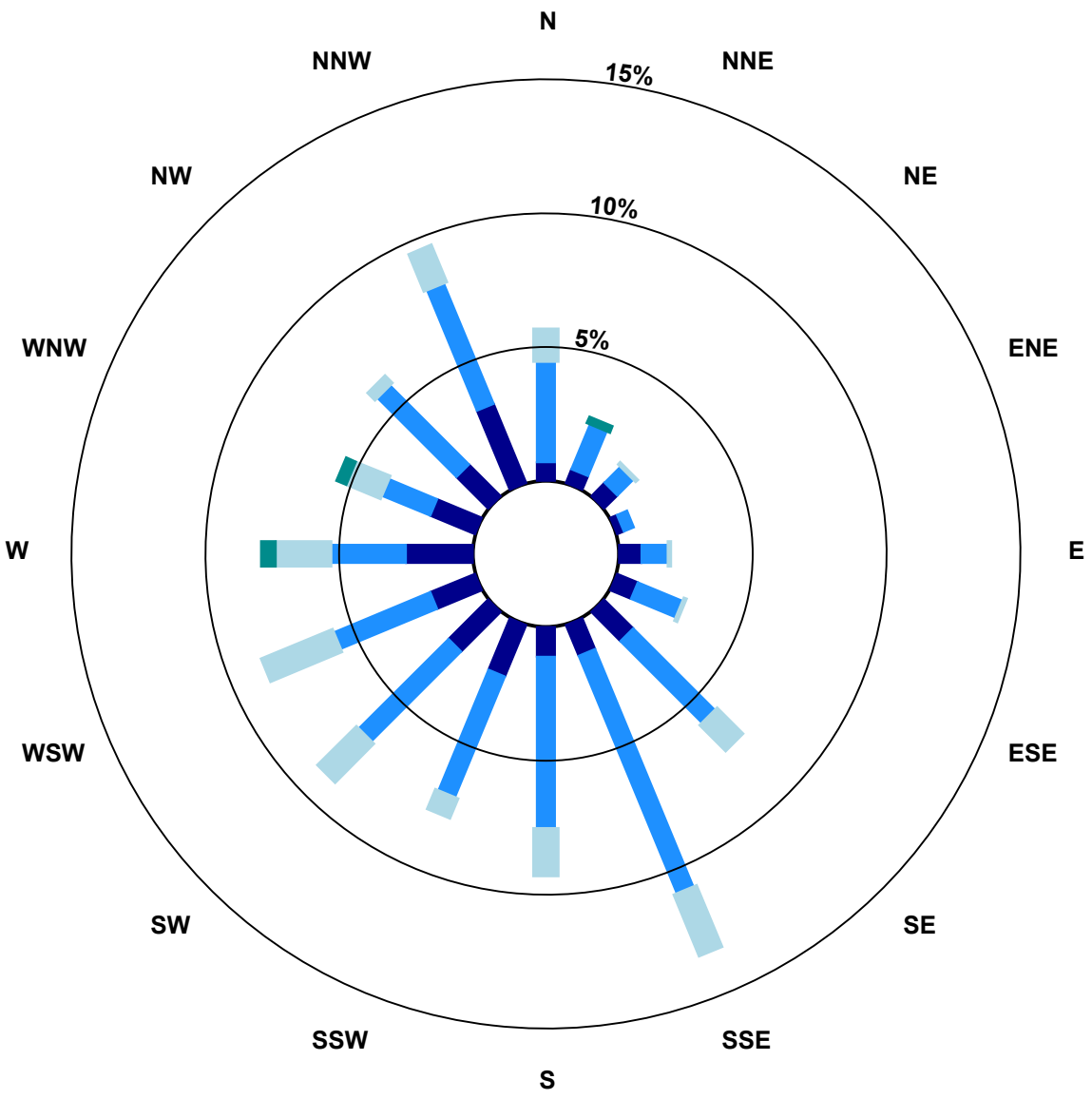
Total Number of Hours: 720

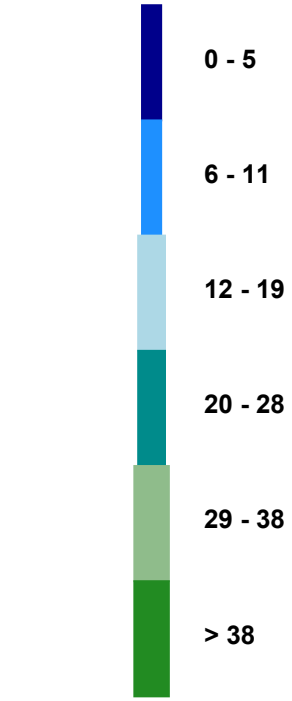
Wood Buffalo Environmental Association

Wind Rose Sep 2024

Wind Speed 20m (WS20) - km/h

Barge Landing





Total Number of Valid Hours: 719

Wood Buffalo Environmental Association

Summary of Hour Averages

Wind Direction 20m (WD20) - deg

Barge Landing - September 2024

Direction of Maximum Speed: 19 deg on Sep 2 22:00
Direction of Maximum Daily Speed Average: 271.2 deg on Sep 30

Direction of Minimum Speed: 319 deg on Sep 19 19:00
Direction of Minimum Daily Speed Average: 0.2 deg on Sep 15

Monthly Average Direction: 228.5 deg

Hours in Service:	720
Hours of Data:	719
Hours of Missing Data:	1
Percent Operational Time:	99.9

Day	Hourly Period Ending At (MST)																								Daily
	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24	Average
1-Sep	154	154	159	161	163	177	171	168	170	163	174	175	204	226	234	247	235	245	223	210	198	172	236	212	195.8
2-Sep	165	167	195	154	160	171	162	169	178	167	170	177	202	207	233	237	241	246	246	306	348	19	15	6	217.3
3-Sep	2	4	353	357	336	347	349	329	1	0	352	358	13	19	30	25	43	35	23	14	355	358	352	325	3.5
4-Sep	303	297	209	235	218	202	228	244	262	283	272	329	195	324	308	290	304	297	278	244	229	254	191	312	268.6
5-Sep	330	299	294	277	251	240	207	188	203	229	192	169	166	162	158	155	133	125	136	138	148	145	146	146	161.0
6-Sep	155	169	176	163	176	172	172	181	194	204	218	216	201	179	177	183	195	198	210	190	218	261	266	266	190.2
7-Sep	223	223	230	174	162	150	161	145	159	166	178	164	172	189	229	234	238	223	204	240	230	237	268	267	203.5
8-Sep	258	214	195	146	161	168	155	140	171	245	159	170	168	258	139	168	330	18	44	37	11	341	351	352	127.1
9-Sep	32	78	5	21	37	3	344	341	14	311	221	259	289	275	261	253	255	243	269	279	272	253	212	235	278.5
10-Sep	251	265	255	232	241	239	217	221	222	213	199	227	263	244	239	228	277	310	283	308	39	351	336	335	252.2
11-Sep	356	327	317	326	319	289	318	312	283	268	281	326	312	336	330	312	324	339	6	66	109	130	156	140	334.3
12-Sep	128	139	8	101	137	157	141	89	337	355	43	77	42	98	110	97	115	124	81	46	339	347	41	98	99.0
13-Sep	UO	266	324	314	270	302	285	302	320	320	329	328	334	353	3	354	348	345	335	341	329	320	317	303	330.5
14-Sep	280	279	273	276	254	240	236	221	215	191	222	230	211	195	204	269	279	306	346	55	33	29	268	307	259.4
15-Sep	328	330	343	347	1	333	263	245	250	252	5	42	137	185	199	142	162	119	97	109	138	151	158	210	73.4
16-Sep	186	155	143	153	154	160	160	152	166	186	189	209	242	238	233	231	243	239	209	190	178	195	205	163	195.3
17-Sep	153	155	150	143	139	148	148	154	172	180	190	169	158	181	170	157	153	131	95	91	111	133	135	138	148.1
18-Sep	151	130	127	165	182	163	169	168	210	276	316	303	291	281	278	276	310	308	314	340	350	296	234	260	262.1
19-Sep	269	238	197	201	209	172	166	164	161	168	173	166	195	200	193	188	157	157	319	67	58	331	331	337	183.0
20-Sep	348	331	333	329	355	11	4	8	226	348	7	354	354	343	350	348	345	345	349	350	342	337	334	320	346.9
21-Sep	311	302	244	233	216	179	229	235	199	144	187	154	168	161	158	151	151	130	131	141	211	119	116	136	159.1
22-Sep	126	93	87	110	128	139	120	145	197	256	252	207	220	184	172	191	100	34	342	339	307	271	334	329	154.7
23-Sep	344	326	16	285	248	252	264	272	296	259	312	206	171	178	170	154	165	168	153	166	146	145	167	157	174.4
24-Sep	167	202	159	216	141	181	144	153	234	222	249	265	267	275	295	302	301	323	338	104	131	129	127	107	245.1
25-Sep	111	126	137	129	120	133	346	342	19	279	244	243	211	159	167	177	191	168	187	173	192	224	264	233	184.3
26-Sep	211	282	313	311	282	252	245	243	259	256	256	272	272	266	309	138	171	281	258	231	160	208	181	144	253.8
27-Sep	151	164	166	134	115	133	153	187	200	240	238	204	201	211	225	220	176	173	181	162	165	190	189	201	184.6
28-Sep	222	234	239	244	258	264	271	256	232	262	251	247	261	245	264	265	261	120	112	113	117	109	228	158	242.1
29-Sep	100	92	347	345	348	332	331	331	333	330	0	17	21	1	355	348	342	335	325	304	304	310	320	297	341.4
30-Sep	283	313	309	277	295	241	234	232	215	187	234	285	290	279	287	290	283	296	285	224	215	219	233	267	271.2
	215.1	209.1	230.7	209.4	194.3	194.4	194.4	204.3	212.1	228.8	230.2	232.6	245.1	244.3	251.6	243.5	250.8	264.9	254.8	148.2	195.7	238.0	247.3	230.9	
	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 20m (WD20) - deg

Barge Landing - September 2024

Number of Exceedences (AAAQO): 1-hr: 0 24-hr: 0
Maximum Value: 104 deg on Sep 4 13:00

Minimum Value: 2 deg on Sep 17 20:00

Percentiles: P_1 = 6 P_{10} = 10 Q_1 = 14 Median = 20 Q_3 = 29 P_{90} = 47 P_{99} = 85

Hours in Service:	720
Hours of Data:	719
Hours of Missing Data:	1
Hours of Calibration:	0
Percent Operational Time:	99.9

Day	Hourly Period Ending At (MST)																								Daily
	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24	Maximum
1-Sep	10	8	11	8	9	13	29	18	14	21	25	24	30	29	21	22	19	16	14	9	17	7	64	33	64
2-Sep	9	8	16	10	10	9	10	16	20	19	20	25	26	32	20	16	19	14	13	19	33	16	16	16	33
3-Sep	17	18	17	16	14	31	16	17	22	20	23	21	20	21	26	23	23	23	15	15	13	14	16	11	31
4-Sep	43	31	68	10	13	28	19	17	22	21	34	63	104	67	23	29	18	20	17	12	7	20	43	73	104
5-Sep	11	30	14	32	14	14	21	33	35	52	28	27	27	22	23	20	12	9	8	9	9	8	9	9	52
6-Sep	9	13	13	12	13	12	14	23	22	22	22	20	23	19	19	22	19	18	17	27	23	21	48	81	81
7-Sep	11	19	14	21	9	10	14	12	24	20	22	19	22	22	21	21	15	19	19	14	13	23	56	29	56
8-Sep	66	22	20	9	13	10	14	18	32	87	42	25	30	60	80	46	85	40	14	13	32	9	13	15	87
9-Sep	71	74	45	41	27	18	22	24	43	49	69	31	20	20	20	19	21	15	23	17	17	23	19	18	74
10-Sep	17	35	68	53	18	22	25	15	17	30	25	25	29	28	15	19	26	16	28	35	40	32	11	8	68
11-Sep	19	11	14	26	9	63	18	37	38	33	33	39	23	79	64	38	20	10	23	13	23	18	8	9	79
12-Sep	6	22	57	35	8	8	10	57	26	35	49	34	33	24	14	18	12	13	31	13	8	56	31	28	57
13-Sep	UO	67	11	15	41	25	28	11	20	17	18	15	17	20	18	18	17	15	12	13	13	11	29	15	67
14-Sep	18	13	18	20	9	10	15	18	19	29	31	54	33	31	32	34	23	17	21	15	27	37	73	25	73
15-Sep	11	14	6	40	60	13	55	34	45	30	62	41	88	79	71	51	39	13	19	10	12	84	55	15	88
16-Sep	18	11	6	9	7	7	8	9	19	17	17	24	20	20	20	15	16	17	18	14	16	17	16	37	37
17-Sep	15	16	8	7	9	7	15	11	15	26	27	27	26	39	41	30	27	16	6	2	24	5	5	7	41
18-Sep	13	6	16	13	23	16	13	23	20	46	21	23	18	24	28	28	18	15	28	23	24	22	94	13	94
19-Sep	21	9	14	22	20	27	12	17	17	23	29	31	47	44	50	25	22	9	92	19	15	39	10	13	92
20-Sep	36	24	22	19	27	21	28	21	77	75	34	27	19	22	22	19	20	16	13	10	11	8	8	12	77
21-Sep	10	15	31	10	17	19	31	26	34	28	41	25	26	22	24	16	13	8	9	17	91	11	9	9	91
22-Sep	19	17	9	9	11	8	6	21	30	34	30	34	30	67	71	50	51	15	14	33	38	60	7	7	71
23-Sep	10	56	33	42	56	12	50	25	29	40	56	41	36	21	24	14	18	16	12	16	10	12	11	14	56
24-Sep	14	17	18	39	35	21	16	35	34	37	22	19	19	20	20	18	21	14	34	36	14	7	8	28	39
25-Sep	16	14	30	67	13	68	60	26	90	85	59	17	24	14	20	31	20	15	15	8	20	18	26	49	90
26-Sep	26	32	13	26	76	24	24	45	79	18	15	21	20	22	33	75	14	58	21	44	29	10	16	20	79
27-Sep	13	23	27	16	20	16	15	16	24	20	20	28	29	40	27	25	16	17	16	9	25	33	13	15	40
28-Sep	17	16	15	16	15	16	16	15	18	18	16	16	17	23	25	29	58	35	7	7	8	60	51	41	60
29-Sep	34	51	42	30	51	21	12	11	11	16	28	26	34	20	18	17	15	13	12	15	13	16	9	17	51
30-Sep	26	15	16	22	23	15	7	10	22	23	23	24	20	21	24	19	19	17	14	27	8	15	21	27	27
	71	74	68	67	76	68	60	57	90	87	69	63	104	79	80	75	85	58	92	44	91	84	94	81	
	Diurnal Maximum																								

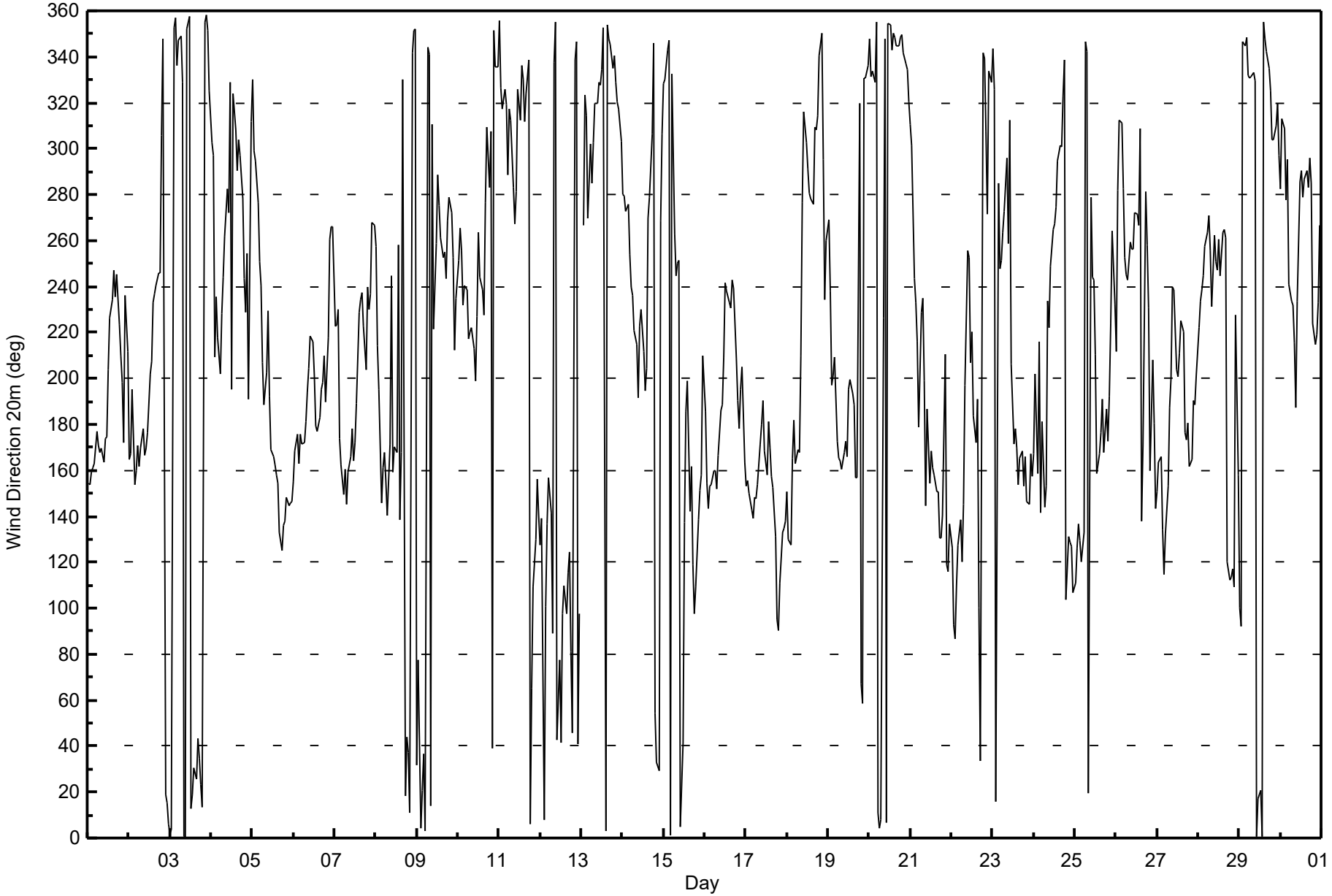
UO - Unstable Operation

Wood Buffalo Environmental Association

Hourly Averages

Wind Direction 20m (WD20) - deg

Barge Landing - September 2024



WOOD BUFFALO ENVIRONMENTAL ASSOCIATION

CONTINUOUS AMBIENT AIR QUALITY
MONITORING PROGRAM
MONTHLY REPORT

AMS11
LOWER CAMP
SEPTEMBER 2024

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

October 31, 2024

WOOD BUFFALO ENVIRONMENTAL ASSOCIATION - LOWER CAMP (AMS11)
SEPTEMBER 2024

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	685	35	35	100	97.7	0	11.4	0
H2S (ppb) Average	678	35	42	99.03	9.3	0	2.3	0
THC (ppm) Average	686	34	34	100	3	-	2.4	-
CH4(ppm) Average	686	34	34	100	2.9	-	2.4	-
NMHC(ppm) Average	686	34	34	100	0.189	-	0.084	-
Temperature (C) Average	720	0	0	100	31.6	-	21.4	-
Relative Humidity (%) Average	687	0	33	95.42	100	-	92.4	-
Barometric Pressure (inHg) Average	720	0	0	100	29.5	-	29.4	-
Wind Speed 10 m (km/h) Average	714	2	6	99.44	27	-	13	-
Wind Direction 10 m (deg) Average	714	2	6	99.44	-	-	-	-

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

WOOD BUFFALO ENVIRONMENTAL ASSOCIATION - LOWER CAMP (AMS11)
SEPTEMBER 2024

MONTHLY SUMMARY FOR AIR QUALITY/ METEOROLOGICAL MONITORING MEASUREMENTS

					Percentile						
Parameter	Number	Mean	StnDev	Total	Min	P10	Q1	Median	Q3	P90	Max
SO2 (ppb) Average	685	2.8	7.7	-	0	0	0.2	0.4	1.7	6.8	97.7
H2S (ppb) Average	678	0.9	1.1	-	0	0.1	0.2	0.5	1.2	2.1	9.3
THC (ppm) Average	686	2.08	0.2	-	1.8	1.9	1.9	2	2.2	2.4	3
CH4(ppm) Average	686	2.05	0.2	-	1.8	1.9	1.9	2	2.1	2.3	2.9
NMHC(ppm) Average	686	0.029	0.029	-	0	0	0	0	0	0.1	0.189
Temperature 2 m (C) Average	720	13.76	5.3	-	3	7.3	10.2	13.2	16.6	20.8	31.6
Relative Humidity (%) Average	687	73.76	18.8	-	24.1	45.9	59.8	76.3	89.8	97.3	100
Barometric Pressure (inHg) Average	720	28.96	0.2	-	28.5	28.8	28.8	28.9	29.1	29.2	29.5
Wind Speed 10 m (km/h) Average	714	7.3	5	-	0	2	4	7	10	14	27
Wind Direction 10 m (deg) Average	714	-	-	-	-	-	-	-	-	-	-

WOOD BUFFALO ENVIRONMENTAL ASSOCIATION - LOWER CAMP (AMS11)
SEPTEMBER 2024

OPERATIONAL NOTES

Parameter	Period Start	Period End	Duration (Hours)	Notes
H2S	20 Sep 2024 14:00	20 Sep 2024 15:00	2	Maintenance - sample manifold cleaned
H2S	25 Sep 2024 10:00	25 Sep 2024 14:00	5	Unstable Operation - flatline in analyzer output signal
Relative Humidity	11 Sep 2024 08:00	11 Sep 2024 10:00	3	Sensor operated out of range
Relative Humidity	13 Sep 2024 00:00	13 Sep 2024 12:00	13	Sensor operated out of range
Relative Humidity	15 Sep 2024 08:00	15 Sep 2024 10:00	3	Sensor operated out of range
Relative Humidity	19 Sep 2024 07:00	19 Sep 2024 07:00	1	Sensor operated out of range
Relative Humidity	23 Sep 2024 07:00	23 Sep 2024 11:00	5	Sensor operated out of range
Relative Humidity	24 Sep 2024 01:00	24 Sep 2024 08:00	8	Sensor operated out of range
Wind Speed, Wind Direction	04 Sep 2024 02:00	04 Sep 2024 02:00	1	Flat line in sensor output signal
Wind Speed, Wind Direction	14 Sep 2024 19:00	14 Sep 2024 19:00	1	Flat line in sensor output signal
Wind Speed, Wind Direction	19 Sep 2024 05:00	19 Sep 2024 06:00	2	Flat line in sensor output signal

Wood Buffalo Environmental Association

Summary of Hour Averages

Sulphur Dioxide (SO_2) - ppb

Lower Camp - September 2024

Number of Exceedences (AAAQO): 1-hr: 0 24-hr: 0
Maximum Value: 97.7 ppb on Sep 16 20:00 Maximum Daily Average: 11.4 ppb on Sep 16

Minimum Value: 0.0 ppb on Sep 3 05:00 Minimum Daily Average: 0.0 ppb on Sep 3
Maximum Diurnal Average: 8.2 ppb at hour 20 Minimum Diurnal Average: 0.5 ppb at hour 5
Monthly Average: 2.80 ppb Percentiles: P_1 = 0.0 P_{10} = 0.0 Q_1 = 0.2 Median = 0.4 Q_3 = 1.7 P_{90} = 6.8 P_{99} = 39.4

Hours in Service:	720
Hours of Data:	685
Hours of Missing Data:	35
Hours of Calibration:	35
Percent Operational Time:	100.0

Day	Hourly Period Ending At (MST)																								Daily	Daily
	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24	Average	Maximum
1-Sep	2.1	5.8	5.4	1.5	1.4	Z	1.6	7.4	4.0	1.1	1.0	1.2	4.3	0.7	0.4	0.2	0.2	0.1	0.3	26.3	3.1	3.9	2.5	1.1	3.3	26.3
2-Sep	Z	0.5	0.3	0.2	0.2	0.1	0.5	0.5	0.4	0.3	0.3	4.6	3.4	2.9	0.3	0.1	0.1	0.2	0.6	0.5	0.3	0.2	0.1	0.2	0.7	4.6
3-Sep	0.1	Z	0.1	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	0.0	0.0	0.0	0.0	0.1
4-Sep	0.0	0.1	Z	5.1	6.3	39.4	4.7	1.7	0.8	1.0	6.2	5.6	3.6	2.5	0.4	0.2	0.4	0.2	0.8	0.8	2.5	0.7	1.2	0.5	3.7	39.4
5-Sep	0.5	0.2	0.2	Z	0.2	0.1	0.2	0.2	2.1	1.0	1.6	1.9	1.8	2.2	1.2	1.3	1.3	1.9	18.2	15.6	21.1	6.6	1.6	2.4	3.6	21.1
6-Sep	2.1	1.4	1.1	0.9	Z	1.1	0.7	0.7	1.5	1.1	0.9	2.7	9.8	0.7	0.6	0.4	0.7	0.8	2.7	7.5	15.6	4.7	5.0	4.8	2.9	15.6
7-Sep	2.5	0.8	0.4	0.2	0.1	Z	0.1	0.1	0.3	0.3	0.3	0.3	0.4	2.4	0.2	0.1	0.0	0.3	0.6	5.7	1.5	1.7	2.2	13.0	1.5	13.0
8-Sep	Z	13.0	1.8	0.9	0.6	0.4	0.3	0.6	0.6	0.6	0.6	0.5	1.3	1.1	0.7	0.7	0.8	0.8	0.6	0.5	0.4	0.3	0.2	0.2	1.2	13.0
9-Sep	0.2	Z	0.3	0.2	0.1	0.1	0.1	0.2	0.2	0.2	0.3	0.5	2.1	19.5	1.2	0.5	0.3	1.3	1.6	14.7	9.3	1.6	0.5	0.4	2.4	19.5
10-Sep	0.3	0.2	Z	0.2	0.1	0.1	0.1	0.2	0.2	2.7	1.1	0.3	0.6	0.3	0.1	0.1	1.2	0.8	0.2	0.3	0.1	0.1	0.1	0.1	0.4	2.7
11-Sep	0.1	0.1	0.0	Z	0.1	0.0	0.0	0.1	0.1	24.3	40.3	19.5	4.2	1.1	0.5	0.9	1.7	1.7	1.3	1.1	1.0	0.8	0.6	0.6	4.4	40.3
12-Sep	0.5	0.5	0.5	0.4	Z	0.8	0.4	0.3	0.3	0.2	0.3	0.3	0.3	0.2	0.3	0.1	0.3	0.2	0.1	0.2	0.1	0.1	0.2	0.1	0.3	0.8
13-Sep	0.1	0.1	0.1	0.0	0.1	Z	0.2	0.2	0.3	0.1	0.2	0.2	0.1	0.1	0.0	0.1	0.1	0.1	0.0	0.0	0.1	0.1	0.0	0.1	0.1	0.3
14-Sep	Z	0.1	0.3	0.2	0.2	0.1	0.1	0.4	0.5	3.6	3.8	15.3	4.1	0.4	0.3	1.7	0.3	0.2	0.2	0.1	0.1	0.0	0.4	0.1	1.4	15.3
15-Sep	0.0	Z	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.4	1.5	12.0	15.7	17.7	12.9	11.3	5.1	2.3	1.1	0.5	0.4	3.5	17.7
16-Sep	0.2	0.9	Z	1.4	0.5	0.3	0.3	0.4	0.6	18.0	43.2	16.7	0.8	0.3	0.3	0.2	0.1	0.5	17.0	97.7	39.5	7.9	2.7	12.6	11.4	97.7
17-Sep	6.5	1.8	1.2	Z	0.5	0.3	0.2	0.4	0.8	0.9	0.5	0.4	0.3	0.6	1.6	1.3	1.6	0.7	1.4	1.4	0.5	0.2	0.2	0.1	1.0	6.5
18-Sep	0.1	0.2	0.1	0.0	Z	0.3	0.3	1.3	1.4	1.6	2.3	3.8	0.8	3.8	19.1	6.8	7.0	0.4	1.0	0.6	0.3	0.2	0.1	0.1	2.2	19.1
19-Sep	0.1	0.1	0.2	0.3	0.3	Z	0.3	0.1	0.1	0.2	1.0	7.5	13.0	10.7	8.0	4.5	3.2	63.2	3.8	1.7	1.3	0.9	0.6	0.4	5.3	63.2
20-Sep	Z	0.3	0.3	0.3	0.3	0.3	0.2	0.2	0.3	0.2	0.3	C	C	C	C	C	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.2	0.3
21-Sep	0.0	Z	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.2	0.3	0.1	0.3	1.0	8.3	0.4	1.2	9.0	6.7	22.0	0.4	0.1	0.0	2.2	22.0
22-Sep	0.2	0.3	Z	0.4	0.2	0.4	0.2	0.1	0.6	2.1	2.4	2.5	2.3	5.1	9.8	13.9	2.3	4.6	7.0	4.8	54.9	2.2	1.7	0.8	5.2	54.9
23-Sep	0.4	0.3	0.2	Z	0.1	0.1	0.1	0.1	0.1	15.2	10.3	19.2	10.8	2.7	2.2	0.9	17.6	2.1	0.6	1.9	0.4	0.3	0.2	0.1	3.7	19.2
24-Sep	0.1	0.1	0.1	0.0	Z	0.2	0.1	0.1	0.9	0.4	2.3	0.2	0.2	6.6	14.6	4.2	0.7	0.3	0.6	3.9	3.1	0.6	0.3	0.2	1.7	14.6
25-Sep	0.2	0.0	0.1	0.0	0.0	Z	0.1	0.1	0.0	0.1	0.8	4.2	30.3	1.6	2.6	0.6	12.3	4.9	78.4	35.5	22.3	5.3	1.5	2.9	8.9	78.4
26-Sep	Z	1.2	0.7	0.3	0.3	0.2	0.8	0.4	0.4	0.3	0.3	3.6	7.0	5.0	3.7	1.1	1.0	2.6	0.4	11.4	1.7	1.5	0.7	0.5	2.0	11.4
27-Sep	0.6	Z	0.3	0.6	0.3	1.7	3.8	4.3	6.0	6.0	6.4	5.1	6.8	3.0	2.7	19.6	8.5	3.2	3.0	0.9	20.8	4.0	22.1	29.7	6.9	29.7
28-Sep	2.1	0.7	Z	0.2	0.1	0.1	0.3	0.1	0.1	0.0	0.1	0.0	0.0	0.0	0.0	0.3	0.0	0.2	1.5	1.2	1.4	1.6	2.7	1.1	0.6	2.7
29-Sep	0.5	0.4	0.3	Z	0.2	0.2	0.1	0.1	0.3	0.4	0.7	0.4	0.2	0.1	0.4	0.4	0.5	0.2	0.1	0.1	0.2	0.1	0.1	0.1	0.3	0.7
30-Sep	0.2	0.2	0.1	0.8	Z	0.4	1.2	0.5	0.4	0.3	1.8	8.5	13.7	8.1	5.0	3.6	11.7	0.3	0.2	0.3	0.2	0.6	1.3	0.6	2.6	13.7
	0.8	1.2	0.6	0.6	0.5	1.9	0.6	0.7	0.8	2.7	4.3	4.3	4.2	2.9	3.1	3.0	3.1	3.5	5.4	8.2	7.5	1.6	1.7	2.4	Diurnal Average	
	6.5	13.0	5.4	5.1	6.3	39.4	4.7	7.4	6.0	24.3	43.2	19.5	30.3	19.5	19.1	19.6	17.7	63.2	78.4	97.7	54.9	7.9	22.1	29.7	Diurnal Maximum	

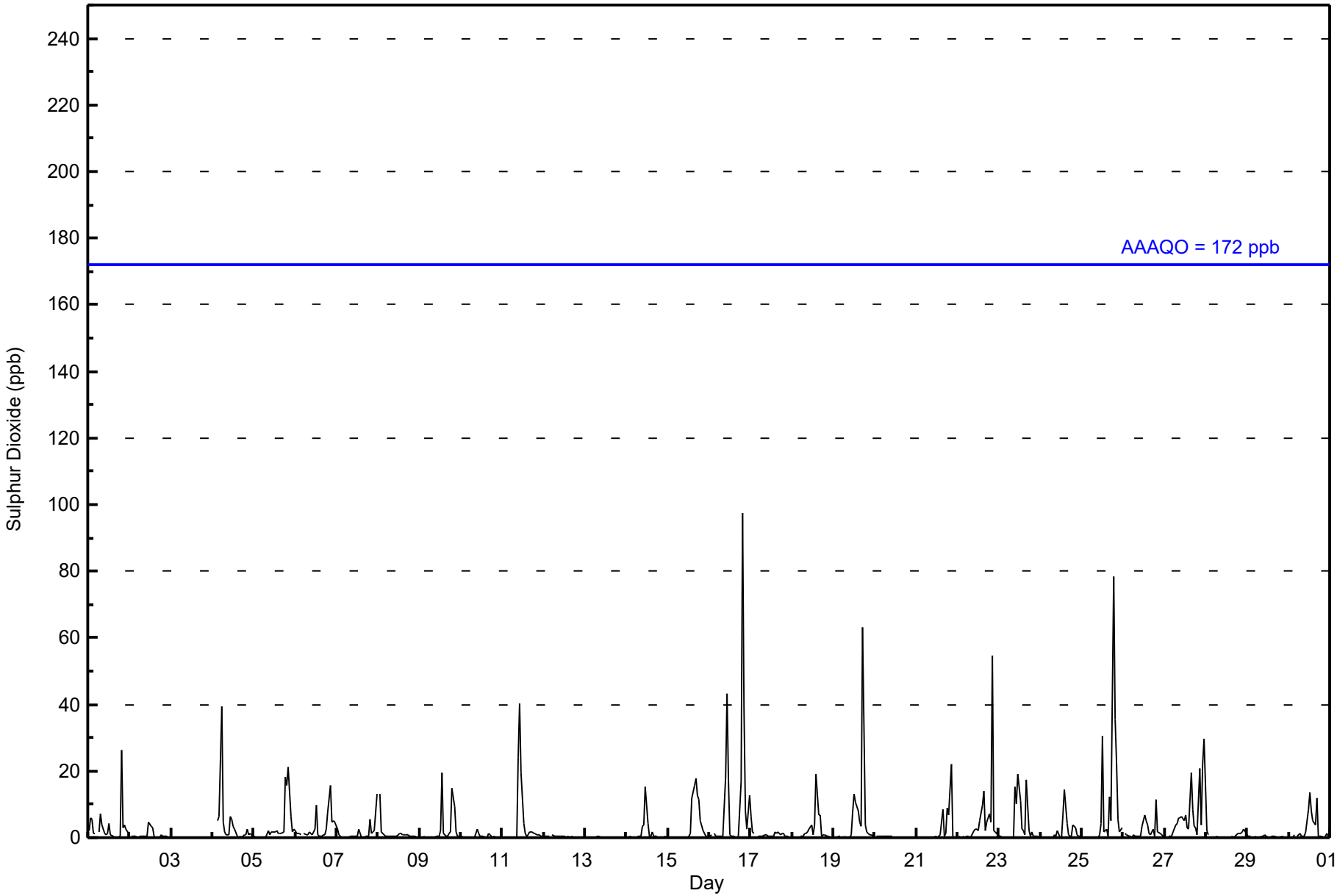
Z - zerospan C - Calibration
Alberta Ambient Air Quality Objectives (AAAQO): 1-hr 172 ppb 24-hr 48 ppb

Wood Buffalo Environmental Association

Hourly Averages

Sulphur Dioxide (SO_2) - ppb

Lower Camp - September 2024



Wood Buffalo Environmental Association

Cumulative Frequency Distribution

Sulphur Dioxide (SO_2) - ppb

Lower Camp - September 2024

Concentration Ranges (ppb)	Number of Hours	%	Cumulative %
0 - 10	635	92.70	92.70
11 - 20	32	4.67	97.37
21 - 60	15	2.19	99.56
61 - 110	3	0.44	100.00
111 - 172	0	0.00	100.00
> 172	0	0.00	100.00

Total Number of Valid Hours: 685

Total Number of Hours: 720

Wood Buffalo Environmental Association

Frequency Distribution

Sulphur Dioxide (SO_2) - ppb

Lower Camp - September 2024

Concentration Ranges (ppb)	Wind Direction																
	N	NNE	NE	ENE	E	ESE	SE	SSE	S	SSW	SW	WSW	W	WNW	NW	NNW	**Totals**
0 - 10	15	11	12	15	24	128	48	18	6	5	28	74	94	78	41	33	630
11 - 20	1	0	0	1	2	7	5	2	3	1	0	0	6	2	0	2	32
21 - 60	0	0	0	0	0	0	3	1	4	3	2	0	0	0	1	1	15
61 - 110	0	0	0	0	0	0	0	0	2	1	0	0	0	0	0	0	3
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	16	11	12	16	26	135	56	21	15	10	30	74	100	80	42	36	680

Total Number of Valid Hours: 680

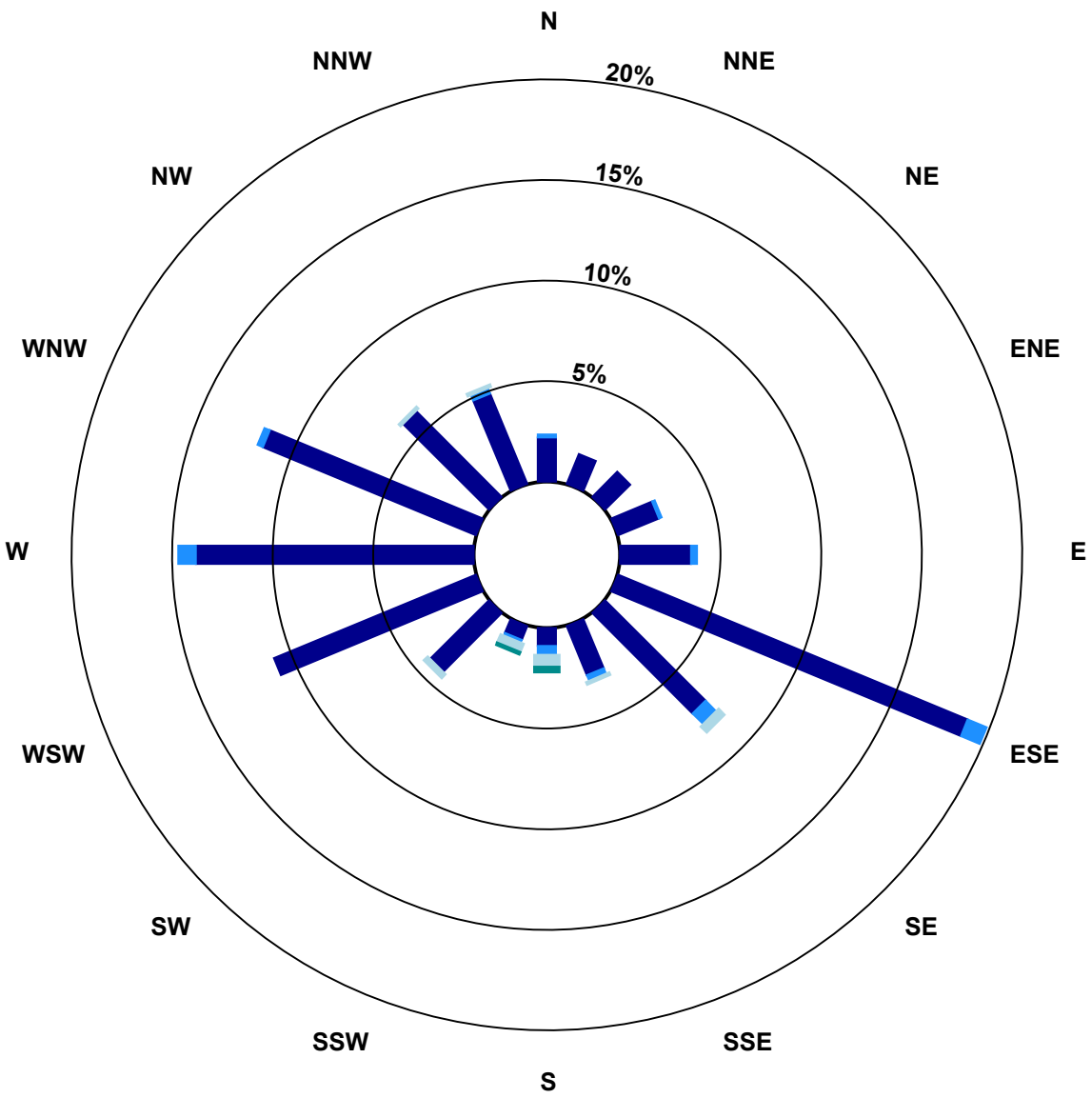
Total Number of Hours: 720

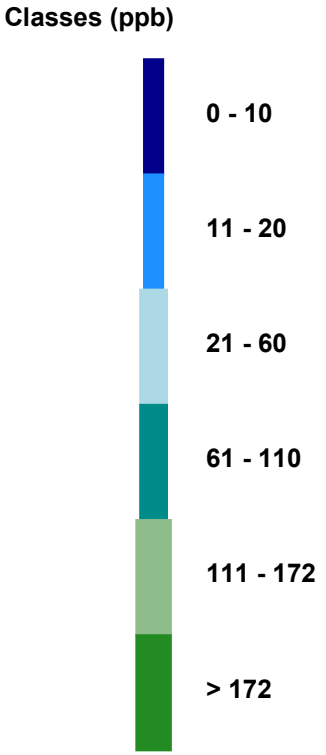
Wood Buffalo Environmental Association

Wind Rose Sep 2024

Sulphur Dioxide (SO_2) - ppb

Lower Camp





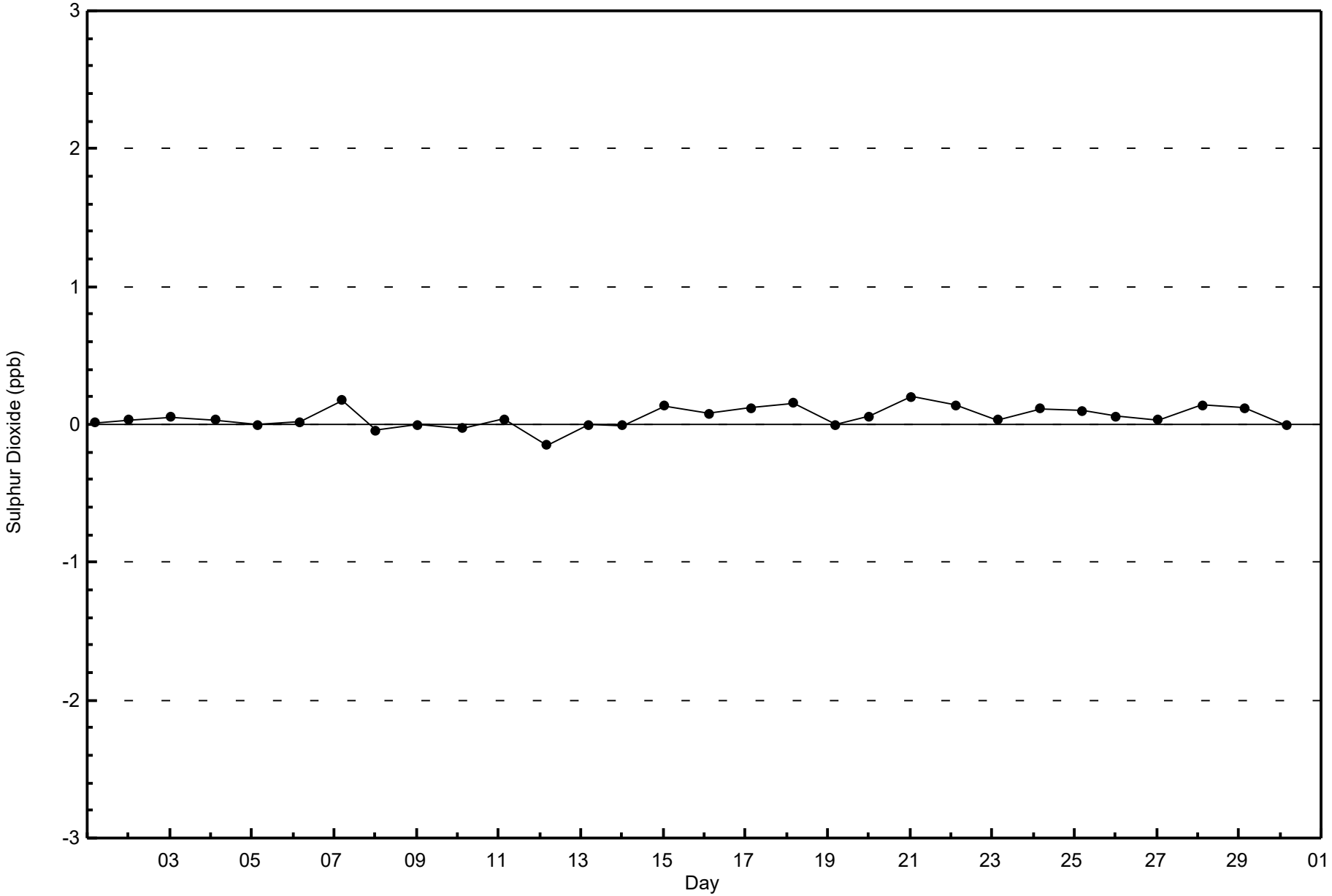
Total Number of Valid Hours: 680

Wood Buffalo Environmental Association

Zero Responses

Sulphur Dioxide (SO_2) - ppb

Lower Camp - September 2024

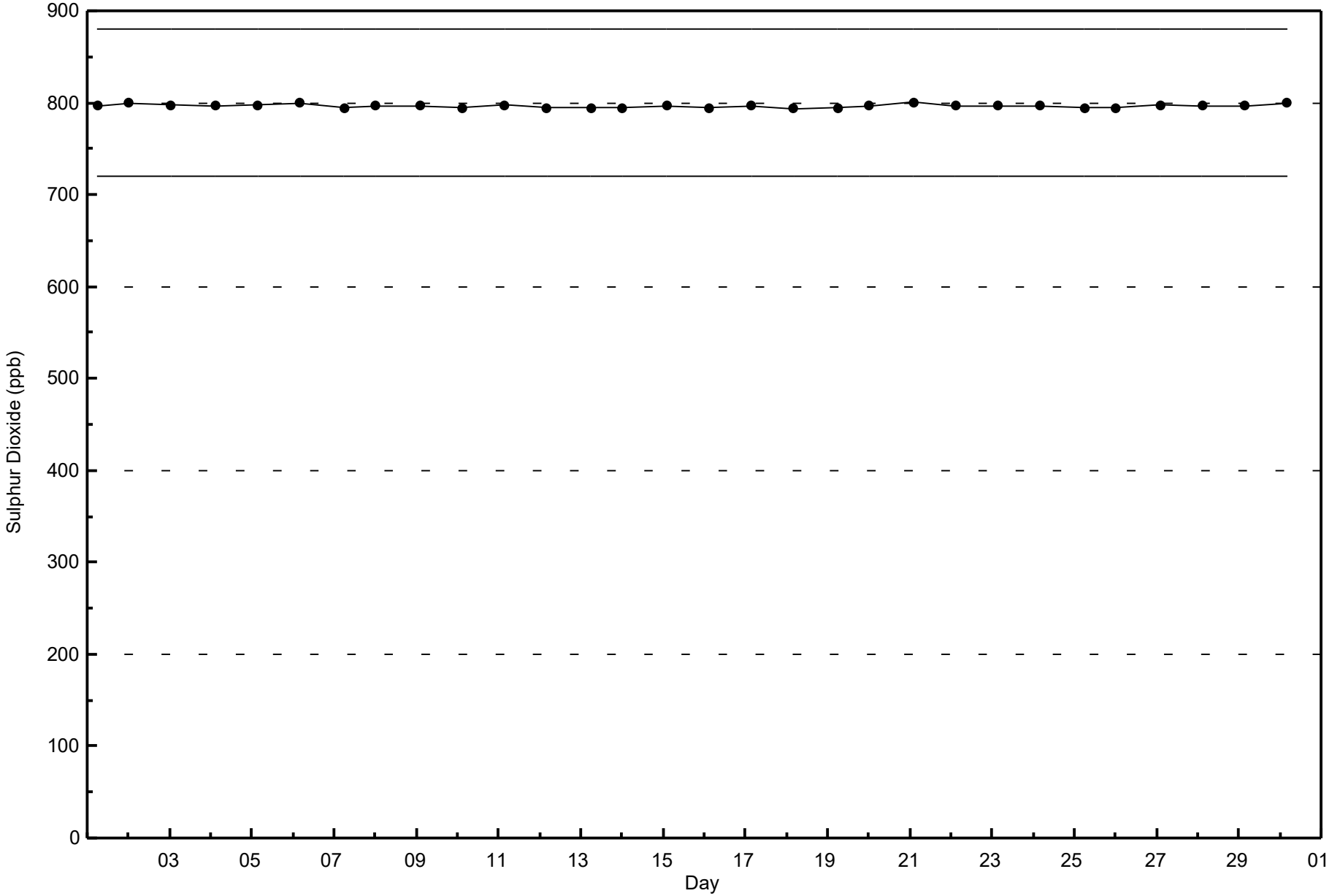


Wood Buffalo Environmental Association

Span Responses

Sulphur Dioxide (SO_2) - ppb

Lower Camp - September 2024



Wood Buffalo Environmental Association

Summary of Hour Averages

Hydrogen Sulphide (H_2S) - ppb

Lower Camp - September 2024

Number of Exceedences (AAAQO): 1-hr: 0 24-hr: 0
Maximum Value: 9.3 ppb on Sep 25 19:00 Maximum Daily Average: 2.3 ppb on Sep 25

Minimum Value: 0.0 ppb on Sep 1 15:00 Minimum Daily Average: 0.2 ppb on Sep 30
Maximum Diurnal Average: 1.7 ppb at hour 21 Minimum Diurnal Average: 0.3 ppb at hour 15
Monthly Average: 0.90 ppb Percentiles: P_1 = 0.0 P_{10} = 0.1 Q_1 = 0.2 Median = 0.5 Q_3 = 1.2 P_{90} = 2.1 P_{99} = 5.7

Hours in Service:	720
Hours of Data:	678
Hours of Missing Data:	42
Hours of Calibration:	35
Percent Operational Time:	99.0

Day	Hourly Period Ending At (MST)																								Daily	Daily
	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24	Average	Maximum
1-Sep	Z	3.7	2.2	1.1	1.0	0.9	0.7	0.9	0.3	0.2	0.3	0.5	0.4	0.1	0.0	0.0	0.0	0.0	0.0	2.7	0.8	1.9	1.8	1.8	0.9	3.7
2-Sep	1.6	Z	1.5	2.0	1.0	1.0	1.3	1.1	0.8	0.7	1.2	1.2	0.6	0.4	0.0	0.0	0.0	0.0	0.0	0.2	0.5	0.2	0.2	0.1	0.7	2.0
3-Sep	0.2	0.1	Z	0.2	0.2	0.2	0.4	0.2	0.2	0.2	0.2	0.2	0.1	0.1	0.1	0.1	0.1	0.1	0.2	0.3	0.8	0.5	0.7	0.6	0.3	0.8
4-Sep	0.4	0.2	0.2	Z	2.1	4.4	0.3	0.3	0.2	0.2	0.3	0.2	0.2	0.2	0.1	0.1	0.1	0.1	0.2	0.3	0.2	0.2	0.2	0.2	0.5	4.4
5-Sep	0.6	0.3	0.3	0.4	Z	0.5	0.6	1.0	2.3	0.9	0.6	0.4	0.3	0.2	0.2	0.1	0.3	0.5	2.8	4.0	2.6	1.9	1.6	1.9	1.1	4.0
6-Sep	1.9	0.9	1.2	1.2	1.3	Z	1.5	1.1	1.1	0.2	0.4	0.5	0.8	0.2	0.3	0.4	1.1	0.8	1.5	2.8	3.7	2.2	1.8	2.4	1.3	3.7
7-Sep	Z	1.8	2.5	1.7	1.6	1.7	1.6	1.1	0.5	0.5	0.6	0.3	0.2	0.3	0.0	0.0	0.0	0.0	0.0	0.5	0.5	1.6	1.4	2.7	0.9	2.7
8-Sep	5.1	Z	1.4	1.9	1.8	1.4	1.6	2.4	1.7	3.9	2.5	0.7	0.6	0.4	0.3	1.4	0.9	0.7	0.7	0.6	0.4	0.6	0.5	0.7	1.4	5.1
9-Sep	0.5	0.5	Z	0.4	0.3	0.5	0.3	0.3	0.4	0.3	0.2	0.2	0.2	0.5	0.1	0.1	0.0	0.1	0.2	0.5	0.3	0.1	0.2	0.3	0.3	0.5
10-Sep	0.3	0.2	0.3	Z	0.2	0.1	0.1	0.2	0.2	0.2	0.1	0.1	0.1	0.1	0.2	0.2	0.2	0.2	0.3	0.2	1.3	0.4	0.7	0.3	0.3	1.3
11-Sep	0.5	0.4	0.7	0.3	Z	0.4	0.4	0.9	1.5	6.4	6.5	3.3	1.7	0.9	0.5	0.5	0.1	0.1	0.5	0.5	0.8	0.4	1.8	1.5	1.3	6.5
12-Sep	3.9	2.6	1.0	1.2	2.3	Z	1.9	3.3	0.3	0.6	0.2	0.1	0.1	0.2	0.2	0.2	0.2	0.2	0.3	0.3	0.2	0.3	0.6	0.5	0.9	3.9
13-Sep	Z	0.4	0.4	0.2	0.5	0.5	0.6	1.0	1.0	0.9	1.0	1.0	1.0	0.6	0.4	0.3	0.4	0.3	0.2	0.7	0.8	0.4	0.2	0.2	0.6	1.0
14-Sep	0.5	Z	0.4	0.3	0.3	0.4	0.1	0.3	0.2	0.3	0.3	0.3	0.1	0.1	0.1	0.2	0.1	0.4	0.3	0.5	0.3	0.5	1.5	0.6	0.4	1.5
15-Sep	0.5	0.4	Z	0.5	0.4	0.3	0.4	0.6	0.6	0.4	0.2	0.1	0.1	0.1	0.3	0.3	1.2	3.5	2.6	2.3	2.2	2.3	2.2	1.3	1.0	3.5
16-Sep	0.9	0.9	1.0	Z	0.9	0.8	0.7	0.6	0.5	2.8	4.9	1.6	0.1	0.0	0.0	0.0	0.0	0.0	1.4	7.6	2.8	0.3	0.5	2.7	1.4	7.6
17-Sep	2.1	1.5	1.6	1.3	Z	1.2	1.5	1.6	0.9	0.5	0.6	0.6	0.3	0.3	0.7	0.8	1.2	1.2	1.7	1.7	1.6	1.4	2.1	1.9	1.2	2.1
18-Sep	2.1	2.0	1.5	1.3	1.3	Z	1.5	1.5	1.1	0.3	1.0	0.3	0.3	0.2	0.2	0.2	0.2	0.2	0.2	0.7	1.2	0.4	0.7	0.5	0.8	2.1
19-Sep	Z	0.3	0.9	1.9	2.7	2.5	2.5	1.9	1.3	1.9	0.7	1.5	1.8	1.2	0.3	0.2	0.3	5.5	1.1	2.3	0.5	0.7	0.9	1.0	1.5	5.5
20-Sep	0.9	Z	0.6	0.5	0.5	0.8	0.3	0.2	0.3	0.3	0.3	0.3	0.3	M	M	0.1	0.1	0.2	0.3	0.1	0.3	0.5	0.4	0.4	0.4	0.9
21-Sep	0.6	0.5	Z	0.2	0.2	1.4	2.3	1.4	1.4	3.5	1.6	0.4	0.2	0.3	0.2	0.9	0.1	0.5	2.0	1.0	3.0	1.3	2.3	1.6	1.2	3.5
22-Sep	1.6	0.4	0.3	Z	1.4	1.8	1.6	0.8	0.8	1.1	0.7	0.4	0.4	0.5	1.5	1.9	1.7	1.2	0.8	1.1	8.4	1.3	2.5	1.2	1.4	8.4
23-Sep	0.7	0.6	0.3	0.5	Z	0.4	0.2	0.4	0.2	3.0	2.1	2.7	3.9	1.1	0.4	0.2	2.2	0.4	0.2	0.8	0.3	0.2	0.2	0.2	0.9	3.9
24-Sep	0.3	0.9	1.1	0.9	1.8	Z	2.4	2.0	1.2	0.3	C	C	C	C	C	0.2	0.0	0.0	0.3	1.2	1.6	0.8	1.8	2.9	1.1	2.9
25-Sep	Z	0.8	1.1	1.1	1.4	1.7	1.9	1.0	1.0	UO	UO	UO	UO	UO	0.4	0.1	1.8	0.9	9.3	7.0	6.7	2.8	1.4	1.0	2.3	9.3
26-Sep	1.0	Z	0.4	0.3	0.8	1.5	0.3	0.3	0.6	0.2	0.1	0.2	0.2	0.1	0.1	0.1	0.1	0.4	0.1	2.2	1.2	2.1	1.0	1.9	0.7	2.2
27-Sep	1.9	1.8	Z	0.9	1.1	0.6	0.6	0.7	0.9	0.7	0.7	0.6	0.7	0.4	0.3	2.2	1.1	0.5	0.6	0.2	4.6	1.1	4.9	5.2	1.4	5.2
28-Sep	0.2	0.1	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	0.1	0.7	1.2	2.1	2.8	3.2	3.1	0.6	3.2
29-Sep	1.5	1.8	1.5	0.8	Z	0.6	0.5	0.5	0.8	1.0	0.8	0.4	0.4	0.3	0.1	0.1	0.2	0.4	0.3	0.1	0.4	0.4	0.2	0.3	0.6	1.8
30-Sep	0.3	0.5	0.2	0.2	0.2	Z	0.2	0.2	0.2	0.2	0.2	0.1	0.1	0.1	0.1	0.1	0.2	0.1	0.5	0.2	0.1	0.2	0.1	0.1	0.2	0.5
	1.2	0.9	0.9	0.9	1.0	1.0	0.9	0.9	0.7	1.1	1.0	0.7	0.5	0.3	0.3	0.4	0.5	0.6	1.0	1.5	1.7	1.0	1.2	1.3	Diurnal Average	
	5.1	3.7	2.5	2.0	2.7	4.4	2.5	3.3	2.3	6.4	6.5	3.3	3.9	1.2	1.5	2.2	2.2	5.5	9.3	7.6	8.4	2.8	4.9	5.2	Diurnal Maximum	

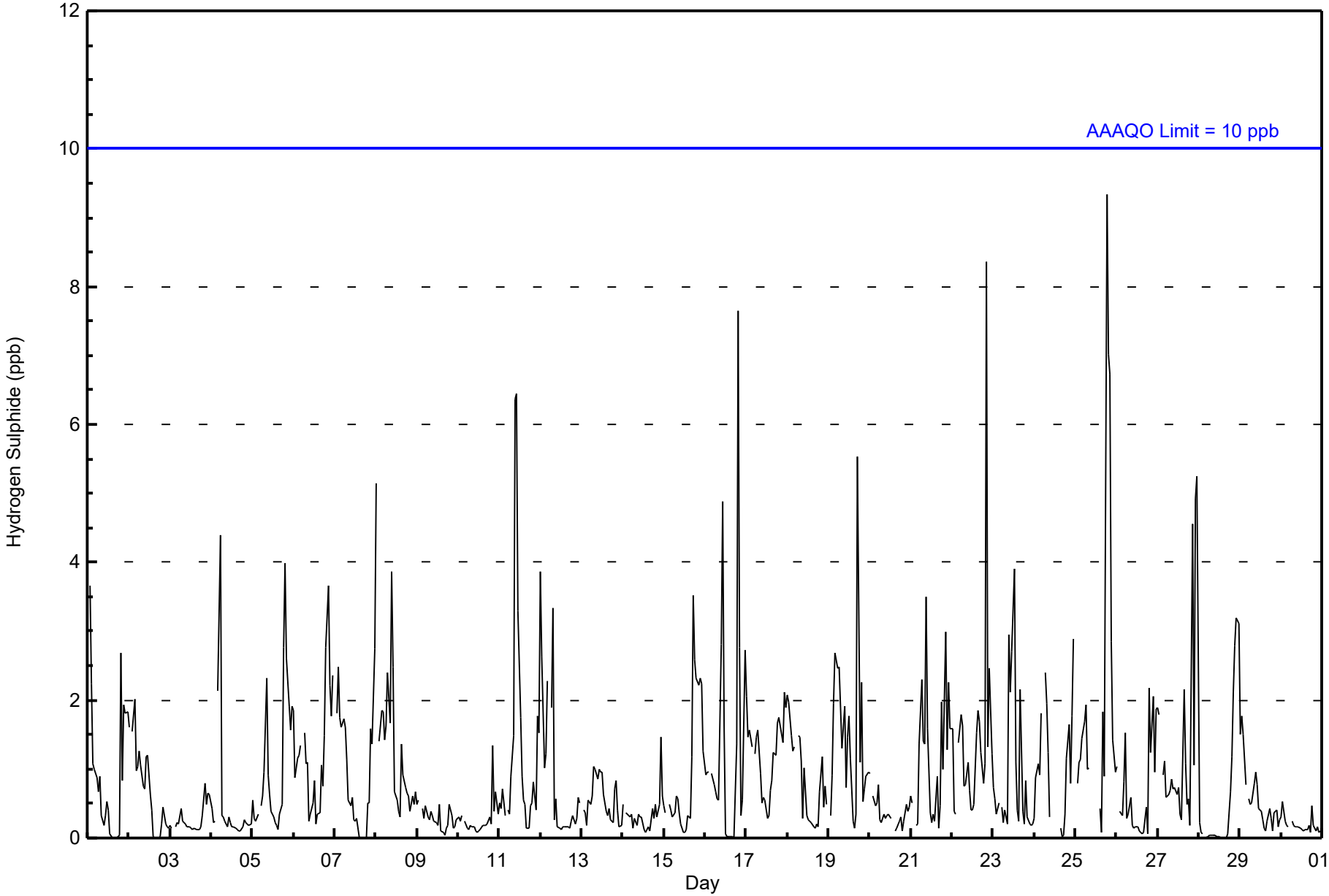
Z - zerospan C - Calibration M - Maintenance UO - Unstable Operation
Alberta Ambient Air Quality Objectives (AAAQO): 1-hr 10 ppb 24-hr 3 ppb

Wood Buffalo Environmental Association

Hourly Averages

Hydrogen Sulphide (H_2S) - ppb

Lower Camp - September 2024



Wood Buffalo Environmental Association

Cumulative Frequency Distribution

Hydrogen Sulphide (H_2S) - ppb

Lower Camp - September 2024

Concentration Ranges (ppb)	Number of Hours	%	Cumulative %
0 - 2	635	93.66	93.66
3 - 4	30	4.42	98.08
5 - 7	10	1.47	99.56
8 - 11	3	0.44	100.00
> 11	0	0.00	100.00

Total Number of Valid Hours: 678

Total Number of Hours: 720

Wood Buffalo Environmental Association

Frequency Distribution

Hydrogen Sulphide (H_2S) - ppb

Lower Camp - September 2024

Concentration Ranges (ppb)	Wind Direction																
	N	NNE	NE	ENE	E	ESE	SE	SSE	S	SSW	SW	WSW	W	WNW	NW	NNW	**Totals**
0 - 2	16	10	12	15	26	125	46	17	8	6	27	75	92	80	41	36	632
3 - 4	1	0	0	0	1	9	8	2	0	2	2	0	1	2	0	1	29
5 - 7	0	0	0	0	0	0	2	0	4	1	1	0	0	0	1	1	10
8 - 11	0	0	0	0	0	0	1	0	1	1	0	0	0	0	0	0	3
> 11	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Totals	17	10	12	15	27	134	57	19	13	10	30	75	93	82	42	38	674

Total Number of Valid Hours: 674

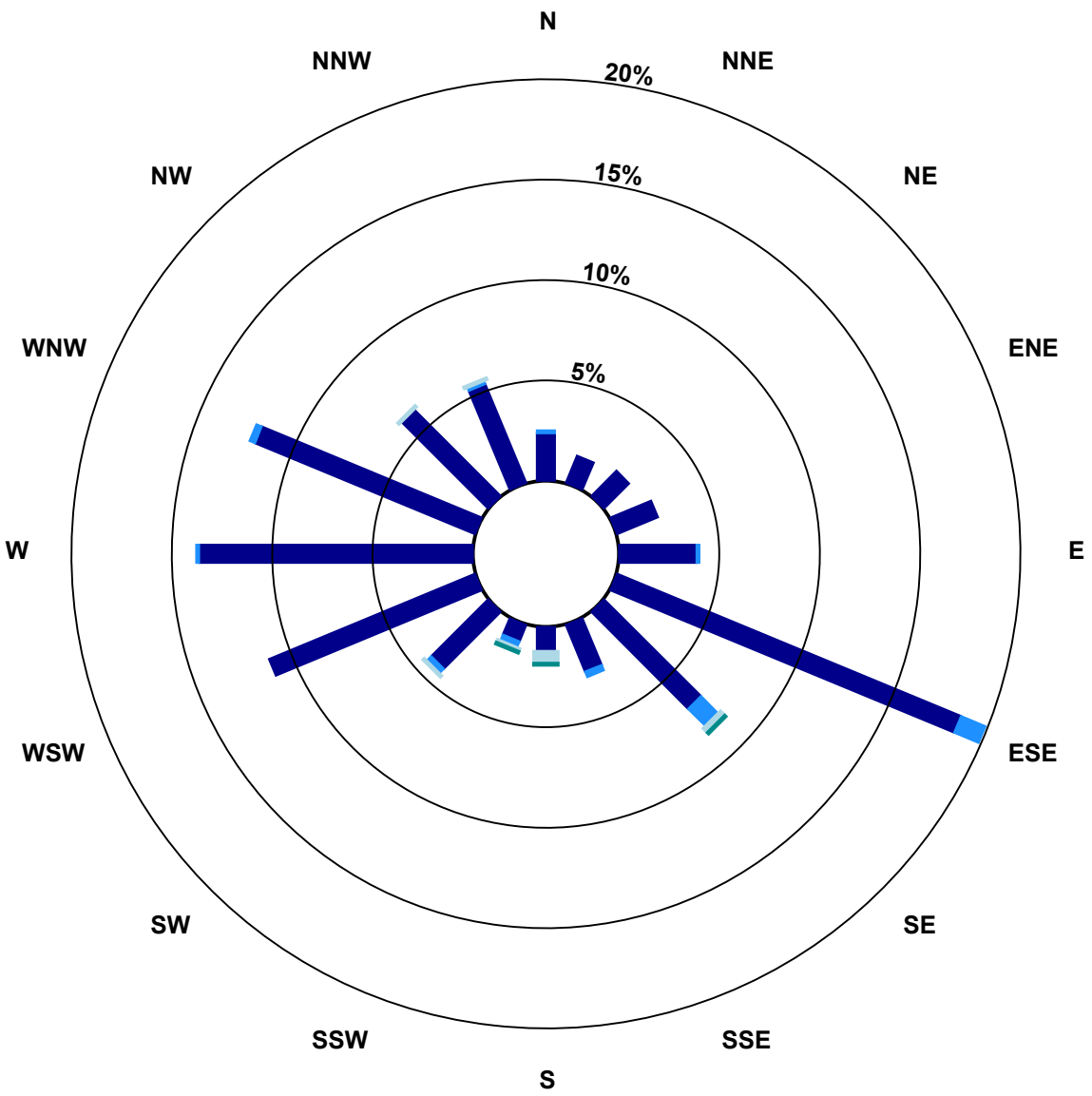
Total Number of Hours: 720

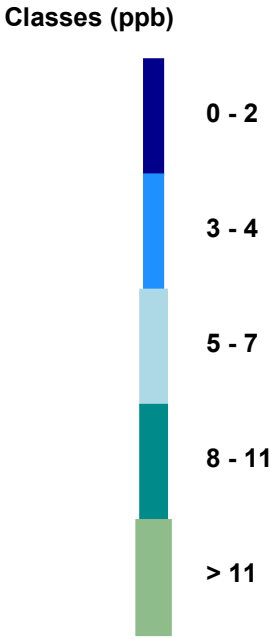
Wood Buffalo Environmental Association

Wind Rose Sep 2024

Hydrogen Sulphide (H_2S) - ppb

Lower Camp





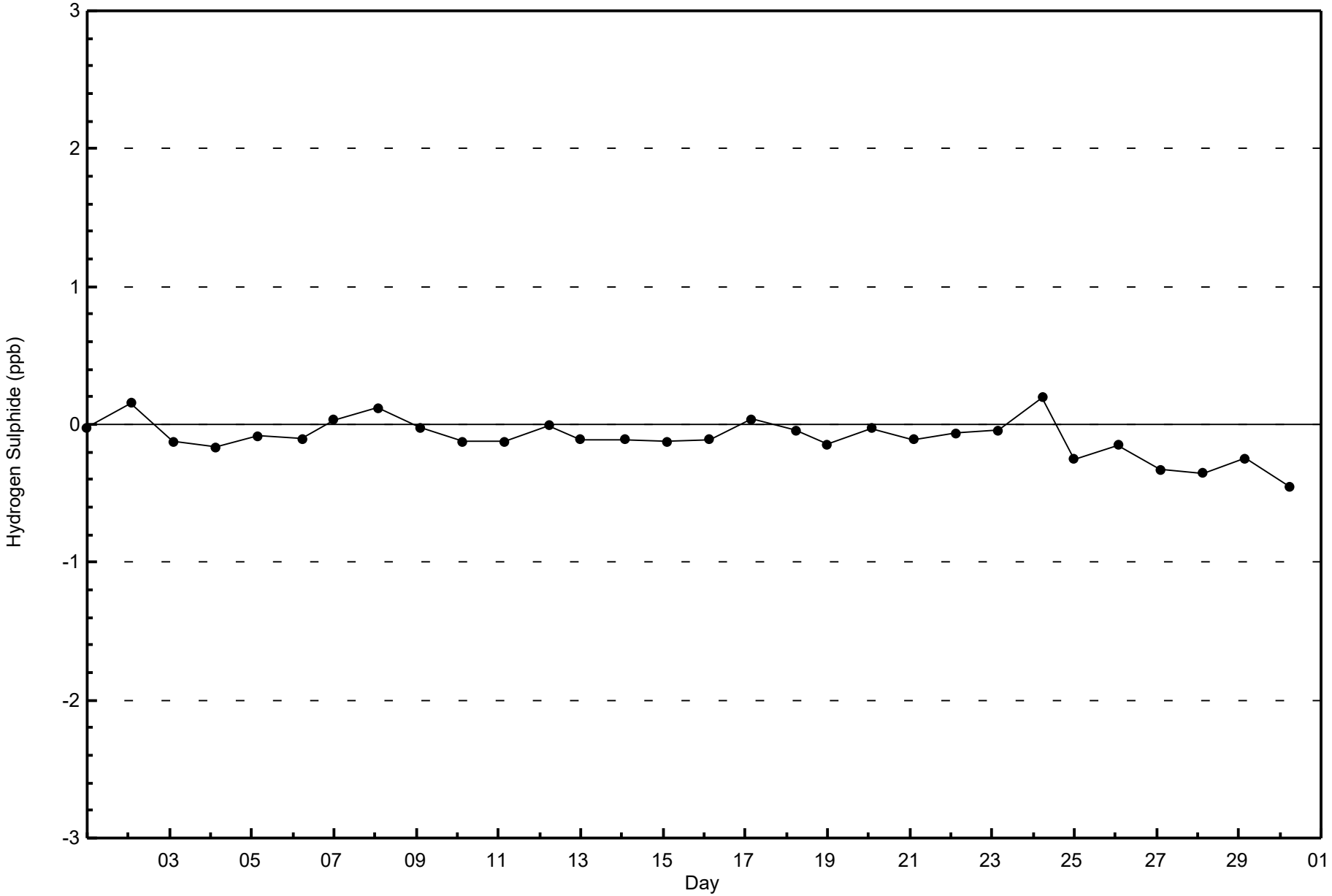
Total Number of Valid Hours: 674

Wood Buffalo Environmental Association

Zero Responses

Hydrogen Sulphide (H_2S) - ppb

Lower Camp - September 2024

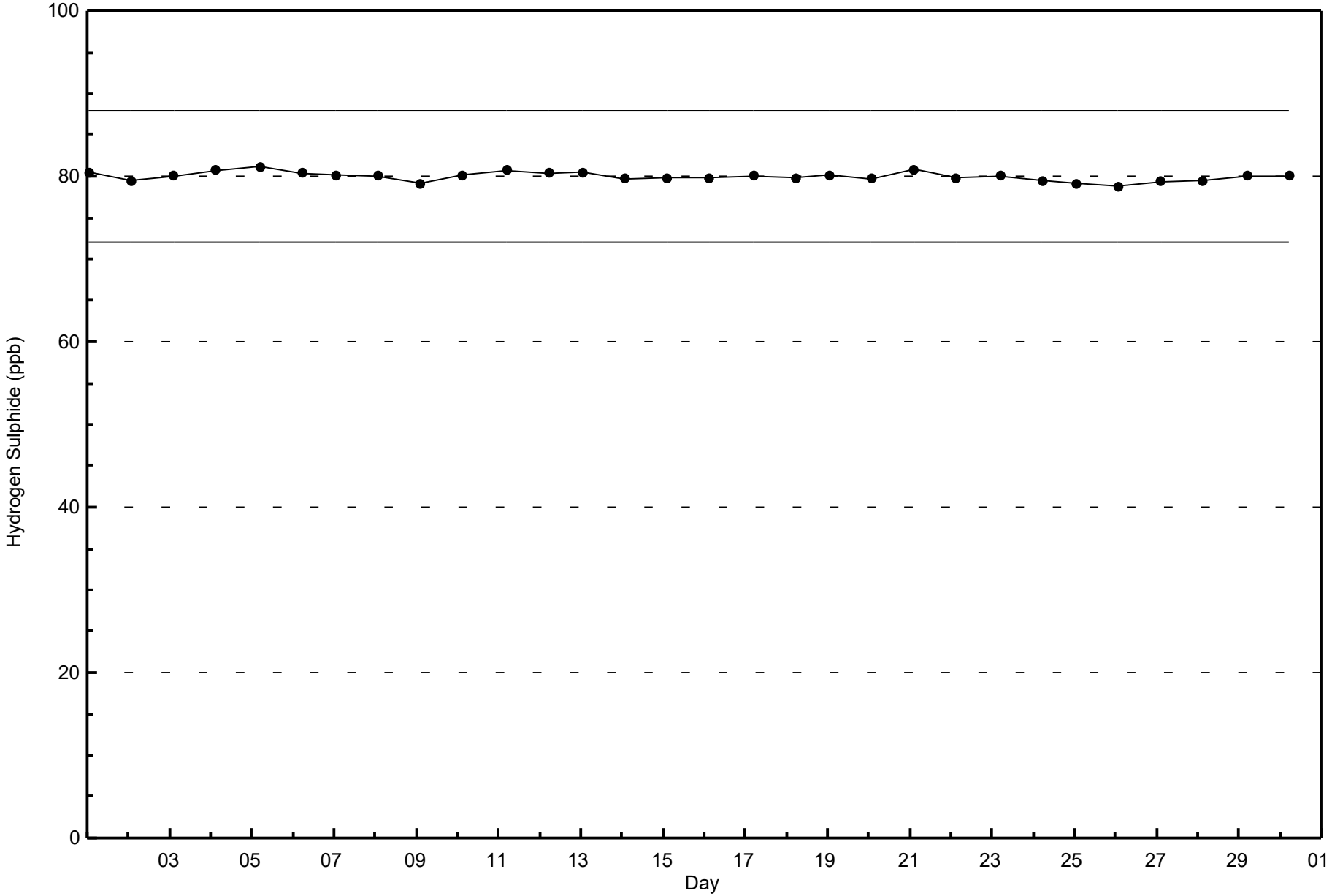


Wood Buffalo Environmental Association

Span Responses

Hydrogen Sulphide (H_2S) - ppb

Lower Camp - September 2024



Wood Buffalo Environmental Association

Summary of Hour Averages

Total Hydrocarbons (THC) - ppm

Lower Camp - September 2024

Maximum Value: 3.0 ppm on Sep 25 21:00

Maximum Daily Average: 2.4 ppm on Sep 25

Minimum Value: 1.8 ppm on Sep 1 16:00

Minimum Daily Average: 1.9 ppm on Sep 3

Maximum Diurnal Average: 2.2 ppm at hour 21

Minimum Diurnal Average: 1.9 ppm at hour 16

Monthly Average: 2.08 ppm

Percentiles: P_1 = 1.8 P_{10} = 1.9 Q_1 = 1.9 Median = 2.0 Q_3 = 2.2 P_{90} = 2.4 P_{99} = 2.8

Hours in Service:	720
Hours of Data:	686
Hours of Missing Data:	34
Hours of Calibration:	34
Percent Operational Time:	100.0

Day	Hourly Period Ending At (MST)																								Daily	Daily
	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24	Average	Maximum
1-Sep	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	1.8	1.8	1.8	1.8	1.9	2.1	2.0	2.2	2.6	2.4	2.0	2.6
2-Sep	Z	2.5	2.3	2.4	2.1	2.1	2.1	2.0	2.0	2.0	2.0	2.0	2.0	1.9	1.8	1.8	1.8	1.9	1.9	1.9	1.9	1.9	1.9	1.8	2.0	2.5
3-Sep	1.8	Z	1.8	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
4-Sep	1.9	2.0	Z	2.1	2.1	2.2	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	2.2
5-Sep	2.0	2.0	2.0	Z	2.1	2.1	2.1	2.1	2.2	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	2.2
6-Sep	2.0	2.0	2.0	2.0	Z	2.1	2.1	2.1	2.1	1.9	2.0	2.0	2.0	2.0	2.1	2.0	2.1	2.1	2.1	2.1	2.3	2.2	2.1	2.3	2.1	2.3
7-Sep	2.4	2.4	2.3	2.3	2.3	Z	2.2	2.1	2.1	2.1	2.1	2.1	2.0	2.0	1.9	1.9	1.9	1.9	1.9	1.9	2.0	2.2	2.1	2.1	2.1	2.4
8-Sep	Z	2.4	2.2	2.4	2.4	2.2	2.3	2.4	2.2	2.4	2.2	2.1	2.0	2.0	2.0	2.1	2.5	2.5	2.7	2.8	2.8	2.6	2.7	2.7	2.4	2.8
9-Sep	2.3	Z	2.3	2.2	2.2	2.2	2.1	2.1	2.2	2.2	2.1	2.1	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	2.3
10-Sep	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	1.8	1.9	1.9	1.9	1.9	1.9	2.0	2.1	2.1	2.1	2.0	1.9	2.1
11-Sep	2.0	2.0	2.0	Z	2.1	2.1	2.1	2.2	2.2	2.4	2.3	2.1	2.0	2.0	1.9	1.9	1.9	1.9	2.0	2.1	2.2	2.1	2.0	2.0	2.1	2.4
12-Sep	2.1	2.2	2.1	2.4	Z	2.0	2.0	2.0	1.9	1.9	1.9	1.9	1.9	2.0	2.0	2.0	2.0	1.9	2.0	2.0	2.1	2.1	2.1	2.1	2.0	2.4
13-Sep	2.1	2.0	2.0	2.0	2.1	Z	2.6	2.9	2.8	2.6	2.7	2.7	2.3	2.3	2.0	1.9	2.1	2.1	2.1	2.1	2.0	2.0	2.0	2.3	2.3	2.9
14-Sep	Z	2.7	2.2	2.1	2.1	2.0	1.9	1.9	2.0	2.1	2.0	2.0	1.9	1.9	1.9	1.9	2.0	2.1	2.1	2.1	2.0	2.0	2.1	2.1	2.0	2.7
15-Sep	2.1	Z	2.1	2.2	2.2	2.0	2.1	2.3	2.2	2.1	2.0	1.9	1.9	1.9	2.0	2.0	2.0	2.2	2.1	2.4	2.4	2.4	2.2	2.0	2.1	2.4
16-Sep	2.0	2.0	Z	2.0	2.0	2.0	2.0	1.9	1.9	2.4	2.2	2.0	1.8	1.8	1.8	1.8	1.9	1.9	1.9	2.2	2.0	1.9	1.9	2.2	2.0	2.4
17-Sep	2.1	2.0	2.0	Z	2.0	2.0	2.0	2.1	2.0	1.9	1.9	1.9	1.9	1.9	1.9	1.9	1.9	1.9	2.1	2.3	2.4	2.4	2.2	2.1	2.0	2.4
18-Sep	2.1	2.1	2.1	2.0	Z	2.1	2.2	2.1	2.0	2.0	2.1	1.9	1.9	1.9	1.9	1.9	1.9	1.9	1.9	2.1	2.0	2.0	2.0	2.1	2.0	2.2
19-Sep	2.0	2.1	2.2	2.4	2.3	Z	2.4	2.2	2.1	2.0	2.0	2.1	2.0	2.0	1.9	1.9	1.9	2.2	2.2	2.2	2.1	2.0	2.1	2.1	2.1	2.4
20-Sep	Z	2.3	2.4	2.4	2.3	2.4	2.2	2.0	2.0	2.1	2.2	C	C	C	C	1.9	1.9	1.9	2.0	2.0	2.1	2.1	2.1	2.1	2.1	2.4
21-Sep	2.1	Z	2.2	2.1	2.2	2.2	2.3	2.2	2.1	2.1	2.1	2.0	2.0	2.0	1.9	2.0	1.9	1.9	2.0	2.0	2.2	2.0	2.1	2.0	2.1	2.3
22-Sep	2.0	2.0	Z	2.0	2.2	2.4	2.4	2.2	2.1	2.1	2.0	2.0	2.1	2.0	2.1	2.1	2.1	2.1	2.0	2.3	2.8	2.2	2.4	2.3	2.2	2.8
23-Sep	2.3	2.4	2.4	Z	2.2	2.4	2.4	2.4	2.2	2.3	2.4	2.7	2.4	2.2	2.1	2.0	2.0	2.0	2.0	2.3	2.0	1.9	1.9	1.9	2.2	2.7
24-Sep	2.0	2.1	2.4	2.5	Z	2.6	2.3	2.2	2.1	1.9	1.9	1.9	1.9	1.9	1.9	1.9	1.9	2.1	2.1	2.2	2.3	2.2	2.3	2.3	2.1	2.6
25-Sep	2.1	2.0	2.1	2.1	2.2	Z	2.5	2.5	2.3	2.5	2.3	2.1	2.6	2.2	2.2	2.0	2.7	2.6	2.6	2.9	3.0	2.9	2.6	2.4	2.4	3.0
26-Sep	Z	2.0	2.4	2.0	2.1	2.2	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	2.1	2.1	2.2	2.1	2.1	2.0	2.4
27-Sep	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	1.9	1.9	2.0	2.0	2.1	2.0	2.0	2.1	2.1	2.5	2.4	2.1	2.5
28-Sep	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	2.0	2.1	2.2	2.3	2.4	2.3	2.0	2.4
29-Sep	2.3	2.2	2.2	Z	2.1	2.2	2.1	2.3	2.8	2.8	2.5	2.2	2.0	2.0	1.9	2.0	2.0	2.0	2.0	2.0	2.1	2.2	2.0	2.2	2.2	2.8
30-Sep	2.2	2.1	2.0	2.0	Z	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	2.2	2.1	2.0	2.0	1.9	1.9	2.0	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	1.9	1.9	2.0	2.0	2.0	2.1	2.2	2.1	2.1	2.1	Diurnal Average	
	2.4	2.7	2.4	2.5	2.4	2.6	2.6	2.9	2.8	2.8	2.7	2.7	2.6	2.3	2.2	2.1	2.7	2.6	2.7	2.9	3.0	2.9	2.7	2.7	Diurnal Maximum	

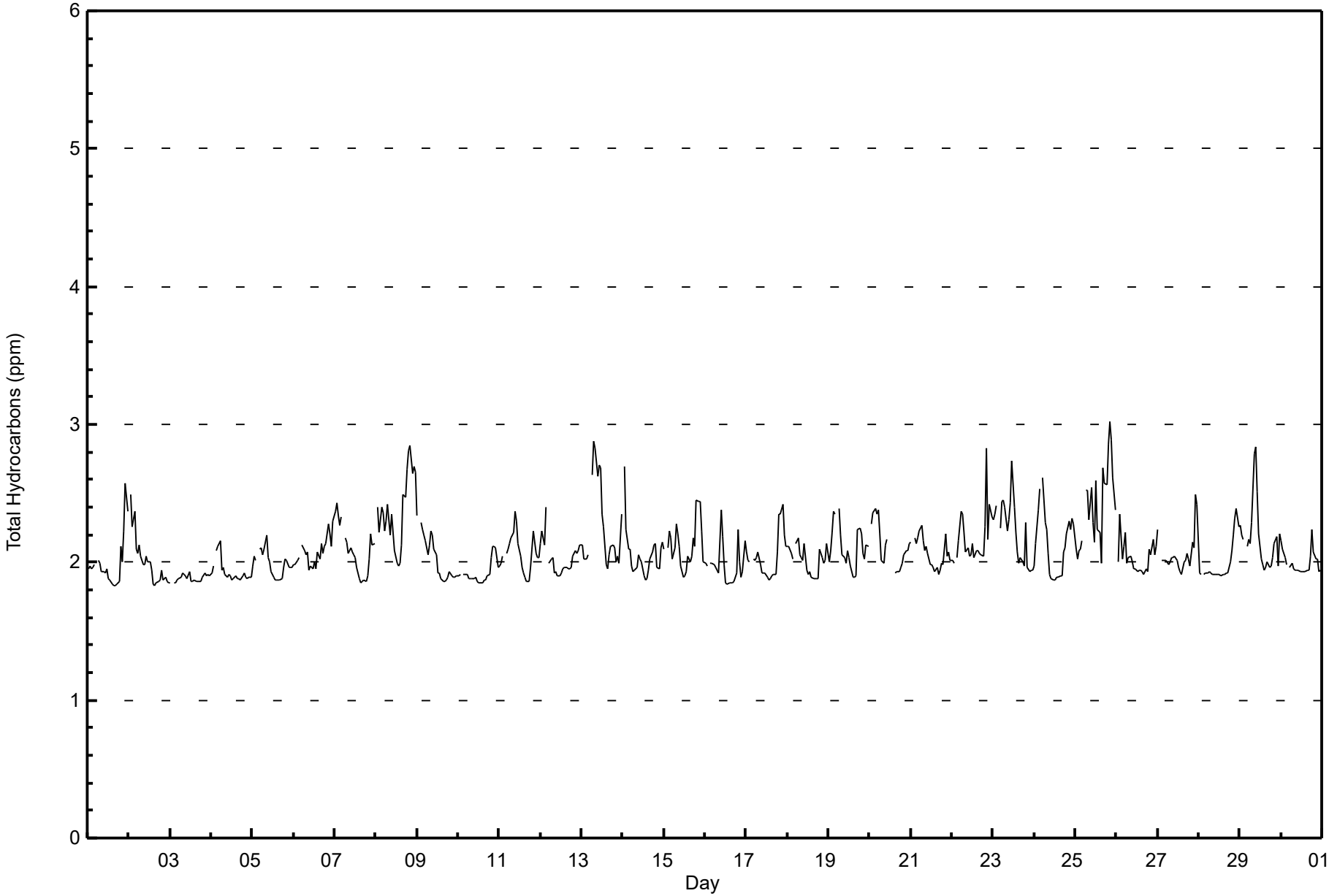
Z - zerospan C - Calibration

Wood Buffalo Environmental Association

Hourly Averages

Total Hydrocarbons (THC) - ppm

Lower Camp - September 2024



Wood Buffalo Environmental Association

Cumulative Frequency Distribution

Total Hydrocarbons (THC) - ppm

Lower Camp - September 2024

Concentration Ranges (ppm)	Number of Hours	%	Cumulative %
0 - 2.0	388	56.56	56.56
2.1 - 3.0	298	43.44	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: 720

Wood Buffalo Environmental Association

Frequency Distribution

Total Hydrocarbons (THC) - ppm

Lower Camp - September 2024

Concentration Ranges (ppm)	Wind Direction																
	N	NNE	NE	ENE	E	ESE	SE	SSE	S	SSW	SW	WSW	W	WNW	NW	NNW	**Totals**
0 - 2.0	13	8	3	7	13	69	34	9	6	6	25	60	55	31	22	24	385
2.1 - 3.0	3	3	9	9	13	66	22	12	9	4	5	14	45	49	20	13	296
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	16	11	12	16	26	135	56	21	15	10	30	74	100	80	42	37	681

Total Number of Valid Hours: 681

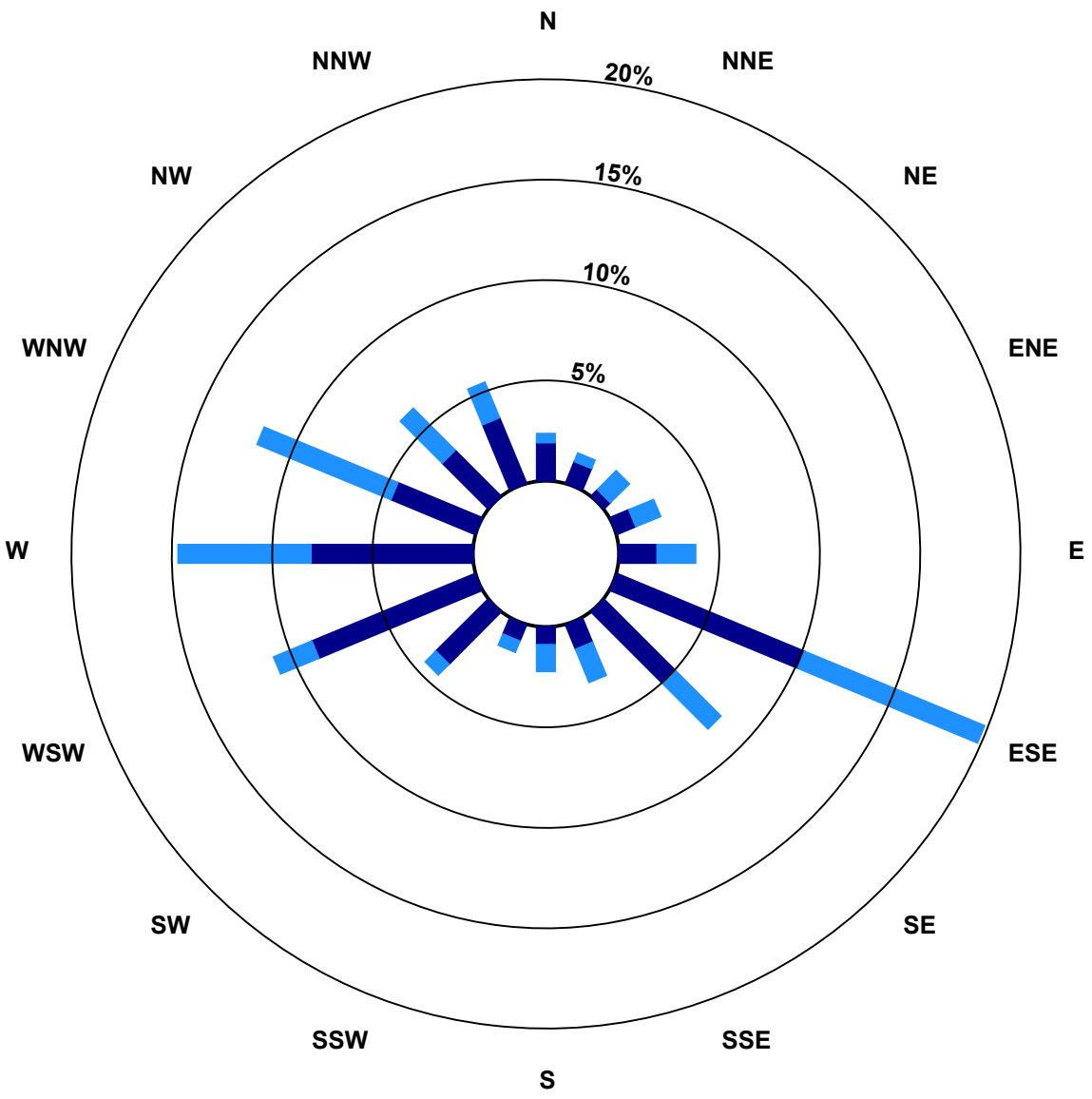
Total Number of Hours: 720

Wood Buffalo Environmental Association

Wind Rose Sep 2024

Total Hydrocarbons (THC) - ppm

Lower Camp



Classes (ppm)

0 - 2.0

2.1 - 3.0

3.1 - 10.0

> 10.0

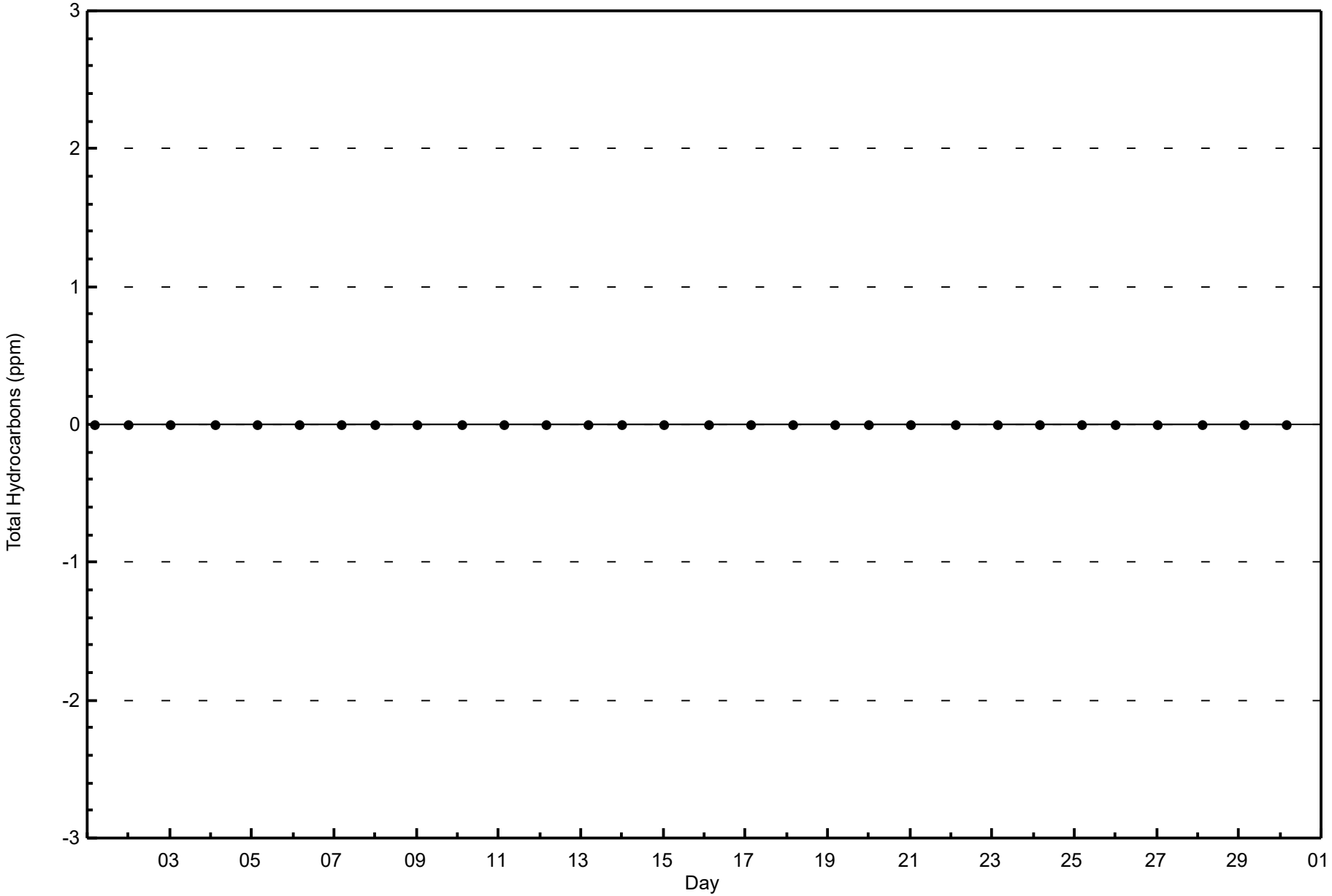
Total Number of Valid Hours: 681

Wood Buffalo Environmental Association

Zero Responses

Total Hydrocarbons (THC) - ppm

Lower Camp - September 2024

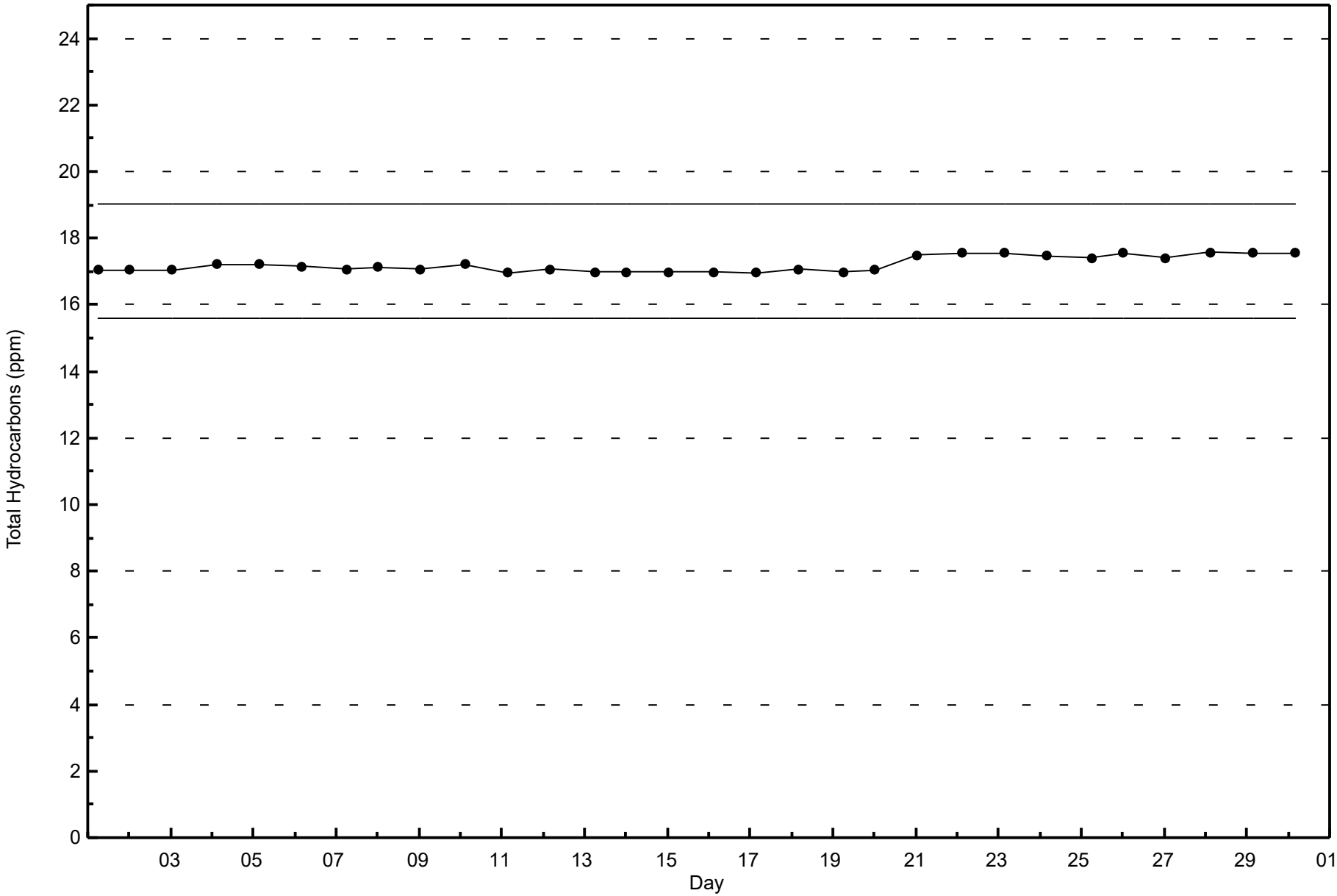


Wood Buffalo Environmental Association

Span Responses

Total Hydrocarbons (THC) - ppm

Lower Camp - September 2024



Wood Buffalo Environmental Association

Summary of Hour Averages

Methane (CH_4) - ppm

Lower Camp - September 2024

Number of Exceedences (AAAQO): 1-hr: 0 24-hr: 0
Maximum Value: 2.9 ppm on Sep 25 21:00
Maximum Daily Average: 2.4 ppm on Sep 25

Minimum Value: 1.8 ppm on Sep 1 16:00
Minimum Daily Average: 1.9 ppm on Sep 3
Maximum Diurnal Average: 2.1 ppm at hour 21
Minimum Diurnal Average: 1.9 ppm at hour 16
Monthly Average: 2.05 ppm
Percentiles: P_1 = 1.8 P_{10} = 1.9 Q_1 = 1.9 Median = 2.0 Q_3 = 2.1 P_{90} = 2.3 P_{99} = 2.7

Hours in Service:	720
Hours of Data:	686
Hours of Missing Data:	34
Hours of Calibration:	34
Percent Operational Time:	100.0

Day	Hourly Period Ending At (MST)																								Daily	Daily
	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24	Average	Maximum
1-Sep	1.9	1.9	1.9	1.9	2.0	Z	2.0	2.0	1.9	1.9	1.9	1.9	1.8	1.8	1.8	1.8	1.8	1.8	1.8	2.1	2.0	2.2	2.5	2.3	2.0	2.5
2-Sep	Z	2.4	2.2	2.3	2.1	2.0	2.1	2.0	1.9	1.9	2.0	1.9	1.9	1.9	1.8	1.8	1.8	1.8	1.8	1.9	1.9	1.9	1.9	1.8	2.0	2.4
3-Sep	1.8	Z	1.8	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
4-Sep	1.9	2.0	Z	2.1	2.1	2.1	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	2.1
5-Sep	2.0	2.0	2.0	Z	2.1	2.1	2.0	2.1	2.1	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	2.1
6-Sep	1.9	1.9	2.0	2.0	Z	2.1	2.0	2.0	2.0	1.9	1.9	1.9	2.0	1.9	1.9	1.9	2.1	2.0	2.0	2.1	2.2	2.1	2.1	2.2	2.0	2.2
7-Sep	2.3	2.4	2.3	2.2	2.2	Z	2.1	2.1	2.0	2.0	2.0	2.0	2.0	1.9	1.9	1.8	1.8	1.8	1.8	1.9	2.0	2.2	2.1	2.1	2.0	2.4
8-Sep	Z	2.3	2.1	2.3	2.3	2.1	2.2	2.3	2.1	2.2	2.1	2.0	1.9	1.9	1.9	2.1	2.4	2.4	2.6	2.7	2.8	2.6	2.6	2.6	2.3	2.8
9-Sep	2.3	Z	2.2	2.2	2.2	2.1	2.0	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	2.3
10-Sep	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	1.8	1.9	1.9	1.9	1.9	1.9	2.0	2.1	2.1	2.1	2.0	1.9	2.1
11-Sep	2.0	2.0	2.0	Z	2.1	2.1	2.1	2.1	2.2	2.3	2.2	2.1	2.0	1.9	1.9	1.9	1.9	1.9	2.0	2.1	2.2	2.0	2.0	2.0	2.0	2.3
12-Sep	2.1	2.2	2.1	2.4	Z	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	2.0	2.1	2.0	2.1	2.1	2.0	2.4
13-Sep	2.1	2.0	2.0	2.0	2.0	Z	2.5	2.7	2.7	2.5	2.6	2.6	2.3	2.1	2.0	1.9	2.0	2.1	2.1	2.1	2.0	2.0	2.0	2.3	2.2	2.7
14-Sep	Z	2.6	2.2	2.1	2.1	2.0	1.9	1.9	2.0	2.0	2.0	1.9	1.9	1.9	1.9	1.9	2.0	2.1	2.1	2.1	2.0	1.9	2.1	2.1	2.0	2.6
15-Sep	2.1	Z	2.1	2.2	2.1	2.0	2.1	2.2	2.2	2.1	2.0	1.9	1.9	1.9	2.0	2.0	2.0	2.1	2.1	2.4	2.4	2.4	2.2	2.0	2.1	2.4
16-Sep	2.0	2.0	Z	2.0	2.0	2.0	1.9	1.9	1.9	2.3	2.2	2.0	1.8	1.8	1.8	1.8	1.9	1.9	1.9	2.2	2.0	1.9	1.9	2.1	2.0	2.3
17-Sep	2.0	2.0	2.0	Z	2.0	2.0	2.0	2.1	2.0	1.9	1.9	1.9	1.9	1.9	1.9	1.9	1.9	1.9	2.0	2.3	2.3	2.4	2.1	2.0	2.0	2.4
18-Sep	2.0	2.0	2.0	2.0	Z	2.1	2.1	2.0	2.0	2.0	2.1	1.9	1.9	1.9	1.9	1.9	1.9	1.9	1.9	2.1	2.0	2.0	2.0	2.1	2.0	2.1
19-Sep	2.0	2.1	2.2	2.3	2.3	Z	2.3	2.2	2.0	2.0	2.0	2.0	2.0	1.9	1.9	1.9	1.9	2.2	2.2	2.2	2.0	2.0	2.1	2.1	2.1	2.3
20-Sep	Z	2.2	2.3	2.3	2.3	2.3	2.2	2.0	2.0	2.1	2.1	C	C	C	C	1.9	1.9	1.9	2.0	2.0	2.0	2.1	2.1	2.1	2.1	2.3
21-Sep	2.1	Z	2.2	2.1	2.2	2.2	2.2	2.1	2.1	2.1	2.1	2.0	2.0	2.0	1.9	2.0	1.9	1.9	2.0	2.0	2.2	2.0	2.0	2.0	2.0	2.2
22-Sep	2.0	2.0	Z	2.0	2.1	2.3	2.3	2.2	2.0	2.0	2.0	2.0	2.1	2.0	2.0	2.0	2.0	2.0	2.0	2.2	2.7	2.1	2.4	2.3	2.1	2.7
23-Sep	2.3	2.3	2.4	Z	2.2	2.4	2.4	2.4	2.2	2.3	2.4	2.6	2.3	2.2	2.0	2.0	2.0	2.0	2.0	2.2	1.9	1.9	1.9	1.9	2.2	2.6
24-Sep	2.0	2.1	2.4	2.5	Z	2.4	2.2	2.2	2.0	1.9	1.9	1.9	1.9	1.9	1.9	1.9	1.9	2.1	2.1	2.2	2.3	2.2	2.3	2.2	2.1	2.5
25-Sep	2.0	2.0	2.0	2.1	2.1	Z	2.5	2.5	2.3	2.5	2.2	2.1	2.5	2.2	2.2	2.0	2.6	2.5	2.5	2.8	2.9	2.8	2.6	2.4	2.4	2.9
26-Sep	Z	2.0	2.3	2.0	2.1	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	2.1	2.1	2.2	2.1	2.1	2.0	2.3
27-Sep	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	1.9	1.9	2.0	2.0	2.1	2.0	2.0	2.1	2.1	2.4	2.4	2.1	2.4
28-Sep	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	2.0	2.1	2.2	2.3	2.3	2.2	2.0	2.3
29-Sep	2.2	2.2	2.2	Z	2.1	2.2	2.1	2.3	2.7	2.8	2.4	2.2	2.0	2.0	1.9	2.0	2.0	2.0	2.0	2.0	2.1	2.1	2.0	2.2	2.2	2.8
30-Sep	2.1	2.1	2.0	2.0	Z	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	2.2	2.1	2.0	2.0	1.9	1.9	2.0	2.2
	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	1.9	1.9	1.9	2.0	2.0	2.0	2.1	2.1	2.1	2.1	2.1	Diurnal Average	
	2.3	2.6	2.4	2.5	2.3	2.4	2.5	2.7	2.7	2.8	2.6	2.6	2.5	2.2	2.2	2.1	2.6	2.5	2.6	2.8	2.9	2.8	2.6	2.6	Diurnal Maximum	

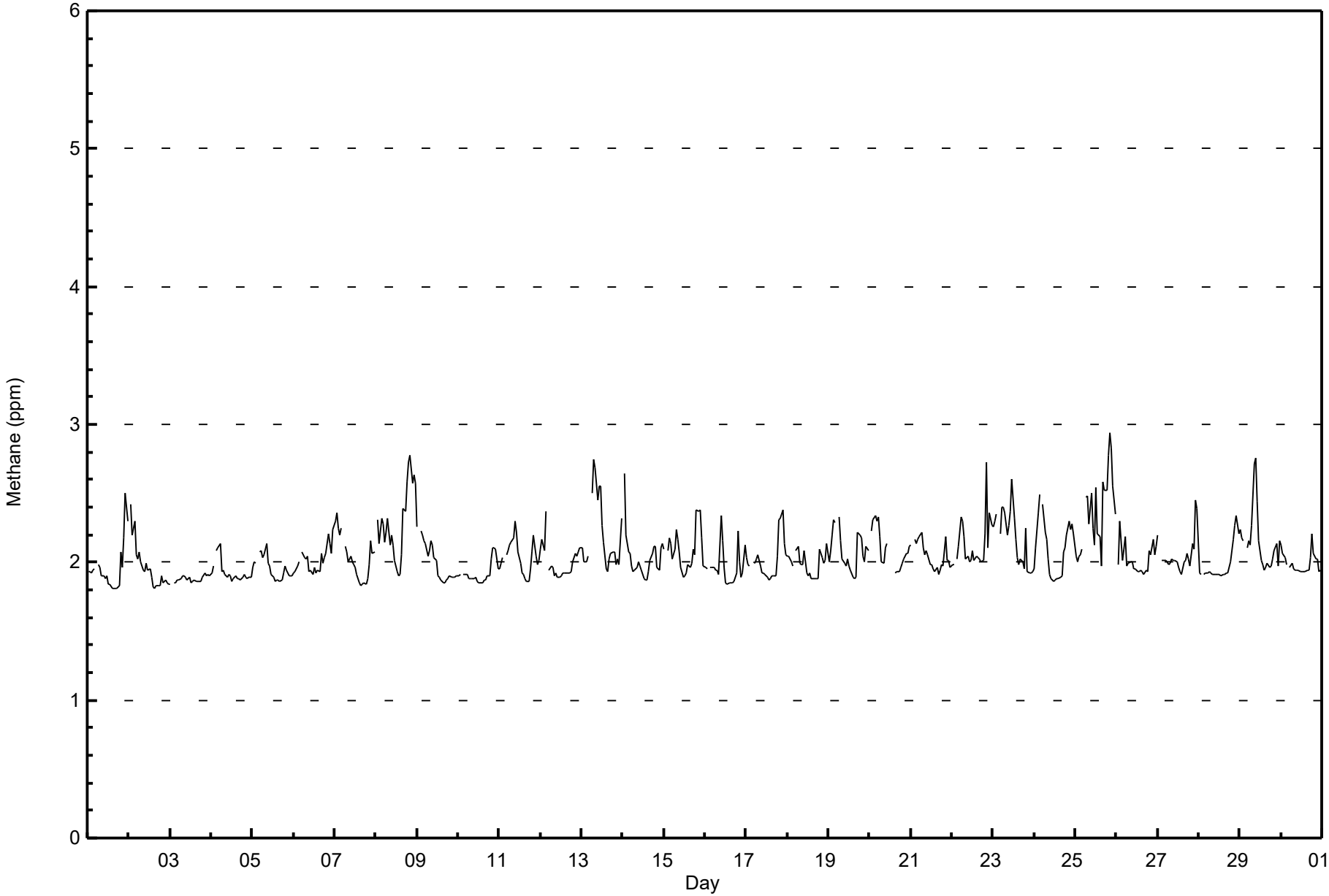
Z - zerospan C - Calibration

Wood Buffalo Environmental Association

Hourly Averages

Methane (CH_4) - ppm

Lower Camp - September 2024



Methane (CH_4) - ppm
Lower Camp - September 2024

Concentration Ranges (ppm)	Number of Hours	%	Cumulative %
0 - 2.0	430	62.68	62.68
2.1 - 3.0	256	37.32	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: 720

Wood Buffalo Environmental Association

Frequency Distribution

Methane (CH_4) - ppm

Lower Camp - September 2024

Concentration Ranges (ppm)	Wind Direction																
	N	NNE	NE	ENE	E	ESE	SE	SSE	S	SSW	SW	WSW	W	WNW	NW	NNW	**Totals**
0 - 2.0	14	8	3	8	16	89	40	9	6	6	26	63	56	35	23	25	427
2.1 - 3.0	2	3	9	8	10	46	16	12	9	4	4	11	44	45	19	12	254
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	16	11	12	16	26	135	56	21	15	10	30	74	100	80	42	37	681

Total Number of Valid Hours: 681

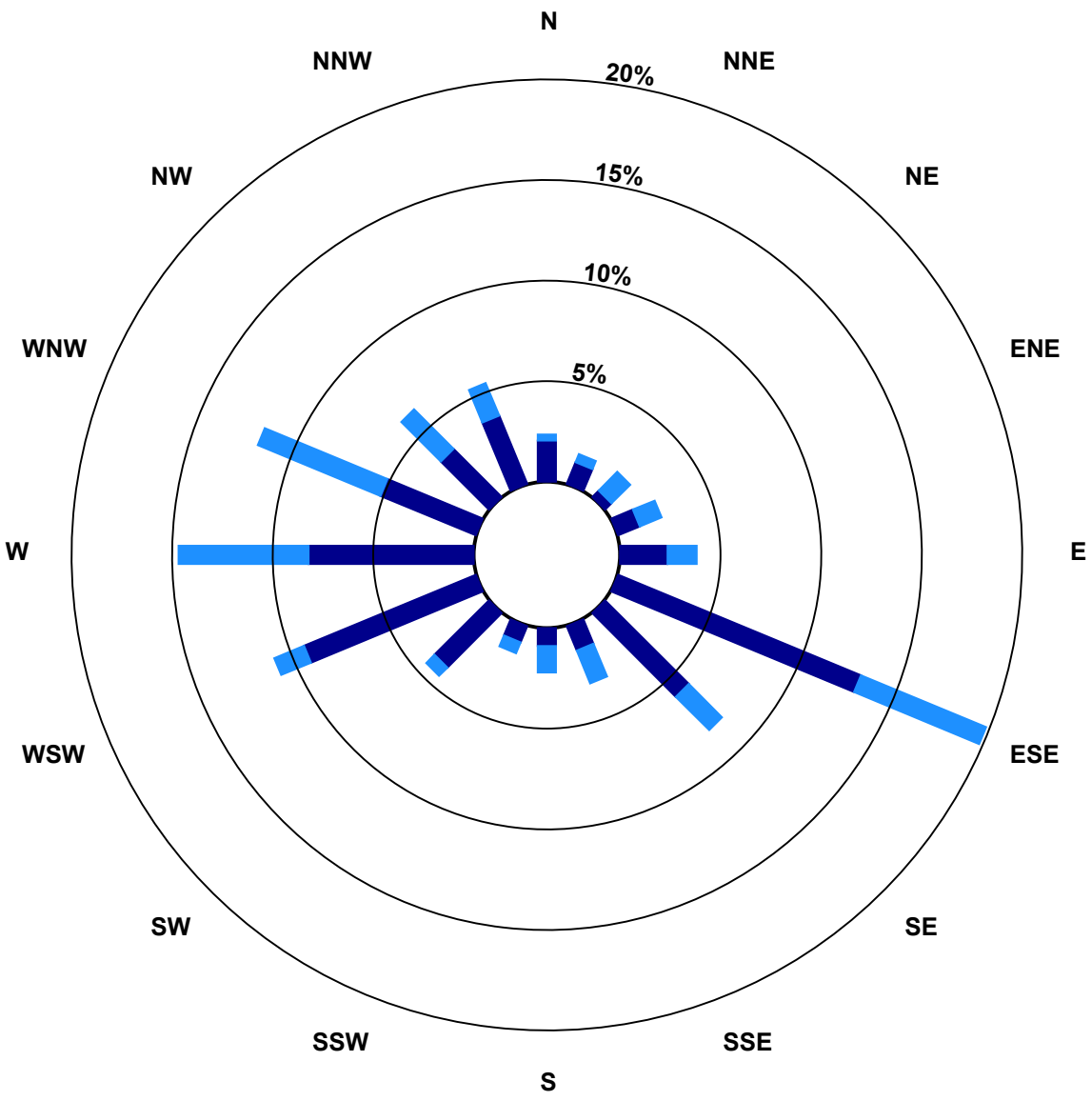
Total Number of Hours: 720

Wood Buffalo Environmental Association

Wind Rose Sep 2024

Methane (CH_4) - ppm

Lower Camp



Classes (ppm)

0 - 2.0

2.1 - 3.0

3.1 - 10.0

> 10.0

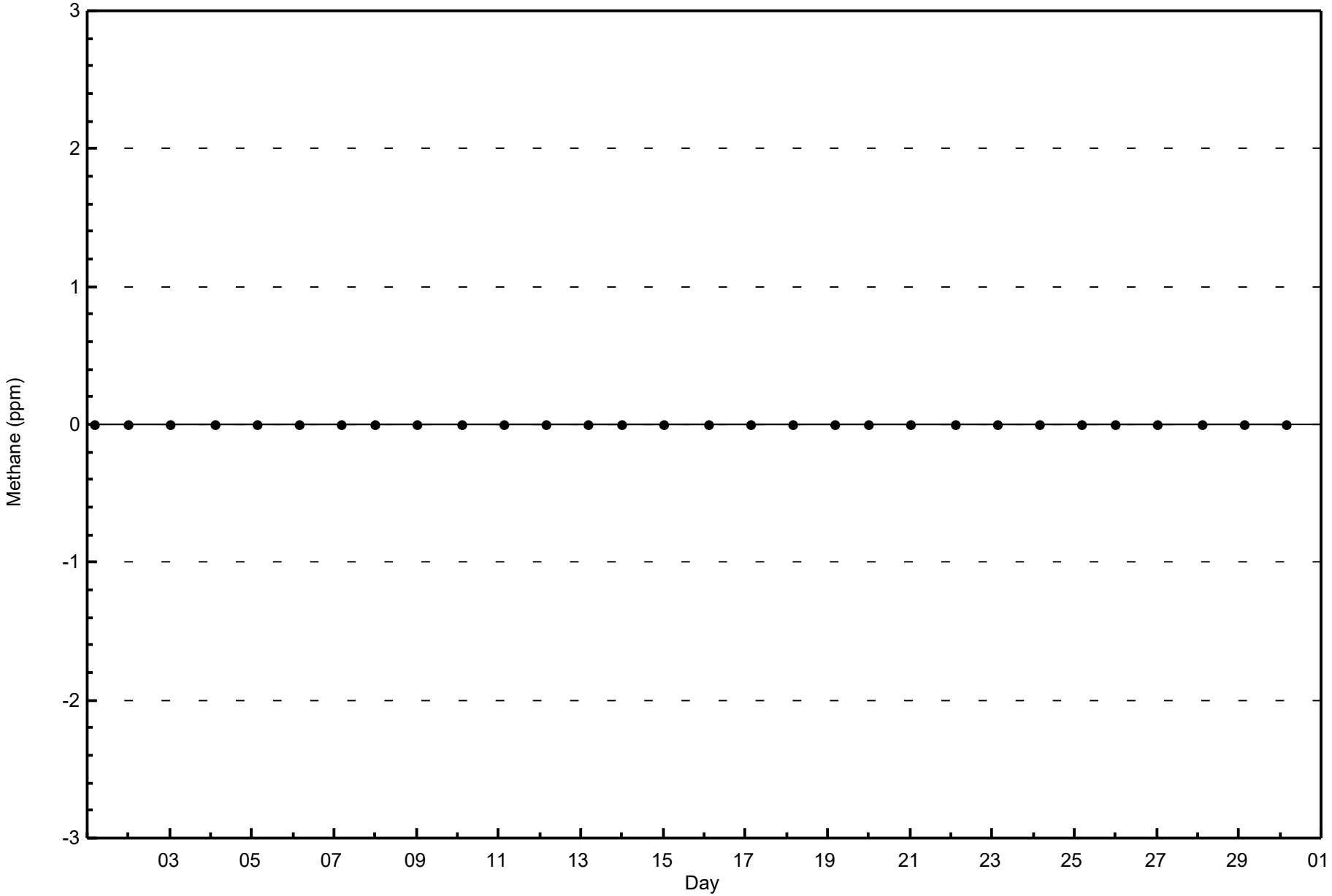
Total Number of Valid Hours: 681

Wood Buffalo Environmental Association

Zero Responses

Methane (CH_4) - ppm

Lower Camp - September 2024

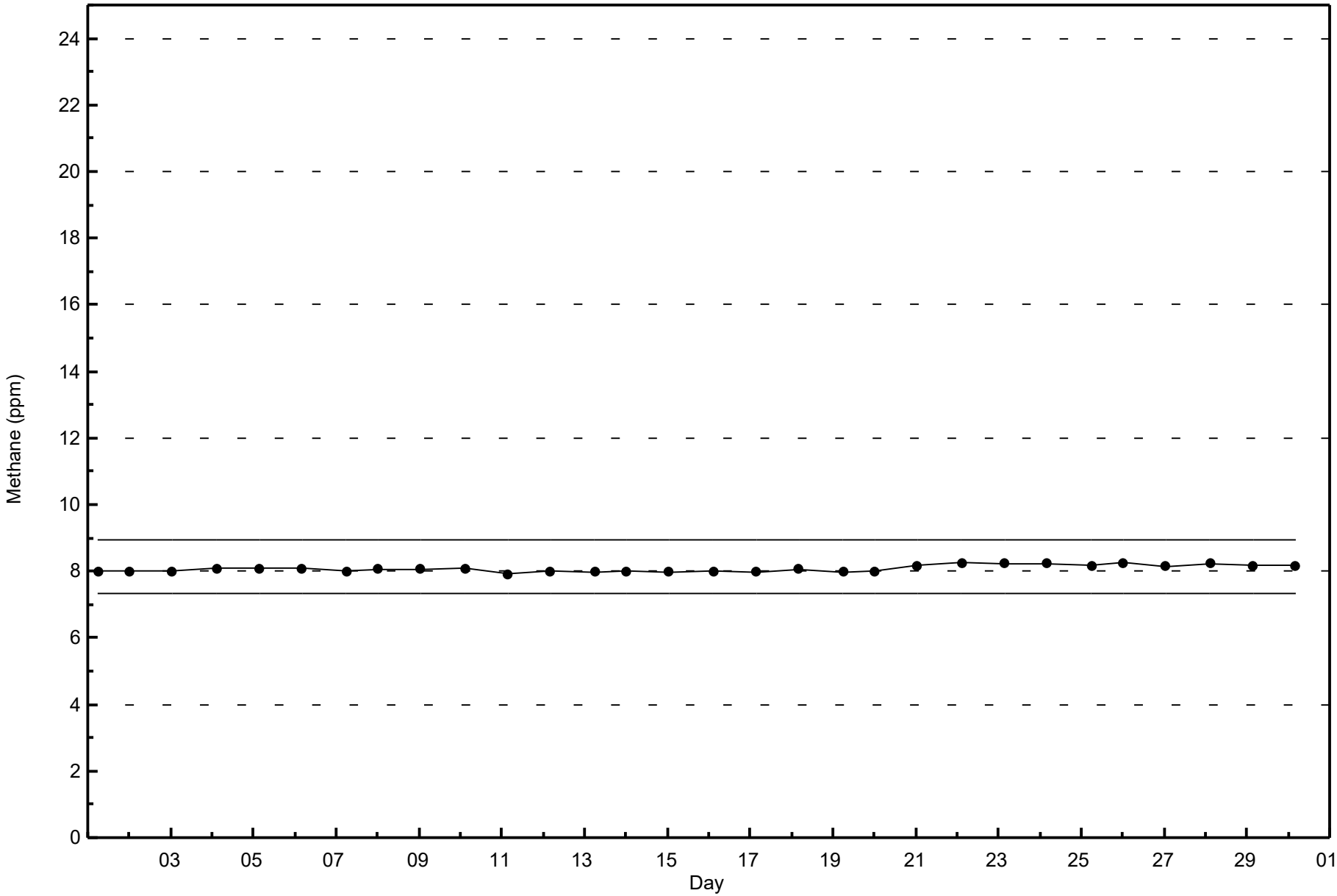


Wood Buffalo Environmental Association

Span Responses

Methane (CH_4) - ppm

Lower Camp - September 2024



Wood Buffalo Environmental Association

Summary of Hour Averages

Non Methane Hydrocarbons (NMHC) - ppm

Lower Camp - September 2024

Maximum Value: 0.189 ppm on Sep 24 06:00

Maximum Daily Average: 0.084 ppm on Sep 8

Minimum Value: 0.000 ppm on Sep 3 19:00

Minimum Daily Average: 0.002 ppm on Sep 10

Maximum Diurnal Average: 0.039 ppm at hour 10

Minimum Diurnal Average: 0.015 ppm at hour 16

Monthly Average: 0.029 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 in Service:	720
Hours of Data:	686
Hours of Missing Data:	34
Hours of Calibration:	34
Percent Operational Time:	100.0

Day	Hourly Period Ending At (MST)																								Daily	Daily
	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24	Average	Maximum
1-Sep	0.020	0.037	0.031	0.021	0.027	Z	0.031	0.034	0.028	0.028	0.036	0.049	0.035	0.033	0.024	0.020	0.026	0.026	0.034	0.045	0.046	0.053	0.070	0.068	0.036	0.070
2-Sep	Z	0.068	0.061	0.068	0.046	0.038	0.048	0.048	0.041	0.042	0.054	0.056	0.058	0.048	0.022	0.021	0.023	0.039	0.040	0.036	0.021	0.018	0.005	0.002	0.039	0.068
3-Sep	0.002	Z	0.000	0.002	0.008	0.005	0.007	0.020	0.013	0.015	0.007	0.035	0.001	0.001	0.001	0.002	0.001	0.000	0.000	0.001	0.001	0.000	0.000	0.000	0.005	0.035
4-Sep	0.000	0.001	Z	0.002	0.012	0.012	0.005	0.015	0.005	0.001	0.010	0.007	0.005	0.001	0.001	0.000	0.000	0.000	0.003	0.005	0.002	0.001	0.000	0.000	0.004	0.015
5-Sep	0.013	0.041	0.024	Z	0.024	0.020	0.023	0.038	0.064	0.041	0.038	0.017	0.007	0.001	0.002	0.002	0.006	0.008	0.046	0.052	0.070	0.055	0.058	0.061	0.031	0.070
6-Sep	0.060	0.043	0.038	0.035	Z	0.052	0.048	0.032	0.037	0.012	0.031	0.039	0.044	0.039	0.130	0.090	0.072	0.070	0.080	0.067	0.072	0.069	0.059	0.060	0.056	0.130
7-Sep	0.076	0.074	0.091	0.077	0.079	Z	0.070	0.066	0.057	0.063	0.068	0.067	0.071	0.051	0.025	0.021	0.018	0.023	0.018	0.026	0.036	0.060	0.064	0.060	0.055	0.091
8-Sep	Z	0.088	0.077	0.080	0.082	0.075	0.082	0.099	0.077	0.151	0.084	0.073	0.068	0.069	0.072	0.078	0.095	0.107	0.095	0.082	0.072	0.069	0.070	0.088	0.084	0.151
9-Sep	0.080	Z	0.057	0.046	0.039	0.021	0.012	0.043	0.079	0.071	0.060	0.042	0.021	0.031	0.008	0.002	0.001	0.001	0.007	0.030	0.006	0.002	0.002	0.004	0.029	0.080
10-Sep	0.000	0.002	Z	0.001	0.001	0.000	0.001	0.001	0.000	0.001	0.001	0.000	0.000	0.000	0.000	0.000	0.000	0.002	0.001	0.006	0.007	0.005	0.008	0.007	0.002	0.008
11-Sep	0.010	0.006	0.012	Z	0.005	0.003	0.013	0.028	0.038	0.075	0.080	0.060	0.045	0.033	0.011	0.010	0.000	0.001	0.008	0.024	0.031	0.015	0.047	0.021	0.025	0.080
12-Sep	0.041	0.063	0.033	0.035	Z	0.048	0.047	0.071	0.017	0.017	0.010	0.010	0.022	0.037	0.037	0.031	0.031	0.025	0.030	0.033	0.018	0.024	0.017	0.022	0.031	0.071
13-Sep	0.017	0.016	0.016	0.018	0.016	Z	0.134	0.131	0.146	0.170	0.153	0.131	0.085	0.105	0.029	0.013	0.030	0.048	0.049	0.034	0.017	0.022	0.004	0.029	0.061	0.170
14-Sep	Z	0.050	0.039	0.020	0.025	0.008	0.003	0.002	0.009	0.056	0.055	0.060	0.014	0.003	0.002	0.014	0.006	0.002	0.018	0.015	0.009	0.009	0.007	0.010	0.019	0.060
15-Sep	0.006	Z	0.027	0.044	0.038	0.009	0.010	0.041	0.041	0.033	0.009	0.000	0.001	0.009	0.056	0.044	0.047	0.074	0.067	0.065	0.067	0.065	0.058	0.033	0.037	0.074
16-Sep	0.025	0.022	Z	0.027	0.023	0.022	0.017	0.005	0.012	0.045	0.036	0.020	0.000	0.000	0.000	0.000	0.000	0.000	0.001	0.007	0.003	0.000	0.002	0.037	0.013	0.045
17-Sep	0.039	0.032	0.029	Z	0.024	0.024	0.015	0.015	0.015	0.002	0.008	0.008	0.001	0.002	0.002	0.004	0.011	0.012	0.035	0.042	0.037	0.038	0.054	0.062	0.022	0.062
18-Sep	0.073	0.071	0.060	0.053	Z	0.055	0.058	0.053	0.047	0.027	0.052	0.014	0.011	0.010	0.011	0.000	0.000	0.000	0.000	0.003	0.002	0.001	0.002	0.001	0.026	0.073
19-Sep	0.000	0.003	0.022	0.057	0.063	Z	0.053	0.047	0.038	0.037	0.020	0.063	0.054	0.023	0.001	0.002	0.003	0.021	0.045	0.031	0.021	0.017	0.020	0.028	0.029	0.063
20-Sep	Z	0.049	0.050	0.048	0.048	0.046	0.019	0.002	0.003	0.022	0.025	C	C	C	C	0.000	0.000	0.000	0.004	0.001	0.025	0.020	0.016	0.017	0.021	0.050
21-Sep	0.024	Z	0.011	0.002	0.003	0.036	0.050	0.047	0.035	0.031	0.017	0.001	0.001	0.001	0.000	0.000	0.000	0.001	0.007	0.015	0.025	0.033	0.055	0.047	0.019	0.055
22-Sep	0.038	0.003	Z	0.012	0.038	0.043	0.052	0.037	0.046	0.059	0.038	0.040	0.045	0.017	0.044	0.049	0.035	0.052	0.031	0.053	0.109	0.062	0.067	0.055	0.045	0.109
23-Sep	0.051	0.051	0.055	Z	0.032	0.039	0.044	0.044	0.029	0.036	0.065	0.132	0.081	0.057	0.042	0.014	0.003	0.009	0.018	0.044	0.030	0.019	0.018	0.014	0.040	0.132
24-Sep	0.020	0.029	0.027	0.033	Z	0.189	0.073	0.075	0.037	0.007	0.004	0.001	0.000	0.006	0.014	0.003	0.000	0.001	0.001	0.005	0.005	0.004	0.042	0.068	0.028	0.189
25-Sep	0.051	0.023	0.044	0.045	0.052	Z	0.052	0.036	0.036	0.038	0.036	0.019	0.046	0.035	0.031	0.018	0.098	0.051	0.041	0.082	0.082	0.060	0.064	0.031	0.047	0.098
26-Sep	Z	0.024	0.049	0.008	0.014	0.033	0.021	0.036	0.036	0.004	0.001	0.006	0.005	0.008	0.008	0.000	0.001	0.003	0.003	0.013	0.003	0.005	0.003	0.003	0.012	0.049
27-Sep	0.034	Z	0.008	0.005	0.003	0.006	0.001	0.006	0.008	0.016	0.027	0.012	0.001	0.000	0.000	0.001	0.002	0.006	0.003	0.003	0.010	0.016	0.039	0.028	0.010	0.039
28-Sep	0.000	0.000	Z	0.000	0.000	0.000	0.000	0.001	0.001	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.006	0.038	0.043	0.048	0.043	0.008	0.048
29-Sep	0.025	0.021	0.012	Z	0.011	0.008	0.005	0.016	0.073	0.084	0.075	0.053	0.006	0.004	0.002	0.004	0.013	0.000	0.000	0.009	0.054	0.047	0.000	0.047	0.025	0.084
30-Sep	0.029	0.025	0.003	0.000	Z	0.000	0.001	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.001	0.014	0.038	0.008	0.000	0.000	0.000	0.000	0.005	0.038
	0.029	0.034	0.035	0.030	0.028	0.032	0.033	0.036	0.036	0.039	0.037	0.035	0.025	0.022	0.020	0.015	0.017	0.020	0.024	0.028	0.031	0.028	0.030	0.032	Diurnal Average	
	0.080	0.088	0.091	0.080	0.082	0.189	0.134	0.131	0.146	0.170	0.153	0.132	0.085	0.105	0.130	0.090	0.098	0.107	0.095	0.082	0.109	0.069	0.070	0.088	Diurnal Maximum	

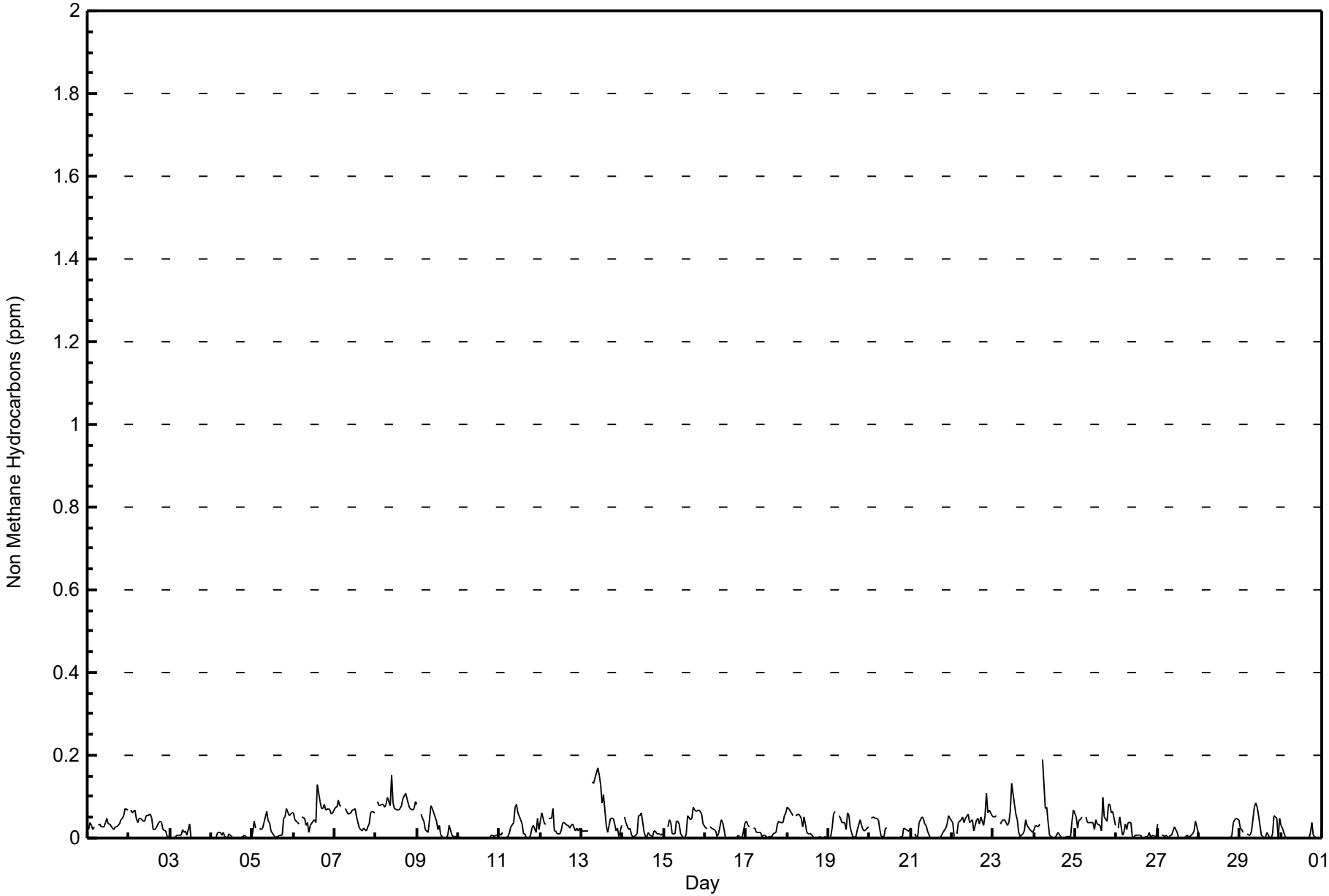
Z - zerospan C - Calibration

Wood Buffalo Environmental Association

Hourly Averages

Non Methane Hydrocarbons (NMHC) - ppm

Lower Camp - September 2024



Non Methane Hydrocarbons (NMHC) - ppm
Lower Camp - September 2024

Concentration Ranges (ppm)	Number of Hours	%	Cumulative %
0 - 0.005	200	29.15	29.15
0.006 - 0.05	370	53.94	83.09
0.06 - 0.1	112	16.33	99.42
> 0.1	4	0.58	100.00

Total Number of Valid Hours: 686

Total Number of Hours: 720

Wood Buffalo Environmental Association

Frequency Distribution

Non Methane Hydrocarbons (NMHC) - ppm

Lower Camp - September 2024

Concentration Ranges (ppm)	Wind Direction																
	N	NNE	NE	ENE	E	ESE	SE	SSE	S	SSW	SW	WSW	W	WNW	NW	NNW	**Totals**
0 - 0.005	8	5	4	4	5	13	10	5	5	3	14	40	36	20	15	11	198
0.006 - 0.05	7	5	7	11	17	76	28	13	9	6	14	30	55	49	20	21	368
0.06 - 0.1	1	1	1	1	4	44	18	3	1	1	2	4	9	10	6	5	111
> 0.1	0	0	0	0	0	2	0	0	0	0	0	0	0	1	1	0	4
Totals	16	11	12	16	26	135	56	21	15	10	30	74	100	80	42	37	681

Total Number of Valid Hours: 681

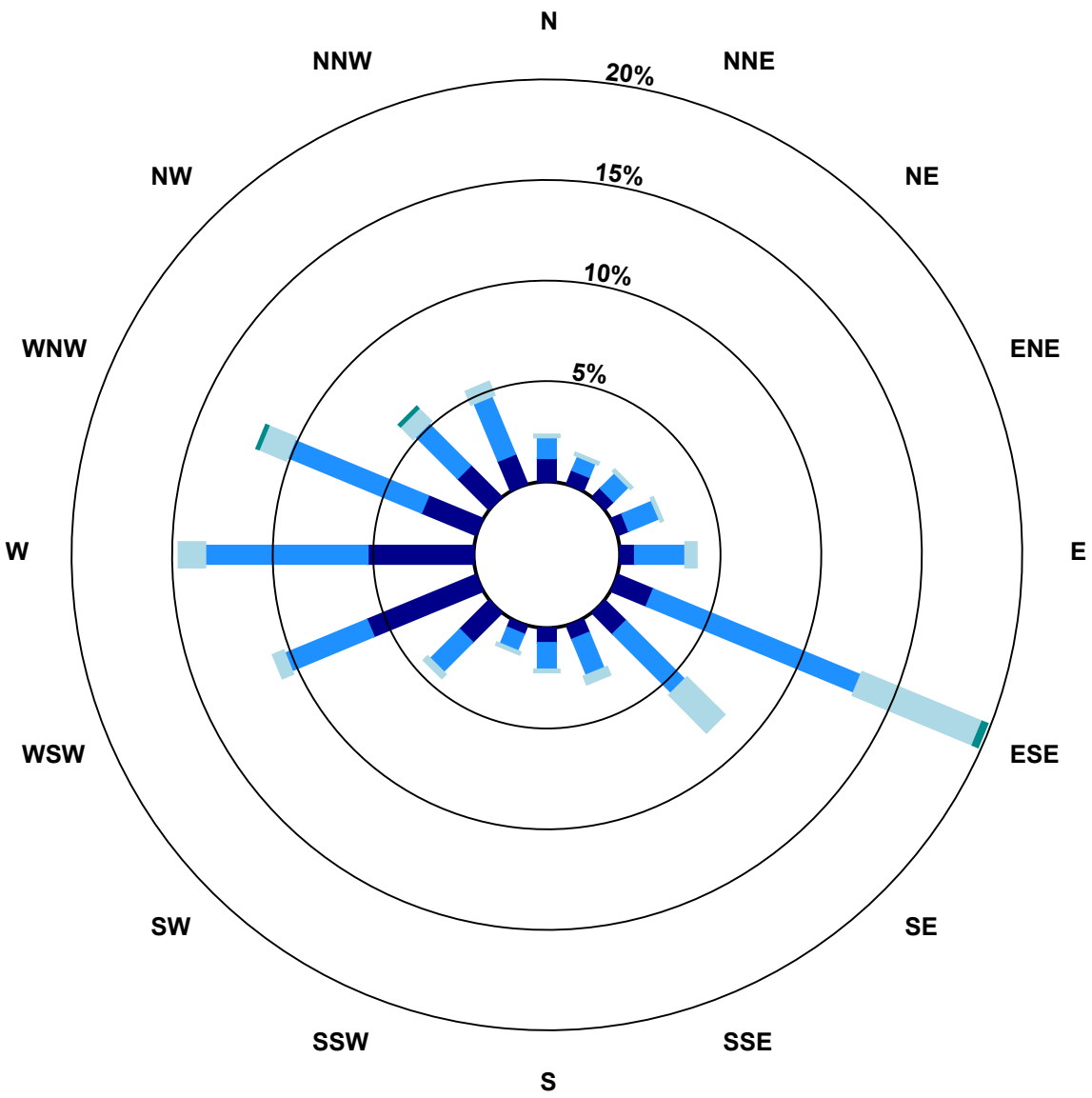
Total Number of Hours: 720

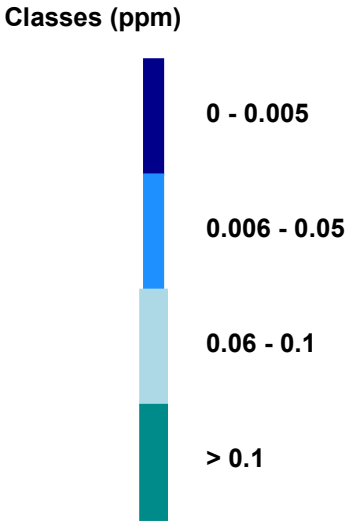
Wood Buffalo Environmental Association

Wind Rose Sep 2024

Non Methane Hydrocarbons (NMHC) - ppm

Lower Camp





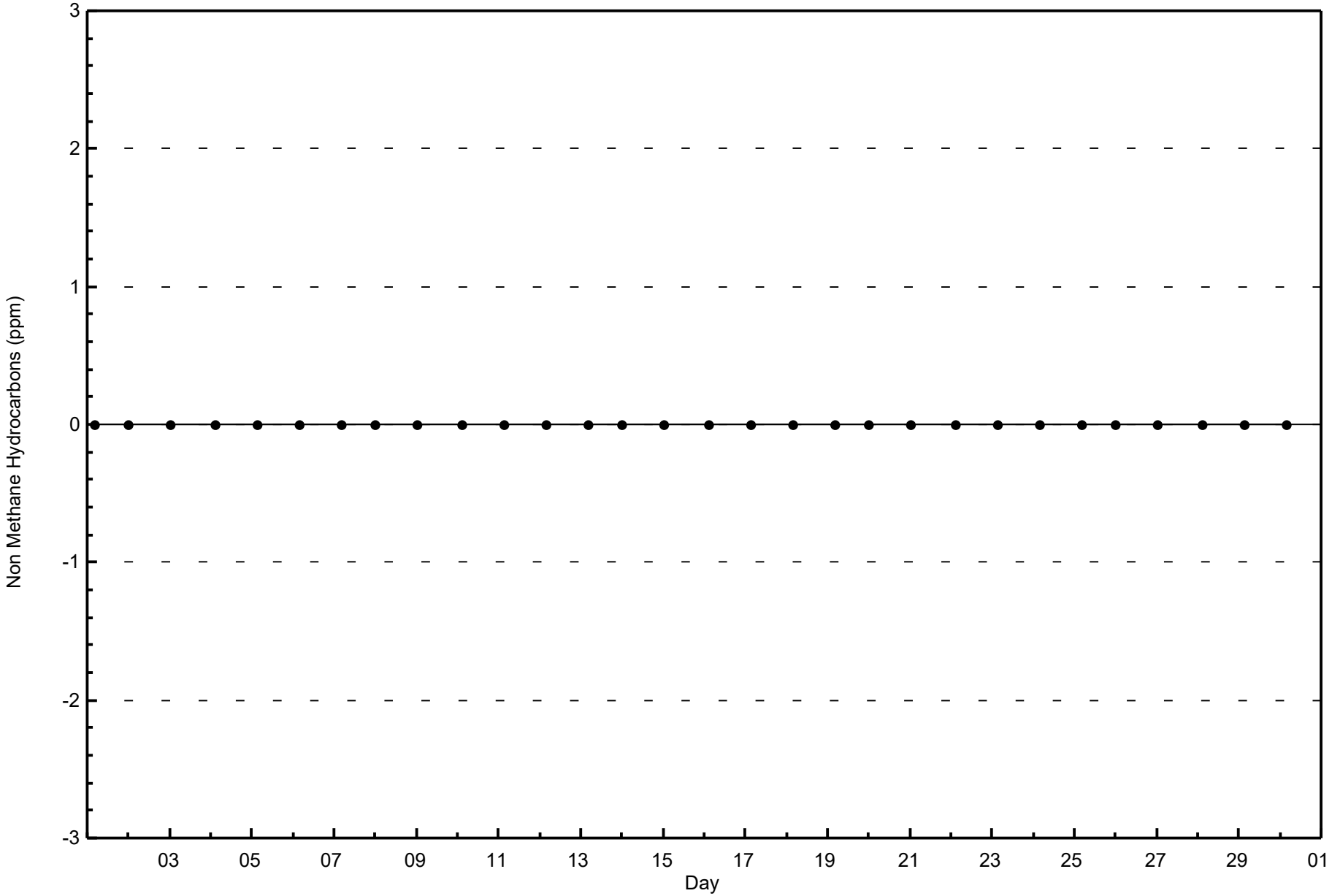
Total Number of Valid Hours: 681

Wood Buffalo Environmental Association

Zero Responses

Non Methane Hydrocarbons (NMHC) - ppm

Lower Camp - September 2024

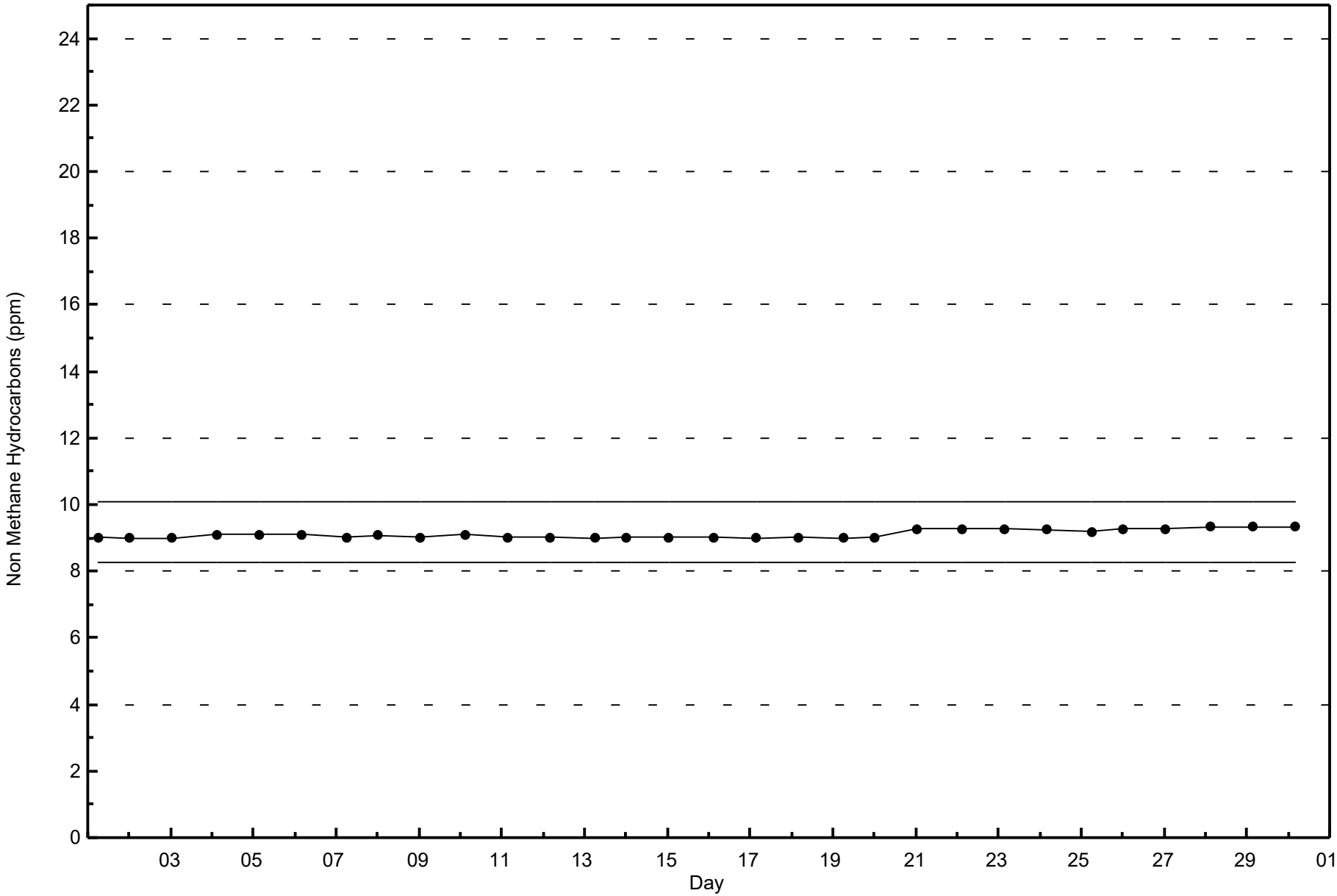


Wood Buffalo Environmental Association

Span Responses

Non Methane Hydrocarbons (NMHC) - ppm

Lower Camp - September 2024



Wood Buffalo Environmental Association

Summary of Hour Averages

Ambient Temperature 2m (AT2) - C

Lower Camp - September 2024

Maximum Value: 31.6 C on Sep 2 16:00

Maximum Daily Average: 21.4 C on Sep 2

Minimum Value: 3.0 C on Sep 19 06:00

Minimum Daily Average: 8.2 C on Sep 30

Maximum Diurnal Average: 19.4 C at hour 16

Minimum Diurnal Average: 9.0 C at hour 7

Monthly Average: 13.76 C

Percentiles: P_1 = 3.6 P_{10} = 7.3 Q_1 = 10.2 Median = 13.2 Q_3 = 16.6 P_{90} = 20.8 P_{99} = 29.3

Hours in Service:	720
Hours of Data:	720
Hours of Missing Data:	0
Hours of Calibration:	0
Percent Operational Time:	100.0

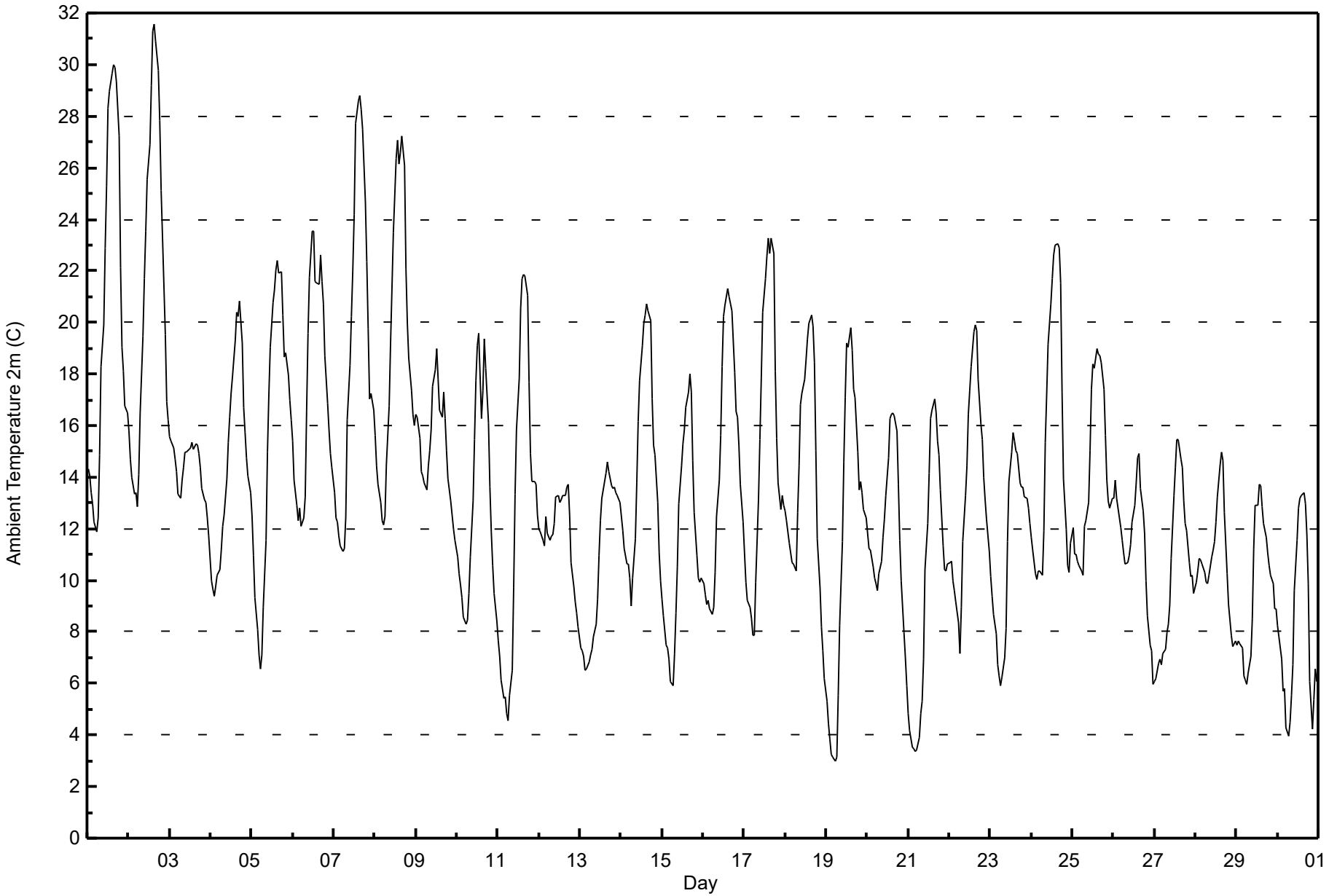
Day	Hourly Period Ending At (MST)																								Daily	Daily
	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24	Average	Maximum
1-Sep	14.3	14.0	13.4	13.0	12.3	11.9	12.4	14.9	18.3	19.9	22.9	25.2	28.3	29.0	29.7	30.0	29.9	29.4	27.2	22.1	19.1	18.1	16.7	16.5	20.3	30.0
2-Sep	15.8	14.7	14.0	13.4	13.4	12.8	14.1	16.5	19.5	21.7	23.6	25.6	26.9	29.2	31.3	31.6	30.9	29.8	27.8	25.1	23.3	19.5	16.9	16.2	21.4	31.6
3-Sep	15.6	15.4	15.2	14.7	14.2	13.4	13.2	13.9	14.4	14.9	15.0	15.1	15.1	15.4	15.1	15.3	15.2	14.9	14.4	13.6	13.1	13.0	12.4	11.7	14.3	15.6
4-Sep	10.0	9.6	9.4	9.8	10.2	10.4	11.2	12.1	12.5	13.9	15.3	16.3	17.2	17.9	19.3	20.4	20.2	20.8	19.2	16.7	15.7	14.7	14.1	13.4	14.6	20.8
5-Sep	12.5	11.0	9.3	8.1	7.1	6.6	7.1	9.0	11.6	15.0	17.2	19.0	20.8	21.2	22.0	22.4	21.9	21.9	20.3	18.6	18.8	18.0	17.0	16.2	15.5	22.4
6-Sep	15.4	13.9	12.9	12.3	12.8	12.1	12.4	13.2	16.6	19.6	21.7	23.5	23.5	21.6	21.5	21.5	22.6	21.6	20.7	18.7	16.9	15.8	14.9	14.4	17.5	23.5
7-Sep	13.4	12.4	12.2	11.7	11.4	11.1	11.2	12.5	16.2	18.3	20.2	22.0	24.2	27.7	28.6	28.8	28.3	27.5	24.7	22.3	19.7	17.0	17.3	16.6	19.0	28.8
8-Sep	15.6	14.4	13.7	13.0	12.3	12.1	12.4	14.5	16.7	19.2	21.3	23.5	26.4	27.0	26.1	26.6	27.2	26.1	22.1	20.0	18.6	17.4	16.4	16.0	19.1	27.2
9-Sep	16.5	16.4	15.5	14.2	14.1	13.8	13.5	14.4	15.0	15.9	17.5	18.2	19.0	17.8	16.6	16.3	17.3	16.3	15.0	13.9	13.1	12.5	12.0	11.6	15.3	19.0
10-Sep	10.9	10.3	9.8	9.3	8.6	8.3	8.4	9.5	10.9	13.1	15.5	17.7	19.1	19.6	16.2	17.4	19.3	18.2	16.1	13.6	11.9	10.6	9.5	8.4	13.0	19.6
11-Sep	7.6	7.1	6.1	5.4	5.5	4.8	4.6	5.5	6.5	9.7	13.4	15.8	17.9	20.6	21.7	21.9	21.8	21.0	17.7	14.9	13.8	13.8	13.7	12.5	12.6	21.9
12-Sep	12.0	11.9	11.6	11.3	12.5	11.8	11.5	11.7	11.8	12.2	13.2	13.3	13.0	13.1	13.3	13.3	13.6	13.7	12.5	10.7	9.8	9.2	8.7	8.2	11.8	13.7
13-Sep	7.4	7.3	7.0	6.5	6.6	6.8	7.1	7.3	7.8	8.3	9.3	11.0	12.3	13.2	13.8	14.1	14.6	14.2	13.7	13.6	13.6	13.4	13.3	13.0	10.6	14.6
14-Sep	12.5	11.9	11.2	10.6	10.6	10.1	9.0	10.1	11.6	13.8	16.2	17.7	19.1	19.9	20.3	20.7	20.4	20.1	17.0	15.2	14.9	13.0	11.1	10.0	14.5	20.7
15-Sep	9.3	8.6	7.5	7.4	6.9	6.1	5.9	7.2	8.7	10.5	13.0	14.4	15.3	15.8	16.7	17.3	18.0	17.3	14.6	12.6	11.0	10.1	9.9	10.1	11.4	18.0
16-Sep	9.9	9.5	9.1	9.2	8.9	8.7	9.0	10.3	12.5	13.9	15.6	18.3	20.2	20.7	21.3	21.0	20.7	20.4	18.0	16.6	16.3	15.2	13.7	12.3	14.6	21.3
17-Sep	11.1	9.9	9.2	8.9	8.5	7.9	7.9	9.9	13.1	15.5	17.8	20.4	21.7	22.6	23.3	22.7	23.3	22.6	18.1	15.5	13.8	12.7	13.3	12.9	15.1	23.3
18-Sep	12.7	12.3	11.4	11.1	10.7	10.6	10.4	12.7	14.4	16.8	17.3	17.8	18.5	19.4	20.0	20.3	19.8	18.4	15.1	11.6	9.7	8.2	7.3	6.2	13.9	20.3
19-Sep	5.3	4.4	3.9	3.3	3.1	3.0	3.1	5.5	8.3	11.5	14.6	17.1	19.2	19.0	19.8	18.9	17.4	17.1	15.0	13.5	13.8	13.4	12.7	12.4	11.5	19.8
20-Sep	11.8	11.2	11.2	10.5	10.1	9.9	9.6	10.3	10.7	11.7	12.4	13.3	14.7	16.3	16.4	16.5	16.4	15.8	13.7	11.5	10.0	8.0	7.0	5.9	11.9	16.5
21-Sep	4.8	4.2	3.5	3.4	3.4	3.4	3.9	4.8	5.3	7.0	10.4	12.2	14.1	16.3	16.6	17.0	16.5	15.4	14.9	13.5	11.3	10.4	10.4	10.7	9.7	17.0
22-Sep	10.7	10.7	10.0	9.6	9.2	8.4	7.2	8.9	11.5	13.3	14.4	16.4	17.4	18.3	19.7	19.9	19.7	17.8	16.1	15.5	14.0	13.1	12.4	11.1	13.5	19.9
23-Sep	10.1	9.4	8.7	7.9	6.7	6.3	5.9	6.2	7.0	8.1	11.5	13.8	15.0	15.7	15.4	15.0	14.9	13.8	13.6	13.6	13.3	13.2	12.8	12.2	11.3	15.7
24-Sep	11.7	11.2	10.3	10.0	10.3	10.4	10.2	11.9	15.4	17.2	19.2	20.7	21.7	22.6	23.0	23.0	22.9	21.5	17.3	13.9	12.0	10.6	10.3	11.4	15.4	23.0
25-Sep	12.0	11.0	11.0	10.7	10.6	10.4	10.2	12.1	12.3	13.0	15.0	17.4	18.4	18.2	19.0	18.7	18.7	18.5	17.4	15.6	13.9	13.1	12.8	13.2	14.3	19.0
26-Sep	13.2	13.9	13.2	12.4	12.0	11.5	11.0	10.6	10.7	11.0	11.4	12.2	12.9	13.8	14.7	14.9	13.6	12.7	11.8	10.0	8.6	7.5	7.3	5.9	11.5	14.9
27-Sep	6.0	6.2	6.8	7.0	6.7	7.1	7.3	8.0	8.3	9.0	10.9	13.3	14.4	15.5	15.5	14.7	14.4	13.1	12.2	11.9	10.7	10.2	10.2	9.5	10.4	15.5
28-Sep	9.9	10.4	10.9	10.8	10.6	10.3	10.0	9.9	10.2	10.9	11.2	11.5	12.3	13.2	14.5	15.0	14.6	12.6	10.3	9.1	8.4	7.9	7.4	7.7	10.8	15.0
29-Sep	7.5	7.7	7.6	7.4	6.3	6.1	6.0	6.4	7.0	8.5	11.3	12.9	12.9	13.7	13.7	12.9	12.2	11.7	11.1	10.6	10.2	9.9	8.9	8.9	9.6	13.7
30-Sep	8.3	7.8	7.0	5.7	5.8	4.3	3.9	4.5	5.6	6.7	9.6	11.6	12.8	13.2	13.3	13.4	13.0	11.8	9.9	6.1	4.2	5.4	6.6	6.1	8.2	13.4
	11.1	10.6	10.1	9.6	9.4	9.0	9.0	10.1	11.7	13.3	15.3	16.9	18.1	18.9	19.3	19.4	19.3	18.5	16.6	14.7	13.5	12.5	11.9	11.4	Diurnal Average	
	16.5	16.4	15.5	14.7	14.2	13.8	14.1	16.5	19.5	21.7	23.6	25.6	28.3	29.2	31.3	31.6	30.9	29.8	27.8	25.1	23.3	19.5	17.3	16.6	Diurnal Maximum	

Wood Buffalo Environmental Association

Hourly Averages

Ambient Temperature 2m (AT2) - C

Lower Camp - September 2024



Concentration Ranges (C)	Number of Hours	%	Cumulative %
-50 - -20	0	0.00	0.00
-20 - 0	0	0.00	0.00
0 - 10	167	23.19	23.19
10 - 20	463	64.31	87.50
> 20	90	12.50	100.00

Total Number of Valid Hours: 720

Total Number of Hours: 720

Wood Buffalo Environmental Association

Summary of Hour Averages

Relative Humidity 2m (RH2) - %

Lower Camp - September 2024

Maximum Value: 100.0 % on Sep 7 03:00

Maximum Daily Average: 92.4 % on Sep 23

Minimum Value: 24.1 % on Sep 2 16:00

Minimum Daily Average: 57.4 % on Sep 30

Maximum Diurnal Average: 91.7 % at hour 6

Minimum Diurnal Average: 50.8 % at hour 16

Monthly Average: 73.76 %

Percentiles: P_1 = 31.6 P_{10} = 45.9 Q_1 = 59.8 Median = 76.3 Q_3 = 89.8 P_{90} = 97.3 P_{99} = 100.0

Hours in Service:	720
Hours of Data:	687
Hours of Missing Data:	33
Hours of Calibration:	0
Percent Operational Time:	95.4

Day	Hourly Period Ending At (MST)																								Daily	Daily
	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24	Average	Maximum
1-Sep	70.0	68.1	73.1	78.2	82.9	85.2	83.0	74.4	67.6	66.4	60.6	55.5	40.2	39.3	35.1	33.4	34.8	35.1	40.2	62.8	82.6	82.8	89.3	89.3	63.7	89.3
2-Sep	92.9	97.3	97.6	97.6	96.3	97.1	92.2	81.7	72.2	65.8	62.5	54.4	53.4	40.7	27.3	24.1	26.9	31.2	34.8	43.0	50.6	66.0	74.5	77.4	64.9	97.6
3-Sep	80.9	82.1	79.0	81.3	83.1	85.3	85.2	83.2	80.5	76.6	74.2	71.7	71.4	70.5	71.4	69.6	68.8	70.2	72.5	77.6	78.3	78.2	81.0	83.9	77.4	85.3
4-Sep	92.4	97.1	97.2	97.8	98.9	97.4	93.2	88.2	83.9	77.6	69.8	65.2	60.3	56.7	44.6	40.2	42.3	39.4	45.6	56.8	58.7	63.0	62.9	64.7	70.6	98.9
5-Sep	69.2	78.4	89.6	96.3	98.6	99.6	99.7	93.4	82.2	67.8	62.9	57.8	48.1	39.8	37.9	39.3	37.5	41.8	46.6	52.6	46.6	47.5	50.2	52.9	64.0	99.7
6-Sep	58.9	72.2	72.9	74.1	71.4	75.9	77.5	76.2	67.0	62.0	58.0	49.0	51.4	63.0	60.4	60.5	58.0	64.9	68.5	75.4	82.8	89.4	89.5	92.4	69.6	92.4
7-Sep	97.6	98.9	100.0	100.0	100.0	100.0	100.0	98.3	79.7	72.4	66.3	62.3	54.5	36.9	34.1	33.8	33.8	36.0	42.6	51.2	65.0	79.9	77.5	79.6	70.9	100.0
8-Sep	84.3	90.3	94.0	95.8	98.5	99.2	98.8	89.5	79.8	71.8	66.9	60.2	48.7	47.5	53.0	52.6	54.9	59.6	72.3	80.5	86.1	91.5	93.2	95.6	77.7	99.2
9-Sep	89.3	89.5	90.8	94.3	91.5	86.2	85.2	83.1	84.7	84.2	75.4	69.3	65.0	67.2	68.2	67.4	63.4	62.3	69.5	69.2	68.8	72.2	77.3	81.5	77.3	94.3
10-Sep	84.9	85.2	86.7	88.5	90.6	89.5	87.1	81.4	74.9	67.3	58.2	49.1	44.3	40.7	54.9	46.4	41.8	47.9	57.6	73.7	86.7	90.1	96.1	91.6	71.5	96.1
11-Sep	94.2	98.1	99.2	99.7	100.0	100.0	100.0	OR	OR	OR	72.8	64.9	58.1	43.2	38.6	36.5	34.7	38.6	51.9	66.6	75.8	70.0	67.2	71.6	70.5	100.0
12-Sep	71.9	76.4	76.0	82.8	78.6	93.7	98.2	98.9	98.2	96.8	87.5	83.1	84.6	87.9	85.3	84.2	81.9	80.4	86.9	96.8	99.3	100.0	100.0	OR	88.2	100.0
13-Sep	OR	OR	OR	OR	OR	OR	OR	OR	OR	OR	OR	OR	93.1	88.3	85.8	83.8	82.4	83.3	84.6	85.4	84.9	86.7	85.5	83.6	--	93.1
14-Sep	84.5	85.2	87.5	89.8	90.0	89.8	92.6	86.8	80.0	73.1	66.3	58.8	51.7	50.1	49.6	47.7	50.2	52.5	64.9	80.2	68.9	76.3	89.5	93.9	73.3	93.9
15-Sep	97.0	97.6	98.3	99.8	100.0	100.0	100.0	OR	OR	OR	78.2	69.7	67.1	64.5	59.6	57.2	56.1	58.9	68.2	83.3	93.0	97.1	98.8	96.2	82.9	100.0
16-Sep	95.0	95.5	96.7	95.0	96.1	95.4	95.4	90.8	81.4	70.5	60.9	51.7	41.8	40.1	38.9	39.1	39.7	42.3	50.0	53.8	55.2	60.6	70.5	75.6	68.0	96.7
17-Sep	84.0	90.0	93.2	94.8	97.8	98.3	99.0	91.5	77.5	69.7	62.1	56.1	51.4	47.7	42.8	46.0	42.1	45.1	64.0	80.3	90.4	94.7	87.5	84.4	74.6	99.0
18-Sep	84.0	85.0	89.3	90.4	91.1	90.1	90.7	82.5	74.6	68.2	69.4	67.9	61.2	54.0	46.5	42.8	41.7	40.6	48.9	79.3	84.5	89.8	94.4	97.4	73.5	97.4
19-Sep	97.9	98.6	99.3	99.8	100.0	100.0	OR	100.0	89.7	71.7	58.3	54.3	50.1	43.1	38.0	45.6	53.6	48.6	67.0	77.9	67.8	69.2	76.7	79.0	73.3	100.0
20-Sep	82.3	85.9	85.2	88.3	87.1	85.5	81.9	76.0	75.2	72.8	70.0	67.2	58.8	49.5	46.7	43.3	38.9	42.9	53.3	60.3	70.3	87.3	91.2	94.5	70.6	94.5
21-Sep	97.0	98.2	99.2	99.8	100.0	100.0	100.0	100.0	100.0	92.6	76.5	70.7	65.9	58.5	51.9	46.2	49.4	56.5	59.0	67.6	81.5	94.0	92.8	88.1	81.1	100.0
22-Sep	84.8	82.6	82.0	82.7	86.2	91.7	96.7	90.2	77.0	69.8	64.4	59.3	55.6	53.4	51.0	50.4	51.4	58.1	64.0	68.7	83.1	92.1	94.0	97.1	74.4	97.1
23-Sep	98.4	98.8	99.5	99.8	100.0	100.0	OR	OR	OR	OR	OR	83.2	77.1	77.8	81.3	82.7	80.0	91.6	93.0	94.6	98.7	99.4	100.0	100.0	92.4	100.0
24-Sep	OR	OR	OR	OR	OR	OR	OR	OR	87.4	76.1	64.7	55.1	47.5	40.5	33.3	31.3	32.9	39.0	57.3	74.7	86.0	90.1	92.0	86.5	--	92.0
25-Sep	81.2	85.7	86.6	86.7	86.9	88.8	92.1	82.0	84.4	83.0	75.4	62.5	57.7	61.3	59.2	63.0	64.5	65.6	69.9	80.8	89.8	93.9	95.4	92.2	78.7	95.4
26-Sep	86.7	80.6	87.1	93.9	95.4	95.4	93.5	93.7	94.5	90.4	86.4	78.9	71.9	66.5	64.3	65.5	66.4	69.7	69.1	82.4	92.9	95.3	95.0	98.5	83.9	98.5
27-Sep	97.9	95.4	87.3	82.6	82.3	78.3	79.2	79.0	82.6	79.7	72.1	62.9	60.0	57.0	49.2	57.6	58.8	67.9	74.6	74.7	88.8	91.9	87.3	84.6	76.3	97.9
28-Sep	75.8	71.7	68.4	69.2	70.2	71.7	75.8	76.1	74.6	70.3	65.7	62.3	58.5	53.7	49.2	46.2	48.1	59.5	73.3	85.5	86.7	91.2	92.3	92.1	70.3	92.3
29-Sep	91.3	90.9	90.1	91.0	96.5	96.7	95.6	93.1	90.5	85.1	72.4	63.6	62.2	58.0	52.8	56.9	62.0	57.5	59.3	62.1	67.2	67.9	70.9	68.5	75.1	96.7
30-Sep	69.4	65.9	67.9	75.9	70.6	77.1	78.0	76.2	69.7	64.3	52.1	44.1	36.6	32.7	31.0	31.0	31.7	38.1	44.5	69.1	77.9	67.1	52.6	54.1	57.4	78.0
	85.5	87.2	88.3	90.2	90.7	91.7	91.2	86.7	81.1	74.8	68.2	62.4	58.3	54.3	51.4	50.8	50.9	54.2	61.8	72.2	78.3	82.5	84.2	84.4	Diurnal Average	
	98.4	98.9	100.0	100.0	100.0	100.0	100.0	100.0	100.0	96.8	87.5	83.2	93.1	88.3	85.8	84.2	82.4	91.6	93.0	96.8	99.3	100.0	100.0	100.0	Diurnal Maximum	

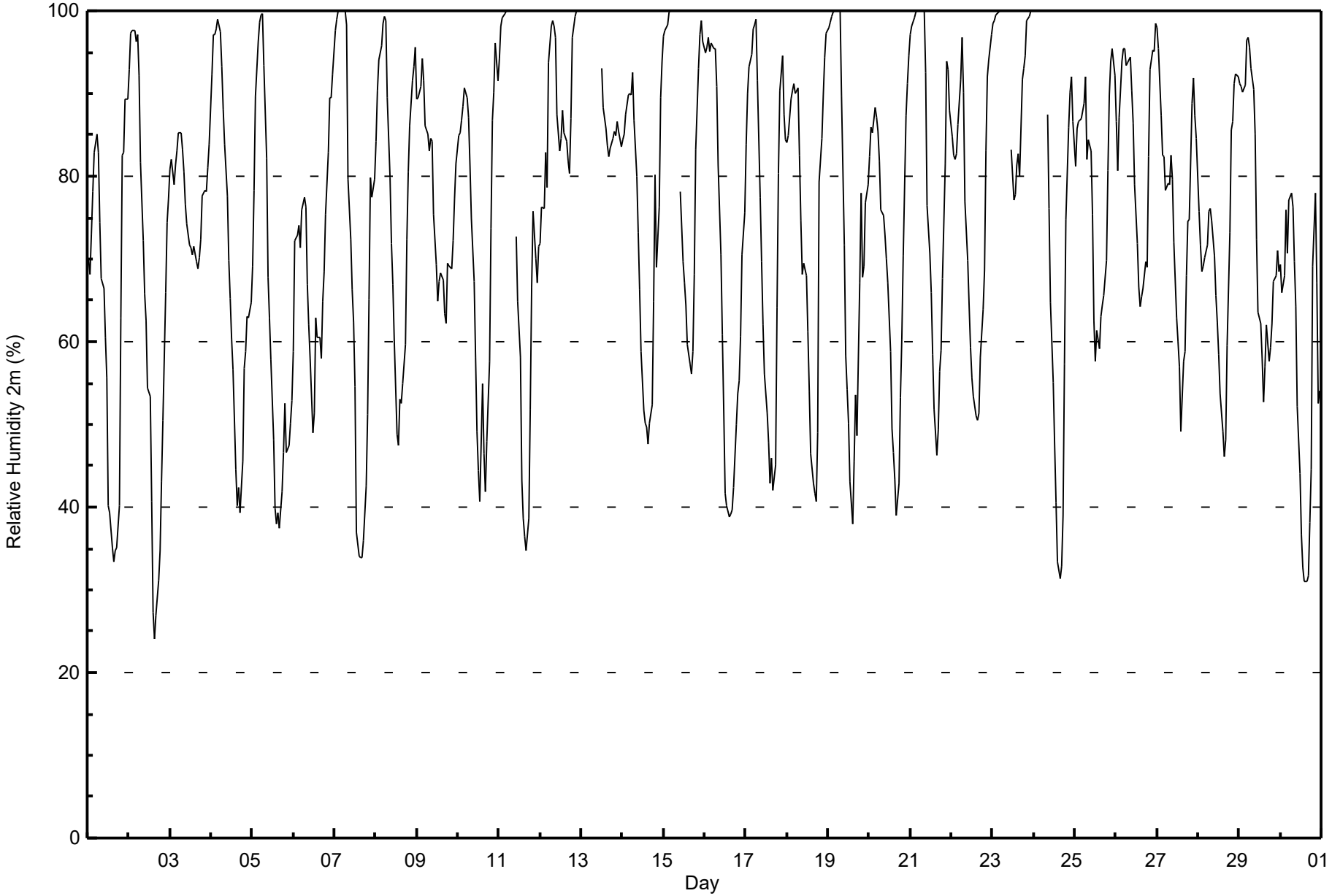
OR - Out of Range

Wood Buffalo Environmental Association

Hourly Averages

Relative Humidity 2m (RH2) - %

Lower Camp - September 2024



Wood Buffalo Environmental Association

Summary of Hour Averages

Barometric Pressure (BP) - inHg

Lower Camp - September 2024

Maximum Value: 29.5 inHg on Sep 5 08:00

Maximum Daily Average: 29.4 inHg on Sep 5

Minimum Value: 28.5 inHg on Sep 25 16:00

Minimum Daily Average: 28.6 inHg on Sep 25

Maximum Diurnal Average: 29.0 inHg at hour 9

Minimum Diurnal Average: 28.9 inHg at hour 18

Monthly Average: 28.96 inHg

Percentiles: P_1 = 28.5 P_{10} = 28.8 Q_1 = 28.8 Median = 28.9 Q_3 = 29.1 P_{90} = 29.2 P_{99} = 29.5

Hours in Service:	720
Hours of Data:	720
Hours of Missing Data:	0
Hours of Calibration:	0
Percent Operational Time:	100.0

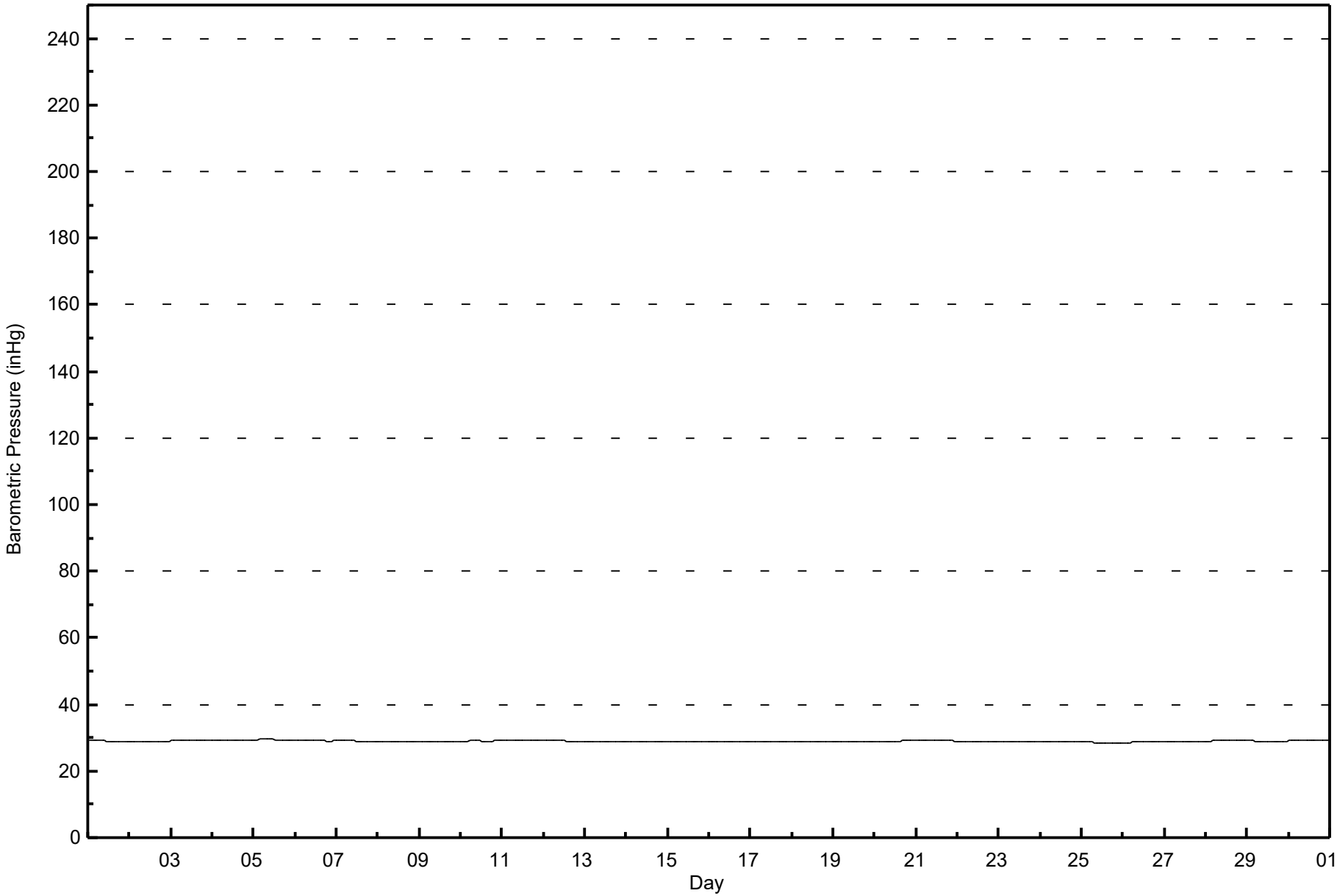
Day	Hourly Period Ending At (MST)																								Daily	Daily
	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24	Average	Maximum
1-Sep	29.2	29.2	29.1	29.1	29.1	29.1	29.1	29.1	29.1	29.0	29.0	29.0	29.0	28.9	28.9	28.9	28.9	28.9	28.9	28.9	28.9	28.9	28.9	28.9	29.0	29.2
2-Sep	28.9	28.9	28.9	28.9	28.9	28.9	28.9	28.9	28.9	28.9	28.9	28.9	28.9	28.8	28.8	28.8	28.8	28.8	28.8	28.9	28.9	29.0	29.0	29.0	28.9	29.0
3-Sep	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	29.2	29.2	29.2	29.2	29.2	29.1	29.2
4-Sep	29.3	29.3	29.3	29.3	29.3	29.3	29.3	29.3	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	29.4
5-Sep	29.4	29.4	29.4	29.4	29.5	29.5	29.5	29.5	29.5	29.5	29.5	29.5	29.4	29.4	29.4	29.4	29.3	29.3	29.3	29.3	29.3	29.3	29.2	29.2	29.4	29.5
6-Sep	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	29.0	29.0	29.0	29.0	29.0	29.0	29.0	29.0	29.1	29.1	29.2
7-Sep	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	28.9	28.9	28.9	28.9	28.9	28.9	29.0	29.0	29.0	29.0	29.1
8-Sep	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	28.9	28.8	28.8	28.8	28.8	28.8	28.8	28.8	28.8	28.9	29.0
9-Sep	28.8	28.7	28.7	28.7	28.7	28.7	28.6	28.7	28.7	28.7	28.7	28.7	28.7	28.8	28.8	28.8	28.8	28.8	28.9	28.9	28.9	29.0	29.0	29.0	28.8	29.0
10-Sep	29.0	29.0	29.0	29.0	29.0	29.0	29.0	29.0	29.0	29.1	29.0	29.0	29.0	29.0	29.0	29.0	29.0	29.0	29.0	29.0	29.0	29.1	29.1	29.1	29.0	29.1
11-Sep	29.1	29.1	29.1	29.1	29.1	29.1	29.1	29.2	29.2	29.1	29.1	29.1	29.1	29.1	29.1	29.0	29.0	29.0	29.0	29.0	29.1	29.1	29.1	29.1	29.1	29.2
12-Sep	29.1	29.1	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	29.0	29.0	29.0	29.1
13-Sep	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	28.8	28.8	28.9	29.0
14-Sep	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	28.9	28.9	28.8	28.9
15-Sep	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	29.0	29.0	29.0	29.0	29.0	29.0	29.0
16-Sep	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	28.9	28.9	29.0
17-Sep	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
18-Sep	28.9	28.9	28.9	28.8	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	28.9	28.9	28.9	28.9	28.9	28.9	28.9	28.9	28.9
19-Sep	28.9	28.9	28.9	28.9	28.9	28.9	28.9	28.9	28.9	28.9	28.9	28.8	28.8	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
20-Sep	28.8	28.8	28.8	28.8	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	29.1	29.1	29.1	29.1	29.2	29.2	29.2	29.0	29.2
21-Sep	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	29.1	29.1	29.1	29.1	29.1	29.1	29.1	29.0	29.0	29.0	29.2	29.3
22-Sep	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	28.8	28.8	28.8	28.8	28.8	28.8	28.9	28.9	28.8	28.9	28.9	29.0
23-Sep	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	28.8	28.8	28.8	28.8	28.8	28.8	28.7	28.7	28.9	28.9
24-Sep	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	28.8	28.8	28.8	28.8	28.8	28.8	28.8	28.7	28.8
25-Sep	28.8	28.8	28.7	28.7	28.7	28.7	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	28.5	28.5	28.5	28.6	28.8
26-Sep	28.6	28.6	28.5	28.6	28.6	28.6	28.6	28.7	28.7	28.7	28.7	28.7	28.7	28.7	28.7	28.7	28.8	28.8	28.8	28.8	28.8	28.8	28.8	28.8	28.7	28.8
27-Sep	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	28.9	28.9	28.9	28.9	29.0	28.9	29.0
28-Sep	29.0	29.0	29.0	29.0	29.0	29.1	29.1	29.1	29.2	29.2	29.2	29.2	29.2	29.2	29.2	29.2	29.2	29.1	29.1	29.1	29.1	29.1	29.1	29.1	29.1	29.2
29-Sep	29.1	29.1	29.1	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	28.9	29.0	29.0	29.0	29.0	29.0	29.0	29.0	29.1
30-Sep	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	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	28.9	28.9	28.9	28.9	28.9	28.9	29.0	29.0	29.0	29.0	Diurnal Average	
	29.4	29.4	29.4	29.4	29.5	29.5	29.5	29.5	29.5	29.5	29.5	29.5	29.4	29.4	29.4	29.4	29.4	29.4	29.4	29.4	29.4	29.4	29.4	29.4	Diurnal Maximum	

Wood Buffalo Environmental Association

Hourly Averages

Barometric Pressure (BP) - inHg

Lower Camp - September 2024



Wood Buffalo Environmental Association

Summary of Hour Averages

Wind Speed 10m (WS10) - km/h

Lower Camp - September 2024

Maximum Speed: 27 km/h on Sep 9 18:00

Maximum Daily Speed Average: 12.4 km/h on Sep 9

Minimum Speed Value: 0 km/h on Sep 26 21:00

Minimum Daily Speed Average: 1.0 km/h on Sep 11

Maximum Diurnal Speed Average: 3.8 km/h at hour 17

Minimum Diurnal Speed Average: 0.8 km/h at hour 8

Monthly Average Velocity: 1.8 km/h 236.4 deg

Percentiles: $P_1 = 0$ $P_{10} = 2$ $Q_1 = 4$ Median = 7 $Q_3 = 10$ $P_{90} = 14$ $P_{99} = 23$

Hours in Service:	720
Hours of Data:	714
Hours of Missing Data:	6
Percent Operational Time:	99.4

Day	Hourly Period Ending At (MST)																								Daily	Daily
	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24	Average	Maximum
1-Sep	ESE7	SE7	SE7	SE8	ESE8	E9	E9	ENE9	ESE10	ESE9	ESE11	ESE9	SSW14	SW14	WSW17	WSW15	SW14	WSW12	WSW7	SW3	N5	NE2	ESE3	ESE5	SSE3.8	WSW17
2-Sep	ENE2	NE1	ESE2	ESE7	ESE9	ESE7	ESE6	ESE9	ESE8	ESE8	ESE9	E4	ESE7	WNW3	WSW12	WSW14	WSW12	SW11	SW11	W12	NW17	NNW16	NW12	NW11	WSW1.2	NW17
3-Sep	NNW9	NNW10	NNW10	NNW8	NNW7	NNW2	NW5	N6	NNW7	N8	NNW10	NNW11	N11	NNE9	NNE8	NNE8	N8	NNE8	N6	NNW4	NW5	NNW7	NW6	NW5	N6.9	N11
4-Sep	WNW1	UO	E1	SSE1	SSE2	SSW3	WSW8	WSW9	WSW12	WSW14	W13	NW5	WSW7	WSW9	W14	WNW13	WNW6	WSW15	WSW12	WSW7	SW9	SW13	SW14	SW16	WSW8.0	SW16
5-Sep	WNW12	W7	W2	NE1	W0	NNE0	N2	NNE3	ENE3	ESE7	ESE11	ESE11	ESE9	ESE8	SE7	ESE9	SE8	SE9	SE11	ESE10	SE12	SE11	SE12	SE12	ESE5.2	SE12
6-Sep	SE11	ESE8	ESE7	ESE7	SE7	ESE10	ESE12	ESE12	ESE13	ESE10	ESE9	SSW6	SSE5	ESE8	SE8	SE9	SE8	ESE8	ESE7	SE4	SE4	ESE4	SSW3	ESE1	SE7.1	ESE13
7-Sep	E4	E2	ESE7	ESE6	ESE5	SE4	SE4	ESE6	ESE10	ESE11	ESE11	ESE11	ESE9	SW9	WSW14	WSW15	SW13	SW12	SSW10	SW7	WSW1	SSE2	SSE4	SE4	SSE4.1	WSW15
8-Sep	SE4	ESE6	ESE6	ESE3	SE4	ESE6	ESE6	ESE6	ESE6	ESE8	ESE10	ESE10	ESE9	SE8	ESE6	NNE3	WNW4	W4	WSW3	WSW3	W4	W3	W4	WNW4	SE2.9	ESE10
9-Sep	W4	ESE1	W4	WSW1	NW5	WNW6	WNW6	WNW9	WNW8	WNW9	NW5	WNW12	W18	W21	WSW23	WSW20	SW21	WSW27	WSW25	W22	W23	WSW16	WSW16	WSW16	W12.4	WSW27
10-Sep	WSW18	WSW17	WSW15	WSW14	WSW7	WSW10	SW12	SW15	WSW13	WSW8	SW9	WSW12	W15	W16	NW4	WSW11	W10	WNW8	WNW4	WSW1	W3	WNW3	WNW4	WNW3	WSW9.3	WSW18
11-Sep	W3	WNW2	WNW2	NW2	WNW4	N3	NE4	NNW2	W3	NW4	NNW5	NNW5	NNW5	E6	ESE9	E7	E5	ESE5	WSW1	W3	WNW3	E2	E2	ESE6	NNE1.0	ESE9
12-Sep	ESE5	ESE1	SSE1	W4	SE6	ESE7	ENE2	N4	NNW3	WNW4	NNW3	NNW4	N2	E8	E6	NE4	ENE7	E8	NE3	W4	WSW3	WNW1	WNW1	W3	ENE1.4	E8
13-Sep	WNW3	WNW5	WNW6	NNE6	NNW5	WNW6	WNW6	NW6	WNW6	NW7	WNW8	NW8	NW6	NW4	NNE6	NW4	WNW7	WNW7	W7	WNW5	NW5	WNW6	WNW8	WNW8	WNW5.5	NW8
14-Sep	W6	W8	WSW11	WSW8	WSW9	WSW8	WSW6	WSW5	WSW8	WSW5	SW2	W5	WSW9	WSW8	WSW13	W14	WNW12	WNW7	UO	WNW3	W4	WNW2	W1	W3	WSW6.3	W14
15-Sep	W5	WNW3	W3	WNW3	WNW4	NNW1	NNW3	W4	W3	WNW6	W6	NW6	NNW6	NNW4	NNW2	N4	ESE4	ESE5	SE6	W3	W3	WSW2	S0	SE5	WNW1.7	W6
16-Sep	ESE9	ESE7	ESE12	ESE10	ESE12	ESE13	E13	E12	SE8	SSE5	S7	S9	SW16	SW16	SW14	SW13	WSW11	SW11	SSW8	SSW9	SSW10	SW11	S2	SE5	S6.0	SW16
17-Sep	ESE5	ESE7	ESE9	ESE10	ESE7	ESE6	ESE8	ESE10	ESE9	ESE11	ESE10	ESE10	ESE12	ESE11	ESE6	E7	ESE5	ENE1	WSW2	NNW1	W1	WNW1	ESE8	SE6	ESE6.5	ESE12
18-Sep	SE6	SE7	ESE10	SE8	ESE10	SE11	ESE11	ESE12	ESE7	NE1	SE3	W9	W15	W14	W13	W13	W12	W8	W3	NW1	W2	N1	WNW2	NE1	SSW2.0	W15
19-Sep	NNE1	NE1	NE1	NNW1	UO	UO	E3	ESE10	ESE10	ESE10	ESE8	ESE7	ESE8	ENE4	N2	ESE6	SE5	S5	NW1	W2	WSW3	W3	W3	WNW4	ESE2.5	ESE10
20-Sep	WNW2	W2	WNW4	W3	WNW5	WNW6	WSW6	W8	NW7	NW7	WNW8	WNW8	WNW7	NNW13	NNW17	NNW16	NW14	NW13	NW7	W7	W4	W2	W2	NNW1	NW6.5	NNW17
21-Sep	W1	N1	ENE2	ENE0	ENE2	ESE5	ESE6	ESE9	ESE8	ESE8	ESE11	ESE10	ESE13	ESE11	SE7	SSE8	SE8	SE9	SE9	SE10	SSE6	SE6	ESE7	E12	ESE6.6	ESE13
22-Sep	ESE8	ESE12	ESE8	SE6	ENE2	W3	WNW1	ENE3	E6	ESE6	ESE7	ESE8	ENE4	NNE4	ESE6	E8	ESE6	ENE3	SW1	W7	SE3	E2	WNW3	W4	ESE3.2	ESE12
23-Sep	W4	W5	W5	WNW4	NW2	W5	WSW5	WNW2	NE4	E3	ESE7	ESE12	ESE12	ESE11	ESE10	ESE11	S5	ESE7	SE8	SE8	SE9	ESE11	ESE10	ESE11	SE4.4	ESE12
24-Sep	SE6	ESE2	E1	E3	ESE5	ESE7	ESE7	ESE8	SW7	WSW15	WSW19	WSW23	C	C	W15	W17	W13	W7	W4	NE0	ESE2	NE1	E1	ESE7	WSW3.5	WSW23
25-Sep	SE10	SE9	SE9	SE6	SE5	WSW1	WSW2	NW3	NNW2	NW5	ENE2	S5	S5	SSE5	SSE6	SSE6	SSE3	SSE5	S3	SE0	SW1	SW1	WNW5	SW2	SSE2.5	SE10
26-Sep	WSW6	W10	WNW6	NW5	WNW5	W9	W13	W10	W6	WSW11	W15	W16	WNW16	WNW14	NNW8	ENE2	N6	WNW1	W5	W2	E0	E2	NNW3	SE4	WNW6.1	W16
27-Sep	ESE3	SE5	SE7	SE5	SE6	SE7	SSE3	SW4	SSE5	SW7	SSE2	SSE5	SSE6	SE7	SW8	S6	S8	S7	S6	SSE7	S6	SSE8	S7	SSW7	SSE5.1	S8
28-Sep	SW15	WSW15	WSW19	W22	W24	W21	W18	WSW18	W18	W18	W17	W16	W16	W11	W9	W9	WNW4	SE2	WSW1	WNW1	WNW2	WNW0	W1	WNW2	W11.2	W24
29-Sep	WNW1	NW4	WNW3	NNW3	W4	W5	WNW6	NW6	WNW7	WNW6	NNW8	NW11	NW10	NW11	N13	NNW14	NNW11	NW11	NW8	WNW8	NW8	NW9	WNW8	NW9	NW7.2	NNW14
30-Sep	NNW6	NNW6	NNW7	WNW4	NW5	WNW7	W6	WSW10	WSW10	WSW11	W15	W21	W21	WNW22	W25	WNW27	WNW23	NW14	WNW7	N1	ENE3	WSW7	WSW16	WSW13	W10.6	WNW27
	SSW1.3	SSW1.0	S1.2	S1.0	S1.0	SSW1.3	SSW1.0	S0.8	S1.4	SW1.6	SW1.2	WSW2.3	WSW2.9	WSW2.8	W3.8	W3.8	WSW3.8	WSW3.2	SW3.1	WSW2.7	WSW2.3	WSW1.3	WSW2.1	SSW1.4	Diurnal Average	
	WSW18	WSW17	WSW19	W22	W24	W21	W18	WSW18	W18	W18	WSW19	WSW23	W21	WNW22	W25	WNW27	WNW23	WSW27	WSW25	W22	W23	NNW16	WSW16	WSW16	Diurnal Maximum	

C - Calibration 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 10m (WS10) - km/h

Lower Camp - September 2024

Number of Exceedences (AAAQO): 1-hr: 0 24-hr: 0
Maximum Value: 7 km/h on Sep 20 14:00

Minimum Value: 1 km/h on Sep 23 06:00

Percentiles: P_1 = 1 P_{10} = 1 Q_1 = 2 Median = 2 Q_3 = 3 P_{90} = 4 P_{99} = 5

Hours in Service:	720
Hours of Data:	714
Hours of Missing Data:	6
Hours of Calibration:	2
Percent Operational Time:	99.4

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

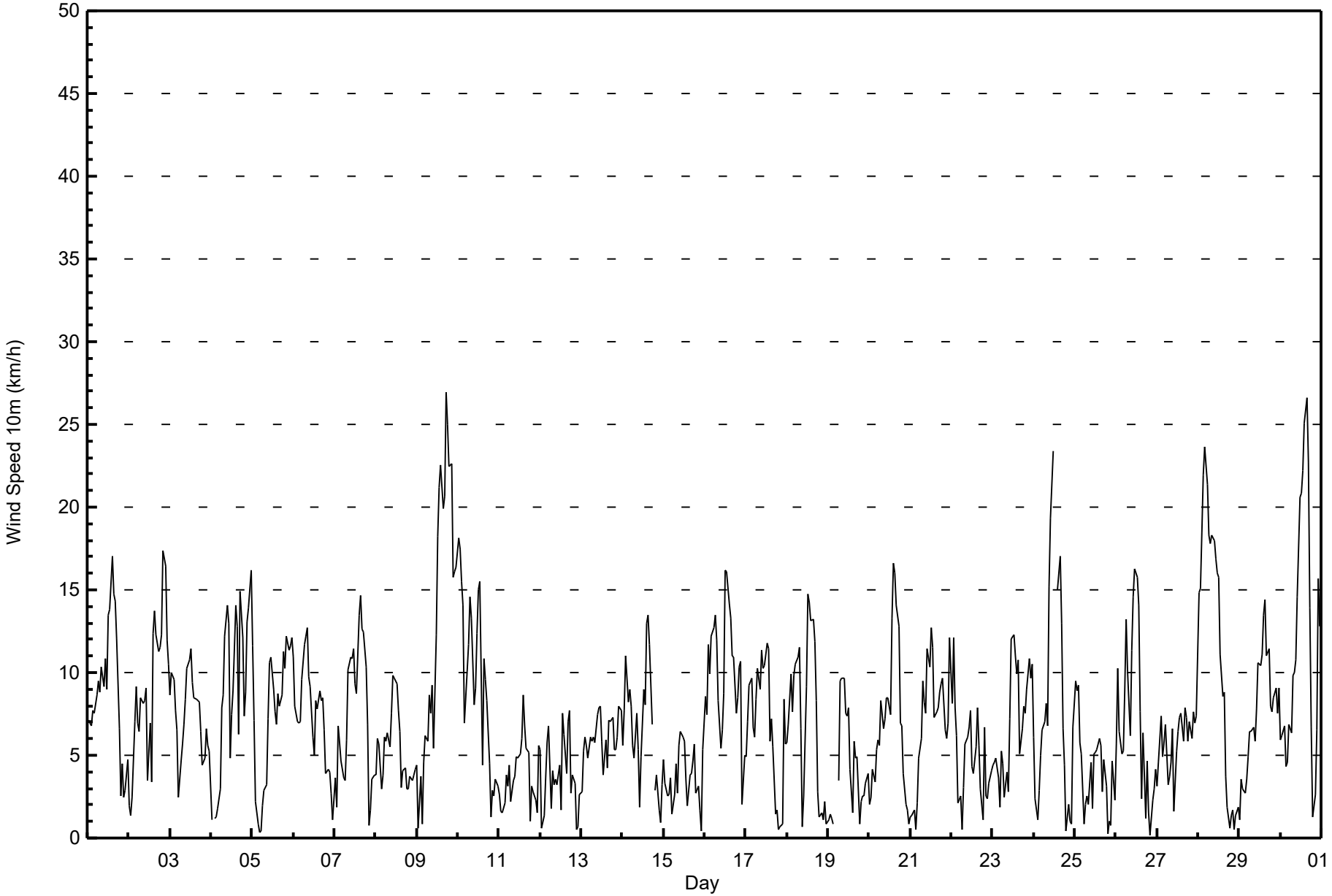
C - Calibration UO - Unstable Operation

Wood Buffalo Environmental Association

Hourly Averages

Wind Speed 10m (WS10) - km/h

Lower Camp - September 2024



Wind Speed Ranges (km/h)	Number of Hours	%	Cumulative %
0 - 5	275	38.52	38.52
6 - 11	317	44.40	82.91
12 - 19	104	14.57	97.48
20 - 28	18	2.52	100.00
29 - 38	0	0.00	100.00
> 38	0	0.00	100.00

Total Number of Valid Hours: 714

Total Number of Hours: 720

Wood Buffalo Environmental Association

Frequency Distribution

Wind Speed 10m (WS10) - km/h

Lower Camp - September 2024

Wind Speed							**Wind Direction**										
Ranges (km/h)	N	NNE	NE	ENE	E	ESE	SE	SSE	S	SSW	SW	WSW	W	WNW	NW	NNW	**Totals**
0 - 5	10	5	13	15	15	20	18	14	7	2	7	16	49	44	20	20	275
6 - 11	6	6	0	2	10	109	40	7	8	7	10	26	19	32	19	16	317
12 - 19	1	0	0	0	3	12	3	0	0	1	13	30	24	7	5	5	104
20 - 28	0	0	0	0	0	0	0	0	0	0	0	6	9	3	0	0	18
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	17	11	13	17	28	141	61	21	15	10	30	78	101	86	44	41	714

Total Number of Valid Hours: 714

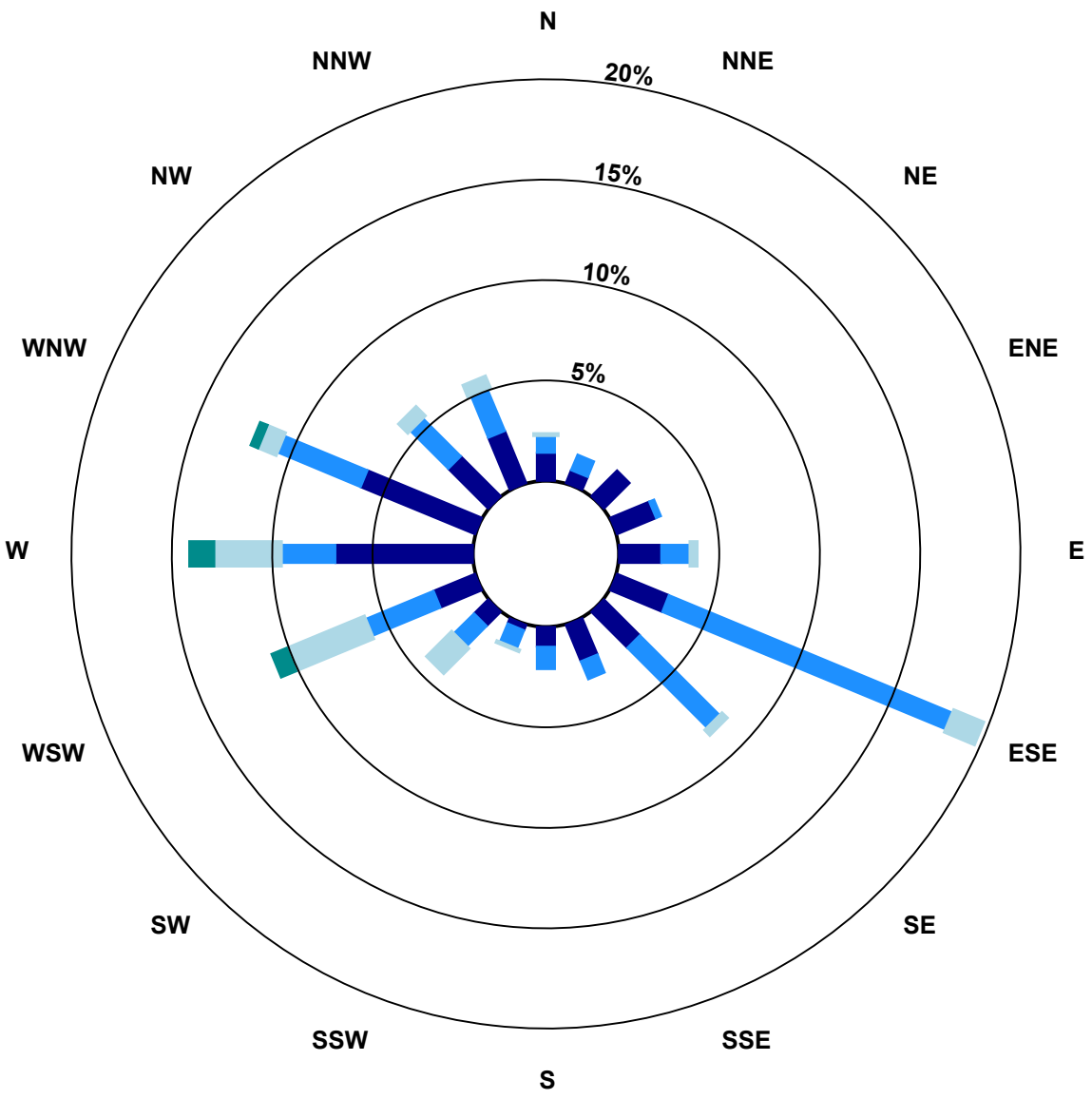
Total Number of Hours: 720

Wood Buffalo Environmental Association

Wind Rose Sep 2024

Wind Speed 10m (WS10) - km/h

Lower Camp



Classes (km/h)

0 - 5

6 - 11

12 - 19

20 - 28

29 - 38

> 38

Total Number of Valid Hours: 714

Wood Buffalo Environmental Association

Summary of Hour Averages

Wind Direction 10m (WD10) - deg

Lower Camp - September 2024

Direction of Maximum Speed: 257 deg on Sep 9 18:00
Direction of Maximum Daily Speed Average: 263.0 deg on Sep 9

Direction of Minimum Speed: 83 deg on Sep 26 21:00
Direction of Minimum Daily Speed Average: 1.0 deg on Sep 11

Monthly Average Direction: 236.4 deg

Hours in Service:	720
Hours of Data:	714
Hours of Missing Data:	6
Percent Operational Time:	99.4

Day	Hourly Period Ending At (MST)																								Daily
	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24	Average
1-Sep	119	137	127	130	108	91	83	78	110	113	113	121	208	230	237	239	236	240	237	226	353	41	102	116	162.8
2-Sep	76	53	117	116	122	120	109	111	112	113	115	81	111	301	249	241	244	232	233	278	304	348	321	323	246.6
3-Sep	329	347	346	340	337	329	317	356	348	358	337	340	6	19	21	30	3	17	359	340	306	327	310	318	349.3
4-Sep	292	UO	96	157	150	203	239	238	241	253	276	316	251	253	274	286	288	244	250	240	231	229	229	233	249.4
5-Sep	298	275	277	49	262	29	3	17	72	113	106	105	117	120	125	120	135	127	127	122	131	134	137	134	122.9
6-Sep	130	122	105	119	124	121	118	120	117	115	119	207	153	122	131	126	124	123	122	139	126	116	206	116	125.2
7-Sep	98	89	120	117	122	124	138	118	109	113	118	116	119	219	250	246	236	223	210	214	245	152	153	131	165.9
8-Sep	146	122	116	118	129	122	112	113	105	109	119	120	122	124	104	28	290	275	256	255	278	273	276	291	124.7
9-Sep	269	110	279	248	304	293	284	301	291	303	309	291	276	260	255	239	236	257	256	268	262	253	247	246	263.0
10-Sep	248	245	243	244	245	239	235	233	237	242	234	242	260	265	314	247	260	286	285	252	270	285	285	293	250.5
11-Sep	278	298	291	311	292	352	38	333	269	305	336	340	343	85	108	101	100	118	241	268	287	79	84	112	29.8
12-Sep	121	123	165	270	136	118	73	358	346	298	347	337	6	87	86	34	64	84	34	264	258	291	298	278	58.9
13-Sep	288	289	289	27	328	291	295	304	301	304	298	307	317	305	13	308	287	289	280	293	306	283	284	287	301.0
14-Sep	281	272	237	246	241	252	249	247	241	241	226	259	244	239	241	265	287	299	UO	289	263	286	275	281	256.4
15-Sep	266	283	275	291	296	327	332	278	269	290	276	323	329	335	341	8	111	121	128	277	276	253	180	127	296.2
16-Sep	119	113	115	118	110	119	99	95	124	149	169	190	233	235	235	232	238	223	210	194	201	214	183	133	174.4
17-Sep	123	119	119	118	114	116	116	114	113	108	110	112	111	110	111	101	108	65	252	329	261	300	121	126	113.8
18-Sep	137	132	122	127	123	125	120	117	113	41	136	263	271	281	264	261	266	278	271	308	267	1	295	52	207.6
19-Sep	18	53	52	345	UO	UO	85	106	111	113	113	113	112	68	1	114	139	181	325	277	251	277	273	303	111.1
20-Sep	290	268	302	261	282	297	258	273	312	321	293	291	297	328	335	333	320	313	306	275	276	280	264	333	305.5
21-Sep	265	7	67	57	71	120	114	109	107	114	110	112	110	113	135	147	143	129	133	139	158	125	106	84	118.1
22-Sep	102	107	122	129	58	266	296	77	94	113	108	103	69	33	108	99	111	65	221	275	137	93	287	267	103.9
23-Sep	272	275	266	287	320	272	253	291	56	98	115	116	117	113	118	118	173	121	132	139	131	120	117	120	127.4
24-Sep	125	102	85	84	107	116	117	116	232	248	255	251	C	C	281	278	279	281	261	50	117	51	80	117	245.2
25-Sep	129	128	125	134	140	251	253	308	328	316	57	176	183	148	150	151	166	148	191	124	235	218	294	229	154.2
26-Sep	248	273	301	326	303	281	276	281	261	256	266	278	284	295	336	60	350	284	262	276	83	93	330	125	284.1
27-Sep	110	128	124	125	140	138	155	234	160	231	155	167	164	146	217	187	171	171	170	162	185	160	178	194	166.7
28-Sep	232	240	243	260	260	265	264	258	260	262	260	262	268	259	276	281	290	139	244	287	283	301	280	296	259.4
29-Sep	286	309	301	329	272	281	298	305	295	300	333	320	316	321	355	346	339	321	308	296	313	313	290	319	317.3
30-Sep	332	329	330	295	304	292	274	256	238	243	264	267	270	289	280	291	287	304	295	357	59	237	239	250	277.5
	202.5	208.9	179.0	177.6	175.5	195.0	195.1	181.8	185.1	225.7	215.4	246.5	245.0	258.1	263.7	260.8	257.7	247.7	235.7	245.9	250.9	241.2	240.0	212.6	
	Diurnal Average																								

C - Calibration UO - Unstable Operation

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

Number of Exceedences (AAAQO): 1-hr: 0 24-hr: 0
Maximum Value: 108 deg on Sep 26 21:00

Minimum Value: 7 deg on Sep 20 20:00

Percentiles: P_1 = 11 P_{10} = 14 Q_1 = 18 Median = 26 Q_3 = 43 P_{90} = 70 P_{99} = 96

Hours in Service:	720
Hours of Data:	714
Hours of Missing Data:	6
Hours of Calibration:	2
Percent Operational Time:	99.4

Day	Hourly Period Ending At (MST)																								Daily
	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24	Maximum
1-Sep	45	41	38	31	31	32	23	30	22	25	25	29	32	25	18	18	17	16	17	61	27	74	58	39	74
2-Sep	80	61	71	33	20	26	43	21	23	21	16	62	35	65	19	16	15	14	13	28	14	27	22	20	80
3-Sep	22	18	21	22	27	36	26	27	30	23	19	21	20	21	20	26	24	23	19	32	14	26	20	19	36
4-Sep	50	UO	93	74	66	43	18	16	15	16	26	64	26	33	15	25	42	14	14	17	19	11	11	12	93
5-Sep	24	17	53	91	92	97	61	49	58	28	15	17	26	38	43	27	33	31	29	30	29	30	30	29	97
6-Sep	31	42	40	31	31	19	17	18	17	21	18	55	57	24	24	21	19	20	22	44	38	70	65	92	92
7-Sep	34	86	16	22	41	46	45	36	19	19	19	17	26	40	19	15	14	18	22	26	104	82	57	39	104
8-Sep	38	20	15	74	48	29	25	24	31	21	16	16	25	26	18	44	16	20	24	24	29	32	18	30	74
9-Sep	51	106	61	88	29	28	19	23	17	33	46	16	17	13	14	15	17	13	13	13	13	14	14	14	106
10-Sep	14	14	15	14	27	18	18	14	16	21	27	25	18	31	63	18	22	17	23	48	34	38	37	42	63
11-Sep	38	63	47	51	29	53	41	59	23	36	31	29	29	45	29	58	38	29	85	32	30	85	90	34	90
12-Sep	24	87	77	21	90	46	88	32	35	29	60	38	78	24	25	43	31	20	56	18	12	65	58	37	90
13-Sep	52	20	35	31	35	15	22	15	17	14	15	19	29	47	39	29	17	12	12	14	14	19	14	12	52
14-Sep	20	18	12	19	13	23	24	35	25	26	92	72	28	29	17	20	13	14	UO	38	30	58	81	31	92
15-Sep	19	48	27	27	24	57	40	28	37	31	23	34	42	51	71	42	70	21	27	44	29	61	79	31	79
16-Sep	14	20	15	24	17	14	17	18	31	43	44	53	19	17	21	17	16	16	19	24	23	19	88	26	88
17-Sep	25	18	13	17	39	38	24	14	18	15	14	13	15	14	43	20	50	85	80	61	73	26	22	28	85
18-Sep	31	25	17	23	19	17	17	15	28	89	83	32	19	19	26	18	18	19	41	31	71	56	52	80	89
19-Sep	47	61	73	38	UO	UO	71	17	15	16	20	15	14	42	80	50	33	51	83	67	72	36	36	43	83
20-Sep	24	43	28	54	27	17	23	22	29	25	14	16	26	35	22	25	20	18	29	7	39	17	24	65	65
21-Sep	38	71	84	105	69	34	30	14	16	15	14	14	14	24	38	38	31	31	28	32	41	29	26	10	105
22-Sep	39	19	26	37	71	32	72	67	34	21	15	19	47	35	19	24	21	62	46	29	73	90	16	17	90
23-Sep	16	15	21	28	45	16	13	43	28	56	18	11	11	14	20	16	45	25	22	26	21	18	20	12	56
24-Sep	27	62	83	66	33	25	29	16	64	14	14	13	C	C	59	17	17	18	46	89	86	59	88	34	89
25-Sep	15	17	17	27	26	75	69	94	81	32	81	49	41	31	36	37	58	25	49	100	88	91	37	94	100
26-Sep	68	18	17	32	30	24	14	17	64	14	13	16	17	18	34	65	54	96	32	70	108	67	74	46	108
27-Sep	57	50	32	68	44	48	72	37	72	32	81	59	54	51	38	51	31	28	26	24	37	27	35	35	81
28-Sep	18	16	16	14	14	13	13	13	13	14	14	16	20	19	23	19	25	73	98	32	42	85	41	38	98
29-Sep	87	37	57	51	26	11	17	26	19	15	25	23	19	18	20	20	25	14	12	13	15	14	12	16	87
30-Sep	15	18	19	94	84	33	19	23	17	18	25	14	16	16	16	14	15	11	17	70	62	64	12	14	94
	87	106	93	105	92	97	88	94	81	89	92	72	78	65	80	65	70	96	98	100	108	91	90	94	
	Diurnal Maximum																								

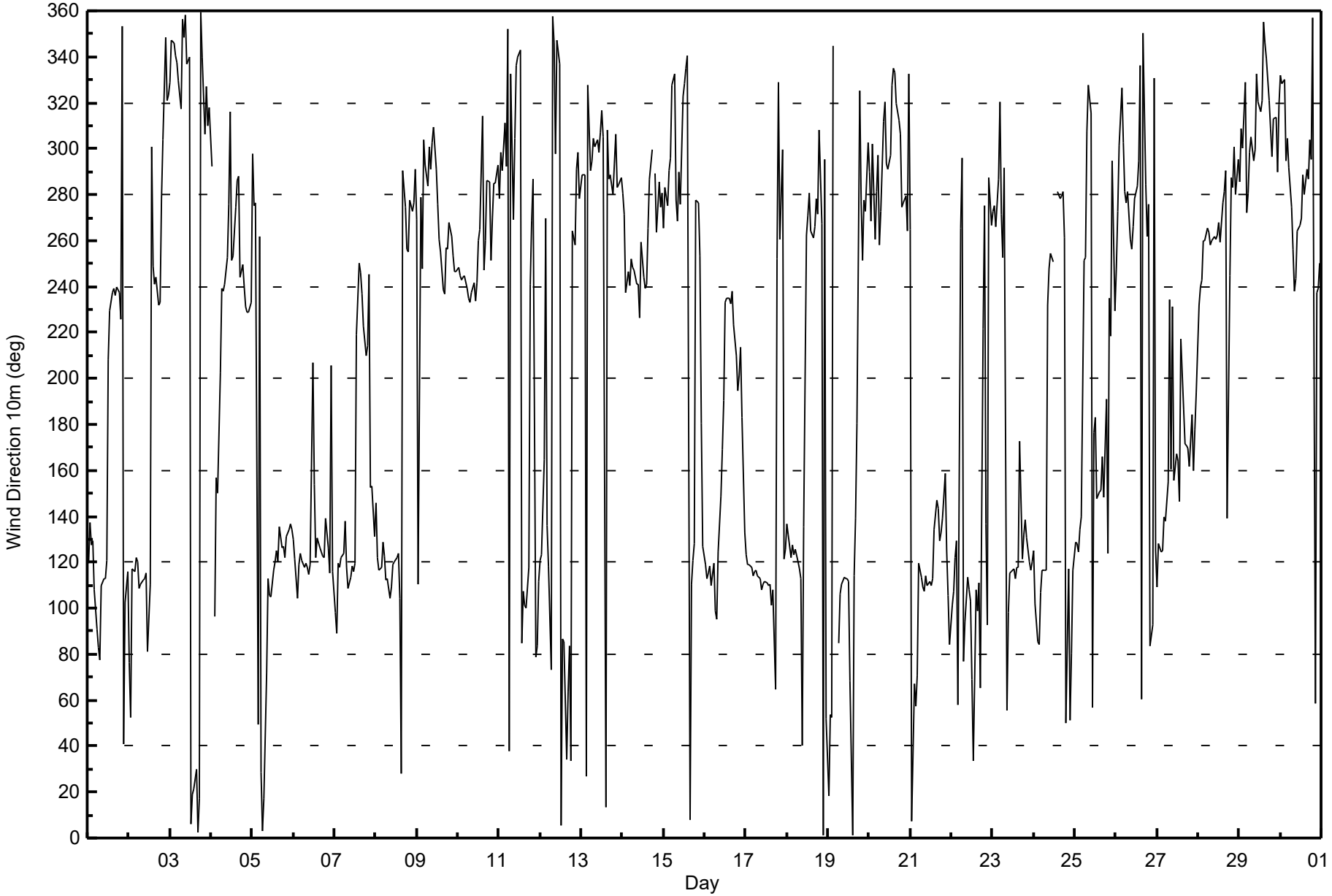
C - Calibration UO - Unstable Operation

Wood Buffalo Environmental Association

Hourly Averages

Wind Direction 10m (WD10) - deg

Lower Camp - September 2024



WOOD BUFFALO ENVIRONMENTAL ASSOCIATION

CONTINUOUS AMBIENT AIR QUALITY
MONITORING PROGRAM
MONTHLY REPORT

AMS13
FORT MCKAY SOUTH
SEPTEMBER 2024

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

October 31, 2024

WOOD BUFFALO ENVIRONMENTAL ASSOCIATION - FORT McKAY SOUTH (AMS13)
SEPTEMBER 2024

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	687	33	33	100	22	0	4.1	0
TRS(ppb) Average	685	35	35	100	3.5	0	1	0
THC(ppm) Average	687	33	33	100	4.1	-	2.5	-
NMHC(ppm) Average	687	33	33	100	0.18	-	0.022	-
CH4(ppm) Average	687	33	33	100	4.1	-	2.5	-
O3(ppb) Average	686	34	34	100	39.3	0	21.3	-
NO2(ppb) Average	685	35	35	100	19.8	0	6.4	-
NO(ppb) Average	685	35	35	100	88	-	11.5	-
NOX(ppb) Average	685	35	35	100	101	-	17.2	-
PM2.5(ug/m3) Average	718	2	2	100	181.9	0	112.5	6
ET(C) Average	720	0	0	100	31.6	-	20.2	-
RH(%) Average	720	0	0	100	99.9	-	89.7	-
WS(km/h) Average	699	0	21	97.08	17	-	8	-
WD(deg) Average	699	0	21	97.08	-	-	-	-

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

WOOD BUFFALO ENVIRONMENTAL ASSOCIATION - FORT McKAY SOUTH (AMS13)
SEPTEMBER 2024

MONTHLY SUMMARY FOR AIR QUALITY/ METEOROLOGICAL MONITORING MEASUREMENTS

					Percentile						
Parameter	Number	Mean	StnDev	Total	Min	P10	Q1	Median	Q3	P90	Max
SO2(ppb) Average	687	1.18	2.7	-	0	0.2	0.3	0.4	0.7	1.9	22
TRS(ppb) Average	685	0.5	0.3	-	0.2	0.3	0.3	0.4	0.5	0.8	3.5
THC(ppm) Average	687	2.22	0.2	-	2	2.1	2.1	2.2	2.3	2.5	4.1
NMHC(ppm) Average	687	0.003	0.011	-	0	0	0	0	0	0	0.18
CH4(ppm) Average	687	2.21	0.2	-	2	2.1	2.1	2.1	2.3	2.5	4.1
O3(ppb) Average	686	14.86	10	-	1.6	2.9	5.2	13.2	22.6	29.2	39.3
NO2(ppb) Average	685	3.46	3.7	-	0	0	0.3	2.3	5.5	8.7	19.8
NO(ppb) Average	685	2.93	7.3	-	0	0	0	0.1	2	9.5	88
NOX(ppb) Average	685	6.39	9.5	-	0	0	0.4	2.9	8.4	16.7	101
PM2.5(ug/m3) Average	718	23.73	33.8	-	0.8	3.9	6.3	10.3	22	68.8	181.9
Temperature 2 m (C) Average	720	12.28	6.4	-	-2	4	7.8	11.9	16.1	20.5	31.6
Relative Humidity (%) Average	720	75.55	19.5	-	24.8	46.8	61.9	77.9	93.9	97.9	99.9
Wind Speed 10 m (km/h) Average	699	5.5	4	-	0	1	2	5	8	10	17
Wind Direction 10 m (deg) Average	699	-	-	-	-	-	-	-	-	-	-

WOOD BUFFALO ENVIRONMENTAL ASSOCIATION - FORT McKAY SOUTH (AMS13)
SEPTEMBER 2024

OPERATIONAL NOTES

Parameter	Period Start	Period End	Duration (Hours)	Notes
Wind Speed, Wind Direction	01 Sep 2024 22:00	01 Sep 2024 22:00	1	Flat line in sensor output signal
Wind Speed, Wind Direction	04 Sep 2024 00:00	04 Sep 2024 00:00	1	Flat line in sensor output signal
Wind Speed, Wind Direction	11 Sep 2024 22:00	11 Sep 2024 22:00	1	Flat line in sensor output signal
Wind Speed, Wind Direction	12 Sep 2024 00:00	12 Sep 2024 00:00	1	Flat line in sensor output signal
Wind Speed, Wind Direction	12 Sep 2024 20:00	12 Sep 2024 21:00	2	Flat line in sensor output signal
Wind Speed, Wind Direction	13 Sep 2024 01:00	13 Sep 2024 01:00	1	Flat line in sensor output signal
Wind Speed, Wind Direction	15 Sep 2024 04:00	15 Sep 2024 04:00	1	Flat line in sensor output signal
Wind Speed, Wind Direction	15 Sep 2024 07:00	15 Sep 2024 07:00	1	Flat line in sensor output signal
Wind Speed, Wind Direction	15 Sep 2024 20:00	15 Sep 2024 20:00	1	Flat line in sensor output signal
Wind Speed, Wind Direction	16 Sep 2024 03:00	16 Sep 2024 03:00	1	Flat line in sensor output signal
Wind Speed, Wind Direction	18 Sep 2024 02:00	18 Sep 2024 02:00	1	Flat line in sensor output signal
Wind Speed, Wind Direction	18 Sep 2024 04:00	18 Sep 2024 04:00	1	Flat line in sensor output signal
Wind Speed, Wind Direction	20 Sep 2024 01:00	20 Sep 2024 01:00	1	Flat line in sensor output signal
Wind Speed, Wind Direction	20 Sep 2024 06:00	20 Sep 2024 06:00	1	Flat line in sensor output signal
Wind Speed, Wind Direction	22 Sep 2024 05:00	22 Sep 2024 05:00	1	Flat line in sensor output signal
Wind Speed, Wind Direction	23 Sep 2024 07:00	23 Sep 2024 07:00	1	Flat line in sensor output signal
Wind Speed, Wind Direction	24 Sep 2024 01:00	24 Sep 2024 03:00	3	Flat line in sensor output signal
Wind Speed, Wind Direction	27 Sep 2024 03:00	27 Sep 2024 03:00	1	Flat line in sensor output signal

Wood Buffalo Environmental Association

Summary of Hour Averages

Sulphur Dioxide (SO_2) - ppb

Fort McKay South - September 2024

Number of Exceedences (AAAQO): 1-hr: 0 24-hr: 0
Maximum Value: 22.0 ppb on Sep 11 11:00 Maximum Daily Average: 4.1 ppb on Sep 5

Minimum Value: 0.0 ppb on Sep 12 21:00 Minimum Daily Average: 0.2 ppb on Sep 12
Maximum Diurnal Average: 4.2 ppb at hour 11 Minimum Diurnal Average: 0.4 ppb at hour 6
Monthly Average: 1.18 ppb Percentiles: P_1 = 0.1 P_{10} = 0.2 Q_1 = 0.3 Median = 0.4 Q_3 = 0.7 P_{90} = 1.9 P_{99} = 15.8

Hours in Service:	720
Hours of Data:	687
Hours of Missing Data:	33
Hours of Calibration:	33
Percent Operational Time:	100.0

Day	Hourly Period Ending At (MST)																								Daily	Daily
	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24	Average	Maximum
1-Sep	0.6	0.9	0.7	0.6	0.5	Z	1.4	1.6	12.2	7.2	14.4	20.0	3.0	1.0	0.7	0.7	0.6	0.6	0.8	0.9	0.8	0.7	0.7	0.8	3.1	20.0
2-Sep	Z	0.6	0.4	0.4	0.7	0.8	0.7	0.7	1.5	5.3	4.0	1.5	1.0	0.9	0.8	0.8	0.8	0.8	0.7	0.8	0.7	0.7	0.5	0.5	1.1	5.3
3-Sep	0.5	Z	0.5	0.5	0.4	0.4	0.4	0.6	0.8	0.6	0.4	0.6	0.7	0.5	0.5	0.5	0.4	0.5	0.4	0.4	0.4	0.4	0.4	0.4	0.5	0.8
4-Sep	0.4	0.4	Z	0.2	0.1	0.2	0.2	0.2	0.1	0.3	0.3	0.4	0.3	0.4	0.4	0.4	0.5	0.5	0.4	0.4	0.4	0.4	0.4	0.4	0.3	0.5
5-Sep	0.4	0.3	0.3	Z	0.3	0.4	0.4	0.4	0.4	7.6	5.3	9.7	15.4	20.2	8.1	5.3	3.1	2.3	5.0	4.8	2.5	0.8	0.8	0.8	4.1	20.2
6-Sep	0.8	0.8	1.0	0.8	Z	1.4	1.1	3.1	1.4	1.0	0.8	0.8	0.8	0.8	0.8	0.8	0.8	0.9	0.8	0.7	0.6	0.5	0.5	0.5	0.9	3.1
7-Sep	0.4	0.5	0.4	0.3	0.3	Z	0.9	0.7	0.6	3.3	16.1	11.3	4.7	0.9	0.6	0.5	0.6	0.6	0.6	0.5	0.6	0.6	0.5	0.5	2.0	16.1
8-Sep	Z	0.5	0.4	0.3	0.4	0.6	0.9	0.8	0.8	1.4	15.3	15.8	10.1	6.7	4.7	4.3	3.5	3.0	2.0	2.0	1.8	1.3	1.4	0.9	3.4	15.8
9-Sep	0.7	Z	0.7	0.6	0.7	0.6	0.7	0.7	0.6	0.8	0.9	0.6	0.6	0.5	0.5	0.4	0.4	0.5	0.5	0.4	0.3	0.3	0.3	0.3	0.5	0.9
10-Sep	0.3	0.3	Z	0.0	0.0	0.1	0.1	0.2	0.2	0.2	0.2	0.2	0.3	0.3	0.4	0.5	0.4	0.5	0.5	0.4	0.4	0.3	0.4	0.4	0.3	0.5
11-Sep	0.4	0.4	0.4	Z	0.3	0.2	0.3	0.4	0.5	0.9	22.0	14.5	3.6	0.9	1.3	1.6	0.8	0.8	0.6	0.3	0.3	0.2	0.3	0.3	2.2	22.0
12-Sep	0.3	0.3	0.3	0.3	Z	0.1	0.1	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	0.0	0.0	0.1	0.1	0.2	0.3
13-Sep	0.2	0.2	0.2	0.8	0.8	Z	0.5	0.4	0.5	C	C	C	0.6	0.5	0.4	0.5	0.5	0.4	0.4	0.4	0.4	0.4	0.5	0.4	0.4	0.8
14-Sep	Z	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	0.2	0.2	0.2	0.4	0.3	0.2	0.3	0.1	0.1	0.2	0.4
15-Sep	0.2	Z	0.3	0.2	0.3	0.3	0.3	0.3	0.4	0.2	0.2	0.2	0.3	0.3	0.5	0.6	2.1	2.8	0.6	0.4	0.4	0.3	0.3	0.3	0.5	2.8
16-Sep	0.3	0.4	Z	0.7	0.7	0.5	0.5	0.8	1.1	0.7	0.7	0.6	0.4	0.4	0.5	0.5	0.5	0.4	0.5	0.4	0.4	0.4	0.4	0.4	0.5	1.1
17-Sep	0.4	0.4	0.4	Z	0.3	0.3	0.2	0.4	0.3	0.3	9.2	4.1	9.0	7.0	0.8	0.8	2.1	2.4	0.8	0.6	0.5	0.5	0.4	0.4	1.8	9.2
18-Sep	0.4	0.4	0.5	0.5	Z	0.4	0.4	0.5	0.5	0.4	0.4	0.4	0.4	0.3	0.3	0.3	0.4	0.3	0.4	0.4	0.4	0.4	0.4	0.4	0.4	0.5
19-Sep	0.4	0.5	0.4	0.4	0.5	Z	0.7	0.9	1.1	1.2	2.5	3.2	2.1	1.1	0.9	0.6	1.1	1.0	0.6	0.5	0.4	0.4	0.5	0.6	0.9	3.2
20-Sep	Z	0.5	0.5	0.5	0.5	0.5	0.6	0.6	0.5	0.5	0.5	0.5	0.4	0.4	0.4	0.4	0.4	0.3	0.3	0.3	0.3	0.3	0.2	0.2	0.4	0.6
21-Sep	0.2	Z	0.1	0.1	0.1	0.0	0.2	0.3	0.5	1.0	1.5	7.6	10.9	11.9	6.8	2.6	1.7	1.3	1.7	2.3	0.7	0.6	0.6	0.4	2.3	11.9
22-Sep	0.3	0.3	Z	0.1	0.1	0.1	0.2	0.2	0.5	3.8	18.4	8.7	0.9	0.7	0.9	11.4	9.8	2.4	1.8	1.4	0.9	0.9	0.6	0.6	2.8	18.4
23-Sep	0.7	0.7	0.7	Z	0.5	0.3	0.3	0.4	0.5	0.6	0.5	7.2	19.7	15.9	9.6	5.7	2.2	0.9	0.8	0.6	0.5	0.8	0.5	0.4	3.0	19.7
24-Sep	0.3	0.3	0.5	0.4	Z	0.4	0.4	0.5	0.5	0.4	0.4	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	0.5
25-Sep	0.3	0.3	0.5	0.6	0.6	Z	0.7	0.7	0.7	0.7	1.8	1.8	1.0	0.9	0.9	1.0	0.7	0.7	0.6	0.6	0.5	0.6	0.5	0.5	0.7	1.8
26-Sep	Z	0.3	0.3	0.4	0.3	0.3	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	0.4	0.3	0.3	0.3	0.3	0.4
27-Sep	0.3	Z	0.2	0.2	0.3	0.3	0.3	0.3	0.7	0.6	3.7	0.7	0.6	0.5	0.5	0.5	0.6	0.6	0.4	0.4	0.4	0.5	0.4	0.4	0.6	3.7
28-Sep	0.4	0.4	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	0.3	0.2	0.2	0.2	0.2	0.2	0.2	0.4
29-Sep	0.2	0.3	0.4	Z	0.3	0.2	0.7	1.9	1.6	1.0	1.0	1.0	1.0	1.3	2.0	1.2	0.8	0.6	0.5	0.5	0.6	0.4	0.4	0.4	0.8	2.0
30-Sep	0.4	0.4	0.4	0.4	Z	0.1	0.1	0.1	0.1	0.2	0.1	0.2	0.2	0.2	0.2	0.2	0.1	0.2	0.1	0.1	0.1	0.1	0.2	0.3	0.2	0.4
	0.4	0.4	0.4	0.4	0.4	0.4	0.5	0.6	1.0	1.4	4.2	3.9	3.0	2.5	1.5	1.4	1.2	0.9	0.8	0.7	0.6	0.5	0.4	0.4	Diurnal Average	
	0.8	0.9	1.0	0.8	0.8	1.4	1.4	3.1	12.2	7.6	22.0	20.0	19.7	20.2	9.6	11.4	9.8	3.0	5.0	4.8	2.5	1.3	1.4	0.9	Diurnal Maximum	

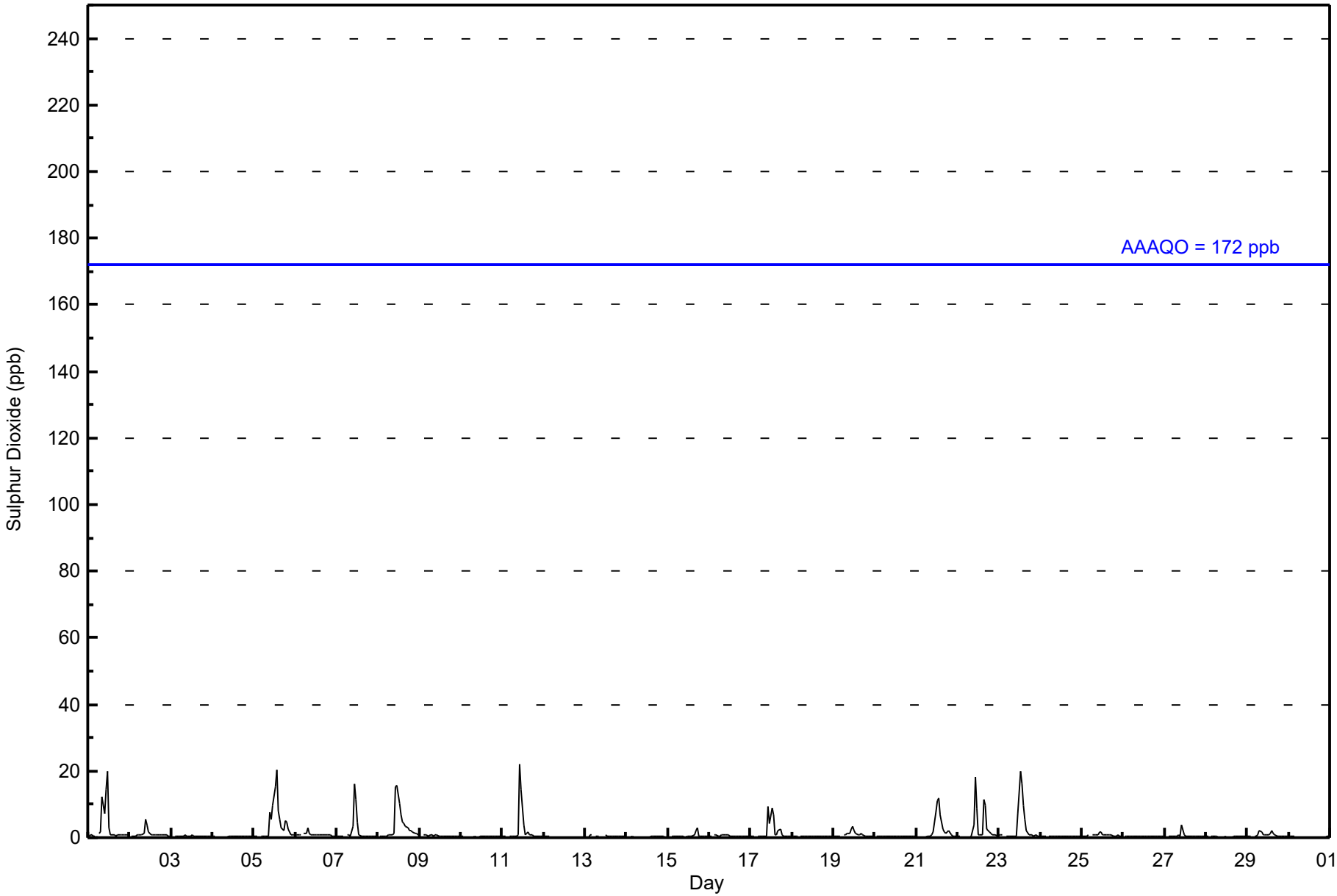
Z - zerospan C - Calibration
Alberta Ambient Air Quality Objectives (AAAQO): 1-hr 172 ppb 24-hr 48 ppb

Wood Buffalo Environmental Association

Hourly Averages

Sulphur Dioxide (SO_2) - ppb

Fort McKay South - September 2024



Sulphur Dioxide (SO_2) - ppb
Fort McKay South - September 2024

Concentration Ranges (ppb)	Number of Hours	%	Cumulative %
0 - 10	670	97.53	97.53
11 - 20	16	2.33	99.85
21 - 60	1	0.15	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: 687

Total Number of Hours: 720

Wood Buffalo Environmental Association

Frequency Distribution

Sulphur Dioxide (SO_2) - ppb

Fort McKay South - September 2024

Concentration Ranges (ppb)	Wind Direction																
	N	NNE	NE	ENE	E	ESE	SE	SSE	S	SSW	SW	WSW	W	WNW	NW	NNW	**Totals**
0 - 10	37	19	4	2	4	13	21	30	83	56	78	109	51	54	40	50	651
11 - 20	0	0	0	0	2	1	8	4	1	0	0	0	0	0	0	0	16
21 - 60	0	0	0	0	1	0	0	0	0	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	37	19	4	2	7	14	29	34	84	56	78	109	51	54	40	50	668

Total Number of Valid Hours: 668

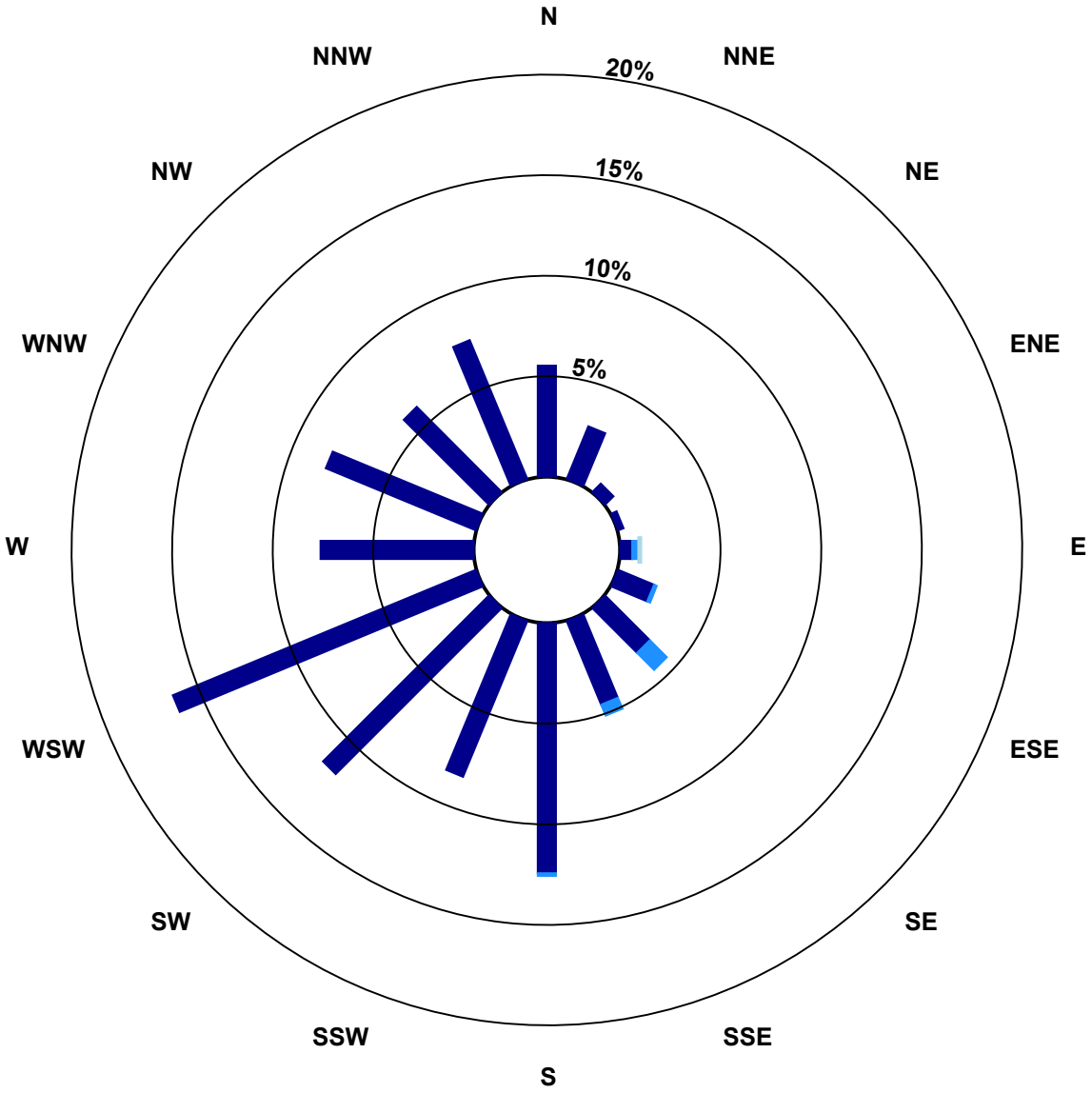
Total Number of Hours: 720

Wood Buffalo Environmental Association

Wind Rose Sep 2024

Sulphur Dioxide (SO_2) - ppb

Fort McKay South



Classes (ppb)

0 - 10

11 - 20

21 - 60

61 - 110

111 - 172

> 172

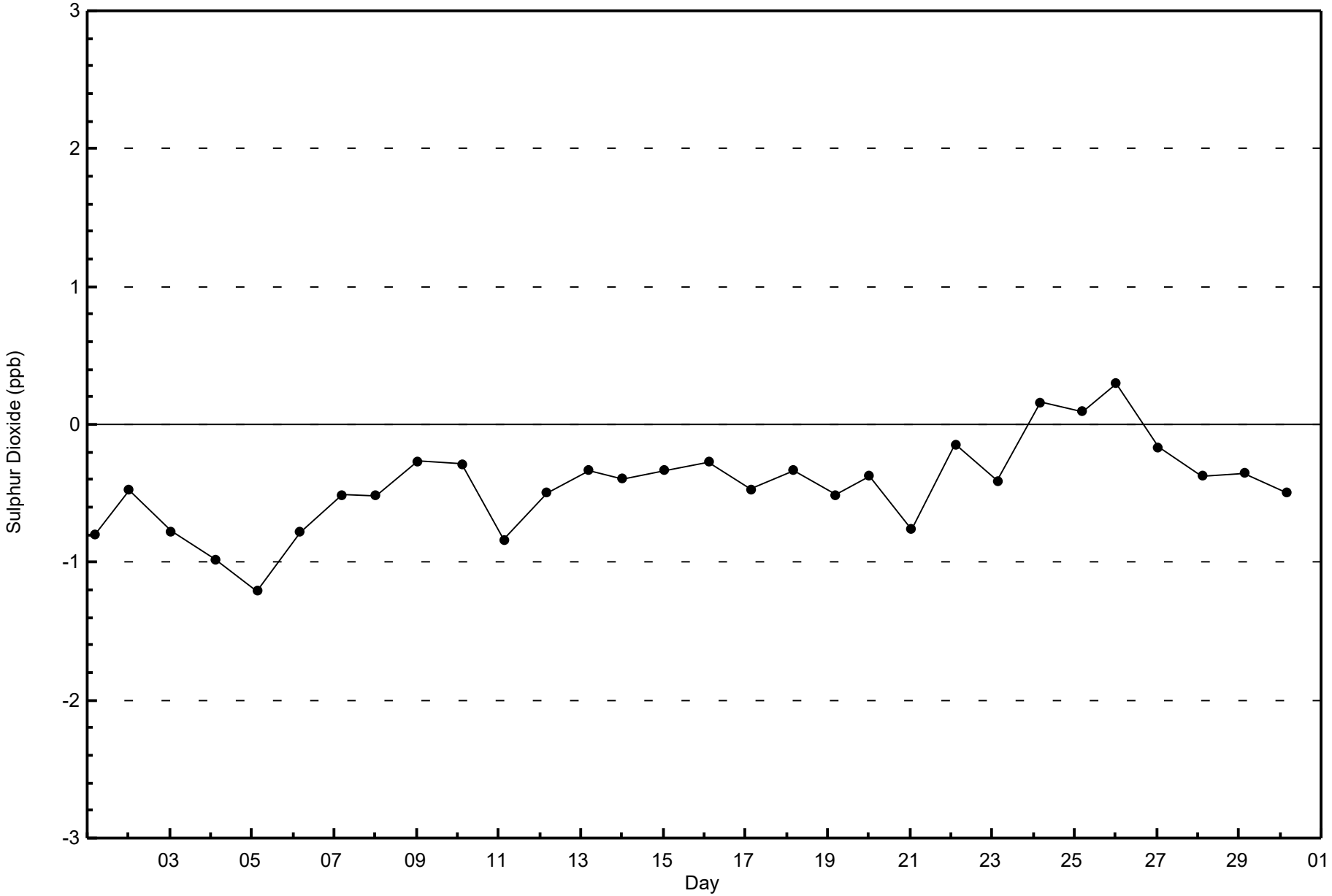
Total Number of Valid Hours: 668

Wood Buffalo Environmental Association

Zero Responses

Sulphur Dioxide (SO_2) - ppb

Fort McKay South - September 2024

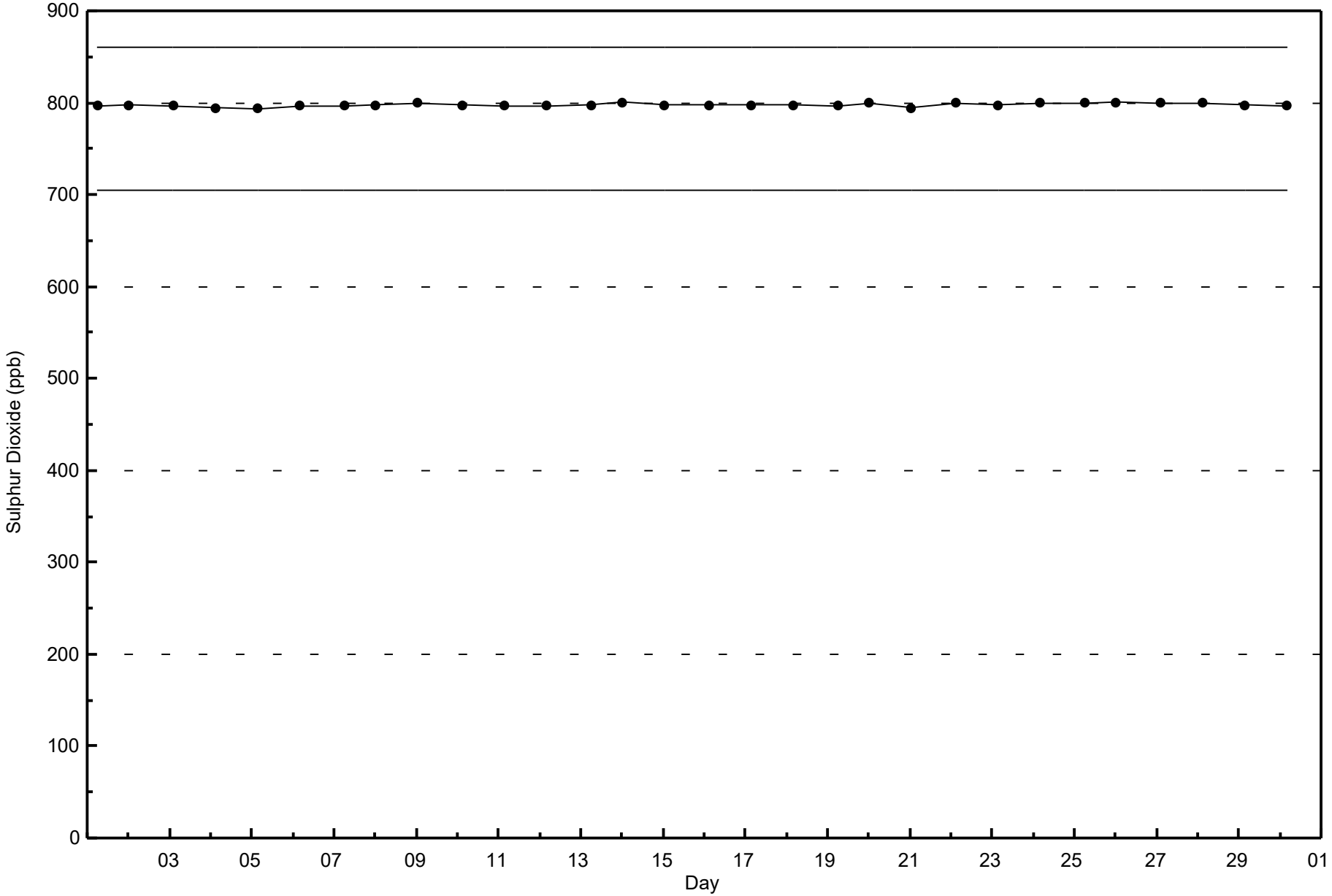


Wood Buffalo Environmental Association

Span Responses

Sulphur Dioxide (SO_2) - ppb

Fort McKay South - September 2024



Wood Buffalo Environmental Association

Summary of Hour Averages

Total Reduced Sulphur (TRS) - ppb

Fort McKay South - September 2024

Number of Exceedences (AAAQO): 1-hr: 0 24-hr: 0

Maximum Value: 3.5 ppb on Sep 7 11:00 Maximum Daily Average: 1.0 ppb on Sep 8

Minimum Value: 0.2 ppb on Sep 19 05:00 Minimum Daily Average: 0.3 ppb on Sep 30

Maximum Diurnal Average: 0.9 ppb at hour 11 Minimum Diurnal Average: 0.4 ppb at hour 2

Monthly Average: 0.50 ppb Percentiles: P_1 = 0.2 P_{10} = 0.3 Q_1 = 0.3 Median = 0.4 Q_3 = 0.5 P_{90} = 0.8 P_{99} = 1.9

Hours in Service:	720
Hours of Data:	685
Hours of Missing Data:	35
Hours of Calibration:	35
Percent Operational Time:	100.0

Day	Hourly Period Ending At (MST)																								Daily	Daily
	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24	Average	Maximum
1-Sep	Z	0.5	0.5	0.6	0.6	0.7	0.7	0.7	1.3	0.9	1.6	1.7	0.6	0.4	0.4	0.4	0.4	0.4	0.5	0.5	0.5	0.5	0.6	0.6	0.7	1.7
2-Sep	0.6	Z	0.5	0.5	0.5	0.5	0.5	1.0	1.2	2.3	1.0	0.6	0.5	0.4	0.4	0.4	0.4	0.4	0.4	0.4	0.5	0.6	0.5	0.5	0.6	2.3
3-Sep	0.5	0.4	Z	0.4	0.5	0.5	0.5	0.5	0.5	0.5	0.4	0.4	0.4	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
4-Sep	0.4	0.3	0.4	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	0.5
5-Sep	0.4	0.4	0.4	0.4	Z	0.4	0.4	0.4	0.3	C	C	C	C	C	0.5	0.4	0.5	0.5	1.0	1.3	0.9	0.5	0.5	0.4	0.5	1.3
6-Sep	0.5	0.5	0.4	0.4	0.5	Z	0.6	0.9	0.6	0.5	0.4	0.4	0.4	0.4	0.5	0.4	0.4	0.5	0.4	0.4	0.4	0.4	0.4	0.4	0.5	0.9
7-Sep	Z	0.4	0.4	0.4	0.4	0.4	0.5	0.8	1.1	1.8	3.5	2.0	0.9	0.5	0.4	0.4	0.4	0.5	0.5	0.5	0.5	0.5	0.5	0.5	0.8	3.5
8-Sep	0.5	Z	0.6	0.6	0.6	0.6	0.6	1.6	1.8	1.6	2.7	3.3	1.3	0.7	0.7	0.7	0.7	0.5	0.4	0.5	0.8	0.8	0.7	0.5	1.0	3.3
9-Sep	0.5	0.5	Z	0.7	0.7	0.6	0.6	0.5	0.5	0.5	0.5	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	0.5	0.7
10-Sep	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	0.3	0.2	0.2	0.2	0.2	0.2	0.3	0.4
11-Sep	0.2	0.2	0.2	0.2	Z	0.2	0.2	0.4	0.8	1.5	2.1	1.8	0.8	0.5	0.6	0.6	0.5	0.5	0.5	0.4	0.4	0.4	0.3	0.3	0.6	2.1
12-Sep	0.4	0.4	0.4	0.3	0.3	Z	0.5	0.4	0.9	0.8	0.6	0.4	0.4	0.5	0.5	0.5	0.5	0.5	0.4	0.3	0.2	0.2	0.2	0.2	0.4	0.9
13-Sep	Z	0.2	0.3	0.6	0.6	0.6	0.5	0.5	0.5	0.7	0.7	0.6	0.5	0.5	0.5	0.4	0.4	0.4	0.4	0.3	0.3	0.4	0.4	0.3	0.5	0.7
14-Sep	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	0.4	0.4	0.4	0.3	0.3	0.4	0.3	0.3	0.3	0.3	0.3	0.3	0.4
15-Sep	0.3	0.3	Z	0.3	0.2	0.2	0.3	0.3	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	0.4	0.3	0.4	0.5
16-Sep	0.2	0.2	0.2	Z	0.7	0.8	0.9	1.2	1.1	0.5	0.4	0.4	0.3	0.3	0.3	0.4	0.4	0.4	0.4	0.4	0.4	0.4	0.4	0.4	0.5	1.2
17-Sep	0.4	0.4	0.3	0.3	Z	0.4	0.4	0.5	0.6	0.5	0.7	0.6	0.6	0.5	0.4	0.4	0.4	0.5	0.5	0.6	0.6	0.5	0.4	0.6	0.5	0.7
18-Sep	0.6	0.6	0.6	0.7	0.8	Z	0.7	0.6	0.6	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	0.3	0.2	0.4	0.8
19-Sep	Z	0.2	0.2	0.2	0.2	0.2	0.3	0.9	1.9	1.6	1.3	1.3	0.8	0.4	0.3	0.3	0.4	0.4	0.4	0.3	0.3	0.4	0.4	0.6	0.6	1.9
20-Sep	0.5	Z	0.4	0.4	0.4	0.4	0.4	0.4	0.5	0.5	0.5	0.5	0.4	0.3	0.3	0.3	0.3	0.3	0.3	0.3	0.3	0.4	0.3	0.3	0.4	0.5
21-Sep	0.3	0.3	Z	0.3	0.3	0.3	0.4	0.5	0.7	1.1	1.5	2.1	0.9	0.7	0.6	0.4	0.4	0.6	1.4	1.6	0.4	0.5	1.8	0.9	0.8	2.1
22-Sep	0.4	0.4	0.4	Z	0.4	0.3	0.3	0.3	0.6	0.9	0.9	0.8	0.4	0.4	0.4	0.5	0.5	0.5	0.5	0.5	0.4	0.4	0.4	0.4	0.5	0.9
23-Sep	0.4	0.4	0.3	0.3	Z	0.3	0.2	0.3	0.4	0.5	0.4	0.5	0.8	1.5	1.3	1.2	0.6	0.5	0.5	0.6	0.5	0.7	0.6	0.5	0.6	1.5
24-Sep	0.5	0.4	0.4	0.3	0.3	Z	0.4	0.5	0.8	0.5	0.5	0.5	0.4	0.4	0.4	0.4	0.4	0.4	0.5	0.4	0.4	0.4	0.4	0.6	0.4	0.8
25-Sep	Z	0.8	0.8	0.7	0.7	0.8	1.1	1.2	1.0	0.9	1.1	0.8	0.5	0.6	0.7	0.9	0.6	0.6	0.6	0.5	0.5	0.5	0.4	0.4	0.7	1.2
26-Sep	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	0.4	0.4	0.4	0.3	0.3	0.3	0.2	0.2	0.4	0.4
27-Sep	0.2	0.2	Z	0.3	0.4	0.3	0.4	0.3	0.5	0.5	0.4	0.4	0.4	0.3	0.3	0.3	0.4	0.4	0.4	0.4	0.4	0.4	0.4	0.4	0.4	0.5
28-Sep	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	0.4	0.3	0.3	0.3	0.3	0.3	0.3	0.3	0.3	0.3	0.3	0.4
29-Sep	0.3	0.3	0.3	0.3	Z	0.2	0.6	1.3	1.1	1.0	0.8	0.7	0.6	0.6	0.5	0.4	0.4	0.3	0.3	0.3	0.3	0.3	0.3	0.3	0.5	1.3
30-Sep	0.3	0.3	0.3	0.3	0.3	Z	0.3	0.2	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	0.3	0.4
	0.4	0.4	0.4	0.4	0.4	0.4	0.5	0.6	0.7	0.8	0.9	0.8	0.5	0.5	0.5	0.5	0.4	0.4	0.5	0.5	0.4	0.4	0.4	0.4	Diurnal Average	
	0.6	0.8	0.8	0.7	0.8	0.8	1.1	1.6	1.9	2.3	3.5	3.3	1.3	1.5	1.3	1.2	0.7	0.6	1.4	1.6	0.9	0.8	1.8	0.9	Diurnal Maximum	

Z - zerospan C - Calibration

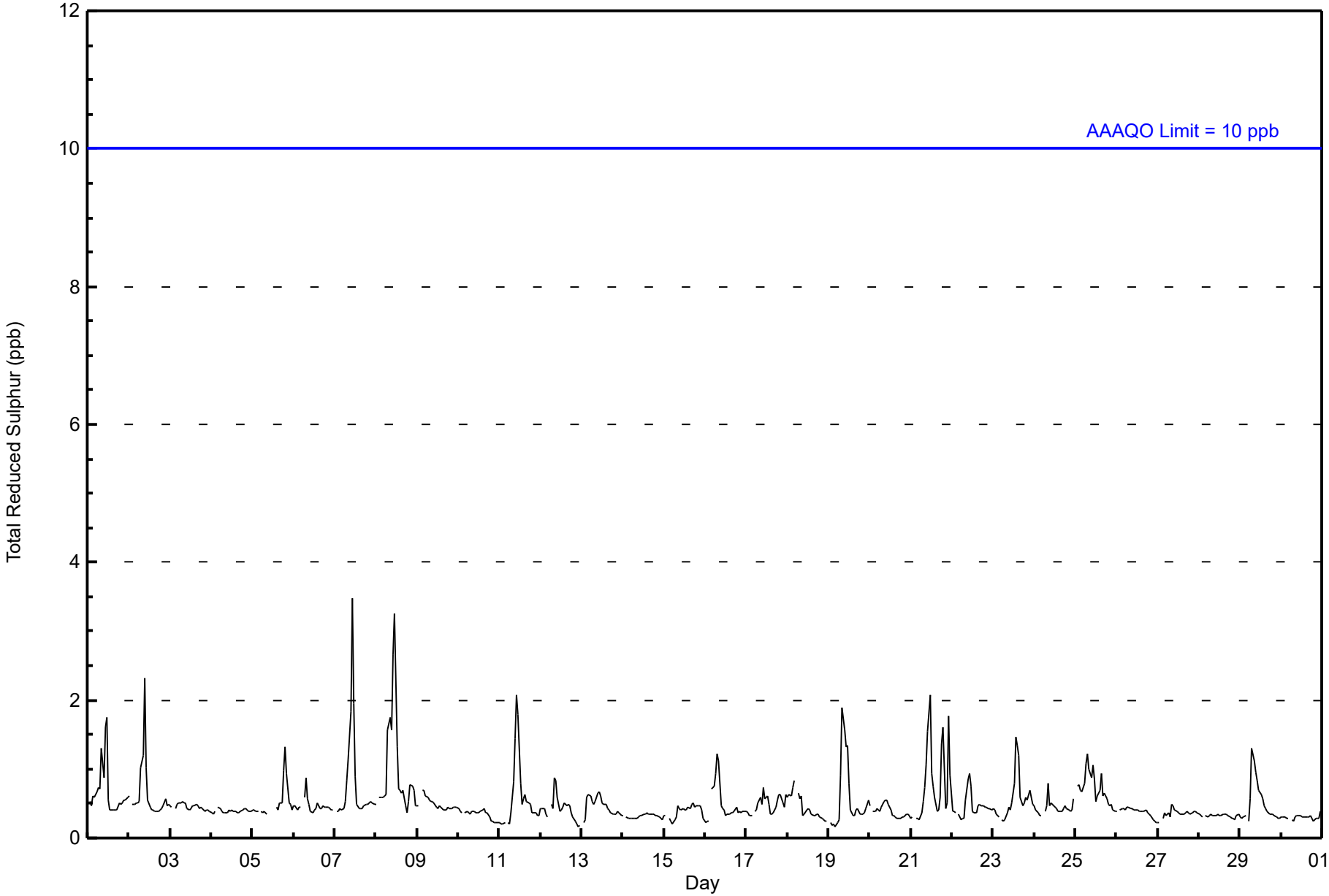
Alberta Ambient Air Quality Objectives (AAAQO): 1-hr 10 ppb 24-hr 3 ppb

Wood Buffalo Environmental Association

Hourly Averages

Total Reduced Sulphur (TRS) - ppb

Fort McKay South - September 2024



Concentration Ranges (ppb)	Number of Hours	%	Cumulative %
0 - 2	682	99.56	99.56
3 - 4	3	0.44	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: 685

Total Number of Hours: 720

Wood Buffalo Environmental Association

Frequency Distribution

Total Reduced Sulphur (TRS) - ppb

Fort McKay South - September 2024

Concentration Ranges (ppb)	Wind Direction																
	N	NNE	NE	ENE	E	ESE	SE	SSE	S	SSW	SW	WSW	W	WNW	NW	NNW	**Totals**
0 - 2	39	19	4	2	7	12	24	33	78	60	81	107	50	55	43	49	663
3 - 4	0	0	0	0	0	0	3	0	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	39	19	4	2	7	12	27	33	78	60	81	107	50	55	43	49	666

Total Number of Valid Hours: 666

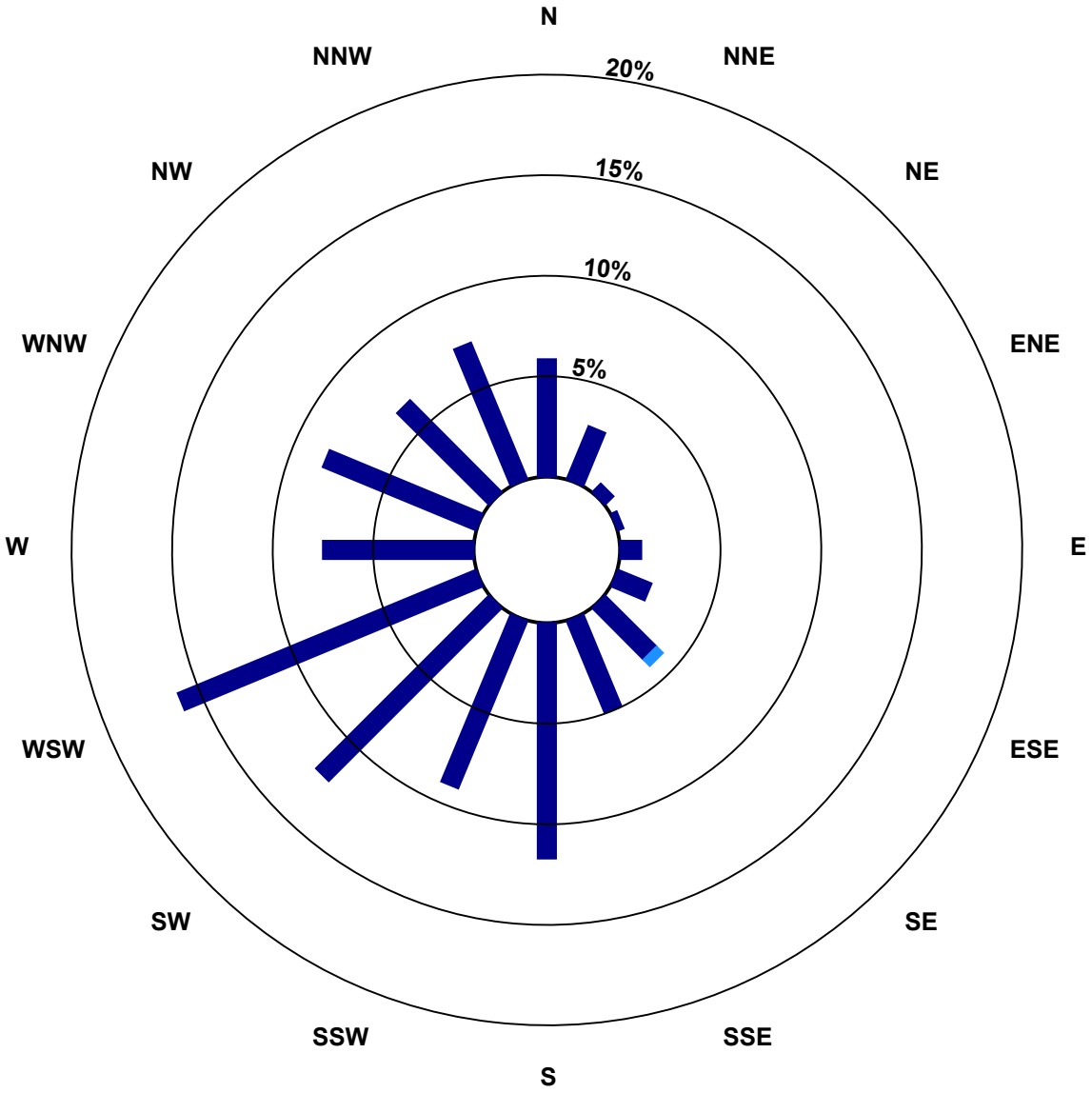
Total Number of Hours: 720

Wood Buffalo Environmental Association

Wind Rose Sep 2024

Total Reduced Sulphur (TRS) - ppb

Fort McKay South



Classes (ppb)

0 - 2

3 - 4

5 - 7

8 - 11

> 11

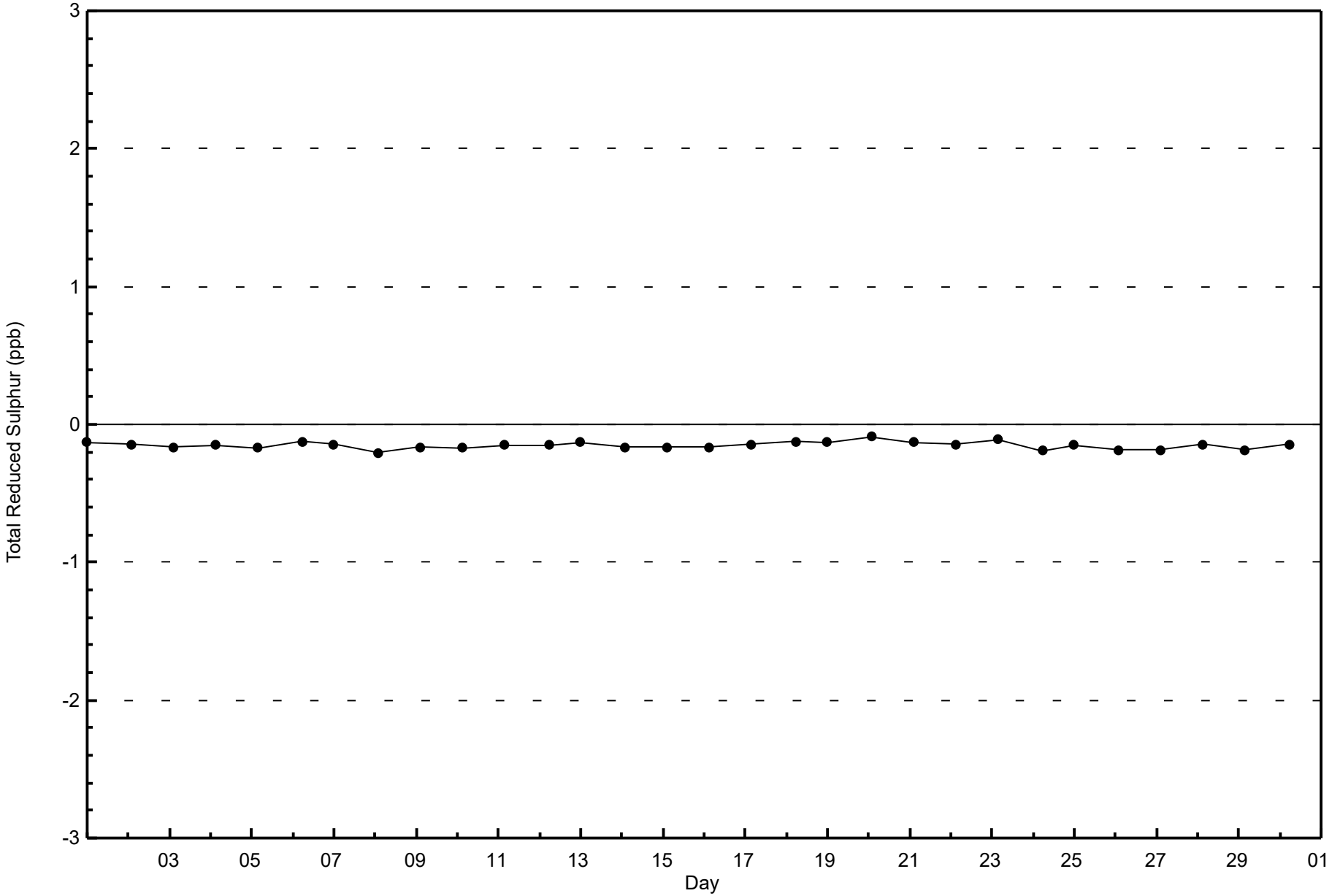
Total Number of Valid Hours: 666

Wood Buffalo Environmental Association

Zero Responses

Total Reduced Sulphur (TRS) - ppb

Fort McKay South - September 2024

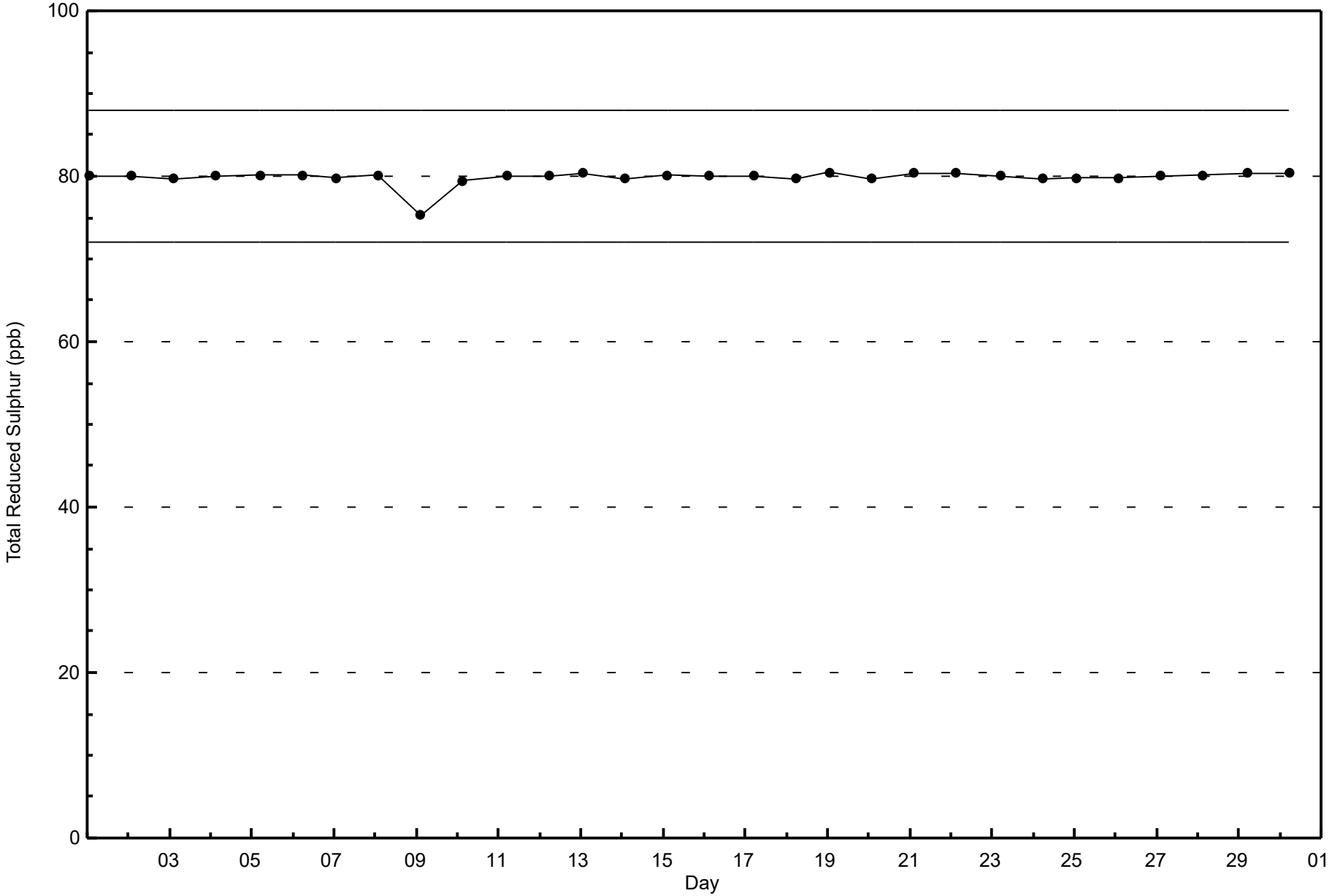


Wood Buffalo Environmental Association

Span Responses

Total Reduced Sulphur (TRS) - ppb

Fort McKay South - September 2024



Wood Buffalo Environmental Association

Summary of Hour Averages

Total Hydrocarbons (THC) - ppm

Fort McKay South - September 2024

Maximum Value: 4.1 ppm on Sep 29 08:00

Maximum Daily Average: 2.5 ppm on Sep 25

Minimum Value: 2.0 ppm on Sep 1 18:00

Minimum Daily Average: 2.1 ppm on Sep 28

Maximum Diurnal Average: 2.4 ppm at hour 8

Minimum Diurnal Average: 2.1 ppm at hour 18

Monthly Average: 2.22 ppm

Percentiles: P_1 = 2.0 P_{10} = 2.1 Q_1 = 2.1 Median = 2.2 Q_3 = 2.3 P_{90} = 2.5 P_{99} = 2.9

Hours in Service:	720
Hours of Data:	687
Hours of Missing Data:	33
Hours of Calibration:	33
Percent Operational Time:	100.0

Day	Hourly Period Ending At (MST)																								Daily	Daily
	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24	Average	Maximum
1-Sep	2.3	2.1	2.1	2.2	2.2	Z	2.2	2.2	2.6	2.2	2.2	2.2	2.1	2.1	2.0	2.0	2.0	2.0	2.0	2.1	2.2	2.3	2.4	2.5	2.2	2.6
2-Sep	Z	2.4	2.4	2.3	2.5	2.6	2.6	2.4	2.4	2.5	2.3	2.2	2.1	2.1	2.0	2.0	2.0	2.0	2.0	2.0	2.1	2.2	2.1	2.1	2.2	2.6
3-Sep	2.1	Z	2.1	2.1	2.1	2.1	2.1	2.2	2.1	2.2	2.1	2.1	2.1	2.1	2.1	2.1	2.1	2.1	2.1	2.1	2.1	2.1	2.1	2.1	2.1	2.2
4-Sep	2.1	2.2	Z	2.3	2.2	2.2	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	2.0	2.1	2.1	2.1	2.1	2.1	2.3
5-Sep	2.1	2.1	2.1	Z	2.1	2.1	2.2	2.1	2.1	2.3	2.4	2.2	2.1	2.1	2.1	2.1	2.1	2.1	2.1	2.1	2.2	2.2	2.2	2.1	2.1	2.4
6-Sep	2.2	2.2	2.1	2.1	Z	2.1	2.2	2.4	2.3	2.3	2.1	2.1	2.1	2.2	2.2	2.2	2.2	2.1	2.2	2.2	2.2	2.2	2.1	2.1	2.2	2.4
7-Sep	2.1	2.1	2.1	2.1	2.2	Z	2.9	2.7	2.4	2.4	2.3	2.3	2.2	2.2	2.1	2.0	2.0	2.1	2.1	2.1	2.2	2.2	2.1	2.1	2.2	2.9
8-Sep	Z	2.1	2.1	2.2	2.3	2.5	2.6	2.6	2.5	2.4	2.4	2.3	2.2	2.2	2.2	2.2	2.2	2.2	2.2	2.3	2.4	2.5	2.4	2.3	2.3	2.6
9-Sep	2.3	Z	2.3	2.4	2.4	2.4	2.5	2.3	2.2	2.2	2.2	2.1	2.1	2.1	2.1	2.0	2.1	2.0	2.1	2.1	2.1	2.1	2.1	2.1	2.2	2.5
10-Sep	2.1	2.1	Z	2.1	2.1	2.2	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	2.1	2.1	2.1	2.2	2.1	2.2
11-Sep	2.4	2.5	2.5	Z	2.5	2.6	2.6	2.7	2.6	2.3	2.2	2.2	2.1	2.2	2.1	2.1	2.2	2.2	2.2	2.2	2.2	2.2	2.2	2.1	2.3	2.7
12-Sep	2.1	2.1	2.1	2.2	Z	2.2	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	2.1	2.2	2.2	2.2	2.1	2.2
13-Sep	2.2	2.2	2.2	2.9	2.9	Z	2.6	2.5	2.6	C	C	C	2.2	2.2	2.2	2.2	2.2	2.1	2.1	2.1	2.2	2.2	2.2	2.2	2.3	2.9
14-Sep	Z	2.1	2.1	2.1	2.2	2.1	2.2	2.2	2.2	2.1	2.1	2.1	2.1	2.1	2.1	2.1	2.1	2.1	2.1	2.1	2.2	2.2	2.2	2.2	2.1	2.2
15-Sep	2.4	Z	2.5	2.5	2.6	2.7	2.7	2.6	2.5	2.3	2.2	2.2	2.2	2.2	2.2	2.2	2.2	2.2	2.2	2.2	2.2	2.2	2.3	2.3	2.3	2.7
16-Sep	2.3	2.3	Z	2.6	2.7	2.6	2.4	2.3	2.3	2.3	2.2	2.1	2.1	2.1	2.1	2.1	2.1	2.1	2.1	2.1	2.2	2.1	2.1	2.2	2.2	2.7
17-Sep	2.2	2.2	2.2	Z	2.4	2.4	2.4	2.4	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	2.2	2.3	2.2	2.4
18-Sep	2.4	2.5	2.7	2.6	Z	2.4	2.3	2.2	2.3	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	2.7
19-Sep	2.1	2.1	2.1	2.1	2.1	Z	2.6	2.8	2.6	2.5	2.3	2.4	2.3	2.2	2.1	2.1	2.1	2.1	2.1	2.2	2.2	2.2	2.5	2.7	2.3	2.8
20-Sep	Z	2.6	2.6	2.5	2.6	2.6	2.7	2.7	2.5	2.5	2.3	2.2	2.1	2.1	2.1	2.1	2.1	2.1	2.1	2.1	2.1	2.2	2.2	2.2	2.3	2.7
21-Sep	2.2	Z	2.1	2.1	2.1	2.1	2.2	2.3	2.5	2.8	2.6	2.4	2.2	2.2	2.1	2.1	2.1	2.1	2.1	2.1	2.1	2.1	2.2	2.1	2.2	2.8
22-Sep	2.1	2.1	Z	2.1	2.1	2.2	2.2	2.2	2.3	2.4	2.4	2.3	2.2	2.2	2.1	2.2	2.1	2.1	2.2	2.2	2.2	2.2	2.3	2.3	2.2	2.4
23-Sep	2.6	2.8	2.8	Z	2.6	2.4	2.3	2.3	2.2	2.3	2.3	2.3	2.6	2.4	2.4	2.3	2.2	2.1	2.2	2.2	2.2	2.2	2.1	2.2	2.3	2.8
24-Sep	2.2	2.3	2.4	2.4	Z	2.4	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	2.1	2.1	2.2	2.3	2.3	2.2	2.4
25-Sep	2.4	2.6	3.0	3.0	3.0	Z	2.8	2.5	2.5	2.5	2.6	2.5	2.3	2.3	2.4	2.4	2.3	2.3	2.4	2.3	2.3	2.4	2.1	2.1	2.5	3.0
26-Sep	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	2.0	2.1	2.1	2.1	2.2	2.2	2.1	2.2
27-Sep	2.2	Z	2.3	2.3	2.3	2.3	2.3	2.3	2.8	2.6	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	2.8
28-Sep	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	2.2	2.2	2.1	2.2
29-Sep	2.3	2.3	2.3	Z	2.3	2.3	2.8	4.1	3.2	2.6	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	2.4	4.1
30-Sep	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	2.3	2.1	2.3
	2.2	2.3	2.3	2.3	2.4	2.3	2.4	2.4	2.4	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	2.2	Diurnal Average	
	2.6	2.8	3.0	3.0	3.0	2.7	2.9	4.1	3.2	2.8	2.6	2.5	2.6	2.4	2.4	2.4	2.3	2.3	2.4	2.3	2.4	2.5	2.5	2.7	Diurnal Maximum	

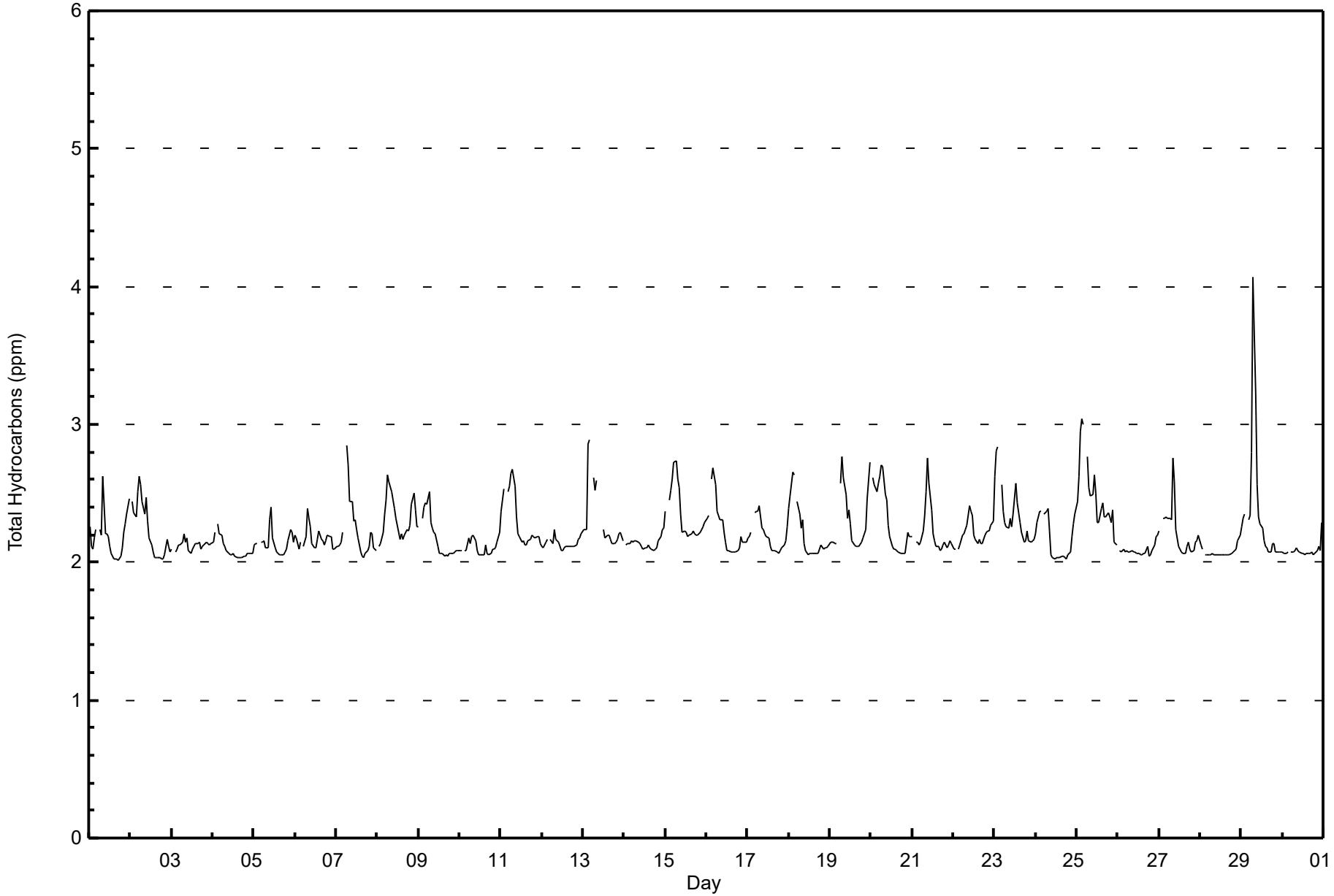
Z - zerospan C - Calibration

Wood Buffalo Environmental Association

Hourly Averages

Total Hydrocarbons (THC) - ppm

Fort McKay South - September 2024



Wood Buffalo Environmental Association

Cumulative Frequency Distribution

Total Hydrocarbons (THC) - ppm

Fort McKay South - September 2024

Concentration Ranges (ppm)	Number of Hours	%	Cumulative %
0 - 2.0	33	4.80	4.80
2.1 - 3.0	652	94.91	99.71
3.1 - 10.0	2	0.29	100.00
> 10.0	0	0.00	100.00

Total Number of Valid Hours: 687

Total Number of Hours: 720

Wood Buffalo Environmental Association

Frequency Distribution

Total Hydrocarbons (THC) - ppm

Fort McKay South - September 2024

Concentration Ranges (ppm)	Wind Direction																
	N	NNE	NE	ENE	E	ESE	SE	SSE	S	SSW	SW	WSW	W	WNW	NW	NNW	**Totals**
0 - 2.0	0	0	0	0	0	0	0	0	0	0	8	11	3	5	3	3	33
2.1 - 3.0	36	19	4	2	7	14	29	34	84	56	70	98	48	49	37	46	633
3.1 - 10.0	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1	2
> 10.0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Totals	37	19	4	2	7	14	29	34	84	56	78	109	51	54	40	50	668

Total Number of Valid Hours: 668

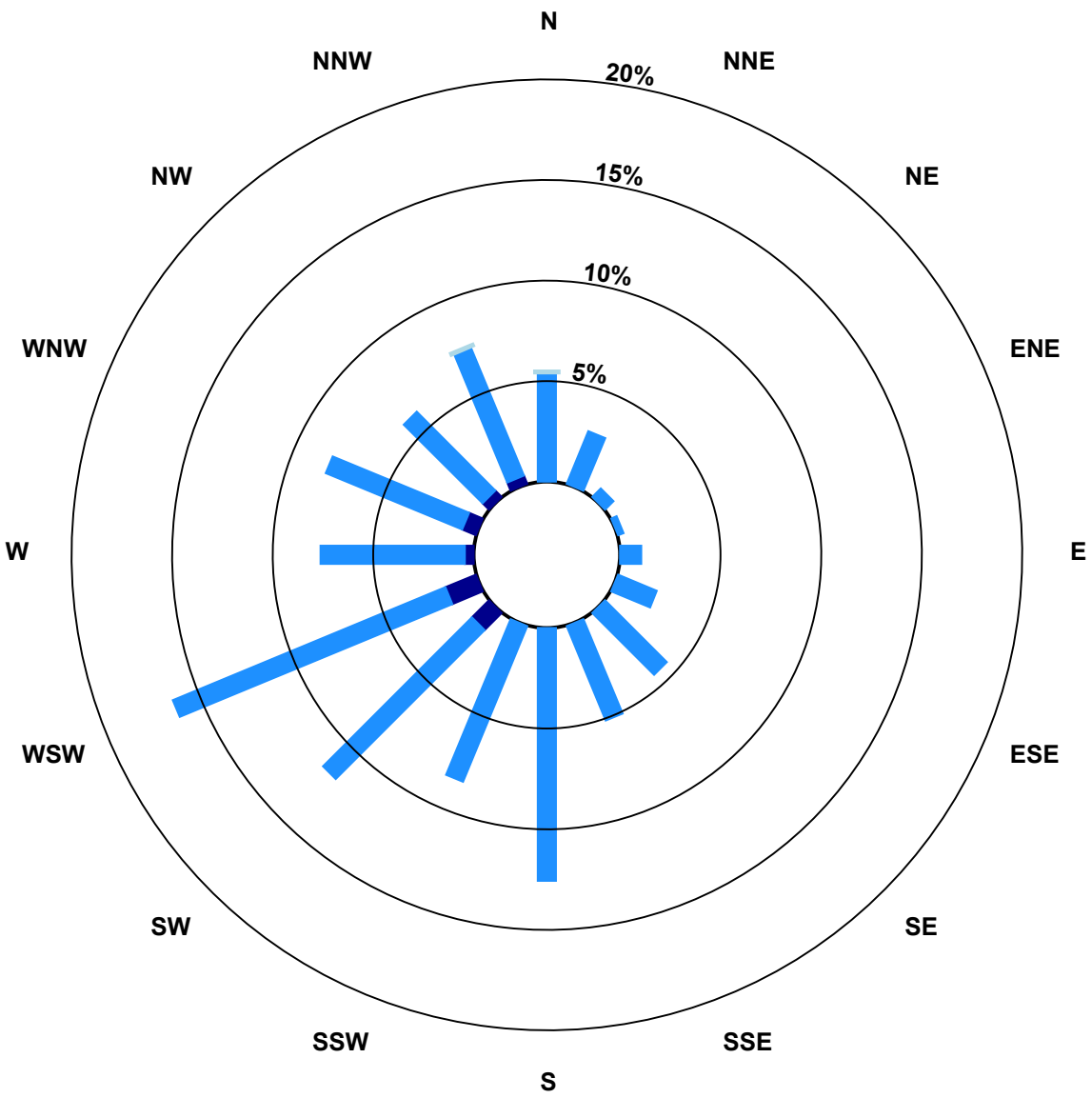
Total Number of Hours: 720

Wood Buffalo Environmental Association

Wind Rose Sep 2024

Total Hydrocarbons (THC) - ppm

Fort McKay South



Classes (ppm)

- 0 - 2.0
- 2.1 - 3.0
- 3.1 - 10.0
- > 10.0

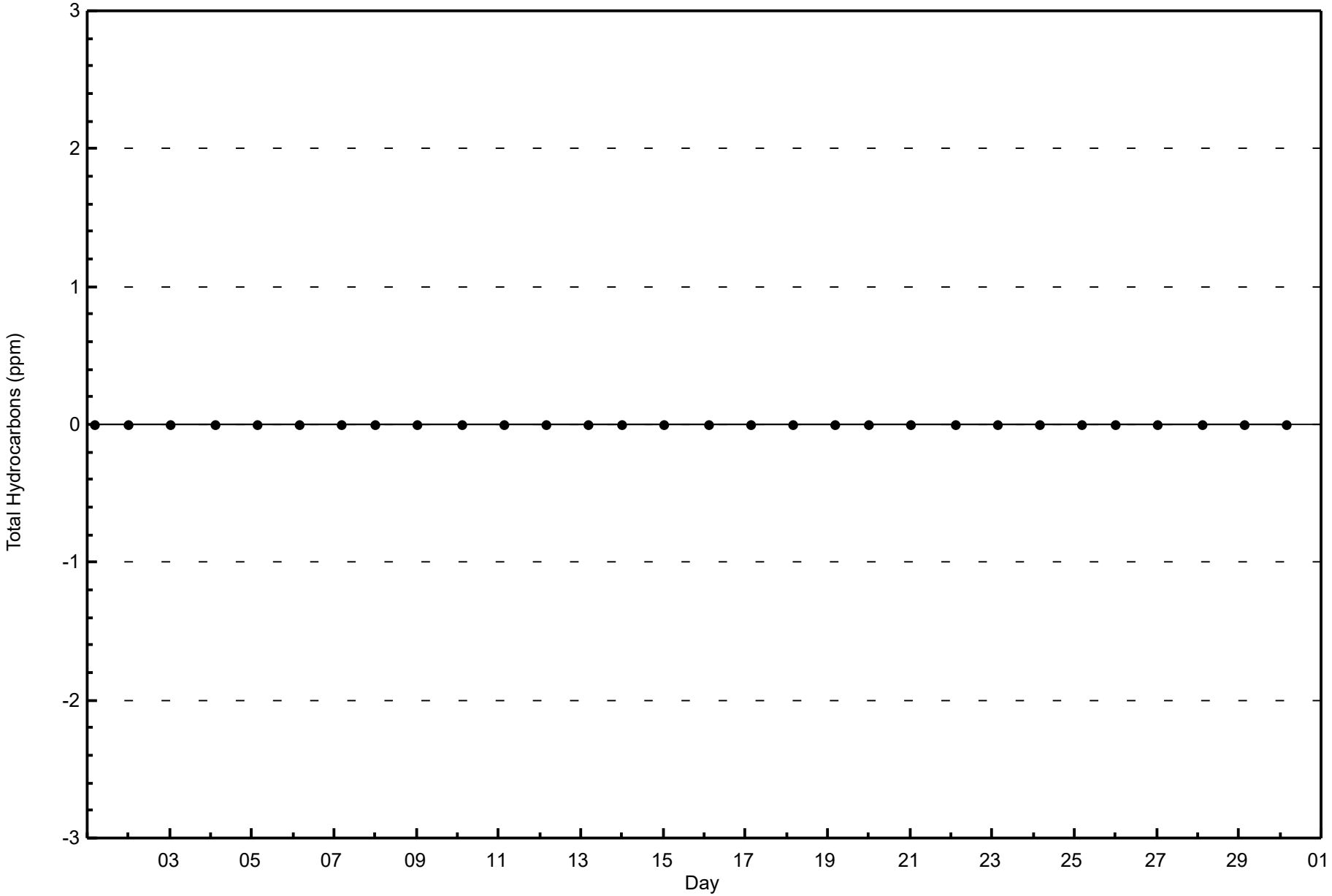
Total Number of Valid Hours: 668

Wood Buffalo Environmental Association

Zero Responses

Total Hydrocarbons (THC) - ppm

Fort McKay South - September 2024

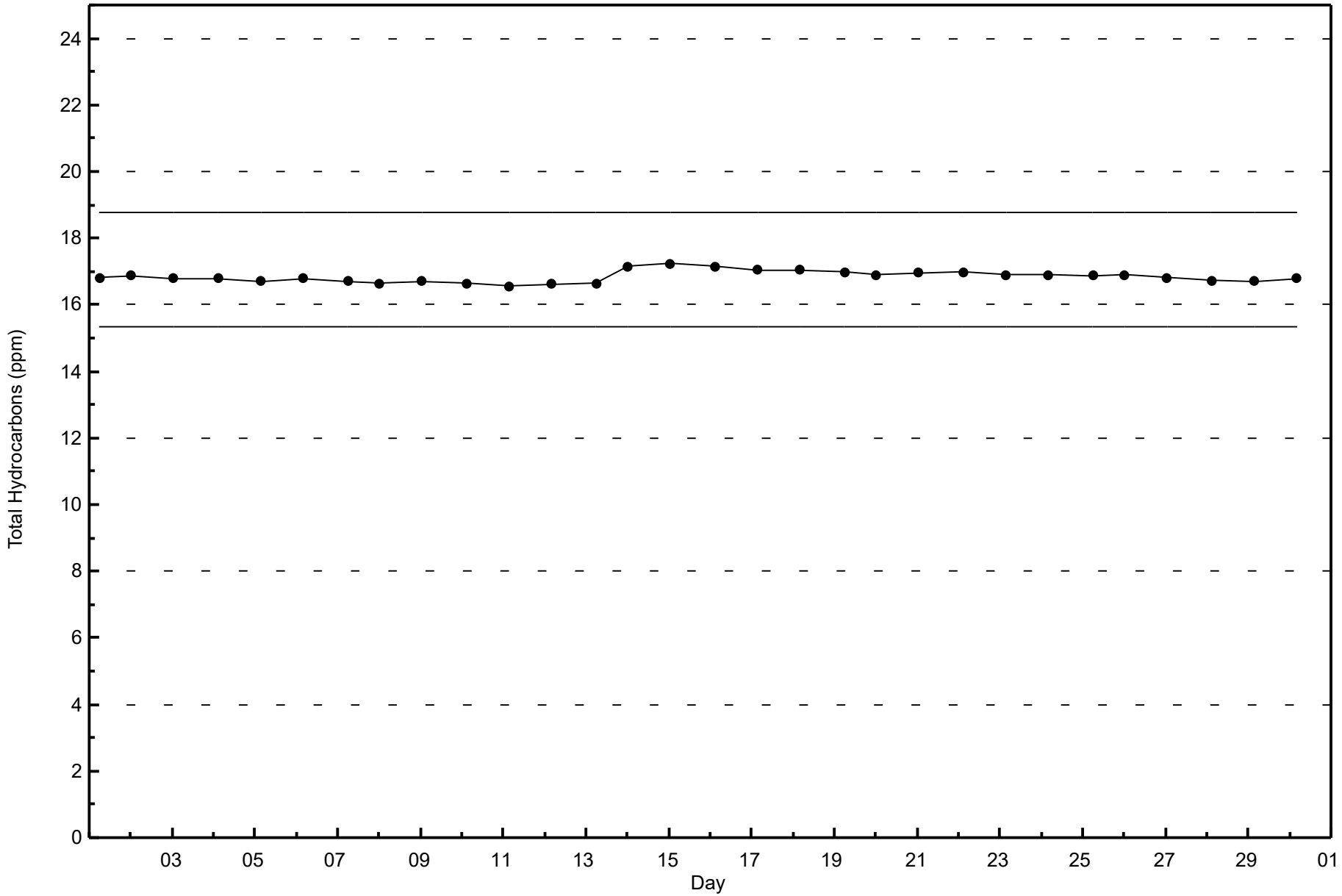


Wood Buffalo Environmental Association

Span Responses

Total Hydrocarbons (THC) - ppm

Fort McKay South - September 2024



Wood Buffalo Environmental Association

Summary of Hour Averages

Non Methane Hydrocarbons (NMHC) - ppm

Fort McKay South - September 2024

Maximum Value: 0.180 ppm on Sep 9 07:00

Maximum Daily Average: 0.022 ppm on Sep 8

Minimum Value: 0.000 ppm on Sep 1 01:00

Minimum Daily Average: 0.000 ppm on Sep 16

Maximum Diurnal Average: 0.007 ppm at hour 19

Minimum Diurnal Average: 0.000 ppm at hour 10

Monthly Average: 0.003 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 in Service:	720
Hours of Data:	687
Hours of Missing Data:	33
Hours of Calibration:	33
Percent Operational Time:	100.0

Day	Hourly Period Ending At (MST)																								Daily	Daily
	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24	Average	Maximum
1-Sep	0.000	0.001	0.001	0.001	0.000	Z	0.000	0.000	0.000	0.000	0.000	0.005	0.005	0.003	0.002	0.002	0.003	0.001	0.022	0.020	0.015	0.002	0.000	0.000	0.004	0.022
2-Sep	Z	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.001	0.006	0.005	0.006	0.012	0.013	0.014	0.001	0.001	0.009	0.060	0.027	0.000	0.007	0.060
3-Sep	0.006	Z	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.002	0.000	0.000	0.000	0.003	0.023	0.014	0.015	0.000	0.000	0.001	0.022	0.008	0.000	0.000	0.004	0.023
4-Sep	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
5-Sep	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	0.001	0.001	0.000	0.000	0.000	0.000	0.000	0.000	0.001
6-Sep	0.000	0.001	0.001	0.000	Z	0.000	0.001	0.000	0.001	0.000	0.002	0.001	0.001	0.009	0.004	0.007	0.006	0.013	0.021	0.011	0.008	0.005	0.003	0.001	0.004	0.021
7-Sep	0.002	0.001	0.000	0.003	0.001	Z	0.001	0.000	0.000	0.001	0.017	0.014	0.015	0.010	0.006	0.003	0.001	0.005	0.007	0.001	0.002	0.003	0.002	0.002	0.004	0.017
8-Sep	Z	0.001	0.001	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.003	0.006	0.012	0.020	0.035	0.033	0.050	0.110	0.091	0.040	0.043	0.055	0.000	0.000	0.022	0.110
9-Sep	0.000	Z	0.000	0.003	0.012	0.050	0.180	0.001	0.011	0.002	0.000	0.000	0.000	0.000	0.002	0.000	0.000	0.000	0.000	0.000	0.001	0.000	0.000	0.001	0.011	0.180
10-Sep	0.000	0.000	Z	0.001	0.000	0.000	0.000	0.000	0.001	0.001	0.000	0.000	0.001	0.000	0.001	0.002	0.000	0.001	0.001	0.000	0.000	0.000	0.001	0.000	0.000	0.002
11-Sep	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	0.001	0.011	0.036	0.057	0.043	0.022	0.012	0.010	0.003	0.009	0.057
12-Sep	0.001	0.000	0.000	0.000	Z	0.000	0.000	0.007	0.000	0.000	0.003	0.000	0.001	0.005	0.005	0.005	0.003	0.004	0.002	0.006	0.009	0.013	0.010	0.007	0.004	0.013
13-Sep	0.008	0.006	0.004	0.000	0.000	Z	0.000	0.000	0.001	C	C	C	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.001	0.000	0.001	0.008
14-Sep	Z	0.001	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.001	0.000	0.001	0.000	0.000	0.000	0.000	0.001	0.001	0.000	0.001	0.000	0.000	0.000	0.001	0.000	0.001
15-Sep	0.000	Z	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.006	0.040	0.040	0.017	0.002	0.001	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.005	0.040
16-Sep	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
17-Sep	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
18-Sep	0.000	0.001	0.000	0.000	Z	0.001	0.001	0.001	0.000	0.000	0.000	0.000	0.001	0.000	0.000	0.002	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.002
19-Sep	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	0.001	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.001
20-Sep	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
21-Sep	0.000	Z	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	0.001	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.003
22-Sep	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
23-Sep	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	0.001	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.001
24-Sep	0.000	0.000	0.000	0.000	Z	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	0.000	0.000	0.000	0.000	0.001
25-Sep	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
26-Sep	Z	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	0.000	0.000	0.001
27-Sep	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	0.000	0.000	0.001
28-Sep	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	0.001	0.000	0.000	0.000	0.000	0.000	0.001
29-Sep	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	0.001	0.001	0.000	0.000	0.000	0.000	0.000	0.000	0.001
30-Sep	0.000	0.000	0.000	0.000	Z	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	0.001
	0.001	0.000	0.000	0.000	0.001	0.002	0.006	0.000	0.001	0.000	0.001	0.002	0.003	0.002	0.003	0.003	0.004	0.006	0.007	0.004	0.004	0.005	0.002	0.000	Diurnal Average	
	0.008	0.006	0.004	0.003	0.012	0.050	0.180	0.007	0.011	0.002	0.017	0.040	0.040	0.020	0.035	0.033	0.050	0.110	0.091	0.043	0.043	0.060	0.027	0.007	Diurnal Maximum	

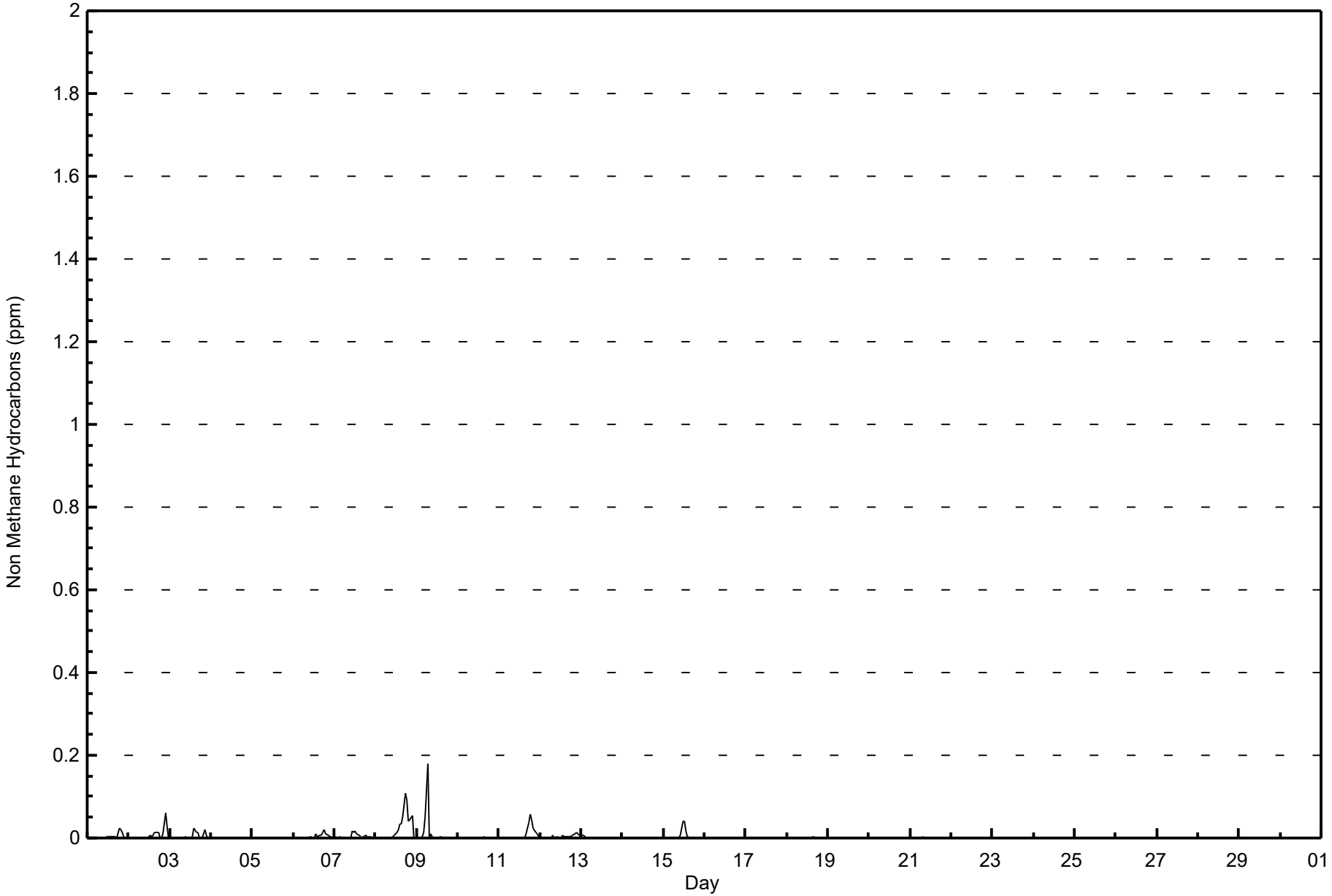
Z - zerospan C - Calibration

Wood Buffalo Environmental Association

Hourly Averages

Non Methane Hydrocarbons (NMHC) - ppm

Fort McKay South - September 2024



Wood Buffalo Environmental Association

Cumulative Frequency Distribution

Non Methane Hydrocarbons (NMHC) - ppm

Fort McKay South - September 2024

Concentration Ranges (ppm)	Number of Hours	%	Cumulative %
0 - 0.005	624	90.83	90.83
0.006 - 0.05	57	8.30	99.13
0.06 - 0.1	5	0.73	99.85
> 0.1	1	0.15	100.00

Total Number of Valid Hours: 687

Total Number of Hours: 720

Concentration Ranges (ppm)	Wind Direction																
	N	NNE	NE	ENE	E	ESE	SE	SSE	S	SSW	SW	WSW	W	WNW	NW	NNW	**Totals**
0 - 0.005	32	12	3	2	6	12	24	34	78	52	72	102	51	52	37	40	609
0.006 - 0.05	4	7	1	0	1	2	5	0	6	4	6	7	0	1	2	7	53
0.06 - 0.1	1	0	0	0	0	0	0	0	0	0	0	0	0	1	1	2	5
> 0.1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1	1
Totals	37	19	4	2	7	14	29	34	84	56	78	109	51	54	40	50	668

Total Number of Valid Hours: 668

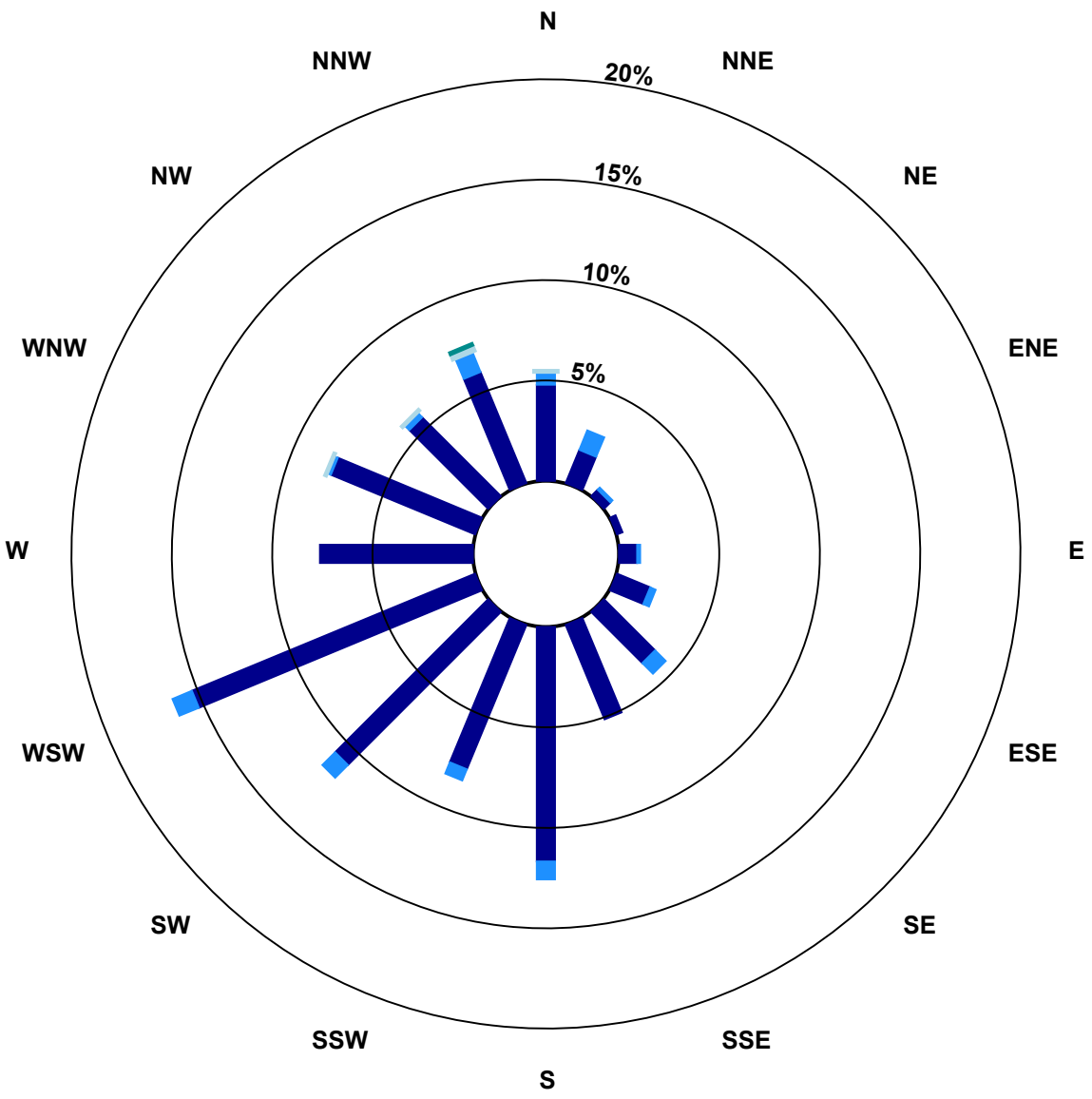
Total Number of Hours: 720

Wood Buffalo Environmental Association

Wind Rose Sep 2024

Non Methane Hydrocarbons (NMHC) - ppm

Fort McKay South



Classes (ppm)

0 - 0.005

0.006 - 0.05

0.06 - 0.1

> 0.1

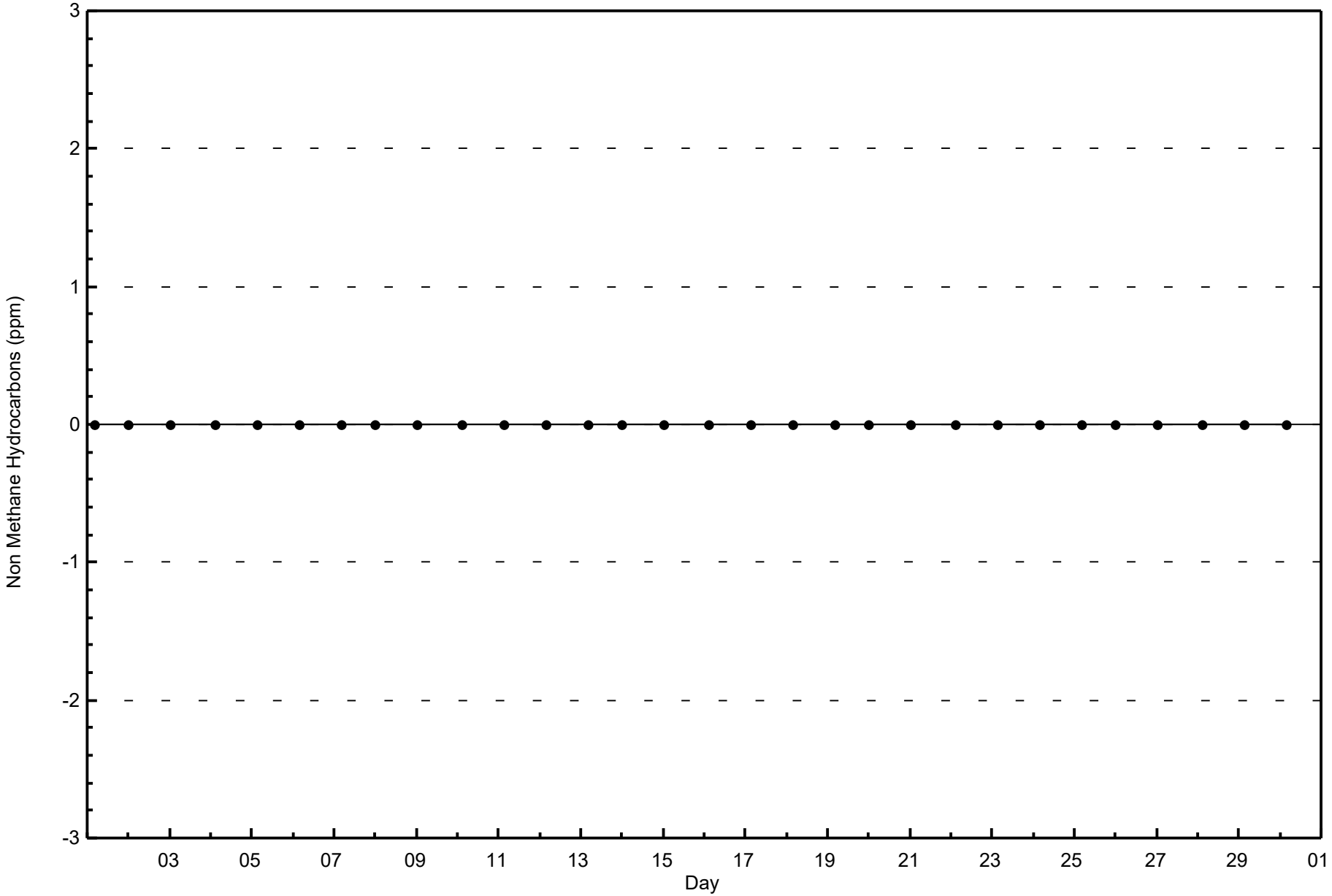
Total Number of Valid Hours: 668

Wood Buffalo Environmental Association

Zero Responses

Non Methane Hydrocarbons (NMHC) - ppm

Fort McKay South - September 2024

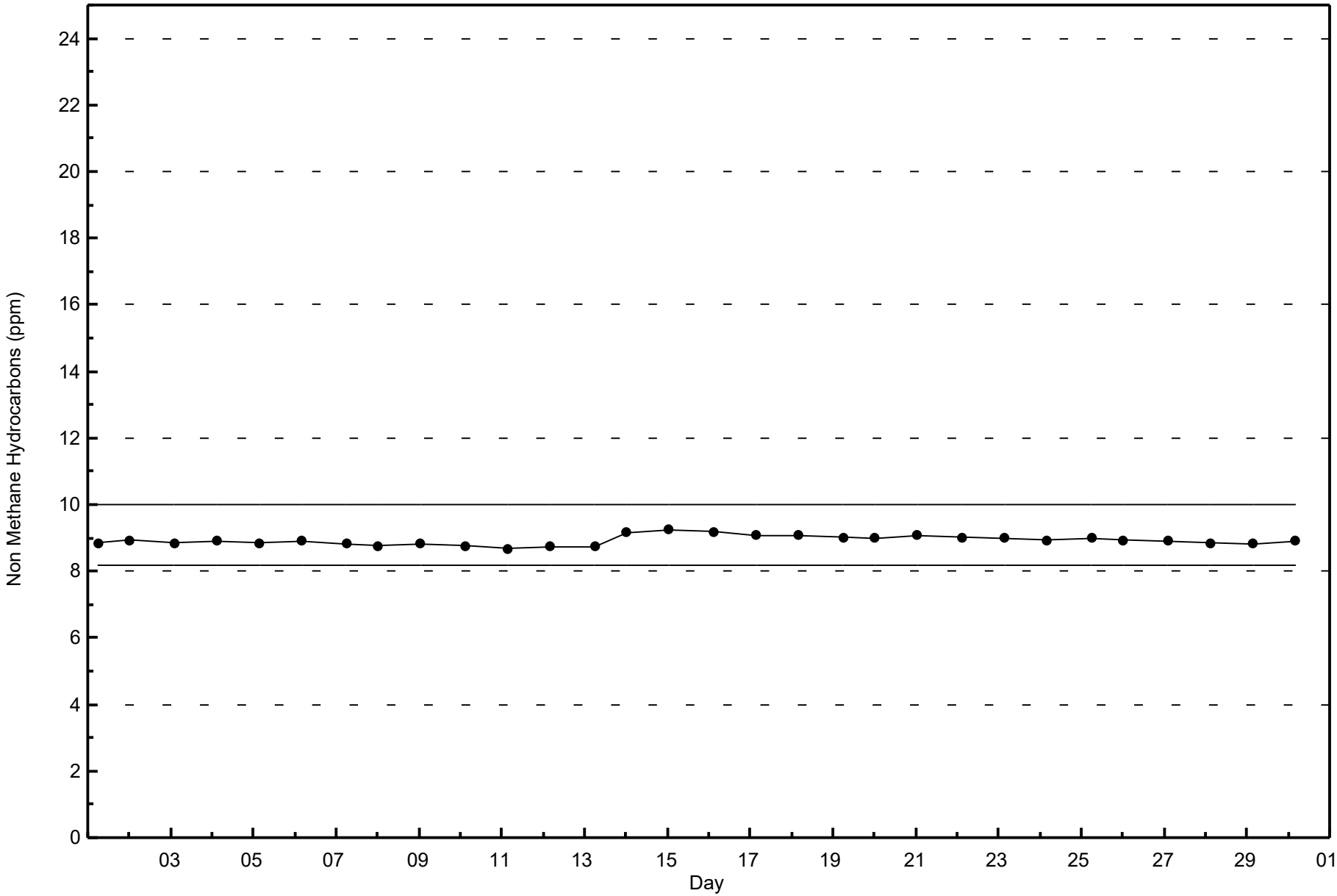


Wood Buffalo Environmental Association

Span Responses

Non Methane Hydrocarbons (NMHC) - ppm

Fort McKay South - September 2024



Wood Buffalo Environmental Association

Summary of Hour Averages

Methane (CH_4) - ppm

Fort McKay South - September 2024

Number of Exceedences (AAAQO): 1-hr: 0 24-hr: 0
Maximum Value: 4.1 ppm on Sep 29 08:00 Maximum Daily Average: 2.5 ppm on Sep 25

Minimum Value: 2.0 ppm on Sep 1 18:00
Maximum Diurnal Average: 2.4 ppm at hour 8
Monthly Average: 2.21 ppm

Minimum Daily Average: 2.1 ppm on Sep 28
Minimum Diurnal Average: 2.1 ppm at hour 18
Percentiles: P_1 = 2.0 P_{10} = 2.1 Q_1 = 2.1 Median = 2.1 Q_3 = 2.3 P_{90} = 2.5 P_{99} = 2.9

Hours in Service:	720
Hours of Data:	687
Hours of Missing Data:	33
Hours of Calibration:	33
Percent Operational Time:	100.0

Day	Hourly Period Ending At (MST)																								Daily	Daily
	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24	Average	Maximum
1-Sep	2.3	2.1	2.1	2.2	2.2	Z	2.2	2.2	2.6	2.2	2.2	2.2	2.1	2.1	2.0	2.0	2.0	2.0	2.0	2.1	2.2	2.3	2.4	2.5	2.2	2.6
2-Sep	Z	2.4	2.4	2.3	2.5	2.6	2.6	2.4	2.4	2.5	2.3	2.2	2.1	2.1	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.1	2.1	2.1	2.2	2.6
3-Sep	2.1	Z	2.1	2.1	2.1	2.1	2.1	2.2	2.1	2.2	2.1	2.1	2.1	2.1	2.1	2.1	2.1	2.1	2.1	2.1	2.1	2.1	2.1	2.1	2.1	2.2
4-Sep	2.1	2.2	Z	2.3	2.2	2.2	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	2.0	2.1	2.1	2.1	2.1	2.1	2.3
5-Sep	2.1	2.1	2.1	Z	2.1	2.1	2.2	2.1	2.1	2.3	2.4	2.2	2.1	2.1	2.1	2.1	2.1	2.1	2.1	2.1	2.2	2.2	2.2	2.1	2.1	2.4
6-Sep	2.2	2.2	2.1	2.1	Z	2.1	2.2	2.4	2.3	2.3	2.1	2.1	2.1	2.2	2.2	2.2	2.2	2.1	2.1	2.2	2.2	2.2	2.1	2.1	2.2	2.4
7-Sep	2.1	2.1	2.1	2.1	2.2	Z	2.9	2.7	2.4	2.4	2.3	2.3	2.2	2.2	2.1	2.0	2.0	2.1	2.1	2.1	2.2	2.2	2.1	2.1	2.2	2.9
8-Sep	Z	2.1	2.1	2.2	2.3	2.5	2.6	2.6	2.5	2.4	2.4	2.3	2.2	2.1	2.2	2.1	2.1	2.1	2.1	2.2	2.4	2.4	2.4	2.3	2.3	2.6
9-Sep	2.3	Z	2.3	2.4	2.4	2.4	2.3	2.3	2.2	2.2	2.2	2.1	2.1	2.1	2.1	2.0	2.1	2.0	2.1	2.1	2.1	2.1	2.1	2.1	2.2	2.4
10-Sep	2.1	2.1	Z	2.1	2.1	2.2	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	2.1	2.1	2.1	2.2	2.1	2.2
11-Sep	2.4	2.5	2.5	Z	2.5	2.6	2.6	2.7	2.6	2.3	2.2	2.2	2.1	2.2	2.1	2.1	2.1	2.1	2.1	2.1	2.2	2.2	2.2	2.1	2.3	2.7
12-Sep	2.1	2.1	2.1	2.2	Z	2.2	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	2.1	2.2	2.2	2.2	2.1	2.2
13-Sep	2.2	2.2	2.2	2.9	2.9	Z	2.6	2.5	2.6	C	C	C	2.2	2.2	2.2	2.2	2.2	2.1	2.1	2.1	2.2	2.2	2.2	2.2	2.3	2.9
14-Sep	Z	2.1	2.1	2.1	2.2	2.1	2.2	2.2	2.2	2.1	2.1	2.1	2.1	2.1	2.1	2.1	2.1	2.1	2.1	2.1	2.2	2.2	2.2	2.2	2.1	2.2
15-Sep	2.4	Z	2.5	2.5	2.6	2.7	2.7	2.6	2.5	2.3	2.2	2.2	2.2	2.2	2.2	2.2	2.2	2.2	2.2	2.2	2.2	2.2	2.3	2.3	2.3	2.7
16-Sep	2.3	2.3	Z	2.6	2.7	2.6	2.4	2.3	2.3	2.3	2.2	2.1	2.1	2.1	2.1	2.1	2.1	2.1	2.1	2.1	2.2	2.1	2.1	2.2	2.2	2.7
17-Sep	2.2	2.2	2.2	Z	2.4	2.4	2.4	2.4	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	2.2	2.3	2.2	2.4
18-Sep	2.4	2.5	2.7	2.6	Z	2.4	2.3	2.2	2.3	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	2.7
19-Sep	2.1	2.1	2.1	2.1	2.1	Z	2.6	2.8	2.6	2.5	2.3	2.4	2.3	2.2	2.1	2.1	2.1	2.1	2.1	2.2	2.2	2.2	2.5	2.7	2.3	2.8
20-Sep	Z	2.6	2.6	2.5	2.6	2.6	2.7	2.7	2.5	2.5	2.3	2.2	2.1	2.1	2.1	2.1	2.1	2.1	2.1	2.1	2.1	2.2	2.2	2.2	2.3	2.7
21-Sep	2.2	Z	2.1	2.1	2.1	2.1	2.2	2.3	2.5	2.8	2.6	2.4	2.2	2.2	2.1	2.1	2.1	2.1	2.1	2.1	2.1	2.1	2.2	2.1	2.2	2.8
22-Sep	2.1	2.1	Z	2.1	2.1	2.2	2.2	2.2	2.3	2.4	2.4	2.3	2.2	2.2	2.1	2.2	2.1	2.1	2.2	2.2	2.2	2.2	2.3	2.3	2.2	2.4
23-Sep	2.6	2.8	2.8	Z	2.6	2.4	2.3	2.3	2.2	2.3	2.3	2.3	2.6	2.4	2.4	2.3	2.2	2.1	2.2	2.2	2.2	2.2	2.1	2.2	2.3	2.8
24-Sep	2.2	2.3	2.4	2.4	Z	2.4	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	2.1	2.1	2.2	2.3	2.3	2.2	2.4
25-Sep	2.4	2.6	3.0	3.0	3.0	Z	2.8	2.5	2.5	2.5	2.6	2.5	2.3	2.3	2.4	2.4	2.3	2.3	2.4	2.3	2.3	2.4	2.1	2.1	2.5	3.0
26-Sep	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	2.0	2.1	2.1	2.1	2.2	2.2	2.1	2.2
27-Sep	2.2	Z	2.3	2.3	2.3	2.3	2.3	2.3	2.8	2.6	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	2.8
28-Sep	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	2.2	2.2	2.1	2.2
29-Sep	2.3	2.3	2.3	Z	2.3	2.3	2.8	4.1	3.2	2.6	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	2.4	4.1
30-Sep	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	2.3	2.1	2.3
	2.2	2.3	2.3	2.3	2.4	2.3	2.4	2.4	2.4	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	2.2	Diurnal Average	
	2.6	2.8	3.0	3.0	3.0	2.7	2.9	4.1	3.2	2.8	2.6	2.5	2.6	2.4	2.4	2.4	2.3	2.3	2.4	2.3	2.4	2.4	2.5	2.7	Diurnal Maximum	

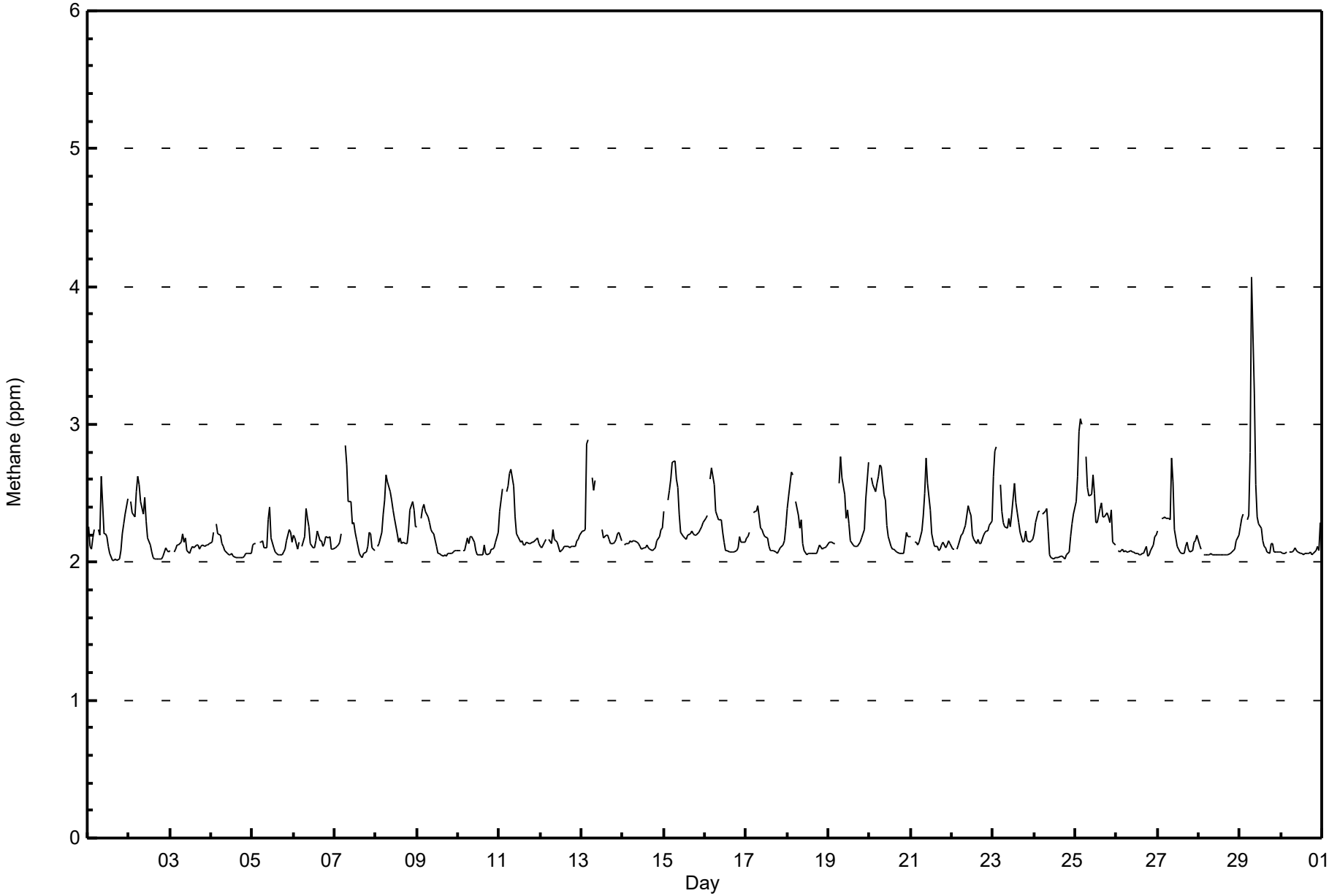
Z - zerospan C - Calibration

Wood Buffalo Environmental Association

Hourly Averages

Methane (CH_4) - ppm

Fort McKay South - September 2024



Concentration Ranges (ppm)	Number of Hours	%	Cumulative %
0 - 2.0	35	5.09	5.09
2.1 - 3.0	650	94.61	99.71
3.1 - 10.0	2	0.29	100.00
> 10.0	0	0.00	100.00

Total Number of Valid Hours: 687

Total Number of Hours: 720

Wood Buffalo Environmental Association

Frequency Distribution

Methane (CH_4) - ppm

Fort McKay South - September 2024

Concentration Ranges (ppm)	Wind Direction																
	N	NNE	NE	ENE	E	ESE	SE	SSE	S	SSW	SW	WSW	W	WNW	NW	NNW	**Totals**
0 - 2.0	0	0	0	0	0	0	0	0	0	0	8	12	3	5	3	4	35
2.1 - 3.0	36	19	4	2	7	14	29	34	84	56	70	97	48	49	37	45	631
3.1 - 10.0	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1	2
> 10.0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Totals	37	19	4	2	7	14	29	34	84	56	78	109	51	54	40	50	668

Total Number of Valid Hours: 668

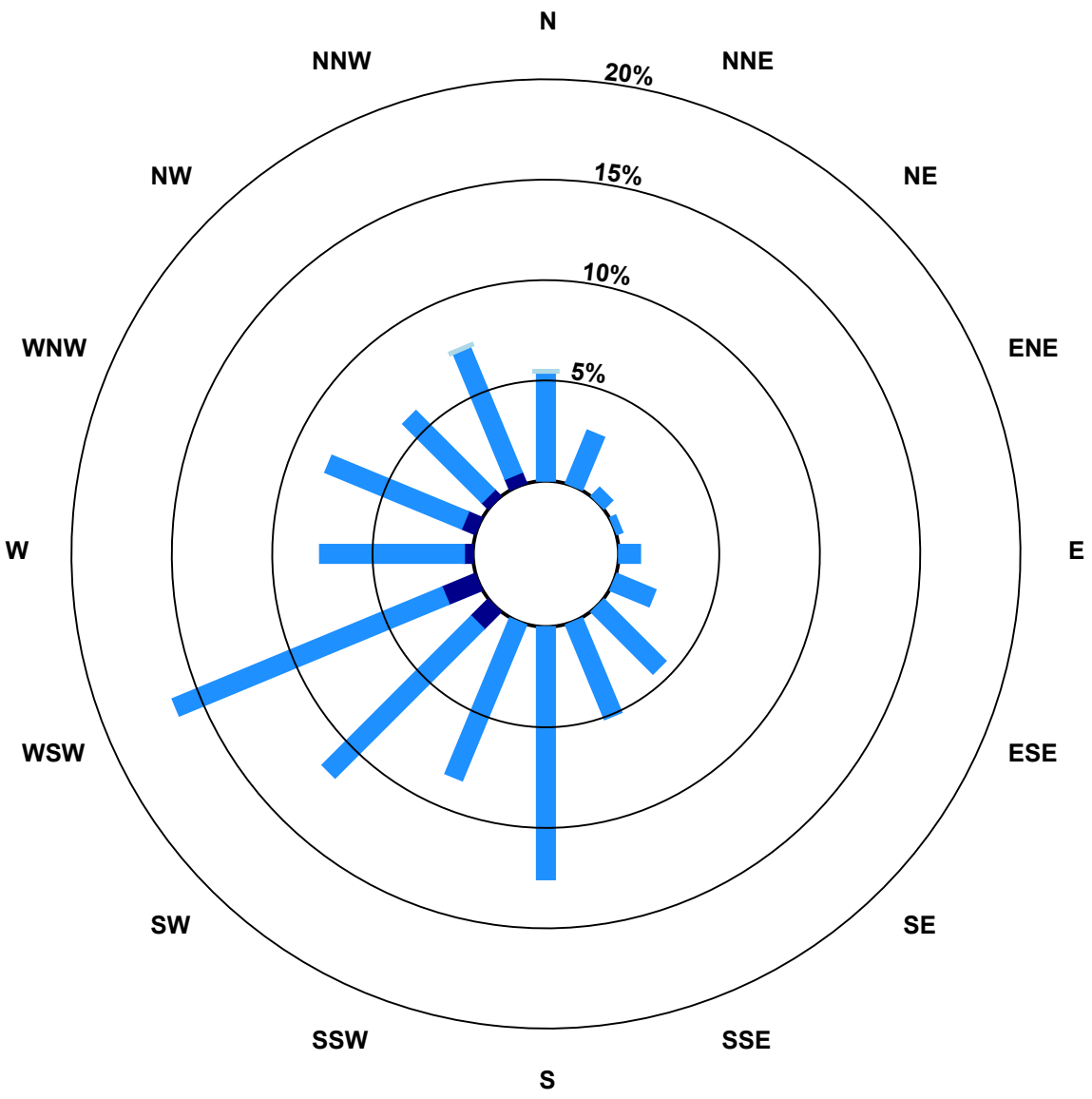
Total Number of Hours: 720

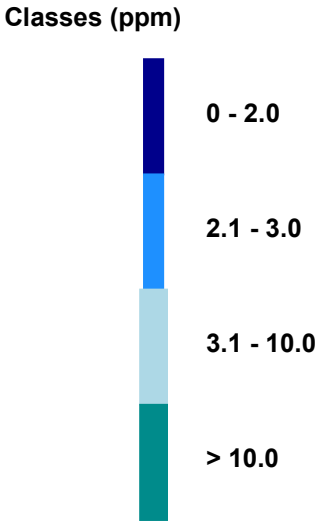
Wood Buffalo Environmental Association

Wind Rose Sep 2024

Methane (CH_4) - ppm

Fort McKay South





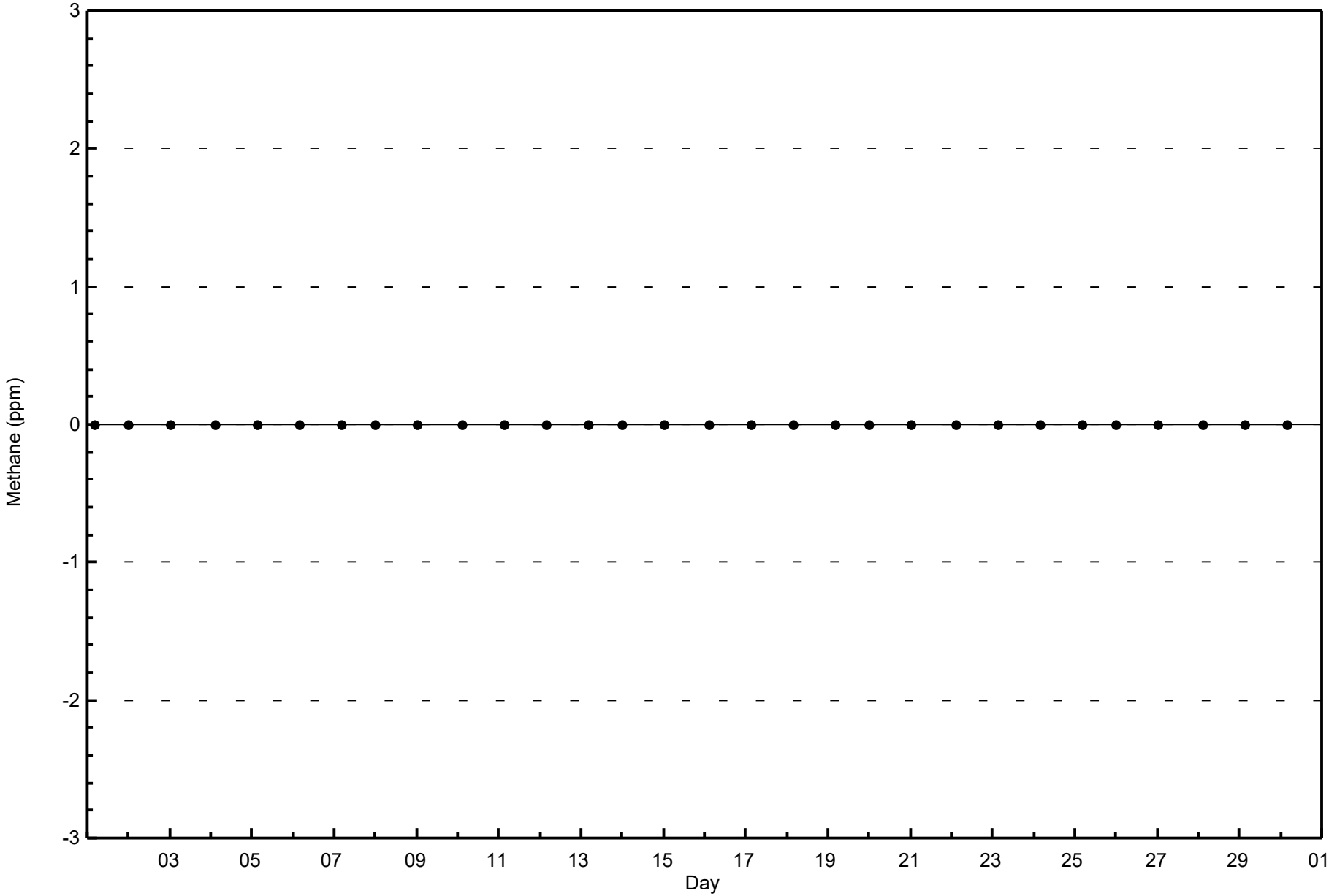
Total Number of Valid Hours: 668

Wood Buffalo Environmental Association

Zero Responses

Methane (CH_4) - ppm

Fort McKay South - September 2024

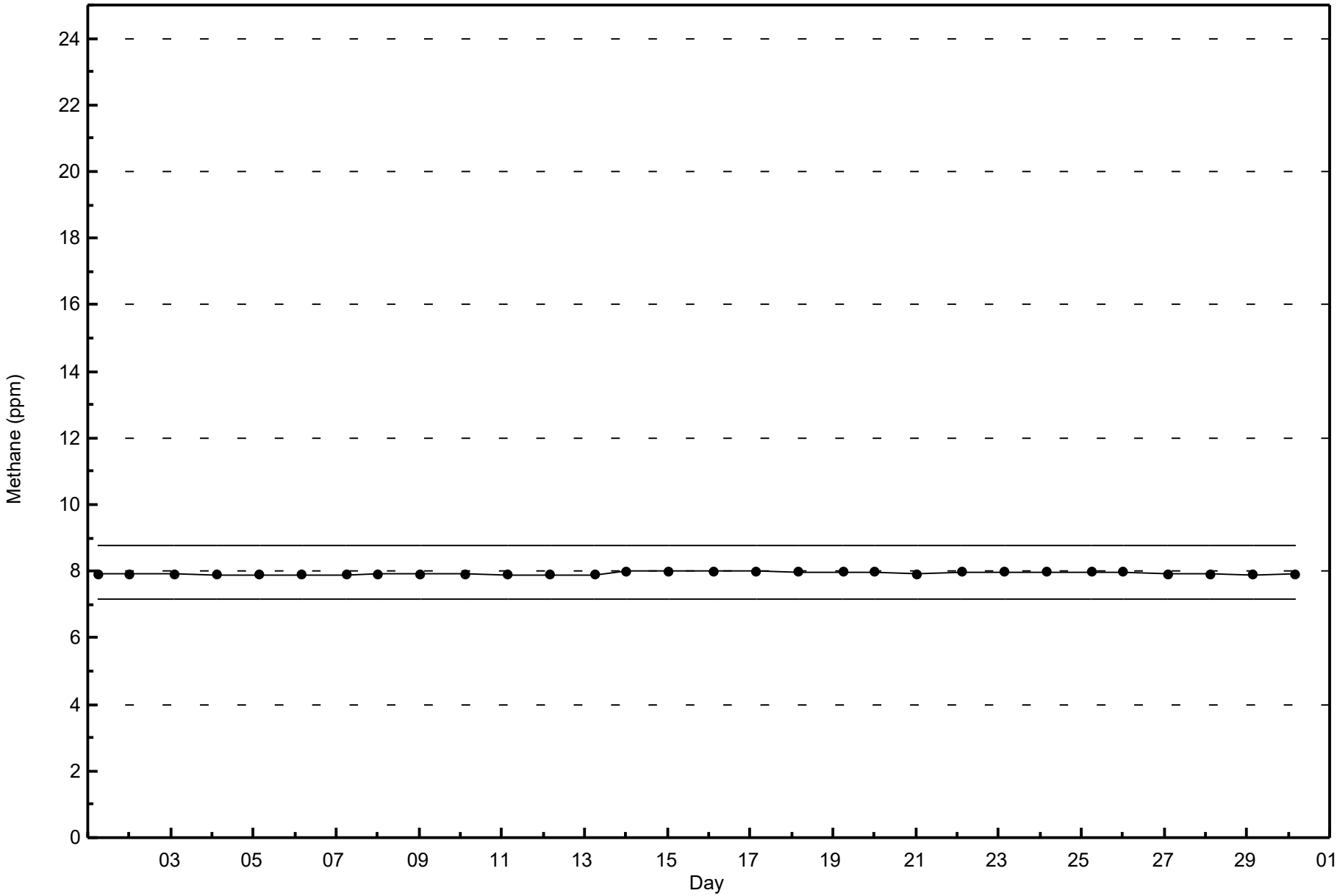


Wood Buffalo Environmental Association

Span Responses

Methane (CH_4) - ppm

Fort McKay South - September 2024



Wood Buffalo Environmental Association

Summary of Hour Averages

Ozone (O_3) - ppb

Fort McKay South - September 2024

Number of Exceedences (AAAQO): 1-hr: 0 24-hr: 0
Maximum Value: 39.3 ppb on Sep 24 16:00 Maximum Daily Average: 21.3 ppb on Sep 2

Minimum Value: 1.6 ppb on Sep 10 20:00 Minimum Daily Average: 7.5 ppb on Sep 23
Maximum Diurnal Average: 27.7 ppb at hour 15 Minimum Diurnal Average: 6.3 ppb at hour 7
Monthly Average: 14.86 ppb Percentiles: P_1 = 2.2 P_{10} = 2.9 Q_1 = 5.2 Median = 13.2 Q_3 = 22.6 P_{90} = 29.2 P_{99} = 37.3

Hours in Service:	720
Hours of Data:	686
Hours of Missing Data:	34
Hours of Calibration:	34
Percent Operational Time:	100.0

Day	Hourly Period Ending At (MST)																								Daily	Daily
	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24	Average	Maximum
1-Sep	18.6	Z	15.4	5.3	7.3	16.6	13.4	15.6	18.9	18.7	21.3	25.0	29.2	28.9	28.4	26.9	27.6	29.2	19.5	11.5	5.0	2.9	3.0	2.9	17.0	29.2
2-Sep	3.0	2.9	Z	2.9	3.1	2.9	3.7	7.8	13.1	19.5	26.3	29.2	33.0	36.3	38.0	37.4	34.2	33.6	31.7	27.0	25.9	21.9	27.7	28.5	21.3	38.0
3-Sep	26.0	32.4	31.6	Z	18.5	13.6	8.4	11.9	21.6	14.8	22.1	24.2	21.8	19.6	20.1	19.7	18.4	19.6	16.2	11.2	6.0	6.9	7.8	6.5	17.3	32.4
4-Sep	3.6	3.1	3.5	6.8	Z	6.7	7.9	8.0	11.1	17.2	19.9	21.4	21.9	26.2	26.8	26.1	25.0	25.8	22.2	15.0	17.1	19.9	19.2	19.4	16.3	26.8
5-Sep	15.7	12.0	7.6	5.6	8.1	Z	6.2	10.0	11.9	10.0	12.0	21.0	26.0	29.1	31.9	33.0	35.5	32.2	30.6	27.4	21.1	25.0	24.5	24.4	20.0	35.5
6-Sep	Z	22.0	22.3	23.5	25.2	21.9	12.4	17.7	25.6	22.7	27.9	30.5	26.2	18.8	21.0	20.5	21.6	19.2	17.4	13.5	8.4	6.5	17.2	12.3	19.8	30.5
7-Sep	9.9	Z	8.8	4.6	2.9	2.9	2.9	4.0	11.8	19.1	24.5	29.5	34.0	33.5	33.5	31.6	32.0	28.1	21.3	22.2	16.4	14.8	21.2	20.6	18.7	34.0
8-Sep	19.3	11.6	Z	3.0	2.6	2.5	2.6	4.1	10.2	15.1	23.6	28.1	38.0	35.6	38.2	34.5	34.6	21.8	13.3	15.7	10.6	7.7	11.8	10.5	17.2	38.2
9-Sep	8.7	7.6	6.6	Z	5.4	8.3	7.4	14.7	13.3	17.7	19.9	21.5	24.4	21.8	23.5	25.7	26.9	23.5	20.7	24.2	24.5	21.9	19.4	17.2	17.6	26.9
10-Sep	15.8	15.5	14.0	12.7	Z	8.6	6.3	7.7	8.8	C	C	C	C	18.9	11.3	13.0	20.7	8.6	2.3	1.6	2.2	2.1	1.9	1.9	9.1	20.7
11-Sep	2.0	2.0	2.2	2.4	2.4	Z	2.6	3.7	6.2	11.7	14.8	18.2	22.9	25.2	30.4	31.8	31.6	19.3	9.4	5.6	4.4	4.0	4.2	6.1	11.4	31.8
12-Sep	Z	4.2	3.6	3.4	3.4	9.6	10.0	4.0	7.6	11.3	17.1	22.2	23.8	23.8	21.3	22.4	23.5	22.0	7.7	3.9	3.1	3.0	2.9	2.9	11.2	23.8
13-Sep	2.8	Z	3.5	2.9	3.0	2.8	3.0	3.3	3.6	3.9	5.0	7.9	10.0	18.0	18.3	16.0	15.9	17.7	17.4	16.3	18.4	17.8	14.0	15.6	10.3	18.4
14-Sep	16.4	15.5	Z	13.1	11.9	12.0	11.8	12.5	12.9	17.1	22.9	29.9	29.8	31.3	29.0	29.7	32.3	22.4	13.1	9.7	8.1	5.6	4.7	4.1	17.2	32.3
15-Sep	3.3	3.4	3.1	Z	3.2	2.9	3.1	3.6	6.0	14.4	22.6	23.9	25.1	26.9	27.0	28.2	28.8	17.0	6.9	4.7	3.4	3.2	3.1	2.8	11.6	28.8
16-Sep	2.9	2.7	2.8	2.8	Z	2.9	3.7	5.6	7.7	11.8	16.0	24.0	28.5	29.0	30.3	30.8	31.0	28.9	15.3	7.4	7.2	15.2	11.4	6.4	14.1	31.0
17-Sep	2.9	2.9	2.5	2.5	2.7	Z	3.3	5.3	14.6	17.3	22.7	26.5	28.1	32.3	35.5	35.6	34.8	26.9	9.7	7.5	6.8	5.2	4.3	3.7	14.5	35.6
18-Sep	Z	4.0	3.9	4.8	4.3	5.8	5.5	13.0	16.2	22.7	21.7	21.6	23.6	28.0	32.2	34.2	34.7	27.8	14.9	9.8	8.5	7.6	7.3	6.6	15.6	34.7
19-Sep	6.4	Z	5.2	4.2	3.2	2.9	2.9	3.4	5.0	10.1	15.0	21.9	29.2	35.6	34.8	28.8	20.7	19.9	13.7	8.3	4.9	5.5	3.9	2.8	12.5	35.6
20-Sep	2.5	2.7	Z	2.8	2.6	2.6	2.7	4.0	7.9	11.7	12.5	16.3	23.6	27.3	27.3	28.6	28.7	27.4	24.2	17.7	12.4	7.8	11.5	7.4	13.6	28.7
21-Sep	6.3	7.9	8.4	Z	7.9	4.6	2.8	2.9	3.3	3.6	7.4	11.1	13.7	17.2	23.2	26.7	28.2	19.2	16.7	17.8	21.0	14.9	11.4	12.6	12.6	28.2
22-Sep	11.4	6.0	6.1	4.0	Z	3.1	2.8	4.2	9.1	11.0	12.0	19.4	23.4	23.1	27.1	25.3	22.6	10.7	14.0	12.1	9.3	10.7	5.2	4.1	12.0	27.1
23-Sep	2.7	2.7	2.7	2.7	2.7	Z	3.2	5.0	8.6	9.7	12.1	10.0	10.2	13.4	12.5	10.0	9.9	10.4	9.0	8.9	9.2	8.3	5.1	3.7	7.5	13.4
24-Sep	Z	3.0	2.9	3.1	3.0	3.1	3.0	3.5	6.5	9.3	14.3	22.8	30.9	34.2	38.5	39.3	37.0	19.7	10.6	8.3	6.5	5.4	4.7	4.3	13.6	39.3
25-Sep	3.0	Z	2.7	2.7	2.7	2.8	2.9	3.5	4.0	4.7	5.8	8.0	12.6	12.6	17.4	18.3	12.2	15.2	12.0	4.5	3.1	3.5	13.4	11.8	7.8	18.3
26-Sep	17.6	19.9	Z	16.0	13.9	12.0	18.0	18.7	17.1	16.1	17.5	20.2	25.2	29.6	31.4	25.7	18.9	31.4	25.1	21.8	8.7	3.7	3.3	4.0	18.1	31.4
27-Sep	3.1	2.8	3.0	Z	3.0	2.8	3.2	3.6	4.1	8.1	24.5	34.1	36.1	38.4	37.3	33.0	23.9	20.4	26.6	25.4	20.1	12.1	5.8	6.9	16.4	38.4
28-Sep	13.9	19.6	18.2	21.5	Z	21.6	23.0	21.0	20.8	24.4	27.2	28.2	29.5	31.4	31.4	31.4	28.9	13.2	7.9	5.7	4.5	4.4	3.5	2.9	18.9	31.4
29-Sep	2.6	2.6	2.9	3.2	2.9	Z	2.8	2.8	3.2	4.5	6.7	10.5	12.3	17.9	22.7	21.9	25.4	22.0	15.7	17.7	22.1	21.8	14.4	17.6	12.0	25.4
30-Sep	Z	23.4	22.1	19.8	18.4	10.1	9.1	9.3	12.4	18.0	19.5	25.4	27.5	29.1	30.1	30.8	31.3	29.0	15.8	9.6	13.2	18.6	23.4	5.2	19.6	31.3
	8.8	9.3	8.2	7.0	6.6	7.4	6.3	7.8	10.8	13.7	17.8	21.8	24.8	26.4	27.7	27.2	26.6	22.1	16.0	13.1	11.1	10.3	10.4	9.2	Diurnal Average	
	26.0	32.4	31.6	23.5	25.2	21.9	23.0	21.0	25.6	24.4	27.9	34.1	38.0	38.4	38.5	39.3	37.0	33.6	31.7	27.4	25.9	25.0	27.7	28.5	Diurnal Maximum	

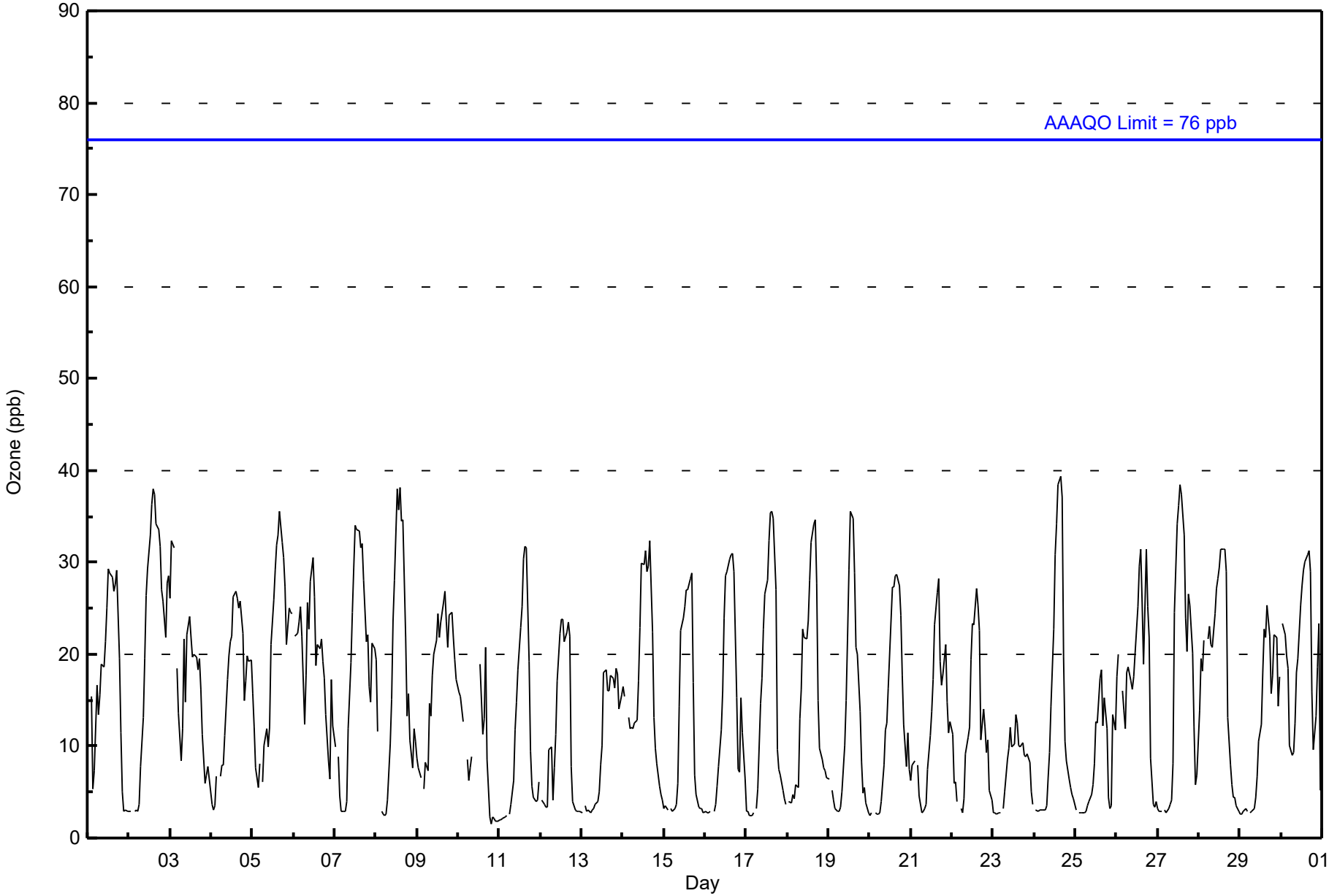
Z - zerospan C - Calibration
Alberta Ambient Air Quality Objectives (AAAQO): 1-hr 76 ppb

Wood Buffalo Environmental Association

Hourly Averages

Ozone (O_3) - ppb

Fort McKay South - September 2024



Concentration Ranges (ppb)	Number of Hours	%	Cumulative %
0 - 20	467	68.08	68.08
21 - 50	219	31.92	100.00
51 - 82	0	0.00	100.00
> 83	0	0.00	100.00

Total Number of Valid Hours: 686

Total Number of Hours: 720

Wood Buffalo Environmental Association

Frequency Distribution

Ozone (O_3) - ppb

Fort McKay South - September 2024

Concentration Ranges (ppb)	Wind Direction																
	N	NNE	NE	ENE	E	ESE	SE	SSE	S	SSW	SW	WSW	W	WNW	NW	NNW	**Totals**
0 - 20	21	10	1	2	3	5	16	17	53	39	61	81	35	31	33	41	449
21 - 50	17	9	3	0	4	9	13	16	25	18	19	27	16	22	11	10	219
51 - 82	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
> 83	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Totals	38	19	4	2	7	14	29	33	78	57	80	108	51	53	44	51	668

Total Number of Valid Hours: 668

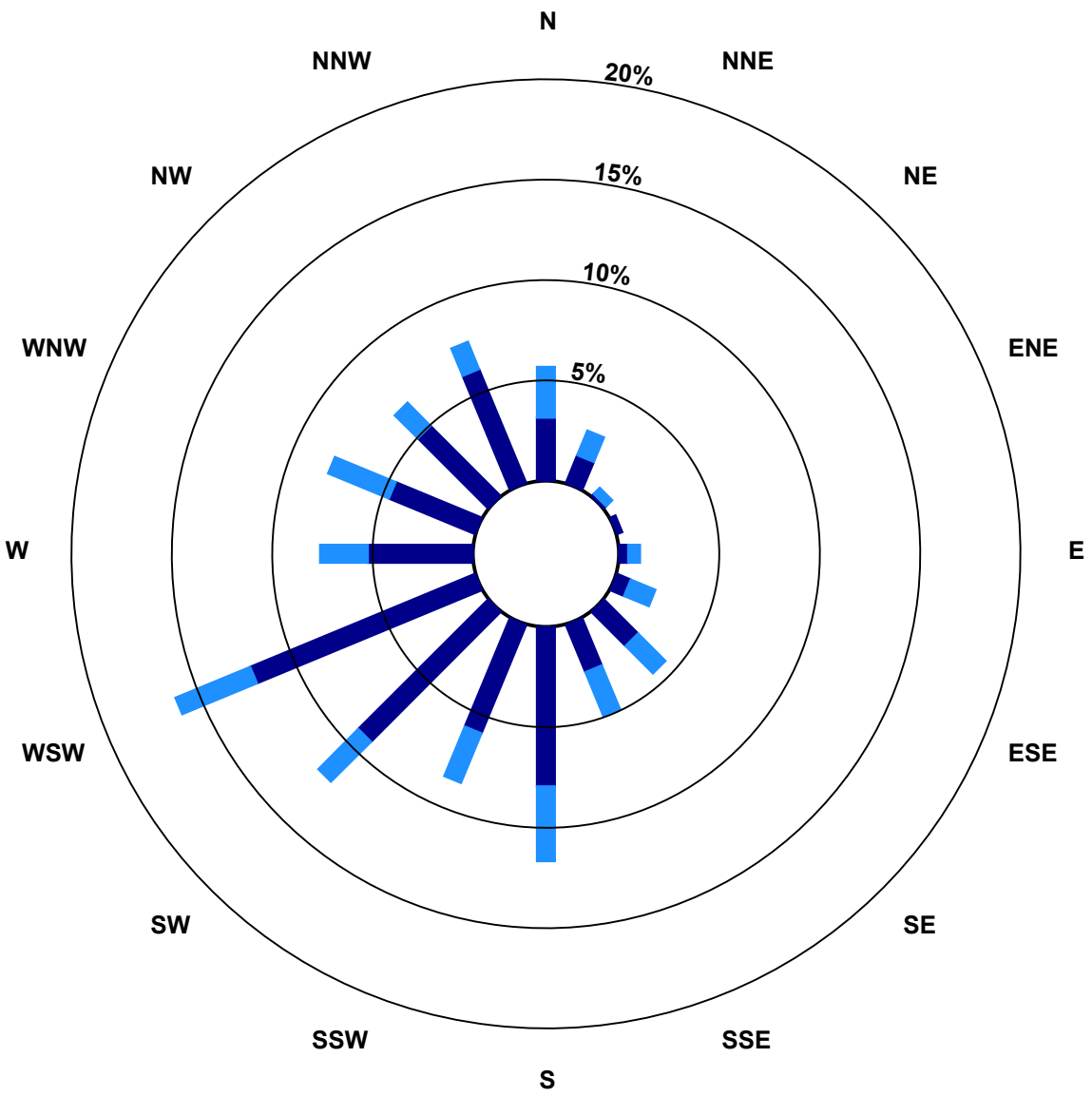
Total Number of Hours: 720

Wood Buffalo Environmental Association

Wind Rose Sep 2024

Ozone (O_3) - ppb

Fort McKay South



Classes (ppb)

0 - 20

21 - 50

51 - 82

> 83

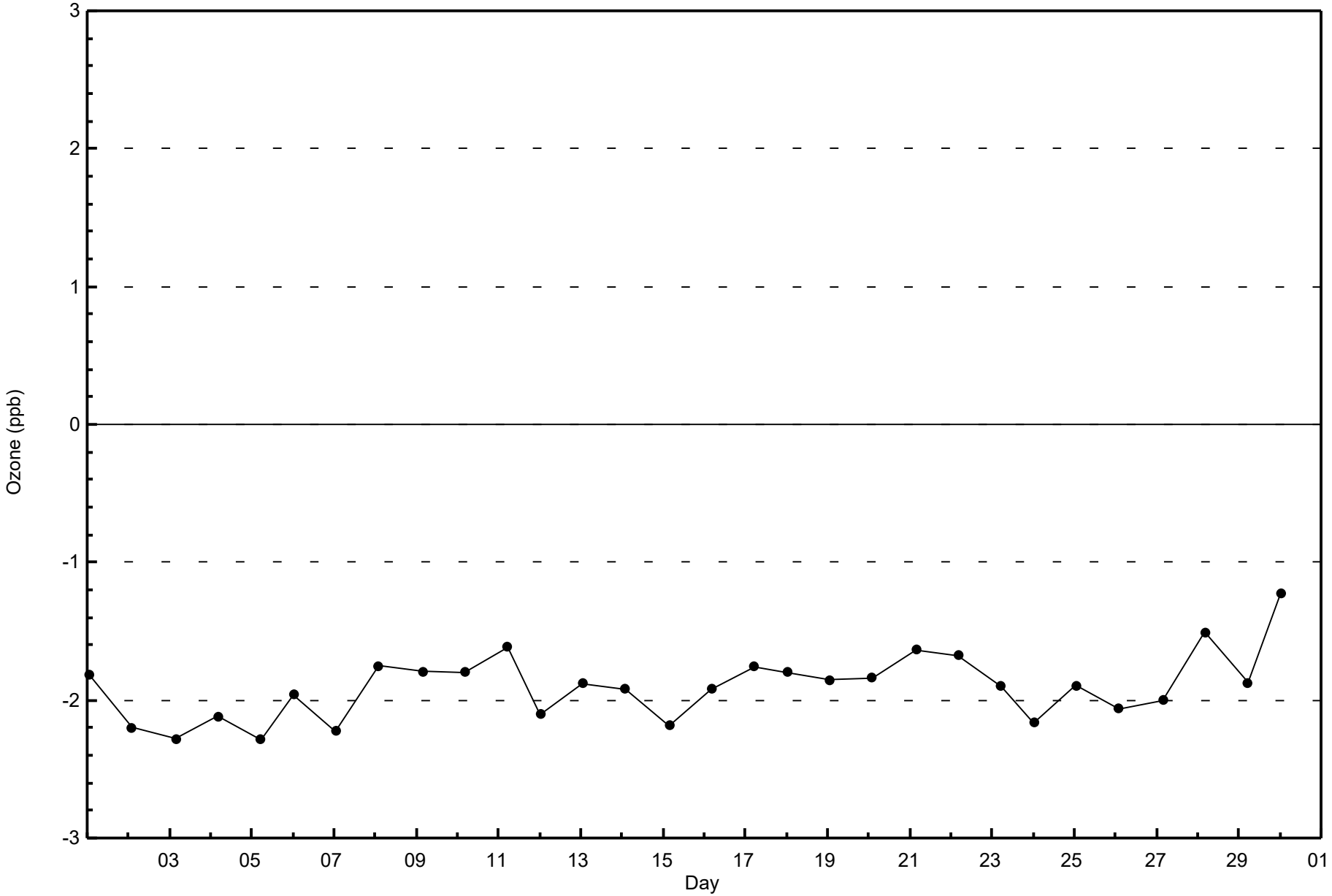
Total Number of Valid Hours: 668

Wood Buffalo Environmental Association

Zero Responses

Ozone (O_3) - ppb

Fort McKay South - September 2024

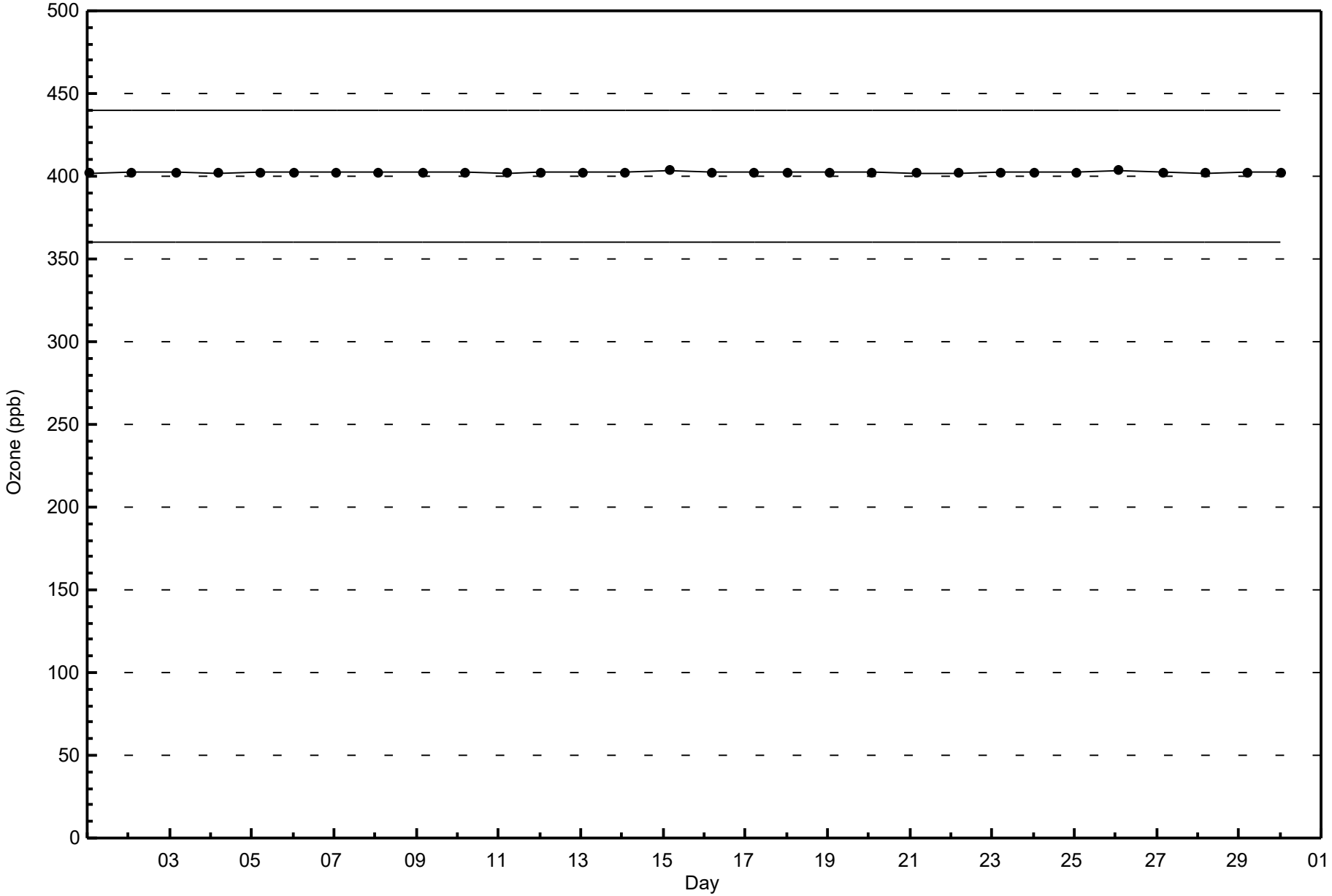


Wood Buffalo Environmental Association

Span Responses

Ozone (O_3) - ppb

Fort McKay South - September 2024



Wood Buffalo Environmental Association

Summary of Hour Averages

Nitric Oxide (NO) - ppb

Fort McKay South - September 2024

Maximum Value: 88.0 ppb on Sep 29 08:00

Maximum Daily Average: 11.5 ppb on Sep 29

Minimum Value: 0.0 ppb on Sep 1 01:00

Minimum Daily Average: 0.0 ppb on Sep 28

Maximum Diurnal Average: 9.7 ppb at hour 8

Minimum Diurnal Average: 0.0 ppb at hour 20

Monthly Average: 2.93 ppb

Percentiles: P_1 = 0.0 P_{10} = 0.0 Q_1 = 0.0 Median = 0.1 Q_3 = 2.0 P_{90} = 9.5 P_{99} = 32.5

Hours in Service:	720
Hours of Data:	685
Hours of Missing Data:	35
Hours of Calibration:	35
Percent Operational Time:	100.0

Day	Hourly Period Ending At (MST)																								Daily	Daily
	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24	Average	Maximum
1-Sep	0.0	0.0	0.0	Z	0.0	0.0	0.0	2.0	2.4	2.4	3.2	2.8	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	4.6	8.4	17.8	1.9	17.8
2-Sep	23.3	8.5	1.1	2.6	Z	23.4	12.8	7.2	5.6	3.9	0.8	1.1	1.1	0.1	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	4.0	23.4
3-Sep	0.2	0.3	0.4	0.5	0.1	Z	0.2	0.7	0.6	5.0	1.3	0.2	1.3	2.1	2.2	1.8	1.7	1.0	0.7	0.6	0.7	0.7	0.1	0.0	1.0	5.0
4-Sep	Z	0.3	1.3	0.2	0.1	0.2	0.0	0.0	0.1	0.1	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	0.1	1.3
5-Sep	0.0	Z	0.1	0.2	0.2	0.2	0.2	0.2	0.9	15.8	15.8	5.1	3.0	2.7	0.3	0.3	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	2.0	15.8
6-Sep	0.0	0.0	Z	0.1	0.1	0.2	1.0	1.8	2.0	4.9	1.9	0.1	0.0	0.6	0.1	1.6	1.4	0.5	0.0	0.0	0.0	0.3	0.3	0.0	0.7	4.9
7-Sep	0.0	0.1	0.1	Z	1.8	13.4	45.1	34.3	5.6	4.2	3.9	2.3	1.0	0.9	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	4.9	45.1
8-Sep	0.0	0.0	0.0	0.6	Z	22.1	38.7	27.9	7.3	4.9	4.7	3.8	0.7	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.2	0.2	0.0	4.8	38.7
9-Sep	0.0	0.1	0.1	1.3	2.0	Z	1.8	1.2	2.8	1.9	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	0.5	2.8
10-Sep	Z	0.0	0.0	0.0	0.0	0.2	2.3	4.4	8.1	4.6	0.6	0.0	0.0	0.0	0.0	1.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.3	0.9	8.1
11-Sep	0.9	Z	1.6	4.7	3.5	5.1	7.0	11.8	20.2	10.3	11.5	7.6	2.4	1.8	0.6	0.2	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	3.9	20.2
12-Sep	0.0	0.0	Z	0.0	0.0	0.0	0.0	1.2	1.9	1.4	0.9	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	1.9
13-Sep	0.1	0.1	0.3	Z	37.1	24.1	17.2	10.4	10.8	27.8	23.7	11.6	5.4	0.8	0.9	1.0	0.5	0.0	0.0	0.0	0.0	0.0	0.0	0.0	7.5	37.1
14-Sep	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	0.3	0.0	0.0	0.3
15-Sep	1.2	1.6	2.9	4.3	4.6	Z	8.8	9.1	11.9	6.0	3.7	3.9	3.5	2.5	2.5	1.8	0.8	0.0	0.0	0.0	0.0	0.0	0.0	0.3	3.0	11.9
16-Sep	Z	3.8	9.5	28.6	29.8	13.0	3.8	5.6	7.0	13.7	13.7	17.4	1.3	1.1	1.0	0.6	0.3	0.1	0.0	0.1	0.7	0.2	0.4	0.7	6.6	29.8
17-Sep	2.1	Z	2.9	6.9	6.0	4.4	3.9	9.8	3.3	3.6	2.4	1.6	1.9	1.5	0.9	0.7	0.0	0.0	0.0	0.0	0.0	0.3	0.4	0.7	2.3	9.8
18-Sep	1.0	1.1	Z	1.2	1.3	1.3	1.7	3.1	5.0	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	0.7	5.0
19-Sep	0.0	0.0	0.0	Z	0.3	6.7	21.1	32.2	30.0	12.2	6.4	4.0	1.7	0.5	0.1	0.0	0.0	0.0	0.0	0.0	0.0	0.0	5.2	12.0	5.8	32.2
20-Sep	8.0	7.6	7.5	6.8	Z	7.8	9.6	11.1	7.7	C	C	C	C	C	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.1	0.0	0.0	3.7	11.1
21-Sep	0.0	0.0	0.0	0.0	0.0	Z	3.7	10.0	20.4	45.1	20.9	11.9	7.0	3.8	1.5	0.7	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.1	5.4	45.1
22-Sep	Z	0.2	0.1	0.3	0.3	0.3	0.2	0.9	8.9	13.6	15.6	5.9	2.4	2.5	0.2	1.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.1	2.3	15.6
23-Sep	6.6	Z	11.2	11.6	5.0	0.9	0.3	0.9	3.6	10.6	7.1	17.4	25.1	11.4	5.3	3.6	1.5	0.0	0.0	0.0	0.0	0.0	0.0	0.0	5.3	25.1
24-Sep	0.2	1.8	Z	3.2	2.6	1.9	2.6	6.3	4.3	0.2	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	1.0	6.3
25-Sep	0.1	0.3	9.5	Z	15.2	13.1	11.9	10.2	10.3	10.8	15.7	9.3	4.7	1.9	0.5	0.1	1.8	0.4	0.0	0.0	0.4	5.8	0.0	0.0	5.3	15.7
26-Sep	0.0	0.1	0.1	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	0.6	0.1	0.0	0.6
27-Sep	0.1	0.5	1.5	1.3	1.0	Z	1.0	1.8	20.8	17.2	4.6	2.5	1.2	0.5	0.0	0.0	0.0	0.1	0.0	0.0	0.0	0.0	2.1	1.4	2.5	20.8
28-Sep	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	0.2	0.0	0.2
29-Sep	1.3	Z	3.7	0.2	0.0	0.2	24.0	88.0	63.8	26.5	21.4	16.9	11.7	4.3	0.6	0.7	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.1	11.5	88.0
30-Sep	0.1	0.3	Z	0.0	0.0	0.1	0.6	0.3	1.2	0.3	0.1	0.0	0.0	0.0	0.0	0.0	0.1	0.0	0.0	0.0	0.0	0.0	0.0	2.8	0.3	2.8
	1.8	1.1	2.2	3.0	4.4	5.6	7.3	9.7	8.9	8.6	6.2	4.3	2.6	1.4	0.6	0.5	0.3	0.1	0.0	0.0	0.1	0.4	0.6	1.2	Diurnal Average	
	23.3	8.5	11.2	28.6	37.1	24.1	45.1	88.0	63.8	45.1	23.7	17.4	25.1	11.4	5.3	3.6	1.8	1.0	0.7	0.6	0.7	5.8	8.4	17.8	Diurnal Maximum	

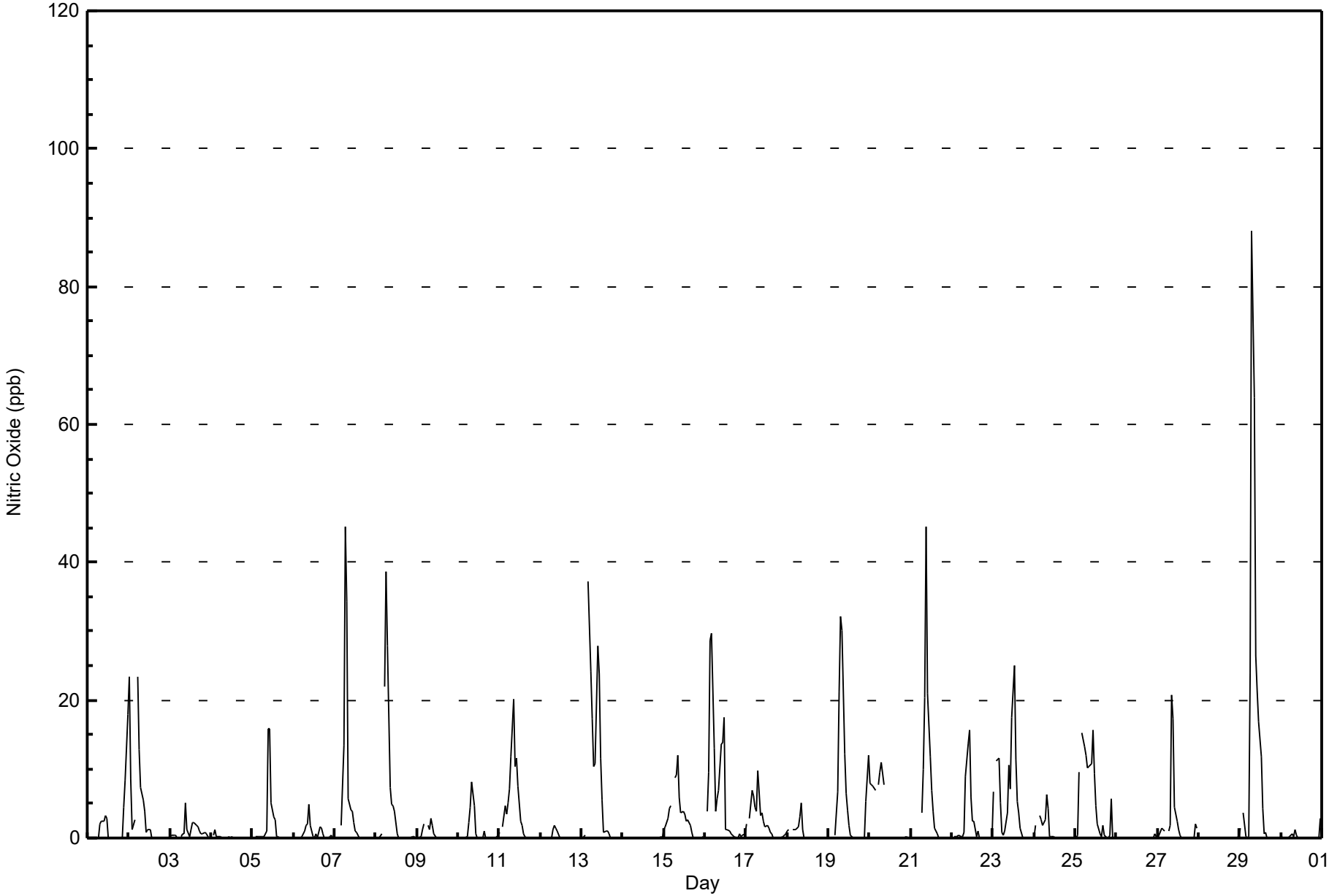
Z - zerospan C - Calibration

Wood Buffalo Environmental Association

Hourly Averages

Nitric Oxide (NO) - ppb

Fort McKay South - September 2024



Concentration Ranges (ppb)	Number of Hours	%	Cumulative %
0 - 20	660	96.35	96.35
21 - 40	21	3.07	99.42
11 - 80	3	0.44	99.85
81 - 159	1	0.15	100.00
> 159	0	0.00	100.00

Total Number of Valid Hours: 685

Total Number of Hours: 720

Wood Buffalo Environmental Association

Frequency Distribution

Nitric Oxide (NO) - ppb

Fort McKay South - September 2024

Concentration Ranges (ppb)	Wind Direction																
	N	NNE	NE	ENE	E	ESE	SE	SSE	S	SSW	SW	WSW	W	WNW	NW	NNW	**Totals**
0 - 20	33	19	4	2	7	14	26	32	79	55	78	102	52	51	41	45	640
21 - 40	3	0	0	0	0	0	3	1	2	2	4	3	1	0	0	2	21
11 - 80	1	0	0	0	0	0	0	1	0	1	0	0	0	0	0	0	3
81 - 159	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1	1
> 159	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Totals	37	19	4	2	7	14	29	34	81	58	82	105	53	51	41	48	665

Total Number of Valid Hours: 665

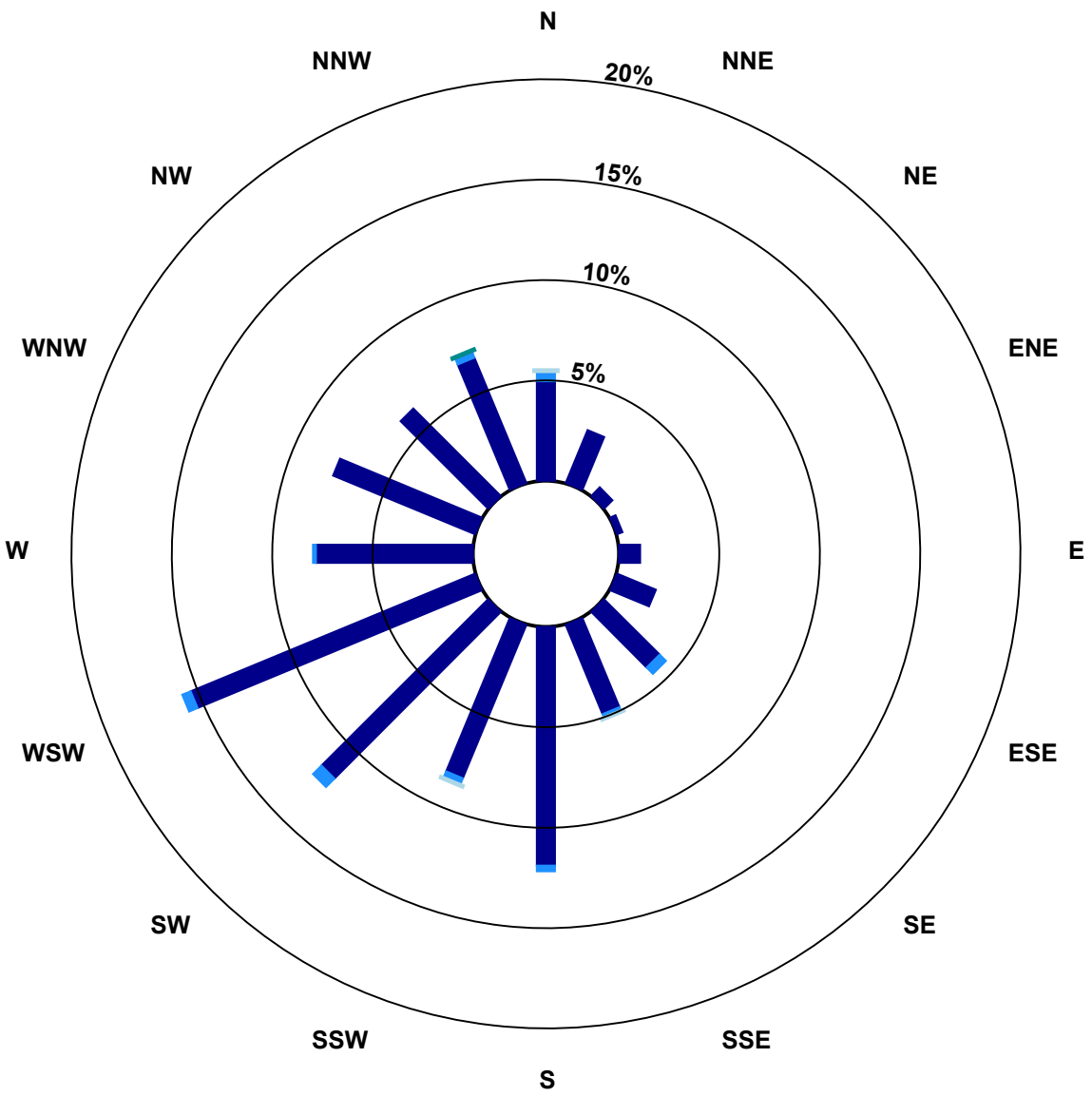
Total Number of Hours: 720

Wood Buffalo Environmental Association

Wind Rose Sep 2024

Nitric Oxide (NO) - ppb

Fort McKay South



Classes (ppb)

0 - 20

21 - 40

11 - 80

81 - 159

> 159

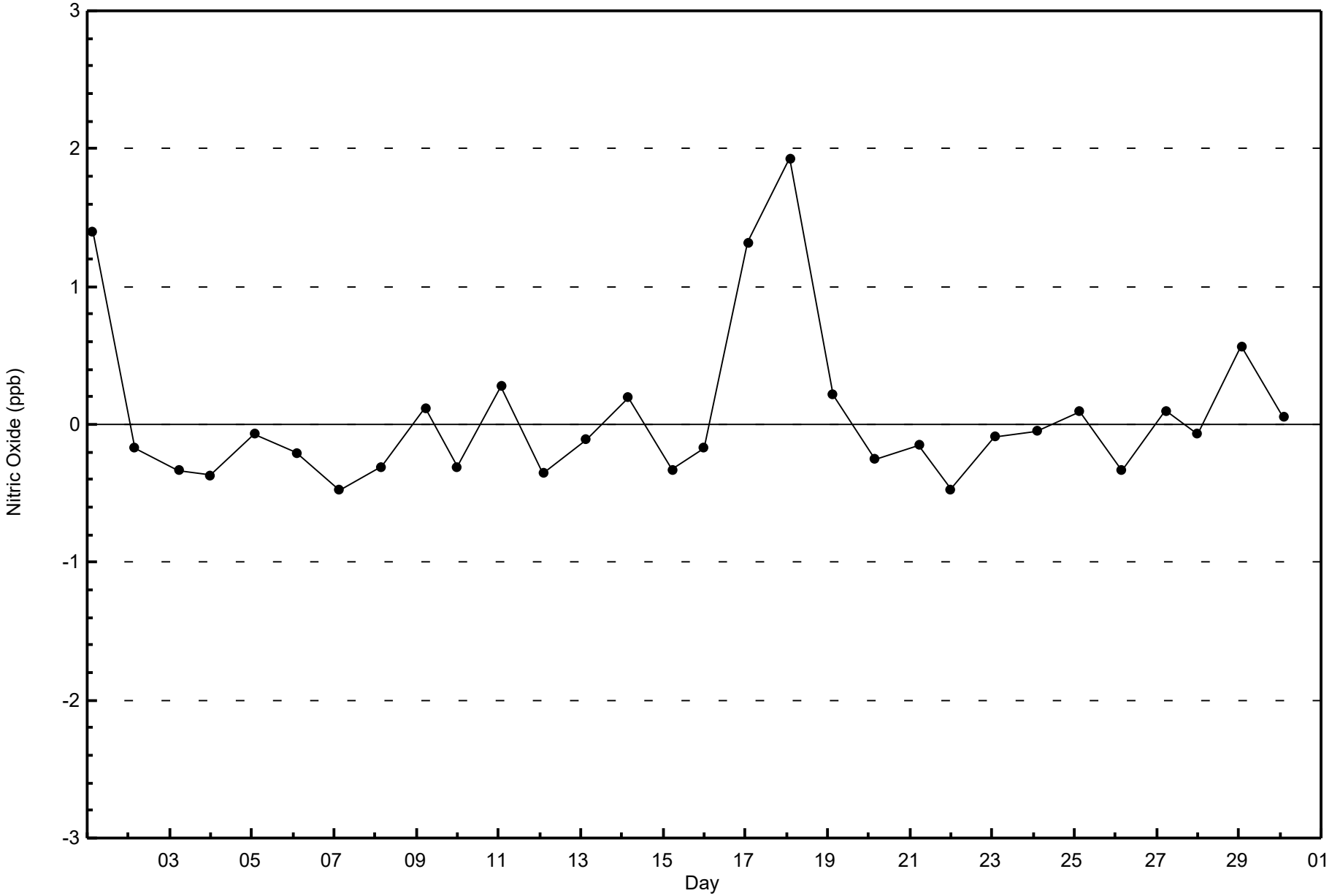
Total Number of Valid Hours: 665

Wood Buffalo Environmental Association

Zero Responses

Nitric Oxide (NO) - ppb

Fort McKay South - September 2024

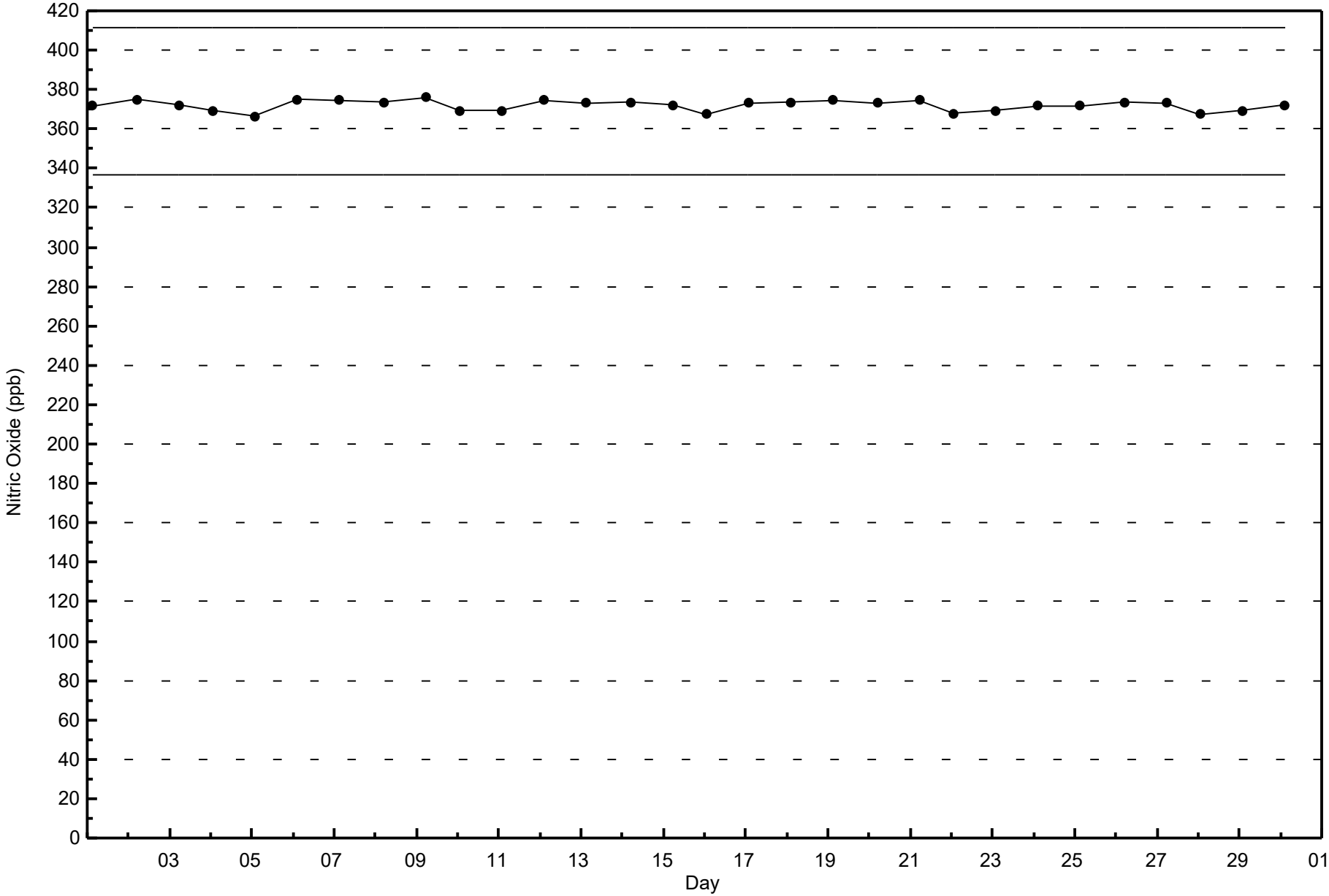


Wood Buffalo Environmental Association

Span Responses

Nitric Oxide (NO) - ppb

Fort McKay South - September 2024



Wood Buffalo Environmental Association

Summary of Hour Averages

Nitrogen Dioxide (NO_2) - ppb

Fort McKay South - September 2024

Number of Exceedences (AAAQO): 1-hr: 0 24-hr: 0
Maximum Value: 19.8 ppb on Oct 1 00:00 Maximum Daily Average: 6.4 ppb on Sep 8

Minimum Value: 0.0 ppb on Sep 1 14:00 Minimum Daily Average: 0.4 ppb on Sep 26
Maximum Diurnal Average: 6.6 ppb at hour 10 Minimum Diurnal Average: 1.9 ppb at hour 19
Monthly Average: 3.46 ppb Percentiles: P_1 = 0.0 P_{10} = 0.0 Q_1 = 0.3 Median = 2.3 Q_3 = 5.5 P_{90} = 8.7 P_{99} = 15.0

Hours in Service:	720
Hours of Data:	685
Hours of Missing Data:	35
Hours of Calibration:	35
Percent Operational Time:	100.0

Day	Hourly Period Ending At (MST)																								Daily	Daily
	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24	Average	Maximum
1-Sep	2.3	2.5	3.6	Z	2.4	1.2	1.7	6.6	6.5	6.1	6.9	7.7	2.6	0.0	0.0	0.0	0.0	0.0	0.0	1.6	6.5	11.1	9.2	8.6	3.8	11.1
2-Sep	9.9	6.1	3.9	3.9	Z	2.8	2.1	6.3	6.3	6.5	2.9	4.1	4.6	2.1	0.0	0.0	0.0	0.0	0.0	0.0	0.7	8.5	5.8	5.4	3.6	9.9
3-Sep	6.1	3.9	3.6	4.3	7.1	Z	2.1	3.8	2.7	12.1	4.3	1.9	5.6	6.9	6.5	6.5	7.0	4.0	4.0	2.7	2.8	4.5	5.1	3.4	4.8	12.1
4-Sep	Z	2.6	3.7	1.5	1.0	0.7	0.1	0.1	0.1	0.1	0.1	0.2	0.9	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.5	3.7
5-Sep	3.0	Z	3.9	2.3	1.6	0.3	0.1	0.1	0.9	9.6	10.8	7.7	6.4	7.0	3.3	3.0	1.9	2.0	3.2	2.9	4.8	2.6	2.6	2.5	3.6	10.8
6-Sep	2.5	3.7	Z	3.1	3.6	6.9	7.2	5.8	5.0	9.0	3.8	1.8	3.2	7.4	4.0	5.5	7.5	6.8	4.7	2.7	3.0	3.1	0.7	0.4	4.4	9.0
7-Sep	0.4	0.8	0.8	Z	2.2	2.3	2.3	5.4	6.9	7.8	10.6	8.9	5.6	4.9	1.1	0.4	0.0	1.4	5.3	3.9	9.1	10.3	2.1	0.5	4.0	10.6
8-Sep	0.6	0.6	2.6	3.8	Z	3.4	2.6	7.8	8.4	8.8	12.6	13.0	6.1	5.2	3.0	2.6	1.7	1.8	1.3	6.7	11.0	14.8	17.5	10.7	6.4	17.5
9-Sep	9.5	10.5	9.4	11.5	9.2	Z	11.0	6.2	7.9	5.2	3.3	0.0	0.0	0.0	0.0	0.0	0.5	0.0	0.0	0.0	0.0	0.0	0.0	0.1	3.7	11.5
10-Sep	Z	0.1	0.0	0.0	0.0	5.3	6.7	4.7	5.9	4.5	1.0	0.3	0.0	0.0	0.0	2.4	0.5	0.0	0.0	0.0	0.0	0.0	1.3	2.7	1.5	6.7
11-Sep	2.5	Z	1.9	1.9	1.1	1.0	0.5	3.5	8.7	8.2	10.9	9.1	4.9	5.0	3.9	5.1	6.1	4.4	3.2	3.0	3.3	2.4	1.5	1.3	4.1	10.9
12-Sep	1.3	1.2	Z	0.9	0.7	3.1	2.3	2.1	5.4	4.3	3.3	1.8	1.8	2.2	1.5	1.3	1.4	1.1	0.3	0.0	0.0	0.0	0.0	0.1	1.6	5.4
13-Sep	0.1	0.4	1.2	Z	7.2	7.5	7.4	6.4	8.2	11.9	12.8	12.8	9.9	5.3	8.4	7.8	5.3	2.1	0.5	0.6	1.3	2.8	3.9	0.8	5.4	12.8
14-Sep	0.2	0.2	0.1	0.1	Z	0.2	0.2	0.2	0.1	0.2	0.3	0.1	1.7	2.4	2.6	0.7	0.0	0.0	0.0	0.6	2.4	2.4	2.5	2.6	0.9	2.6
15-Sep	7.1	7.3	5.2	3.0	1.3	Z	1.7	3.2	8.1	6.6	5.8	7.7	7.5	6.0	6.7	7.2	7.5	6.2	3.7	3.0	2.2	1.9	1.8	1.1	4.9	8.1
16-Sep	Z	1.2	1.0	1.2	1.5	2.0	4.5	6.0	7.6	13.1	5.4	0.0	0.3	0.3	0.2	0.3	0.2	0.2	2.5	7.5	13.4	11.1	15.1	16.0	4.8	16.0
17-Sep	12.1	Z	7.4	6.1	5.2	3.2	2.8	5.1	3.6	3.7	2.9	2.1	2.8	2.5	1.4	1.0	1.1	1.8	1.0	1.3	1.5	1.1	0.9	1.8	3.1	12.1
18-Sep	1.9	2.1	Z	1.9	2.0	4.1	3.5	5.3	7.7	0.6	0.2	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	1.3	7.7
19-Sep	0.0	0.2	0.1	Z	0.7	2.0	1.3	3.5	7.7	8.0	6.9	6.6	4.7	2.8	2.8	2.2	2.6	2.8	2.8	4.1	4.7	4.3	11.7	18.8	4.4	18.8
20-Sep	11.1	9.0	11.6	14.1	Z	7.6	6.0	6.7	10.1	C	C	C	C	C	1.2	0.4	0.0	0.0	0.0	0.0	0.7	8.9	5.7	2.5	5.3	14.1
21-Sep	2.6	3.6	0.7	0.4	0.3	Z	3.1	3.6	6.5	8.5	8.0	8.4	6.5	4.3	2.5	0.6	0.6	1.0	4.1	4.4	3.9	2.4	3.7	3.6	3.6	8.5
22-Sep	Z	1.2	1.1	1.0	0.6	0.3	0.4	0.7	6.1	10.5	12.3	7.6	4.5	5.2	2.0	4.7	4.1	2.6	6.6	7.1	5.5	5.2	5.7	5.9	4.4	12.3
23-Sep	7.8	Z	2.8	2.6	2.3	1.6	1.1	1.1	3.1	7.4	6.6	11.6	16.7	14.2	11.2	8.7	6.9	2.6	3.1	2.4	2.2	2.9	1.7	1.6	5.3	16.7
24-Sep	1.3	1.0	Z	0.7	0.7	1.0	0.9	1.5	1.9	0.3	0.3	0.2	0.1	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.6	1.3	3.3	0.7	3.3
25-Sep	3.0	2.1	4.4	Z	2.4	2.2	3.2	5.6	8.0	7.3	10.2	9.3	11.9	7.7	4.1	3.1	9.0	7.2	5.5	2.7	2.9	10.1	1.6	0.2	5.4	11.9
26-Sep	0.3	0.3	0.2	0.2	Z	0.3	0.2	0.2	0.2	0.1	0.0	0.0	0.0	0.0	0.0	0.0	0.0	1.8	0.0	0.0	0.1	1.8	2.3	1.4	0.4	2.3
27-Sep	1.2	1.2	1.6	2.0	2.1	Z	2.2	1.9	10.5	16.1	8.6	6.0	3.3	2.2	1.5	0.3	4.9	9.3	1.8	0.9	2.0	6.6	14.4	13.6	5.0	16.1
28-Sep	Z	2.3	3.3	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	0.0	0.0	0.0	0.3	0.8	1.2	2.7	3.2	0.6	3.3
29-Sep	2.9	Z	2.6	3.6	2.3	1.7	6.8	13.0	15.0	13.6	13.7	13.7	14.6	9.9	6.1	5.7	0.7	0.3	1.9	2.9	0.1	0.0	0.0	0.1	5.7	15.0
30-Sep	0.1	0.0	Z	0.0	0.0	0.1	0.0	0.0	2.1	0.6	0.2	0.0	0.0	0.1	0.1	0.1	0.0	0.0	0.0	0.0	0.0	0.3	0.6	19.8	1.0	19.8
	3.6	2.6	3.1	2.8	2.3	2.4	2.8	3.9	5.7	6.6	5.7	4.9	4.4	3.6	2.5	2.3	2.3	2.0	1.9	2.0	2.8	4.0	4.0	4.4	Diurnal Average	
	12.1	10.5	11.6	14.1	9.2	7.6	11.0	13.0	15.0	16.1	13.7	13.7	16.7	14.2	11.2	8.7	9.0	9.3	6.6	7.5	13.4	14.8	17.5	19.8	Diurnal Maximum	

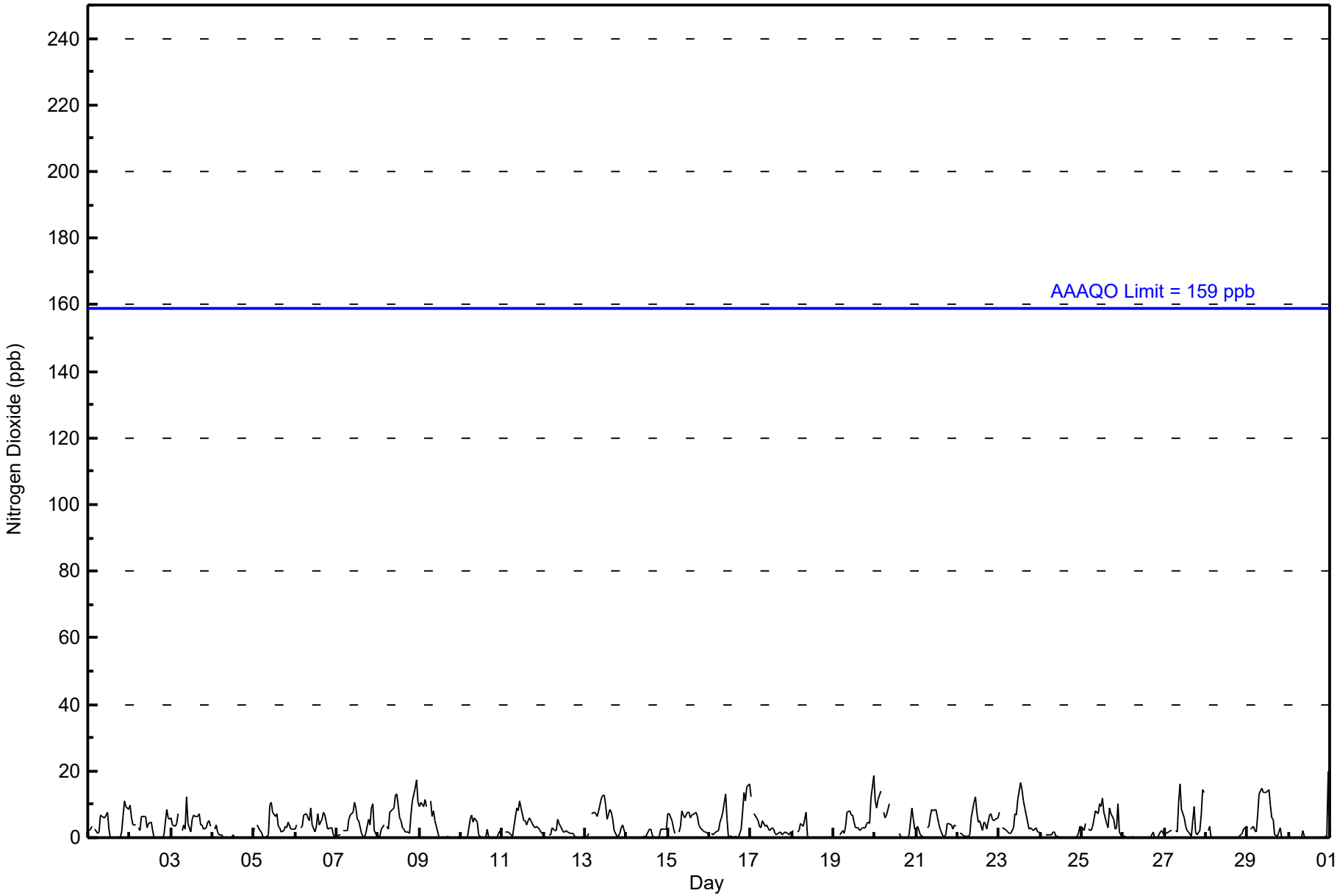
Z - zerospan C - Calibration
Alberta Ambient Air Quality Objectives (AAAQO): 1-hr 159 ppb

Wood Buffalo Environmental Association

Hourly Averages

Nitrogen Dioxide (NO_2) - ppb

Fort McKay South - September 2024



Nitrogen Dioxide (NO_2) - ppb
Fort McKay South - September 2024

Concentration Ranges (ppb)	Number of Hours	%	Cumulative %
0 - 20	685	100.00	100.00
21 - 40	0	0.00	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: 685

Total Number of Hours: 720

Wood Buffalo Environmental Association

Frequency Distribution

Nitrogen Dioxide (NO_2) - ppb

Fort McKay South - September 2024

Concentration Ranges (ppb)	Wind Direction																
	N	NNE	NE	ENE	E	ESE	SE	SSE	S	SSW	SW	WSW	W	WNW	NW	NNW	**Totals**
0 - 20	37	19	4	2	7	14	29	34	81	58	82	105	53	51	41	48	665
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	37	19	4	2	7	14	29	34	81	58	82	105	53	51	41	48	665

Total Number of Valid Hours: 665

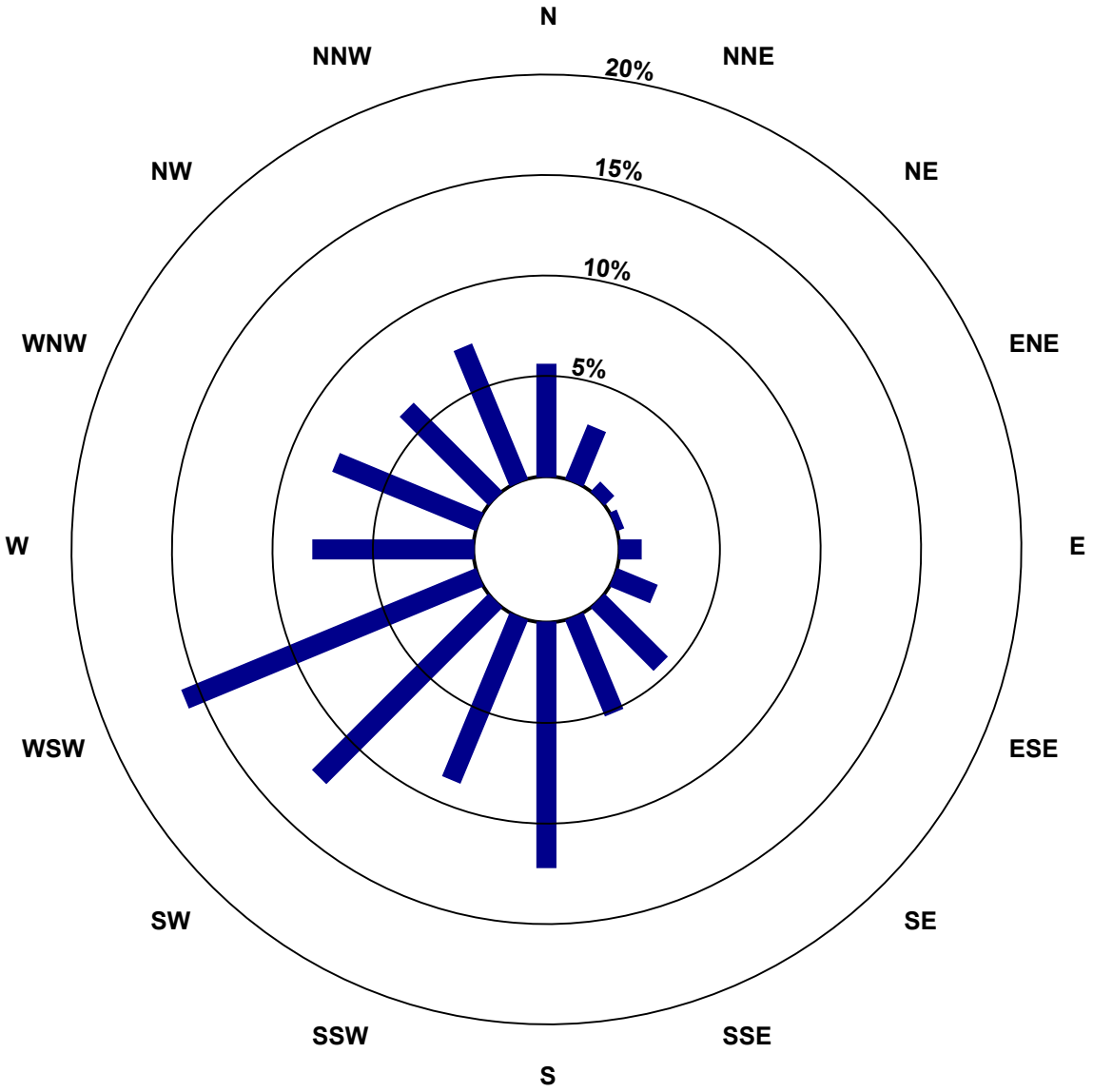
Total Number of Hours: 720

Wood Buffalo Environmental Association

Wind Rose Sep 2024

Nitrogen Dioxide (NO_2) - ppb

Fort McKay South



Classes (ppb)

0 - 20

21 - 40

11 - 80

81 - 159

> 159

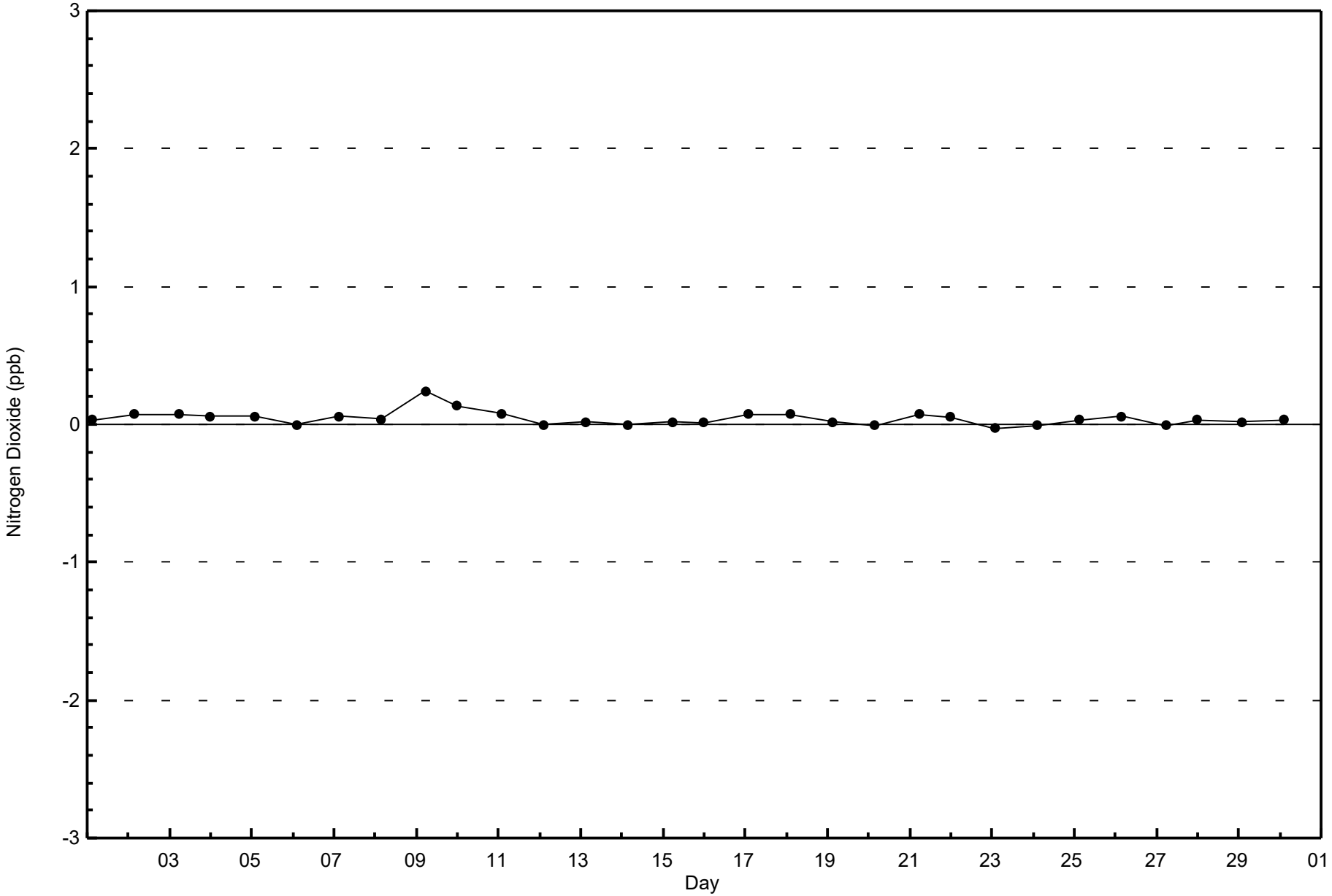
Total Number of Valid Hours: 665

Wood Buffalo Environmental Association

Zero Responses

Nitrogen Dioxide (NO_2) - ppb

Fort McKay South - September 2024

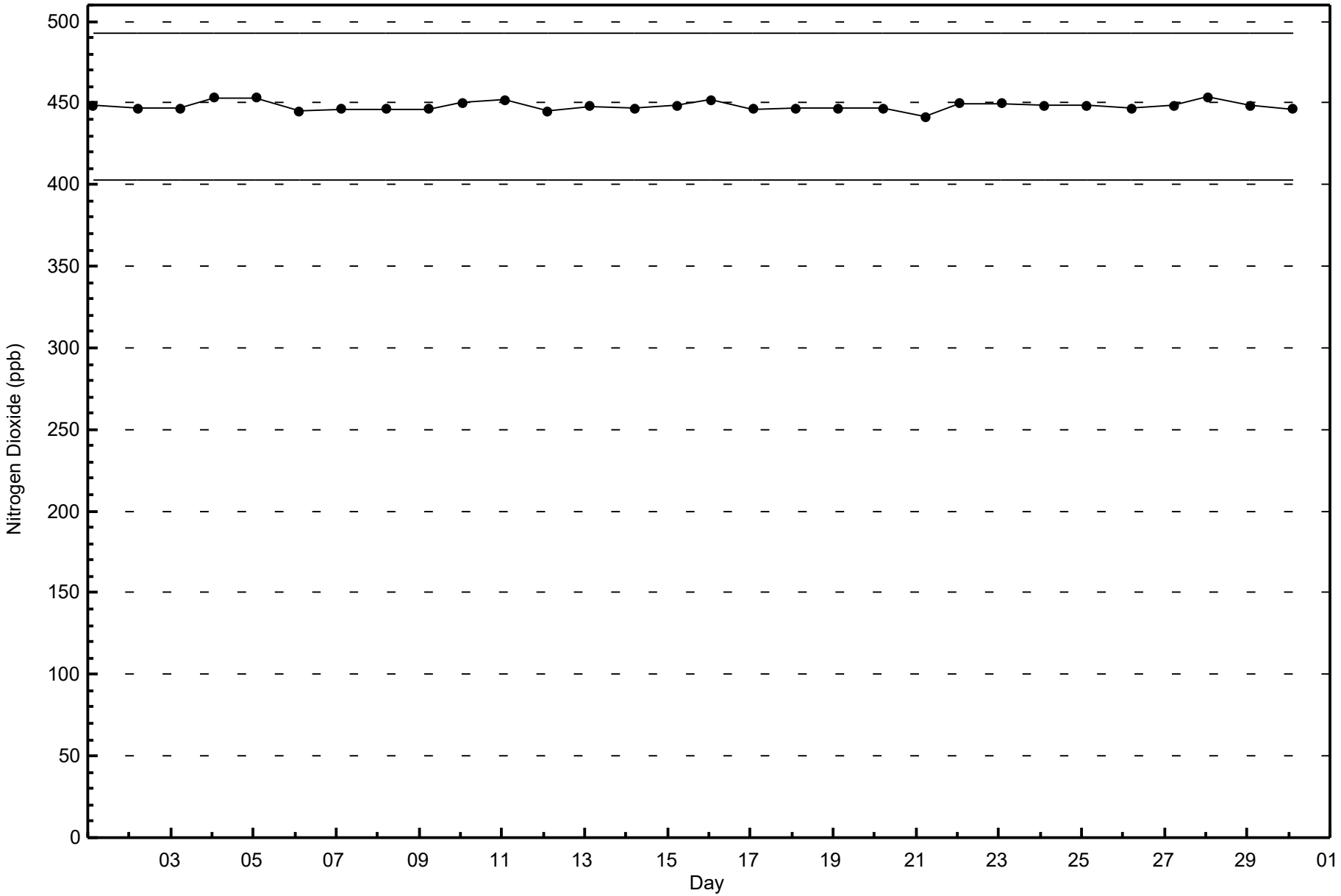


Wood Buffalo Environmental Association

Span Responses

Nitrogen Dioxide (NO_2) - ppb

Fort McKay South - September 2024



Wood Buffalo Environmental Association

Summary of Hour Averages

Nitrogen Oxides (NO_X) - ppb

Fort McKay South - September 2024

Maximum Value: 101.0 ppb on Sep 29 08:00

Maximum Daily Average: 17.2 ppb on Sep 29

Minimum Value: 0.0 ppb on Sep 1 15:00

Minimum Daily Average: 0.4 ppb on Sep 26

Maximum Diurnal Average: 15.1 ppb at hour 10

Minimum Diurnal Average: 1.9 ppb at hour 19

Monthly Average: 6.39 ppb

Percentiles: P_1 = 0.0 P_{10} = 0.0 Q_1 = 0.4 Median = 2.9 Q_3 = 8.4 P_{90} = 16.7 P_{99} = 40.3

Hours in Service:	720
Hours of Data:	685
Hours of Missing Data:	35
Hours of Calibration:	35
Percent Operational Time:	100.0

Day	Hourly Period Ending At (MST)																								Daily	Daily
	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24	Average	Maximum
1-Sep	2.3	2.5	3.6	Z	2.4	1.2	1.7	8.6	8.9	8.5	10.1	10.5	2.6	0.0	0.0	0.0	0.0	0.0	0.0	1.6	6.5	15.7	17.6	26.4	5.7	26.4
2-Sep	33.2	14.6	5.0	6.5	Z	26.2	14.9	13.5	11.9	10.4	3.7	5.2	5.7	2.2	0.0	0.0	0.0	0.0	0.0	0.0	0.7	8.5	5.8	5.4	7.5	33.2
3-Sep	6.3	4.2	4.0	4.8	7.2	Z	2.3	4.5	3.3	17.1	5.6	2.1	6.9	9.0	8.7	8.3	8.7	5.0	4.7	3.3	3.5	5.2	5.2	3.4	5.8	17.1
4-Sep	Z	2.9	5.0	1.7	1.1	0.9	0.1	0.1	0.2	0.2	0.3	0.2	1.1	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.6	5.0
5-Sep	3.0	Z	4.0	2.5	1.8	0.5	0.3	0.3	1.8	25.4	26.6	12.8	9.4	9.7	3.6	3.3	1.9	2.0	3.2	2.9	4.8	2.6	2.6	2.5	5.5	26.6
6-Sep	2.5	3.7	Z	3.2	3.7	7.1	8.2	7.6	7.0	13.9	5.7	1.9	3.2	8.0	4.1	7.1	8.9	7.3	4.7	2.7	3.0	3.4	1.0	0.4	5.1	13.9
7-Sep	0.4	0.9	0.9	Z	4.0	15.7	47.4	39.7	12.5	12.0	14.5	11.2	6.6	5.8	1.1	0.4	0.0	1.4	5.3	3.9	9.1	10.3	2.1	0.5	8.9	47.4
8-Sep	0.6	0.6	2.6	4.4	Z	25.5	41.3	35.7	15.7	13.7	17.3	16.8	6.8	5.2	3.0	2.6	1.7	1.8	1.3	6.7	11.0	15.0	17.7	10.7	11.2	41.3
9-Sep	9.5	10.6	9.5	12.8	11.2	Z	12.8	7.4	10.7	7.1	3.9	0.0	0.0	0.0	0.0	0.0	0.5	0.0	0.0	0.0	0.0	0.0	0.0	0.1	4.2	12.8
10-Sep	Z	0.1	0.0	0.0	0.0	5.5	9.0	9.1	14.0	9.1	1.6	0.3	0.0	0.0	0.0	3.4	0.5	0.0	0.0	0.0	0.0	0.0	1.3	3.0	2.5	14.0
11-Sep	3.4	Z	3.5	6.6	4.6	6.1	7.5	15.3	28.9	18.5	22.4	16.7	7.3	6.8	4.5	5.3	6.1	4.4	3.2	3.0	3.3	2.4	1.5	1.3	7.9	28.9
12-Sep	1.3	1.2	Z	0.9	0.7	3.1	2.3	3.3	7.3	5.7	4.2	1.9	1.8	2.2	1.5	1.3	1.4	1.1	0.3	0.0	0.0	0.0	0.0	0.1	1.8	7.3
13-Sep	0.2	0.5	1.5	Z	44.3	31.6	24.6	16.8	19.0	39.7	36.5	24.4	15.3	6.1	9.3	8.8	5.8	2.1	0.5	0.6	1.3	2.8	3.9	0.8	12.9	44.3
14-Sep	0.2	0.2	0.1	0.1	Z	0.2	0.2	0.2	0.1	0.2	0.3	0.1	1.7	2.4	2.6	0.7	0.0	0.0	0.0	0.6	2.4	2.4	2.8	2.6	0.9	2.8
15-Sep	8.3	8.9	8.1	7.3	5.9	Z	10.5	12.3	20.0	12.6	9.5	11.6	11.0	8.5	9.2	9.0	8.3	6.2	3.7	3.0	2.2	1.9	1.8	1.4	7.9	20.0
16-Sep	Z	5.0	10.5	29.8	31.3	15.0	8.3	11.6	14.6	26.8	19.1	17.4	1.6	1.4	1.2	0.9	0.5	0.3	2.5	7.6	14.1	11.3	15.5	16.7	11.4	31.3
17-Sep	14.2	Z	10.3	13.0	11.2	7.6	6.7	14.9	6.9	7.3	5.3	3.7	4.7	4.0	2.3	1.7	1.1	1.8	1.0	1.3	1.5	1.4	1.3	2.5	5.5	14.9
18-Sep	2.9	3.2	Z	3.1	3.3	5.4	5.2	8.4	12.7	1.8	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	2.0	12.7
19-Sep	0.0	0.2	0.1	Z	1.0	8.7	22.4	35.7	37.7	20.2	13.3	10.6	6.4	3.3	2.9	2.2	2.6	2.8	2.8	4.1	4.7	4.3	16.9	30.8	10.2	37.7
20-Sep	19.1	16.6	19.1	20.9	Z	15.4	15.6	17.8	17.8	C	C	C	C	C	1.2	0.4	0.0	0.0	0.0	0.0	0.7	9.0	5.7	2.5	9.0	20.9
21-Sep	2.6	3.6	0.7	0.4	0.3	Z	6.8	13.6	26.9	53.6	28.9	20.3	13.5	8.1	4.0	1.3	0.6	1.0	4.1	4.4	3.9	2.4	3.7	3.7	9.1	53.6
22-Sep	Z	1.4	1.2	1.3	0.9	0.6	0.6	1.6	15.0	24.1	27.9	13.5	6.9	7.7	2.2	5.7	4.1	2.6	6.6	7.1	5.5	5.2	5.7	6.0	6.7	27.9
23-Sep	14.4	Z	14.0	14.2	7.3	2.5	1.4	2.0	6.7	18.0	13.7	29.0	41.8	25.6	16.5	12.3	8.4	2.6	3.1	2.4	2.2	2.9	1.7	1.6	10.6	41.8
24-Sep	1.5	2.8	Z	3.9	3.3	2.9	3.5	7.8	6.2	0.5	0.5	0.4	0.1	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.6	1.3	3.3	1.7	7.8
25-Sep	3.1	2.4	13.9	Z	17.6	15.3	15.1	15.8	18.3	18.1	25.9	18.6	16.6	9.6	4.6	3.2	10.8	7.6	5.5	2.7	3.3	15.9	1.6	0.2	10.7	25.9
26-Sep	0.3	0.4	0.3	0.3	Z	0.3	0.2	0.2	0.2	0.1	0.0	0.0	0.0	0.0	0.0	0.0	0.0	1.8	0.0	0.0	0.1	1.8	2.9	1.5	0.4	2.9
27-Sep	1.3	1.7	3.1	3.3	3.1	Z	3.2	3.7	31.3	33.3	13.2	8.5	4.5	2.7	1.5	0.3	4.9	9.4	1.8	0.9	2.0	6.6	16.5	15.0	7.5	33.3
28-Sep	Z	2.3	3.3	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	0.0	0.0	0.0	0.3	0.8	1.2	2.7	3.4	0.6	3.4
29-Sep	4.2	Z	6.3	3.8	2.3	1.9	30.8	101.0	78.8	40.1	35.1	30.6	26.3	14.2	6.7	6.4	0.7	0.3	1.9	2.9	0.1	0.0	0.0	0.2	17.2	101.0
30-Sep	0.2	0.3	Z	0.0	0.0	0.2	0.6	0.3	3.3	0.9	0.3	0.0	0.0	0.1	0.1	0.1	0.1	0.0	0.0	0.0	0.0	0.3	0.6	22.6	1.3	22.6
	5.4	3.6	5.2	5.8	6.7	8.0	10.1	13.6	14.6	15.1	11.9	9.2	7.0	4.9	3.0	2.8	2.6	2.1	1.9	2.1	2.9	4.4	4.7	5.6	Diurnal Average	
	33.2	16.6	19.1	29.8	44.3	31.6	47.4	101.0	78.8	53.6	36.5	30.6	41.8	25.6	16.5	12.3	10.8	9.4	6.6	7.6	14.1	15.9	17.7	30.8	Diurnal Maximum	

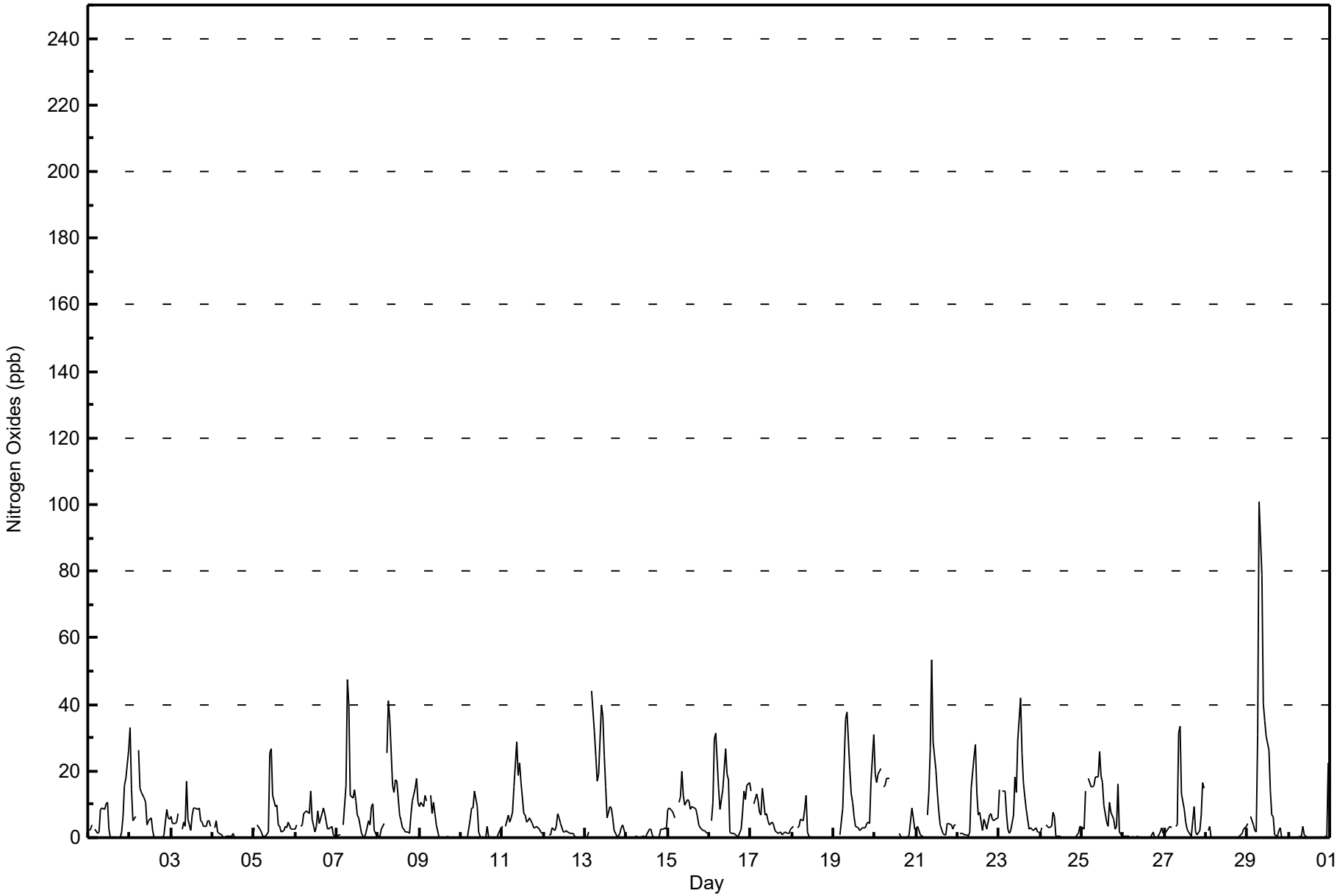
Z - zerospan C - Calibration

Wood Buffalo Environmental Association

Hourly Averages

Nitrogen Oxides (NO_X) - ppb

Fort McKay South - September 2024



Nitrogen Oxides (NO_X) - ppb
Fort McKay South - September 2024

Concentration Ranges (ppb)	Number of Hours	%	Cumulative %
0 - 20	640	93.43	93.43
21 - 40	38	5.55	98.98
11 - 80	6	0.88	99.85
81 - 159	1	0.15	100.00
> 159	0	0.00	100.00

Total Number of Valid Hours: 685

Total Number of Hours: 720

Wood Buffalo Environmental Association

Frequency Distribution

Nitrogen Oxides (NO_X) - ppb

Fort McKay South - September 2024

Concentration Ranges (ppb)	Wind Direction																
	N	NNE	NE	ENE	E	ESE	SE	SSE	S	SSW	SW	WSW	W	WNW	NW	NNW	**Totals**
0 - 20	31	17	3	2	6	12	26	30	78	52	78	100	51	50	40	44	620
21 - 40	5	2	1	0	1	2	2	3	3	5	4	3	2	1	1	3	38
11 - 80	1	0	0	0	0	0	1	1	0	1	0	2	0	0	0	0	6
81 - 159	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1	1
> 159	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Totals	37	19	4	2	7	14	29	34	81	58	82	105	53	51	41	48	665

Total Number of Valid Hours: 665

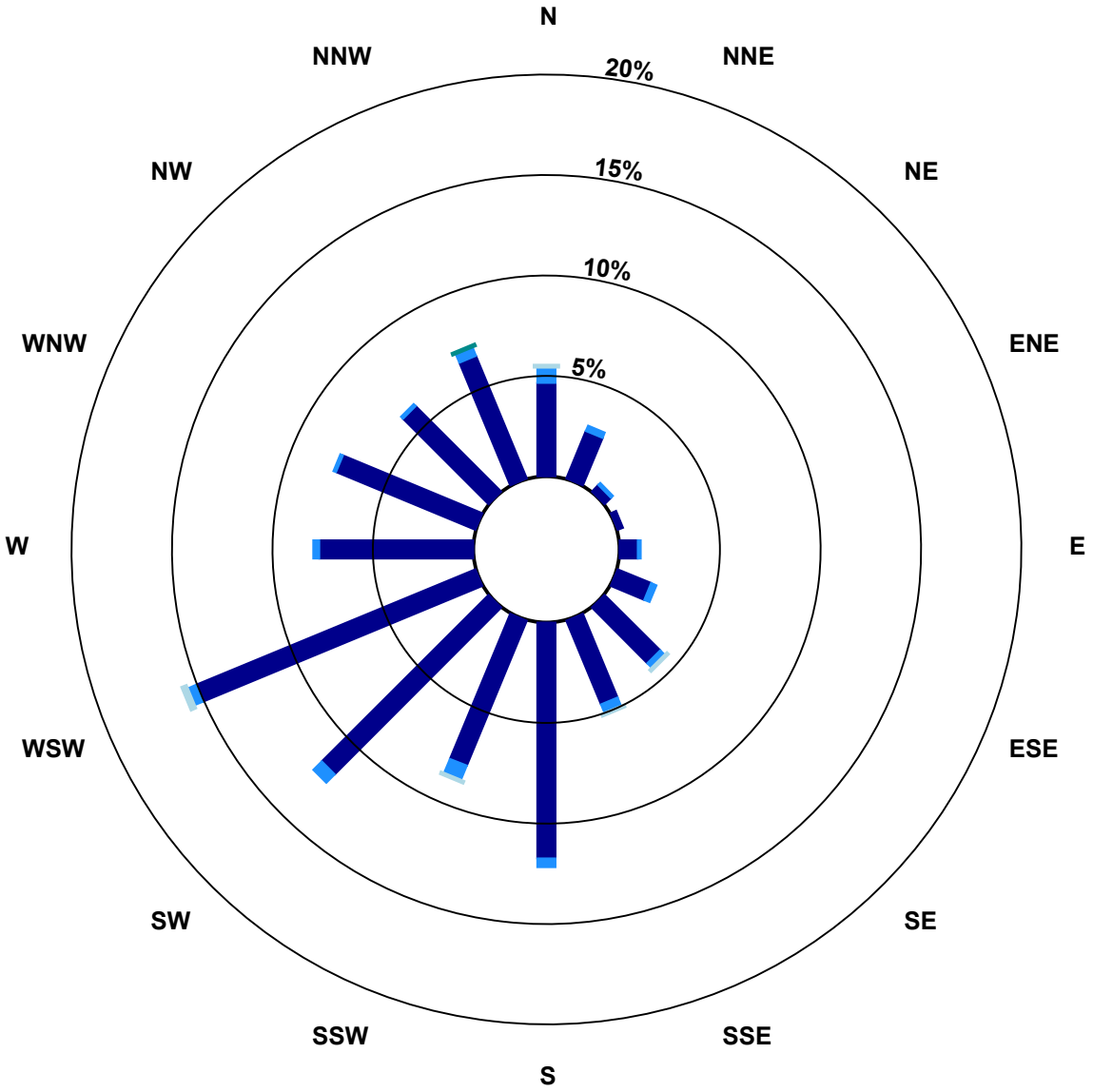
Total Number of Hours: 720

Wood Buffalo Environmental Association

Wind Rose Sep 2024

Nitrogen Oxides (NO_X) - ppb

Fort McKay South



Classes (ppb)

0 - 20

21 - 40

11 - 80

81 - 159

> 159

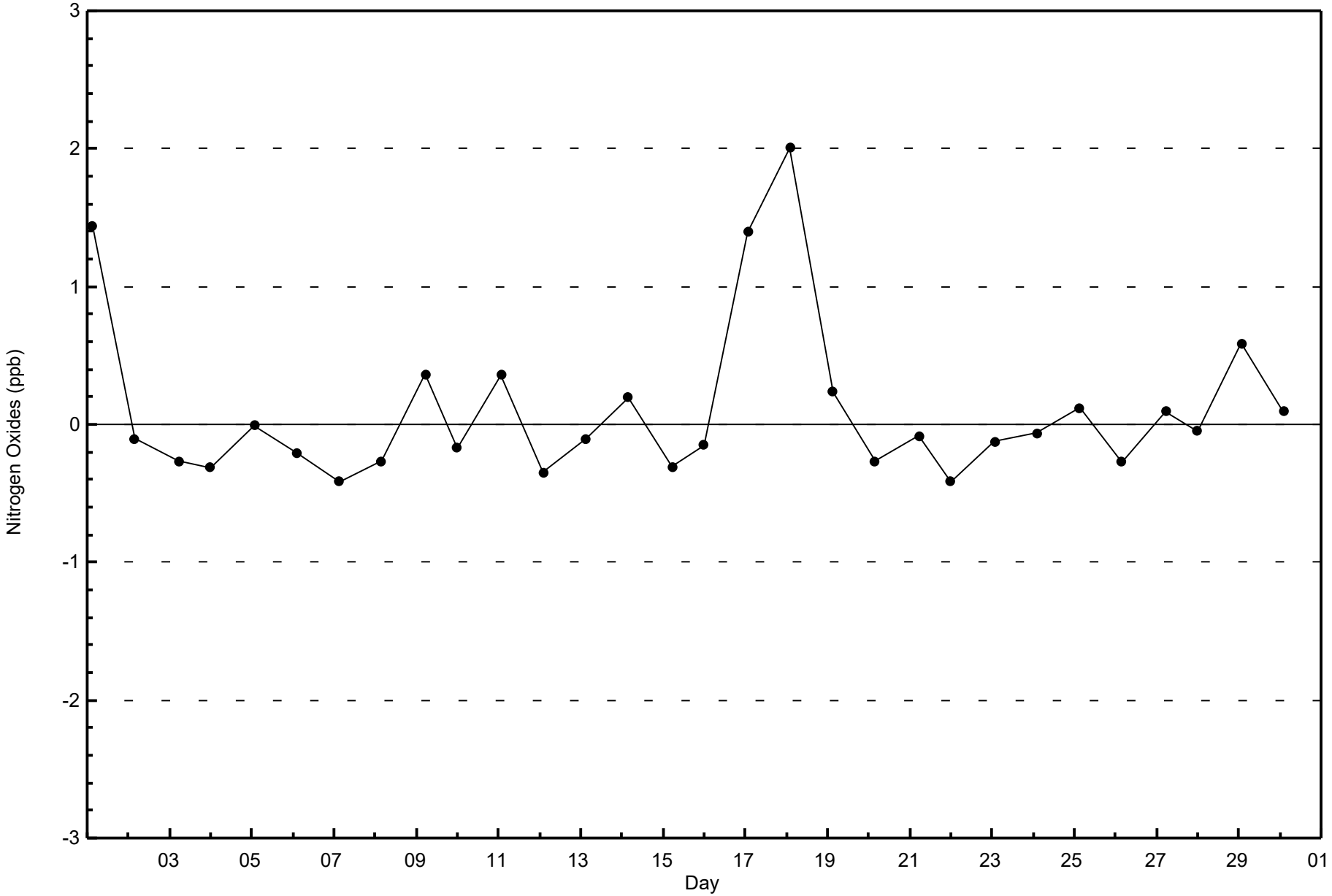
Total Number of Valid Hours: 665

Wood Buffalo Environmental Association

Zero Responses

Nitrogen Oxides (NO_X) - ppb

Fort McKay South - September 2024

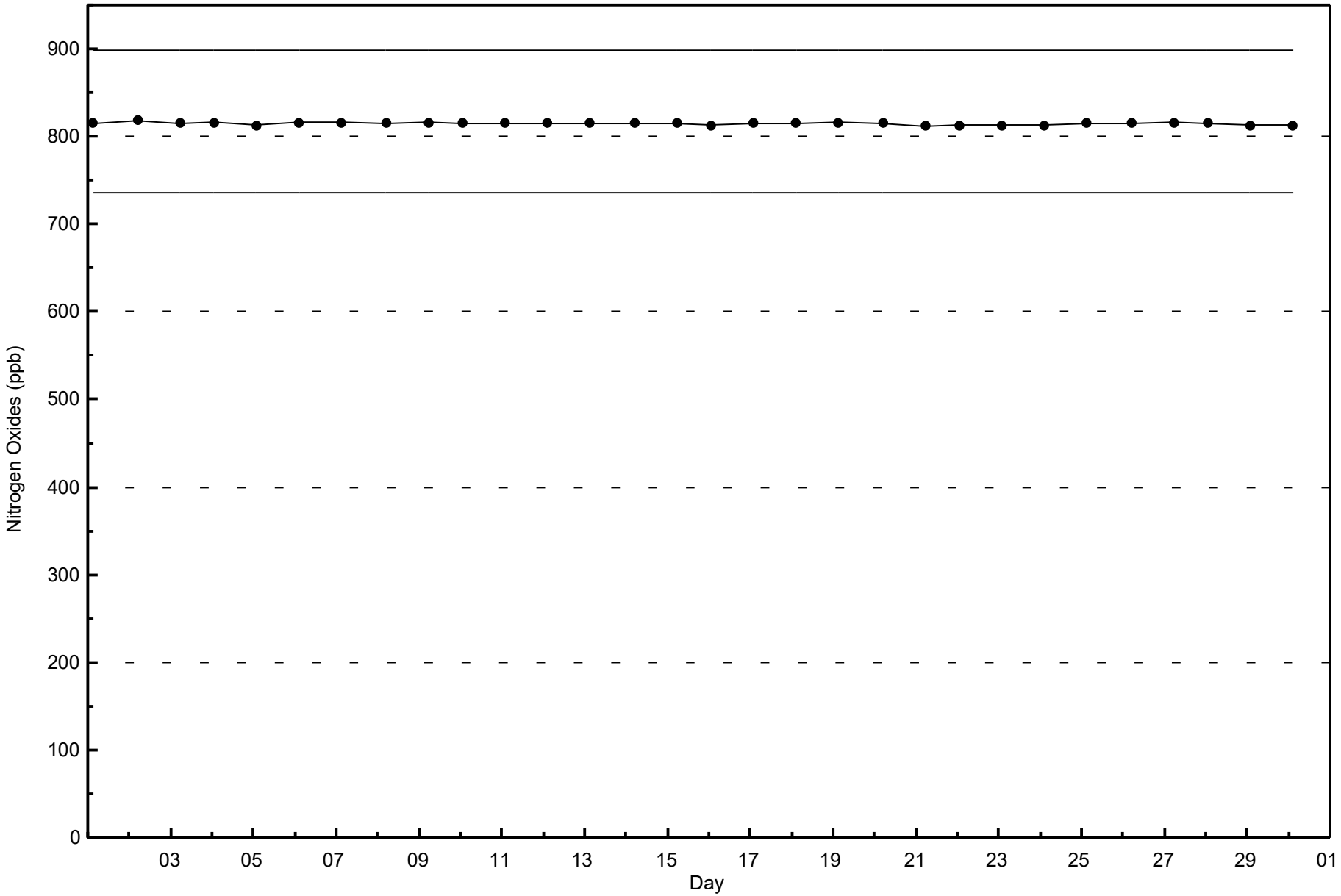


Wood Buffalo Environmental Association

Span Responses

Nitrogen Oxides (NO_X) - ppb

Fort McKay South - September 2024



Wood Buffalo Environmental Association

Summary of Hour Averages

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

Fort McKay South - September 2024

Number of Exceedences (AAAQO): 1-hr: 61 24-hr: 6

Maximum Value: 181.9 $\mu g/m^3$ on Sep 12 15:00

Maximum Daily Average: 112.5 $\mu g/m^3$ on Sep 13

Minimum Value: 0.8 $\mu g/m^3$ on Sep 28 05:00

Minimum Daily Average: 2.8 $\mu g/m^3$ on Sep 28

Maximum Diurnal Average: 30.6 $\mu g/m^3$ at hour 12

Minimum Diurnal Average: 20.3 $\mu g/m^3$ at hour 18

Monthly Average: 23.73 $\mu g/m^3$

Percentiles: P_1 = 1.3 P_{10} = 3.9 Q_1 = 6.3 Median = 10.3 Q_3 = 22.0 P_{90} = 68.8 P_{99} = 148.3

Hours in Service:	720
Hours of Data:	718
Hours of Missing Data:	2
Hours of Calibration:	2
Percent Operational Time:	100.0

Day	Hourly Period Ending At (MST)																								Daily	Daily
	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24	Average	Maximum
1-Sep	11.5	19.3	21.4	29.5	24.8	16.3	17.8	13.0	13.6	12.2	15.2	17.1	11.3	6.6	4.5	4.4	4.8	4.9	7.9	13.8	24.5	36.1	37.8	34.1	16.8	37.8
2-Sep	29.4	22.6	20.4	20.1	19.6	19.9	17.1	19.9	19.9	24.4	20.3	18.1	15.6	10.8	5.6	5.6	6.7	9.0	13.4	14.0	20.1	42.0	21.0	10.4	17.7	42.0
3-Sep	9.8	7.9	8.9	11.0	18.0	17.5	16.3	16.9	14.3	14.3	7.7	6.8	7.5	9.1	9.1	9.7	10.0	7.5	6.8	6.5	7.0	7.7	7.7	6.7	10.2	18.0
4-Sep	6.7	6.8	6.7	6.7	7.3	8.3	8.7	8.8	8.9	8.5	8.9	10.0	10.3	7.7	6.0	5.1	4.6	5.1	4.9	5.2	6.9	5.8	4.7	4.3	7.0	10.3
5-Sep	6.1	7.6	7.8	7.3	6.3	5.2	5.0	5.2	5.9	17.8	23.2	18.0	18.4	23.1	18.3	18.7	17.5	15.6	18.7	19.1	19.2	13.0	11.2	8.5	13.2	23.2
6-Sep	9.4	9.8	8.3	8.0	7.7	11.9	16.1	13.8	11.5	14.7	15.6	15.7	17.9	23.6	24.3	23.4	26.6	30.3	21.3	17.9	18.6	20.5	21.7	20.6	17.0	30.3
7-Sep	21.9	23.9	26.2	28.0	28.7	29.6	33.8	50.4	91.9	105.5	124.5	148.7	171.6	142.0	63.1	47.8	39.2	42.5	56.1	64.7	79.1	89.2	89.0	94.6	70.5	171.6
8-Sep	99.6	100.5	102.4	102.7	109.0	112.6	110.3	117.3	127.7	146.1	149.6	151.7	135.2	115.6	107.3	94.2	90.2	86.0	84.0	89.4	83.9	78.8	75.6	29.2	104.1	151.7
9-Sep	36.1	39.0	40.7	44.6	50.3	69.2	70.5	56.5	50.2	49.9	50.6	48.8	27.9	21.8	13.6	7.4	6.5	9.1	12.4	8.3	7.9	11.2	32.1	44.6	33.7	70.5
10-Sep	41.7	33.7	28.9	27.0	23.8	20.3	17.8	16.8	17.4	17.0	13.4	12.0	17.8	22.5	24.5	25.9	20.9	13.5	12.4	12.5	13.2	13.5	13.3	12.1	19.7	41.7
11-Sep	10.4	8.8	8.2	8.5	7.7	7.3	6.9	7.1	11.4	14.5	22.2	22.9	19.6	20.7	20.8	22.0	25.0	23.9	22.2	22.4	23.0	22.4	23.5	30.1	17.1	30.1
12-Sep	32.9	33.7	33.1	31.7	31.1	53.5	68.7	68.3	71.2	71.6	82.6	92.1	98.1	135.0	181.9	166.3	163.1	156.4	145.8	142.8	140.1	136.1	132.3	131.6	100.0	181.9
13-Sep	125.1	130.5	139.5	135.6	134.2	133.7	132.0	131.5	131.2	129.9	128.5	137.8	129.0	134.7	137.3	120.9	98.4	77.2	74.6	75.4	78.7	65.6	60.7	58.1	112.5	139.5
14-Sep	52.7	48.2	44.1	39.8	42.4	42.6	39.6	36.7	37.8	38.0	35.8	36.2	33.1	41.5	43.0	29.5	20.4	17.8	17.1	20.4	26.4	27.0	26.9	27.1	34.3	52.7
15-Sep	27.7	25.0	22.9	20.5	18.3	17.0	15.5	18.4	17.0	11.9	7.5	8.0	9.9	10.7	13.7	15.5	19.4	20.4	19.4	19.9	21.6	23.6	25.1	21.2	17.9	27.7
16-Sep	15.1	11.1	10.3	13.2	17.5	19.1	17.9	15.4	12.9	7.0	7.0	6.5	3.5	3.4	3.2	2.7	2.7	2.5	6.2	13.5	15.8	8.4	7.2	6.8	9.5	19.1
17-Sep	6.9	6.3	5.8	5.5	5.4	6.8	11.5	12.1	9.6	13.1	12.3	11.3	9.8	9.1	7.3	6.7	6.2	6.5	6.0	6.7	7.4	7.5	7.6	8.5	8.2	13.1
18-Sep	8.5	7.8	7.8	8.3	9.2	9.5	8.2	7.6	8.2	5.1	4.8	12.2	22.1	18.2	12.8	10.3	6.8	5.5	6.4	7.2	7.0	7.2	7.1	7.2	9.0	22.1
19-Sep	7.1	7.2	7.3	7.8	7.6	9.2	10.5	12.0	19.4	23.6	21.1	24.4	21.0	17.1	16.1	15.5	13.7	13.9	15.0	16.8	16.7	16.7	16.8	14.9	14.7	24.4
20-Sep	12.1	10.9	10.3	9.8	9.0	8.4	7.9	7.9	8.0	C	C	11.6	12.1	12.5	10.9	7.0	5.8	5.3	4.8	4.5	4.4	6.3	5.8	4.7	8.2	12.5
21-Sep	4.5	4.6	4.1	4.0	3.9	4.1	4.9	5.8	7.8	16.7	22.4	20.7	19.5	18.7	17.8	11.2	8.7	10.1	12.6	13.4	7.4	6.3	7.6	7.0	10.2	22.4
22-Sep	6.2	6.2	6.2	6.8	6.7	6.4	6.7	7.1	10.3	13.3	44.4	31.0	12.4	11.1	9.0	10.9	9.2	8.3	9.6	9.1	8.5	7.9	8.2	8.8	11.0	44.4
23-Sep	8.9	8.3	8.2	7.7	6.9	6.7	6.6	6.5	7.4	7.9	7.5	16.0	47.0	33.3	22.4	18.9	10.4	5.7	4.6	4.3	4.7	5.4	5.5	5.0	11.1	47.0
24-Sep	5.0	4.7	4.4	4.4	4.3	5.0	4.9	4.6	3.7	2.2	1.9	2.0	2.4	2.6	2.2	2.4	2.2	2.4	2.8	2.9	3.1	3.8	4.6	6.2	3.5	6.2
25-Sep	7.9	8.1	12.3	11.5	10.2	9.6	10.0	9.7	7.3	6.5	7.4	7.8	7.8	8.4	6.9	6.6	6.7	7.1	7.5	6.3	5.7	5.0	3.2	3.1	7.6	12.3
26-Sep	3.0	3.0	3.0	5.2	8.7	8.8	12.0	12.6	11.9	12.2	11.4	8.2	4.7	3.8	3.9	3.7	4.2	5.4	4.4	4.4	4.7	5.3	5.3	5.3	6.5	12.6
27-Sep	5.4	5.4	5.1	5.1	5.3	5.4	5.2	4.5	4.0	3.4	3.5	2.7	2.5	2.8	2.4	2.3	3.5	4.2	2.9	2.7	2.9	2.8	2.5	2.2	3.7	5.4
28-Sep	1.8	1.4	1.3	0.9	0.8	0.9	1.3	1.3	1.3	1.3	1.6	1.5	1.6	2.3	3.1	3.6	3.8	3.9	4.4	4.8	5.2	5.6	6.2	6.7	2.8	6.7
29-Sep	6.8	6.7	6.9	7.1	6.7	6.5	7.5	10.3	10.0	9.0	7.7	7.3	8.2	7.6	6.8	6.3	4.5	4.5	4.8	5.8	4.3	4.0	3.9	3.7	6.5	10.3
30-Sep	3.3	3.4	3.6	4.1	4.8	4.9	5.9	8.7	14.5	21.8	21.9	11.9	5.5	3.6	3.1	3.8	4.1	3.4	3.3	3.8	3.2	3.0	3.1	6.0	6.5	21.9
	20.8	20.4	20.5	20.7	21.2	22.5	23.2	23.6	25.5	28.2	30.4	30.6	30.1	29.3	26.7	23.6	21.5	20.3	20.4	21.3	22.4	22.9	22.6	21.0	Diurnal Average	
	125.1	130.5	139.5	135.6	134.2	133.7	132.0	131.5	131.2	146.1	149.6	151.7	171.6	142.0	181.9	166.3	163.1	156.4	145.8	142.8	140.1	136.1	132.3	131.6	Diurnal Maximum	

C - Calibration

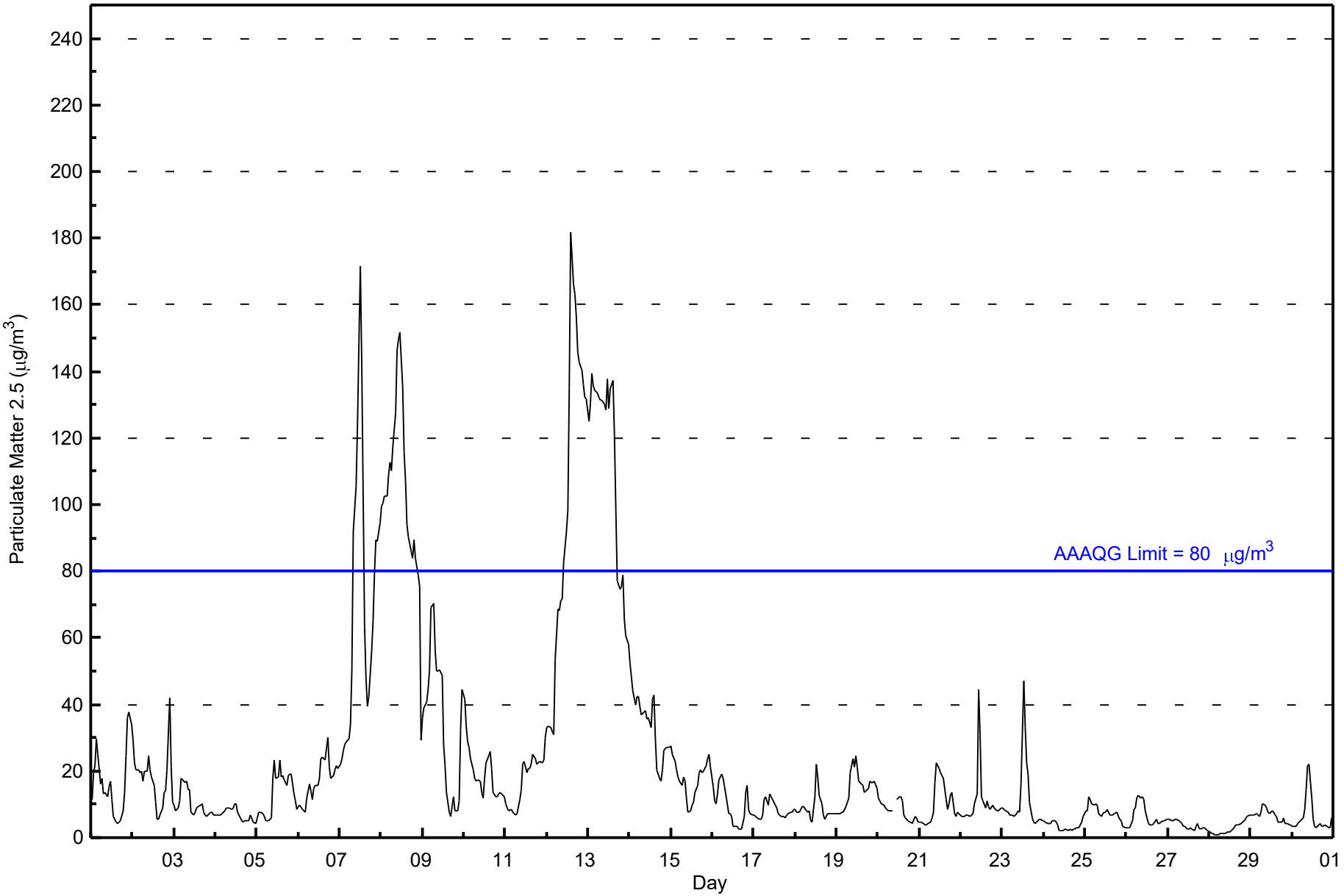
Alberta Ambient Air Quality Guideline/Objectives: 1-hr 80 $\mu g/m^3$ 24-hr 29 $\mu g/m^3$

Wood Buffalo Environmental Association

Hourly Averages

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

Fort McKay South - September 2024



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

Fort McKay South - September 2024

Concentration Ranges ($\mu g/m^3$)	Number of Hours	%	Cumulative %
0 - 5	151	21.03	21.03
6 - 15	295	41.09	62.12
16 - 25	124	17.27	79.39
26 - 80	87	12.12	91.50
> 81.0	61	8.50	100.00

Total Number of Valid Hours: 718

Total Number of Hours: 720

Wood Buffalo Environmental Association

Frequency Distribution

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

Fort McKay South - September 2024

Concentration Ranges ($\mu g/m^3$)	Wind Direction																
	N	NNE	NE	ENE	E	ESE	SE	SSE	S	SSW	SW	WSW	W	WNW	NW	NNW	**Totals**
0 - 5	1	0	0	0	0	0	1	2	14	16	26	37	16	17	11	6	147
6 - 15	24	11	2	2	2	3	4	18	47	20	35	44	18	20	22	14	286
16 - 25	3	3	1	0	2	7	14	12	13	14	12	10	9	12	3	6	121
26 - 80	6	0	1	0	0	0	1	1	8	9	10	13	10	5	5	16	85
> 81.0	5	5	0	0	3	4	9	1	2	4	2	9	1	2	3	8	58
Totals	39	19	4	2	7	14	29	34	84	63	85	113	54	56	44	50	697

Total Number of Valid Hours: 697

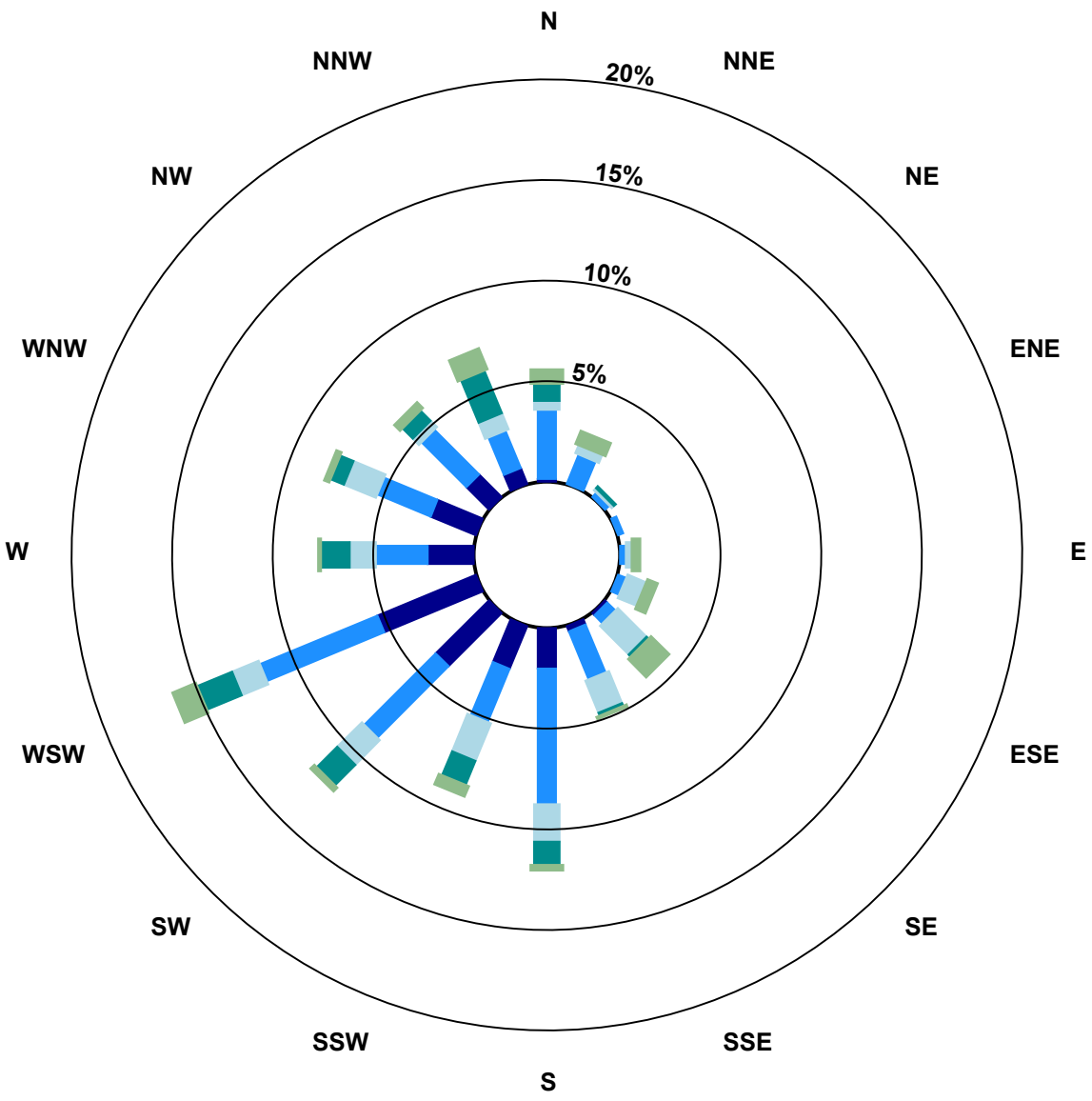
Total Number of Hours: 720

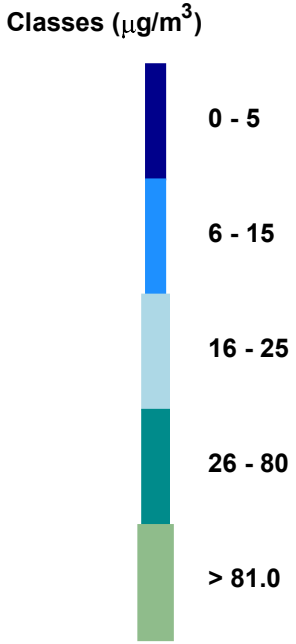
Wood Buffalo Environmental Association

Wind Rose Sep 2024

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

Fort McKay South





Total Number of Valid Hours: 697

Maximum Value: 31.6 C on Sep 2 15:00

Maximum Daily Average: 20.2 C on Sep 2

Minimum Value: -2.0 C on Sep 19 07:00

Minimum Daily Average: 6.1 C on Sep 30

Maximum Diurnal Average: 19.3 C at hour 16

Minimum Diurnal Average: 6.1 C at hour 6

Monthly Average: 12.28 C

Percentiles: P_1 = 0.0 P_{10} = 4.0 Q_1 = 7.8 Median = 11.9 Q_3 = 16.1 P_{90} = 20.5 P_{99} = 29.8

Hours in Service:	720
Hours of Data:	720
Hours of Missing Data:	0
Hours of Calibration:	0
Percent Operational Time:	100.0

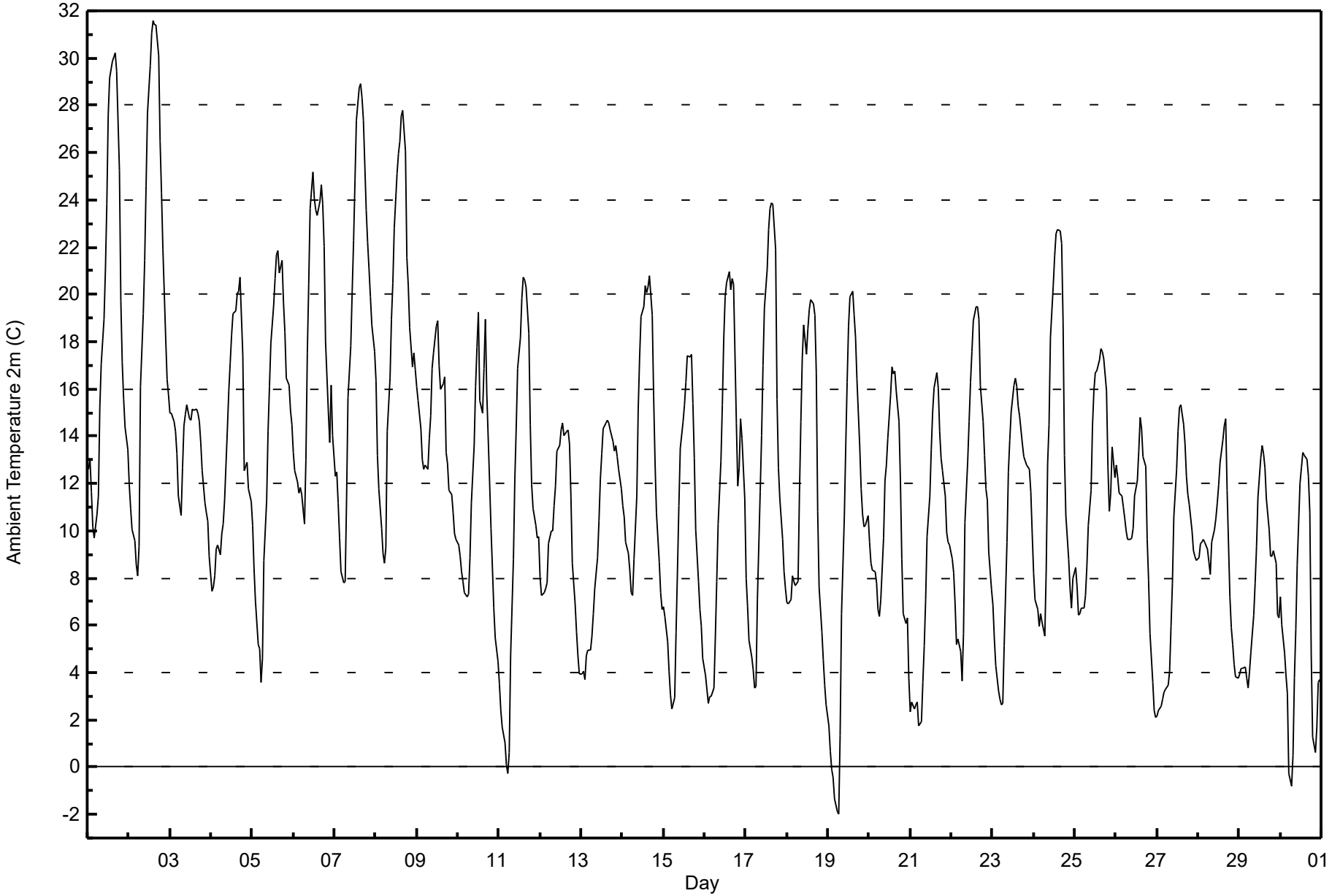
Day	Hourly Period Ending At (MST)																								Daily	Daily
	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24	Average	Maximum
1-Sep	12.6	13.0	11.7	10.2	9.7	10.7	11.5	15.2	17.1	19.0	21.0	23.8	27.6	29.1	29.8	30.0	30.2	29.5	25.2	19.7	17.1	15.6	14.4	13.4	19.0	30.2
2-Sep	12.0	11.0	10.1	9.6	8.6	8.1	9.4	16.1	19.2	21.4	24.6	27.7	29.7	31.0	31.6	31.4	31.4	30.1	26.5	24.3	21.9	18.1	16.4	15.7	20.2	31.6
3-Sep	15.0	15.0	14.6	14.2	13.2	11.5	10.6	12.7	14.5	14.9	15.3	14.7	14.7	15.2	15.1	15.2	15.0	14.6	13.7	12.6	11.2	10.7	10.4	8.9	13.5	15.3
4-Sep	7.4	7.6	8.1	9.2	9.4	9.0	9.9	10.3	11.3	14.3	15.9	17.1	18.3	19.2	19.3	20.0	20.1	20.7	17.4	12.5	12.7	12.9	11.8	11.2	13.6	20.7
5-Sep	10.2	8.4	7.0	5.2	5.0	3.6	4.6	8.7	11.3	14.2	16.1	18.0	19.6	20.7	21.7	21.9	20.9	21.4	19.6	18.4	16.4	16.2	15.1	14.5	14.1	21.9
6-Sep	13.3	12.6	12.1	11.6	11.8	11.5	10.3	13.0	17.5	20.5	23.6	25.2	24.0	23.6	23.3	24.0	24.7	23.8	22.0	18.0	15.0	13.7	16.2	14.0	17.7	25.2
7-Sep	12.3	12.5	11.2	9.7	8.3	7.8	7.8	11.4	15.6	17.8	20.1	22.3	24.8	27.4	28.7	28.9	28.3	27.4	23.6	22.2	21.1	19.9	18.7	17.6	18.6	28.9
8-Sep	16.4	13.2	11.8	10.1	9.0	8.6	9.3	14.2	16.4	19.0	20.5	22.8	25.1	25.9	26.5	27.6	27.8	26.1	21.6	20.4	18.6	16.9	17.5	16.8	18.4	27.8
9-Sep	16.1	15.5	14.3	13.0	12.6	12.8	12.6	13.9	14.9	16.9	17.5	18.7	18.9	17.0	16.0	16.2	16.5	13.3	12.8	11.7	11.5	10.7	9.9	9.6	14.3	18.9
10-Sep	9.4	8.9	8.3	7.9	7.4	7.2	7.3	8.8	11.2	13.6	16.1	17.7	19.2	15.5	15.0	16.9	19.0	15.8	12.0	10.1	8.5	6.8	5.5	4.4	11.4	19.2
11-Sep	3.5	2.4	1.7	1.0	0.1	-0.3	0.6	4.7	8.8	12.2	14.4	16.8	18.2	19.9	20.7	20.6	20.3	18.4	14.5	12.0	10.9	10.2	9.7	9.7	10.5	20.7
12-Sep	8.1	7.3	7.4	7.6	7.8	9.5	10.0	10.0	11.1	11.9	13.4	13.6	14.3	14.5	14.0	14.2	14.3	13.6	11.5	8.6	6.9	5.7	4.7	4.0	10.2	14.5
13-Sep	3.9	4.1	3.7	4.7	5.0	5.0	5.6	6.5	7.6	8.9	10.4	12.2	13.3	14.3	14.5	14.7	14.6	14.2	13.8	13.4	13.6	13.1	12.6	11.8	10.1	14.7
14-Sep	11.0	10.6	9.5	9.0	8.3	7.4	7.2	8.8	11.5	15.2	17.4	19.0	19.5	20.4	20.1	20.3	20.8	19.1	15.7	12.9	10.8	8.7	7.4	6.7	13.2	20.8
15-Sep	6.8	6.4	5.3	4.1	3.1	2.5	2.9	5.7	8.3	11.0	13.5	14.6	15.4	16.3	17.4	17.3	17.5	15.4	13.1	10.0	7.8	6.7	5.9	4.6	9.6	17.5
16-Sep	3.9	3.3	2.7	3.0	3.0	3.4	5.5	7.8	10.3	13.0	15.3	18.1	19.9	20.5	21.0	20.2	20.7	20.4	14.6	11.9	12.7	14.7	13.9	11.3	12.1	21.0
17-Sep	8.0	6.8	5.4	4.7	4.1	3.4	3.4	7.1	11.7	14.0	17.0	19.4	21.1	22.7	23.6	23.9	23.8	21.9	15.6	12.7	11.3	9.6	8.2	7.6	12.8	23.9
18-Sep	7.0	6.9	7.1	8.1	7.8	7.7	7.9	11.6	14.6	17.3	18.7	17.5	18.5	19.3	19.8	19.6	19.1	16.7	10.8	7.6	5.7	4.5	3.5	2.7	11.7	19.8
19-Sep	1.8	0.7	-0.1	-0.4	-1.3	-1.9	-2.0	1.3	6.5	10.6	13.5	16.3	18.6	19.9	20.1	19.1	18.2	16.4	13.5	11.8	10.7	10.2	10.2	10.7	9.3	20.1
20-Sep	9.5	8.6	8.3	8.3	7.8	6.7	6.4	7.1	9.7	12.1	12.8	13.9	15.8	16.9	16.6	16.7	16.0	14.6	12.2	8.8	6.5	6.1	6.3	3.7	10.5	16.9
21-Sep	2.4	2.8	2.5	2.6	2.8	1.8	1.9	3.6	5.1	7.1	9.7	11.5	13.4	15.0	16.0	16.7	16.0	14.2	13.1	12.6	11.5	9.9	9.5	9.4	8.8	16.7
22-Sep	8.8	8.2	6.9	5.2	5.4	4.9	3.6	5.6	10.4	13.0	14.6	16.3	17.6	18.9	19.5	19.5	19.0	16.1	14.6	13.2	11.8	11.3	9.1	7.5	11.7	19.5
23-Sep	6.9	5.4	4.3	3.2	2.9	2.7	2.7	5.2	9.5	12.5	13.9	15.0	16.2	16.5	16.1	15.3	14.8	13.7	13.2	13.0	12.8	12.6	11.7	9.9	10.4	16.5
24-Sep	8.2	7.1	6.6	6.0	6.5	6.1	5.5	8.4	12.8	14.5	18.2	20.4	21.6	22.5	22.8	22.7	22.1	18.9	13.2	10.7	8.8	7.6	6.7	8.0	12.7	22.8
25-Sep	8.4	7.6	6.4	6.5	6.7	6.7	7.2	8.5	10.2	11.7	14.4	15.9	16.7	16.7	17.2	17.7	17.6	17.3	15.9	12.7	10.8	11.6	13.6	12.3	12.1	17.7
26-Sep	12.8	12.3	11.6	11.5	11.0	10.5	10.0	9.6	9.6	9.7	10.1	11.5	12.1	13.4	14.8	14.3	13.2	12.7	9.6	7.9	5.7	3.6	2.4	2.1	10.1	14.8
27-Sep	2.2	2.4	2.6	2.9	3.2	3.3	3.4	4.1	5.9	7.8	10.6	12.6	14.2	15.2	15.3	14.5	13.7	12.3	11.6	11.1	10.0	9.2	8.9	8.7	8.6	15.3
28-Sep	8.8	9.5	9.5	9.6	9.5	9.2	8.7	8.1	9.5	10.1	10.5	11.2	11.9	12.9	13.8	14.4	14.7	11.7	7.2	5.9	5.2	4.4	3.8	3.8	9.3	14.7
29-Sep	3.9	4.2	4.2	4.2	3.8	3.3	4.0	4.9	6.4	7.8	9.3	11.4	13.1	13.6	13.3	12.7	11.4	10.1	8.9	8.9	9.1	8.6	6.5	6.3	7.9	13.6
30-Sep	7.2	6.0	4.8	3.9	3.1	-0.3	-0.8	0.5	3.7	5.9	8.6	12.0	12.7	13.3	13.2	13.0	12.3	10.8	4.8	1.3	0.6	1.7	3.6	3.7	6.1	13.3
	8.6	8.0	7.3	6.9	6.5	6.1	6.2	8.4	11.1	13.3	15.2	16.9	18.2	18.9	19.2	19.3	19.1	17.7	14.7	12.6	11.2	10.4	9.8	9.0	Diurnal Average	
	16.4	15.5	14.6	14.2	13.2	12.8	12.6	16.1	19.2	21.4	24.6	27.7	29.7	31.0	31.6	31.4	31.4	30.1	26.5	24.3	21.9	19.9	18.7	17.6	Diurnal Maximum	

Wood Buffalo Environmental Association

Hourly Averages

Ambient Temperature 2m (AT2) - C

Fort McKay South - September 2024



Concentration Ranges (C)	Number of Hours	%	Cumulative %
-50 - -20	0	0.00	0.00
-20 - 0	8	1.11	1.11
0 - 10	268	37.22	38.33
10 - 20	359	49.86	88.19
> 20	85	11.81	100.00

Total Number of Valid Hours: 720

Total Number of Hours: 720

Wood Buffalo Environmental Association

Summary of Hour Averages

Relative Humidity 2m (RH2) - %

Fort McKay South - September 2024

Maximum Value: 99.9 % on Sep 27 06:00

Maximum Daily Average: 89.7 % on Sep 12

Minimum Value: 24.8 % on Sep 2 16:00

Minimum Daily Average: 61.5 % on Sep 30

Maximum Diurnal Average: 94.0 % at hour 7

Minimum Diurnal Average: 49.9 % at hour 16

Monthly Average: 75.55 %

Percentiles: P_1 = 31.7 P_{10} = 46.8 Q_1 = 61.9 Median = 77.9 Q_3 = 93.9 P_{90} = 97.9 P_{99} = 99.4

Hours in Service:	720
Hours of Data:	720
Hours of Missing Data:	0
Hours of Calibration:	0
Percent Operational Time:	100.0

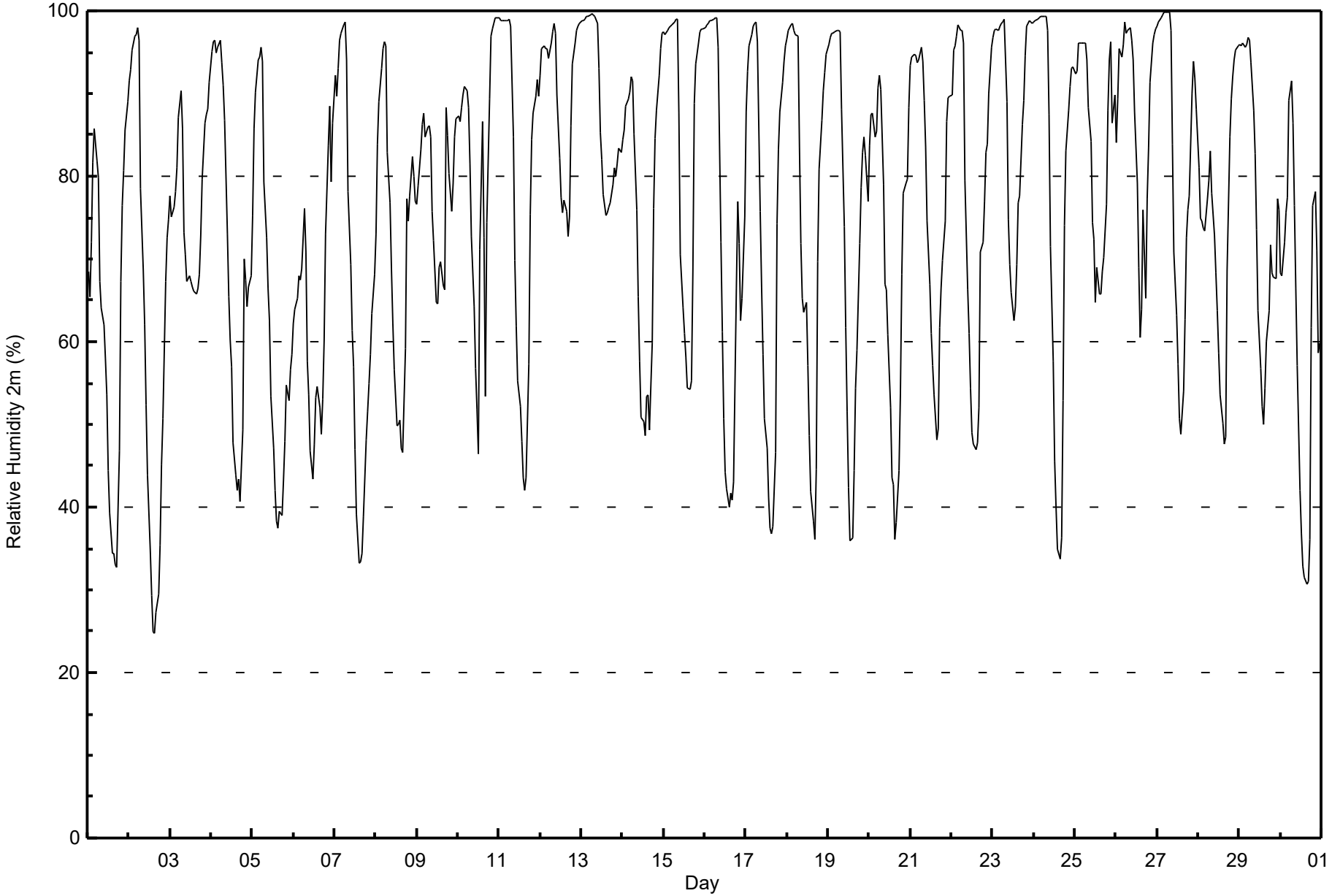
Day	Hourly Period Ending At (MST)																								Daily	Daily
	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24	Average	Maximum
1-Sep	68.5	65.4	72.0	81.7	85.7	81.9	79.8	67.4	64.2	62.0	57.9	53.6	44.4	39.2	34.4	34.4	33.1	32.8	46.8	67.2	76.4	80.7	85.6	88.9	62.7	88.9
2-Sep	91.5	92.9	95.3	96.9	97.1	98.0	96.5	78.4	68.7	62.0	52.4	43.9	34.8	29.3	25.0	24.8	27.3	29.4	35.5	45.0	50.7	67.4	72.6	74.7	62.1	98.0
3-Sep	77.7	75.2	76.2	78.1	81.1	87.1	90.3	85.8	73.2	70.5	67.3	68.0	67.2	66.7	66.2	65.8	66.5	68.2	72.8	79.7	86.5	87.4	88.1	91.4	76.5	91.4
4-Sep	95.1	96.3	96.4	94.9	95.5	96.5	93.7	91.1	86.8	73.0	65.5	60.2	57.0	47.8	43.9	42.1	43.3	40.6	49.3	69.9	67.5	64.2	66.6	68.0	71.0	96.5
5-Sep	75.2	85.7	90.1	94.1	94.4	95.6	93.8	79.2	72.5	66.4	62.5	53.4	47.1	42.0	38.3	37.4	39.4	39.0	43.2	47.9	54.8	52.9	56.5	58.6	63.3	95.6
6-Sep	62.2	63.9	65.3	67.9	67.5	68.8	76.2	70.9	57.6	53.5	46.8	43.3	47.6	53.3	54.6	52.0	48.8	53.1	60.2	73.1	83.7	88.5	79.3	86.5	63.5	88.5
7-Sep	92.2	89.7	93.1	96.5	97.3	98.4	98.6	94.1	78.1	69.4	61.3	56.9	47.0	39.1	33.2	33.4	34.4	38.8	48.1	51.5	54.9	58.6	63.4	68.1	66.5	98.6
8-Sep	73.0	83.9	89.1	93.0	95.5	96.2	95.7	82.9	76.7	68.8	62.3	56.6	49.9	50.0	50.5	47.1	46.6	59.1	77.2	74.6	77.5	82.3	80.1	77.0	72.7	96.2
9-Sep	76.5	78.9	83.3	86.2	87.7	84.7	86.0	86.0	84.8	75.7	72.1	64.8	64.5	69.1	69.6	66.8	66.2	88.2	84.9	80.3	75.8	79.1	84.7	86.9	78.4	88.2
10-Sep	87.3	86.7	88.3	89.8	90.8	90.4	88.3	81.6	72.6	64.3	56.8	51.8	46.5	71.1	86.6	72.6	53.5	74.4	89.3	96.9	97.7	98.6	99.1	99.1	80.6	99.1
11-Sep	99.1	98.9	98.8	98.9	98.8	98.8	98.9	98.2	84.8	69.9	61.9	55.2	52.2	48.0	43.5	42.0	43.6	57.3	75.4	84.4	87.6	89.6	91.7	89.7	77.8	99.1
12-Sep	92.2	95.4	95.7	95.5	95.4	94.2	96.0	97.5	98.5	97.3	89.9	82.2	77.4	75.5	77.2	75.7	72.7	75.1	86.2	93.6	96.1	97.6	98.1	98.4	89.7	98.5
13-Sep	98.8	98.9	99.0	99.2	99.4	99.5	99.6	99.6	99.3	98.4	93.0	85.3	82.0	77.8	75.2	75.6	76.3	76.7	79.0	81.1	80.1	81.5	83.3	82.9	88.4	99.6
14-Sep	84.4	85.6	88.4	89.4	90.1	92.1	91.5	85.1	76.0	65.5	57.7	50.9	50.4	48.6	53.3	53.6	49.4	59.8	76.1	84.6	88.0	92.2	95.5	97.3	75.2	97.3
15-Sep	97.4	97.2	97.7	97.9	98.1	98.3	98.6	99.0	99.1	87.7	70.6	64.1	61.1	58.2	54.5	54.2	55.2	68.6	88.8	93.5	96.2	97.4	97.8	97.7	84.5	99.1
16-Sep	98.1	98.3	98.5	98.8	98.8	99.0	99.2	99.2	95.6	72.1	61.1	50.7	44.2	42.2	40.0	41.7	40.8	43.0	66.4	77.0	71.9	62.6	65.3	75.0	72.5	99.2
17-Sep	87.8	92.8	95.8	97.2	98.2	98.4	98.7	96.3	75.7	66.7	58.5	50.6	47.1	41.1	37.4	36.8	37.7	46.7	74.3	83.2	87.8	91.4	93.8	95.8	74.6	98.7
18-Sep	96.5	97.7	98.3	98.5	97.6	97.1	97.0	83.6	71.8	65.3	63.6	64.8	57.2	48.6	41.9	38.4	36.1	44.6	69.7	80.8	86.8	90.3	92.5	94.7	75.6	98.5
19-Sep	95.9	96.9	97.3	97.3	97.4	97.6	97.6	97.5	88.1	73.9	61.6	51.6	42.5	35.9	36.3	44.5	54.4	58.9	71.9	78.6	83.0	84.8	82.5	77.0	75.1	97.6
20-Sep	83.8	87.5	87.6	84.7	85.5	90.6	92.2	90.6	79.0	66.9	66.2	60.9	52.0	43.6	42.7	36.2	38.2	44.4	53.8	68.2	77.9	79.2	79.6	88.3	70.0	92.2
21-Sep	93.4	94.3	94.7	94.6	93.7	94.0	95.6	93.9	89.2	83.6	74.6	66.9	61.0	57.1	53.6	48.1	49.4	61.7	66.5	69.8	74.7	86.6	89.5	89.7	78.2	95.6
22-Sep	89.8	95.3	95.8	97.0	98.2	97.6	97.6	96.2	79.5	66.3	61.0	54.3	49.1	47.7	47.0	47.9	52.0	70.8	72.0	77.0	82.8	83.9	90.1	95.5	76.9	98.2
23-Sep	96.7	97.6	97.7	97.7	98.1	98.5	98.7	99.0	88.9	74.7	69.3	65.9	62.5	64.2	69.4	76.7	77.5	86.3	89.1	94.6	98.2	98.8	98.6	98.5	87.4	99.0
24-Sep	98.6	98.8	99.0	99.1	99.3	99.3	99.3	99.3	97.6	87.5	71.5	57.6	45.7	40.0	35.0	33.7	36.3	52.8	74.0	83.0	87.9	90.8	93.1	93.1	78.0	99.3
25-Sep	92.5	92.6	96.1	96.1	96.1	96.1	96.2	94.0	88.3	84.3	74.4	72.3	64.7	68.9	65.8	65.7	68.4	70.2	76.7	88.0	94.1	96.2	86.5	89.9	83.9	96.2
26-Sep	84.1	89.4	95.4	94.4	95.9	98.6	97.4	97.6	97.9	96.5	94.1	87.9	79.1	69.1	60.5	63.9	75.9	65.2	77.3	83.4	91.4	96.0	97.1	97.8	86.9	98.6
27-Sep	98.2	98.6	99.1	99.5	99.8	99.9	99.8	99.8	97.7	83.9	70.8	63.2	57.3	50.8	48.8	54.1	62.6	72.5	76.0	77.6	90.0	93.9	91.9	88.1	82.2	99.9
28-Sep	81.1	74.9	74.5	73.7	73.4	77.3	79.5	83.1	77.9	72.9	68.4	63.8	58.6	53.6	50.2	47.6	48.5	68.6	84.8	89.3	92.0	94.0	95.3	95.7	74.1	95.7
29-Sep	95.9	95.8	96.1	95.6	96.0	96.7	96.5	93.8	87.9	82.7	73.5	63.6	56.8	52.2	50.0	54.4	60.0	63.7	71.7	68.2	67.8	67.7	77.3	76.0	76.7	96.7
30-Sep	68.3	68.0	72.0	75.7	77.5	89.1	91.5	86.5	76.4	66.5	57.0	42.0	36.8	32.8	31.5	30.6	31.0	36.1	61.7	76.5	78.2	71.0	58.7	59.8	61.5	91.5
	87.7	89.1	90.9	92.0	92.7	93.7	94.0	90.2	82.8	74.3	66.8	60.2	54.8	52.1	50.5	49.9	50.8	58.2	69.9	77.3	81.3	83.5	84.5	86.0	Diurnal Average	
	99.1	98.9	99.1	99.5	99.8	99.9	99.8	99.8	99.3	98.4	94.1	87.9	82.0	77.8	86.6	76.7	77.5	88.2	89.3	96.9	98.2	98.8	99.1	99.1	Diurnal Maximum	

Wood Buffalo Environmental Association

Hourly Averages

Relative Humidity 2m (RH2) - %

Fort McKay South - September 2024



Wood Buffalo Environmental Association

Summary of Hour Averages

Wind Speed 10m (WS10) - km/h

Fort McKay South - September 2024

Maximum Speed: 17 km/h on Sep 20 14:00

Maximum Daily Speed Average: 7.0 km/h on Sep 30

Minimum Speed Value: 0 km/h on Sep 4 02:00

Minimum Daily Speed Average: 0.7 km/h on Sep 12

Maximum Diurnal Speed Average: 3.0 km/h at hour 6

Minimum Diurnal Speed Average: 1.7 km/h at hour 11

Monthly Average Velocity: 2.2 km/h 243.0 deg

Percentiles: P_1 = 1 P_{10} = 1 Q_1 = 2 Median = 5 Q_3 = 8 P_{90} = 10 P_{99} = 15

Hours in Service: 720

Hours of Data: 699

Hours of Missing Data: 21

Percent Operational Time: 97.1

Day	Hourly Period Ending At (MST)																								Daily	Daily
	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24	Average	Maximum
1-Sep	S8	S8	SSW6	SSW4	SSW5	SSW6	S6	SSE7	SSE9	SE8	SE9	E5	S10	SSW11	SW12	SW11	SW9	WSW8	SW4	SW5	WSW5	UO	NNW1	W1	SSW5.5	SW12
2-Sep	SSW3	SSW3	SW1	W2	WSW3	WSW2	SSW4	SE5	SE7	SE9	SSE10	S10	S11	SSW11	SW10	WSW10	WSW9	WSW7	SW5	NW16	NNW13	N16	NNE15	N15	WSW1.9	N16
3-Sep	N10	N12	N9	N7	NNW6	WSW2	W1	NNW2	N8	N8	N9	N11	N9	NNE9	NNE8	N6	NNE6	NNE6	NNE3	NNW2	NW2	NW4	NW4	UO	N5.9	N12
4-Sep	WSW2	S0	WSW4	WSW4	SW4	SW3	WSW6	WSW7	WSW7	WNW7	WNW6	WSW5	SW6	NNW10	NNW10	NNW8	WNW5	WNW6	W5	WSW7	WSW7	WSW8	WSW9	W9	W5.0	NNW10
5-Sep	NW9	WNW6	WNW3	WSW4	WNW1	SSW1	S2	S4	S3	ESE4	ESE5	SE8	SE10	SSE12	SSE11	SSE14	SE10	SSE11	SSE11	SSE12	S11	S12	S12	S11	SSE6.0	SSE14
6-Sep	S11	S12	SSW7	SSW8	SSW9	S9	S5	SSE6	S11	SSW10	SW8	SW9	SSW8	S9	S11	S13	S8	SSW6	SE1	S2	SW1	WNW3	W6	WNW2	SSW6.5	S13
7-Sep	SSW2	SSW2	S1	S2	SW2	SSW3	SSW2	S5	SE6	SE9	SE7	SE8	S9	SSW10	SW9	SW10	SW8	SSW6	SW8	SW9	SW9	WSW8	WSW9	WSW10	SSW5.0	SW10
8-Sep	WNW3	S4	SW2	WSW2	SSW2	SW2	WSW2	SSE2	SE4	E4	SE7	SE7	ESE7	E3	NNE5	SE3	NNE3	NNW3	NW4	NNW7	NNW6	NNW6	NNW10	NNW9	NNE0.9	NNW10
9-Sep	N2	NW1	NNW4	N1	N3	NNW6	NNW5	NNW10	NNW5	NNW4	SW1	WNW8	NW8	W10	WSW9	WSW10	SW11	WSW11	W9	W8	W7	WSW7	SW7	WSW7	W5.0	SW11
10-Sep	WSW10	WSW12	W10	WSW10	WSW10	WSW10	SW6	SW7	SSW7	SSW7	SSW8	SW11	WSW10	W5	SW3	SW4	WNW5	WNW3	WSW3	W1	WNW2	WNW2	WNW1	WNW3	WSW5.8	WSW12
11-Sep	W2	WSW3	W2	SW2	W2	SW2	WSW1	N1	NE2	ENE2	E1	ESE4	NNE4	N4	NE3	NNE5	N7	NNW4	WNW2	WNW2	WSW1	UO	SW3	UO	NNW1.0	N7
12-Sep	W1	W1	WNW1	WSW1	SSW2	S7	S3	NNW3	N4	N5	NNE4	NNE4	NNE4	ESE5	ESE6	E4	ESE6	SE4	WSW1	UO	UO	SSW2	WSW1	SSW2	ESE0.7	S7
13-Sep	UO	WSW1	NNW3	NW4	WSW2	W2	WNW3	NW3	NNW4	NNW5	N6	N10	N8	N10	N10	NNW7	NNW8	NNW9	NNW7	NNW8	NNW9	NW8	WNW5	WNW6	NNW5.5	N10
14-Sep	W6	W6	W8	W6	WSW6	WSW10	WSW9	WSW7	WSW3	WSW4	W3	WSW3	SSW7	S8	NE1	WNW4	WNW6	NW4	WNW4	NNW5	NW2	W2	WSW3	NNW2	W4.1	WSW10
15-Sep	NW5	NW3	NNW2	UO	W1	WNW1	UO	WNW1	N0	NNE4	NNE7	NE5	NNE5	ESE5	SSE5	ESE8	ESE7	SSE3	WSW2	UO	SW2	W2	SW2	SSW2	ENE0.7	ESE8
16-Sep	SW1	SSW2	UO	SW1	SSW2	SSW5	S5	S5	SSE3	SSW9	S12	SSW12	WSW11	SW11	WSW9	WSW8	WSW7	WSW5	SW5	SW4	SW6	SW8	SW7	S3	SW5.6	S12
17-Sep	S1	SSW1	SW3	SW1	SW1	S2	S3	SSE4	S9	S11	S11	S9	SSE9	SSE8	S6	S7	S7	SSE5	W1	WSW2	SW1	SSW2	SSW2	S2	S4.3	S11
18-Sep	S2	UO	WSW1	UO	SSW1	S4	S3	S6	SSW5	WNW6	WNW2	NW10	WNW8	WNW10	WNW8	WNW8	NW9	NW6	WSW3	W1	SW2	SW1	W1	S0	W3.0	NW10
19-Sep	S3	SSE1	SW4	S3	WSW1	SW2	SW2	S3	SE4	SE6	ESE7	ESE7	SE6	SE4	S5	S4	SSE2	S3	W3	W1	WSW3	WNW2	NW4	NNW6	SSE1.8	ESE7
20-Sep	UO	NW2	W3	NW3	NW2	UO	WNW1	W3	WSW3	N2	NNW5	NNW5	N9	N17	N16	N16	NNW15	NNW11	NNW9	NNW5	NW4	NW5	NW5	WNW3	NNW5.9	N17
21-Sep	WSW2	SW2	WSW1	S1	SSW3	SW3	SW1	SW1	SSW1	SSE4	SE6	ESE9	SE10	SSE9	SE10	SSE13	S10	S3	SSE6	S7	SW5	SSE3	S3	S4	SSE4.2	SSE13
22-Sep	S2	NNW3	NW2	WSW1	UO	WSW3	WSW1	S2	SE4	SSE4	SSE6	S7	SSW6	SSE4	SE5	E7	ESE4	NNW2	NNW8	NW3	WSW2	NW2	NW1	NW3	S0.9	NNW8
23-Sep	NNW2	SW2	NW1	WSW2	SW1	WSW3	UO	WNW2	WSW2	SW2	E1	SSW5	SE7	S9	SSE10	SE10	S9	S8	S7	S6	SSE4	SSE4	S5	SSW1	S3.4	SE10
24-Sep	UO	UO	UO	SW2	SSW3	SSW1	NW1	NW1	WSW4	WSW9	WSW11	W13	W14	WNW13	WNW12	NW10	NW7	WNW2	WSW3	SW2	WSW2	SW2	SSW1	NNW2	W4.7	W14
25-Sep	WSW0	SSW2	WSW1	WNW1	NW1	SW1	N1	NNW2	NNE1	ENE0	NNE2	SW2	SSW5	S5	S7	S6	S7	S7	SSW6	SW1	W1	WSW7	W6	WSW5	SW2.2	S7
26-Sep	WSW8	W8	WNW6	NW6	WNW3	W5	WSW7	WSW5	WSW5	WSW6	WSW7	W9	W8	W8	NW6	SW4	SSW4	WNW8	WSW4	WSW6	WSW1	WSW3	SW3	SE1	W4.8	W9
27-Sep	WSW1	SW2	UO	S1	NW0	WSW1	SSW3	SW3	SW5	WSW6	SW7	SSW9	SSW10	SSW8	SSW6	SW3	S5	SSW8	S8	S8	S6	S8	S8	SSW8	SSW5.2	SSW10
28-Sep	SSW9	SW11	SW9	WSW11	WSW10	W8	W6	SW4	WSW6	WSW9	WSW10	WSW12	W10	WSW11	WSW8	W6	S2	SW2	SW3	SW2	SW2	W2	WSW2	WSW2	WSW6.2	WSW12
29-Sep	W1	NW1	WSW1	NW2	W2	WNW1	NNW3	NNW6	N6	N7	N10	N10	NNE10	N13	N15	N13	NNW12	NNW7	NW6	WNW6	WNW9	NW6	N1	W6	NNW5.6	N15
30-Sep	WNW8	W8	W8	W11	WNW6	SW5	SW6	SW5	S3	SW5	W5	WNW12	WNW11	WNW11	WNW15	WNW13	WNW13	NW6	WSW3	SW4	WSW6	WSW8	WSW8	WSW9	W7.0	WNW15
	WSW2.4	WSW2.5	W2.6	WSW2.6	WSW2.5	SW3.0	SW2.5	SW1.8	SSW1.8	SSW1.7	SSW1.7	SW2.1	SW2.6	WSW2.3	WSW2.0	WSW2.0	WSW2.1	WSW2.2	WSW2.5	WSW2.6	WSW2.7	W2.6	WSW2.5	W2.4	Diurnal Average	
	S11	N12	W10	WSW11	WSW10	WSW10	WSW9	NNW10	S11	S11	S12	W13	W14	N17	N16	N16	NNW15	NNW11	SSE11	NW16	NNW13	N16	NNE15	N15	Diurnal Maximum	

UO - Unstable Operation

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

Number of Exceedences (AAAQO): 1-hr: 0 24-hr: 0
Maximum Value: 6 km/h on Sep 20 13:00

Minimum Value: 1 km/h on Sep 30 20:00

Percentiles: $P_1 = 1$ $P_{10} = 1$ $Q_1 = 1$ Median = 2 $Q_3 = 3$ $P_{90} = 3$ $P_{99} = 5$

Hours in Service:	720
Hours of Data:	699
Hours of Missing Data:	21
Hours of Calibration:	0
Percent Operational Time:	97.1

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

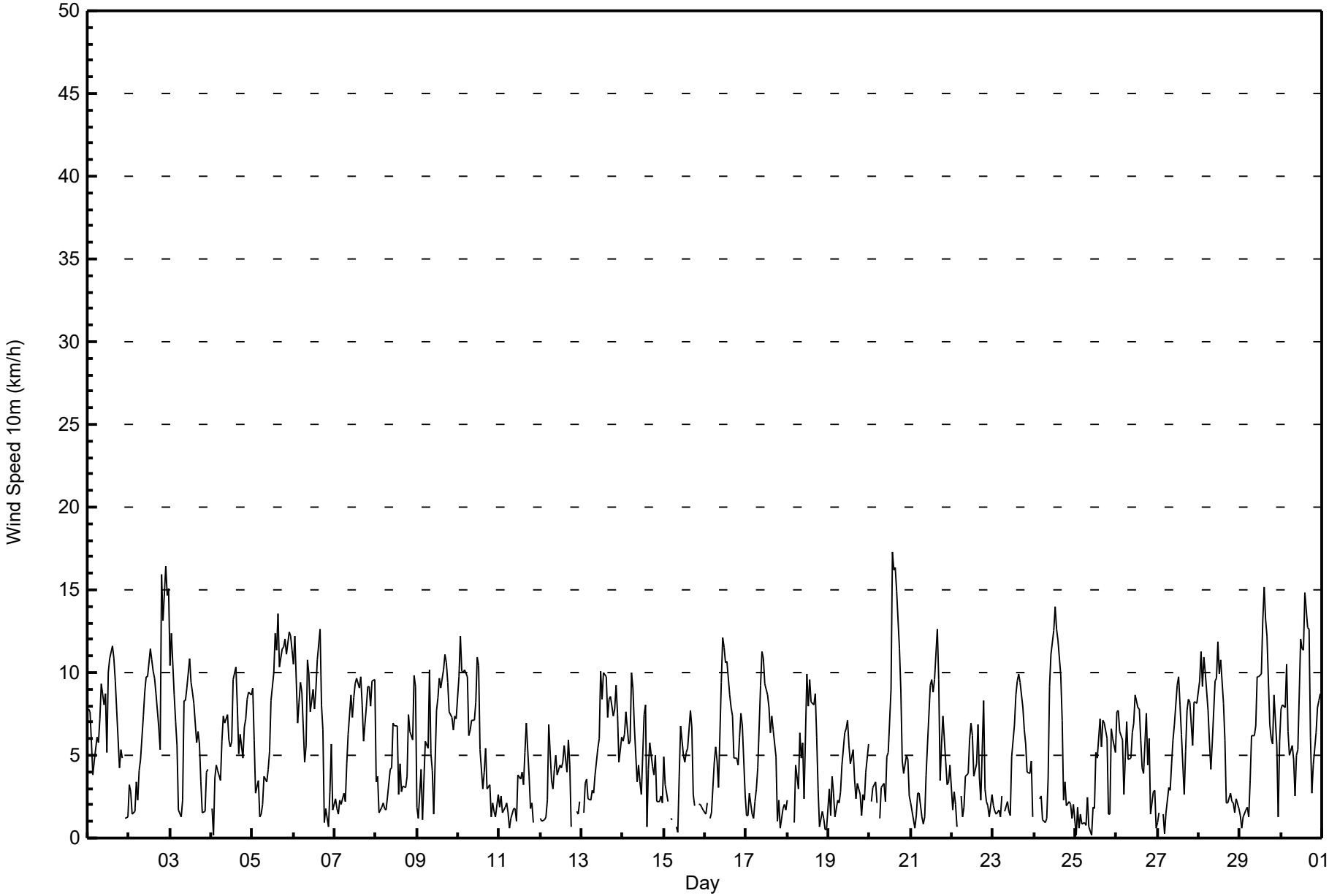
UO - Unstable Operation

Wood Buffalo Environmental Association

Hourly Averages

Wind Speed 10m (WS10) - km/h

Fort McKay South - September 2024



Wind Speed Ranges (km/h)	Number of Hours	%	Cumulative %
0 - 5	371	53.08	53.08
6 - 11	293	41.92	94.99
12 - 19	35	5.01	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: 699

Total Number of Hours: 720

Wood Buffalo Environmental Association

Frequency Distribution

Wind Speed 10m (WS10) - km/h

Fort McKay South - September 2024

Wind Speed Ranges (km/h)	Wind Direction																
	N	NNE	NE	ENE	E	ESE	SE	SSE	S	SSW	SW	WSW	W	WNW	NW	NNW	**Totals**
0 - 5	11	12	4	2	6	6	9	16	39	35	59	59	28	30	30	25	371
6 - 11	20	6	0	0	1	8	20	14	40	27	25	52	24	20	13	23	293
12 - 19	9	1	0	0	0	0	0	4	5	1	1	2	2	6	1	3	35
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	40	19	4	2	7	14	29	34	84	63	85	113	54	56	44	51	699

Total Number of Valid Hours: 699

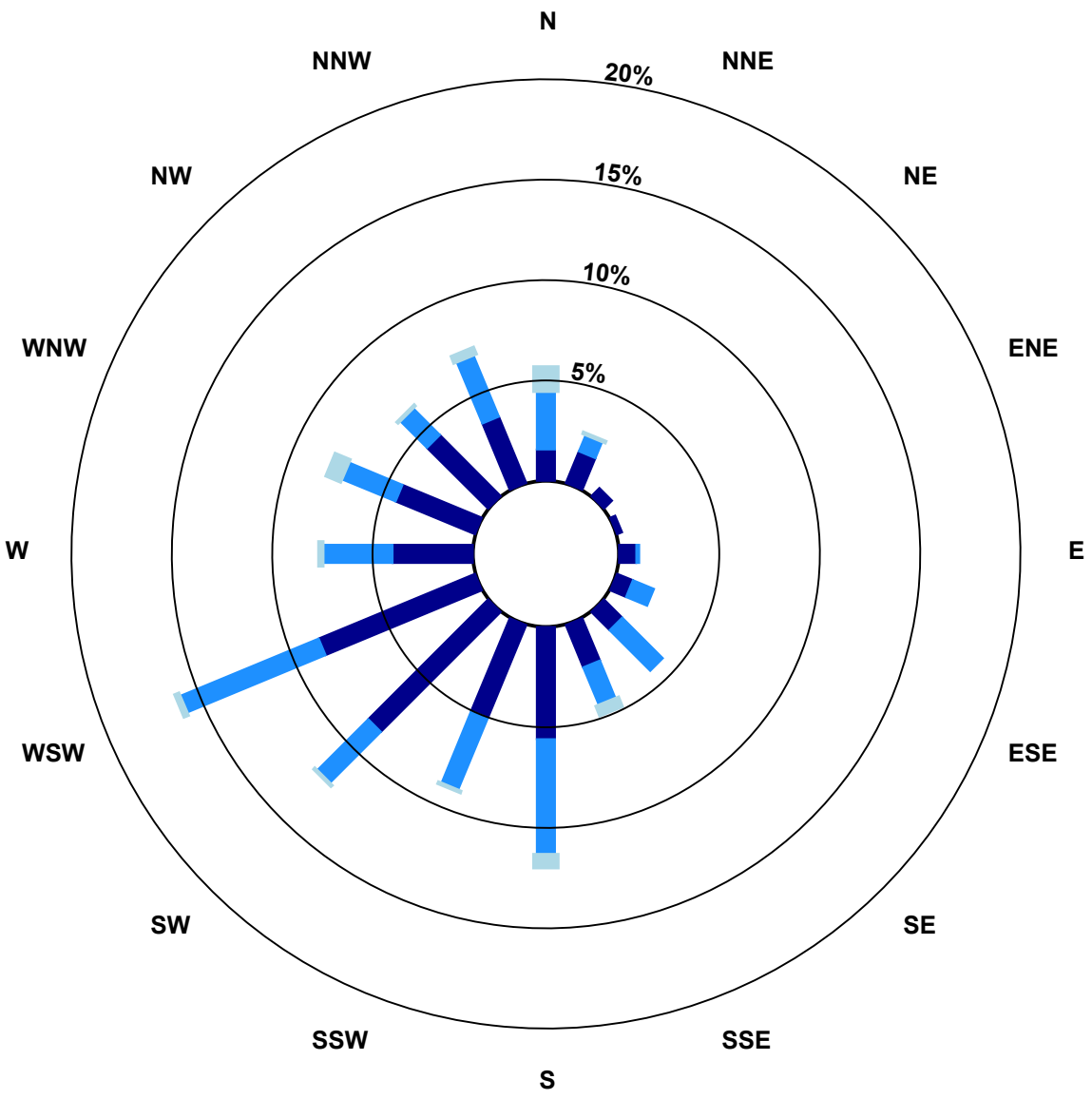
Total Number of Hours: 720

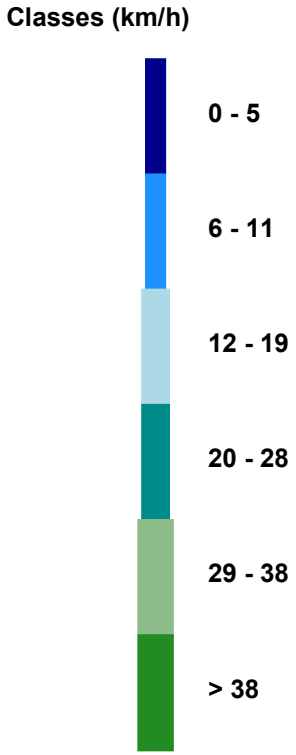
Wood Buffalo Environmental Association

Wind Rose Sep 2024

Wind Speed 10m (WS10) - km/h

Fort McKay South





Total Number of Valid Hours: 699

Wood Buffalo Environmental Association

Summary of Hour Averages

Wind Direction 10m (WD10) - deg

Fort McKay South - September 2024

Direction of Maximum Speed: 8 deg on Sep 20 14:00
Direction of Maximum Daily Speed Average: 271.3 deg on Sep 30

Direction of Minimum Speed: 174 deg on Sep 4 02:00
Direction of Minimum Daily Speed Average: 0.7 deg on Sep 12

Monthly Average Direction: 243.0 deg

Hours in Service:	720
Hours of Data:	699
Hours of Missing Data:	21
Percent Operational Time:	97.1

Day	Hourly Period Ending At (MST)																								Daily
	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24	Average
1-Sep	188	174	193	204	198	213	190	161	160	144	143	92	185	210	227	233	229	242	214	234	241	UO	329	276	197.8
2-Sep	201	207	233	273	248	244	195	143	136	143	165	177	186	207	232	237	246	237	234	325	340	11	12	3	244.8
3-Sep	356	358	355	355	329	255	260	332	360	8	2	5	2	15	13	6	24	30	16	347	306	325	315	UO	358.9
4-Sep	239	174	245	253	234	218	239	250	257	286	283	256	225	330	330	341	291	292	271	250	246	252	246	263	269.3
5-Sep	323	301	291	252	297	197	184	183	169	113	121	133	145	156	158	150	140	149	165	168	176	172	172	175	163.3
6-Sep	178	179	203	195	194	191	173	168	190	199	228	219	204	181	178	187	182	199	143	176	215	283	274	289	194.5
7-Sep	206	201	173	171	231	210	204	173	138	140	131	135	177	196	221	234	236	212	218	232	230	240	258	255	206.7
8-Sep	287	186	224	245	210	214	250	165	128	85	141	137	121	95	19	134	23	333	326	343	345	328	346	345	13.8
9-Sep	349	311	330	11	352	344	335	342	328	347	220	290	306	277	256	247	234	244	262	276	263	248	228	250	278.8
10-Sep	257	256	264	257	254	242	233	225	213	203	207	226	241	272	220	214	284	291	239	259	283	284	290	295	244.7
11-Sep	267	247	270	219	273	219	243	356	38	58	89	122	12	0	53	31	1	339	300	294	251	UO	226	UO	346.3
12-Sep	276	265	283	248	192	183	180	341	355	351	15	27	12	102	118	91	118	133	238	UO	UO	213	244	203	101.3
13-Sep	UO	243	335	307	258	277	296	326	338	346	1	351	353	357	5	345	336	340	333	332	333	326	295	295	335.6
14-Sep	281	278	267	272	255	253	253	248	251	257	259	250	203	191	46	291	286	317	292	344	312	276	243	340	263.7
15-Sep	322	320	330	UO	263	293	UO	301	355	30	20	40	29	109	157	116	119	167	247	UO	225	273	218	212	67.8
16-Sep	220	206	UO	225	194	192	182	180	168	192	188	205	240	234	238	239	244	242	214	224	217	226	230	191	215.8
17-Sep	182	196	215	215	218	189	171	156	175	175	177	173	158	161	182	171	169	147	259	243	229	210	199	191	175.9
18-Sep	188	UO	257	UO	192	189	191	177	201	297	290	313	296	299	292	297	326	320	257	267	230	228	278	178	280.9
19-Sep	175	168	214	183	239	218	230	170	126	134	105	116	140	146	174	188	168	187	262	279	254	288	324	337	168.5
20-Sep	UO	320	263	323	312	UO	294	261	256	354	334	340	2	8	9	0	347	346	340	329	307	316	323	288	342.9
21-Sep	240	232	237	187	192	222	222	215	203	156	126	119	136	148	144	168	170	173	160	172	218	154	171	170	162.5
22-Sep	184	327	305	257	UO	239	243	179	128	163	156	183	192	157	128	101	107	331	348	310	241	308	316	311	176.2
23-Sep	333	222	307	249	235	252	UO	296	252	231	88	192	136	171	155	145	183	173	179	175	150	161	189	199	175.3
24-Sep	UO	UO	UO	227	209	211	322	325	249	246	251	269	280	293	298	310	319	293	250	234	239	216	211	344	275.5
25-Sep	237	205	254	283	318	232	351	340	14	76	18	222	202	182	178	185	188	188	193	216	281	252	266	253	214.7
26-Sep	247	273	292	306	287	270	256	253	256	258	258	269	273	277	322	214	197	287	253	244	254	250	217	135	265.1
27-Sep	256	234	UO	176	304	244	198	227	216	246	217	195	196	205	207	224	188	193	188	185	184	186	188	195	200.1
28-Sep	210	219	223	244	253	276	262	236	237	250	254	247	263	242	257	260	187	223	235	217	220	273	247	247	243.4
29-Sep	277	310	239	310	275	295	337	342	353	354	358	7	14	3	5	358	343	330	305	286	299	312	355	276	341.5
30-Sep	282	275	277	267	285	227	234	222	170	215	270	285	289	292	295	294	299	306	249	236	245	246	247	248	271.3
	252.3	248.3	263.1	255.5	248.3	231.7	231.4	224.4	199.7	208.4	202.3	224.7	226.7	238.8	249.9	238.0	251.9	253.0	246.4	257.0	258.6	260.7	256.1	266.5	
	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 10m (WD10) - deg

Fort McKay South - September 2024

Number of Exceedences (AAAQO): 1-hr: 0 24-hr: 0
Maximum Value: 97 deg on Sep 14 15:00

Minimum Value: 6 deg on Sep 30 21:00

Percentiles: P_1 = 10 P_{10} = 16 Q_1 = 21 Median = 30 Q_3 = 47 P_{90} = 65 P_{99} = 91

Hours in Service:	720
Hours of Data:	699
Hours of Missing Data:	21
Hours of Calibration:	0
Percent Operational Time:	97.1

Day	Hourly Period Ending At (MST)																								Daily
	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24	Maximum
1-Sep	12	19	15	14	18	12	15	18	18	22	19	45	40	33	32	30	32	26	18	6	7	UO	27	68	68
2-Sep	44	29	65	39	11	28	28	19	16	18	22	29	20	32	31	30	33	26	21	25	26	21	22	19	65
3-Sep	19	18	18	15	19	66	54	33	22	22	22	19	20	30	24	22	23	26	29	43	21	18	16	UO	66
4-Sep	37	94	24	27	22	42	33	22	31	40	52	53	64	36	24	34	36	30	19	8	11	16	15	36	94
5-Sep	17	17	36	23	75	78	58	32	45	41	51	30	30	22	23	19	15	14	11	12	11	10	10	11	78
6-Sep	10	12	18	16	11	10	47	16	22	26	41	28	22	13	14	16	16	42	91	80	86	54	42	66	91
7-Sep	47	88	76	69	40	33	27	19	19	18	26	20	32	28	36	29	31	22	21	20	19	18	19	22	88
8-Sep	59	57	71	54	25	47	50	22	23	35	27	35	31	44	29	55	41	22	17	15	15	37	14	16	71
9-Sep	83	95	70	90	68	28	24	25	35	64	83	36	37	32	36	31	29	26	31	27	31	37	24	24	95
10-Sep	24	24	30	21	18	18	20	24	33	38	37	30	40	49	22	25	35	32	15	54	41	56	60	24	60
11-Sep	50	37	55	42	34	44	61	32	57	75	96	63	73	76	83	38	17	21	27	31	27	UO	23	UO	96
12-Sep	32	32	49	53	31	12	25	15	24	18	42	23	31	41	23	32	30	17	67	UO	UO	32	32	48	67
13-Sep	UO	51	16	43	57	53	31	23	20	30	27	20	23	20	18	17	17	15	15	14	16	16	24	21	57
14-Sep	28	28	22	29	33	16	21	52	60	45	68	86	44	34	97	36	31	14	17	21	28	43	13	26	97
15-Sep	19	24	18	UO	46	62	UO	90	89	43	33	49	51	64	47	25	21	70	44	UO	62	40	46	51	90
16-Sep	51	49	UO	59	24	19	11	16	32	18	17	28	30	32	38	30	25	26	11	18	17	21	19	65	65
17-Sep	61	68	18	61	56	32	56	18	14	19	24	25	34	39	39	34	26	18	41	18	66	32	27	32	68
18-Sep	32	UO	73	UO	74	27	21	13	50	38	69	26	40	38	39	33	32	17	33	63	33	69	58	86	86
19-Sep	15	46	25	57	63	25	18	30	24	20	19	26	49	63	50	17	52	64	69	65	34	28	28	11	69
20-Sep	UO	33	27	20	25	UO	28	37	24	72	22	30	52	21	21	20	19	17	16	16	18	28	26	55	72
21-Sep	32	44	62	77	23	39	51	49	52	31	39	24	25	27	29	16	22	26	19	23	67	43	15	18	77
22-Sep	81	19	43	56	UO	27	59	79	20	53	39	39	49	69	60	25	39	19	16	27	26	52	34	27	81
23-Sep	44	56	20	27	52	56	UO	64	48	91	90	63	40	34	22	14	20	9	15	14	21	27	11	77	91
24-Sep	UO	UO	UO	59	31	61	68	61	61	26	28	33	36	35	37	26	26	34	16	47	23	47	65	50	68
25-Sep	88	46	72	70	59	61	89	65	94	93	76	75	22	19	16	29	21	15	13	56	47	16	25	30	94
26-Sep	20	24	25	29	62	39	22	51	70	22	24	33	32	47	38	47	61	46	21	18	62	35	68	84	84
27-Sep	48	42	UO	74	90	54	33	34	30	19	34	34	29	48	34	36	19	14	12	12	60	12	12	17	90
28-Sep	24	27	31	31	31	32	34	28	31	30	30	30	39	36	46	43	47	50	23	47	48	60	73	66	73
29-Sep	59	32	68	72	55	37	22	13	14	24	19	23	21	21	19	21	17	21	13	19	18	31	78	27	78
30-Sep	26	25	24	21	70	24	12	25	44	44	49	35	37	43	34	31	29	27	24	8	6	8	11	13	70
	88	95	76	90	90	78	89	90	94	93	96	86	73	76	97	55	61	70	91	80	86	69	78	86	
	Diurnal Maximum																								

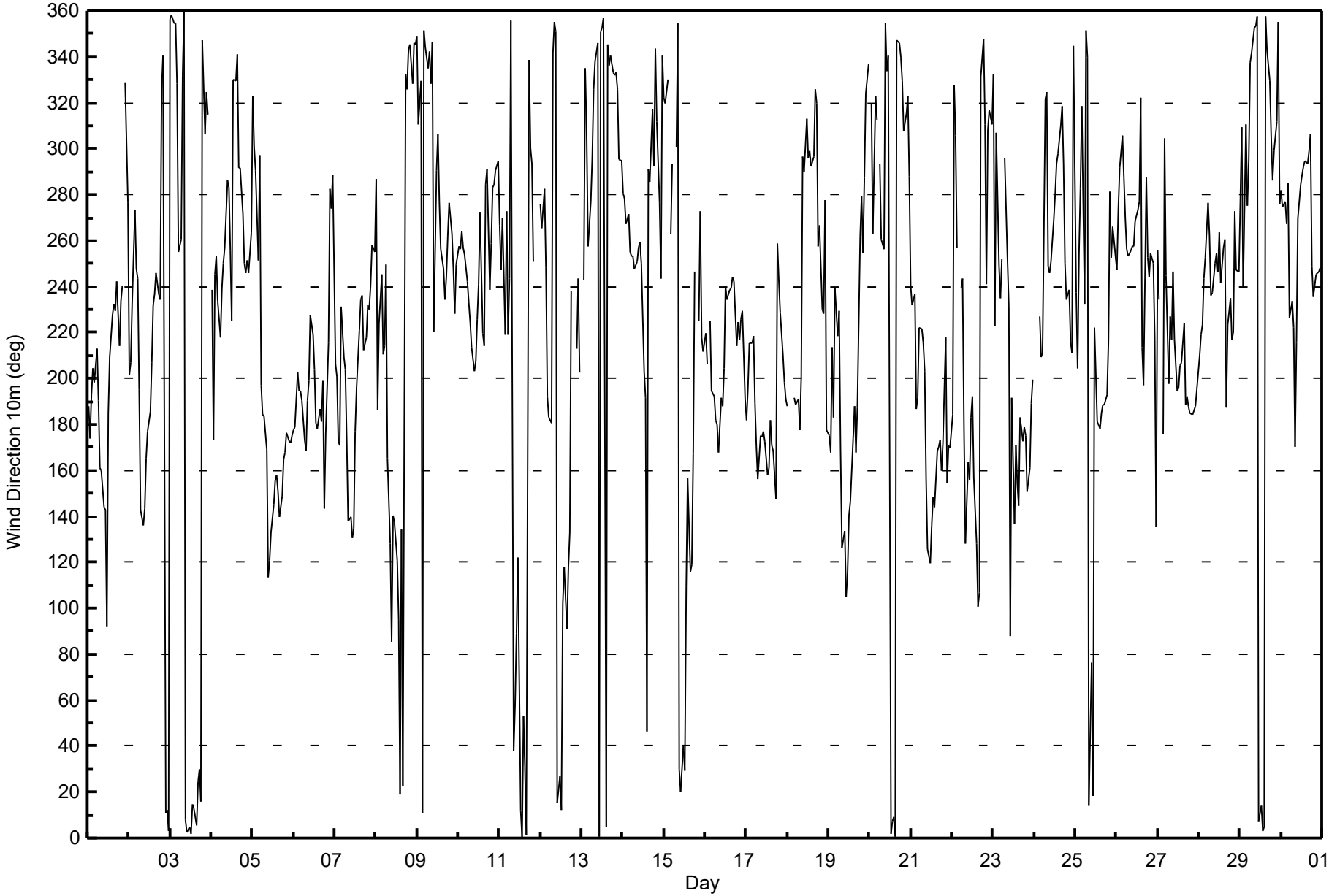
UO - Unstable Operation

Wood Buffalo Environmental Association

Hourly Averages

Wind Direction 10m (WD10) - deg

Fort McKay South - September 2024



WOOD BUFFALO ENVIRONMENTAL ASSOCIATION

CONTINUOUS AMBIENT AIR QUALITY
MONITORING PROGRAM
MONTHLY REPORT

AMS14
ANZAC
SEPTEMBER 2024

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

October 31, 2024

WOOD BUFFALO ENVIRONMENTAL ASSOCIATION - ANZAC (AMS14)
SEPTEMBER 2024

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	682	34	38	99.44	7.7	0	1.4	0
TRS(ppb) Average	680	36	40	99.44	1.3	0	0.5	0
THC(ppm) Average	669	34	51	97.64	2.8	-	2.3	-
NMHC(ppm) Average	669	34	51	97.64	0.476	-	0.094	-
CH4(ppm) Average	669	34	51	97.64	2.5	-	2.2	-
NO2(ppb) Average	681	35	39	99.44	16	0	7.7	-
NO(ppb) Average	681	35	39	99.44	11	-	2.8	-
NOX(ppb) Average	681	35	39	99.44	23.7	-	10.5	-
O3(ppb) Average	682	34	38	99.44	49.4	0	27.6	-
PM2.5(ug/m3) Average	716	1	4	99.58	156.3	0	109.3	4
AT 2m(C) Average	697	0	23	96.81	31.2	-	20.9	-
RH(%) Average	607	0	113	84.31	100	-	89.9	-
WS(km/h) Average	720	0	0	100	27	-	20	-
WD(deg) Average	720	0	0	100	-	-	-	-
Leaf Wetness (% of range) Average	720	0	0	100	49.3	-	22.4	-

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

WOOD BUFFALO ENVIRONMENTAL ASSOCIATION - ANZAC (AMS14)
SEPTEMBER 2024

MONTHLY SUMMARY FOR AIR QUALITY/ METEOROLOGICAL MONITORING MEASUREMENTS

					Percentile						
Parameter	Number	Mean	StnDev	Total	Min	P10	Q1	Median	Q3	P90	Max
SO2(ppb) Average	682	0.35	0.6	-	0	0	0.1	0.2	0.4	0.7	7.7
TRS(ppb) Average	680	0.16	0.1	-	0	0.1	0.1	0.1	0.2	0.3	1.3
THC(ppm) Average	669	2.04	0.1	-	1.9	2	2	2	2.1	2.1	2.8
NMHC (ppm) Average	669	0.015	0.049	-	0	0	0	0	0	0	0.476
CH4(ppm) Average	669	2.02	0.1	-	1.9	2	2	2	2.1	2.1	2.5
NO2(ppb) Average	681	1.52	1.9	-	0.2	0.4	0.6	0.9	1.5	3	16
NO(ppb) Average	681	0.41	1.2	-	0	0	0	0.1	0.2	0.8	11
NOX(ppb) Average	681	1.93	3	-	0.2	0.4	0.6	1	1.7	3.8	23.7
O3(ppb) Average	682	19.74	9.5	-	0	7.1	12.5	20	26.4	31.9	49.4
PM2.5(ug/m3) Average	716	18.95	33.1	-	0.7	1.8	2.9	5.3	13.3	63.8	156.3
Temperature 2 m (C) Average	697	12.36	5.8	-	-0.6	5.9	8.6	11.2	15.9	20	31.2
Relative Humidity (%) Average	607	70.16	18.9	-	21	42.1	55.7	72.7	85.2	94.3	100
Wind Speed 20 m (km/h) Average	720	10.3	5	-	1	5	7	9	13	17	27
Wind Direction 20 m (deg) Average	720	250	-	-	-	-	-	-	-	-	-
Leaf Wetness (% of range) Average	720	5.66	10.9	-	0	0	0	0	4.5	24.4	49.3

WOOD BUFFALO ENVIRONMENTAL ASSOCIATION - ANZAC (AMS14)
SEPTEMBER 2024

OPERATIONAL NOTES

Parameter	Period Start	Period End	Duration (Hours)	Notes
AIR QUALITY ANALYZERS	05 Sep 2024 16:00	05 Sep 2024 18:00	3	Station power failure
ALL GASEOUS ANALYZERS	23 Sep 2024 13:00	23 Sep 2024 13:00	1	Maintenance - sample manifold cleaned
THC/NMHC/CH4	21 Sep 2024 04:00	21 Sep 2024 10:00	7	Unstable Operation - excessive baseline noise
THC/NMHC/CH4	21 Sep 2024 15:00	21 Sep 2024 18:00	4	Maintenance - retention timing adjusted
THC/NMHC/CH4	27 Sep 2024 09:00	27 Sep 2024 10:00	2	Maintenance - replaced support gas cylinder
Relative Humidity, Temperature 2 m	16 Sep 2024 13:00	16 Sep 2024 13:00	1	Maintenance - sensor replaced
Relative Humidity, Temperature 2 m	16 Sep 2024 14:00	17 Sep 2024 10:00	21	Flat line in sensor output signal
Relative Humidity, Temperature 2 m	17 Sep 2024 11:00	17 Sep 2024 11:00	1	Maintenance - sensor replaced
Relative Humidity	03 Sep 2024 23:00	16 Sep 2024 05:00	90	Sensor operated out of range

Wood Buffalo Environmental Association

Summary of Hour Averages

Sulphur Dioxide (SO_2) - ppb

Anzac - September 2024

Number of Exceedences (AAAQO): 1-hr: 0 24-hr: 0
Maximum Value: 7.7 ppb on Sep 20 12:00 Maximum Daily Average: 1.4 ppb on Sep 20

Minimum Value: 0.0 ppb on Sep 2 18:00
Maximum Diurnal Average: 0.8 ppb at hour 12
Monthly Average: 0.35 ppb

Minimum Daily Average: 0.0 ppb on Sep 12
Minimum Diurnal Average: 0.2 ppb at hour 2
Percentiles: P_1 = 0.0 P_{10} = 0.0 Q_1 = 0.1 Median = 0.2 Q_3 = 0.4 P_{90} = 0.7 P_{99} = 2.3

Hours in Service:	720
Hours of Data:	682
Hours of Missing Data:	38
Hours of Calibration:	34
Percent Operational Time:	99.4

Day	Hourly Period Ending At (MST)																								Daily	Daily
	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24	Average	Maximum
1-Sep	0.2	0.2	0.1	0.3	Z	0.3	0.2	0.2	0.3	0.4	0.3	0.3	0.1	0.2	0.5	0.2	0.2	0.1	0.2	0.1	0.1	0.2	0.4	0.5	0.2	0.5
2-Sep	0.4	0.3	0.4	0.7	0.5	Z	0.4	0.5	0.5	0.4	0.6	0.4	0.7	1.0	0.3	0.1	0.1	0.0	0.1	0.1	0.1	2.0	0.3	0.1	0.4	2.0
3-Sep	Z	0.1	0.0	0.0	0.0	0.1	0.0	0.1	0.0	0.0	C	C	C	C	0.0	0.1	0.4	0.4	0.8	0.5	0.3	0.1	0.2	0.3	0.2	0.8
4-Sep	0.3	Z	0.2	0.2	0.2	0.3	0.2	0.2	0.3	0.1	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	0.0	0.2	0.3
5-Sep	0.1	0.1	Z	1.7	1.9	0.4	0.2	0.5	0.7	0.8	1.7	0.6	0.3	0.4	0.5	PF	PF	PF	0.1	0.1	0.1	0.4	0.4	0.3	0.5	1.9
6-Sep	0.5	0.4	0.3	Z	0.3	0.7	0.9	1.3	1.0	0.7	1.0	1.1	1.9	1.0	1.3	1.4	0.8	0.6	0.5	0.4	0.5	0.6	0.6	0.6	0.8	1.9
7-Sep	0.6	0.5	0.5	0.6	Z	0.2	0.2	1.0	1.6	2.3	1.1	0.7	0.8	0.9	0.3	0.2	0.3	1.3	1.2	0.3	0.2	0.3	0.4	0.3	0.7	2.3
8-Sep	0.3	0.4	0.2	0.0	0.1	Z	0.2	0.5	0.9	1.4	1.3	0.8	0.9	0.4	0.4	0.5	1.0	0.5	0.2	0.1	0.3	0.4	1.0	0.7	0.5	1.4
9-Sep	Z	0.6	1.2	1.3	0.7	0.6	0.5	0.7	0.6	1.1	1.5	0.2	0.1	0.1	0.1	0.1	0.0	0.1	0.0	0.0	0.1	0.0	0.1	0.0	0.4	1.5
10-Sep	0.0	Z	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	0.1	0.0	0.0	0.2	0.1	0.0	0.0	0.0	0.2
11-Sep	0.0	0.0	Z	0.1	0.0	0.0	0.0	0.1	0.5	2.1	2.7	1.9	0.8	0.4	0.4	0.6	0.6	0.3	0.3	0.4	0.4	0.3	0.4	0.1	0.5	2.7
12-Sep	0.1	0.0	0.2	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	0.1	0.1	0.1	0.1	0.0	0.0	0.0	0.0	0.2
13-Sep	0.0	0.0	0.0	0.0	Z	0.1	0.0	0.1	0.0	0.2	0.2	0.3	0.2	0.2	1.4	0.6	0.1	0.1	0.8	1.1	0.5	0.3	0.2	0.3	0.3	1.4
14-Sep	0.8	0.6	0.2	0.2	0.3	Z	0.3	0.3	0.2	0.1	0.0	0.0	0.2	0.1	0.1	0.2	0.2	0.3	0.2	0.4	0.3	0.4	0.3	0.2	0.3	0.8
15-Sep	Z	0.2	0.2	0.2	0.4	0.5	0.4	0.7	1.2	2.6	2.2	1.5	2.4	1.6	0.8	0.8	0.6	0.5	0.4	0.4	0.3	0.2	0.2	0.2	0.8	2.6
16-Sep	0.2	Z	0.4	0.2	0.1	0.3	0.4	0.4	0.3	0.2	0.4	0.5	0.5	0.3	0.3	0.4	0.3	0.3	0.3	0.6	0.8	0.5	0.7	0.6	0.4	0.8
17-Sep	0.5	0.3	Z	0.3	0.2	0.2	0.2	0.3	0.5	0.7	0.6	0.4	0.5	0.4	0.2	0.2	0.2	0.4	0.4	0.3	0.4	0.2	0.2	0.2	0.3	0.7
18-Sep	0.3	0.2	0.3	Z	0.3	0.3	0.2	0.4	1.0	0.5	0.3	0.2	0.3	0.3	0.1	0.1	0.1	0.1	0.1	0.2	0.1	0.1	0.0	0.0	0.2	1.0
19-Sep	0.0	0.0	0.1	0.1	Z	0.0	0.0	0.1	0.2	0.7	0.6	0.3	0.1	0.2	0.2	0.3	0.2	0.2	0.1	0.3	0.2	0.2	0.1	0.0	0.2	0.7
20-Sep	0.1	0.0	0.1	0.3	0.2	Z	0.4	0.4	0.2	0.2	1.1	7.7	7.7	4.3	3.0	2.3	1.3	0.1	0.2	0.4	0.4	0.2	0.2	0.3	1.4	7.7
21-Sep	Z	0.2	0.1	0.0	0.0	0.0	0.0	0.0	0.3	0.5	0.4	0.7	1.1	0.9	0.7	0.6	0.5	0.3	0.1	0.2	0.2	0.1	0.4	0.5	0.3	1.1
22-Sep	0.2	Z	0.3	0.3	0.1	0.1	0.1	0.2	0.7	0.8	0.6	0.7	1.0	0.5	0.2	0.2	0.2	0.2	0.2	0.2	0.1	0.2	0.2	0.2	0.3	1.0
23-Sep	0.2	0.1	Z	0.2	0.2	0.0	0.1	0.3	0.5	0.8	1.0	2.0	M	0.4	0.7	0.5	0.4	0.1	0.0	0.0	0.0	0.0	0.0	0.0	0.3	2.0
24-Sep	0.0	0.0	0.0	Z	0.0	0.0	0.1	0.1	0.1	0.1	0.1	0.1	0.2	0.0	0.0	0.0	0.1	0.1	0.0	0.0	0.1	0.0	0.1	0.1	0.1	0.2
25-Sep	0.1	0.1	0.1	0.1	Z	0.4	1.1	0.7	0.2	0.2	0.4	0.5	0.5	0.6	0.4	0.3	0.2	0.2	0.1	0.1	0.5	0.2	0.2	0.1	0.3	1.1
26-Sep	0.1	0.1	0.2	0.1	0.2	Z	0.1	0.1	0.1	0.1	0.2	0.1	0.0	0.1	0.1	0.2	0.1	0.1	0.0	0.1	0.1	0.3	0.3	0.2	0.1	0.3
27-Sep	Z	0.2	0.2	0.1	0.1	0.1	0.1	0.0	0.0	0.1	0.0	0.1	0.0	0.0	0.2	0.2	0.2	0.1	0.1	0.1	0.1	0.1	0.1	0.0	0.1	0.2
28-Sep	0.1	Z	0.1	0.0	0.0	0.1	0.1	0.0	0.0	0.0	0.0	0.0	0.0	0.1	0.1	0.1	0.0	0.1	0.0	0.0	0.0	0.0	0.1	0.0	0.0	0.1
29-Sep	0.1	0.0	Z	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	0.2	0.1	0.1	0.2	0.1	0.2	0.1	0.2
30-Sep	0.2	0.2	0.2	Z	0.3	0.3	0.3	0.3	0.2	0.1	0.2	0.2	0.2	0.3	0.2	0.2	0.2	0.2	0.3	0.2	0.3	0.4	0.4	0.3	0.2	0.4
	0.2	0.2	0.2	0.3	0.2	0.2	0.2	0.3	0.4	0.6	0.6	0.8	0.7	0.5	0.4	0.4	0.3	0.2	0.2	0.2	0.2	0.3	0.3	0.2	Diurnal Average	
	0.8	0.6	1.2	1.7	1.9	0.7	1.1	1.3	1.6	2.6	2.7	7.7	7.7	4.3	3.0	2.3	1.3	1.3	1.2	1.1	0.8	2.0	1.0	0.7	Diurnal Maximum	

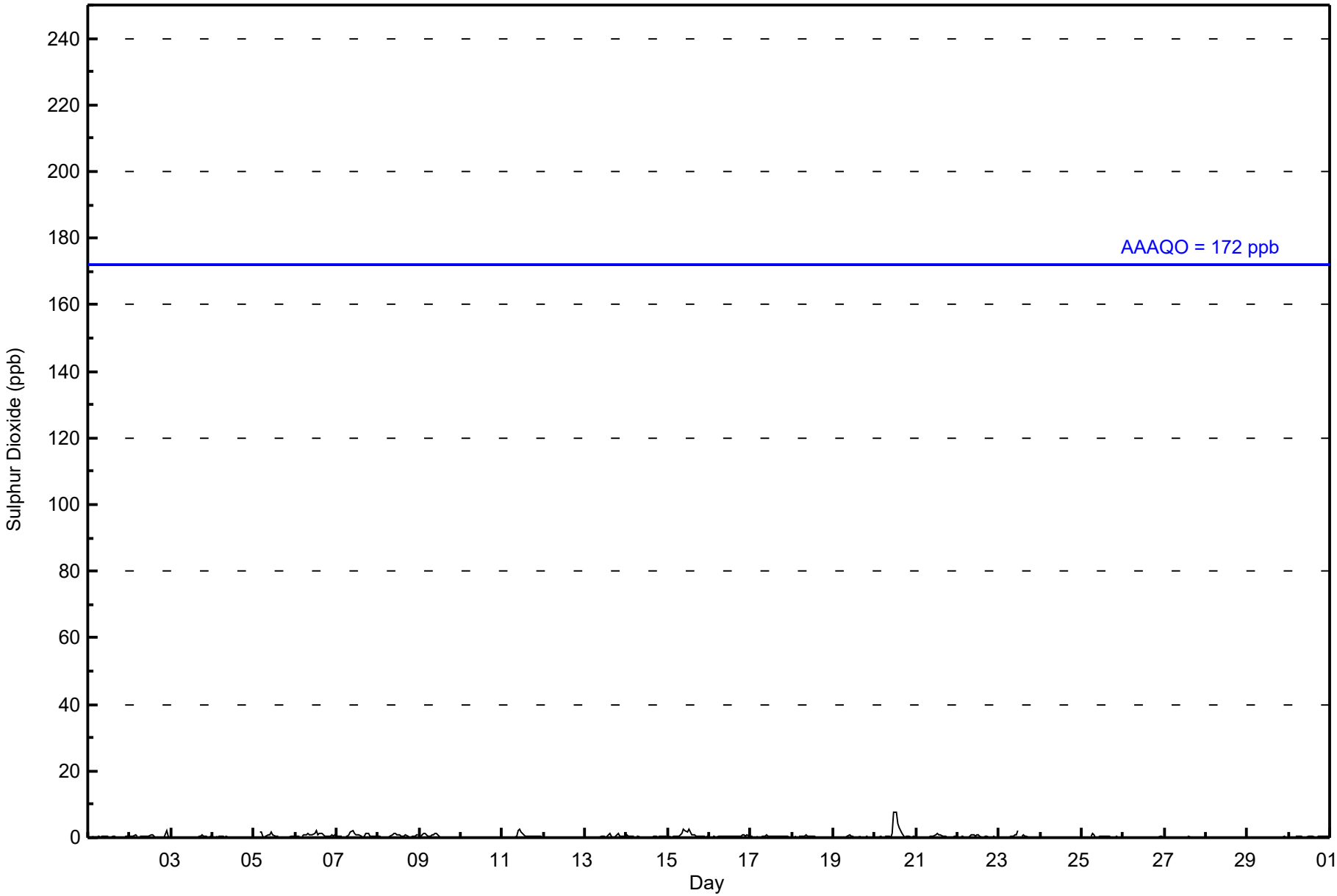
Z - zerospan C - Calibration M - Maintenance PF - Power Failure
Alberta Ambient Air Quality Objectives (AAAQO): 1-hr 172 ppb 24-hr 48 ppb

Wood Buffalo Environmental Association

Hourly Averages

Sulphur Dioxide (SO_2) - ppb

Anzac - September 2024



Sulphur Dioxide (SO_2) - ppb
Anzac - September 2024

Concentration Ranges (ppb)	Number of Hours	%	Cumulative %
0 - 10	682	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: 682

Total Number of Hours: 720

Wood Buffalo Environmental Association

Frequency Distribution

Sulphur Dioxide (SO_2) - ppb

Anzac - September 2024

Concentration Ranges (ppb)	Wind Direction																
	N	NNE	NE	ENE	E	ESE	SE	SSE	S	SSW	SW	WSW	W	WNW	NW	NNW	**Totals**
0 - 10	16	12	13	2	2	12	34	73	46	35	52	48	101	160	49	27	682
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	16	12	13	2	2	12	34	73	46	35	52	48	101	160	49	27	682

Total Number of Valid Hours: 682

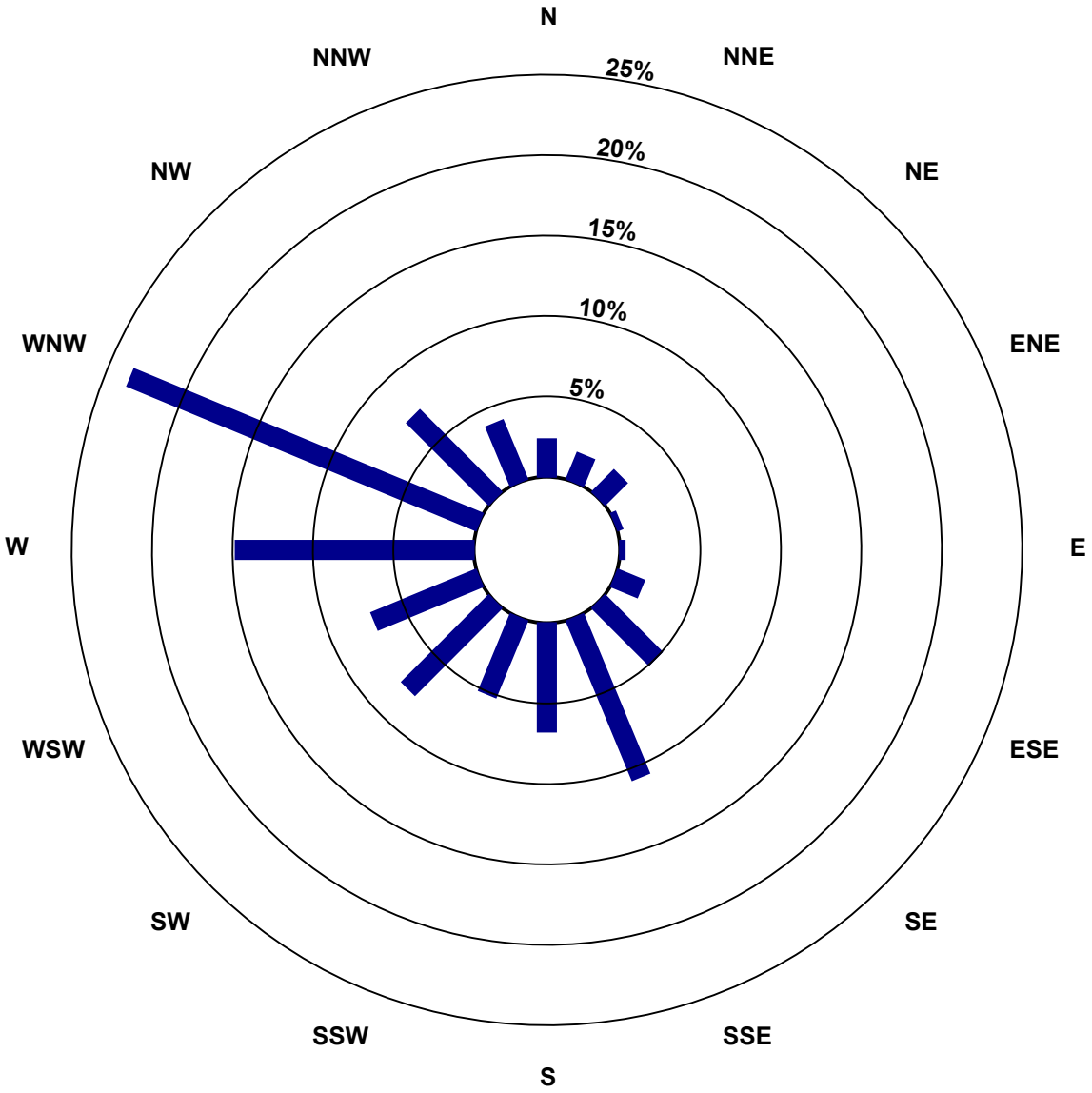
Total Number of Hours: 720

Wood Buffalo Environmental Association

Wind Rose Sep 2024

Sulphur Dioxide (SO_2) - ppb

Anzac



Classes (ppb)

0 - 10

11 - 20

21 - 60

61 - 110

111 - 172

> 172

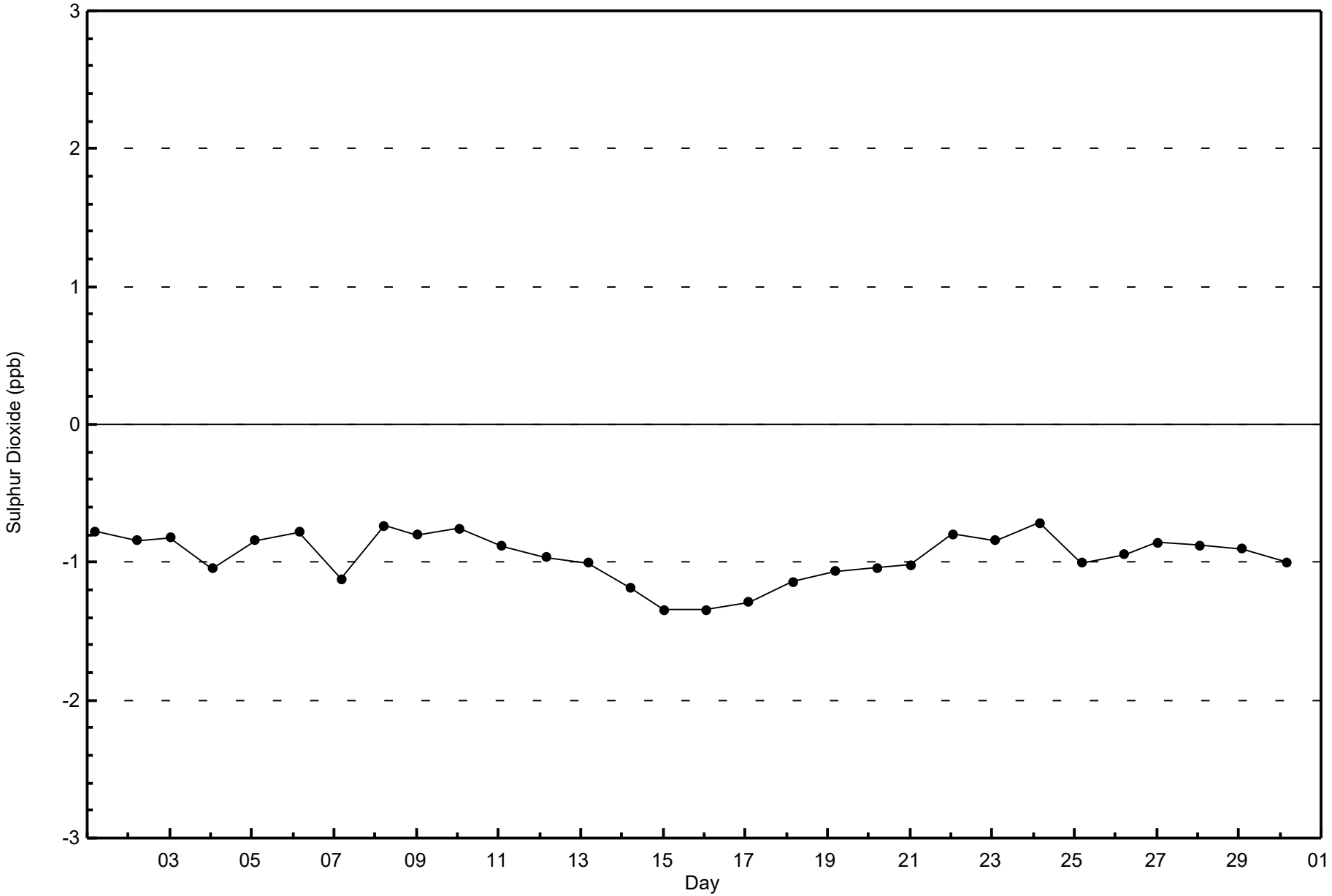
Total Number of Valid Hours: 682

Wood Buffalo Environmental Association

Zero Responses

Sulphur Dioxide (SO_2) - ppb

Anzac - September 2024

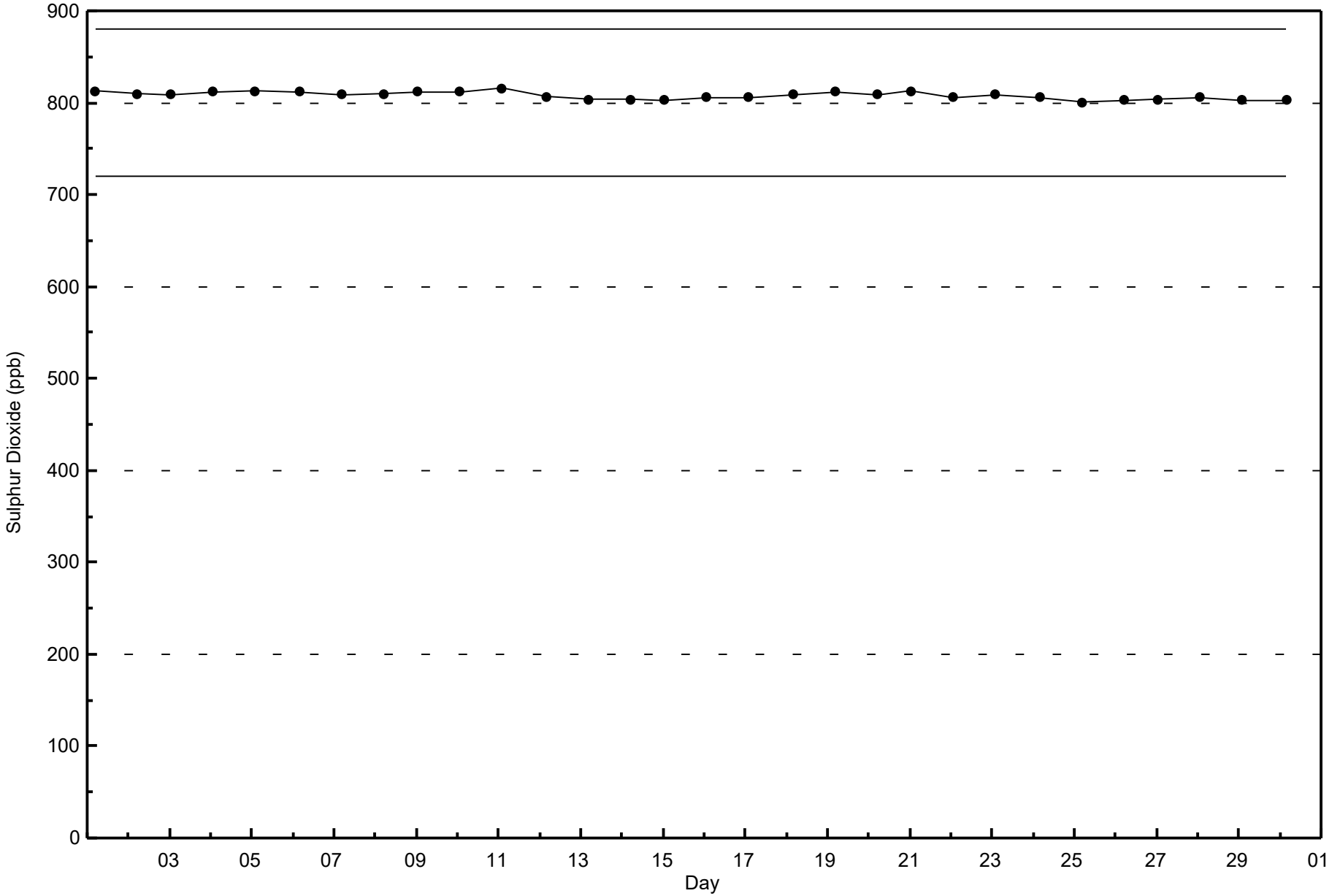


Wood Buffalo Environmental Association

Span Responses

Sulphur Dioxide (SO_2) - ppb

Anzac - September 2024



Wood Buffalo Environmental Association

Summary of Hour Averages

Total Reduced Sulphur (TRS) - ppb

Anzac - September 2024

Number of Exceedences (AAAQO): 1-hr: 0 24-hr: 0

Maximum Value: 1.3 ppb on Sep 1 15:00 Maximum Daily Average: 0.5 ppb on Sep 13

Minimum Value: 0.0 ppb on Sep 17 02:00 Minimum Daily Average: 0.1 ppb on Sep 16

Maximum Diurnal Average: 0.2 ppb at hour 11 Minimum Diurnal Average: 0.1 ppb at hour 2

Monthly Average: 0.16 ppb Percentiles: P_1 = 0.0 P_{10} = 0.1 Q_1 = 0.1 Median = 0.1 Q_3 = 0.2 P_{90} = 0.3 P_{99} = 1.0

Hours in Service:	720
Hours of Data:	680
Hours of Missing Data:	40
Hours of Calibration:	36
Percent Operational Time:	99.4

Day	Hourly Period Ending At (MST)																								Daily	Daily
	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24	Average	Maximum
1-Sep	0.1	0.1	0.1	0.1	0.1	Z	0.1	0.1	0.2	0.2	0.1	0.1	0.2	0.1	1.3	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.2	1.3
2-Sep	Z	0.1	0.1	0.1	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	0.1	0.1	0.1	0.1	0.2	0.2	0.2	0.1	0.3
3-Sep	0.2	Z	0.1	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	0.2	0.2	0.2	0.1	0.1	0.1	0.3	0.5	0.2	0.5
4-Sep	0.5	0.3	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	0.5
5-Sep	0.1	0.1	0.1	Z	0.2	0.2	0.1	0.2	0.2	0.2	0.3	0.2	0.1	0.1	0.1	PF	PF	PF	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.3
6-Sep	0.2	0.1	0.1	0.1	Z	0.1	0.2	0.2	0.2	0.2	0.2	0.2	0.2	0.2	0.4	0.5	0.5	0.4	0.4	0.3	0.2	0.2	0.2	0.2	0.2	0.5
7-Sep	0.2	0.2	0.2	0.2	0.2	Z	0.1	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	0.2	0.1	0.1	0.1	0.2	0.2
8-Sep	Z	0.1	0.2	0.2	0.1	0.2	0.1	0.2	0.7	0.2	0.2	0.2	0.2	0.2	0.1	0.1	0.1	0.1	0.1	0.1	0.7	0.5	0.2	0.2	0.2	0.7
9-Sep	0.2	Z	0.2	0.2	0.3	0.2	0.2	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	0.1	0.1	0.2	0.3
10-Sep	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	0.0	0.1	0.1
11-Sep	0.1	0.1	0.1	Z	0.0	0.1	0.1	0.2	0.5	0.2	0.3	0.2	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	0.5
12-Sep	0.1	0.1	0.2	0.2	Z	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	0.2	0.2	0.3
13-Sep	0.2	0.1	0.2	0.2	0.2	Z	1.0	1.2	1.3	1.0	1.0	0.8	0.7	0.6	0.8	1.0	0.4	0.2	0.6	0.3	0.3	0.2	0.3	0.2	0.5	1.3
14-Sep	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
15-Sep	0.1	Z	0.1	0.1	0.1	0.2	0.1	0.4	0.5	0.7	1.0	0.7	0.6	0.4	0.2	0.2	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.0	0.3	1.0
16-Sep	0.0	0.1	Z	0.0	0.0	0.1	0.1	0.0	0.0	0.0	0.1	0.0	0.0	0.1	0.1	0.1	0.0	0.1	0.1	0.1	0.1	0.1	0.0	0.1	0.1	0.1
17-Sep	0.0	0.0	0.0	Z	0.0	0.0	0.1	0.1	0.1	C	C	C	C	C	C	0.2	0.1	0.1	0.1	0.1	0.1	0.1	0.2	0.1	--	0.2
18-Sep	0.1	0.1	0.1	0.1	Z	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	0.2
19-Sep	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
20-Sep	Z	0.1	0.1	0.1	0.1	0.1	0.3	0.3	0.2	0.1	0.2	0.4	0.4	0.3	0.3	0.3	0.3	0.2	0.1	0.2	0.2	0.2	0.3	0.3	0.2	0.4
21-Sep	0.3	Z	0.3	0.3	0.2	0.2	0.2	0.2	0.2	0.2	0.1	0.2	0.1	0.1	0.1	0.2	0.3	0.4	0.1	0.1	0.1	0.1	0.6	0.4	0.2	0.6
22-Sep	0.3	0.1	Z	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.5	0.5	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	0.5
23-Sep	0.1	0.2	0.1	Z	0.2	0.2	0.2	0.2	0.3	0.2	0.2	0.2	M	0.2	0.3	0.3	0.2	0.2	0.2	0.1	0.1	0.1	0.1	0.1	0.2	0.3
24-Sep	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	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.2	0.1	0.2
25-Sep	0.1	0.2	0.1	0.3	0.4	Z	0.6	0.6	0.1	0.1	0.1	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	0.2	0.6
26-Sep	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	0.2	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.2
27-Sep	0.1	Z	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	0.2
28-Sep	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
29-Sep	0.1	0.1	0.2	Z	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	0.3	0.6	0.2	0.3	0.1	0.1	0.2	0.6
30-Sep	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	0.2
	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	0.1	0.1	0.1	0.1	0.1	0.1	0.2	0.1	Diurnal Average	
	0.5	0.3	0.3	0.3	0.4	0.2	1.0	1.2	1.3	1.0	1.0	0.8	0.7	0.6	1.3	1.0	0.5	0.4	0.6	0.6	0.7	0.5	0.6	0.5	Diurnal Maximum	

Z - zerospan C - Calibration M - Maintenance PF - Power Failure

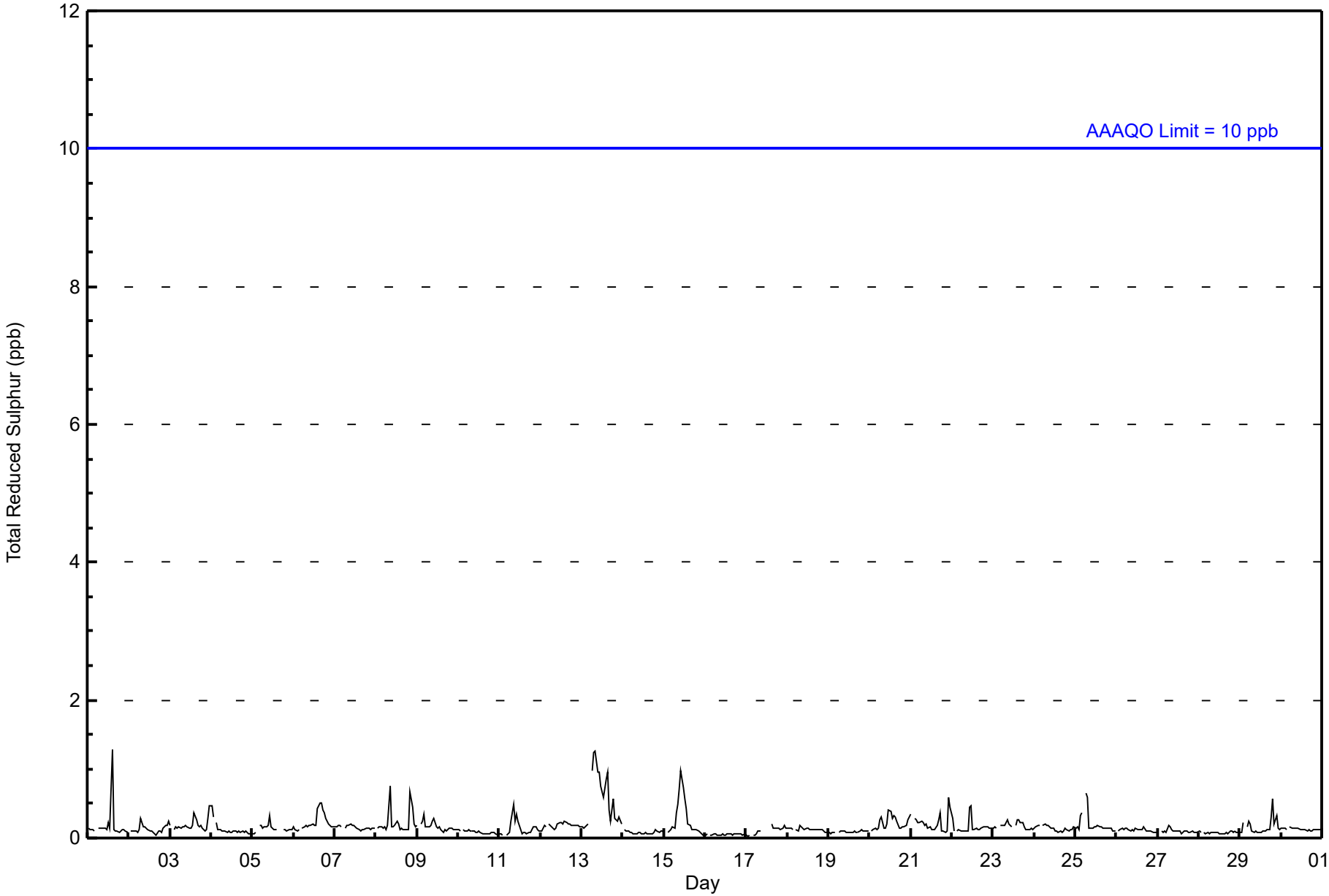
Alberta Ambient Air Quality Objectives (AAAQO): 1-hr 10 ppb 24-hr 3 ppb

Wood Buffalo Environmental Association

Hourly Averages

Total Reduced Sulphur (TRS) - ppb

Anzac - September 2024



Concentration Ranges (ppb)	Number of Hours	%	Cumulative %
0 - 2	680	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: 680

Total Number of Hours: 720

Wood Buffalo Environmental Association

Frequency Distribution

Total Reduced Sulphur (TRS) - ppb

Anzac - September 2024

Concentration Ranges (ppb)	Wind Direction																
	N	NNE	NE	ENE	E	ESE	SE	SSE	S	SSW	SW	WSW	W	WNW	NW	NNW	**Totals**
0 - 2	16	12	12	2	0	12	37	74	41	37	47	48	103	161	47	31	680
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	12	12	2	0	12	37	74	41	37	47	48	103	161	47	31	680

Total Number of Valid Hours: 680

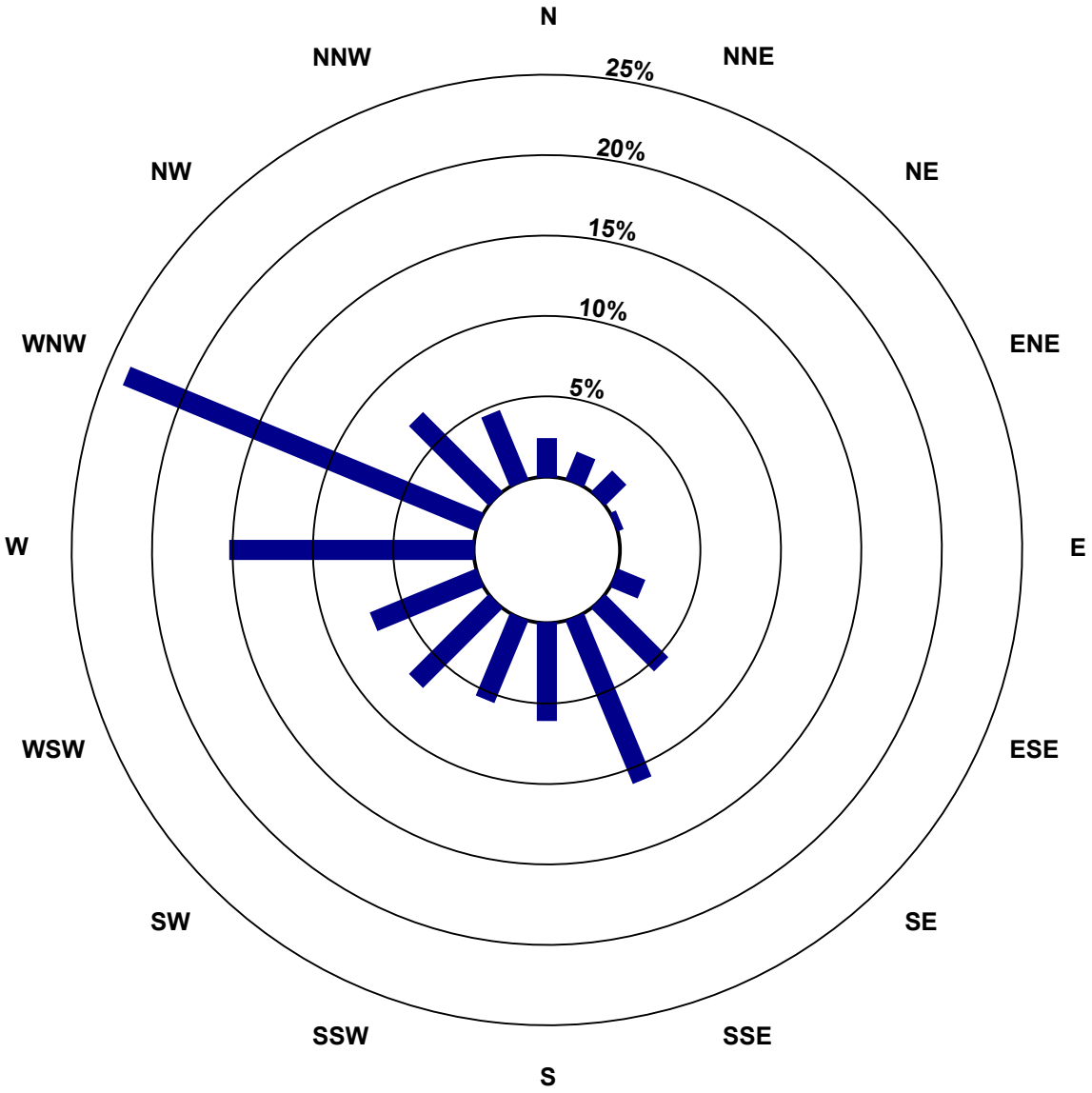
Total Number of Hours: 720

Wood Buffalo Environmental Association

Wind Rose Sep 2024

Total Reduced Sulphur (TRS) - ppb

Anzac



Classes (ppb)

0 - 2

3 - 4

5 - 7

8 - 11

> 11

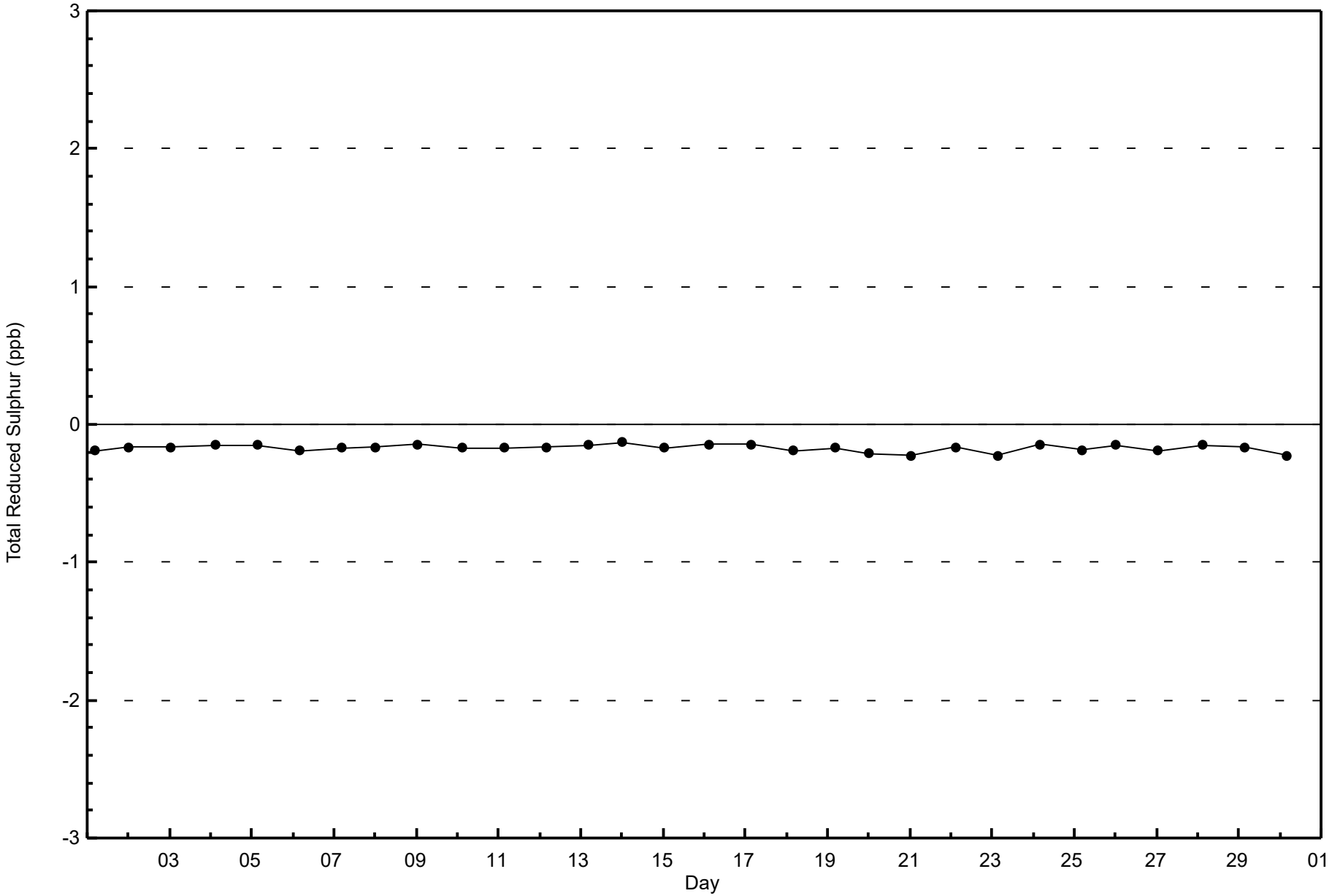
Total Number of Valid Hours: 680

Wood Buffalo Environmental Association

Zero Responses

Total Reduced Sulphur (TRS) - ppb

Anzac - September 2024

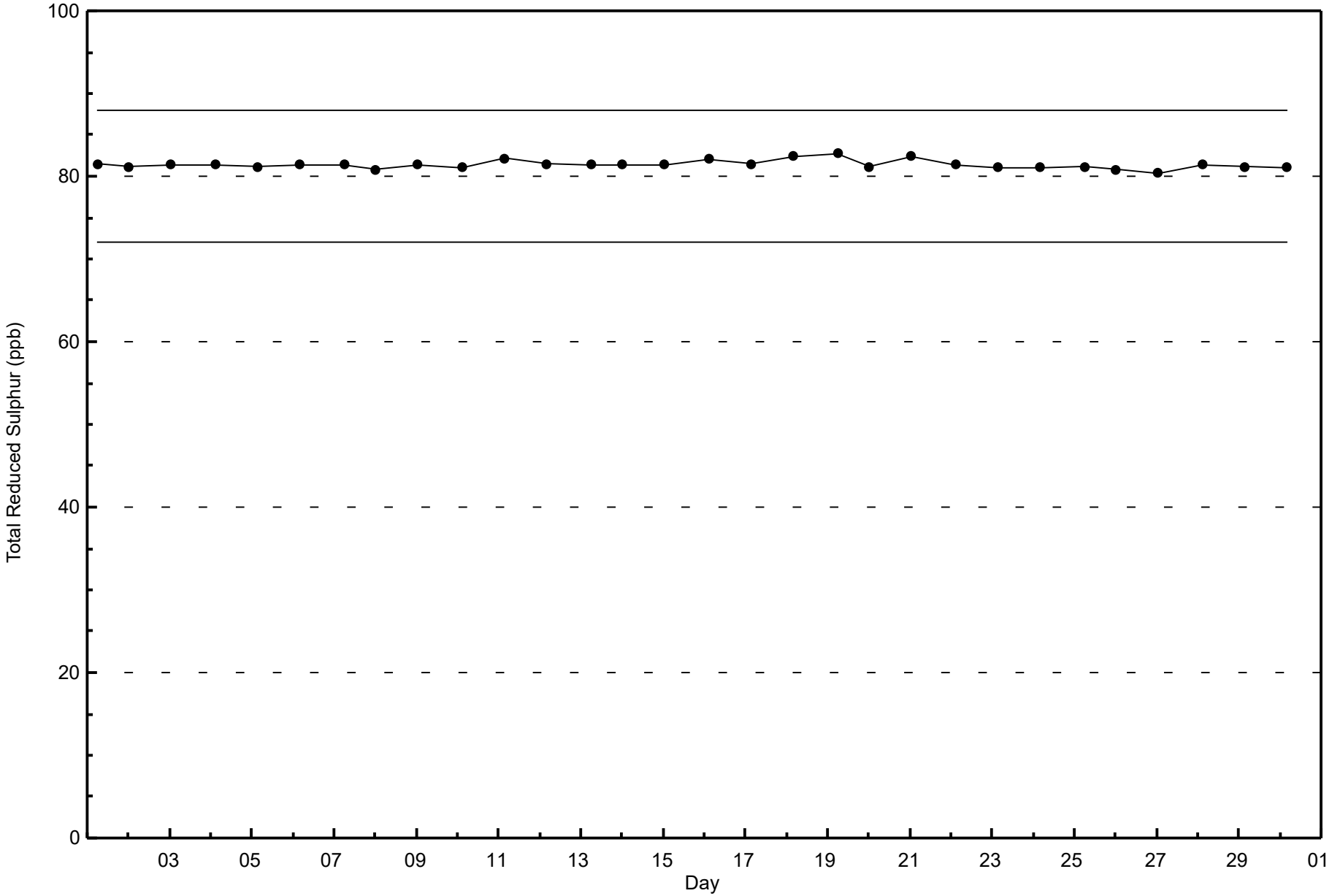


Wood Buffalo Environmental Association

Span Responses

Total Reduced Sulphur (TRS) - ppb

Anzac - September 2024



Wood Buffalo Environmental Association

Summary of Hour Averages

Total Hydrocarbons (THC) - ppm

Anzac - September 2024

Maximum Value: 2.8 ppm on Sep 8 09:00

Maximum Daily Average: 2.3 ppm on Sep 13

Minimum Value: 1.9 ppm on Sep 21 14:00

Minimum Daily Average: 1.9 ppm on Sep 19

Maximum Diurnal Average: 2.1 ppm at hour 9

Minimum Diurnal Average: 2.0 ppm at hour 18

Monthly Average: 2.04 ppm

Percentiles: P_1 = 1.9 P_{10} = 2.0 Q_1 = 2.0 Median = 2.0 Q_3 = 2.1 P_{90} = 2.1 P_{99} = 2.5

Hours in Service:	720
Hours of Data:	669
Hours of Missing Data:	51
Hours of Calibration:	34
Percent Operational Time:	97.6

Day	Hourly Period Ending At (MST)																								Daily	Daily
	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24	Average	Maximum
1-Sep	2.1	2.2	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	2.2
2-Sep	2.0	2.0	2.0	2.0	2.0	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	2.1	2.0	2.2	2.0	2.0	2.0	2.0	2.2
3-Sep	Z	2.0	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	2.0	2.0	2.0	2.0	2.0	2.0	2.0
4-Sep	2.0	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	2.1
5-Sep	2.0	2.0	Z	2.0	2.0	2.1	2.0	2.0	2.0	2.0	2.1	2.0	2.0	2.0	2.0	PF	PF	PF	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.1
6-Sep	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	2.3	2.5	2.4	2.3	2.2	2.2	2.1	2.0	2.0	2.0	2.1	2.5
7-Sep	2.0	2.0	2.1	2.0	Z	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	2.1	2.1	2.0	2.1
8-Sep	2.1	2.1	2.1	2.1	2.1	Z	2.1	2.1	2.8	2.0	2.1	2.0	2.1	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.4	2.3	2.1	2.2	2.1	2.8
9-Sep	Z	2.1	2.2	2.1	2.2	2.0	2.1	2.1	2.1	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	2.0	2.1	2.3
10-Sep	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
11-Sep	2.0	2.0	Z	2.0	2.0	2.0	2.0	2.2	2.4	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	2.1	2.4
12-Sep	2.0	2.0	2.0	Z	2.1	2.1	2.0	2.0	2.0	2.0	2.1	2.1	2.1	2.1	2.1	2.0	2.0	2.0	2.1	2.1	2.0	2.0	2.0	2.0	2.0	2.1
13-Sep	2.0	2.0	2.0	2.0	Z	2.2	2.3	2.4	2.5	2.5	2.6	2.7	2.6	2.6	2.5	2.4	2.1	2.0	2.1	2.2	2.2	2.1	2.1	2.1	2.3	2.7
14-Sep	2.1	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	1.9	1.9	2.0	2.0	2.0	2.0	2.0	2.1
15-Sep	Z	2.0	2.0	2.0	2.0	2.0	2.1	2.2	2.4	2.4	2.3	2.2	2.2	2.1	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.1	2.4
16-Sep	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	1.9	2.0	1.9	1.9	1.9	2.0	2.0	2.0	2.0	2.0	2.0	2.0
17-Sep	2.0	2.0	Z	2.0	2.0	1.9	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	2.0	2.0	2.0	2.0
18-Sep	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	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
19-Sep	1.9	1.9	1.9	1.9	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	2.0	2.0	2.0	2.0	2.0	2.0	2.0	1.9	2.0
20-Sep	2.0	2.0	2.0	2.0	2.0	Z	2.0	2.0	1.9	1.9	1.9	2.2	2.2	2.1	2.0	2.0	2.0	2.0	2.0	1.9	1.9	1.9	1.9	1.9	2.0	2.2
21-Sep	Z	2.0	1.9	UO	UO	UO	UO	UO	UO	UO	1.9	1.9	1.9	1.9	M	M	M	M	2.0	2.0	2.0	2.0	2.3	2.2	--	2.3
22-Sep	2.1	Z	2.0	2.0	2.1	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	2.0	2.0	2.1
23-Sep	2.0	2.0	Z	2.0	2.0	2.0	2.0	2.1	2.1	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-Sep	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	2.0	2.1	2.1	2.0	2.1
25-Sep	2.1	2.1	2.1	2.2	Z	2.7	2.4	2.2	2.1	2.1	2.1	2.0	2.1	2.1	2.1	2.0	2.0	2.1	2.1	2.2	2.1	2.1	2.1	2.1	2.1	2.7
26-Sep	2.1	2.1	2.1	2.0	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
27-Sep	Z	2.1	2.1	2.1	2.1	2.1	2.1	2.1	M	M	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	2.0	2.1	2.1
28-Sep	2.1	Z	2.0	2.1	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	2.1	2.0	2.0	2.1	2.1	2.1	2.1	2.1	2.1
29-Sep	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	2.0	2.1	2.1	2.1	2.1	2.1	2.1	2.1	2.1	2.1	2.2
30-Sep	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	2.0	2.0	2.0	2.0	2.0	2.0	2.1	2.1	2.1	2.1	2.1	2.1	2.1
	2.0	2.0	2.0	2.0	2.0	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	2.0	Diurnal Average	
	2.1	2.2	2.2	2.2	2.2	2.7	2.4	2.4	2.8	2.5	2.6	2.7	2.6	2.6	2.5	2.5	2.4	2.3	2.2	2.2	2.4	2.3	2.3	2.2	Diurnal Maximum	

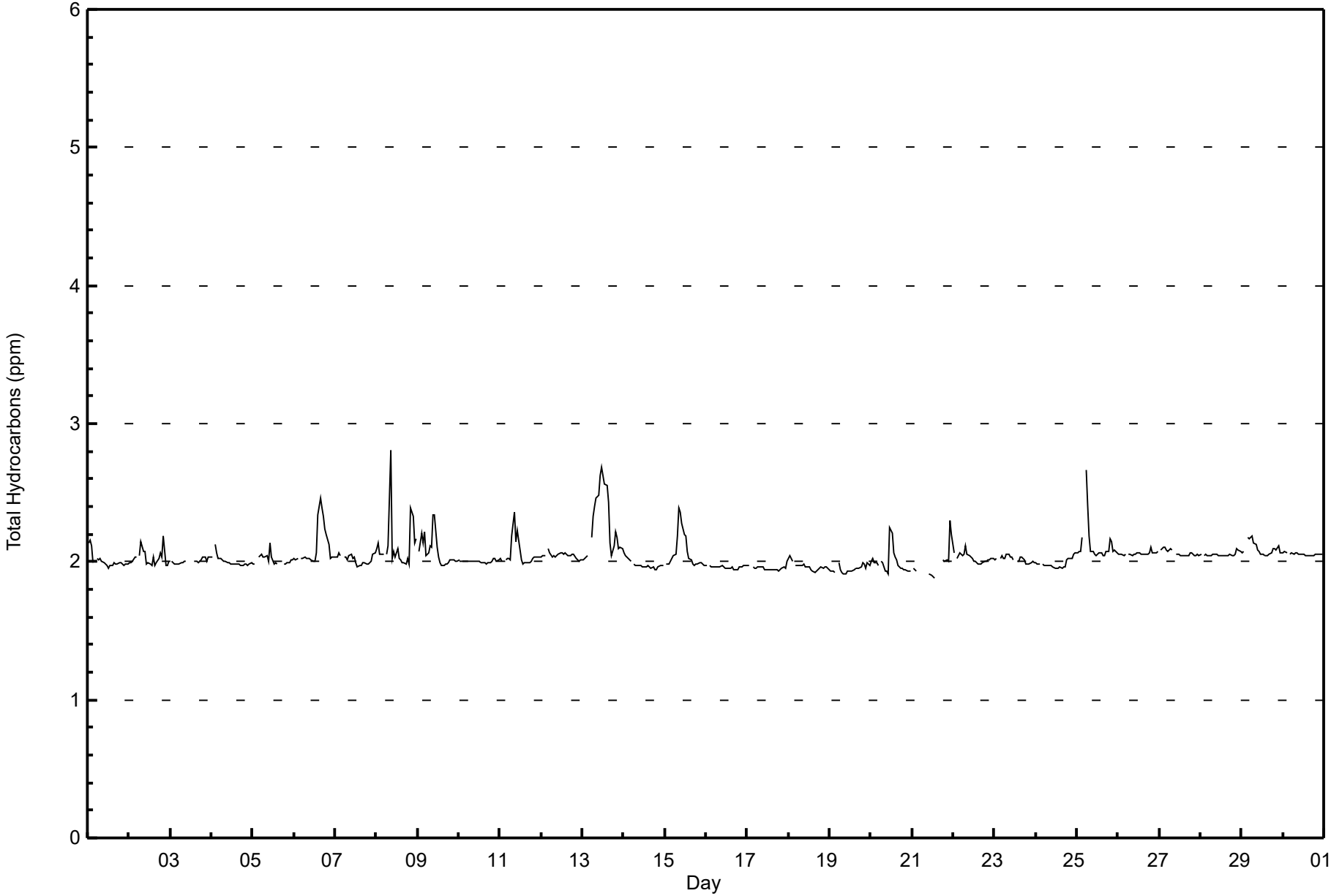
Z - zerospan C - Calibration M - Maintenance UO - Unstable Operation PF - Power Failure

Wood Buffalo Environmental Association

Hourly Averages

Total Hydrocarbons (THC) - ppm

Anzac - September 2024



Wood Buffalo Environmental Association

Cumulative Frequency Distribution

Total Hydrocarbons (THC) - ppm

Anzac - September 2024

Concentration Ranges (ppm)	Number of Hours	%	Cumulative %
0 - 2.0	466	69.66	69.66
2.1 - 3.0	203	30.34	100.00
3.1 - 10.0	0	0.00	100.00
> 10.0	0	0.00	100.00

Total Number of Valid Hours: 669

Total Number of Hours: 720

Wood Buffalo Environmental Association

Frequency Distribution

Total Hydrocarbons (THC) - ppm

Anzac - September 2024

Concentration Ranges (ppm)	Wind Direction																
	N	NNE	NE	ENE	E	ESE	SE	SSE	S	SSW	SW	WSW	W	WNW	NW	NNW	**Totals**
0 - 2.0	11	3	10	0	0	5	14	50	37	25	40	41	77	106	26	21	466
2.1 - 3.0	5	7	2	2	2	6	19	20	8	10	11	7	22	53	23	6	203
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	16	10	12	2	2	11	33	70	45	35	51	48	99	159	49	27	669

Total Number of Valid Hours: 669

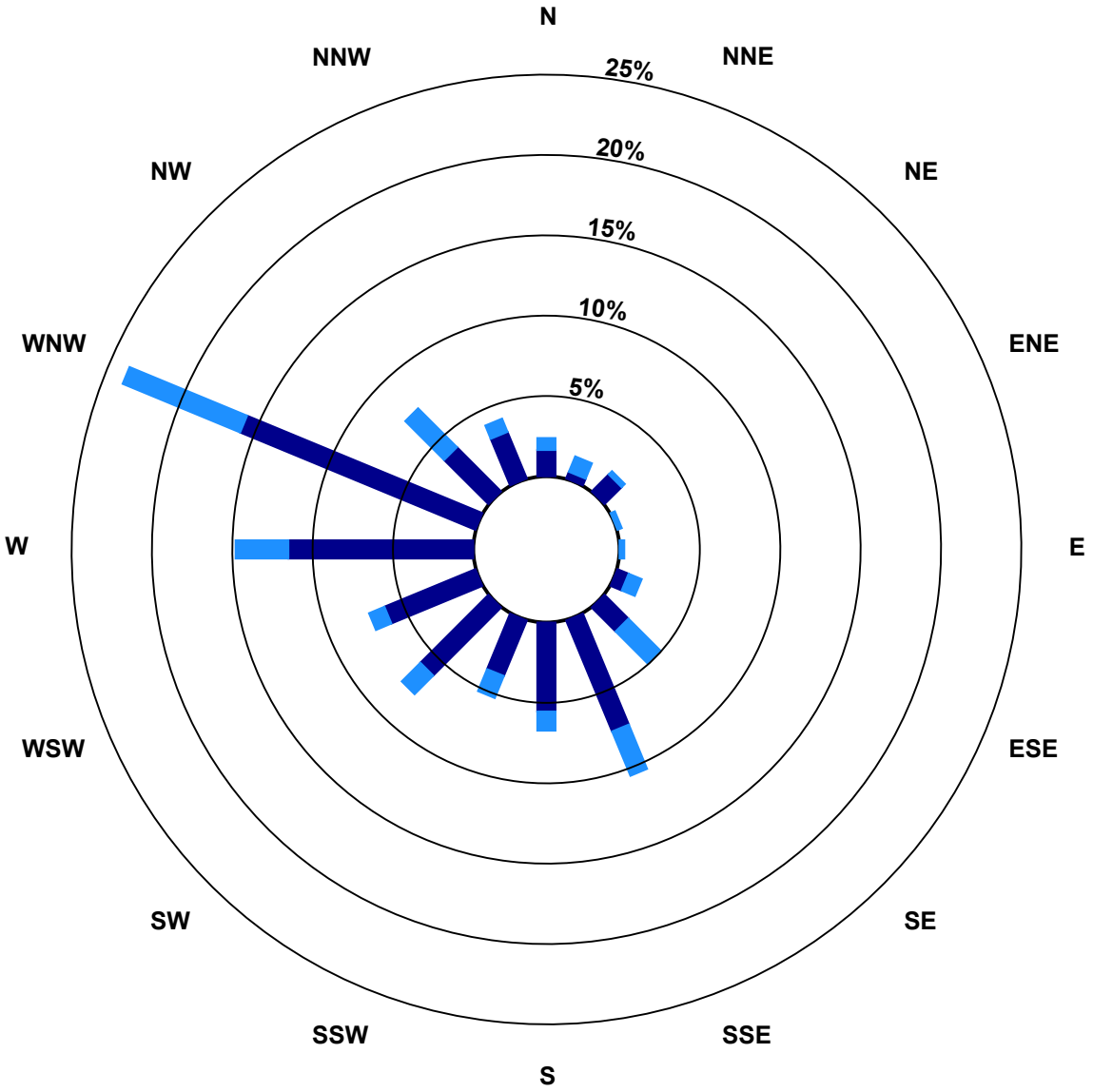
Total Number of Hours: 720

Wood Buffalo Environmental Association

Wind Rose Sep 2024

Total Hydrocarbons (THC) - ppm

Anzac



Classes (ppm)

- 0 - 2.0
- 2.1 - 3.0
- 3.1 - 10.0
- > 10.0

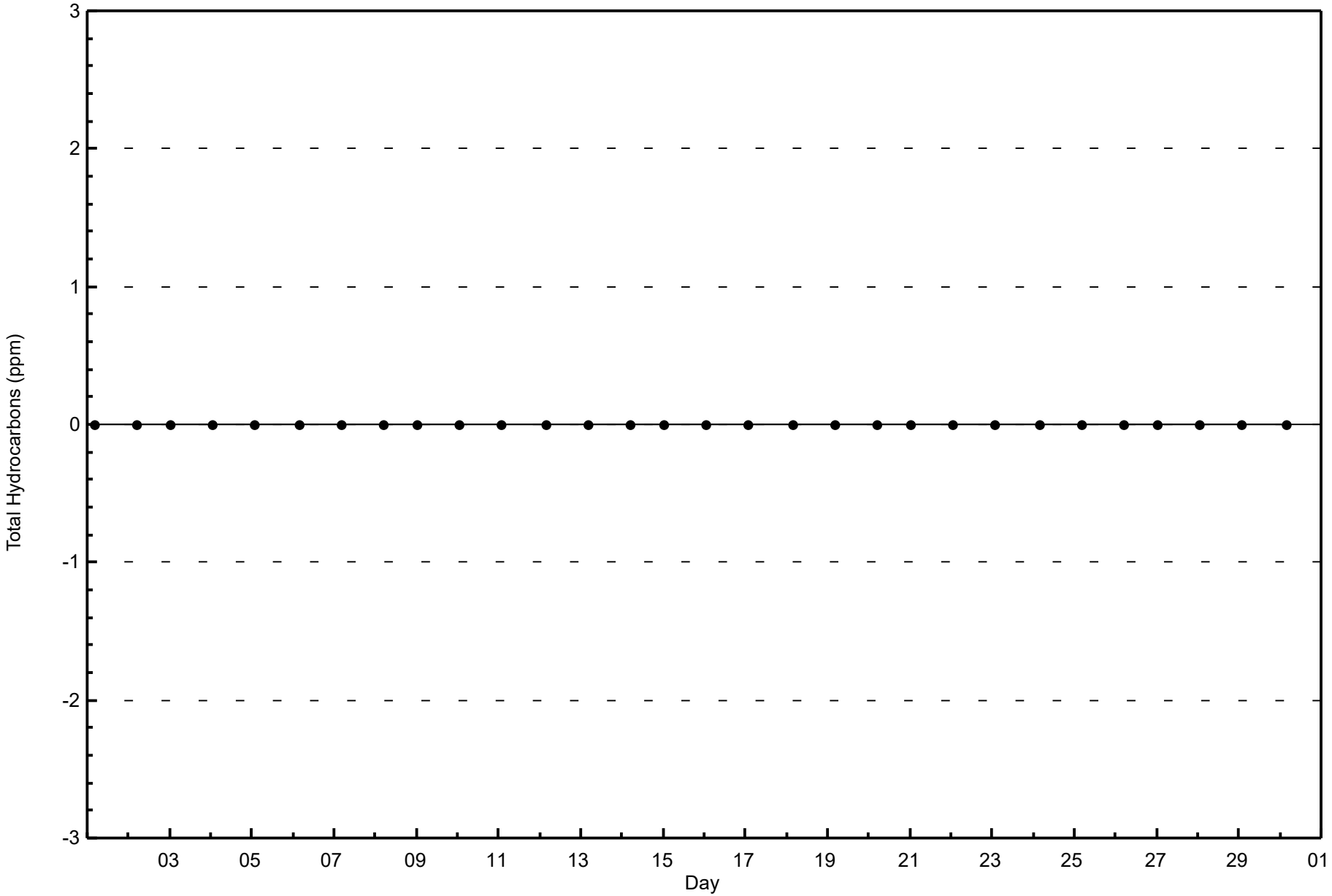
Total Number of Valid Hours: 669

Wood Buffalo Environmental Association

Zero Responses

Total Hydrocarbons (THC) - ppm

Anzac - September 2024

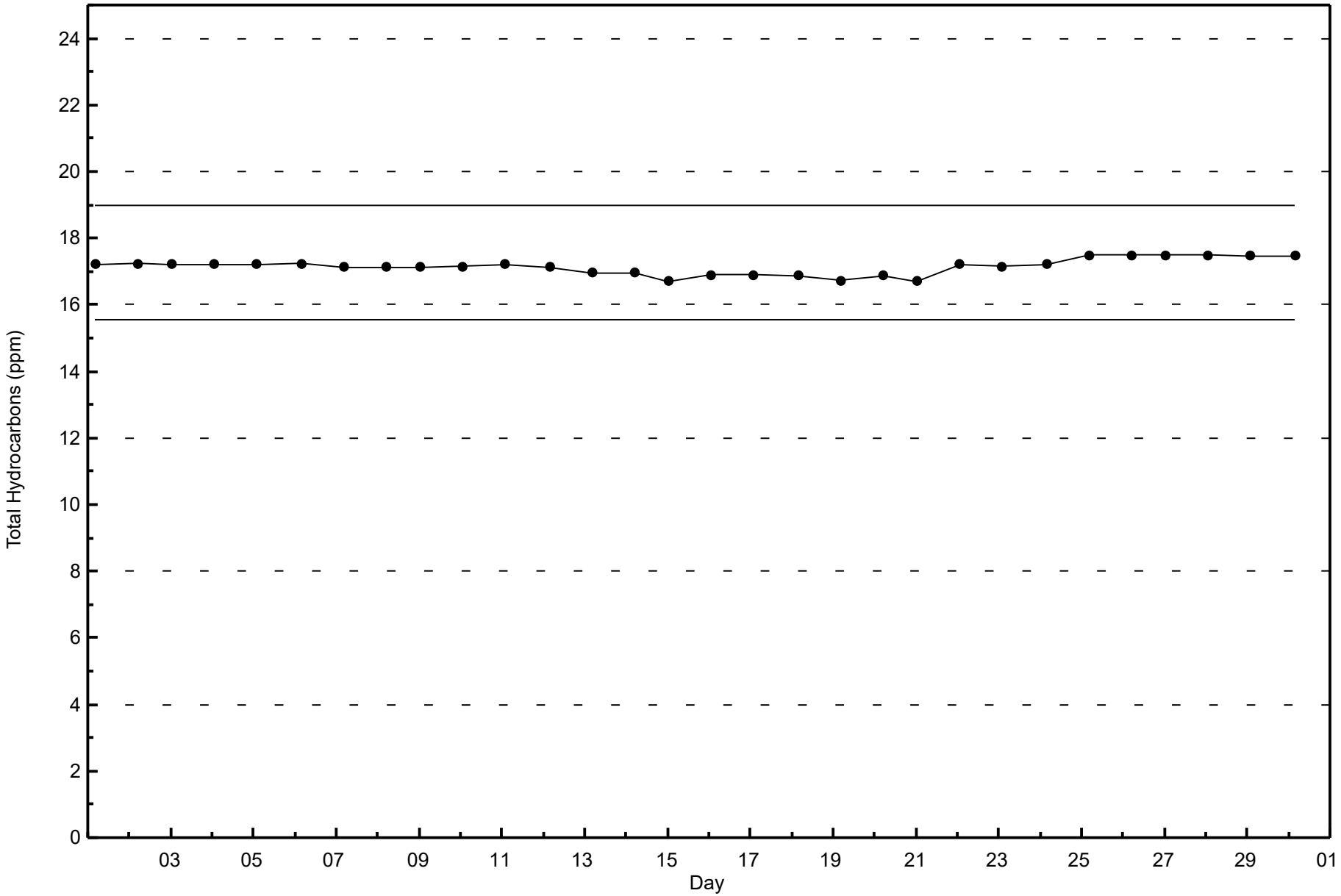


Wood Buffalo Environmental Association

Span Responses

Total Hydrocarbons (THC) - ppm

Anzac - September 2024



Wood Buffalo Environmental Association

Summary of Hour Averages

Non Methane Hydrocarbons (NMHC) - ppm

Anzac - September 2024

Maximum Value: 0.476 ppm on Sep 8 09:00

Maximum Daily Average: 0.094 ppm on Sep 13

Minimum Value: 0.000 ppm on Sep 1 07:00

Minimum Daily Average: 0.000 ppm on Sep 23

Maximum Diurnal Average: 0.032 ppm at hour 9

Minimum Diurnal Average: 0.006 ppm at hour 4

Monthly Average: 0.015 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 in Service:	720
Hours of Data:	669
Hours of Missing Data:	51
Hours of Calibration:	34
Percent Operational Time:	97.6

Day	Hourly Period Ending At (MST)																								Daily	Daily
	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24	Average	Maximum
1-Sep	0.113	0.125	0.101	0.002	Z	0.012	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.006	0.003	0.011	0.009	0.018	0.013	0.003	0.004	0.000	0.005	0.000	0.018	0.125
2-Sep	0.000	0.000	0.009	0.000	0.000	Z	0.007	0.073	0.017	0.005	0.004	0.009	0.003	0.003	0.051	0.000	0.006	0.040	0.064	0.034	0.163	0.000	0.002	0.000	0.021	0.163
3-Sep	Z	0.000	0.000	0.000	0.000	0.000	0.002	0.001	0.000	0.000	C	C	C	C	0.001	0.000	0.000	0.000	0.000	0.000	0.000	0.001	0.006	0.010	0.001	0.010
4-Sep	0.005	Z	0.072	0.026	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.002	0.000	0.000	0.000	0.005	0.072
5-Sep	0.000	0.000	Z	0.000	0.007	0.026	0.002	0.000	0.000	0.000	0.121	0.037	0.000	0.008	0.000	PF	PF	PF	0.000	0.000	0.000	0.000	0.000	0.000	0.010	0.121
6-Sep	0.000	0.000	0.000	Z	0.000	0.000	0.008	0.000	0.000	0.000	0.000	0.000	0.010	0.068	0.313	0.406	0.296	0.251	0.157	0.117	0.063	0.000	0.014	0.008	0.074	0.406
7-Sep	0.008	0.008	0.021	0.012	Z	0.004	0.016	0.000	0.000	0.044	0.015	0.037	0.017	0.000	0.000	0.000	0.018	0.019	0.004	0.002	0.004	0.000	0.024	0.029	0.012	0.044
8-Sep	0.057	0.089	0.015	0.011	0.008	Z	0.012	0.057	0.476	0.004	0.053	0.031	0.079	0.027	0.028	0.008	0.004	0.002	0.047	0.014	0.356	0.312	0.102	0.104	0.082	0.476
9-Sep	Z	0.005	0.105	0.047	0.100	0.000	0.001	0.002	0.001	0.076	0.114	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	0.020	0.114
10-Sep	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	0.007	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.007
11-Sep	0.000	0.000	Z	0.000	0.000	0.000	0.000	0.093	0.129	0.091	0.161	0.117	0.005	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.026	0.161
12-Sep	0.000	0.000	0.000	Z	0.026	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	0.000	0.001	0.000	0.001	0.026
13-Sep	0.000	0.000	0.001	0.000	Z	0.036	0.110	0.147	0.158	0.172	0.214	0.230	0.215	0.209	0.209	0.168	0.031	0.000	0.035	0.111	0.081	0.016	0.015	0.004	0.094	0.230
14-Sep	0.000	0.001	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	0.002	0.001	0.000	0.002
15-Sep	Z	0.000	0.000	0.002	0.000	0.000	0.000	0.032	0.121	0.117	0.103	0.077	0.063	0.001	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.022	0.121
16-Sep	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	0.011	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.011
17-Sep	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	0.001	0.007	0.000	0.002	0.049	0.003	0.049
18-Sep	0.047	0.060	0.013	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	0.005	0.060
19-Sep	0.000	0.000	0.000	0.002	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	0.007	0.005	0.000	0.000	0.000	0.001	0.007
20-Sep	0.000	0.000	0.000	0.000	0.000	Z	0.000	0.000	0.000	0.000	0.002	0.109	0.068	0.001	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.008	0.109
21-Sep	Z	0.000	0.000	UO	UO	UO	UO	UO	UO	UO	0.000	0.000	0.000	0.000	M	M	M	M	0.000	0.000	0.000	0.000	0.193	0.086	--	0.193
22-Sep	0.000	Z	0.000	0.000	0.002	0.000	0.000	0.031	0.004	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.003	0.006	0.000	0.000	0.002	0.031
23-Sep	0.000	0.000	Z	0.000	0.000	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	0.000	0.000	0.000	0.000	0.000	0.000
24-Sep	0.000	0.000	0.000	Z	0.000	0.000	0.000	0.000	0.000	0.018	0.009	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	0.001	0.018
25-Sep	0.000	0.000	0.000	0.032	Z	0.247	0.154	0.034	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.020	0.247
26-Sep	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	0.002	0.048	0.000	0.000	0.000	0.000	0.002	0.048
27-Sep	Z	0.000	0.000	0.000	0.000	0.000	0.005	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	0.005
28-Sep	0.000	Z	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	0.005	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.005
29-Sep	0.000	0.000	Z	0.000	0.000	0.004	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.004
30-Sep	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
	0.009	0.012	0.013	0.006	0.006	0.014	0.011	0.016	0.032	0.019	0.028	0.022	0.016	0.011	0.021	0.022	0.013	0.012	0.011	0.011	0.023	0.011	0.012	0.010	Diurnal Average	
	0.113	0.125	0.105	0.047	0.100	0.247	0.154	0.147	0.476	0.172	0.214	0.230	0.215	0.209	0.313	0.406	0.296	0.251	0.157	0.117	0.356	0.312	0.193	0.104	Diurnal Maximum	

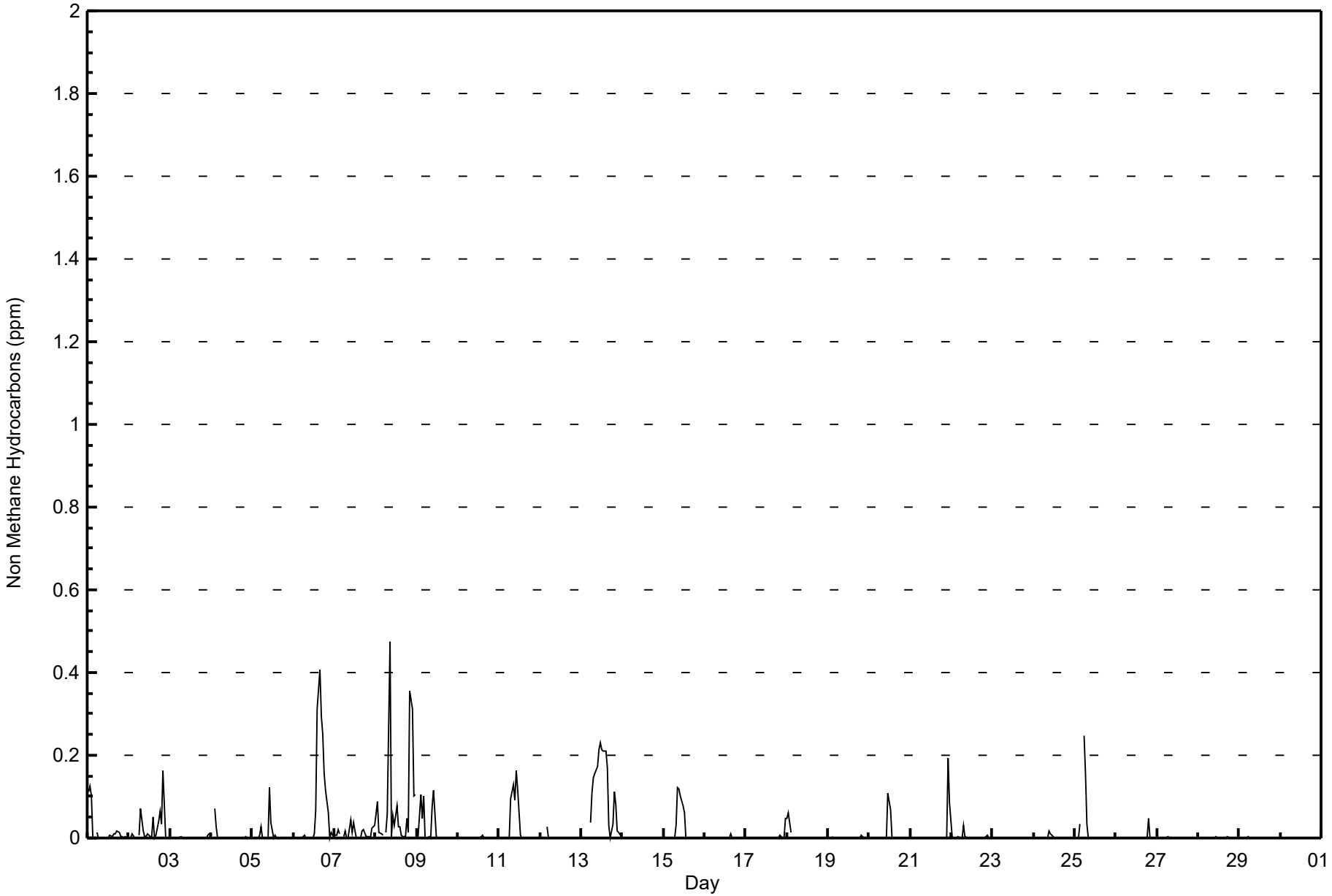
Z - zerospan C - Calibration M - Maintenance UO - Unstable Operation PF - Power Failure

Wood Buffalo Environmental Association

Hourly Averages

Non Methane Hydrocarbons (NMHC) - ppm

Anzac - September 2024



Wood Buffalo Environmental Association

Cumulative Frequency Distribution

Non Methane Hydrocarbons (NMHC) - ppm

Anzac - September 2024

Concentration Ranges (ppm)	Number of Hours	%	Cumulative %
0 - 0.005	540	80.72	80.72
0.006 - 0.05	71	10.61	91.33
0.06 - 0.1	37	5.53	96.86
> 0.1	21	3.14	100.00

Total Number of Valid Hours: 669

Total Number of Hours: 720

Wood Buffalo Environmental Association

Frequency Distribution

Non Methane Hydrocarbons (NMHC) - ppm

Anzac - September 2024

Concentration Ranges (ppm)	Wind Direction																
	N	NNE	NE	ENE	E	ESE	SE	SSE	S	SSW	SW	WSW	W	WNW	NW	NNW	**Totals**
0 - 0.005	16	10	12	2	1	5	13	50	39	32	46	42	83	133	30	26	540
0.006 - 0.05	0	0	0	0	1	1	10	9	4	2	5	6	11	15	7	0	71
0.06 - 0.1	0	0	0	0	0	3	5	8	1	0	0	0	5	7	7	1	37
> 0.1	0	0	0	0	0	2	5	3	1	1	0	0	0	4	5	0	21
Totals	16	10	12	2	2	11	33	70	45	35	51	48	99	159	49	27	669

Total Number of Valid Hours: 669

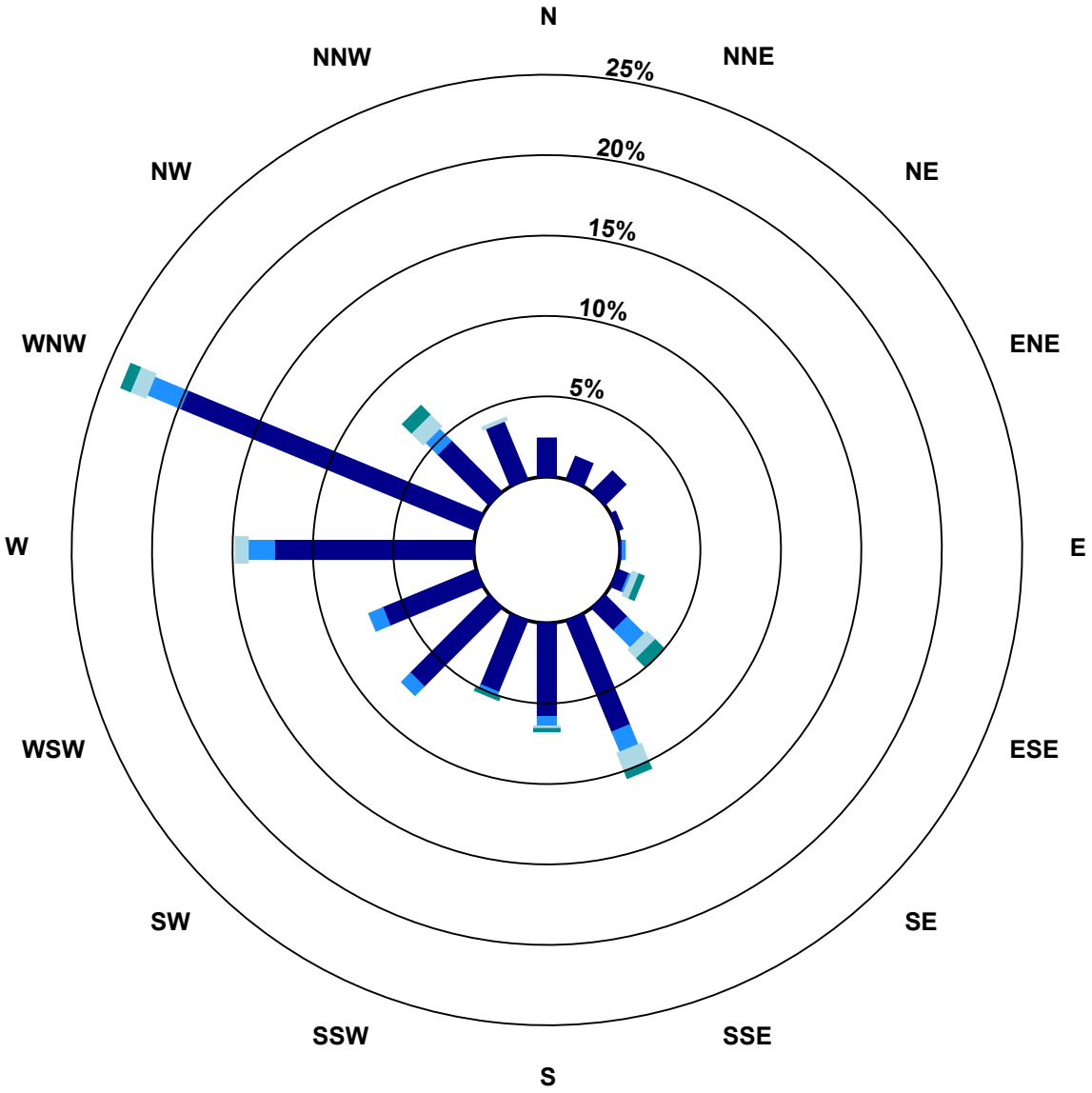
Total Number of Hours: 720

Wood Buffalo Environmental Association

Wind Rose Sep 2024

Non Methane Hydrocarbons (NMHC) - ppm

Anzac



Classes (ppm)

0 - 0.005

0.006 - 0.05

0.06 - 0.1

> 0.1

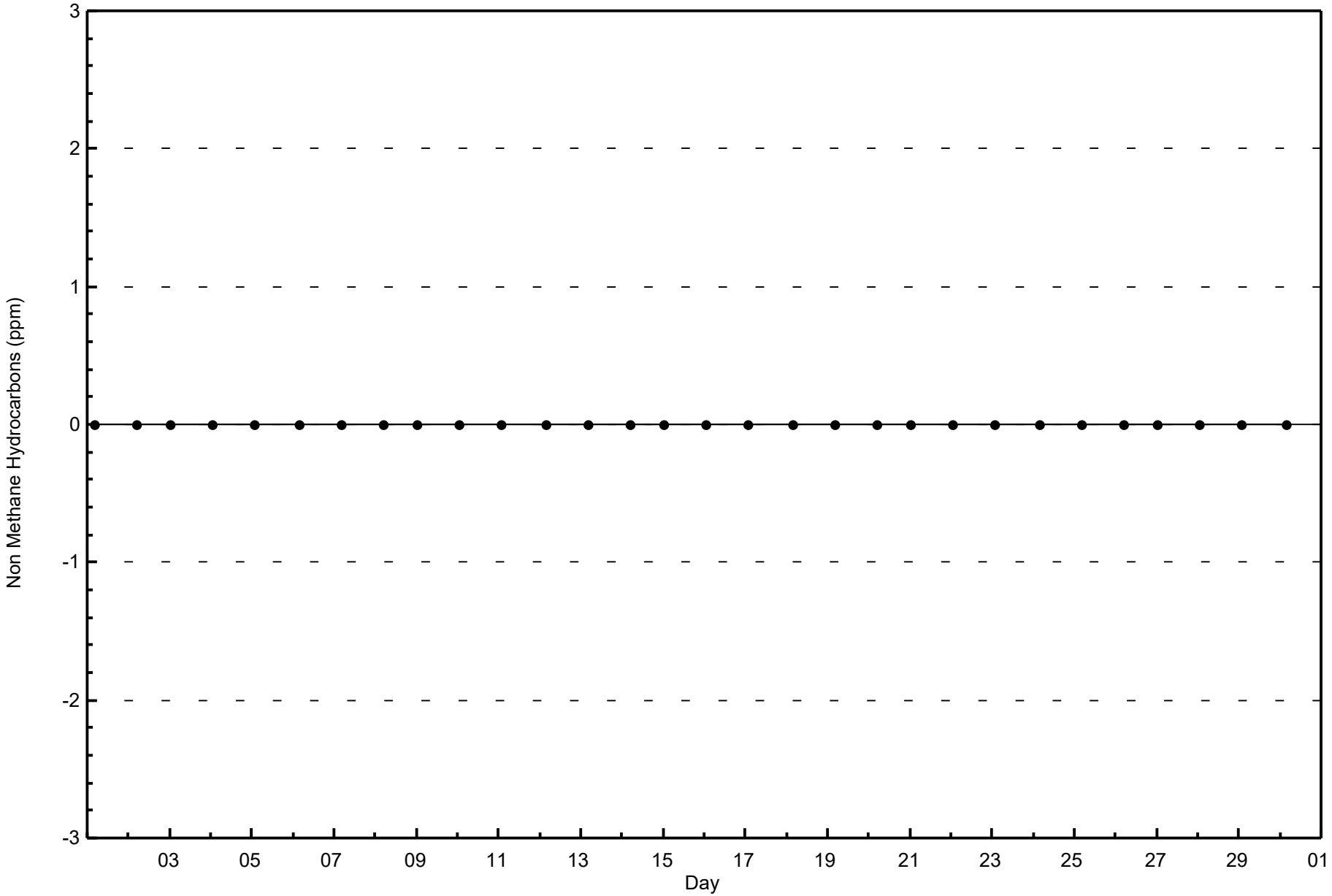
Total Number of Valid Hours: 669

Wood Buffalo Environmental Association

Zero Responses

Non Methane Hydrocarbons (NMHC) - ppm

Anzac - September 2024

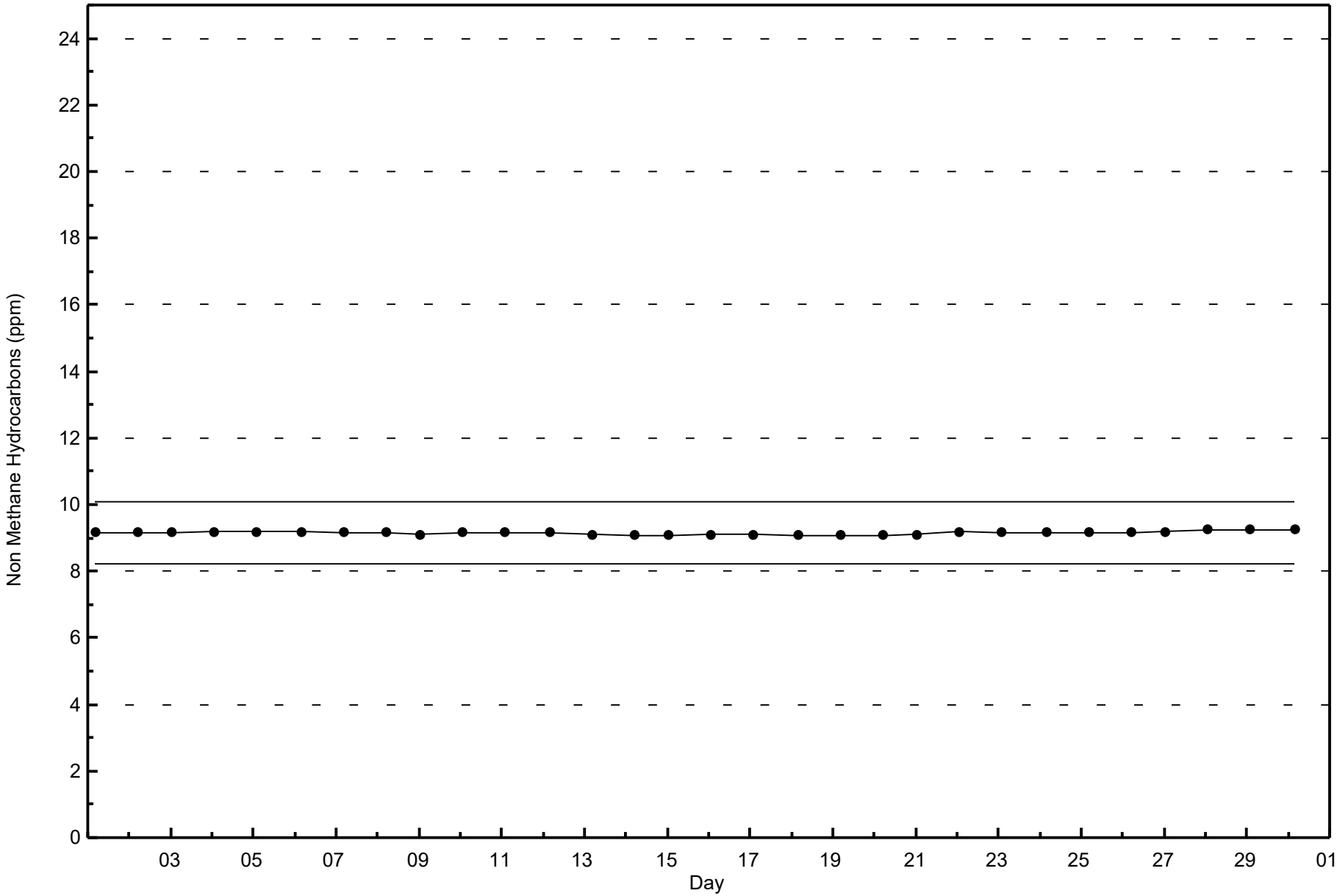


Wood Buffalo Environmental Association

Span Responses

Non Methane Hydrocarbons (NMHC) - ppm

Anzac - September 2024



Wood Buffalo Environmental Association

Summary of Hour Averages

Methane (CH_4) - ppm

Anzac - September 2024

Number of Exceedences (AAAQO): 1-hr: 0 24-hr: 0

Maximum Value: 2.5 ppm on Sep 13 12:00

Maximum Daily Average: 2.2 ppm on Sep 13

Minimum Value: 1.9 ppm on Sep 21 14:00

Minimum Daily Average: 1.9 ppm on Sep 19

Maximum Diurnal Average: 2.1 ppm at hour 9

Minimum Diurnal Average: 2.0 ppm at hour 18

Monthly Average: 2.02 ppm

Percentiles: P_1 = 1.9 P_{10} = 2.0 Q_1 = 2.0 Median = 2.0 Q_3 = 2.1 P_{90} = 2.1 P_{99} = 2.3

Hours in Service:	720
Hours of Data:	669
Hours of Missing Data:	51
Hours of Calibration:	34
Percent Operational Time:	97.6

Day	Hourly Period Ending At (MST)																								Daily	Daily
	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24	Average	Maximum
1-Sep	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
2-Sep	2.0	2.0	2.0	2.0	2.0	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	2.0	2.1
3-Sep	Z	2.0	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	2.0	2.0	2.0	2.0	2.0	2.0	2.0
4-Sep	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	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.1
5-Sep	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	PF	PF	PF	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0
6-Sep	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	2.1	2.1	2.1	2.1	2.1	2.1	2.0	2.0	2.0	2.0	2.1
7-Sep	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
8-Sep	2.0	2.0	2.0	2.0	2.0	Z	2.0	2.1	2.3	2.0	2.0	2.0	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
9-Sep	Z	2.1	2.1	2.1	2.1	2.0	2.1	2.1	2.1	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	2.1	2.3
10-Sep	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
11-Sep	2.0	2.0	Z	2.0	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	2.2
12-Sep	2.0	2.0	2.0	Z	2.1	2.1	2.0	2.0	2.0	2.0	2.1	2.1	2.1	2.1	2.1	2.0	2.0	2.0	2.1	2.1	2.0	2.0	2.0	2.0	2.0	2.1
13-Sep	2.0	2.0	2.0	2.0	Z	2.1	2.2	2.3	2.3	2.3	2.4	2.5	2.4	2.4	2.3	2.3	2.1	2.0	2.1	2.1	2.1	2.1	2.1	2.1	2.2	2.5
14-Sep	2.1	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	1.9	1.9	2.0	2.0	2.0	2.0	2.0	2.1
15-Sep	Z	2.0	2.0	2.0	2.0	2.0	2.1	2.1	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	2.0	2.3
16-Sep	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	1.9	1.9	1.9	1.9	1.9	2.0	2.0	2.0	2.0	2.0	2.0	2.0
17-Sep	2.0	2.0	Z	2.0	2.0	1.9	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	2.0
18-Sep	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	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
19-Sep	1.9	1.9	1.9	1.9	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	2.0	2.0	2.0	2.0	2.0	2.0	2.0	1.9	2.0
20-Sep	2.0	2.0	2.0	2.0	2.0	Z	2.0	2.0	1.9	1.9	1.9	2.1	2.1	2.1	2.0	2.0	2.0	2.0	2.0	1.9	1.9	1.9	1.9	1.9	2.0	2.1
21-Sep	Z	2.0	1.9	UO	UO	UO	UO	UO	UO	UO	1.9	1.9	1.9	1.9	M	M	M	M	2.0	2.0	2.0	2.0	2.1	2.1	--	2.1
22-Sep	2.1	Z	2.0	2.0	2.1	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	2.0	2.0	2.1
23-Sep	2.0	2.0	Z	2.0	2.0	2.0	2.0	2.1	2.1	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-Sep	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	2.0	2.1	2.1	2.0	2.1
25-Sep	2.1	2.1	2.1	2.1	Z	2.4	2.3	2.2	2.1	2.1	2.1	2.0	2.1	2.1	2.1	2.0	2.0	2.1	2.1	2.2	2.1	2.1	2.1	2.1	2.1	2.4
26-Sep	2.1	2.1	2.1	2.0	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
27-Sep	Z	2.1	2.1	2.1	2.1	2.1	2.1	2.1	M	M	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	2.0	2.1	2.1
28-Sep	2.1	Z	2.0	2.1	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	2.1	2.1	2.1	2.1	2.1	2.1
29-Sep	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	2.0	2.1	2.1	2.1	2.1	2.1	2.1	2.1	2.1	2.1	2.2
30-Sep	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	2.0	2.0	2.0	2.0	2.0	2.0	2.1	2.1	2.1	2.1	2.1	2.1	2.1
	2.0	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	2.0	2.0	2.0	2.0	2.0	2.0	Diurnal Average	
	2.1	2.1	2.1	2.2	2.2	2.4	2.3	2.3	2.3	2.3	2.4	2.5	2.4	2.4	2.3	2.3	2.1	2.1	2.1	2.2	2.1	2.1	2.1	2.1	Diurnal Maximum	

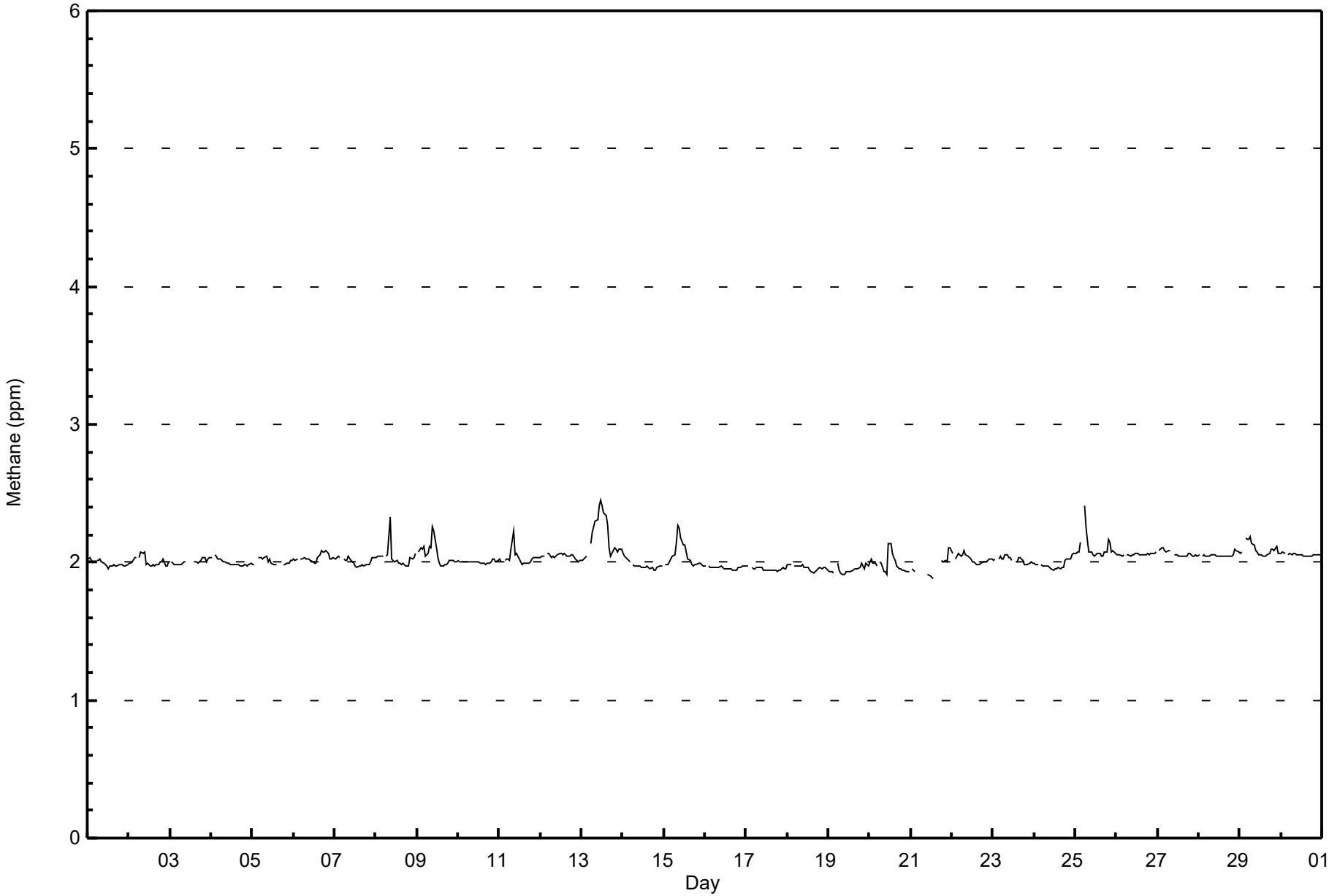
Z - zerospan C - Calibration M - Maintenance UO - Unstable Operation PF - Power Failure

Wood Buffalo Environmental Association

Hourly Averages

Methane (CH_4) - ppm

Anzac - September 2024



Concentration Ranges (ppm)	Number of Hours	%	Cumulative %
0 - 2.0	493	73.69	73.69
2.1 - 3.0	176	26.31	100.00
3.1 - 10.0	0	0.00	100.00
> 10.0	0	0.00	100.00

Total Number of Valid Hours: 669

Total Number of Hours: 720

Wood Buffalo Environmental Association

Frequency Distribution

Methane (CH_4) - ppm

Anzac - September 2024

Concentration Ranges (ppm)	Wind Direction																
	N	NNE	NE	ENE	E	ESE	SE	SSE	S	SSW	SW	WSW	W	WNW	NW	NNW	**Totals**
0 - 2.0	11	3	10	0	0	7	17	55	40	27	41	42	80	111	28	21	493
2.1 - 3.0	5	7	2	2	2	4	16	15	5	8	10	6	19	48	21	6	176
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	16	10	12	2	2	11	33	70	45	35	51	48	99	159	49	27	669

Total Number of Valid Hours: 669

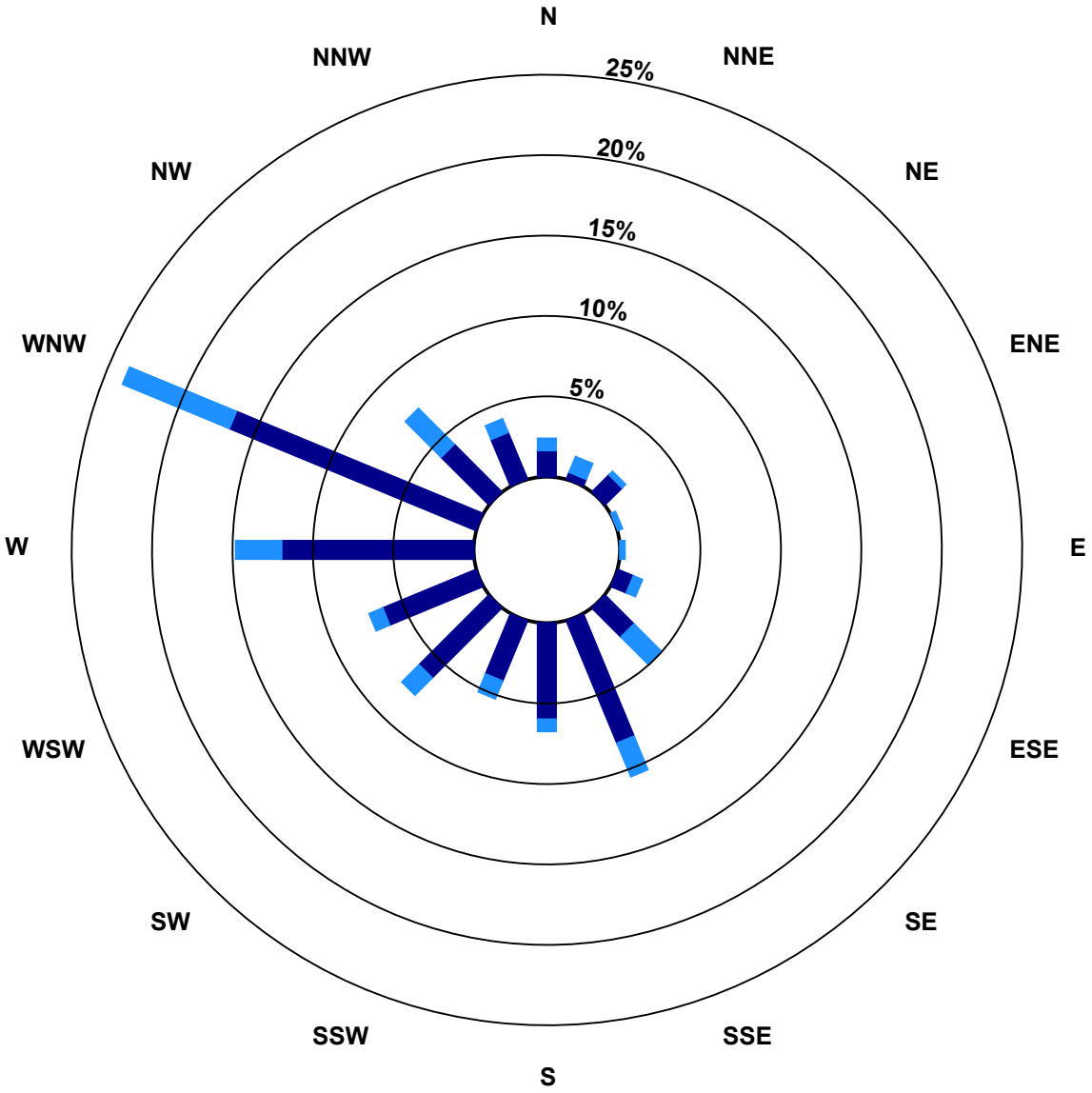
Total Number of Hours: 720

Wood Buffalo Environmental Association

Wind Rose Sep 2024

Methane (CH_4) - ppm

Anzac



Classes (ppm)

0 - 2.0

2.1 - 3.0

3.1 - 10.0

> 10.0

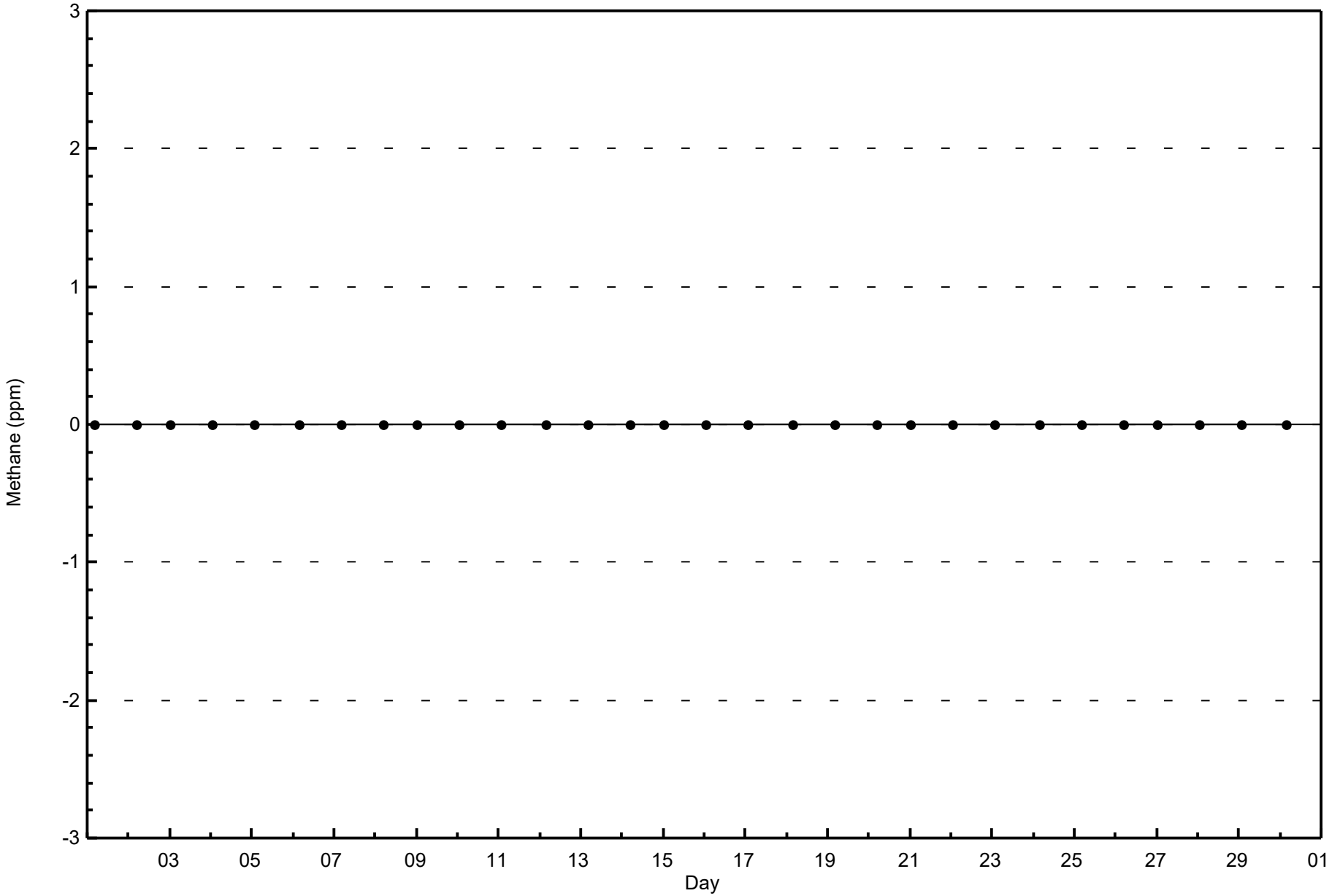
Total Number of Valid Hours: 669

Wood Buffalo Environmental Association

Zero Responses

Methane (CH_4) - ppm

Anzac - September 2024

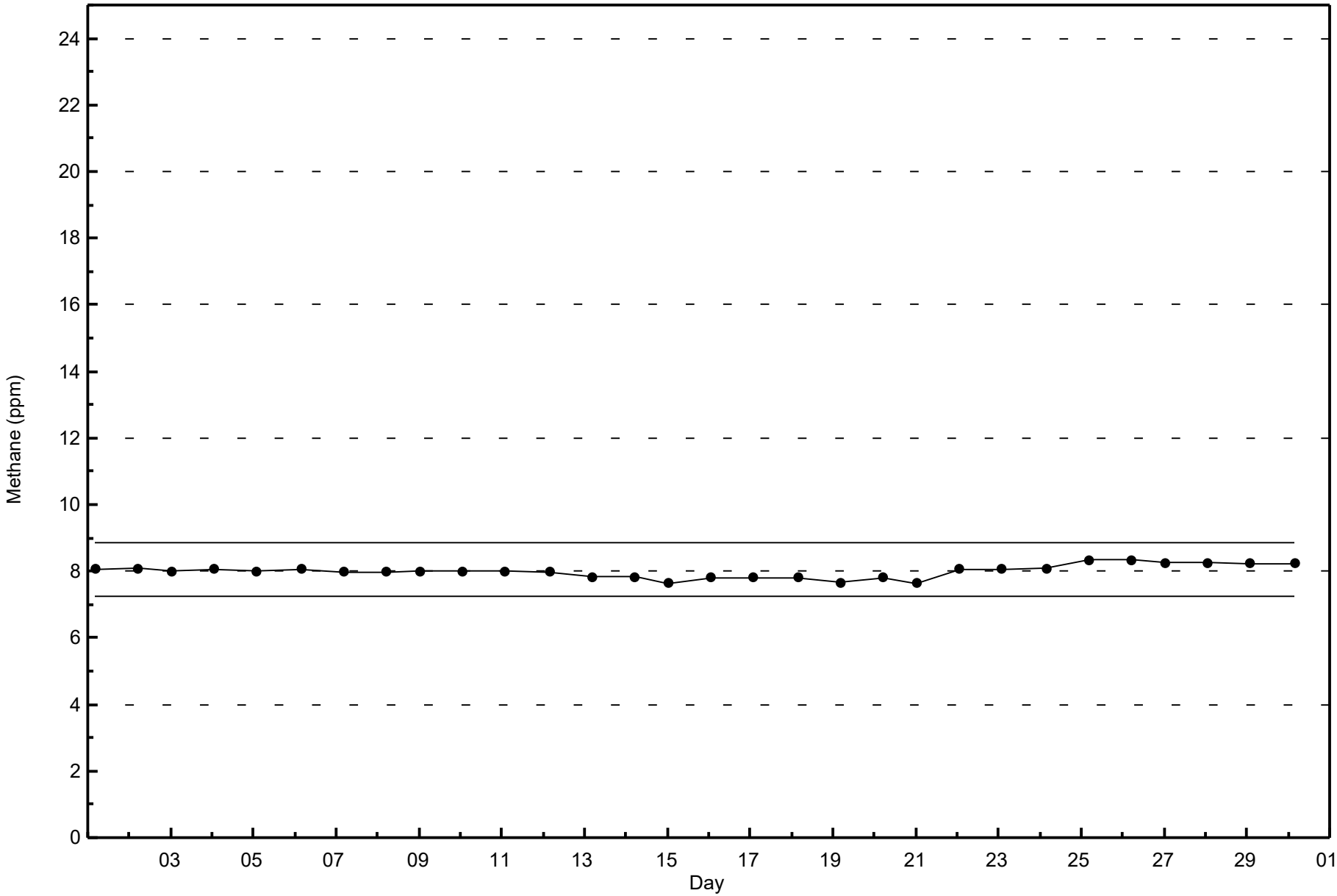


Wood Buffalo Environmental Association

Span Responses

Methane (CH_4) - ppm

Anzac - September 2024



Wood Buffalo Environmental Association

Summary of Hour Averages

Nitric Oxide (NO) - ppb

Anzac - September 2024

Maximum Value: 11.0 ppb on Sep 13 11:00

Maximum Daily Average: 2.8 ppb on Sep 13

Minimum Value: 0.0 ppb on Sep 3 20:00

Minimum Daily Average: 0.1 ppb on Sep 4

Maximum Diurnal Average: 1.0 ppb at hour 11

Minimum Diurnal Average: 0.0 ppb at hour 24

Monthly Average: 0.41 ppb

Percentiles: P_1 = 0.0 P_{10} = 0.0 Q_1 = 0.0 Median = 0.1 Q_3 = 0.2 P_{90} = 0.8 P_{99} = 7.3

Hours in Service:	720
Hours of Data:	681
Hours of Missing Data:	39
Hours of Calibration:	35
Percent Operational Time:	99.4

Day	Hourly Period Ending At (MST)																								Daily	Daily
	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24	Average	Maximum
1-Sep	0.0	0.0	Z	0.0	0.0	2.5	0.5	0.1	0.1	0.1	0.1	0.1	0.1	0.3	0.1	0.1	0.1	0.1	0.1	0.0	0.1	0.0	0.0	0.0	0.2	2.5
2-Sep	0.0	0.0	0.0	Z	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	0.0	0.0	0.1	0.2
3-Sep	0.0	0.0	0.0	0.0	Z	0.0	0.0	0.2	0.1	0.0	0.2	0.3	0.2	1.0	0.7	0.4	0.3	0.1	0.0	0.0	0.0	0.0	0.1	0.1	0.2	1.0
4-Sep	0.1	0.1	0.0	0.0	0.0	Z	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.0	0.0	0.1	0.1	0.0	0.1	0.0	0.0	0.0	0.0	0.0	0.1	0.1
5-Sep	Z	0.0	0.1	0.0	0.0	0.7	0.9	2.4	0.9	0.8	1.9	0.6	0.1	0.2	0.1	PF	PF	PF	0.1	0.1	0.9	0.0	0.0	0.0	0.5	2.4
6-Sep	0.0	Z	0.0	0.1	0.1	0.0	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	0.3	0.0	0.0	0.1	0.1	0.3
7-Sep	0.0	0.1	Z	0.1	0.0	0.1	0.1	0.2	0.5	0.6	0.9	0.1	0.2	0.2	0.1	0.1	0.1	0.1	0.1	0.1	0.0	0.1	0.0	0.0	0.2	0.9
8-Sep	0.0	0.0	0.0	Z	5.2	9.4	1.8	0.2	0.4	0.5	0.2	0.2	0.3	0.2	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.8	9.4
9-Sep	0.1	0.1	0.1	0.1	Z	0.1	0.1	0.2	0.2	1.5	1.7	0.1	0.1	0.1	0.1	0.0	0.1	0.0	0.0	0.0	0.0	0.1	0.0	0.0	0.2	1.7
10-Sep	0.0	0.0	0.0	0.2	0.1	Z	1.0	0.4	0.1	0.1	0.1	0.0	0.0	0.1	0.1	0.0	0.1	0.1	0.0	0.1	0.0	0.0	0.0	0.0	0.1	1.0
11-Sep	Z	0.0	0.6	2.9	0.5	0.0	0.1	0.4	1.8	2.0	4.0	2.1	0.6	0.1	0.0	0.1	0.0	0.0	0.0	0.0	0.0	0.2	0.0	0.0	0.7	4.0
12-Sep	0.0	Z	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	C	C	C	C	C	0.0	0.0	0.8	0.0	0.0	0.0	0.3	0.0	0.0	0.1	0.8
13-Sep	0.0	0.0	Z	0.0	0.0	0.1	0.5	3.4	7.2	8.3	11.0	10.7	6.7	4.4	5.2	4.2	1.0	0.3	0.1	0.1	0.2	0.1	0.1	0.1	2.8	11.0
14-Sep	0.0	0.0	0.0	Z	0.2	0.1	0.0	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.0	0.1	0.2	0.6	0.0	0.1	0.2	0.1	0.1	0.6
15-Sep	0.1	0.1	0.1	0.1	Z	0.1	0.1	2.2	7.4	7.5	5.6	5.2	4.9	2.6	0.9	0.8	0.1	0.1	0.1	0.4	0.5	0.1	0.1	0.1	1.7	7.5
16-Sep	0.0	0.0	0.0	0.0	0.0	Z	1.3	0.2	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.0	0.2	0.1	0.1	0.1	0.0	0.0	0.0	0.0	0.1	1.3
17-Sep	Z	0.0	0.0	0.0	0.0	0.0	0.6	0.4	0.2	0.1	0.1	0.2	0.1	0.1	0.1	0.1	0.1	0.1	0.0	0.0	1.1	0.8	0.0	0.0	0.2	1.1
18-Sep	0.0	Z	0.1	4.0	1.3	0.6	0.3	0.3	0.2	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.0	0.0	0.0	0.3	0.0	0.0	0.6	0.0	0.4	4.0
19-Sep	0.0	0.0	Z	2.8	0.0	0.0	1.5	0.6	0.3	0.1	0.1	0.0	0.0	0.1	0.1	0.1	0.5	0.0	0.0	0.0	0.1	0.1	0.0	0.0	0.3	2.8
20-Sep	0.0	0.0	0.0	Z	0.0	0.0	0.1	0.2	0.0	0.1	0.5	6.6	6.0	2.8	2.4	1.8	0.7	0.2	0.0	0.0	0.0	0.0	0.0	0.1	0.9	6.6
21-Sep	0.6	3.1	0.3	0.1	Z	0.1	0.7	1.3	1.3	1.5	0.8	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	0.5	3.1
22-Sep	0.0	0.1	0.0	0.0	0.1	Z	0.8	0.3	0.3	0.3	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	0.0	0.1	0.8
23-Sep	Z	0.0	0.0	0.1	0.1	0.0	0.2	0.6	0.9	0.7	0.8	0.5	M	0.3	0.3	0.2	0.2	0.1	0.1	0.0	0.0	0.0	0.0	0.0	0.2	0.9
24-Sep	0.0	Z	0.0	0.0	0.0	0.0	0.7	0.1	0.2	0.2	0.2	0.1	0.1	0.1	0.1	0.0	0.0	0.0	10.3	0.0	0.0	0.0	0.0	0.0	0.5	10.3
25-Sep	1.1	1.0	Z	1.5	0.1	0.0	0.2	0.2	0.0	0.0	0.9	0.2	0.2	0.1	0.1	0.1	3.6	0.0	0.0	2.2	0.1	0.0	0.0	0.0	0.5	3.6
26-Sep	0.0	0.0	0.0	Z	1.6	0.0	0.0	0.1	0.0	0.1	0.1	0.1	0.0	0.0	0.0	0.0	0.1	0.0	0.0	0.1	0.1	0.0	0.0	0.0	0.1	1.6
27-Sep	0.0	0.0	0.0	0.7	Z	0.8	0.0	0.0	0.0	0.0	0.0	0.1	0.1	0.0	0.0	0.1	0.0	0.2	0.7	0.0	0.2	0.0	0.0	0.0	0.1	0.8
28-Sep	0.1	0.3	0.1	0.0	0.5	Z	0.1	0.0	0.0	0.1	0.1	0.1	0.1	0.1	0.0	0.0	0.0	0.2	0.0	0.2	0.1	0.2	0.0	0.0	0.1	0.5
29-Sep	Z	1.5	0.0	0.1	0.0	0.0	0.1	0.1	0.2	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.2	0.0	0.1	0.0	0.0	0.0	0.0	0.1	1.5
30-Sep	0.0	Z	0.0	0.0	0.0	0.0	0.1	2.1	0.1	0.1	0.2	0.4	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	2.1
	0.1	0.3	0.1	0.5	0.4	0.6	0.4	0.5	0.8	0.8	1.0	1.0	0.7	0.5	0.4	0.3	0.3	0.1	0.4	0.2	0.1	0.1	0.1	0.0	Diurnal Average	
	1.1	3.1	0.6	4.0	5.2	9.4	1.8	3.4	7.4	8.3	11.0	10.7	6.7	4.4	5.2	4.2	3.6	0.8	10.3	2.2	1.1	0.8	0.6	0.1	Diurnal Maximum	

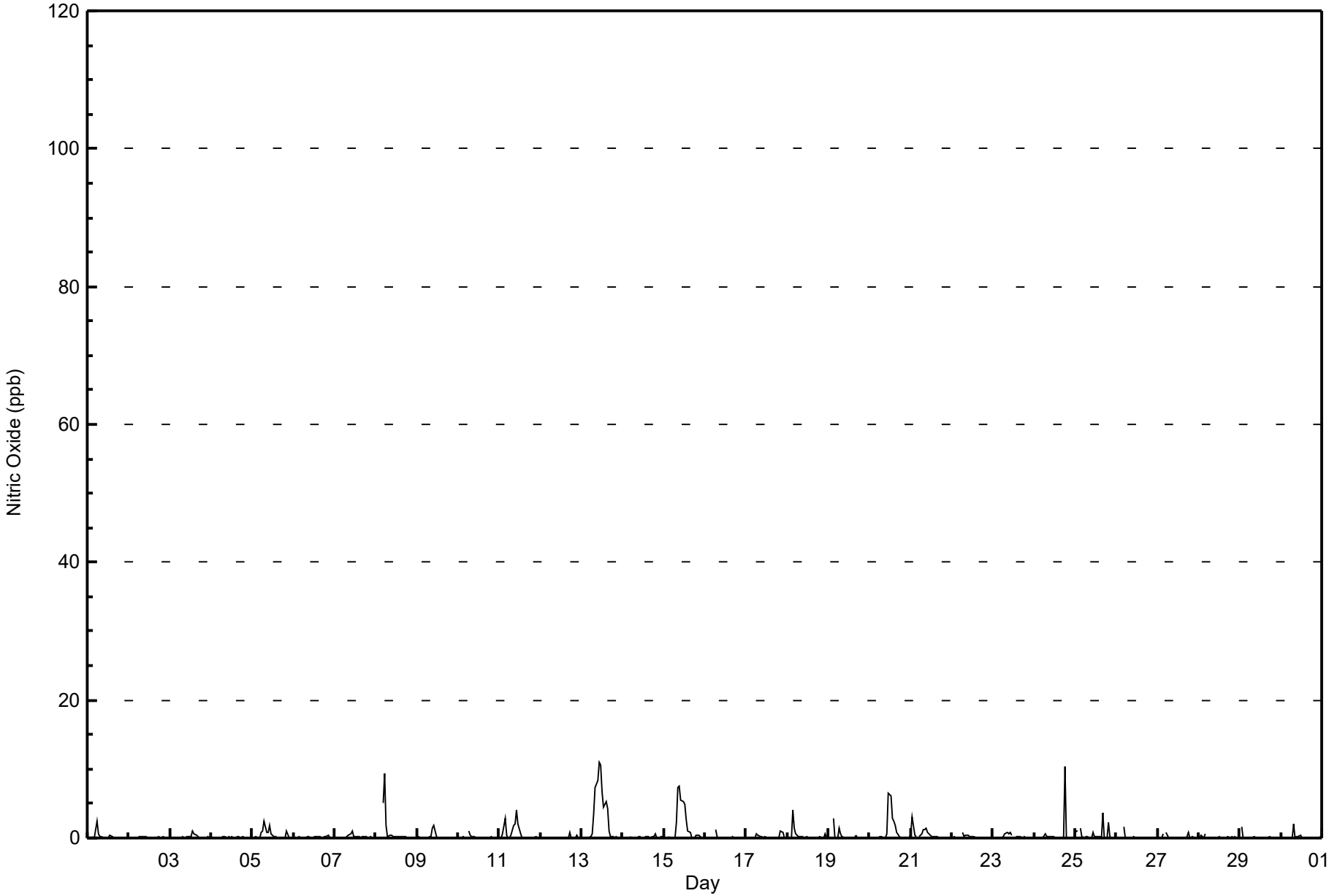
Z - zerospan C - Calibration M - Maintenance PF - Power Failure

Wood Buffalo Environmental Association

Hourly Averages

Nitric Oxide (NO) - ppb

Anzac - September 2024



Concentration Ranges (ppb)	Number of Hours	%	Cumulative %
0 - 20	681	100.00	100.00
21 - 40	0	0.00	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: 681

Total Number of Hours: 720

Wood Buffalo Environmental Association

Frequency Distribution

Nitric Oxide (NO) - ppb

Anzac - September 2024

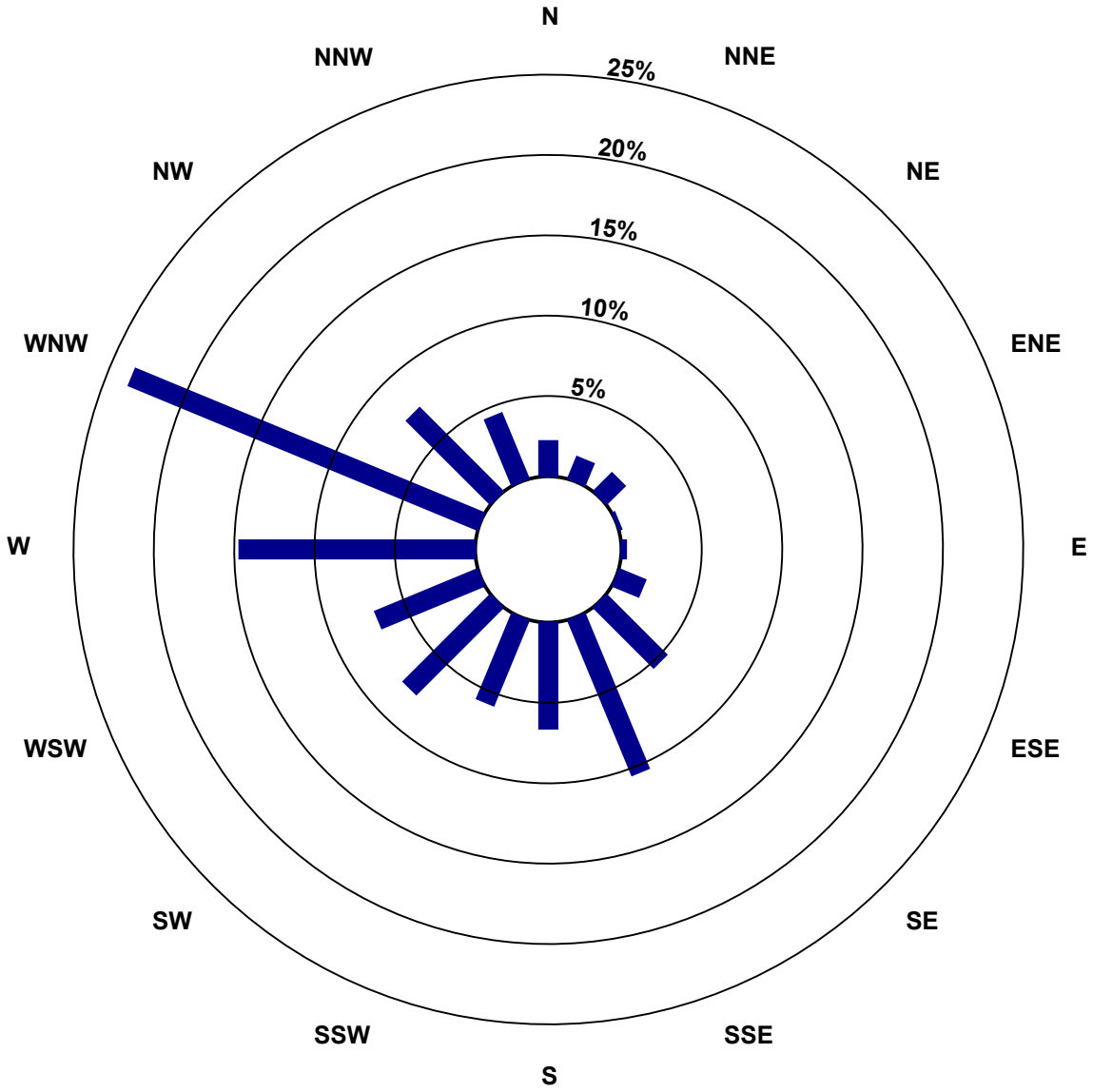
Concentration Ranges (ppb)	Wind Direction																
	N	NNE	NE	ENE	E	ESE	SE	SSE	S	SSW	SW	WSW	W	WNW	NW	NNW	**Totals**
0 - 20	15	10	11	1	2	12	36	71	45	39	52	47	100	160	50	30	681
21 - 40	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
11 - 80	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
81 - 159	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
> 159	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Totals	15	10	11	1	2	12	36	71	45	39	52	47	100	160	50	30	681

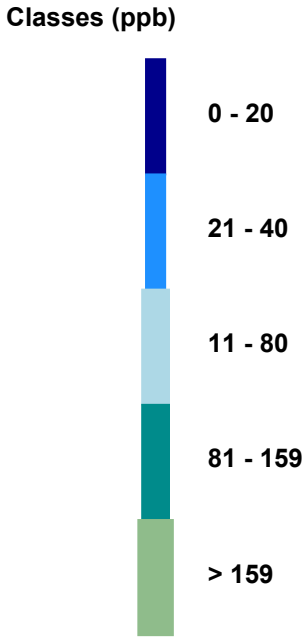
Total Number of Valid Hours: 681

Total Number of Hours: 720

Nitric Oxide (NO) - ppb

Anzac





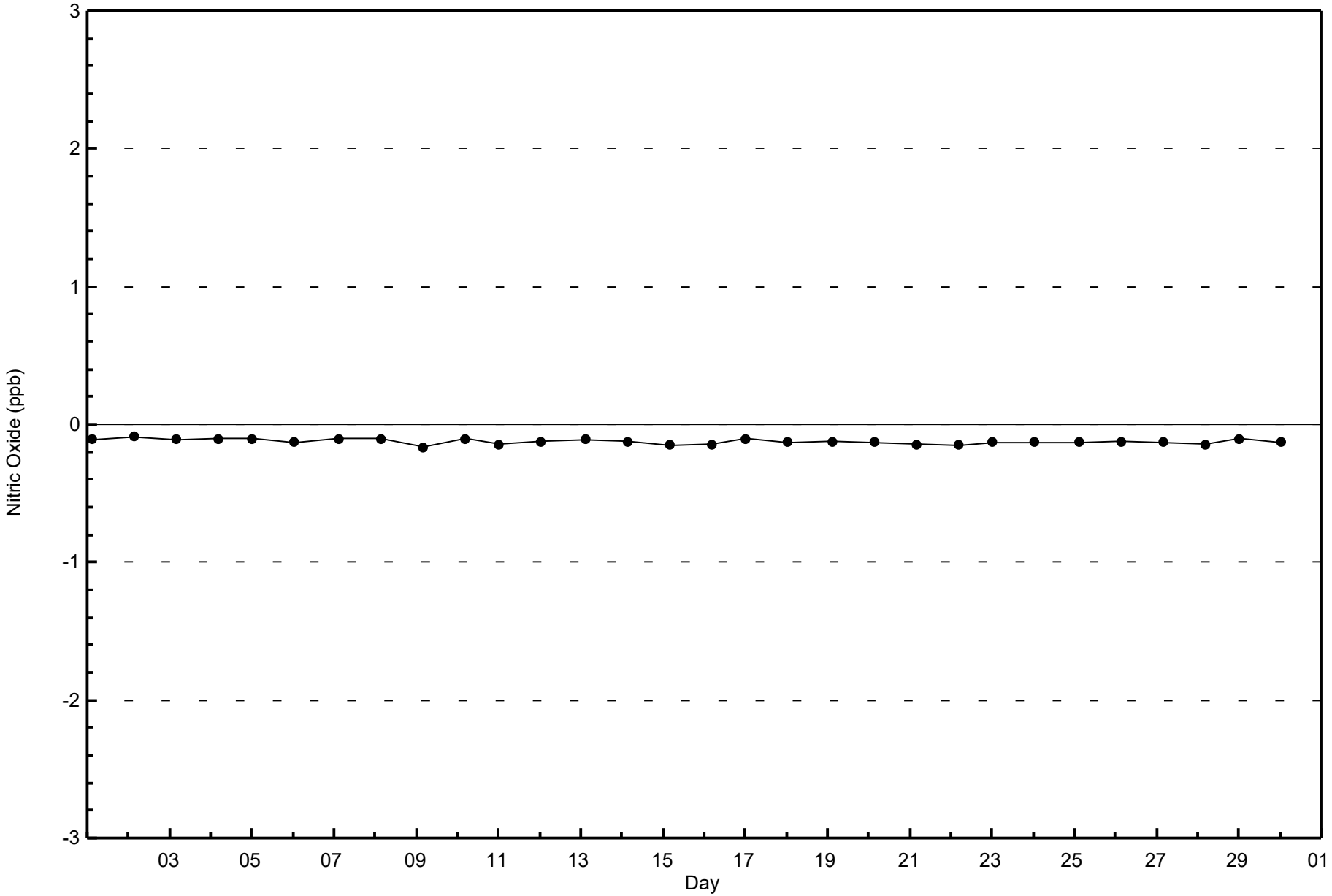
Total Number of Valid Hours: 681

Wood Buffalo Environmental Association

Zero Responses

Nitric Oxide (NO) - ppb

Anzac - September 2024

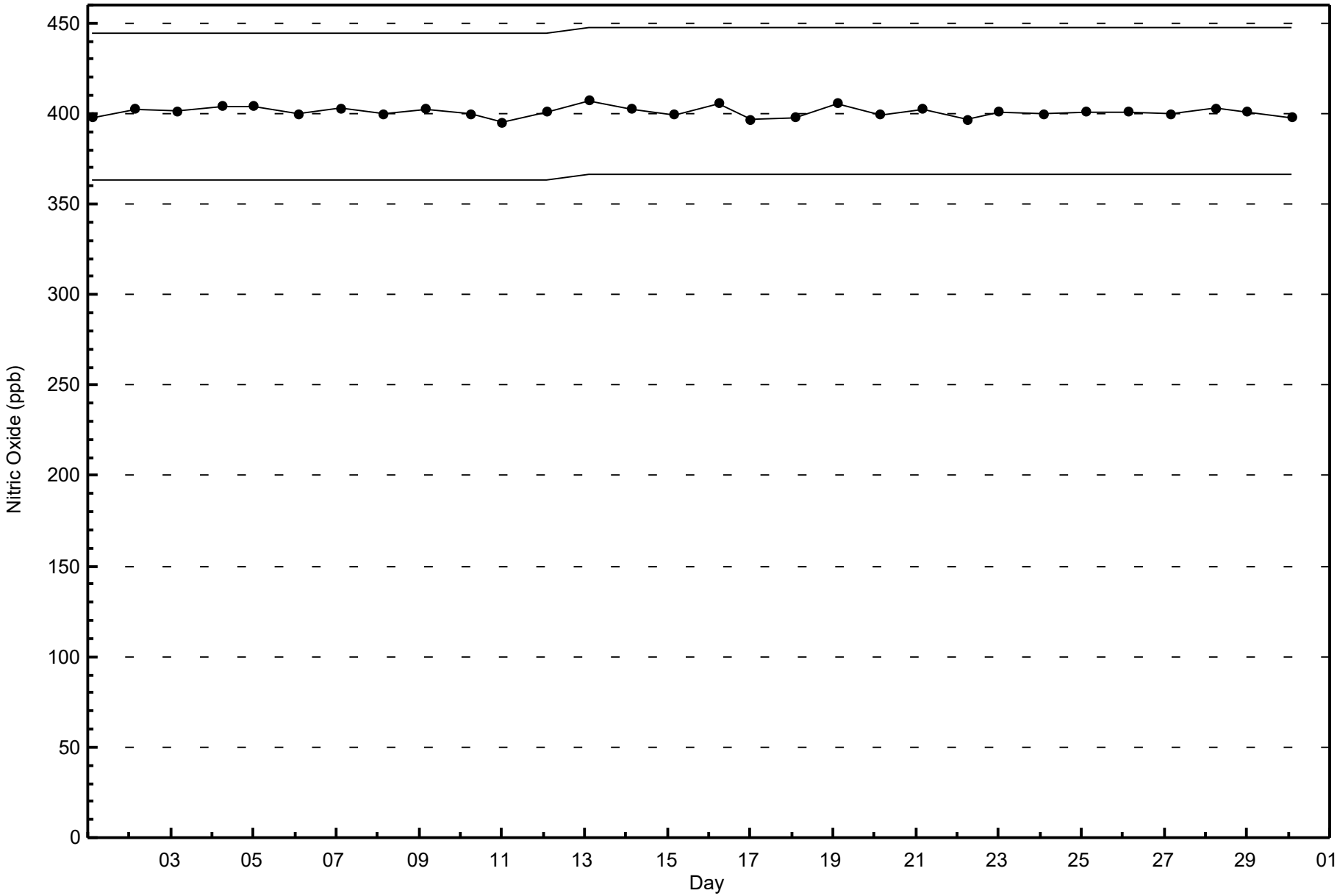


Wood Buffalo Environmental Association

Span Responses

Nitric Oxide (NO) - ppb

Anzac - September 2024



Wood Buffalo Environmental Association

Summary of Hour Averages

Nitrogen Dioxide (NO_2) - ppb

Anzac - September 2024

Number of Exceedences (AAAQO): 1-hr: 0 24-hr: 0

Maximum Value: 16.0 ppb on Sep 13 15:00

Maximum Daily Average: 7.7 ppb on Sep 13

Minimum Value: 0.2 ppb on Sep 24 14:00

Minimum Daily Average: 0.4 ppb on Sep 30

Maximum Diurnal Average: 2.1 ppb at hour 11

Minimum Diurnal Average: 1.1 ppb at hour 24

Monthly Average: 1.52 ppb

Percentiles: $P_1 = 0.2$ $P_{10} = 0.4$ $Q_1 = 0.6$ Median = 0.9 $Q_3 = 1.5$ $P_{90} = 3.0$ $P_{99} = 11.0$

Hours in Service:	720
Hours of Data:	681
Hours of Missing Data:	39
Hours of Calibration:	35
Percent Operational Time:	99.4

Day	Hourly Period Ending At (MST)																								Daily	Daily
	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24	Average	Maximum
1-Sep	0.8	0.7	Z	1.0	0.9	3.1	0.9	0.8	0.9	0.9	0.8	0.6	0.5	0.9	0.6	0.9	0.6	0.8	0.9	1.2	1.1	1.0	0.6	0.6	0.9	3.1
2-Sep	0.6	0.6	0.5	Z	2.2	2.3	1.1	1.1	1.0	1.0	0.8	0.7	0.9	0.8	0.7	0.5	0.6	1.4	0.9	1.0	1.6	2.1	1.0	1.4	1.1	2.3
3-Sep	1.1	1.1	1.0	0.7	Z	1.5	0.9	1.2	0.6	0.5	1.0	1.4	2.4	3.9	1.9	2.5	2.2	1.6	1.5	1.3	0.9	1.9	3.1	2.8	1.6	3.9
4-Sep	2.9	2.6	3.1	2.5	0.9	Z	0.9	0.6	0.5	0.4	0.5	0.4	0.5	0.4	0.3	0.5	0.9	0.4	1.2	0.7	1.3	0.4	0.4	0.4	1.0	3.1
5-Sep	Z	0.6	0.6	2.8	3.2	3.8	2.4	3.2	1.7	1.8	3.7	1.5	0.7	0.9	0.9	PF	PF	PF	0.3	0.4	2.7	0.6	0.5	0.8	1.7	3.8
6-Sep	1.4	Z	1.3	1.3	1.3	1.3	1.4	1.5	1.5	1.4	1.3	1.6	1.6	1.7	2.2	2.5	2.1	1.8	1.8	2.1	3.3	1.6	1.4	1.3	1.7	3.3
7-Sep	1.3	1.2	Z	1.5	1.2	0.9	0.9	1.6	2.5	3.4	2.4	1.3	1.2	1.0	0.9	0.9	1.3	1.7	1.3	1.2	1.1	1.1	1.1	1.3	1.4	3.4
8-Sep	1.3	1.4	1.7	Z	1.8	3.3	1.9	1.4	2.4	2.7	2.4	2.1	2.4	1.2	1.1	1.1	1.5	1.1	0.8	0.7	1.4	1.2	2.6	2.0	1.7	3.3
9-Sep	2.2	1.6	3.0	2.8	Z	2.6	2.4	2.5	2.5	4.8	6.0	0.9	0.5	0.4	0.4	0.4	0.3	0.4	0.4	0.4	0.5	0.5	0.5	0.4	1.6	6.0
10-Sep	0.4	0.4	0.4	0.4	0.3	Z	1.3	1.0	0.7	0.6	0.5	0.4	0.5	0.4	0.3	0.3	0.4	0.7	0.4	0.6	0.8	0.8	0.6	0.6	0.6	1.3
11-Sep	Z	0.9	0.7	0.4	0.3	0.3	0.4	0.7	2.4	2.6	5.6	3.9	1.5	0.5	0.5	0.6	0.5	0.4	0.4	0.9	1.4	1.3	0.7	0.6	1.2	5.6
12-Sep	0.5	Z	1.1	0.9	1.2	0.8	0.9	0.6	0.6	0.6	C	C	C	C	C	1.1	1.0	2.1	0.9	0.9	0.8	3.0	1.0	0.9	1.1	3.0
13-Sep	0.8	0.9	Z	1.4	2.9	6.8	8.1	8.8	8.9	9.6	11.8	13.0	12.9	13.0	16.0	12.8	8.0	5.5	5.8	7.7	7.3	5.5	5.4	4.4	7.7	16.0
14-Sep	3.9	2.5	1.3	Z	1.4	1.1	0.9	0.9	0.8	0.8	0.8	0.8	0.9	0.9	1.0	0.8	0.6	1.1	1.0	1.8	0.8	1.1	1.3	1.1	1.2	3.9
15-Sep	0.7	0.7	0.7	0.9	Z	1.3	0.9	4.4	9.5	8.8	9.0	7.4	7.6	5.6	3.4	3.0	1.2	1.1	1.0	1.2	1.9	1.2	0.6	0.5	3.2	9.5
16-Sep	0.6	0.7	0.6	0.5	0.8	Z	2.0	1.1	0.8	0.7	0.7	0.7	0.5	0.5	0.6	0.5	1.1	1.0	0.7	0.8	1.0	0.7	0.8	0.9	0.8	2.0
17-Sep	Z	0.8	0.8	0.8	0.6	0.6	1.2	1.6	0.8	0.9	0.5	0.8	0.6	0.7	0.8	0.9	0.9	0.9	1.0	0.9	2.4	4.7	2.2	1.5	1.2	4.7
18-Sep	1.9	Z	1.4	2.4	2.2	2.9	2.7	1.8	1.5	1.2	0.9	1.1	0.7	0.6	0.5	0.4	0.4	0.5	0.4	1.6	1.1	0.8	1.0	0.6	1.2	2.9
19-Sep	0.5	0.7	Z	1.9	1.1	1.7	1.7	1.4	1.1	0.5	0.5	0.4	0.5	0.7	0.6	0.9	3.9	0.4	0.4	0.7	1.2	1.7	1.3	0.8	1.1	3.9
20-Sep	0.8	0.9	0.8	Z	0.9	1.7	3.4	4.4	1.1	1.0	2.8	11.8	10.5	7.1	5.6	3.9	2.7	1.4	1.5	1.0	0.9	1.1	1.7	2.6	3.0	11.8
21-Sep	3.4	5.0	5.5	4.4	Z	3.4	3.4	1.8	1.9	2.2	1.3	1.1	1.0	0.7	1.1	1.1	0.9	1.0	0.6	0.6	0.8	0.6	1.7	1.6	2.0	5.5
22-Sep	0.9	0.7	1.5	1.7	1.0	Z	1.3	1.1	1.1	0.9	0.8	0.9	0.8	0.7	0.5	0.5	0.6	0.7	0.7	0.6	0.6	0.6	0.9	1.2	0.9	1.7
23-Sep	Z	1.0	0.8	0.6	0.8	0.7	0.9	2.0	2.3	1.3	1.7	1.2	M	1.1	1.1	0.9	1.0	1.1	1.1	0.6	0.4	0.3	0.3	0.5	1.0	2.3
24-Sep	0.5	Z	0.7	0.6	0.6	0.6	0.8	0.6	0.4	0.5	0.4	0.4	0.3	0.2	0.3	0.3	0.3	0.4	5.6	0.9	0.7	0.5	0.5	0.6	0.7	5.6
25-Sep	1.4	1.8	Z	1.8	1.7	5.5	10.8	3.9	0.3	0.5	2.3	1.4	1.3	1.2	1.0	0.7	4.5	1.0	1.0	4.3	1.4	0.8	0.7	0.4	2.2	10.8
26-Sep	0.3	0.4	0.5	Z	2.1	0.6	0.4	0.5	0.4	0.6	0.8	0.4	0.3	0.3	0.4	0.5	0.7	0.8	0.7	0.8	0.8	0.7	0.8	0.9	0.6	2.1
27-Sep	0.7	0.8	0.6	1.1	Z	2.5	0.9	0.7	0.5	0.4	0.4	0.4	0.4	0.5	0.7	1.0	1.0	1.2	2.5	2.5	0.8	0.5	0.5	0.4	0.9	2.5
28-Sep	0.4	0.5	0.4	0.2	0.8	Z	0.5	0.5	0.4	0.3	0.3	0.2	0.4	0.4	0.3	0.5	0.4	1.3	0.8	1.0	0.7	1.3	0.8	0.7	0.6	1.3
29-Sep	Z	1.1	1.2	1.9	1.7	1.0	1.3	0.5	0.8	0.3	0.3	0.4	0.2	0.2	0.2	0.2	1.1	2.2	4.5	5.2	4.2	5.2	0.9	0.7	1.5	5.2
30-Sep	0.5	Z	0.5	0.3	0.3	0.3	0.2	1.9	0.4	0.4	0.2	0.4	0.3	0.2	0.2	0.2	0.2	0.3	0.5	0.4	0.3	0.4	0.3	0.5	0.4	1.9
	1.2	1.2	1.2	1.4	1.3	2.0	1.9	1.8	1.7	1.7	2.1	2.0	1.9	1.6	1.5	1.4	1.4	1.2	1.4	1.5	1.5	1.4	1.2	1.1	Diurnal Average	
	3.9	5.0	5.5	4.4	3.2	6.8	10.8	8.8	9.5	9.6	11.8	13.0	12.9	13.0	16.0	12.8	8.0	5.5	5.8	7.7	7.3	5.5	5.4	4.4	Diurnal Maximum	

Z - zerospan C - Calibration M - Maintenance PF - Power Failure

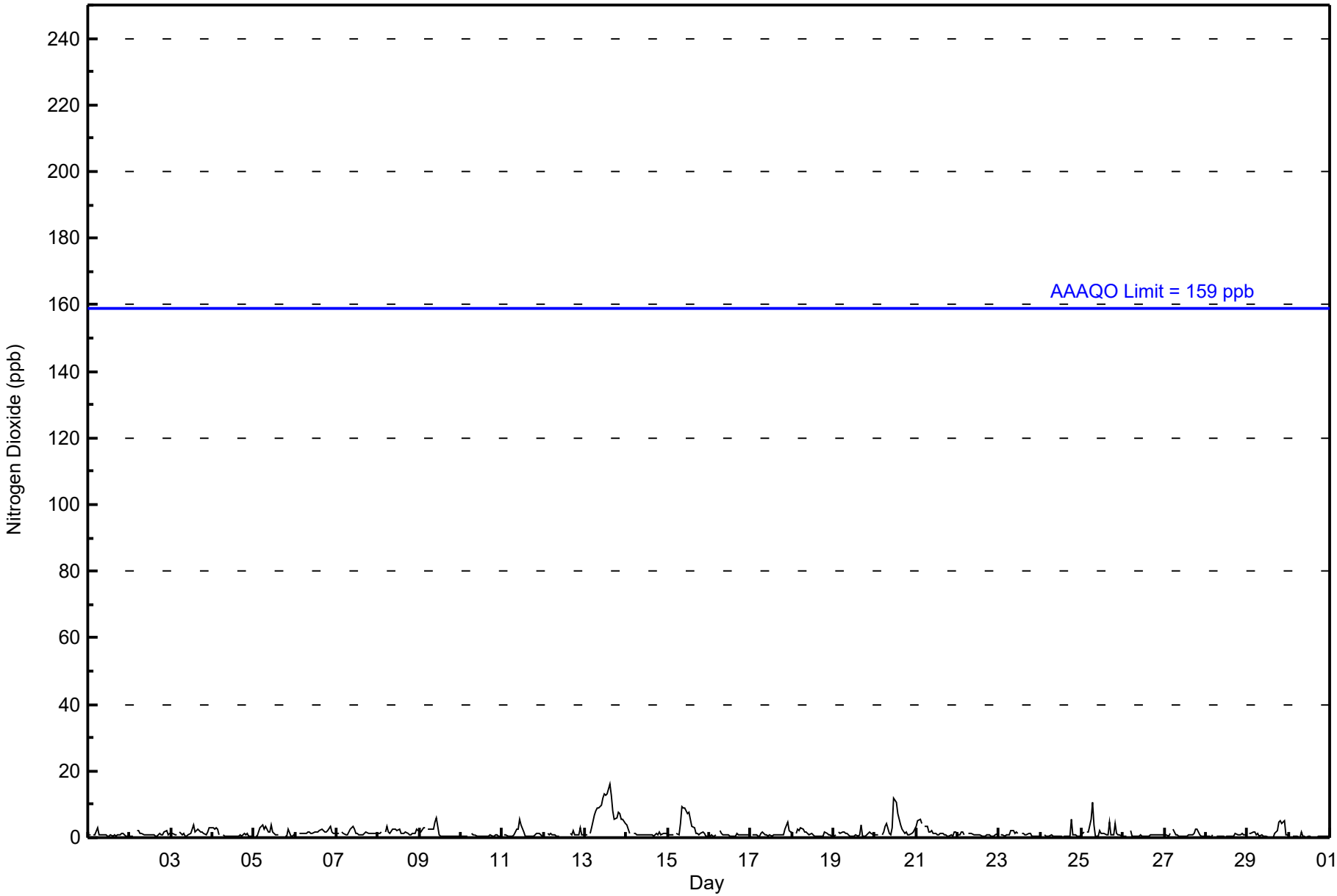
Alberta Ambient Air Quality Objectives (AAAQO): 1-hr 159 ppb

Wood Buffalo Environmental Association

Hourly Averages

Nitrogen Dioxide (NO_2) - ppb

Anzac - September 2024



Nitrogen Dioxide (NO_2) - ppb
Anzac - September 2024

Concentration Ranges (ppb)	Number of Hours	%	Cumulative %
0 - 20	681	100.00	100.00
21 - 40	0	0.00	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: 681

Total Number of Hours: 720

Wood Buffalo Environmental Association

Frequency Distribution

Nitrogen Dioxide (NO_2) - ppb

Anzac - September 2024

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	10	11	1	2	12	36	71	45	39	52	47	100	160	50	30	681
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	10	11	1	2	12	36	71	45	39	52	47	100	160	50	30	681

Total Number of Valid Hours: 681

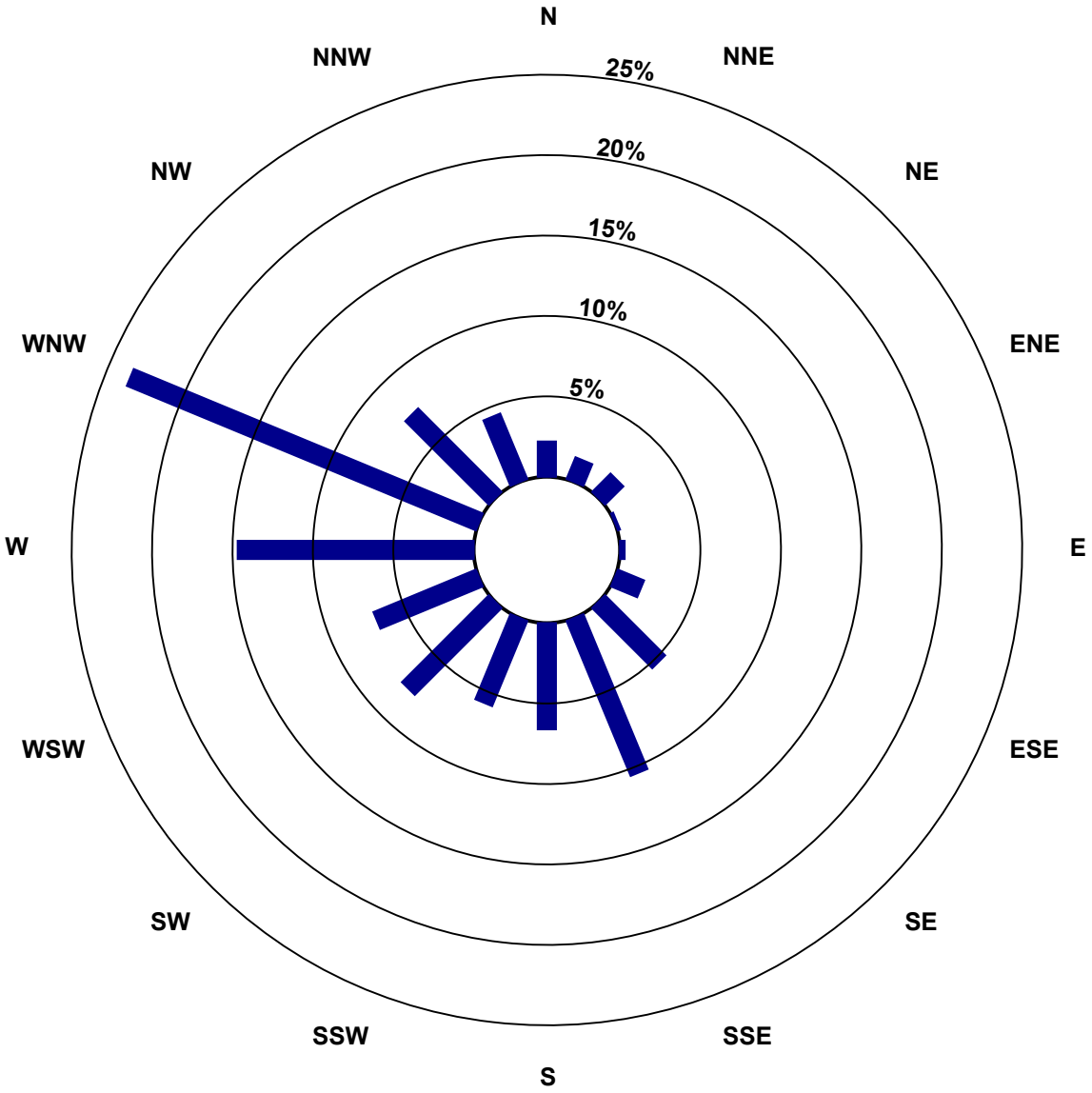
Total Number of Hours: 720

Wood Buffalo Environmental Association

Wind Rose Sep 2024

Nitrogen Dioxide (NO_2) - ppb

Anzac



Classes (ppb)

0 - 20

21 - 40

11 - 80

81 - 159

> 159

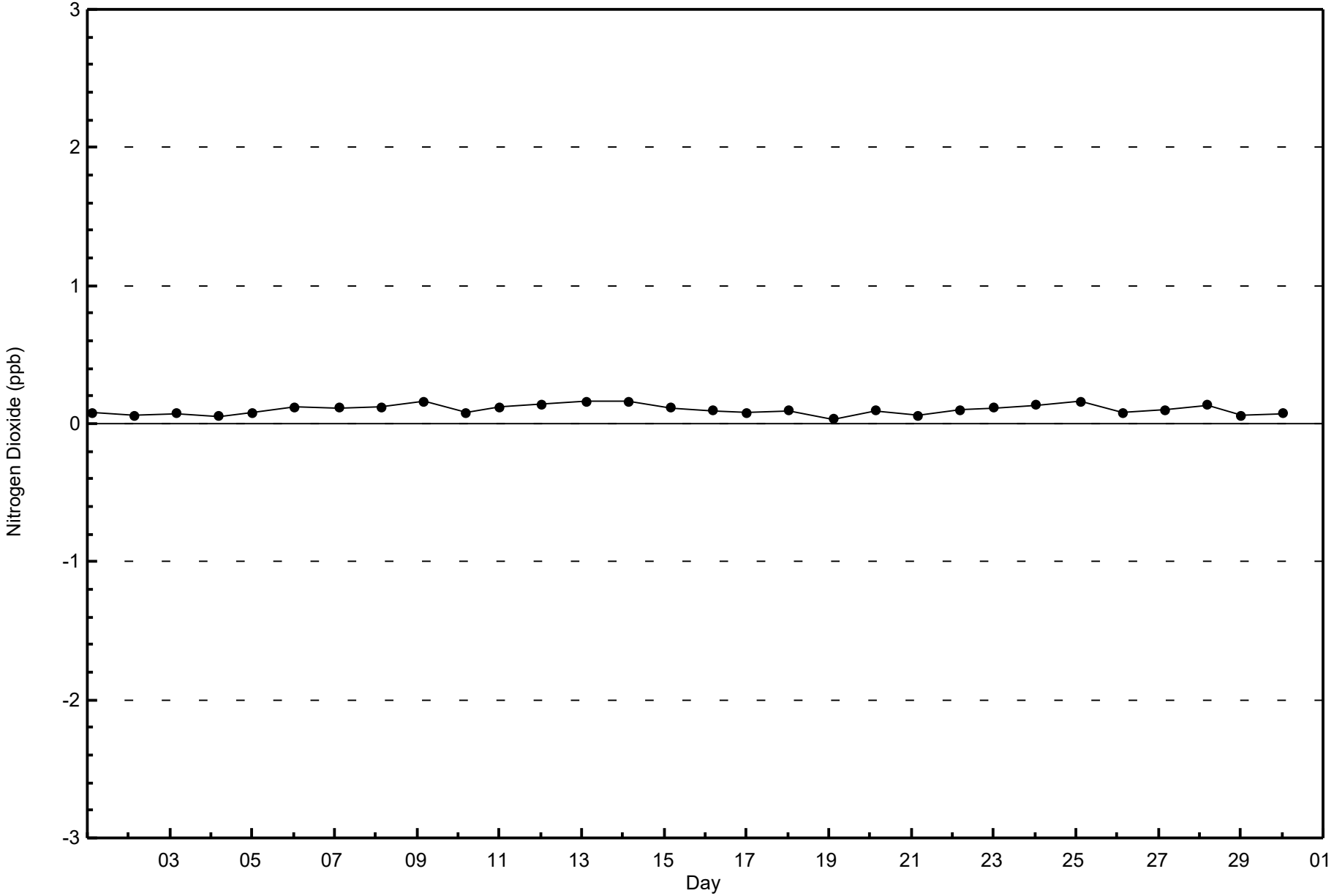
Total Number of Valid Hours: 681

Wood Buffalo Environmental Association

Zero Responses

Nitrogen Dioxide (NO_2) - ppb

Anzac - September 2024

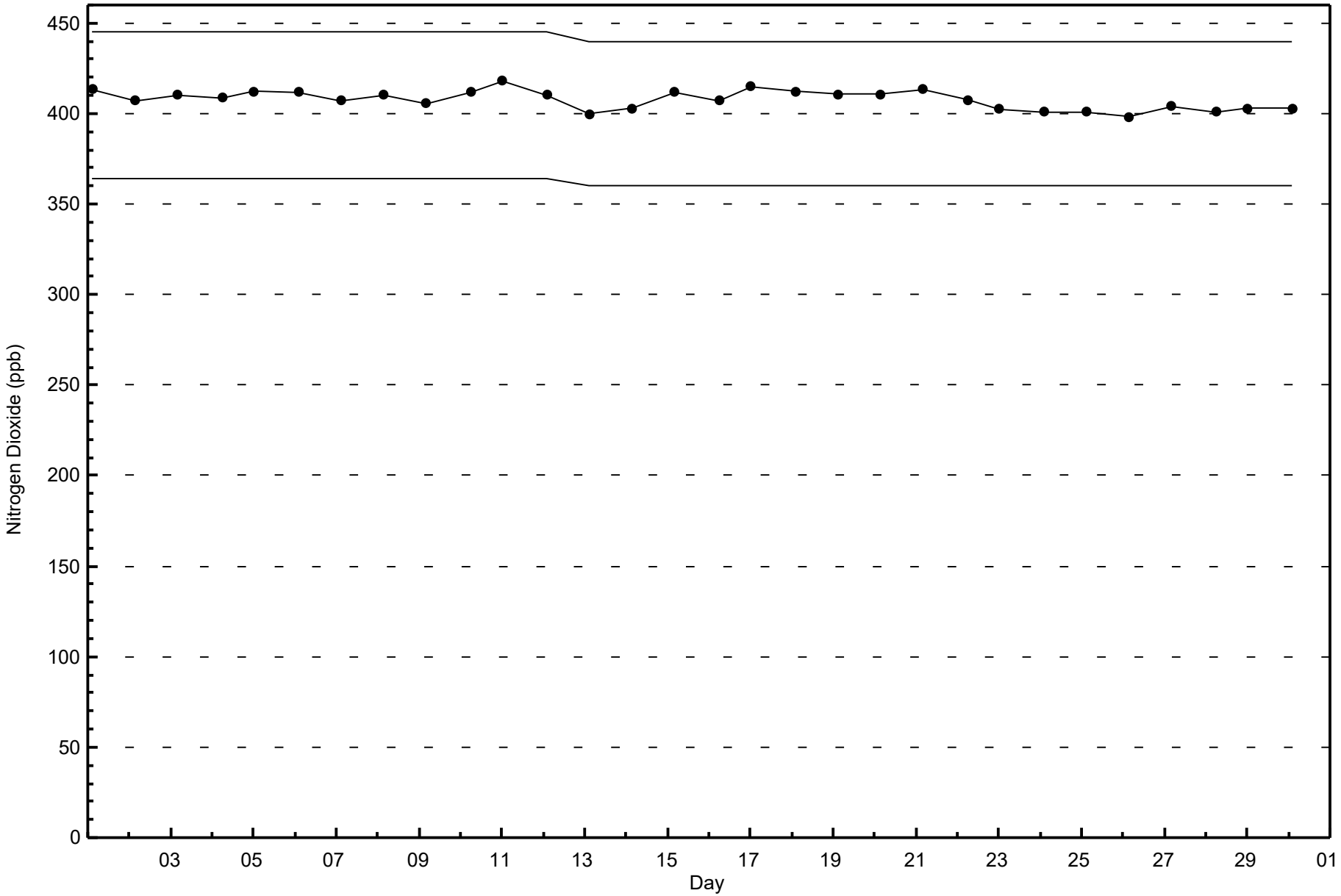


Wood Buffalo Environmental Association

Span Responses

Nitrogen Dioxide (NO_2) - ppb

Anzac - September 2024



Wood Buffalo Environmental Association

Summary of Hour Averages

Nitrogen Oxides (NO_X) - ppb

Anzac - September 2024

Maximum Value: 23.7 ppb on Sep 13 12:00

Maximum Daily Average: 10.5 ppb on Sep 13

Minimum Value: 0.2 ppb on Sep 29 16:00

Minimum Daily Average: 0.5 ppb on Sep 30

Maximum Diurnal Average: 3.1 ppb at hour 11

Minimum Diurnal Average: 1.1 ppb at hour 24

Monthly Average: 1.93 ppb

Percentiles: P_1 = 0.2 P_{10} = 0.4 Q_1 = 0.6 Median = 1.0 Q_3 = 1.7 P_{90} = 3.8 P_{99} = 17.1

Hours in Service:	720
Hours of Data:	681
Hours of Missing Data:	39
Hours of Calibration:	35
Percent Operational Time:	99.4

Day	Hourly Period Ending At (MST)																								Daily	Daily
	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24	Average	Maximum
1-Sep	0.8	0.7	Z	1.0	0.9	5.6	1.4	0.9	1.0	1.0	0.9	0.7	0.6	1.2	0.7	1.0	0.7	0.9	1.0	1.2	1.2	1.0	0.6	0.6	1.1	5.6
2-Sep	0.6	0.6	0.5	Z	2.2	2.4	1.2	1.3	1.1	1.1	0.9	0.8	1.0	0.9	0.8	0.6	0.7	1.5	1.0	1.1	1.7	2.2	1.0	1.4	1.1	2.4
3-Sep	1.1	1.1	1.0	0.7	Z	1.5	0.9	1.4	0.7	0.5	1.2	1.7	2.6	4.9	2.6	2.9	2.5	1.7	1.5	1.3	0.9	1.9	3.2	2.9	1.8	4.9
4-Sep	3.0	2.7	3.1	2.5	0.9	Z	1.0	0.7	0.6	0.5	0.6	0.5	0.6	0.4	0.3	0.6	1.0	0.4	1.3	0.7	1.3	0.4	0.4	0.4	1.0	3.1
5-Sep	Z	0.6	0.7	2.8	3.2	4.5	3.3	5.6	2.6	2.6	5.6	2.1	0.8	1.1	1.0	PF	PF	PF	0.4	0.5	3.6	0.6	0.5	0.8	2.1	5.6
6-Sep	1.4	Z	1.3	1.4	1.4	1.3	1.5	1.6	1.6	1.5	1.4	1.7	1.7	1.9	2.4	2.7	2.2	1.9	1.9	2.2	3.6	1.6	1.4	1.4	1.8	3.6
7-Sep	1.3	1.3	Z	1.6	1.2	1.0	1.0	1.8	3.0	4.0	3.3	1.4	1.4	1.2	1.0	1.0	1.4	1.8	1.4	1.3	1.1	1.2	1.1	1.3	1.6	4.0
8-Sep	1.3	1.4	1.7	Z	7.0	12.7	3.7	1.6	2.8	3.2	2.6	2.3	2.7	1.4	1.2	1.2	1.6	1.2	0.9	0.8	1.5	1.3	2.7	2.1	2.6	12.7
9-Sep	2.3	1.7	3.1	2.9	Z	2.7	2.5	2.7	2.7	6.3	7.7	1.0	0.6	0.5	0.5	0.4	0.4	0.4	0.4	0.4	0.5	0.6	0.5	0.4	1.8	7.7
10-Sep	0.4	0.4	0.4	0.6	0.4	Z	2.3	1.4	0.8	0.7	0.6	0.4	0.5	0.5	0.4	0.3	0.5	0.8	0.4	0.7	0.8	0.8	0.6	0.6	0.7	2.3
11-Sep	Z	0.9	1.3	3.3	0.8	0.3	0.5	1.1	4.2	4.6	9.6	6.0	2.1	0.6	0.5	0.7	0.5	0.4	0.4	0.9	1.4	1.5	0.7	0.6	1.9	9.6
12-Sep	0.5	Z	1.1	0.9	1.2	0.8	0.9	0.6	0.6	0.6	C	C	C	C	C	1.1	1.0	2.9	0.9	0.9	0.8	3.3	1.0	0.9	1.1	3.3
13-Sep	0.8	0.9	Z	1.4	2.9	6.9	8.6	12.2	16.1	17.9	22.8	23.7	19.6	17.4	21.2	17.0	9.0	5.8	5.9	7.8	7.5	5.6	5.5	4.5	10.5	23.7
14-Sep	3.9	2.5	1.3	Z	1.6	1.2	0.9	1.0	0.9	0.9	0.9	0.9	1.0	1.0	1.1	0.9	0.6	1.2	1.2	2.4	0.8	1.2	1.5	1.2	1.3	3.9
15-Sep	0.8	0.8	0.8	1.0	Z	1.4	1.0	6.6	16.9	16.3	14.6	12.6	12.5	8.2	4.3	3.8	1.3	1.2	1.1	1.6	2.4	1.3	0.7	0.6	4.9	16.9
16-Sep	0.6	0.7	0.6	0.5	0.8	Z	3.3	1.3	0.9	0.8	0.8	0.8	0.6	0.6	0.7	0.5	1.3	1.1	0.8	0.9	1.0	0.7	0.8	0.9	0.9	3.3
17-Sep	Z	0.8	0.8	0.8	0.6	0.6	1.8	2.0	1.0	1.0	0.6	1.0	0.7	0.8	0.9	1.0	1.0	1.0	1.0	0.9	3.5	5.5	2.2	1.5	1.3	5.5
18-Sep	1.9	Z	1.5	6.4	3.5	3.5	3.0	2.1	1.7	1.3	1.0	1.2	0.8	0.7	0.6	0.5	0.4	0.5	0.4	1.9	1.1	0.8	1.6	0.6	1.6	6.4
19-Sep	0.5	0.7	Z	4.7	1.1	1.7	3.2	2.0	1.4	0.6	0.6	0.4	0.5	0.8	0.7	1.0	4.4	0.4	0.4	0.7	1.3	1.8	1.3	0.8	1.3	4.7
20-Sep	0.8	0.9	0.8	Z	0.9	1.7	3.5	4.6	1.1	1.1	3.3	18.4	16.5	9.9	8.0	5.7	3.4	1.6	1.5	1.0	0.9	1.1	1.7	2.7	4.0	18.4
21-Sep	4.0	8.1	5.8	4.5	Z	3.5	4.1	3.1	3.2	3.7	2.1	1.6	1.2	0.8	1.3	1.3	1.0	1.1	0.7	0.6	0.8	0.6	1.7	1.6	2.4	8.1
22-Sep	0.9	0.8	1.5	1.7	1.1	Z	2.1	1.4	1.4	1.2	1.0	1.1	0.9	0.8	0.6	0.5	0.6	0.7	0.7	0.6	0.7	0.7	0.9	1.3	1.0	2.1
23-Sep	Z	1.0	0.8	0.7	0.9	0.7	1.1	2.6	3.2	2.0	2.5	1.7	M	1.4	1.4	1.1	1.2	1.2	1.2	0.6	0.4	0.3	0.3	0.5	1.2	3.2
24-Sep	0.5	Z	0.7	0.6	0.6	0.6	1.5	0.7	0.6	0.7	0.6	0.5	0.4	0.3	0.4	0.3	0.3	0.4	15.9	0.9	0.7	0.5	0.5	0.6	1.2	15.9
25-Sep	2.5	2.8	Z	3.3	1.8	5.5	11.0	4.1	0.3	0.5	3.2	1.6	1.5	1.3	1.1	0.8	8.1	1.0	1.0	6.5	1.5	0.8	0.7	0.4	2.7	11.0
26-Sep	0.3	0.4	0.5	Z	3.7	0.6	0.4	0.6	0.4	0.7	0.9	0.5	0.3	0.3	0.4	0.5	0.8	0.8	0.7	0.9	0.9	0.7	0.8	0.9	0.7	3.7
27-Sep	0.7	0.8	0.6	1.8	Z	3.3	0.9	0.7	0.5	0.4	0.4	0.5	0.5	0.5	0.7	1.1	1.0	1.4	3.2	2.5	1.0	0.5	0.5	0.4	1.0	3.3
28-Sep	0.5	0.8	0.5	0.2	1.3	Z	0.6	0.5	0.4	0.4	0.4	0.3	0.5	0.5	0.3	0.5	0.4	1.5	0.8	1.2	0.8	1.5	0.8	0.7	0.7	1.5
29-Sep	Z	2.6	1.2	2.0	1.7	1.0	1.4	0.6	1.0	0.3	0.3	0.4	0.2	0.2	0.2	0.2	1.1	2.4	4.5	5.3	4.2	5.2	0.9	0.7	1.6	5.3
30-Sep	0.5	Z	0.5	0.3	0.3	0.3	0.3	4.0	0.5	0.5	0.4	0.8	0.3	0.2	0.3	0.2	0.2	0.3	0.5	0.4	0.3	0.4	0.3	0.6	0.5	4.0
	1.3	1.4	1.3	1.9	1.7	2.6	2.3	2.3	2.4	2.6	3.1	3.0	2.6	2.1	1.9	1.7	1.7	1.3	1.8	1.6	1.6	1.5	1.2	1.1	Diurnal Average	
	4.0	8.1	5.8	6.4	7.0	12.7	11.0	12.2	16.9	17.9	22.8	23.7	19.6	17.4	21.2	17.0	9.0	5.8	15.9	7.8	7.5	5.6	5.5	4.5	Diurnal Maximum	

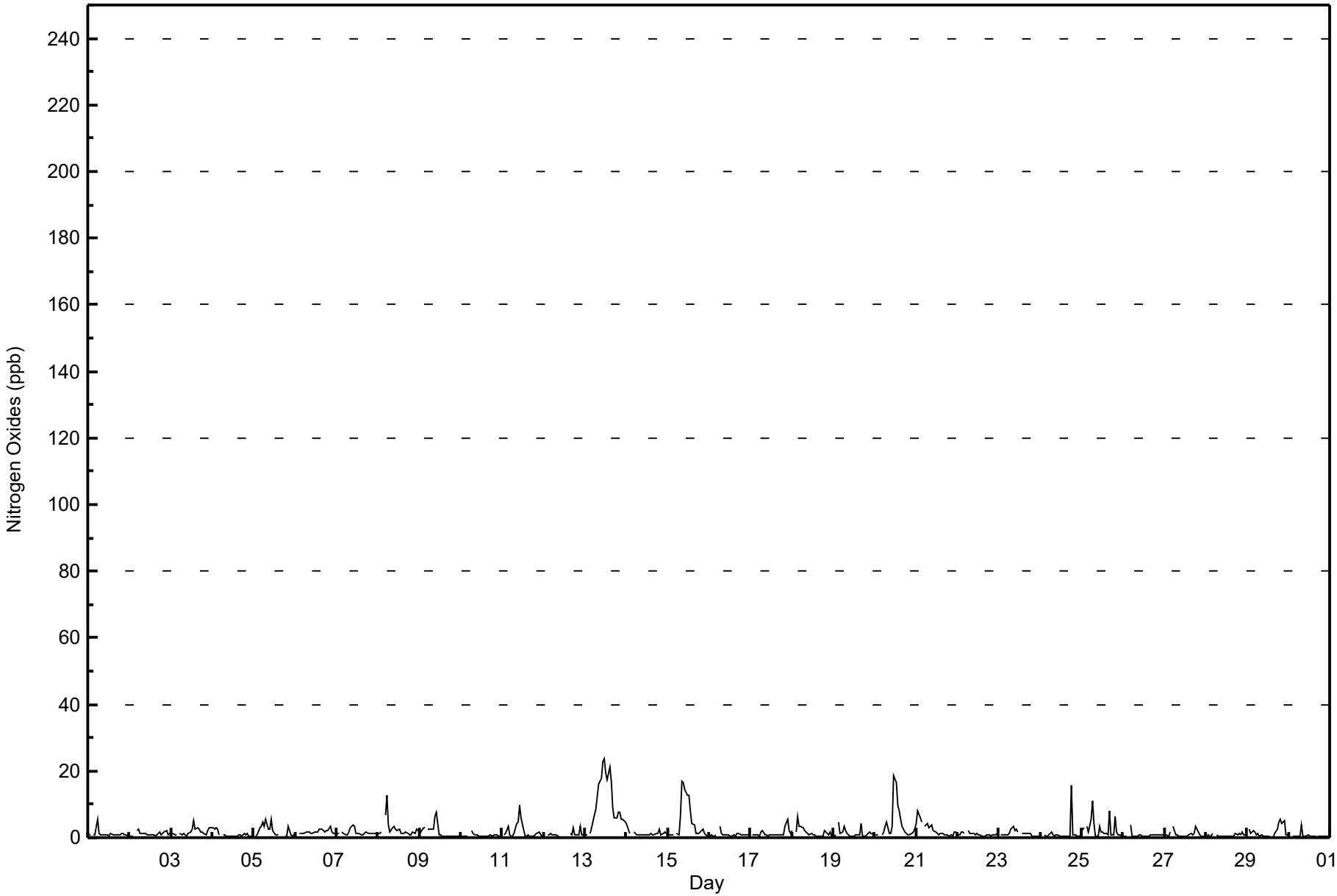
Z - zerospan C - Calibration M - Maintenance PF - Power Failure

Wood Buffalo Environmental Association

Hourly Averages

Nitrogen Oxides (NO_X) - ppb

Anzac - September 2024



Nitrogen Oxides (NO_X) - ppb
Anzac - September 2024

Concentration Ranges (ppb)	Number of Hours	%	Cumulative %
0 - 20	678	99.56	99.56
21 - 40	3	0.44	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: 681

Total Number of Hours: 720

Wood Buffalo Environmental Association

Frequency Distribution

Nitrogen Oxides (NO_X) - ppb

Anzac - September 2024

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	10	11	1	2	12	36	71	45	39	52	47	100	158	49	30	678
21 - 40	0	0	0	0	0	0	0	0	0	0	0	0	0	2	1	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	15	10	11	1	2	12	36	71	45	39	52	47	100	160	50	30	681

Total Number of Valid Hours: 681

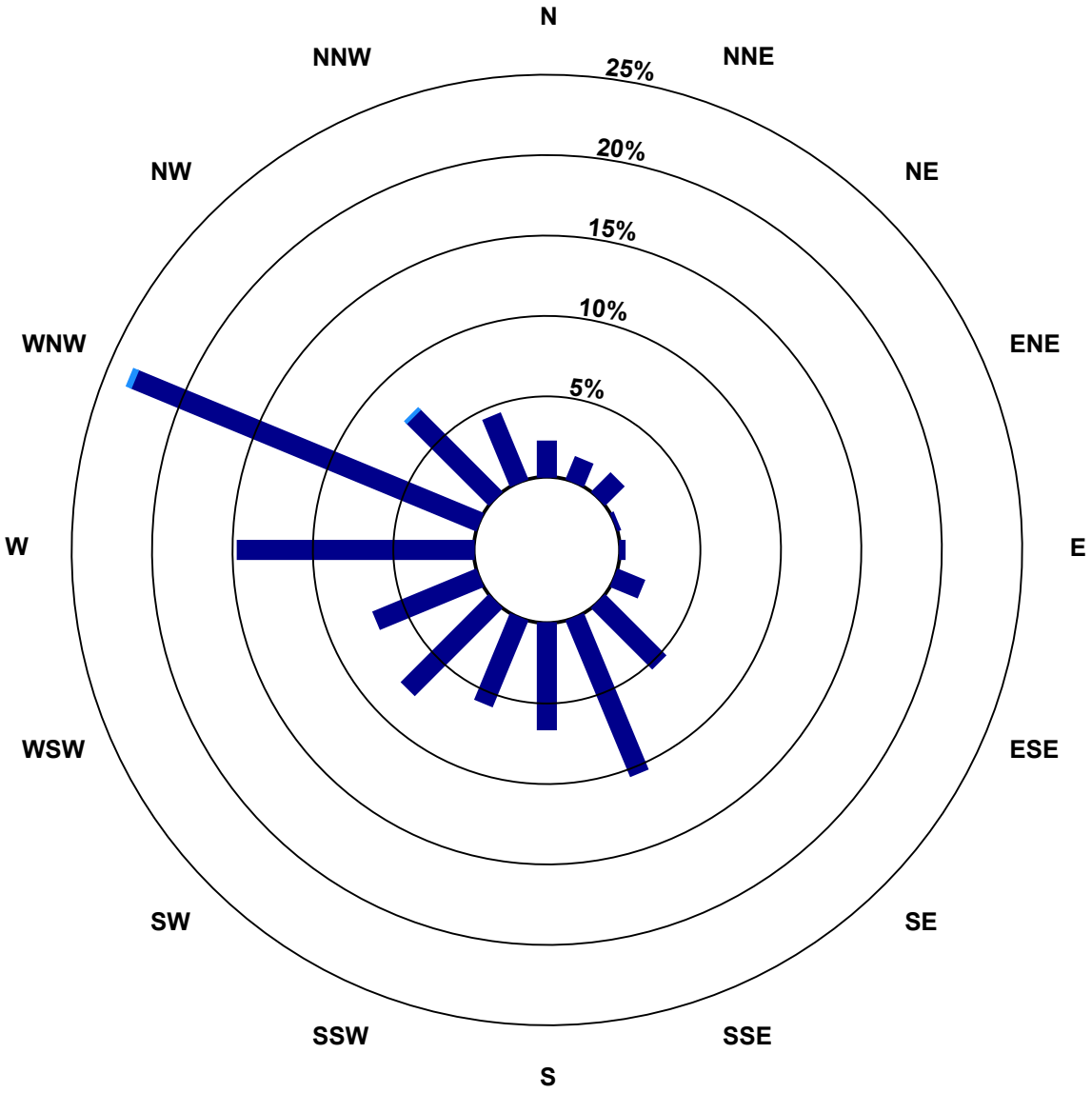
Total Number of Hours: 720

Wood Buffalo Environmental Association

Wind Rose Sep 2024

Nitrogen Oxides (NO_X) - ppb

Anzac



Classes (ppb)

0 - 20

21 - 40

11 - 80

81 - 159

> 159

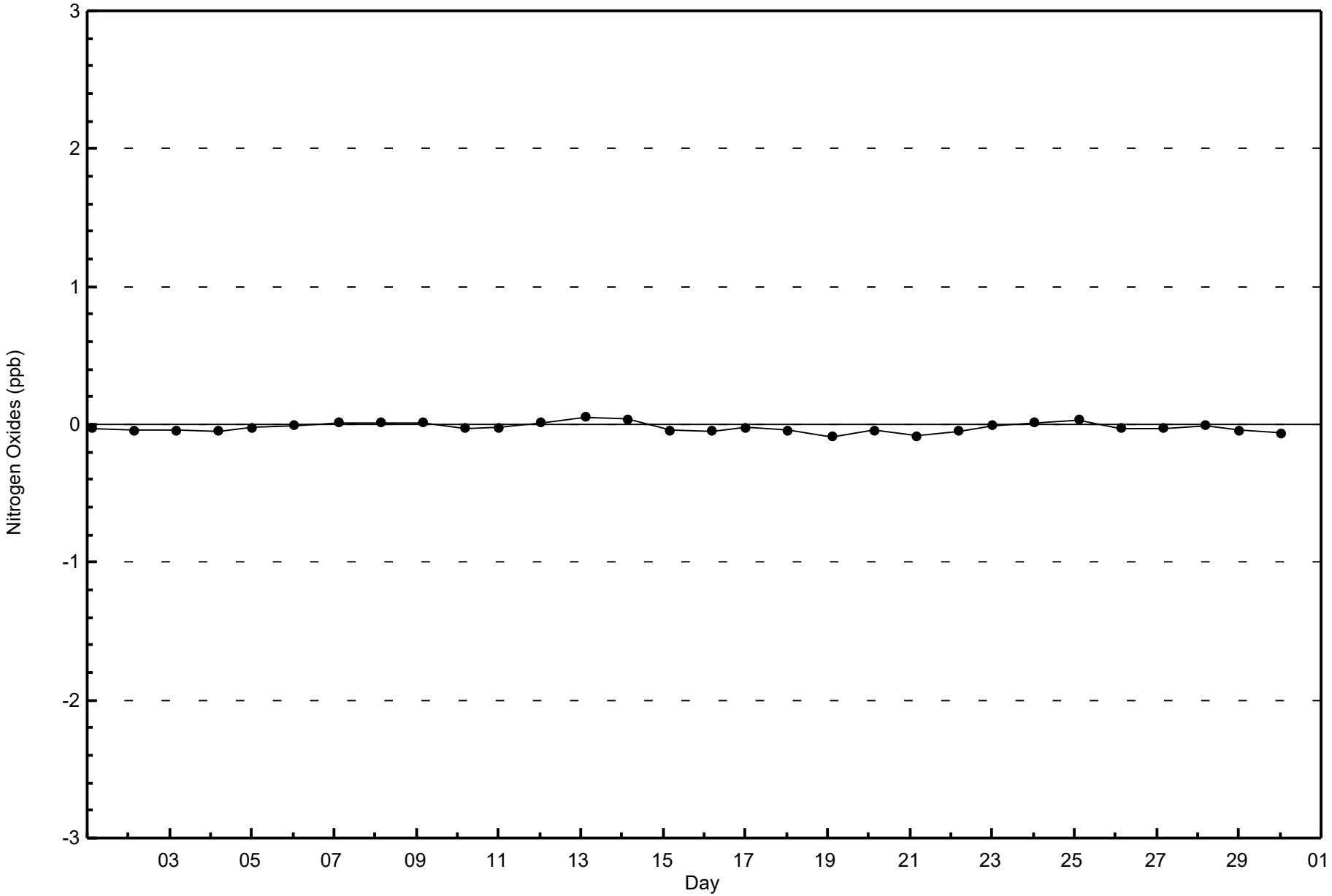
Total Number of Valid Hours: 681

Wood Buffalo Environmental Association

Zero Responses

Nitrogen Oxides (NO_X) - ppb

Anzac - September 2024

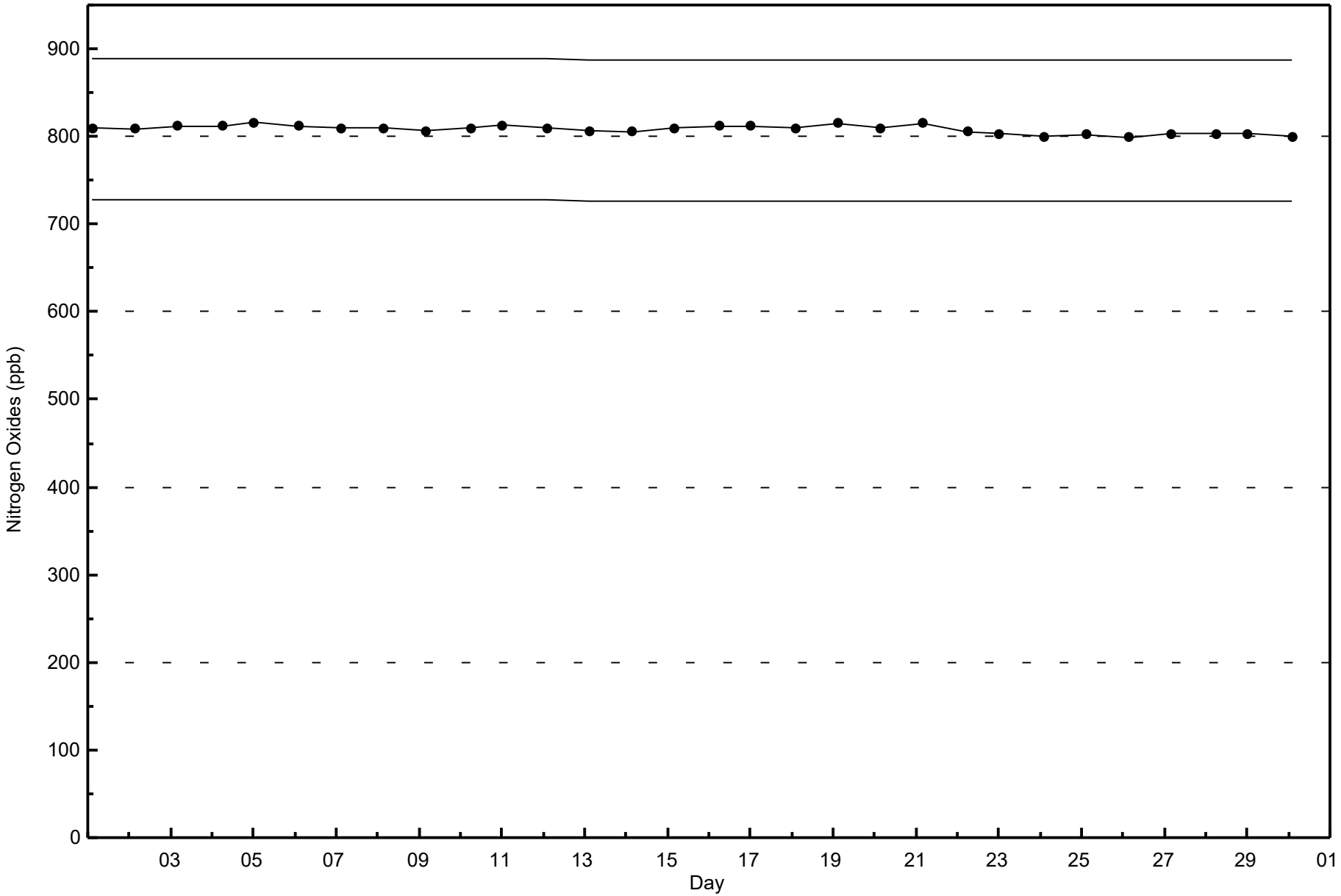


Wood Buffalo Environmental Association

Span Responses

Nitrogen Oxides (NO_X) - ppb

Anzac - September 2024



Wood Buffalo Environmental Association

Summary of Hour Averages

Ozone (O_3) - ppb

Anzac - September 2024

Number of Exceedences (AAAQO): 1-hr: 0 24-hr: 0
Maximum Value: 49.4 ppb on Sep 8 17:00 Maximum Daily Average: 27.6 ppb on Sep 6

Minimum Value: 0.0 ppb on Sep 13 08:00 Minimum Daily Average: 3.7 ppb on Sep 13
Maximum Diurnal Average: 27.9 ppb at hour 16 Minimum Diurnal Average: 12.7 ppb at hour 6
Monthly Average: 19.74 ppb Percentiles: P_1 = 0.3 P_{10} = 7.1 Q_1 = 12.5 Median = 20.0 Q_3 = 26.4 P_{90} = 31.9 P_{99} = 41.9

Hours in Service:	720
Hours of Data:	682
Hours of Missing Data:	38
Hours of Calibration:	34
Percent Operational Time:	99.4

Day	Hourly Period Ending At (MST)																								Daily	Daily
	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24	Average	Maximum
1-Sep	Z	11.9	6.2	20.9	16.5	18.5	19.9	19.7	22.7	27.6	32.1	32.1	32.6	34.1	34.8	40.3	36.1	32.8	31.0	21.0	18.3	18.6	17.2	19.2	24.5	40.3
2-Sep	19.8	Z	18.8	26.1	20.0	11.4	13.2	17.9	15.6	19.2	31.4	35.1	41.9	43.3	42.0	41.7	37.9	34.7	32.1	28.1	24.2	21.9	20.5	23.1	26.9	43.3
3-Sep	24.9	25.2	Z	26.8	25.1	23.6	23.3	23.2	21.7	20.5	21.4	24.5	24.5	17.2	22.6	25.1	26.5	23.7	21.0	17.6	16.1	14.4	11.0	11.0	21.3	26.8
4-Sep	10.9	7.9	6.2	Z	11.1	9.8	10.4	10.6	10.7	11.9	15.0	21.2	22.7	23.1	23.9	21.6	21.2	23.0	16.9	12.2	13.1	16.7	16.7	19.2	15.5	23.9
5-Sep	18.7	18.6	16.7	13.3	Z	4.5	2.2	7.1	15.4	20.8	21.2	24.8	26.8	28.8	30.8	PF	PF	PF	27.9	26.6	23.8	24.3	25.5	23.6	20.1	30.8
6-Sep	22.5	25.2	32.7	31.5	32.0	Z	37.1	36.2	34.1	32.6	31.0	30.6	32.0	33.9	33.2	30.1	21.5	14.2	11.0	9.6	19.2	28.8	28.5	27.2	27.6	37.1
7-Sep	Z	24.9	24.5	23.8	13.8	6.3	4.4	15.8	21.6	28.4	30.3	31.4	32.8	28.2	28.8	27.0	24.3	23.1	21.2	15.4	11.0	15.1	21.8	14.5	21.2	32.8
8-Sep	20.5	Z	16.3	8.8	7.2	2.4	5.7	9.9	21.4	32.3	41.1	44.0	42.4	40.1	38.8	41.8	49.4	43.1	31.1	27.0	22.1	21.0	35.3	27.8	27.4	49.4
9-Sep	32.6	37.4	Z	30.8	28.4	31.5	28.0	31.0	30.8	21.1	15.8	13.1	20.4	23.0	26.8	26.1	30.3	32.2	25.6	21.3	22.0	22.9	22.6	22.0	25.9	37.4
10-Sep	19.0	17.8	18.3	Z	20.2	19.7	18.5	19.0	19.4	20.0	22.4	23.7	24.3	23.9	24.4	25.4	26.1	25.1	18.4	10.9	10.7	7.5	6.3	6.8	18.6	26.1
11-Sep	5.9	7.7	4.0	3.6	Z	1.9	3.3	5.8	12.4	18.8	18.3	23.8	27.9	29.9	33.6	34.2	34.1	30.2	28.6	28.3	27.5	21.6	23.1	23.0	19.5	34.2
12-Sep	21.8	18.7	18.2	17.0	13.2	Z	15.8	16.2	16.0	15.8	15.0	13.8	14.3	14.1	13.1	13.4	14.0	12.3	12.7	11.9	10.5	7.6	9.5	8.4	14.1	21.8
13-Sep	Z	6.8	6.9	7.3	5.1	1.4	0.3	0.0	0.0	0.0	0.0	0.0	0.3	1.6	0.8	0.9	3.4	6.9	7.6	6.7	6.7	8.2	7.6	7.4	3.7	8.2
14-Sep	10.2	Z	11.9	13.2	15.0	18.6	19.9	20.4	20.7	20.6	22.4	26.5	30.7	32.9	31.1	32.6	35.4	32.2	18.3	12.6	10.9	11.9	8.3	4.1	20.0	35.4
15-Sep	1.8	4.5	Z	3.9	7.8	9.5	9.9	5.0	2.6	4.8	9.7	15.2	18.1	23.0	28.0	29.3	30.4	20.5	12.5	8.0	6.3	3.8	1.6	3.0	11.3	30.4
16-Sep	9.2	13.4	15.1	Z	17.6	20.0	19.4	15.8	18.2	19.6	C	C	C	C	30.7	30.7	29.6	27.8	21.7	24.0	21.8	15.8	16.7	18.3	20.3	30.7
17-Sep	17.5	11.3	11.0	16.2	Z	7.2	15.3	19.8	23.8	27.4	31.9	34.5	35.4	38.0	41.9	42.2	41.6	37.7	25.0	21.3	20.6	13.4	14.8	18.5	24.6	42.2
18-Sep	17.6	16.5	17.6	8.1	12.7	Z	10.6	26.1	36.5	33.8	29.7	25.6	25.2	23.3	20.7	20.2	22.1	23.3	25.8	13.4	6.8	3.4	4.8	11.7	18.9	36.5
19-Sep	Z	10.4	2.5	10.5	12.8	7.1	2.4	7.9	23.3	29.4	31.2	32.6	34.0	33.8	33.1	30.7	25.7	29.7	16.8	15.1	8.1	7.2	9.0	8.5	18.3	34.0
20-Sep	11.4	Z	9.5	15.2	16.7	16.0	14.2	23.1	32.6	26.2	25.1	9.1	9.7	11.9	14.0	15.7	21.0	22.7	21.2	19.6	18.1	16.9	14.5	12.1	17.2	32.6
21-Sep	9.6	6.2	Z	1.6	0.0	0.4	0.3	2.5	9.0	14.0	15.9	18.7	23.7	26.2	26.3	26.1	24.4	21.1	21.6	21.8	26.1	23.6	24.1	21.7	15.9	26.3
22-Sep	19.1	17.0	15.3	Z	9.7	6.0	4.4	8.9	15.5	17.0	18.4	19.1	20.5	21.6	28.2	31.9	31.0	21.9	15.8	14.7	8.0	6.3	14.5	17.4	16.6	31.9
23-Sep	11.1	6.9	12.8	12.8	Z	11.3	11.1	10.2	9.6	11.4	13.9	16.5	M	5.4	8.9	9.9	9.5	8.0	12.8	13.2	10.8	8.9	7.5	5.9	10.4	16.5
24-Sep	7.3	11.2	12.6	13.0	12.7	Z	11.1	12.2	13.1	15.4	21.2	24.2	31.8	36.0	37.7	37.4	38.4	38.0	26.0	21.5	17.7	13.0	8.4	9.8	20.4	38.4
25-Sep	Z	23.8	25.2	18.8	18.1	17.5	11.8	19.4	24.8	24.2	24.4	24.9	26.3	25.9	25.9	30.7	30.2	31.8	25.3	19.0	26.8	27.4	26.2	26.2	24.1	31.8
26-Sep	28.0	Z	25.6	23.5	21.1	17.3	20.1	23.3	30.1	26.5	17.8	17.5	23.3	26.8	26.7	26.8	25.1	28.1	30.3	29.5	27.2	26.4	23.1	21.6	24.6	30.3
27-Sep	22.5	22.9	Z	16.9	22.9	26.5	30.9	24.4	22.9	25.1	30.2	31.0	31.0	34.4	33.2	31.8	28.1	19.0	17.7	24.1	21.5	12.9	13.7	18.0	24.4	34.4
28-Sep	21.7	23.8	25.9	Z	24.3	23.9	23.7	22.8	23.1	24.8	26.3	26.8	28.0	28.5	27.5	27.0	26.5	15.7	11.0	10.5	11.1	9.8	12.2	9.3	21.1	28.5
29-Sep	7.5	4.6	3.4	2.3	Z	5.5	3.9	8.9	10.6	12.5	12.1	15.0	17.8	24.9	27.7	28.6	26.6	21.2	14.9	11.5	12.6	13.6	19.9	19.1	14.1	28.6
30-Sep	17.9	15.9	16.1	15.4	16.9	Z	16.6	16.1	17.8	18.6	19.7	22.4	26.8	29.4	29.8	29.5	30.7	29.9	29.2	27.3	27.9	27.7	27.3	26.0	23.3	30.7
	16.4	15.6	14.9	15.3	16.0	12.7	13.6	16.0	19.2	20.7	22.2	23.4	25.9	26.3	27.5	27.9	27.6	25.2	21.0	18.1	16.9	15.7	16.4	16.2	Diurnal Average	
	32.6	37.4	32.7	31.5	32.0	31.5	37.1	36.2	36.5	33.8	41.1	44.0	42.4	43.3	42.0	42.2	49.4	43.1	32.1	29.5	27.9	28.8	35.3	27.8	Diurnal Maximum	

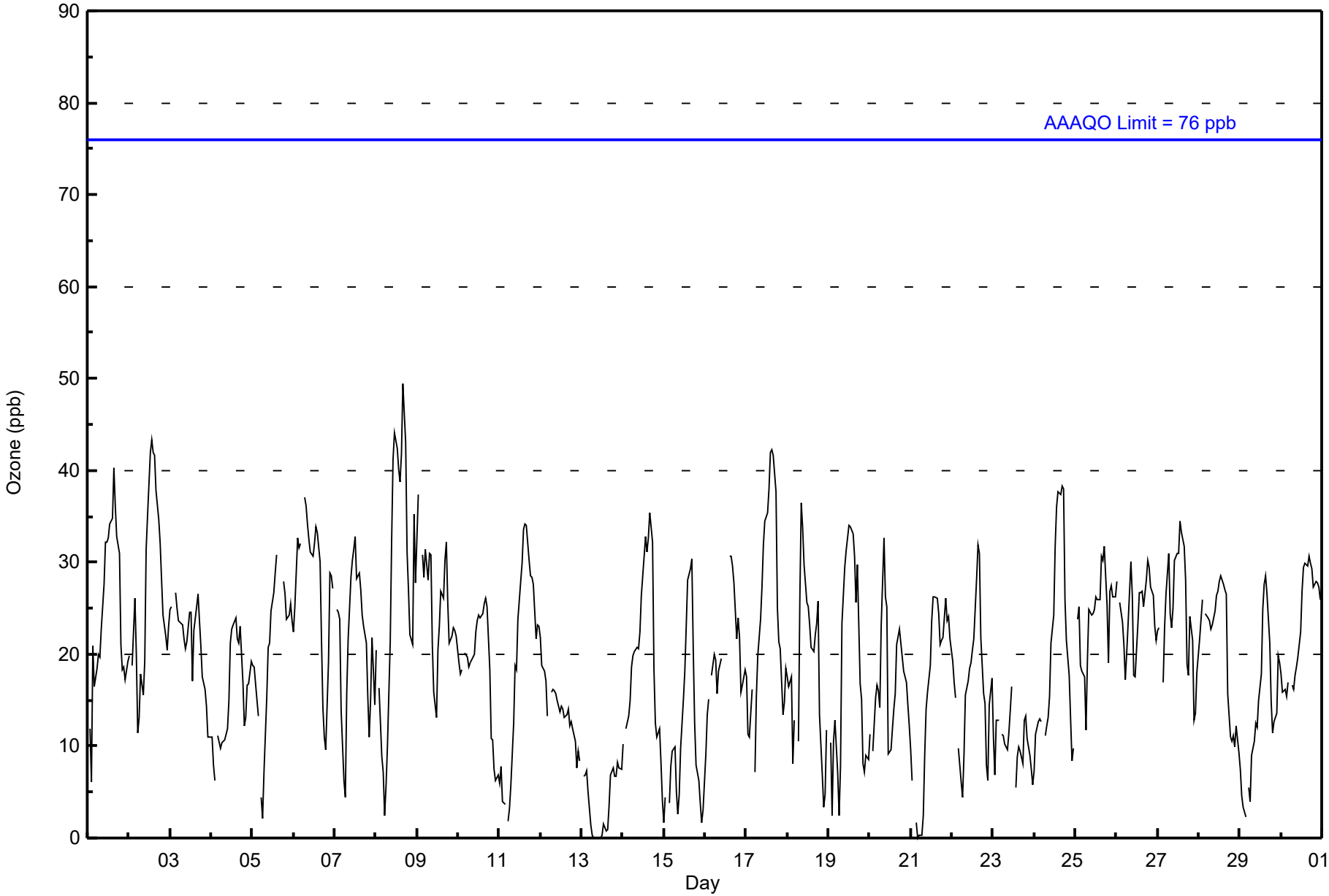
Z - zerospan C - Calibration M - Maintenance PF - Power Failure
Alberta Ambient Air Quality Objectives (AAAQO): 1-hr 76 ppb

Wood Buffalo Environmental Association

Hourly Averages

Ozone (O_3) - ppb

Anzac - September 2024



Concentration Ranges (ppb)	Number of Hours	%	Cumulative %
0 - 20	350	51.32	51.32
21 - 50	332	48.68	100.00
51 - 82	0	0.00	100.00
> 83	0	0.00	100.00

Total Number of Valid Hours: 682

Total Number of Hours: 720

Wood Buffalo Environmental Association

Frequency Distribution

Ozone (O_3) - ppb

Anzac - September 2024

Concentration Ranges (ppb)	Wind Direction																
	N	NNE	NE	ENE	E	ESE	SE	SSE	S	SSW	SW	WSW	W	WNW	NW	NNW	**Totals**
0 - 20	7	5	9	2	1	3	15	31	30	27	29	21	43	74	37	16	350
21 - 50	9	6	4	0	1	8	22	42	14	10	22	26	56	84	15	13	332
51 - 82	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
> 83	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Totals	16	11	13	2	2	11	37	73	44	37	51	47	99	158	52	29	682

Total Number of Valid Hours: 682

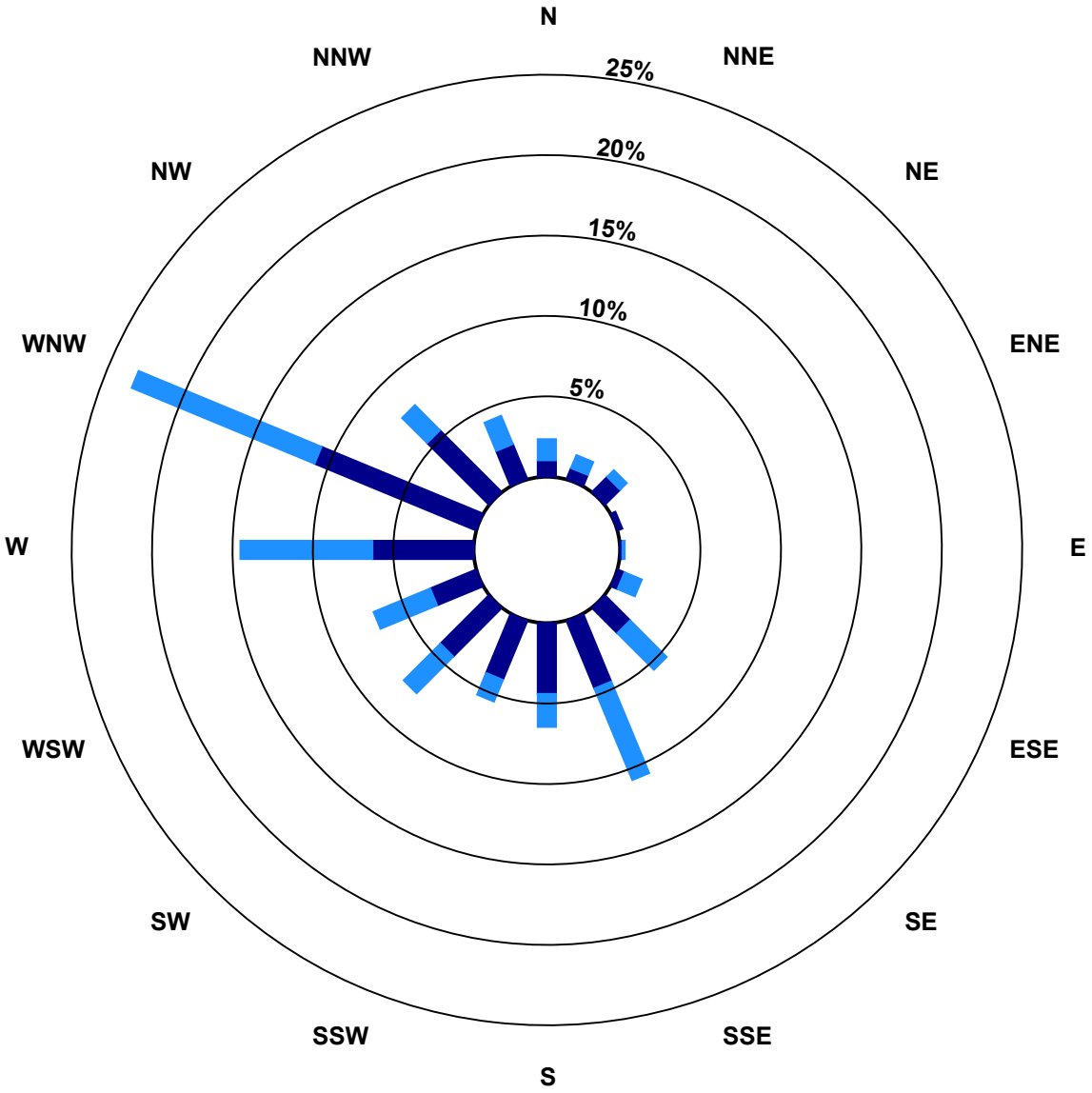
Total Number of Hours: 720

Wood Buffalo Environmental Association

Wind Rose Sep 2024

Ozone (O_3) - ppb

Anzac



Classes (ppb)

- 0 - 20
- 21 - 50
- 51 - 82
- > 83

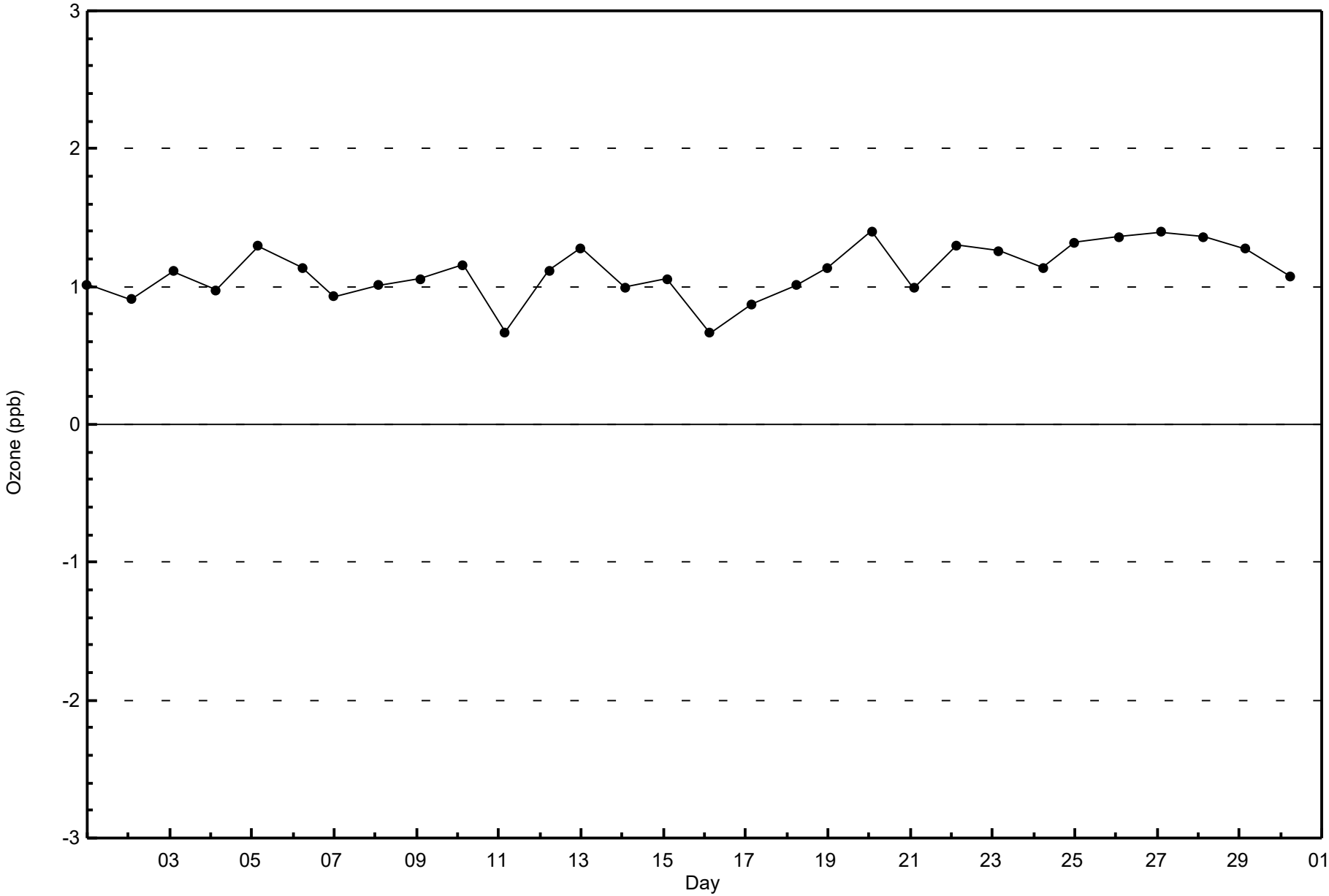
Total Number of Valid Hours: 682

Wood Buffalo Environmental Association

Zero Responses

Ozone (O_3) - ppb

Anzac - September 2024

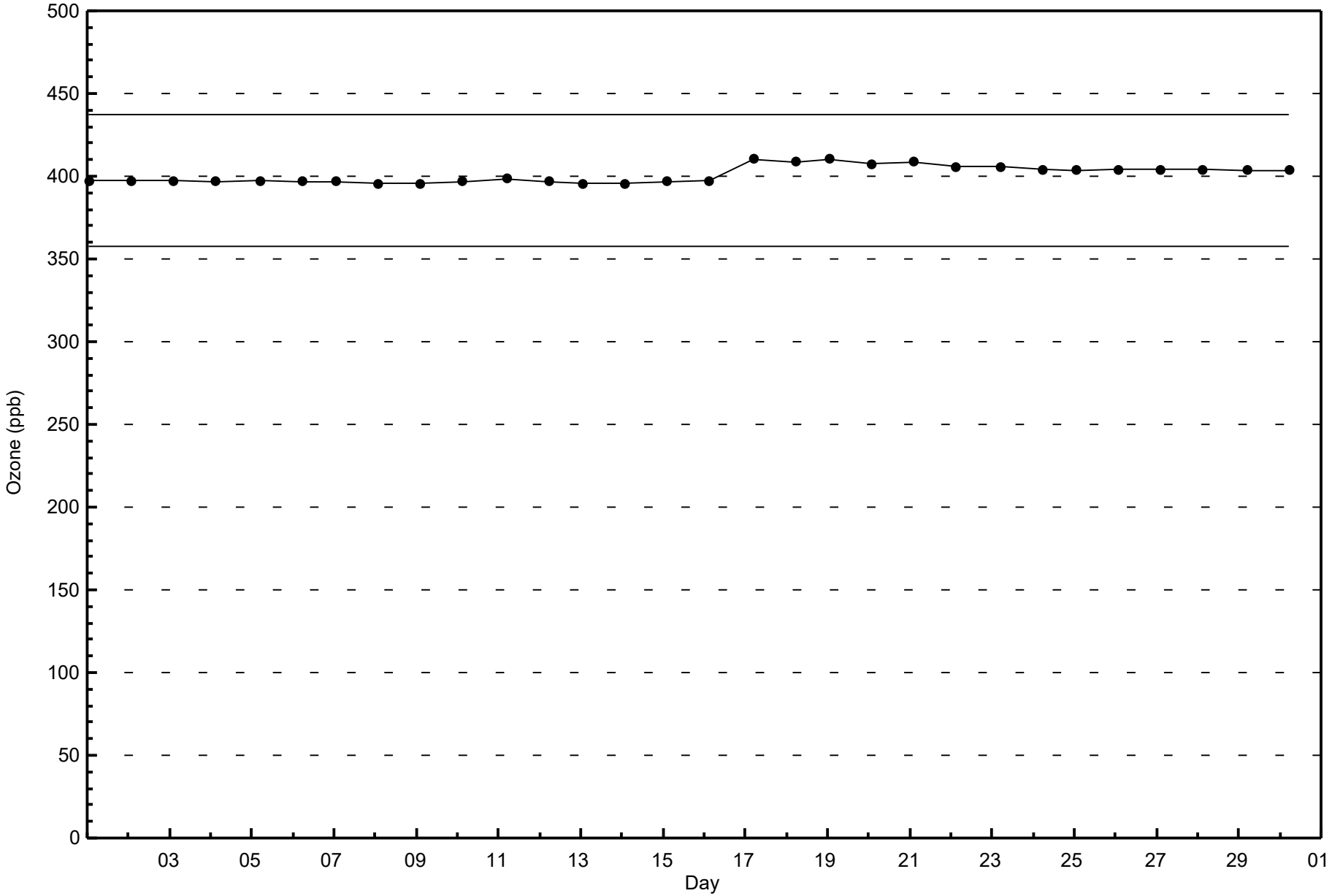


Wood Buffalo Environmental Association

Span Responses

Ozone (O_3) - ppb

Anzac - September 2024



Wood Buffalo Environmental Association

Summary of Hour Averages

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

Anzac - September 2024

Number of Exceedences (AAAQO): 1-hr: 58 24-hr: 4

Maximum Value: 156.3 $\mu g/m^3$ on Sep 12 15:00

Maximum Daily Average: 109.3 $\mu g/m^3$ on Sep 12

Minimum Value: 0.7 $\mu g/m^3$ on Sep 28 02:00

Minimum Daily Average: 1.6 $\mu g/m^3$ on Sep 28

Maximum Diurnal Average: 22.0 $\mu g/m^3$ at hour 13

Minimum Diurnal Average: 16.1 $\mu g/m^3$ at hour 18

Monthly Average: 18.95 $\mu g/m^3$

Percentiles: P_1 = 0.9 P_{10} = 1.8 Q_1 = 2.9 Median = 5.3 Q_3 = 13.3 P_{90} = 63.8 P_{99} = 146.6

Hours in Service:	720
Hours of Data:	716
Hours of Missing Data:	4
Hours of Calibration:	1
Percent Operational Time:	99.6

Day	Hourly Period Ending At (MST)																								Daily	Daily
	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24	Average	Maximum
1-Sep	5.0	5.0	4.8	3.4	3.1	3.1	3.1	3.1	3.4	3.2	3.2	2.8	3.8	12.2	13.3	10.8	11.7	14.8	14.6	15.1	16.6	15.9	13.6	12.3	8.2	16.6
2-Sep	11.1	10.2	7.6	5.4	5.0	4.8	5.0	4.9	4.7	4.8	4.0	3.9	3.9	3.8	3.8	3.7	5.1	5.4	5.3	5.3	6.8	11.6	13.4	30.1	7.1	30.1
3-Sep	20.8	12.8	8.3	6.0	5.7	6.3	6.7	8.1	9.4	8.5	6.5	5.7	6.4	6.7	6.8	7.2	7.9	7.8	7.3	6.6	6.3	5.8	6.9	7.2	7.8	20.8
4-Sep	7.2	7.7	8.0	7.1	6.2	6.1	5.3	5.0	5.3	5.8	5.5	5.2	6.9	6.1	5.1	4.8	4.7	4.2	4.7	5.0	4.4	3.4	2.8	2.1	5.4	8.0
5-Sep	1.9	2.1	2.5	3.9	4.7	5.1	4.7	3.9	3.9	4.8	5.4	6.0	7.6	8.7	8.8	PF	PF	PF	5.7	6.2	6.4	6.1	5.3	4.9	5.2	8.8
6-Sep	4.4	3.8	3.7	3.9	4.1	4.8	5.0	5.4	6.0	7.9	12.2	18.6	20.0	18.5	18.4	17.4	14.7	13.4	12.3	14.5	45.8	80.8	85.8	81.4	21.0	85.8
7-Sep	75.7	77.0	78.4	82.6	78.7	76.3	72.3	73.7	62.0	48.6	38.0	37.2	80.1	49.6	44.1	34.9	34.5	40.7	44.5	50.0	48.0	57.9	91.7	93.1	61.2	93.1
8-Sep	108.5	125.0	122.9	131.2	138.0	138.0	140.3	134.6	136.8	125.9	108.8	108.0	105.4	88.2	74.1	64.7	59.6	58.4	45.2	36.1	31.0	33.0	41.7	39.4	91.5	140.3
9-Sep	37.8	30.2	32.2	32.3	29.1	22.8	20.8	22.7	22.0	32.2	42.3	30.4	35.5	20.1	4.8	4.1	3.7	3.5	6.3	16.2	21.6	18.8	25.1	26.2	22.5	42.3
10-Sep	23.0	18.9	15.9	12.8	11.1	10.8	10.7	12.6	14.0	11.9	9.7	9.6	15.0	11.2	3.8	2.9	2.8	4.3	5.1	4.7	5.3	4.9	4.0	4.1	9.6	23.0
11-Sep	5.0	4.8	4.7	4.7	4.4	4.8	5.7	5.5	6.7	6.5	6.5	7.5	6.1	4.0	5.4	6.4	6.6	5.8	10.5	35.2	67.9	58.7	39.5	27.7	14.2	67.9
12-Sep	27.2	30.1	38.5	56.0	82.5	77.2	62.8	62.0	70.6	80.4	125.2	155.7	150.6	151.1	156.3	147.8	138.0	138.4	142.3	146.9	149.9	146.2	146.6	140.5	109.3	156.3
13-Sep	135.7	129.4	126.2	118.9	120.4	122.9	125.3	118.4	105.5	101.5	101.3	103.6	104.8	107.0	111.7	103.5	102.5	92.2	96.9	97.4	86.0	75.2	63.9	63.7	104.7	135.7
14-Sep	52.5	50.1	48.8	45.4	39.5	29.9	26.8	27.4	25.2	24.1	20.9	25.5	38.3	36.5	32.7	24.2	11.9	10.9	11.8	10.5	10.4	10.7	11.1	13.8	26.6	52.5
15-Sep	12.2	11.7	8.7	8.7	7.6	7.2	8.1	11.1	18.1	18.2	20.6	18.1	19.5	19.6	14.8	13.9	12.4	11.2	11.9	12.8	14.2	12.9	11.5	11.4	13.2	20.6
16-Sep	11.7	10.0	6.6	5.3	4.4	3.8	3.4	3.2	2.9	2.7	2.9	3.3	3.2	2.9	2.4	2.5	2.3	2.1	2.5	2.8	2.9	3.0	3.0	3.0	3.9	11.7
17-Sep	2.9	3.0	2.9	2.8	2.8	2.9	3.7	3.1	3.1	3.0	2.8	2.7	2.9	2.7	2.5	2.6	2.7	2.8	4.7	3.8	3.6	4.2	4.0	3.9	3.2	4.7
18-Sep	4.2	4.0	4.0	3.8	3.5	3.6	3.5	3.6	3.3	3.6	3.3	3.0	3.0	3.2	3.5	3.6	6.3	10.8	14.6	15.7	17.4	23.5	15.7	11.6	7.2	23.5
19-Sep	8.7	7.9	7.5	7.9	7.1	6.8	6.6	6.4	6.4	6.7	5.9	4.5	5.2	6.1	6.2	6.6	6.7	5.6	5.7	13.3	15.4	10.3	8.7	7.1	7.5	15.4
20-Sep	6.8	7.9	6.8	5.7	4.7	5.1	6.6	7.1	4.8	4.6	5.8	12.1	10.8	7.5	7.1	7.4	8.3	7.1	6.1	5.1	5.2	5.9	6.5	6.2	6.7	12.1
21-Sep	5.2	5.1	5.6	5.8	5.4	5.3	5.7	5.0	3.5	2.5	2.7	3.8	4.9	6.6	6.8	5.3	4.8	4.7	5.1	5.1	4.9	4.0	3.4	4.0	4.8	6.8
22-Sep	4.8	5.0	5.0	5.1	9.5	10.8	8.0	5.2	3.6	3.2	3.5	3.5	2.6	2.4	2.3	2.3	2.4	2.7	3.0	3.2	4.7	4.3	2.9	2.8	4.3	10.8
23-Sep	2.9	3.0	2.6	2.3	2.9	2.7	2.1	2.5	3.6	3.3	4.7	C	3.9	4.2	4.0	3.3	3.1	3.6	2.9	4.2	2.8	2.6	2.7	2.7	3.2	4.7
24-Sep	2.4	1.7	1.4	1.3	1.3	1.0	1.1	1.0	1.0	0.9	1.0	1.0	0.8	0.9	0.9	0.9	0.8	1.5	2.7	4.3	2.6	2.6	4.8	4.1	1.7	4.8
25-Sep	2.1	1.8	2.1	2.1	2.0	2.1	2.4	1.9	1.9	2.3	2.4	2.3	2.4	2.4	2.1	1.7	1.5	1.5	1.8	2.6	2.1	1.9	1.8	1.7	2.0	2.6
26-Sep	1.7	1.9	1.8	1.8	1.8	3.2	6.4	7.3	4.0	4.3	7.4	10.2	8.9	6.9	8.5	9.2	8.2	3.7	1.7	1.7	1.8	1.8	1.8	1.7	4.5	10.2
27-Sep	1.6	1.6	1.5	1.7	1.6	1.5	1.5	1.5	1.5	1.5	1.3	1.3	1.4	1.4	1.6	1.7	2.4	2.3	2.6	2.2	1.6	1.6	1.8	1.0	1.7	2.6
28-Sep	0.8	0.7	0.8	0.7	0.8	1.0	1.1	1.1	1.2	1.0	1.0	1.1	1.2	1.4	1.9	1.5	2.1	3.5	2.7	2.5	2.4	2.7	3.0	2.6	1.6	3.5
29-Sep	2.8	2.7	2.7	5.2	3.1	2.6	9.1	3.0	2.3	2.4	2.5	2.5	2.2	1.8	1.7	1.7	1.8	2.3	3.8	5.8	4.3	6.3	3.5	3.2	3.3	9.1
30-Sep	2.7	2.3	2.1	2.2	2.9	5.5	7.1	6.6	8.7	9.6	7.7	4.1	2.3	1.7	1.5	1.3	1.2	1.1	1.1	1.3	1.4	1.5	1.4	1.4	3.3	9.6
	19.6	19.3	18.8	19.2	19.8	19.3	19.0	18.6	18.2	17.9	18.8	20.5	22.0	19.8	18.6	17.2	16.2	16.1	16.2	17.9	19.8	20.6	20.9	20.5	Diurnal Average	
	135.7	129.4	126.2	131.2	138.0	138.0	140.3	134.6	136.8	125.9	125.2	155.7	150.6	151.1	156.3	147.8	138.0	138.4	142.3	146.9	149.9	146.2	146.6	140.5	Diurnal Maximum	

C - Calibration PF - Power Failure

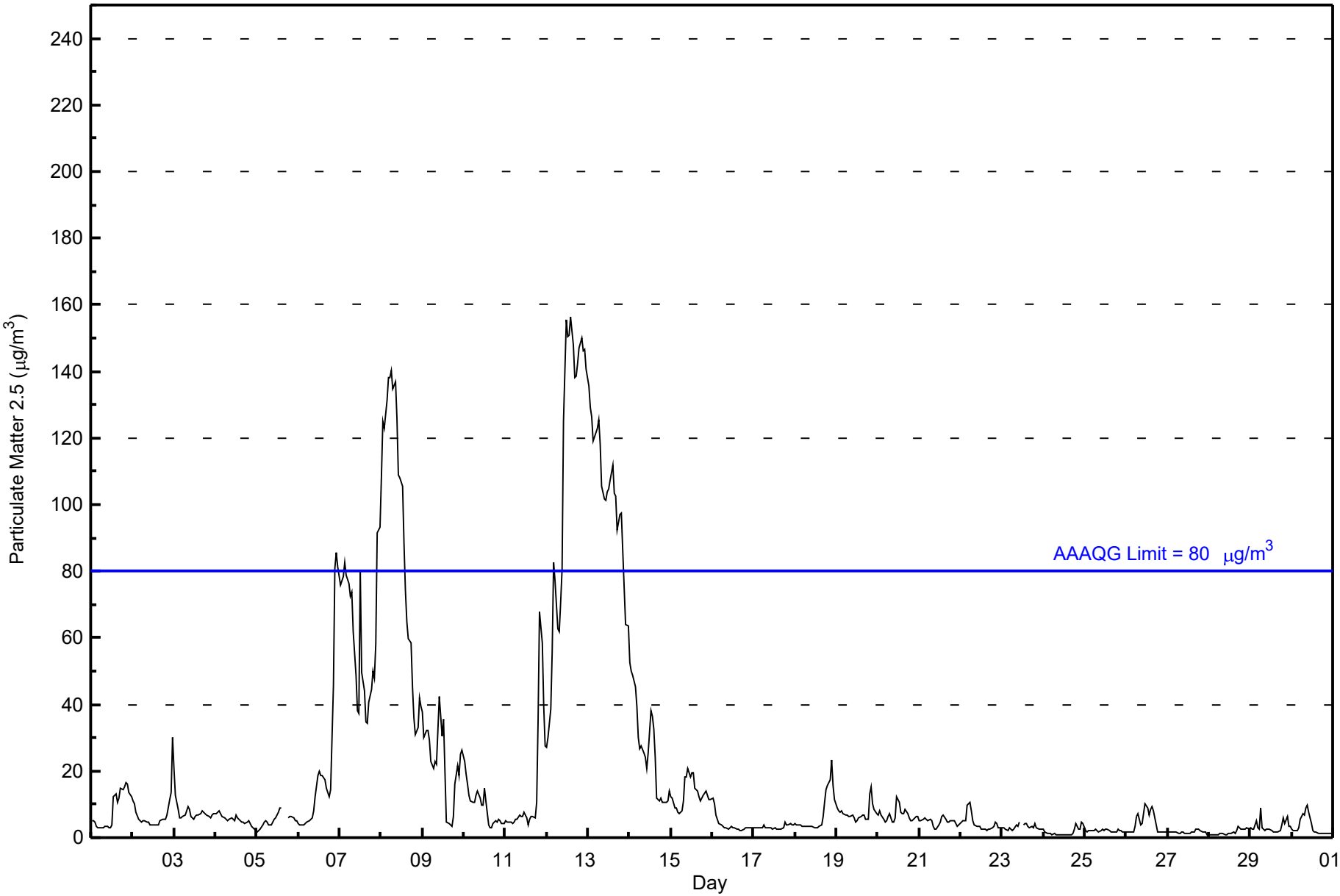
Alberta Ambient Air Quality Guideline/Objectives: 1-hr 80 $\mu g/m^3$ 24-hr 29 $\mu g/m^3$

Wood Buffalo Environmental Association

Hourly Averages

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

Anzac - September 2024



Wood Buffalo Environmental Association
Cumulative Frequency Distribution

Particulate Matter 2.5 ($PM_{2.5}$) - $\mu g/m^3$
Anzac - September 2024

Concentration Ranges ($\mu g/m^3$)	Number of Hours	%	Cumulative %
0 - 5	371	51.82	51.82
6 - 15	183	25.56	77.37
16 - 25	34	4.75	82.12
26 - 80	72	10.06	92.18
> 81.0	56	7.82	100.00

Total Number of Valid Hours: 716

Total Number of Hours: 720

Wood Buffalo Environmental Association

Frequency Distribution

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

Anzac - September 2024

Concentration Ranges ($\mu g/m^3$)	Wind Direction																
	N	NNE	NE	ENE	E	ESE	SE	SSE	S	SSW	SW	WSW	W	WNW	NW	NNW	**Totals**
0 - 5	5	7	2	1	0	3	16	46	39	27	36	39	54	77	11	8	371
6 - 15	8	0	4	0	0	6	9	11	3	8	12	6	28	50	23	15	183
16 - 25	0	0	0	0	0	0	0	2	1	2	1	1	9	14	2	2	34
26 - 80	0	1	4	0	1	3	10	13	2	2	3	3	10	17	2	1	72
> 81.0	3	4	3	1	1	0	3	4	1	1	2	1	5	7	14	6	56
Totals	16	12	13	2	2	12	38	76	46	40	54	50	106	165	52	32	716

Total Number of Valid Hours: 716

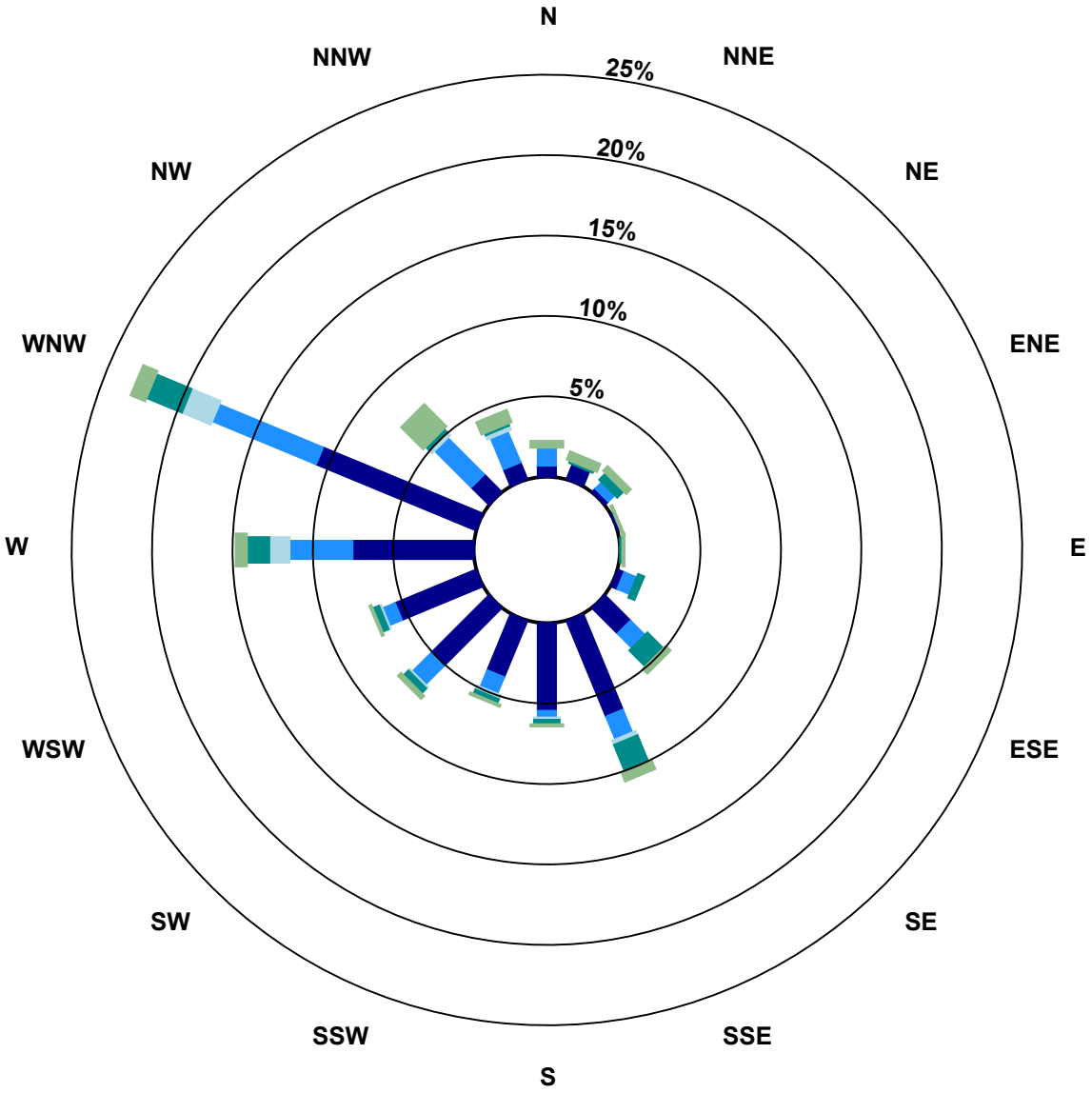
Total Number of Hours: 720

Wood Buffalo Environmental Association

Wind Rose Sep 2024

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

Anzac



Classes ($\mu g/m^3$)

- 0 - 5
- 6 - 15
- 16 - 25
- 26 - 80
- > 81.0

Total Number of Valid Hours: 716

Wood Buffalo Environmental Association

Summary of Hour Averages

Ambient Temperature 2m (AT2) - C

Anzac - September 2024

Maximum Value: 31.2 C on Sep 2 16:00

Maximum Daily Average: 20.9 C on Sep 2

Minimum Value: -0.6 C on Sep 11 06:00

Minimum Daily Average: 6.9 C on Sep 29

Maximum Diurnal Average: 17.9 C at hour 15

Minimum Diurnal Average: 8.3 C at hour 7

Monthly Average: 12.36 C

Percentiles: P_1 = 1.0 P_{10} = 5.9 Q_1 = 8.6 Median = 11.2 Q_3 = 15.9 P_{90} = 20.0 P_{99} = 29.0

Hours in Service:	720
Hours of Data:	697
Hours of Missing Data:	23
Hours of Calibration:	0
Percent Operational Time:	96.8

Day	Hourly Period Ending At (MST)																								Daily	Daily
	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24	Average	Maximum
1-Sep	8.8	7.5	6.1	10.4	10.0	12.0	13.2	17.5	20.9	24.0	25.9	27.3	28.5	29.4	29.3	28.9	28.7	26.9	24.1	18.0	14.4	13.3	13.2	13.4	18.8	29.4
2-Sep	13.1	12.2	12.4	16.2	13.1	10.2	11.6	16.2	16.8	19.8	26.4	28.8	30.0	30.5	30.9	31.2	30.1	27.8	25.9	23.3	20.7	20.4	18.4	16.2	20.9	31.2
3-Sep	14.7	13.5	12.6	12.4	12.3	11.9	11.7	11.9	12.7	13.4	13.6	14.3	13.7	12.7	14.1	14.0	14.1	13.4	12.5	11.6	10.9	10.7	10.1	10.0	12.6	14.7
4-Sep	9.9	8.8	7.8	8.1	9.2	9.6	9.8	10.2	11.2	12.0	12.7	14.8	16.4	16.4	18.1	16.8	16.9	17.3	15.2	10.9	10.0	9.9	10.0	11.4	12.2	18.1
5-Sep	10.3	10.7	10.1	8.8	6.8	3.3	4.0	9.7	13.1	14.3	15.8	17.3	18.8	19.9	20.5	20.7	20.7	20.2	18.0	15.2	13.8	12.2	12.4	11.9	13.7	20.7
6-Sep	11.2	10.6	12.8	12.1	12.0	15.9	15.4	17.5	17.5	20.0	20.8	21.8	22.9	24.2	24.7	24.4	21.5	19.4	18.1	14.7	15.9	18.7	18.5	17.9	17.9	24.7
7-Sep	17.0	16.2	15.6	14.9	11.4	9.3	9.5	13.1	18.3	21.6	23.4	25.2	25.8	25.9	26.0	24.4	23.7	22.8	20.9	17.3	12.8	13.5	14.4	13.2	18.2	26.0
8-Sep	14.1	15.6	11.9	9.5	9.1	8.6	8.5	14.4	17.7	21.2	23.5	25.2	26.6	27.9	28.3	28.4	28.0	26.7	22.0	17.4	15.9	15.0	18.2	15.7	18.7	28.4
9-Sep	17.5	19.6	17.7	17.2	16.0	16.4	15.0	17.6	19.2	17.9	16.1	16.1	17.5	17.2	15.7	14.9	16.1	13.4	12.8	11.9	10.9	10.1	9.8	9.5	15.3	19.6
10-Sep	9.4	9.2	8.8	8.7	8.5	8.4	8.6	10.3	11.8	13.2	15.1	16.7	17.3	16.9	17.3	17.2	15.8	15.3	12.7	9.1	8.6	6.7	4.7	4.5	11.5	17.3
11-Sep	3.1	2.5	2.2	1.6	0.1	-0.6	1.2	8.0	10.5	13.5	16.0	17.7	19.2	19.5	19.3	19.8	19.2	18.1	16.1	14.7	13.9	11.6	12.3	12.5	11.3	19.8
12-Sep	12.2	12.0	11.2	10.1	9.3	9.0	9.4	9.6	9.7	9.9	10.1	9.8	9.6	9.8	9.8	9.8	9.7	9.7	9.6	9.6	9.5	9.4	9.5	9.4	9.9	12.2
13-Sep	9.4	9.3	9.2	9.0	8.8	8.7	8.5	8.2	8.1	8.1	8.3	8.4	8.6	9.0	9.2	9.5	9.8	10.2	10.4	10.8	10.7	10.5	10.4	10.5	9.3	10.8
14-Sep	10.3	9.9	9.2	8.6	8.7	9.3	9.2	9.8	11.1	12.3	13.4	14.6	15.9	17.8	18.9	19.3	19.7	19.1	14.3	10.4	9.2	11.2	10.8	8.8	12.6	19.7
15-Sep	6.6	5.5	4.9	5.3	7.4	9.5	9.7	8.8	8.9	9.9	11.0	12.9	14.9	16.3	16.9	17.0	16.6	14.1	11.8	8.6	7.6	6.2	4.9	4.0	10.0	17.0
16-Sep	4.9	7.4	7.4	5.6	7.3	9.7	10.1	10.6	12.4	13.4	15.2	17.3	M	UO	UO	UO	UO	UO	UO	UO	UO	UO	UO	UO	--	17.3
17-Sep	UO	UO	UO	UO	UO	UO	UO	UO	UO	UO	M	20.6	21.6	22.6	23.2	22.7	22.4	20.4	14.5	11.6	10.2	8.9	8.5	9.5	--	23.2
18-Sep	9.4	8.6	8.1	6.2	6.8	7.6	7.9	14.3	17.7	17.9	17.7	16.9	17.2	17.8	18.9	18.8	17.8	16.4	13.5	8.9	6.0	4.1	2.9	2.9	11.9	18.9
19-Sep	4.3	2.7	1.5	1.7	3.2	1.8	0.2	6.7	12.1	14.0	15.3	16.6	17.5	17.3	17.8	16.4	16.0	15.3	10.2	8.5	8.6	8.3	8.6	8.2	9.7	17.8
20-Sep	8.4	8.5	7.4	7.8	8.6	9.0	8.5	9.1	9.0	8.9	9.3	9.5	10.1	10.3	11.1	12.4	13.6	12.5	10.2	8.7	8.1	7.3	5.7	5.4	9.1	13.6
21-Sep	4.2	2.4	1.0	0.3	0.3	0.3	0.8	4.0	7.5	10.0	11.9	13.2	13.3	14.4	14.2	14.3	13.2	12.4	11.7	11.4	10.9	9.5	9.4	9.4	8.3	14.4
22-Sep	9.0	8.6	7.8	7.2	5.4	3.8	3.3	7.5	12.3	13.5	14.4	15.6	15.8	16.9	17.5	17.2	16.9	15.3	12.1	11.6	9.7	9.2	10.2	10.2	11.3	17.5
23-Sep	8.6	7.7	7.7	6.6	8.4	9.3	8.6	8.5	9.0	10.1	11.5	13.7	14.5	14.9	15.3	15.3	15.3	14.1	13.0	12.6	12.3	12.0	11.8	11.2	11.3	15.3
24-Sep	12.0	14.6	14.9	14.9	15.0	15.3	15.5	16.0	16.5	17.6	18.4	19.4	20.1	20.7	20.9	21.0	20.5	19.3	14.0	10.0	8.5	7.3	6.4	6.6	15.2	21.0
25-Sep	9.8	10.0	10.1	8.9	9.5	10.7	10.8	11.9	13.4	14.5	17.6	19.0	20.8	20.3	19.6	19.6	20.2	18.6	15.4	14.4	16.0	15.3	14.7	14.5	14.8	20.8
26-Sep	13.6	12.3	12.0	11.3	11.3	10.4	9.2	8.6	8.0	8.4	9.2	9.9	10.9	12.4	12.3	12.1	13.1	12.6	10.5	9.1	7.8	7.1	4.3	3.0	10.0	13.6
27-Sep	4.8	5.8	6.0	5.6	7.2	6.2	5.9	5.4	5.5	6.0	7.6	8.8	9.5	10.6	10.6	10.8	10.4	10.0	9.0	8.6	7.3	5.1	5.8	7.7	7.5	10.8
28-Sep	8.3	8.2	8.7	8.6	8.4	8.0	7.8	7.7	7.9	9.3	9.2	10.2	11.8	13.4	14.1	13.4	12.5	10.2	6.8	5.2	5.6	6.0	6.0	5.0	8.8	14.1
29-Sep	3.7	3.5	3.3	3.3	4.1	3.5	3.1	4.9	6.4	7.6	7.6	9.0	11.1	12.6	12.1	11.6	9.6	7.5	7.3	7.0	6.9	6.7	6.6	6.4	6.9	12.6
30-Sep	6.4	5.8	5.3	4.6	4.2	4.0	2.8	3.1	4.4	5.5	7.1	9.3	10.3	11.0	11.7	11.2	11.2	10.0	8.6	7.9	8.1	8.1	7.3	6.0	7.2	11.7
	9.5	9.3	8.7	8.5	8.4	8.3	8.3	10.4	12.1	13.4	14.6	16.0	16.9	17.5	17.9	17.7	17.4	16.2	13.8	11.7	10.7	10.2	9.9	9.5	Diurnal Average	
	17.5	19.6	17.7	17.2	16.0	16.4	15.5	17.6	20.9	24.0	26.4	28.8	30.0	30.5	30.9	31.2	30.1	27.8	25.9	23.3	20.7	20.4	18.5	17.9	Diurnal Maximum	

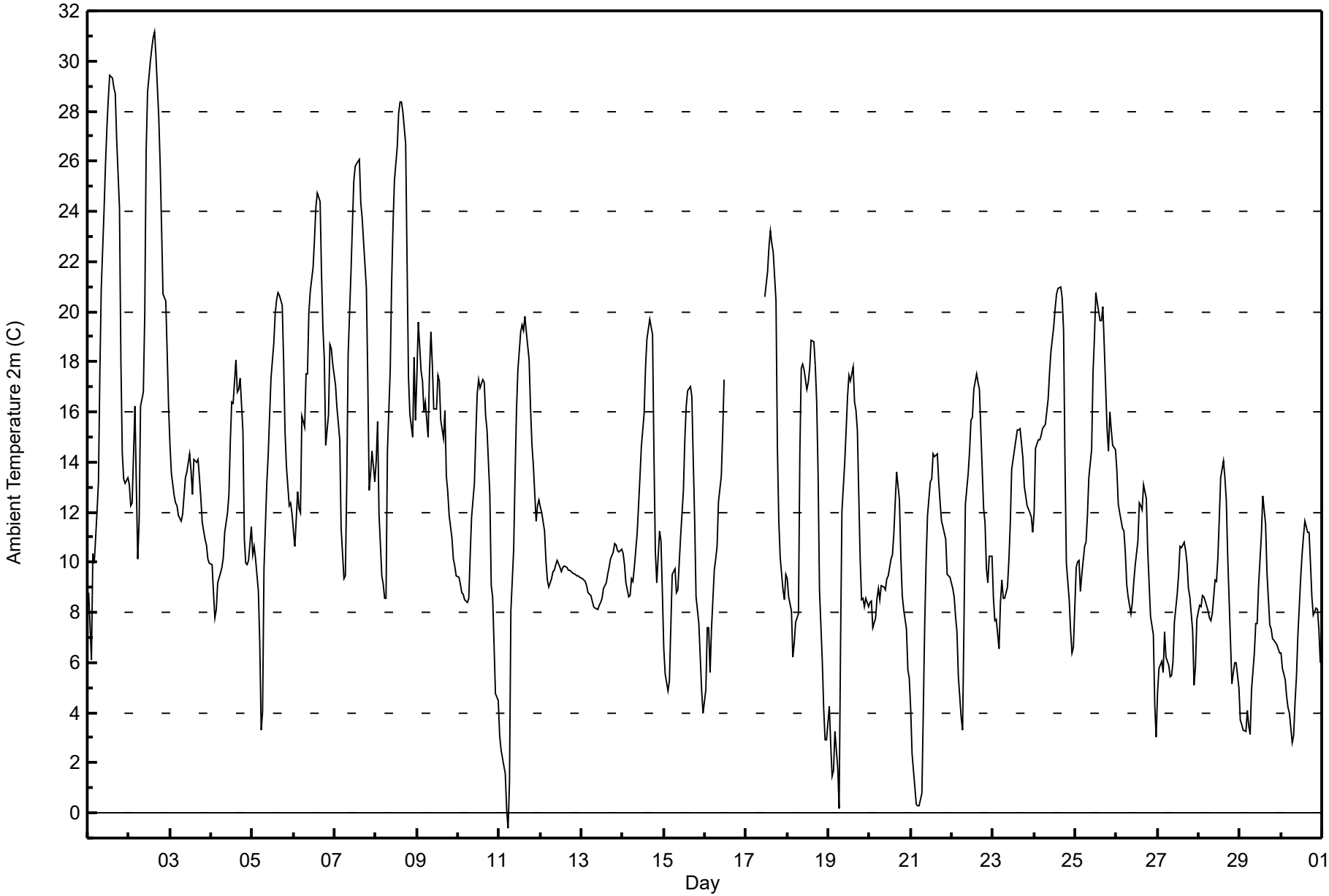
M - Maintenance UO - Unstable Operation

Wood Buffalo Environmental Association

Hourly Averages

Ambient Temperature 2m (AT2) - C

Anzac - September 2024



Concentration Ranges (C)	Number of Hours	%	Cumulative %
-50 - -20	0	0.00	0.00
-20 - 0	1	0.14	0.14
0 - 10	283	40.60	40.75
10 - 20	344	49.35	90.10
> 20	69	9.90	100.00

Total Number of Valid Hours: 697

Total Number of Hours: 720

Wood Buffalo Environmental Association

Summary of Hour Averages

Relative Humidity 2m (RH2) - %

Anzac - September 2024

Maximum Value: 100.0 % on Sep 23 05:00

Maximum Daily Average: 89.9 % on Sep 23

Minimum Value: 21.0 % on Sep 2 16:00

Minimum Daily Average: 54.9 % on Sep 11

Maximum Diurnal Average: 85.5 % at hour 7

Minimum Diurnal Average: 50.0 % at hour 15

Monthly Average: 70.16 %

Percentiles: P_1 = 30.8 P_{10} = 42.1 Q_1 = 55.7 Median = 72.7 Q_3 = 85.2 P_{90} = 94.3 P_{99} = 99.6

Hours in Service:	720
Hours of Data:	607
Hours of Missing Data:	113
Hours of Calibration:	0
Percent Operational Time:	84.3

Day	Hourly Period Ending At (MST)																								Daily	Daily
	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24	Average	Maximum
1-Sep	82.7	89.3	99.5	80.3	86.3	78.5	74.4	62.3	55.1	46.8	40.7	35.8	32.2	31.1	30.7	30.7	29.1	35.2	43.7	69.1	81.5	84.1	81.3	78.0	60.8	99.5
2-Sep	78.5	83.6	85.7	65.4	79.0	95.2	90.2	74.2	76.4	68.3	42.9	36.3	31.6	28.0	25.3	21.0	25.5	34.3	37.4	44.0	52.3	52.7	65.1	72.9	56.9	95.2
3-Sep	78.1	83.3	87.1	88.9	92.1	93.7	91.5	88.8	82.3	78.3	75.4	69.4	71.2	89.2	78.1	73.5	71.7	76.1	80.2	85.2	89.0	95.1	OR	OR	82.6	95.1
4-Sep	OR	OR	OR	OR	OR	OR	OR	99.9	92.6	85.9	80.4	66.5	59.4	56.4	47.5	56.3	54.3	49.2	59.5	77.4	76.0	72.2	72.4	64.4	--	99.9
5-Sep	66.0	66.4	72.1	79.6	88.8	OR	OR	78.4	64.1	58.8	54.7	47.9	42.9	39.1	38.0	37.9	38.4	38.9	42.8	49.8	54.8	63.1	63.9	66.2	56.9	88.8
6-Sep	68.4	68.2	57.9	60.9	62.8	49.4	53.3	49.2	50.2	46.2	45.7	43.7	42.2	40.1	41.8	47.4	63.6	76.1	80.7	93.5	73.8	51.7	54.9	59.6	57.5	93.5
7-Sep	64.4	70.0	73.4	73.6	90.4	OR	OR	82.9	62.7	54.7	49.5	42.2	34.4	35.1	35.5	39.1	42.9	45.6	52.7	68.2	87.9	84.9	84.7	83.5	61.7	90.4
8-Sep	79.4	74.8	92.3	OR	OR	OR	OR	83.3	68.3	55.4	48.9	44.2	40.7	37.1	36.1	34.7	35.4	39.0	55.9	70.2	73.0	77.0	63.9	76.9	59.3	92.3
9-Sep	68.2	55.0	64.6	65.1	68.3	61.0	67.0	59.1	55.6	67.0	72.1	74.5	66.0	66.9	68.7	71.4	61.8	74.9	75.1	78.6	79.0	80.5	83.2	84.3	69.5	84.3
10-Sep	86.5	88.1	87.1	84.6	84.3	84.7	81.7	73.8	68.6	64.2	56.1	48.5	45.6	45.4	43.3	43.0	47.5	49.6	65.0	81.7	82.7	86.0	95.4	97.3	70.5	97.3
11-Sep	99.9	OR	OR	OR	OR	OR	OR	80.0	71.3	59.4	51.0	43.2	37.0	36.0	35.4	34.4	36.4	42.5	48.7	54.4	57.3	69.0	66.7	65.8	54.9	99.9
12-Sep	67.2	68.3	76.1	91.8	OR	OR	OR	OR	OR	OR	OR	OR	OR	OR	OR	OR	OR	OR	OR	OR	OR	OR	OR	OR	--	91.8
13-Sep	OR	OR	OR	OR	OR	OR	OR	OR	OR	OR	OR	OR	OR	OR	OR	OR	OR	OR	OR	OR	OR	OR	OR	OR	--	--
14-Sep	OR	OR	OR	OR	OR	OR	OR	98.9	91.4	85.3	80.5	70.4	62.2	53.9	51.1	45.9	39.4	44.0	70.3	89.5	95.7	88.1	95.5	OR	--	98.9
15-Sep	OR	OR	OR	OR	OR	OR	99.6	OR	99.6	94.1	83.9	74.7	66.0	61.1	59.5	57.8	55.1	72.9	89.0	98.6	OR	OR	OR	OR	--	99.6
16-Sep	OR	OR	95.9	OR	OR	80.8	75.9	77.0	69.5	63.7	55.8	47.6	M	UO	UO	UO	UO	UO	UO	UO	UO	UO	UO	UO	--	95.9
17-Sep	UO	UO	UO	UO	UO	UO	UO	UO	UO	UO	M	41.9	39.1	35.1	32.7	34.4	35.5	43.1	71.7	81.4	86.5	91.6	92.2	87.4	--	92.2
18-Sep	86.6	88.6	90.5	95.1	94.3	91.2	91.8	67.4	55.9	56.6	59.4	64.8	65.5	64.8	59.6	54.2	51.8	54.4	59.7	81.7	90.8	94.0	96.7	96.4	75.5	96.7
19-Sep	91.4	97.2	95.3	97.0	94.0	95.5	96.3	79.8	62.8	50.2	43.7	36.6	36.3	38.8	39.0	45.8	47.5	49.8	79.8	84.1	84.9	87.1	84.7	87.3	71.0	97.2
20-Sep	86.0	87.0	92.8	87.2	82.2	88.7	94.4	95.3	93.1	94.8	92.7	90.1	85.1	84.2	79.8	75.2	58.9	53.8	70.6	82.0	84.6	88.6	88.1	87.4	84.3	95.3
21-Sep	92.2	95.4	98.2	98.3	98.6	98.9	98.9	89.4	79.0	68.4	62.0	58.1	57.1	54.2	54.2	55.5	60.3	63.9	63.8	64.6	63.7	75.9	73.4	74.0	74.9	98.9
22-Sep	79.4	81.8	83.4	84.1	92.2	96.7	96.9	82.3	62.7	60.4	59.3	58.2	59.2	56.6	53.3	53.2	55.3	69.1	84.5	87.4	94.5	96.4	92.9	93.3	76.4	96.9
23-Sep	97.3	98.7	99.1	99.7	100.0	100.0	100.0	99.0	98.8	96.9	89.6	79.8	75.9	72.7	70.9	73.6	75.8	85.1	83.8	85.3	91.0	96.3	95.4	94.1	89.9	100.0
24-Sep	89.0	77.1	74.7	74.3	73.7	73.0	73.0	70.6	68.0	64.0	58.1	53.8	44.1	37.9	36.2	36.5	37.2	40.0	60.6	77.1	84.3	88.9	92.4	92.1	65.7	92.4
25-Sep	74.6	73.5	72.9	81.7	79.2	75.0	73.8	69.7	64.9	63.5	56.1	54.0	50.8	52.6	54.9	53.2	51.5	58.2	73.9	78.9	69.7	74.0	78.6	75.6	67.1	81.7
26-Sep	76.4	84.3	83.4	87.2	89.1	95.7	96.5	96.5	97.2	97.0	94.3	91.3	82.3	70.9	72.5	74.2	69.2	57.8	53.7	55.9	61.0	63.3	76.1	81.0	79.4	97.2
27-Sep	72.1	67.7	67.1	76.5	68.6	85.8	93.2	96.0	94.6	91.9	83.1	79.7	76.3	66.1	68.0	69.1	74.3	81.3	83.3	83.2	94.2	96.9	94.3	82.8	81.1	96.9
28-Sep	76.2	72.0	67.4	67.5	67.6	69.7	69.6	71.0	70.8	66.5	65.6	62.9	57.3	49.3	43.8	44.1	48.1	68.7	82.4	86.7	85.6	83.1	82.9	88.6	68.6	88.6
29-Sep	93.1	95.1	95.9	96.0	91.2	94.1	95.5	93.7	89.4	82.7	82.9	76.8	68.4	59.6	60.5	61.4	70.8	90.4	90.0	89.2	86.4	81.8	80.4	80.7	83.6	96.0
30-Sep	83.1	85.0	83.0	84.2	81.6	78.9	82.5	80.7	71.5	66.8	60.1	51.1	41.1	35.9	34.6	35.6	33.6	36.8	42.0	48.1	45.9	46.3	49.0	55.4	58.9	85.0
	80.7	80.5	83.1	82.7	84.0	84.3	85.5	80.7	74.7	69.9	64.6	58.7	54.4	51.8	50.0	50.3	50.8	56.7	66.7	75.8	77.9	79.6	80.2	80.2	Diurnal Average	
	99.9	98.7	99.5	99.7	100.0	100.0	100.0	99.9	99.6	97.0	94.3	91.3	85.1	89.2	79.8	75.2	75.8	90.4	90.0	98.6	95.7	96.9	96.7	97.3	Diurnal Maximum	

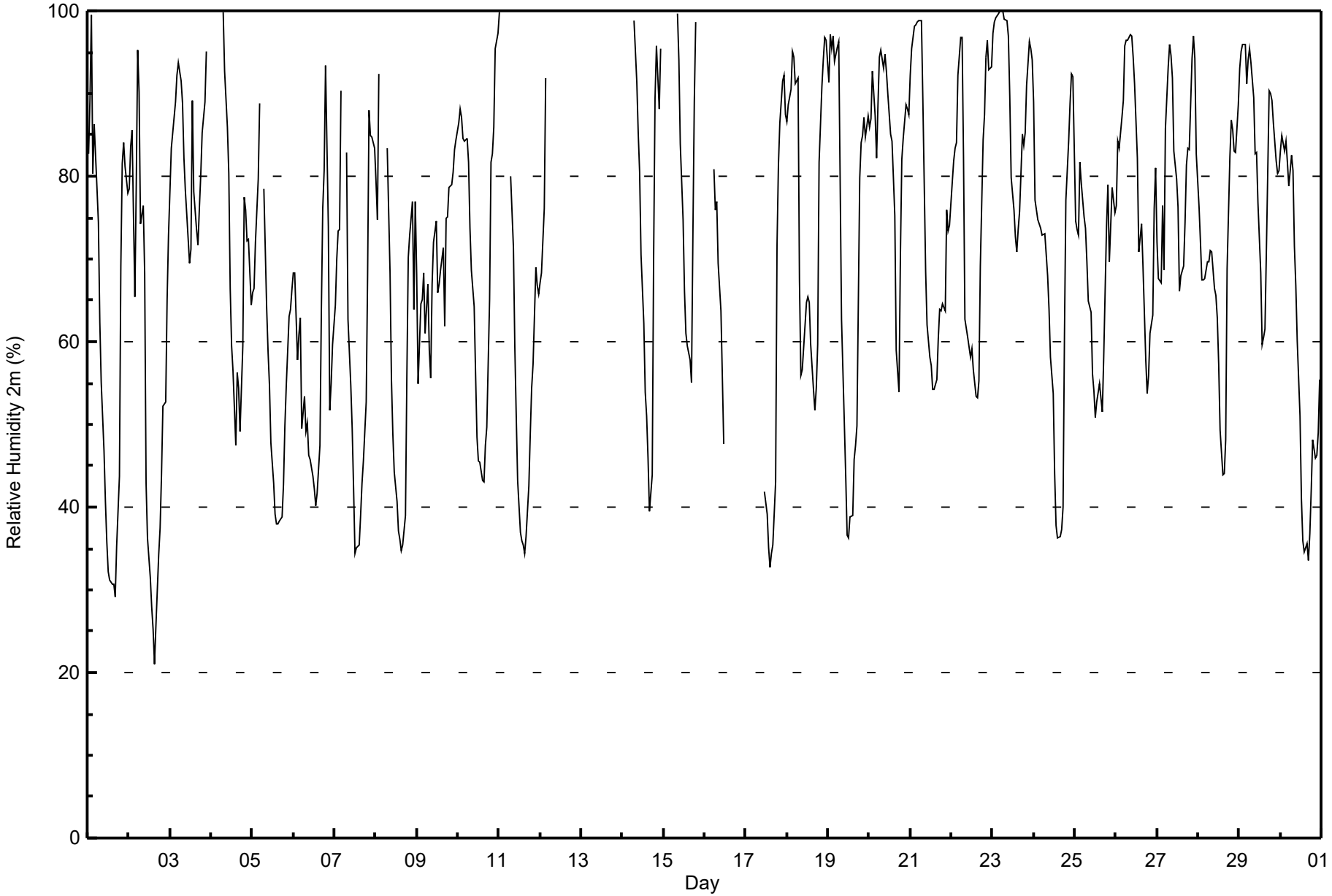
M - Maintenance UO - Unstable Operation OR - Out of Range

Wood Buffalo Environmental Association

Hourly Averages

Relative Humidity 2m (RH2) - %

Anzac - September 2024



Concentration Ranges (%)	Number of Hours	%	Cumulative %
0 - 20	0	0.00	0.00
20 - 40	54	8.90	8.90
40 - 60	132	21.75	30.64
60 - 80	197	32.45	63.10
80 - 100	222	36.57	99.67

Total Number of Valid Hours: 607

Total Number of Hours: 720

Wood Buffalo Environmental Association

Summary of Hour Averages

Leaf Wetness (LW) - %

Anzac - September 2024

Maximum Value: 49.3 % on Sep 26 08:00

Maximum Daily Average: 22.4 % on Sep 12

Minimum Value: 0.0 % on Sep 1 01:00

Minimum Daily Average: 0.0 % on Sep 30

Maximum Diurnal Average: 13.4 % at hour 6

Minimum Diurnal Average: 1.6 % at hour 17

Monthly Average: 5.66 %

Percentiles: P_1 = 0.0 P_{10} = 0.0 Q_1 = 0.0 Median = 0.0 Q_3 = 4.5 P_{90} = 24.4 P_{99} = 39.9

Hours in Service:	720
Hours of Data:	720
Hours of Missing Data:	0
Hours of Calibration:	0
Percent Operational Time:	100.0

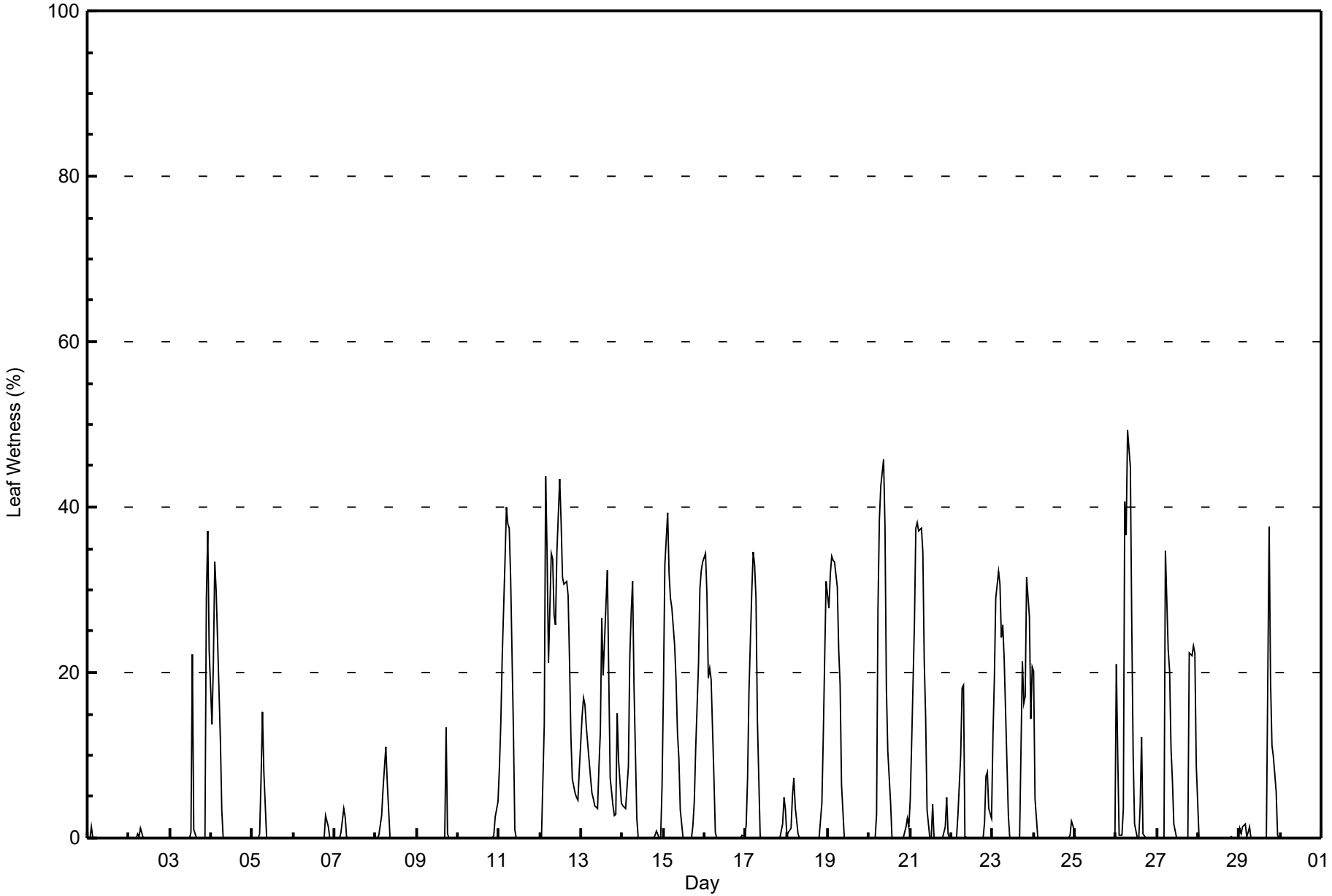
Day	Hourly Period Ending At (MST)																								Daily	Daily
	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24	Average	Maximum
1-Sep	0.0	0.1	1.3	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.1	1.3
2-Sep	0.0	0.0	0.0	0.0	0.0	0.5	0.2	1.2	0.0	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	0.1	1.2
3-Sep	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.6	22.3	1.0	0.0	0.0	0.0	0.0	0.0	0.1	29.0	37.0	22.6	4.7	37.0
4-Sep	13.7	21.2	33.5	29.8	23.9	11.8	3.3	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	5.7	33.5
5-Sep	0.0	0.0	0.0	0.0	0.5	7.2	15.3	8.0	0.0	0.0	0.0	0.0	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	15.3
6-Sep	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	2.8	1.4	0.0	0.0	0.0	0.2	2.8
7-Sep	0.0	0.0	0.0	0.0	0.6	3.5	2.6	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	0.3	3.5
8-Sep	0.0	0.0	0.4	2.6	5.9	8.5	11.1	6.8	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	1.5	11.1
9-Sep	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	13.5	0.6	0.0	0.0	0.0	0.0	0.0	0.6	13.5
10-Sep	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.4	2.5	4.5	0.3	4.5
11-Sep	8.5	13.8	21.8	33.5	40.0	38.0	37.5	31.5	12.9	0.9	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	9.9	40.0
12-Sep	0.0	0.0	13.7	43.8	34.6	21.2	34.5	33.8	26.9	25.8	34.6	43.3	38.2	31.5	30.7	31.0	29.4	21.5	12.2	7.1	5.4	5.0	4.5	8.4	22.4	43.8
13-Sep	14.7	16.9	16.1	13.3	11.3	7.3	5.4	4.7	3.9	3.5	8.6	12.8	26.5	19.7	28.3	32.4	19.5	7.3	3.9	2.7	2.9	15.0	9.4	4.2	12.1	32.4
14-Sep	4.0	3.8	3.5	8.6	21.8	27.4	31.1	18.3	2.3	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.3	0.9	0.0	0.1	6.3	5.3	31.1
15-Sep	18.1	33.0	39.3	32.0	28.9	27.8	23.3	19.1	12.8	9.7	3.5	0.0	0.0	0.0	0.0	0.0	0.0	1.6	4.3	10.9	21.0	30.2	32.4	33.4	15.9	39.3
16-Sep	34.3	29.5	19.3	20.4	19.2	7.4	0.7	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	0.3	0.1	5.5	34.3
17-Sep	1.5	7.4	17.8	29.9	34.6	33.0	29.1	14.3	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	1.7	4.8	3.3	7.4	34.6
18-Sep	0.3	0.7	1.2	5.1	7.3	3.7	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	4.3	12.4	21.9	31.1	3.7	31.1
19-Sep	27.8	31.8	34.0	33.6	33.4	30.3	22.7	18.5	6.5	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	9.9	34.0
20-Sep	0.0	0.0	0.0	0.0	2.8	27.8	38.5	42.6	45.7	37.6	18.1	10.6	4.2	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	1.3	2.3	1.4	9.7	45.7
21-Sep	4.6	11.4	26.0	37.4	38.1	37.2	37.5	34.6	21.4	14.6	3.3	0.0	0.0	4.1	0.0	0.0	0.0	0.0	0.0	0.0	1.3	4.9	0.6	0.0	11.5	38.1
22-Sep	0.0	0.0	0.0	0.0	2.7	9.9	18.1	18.5	0.1	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	1.8	7.4	8.0	3.6	2.4	3.0	18.5
23-Sep	12.3	19.1	28.9	32.3	30.7	24.3	25.7	21.8	9.0	2.7	0.0	0.0	0.0	0.0	0.0	0.0	0.0	21.3	16.3	17.1	31.5	26.8	14.5	20.7	14.8	32.3
24-Sep	20.1	4.8	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.4	2.0	1.5	1.2	20.1
25-Sep	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	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
26-Sep	21.0	10.0	0.4	0.4	3.5	40.7	36.6	49.3	44.9	25.9	10.0	1.7	0.0	0.0	4.0	12.3	0.4	0.0	0.0	0.0	0.0	0.0	0.0	0.0	10.9	49.3
27-Sep	0.0	0.0	0.0	0.0	0.2	34.8	22.6	20.2	10.8	6.9	1.7	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	22.5	22.0	23.2	22.4	8.8	8.2	34.8
28-Sep	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	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	0.2
29-Sep	1.2	0.4	1.3	1.6	0.2	0.6	1.4	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	37.7	18.9	11.2	9.8	5.6	0.3	0.0	3.8	37.7
30-Sep	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
	6.1	6.8	8.6	10.8	11.3	13.4	13.2	11.4	6.6	4.3	2.7	2.3	2.3	2.6	2.1	2.5	1.6	3.4	1.9	2.6	3.6	5.5	5.3	5.0	Diurnal Average	
	34.3	33.0	39.3	43.8	40.0	40.7	38.5	49.3	45.7	37.6	34.6	43.3	38.2	31.5	30.7	32.4	29.4	37.7	18.9	22.5	31.5	30.2	37.0	33.4	Diurnal Maximum	

Wood Buffalo Environmental Association

Hourly Averages

Leaf Wetness (LW) - %

Anzac - September 2024



Concentration Ranges (%)	Number of Hours	%	Cumulative %
0 - 0.3	467	64.86	64.86
0.4 - 0.5	10	1.39	66.25
0.6 - 0.7	7	0.97	67.22
0.8 - 1.4	13	1.81	69.03
1.5 - 10	81	11.25	80.28
> 10	142	19.72	100.00

Total Number of Valid Hours: 720

Total Number of Hours: 720

Wood Buffalo Environmental Association

Summary of Hour Averages

Wind Speed 20m (WS20) - km/h

Anzac - September 2024

Maximum Speed: 27 km/h on Sep 9 21:00

Maximum Daily Speed Average: 19.6 km/h on Sep 30

Minimum Speed Value: 1 km/h on Sep 20 00:00

Minimum Daily Speed Average: 2.7 km/h on Sep 27

Maximum Diurnal Speed Average: 8.8 km/h at hour 14

Minimum Diurnal Speed Average: 3.8 km/h at hour 18

Monthly Average Velocity: 5.4 km/h 265.7 deg

Percentiles: $P_1 = 2$ $P_{10} = 5$ $Q_1 = 7$ Median = 9 $Q_3 = 13$ $P_{90} = 17$ $P_{99} = 24$

Hours in Service:	720
Hours of Data:	720
Hours of Missing Data:	0
Percent Operational Time:	100.0

Day	Hourly Period Ending At (MST)																								Daily	Daily
	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24	Average	Maximum
1-Sep	SSE10	SSE8	S10	S12	SSW6	SW9	SSW7	SSE7	SSE10	S9	SSW14	SSW17	SW18	WSW19	W17	W16	W14	WNW11	W7	SW5	SW5	SSW6	SW7	SW7	SW8.3	WSW19
2-Sep	SW7	SW7	SW7	SW10	SW8	SSW6	S6	SSE6	SE4	S8	S11	WSW11	WSW14	W14	W13	W11	WNW11	W7	WNW9	W9	WNW11	NW16	NW16	NNW16	W6.6	NNW16
3-Sep	NNW17	NNW13	NNW13	N9	N7	NNW9	NW8	NNW9	NNW14	NNW12	NNW14	NNW13	NNW11	NW8	NW10	NNW9	N8	N6	N7	N7	N8	NW10	WNW6	NW8	NNW9.5	NNW17
4-Sep	NW11	NW10	NW7	WNW8	WNW10	WNW11	WNW14	WNW15	WNW16	W15	WNW16	WNW18	WNW17	WNW17	WNW15	N9	N8	WNW8	WSW6	WSW6	WSW8	WSW8	WSW8	WSW9	WNW10.2	WNW18
5-Sep	WSW8	WNW12	WNW13	WNW11	WNW8	NW6	WNW2	S3	SSE6	SSE9	SSE9	SE9	SE8	SE6	SE9	SE11	SE12	SE13	SSE13	SSE12	SSE14	SSE12	SSE17	SSE17	SSE5.6	SSE17
6-Sep	SSE17	SSE15	S17	SSE10	SSE8	SSW13	S9	SW10	SW12	SSW10	SSW9	WSW7	WNW7	WNW6	S4	SSE5	SE5	SSE4	SSW5	W6	W11	W12	W13	WNW15	SSW6.4	S17
7-Sep	WNW14	W13	WNW13	WNW10	W4	S4	S5	SSE8	SSE7	SE5	SSE6	WNW3	WNW13	W14	W12	WSW13	WSW10	WSW10	SW10	SSW7	SW6	SW8	W7	SW6	WSW6.3	WNW14
8-Sep	W9	W8	WSW6	NW2	SSW5	SW6	S4	SE5	SSE6	SSE11	SSE11	SE13	SE13	SSE14	SE15	SSE17	SE15	SE11	SE8	SE9	ESE11	SE10	SSE12	SSE8	SSE7.6	SSE17
9-Sep	SSW6	E3	ESE12	SSE9	SE10	SSE12	SSW5	WNW10	WNW8	WNW24	WNW22	WNW18	WNW23	WNW22	WNW23	W19	WNW20	WNW19	WNW24	WNW25	WNW27	WNW23	WNW22	WNW19	W13.0	WNW27
10-Sep	W19	W21	W20	W20	W19	W17	W15	W17	WNW17	WNW17	WNW16	W15	WNW15	WNW13	W16	WNW15	WSW10	W7	WNW3	SW3	WSW7	WSW7	W7	WSW6	W13.2	W21
11-Sep	W6	WNW5	SE1	S7	SSE6	SSE4	SE4	ESE6	SE8	SSE10	ESE11	ESE12	SE12	SE12	SSE12	SSE10	ESE9	ESE9	ESE10	ESE12	SE11	SSE8	SE9	SE10	SE7.2	SE12
12-Sep	SSE9	SSE10	SSE9	SE10	E4	NNE8	NE8	NE9	NE7	NE9	NE9	ENE9	NE10	NNE10	NNE9	NE9	NNE8	NNE6	N8	N8	N6	NNW6	NNW7	NNW8	NE5.4	NNE10
13-Sep	NNW8	NNW8	NNW9	NW9	NW8	NW7	NW6	NW8	NW9	NW9	WNW10	WNW10	WNW9	NW10	NW13	NW14	NW15	NW14	WNW11	WNW11	NW10	NW12	WNW11	WNW12	NW9.9	NW15
14-Sep	NW13	WNW12	WNW11	WNW12	W12	W11	WNW12	WNW13	WNW13	WNW14	W13	WNW14	W13	W13	W12	W13	W10	WSW7	SW6	SW6	WNW5	W7	W4	W2	W9.8	WNW14
15-Sep	WNW4	NW7	NNW7	NW4	WNW8	WNW9	WNW13	NW9	NW5	WNW6	NW5	NNW5	W6	WNW9	WNW9	WNW8	NW7	NW2	SSE4	SSE7	S7	S5	SSW7	SSW7	WNW4.4	WNW13
16-Sep	SW6	SW9	SSW9	SSW8	SW9	WSW9	SW9	S8	S12	SSW12	SW11	WSW13	WSW19	W17	WSW16	WSW16	WSW13	WSW8	SW8	SW9	SW7	SSW6	SW6	SW6	SW9.5	WSW19
17-Sep	SSW7	S7	SSW6	SSW7	SSW7	SW5	SW8	SSW7	SSW7	SW7	SW4	S11	S10	SSW11	SW9	W5	S8	S9	SSE7	SSE7	SSE8	SSE8	SSE10	SSE11	SSW7.0	S11
18-Sep	SSE12	SSE9	SSE9	SSE10	S9	S9	SSW7	WSW6	WNW10	WNW14	WNW11	NW10	WNW11	WNW12	WNW15	WNW16	NW18	NW13	NW10	WNW5	W6	W8	W8	WNW9	W6.1	NW18
19-Sep	W9	W6	W6	WNW9	W9	WSW8	W7	W7	WNW6	WNW7	WNW8	W7	W7	W8	W9	WNW5	N5	NE6	NE5	ESE2	SSW5	SSW4	WSW5	WSW1	W4.7	W9
20-Sep	NE2	W3	NNW5	NNW7	NNW6	WSW7	WNW6	WNW13	W10	NW5	NW10	NW12	WNW11	WNW14	WNW14	WNW12	NW17	NNW16	WNW13	WNW13	WNW12	WNW10	WNW9	WNW9	WNW9.3	NW17
21-Sep	WNW9	WNW8	WNW8	WNW7	W7	W7	SW6	S5	SSE5	SSE8	S7	WNW5	WNW6	WNW3	NE4	ESE9	SE10	SSE8	S8	S11	S11	SSE8	SE10	SE12	S3.4	SE12
22-Sep	SSE12	SSE10	SSE12	SSE10	SSE6	SSE6	S6	SSW6	SSW3	S4	SSE6	WSW5	W9	WSW5	W7	WSW4	WSW4	S7	S6	S6	S5	SW4	NNW9	WNW6	SSW4.2	SSE12
23-Sep	SW4	NNW5	NNW7	NW7	W7	W8	WNW9	WNW11	WNW11	NW9	NW7	WNW8	WNW5	WNW5	WNW4	WNW5	WNW2	WSW4	SW7	SSW8	SSW8	S6	SSE9	S7	W4.5	WNW11
24-Sep	WSW9	W15	WSW15	W13	W12	W17	W19	W23	W23	W22	WNW25	WNW20	W22	WNW24	WNW21	WNW17	WNW16	W10	WSW6	SW6	S6	S8	S6	S8	W13.6	WNW25
25-Sep	S11	SSE10	SSE11	SE10	SE11	SE15	SE13	SE19	SSE18	SE15	SSE10	SSE8	W4	WNW12	WNW11	NW6	W8	WNW7	SSW5	W7	WNW9	WNW12	W11	W14	S4.2	SE19
26-Sep	WNW13	WNW13	WNW16	NW11	WNW14	WNW17	NW22	WNW19	NW13	WNW12	W13	W15	WNW20	WNW20	WNW16	W9	WSW7	WSW10	WSW12	SW10	SW9	SW9	SW6	SW5	W11.8	NW22
27-Sep	SSW7	SW7	SW6	SSW5	WSW5	ESE5	NNE9	NNE9	NNE6	NNE5	NNE5	W5	W5	S4	WSW4	W5	SW3	SSE4	SSE9	SW7	SW4	S6	SSW11	SW16	SW2.7	SW16
28-Sep	WSW23	WSW19	WSW26	W26	W24	W21	W22	W20	W18	W19	W19	WNW18	WNW12	W13	W14	W10	W6	SSW3	S5	S6	S6	WSW7	SW5	W5	W13.5	WSW26
29-Sep	SE3	SSE5	SE2	SW2	SE7	SE8	SE3	ENE5	N5	NNW8	NNW11	N9	NNE10	NE12	NE12	NNE11	N20	NNW13	NW11	NNW14	NNW15	NW14	NW15	WNW14	NNW5.9	N20
30-Sep	WNW15	WNW16	WNW17	WNW19	WNW19	WNW19	WNW18	WNW17	WNW18	WNW21	WNW22	WNW21	WNW24	WNW26	WNW24	WNW25	WSW23	WNW18	WNW14	W17	W20	W23	WNW22	WNW17	WNW19.6	WNW26
	WSW5.3	W5.2	WSW5.1	WSW4.9	WSW5.1	WSW5.4	W5.2	W5.0	W4.8	W5.5	W5.8	W6.8	W8.2	W8.8	W8.4	W6.4	WNW5.3	W3.8	WSW3.8	WSW4.2	WSW4.6	WSW5.3	WSW5.0	WSW5.2	Diurnal Average	
	WSW23	W21	WSW26	W26	W24	W21	W22	W23	W23	WNW24	WNW25	WNW21	WNW24	WNW26	WNW24	WNW25	WNW23	WNW19	WNW24	WNW25	WNW27	W23	WNW22	WNW19	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 20m (WS20) - km/h

Anzac - September 2024

Number of Exceedences (AAAQO): 1-hr: 0 24-hr: 0
Maximum Value: 8 km/h on Sep 28 03:00

Minimum Value: 1 km/h on Sep 29 01:00

Percentiles: P_1 = 1 P_{10} = 1 Q_1 = 2 Median = 2 Q_3 = 3 P_{90} = 5 P_{99} = 7

Hours in Service:	720
Hours of Data:	720
Hours of Missing Data:	0
Hours of Calibration:	0
Percent Operational Time:	100.0

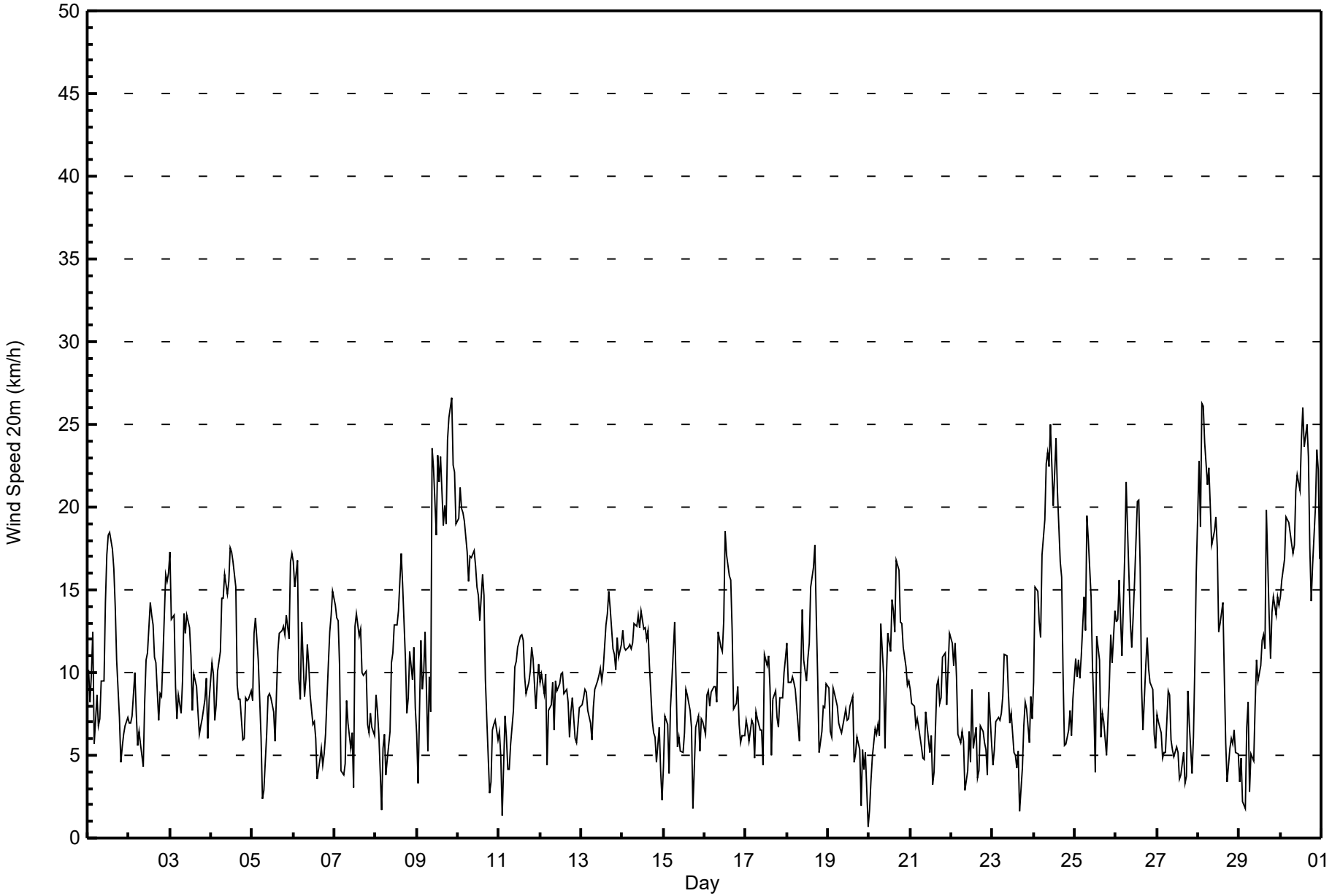
Day	Hourly Period Ending At (MST)																								Daily
	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24	Maximum
1-Sep	2	2	2	1	3	2	1	1	2	3	5	5	6	6	5	5	5	3	2	1	1	2	1	1	6
2-Sep	2	1	2	2	1	2	2	2	2	2	3	3	4	3	4	3	3	3	2	2	5	4	5	5	5
3-Sep	4	4	4	2	2	2	2	2	3	3	3	3	3	2	2	2	2	1	1	1	1	2	1	2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

Wood Buffalo Environmental Association

Hourly Averages

Wind Speed 20m (WS20) - km/h

Anzac - September 2024



Wind Speed Ranges (km/h)	Number of Hours	%	Cumulative %
0 - 5	103	14.31	14.31
6 - 11	380	52.78	67.08
12 - 19	193	26.81	93.89
20 - 28	44	6.11	100.00
29 - 38	0	0.00	100.00
> 38	0	0.00	100.00

Total Number of Valid Hours: 720

Total Number of Hours: 720

Wood Buffalo Environmental Association

Frequency Distribution

Wind Speed 20m (WS20) - km/h

Anzac - September 2024

Wind Speed							**Wind Direction**										
Ranges (km/h)	N	NNE	NE	ENE	E	ESE	SE	SSE	S	SSW	SW	WSW	W	WNW	NW	NNW	**Totals**
0 - 5	2	2	3	1	2	2	9	7	11	9	12	9	10	15	6	3	103
6 - 11	13	10	8	1	0	7	20	51	32	27	39	27	43	55	30	17	380
12 - 19	0	0	2	0	0	3	12	18	3	4	3	12	39	70	15	12	193
20 - 28	1	0	0	0	0	0	0	0	0	0	0	2	14	26	1	0	44
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	16	12	13	2	2	12	41	76	46	40	54	50	106	166	52	32	720

Total Number of Valid Hours: 720

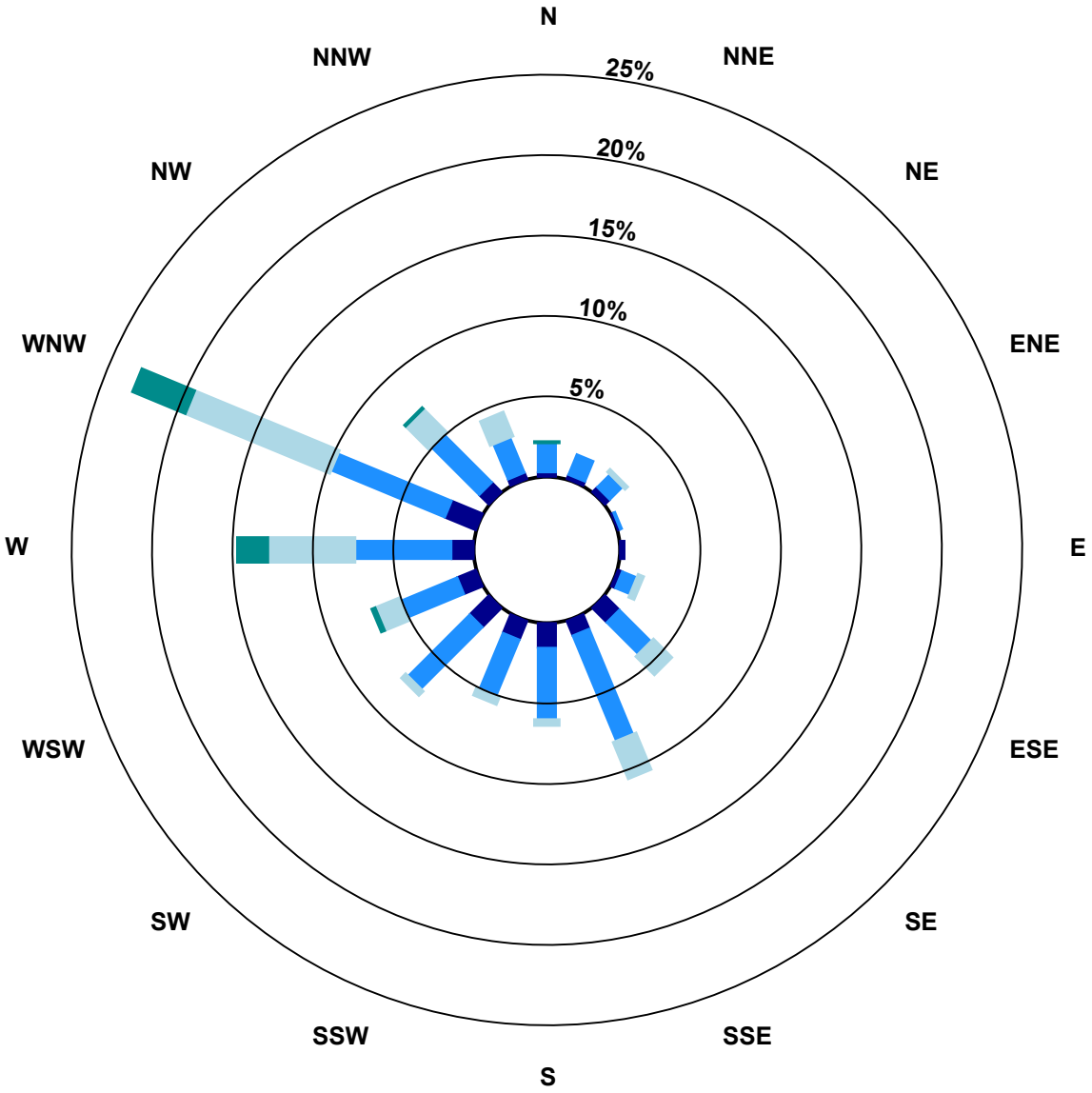
Total Number of Hours: 720

Wood Buffalo Environmental Association

Wind Rose Sep 2024

Wind Speed 20m (WS20) - km/h

Anzac



Classes (km/h)

0 - 5

6 - 11

12 - 19

20 - 28

29 - 38

> 38

Total Number of Valid Hours: 720

Wood Buffalo Environmental Association

Summary of Hour Averages

Wind Direction 20m (WD20) - deg

Anzac - September 2024

Direction of Maximum Speed: 286 deg on Sep 9 21:00
Direction of Maximum Daily Speed Average: 289.0 deg on Sep 30

Direction of Minimum Speed: 251 deg on Sep 20 00:00

Direction of Minimum Daily Speed Average: 2.7 deg on Sep 27

Monthly Average Direction: 265.7 deg

Hours in Service:	720
Hours of Data:	720
Hours of Missing Data:	0
Percent Operational Time:	100.0

Day	Hourly Period Ending At (MST)																								Daily
	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24	Average
1-Sep	156	166	174	181	196	229	208	163	163	170	194	211	221	246	263	269	267	283	271	234	220	211	215	214	218.0
2-Sep	216	221	221	233	229	211	191	160	139	170	177	242	253	281	275	279	287	279	300	280	287	321	318	332	263.1
3-Sep	335	332	340	0	352	335	325	327	341	329	328	329	338	317	324	333	353	3	349	2	353	310	303	306	334.7
4-Sep	307	315	306	300	303	289	289	286	285	276	282	288	286	303	299	5	357	287	251	243	253	249	257	252	289.1
5-Sep	243	287	284	295	301	315	285	180	156	153	149	138	143	134	130	129	128	134	151	154	153	153	151	150	161.0
6-Sep	157	163	170	148	159	194	185	217	222	213	213	252	293	282	182	152	133	154	196	263	259	263	280	283	209.4
7-Sep	286	276	285	290	277	174	178	166	159	142	148	283	284	278	274	256	247	237	223	204	217	232	269	216	249.1
8-Sep	275	278	242	307	200	214	191	141	155	151	152	136	132	148	139	154	146	141	144	131	117	145	151	155	153.6
9-Sep	212	81	110	148	140	166	193	291	284	283	291	288	289	284	287	278	282	289	286	285	286	294	288	286	280.6
10-Sep	281	281	277	277	281	279	270	277	285	287	284	276	282	289	276	287	258	259	294	227	244	247	268	245	276.5
11-Sep	271	289	133	170	161	154	144	119	143	149	120	117	137	144	160	153	118	102	105	109	124	160	146	143	137.6
12-Sep	149	152	148	144	84	25	39	48	42	39	53	57	48	28	30	35	24	23	10	4	9	347	337	339	42.9
13-Sep	343	339	332	319	319	307	308	309	304	305	299	298	299	309	317	320	315	315	302	301	308	310	301	299	311.2
14-Sep	309	300	291	287	277	281	284	283	285	283	275	290	277	275	278	280	276	249	215	218	292	276	271	269	279.8
15-Sep	296	322	333	316	290	291	296	319	315	302	322	334	266	283	282	282	304	312	161	166	181	185	196	196	283.6
16-Sep	217	220	202	200	232	237	217	187	186	202	228	246	252	259	250	252	245	242	216	229	226	200	223	228	229.1
17-Sep	195	184	207	212	194	214	229	208	192	228	230	181	183	210	233	259	189	169	162	165	165	167	157	157	191.5
18-Sep	159	165	167	158	169	171	198	248	291	288	291	304	300	290	293	299	310	313	323	283	259	264	275	282	271.9
19-Sep	280	271	267	285	264	247	266	279	301	294	282	269	270	279	276	283	8	52	50	118	201	206	250	251	275.8
20-Sep	54	259	333	328	334	248	302	287	279	316	322	315	299	297	295	286	321	330	298	296	292	296	298	291	302.2
21-Sep	290	295	299	282	259	264	224	183	151	154	183	288	296	295	42	123	137	147	190	176	172	157	129	140	189.7
22-Sep	148	148	154	154	162	163	171	208	211	178	163	249	277	249	268	243	237	184	179	183	185	222	339	290	191.7
23-Sep	234	327	340	311	272	279	292	297	293	312	313	294	293	290	284	289	290	255	222	208	197	175	166	189	273.1
24-Sep	237	260	258	272	262	260	265	272	277	280	283	282	280	285	283	285	282	274	253	224	184	171	182	180	268.0
25-Sep	173	160	164	139	130	139	129	142	148	140	152	151	268	299	290	312	269	290	210	263	293	291	276	278	189.0
26-Sep	285	297	296	307	292	299	308	302	311	288	275	281	284	283	285	265	247	248	242	235	232	230	218	223	280.2
27-Sep	207	216	215	212	242	114	30	19	13	14	33	270	262	185	239	265	214	154	158	228	222	179	213	233	221.8
28-Sep	250	244	252	264	271	270	269	271	276	276	272	282	285	279	271	260	271	203	183	177	191	240	221	259	262.3
29-Sep	146	147	144	231	146	125	134	74	9	343	342	357	20	39	34	22	349	335	305	331	329	312	306	301	348.6
30-Sep	296	292	292	289	285	286	301	291	295	286	285	285	290	293	294	297	297	302	289	275	272	275	282	287	289.0
	250.3	259.5	255.9	258.0	256.5	252.4	265.3	268.6	269.2	267.8	268.4	275.4	277.4	280.9	281.1	281.2	287.0	278.6	248.6	243.8	245.5	253.9	255.6	253.0	
	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: 97 deg on Sep 20 00:00

Minimum Value: 5 deg on Sep 25 00:00

Percentiles: P_1 = 7 P_{10} = 11 Q_1 = 14 Median = 17 Q_3 = 22 P_{90} = 34 P_{99} = 68

Hours in Service:	720
Hours of Data:	720
Hours of Missing Data:	0
Hours of Calibration:	0
Percent Operational Time:	100.0

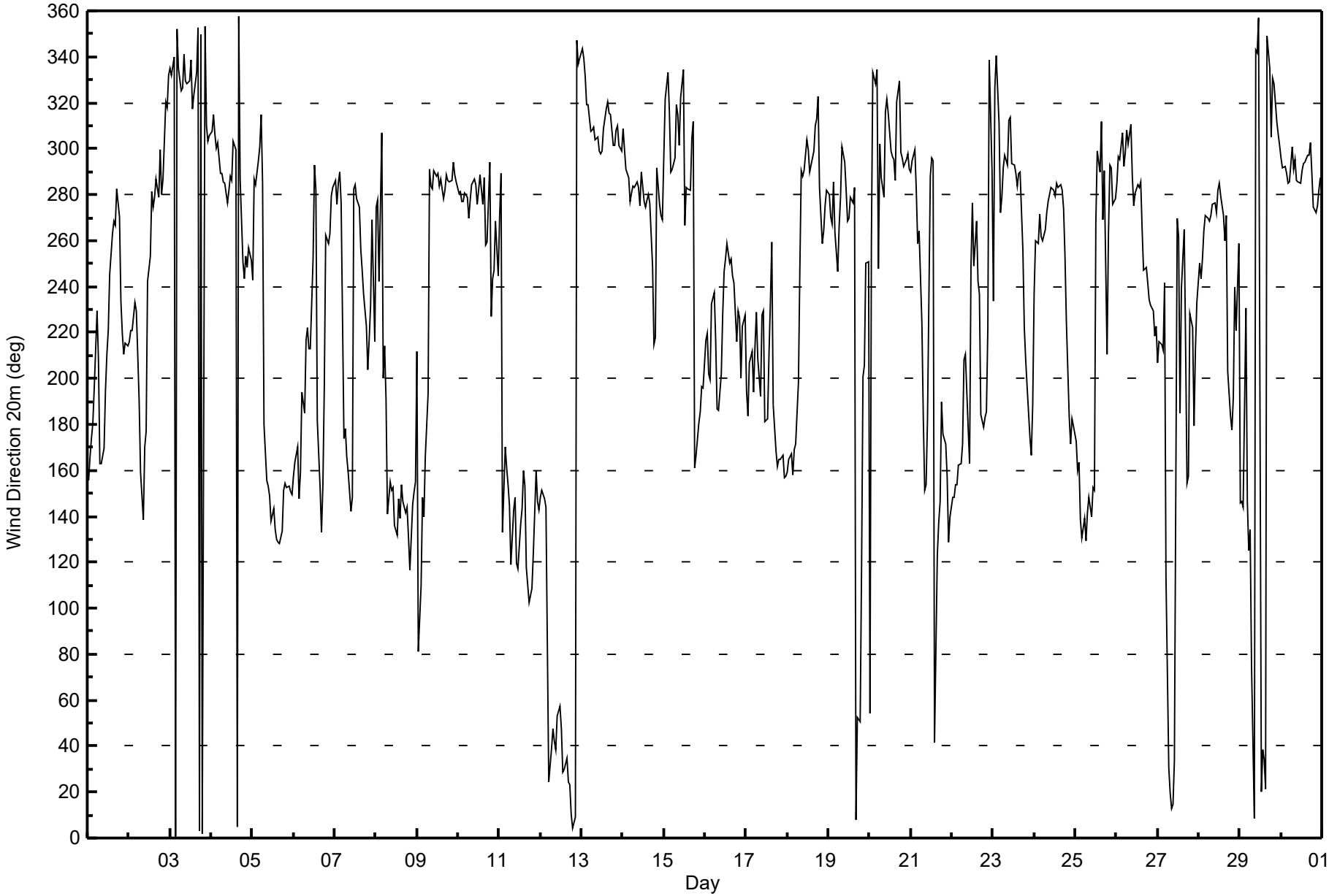
Day	Hourly Period Ending At (MST)																								Daily
	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24	Maximum
1-Sep	9	10	8	8	51	16	18	15	17	22	24	23	22	24	20	20	22	17	17	34	14	29	13	14	51
2-Sep	12	11	15	12	11	25	17	48	46	14	22	30	22	20	22	24	20	17	12	13	17	17	26	23	48
3-Sep	13	15	17	17	17	15	14	16	19	18	19	17	18	19	22	25	25	16	14	10	11	17	17	13	25
4-Sep	12	10	11	14	18	20	18	17	17	20	19	17	17	21	22	25	25	25	15	14	7	12	14	16	25
5-Sep	11	32	15	10	14	17	39	26	24	22	33	38	40	59	37	21	22	16	11	9	9	10	10	12	59
6-Sep	12	9	14	22	30	26	34	29	19	18	19	32	20	22	43	20	15	43	40	10	13	15	17	15	43
7-Sep	14	11	11	11	25	28	29	11	16	26	22	87	17	20	19	17	17	18	13	17	15	19	22	34	87
8-Sep	13	13	17	66	26	10	41	16	15	13	19	19	22	19	19	15	14	13	11	10	9	10	11	17	66
9-Sep	40	79	19	55	41	9	51	24	29	19	17	16	17	18	17	17	18	21	18	18	17	18	17	17	79
10-Sep	17	17	17	17	18	17	17	17	17	17	18	18	22	22	17	22	27	21	62	50	17	19	15	26	62
11-Sep	9	22	76	8	14	11	23	16	16	18	24	28	32	27	20	26	30	14	12	13	14	13	10	11	76
12-Sep	11	10	9	12	43	15	15	17	16	15	17	14	15	17	14	13	16	19	16	16	21	14	11	13	43
13-Sep	10	13	13	14	13	14	15	14	15	16	14	15	15	16	12	12	13	13	14	13	13	13	14	15	16
14-Sep	14	14	15	15	13	15	15	15	16	18	20	16	19	19	20	19	18	25	12	14	52	14	24	27	52
15-Sep	33	9	14	51	15	17	15	14	19	19	24	47	34	20	33	26	20	71	8	8	12	14	11	11	71
16-Sep	18	19	16	19	17	18	19	16	15	19	20	24	20	20	20	22	17	18	14	16	18	19	17	15	24
17-Sep	11	12	17	12	16	16	12	19	24	32	55	25	33	39	36	68	21	14	8	8	5	5	9	6	68
18-Sep	8	7	8	8	7	6	22	35	17	18	19	17	18	22	19	19	16	15	11	27	8	9	9	9	35
19-Sep	9	13	15	14	14	6	8	14	19	24	19	30	37	25	25	24	47	18	11	59	18	28	33	97	97
20-Sep	85	76	24	20	39	38	68	20	24	54	20	16	19	15	14	17	20	12	18	11	11	11	9	11	85
21-Sep	10	9	12	11	14	16	19	18	22	17	31	62	25	68	60	34	17	18	18	14	19	17	13	14	68
22-Sep	13	15	10	11	9	7	11	19	42	50	25	60	25	34	27	34	39	13	10	13	10	11	29	36	60
23-Sep	25	28	11	29	14	16	15	12	17	19	22	24	37	26	35	49	66	26	16	16	22	29	19	17	66
24-Sep	33	19	19	20	21	19	19	18	16	18	17	18	18	17	18	18	18	18	15	23	17	9	10	5	33
25-Sep	6	8	7	13	11	13	15	12	15	14	18	25	59	20	22	37	21	15	22	14	16	15	21	20	59
26-Sep	17	17	16	17	14	16	16	20	16	19	18	18	17	18	17	20	22	16	16	17	17	19	22	24	24
27-Sep	15	17	21	40	41	52	20	19	27	28	41	31	25	53	56	27	33	12	9	61	65	15	15	18	65
28-Sep	16	17	18	18	18	18	18	16	17	19	18	18	22	21	21	21	30	20	8	8	24	14	20	11	30
29-Sep	49	20	60	61	21	13	66	24	34	20	16	24	22	24	17	24	13	22	15	13	12	13	13	12	66
30-Sep	14	15	16	15	15	18	17	17	18	18	17	17	19	18	18	18	18	15	22	18	18	18	17	18	22
	85	79	76	66	51	52	68	48	46	54	55	87	59	68	60	68	66	71	62	61	65	29	33	97	
	Diurnal Maximum																								

Wood Buffalo Environmental Association

Hourly Averages

Wind Direction 20m (WD20) - deg

Anzac - September 2024



WOOD BUFFALO ENVIRONMENTAL ASSOCIATION

CONTINUOUS AMBIENT AIR QUALITY
MONITORING PROGRAM
MONTHLY REPORT

AMS17
WAPASU
SEPTEMBER 2024

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

October 31, 2024

WOOD BUFFALO ENVIRONMENTAL ASSOCIATION - WAPASU (AMS17)
SEPTEMBER 2024

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	685	34	35	99.86	16.7	0	4.9	0
H2S (ppb) Average	684	35	36	99.86	1.9	0	0.4	0
THC (ppm) Average	685	34	35	99.86	3.5	-	2.5	-
O3 (ppb) Average	685	34	35	99.86	55.6	0	36.4	-
NO2 (ppb) Average	685	35	35	100	17.7	0	4.3	-
NO (ppb) Average	685	35	35	100	26.9	-	3.4	-
NOX (ppb) Average	685	35	35	100	41.8	-	6.7	-
PM2.5 (ug/m3) Average	716	2	4	99.72	170.6	0	99.5	4
Temperature 2 m (C) Average	720	0	0	100	29.3	-	20.8	-
Relative Humidity (%) Average	698	0	22	96.94	100	-	91.1	-
Wind Speed 10 m (km/h) Average	720	0	0	100	18	-	11	-
Wind Direction 10 m (deg) Average	720	0	0	100	-	-	-	-
Precipitation (mm) Total	720	0	0	100	2	-	7.6	-

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

WOOD BUFFALO ENVIRONMENTAL ASSOCIATION - WAPASU (AMS17)
SEPTEMBER 2024

MONTHLY SUMMARY FOR AIR QUALITY/ METEOROLOGICAL MONITORING MEASUREMENTS

					Percentile						
Parameter	Number	Mean	StnDev	Total	Min	P10	Q1	Median	Q3	P90	Max
SO2 (ppb) Average	685	0.66	1.9	-	0	0	0	0	0.4	1.6	16.7
H2S (ppb) Average	684	0.16	0.2	-	0	0	0	0.1	0.2	0.4	1.9
THC (ppm) Average	685	2.3	0.1	-	2.1	2.2	2.2	2.3	2.3	2.4	3.5
O3 (ppb) Average	685	27.07	10.1	-	5.7	12.8	19.7	27.4	34.5	39.9	55.6
NO2 (ppb) Average	685	2.78	2.8	-	0.2	0.5	0.8	1.8	3.7	6.3	17.7
NO (ppb) Average	685	0.54	1.9	-	0	0	0	0.1	0.4	1.2	26.9
NOX (ppb) Average	685	3.31	4	-	0.2	0.5	0.9	2	4.3	7.3	41.8
PM2.5 (ug/m3) Average	716	16.03	27.7	-	0.4	2.5	3.6	5.4	12.6	44.3	170.6
Temperature 2 m (C) Average	720	12.06	5.9	-	-2.7	4.9	8.5	11.6	15.3	19.3	29.3
Relative Humidity (%) Average	698	71.52	19.4	-	26.1	43.4	56.7	72.6	88.9	97.1	100
Wind Speed 10 m (km/h) Average	720	7.7	3	-	0	4	5	7	10	12	18
Wind Direction 10 m (deg) Average	720	-	-	-	-	-	-	-	-	-	-
Precipitation (mm) Total	720	-	-	16.76	-	-	-	-	-	-	-

WOOD BUFFALO ENVIRONMENTAL ASSOCIATION - WAPASU (AMS17)
SEPTEMBER 2024

OPERATIONAL NOTES

Parameter	Period Start	Period End	Duration (Hours)	Notes
H2S, SO2, THC, O3	16 Sep 2024 15:00	16 Sep 2024 15:00	1	Maintenance - sample manifold cleaned
PM2.5	10 Sep 2024 12:00	10 Sep 2024 13:00	2	DAS Failure - data not recorded
Relative Humidity	12 Sep 2024 23:00	13 Sep 2024 00:00	2	Sensor operated out of range
Relative Humidity	13 Sep 2024 03:00	13 Sep 2024 13:00	11	Sensor operated out of range
Relative Humidity	14 Sep 2024 03:00	14 Sep 2024 03:00	1	Sensor operated out of range
Relative Humidity	15 Sep 2024 05:00	15 Sep 2024 10:00	6	Sensor operated out of range
Relative Humidity	24 Sep 2024 07:00	24 Sep 2024 08:00	2	Sensor operated out of range

Wood Buffalo Environmental Association

Summary of Hour Averages

Sulphur Dioxide (SO_2) - ppb

Wapasu - September 2024

Number of Exceedences (AAAQO): 1-hr: 0 24-hr: 0
Maximum Value: 16.7 ppb on Sep 6 14:00 Maximum Daily Average: 4.9 ppb on Sep 6

Minimum Value: 0.0 ppb on Sep 1 01:00
Maximum Diurnal Average: 1.7 ppb at hour 16
Monthly Average: 0.66 ppb

Minimum Daily Average: 0.0 ppb on Sep 3
Minimum Diurnal Average: 0.1 ppb at hour 6
Percentiles: P_1 = 0.0 P_{10} = 0.0 Q_1 = 0.0 Median = 0.0 Q_3 = 0.4 P_{90} = 1.6 P_{99} = 9.9

Hours in Service:	720
Hours of Data:	685
Hours of Missing Data:	35
Hours of Calibration:	34
Percent Operational Time:	99.9

Day	Hourly Period Ending At (MST)																								Daily	Daily
	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24	Average	Maximum
1-Sep	0.0	0.0	0.0	0.0	Z	0.1	0.0	0.1	0.0	0.0	0.1	0.2	1.6	1.7	5.3	2.7	0.0	0.0	0.0	0.1	0.3	1.3	1.5	0.9	0.7	5.3
2-Sep	0.6	0.5	1.4	2.0	1.2	Z	0.3	0.5	0.2	0.1	0.9	0.9	1.6	5.0	6.4	1.8	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	1.0	6.4
3-Sep	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
4-Sep	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	0.2	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.2
5-Sep	0.0	0.0	Z	0.0	0.0	0.0	0.0	0.0	0.0	0.0	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
6-Sep	0.0	0.0	0.2	Z	0.3	0.4	0.5	0.7	2.5	8.7	10.4	12.3	10.9	16.7	9.0	12.3	8.4	8.7	5.0	1.6	1.0	1.1	0.6	0.2	4.9	16.7
7-Sep	0.1	0.1	0.1	0.2	Z	0.2	0.4	0.8	1.2	0.8	1.1	0.2	0.2	2.8	4.9	6.9	7.2	5.6	0.3	1.8	1.6	2.5	2.8	1.0	1.9	7.2
8-Sep	0.6	0.1	0.3	0.2	0.1	Z	0.1	0.4	0.2	0.0	0.4	0.4	0.6	0.5	0.7	0.3	0.3	0.1	0.1	0.0	0.0	0.0	0.1	0.5	0.3	0.7
9-Sep	Z	0.2	0.3	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.4	0.1	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.4
10-Sep	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	0.2	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.2
11-Sep	0.0	0.0	Z	0.0	0.0	0.0	0.0	0.0	0.0	0.1	0.9	0.4	0.1	0.0	0.1	0.1	0.0	0.1	0.0	0.0	0.0	0.0	0.0	0.0	0.1	0.9
12-Sep	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	0.3	0.0	0.0	0.0	0.0	0.0	0.0	0.3
13-Sep	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
14-Sep	0.0	0.0	0.0	0.0	0.0	Z	0.0	0.1	0.2	0.2	0.5	0.2	0.2	0.6	0.4	0.3	0.1	0.0	0.0	0.0	0.0	0.0	0.0	0.1	0.1	0.6
15-Sep	Z	0.1	0.0	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	0.1	0.1	0.0	0.0	0.4	1.6	1.7	1.0	0.2	1.7
16-Sep	0.6	Z	0.3	0.2	0.1	0.1	0.2	0.8	2.4	5.5	9.4	5.4	4.4	1.7	M	0.0	0.0	0.0	0.0	0.5	0.6	1.1	1.4	1.1	1.6	9.4
17-Sep	0.4	0.9	Z	0.6	0.4	0.5	0.1	0.2	6.0	3.2	2.6	1.4	0.9	0.6	0.3	1.1	0.6	0.2	0.1	0.1	0.0	0.0	0.0	0.0	0.9	6.0
18-Sep	0.0	0.0	0.0	Z	0.1	0.2	0.2	0.4	5.9	3.0	0.9	0.4	0.0	0.7	0.7	0.7	0.6	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.6	5.9
19-Sep	0.0	0.0	0.0	0.0	Z	0.0	0.0	2.7	15.3	2.5	0.5	0.9	1.6	1.4	0.5	0.4	0.4	0.5	0.3	0.3	0.1	0.0	0.1	0.0	1.2	15.3
20-Sep	0.0	0.0	0.1	0.0	0.0	Z	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	0.1
21-Sep	Z	0.1	0.1	0.0	0.0	0.0	0.0	0.0	0.0	0.2	0.2	1.6	2.4	1.6	0.2	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.3	2.4
22-Sep	0.0	Z	0.0	0.0	0.0	0.0	0.0	0.0	0.1	0.0	1.5	1.8	2.9	6.1	9.8	12.6	5.9	2.3	0.6	0.5	0.5	0.2	0.2	0.0	2.0	12.6
23-Sep	0.0	0.0	Z	0.0	0.0	0.0	0.1	0.0	0.1	0.0	0.1	0.1	0.4	1.3	0.8	4.5	8.8	1.5	0.1	0.0	0.4	0.1	0.0	0.0	0.8	8.8
24-Sep	0.5	0.8	0.2	Z	0.2	0.3	0.7	3.7	4.1	1.0	0.3	0.2	0.0	0.1	0.2	0.6	0.4	0.1	0.1	0.0	0.0	0.0	0.0	0.1	0.6	4.1
25-Sep	0.1	0.0	0.0	0.5	Z	0.2	0.1	0.1	0.0	0.0	0.0	0.0	0.0	1.3	3.3	2.9	3.5	6.2	1.2	1.7	2.6	1.9	1.1	0.4	1.2	6.2
26-Sep	0.2	0.2	0.0	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	0.2	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.2
27-Sep	Z	0.0	0.0	0.1	0.0	0.0	0.0	0.0	0.3	0.2	0.3	0.2	0.4	1.3	2.8	3.2	0.9	0.1	0.1	0.0	0.0	0.4	2.9	6.1	0.8	6.1
28-Sep	5.6	Z	0.6	0.4	0.2	0.1	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	0.3	0.1	0.0	0.0	0.0	0.3	5.6
29-Sep	0.0	0.0	Z	0.0	0.0	0.0	0.0	0.0	0.3	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	0.3
30-Sep	0.0	0.0	0.0	Z	0.0	0.0	0.0	0.0	0.2	0.2	0.7	0.6	0.4	0.2	0.1	0.1	0.0	0.0	0.0	0.0	0.3	0.4	0.0	0.0	0.1	0.7
	0.3	0.1	0.1	0.2	0.1	0.1	0.1	0.4	1.3	0.9	1.1	0.9	1.0	1.5	1.6	1.7	1.2	0.9	0.3	0.2	0.3	0.4	0.4	0.4	Diurnal Average	
	5.6	0.9	1.4	2.0	1.2	0.5	0.7	3.7	15.3	8.7	10.4	12.3	10.9	16.7	9.8	12.6	8.8	8.7	5.0	1.8	2.6	2.5	2.9	6.1	Diurnal Maximum	

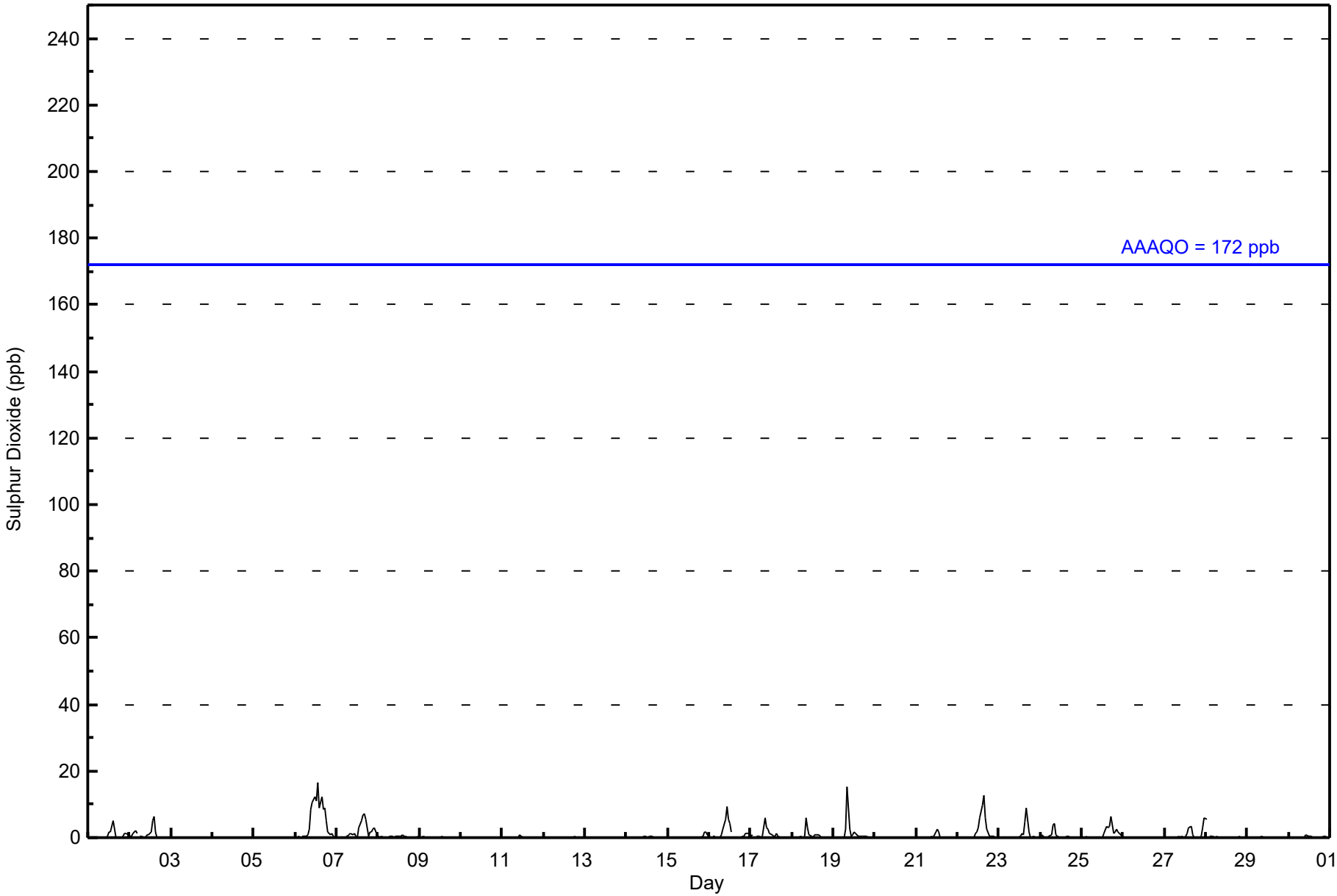
Z - zerospan C - Calibration M - Maintenance
Alberta Ambient Air Quality Objectives (AAAQO): 1-hr 172 ppb 24-hr 48 ppb

Wood Buffalo Environmental Association

Hourly Averages

Sulphur Dioxide (SO_2) - ppb

Wapasu - September 2024



Sulphur Dioxide (SO_2) - ppb
Wapasu - September 2024

Concentration Ranges (ppb)	Number of Hours	%	Cumulative %
0 - 10	679	99.12	99.12
11 - 20	6	0.88	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: 685

Total Number of Hours: 720

Wood Buffalo Environmental Association

Frequency Distribution

Sulphur Dioxide (SO_2) - ppb

Wapasu - September 2024

Concentration Ranges (ppb)	Wind Direction																
	N	NNE	NE	ENE	E	ESE	SE	SSE	S	SSW	SW	WSW	W	WNW	NW	NNW	**Totals**
0 - 10	42	28	11	15	25	30	59	104	70	51	56	60	43	30	16	39	679
11 - 20	1	0	0	0	0	0	0	1	0	1	3	0	0	0	0	0	6
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	43	28	11	15	25	30	59	105	70	52	59	60	43	30	16	39	685

Total Number of Valid Hours: 685

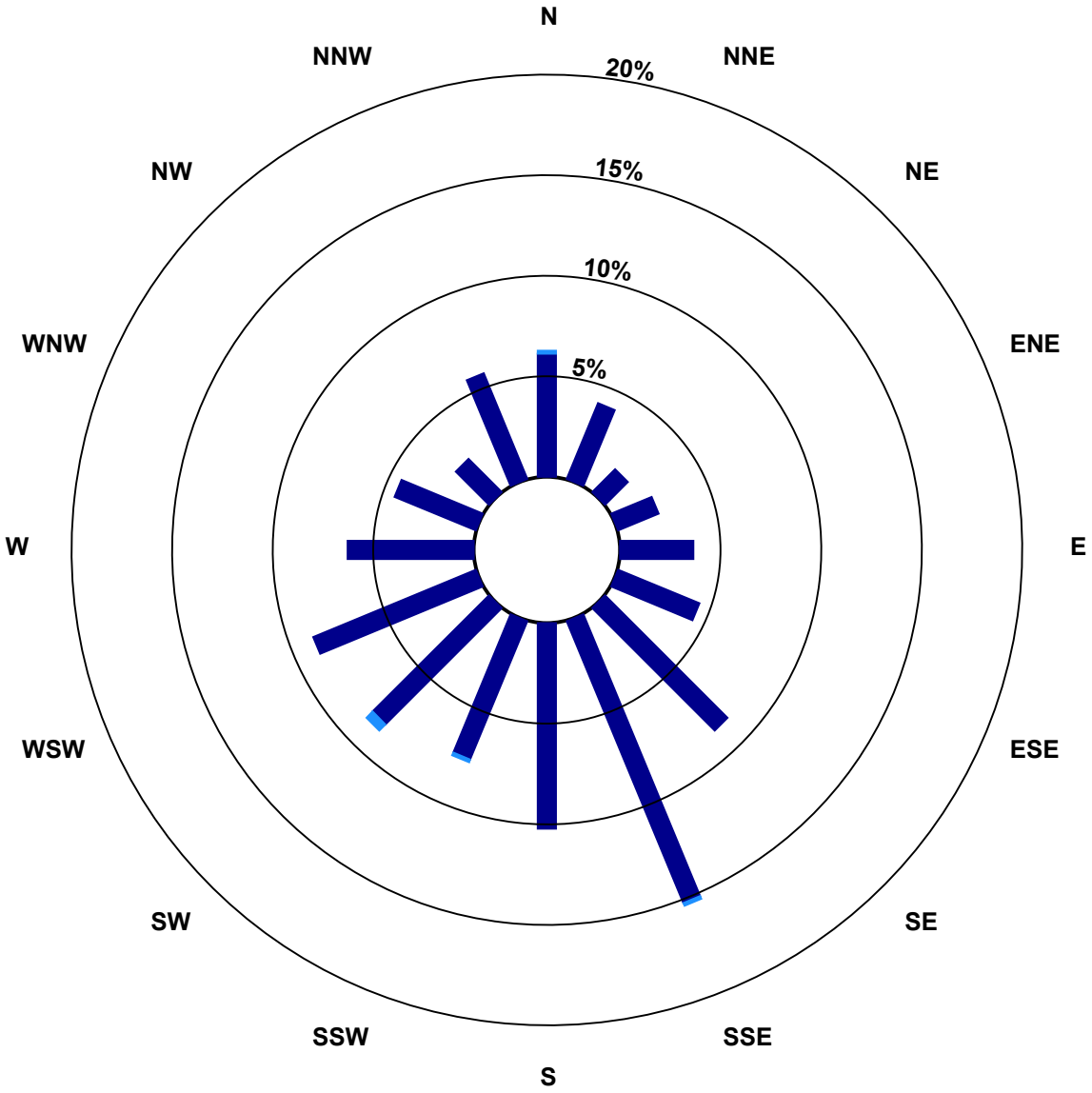
Total Number of Hours: 720

Wood Buffalo Environmental Association

Wind Rose Sep 2024

Sulphur Dioxide (SO_2) - ppb

Wapasu



Classes (ppb)

0 - 10

11 - 20

21 - 60

61 - 110

111 - 172

> 172

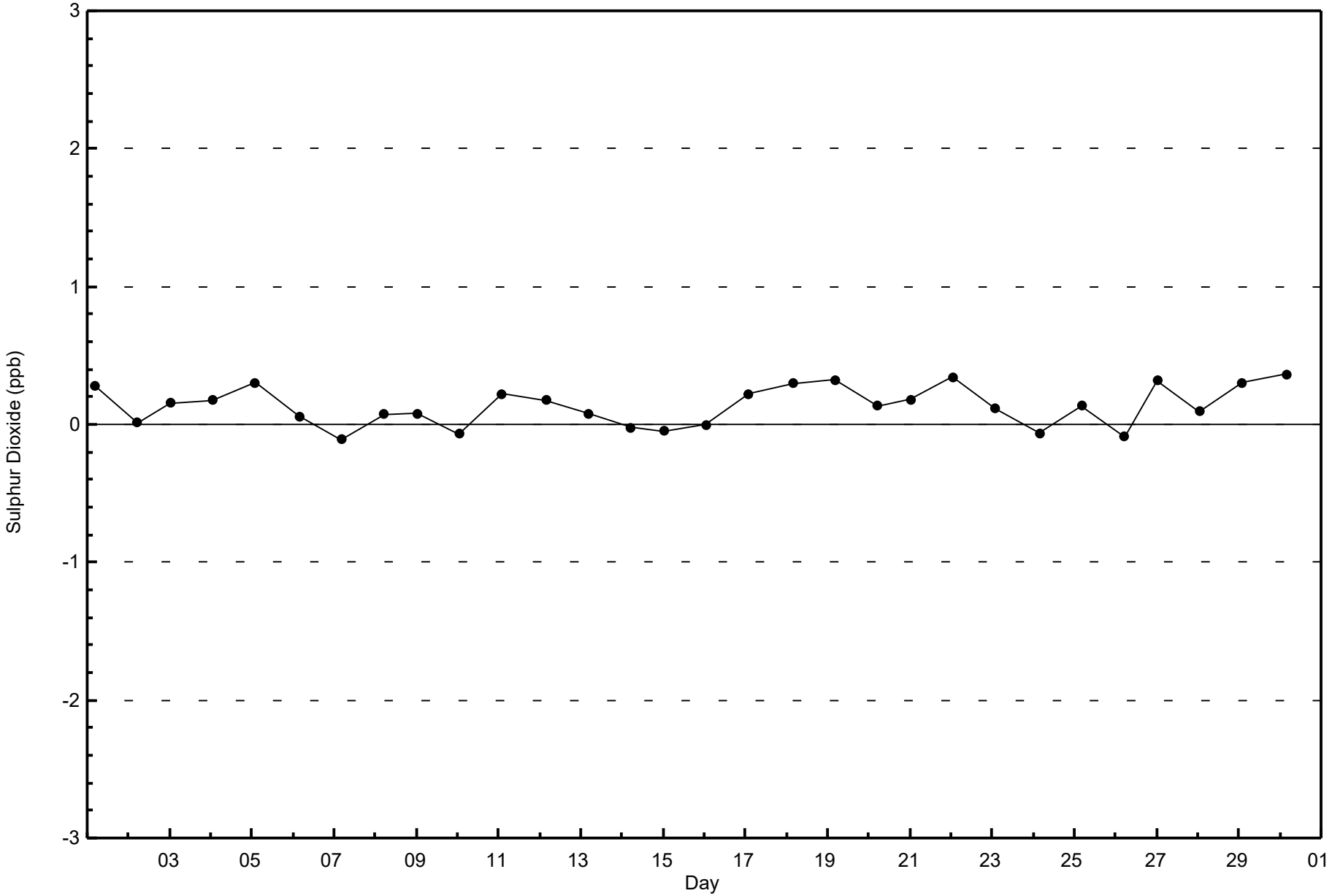
Total Number of Valid Hours: 685

Wood Buffalo Environmental Association

Zero Responses

Sulphur Dioxide (SO_2) - ppb

Wapasu - September 2024



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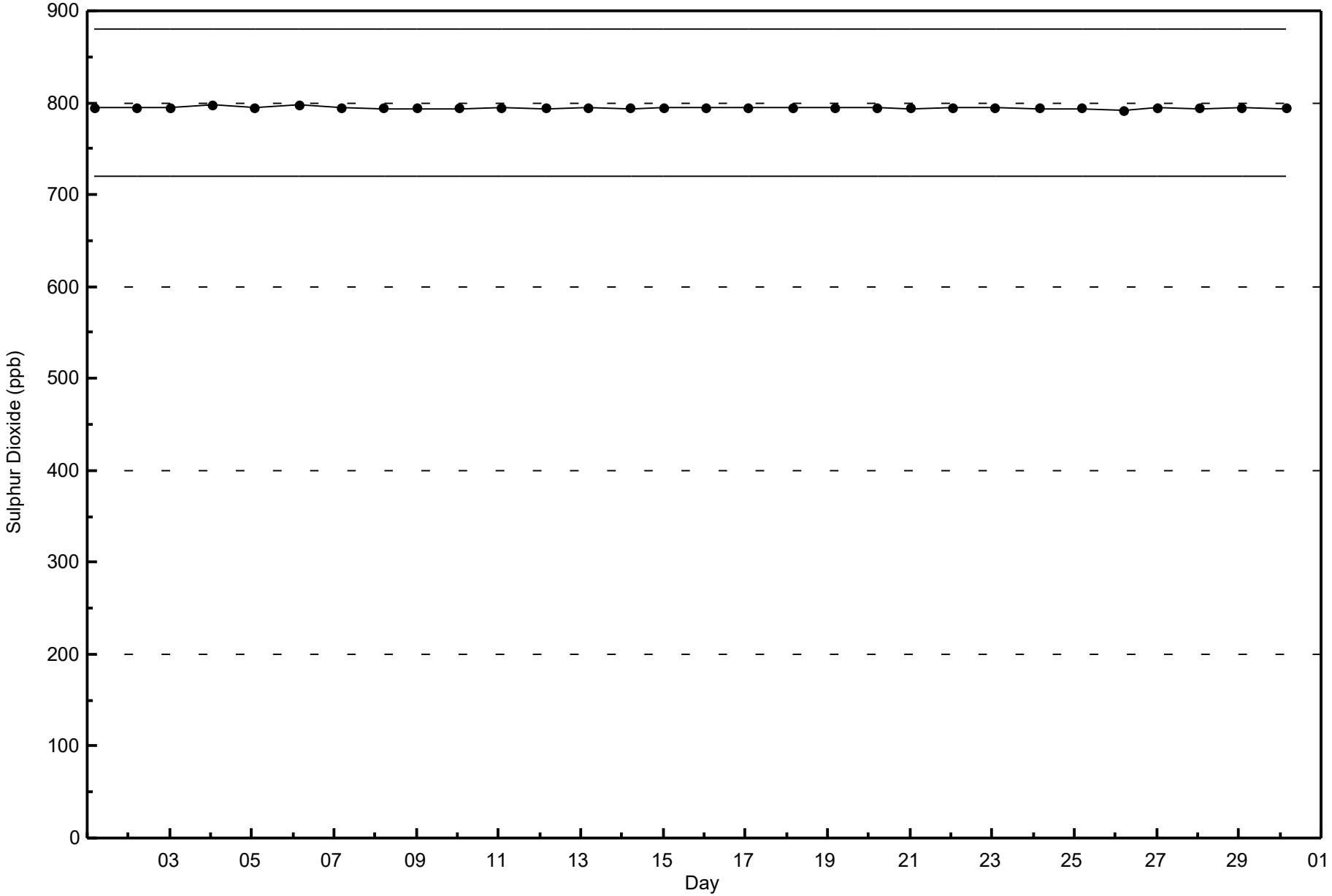
Span Responses

Sulphur Dioxide (SO_2) - ppb

Wapasu - September 2024



Wood Buffalo Environmental Association

Summary of Hour Averages

Hydrogen Sulphide (H_2S) - ppb

Wapasu - September 2024

Number of Exceedences (AAAQO): 1-hr: 0 24-hr: 0
Maximum Value: 1.9 ppb on Sep 4 08:00 Maximum Daily Average: 0.4 ppb on Sep 16

Minimum Value: 0.0 ppb on Sep 1 01:00 Minimum Daily Average: 0.0 ppb on Sep 10
Maximum Diurnal Average: 0.3 ppb at hour 8 Minimum Diurnal Average: 0.1 ppb at hour 18
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} = 0.8

Hours in Service:	720
Hours of Data:	684
Hours of Missing Data:	36
Hours of Calibration:	35
Percent Operational Time:	99.9

Day	Hourly Period Ending At (MST)																								Daily	Daily
	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24	Average	Maximum
1-Sep	0.0	0.0	0.0	0.0	0.0	Z	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	0.1	0.2	0.4	0.9	0.6	0.1	0.9
2-Sep	Z	0.2	0.1	0.2	0.1	0.1	0.0	0.1	0.0	0.0	0.1	0.1	0.1	0.4	0.1	0.0	0.0	0.0	0.0	0.1	0.2	0.1	0.0	0.0	0.1	0.4
3-Sep	0.1	Z	0.2	0.2	0.4	0.4	0.4	0.3	0.2	0.2	0.3	0.1	0.2	0.2	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.3	0.2	0.4
4-Sep	0.2	0.2	Z	0.2	0.2	0.2	1.9	1.9	0.7	0.4	0.2	0.1	0.1	0.1	0.2	0.0	0.1	0.1	0.1	0.2	0.1	0.1	0.2	0.2	0.3	1.9
5-Sep	0.3	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	0.2	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.3
6-Sep	0.1	0.1	0.1	0.1	Z	0.2	0.2	0.1	0.1	0.3	0.5	0.6	0.6	0.5	0.4	0.4	0.2	0.2	0.4	0.2	0.2	0.3	0.3	0.3	0.3	0.6
7-Sep	0.2	0.3	0.2	0.6	0.4	Z	0.5	0.2	0.2	0.1	0.1	0.0	0.1	0.1	0.2	0.1	0.1	0.0	0.0	0.5	0.7	0.5	0.6	0.4	0.3	0.7
8-Sep	Z	0.3	0.3	0.5	0.8	0.5	0.5	0.4	0.5	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	0.2	0.3	0.2	0.8
9-Sep	0.1	Z	0.2	0.2	0.4	0.4	0.4	0.5	0.4	0.1	0.1	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	0.1	0.5
10-Sep	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	0.3	0.0	0.3
11-Sep	0.8	0.5	0.4	Z	0.3	0.1	0.1	0.0	0.0	0.1	0.1	0.0	0.0	0.1	0.0	0.1	0.1	0.0	0.0	0.1	0.1	0.1	0.1	0.1	0.1	0.8
12-Sep	0.1	0.1	0.1	0.2	Z	0.3	0.2	0.2	0.4	0.6	C	C	C	C	C	0.2	0.2	0.0	0.1	0.1	0.0	0.0	0.0	0.0	0.2	0.6
13-Sep	0.0	0.1	0.0	0.1	0.1	Z	0.1	0.1	0.1	0.3	0.8	0.3	0.1	0.1	0.1	0.2	0.1	0.1	0.1	0.1	0.4	0.3	0.1	0.2	0.2	0.8
14-Sep	Z	0.2	0.0	0.2	0.4	0.3	0.3	0.5	0.2	0.2	0.1	0.1	0.0	0.1	0.0	0.0	0.1	0.0	0.0	0.0	0.0	0.0	0.1	0.2	0.1	0.5
15-Sep	0.2	Z	0.1	0.0	0.0	0.0	0.0	0.0	0.0	0.1	0.2	0.2	0.2	0.2	0.1	0.1	0.2	0.1	0.2	0.1	0.3	0.4	0.4	0.3	0.1	0.4
16-Sep	0.3	0.2	Z	0.3	0.2	0.2	0.2	0.2	0.2	0.4	0.4	0.3	0.5	0.2	M	0.0	0.2	0.2	0.2	0.2	0.3	1.7	0.8	0.7	0.4	1.7
17-Sep	0.3	0.4	0.3	Z	0.3	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	0.2	0.1	0.1	0.0	0.1	0.1	0.2	0.4
18-Sep	0.1	0.1	0.1	0.1	Z	0.2	0.1	0.1	0.1	0.3	0.4	0.3	0.2	0.1	0.2	0.1	0.1	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.1	0.4
19-Sep	0.2	0.1	0.0	0.0	0.0	Z	0.2	0.7	0.4	0.2	0.1	0.1	0.1	0.2	0.1	0.2	0.2	0.2	0.2	0.2	0.2	0.2	0.2	0.4	0.2	0.7
20-Sep	Z	0.2	0.1	0.1	0.2	0.3	0.1	0.1	0.0	0.1	0.1	0.1	0.0	0.1	0.0	0.1	0.0	0.1	0.4	0.3	0.2	0.2	0.3	0.2	0.1	0.4
21-Sep	0.0	Z	0.1	0.1	0.1	0.1	0.1	0.3	0.2	0.1	0.1	0.1	0.2	0.1	0.1	0.0	0.0	0.0	0.1	0.0	0.0	0.0	0.0	0.0	0.1	0.3
22-Sep	0.0	0.0	Z	0.1	0.1	0.1	0.0	0.0	0.1	0.0	0.1	0.0	0.0	0.1	0.4	0.6	0.3	0.2	0.1	0.1	0.1	0.1	0.4	0.3	0.1	0.6
23-Sep	0.2	0.2	0.2	Z	0.1	0.1	0.1	0.1	0.0	0.1	0.0	0.1	0.1	0.1	0.2	0.2	0.3	0.1	0.0	0.1	0.1	0.0	0.0	0.0	0.1	0.3
24-Sep	0.2	0.3	0.1	0.3	Z	0.2	0.2	0.6	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	0.1	0.6
25-Sep	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	0.1	0.0	0.2	0.2	0.1	0.5	0.7	0.7	0.5	0.3	0.2	0.7
26-Sep	Z	0.4	0.3	0.2	0.2	0.2	0.1	0.3	0.2	0.1	0.2	0.1	0.1	0.1	0.2	0.0	0.1	0.1	0.0	0.1	0.2	0.2	0.1	0.3	0.2	0.4
27-Sep	0.7	Z	0.2	0.2	0.1	0.1	0.1	0.1	0.2	0.1	0.2	0.1	0.1	0.3	0.3	0.2	0.1	0.0	0.0	0.0	0.0	0.1	0.3	0.4	0.2	0.7
28-Sep	0.6	0.4	Z	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	0.0	0.1	0.0	0.0	0.0	0.1	0.6
29-Sep	0.0	0.0	0.0	Z	0.1	0.1	0.0	0.0	0.1	0.0	0.0	0.0	0.0	0.0	0.0	0.2	0.3	0.1	0.2	0.1	0.3	0.6	0.3	0.2	0.1	0.6
30-Sep	0.0	0.1	0.1	0.2	Z	0.1	0.1	0.1	0.3	0.2	0.1	0.2	0.1	0.0	0.0	0.0	0.0	0.0	0.0	0.1	0.1	0.2	0.0	0.0	0.1	0.3
	0.2	0.2	0.1	0.2	0.2	0.2	0.2	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	0.2	0.2	0.2	0.2	Diurnal Average	
	0.8	0.5	0.4	0.6	0.8	0.5	1.9	1.9	0.7	0.6	0.8	0.6	0.6	0.5	0.4	0.6	0.3	0.2	0.4	0.5	0.7	1.7	0.9	0.7	Diurnal Maximum	

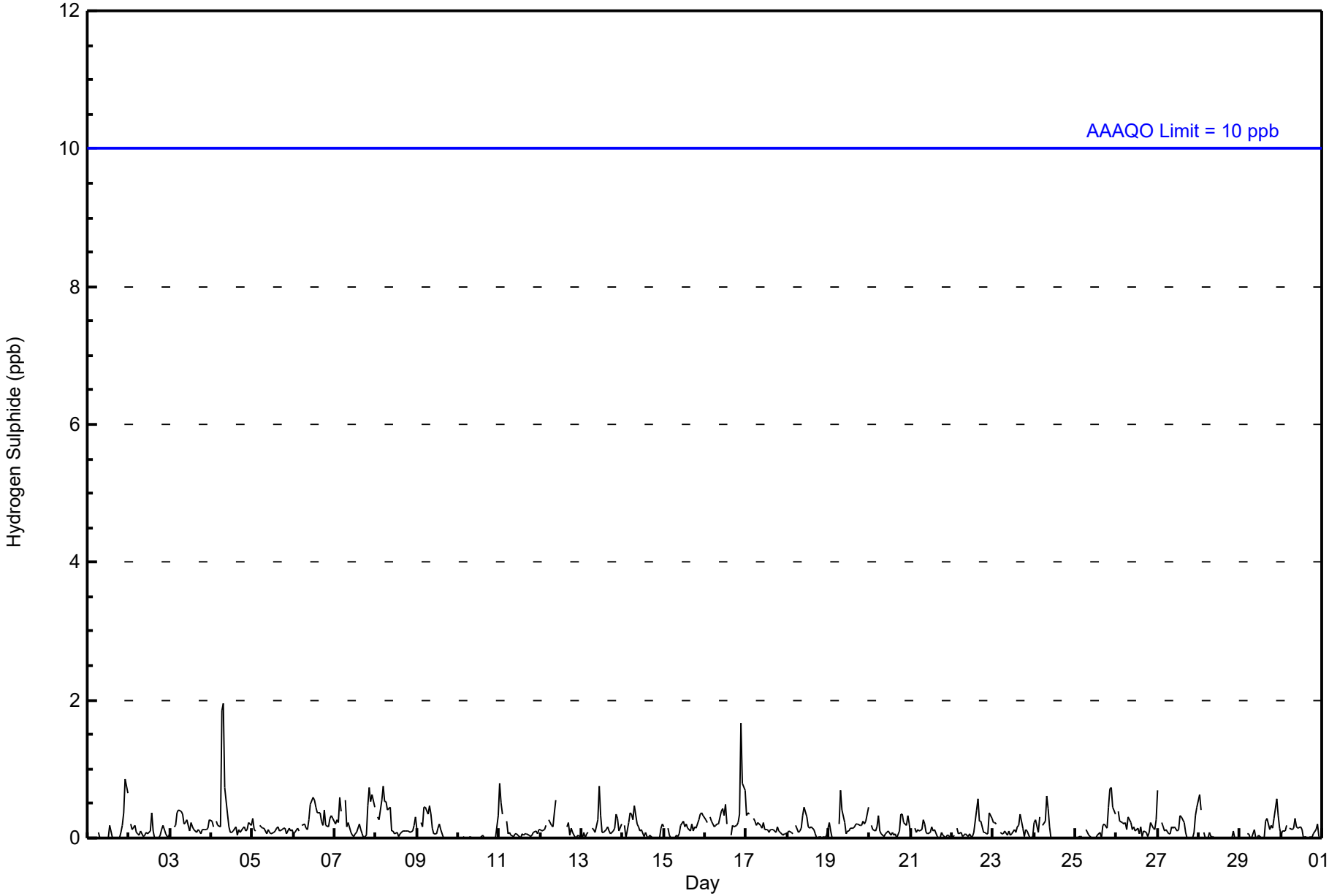
Z - zerospan C - Calibration M - Maintenance
Alberta Ambient Air Quality Objectives (AAAQO): 1-hr 10 ppb 24-hr 3 ppb

Wood Buffalo Environmental Association

Hourly Averages

Hydrogen Sulphide (H_2S) - ppb

Wapasu - September 2024



Hydrogen Sulphide (H_2S) - ppb

Wapasu - September 2024

Concentration Ranges (ppb)	Number of Hours	%	Cumulative %
0 - 2	684	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: 684

Total Number of Hours: 720

Wood Buffalo Environmental Association

Frequency Distribution

Hydrogen Sulphide (H_2S) - ppb

Wapasu - September 2024

Concentration Ranges (ppb)	Wind Direction																
	N	NNE	NE	ENE	E	ESE	SE	SSE	S	SSW	SW	WSW	W	WNW	NW	NNW	**Totals**
0 - 2	44	29	11	17	21	29	58	103	67	56	62	60	43	29	16	39	684
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	44	29	11	17	21	29	58	103	67	56	62	60	43	29	16	39	684

Total Number of Valid Hours: 684

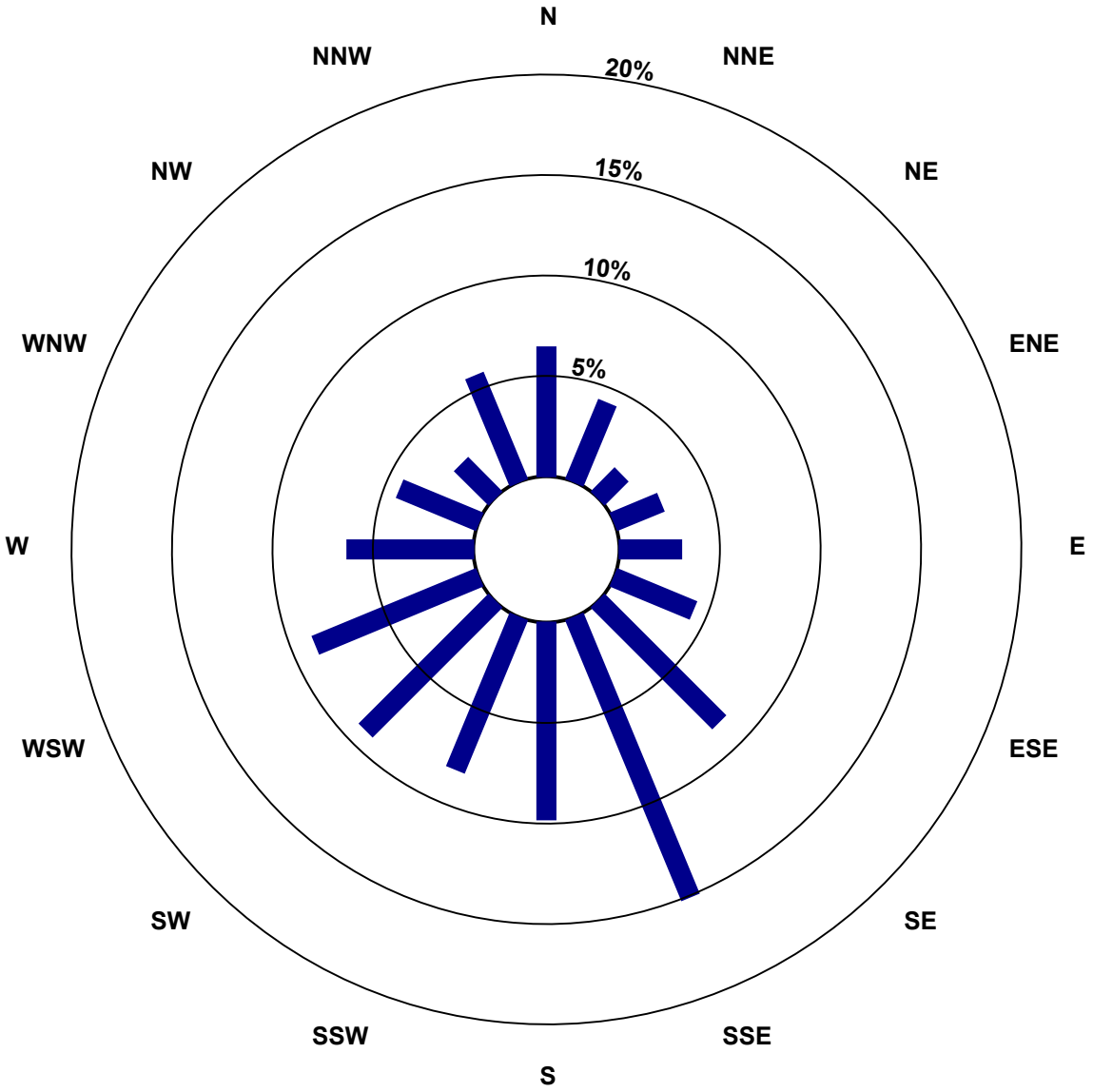
Total Number of Hours: 720

Wood Buffalo Environmental Association

Wind Rose Sep 2024

Hydrogen Sulphide (H_2S) - ppb

Wapasu



Classes (ppb)

0 - 2

3 - 4

5 - 7

8 - 11

> 11

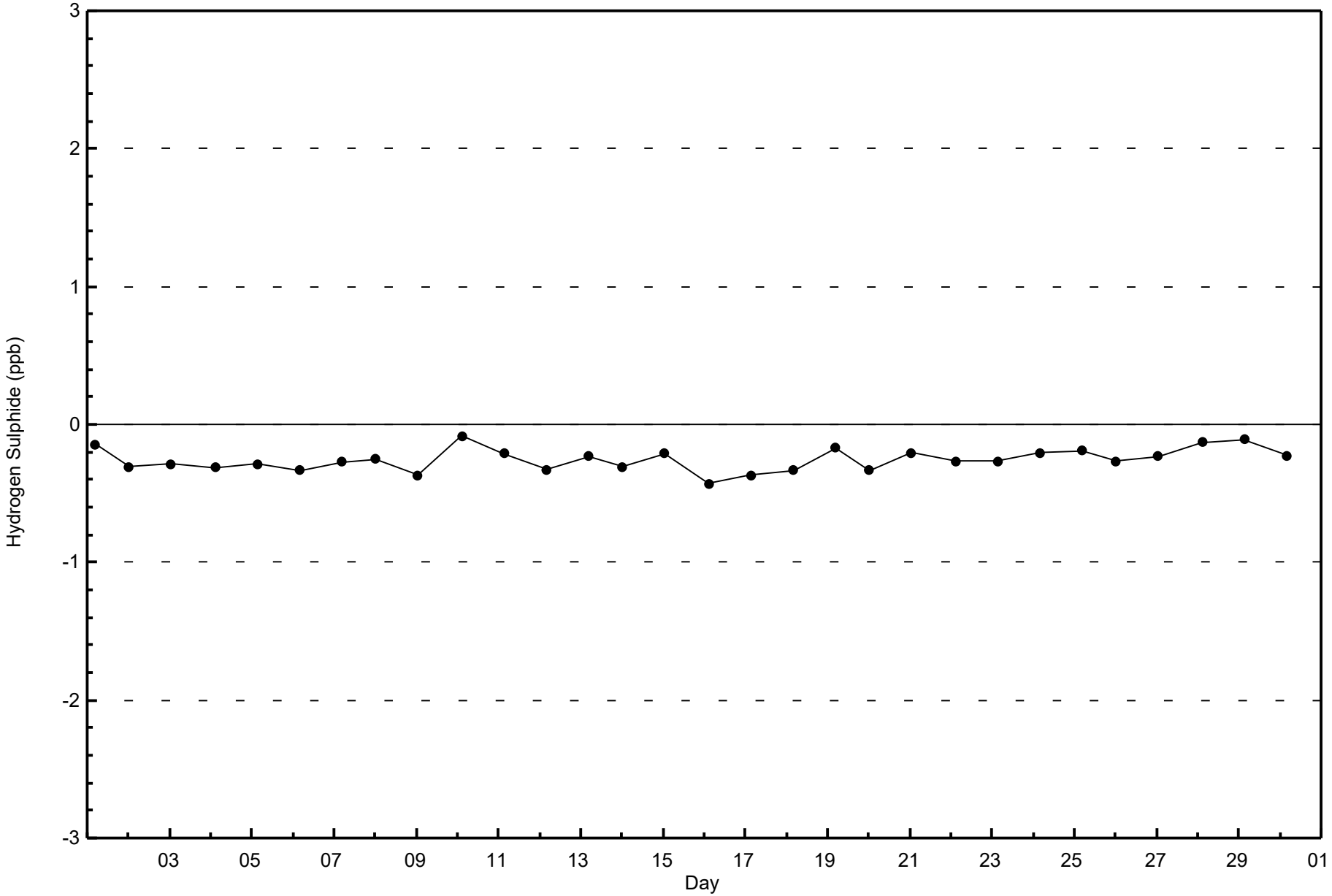
Total Number of Valid Hours: 684

Wood Buffalo Environmental Association

Zero Responses

Hydrogen Sulphide (H_2S) - ppb

Wapasu - September 2024

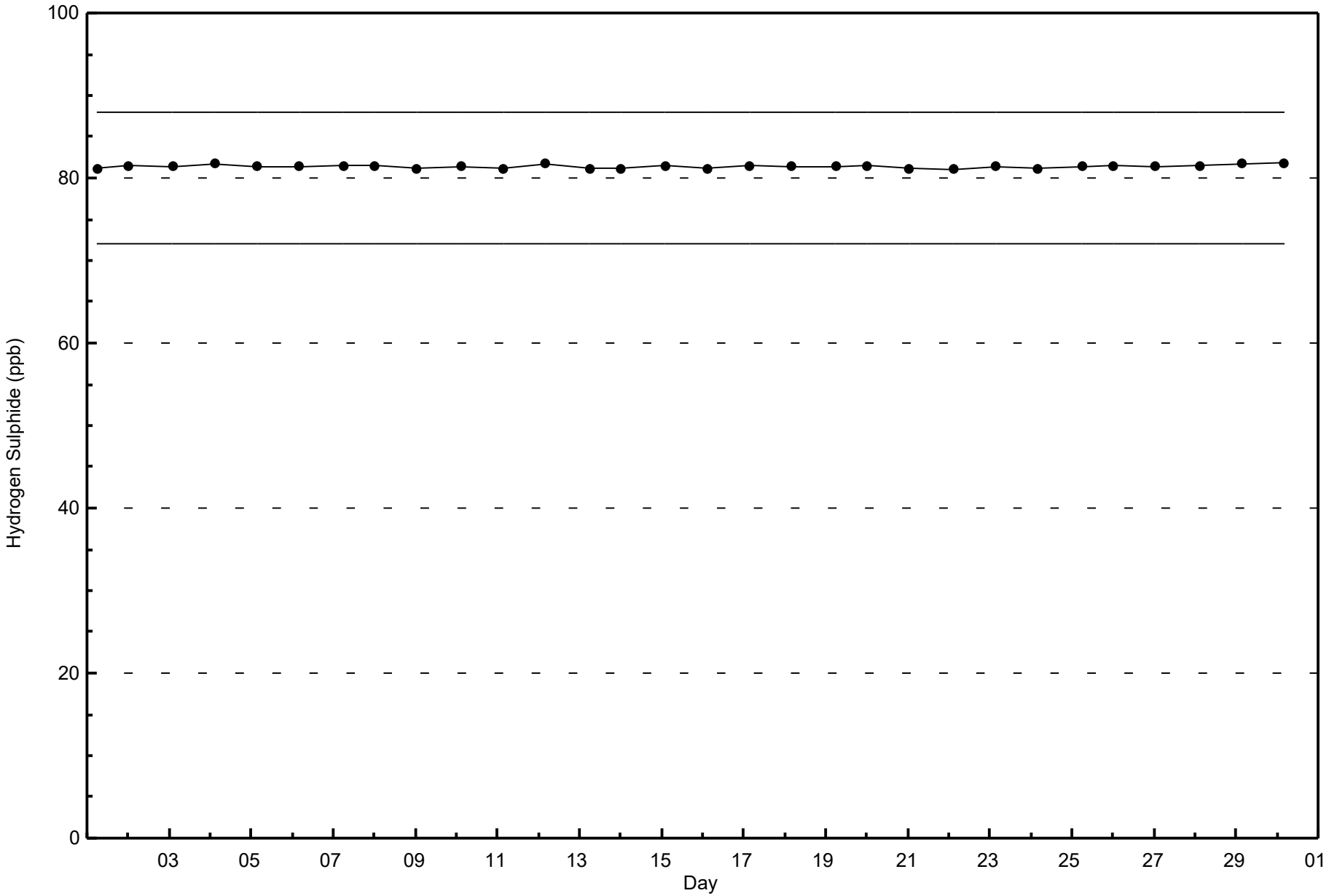


Wood Buffalo Environmental Association

Span Responses

Hydrogen Sulphide (H_2S) - ppb

Wapasu - September 2024



Wood Buffalo Environmental Association

Summary of Hour Averages

Total Hydrocarbons (THC) - ppm

Wapasu - September 2024

Maximum Value: 3.5 ppm on Sep 14 05:00

Maximum Daily Average: 2.5 ppm on Sep 4

Minimum Value: 2.1 ppm on Sep 17 18:00

Minimum Daily Average: 2.2 ppm on Sep 17

Maximum Diurnal Average: 2.4 ppm at hour 5

Minimum Diurnal Average: 2.2 ppm at hour 17

Monthly Average: 2.30 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} = 2.7

Hours in Service:	720
Hours of Data:	685
Hours of Missing Data:	35
Hours of Calibration:	34
Percent Operational Time:	99.9

Day	Hourly Period Ending At (MST)																								Daily	Daily
	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24	Average	Maximum
1-Sep	2.3	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	2.1	2.2	2.1	2.3	2.3	2.4	2.5	2.5	2.3	2.5
2-Sep	2.5	2.4	2.3	2.3	2.3	Z	2.3	2.3	2.3	2.3	2.3	2.2	2.2	2.3	2.2	2.2	2.2	2.2	2.2	2.3	2.3	2.3	2.3	2.3	2.3	2.5
3-Sep	Z	2.3	2.3	2.3	2.4	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	2.3	2.2	2.3	2.3	2.4	2.3	2.5
4-Sep	2.7	Z	2.7	2.5	2.5	2.5	2.6	2.7	2.5	2.5	2.5	2.3	2.3	2.4	2.4	2.4	2.3	2.3	2.4	2.5	2.7	2.6	2.6	2.6	2.5	2.7
5-Sep	2.6	2.4	Z	2.6	2.6	2.5	2.4	2.4	2.3	2.3	C	C	C	C	2.1	2.1	2.1	2.1	2.1	2.2	2.2	2.2	2.2	2.3	2.3	2.6
6-Sep	2.3	2.2	2.3	Z	2.3	2.3	2.2	2.2	2.3	2.3	2.3	2.3	2.3	2.4	2.3	2.3	2.2	2.2	2.3	2.3	2.3	2.4	2.5	2.4	2.3	2.5
7-Sep	2.5	2.6	2.6	2.7	Z	2.7	2.5	2.3	2.4	2.3	2.3	2.2	2.3	2.3	2.3	2.2	2.1	2.1	2.2	2.3	2.3	2.4	2.5	2.5	2.4	2.7
8-Sep	2.4	2.4	2.4	2.5	2.5	Z	2.6	2.5	2.4	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	2.6
9-Sep	Z	2.4	2.3	2.4	2.7	2.7	2.5	2.6	2.4	2.3	2.2	2.2	2.3	2.6	2.4	2.2	2.2	2.2	2.1	2.2	2.2	2.2	2.2	2.2	2.3	2.7
10-Sep	2.2	Z	2.2	2.3	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	2.2	2.2	2.2	2.2	2.3	2.2	2.3
11-Sep	2.3	2.4	Z	2.3	2.3	2.3	2.3	2.3	2.3	2.3	2.2	2.2	2.2	2.2	2.2	2.1	2.2	2.1	2.2	2.3	2.3	2.3	2.3	2.2	2.3	2.4
12-Sep	2.2	2.3	2.3	Z	2.3	2.3	2.3	2.2	2.2	2.2	2.2	2.3	2.3	2.3	2.3	2.3	2.2	2.3	2.3	2.3	2.3	2.3	2.3	2.3	2.3	2.3
13-Sep	2.3	2.3	2.3	2.3	Z	2.3	2.3	2.3	2.3	2.5	2.8	2.6	2.4	2.3	2.4	2.4	2.3	2.4	2.4	2.4	2.4	2.4	2.3	2.3	2.4	2.8
14-Sep	2.3	2.3	2.2	2.7	3.5	Z	3.3	2.6	2.5	2.4	2.4	2.3	2.3	2.3	2.2	2.2	2.2	2.2	2.2	2.2	2.2	2.3	2.3	2.3	2.4	3.5
15-Sep	Z	2.4	2.3	2.2	2.2	2.2	2.2	2.2	2.2	2.2	2.3	2.3	2.3	2.3	2.2	2.2	2.2	2.2	2.3	2.3	2.3	2.3	2.3	2.3	2.3	2.4
16-Sep	2.3	Z	2.3	2.3	2.2	2.2	2.2	2.2	2.2	2.2	2.3	2.2	2.2	2.2	M	2.1	2.1	2.1	2.2	2.2	2.2	2.4	2.4	2.3	2.2	2.4
17-Sep	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	2.1	2.1	2.1	2.1	2.2	2.2	2.2	2.2	2.2	2.2	2.2	2.3
18-Sep	2.2	2.2	2.2	Z	2.2	2.2	2.2	2.2	2.3	2.3	2.3	2.4	2.4	2.3	2.3	2.3	2.2	2.1	2.2	2.2	2.3	2.3	2.4	2.4	2.3	2.4
19-Sep	2.3	2.3	2.3	2.4	Z	2.2	2.3	2.5	2.4	2.3	2.2	2.2	2.2	2.2	2.2	2.2	2.2	2.3	2.3	2.4	2.4	2.3	2.3	2.3	2.3	2.5
20-Sep	2.3	2.3	2.3	2.3	2.3	Z	2.2	2.2	2.2	2.3	2.3	2.3	2.3	2.2	2.2	2.2	2.2	2.3	2.4	2.4	2.4	2.5	2.6	2.6	2.3	2.6
21-Sep	Z	2.4	2.4	2.4	2.4	2.4	2.5	2.5	2.4	2.3	2.3	2.3	2.3	2.3	2.2	2.2	2.2	2.2	2.2	2.2	2.2	2.2	2.2	2.2	2.3	2.5
22-Sep	2.2	Z	2.2	2.2	2.2	2.2	2.2	2.2	2.2	2.2	2.3	2.2	2.2	2.3	2.2	2.2	2.2	2.2	2.3	2.2	2.2	2.3	2.4	2.3	2.2	2.4
23-Sep	2.3	2.4	Z	2.4	2.3	2.3	2.3	2.3	2.3	2.3	2.4	2.4	2.3	2.3	2.3	2.3	2.4	2.3	2.2	2.2	2.2	2.1	2.2	2.2	2.3	2.4
24-Sep	2.2	2.3	2.3	Z	2.3	2.4	2.4	2.3	2.3	2.3	2.2	2.2	2.2	2.2	2.2	2.2	2.2	2.1	2.3	2.3	2.3	2.3	2.3	2.3	2.3	2.4
25-Sep	2.2	2.2	2.2	2.2	Z	2.2	2.2	2.2	2.2	2.2	2.1	2.1	2.1	2.2	2.2	2.2	2.2	2.2	2.2	2.4	2.4	2.4	2.4	2.4	2.2	2.4
26-Sep	2.5	2.3	2.4	2.5	2.4	Z	2.3	2.3	2.4	2.4	2.4	2.3	2.3	2.2	2.3	2.2	2.2	2.2	2.2	2.3	2.3	2.3	2.3	2.4	2.3	2.5
27-Sep	Z	2.4	2.3	2.3	2.2	2.2	2.2	2.2	2.2	2.2	2.2	2.2	2.2	2.2	2.2	2.2	2.2	2.2	2.2	2.2	2.2	2.2	2.3	2.3	2.2	2.4
28-Sep	2.2	Z	2.2	2.2	2.2	2.2	2.4	2.4	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	2.2	2.2	2.2	2.4
29-Sep	2.2	2.2	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	2.4	2.3	2.3	2.4	2.4	2.4	2.6	2.6	2.7	2.3	2.7
30-Sep	2.6	2.3	2.5	Z	2.5	2.5	2.4	2.5	2.4	2.4	2.3	2.4	2.4	2.3	2.3	2.3	2.2	2.2	2.3	2.3	2.5	2.6	2.4	2.4	2.4	2.6
	2.3	2.3	2.3	2.4	2.4	2.3	2.4	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	2.3	2.3	Diurnal Average	
	2.7	2.6	2.7	2.7	3.5	2.7	3.3	2.7	2.5	2.5	2.8	2.6	2.4	2.6	2.4	2.4	2.4	2.4	2.4	2.5	2.7	2.6	2.6	2.7	Diurnal Maximum	

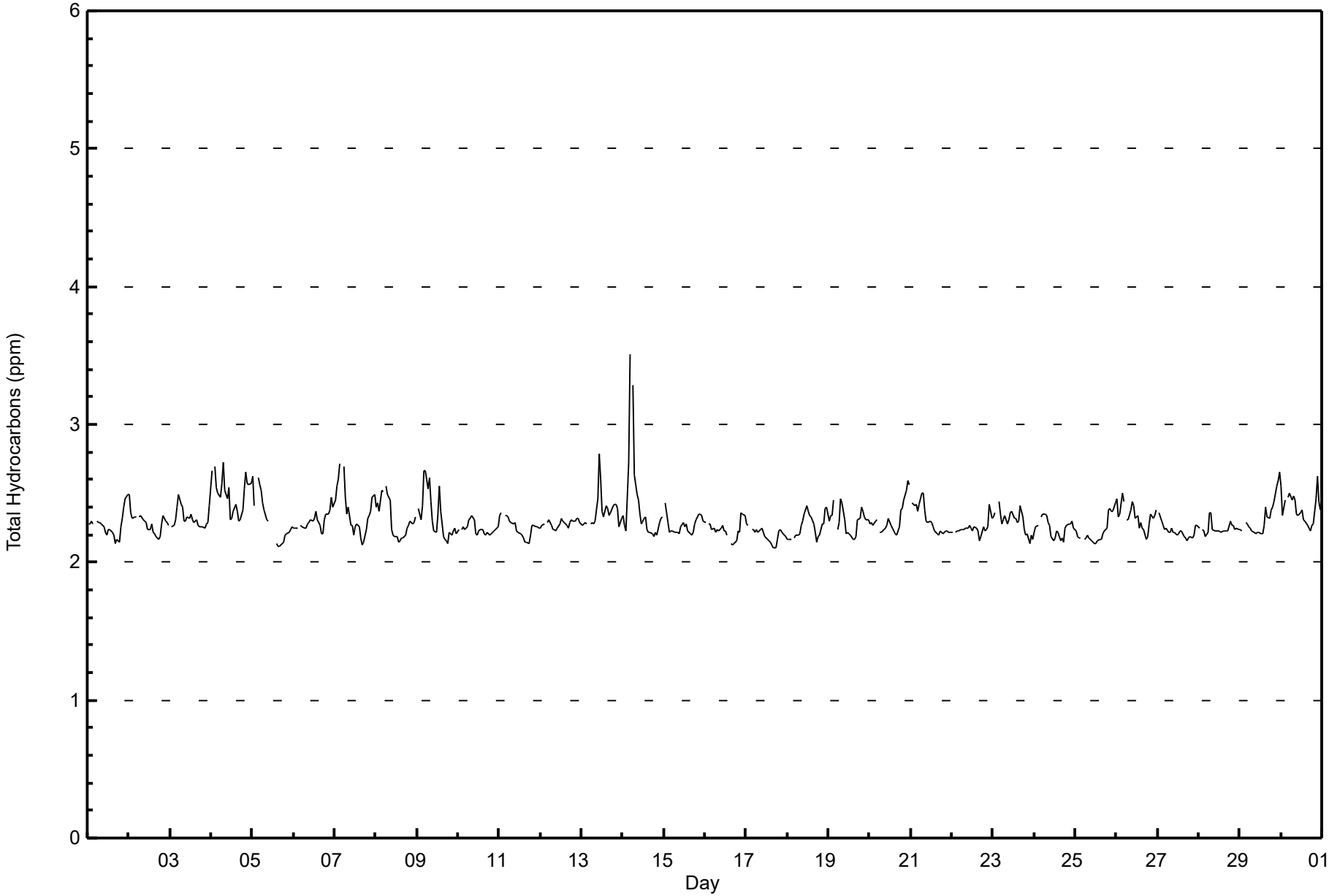
Z - zerospan C - Calibration M - Maintenance

Wood Buffalo Environmental Association

Hourly Averages

Total Hydrocarbons (THC) - ppm

Wapasu - September 2024



Concentration Ranges (ppm)	Number of Hours	%	Cumulative %
0 - 2.0	0	0.00	0.00
2.1 - 3.0	683	99.71	99.71
3.1 - 10.0	2	0.29	100.00
> 10.0	0	0.00	100.00

Total Number of Valid Hours: 685

Total Number of Hours: 720

Wood Buffalo Environmental Association

Frequency Distribution

Total Hydrocarbons (THC) - ppm

Wapasu - September 2024

Concentration Ranges (ppm)	Wind Direction																
	N	NNE	NE	ENE	E	ESE	SE	SSE	S	SSW	SW	WSW	W	WNW	NW	NNW	**Totals**
0 - 2.0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
2.1 - 3.0	43	28	11	15	25	30	59	105	69	52	59	60	42	30	16	39	683
3.1 - 10.0	0	0	0	0	0	0	0	0	1	0	0	0	1	0	0	0	2
> 10.0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Totals	43	28	11	15	25	30	59	105	70	52	59	60	43	30	16	39	685

Total Number of Valid Hours: 685

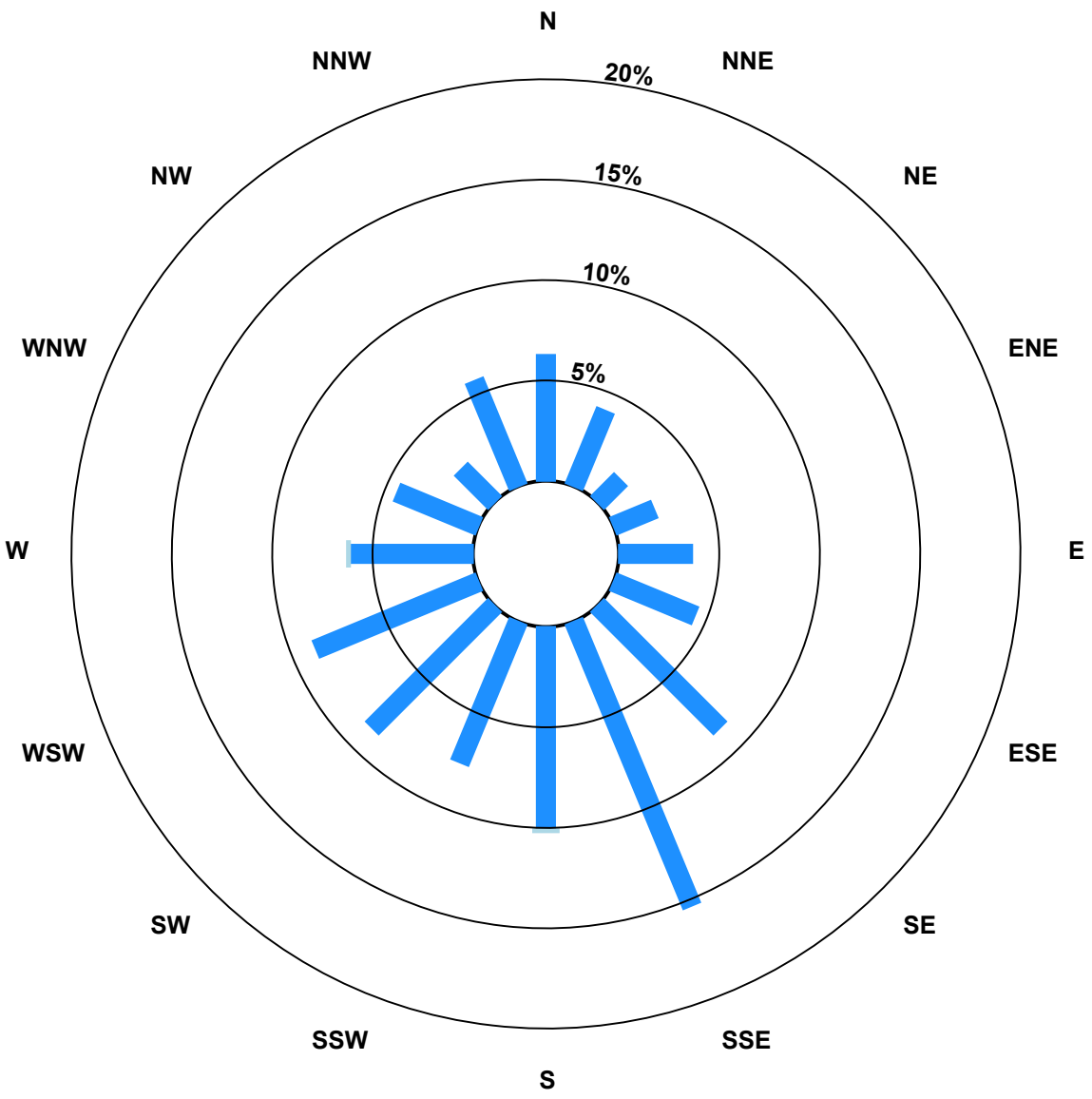
Total Number of Hours: 720

Wood Buffalo Environmental Association

Wind Rose Sep 2024

Total Hydrocarbons (THC) - ppm

Wapasu



Classes (ppm)

- 0 - 2.0
- 2.1 - 3.0
- 3.1 - 10.0
- > 10.0

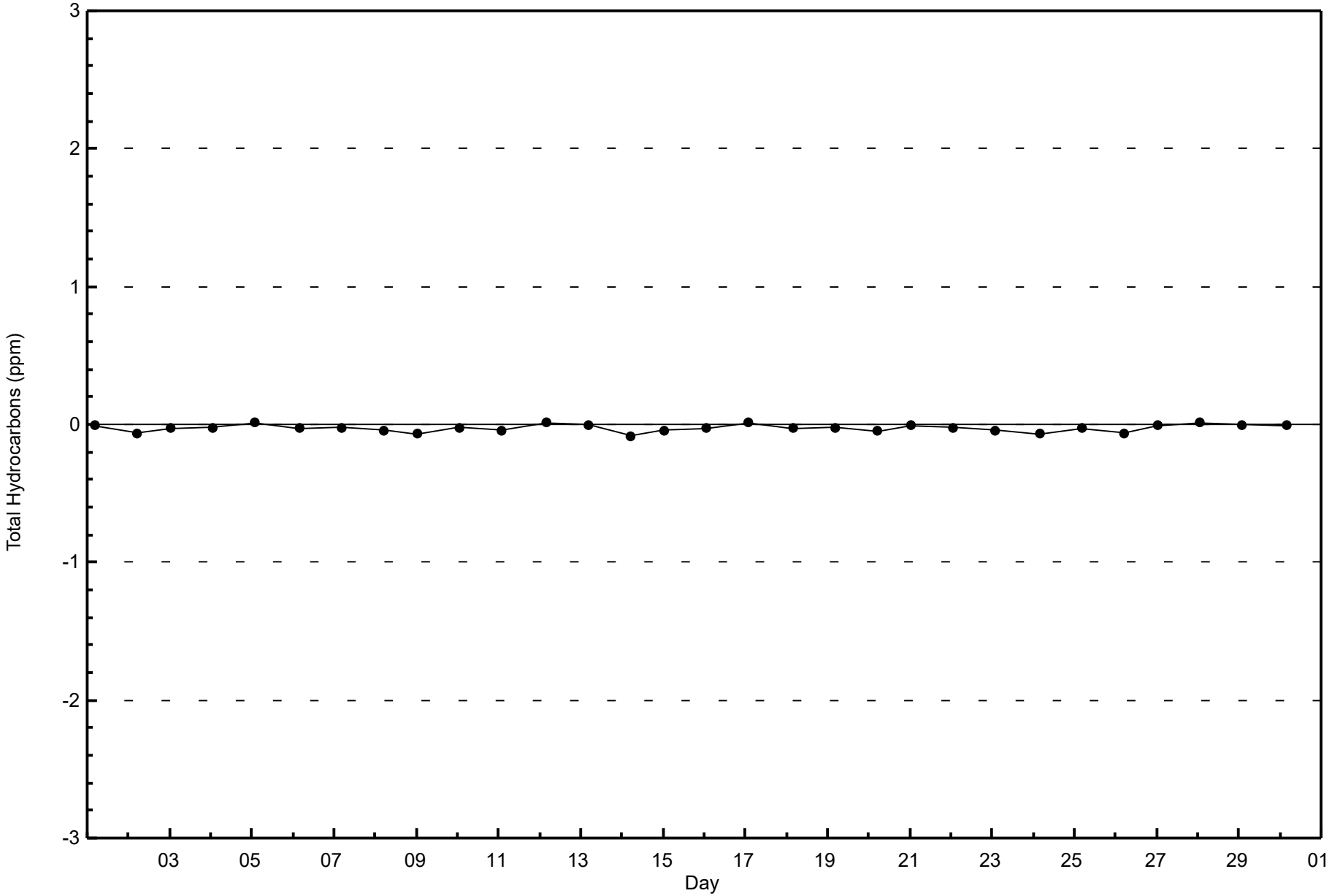
Total Number of Valid Hours: 685

Wood Buffalo Environmental Association

Zero Responses

Total Hydrocarbons (THC) - ppm

Wapasu - September 2024

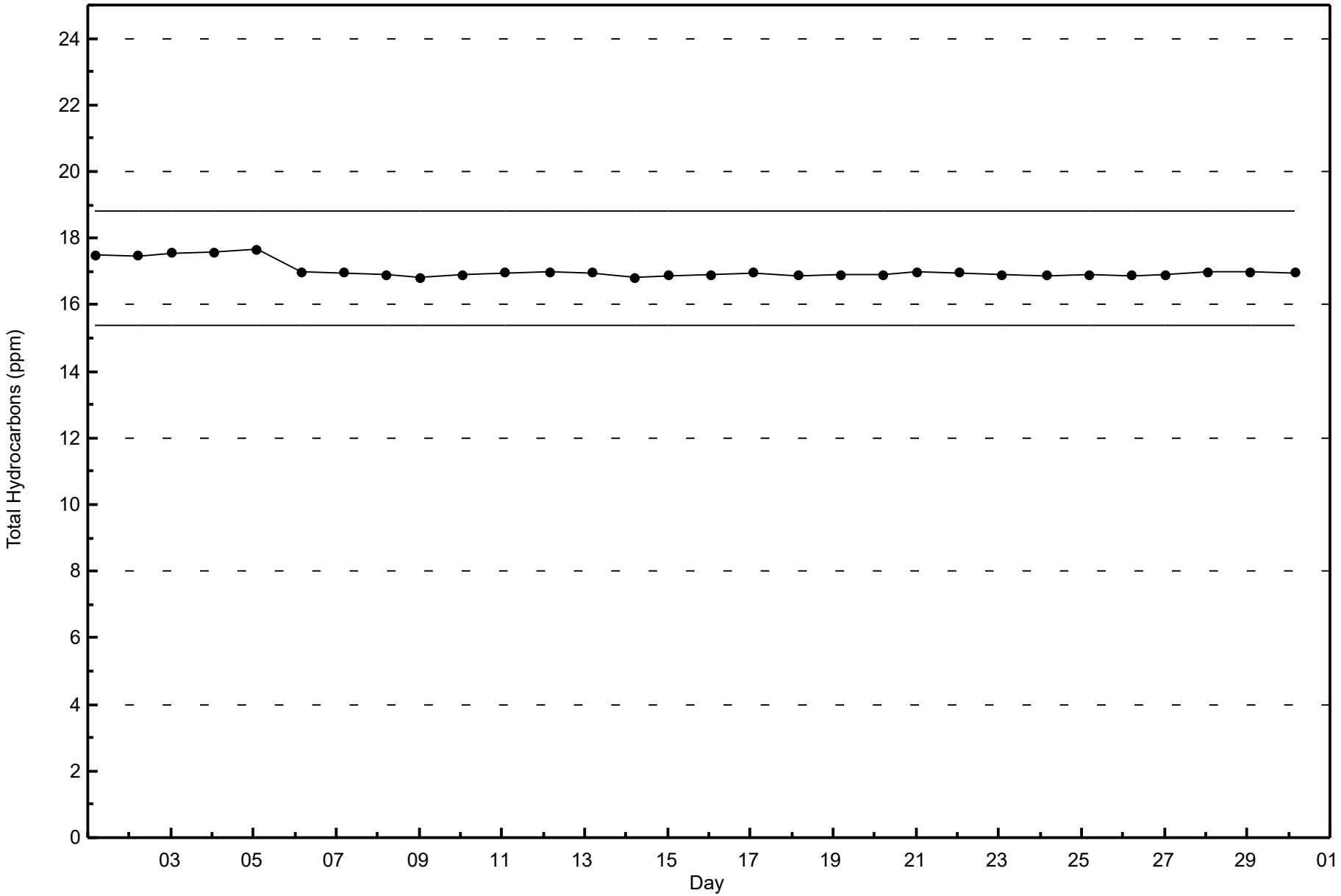


Wood Buffalo Environmental Association

Span Responses

Total Hydrocarbons (THC) - ppm

Wapasu - September 2024



Wood Buffalo Environmental Association

Summary of Hour Averages

Ozone (O_3) - ppb

Wapasu - September 2024

Number of Exceedences (AAAQO): 1-hr: 0 24-hr: 0
Maximum Value: 55.6 ppb on Sep 2 14:00 Maximum Daily Average: 36.4 ppb on Sep 2

Minimum Value: 5.7 ppb on Sep 21 06:00 Minimum Daily Average: 16.3 ppb on Sep 13
Maximum Diurnal Average: 36.6 ppb at hour 16 Minimum Diurnal Average: 20.5 ppb at hour 6
Monthly Average: 27.07 ppb Percentiles: P_1 = 6.4 P_{10} = 12.8 Q_1 = 19.7 Median = 27.4 Q_3 = 34.5 P_{90} = 39.9 P_{99} = 50.8

Hours in Service:	720
Hours of Data:	685
Hours of Missing Data:	35
Hours of Calibration:	34
Percent Operational Time:	99.9

Day	Hourly Period Ending At (MST)																								Daily	Daily
	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24	Average	Maximum
1-Sep	Z	39.4	37.1	34.4	32.1	32.1	31.7	31.6	30.9	32.6	34.2	37.0	44.5	46.2	44.8	42.1	35.4	34.2	34.6	31.8	28.5	26.6	24.4	22.6	34.3	46.2
2-Sep	19.9	Z	28.5	27.3	28.5	27.0	26.3	25.9	28.2	32.1	35.6	42.9	51.0	55.6	54.4	50.8	45.9	41.8	38.5	35.3	31.2	36.5	36.8	37.3	36.4	55.6
3-Sep	38.5	37.0	Z	34.1	25.2	21.1	17.6	18.7	23.6	24.9	26.1	28.8	29.4	29.2	28.1	28.8	30.7	29.8	28.7	24.3	25.0	23.0	21.9	13.8	26.5	38.5
4-Sep	8.7	8.4	9.5	Z	10.3	15.4	16.9	12.8	13.8	18.8	21.0	33.6	36.0	35.1	33.6	35.9	34.9	30.8	25.0	17.6	11.5	16.6	18.8	17.4	21.0	36.0
5-Sep	13.6	22.3	18.8	10.1	Z	9.9	14.5	20.4	32.4	35.9	34.9	35.0	35.7	37.5	39.9	42.1	43.8	41.3	39.6	35.9	36.4	35.9	34.6	34.3	30.7	43.8
6-Sep	34.5	35.7	38.3	39.9	40.3	Z	40.4	40.6	39.9	39.3	40.2	42.6	44.0	34.2	33.3	33.5	32.8	31.0	28.9	25.4	24.3	21.8	16.5	11.1	33.4	44.0
7-Sep	Z	10.6	9.0	11.7	12.6	11.4	20.9	27.2	30.1	38.7	40.8	41.9	48.1	51.7	55.1	48.4	41.1	39.9	34.6	28.8	27.1	24.0	23.1	20.6	30.3	55.1
8-Sep	22.6	Z	18.5	14.3	13.6	11.3	14.1	21.2	23.6	39.7	41.2	43.1	44.4	45.9	46.3	55.2	51.6	41.3	31.6	36.4	43.9	44.3	41.5	38.9	34.1	55.2
9-Sep	38.9	39.6	Z	28.6	14.7	11.3	14.7	16.4	20.1	24.8	29.6	28.5	25.0	23.4	24.4	29.4	30.4	28.4	27.4	28.6	33.0	33.1	29.0	25.7	26.3	39.6
10-Sep	22.7	21.3	20.3	Z	18.4	16.0	13.8	16.6	19.7	24.6	33.0	33.0	31.7	30.5	32.4	32.1	30.7	30.3	27.1	21.1	19.4	22.4	16.5	15.5	23.9	33.0
11-Sep	12.1	10.9	14.4	15.7	Z	23.4	25.1	26.4	28.3	28.4	C	C	C	C	33.2	33.4	33.8	32.7	23.4	24.5	30.5	33.7	35.1	35.7	26.3	35.7
12-Sep	34.6	33.8	32.1	32.2	33.3	Z	25.4	28.5	29.6	28.4	28.9	28.1	21.5	20.0	22.9	25.1	27.0	26.2	21.0	10.7	10.4	14.4	17.3	21.9	24.9	34.6
13-Sep	Z	10.7	13.2	16.3	19.0	19.2	18.5	18.5	18.5	12.5	9.8	10.4	13.5	15.3	15.7	16.4	17.9	19.6	20.3	16.3	13.7	18.1	22.3	19.9	16.3	22.3
14-Sep	19.0	Z	21.0	12.1	8.0	7.8	8.3	12.4	18.2	21.0	26.1	34.1	38.6	42.7	43.1	42.9	41.2	38.1	33.3	26.8	17.2	11.7	12.2	12.5	23.8	43.1
15-Sep	10.5	9.0	Z	20.4	18.4	13.2	23.9	23.3	27.6	30.1	32.6	35.4	36.9	36.7	37.9	37.7	37.5	31.1	16.7	21.1	25.7	27.6	27.7	28.0	26.5	37.9
16-Sep	26.0	24.3	22.3	Z	22.5	24.0	25.6	25.5	28.5	27.5	25.6	28.6	32.7	37.3	M	36.8	37.2	37.1	33.3	29.2	24.0	23.3	21.8	15.4	27.7	37.3
17-Sep	15.1	14.7	14.1	19.8	Z	23.1	21.9	24.4	26.2	30.4	33.9	38.0	41.5	44.3	45.3	45.2	44.9	42.1	25.2	31.8	37.7	39.3	37.6	37.4	31.9	45.3
18-Sep	37.6	37.3	37.4	36.8	37.8	Z	37.3	36.6	35.6	35.1	30.8	29.4	29.6	29.6	34.6	38.1	39.5	39.8	26.1	17.4	12.4	10.3	10.0	12.8	30.1	39.8
19-Sep	Z	17.2	16.2	10.0	18.7	26.1	18.0	15.5	18.3	33.1	38.5	39.6	40.8	42.3	44.4	45.6	40.5	27.0	17.3	23.5	23.4	21.4	28.2	30.0	27.6	45.6
20-Sep	31.4	Z	27.3	30.6	29.1	26.0	32.7	33.1	32.2	31.4	30.3	29.6	33.1	32.7	33.6	33.5	34.2	26.5	21.7	17.9	11.1	6.5	5.8	5.8	25.9	34.2
21-Sep	6.4	6.4	Z	6.3	5.7	5.7	6.0	6.9	15.6	19.2	24.9	26.7	26.9	30.6	35.0	37.0	35.7	32.1	30.3	31.4	28.6	25.4	29.1	32.6	21.9	37.0
22-Sep	31.3	31.7	31.0	Z	29.2	27.4	25.7	24.3	25.7	27.9	29.5	31.1	34.2	32.2	35.1	36.3	36.7	29.4	21.6	23.2	24.9	21.8	17.8	12.6	27.9	36.7
23-Sep	9.9	8.2	7.9	12.0	Z	16.1	10.5	9.1	23.6	23.8	22.7	25.8	31.1	34.8	38.2	34.2	23.3	23.8	18.4	18.4	19.7	26.2	22.4	20.2	20.9	38.2
24-Sep	15.9	14.7	15.0	13.4	9.8	Z	8.1	10.4	14.4	16.9	19.1	24.0	30.8	38.0	41.4	42.7	42.2	40.5	27.2	15.0	14.2	20.0	27.9	33.9	23.3	42.7
25-Sep	Z	39.0	39.5	38.2	40.4	43.8	44.2	42.2	39.2	38.5	37.0	35.0	32.5	31.6	31.2	32.0	29.7	26.3	25.5	22.6	22.1	21.5	21.9	15.9	32.6	44.2
26-Sep	12.8	Z	15.6	13.8	17.8	22.9	22.5	22.9	19.5	20.9	20.3	21.9	23.5	31.0	31.8	35.0	32.7	30.4	36.8	32.9	26.1	19.0	23.5	14.2	23.8	36.8
27-Sep	18.4	16.6	Z	20.2	23.9	23.2	25.8	29.9	31.4	32.6	31.1	40.5	45.0	45.3	45.5	41.6	40.7	38.3	35.7	35.5	35.8	30.1	24.5	20.5	31.8	45.5
28-Sep	21.6	24.6	27.2	Z	26.9	26.5	21.8	21.2	32.9	32.5	33.4	34.0	34.4	35.9	36.4	37.9	35.4	27.6	17.0	22.5	24.9	25.6	26.8	27.7	28.5	37.9
29-Sep	26.4	25.9	21.9	23.6	Z	29.5	30.6	28.5	21.5	24.6	23.9	28.1	30.0	32.3	22.6	15.5	16.6	17.2	14.7	8.3	9.9	11.5	10.3	7.5	20.9	32.3
30-Sep	8.8	20.1	13.8	14.1	8.2	Z	9.1	11.5	18.1	23.6	26.5	27.6	29.0	32.3	32.4	33.5	35.0	34.9	31.2	30.0	21.2	12.4	20.5	24.4	22.5	35.0
	21.5	22.4	22.0	21.4	21.8	20.5	21.7	22.8	25.6	28.3	29.7	32.2	34.3	35.7	36.3	36.6	35.3	32.3	27.1	24.8	23.8	23.5	23.5	22.2	Diurnal Average	
	38.9	39.6	39.5	39.9	40.4	43.8	44.2	42.2	39.9	39.7	41.2	43.1	51.0	55.6	55.1	55.2	51.6	42.1	39.6	36.4	43.9	44.3	41.5	38.9	Diurnal Maximum	

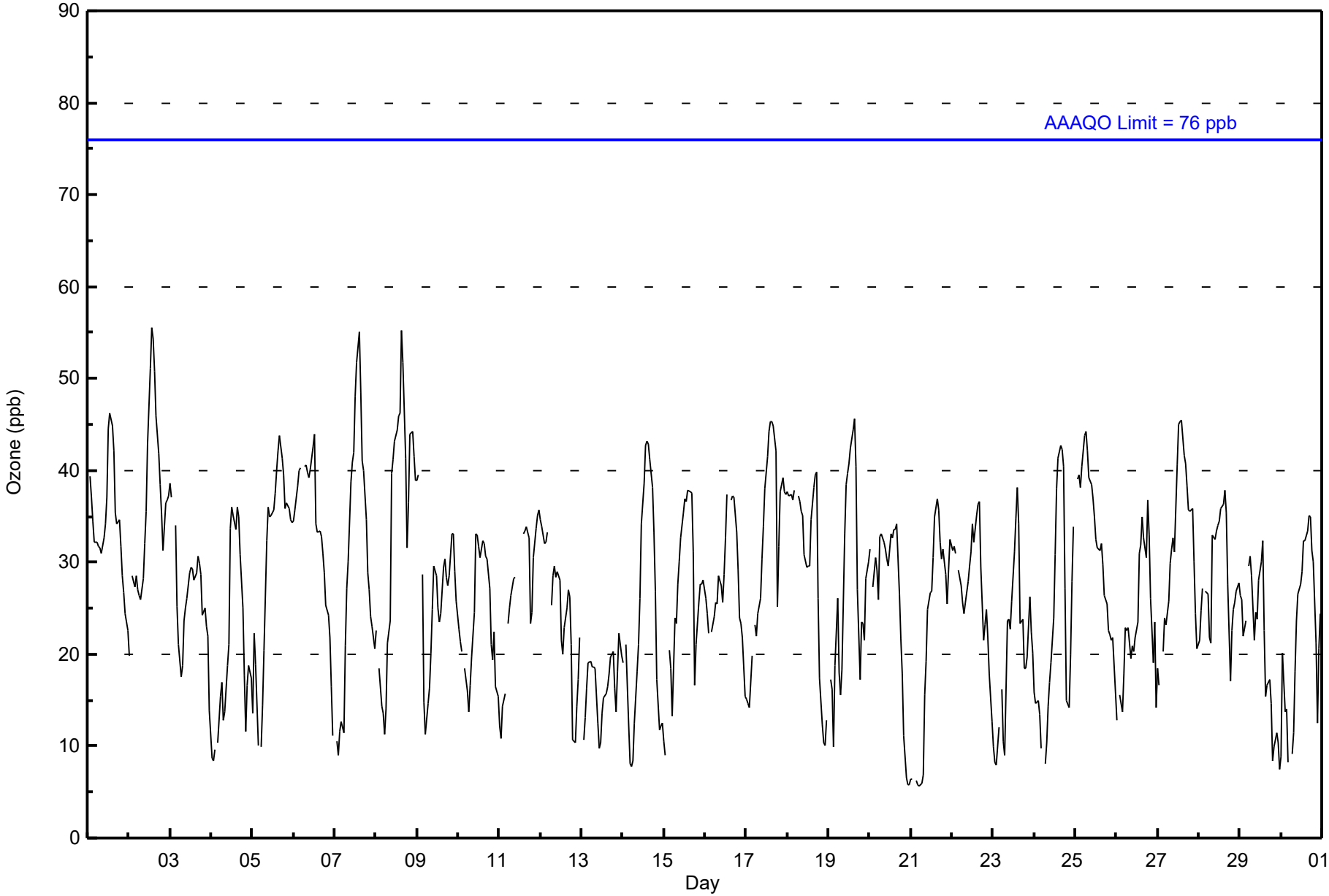
Z - zerospan C - Calibration M - Maintenance
Alberta Ambient Air Quality Objectives (AAAQO): 1-hr 76 ppb

Wood Buffalo Environmental Association

Hourly Averages

Ozone (O_3) - ppb

Wapasu - September 2024



Concentration Ranges (ppb)	Number of Hours	%	Cumulative %
0 - 20	187	27.30	27.30
21 - 50	490	71.53	98.83
51 - 82	8	1.17	100.00
> 83	0	0.00	100.00

Total Number of Valid Hours: 685

Total Number of Hours: 720

Wood Buffalo Environmental Association

Frequency Distribution

Ozone (O_3) - ppb

Wapasu - September 2024

Concentration Ranges (ppb)	Wind Direction																
	N	NNE	NE	ENE	E	ESE	SE	SSE	S	SSW	SW	WSW	W	WNW	NW	NNW	**Totals**
0 - 20	12	12	3	10	15	12	15	30	13	8	11	12	8	4	4	18	187
21 - 50	32	17	9	5	10	18	43	71	56	43	45	47	35	26	12	21	490
51 - 82	0	0	0	0	0	0	0	1	0	2	3	2	0	0	0	0	8
> 83	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Totals	44	29	12	15	25	30	58	102	69	53	59	61	43	30	16	39	685

Total Number of Valid Hours: 685

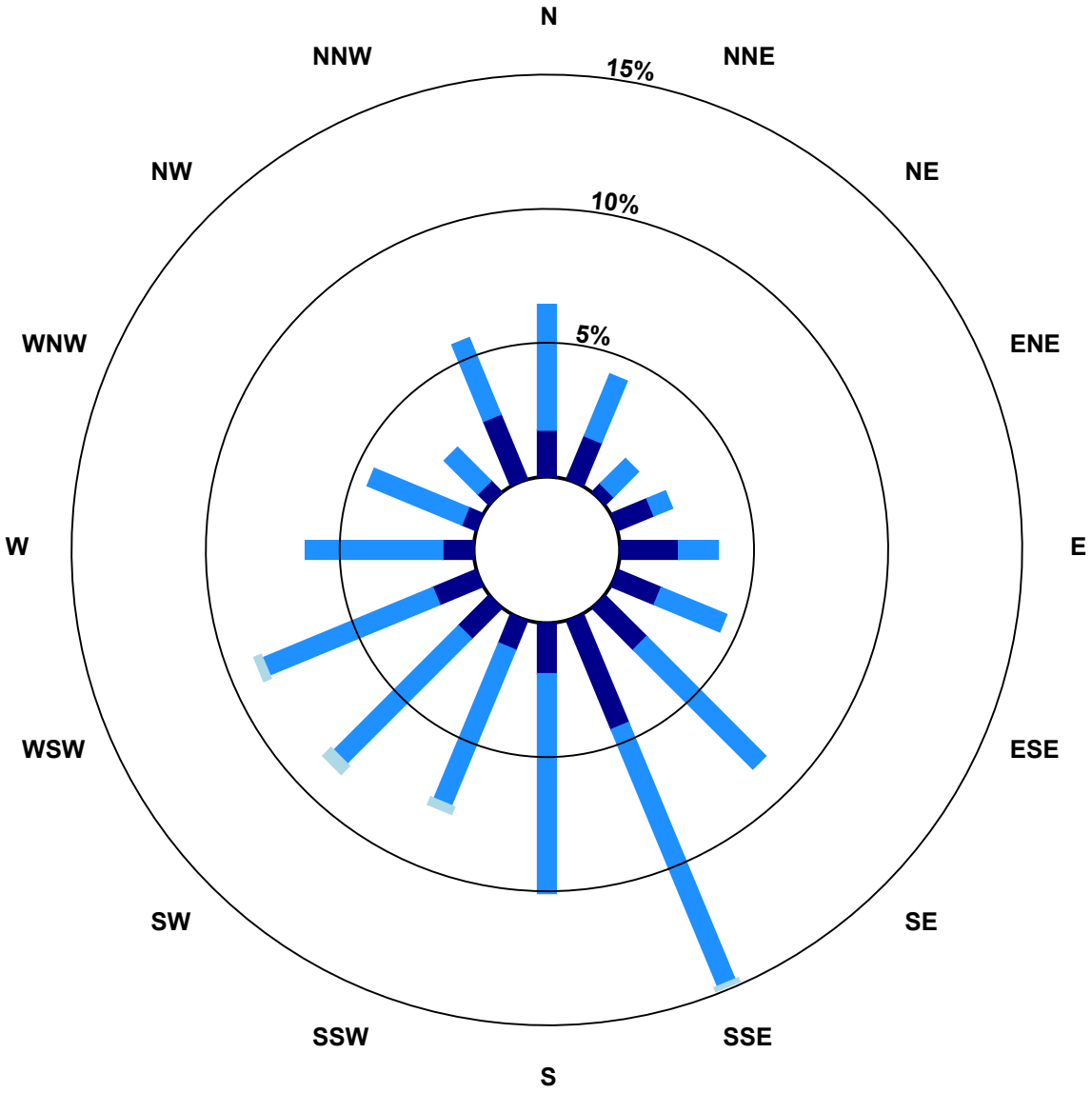
Total Number of Hours: 720

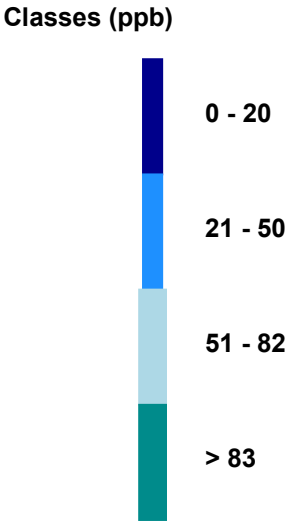
Wood Buffalo Environmental Association

Wind Rose Sep 2024

Ozone (O_3) - ppb

Wapasu





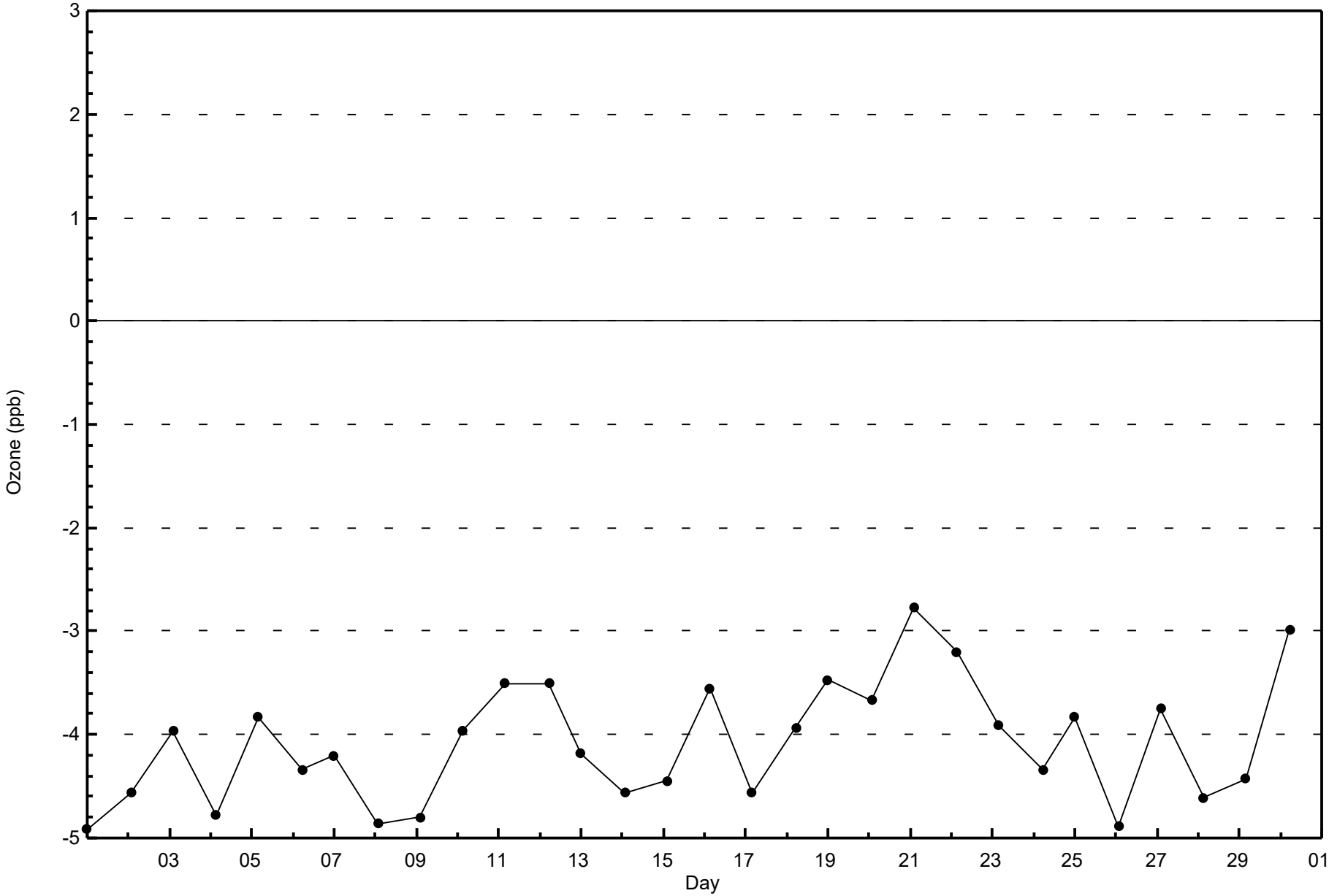
Total Number of Valid Hours: 685

Wood Buffalo Environmental Association

Zero Responses

Ozone (O_3) - ppb

Wapasu - September 2024

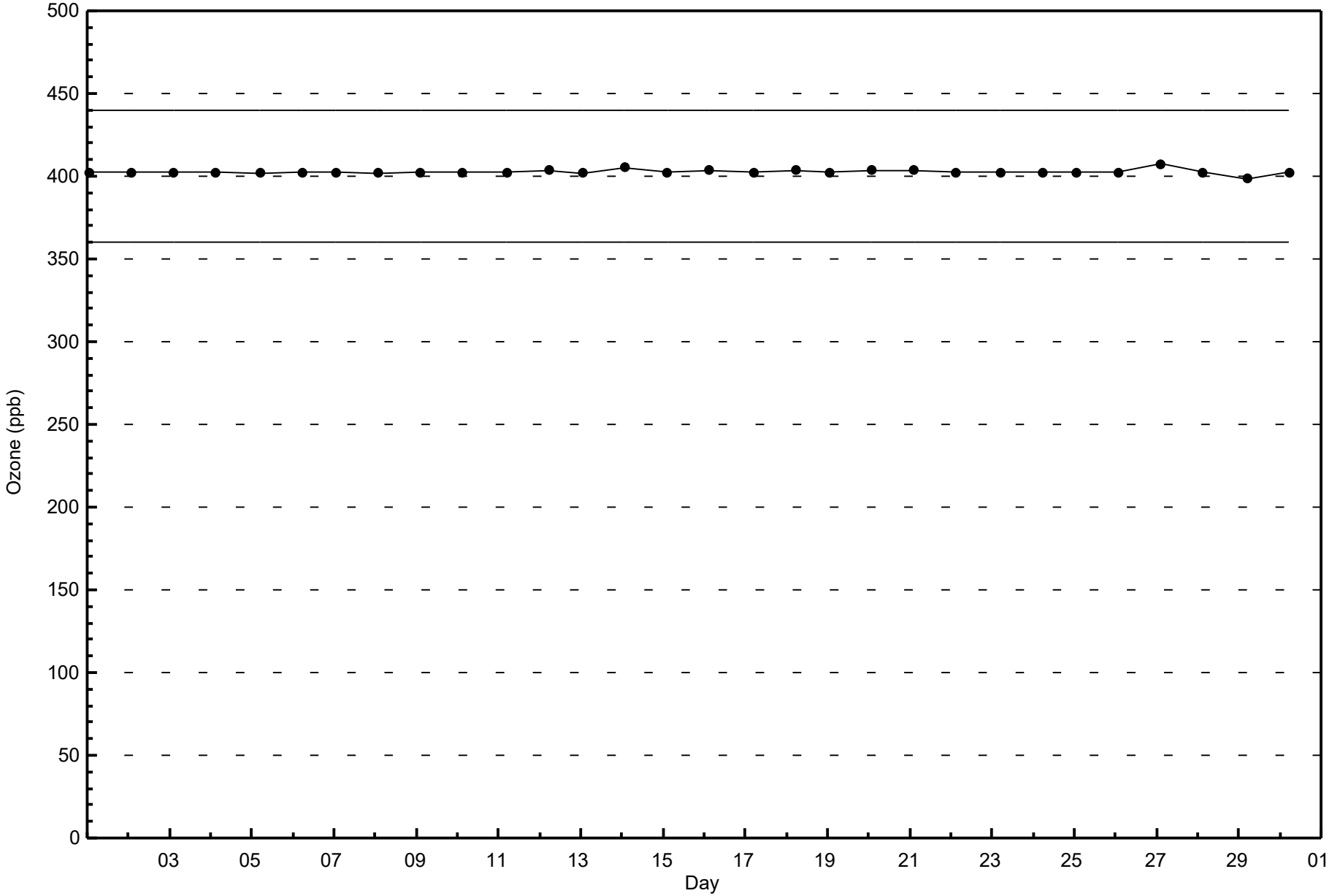


Wood Buffalo Environmental Association

Span Responses

Ozone (O_3) - ppb

Wapasu - September 2024



Wood Buffalo Environmental Association

Summary of Hour Averages

Nitric Oxide (NO) - ppb

Wapasu - September 2024

Maximum Value: 26.9 ppb on Sep 14 05:00

Maximum Daily Average: 3.4 ppb on Sep 14

Minimum Value: 0.0 ppb on Sep 1 01:00

Minimum Daily Average: 0.0 ppb on Sep 11

Maximum Diurnal Average: 1.5 ppb at hour 8

Minimum Diurnal Average: 0.0 ppb at hour 19

Monthly Average: 0.54 ppb

Percentiles: P_1 = 0.0 P_{10} = 0.0 Q_1 = 0.0 Median = 0.1 Q_3 = 0.4 P_{90} = 1.2 P_{99} = 6.3

Hours in Service:	720
Hours of Data:	685
Hours of Missing Data:	35
Hours of Calibration:	35
Percent Operational Time:	100.0

Day	Hourly Period Ending At (MST)																								Daily	Daily
	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24	Average	Maximum
1-Sep	0.0	0.0	Z	0.0	0.0	0.0	0.2	0.2	0.3	0.1	0.1	0.1	0.6	0.4	0.3	0.1	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.1	0.6
2-Sep	0.0	0.0	0.0	Z	0.0	0.0	0.0	0.5	0.5	0.2	0.3	0.2	0.4	0.4	0.2	0.1	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.1	0.5
3-Sep	0.0	0.0	0.0	0.0	Z	0.1	0.4	0.8	0.1	0.3	0.7	0.4	0.9	0.4	0.3	0.4	0.1	0.0	0.0	0.0	0.0	0.0	0.0	0.1	0.2	0.9
4-Sep	0.3	0.1	0.1	0.5	0.2	Z	2.0	5.2	2.7	2.8	3.4	0.2	0.3	0.8	0.9	0.6	0.3	0.2	0.2	0.0	0.0	0.0	0.0	0.0	0.9	5.2
5-Sep	Z	0.0	0.0	0.0	0.1	0.1	0.4	1.0	0.6	0.2	0.2	0.1	0.2	0.1	0.2	0.1	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.1	1.0
6-Sep	0.0	Z	0.0	0.0	0.0	0.0	0.1	0.1	0.4	1.2	1.8	1.5	1.0	1.5	1.3	2.2	1.2	0.6	0.2	0.0	0.0	0.0	0.0	0.0	0.6	2.2
7-Sep	0.0	0.0	Z	0.0	0.0	0.2	0.4	0.6	1.3	0.3	0.1	0.1	0.1	0.3	0.3	0.3	0.3	0.1	0.0	0.0	0.0	0.0	0.0	0.0	0.2	1.3
8-Sep	0.0	0.0	0.2	Z	0.0	0.1	0.8	1.1	0.8	0.1	0.1	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	0.2	1.1
9-Sep	0.0	0.0	0.0	0.0	Z	0.7	1.0	4.9	2.5	0.5	0.6	0.4	1.2	2.5	0.3	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.6	4.9
10-Sep	0.0	0.0	0.0	0.0	0.0	Z	0.9	1.5	1.5	0.6	0.1	0.1	0.2	0.5	0.4	0.1	0.1	0.1	0.0	0.0	0.0	0.0	0.0	0.0	0.3	1.5
11-Sep	Z	0.0	0.0	0.0	0.0	0.0	0.0	0.2	0.2	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	0.2
12-Sep	0.0	Z	0.0	0.0	0.0	0.0	0.0	0.0	0.2	0.2	0.5	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	0.5
13-Sep	0.1	0.1	Z	0.1	0.1	0.0	0.0	0.0	0.1	5.5	18.8	12.6	1.9	0.5	1.0	0.7	0.4	0.1	0.0	0.1	0.1	0.0	0.0	0.0	1.8	18.8
14-Sep	0.0	0.0	0.0	Z	26.9	23.0	13.2	5.3	3.3	2.5	1.3	0.4	0.9	0.9	0.3	0.2	0.2	0.1	0.0	0.0	0.0	0.0	0.0	0.0	3.4	26.9
15-Sep	0.0	1.9	0.1	0.0	Z	0.0	0.0	0.0	0.0	0.3	1.2	1.0	0.4	0.9	0.3	0.5	0.4	0.2	0.0	0.0	0.0	0.0	0.1	0.1	0.3	1.9
16-Sep	0.1	0.0	0.1	0.0	0.1	Z	0.1	0.3	0.7	1.6	C	C	C	C	C	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.5	0.2	1.6
17-Sep	Z	0.8	1.0	0.3	0.4	0.0	0.4	1.1	1.9	1.0	0.9	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	0.4	1.9
18-Sep	0.0	Z	0.0	0.0	0.0	0.0	0.1	0.3	0.9	0.9	0.6	2.1	1.7	1.7	1.3	0.8	0.5	0.0	0.0	0.0	0.0	0.0	0.1	0.0	0.5	2.1
19-Sep	0.0	0.0	Z	0.0	0.0	0.0	0.3	6.3	11.8	2.0	0.3	0.4	0.4	0.2	0.2	0.2	0.1	0.1	0.0	0.0	0.0	0.0	0.0	0.0	1.0	11.8
20-Sep	0.0	0.0	0.0	Z	0.0	0.0	0.0	0.0	0.0	0.0	0.3	1.0	0.3	0.2	0.1	0.1	0.0	0.5	0.2	0.1	0.4	1.6	2.7	2.5	0.4	2.7
21-Sep	0.4	0.2	0.1	0.3	Z	1.2	2.2	5.8	1.9	2.1	0.8	0.5	1.0	0.6	0.2	0.1	0.1	0.0	0.0	0.0	0.1	0.0	0.0	0.0	0.8	5.8
22-Sep	0.0	0.0	0.0	0.0	0.0	Z	0.0	0.6	0.5	0.4	0.8	0.5	0.4	1.6	1.7	1.2	0.3	0.1	0.0	0.1	0.0	0.0	0.0	0.0	0.4	1.7
23-Sep	Z	0.0	0.2	0.1	0.0	0.0	0.0	0.1	0.2	1.1	2.3	1.7	1.2	1.1	0.4	0.7	1.0	0.2	0.0	0.0	0.1	0.0	0.0	0.0	0.5	2.3
24-Sep	0.4	Z	0.1	0.0	1.6	2.7	5.2	6.4	3.4	1.5	0.5	0.3	0.3	0.6	0.5	0.3	0.3	0.1	0.0	0.0	0.0	0.0	0.0	0.0	1.0	6.4
25-Sep	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	0.2	0.5	0.3	0.2	0.6	0.1	0.2	0.1	0.1	0.0	0.1	0.1	0.6
26-Sep	0.1	0.1	0.1	Z	0.1	0.1	0.1	0.1	0.7	0.9	1.4	0.8	1.3	0.7	1.0	0.4	0.4	0.0	0.0	0.0	0.0	0.0	0.0	0.1	0.4	1.4
27-Sep	0.1	0.0	0.1	0.0	Z	0.0	0.1	0.1	0.3	0.3	0.7	0.3	0.2	0.6	0.7	0.4	0.1	0.0	0.0	0.0	0.0	0.1	0.2	0.5	0.2	0.7
28-Sep	0.4	0.0	0.0	0.0	0.0	Z	0.2	0.4	0.1	0.1	0.1	0.1	0.0	0.0	0.2	0.1	0.1	0.1	0.0	0.0	0.0	0.0	0.0	0.0	0.1	0.4
29-Sep	Z	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.3	0.0	0.0	0.3	0.3	0.2	1.7	3.1	1.3	0.5	0.2	1.2	0.3	0.2	0.1	0.1	0.4	3.1
30-Sep	0.1	Z	0.1	0.1	0.1	0.1	0.2	1.8	3.8	1.7	1.4	1.3	1.8	0.7	0.7	0.4	0.2	0.0	0.0	0.0	1.8	0.7	0.0	0.0	0.7	3.8
	0.1	0.1	0.1	0.1	1.2	1.1	0.9	1.5	1.4	1.0	1.4	0.9	0.6	0.6	0.5	0.5	0.3	0.1	0.0	0.1	0.1	0.1	0.1	0.1	Diurnal Average	
	0.4	1.9	1.0	0.5	26.9	23.0	13.2	6.4	11.8	5.5	18.8	12.6	1.9	2.5	1.7	3.1	1.3	0.6	0.2	1.2	1.8	1.6	2.7	2.5	Diurnal Maximum	

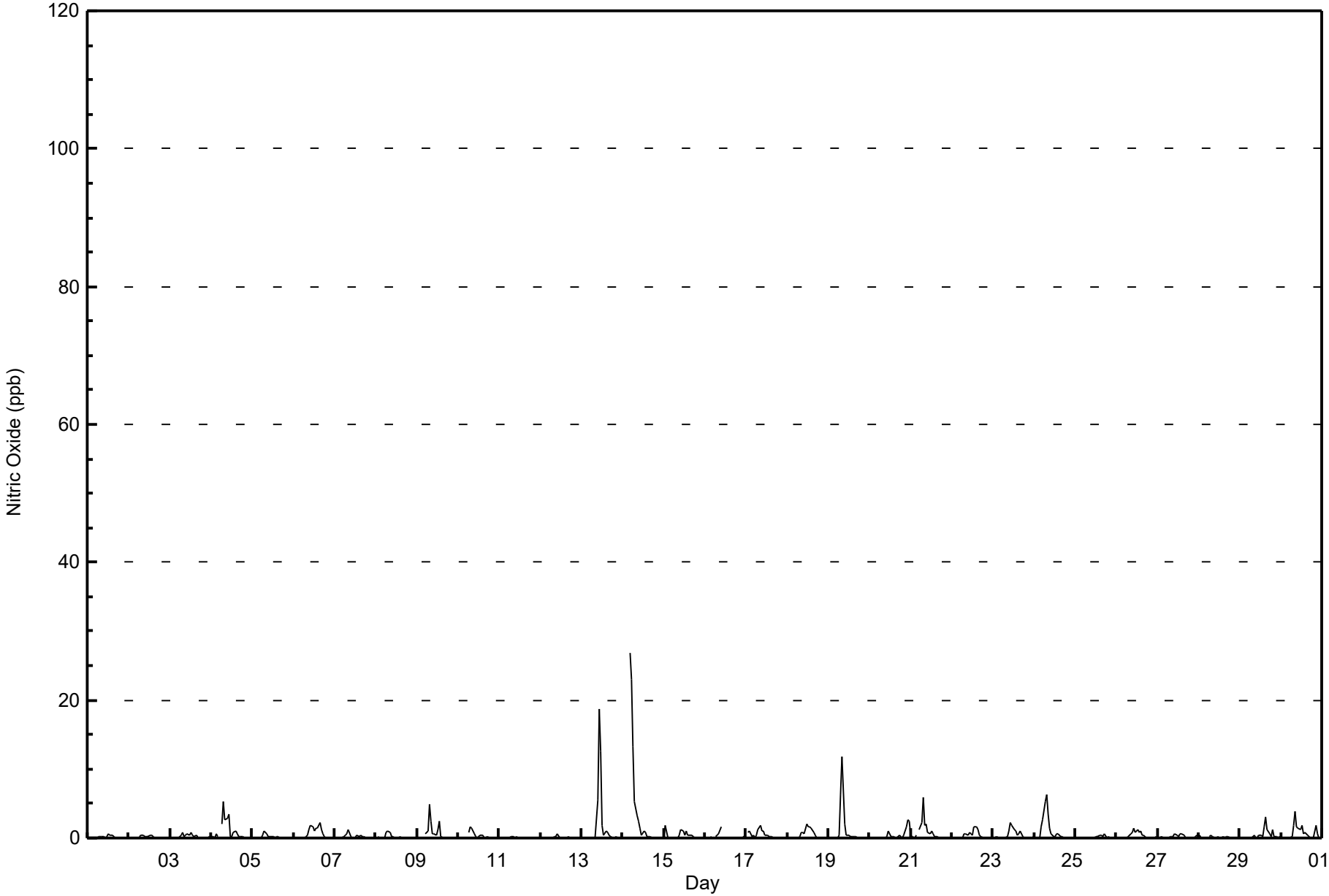
Z - zerospan C - Calibration

Wood Buffalo Environmental Association

Hourly Averages

Nitric Oxide (NO) - ppb

Wapasu - September 2024



Concentration Ranges (ppb)	Number of Hours	%	Cumulative %
0 - 20	683	99.71	99.71
21 - 40	2	0.29	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: 685

Total Number of Hours: 720

Wood Buffalo Environmental Association

Frequency Distribution

Nitric Oxide (NO) - ppb

Wapasu - September 2024

Concentration Ranges (ppb)	Wind Direction																
	N	NNE	NE	ENE	E	ESE	SE	SSE	S	SSW	SW	WSW	W	WNW	NW	NNW	**Totals**
0 - 20	45	27	11	17	22	32	59	103	71	53	59	60	40	29	17	38	683
21 - 40	0	0	0	0	0	0	0	0	0	0	0	1	1	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	45	27	11	17	22	32	59	103	71	53	59	61	41	29	17	38	685

Total Number of Valid Hours: 685

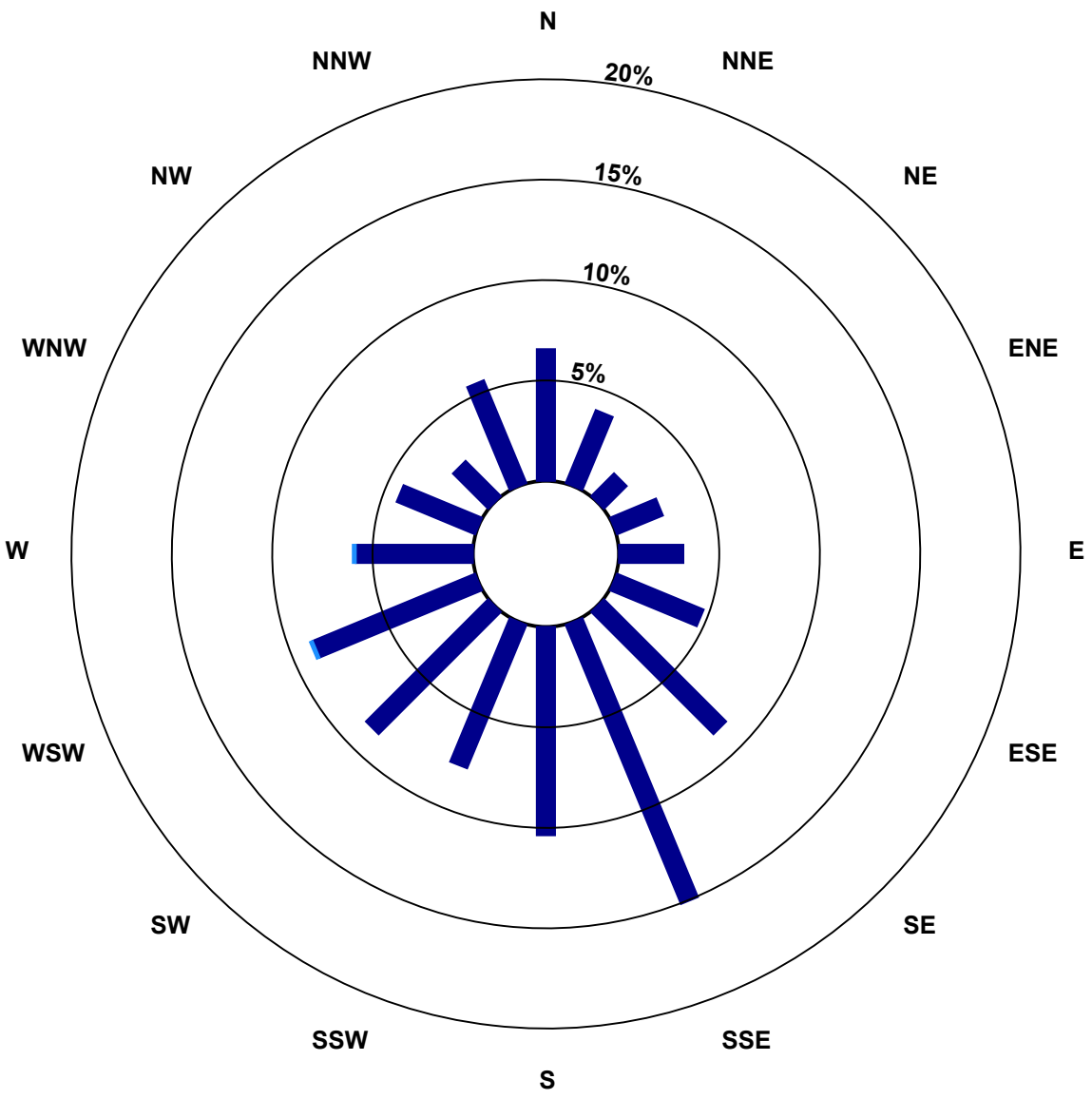
Total Number of Hours: 720

Wood Buffalo Environmental Association

Wind Rose Sep 2024

Nitric Oxide (NO) - ppb

Wapasu



Classes (ppb)

0 - 20

21 - 40

11 - 80

81 - 159

> 159

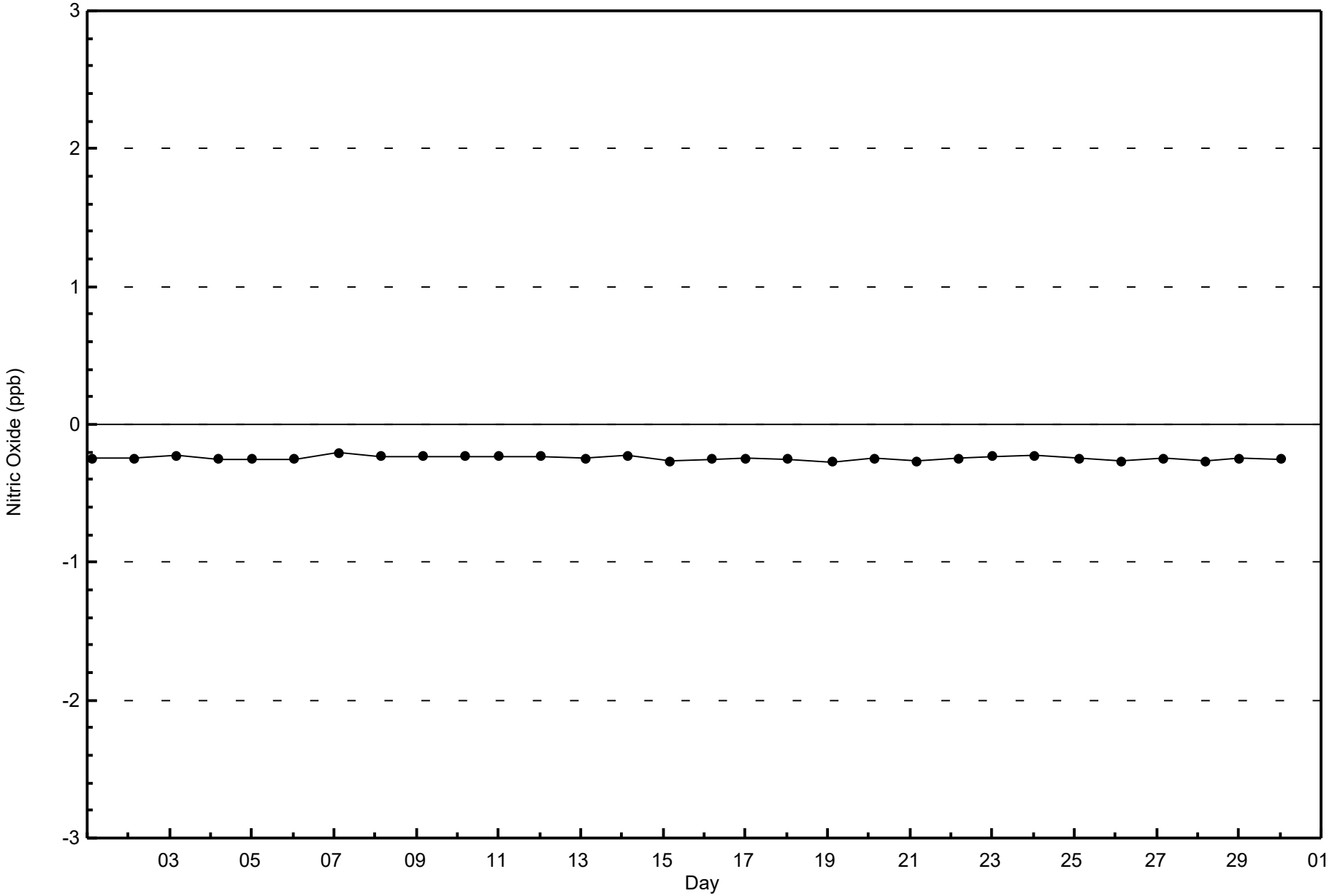
Total Number of Valid Hours: 685

Wood Buffalo Environmental Association

Zero Responses

Nitric Oxide (NO) - ppb

Wapasu - September 2024

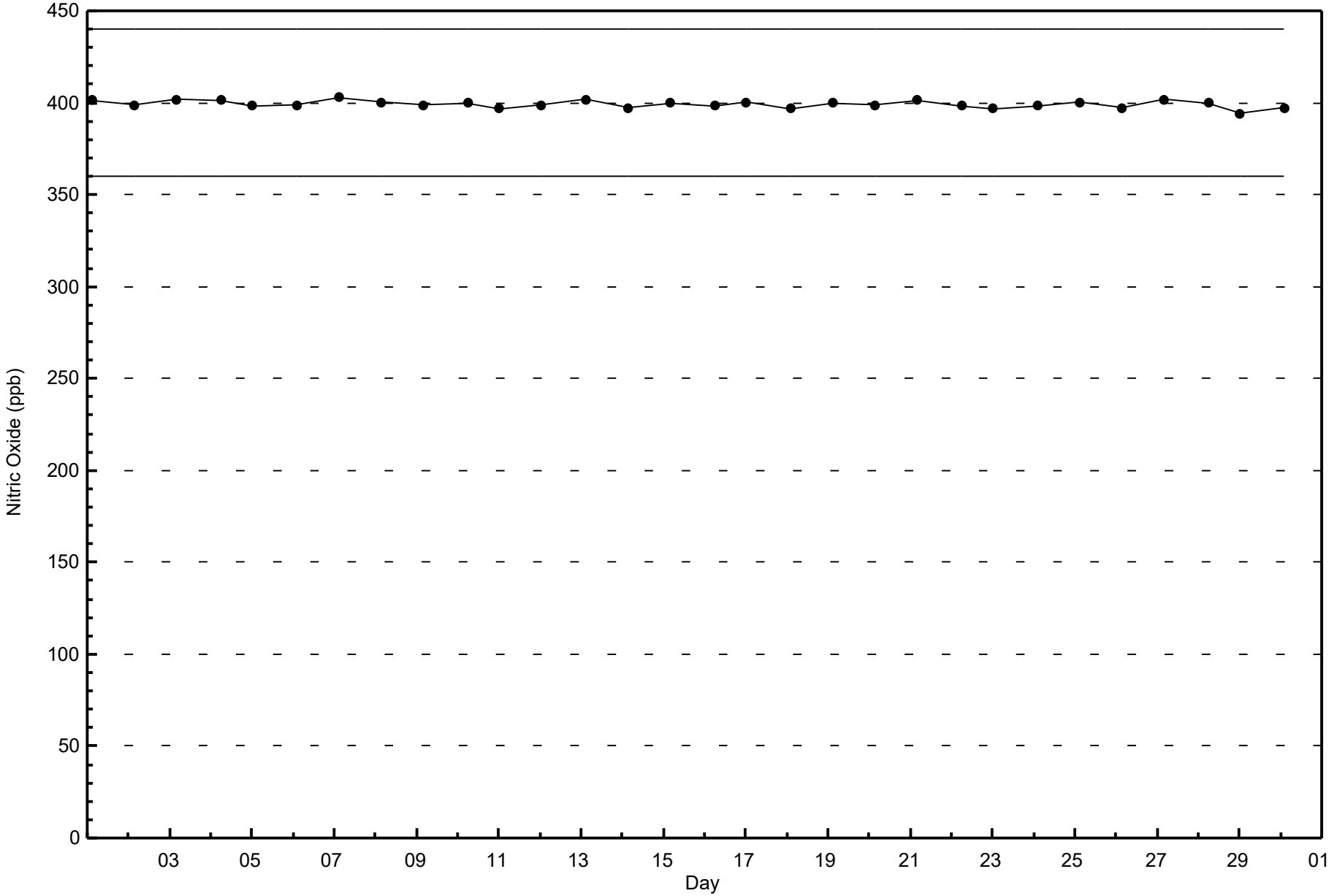


Wood Buffalo Environmental Association

Span Responses

Nitric Oxide (NO) - ppb

Wapasu - September 2024



Wood Buffalo Environmental Association

Summary of Hour Averages

Nitrogen Dioxide (NO_2) - ppb

Wapasu - September 2024

Number of Exceedences (AAAQO): 1-hr: 0 24-hr: 0
Maximum Value: 17.7 ppb on Sep 29 20:00 Maximum Daily Average: 4.3 ppb on Sep 29

Minimum Value: 0.2 ppb on Sep 10 23:00 Minimum Daily Average: 0.6 ppb on Sep 11
Maximum Diurnal Average: 3.7 ppb at hour 21 Minimum Diurnal Average: 2.0 ppb at hour 12
Monthly Average: 2.78 ppb Percentiles: P_1 = 0.3 P_{10} = 0.5 Q_1 = 0.8 Median = 1.8 Q_3 = 3.7 P_{90} = 6.3 P_{99} = 13.3

Hours in Service:	720
Hours of Data:	685
Hours of Missing Data:	35
Hours of Calibration:	35
Percent Operational Time:	100.0

Day	Hourly Period Ending At (MST)																								Daily	Daily
	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24	Average	Maximum
1-Sep	0.3	0.4	Z	1.7	3.0	2.5	2.4	1.3	1.5	0.8	0.7	0.9	2.7	2.3	2.1	1.4	0.5	0.6	0.3	1.0	2.3	3.6	5.8	5.1	1.9	5.8
2-Sep	6.9	4.6	3.1	Z	1.8	1.5	1.1	2.0	1.9	1.1	1.5	1.5	2.5	3.2	2.4	1.3	0.8	0.4	0.4	1.4	3.8	1.0	1.2	1.3	2.0	6.9
3-Sep	0.5	1.0	0.8	2.0	Z	6.8	8.2	6.3	1.5	1.8	3.0	2.1	3.5	2.5	1.7	1.7	0.5	0.3	0.3	0.3	0.3	1.6	1.7	10.0	2.5	10.0
4-Sep	8.9	3.1	0.8	2.2	3.3	Z	5.7	8.6	5.5	2.9	5.2	1.0	1.1	2.3	3.7	2.3	1.4	2.0	2.8	1.4	1.2	2.7	7.2	6.4	3.6	8.9
5-Sep	Z	3.3	0.8	0.5	0.9	1.2	1.9	2.4	1.6	0.9	0.8	0.6	0.7	0.7	0.9	1.2	1.0	1.0	0.5	0.4	0.4	0.3	0.3	0.4	1.0	3.3
6-Sep	0.5	Z	1.1	1.3	1.4	1.5	2.0	1.5	2.1	4.5	5.7	6.4	5.7	8.4	6.6	7.3	5.4	6.4	5.9	5.6	4.5	4.8	4.9	3.0	4.2	8.4
7-Sep	1.8	2.9	Z	4.2	7.7	10.5	4.8	3.3	4.4	2.2	1.7	1.3	2.5	3.7	3.9	3.0	2.9	2.6	2.5	5.5	4.0	6.0	6.6	5.0	4.0	10.5
8-Sep	4.2	5.4	5.9	Z	5.9	3.8	4.2	3.8	2.9	1.0	1.1	1.0	1.0	1.1	1.9	2.3	1.9	1.3	0.9	0.8	0.8	0.9	1.4	1.8	2.4	5.9
9-Sep	1.2	1.7	2.0	3.0	Z	13.3	10.1	9.3	7.6	4.7	2.2	2.3	5.5	9.7	5.6	1.1	0.8	1.4	0.7	2.9	1.7	2.1	2.4	0.5	4.0	13.3
10-Sep	0.6	0.8	1.0	1.0	0.6	Z	3.6	2.9	2.0	1.1	0.7	0.6	1.1	2.0	1.9	0.7	1.0	1.5	1.0	0.7	2.5	0.3	0.2	0.6	1.2	3.6
11-Sep	Z	0.8	0.4	0.3	0.4	0.4	0.5	1.2	0.7	0.5	1.2	0.8	0.7	0.6	0.5	0.4	0.5	0.5	0.5	0.7	0.5	0.6	0.6	0.5	0.6	1.2
12-Sep	0.5	Z	0.7	0.9	1.0	1.2	1.0	0.8	2.8	3.1	3.5	1.4	1.4	1.1	1.1	1.1	2.1	1.1	2.3	2.2	0.6	0.7	0.8	0.7	1.4	3.5
13-Sep	0.5	0.3	Z	0.5	0.6	0.7	0.7	0.7	0.8	6.3	9.9	6.8	2.3	2.2	5.0	5.8	4.4	3.9	5.3	9.1	11.2	4.8	1.2	5.4	3.8	11.2
14-Sep	3.7	0.5	1.0	Z	14.9	11.7	5.7	5.6	6.3	5.1	2.9	1.3	2.9	3.4	1.7	1.5	1.9	1.4	1.3	0.5	0.3	0.2	0.6	0.7	3.3	14.9
15-Sep	0.4	4.6	1.5	0.7	Z	0.4	0.2	0.2	0.3	1.3	2.8	2.5	1.1	2.1	1.2	1.7	2.1	2.1	1.3	1.5	2.9	4.6	8.1	7.4	2.2	8.1
16-Sep	6.4	5.3	5.2	3.5	4.5	Z	2.3	2.2	2.9	4.8	C	C	C	C	C	0.3	0.2	0.2	0.7	2.0	3.8	4.8	6.5	12.6	3.8	12.6
17-Sep	Z	12.8	13.6	7.0	6.3	2.1	4.1	4.0	3.8	2.4	2.2	1.5	1.6	1.3	1.4	1.5	1.1	1.1	1.1	0.9	0.8	0.7	0.5	0.4	3.1	13.6
18-Sep	0.4	Z	0.8	0.9	1.0	3.1	2.6	2.7	3.5	3.8	4.5	5.1	4.5	5.0	4.5	3.3	2.8	0.7	0.5	0.4	0.8	3.7	5.1	1.6	2.7	5.1
19-Sep	0.8	0.5	Z	0.5	0.5	0.8	4.8	11.4	14.7	4.2	1.0	1.2	1.5	1.1	1.4	1.8	2.3	2.0	1.7	2.5	4.3	3.7	1.4	1.3	2.8	14.7
20-Sep	0.7	0.6	0.7	Z	0.8	1.0	0.5	0.3	0.3	0.4	0.9	2.2	1.0	0.7	0.7	0.5	0.6	5.2	9.0	10.3	15.2	13.2	10.9	5.8	3.5	15.2
21-Sep	2.6	1.5	0.9	1.8	Z	1.8	2.8	3.9	2.1	3.1	1.4	1.3	2.2	1.6	1.2	1.2	1.1	0.6	0.7	0.5	3.1	2.3	0.5	0.5	1.7	3.9
22-Sep	0.5	0.4	0.5	0.6	0.7	Z	0.7	1.9	1.7	1.2	1.8	1.5	1.4	4.1	4.6	4.8	2.8	2.4	2.3	2.5	2.0	1.5	3.1	2.7	2.0	4.8
23-Sep	Z	1.9	5.8	5.8	1.5	0.8	0.6	0.4	0.9	1.7	3.0	3.3	2.9	3.6	2.7	5.4	9.1	5.8	3.1	1.3	2.3	1.1	1.1	0.9	2.8	9.1
24-Sep	3.4	Z	2.5	3.1	5.6	6.3	6.9	6.5	3.7	1.6	0.8	0.7	0.8	1.8	2.0	1.4	2.2	2.5	1.6	0.9	1.5	1.4	1.3	1.3	2.6	6.9
25-Sep	1.0	0.6	Z	1.6	1.3	0.5	0.4	0.6	0.6	0.4	0.4	0.8	1.4	2.1	2.7	3.3	4.7	7.7	7.2	8.7	7.2	5.0	4.0	5.8	3.0	8.7
26-Sep	4.9	3.3	5.5	Z	8.8	4.2	4.2	2.8	8.9	7.9	7.8	4.2	4.4	2.3	3.5	1.7	3.0	0.9	2.2	3.5	2.7	1.4	2.1	4.9	4.1	8.9
27-Sep	4.0	5.7	5.8	2.5	Z	1.9	3.1	2.4	2.5	2.0	2.1	1.1	1.1	2.8	3.0	3.6	1.6	1.1	0.6	0.6	0.6	1.9	5.3	7.2	2.7	7.2
28-Sep	5.6	2.6	1.3	1.3	0.7	Z	7.3	8.2	2.2	1.1	0.7	0.7	0.5	0.4	0.8	0.5	1.2	2.2	0.9	1.5	1.5	1.9	0.5	0.3	1.9	8.2
29-Sep	Z	0.4	0.4	0.4	0.4	0.4	0.6	0.6	1.4	0.3	0.2	1.0	1.2	1.2	3.9	9.2	7.7	8.6	12.5	17.7	15.9	10.3	4.2	1.2	4.3	17.7
30-Sep	0.6	Z	7.9	5.0	2.1	1.4	2.8	4.0	6.4	3.4	2.8	2.5	3.3	2.2	2.3	1.7	1.1	1.0	2.0	3.0	11.9	17.0	6.1	6.1	4.2	17.0
	2.4	2.6	2.8	2.1	3.0	3.2	3.2	3.4	3.3	2.5	2.5	2.0	2.2	2.6	2.6	2.4	2.3	2.3	2.4	3.0	3.7	3.5	3.2	3.4	Diurnal Average	
	8.9	12.8	13.6	7.0	14.9	13.3	10.1	11.4	14.7	7.9	9.9	6.8	5.7	9.7	6.6	9.2	9.1	8.6	12.5	17.7	15.9	17.0	10.9	12.6	Diurnal Maximum	

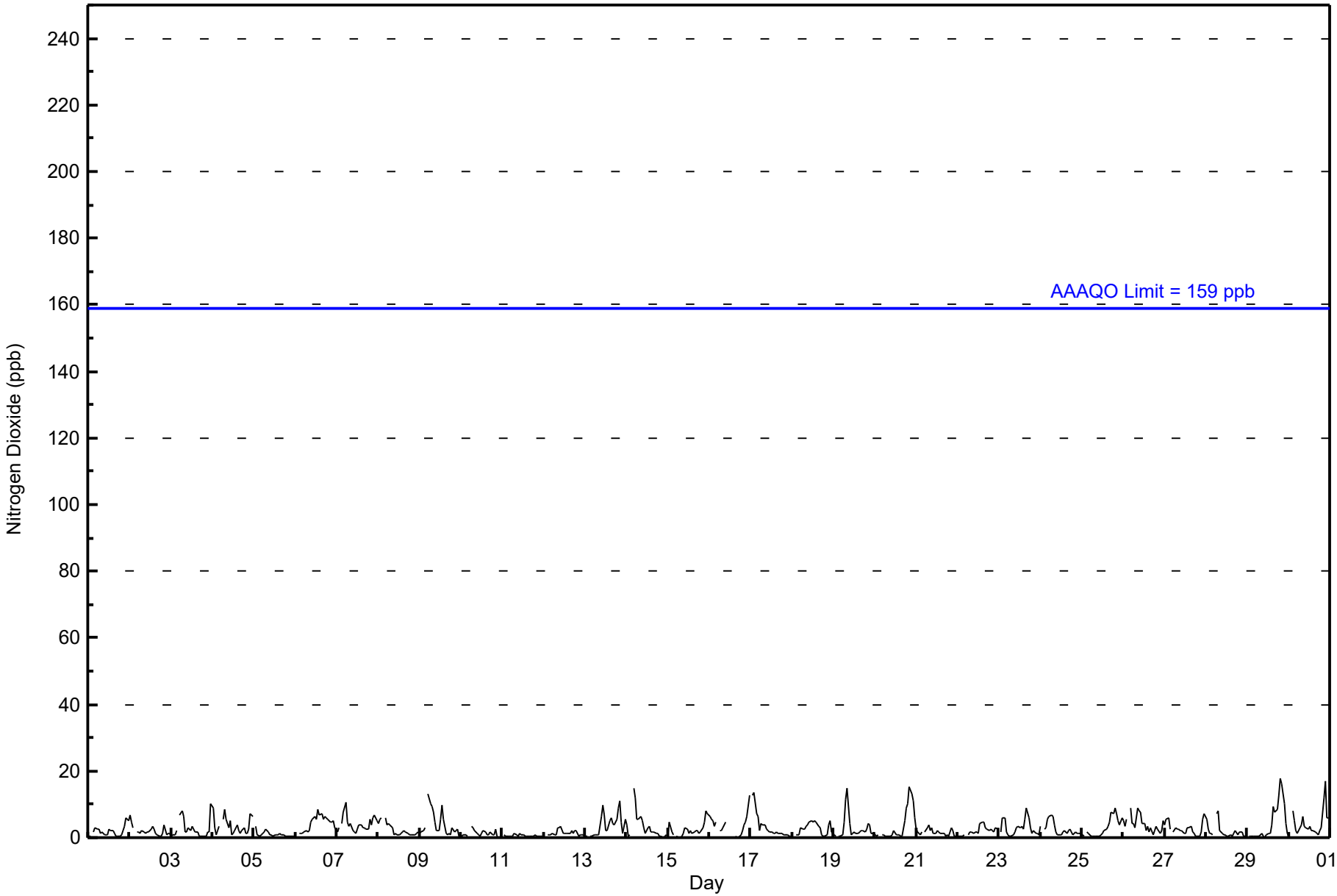
Z - zerospan C - Calibration
Alberta Ambient Air Quality Objectives (AAAQO): 1-hr 159 ppb

Wood Buffalo Environmental Association

Hourly Averages

Nitrogen Dioxide (NO_2) - ppb

Wapasu - September 2024



Nitrogen Dioxide (NO_2) - ppb
Wapasu - September 2024

Concentration Ranges (ppb)	Number of Hours	%	Cumulative %
0 - 20	685	100.00	100.00
21 - 40	0	0.00	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: 685

Total Number of Hours: 720

Wood Buffalo Environmental Association

Frequency Distribution

Nitrogen Dioxide (NO_2) - ppb

Wapasu - September 2024

Concentration Ranges (ppb)	Wind Direction																
	N	NNE	NE	ENE	E	ESE	SE	SSE	S	SSW	SW	WSW	W	WNW	NW	NNW	**Totals**
0 - 20	45	27	11	17	22	32	59	103	71	53	59	61	41	29	17	38	685
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	45	27	11	17	22	32	59	103	71	53	59	61	41	29	17	38	685

Total Number of Valid Hours: 685

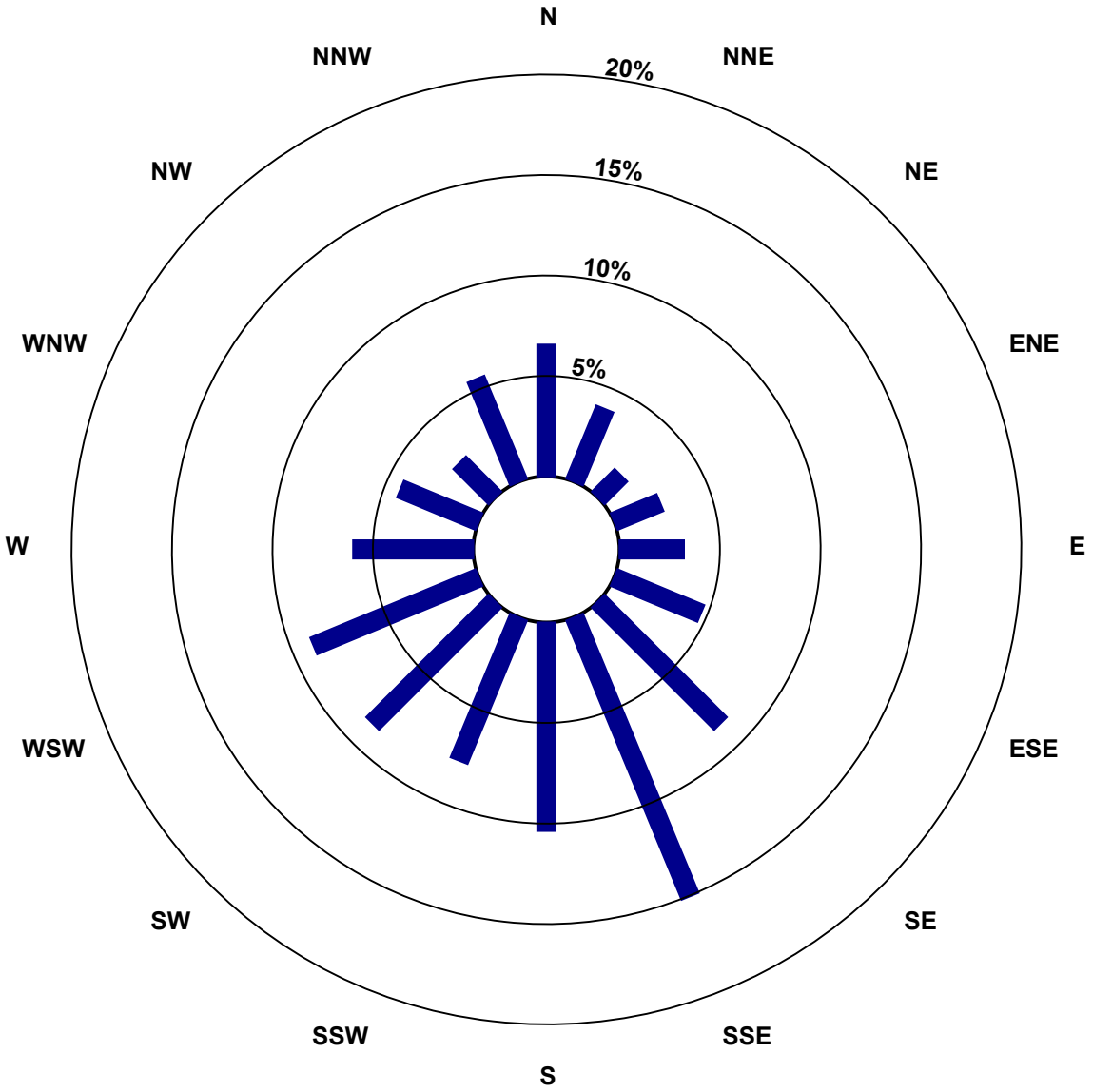
Total Number of Hours: 720

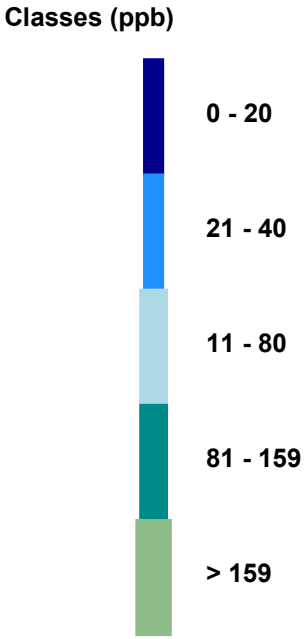
Wood Buffalo Environmental Association

Wind Rose Sep 2024

Nitrogen Dioxide (NO_2) - ppb

Wapasu





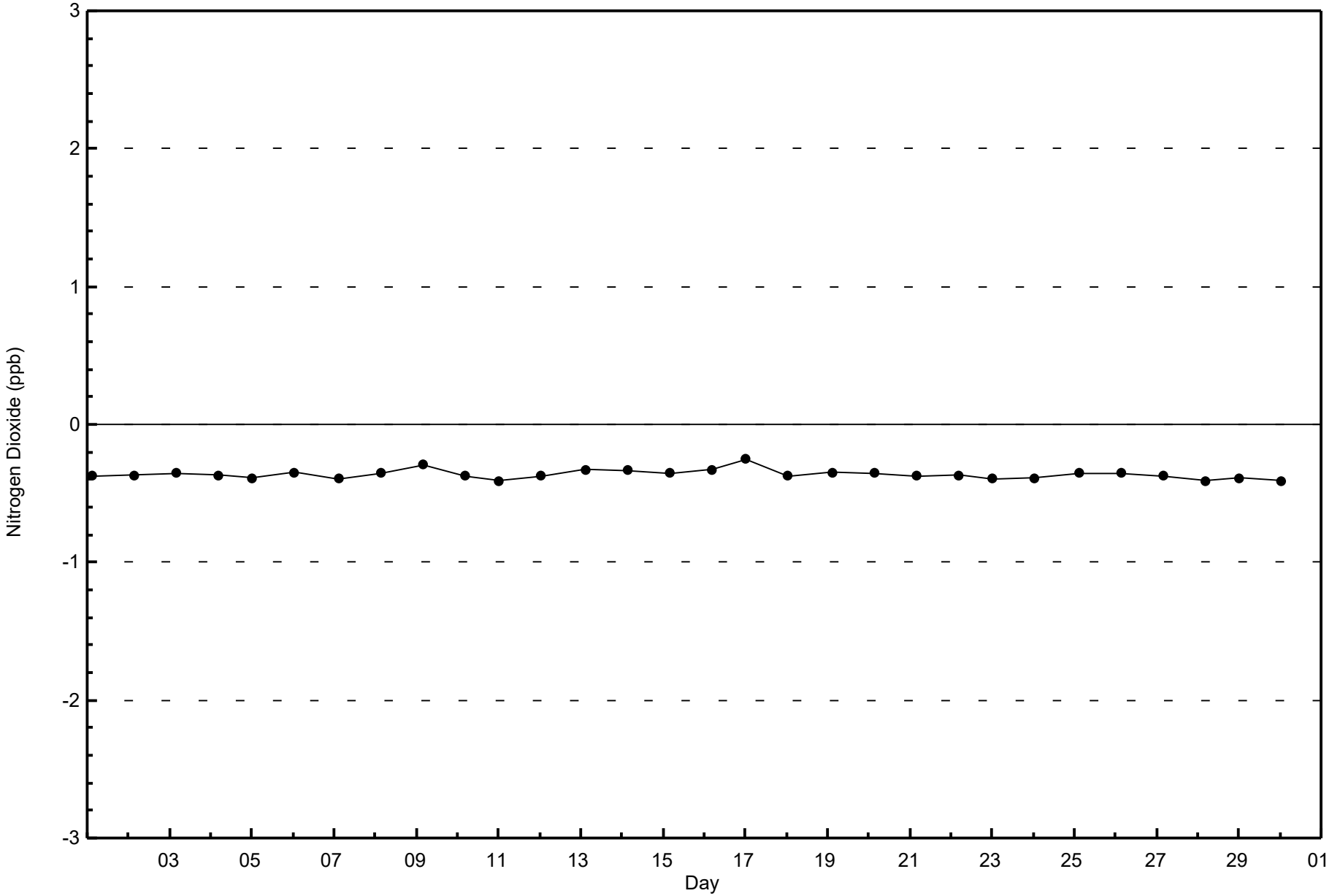
Total Number of Valid Hours: 685

Wood Buffalo Environmental Association

Zero Responses

Nitrogen Dioxide (NO_2) - ppb

Wapasu - September 2024

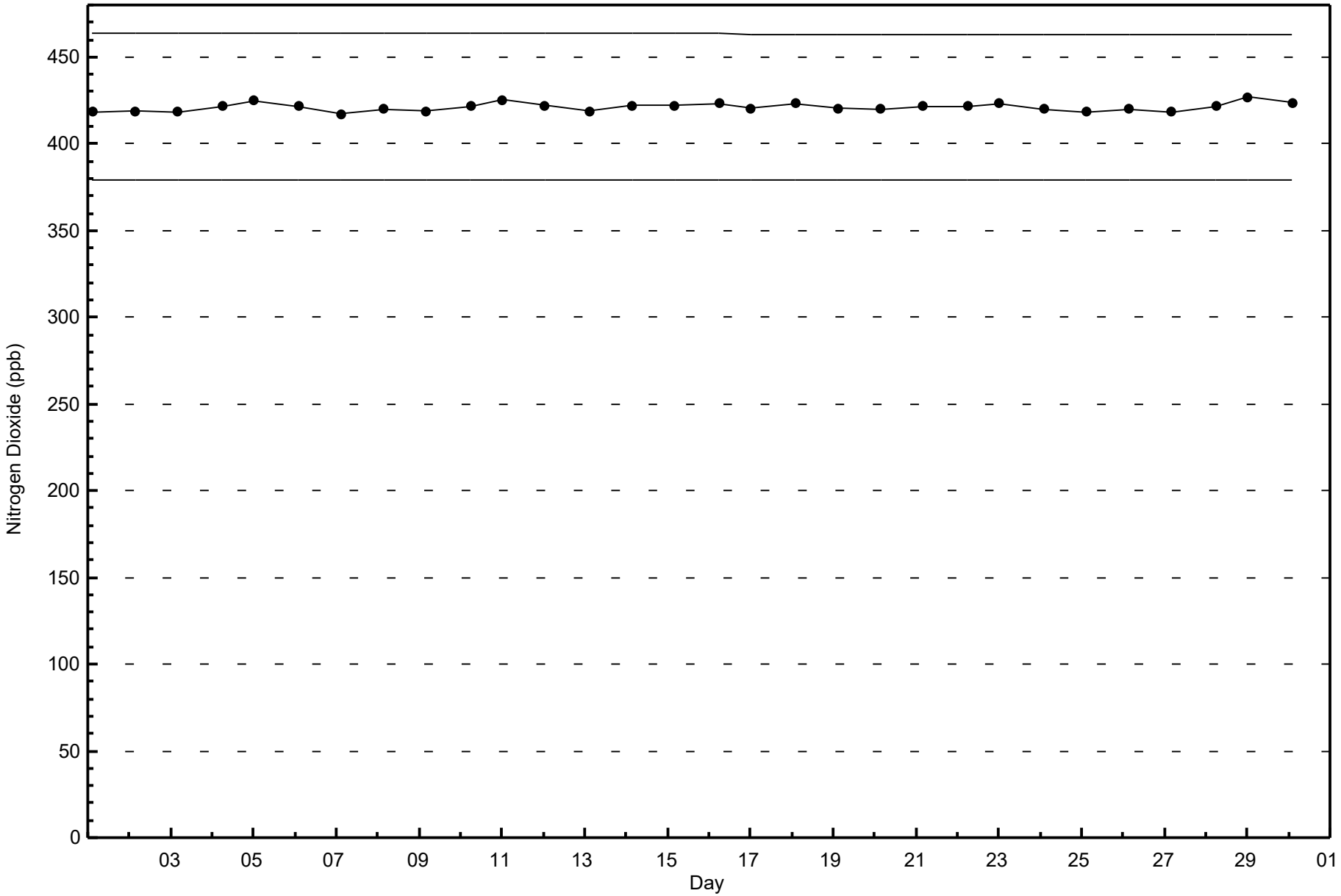


Wood Buffalo Environmental Association

Span Responses

Nitrogen Dioxide (NO_2) - ppb

Wapasu - September 2024



Wood Buffalo Environmental Association

Summary of Hour Averages

Nitrogen Oxides (NO_X) - ppb

Wapasu - September 2024

Maximum Value: 41.8 ppb on Sep 14 05:00

Maximum Daily Average: 6.7 ppb on Sep 14

Minimum Value: 0.2 ppb on Sep 10 23:00

Minimum Daily Average: 0.6 ppb on Sep 11

Maximum Diurnal Average: 4.9 ppb at hour 8

Minimum Diurnal Average: 2.1 ppb at hour 4

Monthly Average: 3.31 ppb

Percentiles: P_1 = 0.3 P_{10} = 0.5 Q_1 = 0.9 Median = 2.0 Q_3 = 4.3 P_{90} = 7.3 P_{99} = 17.9

Hours in Service:	720
Hours of Data:	685
Hours of Missing Data:	35
Hours of Calibration:	35
Percent Operational Time:	100.0

Day	Hourly Period Ending At (MST)																								Daily	Daily
	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24	Average	Maximum
1-Sep	0.3	0.4	Z	1.7	3.0	2.5	2.6	1.5	1.8	0.9	0.8	1.0	3.3	2.7	2.4	1.5	0.5	0.6	0.3	1.0	2.3	3.6	5.8	5.1	2.0	5.8
2-Sep	6.9	4.6	3.1	Z	1.8	1.5	1.1	2.5	2.4	1.3	1.8	1.7	2.9	3.6	2.6	1.4	0.8	0.4	0.4	1.4	3.8	1.0	1.2	1.3	2.1	6.9
3-Sep	0.5	1.0	0.8	2.0	Z	6.9	8.6	7.1	1.6	2.1	3.7	2.5	4.4	2.9	2.0	2.1	0.6	0.3	0.3	0.3	0.3	1.6	1.7	10.1	2.8	10.1
4-Sep	9.2	3.2	0.9	2.7	3.5	Z	7.7	13.8	8.2	5.7	8.6	1.2	1.4	3.1	4.6	2.9	1.7	2.2	3.0	1.4	1.2	2.7	7.2	6.4	4.5	13.8
5-Sep	Z	3.3	0.8	0.5	1.0	1.3	2.3	3.4	2.2	1.1	1.0	0.7	0.9	0.8	1.1	1.3	1.0	1.0	0.5	0.4	0.4	0.3	0.3	0.4	1.1	3.4
6-Sep	0.5	Z	1.1	1.3	1.4	1.5	2.1	1.6	2.5	5.7	7.5	7.9	6.7	9.9	7.9	9.5	6.6	7.0	6.1	5.6	4.5	4.8	4.9	3.0	4.8	9.9
7-Sep	1.8	2.9	Z	4.2	7.7	10.7	5.2	3.9	5.7	2.5	1.8	1.4	2.6	4.0	4.2	3.3	3.2	2.7	2.5	5.5	4.0	6.0	6.6	5.0	4.2	10.7
8-Sep	4.2	5.4	6.1	Z	5.9	3.9	5.0	4.9	3.7	1.1	1.2	1.0	1.0	1.1	2.0	2.4	1.9	1.3	0.9	0.8	0.8	0.9	1.4	1.8	2.6	6.1
9-Sep	1.2	1.7	2.0	3.0	Z	14.0	11.1	14.2	10.1	5.2	2.8	2.7	6.7	12.2	5.9	1.1	0.8	1.4	0.7	2.9	1.7	2.1	2.4	0.5	4.6	14.2
10-Sep	0.6	0.8	1.0	1.0	0.6	Z	4.5	4.4	3.5	1.7	0.8	0.7	1.3	2.5	2.3	0.8	1.1	1.6	1.0	0.7	2.5	0.3	0.2	0.6	1.5	4.5
11-Sep	Z	0.8	0.4	0.3	0.4	0.4	0.5	1.4	0.9	0.6	1.4	0.9	0.8	0.6	0.5	0.4	0.5	0.5	0.5	0.7	0.5	0.6	0.6	0.5	0.6	1.4
12-Sep	0.5	Z	0.7	0.9	1.0	1.2	1.0	0.8	3.0	3.3	4.0	1.4	1.4	1.1	1.1	1.1	2.2	1.1	2.3	2.3	0.7	0.8	0.8	0.7	1.5	4.0
13-Sep	0.6	0.4	Z	0.6	0.7	0.7	0.7	0.7	0.9	11.8	28.7	19.4	4.2	2.7	6.0	6.5	4.8	4.0	5.3	9.2	11.3	4.8	1.2	5.4	5.7	28.7
14-Sep	3.7	0.5	1.0	Z	41.8	34.7	18.9	10.9	9.6	7.6	4.2	1.7	3.8	4.3	2.0	1.7	2.1	1.5	1.3	0.5	0.3	0.2	0.6	0.7	6.7	41.8
15-Sep	0.4	6.5	1.6	0.7	Z	0.4	0.2	0.2	0.3	1.6	4.0	3.5	1.5	3.0	1.5	2.2	2.5	2.3	1.3	1.5	2.9	4.6	8.2	7.5	2.5	8.2
16-Sep	6.5	5.3	5.3	3.5	4.6	Z	2.4	2.5	3.6	6.4	C	C	C	C	C	0.3	0.2	0.2	0.7	2.0	3.8	4.8	6.5	13.1	4.0	13.1
17-Sep	Z	13.6	14.6	7.3	6.7	2.1	4.5	5.1	5.7	3.4	3.1	2.0	2.1	1.6	1.6	1.7	1.2	1.1	1.1	0.9	0.8	0.7	0.5	0.4	3.6	14.6
18-Sep	0.4	Z	0.8	0.9	1.0	3.1	2.7	3.0	4.4	4.7	5.1	7.2	6.2	6.7	5.8	4.1	3.3	0.7	0.5	0.4	0.8	3.7	5.2	1.6	3.1	7.2
19-Sep	0.8	0.5	Z	0.5	0.5	0.8	5.1	17.7	26.5	6.2	1.3	1.6	1.9	1.3	1.6	2.0	2.4	2.1	1.7	2.5	4.3	3.7	1.4	1.3	3.8	26.5
20-Sep	0.7	0.6	0.7	Z	0.8	1.0	0.5	0.3	0.3	0.4	1.2	3.2	1.3	0.9	0.8	0.6	0.6	5.7	9.2	10.4	15.6	14.8	13.6	8.3	4.0	15.6
21-Sep	3.0	1.7	1.0	2.1	Z	3.0	5.0	9.7	4.0	5.2	2.2	1.8	3.2	2.2	1.4	1.3	1.2	0.6	0.7	0.5	3.2	2.3	0.5	0.5	2.4	9.7
22-Sep	0.5	0.4	0.5	0.6	0.7	Z	0.7	2.5	2.2	1.6	2.6	2.0	1.8	5.7	6.3	6.0	3.1	2.5	2.3	2.6	2.0	1.5	3.1	2.7	2.3	6.3
23-Sep	Z	1.9	6.0	5.9	1.5	0.8	0.6	0.5	1.1	2.8	5.3	5.0	4.1	4.7	3.1	6.1	10.1	6.0	3.1	1.3	2.4	1.1	1.1	0.9	3.3	10.1
24-Sep	3.8	Z	2.6	3.1	7.2	9.0	12.1	12.9	7.1	3.1	1.3	1.0	1.1	2.4	2.5	1.7	2.5	2.6	1.6	0.9	1.5	1.4	1.3	1.3	3.6	12.9
25-Sep	1.0	0.6	Z	1.6	1.3	0.5	0.4	0.6	0.6	0.4	0.4	0.8	1.5	2.3	3.2	3.6	4.9	8.3	7.3	8.9	7.3	5.1	4.0	5.9	3.1	8.9
26-Sep	5.0	3.4	5.6	Z	8.9	4.3	4.3	2.9	9.6	8.8	9.2	5.0	5.7	3.0	4.5	2.1	3.4	0.9	2.2	3.5	2.7	1.4	2.1	5.0	4.5	9.6
27-Sep	4.1	5.7	5.9	2.5	Z	1.9	3.2	2.5	2.8	2.3	2.8	1.4	1.3	3.4	3.7	4.0	1.7	1.1	0.6	0.6	0.6	2.0	5.5	7.7	2.9	7.7
28-Sep	6.0	2.6	1.3	1.3	0.7	Z	7.5	8.6	2.3	1.2	0.8	0.8	0.5	0.4	1.0	0.6	1.3	2.3	0.9	1.5	1.5	1.9	0.5	0.3	2.0	8.6
29-Sep	Z	0.4	0.4	0.4	0.4	0.4	0.6	0.6	1.7	0.3	0.2	1.3	1.5	1.4	5.6	12.3	9.0	9.1	12.7	18.9	16.2	10.5	4.3	1.3	4.8	18.9
30-Sep	0.7	Z	8.0	5.1	2.2	1.5	3.0	5.8	10.2	5.1	4.2	3.8	5.1	2.9	3.0	2.1	1.3	1.0	2.0	3.0	13.7	17.7	6.1	6.1	4.9	17.7
	2.5	2.7	2.9	2.1	4.2	4.3	4.1	4.9	4.6	3.5	3.9	2.9	2.8	3.2	3.1	2.9	2.5	2.4	2.4	3.1	3.8	3.6	3.3	3.5	Diurnal Average	
	9.2	13.6	14.6	7.3	41.8	34.7	18.9	17.7	26.5	11.8	28.7	19.4	6.7	12.2	7.9	12.3	10.1	9.1	12.7	18.9	16.2	17.7	13.6	13.1	Diurnal Maximum	

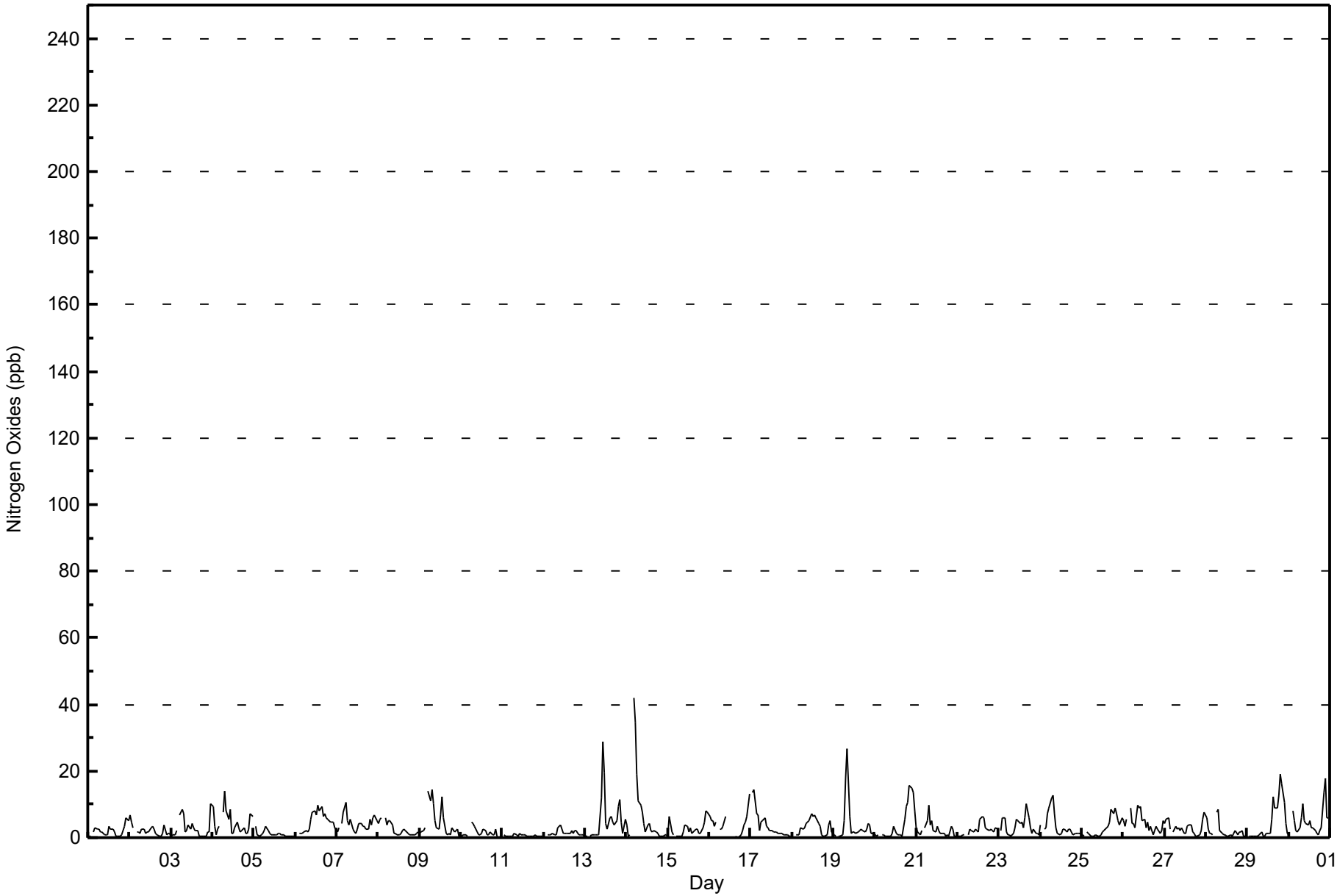
Z - zerospan C - Calibration

Wood Buffalo Environmental Association

Hourly Averages

Nitrogen Oxides (NO_X) - ppb

Wapasu - September 2024



Nitrogen Oxides (NO_X) - ppb
Wapasu - September 2024

Concentration Ranges (ppb)	Number of Hours	%	Cumulative %
0 - 20	681	99.42	99.42
21 - 40	3	0.44	99.85
11 - 80	1	0.15	100.00
81 - 159	0	0.00	100.00
> 159	0	0.00	100.00

Total Number of Valid Hours: 685

Total Number of Hours: 720

Wood Buffalo Environmental Association

Frequency Distribution

Nitrogen Oxides (NO_X) - ppb

Wapasu - September 2024

Concentration Ranges (ppb)	Wind Direction																
	N	NNE	NE	ENE	E	ESE	SE	SSE	S	SSW	SW	WSW	W	WNW	NW	NNW	**Totals**
0 - 20	44	27	11	17	22	32	59	102	71	53	59	60	40	29	17	38	681
21 - 40	1	0	0	0	0	0	0	1	0	0	0	1	0	0	0	0	3
11 - 80	0	0	0	0	0	0	0	0	0	0	0	0	1	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	45	27	11	17	22	32	59	103	71	53	59	61	41	29	17	38	685

Total Number of Valid Hours: 685

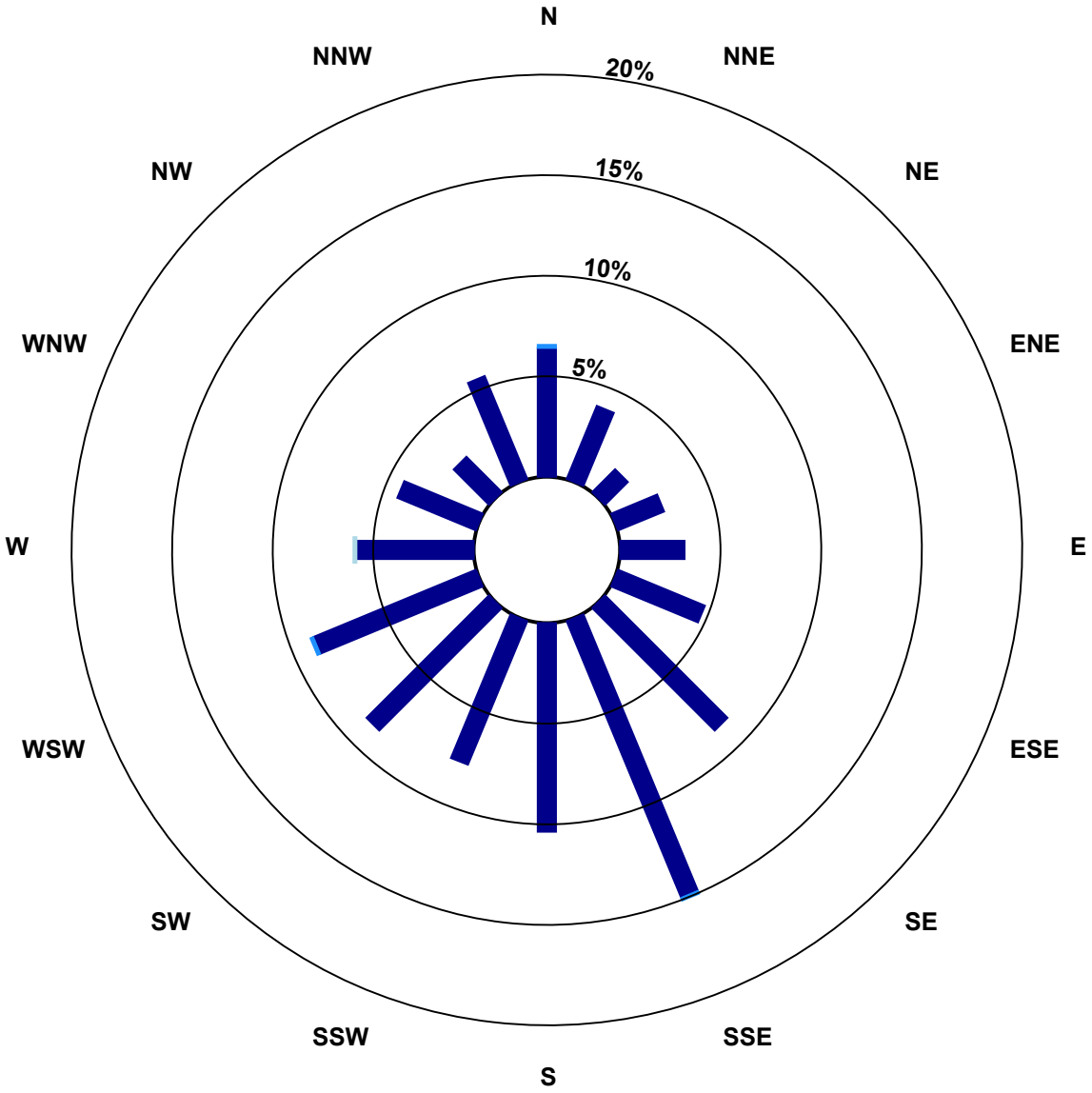
Total Number of Hours: 720

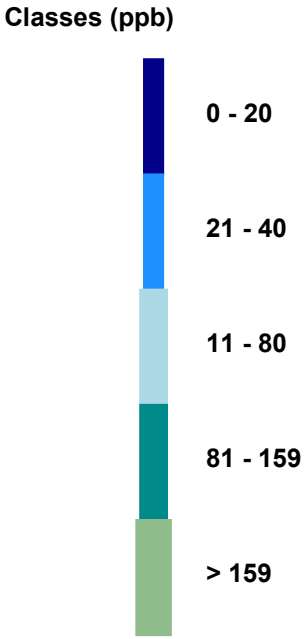
Wood Buffalo Environmental Association

Wind Rose Sep 2024

Nitrogen Oxides (NO_X) - ppb

Wapasu





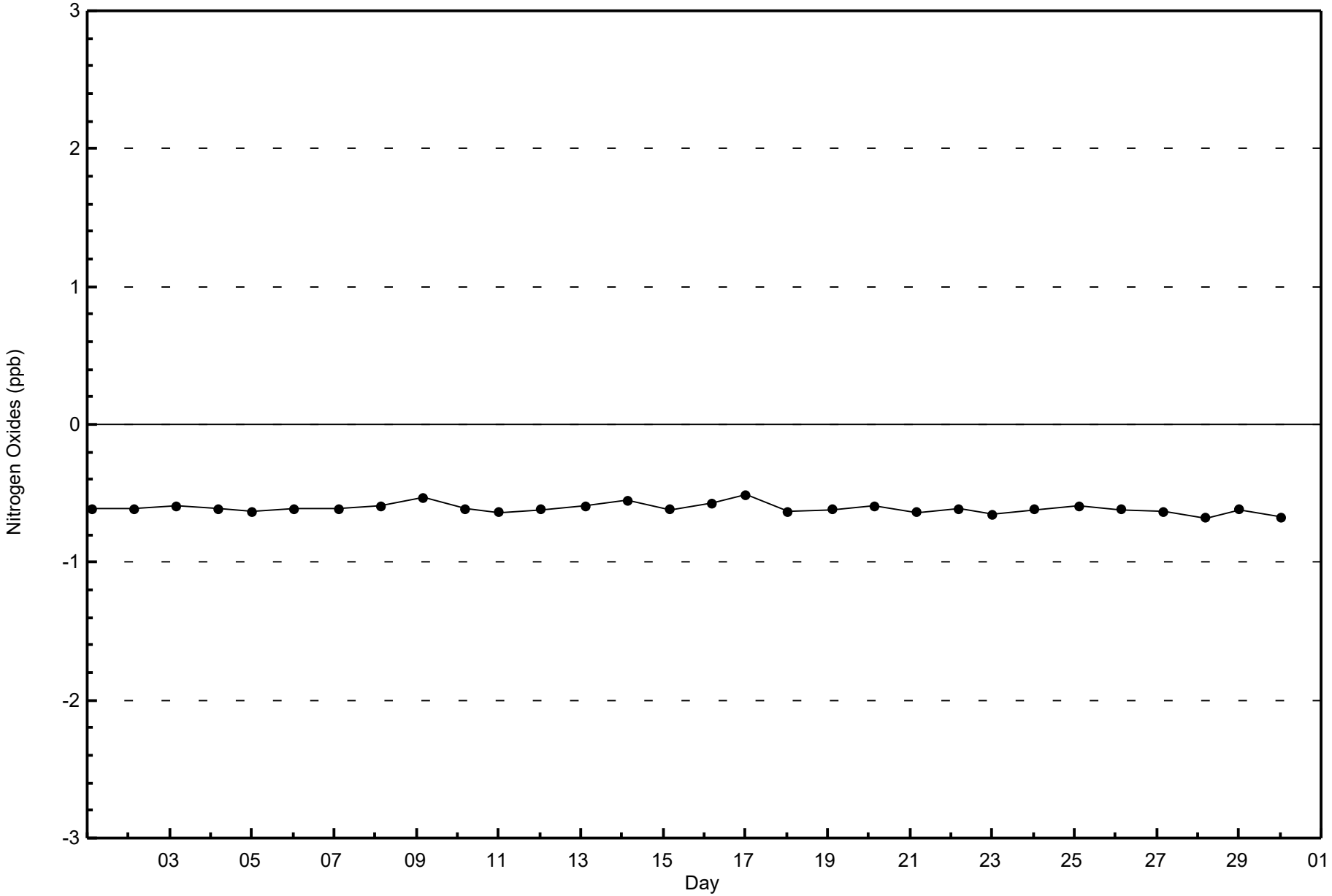
Total Number of Valid Hours: 685

Wood Buffalo Environmental Association

Zero Responses

Nitrogen Oxides (NO_X) - ppb

Wapasu - September 2024

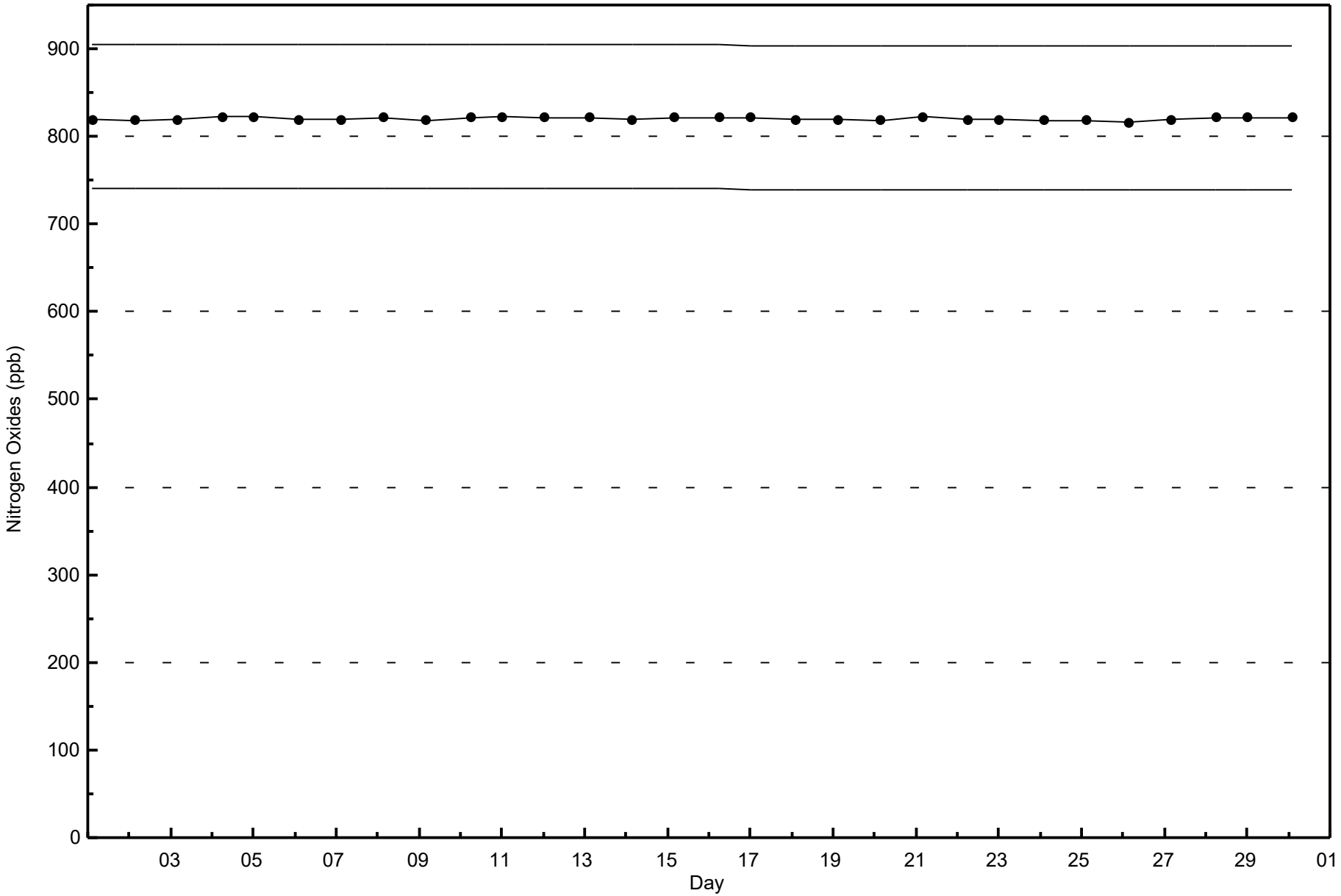


Wood Buffalo Environmental Association

Span Responses

Nitrogen Oxides (NO_X) - ppb

Wapasu - September 2024



Wood Buffalo Environmental Association

Summary of Hour Averages

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

Wapasu - September 2024

Number of Exceedences (AAAQO): 1-hr: 35 24-hr: 4

Maximum Value: 170.6 $\mu g/m^3$ on Sep 12 13:00

Maximum Daily Average: 99.5 $\mu g/m^3$ on Sep 12

Minimum Value: 0.4 $\mu g/m^3$ on Sep 28 05:00

Minimum Daily Average: 1.8 $\mu g/m^3$ on Sep 28

Maximum Diurnal Average: 20.9 $\mu g/m^3$ at hour 13

Minimum Diurnal Average: 13.6 $\mu g/m^3$ at hour 10

Monthly Average: 16.03 $\mu g/m^3$

Percentiles: P_1 = 1.1 P_{10} = 2.5 Q_1 = 3.6 Median = 5.4 Q_3 = 12.6 P_{90} = 44.3 P_{99} = 134.7

Hours in Service:	720
Hours of Data:	716
Hours of Missing Data:	4
Hours of Calibration:	2
Percent Operational Time:	99.7

Day	Hourly Period Ending At (MST)																								Daily	Daily
	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24	Average	Maximum
1-Sep	4.5	6.0	5.3	6.3	6.1	5.5	5.2	4.6	4.1	4.0	3.4	3.1	4.1	4.4	5.5	5.3	3.2	3.4	3.0	3.7	6.0	9.5	11.5	12.6	5.4	12.6
2-Sep	12.5	10.4	9.0	9.7	8.7	8.0	7.5	6.4	6.0	5.5	5.7	6.4	7.2	7.8	7.1	7.4	5.6	5.1	5.7	15.4	62.0	25.0	12.3	7.7	11.0	62.0
3-Sep	5.7	5.6	6.5	7.7	12.9	17.3	15.8	11.1	7.1	4.8	4.8	4.6	5.1	5.1	4.6	4.5	3.6	3.1	3.5	3.4	3.6	4.2	4.5	5.0	6.4	17.3
4-Sep	4.6	4.3	3.6	3.1	3.1	3.4	5.4	8.8	7.5	7.2	7.8	6.3	6.3	8.2	8.4	6.4	5.2	6.8	5.3	5.6	6.3	5.1	6.8	6.5	5.9	8.8
5-Sep	6.3	5.0	4.3	4.0	4.1	4.6	5.4	5.3	3.8	3.7	4.5	4.7	5.3	7.4	9.6	11.8	12.4	11.6	9.8	9.8	10.6	8.7	6.1	7.0	6.9	12.4
6-Sep	7.0	6.3	5.6	4.8	4.6	4.6	4.6	4.7	5.6	7.4	11.4	13.3	16.0	16.0	16.5	16.1	13.3	13.6	13.6	12.8	13.8	16.2	19.6	18.5	11.1	19.6
7-Sep	19.4	21.5	19.4	17.5	17.0	17.3	13.6	11.3	14.3	17.2	29.6	41.7	114.9	117.6	99.5	48.7	35.6	35.2	41.0	34.4	36.7	44.8	58.1	60.7	40.3	117.6
8-Sep	64.3	63.9	69.9	77.6	84.6	77.8	69.6	47.8	30.5	13.6	20.3	32.4	39.3	41.0	35.7	45.7	54.5	54.3	54.5	61.4	66.0	71.1	71.4	68.6	54.8	84.6
9-Sep	64.4	58.7	45.3	38.4	33.5	36.9	37.7	44.2	38.5	31.1	32.5	31.4	32.6	32.8	14.4	9.0	6.5	5.9	6.5	9.2	7.9	5.9	6.1	15.4	26.9	64.4
10-Sep	28.4	29.0	24.7	21.3	17.6	15.8	14.4	12.2	10.8	10.5	8.7	DF	DF	10.8	13.4	16.4	16.4	13.1	7.8	5.6	5.5	5.6	5.5	5.8	13.6	29.0
11-Sep	6.3	5.9	6.0	5.8	5.5	5.6	5.4	5.3	5.6	6.9	12.4	12.8	9.4	8.7	9.4	9.0	8.7	10.8	11.8	20.2	28.7	26.8	25.0	19.8	11.3	28.7
12-Sep	25.6	36.9	44.4	56.5	69.2	85.5	86.1	66.0	67.6	66.5	67.2	120.0	170.6	151.2	126.3	113.9	111.8	114.9	138.1	125.4	125.8	144.2	149.9	124.9	99.5	170.6
13-Sep	120.0	112.9	123.3	129.3	130.9	135.4	135.5	137.5	130.4	117.1	105.1	100.2	103.4	92.9	94.0	88.2	73.7	64.6	69.1	67.9	56.2	32.4	16.7	10.1	93.6	137.5
14-Sep	16.1	16.7	15.7	15.9	19.5	22.9	24.2	26.2	34.6	33.3	31.4	25.7	25.1	28.0	24.3	23.1	18.9	18.4	24.5	21.1	19.7	17.6	16.0	15.6	22.3	34.6
15-Sep	14.7	16.4	10.6	6.3	5.7	5.0	5.1	3.9	3.1	3.6	4.2	5.1	4.4	4.4	3.9	4.1	4.5	4.5	4.4	5.2	8.5	11.8	12.3	12.0	6.8	16.4
16-Sep	11.6	11.4	10.8	9.4	7.8	6.1	5.1	4.3	3.8	3.8	4.5	4.2	4.0	C	C	3.0	2.9	2.6	2.8	3.0	3.7	4.1	5.2	5.1	5.4	11.6
17-Sep	4.0	3.6	3.7	3.5	3.2	3.1	3.0	3.3	4.0	4.3	3.3	2.6	2.4	2.9	4.2	3.9	3.8	3.5	3.6	3.6	3.2	3.1	3.1	3.1	3.4	4.3
18-Sep	3.1	3.2	3.2	3.3	3.2	3.3	3.6	3.5	4.2	5.1	5.4	5.1	7.4	15.1	14.7	11.2	8.5	4.5	4.0	4.3	4.8	5.6	6.0	5.1	5.7	15.1
19-Sep	4.5	4.7	5.2	4.6	4.5	4.6	6.2	11.3	46.7	14.9	5.4	5.0	5.1	5.0	5.5	5.9	7.2	7.6	6.8	7.9	7.5	8.3	5.4	5.0	8.1	46.7
20-Sep	4.3	4.0	4.1	4.2	4.1	4.2	4.6	4.9	5.0	5.0	5.6	6.6	6.6	7.5	6.5	5.4	4.7	5.6	6.2	6.3	7.1	9.7	8.0	6.4	5.7	9.7
21-Sep	4.5	3.5	2.8	2.8	2.6	2.5	2.7	3.3	1.9	2.3	1.3	1.6	3.3	4.3	7.9	6.7	5.5	5.4	4.3	4.3	4.1	4.0	3.5	3.1	3.7	7.9
22-Sep	3.5	3.8	3.9	4.0	4.0	4.1	4.1	4.0	4.1	4.0	3.5	3.3	3.1	3.8	4.5	4.5	3.2	3.2	3.4	3.7	3.7	3.6	4.3	4.3	3.8	4.5
23-Sep	4.2	4.2	5.0	5.6	4.4	4.1	4.1	3.7	3.8	5.3	5.0	4.8	4.6	5.7	5.6	5.9	8.4	6.4	3.5	2.7	2.6	2.0	1.8	2.2	4.4	8.4
24-Sep	2.8	3.3	3.1	3.4	4.4	6.2	6.1	6.5	3.3	2.1	1.5	1.4	1.7	2.9	3.0	2.9	3.3	4.3	3.6	3.6	3.8	3.3	2.9	2.6	3.4	6.5
25-Sep	2.6	1.7	1.4	1.2	1.2	1.1	1.0	1.2	1.5	1.3	1.5	1.7	2.6	3.3	2.8	2.8	3.5	4.1	3.6	4.0	4.1	4.3	3.8	3.0	2.5	4.3
26-Sep	3.0	2.7	2.6	2.8	4.6	7.0	7.7	7.3	6.4	7.7	8.6	7.6	6.1	4.2	3.8	3.6	3.6	3.2	3.0	2.8	2.9	3.0	3.6	3.9	4.7	8.6
27-Sep	5.4	5.7	3.6	3.0	2.1	1.9	1.6	1.4	1.4	1.5	1.7	1.4	1.5	2.1	2.8	3.3	2.4	1.6	1.5	1.5	1.5	1.5	2.4	2.9	2.3	5.7
28-Sep	2.6	3.0	1.0	0.8	0.4	0.5	1.3	1.7	1.4	1.1	1.0	1.2	1.0	1.1	1.3	2.0	2.5	2.7	2.8	3.3	3.5	2.4	1.8	1.5	1.8	3.5
29-Sep	1.4	1.4	1.3	1.3	1.1	1.1	1.1	1.1	1.6	1.5	1.7	1.8	2.2	2.1	3.5	4.1	3.9	3.7	4.5	4.9	5.7	5.0	4.7	4.6	2.7	5.7
30-Sep	3.9	3.1	3.2	3.1	3.1	2.9	3.4	4.1	7.8	14.0	22.8	16.7	10.0	5.1	4.5	4.2	6.5	6.5	5.8	4.3	4.7	5.3	5.1	5.3	6.5	22.8
	15.4	15.3	15.0	15.2	15.8	16.6	16.4	15.2	15.5	13.6	14.1	16.3	20.9	20.7	18.7	16.0	14.8	14.3	15.3	15.4	17.3	16.5	16.1	14.9	Diurnal Average	
	120.0	112.9	123.3	129.3	130.9	135.4	135.5	137.5	130.4	117.1	105.1	120.0	170.6	151.2	126.3	113.9	111.8	114.9	138.1	125.4	125.8	144.2	149.9	124.9	Diurnal Maximum	

C - Calibration DF - DAS Failure

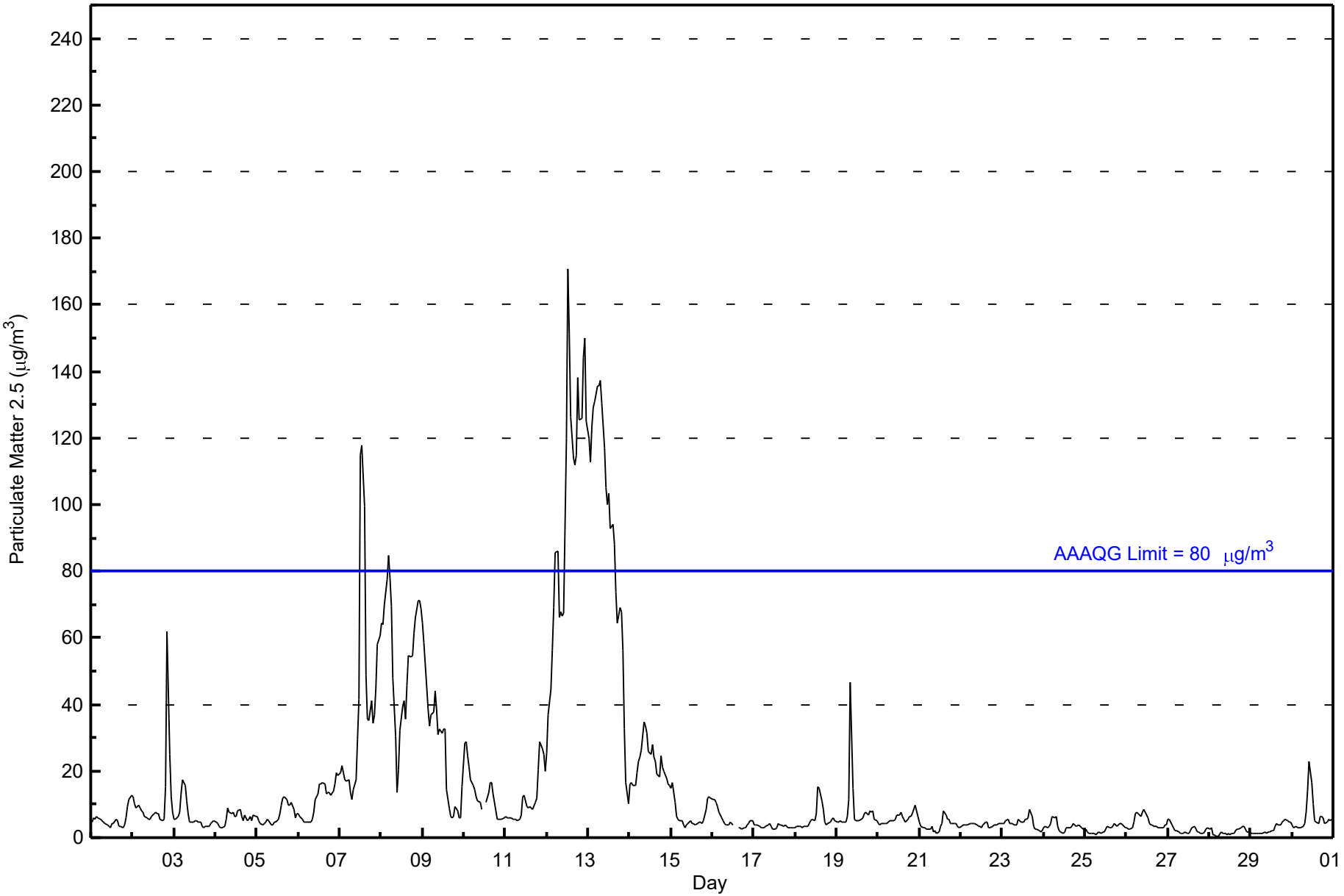
Alberta Ambient Air Quality Guideline/Objectives: 1-hr 80 $\mu g/m^3$ 24-hr 29 $\mu g/m^3$

Wood Buffalo Environmental Association

Hourly Averages

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

Wapasu - September 2024



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

Wapasu - September 2024

Concentration Ranges ($\mu g/m^3$)	Number of Hours	%	Cumulative %
0 - 5	371	51.82	51.82
6 - 15	188	26.26	78.07
16 - 25	49	6.84	84.92
26 - 80	73	10.20	95.11
> 81.0	35	4.89	100.00

Total Number of Valid Hours: 716

Total Number of Hours: 720

Wood Buffalo Environmental Association

Frequency Distribution

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

Wapasu - September 2024

Concentration Ranges ($\mu g/m^3$)	Wind Direction																
	N	NNE	NE	ENE	E	ESE	SE	SSE	S	SSW	SW	WSW	W	WNW	NW	NNW	**Totals**
0 - 5	18	19	7	9	7	18	39	59	44	33	34	30	21	12	7	14	371
6 - 15	15	2	3	5	8	6	3	40	14	9	18	19	11	18	5	12	188
16 - 25	1	1	0	1	2	1	8	3	6	2	5	7	6	0	3	3	49
26 - 80	6	2	0	0	2	5	9	12	7	10	4	5	3	0	2	6	73
> 81.0	5	5	2	3	6	3	3	1	0	2	1	0	0	0	0	4	35
Totals	45	29	12	18	25	33	62	115	71	56	62	61	41	30	17	39	716

Total Number of Valid Hours: 716

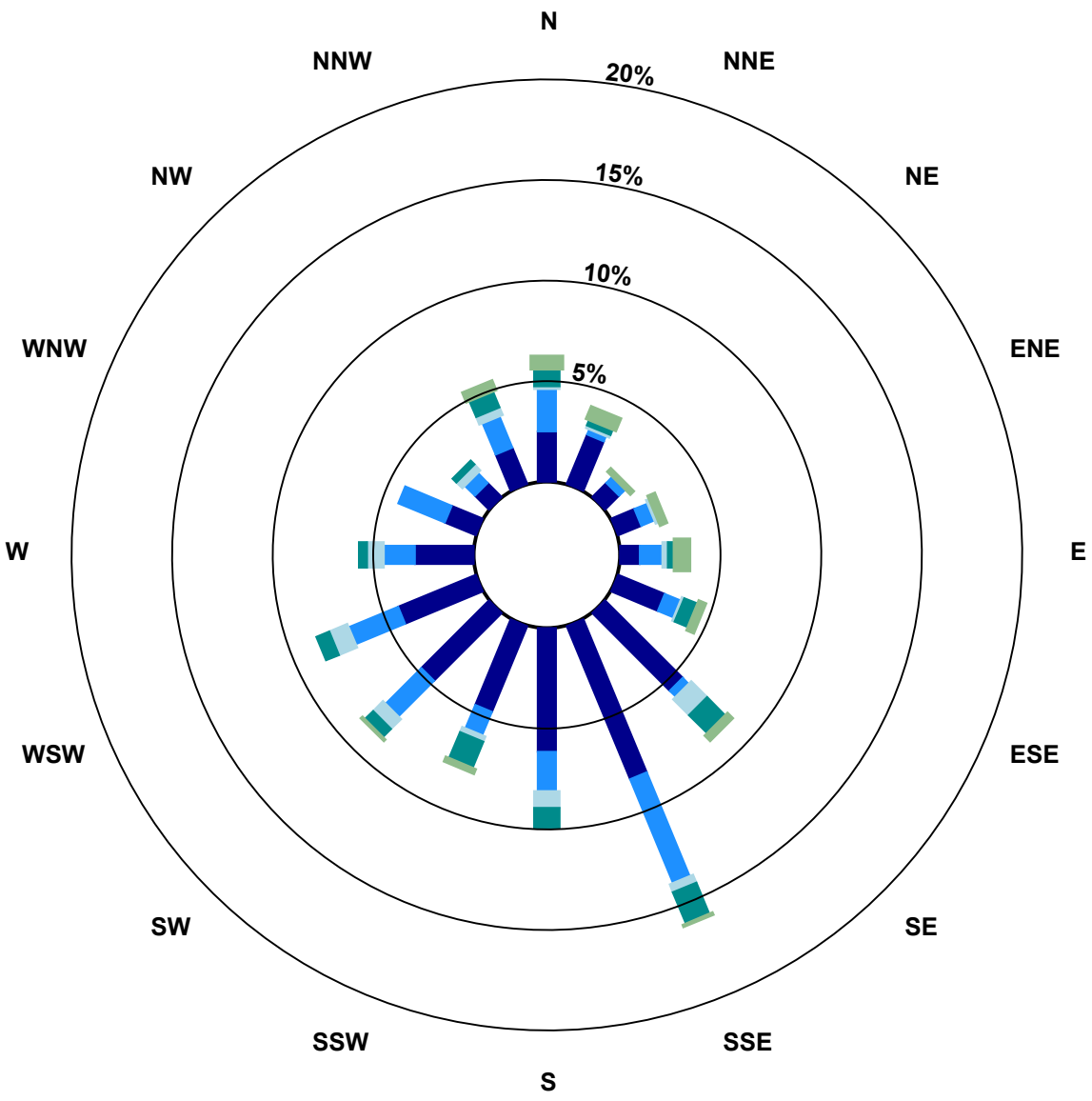
Total Number of Hours: 720

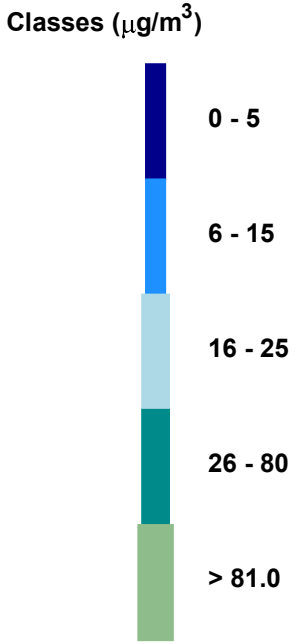
Wood Buffalo Environmental Association

Wind Rose Sep 2024

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

Wapasu





Total Number of Valid Hours: 716

Maximum Value: 29.3 C on Sep 2 16:00

Maximum Daily Average: 20.8 C on Sep 2

Minimum Value: -2.7 C on Sep 30 06:00

Minimum Daily Average: 4.5 C on Sep 30

Maximum Diurnal Average: 17.4 C at hour 16

Minimum Diurnal Average: 7.8 C at hour 6

Monthly Average: 12.06 C

Percentiles: P_1 = -1.6 P_{10} = 4.9 Q_1 = 8.5 Median = 11.6 Q_3 = 15.3 P_{90} = 19.3 P_{99} = 27.6

Hours in Service:	720
Hours of Data:	720
Hours of Missing Data:	0
Hours of Calibration:	0
Percent Operational Time:	100.0

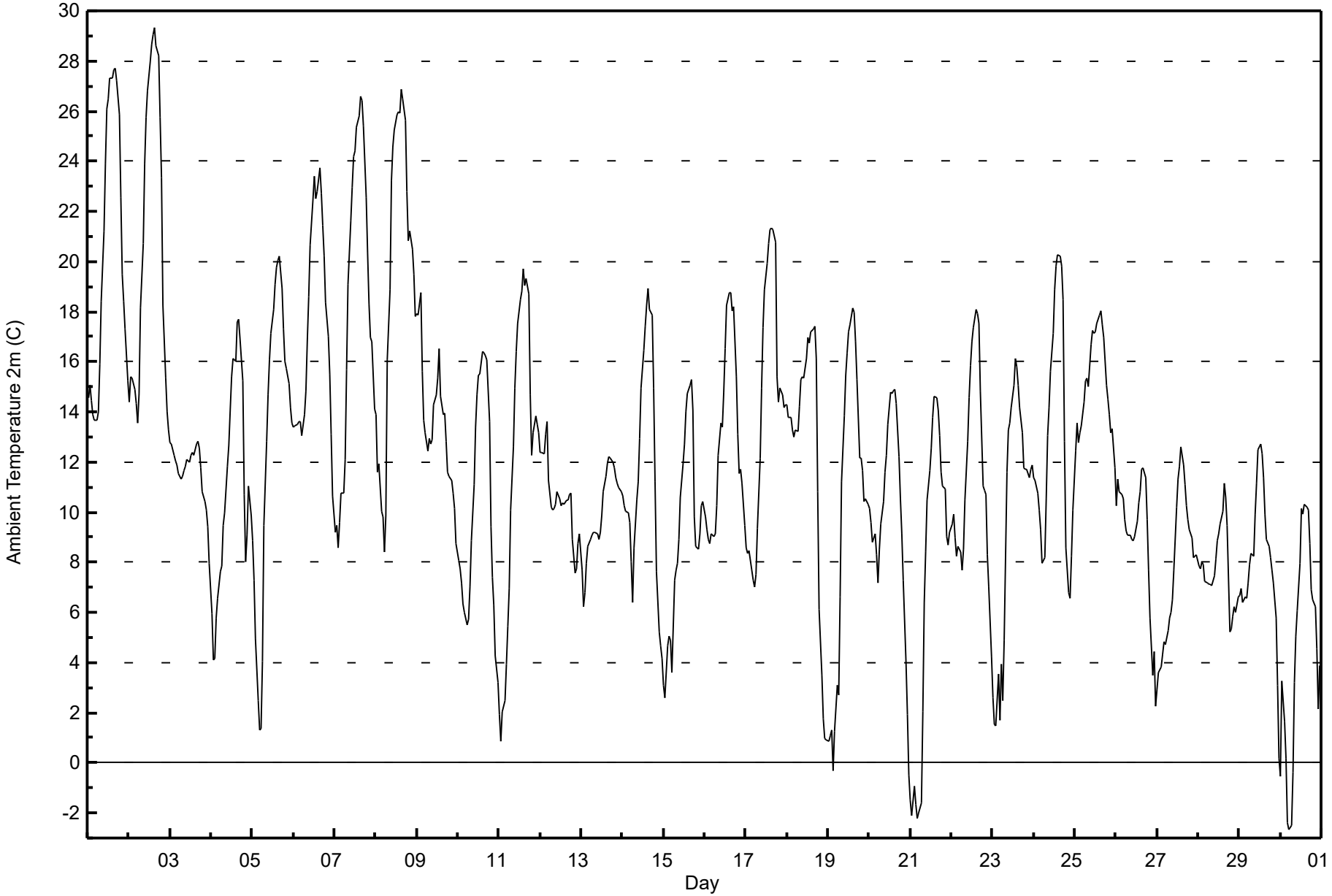
Day	Hourly Period Ending At (MST)																								Daily	Daily
	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24	Average	Maximum
1-Sep	14.6	15.1	14.5	13.9	13.7	13.7	14.0	15.9	18.4	21.2	23.9	26.1	26.5	27.3	27.3	27.6	27.7	27.2	25.9	22.5	19.5	18.4	17.3	15.2	20.3	27.7
2-Sep	14.4	15.4	15.3	14.9	14.3	13.5	14.7	18.2	20.7	23.9	25.7	26.8	28.0	28.7	29.1	29.3	28.6	28.2	25.7	23.3	18.2	15.3	14.0	13.3	20.8	29.3
3-Sep	12.8	12.7	12.3	12.1	11.9	11.5	11.3	11.5	11.7	11.8	12.1	12.0	12.3	12.4	12.3	12.7	12.8	12.5	11.8	10.8	10.4	10.1	9.4	8.0	11.6	12.8
4-Sep	6.0	4.1	4.1	5.8	6.6	7.6	7.8	9.5	10.0	11.8	12.7	14.0	15.4	16.1	16.0	17.6	17.7	16.9	15.2	10.7	8.0	9.1	11.1	9.9	11.0	17.7
5-Sep	8.9	7.3	4.9	2.5	1.3	1.3	4.0	9.5	12.9	14.7	16.1	17.2	18.1	19.1	19.7	20.0	20.2	18.9	17.3	16.0	15.8	15.1	14.2	13.5	12.9	20.2
6-Sep	13.4	13.4	13.5	13.6	13.6	13.1	13.9	14.8	16.8	18.6	20.6	22.5	23.4	22.5	22.8	23.7	22.7	21.4	20.2	18.4	17.0	15.5	13.1	10.7	17.5	23.7
7-Sep	9.2	9.5	8.6	9.6	10.8	10.8	12.1	15.7	19.1	21.6	22.9	24.2	24.4	25.3	25.8	26.6	26.4	25.4	22.6	20.3	18.3	17.0	16.8	14.1	18.2	26.6
8-Sep	13.9	11.6	12.0	10.0	9.8	8.4	9.9	16.1	18.9	23.2	24.6	25.2	25.9	26.0	25.9	26.8	26.5	25.6	22.8	20.8	21.2	20.5	19.5	17.8	19.3	26.8
9-Sep	17.9	17.9	18.8	15.6	13.7	13.2	12.4	13.0	12.7	12.9	14.3	14.7	15.3	16.5	14.6	13.9	14.0	12.8	11.6	11.4	11.2	10.8	10.1	8.8	13.7	18.8
10-Sep	8.1	7.7	7.2	6.4	6.0	5.5	5.7	7.0	8.8	11.1	13.4	14.7	15.5	15.5	16.4	16.4	16.2	16.1	13.6	9.4	7.4	6.3	4.3	3.2	10.1	16.4
11-Sep	1.9	0.9	2.0	2.5	3.9	5.5	6.9	10.1	12.6	15.0	16.4	17.5	18.5	18.8	19.7	19.0	19.3	18.7	14.7	12.3	13.2	13.8	13.5	13.2	12.1	19.7
12-Sep	12.4	12.4	12.3	13.1	13.6	11.3	10.2	10.1	10.2	10.3	10.8	10.5	10.3	10.4	10.3	10.5	10.5	10.7	10.7	8.9	7.6	7.7	8.8	9.1	10.5	13.6
13-Sep	7.7	6.2	6.8	8.0	8.6	8.9	9.1	9.2	9.2	9.1	8.9	9.2	9.9	10.8	11.4	12.0	12.2	12.2	12.0	11.8	11.4	11.2	11.0	10.8	9.9	12.2
14-Sep	10.6	10.3	10.0	10.0	9.6	8.0	6.4	8.6	10.5	11.2	12.9	15.0	16.4	17.4	18.3	18.9	18.1	17.9	14.9	11.2	7.6	5.2	4.7	4.2	11.6	18.9
15-Sep	3.1	2.6	4.6	5.0	4.9	3.6	7.3	7.7	8.0	8.9	10.6	11.9	12.7	14.0	14.7	15.1	15.3	14.0	9.8	8.6	8.5	9.2	10.3	10.4	9.2	15.3
16-Sep	9.8	9.3	8.9	8.8	9.1	9.0	9.1	10.2	12.3	13.6	13.4	14.8	16.5	18.2	18.8	18.8	18.0	18.2	15.4	13.1	11.5	11.7	11.1	9.5	12.9	18.8
17-Sep	8.6	8.4	8.5	7.7	7.3	7.0	7.5	9.4	12.2	15.0	17.4	18.9	20.0	20.7	21.2	21.3	21.3	20.8	15.4	14.4	15.0	14.7	14.2	14.3	14.2	21.3
18-Sep	14.3	13.8	13.8	13.3	13.0	13.3	13.2	14.2	15.3	15.4	15.3	16.1	17.0	16.7	17.2	17.3	17.4	16.1	10.8	6.1	3.5	1.8	1.0	0.9	12.4	17.4
19-Sep	0.8	1.1	1.3	-0.3	1.2	3.1	2.7	6.6	11.2	13.8	15.4	16.4	17.2	17.5	18.1	18.0	16.8	15.3	12.1	12.2	11.6	10.5	10.5	10.3	10.1	18.1
20-Sep	10.1	9.6	8.8	9.1	8.3	7.2	8.5	9.6	10.4	11.6	12.3	13.5	14.8	14.7	14.8	14.9	14.3	12.2	10.6	9.2	7.3	4.0	1.9	-0.5	9.9	14.9
21-Sep	-1.5	-2.1	-0.9	-1.6	-2.2	-2.0	-1.6	2.0	6.4	8.4	10.5	11.6	12.5	13.8	14.6	14.6	14.0	13.1	11.6	11.0	10.9	9.0	8.7	9.2	7.1	14.6
22-Sep	9.5	9.9	9.0	8.2	8.6	8.4	7.7	8.5	10.5	12.9	14.5	15.8	16.8	17.4	18.1	17.9	17.5	14.9	11.1	10.9	10.7	8.3	7.0	4.2	11.6	18.1
23-Sep	2.6	1.5	1.5	3.5	1.7	3.9	2.5	4.9	11.6	13.3	13.5	14.2	15.1	16.2	15.8	15.1	14.2	13.2	11.8	11.7	11.7	11.4	11.7	11.9	9.8	16.2
24-Sep	11.4	11.2	10.7	10.1	9.3	7.9	8.2	10.5	13.1	14.2	15.6	17.1	18.9	19.8	20.2	20.2	19.8	18.5	12.9	8.6	6.8	6.6	8.2	10.1	12.9	20.2
25-Sep	12.4	13.6	12.8	13.2	13.4	14.4	15.3	15.4	15.0	16.7	17.2	17.1	17.2	17.5	17.9	18.0	17.4	17.0	15.1	14.5	13.9	13.2	13.3	11.8	15.1	18.0
26-Sep	10.2	11.3	10.8	10.7	10.5	9.7	9.2	9.1	9.1	8.9	8.9	9.0	9.6	10.3	10.8	11.7	11.8	11.4	9.7	7.7	5.8	3.5	4.5	2.2	9.0	11.8
27-Sep	2.9	3.6	3.8	4.3	4.8	4.7	5.3	5.8	6.0	6.5	7.7	10.2	11.3	11.8	12.6	11.9	11.1	10.3	9.7	9.3	9.0	8.2	8.2	8.3	7.8	12.6
28-Sep	7.8	7.7	8.0	7.9	7.2	7.2	7.1	7.1	7.1	7.5	8.1	8.9	9.2	9.5	10.1	11.2	10.6	9.5	5.2	5.3	5.8	6.3	6.0	6.6	7.8	11.2
29-Sep	6.7	7.0	6.4	6.6	6.6	7.2	7.9	8.4	8.2	9.9	11.2	12.5	12.7	12.3	11.4	9.9	8.9	8.6	8.2	7.7	7.2	5.8	3.1	0.2	8.1	12.7
30-Sep	-0.6	3.3	1.6	0.2	-2.4	-2.7	-2.5	-0.4	3.2	5.1	6.0	7.9	10.1	9.9	10.3	10.2	10.1	8.7	6.9	6.5	6.2	4.5	2.2	3.9	4.5	10.3
	8.7	8.5	8.4	8.1	8.0	7.8	8.2	9.9	11.7	13.3	14.4	15.5	16.4	16.9	17.2	17.4	17.1	16.2	13.8	12.2	11.1	10.1	9.7	8.8	Diurnal Average	
	17.9	17.9	18.8	15.6	14.3	14.4	15.3	18.2	20.7	23.9	25.7	26.8	28.0	28.7	29.1	29.3	28.6	28.2	25.9	23.3	21.2	20.5	19.5	17.8	Diurnal Maximum	

Wood Buffalo Environmental Association

Hourly Averages

Ambient Temperature 2m (AT2) - C

Wapasu - September 2024



Concentration Ranges (C)	Number of Hours	%	Cumulative %
-50 - -20	0	0.00	0.00
-20 - 0	14	1.94	1.94
0 - 10	249	34.58	36.53
10 - 20	392	54.44	90.97
> 20	65	9.03	100.00

Total Number of Valid Hours: 720

Total Number of Hours: 720

Wood Buffalo Environmental Association

Summary of Hour Averages

Relative Humidity 2m (RH2) - %

Wapasu - September 2024

Maximum Value: 100.0 % on Sep 5 06:00

Maximum Daily Average: 91.1 % on Sep 26

Minimum Value: 26.1 % on Sep 2 16:00

Minimum Daily Average: 52.3 % on Sep 1

Maximum Diurnal Average: 86.3 % at hour 6

Minimum Diurnal Average: 51.6 % at hour 16

Monthly Average: 71.52 %

Percentiles: P_1 = 32.4 P_{10} = 43.4 Q_1 = 56.7 Median = 72.6 Q_3 = 88.9 P_{90} = 97.1 P_{99} = 100.0

Hours in Service:	720
Hours of Data:	698
Hours of Missing Data:	22
Hours of Calibration:	0
Percent Operational Time:	96.9

Day	Hourly Period Ending At (MST)																								Daily	Daily
	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24	Average	Maximum
1-Sep	52.6	51.2	55.3	61.2	64.5	66.3	67.8	65.1	61.3	54.0	47.4	41.1	40.7	39.1	38.9	37.8	35.0	38.0	37.7	47.1	57.1	60.7	64.3	71.2	52.3	71.2
2-Sep	73.7	68.4	68.2	70.1	72.6	77.3	75.1	66.3	60.2	51.6	45.3	37.5	31.4	28.8	27.9	26.1	26.4	28.3	35.2	43.9	66.5	77.4	82.0	85.2	55.2	85.2
3-Sep	86.9	89.6	85.4	87.4	90.7	91.8	91.5	90.9	89.4	86.3	81.0	80.6	77.0	76.7	77.7	74.0	71.2	72.4	75.3	80.5	82.6	85.7	85.6	88.8	83.3	91.8
4-Sep	94.0	97.0	98.9	97.9	96.8	94.5	93.8	93.2	92.1	81.6	75.0	63.9	56.7	55.3	56.1	45.1	44.5	49.2	57.7	76.2	85.9	79.4	68.8	73.7	76.1	98.9
5-Sep	79.0	87.4	95.8	97.5	99.3	100.0	100.0	85.2	65.4	54.9	49.7	45.8	42.1	38.7	35.2	33.2	32.4	37.4	43.4	49.2	48.5	50.7	56.0	58.5	61.9	100.0
6-Sep	58.4	57.6	57.3	57.1	57.0	59.9	58.6	58.0	55.2	53.0	48.2	45.2	44.5	49.0	48.4	44.9	48.9	53.6	59.7	67.8	72.2	77.5	86.2	90.9	58.7	90.9
7-Sep	94.4	97.0	96.9	96.4	93.2	94.2	86.4	71.1	60.3	49.2	49.4	43.6	35.7	35.5	36.0	33.9	35.6	37.8	50.0	55.8	61.6	66.2	67.1	77.7	63.5	97.0
8-Sep	79.5	88.5	88.2	93.7	95.2	97.6	93.9	73.1	67.3	41.9	41.1	41.5	41.4	40.3	39.8	36.9	40.3	48.2	60.0	58.7	53.2	57.6	61.6	67.6	62.8	97.6
9-Sep	67.9	68.7	63.6	75.5	83.4	85.3	84.7	82.8	91.4	92.7	82.4	79.6	79.1	73.8	77.3	75.8	75.9	85.7	93.8	85.4	77.1	75.5	79.7	89.1	80.3	93.8
10-Sep	93.7	94.7	95.7	97.6	98.3	99.1	98.5	92.6	84.5	73.2	57.1	53.9	54.1	54.3	48.2	49.2	50.8	50.9	57.4	74.5	82.9	87.5	92.0	95.4	76.5	99.1
11-Sep	97.6	98.5	99.7	99.7	96.8	90.6	84.3	71.8	62.2	54.3	47.1	43.3	39.3	36.6	34.7	36.2	36.7	39.1	56.9	65.1	60.1	55.8	54.3	54.0	63.1	99.7
12-Sep	57.6	58.8	60.9	58.4	59.0	83.3	95.0	96.6	96.5	93.0	89.4	91.3	95.4	97.1	96.4	94.2	90.5	90.1	91.1	97.1	99.5	100.0	OR	OR	85.9	100.0
13-Sep	100.0	100.0	OR	OR	OR	OR	OR	OR	OR	OR	OR	OR	OR	98.4	94.4	90.9	89.9	89.6	90.2	93.0	96.9	98.8	98.4	97.5	--	100.0
14-Sep	98.1	100.0	OR	99.7	98.1	99.0	99.9	97.6	89.6	85.9	77.2	63.8	55.1	51.9	50.0	48.8	47.3	50.3	62.6	75.9	86.8	92.8	95.2	96.7	79.2	100.0
15-Sep	97.6	99.0	100.0	100.0	OR	OR	OR	OR	OR	OR	79.6	71.1	65.9	58.6	55.1	54.0	54.0	61.9	82.8	86.9	84.5	80.5	77.0	78.1	77.0	100.0
16-Sep	81.3	83.9	86.2	87.7	86.1	86.2	84.9	78.6	67.4	62.5	63.3	59.0	52.9	46.0	43.4	43.8	45.4	45.0	55.1	64.4	71.4	70.5	72.7	80.0	67.4	87.7
17-Sep	83.4	84.9	85.0	88.6	90.7	92.2	90.7	83.2	73.6	63.8	53.8	45.6	41.5	39.0	38.6	38.6	39.6	43.3	66.7	68.0	63.7	63.4	64.9	64.1	65.3	92.2
18-Sep	64.7	66.7	66.3	68.1	67.7	65.4	65.2	63.4	61.4	63.9	69.0	68.7	65.7	62.9	52.2	46.9	42.5	42.7	64.5	81.6	88.3	89.7	92.5	94.3	67.3	94.3
19-Sep	93.9	96.2	98.7	99.0	98.2	91.8	97.1	81.0	62.8	48.4	41.7	38.9	36.2	34.6	32.9	32.3	40.9	57.7	72.6	68.6	70.6	72.8	66.7	64.1	66.6	99.0
20-Sep	62.7	65.6	70.8	69.4	72.1	76.1	68.0	66.6	66.9	64.2	61.0	56.2	47.8	47.4	43.8	41.4	40.1	52.9	58.4	65.0	72.4	82.1	87.4	92.7	63.8	92.7
21-Sep	95.6	97.2	96.5	97.5	98.2	98.0	98.6	96.3	89.2	78.2	62.6	58.0	56.4	52.3	50.9	49.0	52.1	58.7	64.2	65.5	67.2	88.6	87.2	78.9	76.5	98.6
22-Sep	74.5	70.7	73.4	75.9	75.8	77.8	81.3	77.5	70.7	61.9	55.4	51.3	48.3	47.9	45.3	44.8	45.1	56.9	73.0	71.9	72.5	80.3	83.9	91.8	67.0	91.8
23-Sep	94.9	96.7	98.1	99.9	99.9	100.0	100.0	96.4	75.8	69.8	68.0	64.4	58.7	54.8	54.9	61.2	73.7	80.2	92.8	96.9	98.3	99.5	99.7	99.1	84.7	100.0
24-Sep	99.0	98.2	99.0	99.3	99.5	100.0	OR	OR	91.2	86.1	80.3	72.1	60.8	48.1	42.6	40.3	39.9	43.2	64.3	80.0	86.2	85.8	77.7	68.6	75.6	100.0
25-Sep	62.1	58.6	59.7	59.3	58.8	54.7	51.8	54.2	57.2	53.9	54.3	56.5	59.1	59.6	60.2	61.3	65.1	67.1	74.6	78.0	82.3	87.0	87.4	91.1	64.7	91.1
26-Sep	97.3	95.7	96.2	95.5	94.8	97.5	99.0	100.0	100.0	100.0	100.0	99.1	96.9	88.9	82.8	72.8	71.0	75.2	75.5	78.2	86.1	95.3	91.2	97.5	91.1	100.0
27-Sep	98.4	95.4	90.4	88.5	83.2	81.6	76.0	76.8	83.6	85.4	82.1	69.3	64.1	60.9	56.6	64.7	70.5	75.0	78.1	79.2	81.5	93.9	92.2	90.3	79.9	98.4
28-Sep	87.8	84.0	79.7	81.4	89.0	90.0	94.1	92.7	86.3	84.4	80.2	75.3	72.0	66.7	64.6	58.3	62.1	69.5	88.3	87.6	82.8	78.1	76.8	74.9	79.4	94.1
29-Sep	77.0	76.2	80.1	77.8	75.4	69.7	68.1	67.9	71.5	66.0	65.3	59.9	58.4	55.3	65.7	75.9	80.7	79.7	77.2	80.4	81.0	85.5	91.2	95.1	74.2	95.1
30-Sep	96.9	81.6	84.8	87.7	94.9	97.5	97.1	90.5	77.3	67.7	61.7	54.8	45.7	41.5	39.0	37.2	36.2	38.9	46.4	48.6	50.3	57.8	66.2	58.3	64.9	97.5
	83.4	83.6	83.2	85.1	85.3	86.3	85.2	80.3	75.4	68.8	64.4	59.7	56.0	54.7	53.0	51.6	52.8	57.3	66.9	72.4	75.7	79.2	79.5	81.6	Diurnal Average	
	100.0	100.0	100.0	100.0	99.9	100.0	100.0	100.0	100.0	100.0	100.0	99.1	96.9	98.4	96.4	94.2	90.5	90.1	93.8	97.1	99.5	100.0	99.7	99.1	Diurnal Maximum	

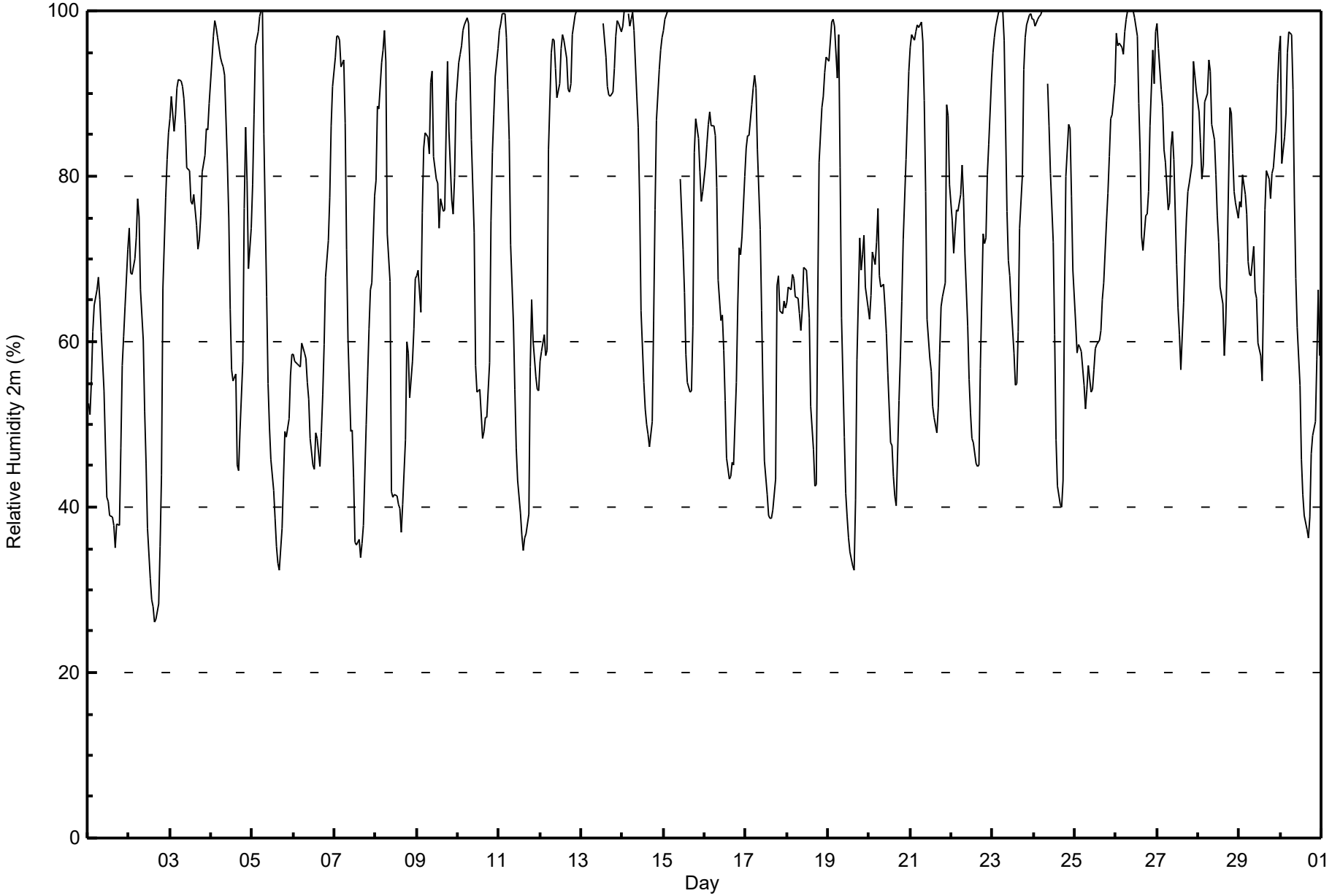
OR - Out of Range

Wood Buffalo Environmental Association

Hourly Averages

Relative Humidity 2m (RH2) - %

Wapasu - September 2024



Concentration Ranges (%)	Number of Hours	%	Cumulative %
0 - 20	0	0.00	0.00
20 - 40	47	6.73	6.73
40 - 60	170	24.36	31.09
60 - 80	209	29.94	61.03
80 - 100	257	36.82	97.85

Total Number of Valid Hours: 698

Total Number of Hours: 720

Wood Buffalo Environmental Association

Summary of Hour Averages

Precipitation (PC) - mm

Wapasu - September 2024

Maximum Value: 2.0 mm on Sep 12 08:00

Maximum Daily Total: 7.6 mm on Sep 26

Minimum Value: 0.0 mm on Sep 1 01:00

Minimum Daily Total: 0.0 mm on Sep 1

Maximum Diurnal Total: 2.6 mm at hour 8

Minimum Diurnal Total: 0.0 mm at hour 1

Monthly Total: 16.76 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} = 1.0

Hours in Service:	720
Hours of Data:	720
Hours of Missing Data:	0
Hours of Calibration:	0
Percent Operational Time:	100.0

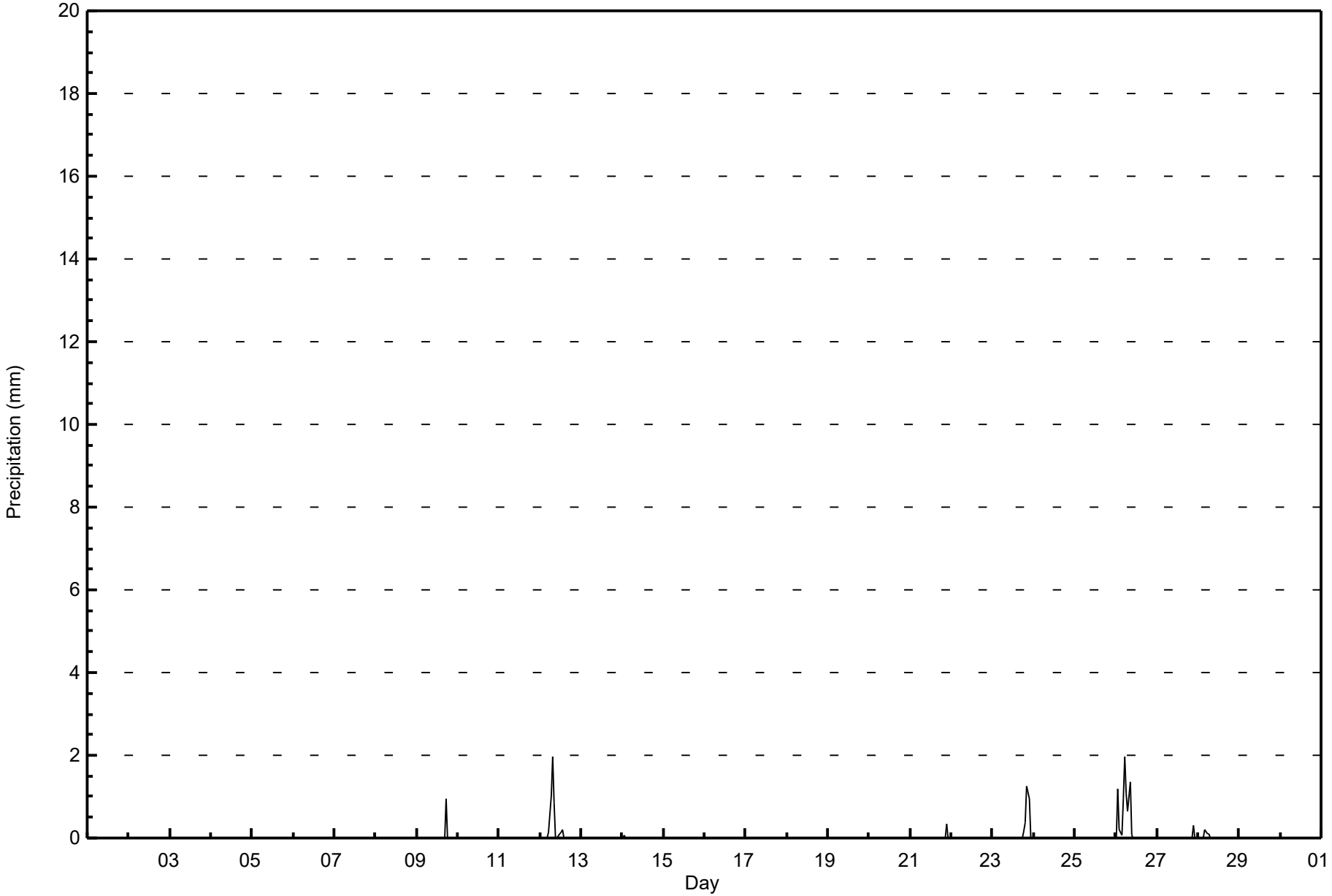
Day	Hourly Period Ending At (MST)																								Daily	Daily
	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24	Average	Maximum
1-Sep	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
2-Sep	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	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-Sep	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	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-Sep	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	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-Sep	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	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-Sep	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	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-Sep	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	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-Sep	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	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-Sep	0.0	0.0	0.0	0.0	0.0	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	1.0	1.0
10-Sep	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	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-Sep	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	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-Sep	0.0	0.0	0.0	0.0	0.0	0.2	1.0	2.0	0.8	0.0	0.0	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	4.4	2.0
13-Sep	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	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-Sep	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	0.1	0.1
15-Sep	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	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-Sep	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	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-Sep	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	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-Sep	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	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-Sep	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	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-Sep	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	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-Sep	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	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	0.3	0.3
22-Sep	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	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-Sep	0.0	0.0	0.0	0.0	0.0	0.0	0.0	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	1.3	1.0	0.0	0.0	2.8	1.3
24-Sep	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	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-Sep	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	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-Sep	0.0	1.2	0.2	0.1	0.9	2.0	1.1	0.6	1.4	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	7.6	2.0
27-Sep	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	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	0.3	0.3
28-Sep	0.0	0.0	0.0	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	0.0	0.4	0.2
29-Sep	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	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-Sep	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	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	0.2	0.1	1.1	2.2	2.2	2.6	2.2	0.1	0.0	0.1	0.1	0.2	0.0	0.0	0.0	1.0	0.2	0.4	1.3	1.6	0.0	0.0	Diurnal Average	
	0.0	1.2	0.2	0.1	0.9	2.0	1.1	2.0	1.4	0.1	0.0	0.1	0.1	0.2	0.0	0.0	0.0	1.0	0.2	0.4	1.3	1.0	0.0	0.0	Diurnal Maximum	

Wood Buffalo Environmental Association

Hourly Averages

Precipitation (PC) - mm

Wapasu - September 2024



Wood Buffalo Environmental Association

Summary of Hour Averages

Wind Speed 10m (WS10) - km/h

Wapasu - September 2024

Maximum Speed: 18 km/h on Sep 25 10:00

Maximum Daily Speed Average: 9.9 km/h on Sep 6

Minimum Speed Value: 0 km/h on Sep 11 16:00

Minimum Daily Speed Average: 1.5 km/h on Sep 19

Maximum Diurnal Speed Average: 6.3 km/h at hour 13

Minimum Diurnal Speed Average: 1.4 km/h at hour 19

Monthly Average Velocity: 2.8 km/h 204.3 deg

Percentiles: P_1 = 2 P_{10} = 4 Q_1 = 5 Median = 7 Q_3 = 10 P_{90} = 12 P_{99} = 17

Hours in Service: 720

Hours of Data: 720

Hours of Missing Data: 0

Percent Operational Time: 100.0

Day	Hourly Period Ending At (MST)																								Daily	Daily
	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24	Average	Maximum
1-Sep	SSE15	SSE14	SSE12	SSE10	SSE10	SSE10	SSE11	S11	S10	S12	S12	SSW15	SW18	SW17	WSW15	WSW12	W13	WSW10	WSW8	SSW5	S5	S6	SSE6	SSE6	SSW9.0	SW18
2-Sep	SSE7	SSE7	SSE7	SSE7	SSE7	SSE7	SSE8	S8	S8	SSW8	SW9	SW11	SW11	WSW14	WSW14	SW14	WSW13	WSW13	WSW8	NW11	N15	N15	N12	N13	SW4.0	N15
3-Sep	N10	N10	N9	N7	NNW9	NNW8	NNW7	NNW9	N10	N11	NNW11	N11	N10	N8	N8	NNE7	N7	NNE6	NNE4	NNE3	NNE4	N5	NNW4	N5	N7.5	NNW11
4-Sep	NNE2	ESE2	SSE5	SSE3	S3	SSW4	SW6	SW8	WSW6	W10	WNW10	WNW11	NW13	NW9	WNW8	WNW11	NNW7	W4	WSW4	WSW4	S3	SW6	WSW7	WSW3	W4.1	WNW13
5-Sep	NNE6	ENE5	ENE4	SSE3	SSE5	SE6	SSE6	SSE5	S6	S6	SSW5	SW6	SSW6	SW8	SW8	SSW10	SSW9	SSE8	SSE11	SSE14	SSE16	SSE18	SSE17	SSE17	SSE7.0	SSE18
6-Sep	SSE17	SSE15	SSE16	S16	S16	S14	S14	S13	SSW13	SW12	SW14	SW14	SW13	SSW9	SSW8	SW10	S8	S8	S6	S6	S6	S5	S4	ESE3	S9.9	SSE17
7-Sep	SE5	SE6	SSE5	S5	SSE8	SSE6	SSE7	SSE6	S10	S11	S12	SSW12	SSW14	SSW12	SW13	SW13	SW14	SW12	S7	SSW7	S7	S6	SSW6	SSW5	SSW7.6	SSW14
8-Sep	SSE5	SSE6	SSE6	SSE7	SE5	SSE5	SSE7	SE5	SE3	SSE8	S9	SSW11	S10	S8	SSW6	SSW8	SSE4	E3	ESE5	ESE7	SE11	SSE11	S4	SW6	SSE5.7	SSE11
9-Sep	SSW3	S6	SSE3	N4	E3	NNE4	NNE4	N6	N10	NNW11	N11	NNW7	NW7	W8	W13	W10	WSW12	WSW8	WSW13	W13	WNW13	WNW12	WSW9	WSW9	WNW5.2	W13
10-Sep	WSW11	WSW10	WSW9	SW9	WSW9	SW9	SW9	SW10	WSW11	WSW10	W10	W11	W10	WNW7	WSW12	WSW11	WSW10	WNW7	NNW2	NE5	E5	E5	ESE5	E5	WSW6.0	WSW12
11-Sep	E5	E5	ESE4	ESE5	ESE6	SE7	SE8	SE8	SE9	SE7	SSW5	SSW3	SW5	S4	ESE6	NNW0	NE6	NE5	ESE3	SE6	SE9	SE10	SE11	SE12	SE5.1	SE12
12-Sep	SE10	SE9	SE8	SSE11	SSE14	SSE12	SE8	SE8	E7	ESE7	ESE10	E9	E7	E5	ESE8	ESE8	ESE10	SE6	NNW2	NNW2	ENE4	E4	E3	E5	ESE6.3	SSE14
13-Sep	ENE3	ENE3	NE4	NNE4	NNE4	NE6	NNE6	NNE5	NNE5	N5	N7	N8	N8	N5	NNW7	NNW7	N8	NNW10	NNW9	NNW8	NNW8	NW7	NNW8	NNW8	N5.8	NNW10
14-Sep	NW6	NW6	W5	W4	W4	WSW3	S3	SSW4	WSW7	WSW9	WSW8	W8	W10	W10	W10	WSW11	W8	NW4	NNE5	ENE4	E4	SE4	SE4	SE2	W3.8	WSW11
15-Sep	ESE3	E4	ENE5	ENE4	ENE5	ENE4	NNE6	NNE6	NNE6	NNE7	N8	NNW8	NW7	N6	NNW4	NNW1	NNW1	NNE1	ESE3	SE5	SSE6	SSE8	SSE9	SSE10	NE1.9	SSE10
16-Sep	SSE9	SSE8	SSE8	SSE10	SSE10	SSE9	S10	S9	SSW12	SW13	SSW12	SSW12	SW17	WSW16	WSW14	WSW11	WSW10	WSW9	SW5	S5	SSE5	S6	S6	SSE6	SSW8.1	SW17
17-Sep	SSE6	SSE6	SSE6	SSE7	SSE7	SSE7	SSE7	S8	S9	SSW10	SSW9	SW9	SW10	SW9	SW6	SW6	S6	S4	ESE3	SE7	SE9	SE10	SSE11	SSE11	S6.5	SSE11
18-Sep	SSE12	SSE12	SSE12	SSE9	SSE9	SSE11	S9	S9	SW10	SW11	W6	NW8	WNW11	WNW9	WNW10	NW11	WNW8	NNW7	NE2	ESE2	ESE3	ESE4	E4	SE4	SSW3.2	SSE12
19-Sep	SE5	SSE5	SSE6	SE6	SSE7	SSE5	SSE6	SSE5	SSE4	SW5	WSW5	W4	WNW6	W6	NNW6	WNW4	WNW2	E1	E3	NW3	ENE3	E4	ESE5	ESE5	SSE1.5	SSE7
20-Sep	ESE5	ESE4	ESE4	ESE4	NE4	NE4	NE6	NE6	NNE7	N8	N9	N11	N13	N14	NNW17	N15	N14	NNW11	NNW8	NNW9	N6	N4	N4	NNE3	N6.6	NNW17
21-Sep	ENE2	SE3	SE2	SE3	SE3	SE3	SSE3	ESE3	SE2	S4	SSW9	SSW9	SSW10	S10	S9	SSW9	S6	SSE8	SE9	SSE11	S10	SSE7	SE10	SE11	SSE5.9	SE11
22-Sep	SE11	SE12	SE11	SSE10	SSE10	SSE8	SSE7	SSE7	S7	S7	SW7	WSW7	W8	WSW7	NW6	N5	N4	NNE4	ENE4	ENE3	E4	E3	S4	ESE3	SSE3.4	SE12
23-Sep	E3	E4	ENE4	ENE5	ENE4	NE6	ENE4	E2	NE2	WNW4	NW5	W6	WSW8	SW7	WSW8	SW8	SSW6	SSW8	S7	SSW8	SSW8	S8	S8	SSW8	SSW2.7	SSW8
24-Sep	SSW8	SW9	SW8	SSW6	S5	SSE6	S6	SW9	SW11	WSW11	W13	W11	W14	WNW16	WNW17	WNW14	WNW11	NW6	SSE1	SE4	SSE5	SE5	SE7	SE8	WSW5.5	WNW17
25-Sep	SE10	SE10	SSE10	SE10	SE10	SE11	SE15	SE14	SE15	SSE18	SSE17	SSE12	SSW8	SSW7	S7	SSE7	SSW7	SSW7	S6	SSW7	SSW5	S5	SW5	SSW3	SSE8.5	SSE18
26-Sep	S4	SW4	NNW6	NNE5	NNE7	N8	NNW5	NW6	W3	W8	W6	WSW9	W8	W10	W11	W7	SW6	SSW5	W8	WSW5	SSW5	S4	SSW6	SSE5	W3.8	W11
27-Sep	SSE7	SSE6	SSE6	SSE7	SSE5	SSE6	S7	S8	SW10	SW7	SW5	SW8	SW11	SW10	SW10	SW9	SSW9	S7	S7	S7	S8	SSW8	SSW9	SW11	SSW6.8	SW11
28-Sep	SW15	SW16	WSW15	WSW17	WSW16	W11	W6	W9	WSW10	WSW11	WSW11	WSW12	WSW13	WSW13	WSW11	WSW10	WNW4	SE1	SE4	SE6	SSE6	SSE7	SSE7	SSE6	WSW8.1	WSW17
29-Sep	SE6	ESE5	SE5	SE5	ESE5	SE7	SE8	E3	N5	NNE6	NNE8	NNE8	NNE9	N9	N13	NNW12	NNW12	NNW10	NNW7	NNW7	NNW6	NW2	WNW2	WSW2	NNE3.7	N13
30-Sep	W3	WNW5	W4	NW4	WNW2	SSW2	W3	S4	SW7	WSW9	SW11	WSW11	W12	W12	W14	WNW14	WNW14	WNW9	WNW6	W7	W6	WNW3	SW5	WSW8	W6.5	W14
	SSE4.1	SSE4.3	SSE3.9	SSE4.0	SSE4.1	SSE4.0	SSE4.0	S3.6	SSW3.4	SW4.2	WSW4.4	WSW5.1	WSW6.3	WSW6.1	W6.2	W5.6	W3.9	WSW2.3	SSW1.4	S1.6	SSE2.4	SSE3.1	S3.4	SSE3.3	Diurnal Average	
	SSE17	SW16	SSE16	WSW17	WSW16	S14	SE15	SE14	SE15	SSE18	SSE17	SSW15	SW18	SW17	NNW17	N15	WNW14	WSW13	WSW13	SSE14	SSE16	SSE18	SSE17	SSE17	Diurnal Maximum	

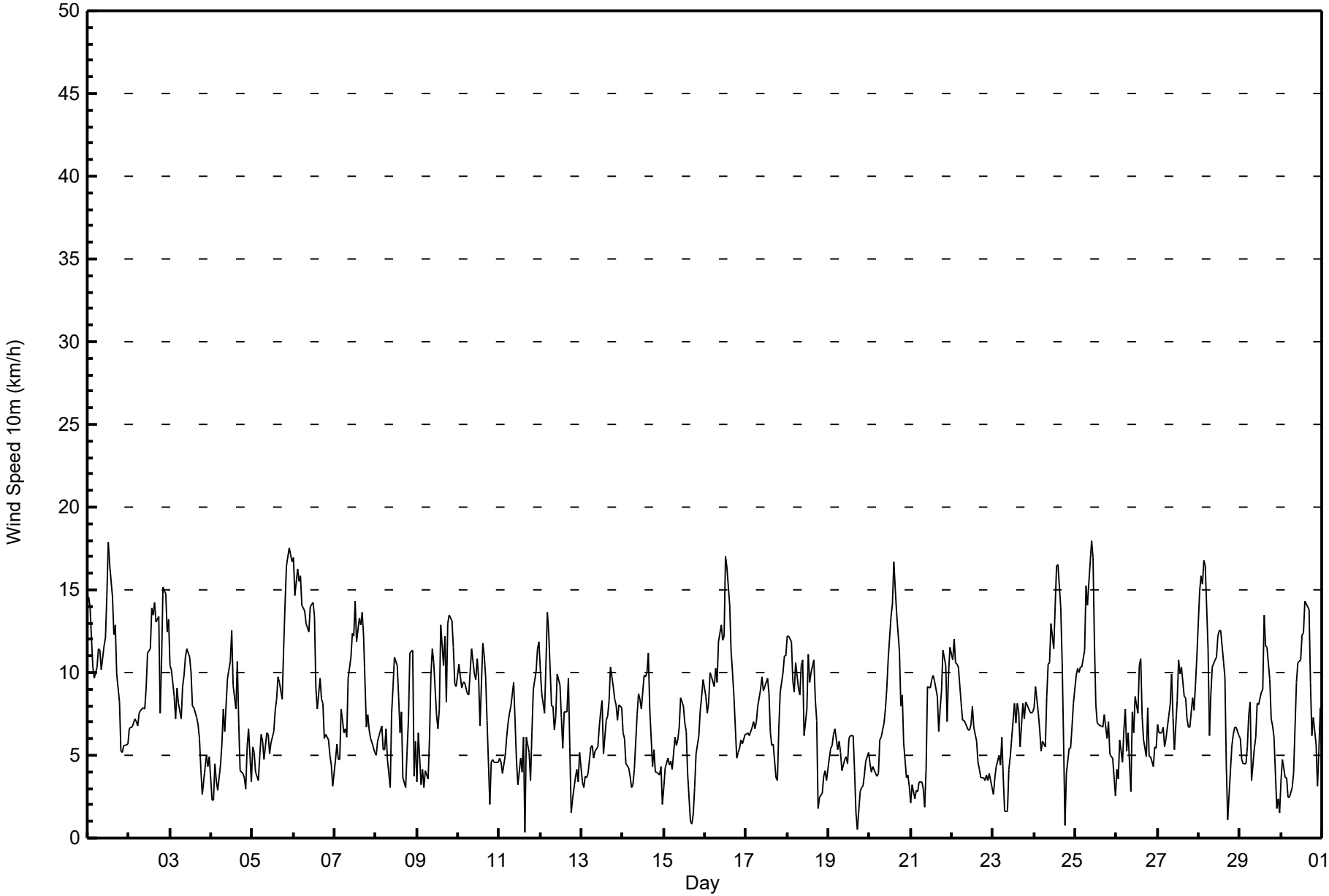
All monthly, daily, and diurnal averages have been calculated using vector methods

Wood Buffalo Environmental Association

Hourly Averages

Wind Speed 10m (WS10) - km/h

Wapasu - September 2024



Wind Speed Ranges (km/h)	Number of Hours	%	Cumulative %
0 - 5	214	29.72	29.72
6 - 11	406	56.39	86.11
12 - 19	100	13.89	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: 720

Total Number of Hours: 720

Wood Buffalo Environmental Association

Frequency Distribution

Wind Speed 10m (WS10) - km/h

Wapasu - September 2024

Wind Speed Ranges (km/h)	Wind Direction																
	N	NNE	NE	ENE	E	ESE	SE	SSE	S	SSW	SW	WSW	W	WNW	NW	NNW	**Totals**
0 - 5	10	15	7	18	23	23	22	20	17	14	7	7	9	8	5	9	214
6 - 11	26	14	5	0	2	10	35	76	47	33	40	38	27	14	12	27	406
12 - 19	9	0	0	0	0	0	5	19	7	9	15	18	7	8	0	3	100
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	45	29	12	18	25	33	62	115	71	56	62	63	43	30	17	39	720

Total Number of Valid Hours: 720

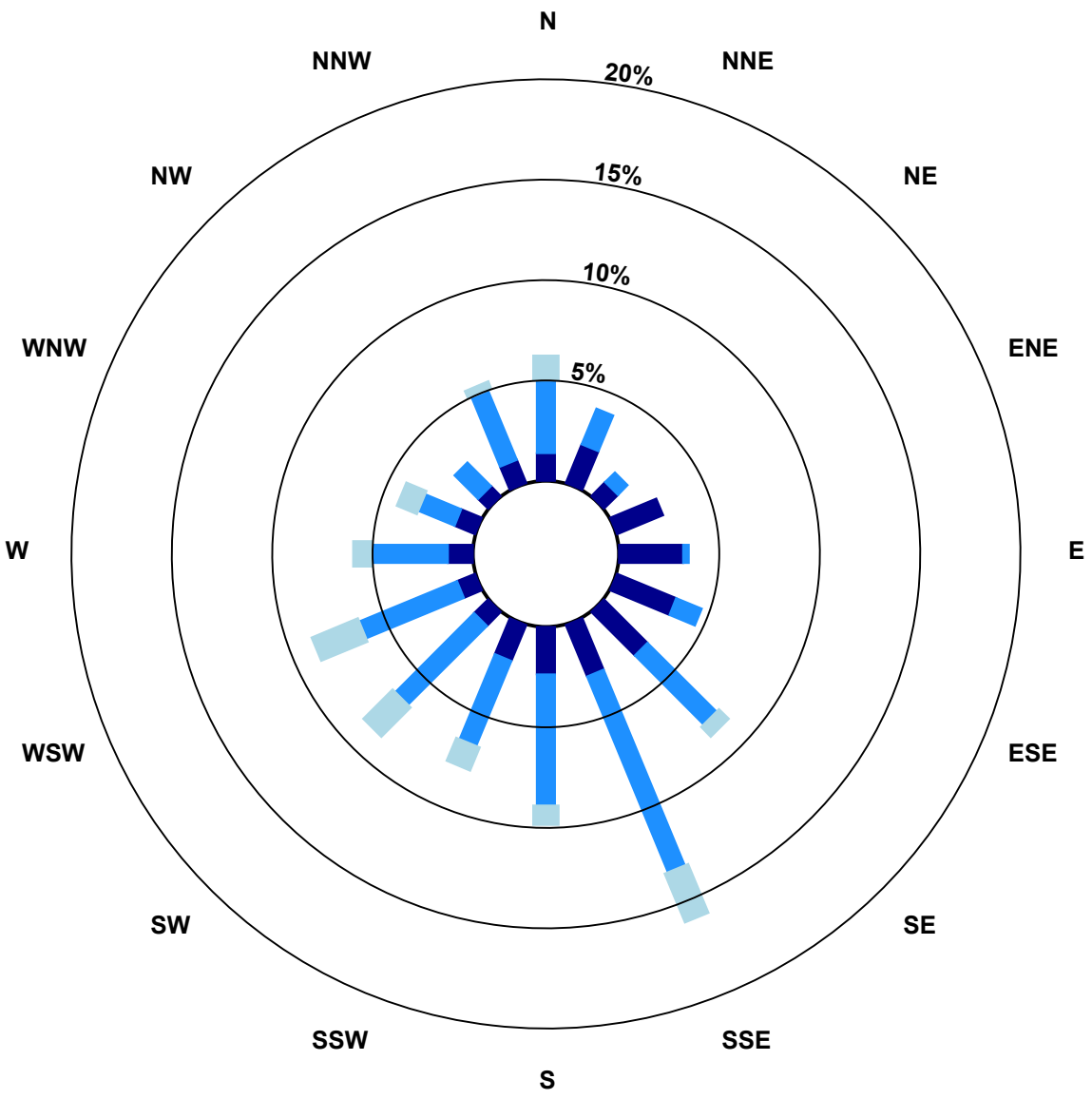
Total Number of Hours: 720

Wood Buffalo Environmental Association

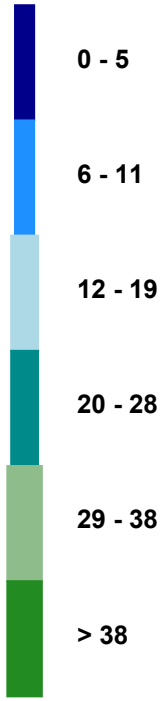
Wind Rose Sep 2024

Wind Speed 10m (WS10) - km/h

Wapasu



Classes (km/h)



Total Number of Valid Hours: 720

Number of Exceedences (AAAQO): 1-hr: 0 24-hr: 0
Maximum Value: 7 km/h on Sep 2 20:00

Minimum Value: 0 km/h on Sep 19 19:00

Percentiles: P_1 = 1 P_{10} = 1 Q_1 = 1 Median = 2 Q_3 = 3 P_{90} = 4 P_{99} = 5

Hours in Service:	720
Hours of Data:	720
Hours of Missing Data:	0
Hours of Calibration:	0
Percent Operational Time:	100.0

Day	Hourly Period Ending At (MST)																								Daily
	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24	Maximum
1-Sep	4	4	3	3	3	3	3	4	3	4	4	5	6	5	4	4	4	3	2	1	1	1	1	1	6
2-Sep	1	1	1	1	1	1	1	3	3	2	3	3	4	4	4	4	4	4	2	7	5	5	4	5	7
3-Sep	3	3	3	2	2	2	2	2	3	3	3	3	3	3	2	2	2	2	1	1	1	2	2	2	3
4-Sep	1	1	1	1	1	1	2	2	2	3	3	4	4	4	3	4	2	2	1	1	1	1	1	1	4
5-Sep	2	2	1	1	1	1	1	1	2	2	2	3	3	3	3	4	3	3	3	4	4	5	4	4	5
6-Sep	5	5	5	5	5	4	4	4	4	4	4	4	4	3	3	3	3	2	2	1	1	1	1	1	5
7-Sep	1	2	1	1	1	1	1	2	3	4	4	4	5	4	4	4	4	4	2	2	1	1	2	1	5
8-Sep	1	1	1	1	2	1	1	1	3	2	3	4	4	3	2	3	1	1	1	1	3	3	3	2	4
9-Sep	1	2	3	2	2	2	2	5	3	4	3	3	2	4	5	3	3	4	4	5	5	4	3	2	5
10-Sep	2	2	2	2	2	2	2	2	3	3	3	4	4	2	4	4	3	3	2	1	1	1	1	1	4
11-Sep	1	1	1	1	1	1	2	2	3	2	2	3	3	3	3	2	2	2	1	1	2	2	3	3	3
12-Sep	2	2	1	3	5	4	2	2	2	3	3	3	2	2	3	3	3	3	2	1	1	1	1	1	5
13-Sep	1	1	1	1	1	2	2	2	2	2	2	2	3	1	2	2	2	3	2	2	2	2	2	2	3
14-Sep	2	2	2	1	1	2	1	1	3	2	2	3	3	3	3	3	3	1	1	1	1	1	1	1	3
15-Sep	1	1	1	1	1	1	2	2	2	2	3	3	2	3	2	2	2	2	1	1	1	1	2	3	3
16-Sep	2	2	2	2	3	3	3	3	4	4	4	4	5	5	5	4	3	3	2	1	1	1	1	1	5
17-Sep	1	1	1	2	1	1	2	3	3	3	3	3	3	3	3	3	2	1	1	2	2	2	2	3	3
18-Sep	3	3	3	3	2	3	3	3	4	3	2	3	3	3	4	3	3	3	1	1	1	0	1	1	4
19-Sep	1	0	1	1	1	1	1	1	1	2	2	3	3	3	3	2	1	1	0	2	1	1	1	1	3
20-Sep	1	1	1	1	1	1	1	2	2	3	2	4	5	5	5	5	5	3	2	2	2	1	1	1	5
21-Sep	1	1	1	1	1	1	1	1	1	2	3	3	3	3	3	3	2	2	2	3	4	2	2	3	4
22-Sep	3	3	2	2	3	2	1	2	3	2	2	3	3	3	3	2	2	1	1	1	1	1	2	1	3
23-Sep	1	1	1	1	1	1	1	1	1	2	1	2	3	3	2	2	2	3	2	3	3	3	2	2	3
24-Sep	3	2	2	2	1	1	1	3	3	3	4	4	5	6	6	5	4	2	1	2	1	1	1	1	6
25-Sep	2	2	2	2	2	3	4	4	4	5	5	4	3	2	2	2	3	2	2	2	2	1	2	1	5
26-Sep	1	3	4	2	2	2	2	2	2	4	2	3	3	3	4	3	2	2	5	1	1	1	2	1	5
27-Sep	1	1	1	1	2	1	2	3	3	2	2	3	3	3	3	3	3	2	2	2	3	2	3	3	3
28-Sep	4	4	4	5	4	4	2	3	3	3	3	4	4	4	3	3	2	1	1	1	1	1	1	1	5
29-Sep	1	1	1	2	1	2	2	1	2	2	3	2	3	3	4	3	3	3	2	1	1	2	1	1	4
30-Sep	1	2	1	1	1	1	1	1	2	3	4	3	4	5	5	5	5	5	3	3	2	1	1	2	5
	5	5	5	5	5	4	4	5	4	5	5	5	6	6	6	5	5	5	5	7	5	5	4	5	
	Diurnal Maximum																								

Direction of Maximum Speed: 156 deg on Sep 25 10:00
Direction of Maximum Daily Speed Average: 187.2 deg on Sep 6

Direction of Minimum Speed: 345 deg on Sep 11 16:00

Direction of Minimum Daily Speed Average: 1.5 deg on Sep 19

Monthly Average Direction: 204.3 deg

Hours in Service:	720
Hours of Data:	720
Hours of Missing Data:	0
Percent Operational Time:	100.0

Day	Hourly Period Ending At (MST)																								Daily
	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24	Average
1-Sep	152	152	161	166	166	167	168	175	176	187	190	203	219	224	237	250	259	251	238	202	180	169	164	153	194.2
2-Sep	149	150	151	157	159	154	149	172	177	196	215	227	225	239	239	232	240	241	240	326	358	358	358	358	228.3
3-Sep	5	355	2	353	342	337	346	345	1	350	344	356	359	352	359	16	8	15	15	19	18	6	347	352	356.6
4-Sep	30	110	152	152	186	210	219	223	239	267	299	297	304	315	302	300	329	272	250	241	189	219	239	257	268.8
5-Sep	15	66	58	151	152	146	150	163	172	179	201	214	200	221	222	208	198	164	153	151	155	156	159	156	166.8
6-Sep	156	161	161	172	172	174	184	188	198	219	221	223	230	208	200	214	184	183	181	174	184	171	170	110	187.2
7-Sep	144	144	147	184	147	151	147	166	170	174	191	196	207	213	224	232	232	226	189	195	179	175	196	192	192.2
8-Sep	167	153	152	151	142	149	150	146	141	156	180	197	188	189	206	200	158	81	102	106	129	148	182	231	162.1
9-Sep	201	175	151	2	85	27	22	353	352	341	2	339	304	276	266	259	246	244	247	270	294	292	252	237	285.3
10-Sep	240	246	249	232	239	221	221	228	245	249	262	261	271	288	258	248	249	287	330	47	81	93	102	87	247.5
11-Sep	82	100	114	111	120	128	129	127	140	145	205	200	227	183	111	345	40	46	108	138	141	140	135	135	130.2
12-Sep	141	144	141	147	154	159	145	129	101	108	110	94	85	95	105	105	122	125	329	342	75	94	81	80	121.3
13-Sep	69	75	48	33	29	45	33	23	13	9	350	353	355	350	346	345	351	346	346	343	334	323	331	332	356.9
14-Sep	326	311	268	274	271	242	188	201	246	240	248	279	268	273	271	255	277	316	24	58	94	138	141	129	265.0
15-Sep	103	89	64	61	65	60	25	32	12	13	358	343	313	359	328	332	340	15	122	142	152	160	167	168	52.7
16-Sep	167	164	162	161	163	166	172	185	206	218	212	205	231	239	252	253	247	242	219	190	164	172	171	158	203.1
17-Sep	161	163	162	160	163	158	160	174	178	195	211	226	215	226	224	222	177	178	109	124	136	146	148	150	174.5
18-Sep	151	150	158	155	161	165	177	185	222	234	261	305	290	283	294	306	295	332	34	121	123	109	101	134	207.7
19-Sep	140	147	151	142	149	158	150	163	168	226	255	263	298	280	330	298	298	84	80	310	62	79	111	102	166.5
20-Sep	103	118	107	104	56	45	40	41	25	10	354	351	359	352	346	353	0	340	338	343	349	356	3	14	4.9
21-Sep	76	141	132	126	134	133	163	123	138	176	202	202	199	189	189	198	171	148	143	151	182	166	146	142	167.0
22-Sep	137	142	144	152	152	151	150	156	178	176	220	243	260	254	324	354	351	23	78	78	91	94	177	103	157.5
23-Sep	97	96	69	70	66	53	76	94	51	299	307	270	239	231	238	220	199	195	183	192	201	174	189	202	197.4
24-Sep	206	222	221	208	175	160	179	218	229	237	259	272	273	282	287	289	291	305	159	136	147	142	133	140	240.4
25-Sep	143	144	147	145	142	140	139	129	128	156	156	168	192	196	191	167	205	196	191	199	195	191	227	212	160.5
26-Sep	182	223	338	15	16	351	332	305	278	261	259	256	280	272	263	271	223	195	267	243	196	187	212	158	264.8
27-Sep	148	148	148	147	152	155	169	183	216	227	220	228	235	234	225	216	193	172	173	175	182	194	206	214	194.7
28-Sep	226	232	237	239	242	261	281	259	255	250	254	248	255	247	255	257	283	140	139	145	155	158	162	153	237.4
29-Sep	141	119	128	125	120	128	125	86	357	15	12	21	14	1	349	343	343	344	348	335	340	313	299	245	13.8
30-Sep	264	297	268	308	292	211	260	176	218	237	235	251	273	275	275	289	297	292	287	277	270	283	221	240	266.6
	154.8	158.0	158.0	160.0	157.6	156.0	157.1	173.3	197.9	219.7	237.0	247.6	255.5	256.4	263.9	261.8	260.1	253.3	205.6	181.5	157.6	157.9	169.9	162.2	
	Diurnal Average																								

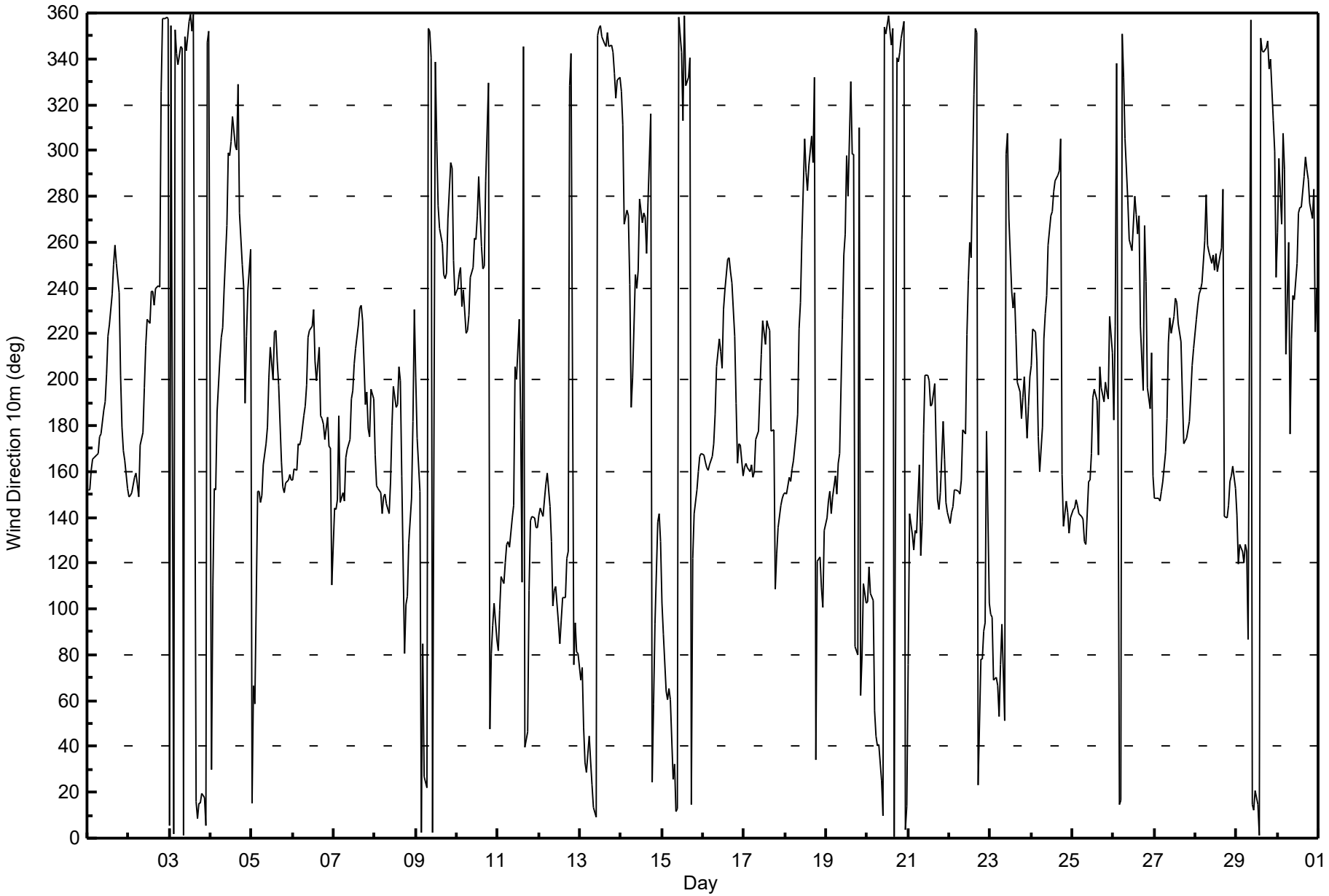
All monthly, daily, and diurnal averages have been calculated using vector methods

Wood Buffalo Environmental Association

Hourly Averages

Wind Direction 10m (WD10) - deg

Wapasu - September 2024



Number of Exceedences (AAAQO): 1-hr: 0 24-hr: 0

Maximum Value: 100 deg on Sep 11 16:00

Minimum Value: 4 deg on Sep 19 04:00

Percentiles: P_1 = 7 P_{10} = 13 Q_1 = 18 Median = 25 Q_3 = 31 P_{90} = 39 P_{99} = 78

Hours in Service:	720
Hours of Data:	720
Hours of Missing Data:	0
Hours of Calibration:	0
Percent Operational Time:	100.0

Day	Hourly Period Ending At (MST)																								Daily
	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24	Maximum
1-Sep	18	19	22	25	23	23	24	27	28	29	30	29	23	24	23	29	30	26	19	22	12	11	12	9	30
2-Sep	8	8	9	10	11	11	12	26	29	28	30	26	26	23	24	22	20	20	19	52	28	26	27	29	52
3-Sep	28	25	30	27	19	18	22	19	28	23	22	26	26	30	28	35	30	32	28	19	31	29	19	26	35
4-Sep	44	30	12	13	32	20	22	16	22	31	27	32	31	34	29	30	27	43	30	20	31	23	18	55	55
5-Sep	36	23	38	23	15	7	15	23	29	50	58	66	52	47	37	34	29	25	17	18	20	20	20	20	66
6-Sep	21	26	23	29	27	27	29	31	31	23	20	18	21	28	28	27	29	26	26	20	21	17	12	25	31
7-Sep	13	11	10	30	8	8	9	27	26	28	29	31	25	30	23	24	19	18	27	26	20	19	19	19	31
8-Sep	17	8	11	7	16	11	10	14	44	29	33	30	33	36	32	30	39	19	14	12	18	17	67	32	67
9-Sep	59	34	82	64	52	48	48	70	27	24	31	30	31	43	29	28	22	25	21	31	31	29	27	18	82
10-Sep	17	21	22	15	17	16	18	16	21	23	32	36	37	33	30	25	25	36	64	26	14	15	14	11	64
11-Sep	14	14	21	18	13	14	14	17	24	38	60	86	68	66	51	100	29	21	31	10	13	18	16	16	100
12-Sep	15	16	14	17	21	22	17	17	25	23	22	25	21	26	21	23	20	37	71	37	10	18	31	28	71
13-Sep	18	23	23	24	27	24	28	33	31	27	19	22	27	26	22	19	21	18	17	15	18	21	17	18	33
14-Sep	18	27	31	32	30	37	22	25	22	18	26	39	36	35	31	28	31	30	24	28	8	17	11	65	65
15-Sep	35	20	9	6	12	20	27	35	35	31	32	36	44	63	71	95	93	60	15	11	13	15	20	23	95
16-Sep	21	21	20	20	23	22	27	29	26	24	25	28	20	23	26	26	23	22	25	19	13	18	18	12	29
17-Sep	13	16	17	17	15	14	18	29	31	29	29	29	30	34	50	46	30	29	16	12	14	14	16	17	50
18-Sep	17	18	21	22	21	22	28	29	31	18	29	35	29	33	33	29	32	21	41	23	10	6	8	15	41
19-Sep	7	5	5	4	6	11	7	10	28	28	51	66	52	47	58	55	62	72	14	72	29	19	13	16	72
20-Sep	19	13	14	18	34	23	21	22	32	32	28	32	31	30	24	28	30	16	15	17	21	21	23	15	34
21-Sep	46	24	43	33	21	12	29	24	30	37	30	33	31	32	35	31	30	18	15	19	31	30	16	17	46
22-Sep	18	17	17	17	18	20	16	27	33	31	39	37	37	43	61	51	40	18	10	11	13	31	39	24	61
23-Sep	32	13	25	14	14	10	19	56	76	50	38	34	31	42	27	22	29	27	28	28	29	27	29	25	76
24-Sep	25	16	15	22	25	13	21	22	19	22	28	33	34	30	29	32	30	25	93	13	10	10	12	11	93
25-Sep	15	15	16	15	15	17	17	19	21	22	21	28	31	28	30	27	30	28	26	25	30	27	34	62	62
26-Sep	23	75	43	35	33	22	28	27	67	36	28	25	32	27	27	31	32	28	40	23	23	19	21	11	75
27-Sep	6	12	13	12	32	19	20	32	23	21	34	43	24	26	26	23	29	24	25	26	29	29	24	22	43
28-Sep	17	18	18	19	21	31	32	25	27	23	28	26	28	24	29	32	30	82	12	8	13	13	16	16	82
29-Sep	11	17	21	41	16	15	16	59	33	32	33	33	31	26	21	19	17	17	18	13	13	79	49	56	79
30-Sep	27	30	26	29	34	30	40	35	26	22	22	28	32	33	30	32	29	31	34	31	30	50	19	23	50
	59	75	82	64	52	48	48	70	76	50	60	86	68	66	71	100	93	82	93	72	31	79	67	65	
	Diurnal Maximum																								

WOOD BUFFALO ENVIRONMENTAL ASSOCIATION

CONTINUOUS AMBIENT AIR QUALITY
MONITORING PROGRAM
MONTHLY REPORT

AMS18
STONY MOUNTAIN
SEPTEMBER 2024

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

October 31, 2024

WOOD BUFFALO ENVIRONMENTAL ASSOCIATION - STONY MOUNTAIN (AMS18)
SEPTEMBER 2024

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	684	35	36	99.86	3.1	0	0.8	0
TRS(ppb) Average	683	36	37	99.86	0.7	0	0.5	0
THC(ppm) Average	653	34	67	95.42	2.3	-	2.2	-
NMHC(ppm) Average	653	34	67	95.42	0.116	-	0.093	-
CH4(ppm) Average	653	34	67	95.42	2.2	-	2.1	-
O3 (ppb) Average	630	32	90	91.94	53.4	0	39.8	-
NO2 (ppb) Average	661	38	59	97.08	3.1	0	1.4	-
NO (ppb) Average	661	38	59	97.08	2	-	0.5	-
NOX (ppb) Average	661	38	59	97.08	4.9	-	1.5	-
PM2.5 (ug/m3) Average	718	1	2	99.86	203	0	123.7	5
CO(ppm) Average	686	33	34	99.86	1.1	0	0.8	0
CO2(ppm) Average	685	34	35	99.86	475.1	0	446	0
Temperature 2 m (C) Average	720	0	0	100	31	-	22.3	-
Relative Humidity (%) Average	669	0	51	92.92	100	-	88.9	-
Wind Speed 10 m (km/h) Average	720	0	0	100	15	-	10	-
Wind Speed 20 m (km/h) Average	720	0	0	100	23	-	17	-
Wind Direction 10 m (deg) Average	720	0	0	100	-	-	0	-
Wind Direction 20 m (deg) Average	720	0	0	100	-	-	0	-
Precipitation (mm) Total	562	0	158	78.06	4.4	-	17.1	-
Leaf Wetness (% of range) Average	720	0	0	100	52.8	-	22.6	-
Global Solar Radiation (W/m2) Average	720	0	0	100	752.8	-	229.9	-

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

WOOD BUFFALO ENVIRONMENTAL ASSOCIATION - STONY MOUNTAIN (AMS18)
SEPTEMBER 2024

MONTHLY SUMMARY FOR AIR QUALITY/ METEOROLOGICAL MONITORING MEASUREMENTS

					Percentile						
Parameter	Number	Mean	StnDev	Total	Min	P10	Q1	Median	Q3	P90	Max
SO2 (ppb) Average	684	0.21	0.3	-	0	0	0	0.1	0.3	0.5	3.1
TRS (ppb) Average	683	0.38	0.1	-	0.2	0.3	0.3	0.4	0.4	0.5	0.7
THC (ppm) Average	653	2.07	0.1	-	1.9	2	2	2.1	2.1	2.2	2.3
NMHC(ppm) Average	653	0.028	0.029	-	0	0	0	0	0	0.1	0.116
CH4(ppm) Average	653	2.04	0	-	1.9	2	2	2	2.1	2.1	2.2
O3 (ppb) Average	630	25.43	7.8	-	8.6	15	19.4	25.6	30.7	35.9	53.4
NO2 (ppb) Average	661	0.42	0.5	-	0	0	0	0.2	0.7	1.1	3.1
NO (ppb) Average	661	0.15	0.3	-	0	0	0	0	0.2	0.5	2
NOX (ppb) Average	661	0.57	0.7	-	0	0	0	0.4	0.9	1.4	4.9
PM2.5 (ug/m3) Average	718	18.94	36.3	-	0.7	1.5	2.5	4.4	9.9	84	203
CO(ppm) Average	686	0.26	0.2	-	0.1	0.2	0.2	0.2	0.2	0.5	1.1
CO2(ppm) Average	685	432.49	9.7	-	412.9	420.8	425	431.9	439.7	444.8	475.1
Temperature 2 m (C) Average	720	12.96	5.4	-	1.4	6.8	9.2	12.1	16.4	20.3	31
Relative Humidity (%) Average	669	68.28	17.5	-	24.6	44.8	55.5	68.1	81.3	93	100
Wind Speed 10 m (km/h) Average	720	6.1	3	-	0	3	4	6	8	10	15
Wind Speed 20 m (km/h) Average	720	10.5	4	-	2	6	8	10	13	16	23
Wind Direction 10 m (deg) Average	720	-	-	-	-	-	-	-	-	-	-
Wind Direction 20 m (deg) Average	720	-	-	-	-	-	-	-	-	-	-
Precipitation (mm) Total	562	-	-	46.16	-	-	-	-	-	-	-
Surface Wetness (% of range) Average	720	5.87	8.7	-	0.1	1	1.3	1.6	5.8	19.3	52.8
Global Solar Radiation (W/m2) Average	720	133.9	197.3	-	0	0.2	0.3	10.1	238.7	477.1	752.8

WOOD BUFFALO ENVIRONMENTAL ASSOCIATION - STONY MOUNTAIN (AMS18)
SEPTEMBER 2024

MONTHLY SUMMARY

Parameter	Period Start	Period End	Duration (Hours)	Notes
AIR QUALITY ANALYZERS	14 Sep 2024 10:00	14 Sep 2024 10:00	1	Maintenance - station logger/modem reset
THC/NMHC/CH4	17 Sep 2024 05:00	18 Sep 2024 04:00	24	Unstable Operations - excessive baseline noise
THC/NMHC/CH4	18 Sep 2024 06:00	18 Sep 2024 11:00	6	Unstable Operations - excessive baseline noise
THC/NMHC/CH4	22 Sep 2024 09:00	22 Sep 2024 10:00	2	Unstable Operations - excessive baseline noise
O3	01 Sep 2024 03:00	03 Sep 2024 11:00	57	Analyzer Failure - sample pump failure
NO2	18 Sep 2024 16:00	19 Sep 2024 11:00	20	Maintenance - sample pump replaced and stablization
Relative Humidity	04 Sep 2024 01:00	04 Sep 2024 06:00	6	Sensor operated out of range
Relative Humidity	12 Sep 2024 09:00	14 Sep 2024 01:00	41	Sensor operated out of range
Relative Humidity	23 Sep 2024 04:00	23 Sep 2024 04:00	1	Sensor operated out of range
Relative Humidity	23 Sep 2024 06:00	23 Sep 2024 08:00	3	Sensor operated out of range
Precipitation Collector	10 Sep 2024 01:00	11 Sep 2024 07:00	31	DAS Failure - data not recorded
Precipitation Collector	13 Sep 2024 01:00	17 Sep 2024 09:00	105	DAS Failure - data not recorded
Precipitation Collector	18 Sep 2024 01:00	18 Sep 2024 13:00	13	DAS Failure - data not recorded
Precipitation Collector	20 Sep 2024 01:00	20 Sep 2024 09:00	9	DAS Failure - data not recorded

Wood Buffalo Environmental Association

Summary of Hour Averages

Sulphur Dioxide (SO_2) - ppb

Stony Mountain - September 2024

Number of Exceedences (AAAQO): 1-hr: 0 24-hr: 0
Maximum Value: 3.1 ppb on Sep 11 11:00 Maximum Daily Average: 0.8 ppb on Sep 11

Minimum Value: 0.0 ppb on Sep 4 06:00 Minimum Daily Average: 0.0 ppb on Sep 15
Maximum Diurnal Average: 0.3 ppb at hour 10 Minimum Diurnal Average: 0.1 ppb at hour 6
Monthly Average: 0.21 ppb 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} = 1.1

Hours in Service:	720
Hours of Data:	684
Hours of Missing Data:	36
Hours of Calibration:	35
Percent Operational Time:	99.9

Day	Hourly Period Ending At (MST)																								Daily	Daily
	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24	Average	Maximum
1-Sep	0.2	0.2	0.7	0.5	0.2	Z	0.2	0.2	0.2	0.2	0.3	0.4	0.6	0.6	0.4	0.4	0.6	0.5	0.5	0.5	0.5	0.4	0.4	0.4	0.4	0.7
2-Sep	Z	0.4	0.4	0.4	0.3	0.3	0.3	0.4	0.5	0.5	0.4	0.5	0.5	0.5	0.4	0.5	0.5	0.4	0.3	0.4	0.3	0.5	0.8	0.6	0.4	0.8
3-Sep	0.7	Z	0.2	0.2	0.2	0.2	0.2	0.1	0.2	0.2	0.2	0.1	0.0	0.2	0.3	0.7	0.7	0.6	0.4	0.2	0.1	0.2	0.1	0.0	0.3	0.7
4-Sep	0.1	0.1	Z	0.2	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	0.0	0.1	0.0	0.0	0.0	0.0	0.0	0.0	0.2
5-Sep	0.1	0.1	0.1	Z	0.1	0.0	0.1	0.0	0.3	0.4	0.2	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	0.1	0.4
6-Sep	0.3	0.3	0.5	0.8	Z	0.2	0.3	0.3	0.2	0.3	0.5	0.7	0.7	0.8	0.7	0.9	0.8	0.8	0.6	0.6	0.4	0.4	0.4	0.4	0.5	0.9
7-Sep	0.5	0.6	0.6	0.5	0.4	Z	0.3	0.2	0.2	0.2	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	0.2	0.6
8-Sep	Z	0.1	0.2	0.1	0.2	0.2	0.3	0.1	0.2	0.2	0.2	0.8	0.2	0.1	0.1	0.4	0.4	0.4	0.4	0.5	1.2	0.9	0.6	0.5	0.4	1.2
9-Sep	1.0	Z	0.4	0.4	0.3	0.3	0.8	0.5	0.4	0.3	0.2	0.2	0.2	0.1	0.1	0.1	0.1	0.2	0.2	0.1	0.1	0.1	0.2	0.2	0.3	1.0
10-Sep	0.1	0.1	Z	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.2	0.1	0.2	0.1	0.1	0.1	0.1	0.0	0.1	0.0	0.1	0.1	0.1	0.1	0.2
11-Sep	0.0	0.1	0.1	Z	0.0	0.0	0.1	0.6	1.0	2.6	3.1	2.7	0.9	0.5	0.6	0.4	0.7	0.8	0.1	0.3	0.8	0.9	1.3	0.6	0.8	3.1
12-Sep	0.2	0.3	0.2	0.1	Z	0.1	0.0	0.0	0.0	0.0	0.1	0.0	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	0.3
13-Sep	0.0	0.1	0.0	0.0	0.1	Z	0.0	0.0	0.0	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.2	0.2	0.2	0.3	0.3	0.3	0.2	0.2	0.1	0.3
14-Sep	Z	0.1	0.1	0.1	0.1	0.1	0.1	0.2	0.1	M	0.0	0.1	0.0	0.0	0.1	0.1	0.0	0.0	0.0	0.0	0.1	0.1	0.0	0.1	0.1	0.2
15-Sep	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
16-Sep	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	0.1	0.1	0.1	0.1	0.0	0.1	0.1	0.0	0.1	0.1	0.0	0.1
17-Sep	0.1	0.1	0.1	Z	0.1	0.1	0.1	0.2	0.3	0.5	0.7	0.5	0.7	1.0	0.7	0.4	0.1	0.2	0.3	0.4	0.3	0.3	0.7	0.3	0.4	1.0
18-Sep	0.5	0.6	0.4	0.4	Z	0.2	0.1	0.1	0.3	0.3	C	C	C	C	C	0.0	0.0	0.2	0.3	0.1	0.1	0.0	0.0	0.1	0.2	0.6
19-Sep	0.3	0.2	0.5	1.2	0.4	Z	0.4	0.2	0.2	0.2	0.2	0.2	0.2	0.1	0.1	0.2	0.2	0.1	0.1	0.1	0.1	0.1	0.1	0.0	0.2	1.2
20-Sep	Z	0.0	0.7	0.4	0.6	0.6	0.1	0.7	0.7	0.5	0.4	0.3	0.3	0.2	0.2	0.2	0.4	0.4	0.4	0.7	0.4	0.3	0.7	0.5	0.4	0.7
21-Sep	0.3	Z	0.4	0.4	0.7	0.4	0.1	0.2	0.5	0.6	0.3	0.2	0.1	0.1	0.0	0.1	0.1	0.2	0.1	0.2	0.3	0.3	0.2	0.2	0.2	0.7
22-Sep	0.2	0.2	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	0.0	0.0	0.1	0.0	0.0	0.0	0.0	0.0	0.1	0.2
23-Sep	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-Sep	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	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.1
25-Sep	0.2	0.0	0.1	0.5	1.6	Z	0.2	0.3	0.3	0.4	0.4	0.4	0.4	0.3	0.3	0.4	0.3	0.0	0.4	0.3	0.3	0.2	0.1	0.0	0.3	1.6
26-Sep	Z	0.2	0.2	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	0.0	0.0	0.0	0.0	0.0	0.0	0.1	0.2
27-Sep	0.0	Z	0.2	0.1	0.2	0.1	0.0	0.0	0.0	0.2	0.1	0.1	0.2	0.2	0.2	0.1	0.0	0.0	0.0	0.1	0.0	0.1	0.1	0.1	0.1	0.2
28-Sep	0.0	0.1	Z	0.1	0.1	0.1	0.2	0.2	0.2	0.2	0.2	0.2	0.1	0.2	0.1	0.2	0.1	0.1	0.2	0.1	0.1	0.1	0.1	0.1	0.1	0.2
29-Sep	0.2	0.4	0.6	Z	0.2	0.1	0.1	0.1	0.0	0.1	0.1	0.0	0.0	0.1	0.1	0.1	0.1	0.1	0.1	0.2	0.3	0.5	0.4	0.4	0.2	0.6
30-Sep	0.2	0.1	0.0	0.1	Z	0.0	0.0	0.0	0.0	0.0	0.1	0.0	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	0.2
	0.2	0.2	0.3	0.3	0.2	0.1	0.1	0.2	0.2	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	0.2	Diurnal Average	
	1.0	0.6	0.7	1.2	1.6	0.6	0.8	0.7	1.0	2.6	3.1	2.7	0.9	1.0	0.7	0.9	0.8	0.8	0.6	0.7	1.2	0.9	1.3	0.6	Diurnal Maximum	

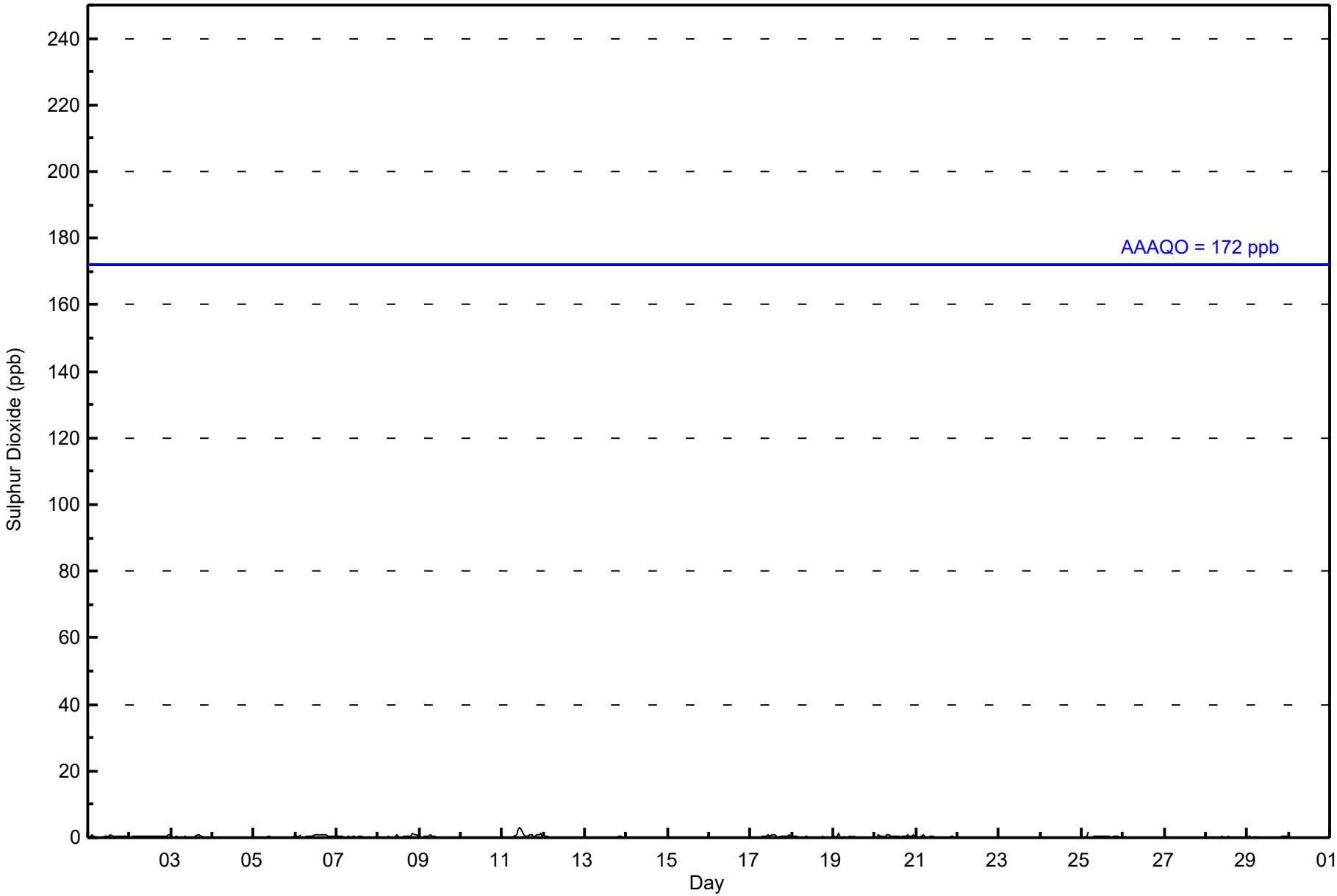
Z - zerospan C - Calibration M - Maintenance
Alberta Ambient Air Quality Objectives (AAAQO): 1-hr 172 ppb 24-hr 48 ppb

Wood Buffalo Environmental Association

Hourly Averages

Sulphur Dioxide (SO_2) - ppb

Stony Mountain - September 2024



Sulphur Dioxide (SO_2) - ppb
Stony Mountain - September 2024

Concentration Ranges (ppb)	Number of Hours	%	Cumulative %
0 - 10	684	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: 684

Total Number of Hours: 720

Wood Buffalo Environmental Association

Frequency Distribution

Sulphur Dioxide (SO_2) - ppb

Stony Mountain - September 2024

Concentration Ranges (ppb)	Wind Direction																
	N	NNE	NE	ENE	E	ESE	SE	SSE	S	SSW	SW	WSW	W	WNW	NW	NNW	**Totals**
0 - 10	22	22	17	7	8	10	10	17	42	83	89	71	94	108	54	30	684
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	22	22	17	7	8	10	10	17	42	83	89	71	94	108	54	30	684

Total Number of Valid Hours: 684

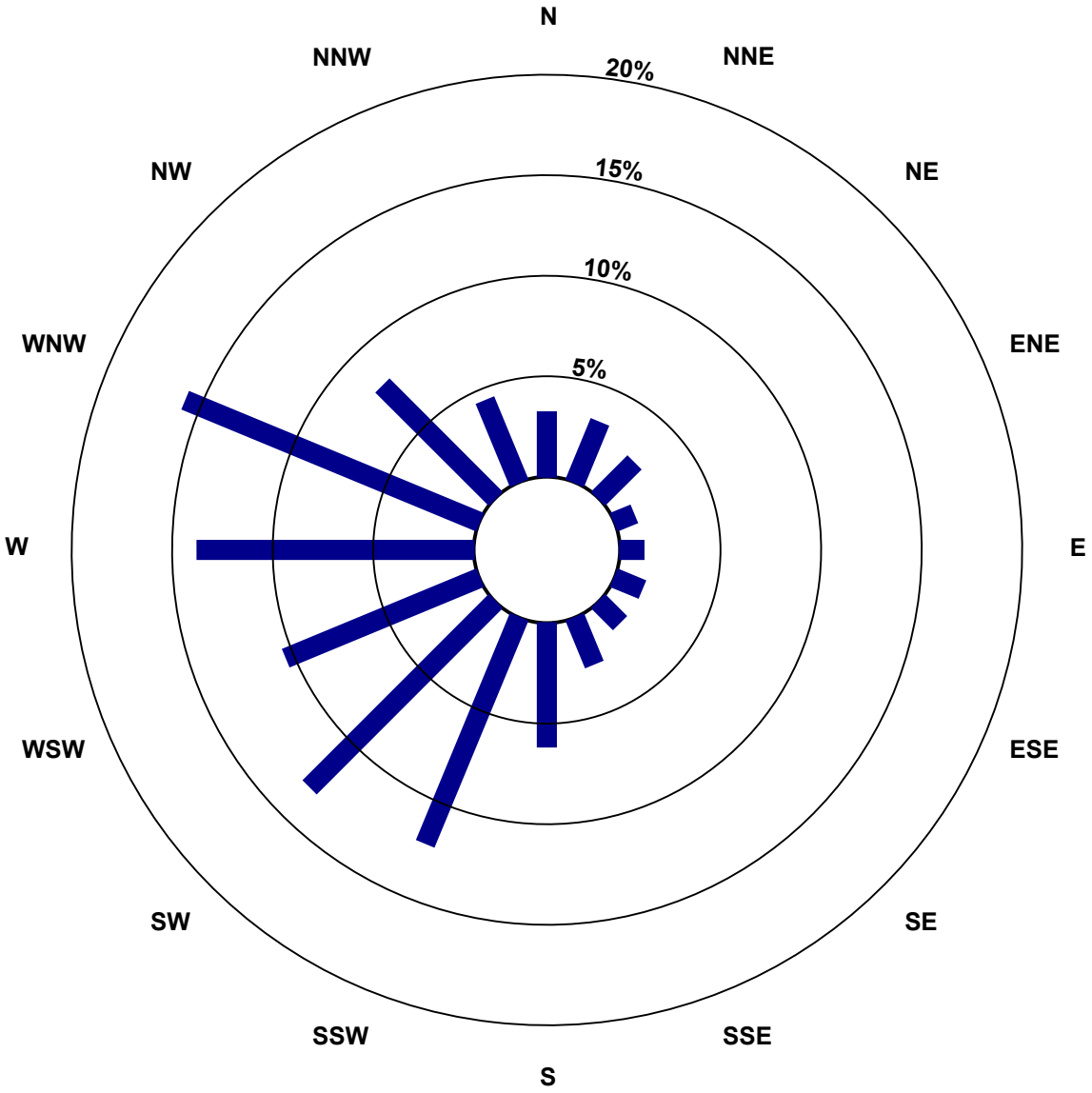
Total Number of Hours: 720

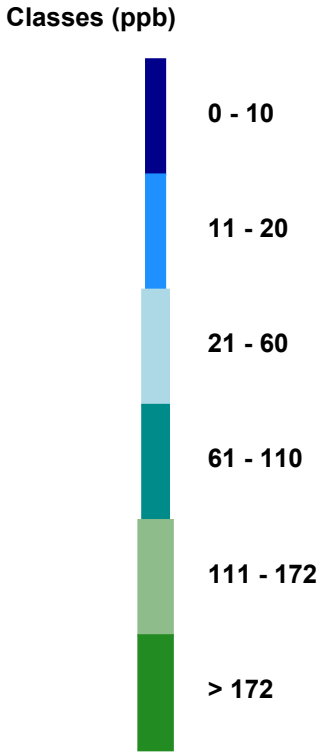
Wood Buffalo Environmental Association

Wind Rose Sep 2024

Sulphur Dioxide (SO_2) - ppb

Stony Mountain





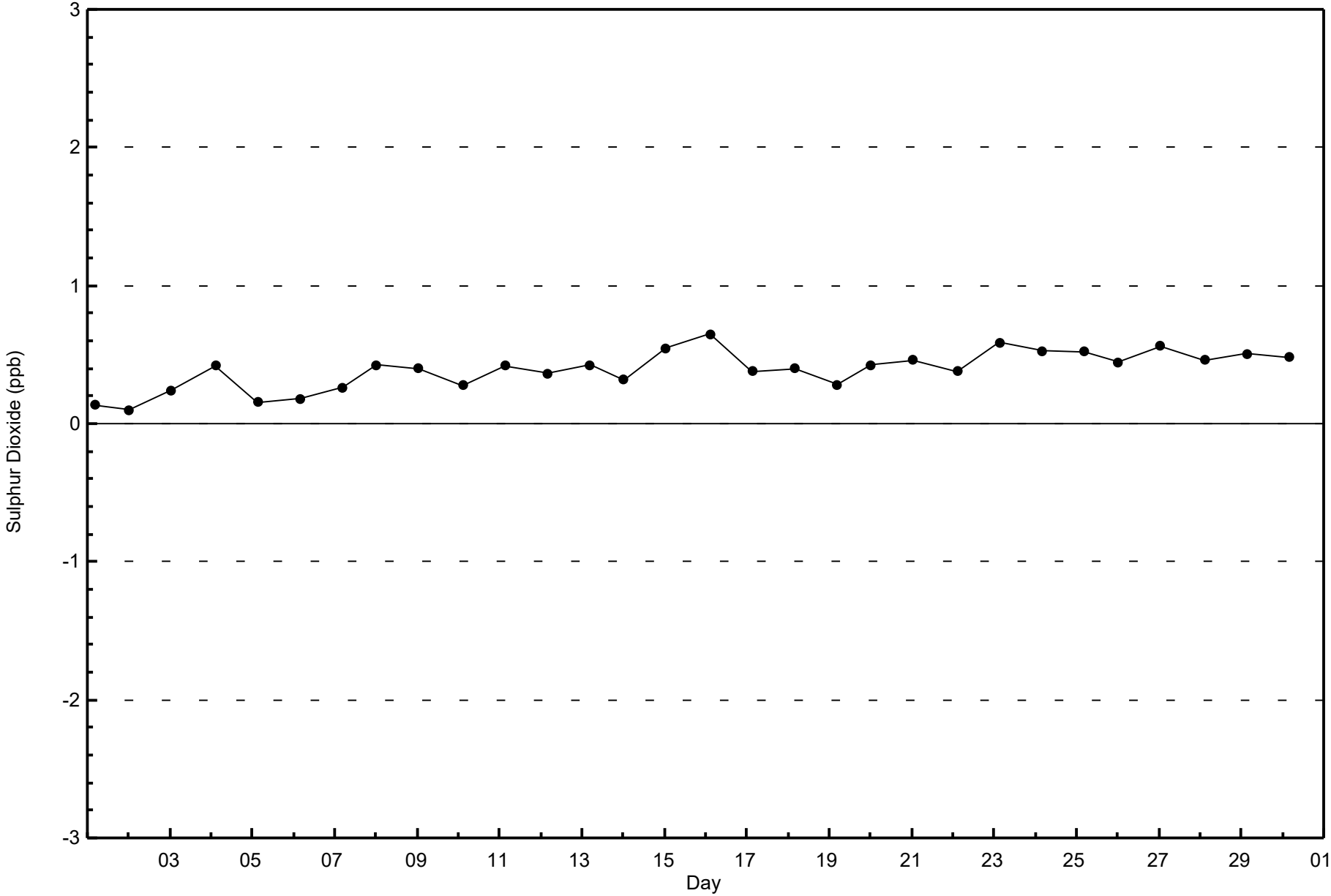
Total Number of Valid Hours: 684

Wood Buffalo Environmental Association

Zero Responses

Sulphur Dioxide (SO_2) - ppb

Stony Mountain - September 2024

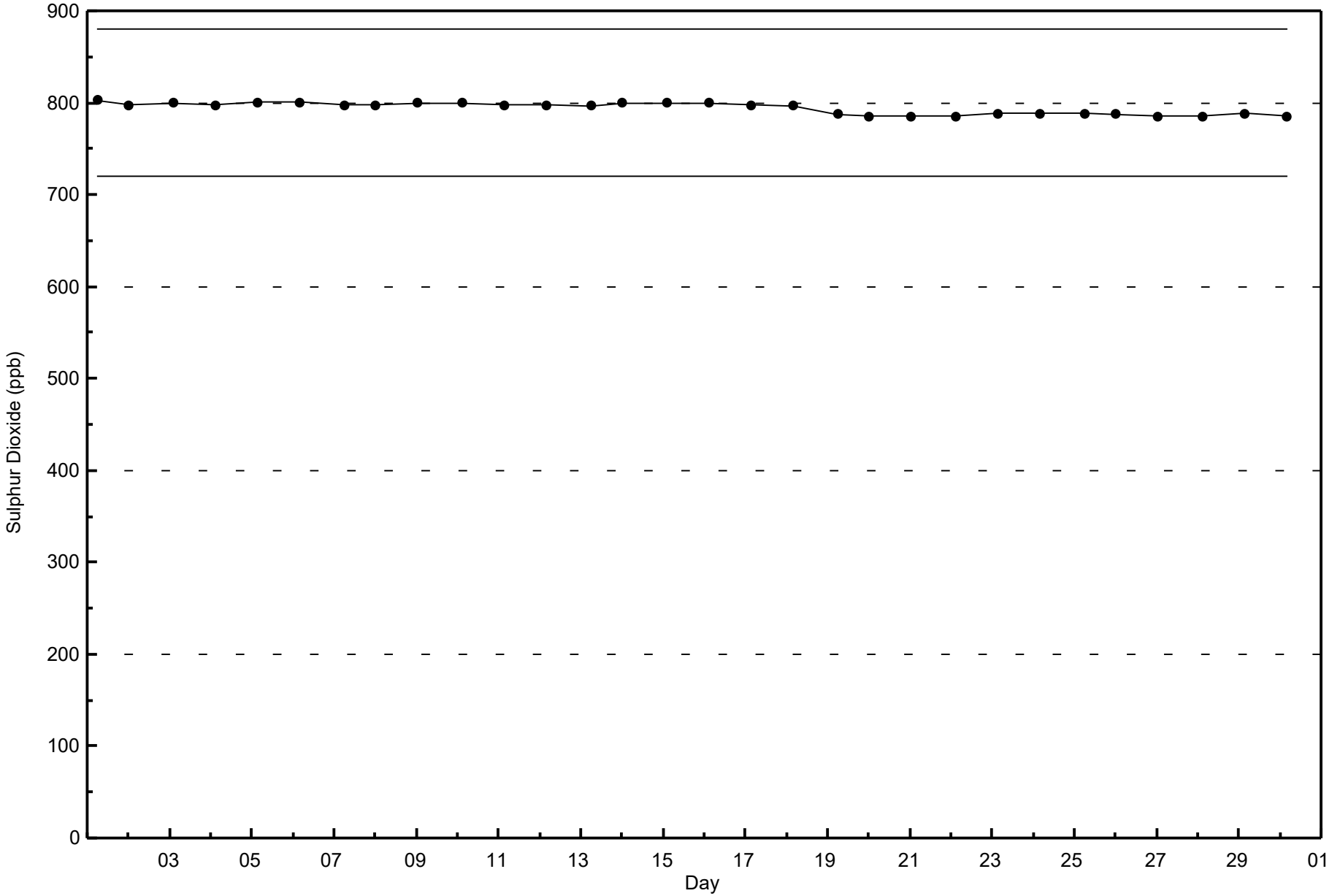


Wood Buffalo Environmental Association

Span Responses

Sulphur Dioxide (SO_2) - ppb

Stony Mountain - September 2024



Wood Buffalo Environmental Association

Summary of Hour Averages

Total Reduced Sulphur (TRS) - ppb

Stony Mountain - September 2024

Number of Exceedences (AAAQO): 1-hr: 0 24-hr: 0
Maximum Value: 0.7 ppb on Sep 24 17:00 Maximum Daily Average: 0.5 ppb on Sep 6

Minimum Value: 0.2 ppb on Sep 21 09:00 Minimum Daily Average: 0.3 ppb on Sep 20
Maximum Diurnal Average: 0.4 ppb at hour 5 Minimum Diurnal Average: 0.4 ppb at hour 1
Monthly Average: 0.38 ppb Percentiles: P_1 = 0.3 P_{10} = 0.3 Q_1 = 0.3 Median = 0.4 Q_3 = 0.4 P_{90} = 0.5 P_{99} = 0.6

Hours in Service:	720
Hours of Data:	683
Hours of Missing Data:	37
Hours of Calibration:	36
Percent Operational Time:	99.9

Day	Hourly Period Ending At (MST)																								Daily	Daily
	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24	Average	Maximum
1-Sep	Z	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	0.4	0.4	0.4	0.4	0.4	0.4	0.4	0.4	0.5	0.4	0.5
2-Sep	0.5	Z	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	0.4	0.5
3-Sep	0.4	0.4	Z	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	0.3	0.4	0.3	0.4	0.4	0.4	0.5
4-Sep	0.3	0.4	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	0.3	0.3	0.3	0.3	0.3	0.3	0.3	0.3	0.3	0.5
5-Sep	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
6-Sep	0.3	0.4	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	0.5	0.5	0.5	0.5	0.5	0.5	0.4	0.5	0.5
7-Sep	Z	0.5	0.5	0.5	0.5	0.5	0.4	0.4	0.4	0.4	0.4	0.5	0.5	0.4	0.5	0.4	0.4	0.4	0.4	0.5	0.5	0.4	0.4	0.5	0.5	0.5
8-Sep	0.5	Z	0.5	0.5	0.5	0.5	0.5	0.4	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	0.5	0.5	0.5
9-Sep	0.5	0.5	Z	0.5	0.6	0.6	0.6	0.7	0.6	0.5	0.4	0.4	0.4	0.4	0.4	0.4	0.4	0.4	0.4	0.4	0.4	0.4	0.4	0.4	0.5	0.7
10-Sep	0.4	0.4	0.4	Z	0.4	0.4	0.4	0.4	0.4	0.4	0.5	0.4	0.4	0.4	0.4	0.3	0.3	0.3	0.3	0.3	0.4	0.4	0.3	0.4	0.4	0.5
11-Sep	0.4	0.4	0.4	0.4	Z	0.4	0.5	0.7	0.4	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	0.7
12-Sep	0.4	0.4	0.4	0.3	0.4	Z	0.5	0.5	0.5	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	0.4	0.4	0.5	0.5
13-Sep	Z	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	0.5	0.5	0.4	0.4	0.4	0.4	0.4	0.4	0.3	0.3	0.4	0.5
14-Sep	0.3	Z	0.4	0.4	0.4	0.3	0.3	0.3	0.3	M	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
15-Sep	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	0.4	0.3	0.4	0.3	0.4	0.3	0.3	0.3	0.3	0.3	0.3	0.4
16-Sep	0.3	0.3	0.3	Z	0.4	0.4	0.3	0.3	0.4	0.4	0.4	0.3	0.3	0.3	0.3	0.3	0.3	0.3	0.4	0.3	0.3	0.3	0.3	0.4	0.3	0.4
17-Sep	0.4	0.3	0.3	0.3	Z	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	0.3	0.4	0.4	0.4	0.4	0.3	0.3	0.4
18-Sep	0.4	0.4	0.4	0.4	0.4	Z	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	0.4	0.4	0.4	0.4	0.4	0.4	0.5
19-Sep	Z	0.4	0.4	0.3	0.4	0.4	0.3	0.3	0.3	0.3	0.3	0.4	0.3	0.3	0.3	0.3	0.3	0.3	0.3	0.3	0.3	0.3	0.3	0.3	0.3	0.4
20-Sep	0.3	Z	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	0.3	0.3	0.3	0.3	0.4	0.3	0.3	0.3	0.3	0.3	0.4
21-Sep	0.3	0.3	Z	0.4	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	0.3	0.3	0.3	0.3	0.3	0.3	0.3	0.3	0.4
22-Sep	0.3	0.3	0.3	Z	0.4	0.4	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
23-Sep	0.4	0.4	0.3	0.4	Z	0.3	0.4	0.4	0.4	0.4	0.4	0.4	0.4	0.4	0.4	0.4	0.3	0.4	0.3	0.4	0.4	0.4	0.4	0.4	0.4	0.4
24-Sep	0.4	0.4	0.4	0.4	0.4	Z	0.4	0.4	0.4	0.4	C	C	C	C	C	C	0.7	0.5	0.5	0.5	0.4	0.5	0.4	0.4	--	0.7
25-Sep	Z	0.4	0.7	0.6	0.5	0.5	0.4	0.4	0.4	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	0.7
26-Sep	0.4	Z	0.3	0.3	0.3	0.3	0.4	0.3	0.3	0.3	0.4	0.4	0.3	0.4	0.3	0.3	0.3	0.3	0.3	0.3	0.2	0.3	0.2	0.3	0.3	0.4
27-Sep	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	0.4	0.4	0.3	0.3	0.3	0.3	0.3	0.3	0.4
28-Sep	0.3	0.3	0.3	Z	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	0.3	0.3	0.3	0.3	0.3	0.3	0.3	0.4
29-Sep	0.4	0.5	0.4	0.4	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	0.5	0.4	0.5	0.4	0.4	0.4	0.4	0.5
30-Sep	0.3	0.3	0.3	0.3	0.3	Z	0.3	0.3	0.3	0.3	0.4	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	0.3	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	0.4	0.4	0.4	0.4	0.4	0.4	0.4	0.4	0.4	Diurnal Average	
	0.5	0.5	0.7	0.6	0.6	0.6	0.6	0.7	0.6	0.5	0.5	0.5	0.5	0.5	0.5	0.5	0.7	0.5	0.5	0.5	0.5	0.5	0.5	0.5	Diurnal Maximum	

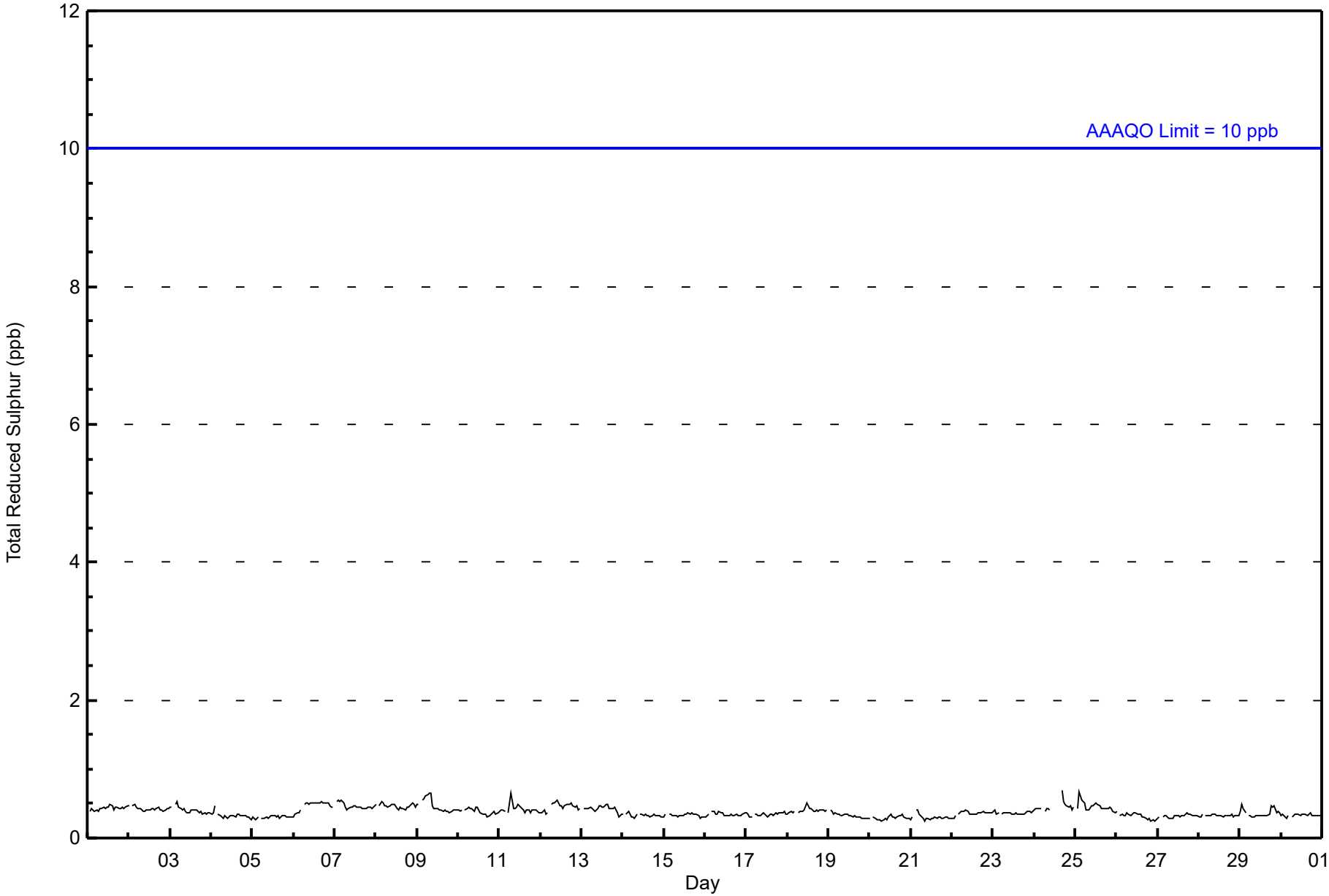
Z - zerospan C - Calibration M - Maintenance
Alberta Ambient Air Quality Objectives (AAAQO): 1-hr 10 ppb 24-hr 3 ppb

Wood Buffalo Environmental Association

Hourly Averages

Total Reduced Sulphur (TRS) - ppb

Stony Mountain - September 2024



Concentration Ranges (ppb)	Number of Hours	%	Cumulative %
0 - 2	683	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: 683

Total Number of Hours: 720

Wood Buffalo Environmental Association

Frequency Distribution

Total Reduced Sulphur (TRS) - ppb

Stony Mountain - September 2024

Concentration Ranges (ppb)	Wind Direction																
	N	NNE	NE	ENE	E	ESE	SE	SSE	S	SSW	SW	WSW	W	WNW	NW	NNW	**Totals**
0 - 2	23	19	17	7	8	10	10	17	43	83	88	71	92	106	58	31	683
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	23	19	17	7	8	10	10	17	43	83	88	71	92	106	58	31	683

Total Number of Valid Hours: 683

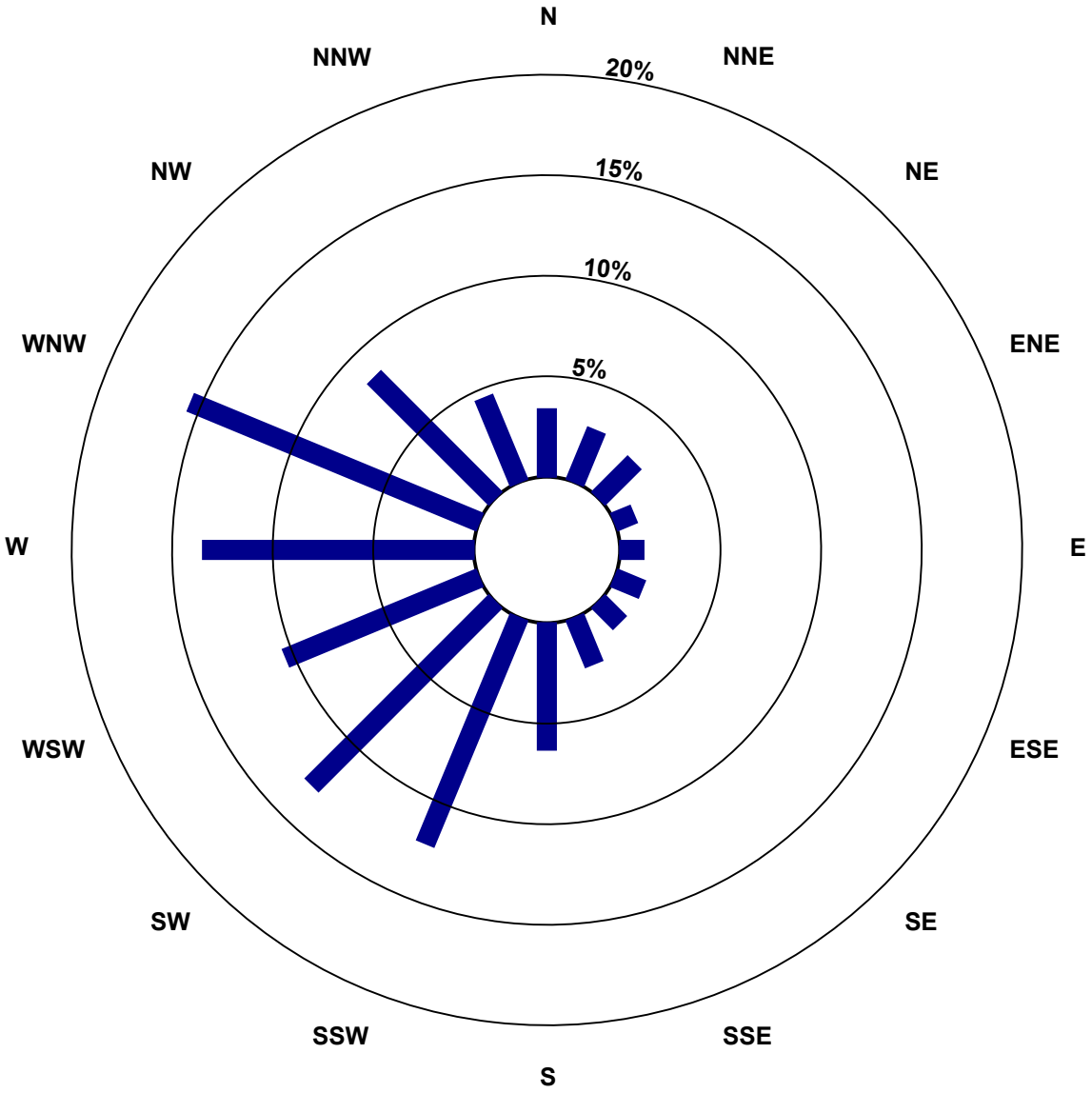
Total Number of Hours: 720

Wood Buffalo Environmental Association

Wind Rose Sep 2024

Total Reduced Sulphur (TRS) - ppb

Stony Mountain



Classes (ppb)

0 - 2

3 - 4

5 - 7

8 - 11

> 11

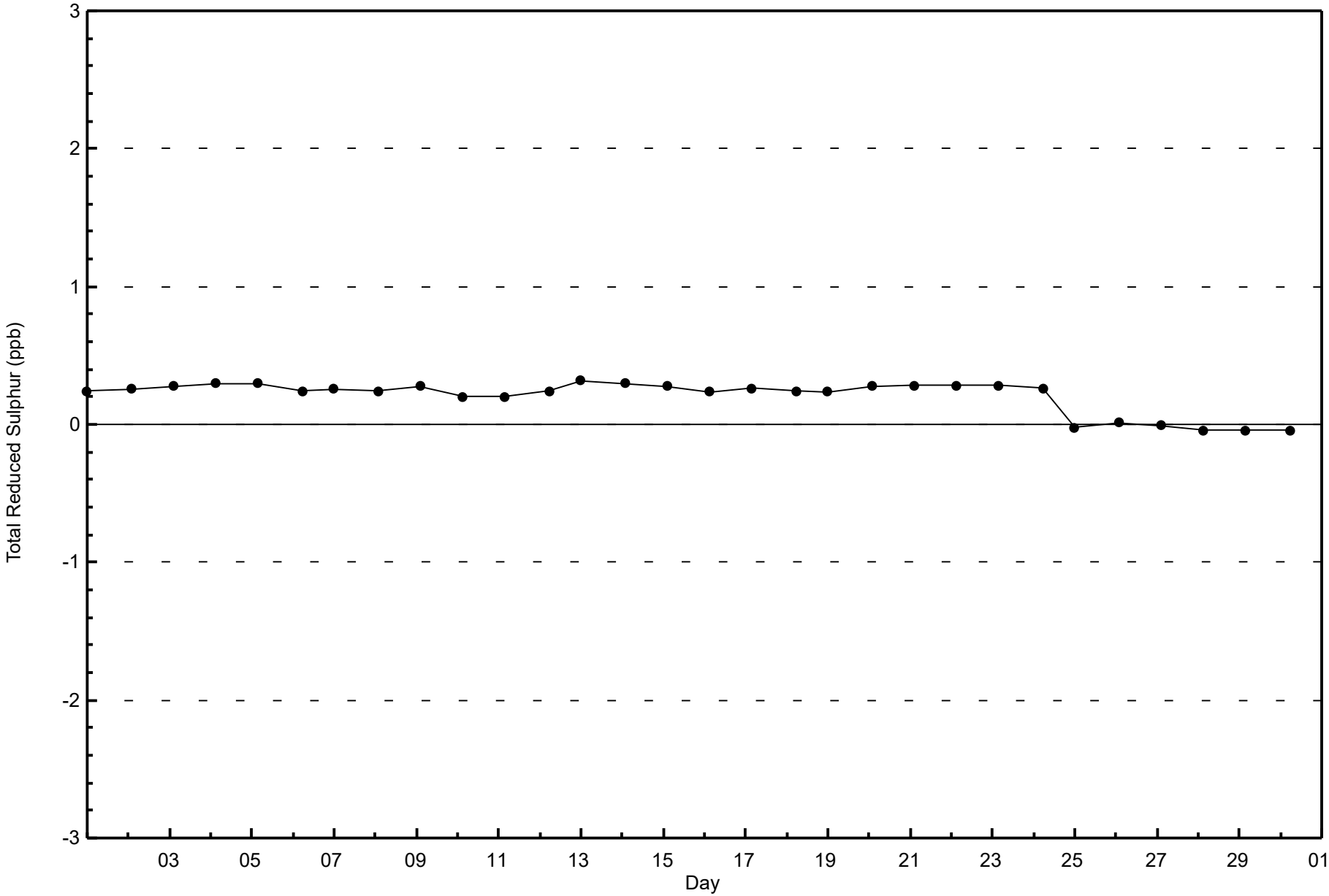
Total Number of Valid Hours: 683

Wood Buffalo Environmental Association

Zero Responses

Total Reduced Sulphur (TRS) - ppb

Stony Mountain - September 2024

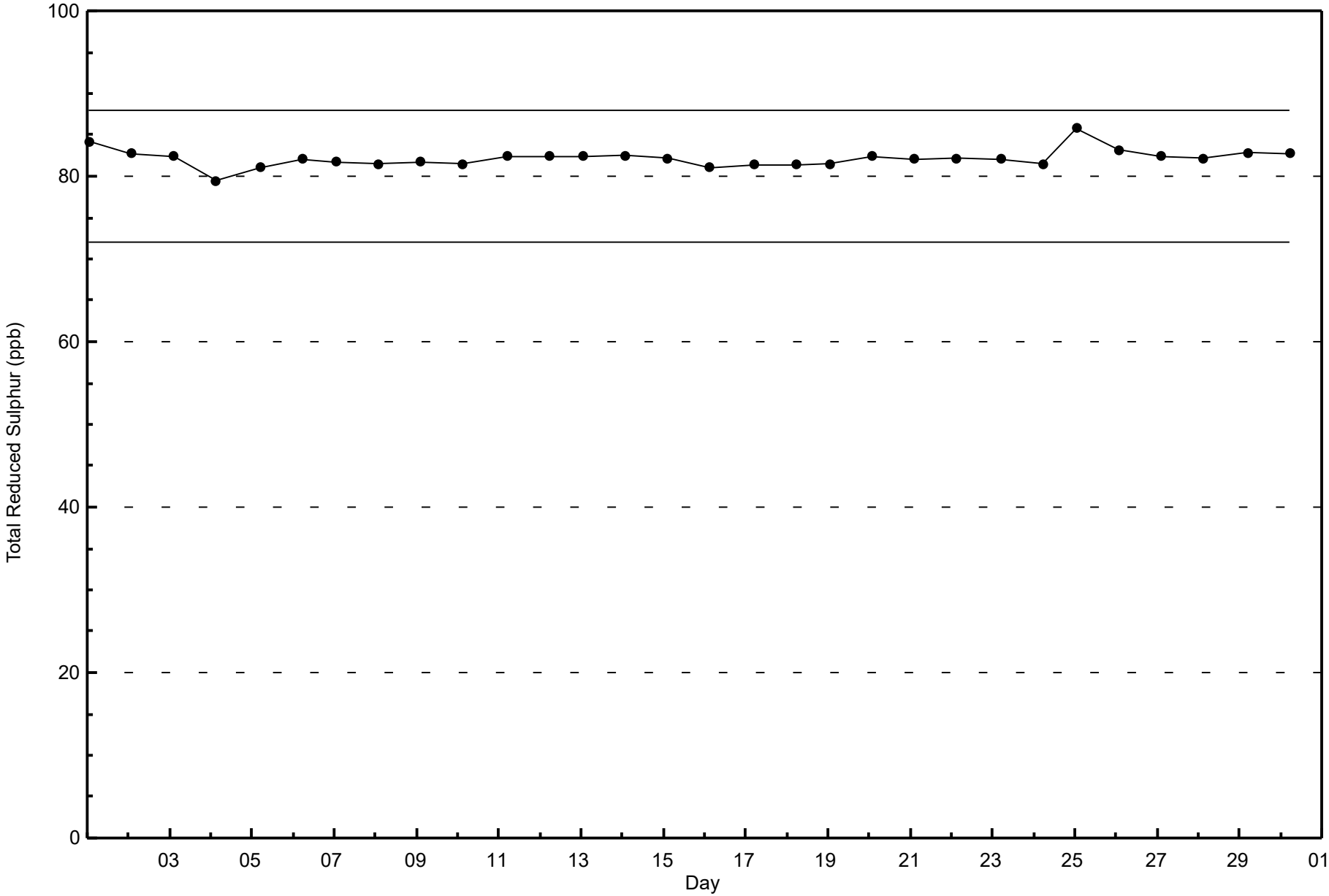


Wood Buffalo Environmental Association

Span Responses

Total Reduced Sulphur (TRS) - ppb

Stony Mountain - September 2024



Wood Buffalo Environmental Association

Summary of Hour Averages

Total Hydrocarbons (THC) - ppm

Stony Mountain - September 2024

Maximum Value: 2.3 ppm on Sep 13 19:00

Maximum Daily Average: 2.2 ppm on Sep 13

Minimum Value: 1.9 ppm on Sep 23 21:00

Minimum Daily Average: 2.0 ppm on Sep 24

Maximum Diurnal Average: 2.1 ppm at hour 5

Minimum Diurnal Average: 2.0 ppm at hour 16

Monthly Average: 2.07 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} = 2.2

Hours in Service:	720
Hours of Data:	653
Hours of Missing Data:	67
Hours of Calibration:	34
Percent Operational Time:	95.4

Day	Hourly Period Ending At (MST)																								Daily	Daily
	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24	Average	Maximum
1-Sep	2.0	2.0	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	2.1	2.1	2.0	2.0	2.0	2.1	2.0	2.1
2-Sep	Z	2.1	2.1	2.1	2.1	2.1	2.1	2.1	2.1	2.1	2.1	2.0	2.1	2.0	2.0	2.0	2.1	2.1	2.1	2.1	2.1	2.1	2.1	2.1	2.1	2.1
3-Sep	2.1	Z	2.1	2.1	2.1	2.1	2.1	2.1	2.1	2.1	2.0	2.1	2.1	2.1	2.0	2.1	2.1	2.1	2.1	2.1	2.1	2.1	2.1	2.1	2.1	2.1
4-Sep	2.2	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	2.1	2.1	2.1	2.1	2.0	2.1	2.2
5-Sep	2.0	2.1	2.1	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	2.1	2.1	2.1	2.1	2.1	2.1
6-Sep	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	2.2	2.2	2.2	2.2	2.1	2.1	2.1	2.1	2.2
7-Sep	2.1	2.2	2.2	2.2	2.2	Z	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	2.2	2.2	2.1	2.1	2.2	2.2
8-Sep	Z	2.1	2.1	2.1	2.1	2.1	2.2	2.1	2.2	2.2	2.2	2.1	2.1	2.0	2.1	2.1	2.1	2.1	2.1	2.1	2.2	2.2	2.2	2.1	2.1	2.2
9-Sep	2.1	Z	2.1	2.1	2.1	2.1	2.1	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	2.1	2.1	2.1	2.1	2.1	2.2
10-Sep	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	2.0	2.1	2.0	2.0	2.1	2.1
11-Sep	2.1	2.1	2.1	Z	2.1	2.1	2.1	2.2	2.1	2.2	2.2	2.2	2.1	2.1	2.0	2.0	2.0	2.0	2.0	2.1	2.1	2.1	2.1	2.1	2.1	2.2
12-Sep	2.1	2.1	2.1	2.1	Z	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
13-Sep	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	2.3	2.3	2.2	2.2	2.2	2.2	2.2	2.3
14-Sep	Z	2.2	2.1	2.1	2.1	2.2	2.2	2.2	2.2	M	2.1	2.1	2.1	2.0	2.0	2.0	2.0	2.0	2.1	2.1	2.0	2.0	2.0	2.1	2.1	2.2
15-Sep	2.1	Z	2.0	2.1	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	2.1	2.1	2.1	2.1	2.0	2.1
16-Sep	2.1	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	2.0	2.0	2.0	2.0	2.1
17-Sep	2.0	2.0	2.0	Z	UO	UO	UO	UO	UO	UO	UO	UO	UO	UO	UO	UO	UO	UO	UO	UO	UO	UO	UO	UO	--	2.0
18-Sep	UO	UO	UO	UO	Z	UO	UO	UO	UO	UO	UO	C	C	C	C	2.1	2.1	2.1	2.1	2.1	2.1	2.1	2.1	2.1	--	2.1
19-Sep	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	2.0	2.1	2.0	2.1	2.1	2.0	2.0	2.1	2.1	2.1	2.1	2.1	2.1
20-Sep	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	2.0	2.0	2.0	2.0	2.0	2.0	2.1	2.1	2.0	2.0	2.1	2.1	2.1
21-Sep	2.1	Z	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	2.0	2.0	2.0	2.0	2.0	2.0	2.1	2.1
22-Sep	2.0	2.0	Z	2.1	2.1	2.1	2.1	2.1	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	2.1
23-Sep	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	1.9	1.9	1.9	1.9	1.9	2.0	2.0
24-Sep	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
25-Sep	2.0	2.0	2.1	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	2.0	2.0	2.0	2.0	2.1	2.1	2.0	2.0	2.0	2.2
26-Sep	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
27-Sep	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	2.0	2.0	2.0	2.0	2.1
28-Sep	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	2.0	2.1
29-Sep	2.1	2.1	2.1	Z	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	2.1	2.0	2.0	2.0	2.0	2.1
30-Sep	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
	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	2.1	2.1	2.1	2.1	2.1	2.1	Diurnal Average	
	2.2	2.2	2.2	2.2	2.2	2.2	2.2	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	Diurnal Maximum	

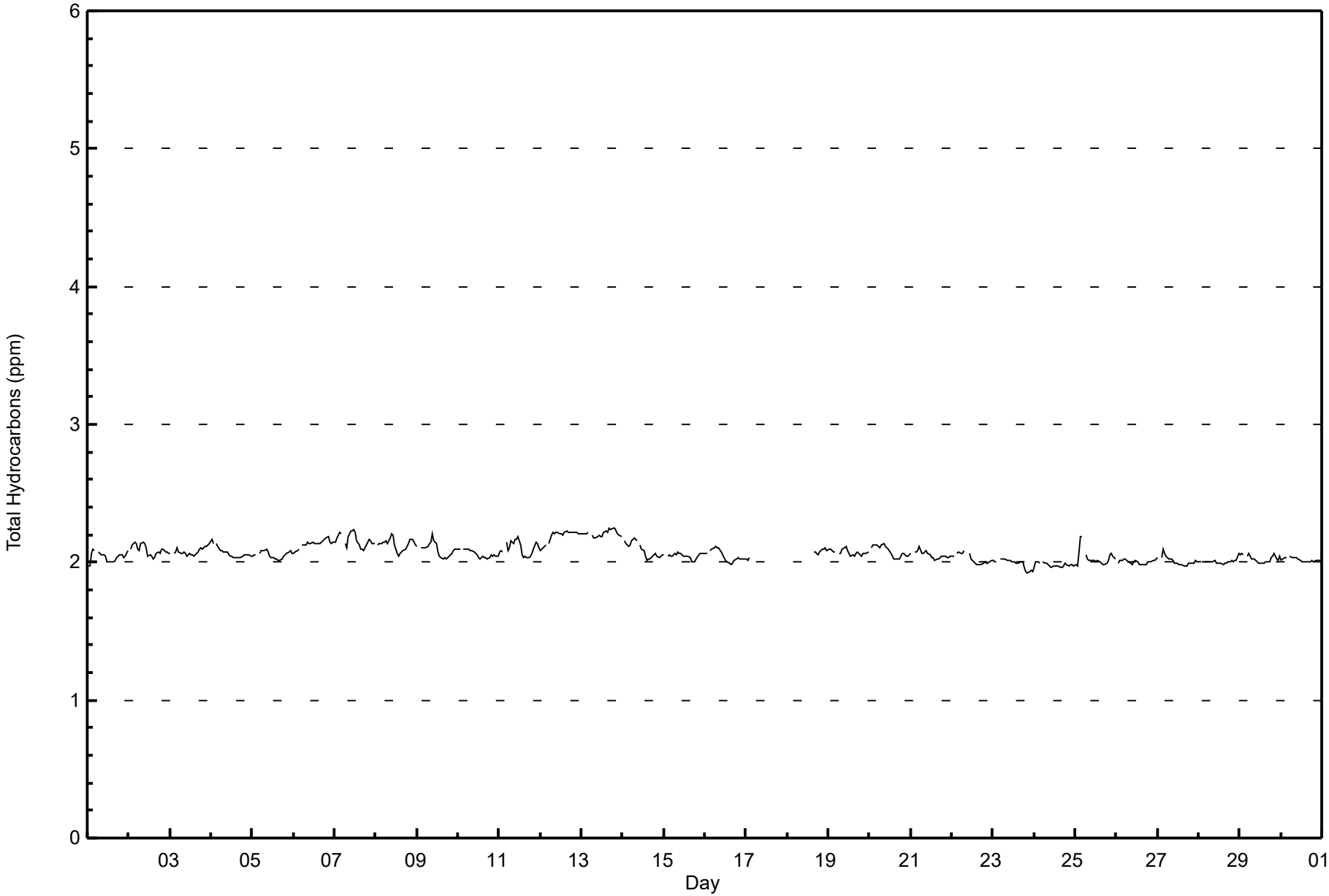
Z - zerospan C - Calibration M - Maintenance UO - Unstable Operation

Wood Buffalo Environmental Association

Hourly Averages

Total Hydrocarbons (THC) - ppm

Stony Mountain - September 2024



Wood Buffalo Environmental Association

Cumulative Frequency Distribution

Total Hydrocarbons (THC) - ppm

Stony Mountain - September 2024

Concentration Ranges (ppm)	Number of Hours	%	Cumulative %
0 - 2.0	308	47.17	47.17
2.1 - 3.0	345	52.83	100.00
3.1 - 10.0	0	0.00	100.00
> 10.0	0	0.00	100.00

Total Number of Valid Hours: 653

Total Number of Hours: 720

Wood Buffalo Environmental Association

Frequency Distribution

Total Hydrocarbons (THC) - ppm

Stony Mountain - September 2024

Concentration Ranges (ppm)	Wind Direction																
	N	NNE	NE	ENE	E	ESE	SE	SSE	S	SSW	SW	WSW	W	WNW	NW	NNW	**Totals**
0 - 2.0	5	4	9	4	2	2	1	11	14	21	48	52	52	48	25	10	308
2.1 - 3.0	17	18	8	3	6	8	8	3	20	53	35	17	41	59	29	20	345
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	22	22	17	7	8	10	9	14	34	74	83	69	93	107	54	30	653

Total Number of Valid Hours: 653

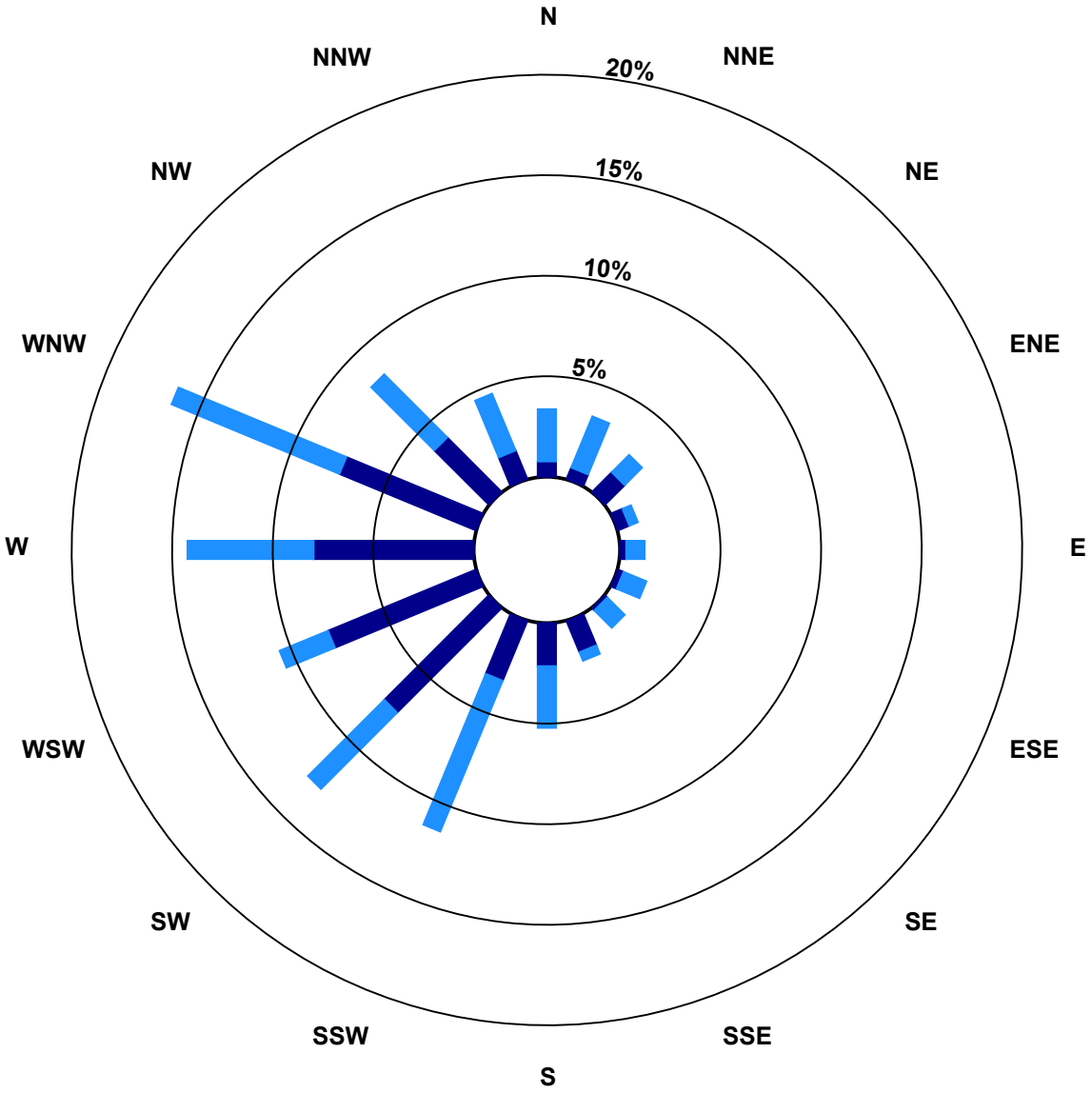
Total Number of Hours: 720

Wood Buffalo Environmental Association

Wind Rose Sep 2024

Total Hydrocarbons (THC) - ppm

Stony Mountain



Classes (ppm)

0 - 2.0

2.1 - 3.0

3.1 - 10.0

> 10.0

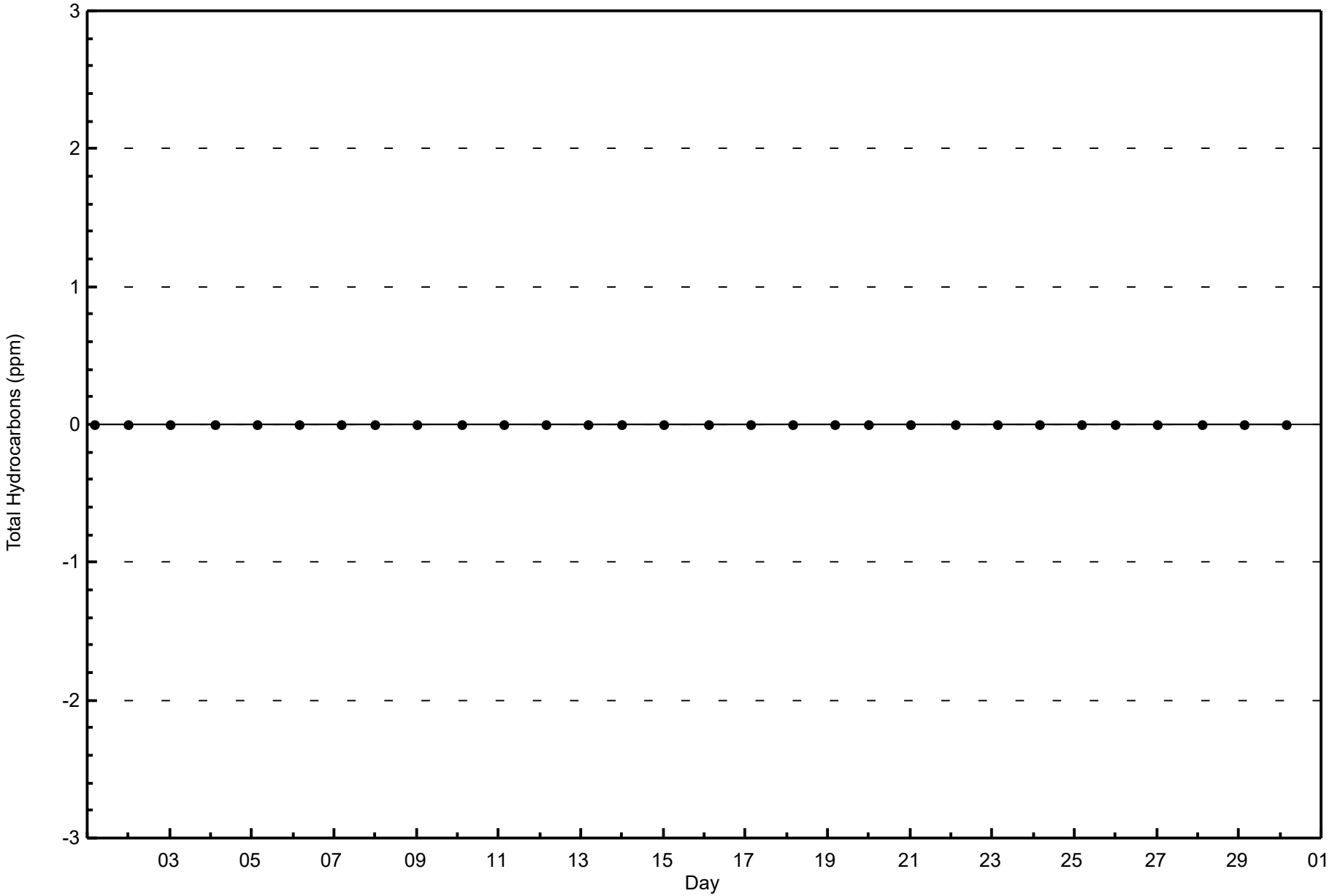
Total Number of Valid Hours: 653

Wood Buffalo Environmental Association

Zero Responses

Total Hydrocarbons (THC) - ppm

Stony Mountain - September 2024

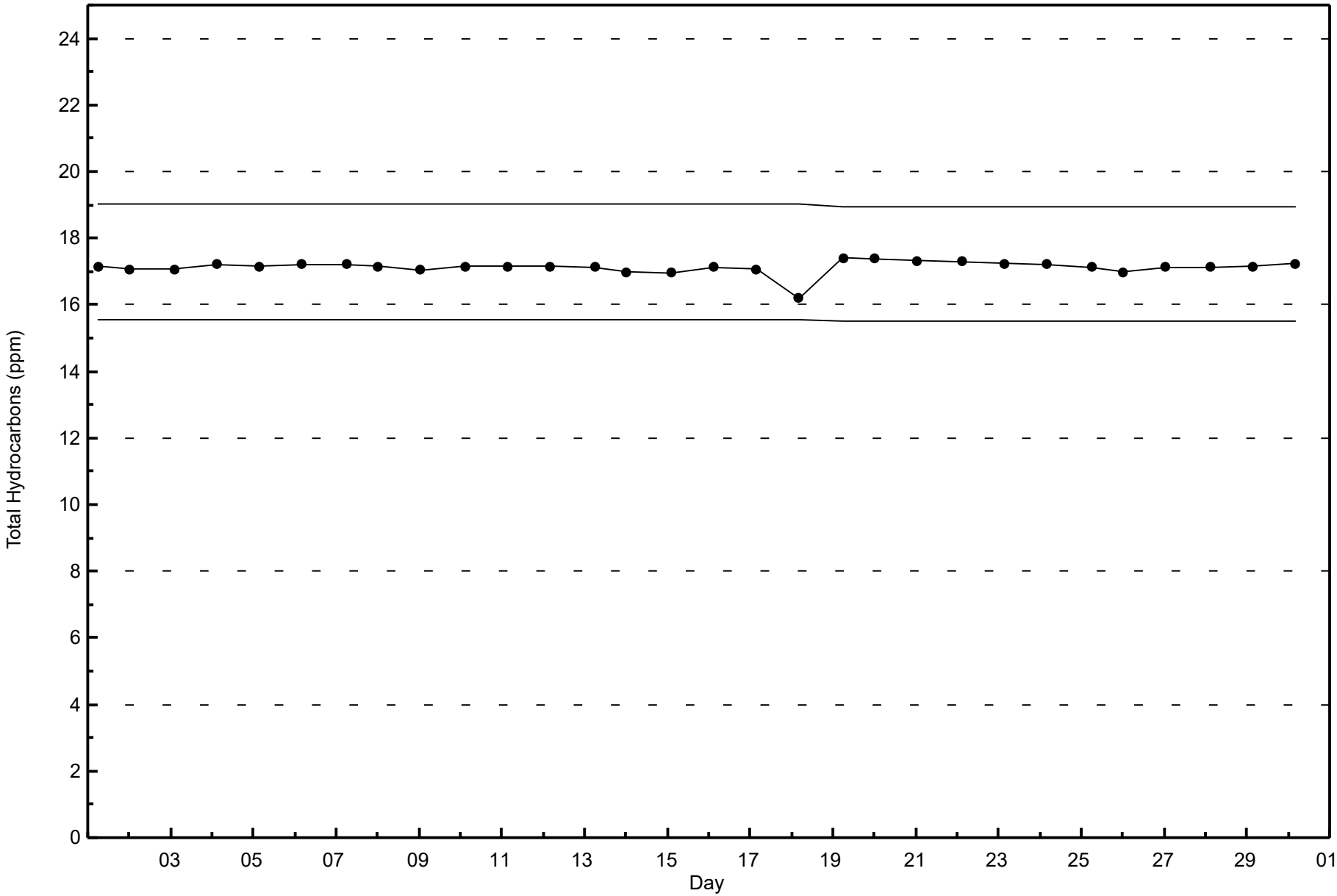


Wood Buffalo Environmental Association

Span Responses

Total Hydrocarbons (THC) - ppm

Stony Mountain - September 2024



Wood Buffalo Environmental Association

Summary of Hour Averages

Non Methane Hydrocarbons (NMHC) - ppm

Stony Mountain - September 2024

Maximum Value: 0.116 ppm on Sep 8 11:00

Maximum Daily Average: 0.093 ppm on Sep 7

Minimum Value: 0.000 ppm on Sep 19 20:00

Minimum Daily Average: 0.001 ppm on Sep 30

Maximum Diurnal Average: 0.034 ppm at hour 5

Minimum Diurnal Average: 0.023 ppm at hour 1

Monthly Average: 0.028 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 in Service:	720
Hours of Data:	653
Hours of Missing Data:	67
Hours of Calibration:	34
Percent Operational Time:	95.4

Day	Hourly Period Ending At (MST)																								Daily	Daily
	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24	Average	Maximum
1-Sep	0.006	0.010	0.019	0.021	0.015	Z	0.014	0.013	0.020	0.027	0.036	0.035	0.040	0.040	0.040	0.039	0.044	0.056	0.059	0.044	0.035	0.024	0.029	0.042	0.031	0.059
2-Sep	Z	0.038	0.042	0.047	0.040	0.033	0.042	0.054	0.059	0.069	0.069	0.062	0.062	0.063	0.061	0.067	0.091	0.076	0.074	0.067	0.070	0.057	0.051	0.047	0.058	0.091
3-Sep	0.050	Z	0.050	0.049	0.060	0.033	0.027	0.041	0.042	0.034	0.017	0.029	0.023	0.023	0.024	0.028	0.029	0.037	0.047	0.040	0.065	0.053	0.057	0.066	0.040	0.066
4-Sep	0.084	0.040	Z	0.046	0.028	0.018	0.020	0.014	0.012	0.018	0.018	0.012	0.016	0.013	0.008	0.014	0.021	0.012	0.010	0.007	0.006	0.006	0.003	0.001	0.019	0.084
5-Sep	0.001	0.005	0.006	Z	0.006	0.009	0.015	0.010	0.019	0.015	0.007	0.005	0.004	0.003	0.004	0.001	0.005	0.006	0.009	0.009	0.010	0.009	0.011	0.004	0.008	0.019
6-Sep	0.006	0.008	0.008	0.009	Z	0.012	0.013	0.013	0.022	0.020	0.022	0.037	0.039	0.057	0.058	0.060	0.064	0.070	0.065	0.061	0.072	0.072	0.072	0.078	0.041	0.078
7-Sep	0.081	0.098	0.106	0.115	0.107	Z	0.079	0.073	0.097	0.102	0.110	0.110	0.113	0.104	0.098	0.092	0.093	0.085	0.090	0.088	0.088	0.079	0.068	0.070	0.093	0.115
8-Sep	Z	0.065	0.068	0.075	0.083	0.090	0.100	0.092	0.099	0.116	0.116	0.095	0.076	0.069	0.076	0.082	0.085	0.089	0.078	0.068	0.068	0.066	0.058	0.050	0.081	0.116
9-Sep	0.047	Z	0.036	0.030	0.025	0.025	0.030	0.037	0.043	0.069	0.065	0.061	0.045	0.025	0.021	0.012	0.010	0.009	0.007	0.004	0.015	0.027	0.029	0.027	0.030	0.069
10-Sep	0.023	0.023	Z	0.022	0.014	0.015	0.011	0.011	0.015	0.015	0.017	0.014	0.009	0.006	0.006	0.001	0.002	0.004	0.005	0.014	0.006	0.003	0.002	0.006	0.011	0.023
11-Sep	0.004	0.008	0.013	Z	0.073	0.009	0.017	0.050	0.035	0.042	0.047	0.051	0.036	0.011	0.008	0.013	0.007	0.005	0.002	0.009	0.020	0.030	0.031	0.020	0.023	0.073
12-Sep	0.012	0.022	0.047	0.027	Z	0.041	0.071	0.076	0.076	0.086	0.080	0.077	0.072	0.069	0.082	0.094	0.091	0.090	0.092	0.090	0.088	0.089	0.085	0.088	0.071	0.094
13-Sep	0.083	0.086	0.083	0.084	0.093	Z	0.079	0.072	0.072	0.074	0.081	0.075	0.076	0.086	0.090	0.084	0.110	0.093	0.102	0.099	0.082	0.075	0.068	0.060	0.083	0.110
14-Sep	Z	0.045	0.038	0.034	0.038	0.045	0.045	0.037	0.040	M	0.040	0.033	0.026	0.016	0.013	0.019	0.024	0.039	0.028	0.022	0.019	0.025	0.021	0.024	0.030	0.045
15-Sep	0.027	Z	0.020	0.024	0.020	0.019	0.026	0.019	0.031	0.024	0.026	0.027	0.028	0.031	0.030	0.036	0.029	0.037	0.025	0.023	0.021	0.021	0.017	0.020	0.025	0.037
16-Sep	0.016	0.020	Z	0.017	0.016	0.016	0.019	0.019	0.027	0.026	0.019	0.011	0.006	0.007	0.005	0.004	0.006	0.013	0.012	0.018	0.012	0.007	0.013	0.006	0.014	0.027
17-Sep	0.004	0.003	0.005	Z	UO	UO	UO	UO	UO	UO	UO	UO	UO	UO	UO	UO	UO	UO	UO	UO	UO	UO	UO	UO	--	0.005
18-Sep	UO	UO	UO	UO	Z	UO	UO	UO	UO	UO	UO	C	C	C	C	0.029	0.032	0.025	0.021	0.025	0.037	0.035	0.038	0.023	--	0.038
19-Sep	0.024	0.018	0.015	0.007	0.002	Z	0.001	0.003	0.016	0.022	0.018	0.008	0.007	0.005	0.004	0.005	0.012	0.023	0.003	0.000	0.006	0.006	0.002	0.009	0.009	0.024
20-Sep	Z	0.023	0.033	0.040	0.029	0.022	0.018	0.015	0.012	0.005	0.009	0.019	0.019	0.012	0.008	0.013	0.011	0.005	0.011	0.024	0.022	0.015	0.010	0.019	0.017	0.040
21-Sep	0.022	Z	0.027	0.023	0.033	0.062	0.005	0.007	0.004	0.008	0.004	0.007	0.002	0.000	0.001	0.002	0.001	0.004	0.005	0.004	0.003	0.001	0.002	0.002	0.010	0.062
22-Sep	0.003	0.004	Z	0.008	0.008	0.008	0.009	0.008	UO	UO	0.021	0.015	0.009	0.007	0.007	0.006	0.005	0.009	0.008	0.012	0.008	0.011	0.013	0.020	0.009	0.021
23-Sep	0.020	0.018	0.021	Z	0.022	0.021	0.024	0.014	0.011	0.012	0.013	0.011	0.009	0.010	0.009	0.010	0.014	0.010	0.011	0.012	0.013	0.017	0.014	0.014	0.014	0.024
24-Sep	0.014	0.013	0.016	0.014	Z	0.016	0.016	0.014	0.012	0.008	0.006	0.002	0.004	0.003	0.002	0.003	0.002	0.002	0.001	0.001	0.004	0.005	0.002	0.004	0.007	0.016
25-Sep	0.009	0.004	0.020	0.068	0.079	Z	0.026	0.016	0.019	0.021	0.016	0.026	0.019	0.022	0.020	0.024	0.027	0.040	0.030	0.047	0.053	0.046	0.040	0.039	0.031	0.079
26-Sep	Z	0.014	0.018	0.020	0.028	0.024	0.024	0.020	0.012	0.005	0.009	0.015	0.007	0.005	0.002	0.000	0.001	0.001	0.001	0.001	0.000	0.000	0.000	0.000	0.009	0.028
27-Sep	0.000	Z	0.008	0.016	0.009	0.009	0.002	0.006	0.006	0.005	0.001	0.004	0.003	0.002	0.000	0.001	0.001	0.002	0.012	0.003	0.004	0.003	0.003	0.002	0.004	0.016
28-Sep	0.001	0.000	Z	0.001	0.000	0.000	0.000	0.000	0.000	0.001	0.000	0.000	0.001	0.001	0.001	0.001	0.000	0.001	0.002	0.001	0.001	0.002	0.000	0.027	0.002	0.027
29-Sep	0.016	0.011	0.009	Z	0.001	0.010	0.002	0.001	0.002	0.002	0.001	0.000	0.000	0.001	0.000	0.002	0.001	0.003	0.013	0.016	0.026	0.007	0.004	0.033	0.007	0.033
30-Sep	0.002	0.001	0.008	0.002	Z	0.003	0.002	0.001	0.000	0.002	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	0.008
	0.023	0.024	0.030	0.033	0.034	0.023	0.026	0.026	0.030	0.032	0.031	0.030	0.027	0.025	0.024	0.026	0.028	0.029	0.028	0.028	0.029	0.027	0.026	0.028	Diurnal Average	
	0.084	0.098	0.106	0.115	0.107	0.090	0.100	0.092	0.099	0.116	0.116	0.110	0.113	0.104	0.098	0.094	0.110	0.093	0.102	0.099	0.088	0.089	0.085	0.088	Diurnal Maximum	

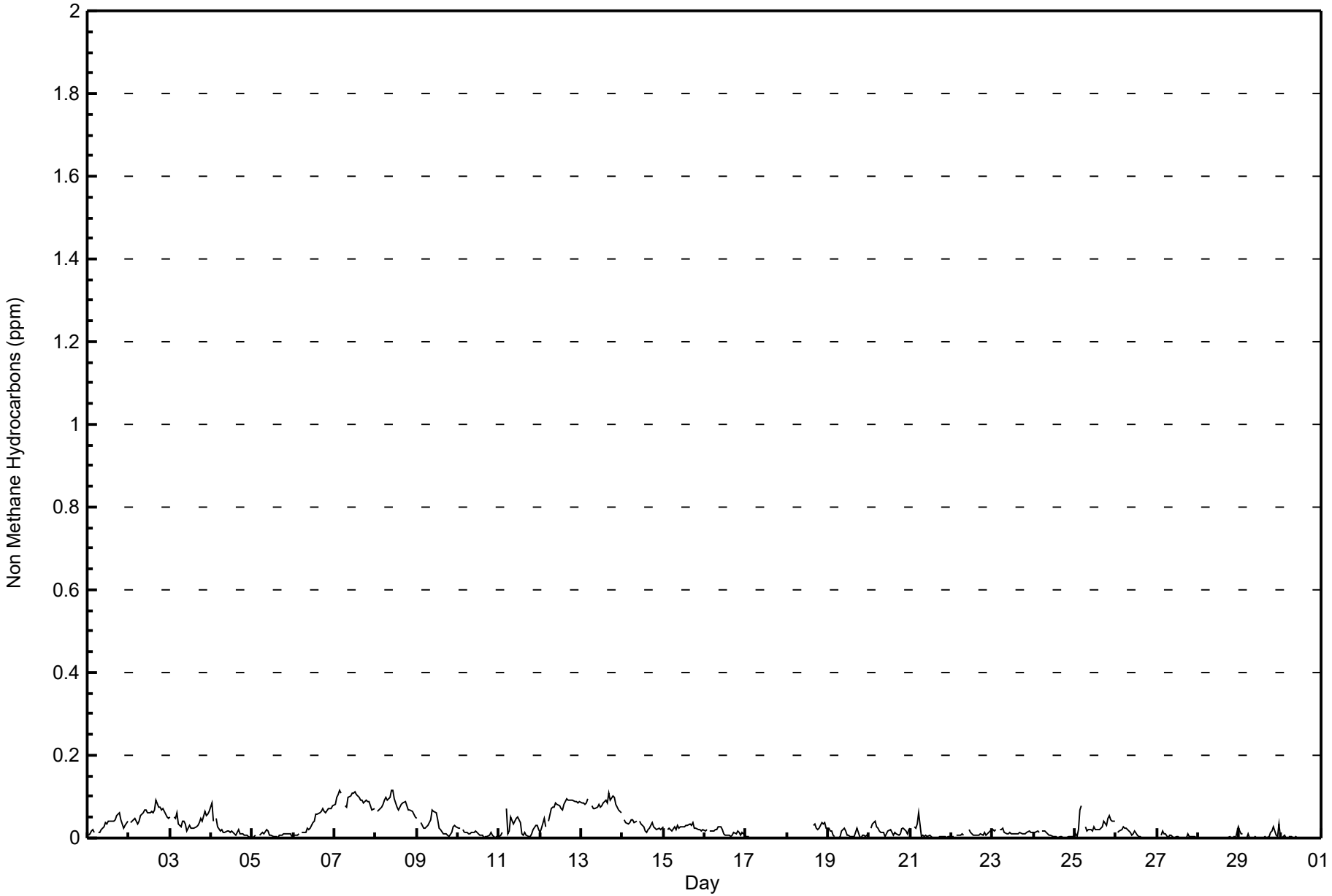
Z - zerospan C - Calibration M - Maintenance UO - Unstable Operation

Wood Buffalo Environmental Association

Hourly Averages

Non Methane Hydrocarbons (NMHC) - ppm

Stony Mountain - September 2024



Wood Buffalo Environmental Association

Cumulative Frequency Distribution

Non Methane Hydrocarbons (NMHC) - ppm

Stony Mountain - September 2024

Concentration Ranges (ppm)	Number of Hours	%	Cumulative %
0 - 0.005	155	23.74	23.74
0.006 - 0.05	373	57.12	80.86
0.06 - 0.1	125	19.14	100.00
> 0.1	0	0.00	100.00

Total Number of Valid Hours: 653

Total Number of Hours: 720

Non Methane Hydrocarbons (NMHC) - ppm

Stony Mountain - September 2024

Concentration Ranges (ppm)	Wind Direction																
	N	NNE	NE	ENE	E	ESE	SE	SSE	S	SSW	SW	WSW	W	WNW	NW	NNW	**Totals**
0 - 0.005	3	2	8	2	1	2	1	4	12	11	22	23	37	21	5	1	155
0.006 - 0.05	8	14	5	5	7	8	6	8	11	46	47	38	43	72	40	15	373
0.06 - 0.1	11	6	4	0	0	0	2	2	11	17	14	8	13	14	9	14	125
> 0.1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Totals	22	22	17	7	8	10	9	14	34	74	83	69	93	107	54	30	653

Total Number of Valid Hours: 653

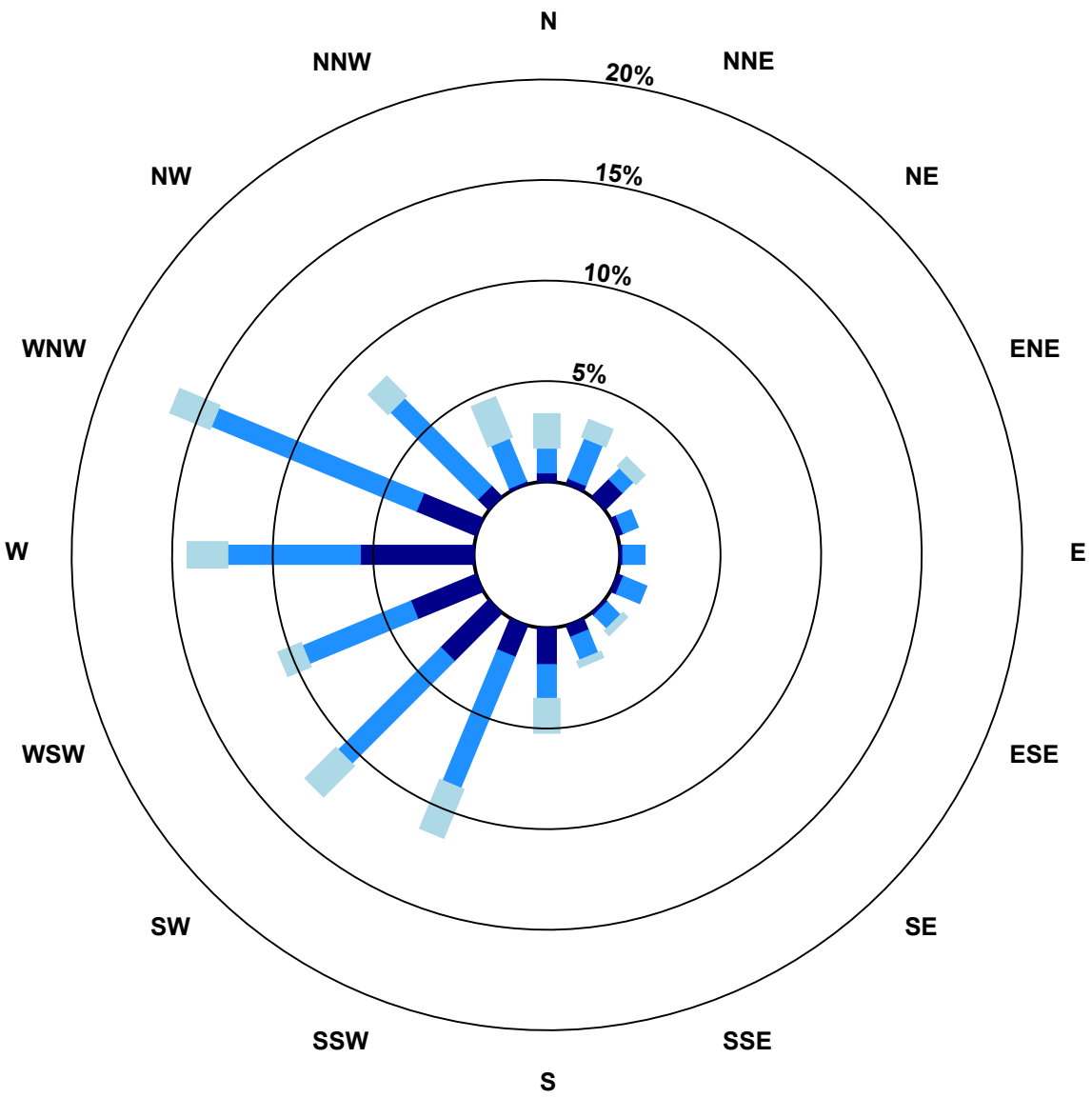
Total Number of Hours: 720

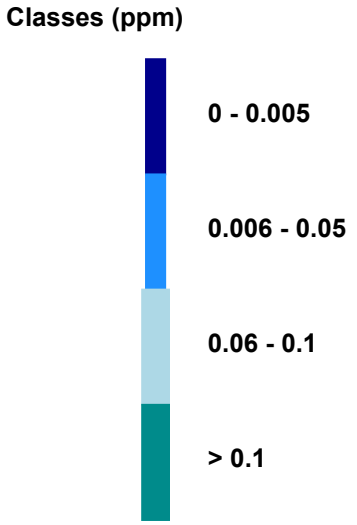
Wood Buffalo Environmental Association

Wind Rose Sep 2024

Non Methane Hydrocarbons (NMHC) - ppm

Stony Mountain





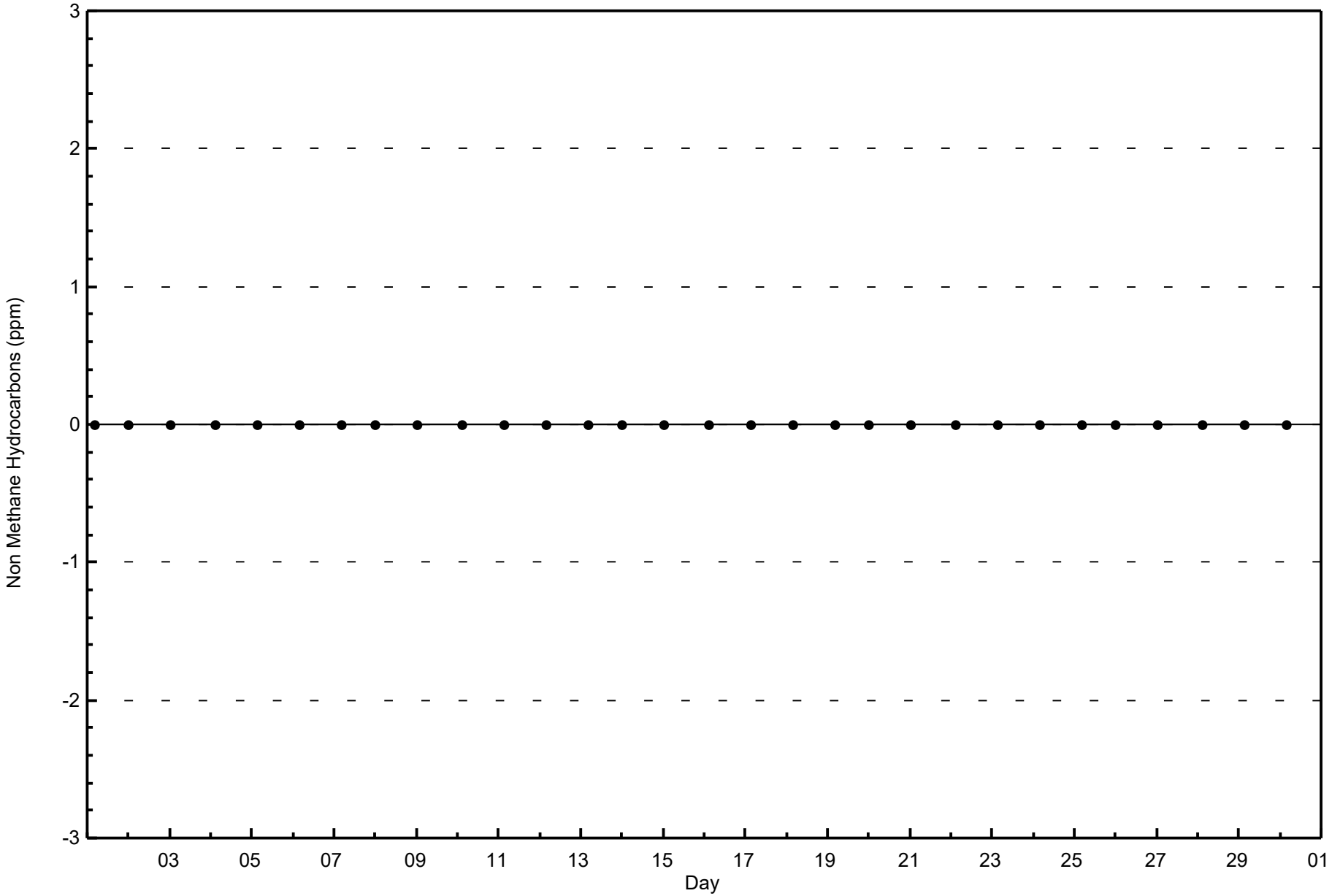
Total Number of Valid Hours: 653

Wood Buffalo Environmental Association

Zero Responses

Non Methane Hydrocarbons (NMHC) - ppm

Stony Mountain - September 2024

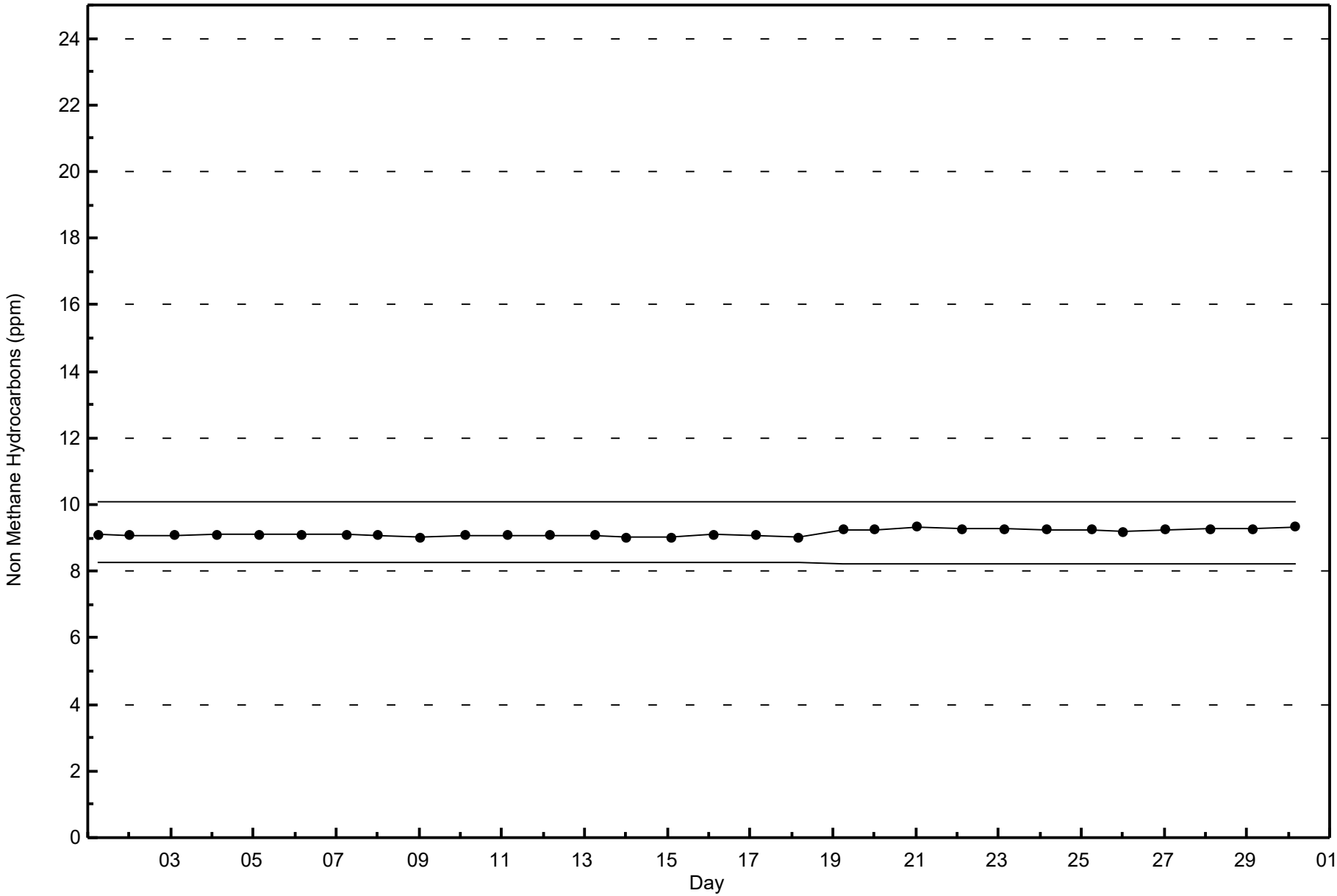


Wood Buffalo Environmental Association

Span Responses

Non Methane Hydrocarbons (NMHC) - ppm

Stony Mountain - September 2024



Wood Buffalo Environmental Association

Summary of Hour Averages

Methane (CH_4) - ppm

Stony Mountain - September 2024

Number of Exceedences (AAAQO): 1-hr: 0 24-hr: 0

Maximum Value: 2.2 ppm on Sep 13 20:00

Maximum Daily Average: 2.1 ppm on Sep 13

Minimum Value: 1.9 ppm on Sep 23 21:00

Minimum Daily Average: 2.0 ppm on Sep 24

Maximum Diurnal Average: 2.1 ppm at hour 4

Minimum Diurnal Average: 2.0 ppm at hour 17

Monthly Average: 2.04 ppm

Percentiles: P_1 = 1.9 P_{10} = 2.0 Q_1 = 2.0 Median = 2.0 Q_3 = 2.1 P_{90} = 2.1 P_{99} = 2.1

Hours in Service:	720
Hours of Data:	653
Hours of Missing Data:	67
Hours of Calibration:	34
Percent Operational Time:	95.4

Day	Hourly Period Ending At (MST)																								Daily	Daily
	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24	Average	Maximum
1-Sep	2.0	2.0	2.0	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
2-Sep	Z	2.1	2.1	2.1	2.1	2.1	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	2.0	2.1
3-Sep	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	2.1	2.1	2.0	2.1
4-Sep	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	2.0	2.0	2.1	2.1	2.0	2.0	2.1
5-Sep	2.0	2.1	2.0	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	2.1	2.1	2.1	2.1	2.0	2.1
6-Sep	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	2.1
7-Sep	2.1	2.1	2.1	2.1	2.1	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	2.1	2.1	2.1	2.1	2.1	2.1	2.1
8-Sep	Z	2.1	2.1	2.1	2.1	2.1	2.1	2.0	2.1	2.1	2.1	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.1	2.1	2.1	2.1	2.1	2.0	2.1
9-Sep	2.1	Z	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	2.0	2.0	2.1	2.1	2.1	2.1	2.1	2.1
10-Sep	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	2.0	2.0	2.1	2.0	2.0	2.1	2.1
11-Sep	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	2.0	2.0	2.0	2.0	2.0	2.0	2.1	2.1	2.1	2.1	2.1	2.1	2.1
12-Sep	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	2.1
13-Sep	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	2.2	2.2	2.1	2.1	2.1	2.1	2.1	2.2
14-Sep	Z	2.1	2.1	2.1	2.1	2.1	2.1	2.1	2.1	M	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	2.1
15-Sep	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	2.0	2.0	2.1
16-Sep	2.0	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	2.0	2.1
17-Sep	2.0	2.0	2.0	Z	UO	UO	UO	UO	UO	UO	UO	UO	UO	UO	UO	UO	UO	UO	UO	UO	UO	UO	UO	UO	--	2.0
18-Sep	UO	UO	UO	UO	Z	UO	UO	UO	UO	UO	UO	C	C	C	C	2.0	2.0	2.0	2.0	2.0	2.1	2.1	2.1	2.1	--	2.1
19-Sep	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	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.1	2.1	2.1	2.1	2.1	2.1
20-Sep	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	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.1	2.1
21-Sep	2.0	Z	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	2.0	2.0	2.0	2.1
22-Sep	2.0	2.0	Z	2.1	2.1	2.1	2.1	2.1	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	2.1
23-Sep	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	1.9	1.9	1.9	1.9	1.9	2.0	2.0
24-Sep	1.9	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
25-Sep	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	1.9	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.1
26-Sep	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
27-Sep	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	2.0	2.0	2.0	2.0	2.1
28-Sep	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
29-Sep	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	2.0	2.0	2.0	2.0	2.0	2.0	2.1
30-Sep	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
	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	2.0	2.0	Diurnal Average	
	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	2.1	2.1	2.1	Diurnal Maximum	

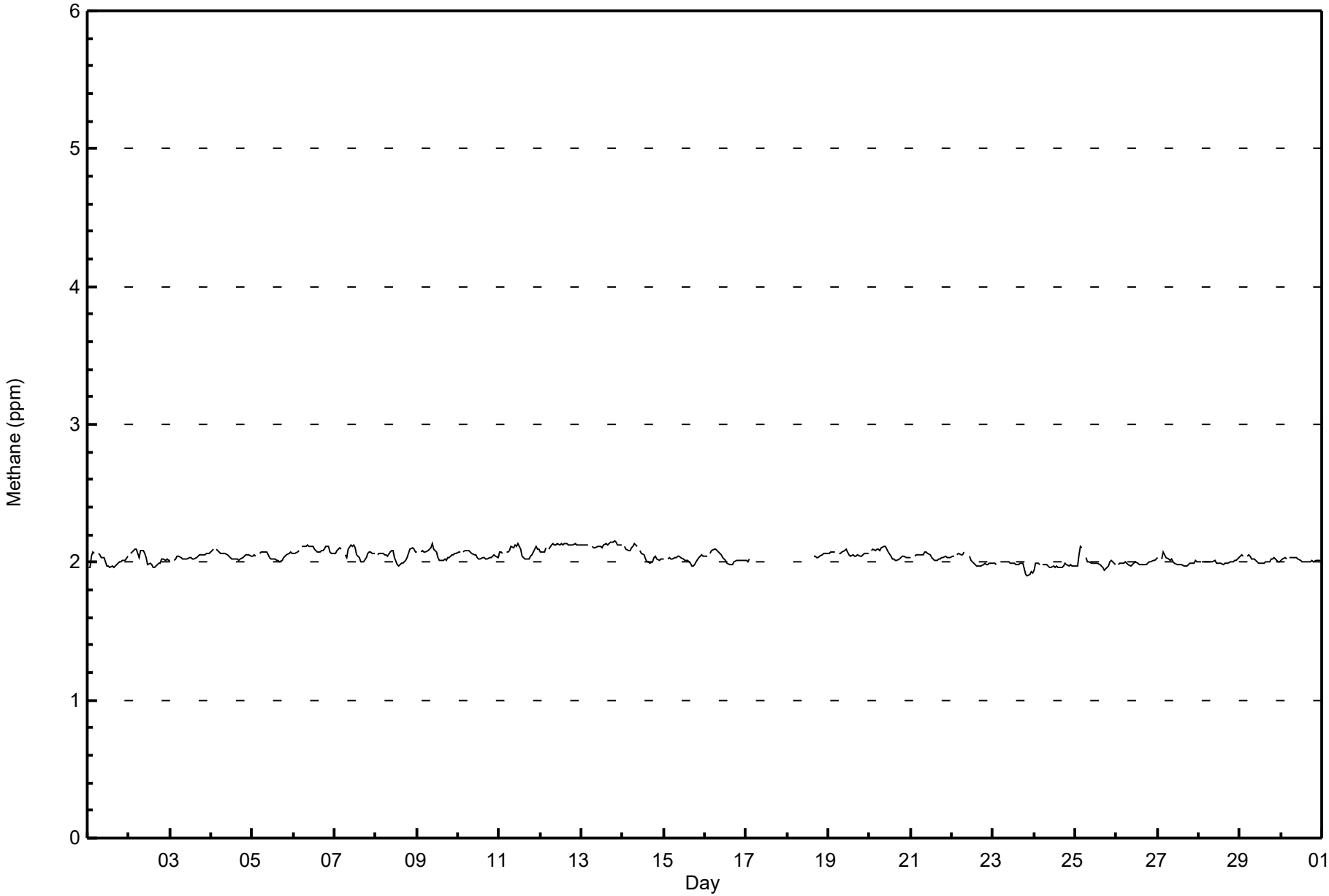
Z - zerospan C - Calibration M - Maintenance UO - Unstable Operation

Wood Buffalo Environmental Association

Hourly Averages

Methane (CH_4) - ppm

Stony Mountain - September 2024



Methane (CH_4) - ppm
Stony Mountain - September 2024

Concentration Ranges (ppm)	Number of Hours	%	Cumulative %
0 - 2.0	402	61.56	61.56
2.1 - 3.0	251	38.44	100.00
3.1 - 10.0	0	0.00	100.00
> 10.0	0	0.00	100.00

Total Number of Valid Hours: 653

Total Number of Hours: 720

Wood Buffalo Environmental Association

Frequency Distribution

Methane (CH_4) - ppm

Stony Mountain - September 2024

Concentration Ranges (ppm)	Wind Direction																
	N	NNE	NE	ENE	E	ESE	SE	SSE	S	SSW	SW	WSW	W	WNW	NW	NNW	**Totals**
0 - 2.0	9	12	11	5	2	3	2	13	20	31	63	58	63	57	39	14	402
2.1 - 3.0	13	10	6	2	6	7	7	1	14	43	20	11	30	50	15	16	251
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	22	22	17	7	8	10	9	14	34	74	83	69	93	107	54	30	653

Total Number of Valid Hours: 653

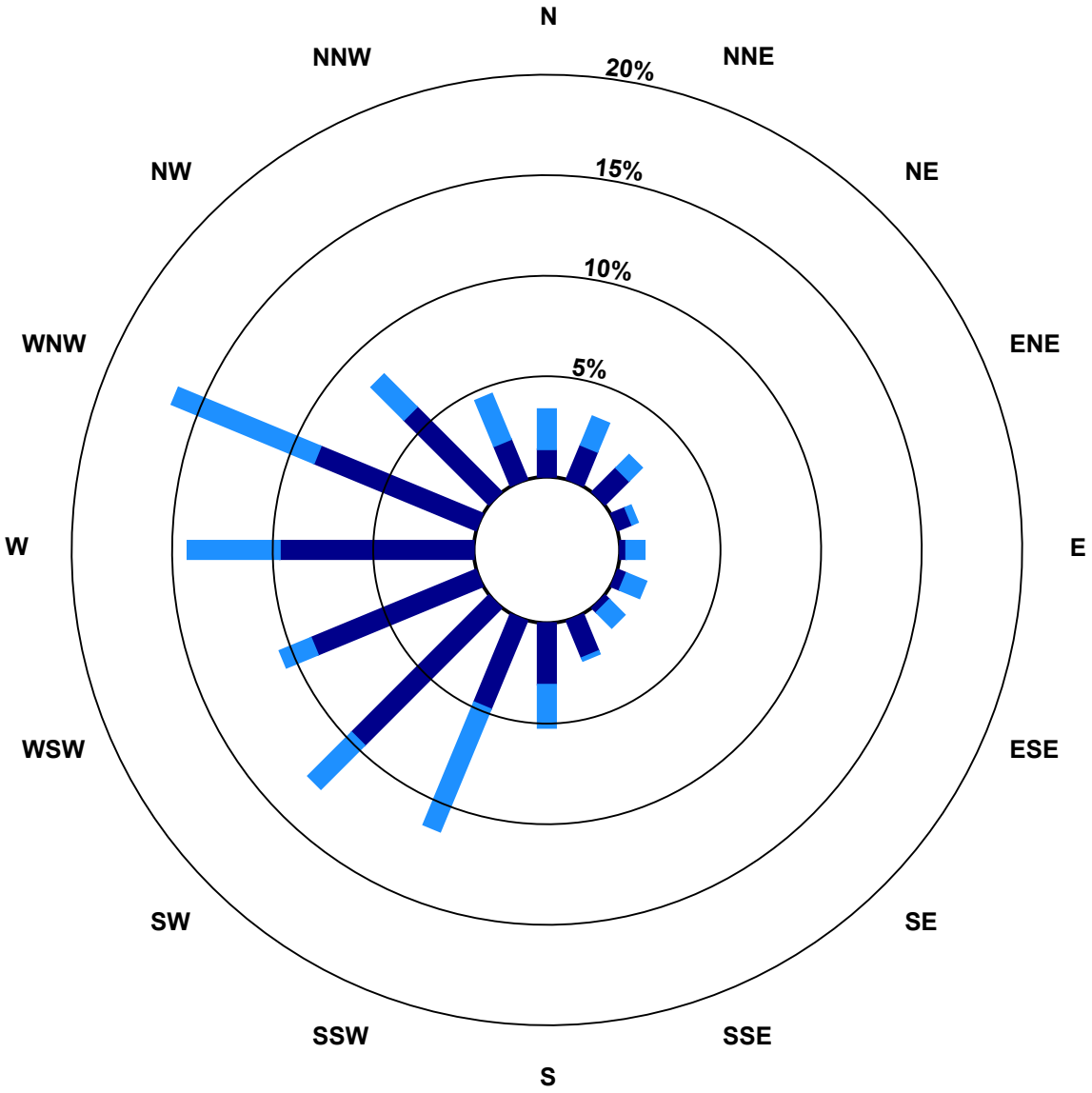
Total Number of Hours: 720

Wood Buffalo Environmental Association

Wind Rose Sep 2024

Methane (CH_4) - ppm

Stony Mountain



Classes (ppm)

0 - 2.0

2.1 - 3.0

3.1 - 10.0

> 10.0

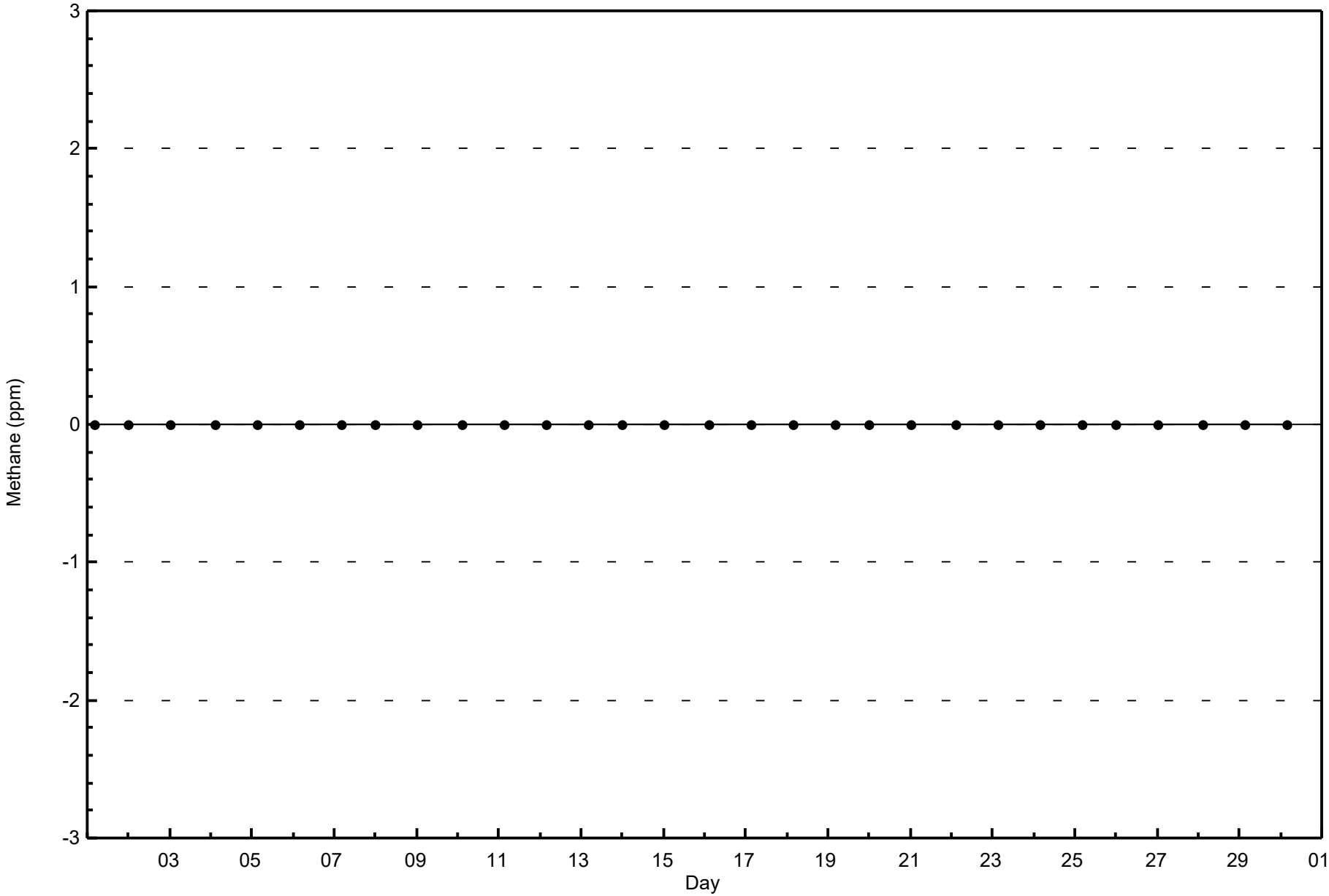
Total Number of Valid Hours: 653

Wood Buffalo Environmental Association

Zero Responses

Methane (CH_4) - ppm

Stony Mountain - September 2024

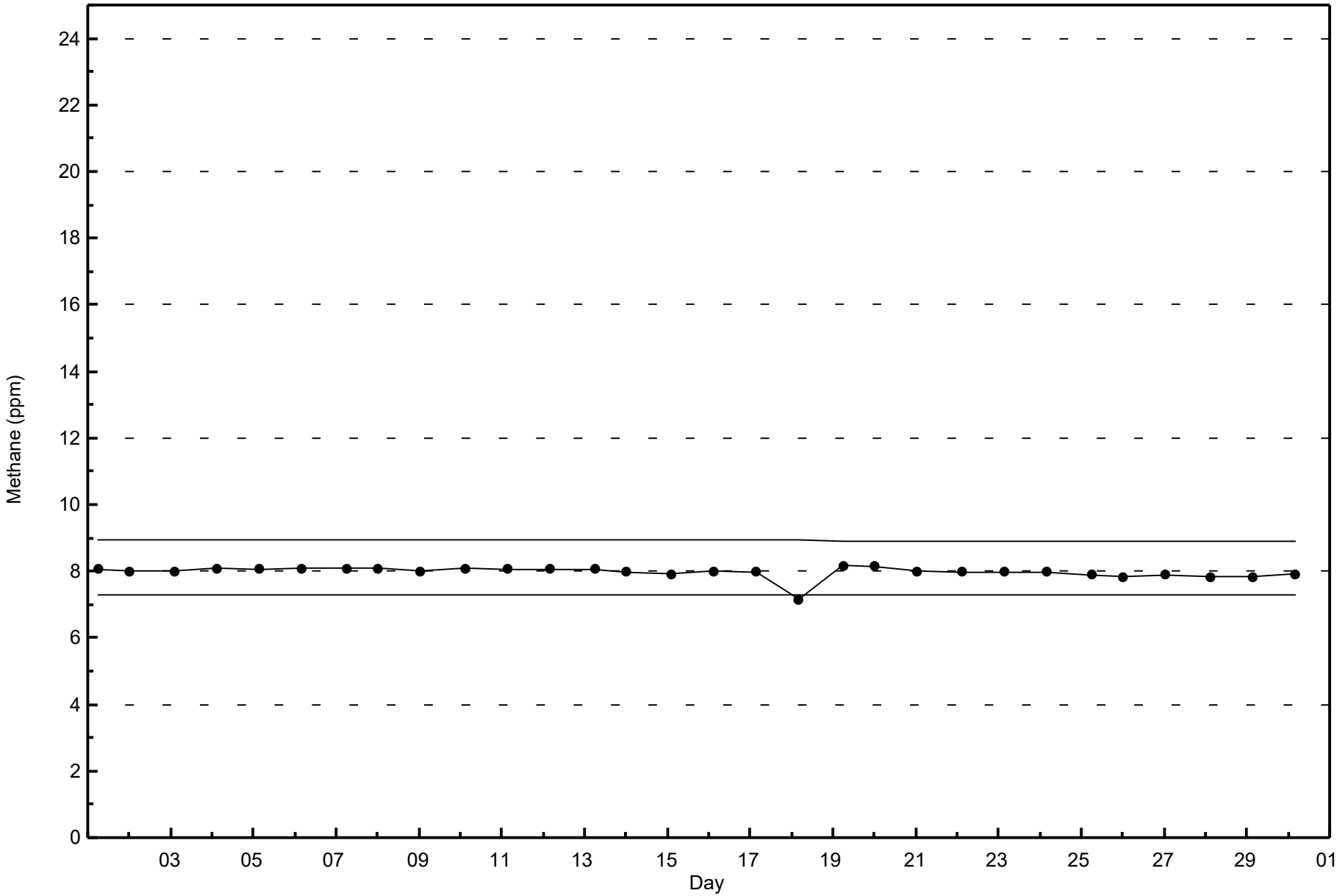


Wood Buffalo Environmental Association

Span Responses

Methane (CH_4) - ppm

Stony Mountain - September 2024



Wood Buffalo Environmental Association

Summary of Hour Averages

Nitric Oxide (NO) - ppb

Stony Mountain - September 2024

Maximum Value: 2.0 ppb on Sep 11 10:00

Maximum Daily Average: 0.5 ppb on Sep 11

Minimum Value: 0.0 ppb on Sep 1 02:00

Minimum Daily Average: 0.0 ppb on Sep 27

Maximum Diurnal Average: 0.3 ppb at hour 16

Minimum Diurnal Average: 0.1 ppb at hour 23

Monthly Average: 0.15 ppb

Percentiles: P_1 = 0.0 P_{10} = 0.0 Q_1 = 0.0 Median = 0.0 Q_3 = 0.2 P_{90} = 0.5 P_{99} = 1.2

Hours in Service:	720
Hours of Data:	661
Hours of Missing Data:	59
Hours of Calibration:	38
Percent Operational Time:	97.1

Day	Hourly Period Ending At (MST)																								Daily	Daily
	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24	Average	Maximum
1-Sep	0.2	0.0	Z	1.2	0.3	0.1	0.0	0.0	0.0	0.4	0.4	0.6	0.2	0.3	0.0	0.5	0.0	0.0	0.2	0.0	0.0	0.3	0.0	0.0	0.2	1.2
2-Sep	0.0	0.0	0.0	Z	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	0.4
3-Sep	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	0.0	0.0	0.0	0.2
4-Sep	0.0	0.0	0.0	0.3	0.8	Z	1.0	0.5	0.4	0.2	0.5	0.2	0.4	0.0	0.4	0.2	0.5	0.3	0.2	0.0	0.2	0.0	0.0	0.0	0.3	1.0
5-Sep	Z	0.4	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.3	0.3	0.1	0.2	0.1	0.0	0.7	0.1	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.1	0.7
6-Sep	0.0	Z	0.8	0.1	0.0	0.0	0.0	0.0	0.0	0.3	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.4	0.0	0.1	0.8
7-Sep	0.2	0.5	Z	0.9	0.0	0.1	0.0	0.0	0.0	0.4	0.5	0.1	0.0	0.0	0.0	0.2	0.3	0.0	0.0	0.0	0.0	0.4	0.1	0.5	0.2	0.9
8-Sep	0.0	0.8	0.0	Z	0.8	0.0	0.0	0.0	0.4	0.5	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	0.1	0.8
9-Sep	0.0	0.0	0.0	0.0	Z	0.5	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	0.4	0.2	0.0	0.6	0.4	0.1	0.6
10-Sep	0.4	0.0	0.1	0.0	0.1	Z	1.7	0.8	0.4	0.0	0.3	0.6	0.3	0.4	0.3	0.1	0.0	0.2	0.1	0.1	0.2	0.1	0.0	0.0	0.3	1.7
11-Sep	Z	1.0	0.1	0.1	0.2	0.0	0.1	0.3	0.0	2.0	1.0	1.4	0.8	0.0	0.6	0.6	0.3	0.7	0.5	0.3	0.1	0.3	0.0	0.2	0.5	2.0
12-Sep	0.3	Z	1.5	0.0	0.0	0.3	0.4	0.0	0.0	0.2	0.2	0.0	0.0	0.3	0.7	0.0	0.3	0.5	0.1	0.5	0.0	0.0	0.1	0.0	0.2	1.5
13-Sep	0.0	0.1	Z	1.0	0.4	0.0	0.0	0.0	0.4	0.0	0.0	0.0	0.0	0.4	0.1	0.6	0.0	0.1	0.0	0.2	0.0	0.3	0.0	0.0	0.2	1.0
14-Sep	0.3	0.2	0.3	Z	1.1	0.2	0.0	0.3	0.3	M	0.3	0.0	0.4	0.4	0.8	0.4	0.1	0.2	0.0	0.0	0.2	0.4	0.0	0.0	0.3	1.1
15-Sep	0.4	0.3	0.4	0.6	Z	1.4	0.7	0.1	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	0.0	0.0	0.0	0.2	1.4
16-Sep	0.0	0.0	0.0	0.0	0.0	Z	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	0.0	0.0	0.0	0.0	0.0	0.6
17-Sep	Z	1.0	0.0	0.0	0.0	0.0	0.1	0.2	0.0	0.3	0.3	0.2	0.5	0.6	0.8	0.8	0.6	0.6	0.0	0.0	0.2	0.0	0.0	0.7	0.3	1.0
18-Sep	0.2	Z	1.3	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	C	C	C	C	M	M	M	M	M	M	M	M	M	--	1.3
19-Sep	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
20-Sep	0.0	0.0	0.0	Z	0.4	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	0.5	0.0	0.5
21-Sep	0.0	0.0	0.0	0.0	Z	0.3	0.4	0.0	0.0	0.0	0.0	0.0	0.2	0.0	0.6	0.5	0.5	0.0	0.0	0.0	0.0	0.5	0.0	0.0	0.1	0.6
22-Sep	0.0	0.0	0.0	0.0	0.0	Z	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	0.0	0.0	0.0	0.8
23-Sep	Z	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	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.6
24-Sep	0.0	Z	0.3	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.1	0.5	0.0	0.5	0.3	0.6	0.7	0.4	0.4	0.2	0.0	0.0	0.0	0.0	0.2	0.7
25-Sep	0.5	0.0	Z	1.0	0.0	0.0	0.0	0.1	0.2	0.0	0.0	0.3	0.1	0.7	0.4	0.7	0.4	0.3	0.1	0.2	0.5	0.6	0.6	1.0	0.3	1.0
26-Sep	0.6	0.9	0.8	Z	1.3	0.5	0.4	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	1.1	0.9	0.4	0.2	0.0	0.0	0.0	0.0	0.0	0.3	1.3
27-Sep	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
28-Sep	0.0	0.0	0.0	0.0	0.0	Z	0.7	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	0.7
29-Sep	Z	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	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.3
30-Sep	0.0	Z	0.9	0.0	0.0	0.0	0.0	0.0	0.0	0.5	0.0	0.2	0.0	0.0	0.1	0.3	0.1	0.2	0.0	0.0	0.0	0.1	0.0	0.0	0.1	0.9
	0.1	0.2	0.3	0.2	0.2	0.1	0.2	0.1	0.1	0.2	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	Diurnal Average	
	0.6	1.0	1.5	1.2	1.3	1.4	1.7	0.8	0.4	2.0	1.0	1.4	0.8	0.7	0.8	1.1	0.9	0.7	0.5	0.5	0.5	0.6	0.6	1.0	Diurnal Maximum	

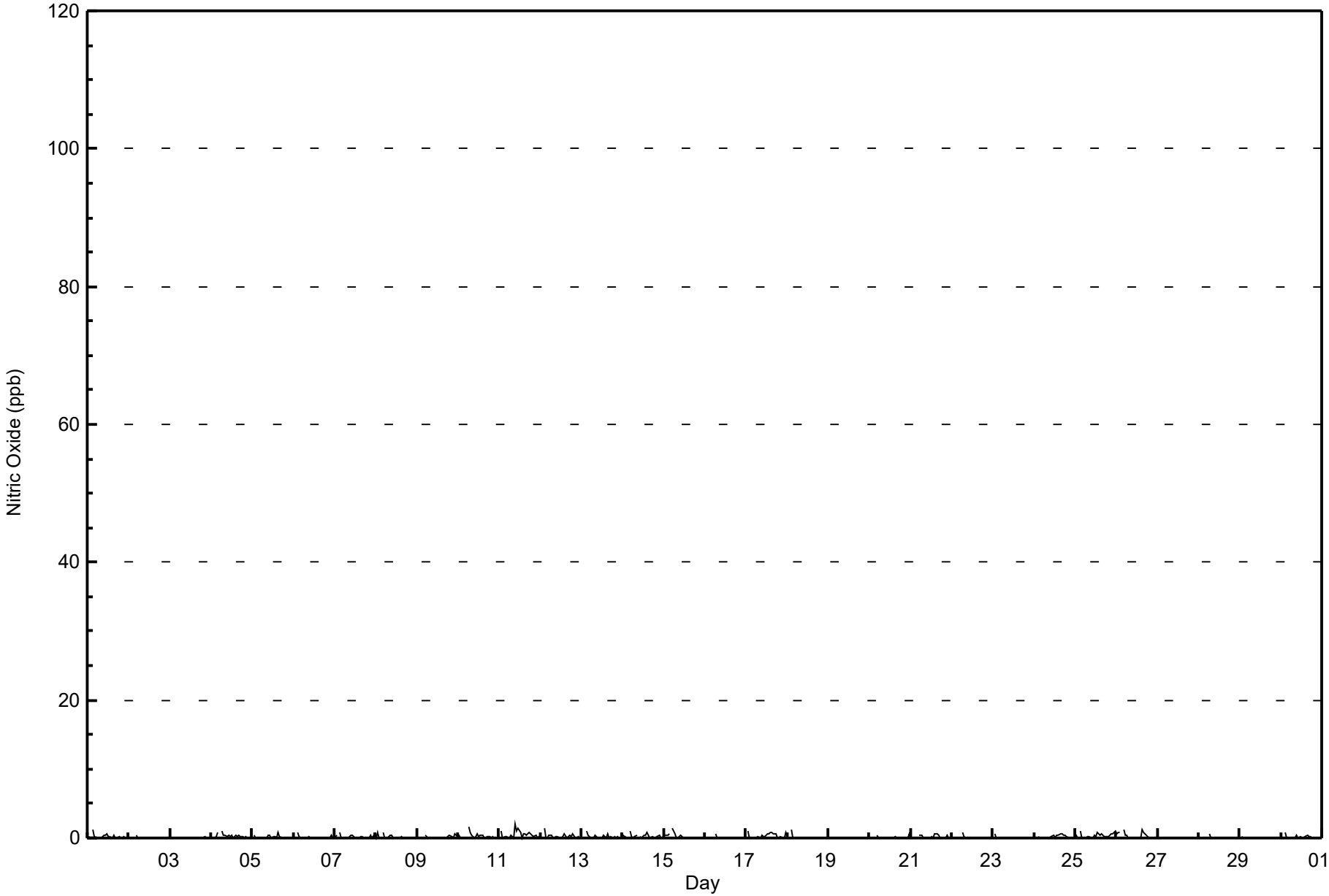
Z - zerospan C - Calibration M - Maintenance

Wood Buffalo Environmental Association

Hourly Averages

Nitric Oxide (NO) - ppb

Stony Mountain - September 2024



Concentration Ranges (ppb)	Number of Hours	%	Cumulative %
0 - 20	661	100.00	100.00
21 - 40	0	0.00	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: 661

Total Number of Hours: 720

Nitric Oxide (NO) - ppb
Stony Mountain - September 2024

Concentration Ranges (ppb)	Wind Direction																
	N	NNE	NE	ENE	E	ESE	SE	SSE	S	SSW	SW	WSW	W	WNW	NW	NNW	**Totals**
0 - 20	23	21	17	6	8	8	10	18	41	84	91	70	86	101	46	31	661
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	23	21	17	6	8	8	10	18	41	84	91	70	86	101	46	31	661

Total Number of Valid Hours: 661

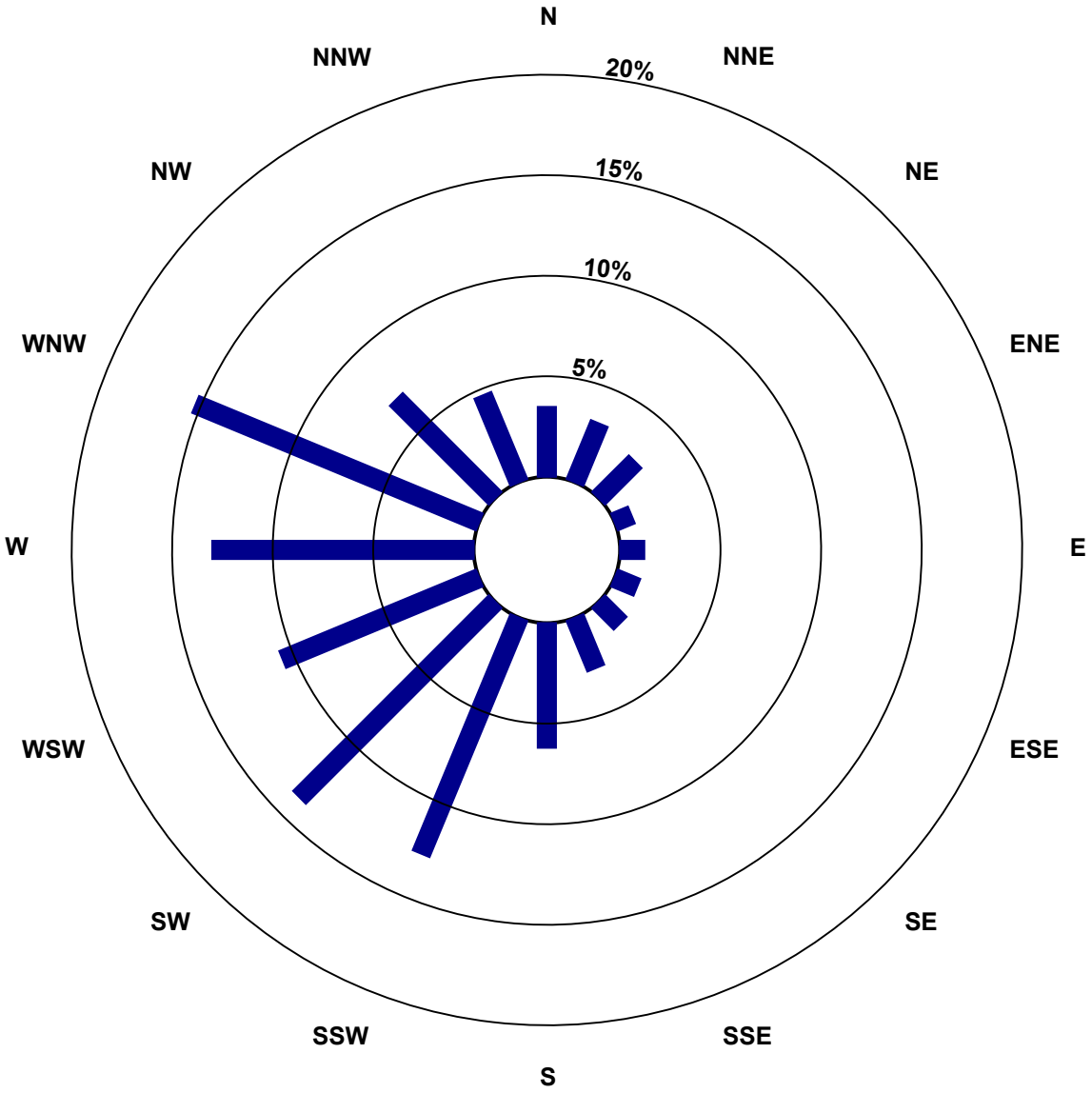
Total Number of Hours: 720

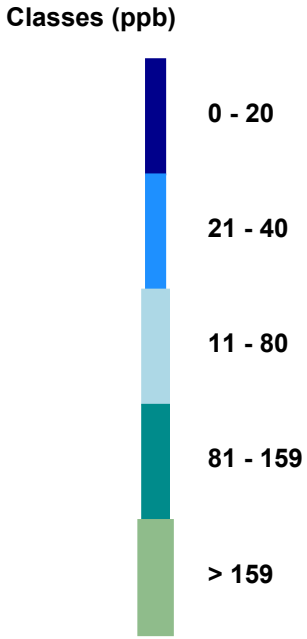
Wood Buffalo Environmental Association

Wind Rose Sep 2024

Nitric Oxide (NO) - ppb

Stony Mountain





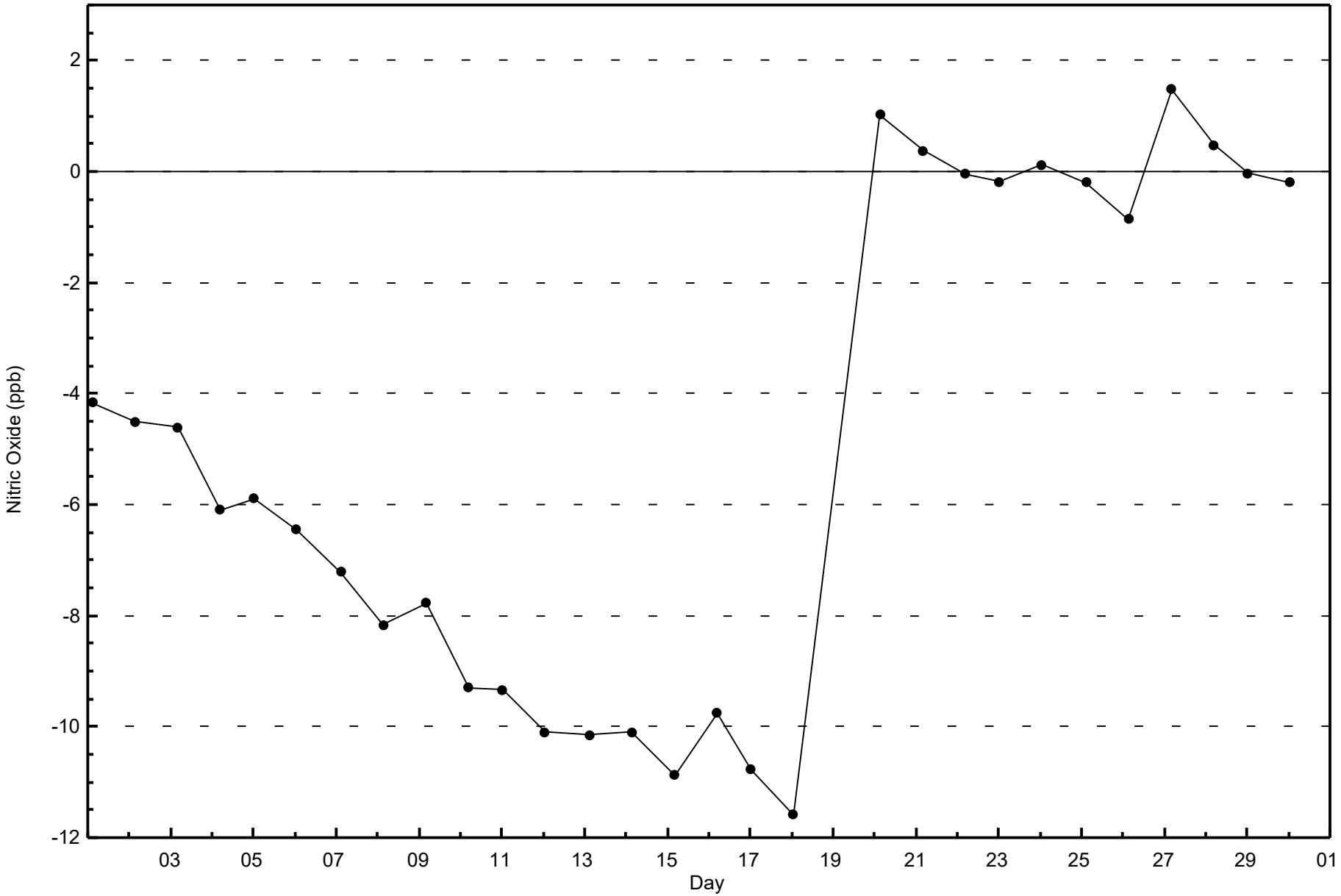
Total Number of Valid Hours: 661

Wood Buffalo Environmental Association

Zero Responses

Nitric Oxide (NO) - ppb

Stony Mountain - September 2024

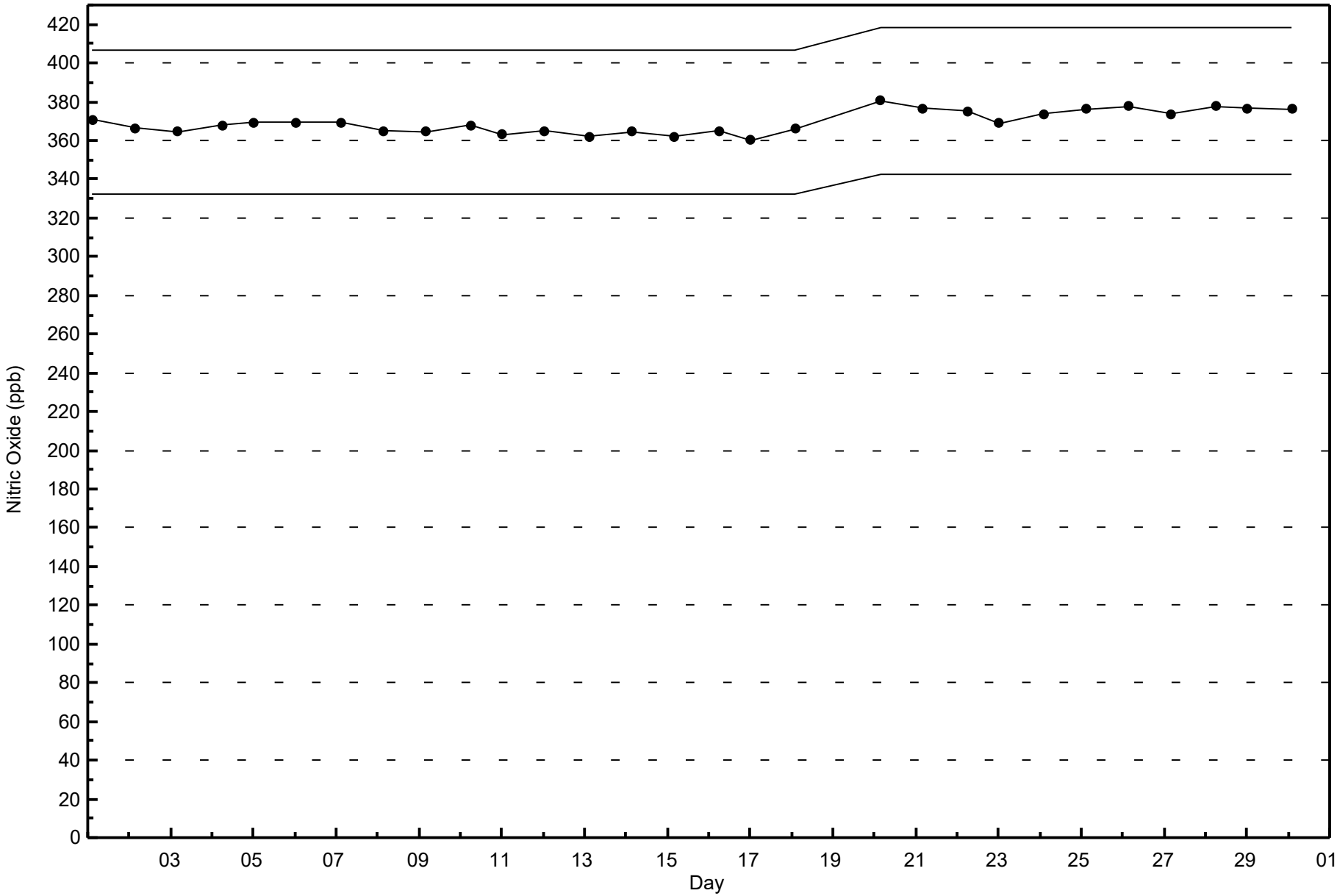


Wood Buffalo Environmental Association

Span Responses

Nitric Oxide (NO) - ppb

Stony Mountain - September 2024



Wood Buffalo Environmental Association

Summary of Hour Averages

Nitrogen Dioxide (NO_2) - ppb

Stony Mountain - September 2024

Number of Exceedences (AAAQO): 1-hr: 0 24-hr: 0
Maximum Value: 3.1 ppb on Sep 11 11:00 Maximum Daily Average: 1.4 ppb on Sep 13

Minimum Value: 0.0 ppb on Sep 2 00:00 Minimum Daily Average: 0.0 ppb on Sep 23
Maximum Diurnal Average: 0.8 ppb at hour 4 Minimum Diurnal Average: 0.2 ppb at hour 17
Monthly Average: 0.42 ppb Percentiles: P_1 = 0.0 P_{10} = 0.0 Q_1 = 0.0 Median = 0.2 Q_3 = 0.7 P_{90} = 1.1 P_{99} = 2.4

Hours in Service:	720
Hours of Data:	661
Hours of Missing Data:	59
Hours of Calibration:	38
Percent Operational Time:	97.1

Day	Hourly Period Ending At (MST)																								Daily	Daily
	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24	Average	Maximum
1-Sep	0.4	0.4	Z	1.4	1.0	0.7	0.8	0.9	0.7	0.8	0.6	0.6	0.6	0.6	0.6	0.4	0.1	0.5	0.5	0.4	0.5	0.5	0.2	0.0	0.6	1.4
2-Sep	0.7	0.3	0.6	Z	1.4	0.7	0.8	0.2	1.0	0.6	0.5	0.3	0.1	0.2	0.4	0.1	0.0	0.0	0.0	0.0	0.0	0.1	0.3	0.2	0.4	1.4
3-Sep	0.0	0.0	0.0	0.0	Z	1.1	0.2	0.2	0.6	0.0	0.0	0.0	0.0	0.0	0.4	0.6	0.7	0.9	0.6	0.6	0.7	0.8	1.0	1.2	0.4	1.2
4-Sep	1.0	1.6	1.3	1.4	0.7	Z	0.5	0.3	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	0.3	1.6
5-Sep	Z	0.3	0.0	0.0	0.1	0.0	0.0	0.0	0.0	0.6	0.3	0.2	0.0	0.1	0.0	0.0	0.1	0.0	0.0	0.0	0.0	0.2	0.6	0.4	0.1	0.6
6-Sep	0.4	Z	1.6	1.8	0.9	0.6	1.4	0.5	0.6	1.3	1.4	1.5	1.5	1.0	1.0	0.3	0.2	0.3	0.5	0.3	0.0	0.7	1.1	1.4	0.9	1.8
7-Sep	1.4	1.6	Z	2.4	1.9	1.3	0.5	0.4	0.4	0.9	0.9	0.7	0.6	0.5	0.6	0.5	0.0	0.3	0.0	0.0	0.1	0.3	0.2	0.3	0.7	2.4
8-Sep	0.1	0.5	0.5	Z	1.2	1.0	0.7	0.4	0.7	0.6	0.8	0.5	0.0	0.0	0.0	0.2	0.0	0.2	0.7	0.4	1.6	1.3	1.1	0.9	0.6	1.6
9-Sep	1.6	0.7	1.3	1.4	Z	1.7	1.2	1.0	1.1	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.1	0.0	0.0	0.0	0.1	0.1	0.1	0.5	1.7
10-Sep	0.0	0.0	0.1	0.0	0.0	Z	0.3	0.0	0.0	0.0	0.0	0.1	0.0	0.2	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.2	0.1	0.0	0.0	0.3
11-Sep	Z	1.6	0.6	0.4	0.9	0.5	0.5	1.7	0.6	2.9	3.1	2.6	1.4	0.6	0.4	0.3	0.4	0.3	0.4	0.2	0.8	1.0	1.1	0.3	1.0	3.1
12-Sep	0.1	Z	1.1	1.0	0.6	0.6	0.8	0.9	0.4	0.6	0.7	0.7	0.9	0.7	0.7	0.7	0.8	0.8	1.1	0.8	0.8	0.9	1.0	0.8	0.8	1.1
13-Sep	0.9	1.1	Z	1.4	1.3	0.8	0.3	0.8	0.8	0.7	0.9	1.1	1.3	2.0	2.4	2.4	2.0	2.5	2.5	2.8	2.0	1.3	0.5	0.3	1.4	2.8
14-Sep	0.3	0.2	0.2	Z	0.9	0.6	0.2	0.4	0.2	M	0.3	0.0	0.2	0.2	0.2	0.4	0.2	0.2	0.3	0.0	0.3	0.4	0.5	0.8	0.3	0.9
15-Sep	0.7	0.6	0.6	0.7	Z	1.1	0.7	0.6	0.5	0.6	0.6	0.3	0.2	0.0	0.1	0.7	0.0	0.4	0.3	0.1	0.0	0.0	0.0	0.0	0.4	1.1
16-Sep	0.0	0.1	0.2	0.0	0.0	Z	1.2	0.4	1.1	0.5	0.2	0.6	0.7	0.1	0.2	0.1	0.0	0.1	0.1	0.3	0.0	0.0	0.0	0.0	0.3	1.2
17-Sep	Z	0.9	0.2	0.1	0.4	0.8	1.1	0.7	0.6	0.7	1.3	0.8	0.7	0.5	0.5	0.4	0.2	0.5	0.2	0.2	0.8	0.8	1.6	1.3	0.7	1.6
18-Sep	0.9	Z	1.5	1.1	0.0	0.5	0.5	0.6	0.5	0.0	0.3	C	C	C	C	M	M	M	M	M	M	M	M	M	--	1.5
19-Sep	M	M	M	M	M	M	M	M	M	M	M	C	C	C	C	C	0.4	0.0	0.0	0.0	0.0	0.0	0.0	0.0	--	0.4
20-Sep	0.1	0.0	0.2	Z	1.2	0.3	0.0	0.8	0.0	0.2	0.0	1.0	0.0	0.2	0.0	0.3	0.5	0.0	0.5	0.5	0.9	0.9	0.8	0.9	0.4	1.2
21-Sep	0.3	0.4	0.5	1.0	Z	1.3	0.7	0.1	0.0	0.4	0.4	0.0	0.0	0.0	0.4	0.2	0.2	0.0	0.0	0.0	0.0	0.6	0.7	1.0	0.4	1.3
22-Sep	1.0	0.8	1.1	1.3	1.4	Z	1.7	1.4	1.2	0.0	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	0.4	1.7
23-Sep	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
24-Sep	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	0.0	0.1
25-Sep	0.4	0.0	Z	2.1	2.4	1.4	0.6	1.1	0.8	0.6	0.5	0.9	0.8	0.6	0.3	0.5	0.3	0.2	0.3	0.4	0.2	0.3	0.3	0.0	0.7	2.4
26-Sep	0.2	0.2	0.0	Z	0.4	0.2	0.3	0.0	0.1	0.0	0.0	0.1	0.0	0.0	0.0	0.2	0.1	0.1	0.2	0.0	0.0	0.0	0.0	0.0	0.1	0.4
27-Sep	0.0	0.0	0.0	0.1	Z	1.1	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	1.1
28-Sep	0.0	0.0	0.0	0.0	0.0	Z	0.5	0.3	0.1	0.0	0.0	0.0	0.0	0.0	0.2	0.0	0.0	0.3	0.0	0.0	0.0	0.0	0.2	0.0	0.1	0.5
29-Sep	Z	1.5	1.2	1.0	0.8	0.1	0.0	0.0	0.9	0.1	0.0	0.4	0.0	0.0	0.0	0.0	0.0	0.0	0.8	0.4	1.5	0.2	0.2	0.3	0.4	1.5
30-Sep	0.0	Z	0.5	0.2	0.1	0.0	0.1	0.0	0.1	0.3	0.0	0.0	0.0	0.0	0.0	0.1	0.2	0.1	0.2	0.0	0.0	0.0	0.0	0.0	0.1	0.5
	0.4	0.5	0.5	0.8	0.7	0.7	0.5	0.5	0.5	0.4	0.5	0.4	0.3	0.3	0.3	0.3	0.2	0.3	0.3	0.3	0.4	0.4	0.4	0.4	Diurnal Average	
	1.6	1.6	1.6	2.4	2.4	1.7	1.7	1.7	1.2	2.9	3.1	2.6	1.5	2.0	2.4	2.4	2.0	2.5	2.5	2.8	2.0	1.3	1.6	1.4	Diurnal Maximum	

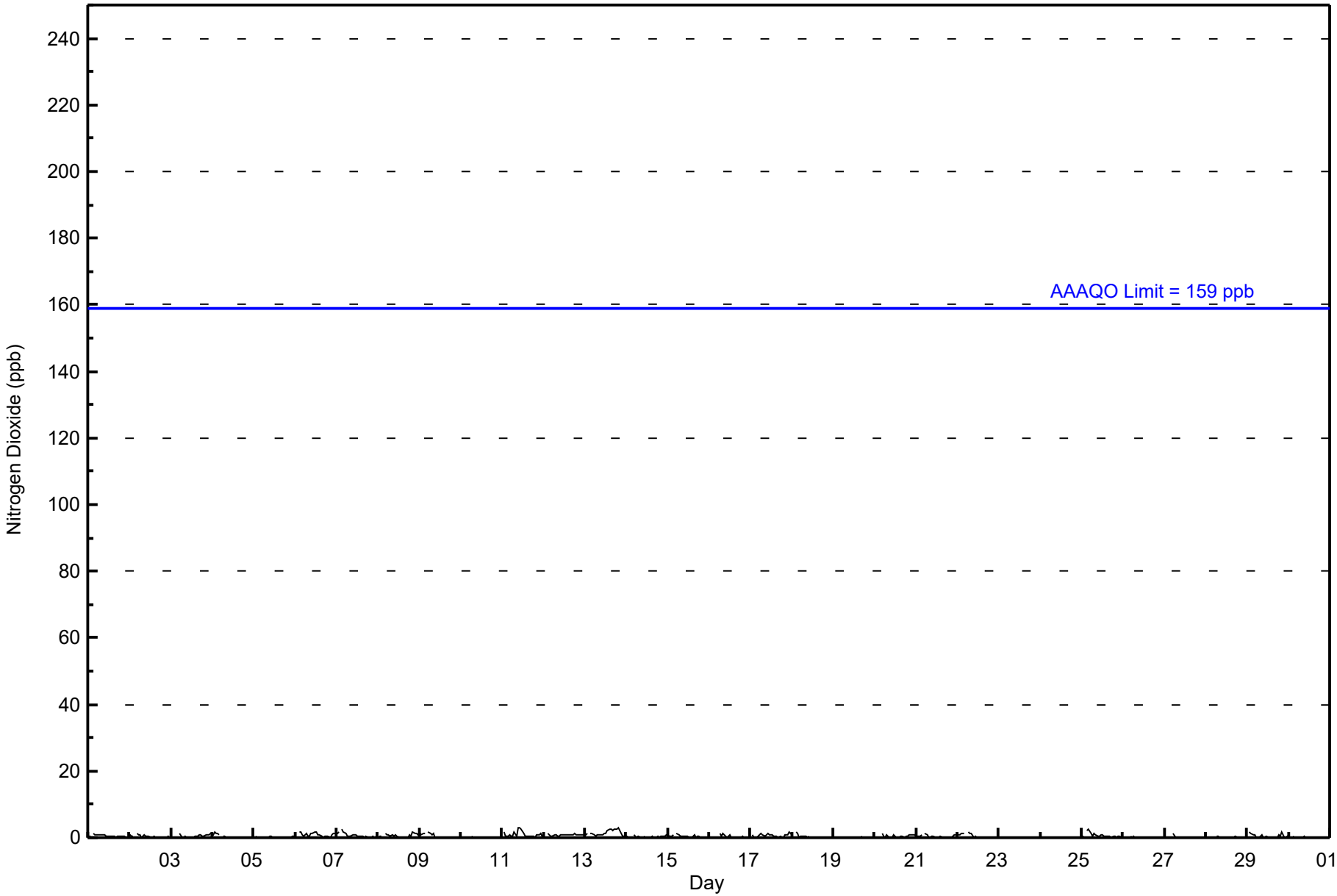
Z - zerospan C - Calibration M - Maintenance
Alberta Ambient Air Quality Objectives (AAAQO): 1-hr 159 ppb

Wood Buffalo Environmental Association

Hourly Averages

Nitrogen Dioxide (NO_2) - ppb

Stony Mountain - September 2024



Nitrogen Dioxide (NO_2) - ppb
Stony Mountain - September 2024

Concentration Ranges (ppb)	Number of Hours	%	Cumulative %
0 - 20	661	100.00	100.00
21 - 40	0	0.00	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: 661

Total Number of Hours: 720

Wood Buffalo Environmental Association

Frequency Distribution

Nitrogen Dioxide (NO_2) - ppb

Stony Mountain - September 2024

Concentration Ranges (ppb)	Wind Direction																
	N	NNE	NE	ENE	E	ESE	SE	SSE	S	SSW	SW	WSW	W	WNW	NW	NNW	**Totals**
0 - 20	23	21	17	6	8	8	10	18	41	84	91	70	86	101	46	31	661
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	23	21	17	6	8	8	10	18	41	84	91	70	86	101	46	31	661

Total Number of Valid Hours: 661

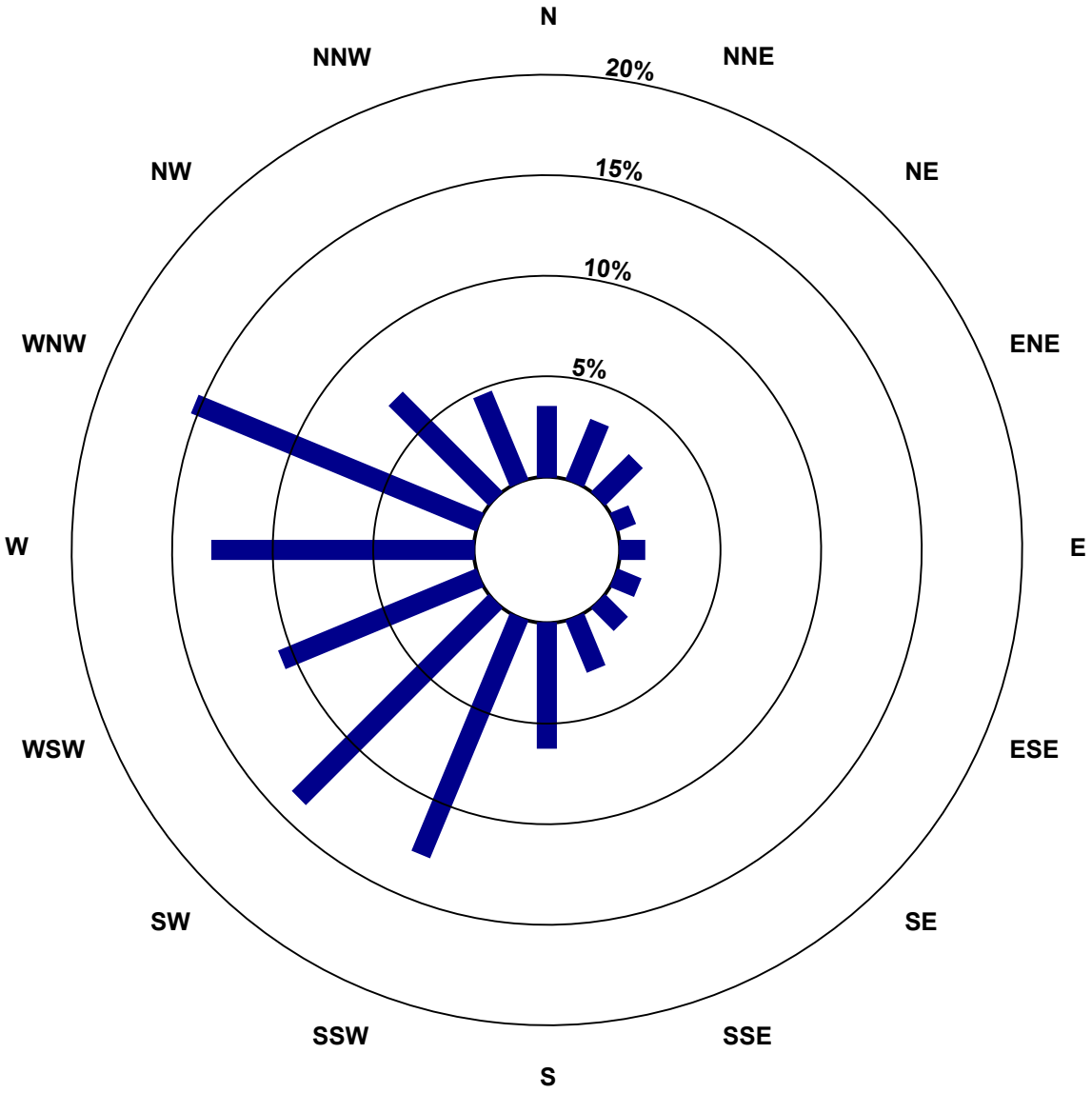
Total Number of Hours: 720

Wood Buffalo Environmental Association

Wind Rose Sep 2024

Nitrogen Dioxide (NO_2) - ppb

Stony Mountain



Classes (ppb)

0 - 20

21 - 40

11 - 80

81 - 159

> 159

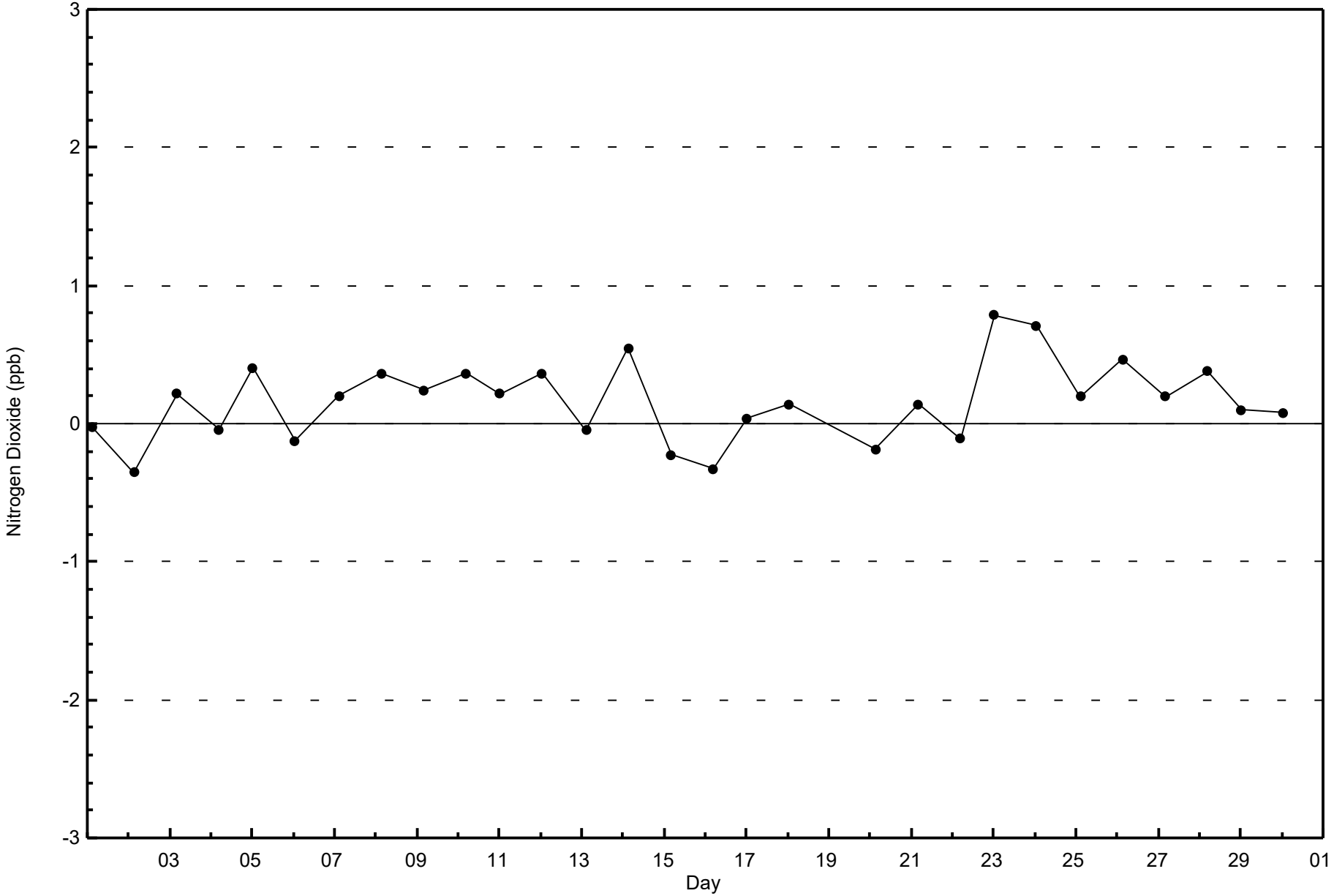
Total Number of Valid Hours: 661

Wood Buffalo Environmental Association

Zero Responses

Nitrogen Dioxide (NO_2) - ppb

Stony Mountain - September 2024



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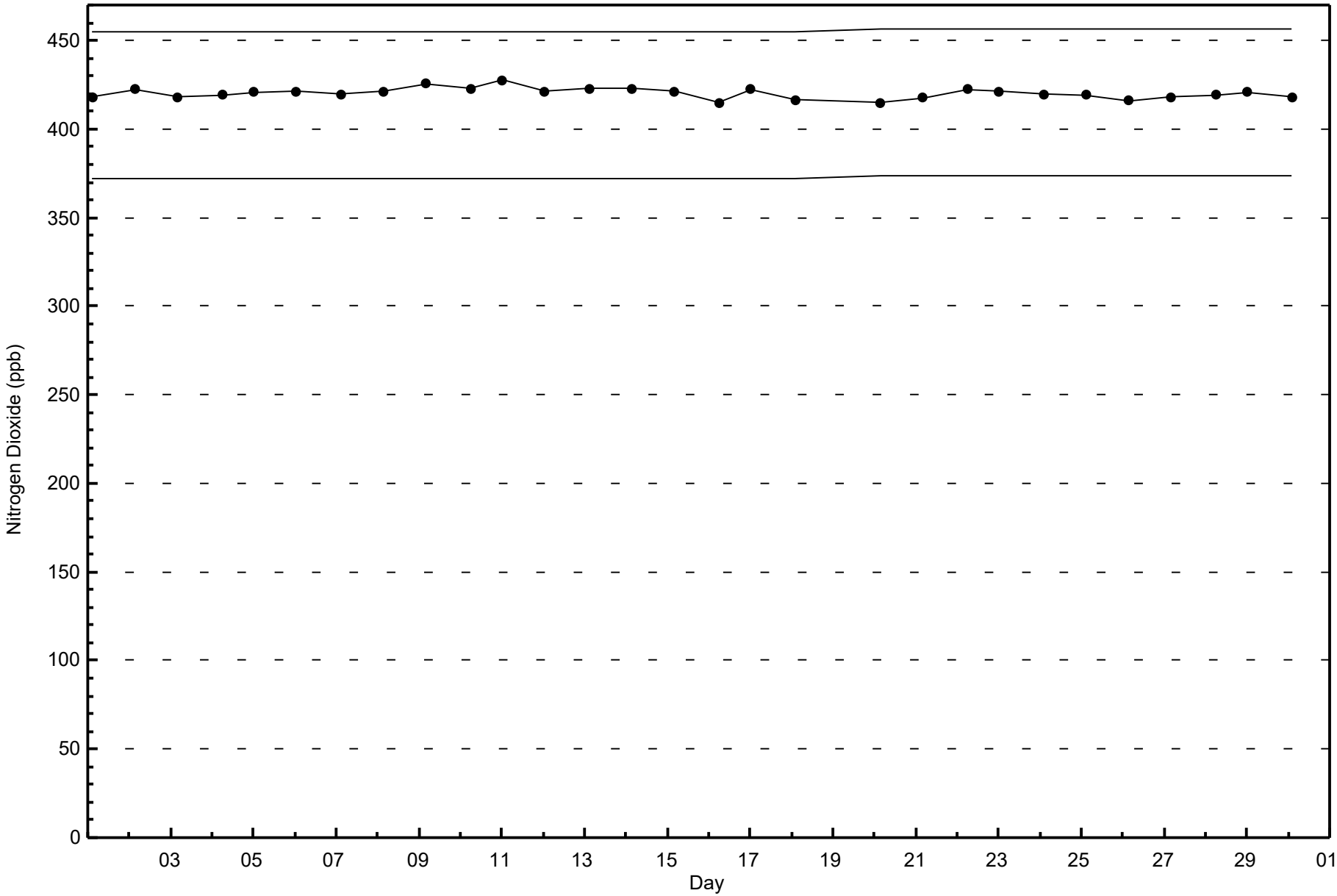
Span Responses

Nitrogen Dioxide (NO_2) - ppb

Stony Mountain - September 2024



Wood Buffalo Environmental Association

Summary of Hour Averages

Nitrogen Oxides (NO_X) - ppb

Stony Mountain - September 2024

Maximum Value: 4.9 ppb on Sep 11 10:00

Maximum Daily Average: 1.5 ppb on Sep 13

Minimum Value: 0.0 ppb on Sep 2 00:00

Minimum Daily Average: 0.0 ppb on Sep 23

Maximum Diurnal Average: 1.0 ppb at hour 4

Minimum Diurnal Average: 0.3 ppb at hour 20

Monthly Average: 0.57 ppb

Percentiles: P_1 = 0.0 P_{10} = 0.0 Q_1 = 0.0 Median = 0.4 Q_3 = 0.9 P_{90} = 1.4 P_{99} = 2.9

Hours in Service:	720
Hours of Data:	661
Hours of Missing Data:	59
Hours of Calibration:	38
Percent Operational Time:	97.1

Day	Hourly Period Ending At (MST)																								Daily	Daily
	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24	Average	Maximum
1-Sep	0.6	0.4	Z	2.6	1.3	0.8	0.8	0.9	0.7	1.2	1.0	1.2	0.8	0.9	0.6	0.9	0.1	0.5	0.7	0.4	0.5	0.8	0.2	0.0	0.8	2.6
2-Sep	0.7	0.3	0.6	Z	1.8	0.7	0.8	0.2	1.0	0.6	0.5	0.3	0.1	0.2	0.4	0.1	0.0	0.0	0.0	0.0	0.0	0.1	0.3	0.2	0.4	1.8
3-Sep	0.0	0.0	0.0	0.0	Z	1.1	0.2	0.2	0.6	0.0	0.0	0.0	0.0	0.0	0.4	0.6	0.7	0.9	0.6	0.6	0.9	0.8	1.0	1.2	0.4	1.2
4-Sep	1.0	1.6	1.3	1.7	1.5	Z	1.5	0.8	0.6	0.2	0.6	0.3	0.5	0.0	0.4	0.2	0.5	0.3	0.2	0.0	0.2	0.0	0.0	0.0	0.6	1.7
5-Sep	Z	0.7	0.0	0.0	0.1	0.0	0.0	0.0	0.0	0.9	0.6	0.3	0.2	0.2	0.0	0.7	0.2	0.0	0.0	0.0	0.0	0.2	0.6	0.4	0.2	0.9
6-Sep	0.4	Z	2.4	1.9	0.9	0.6	1.4	0.5	0.6	1.6	1.4	1.5	1.5	1.0	1.0	0.3	0.2	0.3	0.5	0.3	0.0	0.7	1.5	1.4	0.9	2.4
7-Sep	1.6	2.1	Z	3.3	1.9	1.4	0.5	0.4	0.4	1.3	1.4	0.8	0.6	0.5	0.6	0.7	0.3	0.3	0.0	0.0	0.1	0.7	0.3	0.8	0.9	3.3
8-Sep	0.1	1.3	0.5	Z	2.0	1.0	0.7	0.4	1.1	1.1	0.8	0.5	0.0	0.0	0.0	0.4	0.0	0.2	0.7	0.4	1.6	1.3	1.1	0.9	0.7	2.0
9-Sep	1.6	0.7	1.3	1.4	Z	2.2	1.2	1.0	1.1	0.0	0.0	0.0	0.0	0.0	0.0	0.1	0.0	0.2	0.1	0.4	0.2	0.1	0.7	0.5	0.6	2.2
10-Sep	0.4	0.0	0.2	0.0	0.1	Z	2.0	0.8	0.4	0.0	0.3	0.7	0.3	0.6	0.3	0.1	0.0	0.2	0.1	0.1	0.2	0.3	0.1	0.0	0.3	2.0
11-Sep	Z	2.6	0.7	0.5	1.1	0.5	0.6	2.0	0.6	4.9	4.1	4.0	2.2	0.6	1.0	0.9	0.7	1.0	0.9	0.5	0.9	1.3	1.1	0.5	1.4	4.9
12-Sep	0.4	Z	2.6	1.0	0.6	0.9	1.2	0.9	0.4	0.8	0.9	0.7	0.9	1.0	1.4	0.7	1.1	1.3	1.2	1.3	0.8	0.9	1.1	0.8	1.0	2.6
13-Sep	0.9	1.2	Z	2.4	1.7	0.8	0.3	0.8	1.2	0.7	0.9	1.1	1.3	2.4	2.5	3.0	2.0	2.6	2.5	3.0	2.0	1.6	0.5	0.3	1.5	3.0
14-Sep	0.6	0.4	0.5	Z	2.0	0.8	0.2	0.7	0.5	M	0.6	0.0	0.6	0.6	1.0	0.8	0.3	0.4	0.3	0.0	0.5	0.8	0.5	0.8	0.6	2.0
15-Sep	1.1	0.9	1.0	1.3	Z	2.5	1.4	0.7	0.5	0.7	0.9	0.3	0.2	0.0	0.1	0.7	0.0	0.4	0.3	0.1	0.0	0.0	0.0	0.0	0.6	2.5
16-Sep	0.0	0.1	0.2	0.0	0.0	Z	1.8	0.4	1.1	0.5	0.2	0.6	0.7	0.1	0.2	0.1	0.0	0.1	0.1	0.3	0.0	0.0	0.0	0.0	0.3	1.8
17-Sep	Z	1.9	0.2	0.1	0.4	0.8	1.2	0.9	0.6	1.0	1.6	1.0	1.2	1.1	1.3	1.2	0.8	1.1	0.2	0.2	1.0	0.8	1.6	2.0	1.0	2.0
18-Sep	1.1	Z	2.8	1.1	0.0	0.5	0.5	0.6	0.5	0.0	0.3	C	C	C	C	M	M	M	M	M	M	M	M	M	--	2.8
19-Sep	M	M	M	M	M	M	M	M	M	M	M	C	C	C	C	C	0.4	0.0	0.0	0.0	0.0	0.0	0.0	0.0	--	0.4
20-Sep	0.1	0.0	0.2	Z	1.6	0.3	0.0	0.8	0.0	0.2	0.0	1.0	0.0	0.2	0.0	0.5	0.5	0.0	0.5	0.5	0.9	0.9	0.8	1.4	0.5	1.6
21-Sep	0.3	0.4	0.5	1.0	Z	1.6	1.1	0.1	0.0	0.4	0.4	0.0	0.2	0.0	1.0	0.7	0.7	0.0	0.0	0.0	0.0	1.1	0.7	1.0	0.5	1.6
22-Sep	1.0	0.8	1.1	1.3	1.4	Z	2.5	1.6	1.2	0.0	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	0.5	2.5
23-Sep	Z	0.7	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	0.7
24-Sep	0.0	Z	0.4	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.1	0.5	0.0	0.5	0.3	0.6	0.7	0.4	0.4	0.2	0.0	0.0	0.0	0.0	0.2	0.7
25-Sep	0.9	0.0	Z	3.1	2.4	1.4	0.6	1.2	1.0	0.6	0.5	1.2	0.9	1.3	0.7	1.2	0.7	0.5	0.4	0.6	0.7	0.9	0.9	1.0	1.0	3.1
26-Sep	0.8	1.1	0.8	Z	1.7	0.7	0.7	0.0	0.1	0.0	0.0	0.1	0.0	0.0	0.0	1.3	1.0	0.5	0.4	0.0	0.0	0.0	0.0	0.0	0.4	1.7
27-Sep	0.0	0.0	0.0	0.1	Z	1.1	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	1.1
28-Sep	0.0	0.0	0.0	0.0	0.0	Z	1.2	0.3	0.1	0.0	0.0	0.0	0.0	0.0	0.2	0.0	0.0	0.3	0.0	0.0	0.0	0.0	0.2	0.0	0.1	1.2
29-Sep	Z	1.8	1.2	1.1	0.8	0.1	0.0	0.0	0.9	0.1	0.0	0.4	0.0	0.0	0.0	0.0	0.0	0.0	0.8	0.4	1.5	0.2	0.2	0.3	0.4	1.8
30-Sep	0.0	Z	1.4	0.2	0.1	0.0	0.1	0.0	0.1	0.8	0.0	0.2	0.0	0.0	0.1	0.4	0.3	0.3	0.2	0.0	0.0	0.1	0.0	0.0	0.2	1.4
	0.6	0.8	0.8	1.0	1.0	0.8	0.8	0.6	0.5	0.6	0.6	0.6	0.4	0.4	0.5	0.6	0.4	0.4	0.4	0.3	0.4	0.5	0.5	0.5	Diurnal Average	
	1.6	2.6	2.8	3.3	2.4	2.5	2.5	2.0	1.2	4.9	4.1	4.0	2.2	2.4	2.5	3.0	2.0	2.6	2.5	3.0	2.0	1.6	1.6	2.0	Diurnal Maximum	

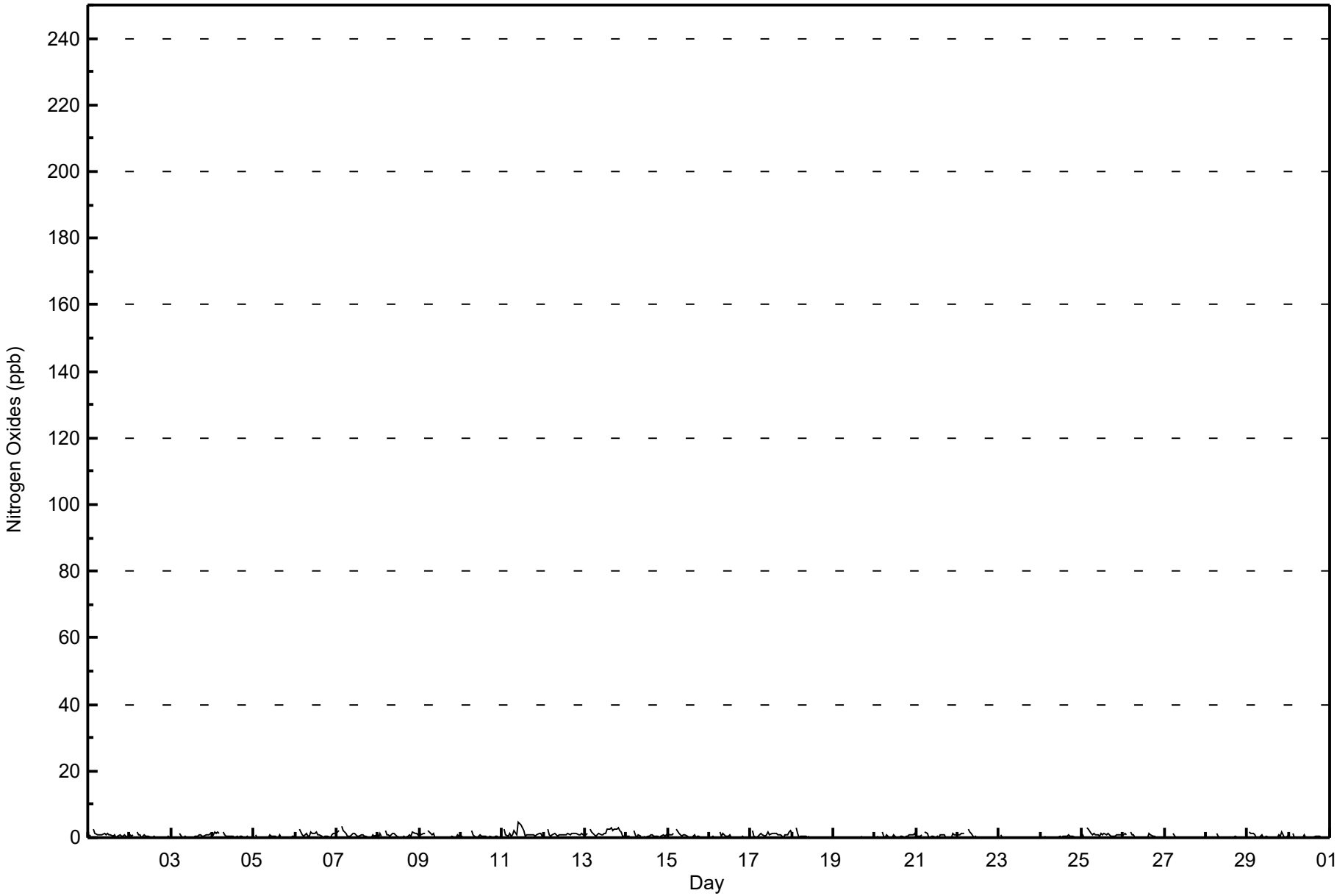
Z - zerospan C - Calibration M - Maintenance

Wood Buffalo Environmental Association

Hourly Averages

Nitrogen Oxides (NO_X) - ppb

Stony Mountain - September 2024



Nitrogen Oxides (NO_X) - ppb
Stony Mountain - September 2024

Concentration Ranges (ppb)	Number of Hours	%	Cumulative %
0 - 20	661	100.00	100.00
21 - 40	0	0.00	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: 661

Total Number of Hours: 720

Wood Buffalo Environmental Association

Frequency Distribution

Nitrogen Oxides (NO_X) - ppb

Stony Mountain - September 2024

Concentration Ranges (ppb)	Wind Direction																
	N	NNE	NE	ENE	E	ESE	SE	SSE	S	SSW	SW	WSW	W	WNW	NW	NNW	**Totals**
0 - 20	23	21	17	6	8	8	10	18	41	84	91	70	86	101	46	31	661
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	23	21	17	6	8	8	10	18	41	84	91	70	86	101	46	31	661

Total Number of Valid Hours: 661

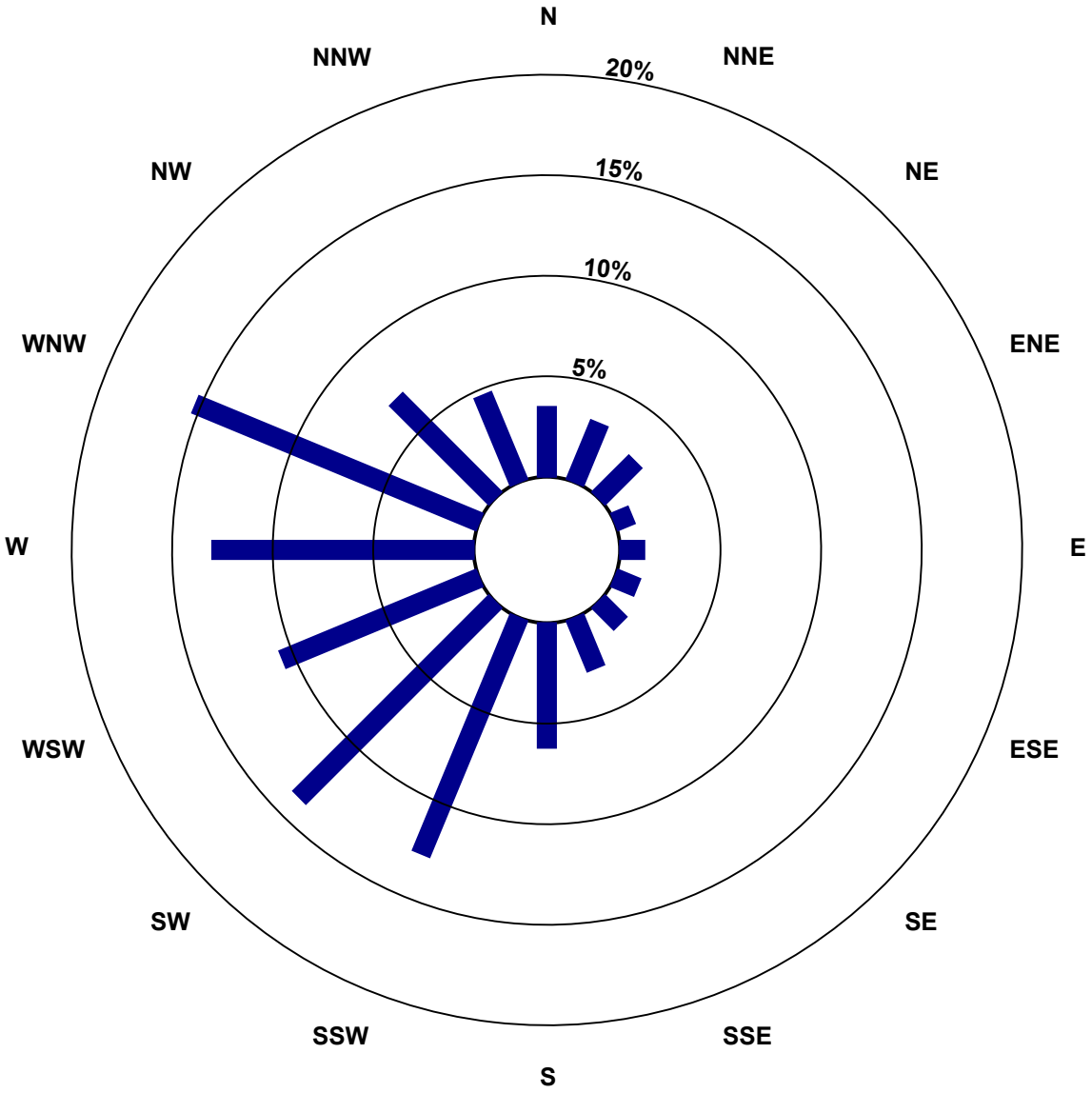
Total Number of Hours: 720

Wood Buffalo Environmental Association

Wind Rose Sep 2024

Nitrogen Oxides (NO_X) - ppb

Stony Mountain



Classes (ppb)

0 - 20

21 - 40

11 - 80

81 - 159

> 159

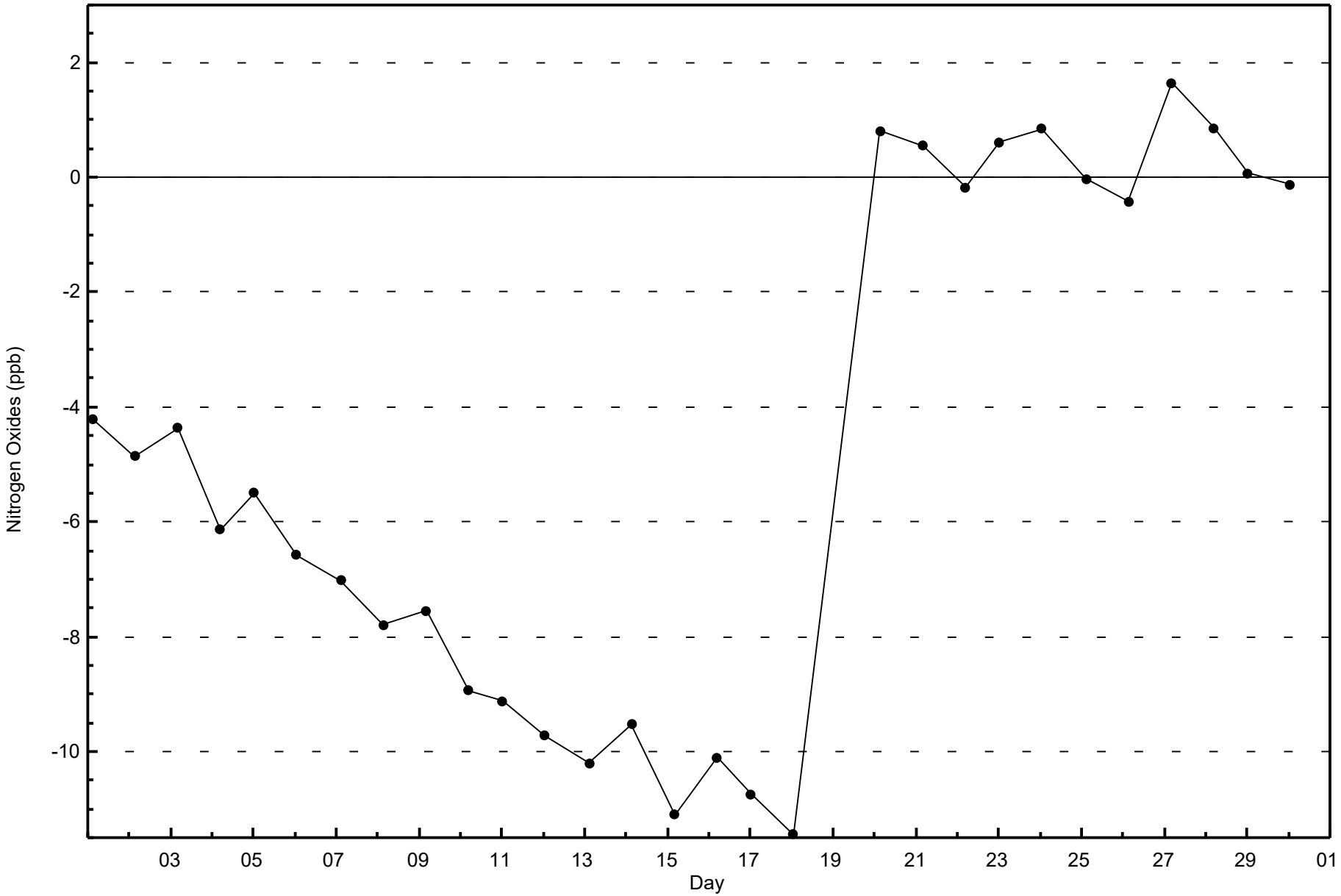
Total Number of Valid Hours: 661

Wood Buffalo Environmental Association

Zero Responses

Nitrogen Oxides (NO_X) - ppb

Stony Mountain - September 2024

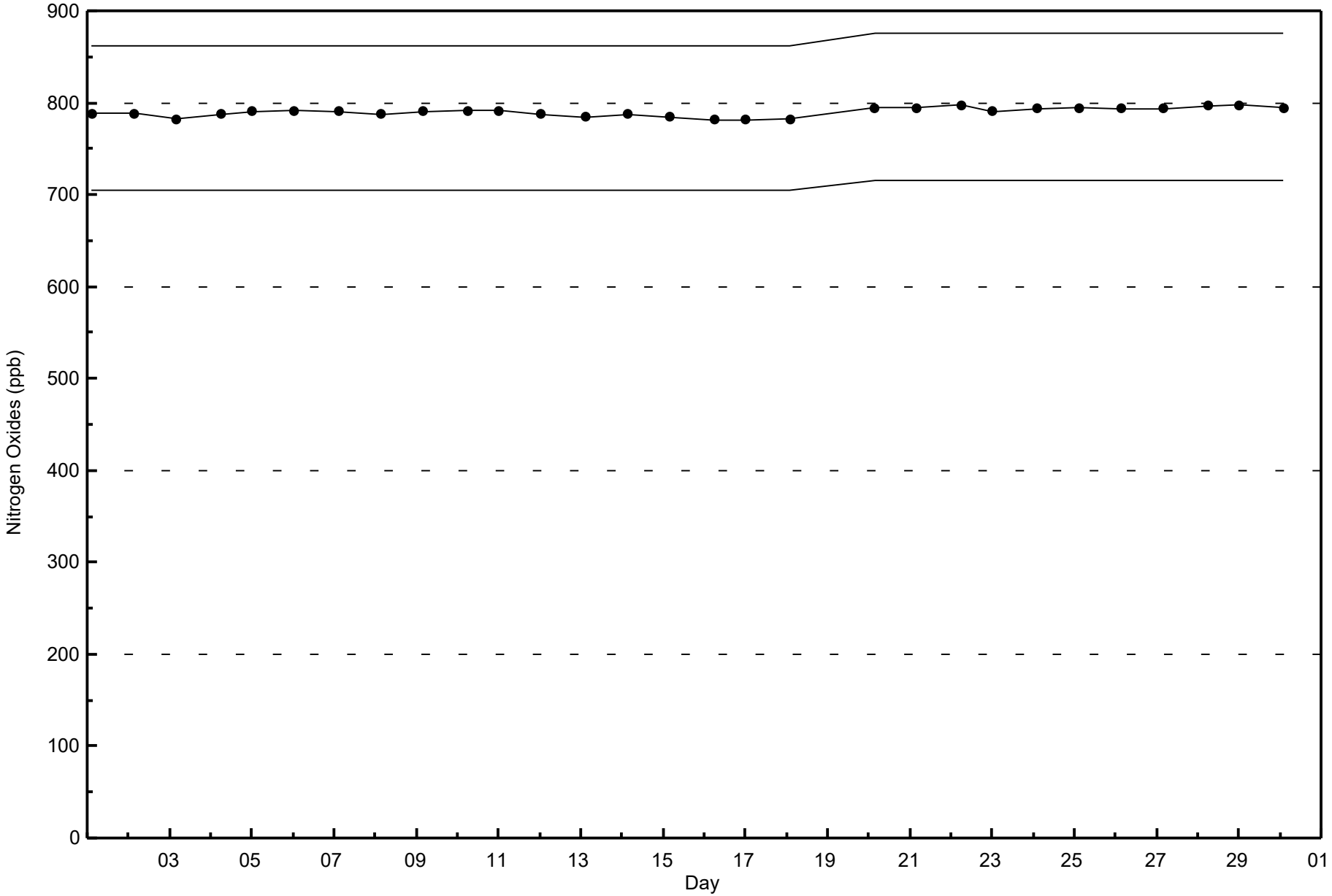


Wood Buffalo Environmental Association

Span Responses

Nitrogen Oxides (NO_X) - ppb

Stony Mountain - September 2024



Wood Buffalo Environmental Association

Summary of Hour Averages

Ozone (O_3) - ppb

Stony Mountain - September 2024

Number of Exceedences (AAAQO): 1-hr: 0 24-hr: 0
Maximum Value: 53.4 ppb on Sep 8 20:00 Maximum Daily Average: 39.8 ppb on Sep 8

Minimum Value: 8.6 ppb on Sep 21 08:00
Maximum Diurnal Average: 30.4 ppb at hour 16
Monthly Average: 25.43 ppb

Minimum Daily Average: 11.9 ppb on Sep 13
Minimum Diurnal Average: 21.4 ppb at hour 8
Percentiles: P_1 = 10.3 P_{10} = 15.0 Q_1 = 19.4 Median = 25.6 Q_3 = 30.7 P_{90} = 35.9 P_{99} = 42.9

Hours in Service:	720
Hours of Data:	630
Hours of Missing Data:	90
Hours of Calibration:	32
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-Sep	26.0	Z	AF	AF	AF	AF	AF	AF	AF	AF	AF	AF	AF	AF	AF	AF	AF	AF	AF	AF	AF	AF	AF	AF	--	26.0
2-Sep	AF	AF	AF	AF	AF	AF	AF	AF	AF	AF	AF	AF	AF	AF	AF	AF	AF	AF	AF	AF	AF	AF	AF	AF	--	--
3-Sep	AF	AF	AF	AF	AF	AF	AF	AF	AF	AF	AF	C	C	C	C	33.7	31.7	30.1	25.0	19.0	16.1	19.5	17.2	16.7	--	33.7
4-Sep	14.1	12.4	11.8	13.5	Z	15.2	13.9	15.4	16.3	16.9	20.1	24.2	27.4	28.6	29.0	27.7	25.8	27.6	26.8	26.2	25.8	26.1	26.0	25.9	21.6	29.0
5-Sep	26.6	28.2	28.1	29.0	26.8	Z	25.8	24.3	23.7	23.3	26.3	28.5	32.4	34.2	34.8	36.0	33.4	33.8	31.4	29.6	27.3	27.2	30.1	33.0	29.3	36.0
6-Sep	Z	32.2	31.5	30.4	30.6	31.3	30.7	30.4	32.3	31.8	32.1	31.7	36.7	38.9	38.6	37.3	36.0	35.3	34.1	34.4	35.8	32.7	30.6	29.5	33.3	38.9
7-Sep	30.4	Z	29.1	27.8	27.3	30.3	31.5	18.5	14.1	20.0	20.8	18.5	19.7	25.6	26.7	26.0	24.9	23.0	19.5	19.8	21.4	26.1	29.0	32.6	24.5	32.6
8-Sep	35.5	37.1	Z	37.1	41.6	42.1	38.0	29.0	26.1	32.7	34.9	39.4	37.1	34.0	38.6	42.9	47.1	47.5	49.4	53.4	47.9	42.7	40.7	40.7	39.8	53.4
9-Sep	37.9	36.8	35.7	Z	38.2	37.1	35.2	34.3	35.3	25.5	18.7	20.5	24.7	30.5	34.6	38.5	42.1	41.6	38.1	36.7	30.7	28.4	27.3	25.8	32.8	42.1
10-Sep	24.5	22.0	21.2	21.2	Z	20.4	20.1	19.7	19.9	22.5	23.2	27.3	28.7	28.7	29.8	29.3	31.5	30.0	27.7	28.5	27.3	29.6	29.4	26.3	25.6	31.5
11-Sep	24.7	25.1	25.3	23.9	21.9	Z	22.6	19.0	17.4	16.1	19.4	23.9	30.7	36.3	35.8	36.0	35.8	34.1	31.6	29.9	28.3	26.6	25.4	25.6	26.7	36.3
12-Sep	Z	21.3	17.3	17.7	13.3	15.0	13.7	11.0	12.2	12.4	12.7	13.0	13.2	12.9	11.9	11.9	13.6	13.9	13.6	12.6	11.7	11.6	11.2	11.0	13.4	21.3
13-Sep	10.6	Z	10.2	10.2	8.9	9.2	9.5	10.6	11.7	11.4	11.0	11.6	11.5	10.9	11.7	12.8	13.9	15.1	14.1	13.3	13.1	13.4	14.2	14.6	11.9	15.1
14-Sep	16.4	17.6	Z	20.1	21.4	18.1	15.9	17.2	18.9	M	23.3	26.7	26.0	31.9	36.3	34.9	29.2	25.0	23.5	23.0	23.9	23.3	23.1	22.9	23.6	36.3
15-Sep	21.3	21.3	20.8	Z	20.9	18.9	17.3	16.0	14.0	18.7	22.4	20.7	21.4	20.3	22.0	20.5	25.9	19.2	22.0	19.7	15.7	14.3	14.7	15.9	19.3	25.9
16-Sep	17.3	15.6	18.1	16.8	Z	17.0	18.6	19.7	21.3	23.1	25.0	28.5	30.0	31.6	33.1	32.1	29.6	25.7	25.1	26.1	24.7	25.5	23.5	26.8	24.1	33.1
17-Sep	31.7	28.3	24.8	25.2	29.6	Z	27.8	26.8	25.5	25.8	32.2	36.6	38.2	39.4	39.6	39.2	37.9	34.0	33.4	34.2	32.8	32.4	32.3	29.5	32.0	39.6
18-Sep	Z	29.5	34.9	35.9	34.3	32.8	37.6	29.3	36.4	36.3	33.9	32.4	29.9	26.2	24.1	23.7	23.3	21.4	19.4	18.4	18.7	18.6	20.0	21.8	27.8	37.6
19-Sep	23.1	Z	25.8	25.3	28.5	29.8	30.4	30.0	26.5	25.9	25.9	29.7	31.8	32.1	30.4	29.4	31.0	27.1	29.7	32.2	31.7	28.7	27.6	28.9	28.8	32.2
20-Sep	28.9	27.7	Z	24.9	24.4	23.8	24.3	20.8	19.0	20.1	20.4	19.9	25.4	26.6	29.0	28.3	27.1	23.0	19.2	16.8	20.2	20.6	19.6	18.1	23.0	29.0
21-Sep	17.6	16.0	16.0	Z	15.6	14.2	9.5	8.6	10.4	14.4	16.1	16.7	19.3	23.1	26.2	25.6	24.6	21.7	20.4	20.1	23.3	24.6	24.6	23.8	18.8	26.2
22-Sep	22.8	21.9	20.3	19.0	Z	17.6	16.9	16.2	15.1	14.9	17.4	21.0	23.2	25.2	24.3	24.4	23.8	20.1	17.4	16.9	17.4	18.4	17.0	17.4	19.5	25.2
23-Sep	14.9	14.7	14.5	14.3	13.5	Z	12.0	15.3	16.4	16.1	16.4	18.2	19.2	18.5	20.2	22.2	22.6	21.8	19.3	18.1	16.3	16.3	17.5	18.1	17.2	22.6
24-Sep	Z	18.3	17.1	16.8	17.0	16.5	15.5	15.8	18.7	22.2	28.1	32.3	34.6	35.4	37.4	39.7	39.7	41.4	43.0	42.8	37.3	34.5	33.7	32.7	29.1	43.0
25-Sep	31.3	Z	26.6	19.3	17.4	19.4	23.1	22.1	21.0	24.6	26.9	27.9	28.8	30.3	32.8	34.2	32.4	33.2	34.2	32.9	26.7	25.3	24.9	21.9	26.8	34.2
26-Sep	26.7	32.2	Z	32.6	30.7	26.0	26.3	30.4	32.4	30.0	26.3	23.9	26.7	31.5	34.9	37.8	38.1	37.0	37.0	36.7	36.8	36.1	33.3	30.2	31.9	38.1
27-Sep	30.7	30.7	29.2	Z	21.7	22.0	24.3	25.5	24.1	30.4	34.5	36.4	37.5	37.6	37.0	36.0	34.6	32.2	28.7	23.5	23.7	23.4	21.0	24.7	29.1	37.6
28-Sep	27.9	29.1	29.6	28.7	Z	28.7	27.7	28.0	27.5	27.5	27.2	28.0	30.5	31.0	31.9	30.9	29.4	28.2	26.4	26.5	26.6	24.9	25.0	23.6	28.0	31.9
29-Sep	23.8	22.1	20.6	20.7	18.8	Z	22.4	25.1	24.5	25.5	29.0	30.2	30.7	31.5	31.2	28.9	29.4	30.3	22.9	21.7	20.1	23.2	23.4	22.9	25.2	31.5
30-Sep	Z	18.2	16.8	17.4	18.1	18.0	17.8	17.9	18.6	20.2	22.4	26.2	28.6	29.1	30.7	31.3	31.2	30.3	29.3	29.6	27.8	26.9	27.5	24.1	24.2	31.3
	24.5	24.3	22.8	22.9	23.7	22.9	22.5	21.4	21.5	22.6	23.9	25.7	27.6	29.0	30.1	30.4	30.2	28.7	27.2	26.5	25.3	25.0	24.6	24.5	Diurnal Average	
	37.9	37.1	35.7	37.1	41.6	42.1	38.0	34.3	36.4	36.3	34.9	39.4	38.2	39.4	39.6	42.9	47.1	47.5	49.4	53.4	47.9	42.7	40.7	40.7	Diurnal Maximum	

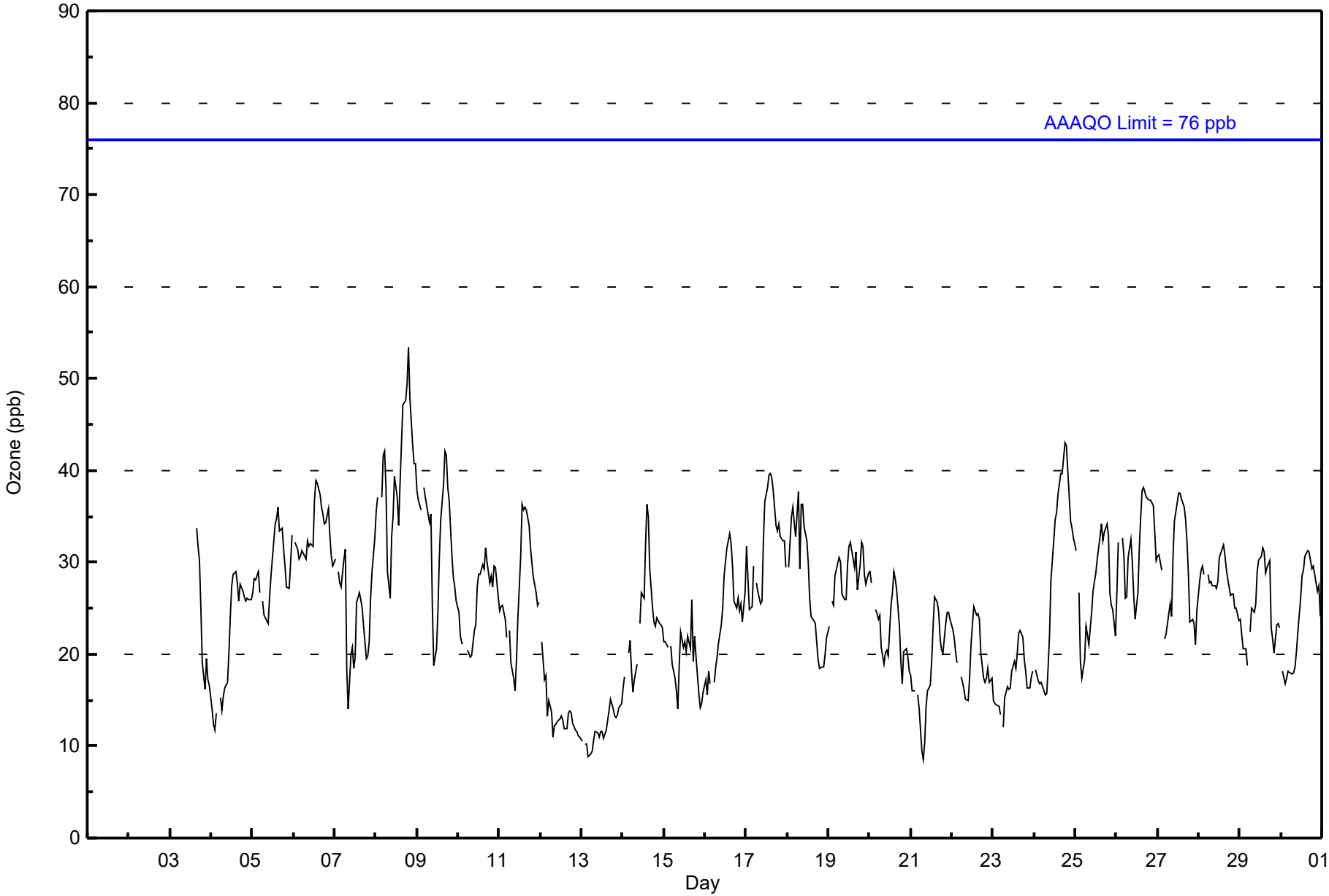
Z - zerospan C - Calibration M - Maintenance AF - Analyzer Failure
Alberta Ambient Air Quality Objectives (AAAQO): 1-hr 76 ppb

Wood Buffalo Environmental Association

Hourly Averages

Ozone (O_3) - ppb

Stony Mountain - September 2024



Concentration Ranges (ppb)	Number of Hours	%	Cumulative %
0 - 20	187	29.68	29.68
21 - 50	442	70.16	99.84
51 - 82	1	0.16	100.00
> 83	0	0.00	100.00

Total Number of Valid Hours: 630

Total Number of Hours: 720

Wood Buffalo Environmental Association

Frequency Distribution

Ozone (O_3) - ppb

Stony Mountain - September 2024

Concentration	Wind Direction																
Ranges (ppb)	N	NNE	NE	ENE	E	ESE	SE	SSE	S	SSW	SW	WSW	W	WNW	NW	NNW	**Totals**
0 - 20	12	8	6	1	3	1	3	2	3	12	31	15	17	36	22	15	187
21 - 50	6	7	10	6	5	8	6	15	38	52	48	49	74	73	32	13	442
51 - 82	0	0	0	0	0	0	0	0	1	0	0	0	0	0	0	0	1
> 83	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Totals	18	15	16	7	8	9	9	17	42	64	79	64	91	109	54	28	630

Total Number of Valid Hours: 630

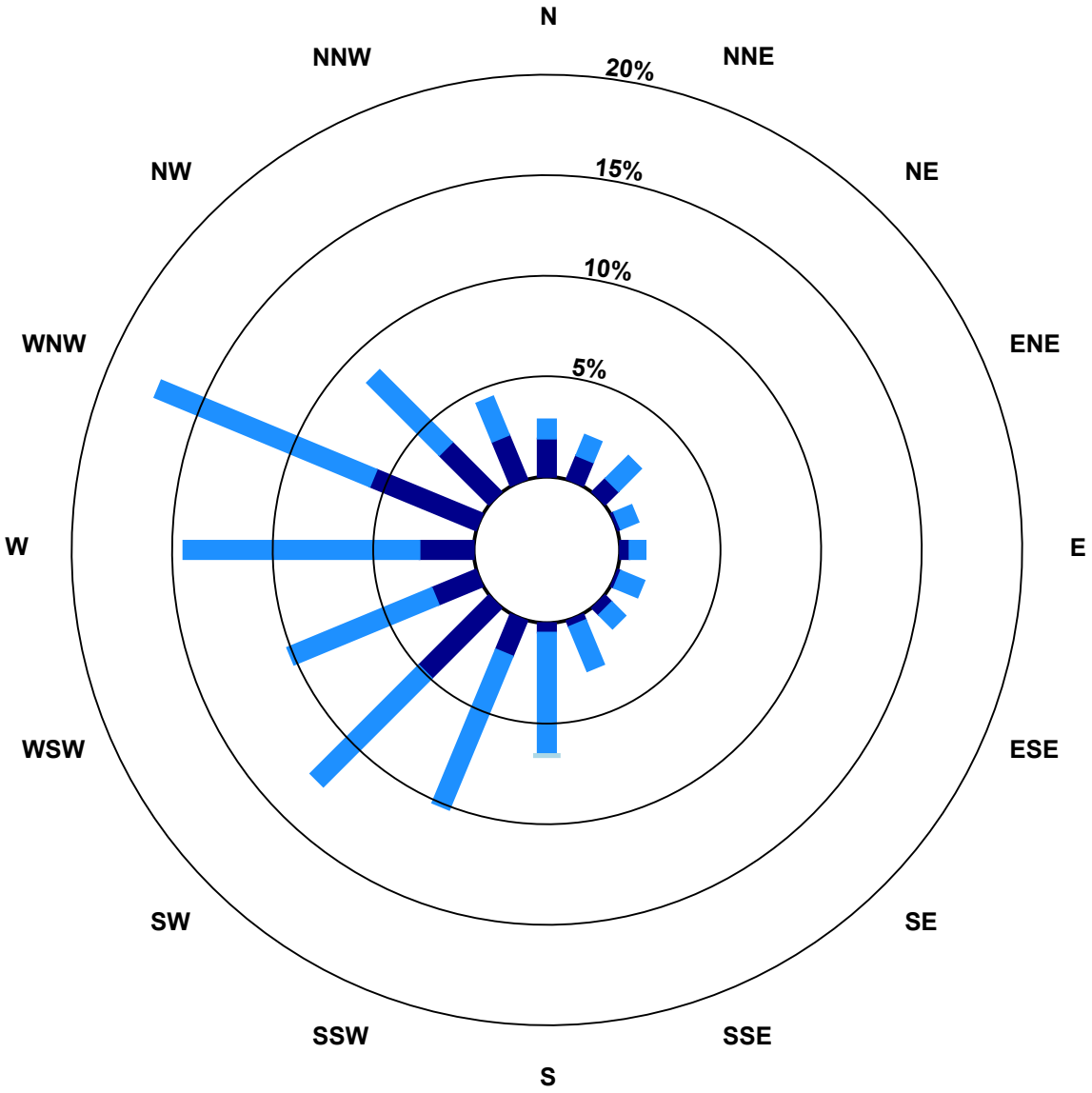
Total Number of Hours: 720

Wood Buffalo Environmental Association

Wind Rose Sep 2024

Ozone (O_3) - ppb

Stony Mountain



Classes (ppb)

0 - 20

21 - 50

51 - 82

> 83

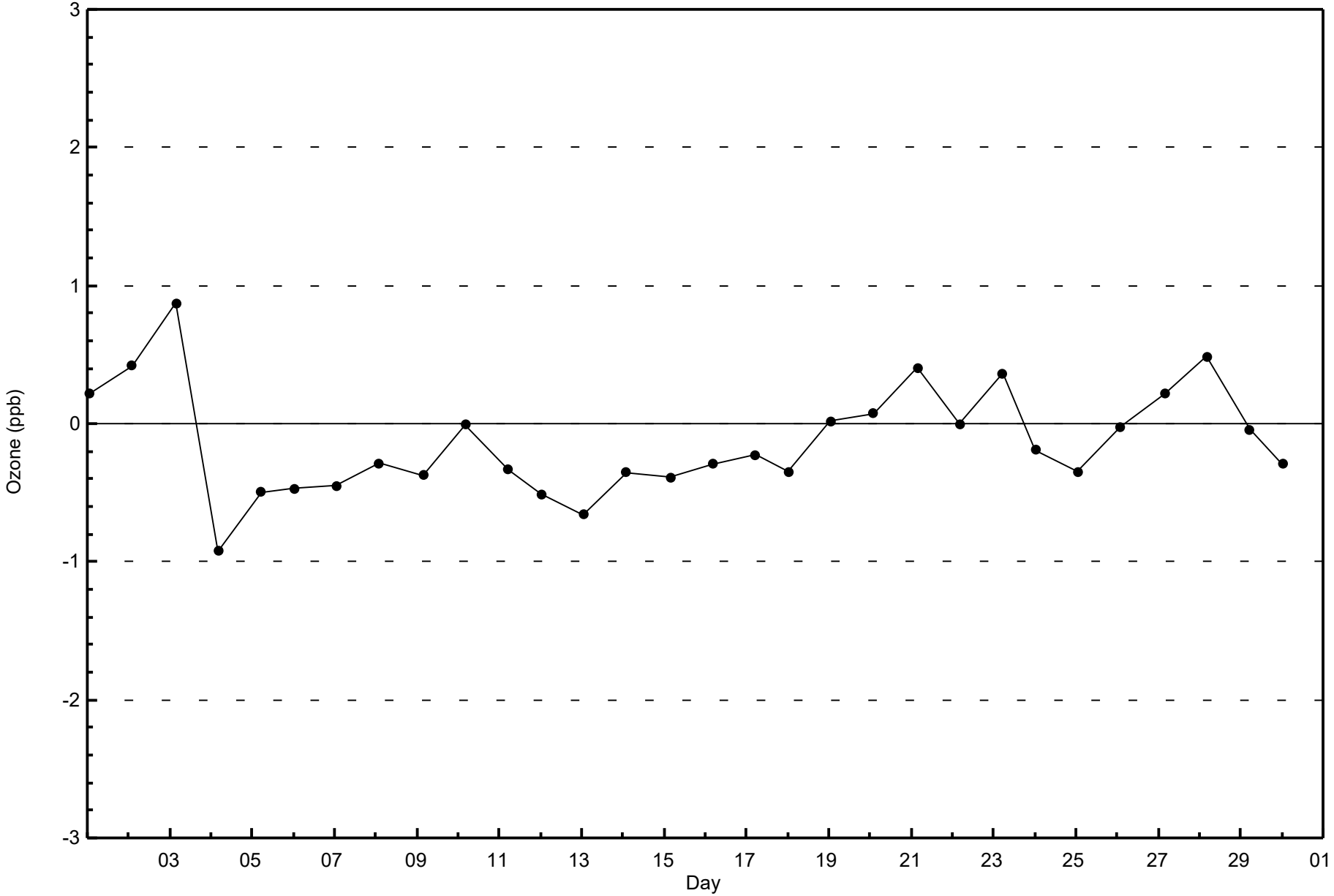
Total Number of Valid Hours: 630

Wood Buffalo Environmental Association

Zero Responses

Ozone (O_3) - ppb

Stony Mountain - September 2024

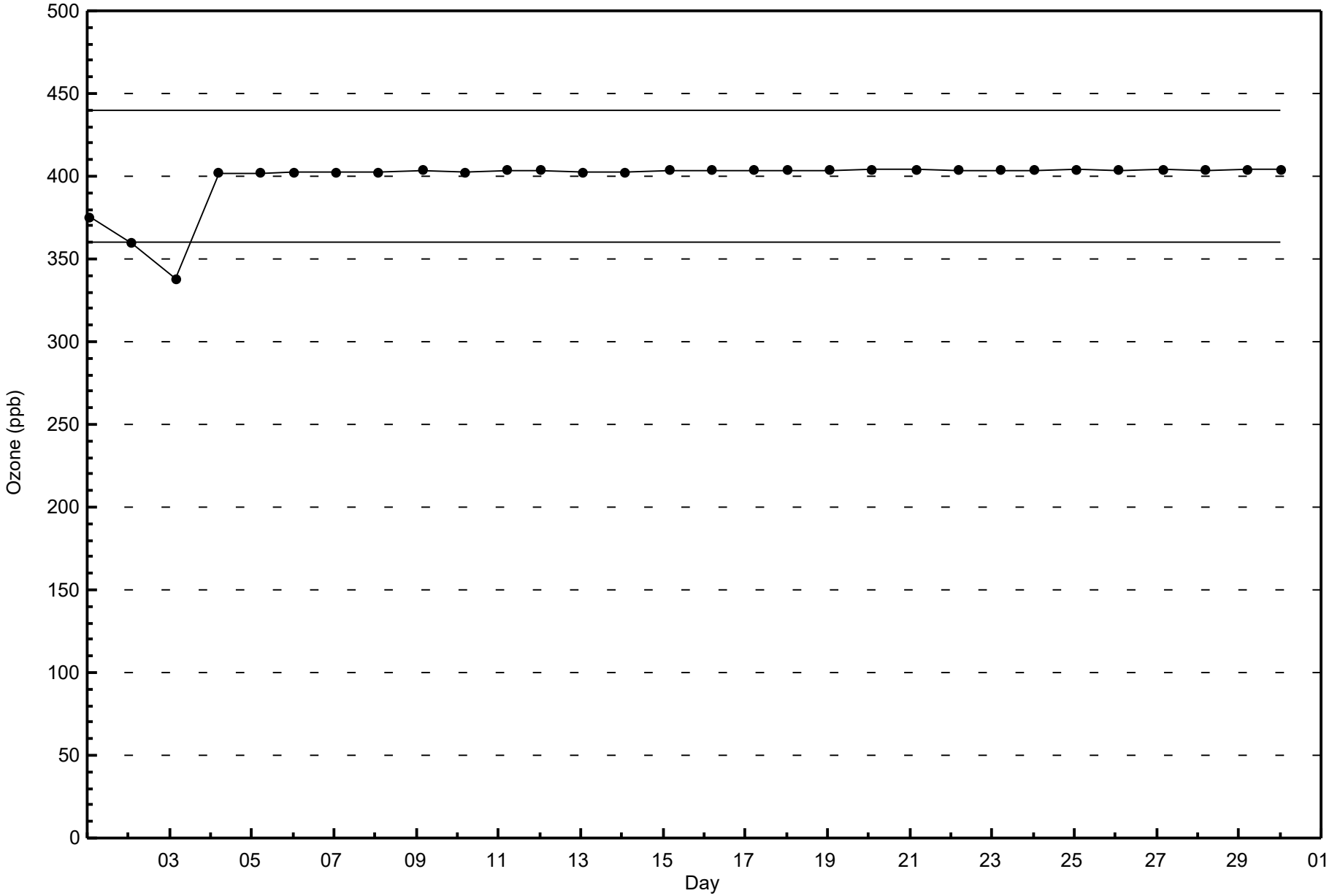


Wood Buffalo Environmental Association

Span Responses

Ozone (O_3) - ppb

Stony Mountain - September 2024



Wood Buffalo Environmental Association

Summary of Hour Averages

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

Stony Mountain - September 2024

Number of Exceedences (AAAQO): 1-hr: 79 24-hr: 5

Maximum Value: 203.0 $\mu g/m^3$ on Sep 7 03:00

Maximum Daily Average: 123.7 $\mu g/m^3$ on Sep 7

Minimum Value: 0.7 $\mu g/m^3$ on Sep 27 18:00

Minimum Daily Average: 1.2 $\mu g/m^3$ on Sep 28

Maximum Diurnal Average: 22.8 $\mu g/m^3$ at hour 3

Minimum Diurnal Average: 14.7 $\mu g/m^3$ at hour 16

Monthly Average: 18.94 $\mu g/m^3$

Percentiles: P_1 = 0.9 P_{10} = 1.5 Q_1 = 2.5 Median = 4.4 Q_3 = 9.9 P_{90} = 84.0 P_{99} = 150.3

Hours in Service:	720
Hours of Data:	718
Hours of Missing Data:	2
Hours of Calibration:	1
Percent Operational Time:	99.9

Day	Hourly Period Ending At (MST)																								Daily	Daily
	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24	Average	Maximum
1-Sep	3.8	4.2	4.0	4.1	3.8	3.9	3.9	3.8	3.7	3.6	3.2	2.9	3.2	3.4	3.4	3.1	3.7	4.1	4.3	4.5	4.5	4.4	4.6	5.0	3.9	5.0
2-Sep	5.2	5.3	5.3	5.3	5.3	4.8	4.5	4.8	5.3	4.7	4.6	4.5	4.6	4.5	3.9	4.0	4.3	4.9	4.7	5.0	5.6	5.6	7.3	9.9	5.2	9.9
3-Sep	12.2	13.2	12.6	14.4	22.2	14.8	10.3	7.8	6.8	6.1	6.0	6.4	7.2	8.6	11.1	13.8	13.7	15.1	14.9	15.6	16.2	14.1	13.5	11.7	12.0	22.2
4-Sep	11.6	10.0	8.8	8.1	7.2	6.0	5.5	5.6	4.8	4.8	5.0	4.9	6.5	7.6	6.8	6.1	5.6	6.1	5.6	4.6	3.5	2.9	2.7	2.5	6.0	11.6
5-Sep	2.5	2.5	2.5	2.4	2.6	2.6	2.7	2.6	2.7	3.2	3.5	3.4	2.9	2.7	2.5	2.4	2.5	2.5	2.5	2.9	3.2	3.4	3.4	3.5	2.8	3.5
6-Sep	3.4	3.4	3.7	4.0	4.4	4.7	5.2	5.6	5.5	5.5	5.6	6.1	7.5	11.1	12.0	8.3	7.7	7.7	8.1	8.9	23.2	80.1	108.4	126.3	19.4	126.3
7-Sep	142.5	184.9	203.0	193.7	181.8	141.5	99.1	85.6	154.2	165.4	146.0	137.1	140.8	140.2	119.1	84.8	73.1	67.0	65.8	77.9	86.7	93.9	87.5	96.6	123.7	203.0
8-Sep	106.3	116.7	115.9	124.4	154.2	151.2	139.2	133.3	120.8	141.9	134.4	98.2	51.2	32.2	45.9	48.7	42.4	36.7	40.2	39.8	42.9	43.2	39.3	33.9	84.7	154.2
9-Sep	29.6	27.6	26.3	24.9	24.0	23.7	22.8	22.0	18.5	29.2	29.5	30.1	25.1	7.8	4.5	5.1	5.0	4.1	3.5	2.6	10.5	20.9	25.2	27.1	18.7	30.1
10-Sep	20.4	16.6	13.8	12.5	12.2	12.1	10.5	9.3	8.4	9.1	12.2	14.6	8.9	3.5	2.8	2.8	2.5	2.5	2.7	2.8	3.0	3.2	3.1	3.3	8.0	20.4
11-Sep	3.6	3.7	3.4	3.4	3.7	3.9	4.0	4.6	4.9	7.7	8.0	9.2	8.4	7.6	7.7	6.8	6.5	6.7	6.3	6.8	8.7	8.8	10.8	10.3	6.5	10.8
12-Sep	15.5	23.4	31.8	28.2	29.8	47.2	80.1	92.2	84.0	103.6	110.4	110.5	98.0	93.9	94.9	112.4	129.8	132.3	142.3	131.0	127.3	124.2	124.5	122.4	91.2	142.3
13-Sep	117.5	115.7	111.8	108.6	101.0	94.7	87.1	83.2	89.1	95.1	93.8	88.4	87.0	79.8	84.1	83.5	96.2	116.1	113.4	107.4	105.4	102.4	93.4	89.5	97.7	117.5
14-Sep	85.1	80.9	81.4	71.2	66.9	51.3	42.3	33.8	46.0	M	42.0	32.8	20.0	13.4	9.9	9.4	7.8	8.0	7.9	8.0	7.1	6.0	5.5	5.5	32.3	85.1
15-Sep	5.8	7.6	7.2	6.6	7.3	7.2	7.8	7.9	7.4	7.2	7.1	8.0	8.2	8.8	13.4	14.6	12.0	11.0	12.4	12.1	9.8	9.5	10.0	10.0	9.1	14.6
16-Sep	8.4	8.4	6.9	6.7	6.1	5.2	4.4	3.8	3.3	3.0	3.0	3.7	3.8	3.5	3.4	3.4	3.5	3.4	3.5	3.4	3.1	2.9	3.6	3.4	4.3	8.4
17-Sep	2.9	3.3	3.4	3.6	3.0	2.9	3.2	3.1	3.0	3.0	3.2	3.3	3.3	3.2	3.2	3.1	3.1	3.1	3.2	3.6	3.6	3.8	3.9	4.0	3.3	4.0
18-Sep	3.7	3.7	3.9	4.1	4.3	4.3	4.0	4.0	4.2	3.8	3.6	3.6	2.8	2.1	2.7	2.9	3.1	3.5	4.4	5.7	9.8	12.7	14.3	13.8	5.2	14.3
19-Sep	13.6	13.3	11.3	9.1	7.9	7.2	6.9	7.0	10.1	11.6	10.9	6.6	4.4	3.3	3.2	3.1	2.8	2.9	2.8	2.7	2.7	3.0	3.2	3.0	6.4	13.6
20-Sep	3.1	3.0	3.1	3.4	3.4	3.5	3.5	3.4	3.6	4.1	4.5	5.4	5.2	5.0	4.9	4.5	4.3	4.3	4.6	5.9	5.5	4.9	4.7	4.8	4.3	5.9
21-Sep	4.9	4.9	4.9	4.9	5.0	4.8	4.9	5.2	4.7	4.4	4.7	5.0	4.9	5.3	5.3	5.7	5.7	5.7	6.2	6.7	6.9	6.3	5.3	5.0	5.3	6.9
22-Sep	4.9	4.8	5.0	4.8	4.6	4.3	3.7	3.4	3.2	3.1	2.9	2.4	2.2	2.2	2.0	1.9	1.6	1.5	1.6	1.6	1.7	1.8	1.4	1.5	2.8	5.0
23-Sep	1.7	1.7	2.0	2.2	2.2	2.4	2.7	2.8	2.3	1.9	2.3	2.5	2.6	2.6	2.6	2.5	2.8	2.9	3.0	3.2	3.6	3.5	3.0	2.8	2.6	3.6
24-Sep	2.5	2.2	2.2	1.9	1.6	1.6	1.6	1.7	1.3	1.2	1.0	1.0	C	0.9	0.9	0.9	0.9	0.9	0.9	0.9	0.9	1.0	1.0	0.8	1.3	2.5
25-Sep	0.8	0.9	1.0	1.9	1.9	1.8	1.2	1.5	2.1	2.6	2.6	3.0	2.9	2.6	2.4	2.1	2.3	1.3	1.1	1.2	2.1	2.3	2.1	2.0	1.9	3.0
26-Sep	1.8	1.5	1.5	1.4	1.4	1.8	4.4	5.3	3.9	4.2	4.8	4.8	5.8	3.4	1.8	1.5	1.2	1.4	1.4	1.5	1.4	1.4	1.5	1.5	2.5	5.8
27-Sep	1.5	1.4	1.4	2.0	1.7	1.8	1.6	1.5	1.6	1.4	1.4	1.5	1.5	1.5	1.5	0.9	0.7	0.7	0.9	0.9	0.9	0.9	1.1	1.2	1.3	2.0
28-Sep	1.1	1.0	1.1	1.3	1.4	1.4	1.4	1.4	1.5	1.5	1.4	1.1	0.9	0.9	0.9	1.0	1.3	1.3	1.2	1.2	1.2	1.3	1.3	1.7	1.2	1.7
29-Sep	1.5	1.9	1.9	1.8	2.0	2.0	1.8	1.5	1.6	1.8	1.9	1.8	1.8	1.8	1.8	1.8	1.6	1.6	2.5	2.5	2.9	2.7	2.7	2.5	2.0	2.9
30-Sep	2.3	2.0	1.7	2.0	2.4	2.5	2.6	6.6	6.8	7.8	5.6	2.0	1.3	1.4	1.4	1.4	1.6	1.4	1.3	1.3	1.4	1.6	1.5	1.7	2.6	7.8
	20.6	22.3	22.8	22.1	22.5	20.6	19.1	18.5	20.5	22.2	22.2	20.2	18.0	15.5	15.3	14.7	15.0	15.4	15.8	15.7	16.8	19.1	19.7	20.2	Diurnal Average	
	142.5	184.9	203.0	193.7	181.8	151.2	139.2	133.3	154.2	165.4	146.0	137.1	140.8	140.2	119.1	112.4	129.8	132.3	142.3	131.0	127.3	124.2	124.5	126.3	Diurnal Maximum	

C - Calibration M - Maintenance

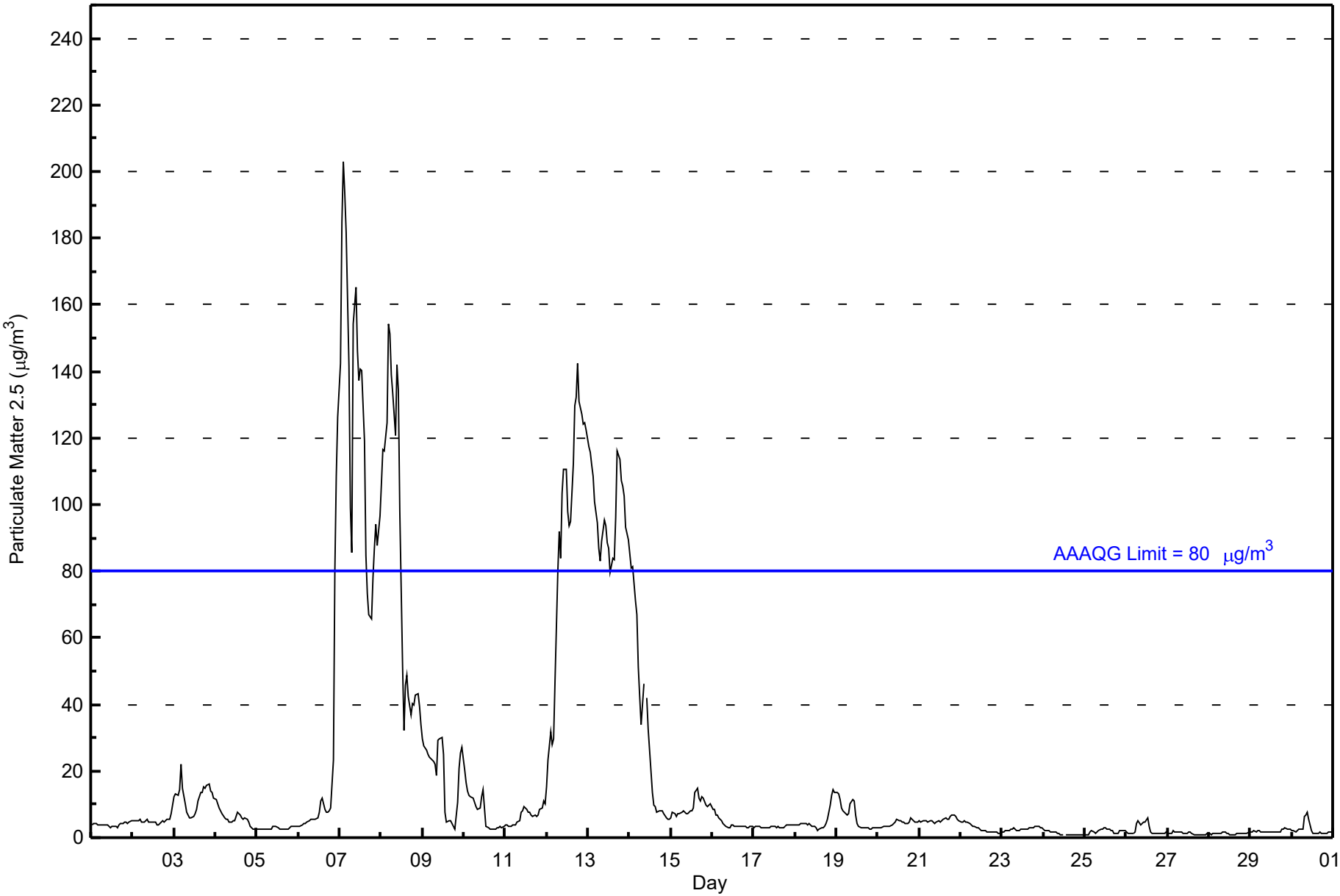
Alberta Ambient Air Quality Guideline/Objectives: 1-hr 80 $\mu g/m^3$ 24-hr 29 $\mu g/m^3$

Wood Buffalo Environmental Association

Hourly Averages

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

Stony Mountain - September 2024



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

Stony Mountain - September 2024

Concentration Ranges ($\mu g/m^3$)	Number of Hours	%	Cumulative %
0 - 5	436	60.72	60.72
6 - 15	150	20.89	81.62
16 - 25	17	2.37	83.98
26 - 80	38	5.29	89.28
> 81.0	77	10.72	100.00

Total Number of Valid Hours: 718

Total Number of Hours: 720

Wood Buffalo Environmental Association

Frequency Distribution

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

Stony Mountain - September 2024

Concentration Ranges ($\mu g/m^3$)	Wind Direction																
	N	NNE	NE	ENE	E	ESE	SE	SSE	S	SSW	SW	WSW	W	WNW	NW	NNW	**Totals**
0 - 5	4	7	13	7	4	6	4	11	24	61	67	58	56	63	39	12	436
6 - 15	7	7	1	0	4	3	6	5	5	12	17	9	24	29	14	7	150
16 - 25	0	2	0	0	0	1	0	0	3	2	0	3	2	4	0	0	17
26 - 80	1	3	1	0	0	0	0	2	8	8	1	0	5	8	0	1	38
> 81.0	11	3	3	0	0	0	0	0	3	5	8	4	10	11	6	13	77
Totals	23	22	18	7	8	10	10	18	43	88	93	74	97	115	59	33	718

Total Number of Valid Hours: 718

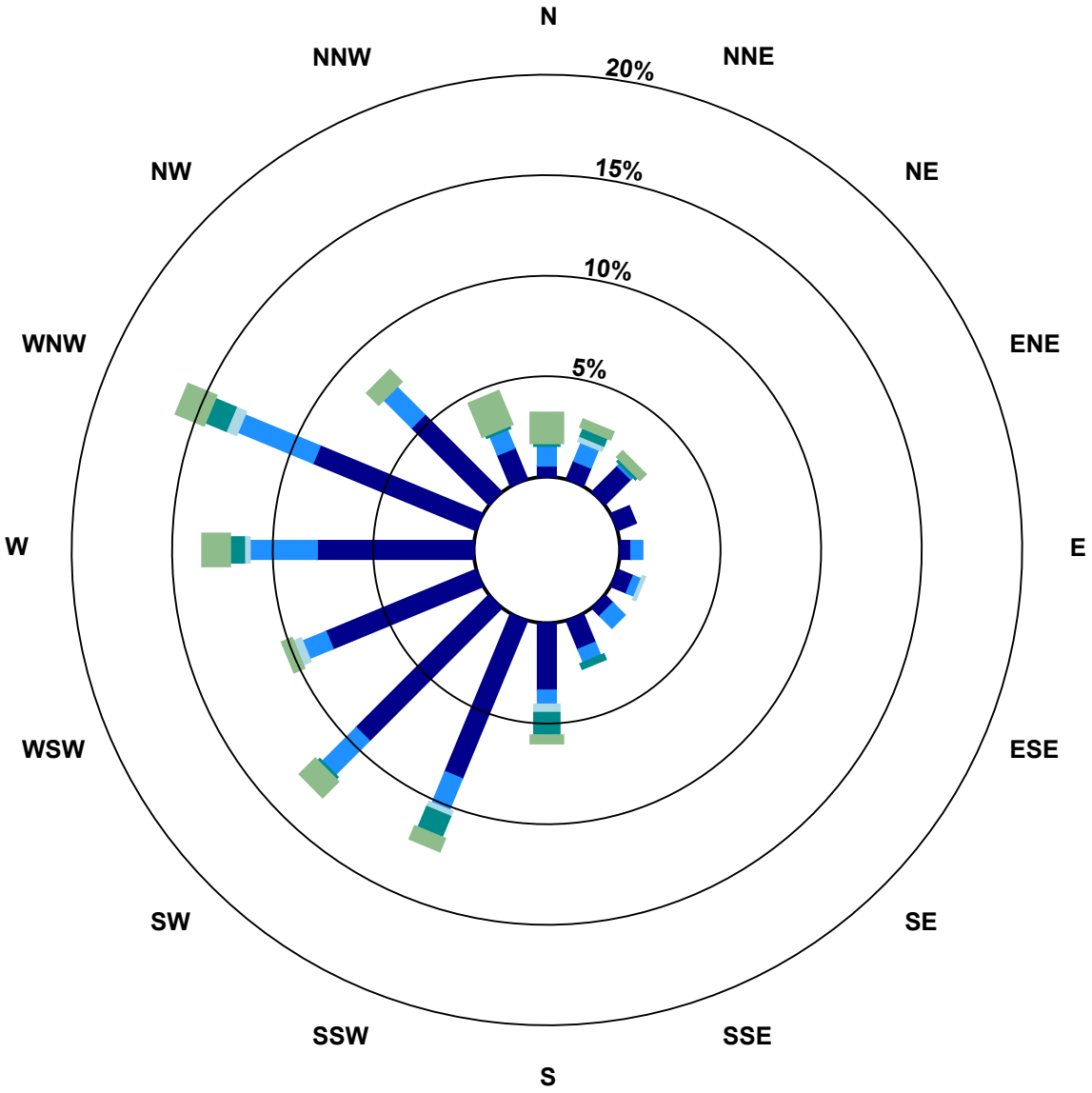
Total Number of Hours: 720

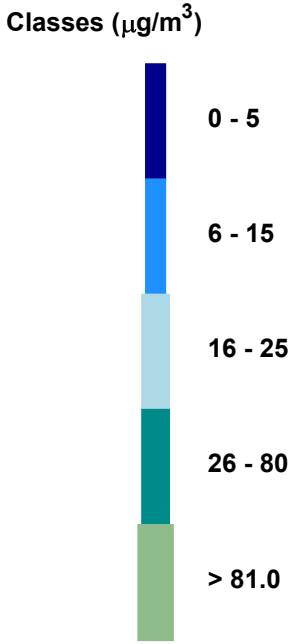
Wood Buffalo Environmental Association

Wind Rose Sep 2024

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

Stony Mountain





Total Number of Valid Hours: 718

Wood Buffalo Environmental Association

Summary of Hour Averages

Carbon Monoxide (CO) - ppm

Stony Mountain - September 2024

Number of Exceedences (AAAQO): 1-hr: 0 24-hr: 0

Maximum Value: 1.1 ppm on Sep 12 20:00

Maximum Daily Average: 0.8 ppm on Sep 12

Minimum Value: 0.1 ppm on Sep 27 03:00

Minimum Daily Average: 0.2 ppm on Sep 27

Maximum Diurnal Average: 0.3 ppm at hour 11

Minimum Diurnal Average: 0.2 ppm at hour 4

Monthly Average: 0.26 ppm

Percentiles: P_1 = 0.1 P_{10} = 0.2 Q_1 = 0.2 Median = 0.2 Q_3 = 0.2 P_{90} = 0.5 P_{99} = 1.0

Hours in Service:	720
Hours of Data:	686
Hours of Missing Data:	34
Hours of Calibration:	33
Percent Operational Time:	99.9

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

Z - zerospan C - Calibration M - Maintenance

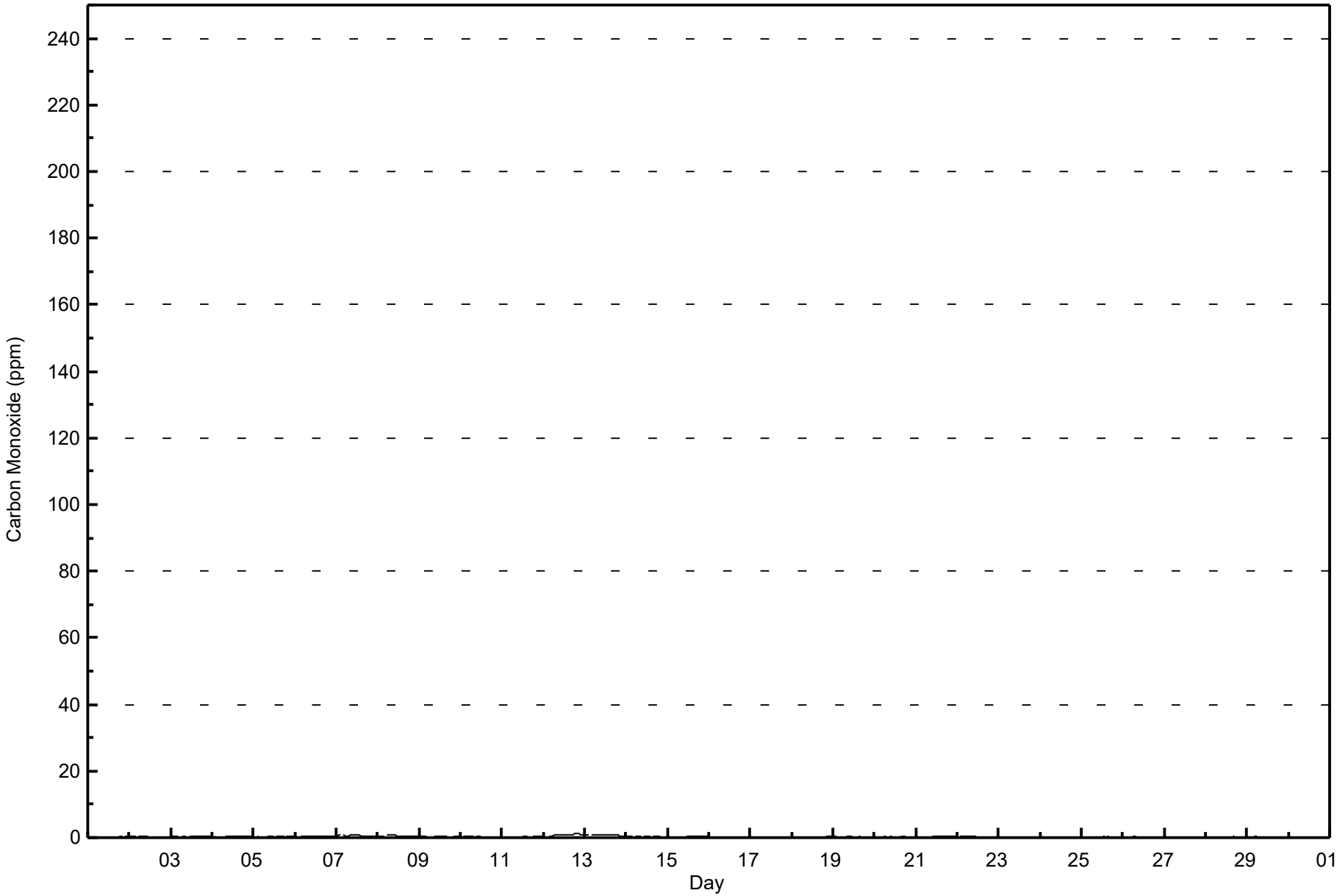
Alberta Ambient Air Quality Objectives (AAAQO): 1-hr 13 ppm

Wood Buffalo Environmental Association

Hourly Averages

Carbon Monoxide (CO) - ppm

Stony Mountain - September 2024



Concentration Ranges (ppm)	Number of Hours	%	Cumulative %
0 - 0.3	596	86.88	86.88
0.4 - 0.5	25	3.64	90.52
0.6 - 0.7	36	5.25	95.77
0.8 - 1.4	29	4.23	100.00
1.5 - 10	0	0.00	100.00
> 10	0	0.00	100.00

Total Number of Valid Hours: 686

Total Number of Hours: 720

Wood Buffalo Environmental Association

Frequency Distribution

Carbon Monoxide (CO) - ppm

Stony Mountain - September 2024

Concentration Ranges (ppm)	Wind Direction																
	N	NNE	NE	ENE	E	ESE	SE	SSE	S	SSW	SW	WSW	W	WNW	NW	NNW	**Totals**
0 - 0.3	12	14	14	4	8	10	9	17	34	77	82	68	79	98	51	19	596
0.4 - 0.5	0	1	0	0	0	0	0	1	3	4	4	0	8	4	0	0	25
0.6 - 0.7	1	1	1	0	0	0	0	0	3	4	5	4	4	8	2	3	36
0.8 - 1.4	9	2	3	0	0	0	0	0	0	0	0	0	0	0	4	11	29
1.5 - 10	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
Totals	22	18	18	4	8	10	9	18	40	85	91	72	91	110	57	33	686

Total Number of Valid Hours: 686

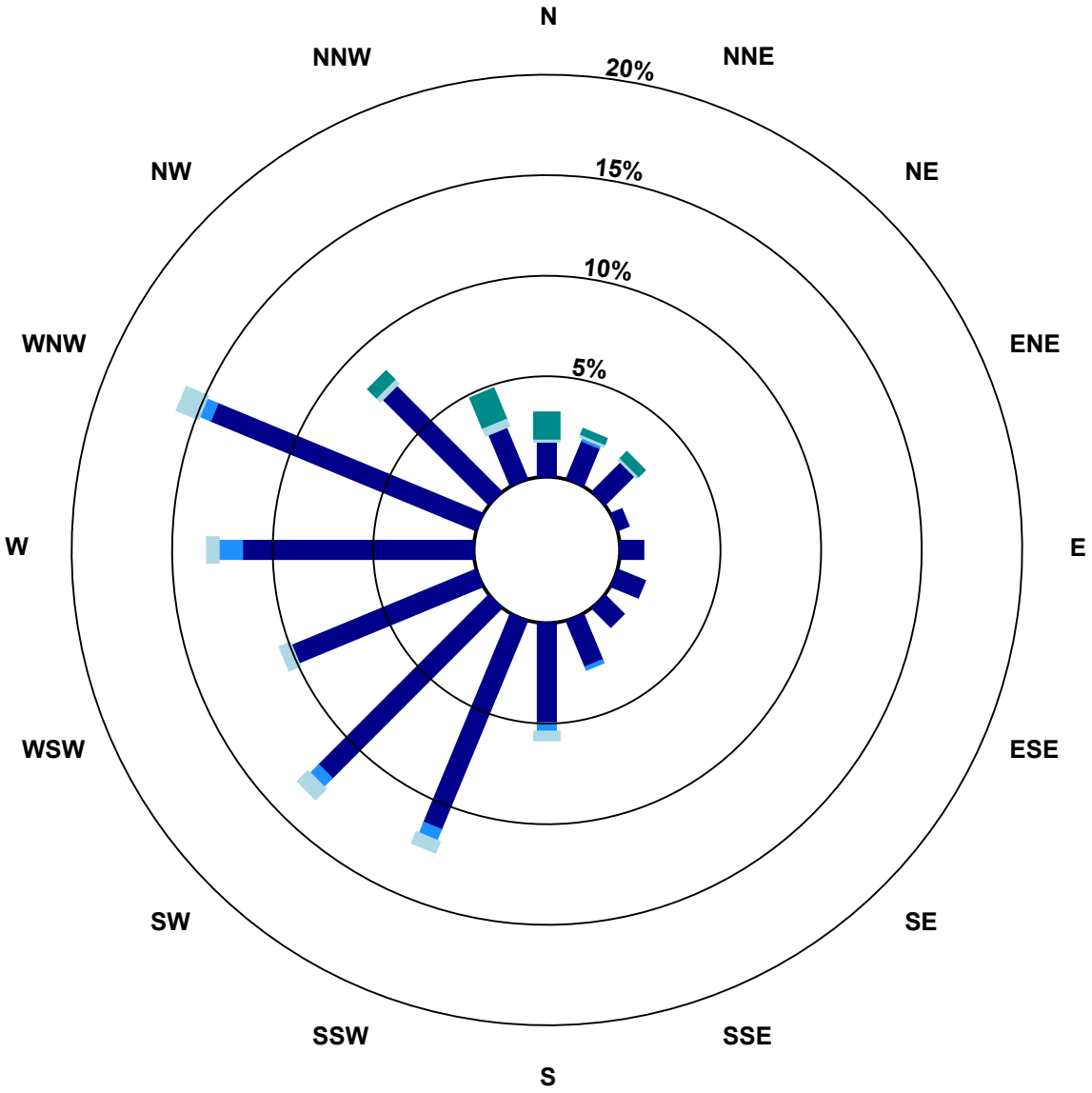
Total Number of Hours: 720

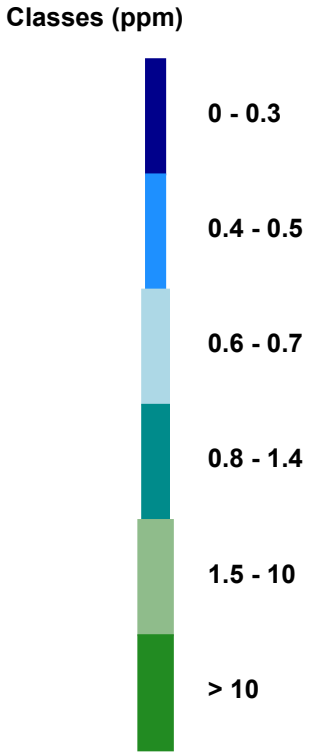
Wood Buffalo Environmental Association

Wind Rose Sep 2024

Carbon Monoxide (CO) - ppm

Stony Mountain





Total Number of Valid Hours: 686

Wood Buffalo Environmental Association

Summary of Hour Averages

Carbon Dioxide (CO_2) - ppm

Stony Mountain - September 2024

Number of Exceedences (AAAQO): 1-hr: 0 24-hr: 0

Maximum Value: 475.1 ppm on Sep 25 06:00

Maximum Daily Average: 446.0 ppm on Sep 25

Minimum Value: 412.9 ppm on Sep 5 17:00

Minimum Daily Average: 421.3 ppm on Sep 5

Maximum Diurnal Average: 442.1 ppm at hour 4

Minimum Diurnal Average: 423.1 ppm at hour 16

Monthly Average: 432.49 ppm

Percentiles: P_1 = 413.4 P_{10} = 420.8 Q_1 = 425.0 Median = 431.9 Q_3 = 439.7 P_{90} = 444.8 P_{99} = 455.0

Hours in Service:	720
Hours of Data:	685
Hours of Missing Data:	35
Hours of Calibration:	34
Percent Operational Time:	99.9

Day	Hourly Period Ending At (MST)																								Daily	Daily
	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24	Average	Maximum
1-Sep	439.9	442.2	441.0	444.0	Z	443.3	442.6	438.2	431.5	426.0	421.2	420.5	422.2	423.7	423.5	423.8	424.4	424.7	425.3	427.6	431.1	432.5	435.5	437.0	431.4	444.0
2-Sep	441.4	443.5	451.2	452.3	454.3	Z	448.5	448.2	445.8	436.2	429.8	428.1	427.7	427.2	427.6	426.6	426.5	429.8	430.9	435.2	442.0	443.5	448.9	448.0	438.8	454.3
3-Sep	Z	446.0	453.1	452.2	445.3	435.1	433.3	430.7	427.4	424.2	424.7	425.5	422.1	421.6	419.8	420.3	419.0	420.5	427.2	434.9	440.4	437.2	441.6	441.6	432.3	453.1
4-Sep	445.9	Z	443.6	442.1	437.5	436.1	436.8	433.5	427.1	422.0	416.3	414.4	413.6	413.6	413.4	413.5	413.6	414.5	416.4	419.7	422.7	422.2	422.4	424.1	424.6	445.9
5-Sep	423.0	421.0	Z	424.5	428.3	429.7	427.9	424.7	423.7	420.4	415.8	413.9	413.4	413.5	413.2	412.9	412.9	413.0	414.3	420.4	428.6	431.6	433.3	430.5	421.3	433.3
6-Sep	428.2	428.1	430.2	Z	434.9	433.3	433.3	430.9	427.3	427.1	425.8	422.0	419.9	416.8	414.5	413.8	413.2	414.8	421.4	425.3	423.3	429.9	433.1	437.6	425.4	437.6
7-Sep	437.8	437.6	439.0	441.8	Z	437.1	430.8	451.3	460.1	441.7	431.6	431.4	424.6	418.3	416.6	414.1	414.0	417.6	425.0	431.6	435.3	437.4	434.4	435.3	432.4	460.1
8-Sep	437.8	436.4	439.5	437.8	432.9	Z	433.5	433.1	431.6	431.3	427.6	420.4	419.4	421.0	422.3	423.1	424.3	426.4	433.6	439.0	447.0	450.6	449.5	445.7	433.2	450.6
9-Sep	Z	450.1	451.0	451.2	448.3	448.8	451.2	446.9	441.7	451.8	448.9	438.5	427.1	425.6	424.2	424.3	421.6	420.8	423.0	425.0	425.3	426.1	427.6	427.8	436.0	451.8
10-Sep	427.7	Z	430.6	430.7	431.3	430.9	429.3	426.9	425.0	421.5	C	C	C	C	416.9	415.2	416.2	415.1	416.5	420.4	422.3	419.3	419.0	426.1	423.2	431.3
11-Sep	423.1	420.9	Z	426.2	430.1	428.0	422.6	429.3	434.8	444.6	441.7	438.3	425.1	417.9	417.7	416.5	418.5	419.3	421.4	424.8	428.2	432.6	433.9	433.3	427.3	444.6
12-Sep	433.1	436.5	441.4	Z	456.1	447.8	449.3	452.3	448.8	445.9	444.4	443.1	441.2	440.8	441.1	440.6	437.9	436.9	438.3	439.9	442.1	442.2	443.7	445.8	443.0	456.1
13-Sep	446.2	447.6	447.4	446.0	Z	447.6	447.8	444.3	441.5	441.1	440.4	438.5	438.7	442.1	442.3	442.4	441.6	440.1	440.7	441.1	439.8	436.8	436.1	437.5	442.1	447.8
14-Sep	436.9	436.5	435.7	435.4	435.3	Z	446.3	442.0	431.4	M	423.3	421.2	420.7	418.5	418.1	417.7	416.7	416.0	422.0	425.9	425.9	428.2	429.7	433.4	428.0	446.3
15-Sep	Z	432.2	433.7	434.7	432.9	437.2	441.1	442.8	444.2	433.2	426.0	422.5	420.8	421.3	419.8	420.1	419.9	419.5	422.2	428.8	433.4	438.2	439.8	440.9	430.7	444.2
16-Sep	442.4	Z	446.1	449.5	452.6	453.2	450.0	444.8	439.1	430.1	427.2	424.4	422.3	421.4	420.5	420.5	419.8	419.7	422.4	426.6	432.0	430.1	437.4	430.7	433.2	453.2
17-Sep	426.1	436.0	Z	438.1	430.8	428.3	433.3	430.7	431.1	429.2	423.7	422.8	421.9	421.0	420.0	420.3	420.6	421.7	423.3	424.5	431.3	434.1	439.3	445.7	428.4	445.7
18-Sep	443.8	446.0	436.0	Z	436.6	441.2	434.8	444.5	432.6	432.1	431.0	433.7	429.4	428.9	427.3	427.6	429.8	432.3	436.2	440.1	441.7	443.9	441.0	440.3	436.1	446.0
19-Sep	440.3	437.1	436.0	438.1	Z	428.8	426.0	423.7	427.3	428.9	431.4	431.0	427.1	424.7	423.3	421.7	423.9	426.3	428.7	428.6	429.4	432.3	434.3	431.9	429.6	440.3
20-Sep	434.3	436.0	441.0	441.7	442.9	Z	440.4	446.1	445.5	442.4	439.7	437.0	429.1	427.1	423.6	423.1	422.1	423.2	428.6	433.6	434.2	434.9	435.7	436.9	434.7	446.1
21-Sep	Z	437.4	436.4	434.3	435.4	436.6	442.0	437.3	441.6	434.6	428.8	425.3	423.8	422.9	422.2	422.2	422.1	422.7	426.0	430.2	432.2	434.7	435.0	435.9	431.3	442.0
22-Sep	437.7	Z	441.2	442.0	441.6	443.2	443.5	442.9	441.1	436.1	429.0	423.5	422.9	421.6	421.1	421.5	422.5	425.5	430.0	434.4	435.8	435.2	436.3	436.5	433.3	443.5
23-Sep	440.8	442.0	Z	441.6	443.1	441.9	442.0	436.2	434.2	434.6	432.8	430.8	427.8	425.7	424.0	425.6	428.3	431.9	435.5	438.6	441.9	443.6	442.4	443.5	436.0	443.6
24-Sep	439.7	439.7	442.6	Z	438.8	438.4	440.9	439.4	434.4	429.4	428.1	427.9	427.8	427.7	427.7	427.4	426.9	428.1	428.9	429.6	433.5	439.0	439.0	434.6	433.5	442.6
25-Sep	436.3	443.4	448.3	471.3	Z	475.1	460.1	457.7	453.8	442.8	437.2	436.0	434.6	434.5	433.5	434.8	436.9	436.9	437.4	441.4	452.1	454.8	448.3	449.9	446.0	475.1
26-Sep	444.9	440.6	440.3	441.3	442.2	Z	440.2	435.7	434.9	436.9	438.1	437.1	430.6	426.5	425.2	424.8	425.3	426.5	428.3	430.3	430.9	432.2	436.1	439.4	434.3	444.9
27-Sep	Z	440.0	442.0	458.6	451.0	449.9	445.0	441.1	441.8	433.0	428.2	426.1	424.8	423.4	423.8	424.0	424.3	425.5	429.8	433.1	434.5	435.9	438.7	435.2	435.2	458.6
28-Sep	431.7	Z	429.3	430.5	433.1	431.4	431.4	429.0	427.0	425.0	424.2	423.9	423.1	422.4	422.0	422.2	423.8	426.2	430.0	430.6	431.3	433.9	431.5	436.8	428.3	436.8
29-Sep	437.1	439.6	Z	446.0	451.1	452.4	443.7	436.6	435.6	432.8	429.5	426.4	424.9	424.7	425.0	426.3	426.5	427.3	432.1	432.6	434.2	431.0	430.4	430.4	433.8	452.4
30-Sep	430.3	432.3	434.1	Z	435.3	435.3	435.5	434.7	432.8	430.3	428.0	426.3	425.1	424.9	424.9	425.1	425.4	426.0	426.9	427.1	429.1	429.7	430.0	434.1	429.7	435.5
	436.3	438.0	440.4	442.1	440.1	440.4	439.4	438.5	436.5	433.3	430.1	428.0	425.2	424.1	423.2	423.1	423.3	424.3	427.4	430.7	433.7	435.1	436.1	436.9	Diurnal Average	
	446.2	450.1	453.1	471.3	456.1	475.1	460.1	457.7	460.1	451.8	448.9	443.1	441.2	442.1	442.3	442.4	441.6	440.1	440.7	441.4	452.1	454.8	449.5	449.9	Diurnal Maximum	

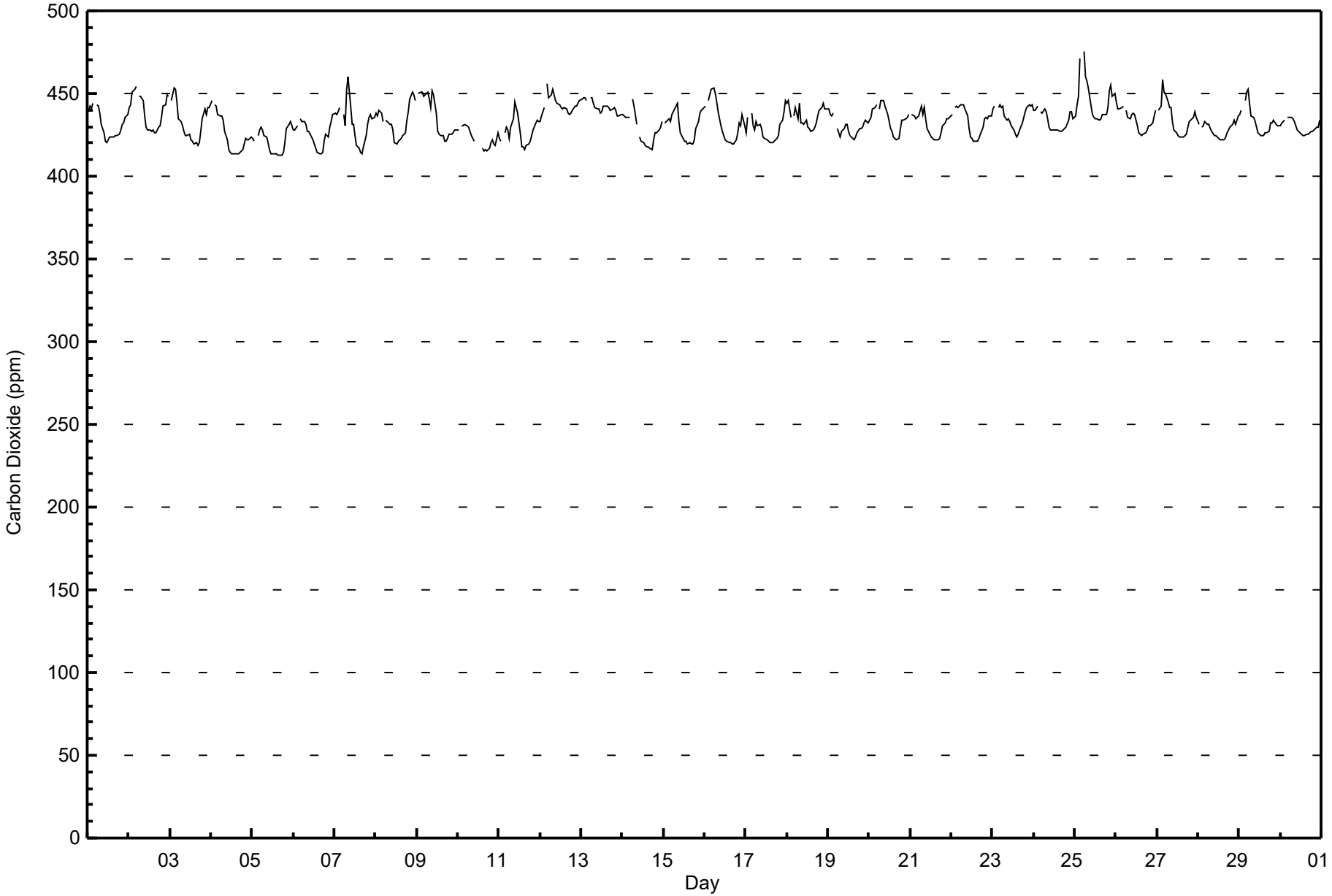
Z - zerospan C - Calibration M - Maintenance

Wood Buffalo Environmental Association

Hourly Averages

Carbon Dioxide (CO_2) - ppm

Stony Mountain - September 2024



Carbon Dioxide (CO_2) - ppm
Stony Mountain - September 2024

Concentration Ranges (ppm)	Number of Hours	%	Cumulative %
400 - 420	66	9.64	9.64
420 - 440	465	67.88	77.52
440 - 460	152	22.19	99.71
460 - 480	2	0.29	100.00
480 - 500	0	0.00	100.00
> 500	0	0.00	100.00

Total Number of Valid Hours: 685

Total Number of Hours: 720

Wood Buffalo Environmental Association

Frequency Distribution

Carbon Dioxide (CO_2) - ppm

Stony Mountain - September 2024

Concentration Ranges (ppm)	Wind Direction																
	N	NNE	NE	ENE	E	ESE	SE	SSE	S	SSW	SW	WSW	W	WNW	NW	NNW	**Totals**
400 - 420	1	1	1	1	2	3	2	1	5	10	12	5	7	9	4	2	66
420 - 440	11	13	8	4	3	6	5	10	31	49	57	60	81	84	32	11	465
440 - 460	11	7	8	2	3	1	1	6	6	24	21	5	3	16	21	17	152
460 - 480	0	0	0	0	0	0	1	1	0	0	0	0	0	0	0	0	2
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	23	21	17	7	8	10	9	18	42	83	90	70	91	109	57	30	685

Total Number of Valid Hours: 685

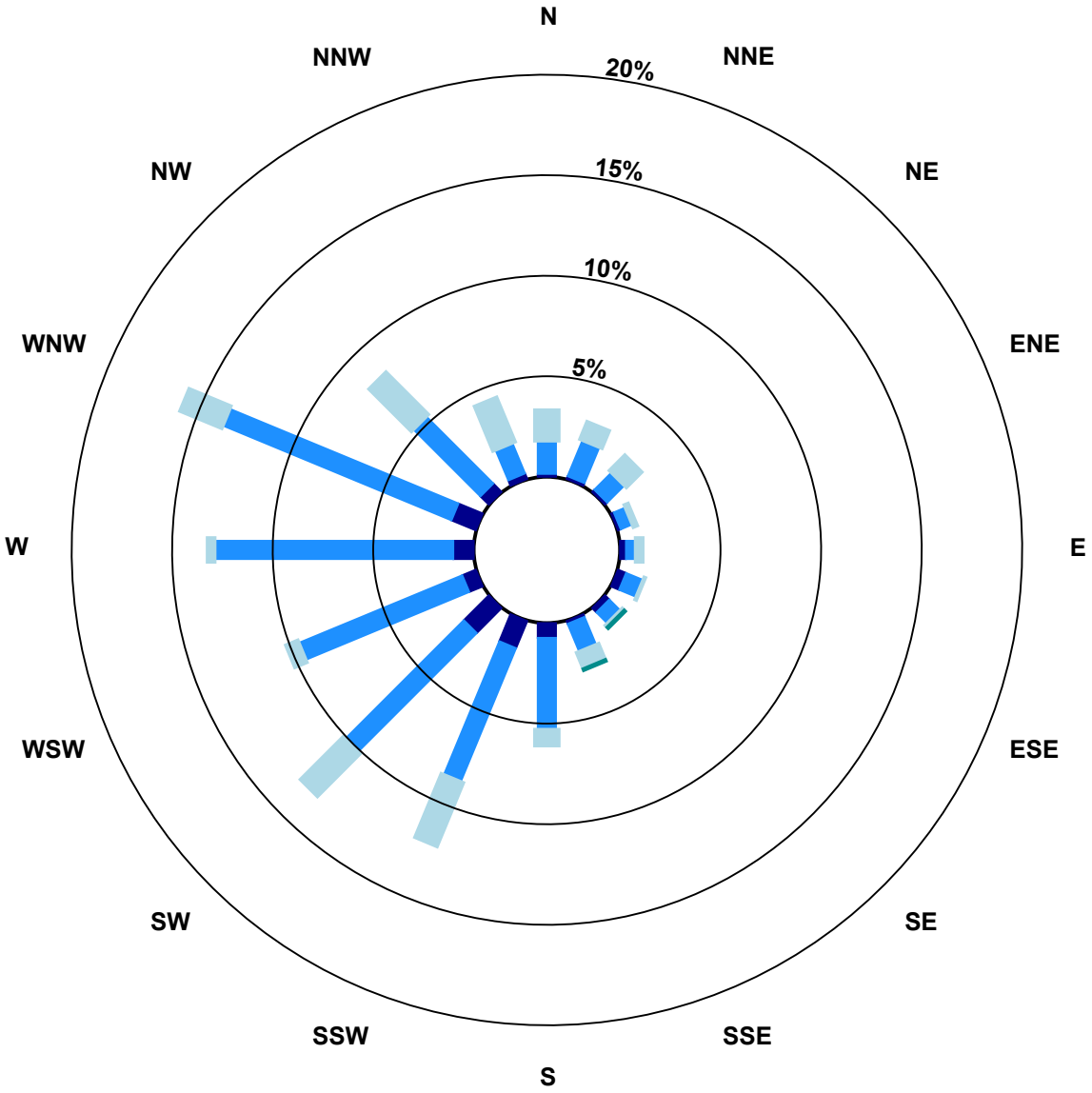
Total Number of Hours: 720

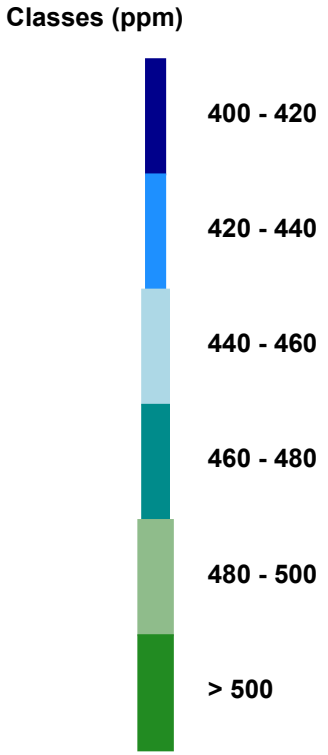
Wood Buffalo Environmental Association

Wind Rose Sep 2024

Carbon Dioxide (CO_2) - ppm

Stony Mountain





Total Number of Valid Hours: 685

Maximum Value: 31.0 C on Sep 2 15:00

Maximum Daily Average: 22.3 C on Sep 2

Minimum Value: 1.4 C on Sep 30 07:00

Minimum Daily Average: 5.7 C on Sep 30

Maximum Diurnal Average: 17.8 C at hour 15

Minimum Diurnal Average: 9.3 C at hour 7

Monthly Average: 12.96 C

Percentiles: P_1 = 3.3 P_{10} = 6.8 Q_1 = 9.2 Median = 12.1 Q_3 = 16.4 P_{90} = 20.3 P_{99} = 28.5

Hours in Service:	720
Hours of Data:	720
Hours of Missing Data:	0
Hours of Calibration:	0
Percent Operational Time:	100.0

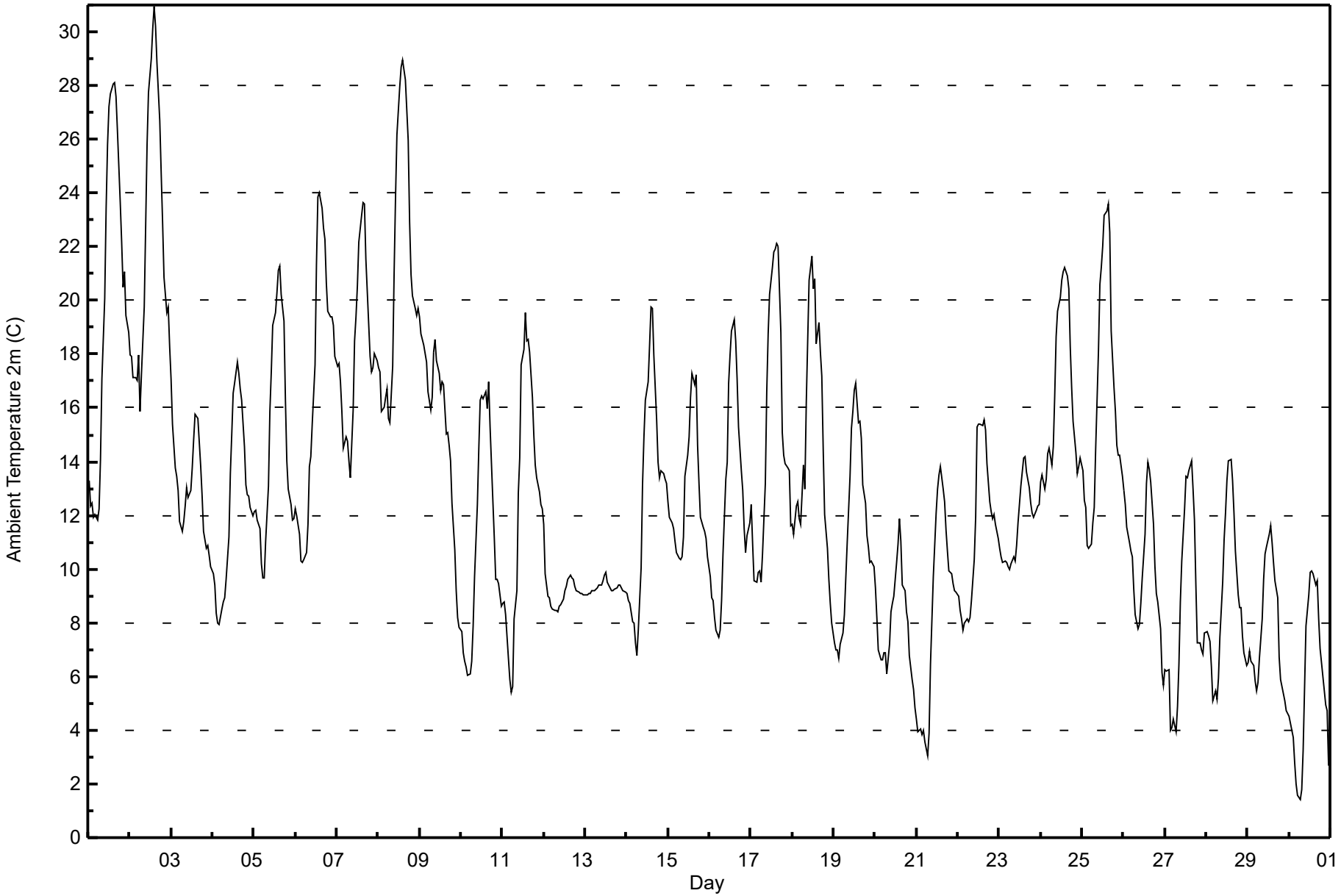
Day	Hourly Period Ending At (MST)																								Daily	Daily
	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24	Average	Maximum
1-Sep	13.3	12.3	12.5	12.0	12.1	11.8	12.2	14.1	17.1	20.1	23.5	25.8	27.2	27.7	28.1	28.1	27.6	26.3	23.6	22.2	20.5	21.1	19.5	18.8	19.9	28.1
2-Sep	18.0	17.9	17.1	17.1	17.0	18.0	15.9	17.2	19.8	22.8	25.8	27.7	29.0	30.1	31.0	30.2	28.8	26.7	24.8	22.9	20.9	19.5	19.8	18.3	22.3	31.0
3-Sep	17.1	15.4	13.8	13.5	12.9	11.8	11.4	11.8	12.4	13.0	12.7	12.9	13.8	14.8	15.8	15.6	14.7	13.8	12.7	11.4	10.8	10.9	10.5	10.1	13.1	17.1
4-Sep	9.8	9.4	8.4	8.0	8.0	8.5	8.8	8.9	9.6	11.2	13.6	15.0	16.6	16.9	17.7	17.3	16.7	16.3	14.6	13.1	12.8	12.7	12.3	12.0	12.4	17.7
5-Sep	12.1	12.2	11.8	11.5	10.2	9.7	9.7	11.0	13.1	15.9	17.3	19.1	19.6	20.3	21.1	21.3	20.3	19.2	16.3	14.0	13.0	12.4	11.8	11.9	14.8	21.3
6-Sep	12.2	12.0	11.3	10.3	10.2	10.3	10.6	11.7	13.8	14.2	15.4	17.6	21.4	23.8	24.0	23.4	22.7	22.3	20.6	19.6	19.4	19.4	19.1	17.9	16.8	24.0
7-Sep	17.5	17.7	17.0	15.9	14.5	14.9	14.7	14.0	13.4	15.9	18.5	19.4	20.5	22.1	23.2	23.7	23.6	21.5	19.1	17.9	17.3	17.5	18.0	17.7	18.2	23.7
8-Sep	17.5	17.3	15.9	16.0	16.4	16.7	15.6	15.4	17.5	20.9	23.8	26.2	27.9	28.7	29.0	28.6	28.2	26.0	22.9	20.9	20.2	19.7	19.4	19.7	21.3	29.0
9-Sep	19.4	18.8	18.3	18.0	17.7	16.6	15.9	16.4	18.1	18.5	17.8	17.3	16.6	17.0	16.9	15.0	15.1	14.6	14.0	12.5	10.7	9.2	8.2	7.8	15.4	19.4
10-Sep	7.7	6.9	6.5	6.4	6.1	6.1	6.6	7.9	9.7	12.4	14.5	16.3	16.4	16.4	16.6	16.0	17.0	15.3	12.5	11.1	9.6	9.6	9.5	8.6	11.1	17.0
11-Sep	8.7	8.8	8.3	6.7	5.9	5.4	5.6	8.2	9.2	12.8	14.1	17.6	18.2	19.5	18.5	18.6	18.1	16.4	15.0	13.8	13.4	12.9	12.4	12.2	12.5	19.5
12-Sep	11.7	9.8	9.0	8.9	8.6	8.5	8.5	8.5	8.4	8.6	8.7	8.9	9.2	9.3	9.6	9.8	9.6	9.6	9.3	9.2	9.2	9.1	9.1	9.1	9.2	11.7
13-Sep	9.0	9.1	9.1	9.1	9.2	9.2	9.2	9.3	9.4	9.4	9.6	9.8	9.9	9.5	9.3	9.2	9.2	9.2	9.3	9.4	9.4	9.3	9.2	9.1	9.3	9.9
14-Sep	9.1	8.8	8.7	8.0	8.0	7.2	6.8	7.7	10.0	13.2	14.9	16.3	17.0	18.4	19.8	19.7	18.0	15.5	14.0	13.4	13.7	13.6	13.4	13.2	12.8	19.8
15-Sep	12.5	11.9	11.7	11.5	11.0	10.6	10.4	10.3	10.4	11.2	13.4	14.2	14.9	16.4	17.3	16.9	17.3	14.6	13.2	11.9	11.6	11.4	11.1	10.4	12.8	17.3
16-Sep	9.7	8.9	8.8	8.2	7.7	7.4	7.7	8.8	10.5	13.4	14.0	16.9	17.9	18.9	19.3	18.5	17.1	15.3	13.7	13.0	11.5	10.6	11.3	11.7	12.5	19.3
17-Sep	12.4	10.9	9.6	9.5	9.9	9.9	9.5	10.5	13.2	16.6	18.7	20.2	21.2	21.8	21.9	22.1	22.0	18.8	15.1	14.2	13.9	13.8	13.6	11.6	15.0	22.1
18-Sep	11.7	11.3	12.3	12.5	11.9	11.6	13.8	13.0	16.2	18.5	20.8	21.6	20.4	20.8	18.4	19.2	18.1	17.2	14.5	12.1	10.8	9.6	8.7	8.0	14.7	21.6
19-Sep	7.3	7.0	7.0	6.7	7.2	7.6	8.3	9.7	11.0	13.5	15.3	15.9	16.6	16.9	15.4	15.5	14.9	13.1	12.5	11.2	10.8	10.2	10.3	10.1	11.4	16.9
20-Sep	9.3	8.2	7.0	6.6	6.6	6.9	6.9	6.1	7.2	8.4	8.7	9.0	10.2	11.0	11.9	11.0	9.4	9.2	8.4	8.0	6.8	5.9	5.5	4.9	8.0	11.9
21-Sep	4.4	3.9	4.1	3.8	4.0	3.6	3.1	3.9	6.5	8.1	9.7	12.1	13.0	13.5	13.8	13.0	12.5	11.4	10.7	9.9	9.8	9.5	9.2	9.2	8.4	13.8
22-Sep	9.0	8.4	8.2	7.7	8.0	8.1	8.0	8.2	8.8	10.3	11.9	15.3	15.4	15.4	15.4	15.6	15.2	13.9	12.5	12.2	11.9	12.0	11.7	11.1	11.4	15.6
23-Sep	10.8	10.5	10.3	10.3	10.2	10.1	10.0	10.2	10.4	10.3	10.9	11.7	13.1	13.6	14.1	14.2	13.6	13.0	12.4	12.1	11.9	12.2	12.3	12.4	11.7	14.2
24-Sep	13.2	13.5	13.0	13.4	14.3	14.5	13.9	14.6	16.5	18.6	19.6	20.2	20.7	21.1	21.2	20.9	20.4	18.3	16.7	15.5	14.4	13.6	13.8	14.1	16.5	21.2
25-Sep	13.7	12.6	12.3	10.9	10.8	10.9	11.7	12.3	14.5	18.1	20.6	21.2	22.0	23.2	23.3	23.6	22.5	18.9	16.8	15.9	14.6	14.2	14.2	13.5	16.3	23.6
26-Sep	12.9	12.4	11.6	11.0	10.7	10.5	9.2	8.3	7.8	7.9	8.7	9.7	11.3	13.2	14.0	13.7	13.3	11.7	10.1	9.1	8.8	7.8	6.2	5.7	10.2	14.0
27-Sep	6.2	6.2	6.3	4.0	4.1	4.4	4.0	4.9	6.5	8.8	10.3	12.3	13.4	13.4	13.7	14.0	13.0	11.8	9.4	7.3	7.3	7.0	6.8	7.6	8.4	14.0
28-Sep	7.7	7.5	7.3	6.4	5.1	5.4	5.1	5.9	7.5	9.5	11.1	12.1	13.3	14.0	14.1	13.3	12.1	10.7	9.1	8.6	8.5	7.5	6.9	6.4	9.0	14.1
29-Sep	6.5	6.9	6.6	6.4	5.9	5.5	5.8	6.7	8.2	9.6	10.5	10.8	11.3	11.6	11.0	10.3	9.6	8.9	6.7	5.9	5.6	5.1	4.7	4.6	7.7	11.6
30-Sep	4.5	4.3	3.8	2.8	2.0	1.6	1.4	1.8	3.3	5.6	7.9	9.0	9.9	10.0	9.8	9.4	9.6	8.2	7.0	6.5	5.5	4.9	4.7	2.7	5.7	10.0
	11.2	10.7	10.2	9.8	9.5	9.5	9.3	9.9	11.3	13.2	14.7	16.1	16.9	17.6	17.8	17.6	17.0	15.6	13.9	12.8	12.1	11.7	11.4	11.0	Diurnal Average	
	19.4	18.8	18.3	18.0	17.7	18.0	15.9	17.2	19.8	22.8	25.8	27.7	29.0	30.1	31.0	30.2	28.8	26.7	24.8	22.9	20.9	21.1	19.8	19.7	Diurnal Maximum	

Wood Buffalo Environmental Association

Hourly Averages

Ambient Temperature 2m (AT2) - C

Stony Mountain - September 2024



Concentration Ranges (C)	Number of Hours	%	Cumulative %
-50 - -20	0	0.00	0.00
-20 - 0	0	0.00	0.00
0 - 10	246	34.17	34.17
10 - 20	397	55.14	89.31
> 20	77	10.69	100.00

Total Number of Valid Hours: 720

Total Number of Hours: 720

Wood Buffalo Environmental Association

Summary of Hour Averages

Relative Humidity 2m (RH2) - %

Stony Mountain - September 2024

Maximum Value: 100.0 % on Sep 4 00:00

Maximum Daily Average: 88.9 % on Sep 23

Minimum Value: 24.6 % on Sep 2 15:00

Minimum Daily Average: 52.1 % on Sep 8

Maximum Diurnal Average: 82.6 % at hour 7

Minimum Diurnal Average: 48.6 % at hour 15

Monthly Average: 68.28 %

Percentiles: P_1 = 32.4 P_{10} = 44.8 Q_1 = 55.5 Median = 68.1 Q_3 = 81.3 P_{90} = 93.0 P_{99} = 99.7

Hours in Service:	720
Hours of Data:	669
Hours of Missing Data:	51
Hours of Calibration:	0
Percent Operational Time:	92.9

Day	Hourly Period Ending At (MST)																								Daily	Daily
	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24	Average	Maximum
1-Sep	69.0	71.0	69.3	72.8	73.8	76.8	76.4	70.2	62.8	54.9	47.2	39.6	35.9	34.8	34.1	33.5	36.0	40.3	50.8	53.4	57.4	52.0	59.2	64.8	55.7	76.8
2-Sep	69.2	68.2	70.4	69.6	68.9	65.4	85.4	75.4	64.3	54.3	45.2	37.4	34.6	29.9	24.6	25.1	32.0	40.7	44.9	53.0	58.7	58.8	53.8	60.7	53.8	85.4
3-Sep	68.2	78.0	91.5	92.0	95.6	95.7	95.7	93.0	87.1	82.6	83.3	82.1	77.0	70.4	64.0	64.0	69.0	74.8	82.5	95.1	99.5	96.5	98.3	100.0	84.8	100.0
4-Sep	OR	OR	OR	OR	OR	OR	100.0	99.6	96.4	89.5	75.4	64.3	54.7	50.3	47.3	48.2	50.1	47.8	54.7	59.0	57.9	57.2	57.3	57.6	64.8	100.0
5-Sep	57.6	59.4	60.9	60.7	66.3	68.3	69.8	66.8	60.3	53.9	46.7	42.0	38.2	35.6	34.6	32.6	37.5	39.1	51.5	59.2	62.4	61.1	61.9	61.1	53.6	69.8
6-Sep	58.5	59.8	64.0	69.9	71.3	71.6	71.4	69.6	63.5	63.8	61.1	57.9	49.5	45.0	47.0	50.3	55.6	59.3	65.5	69.3	67.6	51.7	46.9	49.6	60.0	71.6
7-Sep	49.0	46.9	50.4	55.6	62.5	64.4	68.8	78.2	74.8	64.3	60.5	61.0	58.9	48.5	45.9	46.6	49.0	56.7	68.6	71.6	71.9	66.0	59.5	60.1	60.0	78.2
8-Sep	59.2	58.8	64.1	63.4	61.0	58.5	64.6	72.8	66.3	55.0	48.5	41.3	33.8	31.1	29.6	32.1	33.6	40.7	50.4	56.5	59.6	59.7	57.8	53.1	52.1	72.8
9-Sep	52.5	53.6	54.0	52.8	52.2	55.3	57.7	57.3	53.6	64.3	69.3	69.0	70.0	63.1	58.9	61.5	58.7	60.0	60.6	60.5	68.4	74.3	79.7	83.0	62.1	83.0
10-Sep	86.0	90.0	91.9	92.5	93.0	92.5	91.3	85.7	77.5	65.0	57.8	48.5	44.7	43.8	43.5	48.6	39.9	46.6	59.8	63.1	70.1	68.2	68.7	74.3	68.4	93.0
11-Sep	76.1	75.6	75.9	83.6	87.6	90.7	89.9	80.2	78.0	65.0	61.0	51.1	46.7	39.3	42.2	42.0	40.8	46.4	54.0	59.1	60.0	62.7	65.9	64.8	64.1	90.7
12-Sep	66.8	87.0	96.4	94.9	97.1	98.2	98.9	100.0	OR	OR	OR	OR	OR	OR	OR	OR	OR	OR	OR	OR	OR	OR	OR	OR	--	100.0
13-Sep	OR	OR	OR	OR	OR	OR	OR	OR	OR	OR	OR	OR	OR	OR	OR	OR	OR	OR	OR	OR	OR	OR	OR	OR	--	--
14-Sep	OR	95.9	93.9	92.8	93.0	96.4	98.7	98.1	89.4	77.5	72.0	63.6	61.2	50.1	42.2	44.9	56.2	71.0	77.4	79.8	75.6	75.5	75.2	76.2	76.4	98.7
15-Sep	81.4	88.8	87.4	88.7	93.8	97.1	98.2	99.0	100.0	99.0	88.1	85.5	81.2	76.4	67.1	66.7	58.7	77.7	79.1	85.6	91.5	92.1	90.9	91.0	86.0	100.0
16-Sep	90.8	93.7	92.3	94.1	94.3	94.5	92.4	88.1	83.0	71.7	65.6	51.1	47.4	44.8	43.0	46.1	52.8	64.0	70.3	72.3	78.7	82.0	79.6	74.2	73.6	94.5
17-Sep	66.3	73.9	82.1	80.7	76.3	74.8	76.7	73.8	66.8	58.6	49.6	43.5	41.9	39.5	39.2	38.1	38.9	52.0	64.5	65.5	66.6	65.8	65.1	74.6	61.5	82.1
18-Sep	71.8	73.4	71.0	71.7	74.9	75.7	66.6	72.1	61.4	53.5	49.8	49.3	53.0	49.9	58.4	58.1	61.8	62.4	70.4	79.6	82.8	86.7	87.4	84.3	67.8	87.4
19-Sep	82.6	80.4	75.4	74.5	69.8	66.4	62.6	59.3	63.8	60.0	55.1	49.3	45.6	44.3	49.6	51.2	51.7	63.0	61.3	61.9	63.3	68.1	67.4	65.0	62.1	82.6
20-Sep	67.4	72.4	78.6	81.5	81.1	80.7	80.3	83.5	81.4	78.5	81.9	92.3	85.4	80.0	71.6	74.7	87.9	89.1	91.5	90.9	89.8	90.1	91.2	93.9	83.2	93.9
21-Sep	95.8	97.0	95.5	95.7	94.0	95.7	98.1	99.5	86.8	77.0	74.3	67.0	60.0	57.0	54.1	57.6	62.0	69.2	73.8	77.3	73.8	73.4	72.3	71.9	78.3	99.5
22-Sep	74.3	76.7	78.3	80.8	80.3	81.1	82.9	85.3	85.4	80.8	75.3	63.2	63.4	62.6	64.2	65.3	68.1	76.2	84.1	85.6	86.6	87.1	92.4	94.2	78.1	94.2
23-Sep	96.3	98.3	100.0	OR	100.0	OR	OR	OR	95.3	94.7	93.6	89.4	82.6	81.3	78.1	76.5	78.1	81.9	86.4	88.4	92.1	91.2	88.5	85.6	88.9	100.0
24-Sep	80.1	78.5	81.1	79.9	76.0	75.1	77.7	74.1	65.0	55.6	48.9	44.7	41.6	40.1	37.6	36.2	38.3	41.7	43.9	48.0	58.8	63.7	62.3	62.5	58.8	81.1
25-Sep	65.5	71.3	69.8	78.4	78.9	78.2	75.5	74.8	70.4	59.0	52.7	52.1	51.4	48.7	46.3	44.1	47.7	57.3	64.9	68.5	76.5	80.5	82.6	87.9	66.0	87.9
26-Sep	81.0	75.4	79.3	81.9	84.9	89.0	97.4	98.2	99.1	100.0	98.9	90.9	77.4	60.0	46.8	39.6	39.0	44.9	47.5	49.0	47.9	50.6	59.1	64.5	70.9	100.0
27-Sep	60.9	61.8	63.5	87.1	89.5	89.8	93.7	90.9	84.7	69.6	62.5	56.5	52.7	53.6	53.4	52.6	58.3	66.4	85.5	95.6	90.4	92.2	90.2	78.9	74.2	95.6
28-Sep	69.8	66.2	64.7	67.9	73.5	70.0	70.7	66.9	61.3	55.5	51.3	46.3	39.8	38.2	37.7	41.6	48.6	54.2	60.9	62.2	62.1	69.1	72.5	73.6	59.4	73.6
29-Sep	72.7	70.9	72.0	72.6	79.4	82.3	80.1	75.6	71.4	69.8	65.0	61.8	59.6	57.7	60.5	66.4	69.1	71.2	93.5	98.0	98.8	96.6	96.8	96.9	76.6	98.8
30-Sep	95.5	96.3	95.5	93.7	92.8	91.4	92.0	88.7	80.6	69.1	58.3	49.0	42.6	42.3	40.5	42.0	40.6	43.1	46.0	45.7	51.2	55.0	53.3	64.8	65.4	96.3
	72.8	75.7	77.5	78.9	80.8	80.6	82.6	81.3	76.1	69.4	64.2	58.9	54.7	50.7	48.6	49.5	52.1	58.5	65.9	69.8	72.1	72.4	72.7	73.9	Diurnal Average	
	96.3	98.3	100.0	95.7	100.0	98.2	100.0	100.0	100.0	100.0	98.9	92.3	85.4	81.3	78.1	76.5	87.9	89.1	93.5	98.0	99.5	96.6	98.3	100.0	Diurnal Maximum	

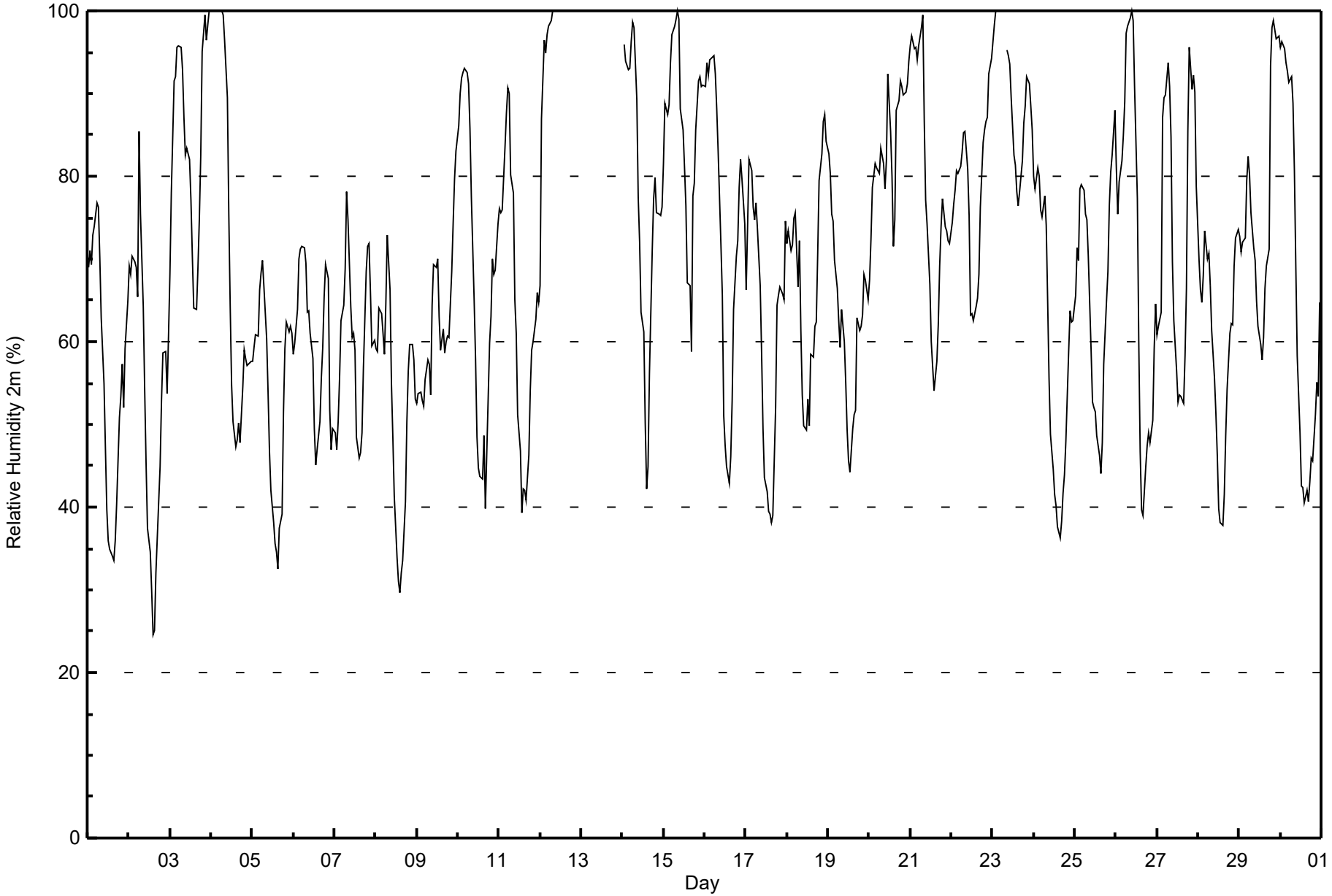
OR - Out of Range

Wood Buffalo Environmental Association

Hourly Averages

Relative Humidity 2m (RH2) - %

Stony Mountain - September 2024



Maximum Value: 4.4 mm on Sep 26 09:00

Maximum Daily Total: 17.1 mm on Sep 12

Minimum Value: 0.0 mm on Sep 1 01:00

Minimum Daily Total: 0.0 mm on Sep 1

Maximum Diurnal Total: 6.6 mm at hour 8

Minimum Diurnal Total: 0.0 mm at hour 5

Monthly Total: 46.16 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} = 3.0

Hours in Service:	720
Hours of Data:	562
Hours of Missing Data:	158
Hours of Calibration:	0
Percent Operational Time:	78.1

Day	Hourly Period Ending At (MST)																								Daily	Daily
	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24	Average	Maximum
1-Sep	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	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-Sep	0.0	0.0	0.0	0.0	0.0	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	0.0	0.0	0.0	0.0	0.7	0.5
3-Sep	0.0	0.1	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	0.5	0.0	0.0	3.3	0.2	4.4	3.3
4-Sep	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	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-Sep	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	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-Sep	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	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-Sep	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	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-Sep	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	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-Sep	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	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-Sep	DF	DF	DF	DF	DF	DF	DF	DF	DF	DF	DF	DF	DF	DF	DF	DF	DF	DF	DF	DF	DF	DF	DF	DF	--	--
11-Sep	DF	DF	DF	DF	DF	DF	DF	0.0	0.0	0.0	0.0	0.0	0.0	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-Sep	0.0	1.0	0.3	0.1	0.0	0.8	0.1	2.9	1.2	3.9	0.1	1.1	0.5	4.4	0.9	0.1	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	17.1	4.4
13-Sep	DF	DF	DF	DF	DF	DF	DF	DF	DF	DF	DF	DF	DF	DF	DF	DF	DF	DF	DF	DF	DF	DF	DF	DF	--	--
14-Sep	DF	DF	DF	DF	DF	DF	DF	DF	DF	DF	DF	DF	DF	DF	DF	DF	DF	DF	DF	DF	DF	DF	DF	DF	--	--
15-Sep	DF	DF	DF	DF	DF	DF	DF	DF	DF	DF	DF	DF	DF	DF	DF	DF	DF	DF	DF	DF	DF	DF	DF	DF	--	--
16-Sep	DF	DF	DF	DF	DF	DF	DF	DF	DF	DF	DF	DF	DF	DF	DF	DF	DF	DF	DF	DF	DF	DF	DF	DF	--	--
17-Sep	DF	DF	DF	DF	DF	DF	DF	DF	DF	0.0	0.0	0.0	0.0	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-Sep	DF	DF	DF	DF	DF	DF	DF	DF	DF	DF	DF	DF	DF	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-Sep	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	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-Sep	DF	DF	DF	DF	DF	DF	DF	DF	DF	0.0	0.5	0.5	0.0	0.0	0.0	0.0	0.4	0.0	0.0	0.0	0.0	0.0	0.0	0.0	--	0.5
21-Sep	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	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-Sep	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	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
23-Sep	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	0.1	0.0	0.0	0.0	0.1	0.1
24-Sep	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	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-Sep	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	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
26-Sep	0.0	0.0	0.0	0.0	0.0	1.9	4.1	3.7	4.4	1.9	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	16.1	4.4
27-Sep	0.0	0.0	0.0	0.7	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	1.2	0.0	0.0	0.0	0.0	0.0	1.8	1.2
28-Sep	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	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-Sep	0.0	0.0	0.0	0.0	0.0	0.0	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	1.1	0.5	0.4	0.5	0.1	4.5	2.0
30-Sep	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	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	0.3	1.1	0.0	2.9	4.7	6.6	5.7	5.8	0.6	1.5	0.5	4.4	0.9	0.1	0.4	0.1	3.1	1.6	0.6	0.4	3.8	0.4	Diurnal Average	
	0.1	1.0	0.3	0.7	0.0	1.9	4.1	3.7	4.4	3.9	0.5	1.1	0.5	4.4	0.9	0.1	0.4	0.1	2.0	1.1	0.5	0.4	3.3	0.2	Diurnal Maximum	

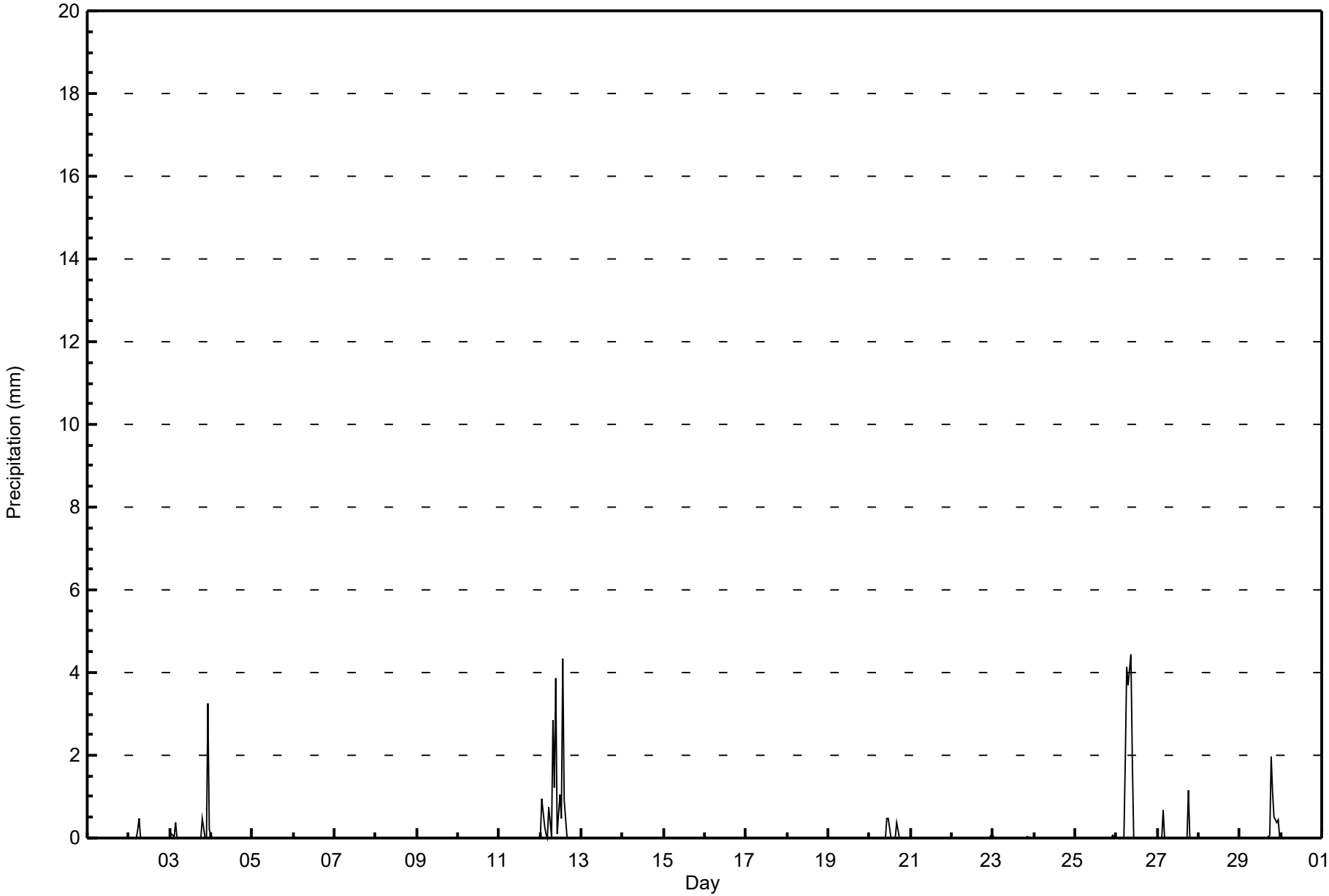
DF - DAS Failure

Wood Buffalo Environmental Association

Hourly Averages

Precipitation (PC) - mm

Stony Mountain - September 2024



Concentration Ranges (mm)	Number of Hours	%	Cumulative %
0 - 0.3	534	95.02	95.02
0.4 - 0.5	10	1.78	96.80
0.6 - 0.7	1	0.18	96.98
0.8 - 1.4	7	1.25	98.22
1.5 - 10	10	1.78	100.00
> 10	0	0.00	100.00

Total Number of Valid Hours: 562

Total Number of Hours: 720

Maximum Value: 52.8 % on Sep 26 07:00

Maximum Daily Average: 22.6 % on Sep 13

Minimum Value: 0.1 % on Sep 2 16:00

Minimum Daily Average: 1.1 % on Sep 8

Maximum Diurnal Average: 11.1 % at hour 7

Minimum Diurnal Average: 2.2 % at hour 16

Monthly Average: 5.87 %

Percentiles: P_1 = 0.2 P_{10} = 1.0 Q_1 = 1.3 Median = 1.6 Q_3 = 5.8 P_{90} = 19.3 P_{99} = 34.4

Hours in Service:	720
Hours of Data:	720
Hours of Missing Data:	0
Hours of Calibration:	0
Percent Operational Time:	100.0

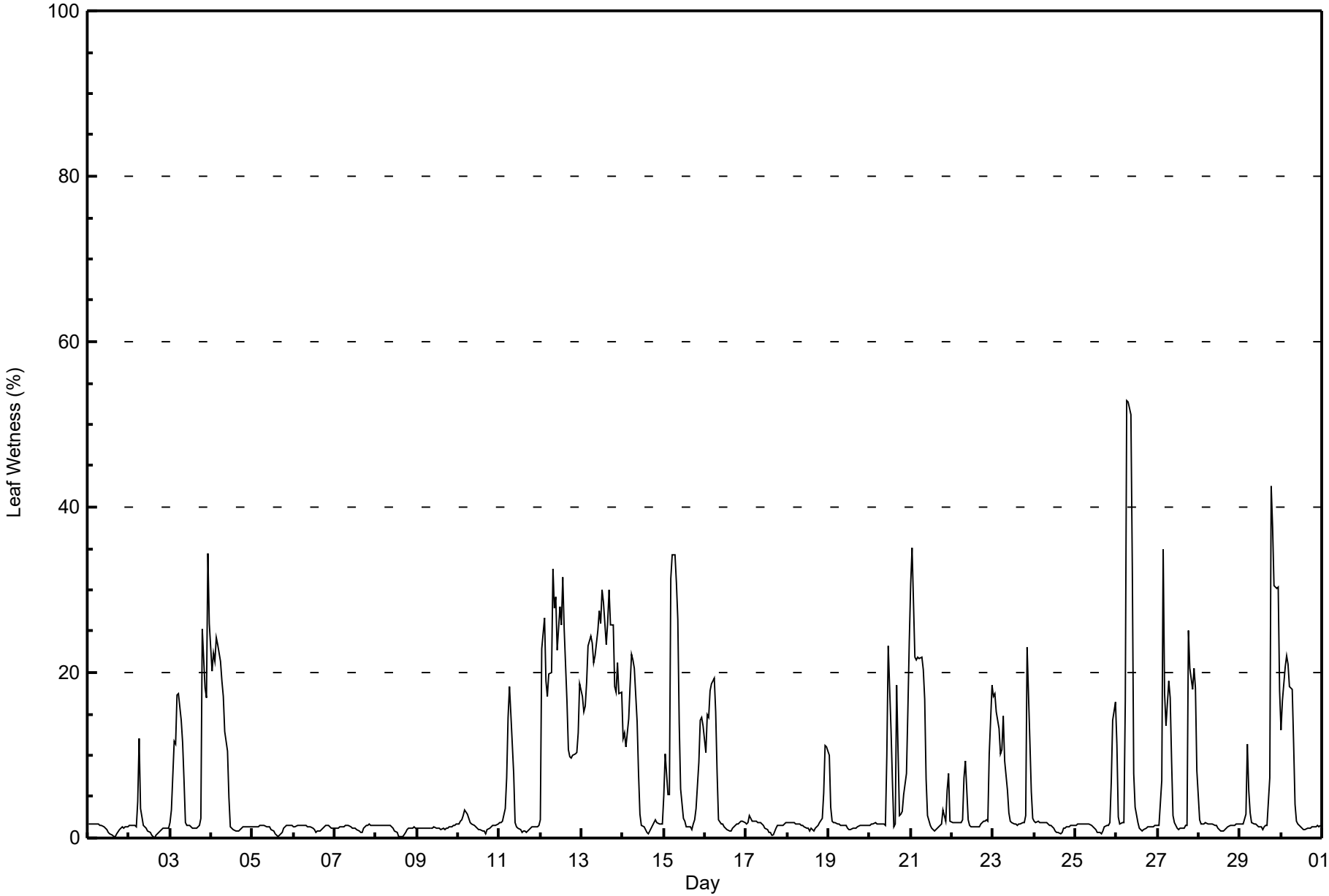
Day	Hourly Period Ending At (MST)																								Daily	Daily
	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24	Average	Maximum
1-Sep	1.6	1.7	1.6	1.7	1.7	1.7	1.7	1.6	1.5	1.4	1.2	1.0	0.7	0.5	0.3	0.2	0.2	0.5	1.0	1.2	1.3	1.2	1.3	1.4	1.2	1.7
2-Sep	1.5	1.5	1.5	1.5	1.4	4.5	12.0	3.6	1.5	1.3	1.1	0.8	0.6	0.3	0.1	0.1	0.4	0.7	0.9	1.1	1.2	1.2	1.1	1.2	1.7	12.0
3-Sep	1.9	3.4	11.8	11.3	17.4	17.4	14.3	11.6	7.0	1.8	1.6	1.5	1.4	1.3	1.2	1.3	1.3	1.4	2.3	25.2	18.1	16.9	34.5	25.9	9.7	34.5
4-Sep	20.2	22.3	21.3	24.2	23.3	21.3	19.0	17.1	12.9	10.6	4.9	1.4	1.2	1.0	0.9	0.9	0.9	1.0	1.3	1.4	1.4	1.4	1.3	1.4	8.9	24.2
5-Sep	1.4	1.4	1.4	1.4	1.5	1.5	1.5	1.5	1.4	1.4	1.3	1.0	0.8	0.6	0.4	0.2	0.4	0.7	1.2	1.4	1.5	1.5	1.5	1.5	1.2	1.5
6-Sep	1.4	1.4	1.5	1.5	1.5	1.5	1.5	1.4	1.4	1.4	1.3	1.2	1.0	0.8	0.8	0.9	1.0	1.1	1.3	1.4	1.5	1.3	1.2	1.2	1.3	1.5
7-Sep	1.2	1.2	1.2	1.3	1.3	1.4	1.5	1.5	1.5	1.4	1.3	1.2	1.1	0.9	0.8	0.8	0.8	1.1	1.5	1.6	1.6	1.5	1.5	1.5	1.3	1.6
8-Sep	1.5	1.5	1.6	1.6	1.5	1.5	1.5	1.6	1.5	1.4	1.2	0.9	0.6	0.2	0.2	0.2	0.2	0.7	1.0	1.2	1.2	1.2	1.3	1.2	1.1	1.6
9-Sep	1.2	1.2	1.2	1.2	1.2	1.2	1.2	1.2	1.1	1.2	1.3	1.2	1.3	1.2	1.1	1.2	1.0	1.2	1.2	1.3	1.4	1.5	1.6	1.7	1.3	1.7
10-Sep	1.7	2.0	2.3	2.6	3.4	2.8	2.3	1.8	1.6	1.5	1.4	1.1	1.0	1.0	0.9	0.9	0.5	1.0	1.3	1.4	1.6	1.6	1.6	1.7	1.6	3.4
11-Sep	1.9	1.9	2.1	3.5	7.2	14.6	18.4	14.9	7.8	1.9	1.4	1.1	1.1	0.8	0.9	0.8	0.8	1.1	1.2	1.3	1.4	1.4	1.4	1.5	3.8	18.4
12-Sep	2.2	22.8	26.5	18.9	17.1	19.8	20.0	32.6	27.7	29.2	22.8	27.9	25.7	31.5	25.3	16.5	10.7	9.8	9.7	9.9	10.1	10.4	12.8	18.6	19.1	32.6
13-Sep	17.1	15.3	15.9	18.9	23.2	24.3	23.6	21.2	22.0	25.2	27.5	25.9	30.1	28.5	23.4	26.1	30.0	25.7	25.7	18.4	17.6	21.1	17.5	17.6	22.6	30.1
14-Sep	12.1	12.7	11.1	14.3	18.4	22.2	21.5	20.5	14.1	7.8	2.9	1.5	1.3	1.0	0.7	0.6	0.8	1.5	1.8	2.3	1.8	1.8	1.7	1.7	7.3	22.2
15-Sep	5.2	10.2	5.2	5.3	31.4	34.2	34.2	30.8	26.4	13.8	5.9	2.3	2.0	1.4	1.3	1.3	1.1	1.6	2.2	3.5	9.2	14.3	14.6	13.5	11.3	34.2
16-Sep	10.4	14.9	14.6	17.7	18.6	19.3	15.2	8.0	2.2	1.7	1.6	1.4	1.2	1.0	0.8	0.9	1.2	1.4	1.6	1.7	1.9	2.1	2.0	1.9	6.0	19.3
17-Sep	1.8	1.9	2.6	2.0	2.0	2.0	2.0	1.9	1.8	1.7	1.5	1.2	1.0	0.7	0.7	0.3	0.4	1.1	1.4	1.5	1.6	1.6	1.6	1.9	1.5	2.6
18-Sep	1.8	1.9	1.8	1.8	1.9	1.8	1.6	1.7	1.5	1.5	1.4	1.1	1.1	0.9	1.2	0.9	1.1	1.3	1.5	1.8	2.3	5.4	11.2	11.1	2.5	11.2
19-Sep	9.9	3.7	2.0	1.9	1.8	1.8	1.7	1.6	1.6	1.6	1.5	1.2	1.0	0.9	1.2	1.1	1.2	1.4	1.4	1.5	1.5	1.6	1.6	1.5	1.9	9.9
20-Sep	1.5	1.6	1.8	1.8	1.8	1.7	1.7	1.7	1.7	1.6	10.0	23.2	13.1	6.7	1.3	1.7	18.5	2.8	2.9	3.3	5.3	7.7	15.4	23.7	6.3	23.7
21-Sep	30.7	35.1	21.8	21.5	21.9	21.7	21.9	20.4	16.8	7.1	2.7	1.6	1.2	1.0	0.9	1.1	1.3	1.6	1.7	3.4	2.1	5.7	7.9	2.1	10.5	35.1
22-Sep	1.9	1.9	1.9	1.9	1.9	1.9	2.3	7.3	9.3	2.1	1.5	1.3	1.3	1.3	1.4	1.3	1.4	1.7	2.1	2.1	2.2	2.0	10.1	18.4	3.4	18.4
23-Sep	17.1	17.4	15.3	13.2	10.1	10.6	14.7	9.3	5.8	3.0	2.0	1.8	1.6	1.6	1.6	1.6	1.7	1.9	1.9	2.8	23.0	11.5	5.6	2.4	7.4	23.0
24-Sep	2.0	1.9	2.0	1.9	1.9	1.8	1.9	1.8	1.7	1.6	1.5	1.2	0.9	0.7	0.6	0.5	0.8	1.1	1.2	1.3	1.4	1.5	1.5	1.6	1.4	2.0
25-Sep	1.6	1.6	1.6	1.7	1.8	1.8	1.7	1.8	1.7	1.6	1.4	1.1	1.0	0.7	0.8	0.5	0.8	1.3	1.5	1.6	1.8	6.7	14.3	16.4	2.8	16.4
26-Sep	11.4	2.6	1.8	1.8	1.8	16.5	52.8	52.8	51.2	32.6	7.7	3.8	1.8	1.2	1.0	0.9	1.0	1.2	1.3	1.3	1.3	1.4	1.5	1.5	10.5	52.8
27-Sep	1.5	1.6	7.0	35.0	17.4	13.5	18.9	16.9	9.3	2.7	1.8	1.3	1.1	1.3	1.2	1.1	1.5	1.5	25.1	20.5	18.0	20.5	18.1	8.1	10.2	35.0
28-Sep	2.3	1.7	1.7	1.7	1.8	1.7	1.7	1.7	1.6	1.6	1.6	1.2	1.0	0.8	0.8	1.0	1.2	1.4	1.5	1.5	1.5	1.6	1.7	1.7	1.5	2.3
29-Sep	1.7	1.6	1.6	2.9	11.3	5.7	3.1	1.8	1.7	1.7	1.5	1.4	1.3	1.1	1.4	1.5	1.5	7.2	42.6	37.6	30.5	30.1	30.3	17.8	10.0	42.6
30-Sep	13.0	16.5	20.6	22.0	21.0	18.3	17.9	11.4	4.1	2.0	1.7	1.4	1.1	1.1	1.1	1.1	1.1	1.3	1.3	1.3	1.4	1.4	1.4	1.6	6.9	22.0
	6.0	6.9	6.8	7.9	9.0	9.7	11.1	10.1	8.0	5.5	3.9	3.8	3.3	3.1	2.5	2.2	2.8	2.6	4.8	5.2	5.6	6.0	7.3	6.8	Diurnal Average	
	30.7	35.1	26.5	35.0	31.4	34.2	52.8	52.8	51.2	32.6	27.5	27.9	30.1	31.5	25.3	26.1	30.0	25.7	42.6	37.6	30.5	30.1	34.5	25.9	Diurnal Maximum	

Wood Buffalo Environmental Association

Hourly Averages

Leaf Wetness (LW) - %

Stony Mountain - September 2024



Leaf Wetness (LW) - %

Stony Mountain - September 2024

Concentration Ranges (%)	Number of Hours	%	Cumulative %
0 - 0.3	12	1.67	1.67
0.4 - 0.5	9	1.25	2.92
0.6 - 0.7	14	1.94	4.86
0.8 - 1.4	230	31.94	36.81
1.5 - 10	267	37.08	73.89
> 10	155	21.53	95.42

Total Number of Valid Hours: 720

Total Number of Hours: 720

Wood Buffalo Environmental Association

Summary of Hour Averages

Global Radiation (GR) - W/m2

Stony Mountain - September 2024

Maximum Value: 752.8 W/m2 on Sep 1 13:00

Maximum Daily Average: 229.9 W/m2 on Sep 1

Minimum Value: 0.0 W/m2 on Sep 3 23:00

Minimum Daily Average: 11.1 W/m2 on Sep 12

Maximum Diurnal Average: 475.9 W/m2 at hour 12

Minimum Diurnal Average: 0.3 W/m2 at hour 5

Monthly Average: 133.90 W/m2

Percentiles: P_1 = 0.0 P_{10} = 0.2 Q_1 = 0.3 Median = 10.1 Q_3 = 238.7 P_{90} = 477.1 P_{99} = 667.6

Hours in Service:	720
Hours of Data:	720
Hours of Missing Data:	0
Hours of Calibration:	0
Percent Operational Time:	100.0

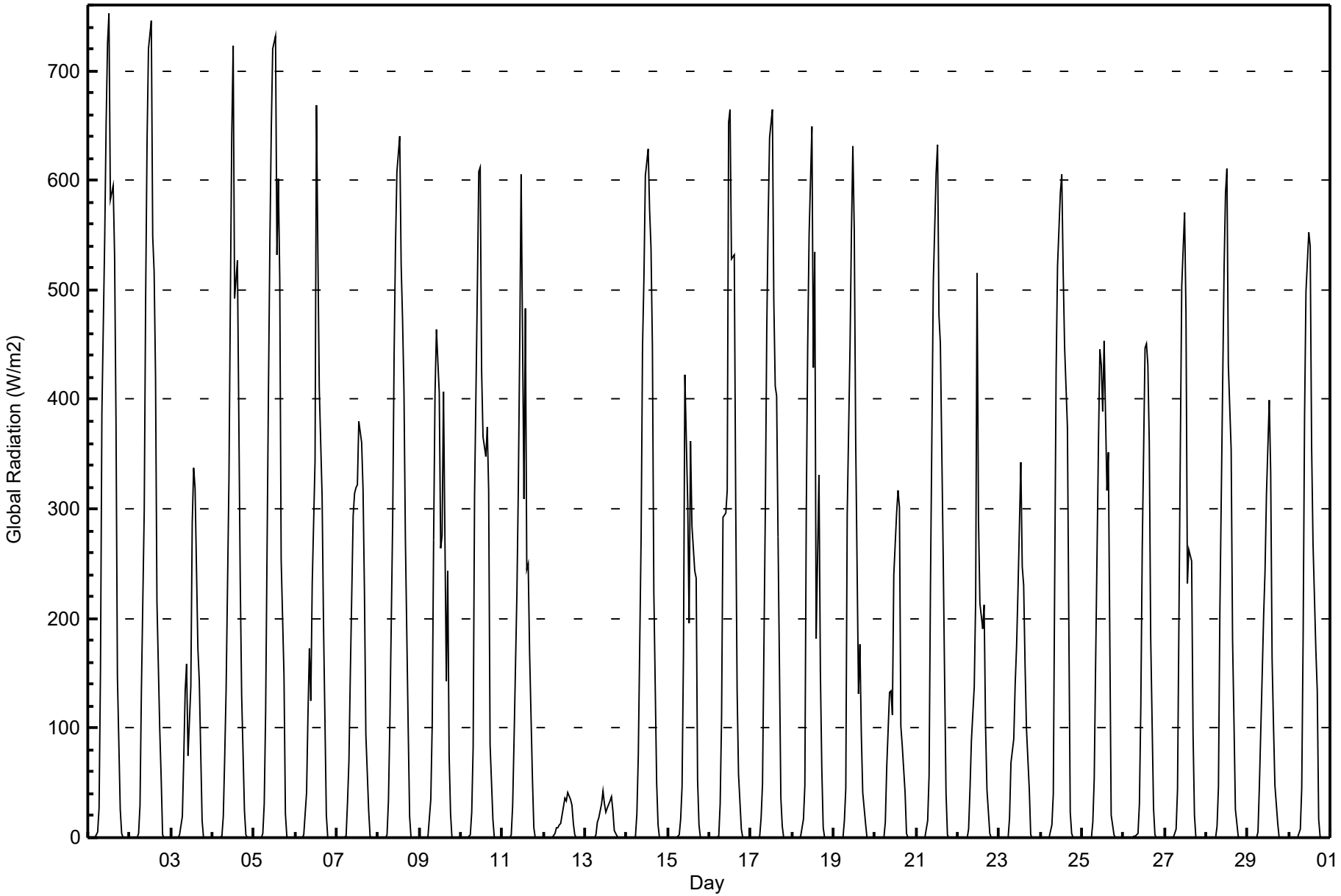
Day	Hourly Period Ending At (MST)																								Daily	Daily
	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24	Average	Maximum
1-Sep	0.3	0.4	0.4	0.5	0.5	5.6	27.1	153.5	387.8	547.2	651.3	725.5	752.8	582.2	595.7	531.3	379.2	146.4	26.0	3.3	0.3	0.5	0.4	0.5	229.9	752.8
2-Sep	0.5	0.5	0.4	0.4	0.4	3.8	29.2	135.9	298.6	493.9	635.8	720.4	746.3	549.4	516.4	420.7	215.7	98.1	54.4	2.4	0.3	0.3	0.2	0.1	205.2	746.3
3-Sep	0.1	0.3	0.2	0.2	0.1	2.1	19.8	74.1	133.5	157.9	74.9	138.1	286.9	337.1	319.5	172.6	142.4	78.4	15.3	0.2	0.0	0.0	0.0	0.0	81.4	337.1
4-Sep	0.0	0.0	0.1	0.2	0.1	1.1	19.5	73.3	135.9	325.4	488.1	641.7	722.3	492.2	527.5	383.6	235.5	129.8	24.5	2.1	0.1	0.1	0.1	0.1	175.1	722.3
5-Sep	0.1	0.1	0.1	0.1	0.1	3.9	31.4	114.2	408.4	543.2	646.5	719.8	731.1	531.7	601.6	510.7	253.8	148.0	21.6	1.5	0.2	0.2	0.2	0.2	219.5	731.1
6-Sep	0.4	0.3	0.3	0.5	0.2	2.8	41.0	113.2	172.0	125.4	231.3	343.9	668.3	535.1	409.8	311.1	194.9	108.2	21.2	0.6	0.2	0.2	0.1	0.1	136.7	668.3
7-Sep	0.2	0.2	0.2	0.1	0.1	1.4	32.7	69.1	148.8	293.8	314.9	319.4	322.6	380.0	361.2	318.7	224.0	94.1	24.7	1.0	0.2	0.2	0.1	0.3	121.2	380.0
8-Sep	0.4	0.3	0.2	0.2	0.2	2.4	33.3	103.7	290.2	438.8	541.2	608.1	639.8	522.4	473.3	407.5	272.5	99.5	19.6	0.6	0.3	0.3	0.3	0.2	185.6	639.8
9-Sep	0.3	0.3	0.2	0.2	0.4	1.9	35.2	103.1	271.4	405.4	463.3	406.2	263.7	276.3	407.0	143.0	243.0	74.3	21.8	0.6	0.3	0.2	0.3	0.3	129.9	463.3
10-Sep	0.3	0.2	0.3	0.2	0.2	2.1	22.9	81.9	312.2	501.8	607.9	611.7	426.7	365.6	348.3	374.8	317.1	85.3	16.9	0.6	0.2	0.2	0.2	0.3	169.9	611.7
11-Sep	0.3	0.3	0.3	0.3	0.2	2.0	29.2	89.8	223.0	318.7	449.6	606.1	309.0	483.0	244.5	250.4	169.1	53.6	9.6	0.1	0.1	0.1	0.1	0.1	135.0	606.1
12-Sep	0.2	0.1	0.1	0.0	0.0	0.2	3.3	8.9	9.0	11.3	12.9	28.1	36.6	33.4	41.1	35.0	29.6	12.8	2.4	0.2	0.1	0.1	0.1	0.1	11.1	41.1
13-Sep	0.1	0.1	0.1	0.1	0.1	0.2	2.2	14.2	17.6	31.0	42.3	30.9	23.5	26.6	33.3	36.9	24.1	6.8	0.8	0.2	0.2	0.1	0.1	0.1	12.2	42.3
14-Sep	0.2	0.2	0.2	0.3	0.2	1.0	21.3	74.6	274.9	448.8	511.9	604.2	629.1	573.2	538.9	448.2	225.2	50.6	11.0	0.5	0.5	0.4	0.2	0.1	184.0	629.1
15-Sep	0.2	0.3	0.3	0.4	0.2	0.2	3.1	17.2	45.8	167.3	422.8	304.9	195.8	361.6	284.9	243.5	236.7	52.5	11.1	0.5	0.5	0.4	0.4	0.3	97.9	422.8
16-Sep	0.3	0.4	0.4	0.3	0.3	1.5	30.6	109.9	292.9	296.7	317.4	652.6	664.6	527.7	531.7	307.8	134.6	57.4	7.8	0.2	0.3	0.3	0.4	0.4	164.0	664.6
17-Sep	0.5	0.4	0.5	0.4	0.4	1.1	18.0	49.6	300.5	462.4	564.8	638.9	664.3	490.5	412.5	403.4	274.7	36.3	9.7	0.3	0.4	0.5	0.4	0.5	180.5	664.3
18-Sep	0.5	0.4	0.5	0.5	0.5	0.6	16.2	47.7	295.8	448.8	550.6	649.3	429.5	534.7	182.0	330.7	151.3	63.6	9.0	0.3	0.3	0.3	0.3	0.4	154.7	649.3
19-Sep	0.5	0.4	0.3	0.2	0.4	0.5	14.9	45.5	295.1	448.7	552.9	631.8	554.2	363.0	131.7	176.5	94.1	40.9	13.1	0.3	0.3	0.2	0.2	0.2	140.2	631.8
20-Sep	0.2	0.2	0.2	0.2	0.3	0.3	13.7	63.9	132.7	133.3	111.6	239.4	296.6	317.0	301.6	102.4	83.2	41.0	4.0	0.2	0.2	0.2	0.2	0.3	76.8	317.0
21-Sep	0.2	0.2	0.2	0.2	0.1	0.3	15.2	56.3	233.7	369.9	508.1	607.3	632.1	476.9	450.5	256.6	145.0	41.8	2.1	0.4	0.4	0.3	0.4	0.5	158.3	632.1
22-Sep	0.3	0.5	0.5	0.4	0.3	0.4	7.7	44.7	89.2	137.2	217.8	515.3	291.5	213.3	190.9	211.9	101.5	43.4	4.4	0.4	0.5	0.3	0.3	0.1	86.4	515.3
23-Sep	0.1	0.1	0.1	0.1	0.1	0.2	18.1	68.5	90.4	141.0	175.2	226.5	342.0	247.2	230.5	157.0	99.2	43.3	2.7	0.3	0.2	0.4	0.4	0.5	76.8	342.0
24-Sep	0.5	0.4	0.5	0.4	0.4	0.5	11.1	39.5	238.5	426.9	521.6	588.2	605.7	517.1	448.4	374.9	196.2	22.7	3.3	0.5	0.4	0.4	0.5	0.4	166.6	605.7
25-Sep	0.4	0.4	0.4	0.4	0.4	0.4	14.6	54.2	160.4	360.3	445.7	431.2	388.4	453.8	317.1	351.8	187.4	21.2	2.1	0.4	0.3	0.3	0.3	0.2	133.0	453.8
26-Sep	0.1	0.2	0.2	0.2	0.2	0.2	0.7	1.7	4.2	30.4	119.3	262.5	446.8	451.3	431.4	359.2	183.3	26.7	2.4	0.4	0.4	0.4	0.3	0.3	96.8	451.3
27-Sep	0.3	0.4	0.3	0.3	0.2	0.2	8.0	43.3	197.8	356.8	504.1	570.1	478.4	231.5	262.9	252.8	95.6	21.0	0.5	0.3	0.3	0.5	0.4	0.5	126.1	570.1
28-Sep	0.5	0.3	0.4	0.5	0.4	0.5	10.4	46.7	205.7	415.8	520.1	588.9	611.2	431.1	354.1	179.8	105.8	25.4	1.4	0.5	0.5	0.6	0.5	0.5	145.9	611.2
29-Sep	0.5	0.5	0.4	0.4	0.4	0.2	4.5	47.3	149.7	202.7	244.1	312.5	398.7	334.1	164.0	102.2	47.3	13.4	0.2	0.1	0.1	0.1	0.1	0.1	84.3	398.7
30-Sep	0.2	0.2	0.2	0.2	0.3	0.2	7.2	44.5	185.1	384.3	499.1	552.4	539.6	356.7	268.2	171.0	133.8	16.4	1.2	0.5	0.5	0.5	0.6	0.5	131.8	552.4
	0.3	0.3	0.3	0.3	0.3	1.3	18.1	66.3	200.0	314.2	398.2	475.9	469.9	399.9	346.0	277.5	173.2	58.4	11.5	0.7	0.3	0.3	0.3	0.3	Diurnal Average	
	0.5	0.5	0.5	0.5	0.5	5.6	41.0	153.5	408.4	547.2	651.3	725.5	752.8	582.2	601.6	531.3	379.2	148.0	54.4	3.3	0.5	0.6	0.6	0.5	Diurnal Maximum	

Wood Buffalo Environmental Association

Hourly Averages

Global Radiation (GR) - W/m2

Stony Mountain - September 2024



Concentration Ranges (W/m2)	Number of Hours	%	Cumulative %
0 - 20	385	53.47	53.47
21 - 100	83	11.53	65.00
101 - 300	102	14.17	79.17
301 - 600	120	16.67	95.83
601 - 900	30	4.17	100.00
> 900	0	0.00	100.00

Total Number of Valid Hours: 720

Total Number of Hours: 720

Wood Buffalo Environmental Association

Summary of Hour Averages

Wind Speed 10m (WS10) - km/h

Stony Mountain - September 2024

Maximum Speed: 15 km/h on Sep 6 09:00

Maximum Daily Speed Average: 9.8 km/h on Sep 30

Minimum Speed Value: 0 km/h on Sep 11 07:00

Minimum Daily Speed Average: 1.0 km/h on Sep 25

Maximum Diurnal Speed Average: 4.4 km/h at hour 15

Minimum Diurnal Speed Average: 2.8 km/h at hour 18

Monthly Average Velocity: 3.6 km/h 242.2 deg

Percentiles: $P_1 = 1$ $P_{10} = 3$ $Q_1 = 4$ Median = 6 $Q_3 = 8$ $P_{90} = 10$ $P_{99} = 13$

Hours in Service:	720
Hours of Data:	720
Hours of Missing Data:	0
Percent Operational Time:	100.0

Day	Hourly Period Ending At (MST)																								Daily	Daily
	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24	Average	Maximum
1-Sep	SSW7	SSW7	SSW7	SSW8	SSW9	SSW10	SSW10	SSW10	SSW10	SSW11	SSW10	SSW11	SSW11	SSW12	SSW12	SW10	SW8	SW6	SW4	SW5	SW5	SW6	SSW6	SSW6	SSW8.2	SSW12
2-Sep	SSW6	SSW7	SSW9	SSW9	SSW8	SW6	SSW5	SSW8	SSW7	SSW7	SSW8	SSW9	SSW8	SW7	WSW5	SW5	WSW4	WSW5	W4	W5	WNW4	WNW3	WNW6	NNW5	SW5.3	SSW9
3-Sep	NNW4	NNW3	NW1	N3	NNE5	NNE7	NNE6	N3	NNE4	N4	NNE4	N4	NNE6	NE3	N3	NNW3	NNE3	NNE3	N2	WSW1	NNW1	N3	NNW2	WNW2	N3.0	NNE7
4-Sep	NW3	NW3	WNW3	W4	W4	W5	W5	W6	W7	W7	W7	W9	WNW9	W9	W8	WNW6	WNW5	W6	WSW5	WSW5	WSW6	WSW8	W8	WSW8	W6.0	WNW9
5-Sep	WSW8	W8	WSW8	WSW7	W6	WNW6	W6	NNW3	NNW2	E3	ENE4	NE2	W1	WSW2	SSW6	SSW5	S5	SSW6	S3	S4	S5	S6	S8	S9	SW3.2	S9
6-Sep	S10	S10	S9	S10	S11	SSW13	SSW13	SSW13	SSW15	SSW13	SSW13	SSW11	SSW12	SSW10	SSW9	SSW9	SSW8	SSW7	SSW7	SW7	SW7	WSW7	W8	W7	SSW9.5	SSW15
7-Sep	W8	W8	W8	WNW6	W5	WNW4	W3	SSW2	S4	SSW6	SSW5	SSW5	SSW5	SW5	SW5	SW5	SSW4	SSW5	SSW5	SSW6	SSW7	SSW8	SSW8	SSW7	SW4.7	W8
8-Sep	SW6	SW6	SW5	SW5	WSW4	W5	WNW3	SW2	S3	S4	S4	S5	S6	SSE6	SSE7	S7	SSE6	SSE4	S4	SSE4	S5	S7	S7	S8	S4.3	S8
9-Sep	SSW8	SSW8	S8	S8	S9	S9	S9	SSW11	SW9	WNW11	W11	W11	WNW9	W14	W13	W10	W8	WSW6	W7	W11	WNW10	WNW9	WNW7	W7	WSW7.0	W14
10-Sep	W8	W8	W8	W8	W8	W8	W8	WSW7	WSW7	WSW6	WSW7	WNW7	W6	WSW7	WSW9	WSW7	WSW6	WSW3	SW3	SW3	WNW2	SSW1	WSW1	SSW2	WSW5.6	WSW9
11-Sep	SSW5	SSW4	SSW2	SSW1	NNW2	S1	NE0	E2	ESE4	E3	E4	E4	ESE4	SE5	E5	ESE5	ESE6	SE4	SE4	ESE4	ESE4	ESE4	ESE4	ESE5	ESE2.8	ESE6
12-Sep	ESE4	ESE3	N2	NNE6	N3	NNE7	NE6	NNE3	NNE5	NNE5	NE7	NE6	NE5	NNE4	NNE4	N4	NNE6	NNE7	NNE7	NNE6	NNE4	NNE5	NNE4	N3	NNE4.4	NNE7
13-Sep	N3	NNW3	N3	NNE4	N3	N3	NNW3	NNW4	NNW4	N4	N4	N4	N4	NW5	NW6	WNW6	WNW6	NW4	WNW3	WNW4	WNW5	W5	W6	W6	NW3.6	WNW6
14-Sep	W6	W6	W5	WSW4	W5	WNW6	WNW5	WNW5	WSW3	W4	WNW4	W5	SW6	WSW6	W5	W5	SSW5	SSW3	SSW5	SW5	SW5	WSW6	W7	W6	WSW4.7	W7
15-Sep	WSW6	WSW6	WSW7	WSW6	WSW6	WSW6	SW5	SSW3	W3	W5	W5	WSW3	WSW2	SSE2	WSW1	W2	W3	SSW3	SSW5	SSW6	SSW6	SSW6	SSW7	SSW7	SW4.2	SSW7
16-Sep	SSW7	SSW7	SSW8	SSW8	SSW9	SSW9	SSW9	SSW9	SSW10	SSW9	SSW10	SW10	SW10	SW10	SW10	SW8	SW6	SW4	SW4	W3	W2	SSW2	SSW5	SW5	SSW7.0	SSW10
17-Sep	SW5	SW4	SSW6	SSW6	SSW6	SSW6	SSW6	S5	S5	S6	S8	SSW7	SSW7	S6	SSW5	S2	SSE3	SSE2	SSE1	S2	S4	SSW5	S5	S4	SSW4.7	S8
18-Sep	S5	SSW5	SSW5	SSW5	SSW6	SSW7	SW7	WSW4	W5	WNW5	W4	WNW6	WNW7	WNW8	WNW7	WNW5	WNW5	NW4	WNW3	W3	W2	W2	WNW4	WNW4	W3.8	WNW8
19-Sep	WNW4	WNW4	WNW4	W4	W5	W5	W5	W5	WNW6	WNW4	WNW5	W7	W6	W5	WNW5	WNW4	WNW4	W2	WSW3	WSW3	W3	W3	W5	W6	W4.6	W7
20-Sep	WNW6	WNW6	WNW4	WNW5	WNW6	WNW7	WNW7	NW6	WNW4	SE1	NE2	ENE3	NNE4	NE4	NNE4	WNW5	W4	W4	W5	WNW4	WNW4	WNW4	WNW4	WNW4	NW3.5	WNW7
21-Sep	WNW4	WNW4	WNW5	WNW4	WNW4	WNW4	SW2	WSW2	S4	S6	SSW7	SSW7	SSW8	SSW9	SSW9	S9	S7	SE4	SSE5	SSE4	S5	SSE4	SSE5	S6	SSW3.9	SSW9
22-Sep	S6	S7	S8	SSW7	SSW8	SSW9	SSW9	SSW9	SSW7	SW4	SW4	WSW5	WSW6	WSW6	SW5	SW5	SW6	SSW3	SW4	SW4	SW4	SW6	WSW6	W6	SW5.4	SSW9
23-Sep	WNW6	WNW5	WNW5	WNW5	NW3	WNW4	WNW4	W4	W4	WSW5	WSW5	WSW5	SW6	SW6	SSW7	SW7	SW6	SSW6	SSW7	SSW7	SSW7	SSW8	SSW8	SSW8	SW4.8	SSW8
24-Sep	SW9	SW9	SW9	SW9	WSW10	WSW11	SW10	WSW12	W13	W14	WNW14	WNW14	WNW11	W11	W10	W8	W7	WSW5	WSW5	SW4	SSW6	SSW7	SSW8	SSW6	WSW8.3	W14
25-Sep	S4	SE3	ESE3	ESE5	SE5	SE4	SE3	SE4	SSE4	SSE6	SE7	SSE5	SW4	WNW5	NW4	WNW5	WNW4	WNW3	WNW2	NW3	NW3	WNW4	W4	NW5	SSW1.0	SE7
26-Sep	NW7	NW5	NW7	NW4	NW5	WNW8	WNW11	WNW10	WNW6	W5	W6	W9	W9	W12	W12	W10	W8	WSW8	SW8	SW7	SW8	SW6	SSW7	SSW7	W6.5	W12
27-Sep	SSW5	S4	SE1	NNE4	NE6	ENE4	E3	N4	NW4	N5	NNE4	NNW4	W6	W6	W6	W10	W7	SW5	W5	SSW6	SSW7	SSW8	SSW8	SW9	WSW2.5	W10
28-Sep	SW11	SW10	SW11	SW9	SW9	SW10	SW9	SW11	WSW11	W9	W8	WSW9	W10	W6	SW7	SSW6	SSW7	SSW6	SSW4	SSW5	SSW4	SW3	S1	ESE1	SW6.8	SW11
29-Sep	ENE2	NE4	NE6	NE7	NE5	NNE6	ENE5	ENE6	NE7	NE6	NE10	NE11	NE11	NE12	NNE11	NNE9	NNE9	NNE7	NNW6	N4	NW6	NW7	NW7	WNW7	NNE5.8	NE12
30-Sep	WNW7	WNW8	WNW9	WNW9	W9	W10	W11	W11	W10	WNW11	WNW12	WNW13	WNW14	WNW13	W14	W12	W13	W10	WSW9	WSW10	SW8	WSW9	WSW8	SSW8	W9.8	W14
	WSW4.1	WSW3.7	WSW3.8	WSW3.2	WSW3.4	WSW3.7	WSW3.6	WSW3.5	WSW3.5	WSW3.2	WSW2.9	WSW3.6	WSW3.8	WSW4.3	WSW4.4	WSW4.2	WSW3.5	WSW2.8	SW3.0	SW3.4	SW3.5	SW3.7	SW4.0	SW3.9	Diurnal Average	
	SW11	SW10	SW11	S10	S11	SSW13	SSW13	SSW13	SSW15	W14	WNW14	WNW14	WNW14	W14	W14	W12	W13	W10	WSW9	W11	WNW10	WNW9	W8	SW9	Diurnal Maximum	

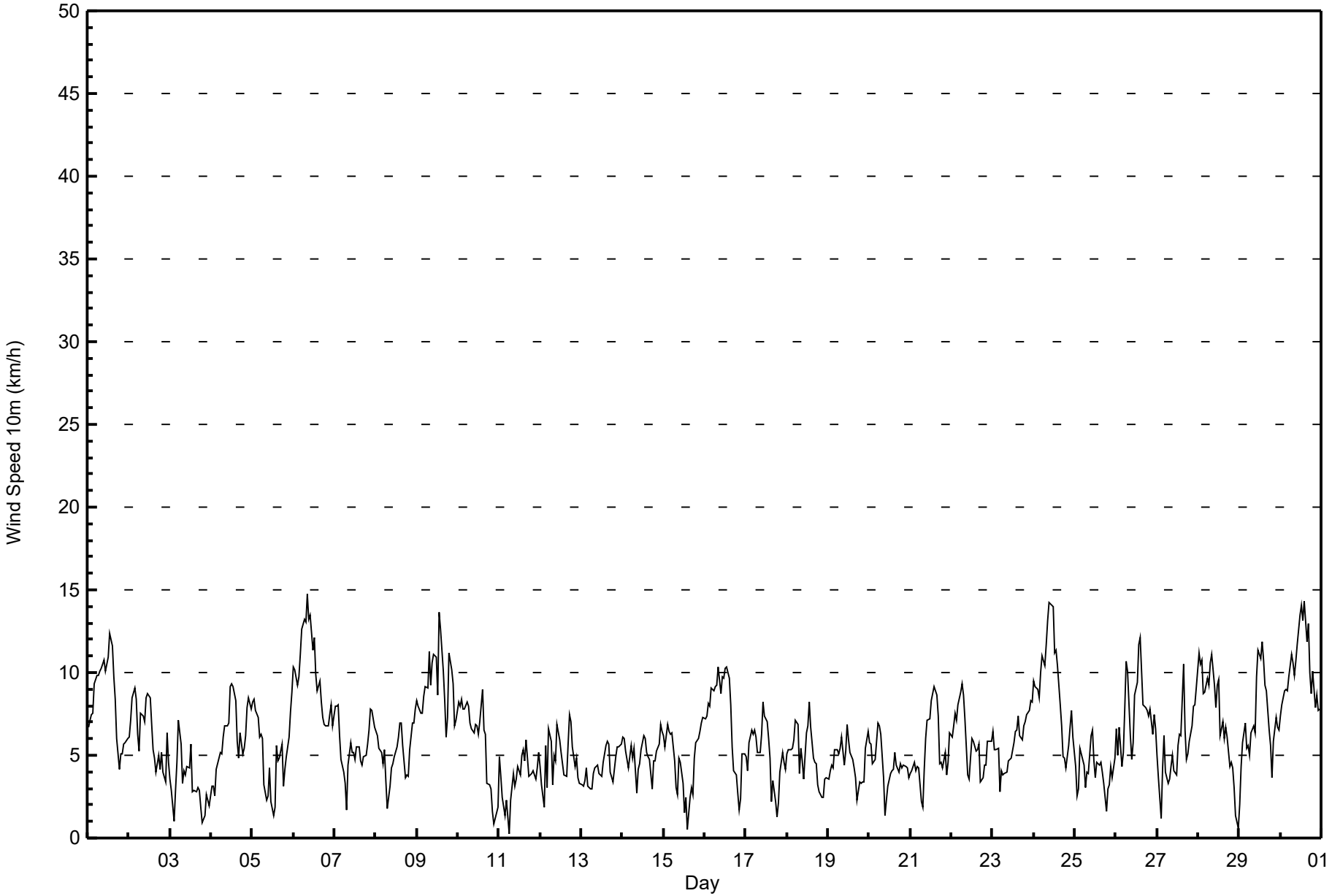
All monthly, daily, and diurnal averages have been calculated using vector methods

Wood Buffalo Environmental Association

Hourly Averages

Wind Speed 10m (WS10) - km/h

Stony Mountain - September 2024



Wind Speed Ranges (km/h)	Number of Hours	%	Cumulative %
0 - 5	341	47.36	47.36
6 - 11	353	49.03	96.39
12 - 19	26	3.61	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: 720

Total Number of Hours: 720

Wood Buffalo Environmental Association

Frequency Distribution

Wind Speed 10m (WS10) - km/h

Stony Mountain - September 2024

Wind Speed Ranges (km/h)	Wind Direction																
	N	NNE	NE	ENE	E	ESE	SE	SSE	S	SSW	SW	WSW	W	WNW	NW	NNW	**Totals**
0 - 5	20	18	8	5	7	13	11	12	24	34	32	25	47	54	15	16	341
6 - 11	0	14	11	1	0	1	1	4	28	102	45	36	65	37	7	1	353
12 - 19	0	0	1	0	0	0	0	0	0	9	0	1	9	6	0	0	26
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	20	32	20	6	7	14	12	16	52	145	77	62	121	97	22	17	720

Total Number of Valid Hours: 720

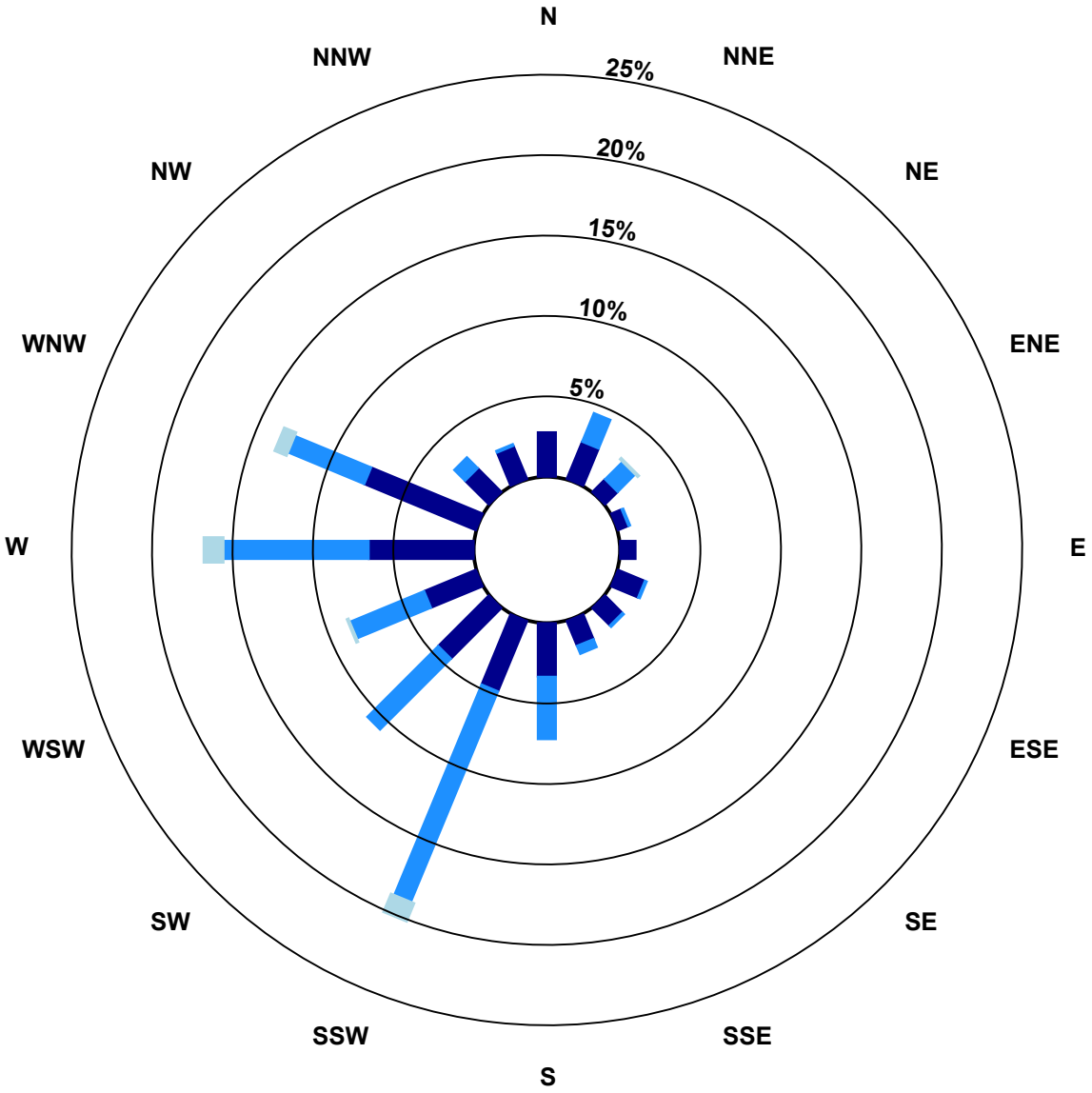
Total Number of Hours: 720

Wood Buffalo Environmental Association

Wind Rose Sep 2024

Wind Speed 10m (WS10) - km/h

Stony Mountain



Classes (km/h)

0 - 5

6 - 11

12 - 19

20 - 28

29 - 38

> 38

Total Number of Valid Hours: 720

Wood Buffalo Environmental Association

Summary of Hour Standard Deviations

Wind Speed 10m (WS10) - km/h

Stony Mountain - September 2024

Number of Exceedences (AAAQO): 1-hr: 0 24-hr: 0
Maximum Value: 7 km/h on Sep 24 10:00

Minimum Value: 0 km/h on Sep 10 21:00

Percentiles: P_1 = 1 P_{10} = 1 Q_1 = 2 Median = 2 Q_3 = 3 P_{90} = 4 P_{99} = 6

Hours in Service:	720
Hours of Data:	720
Hours of Missing Data:	0
Hours of Calibration:	0
Percent Operational Time:	100.0

Day	Hourly Period Ending At (MST)																								Daily
	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24	Maximum
1-Sep	2	2	2	2	3	3	3	3	3	4	4	4	5	5	5	4	4	2	1	2	1	2	1	2	5
2-Sep	2	2	3	3	3	4	2	3	2	2	3	4	4	3	2	2	2	2	2	2	2	1	3	2	4
3-Sep	2	1	1	2	2	3	2	2	2	2	2	2	3	2	2	1	2	1	1	1	1	1	1	1	3
4-Sep	1	1	1	2	2	2	2	2	3	3	3	4	4	4	4	3	2	3	3	2	2	4	4	3	4
5-Sep	3	3	3	3	3	2	2	2	1	1	2	2	2	2	3	2	2	2	1	1	1	2	3	3	3
6-Sep	4	4	3	3	4	4	4	5	5	5	4	4	5	4	3	3	3	3	2	2	3	3	3	3	5
7-Sep	3	3	3	3	2	1	1	1	2	2	2	2	2	2	2	2	2	1	1	2	2	2	3	2	3
8-Sep	2	2	2	2	2	2	2	1	1	2	2	2	3	2	3	3	3	2	2	2	2	3	2	3	3
9-Sep	3	3	3	3	3	3	3	4	4	5	5	5	4	7	6	5	4	3	4	5	5	4	3	3	7
10-Sep	4	3	3	3	3	3	3	3	3	3	3	3	3	4	4	3	3	1	1	1	0	1	1	1	4
11-Sep	1	1	1	1	1	1	1	1	1	2	1	2	2	3	3	2	3	2	2	1	2	1	1	2	3
12-Sep	2	1	1	2	1	2	3	2	2	2	3	2	2	2	2	2	2	3	3	2	2	2	2	1	3
13-Sep	1	2	2	2	1	1	1	2	2	2	2	2	2	2	2	3	3	2	2	2	2	2	2	2	3
14-Sep	3	2	2	2	2	2	2	2	1	2	2	2	3	3	3	2	2	1	1	1	2	3	3	3	3
15-Sep	3	2	3	3	3	3	2	1	2	2	2	2	2	1	1	2	1	2	1	1	2	2	2	2	3
16-Sep	2	3	2	2	3	3	3	3	4	3	4	4	5	5	4	4	2	1	1	1	1	1	1	2	5
17-Sep	2	1	2	2	2	2	2	2	2	3	3	3	3	3	3	2	2	2	1	1	1	1	2	1	3
18-Sep	1	2	1	2	2	2	3	2	2	2	2	3	3	4	3	2	2	2	1	1	1	1	1	1	4
19-Sep	1	1	2	1	2	2	2	2	2	2	2	3	3	3	2	2	2	1	1	1	1	1	2	2	3
20-Sep	2	2	1	1	2	2	2	2	2	1	1	1	2	2	2	3	2	1	2	1	1	1	2	1	3
21-Sep	1	1	1	1	1	1	2	1	1	3	3	3	3	4	4	3	3	2	2	2	3	2	2	3	4
22-Sep	2	2	3	2	3	3	3	3	3	2	2	2	3	2	2	2	2	1	1	1	1	2	3	2	3
23-Sep	2	2	2	2	1	2	2	2	2	2	2	2	3	3	3	3	3	2	2	2	3	2	3	3	3
24-Sep	4	4	3	4	4	5	4	5	6	7	6	6	5	5	5	4	3	2	2	1	1	2	2	2	7
25-Sep	1	1	1	2	2	2	2	2	3	3	3	2	2	2	2	2	2	1	1	1	1	3	3	2	3
26-Sep	3	2	3	2	2	3	5	5	3	2	3	4	4	5	5	5	4	4	3	3	3	2	2	2	5
27-Sep	2	1	1	3	2	3	1	1	2	2	2	2	3	3	3	5	4	2	4	2	2	2	3	4	5
28-Sep	5	4	4	4	3	4	4	5	5	4	3	4	4	3	3	3	3	2	1	2	1	1	1	1	5
29-Sep	1	2	2	2	2	2	2	3	3	3	4	5	5	5	4	4	3	3	3	2	3	3	3	3	5
30-Sep	3	3	4	4	4	4	4	5	4	5	5	6	7	6	6	5	6	5	4	5	3	4	3	3	7
	5	4	4	4	4	5	5	5	6	7	6	6	7	7	6	5	6	5	4	5	5	4	4	4	
	Diurnal Maximum																								

Wood Buffalo Environmental Association

Summary of Hour Averages

Wind Direction 10m (WD10) - deg

Stony Mountain - September 2024

Direction of Maximum Speed: 197 deg on Sep 6 09:00
Direction of Maximum Daily Speed Average: 273.5 deg on Sep 30

Direction of Minimum Speed: 46 deg on Sep 11 07:00

Direction of Minimum Daily Speed Average: 1.0 deg on Sep 25

Monthly Average Direction: 242.2 deg

Hours in Service:	720
Hours of Data:	720
Hours of Missing Data:	0
Percent Operational Time:	100.0

Day	Hourly Period Ending At (MST)																								Daily
	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24	Average
1-Sep	193	192	193	194	199	201	199	199	199	196	195	194	197	202	210	220	227	219	219	223	215	217	209	210	203.6
2-Sep	208	207	208	207	205	234	211	200	200	198	193	192	200	227	251	230	240	258	259	272	288	284	297	328	222.8
3-Sep	329	344	312	8	19	23	18	5	22	357	21	10	29	43	350	337	19	13	358	240	344	10	327	301	6.4
4-Sep	316	313	283	276	274	267	272	276	275	278	276	277	282	276	279	290	286	280	258	248	239	255	261	254	272.7
5-Sep	256	261	250	255	275	283	280	341	332	91	59	45	278	245	210	209	187	200	191	187	188	185	180	183	228.2
6-Sep	188	186	185	187	191	196	194	195	197	202	202	203	207	207	206	201	203	210	210	216	222	247	262	261	204.0
7-Sep	264	263	271	282	280	283	278	193	189	200	201	203	201	217	220	215	208	205	196	202	202	205	210	213	225.3
8-Sep	223	219	221	224	243	279	300	217	185	175	176	179	174	149	157	173	161	161	175	167	174	185	190	189	190.8
9-Sep	192	197	187	170	180	184	185	198	235	282	281	278	284	278	279	273	260	243	272	279	282	288	283	268	250.1
10-Sep	262	273	280	271	269	269	265	245	241	247	244	282	267	242	249	243	248	250	225	229	298	203	254	212	257.1
11-Sep	204	194	212	213	333	188	46	89	113	96	92	79	120	129	91	110	117	131	143	122	113	103	107	111	120.4
12-Sep	113	114	6	14	349	25	49	25	18	12	40	34	37	27	24	8	14	21	25	20	12	22	14	2	26.3
13-Sep	360	348	356	16	356	2	344	335	340	358	0	1	354	313	305	303	299	307	297	286	285	281	277	271	321.3
14-Sep	272	271	261	251	266	283	282	282	240	274	288	263	234	254	269	263	211	207	202	215	231	256	266	267	256.9
15-Sep	251	250	245	238	246	257	236	212	263	277	268	254	251	157	258	270	263	211	206	207	206	208	211	206	233.6
16-Sep	208	201	204	203	201	201	201	199	194	200	210	227	223	232	235	233	228	215	219	263	266	209	204	216	213.0
17-Sep	234	232	203	200	204	203	192	187	176	171	183	201	198	179	209	174	163	150	155	186	188	202	190	180	192.8
18-Sep	190	193	202	211	205	213	234	239	259	286	273	300	297	294	297	302	294	307	289	279	273	274	282	285	261.5
19-Sep	284	285	282	280	273	271	262	263	284	297	284	263	269	264	283	282	284	266	249	255	275	273	265	280	273.9
20-Sep	285	298	303	301	292	292	303	305	301	144	48	60	33	38	23	299	275	262	277	292	296	299	293	294	304.4
21-Sep	297	290	292	291	291	299	236	237	187	183	213	211	207	206	197	191	175	141	163	166	177	160	153	172	203.1
22-Sep	172	183	189	195	200	205	207	206	206	218	222	246	244	256	234	220	221	208	218	216	216	224	257	279	215.8
23-Sep	286	295	283	287	311	293	287	271	265	241	240	258	217	229	211	220	222	211	206	200	203	202	206	207	234.9
24-Sep	228	226	221	227	240	245	234	246	262	276	283	285	287	280	275	266	266	251	250	230	206	210	204	201	251.2
25-Sep	191	143	110	118	127	128	136	128	150	156	141	167	229	284	321	301	302	293	291	305	313	291	277	306	199.2
26-Sep	321	322	306	314	307	301	302	297	297	274	268	278	277	280	272	269	260	244	232	230	235	225	207	201	271.7
27-Sep	195	181	128	28	38	61	94	353	322	349	14	329	279	261	268	276	263	220	270	209	213	210	211	230	256.4
28-Sep	230	231	235	216	221	225	226	236	251	265	271	243	271	260	236	206	200	201	200	213	212	216	182	109	232.7
29-Sep	66	52	41	39	40	29	70	64	48	42	43	45	46	35	29	21	20	17	331	349	308	310	311	301	24.7
30-Sep	299	294	290	283	278	273	272	278	276	282	282	290	293	282	276	274	272	272	257	256	236	245	240	213	273.5
	237.2	237.9	239.3	238.5	241.2	247.8	240.2	237.8	238.4	244.4	245.5	255.1	252.3	252.9	255.0	251.5	244.1	237.7	235.7	234.4	233.0	235.6	235.8	234.2	
	Diurnal Average																								

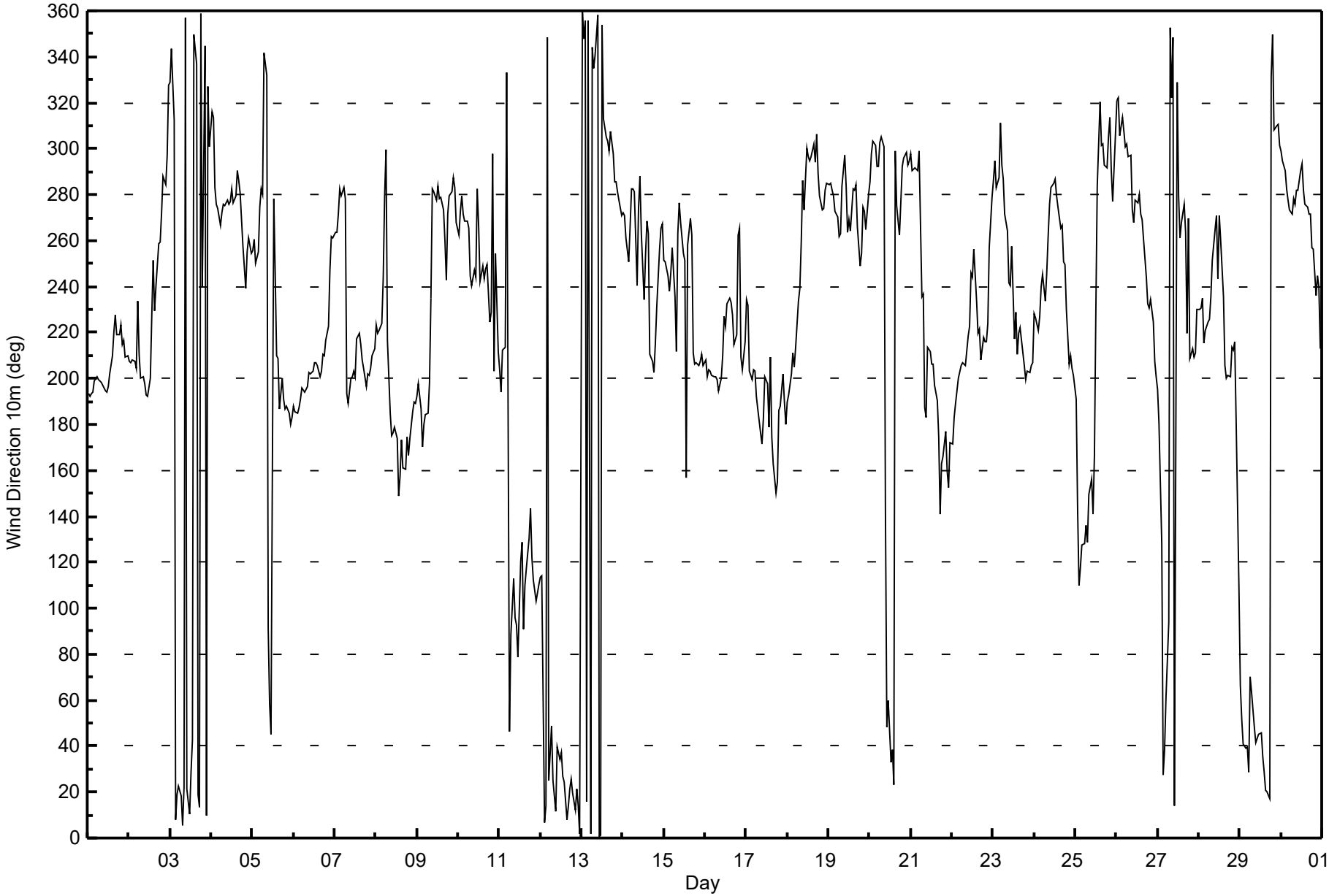
All monthly, daily, and diurnal averages have been calculated using vector methods

Wood Buffalo Environmental Association

Hourly Averages

Wind Direction 10m (WD10) - deg

Stony Mountain - September 2024



Wood Buffalo Environmental Association

Summary of Hour Standard Deviations

Wind Direction 10m (WD10) - deg

Stony Mountain - September 2024

Number of Exceedences (AAAQO): 1-hr: 0 24-hr: 0
Maximum Value: 101 deg on Sep 15 15:00

Minimum Value: 15 deg on Sep 11 02:00

Percentiles: P_1 = 18 P_{10} = 23 Q_1 = 28 Median = 37 Q_3 = 44 P_{90} = 52 P_{99} = 83

Hours in Service:	720
Hours of Data:	720
Hours of Missing Data:	0
Hours of Calibration:	0
Percent Operational Time:	100.0

Day	Hourly Period Ending At (MST)																								Daily
	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24	Maximum
1-Sep	22	23	23	21	24	24	24	25	27	27	33	36	37	38	40	40	41	33	22	26	22	26	19	19	41
2-Sep	19	21	24	23	24	51	41	22	24	28	35	41	42	46	49	44	35	40	31	29	24	35	34	47	51
3-Sep	50	49	93	61	35	29	35	49	46	51	32	47	36	79	70	66	57	37	44	60	80	42	51	48	93
4-Sep	45	60	41	35	42	36	43	39	38	37	45	48	42	45	44	50	49	44	33	35	36	40	42	42	60
5-Sep	42	41	41	40	43	33	27	50	66	68	51	87	100	85	60	56	46	29	28	28	25	29	28	31	100
6-Sep	28	30	28	25	25	25	26	27	26	26	26	28	30	32	32	29	29	27	24	30	30	42	37	37	42
7-Sep	36	36	37	39	28	23	23	61	19	22	26	26	28	38	37	31	25	21	21	22	24	23	26	27	61
8-Sep	30	27	27	27	32	30	25	43	15	31	41	47	54	51	54	53	50	48	40	44	39	29	27	26	54
9-Sep	24	28	31	37	35	30	26	28	45	40	41	43	44	40	37	40	45	41	44	40	42	38	38	40	45
10-Sep	40	40	36	38	37	37	38	42	40	45	50	53	51	51	41	45	42	38	18	37	27	53	33	45	53
11-Sep	16	15	50	66	40	73	97	44	33	50	43	49	56	63	43	44	42	42	49	34	31	31	28	29	97
12-Sep	28	31	53	23	28	23	29	46	34	35	26	27	35	29	44	55	40	31	27	29	43	30	40	42	55
13-Sep	41	48	52	34	47	48	46	47	49	51	55	57	63	58	43	48	49	46	40	46	34	35	39	42	63
14-Sep	39	41	42	34	37	32	32	32	52	52	49	52	48	51	56	56	28	25	19	23	32	37	35	37	56
15-Sep	42	39	44	43	43	43	40	37	50	37	45	41	72	64	101	63	52	42	16	20	23	25	25	23	101
16-Sep	23	24	25	24	25	25	26	28	28	31	35	41	42	48	46	46	39	21	20	40	49	20	18	23	49
17-Sep	32	34	18	19	18	18	21	23	34	40	42	48	45	57	58	81	59	44	52	21	26	20	24	28	81
18-Sep	23	26	21	23	21	29	38	54	41	48	67	49	44	44	44	43	43	53	41	26	26	36	20	24	67
19-Sep	21	22	28	25	23	23	31	35	37	42	48	48	47	58	44	37	45	65	33	30	27	27	33	28	65
20-Sep	31	24	17	17	23	25	24	28	50	83	73	47	38	46	47	41	41	35	35	30	28	31	29	24	83
21-Sep	23	24	22	18	23	20	43	47	26	33	36	43	39	40	38	38	45	52	51	44	44	45	47	38	52
22-Sep	39	27	23	25	26	27	25	27	25	38	50	55	48	44	44	44	33	26	23	24	24	36	42	36	55
23-Sep	32	37	32	36	56	43	42	40	48	43	47	54	47	44	39	38	39	31	26	25	30	26	27	24	56
24-Sep	36	35	34	39	41	42	39	41	42	38	38	37	44	43	41	46	45	36	36	26	19	23	23	21	46
25-Sep	19	35	25	23	35	33	64	47	69	51	52	50	56	61	55	51	40	22	56	29	33	51	57	28	69
26-Sep	44	38	26	30	33	34	39	39	36	40	40	43	41	39	46	43	42	41	34	35	37	33	23	22	46
27-Sep	20	33	84	46	30	59	33	47	32	48	57	70	51	46	49	43	43	34	46	26	27	24	26	35	84
28-Sep	38	39	35	33	35	34	34	40	42	45	45	45	44	50	46	43	35	25	24	26	22	29	33	69	69
29-Sep	52	30	26	21	25	27	35	34	27	31	27	30	29	27	27	32	27	31	54	50	34	34	41	39	54
30-Sep	36	34	34	34	36	35	35	36	37	36	37	38	37	38	37	41	40	37	41	38	36	40	40	28	41
	52	60	93	66	56	73	97	61	69	83	73	87	100	85	101	81	59	65	56	60	80	53	57	69	
	Diurnal Maximum																								

Wood Buffalo Environmental Association

Summary of Hour Averages

Wind Speed 20m (WS20) - km/h

Stony Mountain - September 2024

Maximum Speed: 23 km/h on Sep 6 09:00

Maximum Daily Speed Average: 15.9 km/h on Sep 30

Minimum Speed Value: 2 km/h on Sep 15 15:00

Minimum Daily Speed Average: 1.7 km/h on Sep 25

Maximum Diurnal Speed Average: 7.1 km/h at hour 1

Minimum Diurnal Speed Average: 4.7 km/h at hour 11

Monthly Average Velocity: 6.1 km/h 256.0 deg

Percentiles: $P_1 = 3$ $P_{10} = 6$ $Q_1 = 8$ Median = 10 $Q_3 = 13$ $P_{90} = 16$ $P_{99} = 21$

Hours in Service:	720
Hours of Data:	720
Hours of Missing Data:	0
Percent Operational Time:	100.0

Day	Hourly Period Ending At (MST)																								Daily	Daily
	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24	Average	Maximum
1-Sep	SSW12	SSW13	SSW13	SSW13	SSW16	SSW17	SSW16	SSW15	SSW15	SSW16	SSW15	SSW16	SSW16	SSW18	SW17	SW15	WSW13	SW9	SW8	WSW10	SW10	WSW11	SW11	SW11	SSW13.3	SSW18
2-Sep	SW11	SW13	SW14	SW15	SW14	WSW12	SW10	SSW13	SSW12	SSW10	SSW13	SSW13	SSW12	WSW9	W8	WSW8	WSW7	W9	W9	WNW10	WNW9	NW9	NW13	NNW11	WSW8.6	SW15
3-Sep	NNW9	NNW8	NNE3	N6	NNE8	NNE11	NNE8	N6	NNE6	N7	N6	N7	NNE8	NE5	NNW5	NNW6	NNE5	N5	N4	WNW2	NNE4	NNE5	NNW6	NW5	N5.5	NNE11
4-Sep	NW8	NNW8	NW6	WNW8	WNW8	W9	WNW9	WNW10	WNW11	WNW11	WNW11	WNW15	WNW15	WNW15	WNW13	NW10	NW9	WNW11	W9	W10	WSW11	W13	W14	W13	WNW10.3	WNW15
5-Sep	W13	W14	W13	W12	W11	WNW11	WNW11	NW6	NNW3	E4	ENE6	NE3	NW3	WSW4	SW7	SSW6	S7	SSW9	S7	SSW9	SSW10	S13	S15	S17	SW5.6	S17
6-Sep	SSW18	S18	SSW17	SSW18	SSW19	SSW21	SSW21	SSW21	SSW23	SSW20	SSW20	SSW17	SSW18	SW14	SSW13	SSW14	SSW13	SW12	SW12	SW12	WSW12	W13	W14	W12	SSW15.1	SSW23
7-Sep	W14	W14	W13	WNW11	WNW9	WNW8	W7	W3	SSW8	SW9	SSW7	SW7	SSW7	SW8	SW8	SW7	SW6	SSW8	SSW9	SSW11	SSW12	SW13	SW13	SW12	WSW8.1	W14
8-Sep	WSW12	WSW11	WSW10	WSW10	W9	WNW11	WNW8	W3	SSW4	S6	S6	S7	S8	SSE10	SSE12	S11	S10	S8	S10	S10	S12	S14	SSW14	SSW15	SSW7.4	SSW15
9-Sep	SSW14	SSW14	SSW14	S15	S16	S17	SSW16	SSW18	WSW14	WNW17	WNW18	WNW17	WNW15	WNW22	WNW20	WNW16	W13	WSW10	WNW12	WNW18	WNW18	WNW17	WNW12	WNW12	W11.2	WNW22
10-Sep	W14	W13	WNW14	W13	W13	W14	W13	WSW11	WSW10	WSW10	W10	WNW11	W9	WSW11	W14	WSW9	W10	W6	WSW7	SW6	NNW4	ESE4	ESE3	S4	W8.6	WNW14
11-Sep	SSW9	S7	SSW5	SSW4	NNE6	ESE6	E5	E5	ESE6	E6	E6	E7	SE6	SE8	E9	ESE8	SE10	SSE8	SSE8	SSE8	SE8	ESE8	ESE9	SE9	SE5.6	SE10
12-Sep	SE8	ESE8	NNE5	NNE10	N7	NNE10	NE10	NNE6	N8	N8	NE10	NE9	NE8	NNE6	N6	NNW7	N9	N12	NNE10	N9	N8	N7	N7	N7	NNE6.8	N12
13-Sep	NNW7	NNW8	NNW8	N7	NNW7	NNW7	NNW8	NNW10	NNW10	NNW10	NNW8	NNW7	NNW8	NNW10	NW12	NW12	NW11	NW8	NW8	NW8	WNW9	WNW10	WNW10	WNW10	NW8.4	NW12
14-Sep	WNW11	WNW11	W10	W9	W10	WNW10	WNW9	WNW9	W4	WNW7	WNW7	W8	WSW9	W9	WNW8	W8	SW7	SW6	SSW8	SW9	WSW10	W10	W12	W11	W8.2	W12
15-Sep	W11	W10	WSW12	WSW11	WSW11	W11	WSW8	SW5	W4	WNW8	W7	W5	W2	SSE4	NW2	WNW5	WNW6	SSW5	SW9	SW10	SW11	SW11	SW12	SW12	WSW7.1	SW12
16-Sep	SW12	SW13	SW14	SW13	SSW15	SSW15	SSW15	SSW15	SSW15	SSW13	SW15	WSW14	SW15	WSW15	WSW15	WSW12	WSW9	SW7	SW8	W7	WNW4	WSW4	SW9	WSW10	SW11.2	WSW15
17-Sep	W9	W8	SW10	SW11	SW11	SSW11	SSW11	S9	S9	S10	S13	SSW10	SSW10	S9	SW7	S3	SSE6	SSE5	SE5	SSE6	S9	SSW9	SSW9	S9	SSW7.9	S13
18-Sep	SSW10	SSW11	SSW10	SW10	SW10	SW13	WSW13	WSW8	W9	WNW8	WNW5	NW11	NW12	NW14	NW13	NW9	NW9	NW10	NW8	NW8	NW7	NW6	WNW8	WNW8	WNW7.0	NW14
19-Sep	WNW8	WNW8	WNW9	WNW9	W10	W10	W10	W9	WNW10	NW7	WNW8	W10	WNW9	WNW8	WNW9	WNW7	NW8	WNW6	W7	W8	WNW8	WNW7	W10	WNW11	WNW8.5	WNW11
20-Sep	WNW11	WNW11	NW10	WNW10	WNW11	WNW12	WNW13	NW12	NW7	SE2	NE3	ENE5	NNE5	NNE5	NNE6	NW9	WNW8	W7	WNW9	NW9	NW10	NW10	NW10	NW9	NW7.2	WNW13
21-Sep	NW9	WNW9	WNW9	WNW8	WNW8	WNW9	W5	W4	SSW6	S9	SW10	SW10	SW11	SW12	SSW13	SSW13	S13	SSE9	S9	S9	S10	S9	S9	S12	SSW6.6	SSW13
22-Sep	S13	S13	SSW13	SSW12	SSW13	SW13	SW14	SW13	SW10	SW5	WSW5	W7	WSW9	W9	WSW8	SW8	SW8	SW6	SW8	SW9	SW9	WSW10	W10	WNW10	SW8.8	SW14
23-Sep	WNW11	WNW10	WNW9	WNW10	NW6	WNW7	WNW6	W6	W6	WSW7	WSW7	W7	SW8	WSW9	SW10	SW11	WSW9	SW9	SW10	SSW11	SW12	SW12	SW13	SW13	WSW7.6	SW13
24-Sep	WSW16	WSW15	WSW15	WSW14	WSW17	WSW17	WSW17	WSW19	W21	WNW22	WNW22	WNW22	WNW18	WNW18	W16	W12	W11	W9	W9	WSW8	SW10	SW12	SW13	SSW11	W13.9	WNW22
25-Sep	SSW8	SSE8	ESE6	SE10	SE10	SSE11	SSE8	SSE9	SSE9	SSE11	SSE11	S7	WSW5	WNW7	NNW9	NW8	NW8	NW8	NNW5	NNW7	NW8	NW10	WNW7	NW11	SSW1.7	NW11
26-Sep	NNW15	NNW11	NW13	NW10	NW11	NW15	NW20	NW19	NW11	WNW8	W9	WNW14	WNW15	WNW18	W19	W16	W12	WSW12	WSW12	WSW13	WSW13	WSW11	SW13	SSW11	WNW11.4	NW20
27-Sep	SSW9	S7	SSE4	NNE8	NE11	ENE8	E8	N7	NNW8	NNW8	N6	NW6	WNW8	W10	W9	WNW16	W11	SW8	W9	SW10	SW11	SW13	SW14	WSW15	W4.2	WNW16
28-Sep	WSW18	WSW17	WSW17	SW13	SW14	WSW16	WSW15	WSW16	WSW17	W14	W12	WSW13	W14	W9	WSW10	SW9	SSW10	SSW9	SSW8	SW9	SW8	SW6	S4	ESE4	WSW10.8	WSW18
29-Sep	ENE7	ENE9	NE10	NE10	NE9	NE9	ENE12	ENE13	NE10	NE9	NE14	NE17	NE16	NE16	NNE15	N14	NNE13	N10	NNW13	NNW8	NW12	NW15	NW14	NW13	NNE9.6	NE17
30-Sep	NW14	NW14	WNW15	WNW15	WNW15	W16	W18	WNW17	WNW15	WNW17	WNW18	WNW22	WNW22	WNW20	WNW22	W19	W20	W16	W15	W16	WSW13	WSW14	WSW13	SW13	WNW15.9	WNW22
	WSW7.1	WSW6.7	WSW6.6	WSW6.0	WSW6.2	WSW6.7	WSW6.1	WSW6.0	WSW5.7	WSW5.0	W4.7	W5.7	W6.0	W6.7	W7.0	W6.7	W5.6	WSW5.0	WSW5.4	WSW6.2	WSW6.2	WSW6.5	WSW7.0	WSW6.9	Diurnal Average	
	SSW18	S18	SSW17	SSW18	SSW19	SSW21	SSW21	SSW21	SSW23	WNW22	WNW22	WNW22	WNW22	WNW22	WNW22	WNW19	W20	W16	W15	WNW18	WNW18	WNW17	S15	S17	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: 9 km/h on Sep 30 13:00

Minimum Value: 1 km/h on Sep 10 22:00

Percentiles: P_1 = 1 P_{10} = 2 Q_1 = 2 Median = 3 Q_3 = 4 P_{90} = 5 P_{99} = 8

Hours in Service:	720
Hours of Data:	720
Hours of Missing Data:	0
Hours of Calibration:	0
Percent Operational Time:	100.0

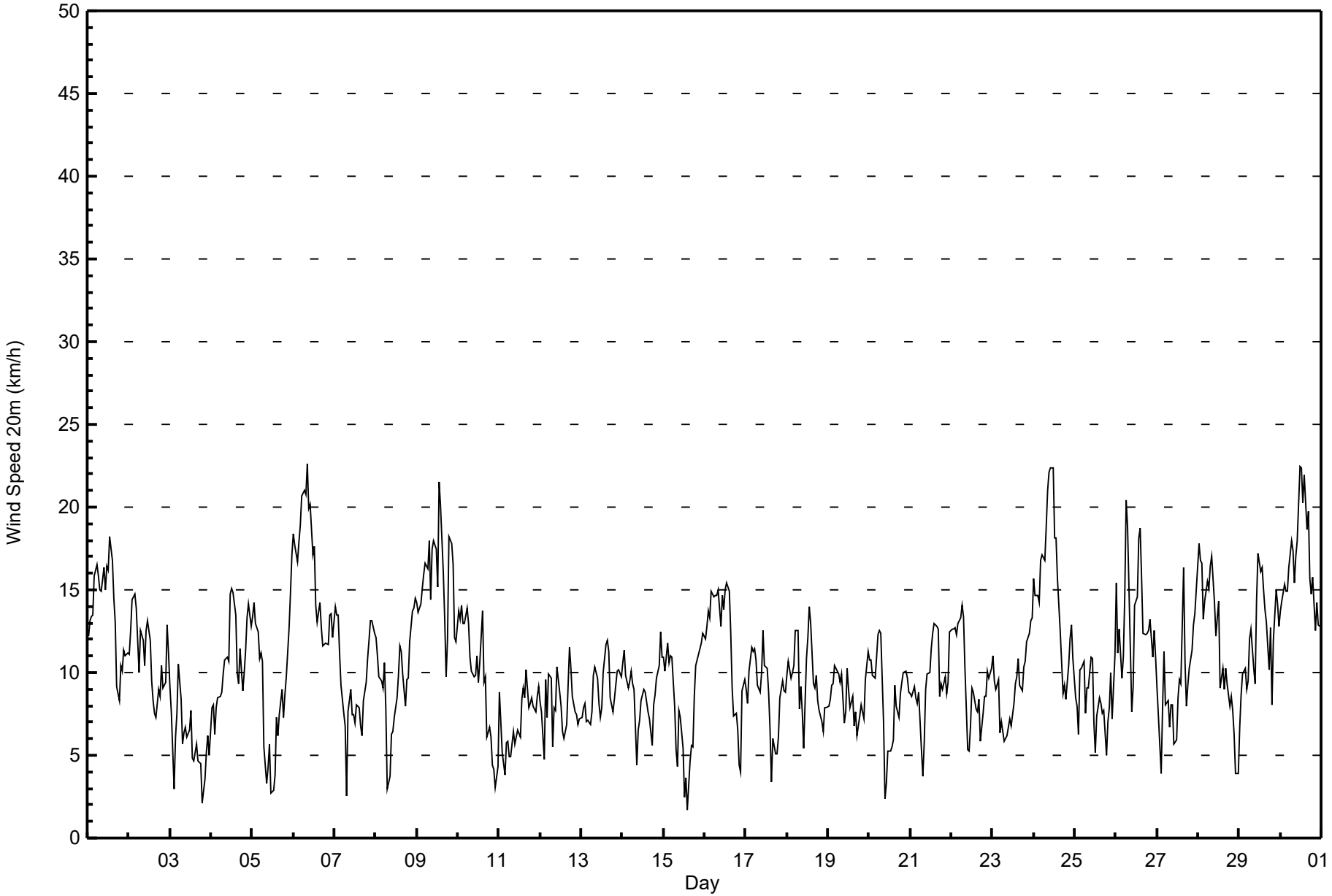
Day	Hourly Period Ending At (MST)																								Daily
	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24	Maximum
1-Sep	2	3	3	3	4	4	4	4	4	5	5	6	6	6	6	5	5	3	2	2	2	2	2	2	6
2-Sep	2	3	3	3	4	6	3	3	3	3	4	5	5	4	3	3	2	3	2	2	2	3	4	4	6
3-Sep	3	3	2	2	3	3	3	3	2	2	2	2	3	2	2	3	3	2	1	1	2	2	2	1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

Wood Buffalo Environmental Association

Hourly Averages

Wind Speed 20m (WS20) - km/h

Stony Mountain - September 2024



Wind Speed Ranges (km/h)	Number of Hours	%	Cumulative %
0 - 5	56	7.78	7.78
6 - 11	416	57.78	65.56
12 - 19	230	31.94	97.50
20 - 28	18	2.50	100.00
29 - 38	0	0.00	100.00
> 38	0	0.00	100.00

Total Number of Valid Hours: 720

Total Number of Hours: 720

Wood Buffalo Environmental Association

Frequency Distribution

Wind Speed 20m (WS20) - km/h

Stony Mountain - September 2024

Wind Speed Ranges (km/h)	Wind Direction																
	N	NNE	NE	ENE	E	ESE	SE	SSE	S	SSW	SW	WSW	W	WNW	NW	NNW	**Totals**
0 - 5	2	7	3	1	3	3	2	3	3	4	2	4	8	4	3	4	56
6 - 11	19	13	11	4	5	7	8	14	26	31	54	34	52	72	39	27	416
12 - 19	2	2	4	2	0	0	0	1	14	47	37	36	35	32	16	2	230
20 - 28	0	0	0	0	0	0	0	0	0	6	0	0	2	9	1	0	18
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	23	22	18	7	8	10	10	18	43	88	93	74	97	117	59	33	720

Total Number of Valid Hours: 720

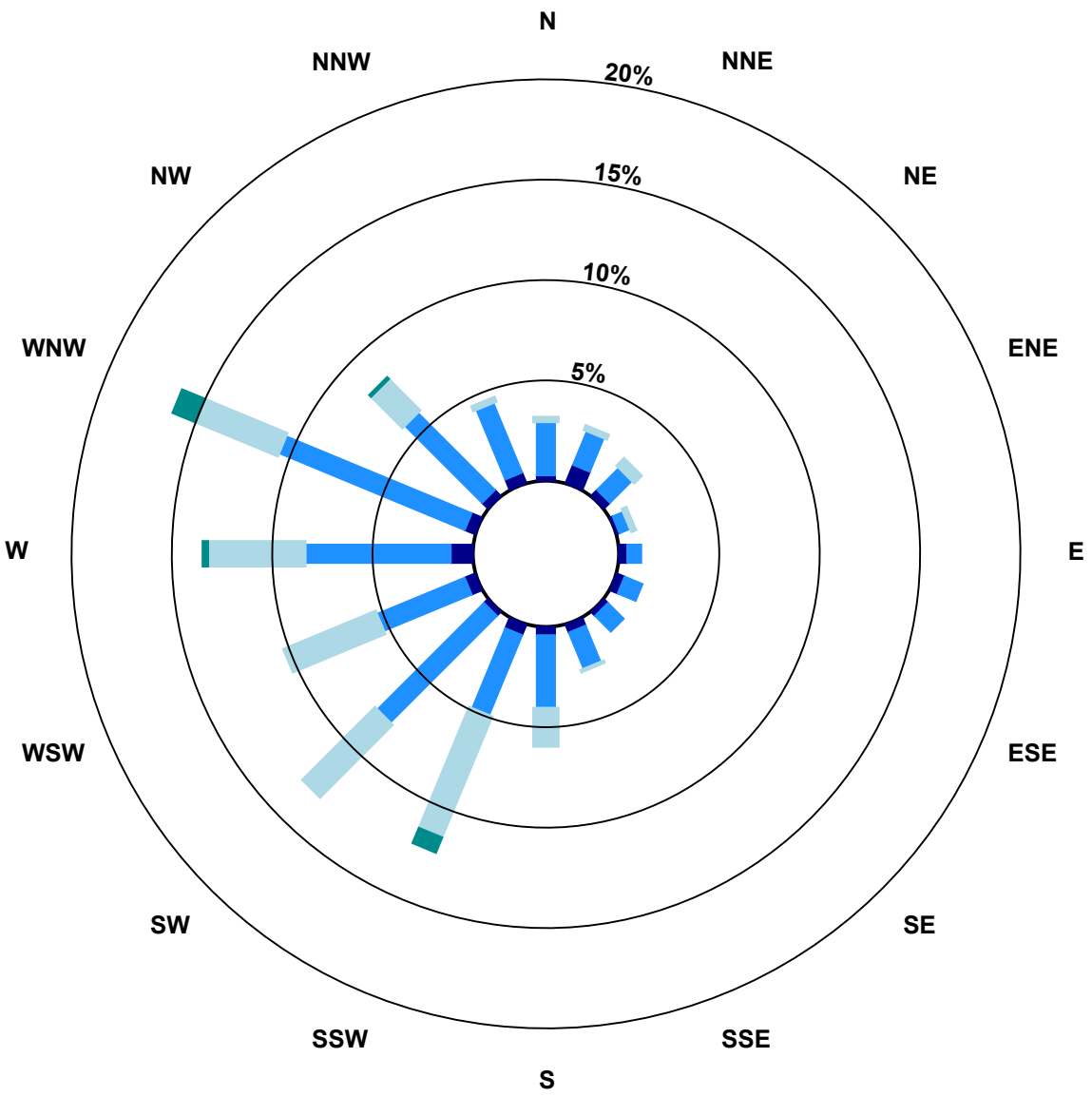
Total Number of Hours: 720

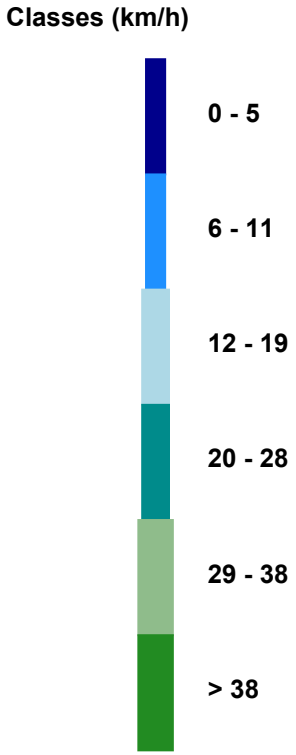
Wood Buffalo Environmental Association

Wind Rose Sep 2024

Wind Speed 20m (WS20) - km/h

Stony Mountain





Total Number of Valid Hours: 720

Direction of Maximum Speed: 204 deg on Sep 6 09:00

Direction of Maximum Daily Speed Average: 282.4 deg on Sep 30

Direction of Minimum Speed: 306 deg on Sep 15 15:00

Direction of Minimum Daily Speed Average: 1.7 deg on Sep 25

Monthly Average Direction: 256.0 deg

Hours in Service:	720
Hours of Data:	720
Hours of Missing Data:	0
Percent Operational Time:	100.0

Day	Hourly Period Ending At (MST)																								Daily
	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24	Average
1-Sep	200	200	204	202	208	210	210	208	206	200	201	200	199	209	217	234	238	234	231	239	235	239	230	226	213.7
2-Sep	221	222	221	222	218	247	222	211	209	206	196	196	203	240	269	237	251	272	277	284	300	316	313	334	238.8
3-Sep	334	340	30	2	19	12	13	357	15	351	11	359	22	51	348	334	12	8	8	296	27	23	333	320	1.7
4-Sep	325	327	315	290	287	279	285	282	284	285	288	290	293	293	291	305	311	295	272	265	257	265	268	265	286.4
5-Sep	267	270	262	265	281	290	283	325	340	96	76	48	309	258	217	213	186	201	185	194	194	189	187	189	233.1
6-Sep	192	190	192	196	200	202	203	203	204	209	212	212	213	214	210	206	210	218	223	236	247	262	275	273	212.7
7-Sep	277	273	279	288	283	286	281	261	208	217	213	216	211	233	232	226	216	212	204	211	212	217	222	235	238.6
8-Sep	245	244	247	249	261	282	303	276	192	180	176	179	176	160	168	178	171	174	180	175	180	188	192	194	201.6
9-Sep	199	204	192	178	185	190	192	207	246	292	293	291	299	288	289	283	271	256	284	291	294	302	300	282	259.3
10-Sep	274	278	286	281	276	277	276	257	255	257	265	293	279	256	259	247	265	272	240	232	335	111	109	186	267.7
11-Sep	208	190	199	204	20	114	81	90	120	95	95	81	126	126	94	116	132	149	161	148	125	118	117	125	126.9
12-Sep	127	115	32	18	349	27	54	31	5	360	41	34	44	17	3	346	360	8	20	9	354	5	353	349	19.7
13-Sep	346	341	343	358	344	344	339	335	338	343	343	344	340	327	321	318	317	321	315	307	302	298	293	286	326.0
14-Sep	283	283	278	271	276	284	287	282	269	287	301	276	245	268	285	272	224	216	213	229	252	268	275	276	268.8
15-Sep	262	259	256	250	256	266	254	234	266	282	278	269	267	165	306	302	292	211	218	216	218	219	222	222	245.9
16-Sep	220	215	217	214	212	211	213	208	203	205	222	237	236	242	242	247	244	227	233	274	301	237	216	240	225.4
17-Sep	259	263	220	216	215	213	200	189	177	173	188	203	201	180	217	176	165	156	134	165	190	210	201	187	198.8
18-Sep	198	203	207	224	223	232	253	255	277	299	283	314	310	306	312	320	317	326	325	317	318	314	301	301	281.8
19-Sep	300	293	291	288	280	273	268	268	289	308	295	277	282	286	303	297	308	300	278	279	288	287	273	282	286.2
20-Sep	288	295	306	301	293	291	303	310	307	128	45	59	25	33	17	309	288	278	290	311	314	312	309	308	309.0
21-Sep	306	294	288	294	288	295	264	264	198	189	224	219	215	214	206	195	176	163	170	172	186	171	170	178	213.4
22-Sep	177	190	198	208	212	215	218	220	219	232	237	264	253	263	243	233	232	221	233	234	234	237	266	285	226.5
23-Sep	292	299	289	295	321	302	300	278	278	257	254	267	227	237	223	232	240	224	216	209	215	214	217	222	248.0
24-Sep	243	244	239	247	252	254	249	257	272	282	289	295	295	289	280	277	273	264	265	247	226	220	219	213	261.9
25-Sep	195	160	119	127	137	150	148	149	167	166	154	180	239	293	327	315	318	307	335	327	326	307	290	317	211.1
26-Sep	327	327	313	321	317	311	314	310	312	287	277	287	285	289	277	276	271	257	246	247	252	246	222	213	285.0
27-Sep	203	185	154	33	47	67	92	359	334	347	4	322	290	272	279	287	277	236	280	226	229	223	230	247	269.5
28-Sep	245	246	245	232	236	241	243	253	257	273	279	258	280	264	241	216	206	208	212	224	223	225	190	116	243.0
29-Sep	75	62	48	44	51	40	73	68	50	44	46	47	46	36	26	9	12	6	338	344	321	321	323	314	24.1
30-Sep	309	304	300	290	289	281	279	285	286	292	293	299	299	289	283	281	278	276	266	263	250	256	257	232	282.4
	251.2	250.7	251.5	253.1	254.8	257.0	254.4	253.1	252.7	257.4	259.8	270.0	266.4	266.5	268.7	266.3	260.0	252.5	249.8	248.8	251.9	251.4	249.7	248.5	
	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: 84 deg on Sep 15 15:00

Minimum Value: 10 deg on Sep 11 01:00

Percentiles: P_1 = 12 P_{10} = 15 Q_1 = 18 Median = 23 Q_3 = 28 P_{90} = 35 P_{99} = 72

Hours in Service:	720
Hours of Data:	720
Hours of Missing Data:	0
Hours of Calibration:	0
Percent Operational Time:	100.0

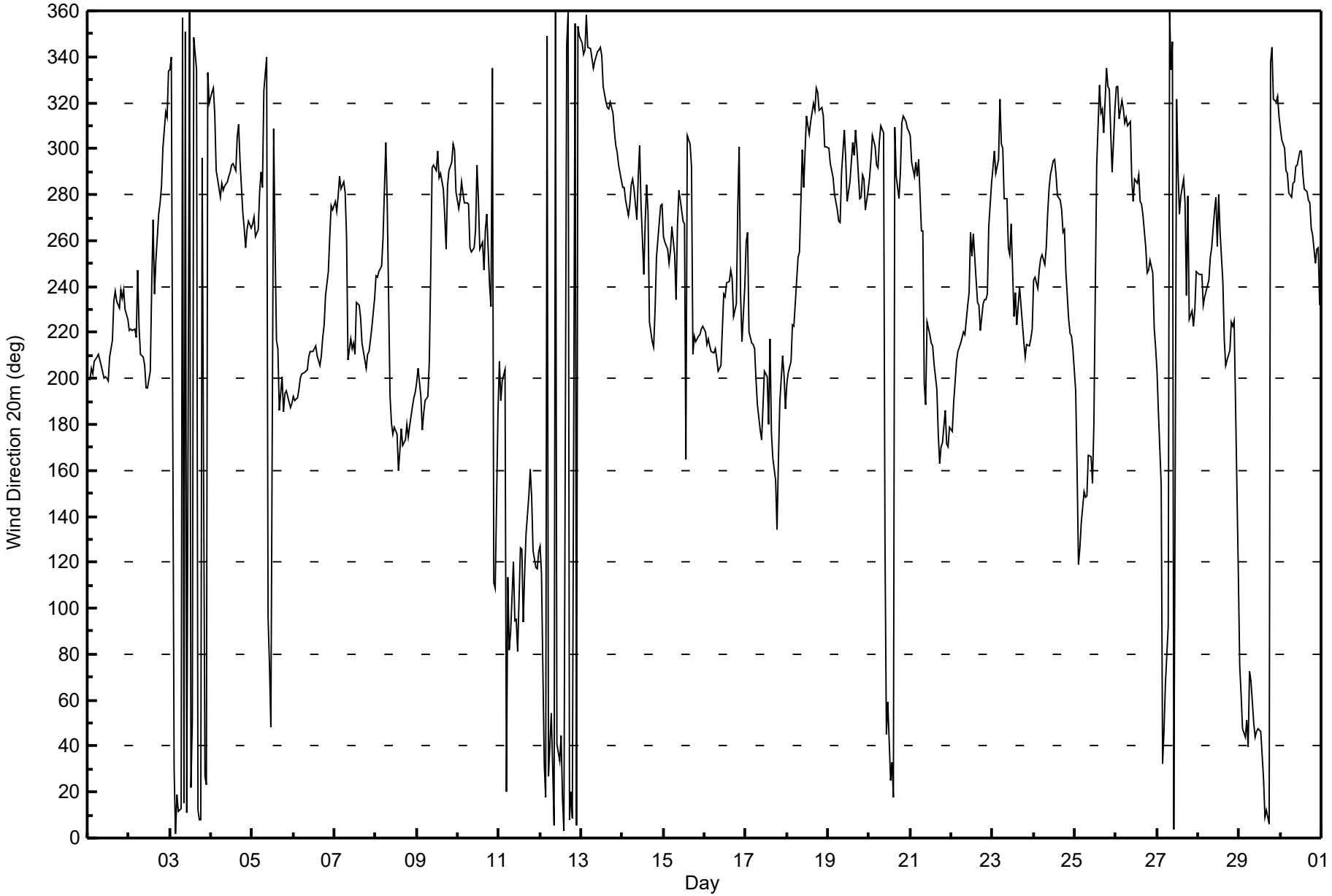
Day	Hourly Period Ending At (MST)																								Daily
	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24	Maximum
1-Sep	14	14	15	14	16	17	17	19	19	21	23	26	28	27	31	29	27	23	15	14	15	15	12	12	31
2-Sep	13	15	16	15	17	33	37	17	18	21	28	29	35	34	34	33	21	22	16	17	16	18	20	24	37
3-Sep	26	23	56	34	28	23	26	29	31	32	29	30	33	57	52	39	44	24	19	57	42	27	24	20	57
4-Sep	21	26	21	19	21	21	24	23	23	27	30	29	28	32	31	32	28	25	22	20	22	25	25	26	32
5-Sep	25	24	25	24	26	19	17	38	56	48	40	76	84	74	55	51	33	21	14	15	15	16	16	17	84
6-Sep	18	19	17	15	17	18	17	19	19	19	19	20	22	23	23	21	21	19	16	20	20	25	21	21	25
7-Sep	23	22	23	22	17	13	14	59	13	17	24	23	24	27	27	23	21	15	14	14	16	17	17	16	59
8-Sep	18	18	18	19	18	17	15	38	20	20	30	34	42	35	33	34	29	22	16	16	18	17	16	17	42
9-Sep	17	19	18	21	20	17	16	20	31	27	29	27	28	26	26	27	29	25	31	24	25	26	23	24	31
10-Sep	24	24	22	24	23	22	23	28	27	31	38	31	39	32	28	31	28	21	14	37	24	29	24	43	43
11-Sep	10	15	36	58	24	27	15	20	20	27	29	31	38	44	32	31	28	19	22	17	16	17	17	17	58
12-Sep	16	16	47	19	19	22	21	36	24	26	21	24	26	23	33	31	26	24	22	23	26	25	25	25	47
13-Sep	24	26	26	24	26	25	24	25	25	28	31	32	29	26	24	24	26	23	21	22	21	20	22	22	32
14-Sep	22	22	21	18	19	18	16	19	30	36	32	35	34	38	42	42	19	19	12	18	20	21	21	22	42
15-Sep	24	26	26	25	26	25	24	28	41	22	31	28	65	72	84	51	36	17	10	13	15	17	16	15	84
16-Sep	16	16	18	16	16	17	18	19	19	24	24	30	32	36	32	29	25	15	11	31	51	29	10	16	51
17-Sep	21	24	12	12	12	11	15	17	22	27	27	39	35	38	61	76	40	18	16	15	18	14	17	16	76
18-Sep	14	15	13	16	15	20	23	42	22	31	55	29	26	27	24	29	24	27	20	17	16	16	14	14	55
19-Sep	13	14	17	14	13	14	16	19	23	24	33	33	35	38	26	23	22	17	15	13	15	14	19	18	38
20-Sep	18	17	13	13	14	15	17	17	31	72	78	35	30	35	34	25	24	18	22	20	19	19	18	17	78
21-Sep	15	15	14	12	14	14	32	40	21	26	28	31	30	29	30	29	30	25	23	20	25	20	23	19	40
22-Sep	18	16	16	17	18	19	18	18	20	31	41	47	33	30	30	30	22	19	12	14	14	24	26	21	47
23-Sep	20	20	21	21	27	23	23	27	33	34	34	40	31	31	26	26	29	23	18	19	21	18	19	18	40
24-Sep	24	24	22	23	26	27	26	26	27	27	27	27	30	29	30	29	27	23	20	18	14	16	16	14	30
25-Sep	14	14	20	16	20	15	38	19	25	28	29	39	44	42	31	31	27	16	35	25	22	32	47	18	47
26-Sep	25	24	20	19	20	22	24	25	23	27	25	28	27	27	29	31	30	29	24	23	23	20	16	16	31
27-Sep	14	21	76	37	21	40	19	44	23	32	45	56	34	32	33	26	28	23	32	21	20	17	18	24	76
28-Sep	23	26	24	27	24	24	23	25	26	31	31	31	30	41	32	33	24	20	15	16	15	17	31	37	41
29-Sep	16	24	21	18	18	22	20	22	20	26	22	23	27	24	24	27	23	26	28	28	20	21	23	23	28
30-Sep	22	21	21	22	22	22	23	23	24	23	25	25	27	27	26	28	27	24	24	26	25	26	26	19	28
	26	26	76	58	28	40	38	59	56	72	78	76	84	74	84	76	44	29	35	57	51	32	47	43	
	Diurnal Maximum																								

Wood Buffalo Environmental Association

Hourly Averages

Wind Direction 20m (WD20) - deg

Stony Mountain - September 2024



WOOD BUFFALO ENVIRONMENTAL ASSOCIATION

CONTINUOUS AMBIENT AIR QUALITY
MONITORING PROGRAM
MONTHLY REPORT

AMS19
FIREBAG
SEPTEMBER 2024

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

October 31, 2024

WOOD BUFFALO ENVIRONMENTAL ASSOCIATION - FIREBAG (AMS19)
SEPTEMBER 2024

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	684	34	36	99.72	16.5	0	2.6	0
H2S (ppb) Average	684	36	36	100	2.7	0	0.7	0
THC (ppm) Average	671	32	49	97.64	3.1	-	2.4	-
NO2 (ppb) Average	683	35	37	99.72	18.1	0	3.7	-
NO (ppb) Average	683	35	37	99.72	13.2	-	1.6	-
NOX (ppb) Average	683	35	37	99.72	23.4	-	4.6	-
Temperature 2 m (C) Average	720	0	0	100	28.1	-	20.5	-
Relative Humidity (%) Average	720	0	0	100	98.2	-	95.9	-
Wind Speed 10 m (km/h) Average	720	0	0	100	26	-	17	-
Wind Direction 10 m (deg) Average	720	0	0	100	-	-	-	-

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

WOOD BUFFALO ENVIRONMENTAL ASSOCIATION - FIREBAG (AMS19)
SEPTEMBER 2024

MONTHLY SUMMARY FOR AIR QUALITY/ METEOROLOGICAL MONITORING MEASUREMENTS

					Percentile						
Parameter	Number	Mean	StnDev	Total	Min	P10	Q1	Median	Q3	P90	Max
SO2 (ppb) Average	684	0.58	1.3	-	0	0	0	0.1	0.5	1.5	16.5
H2S (ppb) Average	684	0.2	0.3	-	0	0	0.1	0.1	0.2	0.4	2.7
THC (ppm) Average	671	2.28	0.1	-	2.1	2.2	2.2	2.3	2.3	2.4	3.1
NO2 (ppb) Average	683	2.24	2.4	-	0.1	0.4	0.7	1.4	2.9	4.8	18.1
NO (ppb) Average	683	0.45	1.2	-	0	0	0.1	0.1	0.3	0.9	13.2
NOX (ppb) Average	683	2.69	3.2	-	0.1	0.5	0.8	1.7	3.4	5.7	23.4
Temperature 2 m (C) Average	720	12.1	5.2	-	0.5	6.1	8.6	11.2	15	18.9	28.1
Relative Humidity (%) Average	720	70.11	18.2	-	28.5	44.1	56.8	71.8	86.4	94.1	98.2
Wind Speed 10 m (km/h) Average	720	10.9	5	-	0	5	7	10	14	17	26
Wind Direction 10 m (deg) Average	720	-	-	-	-	-	-	-	-	-	-

WOOD BUFFALO ENVIRONMENTAL ASSOCIATION - FIREBAG (AMS19)
SEPTEMBER 2024

OPERATIONAL NOTES

Parameter	Period Start	Period End	Duration (Hours)	Notes
NO2, SO2, THC	20 Sep 2024 13:00	20 Sep 2024 14:00	2	Maintenance - sample manifold cleaned
THC	08 Sep 2024 22:00	09 Sep 2024 10:00	13	Unstable Operation - flatline in analyzer output signal
THC	09 Sep 2024 11:00	09 Sep 2024 12:00	2	Maintenance - analyzer rebooted

Wood Buffalo Environmental Association

Summary of Hour Averages

Sulphur Dioxide (SO_2) - ppb

Firebag - September 2024

Number of Exceedences (AAAQO): 1-hr: 0 24-hr: 0
Maximum Value: 16.5 ppb on Sep 19 09:00 Maximum Daily Average: 2.6 ppb on Sep 6

Minimum Value: 0.0 ppb on Sep 3 04:00 Minimum Daily Average: 0.0 ppb on Sep 3
Maximum Diurnal Average: 1.4 ppb at hour 9 Minimum Diurnal Average: 0.2 ppb at hour 5
Monthly Average: 0.58 ppb Percentiles: P_1 = 0.0 P_{10} = 0.0 Q_1 = 0.0 Median = 0.1 Q_3 = 0.5 P_{90} = 1.5 P_{99} = 6.6

Hours in Service:	720
Hours of Data:	684
Hours of Missing Data:	36
Hours of Calibration:	34
Percent Operational Time:	99.7

Day	Hourly Period Ending At (MST)																								Daily	Daily
	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24	Average	Maximum
1-Sep	0.1	0.2	0.2	0.2	0.4	Z	0.3	0.4	0.3	0.3	0.4	0.3	0.3	0.4	1.9	3.1	0.6	0.8	1.5	0.2	0.8	1.6	1.5	1.9	0.8	3.1
2-Sep	Z	0.2	1.5	1.3	1.5	0.7	1.0	4.1	5.9	0.6	0.2	0.2	0.2	1.2	3.9	4.1	1.9	0.1	0.1	0.1	0.1	0.1	0.1	0.1	1.3	5.9
3-Sep	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	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.1
4-Sep	0.0	0.0	Z	0.0	0.0	0.0	0.1	0.3	0.2	0.8	0.5	0.1	0.0	0.1	0.4	0.2	0.1	0.0	0.2	0.1	0.2	0.0	0.1	0.2	0.1	0.8
5-Sep	0.0	0.1	0.1	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	0.1	0.1	0.1	0.1	0.1	0.0	0.0	0.0	0.0	0.1
6-Sep	0.1	0.2	0.2	0.3	Z	0.4	0.5	0.8	0.8	1.7	4.5	5.4	7.1	6.9	8.1	7.7	5.7	2.4	3.1	0.5	0.3	1.0	1.1	1.0	2.6	8.1
7-Sep	0.3	0.1	0.1	0.1	0.2	Z	0.7	0.6	0.6	0.5	0.9	0.4	0.2	0.4	2.4	4.4	2.8	0.6	0.1	0.2	0.8	1.6	1.6	1.3	0.9	4.4
8-Sep	Z	0.6	1.1	1.6	1.0	0.6	0.5	0.7	0.3	0.2	0.4	0.5	0.5	0.5	0.3	0.4	0.4	0.2	0.2	0.2	0.1	0.2	0.1	0.2	0.5	1.6
9-Sep	0.3	Z	0.5	0.3	0.2	0.1	0.0	0.2	0.0	0.0	0.0	0.0	0.0	0.3	0.3	0.1	0.0	1.3	0.1	0.0	0.0	0.0	0.0	0.0	0.2	1.3
10-Sep	0.0	0.1	Z	0.0	0.0	0.0	0.1	0.1	0.1	0.3	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	0.3
11-Sep	0.0	0.0	0.0	Z	0.0	0.0	0.0	0.0	0.0	0.2	0.7	0.3	0.1	0.1	0.1	0.1	0.0	0.1	0.0	0.1	0.1	0.0	0.0	0.0	0.1	0.7
12-Sep	0.0	0.0	0.1	0.0	Z	0.0	0.0	0.1	0.8	0.8	0.9	0.4	0.0	0.2	0.2	0.1	2.2	4.4	4.1	0.6	0.1	0.0	0.0	0.0	0.7	4.4
13-Sep	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	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.1	0.0	0.1
14-Sep	Z	0.0	0.0	0.0	0.1	0.1	0.1	0.2	0.2	0.5	0.6	0.7	0.3	0.6	0.6	0.7	0.5	0.2	0.1	0.1	0.0	0.0	0.1	0.0	0.2	0.7
15-Sep	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	0.1	0.0	0.1	0.2	0.2	0.0	0.1	0.9	2.8	2.0	1.2	0.3	2.8
16-Sep	0.8	0.4	Z	0.2	0.1	0.2	0.1	0.1	0.1	0.3	4.0	1.3	1.6	3.5	1.2	0.1	0.1	0.0	0.0	0.3	0.6	1.0	0.7	1.5	0.8	4.0
17-Sep	0.3	0.4	0.4	Z	0.2	0.6	0.4	0.2	2.4	0.7	0.1	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	0.3	2.4
18-Sep	0.1	0.0	0.0	0.1	Z	0.3	0.5	0.5	6.6	6.6	2.2	0.9	0.5	0.7	0.7	0.9	0.6	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.9	6.6
19-Sep	0.0	0.0	0.0	0.0	0.0	Z	0.0	9.9	16.5	2.7	0.4	0.4	0.5	0.8	0.6	0.5	0.5	0.4	0.5	0.3	0.2	0.2	0.5	0.1	1.5	16.5
20-Sep	Z	0.1	0.0	0.1	0.2	0.1	0.0	0.0	0.0	0.0	0.0	0.1	M	M	0.0	0.1	0.0	0.0	0.0	0.0	0.1	0.1	0.1	0.1	0.1	0.2
21-Sep	0.1	Z	0.0	0.1	0.1	0.1	0.1	0.0	0.0	0.1	0.9	4.6	3.9	1.7	0.7	0.1	0.0	0.2	0.2	0.0	0.0	0.0	0.0	0.0	0.6	4.6
22-Sep	0.0	0.0	Z	0.0	0.0	0.0	0.0	0.0	0.2	0.2	0.2	0.4	2.2	4.1	1.9	3.0	2.8	1.4	0.9	1.2	1.0	0.5	0.2	0.1	0.9	4.1
23-Sep	0.0	0.3	0.1	Z	0.1	0.0	0.0	0.0	0.1	0.2	0.6	1.1	0.9	1.1	0.8	1.5	2.1	1.1	0.1	0.1	0.2	0.1	0.1	0.2	0.5	2.1
24-Sep	0.6	1.0	0.7	0.8	Z	1.7	2.5	5.9	3.6	0.9	0.5	0.5	0.3	0.3	0.4	0.6	0.5	0.3	0.0	0.0	0.0	0.1	0.2	0.2	0.9	5.9
25-Sep	0.1	0.1	0.1	0.6	0.4	Z	0.1	0.2	0.1	0.0	0.0	0.0	0.0	0.4	1.5	2.5	1.9	6.7	1.9	1.0	2.8	3.8	1.7	0.6	1.2	6.7
26-Sep	Z	0.2	0.1	0.1	0.0	0.0	0.0	0.0	0.0	0.1	0.3	0.3	0.4	0.2	0.4	0.3	0.4	0.1	0.1	0.2	0.1	0.1	0.2	0.6	0.2	0.6
27-Sep	0.9	Z	0.5	0.4	0.3	0.2	0.1	0.2	0.1	0.1	0.1	0.1	0.1	0.2	1.3	2.7	2.4	0.1	0.0	0.0	0.1	0.3	0.9	1.6	0.5	2.7
28-Sep	1.8	3.1	Z	1.6	0.2	0.1	0.1	0.3	0.1	0.0	0.1	0.1	0.1	0.1	0.3	0.2	0.2	0.2	0.4	1.6	0.3	0.2	0.2	0.1	0.5	3.1
29-Sep	0.1	0.2	0.2	Z	0.2	0.2	0.2	0.2	1.2	2.9	1.1	0.6	1.0	0.4	0.2	0.3	0.2	0.1	0.2	0.1	0.1	0.1	0.1	0.1	0.5	2.9
30-Sep	0.1	0.1	0.1	0.1	Z	0.1	0.1	0.1	1.0	0.5	0.7	1.1	0.7	0.5	0.1	0.3	0.1	0.1	0.1	0.0	0.1	0.7	0.2	0.0	0.3	1.1
	0.2	0.3	0.2	0.3	0.2	0.2	0.3	0.8	1.4	0.7	0.7	0.7	0.8	0.9	0.9	1.1	0.9	0.7	0.5	0.3	0.3	0.5	0.4	0.4	Diurnal Average	
	1.8	3.1	1.5	1.6	1.5	1.7	2.5	9.9	16.5	6.6	4.5	5.4	7.1	6.9	8.1	7.7	5.7	6.7	4.1	1.6	2.8	3.8	2.0	1.9	Diurnal Maximum	

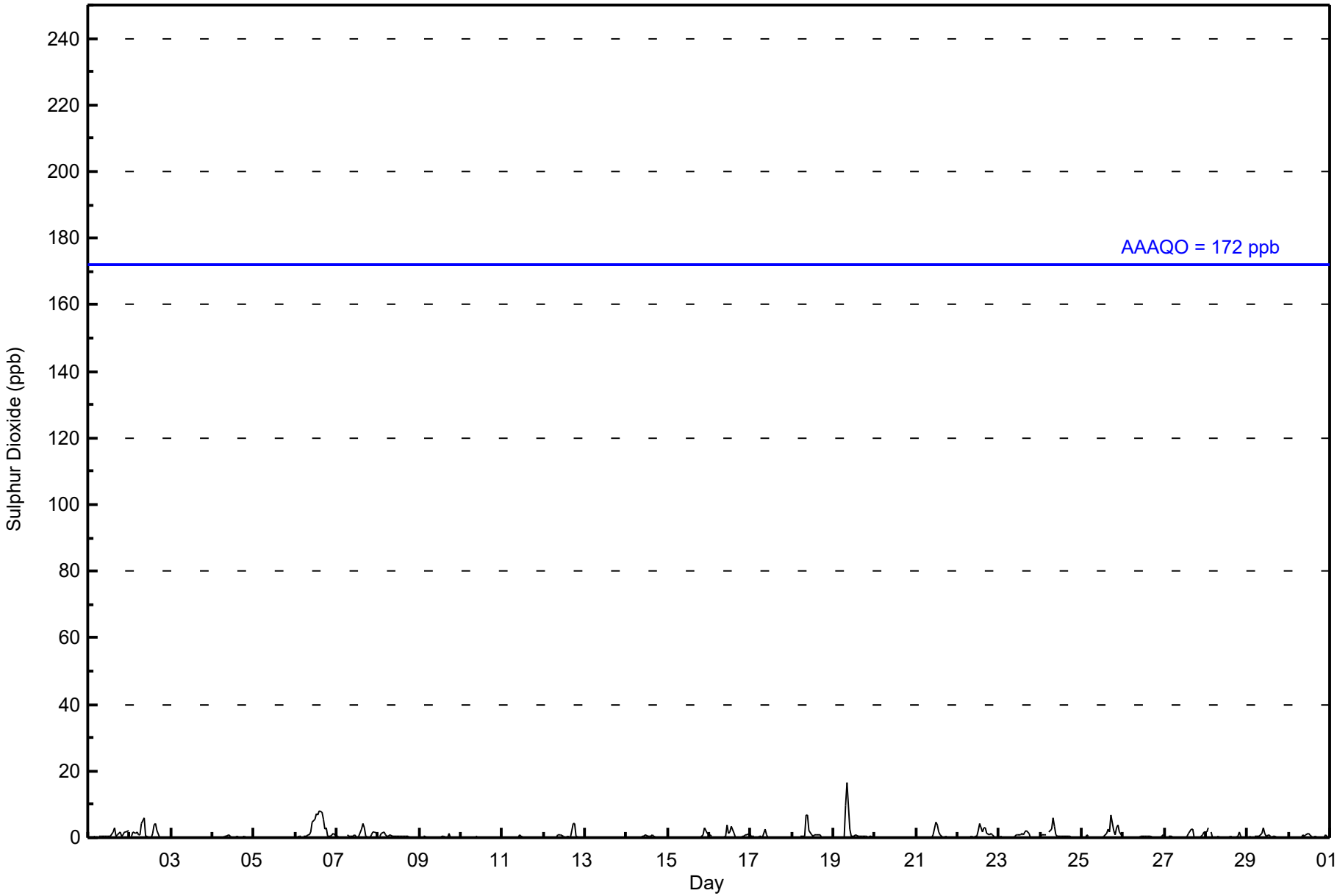
Z - zerospan C - Calibration M - Maintenance
Alberta Ambient Air Quality Objectives (AAAQO): 1-hr 172 ppb 24-hr 48 ppb

Wood Buffalo Environmental Association

Hourly Averages

Sulphur Dioxide (SO_2) - ppb

Firebag - September 2024



Sulphur Dioxide (SO_2) - ppb
Firebag - September 2024

Concentration Ranges (ppb)	Number of Hours	%	Cumulative %
0 - 10	683	99.85	99.85
11 - 20	1	0.15	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: 684

Total Number of Hours: 720

Wood Buffalo Environmental Association

Frequency Distribution

Sulphur Dioxide (SO_2) - ppb

Firebag - September 2024

Concentration Ranges (ppb)	Wind Direction																
	N	NNE	NE	ENE	E	ESE	SE	SSE	S	SSW	SW	WSW	W	WNW	NW	NNW	**Totals**
0 - 10	47	34	16	8	14	26	33	49	53	93	77	62	54	53	22	42	683
11 - 20	0	0	0	0	0	0	0	0	0	0	0	1	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	47	34	16	8	14	26	33	49	53	93	77	63	54	53	22	42	684

Total Number of Valid Hours: 684

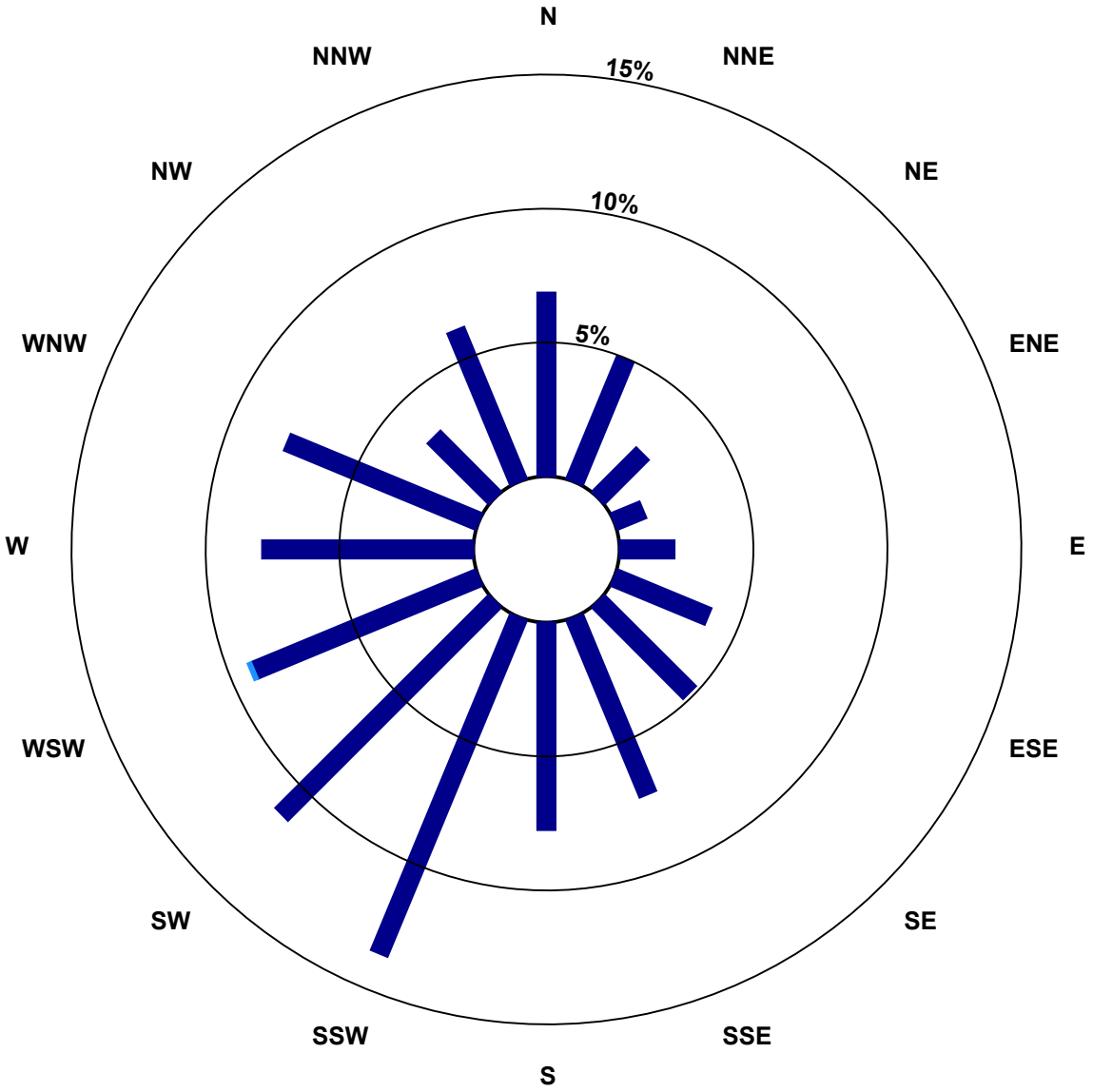
Total Number of Hours: 720

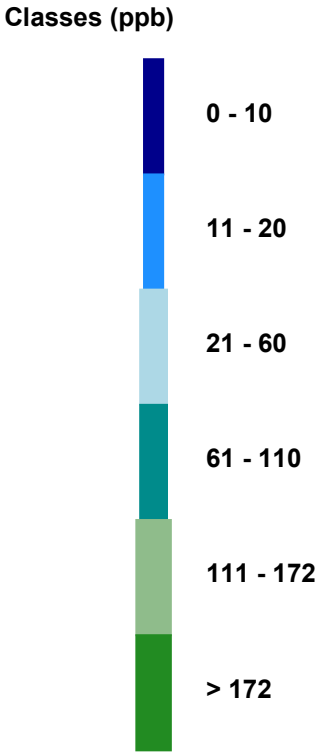
Wood Buffalo Environmental Association

Wind Rose Sep 2024

Sulphur Dioxide (SO_2) - ppb

Firebag





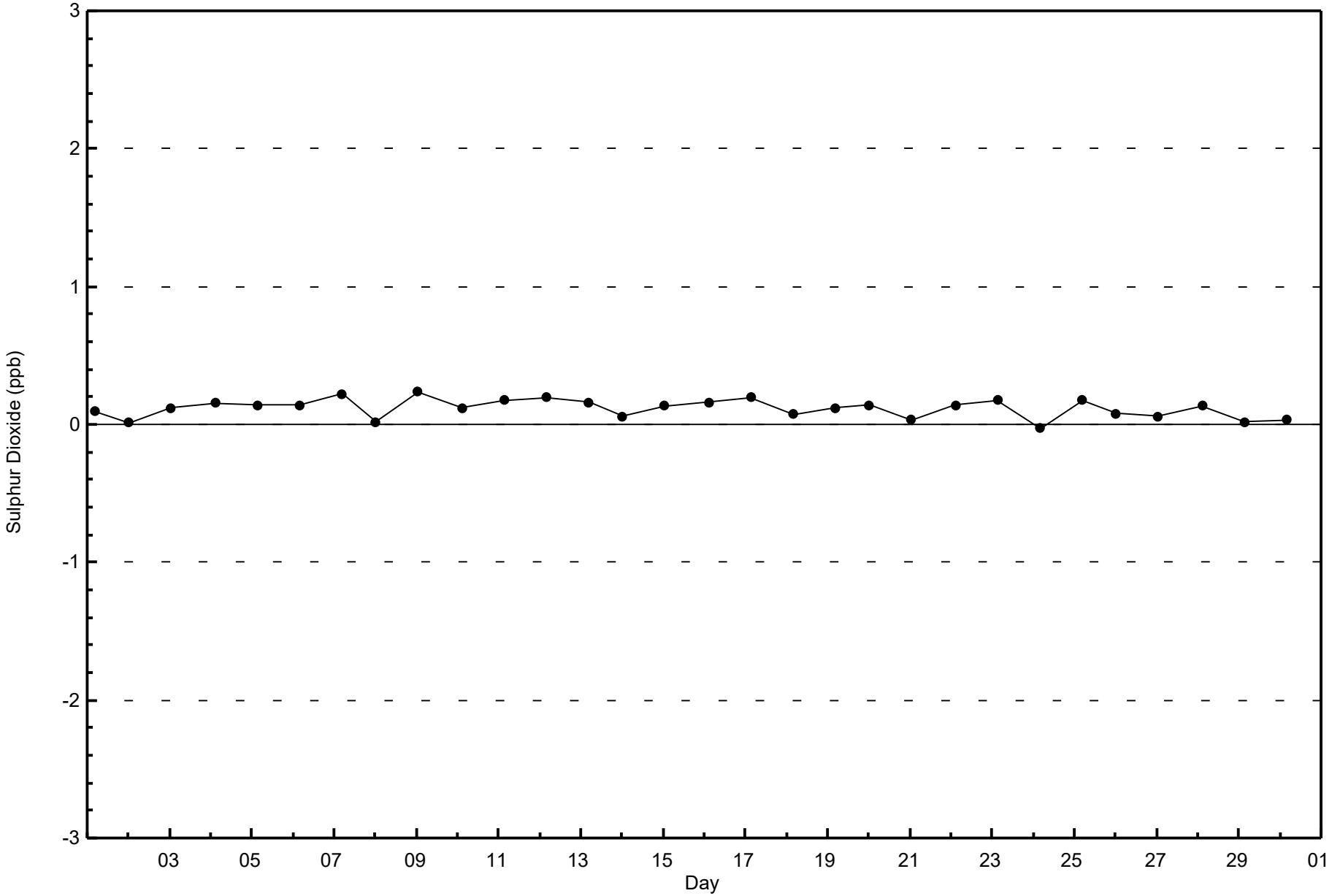
Total Number of Valid Hours: 684

Wood Buffalo Environmental Association

Zero Responses

Sulphur Dioxide (SO_2) - ppb

Firebag - September 2024

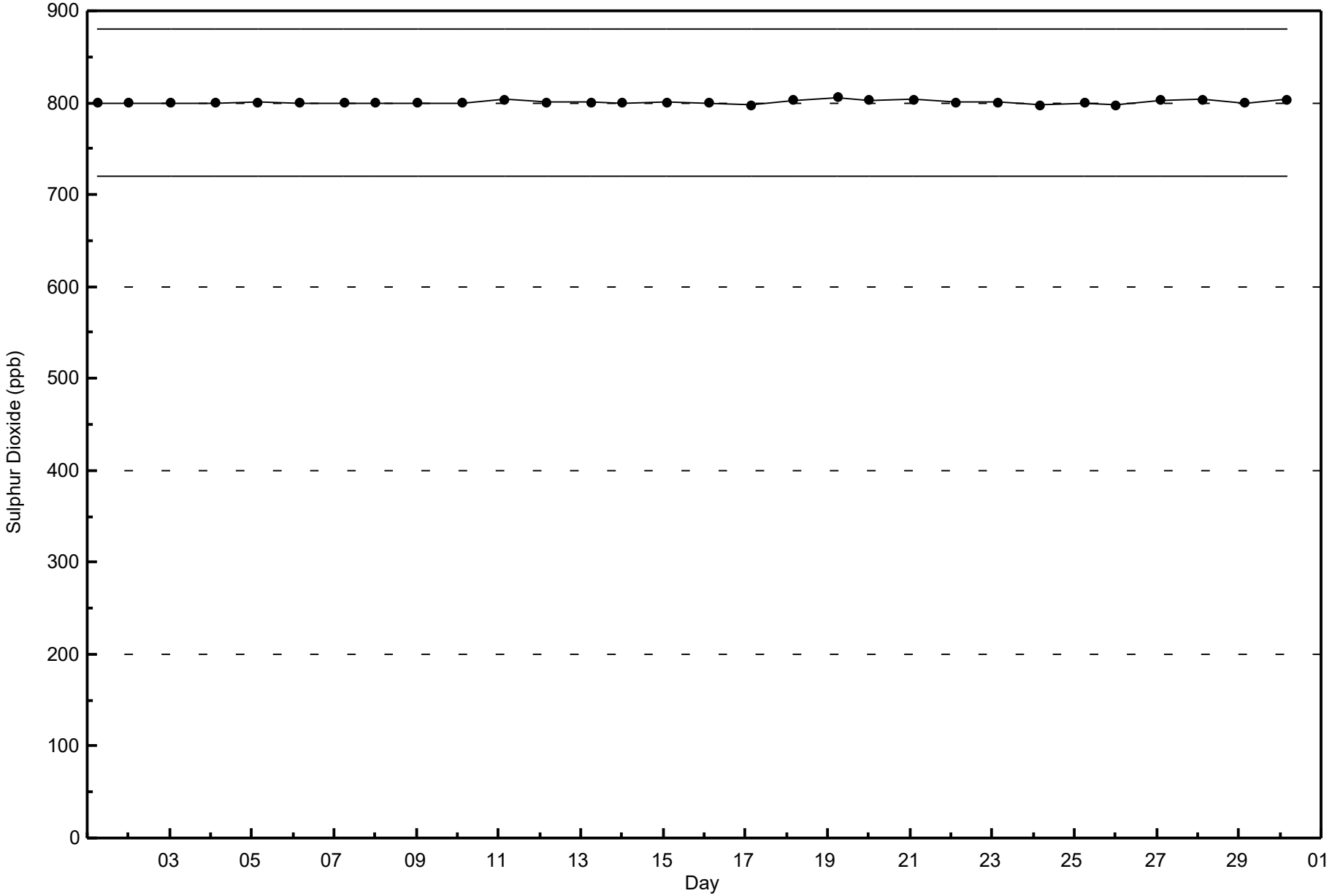


Wood Buffalo Environmental Association

Span Responses

Sulphur Dioxide (SO_2) - ppb

Firebag - September 2024



Wood Buffalo Environmental Association

Summary of Hour Averages

Hydrogen Sulphide (H_2S) - ppb

Firebag - September 2024

Number of Exceedences (AAAQO): 1-hr: 0 24-hr: 0
Maximum Value: 2.7 ppb on Sep 12 20:00 Maximum Daily Average: 0.7 ppb on Sep 12

Minimum Value: 0.0 ppb on Sep 30 16:00
Maximum Diurnal Average: 0.4 ppb at hour 23
Monthly Average: 0.20 ppb

Minimum Daily Average: 0.1 ppb on Sep 30
Minimum Diurnal Average: 0.1 ppb at hour 18
Percentiles: P_1 = 0.0 P_{10} = 0.0 Q_1 = 0.1 Median = 0.1 Q_3 = 0.2 P_{90} = 0.4 P_{99} = 1.5

Hours in Service:	720
Hours of Data:	684
Hours of Missing Data:	36
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-Sep	Z	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	0.1	0.0	0.0	0.0	0.0	0.1	0.6	0.7	0.5	0.2	0.7
2-Sep	0.2	Z	0.1	0.1	0.1	0.2	0.2	0.1	0.1	0.1	0.1	0.0	0.0	0.1	0.3	0.1	0.1	0.0	0.0	0.1	0.3	0.2	0.1	0.1	0.1	0.3
3-Sep	0.1	0.1	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	0.1	0.1	0.1	0.1	0.1	0.2
4-Sep	0.1	0.1	0.1	Z	0.2	0.1	0.9	1.0	0.5	0.4	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	0.2	1.0
5-Sep	0.2	0.1	0.1	0.1	Z	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	0.0	0.1	0.1	0.4
6-Sep	0.1	0.1	0.1	0.1	0.1	Z	0.1	0.1	0.1	0.1	0.2	0.3	0.3	0.2	0.2	0.3	0.2	0.1	0.3	0.1	0.1	0.3	0.4	0.4	0.2	0.4
7-Sep	Z	0.4	0.6	1.0	0.5	0.9	0.4	0.2	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.3	0.3	0.2	0.0	0.0	0.2	0.3	0.3	0.4	0.3	1.0
8-Sep	0.3	Z	0.4	0.7	0.8	0.7	0.7	0.6	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	0.1	0.3	0.8
9-Sep	0.2	0.2	Z	0.2	0.3	0.4	0.3	0.2	0.3	0.2	0.1	0.1	0.2	0.3	0.3	0.2	0.1	0.2	0.1	0.1	0.1	0.1	0.1	0.1	0.2	0.4
10-Sep	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	0.2	1.8	1.5	0.2	1.8
11-Sep	1.0	0.7	0.4	1.4	Z	0.8	0.2	0.4	0.2	0.1	0.1	0.1	0.1	0.0	0.0	0.0	0.0	0.1	0.1	0.2	0.6	0.4	0.1	1.0	0.3	1.4
12-Sep	0.1	0.1	0.1	0.5	0.2	Z	0.2	0.1	1.3	1.6	0.7	0.6	1.1	1.1	1.8	1.0	0.4	0.2	1.0	2.7	0.3	0.2	0.2	0.1	0.7	2.7
13-Sep	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	0.1	0.1	0.1
14-Sep	0.0	Z	0.2	0.1	0.1	0.2	0.3	0.2	0.1	0.2	0.1	0.1	0.0	0.1	0.1	0.1	0.1	0.1	0.1	0.0	0.1	0.2	0.4	0.3	0.1	0.4
15-Sep	0.2	0.2	Z	0.1	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	0.3	0.2	0.4	0.3	0.3	0.1	0.4
16-Sep	0.2	0.1	0.1	Z	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	0.6	1.4	1.1	0.3	0.6	0.3	1.4
17-Sep	0.1	0.1	0.1	0.1	Z	0.2	0.3	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	0.1	0.1	0.1	0.3
18-Sep	0.1	0.1	0.1	0.1	0.1	Z	0.2	0.1	0.1	0.2	0.4	0.4	0.2	0.2	0.2	0.2	0.1	0.1	0.1	0.2	0.2	0.2	0.2	0.7	0.2	0.7
19-Sep	Z	0.4	0.2	0.2	0.1	0.1	0.1	0.9	0.6	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.2	0.2	0.2	0.2	0.2	0.9	2.1	0.1	0.3	2.1
20-Sep	0.1	Z	0.1	0.4	1.1	0.4	0.1	0.1	0.1	0.1	C	C	C	C	C	C	0.2	0.1	0.1	0.1	0.1	0.1	0.1	0.1	--	1.1
21-Sep	0.1	0.1	Z	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	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.4
22-Sep	0.1	0.0	0.1	Z	0.1	0.1	0.1	0.1	0.1	0.1	0.0	0.0	0.0	0.0	0.1	0.2	0.2	0.2	0.2	0.2	1.2	2.6	1.7	0.8	0.3	2.6
23-Sep	0.6	0.5	0.3	0.4	Z	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	0.1	0.1	0.1	0.1	0.1	0.1	0.2	0.6
24-Sep	0.1	0.1	0.2	0.3	0.2	Z	0.4	0.4	0.4	0.3	0.2	0.1	0.1	0.1	0.1	0.1	0.1	0.0	0.1	0.1	0.2	0.3	0.1	0.2	0.2	0.4
25-Sep	Z	0.1	0.0	0.0	0.1	0.1	0.1	0.0	0.1	0.0	0.0	0.0	0.0	0.1	0.1	0.1	0.1	0.2	0.1	0.2	0.6	0.7	0.4	0.4	0.1	0.7
26-Sep	0.3	Z	0.2	0.2	0.2	0.1	0.1	0.2	0.1	0.1	0.2	0.2	0.2	0.1	0.1	0.1	0.1	0.0	0.0	0.1	0.0	0.1	0.1	0.5	0.1	0.5
27-Sep	0.9	0.5	Z	0.3	0.1	0.1	0.1	0.1	0.1	0.1	0.0	0.1	0.0	0.1	0.3	0.2	0.1	0.0	0.1	0.0	0.0	0.1	0.1	0.1	0.1	0.9
28-Sep	0.2	0.5	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	0.1	0.1	0.2	0.1	0.1	0.1	0.1	0.1	0.5
29-Sep	0.1	0.1	0.1	0.1	Z	0.1	0.0	0.0	0.0	1.1	0.4	0.2	0.3	1.0	0.0	0.0	0.0	0.1	0.0	0.0	0.0	0.0	0.4	0.3	0.2	1.1
30-Sep	0.1	0.0	0.0	0.0	0.0	Z	0.1	0.1	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	0.2	0.1	0.1	0.1	0.2
	0.2	0.2	0.2	0.3	0.2	0.2	0.2	0.2	0.2	0.2	0.1	0.1	0.1	0.2	0.2	0.1	0.1	0.1	0.1	0.2	0.2	0.3	0.4	0.3	Diurnal Average	
	1.0	0.7	0.6	1.4	1.1	0.9	0.9	1.0	1.3	1.6	0.7	0.6	1.1	1.1	1.8	1.0	0.4	0.2	1.0	2.7	1.4	2.6	2.1	1.5	Diurnal Maximum	

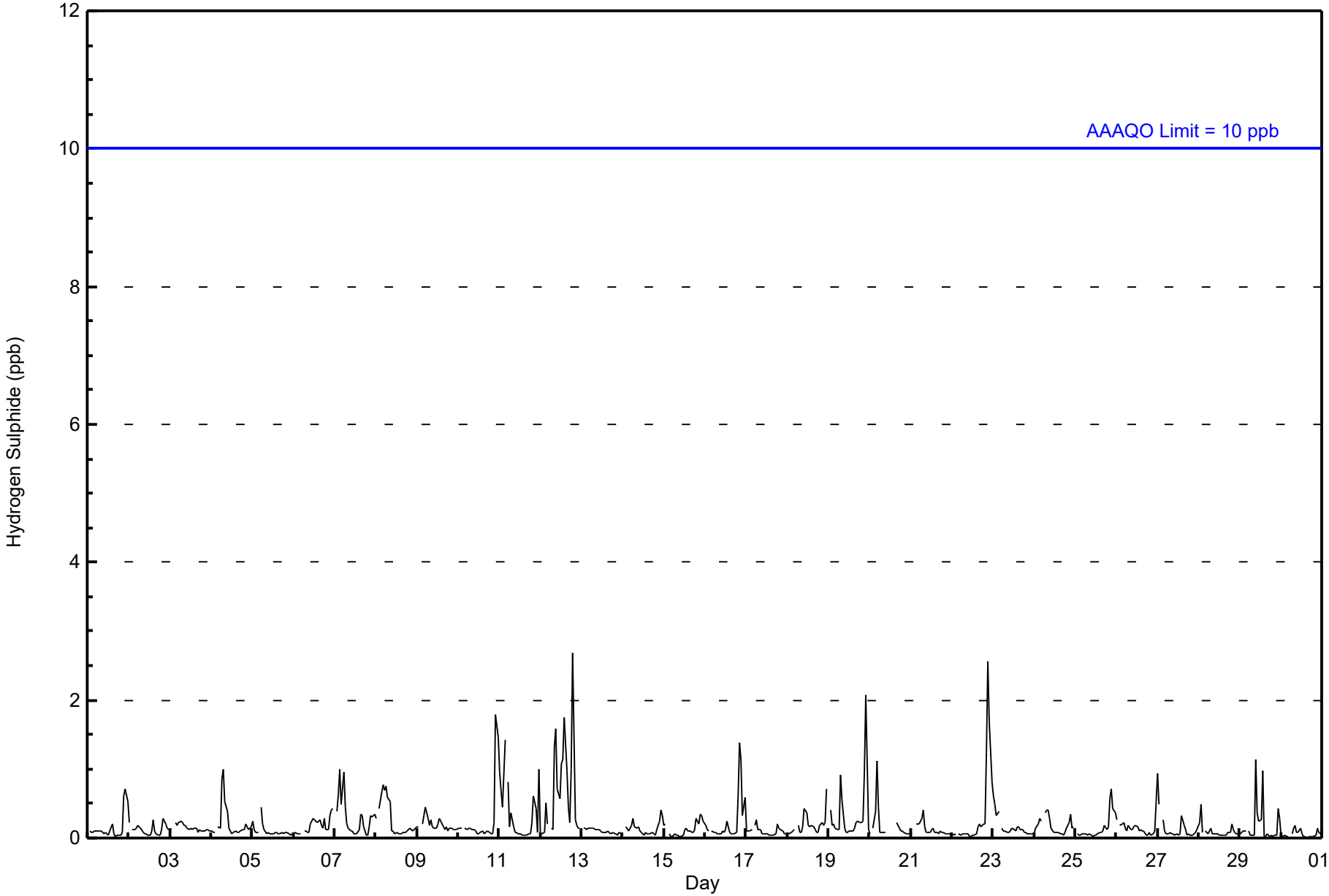
Z - zerospan C - Calibration
Alberta Ambient Air Quality Objectives (AAAQO): 1-hr 10 ppb 24-hr 3 ppb

Wood Buffalo Environmental Association

Hourly Averages

Hydrogen Sulphide (H_2S) - ppb

Firebag - September 2024



Concentration Ranges (ppb)	Number of Hours	%	Cumulative %
0 - 2	682	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: 684

Total Number of Hours: 720

Wood Buffalo Environmental Association

Frequency Distribution

Hydrogen Sulphide (H_2S) - ppb

Firebag - September 2024

Concentration Ranges (ppb)	Wind Direction																
	N	NNE	NE	ENE	E	ESE	SE	SSE	S	SSW	SW	WSW	W	WNW	NW	NNW	**Totals**
0 - 2	42	36	15	7	13	26	33	48	52	94	79	60	57	54	22	44	682
3 - 4	1	0	0	0	1	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	43	36	15	7	14	26	33	48	52	94	79	60	57	54	22	44	684

Total Number of Valid Hours: 684

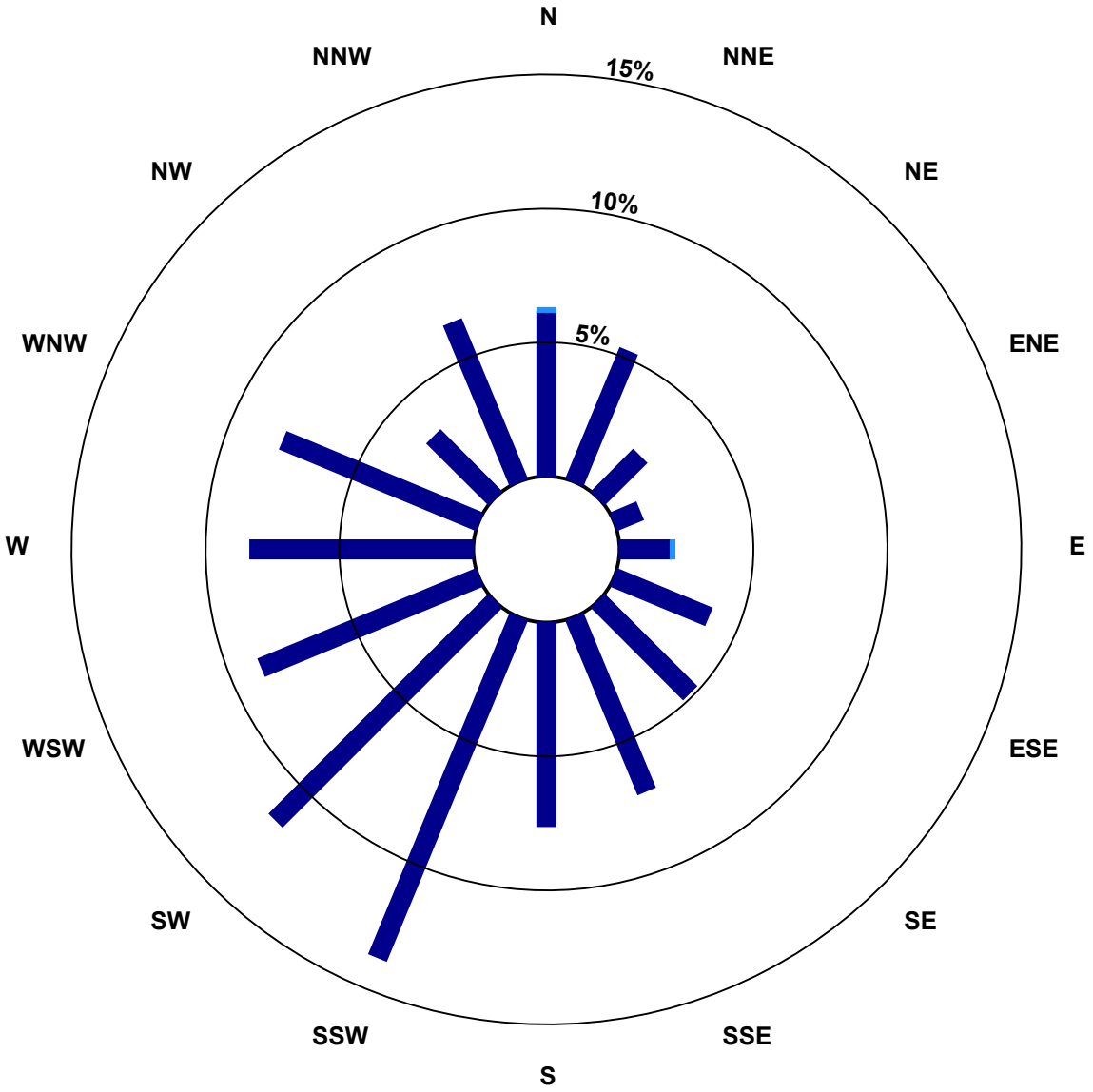
Total Number of Hours: 720

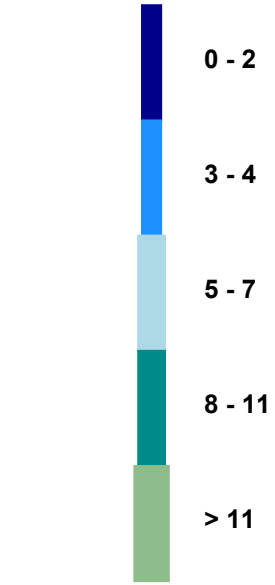
Wood Buffalo Environmental Association

Wind Rose Sep 2024

Hydrogen Sulphide (H_2S) - ppb

Firebag





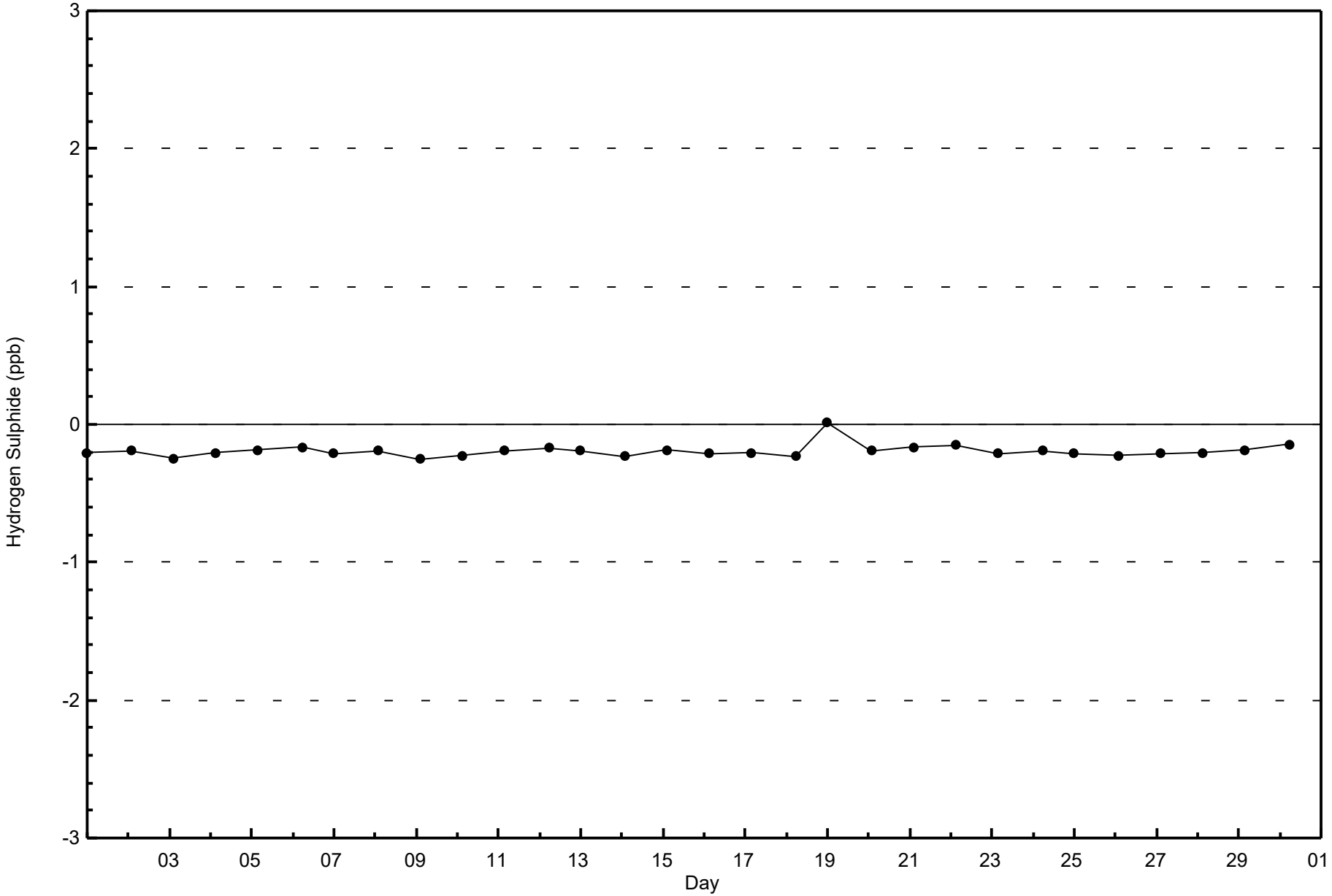
Total Number of Valid Hours: 684

Wood Buffalo Environmental Association

Zero Responses

Hydrogen Sulphide (H_2S) - ppb

Firebag - September 2024

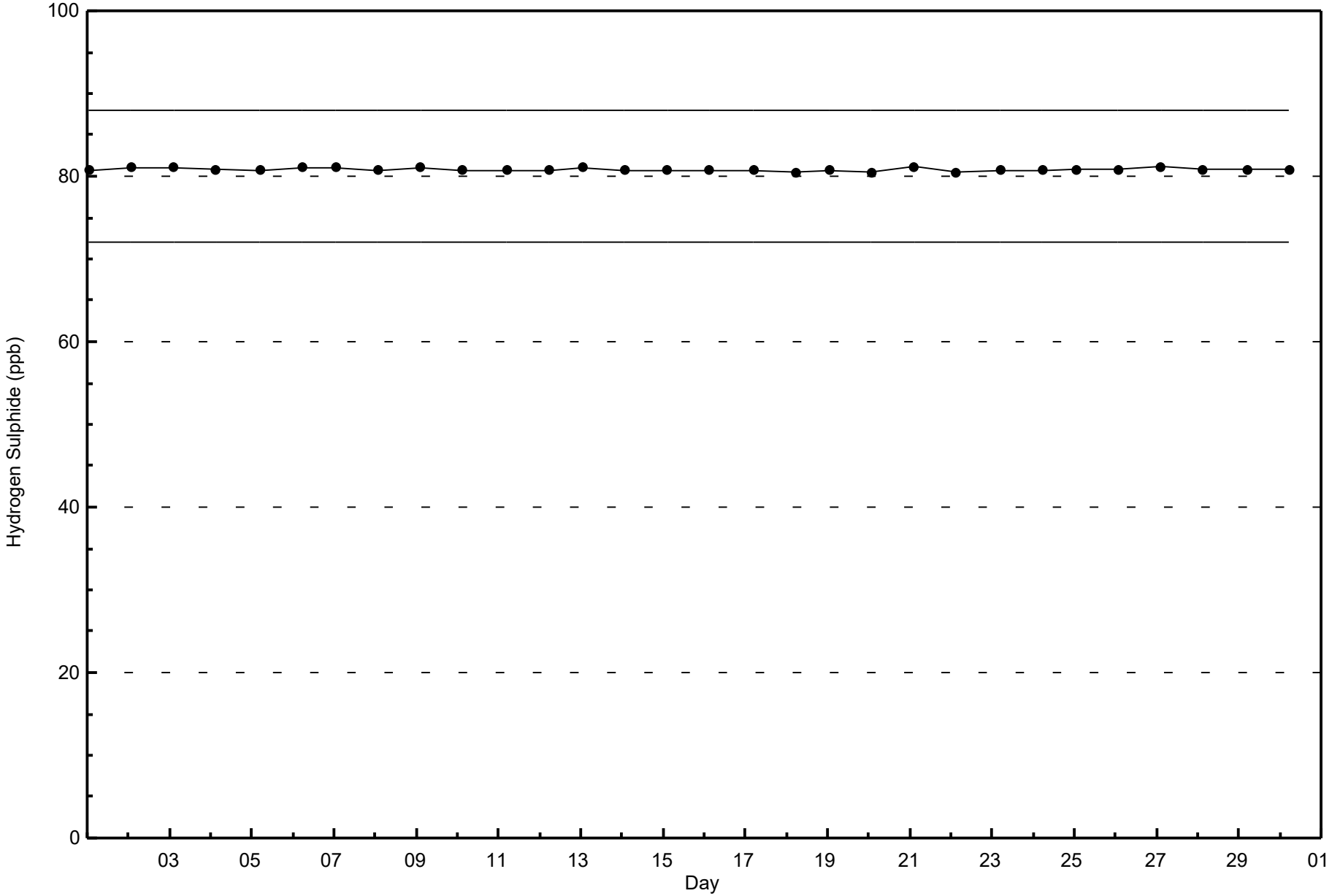


Wood Buffalo Environmental Association

Span Responses

Hydrogen Sulphide (H_2S) - ppb

Firebag - September 2024



Wood Buffalo Environmental Association

Summary of Hour Averages

Total Hydrocarbons (THC) - ppm

Firebag - September 2024

Maximum Value: 3.1 ppm on Sep 14 06:00

Maximum Daily Average: 2.4 ppm on Sep 14

Minimum Value: 2.1 ppm on Sep 25 16:00

Minimum Daily Average: 2.2 ppm on Sep 17

Maximum Diurnal Average: 2.4 ppm at hour 5

Minimum Diurnal Average: 2.2 ppm at hour 11

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} = 2.7

Hours in Service:	720
Hours of Data:	671
Hours of Missing Data:	49
Hours of Calibration:	32
Percent Operational Time:	97.6

Day	Hourly Period Ending At (MST)																								Daily	Daily
	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24	Average	Maximum
1-Sep	2.3	2.2	2.2	2.3	2.3	Z	2.2	2.2	2.2	2.2	2.2	2.1	2.1	2.2	2.1	2.1	2.1	2.2	2.2	2.2	2.3	2.3	2.4	2.4	2.2	2.4
2-Sep	Z	2.4	2.3	2.3	2.4	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	2.2	2.3	2.3	2.2	2.2	2.2	2.4
3-Sep	2.2	Z	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	2.2	2.2	2.2	2.2	2.3	2.3	2.2	2.3
4-Sep	2.3	2.3	Z	2.4	2.3	2.3	2.4	2.5	2.4	2.3	2.3	2.3	2.2	2.2	2.3	2.3	2.3	2.3	2.3	2.3	2.4	2.4	2.3	2.4	2.3	2.5
5-Sep	2.5	2.3	2.3	Z	2.4	2.4	2.4	2.2	2.2	2.2	2.2	2.2	2.2	2.2	2.2	2.2	2.2	2.2	2.2	2.2	2.2	2.2	2.2	2.2	2.3	2.5
6-Sep	2.2	2.2	2.2	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	2.3	2.3	2.3	2.4	2.2	2.4
7-Sep	2.6	2.7	2.7	2.9	2.7	Z	2.6	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	2.4	2.3	2.9
8-Sep	Z	2.4	2.4	2.5	2.6	3.0	2.8	2.6	2.3	2.2	2.2	2.1	2.1	2.1	2.1	2.2	2.2	2.2	2.2	2.3	2.3	UO	UO	UO	2.3	3.0
9-Sep	UO	UO	UO	UO	UO	UO	UO	UO	UO	UO	M	M	2.4	2.6	2.5	2.3	2.2	2.2	2.2	2.3	2.3	2.3	2.3	2.2	--	2.6
10-Sep	2.3	2.2	Z	2.3	2.3	2.2	2.3	2.3	2.2	2.2	C	C	C	2.2	2.2	2.2	2.2	2.2	2.2	2.3	2.2	2.3	2.4	2.5	2.3	2.5
11-Sep	2.5	2.4	2.4	Z	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	2.3	2.3	2.3	2.3	2.3	2.3	2.3	2.5
12-Sep	2.3	2.3	2.3	2.3	Z	2.2	2.2	2.2	2.3	2.3	2.2	2.3	2.3	2.3	2.3	2.3	2.2	2.3	2.4	2.5	2.3	2.3	2.3	2.2	2.3	2.5
13-Sep	2.3	2.3	2.3	2.3	2.3	Z	2.3	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	2.2	2.2	2.3	2.3	2.3	2.3
14-Sep	Z	2.3	2.3	2.3	2.7	3.1	3.0	2.6	2.4	2.3	2.3	2.2	2.2	2.3	2.2	2.2	2.3	2.3	2.3	2.3	2.3	2.4	2.5	2.6	2.4	3.1
15-Sep	2.7	Z	2.4	2.3	2.3	2.3	2.3	2.2	2.2	2.2	2.2	2.2	2.3	2.3	2.3	2.3	2.2	2.3	2.3	2.5	2.4	2.4	2.3	2.3	2.3	2.7
16-Sep	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	2.1	2.2	2.2	2.3	2.3	2.3	2.3	2.3	2.2	2.3
17-Sep	2.2	2.2	2.2	Z	2.3	2.3	2.3	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	2.3	2.2	2.2	2.2	2.3
18-Sep	2.2	2.3	2.2	2.2	Z	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	2.4	2.5	2.5	2.5	2.6	2.3	2.6
19-Sep	2.4	2.5	2.5	2.6	2.6	Z	2.2	2.5	2.4	2.3	2.2	2.2	2.2	2.2	2.2	2.2	2.3	2.3	2.4	2.4	2.4	2.3	2.4	2.2	2.4	2.6
20-Sep	Z	2.3	2.3	2.3	2.5	2.4	2.2	2.2	2.2	2.2	2.2	2.2	M	M	2.2	2.2	2.2	2.2	2.3	2.3	2.3	2.3	2.3	2.3	2.3	2.5
21-Sep	2.3	Z	2.3	2.3	2.3	2.4	2.5	2.5	2.2	2.2	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	2.5
22-Sep	2.3	2.2	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	2.3	2.2	2.3	2.3	2.4	2.4	2.3	2.4
23-Sep	2.5	2.5	2.4	Z	2.4	2.3	2.2	2.2	2.2	2.2	2.2	2.2	2.2	2.3	2.2	2.3	2.2	2.3	2.2	2.2	2.2	2.2	2.2	2.2	2.3	2.5
24-Sep	2.2	2.2	2.3	2.3	Z	2.3	2.3	2.3	2.2	2.2	2.2	2.1	2.1	2.2	2.2	2.2	2.3	2.2	2.3	2.5	2.6	2.5	2.4	2.3	2.3	2.6
25-Sep	2.3	2.3	2.3	2.3	2.3	Z	2.3	2.2	2.2	2.2	2.1	2.1	2.1	2.1	2.1	2.1	2.1	2.2	2.2	2.2	2.3	2.3	2.3	2.3	2.2	2.3
26-Sep	Z	2.3	2.3	2.5	2.4	2.3	2.2	2.2	2.2	2.3	2.3	2.3	2.3	2.3	2.3	2.2	2.3	2.2	2.3	2.3	2.3	2.3	2.3	2.3	2.3	2.5
27-Sep	2.4	Z	2.3	2.4	2.3	2.2	2.2	2.2	2.1	2.1	2.1	2.2	2.2	2.2	2.3	2.3	2.2	2.2	2.2	2.2	2.2	2.2	2.2	2.3	2.2	2.4
28-Sep	2.3	2.3	Z	2.2	2.2	2.1	2.2	2.3	2.1	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	2.2	2.3
29-Sep	2.3	2.3	2.4	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	2.3	2.3	2.5	2.4	2.3	2.5
30-Sep	2.3	2.3	2.3	2.3	Z	2.3	2.3	2.4	2.4	2.3	2.3	2.3	2.4	2.3	2.4	2.3	2.3	2.3	2.3	2.3	2.3	2.6	2.4	2.4	2.3	2.6
	2.3	2.3	2.3	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	2.3	2.3	2.3	2.3	2.3	2.3	Diurnal Average	
	2.7	2.7	2.7	2.9	2.7	3.1	3.0	2.6	2.4	2.3	2.3	2.4	2.4	2.6	2.5	2.3	2.3	2.3	2.4	2.5	2.6	2.6	2.5	2.6	Diurnal Maximum	

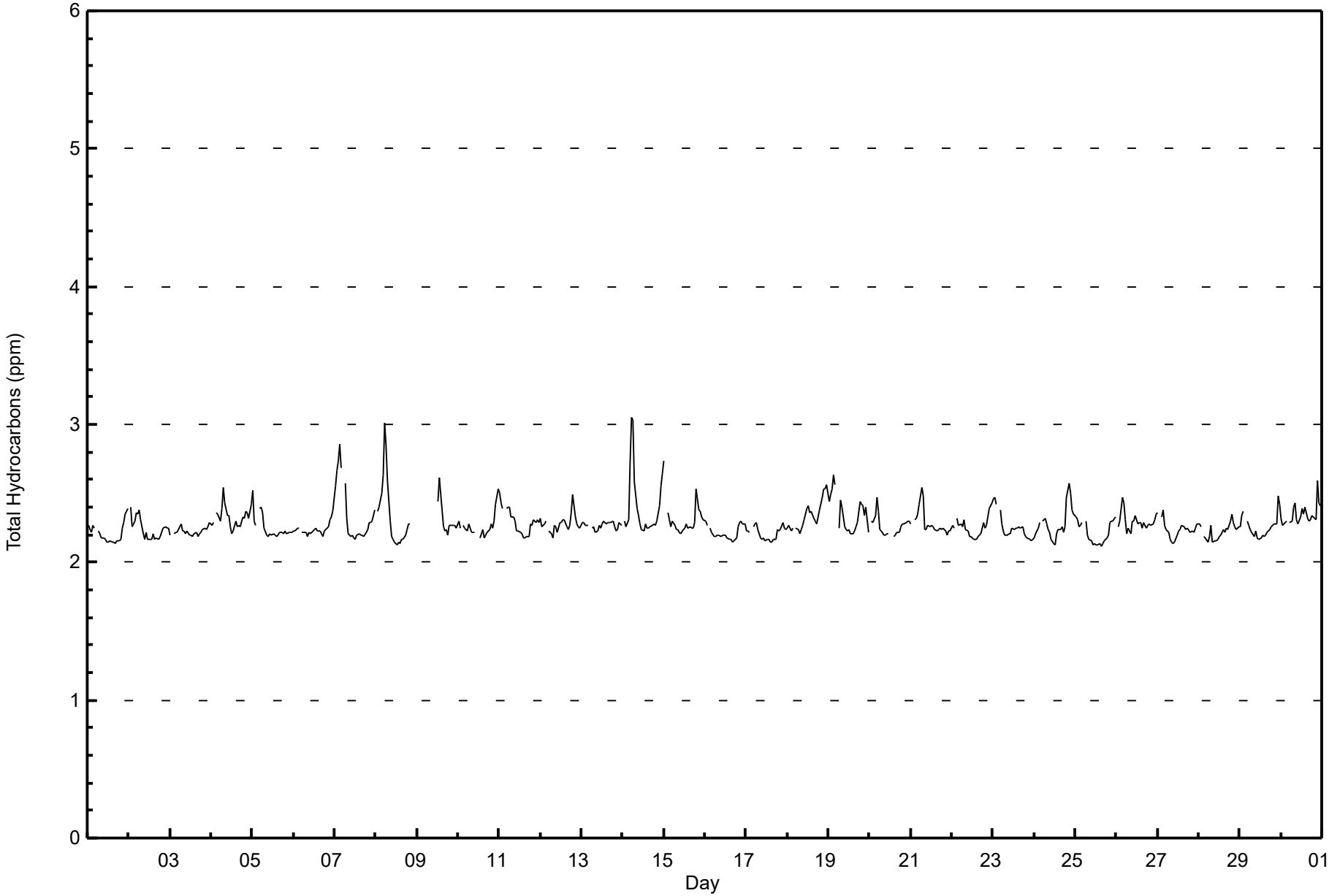
Z - zerospan C - Calibration M - Maintenance UO - Unstable Operation

Wood Buffalo Environmental Association

Hourly Averages

Total Hydrocarbons (THC) - ppm

Firebag - September 2024



Concentration Ranges (ppm)	Number of Hours	%	Cumulative %
0 - 2.0	0	0.00	0.00
2.1 - 3.0	670	99.85	99.85
3.1 - 10.0	1	0.15	100.00
> 10.0	0	0.00	100.00

Total Number of Valid Hours: 671

Total Number of Hours: 720

Wood Buffalo Environmental Association

Frequency Distribution

Total Hydrocarbons (THC) - ppm

Firebag - September 2024

Concentration Ranges (ppm)	Wind Direction																
	N	NNE	NE	ENE	E	ESE	SE	SSE	S	SSW	SW	WSW	W	WNW	NW	NNW	**Totals**
0 - 2.0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
2.1 - 3.0	46	34	16	8	13	25	33	47	50	93	76	63	52	53	22	39	670
3.1 - 10.0	0	0	0	0	0	0	0	0	0	0	0	0	0	1	0	0	1
> 10.0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Totals	46	34	16	8	13	25	33	47	50	93	76	63	52	54	22	39	671

Total Number of Valid Hours: 671

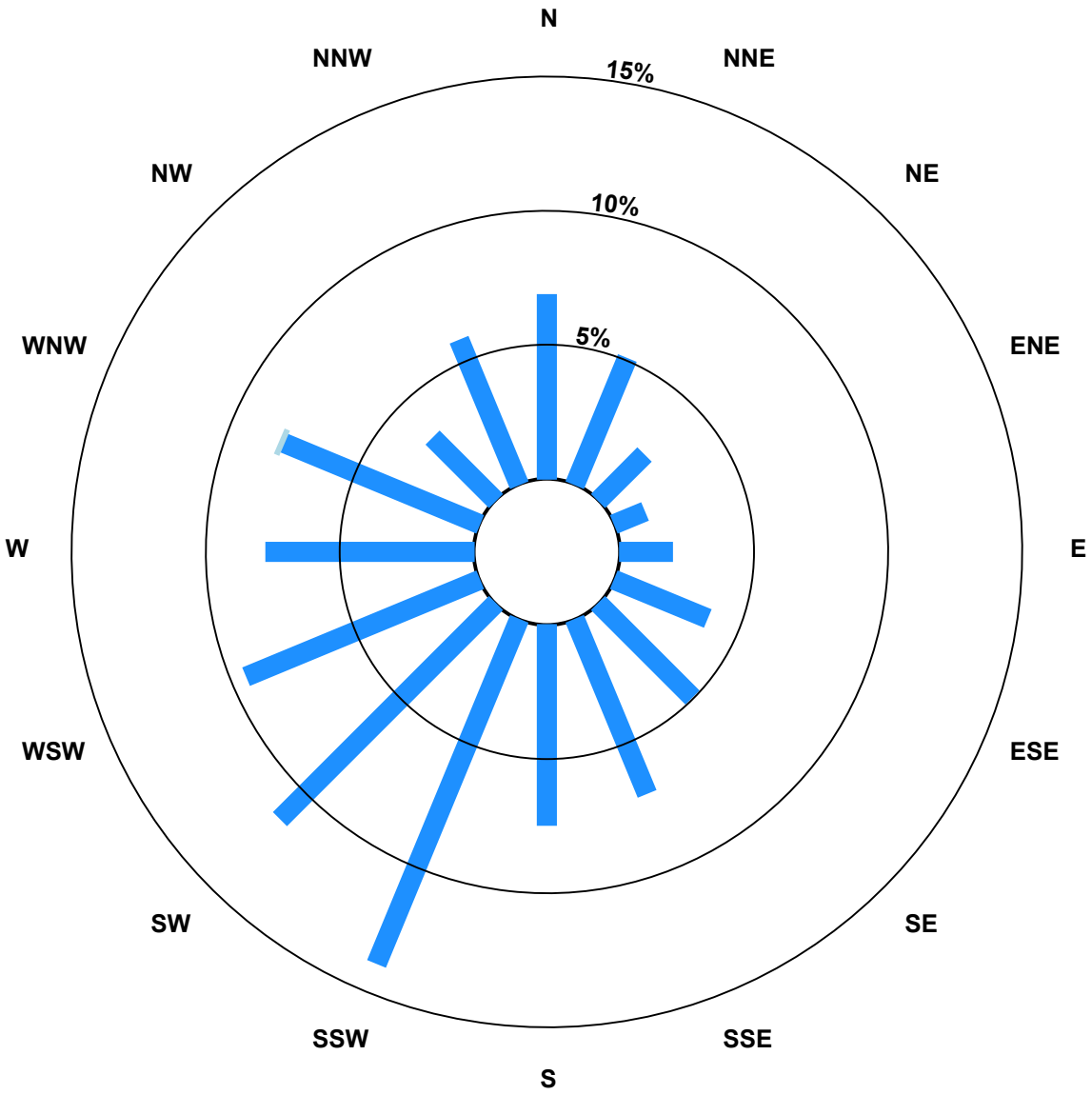
Total Number of Hours: 720

Wood Buffalo Environmental Association

Wind Rose Sep 2024

Total Hydrocarbons (THC) - ppm

Firebag



Classes (ppm)

- 0 - 2.0
- 2.1 - 3.0
- 3.1 - 10.0
- > 10.0

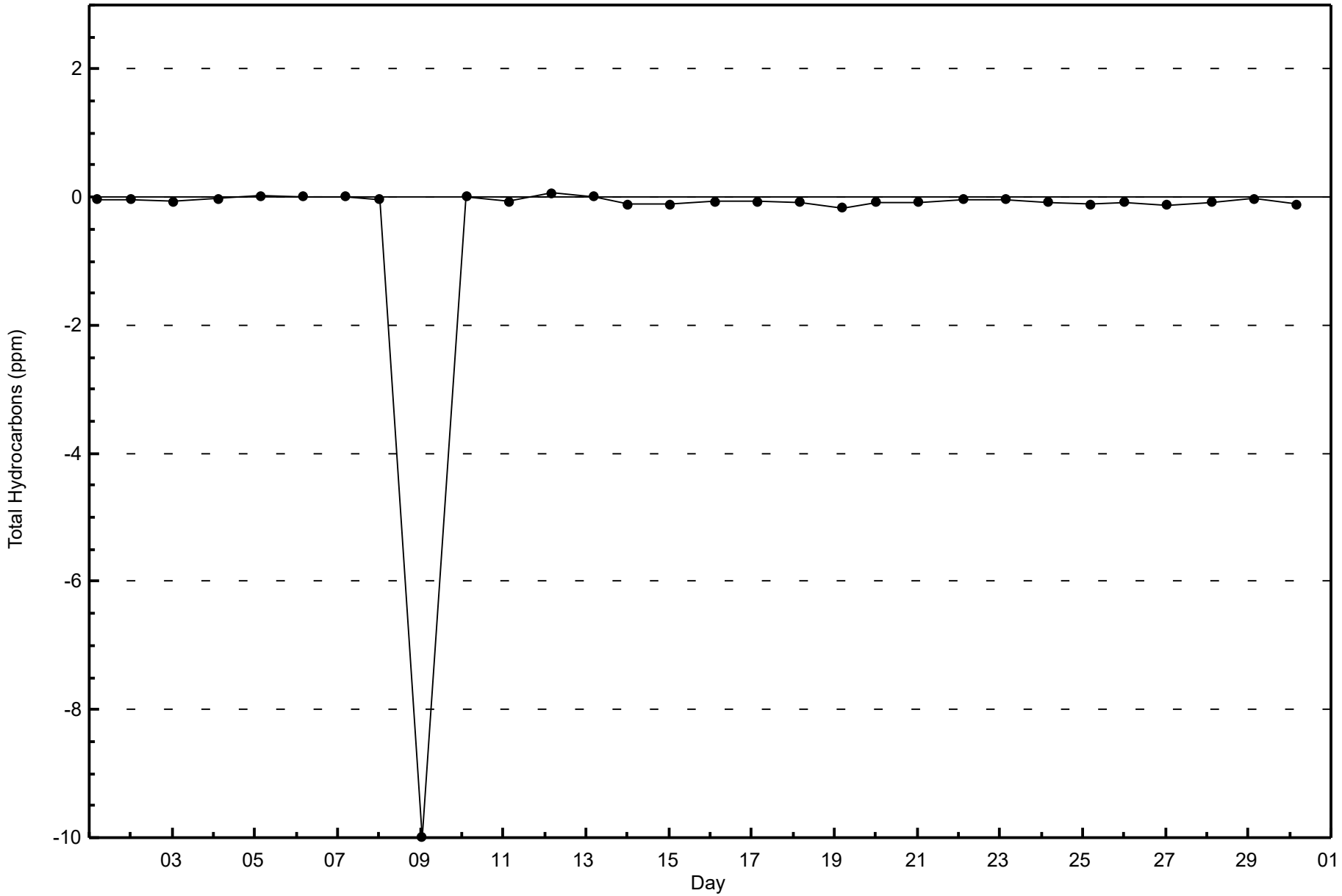
Total Number of Valid Hours: 671

Wood Buffalo Environmental Association

Zero Responses

Total Hydrocarbons (THC) - ppm

Firebag - September 2024

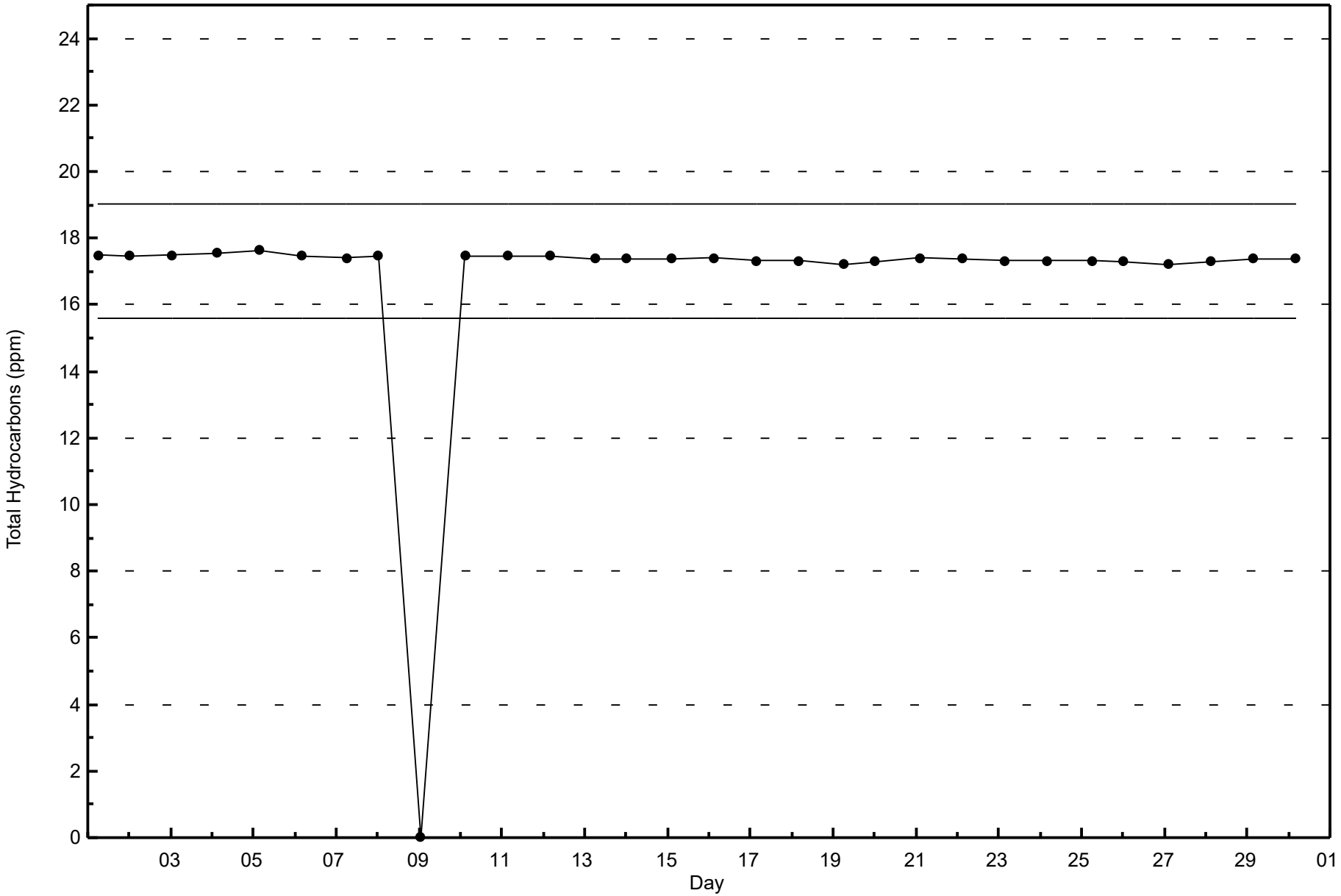


Wood Buffalo Environmental Association

Span Responses

Total Hydrocarbons (THC) - ppm

Firebag - September 2024



Wood Buffalo Environmental Association

Summary of Hour Averages

Nitric Oxide (NO) - ppb

Firebag - September 2024

Maximum Value: 13.2 ppb on Sep 21 07:00

Maximum Daily Average: 1.6 ppb on Sep 21

Minimum Value: 0.0 ppb on Sep 27 07:00

Minimum Daily Average: 0.0 ppb on Sep 20

Maximum Diurnal Average: 1.8 ppb at hour 6

Minimum Diurnal Average: 0.1 ppb at hour 24

Monthly Average: 0.45 ppb

Percentiles: P_1 = 0.0 P_{10} = 0.0 Q_1 = 0.1 Median = 0.1 Q_3 = 0.3 P_{90} = 0.9 P_{99} = 7.4

Hours in Service:	720
Hours of Data:	683
Hours of Missing Data:	37
Hours of Calibration:	35
Percent Operational Time:	99.7

Day	Hourly Period Ending At (MST)																								Daily	Daily
	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24	Average	Maximum
1-Sep	0.1	0.0	0.0	Z	0.1	0.1	0.1	0.6	0.4	0.2	0.8	0.2	0.2	0.2	0.2	0.3	0.2	0.2	0.1	0.1	0.1	0.1	0.1	0.1	0.2	0.8
2-Sep	0.1	0.1	0.1	0.1	Z	9.2	0.6	1.7	1.0	0.2	0.1	0.1	0.1	0.2	0.3	0.2	0.2	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.7	9.2
3-Sep	0.1	0.1	0.1	0.1	0.1	Z	0.1	0.1	0.1	0.1	0.2	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.0	0.1	0.0	0.1	0.1	0.1	0.1	0.2
4-Sep	Z	0.0	0.0	0.0	0.1	0.1	0.8	3.6	2.6	2.7	2.0	0.5	0.1	0.4	0.8	0.6	0.4	0.1	0.2	0.1	0.1	0.0	0.1	0.1	0.7	3.6
5-Sep	0.8	Z	0.0	0.0	0.0	0.4	0.9	1.8	0.3	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	0.3	1.8
6-Sep	0.1	0.1	Z	0.1	0.1	0.9	0.1	0.2	0.2	0.3	0.9	0.9	1.0	0.8	1.0	1.2	0.8	0.2	0.2	0.1	0.1	0.1	0.1	0.1	0.4	1.2
7-Sep	0.2	1.2	0.7	Z	1.1	5.8	1.0	1.3	0.9	0.4	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	0.6	5.8
8-Sep	0.1	0.1	0.1	0.1	Z	12.1	12.5	2.7	0.4	0.2	0.2	0.1	0.1	0.1	0.1	0.1	0.2	0.2	0.2	0.2	0.1	0.1	0.1	0.1	1.3	12.5
9-Sep	0.1	0.1	0.1	0.1	0.2	Z	0.4	0.3	3.3	0.2	C	C	C	C	C	0.1	0.0	0.1	0.0	0.0	0.0	0.0	0.0	0.0	0.3	3.3
10-Sep	Z	0.0	0.0	0.0	0.0	0.0	0.7	1.0	0.8	0.5	0.4	0.2	0.3	0.3	0.5	0.1	0.1	0.2	0.1	0.0	0.0	0.0	0.1	0.1	0.2	1.0
11-Sep	0.1	Z	0.1	0.3	0.9	0.6	1.7	0.5	0.4	0.2	0.1	0.1	0.1	0.0	0.0	0.2	0.1	0.0	0.2	0.2	0.1	0.1	0.1	0.1	0.3	1.7
12-Sep	0.1	0.1	Z	0.2	0.6	0.7	1.0	0.2	0.4	0.5	1.0	0.4	0.4	0.4	0.3	0.2	0.4	0.4	0.5	0.2	0.1	0.1	0.1	0.1	0.4	1.0
13-Sep	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	0.2
14-Sep	0.2	0.2	0.1	0.2	Z	7.2	8.6	3.4	2.0	2.2	1.1	0.5	0.4	0.8	0.4	0.3	0.3	0.1	0.1	0.1	0.1	0.1	0.1	0.1	1.2	8.6
15-Sep	0.8	0.3	0.0	0.0	0.0	Z	0.1	0.1	0.1	0.1	0.1	0.3	1.0	1.2	0.7	0.5	0.3	0.2	0.2	0.2	0.1	0.1	0.1	0.1	0.3	1.2
16-Sep	Z	0.1	0.1	0.1	0.1	0.1	0.1	0.2	0.2	0.6	0.9	0.8	0.7	0.6	0.3	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.2	0.9
17-Sep	0.1	Z	0.1	0.1	0.1	2.3	0.9	0.6	0.5	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	0.1	0.1	0.3	2.3
18-Sep	0.1	0.1	Z	0.1	0.3	2.8	0.1	0.3	0.7	0.8	0.5	1.3	1.9	1.4	1.7	0.8	0.5	0.2	0.1	0.1	0.1	0.1	0.1	0.1	0.6	2.8
19-Sep	0.1	0.1	0.1	Z	0.4	0.6	0.1	5.1	7.9	1.3	0.3	0.2	0.2	0.2	0.2	0.3	0.4	0.2	0.1	0.1	0.1	0.0	0.1	0.1	0.8	7.9
20-Sep	0.1	0.0	0.1	0.0	Z	0.0	0.0	0.0	0.0	0.0	0.0	0.0	M	M	0.0	0.0	0.0	0.0	0.0	0.1	0.0	0.0	0.0	0.0	0.0	0.1
21-Sep	0.0	0.1	0.0	2.1	3.1	Z	13.2	11.5	1.7	0.4	0.3	0.7	0.8	0.6	0.3	0.1	0.1	0.1	0.2	0.1	0.1	0.1	0.1	0.1	1.6	13.2
22-Sep	Z	0.1	0.1	0.1	0.3	0.4	0.3	0.9	0.6	0.3	0.2	0.2	0.4	0.6	0.7	0.5	0.3	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.3	0.9
23-Sep	0.1	Z	0.2	0.4	0.1	0.1	0.1	0.1	0.1	0.1	0.2	0.8	0.7	0.5	0.2	0.4	0.3	0.2	0.1	0.1	0.1	0.1	0.1	0.1	0.2	0.8
24-Sep	0.1	0.1	Z	0.1	0.1	0.1	0.5	3.7	2.5	1.4	0.8	0.4	0.3	0.6	0.6	0.5	0.4	0.1	0.1	0.4	0.2	0.1	0.1	0.1	0.6	3.7
25-Sep	0.1	0.1	0.1	Z	0.3	0.9	0.9	0.3	0.1	0.1	0.1	0.2	0.1	0.1	0.2	0.2	0.1	0.3	0.1	0.1	0.1	0.1	0.1	0.1	0.2	0.9
26-Sep	0.1	0.1	0.9	1.1	Z	0.1	0.2	0.2	0.1	0.3	0.6	1.0	0.9	0.7	1.0	0.5	0.3	0.1	0.0	0.0	0.0	0.0	0.0	0.0	0.4	1.1
27-Sep	0.0	0.0	0.0	0.1	0.4	Z	0.0	0.0	0.1	0.1	0.0	2.1	0.0	0.1	0.4	0.3	0.2	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.2	2.1
28-Sep	Z	0.1	0.0	0.0	0.0	0.0	0.1	0.4	0.1	0.1	0.2	0.1	0.1	0.1	0.2	0.2	0.1	0.2	0.5	0.1	0.1	0.1	0.0	0.1	0.1	0.5
29-Sep	0.1	Z	0.2	0.2	2.9	1.2	0.7	0.6	0.4	1.7	1.0	0.8	0.3	0.2	0.1	0.1	0.2	0.1	0.1	0.1	0.1	0.2	0.3	0.1	0.5	2.9
30-Sep	0.1	0.1	Z	0.0	0.0	0.1	0.1	2.2	4.5	1.9	0.8	1.3	1.5	0.9	0.5	0.4	0.1	0.0	0.0	0.0	0.1	0.3	0.0	0.0	0.7	4.5
	0.1	0.1	0.1	0.2	0.5	1.8	1.5	1.5	1.1	0.6	0.5	0.5	0.4	0.4	0.4	0.3	0.2	0.1	0.1	0.1	0.1	0.1	0.1	0.1	Diurnal Average	
	0.8	1.2	0.9	2.1	3.1	12.1	13.2	11.5	7.9	2.7	2.0	2.1	1.9	1.4	1.7	1.2	0.8	0.4	0.5	0.4	0.2	0.3	0.3	0.1	Diurnal Maximum	

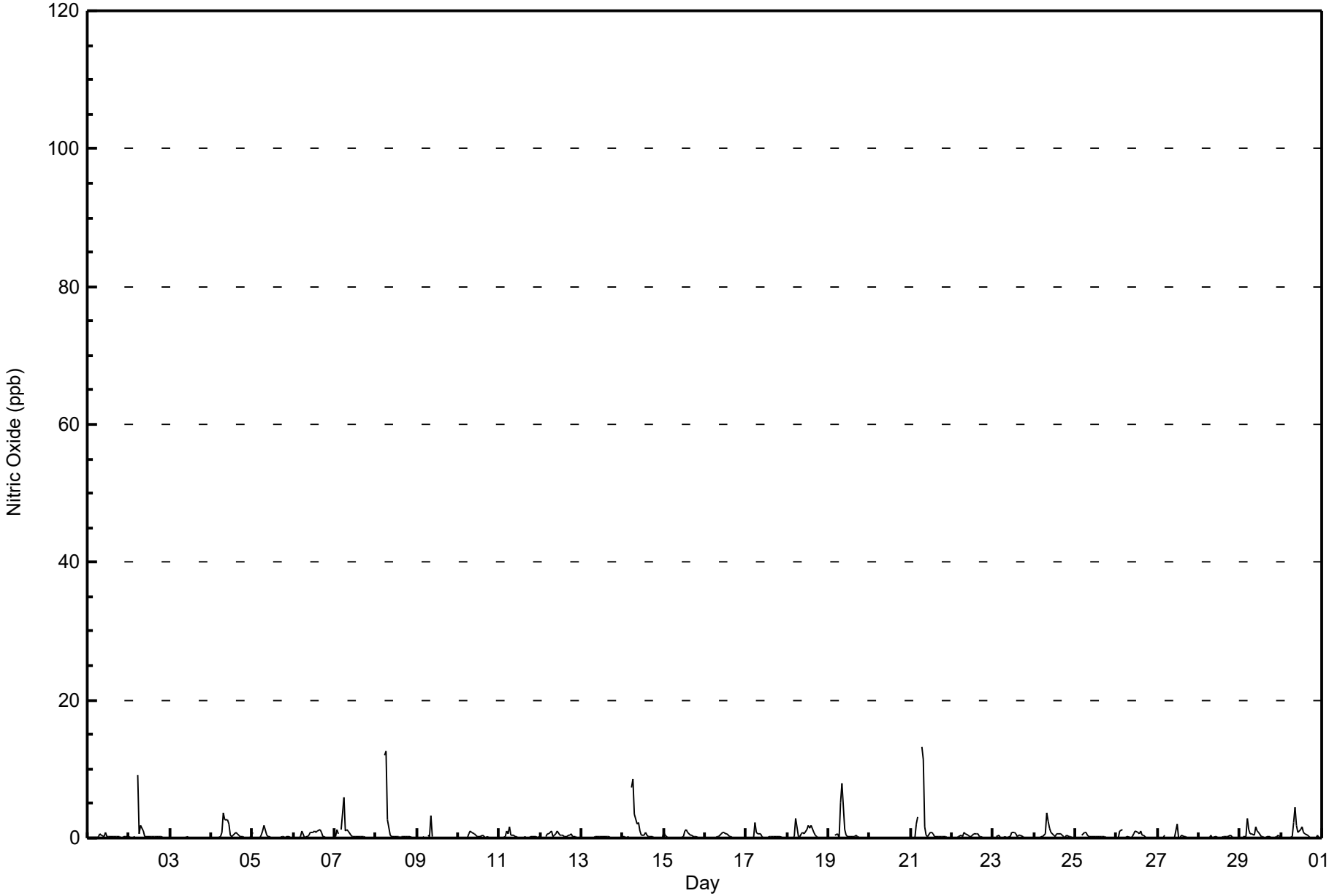
Z - zerospan C - Calibration M - Maintenance

Wood Buffalo Environmental Association

Hourly Averages

Nitric Oxide (NO) - ppb

Firebag - September 2024



Concentration Ranges (ppb)	Number of Hours	%	Cumulative %
0 - 20	683	100.00	100.00
21 - 40	0	0.00	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: 683

Total Number of Hours: 720

Wood Buffalo Environmental Association

Frequency Distribution

Nitric Oxide (NO) - ppb

Firebag - September 2024

Concentration Ranges (ppb)	Wind Direction																
	N	NNE	NE	ENE	E	ESE	SE	SSE	S	SSW	SW	WSW	W	WNW	NW	NNW	**Totals**
0 - 20	43	36	15	8	13	27	33	50	48	98	77	64	56	50	24	41	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	43	36	15	8	13	27	33	50	48	98	77	64	56	50	24	41	683

Total Number of Valid Hours: 683

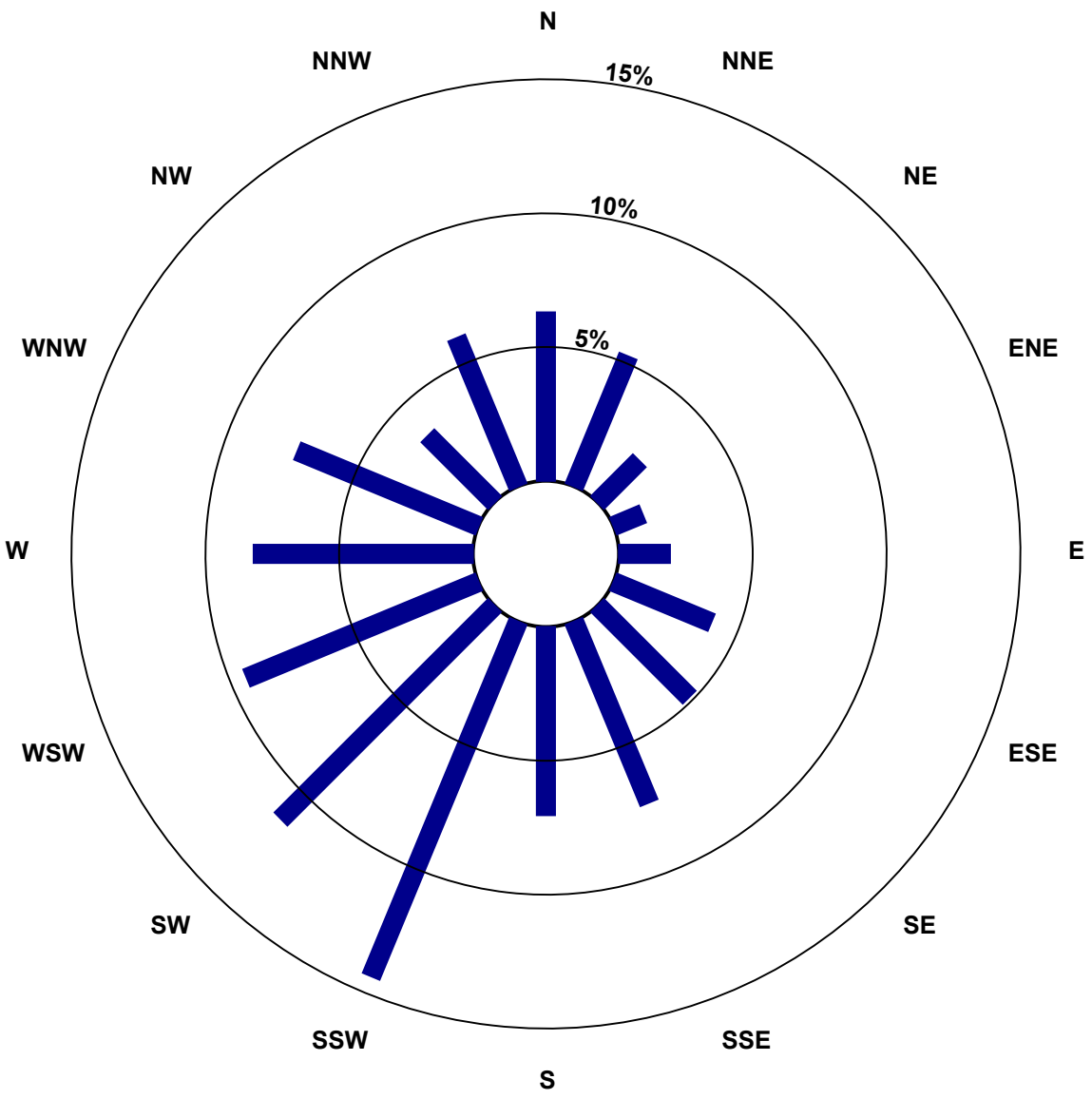
Total Number of Hours: 720

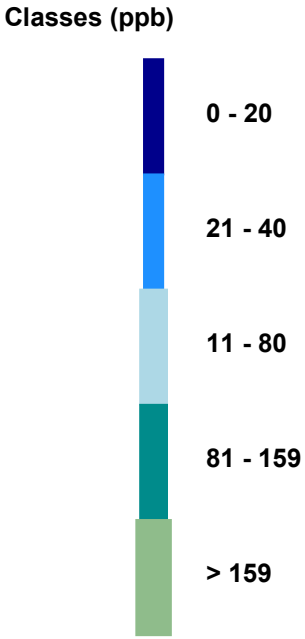
Wood Buffalo Environmental Association

Wind Rose Sep 2024

Nitric Oxide (NO) - ppb

Firebag





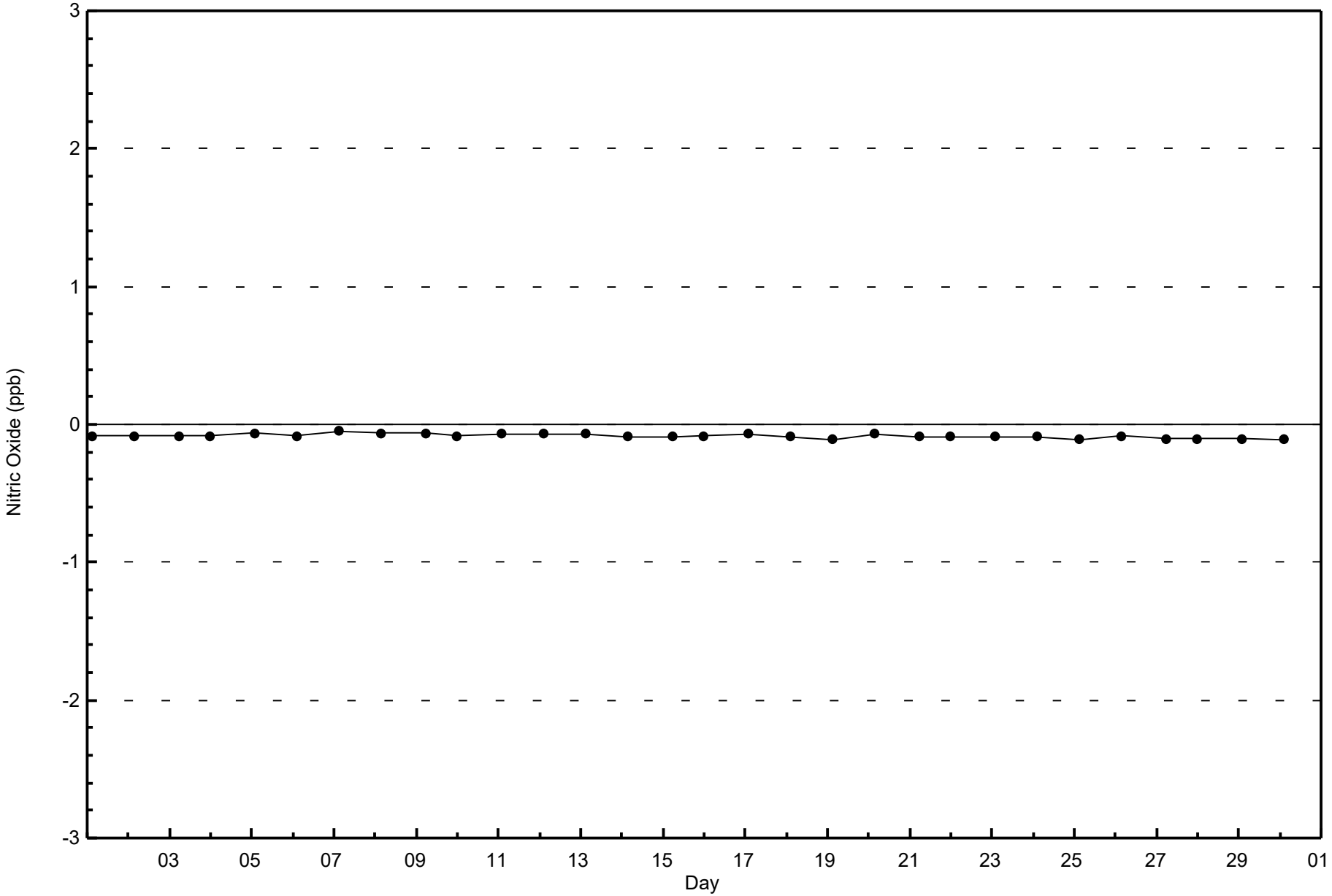
Total Number of Valid Hours: 683

Wood Buffalo Environmental Association

Zero Responses

Nitric Oxide (NO) - ppb

Firebag - September 2024

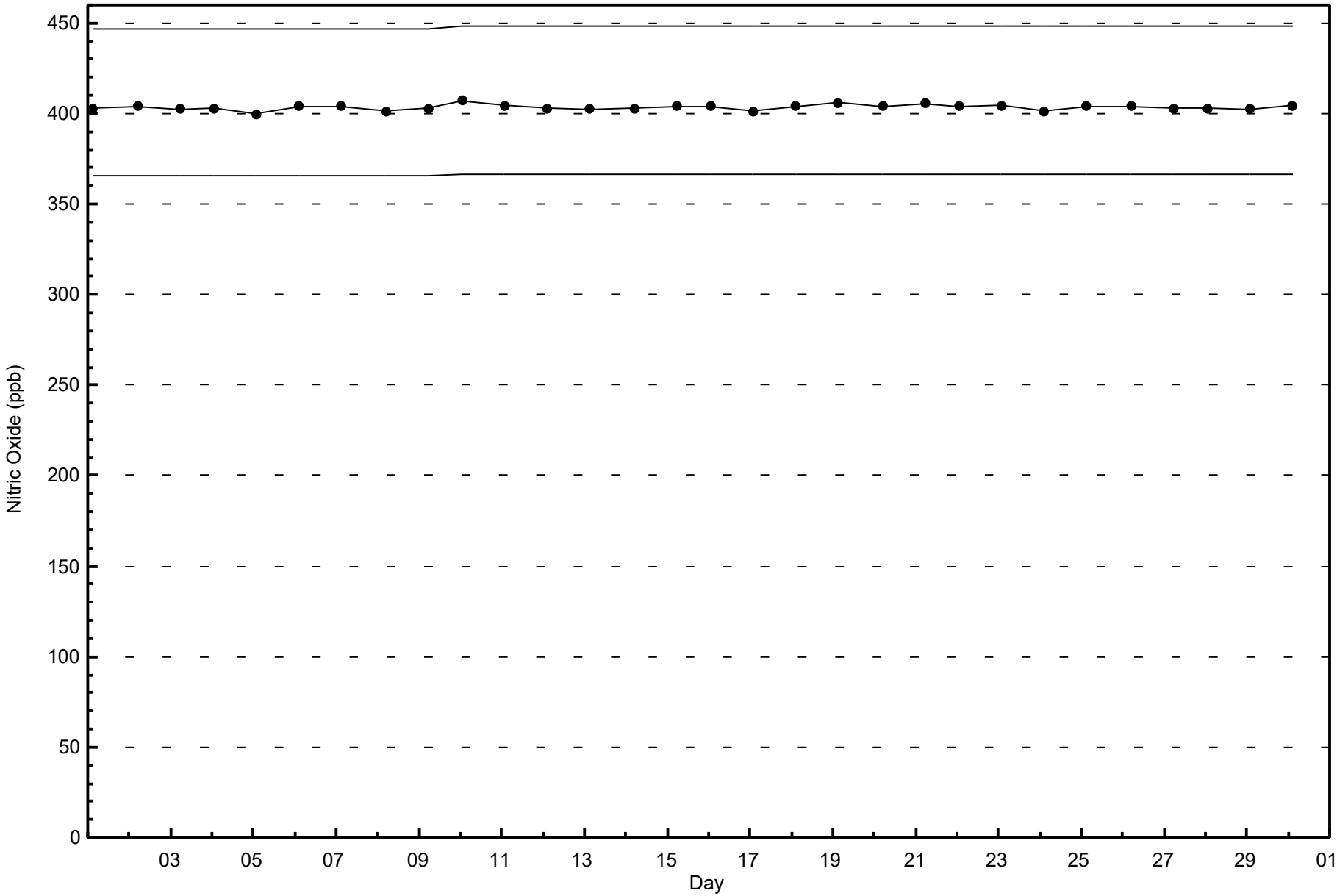


Wood Buffalo Environmental Association

Span Responses

Nitric Oxide (NO) - ppb

Firebag - September 2024



Wood Buffalo Environmental Association

Summary of Hour Averages

Nitrogen Dioxide (NO_2) - ppb

Firebag - September 2024

Number of Exceedences (AAAQO): 1-hr: 0 24-hr: 0
Maximum Value: 18.1 ppb on Sep 30 22:00 Maximum Daily Average: 3.7 ppb on Sep 30

Minimum Value: 0.1 ppb on Sep 3 10:00 Minimum Daily Average: 0.3 ppb on Sep 3
Maximum Diurnal Average: 4.4 ppb at hour 6 Minimum Diurnal Average: 1.4 ppb at hour 13
Monthly Average: 2.24 ppb Percentiles: P_1 = 0.2 P_{10} = 0.4 Q_1 = 0.7 Median = 1.4 Q_3 = 2.9 P_{90} = 4.8 P_{99} = 12.6

Hours in Service:	720
Hours of Data:	683
Hours of Missing Data:	37
Hours of Calibration:	35
Percent Operational Time:	99.7

Day	Hourly Period Ending At (MST)																								Daily	Daily
	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24	Average	Maximum
1-Sep	0.2	0.5	0.4	Z	1.0	0.8	0.9	2.0	1.2	0.8	1.2	0.6	0.8	1.0	1.3	1.5	0.8	1.1	1.1	0.5	1.3	2.0	4.0	6.2	1.4	6.2
2-Sep	6.9	3.2	2.6	3.2	Z	11.1	3.4	4.1	2.2	0.7	0.4	0.4	0.8	1.6	2.1	1.7	1.4	0.7	0.7	1.2	0.6	0.5	0.3	0.3	2.2	11.1
3-Sep	0.2	0.2	0.2	0.2	0.5	Z	0.8	0.3	0.2	0.1	0.6	0.3	0.3	0.3	0.3	0.2	0.1	0.1	0.2	0.1	0.2	0.1	0.1	0.6	0.3	0.8
4-Sep	Z	0.6	2.6	1.9	2.3	2.2	3.5	7.1	5.0	3.1	2.8	1.1	0.5	1.3	2.7	1.9	1.8	1.0	3.1	3.4	4.6	3.8	4.5	6.9	2.9	7.1
5-Sep	11.3	Z	0.9	0.6	1.4	2.6	2.7	3.6	0.9	0.4	0.4	0.2	0.2	0.3	0.3	0.4	0.4	1.0	0.9	0.6	0.7	0.4	0.3	0.3	1.3	11.3
6-Sep	0.5	0.8	Z	1.2	1.5	3.0	1.3	1.4	1.2	1.6	3.0	3.5	4.7	5.3	5.5	4.4	3.1	1.8	3.9	3.0	3.9	4.2	4.6	4.1	2.9	5.5
7-Sep	3.8	4.7	5.1	Z	7.3	13.4	6.1	4.8	2.9	1.7	1.3	1.0	1.0	1.4	2.2	2.4	1.8	1.1	1.7	3.2	4.8	4.0	3.6	4.2	3.6	13.4
8-Sep	4.0	3.8	4.4	6.5	Z	11.3	9.9	6.4	1.7	0.8	0.8	0.8	0.9	0.8	0.8	0.9	1.9	2.0	3.9	2.3	1.4	1.2	1.0	1.3	3.0	11.3
9-Sep	1.8	1.5	1.5	2.4	3.1	Z	5.6	2.3	5.3	1.1	C	C	C	C	C	0.9	0.6	2.1	0.6	2.2	1.8	1.6	1.5	0.3	2.0	5.6
10-Sep	Z	1.4	1.2	0.8	0.6	0.6	2.9	2.0	1.2	0.9	0.9	0.6	1.0	1.3	2.1	0.6	0.5	1.5	0.6	0.3	0.1	0.3	1.7	1.2	1.1	2.9
11-Sep	1.2	Z	0.9	1.5	4.3	2.8	4.4	1.2	0.8	0.5	0.8	0.5	0.3	0.3	0.4	0.6	0.4	0.5	2.4	2.4	1.1	0.9	0.6	1.0	1.3	4.4
12-Sep	0.7	0.9	Z	1.8	2.8	2.5	3.6	2.2	5.5	3.6	5.9	3.9	2.8	3.6	2.8	2.2	2.7	2.7	4.3	3.2	1.1	1.1	1.1	1.0	2.7	5.9
13-Sep	0.9	0.9	1.0	Z	1.1	1.0	0.9	1.0	0.9	1.0	1.4	1.2	0.8	0.7	1.1	1.4	1.0	0.7	0.7	0.8	0.6	0.6	3.2	1.1	1.0	3.2
14-Sep	1.8	4.7	1.7	4.7	Z	15.4	12.4	5.6	4.9	4.4	2.6	1.5	1.5	2.9	2.2	1.6	2.1	1.5	1.1	0.4	0.5	0.9	1.3	0.8	3.3	15.4
15-Sep	3.4	5.9	1.2	0.3	0.3	Z	0.3	0.2	0.2	0.2	0.2	0.8	2.1	2.8	1.9	1.6	1.6	1.7	3.4	3.8	3.4	4.8	4.2	2.9	2.1	5.9
16-Sep	Z	1.2	1.2	1.0	0.8	0.8	0.8	1.3	1.0	1.6	3.1	1.8	1.4	1.5	1.0	0.7	0.5	0.5	0.9	1.5	2.3	3.8	6.1	6.1	1.8	6.1
17-Sep	5.4	Z	4.7	3.6	1.6	5.9	3.5	2.4	1.4	0.8	0.4	0.4	0.3	0.5	0.8	0.8	0.8	1.0	2.5	1.7	1.1	0.7	0.5	0.4	1.8	5.9
18-Sep	0.4	0.3	Z	0.6	1.7	6.9	2.1	1.3	2.3	3.7	3.8	4.3	4.8	3.9	4.6	2.8	2.2	1.9	3.1	2.3	3.6	2.9	2.1	2.2	2.8	6.9
19-Sep	1.2	0.7	1.9	Z	4.6	5.3	0.7	10.0	12.1	2.9	0.9	0.6	0.6	0.8	0.7	1.4	3.7	3.4	2.4	2.9	5.3	1.8	1.7	1.1	2.9	12.1
20-Sep	1.0	0.8	1.4	1.7	Z	0.7	0.5	0.3	0.3	0.3	0.3	0.2	M	M	0.2	0.2	0.2	0.2	0.2	1.4	0.6	0.4	0.6	1.2	0.6	1.7
21-Sep	0.6	2.4	1.3	11.2	13.5	Z	7.7	10.5	2.6	1.0	0.5	1.2	2.0	1.3	0.9	0.7	0.7	1.1	1.3	1.0	0.6	0.6	0.6	0.3	2.8	13.5
22-Sep	Z	0.7	0.7	0.8	1.4	1.7	1.9	2.5	1.4	0.9	0.7	0.6	1.2	1.8	1.9	1.9	1.8	1.6	2.2	2.6	2.1	2.0	1.9	1.9	1.6	2.6
23-Sep	3.5	Z	5.7	15.5	6.7	1.7	0.6	0.5	0.4	0.6	1.0	2.4	2.4	2.2	1.8	2.8	3.8	3.8	1.3	0.5	0.6	0.5	0.4	0.5	2.6	15.5
24-Sep	1.1	2.0	Z	2.9	3.7	4.7	4.5	4.3	2.7	1.3	1.0	0.7	0.7	1.5	1.8	2.0	2.5	1.3	2.1	9.2	7.0	3.5	2.8	1.8	2.8	9.2
25-Sep	1.4	1.2	0.7	Z	3.0	4.6	3.7	1.9	0.8	0.7	0.6	0.7	0.6	0.8	1.2	1.6	1.7	4.9	5.0	5.4	5.3	5.6	3.6	4.9	2.6	5.6
26-Sep	4.4	2.4	7.1	13.7	Z	2.9	2.0	3.7	1.4	4.5	4.7	5.3	3.5	2.8	3.3	1.7	2.3	0.6	1.6	2.1	1.2	0.7	2.2	2.3	3.3	13.7
27-Sep	4.4	7.3	5.7	3.4	2.3	Z	1.0	0.9	0.7	0.5	0.5	4.1	0.4	0.5	2.2	2.4	1.8	0.6	0.5	0.5	0.6	0.8	1.7	2.8	2.0	7.3
28-Sep	Z	2.9	1.7	1.7	1.1	0.6	2.9	7.1	1.0	0.8	0.9	0.4	0.3	0.3	0.9	0.8	1.0	2.0	8.2	2.8	1.5	0.9	0.5	0.4	1.8	8.2
29-Sep	0.5	Z	1.1	1.4	7.2	5.0	3.5	2.7	1.3	3.9	2.3	1.5	1.3	0.7	0.2	0.2	0.7	0.7	0.5	0.3	0.6	3.7	16.0	9.5	2.8	16.0
30-Sep	1.0	0.7	Z	3.6	1.7	2.5	3.1	7.0	7.4	3.1	1.7	2.4	2.9	2.2	1.9	1.5	0.7	0.7	1.4	2.1	3.8	18.1	8.8	6.0	3.7	18.1
	2.5	2.1	2.3	3.4	3.0	4.4	3.2	3.4	2.4	1.6	1.5	1.5	1.4	1.6	1.7	1.5	1.5	1.5	2.1	2.1	2.1	2.4	2.7	2.5	Diurnal Average	
	11.3	7.3	7.1	15.5	13.5	15.4	12.4	10.5	12.1	4.5	5.9	5.3	4.8	5.3	5.5	4.4	3.8	4.9	8.2	9.2	7.0	18.1	16.0	9.5	Diurnal Maximum	

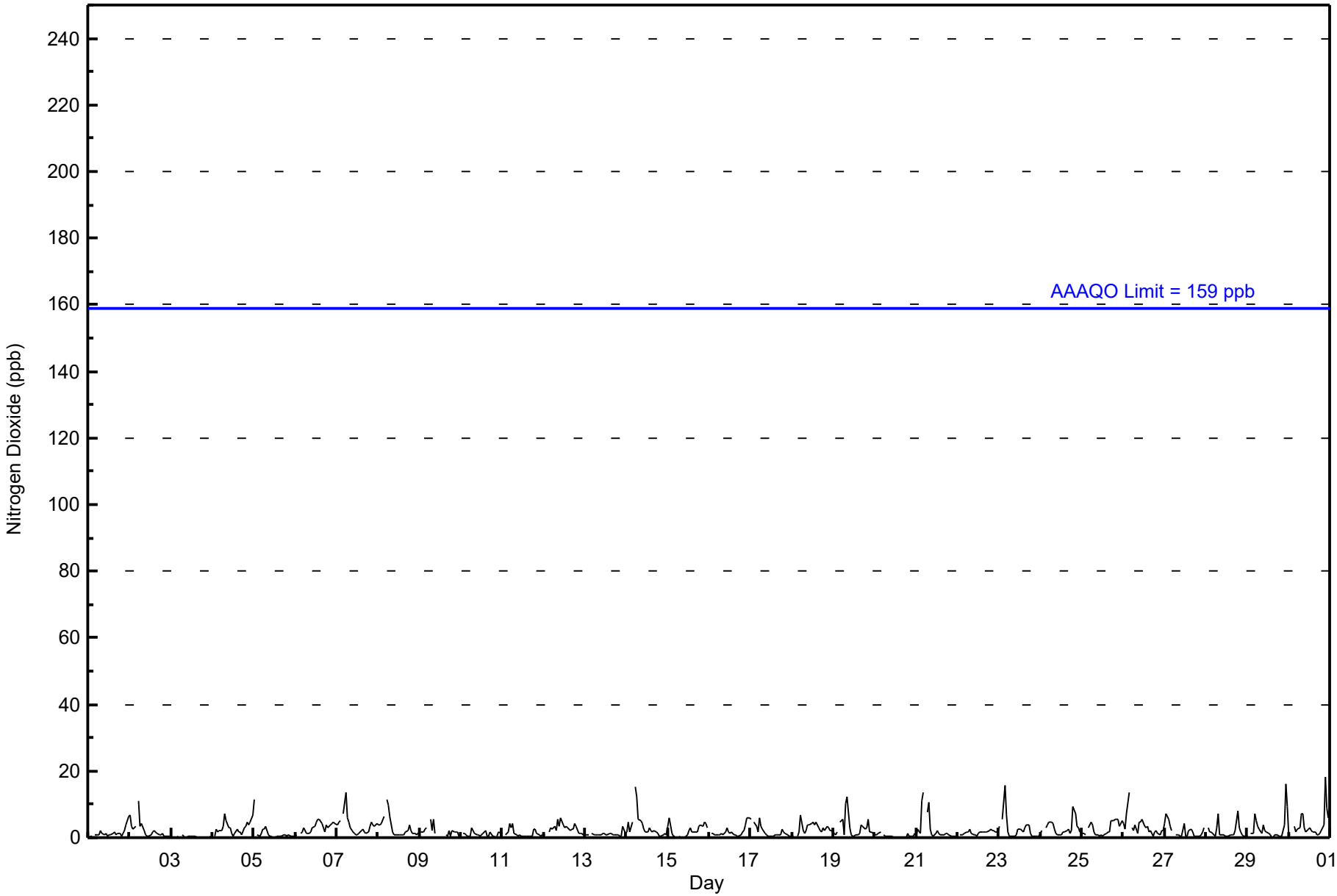
Z - zerospan C - Calibration M - Maintenance
Alberta Ambient Air Quality Objectives (AAAQO): 1-hr 159 ppb

Wood Buffalo Environmental Association

Hourly Averages

Nitrogen Dioxide (NO_2) - ppb

Firebag - September 2024



Nitrogen Dioxide (NO_2) - ppb
Firebag - September 2024

Concentration Ranges (ppb)	Number of Hours	%	Cumulative %
0 - 20	683	100.00	100.00
21 - 40	0	0.00	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: 683

Total Number of Hours: 720

Wood Buffalo Environmental Association

Frequency Distribution

Nitrogen Dioxide (NO_2) - ppb

Firebag - September 2024

Concentration Ranges (ppb)	Wind Direction																
	N	NNE	NE	ENE	E	ESE	SE	SSE	S	SSW	SW	WSW	W	WNW	NW	NNW	**Totals**
0 - 20	43	36	15	8	13	27	33	50	48	98	77	64	56	50	24	41	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	43	36	15	8	13	27	33	50	48	98	77	64	56	50	24	41	683

Total Number of Valid Hours: 683

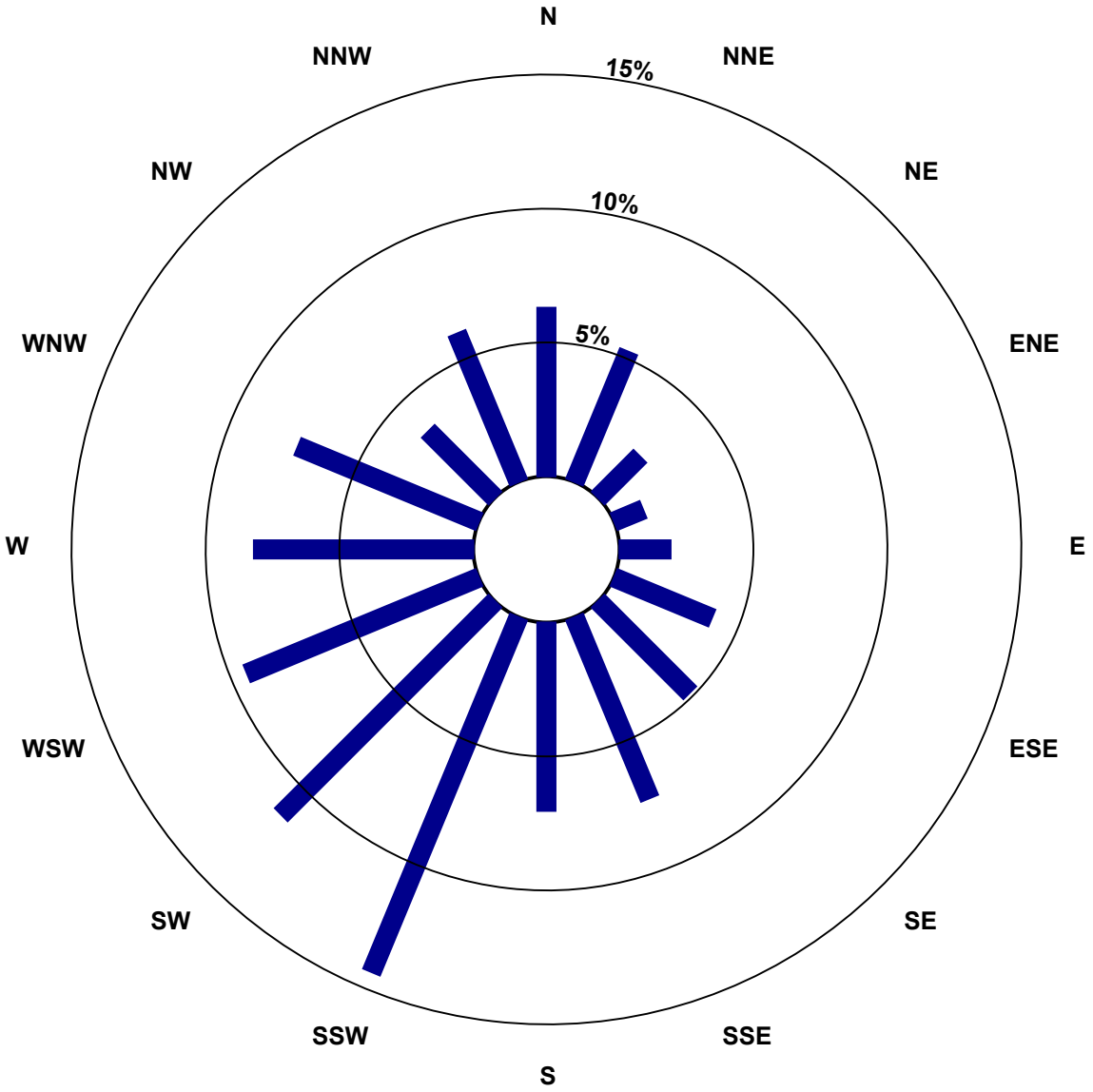
Total Number of Hours: 720

Wood Buffalo Environmental Association

Wind Rose Sep 2024

Nitrogen Dioxide (NO_2) - ppb

Firebag



Classes (ppb)

0 - 20

21 - 40

11 - 80

81 - 159

> 159

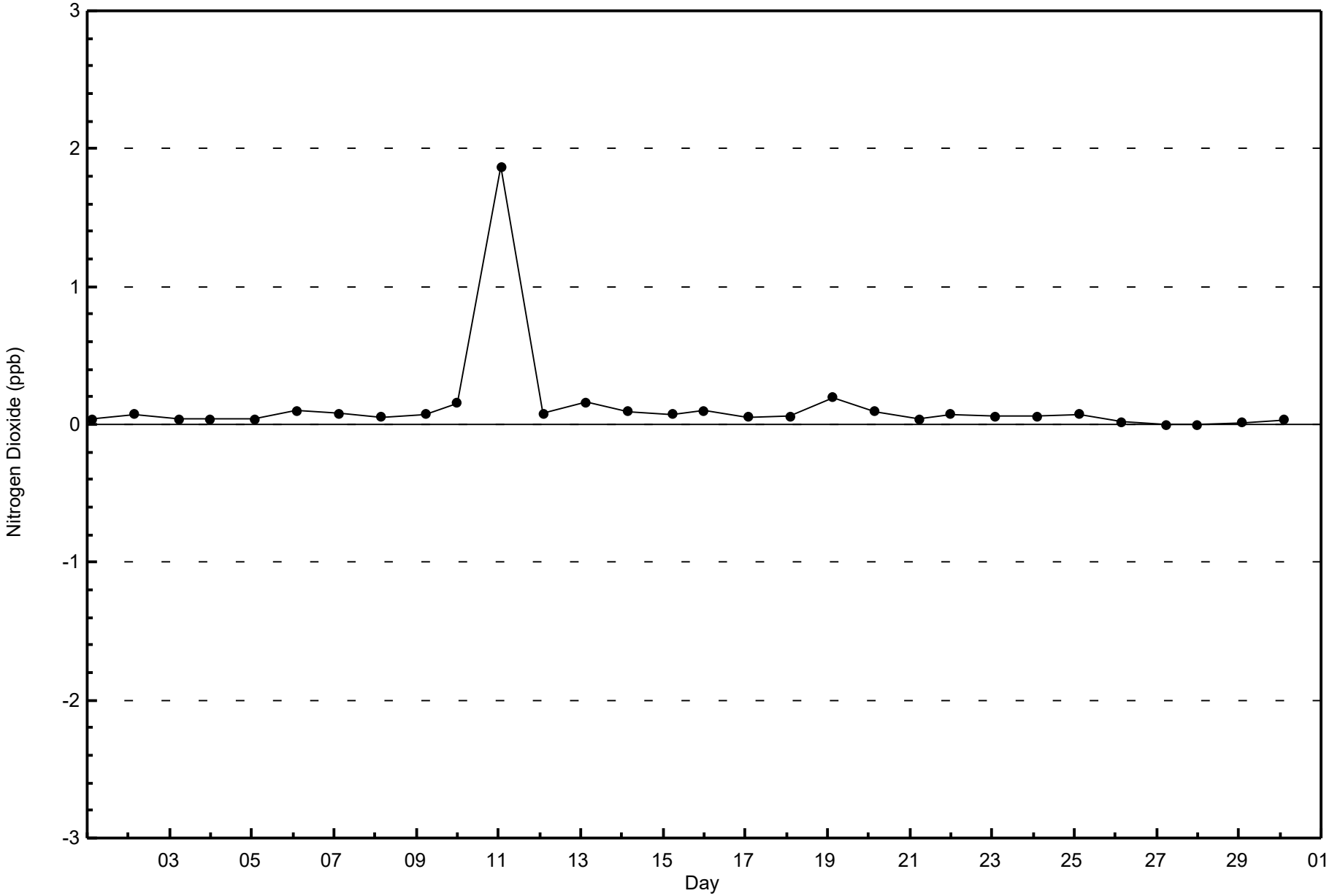
Total Number of Valid Hours: 683

Wood Buffalo Environmental Association

Zero Responses

Nitrogen Dioxide (NO_2) - ppb

Firebag - September 2024

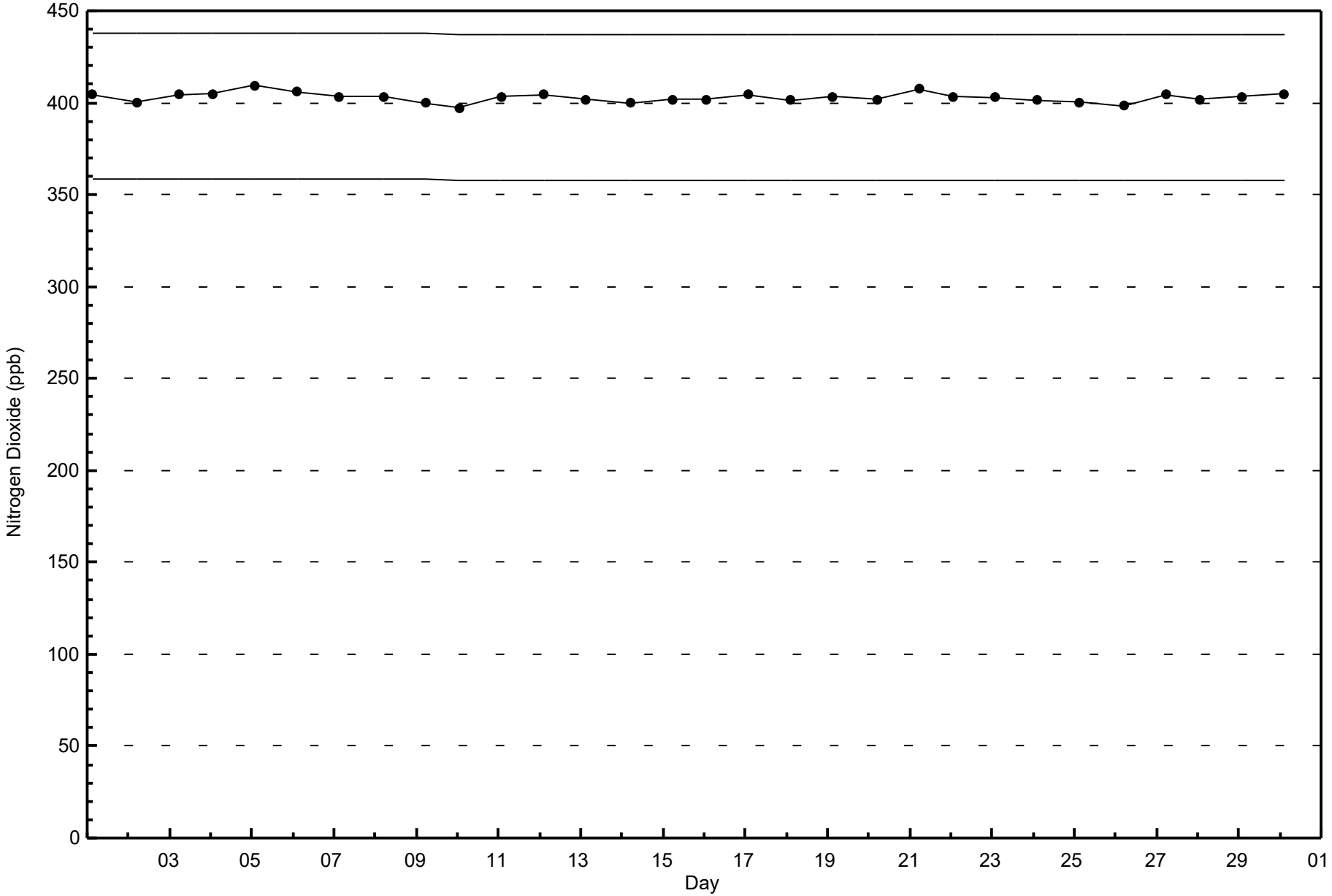


Wood Buffalo Environmental Association

Span Responses

Nitrogen Dioxide (NO_2) - ppb

Firebag - September 2024



Wood Buffalo Environmental Association

Summary of Hour Averages

Nitrogen Oxides (NO_X) - ppb

Firebag - September 2024

Maximum Value: 23.4 ppb on Sep 8 06:00

Maximum Daily Average: 4.6 ppb on Sep 14

Minimum Value: 0.1 ppb on Sep 10 21:00

Minimum Daily Average: 0.4 ppb on Sep 3

Maximum Diurnal Average: 6.2 ppb at hour 6

Minimum Diurnal Average: 1.6 ppb at hour 18

Monthly Average: 2.69 ppb

Percentiles: P_1 = 0.2 P_{10} = 0.5 Q_1 = 0.8 Median = 1.7 Q_3 = 3.4 P_{90} = 5.7 P_{99} = 20.1

Hours in Service:	720
Hours of Data:	683
Hours of Missing Data:	37
Hours of Calibration:	35
Percent Operational Time:	99.7

Day	Hourly Period Ending At (MST)																								Daily	Daily
	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24	Average	Maximum
1-Sep	0.3	0.5	0.4	Z	1.1	0.9	1.0	2.6	1.6	1.0	2.0	0.8	1.0	1.2	1.5	1.8	1.0	1.3	1.2	0.6	1.4	2.1	4.1	6.3	1.5	6.3
2-Sep	7.0	3.3	2.7	3.3	Z	20.3	4.0	5.8	3.2	0.9	0.5	0.5	0.9	1.8	2.4	1.9	1.6	0.8	0.8	1.3	0.7	0.6	0.4	0.4	2.8	20.3
3-Sep	0.3	0.3	0.3	0.3	0.6	Z	0.9	0.4	0.3	0.2	0.8	0.4	0.4	0.4	0.4	0.3	0.2	0.2	0.2	0.2	0.2	0.2	0.2	0.7	0.4	0.9
4-Sep	Z	0.6	2.6	1.9	2.4	2.3	4.3	10.7	7.6	5.8	4.8	1.6	0.6	1.7	3.5	2.5	2.2	1.1	3.3	3.5	4.7	3.8	4.6	7.0	3.6	10.7
5-Sep	12.1	Z	0.9	0.6	1.4	3.0	3.6	5.4	1.2	0.5	0.5	0.3	0.3	0.4	0.4	0.5	0.5	1.2	1.0	0.7	0.8	0.5	0.4	0.4	1.6	12.1
6-Sep	0.6	0.9	Z	1.3	1.6	3.9	1.4	1.6	1.4	1.9	3.9	4.4	5.7	6.1	6.5	5.6	3.9	2.0	4.1	3.1	4.0	4.3	4.7	4.2	3.3	6.5
7-Sep	4.0	5.9	5.8	Z	8.4	19.2	7.1	6.1	3.8	2.1	1.5	1.1	1.1	1.5	2.4	2.6	2.0	1.2	1.8	3.3	4.9	4.1	3.7	4.3	4.3	19.2
8-Sep	4.1	3.9	4.5	6.6	Z	23.4	22.4	9.1	2.1	1.0	1.0	0.9	1.0	0.9	0.9	1.0	2.1	2.2	4.1	2.5	1.5	1.3	1.1	1.4	4.3	23.4
9-Sep	1.9	1.6	1.6	2.5	3.3	Z	6.0	2.6	8.6	1.3	C	C	C	C	C	1.0	0.6	2.2	0.6	2.2	1.8	1.6	1.5	0.3	2.3	8.6
10-Sep	Z	1.4	1.2	0.8	0.6	0.6	3.6	3.0	2.0	1.4	1.3	0.8	1.3	1.6	2.6	0.7	0.6	1.7	0.7	0.3	0.1	0.3	1.8	1.3	1.3	3.6
11-Sep	1.3	Z	1.0	1.8	5.2	3.4	6.1	1.7	1.2	0.7	0.9	0.6	0.4	0.3	0.4	0.8	0.5	0.5	2.6	2.6	1.2	1.0	0.7	1.1	1.6	6.1
12-Sep	0.8	1.0	Z	2.0	3.4	3.2	4.6	2.4	5.9	4.1	6.9	4.3	3.2	4.0	3.1	2.4	3.1	3.1	4.8	3.4	1.2	1.2	1.2	1.1	3.1	6.9
13-Sep	1.0	1.0	1.1	Z	1.2	1.1	1.0	1.1	1.0	1.1	1.5	1.3	0.9	0.8	1.3	1.6	1.1	0.8	0.8	0.9	0.7	0.7	3.3	1.2	1.2	3.3
14-Sep	2.0	4.9	1.8	4.9	Z	22.6	21.0	9.0	6.9	6.6	3.7	2.0	1.9	3.7	2.6	1.9	2.4	1.6	1.2	0.5	0.6	1.0	1.4	0.9	4.6	22.6
15-Sep	4.2	6.2	1.2	0.3	0.3	Z	0.4	0.3	0.3	0.3	0.3	1.1	3.1	4.0	2.6	2.1	1.9	1.9	3.6	4.0	3.5	4.9	4.3	3.0	2.3	6.2
16-Sep	Z	1.3	1.3	1.1	0.9	0.9	0.9	1.5	1.2	2.2	4.0	2.6	2.1	2.1	1.3	0.8	0.6	0.6	1.0	1.6	2.4	3.9	6.2	6.2	2.0	6.2
17-Sep	5.5	Z	4.8	3.7	1.7	8.2	4.4	3.0	1.9	1.0	0.5	0.5	0.4	0.6	0.9	0.9	0.9	1.1	2.7	1.8	1.2	0.8	0.6	0.5	2.1	8.2
18-Sep	0.5	0.4	Z	0.7	2.0	9.7	2.2	1.6	3.0	4.5	4.3	5.6	6.7	5.3	6.3	3.6	2.7	2.1	3.2	2.4	3.7	3.0	2.2	2.3	3.4	9.7
19-Sep	1.3	0.8	2.0	Z	5.0	5.9	0.8	15.1	20.0	4.2	1.2	0.8	0.8	1.0	0.9	1.7	4.1	3.6	2.5	3.0	5.4	1.8	1.8	1.2	3.7	20.0
20-Sep	1.1	0.8	1.5	1.7	Z	0.7	0.5	0.3	0.3	0.3	0.3	0.2	M	M	0.2	0.2	0.2	0.2	0.2	1.5	0.6	0.4	0.6	1.2	0.6	1.7
21-Sep	0.6	2.5	1.3	13.3	16.6	Z	20.9	22.0	4.3	1.4	0.8	1.9	2.8	1.9	1.2	0.8	0.8	1.2	1.5	1.1	0.7	0.7	0.7	0.4	4.3	22.0
22-Sep	Z	0.8	0.8	0.9	1.7	2.1	2.2	3.4	2.0	1.2	0.9	0.8	1.6	2.4	2.6	2.4	2.1	1.7	2.3	2.7	2.2	2.1	2.0	2.0	1.9	3.4
23-Sep	3.6	Z	5.9	15.9	6.8	1.8	0.7	0.6	0.5	0.7	1.2	3.2	3.1	2.7	2.0	3.2	4.1	4.0	1.4	0.6	0.7	0.6	0.5	0.6	2.8	15.9
24-Sep	1.2	2.1	Z	3.0	3.8	4.8	5.0	8.0	5.2	2.7	1.8	1.1	1.0	2.1	2.4	2.5	2.9	1.4	2.2	9.6	7.2	3.6	2.9	1.9	3.4	9.6
25-Sep	1.5	1.3	0.8	Z	3.3	5.5	4.6	2.2	0.9	0.8	0.7	0.9	0.7	0.9	1.4	1.8	1.8	5.2	5.1	5.5	5.4	5.7	3.7	5.0	2.8	5.7
26-Sep	4.5	2.5	8.0	14.8	Z	3.0	2.2	3.9	1.5	4.8	5.3	6.3	4.4	3.5	4.3	2.2	2.6	0.7	1.6	2.1	1.2	0.7	2.2	2.3	3.7	14.8
27-Sep	4.4	7.3	5.7	3.5	2.7	Z	1.0	0.9	0.8	0.6	0.5	6.2	0.4	0.6	2.6	2.7	2.0	0.6	0.5	0.5	0.6	0.8	1.7	2.8	2.2	7.3
28-Sep	Z	3.0	1.7	1.7	1.1	0.6	3.0	7.5	1.1	0.9	1.1	0.5	0.4	0.4	1.1	1.0	1.1	2.2	8.7	2.9	1.6	1.0	0.5	0.5	1.9	8.7
29-Sep	0.6	Z	1.3	1.6	10.1	6.2	4.2	3.3	1.7	5.6	3.3	2.3	1.6	0.9	0.3	0.3	0.9	0.8	0.6	0.4	0.7	3.9	16.3	9.6	3.3	16.3
30-Sep	1.1	0.8	Z	3.6	1.7	2.6	3.2	9.2	11.9	5.0	2.5	3.7	4.4	3.1	2.4	1.9	0.8	0.7	1.4	2.1	3.9	18.4	8.8	6.0	4.3	18.4
	2.6	2.2	2.4	3.7	3.5	6.2	4.8	4.8	3.4	2.2	2.0	2.0	1.9	2.0	2.1	1.8	1.7	1.6	2.2	2.2	2.2	2.5	2.8	2.5	Diurnal Average	
	12.1	7.3	8.0	15.9	16.6	23.4	22.4	22.0	20.0	6.6	6.9	6.3	6.7	6.1	6.5	5.6	4.1	5.2	8.7	9.6	7.2	18.4	16.3	9.6	Diurnal Maximum	

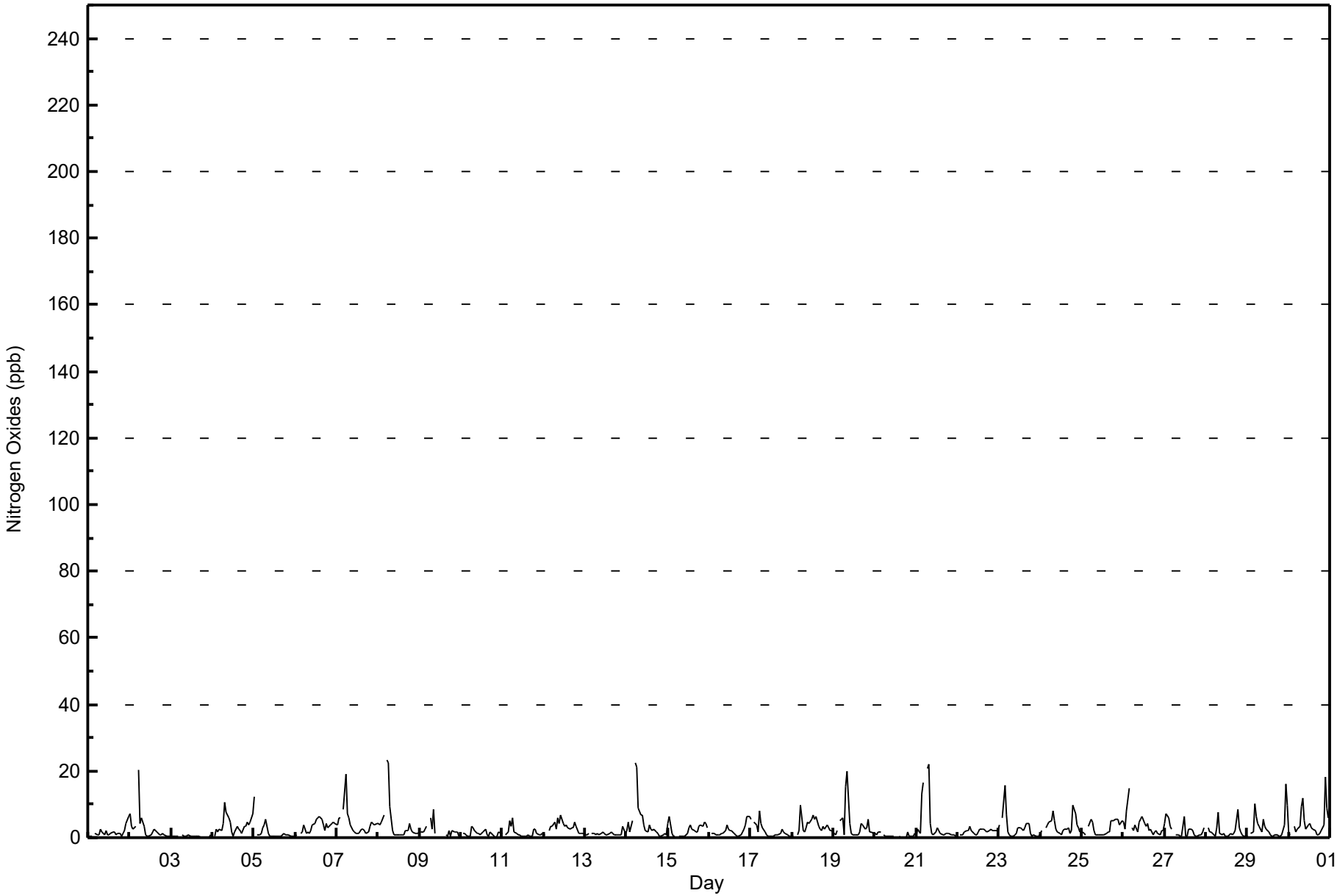
Z - zerospan C - Calibration M - Maintenance

Wood Buffalo Environmental Association

Hourly Averages

Nitrogen Oxides (NO_X) - ppb

Firebag - September 2024



Nitrogen Oxides (NO_X) - ppb
Firebag - September 2024

Concentration Ranges (ppb)	Number of Hours	%	Cumulative %
0 - 20	677	99.12	99.12
21 - 40	6	0.88	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: 683

Total Number of Hours: 720

Wood Buffalo Environmental Association

Frequency Distribution

Nitrogen Oxides (NO_X) - ppb

Firebag - September 2024

Concentration Ranges (ppb)	Wind Direction																
	N	NNE	NE	ENE	E	ESE	SE	SSE	S	SSW	SW	WSW	W	WNW	NW	NNW	**Totals**
0 - 20	43	36	15	8	13	27	32	48	48	97	77	64	55	49	24	41	677
21 - 40	0	0	0	0	0	0	1	2	0	1	0	0	1	1	0	0	6
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	43	36	15	8	13	27	33	50	48	98	77	64	56	50	24	41	683

Total Number of Valid Hours: 683

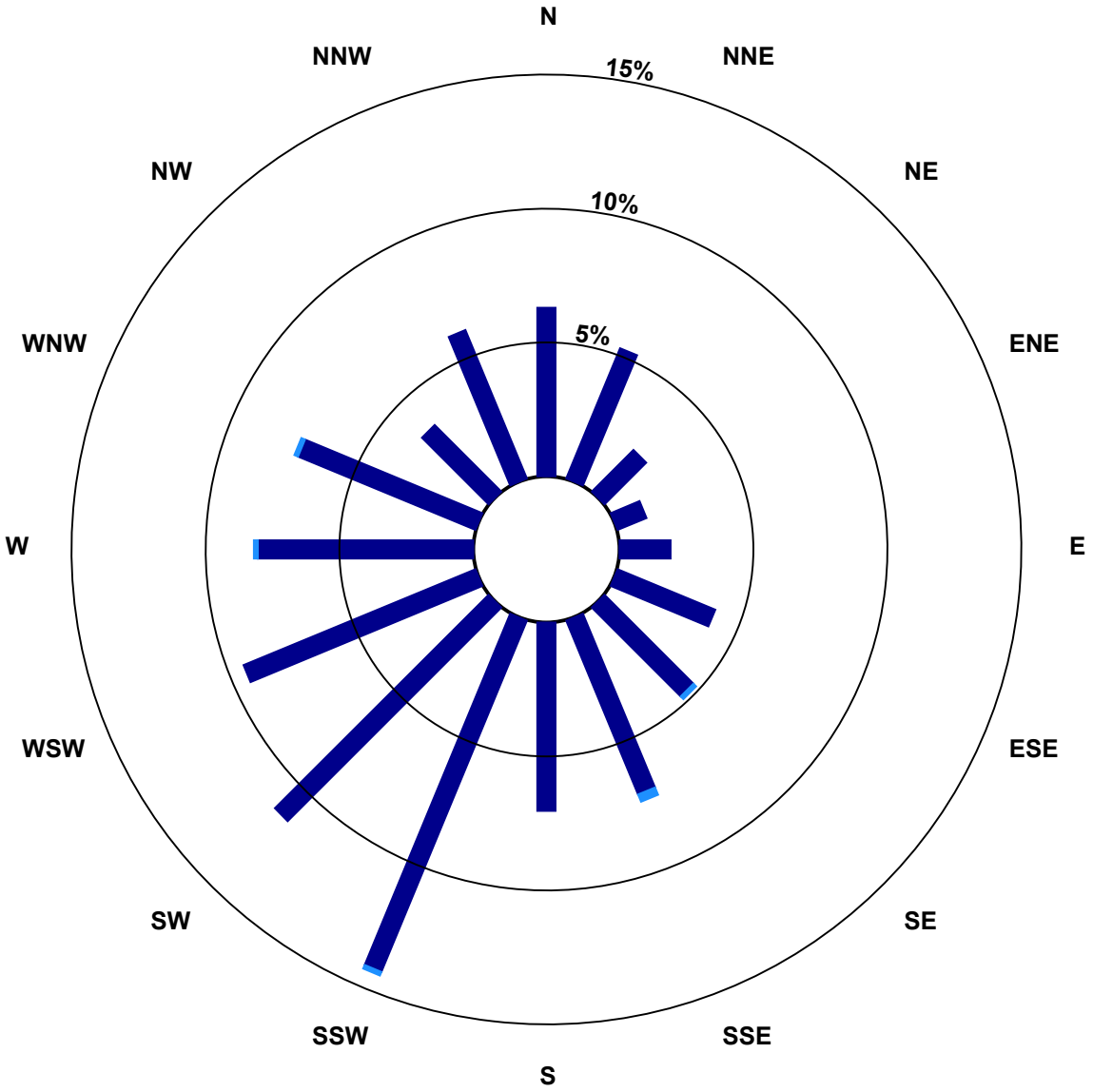
Total Number of Hours: 720

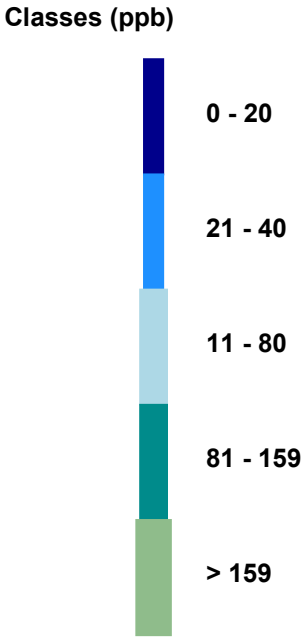
Wood Buffalo Environmental Association

Wind Rose Sep 2024

Nitrogen Oxides (NO_X) - ppb

Firebag





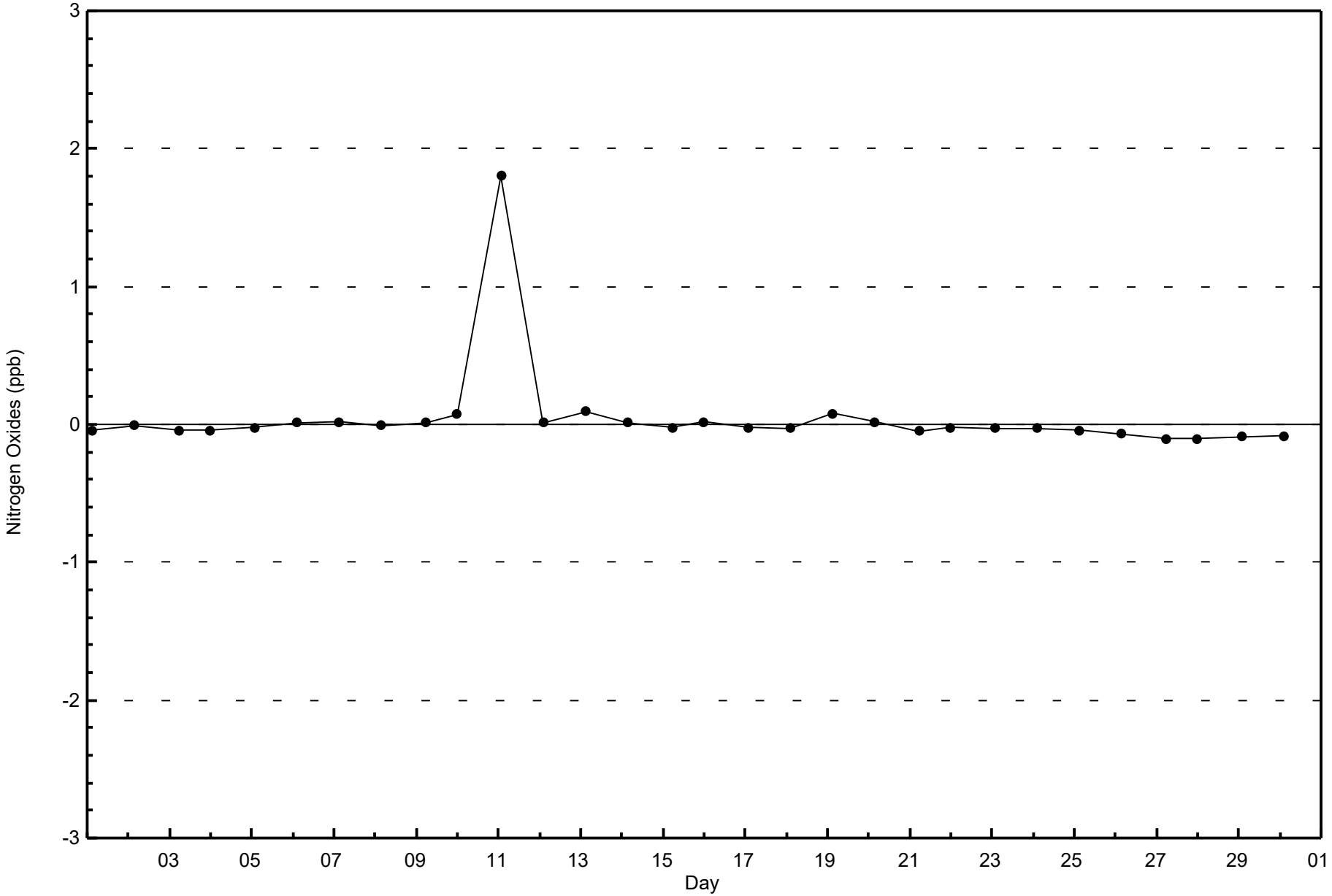
Total Number of Valid Hours: 683

Wood Buffalo Environmental Association

Zero Responses

Nitrogen Oxides (NO_X) - ppb

Firebag - September 2024

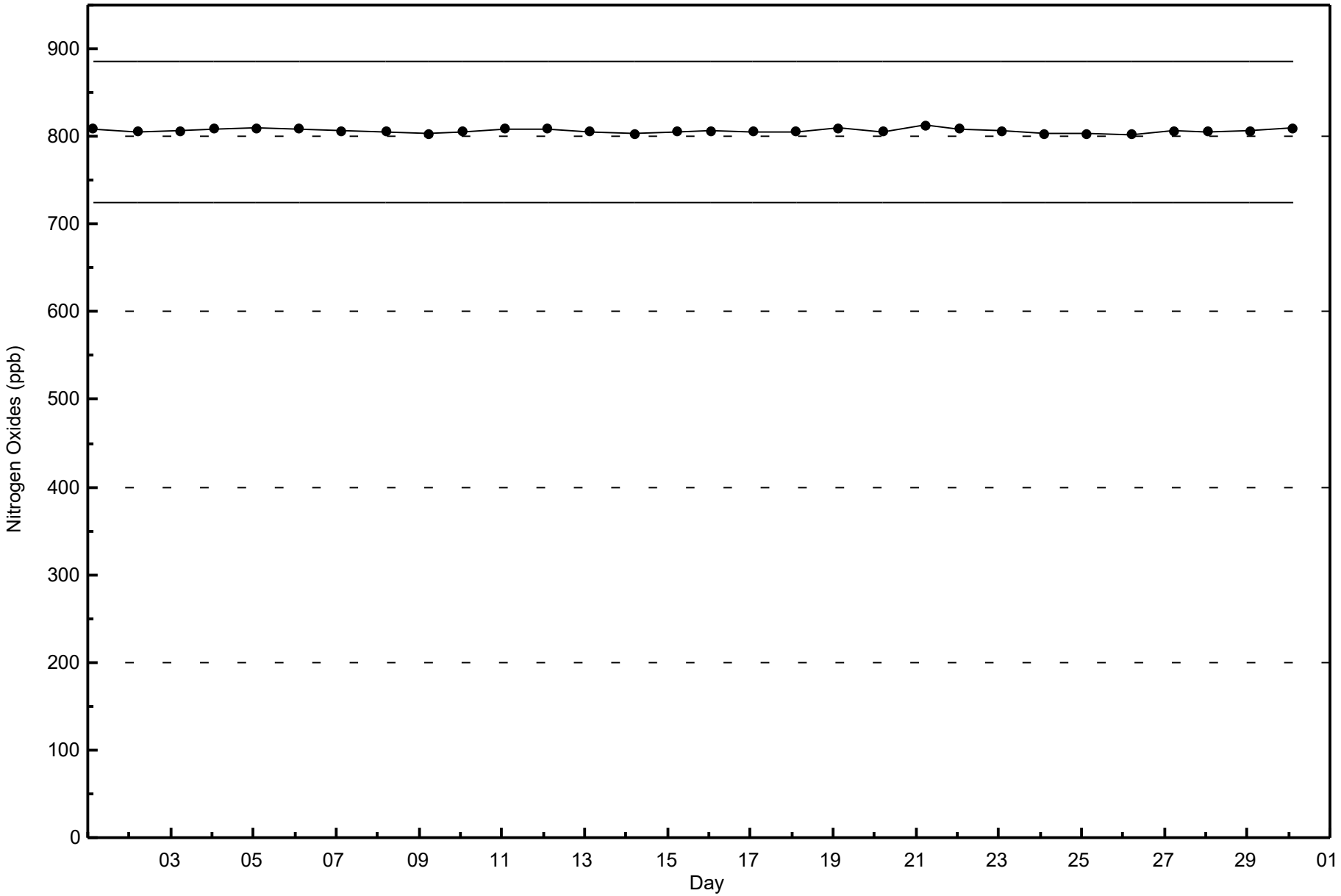


Wood Buffalo Environmental Association

Span Responses

Nitrogen Oxides (NO_X) - ppb

Firebag - September 2024



Maximum Value: 28.1 C on Sep 2 16:00

Maximum Daily Average: 20.5 C on Sep 2

Minimum Value: 0.5 C on Sep 30 07:00

Minimum Daily Average: 5.1 C on Sep 30

Maximum Diurnal Average: 16.5 C at hour 16

Minimum Diurnal Average: 8.5 C at hour 6

Monthly Average: 12.10 C

Percentiles: P_1 = 2.5 P_{10} = 6.1 Q_1 = 8.6 Median = 11.2 Q_3 = 15.0 P_{90} = 18.9 P_{99} = 26.4

Hours in Service:	720
Hours of Data:	720
Hours of Missing Data:	0
Hours of Calibration:	0
Percent Operational Time:	100.0

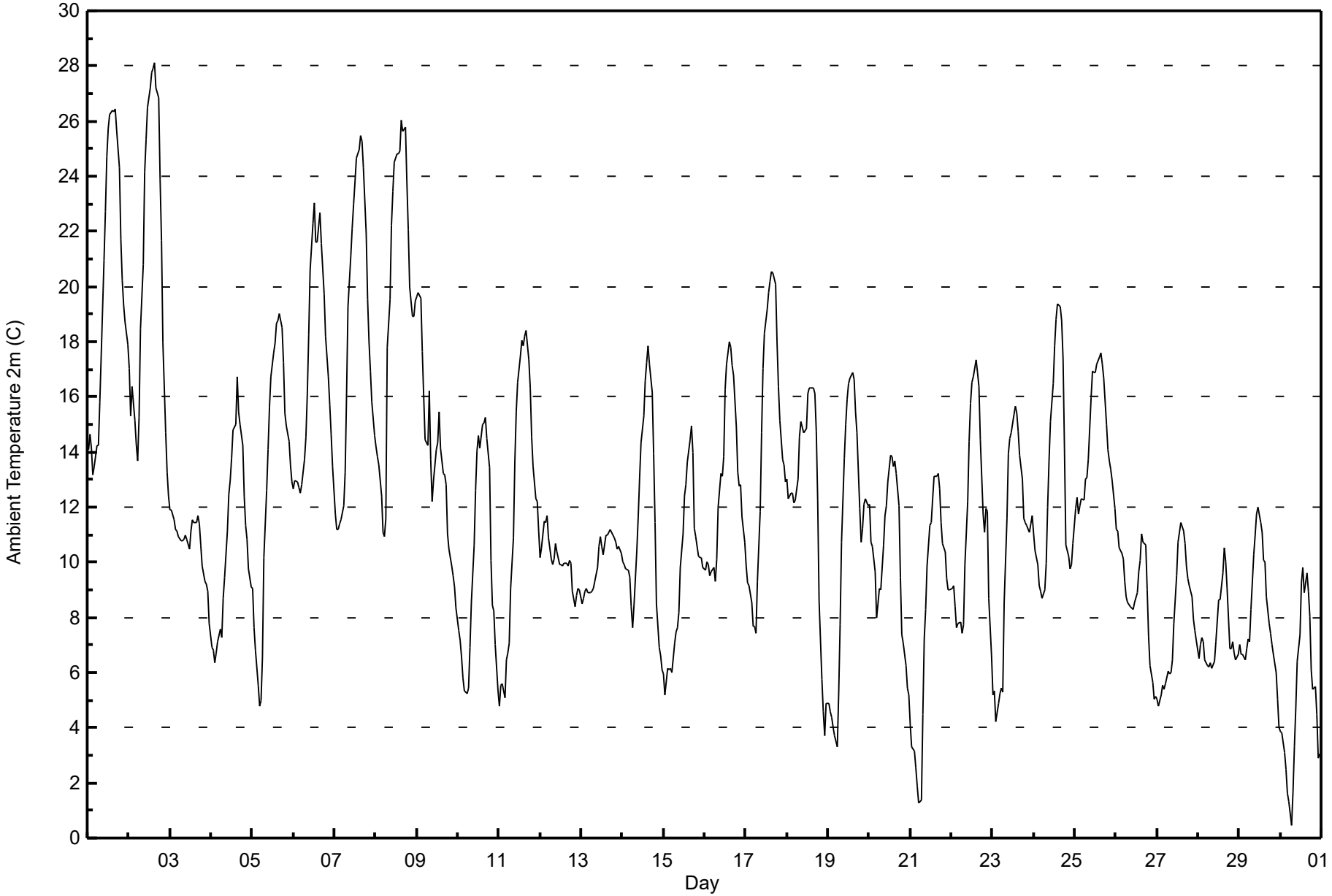
Day	Hourly Period Ending At (MST)																								Daily	Daily
	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24	Average	Maximum
1-Sep	14.1	14.7	14.1	13.1	13.5	14.2	14.2	15.8	17.5	20.9	22.7	24.7	25.8	26.2	26.4	26.3	26.4	25.7	24.3	21.7	20.2	19.3	18.7	17.9	19.9	26.4
2-Sep	17.0	15.3	16.4	15.1	14.3	13.7	15.3	18.4	20.8	24.2	25.3	26.5	27.2	27.8	27.9	28.1	27.2	26.8	23.9	21.7	17.9	14.7	13.3	12.4	20.5	28.1
3-Sep	11.9	11.9	11.5	11.2	11.1	10.9	10.8	10.8	10.8	11.0	10.8	10.5	11.1	11.5	11.5	11.4	11.7	11.4	10.6	9.9	9.3	9.2	8.9	7.8	10.7	11.9
4-Sep	6.9	6.8	6.4	6.7	7.1	7.6	7.3	8.7	9.4	11.2	12.4	12.9	13.8	14.8	15.0	16.7	15.5	15.0	14.2	12.4	11.4	10.8	9.7	9.1	10.9	16.7
5-Sep	9.0	7.6	6.8	5.5	4.8	5.0	6.5	10.2	12.6	14.1	15.6	16.8	17.6	17.9	18.7	18.8	19.0	18.5	17.2	15.4	15.0	14.4	13.5	12.9	13.1	19.0
6-Sep	12.7	13.0	12.9	12.7	12.5	12.8	13.7	14.6	16.1	18.3	20.6	22.3	23.1	21.6	21.6	22.7	21.6	20.6	19.7	18.2	16.7	15.7	14.6	13.5	17.2	23.1
7-Sep	11.8	11.2	11.2	11.4	11.6	12.0	13.3	16.1	19.3	21.1	22.1	23.0	23.8	24.7	25.0	25.5	25.2	24.3	21.9	19.5	18.0	16.9	15.8	14.6	18.3	25.5
8-Sep	14.2	13.8	13.5	12.4	11.1	10.9	11.6	17.8	19.5	22.2	23.4	24.5	24.8	24.8	24.9	26.0	25.6	25.8	23.8	22.0	20.0	18.9	18.9	19.5	19.6	26.0
9-Sep	19.6	19.8	19.6	17.6	16.0	14.5	14.3	16.2	13.7	12.2	13.0	14.1	14.3	15.5	14.1	13.2	13.2	12.8	11.0	10.5	9.9	9.5	9.1	8.3	13.8	19.8
10-Sep	7.5	7.2	6.6	5.8	5.4	5.3	5.4	6.9	8.5	10.6	12.6	14.0	14.6	14.2	15.0	15.1	15.2	14.5	13.4	10.1	8.4	8.2	7.0	5.3	9.9	15.2
11-Sep	4.8	5.6	5.6	5.1	6.4	6.7	7.0	9.0	10.9	13.6	15.4	16.5	17.5	18.0	17.9	18.2	18.4	17.3	16.3	14.5	13.5	12.3	12.2	11.2	12.3	18.4
12-Sep	10.2	10.5	11.5	11.5	11.7	10.9	10.1	9.9	10.1	10.7	10.4	9.9	9.9	9.9	9.9	10.0	9.9	10.1	9.9	9.0	8.4	8.8	9.0	9.0	10.0	11.7
13-Sep	8.5	8.7	8.9	9.0	8.9	8.9	9.0	9.0	9.3	9.8	10.6	11.0	10.6	10.2	11.0	11.0	11.1	11.2	11.0	10.9	10.7	10.5	10.6	10.3	10.0	11.2
14-Sep	10.0	9.9	9.8	9.7	9.5	8.4	7.6	8.4	10.4	11.6	13.0	14.3	15.3	16.6	17.2	17.9	17.2	16.2	13.9	11.4	8.5	6.9	6.6	6.1	11.5	17.9
15-Sep	5.9	5.2	6.2	6.1	6.2	6.0	7.1	7.5	7.6	8.2	9.8	11.0	12.4	12.8	13.6	14.4	15.0	14.0	11.2	10.9	10.2	10.2	10.2	9.8	9.7	15.0
16-Sep	9.7	10.0	9.9	9.5	9.7	9.8	9.3	10.1	12.0	13.2	13.1	13.8	16.2	17.2	18.0	17.8	17.1	16.8	14.9	13.3	12.8	12.8	11.7	10.7	12.9	18.0
17-Sep	9.9	9.3	9.2	8.5	7.7	7.7	7.4	9.3	11.9	14.7	17.0	18.3	19.2	19.8	20.2	20.5	20.5	20.1	18.0	16.4	15.1	13.7	13.5	12.9	14.2	20.5
18-Sep	13.0	12.3	12.5	12.5	12.1	12.3	13.0	14.5	15.1	14.9	14.7	14.9	16.1	16.3	16.3	16.3	16.1	14.7	12.3	8.6	5.8	4.6	3.7	4.9	12.4	16.3
19-Sep	4.9	4.6	4.4	4.0	3.7	3.3	5.3	7.7	10.7	13.8	15.0	15.9	16.5	16.7	16.9	16.6	15.4	14.7	11.9	10.7	11.2	12.1	12.3	12.0	10.8	16.9
20-Sep	12.1	10.7	10.6	9.7	8.0	8.5	9.0	9.0	10.6	11.7	12.0	12.9	13.9	13.8	13.5	13.7	13.2	12.0	9.5	7.4	7.1	6.2	5.5	5.2	10.2	13.9
21-Sep	4.1	3.3	3.1	2.6	1.9	1.3	1.4	4.5	7.2	8.3	9.8	11.3	11.5	12.3	13.1	13.1	13.2	12.7	11.5	10.7	10.4	9.4	9.0	9.0	8.1	13.2
22-Sep	9.0	9.1	8.4	7.6	7.8	7.8	7.4	7.7	9.9	12.2	14.4	15.7	16.5	16.8	17.3	16.9	16.4	14.4	11.8	11.1	12.0	11.8	8.7	6.6	11.6	17.3
23-Sep	5.2	5.4	4.2	4.9	5.3	5.5	5.3	8.6	11.6	13.9	14.5	14.7	15.4	15.7	15.4	14.8	13.9	13.0	11.6	11.4	11.4	11.1	11.4	11.7	10.7	15.7
24-Sep	11.0	10.4	9.9	9.1	8.9	8.7	9.0	10.0	12.0	13.7	15.1	16.5	17.8	18.8	19.4	19.3	18.8	17.4	14.2	10.6	10.2	9.7	9.9	10.7	13.0	19.4
25-Sep	12.0	12.3	11.7	12.0	12.3	12.2	13.0	13.1	13.7	16.0	16.9	16.9	16.9	17.2	17.4	17.6	17.2	16.7	15.0	14.1	13.7	13.4	13.0	12.0	14.4	17.6
26-Sep	11.2	11.1	10.5	10.3	10.1	9.3	8.7	8.6	8.4	8.4	8.3	8.6	8.9	9.6	10.1	11.1	10.7	10.6	9.0	7.3	6.3	5.6	5.1	5.1	8.9	11.2
27-Sep	5.0	4.8	5.2	5.5	5.4	5.6	6.1	5.9	6.0	6.4	7.8	9.5	10.7	11.1	11.4	11.1	10.7	9.8	9.4	9.1	8.7	7.9	7.5	7.2	7.8	11.4
28-Sep	6.5	7.0	7.3	7.1	6.5	6.2	6.2	6.3	6.1	6.4	7.1	7.9	8.6	8.6	9.6	10.5	10.0	9.1	6.9	6.9	7.1	6.7	6.4	6.7	7.4	10.5
29-Sep	7.0	6.7	6.7	6.4	6.9	7.2	7.1	8.3	10.3	11.0	11.7	12.0	11.5	11.1	10.1	10.0	8.8	7.8	7.4	7.0	6.7	6.0	5.0	4.0	8.2	12.0
30-Sep	3.9	3.8	3.1	2.5	1.6	1.3	0.5	1.7	3.3	4.7	6.4	7.4	9.3	9.8	8.9	9.6	8.9	8.0	6.1	5.4	5.5	4.5	2.9	3.0	5.1	9.8
	9.6	9.4	9.3	8.9	8.6	8.5	8.7	10.2	11.5	13.0	14.1	14.9	15.7	16.0	16.2	16.5	16.1	15.4	13.7	12.3	11.4	10.7	10.1	9.6	Diurnal Average	
	19.6	19.8	19.6	17.6	16.0	14.5	15.3	18.4	20.8	24.2	25.3	26.5	27.2	27.8	27.9	28.1	27.2	26.8	24.3	22.0	20.2	19.3	18.9	19.5	Diurnal Maximum	

Wood Buffalo Environmental Association

Hourly Averages

Ambient Temperature 2m (AT2) - C

Firebag - September 2024



Concentration Ranges (C)	Number of Hours	%	Cumulative %
-50 - -20	0	0.00	0.00
-20 - 0	0	0.00	0.00
0 - 10	269	37.36	37.36
10 - 20	394	54.72	92.08
> 20	57	7.92	100.00

Total Number of Valid Hours: 720

Total Number of Hours: 720

Wood Buffalo Environmental Association

Summary of Hour Averages

Relative Humidity 2m (RH2) - %

Firebag - September 2024

Maximum Value: 98.2 % on Sep 13 08:00

Maximum Daily Average: 95.9 % on Sep 13

Minimum Value: 28.5 % on Sep 2 16:00

Minimum Daily Average: 51.4 % on Sep 1

Maximum Diurnal Average: 83.5 % at hour 6

Minimum Diurnal Average: 52.7 % at hour 16

Monthly Average: 70.11 %

Percentiles: P_1 = 34.0 P_{10} = 44.1 Q_1 = 56.8 Median = 71.8 Q_3 = 86.4 P_{90} = 94.1 P_{99} = 98.0

Hours in Service:	720
Hours of Data:	720
Hours of Missing Data:	0
Hours of Calibration:	0
Percent Operational Time:	100.0

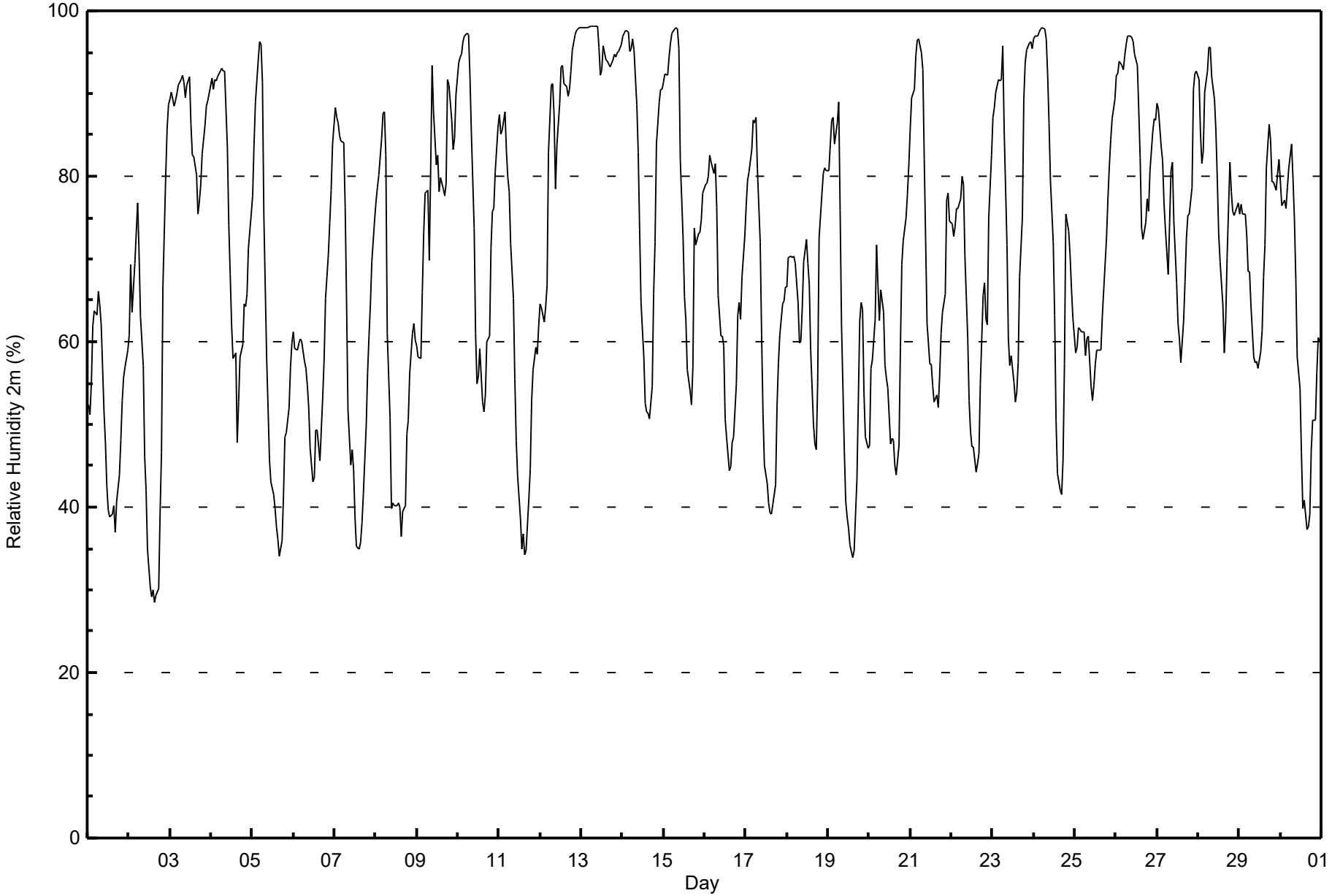
Day	Hourly Period Ending At (MST)																								Daily	Daily
	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24	Average	Maximum
1-Sep	52.4	51.1	55.0	61.9	63.7	63.2	66.1	64.4	62.0	51.5	47.8	42.5	39.6	38.8	39.1	40.1	37.0	40.8	43.8	48.1	52.8	55.7	56.9	59.0	51.4	66.1
2-Sep	60.9	69.2	63.6	69.5	73.1	76.8	70.7	63.0	57.0	46.1	42.0	34.9	30.4	29.2	29.9	28.5	29.3	30.2	39.4	46.6	66.6	80.0	85.8	88.7	54.6	88.7
3-Sep	89.3	90.2	88.4	89.2	89.9	91.0	91.7	92.3	91.3	89.5	91.0	92.0	86.4	82.5	82.4	80.1	75.4	77.0	79.0	82.7	86.2	88.5	89.1	90.0	86.9	92.3
4-Sep	91.9	90.6	91.7	91.6	92.0	92.7	93.0	92.7	92.8	83.3	74.1	68.1	62.1	58.0	58.6	47.9	52.7	58.1	59.7	64.5	64.3	65.7	71.3	75.4	74.7	93.0
5-Sep	77.7	84.0	88.9	94.1	96.3	95.9	91.3	75.2	57.9	52.1	45.8	43.1	41.5	39.8	37.7	36.0	34.0	35.9	41.3	48.5	48.9	52.0	57.0	59.8	59.8	96.3
6-Sep	61.2	59.2	59.0	59.9	60.4	60.0	57.6	56.8	54.7	52.0	47.0	43.1	43.5	49.3	49.2	45.6	49.5	53.5	58.0	65.2	70.6	74.4	78.3	83.9	58.0	83.9
7-Sep	88.3	87.2	86.4	84.9	84.2	84.0	76.3	64.6	51.7	45.1	46.9	44.6	38.9	35.2	35.0	35.7	38.2	41.7	49.8	56.3	60.7	64.6	69.6	74.7	60.2	88.3
8-Sep	76.9	78.6	80.2	84.7	87.7	87.8	82.6	60.9	50.9	39.9	40.5	40.1	40.2	40.5	40.0	36.5	39.4	40.2	48.7	50.5	56.2	61.0	62.2	60.2	57.8	87.8
9-Sep	59.5	58.1	58.0	65.9	73.1	77.9	78.2	69.8	81.1	93.4	87.8	81.4	82.6	78.1	79.8	78.5	77.6	79.2	91.8	91.0	86.7	83.3	84.5	89.8	78.6	93.4
10-Sep	93.7	94.3	94.7	96.4	96.9	97.3	97.1	92.1	85.3	73.7	61.0	54.9	55.7	59.1	52.8	51.6	53.6	59.9	60.6	71.3	75.8	76.0	80.6	86.0	75.9	97.3
11-Sep	87.5	85.1	85.7	87.7	83.0	79.9	78.2	71.9	65.2	55.4	48.0	43.8	38.6	35.0	36.8	34.2	34.7	41.0	44.6	52.9	56.5	59.4	58.5	61.8	59.4	87.7
12-Sep	64.7	64.0	62.3	64.3	66.8	82.9	91.0	91.2	87.2	78.5	83.7	88.8	93.2	93.4	91.3	90.8	89.6	90.5	92.7	95.2	97.1	97.7	97.9	97.9	85.5	97.9
13-Sep	97.9	98.0	98.0	98.0	98.0	98.1	98.1	98.2	98.1	98.1	95.5	92.1	92.8	95.8	94.0	94.0	93.5	93.2	94.1	94.7	94.4	94.9	95.1	96.0	95.9	98.2
14-Sep	97.0	97.3	97.6	97.4	95.2	95.5	96.6	95.3	88.6	82.9	73.6	64.7	58.1	52.5	51.6	51.4	50.7	54.6	65.8	72.1	84.0	89.1	90.5	90.5	78.9	97.6
15-Sep	91.3	92.4	92.1	94.5	96.2	97.3	97.7	97.9	97.9	95.4	82.0	72.6	65.5	62.5	56.7	54.0	52.4	56.9	73.7	71.7	73.1	73.2	74.7	78.0	79.2	97.9
16-Sep	79.0	79.2	80.0	82.5	81.7	80.3	81.6	76.2	65.6	60.7	60.6	59.4	50.7	48.5	44.4	45.0	47.7	48.4	55.0	63.3	64.8	62.7	67.9	72.6	64.9	82.5
17-Sep	76.5	79.5	80.4	83.2	86.7	86.4	87.0	80.9	72.1	60.9	51.3	45.1	42.8	40.5	39.4	39.1	40.3	42.8	52.3	57.4	60.9	64.6	65.0	66.6	62.6	87.0
18-Sep	66.6	70.1	70.4	70.2	70.3	69.5	64.7	59.8	60.2	64.1	69.7	72.4	69.5	67.0	59.0	50.1	47.6	47.0	55.1	72.6	77.8	80.4	81.0	80.6	66.5	81.0
19-Sep	80.7	83.9	86.8	87.2	83.9	86.5	89.0	75.9	62.1	46.9	40.7	38.8	37.4	35.5	33.8	34.7	39.2	43.3	62.5	64.8	63.9	53.9	48.6	47.1	59.4	89.0
20-Sep	47.5	56.8	57.8	62.8	71.6	66.7	62.5	66.2	63.6	57.1	55.5	54.4	47.7	48.3	48.1	45.0	43.8	47.4	59.4	69.2	72.2	74.8	77.8	81.4	59.9	81.4
21-Sep	85.8	89.4	90.5	94.5	96.4	96.6	95.0	92.9	82.1	72.3	62.2	57.2	57.3	54.7	52.7	53.5	52.1	56.0	61.0	63.6	65.8	77.2	77.9	74.5	73.4	96.6
22-Sep	74.3	72.7	73.8	76.0	76.1	77.2	80.0	79.1	70.3	60.5	52.9	49.1	47.3	47.3	44.2	45.3	46.4	54.9	65.6	67.0	62.7	62.1	75.2	82.5	64.3	82.5
23-Sep	87.1	88.4	90.2	91.7	91.6	91.7	95.8	85.7	71.8	60.4	57.1	58.3	55.1	52.8	53.8	57.5	67.9	75.0	89.3	93.8	95.3	96.1	96.3	95.5	79.1	96.3
24-Sep	96.5	96.9	97.0	97.5	97.8	97.9	97.9	96.7	92.4	86.4	79.5	72.0	63.1	50.5	44.0	42.1	41.5	45.8	57.3	75.5	73.4	70.6	66.5	62.8	75.1	97.9
25-Sep	58.7	59.3	61.7	61.5	61.2	61.1	58.3	60.4	60.6	54.6	52.9	54.7	57.2	58.9	59.1	59.0	63.1	66.3	72.6	77.4	81.1	84.4	86.9	89.3	65.0	89.3
26-Sep	92.1	92.5	93.9	93.4	92.9	94.6	95.9	96.9	97.0	96.9	96.3	94.7	93.3	88.0	82.3	73.8	72.4	74.5	77.2	75.8	80.8	85.4	86.9	86.8	88.1	97.0
27-Sep	88.8	88.1	83.5	81.8	76.8	73.6	68.1	74.4	80.7	81.7	74.5	67.1	62.2	60.3	57.5	62.6	67.3	72.5	75.3	75.4	78.7	90.6	92.4	92.7	76.1	92.7
28-Sep	91.7	85.3	81.5	83.1	90.2	92.7	95.7	95.6	92.1	89.4	85.6	79.7	73.1	69.7	64.5	58.6	62.6	70.1	81.6	78.2	75.8	75.3	75.8	76.8	80.2	95.7
29-Sep	75.3	76.6	75.4	75.5	72.9	68.5	68.5	64.4	58.1	57.5	57.7	56.8	58.7	61.4	67.8	71.6	80.9	86.2	84.5	79.3	79.4	78.4	80.3	82.1	71.6	86.2
30-Sep	79.2	76.5	77.1	76.0	78.7	81.0	84.0	79.7	74.9	67.6	58.1	54.4	46.5	39.8	40.9	37.3	37.7	39.2	46.8	50.5	50.5	56.2	60.5	60.0	60.5	84.0
	79.0	79.8	80.1	81.9	82.8	83.5	83.0	79.0	74.2	68.5	64.0	60.7	57.7	55.8	54.2	52.7	53.9	57.4	64.6	69.2	71.9	74.3	76.4	78.1	Diurnal Average	
	97.9	98.0	98.0	98.0	98.0	98.1	98.1	98.2	98.1	98.1	96.3	94.7	93.3	95.8	94.0	94.0	93.5	93.2	94.1	95.2	97.1	97.7	97.9	97.9	Diurnal Maximum	

Wood Buffalo Environmental Association

Hourly Averages

Relative Humidity 2m (RH2) - %

Firebag - September 2024



Concentration Ranges (%)	Number of Hours	%	Cumulative %
0 - 20	0	0.00	0.00
20 - 40	43	5.97	5.97
40 - 60	190	26.39	32.36
60 - 80	235	32.64	65.00
80 - 100	252	35.00	100.00

Total Number of Valid Hours: 720

Total Number of Hours: 720

Wood Buffalo Environmental Association

Summary of Hour Averages

Wind Speed 10m (WS10) - km/h

Firebag - September 2024

Maximum Speed: 26 km/h on Sep 6 00:00

Maximum Daily Speed Average: 15.4 km/h on Sep 6

Minimum Speed Value: 0 km/h on Sep 9 04:00

Minimum Daily Speed Average: 1.5 km/h on Sep 19

Maximum Diurnal Speed Average: 8.7 km/h at hour 15

Minimum Diurnal Speed Average: 2.5 km/h at hour 21

Monthly Average Velocity: 4.3 km/h 230.8 deg

Percentiles: P_1 = 2 P_{10} = 5 Q_1 = 7 Median = 10 Q_3 = 14 P_{90} = 17 P_{99} = 24

Hours in Service:	720
Hours of Data:	720
Hours of Missing Data:	0
Percent Operational Time:	100.0

Day	Hourly Period Ending At (MST)																								Daily	Daily
	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24	Average	Maximum
1-Sep	SSE19	SSE18	S16	S13	S12	SSW15	SSW17	SSW18	S15	SSW20	SSW19	SSW23	SW25	SW24	WSW20	W16	W16	WSW13	WSW9	SW8	SW9	SSW9	SSW9	SSW9	SSW13.7	SW25
2-Sep	SSW7	S7	SSW9	S7	S7	S6	S6	SSW10	SSW12	SSW11	SSW14	SW15	WSW16	WSW16	WSW15	WSW16	WSW13	WSW16	WSW11	NW12	N20	N20	N18	N17	WSW6.7	N20
3-Sep	N18	N12	N13	N10	NNW14	N14	NNW12	NNW13	N13	N14	NNW12	NNW13	N11	N10	N9	N11	NNE9	N10	N8	N5	N7	N9	NNW8	NNW7	N10.8	N18
4-Sep	NNW7	N5	NW3	WSW5	WSW6	WSW6	WSW9	WSW11	W9	WNW11	WNW13	NW14	NW14	WNW14	WNW11	WNW14	NW8	W5	WSW7	WSW8	WSW8	WSW9	WSW8	W8	W7.7	WNW14
5-Sep	N10	NE9	NE7	NNE1	SSW4	SSW4	SSW5	S7	SSW8	SSW6	SSW6	SW6	SSW8	SSW9	SW10	SSW14	SSW15	S16	SSE16	SSE15	SSE18	SSE22	SSE26	S26	S8.6	S26
6-Sep	S24	S24	S25	S25	S24	S22	SSW25	SSW24	SSW24	SW19	SW17	SW18	WSW16	SW14	SW12	SW12	SW15	SSW13	SW12	SW11	SW10	SW9	WSW8	W3	SSW15.4	SSW25
7-Sep	SSW1	SSE2	E4	S4	SSW5	SSE6	SSE7	S9	S16	S19	SSW19	SSW20	SSW20	SW19	SW18	WSW16	SW15	SW13	SW13	SW12	SW12	SW10	SW7	SW7	SSW10.5	SSW20
8-Sep	SW8	WSW8	SW6	SW4	S2	SSE3	SE4	ESE4	SE9	SSE12	S14	SSW17	SSW18	SSW16	SSW11	SSW13	S8	SE6	ESE7	ESE11	ESE12	SSE12	S14	S15	S8.1	SSW18
9-Sep	S13	SSW14	S11	W0	ESE1	E2	SW3	W6	NNW14	NNW14	N15	NNW12	WNW10	WNW10	W15	W16	WSW17	W13	WSW19	W19	WNW16	WNW16	W13	W15	W8.5	WSW19
10-Sep	W16	W14	W12	WSW11	WSW9	WSW11	WSW12	WSW14	WSW15	W14	W13	W15	W14	WNW9	WSW15	W15	WSW13	W7	N4	NNE5	NE8	ENE6	ESE4	ESE4	W8.5	W16
11-Sep	ESE5	ESE6	E4	ESE7	ESE9	SE10	SE10	ESE9	SE12	SE11	SSE7	SSW4	SSW6	SSW5	WSW7	SE5	SSW2	NE5	SSE8	SE9	SE11	SE12	SE12	SE11	SE6.7	SE12
12-Sep	SE12	SE13	SE13	SE12	SSE14	SSE18	SSE11	SE10	E13	E17	E14	E14	ENE11	E12	E11	E12	ESE11	ESE9	ESE6	N2	NNE4	ENE6	NE8	NNE7	ESE8.9	SSE18
13-Sep	ENE5	NE5	NNE8	N8	NNE9	NNE10	NNE11	NNE10	NE9	NNE9	NNE11	NNE11	N11	N9	NNW10	NNW10	NNW11	N12	N10	NNW10	N11	NNW8	NNW11	NNW13	N9.0	NNW13
14-Sep	NNW12	NW12	NW10	WNW9	WNW8	WNW7	W7	W7	W10	W11	W13	WNW12	W13	W14	W14	W15	W12	WNW7	NNE8	NNE6	ENE3	ESE2	SSE4	SSE5	WNW7.1	W15
15-Sep	SW2	NNE5	NE8	NE7	NE6	NNE6	NNE9	NNE9	NNE8	N10	N9	NW9	NW9	NW9	WNW5	WNW2	NW2	WNW2	SSE3	SSE8	SSE9	S10	S10	S12	N1.8	S12
16-Sep	S11	SSW12	SSW12	SSW13	SSW13	SSW16	SSW17	SSW17	SSW17	SW21	SW19	SSW20	SW23	WSW22	WSW18	WSW17	WSW13	WSW11	SW8	SSW9	SSW8	SSW10	SW10	SSW10	SW13.4	SW23
17-Sep	SSW10	SSW10	SSW11	S10	SSW11	S8	S10	SSW13	SSW15	SSW15	SW14	SW14	SW13	SW13	SW10	SW9	SSW8	SSW6	SE6	SE9	SE10	SSE12	SSE13	SSE13	SSW9.4	SSW15
18-Sep	SSE16	SSE14	S15	S14	S14	S14	SSW13	SSW17	SW17	WSW14	W9	WNW10	NW13	WNW12	WNW14	NW15	WNW12	NNW10	NNW6	N3	NNW3	NE3	ENE4	ESE3	SW4.9	SSW17
19-Sep	SE5	SSE5	S5	SSW4	SSW5	SW7	SW7	SW5	WSW6	WNW7	NW6	WNW6	NW8	WNW9	NW6	NNW5	NNE6	NNW1	N4	NNW4	N6	ENE5	E6	ESE6	WNW1.5	WNW9
20-Sep	SE6	ESE5	ESE7	E3	NNE4	NNE8	NNE10	NNE10	NNE14	NNE16	NNE15	N17	N19	N21	N20	N20	N19	N14	NNW9	NNW9	NNW10	NNW9	NNW9	N9	N10.2	N21
21-Sep	N6	NNW6	N8	NNW6	NW5	NNW1	SSE2	SSW2	SW3	SW8	SSW12	SW13	SSW12	SSW14	SSW14	SSW14	S14	SSE14	SSE12	SSE13	S16	SSW17	SSE13	SSE13	S6.7	SSW17
22-Sep	SE13	SE13	SE12	SSE11	SSE12	SSE13	S9	S10	S11	S10	SW10	WSW9	WNW11	WNW9	WNW6	N7	N5	NNE7	NNE6	NE6	E5	E5	WSW2	NNW2	S3.1	SSE13
23-Sep	NNW4	N3	NNE5	NNE5	NNE7	NE8	NNE6	NE4	NNE5	NNW2	WNW7	W9	WSW9	SW9	WSW11	SW11	SW10	SSW13	SSW14	SSW15	SW15	SSW13	SSW16	SW15	SW4.5	SSW16
24-Sep	SW13	SW12	SW10	SW6	SSW8	SSW10	SW11	SW14	WSW14	WSW16	W17	W15	W20	WNW21	WNW23	WNW18	WNW14	WNW8	W3	S3	SSE5	SE6	SE8	SE11	WSW8.8	WNW23
25-Sep	SE11	SSE12	SSE12	SSE13	SSE11	SE12	SE17	ESE15	ESE15	SSE21	SSE24	SSE20	SSW16	SW10	SSW10	S11	SSW9	SW11	SW10	SW13	SW11	WSW10	W9	W7	S9.9	SSE24
26-Sep	SW7	W8	NW8	NNW9	N11	N13	NNW11	NW13	WNW10	W7	W10	W12	WNW12	WNW14	W15	W12	WSW10	SW9	W12	WSW9	SW8	SW10	SW10	SW9	W7.8	W15
27-Sep	SSW7	SSW5	SSW6	SSE7	SSE10	S6	SSW11	S18	SSW12	SSW12	S10	SSW11	SW13	WSW11	SW11	SW13	SW14	SSW14	SSW13	SSW13	SSW15	SSW16	SW15	SW15	SSW11.0	S18
28-Sep	SW14	WSW21	WSW22	WSW20	WSW22	W18	WNW12	W13	W15	W14	W15	W15	W18	WSW15	WSW15	W14	W7	WNW1	SSE5	S7	S9	S9	S9	S8	WSW11.4	WSW22
29-Sep	SSE8	SE4	SE8	ESE4	SE7	SE10	ESE10	ESE9	ESE8	E8	NE7	ENE8	E6	NE7	NNE12	N10	NNW15	NNW11	N8	NNW9	NNW10	NNW8	NW8	NW8	NE3.7	NNW15
30-Sep	WNW8	WNW8	WNW8	NW9	NW9	NW7	WNW6	W6	WSW9	WSW12	W15	W14	WNW15	WNW19	WNW18	WNW22	WNW18	WNW15	WNW10	WNW9	WNW9	NW5	WSW8	WSW11	WNW10.9	WNW22
	S4.0	SSW3.9	S3.5	SSW3.3	SSW3.6	S3.9	SSW4.1	SSW4.7	SW4.7	SW5.5	WSW5.8	WSW6.9	W8.5	W8.5	W8.7	W7.9	W6.4	WSW4.0	SW3.1	SW2.8	SSW2.5	SSW3.4	SSW4.0	SSW3.9	Diurnal Average	
	S24	S24	S25	S25	S24	S22	SSW25	SSW24	SSW24	SSE21	SSE24	SSW23	SW25	SW24	WNW23	WNW22	N19	WSW16	WSW19	W19	N20	SSE22	SSE26	S26	Diurnal Maximum	

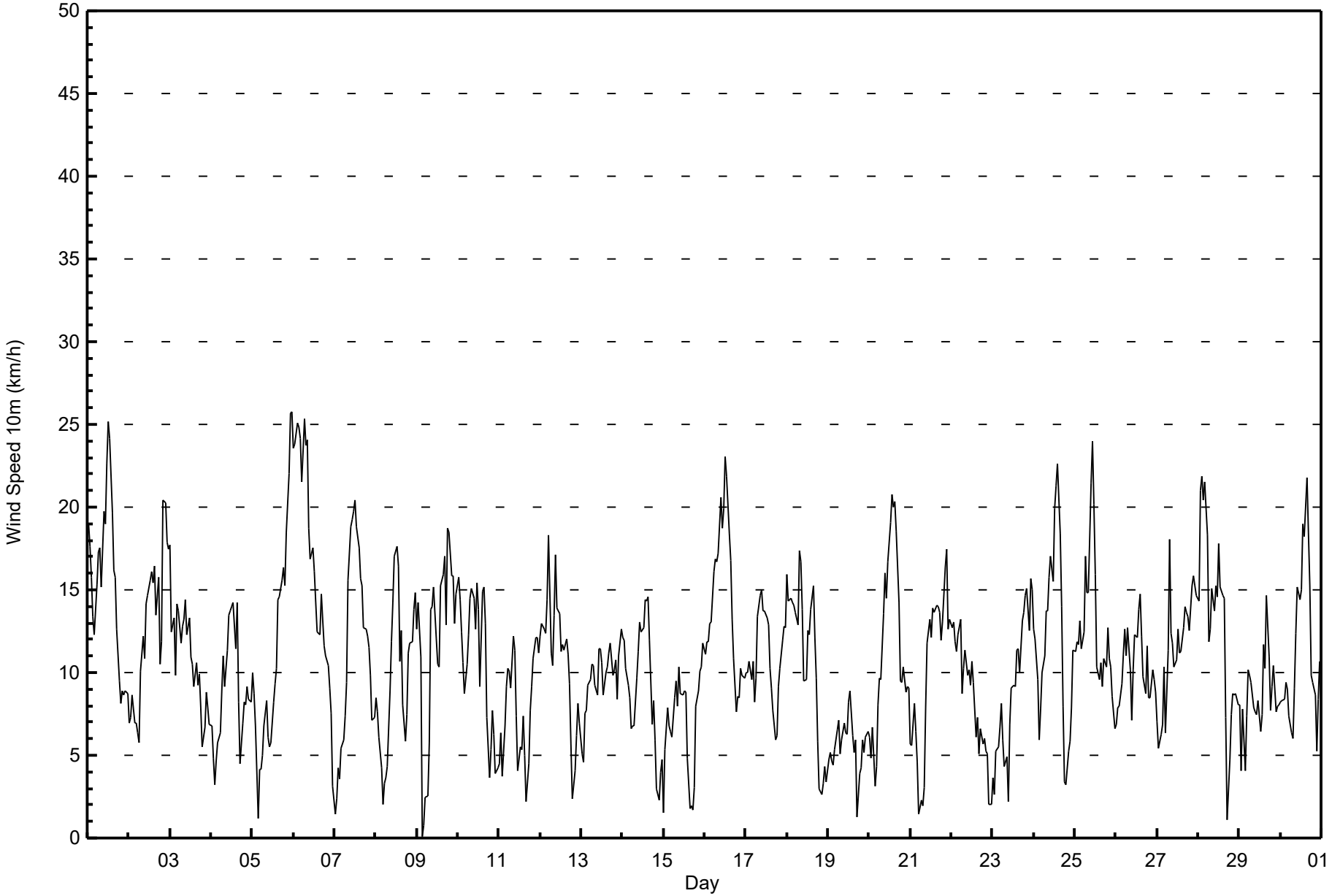
All monthly, daily, and diurnal averages have been calculated using vector methods

Wood Buffalo Environmental Association

Hourly Averages

Wind Speed 10m (WS10) - km/h

Firebag - September 2024



Wind Speed Ranges (km/h)	Number of Hours	%	Cumulative %
0 - 5	95	13.19	13.19
6 - 11	321	44.58	57.78
12 - 19	265	36.81	94.58
20 - 28	39	5.42	100.00
29 - 38	0	0.00	100.00
> 38	0	0.00	100.00

Total Number of Valid Hours: 720

Total Number of Hours: 720

Wood Buffalo Environmental Association

Frequency Distribution

Wind Speed 10m (WS10) - km/h

Firebag - September 2024

Wind Speed Ranges (km/h)	Wind Direction																
	N	NNE	NE	ENE	E	ESE	SE	SSE	S	SSW	SW	WSW	W	WNW	NW	NNW	**Totals**
0 - 5	8	8	4	4	6	9	4	9	4	12	5	2	3	6	3	8	95
6 - 11	22	26	12	4	3	15	20	12	27	33	35	30	17	26	14	25	321
12 - 19	15	4	0	0	5	4	12	25	18	47	35	26	37	19	7	11	265
20 - 28	5	0	0	0	0	0	0	5	7	8	4	6	1	3	0	0	39
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	50	38	16	8	14	28	36	51	56	100	79	64	58	54	24	44	720

Total Number of Valid Hours: 720

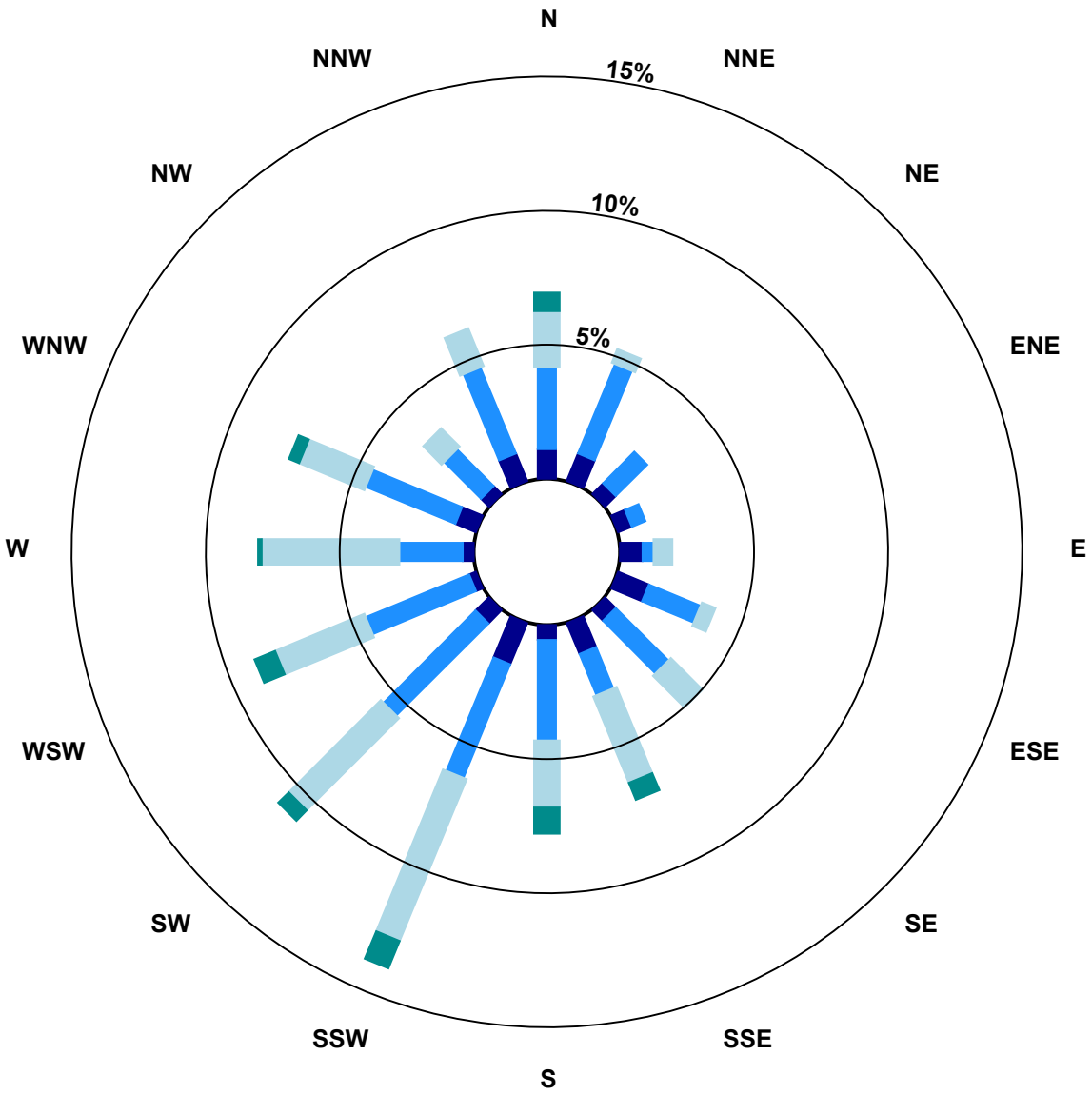
Total Number of Hours: 720

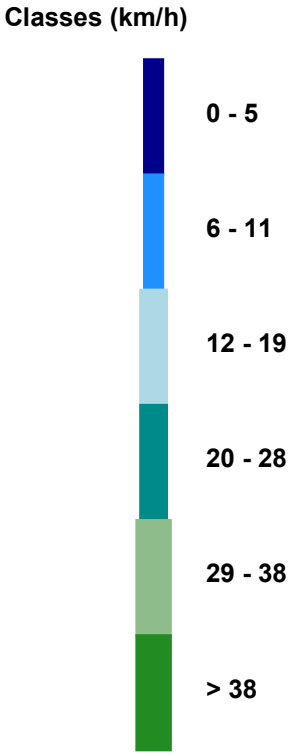
Wood Buffalo Environmental Association

Wind Rose Sep 2024

Wind Speed 10m (WS10) - km/h

Firebag





Total Number of Valid Hours: 720

Wood Buffalo Environmental Association

Summary of Hour Standard Deviations

Wind Speed 10m (WS10) - km/h

Firebag - September 2024

Number of Exceedences (AAAQO): 1-hr: 0 24-hr: 0
Maximum Value: 8 km/h on Sep 2 20:00

Minimum Value: 1 km/h on Sep 19 04:00

Percentiles: P_1 = 1 P_{10} = 1 Q_1 = 2 Median = 2 Q_3 = 3 P_{90} = 4 P_{99} = 6

Hours in Service:	720
Hours of Data:	720
Hours of Missing Data:	0
Hours of Calibration:	0
Percent Operational Time:	100.0

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

Wood Buffalo Environmental Association

Summary of Hour Averages

Wind Direction 10m (WD10) - deg

Firebag - September 2024

Direction of Maximum Speed: 170 deg on Sep 6 00:00
Direction of Maximum Daily Speed Average: 205.5 deg on Sep 6

Direction of Minimum Speed: 279 deg on Sep 9 04:00

Direction of Minimum Daily Speed Average: 1.5 deg on Sep 19

Monthly Average Direction: 230.8 deg

Hours in Service:	720
Hours of Data:	720
Hours of Missing Data:	0
Percent Operational Time:	100.0

Day	Hourly Period Ending At (MST)																								Daily
	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24	Average
1-Sep	166	165	174	173	185	193	194	193	191	202	203	203	224	223	248	263	260	246	243	223	217	212	213	207	208.1
2-Sep	205	189	199	188	189	186	176	199	201	211	213	226	239	243	252	248	249	253	248	316	351	357	356	358	249.8
3-Sep	4	357	359	358	345	351	346	348	357	349	340	347	360	0	349	10	13	11	6	352	359	357	343	339	354.9
4-Sep	346	352	306	254	256	247	240	246	265	282	296	313	310	303	290	293	308	281	242	248	242	241	243	278	279.6
5-Sep	3	51	47	14	208	198	202	190	194	200	197	222	208	205	219	199	199	179	165	153	155	161	168	170	177.6
6-Sep	171	173	173	177	184	187	198	208	211	229	235	233	244	231	221	223	214	208	216	215	218	226	243	281	205.5
7-Sep	197	152	99	182	193	166	164	173	184	190	203	205	210	216	236	241	225	235	215	216	215	216	215	228	208.3
8-Sep	231	237	219	219	185	152	143	119	142	153	182	198	202	197	203	207	178	137	120	113	122	151	169	186	177.1
9-Sep	185	196	176	279	106	88	233	272	339	334	349	327	302	295	278	269	255	260	257	270	292	291	270	262	276.4
10-Sep	266	272	264	257	255	241	248	257	256	264	280	280	280	285	258	259	252	280	5	20	48	74	109	120	266.7
11-Sep	122	114	96	109	122	133	136	121	133	140	148	208	192	194	241	145	199	40	152	141	140	133	138	133	139.1
12-Sep	143	145	142	132	154	167	155	124	97	101	85	85	64	87	85	85	111	110	106	10	28	67	50	33	109.2
13-Sep	58	42	16	5	25	28	25	24	34	26	31	24	11	355	346	338	345	353	349	348	353	348	340	339	5.9
14-Sep	337	321	307	296	291	284	269	262	276	272	272	285	277	271	278	259	279	301	14	33	63	114	150	154	287.8
15-Sep	232	20	43	38	38	22	15	18	19	354	357	325	312	324	301	294	304	288	152	154	167	182	185	182	2.3
16-Sep	189	201	193	195	197	195	196	203	212	222	224	213	233	239	255	254	256	254	225	205	205	210	214	207	218.3
17-Sep	210	203	198	191	194	184	187	197	202	210	231	233	231	224	233	227	201	193	137	129	131	151	158	157	195.7
18-Sep	163	162	174	174	175	179	194	205	231	247	263	297	308	296	297	308	300	330	331	359	347	34	66	122	234.1
19-Sep	138	149	178	192	202	214	226	233	252	284	304	300	324	302	314	341	12	346	2	341	2	77	101	117	285.5
20-Sep	133	111	114	94	33	21	21	19	25	29	16	360	352	351	4	351	353	353	342	335	345	343	348	358	5.0
21-Sep	350	340	2	331	323	331	158	199	224	216	201	224	211	200	200	196	178	159	151	151	175	202	161	149	189.0
22-Sep	137	134	139	153	160	168	172	169	187	191	218	251	284	284	303	357	358	23	16	47	79	87	247	335	169.3
23-Sep	337	7	20	23	33	34	31	34	33	333	296	271	255	235	247	228	217	202	208	208	219	195	200	216	230.4
24-Sep	223	231	232	219	209	210	220	234	245	254	277	278	273	286	287	290	292	299	281	174	158	145	144	145	252.4
25-Sep	145	153	153	156	152	138	137	119	116	156	164	168	201	221	208	188	210	216	217	229	236	244	265	267	176.4
26-Sep	227	260	325	340	8	356	340	323	302	273	276	272	282	284	277	276	252	220	280	253	232	226	232	224	280.7
27-Sep	198	196	198	164	163	184	192	181	195	197	181	194	229	242	236	226	221	203	198	195	193	209	220	222	203.2
28-Sep	230	243	250	250	254	265	299	272	266	261	267	259	262	256	254	264	267	300	149	174	178	180	180	174	248.9
29-Sep	151	137	132	105	126	132	121	114	117	98	53	73	96	41	32	4	337	346	350	342	342	330	325	313	46.7
30-Sep	294	297	292	308	316	304	290	264	256	255	265	270	288	286	290	290	301	296	293	285	285	304	254	257	284.9
	190.2	193.0	189.2	193.9	193.2	190.4	197.3	205.7	216.2	226.9	243.5	251.0	259.5	261.0	266.7	265.5	261.1	254.4	232.2	219.9	210.2	201.1	202.9	204.4	
	Diurnal Average																								

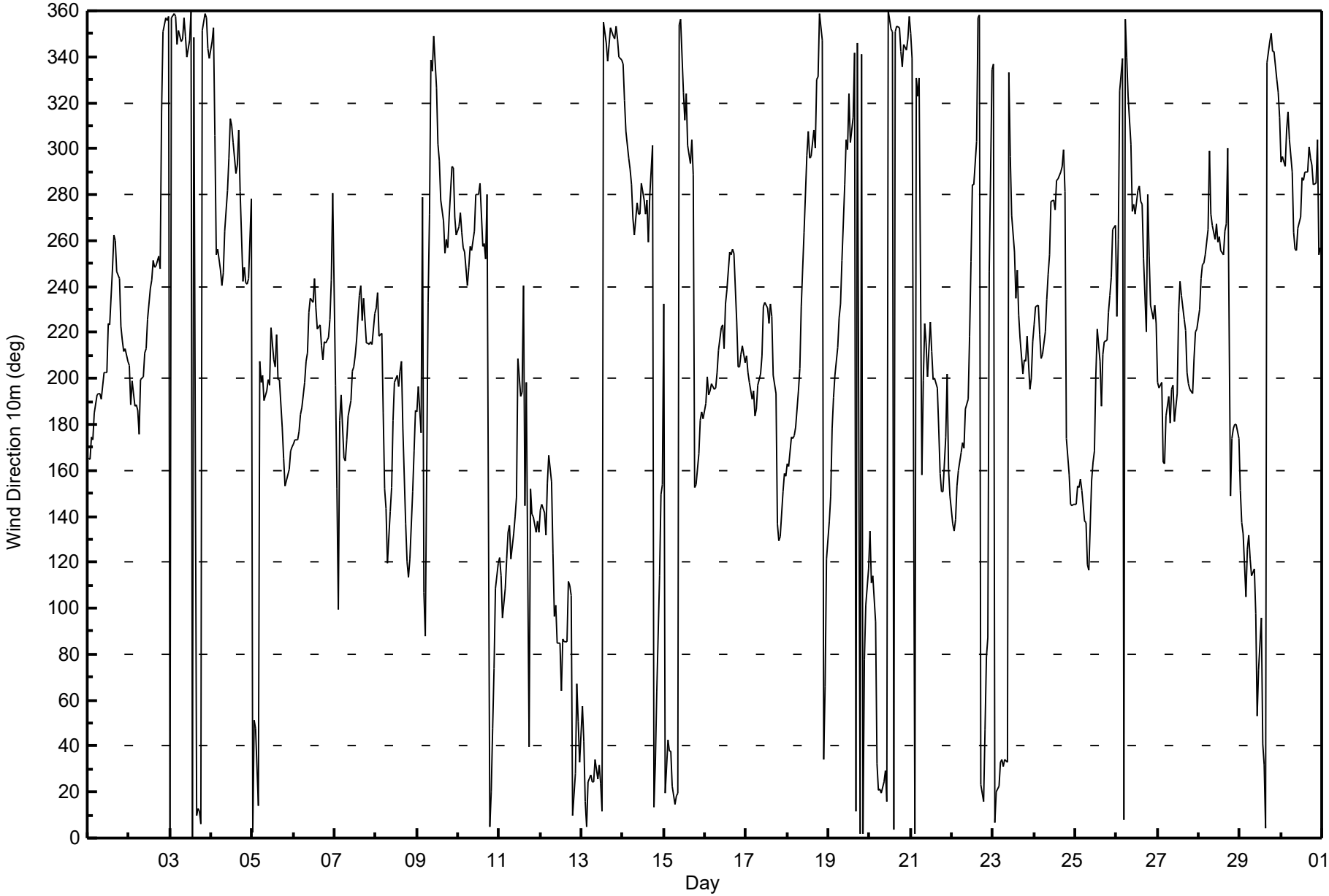
All monthly, daily, and diurnal averages have been calculated using vector methods

Wood Buffalo Environmental Association

Hourly Averages

Wind Direction 10m (WD10) - deg

Firebag - September 2024



Number of Exceedences (AAAQO): 1-hr: 0 24-hr: 0

Maximum Value: 98 deg on Sep 11 17:00

Minimum Value: 3 deg on Sep 23 06:00

Percentiles: P_1 = 6 P_{10} = 9 Q_1 = 11 Median = 15 Q_3 = 21 P_{90} = 31 P_{99} = 86

Hours in Service:	720
Hours of Data:	720
Hours of Missing Data:	0
Hours of Calibration:	0
Percent Operational Time:	100.0

Day	Hourly Period Ending At (MST)																								Daily
	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24	Maximum
1-Sep	9	9	9	9	10	8	8	9	10	11	13	14	14	15	21	22	19	17	12	8	10	8	8	7	22
2-Sep	6	7	4	12	7	12	13	16	9	19	17	18	21	19	22	19	15	13	10	44	16	17	15	17	44
3-Sep	15	17	16	17	15	16	16	15	17	16	17	16	18	17	18	22	15	14	13	12	11	13	13	9	22
4-Sep	8	18	37	22	13	13	11	14	17	24	23	21	24	26	22	24	15	27	7	6	12	7	12	33	37
5-Sep	29	11	14	96	19	19	16	15	16	33	56	57	42	34	32	18	18	11	9	10	10	10	9	9	96
6-Sep	9	8	9	9	10	10	10	10	12	15	18	16	17	15	12	13	11	9	10	9	9	7	11	32	32
7-Sep	47	30	21	24	19	9	7	9	10	12	14	14	16	15	19	15	18	15	10	9	9	9	11	8	47
8-Sep	6	8	12	13	66	27	21	21	14	17	14	18	17	16	16	15	15	28	13	10	13	16	9	10	66
9-Sep	9	13	27	91	90	43	78	39	15	17	23	23	20	26	20	20	15	22	14	20	21	20	21	14	91
10-Sep	15	18	15	14	15	12	12	14	14	18	23	22	27	22	18	15	16	25	27	21	7	13	14	12	27
11-Sep	9	10	25	13	11	11	12	14	15	20	48	78	65	70	39	62	98	27	24	13	13	12	11	12	98
12-Sep	11	10	11	12	19	9	11	18	12	10	11	11	12	12	15	15	15	14	14	64	41	16	12	15	64
13-Sep	14	19	13	14	16	12	12	13	13	13	16	18	21	16	17	13	14	16	17	14	15	16	13	13	21
14-Sep	14	14	17	20	21	20	18	21	20	20	21	26	26	26	26	22	23	22	15	13	12	25	9	10	26
15-Sep	66	21	7	5	5	16	12	16	17	21	29	39	43	25	68	92	71	41	27	14	11	8	8	8	92
16-Sep	7	11	9	9	13	8	9	11	12	14	13	13	17	17	20	17	15	14	20	8	10	10	10	9	20
17-Sep	9	10	8	8	8	13	8	8	9	16	19	22	28	28	34	25	30	18	32	12	12	13	9	10	34
18-Sep	9	9	9	9	8	8	12	11	17	14	25	23	24	24	22	17	20	11	8	21	14	20	17	14	25
19-Sep	14	9	13	19	9	12	9	10	18	24	40	54	44	31	54	41	14	40	12	28	37	24	13	17	54
20-Sep	39	31	19	51	17	10	8	10	12	14	17	19	18	19	18	17	16	16	8	9	11	9	8	12	51
21-Sep	13	22	11	11	17	94	35	64	35	16	17	20	18	18	20	17	16	13	10	14	22	12	14	13	94
22-Sep	13	12	12	12	10	11	11	13	10	17	22	32	28	34	58	29	32	9	7	9	14	15	90	35	90
23-Sep	31	11	12	7	9	3	5	14	21	85	34	29	33	28	16	16	12	11	10	11	11	13	13	11	85
24-Sep	10	12	13	16	15	9	9	11	13	15	21	24	22	23	21	23	22	15	61	14	8	15	13	7	61
25-Sep	12	11	11	10	12	12	11	14	15	15	11	12	12	12	15	13	26	13	16	10	10	12	21	35	35
26-Sep	12	29	14	19	14	16	16	17	20	39	21	20	21	22	20	24	23	11	37	24	9	8	7	9	39
27-Sep	6	23	13	11	14	44	9	10	23	13	13	28	26	27	28	15	13	11	8	8	11	13	11	10	44
28-Sep	13	12	13	13	14	17	20	18	16	15	18	19	18	17	18	24	19	87	14	9	9	7	8	9	87
29-Sep	12	49	26	59	15	12	12	12	22	30	31	40	45	43	16	20	14	15	14	13	12	11	9	13	59
30-Sep	15	17	17	13	9	14	14	17	15	19	22	23	26	24	22	21	18	19	18	19	19	28	11	14	28
	66	49	37	96	90	94	78	64	35	85	56	78	65	70	68	92	98	87	61	64	41	28	90	35	
	Diurnal Maximum																								

WOOD BUFFALO ENVIRONMENTAL ASSOCIATION

CONTINUOUS AMBIENT AIR QUALITY
MONITORING PROGRAM
MONTHLY REPORT

AMS20
MACKAY RIVER
SEPTEMBER 2024

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

October 31, 2024

WOOD BUFFALO ENVIRONMENTAL ASSOCIATION - MACKAY RIVER (AMS20)
SEPTEMBER 2024

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	686	34	34	100	16.1	0	2.4	0
H2S (ppb) Average	685	35	35	100	2.1	0	0.3	0
THC (ppm) Average	686	34	34	100	3.2	-	2.6	-
NO2 (ppb) Average	684	36	36	100	14.2	0	3.2	-
NO (ppb) Average	684	36	36	100	18.8	-	2.7	-
NOX (ppb) Average	684	36	36	100	32.2	-	5.9	-
Temperature 2 m (C) Average	720	0	0	100	30.3	-	19.3	-
Relative Humidity (%) Average	720	0	0	100	99.8	-	94.5	-
Wind Speed 10 m (km/h) Average	715	0	5	99.31	17	-	9	-
Wind Direction 10 m (deg) Average	715	0	5	99.31	-	-	-	-
Precipitation (mm) Total	720	0	0	100	2.9	-	10	-

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

WOOD BUFFALO ENVIRONMENTAL ASSOCIATION - MACKAY RIVER (AMS20)
SEPTEMBER 2024

MONTHLY SUMMARY FOR AIR QUALITY/ METEOROLOGICAL MONITORING MEASUREMENTS

					Percentile						
Parameter	Number	Mean	StnDev	Total	Min	P10	Q1	Median	Q3	P90	Max
SO2 (ppb) Average	686	0.24	0.9	-	0	0	0	0.1	0.1	0.3	16.1
H2S (ppb) Average	685	0.13	0.2	-	0	0	0.1	0.1	0.1	0.2	2.1
THC (ppm) Average	686	2.34	0.2	-	2.1	2.2	2.2	2.3	2.4	2.5	3.2
NO2 (ppb) Average	684	0.77	1.7	-	0	0.1	0.2	0.3	0.6	1.5	14.2
NO (ppb) Average	684	0.23	1.4	-	0	0	0	0	0	0.1	18.8
NOX (ppb) Average	684	1	2.8	-	0	0.1	0.2	0.3	0.6	1.6	32.2
Temperature 2 m (C) Average	720	11.52	6.1	-	-2.3	4	7.8	11.2	15	19.4	30.3
Relative Humidity (%) Average	720	74.31	19.4	-	24.2	43.5	61.5	77.3	91	96.6	99.8
Wind Speed 10 m (km/h) Average	715	5.8	3	-	0	2	3	6	8	10	17
Wind Direction 10 m (deg) Average	715	-	-	-	-	-	-	-	-	-	-
Precipitation (mm) Total	720	-	-	32.67	-	-	-	-	-	-	-

WOOD BUFFALO ENVIRONMENTAL ASSOCIATION -MACKAY RIVER (AMS20)
SEPTEMBER 2024

OPERATIONAL NOTES

Parameter	Period Start	Period End	Duration (Hours)	Notes
Wind Speed, Wind Direction	12 Sep 2024 23:00	12 Sep 2024 23:00	1	Unstable Operation - flatline in analyzer output signal
Wind Speed, Wind Direction	13 Sep 2024 03:00	13 Sep 2024 03:00	1	Unstable Operation - flatline in analyzer output signal
Wind Speed, Wind Direction	15 Sep 2024 06:00	15 Sep 2024 06:00	1	Unstable Operation - flatline in analyzer output signal
Wind Speed, Wind Direction	21 Sep 2024 05:00	21 Sep 2024 06:00	2	Unstable Operation - flatline in analyzer output signal

Wood Buffalo Environmental Association

Summary of Hour Averages

Sulphur Dioxide (SO_2) - ppb

Mackay River - September 2024

Number of Exceedences (AAAQO): 1-hr: 0 24-hr: 0
Maximum Value: 16.1 ppb on Sep 15 10:00 Maximum Daily Average: 2.4 ppb on Sep 15

Minimum Value: 0.0 ppb on Sep 2 05:00 Minimum Daily Average: 0.0 ppb on Sep 24
Maximum Diurnal Average: 1.0 ppb at hour 10 Minimum Diurnal Average: 0.1 ppb at hour 5
Monthly Average: 0.24 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} = 4.2

Hours in Service:	720
Hours of Data:	686
Hours of Missing Data:	34
Hours of Calibration:	34
Percent Operational Time:	100.0

Day	Hourly Period Ending At (MST)																								Daily	Daily
	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24	Average	Maximum
1-Sep	0.1	0.1	0.1	0.0	Z	0.1	0.1	0.0	0.1	0.1	0.2	0.1	0.1	0.2	0.1	0.0	0.1	0.1	0.2	0.1	0.0	0.1	0.0	0.1	0.1	0.2
2-Sep	0.1	0.1	0.1	0.1	0.0	Z	0.0	0.1	0.1	0.1	0.1	0.1	0.1	0.2	0.1	0.1	0.1	0.1	0.0	0.5	0.1	0.6	2.7	2.6	0.4	2.7
3-Sep	Z	0.1	0.1	0.1	0.1	0.6	0.1	0.1	0.1	0.1	0.1	0.1	0.0	1.4	0.3	1.7	2.3	0.9	0.6	0.4	0.0	0.1	0.0	0.1	0.4	2.3
4-Sep	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	0.4	0.1	0.1	0.1	0.1	0.1	0.1	0.0	0.1	0.1	0.0	0.1	0.4
5-Sep	0.1	0.1	Z	0.1	0.1	0.0	0.1	0.2	3.0	1.9	0.4	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.0	0.0	0.1	0.0	0.0	0.1	0.3	3.0
6-Sep	0.1	0.1	0.1	Z	0.5	0.6	0.5	0.4	0.3	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	0.2	0.6
7-Sep	0.0	0.1	0.0	0.0	Z	0.0	0.1	0.0	0.2	0.2	0.2	0.1	0.1	0.1	0.0	0.0	0.0	0.1	0.0	0.0	0.0	0.1	0.0	0.1	0.1	0.2
8-Sep	0.0	0.0	0.0	0.0	0.0	Z	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	0.1	0.1	0.1	0.0	0.3	0.1	0.3
9-Sep	Z	0.6	0.2	0.1	0.0	0.1	0.1	1.3	2.1	2.8	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	2.8
10-Sep	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	0.8	0.3	0.1	0.0	0.0	0.0	0.0	0.1	0.8
11-Sep	0.0	0.0	Z	0.0	0.0	0.0	0.1	0.1	0.2	0.3	0.5	0.5	0.2	0.2	0.3	0.3	0.3	0.3	0.2	0.2	0.2	0.2	0.1	0.2	0.2	0.5
12-Sep	0.2	0.2	0.2	Z	0.2	0.1	0.2	0.1	0.1	0.2	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	0.2
13-Sep	0.1	0.0	0.1	0.1	Z	0.3	C	C	C	C	0.3	1.5	1.0	0.3	0.0	0.0	0.2	0.1	0.0	0.0	0.0	0.0	0.0	0.0	0.2	1.5
14-Sep	0.3	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	0.3
15-Sep	Z	0.0	0.0	0.0	0.0	0.0	0.0	0.0	3.0	16.1	4.9	4.8	8.3	5.4	4.2	2.9	2.4	1.4	0.6	0.4	0.2	0.2	0.1	0.1	2.4	16.1
16-Sep	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	0.1	0.0	0.1	0.0	0.1	0.1	0.1	0.0	0.1
17-Sep	0.1	0.1	Z	0.0	0.0	0.1	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	0.0	0.0	0.0	0.0	0.0	0.1
18-Sep	0.0	0.1	0.2	Z	0.0	0.0	0.0	0.0	0.0	0.0	0.0	4.4	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	4.4
19-Sep	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	1.8	0.4	0.1	0.0	0.0	0.1	0.0	0.0	0.1	1.8
20-Sep	0.1	0.2	0.2	0.1	0.1	Z	0.2	0.1	0.1	0.2	0.2	0.1	0.5	1.5	0.7	0.1	0.2	0.0	0.1	0.0	0.0	0.0	0.1	0.0	0.2	1.5
21-Sep	Z	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	0.1	0.0	0.0	0.0	0.1	0.0	0.1	0.1	0.2	0.1	0.1	0.2
22-Sep	0.1	Z	0.1	0.1	0.0	0.0	0.1	0.0	0.1	0.0	0.1	0.1	0.1	0.1	0.1	0.6	0.1	0.1	0.0	0.0	0.0	0.0	0.2	0.1	0.1	0.6
23-Sep	0.0	0.0	Z	0.0	0.0	0.0	0.0	0.0	1.3	3.7	1.6	0.6	0.4	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.3	3.7
24-Sep	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
25-Sep	0.0	0.0	0.0	0.0	Z	0.2	0.1	0.4	0.3	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	0.0	0.1	0.4
26-Sep	0.0	0.0	0.0	0.6	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	0.2	0.2	0.0	0.0	0.0	0.0	0.6
27-Sep	Z	0.1	0.0	0.1	0.1	0.0	0.0	0.0	0.0	0.0	0.1	0.1	0.1	0.1	0.0	0.1	0.0	0.1	0.0	0.1	0.0	0.1	0.1	0.1	0.1	0.1
28-Sep	0.1	Z	0.1	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	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1
29-Sep	0.0	0.1	Z	0.1	0.0	0.0	0.0	0.0	0.5	2.5	4.0	4.3	2.8	1.9	1.2	1.0	0.8	0.2	0.6	1.0	0.1	0.2	0.0	0.0	0.9	4.3
30-Sep	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
	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.4	1.0	0.5	0.6	0.5	0.4	0.3	0.3	0.3	0.2	0.1	0.1	0.1	0.1	0.1	0.1	Diurnal Average	
	0.3	0.6	0.2	0.6	0.5	0.6	0.5	1.3	3.0	16.1	4.9	4.8	8.3	5.4	4.2	2.9	2.4	1.4	0.6	1.0	0.2	0.6	2.7	2.6	Diurnal Maximum	

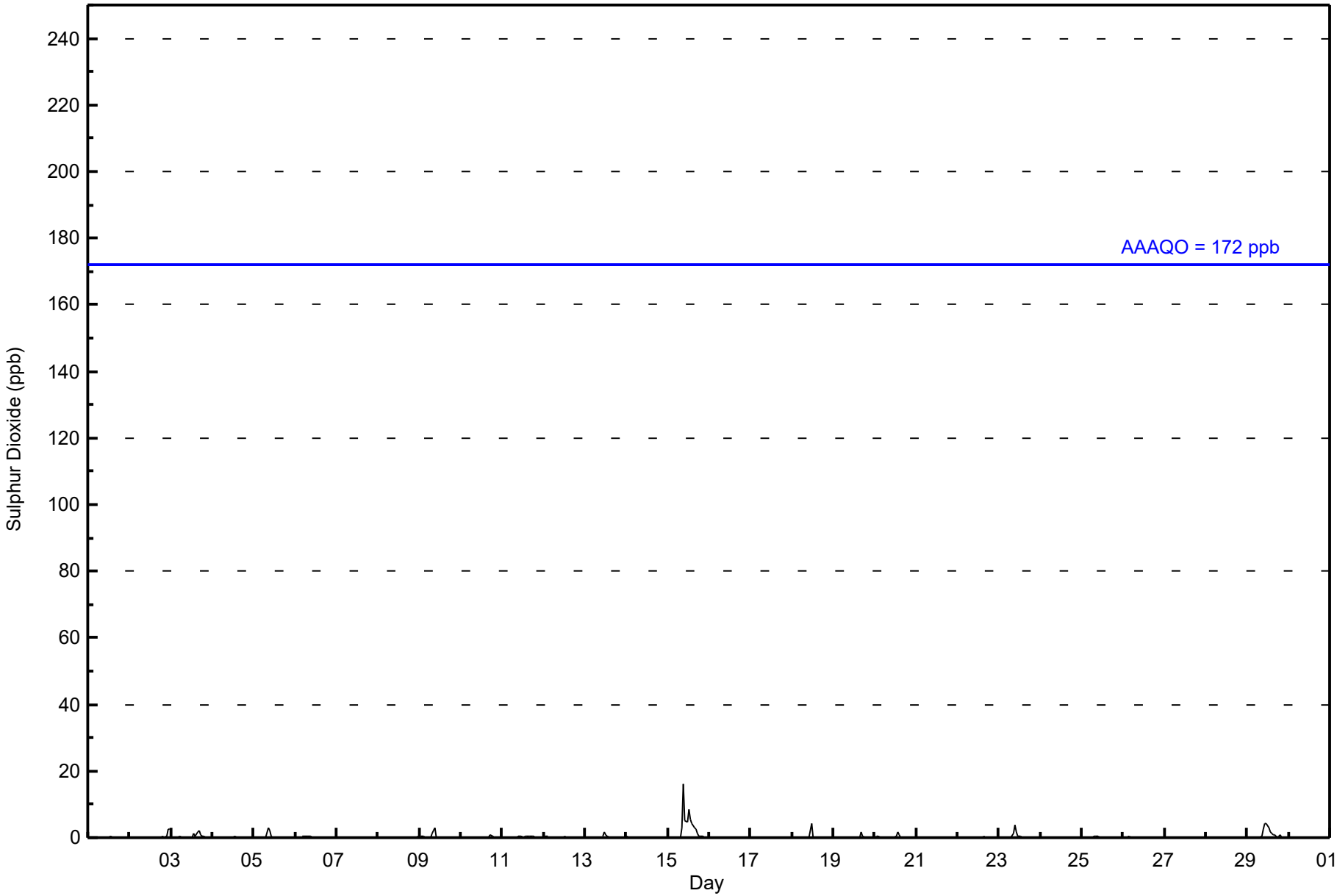
Z - zerospan C - Calibration
Alberta Ambient Air Quality Objectives (AAAQO): 1-hr 172 ppb 24-hr 48 ppb

Wood Buffalo Environmental Association

Hourly Averages

Sulphur Dioxide (SO_2) - ppb

Mackay River - September 2024



Sulphur Dioxide (SO_2) - ppb
Mackay River - September 2024

Concentration Ranges (ppb)	Number of Hours	%	Cumulative %
0 - 10	685	99.85	99.85
11 - 20	1	0.15	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: 686

Total Number of Hours: 720

Wood Buffalo Environmental Association

Frequency Distribution

Sulphur Dioxide (SO_2) - ppb

Mackay River - September 2024

Concentration Ranges (ppb)	Wind Direction																
	N	NNE	NE	ENE	E	ESE	SE	SSE	S	SSW	SW	WSW	W	WNW	NW	NNW	**Totals**
0 - 10	17	6	11	16	16	33	50	83	91	58	65	99	69	31	18	17	680
11 - 20	0	0	1	0	0	0	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	17	6	12	16	16	33	50	83	91	58	65	99	69	31	18	17	681

Total Number of Valid Hours: 681

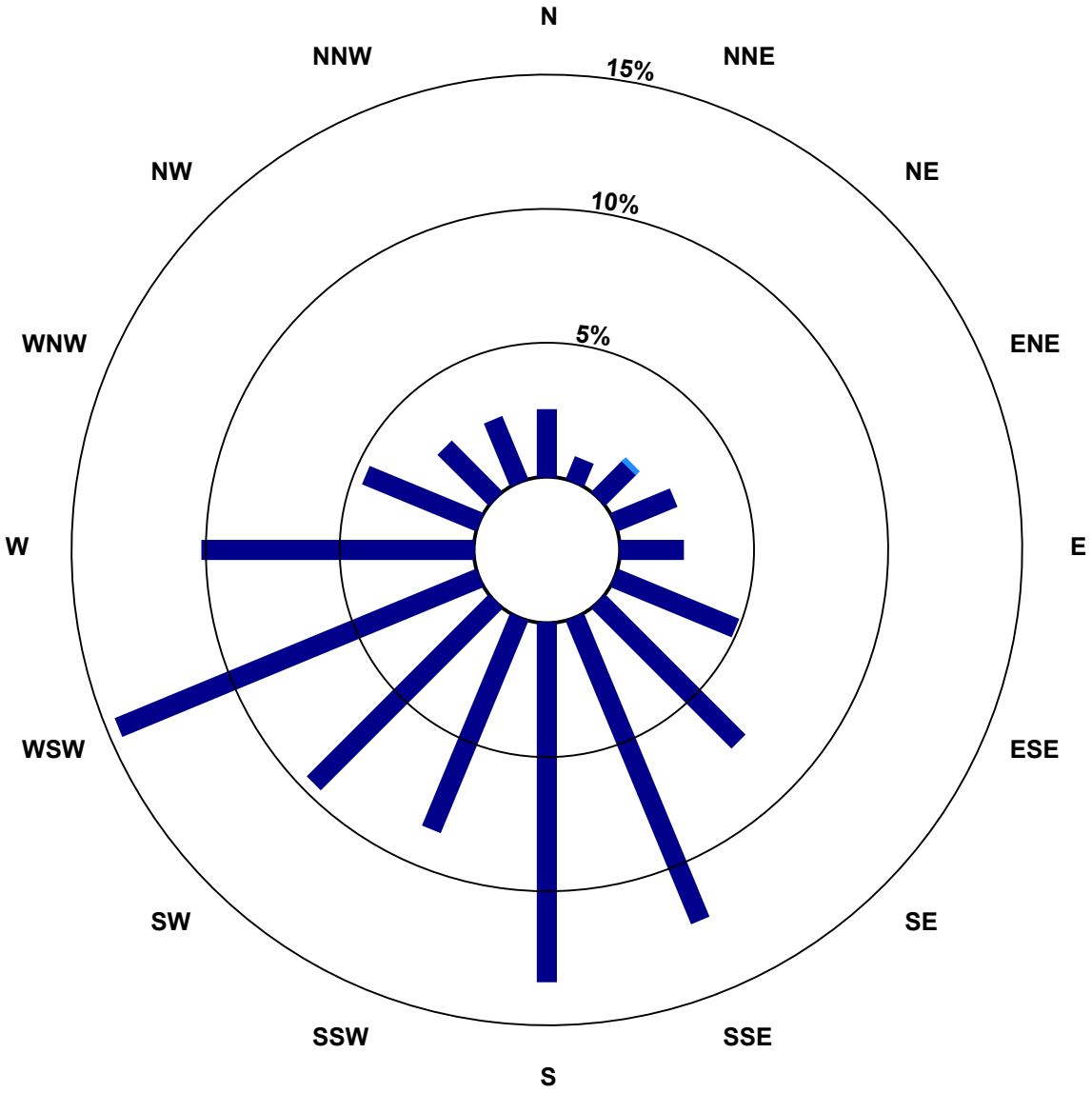
Total Number of Hours: 720

Wood Buffalo Environmental Association

Wind Rose Sep 2024

Sulphur Dioxide (SO_2) - ppb

Mackay River



Classes (ppb)

0 - 10

11 - 20

21 - 60

61 - 110

111 - 172

> 172

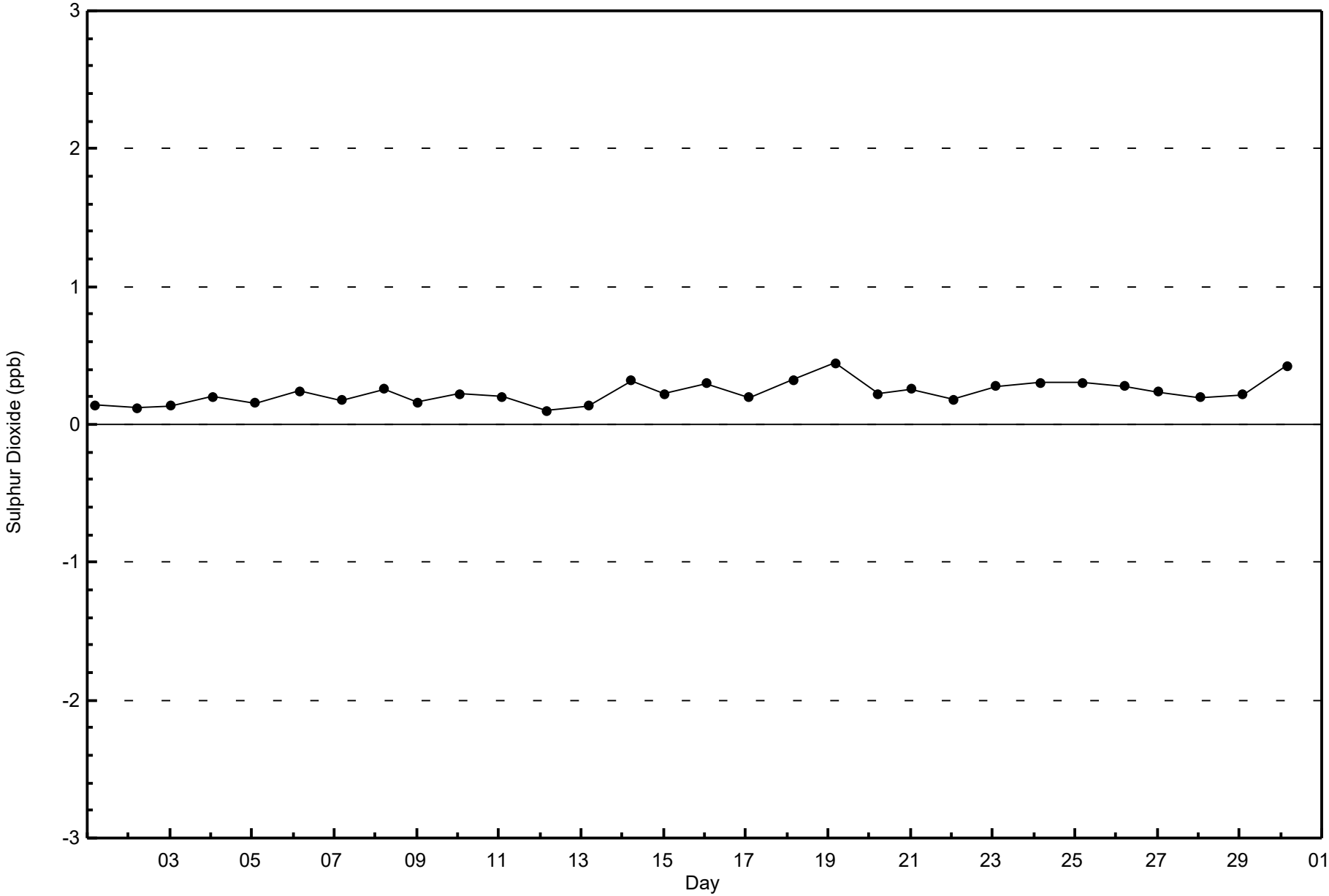
Total Number of Valid Hours: 681

Wood Buffalo Environmental Association

Zero Responses

Sulphur Dioxide (SO_2) - ppb

Mackay River - September 2024



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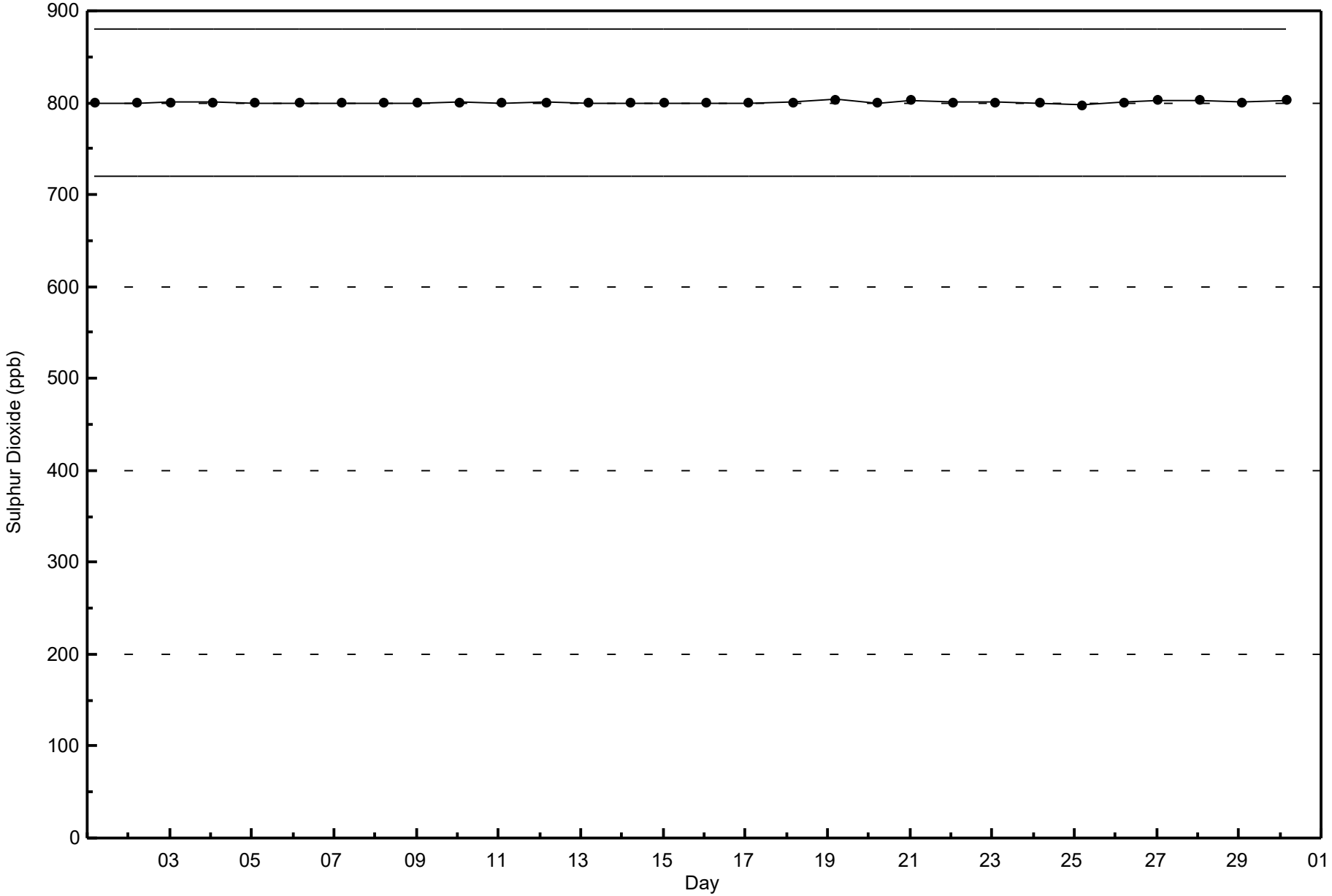
Span Responses

Sulphur Dioxide (SO_2) - ppb

Mackay River - September 2024



Wood Buffalo Environmental Association

Summary of Hour Averages

Hydrogen Sulphide (H_2S) - ppb

Mackay River - September 2024

Number of Exceedences (AAAQO): 1-hr: 0 24-hr: 0
Maximum Value: 2.1 ppb on Sep 2 23:00 Maximum Daily Average: 0.3 ppb on Sep 20

Minimum Value: 0.0 ppb on Sep 11 14:00 Minimum Daily Average: 0.0 ppb on Sep 30
Maximum Diurnal Average: 0.2 ppb at hour 23 Minimum Diurnal Average: 0.1 ppb at hour 16
Monthly Average: 0.13 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} = 1.0

Hours in Service:	720
Hours of Data:	685
Hours of Missing Data:	35
Hours of Calibration:	35
Percent Operational Time:	100.0

Day	Hourly Period Ending At (MST)																								Daily	Daily
	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24	Average	Maximum
1-Sep	0.1	0.1	0.1	0.1	0.0	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	0.1	0.2	0.2	0.2	0.1	0.1	0.1	0.2
2-Sep	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	0.0	0.0	0.0	0.0	0.1	0.3	0.2	0.5	2.1	1.1	0.2	2.1
3-Sep	0.2	Z	0.2	0.1	0.1	0.9	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	1.3	0.6	0.6	0.1	0.1	0.3	1.3
4-Sep	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
5-Sep	0.1	0.2	0.2	Z	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	0.1	0.1	0.1	0.1	0.0	0.1	0.1	0.1	0.2
6-Sep	0.1	0.1	0.1	0.1	Z	0.2	0.2	0.2	0.1	0.1	0.1	0.1	0.1	0.1	0.2	0.3	0.2	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.3
7-Sep	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	0.0	0.0	0.0	0.0	0.0	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1
8-Sep	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	0.1	0.1	0.2	0.2	0.2	0.3	0.1	0.3
9-Sep	0.4	Z	0.4	0.3	0.2	0.2	0.5	0.7	0.7	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	0.2	0.7
10-Sep	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	0.6	0.4	0.2	0.1	0.1	0.1	0.1	0.1	0.6
11-Sep	0.1	0.3	0.4	Z	0.2	0.1	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	0.0	0.0	0.1	0.1	0.4
12-Sep	0.0	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	0.0	0.0	0.1	0.1
13-Sep	0.2	0.1	0.2	0.6	0.3	Z	0.2	0.9	0.4	0.3	0.7	1.0	0.6	0.2	0.1	0.1	0.1	0.1	0.1	0.0	0.1	0.0	0.0	0.0	0.3	1.0
14-Sep	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	0.1	0.1	0.1	0.0	0.1
15-Sep	0.5	Z	0.4	0.2	0.2	0.1	0.1	0.1	0.3	0.6	0.4	0.3	0.3	0.2	0.2	0.1	0.1	0.1	0.2	0.3	0.2	0.1	0.1	0.1	0.2	0.6
16-Sep	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
17-Sep	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	0.0	0.0	0.0	0.1	0.1	0.2	0.1	0.1	0.1	0.1	0.1	0.2
18-Sep	0.1	0.1	0.0	0.0	Z	0.1	0.1	0.1	0.1	0.0	0.1	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	0.3
19-Sep	0.1	0.1	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	1.1	0.8	0.5	0.4	0.2	0.2	0.2	0.1	0.2	1.1
20-Sep	Z	0.1	0.2	0.2	0.1	0.1	0.1	0.1	1.0	0.4	0.3	0.3	0.4	0.3	0.2	0.1	0.1	0.1	0.1	0.1	0.0	0.4	1.2	1.8	0.3	1.8
21-Sep	1.8	Z	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	0.1	0.1	0.1	0.2	1.8
22-Sep	0.1	0.1	Z	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	0.2	0.5	0.1	0.5
23-Sep	0.2	0.2	0.1	Z	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	0.2
24-Sep	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	0.0	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.2
25-Sep	0.1	0.0	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
26-Sep	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	0.1	0.1	0.1	0.1	0.1	0.2	0.1	0.1	0.1	0.1	0.2
27-Sep	0.1	Z	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.0	0.1	0.0	0.0	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1
28-Sep	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
29-Sep	0.1	0.1	0.1	Z	0.1	0.1	0.1	0.1	0.4	1.0	0.9	0.6	0.3	0.2	0.6	0.2	0.7	0.1	0.6	0.6	0.1	0.1	0.0	0.0	0.3	1.0
30-Sep	0.0	0.0	0.0	0.0	Z	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	0.1	0.0	0.0	0.1
	0.2	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.2	0.2	0.2	0.2	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.2	0.1	0.1	0.2	0.2	Diurnal Average	
	1.8	0.3	0.4	0.6	0.3	0.9	0.5	0.9	1.0	1.0	0.9	1.0	0.6	0.3	0.6	0.3	1.1	0.8	0.6	1.3	0.6	0.6	2.1	1.8	Diurnal Maximum	

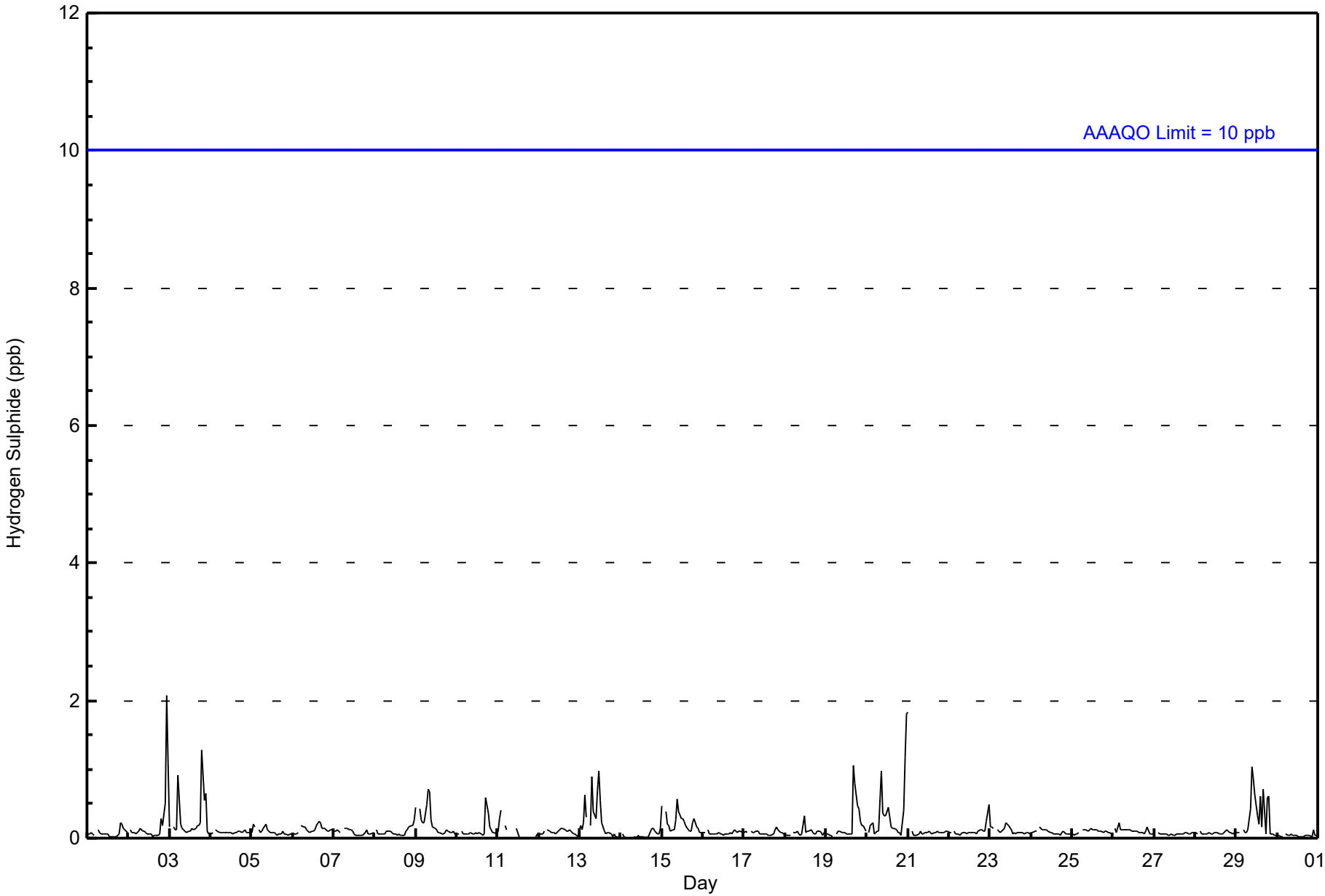
Z - zerospan C - Calibration
Alberta Ambient Air Quality Objectives (AAAQO): 1-hr 10 ppb 24-hr 3 ppb

Wood Buffalo Environmental Association

Hourly Averages

Hydrogen Sulphide (H_2S) - ppb

Mackay River - September 2024



Concentration Ranges (ppb)	Number of Hours	%	Cumulative %
0 - 2	685	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: 685

Total Number of Hours: 720

Wood Buffalo Environmental Association

Frequency Distribution

Hydrogen Sulphide (H_2S) - ppb

Mackay River - September 2024

Concentration Ranges (ppb)	Wind Direction																
	N	NNE	NE	ENE	E	ESE	SE	SSE	S	SSW	SW	WSW	W	WNW	NW	NNW	**Totals**
0 - 2	17	5	11	16	15	31	51	84	92	57	63	99	69	33	20	17	680
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	17	5	11	16	15	31	51	84	92	57	63	99	69	33	20	17	680

Total Number of Valid Hours: 680

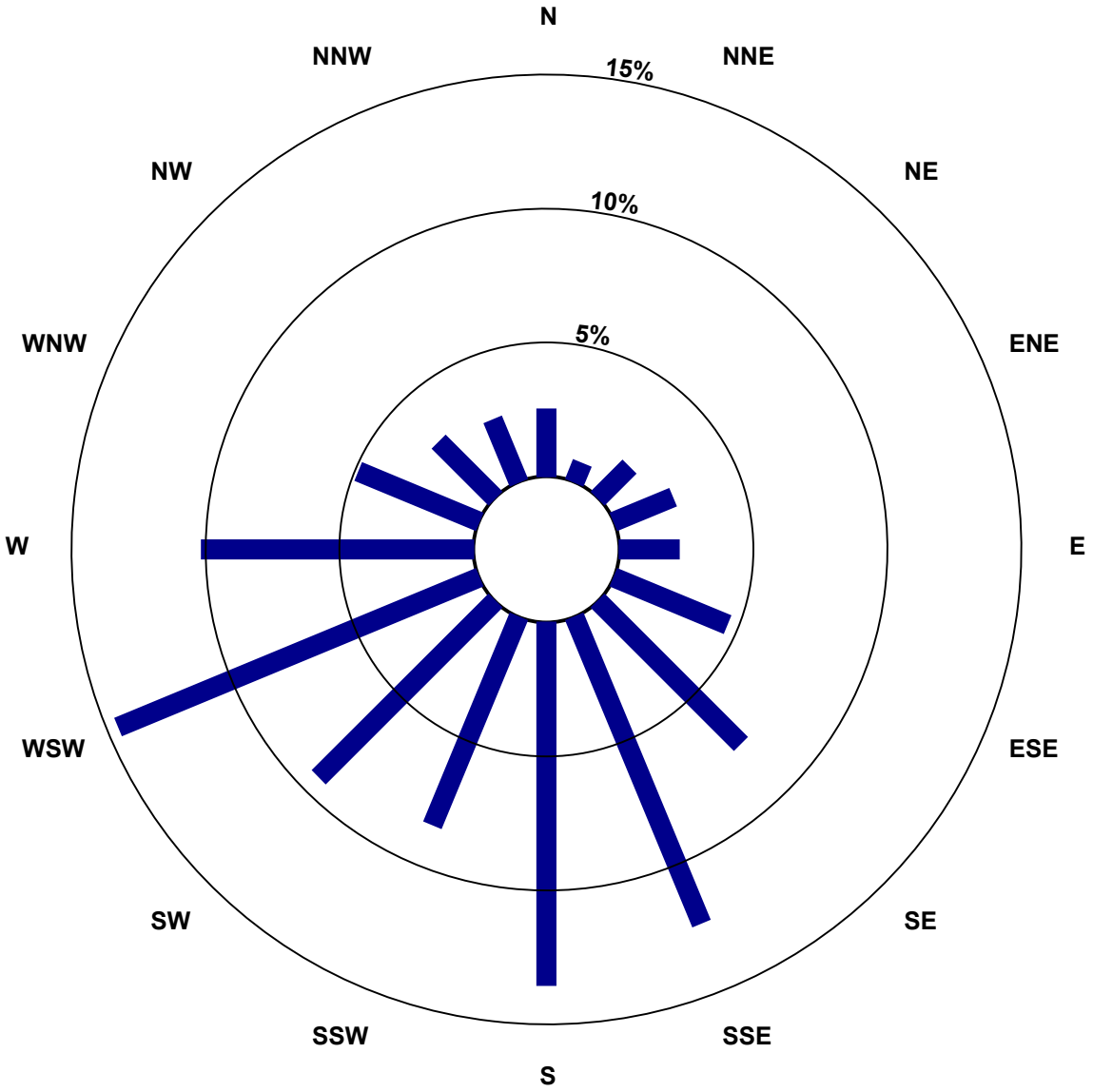
Total Number of Hours: 720

Wood Buffalo Environmental Association

Wind Rose Sep 2024

Hydrogen Sulphide (H_2S) - ppb

Mackay River



Classes (ppb)

0 - 2

3 - 4

5 - 7

8 - 11

> 11

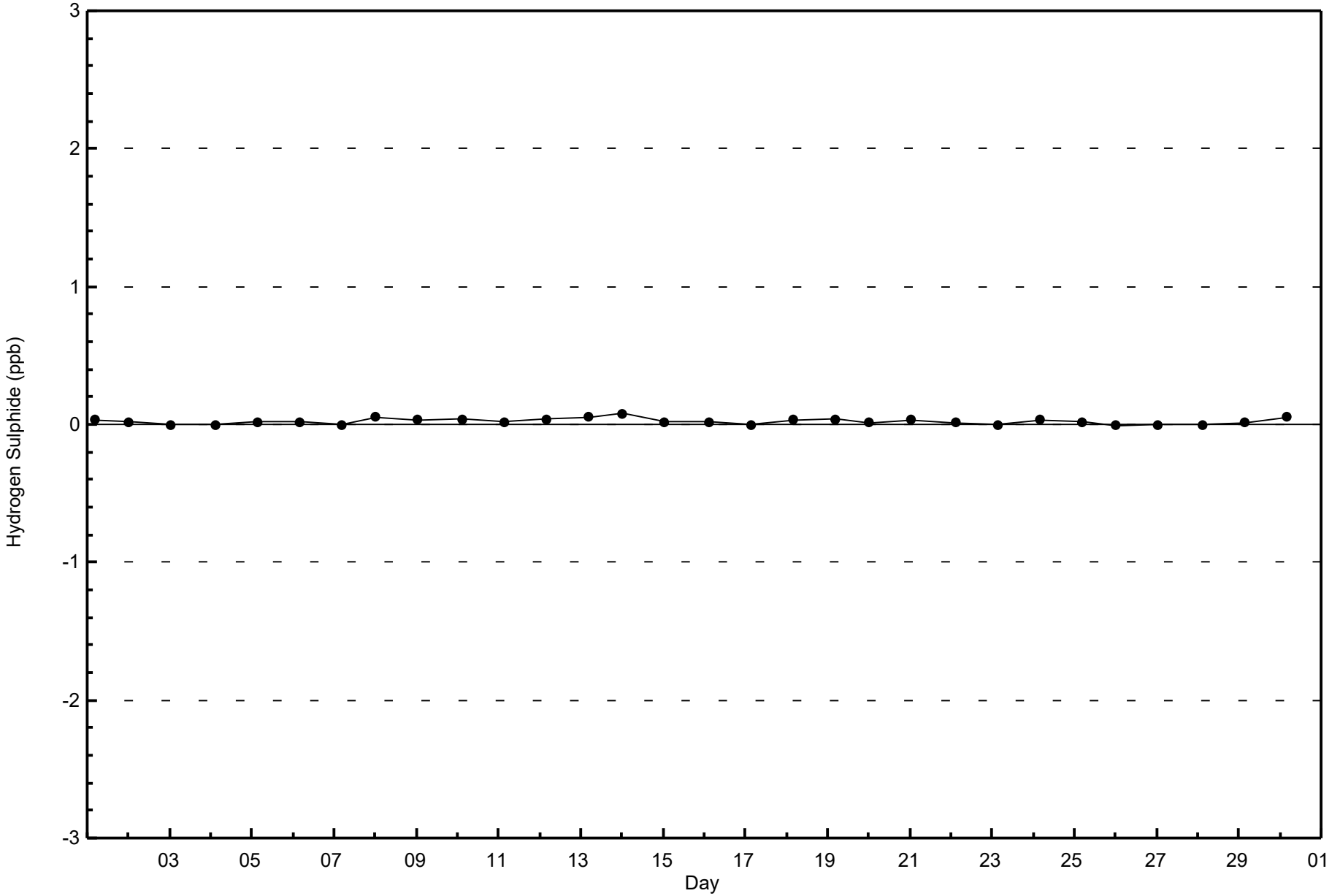
Total Number of Valid Hours: 680

Wood Buffalo Environmental Association

Zero Responses

Hydrogen Sulphide (H_2S) - ppb

Mackay River - September 2024

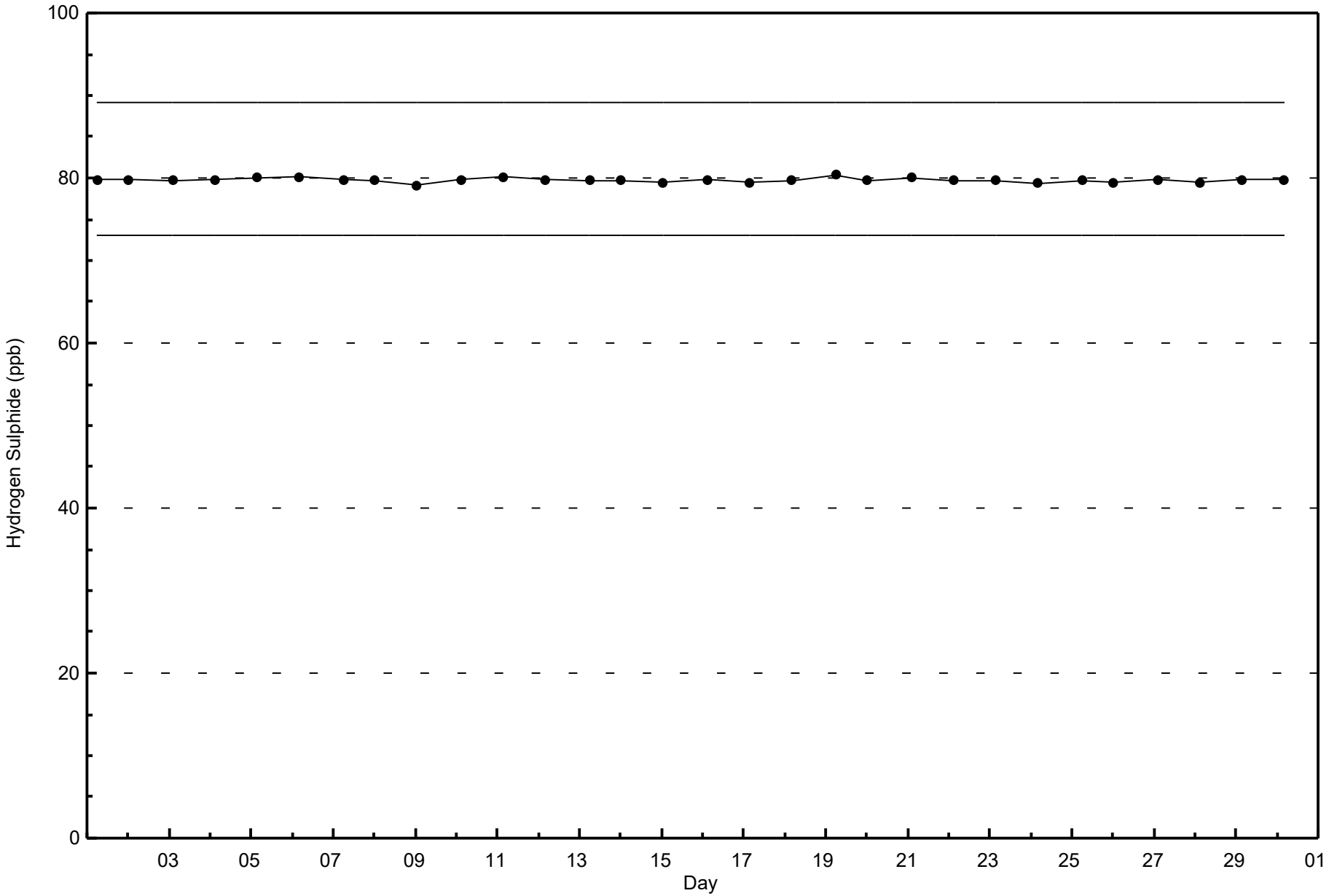


Wood Buffalo Environmental Association

Span Responses

Hydrogen Sulphide (H_2S) - ppb

Mackay River - September 2024



Wood Buffalo Environmental Association

Summary of Hour Averages

Total Hydrocarbons (THC) - ppm

Mackay River - September 2024

Maximum Value: 3.2 ppm on Sep 9 07:00

Maximum Daily Average: 2.6 ppm on Sep 9

Minimum Value: 2.1 ppm on Sep 18 19:00

Minimum Daily Average: 2.2 ppm on Sep 18

Maximum Diurnal Average: 2.5 ppm at hour 8

Minimum Diurnal Average: 2.2 ppm at hour 16

Monthly Average: 2.34 ppm

Percentiles: P_1 = 2.1 P_{10} = 2.2 Q_1 = 2.2 Median = 2.3 Q_3 = 2.4 P_{90} = 2.5 P_{99} = 3.0

Hours in Service:	720
Hours of Data:	686
Hours of Missing Data:	34
Hours of Calibration:	34
Percent Operational Time:	100.0

Day	Hourly Period Ending At (MST)																								Daily	Daily
	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24	Average	Maximum
1-Sep	2.4	2.4	2.4	2.3	Z	2.3	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	2.3	2.3	2.4	2.3	2.4	2.3	2.4
2-Sep	2.4	2.5	2.5	2.6	2.6	Z	2.5	2.5	2.5	2.3	2.3	2.2	2.3	2.2	2.2	2.2	2.2	2.2	2.2	2.3	2.3	2.3	2.5	2.4	2.4	2.6
3-Sep	Z	2.3	2.3	2.4	2.3	2.5	2.3	2.3	2.3	2.3	2.3	2.3	2.2	2.3	2.2	2.3	2.4	2.4	2.4	2.6	2.5	2.5	2.3	2.3	2.4	2.6
4-Sep	2.4	Z	2.4	2.4	2.4	2.4	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	2.3	2.3	2.3	2.3	2.4
5-Sep	2.3	2.4	Z	2.5	2.5	2.5	2.6	2.6	2.5	2.5	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	2.6
6-Sep	2.3	2.3	2.3	Z	2.3	2.4	2.4	2.4	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	2.4	2.4	2.4	2.3	2.4
7-Sep	2.4	2.4	2.4	2.4	Z	2.5	2.6	2.6	2.6	2.6	2.5	2.4	2.3	2.2	2.2	2.2	2.2	2.2	2.2	2.3	2.3	2.3	2.3	2.3	2.4	2.6
8-Sep	2.4	2.4	2.5	2.5	2.6	Z	2.7	2.8	2.8	2.6	2.4	2.3	2.3	2.3	2.3	2.2	2.2	2.3	2.3	2.4	2.5	2.5	2.5	2.7	2.5	2.8
9-Sep	Z	3.2	3.1	3.1	3.0	3.1	3.2	3.2	2.8	2.4	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	2.6	3.2
10-Sep	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	2.2	2.2	2.2	2.2	2.3	2.3	2.2	2.3	2.3	2.3	2.3	2.3	2.3
11-Sep	2.4	2.5	Z	2.8	2.8	2.9	3.0	3.0	2.8	2.4	2.3	2.2	2.3	2.3	2.3	2.2	2.2	2.3	2.3	2.3	2.3	2.4	2.4	2.4	2.5	3.0
12-Sep	2.4	2.4	2.4	Z	2.4	2.4	2.4	2.3	2.3	2.3	2.3	2.4	2.4	2.4	2.4	2.4	2.4	2.4	2.4	2.4	2.4	2.4	2.4	2.5	2.4	2.5
13-Sep	2.6	2.6	2.7	3.0	Z	2.7	C	C	C	C	2.7	2.6	2.3	2.2	2.1	2.1	2.1	2.1	2.1	2.2	2.3	2.3	2.3	2.4	2.4	3.0
14-Sep	2.3	2.3	2.4	2.5	2.4	Z	2.5	2.5	2.4	2.3	2.3	2.3	2.3	2.3	2.2	2.2	2.2	2.3	2.3	2.3	2.3	2.4	2.4	2.4	2.3	2.5
15-Sep	Z	2.4	2.5	2.6	2.7	2.7	2.8	2.8	2.9	2.9	2.5	2.5	2.5	2.4	2.4	2.3	2.3	2.3	2.3	2.3	2.3	2.3	2.3	2.3	2.5	2.9
16-Sep	2.3	Z	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	2.2	2.2	2.2	2.2	2.2	2.2	2.3	2.3
17-Sep	2.3	2.3	Z	2.3	2.3	2.3	2.4	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	2.3	2.3	2.4	2.3	2.4
18-Sep	2.4	2.4	2.3	Z	2.3	2.3	2.3	2.3	2.3	2.2	2.1	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	2.2	2.4
19-Sep	2.3	2.3	2.4	2.4	Z	2.5	2.8	2.9	2.6	2.3	2.3	2.2	2.2	2.2	2.1	2.1	2.2	2.2	2.2	2.2	2.2	2.3	2.3	2.3	2.3	2.9
20-Sep	2.3	2.2	2.2	2.2	2.2	Z	2.3	2.3	2.7	2.5	2.4	2.4	2.4	2.3	2.3	2.2	2.2	2.2	2.2	2.3	2.3	2.3	2.4	2.4	2.3	2.7
21-Sep	Z	2.4	2.4	2.5	2.5	2.5	2.7	2.7	2.5	2.5	2.4	2.4	2.4	2.3	2.3	2.3	2.2	2.2	2.2	2.2	2.3	2.3	2.3	2.3	2.4	2.7
22-Sep	2.3	Z	2.3	2.3	2.3	2.4	2.4	2.4	2.4	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	2.4	2.3	2.4
23-Sep	2.3	2.4	Z	2.5	2.5	2.5	2.5	2.6	2.5	2.6	2.6	2.6	2.5	2.3	2.3	2.3	2.3	2.2	2.2	2.2	2.2	2.2	2.2	2.2	2.4	2.6
24-Sep	2.3	2.3	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	2.3	2.3	2.4	2.2	2.4
25-Sep	2.3	2.4	2.5	2.4	Z	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	2.3	2.5
26-Sep	2.2	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	2.3	2.2	2.2	2.2	2.2	2.2	2.2	2.2	2.2	2.3	2.2	2.3
27-Sep	Z	2.3	2.3	2.3	2.2	2.3	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	2.3	2.2	2.2	2.2	2.3
28-Sep	2.2	Z	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	2.2	2.2	2.3	2.3	2.3	2.3	2.4	2.3	2.4
29-Sep	2.4	2.4	Z	2.4	2.4	2.3	2.3	2.5	3.0	3.1	2.8	2.6	2.4	2.3	2.4	2.2	2.4	2.2	2.4	2.4	2.3	2.3	2.3	2.3	2.4	3.1
30-Sep	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	2.2	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	2.4	2.4	2.5	2.4	2.4	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	2.3	2.3	2.3	2.3	2.3	Diurnal Average	
	2.6	3.2	3.1	3.1	3.0	3.1	3.2	3.2	3.0	3.1	2.8	2.6	2.5	2.4	2.4	2.4	2.4	2.4	2.4	2.6	2.5	2.5	2.5	2.7	Diurnal Maximum	

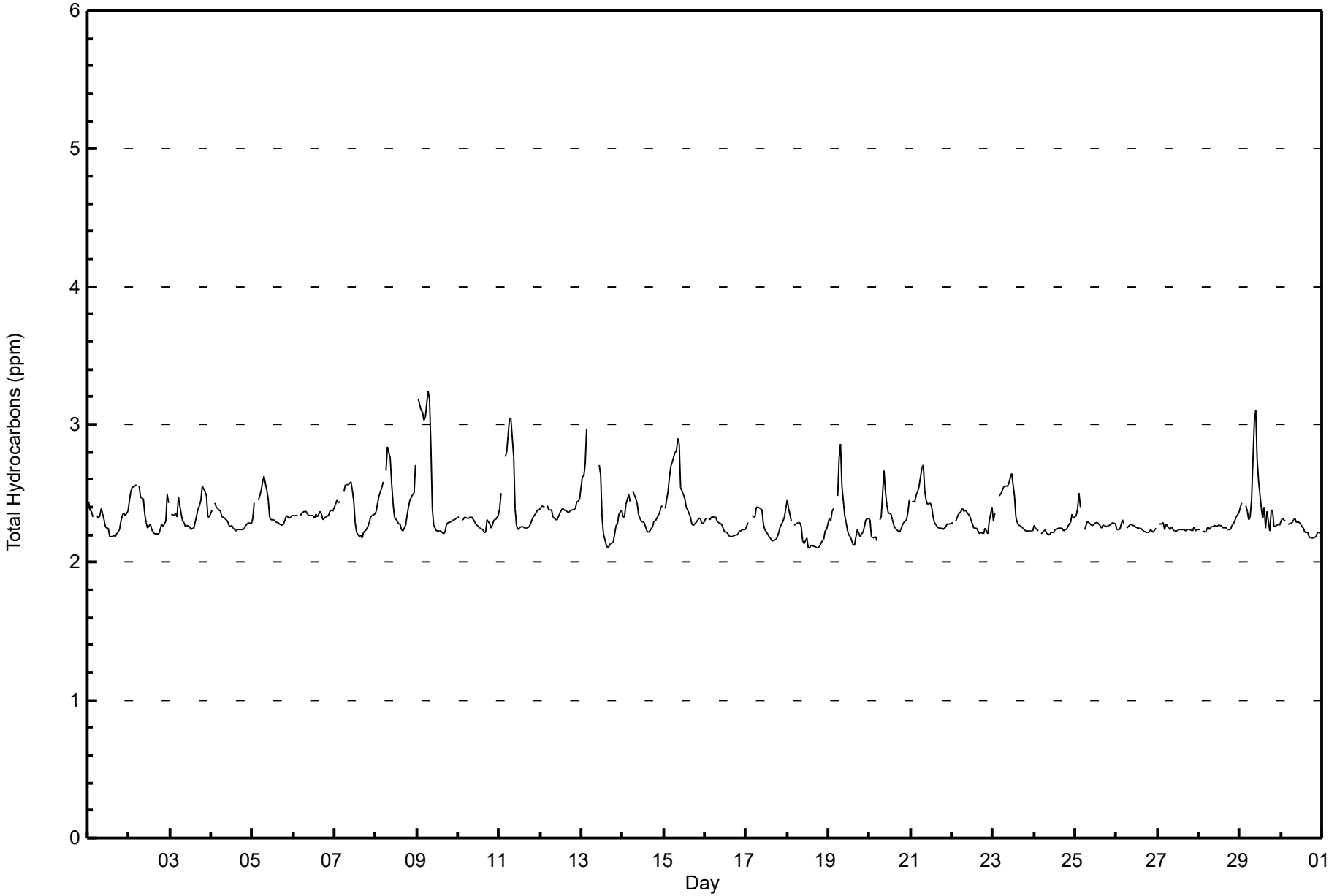
Z - zerospan C - Calibration

Wood Buffalo Environmental Association

Hourly Averages

Total Hydrocarbons (THC) - ppm

Mackay River - September 2024



Wood Buffalo Environmental Association

Cumulative Frequency Distribution

Total Hydrocarbons (THC) - ppm

Mackay River - September 2024

Concentration Ranges (ppm)	Number of Hours	%	Cumulative %
0 - 2.0	0	0.00	0.00
2.1 - 3.0	679	98.98	98.98
3.1 - 10.0	7	1.02	100.00
> 10.0	0	0.00	100.00

Total Number of Valid Hours: 686

Total Number of Hours: 720

Wood Buffalo Environmental Association

Frequency Distribution

Total Hydrocarbons (THC) - ppm

Mackay River - September 2024

Concentration Ranges (ppm)	Wind Direction																
	N	NNE	NE	ENE	E	ESE	SE	SSE	S	SSW	SW	WSW	W	WNW	NW	NNW	**Totals**
0 - 2.0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
2.1 - 3.0	15	6	11	15	15	33	50	83	91	58	65	99	69	31	16	17	674
3.1 - 10.0	2	0	1	1	1	0	0	0	0	0	0	0	0	0	2	0	7
> 10.0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Totals	17	6	12	16	16	33	50	83	91	58	65	99	69	31	18	17	681

Total Number of Valid Hours: 681

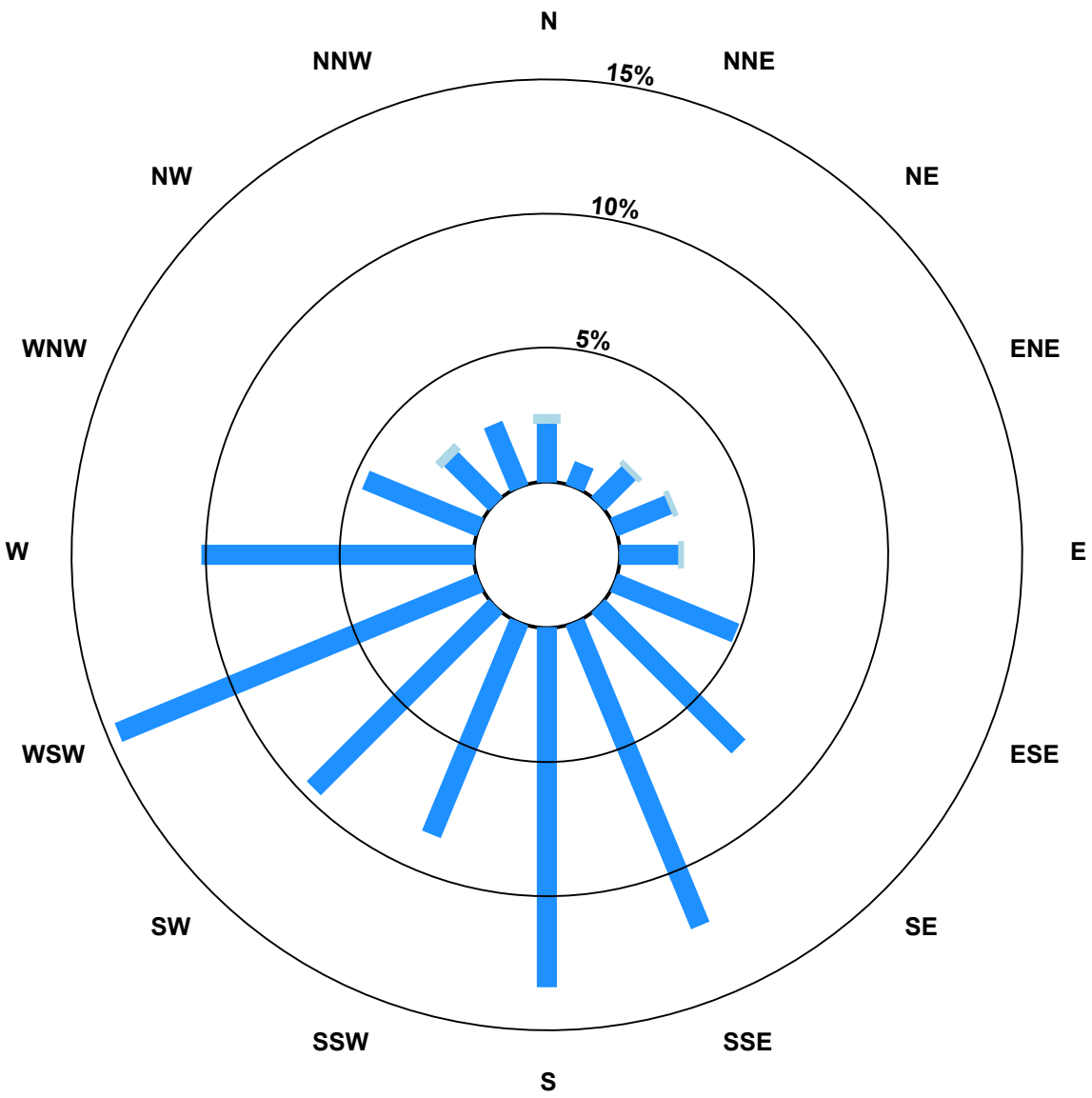
Total Number of Hours: 720

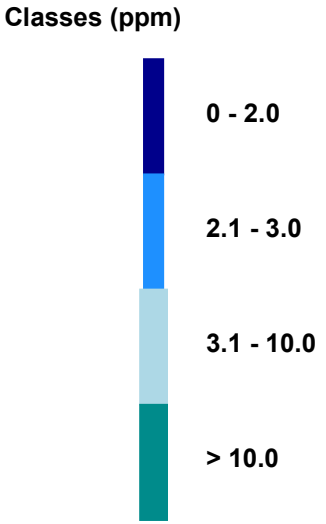
Wood Buffalo Environmental Association

Wind Rose Sep 2024

Total Hydrocarbons (THC) - ppm

Mackay River





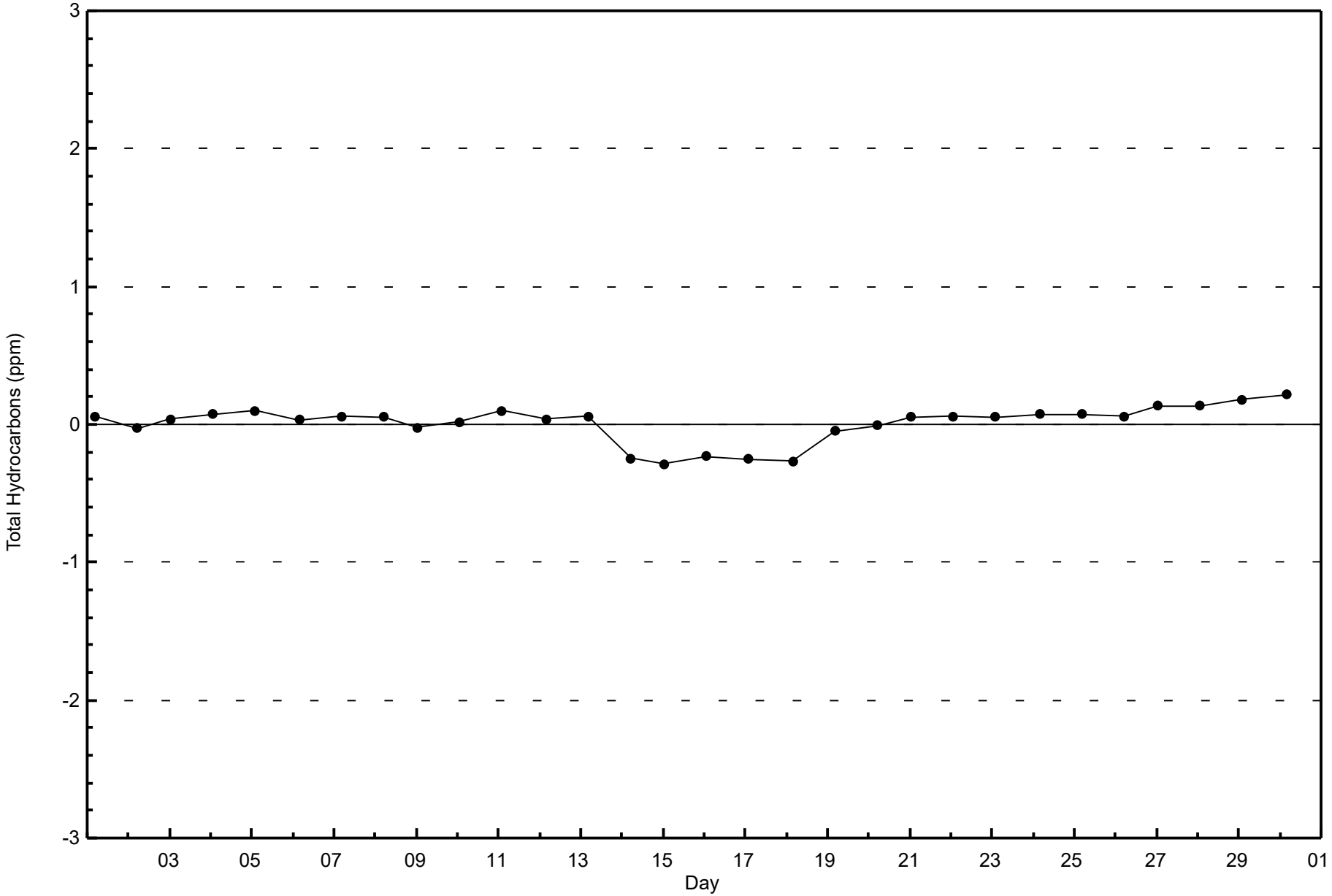
Total Number of Valid Hours: 681

Wood Buffalo Environmental Association

Zero Responses

Total Hydrocarbons (THC) - ppm

Mackay River - September 2024

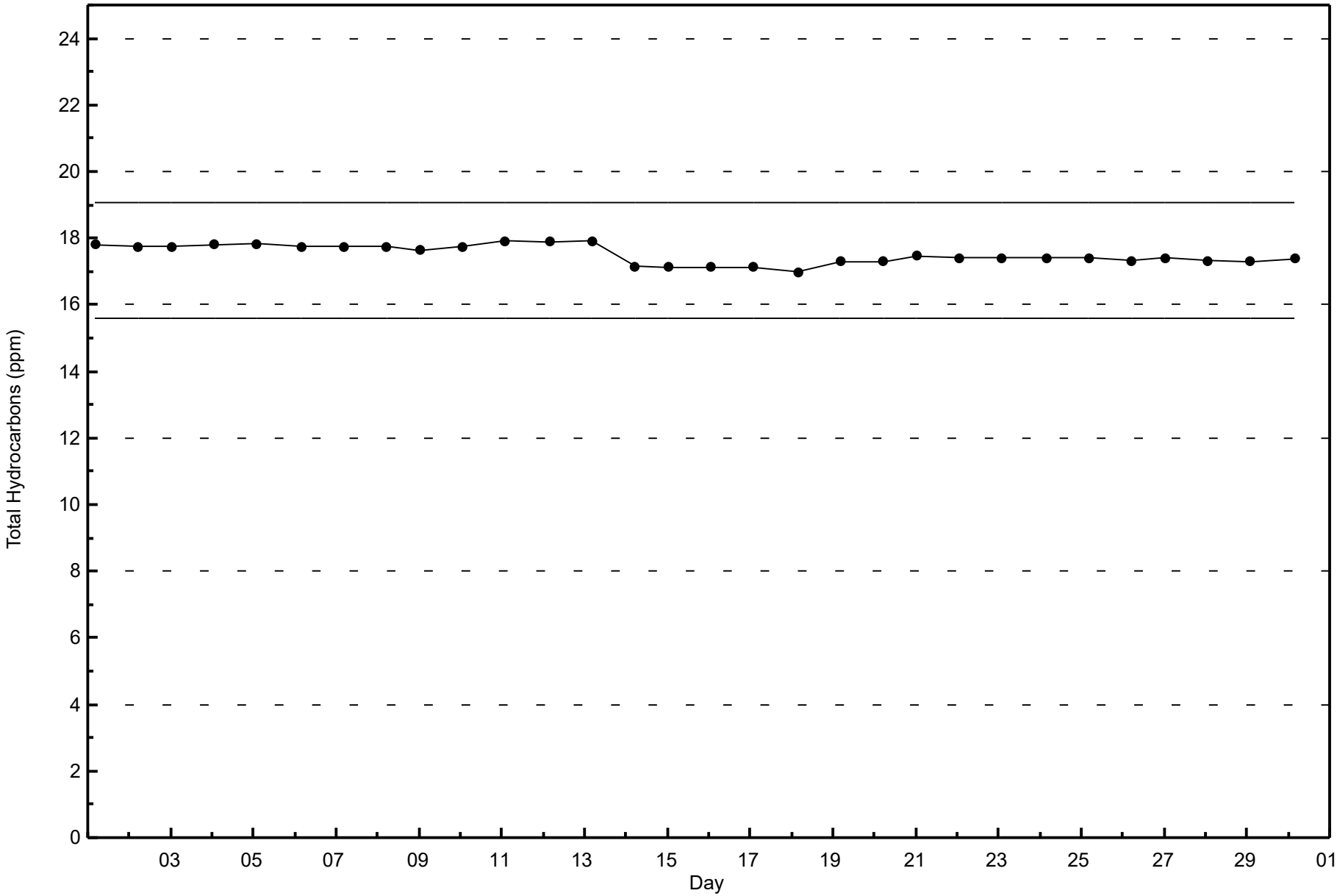


Wood Buffalo Environmental Association

Span Responses

Total Hydrocarbons (THC) - ppm

Mackay River - September 2024



Wood Buffalo Environmental Association

Summary of Hour Averages

Nitric Oxide (NO) - ppb

Mackay River - September 2024

Maximum Value: 18.8 ppb on Sep 29 09:00

Maximum Daily Average: 2.7 ppb on Sep 29

Minimum Value: 0.0 ppb on Sep 1 01:00

Minimum Daily Average: 0.0 ppb on Sep 27

Maximum Diurnal Average: 1.3 ppb at hour 9

Minimum Diurnal Average: 0.0 ppb at hour 21

Monthly Average: 0.23 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} = 5.6

Hours in Service:	720
Hours of Data:	684
Hours of Missing Data:	36
Hours of Calibration:	36
Percent Operational Time:	100.0

Day	Hourly Period Ending At (MST)																								Daily	Daily
	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24	Average	Maximum
1-Sep	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
2-Sep	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
3-Sep	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	0.1	0.0	0.6	0.8	0.3	0.0	0.0	0.0	0.0	0.0	0.0	0.1	0.8
4-Sep	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	0.1	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.1
5-Sep	Z	0.0	0.0	0.0	0.0	0.0	0.0	0.2	1.1	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	0.1	1.1
6-Sep	0.0	Z	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	0.1
7-Sep	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
8-Sep	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
9-Sep	0.0	0.0	0.0	0.0	Z	0.3	C	C	C	C	C	C	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	--	0.3
10-Sep	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
11-Sep	Z	0.0	0.0	0.1	0.3	1.8	5.3	12.1	8.7	1.3	0.3	0.2	0.1	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	1.3	12.1
12-Sep	0.0	Z	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.1	0.2	0.1	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.1	0.1	0.0	0.2
13-Sep	0.1	0.1	Z	0.1	0.1	0.1	0.3	1.1	2.5	4.3	3.4	1.5	0.4	0.2	0.0	0.0	0.1	0.1	0.0	0.0	0.0	0.0	0.0	0.0	0.6	4.3
14-Sep	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
15-Sep	0.0	0.0	0.0	0.0	Z	0.1	0.2	1.3	5.0	7.4	2.6	2.7	3.2	2.2	1.3	0.5	0.2	0.0	0.0	0.0	0.0	0.0	0.0	0.0	1.2	7.4
16-Sep	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
17-Sep	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	0.0	0.0	0.0	0.1
18-Sep	0.0	Z	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	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	0.6
19-Sep	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	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.1
20-Sep	0.0	0.0	0.0	Z	0.0	0.0	0.0	0.0	0.1	0.5	0.3	0.0	0.3	0.7	0.3	0.1	0.1	0.0	0.0	0.0	0.0	0.0	0.1	0.1	0.1	0.7
21-Sep	0.1	0.0	0.0	0.0	Z	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	0.0	0.2
22-Sep	0.0	0.0	0.0	0.0	0.0	Z	0.0	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	0.0	0.0	0.0	0.1
23-Sep	Z	0.0	0.0	0.0	0.1	0.1	0.1	0.4	2.0	4.3	3.6	3.6	1.2	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.7	4.3
24-Sep	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
25-Sep	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	0.0	0.0	0.0	0.0	0.0	0.0	0.1
26-Sep	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
27-Sep	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
28-Sep	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
29-Sep	Z	0.0	0.0	0.0	0.0	0.0	0.0	3.4	18.8	17.6	11.8	7.1	1.7	1.0	0.1	0.1	0.1	0.0	0.0	0.0	0.0	0.0	0.0	0.0	2.7	18.8
30-Sep	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	0.1	0.2	0.7	1.3	1.3	0.8	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	Diurnal Average	
	0.1	0.1	0.0	0.1	0.3	1.8	5.3	12.1	18.8	17.6	11.8	7.1	3.2	2.2	1.3	0.6	0.8	0.3	0.0	0.0	0.0	0.0	0.1	0.1	Diurnal Maximum	

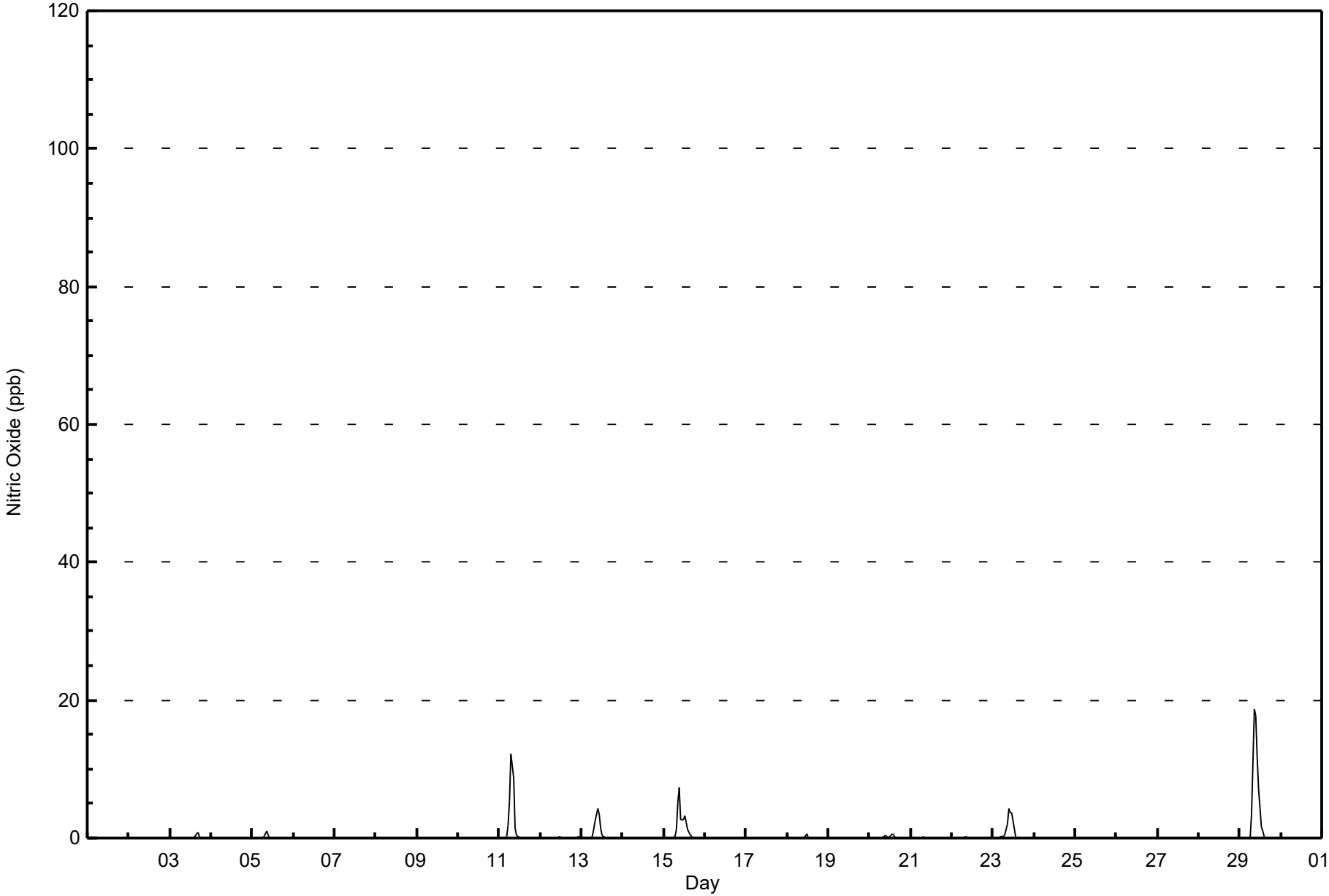
Z - zerospan C - Calibration

Wood Buffalo Environmental Association

Hourly Averages

Nitric Oxide (NO) - ppb

Mackay River - September 2024



Concentration Ranges (ppb)	Number of Hours	%	Cumulative %
0 - 20	684	100.00	100.00
21 - 40	0	0.00	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: 684

Total Number of Hours: 720

Wood Buffalo Environmental Association

Frequency Distribution

Nitric Oxide (NO) - ppb

Mackay River - September 2024

Concentration Ranges (ppb)	Wind Direction																
	N	NNE	NE	ENE	E	ESE	SE	SSE	S	SSW	SW	WSW	W	WNW	NW	NNW	**Totals**
0 - 20	17	6	13	16	17	34	51	81	93	57	65	100	65	32	18	16	681
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	17	6	13	16	17	34	51	81	93	57	65	100	65	32	18	16	681

Total Number of Valid Hours: 681

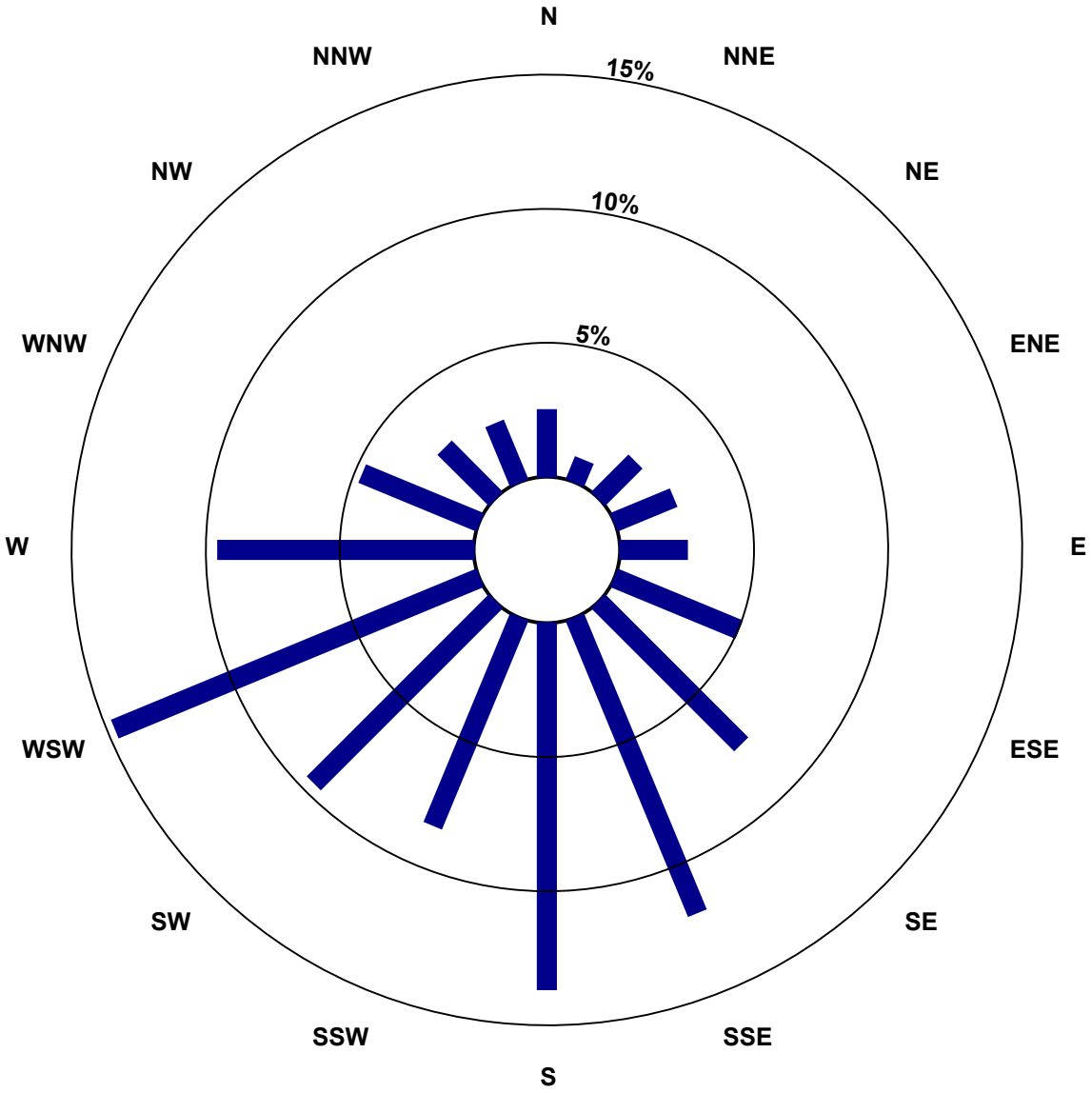
Total Number of Hours: 720

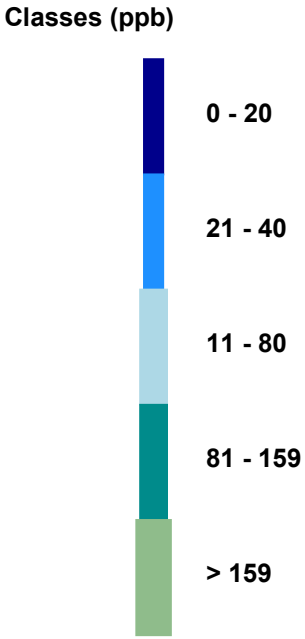
Wood Buffalo Environmental Association

Wind Rose Sep 2024

Nitric Oxide (NO) - ppb

Mackay River





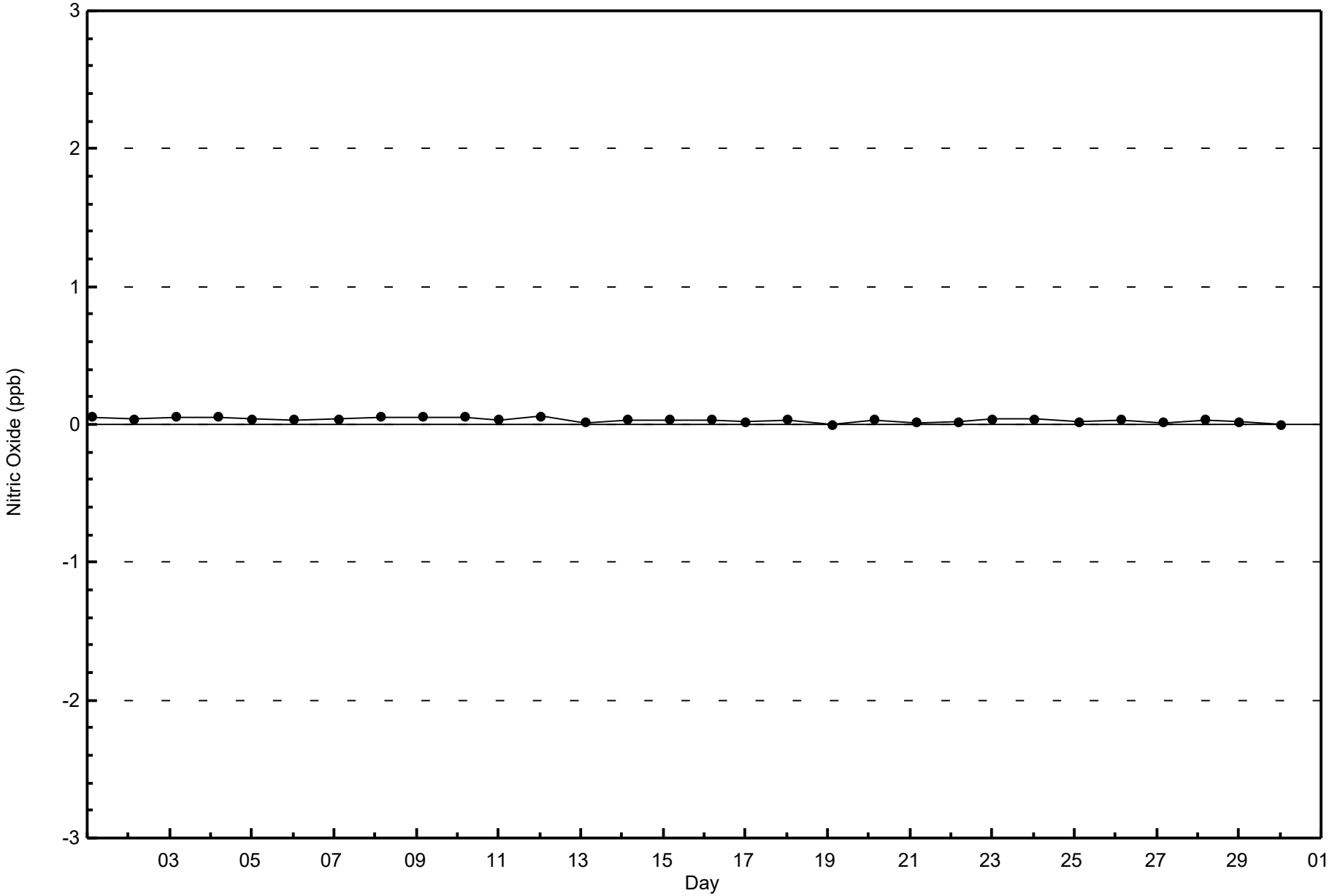
Total Number of Valid Hours: 681

Wood Buffalo Environmental Association

Zero Responses

Nitric Oxide (NO) - ppb

Mackay River - September 2024

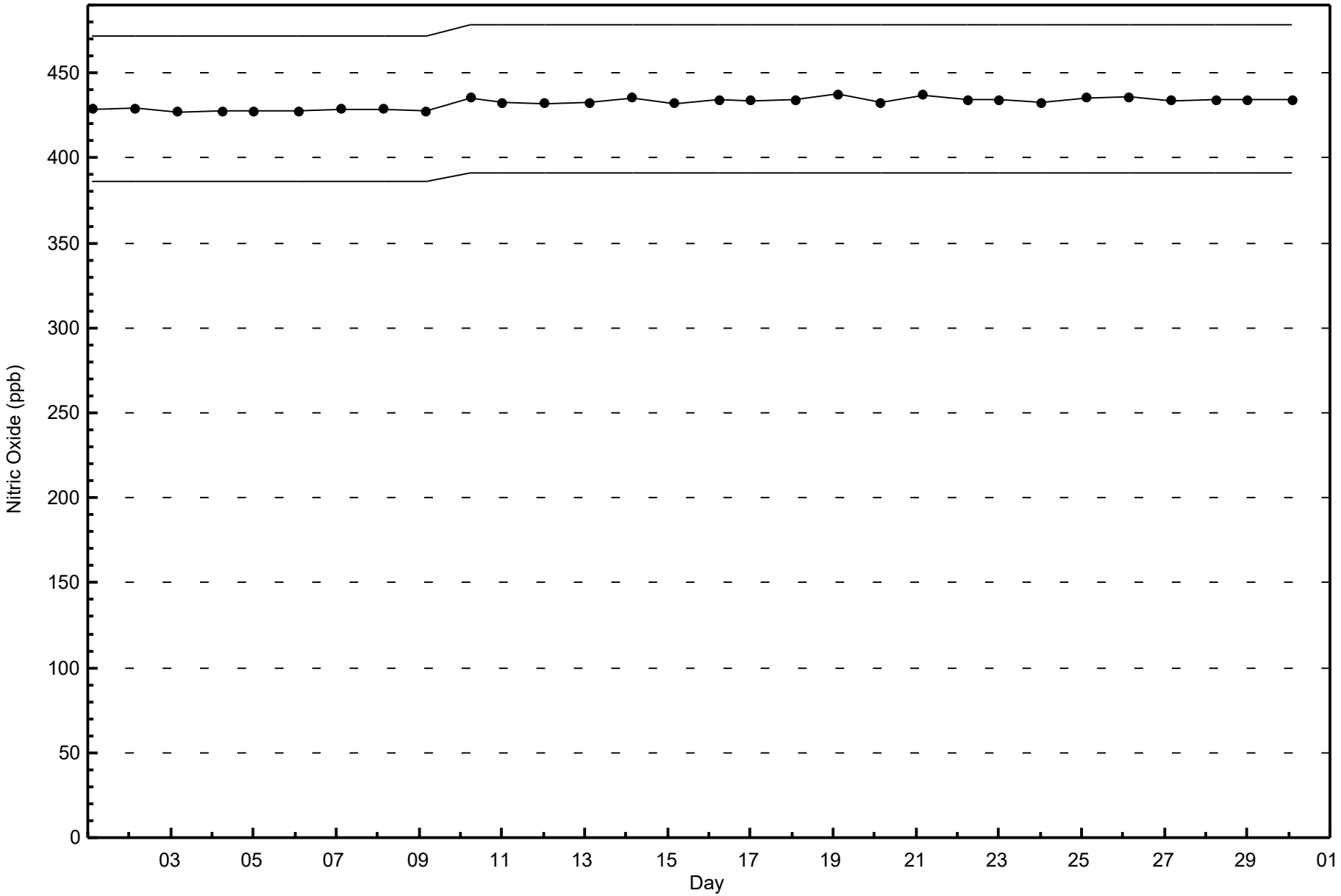


Wood Buffalo Environmental Association

Span Responses

Nitric Oxide (NO) - ppb

Mackay River - September 2024



Wood Buffalo Environmental Association

Summary of Hour Averages

Nitrogen Dioxide (NO_2) - ppb

Mackay River - September 2024

Number of Exceedences (AAAQO): 1-hr: 0 24-hr: 0
Maximum Value: 14.2 ppb on Sep 15 10:00 Maximum Daily Average: 3.2 ppb on Sep 29

Minimum Value: 0.0 ppb on Sep 4 21:00 Minimum Daily Average: 0.1 ppb on Sep 4
Maximum Diurnal Average: 1.8 ppb at hour 10 Minimum Diurnal Average: 0.3 ppb at hour 22
Monthly Average: 0.77 ppb Percentiles: P_1 = 0.0 P_{10} = 0.1 Q_1 = 0.2 Median = 0.3 Q_3 = 0.6 P_{90} = 1.5 P_{99} = 8.8

Hours in Service:	720
Hours of Data:	684
Hours of Missing Data:	36
Hours of Calibration:	36
Percent Operational Time:	100.0

Day	Hourly Period Ending At (MST)																								Daily	Daily
	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24	Average	Maximum
1-Sep	0.1	0.1	Z	0.3	0.3	0.3	0.4	0.5	0.5	0.5	0.6	0.6	0.6	0.4	0.3	0.3	0.2	0.3	0.3	0.3	0.2	0.2	0.2	0.1	0.3	0.6
2-Sep	0.1	0.1	0.1	Z	0.2	0.1	0.1	0.2	0.3	0.3	0.3	0.3	0.4	0.3	0.2	0.2	0.2	0.2	0.2	0.5	0.4	0.5	1.7	4.6	0.5	4.6
3-Sep	6.9	6.0	6.2	3.4	Z	2.5	0.9	0.2	0.2	0.2	0.2	0.2	0.2	0.8	0.3	3.0	4.4	4.4	4.7	4.5	2.0	0.9	0.4	0.2	2.3	6.9
4-Sep	0.2	0.1	0.1	0.1	0.1	Z	0.2	0.1	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	0.1	0.1	0.2
5-Sep	Z	0.3	0.1	0.1	0.0	0.0	0.0	0.4	1.9	1.1	0.4	0.2	0.3	0.2	0.1	0.1	0.2	0.2	0.2	0.2	0.2	0.2	0.3	0.3	0.3	1.9
6-Sep	0.3	Z	0.6	0.8	0.9	1.1	1.2	1.2	1.0	0.9	0.9	0.8	0.8	0.7	0.7	0.6	0.6	0.7	0.7	0.7	0.8	1.0	1.0	0.7	0.8	1.2
7-Sep	0.5	0.3	Z	0.3	0.2	0.2	0.2	0.5	1.1	1.3	1.4	1.1	0.7	0.4	0.4	0.3	0.3	0.5	0.5	0.5	0.6	0.8	0.8	0.5	0.6	1.4
8-Sep	0.4	0.3	0.2	Z	0.3	0.2	0.2	0.5	0.8	0.8	0.9	0.8	0.7	0.9	0.8	0.6	0.5	0.5	0.6	0.6	0.5	0.4	0.4	3.0	0.6	3.0
9-Sep	13.5	12.1	8.4	5.1	Z	5.9	C	C	C	C	C	C	0.1	0.1	0.0	0.0	0.0	0.2	0.2	0.2	0.2	0.2	0.2	0.1	--	13.5
10-Sep	0.1	0.1	0.1	0.1	0.1	Z	0.2	0.2	0.2	0.1	0.1	0.2	0.2	0.2	0.2	0.1	0.1	0.6	0.6	0.1	0.0	0.0	0.0	0.0	0.2	0.6
11-Sep	Z	0.1	0.2	0.6	1.5	2.0	2.0	3.5	5.2	2.8	1.4	0.8	0.5	0.5	0.6	0.5	0.4	0.5	0.6	0.5	0.5	0.5	0.6	0.6	1.1	5.2
12-Sep	0.6	Z	0.8	0.8	0.8	0.6	0.5	0.8	0.6	0.8	1.1	2.0	1.8	1.8	1.7	1.5	1.3	1.3	1.1	0.6	0.4	0.3	0.2	0.2	0.9	2.0
13-Sep	0.4	0.3	Z	1.1	2.6	2.1	1.9	2.5	3.9	4.3	5.6	4.5	2.2	1.8	1.3	1.0	1.2	1.7	1.4	1.2	0.9	0.7	0.4	0.4	1.9	5.6
14-Sep	0.9	0.4	0.2	Z	0.2	0.1	0.0	0.2	0.2	0.2	0.5	0.5	0.4	0.3	0.3	0.3	0.3	0.3	0.2	0.2	0.1	0.1	0.2	0.6	0.3	0.9
15-Sep	1.0	0.7	0.8	0.6	Z	0.4	0.3	1.2	7.4	14.2	7.1	5.5	5.4	4.4	3.5	2.3	1.7	1.0	0.6	0.5	0.7	0.7	0.3	0.2	2.6	14.2
16-Sep	0.2	0.2	0.2	0.2	0.2	Z	0.3	0.3	0.3	0.3	0.3	0.2	0.2	0.2	0.2	0.2	0.2	0.2	0.1	0.2	0.2	0.2	0.2	0.2	0.2	0.3
17-Sep	Z	0.2	0.2	0.2	0.2	0.2	0.1	0.2	0.2	0.3	0.4	0.3	0.3	0.3	0.2	0.2	0.2	0.2	0.2	0.1	0.1	0.1	0.2	0.3	0.2	0.4
18-Sep	0.3	Z	0.6	0.6	0.6	0.6	0.6	0.6	0.6	0.4	0.3	1.6	0.2	0.2	0.3	0.3	0.2	0.1	0.1	0.1	0.1	0.0	0.0	0.0	0.4	1.6
19-Sep	0.0	0.0	Z	0.1	0.0	0.0	0.0	0.0	0.1	0.4	0.4	0.4	0.4	0.4	0.3	0.3	1.5	0.7	0.5	0.4	0.3	0.2	0.2	0.4	0.3	1.5
20-Sep	1.0	0.3	0.4	Z	0.4	0.4	0.8	0.6	1.3	2.8	1.3	0.4	1.2	1.8	1.3	0.7	0.5	0.3	0.2	0.1	0.1	0.1	0.1	0.1	0.7	2.8
21-Sep	0.1	0.1	0.1	0.0	Z	0.1	0.3	0.7	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	0.3	0.4	0.2	0.7
22-Sep	0.4	0.3	0.3	0.3	0.2	Z	0.2	0.1	0.3	0.5	0.5	0.4	0.4	0.3	0.2	0.4	0.2	0.2	0.2	0.4	0.7	0.2	0.7	0.8	0.4	0.8
23-Sep	Z	0.5	2.3	1.5	0.7	0.5	0.5	0.6	1.4	3.5	4.3	4.6	2.2	0.3	0.2	0.2	0.2	0.2	0.2	0.2	0.2	0.3	0.3	0.3	1.1	4.6
24-Sep	0.4	Z	0.4	0.4	0.3	0.3	0.3	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	0.1	0.1	0.2	0.4
25-Sep	0.1	0.1	Z	0.3	0.5	0.5	0.8	1.2	1.2	1.0	0.9	0.9	0.8	0.7	0.5	0.4	0.4	0.3	0.3	0.2	0.2	0.2	0.2	0.2	0.5	1.2
26-Sep	0.2	0.2	0.3	Z	0.4	0.3	0.3	0.2	0.2	0.1	0.2	0.2	0.1	0.2	0.2	0.2	0.2	0.2	0.2	0.3	0.2	0.2	0.1	0.1	0.2	0.4
27-Sep	0.1	0.2	0.2	0.2	Z	0.2	0.2	0.2	0.2	0.2	0.2	0.2	0.3	0.2	0.2	0.2	0.2	0.2	0.2	0.2	0.2	0.2	0.2	0.2	0.2	0.3
28-Sep	0.2	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	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.2	0.2
29-Sep	Z	0.1	0.1	0.2	0.2	0.2	0.2	3.0	13.4	13.4	13.6	10.9	6.4	4.2	2.0	0.7	0.8	0.4	0.7	0.7	1.2	0.9	1.0	0.4	3.2	13.6
30-Sep	0.1	Z	0.1	0.1	0.1	0.1	0.2	0.2	0.2	0.2	0.1	0.2	0.2	0.2	0.2	0.1	0.1	0.1	0.1	0.1	0.2	0.2	0.3	0.3	0.2	0.3
	1.1	0.9	0.9	0.7	0.4	0.8	0.5	0.7	1.5	1.8	1.5	1.3	0.9	0.8	0.6	0.5	0.6	0.5	0.5	0.5	0.4	0.3	0.4	0.5	Diurnal Average	
	13.5	12.1	8.4	5.1	2.6	5.9	2.0	3.5	13.4	14.2	13.6	10.9	6.4	4.4	3.5	3.0	4.4	4.4	4.7	4.5	2.0	1.0	1.7	4.6	Diurnal Maximum	

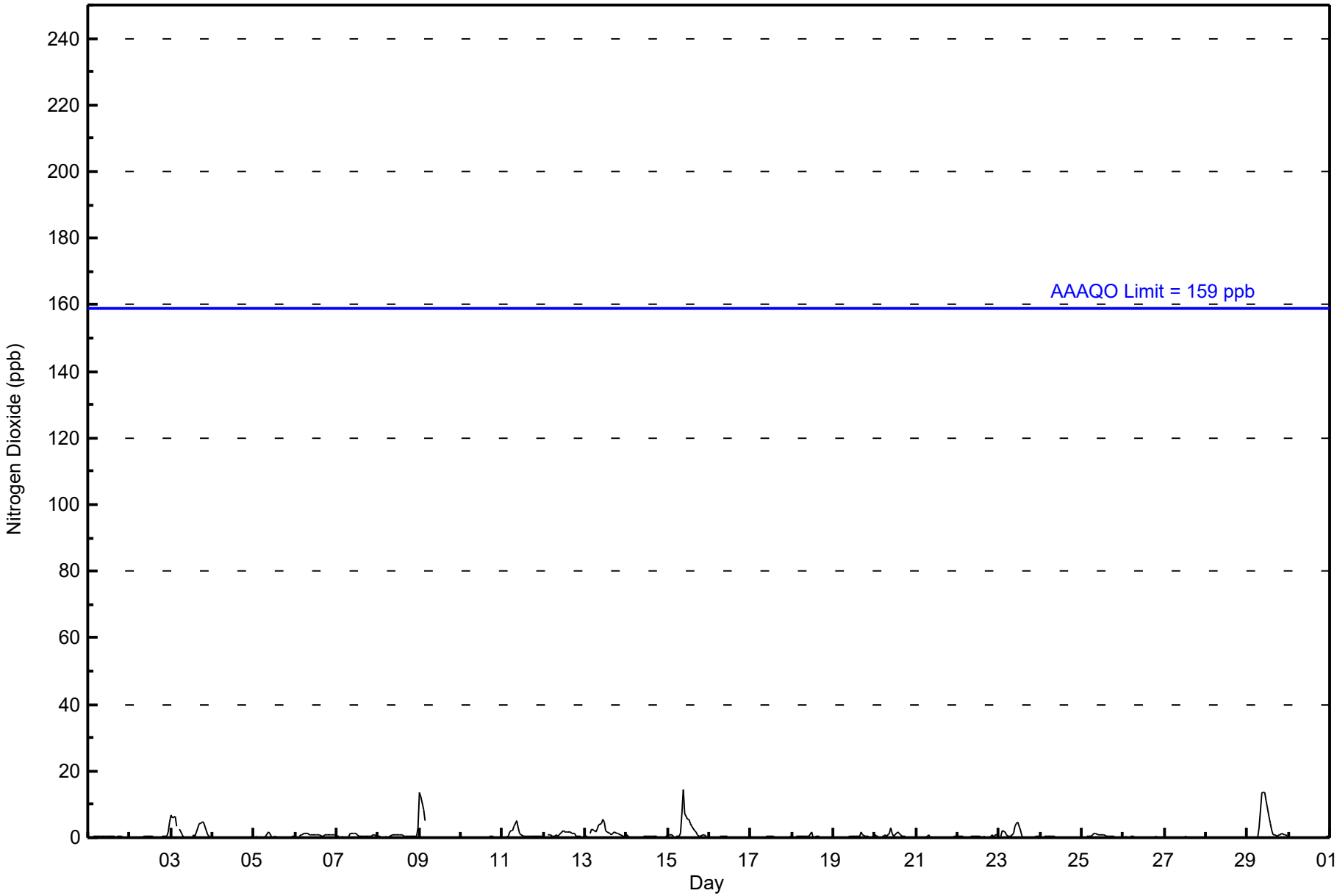
Z - zerospan C - Calibration
Alberta Ambient Air Quality Objectives (AAAQO): 1-hr 159 ppb

Wood Buffalo Environmental Association

Hourly Averages

Nitrogen Dioxide (NO_2) - ppb

Mackay River - September 2024



Nitrogen Dioxide (NO_2) - ppb
Mackay River - September 2024

Concentration Ranges (ppb)	Number of Hours	%	Cumulative %
0 - 20	684	100.00	100.00
21 - 40	0	0.00	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: 684

Total Number of Hours: 720

Wood Buffalo Environmental Association

Frequency Distribution

Nitrogen Dioxide (NO_2) - ppb

Mackay River - September 2024

Concentration Ranges (ppb)	Wind Direction																
	N	NNE	NE	ENE	E	ESE	SE	SSE	S	SSW	SW	WSW	W	WNW	NW	NNW	**Totals**
0 - 20	17	6	13	16	17	34	51	81	93	57	65	100	65	32	18	16	681
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	17	6	13	16	17	34	51	81	93	57	65	100	65	32	18	16	681

Total Number of Valid Hours: 681

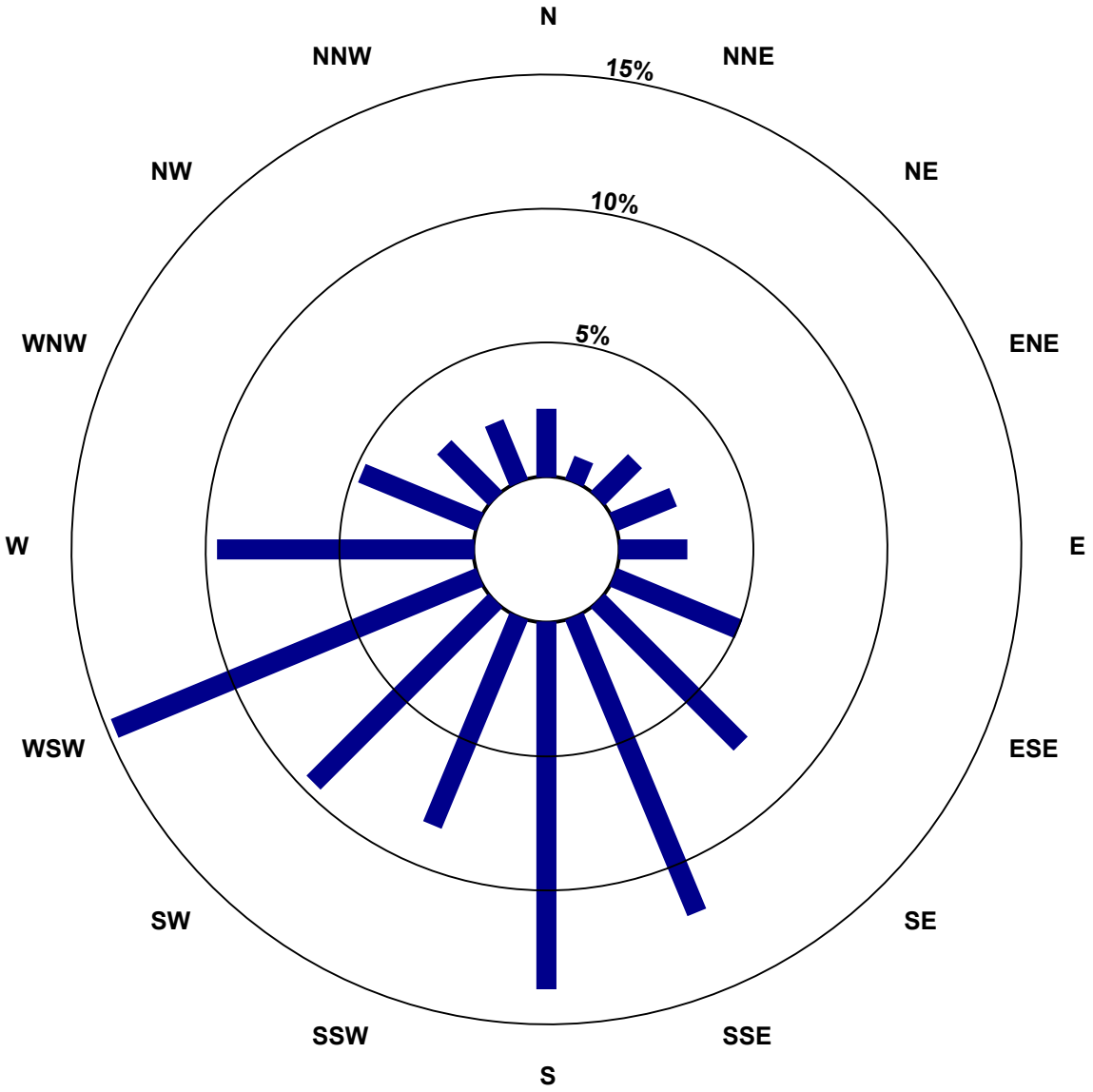
Total Number of Hours: 720

Wood Buffalo Environmental Association

Wind Rose Sep 2024

Nitrogen Dioxide (NO_2) - ppb

Mackay River



Classes (ppb)

0 - 20

21 - 40

11 - 80

81 - 159

> 159

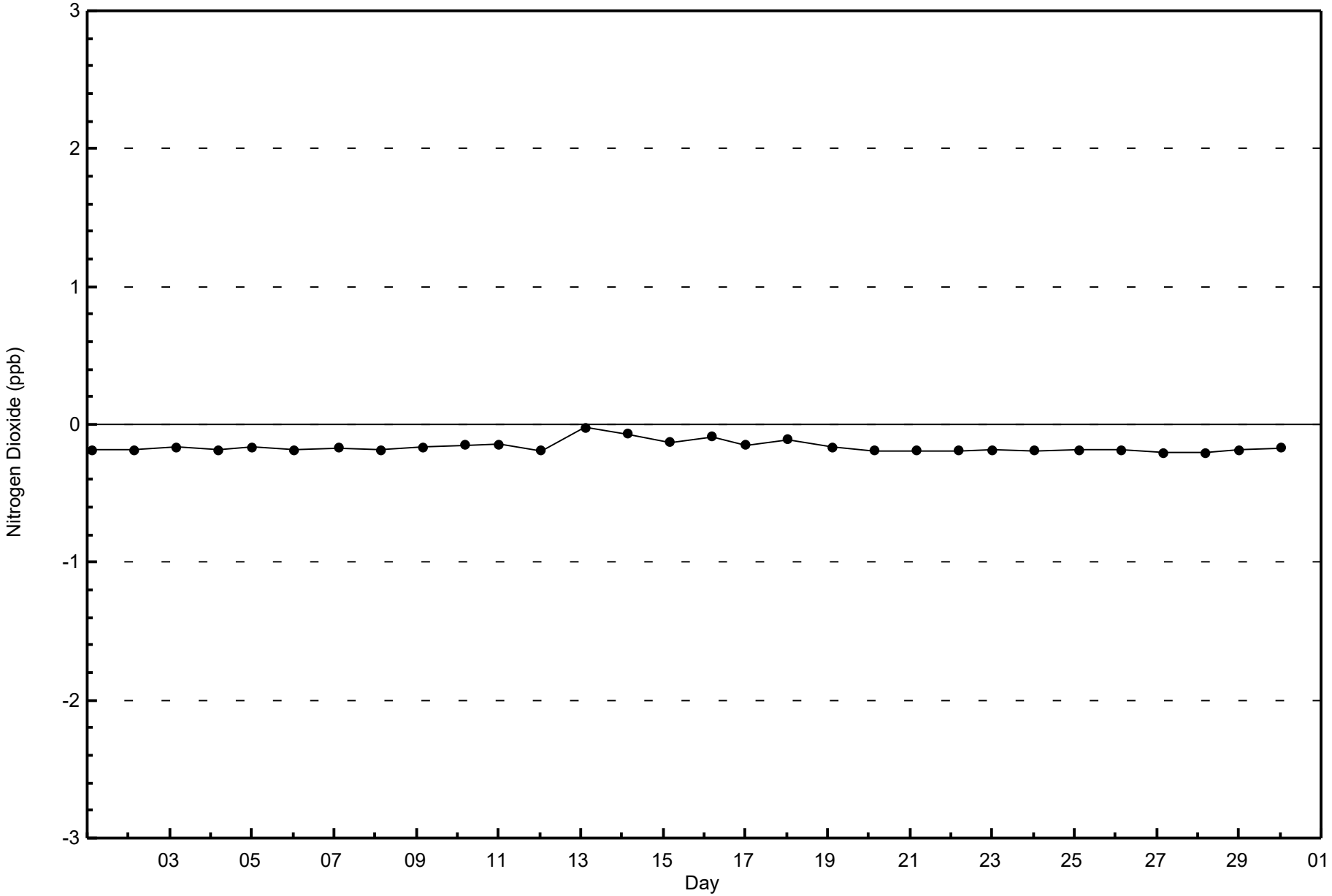
Total Number of Valid Hours: 681

Wood Buffalo Environmental Association

Zero Responses

Nitrogen Dioxide (NO_2) - ppb

Mackay River - September 2024

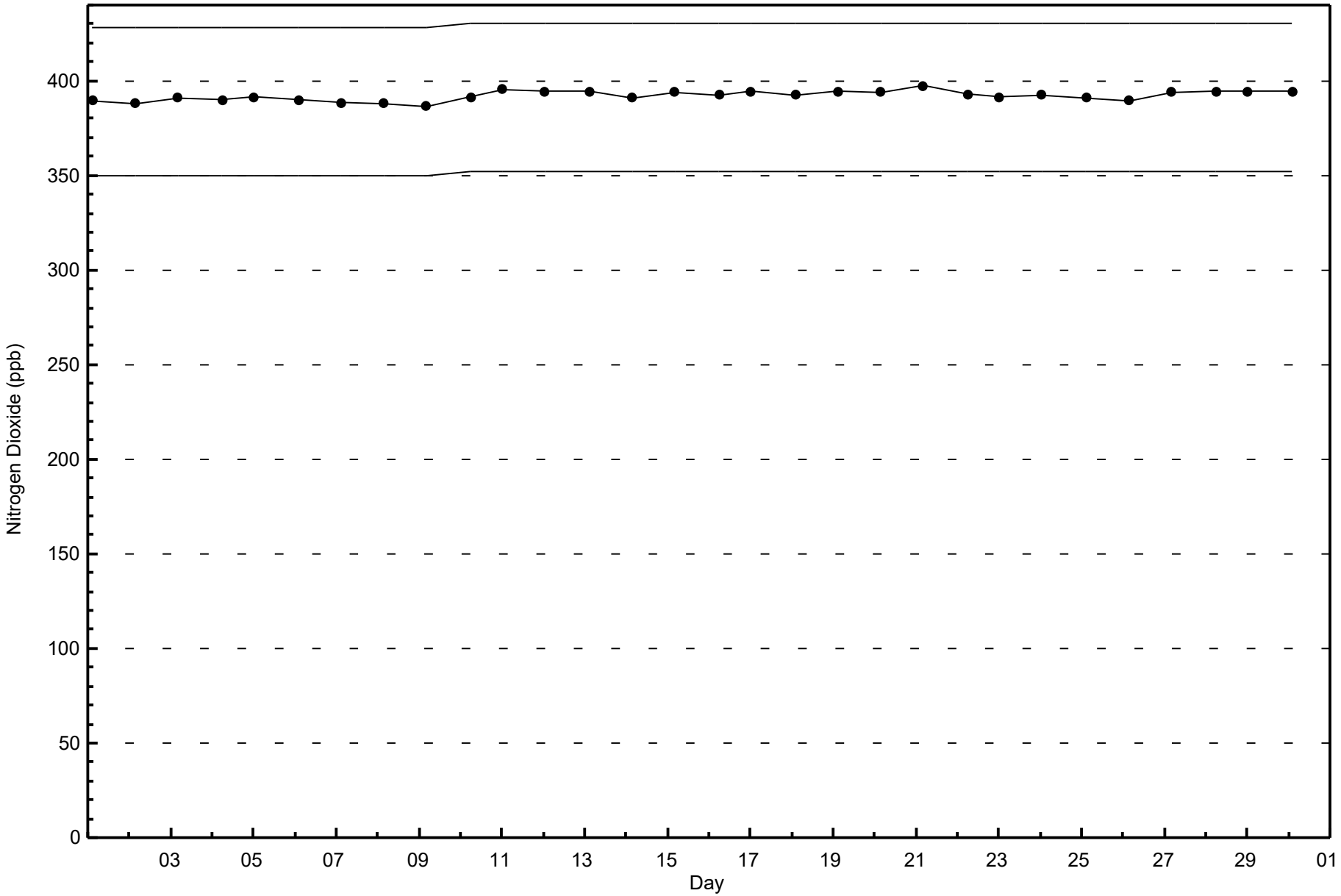


Wood Buffalo Environmental Association

Span Responses

Nitrogen Dioxide (NO_2) - ppb

Mackay River - September 2024



Wood Buffalo Environmental Association

Summary of Hour Averages

Nitrogen Oxides (NO_X) - ppb

Mackay River - September 2024

Maximum Value: 32.2 ppb on Sep 29 09:00

Maximum Daily Average: 5.9 ppb on Sep 29

Minimum Value: 0.0 ppb on Sep 19 07:00

Minimum Daily Average: 0.1 ppb on Sep 4

Maximum Diurnal Average: 3.0 ppb at hour 10

Minimum Diurnal Average: 0.3 ppb at hour 22

Monthly Average: 1.00 ppb

Percentiles: P_1 = 0.0 P_{10} = 0.1 Q_1 = 0.2 Median = 0.3 Q_3 = 0.6 P_{90} = 1.6 P_{99} = 13.5

Hours in Service:	720
Hours of Data:	684
Hours of Missing Data:	36
Hours of Calibration:	36
Percent Operational Time:	100.0

Day	Hourly Period Ending At (MST)																								Daily	Daily
	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24	Average	Maximum
1-Sep	0.1	0.1	Z	0.3	0.3	0.3	0.4	0.5	0.5	0.5	0.6	0.6	0.6	0.4	0.3	0.3	0.2	0.3	0.3	0.3	0.2	0.2	0.2	0.1	0.3	0.6
2-Sep	0.1	0.1	0.1	Z	0.2	0.1	0.1	0.2	0.3	0.3	0.3	0.3	0.4	0.3	0.2	0.2	0.2	0.2	0.2	0.5	0.4	0.5	1.7	4.6	0.5	4.6
3-Sep	6.9	6.0	6.2	3.4	Z	2.5	0.9	0.2	0.2	0.2	0.2	0.2	0.2	0.9	0.3	3.6	5.2	4.7	4.7	4.5	2.0	0.9	0.4	0.2	2.4	6.9
4-Sep	0.2	0.1	0.1	0.1	0.1	Z	0.2	0.1	0.2	0.2	0.2	0.2	0.2	0.3	0.1	0.1	0.1	0.1	0.1	0.1	0.0	0.0	0.0	0.1	0.1	0.3
5-Sep	Z	0.3	0.1	0.1	0.0	0.0	0.0	0.6	3.0	1.5	0.4	0.2	0.3	0.2	0.1	0.1	0.2	0.2	0.2	0.2	0.2	0.2	0.3	0.3	0.4	3.0
6-Sep	0.3	Z	0.6	0.8	0.9	1.1	1.2	1.3	1.1	1.0	0.9	0.8	0.8	0.7	0.7	0.6	0.6	0.7	0.7	0.7	0.8	1.0	1.0	0.7	0.8	1.3
7-Sep	0.5	0.3	Z	0.3	0.2	0.2	0.2	0.5	1.1	1.3	1.4	1.1	0.7	0.4	0.4	0.3	0.3	0.5	0.5	0.5	0.6	0.8	0.8	0.5	0.6	1.4
8-Sep	0.4	0.3	0.2	Z	0.3	0.2	0.2	0.5	0.8	0.8	0.9	0.8	0.7	0.9	0.8	0.6	0.5	0.5	0.6	0.6	0.5	0.4	0.4	3.0	0.6	3.0
9-Sep	13.5	12.1	8.4	5.1	Z	6.2	C	C	C	C	C	C	0.1	0.1	0.0	0.0	0.0	0.2	0.2	0.2	0.2	0.2	0.2	0.1	--	13.5
10-Sep	0.1	0.1	0.1	0.1	0.1	Z	0.2	0.2	0.2	0.1	0.1	0.2	0.2	0.2	0.2	0.1	0.1	0.6	0.6	0.1	0.0	0.0	0.0	0.0	0.2	0.6
11-Sep	Z	0.1	0.2	0.7	1.8	3.8	7.3	15.6	13.9	4.1	1.7	1.0	0.6	0.5	0.6	0.5	0.4	0.5	0.6	0.5	0.5	0.5	0.6	0.6	2.5	15.6
12-Sep	0.6	Z	0.8	0.8	0.8	0.6	0.5	0.8	0.6	0.8	1.2	2.2	1.9	1.8	1.7	1.5	1.3	1.3	1.1	0.6	0.4	0.3	0.3	0.3	1.0	2.2
13-Sep	0.5	0.4	Z	1.2	2.7	2.2	2.2	3.6	6.4	8.6	9.0	6.0	2.6	2.0	1.3	1.0	1.3	1.8	1.4	1.2	0.9	0.7	0.4	0.4	2.5	9.0
14-Sep	0.9	0.4	0.2	Z	0.2	0.1	0.0	0.2	0.2	0.2	0.5	0.5	0.4	0.3	0.3	0.3	0.3	0.3	0.2	0.2	0.1	0.1	0.2	0.6	0.3	0.9
15-Sep	1.0	0.7	0.8	0.6	Z	0.5	0.5	2.5	12.4	21.6	9.7	8.2	8.6	6.6	4.8	2.8	1.9	1.0	0.6	0.5	0.7	0.7	0.3	0.2	3.8	21.6
16-Sep	0.2	0.2	0.2	0.2	0.2	Z	0.3	0.3	0.3	0.3	0.3	0.2	0.2	0.2	0.2	0.2	0.2	0.2	0.1	0.2	0.2	0.2	0.2	0.2	0.2	0.3
17-Sep	Z	0.2	0.2	0.2	0.2	0.2	0.1	0.2	0.3	0.4	0.4	0.3	0.3	0.3	0.2	0.2	0.2	0.2	0.2	0.1	0.1	0.1	0.2	0.3	0.2	0.4
18-Sep	0.3	Z	0.6	0.6	0.6	0.6	0.6	0.6	0.6	0.4	0.3	2.2	0.2	0.2	0.3	0.3	0.2	0.1	0.1	0.1	0.1	0.0	0.0	0.0	0.4	2.2
19-Sep	0.0	0.0	Z	0.1	0.0	0.0	0.0	0.0	0.1	0.4	0.4	0.4	0.4	0.4	0.3	0.3	1.6	0.7	0.5	0.4	0.3	0.2	0.2	0.4	0.3	1.6
20-Sep	1.0	0.3	0.4	Z	0.4	0.4	0.8	0.6	1.4	3.3	1.6	0.4	1.5	2.5	1.6	0.8	0.6	0.3	0.2	0.1	0.1	0.1	0.2	0.2	0.8	3.3
21-Sep	0.2	0.1	0.1	0.0	Z	0.1	0.3	0.9	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	0.3	0.4	0.2	0.9
22-Sep	0.4	0.3	0.3	0.3	0.2	Z	0.2	0.2	0.4	0.6	0.6	0.5	0.4	0.3	0.2	0.5	0.2	0.2	0.2	0.4	0.7	0.2	0.7	0.8	0.4	0.8
23-Sep	Z	0.5	2.3	1.5	0.8	0.6	0.6	1.0	3.4	7.8	7.9	8.2	3.4	0.3	0.2	0.2	0.2	0.2	0.2	0.2	0.2	0.3	0.3	0.3	1.8	8.2
24-Sep	0.4	Z	0.4	0.4	0.3	0.3	0.3	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	0.1	0.1	0.2	0.4
25-Sep	0.1	0.1	Z	0.3	0.5	0.5	0.8	1.2	1.2	1.1	1.0	0.9	0.8	0.7	0.5	0.4	0.4	0.3	0.3	0.2	0.2	0.2	0.2	0.2	0.5	1.2
26-Sep	0.2	0.2	0.3	Z	0.4	0.3	0.3	0.2	0.2	0.1	0.2	0.2	0.1	0.2	0.2	0.2	0.2	0.2	0.2	0.3	0.2	0.2	0.1	0.1	0.2	0.4
27-Sep	0.1	0.2	0.2	0.2	Z	0.2	0.2	0.2	0.2	0.2	0.2	0.2	0.3	0.2	0.2	0.2	0.2	0.2	0.2	0.2	0.2	0.2	0.2	0.2	0.2	0.3
28-Sep	0.2	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	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.2	0.2
29-Sep	Z	0.1	0.1	0.2	0.2	0.2	0.2	6.4	32.2	31.0	25.4	18.0	8.1	5.2	2.1	0.8	0.9	0.4	0.7	0.7	1.2	0.9	1.0	0.4	5.9	32.2
30-Sep	0.1	Z	0.1	0.1	0.1	0.1	0.2	0.2	0.2	0.2	0.1	0.2	0.2	0.2	0.2	0.1	0.1	0.1	0.1	0.1	0.2	0.2	0.3	0.3	0.2	0.3
	1.1	0.9	0.9	0.7	0.5	0.9	0.7	1.4	2.8	3.0	2.3	1.9	1.2	0.9	0.6	0.6	0.6	0.5	0.5	0.5	0.4	0.3	0.4	0.5	Diurnal Average	
	13.5	12.1	8.4	5.1	2.7	6.2	7.3	15.6	32.2	31.0	25.4	18.0	8.6	6.6	4.8	3.6	5.2	4.7	4.7	4.5	2.0	1.0	1.7	4.6	Diurnal Maximum	

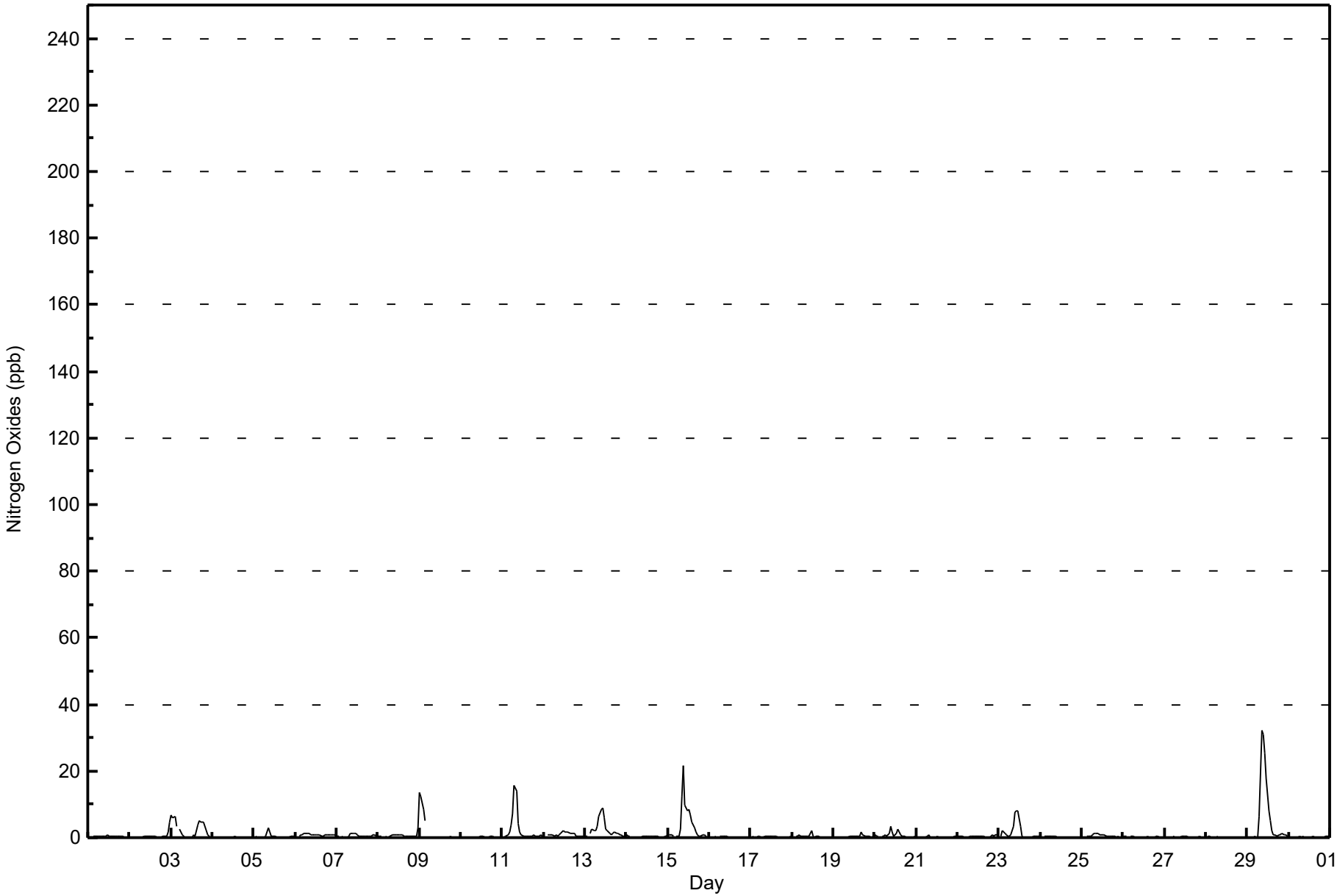
Z - zerospan C - Calibration

Wood Buffalo Environmental Association

Hourly Averages

Nitrogen Oxides (NO_X) - ppb

Mackay River - September 2024



Nitrogen Oxides (NO_X) - ppb
Mackay River - September 2024

Concentration Ranges (ppb)	Number of Hours	%	Cumulative %
0 - 20	680	99.42	99.42
21 - 40	4	0.58	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: 684

Total Number of Hours: 720

Wood Buffalo Environmental Association

Frequency Distribution

Nitrogen Oxides (NO_X) - ppb

Mackay River - September 2024

Concentration Ranges (ppb)	Wind Direction																
	N	NNE	NE	ENE	E	ESE	SE	SSE	S	SSW	SW	WSW	W	WNW	NW	NNW	**Totals**
0 - 20	14	6	12	16	17	34	51	81	93	57	65	100	65	32	18	16	677
21 - 40	3	0	1	0	0	0	0	0	0	0	0	0	0	0	0	0	4
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	17	6	13	16	17	34	51	81	93	57	65	100	65	32	18	16	681

Total Number of Valid Hours: 681

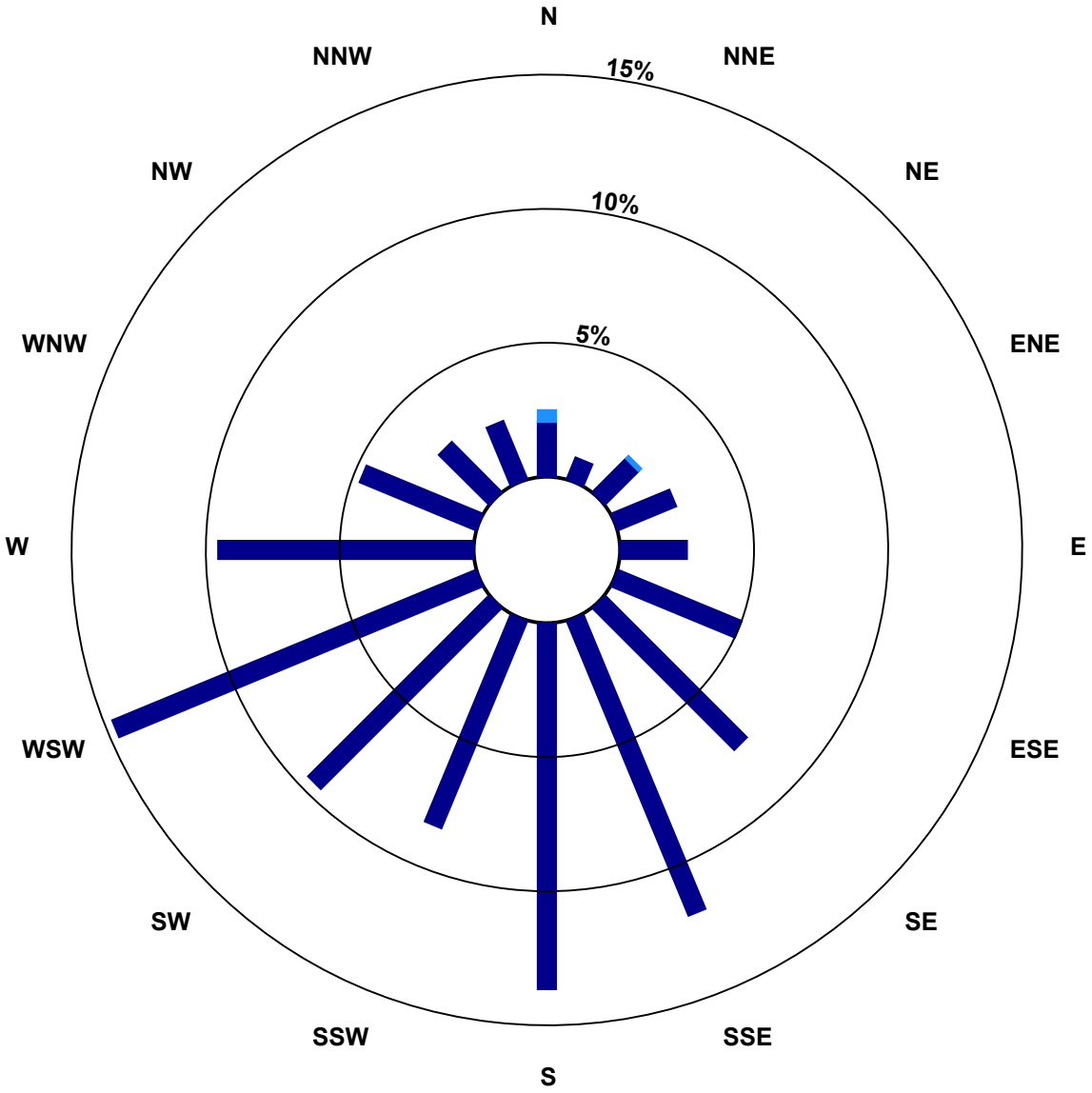
Total Number of Hours: 720

Wood Buffalo Environmental Association

Wind Rose Sep 2024

Nitrogen Oxides (NO_X) - ppb

Mackay River



Classes (ppb)

0 - 20

21 - 40

11 - 80

81 - 159

> 159

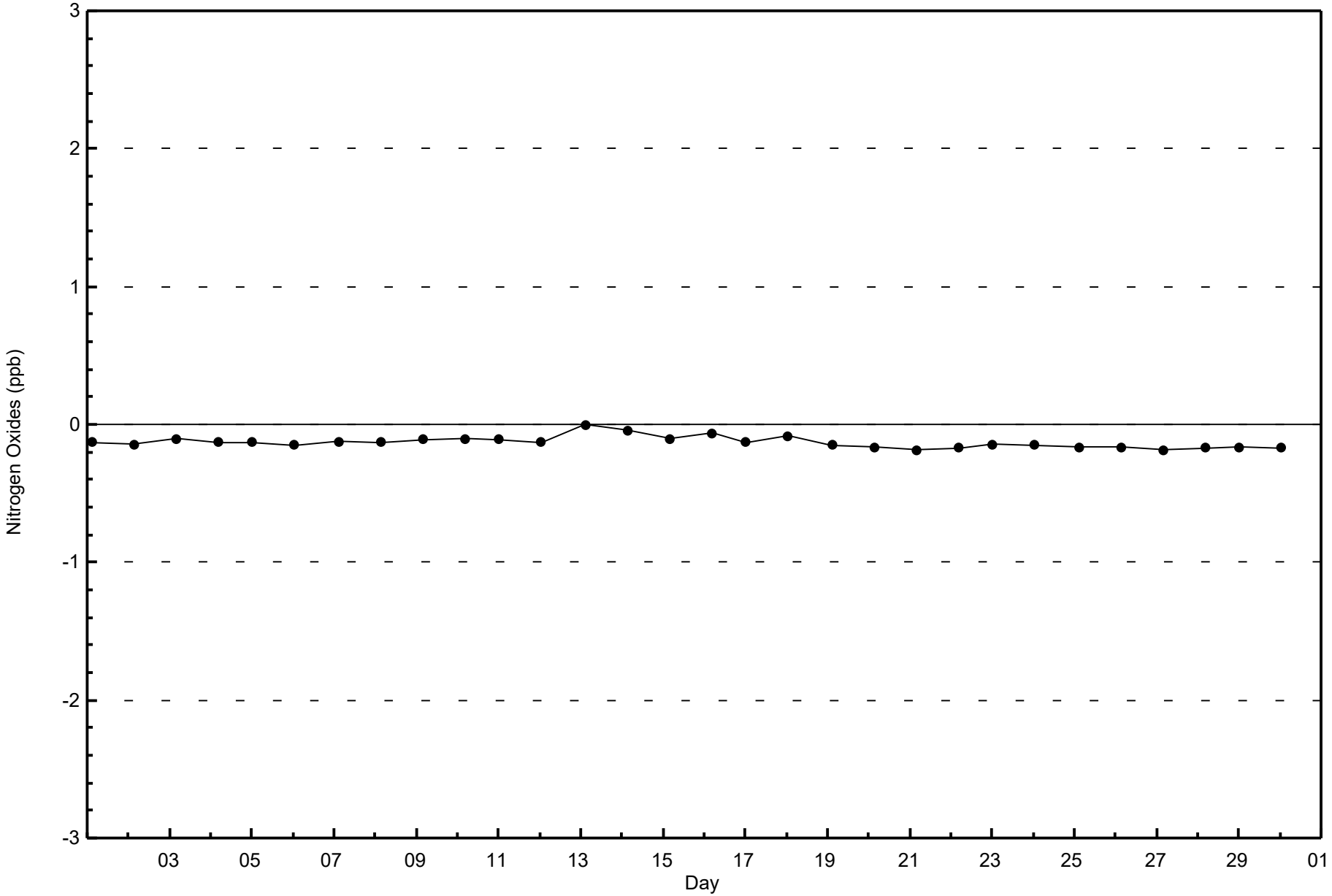
Total Number of Valid Hours: 681

Wood Buffalo Environmental Association

Zero Responses

Nitrogen Oxides (NO_X) - ppb

Mackay River - September 2024

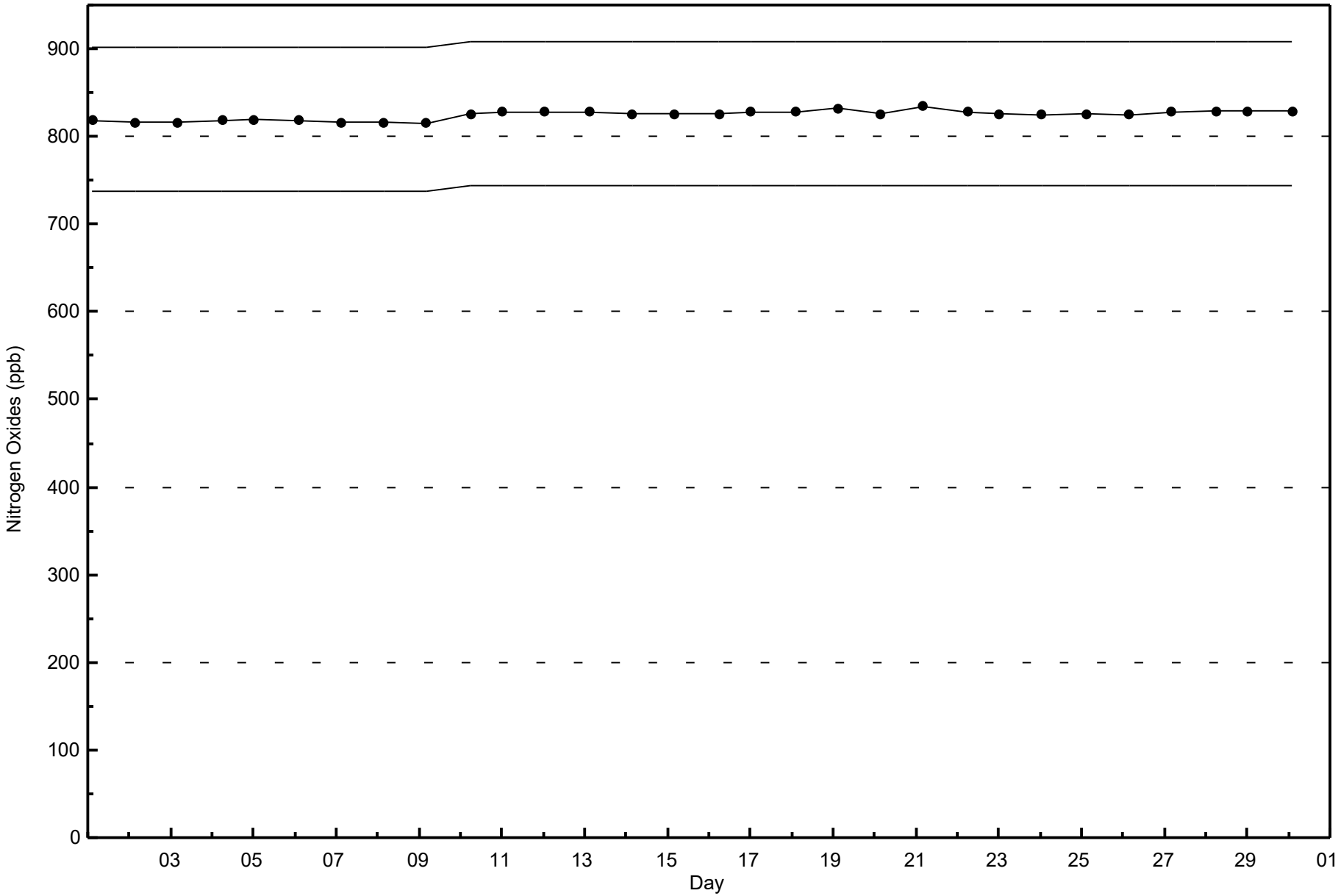


Wood Buffalo Environmental Association

Span Responses

Nitrogen Oxides (NO_X) - ppb

Mackay River - September 2024



Maximum Value: 30.3 C on Sep 2 15:00

Maximum Daily Average: 19.3 C on Sep 2

Minimum Value: -2.3 C on Sep 19 06:00

Minimum Daily Average: 5.4 C on Sep 30

Maximum Diurnal Average: 17.9 C at hour 15

Minimum Diurnal Average: 6.1 C at hour 7

Monthly Average: 11.52 C

Percentiles: P_1 = -1.1 P_{10} = 4.0 Q_1 = 7.8 Median = 11.2 Q_3 = 15.0 P_{90} = 19.4 P_{99} = 28.1

Hours in Service:	720
Hours of Data:	720
Hours of Missing Data:	0
Hours of Calibration:	0
Percent Operational Time:	100.0

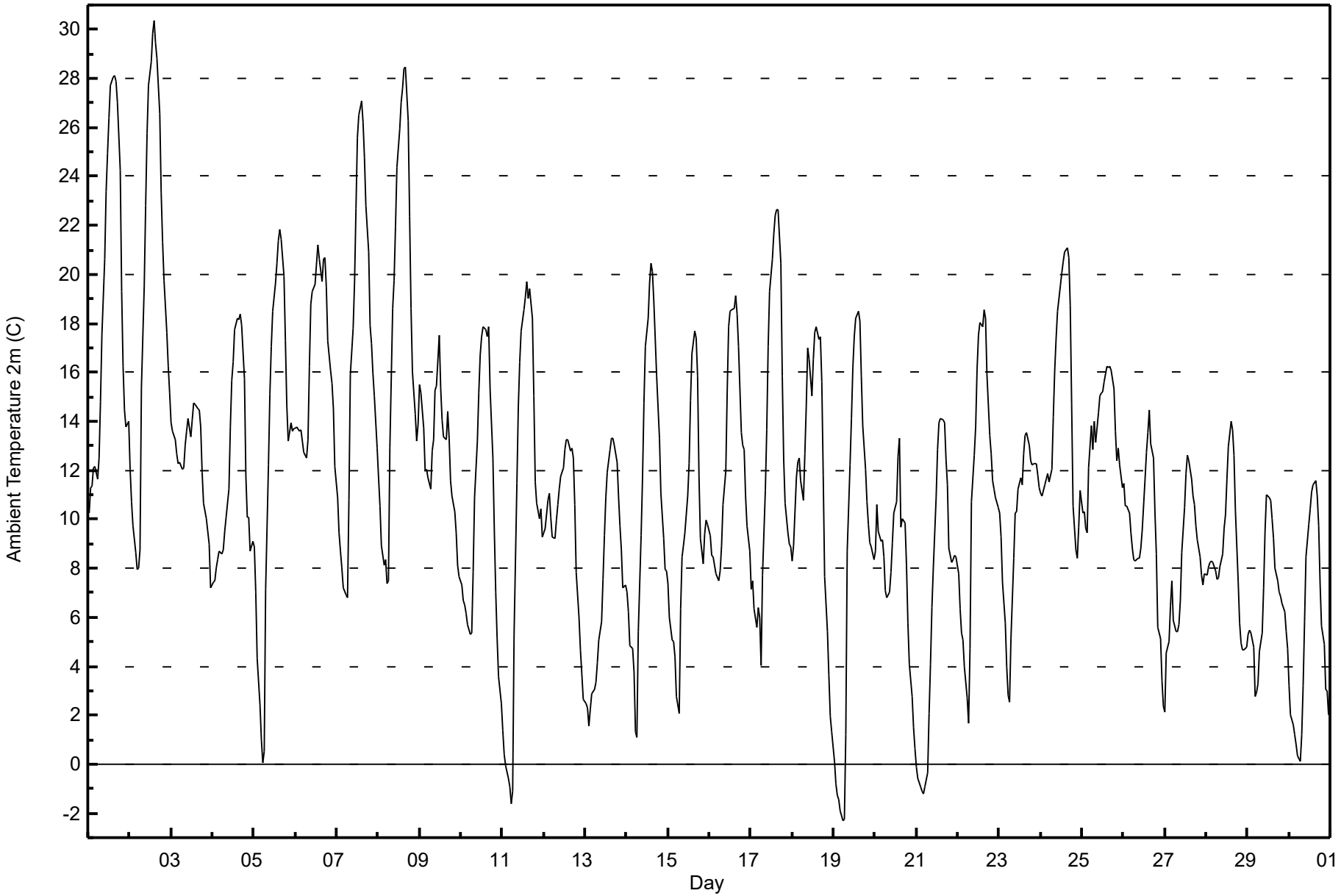
Day	Hourly Period Ending At (MST)																								Daily	Daily
	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24	Average	Maximum
1-Sep	10.3	11.3	11.3	12.1	12.2	11.7	12.5	14.8	17.5	20.6	23.4	25.0	26.4	27.7	28.0	28.1	27.9	27.0	24.3	19.3	16.2	14.5	13.8	14.0	18.7	28.1
2-Sep	12.0	10.7	9.7	8.6	7.9	8.0	8.7	15.4	19.5	22.8	25.8	27.7	28.7	29.8	30.3	29.5	28.8	26.5	23.3	21.3	19.7	17.6	16.2	15.2	19.3	30.3
3-Sep	14.0	13.6	13.3	12.6	12.3	12.3	12.1	12.1	13.0	13.6	14.1	13.4	14.1	14.8	14.7	14.5	14.5	13.8	11.9	10.6	10.0	9.5	9.0	7.2	12.5	14.8
4-Sep	7.4	7.5	8.0	8.4	8.7	8.6	8.8	9.5	10.1	11.2	13.8	15.6	16.4	17.7	18.2	18.2	18.4	17.9	15.8	11.7	10.1	10.1	8.7	9.1	12.1	18.4
5-Sep	8.9	7.1	4.3	2.4	1.0	0.1	0.5	7.1	12.2	15.1	17.1	18.5	19.7	20.5	21.4	21.9	21.4	19.9	17.3	14.6	13.2	13.9	13.6	13.7	12.7	21.9
6-Sep	13.7	13.7	13.6	13.7	13.2	12.7	12.5	13.2	16.3	18.8	19.3	19.6	20.4	21.2	20.6	19.7	20.6	20.7	19.5	17.3	16.1	15.6	14.5	12.2	16.6	21.2
7-Sep	10.9	9.5	8.7	8.0	7.2	6.9	6.8	10.7	15.9	17.8	19.7	22.7	25.6	26.5	27.1	26.2	24.8	22.8	20.9	17.9	17.2	15.9	15.0	12.9	16.6	27.1
8-Sep	11.7	10.5	8.9	8.1	8.3	7.4	7.5	12.9	18.6	19.8	21.9	24.4	25.9	27.0	27.6	28.4	28.5	26.3	22.3	18.6	16.0	14.3	13.2	13.9	17.6	28.5
9-Sep	15.5	15.1	13.7	12.0	12.0	11.7	11.3	12.8	13.2	15.3	15.4	17.5	15.4	14.1	13.4	13.3	14.4	13.3	11.6	10.9	10.3	9.5	8.1	7.7	12.8	17.5
10-Sep	7.3	6.7	6.5	6.2	5.7	5.3	5.4	7.8	10.9	13.2	15.2	16.7	17.5	17.8	17.8	17.5	17.8	15.3	12.5	9.5	7.0	5.1	3.6	2.5	10.4	17.8
11-Sep	1.4	0.4	0.0	-0.6	-0.9	-1.6	-1.1	5.3	11.5	14.6	16.4	17.7	18.5	19.1	19.7	19.0	19.4	18.2	15.1	11.5	10.6	10.1	10.4	9.2	10.2	19.7
12-Sep	9.4	9.6	10.8	11.0	10.1	9.3	9.2	10.0	10.6	11.2	11.7	12.1	12.9	13.3	13.2	12.8	12.9	12.5	10.6	7.8	6.0	4.6	3.7	2.6	9.9	13.3
13-Sep	2.5	2.3	1.6	2.2	2.9	3.0	3.3	4.1	5.1	5.8	7.5	9.3	10.9	11.9	12.9	13.3	13.3	13.0	12.4	11.0	9.7	8.7	7.2	7.3	7.6	13.3
14-Sep	7.0	6.2	4.9	4.7	3.8	1.3	1.1	5.4	9.3	11.7	14.7	17.1	18.2	19.6	20.5	20.1	18.9	15.8	14.6	13.3	11.0	9.2	8.0	7.9	11.0	20.5
15-Sep	7.4	6.0	5.1	5.0	4.4	2.7	2.1	6.3	8.5	8.9	9.4	10.9	12.3	14.9	16.8	17.7	17.4	15.8	11.7	9.2	8.2	9.4	10.0	9.8	9.6	17.7
16-Sep	9.4	8.5	8.5	8.1	7.8	7.5	7.9	8.9	10.6	12.0	15.3	17.8	18.5	18.6	18.6	19.1	18.4	17.1	13.5	13.0	12.8	10.9	9.8	8.7	12.6	19.1
17-Sep	7.2	7.5	6.3	5.6	6.4	6.0	4.0	7.7	11.2	13.6	17.0	19.3	20.6	21.7	22.4	22.7	22.6	20.5	15.8	12.5	10.7	9.4	9.0	8.9	12.9	22.7
18-Sep	8.3	9.0	11.7	12.3	12.5	11.6	10.8	12.7	14.6	17.0	16.5	15.1	16.5	17.6	17.8	17.4	17.4	15.6	11.8	7.7	5.4	3.6	2.0	1.3	11.9	17.8
19-Sep	0.1	-0.8	-1.3	-1.5	-1.9	-2.3	-2.3	1.2	8.7	12.2	14.1	16.2	17.5	18.2	18.5	18.1	15.8	13.8	12.0	10.7	9.8	9.1	8.9	8.4	8.5	18.5
20-Sep	8.7	10.6	9.5	9.1	9.1	8.5	7.1	6.8	7.0	7.8	9.0	10.2	10.7	12.5	13.3	9.7	10.0	9.8	8.2	5.8	4.1	2.8	1.5	0.6	8.0	13.3
21-Sep	-0.1	-0.6	-0.9	-1.1	-1.2	-0.9	-0.4	2.1	4.1	6.4	8.0	10.9	12.8	14.0	14.1	14.1	13.9	12.4	11.4	8.8	8.2	8.4	8.5	8.5	6.7	14.1
22-Sep	7.8	6.3	5.4	5.0	4.0	2.7	1.6	4.7	10.7	12.6	13.8	16.1	17.5	18.0	17.9	18.6	18.2	15.9	13.4	12.6	11.6	11.2	10.9	10.5	11.1	18.6
23-Sep	10.3	9.3	7.4	5.8	4.0	2.8	2.6	5.1	8.4	10.3	10.3	11.2	11.7	11.4	12.7	13.4	13.6	13.0	12.4	12.2	12.3	12.3	11.8	11.3	9.8	13.6
24-Sep	11.1	11.0	11.4	11.7	11.9	11.5	12.1	14.2	16.1	17.4	18.5	19.5	20.1	20.5	20.9	21.1	20.7	18.7	14.7	10.6	8.7	8.4	9.7	11.2	14.6	21.1
25-Sep	10.3	10.3	9.6	9.5	12.1	13.8	12.8	14.0	13.1	14.3	15.0	15.2	15.2	15.6	16.2	16.2	16.3	16.1	15.3	13.6	12.4	12.9	12.2	11.3	13.5	16.3
26-Sep	11.5	10.5	10.5	10.2	9.5	8.8	8.4	8.3	8.4	8.4	8.8	9.6	11.6	12.7	13.5	14.4	13.1	12.5	10.3	8.6	5.6	5.1	3.4	2.4	9.4	14.4
27-Sep	2.1	4.6	5.0	6.4	7.5	5.9	5.4	5.4	5.7	6.7	8.6	10.5	11.9	12.6	12.4	11.6	10.9	10.6	9.8	9.2	8.4	7.7	7.3	7.8	8.1	12.6
28-Sep	7.7	8.1	8.2	8.3	8.2	7.9	7.6	7.6	8.1	8.6	9.6	10.2	11.6	13.0	14.0	13.6	12.6	10.3	7.4	5.7	5.0	4.6	4.7	4.8	8.7	14.0
29-Sep	5.3	5.5	5.4	4.8	2.8	2.9	3.3	4.6	5.4	7.2	9.5	11.0	10.9	10.8	10.0	9.2	8.0	7.5	7.0	6.9	6.6	6.2	5.4	4.7	6.7	11.0
30-Sep	3.2	2.0	1.6	1.2	0.8	0.4	0.1	1.2	3.2	5.8	8.5	9.8	10.4	11.1	11.4	11.6	11.0	9.8	7.3	5.6	4.9	3.1	3.0	2.0	5.4	11.6
	8.1	7.7	7.3	7.0	6.7	6.2	6.1	8.4	10.9	12.7	14.3	15.7	16.7	17.5	17.9	17.7	17.4	16.1	13.8	11.6	10.3	9.5	8.8	8.2	Diurnal Average	
	15.5	15.1	13.7	13.7	13.2	13.8	12.8	15.4	19.5	22.8	25.8	27.7	28.7	29.8	30.3	29.5	28.8	27.0	24.3	21.3	19.7	17.6	16.2	15.2	Diurnal Maximum	

Wood Buffalo Environmental Association

Hourly Averages

Ambient Temperature 2m (AT2) - C

Mackay River - September 2024



Concentration Ranges (C)	Number of Hours	%	Cumulative %
-50 - -20	0	0.00	0.00
-20 - 0	18	2.50	2.50
0 - 10	280	38.89	41.39
10 - 20	362	50.28	91.67
> 20	60	8.33	100.00

Total Number of Valid Hours: 720

Total Number of Hours: 720

Wood Buffalo Environmental Association

Summary of Hour Averages

Relative Humidity 2m (RH2) - %

Mackay River - September 2024

Maximum Value: 99.8 % on Sep 13 08:00

Maximum Daily Average: 94.5 % on Sep 23

Minimum Value: 24.2 % on Sep 2 15:00

Minimum Daily Average: 58.0 % on Sep 2

Maximum Diurnal Average: 90.6 % at hour 7

Minimum Diurnal Average: 51.2 % at hour 15

Monthly Average: 74.31 %

Percentiles: P_1 = 30.6 P_{10} = 43.5 Q_1 = 61.5 Median = 77.3 Q_3 = 91.0 P_{90} = 96.6 P_{99} = 99.6

Hours in Service:	720
Hours of Data:	720
Hours of Missing Data:	0
Hours of Calibration:	0
Percent Operational Time:	100.0

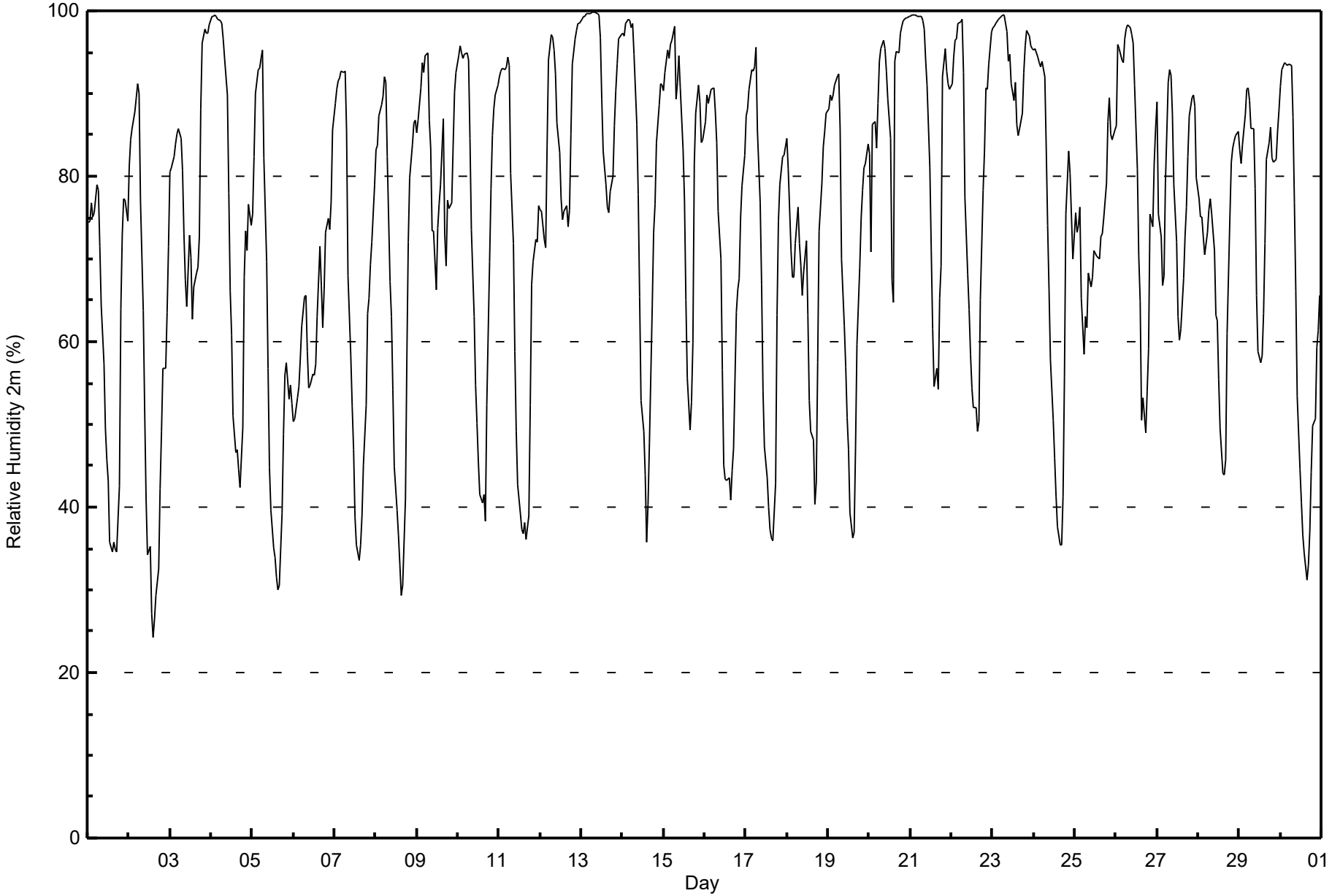
Day	Hourly Period Ending At (MST)																								Daily	Daily
	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24	Average	Maximum
1-Sep	74.3	74.6	76.8	75.1	75.5	79.0	78.2	71.5	64.4	57.3	49.6	45.8	43.2	35.7	34.5	35.8	34.9	34.5	42.6	63.9	72.9	77.2	77.1	74.6	60.4	79.0
2-Sep	81.2	84.3	85.8	87.8	89.5	91.2	90.0	77.1	63.6	51.7	41.1	34.3	35.2	27.0	24.2	26.5	29.3	32.6	42.2	49.1	56.7	56.8	63.5	71.5	58.0	91.2
3-Sep	80.5	81.1	82.5	83.8	85.0	85.7	84.6	80.6	73.0	67.5	64.2	72.8	70.1	62.7	66.6	68.3	69.0	72.8	88.2	96.1	97.7	97.2	97.3	98.3	80.2	98.3
4-Sep	99.3	99.4	99.5	99.3	99.0	98.8	98.4	96.6	94.3	89.8	77.9	66.1	60.9	51.0	46.6	46.9	44.6	42.3	49.6	67.8	73.4	71.0	76.6	74.1	76.0	99.5
5-Sep	75.4	82.4	90.0	92.8	93.0	94.2	95.2	82.2	69.6	56.8	44.8	39.6	35.1	33.8	31.5	29.9	30.5	39.4	48.9	55.9	57.5	53.1	54.8	52.5	60.0	95.2
6-Sep	50.3	50.7	53.3	54.6	57.9	61.9	65.5	65.7	58.8	54.4	54.8	56.1	55.9	57.3	63.1	71.5	66.8	61.7	66.2	73.2	74.9	73.5	76.9	85.6	62.9	85.6
7-Sep	88.7	90.5	91.5	91.9	92.7	92.6	92.8	85.4	67.9	58.3	52.2	46.9	38.9	35.4	33.6	35.5	39.0	45.1	52.3	63.4	65.2	69.3	72.0	79.1	65.8	92.8
8-Sep	83.2	83.8	87.3	88.6	89.7	92.1	91.3	82.4	67.3	63.0	54.3	44.9	39.7	36.5	33.0	29.4	30.5	41.0	58.2	72.1	79.9	83.8	86.5	86.7	66.9	92.1
9-Sep	85.3	86.8	90.7	93.7	92.6	94.6	94.9	86.7	83.4	73.4	73.4	66.2	73.7	76.6	79.0	87.0	73.0	69.2	77.2	76.0	76.9	83.7	90.2	92.5	82.4	94.9
10-Sep	94.5	95.7	95.0	94.3	94.7	94.9	94.0	84.6	73.5	63.0	54.7	50.1	45.5	41.5	40.5	41.6	38.3	52.3	69.7	78.5	84.9	88.1	89.9	91.1	73.0	95.7
11-Sep	92.1	92.6	93.0	92.9	93.2	94.5	93.4	80.3	71.9	58.7	49.2	42.7	39.2	37.2	36.8	38.1	36.0	38.9	52.4	66.9	69.7	72.3	72.1	76.4	66.3	94.5
12-Sep	75.9	75.8	72.4	71.3	83.6	94.1	97.1	96.7	95.2	92.3	86.5	82.8	77.3	74.8	75.7	76.4	73.8	75.9	85.0	93.6	96.5	97.6	98.5	98.4	85.3	98.5
13-Sep	99.0	99.3	99.4	99.6	99.7	99.7	99.8	99.8	99.8	99.7	99.6	96.8	89.4	83.1	79.0	76.3	75.7	78.2	79.9	86.1	90.4	93.5	96.6	97.2	92.4	99.8
14-Sep	97.2	96.9	98.5	99.0	98.8	97.9	98.5	94.7	86.3	77.7	65.4	52.9	49.2	43.9	35.8	40.3	47.8	64.2	73.2	76.7	84.0	88.7	91.2	91.0	77.1	99.0
15-Sep	90.3	92.5	95.3	94.3	96.0	96.4	98.1	89.4	91.4	94.5	90.7	83.2	77.2	65.2	55.5	49.3	52.7	59.9	81.6	87.6	91.0	88.9	84.0	84.3	82.9	98.1
16-Sep	86.5	89.9	88.9	89.6	90.5	90.6	87.8	84.2	75.7	69.9	56.6	45.2	43.4	43.2	43.6	40.9	44.4	47.2	63.6	66.2	67.7	75.0	78.8	82.5	68.8	90.6
17-Sep	87.3	88.1	90.5	92.8	92.6	93.3	95.6	85.5	76.7	67.0	54.1	47.3	43.5	40.0	37.2	36.3	36.0	42.9	63.2	74.6	79.0	82.3	82.6	83.6	69.7	95.6
18-Sep	84.6	80.9	71.0	67.9	67.8	71.9	76.2	71.8	69.1	65.6	68.5	72.1	63.3	53.0	49.1	48.1	40.4	43.1	57.5	73.5	79.2	83.6	85.4	87.6	68.0	87.6
19-Sep	88.2	89.9	89.1	89.8	91.0	92.1	92.4	85.8	69.9	61.8	57.0	50.8	47.0	39.4	36.3	36.9	47.3	59.7	69.0	74.9	78.3	81.1	81.5	83.9	70.5	92.4
20-Sep	82.7	70.8	86.2	86.6	83.4	88.9	94.0	95.5	96.4	95.4	92.7	89.3	84.5	67.5	64.8	93.8	95.0	95.0	97.3	98.1	98.9	99.1	99.2	99.4	89.8	99.4
21-Sep	99.4	99.4	99.5	99.4	99.3	99.3	99.3	98.9	97.8	94.0	91.0	81.0	71.1	61.5	54.6	56.7	54.3	65.2	69.2	92.0	95.5	92.7	91.2	90.5	85.5	99.5
22-Sep	91.2	94.4	96.4	96.7	98.5	98.7	99.0	92.6	77.4	68.1	64.0	58.4	54.3	52.0	52.1	49.1	50.3	65.1	78.2	83.2	90.7	90.5	93.6	97.5	78.8	99.0
23-Sep	98.0	98.2	98.6	98.9	99.1	99.3	99.5	99.5	97.4	93.8	94.8	91.2	89.1	91.3	86.2	84.9	85.7	87.6	92.6	95.8	97.7	96.9	95.8	95.4	94.5	99.5
24-Sep	95.3	95.5	94.5	93.8	93.3	93.8	92.0	83.4	74.1	66.3	57.7	50.4	45.9	41.4	37.5	35.4	35.5	41.3	55.8	75.4	83.0	80.3	75.0	70.0	69.5	95.5
25-Sep	75.5	73.2	74.1	76.3	65.2	58.5	63.1	61.8	68.4	66.6	67.8	71.0	70.8	70.4	70.0	72.8	73.0	74.9	79.2	86.6	89.6	85.0	84.4	85.6	73.5	89.6
26-Sep	86.1	95.9	95.5	94.1	93.7	96.6	97.8	98.3	97.9	97.1	96.2	90.9	80.9	70.3	64.8	50.5	53.2	49.0	54.1	59.2	75.4	73.9	81.5	85.7	80.8	98.3
27-Sep	89.0	75.4	72.6	66.7	67.9	79.1	91.3	92.9	92.2	87.4	79.0	72.0	63.0	60.2	61.6	67.6	72.6	76.3	82.4	87.4	89.5	89.9	88.6	79.8	78.5	92.9
28-Sep	77.3	75.2	75.0	72.7	70.4	73.2	75.9	77.2	75.5	71.0	63.3	62.5	55.4	49.6	44.1	43.9	45.7	60.9	75.1	81.7	83.4	84.2	85.0	85.4	69.3	85.4
29-Sep	83.3	81.5	84.0	87.4	90.5	90.7	89.2	85.7	85.8	78.4	65.6	58.8	57.5	58.2	63.4	71.9	82.0	84.1	85.9	82.1	81.7	82.0	85.5	87.9	79.3	90.7
30-Sep	90.8	92.8	93.8	93.5	93.3	93.5	93.3	87.1	76.9	66.1	53.4	44.6	40.4	36.5	34.5	31.1	33.1	37.0	44.3	49.8	50.7	59.3	61.4	65.6	63.5	93.8
	86.1	86.3	87.3	87.5	87.9	89.6	90.6	85.8	79.7	73.6	67.3	62.2	58.0	53.2	51.2	52.4	53.0	57.9	67.8	76.3	80.4	81.7	83.2	84.5	Diurnal Average	
	99.4	99.4	99.5	99.6	99.7	99.7	99.8	99.8	99.8	99.7	99.6	96.8	89.4	91.3	86.2	93.8	95.0	95.0	97.3	98.1	98.9	99.1	99.2	99.4	Diurnal Maximum	

Wood Buffalo Environmental Association

Hourly Averages

Relative Humidity 2m (RH2) - %

Mackay River - September 2024



Concentration Ranges (%)	Number of Hours	%	Cumulative %
0 - 20	0	0.00	0.00
20 - 40	51	7.08	7.08
40 - 60	125	17.36	24.44
60 - 80	208	28.89	53.33
80 - 100	336	46.67	100.00

Total Number of Valid Hours: 720

Total Number of Hours: 720

Maximum Value: 2.9 mm on Sep 26 06:00

Maximum Daily Total: 10.0 mm on Sep 20

Minimum Value: 0.0 mm on Sep 1 01:00

Minimum Daily Total: 0.0 mm on Sep 1

Maximum Diurnal Total: 5.0 mm at hour 6

Minimum Diurnal Total: 0.0 mm at hour 11

Monthly Total: 32.67 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} = 1.3

Hours in Service:	720
Hours of Data:	720
Hours of Missing Data:	0
Hours of Calibration:	0
Percent Operational Time:	100.0

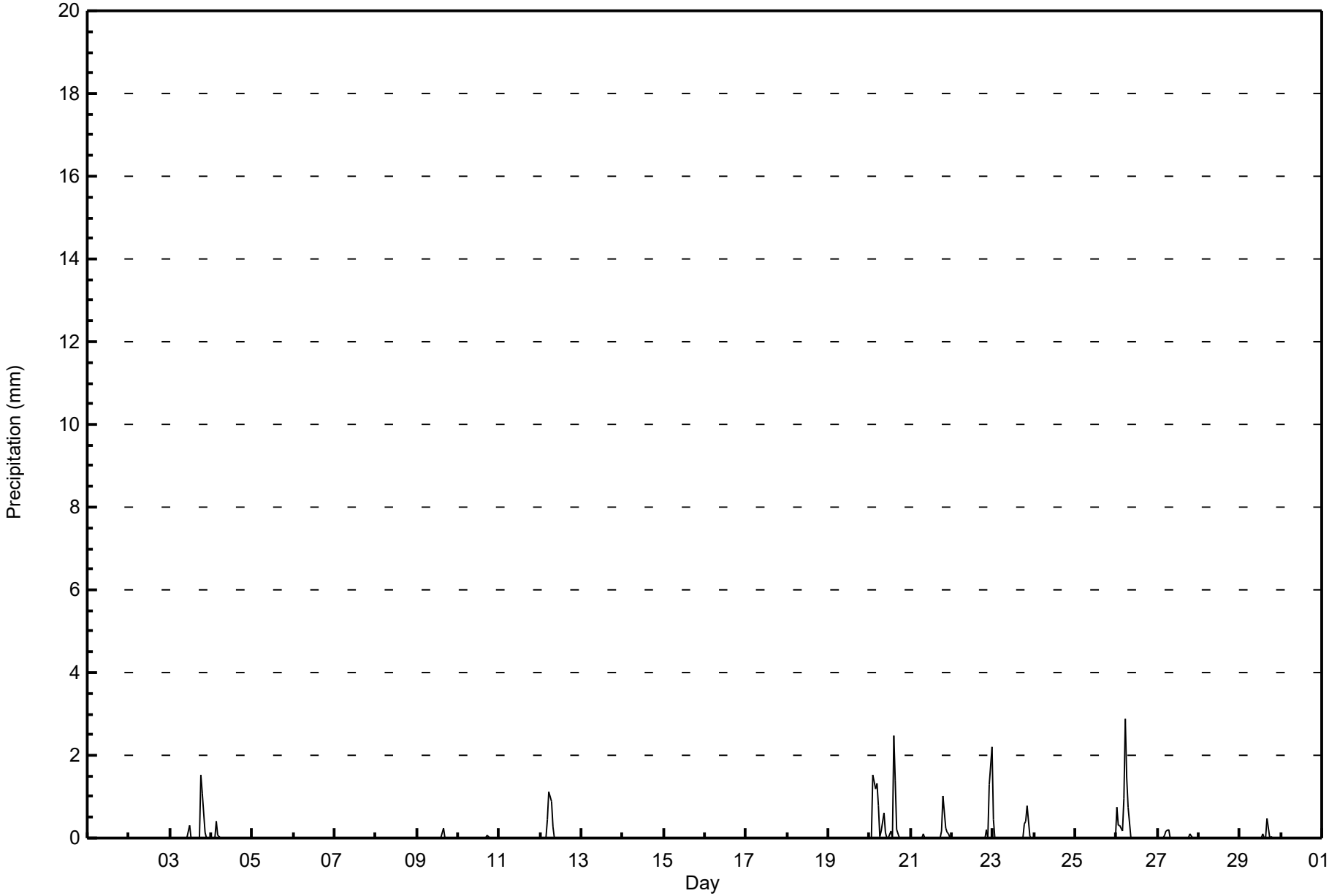
Day	Hourly Period Ending At (MST)																								Daily	Daily
	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24	Average	Maximum
1-Sep	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
2-Sep	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	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-Sep	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	1.5	1.1	0.1	0.0	0.0	0.0	3.0	1.5
4-Sep	0.0	0.0	0.0	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	0.0	0.0	0.0	0.0	0.5	0.4
5-Sep	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	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-Sep	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	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-Sep	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	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-Sep	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	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-Sep	0.0	0.0	0.0	0.0	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	0.0	0.0	0.3	0.3
10-Sep	0.0	0.0	0.0	0.0	0.0	0.0	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	0.1	0.1
11-Sep	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	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-Sep	0.0	0.0	0.0	0.0	0.4	1.1	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	0.0	0.0	0.0	2.7	1.1
13-Sep	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	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-Sep	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	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-Sep	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	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-Sep	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	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-Sep	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	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-Sep	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	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-Sep	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	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-Sep	0.0	0.0	1.5	1.2	1.3	0.8	0.1	0.2	0.6	0.1	0.0	0.0	0.2	0.0	2.5	1.4	0.2	0.0	0.0	0.0	0.0	0.0	0.0	0.0	10.0	2.5
21-Sep	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	0.2	1.0	0.3	0.2	0.1	0.0	1.8	1.0
22-Sep	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	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	1.3	2.2	3.7	2.2
23-Sep	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	0.3	0.4	0.8	0.1	0.0	0.0	2.0	0.8
24-Sep	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	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-Sep	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	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-Sep	0.7	0.3	0.3	0.2	1.0	2.9	1.5	0.8	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	7.5	2.9
27-Sep	0.0	0.0	0.0	0.0	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	0.0	0.1	0.0	0.0	0.0	0.0	0.5	0.2
28-Sep	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	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-Sep	0.0	0.0	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	0.5	0.0	0.1	0.0	0.0	0.0	0.0	0.0	0.6	0.5
30-Sep	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	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	0.3	1.8	1.7	2.8	5.0	2.6	1.3	0.6	0.1	0.0	0.3	0.2	0.1	2.5	1.6	0.7	0.1	2.1	2.6	1.4	0.2	1.4	2.2	Diurnal Average	
	0.7	0.3	1.5	1.2	1.3	2.9	1.5	0.8	0.6	0.1	0.0	0.3	0.2	0.1	2.5	1.4	0.5	0.1	1.5	1.1	0.8	0.2	1.3	2.2	Diurnal Maximum	

Wood Buffalo Environmental Association

Hourly Averages

Precipitation (PC) - mm

Mackay River - September 2024



Concentration Ranges (mm)	Number of Hours	%	Cumulative %
0 - 0.3	695	96.53	96.53
0.4 - 0.5	5	0.69	97.22
0.6 - 0.7	2	0.28	97.50
0.8 - 1.4	12	1.67	99.17
1.5 - 10	5	0.69	99.86
> 10	0	0.00	99.86

Total Number of Valid Hours: 720

Total Number of Hours: 720

Wood Buffalo Environmental Association

Summary of Hour Averages

Wind Speed 10m (WS10) - km/h

Mackay River - September 2024

Maximum Speed: 17 km/h on Sep 30 15:00

Maximum Daily Speed Average: 8.7 km/h on Sep 30

Minimum Speed Value: 0 km/h on Sep 23 08:00

Minimum Daily Speed Average: 1.1 km/h on Sep 20

Maximum Diurnal Speed Average: 5.2 km/h at hour 14

Minimum Diurnal Speed Average: 2.2 km/h at hour 21

Monthly Average Velocity: 2.9 km/h 219.0 deg

Percentiles: P_1 = 1 P_{10} = 2 Q_1 = 3 Median = 6 Q_3 = 8 P_{90} = 10 P_{99} = 14

Hours in Service: 720

Hours of Data: 715

Hours of Missing Data: 5

Percent Operational Time: 99.3

Day	Hourly Period Ending At (MST)																								Daily	Daily
	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24	Average	Maximum
1-Sep	SSE6	SSE7	SSE6	S8	S11	S9	S11	S11	S9	S9	SSW11	SSW11	SW11	WSW11	WSW11	WSW10	WSW10	WSW8	SW4	SSE3	SSE4	SSE5	SSE6	S6	SSW7.1	SSW11
2-Sep	SSE4	SSE4	SSE4	SSE3	SE3	SSE5	SE3	SSE3	SSW5	SW5	SSW6	SW8	SW8	WSW8	WSW8	W9	WSW8	SW6	WSW4	WNW9	NW11	NW13	NW9	NNE6	WSW3.5	NW13
3-Sep	NE4	NE6	NNE7	N6	NNW4	NNW4	NNW6	NNW7	NNW8	NNW8	NNW5	N5	NNW5	N2	NE3	ENE6	ENE5	NE5	NW5	WNW3	NNW3	WNW4	WSW2	WSW2	N3.8	NNW8
4-Sep	W2	WSW3	WSW3	WSW5	WSW4	WSW5	WSW5	WSW6	WSW6	WSW7	W9	W10	W9	WNW12	W9	W8	W7	W7	WSW4	SW4	SW5	SW5	SW4	WSW5	W5.7	WNW12
5-Sep	WSW6	NW2	S1	SSE2	SE3	SSE2	ESE2	ENE2	SE4	SE6	SE7	SSE8	S7	SSE7	SSW8	SSW8	S8	SSE6	SE4	SE5	SE5	SSE6	SSE8	SSE9	SSE4.4	SSE9
6-Sep	S10	S11	S12	S13	S12	S12	S11	SSW12	SSW11	SSW9	SW10	SSW8	SSW5	SSW5	S4	S3	SW4	SW6	SW6	SSW6	SW5	WSW6	W4	W3	SSW7.2	S13
7-Sep	WSW1	SE2	S3	SSE5	SSE3	ESE3	SE3	SE5	S7	SSW8	S9	SSW9	SW9	WSW11	WSW10	SW10	SW10	SW9	SSW5	S5	SSW6	SW5	SW4	SW4	SSW5.2	WSW11
8-Sep	SW3	SSE3	SSE3	SSE3	SE3	SE3	SE3	SE4	SE3	S8	SSE8	S9	S8	S8	S7	S6	S4	ENE3	ENE3	E1	SE2	SSE1	SE1	NE2	SSE3.3	S9
9-Sep	E2	NE3	ENE2	E1	E2	N3	NW3	NW6	W7	WNW12	WNW11	W11	WSW12	WSW10	WSW9	WSW9	WSW11	W15	W12	W11	W11	WSW9	WSW7	WSW7	W6.4	W15
10-Sep	W7	WSW7	WSW7	WSW7	SW7	SW7	SW6	WSW7	WSW7	WSW7	WSW9	WSW9	WSW10	WSW8	WSW9	WSW8	SW7	WNW5	SSW2	SSE2	SSE2	SSE2	SE2	SE2	WSW5.5	WSW10
11-Sep	SSE1	SE1	SE1	SW1	S1	ENE0	E1	NNE2	ESE1	ESE5	ESE9	ESE10	ESE9	ESE9	E7	E8	ESE10	ESE8	E3	ESE4	ESE5	ESE5	ESE6	ESE5	ESE4.4	ESE10
12-Sep	ESE5	ESE5	ESE5	SE7	SE7	SE7	ESE5	ENE3	E5	ENE6	E7	ENE7	E8	E8	ENE8	E6	ENE5	ENE5	NE2	NE0	SW1	SSE1	UO	SSE2	E4.5	E8
13-Sep	W2	SE1	UO	WNW2	WNW3	WNW3	WNW4	NW3	WNW4	WNW4	NW5	NW7	NW7	NW8	NW9	N8	N7	NNW5	NNW4	NW1	WSW3	WSW3	W3	W4	NW3.7	NW9
14-Sep	WNW4	WNW3	W3	W3	WSW3	S2	SW3	WSW3	WSW4	WSW6	WSW6	WSW6	WSW7	WSW9	W9	W6	W4	N1	SE1	SSW3	ESE2	NNE1	SSE1	E2	WSW3.1	W9
15-Sep	SSE3	S1	NNW2	WSW1	W1	UO	ENE1	W1	NNW6	NE6	ENE5	SSE2	SSW5	W4	WSW3	SW4	WSW3	SW3	SSE3	SSE4	SSE4	S7	S7	S7	S1.5	S7
16-Sep	S8	S7	S8	S9	S9	S9	S9	S10	SSW10	SSW10	SW10	SW12	WSW12	WSW10	SW10	SW10	SW8	WSW5	S4	SSW6	SSW5	S5	S6	S6	SSW7.5	WSW12
17-Sep	S6	S7	SSE6	SSE7	S7	S6	SSE5	SSE4	SSE6	SSE7	S7	SSW8	S9	SSW6	SW5	SSW3	S2	SSE5	SE3	SE3	SSE4	SSE3	SE5	SE5	S5.0	S9
18-Sep	SSE5	SSE5	S7	S8	S9	S9	S8	SW6	W7	WNW11	WNW7	WNW11	W10	W10	WNW11	WNW11	W8	W6	WSW3	SSW2	SSE2	S1	SE3	S2	WSW4.1	WNW11
19-Sep	SSE2	SSE2	SE3	SSE3	SE3	SE3	SE2	SSE3	SW3	WSW4	SW5	WSW5	WSW5	W5	W6	SW5	WNW6	ESE1	SE2	S2	SE3	SSE0	NNE1	N1	SW1.6	WNW6
20-Sep	NE3	NE7	NNE1	SSW3	NE8	NE5	WSW3	WSW2	NW4	NNW4	NW4	NW5	WNW4	WNW5	WNW4	SSE2	SW3	SSW3	SSW4	SE1	S1	WSW1	S2	WSW1	NW1.1	NE8
21-Sep	WSW2	SW1	SSE2	S1	UO	UO	SE4	SSE5	S3	SSE4	SSE6	S7	SSE7	SSE7	S8	SSE8	SSE9	SSE4	S5	SSE2	ESE4	ESE7	ESE7	ESE8	SSE4.6	SSE9
22-Sep	ESE7	ESE6	SE5	SSE4	SSE5	SSE5	S4	SSE3	S1	SW4	SSW4	SW6	WSW8	WSW7	W5	WNW3	SSW3	S3	SSE3	N7	ENE4	ESE4	NNW3	SSW3	S2.0	WSW8
23-Sep	NE2	N3	NW3	SSE1	S1	S1	SW2	WNW0	ESE1	SW4	SW4	SSW3	SSE8	S8	S6	SSW5	S6	S7	S7	S7	S7	S8	SSW8	SSW8	S3.8	S8
24-Sep	SSW7	SW6	SW6	SW6	SW6	SSW6	SW8	WSW10	W10	W14	W14	W14	W14	W14	W12	W11	W9	WSW6	SW3	SSE3	SE4	SE6	SSE6	SSE6	WSW6.6	W14
25-Sep	SE5	SE7	SE6	ESE6	ESE8	E7	ESE9	ESE4	ESE5	SE5	SE3	SSW3	SW3	SSW5	SSW5	S6	SSW7	SSW7	SSW6	SSW5	S4	WSW6	W5	SW6	SSE3.6	ESE9
26-Sep	WSW6	W3	W6	WNW7	WNW6	W6	W3	SW4	WSW5	WSW5	W7	WNW10	W8	W9	WSW6	W9	W6	WSW7	SW7	SW6	SSW5	SW6	S5	SE3	WSW5.2	WNW10
27-Sep	SSE5	S6	S7	S7	SSE6	SSE9	SSE10	S4	SE7	SE7	SSE4	S8	SSW8	SSW7	SSW9	S7	S6	S5	S6	SSW7	SSW6	S8	SSW9	SW11	S6.5	SW11
28-Sep	SW13	SW12	WSW13	WSW13	W14	W12	WSW11	WSW9	W9	W9	WSW10	WSW10	WSW9	WSW8	WSW9	SW7	SW7	S4	S5	SSE4	S4	SE4	SE3	SSE5	WSW7.1	W14
29-Sep	SE5	SSE2	E2	E3	ESE3	E2	NNW3	N5	N6	N7	N10	N10	N10	N10	NW8	WNW9	NW11	NNW7	WNW5	WNW5	WNW6	WNW6	W4	W4	NNW3.9	NW11
30-Sep	WSW5	WSW5	WSW6	WSW7	W7	WSW7	WSW6	WSW7	WSW9	W10	W11	W14	W15	W15	W17	W16	W15	W10	WSW6	SW6	SW6	WSW4	WSW5	SW5	W8.7	W17
	S2.6	S2.2	SSW2.7	SSW3.0	S2.8	S2.9	SSW2.9	SW2.5	SW2.6	SW3.1	SW3.7	WSW4.5	WSW4.9	WSW5.2	WSW5.1	WSW4.3	SW3.9	SW2.7	SSW2.5	SSW2.2	SSW2.2	SSW2.4	SSW2.6	S2.7	Diurnal Average	
	SW13	SW12	WSW13	S13	W14	S12	S11	SSW12	SSW11	W14	W14	W14	W15	W15	W17	W16	WNW15	W15	W12	W11	NW11	NW13	NW9	SW11	Diurnal Maximum	

UO - Unstable Operation

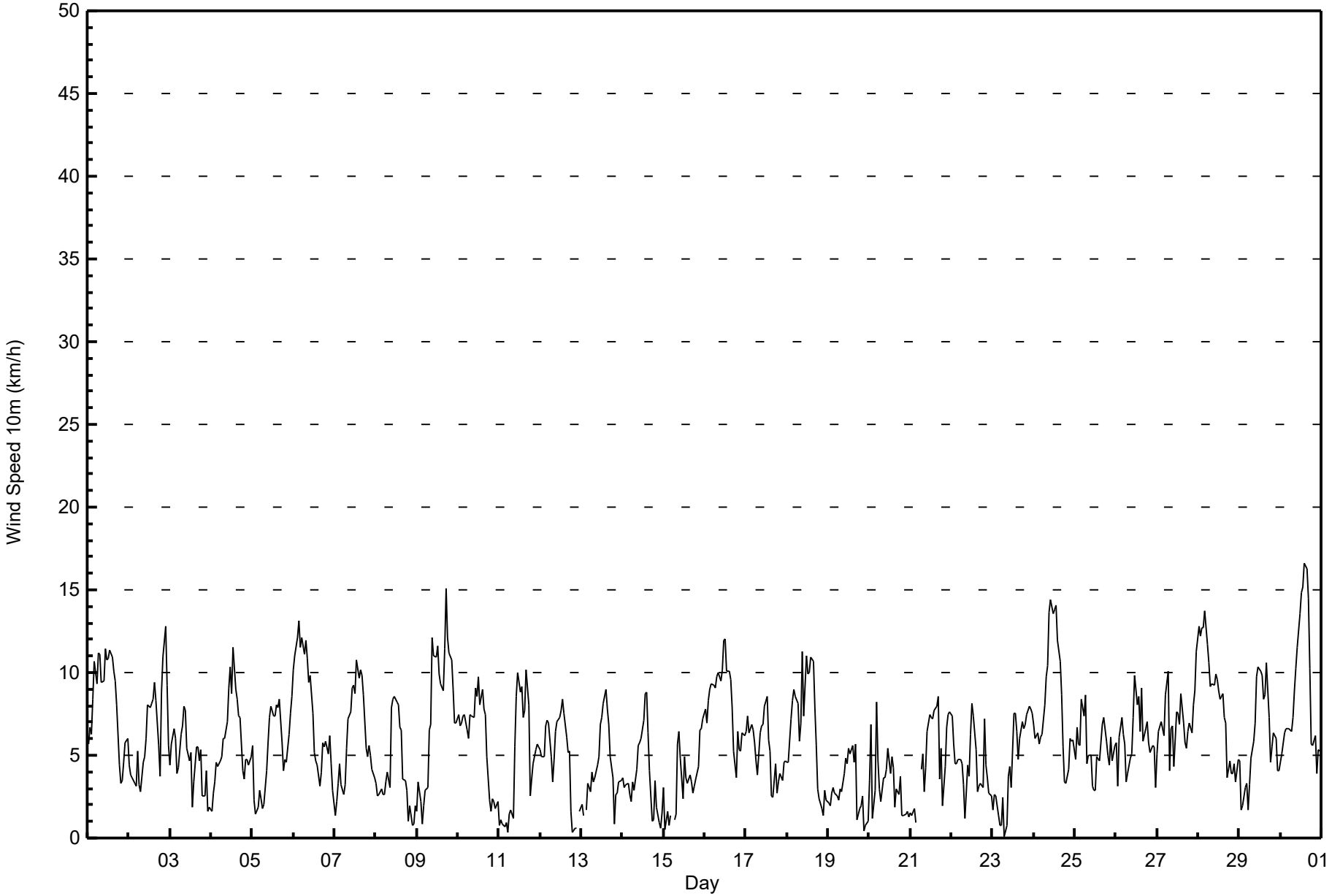
All monthly, daily, and diurnal averages have been calculated using vector methods

Wood Buffalo Environmental Association

Hourly Averages

Wind Speed 10m (WS10) - km/h

Mackay River - September 2024



Wind Speed Ranges (km/h)	Number of Hours	%	Cumulative %
0 - 5	349	48.81	48.81
6 - 11	335	46.85	95.66
12 - 19	31	4.34	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: 715

Total Number of Hours: 720

Wood Buffalo Environmental Association

Frequency Distribution

Wind Speed 10m (WS10) - km/h

Mackay River - September 2024

Wind Speed Ranges (km/h)	Wind Direction																
	N	NNE	NE	ENE	E	ESE	SE	SSE	S	SSW	SW	WSW	W	WNW	NW	NNW	**Totals**
0 - 5	7	4	10	12	11	20	44	61	31	24	31	36	19	18	10	11	349
6 - 11	10	2	4	4	7	15	10	27	62	33	33	63	36	14	9	6	335
12 - 19	0	0	0	0	0	0	0	0	4	1	3	4	15	3	1	0	31
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	17	6	14	16	18	35	54	88	97	58	67	103	70	35	20	17	715

Total Number of Valid Hours: 715

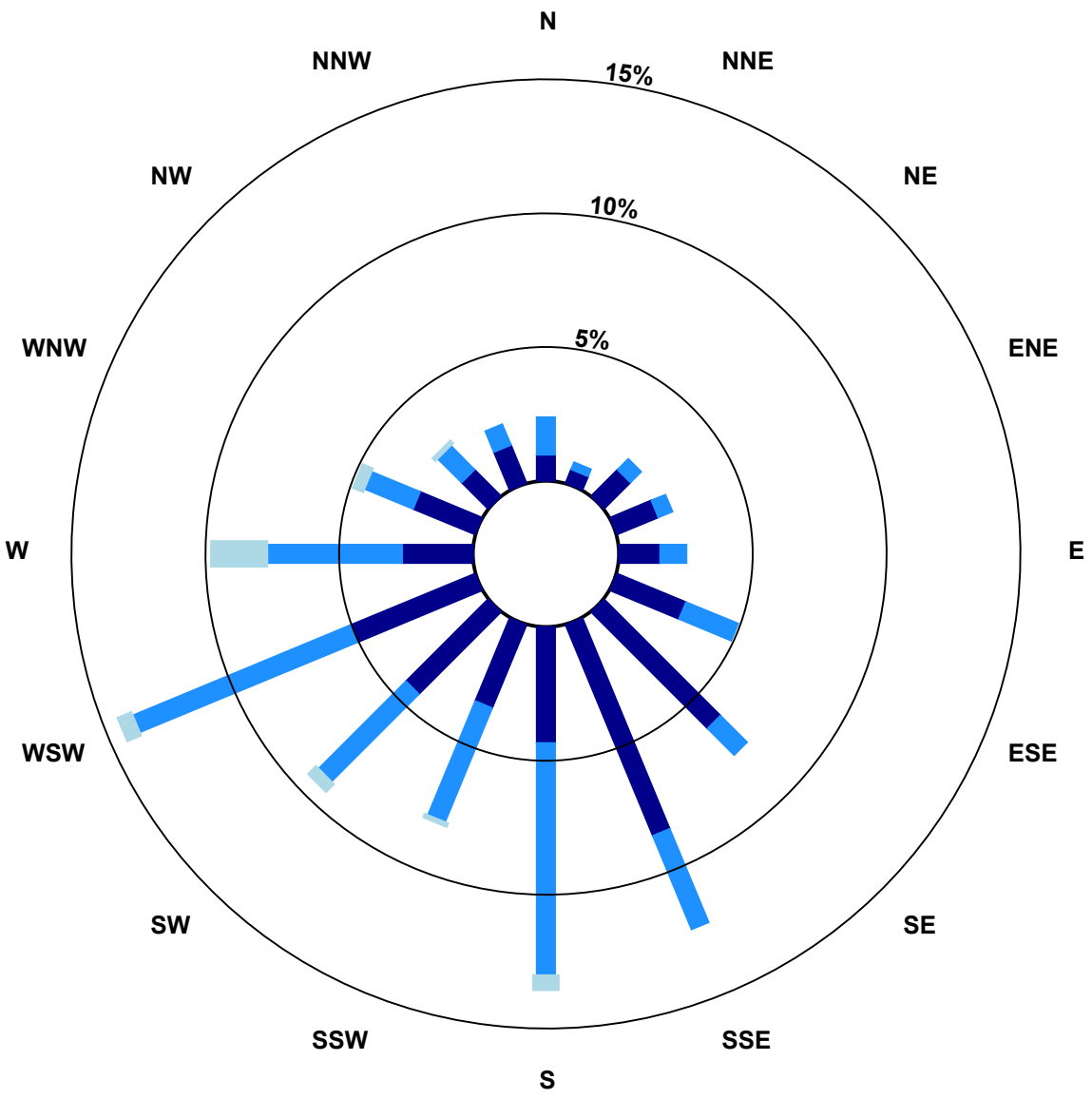
Total Number of Hours: 720

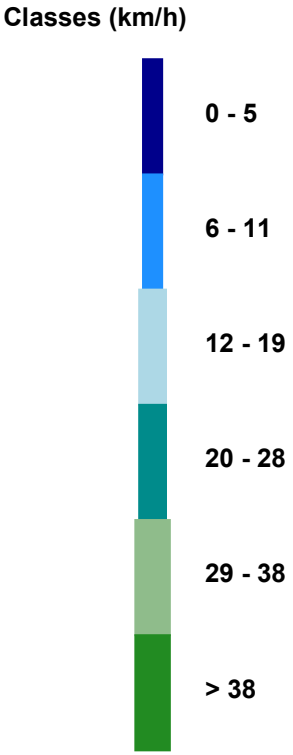
Wood Buffalo Environmental Association

Wind Rose Sep 2024

Wind Speed 10m (WS10) - km/h

Mackay River





Total Number of Valid Hours: 715

Wood Buffalo Environmental Association

Summary of Hour Standard Deviations

Wind Speed 10m (WS10) - km/h

Mackay River - September 2024

Number of Exceedences (AAAQO): 1-hr: 0 24-hr: 0
Maximum Value: 7 km/h on Sep 30 15:00

Minimum Value: 0 km/h on Sep 5 06:00

Percentiles: P_1 = 1 P_{10} = 1 Q_1 = 1 Median = 2 Q_3 = 3 P_{90} = 4 P_{99} = 6

Hours in Service:	720
Hours of Data:	715
Hours of Missing Data:	5
Hours of Calibration:	0
Percent Operational Time:	99.3

Day	Hourly Period Ending At (MST)																								Daily
	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24	Maximum
1-Sep	1	2	2	2	3	3	3	3	3	3	4	4	4	5	5	4	4	4	1	1	1	1	1	1	5
2-Sep	1	1	1	1	1	2	1	1	2	2	2	3	3	4	4	4	4	2	1	6	4	4	3	2	6
3-Sep	2	2	2	2	1	2	2	2	2	2	2	2	2	2	1	2	2	1	2	3	1	1	1	1	3
4-Sep	1	1	1	2	2	2	2	2	2	3	3	4	4	4	3	4	3	3	2	1	1	1	1	2	4
5-Sep	2	3	1	1	0	0	1	1	1	2	2	3	3	3	3	3	3	2	1	1	1	2	2	2	3
6-Sep	3	3	3	4	3	3	3	3	4	3	4	3	2	1	1	2	2	2	2	2	2	2	2	1	4
7-Sep	1	1	1	1	1	1	1	2	2	3	3	3	3	4	4	4	4	4	1	1	2	1	1	1	4
8-Sep	1	1	1	1	1	1	1	2	1	3	2	3	3	3	2	3	2	2	2	1	1	1	1	1	3
9-Sep	2	3	3	2	2	1	1	2	3	5	4	4	5	4	4	4	5	6	5	4	4	4	3	3	6
10-Sep	3	3	3	3	2	2	2	3	3	3	3	4	4	4	3	3	3	3	1	1	0	0	1	1	4
11-Sep	1	1	1	1	1	1	1	1	2	2	3	3	3	3	3	3	3	3	1	1	1	2	1	1	3
12-Sep	1	1	1	2	2	2	1	1	2	2	3	2	3	3	2	2	2	2	1	1	1	1	UO	1	3
13-Sep	1	1	UO	1	1	1	1	1	1	1	1	2	2	2	2	3	2	2	1	1	1	1	1	1	3
14-Sep	1	1	1	1	1	1	1	1	2	2	2	3	3	3	4	3	2	1	1	2	1	2	1	1	4
15-Sep	1	1	1	1	1	UO	1	1	2	2	2	2	2	2	2	2	1	1	1	1	1	1	1	1	2
16-Sep	2	2	2	2	2	2	2	3	3	4	4	5	5	4	4	4	3	2	1	2	2	1	1	1	5
17-Sep	1	1	2	1	1	2	1	1	2	2	2	3	3	3	2	2	1	2	1	1	1	1	1	1	3
18-Sep	1	1	2	2	2	2	2	2	4	4	3	4	4	4	4	3	3	2	1	1	0	1	1	1	4
19-Sep	1	1	1	1	1	0	1	1	1	1	2	2	2	3	3	2	5	2	1	1	1	1	1	1	5
20-Sep	2	2	3	4	4	3	2	1	1	1	1	2	1	2	3	2	1	1	1	1	1	1	1	1	4
21-Sep	1	1	1	1	UO	UO	1	1	1	1	2	2	2	2	3	3	3	1	3	2	2	2	2	2	3
22-Sep	2	1	1	1	1	1	1	1	1	1	2	2	3	3	2	2	2	1	1	5	2	1	2	2	5
23-Sep	2	1	1	1	1	1	1	1	1	1	1	1	2	2	2	2	2	2	2	2	2	2	3	2	3
24-Sep	2	2	2	2	2	2	3	4	4	6	6	6	5	5	5	4	4	3	1	0	1	1	1	1	6
25-Sep	1	1	1	2	2	3	2	3	2	2	2	1	2	2	1	2	2	2	1	1	2	2	2	2	3
26-Sep	3	1	2	3	2	2	2	2	2	2	3	4	3	4	3	4	3	3	2	3	1	1	2	1	4
27-Sep	2	2	2	3	2	3	3	2	2	2	2	3	3	3	3	2	2	1	2	2	2	2	3	4	4
28-Sep	5	5	5	6	6	5	5	4	4	4	4	4	3	4	4	4	3	1	1	1	1	1	1	1	6
29-Sep	2	2	2	1	1	1	1	2	2	3	3	3	3	3	2	3	3	3	1	2	2	2	2	1	3
30-Sep	2	2	2	3	2	2	2	3	4	4	5	6	6	6	7	6	6	4	2	2	2	2	2	2	7
	5	5	5	6	6	5	5	4	4	6	6	6	6	6	7	6	6	6	5	6	4	4	3	4	
	Diurnal Maximum																								

UO - Unstable Operation

Wood Buffalo Environmental Association

Summary of Hour Averages

Wind Direction 10m (WD10) - deg

Mackay River - September 2024

Direction of Maximum Speed: 274 deg on Sep 30 15:00
Direction of Maximum Daily Speed Average: 263.3 deg on Sep 30

Direction of Minimum Speed: 294 deg on Sep 23 08:00

Direction of Minimum Daily Speed Average: 1.1 deg on Sep 20

Monthly Average Direction: 219.0 deg

Hours in Service:	720
Hours of Data:	715
Hours of Missing Data:	5
Percent Operational Time:	99.3

Day	Hourly Period Ending At (MST)																								Daily
	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24	Average
1-Sep	164	167	167	177	177	171	179	185	179	175	197	204	214	250	251	245	238	244	216	158	155	153	168	173	196.4
2-Sep	168	168	150	151	127	159	145	159	195	229	208	224	218	252	248	260	247	230	237	300	318	314	310	17	245.2
3-Sep	50	37	15	352	341	329	333	341	346	339	344	7	340	2	43	65	62	40	325	300	333	298	248	242	356.1
4-Sep	262	258	247	254	248	257	256	255	251	244	265	274	269	291	278	274	267	270	256	216	220	229	235	238	259.8
5-Sep	258	317	175	157	143	148	109	74	135	136	139	153	169	167	192	198	171	156	144	130	140	157	148	155	159.4
6-Sep	171	176	180	180	189	187	190	192	201	208	215	209	200	194	173	183	223	226	217	212	236	257	266	271	199.1
7-Sep	243	139	178	154	147	122	141	145	176	194	187	207	221	240	244	223	219	226	210	188	213	220	224	229	205.4
8-Sep	230	155	168	148	131	133	134	130	144	175	166	173	190	181	182	178	179	59	69	95	144	148	127	41	162.5
9-Sep	83	42	74	82	86	2	321	318	278	290	291	275	258	255	246	237	246	269	272	281	275	255	240	247	270.1
10-Sep	259	244	249	239	231	225	222	238	250	245	246	252	257	253	241	252	233	300	198	149	153	152	142	143	240.7
11-Sep	166	126	138	222	188	63	89	17	117	102	110	106	107	110	81	99	109	102	88	109	108	113	114	112	105.7
12-Sep	113	118	121	124	129	128	121	59	82	65	86	74	85	96	78	90	73	65	51	43	224	147	UO	159	95.7
13-Sep	265	146	UO	286	286	294	293	308	300	292	311	307	311	318	326	353	359	339	343	304	244	258	265	268	310.7
14-Sep	288	283	263	260	247	183	228	249	256	238	245	243	252	250	260	276	275	10	128	202	123	28	159	89	251.2
15-Sep	147	191	337	239	260	UO	73	269	342	39	72	160	196	261	248	235	249	232	150	157	164	177	177	176	187.9
16-Sep	179	173	177	181	182	178	184	189	200	202	215	231	243	245	230	234	234	239	182	200	202	189	181	178	204.2
17-Sep	174	175	167	166	173	180	156	163	162	168	181	192	185	206	227	205	176	152	140	138	149	152	145	145	171.9
18-Sep	154	147	171	187	180	187	184	218	271	291	283	298	270	276	293	299	277	264	237	196	165	177	134	169	243.8
19-Sep	157	156	139	151	144	139	146	157	236	242	233	242	247	270	259	233	301	110	137	179	131	158	16	2	214.5
20-Sep	45	36	15	211	39	36	249	251	322	331	317	311	301	302	284	165	217	205	212	144	186	238	181	244	311.8
21-Sep	245	221	166	181	UO	UO	146	164	170	153	165	170	147	168	178	153	164	150	174	154	106	114	120	121	153.4
22-Sep	120	121	139	152	166	163	170	167	190	229	195	232	251	258	265	302	213	174	155	349	61	118	332	197	190.0
23-Sep	37	3	308	164	172	173	221	294	116	221	230	212	165	176	191	193	182	177	169	185	183	180	194	206	188.3
24-Sep	213	219	223	230	220	209	223	251	262	268	272	269	276	272	273	262	266	240	219	148	135	145	160	163	245.1
25-Sep	142	141	135	117	113	100	115	103	106	124	137	212	231	213	194	180	194	203	200	198	185	251	271	225	164.1
26-Sep	241	262	280	287	284	264	260	236	254	248	262	287	269	268	256	259	260	249	218	223	206	214	176	136	252.9
27-Sep	159	173	177	191	167	164	153	171	136	142	168	186	201	206	199	185	175	174	183	193	202	188	202	225	181.9
28-Sep	230	236	239	256	268	269	256	257	259	261	253	248	249	244	247	226	216	186	172	159	170	144	135	152	239.7
29-Sep	131	163	82	93	105	100	333	354	358	4	4	4	2	357	318	291	315	335	303	292	282	284	264	265	334.7
30-Sep	256	254	254	256	260	258	252	252	258	268	262	276	276	264	274	276	281	270	253	236	235	255	241	233	263.3
	187.8	179.6	191.5	196.2	189.4	188.0	193.3	215.4	229.7	234.2	230.6	240.5	239.5	247.4	248.2	240.7	236.0	232.9	210.1	208.5	199.0	203.5	195.0	190.2	
	Diurnal Average																								

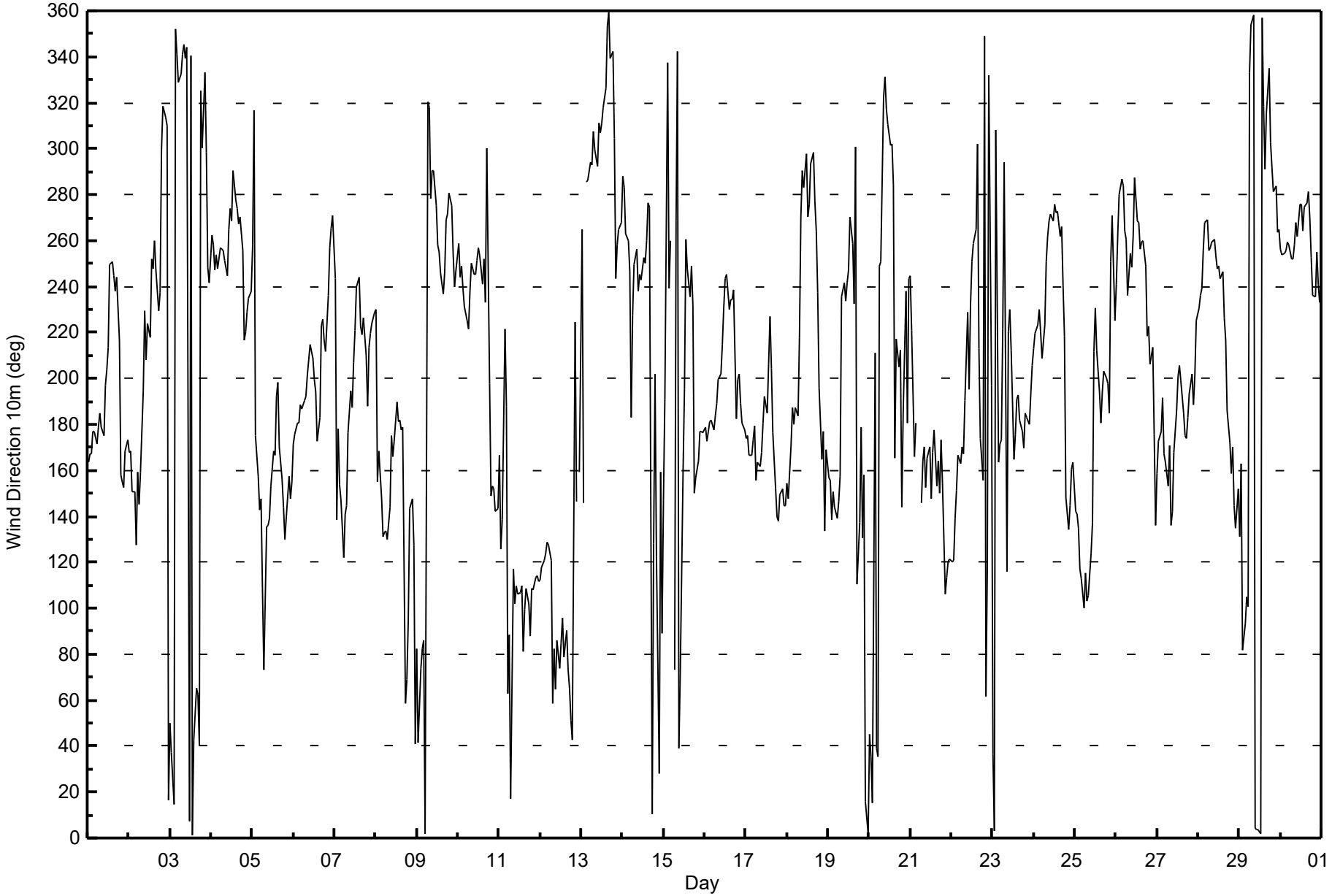
UO - Unstable Operation
All monthly, daily, and diurnal averages have been calculated using vector methods

Wood Buffalo Environmental Association

Hourly Averages

Wind Direction 10m (WD10) - deg

Mackay River - September 2024



Wood Buffalo Environmental Association

Summary of Hour Standard Deviations

Wind Direction 10m (WD10) - deg

Mackay River - September 2024

Number of Exceedences (AAAQO): 1-hr: 0 24-hr: 0
Maximum Value: 104 deg on Sep 20 03:00

Minimum Value: 7 deg on Sep 24 22:00

Percentiles: P_1 = 12 P_{10} = 17 Q_1 = 22 Median = 32 Q_3 = 42 P_{90} = 57 P_{99} = 90

Hours in Service:	720
Hours of Data:	715
Hours of Missing Data:	5
Hours of Calibration:	0
Percent Operational Time:	99.3

Day	Hourly Period Ending At (MST)																								Daily
	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24	Maximum
1-Sep	15	16	23	20	18	20	20	23	23	26	33	34	34	43	43	44	42	45	28	16	20	13	12	10	45
2-Sep	18	25	15	24	29	18	29	40	34	35	40	41	47	43	46	43	47	37	26	35	18	18	18	48	48
3-Sep	37	27	26	25	22	24	19	24	27	27	33	32	41	83	50	38	38	25	32	66	41	20	50	18	83
4-Sep	21	33	43	39	34	37	38	42	42	41	39	37	45	30	35	40	47	43	45	16	20	23	23	30	47
5-Sep	39	91	24	20	12	27	63	36	28	29	32	37	43	43	40	41	29	26	26	19	22	27	24	27	91
6-Sep	24	24	21	22	21	21	20	22	28	29	30	29	28	24	18	22	28	31	21	23	40	40	39	32	40
7-Sep	80	37	24	21	32	18	25	23	27	27	27	31	41	41	47	34	35	32	21	20	21	23	21	17	80
8-Sep	30	41	32	34	28	40	15	13	36	24	27	32	32	36	36	36	37	37	73	75	12	78	83	71	83
9-Sep	96	62	80	94	74	36	39	30	34	30	28	38	43	41	41	43	43	37	39	29	33	46	48	43	96
10-Sep	45	43	46	36	31	27	27	38	43	43	39	46	44	45	42	44	41	64	36	37	18	12	54	28	64
11-Sep	70	58	56	65	70	76	49	32	87	33	28	29	35	34	42	30	24	23	41	20	13	14	14	12	87
12-Sep	13	13	14	16	19	20	18	33	35	31	35	31	33	32	31	32	39	31	33	57	73	86	UO	44	86
13-Sep	15	69	UO	52	22	21	17	21	19	21	23	20	24	23	26	30	27	23	21	72	21	28	16	19	72
14-Sep	20	18	14	22	25	41	22	45	42	43	41	48	47	41	47	40	59	85	63	26	46	87	84	63	87
15-Sep	18	83	47	67	20	UO	38	60	28	26	42	78	55	61	71	59	50	47	14	15	16	13	15	15	83
16-Sep	16	16	20	18	17	18	19	20	25	27	32	42	44	41	37	41	43	45	33	20	21	17	13	13	45
17-Sep	15	14	15	13	18	21	21	21	21	29	40	37	42	57	54	83	82	23	10	19	12	11	15	14	83
18-Sep	21	20	21	19	21	19	18	31	46	30	37	30	41	43	33	24	40	42	27	39	33	54	18	35	54
19-Sep	15	35	15	25	17	20	47	33	54	44	53	58	52	66	48	47	45	73	22	44	42	95	94	77	95
20-Sep	33	22	104	77	44	73	78	63	38	28	24	19	30	37	67	71	39	57	22	48	33	25	39	14	104
21-Sep	28	50	43	87	UO	UO	13	20	38	22	22	33	35	35	33	28	26	25	30	71	17	18	18	19	87
22-Sep	15	17	21	19	13	21	18	21	68	38	60	44	47	42	46	78	60	18	21	80	39	22	76	65	80
23-Sep	70	26	34	72	90	88	21	87	87	43	36	53	25	31	29	27	20	23	26	26	23	24	26	24	90
24-Sep	23	24	24	32	24	20	30	42	42	42	38	41	36	38	40	45	42	40	21	20	9	7	12	15	45
25-Sep	14	11	12	18	17	28	19	49	32	30	46	44	47	34	33	26	23	26	21	18	35	44	28	28	49
26-Sep	40	33	25	28	25	36	40	43	41	42	38	30	44	40	48	40	44	42	27	41	19	20	16	29	48
27-Sep	22	19	16	29	28	27	27	33	24	25	47	37	45	42	30	25	23	22	18	22	20	18	25	33	47
28-Sep	33	38	38	45	41	39	41	43	46	45	43	39	47	45	48	46	28	17	11	22	12	14	15	13	48
29-Sep	19	93	88	39	18	41	29	28	30	26	27	28	25	28	20	24	21	21	23	23	25	24	34	38	93
30-Sep	43	42	47	40	41	45	43	44	42	41	45	40	36	41	34	35	28	35	40	38	42	51	40	30	51
	96	93	104	94	90	88	78	87	87	45	60	78	55	83	71	83	82	85	73	80	73	95	94	77	
	Diurnal Maximum																								

UO - Unstable Operation

WOOD BUFFALO ENVIRONMENTAL ASSOCIATION

CONTINUOUS AMBIENT AIR QUALITY
MONITORING PROGRAM
MONTHLY REPORT

AMS21
CONKLIN
SEPTEMBER 2024

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

October 31, 2024

WOOD BUFFALO ENVIRONMENTAL ASSOCIATION - CONKLIN (AMS21)
SEPTEMBER 2024

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	626	31	94	91.25	1.3	0	0.4	0
TRS(ppb) Average	678	36	42	99.17	0.4	0	0.2	0
THC(ppm) Average	681	35	39	99.44	2.4	-	2	-
NMHC(ppm) Average	681	35	39	99.44	0.08	-	0.003	-
CH4(ppm) Average	681	35	39	99.44	2.4	-	2	-
O3 (ppb) Average	682	36	38	99.72	55.2	0	33.6	-
NO2 (ppb) Average	682	36	38	99.72	9.6	0	3.2	-
NO (ppb) Average	682	36	38	99.72	20.4	-	2.5	-
NOX (ppb) Average	682	36	38	99.72	24.2	-	4.8	-
PM2.5 (ug/m3) Average	717	1	3	99.72	152.3	0	106.7	5
Temperature 2 m (C) Average	720	0	0	100	31.7	-	20.3	-
Relative Humidity (%) Average	720	0	0	100	100	-	100	-
Wind Speed 10 m (km/h) Average	717	3	3	100	15	-	9	-
Wind Direction 10 m (deg) Average	717	3	3	100	-	-	-	-

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

WOOD BUFFALO ENVIRONMENTAL ASSOCIATION - CONKLIN (AMS21)
SEPTEMBER 2024

MONTHLY SUMMARY FOR AIR QUALITY/ METEOROLOGICAL MONITORING MEASUREMENTS

					Percentile						
Parameter	Number	Mean	StnDev	Total	Min	P10	Q1	Median	Q3	P90	Max
SO2 (ppb) Average	626	0.12	0.2	-	0	0	0	0.1	0.2	0.3	1.3
TRS (ppb) Average	678	0.14	0.1	-	0	0.1	0.1	0.1	0.2	0.2	0.4
THC (ppm) Average	681	1.97	0.1	-	1.8	1.9	1.9	2	2	2.1	2.4
NMHC(ppm) Average	681	0	0.004	-	0	0	0	0	0	0	0.08
CH4(ppm) Average	681	1.97	0.1	-	1.8	1.9	1.9	2	2	2.1	2.4
O3 (ppb) Average	682	21.81	11.4	-	1.9	6.8	12.5	21.7	30.6	36.4	55.2
NO2 (ppb) Average	682	1.51	1.3	-	0.2	0.5	0.7	1.1	1.9	3.1	9.6
NO (ppb) Average	682	0.74	1.7	-	0	0	0	0.2	0.6	2	20.4
NOX (ppb) Average	682	2.25	2.7	-	0.2	0.5	0.8	1.3	2.4	5.2	24.2
PM2.5 (ug/m3) Average	717	18.8	31.1	-	1.1	2	3.2	5.3	12.5	73	152.3
Temperature 2 m (C) Average	720	12.13	6.3	-	-1.5	4.5	8.2	11	16	20.4	31.7
Relative Humidity (%) Average	720	75.78	21	-	23.2	43.6	58.8	80.5	95.3	98.9	100
Wind Speed 10 m (km/h) Average	717	5.4	3	-	0	1	3	5	7	10	15
Wind Direction 10 m (deg) Average	717	-	-	-	-	-	-	-	-	-	-

WOOD BUFFALO ENVIRONMENTAL ASSOCIATION - CONKLIN (AMS 21)
SEPTEMBER 2024

OPERATIONAL NOTES

Parameter	Period Start	Period End	Duration (Hours)	Notes
AIR QUALITY ANALYZERS	05 Sep 2024 11:00	05 Sep 2024 12:00	2	Maintenance - station router replaced
SO2	06 Sep 2024 23:00	09 Sep 2024 10:00	60	Unstable Operation - flatline in analyzer output signal
SO2	09 Sep 2024 11:00	09 Sep 2024 11:00	1	Maintenance - analyzer rebooted
TRS	02 Sep 2024 05:00	02 Sep 2024 08:00	4	Unstable Operation - flatline in analyzer output signal
THC/NMHC/CH4	08 Sep 2024 14:00	08 Sep 2024 15:00	2	Unstable Operation - excessive baseline drift

Wood Buffalo Environmental Association

Summary of Hour Averages

Sulphur Dioxide (SO_2) - ppb

Conklin - September 2024

Number of Exceedences (AAAQO): 1-hr: 0 24-hr: 0

Maximum Value: 1.3 ppb on Sep 11 12:00 Maximum Daily Average: 0.4 ppb on Sep 6

Minimum Value: 0.0 ppb on Sep 2 03:00 Minimum Daily Average: 0.0 ppb on Sep 14

Maximum Diurnal Average: 0.2 ppb at hour 11 Minimum Diurnal Average: 0.1 ppb at hour 4

Monthly Average: 0.12 ppb Percentiles: P_1 = 0.0 P_{10} = 0.0 Q_1 = 0.0 Median = 0.1 Q_3 = 0.2 P_{90} = 0.3 P_{99} = 0.7

Hours in Service:	720
Hours of Data:	626
Hours of Missing Data:	94
Hours of Calibration:	31
Percent Operational Time:	91.3

Day	Hourly Period Ending At (MST)																								Daily	Daily
	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24	Average	Maximum
1-Sep	Z	0.3	0.3	0.3	0.3	0.3	0.3	0.6	1.1	1.3	0.3	0.2	0.5	0.5	0.3	0.2	0.3	0.4	0.4	0.2	0.1	0.1	0.1	0.1	0.4	1.3
2-Sep	0.1	Z	0.0	0.0	0.0	0.0	0.1	0.1	0.3	0.6	1.0	0.6	0.5	0.2	0.1	0.2	0.3	0.3	0.1	0.1	0.1	0.1	0.2	0.1	0.2	1.0
3-Sep	0.6	0.3	Z	0.0	0.0	0.0	0.0	0.1	0.2	0.2	0.2	0.0	0.1	0.2	0.2	0.3	0.4	0.5	0.3	0.1	0.1	0.1	0.2	0.1	0.2	0.6
4-Sep	0.1	0.2	0.2	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	0.1	0.1	0.0	0.0	0.1	0.0	0.1	0.0	0.1	0.2
5-Sep	0.0	0.0	0.0	0.1	Z	0.1	0.1	0.2	0.4	0.4	M	M	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	0.4
6-Sep	0.3	0.2	0.2	0.1	0.1	Z	0.1	0.4	0.5	0.2	0.4	0.6	0.6	0.6	0.6	0.6	0.5	0.5	0.4	0.3	0.3	0.3	UO	UO	0.4	0.6
7-Sep	UO	UO	UO	UO	UO	UO	UO	UO	UO	UO	UO	UO	UO	UO	UO	UO	UO	UO	UO	UO	UO	UO	UO	UO	--	--
8-Sep	UO	UO	UO	UO	UO	UO	UO	UO	UO	UO	UO	UO	UO	UO	UO	UO	UO	UO	UO	UO	UO	UO	UO	UO	--	--
9-Sep	UO	UO	UO	UO	UO	UO	UO	UO	UO	UO	M	C	C	C	C	0.1	0.1	0.0	0.0	0.0	0.1	0.1	0.1	0.1	--	0.1
10-Sep	0.1	0.1	0.2	Z	0.1	0.2	0.1	0.2	0.2	0.2	0.1	0.2	0.2	0.3	0.2	0.3	0.3	0.2	0.2	0.2	0.1	0.1	0.1	0.1	0.2	0.3
11-Sep	0.1	0.1	0.2	0.1	Z	0.1	0.1	0.0	0.1	0.3	0.4	1.3	0.5	0.3	0.2	0.1	0.1	0.1	0.1	0.0	0.0	0.0	0.0	0.0	0.2	1.3
12-Sep	0.0	0.0	0.0	0.1	0.2	Z	0.1	0.0	0.0	0.1	0.1	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	0.0	0.2
13-Sep	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	0.1	0.1	0.0	0.0	0.1
14-Sep	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
15-Sep	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	0.0	0.0	0.1
16-Sep	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	0.1	0.0	0.1	0.1	0.0	0.2	0.0	0.2
17-Sep	0.2	0.1	0.2	0.1	Z	0.1	0.2	0.1	0.1	0.6	0.7	0.4	0.9	0.6	0.6	0.3	0.5	0.2	0.0	0.0	0.0	0.0	0.1	0.0	0.3	0.9
18-Sep	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	0.1	0.1	0.1	0.2	0.4	0.1	0.1	0.0	0.1	0.1	0.1	0.1	0.4
19-Sep	Z	0.0	0.0	0.1	0.0	0.0	0.0	0.1	0.2	0.1	0.1	0.1	0.1	0.1	0.1	0.0	0.0	0.1	0.0	0.0	0.0	0.0	0.1	0.0	0.1	0.2
20-Sep	0.0	Z	0.0	0.0	0.0	0.0	0.0	0.1	0.1	0.2	0.2	0.1	0.2	0.1	0.1	0.1	0.1	0.2	0.3	0.3	0.2	0.1	0.1	0.2	0.1	0.3
21-Sep	0.1	0.1	Z	0.0	0.2	0.2	0.2	0.2	0.2	0.4	0.5	0.2	0.2	0.1	0.1	0.1	0.1	0.2	0.2	0.2	0.3	0.2	0.5	0.4	0.2	0.5
22-Sep	0.3	0.3	0.2	Z	0.2	0.2	0.2	0.2	0.1	0.2	0.1	0.2	0.2	0.1	0.1	0.1	0.0	0.0	0.0	0.1	0.0	0.0	0.0	0.0	0.1	0.3
23-Sep	0.0	0.0	0.0	0.0	Z	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	0.1	0.0	0.0	0.0	0.0	0.1
24-Sep	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
25-Sep	Z	0.0	0.0	0.0	0.0	0.0	0.1	0.1	0.1	0.4	1.0	0.7	0.5	0.4	0.5	0.4	0.4	0.3	0.3	0.2	0.4	0.3	0.4	0.4	0.3	1.0
26-Sep	0.3	Z	0.3	0.3	0.3	0.3	0.2	0.2	0.2	0.1	0.2	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	0.1	0.3
27-Sep	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	0.0	0.0	0.0	0.0	0.0	0.1	0.0	0.1
28-Sep	0.0	0.0	0.1	Z	0.0	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	0.0	0.0	0.0	0.0	0.1	0.1	0.2
29-Sep	0.0	0.0	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	0.1
30-Sep	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
	0.1	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	0.1	0.1	0.1	0.1	0.1	Diurnal Average	
	0.6	0.3	0.3	0.3	0.3	0.3	0.3	0.6	1.1	1.3	1.0	1.3	0.9	0.6	0.6	0.6	0.5	0.5	0.4	0.3	0.4	0.3	0.5	0.4	Diurnal Maximum	

Z - zerospan C - Calibration M - Maintenance UO - Unstable Operation

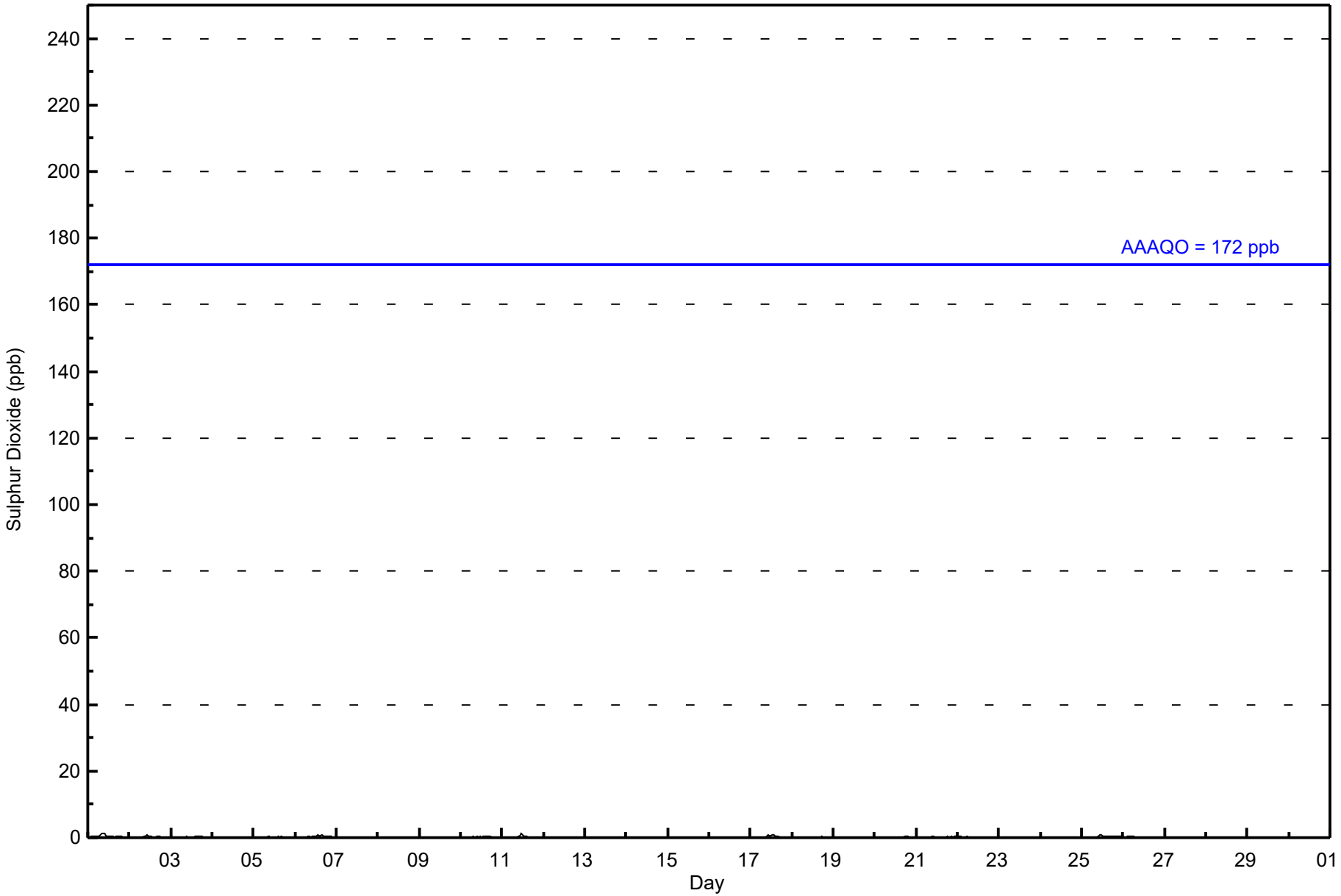
Alberta Ambient Air Quality Objectives (AAAQO): 1-hr 172 ppb 24-hr 48 ppb

Wood Buffalo Environmental Association

Hourly Averages

Sulphur Dioxide (SO_2) - ppb

Conklin - September 2024



Sulphur Dioxide (SO_2) - ppb
Conklin - September 2024

Concentration Ranges (ppb)	Number of Hours	%	Cumulative %
0 - 10	626	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: 626

Total Number of Hours: 720

Sulphur Dioxide (SO_2) - ppb
Conklin - September 2024

Concentration Ranges (ppb)	Wind Direction																
	N	NNE	NE	ENE	E	ESE	SE	SSE	S	SSW	SW	WSW	W	WNW	NW	NNW	**Totals**
0 - 10	32	5	4	5	1	17	20	48	71	94	64	29	45	57	64	67	623
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	32	5	4	5	1	17	20	48	71	94	64	29	45	57	64	67	623

Total Number of Valid Hours: 623

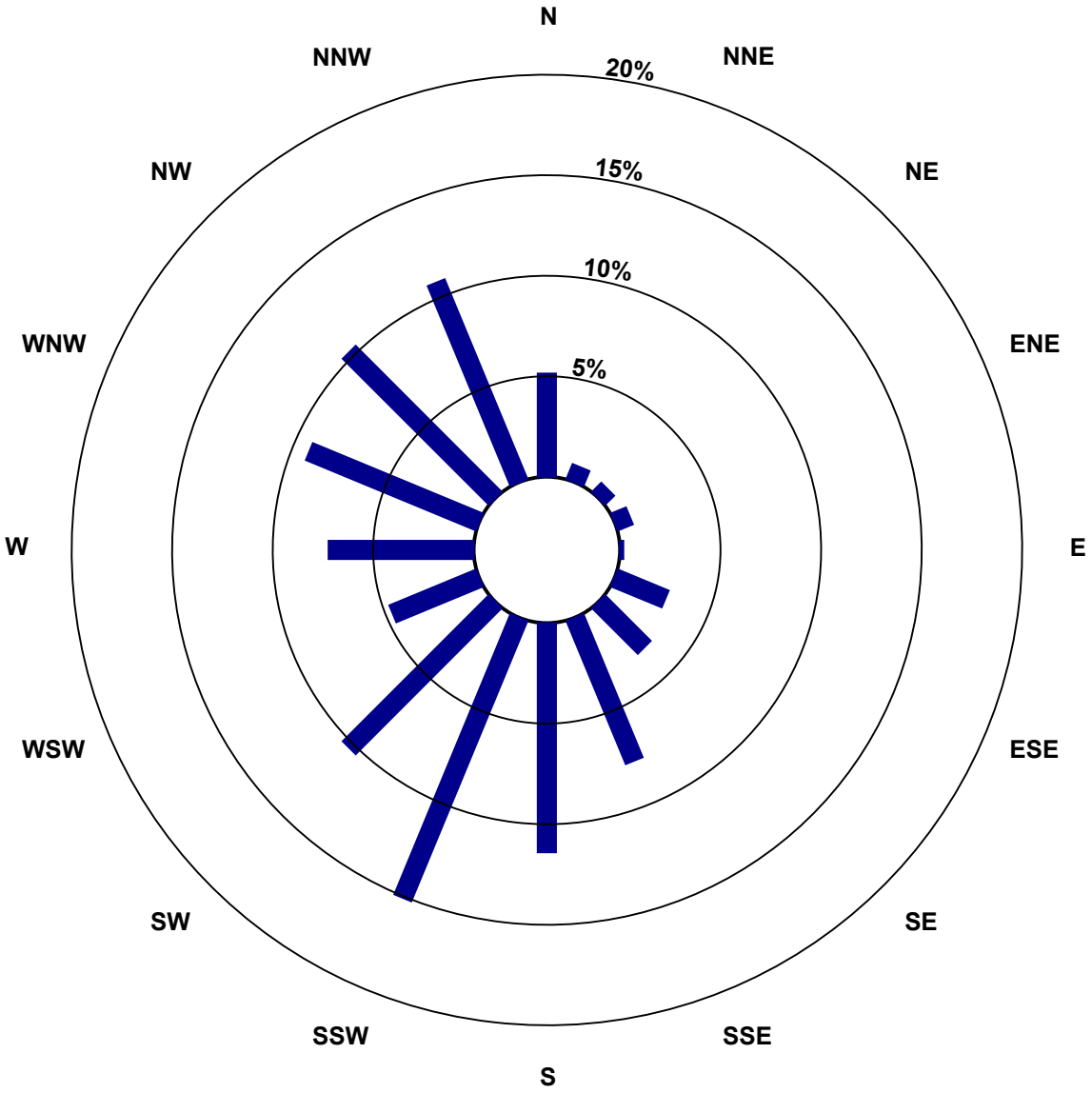
Total Number of Hours: 720

Wood Buffalo Environmental Association

Wind Rose Sep 2024

Sulphur Dioxide (SO_2) - ppb

Conklin



Classes (ppb)

0 - 10

11 - 20

21 - 60

61 - 110

111 - 172

> 172

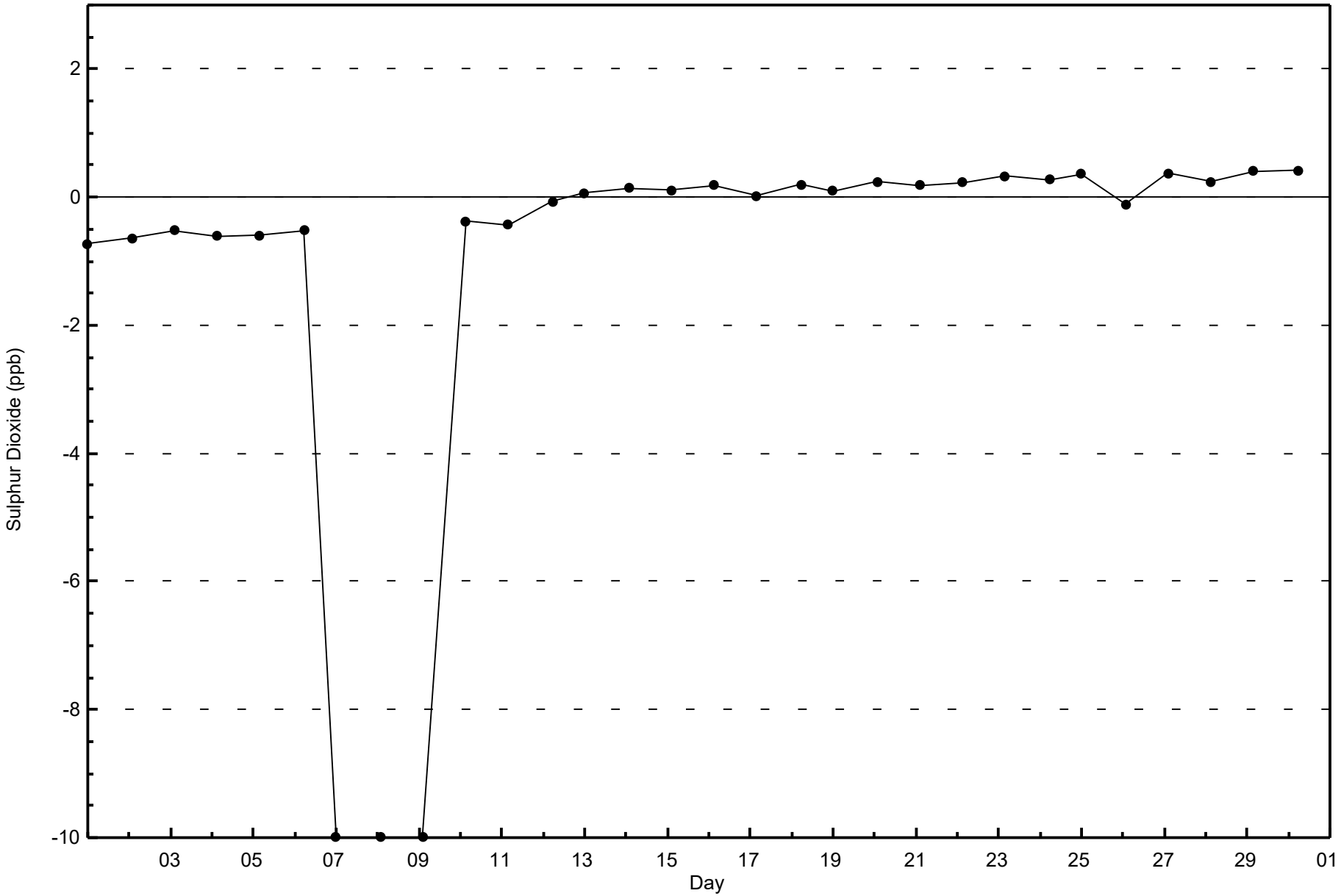
Total Number of Valid Hours: 623

Wood Buffalo Environmental Association

Zero Responses

Sulphur Dioxide (SO_2) - ppb

Conklin - September 2024

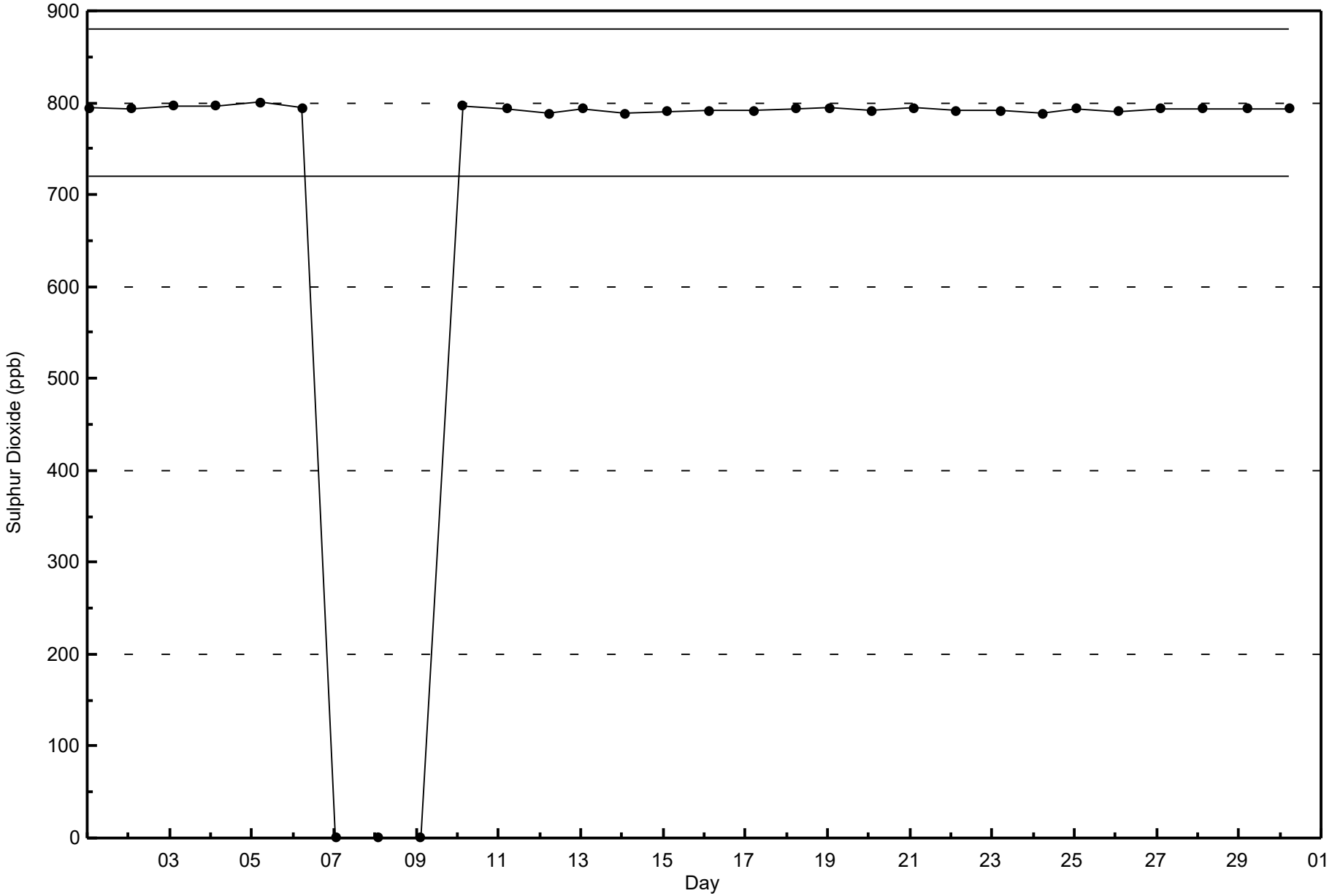


Wood Buffalo Environmental Association

Span Responses

Sulphur Dioxide (SO_2) - ppb

Conklin - September 2024



Wood Buffalo Environmental Association

Summary of Hour Averages

Total Reduced Sulphur (TRS) - ppb

Conklin - September 2024

Number of Exceedences (AAAQO): 1-hr: 0 24-hr: 0

Maximum Value: 0.4 ppb on Sep 8 12:00 Maximum Daily Average: 0.2 ppb on Sep 13

Minimum Value: 0.0 ppb on Sep 2 16:00 Minimum Daily Average: 0.1 ppb on Sep 27

Maximum Diurnal Average: 0.2 ppb at hour 9 Minimum Diurnal Average: 0.1 ppb at hour 15

Monthly Average: 0.14 ppb Percentiles: P_1 = 0.0 P_{10} = 0.1 Q_1 = 0.1 Median = 0.1 Q_3 = 0.2 P_{90} = 0.2 P_{99} = 0.3

Hours in Service:	720
Hours of Data:	678
Hours of Missing Data:	42
Hours of Calibration:	36
Percent Operational Time:	99.2

Day	Hourly Period Ending At (MST)																								Daily	Daily
	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24	Average	Maximum
1-Sep	0.1	Z	0.1	0.2	0.1	0.1	0.1	0.2	0.2	0.1	0.2	0.2	0.1	0.2	0.1	0.1	0.1	0.1	0.2	0.2	0.1	0.1	0.1	0.1	0.1	0.2
2-Sep	0.1	0.1	Z	0.2	UO	UO	UO	UO	0.1	0.1	0.1	0.0	0.0	0.0	0.1	0.0	0.0	0.1	0.1	0.1	0.1	0.1	0.1	0.0	0.1	0.2
3-Sep	0.1	0.1	0.1	Z	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	0.2	0.2	0.2	0.2	0.2	0.2	0.2	0.2	0.3
4-Sep	0.2	0.2	0.2	0.2	Z	0.3	0.2	0.2	0.2	0.2	0.2	0.2	0.1	0.2	0.1	0.2	0.1	0.1	0.2	0.1	0.1	0.1	0.2	0.1	0.2	0.3
5-Sep	0.1	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	0.2	0.1	0.1	0.2	0.1	0.1	0.2
6-Sep	Z	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	0.2	0.2	0.2	0.2	0.2	0.2	0.2	0.1	0.1	0.2	0.2
7-Sep	0.1	Z	0.2	0.2	0.1	0.2	0.2	0.2	0.2	0.2	0.2	0.2	0.2	0.2	0.2	0.2	0.2	0.2	0.2	0.2	0.2	0.2	0.2	0.2	0.2	0.2
8-Sep	0.2	0.1	Z	0.2	0.2	0.2	0.2	0.2	0.3	0.2	0.2	0.4	0.2	0.1	0.2	0.1	0.1	0.2	0.2	0.2	0.2	0.2	0.3	0.3	0.2	0.4
9-Sep	0.2	0.2	0.2	Z	0.4	0.3	0.4	0.4	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	0.2	0.2	0.1	0.2	0.4
10-Sep	0.2	0.1	0.1	0.1	Z	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	0.1	0.1	0.1	0.2
11-Sep	0.1	0.1	0.1	0.1	0.1	Z	0.1	0.1	0.2	0.2	0.2	0.2	0.1	0.1	0.1	0.1	0.1	0.1	0.2	0.2	0.2	0.2	0.2	0.2	0.2	0.2
12-Sep	Z	0.2	0.2	0.2	0.2	0.2	0.3	0.3	0.3	C	C	C	C	C	C	0.3	0.2	0.2	0.2	0.2	0.2	0.2	0.2	0.2	--	0.3
13-Sep	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	0.2	0.2	0.2	0.2	0.2	0.2	0.2	0.1	0.2	0.3
14-Sep	0.1	0.1	Z	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	0.2	0.1	0.1	0.1	0.1	0.1	0.1	0.2
15-Sep	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
16-Sep	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	0.2	0.2	0.2	0.2	0.2	0.1	0.1	0.2
17-Sep	0.1	0.1	0.1	0.1	0.1	Z	0.1	0.1	0.2	0.2	0.2	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.2	0.2	0.1	0.1	0.1	0.1	0.1	0.2
18-Sep	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
19-Sep	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
20-Sep	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	0.2	0.1	0.2	0.1	0.1	0.1	0.1	0.1	0.2
21-Sep	0.1	0.2	0.1	Z	0.2	0.1	0.1	0.1	0.1	0.2	0.1	0.1	0.1	0.2	0.2	0.2	0.1	0.1	0.2	0.2	0.2	0.1	0.2	0.1	0.1	0.2
22-Sep	0.2	0.1	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	0.2	0.2	0.2	0.2	0.2	0.2	0.2	0.2	0.2
23-Sep	0.2	0.2	0.2	0.2	0.2	Z	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	0.2	0.1	0.1	0.1	0.2
24-Sep	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	0.1	0.2	0.2	0.1	0.2	0.2	0.2	0.2	0.2
25-Sep	0.1	Z	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	0.1	0.2	0.2	0.2	0.2	0.2	0.2	0.2	0.2	0.2
26-Sep	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	0.0	0.1	0.1	0.1
27-Sep	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	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1
28-Sep	0.1	0.0	0.0	0.0	Z	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
29-Sep	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	0.2	0.2	0.2	0.1	0.1	0.1	0.2
30-Sep	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	0.2	0.1	0.2	0.2	0.2	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.2	0.2	0.1	0.1	0.1	0.1	Diurnal Average	
	0.2	0.2	0.2	0.2	0.4	0.3	0.4	0.4	0.4	0.3	0.2	0.4	0.2	0.2	0.2	0.3	0.2	0.2	0.2	0.2	0.2	0.2	0.3	0.3	Diurnal Maximum	

Z - zerospan C - Calibration M - Maintenance UO - Unstable Operation

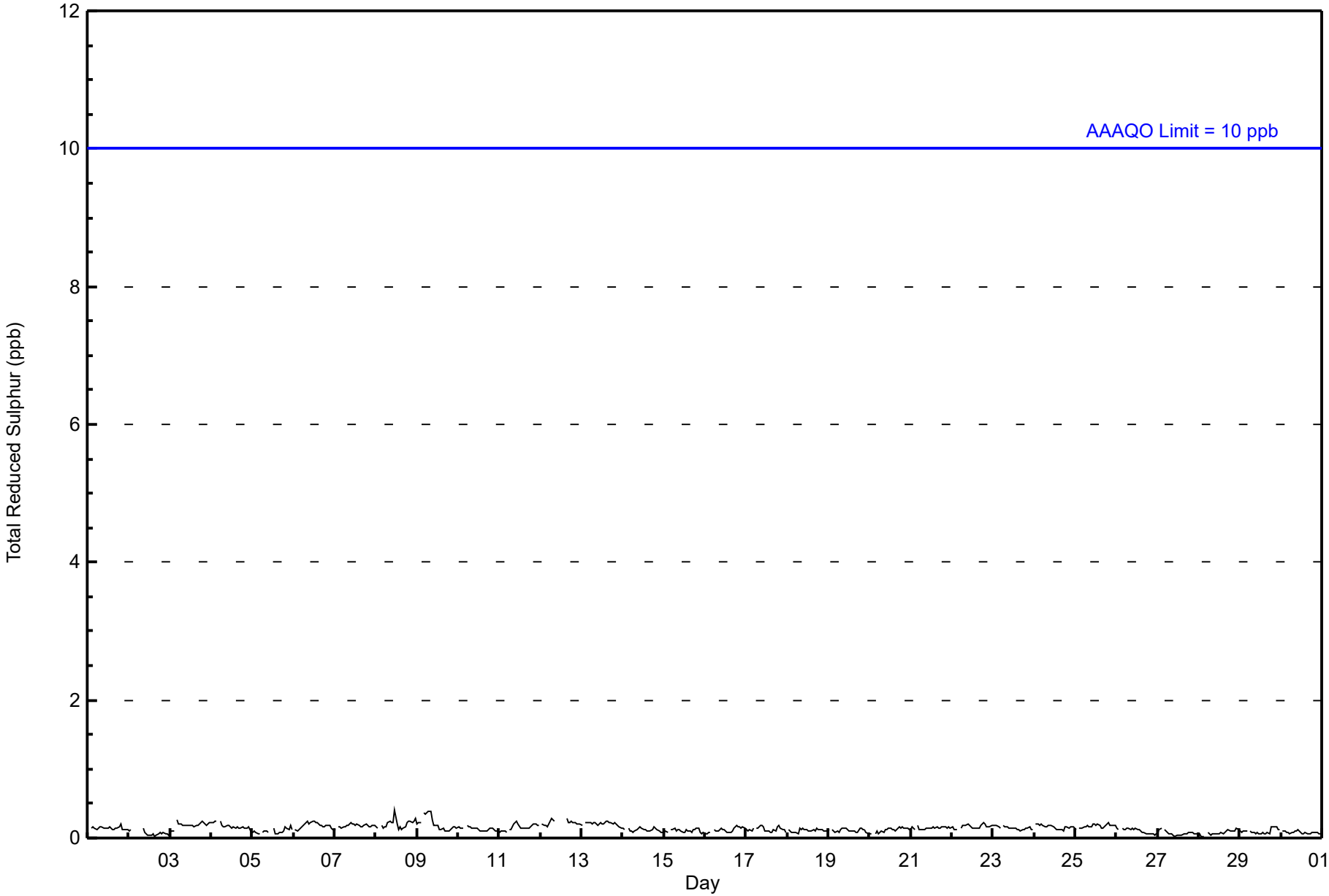
Alberta Ambient Air Quality Objectives (AAAQO): 1-hr 10 ppb 24-hr 3 ppb

Wood Buffalo Environmental Association

Hourly Averages

Total Reduced Sulphur (TRS) - ppb

Conklin - September 2024



Concentration Ranges (ppb)	Number of Hours	%	Cumulative %
0 - 2	678	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: 678

Total Number of Hours: 720

Wood Buffalo Environmental Association

Frequency Distribution

Total Reduced Sulphur (TRS) - ppb

Conklin - September 2024

Concentration Ranges (ppb)	Wind Direction																
	N	NNE	NE	ENE	E	ESE	SE	SSE	S	SSW	SW	WSW	W	WNW	NW	NNW	**Totals**
0 - 2	31	5	6	7	1	17	26	57	82	106	72	29	47	64	60	65	675
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	5	6	7	1	17	26	57	82	106	72	29	47	64	60	65	675

Total Number of Valid Hours: 675

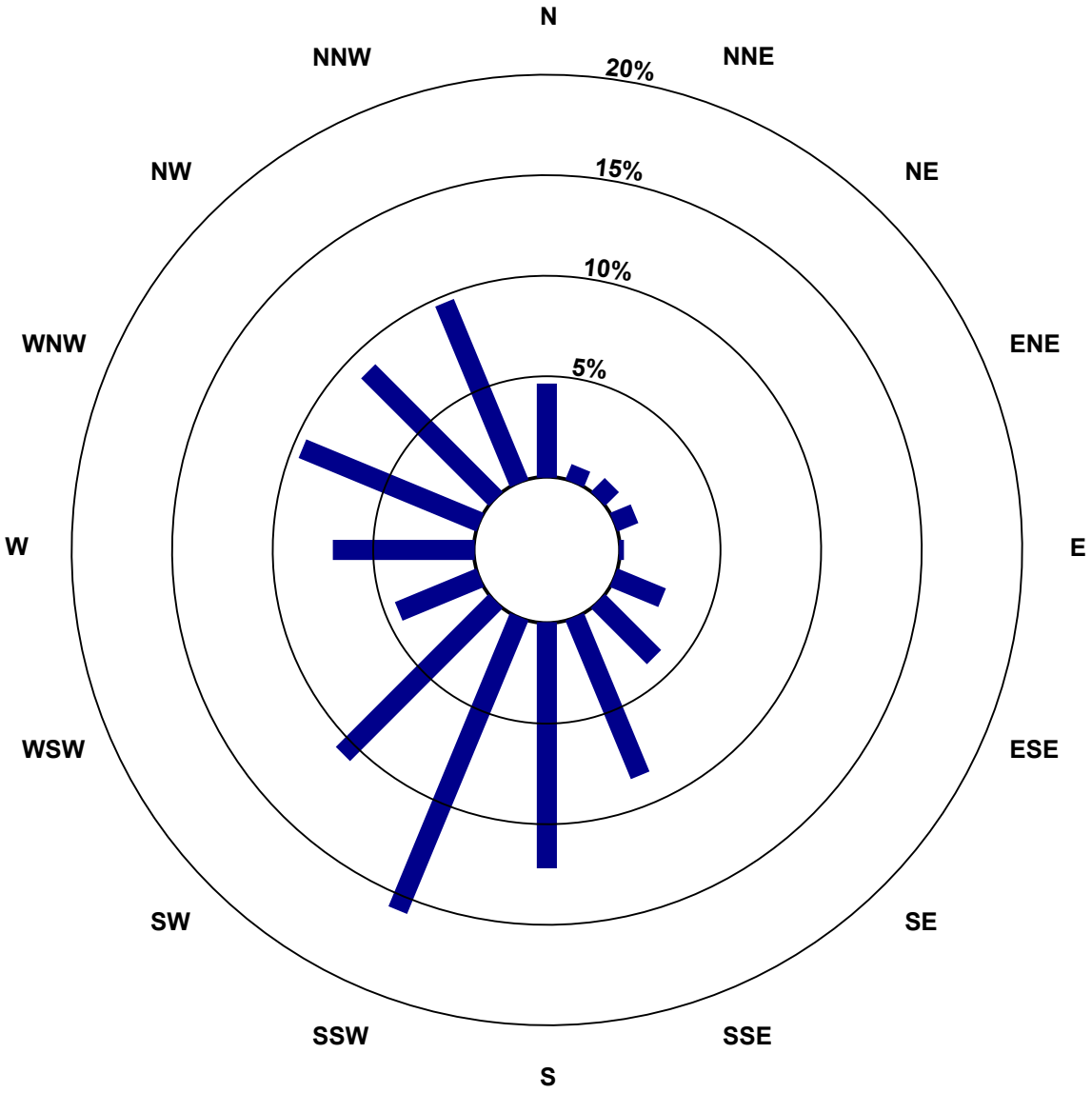
Total Number of Hours: 720

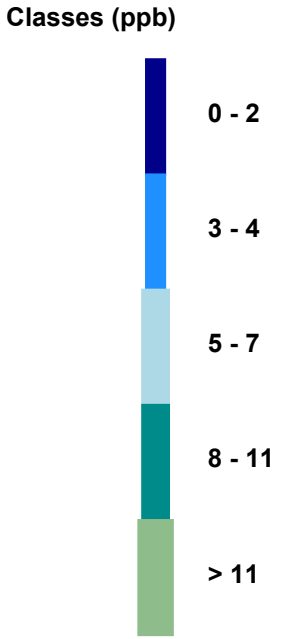
Wood Buffalo Environmental Association

Wind Rose Sep 2024

Total Reduced Sulphur (TRS) - ppb

Conklin





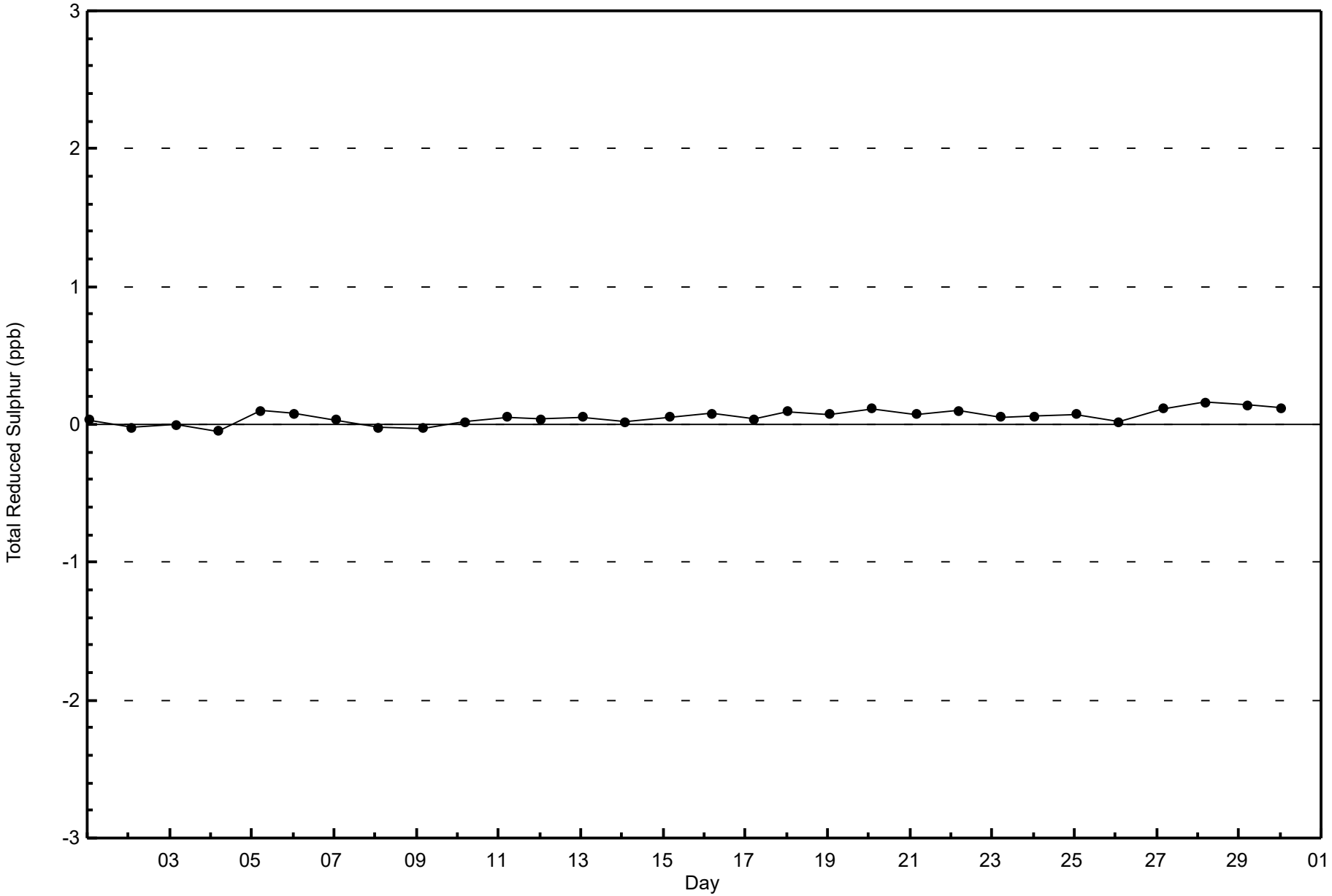
Total Number of Valid Hours: 675

Wood Buffalo Environmental Association

Zero Responses

Total Reduced Sulphur (TRS) - ppb

Conklin - September 2024

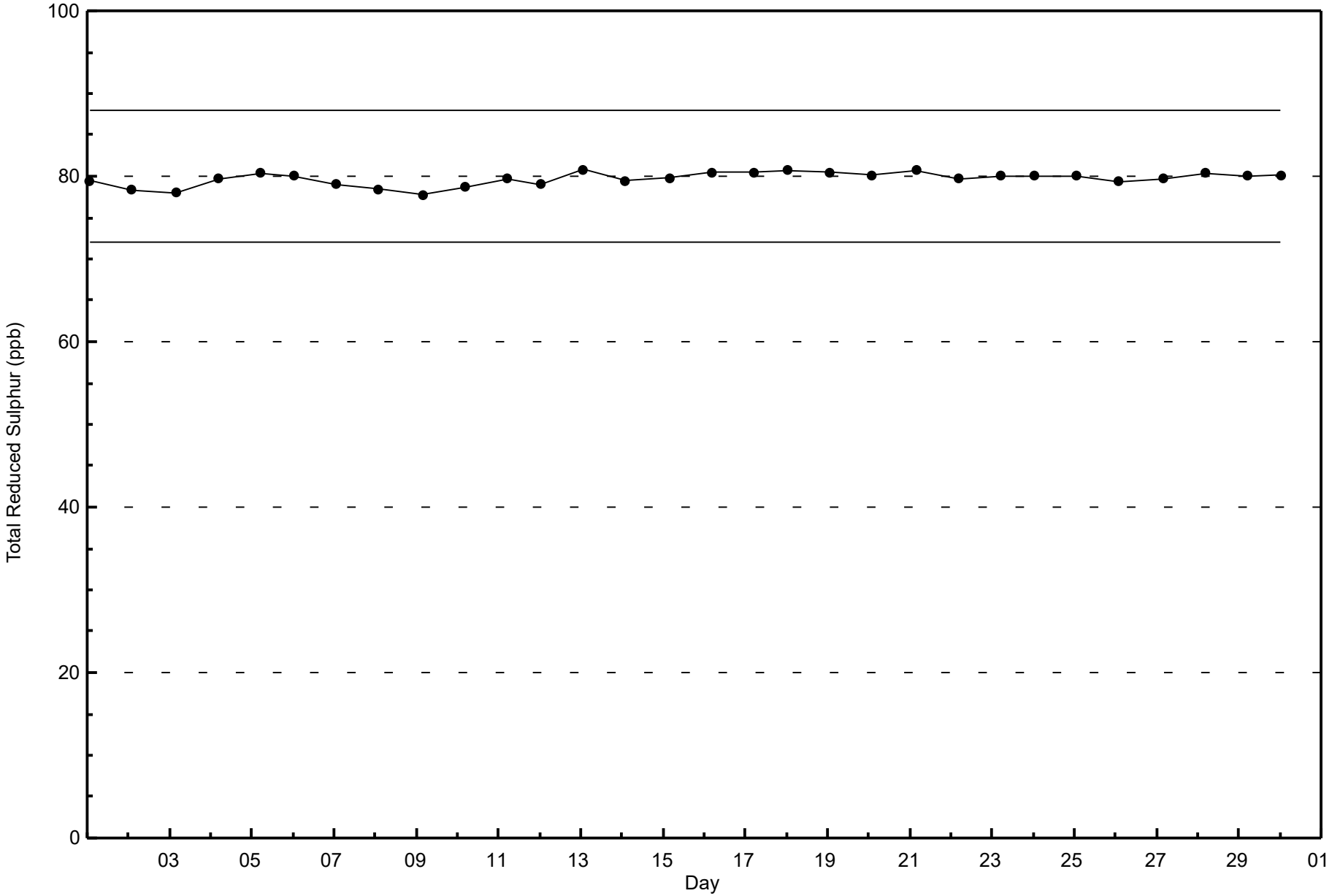


Wood Buffalo Environmental Association

Span Responses

Total Reduced Sulphur (TRS) - ppb

Conklin - September 2024



Wood Buffalo Environmental Association

Summary of Hour Averages

Total Hydrocarbons (THC) - ppm

Conklin - September 2024

Maximum Value: 2.4 ppm on Sep 2 03:00

Maximum Daily Average: 2.0 ppm on Sep 14

Minimum Value: 1.8 ppm on Sep 8 16:00

Minimum Daily Average: 1.9 ppm on Sep 3

Maximum Diurnal Average: 2.0 ppm at hour 4

Minimum Diurnal Average: 1.9 ppm at hour 16

Monthly Average: 1.97 ppm

Percentiles: P_1 = 1.8 P_{10} = 1.9 Q_1 = 1.9 Median = 2.0 Q_3 = 2.0 P_{90} = 2.1 P_{99} = 2.2

Hours in Service:	720
Hours of Data:	681
Hours of Missing Data:	39
Hours of Calibration:	35
Percent Operational Time:	99.4

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-Sep	Z	1.9	1.9	1.9	1.9	1.9	1.9	1.9	1.9	1.8	1.8	1.8	1.8	1.8	1.8	1.8	1.8	1.8	1.8	2.0	2.1	2.2	2.2	2.1	1.9	2.2
2-Sep	2.1	Z	2.4	2.1	2.2	2.1	2.0	2.0	1.9	1.9	1.8	1.8	1.8	1.8	1.8	1.8	1.8	1.8	1.8	1.9	1.9	1.9	1.9	1.8	1.9	2.4
3-Sep	1.8	1.9	Z	1.9	1.9	1.9	1.8	1.8	1.8	1.8	1.8	1.8	1.8	1.8	1.8	1.8	1.8	1.9	1.9	1.9	2.0	1.9	1.9	1.9	1.9	2.0
4-Sep	1.9	1.9	1.9	Z	2.0	2.2	2.0	1.9	1.9	1.9	1.8	1.8	1.8	1.8	1.8	1.8	1.8	1.8	1.8	1.8	1.9	1.9	1.9	2.0	1.9	2.2
5-Sep	2.0	2.0	2.0	2.0	Z	2.0	2.0	1.9	1.9	1.9	M	M	1.8	1.8	1.8	1.8	1.8	1.8	1.8	1.9	2.1	2.1	2.0	2.0	1.9	2.1
6-Sep	1.9	1.9	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	2.0	1.9	2.0
7-Sep	Z	2.1	2.2	2.1	2.2	2.0	2.3	2.1	2.0	1.9	1.9	1.9	1.9	1.9	1.8	1.8	1.8	1.8	1.9	1.9	1.9	1.9	1.9	1.9	2.0	2.3
8-Sep	2.0	Z	2.2	2.1	2.0	2.0	2.1	2.2	2.0	1.9	1.9	1.9	1.8	UO	UO	1.8	1.8	1.8	1.9	1.9	1.9	1.9	1.9	1.9	2.0	2.2
9-Sep	1.9	1.9	Z	2.2	1.9	1.9	1.9	1.9	1.9	1.9	C	C	C	C	C	1.9	1.9	1.9	1.9	1.9	1.9	1.9	2.0	2.0	1.9	2.2
10-Sep	2.0	2.0	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	1.9	2.0	2.0	2.1	2.2	2.1	2.1	2.0	2.2
11-Sep	2.1	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	1.9	2.0	2.0	2.0	2.1	2.0	2.0	2.0	2.0	2.1
12-Sep	2.1	2.0	2.0	2.1	2.0	Z	2.0	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	2.0	2.0	2.0	2.0	2.0	2.1
13-Sep	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	2.0	2.1	2.1	2.1	2.1	2.1	2.1	2.0	2.0	2.1
14-Sep	2.1	Z	2.0	2.1	2.1	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	2.2	2.1	2.0	2.2
15-Sep	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
16-Sep	2.0	2.0	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	1.9	2.1	2.1	2.1	2.2	2.1	2.0	2.0	2.2
17-Sep	2.0	2.0	2.0	2.0	Z	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	1.9	2.1	2.2	2.2	2.2	2.2	2.0	2.2
18-Sep	2.2	2.2	2.2	2.2	2.2	Z	2.2	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	1.9	2.0	2.0	2.0	2.0	2.2
19-Sep	Z	2.2	2.2	2.2	2.1	2.2	2.1	2.1	2.0	2.0	2.0	2.0	2.0	1.9	1.9	1.9	1.9	2.0	2.0	2.1	2.1	2.2	2.0	2.1	2.0	2.2
20-Sep	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	1.9	1.9	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.1
21-Sep	2.0	2.0	Z	2.2	2.1	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	1.9	2.0	1.9	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.2
22-Sep	2.0	2.0	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	1.9	2.0	2.1	2.3	2.1	2.0	2.0	2.0	2.3
23-Sep	1.9	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
24-Sep	1.9	1.9	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	2.1	2.1	2.1	2.1	2.3	2.0	2.3
25-Sep	Z	2.2	2.2	2.2	2.2	2.2	2.2	2.3	2.1	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	2.3
26-Sep	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	2.0	2.0	2.0	2.0	2.0	1.9	2.0
27-Sep	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	1.9	1.9	1.9	1.9	1.9	1.9	2.0	1.9	2.0	2.1
28-Sep	2.0	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	2.0	2.0	2.0	2.0	2.2	2.1	2.0	2.2
29-Sep	2.1	2.1	2.1	2.1	Z	2.0	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	2.0	2.0	1.9	1.9	2.0	2.1
30-Sep	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	2.0	2.0	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	1.9	1.9	1.9	1.9	1.9	1.9	1.9	2.0	2.0	2.0	2.0	2.0	Diurnal Average	
	2.2	2.2	2.4	2.2	2.2	2.2	2.3	2.3	2.1	2.1	2.1	2.1	2.0	2.0	2.1	2.1	2.1	2.1	2.1	2.1	2.3	2.2	2.2	2.3	Diurnal Maximum	

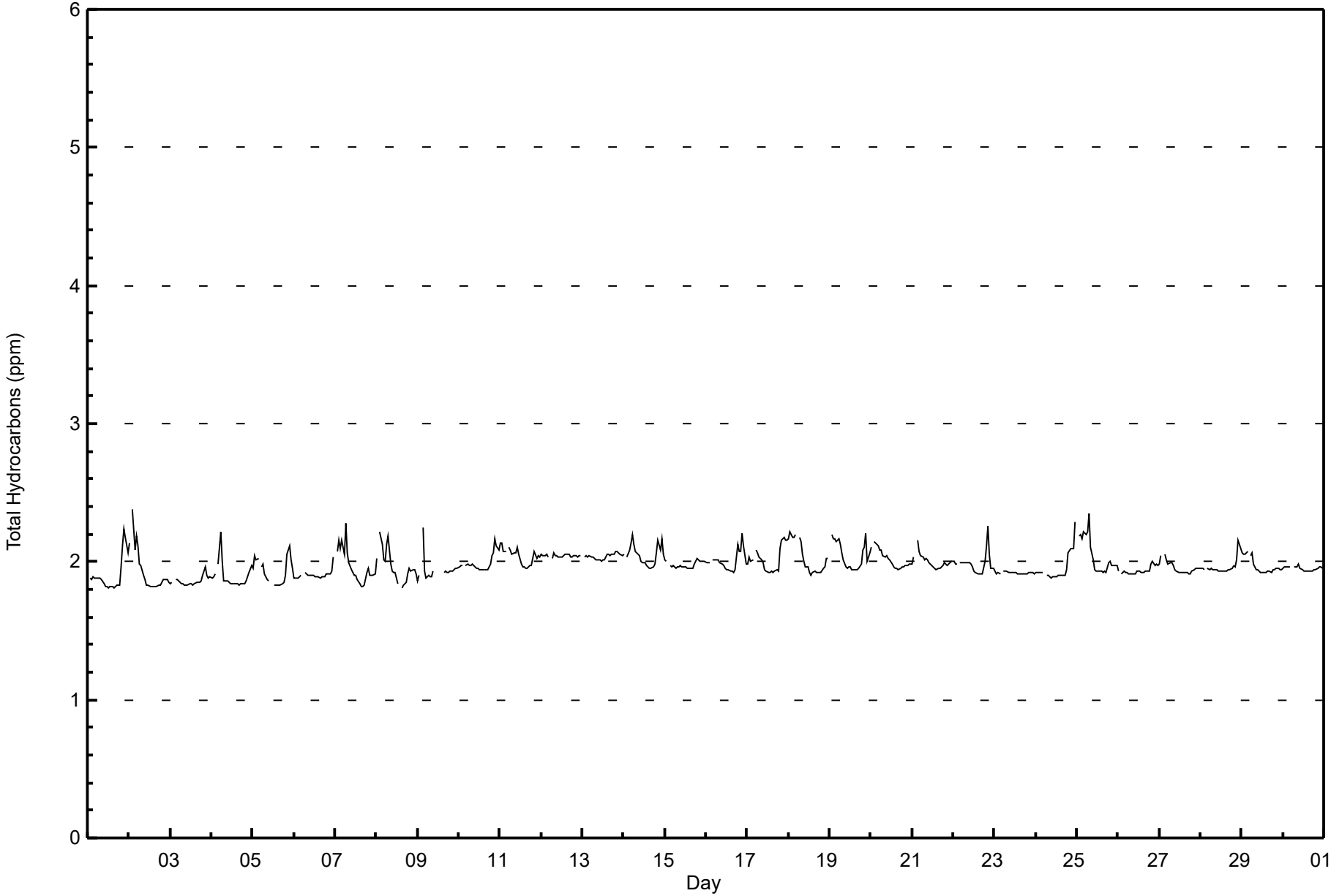
Z - zerospan C - Calibration M - Maintenance UO - Unstable Operation

Wood Buffalo Environmental Association

Hourly Averages

Total Hydrocarbons (THC) - ppm

Conklin - September 2024



Concentration Ranges (ppm)	Number of Hours	%	Cumulative %
0 - 2.0	553	81.20	81.20
2.1 - 3.0	128	18.80	100.00
3.1 - 10.0	0	0.00	100.00
> 10.0	0	0.00	100.00

Total Number of Valid Hours: 681

Total Number of Hours: 720

Wood Buffalo Environmental Association

Frequency Distribution

Total Hydrocarbons (THC) - ppm

Conklin - September 2024

Concentration Ranges (ppm)	Wind Direction																
	N	NNE	NE	ENE	E	ESE	SE	SSE	S	SSW	SW	WSW	W	WNW	NW	NNW	**Totals**
0 - 2.0	29	5	5	5	1	11	10	25	52	94	72	29	45	55	55	57	550
2.1 - 3.0	3	0	0	2	0	8	17	29	29	14	0	1	0	4	9	12	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	32	5	5	7	1	19	27	54	81	108	72	30	45	59	64	69	678

Total Number of Valid Hours: 678

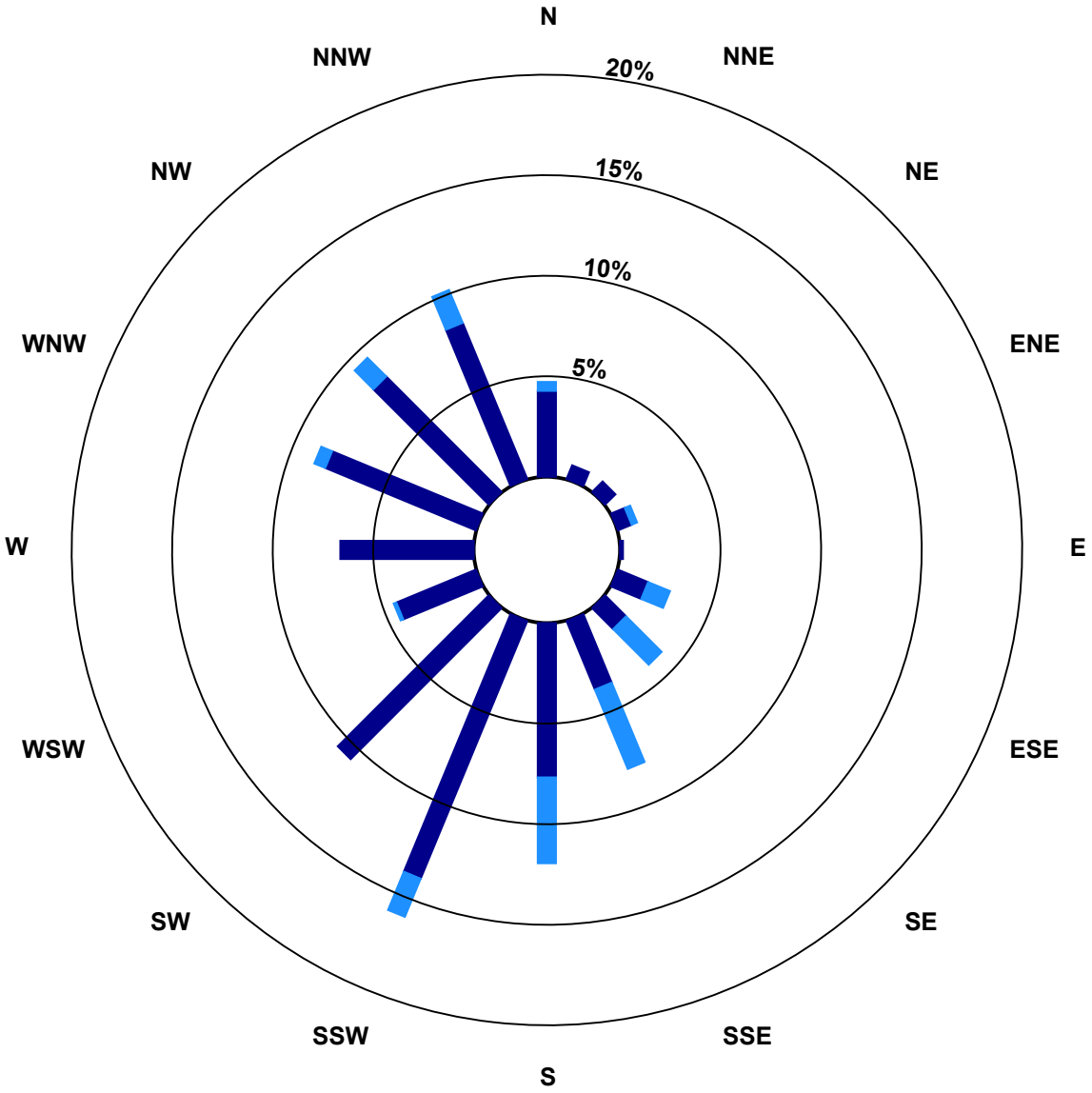
Total Number of Hours: 720

Wood Buffalo Environmental Association

Wind Rose Sep 2024

Total Hydrocarbons (THC) - ppm

Conklin



Classes (ppm)

0 - 2.0

2.1 - 3.0

3.1 - 10.0

> 10.0

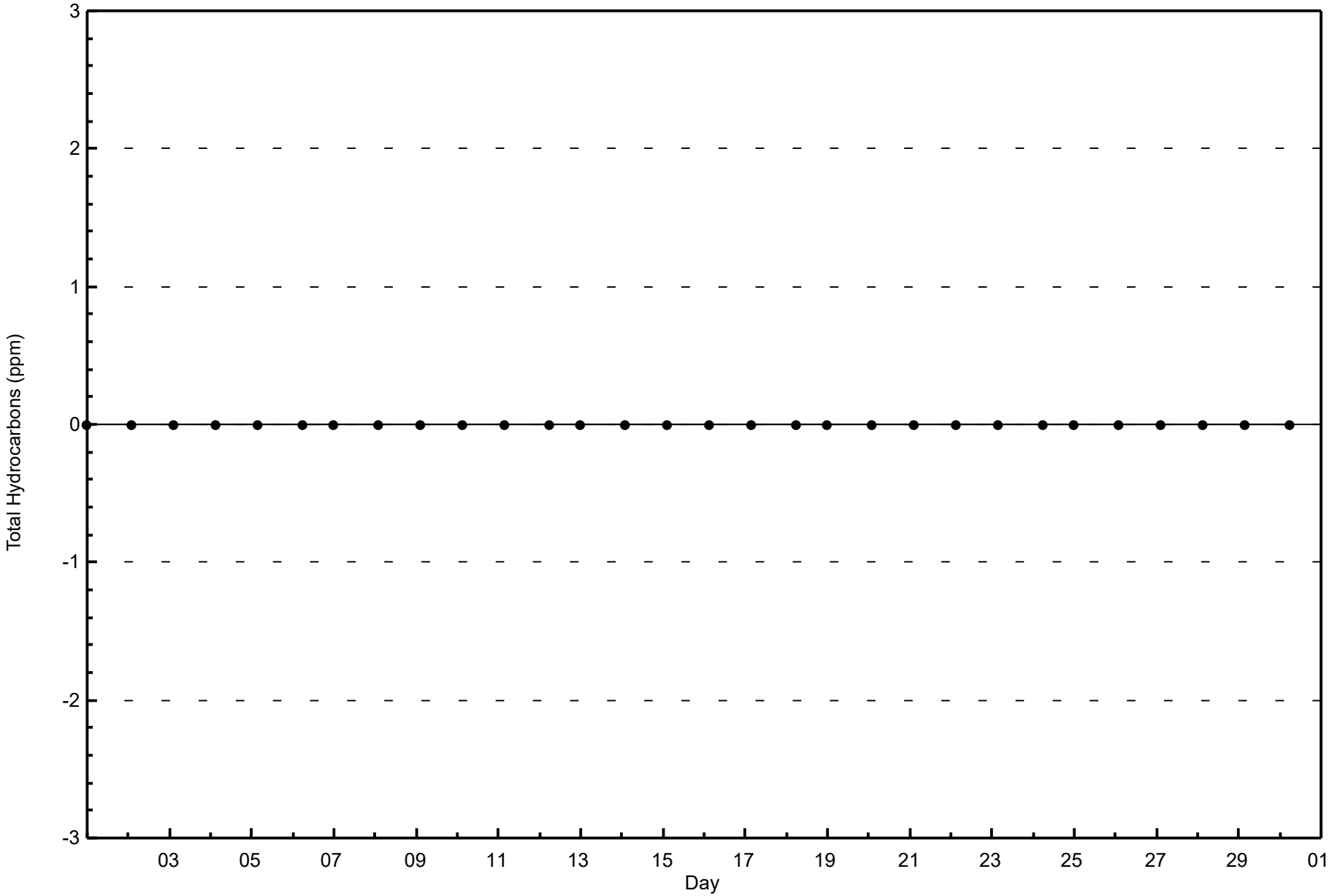
Total Number of Valid Hours: 678

Wood Buffalo Environmental Association

Zero Responses

Total Hydrocarbons (THC) - ppm

Conklin - September 2024

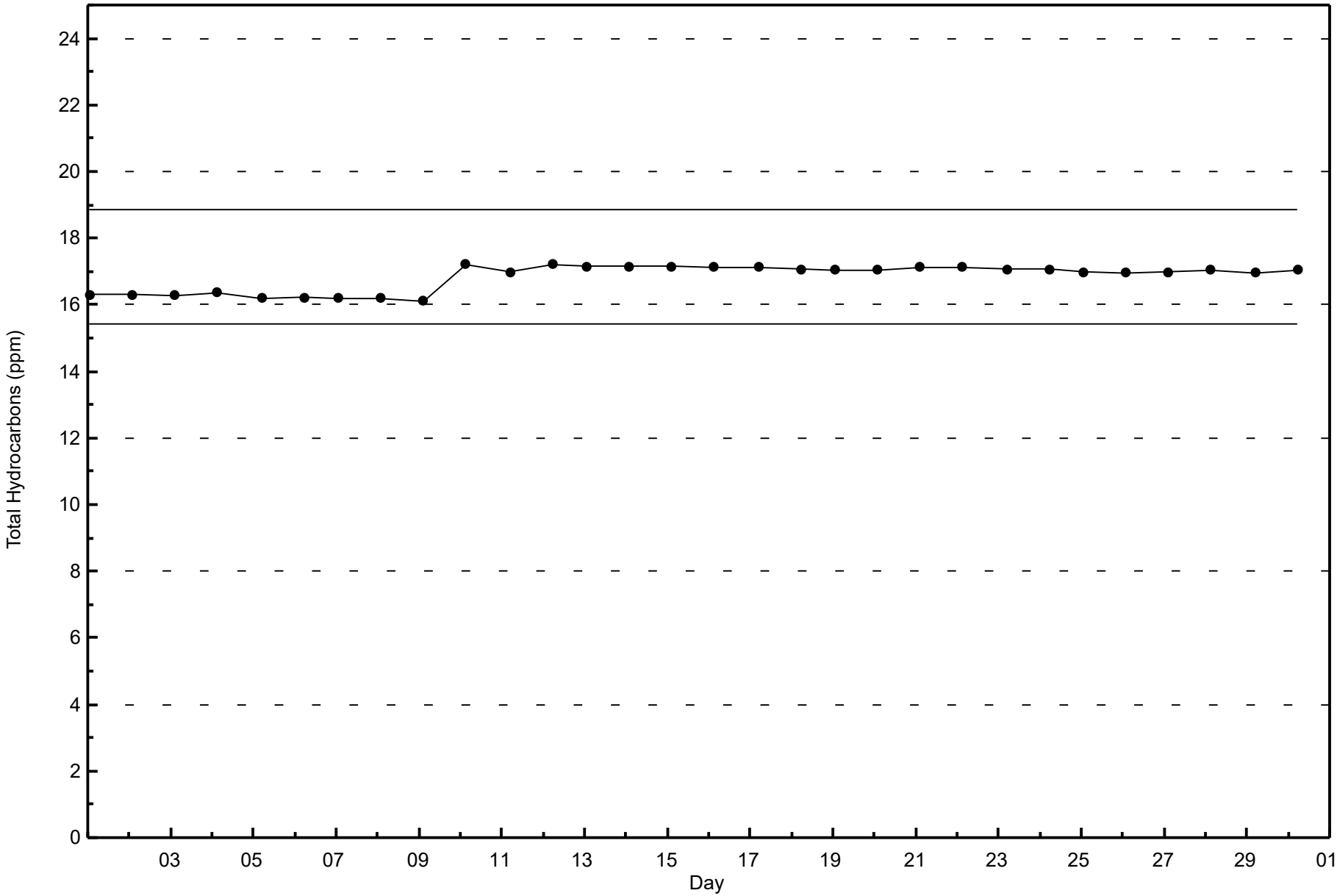


Wood Buffalo Environmental Association

Span Responses

Total Hydrocarbons (THC) - ppm

Conklin - September 2024



Wood Buffalo Environmental Association

Summary of Hour Averages

Non Methane Hydrocarbons (NMHC) - ppm

Conklin - September 2024

Maximum Value: 0.080 ppm on Sep 16 19:00

Maximum Daily Average: 0.003 ppm on Sep 16

Minimum Value: 0.000 ppm on Sep 1 02:00

Minimum Daily Average: 0.000 ppm on Sep 2

Maximum Diurnal Average: 0.004 ppm at hour 19

Minimum Diurnal Average: 0.000 ppm at hour 1

Monthly Average: 0.000 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 in Service:	720
Hours of Data:	681
Hours of Missing Data:	39
Hours of Calibration:	35
Percent Operational Time:	99.4

Day	Hourly Period Ending At (MST)																								Daily	Daily
	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24	Average	Maximum
1-Sep	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	0.045	0.000	0.000	0.000	0.000	0.002	0.045
2-Sep	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
3-Sep	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
4-Sep	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
5-Sep	0.000	0.000	0.000	0.000	Z	0.000	0.000	0.000	0.000	0.000	M	M	0.000	0.000	0.000	0.000	0.000	0.000	0.003	0.002	0.000	0.002	0.026	0.008	0.002	0.026
6-Sep	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	0.001	0.000	0.000	0.001
7-Sep	Z	0.000	0.000	0.006	0.018	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.002	0.023	0.000	0.000	0.000	0.000	0.002	0.023
8-Sep	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	UO	UO	0.000	0.000	0.000	0.004	0.000	0.000	0.000	0.000	0.000	0.000	0.004
9-Sep	0.000	0.000	Z	0.000	0.039	0.000	0.000	0.000	0.000	0.000	C	C	C	C	C	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.002	0.039
10-Sep	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
11-Sep	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
12-Sep	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
13-Sep	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
14-Sep	0.000	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	0.000	0.003	0.000	0.000	0.000	0.000	0.000	0.000	0.003
15-Sep	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
16-Sep	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	0.080	0.000	0.000	0.000	0.000	0.000	0.003	0.080
17-Sep	0.000	0.000	0.000	0.000	Z	0.000	0.000	0.000	0.000	0.008	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.007	0.002	0.000	0.000	0.000	0.001	0.008
18-Sep	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
19-Sep	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	0.000	0.000	0.000	0.002
20-Sep	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
21-Sep	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
22-Sep	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	0.010	0.002	0.000	0.000	0.000	0.000	0.001	0.010
23-Sep	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
24-Sep	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	0.005	0.002	0.000	0.000	0.000	0.000	0.000	0.005
25-Sep	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
26-Sep	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	0.006	0.000	0.000	0.000	0.000	0.000	0.006
27-Sep	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
28-Sep	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
29-Sep	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
30-Sep	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	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	0.004	0.003	0.000	0.000	0.001	0.000	Diurnal Average	
	0.000	0.000	0.000	0.006	0.039	0.000	0.000	0.000	0.000	0.008	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.080	0.045	0.002	0.002	0.026	0.008	Diurnal Maximum	

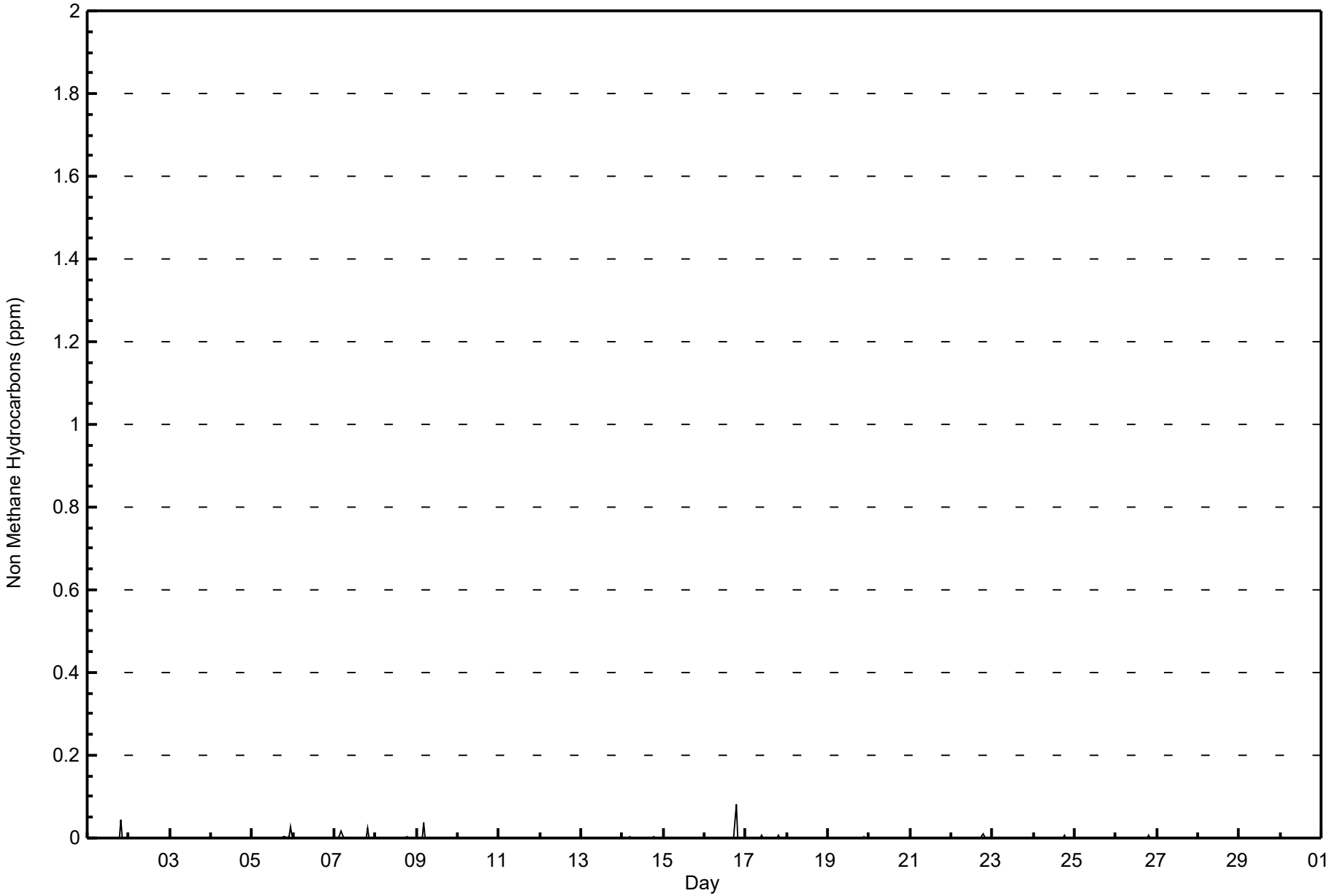
Z - zerospan C - Calibration M - Maintenance UO - Unstable Operation

Wood Buffalo Environmental Association

Hourly Averages

Non Methane Hydrocarbons (NMHC) - ppm

Conklin - September 2024



Concentration Ranges (ppm)	Number of Hours	%	Cumulative %
0 - 0.005	669	98.24	98.24
0.006 - 0.05	11	1.62	99.85
0.06 - 0.1	1	0.15	100.00
> 0.1	0	0.00	100.00

Total Number of Valid Hours: 681

Total Number of Hours: 720

Wood Buffalo Environmental Association

Frequency Distribution

Non Methane Hydrocarbons (NMHC) - ppm

Conklin - September 2024

Concentration Ranges (ppm)	Wind Direction																
	N	NNE	NE	ENE	E	ESE	SE	SSE	S	SSW	SW	WSW	W	WNW	NW	NNW	**Totals**
0 - 0.005	32	5	5	7	1	19	25	52	78	103	72	30	45	59	64	69	666
0.006 - 0.05	0	0	0	0	0	0	2	2	3	4	0	0	0	0	0	0	11
0.06 - 0.1	0	0	0	0	0	0	0	0	0	1	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
Totals	32	5	5	7	1	19	27	54	81	108	72	30	45	59	64	69	678

Total Number of Valid Hours: 678

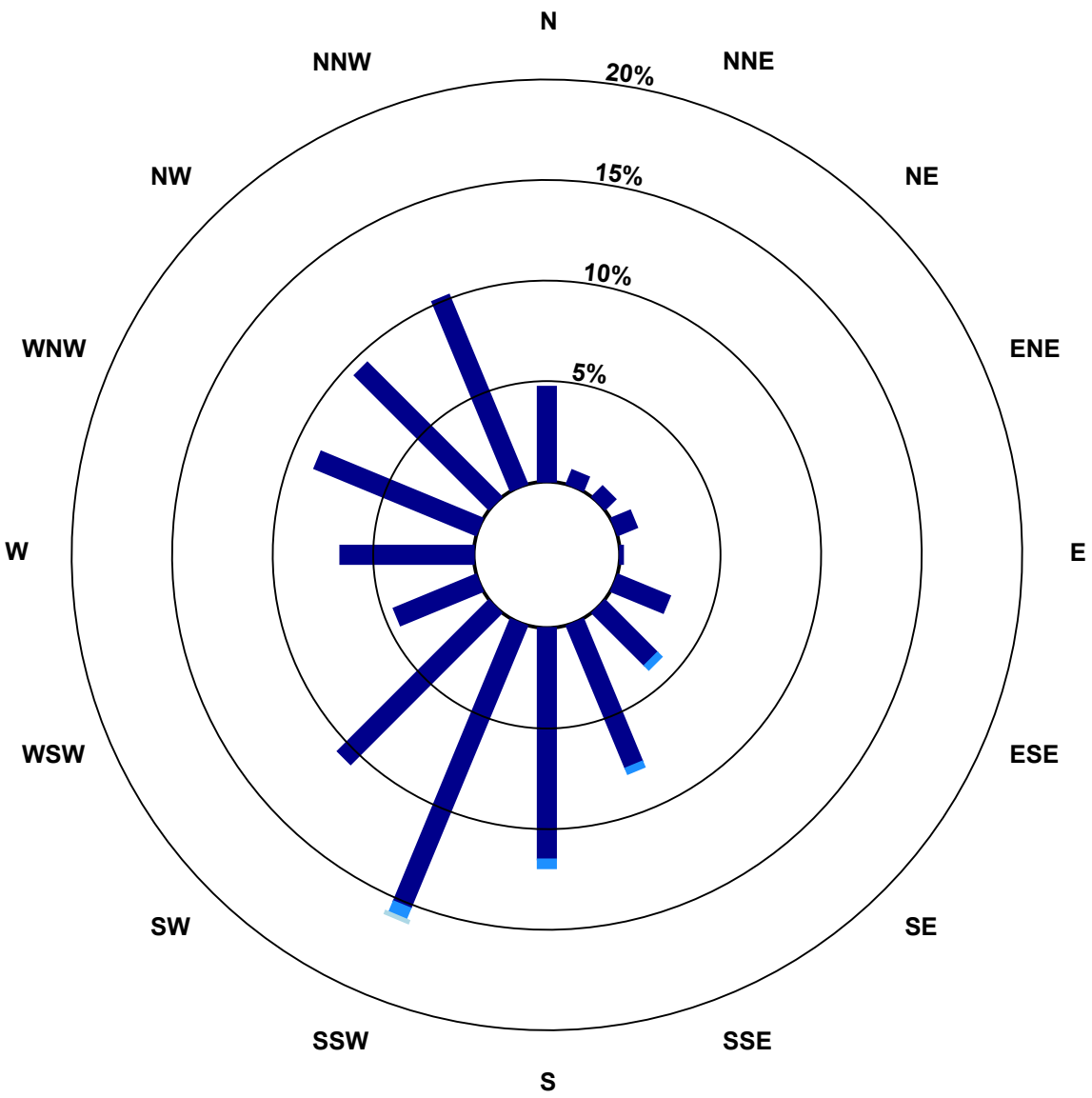
Total Number of Hours: 720

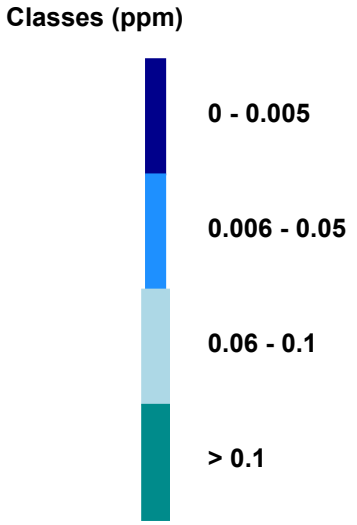
Wood Buffalo Environmental Association

Wind Rose Sep 2024

Non Methane Hydrocarbons (NMHC) - ppm

Conklin





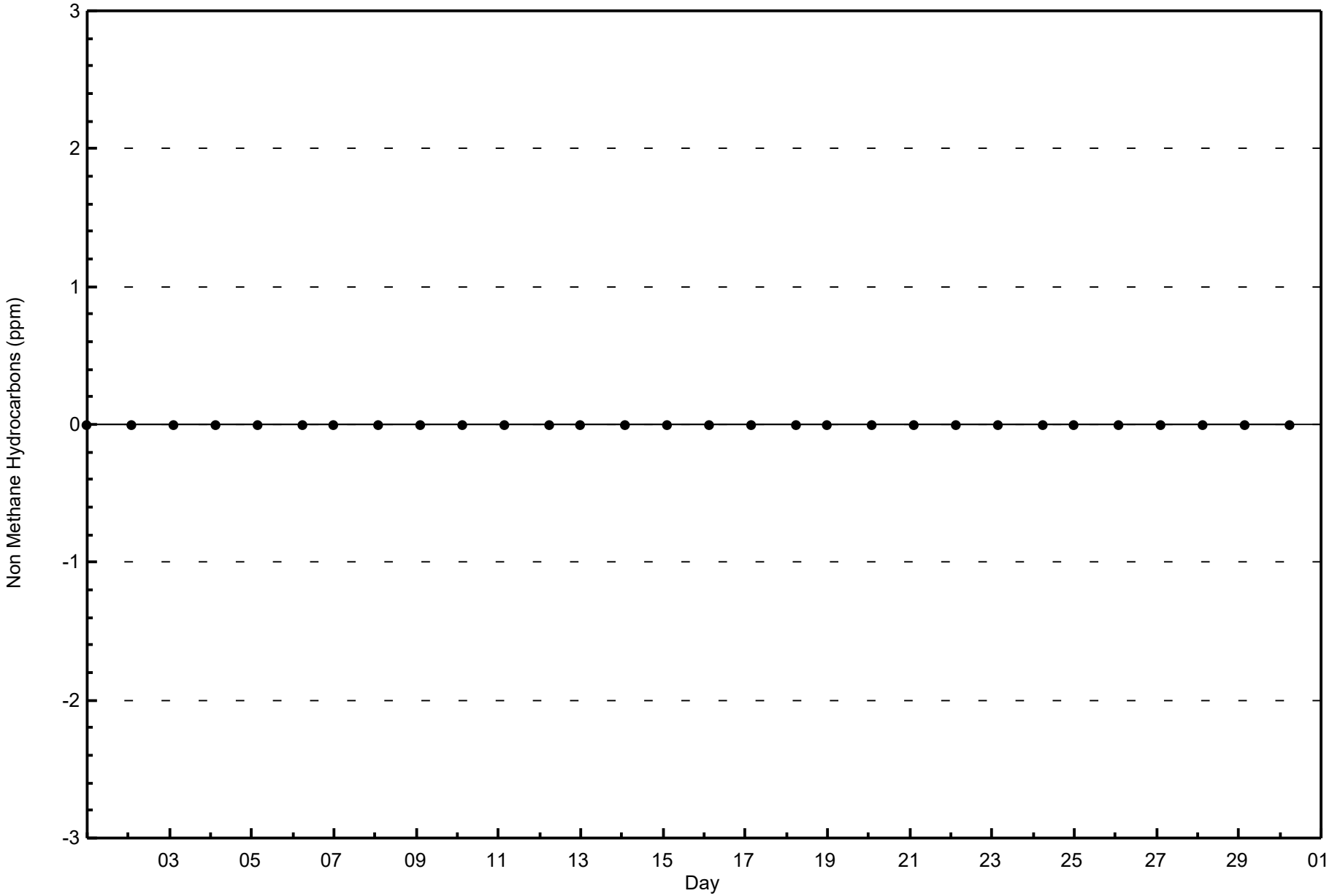
Total Number of Valid Hours: 678

Wood Buffalo Environmental Association

Zero Responses

Non Methane Hydrocarbons (NMHC) - ppm

Conklin - September 2024

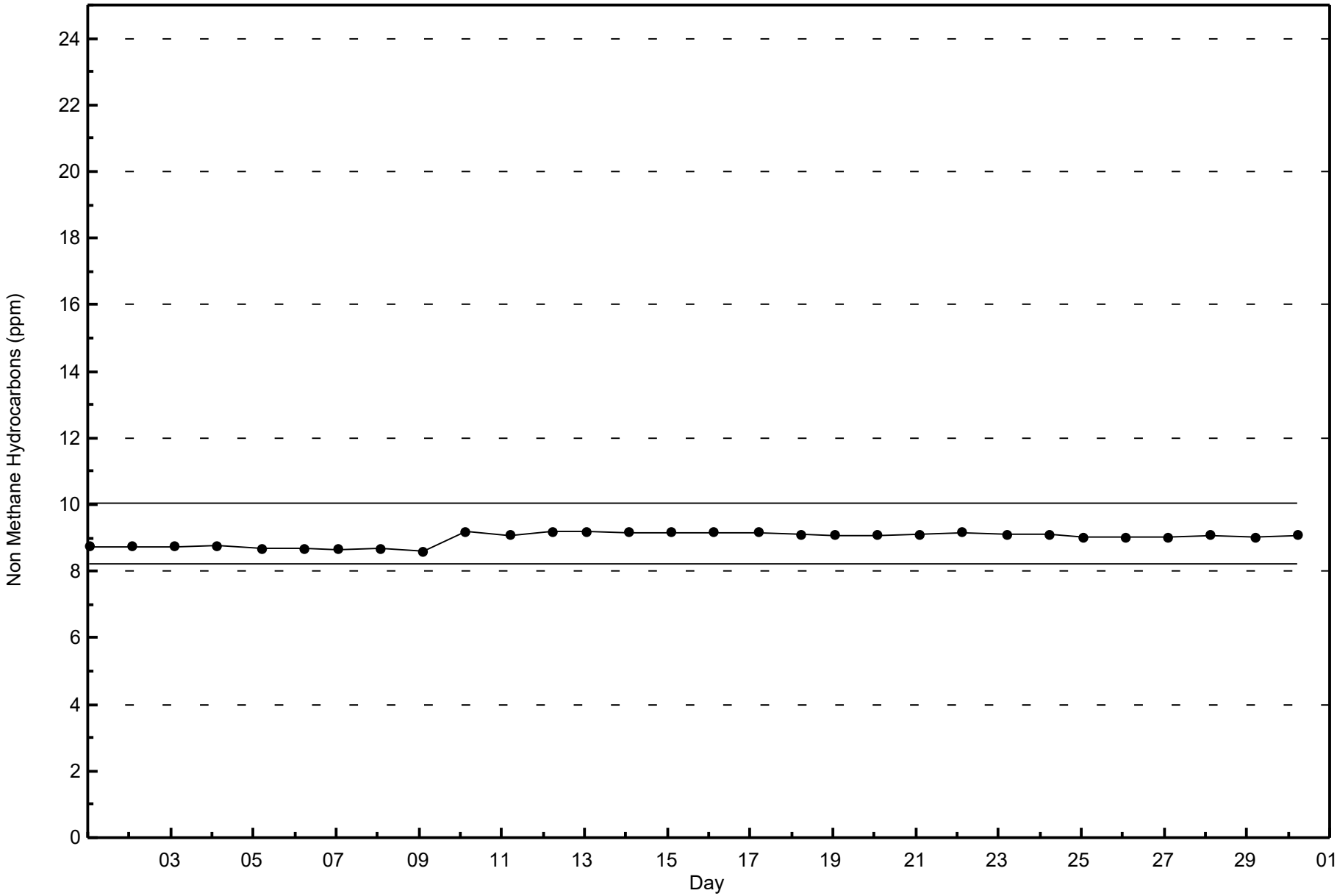


Wood Buffalo Environmental Association

Span Responses

Non Methane Hydrocarbons (NMHC) - ppm

Conklin - September 2024



Wood Buffalo Environmental Association

Summary of Hour Averages

Methane (CH_4) - ppm

Conklin - September 2024

Number of Exceedences (AAAQO): 1-hr: 0 24-hr: 0

Maximum Value: 2.4 ppm on Sep 2 03:00

Maximum Daily Average: 2.0 ppm on Sep 14

Minimum Value: 1.8 ppm on Sep 8 16:00

Minimum Daily Average: 1.9 ppm on Sep 3

Maximum Diurnal Average: 2.0 ppm at hour 4

Minimum Diurnal Average: 1.9 ppm at hour 16

Monthly Average: 1.97 ppm

Percentiles: P_1 = 1.8 P_{10} = 1.9 Q_1 = 1.9 Median = 2.0 Q_3 = 2.0 P_{90} = 2.1 P_{99} = 2.2

Hours in Service:	720
Hours of Data:	681
Hours of Missing Data:	39
Hours of Calibration:	35
Percent Operational Time:	99.4

Day	Hourly Period Ending At (MST)																								Daily	Daily
	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24	Average	Maximum
1-Sep	Z	1.9	1.9	1.9	1.9	1.9	1.9	1.9	1.9	1.8	1.8	1.8	1.8	1.8	1.8	1.8	1.8	1.8	1.8	1.9	2.1	2.2	2.2	2.1	1.9	2.2
2-Sep	2.1	Z	2.4	2.1	2.2	2.1	2.0	2.0	1.9	1.9	1.8	1.8	1.8	1.8	1.8	1.8	1.8	1.8	1.8	1.9	1.9	1.9	1.9	1.8	1.9	2.4
3-Sep	1.8	1.9	Z	1.9	1.9	1.9	1.8	1.8	1.8	1.8	1.8	1.8	1.8	1.8	1.8	1.8	1.8	1.9	1.9	1.9	2.0	1.9	1.9	1.9	1.9	2.0
4-Sep	1.9	1.9	1.9	Z	2.0	2.2	2.0	1.9	1.9	1.9	1.8	1.8	1.8	1.8	1.8	1.8	1.8	1.8	1.8	1.8	1.9	1.9	1.9	2.0	1.9	2.2
5-Sep	2.0	2.0	2.0	2.0	Z	2.0	2.0	1.9	1.9	1.9	M	M	1.8	1.8	1.8	1.8	1.8	1.8	1.8	1.9	2.1	2.1	2.0	1.9	1.9	2.1
6-Sep	1.9	1.9	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	2.0	1.9	2.0
7-Sep	Z	2.1	2.2	2.1	2.1	2.0	2.3	2.1	2.0	1.9	1.9	1.9	1.9	1.9	1.8	1.8	1.8	1.8	1.9	1.9	1.9	1.9	1.9	1.9	2.0	2.3
8-Sep	2.0	Z	2.2	2.1	2.0	2.0	2.1	2.2	2.0	1.9	1.9	1.9	1.8	UO	UO	1.8	1.8	1.8	1.9	1.9	1.9	1.9	1.9	1.9	2.0	2.2
9-Sep	1.9	1.9	Z	2.2	1.9	1.9	1.9	1.9	1.9	1.9	C	C	C	C	C	1.9	1.9	1.9	1.9	1.9	1.9	1.9	2.0	2.0	1.9	2.2
10-Sep	2.0	2.0	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	1.9	2.0	2.0	2.1	2.2	2.1	2.1	2.0	2.2
11-Sep	2.1	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	1.9	2.0	2.0	2.0	2.1	2.0	2.0	2.0	2.0	2.1
12-Sep	2.1	2.0	2.0	2.1	2.0	Z	2.0	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	2.0	2.0	2.0	2.0	2.0	2.1
13-Sep	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	2.0	2.1	2.1	2.1	2.1	2.1	2.1	2.0	2.0	2.1
14-Sep	2.1	Z	2.0	2.1	2.1	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	2.2	2.1	2.0	2.2
15-Sep	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
16-Sep	2.0	2.0	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	1.9	2.0	2.1	2.1	2.2	2.1	2.0	2.0	2.2
17-Sep	2.0	2.0	2.0	2.0	Z	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	1.9	2.1	2.2	2.2	2.2	2.2	2.0	2.2
18-Sep	2.2	2.2	2.2	2.2	2.2	Z	2.2	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	1.9	2.0	2.0	2.0	2.0	2.2
19-Sep	Z	2.2	2.2	2.2	2.1	2.2	2.1	2.1	2.0	2.0	2.0	2.0	2.0	1.9	1.9	1.9	1.9	2.0	2.0	2.1	2.1	2.2	2.0	2.1	2.0	2.2
20-Sep	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	1.9	1.9	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.1
21-Sep	2.0	2.0	Z	2.2	2.1	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	1.9	2.0	1.9	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.2
22-Sep	2.0	2.0	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	1.9	2.0	2.1	2.3	2.1	2.0	2.0	2.0	2.3
23-Sep	1.9	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
24-Sep	1.9	1.9	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	2.1	2.1	2.1	2.1	2.3	2.0	2.3
25-Sep	Z	2.2	2.2	2.2	2.2	2.2	2.2	2.3	2.1	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	2.3
26-Sep	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	2.0	2.0	2.0	2.0	2.0	1.9	2.0
27-Sep	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	1.9	1.9	1.9	1.9	1.9	1.9	2.0	1.9	2.0	2.1
28-Sep	2.0	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	2.0	2.0	2.0	2.0	2.2	2.1	2.0	2.2
29-Sep	2.1	2.1	2.1	2.1	Z	2.0	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	2.0	2.0	1.9	1.9	2.0	2.1
30-Sep	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	2.0	2.0	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	1.9	1.9	1.9	1.9	1.9	1.9	1.9	2.0	2.0	2.0	2.0	2.0	Diurnal Average	
	2.2	2.2	2.4	2.2	2.2	2.2	2.3	2.3	2.1	2.1	2.1	2.1	2.0	2.0	2.1	2.1	2.1	2.1	2.1	2.1	2.3	2.2	2.2	2.3	Diurnal Maximum	

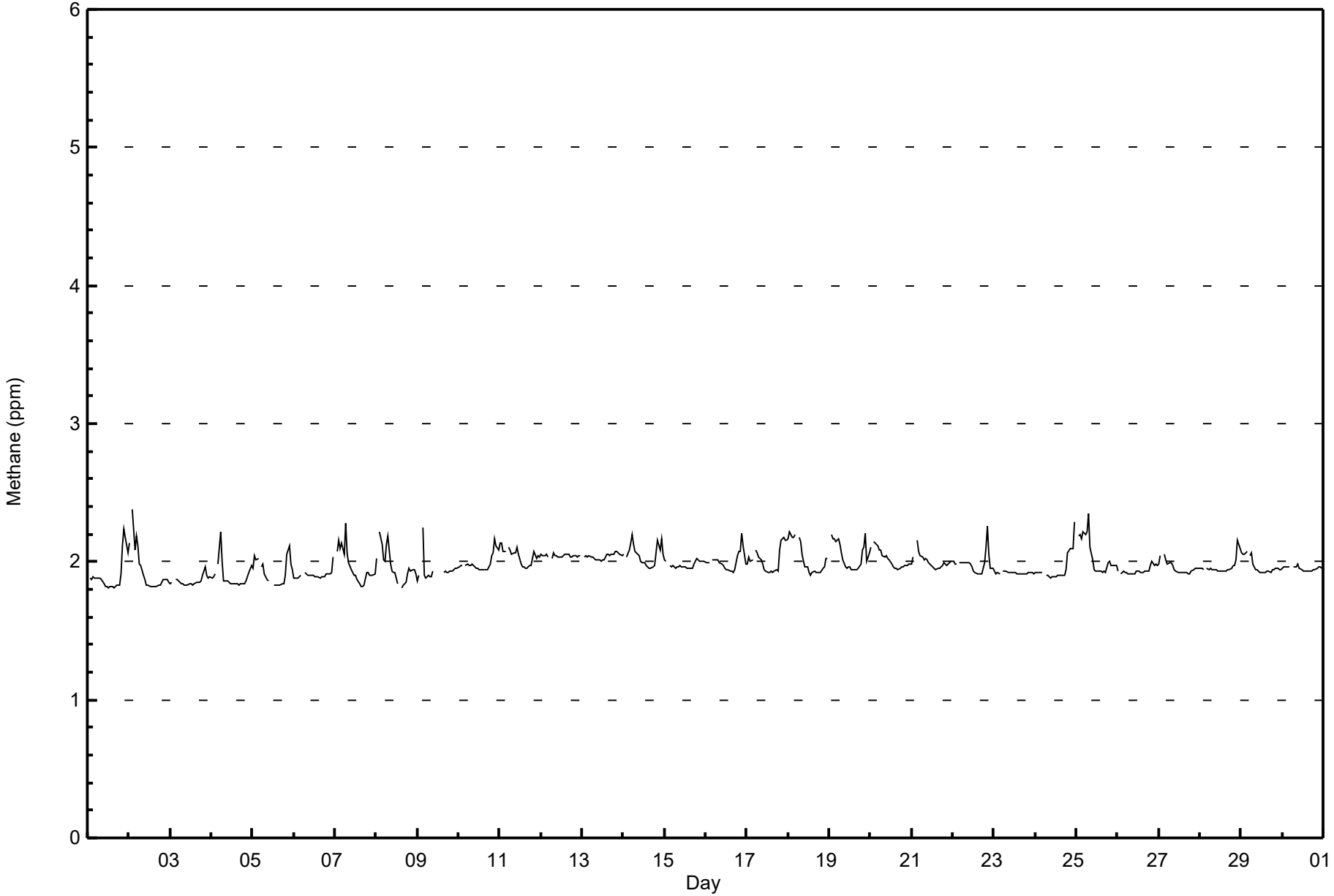
Z - zerospan C - Calibration M - Maintenance UO - Unstable Operation

Wood Buffalo Environmental Association

Hourly Averages

Methane (CH_4) - ppm

Conklin - September 2024



Methane (CH_4) - ppm
Conklin - September 2024

Concentration Ranges (ppm)	Number of Hours	%	Cumulative %
0 - 2.0	554	81.35	81.35
2.1 - 3.0	127	18.65	100.00
3.1 - 10.0	0	0.00	100.00
> 10.0	0	0.00	100.00

Total Number of Valid Hours: 681

Total Number of Hours: 720

Methane (CH_4) - ppm
Conklin - September 2024

Concentration Ranges (ppm)	Wind Direction																
	N	NNE	NE	ENE	E	ESE	SE	SSE	S	SSW	SW	WSW	W	WNW	NW	NNW	**Totals**
0 - 2.0	29	5	5	5	1	11	10	25	52	95	72	29	45	55	55	57	551
2.1 - 3.0	3	0	0	2	0	8	17	29	29	13	0	1	0	4	9	12	127
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	32	5	5	7	1	19	27	54	81	108	72	30	45	59	64	69	678

Total Number of Valid Hours: 678

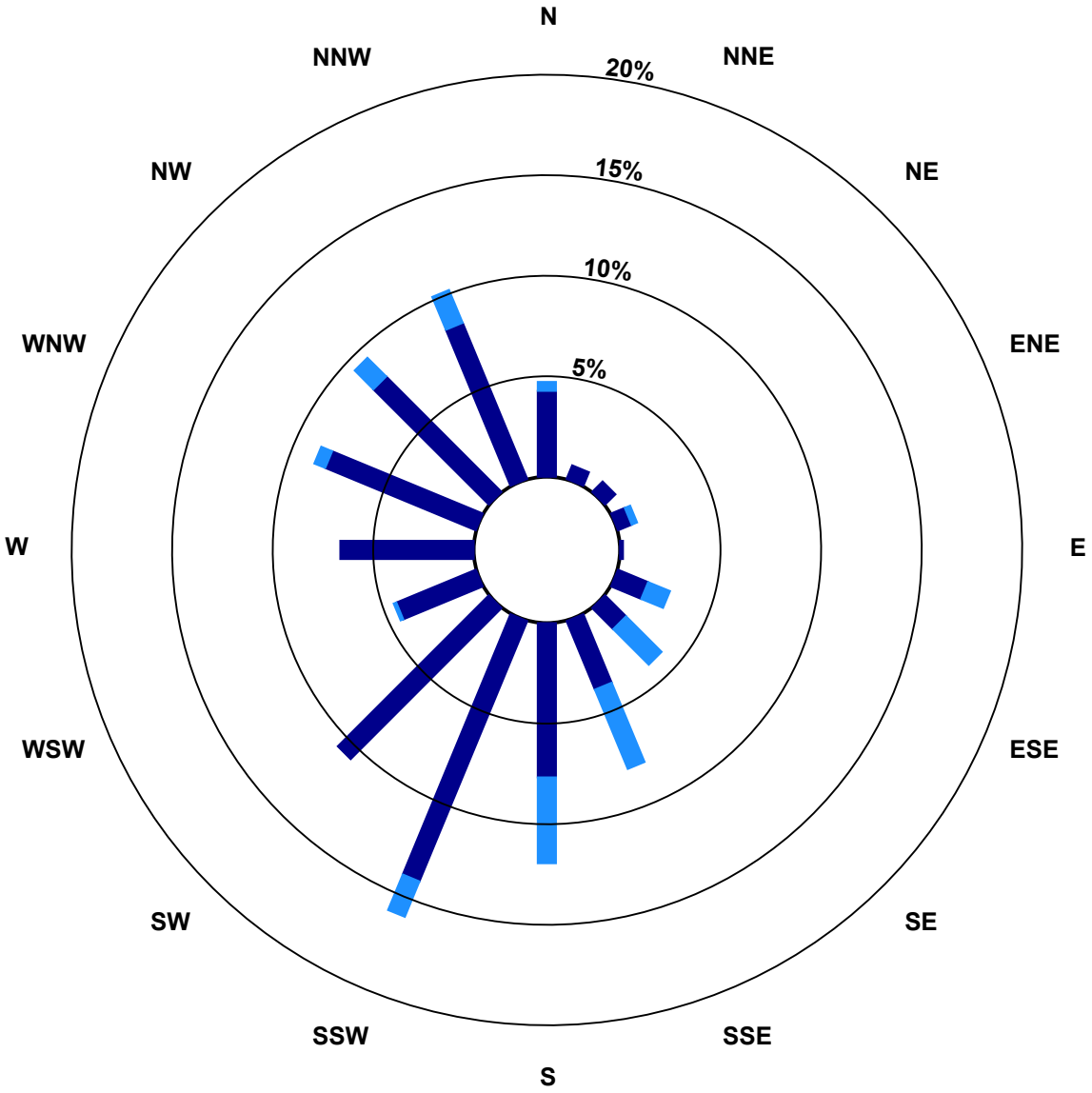
Total Number of Hours: 720

Wood Buffalo Environmental Association

Wind Rose Sep 2024

Methane (CH_4) - ppm

Conklin



Classes (ppm)

0 - 2.0

2.1 - 3.0

3.1 - 10.0

> 10.0

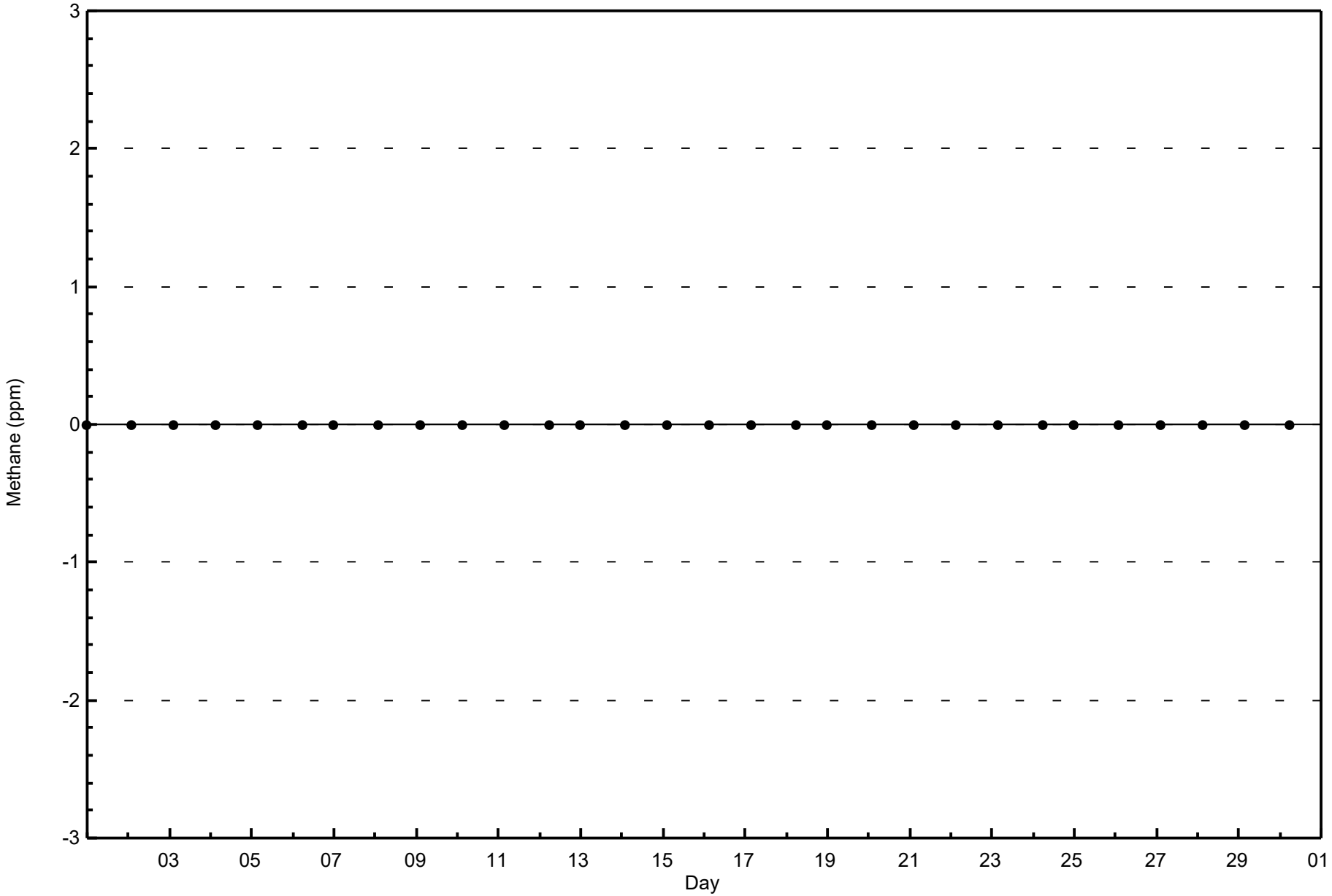
Total Number of Valid Hours: 678

Wood Buffalo Environmental Association

Zero Responses

Methane (CH_4) - ppm

Conklin - September 2024

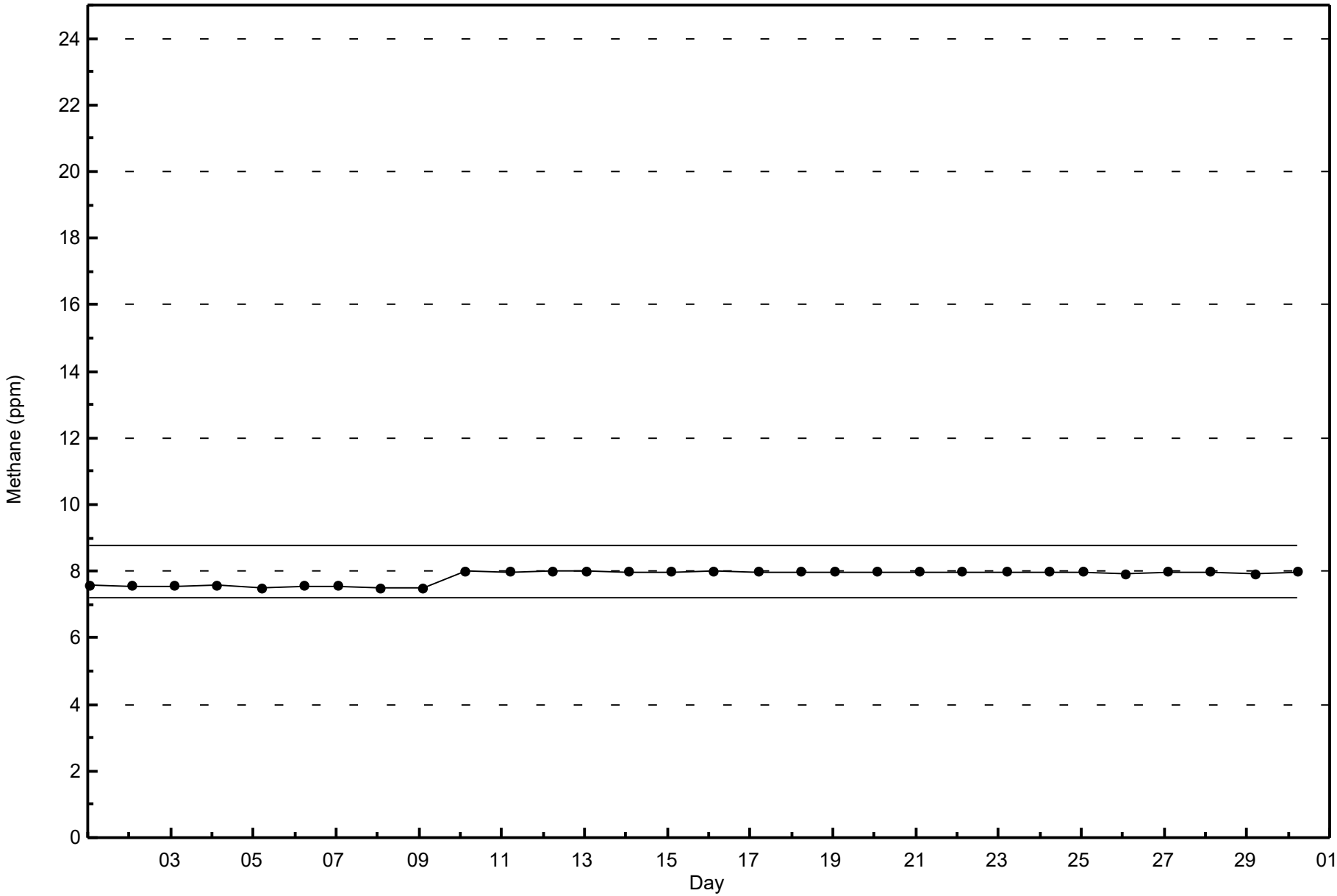


Wood Buffalo Environmental Association

Span Responses

Methane (CH_4) - ppm

Conklin - September 2024



Wood Buffalo Environmental Association

Summary of Hour Averages

Nitric Oxide (NO) - ppb

Conklin - September 2024

Maximum Value: 20.4 ppb on Sep 18 08:00

Maximum Daily Average: 2.5 ppb on Sep 21

Minimum Value: 0.0 ppb on Sep 2 15:00

Minimum Daily Average: 0.0 ppb on Sep 12

Maximum Diurnal Average: 2.8 ppb at hour 8

Minimum Diurnal Average: 0.1 ppb at hour 24

Monthly Average: 0.74 ppb

Percentiles: P_1 = 0.0 P_{10} = 0.0 Q_1 = 0.0 Median = 0.2 Q_3 = 0.6 P_{90} = 2.0 P_{99} = 8.4

Hours in Service:	720
Hours of Data:	682
Hours of Missing Data:	38
Hours of Calibration:	36
Percent Operational Time:	99.7

Day	Hourly Period Ending At (MST)																								Daily	Daily
	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24	Average	Maximum
1-Sep	0.1	0.0	0.0	0.2	Z	0.2	0.2	0.4	0.5	0.4	0.1	0.1	0.1	0.1	0.0	0.0	0.0	0.0	0.0	0.6	0.1	0.2	0.2	0.0	0.2	0.6
2-Sep	0.1	1.3	0.1	0.1	0.1	Z	0.1	0.3	0.2	0.2	0.1	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.1	1.3
3-Sep	Z	0.0	0.0	0.0	0.0	0.0	0.0	0.1	0.2	0.1	0.1	0.1	0.1	0.1	0.2	0.1	0.1	0.0	0.0	0.3	0.2	0.0	0.0	0.5	0.1	0.5
4-Sep	0.1	Z	2.3	4.2	0.9	0.7	0.2	0.2	0.2	0.2	0.3	0.2	0.2	0.2	0.1	0.2	0.1	0.1	0.2	0.1	0.3	0.6	12.3	0.6	1.1	12.3
5-Sep	0.0	0.0	Z	0.0	0.8	1.1	7.0	3.9	1.2	2.7	M	M	0.5	0.9	1.1	0.9	3.2	0.3	0.0	0.6	0.2	0.1	0.0	0.0	1.2	7.0
6-Sep	0.0	0.0	0.0	Z	0.0	0.0	0.2	0.4	0.2	0.3	0.3	0.9	0.5	0.5	0.7	1.0	0.4	0.2	0.0	0.1	0.1	0.0	0.3	0.1	0.3	1.0
7-Sep	1.9	0.0	0.2	0.0	Z	1.9	5.2	4.7	2.0	0.7	1.1	3.1	1.9	1.2	2.7	1.9	3.5	2.5	2.0	0.4	0.3	0.1	0.0	0.0	1.6	5.2
8-Sep	0.8	0.2	0.2	0.3	0.3	Z	5.3	7.3	5.3	2.9	1.4	1.6	2.3	0.6	0.4	0.3	0.1	0.0	0.3	0.0	0.0	0.0	0.0	0.0	1.3	7.3
9-Sep	Z	0.0	0.0	0.0	0.0	0.0	0.5	0.5	1.3	0.1	0.2	0.1	0.1	1.3	0.1	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.2	1.3
10-Sep	0.0	Z	0.0	0.0	0.1	0.0	0.0	4.0	1.1	0.6	0.3	0.3	0.6	0.2	1.3	1.0	2.0	6.3	3.7	1.4	1.4	0.2	0.2	0.4	1.1	6.3
11-Sep	0.2	0.1	Z	0.4	0.7	1.2	2.7	3.3	2.4	1.9	2.4	2.0	0.5	1.1	1.5	2.1	2.3	2.8	0.2	0.1	0.0	1.1	0.2	0.2	1.3	3.3
12-Sep	0.0	0.1	0.1	Z	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.1	0.2	0.1	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.2
13-Sep	0.0	0.0	0.0	0.0	Z	0.0	0.1	0.1	0.1	0.1	0.2	0.1	0.2	0.1	3.0	0.4	0.1	0.1	0.0	0.0	0.1	0.1	0.0	0.1	0.2	3.0
14-Sep	0.0	0.0	0.1	0.0	0.3	Z	0.7	0.5	0.2	0.3	0.5	0.1	0.1	0.0	0.1	0.0	0.0	0.0	0.4	0.7	0.7	0.1	0.1	0.2	0.2	0.7
15-Sep	Z	0.1	0.1	0.0	0.1	0.0	0.0	0.0	0.1	0.9	0.2	0.1	0.1	1.3	0.1	0.1	0.1	0.2	0.4	0.3	0.2	0.4	0.2	0.1	0.2	1.3
16-Sep	0.1	Z	0.3	0.2	0.0	0.1	0.3	0.3	0.3	0.3	0.2	0.3	0.7	0.4	1.1	0.2	0.3	0.1	0.3	0.6	0.2	0.6	0.3	0.3	0.3	1.1
17-Sep	0.3	0.1	Z	0.1	0.0	0.3	1.4	4.2	1.4	1.4	1.6	0.2	1.3	0.8	1.9	2.0	1.9	0.4	0.5	5.6	4.8	0.4	0.2	0.1	1.4	5.6
18-Sep	2.1	2.5	3.0	Z	2.3	1.4	1.6	20.4	3.1	1.9	0.5	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.0	0.1	0.0	0.1	0.1	0.4	1.7	20.4
19-Sep	0.4	0.7	0.6	1.4	Z	0.7	0.8	14.2	9.3	C	C	C	C	C	C	0.0	0.1	0.0	0.0	0.3	0.7	0.2	0.7	0.0	--	14.2
20-Sep	0.0	0.4	0.0	0.4	14.1	Z	3.8	5.2	0.2	3.3	0.4	0.4	0.4	0.4	0.2	0.1	1.0	2.2	0.1	0.1	0.1	0.0	0.0	0.0	1.4	14.1
21-Sep	Z	0.0	0.2	2.4	10.5	8.4	8.5	4.8	5.7	2.5	1.0	1.3	1.5	0.7	2.0	5.8	1.0	0.4	0.9	0.1	0.0	0.0	0.0	0.0	2.5	10.5
22-Sep	0.1	Z	0.0	0.0	0.1	0.0	0.0	0.2	0.6	0.3	1.1	0.3	0.1	0.0	0.0	0.0	0.0	0.0	0.7	2.0	0.9	0.2	0.0	0.0	0.3	2.0
23-Sep	0.0	0.0	Z	0.0	0.0	0.0	0.1	0.2	0.1	0.2	0.4	0.9	0.7	3.2	0.1	0.3	0.8	0.6	0.0	0.0	0.0	0.0	0.1	0.0	0.3	3.2
24-Sep	0.0	0.0	0.0	Z	0.0	0.0	0.1	0.7	1.0	0.2	0.2	0.2	0.1	0.1	0.1	2.1	0.4	1.1	0.8	0.6	0.5	0.2	0.0	0.1	0.4	2.1
25-Sep	0.1	0.0	0.1	0.9	Z	0.4	1.5	8.0	2.0	0.9	1.6	1.9	1.5	0.8	0.1	0.0	0.0	0.0	0.4	4.0	0.5	0.0	0.0	0.0	1.1	8.0
26-Sep	0.0	0.0	0.0	0.0	0.0	Z	0.0	0.0	0.0	0.0	0.1	0.1	0.1	0.1	0.2	0.1	0.1	0.3	1.0	0.0	0.0	0.2	0.0	0.2	0.1	1.0
27-Sep	Z	0.3	0.1	0.0	0.0	0.0	0.1	0.1	0.3	0.1	0.2	0.9	0.2	0.4	0.4	2.7	0.1	0.5	0.0	0.2	0.1	0.0	0.1	0.0	0.3	2.7
28-Sep	0.0	Z	0.0	0.2	0.0	6.1	0.7	0.2	0.2	0.2	0.5	0.2	1.5	0.3	0.3	2.6	4.5	7.1	0.1	0.1	0.2	0.1	0.1	0.2	1.1	7.1
29-Sep	0.1	0.1	Z	0.1	0.2	0.2	0.2	0.1	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	0.1	0.2
30-Sep	6.2	0.0	0.0	Z	0.1	0.1	0.1	0.3	2.5	0.4	0.4	0.2	0.2	0.3	0.2	0.1	0.2	1.4	0.0	0.0	0.0	0.0	0.1	0.0	0.6	6.2
	0.5	0.2	0.3	0.4	1.2	0.9	1.4	2.8	1.4	0.8	0.5	0.6	0.5	0.5	0.6	0.8	0.7	0.9	0.4	0.6	0.4	0.2	0.5	0.1	Diurnal Average	
	6.2	2.5	3.0	4.2	14.1	8.4	8.5	20.4	9.3	3.3	2.4	3.1	2.3	3.2	3.0	5.8	4.5	7.1	3.7	5.6	4.8	1.1	12.3	0.6	Diurnal Maximum	

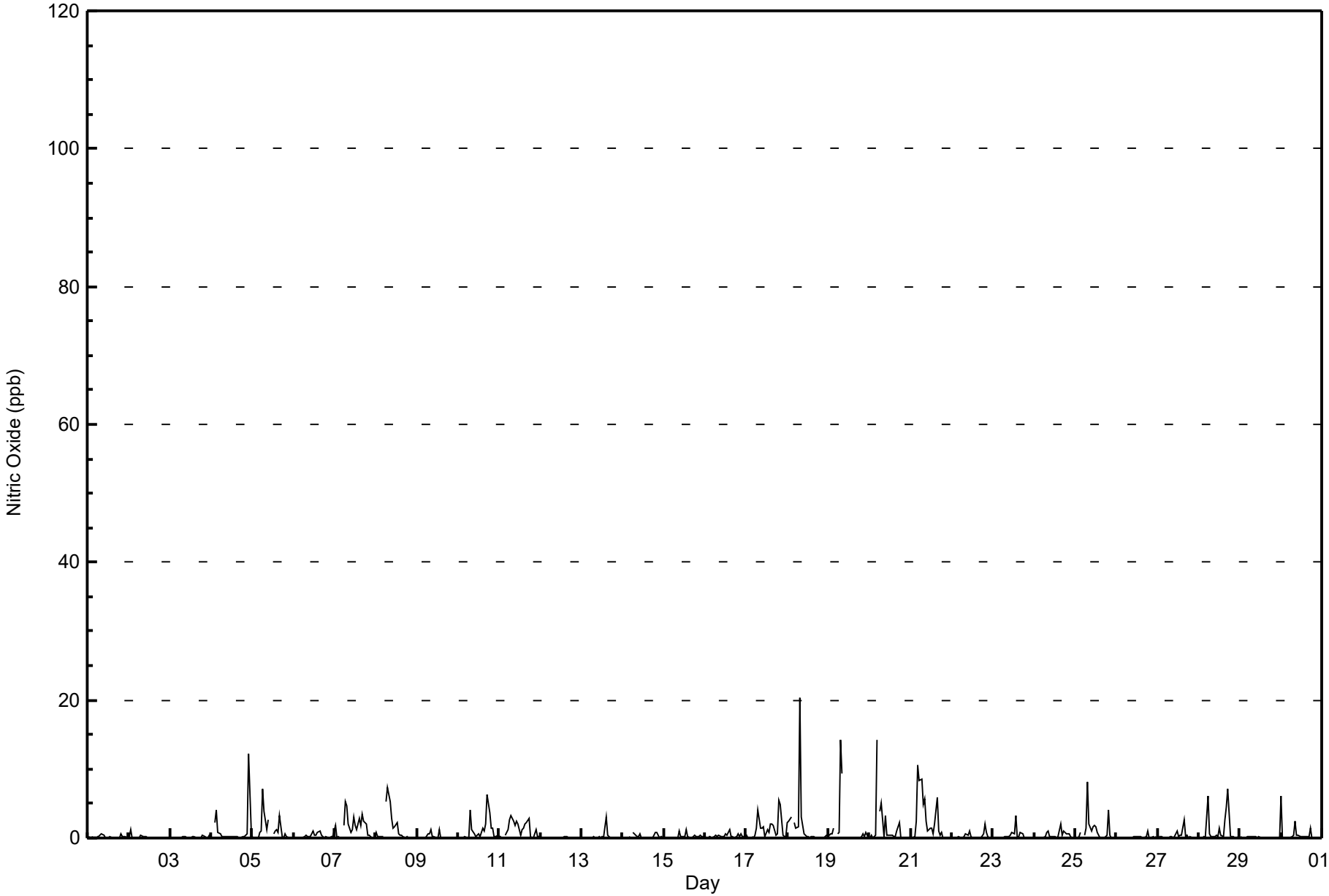
Z - zerospan C - Calibration M - Maintenance

Wood Buffalo Environmental Association

Hourly Averages

Nitric Oxide (NO) - ppb

Conklin - September 2024



Concentration Ranges (ppb)	Number of Hours	%	Cumulative %
0 - 20	682	100.00	100.00
21 - 40	0	0.00	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: 682

Total Number of Hours: 720

Concentration Ranges (ppb)	Wind Direction																
	N	NNE	NE	ENE	E	ESE	SE	SSE	S	SSW	SW	WSW	W	WNW	NW	NNW	**Totals**
0 - 20	34	5	6	7	1	19	30	57	82	106	71	30	45	62	60	67	682
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	34	5	6	7	1	19	30	57	82	106	71	30	45	62	60	67	682

Total Number of Valid Hours: 682

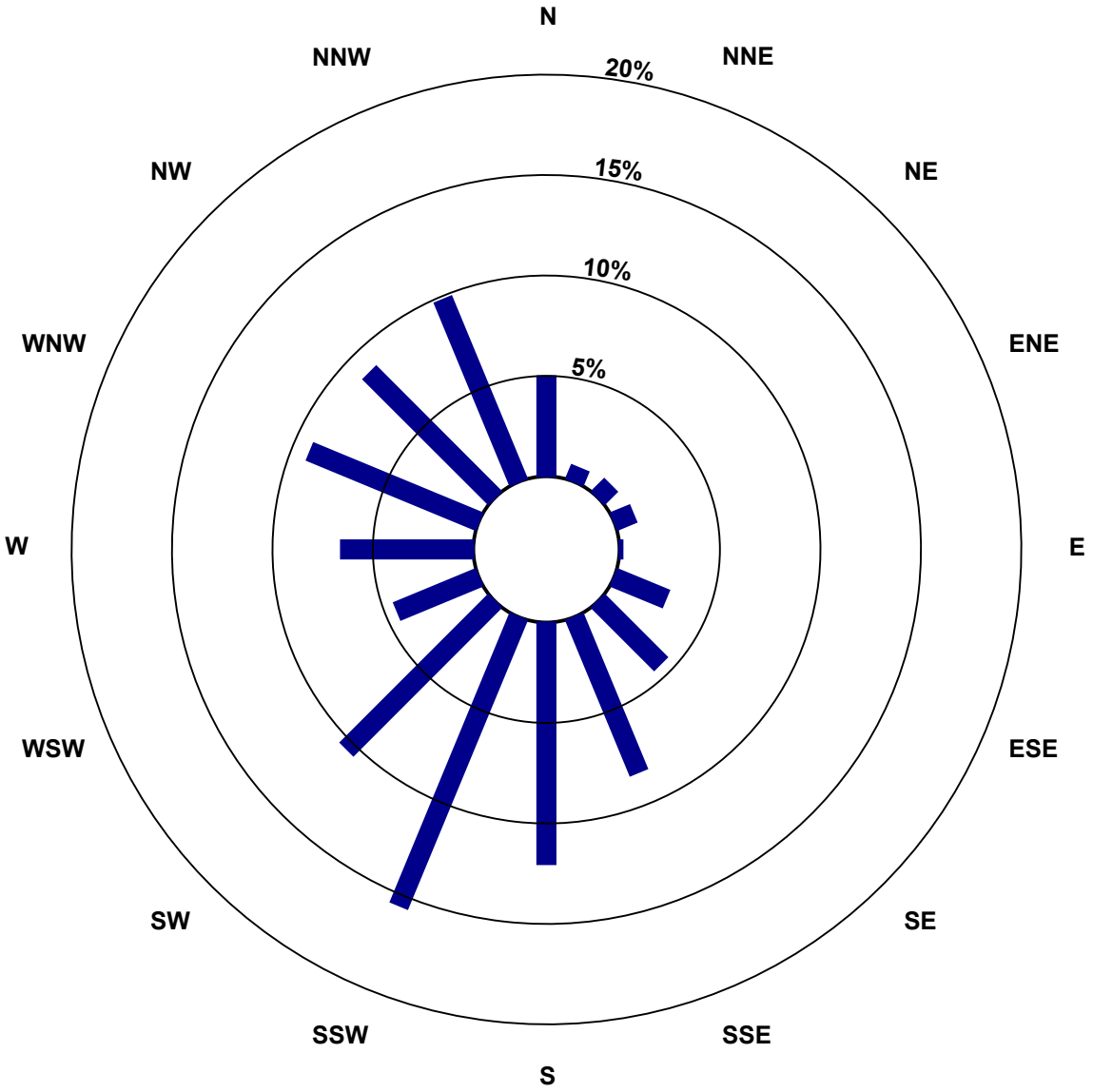
Total Number of Hours: 720

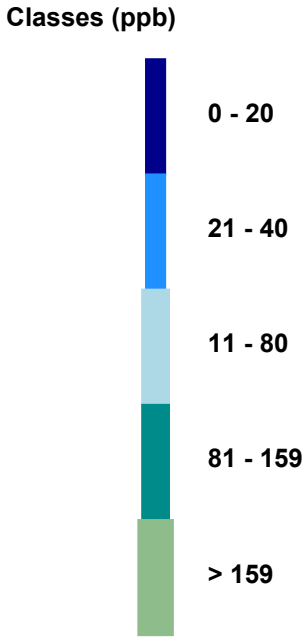
Wood Buffalo Environmental Association

Wind Rose Sep 2024

Nitric Oxide (NO) - ppb

Conklin





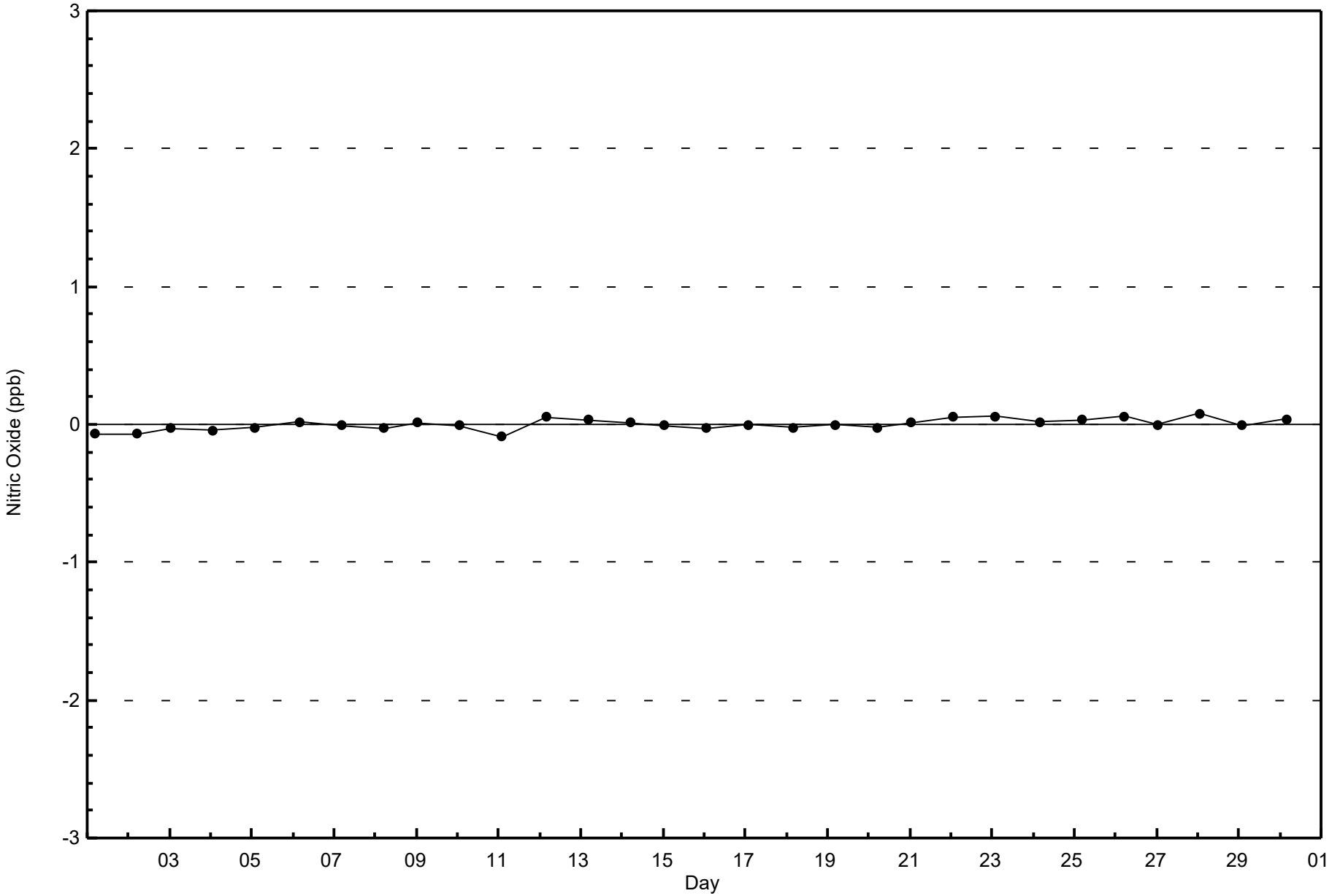
Total Number of Valid Hours: 682

Wood Buffalo Environmental Association

Zero Responses

Nitric Oxide (NO) - ppb

Conklin - September 2024

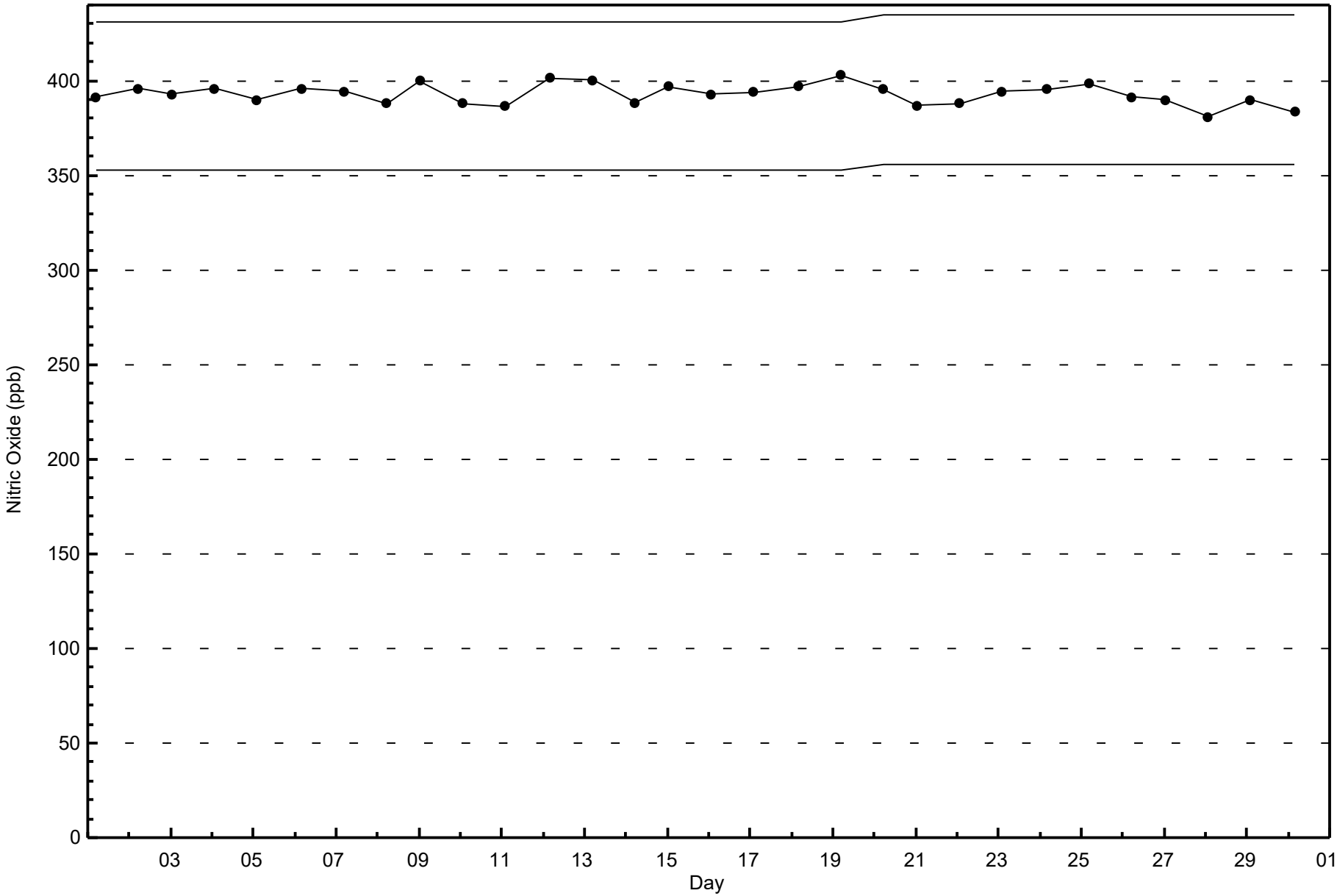


Wood Buffalo Environmental Association

Span Responses

Nitric Oxide (NO) - ppb

Conklin - September 2024



Wood Buffalo Environmental Association

Summary of Hour Averages

Nitrogen Dioxide (NO_2) - ppb

Conklin - September 2024

Number of Exceedences (AAAQO): 1-hr: 0 24-hr: 0
Maximum Value: 9.6 ppb on Sep 10 19:00 Maximum Daily Average: 3.2 ppb on Sep 7

Minimum Value: 0.2 ppb on Sep 15 17:00
Maximum Diurnal Average: 2.5 ppb at hour 20
Monthly Average: 1.51 ppb

Minimum Daily Average: 0.7 ppb on Sep 15
Minimum Diurnal Average: 1.1 ppb at hour 4
Percentiles: P_1 = 0.3 P_{10} = 0.5 Q_1 = 0.7 Median = 1.1 Q_3 = 1.9 P_{90} = 3.1 P_{99} = 6.9

Hours in Service:	720
Hours of Data:	682
Hours of Missing Data:	38
Hours of Calibration:	36
Percent Operational Time:	99.7

Day	Hourly Period Ending At (MST)																								Daily	Daily
	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24	Average	Maximum
1-Sep	1.2	1.1	1.3	0.9	Z	1.2	0.9	1.3	1.6	1.3	0.6	0.6	0.6	0.8	0.5	0.5	0.5	0.6	1.0	5.0	1.8	1.2	0.8	0.7	1.1	5.0
2-Sep	0.7	1.1	0.9	0.7	0.6	Z	0.9	1.4	0.9	1.1	1.2	0.8	0.7	0.6	0.5	0.4	0.5	0.9	1.4	1.0	0.6	0.6	0.6	0.5	0.8	1.4
3-Sep	Z	1.0	1.4	0.9	1.1	1.4	1.2	1.5	1.3	1.2	0.9	0.8	0.7	0.7	0.9	1.0	1.1	1.2	1.0	2.0	1.7	0.9	1.3	2.5	1.2	2.5
4-Sep	1.8	Z	2.2	3.5	1.2	1.1	1.1	0.8	0.4	0.5	0.5	0.4	0.5	0.7	0.6	0.6	0.5	0.6	0.9	1.1	1.8	1.9	9.3	4.2	1.6	9.3
5-Sep	1.0	0.4	Z	0.4	1.7	1.0	3.2	2.6	2.1	2.7	M	M	1.0	1.8	1.8	1.6	3.8	1.3	1.0	4.8	2.0	1.2	1.6	1.9	1.9	4.8
6-Sep	1.5	1.3	1.2	Z	1.4	1.6	2.5	2.5	1.9	2.1	2.0	3.0	2.0	1.9	2.4	2.8	2.5	1.8	1.6	2.2	2.2	1.2	2.3	1.3	2.0	3.0
7-Sep	4.8	4.8	2.5	1.4	Z	3.1	3.2	4.5	3.7	2.4	2.7	4.3	3.9	2.8	3.6	3.4	4.3	5.6	4.7	2.3	2.0	1.2	1.0	1.2	3.2	5.6
8-Sep	2.2	0.9	0.9	0.4	0.3	Z	0.9	4.2	6.2	4.9	3.8	5.3	5.2	1.6	1.6	1.5	1.4	1.1	3.2	3.5	2.4	2.3	2.1	2.3	2.5	6.2
9-Sep	Z	2.1	5.3	3.7	2.7	2.4	3.2	3.0	2.9	1.5	1.1	0.9	0.9	1.9	0.5	0.5	0.4	0.5	0.6	0.5	0.5	0.7	0.7	0.7	1.6	5.3
10-Sep	0.4	Z	0.7	0.5	0.9	0.6	0.8	2.9	0.8	0.8	0.7	0.7	1.0	0.8	1.5	1.5	2.4	4.5	9.6	6.8	4.3	2.1	1.7	1.7	2.1	9.6
11-Sep	1.1	0.7	Z	1.1	0.9	0.8	0.7	1.1	2.9	2.5	2.5	3.1	1.7	2.3	3.5	3.6	3.8	7.4	1.4	3.0	2.3	5.6	4.1	2.9	2.6	7.4
12-Sep	2.2	1.3	0.6	Z	0.9	0.7	0.9	0.9	1.4	1.6	0.8	0.8	0.9	0.8	1.1	1.7	1.6	0.9	0.9	0.8	1.2	1.0	1.8	1.9	1.2	2.2
13-Sep	1.5	1.5	2.0	1.2	Z	2.0	2.3	2.3	1.7	1.4	1.8	1.7	2.3	1.3	3.0	2.5	2.2	2.6	3.5	3.5	3.8	2.9	1.7	1.3	2.2	3.8
14-Sep	1.0	1.2	1.2	0.8	0.8	Z	1.5	1.1	0.7	0.8	1.2	0.7	0.6	0.5	0.6	0.6	0.6	0.8	2.7	1.6	1.0	0.5	0.4	1.0	1.0	2.7
15-Sep	Z	0.5	0.6	0.5	0.5	0.6	0.5	0.6	0.7	1.1	0.4	0.5	0.5	1.1	0.5	0.4	0.2	0.8	1.2	1.4	1.2	1.0	0.6	0.4	0.7	1.4
16-Sep	0.4	Z	0.6	0.7	0.6	0.8	1.0	0.7	0.9	0.9	0.9	0.7	0.9	0.7	1.2	0.7	1.3	0.8	1.9	1.9	1.3	1.2	0.8	1.1	1.0	1.9
17-Sep	0.8	0.4	Z	1.0	0.7	0.8	1.2	2.5	2.2	1.8	2.3	1.0	2.2	2.0	2.6	3.4	3.3	4.3	9.0	8.5	4.3	1.6	1.0	0.7	2.5	9.0
18-Sep	1.8	2.0	2.0	Z	1.8	1.2	1.3	3.8	3.2	3.4	1.4	1.0	0.8	0.4	0.6	0.8	0.5	0.6	0.6	0.8	0.6	0.6	0.6	0.7	1.3	3.8
19-Sep	0.8	0.8	0.8	1.2	Z	1.0	0.7	4.4	4.1	C	C	C	C	C	C	0.7	0.8	1.7	1.5	3.0	2.1	1.8	1.4	0.4	--	4.4
20-Sep	0.5	0.7	0.3	0.6	2.4	Z	2.9	3.9	1.7	2.8	1.4	1.5	1.2	1.1	0.7	0.9	3.0	4.9	1.6	1.5	1.4	1.0	0.7	0.5	1.6	4.9
21-Sep	Z	0.8	0.7	1.2	2.2	2.4	3.1	2.0	1.9	1.3	1.1	0.9	1.2	0.8	1.5	3.6	1.4	0.9	2.3	0.9	0.8	0.7	1.6	1.7	1.5	3.6
22-Sep	1.5	Z	1.4	1.5	1.9	1.8	1.7	1.6	2.2	1.4	1.5	0.7	0.6	0.6	0.5	0.4	0.7	0.8	2.2	2.5	1.2	0.7	0.5	0.5	1.2	2.5
23-Sep	0.5	0.6	Z	0.6	0.8	0.9	1.7	1.3	0.8	0.9	0.5	1.1	0.6	2.8	0.3	0.6	1.3	1.4	0.5	0.6	0.6	0.8	0.5	0.5	0.9	2.8
24-Sep	0.5	0.5	0.6	Z	0.7	0.6	0.6	1.0	0.5	0.5	0.5	0.5	0.5	0.4	0.5	1.9	1.3	3.6	7.1	4.2	2.9	1.3	0.9	0.5	1.4	7.1
25-Sep	0.7	1.1	0.8	1.1	Z	1.7	2.5	4.3	2.8	1.8	2.3	2.6	2.5	1.8	0.9	0.8	0.8	1.0	4.7	7.4	2.2	1.4	1.2	1.2	2.1	7.4
26-Sep	0.4	0.3	0.5	0.4	1.0	Z	0.7	0.8	0.5	1.5	1.1	0.6	0.6	0.5	0.5	0.3	0.4	0.8	2.5	1.5	1.2	0.6	0.4	1.3	0.8	2.5
27-Sep	Z	1.5	1.3	1.3	1.4	2.3	1.2	0.7	0.9	0.4	0.6	1.7	0.8	1.5	1.5	2.8	1.3	4.2	0.8	1.0	0.9	0.7	0.6	0.3	1.3	4.2
28-Sep	0.3	Z	0.4	0.7	0.3	1.1	5.0	1.1	0.6	0.5	0.8	0.5	0.5	0.8	0.4	2.1	2.6	6.8	1.6	1.1	0.7	0.5	0.3	0.6	1.3	6.8
29-Sep	0.5	0.5	Z	0.8	1.2	1.6	1.1	0.6	0.4	0.6	0.3	0.3	0.2	0.2	0.2	0.3	0.2	0.2	1.4	1.5	1.5	1.4	0.8	0.8	0.7	1.6
30-Sep	2.9	0.5	0.5	Z	0.7	0.5	0.7	1.1	1.4	0.8	0.9	0.5	0.5	0.6	0.5	0.5	0.6	0.8	0.5	0.3	0.5	0.5	0.6	0.4	0.7	2.9
	1.2	1.1	1.2	1.1	1.1	1.3	1.6	2.0	1.8	1.5	1.3	1.3	1.2	1.2	1.2	1.4	1.5	2.1	2.4	2.5	1.7	1.3	1.4	1.2	Diurnal Average	
	4.8	4.8	5.3	3.7	2.7	3.1	5.0	4.5	6.2	4.9	3.8	5.3	5.2	2.8	3.6	3.6	4.3	7.4	9.6	8.5	4.3	5.6	9.3	4.2	Diurnal Maximum	

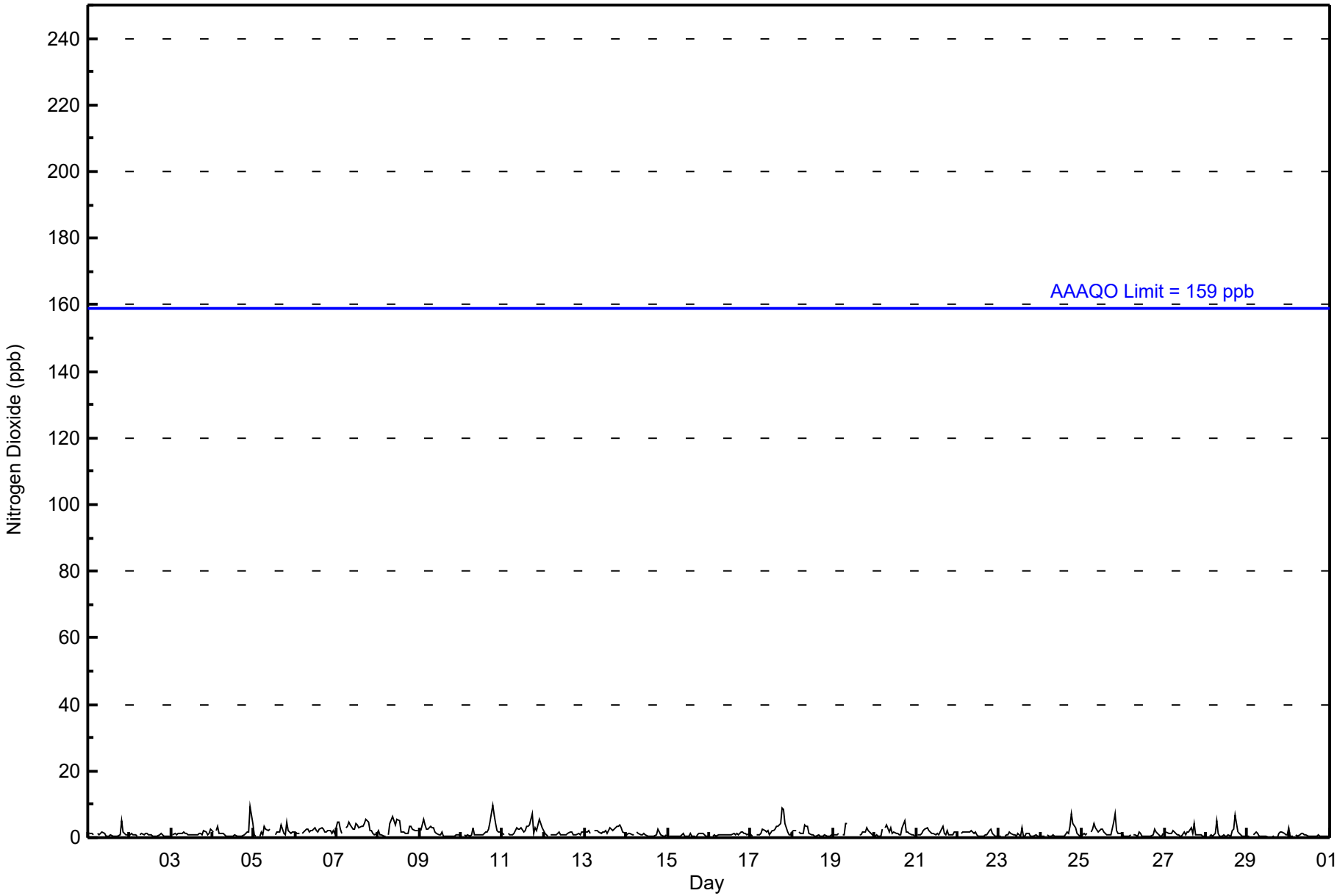
Z - zerospan C - Calibration M - Maintenance
Alberta Ambient Air Quality Objectives (AAAQO): 1-hr 159 ppb

Wood Buffalo Environmental Association

Hourly Averages

Nitrogen Dioxide (NO_2) - ppb

Conklin - September 2024



Nitrogen Dioxide (NO_2) - ppb
Conklin - September 2024

Concentration Ranges (ppb)	Number of Hours	%	Cumulative %
0 - 20	682	100.00	100.00
21 - 40	0	0.00	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: 682

Total Number of Hours: 720

Nitrogen Dioxide (NO_2) - ppb
Conklin - September 2024

Concentration Ranges (ppb)	Wind Direction																
	N	NNE	NE	ENE	E	ESE	SE	SSE	S	SSW	SW	WSW	W	WNW	NW	NNW	**Totals**
0 - 20	34	5	6	7	1	19	30	57	82	106	71	30	45	62	60	67	682
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	34	5	6	7	1	19	30	57	82	106	71	30	45	62	60	67	682

Total Number of Valid Hours: 682

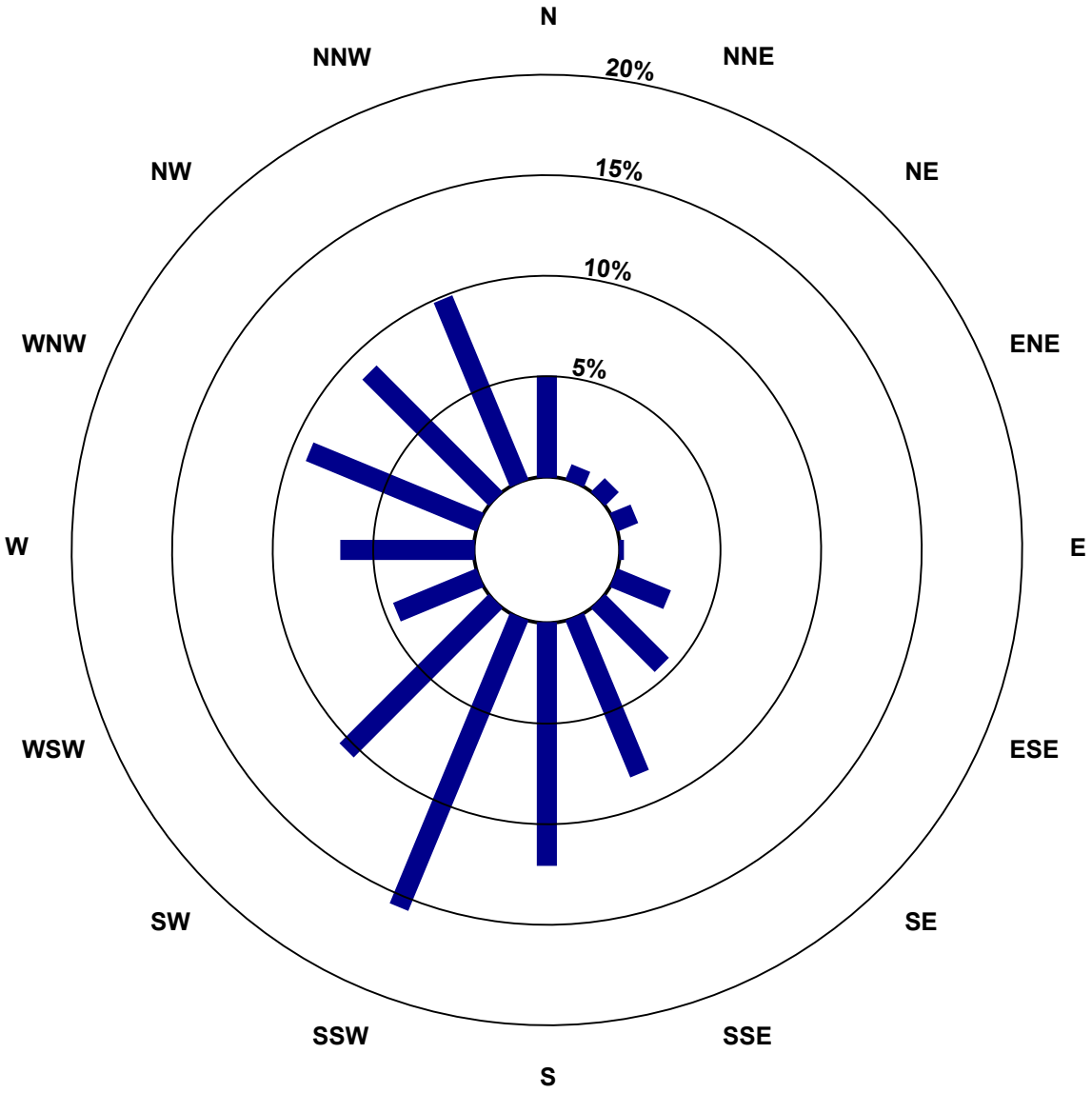
Total Number of Hours: 720

Wood Buffalo Environmental Association

Wind Rose Sep 2024

Nitrogen Dioxide (NO_2) - ppb

Conklin



Classes (ppb)

0 - 20

21 - 40

11 - 80

81 - 159

> 159

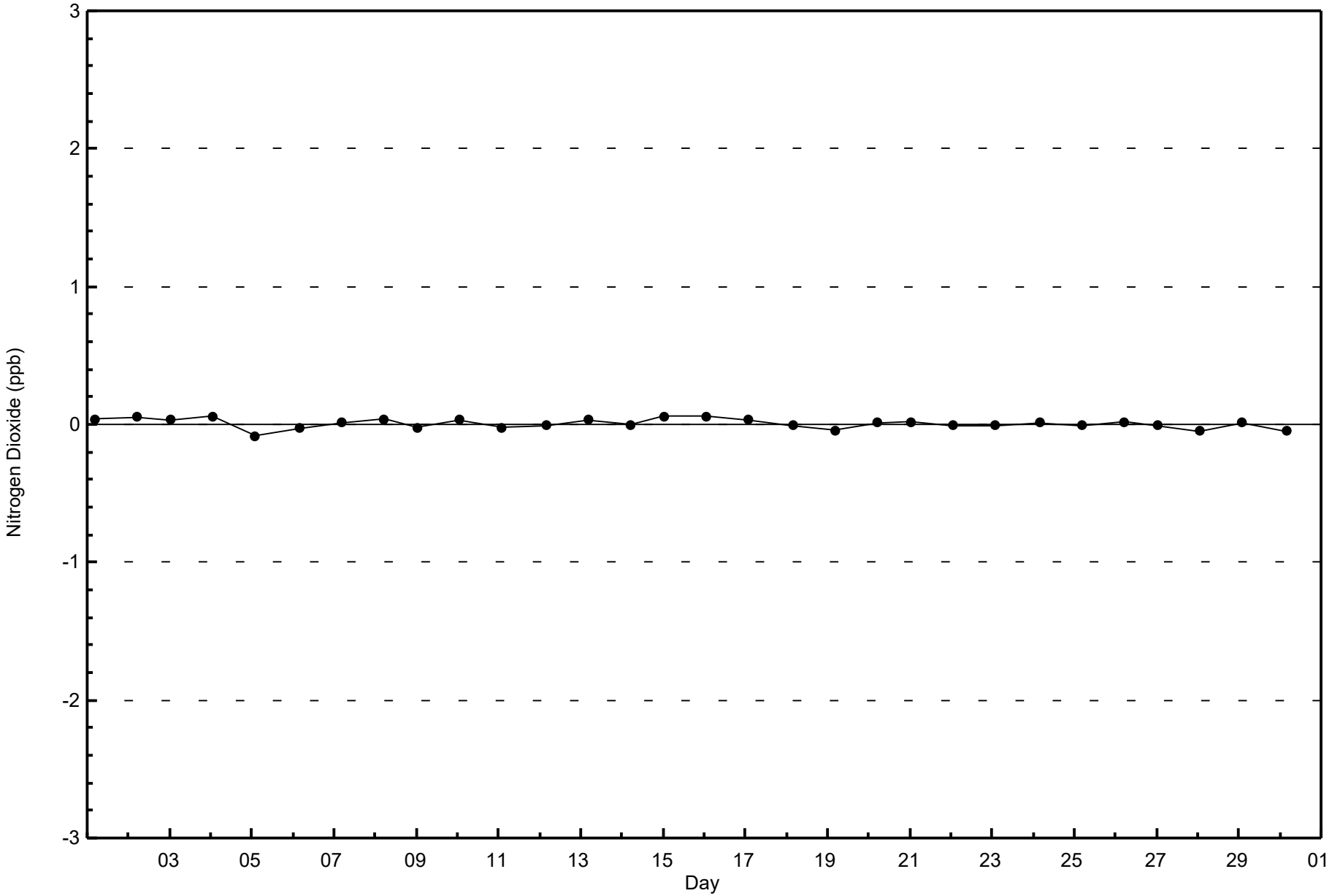
Total Number of Valid Hours: 682

Wood Buffalo Environmental Association

Zero Responses

Nitrogen Dioxide (NO_2) - ppb

Conklin - September 2024

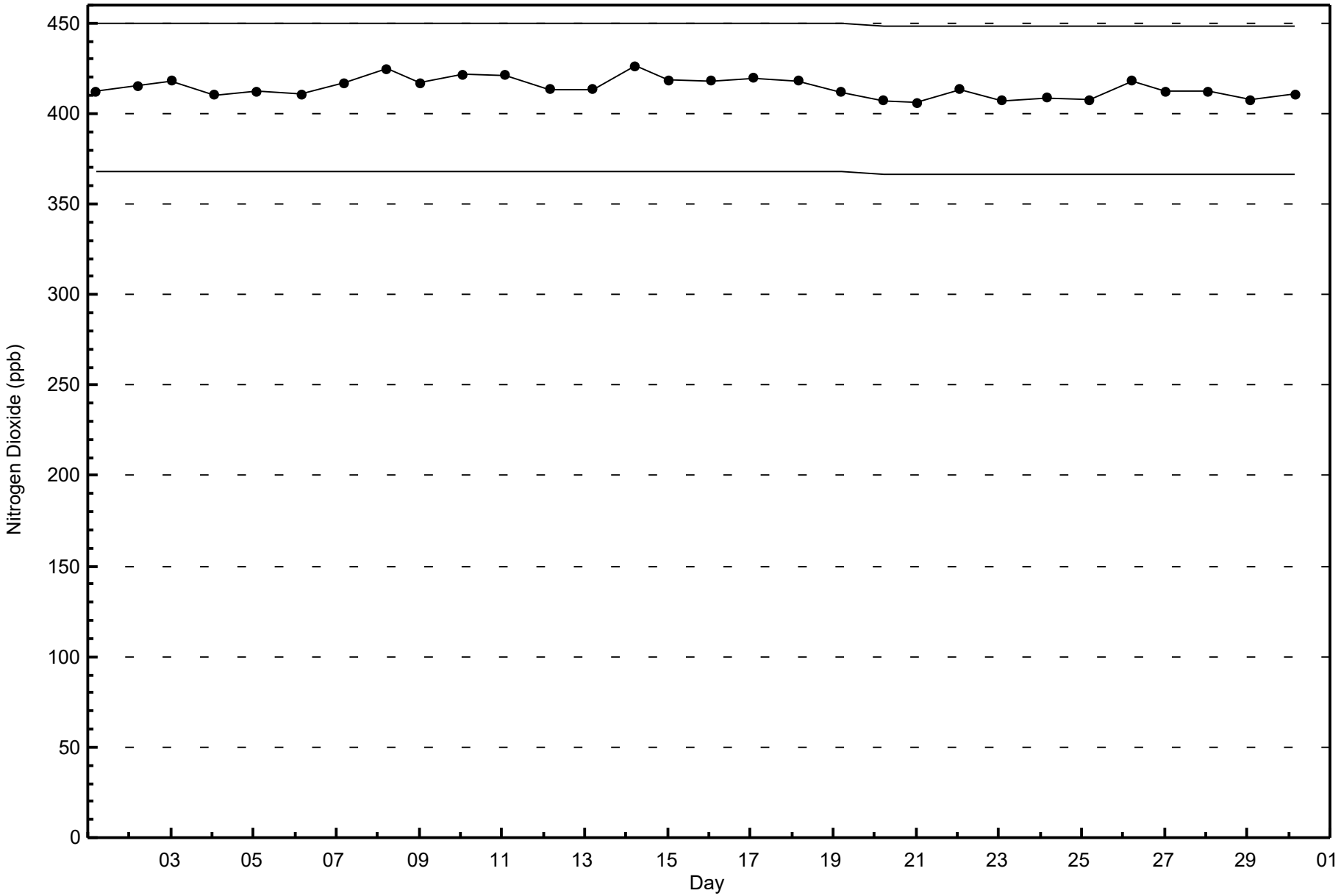


Wood Buffalo Environmental Association

Span Responses

Nitrogen Dioxide (NO_2) - ppb

Conklin - September 2024



Wood Buffalo Environmental Association

Summary of Hour Averages

Nitrogen Oxides (NO_X) - ppb

Conklin - September 2024

Maximum Value: 24.2 ppb on Sep 18 08:00

Maximum Daily Average: 4.8 ppb on Sep 7

Minimum Value: 0.2 ppb on Sep 29 18:00

Minimum Daily Average: 0.8 ppb on Sep 29

Maximum Diurnal Average: 4.8 ppb at hour 8

Minimum Diurnal Average: 1.3 ppb at hour 24

Monthly Average: 2.25 ppb

Percentiles: P_1 = 0.3 P_{10} = 0.5 Q_1 = 0.8 Median = 1.3 Q_3 = 2.4 P_{90} = 5.2 P_{99} = 13.3

Hours in Service:	720
Hours of Data:	682
Hours of Missing Data:	38
Hours of Calibration:	36
Percent Operational Time:	99.7

Day	Hourly Period Ending At (MST)																								Daily	Daily
	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24	Average	Maximum
1-Sep	1.3	1.1	1.3	1.1	Z	1.4	1.1	1.7	2.1	1.7	0.7	0.7	0.7	0.9	0.5	0.5	0.5	0.6	1.0	5.6	1.9	1.4	1.0	0.7	1.3	5.6
2-Sep	0.8	2.4	1.0	0.8	0.7	Z	1.0	1.7	1.1	1.3	1.3	0.8	0.7	0.6	0.5	0.4	0.5	0.9	1.4	1.0	0.6	0.6	0.6	0.5	0.9	2.4
3-Sep	Z	1.0	1.4	0.9	1.1	1.4	1.2	1.6	1.5	1.3	1.0	0.9	0.8	0.8	1.1	1.1	1.2	1.2	1.0	2.3	1.9	0.9	1.3	3.0	1.3	3.0
4-Sep	1.9	Z	4.5	7.7	2.1	1.8	1.3	1.0	0.6	0.7	0.8	0.6	0.7	0.9	0.7	0.8	0.6	0.7	1.1	1.2	2.1	2.5	21.6	4.8	2.6	21.6
5-Sep	1.0	0.4	Z	0.4	2.5	2.1	10.2	6.5	3.3	5.4	M	M	1.5	2.7	2.9	2.5	7.0	1.6	1.0	5.4	2.2	1.3	1.6	1.9	3.0	10.2
6-Sep	1.5	1.3	1.2	Z	1.4	1.6	2.7	2.9	2.1	2.4	2.3	3.9	2.5	2.4	3.1	3.8	2.9	2.0	1.6	2.3	2.3	1.2	2.6	1.4	2.2	3.9
7-Sep	6.7	4.8	2.7	1.4	Z	5.0	8.4	9.2	5.7	3.1	3.8	7.4	5.8	4.0	6.3	5.3	7.8	8.1	6.7	2.7	2.3	1.3	1.0	1.2	4.8	9.2
8-Sep	3.0	1.1	1.1	0.7	0.6	Z	6.2	11.5	11.5	7.8	5.2	6.9	7.5	2.2	2.0	1.8	1.5	1.1	3.5	3.5	2.4	2.3	2.1	2.3	3.8	11.5
9-Sep	Z	2.1	5.3	3.7	2.7	2.4	3.7	3.5	4.2	1.6	1.3	1.0	1.0	3.2	0.6	0.5	0.4	0.5	0.6	0.5	0.5	0.7	0.7	0.7	1.8	5.3
10-Sep	0.4	Z	0.7	0.5	1.0	0.6	0.8	6.9	1.9	1.4	1.0	1.0	1.6	1.0	2.8	2.5	4.4	10.8	13.3	8.2	5.7	2.3	1.9	2.1	3.2	13.3
11-Sep	1.3	0.8	Z	1.5	1.6	2.0	3.4	4.4	5.3	4.4	4.9	5.1	2.2	3.4	5.0	5.7	6.1	10.2	1.6	3.1	2.3	6.7	4.3	3.1	3.8	10.2
12-Sep	2.2	1.4	0.7	Z	0.9	0.7	0.9	0.9	1.4	1.6	0.8	0.8	0.9	0.8	1.2	1.9	1.7	0.9	0.9	0.8	1.2	1.0	1.8	1.9	1.2	2.2
13-Sep	1.5	1.5	2.0	1.2	Z	2.0	2.4	2.4	1.8	1.5	2.0	1.8	2.5	1.4	6.0	2.9	2.3	2.7	3.5	3.5	3.9	3.0	1.7	1.4	2.4	6.0
14-Sep	1.0	1.2	1.3	0.8	1.1	Z	2.2	1.6	0.9	1.1	1.7	0.8	0.7	0.5	0.7	0.6	0.6	0.8	3.1	2.3	1.7	0.6	0.5	1.2	1.2	3.1
15-Sep	Z	0.6	0.7	0.5	0.6	0.6	0.5	0.6	0.8	2.0	0.6	0.6	0.6	2.4	0.6	0.5	0.3	1.0	1.6	1.7	1.4	1.4	0.8	0.5	0.9	2.4
16-Sep	0.5	Z	0.9	0.9	0.6	0.9	1.3	1.0	1.2	1.2	1.1	1.0	1.6	1.1	2.3	0.9	1.6	0.9	2.2	2.5	1.5	1.8	1.1	1.4	1.3	2.5
17-Sep	1.1	0.5	Z	1.1	0.7	1.1	2.6	6.7	3.6	3.2	3.9	1.2	3.5	2.8	4.5	5.4	5.2	4.7	9.5	14.1	9.1	2.0	1.2	0.8	3.9	14.1
18-Sep	3.9	4.5	5.0	Z	4.1	2.6	2.9	24.2	6.3	5.3	1.9	1.1	0.9	0.5	0.7	0.9	0.6	0.7	0.6	0.9	0.6	0.7	0.7	1.1	3.1	24.2
19-Sep	1.2	1.5	1.4	2.6	Z	1.7	1.5	18.6	13.4	C	C	C	C	C	C	0.7	0.9	1.7	1.5	3.3	2.8	2.0	2.1	0.4	--	18.6
20-Sep	0.5	1.1	0.3	1.0	16.5	Z	6.7	9.1	1.9	6.1	1.8	1.9	1.6	1.5	0.9	1.0	4.0	7.1	1.7	1.6	1.5	1.0	0.7	0.5	3.0	16.5
21-Sep	Z	0.8	0.9	3.6	12.7	10.8	11.6	6.8	7.6	3.8	2.1	2.2	2.7	1.5	3.5	9.4	2.4	1.3	3.2	1.0	0.8	0.7	1.6	1.7	4.0	12.7
22-Sep	1.6	Z	1.4	1.5	2.0	1.8	1.7	1.8	2.8	1.7	2.6	1.0	0.7	0.6	0.5	0.4	0.7	0.8	2.9	4.5	2.1	0.9	0.5	0.5	1.5	4.5
23-Sep	0.5	0.6	Z	0.6	0.8	0.9	1.8	1.5	0.9	1.1	0.9	2.0	1.3	6.0	0.4	0.9	2.1	2.0	0.5	0.6	0.6	0.8	0.6	0.5	1.2	6.0
24-Sep	0.5	0.5	0.6	Z	0.7	0.6	0.7	1.7	1.5	0.7	0.7	0.7	0.6	0.5	0.6	4.0	1.7	4.7	7.9	4.8	3.4	1.5	0.9	0.6	1.7	7.9
25-Sep	0.8	1.1	0.9	2.0	Z	2.1	4.0	12.3	4.8	2.7	3.9	4.5	4.0	2.6	1.0	0.8	0.8	1.0	5.1	11.4	2.7	1.4	1.2	1.2	3.2	12.3
26-Sep	0.4	0.3	0.5	0.4	1.0	Z	0.7	0.8	0.5	1.5	1.2	0.7	0.7	0.6	0.7	0.4	0.5	1.1	3.5	1.5	1.2	0.8	0.4	1.5	0.9	3.5
27-Sep	Z	1.8	1.4	1.3	1.4	2.3	1.3	0.8	1.2	0.5	0.8	2.6	1.0	1.9	1.9	5.5	1.4	4.7	0.8	1.2	1.0	0.7	0.7	0.3	1.6	5.5
28-Sep	0.3	Z	0.4	0.9	0.3	7.2	5.7	1.3	0.8	0.7	1.3	0.7	2.0	1.1	0.7	4.7	7.1	13.9	1.7	1.2	0.9	0.6	0.4	0.8	2.4	13.9
29-Sep	0.6	0.6	Z	0.9	1.4	1.8	1.3	0.7	0.6	0.8	0.4	0.4	0.3	0.3	0.3	0.3	0.2	0.2	1.4	1.5	1.5	1.4	0.8	0.8	0.8	1.8
30-Sep	9.1	0.5	0.5	Z	0.8	0.6	0.8	1.4	3.9	1.2	1.3	0.7	0.7	0.9	0.7	0.6	0.8	2.2	0.5	0.3	0.5	0.5	0.7	0.4	1.3	9.1
	1.7	1.3	1.5	1.5	2.4	2.2	3.0	4.8	3.2	2.3	1.8	1.9	1.8	1.7	1.8	2.2	2.3	3.0	2.8	3.2	2.1	1.5	1.9	1.3	Diurnal Average	
	9.1	4.8	5.3	7.7	16.5	10.8	11.6	24.2	13.4	7.8	5.2	7.4	7.5	6.0	6.3	9.4	7.8	13.9	13.3	14.1	9.1	6.7	21.6	4.8	Diurnal Maximum	

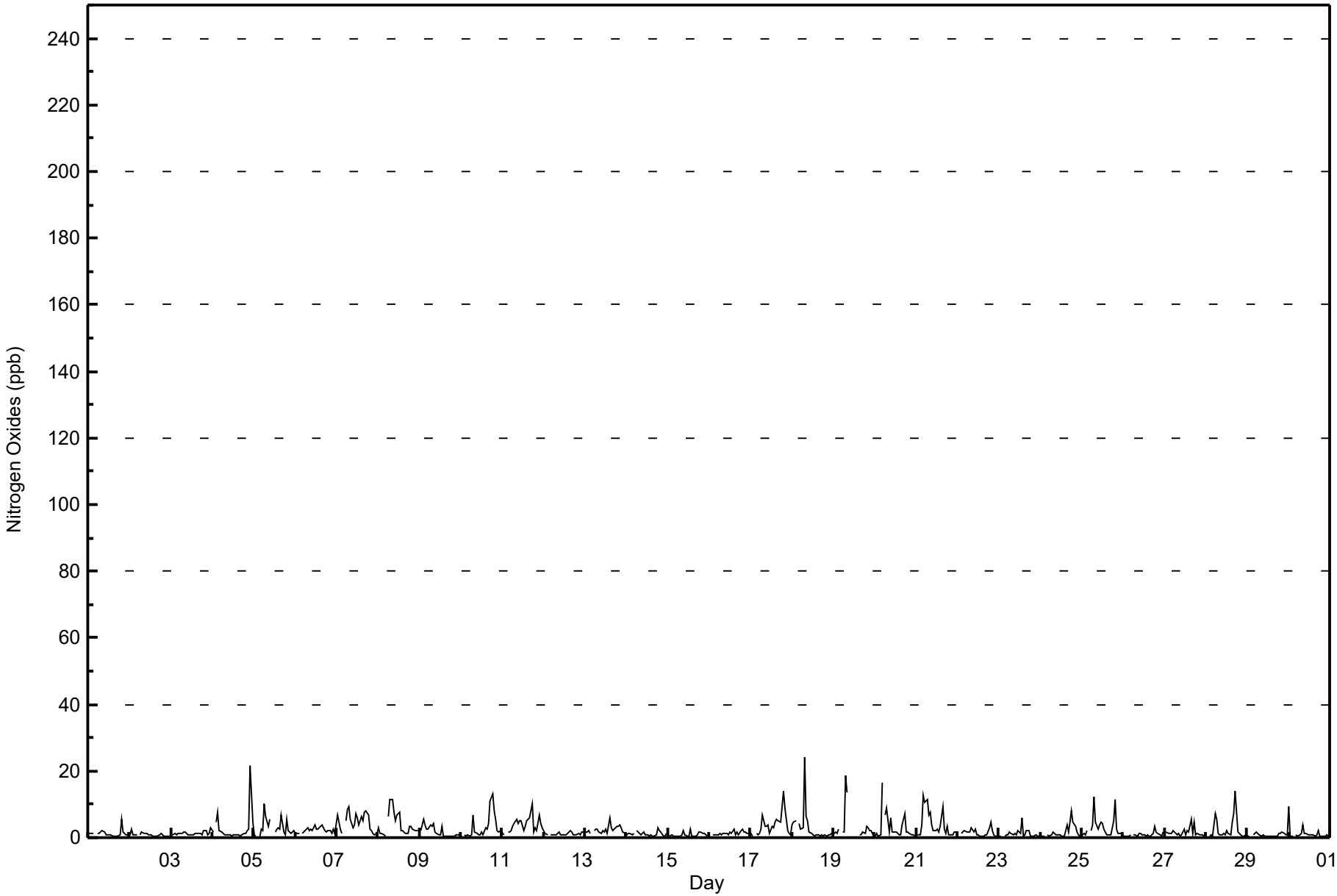
Z - zerospan C - Calibration M - Maintenance

Wood Buffalo Environmental Association

Hourly Averages

Nitrogen Oxides (NO_X) - ppb

Conklin - September 2024



Nitrogen Oxides (NO_X) - ppb
Conklin - September 2024

Concentration Ranges (ppb)	Number of Hours	%	Cumulative %
0 - 20	680	99.71	99.71
21 - 40	2	0.29	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: 682

Total Number of Hours: 720

Wood Buffalo Environmental Association

Frequency Distribution

Nitrogen Oxides (NO_X) - ppb

Conklin - September 2024

Concentration Ranges (ppb)	Wind Direction																
	N	NNE	NE	ENE	E	ESE	SE	SSE	S	SSW	SW	WSW	W	WNW	NW	NNW	**Totals**
0 - 20	34	5	6	7	1	18	30	57	82	105	71	30	45	62	60	67	680
21 - 40	0	0	0	0	0	1	0	0	0	1	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	34	5	6	7	1	19	30	57	82	106	71	30	45	62	60	67	682

Total Number of Valid Hours: 682

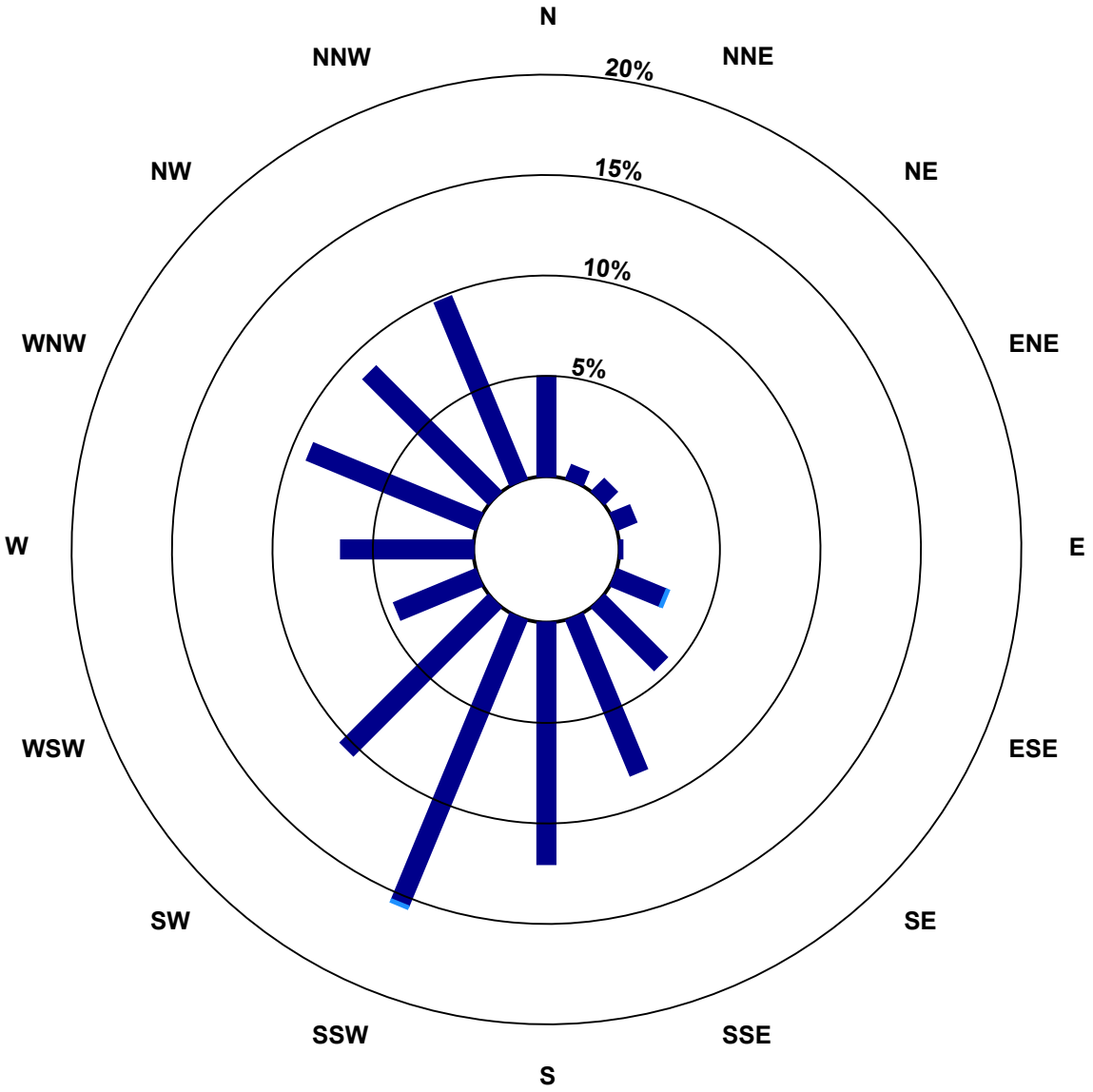
Total Number of Hours: 720

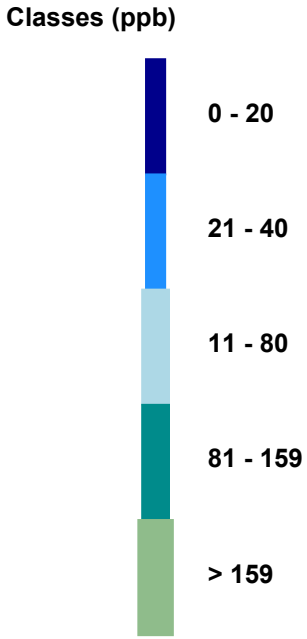
Wood Buffalo Environmental Association

Wind Rose Sep 2024

Nitrogen Oxides (NO_X) - ppb

Conklin





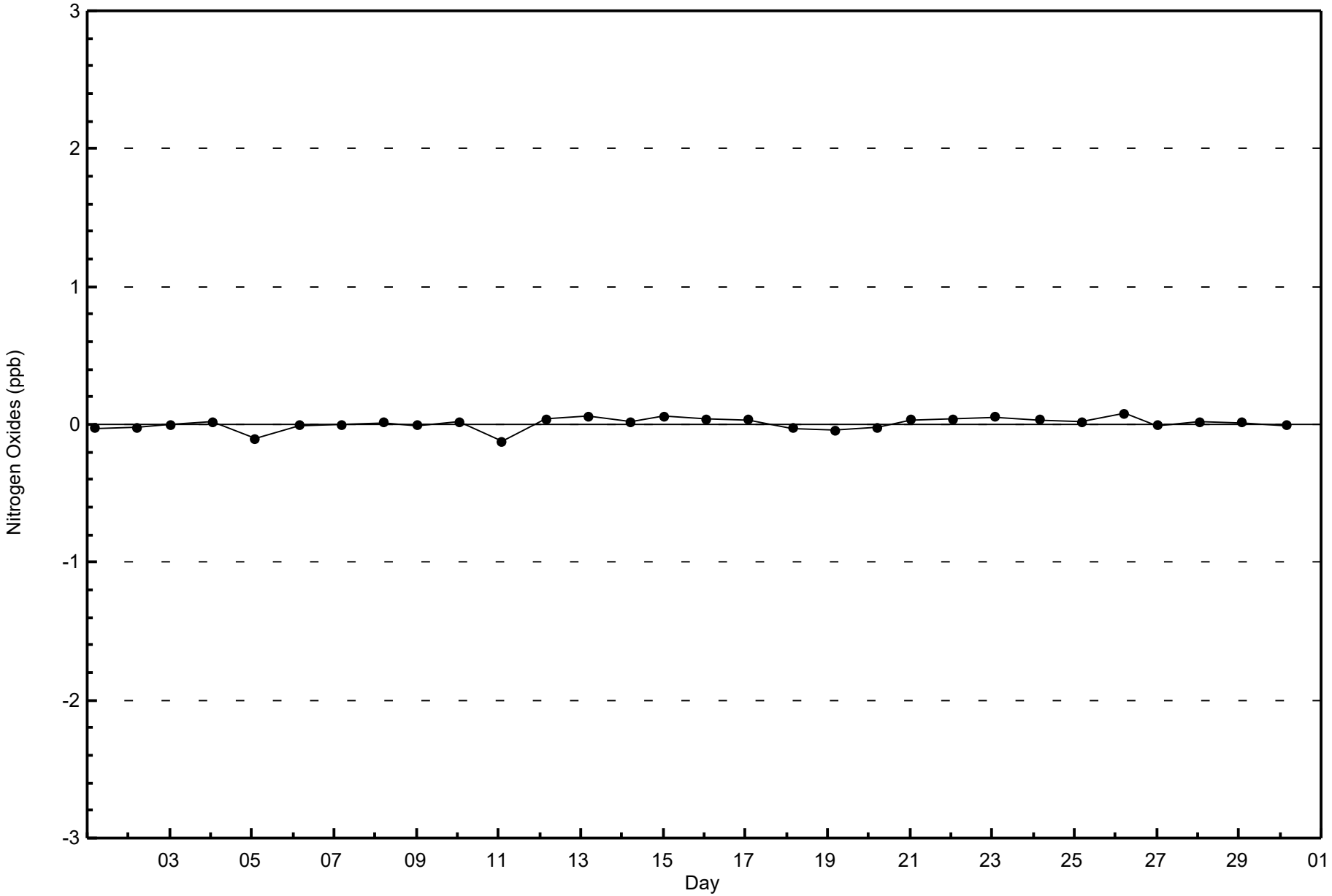
Total Number of Valid Hours: 682

Wood Buffalo Environmental Association

Zero Responses

Nitrogen Oxides (NO_X) - ppb

Conklin - September 2024

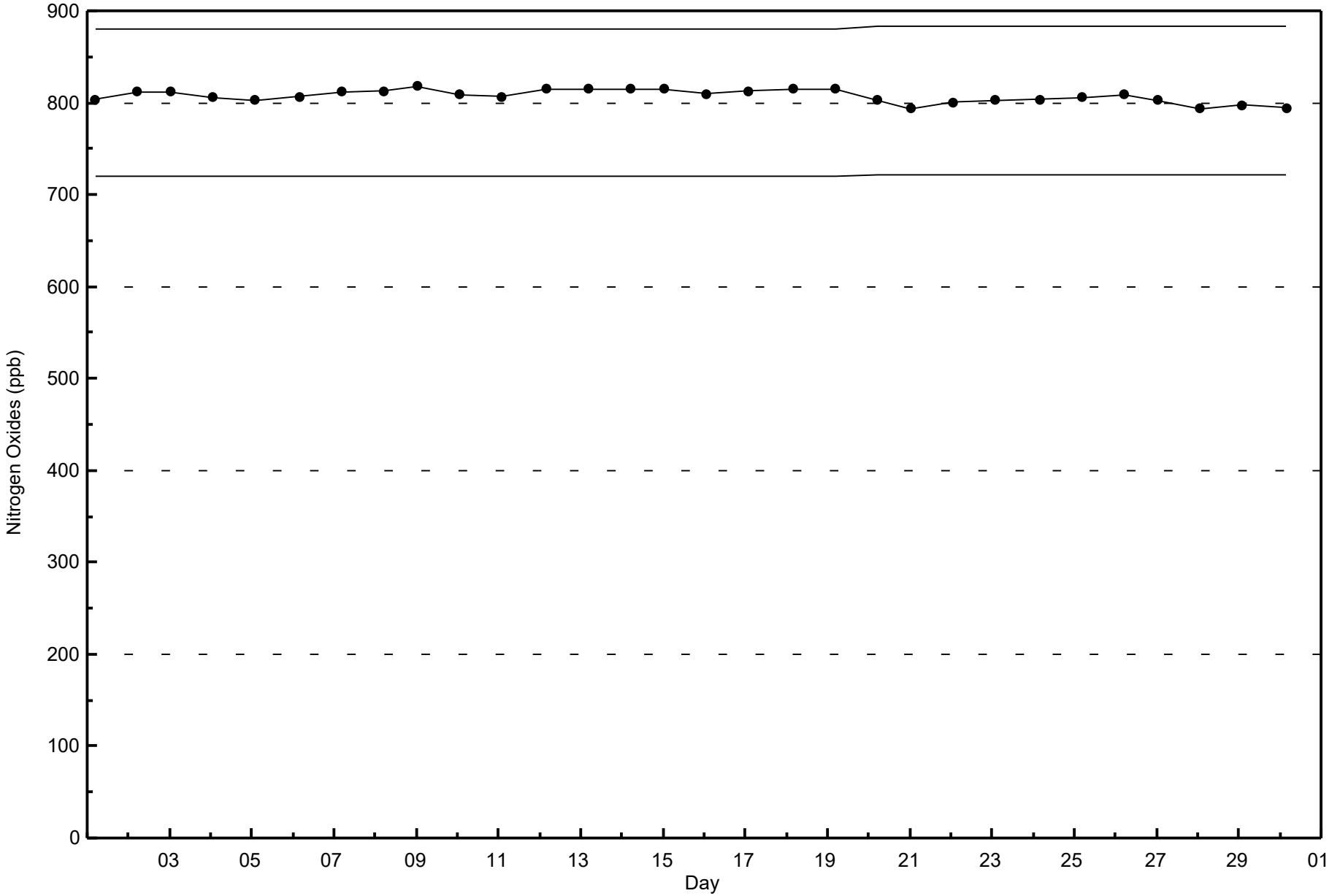


Wood Buffalo Environmental Association

Span Responses

Nitrogen Oxides (NO_X) - ppb

Conklin - September 2024



Wood Buffalo Environmental Association

Summary of Hour Averages

Ozone (O_3) - ppb

Conklin - September 2024

Number of Exceedences (AAAQO): 1-hr: 0 24-hr: 0
Maximum Value: 55.2 ppb on Sep 8 18:00 Maximum Daily Average: 33.6 ppb on Sep 6

Minimum Value: 1.9 ppb on Sep 11 06:00 Minimum Daily Average: 11.7 ppb on Sep 12
Maximum Diurnal Average: 33.6 ppb at hour 16 Minimum Diurnal Average: 12.8 ppb at hour 5
Monthly Average: 21.81 ppb Percentiles: P_1 = 2.3 P_{10} = 6.8 Q_1 = 12.5 Median = 21.7 Q_3 = 30.6 P_{90} = 36.4 P_{99} = 47.1

Hours in Service:	720
Hours of Data:	682
Hours of Missing Data:	38
Hours of Calibration:	36
Percent Operational Time:	99.7

Day	Hourly Period Ending At (MST)																								Daily	Daily
	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24	Average	Maximum
1-Sep	24.8	25.8	Z	22.4	23.5	21.6	21.7	21.7	25.5	32.7	33.2	35.4	41.1	45.1	44.0	42.0	42.4	43.2	41.0	15.3	13.7	12.5	16.9	14.6	28.7	45.1
2-Sep	6.4	4.1	6.6	Z	9.5	11.4	16.3	14.5	22.4	30.1	45.2	47.5	47.9	49.4	51.3	49.9	47.0	44.0	39.7	31.9	25.2	22.9	24.5	25.6	29.3	51.3
3-Sep	23.3	18.6	13.1	12.9	Z	22.6	25.8	25.5	28.8	29.7	29.8	29.3	30.3	34.2	36.1	35.6	33.7	31.7	22.6	13.9	7.4	10.7	15.4	9.5	23.5	36.1
4-Sep	10.3	10.7	5.9	2.1	4.1	Z	8.9	13.8	16.2	17.0	20.6	24.9	28.5	29.5	29.9	28.8	27.5	25.8	25.8	22.9	18.3	14.8	7.4	9.3	17.5	29.9
5-Sep	Z	11.7	11.7	9.7	9.8	6.5	6.4	12.9	20.9	23.5	M	M	33.7	34.8	35.0	35.8	34.1	34.3	28.8	12.9	6.9	7.5	13.5	22.7	19.7	35.8
6-Sep	32.7	Z	32.8	33.5	33.2	31.9	30.0	32.0	35.5	34.3	33.4	32.5	36.9	40.0	38.9	38.1	36.7	39.2	38.6	34.7	32.7	33.2	24.7	18.4	33.6	40.0
7-Sep	11.8	14.5	Z	10.7	6.9	8.6	8.3	9.7	12.4	19.0	20.5	22.5	21.1	26.0	26.5	26.5	24.6	21.0	12.4	14.7	14.7	17.8	18.1	12.6	16.5	26.5
8-Sep	4.9	6.2	6.0	Z	2.2	2.0	2.0	5.6	12.3	22.2	34.6	44.0	40.8	37.8	42.2	45.9	51.9	55.2	40.4	26.2	37.8	33.5	30.9	38.7	27.1	55.2
9-Sep	40.0	33.8	25.3	27.7	Z	39.7	37.3	35.7	35.5	29.4	21.3	21.9	26.2	31.1	36.5	40.5	44.2	44.3	41.1	38.1	33.7	30.3	29.8	27.5	33.5	44.3
10-Sep	26.2	24.3	21.9	22.5	21.5	Z	21.1	17.1	16.4	22.0	25.9	28.8	30.1	30.0	30.7	30.5	31.0	28.9	11.6	7.2	5.8	6.2	5.1	5.0	20.4	31.0
11-Sep	Z	3.0	2.4	2.3	2.0	1.9	2.0	4.0	11.3	14.8	C	C	C	C	C	C	35.1	28.8	31.7	19.4	16.7	11.7	6.8	6.8	--	35.1
12-Sep	7.6	Z	5.0	8.0	8.4	12.2	13.4	9.3	11.8	11.7	12.8	13.1	13.4	12.5	11.9	12.6	13.6	13.8	14.1	13.1	12.4	12.2	12.8	13.1	11.7	14.1
13-Sep	12.8	11.3	Z	12.1	11.0	10.1	11.3	14.8	14.7	13.4	15.0	16.4	15.6	13.3	11.2	13.1	13.5	14.1	13.3	12.7	13.2	13.1	14.7	14.7	13.3	16.4
14-Sep	14.4	16.7	14.4	Z	6.3	5.1	5.0	10.1	13.9	17.2	26.2	29.8	28.0	32.1	35.7	37.8	35.1	28.6	11.3	8.7	8.1	8.7	5.8	9.0	17.7	37.8
15-Sep	10.7	9.5	10.1	14.4	Z	14.2	19.1	16.5	15.2	17.9	23.6	22.9	25.4	25.3	25.7	25.5	29.9	19.2	10.3	11.4	11.0	9.1	8.8	9.9	16.8	29.9
16-Sep	11.0	11.5	12.3	14.3	15.4	Z	17.7	18.7	23.6	27.5	27.6	31.4	33.4	34.6	35.9	35.9	32.4	26.8	12.7	7.7	6.3	4.9	8.3	11.6	20.1	35.9
17-Sep	Z	8.8	10.5	9.5	8.8	8.0	7.4	12.5	19.4	26.9	34.6	39.7	40.9	42.8	42.4	41.8	41.1	29.8	14.0	4.1	4.4	7.0	8.4	5.4	20.4	42.8
18-Sep	4.4	Z	3.2	4.0	3.3	3.7	3.4	5.6	15.1	28.5	39.7	35.6	34.3	30.3	28.3	26.9	26.9	24.5	19.7	17.2	11.9	10.2	6.1	5.0	16.9	39.7
19-Sep	4.1	3.5	Z	4.0	4.7	3.5	3.5	5.2	12.8	28.0	31.3	33.1	34.5	36.1	33.6	32.6	33.0	26.1	18.0	9.6	8.1	7.8	15.5	12.2	17.4	36.1
20-Sep	7.0	5.8	6.1	Z	5.3	5.5	5.8	13.2	17.9	14.7	19.4	18.8	24.1	27.8	31.0	30.3	26.6	20.8	21.7	17.9	17.3	18.4	17.9	15.7	16.9	31.0
21-Sep	14.1	9.7	5.0	4.0	Z	3.3	4.6	6.9	8.5	13.2	19.0	20.6	23.4	27.3	28.9	26.3	28.1	23.8	21.0	21.9	26.1	27.1	26.1	19.7	17.8	28.9
22-Sep	25.3	25.5	23.8	22.0	19.7	Z	19.2	18.0	15.4	17.2	18.3	21.8	26.0	28.1	28.7	28.6	27.3	22.4	10.3	7.1	5.7	9.9	12.8	10.5	19.3	28.7
23-Sep	Z	16.5	16.3	15.3	13.7	12.5	14.1	15.9	19.4	19.0	19.9	19.4	22.1	22.0	23.0	26.2	25.8	25.5	24.0	22.1	19.1	19.1	20.4	21.1	19.7	26.2
24-Sep	19.9	Z	18.4	17.6	16.6	16.3	16.0	16.1	21.3	25.3	30.4	35.0	38.2	39.9	40.7	42.7	42.1	40.6	27.0	16.3	18.8	16.5	12.6	9.1	25.1	42.7
25-Sep	7.9	7.2	Z	6.7	6.0	6.2	6.3	6.9	13.9	21.0	29.3	31.2	32.1	33.8	35.7	38.7	36.0	32.5	17.1	11.8	15.8	20.9	23.9	13.2	19.7	38.7
26-Sep	24.0	29.9	30.3	Z	29.6	28.4	28.1	31.4	32.3	30.6	29.0	27.4	29.8	34.3	37.7	41.5	42.7	40.5	38.7	32.5	27.1	29.7	26.6	27.6	31.7	42.7
27-Sep	25.8	19.1	11.7	13.7	Z	22.6	19.5	15.9	26.1	33.4	38.9	40.4	41.7	41.1	40.7	39.8	38.3	33.6	32.2	24.2	23.0	21.2	22.8	23.4	28.2	41.7
28-Sep	24.1	28.4	28.5	26.9	28.5	Z	24.1	28.2	31.6	31.2	30.8	31.4	33.1	34.3	35.3	33.7	31.4	26.8	27.5	23.0	22.8	18.0	10.7	8.8	26.9	35.3
29-Sep	Z	6.1	8.2	8.3	9.3	9.0	7.2	23.0	29.7	32.4	34.2	34.3	34.6	34.8	34.3	32.3	31.7	33.2	27.6	23.5	20.8	23.4	25.2	23.0	23.8	34.8
30-Sep	20.8	Z	18.2	18.5	19.9	20.5	20.5	19.7	21.3	22.7	24.8	28.7	31.2	32.1	33.6	34.6	34.1	33.5	32.8	33.7	31.2	27.1	25.9	26.5	26.6	34.6
	16.6	14.5	13.9	13.7	12.8	13.1	14.2	16.0	20.0	23.5	27.5	29.2	31.0	32.4	33.3	33.6	33.3	30.4	24.2	18.5	17.2	16.8	16.6	15.7	Diurnal Average	
	40.0	33.8	32.8	33.5	33.2	39.7	37.3	35.7	35.5	34.3	45.2	47.5	47.9	49.4	51.3	49.9	51.9	55.2	41.1	38.1	37.8	33.5	30.9	38.7	Diurnal Maximum	

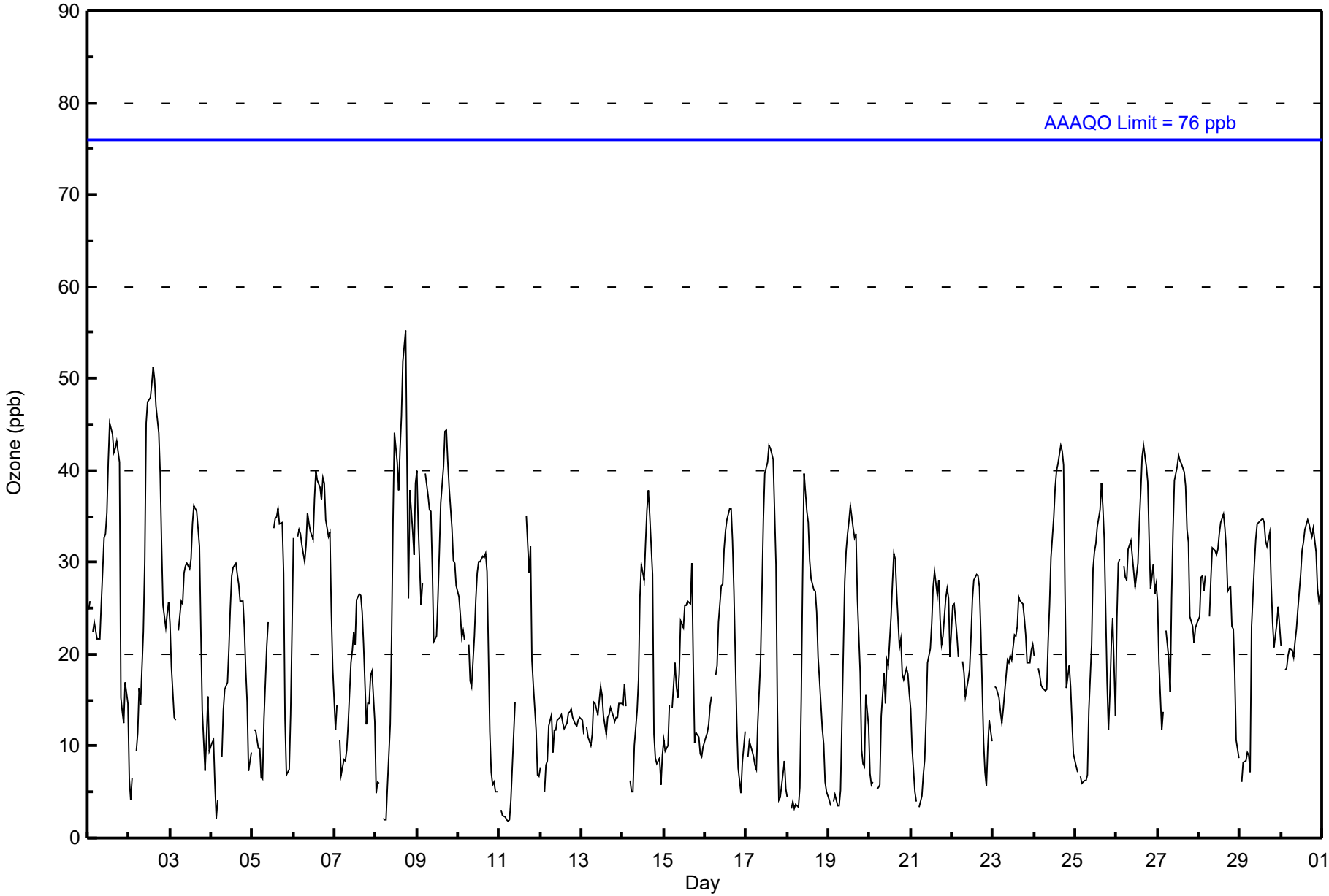
Z - zerospan C - Calibration M - Maintenance
Alberta Ambient Air Quality Objectives (AAAQO): 1-hr 76 ppb

Wood Buffalo Environmental Association

Hourly Averages

Ozone (O_3) - ppb

Conklin - September 2024



Concentration Ranges (ppb)	Number of Hours	%	Cumulative %
0 - 20	319	46.77	46.77
21 - 50	360	52.79	99.56
51 - 82	3	0.44	100.00
> 83	0	0.00	100.00

Total Number of Valid Hours: 682

Total Number of Hours: 720

Ozone (O_3) - ppb
Conklin - September 2024

Concentration Ranges (ppb)	Wind Direction																
	N	NNE	NE	ENE	E	ESE	SE	SSE	S	SSW	SW	WSW	W	WNW	NW	NNW	**Totals**
0 - 20	18	0	5	2	0	9	18	44	53	49	16	8	6	15	27	49	319
21 - 50	16	5	1	3	1	4	8	14	28	58	56	22	40	48	35	18	357
51 - 82	0	0	0	0	0	0	0	2	0	0	0	0	1	0	0	0	3
> 83	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Totals	34	5	6	5	1	13	26	60	81	107	72	30	47	63	62	67	679

Total Number of Valid Hours: 679

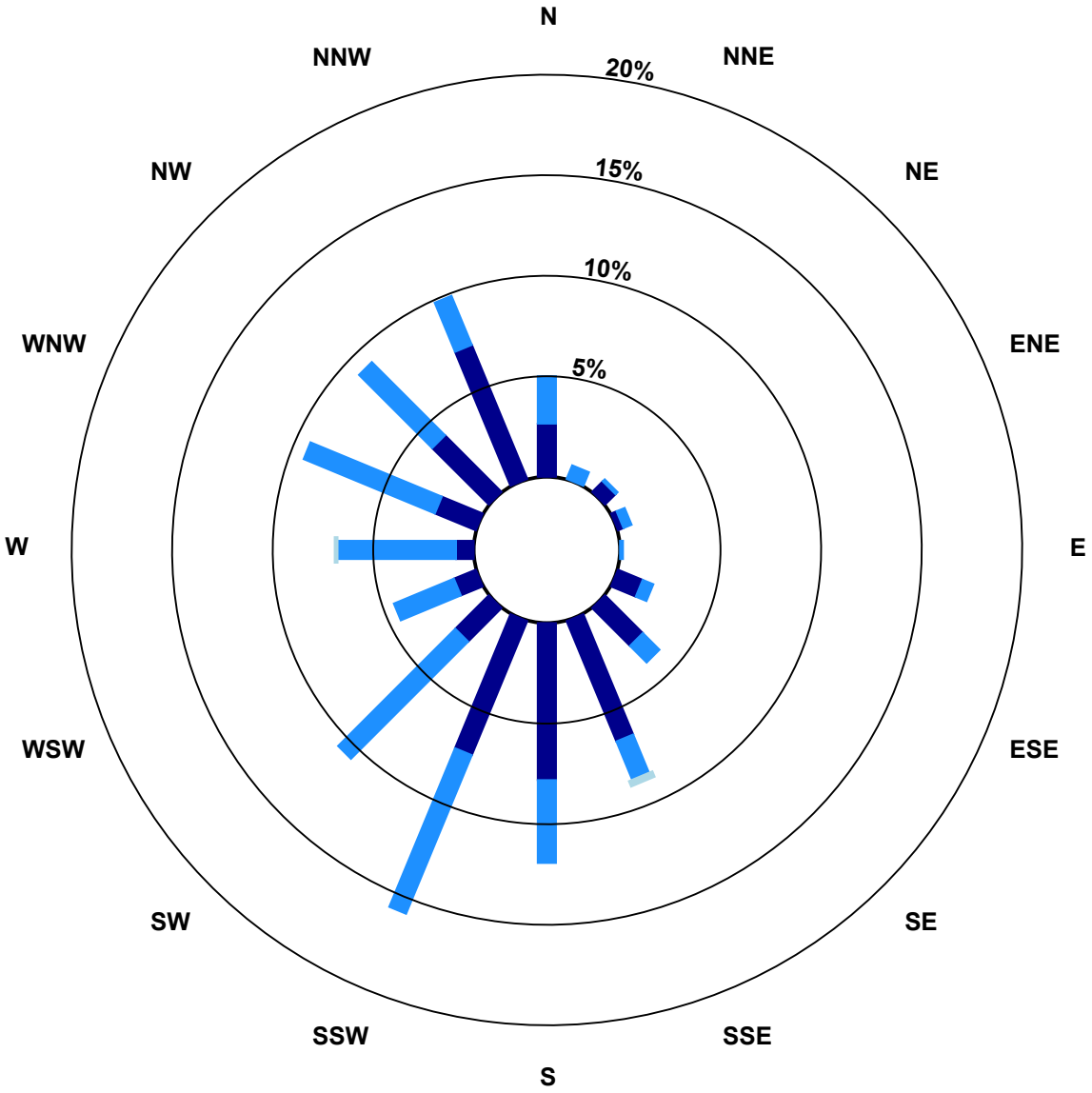
Total Number of Hours: 720

Wood Buffalo Environmental Association

Wind Rose Sep 2024

Ozone (O_3) - ppb

Conklin



Classes (ppb)

0 - 20

21 - 50

51 - 82

> 83

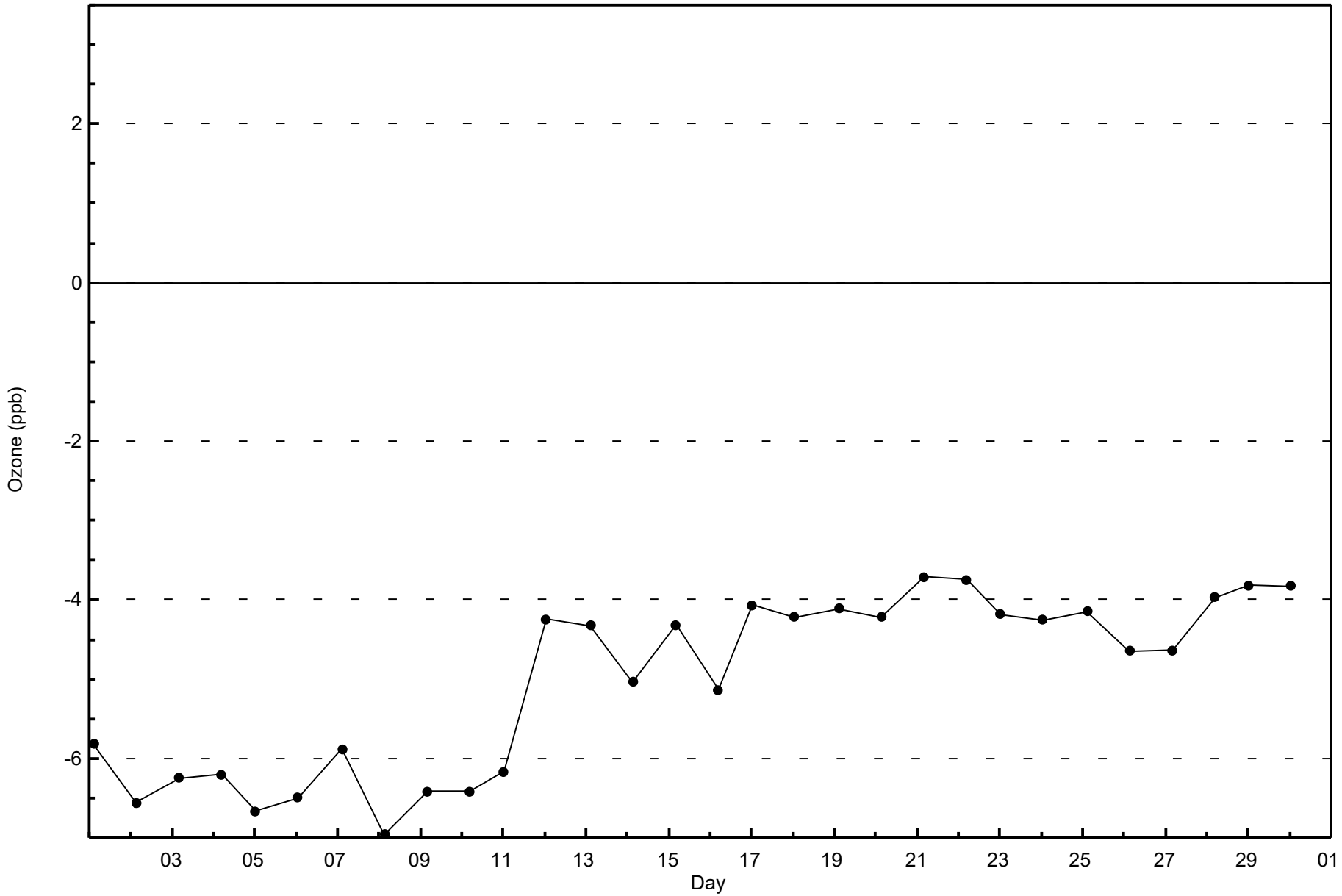
Total Number of Valid Hours: 679

Wood Buffalo Environmental Association

Zero Responses

Ozone (O_3) - ppb

Conklin - September 2024

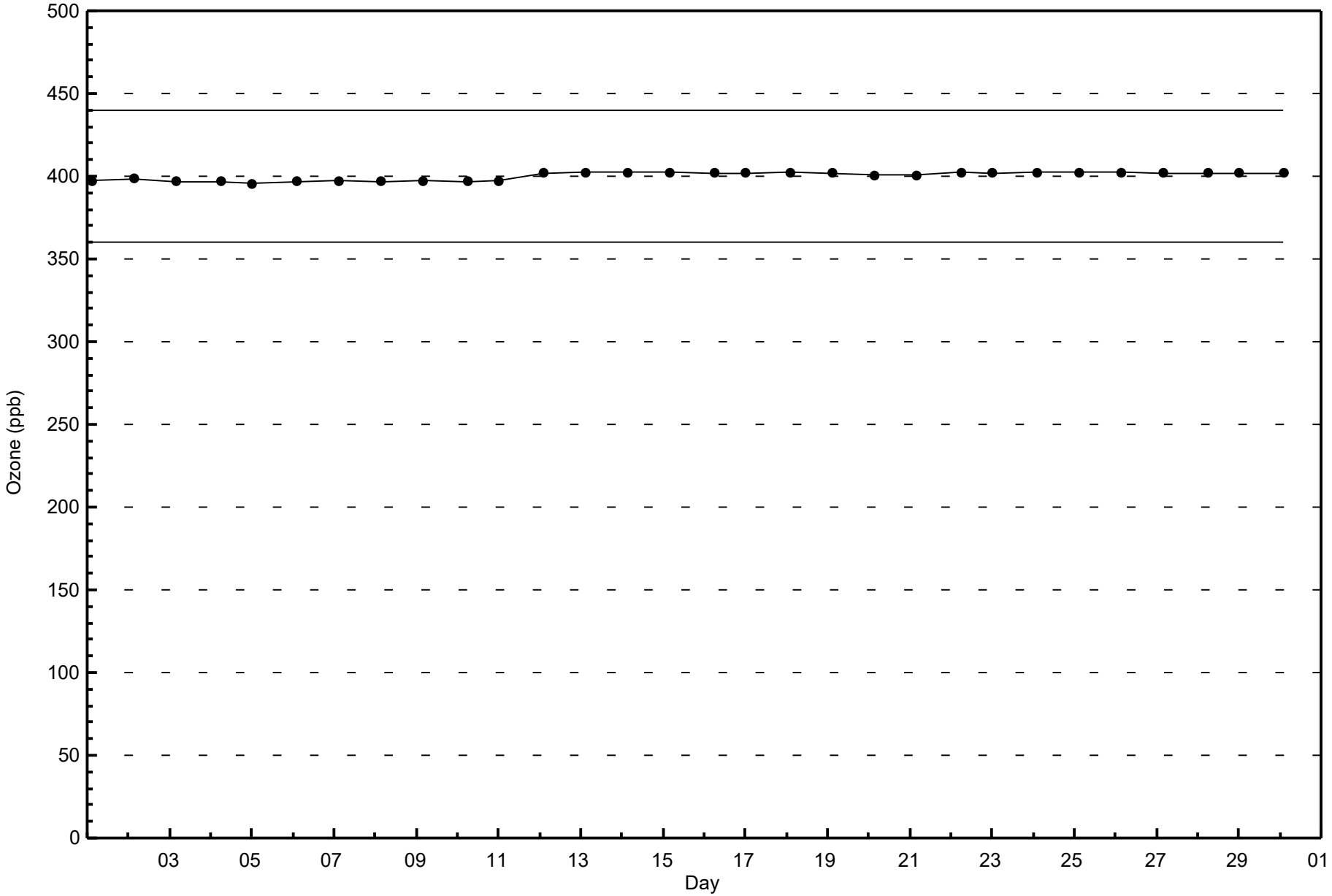


Wood Buffalo Environmental Association

Span Responses

Ozone (O_3) - ppb

Conklin - September 2024



Wood Buffalo Environmental Association

Summary of Hour Averages

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

Conklin - September 2024

Number of Exceedences (AAAQO): 1-hr: 58 24-hr: 5

Maximum Value: 152.3 $\mu g/m^3$ on Sep 7 10:00

Maximum Daily Average: 106.7 $\mu g/m^3$ on Sep 7

Minimum Value: 1.1 $\mu g/m^3$ on Sep 28 15:00

Minimum Daily Average: 2.2 $\mu g/m^3$ on Sep 29

Maximum Diurnal Average: 25.5 $\mu g/m^3$ at hour 20

Minimum Diurnal Average: 14.7 $\mu g/m^3$ at hour 16

Monthly Average: 18.80 $\mu g/m^3$

Percentiles: P_1 = 1.2 P_{10} = 2.0 Q_1 = 3.2 Median = 5.3 Q_3 = 12.5 P_{90} = 73.0 P_{99} = 133.7

Hours in Service:	720
Hours of Data:	717
Hours of Missing Data:	3
Hours of Calibration:	1
Percent Operational Time:	99.7

Day	Hourly Period Ending At (MST)																								Daily	Daily
	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24	Average	Maximum
1-Sep	4.7	4.0	3.6	3.6	3.6	3.6	3.5	3.6	3.5	3.3	2.8	3.3	3.0	3.5	3.2	3.1	3.3	3.7	4.6	11.5	28.1	10.4	5.9	5.3	5.4	28.1
2-Sep	5.2	5.0	5.3	5.1	4.9	5.0	4.6	4.2	4.3	4.4	4.1	4.5	4.2	4.0	3.5	3.4	3.8	4.2	4.2	4.5	4.7	5.1	5.7	7.8	4.7	7.8
3-Sep	10.5	10.9	11.5	14.7	19.8	13.4	8.1	6.9	6.2	5.7	6.1	6.9	7.0	8.0	9.8	12.1	12.5	13.2	13.3	14.0	15.1	12.8	11.0	10.8	10.8	19.8
4-Sep	12.4	10.2	8.6	7.8	7.0	6.1	5.4	4.9	4.5	4.3	4.5	4.5	5.5	6.8	5.9	5.5	4.9	4.9	5.0	5.0	7.9	7.6	4.8	3.6	6.2	12.4
5-Sep	3.0	3.0	3.2	2.7	3.2	3.2	3.9	2.9	2.8	3.9	M	M	3.7	3.8	5.2	5.6	6.2	4.2	4.5	10.7	47.7	13.0	4.1	4.4	6.6	47.7
6-Sep	3.8	5.2	3.8	4.0	4.5	5.0	5.9	6.0	5.7	5.4	6.2	5.9	7.1	10.3	11.2	8.7	8.2	8.2	8.6	8.5	8.0	15.5	48.0	48.3	10.5	48.3
7-Sep	53.5	97.8	91.6	106.1	105.9	134.0	141.9	148.5	149.0	152.3	149.1	135.3	131.7	139.1	129.0	99.1	78.7	67.0	79.8	74.1	69.7	75.6	77.4	74.6	106.7	152.3
8-Sep	72.2	69.9	73.3	69.6	68.1	65.4	66.8	72.1	77.4	90.6	120.9	119.9	74.0	32.3	39.8	45.6	44.2	57.5	63.3	55.6	44.1	39.6	37.9	33.9	63.9	120.9
9-Sep	27.6	24.6	24.3	23.4	26.0	23.2	22.5	22.4	19.0	26.2	30.0	27.8	24.4	9.9	4.8	5.1	4.8	4.1	3.6	2.4	8.2	18.6	20.2	24.2	17.8	30.0
10-Sep	18.7	14.9	12.7	10.9	10.5	10.2	9.1	8.4	8.0	7.6	12.1	12.5	9.9	5.1	3.0	2.8	4.3	4.1	74.2	80.4	69.9	18.2	7.9	5.3	17.5	80.4
11-Sep	6.1	4.3	5.2	4.5	8.0	11.4	13.3	6.2	5.1	6.9	8.2	9.5	C	10.9	9.1	13.0	15.5	46.4	33.6	61.2	44.7	23.5	23.4	24.5	17.1	61.2
12-Sep	28.4	10.1	11.4	19.5	25.5	42.4	80.2	86.3	80.7	93.5	104.8	101.5	96.2	91.1	83.9	99.6	118.4	125.7	132.5	128.3	124.9	127.6	123.2	116.0	85.5	132.5
13-Sep	111.3	113.0	112.8	108.1	98.9	91.9	87.6	93.4	86.6	84.8	85.4	83.0	87.0	82.1	78.8	75.7	83.6	98.4	101.8	96.7	96.0	92.2	87.3	78.8	92.3	113.0
14-Sep	77.3	72.9	68.8	72.9	66.3	61.6	57.2	47.2	36.3	37.9	53.7	36.3	22.7	15.9	13.9	9.6	7.9	7.6	9.0	10.6	9.5	8.6	8.2	7.1	34.1	77.3
15-Sep	6.4	5.7	7.1	6.3	5.8	6.2	6.9	7.8	7.4	6.6	6.4	7.2	7.4	7.0	7.8	10.8	10.5	9.9	11.2	21.1	35.8	13.0	12.5	12.4	10.0	35.8
16-Sep	11.2	10.7	8.3	8.4	6.4	6.1	5.0	4.1	3.0	2.7	2.7	3.3	3.6	3.4	3.2	3.1	3.2	3.8	11.3	8.8	6.9	5.9	6.2	19.4	6.3	19.4
17-Sep	6.3	5.1	5.0	7.0	4.4	5.0	5.1	4.1	3.4	3.0	3.1	3.3	3.1	3.0	3.5	3.5	5.3	6.5	6.6	30.9	22.3	7.0	5.0	5.0	6.5	30.9
18-Sep	5.1	4.8	4.9	28.6	11.9	7.2	5.3	5.5	4.4	4.1	3.8	3.4	2.9	2.1	2.4	3.1	2.9	3.0	3.7	4.7	5.2	7.1	8.2	8.4	5.9	28.6
19-Sep	9.7	10.3	9.5	9.7	15.6	16.4	11.1	15.2	9.9	11.1	10.7	7.7	4.9	3.3	3.3	3.9	3.1	3.7	6.3	36.9	18.4	33.2	5.8	4.2	11.0	36.9
20-Sep	3.6	5.8	3.7	3.4	5.9	5.3	22.6	8.1	3.8	4.5	4.0	5.0	5.2	4.6	4.4	4.7	4.7	4.4	5.3	8.4	5.7	4.8	4.4	4.4	5.7	22.6
21-Sep	6.5	14.9	6.1	9.2	9.1	5.8	9.2	4.3	3.4	3.6	4.4	4.7	4.5	5.2	5.1	6.8	6.0	6.1	5.9	5.7	6.9	5.5	4.9	4.9	6.2	14.9
22-Sep	4.4	4.4	4.2	4.3	4.3	4.2	4.5	4.1	3.2	3.3	3.1	2.7	2.0	2.1	1.9	1.9	1.7	3.4	9.2	13.1	6.7	4.6	3.6	2.9	4.2	13.1
23-Sep	2.8	1.8	2.2	1.7	1.8	2.4	3.2	3.1	2.5	2.0	1.8	2.4	2.8	3.2	2.4	2.7	2.8	2.9	3.1	6.0	4.5	4.0	3.1	2.8	2.8	6.0
24-Sep	2.6	2.4	2.4	2.6	2.5	2.2	2.1	1.8	1.4	1.4	1.7	1.6	1.9	1.8	1.6	1.6	1.6	2.7	16.7	33.8	17.0	6.3	4.6	4.2	4.9	33.8
25-Sep	3.7	3.5	3.1	11.0	8.9	5.1	6.4	9.1	3.7	2.7	3.8	4.9	4.1	3.2	2.9	2.4	2.2	2.5	25.5	18.4	4.6	3.2	2.6	3.7	5.9	25.5
26-Sep	4.3	3.2	1.7	1.4	1.5	1.6	4.2	5.9	4.2	4.1	4.6	4.8	5.7	4.3	1.9	1.7	1.2	1.4	1.7	4.7	4.4	3.3	7.9	18.7	4.1	18.7
27-Sep	2.5	3.8	12.1	2.8	1.8	2.2	3.2	1.7	1.5	1.5	1.5	1.6	1.6	2.1	2.3	2.0	1.3	1.2	1.3	1.6	4.3	5.2	2.3	1.1	2.6	12.1
28-Sep	1.2	1.1	1.2	10.5	3.5	1.4	1.5	1.3	1.5	1.6	1.6	1.2	1.2	1.1	1.1	1.4	2.9	3.6	3.7	2.8	2.2	2.5	2.8	2.8	2.3	10.5
29-Sep	2.9	3.0	2.6	2.4	3.4	2.2	2.4	1.7	1.5	1.8	1.8	1.6	1.8	1.8	1.7	1.8	1.7	1.5	2.2	2.4	2.6	3.2	3.3	2.8	2.2	3.4
30-Sep	2.7	2.2	1.8	2.0	2.4	2.7	2.9	6.1	7.7	8.9	6.5	2.5	1.5	1.8	2.0	1.7	2.0	1.9	1.7	1.5	2.0	4.6	2.6	2.8	3.1	8.9
	17.0	17.6	17.1	18.8	18.0	18.4	20.2	19.9	18.4	19.7	22.4	21.0	18.3	15.8	15.0	14.7	15.0	16.9	21.8	25.5	24.3	19.4	18.2	18.2	Diurnal Average	
	111.3	113.0	112.8	108.1	105.9	134.0	141.9	148.5	149.0	152.3	149.1	135.3	131.7	139.1	129.0	99.6	118.4	125.7	132.5	128.3	124.9	127.6	123.2	116.0	Diurnal Maximum	

C - Calibration M - Maintenance

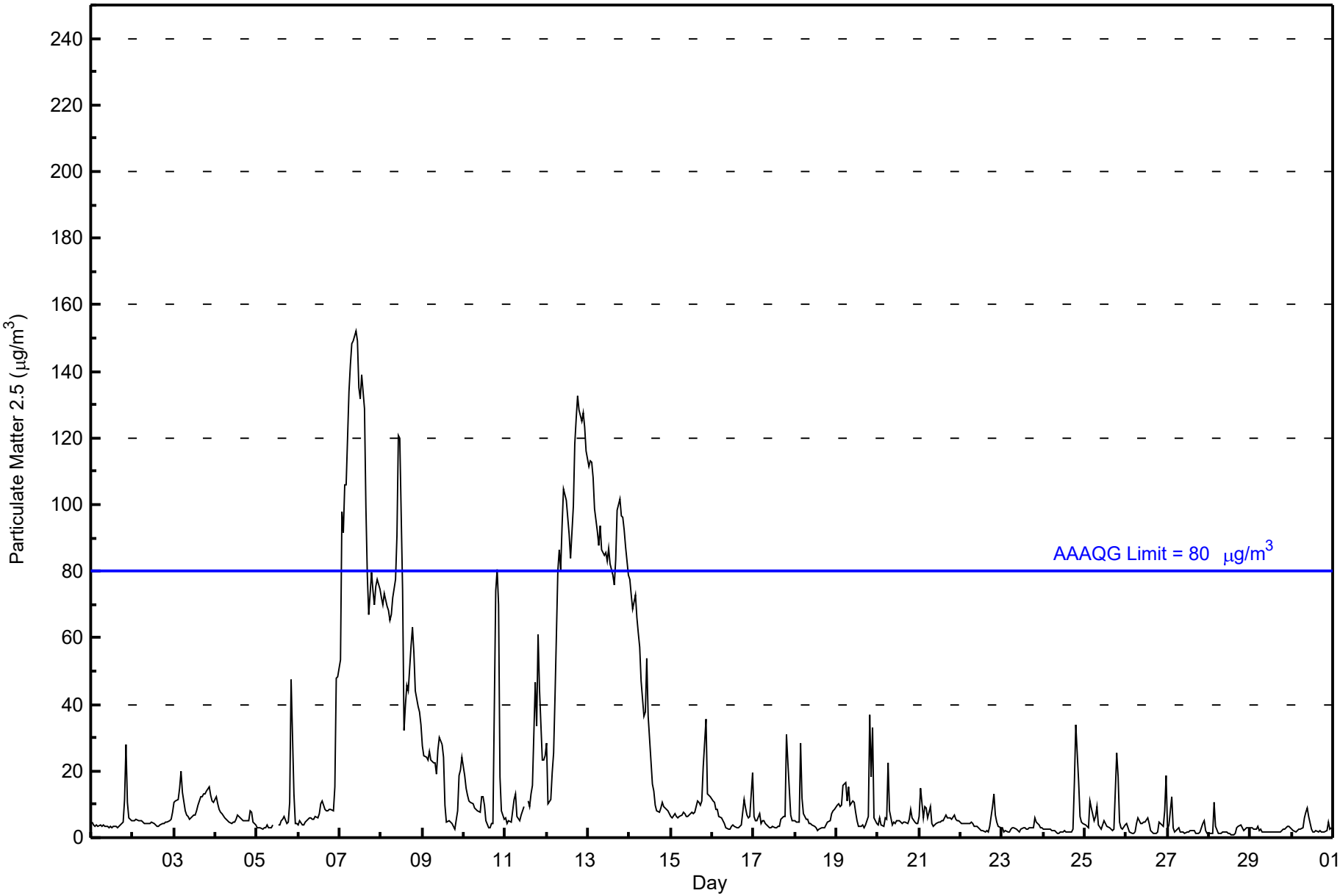
Alberta Ambient Air Quality Guideline/Objectives: 1-hr 80 $\mu g/m^3$ 24-hr 29 $\mu g/m^3$

Wood Buffalo Environmental Association

Hourly Averages

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

Conklin - September 2024



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

Conklin - September 2024

Concentration Ranges ($\mu g/m^3$)	Number of Hours	%	Cumulative %
0 - 5	368	51.32	51.33
6 - 15	190	26.50	77.82
16 - 25	31	4.32	82.15
26 - 80	72	10.04	92.19
> 81.0	56	7.81	100.00

Total Number of Valid Hours: 717

Total Number of Hours: 720

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

Conklin - September 2024

Concentration Ranges ($\mu g/m^3$)	Wind Direction																
	N	NNE	NE	ENE	E	ESE	SE	SSE	S	SSW	SW	WSW	W	WNW	NW	NNW	**Totals**
0 - 5	11	5	3	4	1	7	12	23	39	52	51	22	35	34	42	25	366
6 - 15	15	0	1	1	0	9	7	21	29	34	13	6	7	18	11	17	189
16 - 25	0	0	0	0	0	0	2	3	5	5	3	1	2	4	2	4	31
26 - 80	1	0	2	2	0	1	6	12	13	16	2	1	3	6	4	3	72
> 81.0	7	0	0	0	0	1	3	3	2	4	5	0	0	2	6	23	56
Totals	34	5	6	7	1	18	30	62	88	111	74	30	47	64	65	72	714

Total Number of Valid Hours: 714

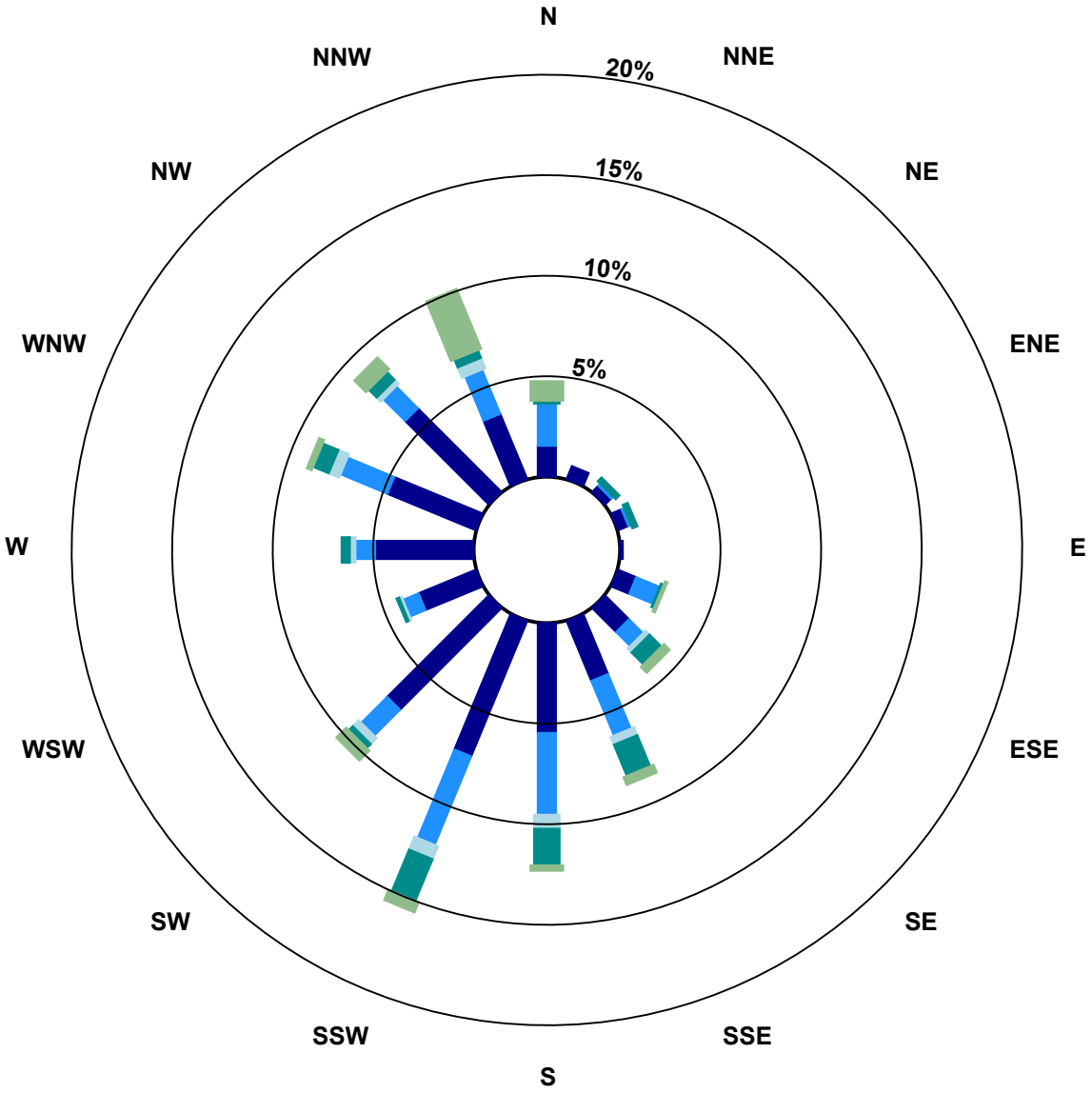
Total Number of Hours: 720

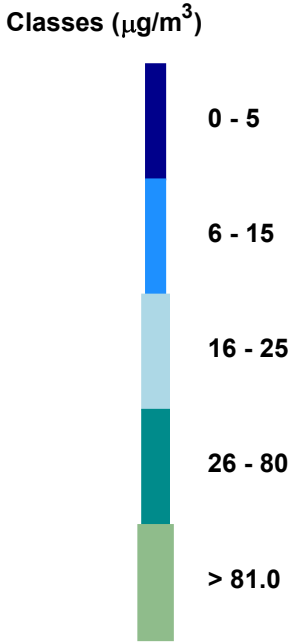
Wood Buffalo Environmental Association

Wind Rose Sep 2024

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

Conklin





Total Number of Valid Hours: 714

Maximum Value: 31.7 C on Sep 2 15:00

Maximum Daily Average: 20.3 C on Sep 2

Minimum Value: -1.5 C on Sep 19 07:00

Minimum Daily Average: 6.2 C on Sep 30

Maximum Diurnal Average: 18.7 C at hour 15

Minimum Diurnal Average: 6.8 C at hour 6

Monthly Average: 12.13 C

Percentiles: P_1 = -0.7 P_{10} = 4.5 Q_1 = 8.2 Median = 11.0 Q_3 = 16.0 P_{90} = 20.4 P_{99} = 29.1

Hours in Service:	720
Hours of Data:	720
Hours of Missing Data:	0
Hours of Calibration:	0
Percent Operational Time:	100.0

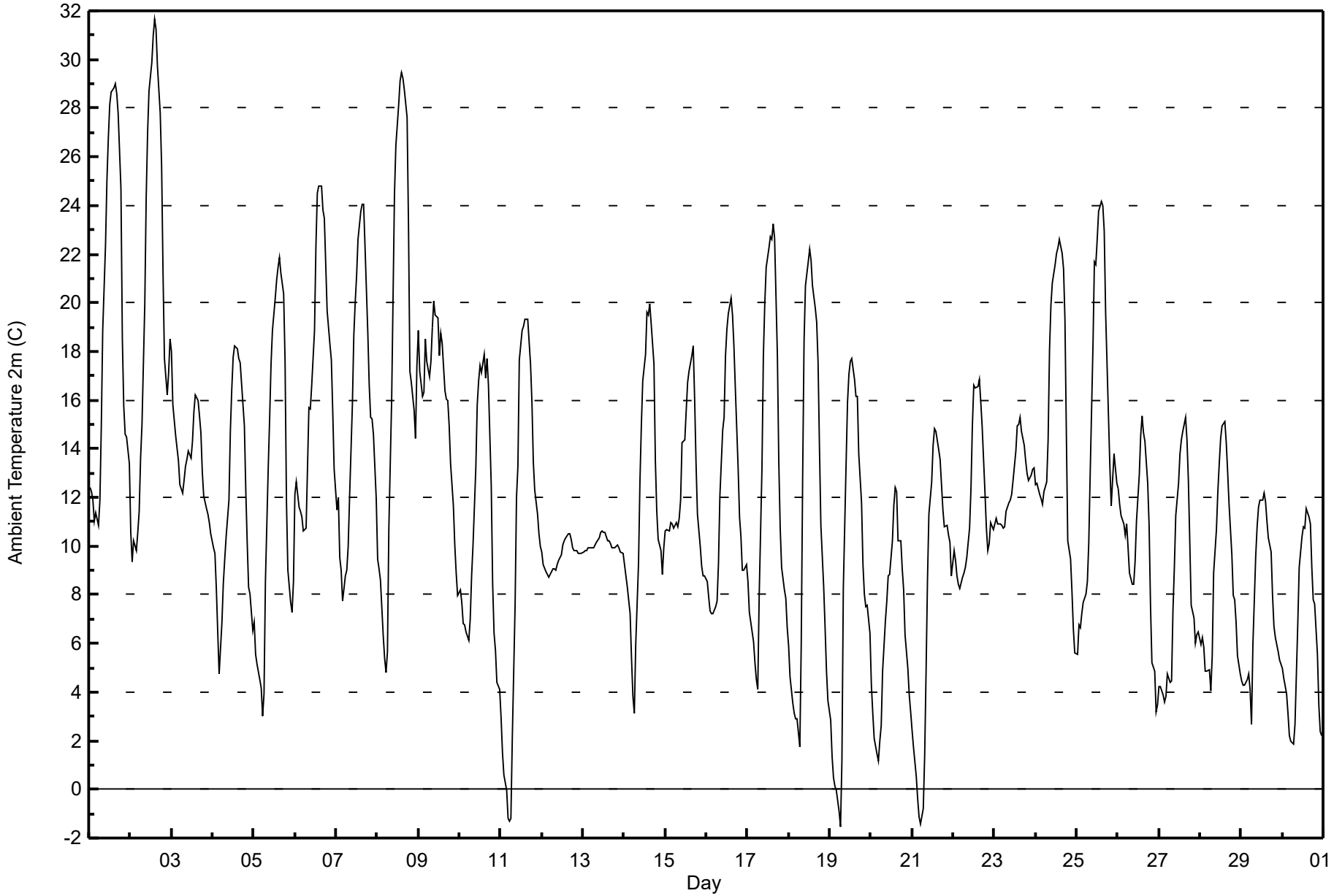
Day	Hourly Period Ending At (MST)																								Daily	Daily
	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24	Average	Maximum
1-Sep	12.4	12.2	11.9	11.0	11.4	10.8	11.9	14.9	18.9	22.4	25.1	26.8	28.1	28.7	28.8	29.0	28.6	27.8	24.7	18.5	15.8	14.6	14.5	13.4	19.3	29.0
2-Sep	10.6	9.4	10.2	9.8	10.6	11.4	13.6	15.0	20.0	24.4	27.0	28.7	29.9	30.9	31.7	31.2	29.7	27.8	25.6	21.2	17.7	16.2	17.1	18.5	20.3	31.7
3-Sep	18.0	15.8	14.5	14.0	13.5	12.5	12.2	12.7	13.2	13.5	13.9	13.6	14.3	15.5	16.2	16.0	15.4	14.6	13.0	12.1	11.6	11.3	11.0	10.5	13.7	18.0
4-Sep	10.0	9.7	8.2	6.5	4.8	6.9	8.5	9.5	10.4	11.9	14.7	16.4	17.8	18.2	18.1	17.7	17.5	16.7	14.9	12.3	10.2	8.3	8.0	6.5	11.8	18.2
5-Sep	6.9	5.5	5.2	4.5	4.2	3.0	4.0	8.5	13.2	15.3	17.5	18.9	20.2	20.9	21.5	21.8	21.2	20.3	17.6	11.8	9.0	7.7	7.3	8.6	12.3	21.8
6-Sep	12.1	12.6	11.6	11.5	11.2	10.6	10.7	13.2	15.7	15.6	16.6	18.9	22.3	24.5	24.8	24.8	23.8	23.5	21.6	19.7	18.3	17.6	15.5	13.1	17.1	24.8
7-Sep	11.5	12.0	9.5	9.0	7.7	8.7	9.0	10.0	12.0	15.8	18.6	20.0	21.1	22.6	23.8	24.0	24.1	22.3	18.7	16.6	15.3	15.2	14.6	12.0	15.6	24.1
8-Sep	9.5	9.1	8.6	6.3	5.3	4.8	5.7	10.7	16.1	20.2	24.5	26.5	28.2	29.1	29.5	29.2	28.8	27.6	23.2	17.2	16.8	15.6	14.4	17.4	17.7	29.5
9-Sep	18.8	17.2	16.2	16.3	18.5	17.6	17.0	17.6	19.0	20.1	19.5	19.4	17.8	18.7	18.3	16.4	16.1	16.0	14.9	13.4	11.7	10.0	8.9	8.0	16.1	20.1
10-Sep	8.2	7.7	6.8	6.8	6.5	6.1	7.0	8.8	10.0	13.2	15.8	16.8	17.4	17.1	17.9	16.9	17.7	16.6	12.4	8.4	6.4	5.7	4.4	4.1	10.8	17.9
11-Sep	3.0	1.5	0.6	0.0	-1.2	-1.3	-1.2	2.1	7.6	12.0	13.3	17.6	18.9	19.0	19.3	19.3	19.3	17.5	16.0	13.4	12.3	11.3	10.5	10.0	10.0	19.3
12-Sep	9.8	9.2	9.0	8.8	8.7	8.8	9.1	9.1	9.0	9.2	9.4	9.6	10.0	10.2	10.3	10.5	10.5	10.3	9.9	9.8	9.8	9.7	9.7	9.7	9.6	10.5
13-Sep	9.8	9.8	9.8	9.9	9.9	9.9	9.9	10.0	10.2	10.3	10.6	10.6	10.6	10.5	10.2	10.2	10.1	9.9	9.9	10.0	10.1	9.9	9.8	9.7	10.1	10.6
14-Sep	9.2	8.7	8.3	7.2	5.4	3.8	3.1	6.0	9.3	12.6	15.0	16.8	17.9	19.6	19.5	20.0	19.2	17.5	13.5	11.5	10.3	9.8	8.8	9.9	11.8	20.0
15-Sep	10.6	10.7	10.6	11.0	10.9	10.8	11.0	10.8	11.1	11.9	14.3	14.3	15.6	16.8	17.2	17.8	18.2	16.1	13.4	11.3	10.0	9.2	8.8	8.8	12.5	18.2
16-Sep	8.6	7.9	7.3	7.2	7.2	7.5	7.8	9.3	12.1	14.7	15.3	17.8	18.9	19.6	20.2	19.5	18.2	16.5	13.2	11.2	10.4	9.0	9.0	9.3	12.4	20.2
17-Sep	8.6	7.3	6.9	6.1	5.2	4.5	4.1	7.9	13.2	17.8	19.9	21.4	22.3	22.7	22.6	23.2	22.6	17.8	13.5	10.8	9.1	8.2	7.8	6.6	12.9	23.2
18-Sep	5.9	4.6	3.6	3.1	2.9	2.9	1.8	6.0	12.8	18.4	20.7	21.7	22.2	21.7	20.7	19.8	19.2	17.5	14.0	10.9	8.3	6.6	4.8	3.6	11.4	22.2
19-Sep	2.8	1.4	0.5	0.1	0.0	-0.9	-1.5	1.1	8.3	13.4	15.9	17.1	17.6	17.7	16.9	16.2	16.2	13.8	11.8	9.3	8.0	7.5	7.6	6.4	8.6	17.7
20-Sep	4.3	3.1	2.1	1.5	1.2	2.0	2.6	4.8	6.9	7.7	8.8	8.8	10.2	11.7	12.4	12.2	10.2	10.2	9.1	8.2	6.4	5.0	3.9	3.2	6.5	12.4
21-Sep	2.4	1.7	0.5	-0.4	-1.1	-1.4	-0.8	1.4	4.9	8.6	11.3	12.6	14.1	14.8	14.7	13.9	13.6	12.5	11.5	10.8	10.8	10.4	10.2	8.8	7.7	14.8
22-Sep	9.8	9.4	8.8	8.4	8.3	8.7	8.9	9.1	9.5	10.7	12.3	15.0	16.6	16.5	16.6	16.8	15.9	14.9	12.2	10.7	9.8	10.1	11.0	10.7	11.7	16.8
23-Sep	10.9	11.1	10.9	10.9	10.8	10.7	10.8	11.4	11.8	11.9	12.1	12.7	13.9	14.9	15.0	15.3	14.7	14.1	13.5	13.0	12.7	12.9	13.2	13.2	12.6	15.3
24-Sep	12.5	12.6	12.1	11.9	11.7	12.2	12.7	14.4	18.1	19.9	20.8	21.6	22.0	22.3	22.6	22.0	21.4	19.3	14.6	10.2	9.5	8.1	6.6	5.6	15.2	22.6
25-Sep	5.5	6.7	6.6	7.2	7.7	8.0	8.6	10.2	13.0	18.3	21.7	21.6	22.6	23.8	24.1	24.0	23.0	19.6	15.4	13.3	11.7	12.7	13.8	12.6	14.7	24.1
26-Sep	12.4	11.7	11.2	10.9	10.5	10.9	9.9	8.9	8.4	8.5	9.4	11.0	12.9	14.5	15.3	14.6	14.3	12.6	10.8	7.6	5.2	4.8	3.2	3.5	10.1	15.3
27-Sep	4.3	4.2	3.9	3.6	3.8	4.7	4.4	4.5	7.4	9.1	11.3	12.6	13.8	14.4	14.7	15.3	14.3	12.7	10.2	7.6	7.0	6.0	6.4	6.4	8.4	15.3
28-Sep	5.9	6.3	5.9	4.9	4.8	4.9	4.1	5.5	8.9	10.7	12.2	13.4	14.4	14.9	15.1	14.2	13.0	11.7	9.6	8.0	7.8	6.9	5.5	4.7	8.9	15.1
29-Sep	4.4	4.3	4.3	4.5	4.8	4.1	2.7	6.0	9.6	10.8	11.6	11.9	11.9	12.2	11.8	11.0	10.4	9.8	8.0	6.7	6.2	5.7	5.3	5.2	7.6	12.2
30-Sep	5.0	4.5	3.9	3.1	2.2	2.0	1.9	2.7	4.7	6.8	9.1	10.4	10.8	10.7	11.6	11.2	10.9	9.1	7.8	7.6	5.5	3.5	2.4	2.2	6.2	11.6
	8.8	8.3	7.7	7.2	6.9	6.8	7.0	8.7	11.5	13.9	15.6	16.8	17.8	18.5	18.7	18.5	17.9	16.6	14.2	11.8	10.4	9.7	9.1	8.7	Diurnal Average	
	18.8	17.2	16.2	16.3	18.5	17.6	17.0	17.6	20.0	24.4	27.0	28.7	29.9	30.9	31.7	31.2	29.7	27.8	25.6	21.2	18.3	17.6	17.1	18.5	Diurnal Maximum	

Wood Buffalo Environmental Association

Hourly Averages

Ambient Temperature 2m (AT2) - C

Conklin - September 2024



Concentration Ranges (C)	Number of Hours	%	Cumulative %
-50 - -20	0	0.00	0.00
-20 - 0	11	1.53	1.53
0 - 10	270	37.50	39.03
10 - 20	362	50.28	89.31
> 20	77	10.69	100.00

Total Number of Valid Hours: 720

Total Number of Hours: 720

Maximum Value: 100.0 % on Sep 12 15:00

Maximum Daily Average: 100.0 % on Sep 13

Minimum Value: 23.2 % on Sep 2 15:00

Minimum Daily Average: 60.2 % on Sep 1

Maximum Diurnal Average: 92.0 % at hour 7

Minimum Diurnal Average: 50.7 % at hour 15

Monthly Average: 75.78 %

Percentiles: P_1 = 31.0 P_{10} = 43.6 Q_1 = 58.8 Median = 80.5 Q_3 = 95.3 P_{90} = 98.9 P_{99} = 100.0

Hours in Service:	720
Hours of Data:	720
Hours of Missing Data:	0
Hours of Calibration:	0
Percent Operational Time:	100.0

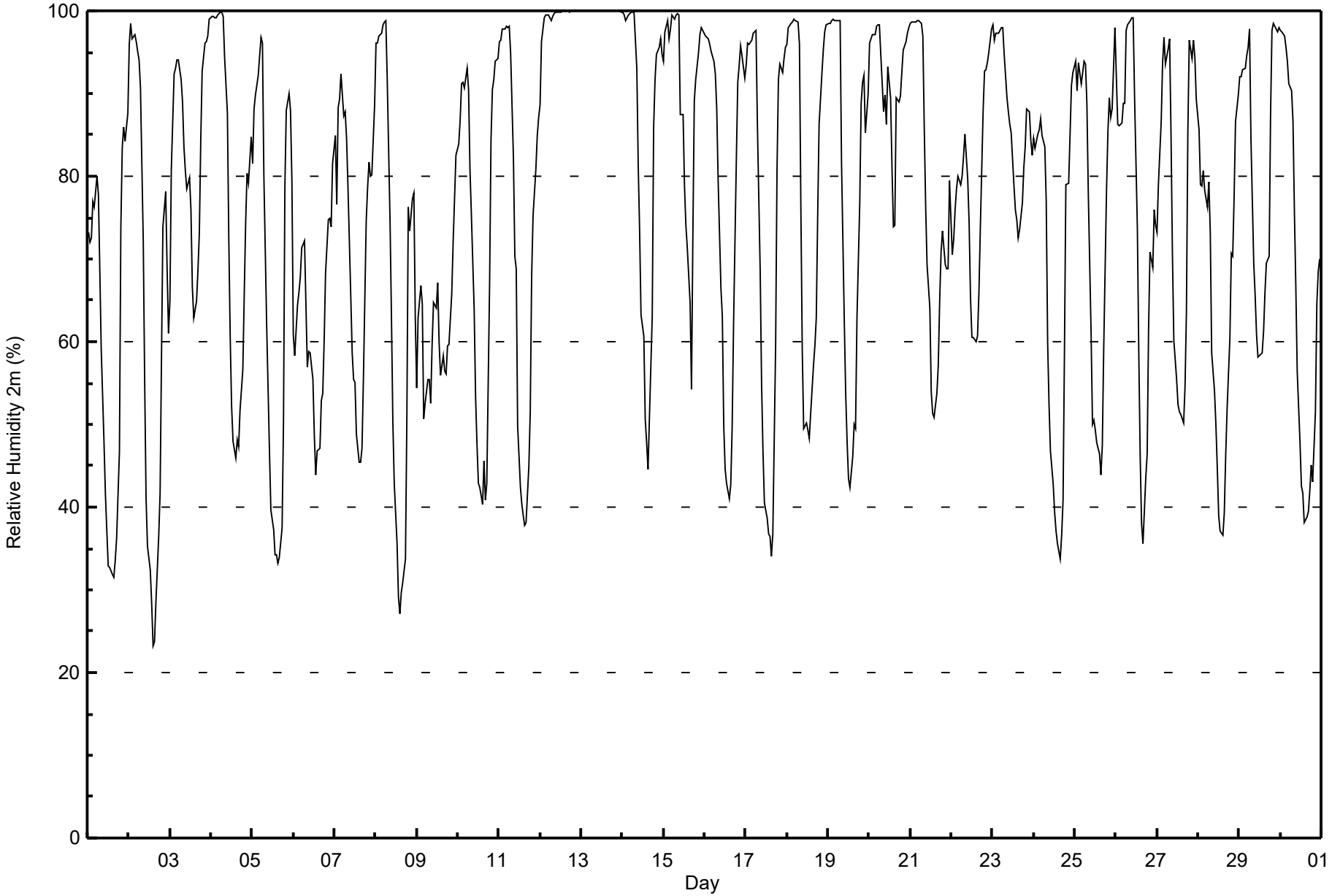
Day	Hourly Period Ending At (MST)																								Daily	Daily
	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24	Average	Maximum
1-Sep	73.1	72.0	72.5	76.9	76.3	80.1	77.9	68.7	59.2	47.9	41.6	37.1	32.8	32.8	31.9	31.5	33.6	36.2	46.8	73.7	83.5	85.9	84.2	87.7	60.2	87.7
2-Sep	95.9	98.4	96.7	97.2	96.3	95.2	94.1	90.7	72.1	55.1	41.0	35.3	32.4	28.4	23.2	23.7	28.5	36.4	41.6	58.1	74.0	78.1	68.8	61.1	63.4	98.4
3-Sep	64.9	80.8	92.4	93.1	94.0	94.1	91.8	89.0	83.6	80.7	78.5	79.8	75.9	66.6	62.8	64.9	68.6	73.1	84.5	92.7	96.2	96.2	96.9	98.9	83.3	98.9
4-Sep	99.2	99.3	99.2	99.2	99.4	99.9	99.8	99.3	94.4	87.7	72.4	60.5	52.1	48.0	46.0	48.1	47.3	51.7	56.6	65.7	74.3	80.4	79.1	84.7	76.8	99.9
5-Sep	81.6	88.2	89.8	92.2	94.5	96.7	96.2	80.1	62.0	54.5	46.7	39.7	37.2	34.3	34.2	33.3	33.9	37.5	50.1	78.8	88.0	90.0	88.0	79.4	67.0	96.7
6-Sep	60.8	58.3	64.3	66.0	67.9	71.3	72.2	64.6	57.0	58.8	58.6	55.4	48.6	43.8	46.8	47.1	52.9	53.7	60.0	68.4	74.7	75.0	73.8	81.6	61.7	81.6
7-Sep	85.0	76.7	88.3	89.4	92.3	87.3	87.9	84.6	78.6	65.4	58.7	55.4	55.1	48.8	45.3	45.5	47.1	55.4	74.5	78.7	81.7	80.0	80.1	88.7	72.1	92.3
8-Sep	96.1	96.1	96.9	97.2	98.4	98.6	98.8	91.6	74.5	63.1	50.3	42.9	35.6	29.1	27.1	29.6	30.9	33.7	50.8	76.3	73.4	77.3	78.0	62.9	67.1	98.8
9-Sep	54.5	62.8	66.7	64.5	50.7	52.6	55.4	55.4	52.5	59.6	64.8	64.0	67.2	59.8	55.9	58.3	56.5	56.1	59.4	59.6	65.7	72.0	77.3	82.5	61.4	82.5
10-Sep	83.9	86.8	91.1	91.3	90.8	93.0	90.5	80.8	75.4	63.9	53.4	47.6	42.9	42.4	40.3	45.7	40.9	42.8	67.0	84.3	90.5	91.7	93.9	94.2	71.9	94.2
11-Sep	96.3	96.5	97.8	97.8	98.2	98.0	98.1	94.9	82.2	70.3	68.7	49.9	42.4	40.3	38.9	37.8	38.2	44.9	51.6	68.0	75.2	80.8	85.0	87.2	72.5	98.2
12-Sep	88.6	96.4	99.2	99.4	99.5	99.4	98.9	99.4	99.7	99.8	99.8	99.8	99.9	99.9	100.0	100.0	99.9	99.9	99.9	100.0	100.0	100.0	100.0	100.0	99.1	100.0
13-Sep	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	99.8	100.0	100.0
14-Sep	99.8	99.5	98.8	99.6	99.7	99.8	99.9	99.8	93.1	81.3	73.4	63.2	60.7	50.7	47.9	44.6	50.8	63.1	85.9	91.7	94.7	95.7	96.6	94.7	82.7	99.9
15-Sep	93.9	97.4	98.8	96.6	97.8	99.4	99.0	99.6	99.7	99.5	87.5	87.4	78.8	74.0	71.4	64.7	54.2	73.3	89.2	91.7	95.0	97.1	97.9	97.6	89.2	99.7
16-Sep	96.9	96.8	96.6	96.0	95.2	93.9	92.3	88.1	79.4	66.4	63.1	49.9	44.6	42.9	40.9	42.8	49.7	62.0	82.2	91.4	93.4	95.8	94.5	91.8	76.9	96.9
17-Sep	93.4	96.1	95.9	96.5	97.3	97.4	97.7	86.4	68.5	54.7	46.7	40.5	38.6	36.7	36.4	34.0	36.8	59.5	80.9	91.6	93.5	92.5	94.2	95.6	73.4	97.7
18-Sep	96.0	98.0	98.5	98.7	99.0	98.7	98.6	95.9	76.2	59.0	49.4	50.1	49.3	48.2	51.4	57.1	59.4	63.0	75.3	86.2	92.3	95.3	97.4	98.4	78.8	99.0
19-Sep	98.4	98.4	98.8	99.0	98.8	98.8	98.8	98.8	81.7	62.2	53.6	47.7	43.5	42.3	46.1	50.1	49.5	62.7	76.7	88.8	91.3	92.2	85.2	90.1	77.2	99.0
20-Sep	96.2	96.6	97.2	97.2	98.1	98.3	98.3	94.8	87.9	89.9	86.3	93.2	89.4	81.0	74.0	74.1	89.5	89.0	89.7	92.5	95.2	96.2	97.3	98.0	91.7	98.3
21-Sep	98.4	98.6	98.7	98.7	98.9	98.8	98.5	96.9	85.9	76.4	69.3	64.2	53.9	51.4	50.9	53.6	57.1	64.9	70.9	73.3	69.3	68.8	68.8	79.5	76.9	98.9
22-Sep	70.5	72.3	75.9	78.4	79.9	79.0	79.9	82.4	85.2	79.7	74.4	65.3	60.5	60.5	60.0	60.6	65.9	73.7	88.0	92.6	92.9	93.7	95.0	97.8	77.7	97.8
23-Sep	98.3	96.5	97.2	97.3	97.6	98.0	98.0	94.8	89.4	87.8	86.2	85.3	78.8	75.9	74.7	72.5	73.6	76.8	81.0	83.6	88.2	87.7	84.4	82.5	86.9	98.3
24-Sep	84.6	83.4	85.1	85.6	86.9	84.9	83.6	76.9	60.0	52.4	46.8	42.7	39.2	37.1	35.6	33.8	36.7	40.9	58.8	79.0	79.2	85.0	91.1	92.6	65.9	92.6
25-Sep	93.9	90.3	93.8	92.3	91.3	93.9	93.6	88.8	78.0	61.0	49.9	50.5	49.3	47.8	46.4	43.8	47.4	59.1	78.3	85.5	89.4	87.1	88.1	98.0	74.9	98.0
26-Sep	92.0	86.4	86.0	86.5	88.8	88.8	97.6	98.4	98.9	99.2	99.1	89.6	73.8	58.9	46.3	38.0	35.6	43.6	46.4	61.5	70.9	68.9	75.9	74.1	75.2	99.2
27-Sep	73.2	78.9	86.6	93.7	96.8	93.5	95.4	96.6	85.0	70.7	60.2	55.4	52.4	51.5	51.2	50.2	54.6	63.6	85.3	96.5	94.3	96.5	94.3	89.3	77.7	96.8
28-Sep	85.6	79.1	78.8	80.7	78.3	76.3	79.3	73.2	58.7	54.0	50.0	44.8	39.0	37.1	36.6	39.3	46.3	51.8	60.5	70.6	70.3	77.5	86.6	89.9	64.3	89.9
29-Sep	92.1	92.0	93.0	93.1	94.6	95.7	97.8	84.5	69.5	65.7	60.9	58.1	58.5	58.7	61.2	66.0	69.4	70.3	87.5	97.6	98.4	97.7	97.5	98.0	81.6	98.4
30-Sep	97.6	97.5	97.0	95.6	93.8	91.2	90.4	86.6	75.8	66.8	56.5	47.8	42.5	41.6	38.1	38.8	39.5	42.0	45.0	43.1	51.6	64.5	68.5	70.0	65.9	97.6
	88.0	89.0	91.1	91.7	91.7	91.8	92.0	88.0	78.8	71.1	64.9	60.1	55.8	52.3	50.7	51.0	53.1	59.4	70.8	80.7	84.6	86.7	87.3	88.2	Diurnal Average	
	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	Diurnal Maximum	

Wood Buffalo Environmental Association

Hourly Averages

Relative Humidity 2m (RH2) - %

Conklin - September 2024



Wood Buffalo Environmental Association

Summary of Hour Averages

Wind Speed 10m (WS10) - km/h

Conklin - September 2024

Maximum Speed: 15 km/h on Sep 1 14:00

Maximum Daily Speed Average: 8.4 km/h on Sep 1

Minimum Speed Value: 0 km/h on Sep 3 20:00

Minimum Daily Speed Average: 0.9 km/h on Sep 20

Maximum Diurnal Speed Average: 4.6 km/h at hour 16

Minimum Diurnal Speed Average: 1.7 km/h at hour 2

Monthly Average Velocity: 2.5 km/h 240.2 deg

Percentiles: $P_1 = 0$ $P_{10} = 1$ $Q_1 = 3$ Median = 5 $Q_3 = 7$ $P_{90} = 10$ $P_{99} = 13$

Hours in Service: 720

Hours of Data: 717

Hours of Missing Data: 3

Percent Operational Time: 100.0

Day	Hourly Period Ending At (MST)																								Daily	Daily
	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24	Average	Maximum
1-Sep	SSW7	SSW7	S6	S7	SSW8	S7	S7	S6	SSW8	SSW13	SSW13	SSW14	SSW15	SSW15	SW15	SW12	SW10	SW7	SW4	SSW4	SSW7	SSW6	S5	S3	SSW8.4	SSW15
2-Sep	ESE1	SE2	SE4	ESE3	ESE4	S1	SSW2	SSE2	W1	SSW2	SSW10	SSW11	SSW10	SW8	W7	SW3	WSW6	W4	WSW3	NW3	NNW3	NNW3	NW5	NNW8	SW2.4	SSW11
3-Sep	NW7	N2	NE1	NNW4	NNW4	NNW8	N7	N3	N5	N6	N5	N6	N5	ENE3	NNW3	NNW6	N5	N4	NNW2	WSW0	NNW1	NNW2	NW2	NNW2	N3.7	NNW8
4-Sep	NNW4	NW4	WSW0	S1	NW2	SE1	NW1	WNW4	W5	WNW5	WNW7	WNW8	WNW9	NW9	WNW8	WNW5	NW6	NW4	WSW4	SW5	SSW6	SSW5	SSW5	S4	W3.5	WNW9
5-Sep	S5	SSE5	SSE4	SSE5	S2	SSE2	SSE3	SSE3	ENE2	SE6	ESE6	ESE5	W1	E4	SE6	S5	S7	SSW5	S3	SSE1	SSE2	S2	S2	S4	SSE3.2	S7
6-Sep	S7	SSW6	SSW4	SSE5	S7	SSE7	SSE5	S8	SSW13	SSW9	SSW13	SW7	SSW10	SSW10	SSW9	SSW10	SSW7	SW9	SW6	SW6	SW7	SW9	SSW5	S4	SSW7.3	SSW13
7-Sep	S3	SSE4	SE4	SE2	S3	S3	SSE4	SSE4	S3	SSW5	SSW4	SW7	SW5	SW7	SW6	SW6	SSW6	SSW5	S4	SSW5	SSW6	SSW7	SSW5	ENE1	SSW4.1	SW7
8-Sep	ESE1	SE4	SE3	ENE0	NE1	NNW1	SE2	S4	S4	SSW4	SE4	ESE6	SE7	SSE9	S10	S11	SSE10	SSE7	SSE4	S1	S5	WNW2	NNW3	SW5	SSE3.5	S11
9-Sep	SW5	SW1	SSE6	SE4	S6	SSW8	SSW9	SSW8	WSW9	WNW9	WNW9	NW9	WNW8	WNW10	WNW10	WNW9	W8	W7	W6	WNW6	WNW9	NW8	WNW5	W4	W5.3	WNW10
10-Sep	W6	WNW6	WNW5	W5	WSW5	NW4	WNW4	SW6	SW9	WSW9	W8	W8	W7	W6	SW11	W7	WSW6	WSW3	SSW1	W0	S1	SSE3	SSW0	S2	WSW4.4	SW11
11-Sep	SSE3	WSW0	SSE1	S1	SSE0	S1	SSE1	N2	N1	ESE4	SE5	ESE6	ESE7	ESE7	ESE7	ESE9	ESE7	SSE6	SSE5	SE2	SSE1	NNW0	NNW1	WNW1	ESE2.7	ESE9
12-Sep	NW1	NW2	NNW3	NNW2	NNW4	N6	NE2	NW2	NNW6	NNW6	N5	N5	N4	N5	NNW7	NNW8	NNW8	N9	N7	N6	NNW7	NNW7	NNW7	NNW7	NNW5.2	N9
13-Sep	NNW7	NNW6	NNW7	NNW5	NNW7	NNW6	NNW9	NNW11	NNW8	NNW7	NNW7	N7	NNW8	NNW6	NW7	NW7	NW5	NW4	NW3	WNW1	NW2	NW3	WNW3	WNW3	NNW5.7	NNW11
14-Sep	WNW3	W3	SSW3	SSE3	SSE2	SSW3	SSW3	S3	SSW6	WSW3	WNW5	W5	SW6	WNW5	NNW4	W5	SW8	SW3	SSW4	SSW5	S5	SSE4	SE4	SSW5	SW2.8	SW8
15-Sep	SSW4	SSW2	SW2	SSW4	SSW4	SW2	WSW4	SW3	WSW2	WNW3	W5	WNW2	SSE3	SSE5	S5	SW4	WNW4	SSW4	SSW5	SSW5	SSW5	SSW6	S6	S7	SSW3.3	S7
16-Sep	S7	SSW7	S7	SSW7	SSW8	SSW8	SSW9	SSW9	SSW11	SSW11	SW9	SW11	SW14	SW15	WSW12	SW12	SW7	SSW4	SSW4	SSW0	SSE3	SSE3	S4	S5	SSW7.4	SW15
17-Sep	S5	SSE5	S5	S5	SSE5	SE5	SE5	SE5	S4	SE7	S9	SSW9	SW9	SW8	SW7	S4	SE7	N1	NNW1	SSE2	S3	S4	SSE4	SSE4	S4.3	S9
18-Sep	SSE3	ENE0	SSE0	S0	SSE2	SE3	NNW1	ESE0	ESE3	N2	W3	NW7	NW7	NW9	NW9	NW6	NW7	NW7	NW4	NW2	N3	N2	N1	ESE0	NW2.3	NW9
19-Sep	SSE1	ESE1	SE1	SSE1	SSE2	SE1	SE1	SE0	N1	WNW4	NW4	C	C	C	W5	WNW4	WNW3	W0	W1	SSW1	S2	SSE2	SSW5	S2	WSW0.9	W5
20-Sep	S1	S2	S2	S2	S2	SSE1	S2	NW2	W1	SSE3	NE1	NE1	NW2	NNW3	N4	NW5	W1	WSW2	W2	NW3	NNW3	NW3	NNW3	NNW4	NW0.9	NNW5
21-Sep	NNW4	N1	SSE1	S1	S2	S1	S4	S5	S6	SSW6	WSW9	WSW9	SW10	WSW10	SSW10	SSW10	S11	SSE8	SSE6	SSE6	S7	SE5	SSE4	ESE3	SSW4.5	S11
22-Sep	S6	S7	S7	S6	S6	SSW6	SSW8	SSW3	SW2	SW6	SSW5	S4	WSW5	WSW6	WSW7	SW7	SW5	SSW3	SSE2	S3	S4	SSW5	S2	SSW2	SSW4.4	SSW8
23-Sep	WNW3	NW3	W3	NW2	N3	NW3	WNW3	WNW2	WNW4	WNW4	SW6	WSW6	SSW7	SW9	SW7	SW9	WSW9	SW6	SSW6	SSW7	SSW6	SSW6	SW8	SW12	WSW4.4	SW12
24-Sep	SW11	SW9	SW10	SW9	SW9	SW10	SW12	SW11	W13	WNW13	WNW13	WNW11	WNW11	WNW10	WNW8	WNW9	W6	WSW6	SW4	SSW5	S6	SSE4	SE3	SE4	WSW6.6	WNW13
25-Sep	SSE2	SSE2	NNW2	SSE2	S2	NNW1	NNW1	SSE2	NNW3	ESE2	S8	SSW7	SSW5	WNW5	NW5	NW7	NW7	NW3	SE1	NW1	NNW3	WNW3	SSW2	NW2	W1.1	S8
26-Sep	NNW10	NNW5	NW4	NNW3	NW4	NW7	NW11	NW9	NW5	WNW2	WNW3	WNW8	WNW8	W12	W11	W12	W9	WSW9	WSW9	SSW6	SSW7	SSW7	SSW7	SSW7	W5.4	W12
27-Sep	S5	SSE3	S1	NNW4	NNW2	ESE1	ENE1	NNW5	NNW6	N8	NNW4	W5	NW5	WNW6	W7	NW8	WNW7	WSW5	W4	SSW6	SSW6	SSW7	SW8	SW10	W2.7	SW10
28-Sep	SW9	SW9	SW9	SSW8	SW9	SW10	SW9	SW10	WSW13	W10	W9	W9	W10	W8	WSW8	SW10	SSW9	SSW7	S5	SSW4	SSW5	S3	SSE3	N0	SW6.9	WSW13
29-Sep	S1	NW3	NNW2	NNW2	NW2	NNW3	WNW1	NNE4	ENE7	NE7	NNE10	NNE13	NNE13	NNE13	N12	N12	N11	N9	NNW11	NW8	NW6	NW9	NW9	NW6	N6.2	NNE13
30-Sep	NW6	NW6	NW5	NW5	NW5	WNW7	WNW7	WNW7	WNW9	WNW9	WNW10	NW13	NW13	WNW13	WNW13	W13	WNW11	W9	W9	W11	SW7	SW8	SSW7	SW9	WNW7.6	WNW13
	SW2.1	SW1.7	SSW1.8	SSW1.7	SSW1.9	SW1.7	SW2.0	SW2.0	WSW2.7	WSW2.5	WSW3.0	W3.4	WSW4.0	W4.5	W4.6	WSW4.6	WSW3.7	WSW2.7	SW2.2	SW2.3	SW2.7	SW2.2	SW2.0	SW2.3	Diurnal Average	
	SW11	SW9	SW10	SW9	SW9	SW10	SW12	SW11	SSW13	WNW13	WNW13	SSW14	SSW15	SSW15	SW15	W13	S11	SW9	NNW11	W11	WNW9	SW9	NW9	SW12	Diurnal Maximum	

C - Calibration

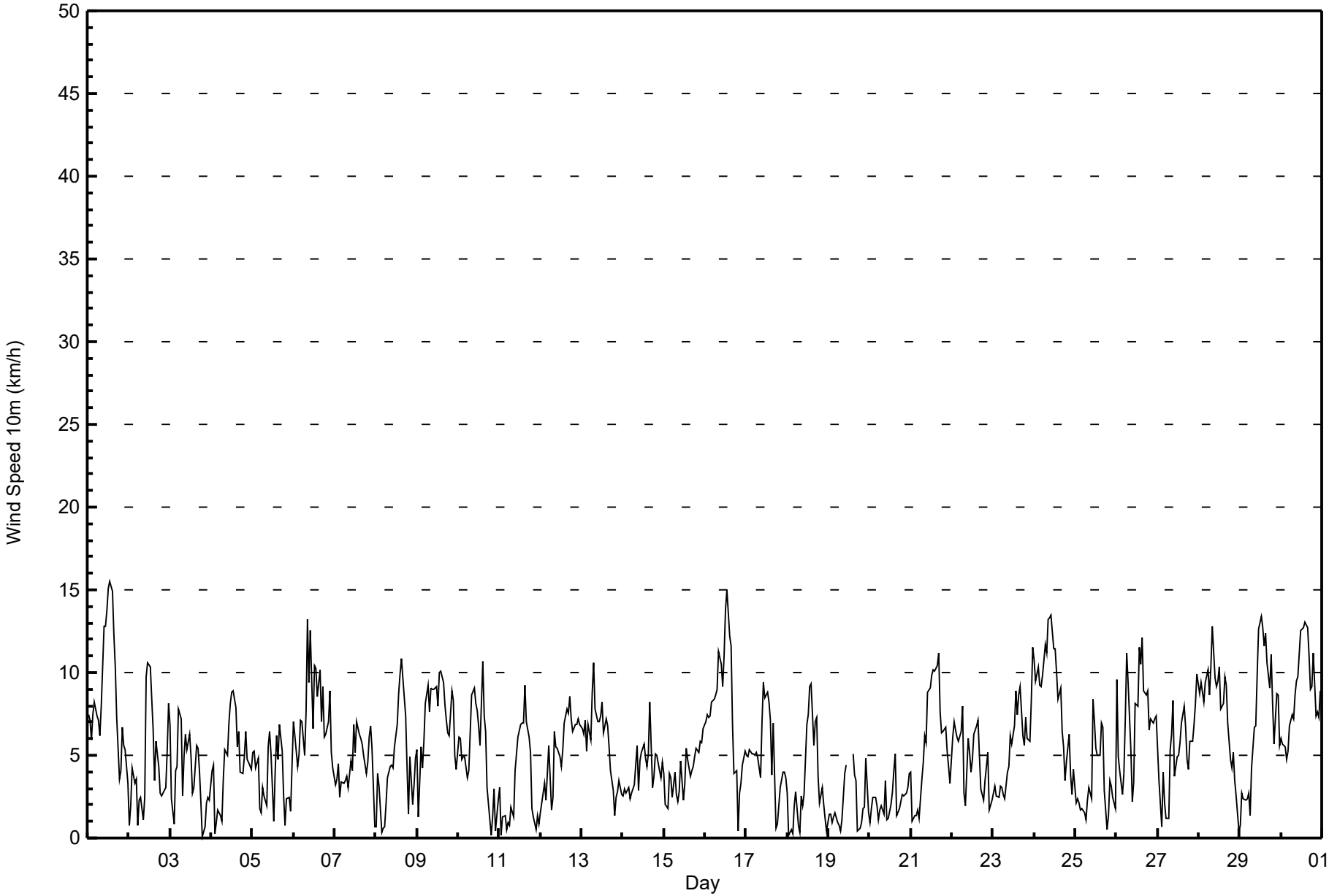
All monthly, daily, and diurnal averages have been calculated using vector methods

Wood Buffalo Environmental Association

Hourly Averages

Wind Speed 10m (WS10) - km/h

Conklin - September 2024



Wind Speed Ranges (km/h)	Number of Hours	%	Cumulative %
0 - 5	393	54.81	54.81
6 - 11	293	40.86	95.68
12 - 19	31	4.32	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: 717

Total Number of Hours: 720

Wood Buffalo Environmental Association

Frequency Distribution

Wind Speed 10m (WS10) - km/h

Conklin - September 2024

Wind Speed Ranges (km/h)	Wind Direction																
	N	NNE	NE	ENE	E	ESE	SE	SSE	S	SSW	SW	WSW	W	WNW	NW	NNW	**Totals**
0 - 5	22	1	5	6	1	13	25	53	61	46	15	13	21	30	38	43	393
6 - 11	10	1	1	1	0	8	5	9	27	58	52	15	22	30	25	29	293
12 - 19	2	3	0	0	0	0	0	0	0	7	7	2	4	4	2	0	31
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	34	5	6	7	1	21	30	62	88	111	74	30	47	64	65	72	717

Total Number of Valid Hours: 717

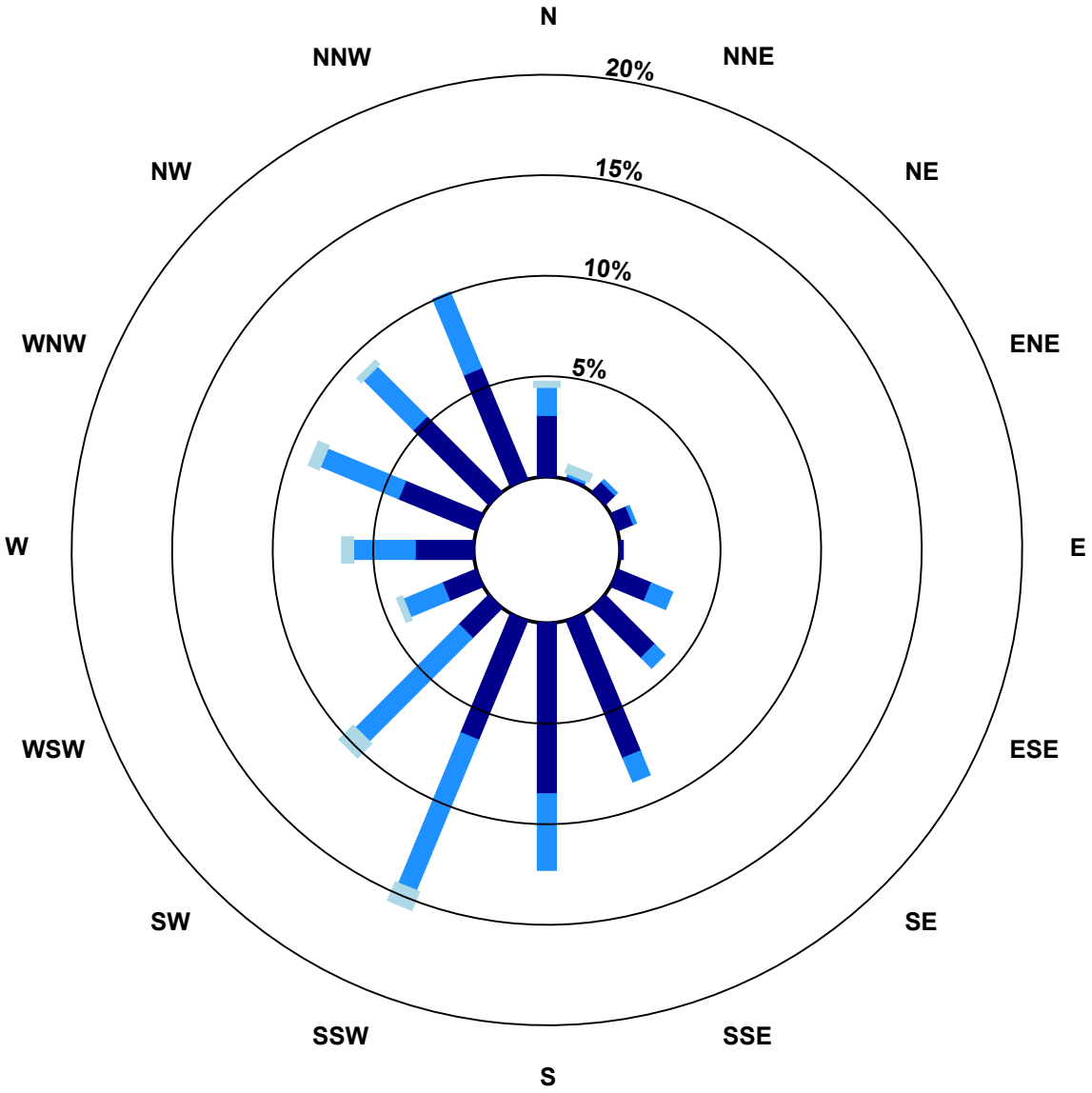
Total Number of Hours: 720

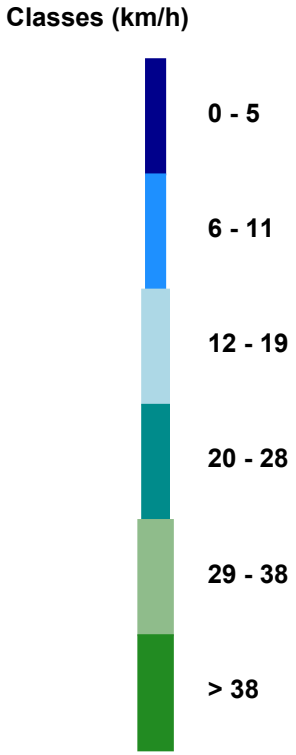
Wood Buffalo Environmental Association

Wind Rose Sep 2024

Wind Speed 10m (WS10) - km/h

Conklin





Total Number of Valid Hours: 717

Wood Buffalo Environmental Association

Summary of Hour Standard Deviations

Wind Speed 10m (WS10) - km/h

Conklin - September 2024

Number of Exceedences (AAAQO): 1-hr: 0 24-hr: 0
Maximum Value: 6 km/h on Sep 30 15:00

Minimum Value: 1 km/h on Sep 18 21:00

Percentiles: P_1 = 1 P_{10} = 1 Q_1 = 1 Median = 2 Q_3 = 3 P_{90} = 4 P_{99} = 6

Hours in Service:	720
Hours of Data:	717
Hours of Missing Data:	3
Hours of Calibration:	3
Percent Operational Time:	100.0

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

C - Calibration

Direction of Maximum Speed: 201 deg on Sep 1 14:00

Direction of Maximum Daily Speed Average: 199.2 deg on Sep 1

Direction of Minimum Speed: 250 deg on Sep 3 20:00

Direction of Minimum Daily Speed Average: 0.9 deg on Sep 20

Monthly Average Direction: 240.2 deg

Hours in Service:	720
Hours of Data:	717
Hours of Missing Data:	3
Percent Operational Time:	100.0

Day	Hourly Period Ending At (MST)																								Daily
	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24	Average
1-Sep	199	202	180	190	193	183	175	170	197	198	200	195	196	201	218	215	227	229	219	195	199	193	176	173	199.2
2-Sep	123	143	131	113	123	183	212	157	275	202	209	196	208	236	264	234	239	276	257	312	341	330	321	327	230.7
3-Sep	325	351	44	345	342	345	349	355	353	357	358	355	6	63	342	333	7	355	344	250	341	339	323	335	349.8
4-Sep	328	326	237	189	325	135	310	284	271	294	284	298	295	304	301	299	307	319	258	235	209	201	201	181	280.7
5-Sep	187	151	149	149	186	153	153	161	67	130	122	122	276	99	128	177	176	204	182	164	168	177	177	183	155.1
6-Sep	186	196	193	163	169	168	164	185	199	212	202	215	213	201	200	213	209	214	221	214	221	233	212	179	201.5
7-Sep	173	168	132	136	191	173	147	167	172	208	199	221	228	227	219	223	213	200	185	193	195	196	192	78	195.6
8-Sep	119	128	125	75	41	329	139	171	184	192	127	108	144	168	177	184	165	161	159	187	186	291	333	230	166.2
9-Sep	223	229	167	144	181	203	198	204	239	282	301	305	301	291	294	286	276	262	268	291	295	310	300	264	266.4
10-Sep	280	293	289	268	248	304	288	225	232	238	271	275	273	275	227	259	237	256	194	276	176	165	197	170	254.9
11-Sep	152	255	167	179	155	182	162	3	4	123	127	117	107	106	105	117	114	151	149	145	167	337	335	300	122.7
12-Sep	322	325	329	332	331	352	34	317	336	341	5	2	3	349	341	340	347	357	358	355	342	348	341	341	346.6
13-Sep	337	335	343	348	338	336	338	339	338	339	347	355	340	328	320	317	321	316	316	290	313	312	297	292	332.8
14-Sep	287	281	207	168	164	194	194	181	210	240	300	269	221	285	330	276	229	218	197	198	179	155	145	195	221.8
15-Sep	208	201	218	197	192	226	240	230	243	298	264	283	168	161	186	218	297	199	198	198	195	194	190	191	208.2
16-Sep	191	193	191	192	192	193	194	195	199	203	218	224	226	234	239	234	236	210	194	210	165	159	175	186	208.4
17-Sep	174	162	178	176	156	141	129	141	171	139	172	201	220	235	216	185	136	353	328	157	174	175	147	158	174.1
18-Sep	149	72	168	179	155	131	333	112	114	0	261	314	306	314	311	311	325	324	320	321	353	355	4	113	319.0
19-Sep	157	120	134	167	150	142	141	128	5	303	306	C	C	C	271	287	292	266	263	204	187	168	202	178	241.3
20-Sep	171	176	172	178	185	150	183	320	266	153	37	37	312	336	355	326	275	245	281	322	327	326	336	339	307.2
21-Sep	345	2	168	170	187	170	178	181	181	194	240	239	234	238	213	193	182	154	154	154	171	145	150	123	192.9
22-Sep	173	181	189	180	178	196	205	206	223	221	200	187	257	255	250	234	220	204	166	187	178	193	178	195	203.9
23-Sep	302	314	278	308	356	316	293	296	302	303	216	241	207	227	227	225	239	234	213	198	199	204	215	229	236.4
24-Sep	229	225	223	219	218	221	227	234	270	292	294	299	293	297	291	283	271	258	221	192	189	151	126	136	251.6
25-Sep	156	147	328	154	188	330	341	158	342	119	171	200	204	302	321	325	319	323	134	305	336	298	196	310	270.4
26-Sep	332	329	320	334	316	316	316	316	317	287	285	284	292	275	279	278	271	257	239	212	208	200	192	196	277.4
27-Sep	176	161	181	340	348	116	71	330	339	354	339	277	315	302	279	305	284	240	280	203	203	197	217	222	270.0
28-Sep	222	224	221	204	224	227	219	228	256	278	274	270	261	263	240	221	202	194	186	197	195	175	157	3	230.7
29-Sep	169	323	334	327	326	328	299	31	57	48	33	32	25	17	6	358	1	356	335	326	318	322	322	314	359.6
30-Sep	312	314	310	312	306	295	296	303	296	298	301	308	305	299	293	276	285	276	261	262	226	216	207	216	284.0
	228.6	221.8	206.3	199.3	211.0	225.1	225.8	230.1	251.5	255.8	249.7	261.5	257.4	262.8	261.1	258.3	251.4	245.8	236.0	225.3	214.2	216.7	216.6	218.6	
	Diurnal Average																								

C - Calibration

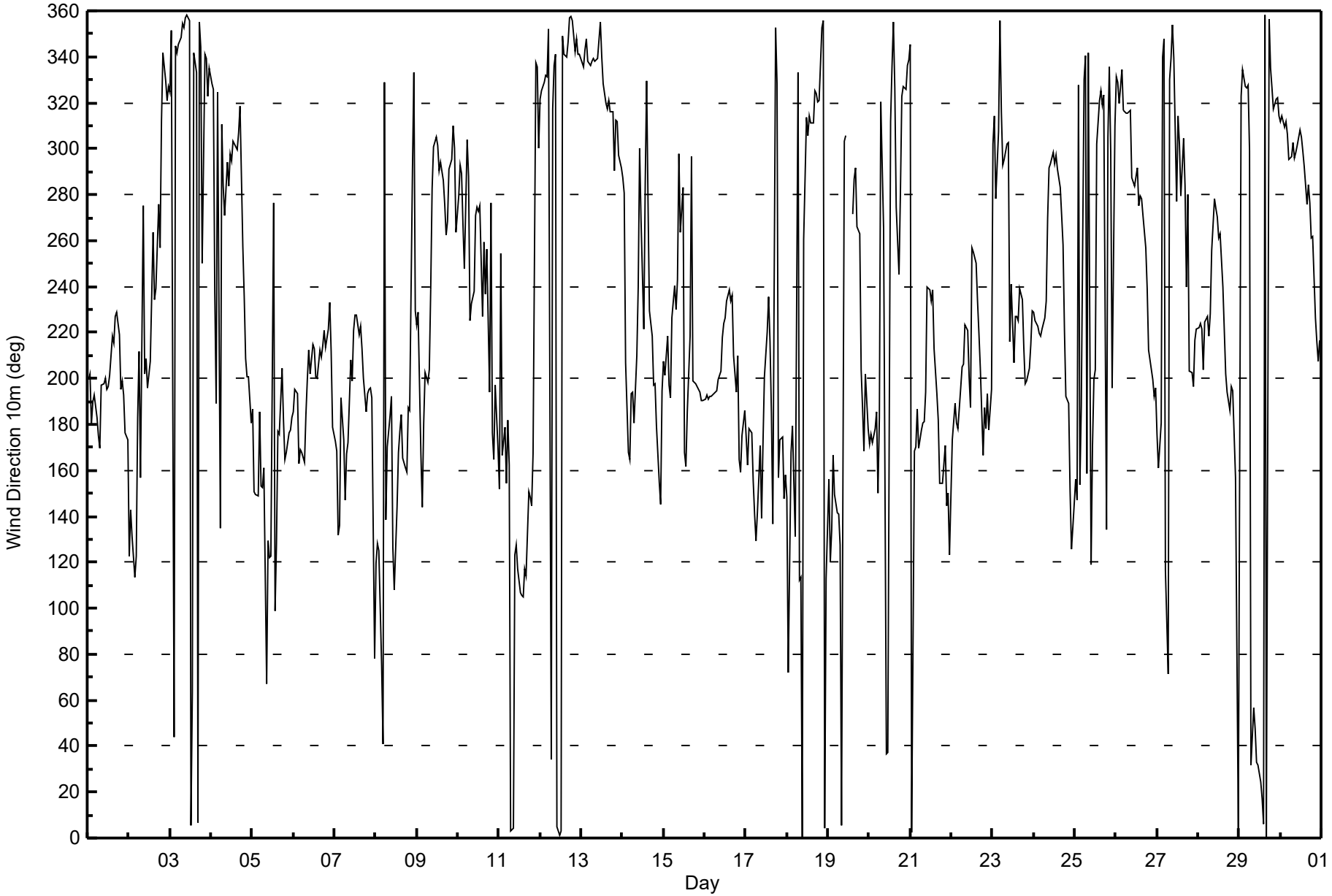
All monthly, daily, and diurnal averages have been calculated using vector methods

Wood Buffalo Environmental Association

Hourly Averages

Wind Direction 10m (WD10) - deg

Conklin - September 2024



Number of Exceedences (AAAQO): 1-hr: 0 24-hr: 0

Maximum Value: 105 deg on Sep 4 07:00

Minimum Value: 8 deg on Sep 17 07:00

Percentiles: P_1 = 10 P_{10} = 17 Q_1 = 21 Median = 32 Q_3 = 52 P_{90} = 71 P_{99} = 94

Hours in Service:	720
Hours of Data:	717
Hours of Missing Data:	3
Hours of Calibration:	3
Percent Operational Time:	100.0

Day	Hourly Period Ending At (MST)																								Daily
	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24	Maximum
1-Sep	16	17	15	15	17	17	19	21	21	21	23	23	21	24	26	26	27	24	18	11	8	9	11	43	43
2-Sep	75	45	16	21	40	102	78	81	90	78	24	27	31	44	54	75	25	48	44	31	22	16	30	23	102
3-Sep	51	77	94	45	65	20	21	62	29	28	31	25	45	69	85	27	34	21	35	93	84	59	31	23	94
4-Sep	19	23	75	72	68	90	105	71	46	54	54	52	52	50	50	58	43	44	29	29	13	17	34	23	105
5-Sep	20	16	35	18	77	45	37	39	67	32	33	55	96	79	61	59	34	21	25	78	28	48	71	20	96
6-Sep	22	21	49	28	17	17	28	25	21	29	20	42	23	21	21	22	28	22	22	21	16	17	32	25	49
7-Sep	55	40	20	65	36	23	16	18	28	28	57	25	30	27	26	23	19	17	12	12	17	15	16	84	84
8-Sep	75	10	18	59	72	82	41	25	21	22	35	25	32	31	26	22	20	16	14	72	19	48	28	29	82
9-Sep	19	76	17	37	42	18	17	57	37	52	51	48	52	51	53	52	50	47	49	61	49	47	57	58	76
10-Sep	50	55	65	48	42	64	60	30	18	25	50	47	59	54	39	50	47	53	71	89	69	20	89	63	89
11-Sep	21	94	24	70	92	73	84	26	84	46	38	43	30	29	31	21	30	19	14	56	57	88	69	70	94
12-Sep	36	34	15	35	21	27	91	65	22	24	34	36	41	23	17	17	19	20	21	21	19	20	17	17	91
13-Sep	17	20	19	22	18	19	16	18	20	19	22	22	18	25	32	37	36	37	46	71	65	53	60	65	71
14-Sep	55	65	55	23	29	31	33	25	21	78	47	56	51	67	57	49	23	25	9	10	10	16	14	14	78
15-Sep	63	59	65	31	30	68	37	29	35	46	60	64	48	31	29	62	50	15	12	13	12	14	14	15	68
16-Sep	17	17	16	16	18	17	20	17	18	22	27	27	28	29	36	26	29	20	12	85	29	23	21	14	85
17-Sep	17	22	18	17	13	12	8	24	32	32	29	38	33	40	39	63	30	62	77	23	18	24	63	19	77
18-Sep	58	89	90	89	49	32	97	95	54	81	73	45	49	45	40	46	28	25	26	33	19	28	62	76	97
19-Sep	31	55	30	31	31	46	45	38	83	56	60	C	C	C	47	47	54	65	82	80	26	54	18	69	83
20-Sep	52	25	23	28	31	30	36	90	76	30	75	91	73	59	40	41	88	39	52	34	26	28	21	20	91
21-Sep	19	74	66	62	24	61	28	23	18	26	28	31	34	32	31	24	25	15	13	15	29	15	36	33	74
22-Sep	16	14	17	20	20	26	21	88	91	27	31	79	58	40	31	37	23	24	23	22	10	17	52	43	91
23-Sep	53	58	62	48	43	34	52	56	42	44	39	35	46	34	35	27	21	29	23	18	21	21	20	21	62
24-Sep	20	21	20	23	22	21	23	26	43	44	42	45	45	47	55	48	47	32	40	15	16	28	39	13	55
25-Sep	44	40	28	27	58	76	82	67	28	72	31	32	49	55	44	31	30	41	96	83	56	62	78	63	96
26-Sep	23	34	46	38	34	36	38	37	36	70	52	48	51	42	49	42	43	31	21	15	14	21	14	14	70
27-Sep	19	31	70	53	79	101	86	20	26	30	68	60	57	59	47	43	53	23	53	19	21	17	23	18	101
28-Sep	18	19	19	18	21	19	20	22	33	41	47	42	43	45	34	26	19	19	17	17	17	37	36	87	87
29-Sep	78	58	18	26	74	38	76	62	40	41	34	32	29	26	24	21	22	19	20	24	28	26	27	35	78
30-Sep	36	43	42	46	51	42	49	49	39	42	41	39	39	43	42	39	45	43	30	31	27	18	16	18	51
	78	94	94	89	92	102	105	95	91	81	75	91	96	79	85	75	88	65	96	93	84	88	89	87	
	Diurnal Maximum																								

C - Calibration

WOOD BUFFALO ENVIRONMENTAL ASSOCIATION

CONTINUOUS AMBIENT AIR QUALITY
MONITORING PROGRAM
MONTHLY REPORT

AMS22
JANVIER
SEPTEMBER 2024

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

October 31, 2024

WOOD BUFFALO ENVIRONMENTAL ASSOCIATION - JANVIER (AMS22)
SEPTEMBER 2024

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	685	34	35	99.86	2.5	0	0.4	0
TRS(ppb) Average	683	36	37	99.86	0.5	0	0.3	0
THC(ppm) Average	677	33	43	98.61	2.2	-	2.1	-
NMHC(ppm) Average	677	33	43	98.61	0.013	-	0.001	-
CH4(ppm) Average	677	33	43	98.61	2.2	-	2.1	-
O3 (ppb) Average	686	33	34	99.86	51.5	0	33.8	-
NO2 (ppb) Average	628	32	92	91.67	4.6	0	1.5	-
NO (ppb) Average	628	32	92	91.67	10.2	-	1.1	-
NOX (ppb) Average	628	32	92	91.67	11.6	-	1.9	-
PM2.5 (ug/m3) Average	717	2	3	99.86	179.4	0	104.9	5
Temperature 2 m (C) Average	720	0	0	100	31.5	-	21	-
Relative Humidity (%) Average	720	0	0	100	100	-	100	-
Wind Speed 10 m (km/h) Average	720	0	0	100	16	-	9	-
Wind Speed 20 m (km/h) Average	715	0	5	99.31	23	-	14	-
Wind Direction 10 m (deg) Average	720	0	0	100	-	-	-	-
Wind Direction 20 m (deg) Average	715	0	5	99.31	-	-	-	-

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

WOOD BUFFALO ENVIRONMENTAL ASSOCIATION - JANVIER (AMS22)
SEPTEMBER 2024

MONTHLY SUMMARY FOR AIR QUALITY/ METEOROLOGICAL MONITORING MEASUREMENTS

					Percentile						
Parameter	Number	Mean	StnDev	Total	Min	P10	Q1	Median	Q3	P90	Max
SO2 (ppb) Average	685	0.12	0.2	-	0	0	0	0	0.1	0.4	2.5
TRS (ppb) Average	683	0.21	0.1	-	0.1	0.1	0.2	0.2	0.2	0.3	0.5
THC (ppm) Average	677	2.01	0	-	1.9	2	2	2	2	2.1	2.2
NMHC(ppm) Average	677	0	0.001	-	0	0	0	0	0	0	0.013
CH4(ppm) Average	677	2.01	0	-	1.9	2	2	2	2	2.1	2.2
O3 (ppb) Average	686	21.91	10.3	-	2.7	9.7	13	20.8	29.8	35.9	51.5
NO2 (ppb) Average	628	0.46	0.7	-	0	0	0	0.1	0.7	1.4	4.6
NO (ppb) Average	628	0.41	0.7	-	0	0	0	0.2	0.6	1	10.2
NOX (ppb) Average	628	0.87	1.1	-	0	0	0.1	0.5	1.2	2.4	11.6
PM2.5 (ug/m3) Average	717	18.43	33.3	-	0.8	1.8	2.9	4.9	10.6	70.3	179.4
Temperature 2 m (C) Average	720	12.67	5.6	-	1	5.9	9	11.6	15.8	20.4	31.5
Relative Humidity (%) Average	720	77.69	19.6	-	27.4	47.1	62.9	82.7	95.2	99.5	100
Wind Speed 10 m (km/h) Average	720	5.1	3	-	0	2	3	5	7	9	16
Wind Speed 20 m (km/h) Average	715	7.5	4	-	0	3	5	7	9	12	23
Wind Direction 10 m (deg) Average	720	-	-	-	-	-	-	-	-	-	-
Wind Direction 20 m (deg) Average	715	-	-	-	-	-	-	-	-	-	-

WOOD BUFFALO ENVIRONMENTAL ASSOCIATION - JANVIER (AMS22)
SEPTEMBER 2024

OPERATIONAL NOTES

Parameter	Period Start	Period End	Duration (Hours)	Notes
AIR QUALITY ANALYZERS	03 Sep 2024 11:00	03 Sep 2024 11:00	1	Maintenance - station logger/modem reset
THC/NMHC/CH4	01 Sep 2024 01:00	01 Sep 2024 09:00	9	Unstable Operations - ZAG failure
NO2	01 Sep 2024 01:00	03 Sep 2024 11:00	59	Unstable Operation - flatline in analyzer output signal
NO2	03 Sep 2024 12:00	03 Sep 2024 12:00	1	Maintenance - analyzer rebooted
Wind Speed, Wind Direction 20m	12 Sep 2024 01:00	12 Sep 2024 01:00	1	Flat line in sensor output signal
Wind Speed, Wind Direction 20m	17 Sep 2024 21:00	17 Sep 2024 21:00	1	Flat line in sensor output signal
Wind Speed, Wind Direction 20m	19 Sep 2024 19:00	19 Sep 2024 19:00	1	Flat line in sensor output signal
Wind Speed, Wind Direction 20m	25 Sep 2024 03:00	25 Sep 2024 03:00	1	Flat line in sensor output signal
Wind Speed, Wind Direction 20m	29 Sep 2024 01:00	29 Sep 2024 01:00	1	Flat line in sensor output signal

Wood Buffalo Environmental Association

Summary of Hour Averages

Sulphur Dioxide (SO_2) - ppb

Janvier - September 2024

Number of Exceedences (AAAQO): 1-hr: 0 24-hr: 0

Maximum Value: 2.5 ppb on Sep 3 00:00 Maximum Daily Average: 0.4 ppb on Sep 8

Minimum Value: 0.0 ppb on Sep 2 21:00 Minimum Daily Average: 0.0 ppb on Sep 19

Maximum Diurnal Average: 0.2 ppb at hour 13 Minimum Diurnal Average: 0.1 ppb at hour 22

Monthly Average: 0.12 ppb Percentiles: P_1 = 0.0 P_{10} = 0.0 Q_1 = 0.0 Median = 0.0 Q_3 = 0.1 P_{90} = 0.4 P_{99} = 1.0

Hours in Service:	720
Hours of Data:	685
Hours of Missing Data:	35
Hours of Calibration:	34
Percent Operational Time:	99.9

Day	Hourly Period Ending At (MST)																								Daily	Daily
	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24	Average	Maximum
1-Sep	0.1	0.1	0.0	0.1	0.1	Z	0.3	0.3	0.4	0.4	0.5	0.9	0.4	0.2	0.4	0.3	0.2	0.2	0.1	0.1	0.1	0.2	0.1	0.1	0.3	0.9
2-Sep	Z	0.1	0.2	0.1	0.1	0.1	0.1	0.1	0.1	0.3	0.2	0.4	0.5	0.3	0.1	0.2	0.1	0.1	0.0	0.0	0.0	0.0	0.5	2.5	0.3	2.5
3-Sep	0.8	Z	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	M	0.0	0.6	0.6	0.8	0.8	0.4	0.3	0.2	0.1	0.1	0.0	0.0	0.0	0.2	0.8
4-Sep	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	0.0	0.0	0.1
5-Sep	0.2	0.0	Z	0.0	0.0	0.0	0.0	0.0	0.6	1.0	0.6	0.2	0.1	0.0	0.0	0.0	0.1	0.3	0.2	0.1	0.0	0.0	0.1	0.0	0.2	1.0
6-Sep	0.0	0.1	0.2	Z	0.4	0.4	0.6	1.0	0.8	0.2	0.1	0.3	0.3	0.4	0.2	0.3	0.3	0.4	0.3	0.2	0.3	0.1	0.1	0.1	0.3	1.0
7-Sep	0.1	0.2	0.2	0.2	Z	0.1	0.2	0.3	0.3	0.2	0.4	0.2	0.2	0.2	0.2	0.2	0.2	0.1	0.2	0.2	0.1	0.1	0.1	0.1	0.2	0.4
8-Sep	0.2	0.1	0.1	0.2	0.2	Z	0.2	0.2	0.3	0.4	0.3	0.4	1.0	1.0	0.7	0.5	0.5	0.6	0.5	0.7	0.7	0.5	0.4	0.6	0.4	1.0
9-Sep	Z	0.8	0.5	0.5	0.6	0.7	0.6	0.9	0.9	0.4	0.6	0.8	0.4	0.2	0.1	0.0	0.1	0.0	0.0	0.0	0.0	0.0	0.0	0.1	0.4	0.9
10-Sep	0.0	Z	0.0	0.0	0.0	0.1	0.0	0.0	0.0	0.1	0.2	0.1	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	0.2
11-Sep	0.1	0.1	Z	0.1	0.1	0.1	0.1	0.1	0.1	0.0	0.1	0.1	0.1	0.2	0.2	0.0	0.1	0.1	0.1	0.1	0.0	0.1	0.1	0.0	0.1	0.2
12-Sep	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
13-Sep	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	0.1	0.0	0.0	0.1
14-Sep	0.1	0.4	0.2	0.1	0.0	Z	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	0.0	0.0	0.0	0.0	0.4
15-Sep	Z	0.1	0.1	0.1	0.0	0.1	0.1	0.0	0.1	0.0	0.1	0.2	0.1	0.2	0.1	0.0	0.1	0.1	0.0	0.0	0.0	0.0	0.0	0.0	0.1	0.2
16-Sep	0.0	Z	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	0.0	0.1
17-Sep	0.0	0.0	Z	0.0	0.0	0.0	0.0	0.0	0.1	0.4	0.7	0.3	0.6	0.4	0.3	0.3	0.3	0.2	0.1	0.0	0.1	0.1	0.0	0.0	0.2	0.7
18-Sep	0.0	0.0	0.1	Z	0.1	0.1	0.1	0.1	0.1	0.3	0.5	0.2	0.1	0.1	0.0	0.0	0.0	0.0	0.1	0.1	0.0	0.0	0.0	0.0	0.1	0.5
19-Sep	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
20-Sep	0.0	0.0	0.1	0.1	0.0	Z	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.2	0.5	1.6	1.2	0.4	0.4	1.2	0.4	0.2	0.1	0.1	0.3	1.6
21-Sep	Z	0.2	0.1	0.1	0.0	0.1	0.0	0.0	0.1	0.2	0.2	0.3	0.1	0.0	0.0	0.0	0.0	0.1	0.1	0.1	0.0	0.1	0.3	0.1	0.1	0.3
22-Sep	0.0	Z	0.0	0.0	0.0	0.0	0.0	0.1	0.0	0.0	0.1	0.2	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	0.3
23-Sep	0.1	0.1	Z	0.2	0.1	0.1	0.1	0.2	0.1	0.1	0.1	0.2	0.3	0.1	0.1	0.0	0.1	0.1	0.1	0.1	0.1	0.0	0.1	0.1	0.1	0.3
24-Sep	0.1	0.1	0.1	Z	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	0.1
25-Sep	0.0	0.0	0.0	0.0	Z	0.0	0.1	0.2	0.3	C	C	C	C	0.5	0.4	0.5	0.3	0.2	0.0	0.0	0.0	0.0	0.0	0.0	0.1	0.5
26-Sep	0.0	0.0	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	0.1	0.0	0.0	0.0	0.0	0.0	0.0	0.1
27-Sep	Z	0.1	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	0.1
28-Sep	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	0.0	0.0	0.0	0.0	0.0	0.0	0.1
29-Sep	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	0.1	0.1	0.1	0.2	0.0	0.2
30-Sep	0.5	0.1	0.1	Z	0.2	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	0.4	0.3	0.2	0.1	0.1	0.5
	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	0.2	0.1	0.2	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	Diurnal Average	
	0.8	0.8	0.5	0.5	0.6	0.7	0.6	1.0	0.9	1.0	0.7	0.9	1.0	1.0	0.8	1.6	1.2	0.6	0.5	1.2	0.7	0.5	0.5	2.5	Diurnal Maximum	

Z - zerospan C - Calibration M - Maintenance

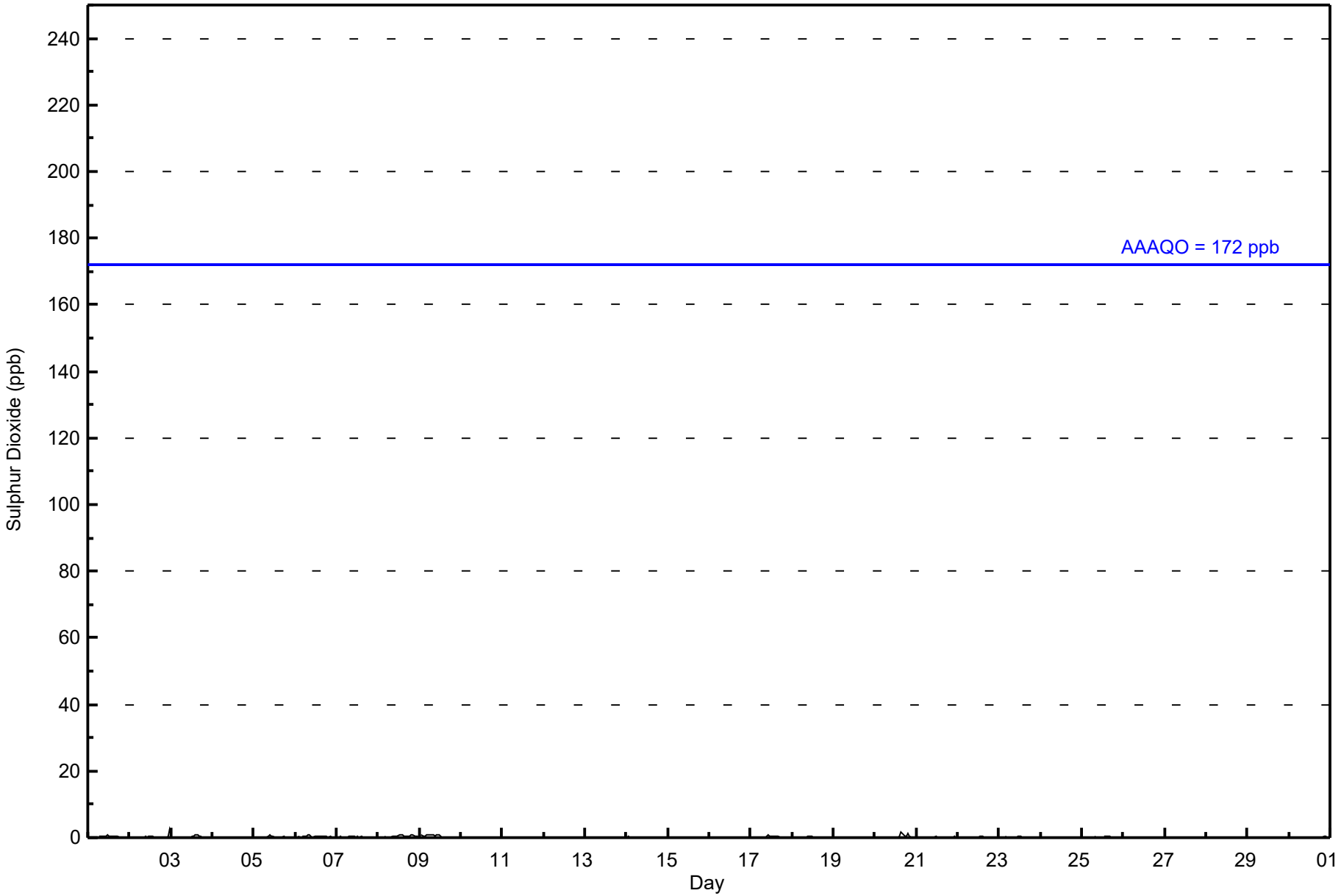
Alberta Ambient Air Quality Objectives (AAAQO): 1-hr 172 ppb 24-hr 48 ppb

Wood Buffalo Environmental Association

Hourly Averages

Sulphur Dioxide (SO_2) - ppb

Janvier - September 2024



Sulphur Dioxide (SO_2) - ppb

Janvier - September 2024

Concentration Ranges (ppb)	Number of Hours	%	Cumulative %
0 - 10	685	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: 685

Total Number of Hours: 720

Wood Buffalo Environmental Association

Frequency Distribution

Sulphur Dioxide (SO_2) - ppb

Janvier - September 2024

Concentration Ranges (ppb)	Wind Direction																
	N	NNE	NE	ENE	E	ESE	SE	SSE	S	SSW	SW	WSW	W	WNW	NW	NNW	**Totals**
0 - 10	53	41	6	14	20	10	17	32	32	156	127	45	43	47	22	15	680
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	53	41	6	14	20	10	17	32	32	156	127	45	43	47	22	15	680

Total Number of Valid Hours: 680

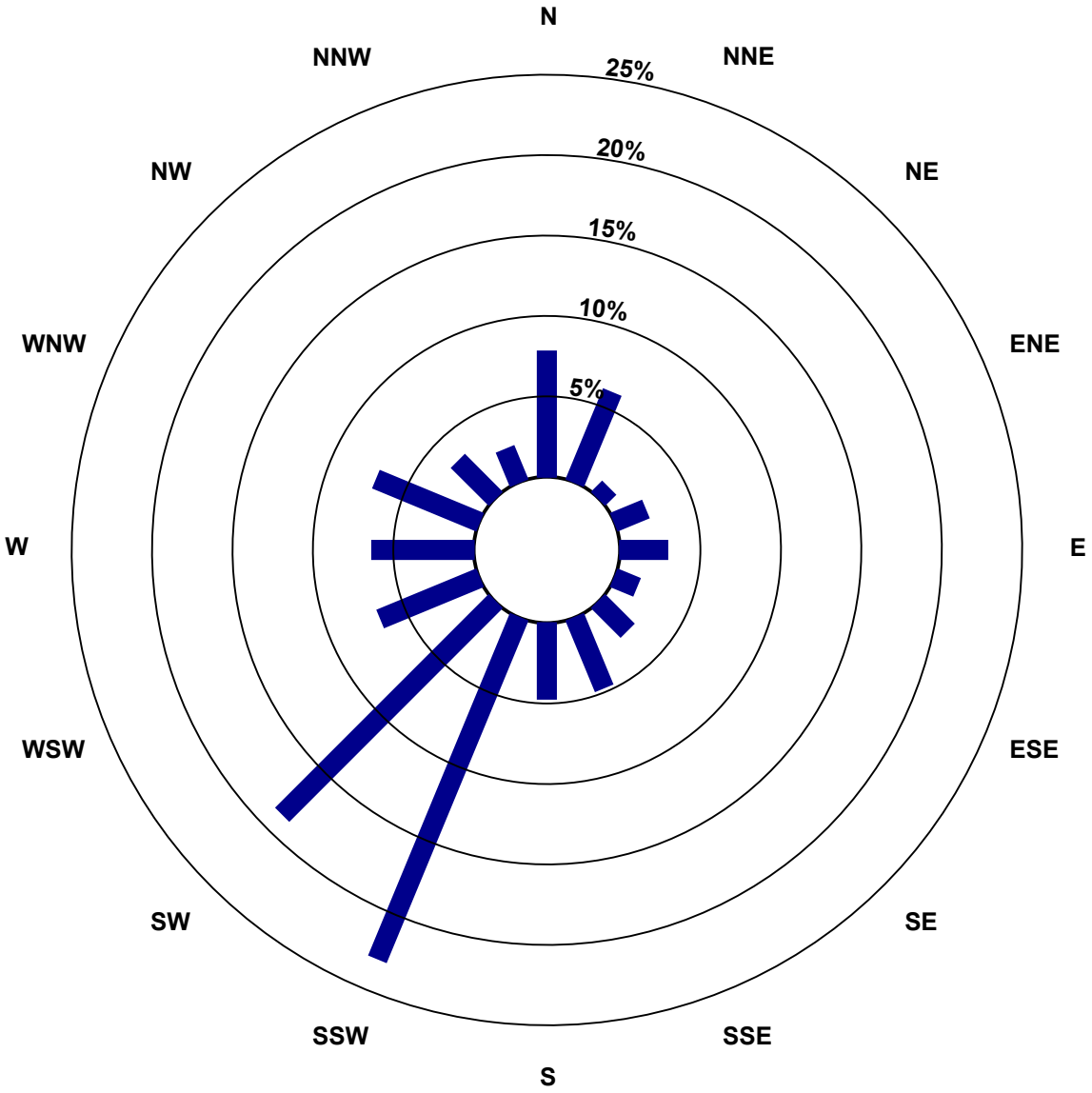
Total Number of Hours: 720

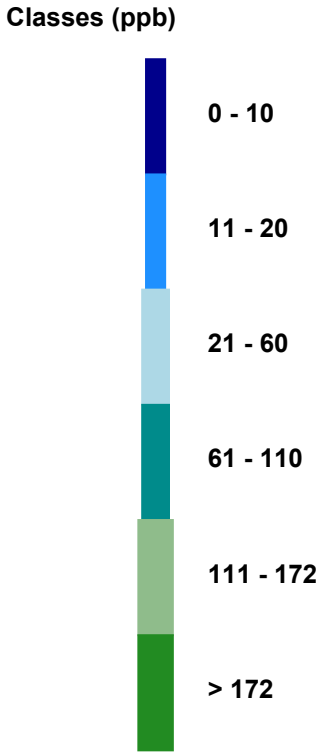
Wood Buffalo Environmental Association

Wind Rose Sep 2024

Sulphur Dioxide (SO_2) - ppb

Janvier





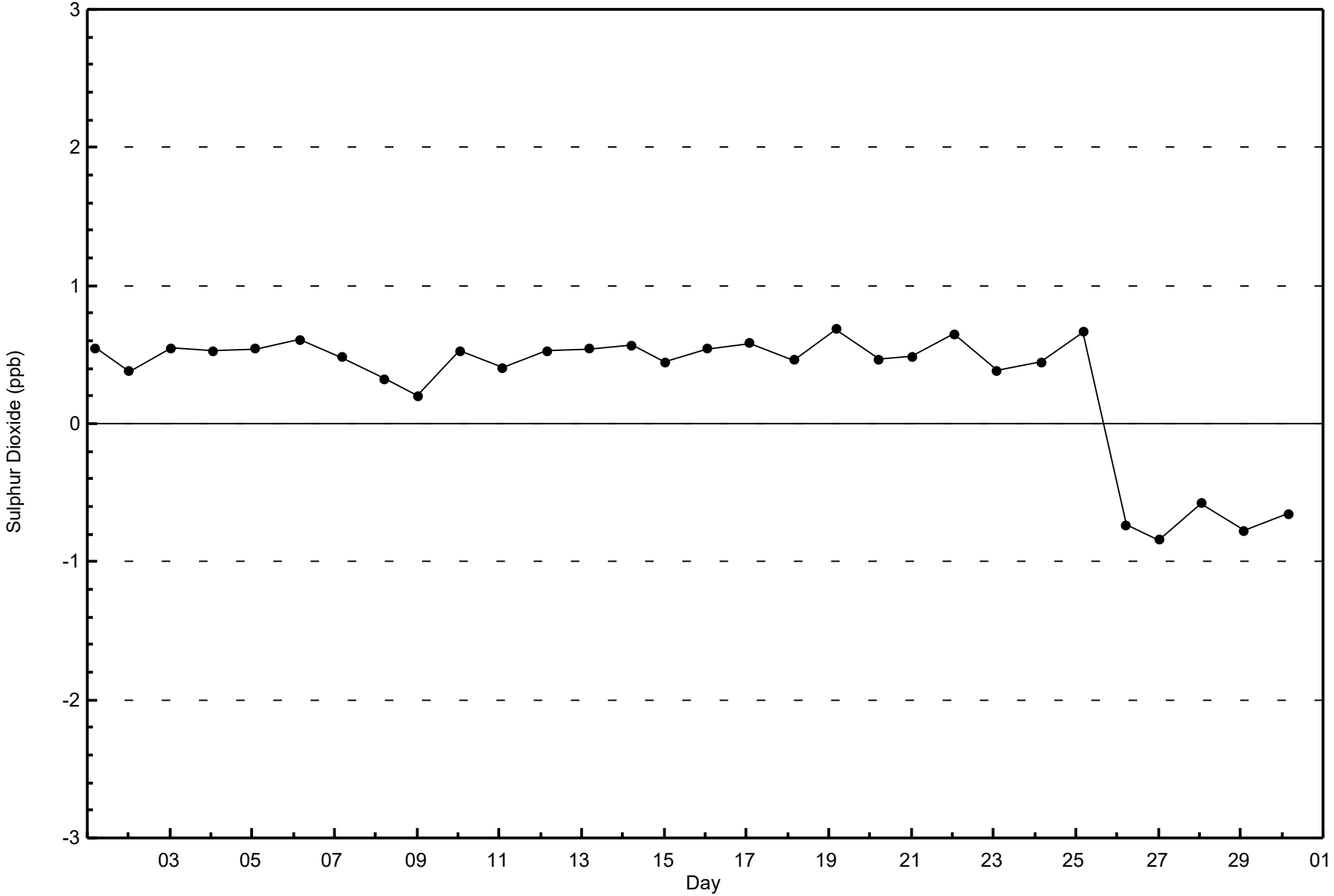
Total Number of Valid Hours: 680

Wood Buffalo Environmental Association

Zero Responses

Sulphur Dioxide (SO_2) - ppb

Janvier - September 2024

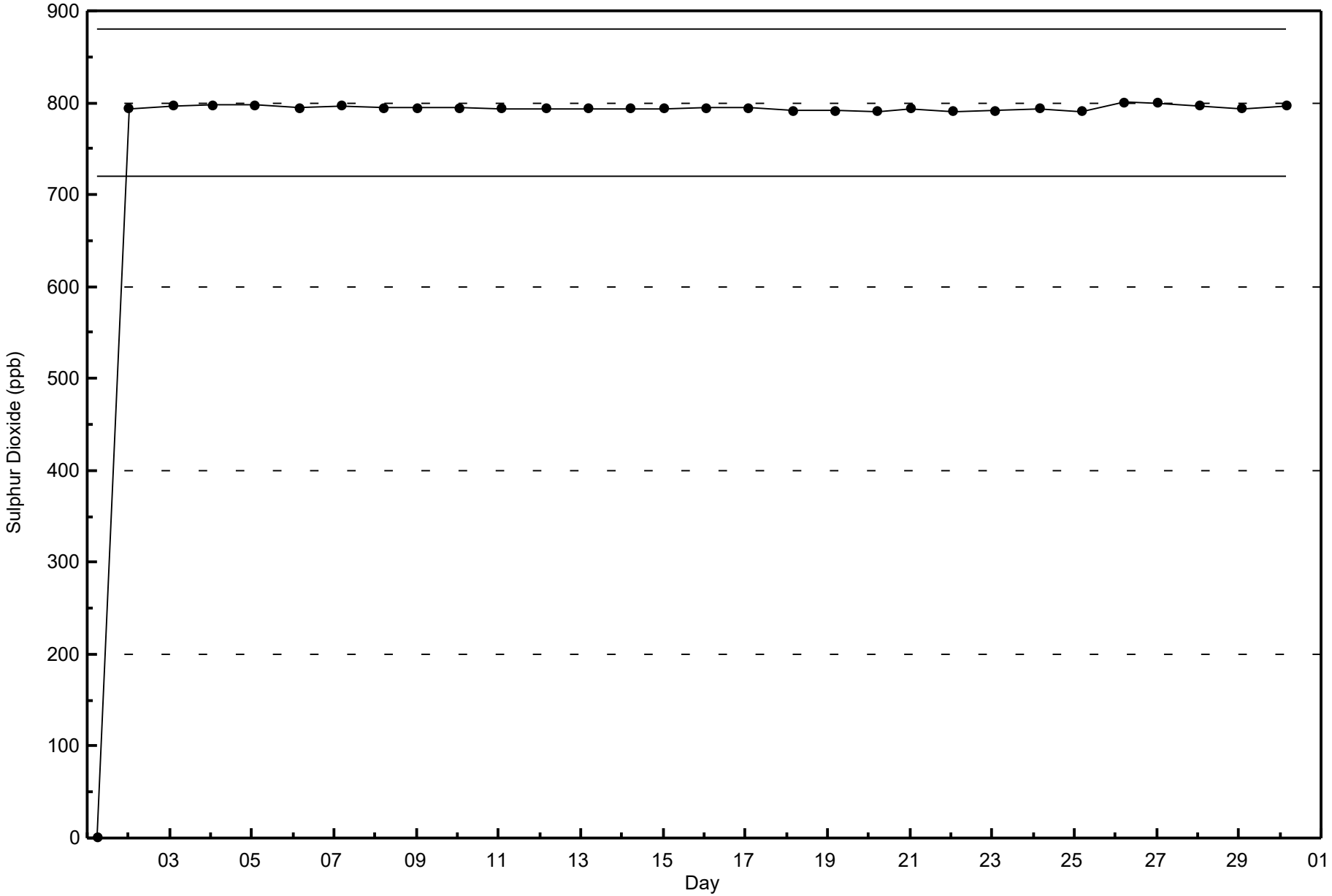


Wood Buffalo Environmental Association

Span Responses

Sulphur Dioxide (SO_2) - ppb

Janvier - September 2024



Wood Buffalo Environmental Association

Summary of Hour Averages

Total Reduced Sulphur (TRS) - ppb

Janvier - September 2024

Number of Exceedences (AAAQO): 1-hr: 0 24-hr: 0
Maximum Value: 0.5 ppb on Sep 13 11:00 Maximum Daily Average: 0.3 ppb on Sep 13

Minimum Value: 0.1 ppb on Sep 20 08:00 Minimum Daily Average: 0.1 ppb on Sep 30
Maximum Diurnal Average: 0.2 ppb at hour 21 Minimum Diurnal Average: 0.2 ppb at hour 6
Monthly Average: 0.21 ppb Percentiles: P_1 = 0.1 P_{10} = 0.1 Q_1 = 0.2 Median = 0.2 Q_3 = 0.2 P_{90} = 0.3 P_{99} = 0.4

Hours in Service:	720
Hours of Data:	683
Hours of Missing Data:	37
Hours of Calibration:	36
Percent Operational Time:	99.9

Day	Hourly Period Ending At (MST)																								Daily	Daily
	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24	Average	Maximum
1-Sep	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	0.2	0.2	0.2	0.2	0.2	0.2	0.2	0.2	0.2
2-Sep	0.2	Z	0.3	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	0.2	0.2	0.2	0.2	0.4	0.2	0.4
3-Sep	0.4	0.3	Z	0.3	0.3	0.2	0.2	0.2	0.2	0.2	M	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
4-Sep	0.3	0.2	Z	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	0.2	0.2	0.2	0.2	0.2	0.2	0.2	0.2	0.3
5-Sep	0.2	0.2	0.2	Z	0.2	0.2	0.2	0.2	0.3	0.4	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	0.4
6-Sep	0.2	0.2	0.2	0.2	Z	0.3	0.3	0.3	0.3	0.3	0.2	0.3	0.3	0.3	0.3	0.2	0.2	0.2	0.3	0.3	0.3	0.3	0.3	0.3	0.2	0.3
7-Sep	0.2	0.2	0.2	0.2	0.2	Z	0.3	0.3	0.3	0.3	0.3	0.3	0.2	0.3	0.3	0.2	0.2	0.2	0.3	0.3	0.3	0.3	0.3	0.3	0.3	0.3
8-Sep	Z	0.3	0.3	0.2	0.3	0.2	0.2	0.2	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	0.2	0.2	0.3	0.2	0.3
9-Sep	0.3	Z	0.4	0.3	0.3	0.4	0.4	0.4	0.4	0.4	0.3	0.3	0.3	0.2	0.2	0.2	0.2	0.2	0.2	0.2	0.2	0.3	0.2	0.3	0.3	0.4
10-Sep	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	0.2	0.2	0.2	0.2	0.2	0.2	0.2
11-Sep	0.2	0.1	0.1	Z	0.2	0.1	0.1	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	0.2	0.2	0.2	0.2	0.2	0.3
12-Sep	0.2	0.2	0.2	0.2	Z	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	0.3	0.3	0.3	0.4
13-Sep	0.3	0.3	0.3	0.2	0.3	Z	0.3	0.3	0.3	0.4	0.5	0.5	0.5	0.4	0.4	0.4	0.3	0.3	0.3	0.4	0.4	0.3	0.3	0.3	0.3	0.5
14-Sep	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	0.2	0.2	0.2	0.2	0.2	0.2	0.2	0.2	0.2	0.2	0.2	0.3
15-Sep	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	0.2	0.2	0.2	0.2	0.2	0.2	0.2	0.2	0.3
16-Sep	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	0.3	0.2	0.2	0.2	0.2	0.2	0.2	0.2	0.3
17-Sep	0.2	0.2	0.2	Z	0.2	0.2	0.2	0.2	0.3	0.3	0.3	0.2	0.2	0.2	0.1	0.2	0.2	0.2	0.2	0.2	0.2	0.2	0.2	0.2	0.2	0.3
18-Sep	0.2	0.2	0.2	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	0.2	0.2	0.2	0.2	0.3	0.3	0.3	0.2	0.2	0.3
19-Sep	0.2	0.2	0.2	0.1	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	0.2	0.2	0.2	0.2
20-Sep	Z	0.2	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.2	0.2	0.2	0.2	0.1	0.2	0.2	0.2	0.2	0.2	0.2	0.2	0.1	0.1	0.1	0.1	0.2
21-Sep	0.1	Z	0.2	0.1	0.2	0.2	0.2	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	0.2	0.2	0.2	0.2	0.2
22-Sep	0.2	0.1	Z	0.2	0.2	0.2	0.1	0.2	0.2	0.2	0.2	0.2	0.2	0.2	0.2	0.2	0.2	0.2	0.2	0.2	0.2	0.2	0.2	0.2	0.2	0.2
23-Sep	0.1	0.1	0.1	Z	0.2	0.1	0.1	0.1	0.1	0.2	0.1	0.1	0.1	0.2	0.1	0.1	0.2	0.1	0.1	0.1	0.1	0.2	0.2	0.2	0.1	0.2
24-Sep	0.2	0.2	0.2	0.2	Z	0.2	0.2	0.2	0.2	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	0.2	0.2	0.2	0.3
25-Sep	0.2	0.2	0.2	0.2	0.2	Z	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	0.2	0.2	0.2	0.2	0.2	0.2	0.3
26-Sep	Z	0.2	0.2	0.2	0.2	0.1	0.2	0.2	0.2	0.2	0.2	C	C	C	C	C	C	0.3	0.2	0.2	0.2	0.2	0.1	0.1	--	0.3
27-Sep	0.1	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	0.2	0.1	0.2	0.2	0.2	0.2	0.2	0.1	0.1	0.1	0.1	0.2
28-Sep	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	0.2	0.2	0.1	0.1	0.1	0.1	0.1	0.2
29-Sep	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	0.2	0.4	0.3	0.3	0.2	0.1	0.4
30-Sep	0.2	0.1	0.1	0.1	Z	0.2	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	0.2
	0.2	0.2	0.2	0.2	0.2	0.2	0.2	0.2	0.2	0.2	0.2	0.2	0.2	0.2	0.2	0.2	0.2	0.2	0.2	0.2	0.2	0.2	0.2	0.2	Diurnal Average	
	0.4	0.3	0.4	0.3	0.3	0.4	0.4	0.4	0.4	0.4	0.5	0.5	0.5	0.4	0.4	0.4	0.3	0.3	0.3	0.4	0.4	0.3	0.3	0.4	Diurnal Maximum	

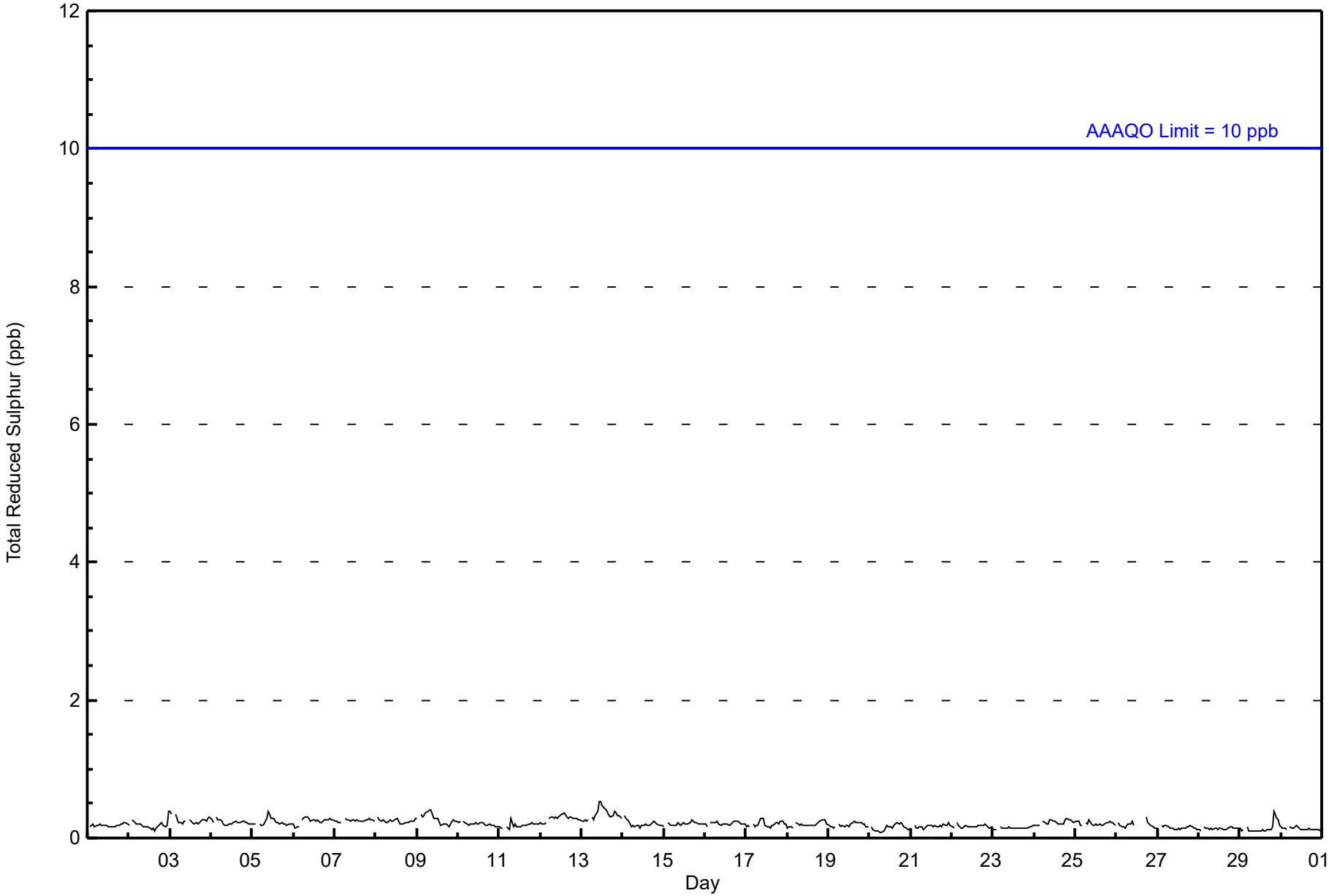
Z - zerospan C - Calibration M - Maintenance
Alberta Ambient Air Quality Objectives (AAAQO): 1-hr 10 ppb 24-hr 3 ppb

Wood Buffalo Environmental Association

Hourly Averages

Total Reduced Sulphur (TRS) - ppb

Janvier - September 2024



Wood Buffalo Environmental Association

Cumulative Frequency Distribution

Total Reduced Sulphur (TRS) - ppb

Janvier - September 2024

Concentration Ranges (ppb)	Number of Hours	%	Cumulative %
0 - 2	683	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: 683

Total Number of Hours: 720

Wood Buffalo Environmental Association

Frequency Distribution

Total Reduced Sulphur (TRS) - ppb

Janvier - September 2024

Concentration Ranges (ppb)	Wind Direction																
	N	NNE	NE	ENE	E	ESE	SE	SSE	S	SSW	SW	WSW	W	WNW	NW	NNW	**Totals**
0 - 2	54	41	6	14	20	11	17	31	31	157	127	45	39	45	23	17	678
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	54	41	6	14	20	11	17	31	31	157	127	45	39	45	23	17	678

Total Number of Valid Hours: 678

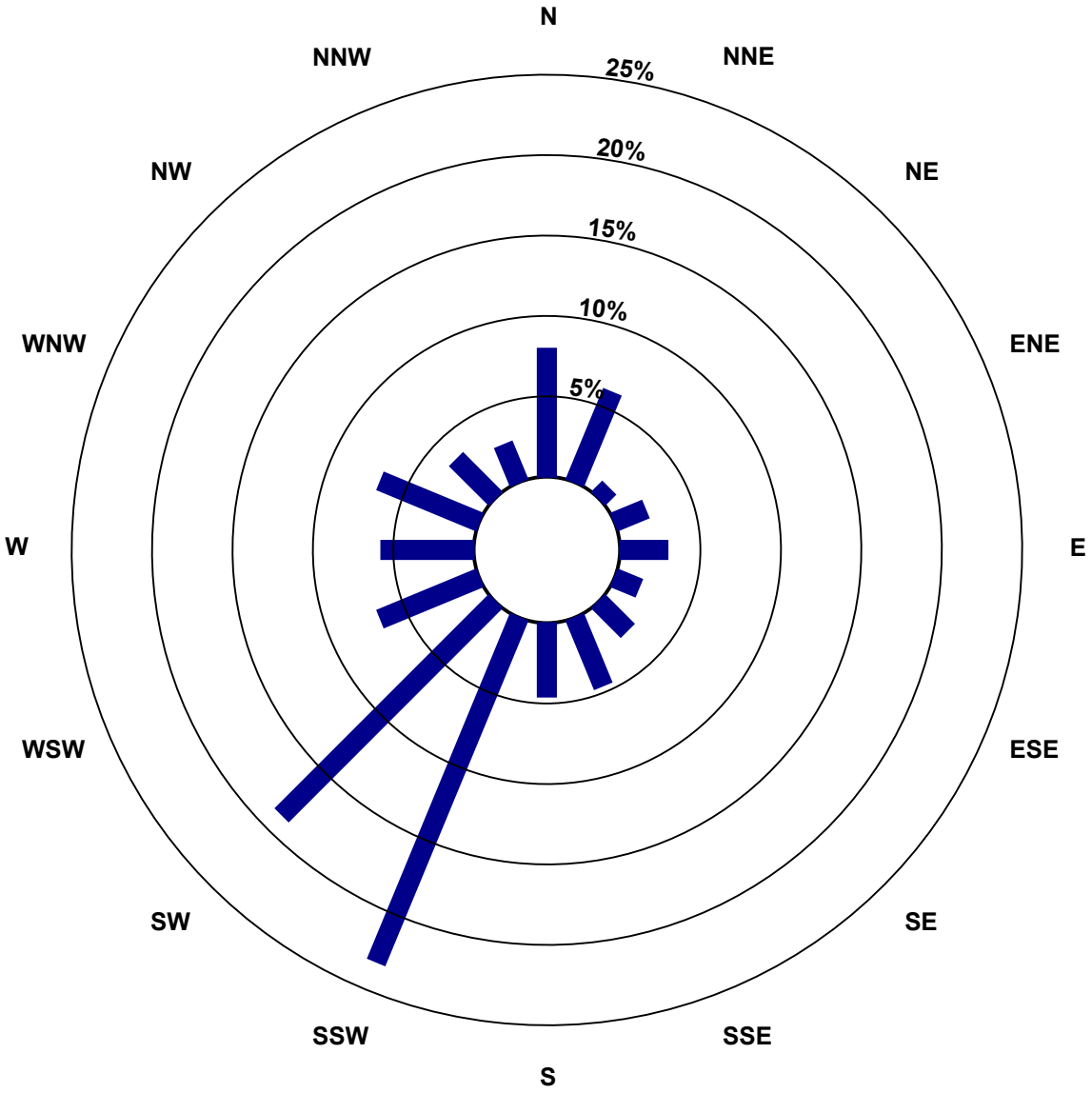
Total Number of Hours: 720

Wood Buffalo Environmental Association

Wind Rose Sep 2024

Total Reduced Sulphur (TRS) - ppb

Janvier



Classes (ppb)

- 0 - 2
- 3 - 4
- 5 - 7
- 8 - 11
- > 11

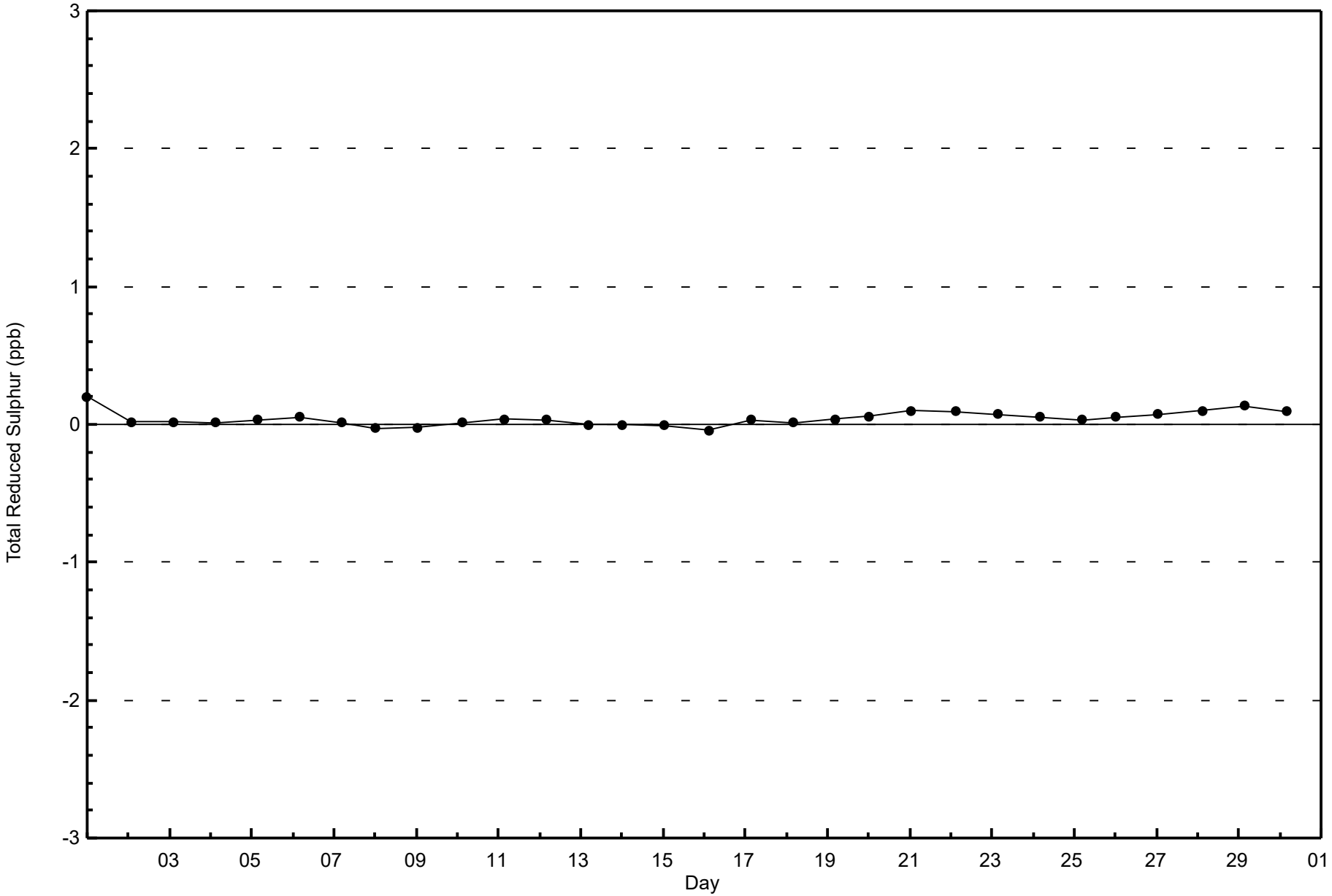
Total Number of Valid Hours: 678

Wood Buffalo Environmental Association

Zero Responses

Total Reduced Sulphur (TRS) - ppb

Janvier - September 2024

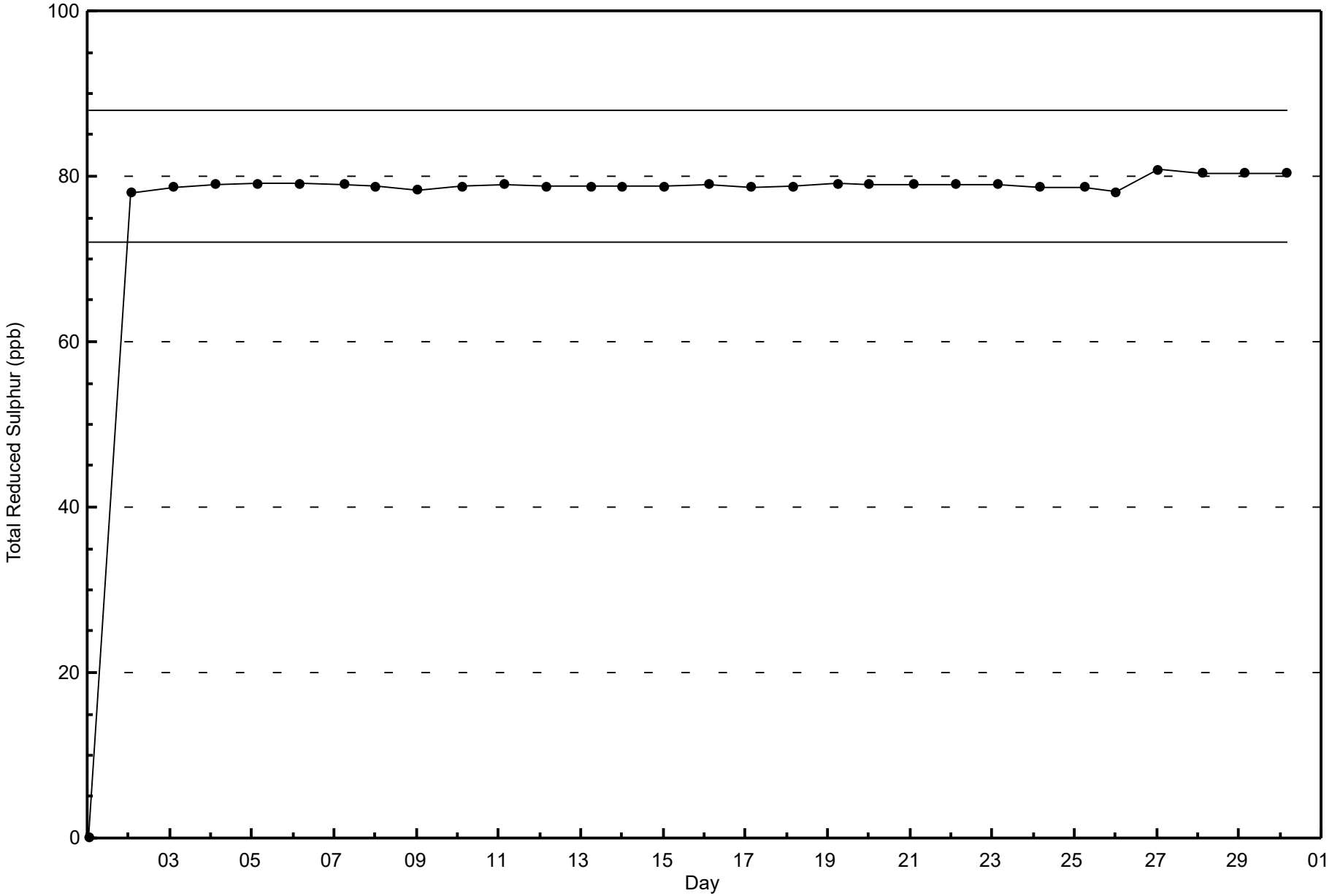


Wood Buffalo Environmental Association

Span Responses

Total Reduced Sulphur (TRS) - ppb

Janvier - September 2024



Wood Buffalo Environmental Association

Summary of Hour Averages

Total Hydrocarbons (THC) - ppm

Janvier - September 2024

Maximum Value: 2.2 ppm on Sep 25 06:00

Maximum Daily Average: 2.1 ppm on Sep 13

Minimum Value: 1.9 ppm on Sep 1 14:00

Minimum Daily Average: 2.0 ppm on Sep 23

Maximum Diurnal Average: 2.0 ppm at hour 8

Minimum Diurnal Average: 2.0 ppm at hour 16

Monthly Average: 2.01 ppm

Percentiles: P_1 = 1.9 P_{10} = 2.0 Q_1 = 2.0 Median = 2.0 Q_3 = 2.0 P_{90} = 2.1 P_{99} = 2.1

Hours in Service:	720
Hours of Data:	677
Hours of Missing Data:	43
Hours of Calibration:	33
Percent Operational Time:	98.6

Day	Hourly Period Ending At (MST)																								Daily	Daily
	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24	Average	Maximum
1-Sep	UO	UO	UO	UO	UO	UO	UO	UO	UO	2.0	2.0	1.9	1.9	1.9	1.9	1.9	1.9	1.9	1.9	2.0	2.0	2.1	2.0	2.0	--	2.1
2-Sep	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	1.9	1.9	1.9	2.0	2.0	2.0	2.0	2.0	2.0	2.0
3-Sep	2.0	Z	2.0	2.0	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	2.0
4-Sep	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
5-Sep	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
6-Sep	2.0	2.0	2.0	Z	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	2.1	2.1	2.1	2.0	2.1
7-Sep	2.1	2.0	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	2.0	2.0	2.0	2.0	2.1
8-Sep	2.0	2.0	2.0	2.0	2.0	Z	2.0	2.0	2.0	2.0	2.0	2.1	2.1	2.0	1.9	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.1	2.1	2.0	2.1
9-Sep	Z	2.0	2.1	2.1	2.1	2.1	2.1	2.1	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	2.2
10-Sep	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
11-Sep	2.0	2.0	Z	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	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.1
12-Sep	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	2.1	2.1
13-Sep	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	2.2	2.2	2.1	2.1	2.1	2.1	2.1	2.2
14-Sep	2.1	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	2.1
15-Sep	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
16-Sep	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	2.1
17-Sep	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
18-Sep	2.0	2.0	2.0	Z	2.1	2.1	2.0	2.1	2.0	2.0	2.0	2.0	2.0	1.9	2.0	2.0	2.0	1.9	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.1
19-Sep	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	2.1	2.0	2.1
20-Sep	2.0	2.1	2.1	2.1	2.1	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	2.1
21-Sep	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
22-Sep	2.0	Z	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	2.0	2.0	2.1
23-Sep	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
24-Sep	2.0	2.0	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	2.0	2.1	2.1	2.1	2.0	2.0	2.1
25-Sep	2.1	2.0	2.0	2.0	Z	2.2	2.2	2.1	2.1	C	C	C	C	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.2
26-Sep	2.0	2.0	2.0	2.0	2.0	Z	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	2.1
27-Sep	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	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.1
28-Sep	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	2.1	2.0	2.0	2.1
29-Sep	2.0	2.1	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	2.1
30-Sep	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
	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	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	2.1	2.1	2.2	2.2	2.1	2.1	2.1	2.2	2.1	2.1	2.1	2.1	2.1	2.1	2.1	2.2	2.2	2.1	2.1	2.1	2.1	Diurnal Maximum	

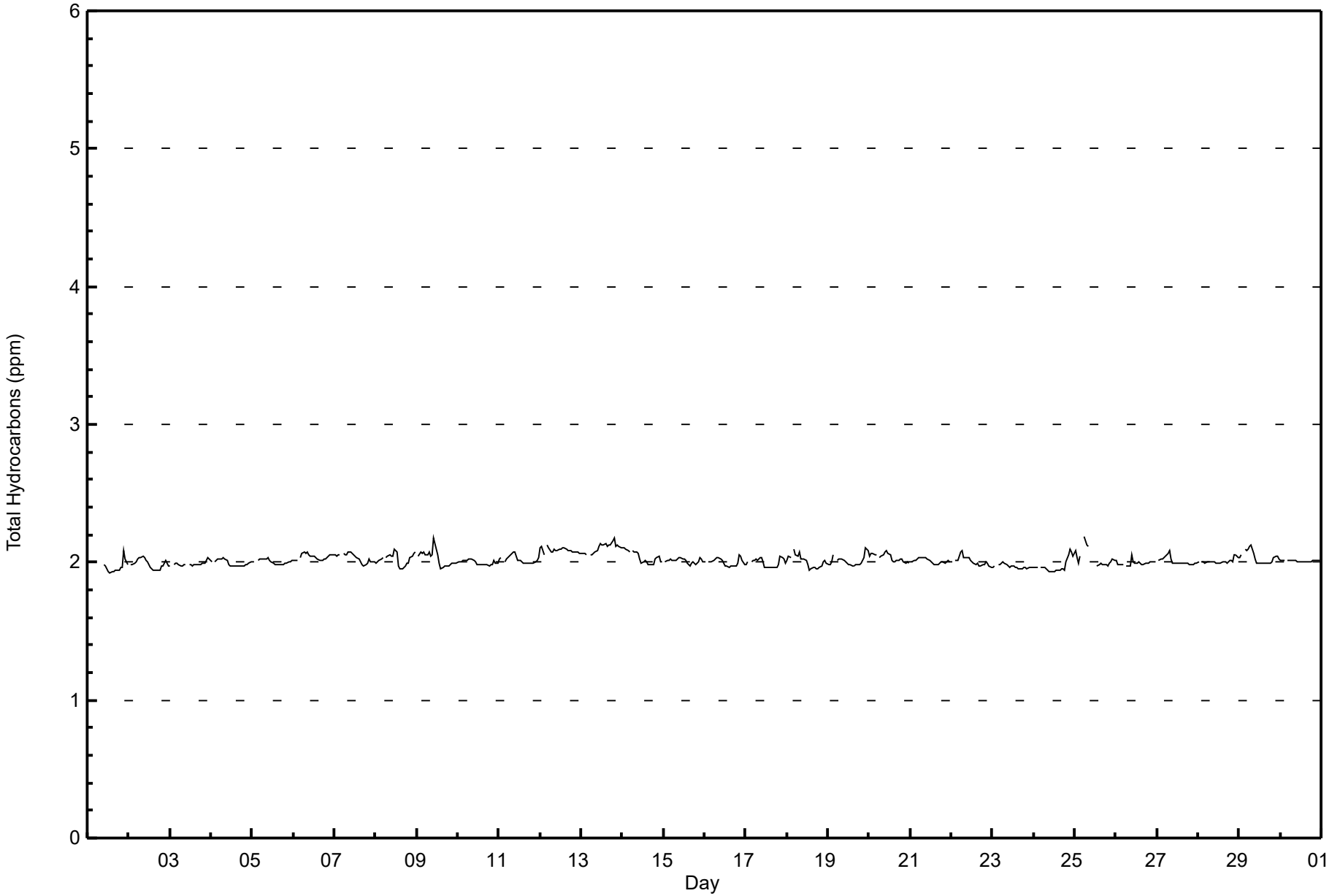
Z - zerospan C - Calibration M - Maintenance UO - Unstable Operation

Wood Buffalo Environmental Association

Hourly Averages

Total Hydrocarbons (THC) - ppm

Janvier - September 2024



Concentration Ranges (ppm)	Number of Hours	%	Cumulative %
0 - 2.0	549	81.09	81.09
2.1 - 3.0	128	18.91	100.00
3.1 - 10.0	0	0.00	100.00
> 10.0	0	0.00	100.00

Total Number of Valid Hours: 677

Total Number of Hours: 720

Wood Buffalo Environmental Association

Frequency Distribution

Total Hydrocarbons (THC) - ppm

Janvier - September 2024

Concentration Ranges (ppm)	Wind Direction																
	N	NNE	NE	ENE	E	ESE	SE	SSE	S	SSW	SW	WSW	W	WNW	NW	NNW	**Totals**
0 - 2.0	27	18	6	14	17	10	15	26	25	127	109	41	39	38	21	12	545
2.1 - 3.0	26	23	0	0	3	0	2	5	5	26	16	4	4	9	1	3	127
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	53	41	6	14	20	10	17	31	30	153	125	45	43	47	22	15	672

Total Number of Valid Hours: 672

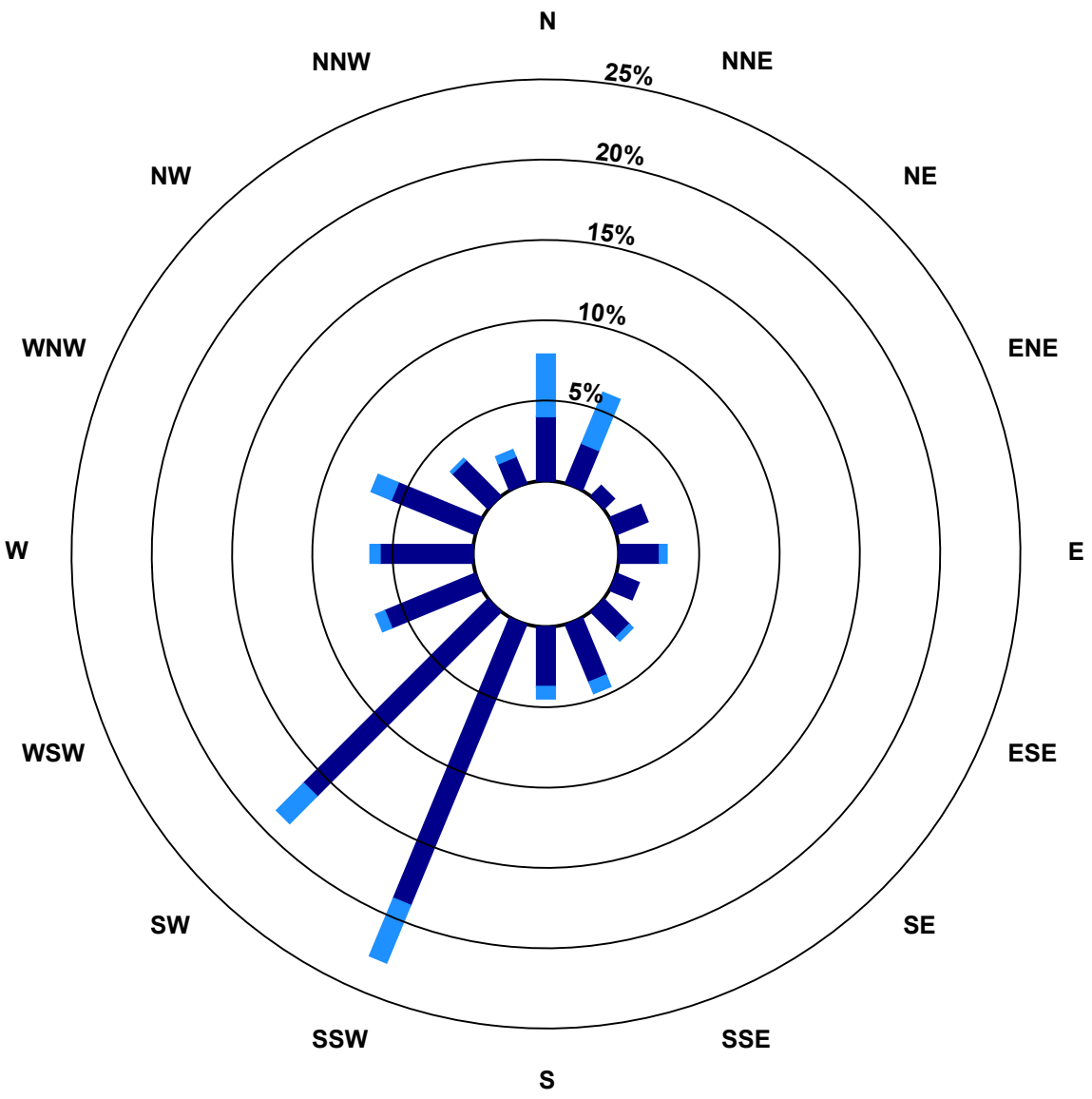
Total Number of Hours: 720

Wood Buffalo Environmental Association

Wind Rose Sep 2024

Total Hydrocarbons (THC) - ppm

Janvier



Classes (ppm)

- 0 - 2.0
- 2.1 - 3.0
- 3.1 - 10.0
- > 10.0

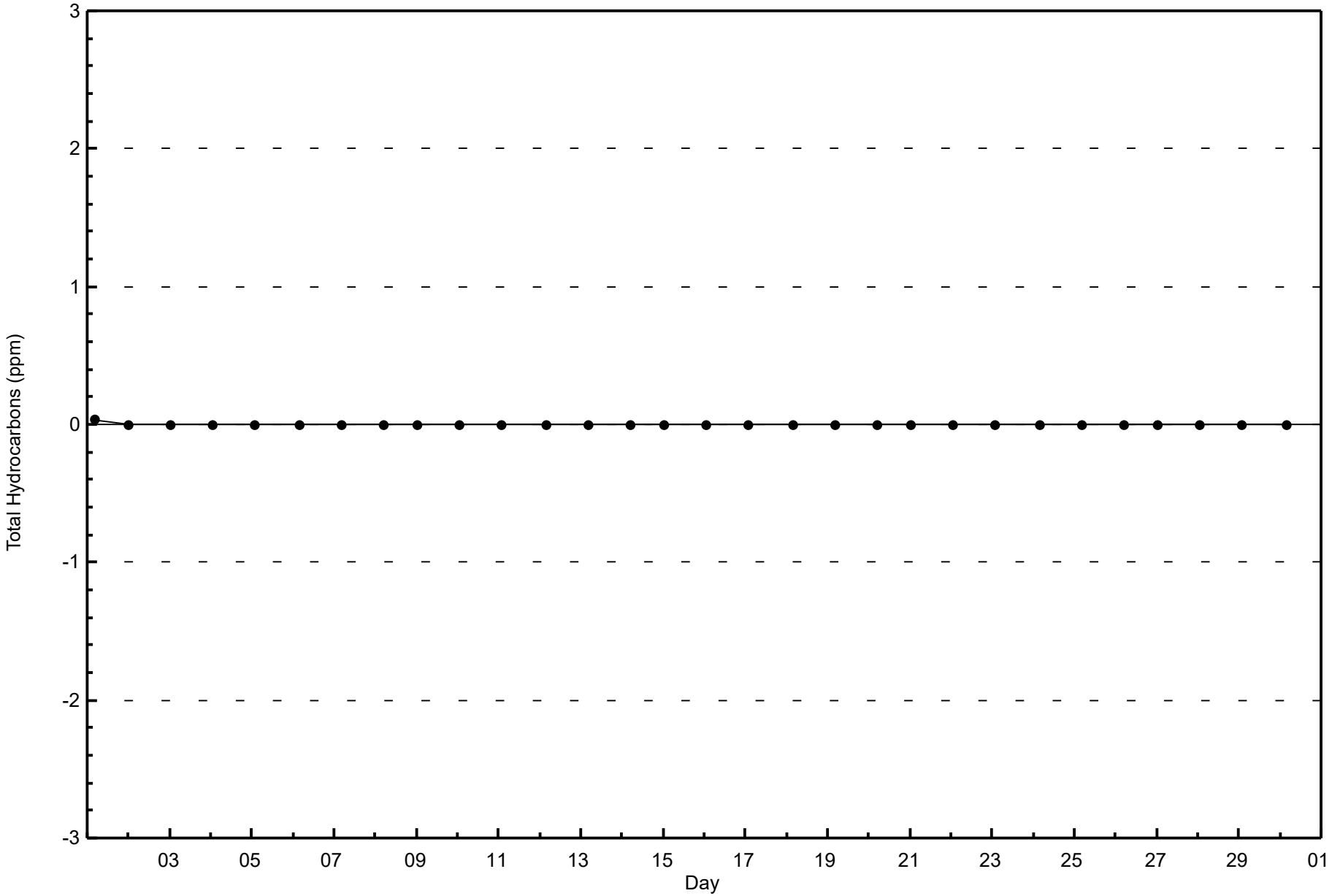
Total Number of Valid Hours: 672

Wood Buffalo Environmental Association

Zero Responses

Total Hydrocarbons (THC) - ppm

Janvier - September 2024

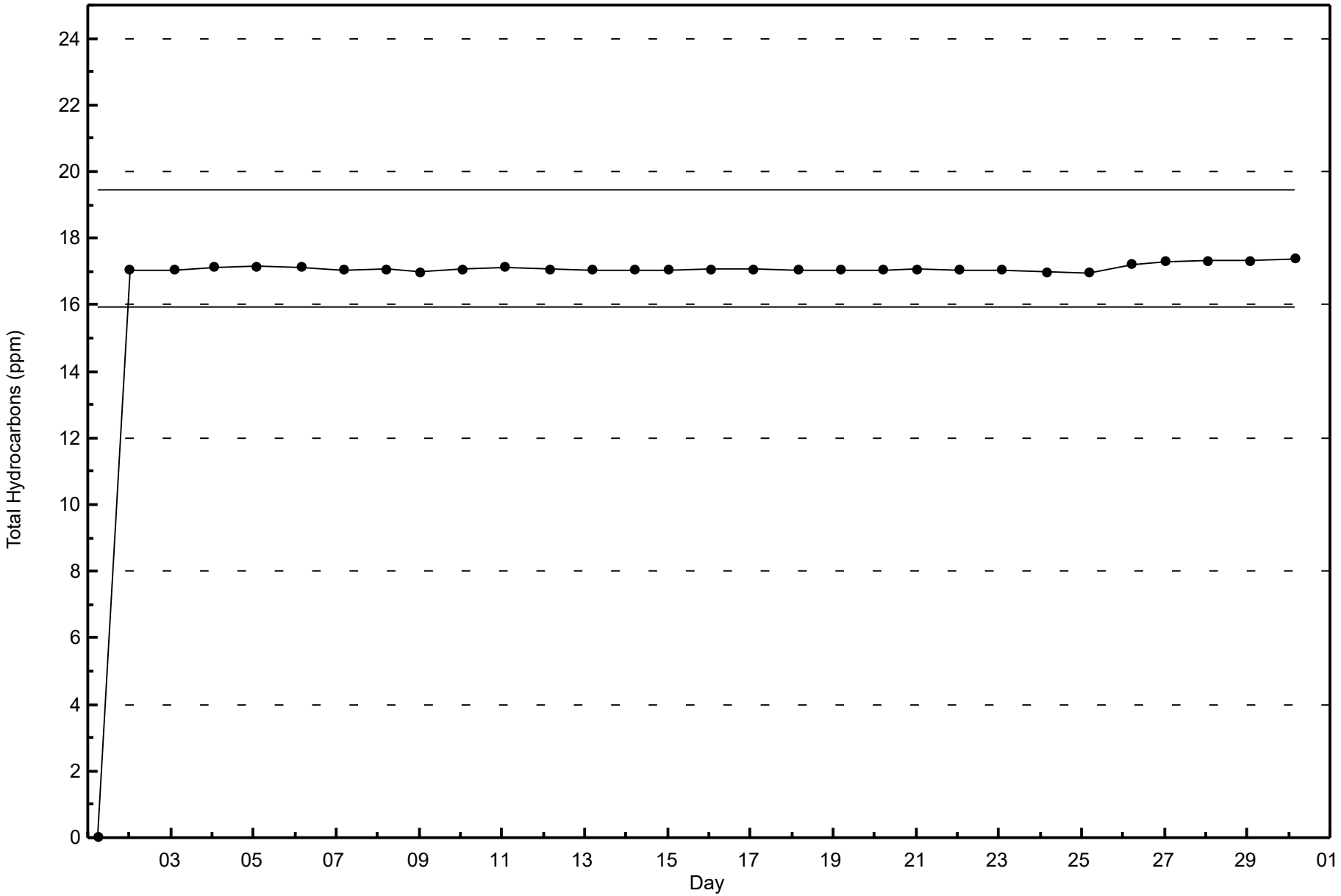


Wood Buffalo Environmental Association

Span Responses

Total Hydrocarbons (THC) - ppm

Janvier - September 2024



Wood Buffalo Environmental Association

Summary of Hour Averages

Non Methane Hydrocarbons (NMHC) - ppm

Janvier - September 2024

Maximum Value: 0.013 ppm on Sep 2 10:00

Maximum Daily Average: 0.001 ppm on Sep 2

Minimum Value: 0.000 ppm on Sep 1 10:00

Minimum Daily Average: 0.000 ppm on Sep 3

Maximum Diurnal Average: 0.000 ppm at hour 10

Minimum Diurnal Average: 0.000 ppm at hour 1

Monthly Average: 0.000 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 in Service:	720
Hours of Data:	677
Hours of Missing Data:	43
Hours of Calibration:	33
Percent Operational Time:	98.6

Day	Hourly Period Ending At (MST)																								Daily	Daily
	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24	Average	Maximum
1-Sep	UO	UO	UO	UO	UO	UO	UO	UO	UO	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	--	0.000
2-Sep	Z	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.013	0.000	0.000	0.000	0.000	0.000	0.000	0.002	0.008	0.001	0.001	0.002	0.000	0.000	0.000	0.001	0.013
3-Sep	0.000	Z	0.000	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	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000
4-Sep	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
5-Sep	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
6-Sep	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
7-Sep	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	0.006	0.000	0.000	0.000	0.000	0.006
8-Sep	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	0.002	0.000	0.000	0.000	0.000	0.002
9-Sep	Z	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	0.000	0.000	0.000	0.000	0.001
10-Sep	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	0.001	0.000	0.000	0.000	0.001	0.000	0.001	0.000	0.001
11-Sep	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
12-Sep	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
13-Sep	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
14-Sep	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
15-Sep	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
16-Sep	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
17-Sep	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
18-Sep	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
19-Sep	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
20-Sep	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
21-Sep	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
22-Sep	0.000	Z	0.005	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	0.000	0.000	0.000	0.005
23-Sep	0.000	0.000	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	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.003
24-Sep	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	0.003	0.000	0.001	0.000	0.000	0.000	0.003
25-Sep	0.000	0.000	0.000	0.000	Z	0.000	0.000	0.000	0.000	C	C	C	C	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000
26-Sep	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
27-Sep	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
28-Sep	0.000	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	0.003	0.000	0.000	0.000	0.000	0.000	0.003
29-Sep	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
30-Sep	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
	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	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	
	0.000	0.000	0.005	0.001	0.000	0.003	0.003	0.000	0.000	0.013	0.000	0.000	0.000	0.000	0.000	0.000	0.002	0.008	0.001	0.003	0.006	0.001	0.000	0.001	Diurnal Maximum	

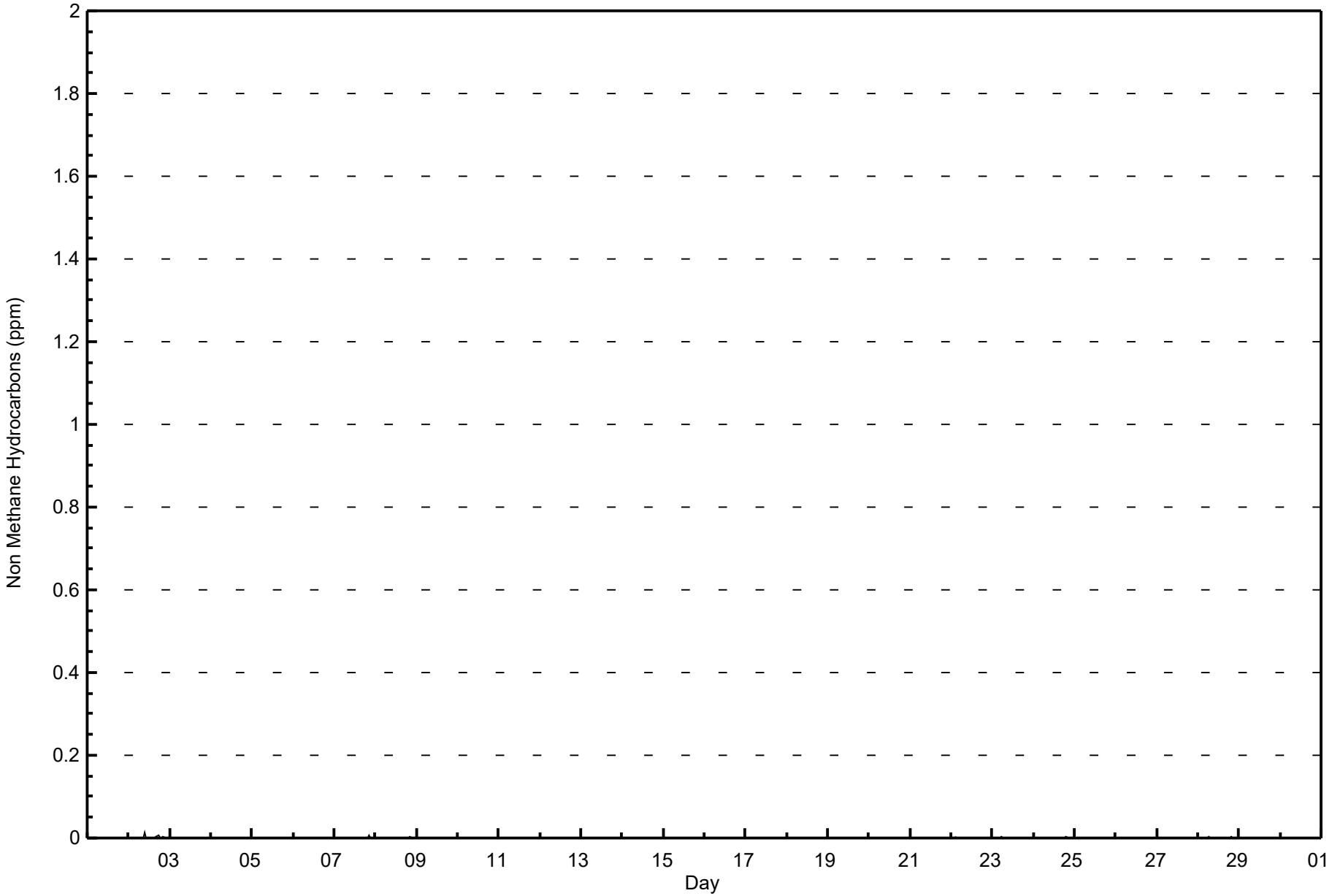
Z - zerospan C - Calibration M - Maintenance UO - Unstable Operation

Wood Buffalo Environmental Association

Hourly Averages

Non Methane Hydrocarbons (NMHC) - ppm

Janvier - September 2024



Wood Buffalo Environmental Association

Cumulative Frequency Distribution

Non Methane Hydrocarbons (NMHC) - ppm

Janvier - September 2024

Concentration Ranges (ppm)	Number of Hours	%	Cumulative %
0 - 0.005	674	99.56	99.56
0.006 - 0.05	3	0.44	100.00
0.06 - 0.1	0	0.00	100.00
> 0.1	0	0.00	100.00

Total Number of Valid Hours: 677

Total Number of Hours: 720

Wood Buffalo Environmental Association

Frequency Distribution

Non Methane Hydrocarbons (NMHC) - ppm

Janvier - September 2024

Concentration Ranges (ppm)	Wind Direction																
	N	NNE	NE	ENE	E	ESE	SE	SSE	S	SSW	SW	WSW	W	WNW	NW	NNW	**Totals**
0 - 0.005	53	41	6	14	20	10	17	31	30	151	125	44	43	47	22	15	669
0.006 - 0.05	0	0	0	0	0	0	0	0	0	2	0	1	0	0	0	0	3
0.06 - 0.1	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
Totals	53	41	6	14	20	10	17	31	30	153	125	45	43	47	22	15	672

Total Number of Valid Hours: 672

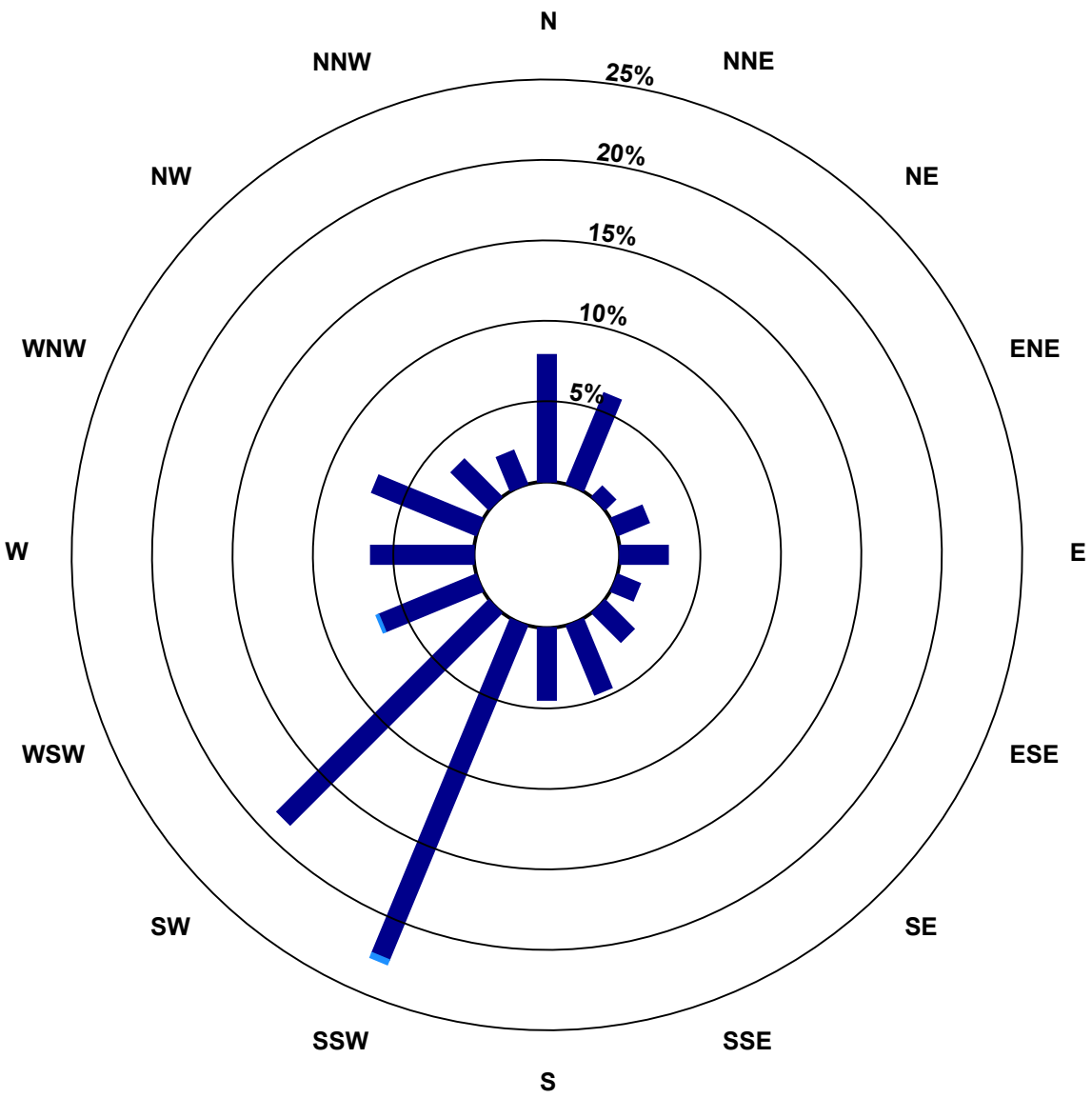
Total Number of Hours: 720

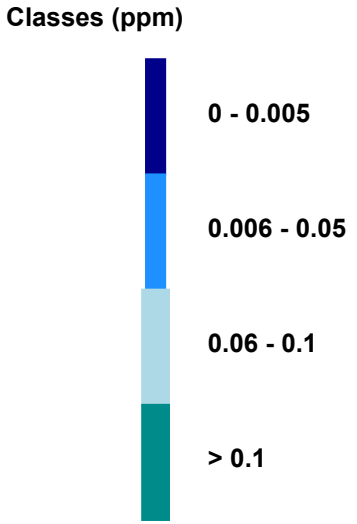
Wood Buffalo Environmental Association

Wind Rose Sep 2024

Non Methane Hydrocarbons (NMHC) - ppm

Janvier





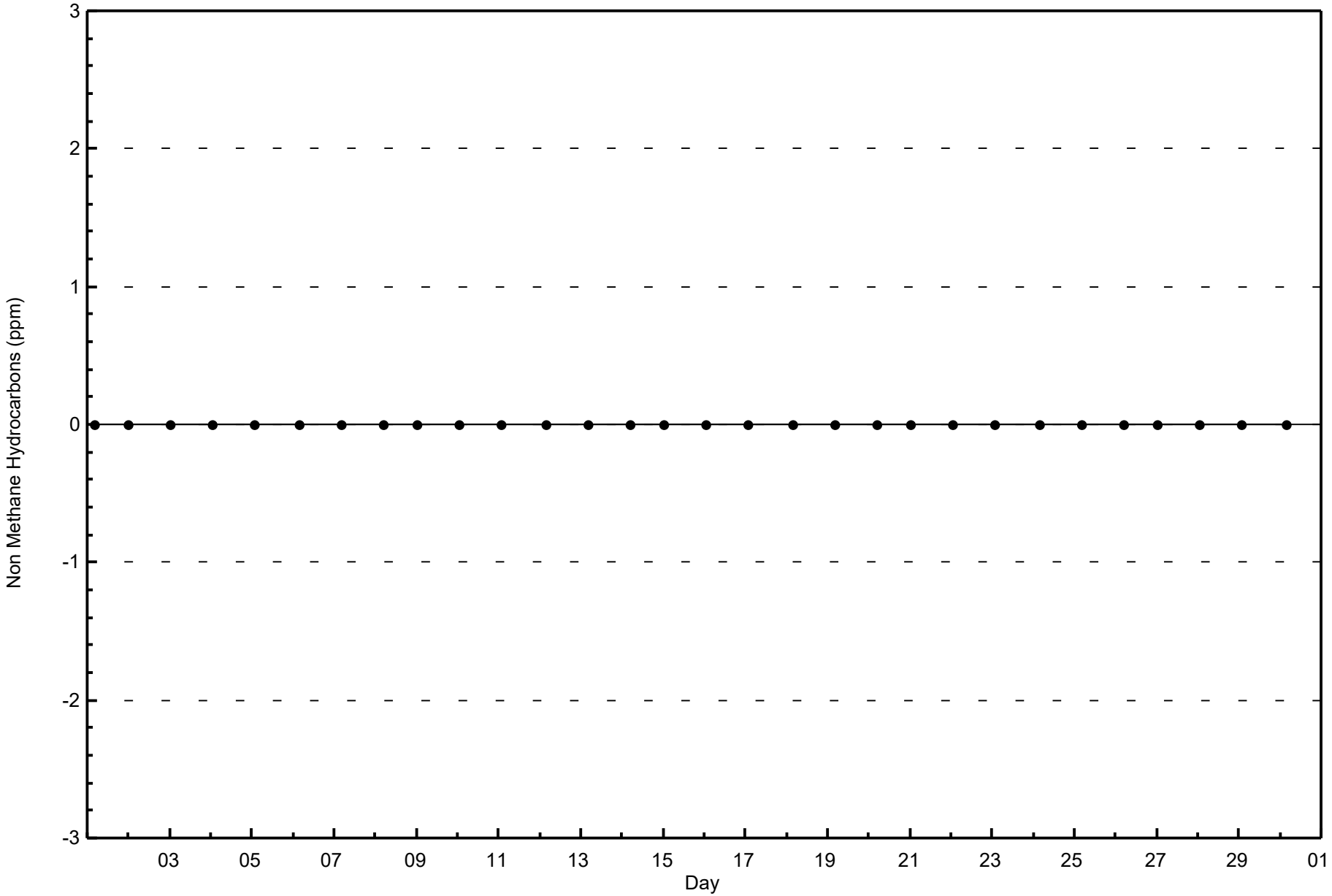
Total Number of Valid Hours: 672

Wood Buffalo Environmental Association

Zero Responses

Non Methane Hydrocarbons (NMHC) - ppm

Janvier - September 2024

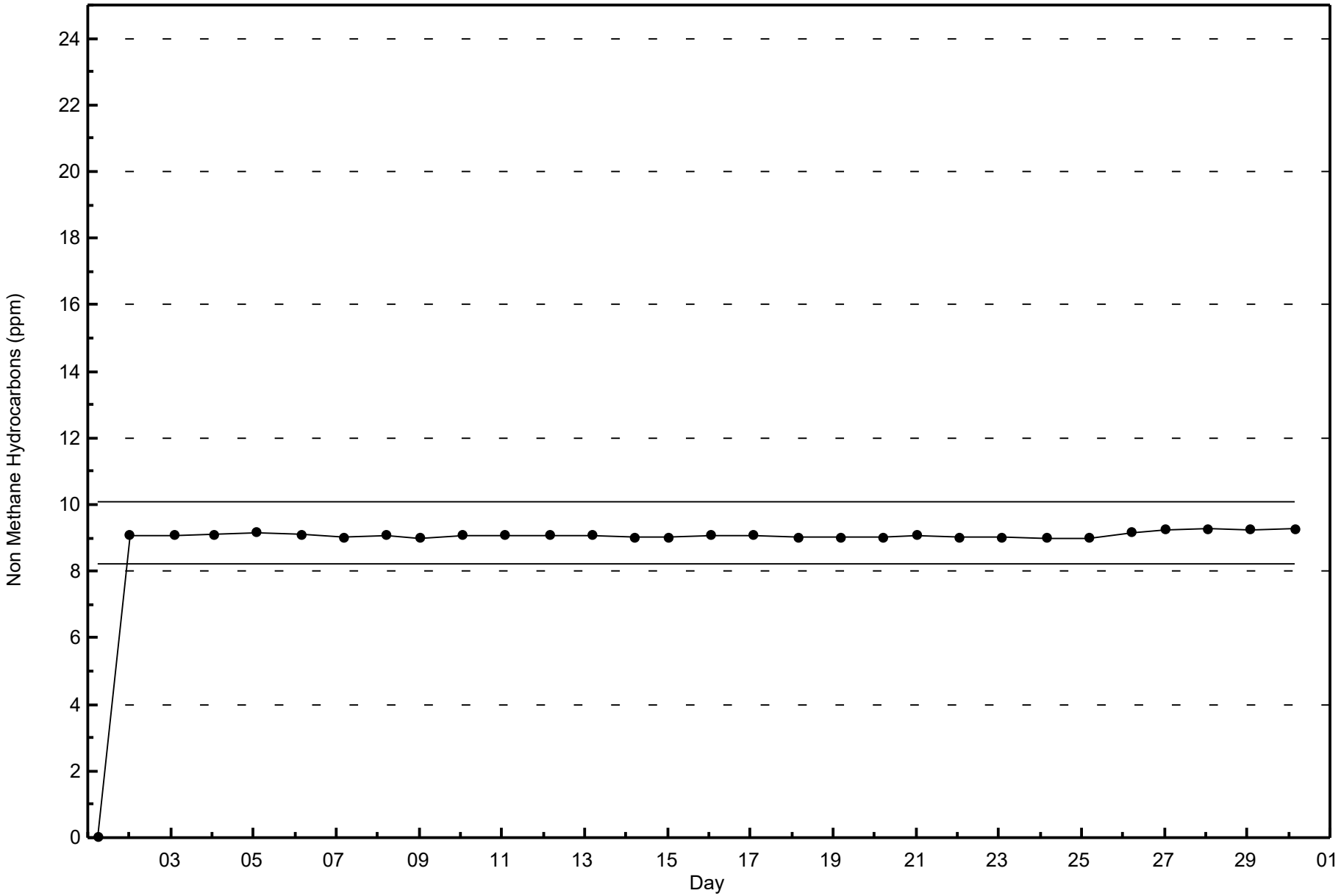


Wood Buffalo Environmental Association

Span Responses

Non Methane Hydrocarbons (NMHC) - ppm

Janvier - September 2024



Wood Buffalo Environmental Association

Summary of Hour Averages

Methane (CH_4) - ppm

Janvier - September 2024

Number of Exceedences (AAAQO): 1-hr: 0 24-hr: 0

Maximum Value: 2.2 ppm on Sep 25 06:00

Maximum Daily Average: 2.1 ppm on Sep 13

Minimum Value: 1.9 ppm on Sep 1 14:00

Minimum Daily Average: 2.0 ppm on Sep 23

Maximum Diurnal Average: 2.0 ppm at hour 8

Minimum Diurnal Average: 2.0 ppm at hour 16

Monthly Average: 2.01 ppm

Percentiles: P_1 = 1.9 P_{10} = 2.0 Q_1 = 2.0 Median = 2.0 Q_3 = 2.0 P_{90} = 2.1 P_{99} = 2.1

Hours in Service:	720
Hours of Data:	677
Hours of Missing Data:	43
Hours of Calibration:	33
Percent Operational Time:	98.6

Day	Hourly Period Ending At (MST)																								Daily	Daily
	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24	Average	Maximum
1-Sep	UO	UO	UO	UO	UO	UO	UO	UO	UO	2.0	2.0	1.9	1.9	1.9	1.9	1.9	1.9	1.9	1.9	2.0	2.0	2.1	2.0	2.0	--	2.1
2-Sep	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	1.9	1.9	1.9	2.0	2.0	2.0	2.0	2.0	2.0	2.0
3-Sep	2.0	Z	2.0	2.0	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	2.0
4-Sep	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
5-Sep	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
6-Sep	2.0	2.0	2.0	Z	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	2.1	2.1	2.1	2.0	2.1
7-Sep	2.1	2.0	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	2.0	2.0	2.0	2.0	2.1
8-Sep	2.0	2.0	2.0	2.0	2.0	Z	2.0	2.0	2.0	2.0	2.0	2.1	2.1	2.0	1.9	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.1	2.1	2.0	2.1
9-Sep	Z	2.0	2.1	2.1	2.1	2.1	2.1	2.1	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	2.2
10-Sep	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
11-Sep	2.0	2.0	Z	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	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.1
12-Sep	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	2.1	2.1
13-Sep	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	2.2	2.2	2.1	2.1	2.1	2.1	2.1	2.2
14-Sep	2.1	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	2.1
15-Sep	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
16-Sep	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	2.1
17-Sep	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
18-Sep	2.0	2.0	2.0	Z	2.1	2.1	2.0	2.1	2.0	2.0	2.0	2.0	2.0	1.9	2.0	2.0	2.0	1.9	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.1
19-Sep	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	2.1	2.0	2.1
20-Sep	2.0	2.1	2.1	2.1	2.1	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	2.1
21-Sep	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
22-Sep	2.0	Z	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	2.0	2.0	2.1
23-Sep	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
24-Sep	2.0	2.0	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	2.0	2.1	2.1	2.1	2.0	2.0	2.1
25-Sep	2.1	2.0	2.0	2.0	Z	2.2	2.2	2.1	2.1	C	C	C	C	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.2
26-Sep	2.0	2.0	2.0	2.0	2.0	Z	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	2.1
27-Sep	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	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.1
28-Sep	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	2.1	2.0	2.0	2.1
29-Sep	2.0	2.1	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	2.1
30-Sep	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
	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	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	2.1	2.1	2.2	2.2	2.1	2.1	2.1	2.2	2.1	2.1	2.1	2.1	2.1	2.1	2.1	2.2	2.2	2.1	2.1	2.1	2.1	Diurnal Maximum	

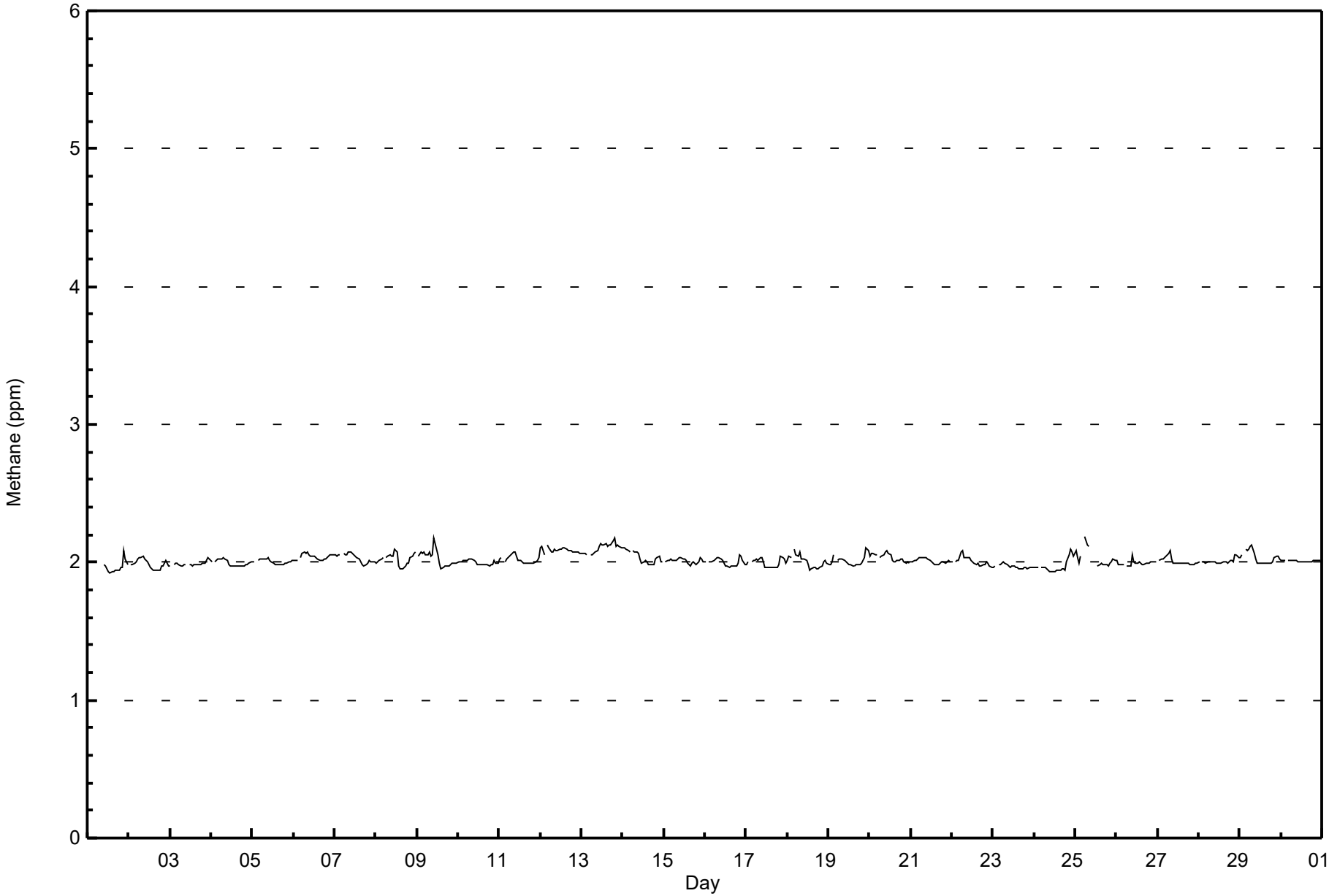
Z - zerospan C - Calibration M - Maintenance UO - Unstable Operation

Wood Buffalo Environmental Association

Hourly Averages

Methane (CH_4) - ppm

Janvier - September 2024



Wood Buffalo Environmental Association

Cumulative Frequency Distribution

Methane (CH_4) - ppm

Janvier - September 2024

Concentration Ranges (ppm)	Number of Hours	%	Cumulative %
0 - 2.0	549	81.09	81.09
2.1 - 3.0	128	18.91	100.00
3.1 - 10.0	0	0.00	100.00
> 10.0	0	0.00	100.00

Total Number of Valid Hours: 677

Total Number of Hours: 720

Wood Buffalo Environmental Association

Frequency Distribution

Methane (CH_4) - ppm

Janvier - September 2024

Concentration Ranges (ppm)	Wind Direction																
	N	NNE	NE	ENE	E	ESE	SE	SSE	S	SSW	SW	WSW	W	WNW	NW	NNW	**Totals**
0 - 2.0	27	18	6	14	17	10	15	26	25	127	109	41	39	38	21	12	545
2.1 - 3.0	26	23	0	0	3	0	2	5	5	26	16	4	4	9	1	3	127
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	53	41	6	14	20	10	17	31	30	153	125	45	43	47	22	15	672

Total Number of Valid Hours: 672

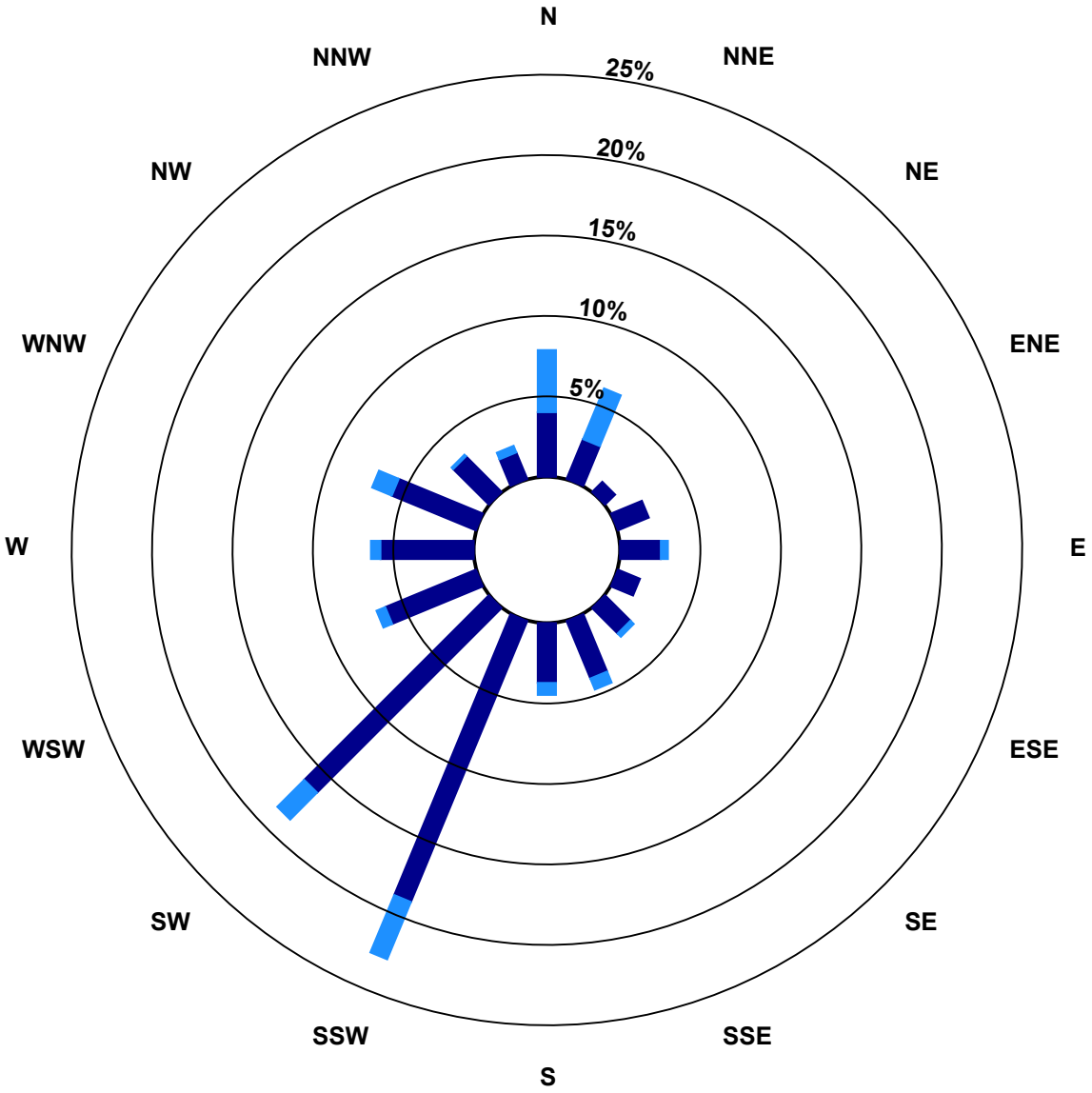
Total Number of Hours: 720

Wood Buffalo Environmental Association

Wind Rose Sep 2024

Methane (CH_4) - ppm

Janvier



Classes (ppm)

- 0 - 2.0
- 2.1 - 3.0
- 3.1 - 10.0
- > 10.0

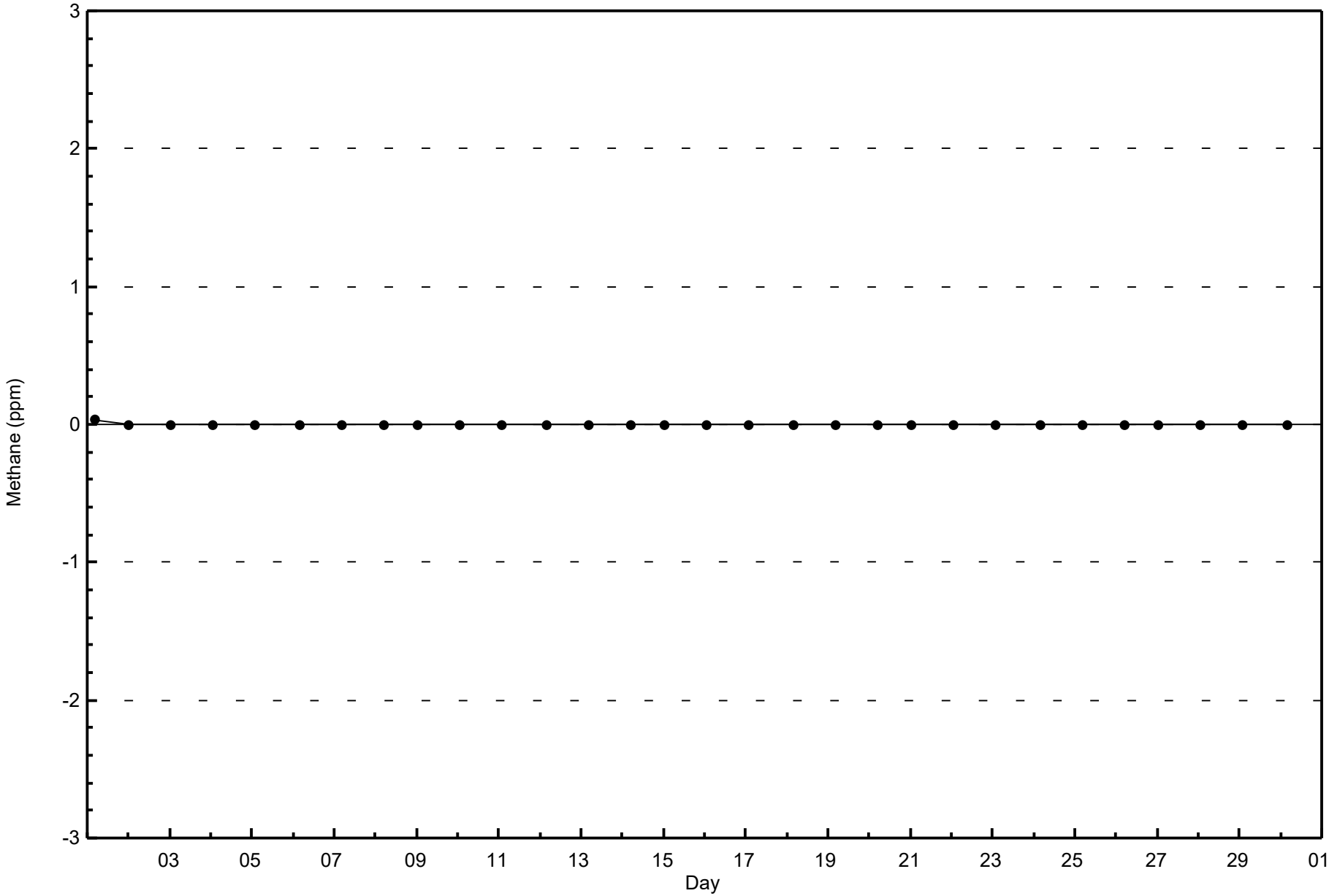
Total Number of Valid Hours: 672

Wood Buffalo Environmental Association

Zero Responses

Methane (CH_4) - ppm

Janvier - September 2024

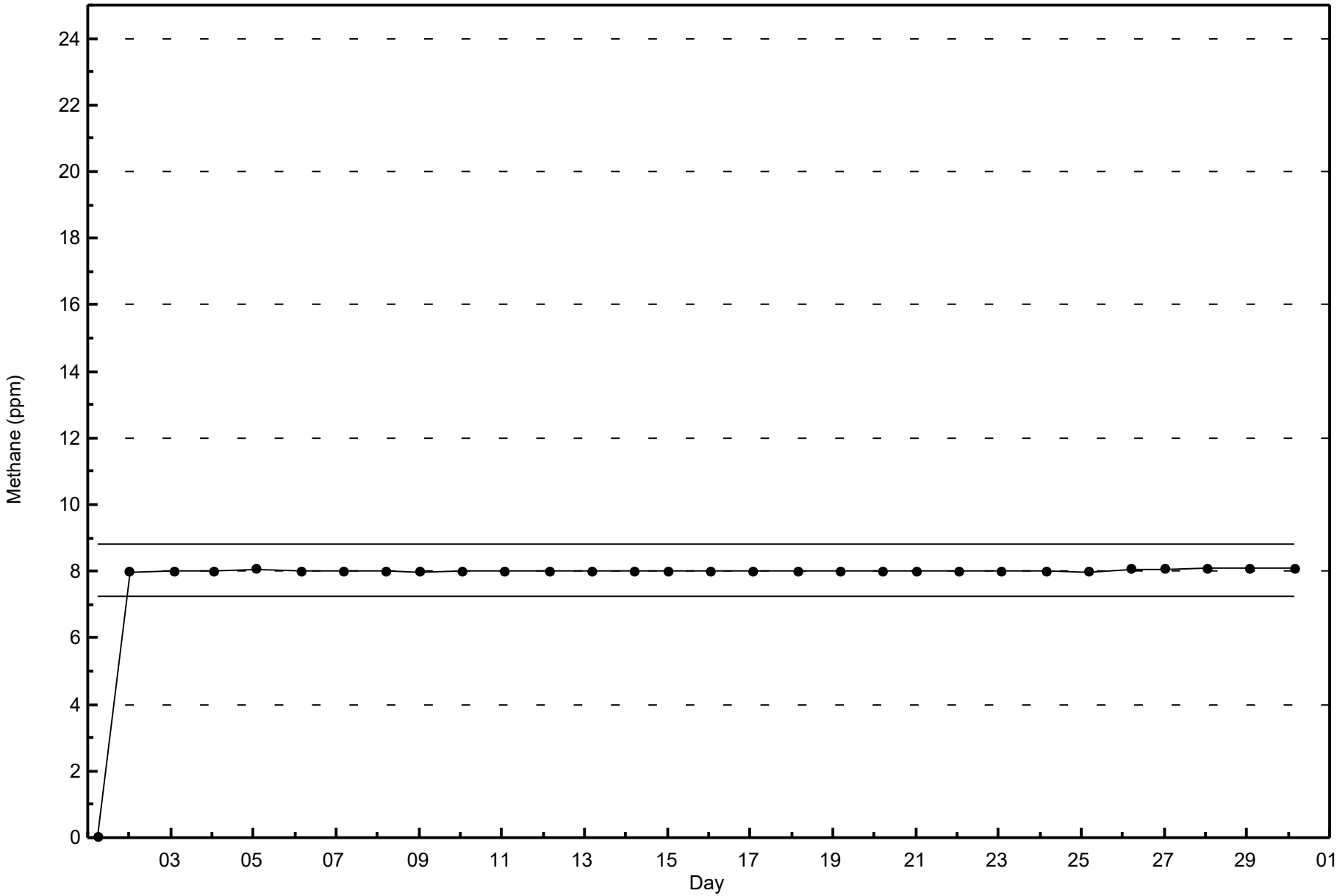


Wood Buffalo Environmental Association

Span Responses

Methane (CH_4) - ppm

Janvier - September 2024



Wood Buffalo Environmental Association

Summary of Hour Averages

Nitric Oxide (NO) - ppb

Janvier - September 2024

Maximum Value: 10.2 ppb on Sep 11 08:00

Maximum Daily Average: 1.1 ppb on Sep 17

Minimum Value: 0.0 ppb on Sep 3 13:00

Minimum Daily Average: 0.1 ppb on Sep 12

Maximum Diurnal Average: 0.9 ppb at hour 8

Minimum Diurnal Average: 0.2 ppb at hour 3

Monthly Average: 0.41 ppb

Percentiles: P_1 = 0.0 P_{10} = 0.0 Q_1 = 0.0 Median = 0.2 Q_3 = 0.6 P_{90} = 1.0 P_{99} = 2.5

Hours in Service:	720
Hours of Data:	628
Hours of Missing Data:	92
Hours of Calibration:	32
Percent Operational Time:	91.7

Day	Hourly Period Ending At (MST)																								Daily	Daily
	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24	Average	Maximum
1-Sep	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-Sep	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-Sep	UO	UO	UO	UO	UO	UO	UO	UO	UO	UO	UO	M	0.0	0.1	0.2	0.1	0.0	0.0	1.1	0.2	0.0	0.0	0.0	0.0	--	1.1
4-Sep	0.0	0.0	0.0	0.0	0.0	Z	0.9	0.3	1.9	0.8	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.4	1.0	4.9	0.5	0.0	0.2	0.5	4.9
5-Sep	Z	0.1	0.1	0.0	0.5	0.0	1.0	1.8	0.9	1.1	0.6	0.0	0.1	0.0	0.4	0.0	0.4	0.6	0.0	0.0	0.0	0.0	0.0	0.2	0.3	1.8
6-Sep	0.8	Z	0.0	0.0	0.0	0.0	0.2	0.2	0.4	0.2	0.0	0.2	0.3	0.0	1.1	0.3	0.1	0.1	0.4	0.4	0.0	0.1	0.0	0.1	0.2	1.1
7-Sep	0.2	0.0	Z	0.0	0.6	0.4	0.3	0.8	0.4	0.2	0.1	0.4	0.0	0.3	0.0	0.0	0.3	0.3	1.8	0.4	4.9	0.1	0.0	0.1	0.5	4.9
8-Sep	0.2	0.0	0.4	Z	0.4	0.0	0.2	0.5	1.1	0.3	0.0	0.1	0.1	0.2	0.2	0.3	0.1	0.6	1.1	0.1	0.3	0.4	0.2	0.4	0.3	1.1
9-Sep	0.9	0.6	0.7	0.8	Z	0.8	0.7	0.7	0.7	0.6	0.7	0.8	0.4	0.3	0.3	0.5	0.6	0.5	0.3	0.5	0.3	0.4	0.4	0.5	0.6	0.9
10-Sep	0.2	0.3	0.0	0.0	0.0	Z	0.4	0.3	0.0	0.1	0.1	0.0	0.0	0.0	0.0	0.0	0.0	0.2	0.0	0.3	0.1	0.0	0.0	0.0	0.1	0.4
11-Sep	Z	0.0	0.0	0.0	0.4	1.6	1.7	10.2	0.6	0.6	0.1	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.1	0.6	0.0	0.0	0.0	0.7	10.2
12-Sep	0.0	Z	0.8	0.1	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	0.0	0.0	0.0	0.1	0.0	0.2	0.0	0.1	0.8
13-Sep	0.3	0.3	Z	0.3	0.2	0.0	0.2	0.1	0.1	0.1	0.3	0.8	0.4	0.9	1.1	0.5	0.7	0.4	0.2	0.1	0.1	0.1	0.0	0.0	0.3	1.1
14-Sep	0.0	0.0	0.0	Z	0.5	0.4	0.1	0.6	0.4	0.3	0.0	0.0	0.0	0.0	0.0	0.3	0.0	0.5	1.3	0.8	0.9	0.0	0.5	0.3	0.3	1.3
15-Sep	0.2	0.0	0.0	0.8	Z	0.1	0.0	0.2	0.5	0.0	0.2	0.4	0.8	0.1	0.3	0.4	0.9	0.6	0.7	1.3	0.8	1.9	1.3	0.4	0.5	1.9
16-Sep	0.5	0.6	0.5	0.3	0.7	Z	0.6	1.5	1.1	0.8	1.0	0.9	0.8	1.1	0.9	0.6	0.9	1.3	1.4	2.2	1.6	1.1	1.0	1.2	1.0	2.2
17-Sep	Z	1.3	0.9	1.2	1.3	1.1	1.3	2.2	1.3	1.7	1.8	0.8	0.6	0.5	0.5	0.6	0.6	2.3	1.4	0.6	1.8	0.5	0.4	1.0	1.1	2.3
18-Sep	0.3	Z	0.0	0.1	0.1	0.2	0.5	1.2	1.7	0.5	0.8	0.2	0.1	0.0	0.0	0.0	0.0	0.0	0.0	0.7	0.1	1.2	0.0	0.0	0.3	1.7
19-Sep	0.0	0.0	Z	0.0	0.0	0.0	0.0	1.0	0.6	0.0	0.0	0.0	0.1	0.0	0.2	1.5	0.5	0.6	1.5	1.7	2.8	0.5	1.6	4.2	0.7	4.2
20-Sep	0.8	0.5	0.4	Z	0.9	0.0	0.3	0.8	1.2	0.9	2.5	1.1	2.4	0.6	0.8	0.4	0.2	0.0	0.2	0.2	0.0	0.2	0.3	0.6	0.7	2.5
21-Sep	0.5	0.1	0.1	0.6	Z	0.1	0.6	0.9	1.0	0.8	0.7	0.3	0.2	0.0	0.2	0.1	0.2	0.3	0.4	1.0	0.1	0.2	0.4	0.1	0.4	1.0
22-Sep	0.0	0.0	0.4	0.6	0.8	Z	0.2	0.8	0.5	0.3	0.6	0.3	0.1	0.3	0.0	0.9	0.2	0.8	0.1	0.3	1.0	2.6	0.0	0.0	0.5	2.6
23-Sep	Z	0.9	0.0	0.0	0.4	1.4	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	0.1	1.4
24-Sep	0.0	Z	0.2	0.2	0.0	0.0	0.1	0.0	0.2	0.0	0.0	0.0	0.0	0.0	0.0	0.1	0.0	0.0	0.8	1.8	0.8	0.9	0.4	0.4	0.3	1.8
25-Sep	0.1	0.4	Z	0.2	0.1	0.2	0.3	0.5	2.0	2.2	0.4	0.0	0.3	1.5	1.3	0.0	0.0	0.0	0.7	0.9	0.8	0.7	1.3	0.0	0.6	2.2
26-Sep	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	0.0	0.2	0.1	0.6	1.2	0.4	0.5	0.2	0.1	1.2
27-Sep	0.4	0.0	0.2	0.3	Z	0.0	0.0	0.0	0.0	0.0	0.0	C	C	C	C	C	0.6	0.2	0.0	0.1	0.2	0.0	0.1	0.0	0.1	0.6
28-Sep	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	0.1	0.0	0.1	0.5	1.0	0.1	0.3	0.9	0.9	1.1	0.3	0.2	1.1
29-Sep	Z	0.2	0.2	0.5	0.5	0.3	0.5	0.0	0.2	0.5	0.4	0.4	0.2	0.3	0.3	0.1	0.1	0.4	0.3	0.5	0.5	0.0	0.1	0.5	0.3	0.5
30-Sep	0.1	Z	0.4	0.3	0.2	0.3	0.2	0.5	0.4	0.4	0.4	0.2	0.2	0.4	0.5	0.2	0.3	0.0	0.2	0.2	0.4	0.3	0.3	0.0	0.3	0.5
	0.3	0.2	0.2	0.3	0.3	0.3	0.4	0.9	0.7	0.5	0.4	0.3	0.3	0.2	0.3	0.3	0.3	0.4	0.5	0.6	0.9	0.5	0.4	0.4	Diurnal Average	
	0.9	1.3	0.9	1.2	1.3	1.6	1.7	10.2	2.0	2.2	2.5	1.1	2.4	1.5	1.3	1.5	0.9	2.3	1.8	2.2	4.9	2.6	1.6	4.2	Diurnal Maximum	

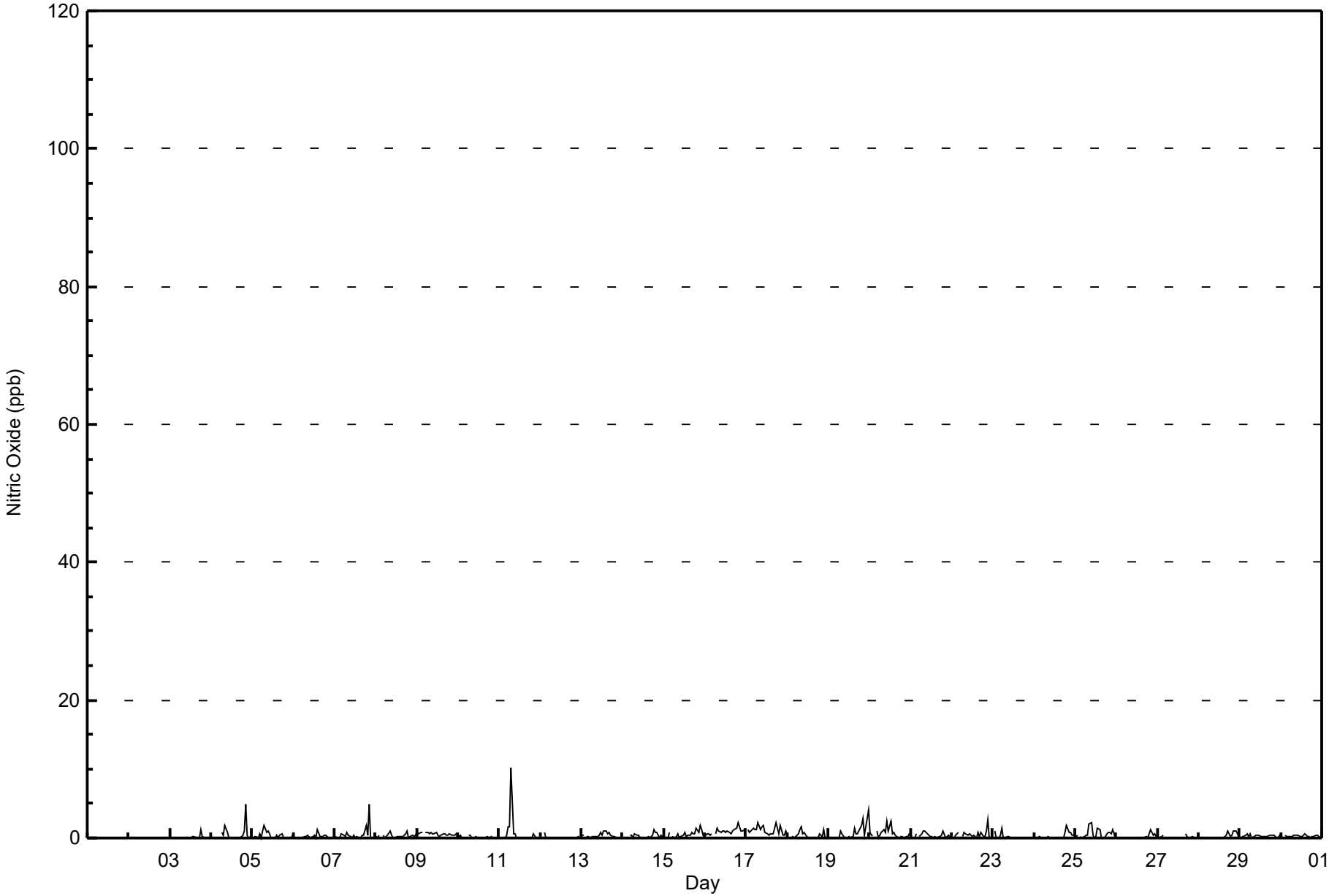
Z - zerospan C - Calibration M - Maintenance UO - Unstable Operation

Wood Buffalo Environmental Association

Hourly Averages

Nitric Oxide (NO) - ppb

Janvier - September 2024



Concentration Ranges (ppb)	Number of Hours	%	Cumulative %
0 - 20	628	100.00	100.00
21 - 40	0	0.00	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: 628

Total Number of Hours: 720

Wood Buffalo Environmental Association

Frequency Distribution

Nitric Oxide (NO) - ppb

Janvier - September 2024

Concentration Ranges (ppb)	Wind Direction																
	N	NNE	NE	ENE	E	ESE	SE	SSE	S	SSW	SW	WSW	W	WNW	NW	NNW	**Totals**
0 - 20	41	42	6	14	18	11	16	32	30	140	114	33	43	47	22	16	625
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	41	42	6	14	18	11	16	32	30	140	114	33	43	47	22	16	625

Total Number of Valid Hours: 625

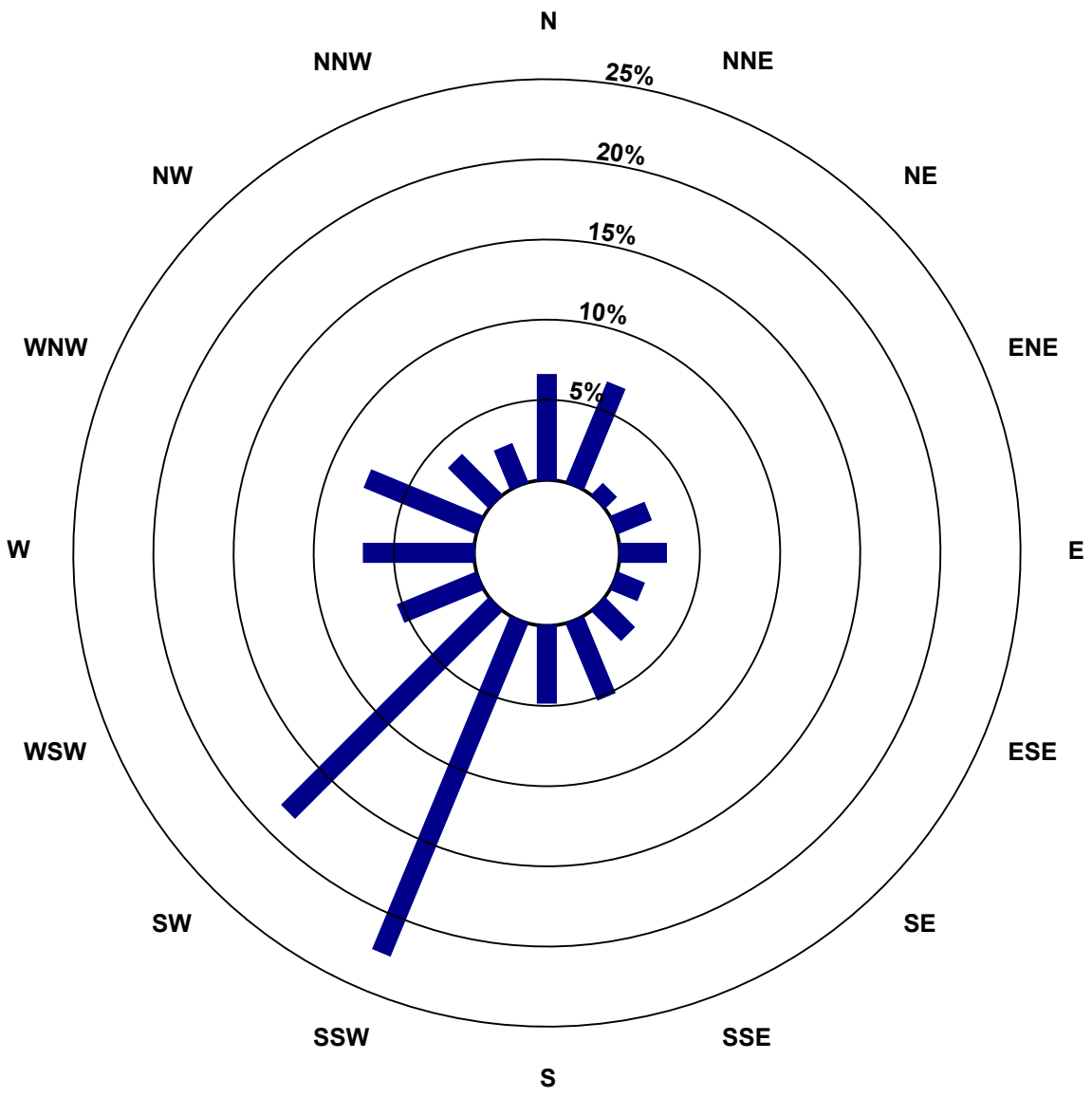
Total Number of Hours: 720

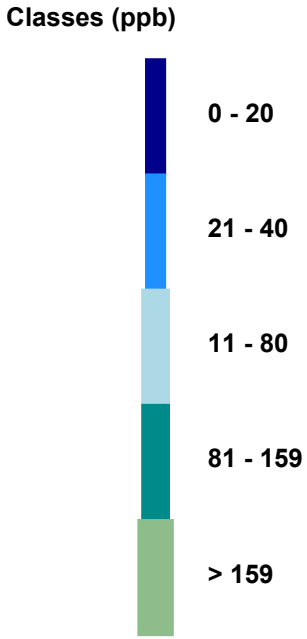
Wood Buffalo Environmental Association

Wind Rose Sep 2024

Nitric Oxide (NO) - ppb

Janvier





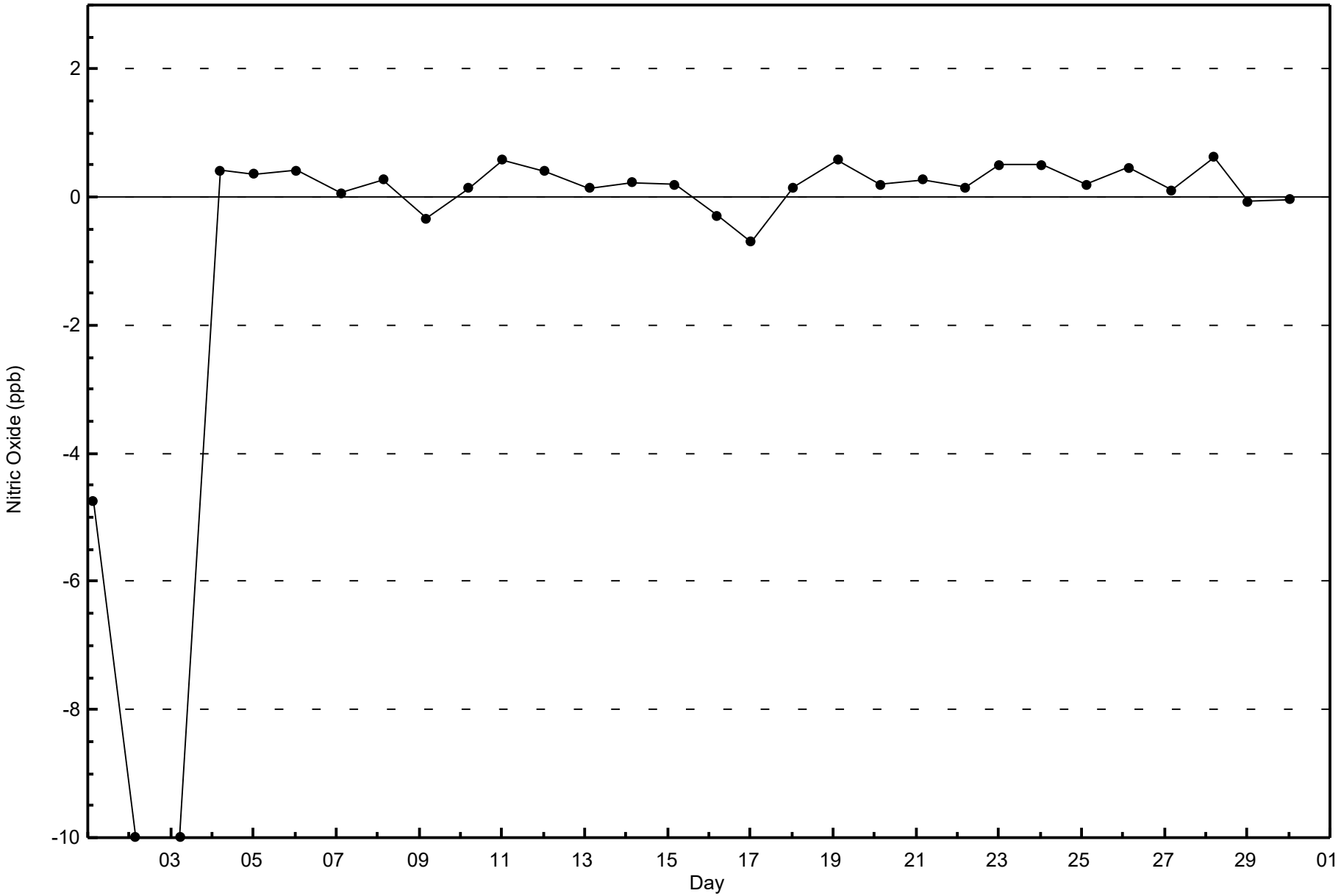
Total Number of Valid Hours: 625

Wood Buffalo Environmental Association

Zero Responses

Nitric Oxide (NO) - ppb

Janvier - September 2024

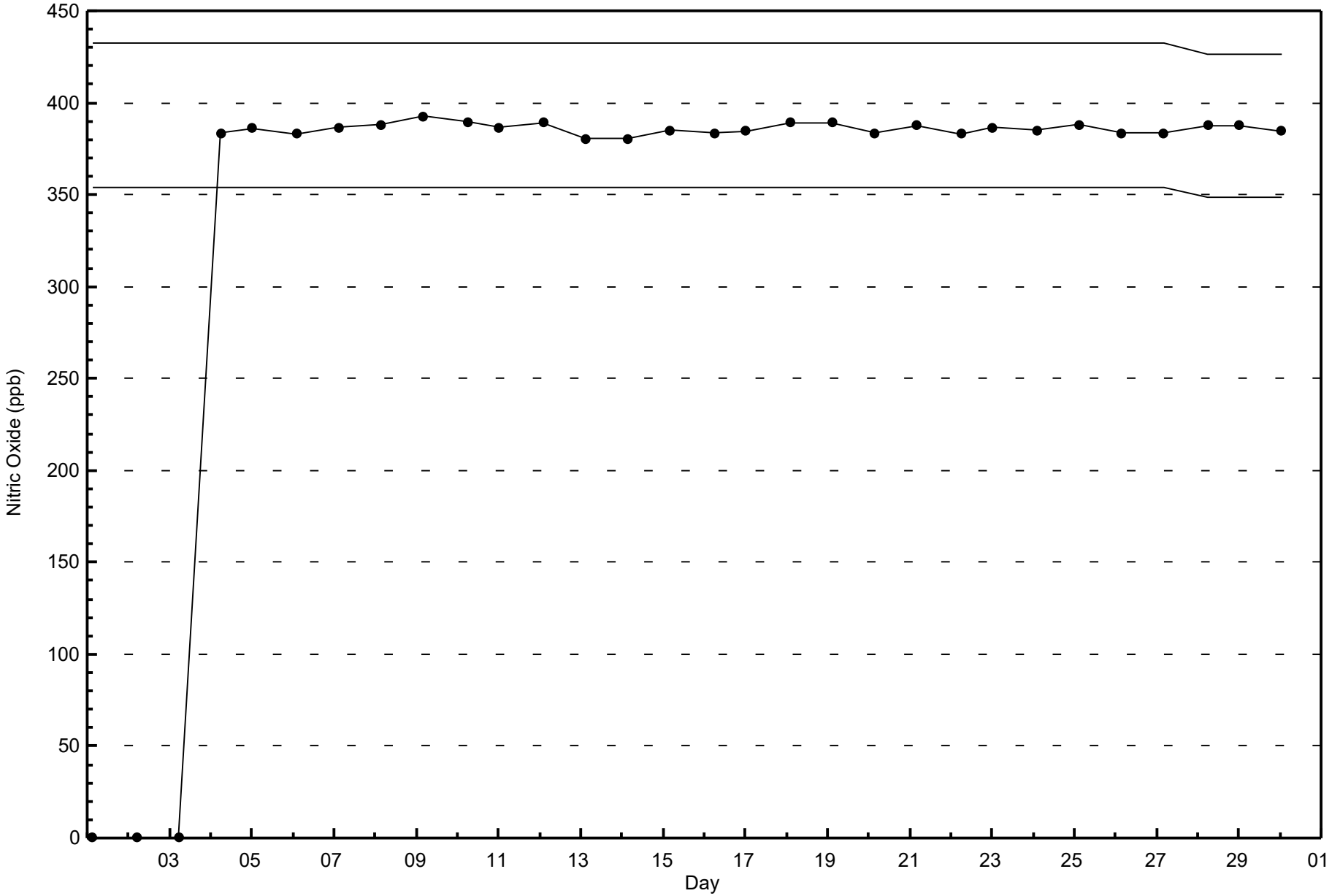


Wood Buffalo Environmental Association

Span Responses

Nitric Oxide (NO) - ppb

Janvier - September 2024



Wood Buffalo Environmental Association

Summary of Hour Averages

Nitrogen Dioxide (NO_2) - ppb

Janvier - September 2024

Number of Exceedences (AAAQO): 1-hr: 0 24-hr: 0

Maximum Value: 4.6 ppb on Sep 13 20:00

Maximum Daily Average: 1.5 ppb on Sep 13

Minimum Value: 0.0 ppb on Sep 4 11:00

Minimum Daily Average: 0.0 ppb on Sep 10

Maximum Diurnal Average: 1.0 ppb at hour 21

Minimum Diurnal Average: 0.3 ppb at hour 5

Monthly Average: 0.46 ppb

Percentiles: P_1 = 0.0 P_{10} = 0.0 Q_1 = 0.0 Median = 0.1 Q_3 = 0.7 P_{90} = 1.4 P_{99} = 2.7

Hours in Service:	720
Hours of Data:	628
Hours of Missing Data:	92
Hours of Calibration:	32
Percent Operational Time:	91.7

Day	Hourly Period Ending At (MST)																								Daily	Daily
	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24	Average	Maximum
1-Sep	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-Sep	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-Sep	UO	UO	UO	UO	UO	UO	UO	UO	UO	UO	UO	M	0.8	1.1	1.0	1.1	1.7	1.1	2.9	2.3	1.1	1.0	0.5	0.9	--	2.9
4-Sep	0.5	0.7	0.9	0.3	0.9	Z	0.9	0.6	1.4	0.6	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.1	0.6	2.3	0.4	0.0	0.0	0.4	2.3
5-Sep	Z	0.2	0.0	0.0	0.1	0.0	0.5	1.0	1.1	1.1	1.1	0.3	0.2	0.0	0.0	0.0	0.0	0.8	0.3	0.0	0.0	0.0	0.3	2.5	0.4	2.5
6-Sep	2.5	Z	1.1	1.0	1.5	1.7	2.3	2.4	2.7	1.7	1.1	1.1	0.9	0.8	1.7	0.8	0.8	0.4	1.0	1.0	0.2	0.1	0.0	0.3	1.2	2.7
7-Sep	0.8	0.1	Z	0.3	0.0	0.0	0.6	1.8	1.3	0.4	0.4	0.4	0.6	0.5	0.2	0.1	0.3	0.0	1.0	0.3	2.7	0.0	0.0	0.0	0.5	2.7
8-Sep	0.0	0.0	0.0	Z	0.5	0.0	0.2	1.2	1.3	0.4	0.2	0.3	1.2	0.6	0.0	0.0	0.0	1.0	2.5	0.3	1.3	1.1	0.1	0.8	0.6	2.5
9-Sep	1.6	1.2	1.6	1.1	Z	2.0	1.8	1.8	1.8	0.6	0.5	0.6	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.6	2.0
10-Sep	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	0.1	0.3	0.0	0.0	0.0	0.3
11-Sep	Z	0.0	0.0	0.0	0.0	0.0	0.0	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	0.8	0.0	0.0	0.0	0.1	1.4
12-Sep	0.0	Z	0.7	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	0.7
13-Sep	0.0	0.0	Z	0.0	0.0	0.0	0.0	0.0	0.0	0.4	1.3	2.5	2.4	3.2	3.5	2.3	2.5	2.0	2.6	4.6	2.2	1.7	2.5	1.8	1.5	4.6
14-Sep	1.4	1.9	1.4	Z	0.5	0.2	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.2	1.9
15-Sep	0.0	0.0	0.0	0.0	Z	0.0	0.0	0.0	0.3	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	0.4
16-Sep	0.0	0.0	0.0	0.0	0.0	Z	0.3	0.8	0.5	0.0	0.1	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.6	0.0	0.0	0.0	0.0	0.1	0.8
17-Sep	Z	0.0	0.0	0.0	0.0	0.0	0.1	0.5	0.0	0.6	1.5	0.0	0.0	0.0	0.0	0.2	0.0	1.4	1.1	0.6	2.2	1.0	0.2	0.3	0.4	2.2
18-Sep	0.1	Z	0.1	0.0	0.2	0.6	1.5	0.9	1.2	0.7	0.7	0.2	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.5	0.0	0.9	0.4	0.0	0.3	1.5
19-Sep	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	1.2	0.4	0.8	1.5	2.4	2.0	0.4	0.1	1.8	0.5	2.4
20-Sep	0.3	0.0	0.0	Z	0.1	0.0	0.0	0.0	0.3	0.1	1.2	1.0	1.2	1.0	2.0	2.2	2.0	1.2	1.2	2.5	0.5	0.4	0.2	0.4	0.8	2.5
21-Sep	0.7	0.4	0.4	0.6	Z	1.1	0.8	0.5	0.3	0.5	0.4	0.3	0.0	0.0	0.0	0.0	0.1	0.1	0.1	0.4	0.5	0.5	1.3	0.9	0.4	1.3
22-Sep	0.7	0.7	1.3	1.4	1.7	Z	1.2	2.3	0.8	0.6	0.3	0.2	0.2	0.3	0.5	0.5	0.1	0.1	0.2	0.7	0.6	1.0	0.1	0.0	0.7	2.3
23-Sep	Z	0.2	0.0	0.0	0.0	0.3	0.0	0.1	0.0	0.5	0.0	0.0	0.2	0.0	0.0	0.0	0.0	0.2	0.0	0.0	0.2	0.6	0.0	0.0	0.1	0.6
24-Sep	0.0	Z	1.1	0.7	0.3	0.2	0.3	0.2	0.2	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.7	2.3	0.6	0.9	0.8	1.3	0.4	2.3
25-Sep	1.2	0.8	Z	0.4	0.3	0.2	0.5	0.9	2.3	2.4	1.2	0.5	0.9	1.4	1.2	0.7	0.8	1.1	0.8	1.9	3.7	2.1	1.6	0.0	1.2	3.7
26-Sep	0.0	0.0	0.0	Z	0.0	0.0	0.0	0.0	0.0	0.0	0.9	0.2	0.0	0.0	0.0	0.0	0.0	0.0	0.0	1.0	2.2	0.1	0.7	0.0	0.2	2.2
27-Sep	0.4	0.4	0.0	0.3	Z	0.6	0.1	0.1	0.0	0.0	0.0	C	C	C	C	C	0.4	0.8	0.7	0.3	0.2	0.0	0.0	0.0	0.2	0.8
28-Sep	0.0	0.0	0.0	0.0	0.0	Z	0.5	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.1	0.6	0.1	0.3	1.0	0.5	0.8	0.5	0.2	1.0
29-Sep	Z	0.8	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	0.0	0.0	0.0	0.7	2.5	3.4	2.6	1.5	0.5	3.4
30-Sep	0.8	Z	0.1	0.0	0.0	0.0	0.3	0.3	0.1	0.1	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.2	0.1	0.4	0.2	0.1	0.0	0.1	0.8
	0.5	0.3	0.4	0.3	0.3	0.3	0.4	0.6	0.6	0.4	0.4	0.3	0.3	0.3	0.4	0.4	0.3	0.4	0.6	0.8	1.0	0.6	0.4	0.5	Diurnal Average	
	2.5	1.9	1.6	1.4	1.7	2.0	2.3	2.4	2.7	2.4	1.5	2.5	2.4	3.2	3.5	2.3	2.5	2.0	2.9	4.6	3.7	3.4	2.6	2.5	Diurnal Maximum	

Z - zerospan C - Calibration M - Maintenance UO - Unstable Operation

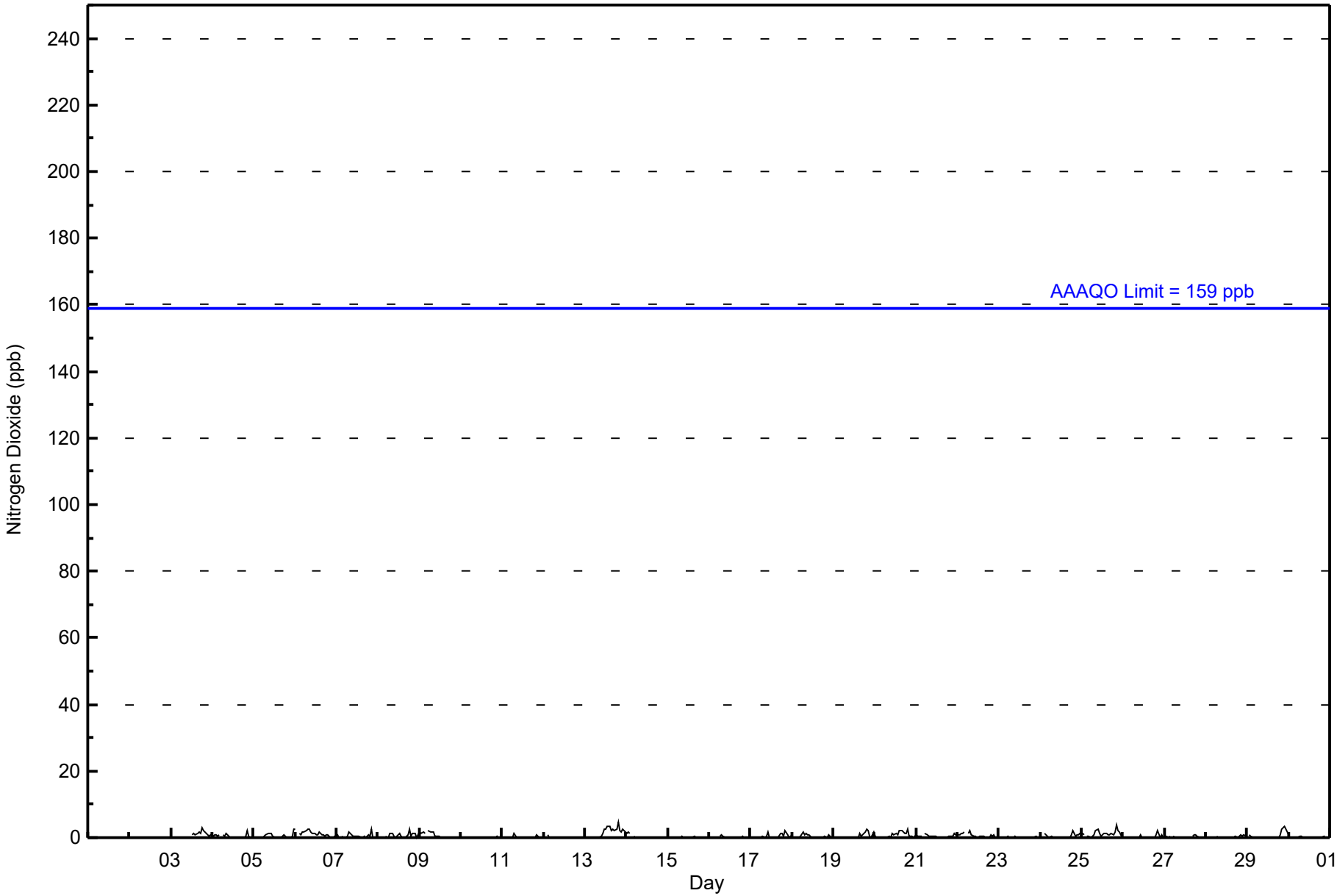
Alberta Ambient Air Quality Objectives (AAAQO): 1-hr 159 ppb

Wood Buffalo Environmental Association

Hourly Averages

Nitrogen Dioxide (NO_2) - ppb

Janvier - September 2024



Nitrogen Dioxide (NO_2) - ppb

Janvier - September 2024

Concentration Ranges (ppb)	Number of Hours	%	Cumulative %
0 - 20	628	100.00	100.00
21 - 40	0	0.00	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: 628

Total Number of Hours: 720

Wood Buffalo Environmental Association

Frequency Distribution

Nitrogen Dioxide (NO_2) - ppb

Janvier - September 2024

Concentration Ranges (ppb)	Wind Direction																
	N	NNE	NE	ENE	E	ESE	SE	SSE	S	SSW	SW	WSW	W	WNW	NW	NNW	**Totals**
0 - 20	41	42	6	14	18	11	16	32	30	140	114	33	43	47	22	16	625
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	41	42	6	14	18	11	16	32	30	140	114	33	43	47	22	16	625

Total Number of Valid Hours: 625

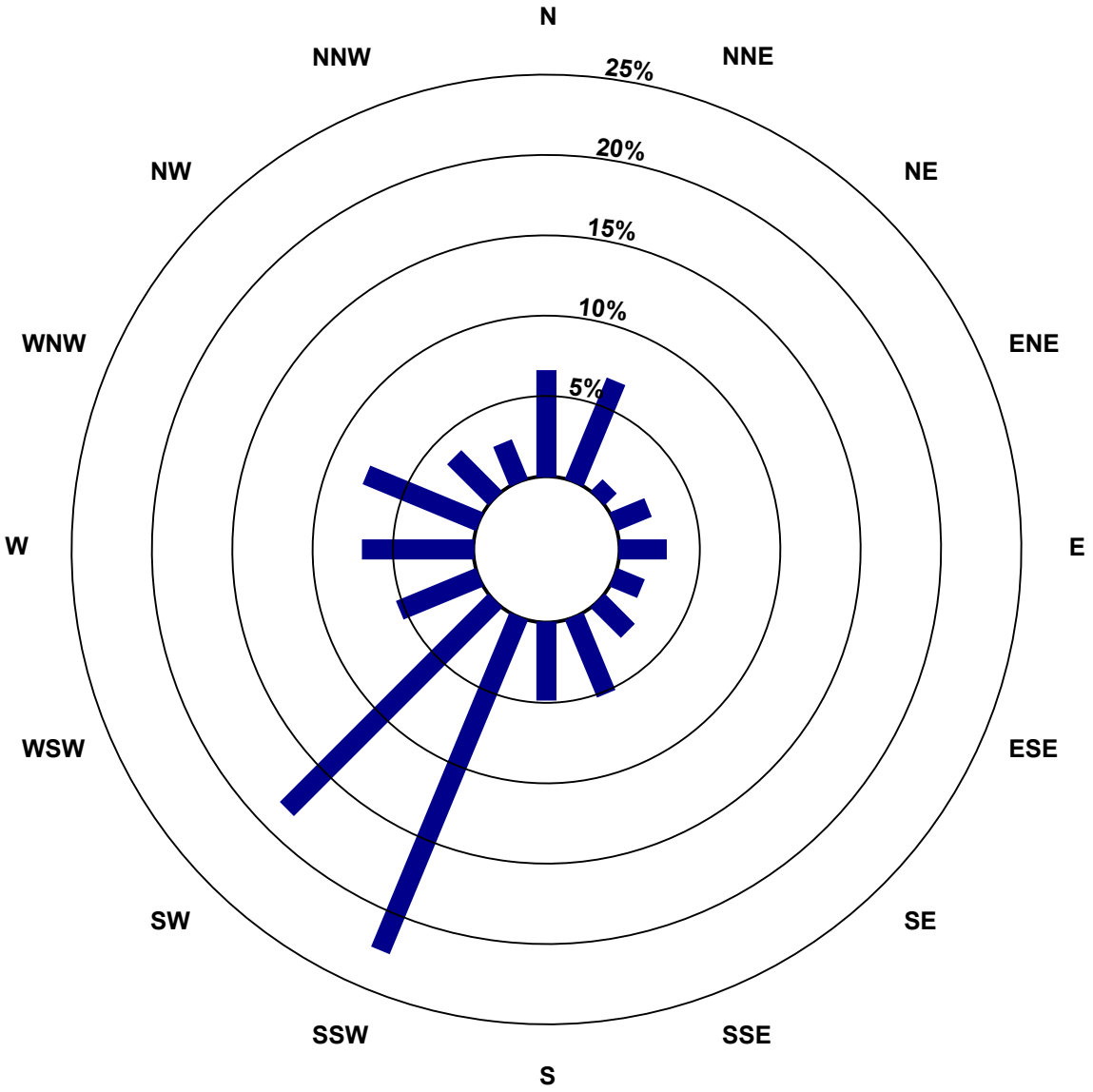
Total Number of Hours: 720

Wood Buffalo Environmental Association

Wind Rose Sep 2024

Nitrogen Dioxide (NO_2) - ppb

Janvier



Classes (ppb)

0 - 20

21 - 40

11 - 80

81 - 159

> 159

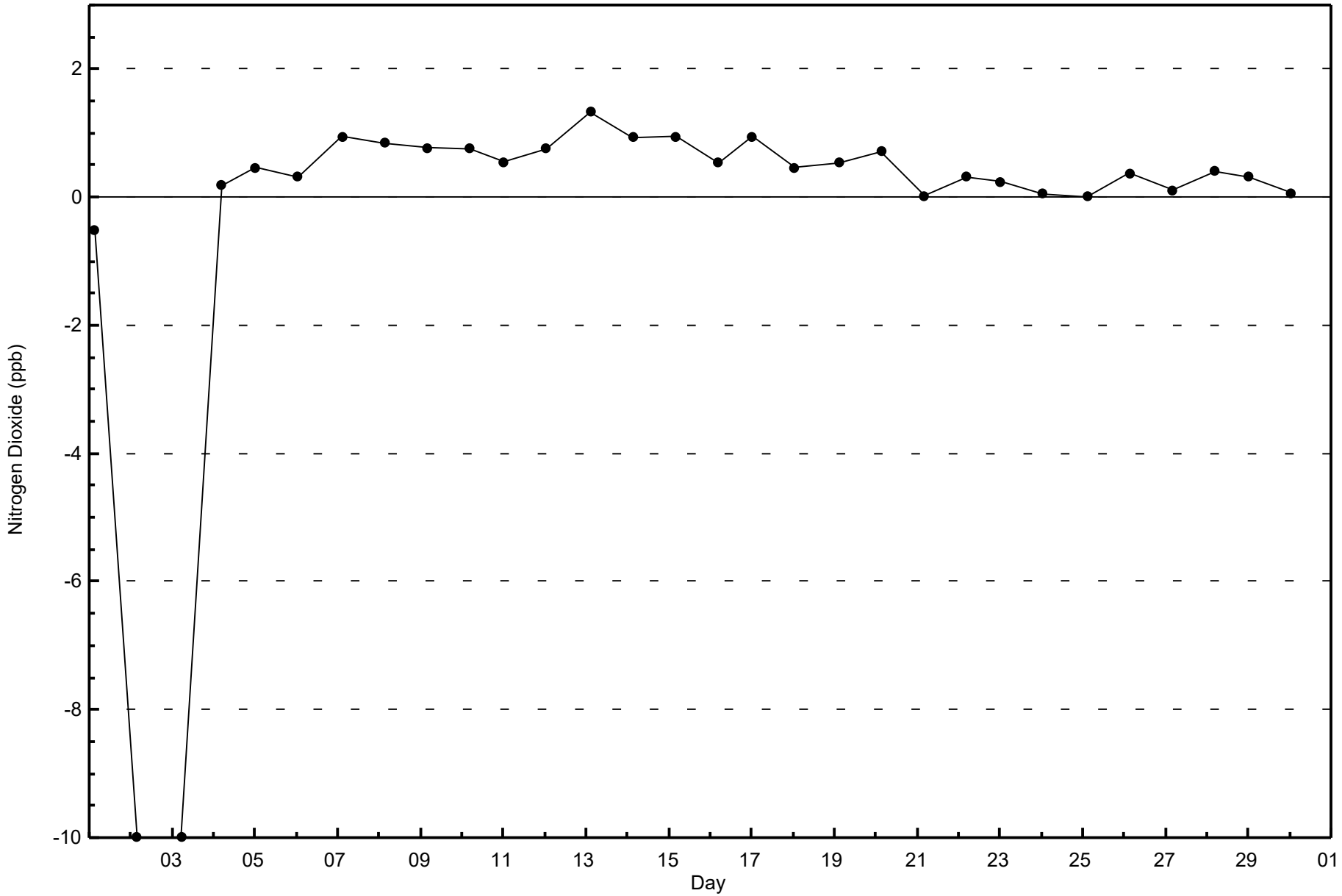
Total Number of Valid Hours: 625

Wood Buffalo Environmental Association

Zero Responses

Nitrogen Dioxide (NO_2) - ppb

Janvier - September 2024

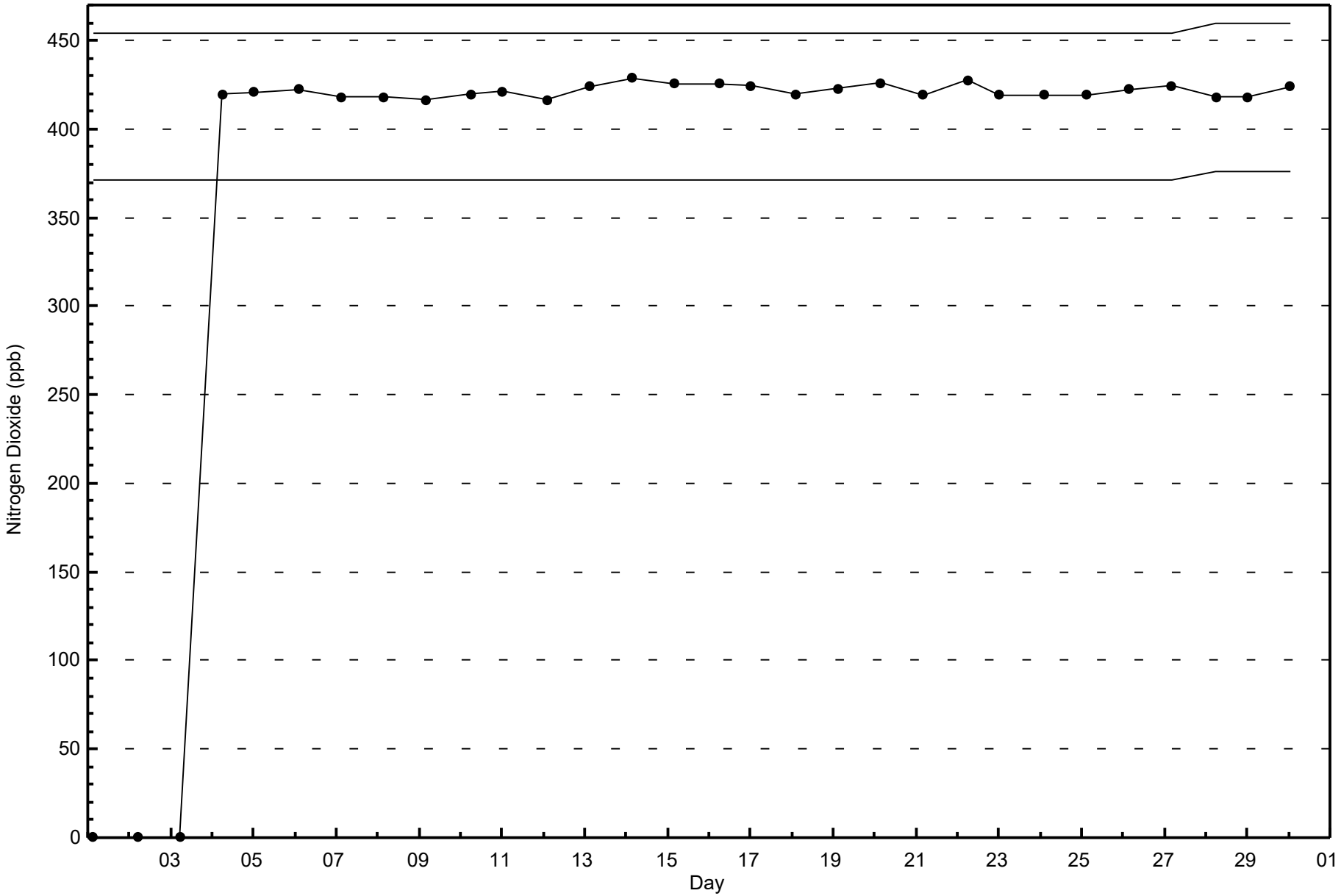


Wood Buffalo Environmental Association

Span Responses

Nitrogen Dioxide (NO_2) - ppb

Janvier - September 2024



Maximum Value: 11.6 ppb on Sep 11 08:00

Maximum Daily Average: 1.9 ppb on Sep 13

Minimum Value: 0.0 ppb on Sep 4 12:00

Minimum Daily Average: 0.1 ppb on Sep 12

Maximum Diurnal Average: 1.9 ppb at hour 21

Minimum Diurnal Average: 0.5 ppb at hour 4

Monthly Average: 0.87 ppb

Percentiles: P_1 = 0.0 P_{10} = 0.0 Q_1 = 0.1 Median = 0.5 Q_3 = 1.2 P_{90} = 2.4 P_{99} = 4.6

Hours in Service:	720
Hours of Data:	628
Hours of Missing Data:	92
Hours of Calibration:	32
Percent Operational Time:	91.7

Day	Hourly Period Ending At (MST)																								Daily	Daily
	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24	Average	Maximum
1-Sep	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-Sep	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-Sep	UO	UO	UO	UO	UO	UO	UO	UO	UO	UO	UO	M	0.8	1.2	1.2	1.2	1.7	1.1	4.0	2.5	1.1	1.0	0.5	0.9	--	4.0
4-Sep	0.5	0.7	0.9	0.3	0.9	Z	1.8	0.9	3.3	1.4	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.5	1.6	7.2	0.9	0.0	0.2	0.9	7.2
5-Sep	Z	0.3	0.1	0.0	0.6	0.0	1.5	2.8	2.0	2.2	1.7	0.3	0.3	0.0	0.4	0.0	0.4	1.4	0.3	0.0	0.0	0.0	0.3	2.7	0.8	2.8
6-Sep	3.3	Z	1.1	1.0	1.5	1.7	2.5	2.6	3.1	1.9	1.1	1.3	1.2	0.8	2.8	1.1	0.9	0.5	1.4	1.4	0.2	0.2	0.0	0.4	1.4	3.3
7-Sep	1.0	0.1	Z	0.3	0.6	0.4	0.9	2.6	1.7	0.6	0.5	0.8	0.6	0.8	0.2	0.1	0.6	0.3	2.8	0.7	7.6	0.1	0.0	0.1	1.0	7.6
8-Sep	0.2	0.0	0.4	Z	0.9	0.0	0.4	1.7	2.4	0.7	0.2	0.4	1.3	0.8	0.2	0.3	0.1	1.6	3.6	0.4	1.6	1.5	0.3	1.2	0.9	3.6
9-Sep	2.5	1.8	2.3	1.9	Z	2.8	2.5	2.5	2.5	1.2	1.2	1.4	0.4	0.3	0.3	0.5	0.6	0.5	0.3	0.5	0.3	0.4	0.4	0.5	1.2	2.8
10-Sep	0.2	0.3	0.0	0.0	0.0	Z	0.4	0.3	0.0	0.1	0.1	0.0	0.0	0.0	0.0	0.0	0.0	0.2	0.0	0.3	0.2	0.3	0.0	0.0	0.1	0.4
11-Sep	Z	0.0	0.0	0.0	0.4	1.6	1.7	11.6	0.6	0.6	0.1	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.1	1.4	0.0	0.0	0.0	0.8	11.6
12-Sep	0.0	Z	1.5	0.1	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	0.0	0.0	0.0	0.1	0.0	0.2	0.0	0.1	1.5
13-Sep	0.3	0.3	Z	0.3	0.2	0.0	0.2	0.1	0.1	0.5	1.6	3.3	2.8	4.1	4.6	2.8	3.2	2.4	2.8	4.7	2.3	1.8	2.5	1.8	1.9	4.7
14-Sep	1.4	1.9	1.4	Z	1.0	0.6	0.1	0.6	0.4	0.3	0.0	0.0	0.0	0.0	0.0	0.3	0.0	0.5	1.3	0.8	0.9	0.0	0.5	0.3	0.5	1.9
15-Sep	0.2	0.0	0.0	0.8	Z	0.1	0.0	0.2	0.8	0.0	0.2	0.4	0.8	0.1	0.3	0.8	0.9	0.6	0.7	1.3	0.8	1.9	1.3	0.4	0.6	1.9
16-Sep	0.5	0.6	0.5	0.3	0.7	Z	0.9	2.3	1.6	0.8	1.1	0.9	0.8	1.1	0.9	0.6	0.9	1.3	1.4	2.8	1.6	1.1	1.0	1.2	1.1	2.8
17-Sep	Z	1.3	0.9	1.2	1.3	1.1	1.4	2.7	1.3	2.3	3.3	0.8	0.6	0.5	0.5	0.8	0.6	3.7	2.5	1.2	4.0	1.5	0.6	1.3	1.5	4.0
18-Sep	0.4	Z	0.1	0.1	0.3	0.8	2.0	2.1	2.9	1.2	1.5	0.4	0.1	0.0	0.0	0.0	0.0	0.0	0.0	1.2	0.1	2.1	0.4	0.0	0.7	2.9
19-Sep	0.0	0.0	Z	0.0	0.0	0.0	0.1	1.1	0.6	0.0	0.0	0.0	0.1	0.0	0.2	2.7	0.9	1.4	3.0	4.1	4.8	0.9	1.7	6.0	1.2	6.0
20-Sep	1.1	0.5	0.4	Z	1.0	0.0	0.3	0.8	1.5	1.0	3.7	2.1	3.6	1.6	2.8	2.6	2.2	1.2	1.4	2.7	0.5	0.6	0.5	1.0	1.4	3.7
21-Sep	1.2	0.5	0.5	1.2	Z	1.2	1.4	1.4	1.3	1.3	1.1	0.6	0.2	0.0	0.2	0.1	0.3	0.4	0.5	1.4	0.6	0.7	1.7	1.0	0.8	1.7
22-Sep	0.7	0.7	1.7	2.0	2.5	Z	1.4	3.1	1.3	0.9	0.9	0.5	0.3	0.6	0.5	1.4	0.3	0.9	0.3	1.0	1.6	3.6	0.1	0.0	1.1	3.6
23-Sep	Z	1.1	0.0	0.0	0.4	1.7	0.0	0.1	0.3	0.7	0.0	0.0	0.2	0.0	0.0	0.0	0.0	0.2	0.0	0.0	0.2	0.6	0.0	0.0	0.2	1.7
24-Sep	0.0	Z	1.3	0.9	0.3	0.2	0.4	0.2	0.4	0.0	0.0	0.0	0.0	0.0	0.0	0.1	0.0	0.0	1.5	4.1	1.4	1.8	1.2	1.7	0.7	4.1
25-Sep	1.3	1.2	Z	0.6	0.4	0.4	0.8	1.4	4.3	4.6	1.6	0.5	1.2	2.9	2.5	0.7	0.8	1.1	1.5	2.8	4.5	2.8	2.9	0.0	1.8	4.6
26-Sep	0.0	0.0	0.0	Z	0.0	0.0	0.0	0.0	0.0	0.0	0.9	0.2	0.0	0.0	0.0	0.1	0.0	0.2	0.1	1.6	3.4	0.5	1.2	0.2	0.4	3.4
27-Sep	0.8	0.4	0.2	0.6	Z	0.6	0.1	0.1	0.0	0.0	0.0	C	C	C	C	C	1.0	1.0	0.7	0.4	0.4	0.0	0.1	0.0	0.4	1.0
28-Sep	0.0	0.0	0.0	0.0	0.0	Z	0.5	0.0	0.0	0.0	0.0	0.0	0.0	0.1	0.0	0.1	0.6	1.6	0.2	0.6	1.9	1.4	1.9	0.8	0.4	1.9
29-Sep	Z	1.0	0.5	0.6	0.5	0.3	0.5	0.0	0.2	0.5	0.4	0.4	0.2	0.3	0.3	0.1	0.1	0.4	0.3	1.2	3.0	3.4	2.7	2.0	0.8	3.4
30-Sep	0.9	Z	0.5	0.3	0.2	0.3	0.5	0.8	0.5	0.5	0.4	0.2	0.2	0.4	0.5	0.2	0.3	0.0	0.4	0.3	0.8	0.5	0.4	0.0	0.4	0.9
	0.8	0.6	0.6	0.5	0.6	0.6	0.8	1.6	1.2	0.9	0.8	0.6	0.6	0.6	0.7	0.6	0.6	0.8	1.1	1.4	1.9	1.1	0.8	0.8	Diurnal Average	
	3.3	1.9	2.3	2.0	2.5	2.8	2.5	11.6	4.3	4.6	3.7	3.3	3.6	4.1	4.6	2.8	3.2	3.7	4.0	4.7	7.6	3.6	2.9	6.0	Diurnal Maximum	

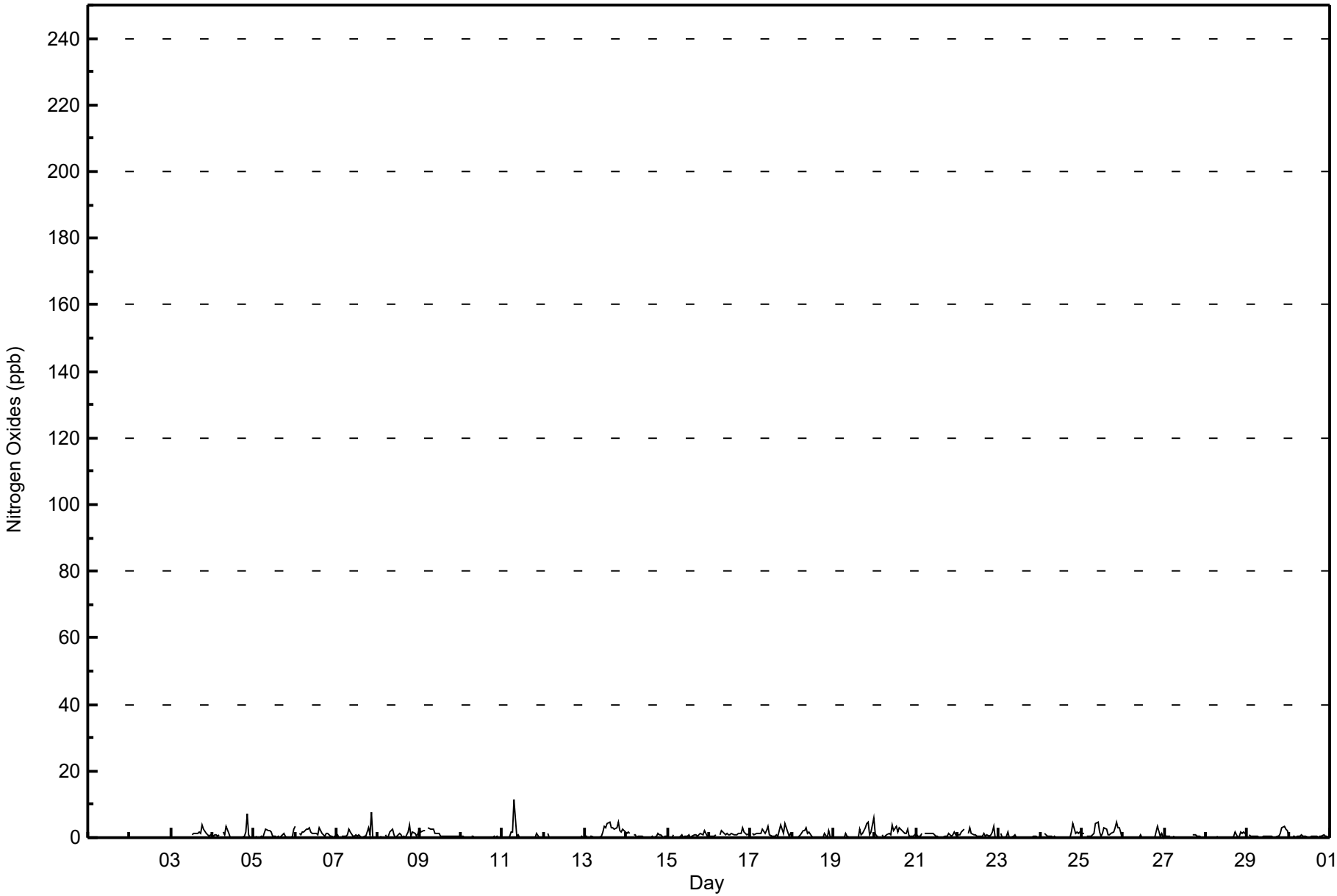
Z - zerospan C - Calibration M - Maintenance UO - Unstable Operation

Wood Buffalo Environmental Association

Hourly Averages

Nitrogen Oxides (NO_X) - ppb

Janvier - September 2024



Nitrogen Oxides (NO_X) - ppb

Janvier - September 2024

Concentration Ranges (ppb)	Number of Hours	%	Cumulative %
0 - 20	628	100.00	100.00
21 - 40	0	0.00	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: 628

Total Number of Hours: 720

Wood Buffalo Environmental Association

Frequency Distribution

Nitrogen Oxides (NO_X) - ppb

Janvier - September 2024

Concentration Ranges (ppb)	Wind Direction																
	N	NNE	NE	ENE	E	ESE	SE	SSE	S	SSW	SW	WSW	W	WNW	NW	NNW	**Totals**
0 - 20	41	42	6	14	18	11	16	32	30	140	114	33	43	47	22	16	625
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	41	42	6	14	18	11	16	32	30	140	114	33	43	47	22	16	625

Total Number of Valid Hours: 625

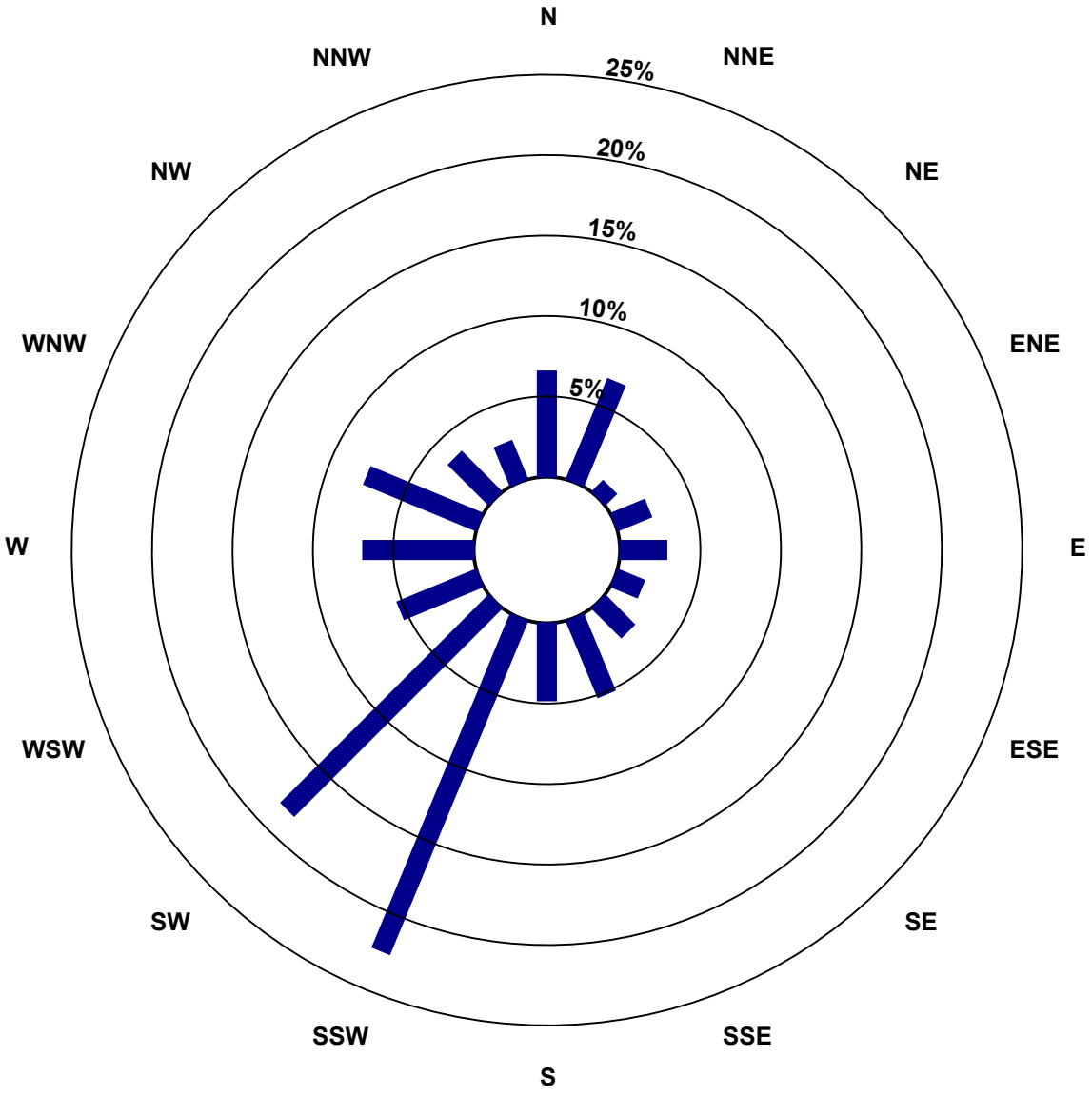
Total Number of Hours: 720

Wood Buffalo Environmental Association

Wind Rose Sep 2024

Nitrogen Oxides (NO_X) - ppb

Janvier



Classes (ppb)

0 - 20

21 - 40

11 - 80

81 - 159

> 159

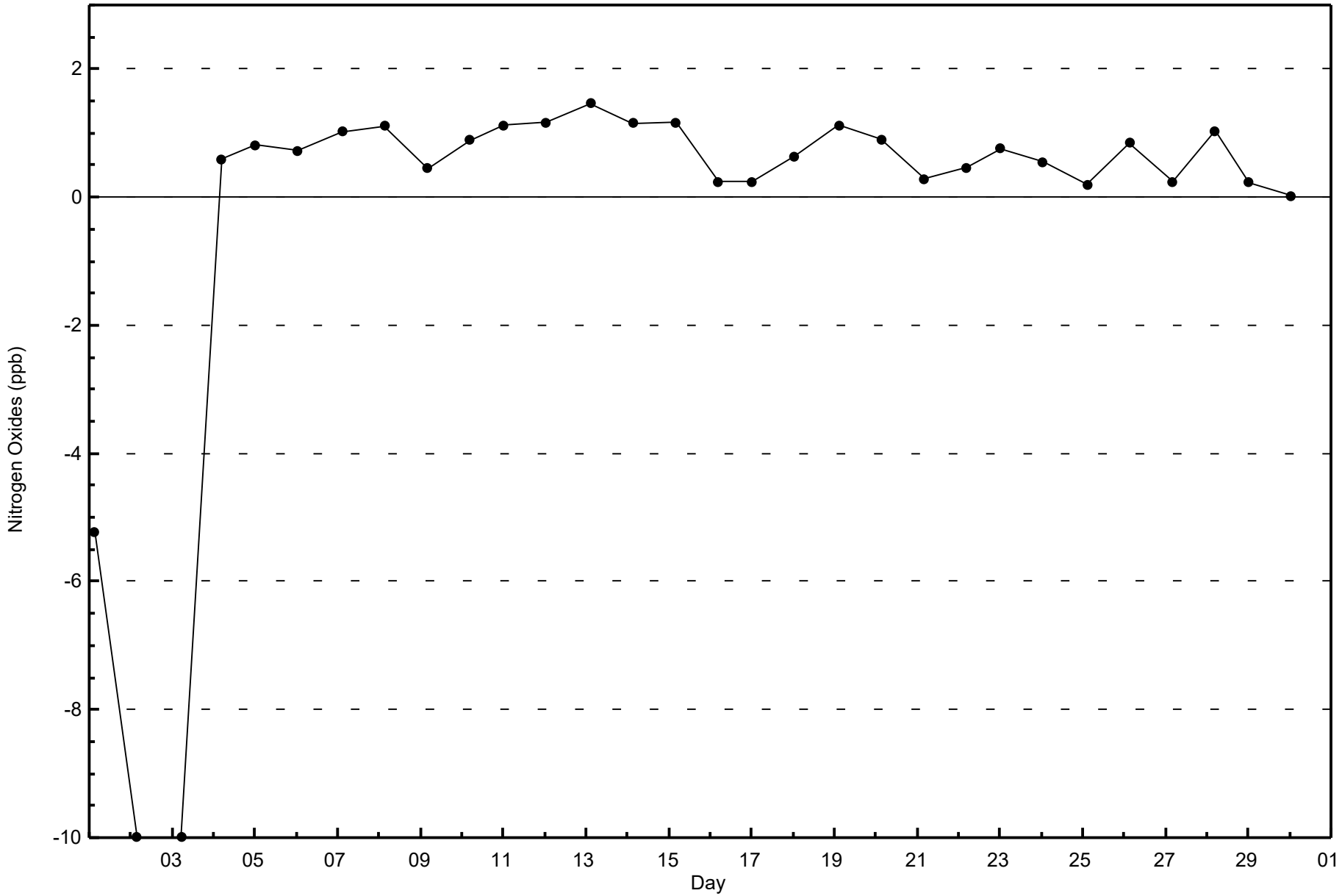
Total Number of Valid Hours: 625

Wood Buffalo Environmental Association

Zero Responses

Nitrogen Oxides (NO_X) - ppb

Janvier - September 2024

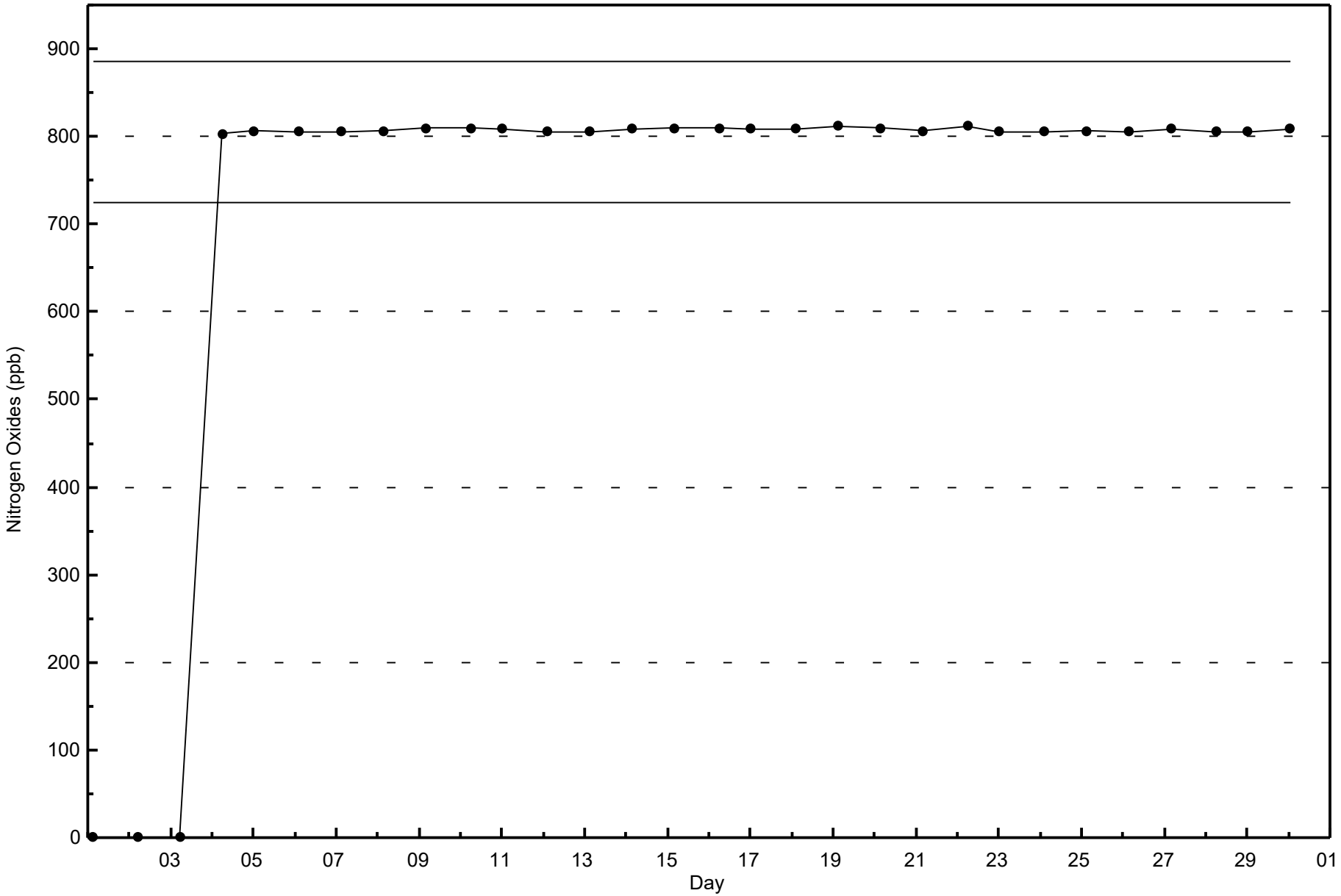


Wood Buffalo Environmental Association

Span Responses

Nitrogen Oxides (NO_X) - ppb

Janvier - September 2024



Wood Buffalo Environmental Association

Summary of Hour Averages

Ozone (O_3) - ppb

Janvier - September 2024

Number of Exceedences (AAAQO): 1-hr: 0 24-hr: 0
Maximum Value: 51.5 ppb on Sep 8 21:00 Maximum Daily Average: 33.8 ppb on Sep 8

Minimum Value: 2.7 ppb on Sep 11 07:00 Minimum Daily Average: 10.3 ppb on Sep 13
Maximum Diurnal Average: 32.2 ppb at hour 16 Minimum Diurnal Average: 13.6 ppb at hour 4
Monthly Average: 21.91 ppb Percentiles: P_1 = 4.2 P_{10} = 9.7 Q_1 = 13.0 Median = 20.8 Q_3 = 29.8 P_{90} = 35.9 P_{99} = 48.1

Hours in Service:	720
Hours of Data:	686
Hours of Missing Data:	34
Hours of Calibration:	33
Percent Operational Time:	99.9

Day	Hourly Period Ending At (MST)																								Daily	Daily
	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24	Average	Maximum
1-Sep	13.7	Z	9.0	12.0	11.8	11.4	17.1	20.7	23.5	27.8	32.4	37.2	36.3	39.2	43.4	42.8	40.9	42.0	33.8	27.9	22.2	20.5	21.4	22.0	26.5	43.4
2-Sep	22.9	24.8	Z	26.0	24.5	22.9	20.8	15.5	14.8	21.0	28.2	34.9	48.0	51.2	50.4	49.4	40.5	31.2	25.8	21.2	20.8	17.5	23.2	23.0	28.6	51.2
3-Sep	23.9	26.6	25.5	Z	24.7	26.9	28.6	26.5	29.8	31.3	M	C	C	C	36.6	38.1	34.4	32.8	21.2	19.4	18.6	13.2	15.3	17.0	25.8	38.1
4-Sep	15.0	11.2	9.4	Z	8.4	10.0	11.3	9.3	7.7	11.1	18.9	24.3	28.9	30.6	30.4	30.4	30.1	27.3	21.2	14.4	12.4	19.7	20.2	19.2	18.3	30.6
5-Sep	18.5	18.0	17.4	13.2	Z	12.2	10.4	11.9	17.3	20.3	24.4	28.4	31.7	33.7	34.3	35.8	38.9	36.7	34.1	31.7	29.9	29.7	27.0	18.9	25.0	38.9
6-Sep	21.1	28.6	27.5	28.8	32.1	Z	27.5	27.2	27.1	28.5	30.1	30.8	36.4	41.2	39.8	43.8	41.2	39.6	32.7	27.6	32.9	30.0	27.2	23.4	31.5	43.8
7-Sep	Z	24.1	21.3	18.2	15.4	13.3	17.4	17.0	18.4	19.3	18.9	21.1	24.4	24.9	24.4	24.8	23.7	21.9	18.8	19.8	13.1	13.6	16.4	17.5	19.5	24.9
8-Sep	17.6	Z	15.6	16.4	15.9	18.7	17.1	18.5	20.8	25.6	30.9	36.8	49.9	48.6	45.9	44.6	45.3	45.6	42.4	50.5	51.5	45.9	42.2	32.0	33.8	51.5
9-Sep	26.2	33.7	Z	26.0	31.9	36.1	36.9	33.7	34.2	35.9	31.7	28.4	25.2	29.0	31.5	35.7	37.9	40.7	41.7	38.7	30.8	29.9	30.9	28.8	32.8	41.7
10-Sep	26.8	24.8	22.5	Z	20.5	18.4	16.4	16.4	18.7	21.8	25.9	29.7	31.1	32.0	32.6	31.4	31.8	31.8	22.7	18.1	14.7	15.9	14.3	13.4	23.1	32.6
11-Sep	13.2	12.8	11.2	8.3	Z	3.9	2.7	4.0	8.6	13.9	18.9	24.7	27.8	31.8	34.5	35.7	35.2	36.3	34.6	30.5	27.5	26.3	23.2	19.9	21.1	36.3
12-Sep	11.9	13.8	13.2	12.7	11.8	Z	14.6	12.8	10.8	12.0	11.1	11.8	10.6	9.6	10.4	11.3	11.3	12.9	13.1	12.3	11.8	11.9	12.0	12.2	12.0	14.6
13-Sep	Z	12.3	12.9	12.5	12.0	11.4	11.5	10.8	10.4	10.3	10.1	10.2	10.1	9.0	10.6	11.0	9.2	8.1	8.0	7.9	10.9	9.2	9.8	9.5	10.3	12.9
14-Sep	9.9	Z	6.5	9.2	8.7	7.3	8.6	10.3	11.5	13.2	20.8	33.1	33.8	32.6	33.0	37.0	37.7	25.0	14.4	12.0	9.7	9.2	14.6	12.0	17.8	37.7
15-Sep	10.6	12.0	Z	10.5	11.8	11.7	11.9	11.1	11.7	12.0	13.5	15.8	18.6	23.0	25.4	19.1	14.1	8.7	9.8	7.8	5.2	4.4	10.8	11.4	12.6	25.4
16-Sep	11.1	11.9	11.5	Z	13.4	13.8	15.0	14.6	16.0	17.8	20.0	27.2	31.5	34.6	35.3	36.0	33.1	21.7	16.4	14.0	14.8	14.3	12.7	13.2	19.6	36.0
17-Sep	12.3	11.4	12.2	12.9	Z	11.9	9.8	13.6	17.3	18.1	26.6	37.1	42.1	44.1	44.4	38.0	35.7	30.4	25.9	19.7	15.4	12.6	11.4	11.4	22.4	44.4
18-Sep	5.9	4.5	3.5	3.8	5.2	Z	12.0	15.0	23.3	25.6	30.8	32.7	33.8	32.4	29.0	28.2	26.7	23.1	23.3	18.3	16.2	15.6	14.6	15.3	19.1	33.8
19-Sep	Z	16.0	15.8	11.8	13.8	13.1	12.7	14.3	18.8	20.9	24.6	30.1	33.6	32.4	27.9	20.2	23.6	20.8	17.4	14.0	11.2	10.2	10.2	8.1	18.3	33.6
20-Sep	7.8	Z	4.5	4.2	3.5	9.2	7.6	6.4	5.9	6.6	7.5	11.3	13.2	19.8	24.3	26.4	23.1	18.7	15.4	19.8	23.0	18.2	14.8	11.5	13.2	26.4
21-Sep	9.5	9.2	Z	6.7	7.6	6.2	6.7	8.3	9.3	12.5	17.1	22.0	25.6	29.3	29.5	31.1	29.9	27.1	22.6	22.9	22.8	22.7	24.1	25.9	18.6	31.1
22-Sep	22.1	16.7	15.0	Z	10.5	6.1	8.5	12.0	13.8	14.8	16.1	18.4	19.1	22.9	23.3	19.8	21.7	17.2	15.5	9.5	5.8	6.6	7.3	8.6	14.4	23.3
23-Sep	6.4	4.9	4.6	5.6	Z	4.0	9.5	11.5	12.3	14.8	17.9	19.7	20.4	21.0	22.4	24.1	24.3	20.8	22.2	21.4	19.5	15.8	15.6	15.3	15.4	24.3
24-Sep	17.5	17.0	15.0	15.1	13.8	Z	12.9	13.3	14.6	22.7	28.1	32.3	35.9	39.2	40.9	42.9	43.3	41.3	27.9	21.8	21.2	20.6	19.3	18.4	25.0	43.3
25-Sep	Z	12.3	12.9	5.0	6.3	10.4	10.9	12.0	11.8	15.2	21.6	25.4	29.6	33.6	34.4	35.4	33.7	29.6	24.8	18.9	19.2	18.5	17.2	19.7	19.9	35.4
26-Sep	19.4	Z	17.3	17.8	18.7	24.5	27.9	35.7	36.3	37.6	33.8	30.0	29.2	28.0	31.7	36.8	39.5	40.5	38.5	28.3	25.1	30.8	28.7	30.3	29.9	40.5
27-Sep	27.8	25.8	Z	16.8	21.9	18.6	19.0	16.8	25.4	37.1	38.7	39.5	40.7	41.1	40.3	39.1	37.6	33.0	26.5	28.8	22.1	19.8	20.4	21.1	28.6	41.1
28-Sep	20.7	22.4	25.2	Z	28.3	27.2	25.1	26.5	27.3	28.5	30.2	30.9	30.7	32.5	32.8	33.7	32.4	25.3	26.1	24.6	19.2	19.8	17.7	16.3	26.2	33.7
29-Sep	11.2	9.0	11.1	11.6	Z	9.7	10.2	8.7	20.4	24.1	28.7	32.6	32.9	32.9	29.8	29.3	30.4	31.3	31.6	25.3	20.1	16.5	17.8	19.8	21.5	32.9
30-Sep	20.1	21.0	21.8	21.2	22.2	Z	20.8	20.8	21.6	24.5	26.4	28.0	30.7	31.7	32.3	33.2	34.0	33.5	32.2	30.3	29.3	29.2	28.6	27.2	27.0	34.0
	16.3	17.0	14.5	13.6	15.8	14.4	15.4	15.8	18.0	20.8	23.6	27.1	29.7	31.4	32.0	32.2	31.4	28.5	24.7	21.9	19.9	18.9	19.0	18.1	Diurnal Average	
	27.8	33.7	27.5	28.8	32.1	36.1	36.9	35.7	36.3	37.6	38.7	39.5	49.9	51.2	50.4	49.4	45.3	45.6	42.4	50.5	51.5	45.9	42.2	32.0	Diurnal Maximum	

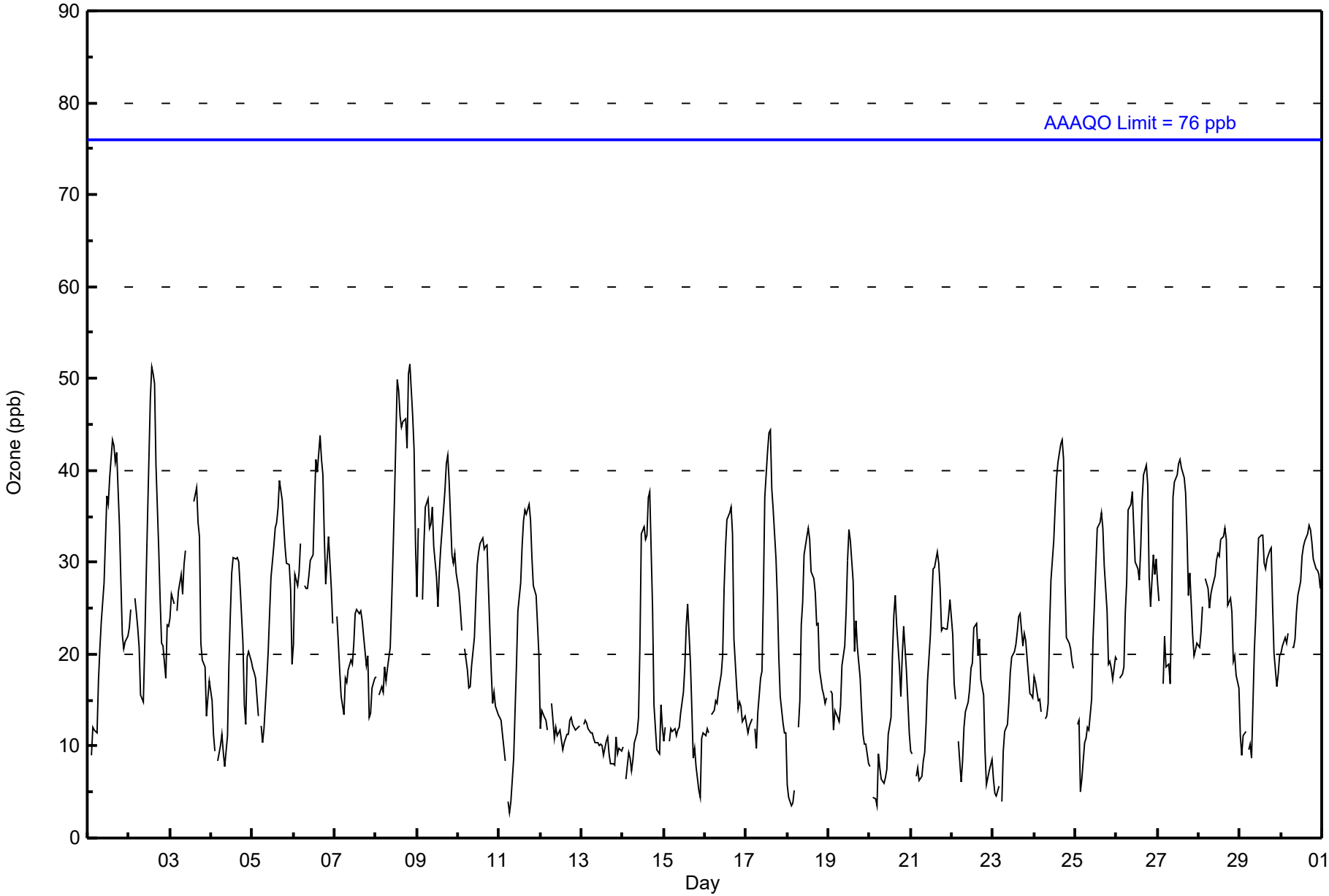
Z - zerospan C - Calibration M - Maintenance
Alberta Ambient Air Quality Objectives (AAAQO): 1-hr 76 ppb

Wood Buffalo Environmental Association

Hourly Averages

Ozone (O_3) - ppb

Janvier - September 2024



Concentration Ranges (ppb)	Number of Hours	%	Cumulative %
0 - 20	334	48.69	48.69
21 - 50	350	51.02	99.71
51 - 82	2	0.29	100.00
> 83	0	0.00	100.00

Total Number of Valid Hours: 686

Total Number of Hours: 720

Wood Buffalo Environmental Association

Frequency Distribution

Ozone (O_3) - ppb

Janvier - September 2024

Concentration Ranges (ppb)	Wind Direction																
	N	NNE	NE	ENE	E	ESE	SE	SSE	S	SSW	SW	WSW	W	WNW	NW	NNW	**Totals**
0 - 20	37	27	0	4	7	4	8	12	18	104	60	14	5	12	9	8	329
21 - 50	15	15	6	10	13	7	9	17	17	51	66	28	38	36	14	8	350
51 - 82	0	0	0	0	0	0	0	1	0	0	1	0	0	0	0	0	2
> 83	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Totals	52	42	6	14	20	11	17	30	35	155	127	42	43	48	23	16	681

Total Number of Valid Hours: 681

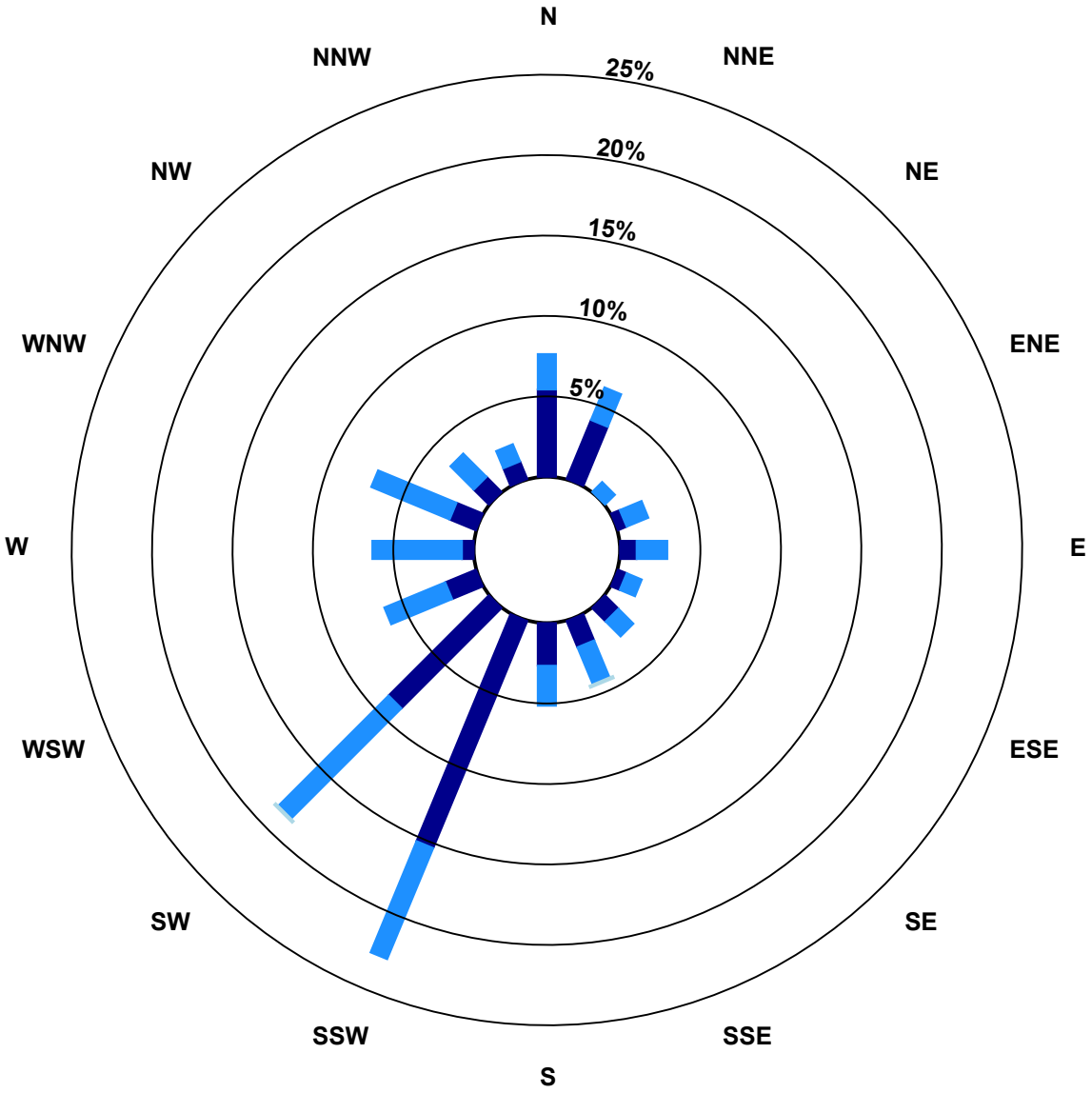
Total Number of Hours: 720

Wood Buffalo Environmental Association

Wind Rose Sep 2024

Ozone (O_3) - ppb

Janvier



Classes (ppb)

0 - 20

21 - 50

51 - 82

> 83

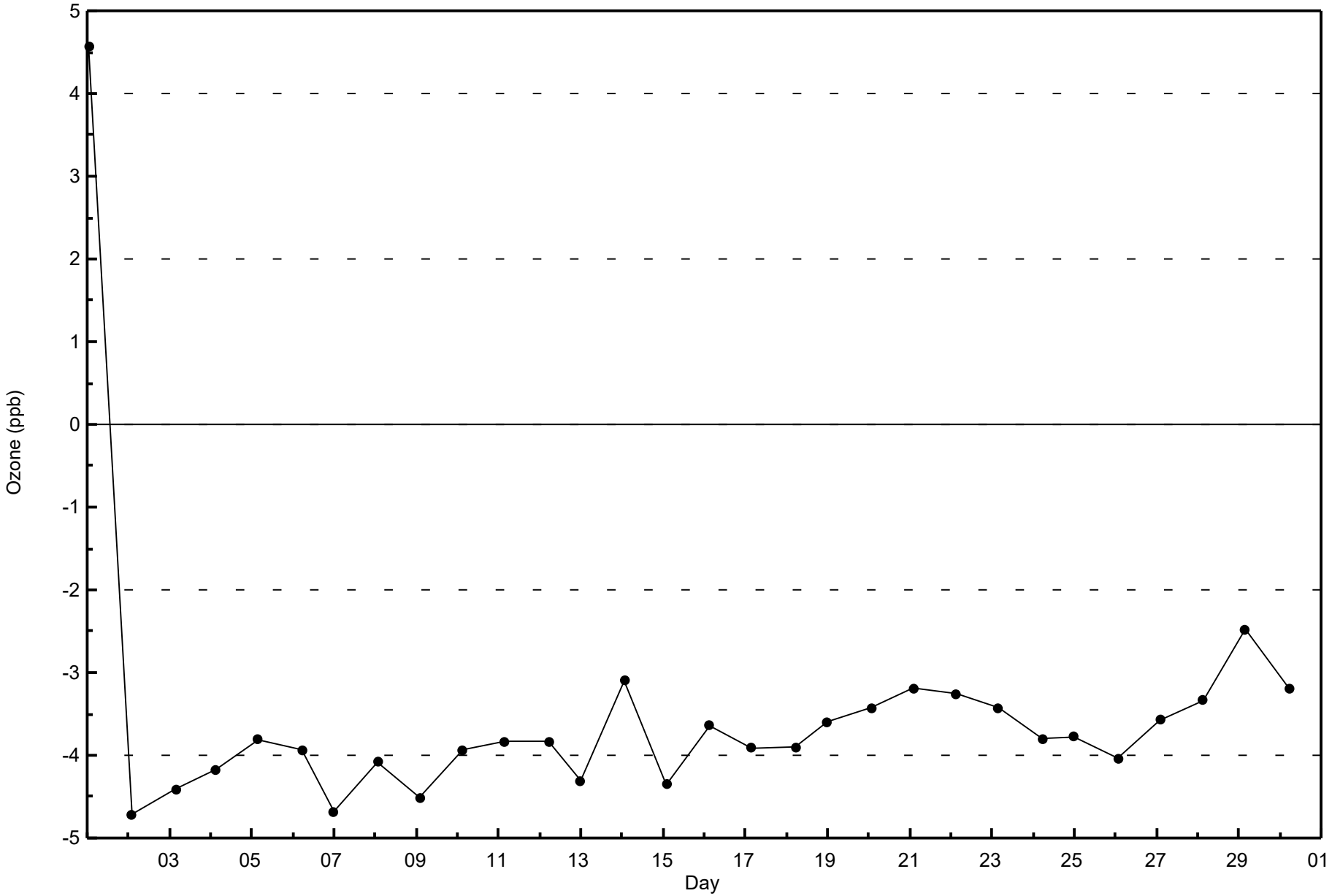
Total Number of Valid Hours: 681

Wood Buffalo Environmental Association

Zero Responses

Ozone (O_3) - ppb

Janvier - September 2024

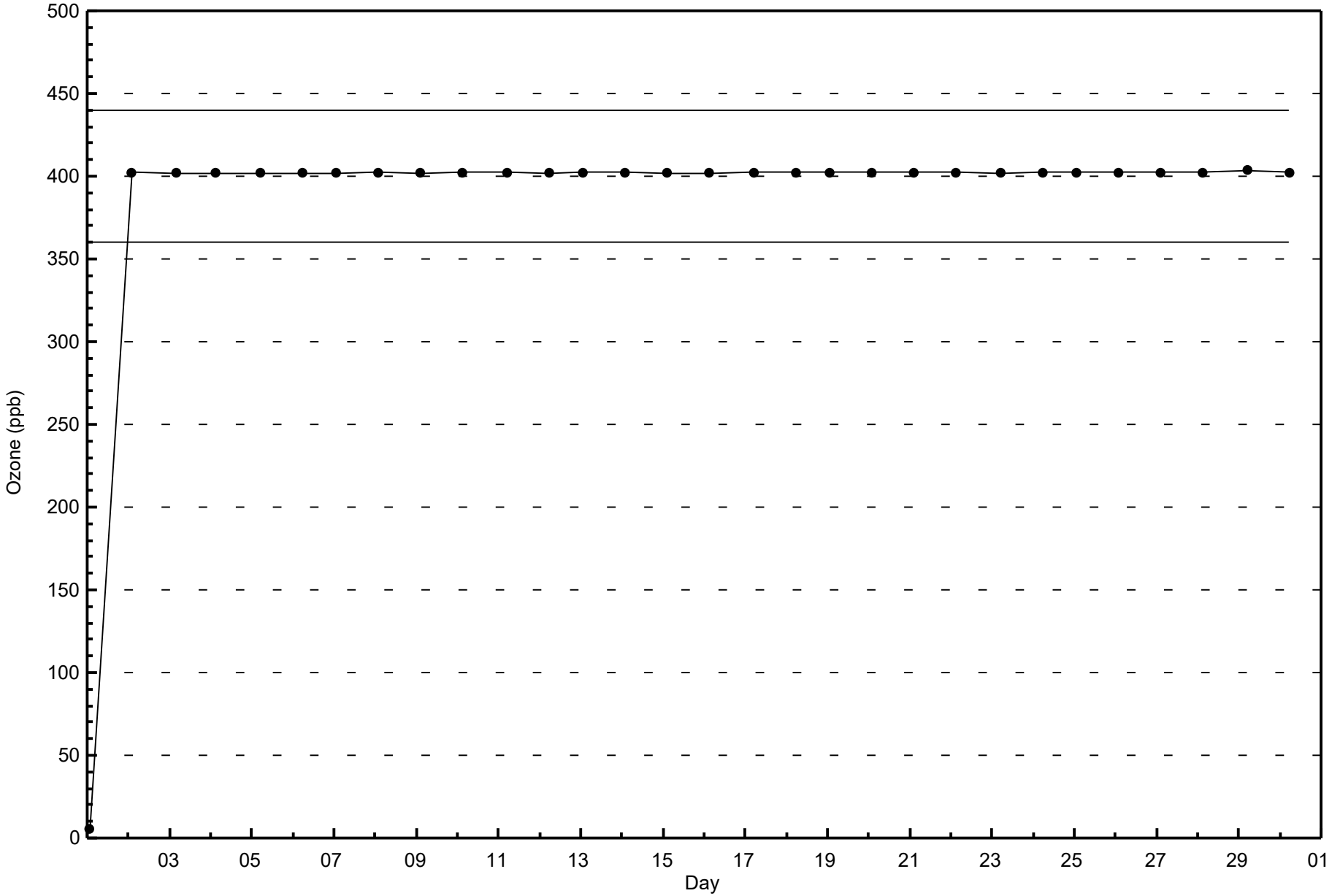


Wood Buffalo Environmental Association

Span Responses

Ozone (O_3) - ppb

Janvier - September 2024



Wood Buffalo Environmental Association

Summary of Hour Averages

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

Janvier - September 2024

Number of Exceedences (AAAQO): 1-hr: 55 24-hr: 5

Maximum Value: 179.4 $\mu g/m^3$ on Sep 12 15:00

Maximum Daily Average: 104.9 $\mu g/m^3$ on Sep 12

Minimum Value: 0.8 $\mu g/m^3$ on Sep 24 15:00

Minimum Daily Average: 1.5 $\mu g/m^3$ on Sep 28

Maximum Diurnal Average: 22.5 $\mu g/m^3$ at hour 13

Minimum Diurnal Average: 15.6 $\mu g/m^3$ at hour 17

Monthly Average: 18.43 $\mu g/m^3$

Percentiles: P_1 = 0.9 P_{10} = 1.8 Q_1 = 2.9 Median = 4.9 Q_3 = 10.6 P_{90} = 70.3 P_{99} = 145.2

Hours in Service:	720
Hours of Data:	717
Hours of Missing Data:	3
Hours of Calibration:	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-Sep	5.1	5.1	5.1	4.8	4.6	4.4	4.0	3.7	3.4	3.7	3.6	3.5	2.8	2.5	2.9	2.9	2.9	3.3	4.4	5.5	5.3	5.8	5.4	5.3	4.2	5.8
2-Sep	5.6	5.4	5.7	5.3	5.3	5.3	5.5	4.9	4.6	4.2	4.1	4.0	4.0	3.9	3.6	3.6	4.0	4.8	5.4	6.2	6.0	6.4	7.8	12.9	5.4	12.9
3-Sep	17.5	24.1	20.3	15.6	10.8	7.5	5.3	5.3	6.9	7.7	M	8.2	8.2	8.9	10.5	10.6	9.9	9.3	10.1	10.4	10.4	10.6	9.0	7.3	10.6	24.1
4-Sep	6.4	6.2	6.4	7.1	7.3	7.5	6.6	6.5	6.2	5.9	5.1	5.2	6.1	6.5	5.7	5.8	4.5	4.1	4.8	5.6	7.0	5.1	4.3	3.7	5.8	7.5
5-Sep	3.3	2.9	2.8	2.8	3.1	2.9	3.5	4.9	3.8	4.3	5.2	5.6	6.4	7.0	6.0	4.9	4.7	4.3	4.1	3.8	3.6	3.3	3.6	4.3	4.2	7.0
6-Sep	4.4	3.2	3.1	3.4	3.7	4.0	4.7	4.7	5.2	5.2	4.9	5.1	6.1	8.0	12.1	24.4	23.4	11.7	8.2	7.8	7.6	8.2	16.9	44.9	9.6	44.9
7-Sep	74.1	85.5	102.7	115.6	122.1	121.9	133.9	141.1	146.1	136.4	145.1	145.2	125.2	125.6	113.1	92.6	76.5	75.4	72.1	75.2	75.2	71.6	67.3	66.9	104.4	146.1
8-Sep	64.6	64.3	65.0	67.4	71.2	78.1	80.2	82.2	85.0	91.8	104.4	111.9	108.2	64.4	47.4	47.6	39.6	49.1	47.9	42.0	39.6	39.8	40.1	38.2	65.4	111.9
9-Sep	36.5	33.4	32.2	29.5	26.2	26.7	27.5	26.0	21.7	18.6	32.8	35.2	35.4	24.5	7.4	4.3	5.0	6.6	3.7	3.0	12.4	20.9	18.0	24.2	21.3	36.5
10-Sep	23.0	19.9	16.5	12.7	11.7	11.0	11.3	10.4	9.6	8.2	8.4	8.9	11.6	16.4	12.2	9.3	5.1	3.1	3.5	2.9	2.9	2.9	2.9	2.9	9.5	23.0
11-Sep	3.0	3.1	3.4	5.0	3.8	3.9	4.5	4.8	3.9	4.3	4.4	4.1	4.4	5.4	5.9	5.5	5.5	13.7	22.7	22.0	18.6	16.0	15.3	17.8	8.4	22.7
12-Sep	17.8	19.8	26.6	25.7	37.6	52.1	75.9	81.6	91.0	98.8	105.9	129.2	155.1	177.2	179.4	162.6	148.4	147.8	140.3	134.7	131.1	128.9	124.4	126.4	104.9	179.4
13-Sep	126.7	125.2	122.9	116.3	114.0	119.0	118.5	110.3	112.7	112.7	99.9	91.3	93.0	91.8	89.7	79.8	75.5	77.2	76.1	82.6	70.2	68.7	73.5	72.2	96.7	126.7
14-Sep	70.5	64.9	62.8	58.1	57.3	64.0	68.1	69.5	63.4	55.7	35.6	28.2	35.6	37.0	28.7	15.6	11.0	10.6	11.4	12.6	13.1	11.8	8.4	7.8	37.6	70.5
15-Sep	7.3	6.6	6.3	6.0	5.7	5.9	5.9	5.8	6.3	7.5	7.7	9.7	10.9	11.0	11.6	13.0	11.8	11.7	12.0	12.6	11.6	12.0	10.1	9.5	9.1	13.0
16-Sep	9.6	9.0	8.0	7.8	6.6	5.9	5.2	4.5	4.0	3.4	2.9	2.9	3.4	3.1	2.5	4.0	4.1	3.5	3.8	4.3	3.7	4.1	4.4	4.3	4.8	9.6
17-Sep	4.4	4.3	4.4	4.2	4.0	4.4	4.5	4.1	3.5	3.2	3.1	2.9	2.9	2.9	2.8	3.1	3.1	3.5	3.7	5.0	6.0	5.2	4.9	4.7	3.9	6.0
18-Sep	6.3	5.5	5.2	5.8	4.9	4.8	4.6	4.6	4.2	3.7	3.9	3.5	3.1	2.3	2.1	2.5	2.8	3.0	4.7	7.9	9.7	12.6	13.4	12.0	5.6	13.4
19-Sep	11.2	10.2	9.1	9.2	9.2	9.2	9.6	9.7	8.6	7.2	6.6	5.9	5.0	5.3	5.7	6.7	6.0	6.2	7.2	6.9	7.6	7.2	6.8	7.2	7.6	11.2
20-Sep	6.1	5.7	5.6	7.4	8.4	4.2	4.1	4.2	4.6	5.0	4.8	5.0	5.0	4.4	5.0	5.5	5.5	5.6	6.4	7.8	5.9	5.2	4.9	4.8	5.5	8.4
21-Sep	4.9	4.5	4.3	4.4	4.5	4.3	4.4	4.3	4.1	3.7	3.4	4.3	4.7	5.1	4.9	4.5	4.8	4.9	5.1	5.0	5.2	5.6	5.1	4.5	4.6	5.6
22-Sep	4.7	4.7	4.4	5.1	4.5	4.6	6.0	4.3	4.0	3.5	3.2	2.9	3.0	2.6	2.5	2.4	1.9	2.3	3.1	2.9	2.8	2.6	2.7	2.5	3.5	6.0
23-Sep	2.7	2.9	2.8	2.5	2.8	2.6	2.1	2.3	2.4	2.5	2.7	2.6	2.7	2.2	2.1	2.4	2.5	2.5	2.6	2.6	2.8	3.0	3.1	3.0	2.6	3.1
24-Sep	2.8	2.6	2.4	2.3	2.1	2.0	1.9	1.5	1.3	1.0	1.0	0.9	0.9	0.8	0.8	0.8	0.8	1.0	2.2	3.2	3.1	2.8	2.7	2.8	1.8	3.2
25-Sep	3.1	3.3	2.8	4.1	3.2	2.8	2.8	2.7	2.5	2.5	2.4	2.2	2.4	2.9	2.9	2.9	2.7	2.7	3.1	4.0	3.6	3.6	3.5	3.0	3.0	4.1
26-Sep	3.0	1.9	2.1	2.2	2.1	1.9	3.1	4.3	4.0	3.4	3.0	3.3	C	C	6.3	1.7	1.6	1.5	2.6	2.2	2.2	1.9	2.4	1.8	2.7	6.3
27-Sep	1.8	2.0	2.5	2.5	2.2	1.9	1.8	1.8	1.5	1.3	1.2	1.2	1.5	1.3	1.5	1.6	1.8	1.9	2.4	1.1	1.0	1.4	1.0	1.0	1.6	2.5
28-Sep	1.0	1.0	1.0	0.9	1.0	1.2	1.3	1.4	1.3	1.4	1.4	1.3	1.1	1.0	0.9	0.9	1.2	1.7	1.7	1.9	2.6	2.5	2.6	2.6	1.5	2.6
29-Sep	4.3	3.9	2.6	2.5	2.6	2.4	2.1	2.2	1.7	1.7	1.8	1.6	1.6	1.6	1.6	1.6	1.5	1.5	1.4	2.0	3.5	3.8	4.6	4.8	2.5	4.8
30-Sep	3.7	3.1	2.5	2.7	2.9	3.3	5.7	5.7	7.4	13.2	6.9	3.7	1.9	1.3	1.2	1.3	1.2	1.1	1.4	1.4	1.4	1.4	1.4	1.4	3.2	13.2
	17.8	17.8	18.0	18.0	18.2	19.0	20.5	20.6	20.8	20.7	21.2	21.3	22.5	21.6	19.3	17.5	15.6	15.9	15.9	16.2	15.9	15.8	15.7	16.8	Diurnal Average	
	126.7	125.2	122.9	116.3	122.1	121.9	133.9	141.1	146.1	136.4	145.1	145.2	155.1	177.2	179.4	162.6	148.4	147.8	140.3	134.7	131.1	128.9	124.4	126.4	Diurnal Maximum	

C - Calibration M - Maintenance

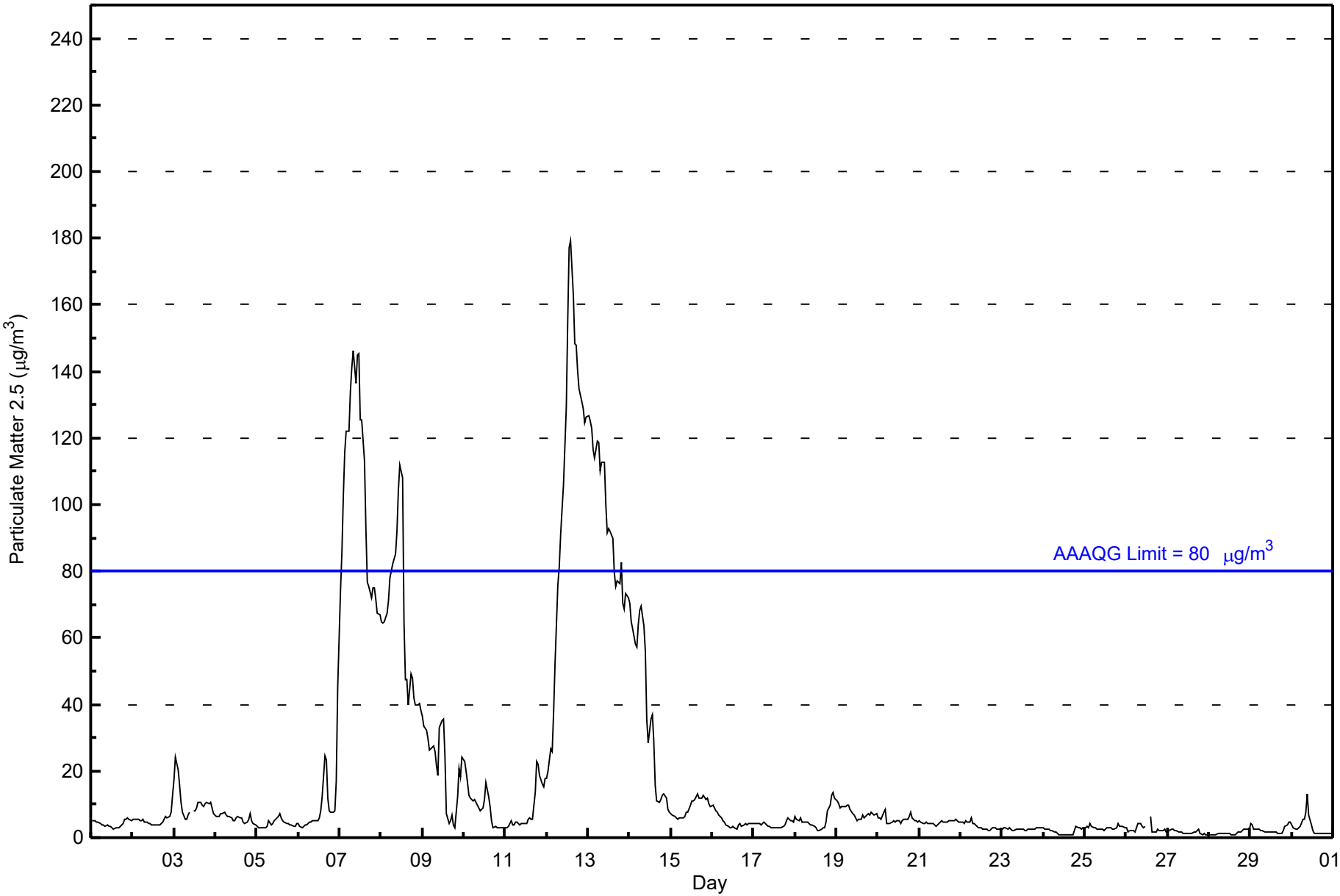
Alberta Ambient Air Quality Guideline/Objectives: 1-hr 80 $\mu g/m^3$ 24-hr 29 $\mu g/m^3$

Wood Buffalo Environmental Association

Hourly Averages

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

Janvier - September 2024



Wood Buffalo Environmental Association

Cumulative Frequency Distribution

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

Janvier - September 2024

Concentration Ranges ($\mu g/m^3$)	Number of Hours	%	Cumulative %
0 - 5	412	57.46	57.46
6 - 15	159	22.18	79.64
16 - 25	25	3.49	83.12
26 - 80	67	9.34	92.47
> 81.0	54	7.53	100.00

Total Number of Valid Hours: 717

Total Number of Hours: 720

Wood Buffalo Environmental Association

Frequency Distribution

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

Janvier - September 2024

Concentration Ranges ($\mu g/m^3$)	Wind Direction																
	N	NNE	NE	ENE	E	ESE	SE	SSE	S	SSW	SW	WSW	W	WNW	NW	NNW	**Totals**
0 - 5	13	27	3	8	8	7	9	21	21	102	84	29	23	25	18	12	410
6 - 15	16	4	3	6	7	2	6	5	6	34	27	10	10	13	5	3	157
16 - 25	3	2	0	0	2	2	1	0	0	2	2	2	5	3	0	0	24
26 - 80	0	4	0	0	1	0	1	7	7	18	12	4	5	6	1	1	67
> 81.0	23	8	0	0	2	0	0	0	1	12	6	0	0	1	0	1	54
Totals	55	45	6	14	20	11	17	33	35	168	131	45	43	48	24	17	712

Total Number of Valid Hours: 712

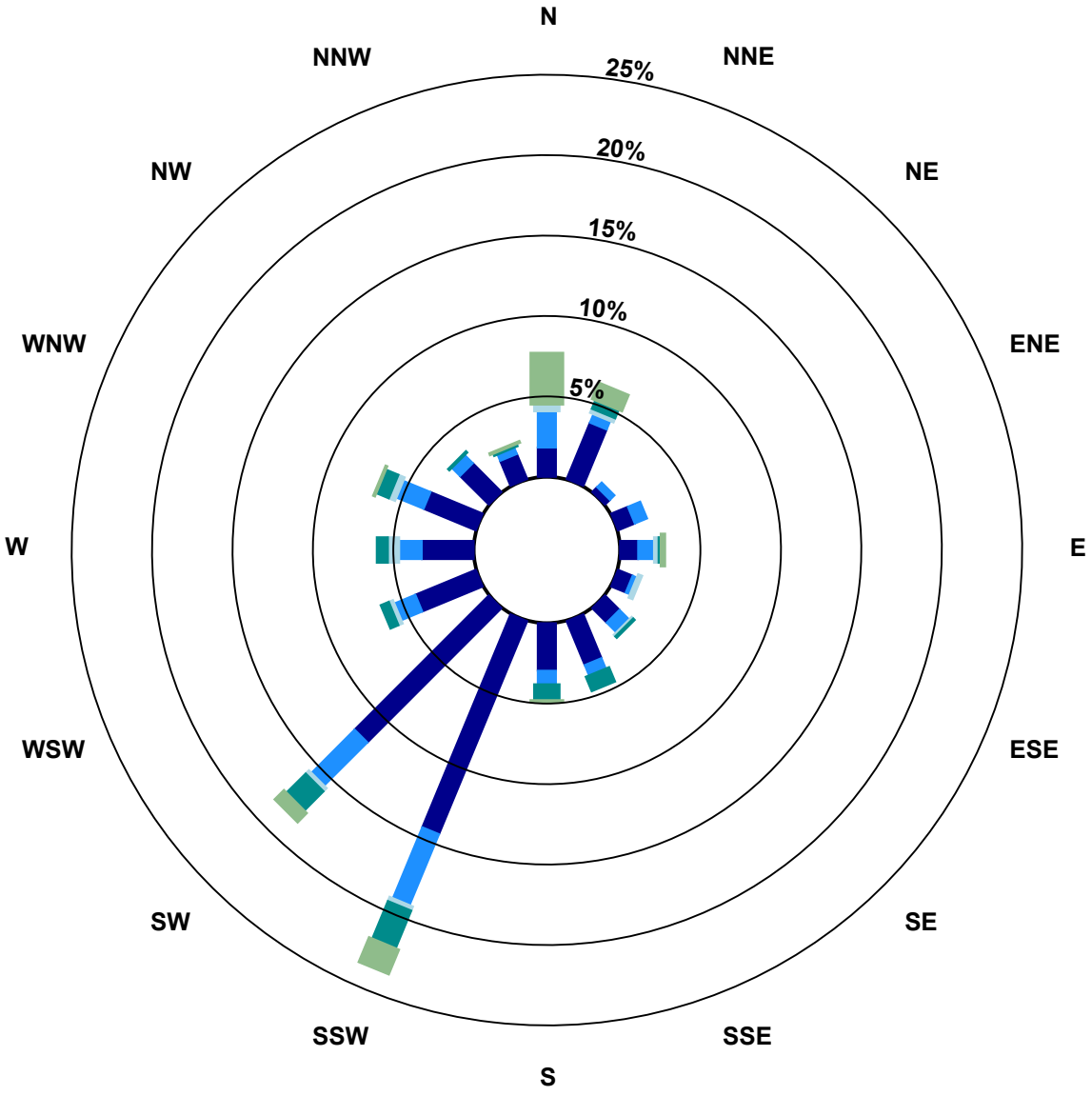
Total Number of Hours: 720

Wood Buffalo Environmental Association

Wind Rose Sep 2024

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

Janvier



Classes ($\mu g/m^3$)

0 - 5

6 - 15

16 - 25

26 - 80

> 81.0

Total Number of Valid Hours: 712

Maximum Value: 31.5 C on Sep 2 15:00

Maximum Daily Average: 21.0 C on Sep 2

Minimum Value: 1.0 C on Sep 21 07:00

Minimum Daily Average: 7.4 C on Sep 30

Maximum Diurnal Average: 18.5 C at hour 15

Minimum Diurnal Average: 7.9 C at hour 7

Monthly Average: 12.67 C

Percentiles: P_1 = 2.6 P_{10} = 5.9 Q_1 = 9.0 Median = 11.6 Q_3 = 15.8 P_{90} = 20.4 P_{99} = 29.3

Hours in Service:	720
Hours of Data:	720
Hours of Missing Data:	0
Hours of Calibration:	0
Percent Operational Time:	100.0

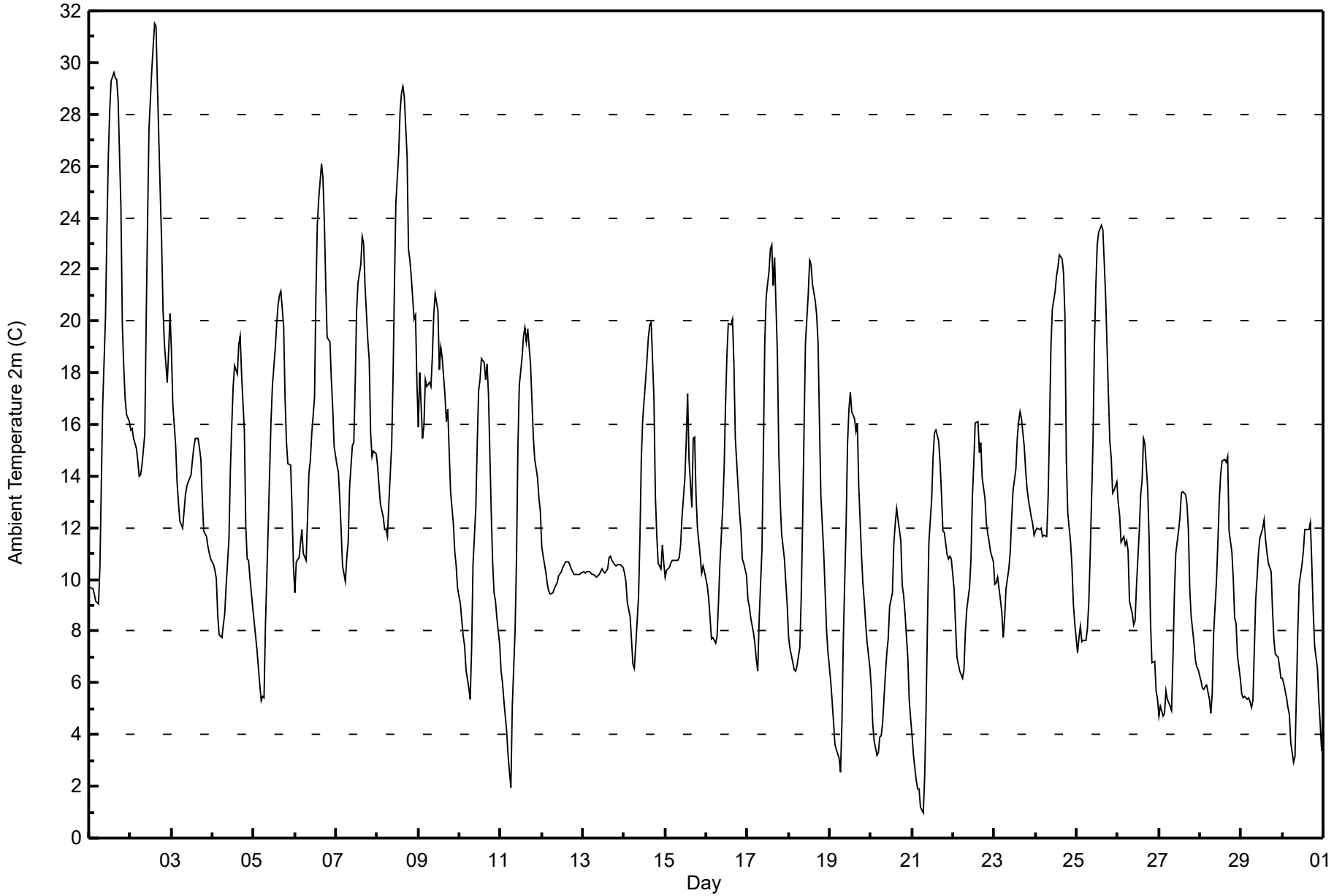
Day	Hourly Period Ending At (MST)																								Daily	Daily
	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24	Average	Maximum
1-Sep	9.7	9.7	9.6	9.4	9.2	9.1	10.5	13.7	16.8	20.2	23.5	26.4	28.1	29.3	29.6	29.4	29.3	28.5	24.4	19.9	18.2	17.0	16.4	16.1	18.9	29.6
2-Sep	15.8	15.8	15.5	15.1	14.6	14.0	14.1	14.4	15.6	20.0	23.9	27.5	29.7	30.6	31.5	31.4	29.1	25.0	23.0	20.5	19.1	17.6	18.8	20.3	21.0	31.5
3-Sep	18.8	16.7	15.2	13.8	13.0	12.3	12.0	12.6	13.3	13.6	13.8	14.0	14.6	15.1	15.5	15.5	15.1	14.6	13.1	11.9	11.7	11.3	11.0	10.8	13.7	18.8
4-Sep	10.6	10.4	10.0	8.6	7.9	7.8	8.2	8.7	9.7	11.5	14.2	15.9	17.5	18.3	18.0	19.1	19.4	18.0	15.7	12.0	10.8	10.7	10.0	8.9	12.6	19.4
5-Sep	8.4	7.8	7.3	5.9	5.3	5.5	5.4	8.2	12.0	14.1	16.2	17.5	19.0	19.8	20.6	21.0	21.2	19.8	17.0	15.3	14.5	14.4	12.7	10.5	13.3	21.2
6-Sep	9.5	10.7	10.9	11.4	11.9	11.0	10.7	12.3	14.1	14.6	15.6	17.0	21.0	23.7	24.8	26.1	25.6	23.9	21.4	19.4	19.2	17.7	16.6	15.2	16.8	26.1
7-Sep	14.5	14.2	13.1	11.9	10.5	9.9	10.9	11.4	13.6	15.2	15.3	17.6	20.4	21.5	22.2	23.3	23.0	21.4	19.3	18.5	15.7	14.8	14.9	14.9	16.2	23.3
8-Sep	14.4	13.6	12.9	12.4	11.9	11.9	11.7	13.0	15.2	17.8	21.4	24.6	26.5	28.1	28.8	29.1	28.7	26.4	22.8	22.4	21.7	20.1	20.2	17.6	19.7	29.1
9-Sep	15.9	18.0	15.5	15.9	17.7	17.5	17.6	17.5	18.6	20.3	21.1	20.4	18.1	19.0	18.6	17.2	16.1	16.6	15.0	13.4	12.2	11.1	10.5	9.7	16.4	21.1
10-Sep	9.1	8.4	7.8	7.4	6.5	5.8	5.4	7.3	10.6	12.8	15.3	17.3	17.7	18.5	18.4	17.7	18.3	17.2	12.6	10.7	9.5	9.2	8.5	7.5	11.6	18.5
11-Sep	6.5	6.0	5.3	4.1	3.2	2.6	2.0	5.1	8.0	10.8	15.1	17.5	18.6	19.4	19.7	19.2	19.7	18.3	16.9	15.5	14.7	13.9	13.1	12.6	12.0	19.7
12-Sep	11.3	10.9	10.2	9.8	9.6	9.4	9.5	9.7	9.8	9.9	10.2	10.3	10.5	10.6	10.7	10.7	10.6	10.4	10.3	10.2	10.2	10.2	10.2	10.3	10.2	11.3
13-Sep	10.3	10.3	10.3	10.3	10.3	10.2	10.2	10.1	10.1	10.2	10.3	10.4	10.3	10.3	10.4	10.9	10.9	10.8	10.6	10.5	10.6	10.6	10.6	10.5	10.4	10.9
14-Sep	10.3	9.9	9.1	8.6	7.6	6.7	6.6	7.4	9.3	11.6	14.7	16.2	17.7	18.5	19.3	19.9	19.9	17.0	13.2	11.7	10.6	10.4	11.4	10.6	12.4	19.9
15-Sep	10.1	10.4	10.4	10.6	10.7	10.8	10.7	10.7	10.8	11.3	12.4	13.9	15.3	17.2	14.7	12.8	15.5	15.5	13.2	12.0	10.9	10.3	10.5	10.3	12.1	17.2
16-Sep	9.8	9.3	8.5	7.7	7.8	7.5	7.8	9.1	10.6	12.7	14.3	16.7	18.7	19.9	19.8	20.1	18.4	15.4	13.6	12.6	11.9	10.8	10.6	10.2	12.7	20.1
17-Sep	9.2	8.9	8.5	7.9	7.5	6.9	6.5	8.5	11.2	15.0	19.2	20.9	21.9	22.8	22.9	21.3	22.4	18.7	14.9	13.0	11.8	10.8	9.9	9.0	13.7	22.9
18-Sep	7.8	7.3	6.8	6.5	6.5	6.7	7.4	9.3	12.3	15.8	19.2	21.0	22.3	22.2	21.4	20.8	20.2	19.1	16.0	13.2	11.1	9.6	8.1	7.2	13.2	22.3
19-Sep	6.1	5.3	4.5	3.7	3.4	3.1	2.6	4.5	7.7	12.1	15.2	16.6	17.3	16.5	16.2	15.7	16.1	13.6	10.9	9.8	9.1	8.2	7.5	6.6	9.7	17.3
20-Sep	5.8	4.4	3.8	3.2	3.3	3.9	3.9	4.5	6.4	7.1	7.7	8.9	9.5	11.4	12.1	12.7	12.3	11.5	9.8	9.4	8.7	6.9	5.3	4.6	7.4	12.7
21-Sep	3.9	3.2	2.2	1.9	1.9	1.2	1.0	2.4	5.0	8.4	11.5	13.1	14.7	15.7	15.8	15.4	14.5	13.3	11.9	11.8	11.0	10.8	10.9	10.8	8.8	15.8
22-Sep	9.6	8.2	7.0	6.7	6.4	6.2	6.5	8.0	8.8	9.7	10.8	13.2	14.5	16.0	16.1	14.9	15.3	13.9	13.1	12.2	11.8	11.4	11.1	10.7	10.9	16.1
23-Sep	9.8	9.9	10.1	9.2	8.8	7.8	8.5	9.7	10.4	11.1	12.4	13.4	14.2	15.5	16.1	16.5	16.2	15.1	14.2	13.5	13.1	12.4	12.1	11.7	12.2	16.5
24-Sep	11.9	12.0	11.9	12.0	11.6	11.7	11.7	13.2	15.9	19.0	20.4	21.1	21.8	22.1	22.5	22.4	21.9	20.2	14.6	12.6	11.5	10.5	9.1	8.3	15.4	22.5
25-Sep	7.2	7.8	8.2	7.6	7.6	7.7	8.1	9.1	11.0	15.4	19.1	21.3	22.9	23.4	23.7	23.6	22.3	21.0	17.1	15.3	14.7	13.4	13.5	13.8	14.8	23.7
26-Sep	13.0	12.5	11.4	11.6	11.4	11.5	11.1	9.1	8.7	8.2	8.4	9.8	11.9	13.3	13.8	15.4	15.2	13.5	11.6	8.4	6.8	6.8	5.7	5.3	10.6	15.4
27-Sep	4.7	5.1	4.7	4.8	5.7	5.4	5.1	4.9	7.0	9.4	11.0	11.9	12.4	13.3	13.4	13.3	12.9	11.9	9.6	8.6	7.5	6.9	6.6	6.5	8.5	13.4
28-Sep	6.1	5.8	5.8	5.9	5.9	5.4	4.8	5.6	7.9	9.9	11.4	13.0	14.1	14.6	14.7	14.5	14.8	11.9	11.1	10.0	8.5	8.3	7.1	6.2	9.3	14.8
29-Sep	5.6	5.4	5.5	5.4	5.4	5.3	5.0	5.3	9.2	10.1	11.1	11.6	12.0	12.3	11.6	11.1	10.6	10.3	8.8	7.6	7.1	7.0	6.6	6.2	8.2	12.3
30-Sep	6.2	5.9	5.4	5.0	4.8	3.7	2.9	3.2	5.5	8.0	9.8	10.6	11.1	11.9	12.0	11.9	12.2	10.6	8.8	7.5	6.6	5.3	4.4	3.4	7.4	12.2
	9.7	9.5	8.9	8.5	8.3	7.9	7.9	8.9	10.8	12.9	14.8	16.3	17.5	18.4	18.5	18.4	18.3	16.8	14.5	13.0	12.0	11.3	10.8	10.2	Diurnal Average	
	18.8	18.0	15.5	15.9	17.7	17.5	17.6	17.5	18.6	20.3	23.9	27.5	29.7	30.6	31.5	31.4	29.3	28.5	24.4	22.4	21.7	20.1	20.2	20.3	Diurnal Maximum	

Wood Buffalo Environmental Association

Hourly Averages

Ambient Temperature 2m (AT2) - C

Janvier - September 2024



Concentration Ranges (C)	Number of Hours	%	Cumulative %
-50 - -20	0	0.00	0.00
-20 - 0	0	0.00	0.00
0 - 10	231	32.08	32.08
10 - 20	407	56.53	88.61
> 20	82	11.39	100.00

Total Number of Valid Hours: 720

Total Number of Hours: 720

Wood Buffalo Environmental Association

Summary of Hour Averages

Relative Humidity 2m (RH2) - %

Janvier - September 2024

Maximum Value: 100.0 % on Sep 4 05:00

Maximum Daily Average: 100.0 % on Sep 13

Minimum Value: 27.4 % on Sep 2 16:00

Minimum Daily Average: 59.7 % on Sep 30

Maximum Diurnal Average: 92.4 % at hour 7

Minimum Diurnal Average: 55.2 % at hour 15

Monthly Average: 77.69 %

Percentiles: P_1 = 33.8 P_{10} = 47.1 Q_1 = 62.9 Median = 82.7 Q_3 = 95.2 P_{90} = 99.5 P_{99} = 100.0

Hours in Service:	720
Hours of Data:	720
Hours of Missing Data:	0
Hours of Calibration:	0
Percent Operational Time:	100.0

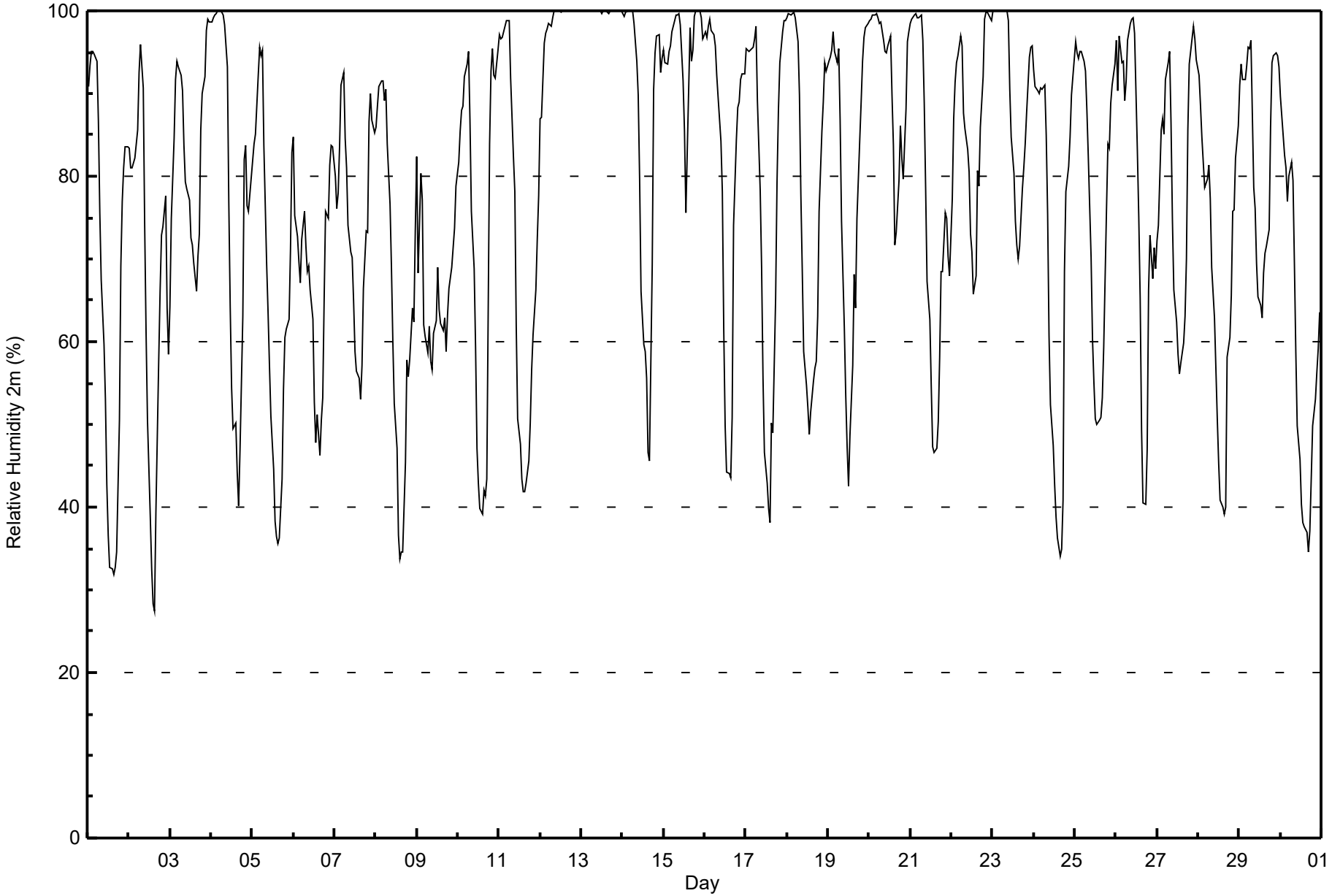
Day	Hourly Period Ending At (MST)																								Daily	Daily
	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24	Average	Maximum
1-Sep	90.8	93.4	95.0	95.1	94.7	93.9	86.6	75.5	67.5	59.7	53.0	42.8	36.6	32.7	32.5	31.9	32.7	34.6	50.4	69.1	76.9	81.0	83.6	83.5	66.4	95.1
2-Sep	83.4	81.0	81.1	82.3	84.0	85.6	92.6	96.0	90.6	74.0	60.9	50.5	38.8	32.6	28.2	27.4	39.3	57.6	66.1	72.9	73.9	77.7	64.1	58.5	66.6	96.0
3-Sep	64.3	75.0	84.6	91.7	94.0	93.1	92.1	90.3	83.8	79.3	78.5	77.2	72.5	71.6	69.5	66.2	70.4	73.1	85.5	90.0	92.0	97.6	98.9	98.6	82.9	98.9
4-Sep	98.7	99.2	99.5	99.6	100.0	99.9	99.8	99.5	98.3	93.3	76.8	64.2	54.4	49.4	50.2	44.2	40.1	46.9	63.0	82.0	83.7	76.4	75.7	79.8	78.1	100.0
5-Sep	81.9	83.9	85.2	92.2	95.6	94.5	95.3	83.8	69.4	63.6	57.1	51.1	44.6	38.3	36.4	35.6	36.3	43.4	54.3	60.4	61.5	62.7	71.3	82.8	65.9	95.6
6-Sep	84.7	75.2	72.6	69.7	67.2	72.3	75.8	71.5	68.5	69.1	66.3	62.8	52.7	47.8	51.2	46.3	50.4	53.2	65.2	75.8	74.8	81.4	83.8	83.6	67.6	84.7
7-Sep	80.1	76.1	77.9	83.6	91.1	92.6	84.5	81.0	74.1	70.8	70.2	64.8	58.8	56.4	55.6	53.1	57.1	66.4	73.3	73.2	86.6	90.0	86.8	85.3	74.6	92.6
8-Sep	85.9	88.5	90.8	91.5	91.5	89.1	90.5	83.9	76.7	69.0	60.0	52.6	47.1	36.7	33.7	34.6	34.6	45.5	57.7	55.7	57.7	64.0	62.4	73.4	65.5	91.5
9-Sep	82.4	68.3	80.4	77.1	62.0	60.6	58.6	61.8	57.6	56.6	61.0	62.6	69.0	63.9	62.2	61.4	62.8	58.8	63.2	66.5	69.0	71.3	73.6	78.9	66.2	82.4
10-Sep	81.7	85.4	87.9	88.5	92.0	93.5	95.0	86.8	75.7	68.7	59.3	47.1	42.9	39.8	39.2	42.0	41.3	43.4	84.0	92.7	95.3	92.2	91.9	95.3	73.4	95.3
11-Sep	97.1	96.6	96.8	98.2	98.9	98.8	98.8	91.8	82.4	78.2	61.9	50.6	47.7	43.4	41.9	41.9	42.8	45.7	50.1	56.6	60.8	66.3	72.4	77.6	70.7	98.9
12-Sep	86.9	87.1	96.1	97.4	97.8	98.5	98.2	99.2	100.0	100.0	100.0	100.0	99.9	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	98.4	100.0
13-Sep	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	99.9	99.6	99.9	100.0	99.8	99.6	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0
14-Sep	99.6	99.3	99.9	100.0	100.0	100.0	100.0	98.5	94.0	89.9	79.7	66.1	59.7	58.7	55.6	46.6	45.5	69.3	90.6	95.0	97.0	97.0	92.6	94.2	84.5	100.0
15-Sep	95.2	93.8	93.5	95.1	95.8	97.5	98.9	99.6	99.6	99.7	98.4	91.5	85.4	75.6	83.2	97.9	93.9	95.2	99.3	100.0	100.0	100.0	99.1	96.7	95.2	100.0
16-Sep	97.5	96.8	98.1	99.0	97.6	97.2	95.8	92.1	89.4	84.2	78.1	61.6	49.9	44.3	44.1	43.6	50.8	74.0	84.5	88.3	89.0	91.7	92.4	92.4	80.5	99.0
17-Sep	95.4	95.2	95.1	95.4	95.7	96.6	98.1	89.1	78.3	69.0	55.6	46.6	42.9	39.8	38.2	50.1	49.0	65.2	79.3	88.0	93.7	97.5	98.8	98.7	77.1	98.8
18-Sep	99.1	99.6	99.5	99.7	99.8	99.1	96.2	89.9	77.7	68.6	58.8	54.8	52.1	48.8	51.5	55.2	56.8	57.6	63.1	75.8	85.4	89.0	93.7	92.7	77.7	99.8
19-Sep	94.0	94.4	95.3	97.4	95.2	93.7	95.4	86.7	74.6	61.7	53.5	47.2	42.5	48.6	57.0	68.2	64.1	75.0	84.3	89.1	93.9	96.9	97.9	98.5	79.4	98.5
20-Sep	98.8	99.1	99.4	99.5	99.6	99.2	98.5	98.7	96.4	95.1	94.9	95.8	96.9	89.8	83.7	71.7	73.2	79.5	86.1	82.2	79.6	88.2	96.3	97.5	91.6	99.6
21-Sep	98.5	99.0	99.4	99.7	99.2	99.1	99.5	96.4	88.9	78.4	67.3	62.7	54.6	47.3	46.6	47.2	50.3	58.1	68.5	68.5	75.7	74.9	70.3	67.9	75.7	99.7
22-Sep	77.3	86.9	91.3	93.7	94.5	97.0	95.8	87.7	85.7	83.2	80.6	73.0	70.8	65.8	68.0	80.8	78.8	85.9	92.1	99.0	99.9	99.8	99.5	98.8	86.9	99.9
23-Sep	99.9	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	98.8	90.5	84.7	80.3	74.5	71.6	69.9	71.6	78.5	81.0	83.9	87.6	94.3	95.6	95.7	89.9	100.0
24-Sep	92.9	90.8	90.3	90.0	90.7	90.6	91.0	84.9	75.4	60.7	52.3	47.4	42.8	38.8	36.2	34.1	34.9	40.9	68.5	78.2	81.2	84.7	89.8	92.1	70.0	92.9
25-Sep	96.3	94.9	94.2	95.1	95.0	93.9	92.6	87.9	82.4	70.1	60.3	55.0	50.7	50.0	50.5	50.8	53.3	59.3	76.1	84.0	83.4	88.9	91.0	93.6	77.1	96.3
26-Sep	96.4	90.4	97.0	93.8	93.8	89.1	91.5	96.5	98.5	99.0	99.2	97.3	83.0	75.1	65.2	49.3	40.5	40.3	47.0	66.2	72.8	67.6	71.3	68.8	78.7	99.2
27-Sep	72.1	74.1	85.6	87.0	85.1	91.8	93.8	95.2	86.5	74.7	66.3	62.3	58.4	56.1	57.4	59.8	63.1	69.9	85.6	93.5	96.6	98.1	96.6	94.1	79.3	98.1
28-Sep	92.1	88.6	84.8	81.7	78.7	79.7	81.4	77.3	68.9	62.9	56.8	50.8	45.3	40.9	40.1	39.2	40.0	58.1	60.5	65.6	75.8	76.0	82.1	86.2	67.2	92.1
29-Sep	91.0	93.5	91.7	91.7	93.3	95.6	95.5	96.4	78.6	76.2	69.4	65.4	64.3	62.9	68.4	70.7	71.6	73.5	86.0	93.8	94.6	94.9	94.6	93.3	83.6	96.4
30-Sep	89.7	87.3	82.6	81.1	76.9	80.1	81.7	79.5	69.5	58.9	49.9	45.8	40.3	38.1	37.6	37.0	34.6	37.2	43.4	49.9	53.1	56.3	59.1	63.5	59.7	89.7
	90.1	89.8	91.5	92.2	92.0	92.4	92.4	89.2	83.0	77.1	70.6	64.5	59.5	55.6	55.2	55.2	56.0	62.9	73.6	79.9	83.1	85.2	86.2	87.4	Diurnal Average	
	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	99.9	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	Diurnal Maximum	

Wood Buffalo Environmental Association

Hourly Averages

Relative Humidity 2m (RH2) - %

Janvier - September 2024



Maximum Speed: 16 km/h on Sep 30 15:00

Maximum Daily Speed Average: 8.2 km/h on Sep 30

Minimum Speed Value: 0 km/h on Sep 3 22:00

Minimum Daily Speed Average: 0.1 km/h on Sep 27

Maximum Diurnal Speed Average: 4.2 km/h at hour 14

Minimum Diurnal Speed Average: 1.4 km/h at hour 18

Monthly Average Velocity: 2.4 km/h 225.6 deg

Percentiles: P_1 = 1 P_{10} = 2 Q_1 = 3 Median = 5 Q_3 = 7 P_{90} = 9 P_{99} = 13

Hours in Service: 720

Hours of Data: 720

Hours of Missing Data: 0

Percent Operational Time: 100.0

Day	Hourly Period Ending At (MST)																								Daily	Daily
	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24	Average	Maximum
1-Sep	E1	SSE1	SE2	SE3	SSE3	S4	SSW5	SSW5	SW6	WSW5	WSW5	SSW9	SSW10	SW11	SW13	SW13	SW11	WSW8	SSW4	SE4	SSE3	S4	SSW5	SSW7	SSW5.1	SW13
2-Sep	SSW7	SSW8	SSW8	SSW8	SSW8	SSW6	SSW4	S4	SSW5	S5	S7	SSW3	WSW6	SW8	WSW7	WSW6	SSW4	S3	SSE3	S3	SSE3	SE4	NNE5	N7	SSW4.0	SSW8
3-Sep	NNE8	NNE6	NNE7	NNE6	N5	N5	NNE4	N4	NNE7	N6	N5	N3	NNE4	NW1	NNW3	N3	NE3	NE3	ESE1	ENE2	NNW0	W0	NNE3	N3	NNE3.6	NNE8
4-Sep	N3	N1	WSW1	S2	SW4	SSW3	SSW5	SW4	SSW5	SW4	WNW5	WNW7	WNW9	WNW10	WNW7	WNW8	WNW7	WNW4	WSW4	SSW4	SSW4	SSW5	SSW5	SSW6	WSW3.4	WNW10
5-Sep	SSW8	SSW8	SSW7	SSE2	S4	SSW4	SSW4	SSW3	ESE2	SE2	ESE4	E4	ENE3	ENE5	E6	SE6	SE7	SE5	SSE5	SSE6	SSE6	SSE8	S4	S2	SSE3.6	SSW8
6-Sep	SSW3	SSW5	SSW5	SSW7	SSW8	SSW6	SSW6	SSW6	SW6	SW5	SW5	SSW8	SW9	SW5	S3	SSW6	SSW6	SSW8	SSW7	SSW5	SSW7	SSW7	SSW7	SSW6	SSW6.0	SW9
7-Sep	SSW7	SSW8	SSW6	S4	SSE4	S3	SSW5	SSW7	SW6	SSW7	SSW6	SW6	SW7	SW7	SSW6	SSW6	S4	SSE4	S5	SSW5	S3	SSW4	SSW5	SSW7	SSW5.3	SSW8
8-Sep	SSW6	SSW5	SSW6	SSW6	SSW6	SSW6	SSW5	SSW6	SSW5	SSW4	S4	ENE2	E3	S7	S7	SSE6	SSE6	SSE5	SE6	SSE6	S6	S6	SSW6	SW2	S4.7	S7
9-Sep	SSW3	SSE5	SSE1	SE5	SSW4	SSW8	SSW7	SW6	SW9	WSW9	WNW9	WNW9	W9	WNW9	W10	W12	W10	W8	WNW7	W8	WNW9	WNW9	W7	W10	W6.1	W12
10-Sep	W9	W9	W9	WSW6	SW5	SW6	SW6	SW6	WSW7	SW8	SW9	W9	W8	W9	WSW8	WSW6	WSW8	SW5	SE2	SE3	SSE3	S4	SSE2	SSE2	WSW5.3	W9
11-Sep	S3	S3	SSE2	S1	SE1	S2	SW0	NW1	NNW2	NE2	NE2	ENE5	NNE5	NE6	ENE6	ENE5	ENE6	E5	ESE4	SE4	ESE4	E3	E3	NE2	E2.1	ENE6
12-Sep	NNW1	ESE1	NE2	NNE3	NNE4	NNE4	NNE6	NNE3	N4	N4	N3	NNE5	NNE4	N5	NNE6	NNE5	N4	NNE6	NNE5	NNE5	N5	N4	N4	N4	NNE4.0	NNE6
13-Sep	N5	N5	NNE6	NNE6	NNE5	N6	N5	NNE6	NNE7	N6	N6	N6	N5	N5	NNW5	NNW4	WNW2	WNW1	WSW3	W3	WNW3	W2	W2	W4	N3.7	NNE7
14-Sep	W5	WSW5	SSW4	SW4	SSW5	SSW4	SSW6	SSW6	SW6	SSW6	SW5	W5	WSW6	SW9	SW8	WSW8	W5	SSE3	SE4	SSE2	SSE3	SSW5	SSW7	SSW6	SW4.5	SW9
15-Sep	SSW5	SSW5	SW4	SSW3	SSW6	SSW5	SW5	SW5	SW4	SW3	WSW3	ENE1	S5	SSW7	NE3	SE3	N1	ESE2	SE4	ESE2	SSE3	S3	SSW6	SSW6	SSW3.2	SSW7
16-Sep	SSW7	SSW7	SSW6	SSW6	SSW7	SSW6	SSW7	SSW6	SW6	WSW5	SW5	SW9	SW12	SW11	W10	WSW9	W5	S3	S3	SSE3	S3	S3	SSW5	S5	SW5.6	SW12
17-Sep	SSW5	SSW5	SSW6	SSW6	SSW6	SSW5	S4	SSW5	S6	SW3	S5	SSW7	SW6	SW5	WSW6	S2	NE1	ESE4	SE5	SSE2	SE2	SSE2	SE1	SE1	S3.6	SSW7
18-Sep	SSE0	S2	S2	SSE2	S3	SSW4	SSW5	SSW5	SSW7	SSW5	SW5	SSW5	WNW7	WNW8	NW7	WNW6	NW5	NNW4	NW2	E1	ESE2	SE3	S2	SE3	SW1.9	WNW8
19-Sep	SSE3	SSE3	SSE3	S3	SSW6	SSW5	SSW5	SSW6	SSW5	SSE3	ESE3	E5	ESE6	SE4	SE3	ESE2	ESE2	SE3	SSE3	SSE3	SSE2	SSE2	S2	SSE3	SSE2.9	ESE6
20-Sep	SSE2	ESE2	S2	SSE1	SSW2	SW4	SSW1	ESE1	NW1	W2	SSW1	SW1	WSW4	SW3	E2	N4	NW3	SW2	W2	NW3	NNE3	ESE2	SE2	SE3	SW0.6	N4
21-Sep	SE3	SSE2	S3	SSW4	SSW6	S3	SSW5	SSW6	SSW5	SSW6	SW6	SW7	SW8	SW10	SSW10	SW10	SSW10	S6	SSE5	SSE6	SSE4	SSE5	S6	S5	SSW5.4	SSW10
22-Sep	SSE4	ENE1	SE3	SE4	SSE3	S2	SW3	SSW3	S3	SSW6	SSW7	SSW7	SW6	S5	SE3	SSE3	SE5	ESE4	E2	SSE2	S2	S3	SSW3	SSW3	S2.8	SSW7
23-Sep	S2	SSW3	S2	SW3	S2	SSW3	SW4	SW5	WSW5	SW5	W5	SW5	SSW7	SW6	SW6	SW8	SW6	SSW7	SW7	SSW7	SSW5	SSW4	SSW6	SSW7	SW4.7	SW8
24-Sep	SW8	SSW8	SSW8	SSW9	SSW9	SSW8	SSW8	SW9	SW8	WNW12	WNW13	W13	W13	W14	W12	WNW12	W10	W5	SSE3	SSE3	SSE4	SSE3	SSE2	S3	WSW6.1	W14
25-Sep	SSW1	SSE1	SE1	WSW1	NNE3	NNE4	NNE3	NNE3	N1	NW2	NNW2	WNW3	ESE1	SSW1	ESE3	NE6	NNE6	N2	SE3	NNE1	NNE2	S2	SSE3	SSW3	NE1.0	NE6
26-Sep	NNW1	NNE1	SSW3	S1	SW3	WNW3	WNW8	NW8	NNW4	W3	SW4	SW6	W10	W10	WNW10	W10	W12	W8	W7	SSW5	SSW6	SSW8	SSW6	SSW8	WSW4.6	W12
27-Sep	SSW6	S4	S0	ESE2	E2	NNE4	NNE4	N3	NNE6	NNE9	NNE6	N2	WNW4	NNE4	NE3	E3	SE4	SE3	SW5	SW5	SSW4	SSW5	SSW7	SSW9	SE0.1	NNE9
28-Sep	SSW9	SW9	SW8	SSW9	SSW8	SSW7	SSW7	SSW8	SW9	W10	W10	WSW10	WSW10	WSW11	WSW9	W6	SW3	S3	SSW6	S3	S3	SSE4	ESE1	ENE0	SW5.9	WSW11
29-Sep	SW0	N2	NNE4	NNE2	N3	NNE4	NNE3	N2	NNE6	NNE5	NNE7	NNE12	NNE12	NNE13	NNE10	NNE10	NNE8	NNE6	N5	N4	N5	N5	NNW4	WNW3	NNE5.3	NNE13
30-Sep	WNW4	WNW5	WNW5	WNW6	WNW7	W7	W9	W5	W6	WNW8	WNW11	WNW13	WNW13	WNW13	W16	W14	W12	W11	W7	WSW8	SW7	SW6	SW7	SW8	W8.2	W16
	SSW2.5	SSW2.6	SSW2.4	SSW2.4	SSW2.8	SSW2.6	SW2.9	SW3.1	SW2.8	WSW2.7	WSW2.7	WSW2.7	W3.8	WSW4.2	W3.3	W3.2	WSW2.3	SW1.4	S1.8	S2.0	S2.0	S2.7	SSW2.8	SSW2.9	Diurnal Average	
	W9	W9	W9	SSW9	SSW9	SSW8	W9	SW9	SW9	WNW12	WNW13	WNW13	WNW13	W14	W16	W14	W12	W11	WNW7	W8	WNW9	WNW9	WNW7	W10	Diurnal Maximum	

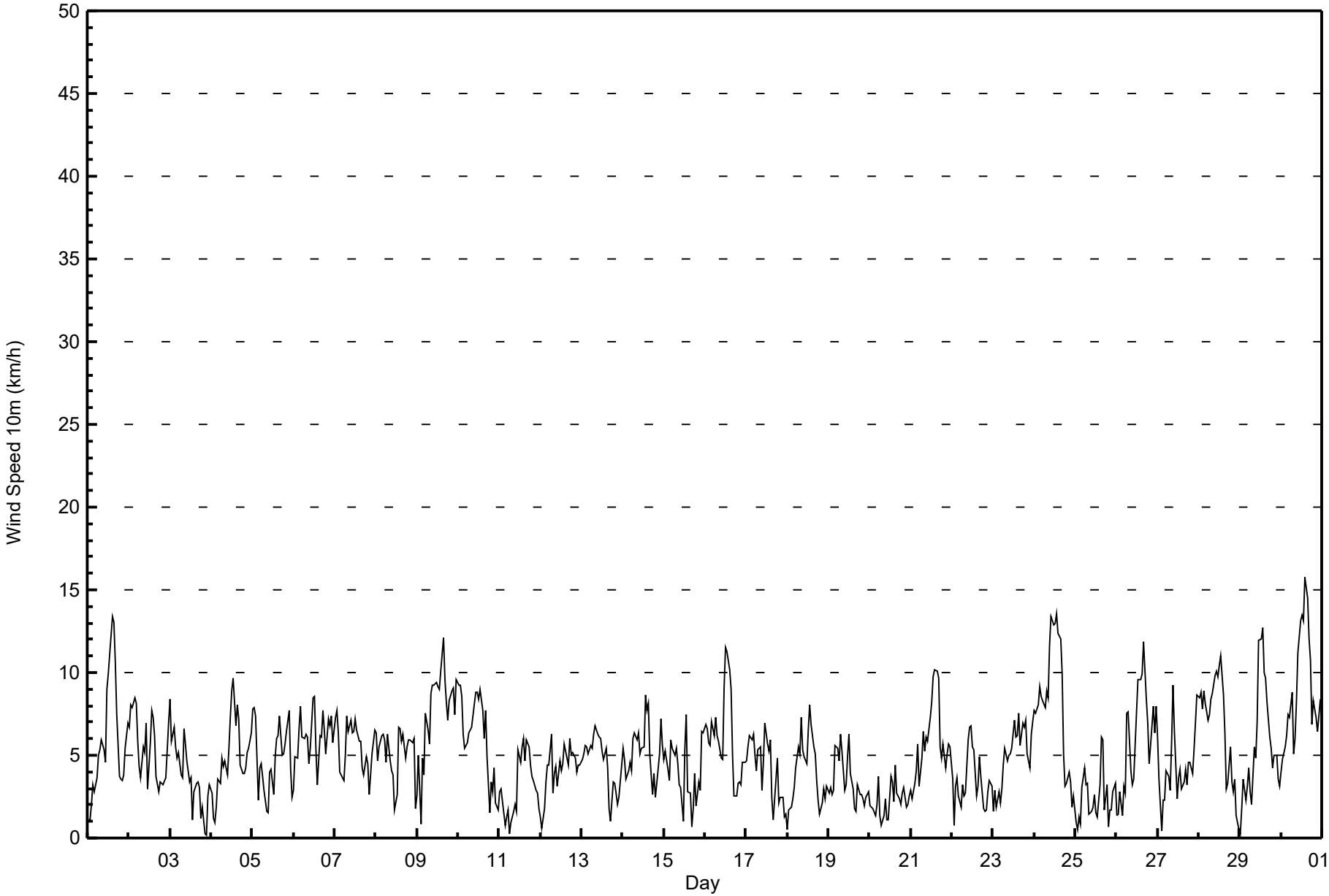
All monthly, daily, and diurnal averages have been calculated using vector methods

Wood Buffalo Environmental Association

Hourly Averages

Wind Speed 10m (WS10) - km/h

Janvier - September 2024



Wind Speed Ranges (km/h)	Number of Hours	%	Cumulative %
0 - 5	429	59.58	59.58
6 - 11	270	37.50	97.08
12 - 19	21	2.92	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: 720

Total Number of Hours: 720

Wood Buffalo Environmental Association

Frequency Distribution

Wind Speed 10m (WS10) - km/h

Janvier - September 2024

Wind Speed	Wind Direction																
Ranges (km/h)	N	NNE	NE	ENE	E	ESE	SE	SSE	S	SSW	SW	WSW	W	WNW	NW	NNW	**Totals**
0 - 5	35	32	9	9	12	21	34	54	55	74	36	12	15	12	7	12	429
6 - 11	5	23	2	2	1	1	3	7	8	102	46	19	26	23	2	0	270
12 - 19	0	3	0	0	0	0	0	0	0	0	3	0	9	6	0	0	21
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	40	58	11	11	13	22	37	61	63	176	85	31	50	41	9	12	720

Total Number of Valid Hours: 720

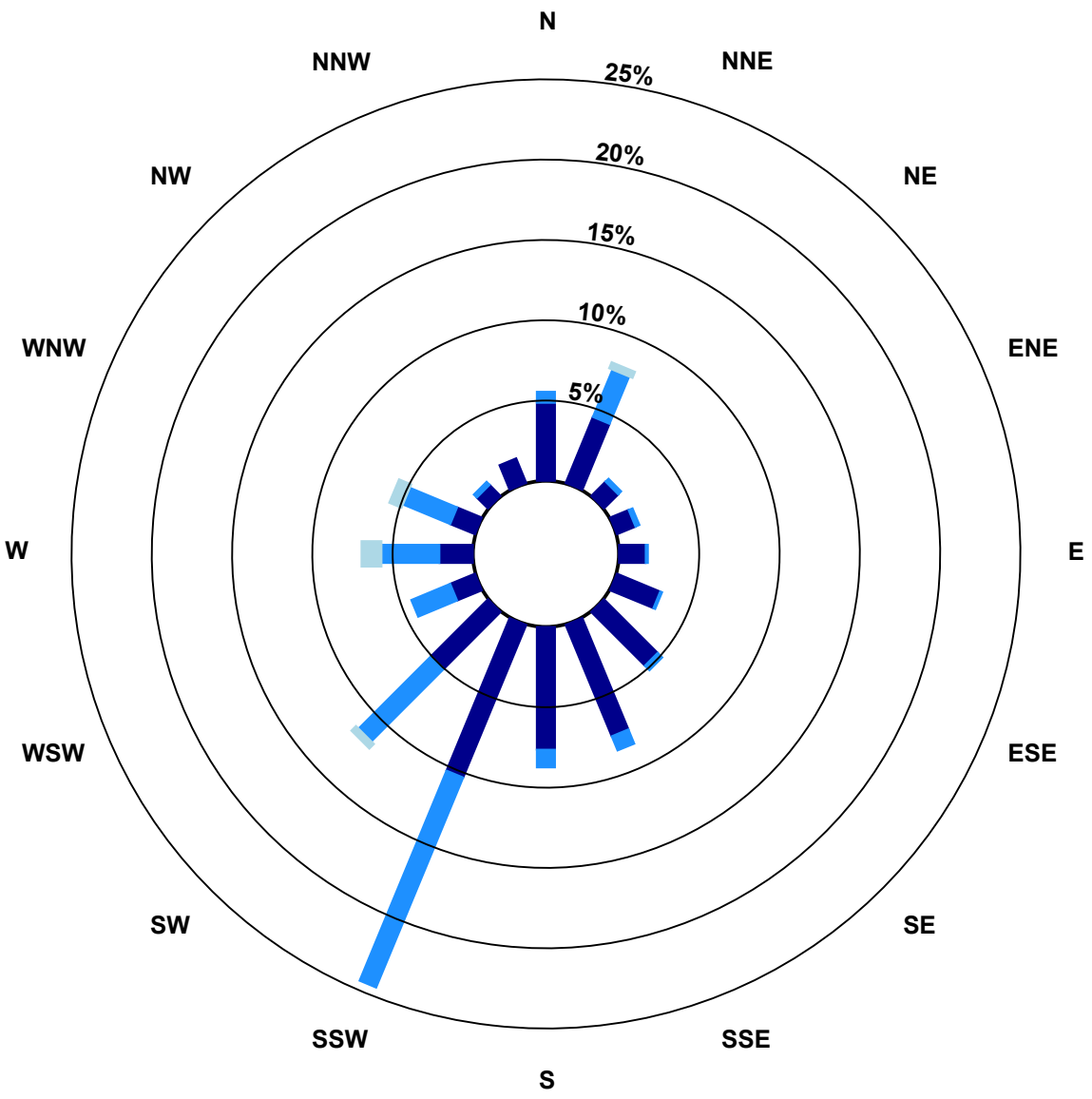
Total Number of Hours: 720

Wood Buffalo Environmental Association

Wind Rose Sep 2024

Wind Speed 10m (WS10) - km/h

Janvier



Classes (km/h)

0 - 5

6 - 11

12 - 19

20 - 28

29 - 38

> 38

Total Number of Valid Hours: 720

Number of Exceedences (AAAQO): 1-hr: 0 24-hr: 0

Maximum Value: 7 km/h on Sep 30 16:00

Minimum Value: 1 km/h on Sep 7 21:00

Percentiles: P_1 = 1 P_{10} = 1 Q_1 = 1 Median = 2 Q_3 = 2 P_{90} = 4 P_{99} = 6

Hours in Service:	720
Hours of Data:	720
Hours of Missing Data:	0
Hours of Calibration:	0
Percent Operational Time:	100.0

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

Direction of Maximum Speed: 278 deg on Sep 30 15:00
Direction of Maximum Daily Speed Average: 273.3 deg on Sep 30

Direction of Minimum Speed: 274 deg on Sep 3 22:00

Direction of Minimum Daily Speed Average: 0.1 deg on Sep 27

Monthly Average Direction: 225.6 deg

Hours in Service:	720
Hours of Data:	720
Hours of Missing Data:	0
Percent Operational Time:	100.0

Day	Hourly Period Ending At (MST)																								Daily
	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24	Average
1-Sep	98	150	140	145	148	190	194	209	234	242	243	194	206	224	234	230	235	242	204	132	150	190	193	199	211.2
2-Sep	198	199	202	201	202	203	194	191	209	183	186	202	247	232	246	241	207	184	148	182	156	136	19	3	204.6
3-Sep	14	23	29	15	10	9	16	3	12	7	2	8	25	321	332	11	40	34	104	61	346	274	17	5	14.8
4-Sep	8	351	251	182	221	193	199	216	201	223	289	301	297	291	299	291	299	302	240	198	202	212	213	202	256.5
5-Sep	201	201	202	167	185	193	194	203	114	125	103	81	73	61	95	124	143	142	149	150	153	168	188	178	156.8
6-Sep	193	192	205	197	207	209	208	209	214	224	225	203	225	222	173	208	193	209	205	207	210	208	204	202	207.4
7-Sep	201	212	205	191	151	171	204	200	214	206	206	214	219	223	202	202	184	160	173	194	178	195	209	201	200.3
8-Sep	201	194	196	197	198	198	199	196	199	198	184	77	88	177	177	152	152	147	143	157	176	178	207	224	180.6
9-Sep	193	162	148	143	194	199	212	227	225	252	284	292	276	286	280	273	270	262	288	279	283	286	281	276	262.1
10-Sep	275	271	269	257	235	234	224	236	240	232	231	265	278	267	257	245	241	232	128	139	158	181	156	152	244.8
11-Sep	169	177	156	174	146	185	226	306	343	38	56	65	21	51	57	62	57	88	111	137	110	96	101	53	82.2
12-Sep	338	108	53	28	14	22	30	16	360	10	352	16	17	11	15	12	10	15	13	14	5	7	8	9	13.7
13-Sep	9	11	13	12	12	10	9	12	13	11	10	10	7	4	345	340	297	292	251	272	289	273	273	264	354.1
14-Sep	264	252	208	214	212	194	206	208	215	205	226	270	254	235	236	253	274	159	143	157	149	192	200	197	219.9
15-Sep	199	212	229	206	208	212	216	219	228	226	241	67	191	204	51	134	10	121	127	120	155	176	203	205	199.3
16-Sep	202	202	203	203	204	208	207	211	231	239	229	225	221	236	259	257	259	171	191	157	174	188	198	186	217.7
17-Sep	192	199	197	198	199	193	186	196	186	222	181	193	224	227	240	174	43	121	126	167	146	156	134	129	190.5
18-Sep	156	189	173	165	178	203	194	192	199	201	216	211	289	303	304	302	308	346	325	91	105	133	171	143	229.7
19-Sep	164	152	154	185	198	197	193	197	193	154	103	88	119	138	144	114	107	127	148	151	162	152	177	166	158.4
20-Sep	167	117	169	159	207	217	213	110	325	274	211	217	246	222	95	352	326	234	267	315	21	107	139	143	223.7
21-Sep	145	162	189	196	197	184	200	200	196	192	220	230	235	218	212	215	198	177	156	154	152	156	175	174	195.4
22-Sep	168	77	132	137	156	186	225	193	181	209	205	207	223	190	144	151	128	102	82	156	179	184	192	202	178.6
23-Sep	189	201	179	215	186	195	224	222	255	228	270	236	212	223	219	235	231	208	214	207	192	202	212	209	218.0
24-Sep	219	212	203	204	205	205	210	220	235	284	286	279	275	276	277	283	275	265	148	148	149	149	162	178	245.0
25-Sep	206	153	143	258	13	13	22	32	3	322	344	295	102	209	108	39	23	9	129	25	32	179	165	196	38.5
26-Sep	345	24	203	177	235	292	298	321	334	269	214	231	281	274	282	275	262	270	266	206	206	205	200	203	258.6
27-Sep	202	174	180	112	90	15	20	5	21	20	14	349	302	12	36	89	124	134	233	218	206	200	204	213	130.6
28-Sep	212	216	217	212	213	208	205	208	236	267	273	258	251	244	253	268	234	169	199	187	189	159	116	70	228.8
29-Sep	235	10	16	31	8	14	14	359	29	16	32	32	31	22	18	17	17	15	6	357	9	354	335	290	16.2
30-Sep	284	286	292	301	293	275	275	269	263	288	287	291	289	283	278	272	281	277	264	257	228	230	222	215	273.3
	212.1	207.5	205.3	198.2	206.1	211.4	217.7	219.4	231.9	248.2	255.5	257.7	259.8	255.2	261.7	260.7	253.5	215.2	189.8	186.9	181.7	189.5	202.6	207.5	
	Diurnal Average																								

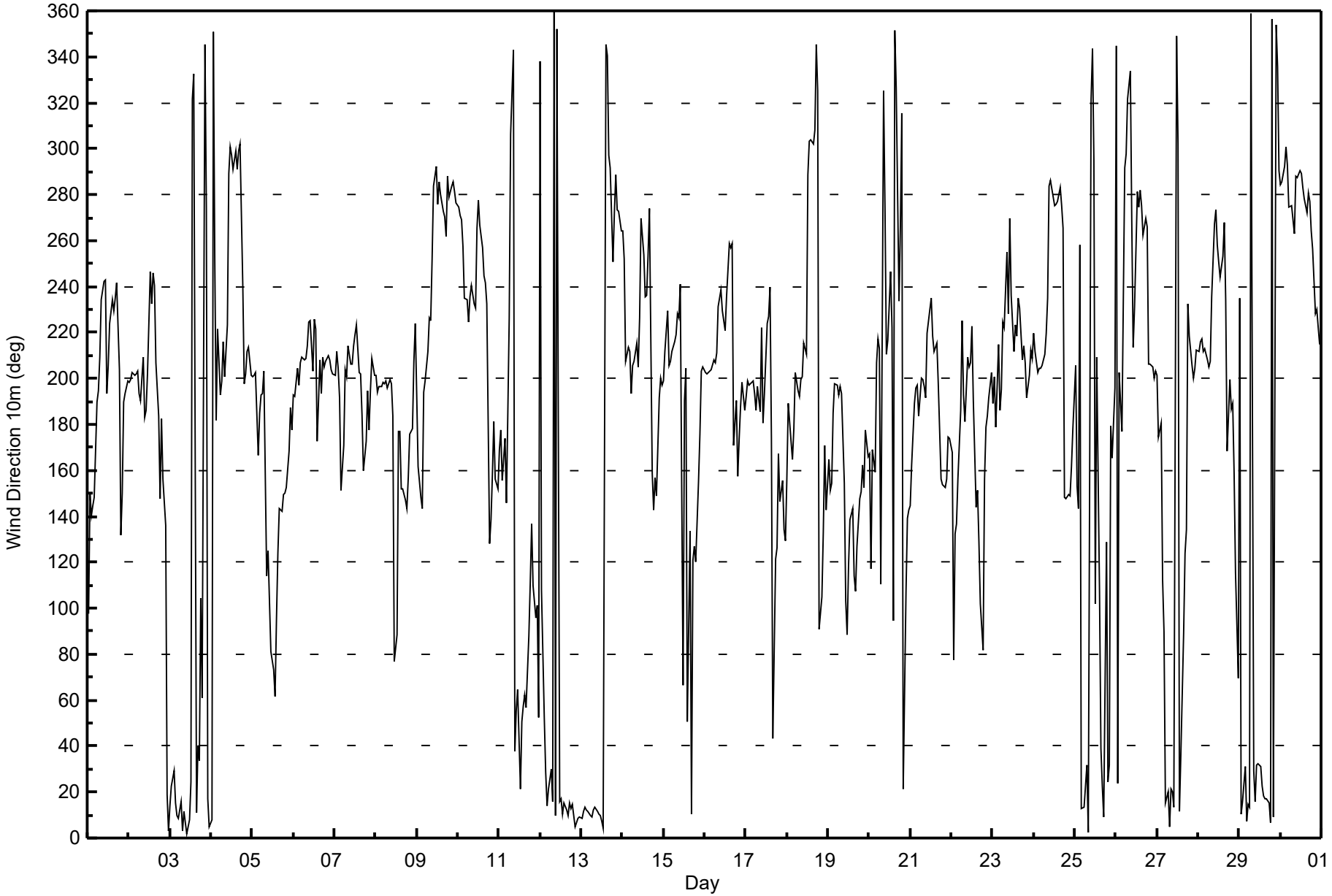
All monthly, daily, and diurnal averages have been calculated using vector methods

Wood Buffalo Environmental Association

Hourly Averages

Wind Direction 10m (WD10) - deg

Janvier - September 2024



Number of Exceedences (AAAQO): 1-hr: 0 24-hr: 0

Maximum Value: 103 deg on Sep 26 02:00

Minimum Value: 7 deg on Sep 17 19:00

Percentiles: P_1 = 10 P_{10} = 16 Q_1 = 22 Median = 31 Q_3 = 45 P_{90} = 66 P_{99} = 93

Hours in Service:	720
Hours of Data:	720
Hours of Missing Data:	0
Hours of Calibration:	0
Percent Operational Time:	100.0

Day	Hourly Period Ending At (MST)																								Daily
	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24	Maximum
1-Sep	52	66	14	14	16	26	14	26	30	40	40	34	31	36	33	31	31	29	30	41	16	18	12	9	66
2-Sep	10	10	13	13	12	21	77	69	31	16	24	63	61	32	41	38	40	28	24	28	32	30	38	36	77
3-Sep	34	53	29	42	38	32	35	42	34	33	35	51	59	87	72	47	44	55	48	39	86	90	49	33	90
4-Sep	31	55	66	48	22	27	21	26	21	46	57	49	50	47	47	48	48	58	39	15	15	19	18	13	66
5-Sep	12	13	12	72	19	17	12	34	64	75	56	67	85	52	45	38	28	21	17	17	20	25	28	25	85
6-Sep	27	18	21	20	21	20	20	24	32	35	35	23	32	47	47	31	22	21	15	23	20	17	15	16	47
7-Sep	16	20	16	29	22	22	23	14	26	23	21	25	26	28	24	23	24	22	25	22	15	16	31	12	31
8-Sep	10	17	13	12	11	14	16	13	27	43	37	81	72	43	33	31	26	18	14	20	23	23	31	76	81
9-Sep	40	34	90	23	53	25	23	31	31	34	43	44	33	41	39	35	34	27	41	31	39	41	31	29	90
10-Sep	30	27	24	24	26	26	25	26	29	32	34	41	42	39	37	30	33	53	77	20	32	19	68	46	77
11-Sep	17	21	29	83	76	61	83	71	82	94	100	46	49	37	30	28	25	28	26	31	25	26	30	55	100
12-Sep	27	89	52	37	26	24	29	48	32	36	34	29	30	34	27	25	27	23	23	22	28	25	30	28	89
13-Sep	29	28	22	23	27	26	26	26	26	26	31	28	29	42	55	49	45	45	20	34	55	46	47	20	55
14-Sep	22	19	13	19	17	42	14	19	26	28	49	48	55	31	37	29	35	46	8	40	14	18	12	12	55
15-Sep	15	22	33	32	17	22	21	25	30	38	49	91	54	37	91	55	85	66	19	50	17	24	15	14	91
16-Sep	15	15	13	13	13	20	18	22	26	34	29	34	32	35	34	33	28	28	34	17	17	22	16	17	35
17-Sep	14	13	11	11	11	17	18	20	14	52	40	37	45	62	43	49	72	9	7	28	32	37	49	37	72
18-Sep	99	52	39	35	34	22	20	29	22	34	49	44	44	49	53	47	45	70	86	81	49	9	25	22	99
19-Sep	18	25	31	27	13	12	17	14	12	39	53	40	44	20	20	28	47	9	17	23	31	15	17	28	53
20-Sep	63	60	56	77	38	26	80	80	58	30	78	83	39	35	67	59	74	54	71	74	67	66	38	24	83
21-Sep	16	31	21	15	11	20	19	18	22	21	48	36	39	40	32	28	23	25	22	23	40	43	24	27	48
22-Sep	32	81	18	10	26	52	30	36	29	21	23	30	32	32	56	51	16	30	72	63	59	22	17	42	81
23-Sep	71	21	45	34	33	20	25	25	36	38	32	42	29	36	31	34	36	19	23	19	22	26	24	17	71
24-Sep	23	19	15	16	17	17	20	24	29	38	38	37	34	34	33	34	34	30	22	20	17	22	63	44	63
25-Sep	75	80	63	67	49	28	35	23	57	72	68	65	76	97	66	32	24	81	34	82	58	88	73	70	97
26-Sep	90	103	64	80	53	69	48	55	56	49	36	29	36	37	37	36	30	29	22	26	14	14	16	14	103
27-Sep	12	28	99	77	92	42	46	42	39	29	45	88	63	69	56	34	21	27	52	41	38	19	15	20	99
28-Sep	19	20	23	22	23	19	18	22	30	33	34	34	36	33	33	32	52	30	17	29	26	19	53	96	96
29-Sep	93	69	19	45	42	27	34	48	38	26	25	22	22	24	26	24	24	22	39	59	31	48	65	61	93
30-Sep	55	45	55	54	42	33	26	51	32	41	40	37	37	40	31	33	32	26	23	23	24	24	22	19	55
	99	103	99	83	92	69	83	80	82	94	100	91	85	97	91	59	85	81	86	82	86	90	73	96	
	Diurnal Maximum																								

Wood Buffalo Environmental Association

Summary of Hour Averages

Wind Speed 20m (WS20) - km/h

Janvier - September 2024

Maximum Speed: 23 km/h on Sep 30 15:00

Maximum Daily Speed Average: 13.1 km/h on Sep 30

Minimum Speed Value: 0 km/h on Sep 18 01:00

Minimum Daily Speed Average: 0.4 km/h on Sep 27

Maximum Diurnal Speed Average: 6.0 km/h at hour 14

Minimum Diurnal Speed Average: 2.4 km/h at hour 18

Monthly Average Velocity: 3.8 km/h 240.4 deg

Percentiles: $P_1 = 1$ $P_{10} = 3$ $Q_1 = 5$ Median = 7 $Q_3 = 9$ $P_{90} = 12$ $P_{99} = 20$

Hours in Service: 720

Hours of Data: 715

Hours of Missing Data: 5

Percent Operational Time: 99.3

Day	Hourly Period Ending At (MST)																								Daily	Daily
	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24	Average	Maximum
1-Sep	SSE1	SSW2	S4	S6	SSW5	SSW7	SSW7	SW7	SW8	WSW7	WSW6	SSW11	SSW12	SW15	WSW18	SW17	WSW15	WSW11	SW7	SW3	SSW6	SSW7	SSW9	SSW10	SW8.0	WSW18
2-Sep	SSW10	SSW12	SSW12	SSW12	SSW11	SSW9	SSW6	SSW6	SW8	SSW7	S8	SSW3	WSW8	SW10	WSW10	WSW8	SW6	WSW5	SW3	WSW6	W4	NW2	N8	N10	SW5.9	SSW12
3-Sep	N11	NNE8	NNE10	N8	N8	N8	N6	N5	N9	N8	N7	N5	NNE5	NW2	NNW5	N4	NE5	NNE5	NE1	NNE4	N3	N1	N4	N5	N5.4	N11
4-Sep	N4	N3	WNW2	WSW2	WSW5	SSW6	SSW7	SW6	SSW6	SW5	WNW9	WNW13	WNW15	WNW16	WNW12	WNW14	NW12	NW8	W6	SW7	SW7	SW9	SW8	SW9	W5.9	WNW16
5-Sep	SSW10	SSW10	SW10	S4	SSW8	SSW7	SSW5	SW4	E1	SE2	E5	E5	ENE3	ENE6	E7	SE7	SE9	SE7	SSE8	SSE9	SSE10	SSE11	S7	S5	SSE4.9	SSE11
6-Sep	SSW7	SSW9	SSW9	SSW11	SSW12	SSW10	SSW10	SSW9	SSW9	SW7	SW8	SSW11	SW11	SW7	S4	SSW8	SSW8	SSW11	SW9	SW8	SW11	SW10	SW10	SSW8	SSW8.8	SSW12
7-Sep	SSW10	SW11	SW9	SSW6	S6	SSW6	SSW8	SSW10	SW8	SSW8	SSW8	SW8	SW9	SW9	SSW7	SSW8	SSW7	S7	S9	SSW8	SSW6	SW7	SW8	SSW9	SSW7.9	SW11
8-Sep	SSW9	SSW8	SSW9	SSW9	SSW9	SSW8	SSW7	SSW8	SSW6	SSW4	SSW4	E2	E3	S8	S8	SSE7	SSE8	SSE7	SSE9	SSE9	SSE9	S9	SSW9	SW5	S6.5	SSE9
9-Sep	SW6	S8	SSE1	SE8	S7	SSW11	SSW10	SW9	SW12	WSW13	WNW15	WNW16	W14	WNW15	WNW16	W18	W15	W11	WNW13	WNW14	WNW15	WNW15	WNW13	W15	W9.7	W18
10-Sep	W15	W14	W13	W9	WSW9	WSW9	SW9	WSW9	WSW8	SW10	SW11	W12	W12	W13	W11	WSW8	WSW10	WSW7	W0	ENE1	SSW4	SSW8	SSW3	S2	WSW7.8	W15
11-Sep	S5	SSW6	S4	SSW1	SSW3	S2	SSE0	W1	NNW2	NNE3	ENE2	ENE7	NNE5	NE6	ENE7	ENE6	ENE8	E8	ESE7	SE6	ESE6	E5	E5	E4	E2.8	ENE8
12-Sep	UO	N1	E3	NNE6	NNE7	NNE6	NNE9	NNE4	N6	N6	N5	NNE6	NNE5	N6	NNE8	NNE6	N6	N8	N7	NNE7	N7	N5	N6	N6	NNE5.8	NNE9
13-Sep	N6	N7	N8	NNE7	N7	N7	N7	N8	N9	N8	N8	N8	N7	N7	NNW9	NNW7	NW4	WNW2	WSW5	WNW6	WNW5	WNW4	WNW4	W7	NNW5.4	NNW9
14-Sep	W8	WSW7	SW5	SW6	SW7	SSW7	SW8	SW8	SW8	SSW7	SW6	W8	W7	WSW11	WSW10	WSW11	WNW8	SW2	SSE6	SSE4	S5	SSW9	SSW10	SSW8	SW6.5	WSW11
15-Sep	SSW7	SW8	WSW7	SW6	SW8	SW8	SW7	SW8	SW6	SW4	WSW4	ESE1	SSW6	SSW9	NE4	SE3	E0	SE2	SE5	SE2	S6	SSW6	SSW10	SSW9	SSW4.7	SSW10
16-Sep	SSW10	SSW9	SSW9	SSW8	SSW10	SW9	SSW10	SW8	SW8	WSW7	SW7	SW12	SW15	WSW15	W14	W13	W8	SSW5	SW5	SSW6	SSW7	SW6	SSW8	SSW8	SW8.5	SW15
17-Sep	SSW8	SSW8	SSW9	SSW9	SSW9	SSW8	SSW7	SSW7	SSW6	SW3	S5	SSW8	SW7	SW7	WSW8	SSW3	NNW1	E3	E6	SE1	UO	SSW2	ENE1	ESE2	SSW4.6	SSW9
18-Sep	NW0	SW3	SSW3	S4	S6	SSW7	SSW9	SSW7	SSW9	SSW6	SW6	SW5	WNW10	NW13	NW11	NW9	NW9	NNW7	NW6	N3	N3	NNE3	W2	WNW1	W3.2	NW13
19-Sep	SW3	SW3	SE3	S4	SSW9	SSW8	SSW8	SSW7	SSW6	SSE3	ESE3	E6	ESE8	SE5	SE4	E1	ENE2	ENE1	UO	SSW3	SSW4	SSW4	SSW5	SSW5	S3.3	SSW9
20-Sep	SSW4	SSE1	S4	SSW3	SSW4	SW7	SSW3	ESE0	N2	WNW2	SSE1	SW1	WSW5	SW4	ENE3	NNW7	NW5	WNW4	NW5	NW6	NNW5	NNW3	NNW3	NW2	W1.6	NNW7
21-Sep	WNW2	SSW3	SSW5	SSW7	SSW9	SSW6	SSW8	SSW8	SSW6	SSW6	SW7	SW9	SW10	SW12	SW12	SW13	SSW12	S8	SSE7	SSE8	SSE7	SSE7	S8	S8	SSW7.1	SW13
22-Sep	SSE6	SSE3	SSE4	SSE5	S3	SSW4	SW6	SSW4	SSW4	SW7	SSW8	SSW7	SW7	SSW6	SSE3	SSE4	SE6	ESE6	E4	SSE2	SSW4	SSW5	SSW6	SW6	S4.1	SSW8
23-Sep	WSW4	WSW4	SW3	SW5	SW4	SW5	SW6	SW7	WSW7	WSW7	W7	WSW7	SW8	SW8	SW7	WSW10	SW8	SW9	SW9	SSW9	SSW7	SSW6	SW9	SW10	SW6.7	SW10
24-Sep	SW11	SW10	SW11	SSW12	SSW11	SSW11	SW11	SW12	SW12	WNW19	WNW22	WNW20	WNW20	WNW20	W19	WNW19	W15	W8	SW4	S6	S6	SSE5	SSE3	SSE5	WSW9.6	WNW22
25-Sep	SSW2	SW3	UO	SW1	NNE4	NNE6	NNE5	NNE5	N2	NNW2	NNW2	NW4	ESE1	SW2	ESE4	NE7	NNE8	N4	ENE3	N4	N5	SSW2	SSE3	SSW5	NNE1.8	NNE8
26-Sep	NW5	NNW4	SW3	WNW2	WSW5	WNW6	WNW14	NW13	NW7	WNW5	SW5	SW7	WNW15	W14	WNW16	W15	W16	W13	W10	SW7	SW9	SW11	SSW9	SSW11	W7.5	W16
27-Sep	SSW9	S6	SW1	E4	E6	NNE6	NNE7	N5	N8	NNE11	N8	NNW3	NW6	N5	NNE3	E4	ESE5	SE5	WSW8	SW8	SW7	SSW8	SSW10	SW12	W0.4	SW12
28-Sep	SW12	SW12	SW12	SW13	SW11	SW10	SSW10	SW11	SW12	W15	W15	W14	WSW14	WSW14	WSW12	W9	WSW4	S5	SSW8	SSW6	SSW5	S6	SE1	ENE1	SW8.5	W15
29-Sep	UO	NNE3	NNE6	NNE4	NNE5	NNE7	NNE4	NNE4	NNE7	NNE6	NE9	NNE15	NNE15	NNE16	NNE13	NNE13	NNE11	NNE8	N8	NNW7	N8	NNW8	NNW7	NW7	NNE7.8	NNE16
30-Sep	NW8	WNW10	NW11	NW12	WNW14	WNW13	W14	W8	W9	WNW13	WNW18	WNW21	WNW22	WNW21	WNW23	W21	WNW19	W17	W10	WSW12	SW11	WSW10	SW11	SW12	WNW13.1	WNW23
	SW4.4	SW4.2	SW3.8	SSW3.6	SW4.4	SW4.3	SW4.5	SW4.3	WSW3.8	W3.9	W4.1	W4.2	W5.6	W6.0	W5.2	W5.0	W3.7	WSW2.4	SW2.6	SW2.9	SW3.3	SSW4.0	SW4.2	SW4.4	Diurnal Average	
	W15	W14	W13	SW13	WNW14	WNW13	W14	NW13	SW12	WNW19	WNW22	WNW21	WNW22	WNW21	WNW23	W21	WNW19	W17	WNW13	WNW14	WNW15	WNW15	WNW13	W15	Diurnal Maximum	

UO - Unstable Operation

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

Number of Exceedences (AAAQO): 1-hr: 0 24-hr: 0

Maximum Value: 8 km/h on Sep 27 19:00

Minimum Value: 1 km/h on Sep 1 03:00

Percentiles: P_1 = 1 P_{10} = 1 Q_1 = 2 Median = 2 Q_3 = 3 P_{90} = 4 P_{99} = 7

Hours in Service:	720
Hours of Data:	715
Hours of Missing Data:	5
Hours of Calibration:	0
Percent Operational Time:	99.3

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

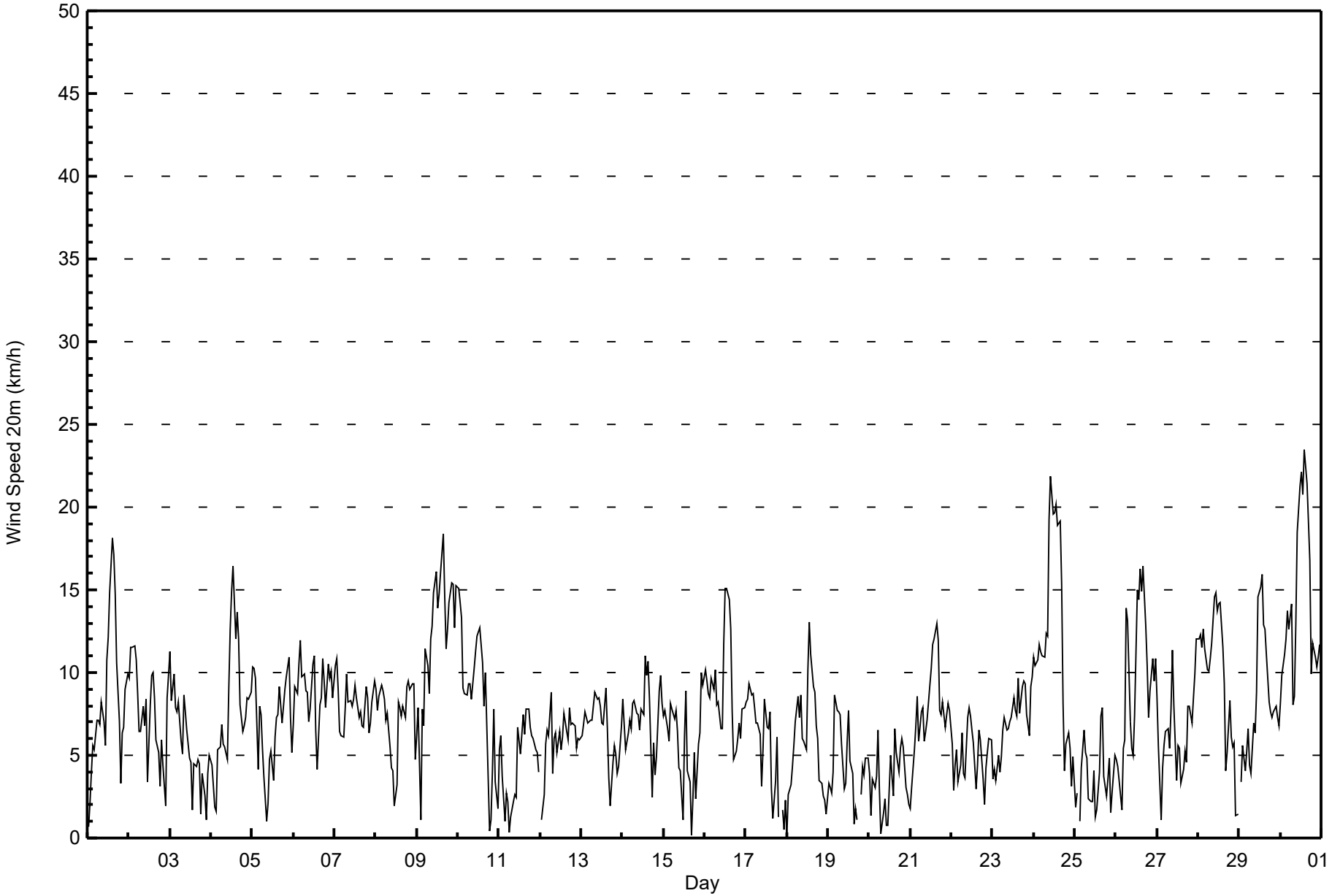
UO - Unstable Operation

Wood Buffalo Environmental Association

Hourly Averages

Wind Speed 20m (WS20) - km/h

Janvier - September 2024



Wind Speed Ranges (km/h)	Number of Hours	%	Cumulative %
0 - 5	220	30.77	30.77
6 - 11	398	55.66	86.43
12 - 19	88	12.31	98.74
20 - 28	9	1.26	100.00
29 - 38	0	0.00	100.00
> 38	0	0.00	100.00

Total Number of Valid Hours: 715

Total Number of Hours: 720

Wood Buffalo Environmental Association

Frequency Distribution

Wind Speed 20m (WS20) - km/h

Janvier - September 2024

Wind Speed Ranges (km/h)	Wind Direction																
	N	NNE	NE	ENE	E	ESE	SE	SSE	S	SSW	SW	WSW	W	WNW	NW	NNW	**Totals**
0 - 5	21	17	3	9	15	7	11	17	15	34	27	10	4	11	9	10	220
6 - 11	35	23	3	5	5	4	6	16	20	127	87	27	16	6	11	7	398
12 - 19	0	5	0	0	0	0	0	0	0	7	17	8	23	24	4	0	88
20 - 28	0	0	0	0	0	0	0	0	0	0	0	0	1	8	0	0	9
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	56	45	6	14	20	11	17	33	35	168	131	45	44	49	24	17	715

Total Number of Valid Hours: 715

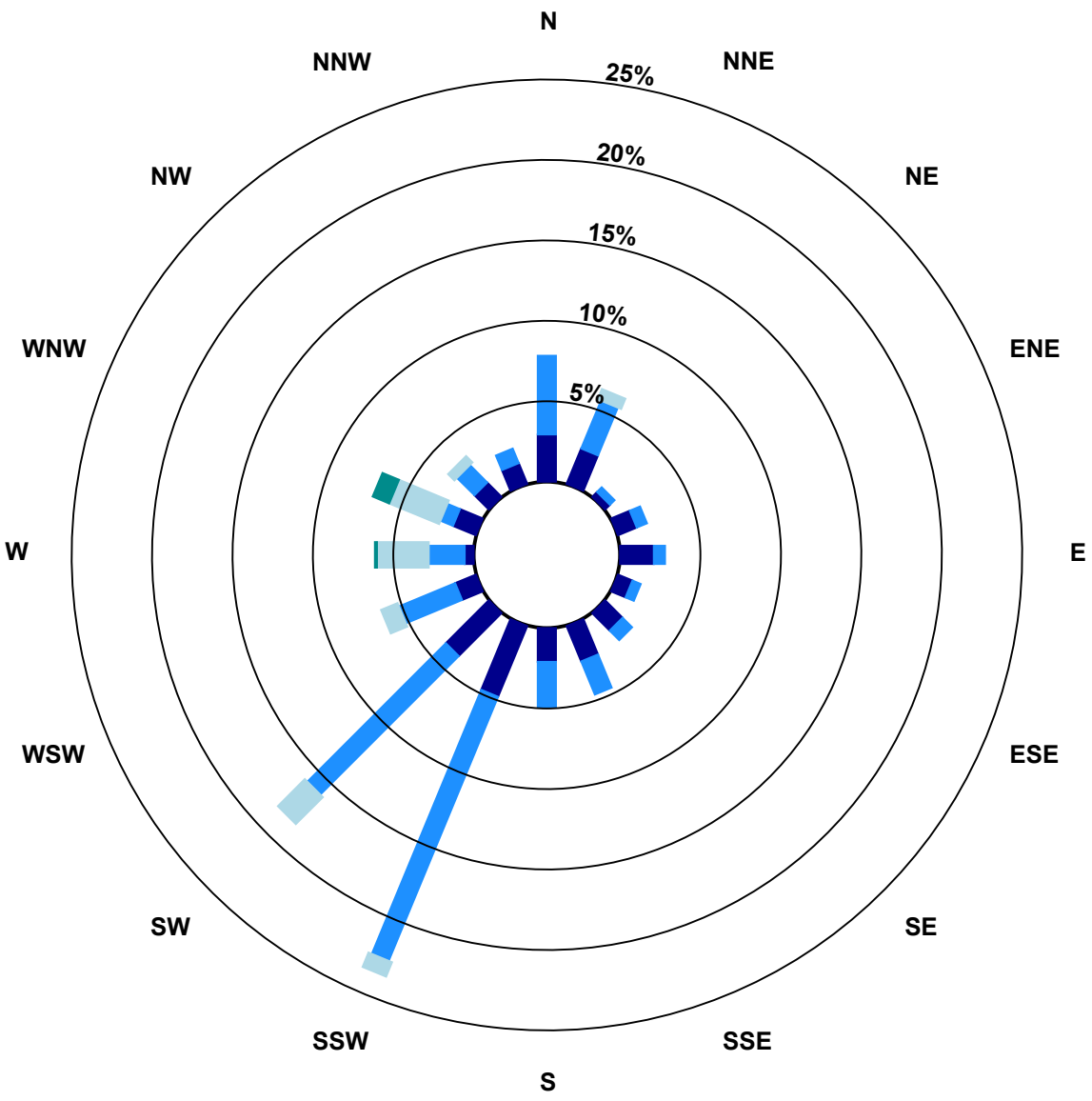
Total Number of Hours: 720

Wood Buffalo Environmental Association

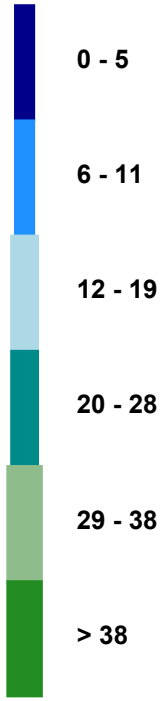
Wind Rose Sep 2024

Wind Speed 20m (WS20) - km/h

Janvier



Classes (km/h)



Total Number of Valid Hours: 715

Wood Buffalo Environmental Association

Summary of Hour Averages

Wind Direction 20m (WD20) - deg

Janvier - September 2024

Direction of Maximum Speed: 283 deg on Sep 30 15:00
Direction of Maximum Daily Speed Average: 282.1 deg on Sep 30

Direction of Minimum Speed: 312 deg on Sep 18 01:00

Direction of Minimum Daily Speed Average: 0.4 deg on Sep 27

Monthly Average Direction: 240.4 deg

Hours in Service:	720
Hours of Data:	715
Hours of Missing Data:	5
Percent Operational Time:	99.3

Day	Hourly Period Ending At (MST)																								Daily
	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24	Average
1-Sep	149	196	181	188	199	206	211	223	231	246	248	201	212	227	237	232	238	242	223	225	193	209	209	208	220.8
2-Sep	208	205	205	207	210	211	207	200	214	197	189	212	252	236	254	248	225	242	229	241	262	322	3	354	225.5
3-Sep	7	16	31	4	2	359	8	359	6	2	358	359	16	318	331	4	37	33	50	30	9	359	7	2	8.2
4-Sep	356	354	302	248	238	207	203	221	207	236	296	303	300	298	302	295	304	309	263	226	220	222	228	218	270.8
5-Sep	210	212	214	189	197	204	213	227	79	131	100	91	76	63	96	124	146	144	151	155	151	162	187	185	165.0
6-Sep	201	198	201	194	205	205	206	209	213	220	224	208	225	226	184	212	201	213	214	218	219	219	216	212	210.6
7-Sep	209	219	219	213	177	195	212	206	218	211	213	217	222	227	210	208	196	189	188	196	206	218	220	209	209.0
8-Sep	210	205	201	203	209	210	208	207	212	212	195	92	96	177	177	149	155	150	147	158	167	177	198	227	185.3
9-Sep	218	182	148	146	189	197	206	224	228	254	293	294	281	292	285	279	274	267	294	284	293	291	288	278	267.3
10-Sep	279	276	275	263	237	237	230	237	242	235	231	270	281	275	263	250	243	238	272	69	194	201	192	176	252.1
11-Sep	186	206	190	196	205	172	168	273	338	24	61	69	16	52	63	69	65	93	114	132	110	98	95	79	93.9
12-Sep	UO	353	81	27	17	23	29	18	359	8	353	18	22	7	16	12	360	11	9	16	6	1	0	3	12.5
13-Sep	3	6	10	13	7	5	2	2	7	9	6	4	3	349	330	329	305	290	252	286	297	293	282	275	345.5
14-Sep	271	256	229	227	223	209	218	217	220	213	236	274	262	241	242	258	283	226	164	168	191	207	208	207	230.5
15-Sep	204	219	238	223	219	219	223	224	230	227	250	103	197	210	47	125	89	138	138	142	172	204	208	212	208.0
16-Sep	209	208	208	210	212	214	213	218	230	237	229	226	224	239	264	261	266	208	230	195	205	216	210	202	224.5
17-Sep	204	208	207	207	210	205	197	209	197	235	191	199	225	223	244	211	329	79	83	142	UO	195	68	117	204.0
18-Sep	312	214	195	175	187	211	202	197	204	209	220	220	293	306	308	308	309	331	325	6	6	18	275	287	264.5
19-Sep	229	222	126	176	204	206	199	206	196	150	102	88	114	133	144	92	78	64	UO	211	198	195	202	203	177.6
20-Sep	192	166	178	198	202	215	207	103	358	284	164	217	249	236	70	338	326	294	319	321	345	331	328	309	280.4
21-Sep	289	210	198	206	201	197	207	208	205	200	228	234	234	223	217	216	201	185	168	158	150	159	171	171	200.8
22-Sep	161	161	164	157	183	194	218	205	200	216	211	210	227	198	152	159	125	103	88	162	203	205	208	214	187.2
23-Sep	252	250	230	224	216	214	231	230	258	238	267	243	216	228	224	237	234	214	219	211	197	209	218	220	226.9
24-Sep	228	223	214	213	213	212	220	226	236	290	292	284	282	282	281	286	278	276	221	180	183	165	160	168	253.7
25-Sep	205	225	UO	235	20	16	22	22	11	337	344	305	108	225	106	42	20	353	65	6	9	202	158	211	16.5
26-Sep	319	339	223	297	256	303	303	324	324	288	216	232	287	278	287	279	267	272	269	223	215	214	209	210	269.6
27-Sep	213	188	219	96	93	24	31	357	11	18	9	342	304	358	30	86	116	134	244	221	223	208	211	219	262.1
28-Sep	218	221	221	214	219	214	212	214	236	271	278	263	255	249	256	271	239	185	205	202	213	179	141	66	233.7
29-Sep	UO	13	21	29	22	23	16	17	29	15	35	33	32	23	17	16	18	16	357	345	357	342	328	306	13.8
30-Sep	307	303	308	308	301	286	280	281	272	296	296	298	298	292	283	278	286	281	264	256	236	237	229	221	282.1
	230.4	227.4	220.6	212.4	217.7	221.7	226.9	231.4	240.9	260.8	267.9	268.5	268.9	265.6	271.8	269.5	265.2	244.7	223.0	216.9	214.7	213.6	220.1	223.5	
	Diurnal Average																								

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

Number of Exceedences (AAAQO): 1-hr: 0 24-hr: 0

Maximum Value: 98 deg on Sep 10 19:00

Minimum Value: 8 deg on Sep 17 19:00

Percentiles: P_1 = 9 P_{10} = 13 Q_1 = 17 Median = 24 Q_3 = 33 P_{90} = 51 P_{99} = 89

Hours in Service:	720
Hours of Data:	715
Hours of Missing Data:	5
Hours of Calibration:	0
Percent Operational Time:	99.3

Day	Hourly Period Ending At (MST)																								Daily
	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24	Maximum
1-Sep	74	51	11	10	13	12	12	23	22	32	33	36	29	31	25	26	25	24	17	44	11	9	9	8	74
2-Sep	9	9	9	11	11	15	73	43	22	18	23	58	54	28	32	31	22	24	49	20	21	51	25	31	73
3-Sep	27	43	22	33	27	24	24	28	26	29	24	33	45	64	44	36	28	27	30	15	32	40	27	23	64
4-Sep	23	22	45	68	20	15	16	23	19	40	31	28	28	28	27	26	27	29	24	13	13	15	15	14	68
5-Sep	11	12	12	49	10	10	11	28	83	65	50	51	76	37	37	35	25	19	15	14	17	22	20	14	83
6-Sep	11	12	15	15	17	15	14	19	25	26	27	21	29	39	39	26	19	18	14	15	17	14	15	15	39
7-Sep	13	17	14	23	15	21	17	12	20	20	19	20	22	22	22	20	16	15	14	13	9	12	22	11	23
8-Sep	10	14	9	9	11	13	13	16	26	36	37	81	59	38	31	31	23	16	13	17	19	17	23	36	81
9-Sep	16	22	96	16	31	15	16	23	23	28	23	24	22	23	24	23	23	22	26	18	21	21	17	18	96
10-Sep	18	18	16	20	19	20	19	20	27	27	30	30	29	28	27	25	28	43	98	73	24	10	57	80	98
11-Sep	11	9	34	66	33	40	84	51	61	86	91	36	46	35	25	22	22	22	18	19	16	16	16	25	91
12-Sep	UO	67	48	25	19	17	21	41	22	28	28	27	26	30	22	22	25	21	22	20	22	27	25	24	67
13-Sep	27	26	19	20	24	23	26	25	23	21	24	26	26	37	36	33	26	32	18	21	40	30	31	15	40
14-Sep	17	16	14	15	15	20	12	18	22	24	43	34	41	25	32	25	20	46	9	46	28	8	10	10	46
15-Sep	10	17	27	23	16	18	17	23	23	32	38	83	47	35	87	40	86	63	11	85	15	11	12	13	87
16-Sep	13	13	10	12	12	15	15	20	20	28	23	26	28	26	25	28	22	24	21	10	11	15	12	11	28
17-Sep	8	11	10	10	10	14	12	19	20	51	38	34	39	49	32	44	92	17	8	64	UO	59	56	52	92
18-Sep	92	65	22	24	24	21	14	24	21	33	42	38	31	33	35	29	26	38	33	47	27	22	29	81	92
19-Sep	20	38	62	36	10	10	11	13	16	38	41	31	31	16	20	73	50	35	UO	26	16	13	20	14	73
20-Sep	51	78	22	33	24	15	68	83	52	42	64	95	38	33	82	40	38	31	27	33	43	57	32	49	95
21-Sep	39	23	14	12	8	11	13	17	24	23	42	29	33	36	31	25	21	20	18	20	32	37	21	22	42
22-Sep	22	36	12	16	50	19	15	21	20	20	19	31	30	35	53	41	12	22	59	65	18	13	11	17	65
23-Sep	43	18	23	22	22	12	20	21	32	33	25	36	27	29	28	28	32	19	19	16	16	19	19	16	43
24-Sep	19	17	15	15	15	15	18	19	24	23	22	25	23	24	22	21	22	17	33	14	19	26	36	15	36
25-Sep	68	64	UO	67	48	19	21	20	41	55	53	43	80	90	59	32	21	28	39	36	18	87	88	57	90
26-Sep	61	45	75	72	45	39	27	35	39	40	26	24	25	25	21	25	23	20	18	21	12	13	13	12	75
27-Sep	11	23	89	49	57	30	39	29	31	25	40	83	45	51	49	27	16	21	43	29	25	14	14	17	89
28-Sep	16	17	18	18	19	17	16	20	25	24	25	27	30	29	29	24	52	20	14	16	16	16	64	53	64
29-Sep	UO	24	14	28	25	18	24	30	36	24	24	18	19	20	21	22	20	20	32	41	26	35	35	30	41
30-Sep	25	22	23	26	23	20	17	37	26	25	24	24	24	26	22	21	21	18	19	20	19	18	18	17	37
	92	78	96	72	57	40	84	83	83	86	91	95	80	90	87	73	92	63	98	85	43	87	88	81	
	Diurnal Maximum																								

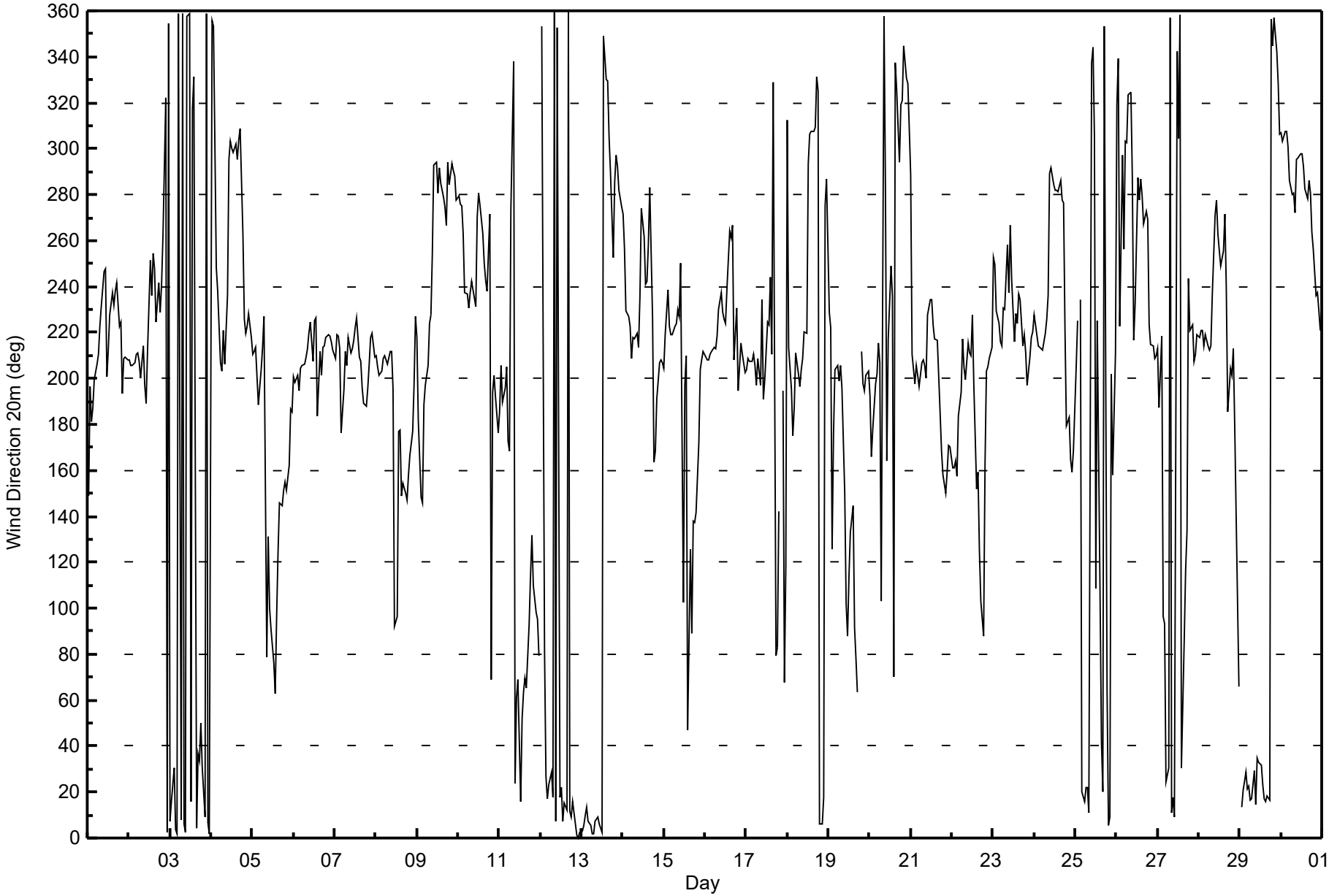
UO - Unstable Operation

Wood Buffalo Environmental Association

Hourly Averages

Wind Direction 20m (WD20) - deg

Janvier - September 2024



WOOD BUFFALO ENVIRONMENTAL ASSOCIATION

CONTINUOUS AMBIENT AIR QUALITY
MONITORING PROGRAM
MONTHLY REPORT

AMS23
FORT HILLS
SEPTEMBER 2024

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

October 31, 2024

WOOD BUFFALO ENVIRONMENTAL ASSOCIATION - FORT HILLS (AMS23)
SEPTEMBER 2024

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	683	33	37	99.44	24.8	0	4.3	0
TRS(ppb) Average	682	35	38	99.58	2.7	0	0.9	0
THC(ppm) Average	555	35	165	81.94	4.7	-	2.7	-
NMHC(ppm) Average	555	35	165	81.94	1.641	-	0.383	-
CH4(ppm) Average	555	35	165	81.94	3.8	-	2.4	-
NO2 (ppb) Average	681	35	39	99.44	46.3	0	15.7	-
NO (ppb) Average	681	35	39	99.44	130	-	35.4	-
NOX (ppb) Average	681	35	39	99.44	153.2	-	49.1	-
PM2.5 (ug/m3) Average	715	2	5	99.58	158.1	0	90.1	5
Temperature 2 m (C) Average	717	0	3	99.58	30.3	-	20.8	-
Relative Humidity (%) Average	717	0	3	99.58	99.5	-	87.7	-
Wind Speed 10 m (km/h) Average	717	0	3	99.58	26	-	14	-
Wind Direction 10 m (deg) Average	717	0	3	99.58	-	-	-	-

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

WOOD BUFFALO ENVIRONMENTAL ASSOCIATION - FORT HILLS (AMS23)
SEPTEMBER 2024

MONTHLY SUMMARY FOR AIR QUALITY/ METEOROLOGICAL MONITORING MEASUREMENTS

					Percentile						
Parameter	Number	Mean	StnDev	Total	Min	P10	Q1	Median	Q3	P90	Max
SO2 (ppb) Average	683	0.78	2.1	-	0	0	0.1	0.2	0.5	1.7	24.8
TRS (ppb) Average	682	0.48	0.3	-	0.1	0.2	0.3	0.4	0.5	0.8	2.7
THC (ppm) Average	555	2.37	0.5	-	1.9	2	2	2.2	2.5	3	4.7
NMHC(ppm) Average	555	0.136	0.195	-	0	0	0	0	0.2	0.4	1.641
CH4(ppm) Average	555	2.24	0.3	-	1.9	2	2	2.1	2.3	2.6	3.8
NO2 (ppb) Average	681	8.42	7.6	-	0	0.5	2.2	6.3	12.9	19.7	46.3
NO (ppb) Average	681	8.66	17.9	-	0	0	0	1.3	7.9	27.8	130
NOX (ppb) Average	681	17.08	23.2	-	0	0.5	2.7	8.5	22	45.1	153.2
PM2.5 (ug/m3) Average	715	19	27.2	-	0.8	3.3	5.1	8.3	16.3	52.6	158.1
Temperature 2 m (C) Average	717	13.45	5.2	-	3.2	7	9.9	13	16.3	20.2	30.3
Relative Humidity (%) Average	717	70.08	18.6	-	24.4	42.3	55.9	71.3	85.6	93.1	99.5
Wind Speed 10 m (km/h) Average	717	9.5	5	-	0	3	5	9	13	17	26
Wind Direction 10 m (deg) Average	717	-	-	-	-	-	-	-	-	-	-

WOOD BUFFALO ENVIRONMENTAL ASSOCIATION - FORT HILLS (AMS23)
SEPTEMBER 2024

OPERATIONAL NOTES

Parameter	Period Start	Period End	Duration (Hours)	Notes
ALL PARAMETERS	19 Sep 2024 11:00	19 Sep 2024 12:00	2	DAS Failure - data not recorded
ALL PARAMETERS	22 Sep 2024 16:00	22 Sep 2024 16:00	1	DAS Failure - data not recorded
SO2, THC/NMHC/CH4, NO2	16 Sep 2024 08:00	16 Sep 2024 08:00	1	Maintenance - sample manifold cleaned
THC/NMHC/CH4	03 Sep 2024 07:00	03 Sep 2024 08:00	2	Unstable Operation - excessive baseline noise
THC/NMHC/CH4	03 Sep 2024 11:00	03 Sep 2024 19:00	9	Unstable Operation - excessive baseline noise
THC/NMHC/CH4	03 Sep 2024 22:00	03 Sep 2024 22:00	1	Unstable Operation - excessive baseline noise
THC/NMHC/CH4	04 Sep 2024 00:00	04 Sep 2024 01:00	2	Unstable Operation - excessive baseline noise
THC/NMHC/CH4	04 Sep 2024 03:00	04 Sep 2024 04:00	2	Unstable Operation - excessive baseline noise
THC/NMHC/CH4	04 Sep 2024 06:00	04 Sep 2024 06:00	1	Unstable Operation - excessive baseline noise
THC/NMHC/CH4	17 Sep 2024 07:00	17 Sep 2024 07:00	1	Unstable Operation - excessive baseline noise
THC/NMHC/CH4	17 Sep 2024 09:00	17 Sep 2024 11:00	3	Unstable Operation - excessive baseline noise
THC/NMHC/CH4	17 Sep 2024 13:00	17 Sep 2024 13:00	1	Unstable Operation - excessive baseline noise
THC/NMHC/CH4	17 Sep 2024 15:00	17 Sep 2024 19:00	5	Unstable Operation - excessive baseline noise
THC/NMHC/CH4	17 Sep 2024 21:00	17 Sep 2024 22:00	2	Unstable Operation - excessive baseline noise
THC/NMHC/CH4	18 Sep 2024 02:00	18 Sep 2024 03:00	2	Unstable Operation - excessive baseline noise
THC/NMHC/CH4	18 Sep 2024 05:00	18 Sep 2024 06:00	2	Unstable Operation - excessive baseline noise
THC/NMHC/CH4	18 Sep 2024 07:00	18 Sep 2024 09:00	3	Maintenance - adjust retention time
THC/NMHC/CH4	20 Sep 2024 07:00	21 Sep 2024 00:00	18	Unstable Operation - excessive baseline noise
THC/NMHC/CH4	21 Sep 2024 02:00	22 Sep 2024 01:00	24	Unstable Operation - excessive baseline noise
THC/NMHC/CH4	22 Sep 2024 03:00	22 Sep 2024 07:00	5	Unstable Operation - excessive baseline noise
THC/NMHC/CH4	22 Sep 2024 09:00	22 Sep 2024 10:00	2	Unstable Operation - excessive baseline noise
THC/NMHC/CH4	22 Sep 2024 11:00	22 Sep 2024 15:00	5	Maintenance - adjust zero and span
THC/NMHC/CH4	23 Sep 2024 10:00	23 Sep 2024 13:00	4	Maintenance - adjust retention time
THC/NMHC/CH4	24 Sep 2024 05:00	25 Sep 2024 12:00	32	Unstable Operation - AMD noncompliance

Wood Buffalo Environmental Association

Summary of Hour Averages

Sulphur Dioxide (SO_2) - ppb

Fort Hills - September 2024

Number of Exceedences (AAAQO): 1-hr: 0 24-hr: 0
Maximum Value: 24.8 ppb on Sep 5 12:00 Maximum Daily Average: 4.3 ppb on Sep 5

Minimum Value: 0.0 ppb on Sep 4 15:00
Maximum Diurnal Average: 2.5 ppb at hour 12
Monthly Average: 0.78 ppb

Minimum Daily Average: 0.1 ppb on Sep 13
Minimum Diurnal Average: 0.2 ppb at hour 3
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} = 11.3

Hours in Service:	720
Hours of Data:	683
Hours of Missing Data:	37
Hours of Calibration:	33
Percent Operational Time:	99.4

Day	Hourly Period Ending At (MST)																								Daily	Daily
	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24	Average	Maximum
1-Sep	0.1	0.1	0.8	3.9	Z	2.0	1.4	5.0	2.5	1.3	1.0	1.3	2.3	0.5	0.1	0.1	0.1	0.1	0.0	0.1	0.2	0.2	0.2	0.3	1.0	5.0
2-Sep	0.2	0.1	0.1	0.1	0.1	Z	0.5	0.4	0.3	0.3	0.4	0.8	0.4	0.2	0.2	0.2	0.2	0.2	0.2	0.1	0.1	0.1	0.1	0.1	0.2	0.8
3-Sep	Z	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	0.1	0.2	0.1	0.2	0.2	0.1	0.1	0.1	0.2
4-Sep	0.1	Z	0.1	0.1	0.1	0.2	0.1	0.1	0.2	C	C	C	0.5	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.7	0.2	0.3	0.2	0.1	0.7
5-Sep	0.2	0.2	Z	0.2	0.2	0.2	0.1	0.2	0.2	1.3	18.0	24.8	9.1	12.9	12.7	6.0	4.5	1.9	0.5	0.4	0.3	0.3	1.4	4.0	4.3	24.8
6-Sep	3.1	3.7	2.0	Z	4.1	3.4	4.2	2.1	0.6	0.4	0.4	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	1.2	4.2
7-Sep	0.1	0.2	0.1	0.1	Z	0.1	0.2	0.1	0.2	0.3	2.6	5.3	5.2	0.5	0.1	0.0	0.0	0.0	0.0	0.0	0.1	0.2	0.2	0.1	0.7	5.3
8-Sep	0.0	0.0	0.0	0.0	0.0	Z	0.1	0.0	0.1	0.6	5.3	8.5	11.1	17.8	11.8	12.3	10.2	5.9	4.9	4.6	3.6	1.7	0.5	0.2	4.3	17.8
9-Sep	Z	0.2	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.2	0.4	0.1	0.2	0.2	0.4	0.2	1.1	1.2	0.5	0.1	0.1	0.7	1.3	0.3	0.3	1.3
10-Sep	0.3	Z	0.2	0.2	0.1	0.1	0.2	0.1	0.1	0.1	0.1	0.2	0.1	0.0	0.1	0.1	0.0	0.1	0.1	0.1	0.2	0.2	0.1	0.1	0.1	0.3
11-Sep	0.0	0.1	Z	0.6	0.3	0.3	0.2	0.3	0.6	0.4	0.5	0.8	0.9	0.7	0.5	0.5	0.5	0.5	0.4	0.5	0.3	0.3	0.2	0.2	0.4	0.9
12-Sep	0.2	0.1	0.1	Z	0.2	0.2	0.9	0.4	0.5	0.7	0.6	0.4	0.3	0.2	0.2	0.2	0.5	0.4	0.1	0.1	0.2	0.0	0.2	0.0	0.3	0.9
13-Sep	0.2	0.0	0.1	0.2	Z	0.1	0.1	0.0	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	0.2
14-Sep	0.1	0.1	0.0	0.1	0.0	Z	0.1	0.1	0.3	1.0	3.7	1.5	1.8	1.1	0.1	0.1	0.1	0.1	0.1	0.0	0.1	0.1	0.0	0.0	0.5	3.7
15-Sep	Z	0.4	0.1	0.0	0.0	0.0	0.1	0.2	0.2	0.1	0.1	0.1	0.1	0.9	1.7	1.1	0.7	0.5	0.2	0.1	0.0	0.0	0.0	0.0	0.3	1.7
16-Sep	0.0	Z	0.1	0.8	2.2	1.4	0.4	M	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	0.3	2.2
17-Sep	0.0	0.1	Z	0.0	0.0	1.0	1.1	0.6	0.3	0.2	0.1	0.2	1.3	1.4	0.6	2.1	0.7	1.1	3.6	2.8	1.9	1.1	0.6	0.6	0.9	3.6
18-Sep	0.3	0.3	0.6	Z	0.7	1.7	2.6	1.5	0.5	0.8	0.2	0.3	2.3	0.2	1.6	0.3	0.6	0.2	0.1	0.1	0.0	0.0	0.0	0.1	0.7	2.6
19-Sep	0.3	0.2	0.0	0.0	Z	0.0	0.1	0.1	0.1	0.3	DF	DF	0.2	0.2	0.1	0.1	0.1	0.0	0.3	0.2	0.1	0.0	0.0	0.3	0.1	0.3
20-Sep	0.4	0.4	0.5	0.4	0.2	Z	0.0	0.0	0.1	0.0	0.0	0.0	0.0	0.1	0.0	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.2	0.2	0.1	0.5
21-Sep	Z	0.2	0.2	0.1	0.1	0.1	0.1	0.1	0.2	0.2	6.1	7.4	6.4	5.8	7.3	5.0	3.4	1.3	0.7	1.2	0.5	0.2	0.4	0.3	2.1	7.4
22-Sep	0.2	Z	0.3	0.4	0.3	0.1	0.1	0.2	0.3	0.3	1.9	7.1	8.6	1.5	1.1	DF	0.5	1.2	1.3	1.1	0.7	0.4	0.2	0.3	1.3	8.6
23-Sep	0.8	0.7	Z	0.2	0.1	0.2	0.2	0.2	0.2	0.2	1.6	5.2	2.3	3.1	6.2	7.0	4.2	1.7	0.4	0.7	0.3	0.6	1.0	0.6	1.6	7.0
24-Sep	0.2	0.0	0.0	Z	0.0	0.0	0.0	0.0	0.0	0.0	0.1	1.9	0.4	0.1	0.0	0.1	0.0	0.0	0.0	0.0	0.1	0.1	0.0	0.1	0.1	1.9
25-Sep	0.1	0.2	0.1	0.1	Z	0.2	0.6	0.7	0.8	1.1	1.1	2.3	1.4	0.4	0.3	0.4	0.2	0.2	0.1	0.1	0.1	0.1	0.2	0.2	0.5	2.3
26-Sep	0.1	0.2	0.0	0.1	0.0	Z	0.0	0.0	0.0	0.0	0.2	0.1	0.1	0.2	0.0	1.4	0.6	0.3	0.3	0.0	0.0	0.1	0.0	0.0	0.2	1.4
27-Sep	Z	0.0	0.0	0.0	0.0	0.0	0.0	0.1	0.1	0.1	2.1	0.5	0.2	0.2	0.1	0.2	0.1	0.1	0.1	0.1	0.3	0.1	0.1	0.1	0.2	2.1
28-Sep	0.1	Z	0.1	0.1	3.6	1.1	0.2	1.4	1.4	0.9	1.9	0.2	0.5	0.1	0.1	0.7	0.4	0.4	0.1	0.1	0.0	0.2	0.2	0.1	0.6	3.6
29-Sep	0.2	0.1	Z	0.0	0.6	0.5	0.5	0.4	0.4	0.2	0.4	0.8	1.4	1.4	0.7	0.3	0.1	0.1	0.1	0.0	0.0	0.0	0.0	0.0	0.4	1.4
30-Sep	0.0	0.0	0.0	Z	0.0	0.0	0.2	0.3	0.3	0.1	2.1	0.2	0.1	0.1	0.1	0.1	0.1	0.3	0.2	1.1	0.1	0.1	0.4	0.2	0.3	2.1
	0.3	0.3	0.2	0.3	0.5	0.5	0.5	0.5	0.4	0.4	1.8	2.5	1.9	1.7	1.6	1.4	1.0	0.6	0.5	0.5	0.4	0.3	0.3	0.3	Diurnal Average	
	3.1	3.7	2.0	3.9	4.1	3.4	4.2	5.0	2.5	1.3	18.0	24.8	11.1	17.8	12.7	12.3	10.2	5.9	4.9	4.6	3.6	1.7	1.4	4.0	Diurnal Maximum	

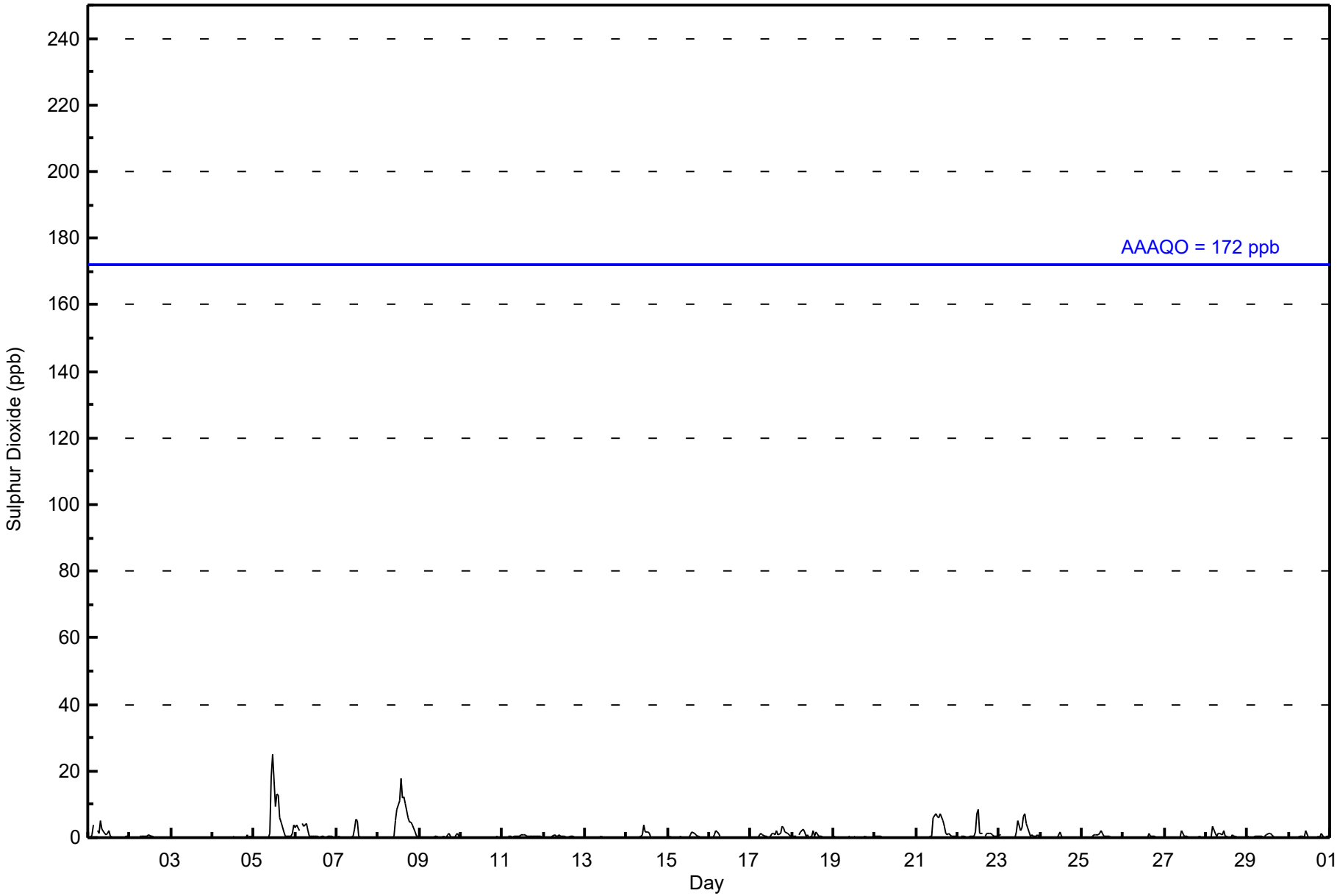
Z - zerospan C - Calibration M - Maintenance DF - DAS Failure
Alberta Ambient Air Quality Objectives (AAAQO): 1-hr 172 ppb 24-hr 48 ppb

Wood Buffalo Environmental Association

Hourly Averages

Sulphur Dioxide (SO_2) - ppb

Fort Hills - September 2024



Concentration Ranges (ppb)	Number of Hours	%	Cumulative %
0 - 10	675	98.83	98.83
11 - 20	7	1.02	99.85
21 - 60	1	0.15	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: 683

Total Number of Hours: 720

Wood Buffalo Environmental Association

Frequency Distribution

Sulphur Dioxide (SO_2) - ppb

Fort Hills - September 2024

Concentration Ranges (ppb)	Wind Direction																
	N	NNE	NE	ENE	E	ESE	SE	SSE	S	SSW	SW	WSW	W	WNW	NW	NNW	**Totals**
0 - 10	76	41	8	4	4	10	22	96	74	65	67	33	38	43	32	62	675
11 - 20	0	0	0	0	0	0	0	3	2	1	0	1	0	0	0	0	7
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	76	41	8	4	4	10	22	99	77	66	67	34	38	43	32	62	683

Total Number of Valid Hours: 683

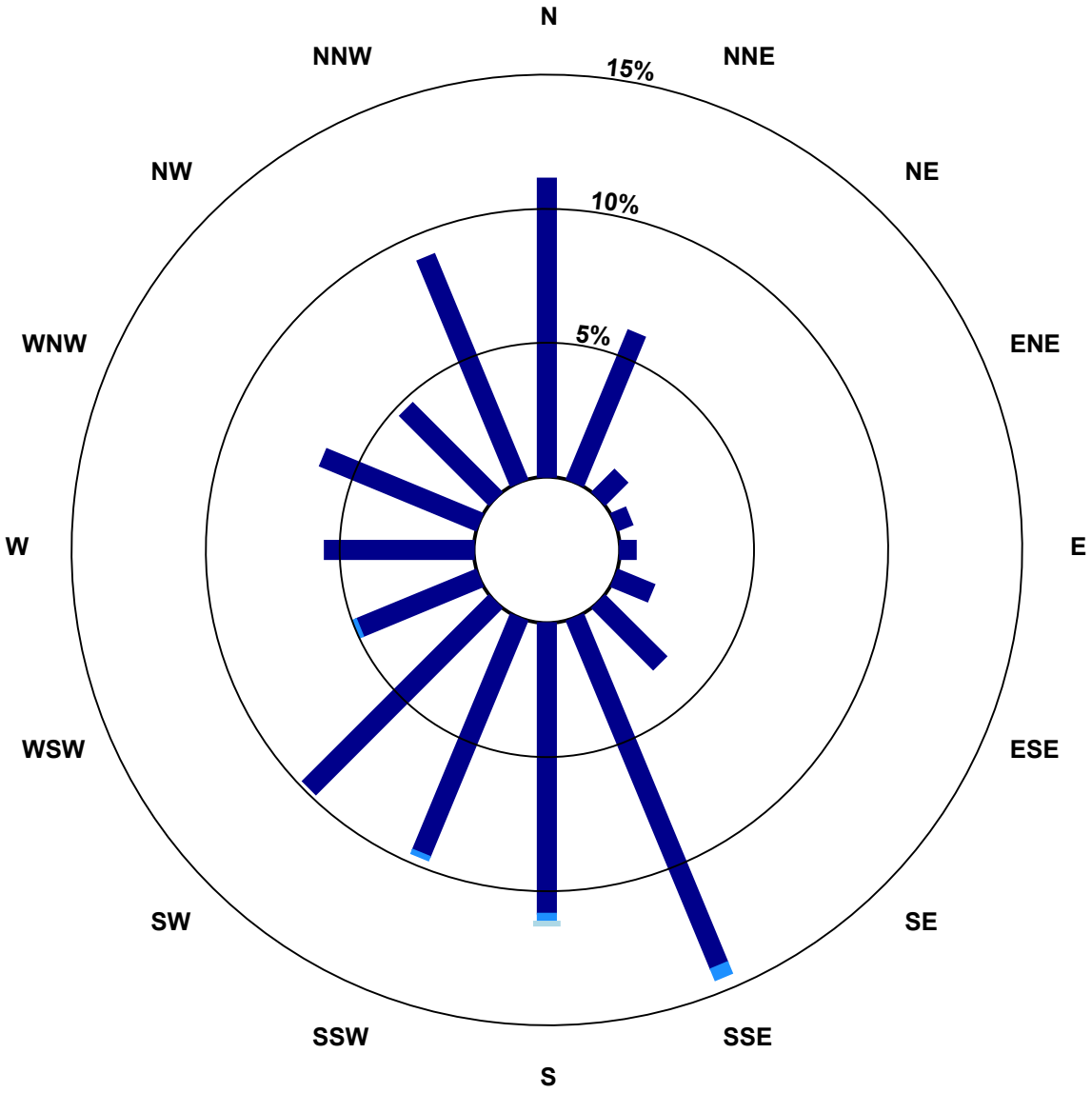
Total Number of Hours: 720

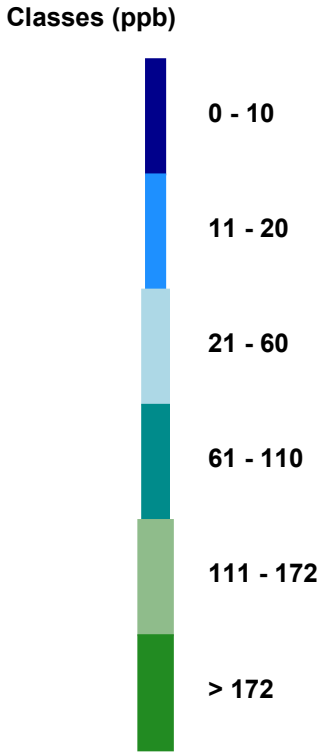
Wood Buffalo Environmental Association

Wind Rose Sep 2024

Sulphur Dioxide (SO_2) - ppb

Fort Hills





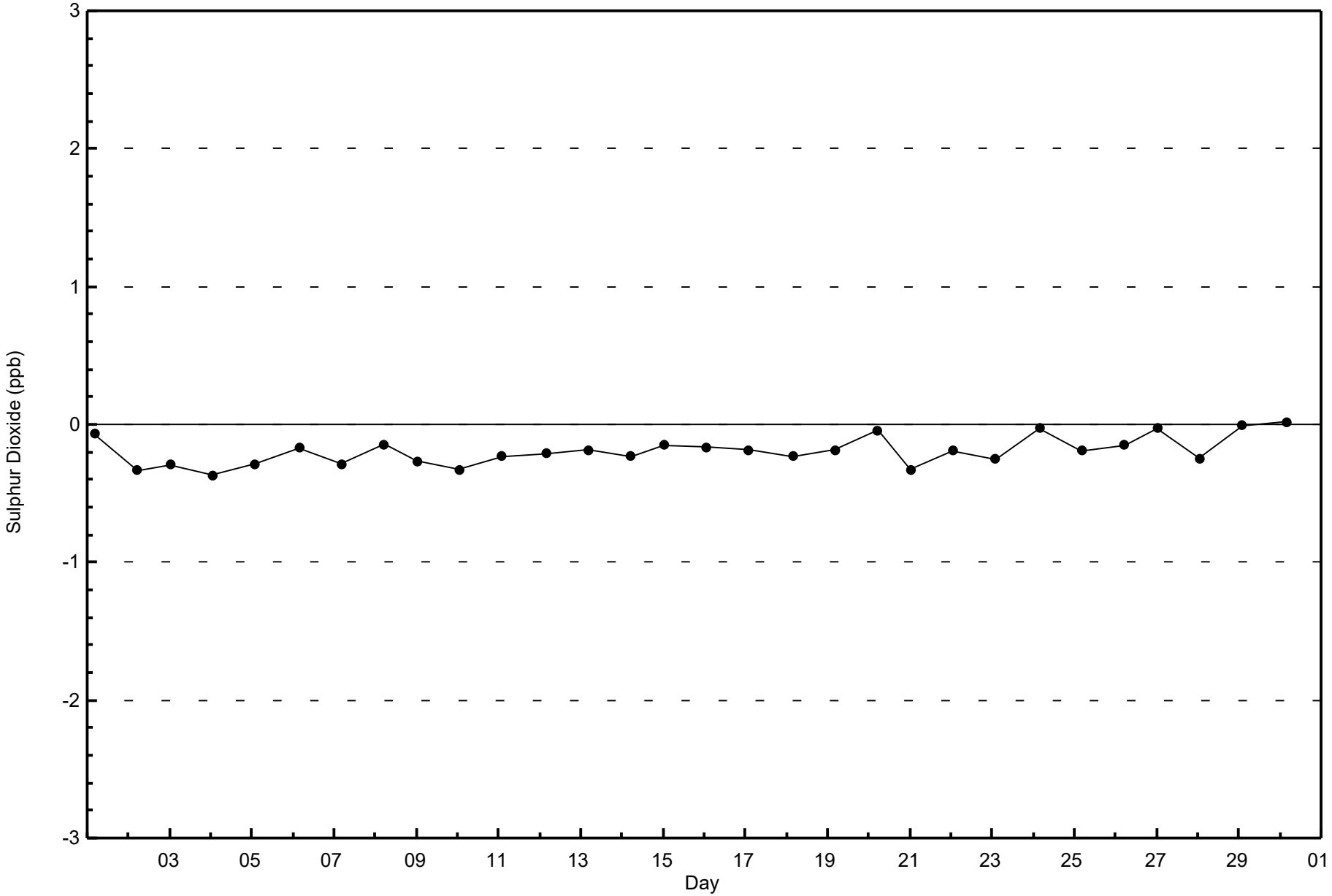
Total Number of Valid Hours: 683

Wood Buffalo Environmental Association

Zero Responses

Sulphur Dioxide (SO_2) - ppb

Fort Hills - September 2024

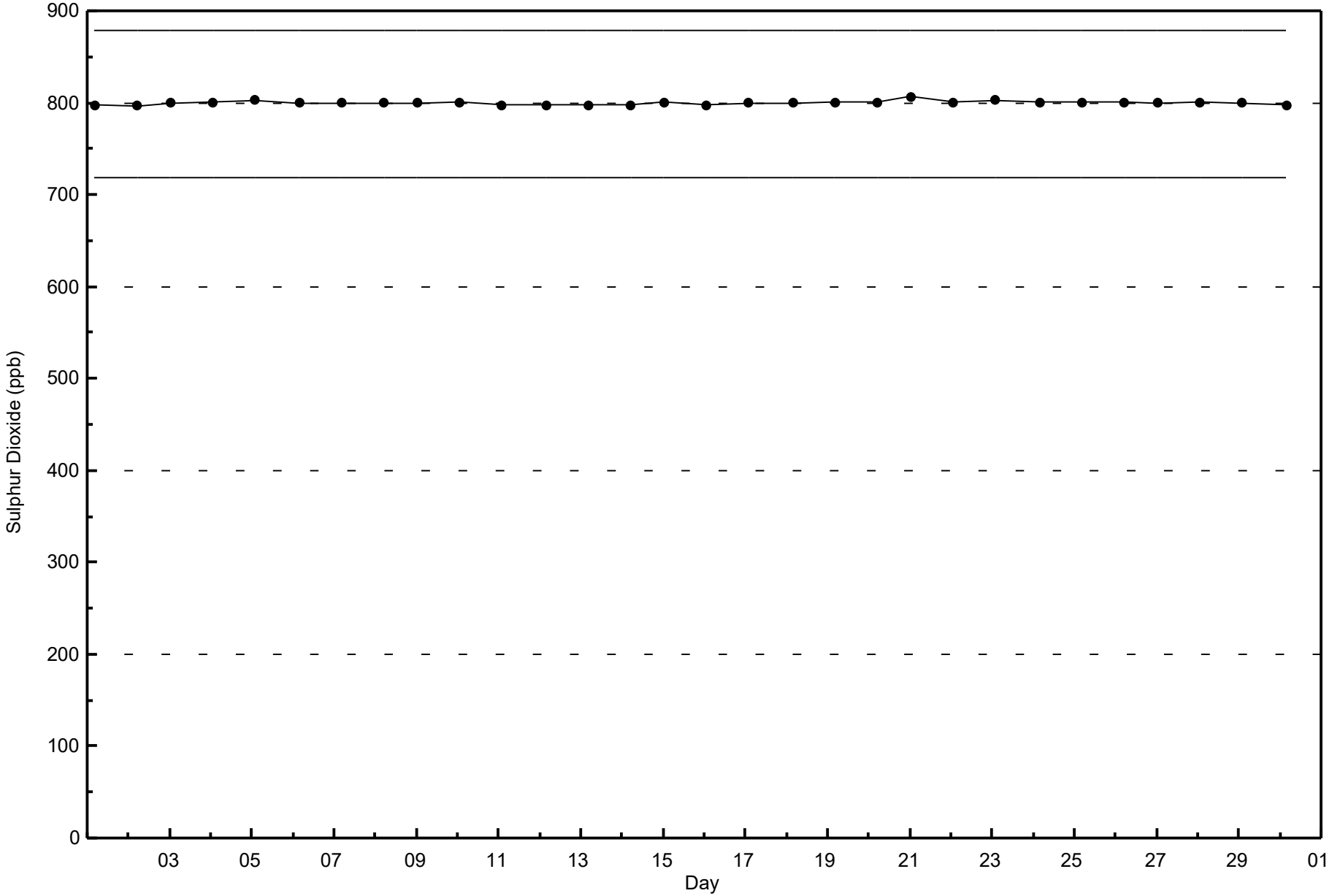


Wood Buffalo Environmental Association

Span Responses

Sulphur Dioxide (SO_2) - ppb

Fort Hills - September 2024



Wood Buffalo Environmental Association

Summary of Hour Averages

Total Reduced Sulphur (TRS) - ppb

Fort Hills - September 2024

Number of Exceedences (AAAQO): 1-hr: 0 24-hr: 0

Maximum Value: 2.7 ppb on Sep 6 01:00 Maximum Daily Average: 0.9 ppb on Sep 25

Minimum Value: 0.1 ppb on Sep 22 14:00 Minimum Daily Average: 0.3 ppb on Sep 28

Maximum Diurnal Average: 0.7 ppb at hour 7 Minimum Diurnal Average: 0.3 ppb at hour 16

Monthly Average: 0.48 ppb Percentiles: P_1 = 0.2 P_{10} = 0.2 Q_1 = 0.3 Median = 0.4 Q_3 = 0.5 P_{90} = 0.8 P_{99} = 1.8

Hours in Service:	720
Hours of Data:	682
Hours of Missing Data:	38
Hours of Calibration:	35
Percent Operational Time:	99.6

Day	Hourly Period Ending At (MST)																								Daily	Daily
	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24	Average	Maximum
1-Sep	0.8	0.7	1.1	1.7	1.9	Z	0.9	0.9	0.5	0.5	0.4	0.4	0.5	0.3	0.3	0.2	0.2	0.3	0.3	0.2	0.3	0.4	0.8	0.9	0.6	1.9
2-Sep	Z	0.3	0.3	0.3	0.3	0.6	1.2	0.9	0.4	0.4	0.4	0.6	0.3	0.3	0.2	0.3	0.3	0.3	0.3	0.3	0.5	0.4	0.4	0.5	0.4	1.2
3-Sep	0.4	Z	0.4	0.5	0.5	0.4	0.4	0.4	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	0.4	0.3	0.3	0.4	0.5
4-Sep	0.3	0.3	Z	0.4	0.5	0.5	0.5	0.6	0.7	0.4	0.3	0.2	0.3	0.2	0.2	0.2	0.2	0.2	0.2	0.3	0.5	0.5	0.8	0.6	0.4	0.8
5-Sep	0.4	0.5	0.4	Z	0.5	0.5	0.4	0.4	0.3	0.4	0.4	0.8	1.1	0.6	0.4	0.3	0.4	0.6	0.6	0.4	0.3	0.3	1.0	2.4	0.6	2.4
6-Sep	2.7	1.6	0.6	0.8	Z	1.1	1.8	0.7	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	0.8	0.9	0.6	0.7	2.7
7-Sep	0.6	0.7	0.5	0.4	0.4	Z	0.6	0.5	0.6	0.8	0.8	0.8	1.0	0.3	0.2	0.2	0.2	0.2	0.2	0.2	0.3	0.6	0.8	0.8	0.5	1.0
8-Sep	Z	0.4	0.3	0.3	0.3	0.3	0.5	0.6	0.5	0.4	1.4	1.8	1.6	1.1	0.7	0.4	0.3	0.4	1.1	1.6	1.8	1.2	0.8	0.7	0.8	1.8
9-Sep	0.6	Z	0.5	0.6	0.6	0.5	0.4	0.3	0.3	0.4	0.3	0.2	0.2	0.3	0.2	0.3	0.4	0.3	0.3	0.2	0.2	0.3	0.4	0.5	0.4	0.6
10-Sep	0.6	0.7	Z	0.5	0.5	0.4	0.6	0.3	0.3	0.2	0.2	0.3	0.2	0.2	0.2	0.2	0.2	0.3	0.3	0.3	0.4	0.5	0.5	0.4	0.4	0.7
11-Sep	0.3	0.3	0.3	Z	0.4	0.4	0.4	0.5	0.6	0.6	0.6	0.6	0.4	0.3	0.3	0.3	0.3	0.3	0.4	0.6	0.4	0.4	0.4	0.4	0.4	0.6
12-Sep	0.4	0.5	0.4	0.3	Z	0.6	2.0	1.0	0.7	0.8	0.7	0.6	0.4	0.4	0.4	0.4	0.5	0.4	0.5	0.5	0.8	0.4	0.5	0.4	0.6	2.0
13-Sep	0.5	0.3	0.4	0.4	0.3	Z	0.3	0.4	0.4	0.6	0.6	0.5	0.4	0.4	0.4	0.3	0.3	0.3	0.3	0.3	0.3	0.3	0.3	0.3	0.4	0.6
14-Sep	Z	0.3	0.3	0.3	0.3	0.3	0.3	0.3	0.6	0.5	0.4	0.3	0.3	0.4	0.2	0.2	0.2	0.2	0.3	0.3	0.5	0.5	0.4	0.3	0.3	0.6
15-Sep	0.5	Z	0.4	0.5	0.4	0.3	0.3	0.5	0.4	0.4	0.2	0.2	0.2	0.3	0.4	0.4	0.4	0.4	0.4	0.3	0.3	0.3	0.3	0.2	0.3	0.5
16-Sep	0.3	0.4	Z	0.9	1.3	1.2	0.4	C	C	C	C	C	0.4	0.4	0.4	0.4	0.5	0.4	0.5	0.5	0.5	0.4	0.5	0.4	0.5	1.3
17-Sep	0.4	0.4	0.4	Z	0.5	1.9	1.9	1.2	0.6	0.5	0.4	0.4	0.5	0.4	0.4	0.4	0.4	0.4	0.8	0.9	1.0	1.2	1.2	1.8	0.8	1.9
18-Sep	1.4	1.2	1.4	1.3	Z	1.4	1.5	1.0	0.6	0.7	0.4	0.5	0.5	0.4	0.3	0.3	0.3	0.3	0.3	0.4	0.3	0.3	0.3	0.3	0.7	1.5
19-Sep	0.5	0.5	0.4	0.3	0.3	Z	0.3	0.4	0.3	1.0	DF	DF	0.5	0.4	0.3	0.3	0.3	0.3	0.4	0.8	0.5	0.5	0.4	0.7	0.5	1.0
20-Sep	Z	0.6	0.7	1.0	1.0	0.8	0.8	0.7	0.6	0.4	0.4	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	0.4	1.0
21-Sep	0.3	Z	0.3	0.3	0.3	0.3	0.2	0.2	0.4	0.4	0.6	0.8	0.8	0.7	0.4	0.3	0.2	0.3	0.6	0.4	0.4	0.3	0.6	0.5	0.4	0.8
22-Sep	0.5	0.5	Z	0.6	0.9	0.4	0.4	0.4	0.3	0.2	0.2	0.2	0.1	0.1	0.2	DF	0.2	0.3	0.2	0.5	0.4	0.4	0.3	0.2	0.3	0.9
23-Sep	0.5	0.6	0.5	Z	0.2	0.3	0.4	0.3	0.3	0.3	0.4	0.5	0.3	0.2	0.3	0.3	0.6	0.5	0.3	0.6	0.4	0.6	0.6	0.7	0.4	0.7
24-Sep	0.7	0.5	0.3	0.3	Z	0.3	0.3	0.3	0.3	0.3	0.4	0.5	0.4	0.3	0.3	0.2	0.3	0.3	0.3	0.4	0.6	0.6	0.8	0.7	0.4	0.8
25-Sep	0.6	0.9	0.7	0.8	1.3	Z	1.2	1.6	1.4	1.6	1.6	1.9	1.4	0.7	0.5	0.4	0.3	0.3	0.3	0.3	0.3	0.4	0.7	0.7	0.9	1.9
26-Sep	Z	0.5	0.5	0.7	0.6	0.3	0.3	0.4	0.4	0.3	0.3	0.2	0.2	0.2	0.2	0.2	0.2	0.3	0.3	0.2	0.4	0.8	0.4	0.4	0.4	0.8
27-Sep	0.3	Z	0.2	0.4	0.5	0.6	0.6	0.5	0.3	0.4	0.3	0.2	0.2	0.2	0.2	0.2	0.2	0.2	0.2	0.2	0.3	0.2	0.2	0.2	0.3	0.6
28-Sep	0.2	0.2	Z	0.2	1.2	0.4	0.2	0.3	0.3	0.3	0.3	0.2	0.2	0.2	0.2	0.2	0.2	0.2	0.2	0.3	0.3	0.4	0.4	0.3	0.3	1.2
29-Sep	0.4	0.4	0.3	Z	0.6	0.7	0.6	0.8	1.1	1.0	0.9	0.8	0.6	0.4	0.2	0.2	0.2	0.2	0.2	0.2	0.2	0.2	0.2	0.2	0.5	1.1
30-Sep	0.2	0.2	0.2	0.9	Z	0.2	0.5	0.3	0.4	0.3	0.4	0.3	0.3	0.2	0.2	0.2	0.2	0.2	0.2	0.3	0.2	0.3	0.4	0.4	0.3	0.9
	0.6	0.5	0.5	0.6	0.6	0.6	0.7	0.6	0.5	0.5	0.5	0.5	0.5	0.4	0.3	0.3	0.3	0.3	0.4	0.4	0.4	0.5	0.5	0.6	Diurnal Average	
	2.7	1.6	1.4	1.7	1.9	1.9	2.0	1.6	1.4	1.6	1.6	1.9	1.6	1.1	0.7	0.4	0.6	0.6	1.1	1.6	1.8	1.2	1.2	2.4	Diurnal Maximum	

Z - zerospan C - Calibration DF - DAS Failure

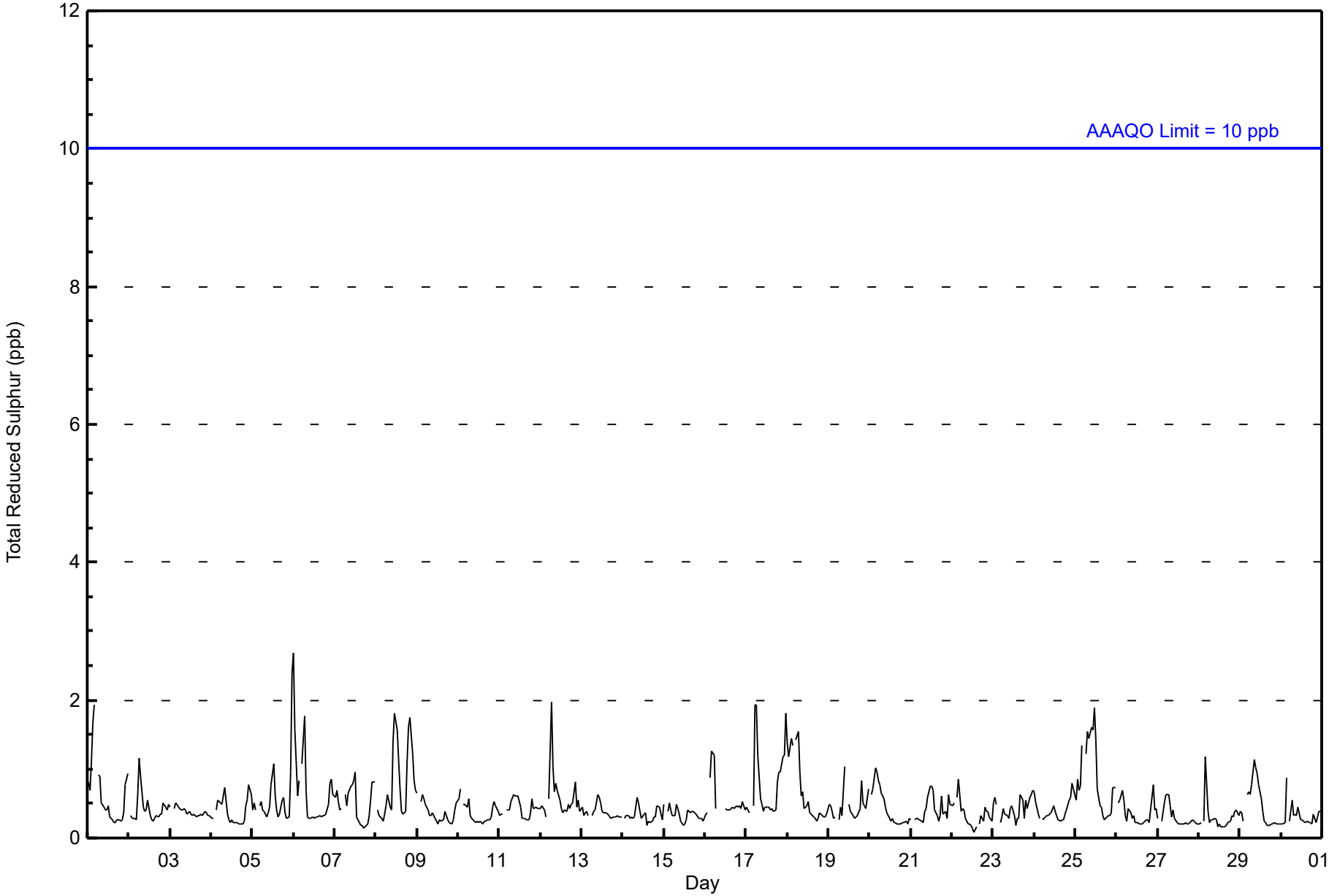
Alberta Ambient Air Quality Objectives (AAAQO): 1-hr 10 ppb 24-hr 3 ppb

Wood Buffalo Environmental Association

Hourly Averages

Total Reduced Sulphur (TRS) - ppb

Fort Hills - September 2024



Concentration Ranges (ppb)	Number of Hours	%	Cumulative %
0 - 2	681	99.85	99.85
3 - 4	1	0.15	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: 682

Total Number of Hours: 720

Wood Buffalo Environmental Association

Frequency Distribution

Total Reduced Sulphur (TRS) - ppb

Fort Hills - September 2024

Concentration Ranges (ppb)	Wind Direction																
	N	NNE	NE	ENE	E	ESE	SE	SSE	S	SSW	SW	WSW	W	WNW	NW	NNW	**Totals**
0 - 2	77	40	8	3	4	10	22	100	76	63	63	36	36	46	35	62	681
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	77	40	8	3	4	10	22	100	77	63	63	36	36	46	35	62	682

Total Number of Valid Hours: 682

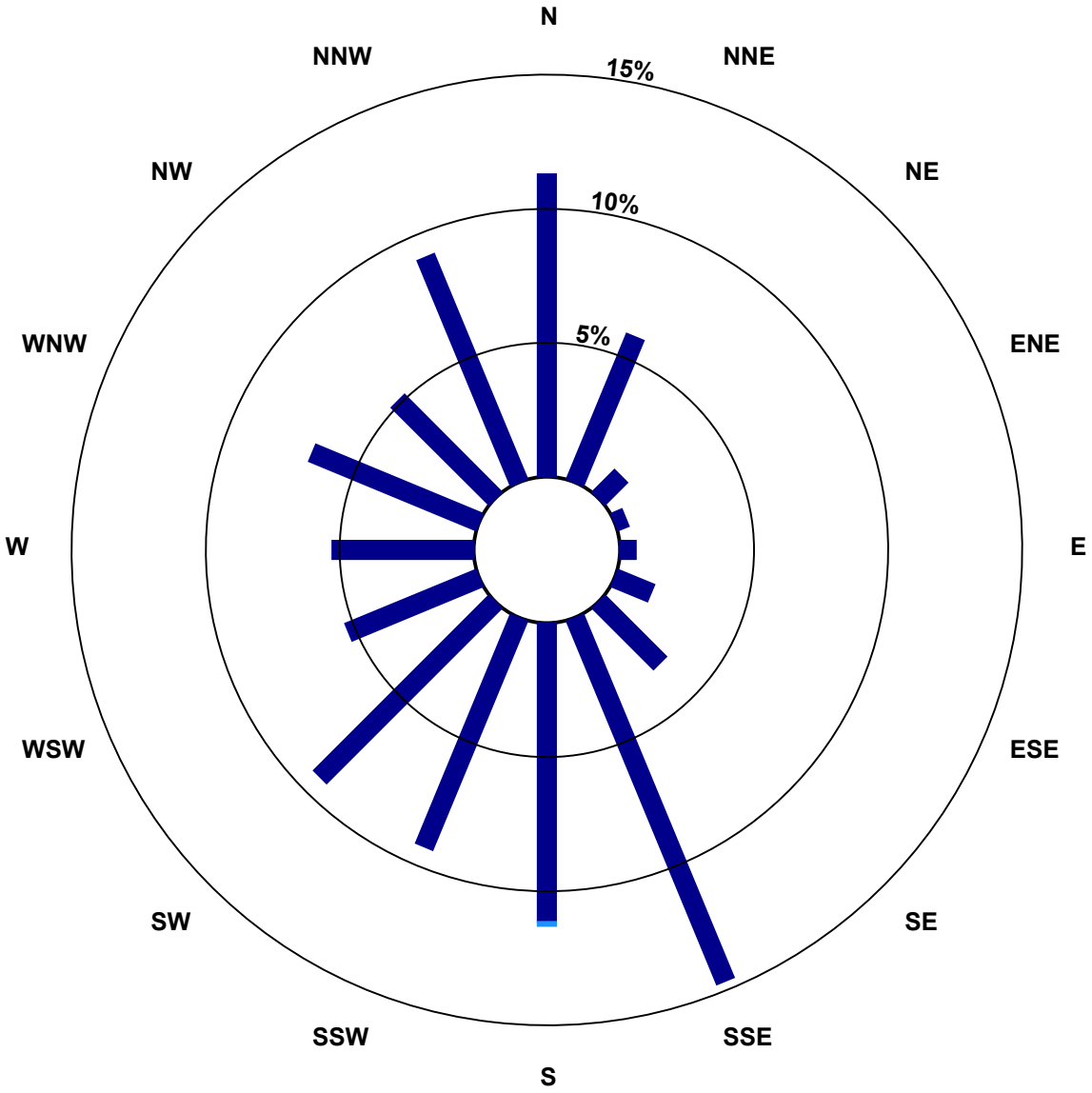
Total Number of Hours: 720

Wood Buffalo Environmental Association

Wind Rose Sep 2024

Total Reduced Sulphur (TRS) - ppb

Fort Hills



Classes (ppb)

0 - 2

3 - 4

5 - 7

8 - 11

> 11

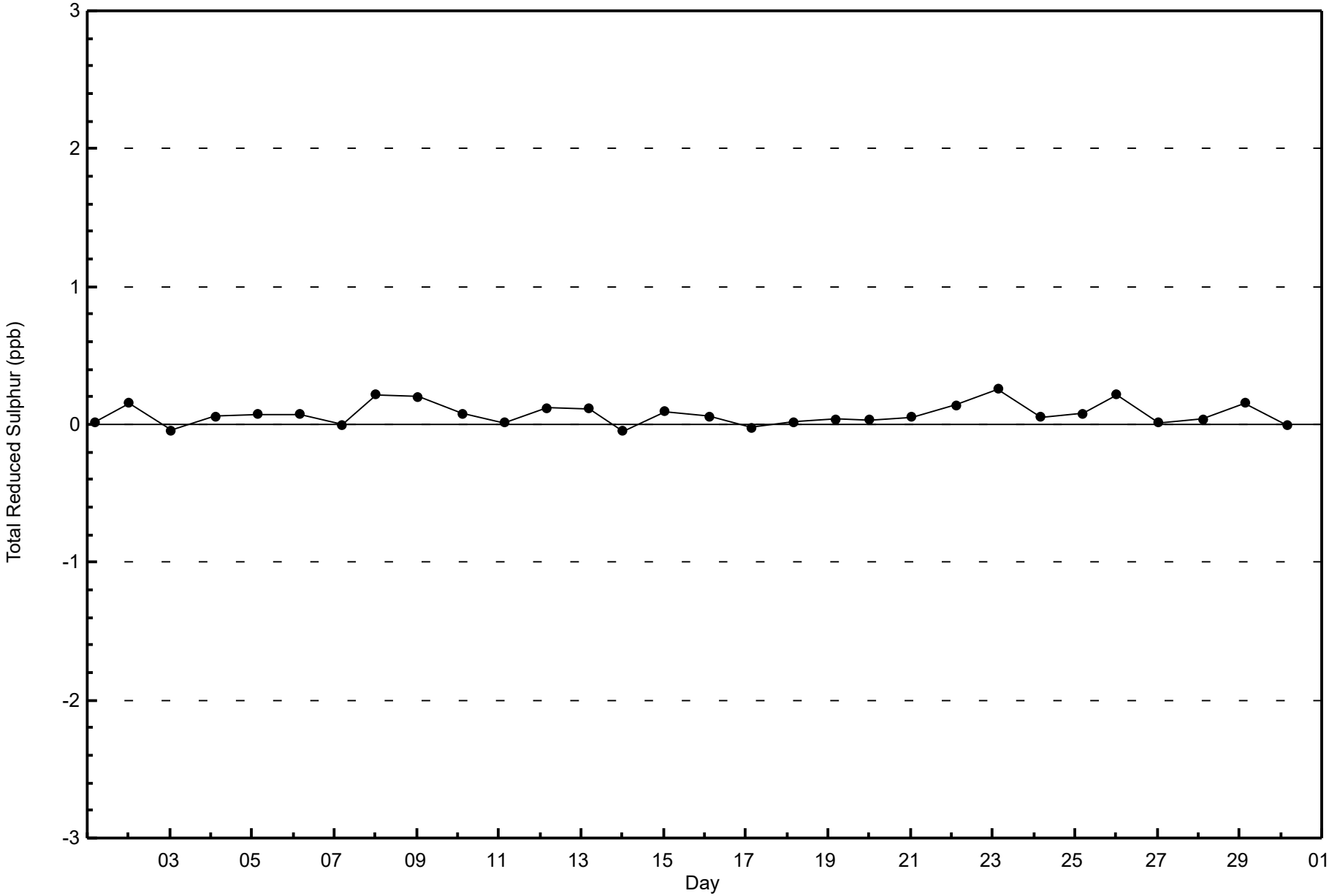
Total Number of Valid Hours: 682

Wood Buffalo Environmental Association

Zero Responses

Total Reduced Sulphur (TRS) - ppb

Fort Hills - September 2024

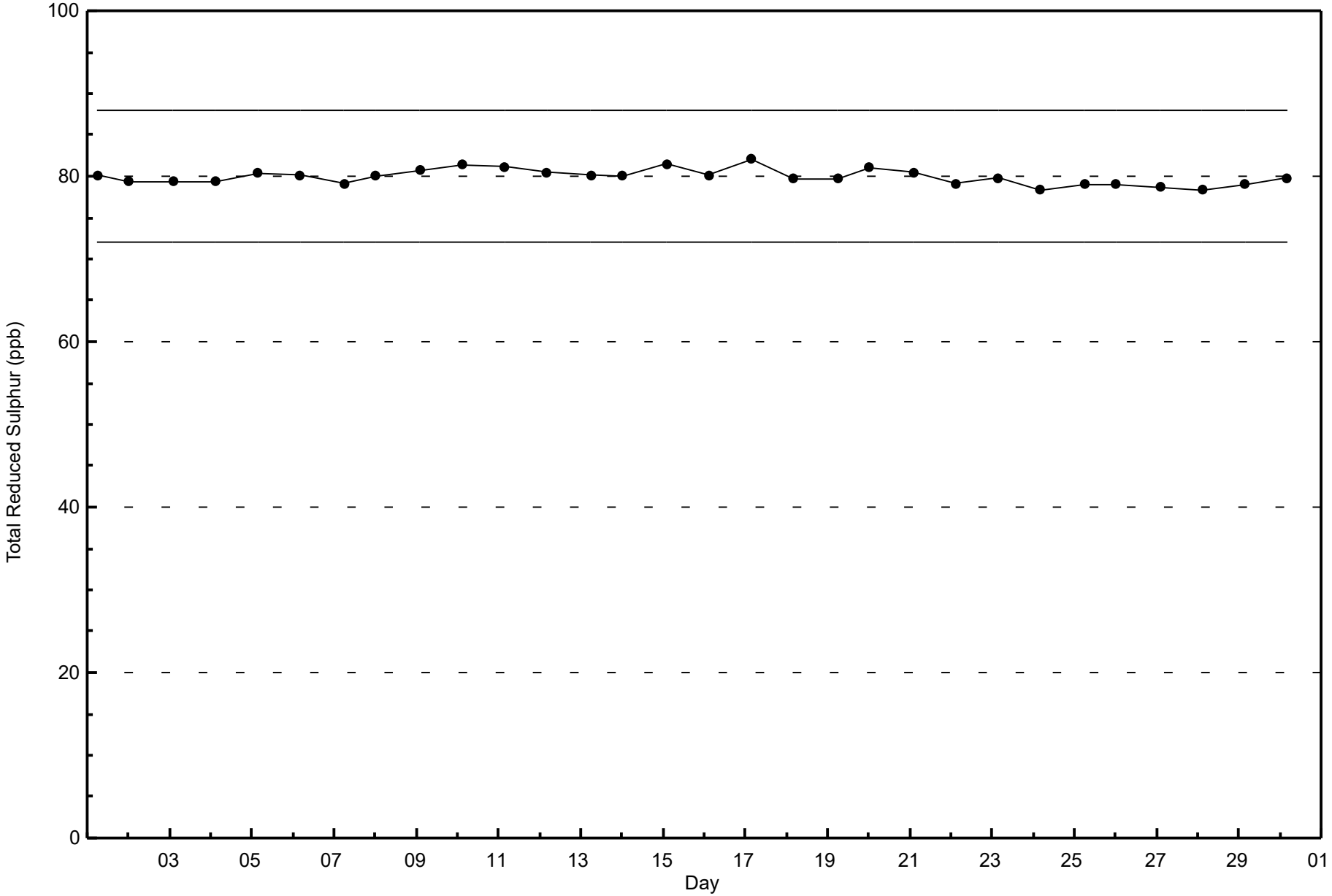


Wood Buffalo Environmental Association

Span Responses

Total Reduced Sulphur (TRS) - ppb

Fort Hills - September 2024



Wood Buffalo Environmental Association

Summary of Hour Averages

Total Hydrocarbons (THC) - ppm

Fort Hills - September 2024

Number of Exceedences (AAAQO): 1-hr: 0 24-hr: 0

Maximum Value: 4.7 ppm on Sep 23 01:00

Maximum Daily Average: 2.7 ppm on Sep 8

Minimum Value: 1.9 ppm on Sep 2 20:00

Minimum Daily Average: 2.1 ppm on Sep 30

Maximum Diurnal Average: 2.7 ppm at hour 1

Minimum Diurnal Average: 2.1 ppm at hour 14

Monthly Average: 2.37 ppm

Percentiles: P_1 = 2.0 P_{10} = 2.0 Q_1 = 2.0 Median = 2.2 Q_3 = 2.5 P_{90} = 3.0 P_{99} = 3.9

Hours in Service:	720
Hours of Data:	555
Hours of Missing Data:	165
Hours of Calibration:	35
Percent Operational Time:	81.9

Day	Hourly Period Ending At (MST)																								Daily	Daily
	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24	Average	Maximum
1-Sep	2.6	2.0	2.1	2.1	Z	2.2	2.3	2.5	2.2	2.2	2.2	2.2	2.1	2.0	2.0	1.9	2.0	2.2	2.1	2.0	1.9	2.4	3.3	3.9	2.3	3.9
2-Sep	2.9	2.1	2.0	2.0	2.0	Z	2.6	2.5	2.2	2.2	2.1	2.2	2.0	1.9	1.9	2.0	2.2	2.1	2.0	1.9	2.3	2.1	2.0	2.3	2.2	2.9
3-Sep	Z	2.2	2.0	2.3	2.0	2.0	UO	UO	2.3	2.0	UO	UO	UO	UO	UO	UO	UO	UO	UO	2.2	2.0	UO	2.3	UO	--	2.3
4-Sep	UO	Z	UO	UO	3.4	UO	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	2.8	2.9	3.4	3.0	--	3.4
5-Sep	2.7	2.9	Z	2.2	3.1	3.2	2.3	2.5	2.2	2.1	2.1	2.1	2.1	2.1	2.0	2.0	2.1	2.4	2.6	2.3	2.2	2.1	2.1	2.3	2.3	3.2
6-Sep	2.3	2.2	2.2	Z	2.1	2.2	2.3	2.4	2.1	2.1	2.1	2.1	2.1	2.0	2.0	2.0	2.0	2.0	2.1	2.2	3.2	3.9	3.5	2.8	2.3	3.9
7-Sep	2.9	3.7	2.5	2.1	Z	2.2	2.4	2.3	2.5	2.5	2.4	2.4	2.4	2.2	2.1	2.0	2.0	2.0	2.0	2.2	2.8	3.1	3.9	3.9	2.5	3.9
8-Sep	3.4	2.8	2.0	2.0	2.0	Z	2.3	2.5	2.4	2.3	3.3	3.5	2.6	2.3	2.3	2.2	2.2	2.4	4.7	4.3	3.4	3.0	2.8	2.4	2.7	4.7
9-Sep	Z	2.8	3.0	2.5	2.4	2.5	2.3	2.3	2.3	2.2	2.2	2.1	2.0	2.1	2.1	2.1	2.1	2.0	2.0	2.0	2.0	2.1	2.8	2.9	2.3	3.0
10-Sep	2.9	Z	2.6	2.7	2.7	2.6	3.0	2.1	2.1	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.2	3.0	2.8	2.5	2.5	2.3	3.0
11-Sep	2.1	2.3	Z	3.2	2.7	2.6	2.6	2.7	3.3	3.4	3.0	2.8	2.4	2.1	2.1	2.1	2.2	2.3	2.9	3.6	2.5	2.8	2.5	2.7	2.6	3.6
12-Sep	2.6	2.6	2.3	Z	2.7	2.2	2.3	2.3	2.5	2.8	2.8	2.5	2.4	2.3	2.2	2.3	2.4	2.4	2.5	2.8	3.2	2.5	2.9	2.6	2.5	3.2
13-Sep	2.8	2.5	2.8	3.2	Z	3.0	2.9	2.6	2.5	3.0	2.8	2.4	2.1	2.2	2.3	2.3	2.1	2.1	2.1	2.1	2.0	2.0	2.0	2.1	2.4	3.2
14-Sep	2.1	2.1	2.0	2.0	2.0	Z	2.1	2.2	3.4	2.5	2.0	2.0	2.1	2.2	2.0	2.0	2.0	2.0	2.7	2.4	2.6	3.0	2.5	2.2	2.3	3.4
15-Sep	Z	3.9	3.5	2.6	2.2	2.2	2.3	2.9	2.4	2.4	2.1	2.0	2.0	2.1	2.4	2.5	2.5	2.5	2.3	2.6	2.1	2.0	2.1	2.0	2.4	3.9
16-Sep	2.4	Z	2.4	2.3	2.3	2.4	2.2	M	2.0	2.0	2.0	2.0	2.1	2.0	2.0	1.9	2.1	2.1	2.3	2.0	2.9	2.2	3.0	2.1	2.2	3.0
17-Sep	2.1	2.0	Z	2.0	2.1	2.3	UO	2.5	UO	UO	UO	2.0	UO	2.0	UO	UO	UO	UO	UO	3.0	UO	UO	3.1	3.5	--	3.5
18-Sep	2.2	UO	UO	Z	UO	UO	M	M	M	2.6	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	2.6	--	2.6
19-Sep	3.7	3.6	2.6	2.1	Z	2.1	2.1	2.1	2.1	2.8	DF	DF	2.2	2.0	2.0	2.0	2.0	2.0	2.8	2.8	2.8	2.4	2.6	3.3	2.5	3.7
20-Sep	3.1	3.5	3.6	3.4	3.2	Z	UO	UO	UO	UO	UO	UO	UO	UO	UO	UO	UO	UO	UO	UO	UO	UO	UO	UO	--	3.6
21-Sep	Z	UO	UO	UO	UO	UO	UO	UO	UO	UO	UO	UO	UO	UO	UO	UO	UO	UO	UO	UO	UO	UO	UO	UO	--	--
22-Sep	UO	Z	UO	UO	UO	UO	UO	2.0	UO	UO	M	M	M	M	M	DF	2.4	2.5	2.4	3.1	2.8	2.5	2.4	2.5	--	3.1
23-Sep	4.7	4.0	Z	2.3	2.3	2.2	2.6	2.5	2.5	M	M	M	M	2.2	2.4	2.3	2.5	2.3	2.2	2.2	2.2	2.3	2.3	2.3	2.5	4.7
24-Sep	2.3	2.3	2.2	Z	UO	UO	UO	UO	UO	UO	UO	UO	UO	UO	UO	UO	UO	UO	UO	UO	UO	UO	UO	UO	--	2.3
25-Sep	UO	UO	UO	UO	UO	UO	UO	UO	UO	UO	UO	UO	C	C	C	2.2	2.1	2.1	2.1	2.1	2.3	3.0	3.5	3.3	--	3.5
26-Sep	3.0	3.4	2.7	3.1	2.3	Z	2.2	2.5	2.5	2.1	2.1	2.0	2.0	2.0	2.0	2.0	2.1	2.1	2.1	2.1	2.7	3.3	2.8	2.6	2.4	3.4
27-Sep	Z	2.0	2.1	2.4	2.5	2.4	2.3	2.4	2.3	2.8	2.3	2.0	2.0	2.1	2.1	2.1	2.2	2.0	2.0	2.0	2.1	2.1	2.0	2.0	2.2	2.8
28-Sep	2.0	Z	2.2	2.3	2.0	2.0	2.0	2.1	2.1	2.2	2.1	2.0	2.0	2.0	2.1	2.0	2.0	2.1	2.3	2.6	2.6	2.7	2.8	2.5	2.2	2.8
29-Sep	2.7	2.4	Z	2.2	3.3	3.5	3.1	3.1	3.1	2.5	2.6	2.4	2.2	2.2	2.0	2.0	2.0	2.0	2.0	2.1	2.0	2.0	2.1	2.0	2.4	3.5
30-Sep	2.0	2.0	2.0	Z	2.1	2.0	2.0	2.0	2.2	2.1	2.2	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.1	2.1	2.1	2.5	2.3	2.1	2.5
	2.7	2.7	2.5	2.4	2.5	2.4	2.4	2.4	2.4	2.4	2.3	2.2	2.1	2.1	2.1	2.1	2.1	2.2	2.3	2.4	2.5	2.5	2.6	2.6	Diurnal Average	
	4.7	4.0	3.6	3.4	3.4	3.5	3.1	3.1	3.4	3.4	3.3	3.5	2.6	2.3	2.4	2.5	2.5	2.5	4.7	4.3	3.4	3.9	3.9	3.9	Diurnal Maximum	

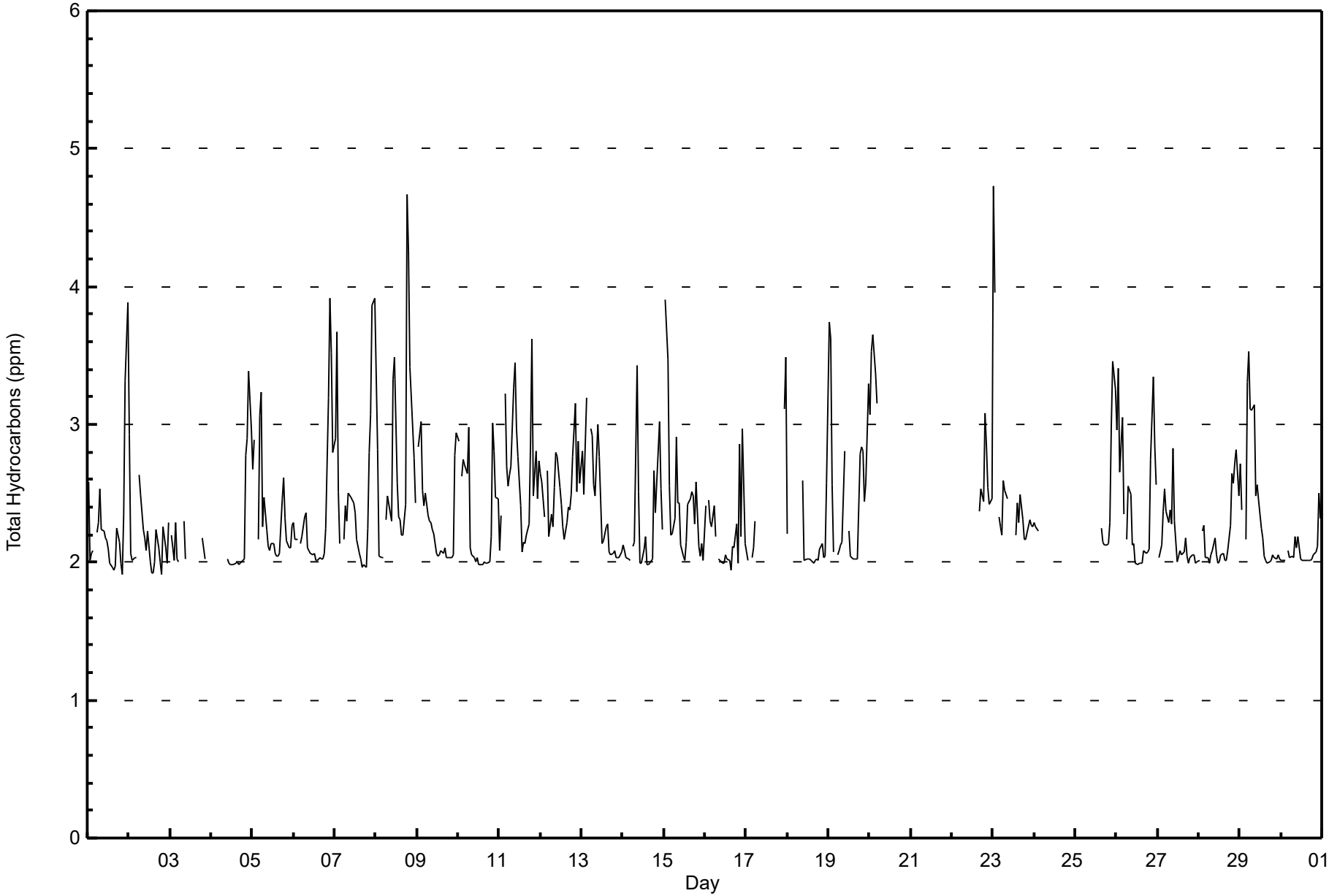
Z - zerospan C - Calibration M - Maintenance DF - DAS Failure UO - Unstable Operation

Wood Buffalo Environmental Association

Hourly Averages

Total Hydrocarbons (THC) - ppm

Fort Hills - September 2024



Concentration Ranges (ppm)	Number of Hours	%	Cumulative %
0 - 2.0	151	27.21	27.21
2.1 - 3.0	353	63.60	90.81
3.1 - 10.0	51	9.19	100.00
> 10.0	0	0.00	100.00

Total Number of Valid Hours: 555

Total Number of Hours: 720

Wood Buffalo Environmental Association

Frequency Distribution

Total Hydrocarbons (THC) - ppm

Fort Hills - September 2024

Concentration Ranges (ppm)	Wind Direction																
	N	NNE	NE	ENE	E	ESE	SE	SSE	S	SSW	SW	WSW	W	WNW	NW	NNW	**Totals**
0 - 2.0	6	2	0	0	2	0	2	13	10	17	17	9	20	29	15	9	151
2.1 - 3.0	42	23	5	3	2	9	10	58	48	26	38	23	12	8	13	33	353
3.1 - 10.0	12	5	0	0	0	0	1	5	4	7	4	1	2	1	0	9	51
> 10.0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Totals	60	30	5	3	4	9	13	76	62	50	59	33	34	38	28	51	555

Total Number of Valid Hours: 555

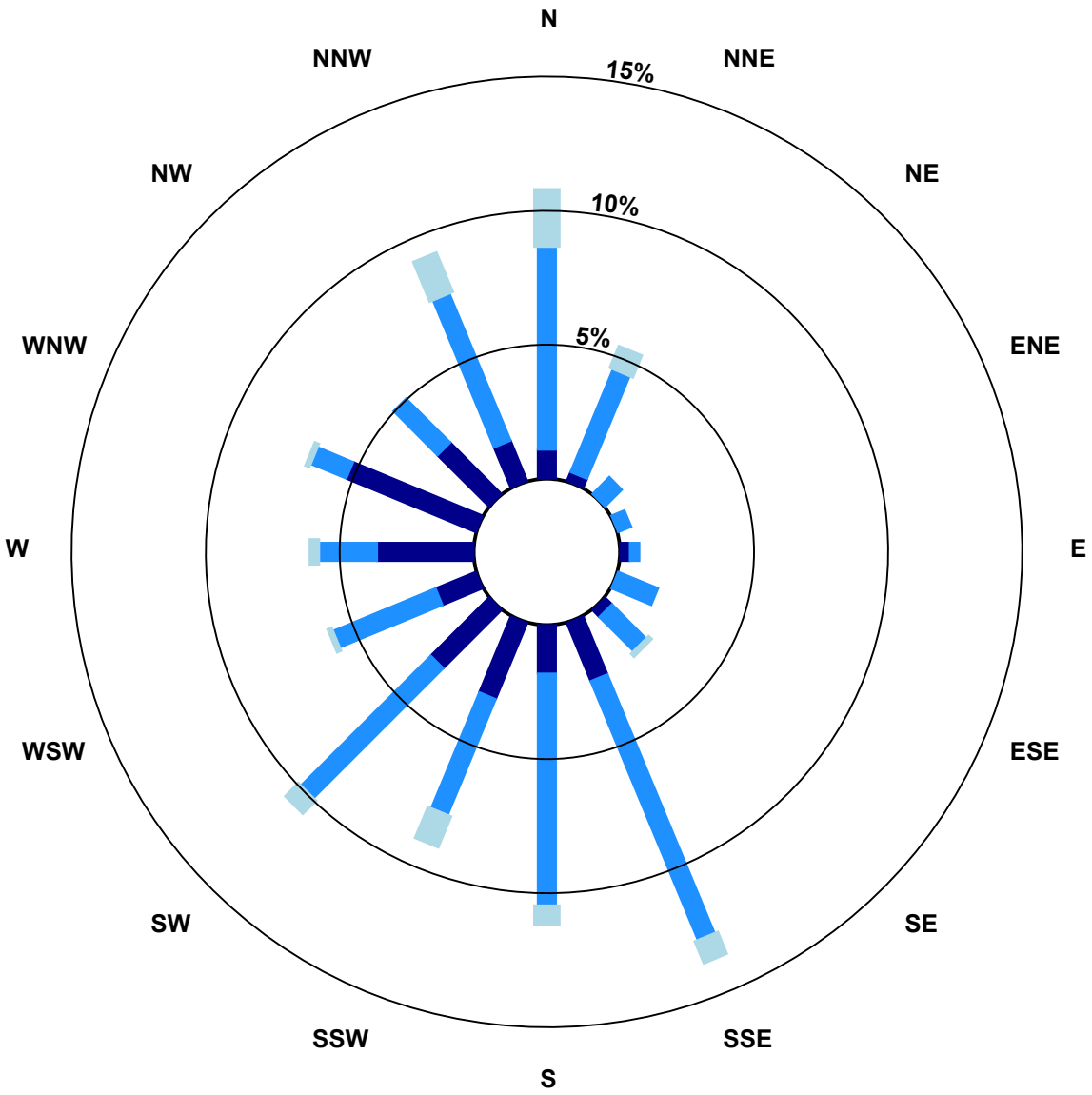
Total Number of Hours: 720

Wood Buffalo Environmental Association

Wind Rose Sep 2024

Total Hydrocarbons (THC) - ppm

Fort Hills



Classes (ppm)

0 - 2.0

2.1 - 3.0

3.1 - 10.0

> 10.0

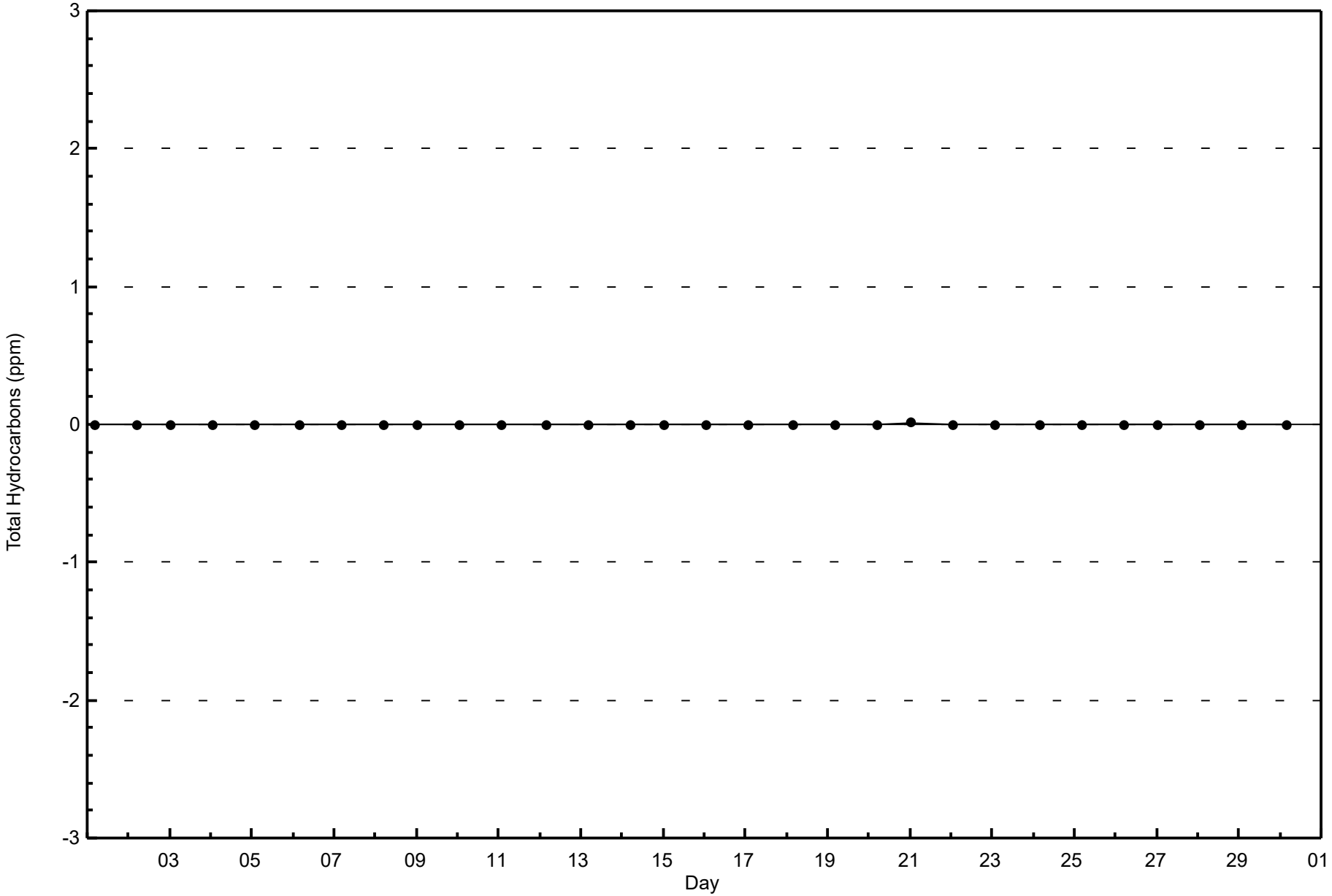
Total Number of Valid Hours: 555

Wood Buffalo Environmental Association

Zero Responses

Total Hydrocarbons (THC) - ppm

Fort Hills - September 2024

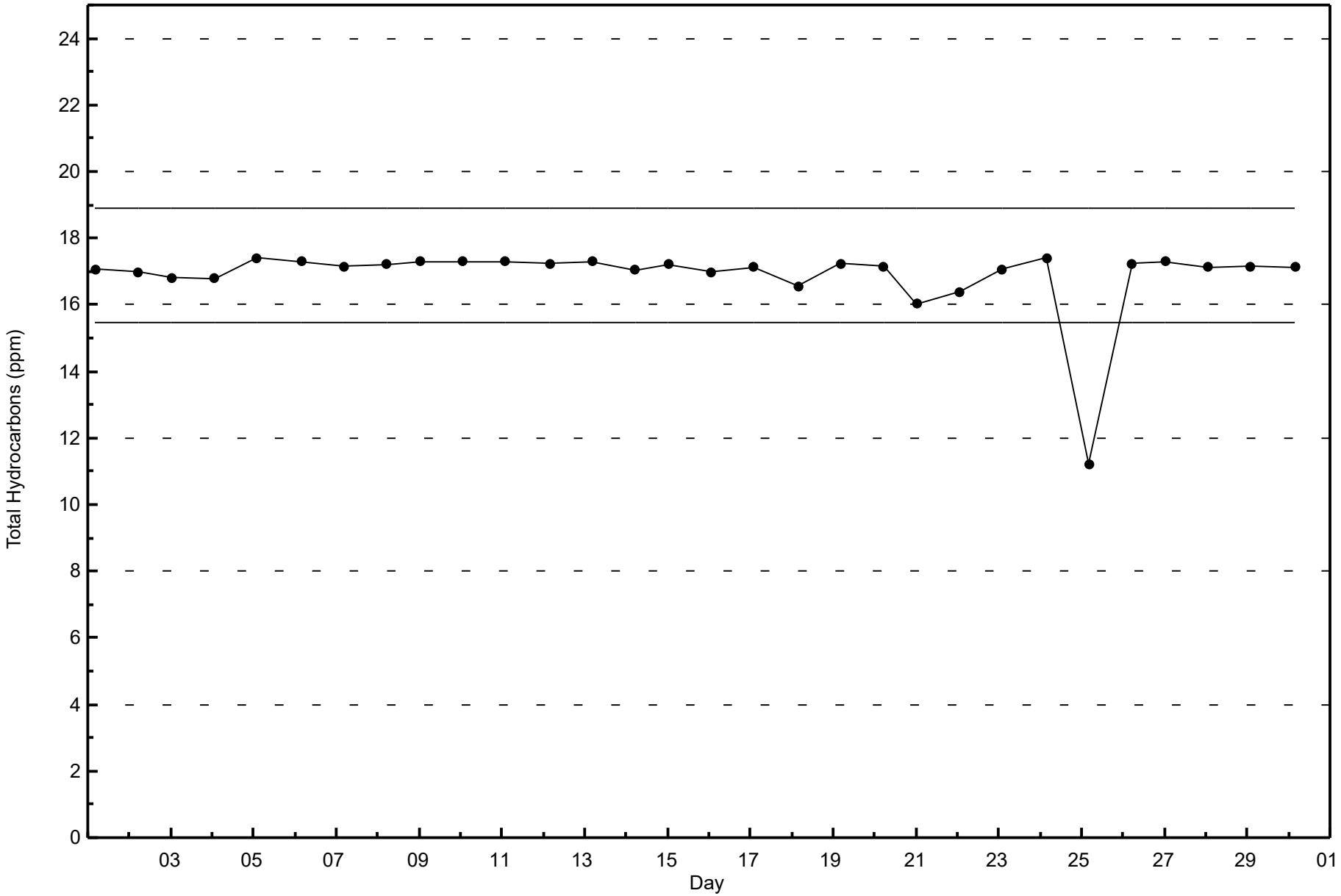


Wood Buffalo Environmental Association

Span Responses

Total Hydrocarbons (THC) - ppm

Fort Hills - September 2024



Wood Buffalo Environmental Association

Summary of Hour Averages

Non Methane Hydrocarbons (NMHC) - ppm

Fort Hills - September 2024

Maximum Value: 1.641 ppm on Sep 8 19:00

Maximum Daily Average: 0.383 ppm on Sep 8

Minimum Value: 0.000 ppm on Sep 1 16:00

Minimum Daily Average: 0.001 ppm on Sep 27

Maximum Diurnal Average: 0.247 ppm at hour 1

Minimum Diurnal Average: 0.032 ppm at hour 14

Monthly Average: 0.136 ppm

Percentiles: P_1 = 0.0 P_{10} = 0.0 Q_1 = 0.0 Median = 0.0 Q_3 = 0.2 P_{90} = 0.4 P_{99} = 0.8

Hours in Service:	720
Hours of Data:	555
Hours of Missing Data:	165
Hours of Calibration:	35
Percent Operational Time:	81.9

Day	Hourly Period Ending At (MST)																								Daily	Daily
	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24	Average	Maximum
1-Sep	0.507	0.009	0.007	0.001	Z	0.056	0.117	0.323	0.121	0.105	0.065	0.060	0.049	0.003	0.001	0.000	0.009	0.108	0.067	0.025	0.000	0.123	0.416	0.510	0.117	0.510
2-Sep	0.255	0.003	0.000	0.000	0.000	Z	0.239	0.186	0.063	0.030	0.030	0.131	0.020	0.000	0.000	0.011	0.114	0.114	0.037	0.000	0.244	0.117	0.029	0.241	0.081	0.255
3-Sep	Z	0.159	0.051	0.183	0.034	0.010	UO	UO	0.216	0.050	UO	UO	UO	UO	UO	UO	UO	UO	UO	0.186	0.012	UO	0.157	UO	--	0.216
4-Sep	UO	Z	UO	UO	0.234	UO	C	C	C	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.006	0.307	0.438	0.537	0.295	--	0.537
5-Sep	0.452	0.503	Z	0.000	0.179	0.248	0.044	0.136	0.120	0.005	0.000	0.009	0.015	0.000	0.000	0.000	0.002	0.301	0.405	0.203	0.051	0.000	0.016	0.146	0.123	0.503
6-Sep	0.153	0.030	0.006	Z	0.000	0.000	0.154	0.132	0.000	0.000	0.000	0.000	0.012	0.014	0.012	0.040	0.038	0.023	0.040	0.077	0.255	0.477	0.359	0.225	0.089	0.477
7-Sep	0.265	0.440	0.154	0.021	Z	0.043	0.149	0.073	0.196	0.216	0.224	0.199	0.171	0.075	0.018	0.001	0.000	0.008	0.010	0.078	0.369	0.488	0.577	0.458	0.184	0.577
8-Sep	0.374	0.227	0.004	0.001	0.000	Z	0.132	0.197	0.133	0.113	0.681	1.086	0.305	0.154	0.135	0.083	0.079	0.238	1.641	1.436	0.748	0.508	0.342	0.203	0.383	1.641
9-Sep	Z	0.505	0.570	0.266	0.195	0.274	0.122	0.113	0.136	0.107	0.097	0.000	0.000	0.023	0.060	0.030	0.036	0.018	0.000	0.000	0.000	0.011	0.242	0.250	0.133	0.570
10-Sep	0.294	Z	0.188	0.197	0.173	0.157	0.166	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.090	0.458	0.448	0.155	0.112	0.106	0.458
11-Sep	0.002	0.050	Z	0.398	0.199	0.120	0.136	0.239	0.493	0.872	0.544	0.381	0.223	0.021	0.075	0.051	0.116	0.187	0.566	0.946	0.384	0.398	0.189	0.278	0.299	0.946
12-Sep	0.290	0.247	0.116	Z	0.235	0.011	0.135	0.079	0.121	0.399	0.348	0.263	0.254	0.168	0.075	0.134	0.197	0.149	0.285	0.517	0.505	0.229	0.403	0.229	0.234	0.517
13-Sep	0.353	0.207	0.368	0.390	Z	0.356	0.328	0.161	0.139	0.389	0.331	0.214	0.041	0.046	0.131	0.125	0.011	0.000	0.000	0.004	0.000	0.000	0.000	0.000	0.156	0.390
14-Sep	0.000	0.000	0.000	0.000	0.000	Z	0.001	0.006	0.392	0.250	0.004	0.004	0.005	0.059	0.000	0.000	0.000	0.000	0.419	0.226	0.316	0.411	0.179	0.078	0.102	0.419
15-Sep	Z	0.623	0.431	0.150	0.000	0.009	0.064	0.272	0.141	0.232	0.063	0.004	0.000	0.090	0.304	0.334	0.345	0.291	0.226	0.340	0.050	0.006	0.022	0.000	0.174	0.623
16-Sep	0.192	Z	0.227	0.157	0.134	0.177	0.046	M	0.000	0.000	0.000	0.000	0.004	0.000	0.000	0.000	0.000	0.000	0.033	0.000	0.143	0.007	0.155	0.004	0.058	0.227
17-Sep	0.000	0.000	Z	0.000	0.022	0.154	UO	0.289	UO	UO	UO	0.019	UO	0.022	UO	UO	UO	UO	UO	0.599	UO	UO	0.568	0.681	--	0.681
18-Sep	0.158	UO	UO	Z	UO	UO	M	M	M	0.229	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.003	0.025	0.000	0.000	0.125	--	0.229
19-Sep	0.335	0.302	0.124	0.000	Z	0.000	0.000	0.000	0.000	0.308	DF	DF	0.069	0.000	0.000	0.000	0.000	0.000	0.503	0.618	0.574	0.198	0.309	0.428	0.179	0.618
20-Sep	0.401	0.593	0.590	0.510	0.430	Z	UO	UO	UO	UO	UO	UO	UO	UO	UO	UO	UO	UO	UO	UO	UO	UO	UO	UO	--	0.593
21-Sep	Z	UO	UO	UO	UO	UO	UO	UO	UO	UO	UO	UO	UO	UO	UO	UO	UO	UO	UO	UO	UO	UO	UO	UO	--	--
22-Sep	UO	Z	UO	UO	UO	UO	UO	0.034	UO	UO	M	M	M	M	M	DF	0.234	0.314	0.229	0.505	0.368	0.222	0.161	0.194	--	0.505
23-Sep	0.959	0.796	Z	0.098	0.054	0.031	0.301	0.221	0.156	M	M	M	M	0.047	0.202	0.129	0.218	0.114	0.018	0.018	0.063	0.134	0.112	0.089	0.198	0.959
24-Sep	0.084	0.041	0.017	Z	UO	UO	UO	UO	UO	UO	UO	UO	UO	UO	UO	UO	UO	UO	UO	UO	UO	UO	UO	UO	--	0.084
25-Sep	UO	UO	UO	UO	UO	UO	UO	UO	UO	UO	UO	UO	C	C	C	0.002	0.000	0.000	0.000	0.000	0.005	0.061	0.160	0.206	--	0.206
26-Sep	0.091	0.192	0.223	0.259	0.035	Z	0.006	0.003	0.113	0.049	0.002	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.009	0.035	0.019	0.003	0.003	0.045	0.259
27-Sep	Z	0.000	0.000	0.000	0.011	0.002	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	0.001	0.011
28-Sep	0.000	Z	0.000	0.000	0.003	0.002	0.000	0.006	0.000	0.001	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.051	0.260	0.198	0.230	0.242	0.094	0.047	0.260
29-Sep	0.273	0.120	Z	0.000	0.421	0.403	0.263	0.349	0.336	0.211	0.237	0.204	0.088	0.050	0.014	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.129	0.421
30-Sep	0.000	0.000	0.000	Z	0.003	0.000	0.000	0.000	0.000	0.000	0.018	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.263	0.053	0.015	0.263
	0.247	0.229	0.154	0.125	0.112	0.108	0.114	0.128	0.131	0.155	0.126	0.117	0.057	0.032	0.045	0.039	0.056	0.075	0.181	0.228	0.197	0.181	0.207	0.188	Diurnal Average	
	0.959	0.796	0.590	0.510	0.430	0.403	0.328	0.349	0.493	0.872	0.681	1.086	0.305	0.168	0.304	0.334	0.345	0.314	1.641	1.436	0.748	0.508	0.577	0.681	Diurnal Maximum	

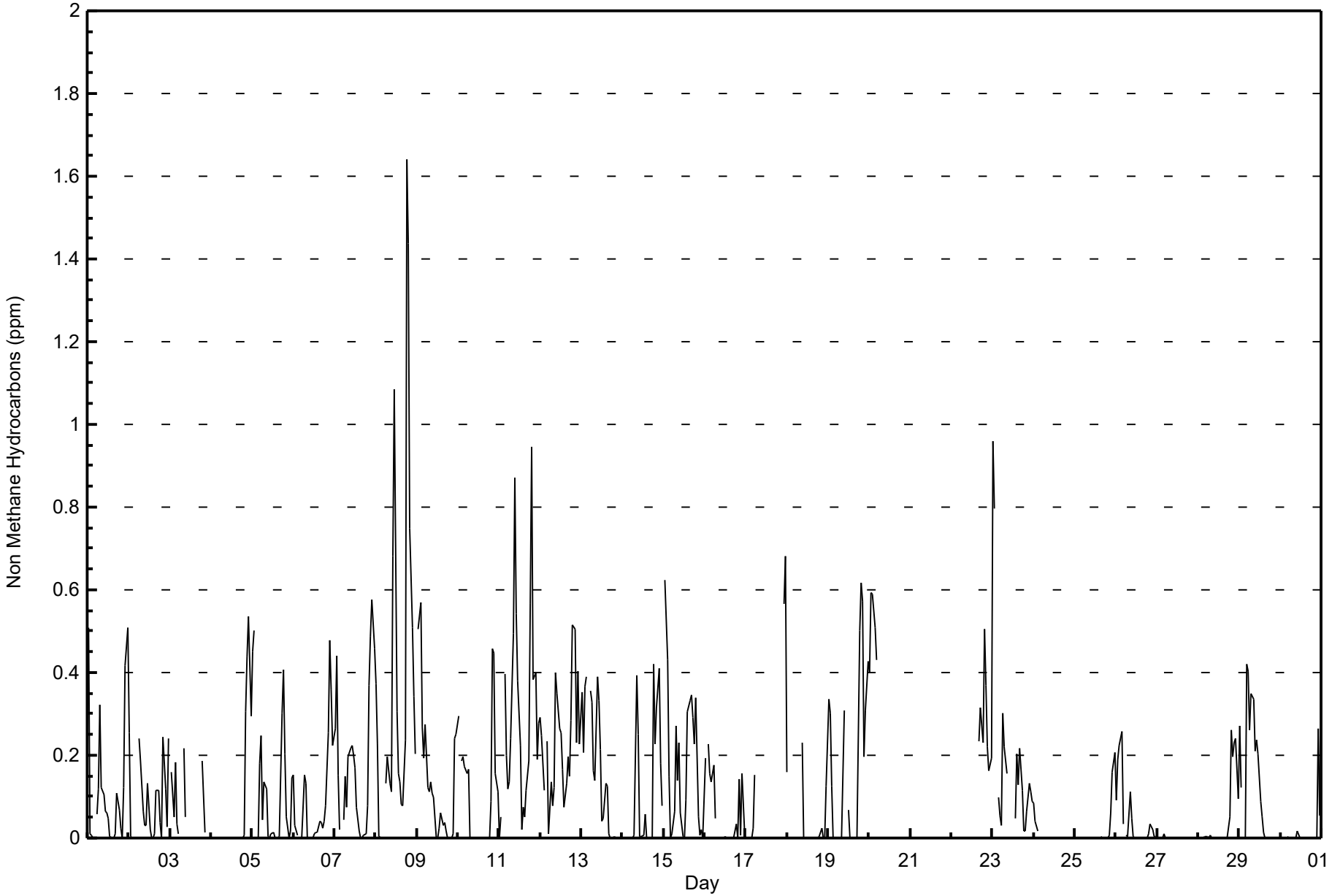
Z - zerospan C - Calibration M - Maintenance DF - DAS Failure UO - Unstable Operation

Wood Buffalo Environmental Association

Hourly Averages

Non Methane Hydrocarbons (NMHC) - ppm

Fort Hills - September 2024



Wood Buffalo Environmental Association

Cumulative Frequency Distribution

Non Methane Hydrocarbons (NMHC) - ppm

Fort Hills - September 2024

Concentration Ranges (ppm)	Number of Hours	%	Cumulative %
0 - 0.005	206	37.12	37.12
0.006 - 0.05	81	14.59	51.71
0.06 - 0.1	76	13.69	65.41
> 0.1	192	34.59	100.00

Total Number of Valid Hours: 555

Total Number of Hours: 720

Wood Buffalo Environmental Association

Frequency Distribution

Non Methane Hydrocarbons (NMHC) - ppm

Fort Hills - September 2024

Concentration Ranges (ppm)	Wind Direction																
	N	NNE	NE	ENE	E	ESE	SE	SSE	S	SSW	SW	WSW	W	WNW	NW	NNW	**Totals**
0 - 0.005	8	0	0	0	2	1	3	24	19	22	30	17	22	32	16	10	206
0.006 - 0.05	7	2	0	0	0	1	1	16	13	11	5	8	4	3	5	5	81
0.06 - 0.1	3	6	0	0	1	0	2	17	14	4	10	2	5	0	2	10	76
> 0.1	42	22	5	3	1	7	7	19	16	13	14	6	3	3	5	26	192
Totals	60	30	5	3	4	9	13	76	62	50	59	33	34	38	28	51	555

Total Number of Valid Hours: 555

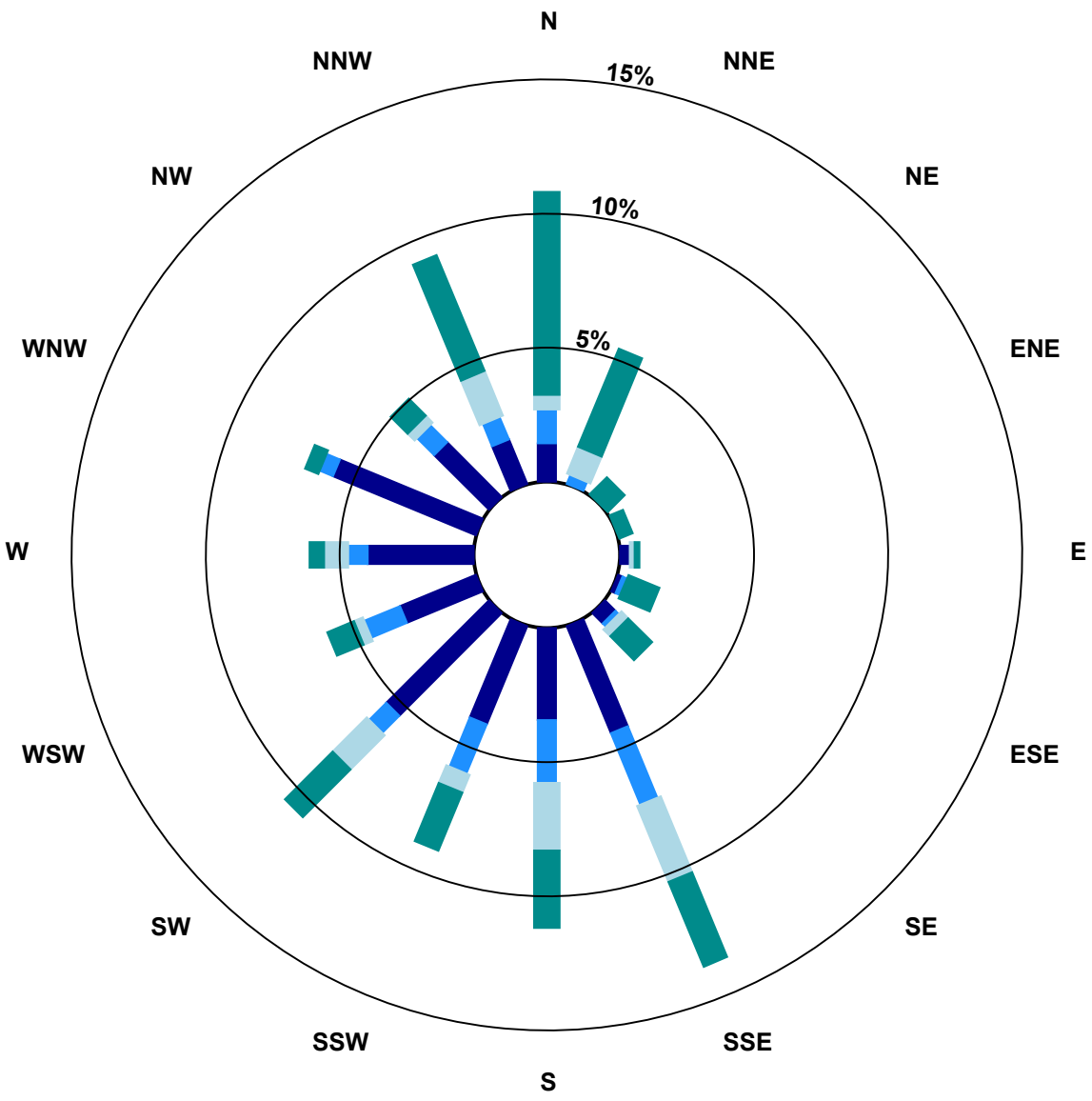
Total Number of Hours: 720

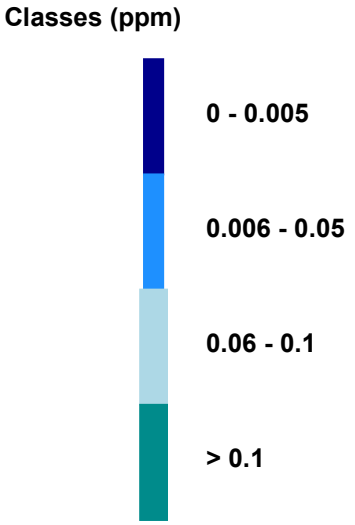
Wood Buffalo Environmental Association

Wind Rose Sep 2024

Non Methane Hydrocarbons (NMHC) - ppm

Fort Hills





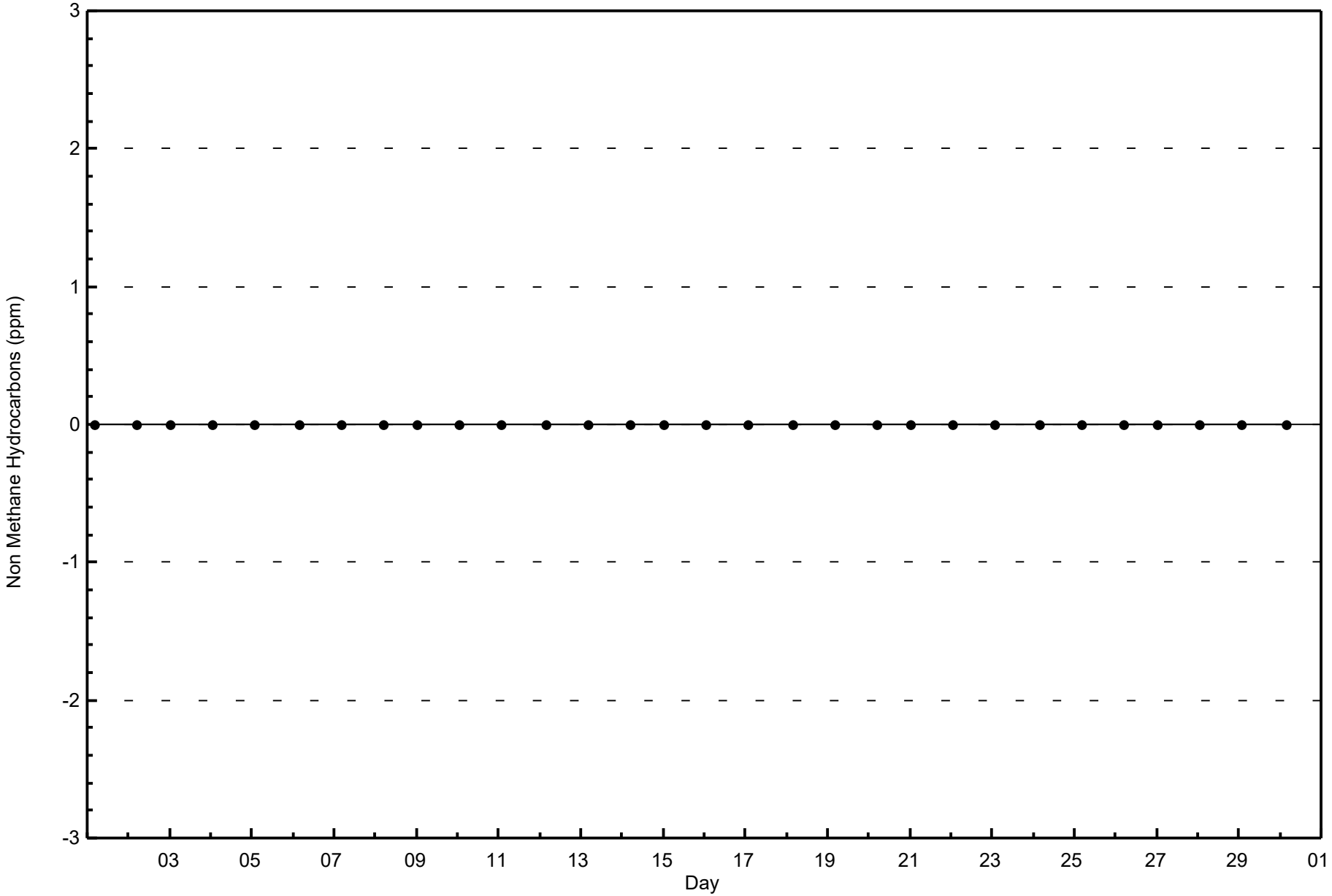
Total Number of Valid Hours: 555

Wood Buffalo Environmental Association

Zero Responses

Non Methane Hydrocarbons (NMHC) - ppm

Fort Hills - September 2024

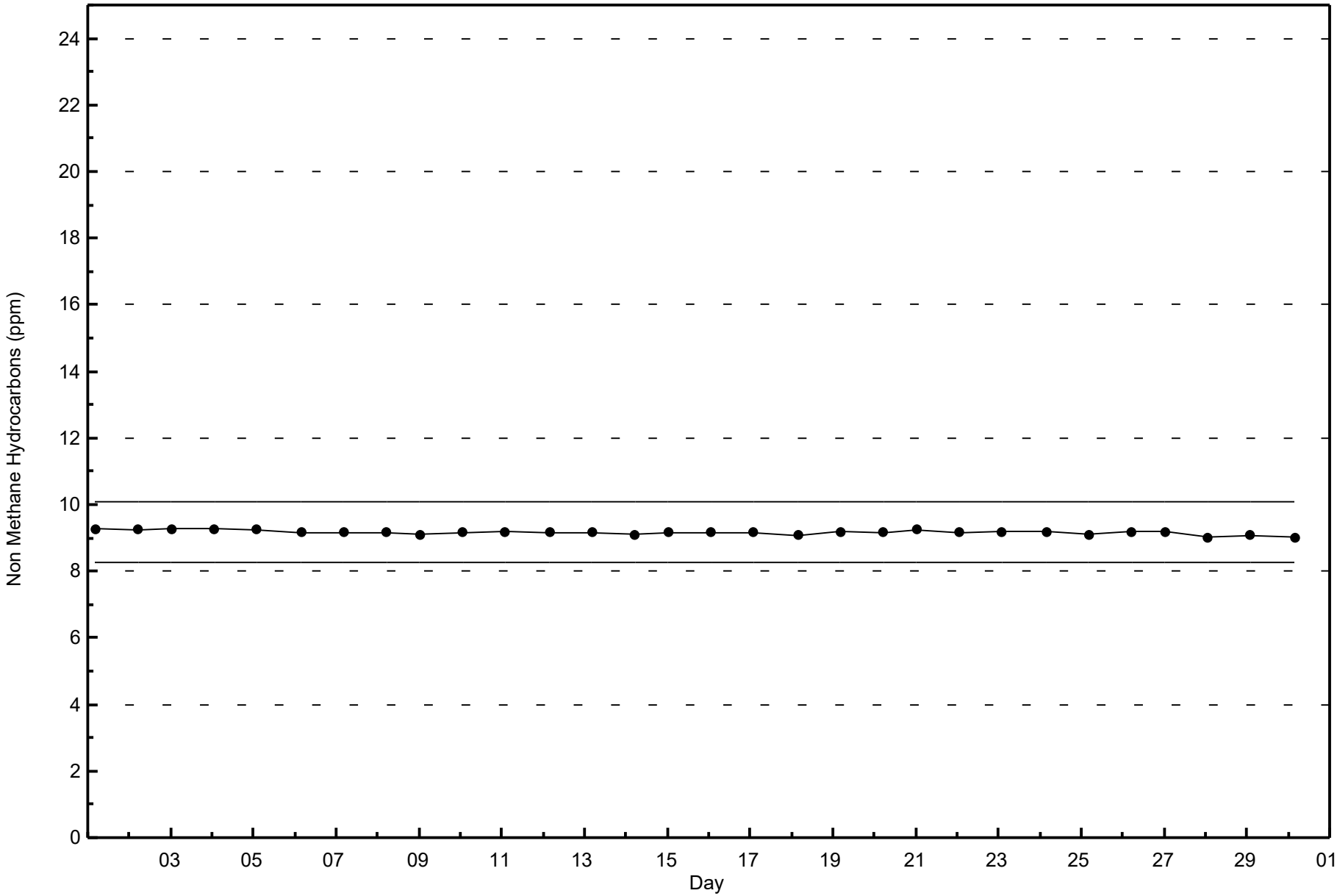


Wood Buffalo Environmental Association

Span Responses

Non Methane Hydrocarbons (NMHC) - ppm

Fort Hills - September 2024



Wood Buffalo Environmental Association

Summary of Hour Averages

Methane (CH_4) - ppm

Fort Hills - September 2024

Number of Exceedences (AAAQO): 1-hr: 0 24-hr: 0

Maximum Value: 3.8 ppm on Sep 23 01:00

Maximum Daily Average: 2.4 ppm on Sep 26

Minimum Value: 1.9 ppm on Sep 2 20:00

Minimum Daily Average: 2.1 ppm on Sep 30

Maximum Diurnal Average: 2.5 ppm at hour 2

Minimum Diurnal Average: 2.0 ppm at hour 15

Monthly Average: 2.24 ppm

Percentiles: P_1 = 1.9 P_{10} = 2.0 Q_1 = 2.0 Median = 2.1 Q_3 = 2.3 P_{90} = 2.6 P_{99} = 3.3

Hours in Service:	720
Hours of Data:	555
Hours of Missing Data:	165
Hours of Calibration:	35
Percent Operational Time:	81.9

Day	Hourly Period Ending At (MST)																								Daily	Daily
	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24	Average	Maximum
1-Sep	2.1	2.0	2.1	2.1	Z	2.2	2.2	2.2	2.1	2.1	2.1	2.1	2.0	2.0	2.0	1.9	2.0	2.1	2.1	2.0	1.9	2.2	2.9	3.4	2.2	3.4
2-Sep	2.7	2.1	2.0	2.0	2.0	Z	2.4	2.3	2.2	2.1	2.1	2.1	2.0	1.9	1.9	2.0	2.1	2.0	2.0	1.9	2.0	2.0	2.0	2.0	2.1	2.7
3-Sep	Z	2.0	2.0	2.1	2.0	2.0	UO	UO	2.1	2.0	UO	UO	UO	UO	UO	UO	UO	UO	UO	2.0	2.0	UO	2.1	UO	--	2.1
4-Sep	UO	Z	UO	UO	3.2	UO	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	2.5	2.5	2.9	2.7	--	3.2
5-Sep	2.2	2.4	Z	2.2	2.9	3.0	2.2	2.3	2.1	2.1	2.1	2.1	2.1	2.1	2.0	2.0	2.1	2.1	2.2	2.1	2.1	2.1	2.1	2.1	2.2	3.0
6-Sep	2.1	2.1	2.2	Z	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	2.2	2.9	3.4	3.2	2.6	2.3	3.4
7-Sep	2.6	3.2	2.4	2.1	Z	2.1	2.3	2.2	2.3	2.3	2.2	2.2	2.2	2.1	2.0	2.0	2.0	2.0	2.0	2.2	2.4	2.6	3.3	3.5	2.4	3.5
8-Sep	3.0	2.6	2.0	2.0	2.0	Z	2.2	2.3	2.2	2.2	2.6	2.4	2.3	2.2	2.2	2.1	2.1	2.2	3.0	2.8	2.7	2.5	2.4	2.2	2.4	3.0
9-Sep	Z	2.3	2.5	2.3	2.2	2.2	2.2	2.2	2.2	2.1	2.1	2.1	2.0	2.0	2.0	2.0	2.1	2.0	2.0	2.0	2.0	2.0	2.5	2.7	2.2	2.7
10-Sep	2.6	Z	2.4	2.5	2.5	2.5	2.8	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	2.6	2.4	2.3	2.4	2.2	2.8
11-Sep	2.1	2.3	Z	2.8	2.5	2.4	2.5	2.5	2.8	2.6	2.4	2.4	2.2	2.1	2.1	2.1	2.1	2.1	2.3	2.7	2.1	2.4	2.3	2.5	2.3	2.8
12-Sep	2.4	2.3	2.2	Z	2.4	2.2	2.2	2.2	2.4	2.4	2.4	2.3	2.2	2.1	2.1	2.2	2.2	2.2	2.2	2.3	2.6	2.3	2.5	2.3	2.3	2.6
13-Sep	2.5	2.3	2.5	2.8	Z	2.6	2.6	2.4	2.3	2.6	2.4	2.2	2.1	2.1	2.1	2.2	2.1	2.1	2.1	2.1	2.0	2.0	2.0	2.1	2.3	2.8
14-Sep	2.1	2.1	2.0	2.0	2.0	Z	2.1	2.1	3.0	2.3	2.0	2.0	2.1	2.1	2.0	2.0	2.0	2.0	2.2	2.1	2.3	2.6	2.3	2.2	2.2	3.0
15-Sep	Z	3.3	3.0	2.4	2.2	2.2	2.3	2.6	2.3	2.2	2.1	2.0	2.0	2.1	2.1	2.1	2.2	2.2	2.1	2.2	2.1	2.0	2.1	2.0	2.3	3.3
16-Sep	2.2	Z	2.2	2.1	2.1	2.2	2.1	M	2.0	2.0	2.0	2.0	2.1	2.0	2.0	1.9	2.1	2.1	2.2	2.0	2.7	2.2	2.8	2.1	2.2	2.8
17-Sep	2.1	2.0	Z	2.0	2.1	2.1	UO	2.2	UO	UO	UO	2.0	UO	1.9	UO	UO	UO	UO	UO	2.4	UO	UO	2.5	2.8	--	2.8
18-Sep	2.0	UO	UO	Z	UO	UO	M	M	M	2.4	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	2.4	--	2.4
19-Sep	3.4	3.3	2.4	2.1	Z	2.1	2.1	2.1	2.1	2.5	DF	DF	2.2	2.0	2.0	2.0	2.0	2.0	2.3	2.2	2.2	2.2	2.3	2.9	2.3	3.4
20-Sep	2.7	2.9	3.1	2.9	2.7	Z	UO	UO	UO	UO	UO	UO	UO	UO	UO	UO	UO	UO	UO	UO	UO	UO	UO	UO	--	3.1
21-Sep	Z	UO	UO	UO	UO	UO	UO	UO	UO	UO	UO	UO	UO	UO	UO	UO	UO	UO	UO	UO	UO	UO	UO	UO	--	--
22-Sep	UO	Z	UO	UO	UO	UO	UO	2.0	UO	UO	M	M	M	M	M	DF	2.1	2.2	2.2	2.6	2.5	2.3	2.3	2.3	--	2.6
23-Sep	3.8	3.2	Z	2.2	2.2	2.2	2.3	2.3	2.3	M	M	M	M	2.1	2.2	2.2	2.3	2.2	2.1	2.1	2.2	2.2	2.2	2.2	2.3	3.8
24-Sep	2.2	2.2	2.2	Z	UO	UO	UO	UO	UO	UO	UO	UO	UO	UO	UO	UO	UO	UO	UO	UO	UO	UO	UO	UO	--	2.2
25-Sep	UO	UO	UO	UO	UO	UO	UO	UO	UO	UO	UO	UO	C	C	C	2.2	2.1	2.1	2.1	2.1	2.3	2.9	3.3	3.0	--	3.3
26-Sep	2.9	3.2	2.4	2.8	2.3	Z	2.2	2.5	2.4	2.1	2.1	2.0	2.0	2.0	2.0	2.0	2.1	2.1	2.1	2.1	2.7	3.3	2.8	2.6	2.4	3.3
27-Sep	Z	2.0	2.1	2.4	2.5	2.4	2.3	2.4	2.3	2.8	2.3	2.0	2.0	2.1	2.1	2.1	2.2	2.0	2.0	2.0	2.1	2.1	2.0	2.0	2.2	2.8
28-Sep	2.0	Z	2.2	2.3	2.0	2.0	2.0	2.0	2.1	2.2	2.1	2.0	2.0	2.0	2.1	2.0	2.0	2.1	2.2	2.4	2.4	2.5	2.6	2.4	2.2	2.6
29-Sep	2.4	2.3	Z	2.2	2.9	3.1	2.9	2.8	2.8	2.3	2.3	2.2	2.2	2.1	2.0	2.0	2.0	2.0	2.0	2.1	2.0	2.0	2.1	2.0	2.3	3.1
30-Sep	2.0	2.0	2.0	Z	2.1	2.0	2.0	2.0	2.2	2.1	2.2	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.1	2.1	2.1	2.2	2.3	2.1	2.3
	2.5	2.5	2.3	2.3	2.3	2.3	2.3	2.3	2.3	2.2	2.2	2.1	2.1	2.0	2.0	2.0	2.1	2.1	2.1	2.2	2.3	2.4	2.4	2.4	Diurnal Average	
	3.8	3.3	3.1	2.9	3.2	3.1	2.9	2.8	3.0	2.8	2.6	2.4	2.3	2.2	2.2	2.2	2.3	2.2	3.0	2.8	2.9	3.4	3.3	3.5	Diurnal Maximum	

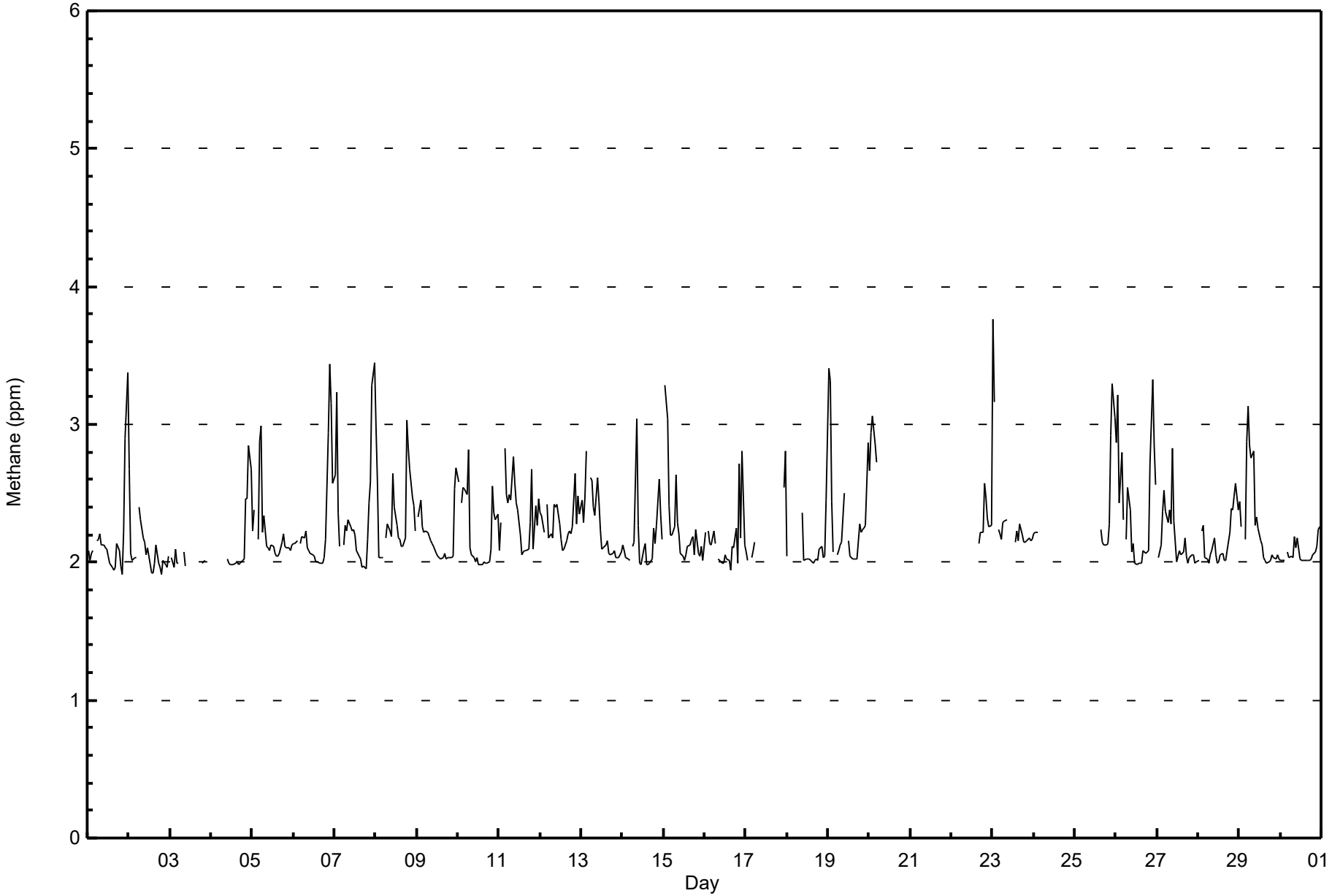
Z - zerospan C - Calibration M - Maintenance DF - DAS Failure UO - Unstable Operation

Wood Buffalo Environmental Association

Hourly Averages

Methane (CH_4) - ppm

Fort Hills - September 2024



Concentration Ranges (ppm)	Number of Hours	%	Cumulative %
0 - 2.0	167	30.09	30.09
2.1 - 3.0	371	66.85	96.94
3.1 - 10.0	17	3.06	100.00
> 10.0	0	0.00	100.00

Total Number of Valid Hours: 555

Total Number of Hours: 720

Wood Buffalo Environmental Association

Frequency Distribution

Methane (CH_4) - ppm

Fort Hills - September 2024

Concentration Ranges (ppm)	Wind Direction																
	N	NNE	NE	ENE	E	ESE	SE	SSE	S	SSW	SW	WSW	W	WNW	NW	NNW	**Totals**
0 - 2.0	8	5	0	0	2	0	2	13	11	21	17	12	23	29	15	9	167
2.1 - 3.0	49	25	5	3	2	9	11	62	48	25	41	21	9	8	13	40	371
3.1 - 10.0	3	0	0	0	0	0	0	1	3	4	1	0	2	1	0	2	17
> 10.0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Totals	60	30	5	3	4	9	13	76	62	50	59	33	34	38	28	51	555

Total Number of Valid Hours: 555

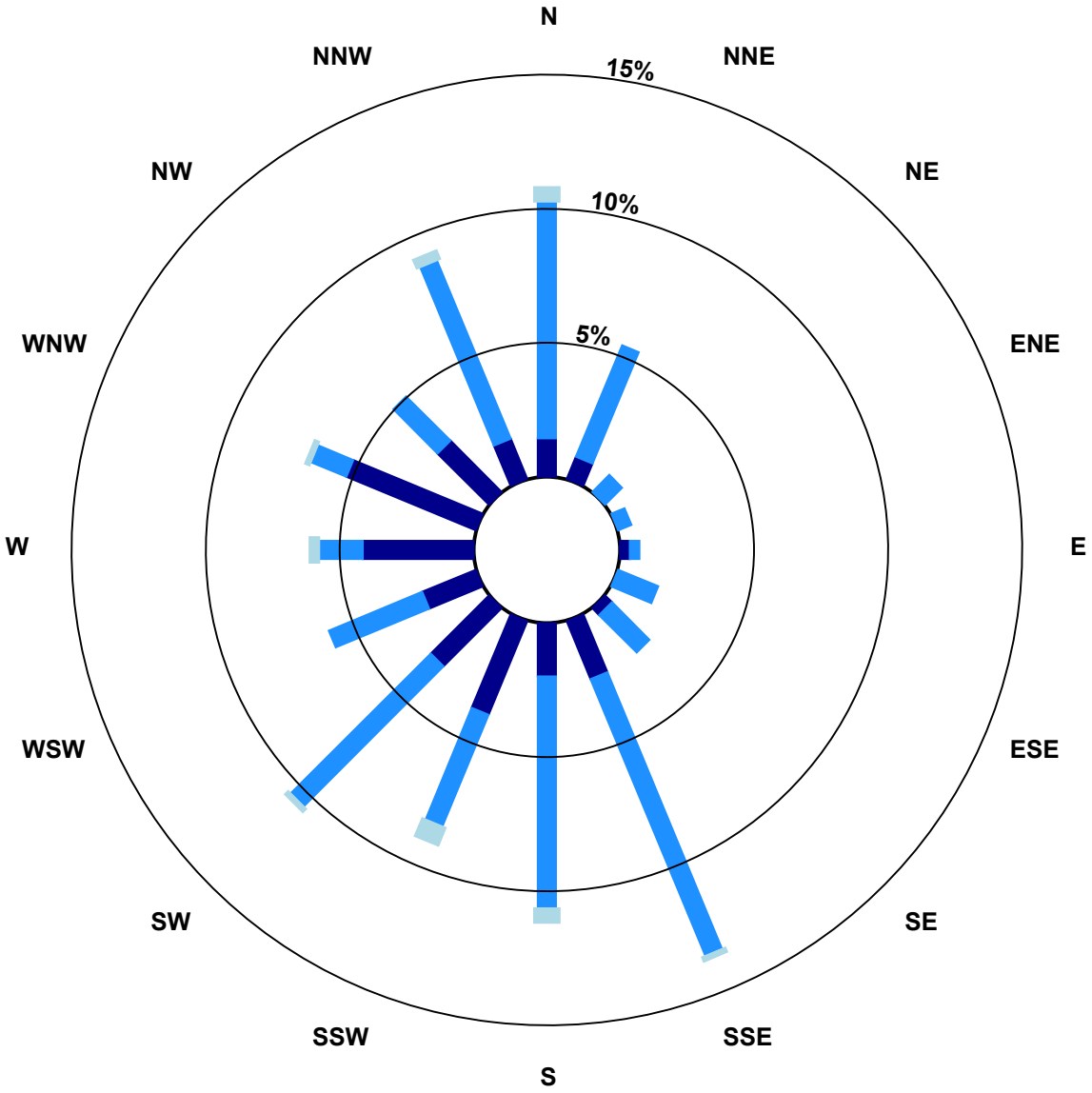
Total Number of Hours: 720

Wood Buffalo Environmental Association

Wind Rose Sep 2024

Methane (CH_4) - ppm

Fort Hills



Classes (ppm)

0 - 2.0

2.1 - 3.0

3.1 - 10.0

> 10.0

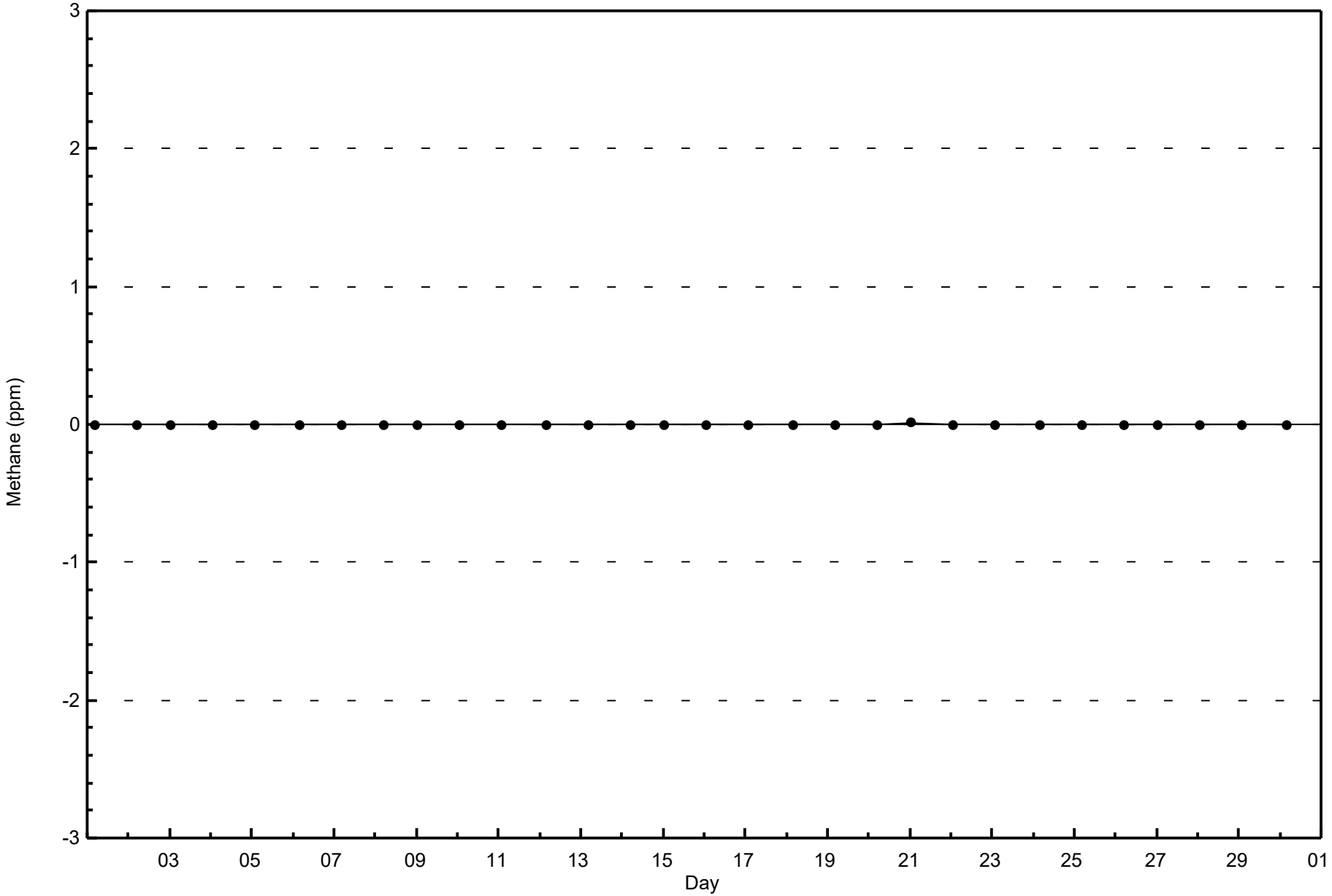
Total Number of Valid Hours: 555

Wood Buffalo Environmental Association

Zero Responses

Methane (CH_4) - ppm

Fort Hills - September 2024

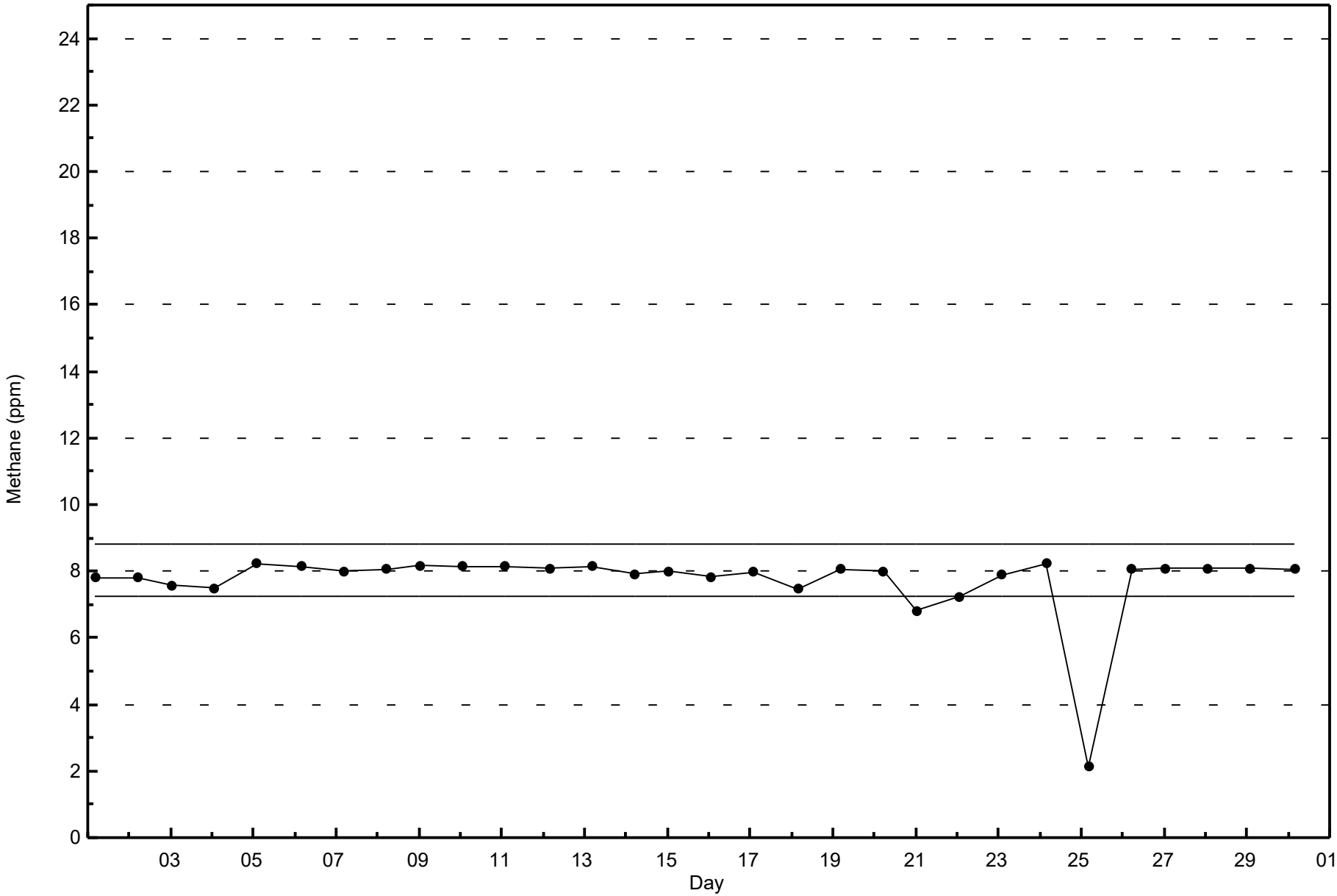


Wood Buffalo Environmental Association

Span Responses

Methane (CH_4) - ppm

Fort Hills - September 2024



Wood Buffalo Environmental Association

Summary of Hour Averages

Nitric Oxide (NO) - ppb

Fort Hills - September 2024

Number of Exceedences (AAAQO): 1-hr: 0 24-hr: 0

Maximum Value: 130.0 ppb on Sep 25 10:00 Maximum Daily Average: 35.4 ppb on Sep 25

Minimum Value: 0.0 ppb on Sep 1 01:00 Minimum Daily Average: 1.1 ppb on Sep 18

Maximum Diurnal Average: 20.3 ppb at hour 2 Minimum Diurnal Average: 0.5 ppb at hour 18

Monthly Average: 8.66 ppb Percentiles: P_1 = 0.0 P_{10} = 0.0 Q_1 = 0.0 Median = 1.3 Q_3 = 7.9 P_{90} = 27.8 P_{99} = 97.9

Hours in Service:	720
Hours of Data:	681
Hours of Missing Data:	39
Hours of Calibration:	35
Percent Operational Time:	99.4

Day	Hourly Period Ending At (MST)																								Daily	Daily
	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24	Average	Maximum
1-Sep	0.0	0.0	Z	0.0	0.0	0.0	0.3	1.4	1.0	1.3	2.2	1.3	0.7	0.1	0.1	0.4	0.5	1.0	0.5	0.0	0.0	4.6	32.2	41.2	3.9	41.2
2-Sep	9.9	0.0	0.0	Z	0.0	1.1	13.8	12.4	9.3	5.7	1.3	2.4	0.2	0.0	0.0	0.5	1.2	0.4	0.0	0.0	1.0	0.7	0.3	1.6	2.7	13.8
3-Sep	0.0	0.1	0.0	2.0	Z	0.0	0.0	0.4	11.4	2.3	0.0	1.4	3.0	3.5	1.5	0.5	0.2	0.4	0.6	4.2	5.4	2.8	3.5	2.8	2.0	11.4
4-Sep	0.4	0.0	0.0	8.3	22.0	Z	13.1	24.2	31.9	4.4	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	19.7	26.5	34.8	22.9	9.0	34.8
5-Sep	Z	27.8	0.7	0.6	15.4	17.0	2.7	10.0	1.2	2.7	4.8	7.5	3.2	2.4	1.2	0.3	0.4	0.7	0.7	0.2	0.0	0.0	0.0	0.0	4.3	27.8
6-Sep	0.0	Z	0.0	0.0	0.0	0.0	0.5	2.6	0.3	0.1	0.0	0.1	0.1	0.0	0.0	0.0	0.0	0.0	0.0	0.0	8.8	20.5	15.0	3.4	2.2	20.5
7-Sep	6.8	22.8	Z	0.0	0.0	0.0	2.4	4.2	9.1	5.2	4.7	1.4	0.7	0.1	0.0	0.0	0.0	0.0	0.0	0.0	12.6	28.5	38.4	28.1	7.2	38.4
8-Sep	15.8	6.2	0.4	Z	0.0	0.0	0.8	6.1	3.6	4.2	38.5	6.7	3.4	0.9	0.3	0.1	0.0	0.4	44.0	39.3	14.8	5.1	17.9	14.0	9.7	44.0
9-Sep	24.7	8.0	22.6	9.1	Z	4.5	3.3	4.2	3.3	2.4	0.9	0.0	0.0	0.0	0.0	0.6	0.6	0.0	0.0	0.0	0.0	0.0	6.6	16.8	4.7	24.7
10-Sep	15.5	17.4	4.3	13.5	6.1	Z	12.9	2.5	0.6	0.1	0.0	0.3	0.0	0.0	0.0	0.0	0.0	0.0	0.2	3.8	28.6	31.6	9.8	5.4	6.6	31.6
11-Sep	Z	0.2	13.6	86.2	36.5	33.0	20.9	57.0	99.1	50.0	44.6	39.0	12.0	2.6	4.7	3.0	2.4	1.3	6.8	36.9	1.1	8.9	7.4	6.4	24.9	99.1
12-Sep	10.9	Z	4.6	6.4	19.5	0.4	C	C	C	C	C	12.9	5.2	1.0	0.7	3.9	6.9	3.1	1.6	1.9	16.3	1.0	27.9	6.8	7.3	27.9
13-Sep	27.9	2.2	Z	18.4	6.4	11.1	13.1	5.0	13.3	46.5	22.9	10.6	0.8	0.6	1.5	2.4	0.9	0.3	0.0	0.1	0.0	0.0	0.0	0.0	8.0	46.5
14-Sep	1.0	0.3	0.0	Z	0.0	0.1	0.9	4.4	41.0	18.8	1.3	0.5	2.4	2.8	0.0	0.0	0.0	0.0	2.4	1.7	10.9	8.1	5.5	4.3	4.6	41.0
15-Sep	71.1	83.8	34.0	18.7	Z	2.1	16.7	51.8	27.4	16.9	7.0	2.3	1.2	3.4	7.4	7.7	6.4	4.1	1.2	8.1	0.6	0.0	0.9	0.0	16.2	83.8
16-Sep	3.2	1.1	3.6	1.3	0.5	Z	0.9	M	0.8	0.6	0.2	0.6	1.1	0.8	0.7	0.1	1.1	0.4	0.1	0.0	6.7	0.0	10.1	0.0	1.5	10.1
17-Sep	Z	0.0	0.0	0.0	0.0	0.0	4.5	10.3	7.3	7.2	4.2	5.5	1.3	0.6	0.1	1.3	0.4	0.1	39.0	35.0	34.1	27.8	30.5	40.2	10.8	40.2
18-Sep	0.0	Z	0.0	0.0	0.3	0.2	0.3	1.1	5.8	9.2	0.0	0.0	0.1	0.0	0.0	0.0	0.0	0.0	0.7	0.0	0.1	0.0	0.0	6.7	1.1	9.2
19-Sep	36.6	32.0	Z	0.0	0.0	0.0	0.6	2.9	4.5	27.8	DF	DF	3.7	1.2	0.3	0.0	0.0	0.0	1.4	4.5	8.2	1.4	7.3	62.2	9.3	62.2
20-Sep	77.1	88.1	93.6	Z	44.4	16.1	9.6	13.5	15.6	7.8	5.0	1.1	0.3	0.2	0.1	0.5	0.2	0.2	0.0	0.0	0.0	0.0	0.0	13.6	16.8	93.6
21-Sep	1.6	0.7	0.7	0.6	Z	3.4	0.1	0.9	13.2	8.4	7.9	10.1	7.1	4.3	2.2	0.4	0.1	0.0	4.9	3.9	0.1	0.0	22.2	15.2	4.7	22.2
22-Sep	8.8	15.0	34.0	58.5	35.2	Z	0.0	1.6	10.4	5.2	3.0	2.4	2.0	0.2	3.4	DF	2.3	3.2	5.3	37.9	21.8	7.9	1.3	3.6	12.0	58.5
23-Sep	Z	105.4	36.9	6.1	5.2	4.1	13.1	18.1	19.0	17.6	17.4	8.4	10.0	3.4	6.4	2.4	1.9	0.4	0.0	0.0	0.0	0.0	0.0	0.0	12.0	105.4
24-Sep	0.0	Z	0.6	0.0	0.0	0.1	0.0	0.7	4.4	4.7	3.7	1.7	0.0	0.0	0.0	0.0	0.0	0.0	0.1	1.3	7.6	2.6	6.6	15.2	2.1	15.2
25-Sep	7.6	31.8	Z	10.0	1.3	3.7	79.5	99.1	99.1	130.0	97.6	94.9	61.1	2.1	2.5	1.8	1.4	0.1	0.0	0.0	1.0	14.1	33.2	42.9	35.4	130.0
26-Sep	15.2	35.2	10.6	Z	3.0	0.0	0.4	6.1	7.3	7.1	12.2	0.0	0.0	0.0	0.0	0.0	0.3	0.1	0.0	0.0	7.1	29.9	8.9	5.7	6.5	35.2
27-Sep	0.0	0.0	0.6	6.0	Z	6.0	1.5	6.3	4.8	11.7	2.5	0.0	0.1	0.5	0.2	0.1	0.4	0.0	0.0	0.0	0.0	0.0	0.0	0.0	1.8	11.7
28-Sep	0.0	0.0	0.4	0.5	0.1	Z	0.0	2.8	1.7	2.4	1.0	0.6	0.6	0.8	0.7	0.2	0.0	0.0	10.6	11.4	10.4	23.8	28.6	19.7	5.1	28.6
29-Sep	Z	28.1	2.7	6.5	103.7	106.8	87.6	85.0	70.3	29.9	32.9	18.9	9.9	5.5	1.5	0.9	0.5	0.2	0.2	0.1	0.0	0.0	0.0	0.0	25.7	106.8
30-Sep	0.0	Z	0.0	0.0	0.2	0.0	0.0	0.0	1.9	1.8	5.4	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.1	5.1	17.4	1.4	17.4
	13.4	20.3	10.6	10.1	12.0	8.4	10.3	15.5	17.9	14.9	11.5	7.9	4.3	1.2	1.2	0.9	0.9	0.5	4.0	6.3	7.2	8.2	11.8	13.2	Diurnal Average	
	77.1	105.4	93.6	86.2	103.7	106.8	87.6	99.1	99.1	130.0	97.6	94.9	61.1	5.5	7.4	7.7	6.9	4.1	44.0	39.3	34.1	31.6	38.4	62.2	Diurnal Maximum	

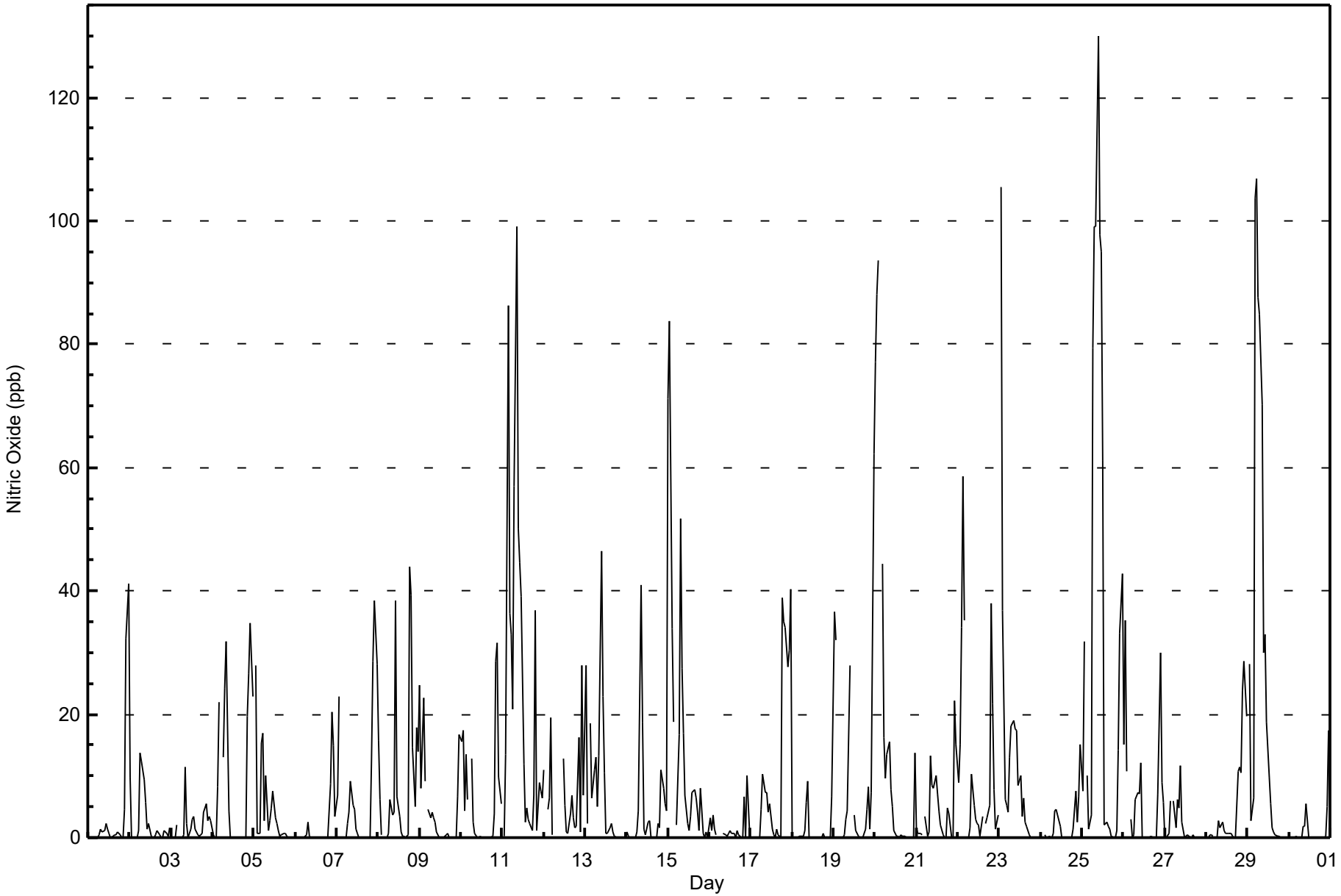
Z - zerospan C - Calibration M - Maintenance DF - DAS Failure

Wood Buffalo Environmental Association

Hourly Averages

Nitric Oxide (NO) - ppb

Fort Hills - September 2024



Concentration Ranges (ppb)	Number of Hours	%	Cumulative %
0 - 20	597	87.67	87.67
21 - 40	52	7.64	95.30
11 - 80	17	2.50	97.80
81 - 159	15	2.20	100.00
> 159	0	0.00	100.00

Total Number of Valid Hours: 681

Total Number of Hours: 720

Wood Buffalo Environmental Association

Frequency Distribution

Nitric Oxide (NO) - ppb

Fort Hills - September 2024

Concentration Ranges (ppb)	Wind Direction																
	N	NNE	NE	ENE	E	ESE	SE	SSE	S	SSW	SW	WSW	W	WNW	NW	NNW	**Totals**
0 - 20	54	31	7	3	4	7	18	91	74	57	60	35	35	45	33	43	597
21 - 40	11	4	0	1	0	3	3	4	4	6	4	1	1	1	2	7	52
11 - 80	6	2	1	0	0	0	0	1	0	2	1	0	0	0	0	4	17
81 - 159	6	2	0	0	0	0	0	0	0	0	1	0	1	0	0	5	15
> 159	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Totals	77	39	8	4	4	10	21	96	78	65	66	36	37	46	35	59	681

Total Number of Valid Hours: 681

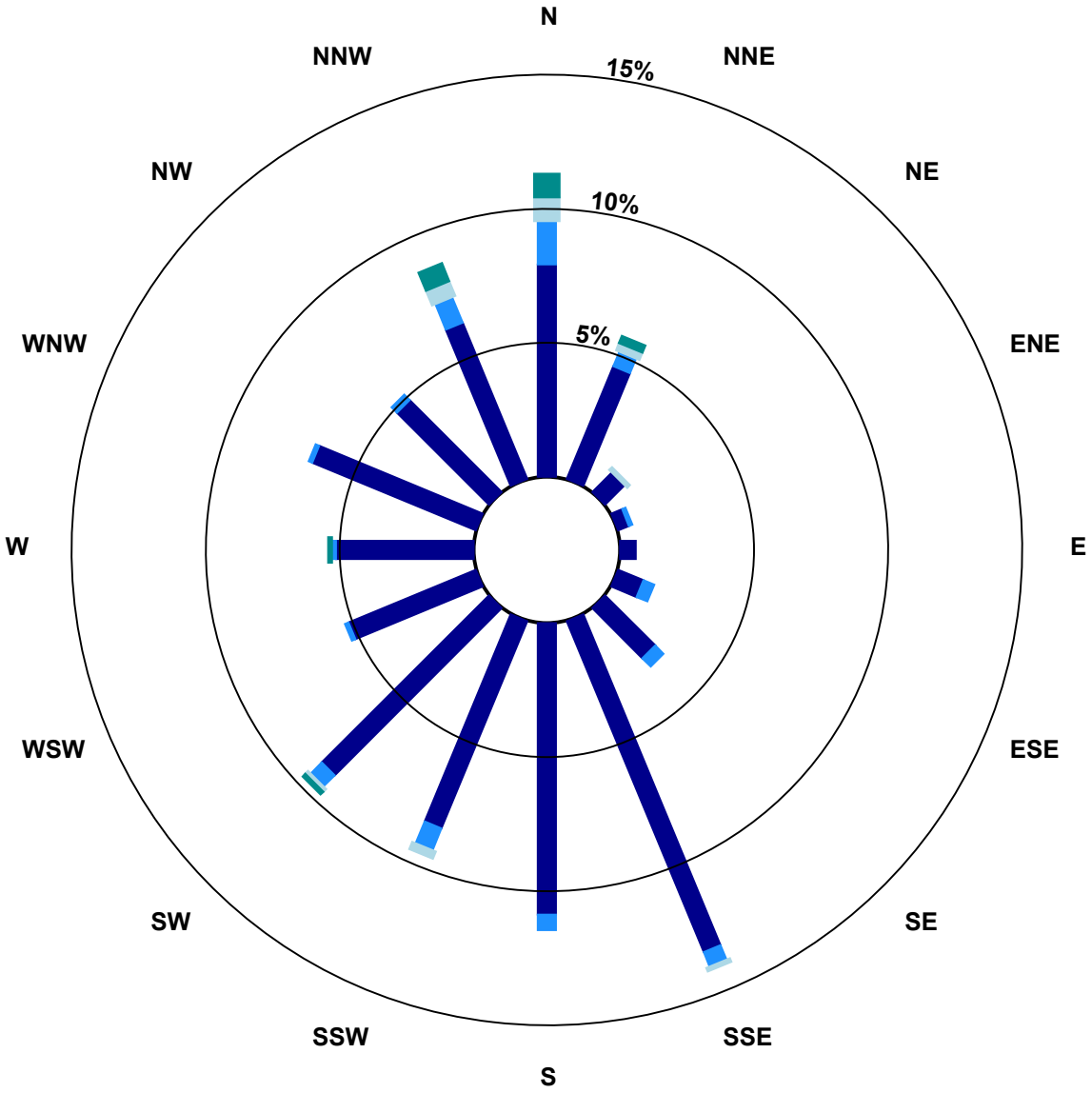
Total Number of Hours: 720

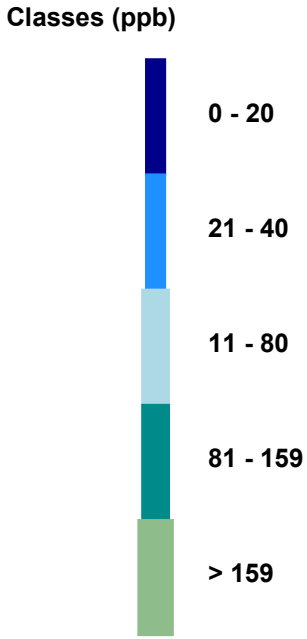
Wood Buffalo Environmental Association

Wind Rose Sep 2024

Nitric Oxide (NO) - ppb

Fort Hills





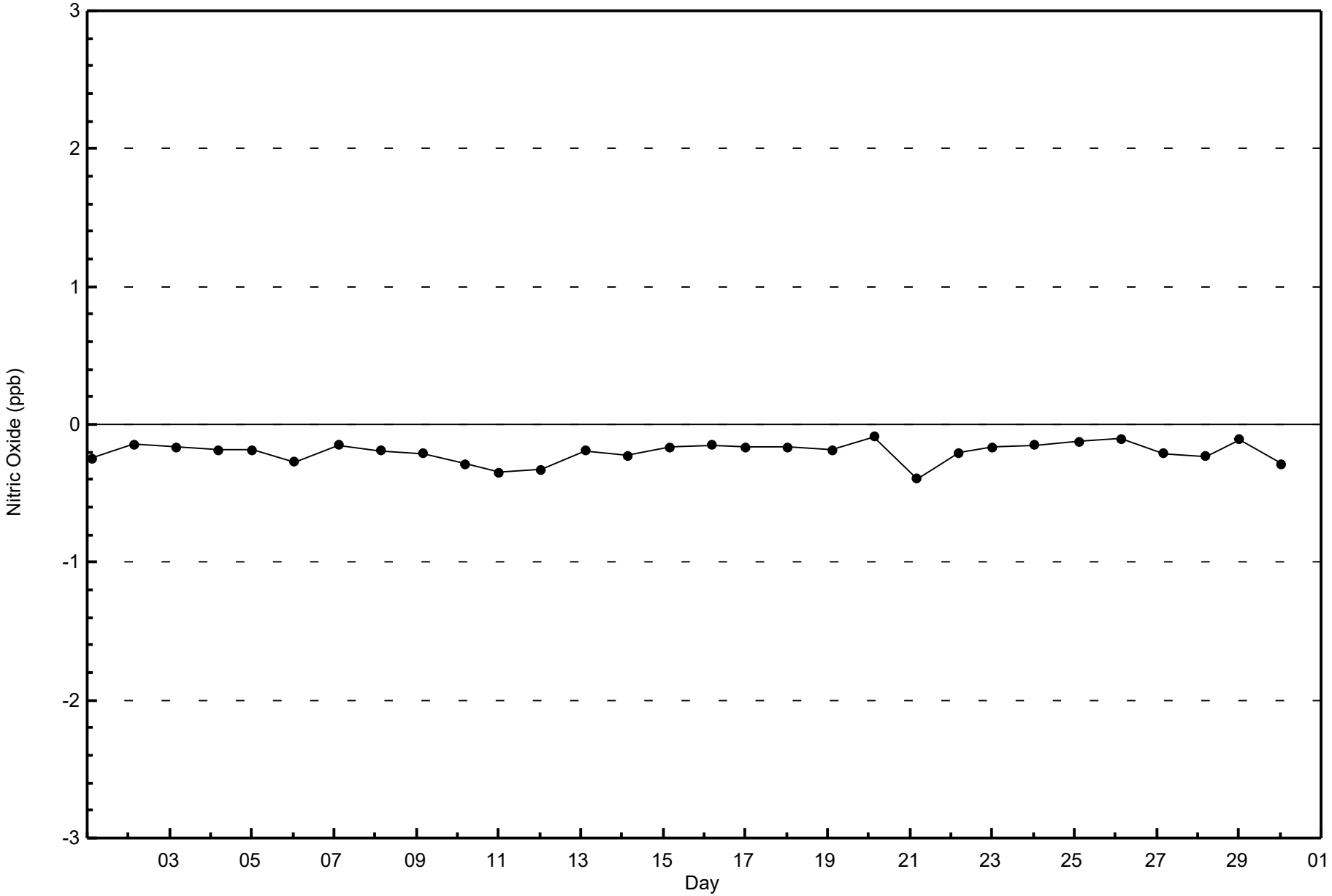
Total Number of Valid Hours: 681

Wood Buffalo Environmental Association

Zero Responses

Nitric Oxide (NO) - ppb

Fort Hills - September 2024

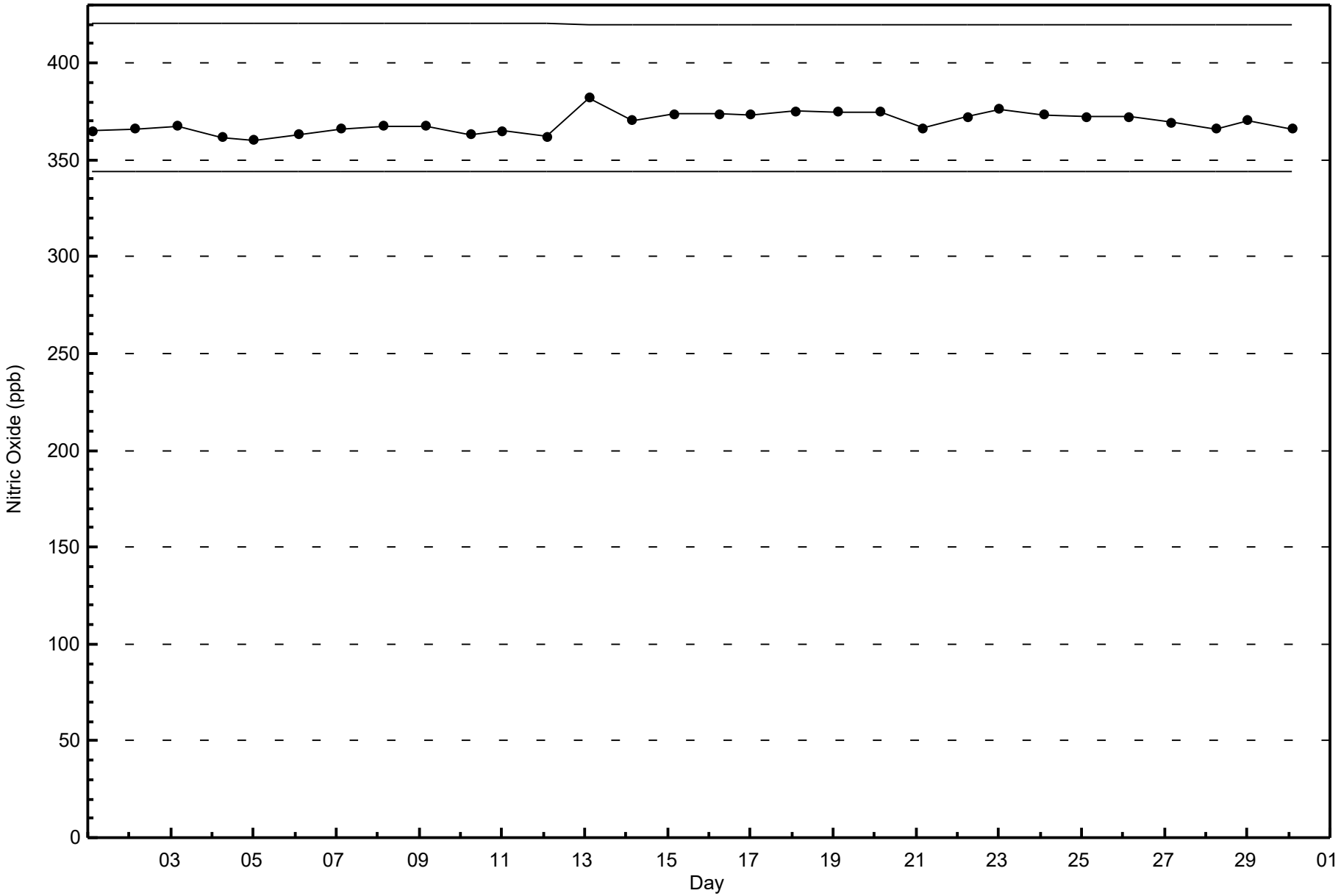


Wood Buffalo Environmental Association

Span Responses

Nitric Oxide (NO) - ppb

Fort Hills - September 2024



Wood Buffalo Environmental Association

Summary of Hour Averages

Nitrogen Dioxide (NO_2) - ppb

Fort Hills - September 2024

Number of Exceedences (AAAQO): 1-hr: 0 24-hr: 0
Maximum Value: 46.3 ppb on Sep 8 19:00 Maximum Daily Average: 15.7 ppb on Sep 8

Minimum Value: 0.0 ppb on Sep 4 16:00 Minimum Daily Average: 3.7 ppb on Sep 30
Maximum Diurnal Average: 13.3 ppb at hour 24 Minimum Diurnal Average: 3.5 ppb at hour 14
Monthly Average: 8.42 ppb Percentiles: P_1 = 0.1 P_{10} = 0.5 Q_1 = 2.2 Median = 6.3 Q_3 = 12.9 P_{90} = 19.7 P_{99} = 28.5

Hours in Service:	720
Hours of Data:	681
Hours of Missing Data:	39
Hours of Calibration:	35
Percent Operational Time:	99.4

Day	Hourly Period Ending At (MST)																								Daily	Daily
	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24	Average	Maximum
1-Sep	7.9	5.3	Z	6.1	5.1	3.8	3.6	4.4	2.5	2.7	3.9	3.7	3.4	1.4	1.2	1.6	2.2	5.1	3.9	1.9	0.4	10.3	19.7	16.1	5.1	19.7
2-Sep	11.9	2.9	2.0	Z	1.4	6.0	11.5	9.3	8.2	6.6	3.7	7.2	2.6	0.5	1.1	3.0	5.6	5.4	0.5	0.4	11.0	13.8	12.6	20.8	6.4	20.8
3-Sep	10.2	16.2	4.6	19.1	Z	1.6	0.8	2.0	13.5	7.1	0.8	5.6	8.6	7.8	4.9	3.2	3.8	4.4	8.6	15.1	14.8	13.2	10.7	4.8	7.9	19.1
4-Sep	2.3	0.4	2.1	7.7	8.6	Z	5.9	6.6	9.8	3.5	0.6	0.1	0.8	0.3	0.1	0.0	0.0	0.0	0.1	3.5	12.7	18.8	18.4	13.1	5.0	18.8
5-Sep	Z	19.0	5.7	6.3	12.1	10.0	4.5	5.0	1.8	3.9	5.8	8.6	5.4	5.2	4.3	2.4	3.4	7.6	13.8	14.8	6.5	4.6	6.6	11.1	7.3	19.0
6-Sep	9.9	Z	3.3	2.9	5.1	4.4	7.8	7.9	2.1	1.0	0.7	1.0	1.0	0.4	0.3	0.5	0.6	0.2	1.2	3.6	13.2	16.7	13.0	12.5	4.8	16.7
7-Sep	12.6	13.2	Z	1.7	0.4	2.9	6.8	5.3	8.5	8.9	10.0	7.2	6.2	3.0	1.1	1.1	0.2	0.6	0.2	4.5	24.1	23.3	21.7	19.0	7.9	24.1
8-Sep	18.4	12.3	2.5	Z	0.9	2.2	4.1	7.5	5.0	5.9	26.5	23.4	16.4	11.0	6.5	5.7	4.9	11.6	46.3	44.7	37.7	25.0	20.4	22.6	15.7	46.3
9-Sep	25.2	23.7	23.6	20.5	Z	14.5	11.1	7.6	8.9	6.3	3.1	0.8	0.9	0.7	1.7	4.3	3.6	0.8	0.4	0.1	0.1	0.5	17.4	18.9	8.5	25.2
10-Sep	18.0	18.2	15.0	16.5	11.2	Z	9.2	2.9	0.9	0.6	0.6	1.2	0.2	0.2	0.2	0.3	0.3	0.2	1.9	10.5	23.5	24.1	18.2	15.3	8.2	24.1
11-Sep	Z	3.1	7.2	16.9	14.0	12.1	8.3	12.3	20.6	22.6	24.1	24.7	14.7	5.4	9.7	8.9	10.1	10.3	23.0	31.5	14.5	21.7	18.9	17.8	15.3	31.5
12-Sep	18.9	Z	10.6	10.2	13.1	6.4	C	C	C	C	C	17.0	10.7	6.0	5.2	10.3	18.4	15.9	12.8	10.5	15.6	7.9	13.8	5.8	11.6	18.9
13-Sep	10.6	7.4	Z	11.1	7.9	11.3	9.9	5.9	8.3	14.7	12.9	9.4	3.2	4.3	6.9	8.3	3.9	2.2	1.4	4.1	1.2	0.7	0.5	0.3	6.4	14.7
14-Sep	1.7	1.2	0.1	Z	0.7	3.9	3.9	4.3	13.3	12.7	2.9	1.8	5.6	7.1	0.3	0.3	0.5	0.5	16.4	20.9	25.3	20.8	14.3	12.4	7.4	25.3
15-Sep	20.8	20.6	15.4	13.1	Z	5.1	5.5	11.4	10.8	13.4	10.1	4.8	3.2	6.7	14.0	17.1	20.2	22.0	15.0	22.5	7.8	0.7	5.2	0.4	11.6	22.5
16-Sep	11.5	11.2	11.1	9.8	9.6	Z	5.7	M	2.0	1.5	0.9	1.4	2.3	2.2	2.1	1.8	6.1	3.9	8.6	1.2	15.3	7.9	20.5	4.9	6.4	20.5
17-Sep	Z	1.3	2.6	2.6	5.0	10.3	11.5	9.6	6.2	6.0	4.7	6.5	3.2	2.5	1.5	5.2	3.1	3.6	29.0	31.2	28.7	26.1	23.2	25.8	10.8	31.2
18-Sep	10.2	Z	10.0	8.6	14.0	13.7	8.4	6.5	10.3	11.9	0.5	0.5	0.9	0.3	0.2	0.2	0.4	0.3	4.8	6.5	4.8	1.0	0.7	9.2	5.4	14.0
19-Sep	18.4	16.2	Z	1.7	0.4	0.2	3.0	4.2	3.8	13.4	DF	DF	6.4	4.0	2.8	3.3	3.1	3.4	20.6	27.1	28.5	19.3	21.5	27.4	10.9	28.5
20-Sep	28.1	27.9	28.3	Z	22.2	23.8	20.8	17.9	17.0	11.9	7.6	2.4	1.1	0.8	0.7	1.5	0.9	1.7	2.4	2.0	1.0	0.1	1.0	15.5	10.3	28.3
21-Sep	6.9	3.3	2.6	3.2	Z	7.9	3.9	3.0	5.4	5.0	6.4	8.8	8.3	5.8	4.2	2.6	2.1	2.0	17.9	12.9	10.7	6.6	20.1	23.4	7.5	23.4
22-Sep	21.4	16.0	16.1	16.5	17.9	Z	3.8	4.8	7.0	5.2	3.5	3.0	3.1	1.1	6.4	DF	11.1	18.8	12.7	25.3	19.7	12.6	10.4	11.8	11.3	25.3
23-Sep	Z	16.4	10.8	6.8	5.1	5.1	11.7	7.3	7.8	6.8	9.3	9.1	9.0	6.6	13.3	10.0	10.2	6.8	4.5	2.1	3.2	3.5	3.4	3.5	7.5	16.4
24-Sep	3.9	Z	3.5	1.2	0.5	1.4	1.5	1.0	2.7	2.5	2.1	2.2	0.2	0.2	0.1	0.1	0.0	0.5	9.6	5.9	13.4	11.7	16.6	16.3	4.2	16.6
25-Sep	11.7	16.5	Z	13.3	13.6	11.1	18.2	19.7	21.0	23.2	22.3	27.3	22.7	6.3	9.3	8.5	8.1	5.0	4.9	4.6	8.7	11.8	13.4	12.1	13.6	27.3
26-Sep	13.7	19.1	18.2	Z	11.6	4.0	6.6	22.1	15.7	9.6	14.7	0.8	0.2	0.1	0.1	0.9	4.4	7.1	6.0	3.8	17.4	26.1	23.7	21.6	10.8	26.1
27-Sep	4.5	1.3	6.6	17.2	Z	14.1	11.0	10.7	7.7	13.4	6.8	0.2	1.0	1.9	1.7	2.2	9.1	1.7	0.4	3.8	3.3	4.4	0.3	0.7	5.4	17.2
28-Sep	0.9	1.4	8.1	10.7	8.6	Z	0.4	13.0	7.9	8.0	4.1	3.9	3.2	2.4	2.6	1.7	1.3	2.7	17.7	21.3	19.6	20.1	17.6	12.7	8.3	21.3
29-Sep	Z	9.9	7.3	8.3	17.5	15.5	17.0	15.1	14.8	14.4	14.9	12.8	11.3	10.0	5.1	3.9	3.1	3.0	3.3	2.0	0.6	0.6	0.4	0.4	8.3	17.5
30-Sep	0.1	Z	0.5	3.9	6.3	2.6	2.1	1.4	5.6	3.0	7.5	0.4	0.3	0.4	0.5	0.2	0.3	0.3	0.4	1.6	1.0	6.8	14.9	24.0	3.7	24.0
	12.0	11.4	8.7	9.4	8.5	7.8	7.5	8.2	8.6	8.5	7.5	6.8	5.2	3.5	3.6	3.8	4.7	4.9	9.6	11.3	12.8	12.0	13.3	13.3	Diurnal Average	
	28.1	27.9	28.3	20.5	22.2	23.8	20.8	22.1	21.0	23.2	26.5	27.3	22.7	11.0	14.0	17.1	20.2	22.0	46.3	44.7	37.7	26.1	23.7	27.4	Diurnal Maximum	

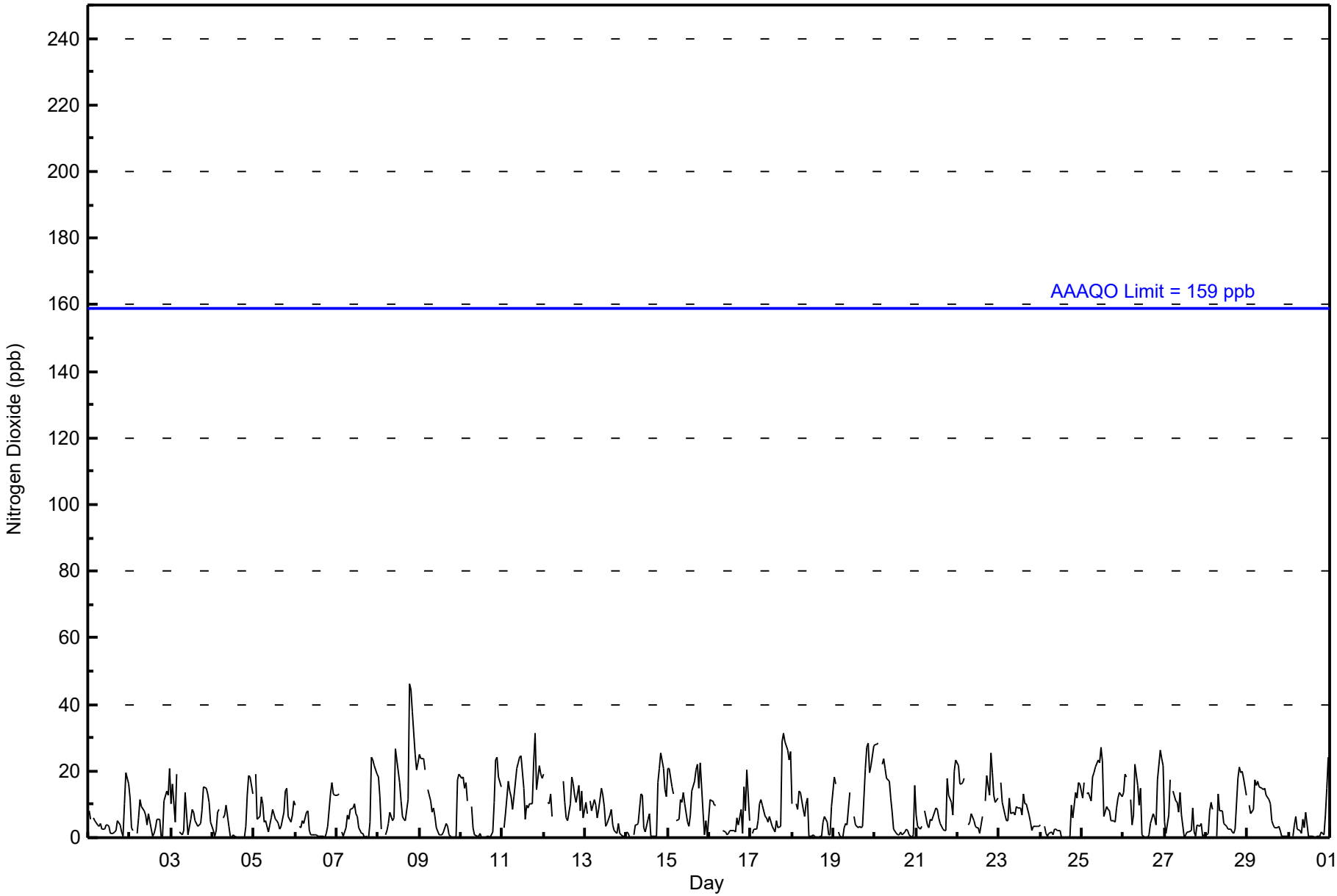
Z - zerospan C - Calibration M - Maintenance DF - DAS Failure
Alberta Ambient Air Quality Objectives (AAAQO): 1-hr 159 ppb

Wood Buffalo Environmental Association

Hourly Averages

Nitrogen Dioxide (NO_2) - ppb

Fort Hills - September 2024



Nitrogen Dioxide (NO_2) - ppb
Fort Hills - September 2024

Concentration Ranges (ppb)	Number of Hours	%	Cumulative %
0 - 20	618	90.75	90.75
21 - 40	61	8.96	99.71
11 - 80	2	0.29	100.00
81 - 159	0	0.00	100.00
> 159	0	0.00	100.00

Total Number of Valid Hours: 681

Total Number of Hours: 720

Wood Buffalo Environmental Association

Frequency Distribution

Nitrogen Dioxide (NO_2) - ppb

Fort Hills - September 2024

Concentration Ranges (ppb)	Wind Direction																
	N	NNE	NE	ENE	E	ESE	SE	SSE	S	SSW	SW	WSW	W	WNW	NW	NNW	**Totals**
0 - 20	64	27	4	2	4	6	18	91	77	63	60	35	36	46	35	50	618
21 - 40	13	10	4	2	0	4	3	5	1	2	6	1	1	0	0	9	61
11 - 80	0	2	0	0	0	0	0	0	0	0	0	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	77	39	8	4	4	10	21	96	78	65	66	36	37	46	35	59	681

Total Number of Valid Hours: 681

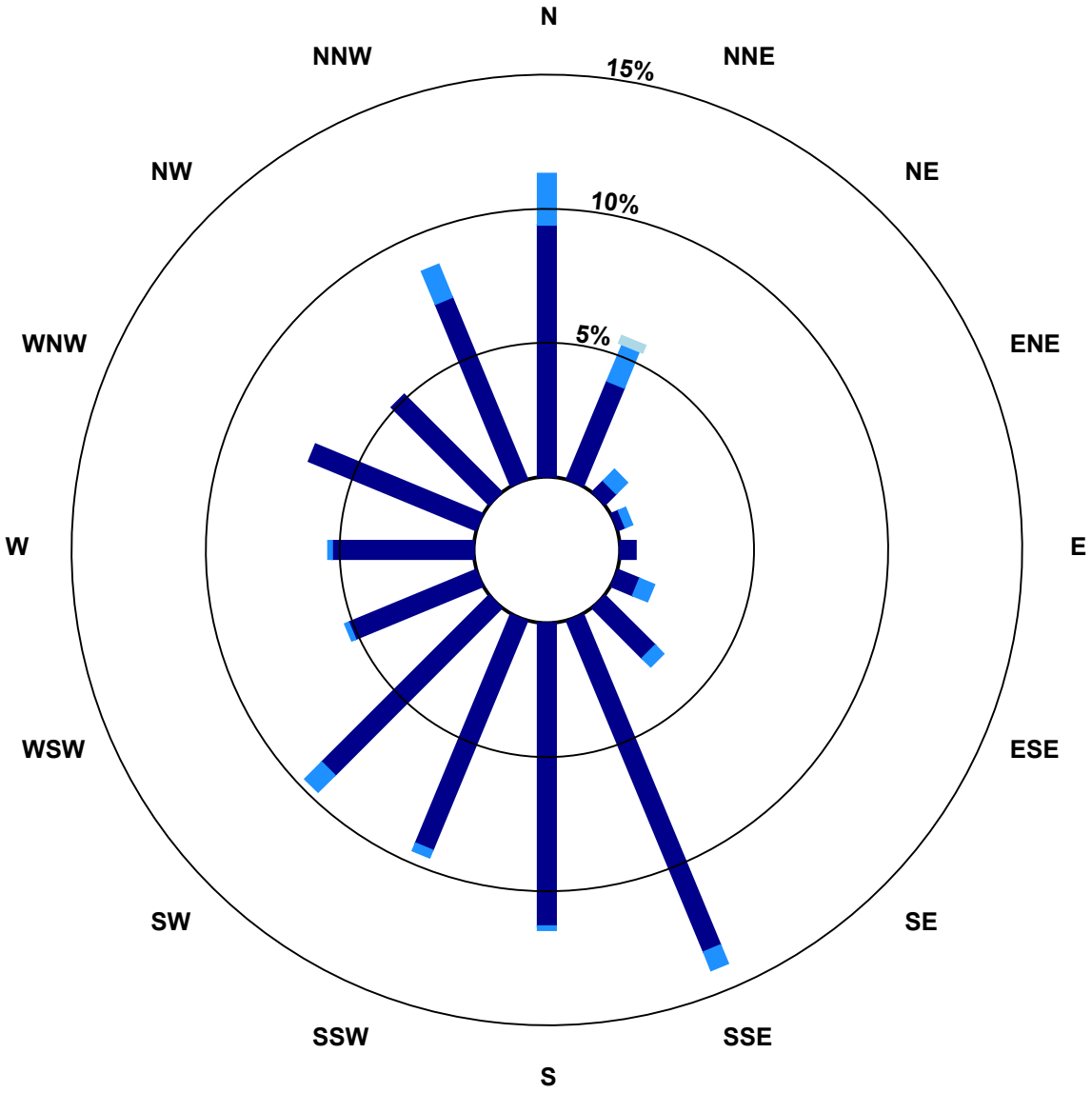
Total Number of Hours: 720

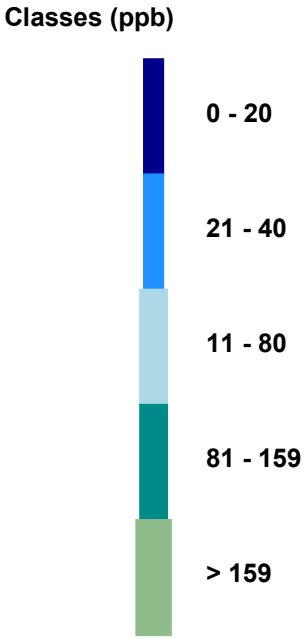
Wood Buffalo Environmental Association

Wind Rose Sep 2024

Nitrogen Dioxide (NO_2) - ppb

Fort Hills





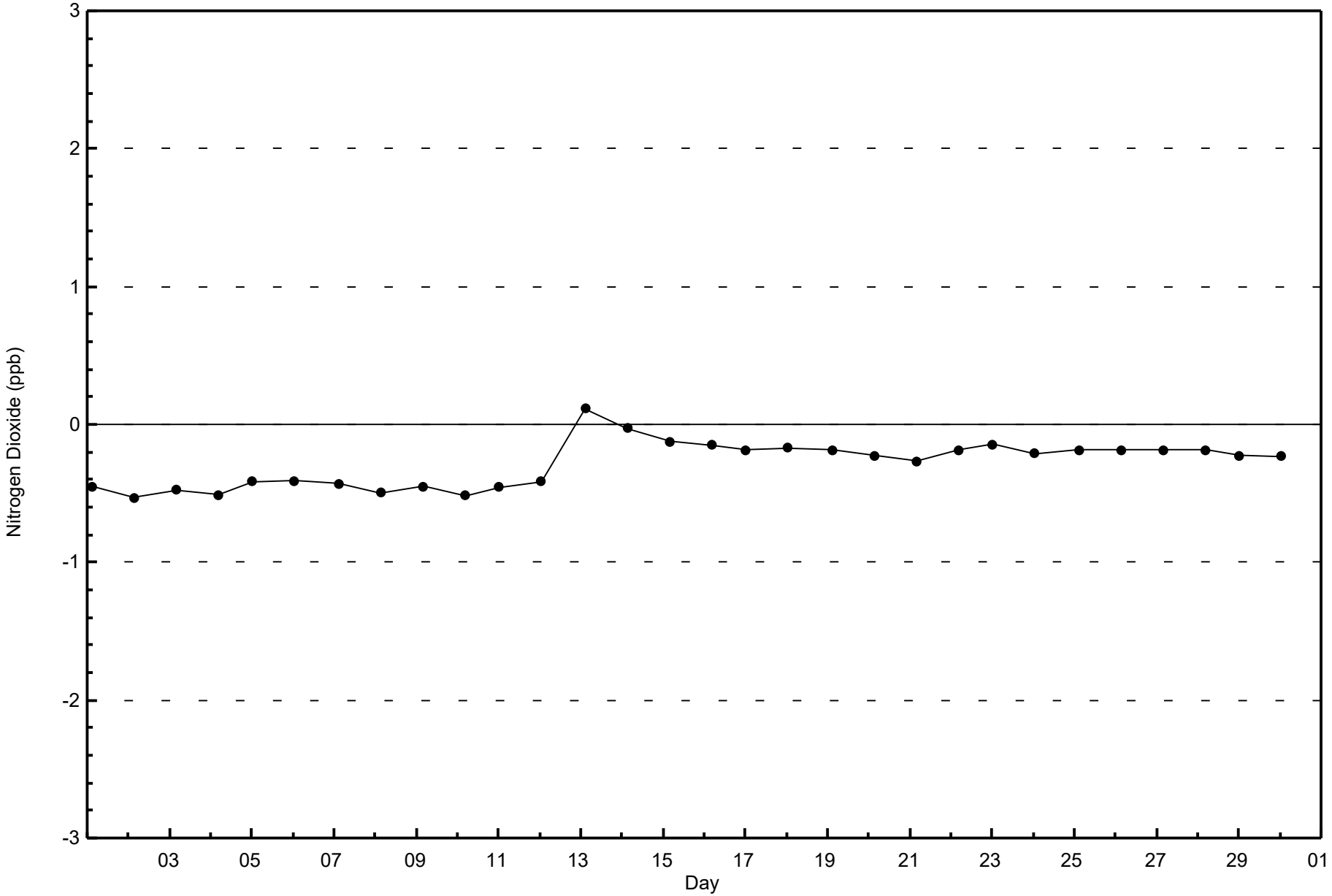
Total Number of Valid Hours: 681

Wood Buffalo Environmental Association

Zero Responses

Nitrogen Dioxide (NO_2) - ppb

Fort Hills - September 2024

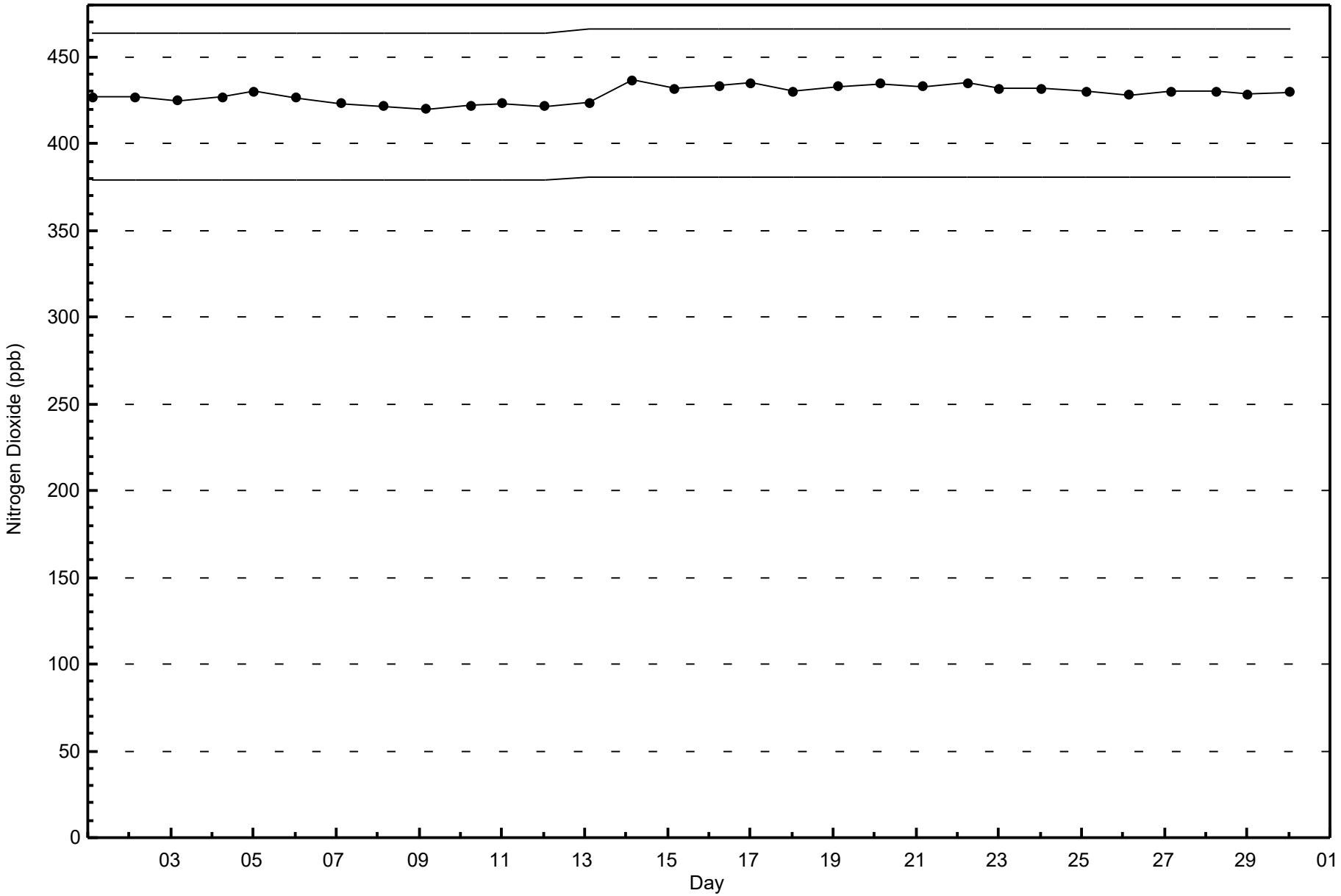


Wood Buffalo Environmental Association

Span Responses

Nitrogen Dioxide (NO_2) - ppb

Fort Hills - September 2024



Wood Buffalo Environmental Association

Summary of Hour Averages

Nitrogen Oxides (NO_X) - ppb

Fort Hills - September 2024

Number of Exceedences (AAAQO): 1-hr: 0 24-hr: 0

Maximum Value: 153.2 ppb on Sep 25 10:00

Maximum Daily Average: 49.1 ppb on Sep 25

Minimum Value: 0.0 ppb on Sep 4 16:00

Minimum Daily Average: 5.0 ppb on Sep 30

Maximum Diurnal Average: 31.6 ppb at hour 2

Minimum Diurnal Average: 4.7 ppb at hour 16

Monthly Average: 17.08 ppb

Percentiles: P_1 = 0.1 P_{10} = 0.5 Q_1 = 2.7 Median = 8.5 Q_3 = 22.0 P_{90} = 45.1 P_{99} = 120.0

Hours in Service:	720
Hours of Data:	681
Hours of Missing Data:	39
Hours of Calibration:	35
Percent Operational Time:	99.4

Day	Hourly Period Ending At (MST)																								Daily	Daily
	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24	Average	Maximum
1-Sep	7.9	5.3	Z	6.1	5.1	3.8	3.9	5.8	3.5	4.0	6.1	5.0	4.1	1.5	1.3	2.0	2.7	6.1	4.4	1.9	0.4	14.9	51.9	57.3	8.9	57.3
2-Sep	21.8	2.9	2.0	Z	1.4	7.1	25.3	21.7	17.5	12.3	5.0	9.6	2.8	0.5	1.1	3.5	6.8	5.8	0.5	0.4	12.0	14.5	12.9	22.4	9.1	25.3
3-Sep	10.2	16.3	4.6	21.1	Z	1.6	0.8	2.4	24.9	9.4	0.8	7.0	11.6	11.3	6.4	3.7	4.0	4.8	9.2	19.3	20.2	16.0	14.2	7.6	9.9	24.9
4-Sep	2.7	0.4	2.1	16.0	30.6	Z	19.0	30.8	41.7	7.9	0.6	0.1	0.8	0.3	0.1	0.0	0.0	0.0	0.1	3.5	32.4	45.3	53.2	36.0	14.1	53.2
5-Sep	Z	46.8	6.4	6.9	27.5	27.0	7.2	15.0	3.0	6.6	10.6	16.1	8.6	7.6	5.5	2.7	3.8	8.3	14.5	15.0	6.5	4.6	6.6	11.1	11.6	46.8
6-Sep	9.9	Z	3.3	2.9	5.1	4.4	8.3	10.5	2.4	1.1	0.7	1.1	1.1	0.4	0.3	0.5	0.6	0.2	1.2	3.6	22.0	37.2	28.0	15.9	7.0	37.2
7-Sep	19.4	36.0	Z	1.7	0.4	2.9	9.2	9.5	17.6	14.1	14.7	8.6	6.9	3.1	1.1	1.1	0.2	0.6	0.2	4.5	36.7	51.8	60.1	47.1	15.1	60.1
8-Sep	34.2	18.5	2.9	Z	0.9	2.2	4.9	13.6	8.6	10.1	65.0	30.1	19.8	11.9	6.8	5.8	4.9	12.0	90.3	84.0	52.5	30.1	38.3	36.6	25.4	90.3
9-Sep	49.9	31.7	46.2	29.6	Z	19.0	14.4	11.8	12.2	8.7	4.0	0.8	0.9	0.7	1.7	4.9	4.2	0.8	0.4	0.1	0.1	0.5	24.0	35.7	13.1	49.9
10-Sep	33.5	35.6	19.3	30.0	17.3	Z	22.1	5.4	1.5	0.7	0.6	1.5	0.2	0.2	0.2	0.3	0.3	0.2	2.1	14.3	52.1	55.7	28.0	20.7	14.9	55.7
11-Sep	Z	3.3	20.8	103.1	50.5	45.1	29.2	69.3	119.7	72.6	68.7	63.7	26.7	8.0	14.4	11.9	12.5	11.6	29.8	68.4	15.6	30.6	26.3	24.2	40.3	119.7
12-Sep	29.8	Z	15.2	16.6	32.6	6.8	C	C	C	C	C	29.9	15.9	7.0	5.9	14.2	25.3	19.0	14.4	12.4	31.9	8.9	41.7	12.6	18.9	41.7
13-Sep	38.5	9.6	Z	29.5	14.3	22.4	23.0	10.9	21.6	61.2	35.8	20.0	4.0	4.9	8.4	10.7	4.8	2.5	1.4	4.2	1.2	0.7	0.5	0.3	14.4	61.2
14-Sep	2.7	1.5	0.1	Z	0.7	4.0	4.8	8.7	54.3	31.5	4.2	2.3	8.0	9.9	0.3	0.3	0.5	0.5	18.8	22.6	36.2	28.9	19.8	16.7	12.1	54.3
15-Sep	91.9	104.4	49.4	31.8	Z	7.2	22.2	63.2	38.2	30.3	17.1	7.1	4.4	10.1	21.4	24.8	26.6	26.1	16.2	30.6	8.4	0.7	6.1	0.4	27.8	104.4
16-Sep	14.7	12.3	14.7	11.1	10.1	Z	6.6	M	2.8	2.1	1.1	2.0	3.4	3.0	2.8	1.9	7.2	4.3	8.7	1.2	22.0	7.9	30.6	4.9	8.0	30.6
17-Sep	Z	1.3	2.6	2.6	5.0	10.3	16.0	19.9	13.5	13.2	8.9	12.0	4.5	3.1	1.6	6.5	3.5	3.7	68.0	66.2	62.8	53.9	53.7	66.0	21.7	68.0
18-Sep	10.2	Z	10.0	8.6	14.3	13.9	8.7	7.6	16.1	21.1	0.5	0.5	1.0	0.3	0.2	0.2	0.4	0.3	5.5	6.5	4.9	1.0	0.7	15.9	6.4	21.1
19-Sep	55.0	48.2	Z	1.7	0.4	0.2	3.6	7.1	8.3	41.2	DF	DF	10.1	5.2	3.1	3.3	3.1	3.4	22.0	31.6	36.7	20.7	28.8	89.6	20.2	89.6
20-Sep	105.2	116.0	121.9	Z	66.6	39.9	30.4	31.4	32.6	19.7	12.6	3.5	1.4	1.0	0.8	2.0	1.1	1.9	2.4	2.0	1.0	0.1	1.0	29.1	27.1	121.9
21-Sep	8.5	4.0	3.3	3.8	Z	11.3	4.0	3.9	18.6	13.4	14.3	18.9	15.4	10.1	6.4	3.0	2.2	2.0	22.8	16.8	10.8	6.6	42.3	38.6	12.2	42.3
22-Sep	30.2	31.0	50.1	75.0	53.1	Z	3.8	6.4	17.4	10.4	6.5	5.4	5.1	1.3	9.8	DF	13.4	22.0	18.0	63.2	41.5	20.5	11.7	15.4	23.2	75.0
23-Sep	Z	121.8	47.7	12.9	10.3	9.2	24.8	25.4	26.8	24.4	26.7	17.5	19.0	10.0	19.7	12.4	12.1	7.2	4.5	2.1	3.2	3.5	3.4	3.5	19.5	121.8
24-Sep	3.9	Z	4.1	1.2	0.5	1.5	1.5	1.7	7.1	7.2	5.8	3.9	0.2	0.2	0.1	0.1	0.0	0.5	9.7	7.2	21.0	14.3	23.2	31.5	6.4	31.5
25-Sep	19.3	48.3	Z	23.3	14.9	14.8	97.7	118.8	120.1	153.2	119.9	122.2	83.8	8.4	11.8	10.3	9.5	5.1	4.9	4.6	9.7	25.9	46.6	55.0	49.1	153.2
26-Sep	28.9	54.3	28.8	Z	14.6	4.0	7.0	28.2	23.0	16.7	26.9	0.8	0.2	0.1	0.1	0.9	4.7	7.2	6.0	3.8	24.5	56.0	32.6	27.3	17.2	56.0
27-Sep	4.5	1.3	7.2	23.2	Z	20.1	12.5	17.0	12.5	25.1	9.3	0.2	1.1	2.4	1.9	2.3	9.5	1.7	0.4	3.8	3.3	4.4	0.3	0.7	7.2	25.1
28-Sep	0.9	1.4	8.5	11.2	8.7	Z	0.4	15.8	9.6	10.4	5.1	4.5	3.8	3.2	3.3	1.9	1.3	2.7	28.3	32.7	30.0	43.9	46.2	32.4	13.3	46.2
29-Sep	Z	38.0	10.0	14.8	121.2	122.3	104.6	100.1	85.1	44.3	47.8	31.7	21.2	15.5	6.6	4.8	3.6	3.2	3.5	2.1	0.6	0.6	0.4	0.4	34.0	122.3
30-Sep	0.1	Z	0.5	3.9	6.5	2.6	2.1	1.4	7.5	4.8	12.9	0.4	0.3	0.4	0.5	0.2	0.3	0.3	0.4	1.6	1.0	6.9	20.0	41.4	5.0	41.4
	25.3	31.6	19.3	19.5	20.5	16.1	17.9	23.7	26.5	23.4	19.0	14.7	9.5	4.7	4.8	4.7	5.6	5.5	13.6	17.7	20.0	20.2	25.1	26.5	Diurnal Average	
	105.2	121.8	121.9	103.1	121.2	122.3	104.6	118.8	120.1	153.2	119.9	122.2	83.8	15.5	21.4	24.8	26.6	26.1	90.3	84.0	62.8	56.0	60.1	89.6	Diurnal Maximum	

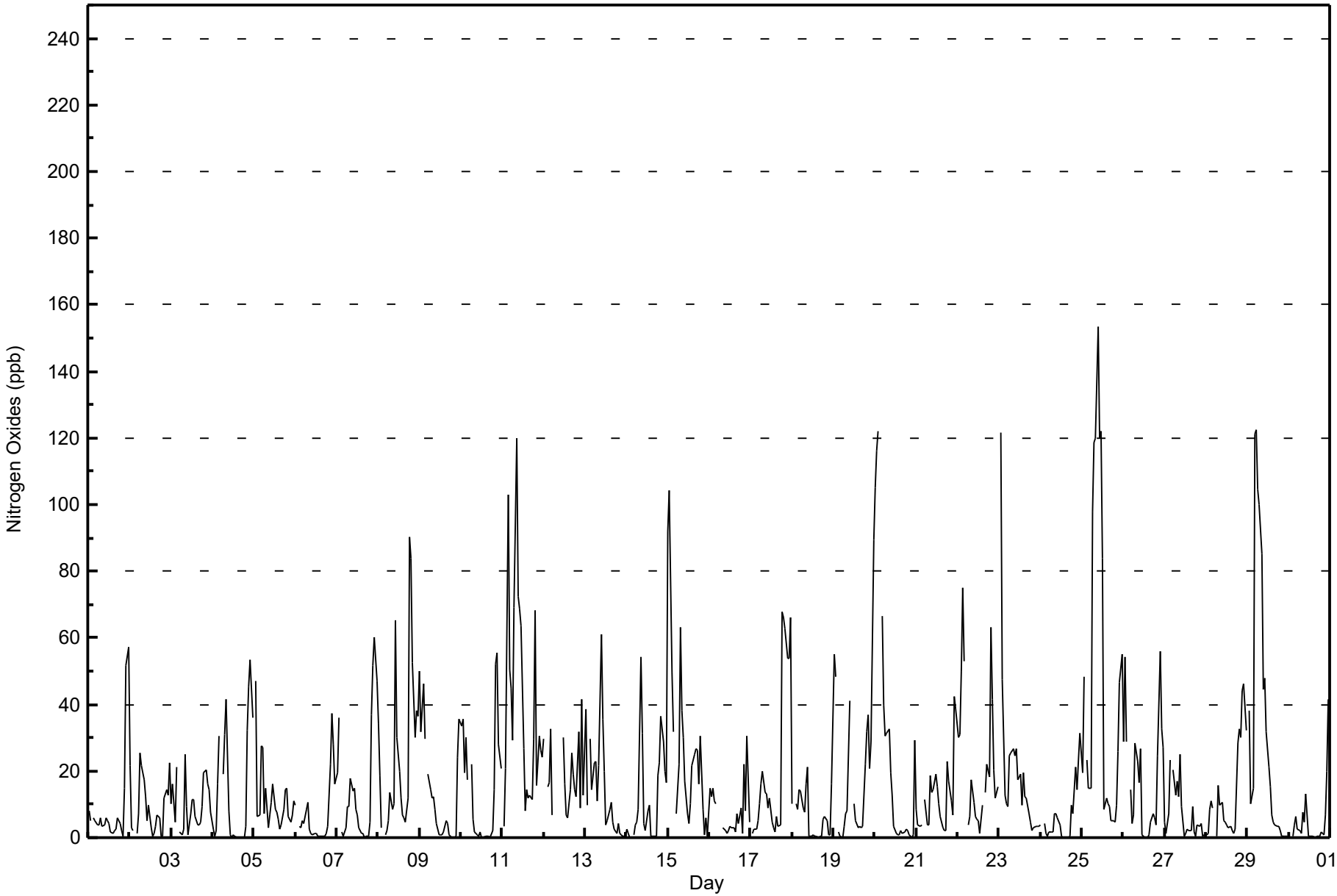
Z - zerospan C - Calibration M - Maintenance DF - DAS Failure

Wood Buffalo Environmental Association

Hourly Averages

Nitrogen Oxides (NO_X) - ppb

Fort Hills - September 2024



Nitrogen Oxides (NO_X) - ppb
Fort Hills - September 2024

Concentration Ranges (ppb)	Number of Hours	%	Cumulative %
0 - 20	495	72.69	72.69
21 - 40	109	16.01	88.69
11 - 80	54	7.93	96.62
81 - 159	23	3.38	100.00
> 159	0	0.00	100.00

Total Number of Valid Hours: 681

Total Number of Hours: 720

Wood Buffalo Environmental Association

Frequency Distribution

Nitrogen Oxides (NO_X) - ppb

Fort Hills - September 2024

Concentration							**Wind Direction**										
Ranges (ppb)	N	NNE	NE	ENE	E	ESE	SE	SSE	S	SSW	SW	WSW	W	WNW	NW	NNW	**Totals**
0 - 20	39	17	4	2	4	2	14	83	70	52	46	30	33	43	29	27	495
21 - 40	16	13	3	1	0	5	4	8	5	7	14	4	2	3	5	19	109
11 - 80	11	5	1	1	0	3	3	5	3	6	4	2	1	0	1	8	54
81 - 159	11	4	0	0	0	0	0	0	0	0	2	0	1	0	0	5	23
> 159	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Totals	77	39	8	4	4	10	21	96	78	65	66	36	37	46	35	59	681

Total Number of Valid Hours: 681

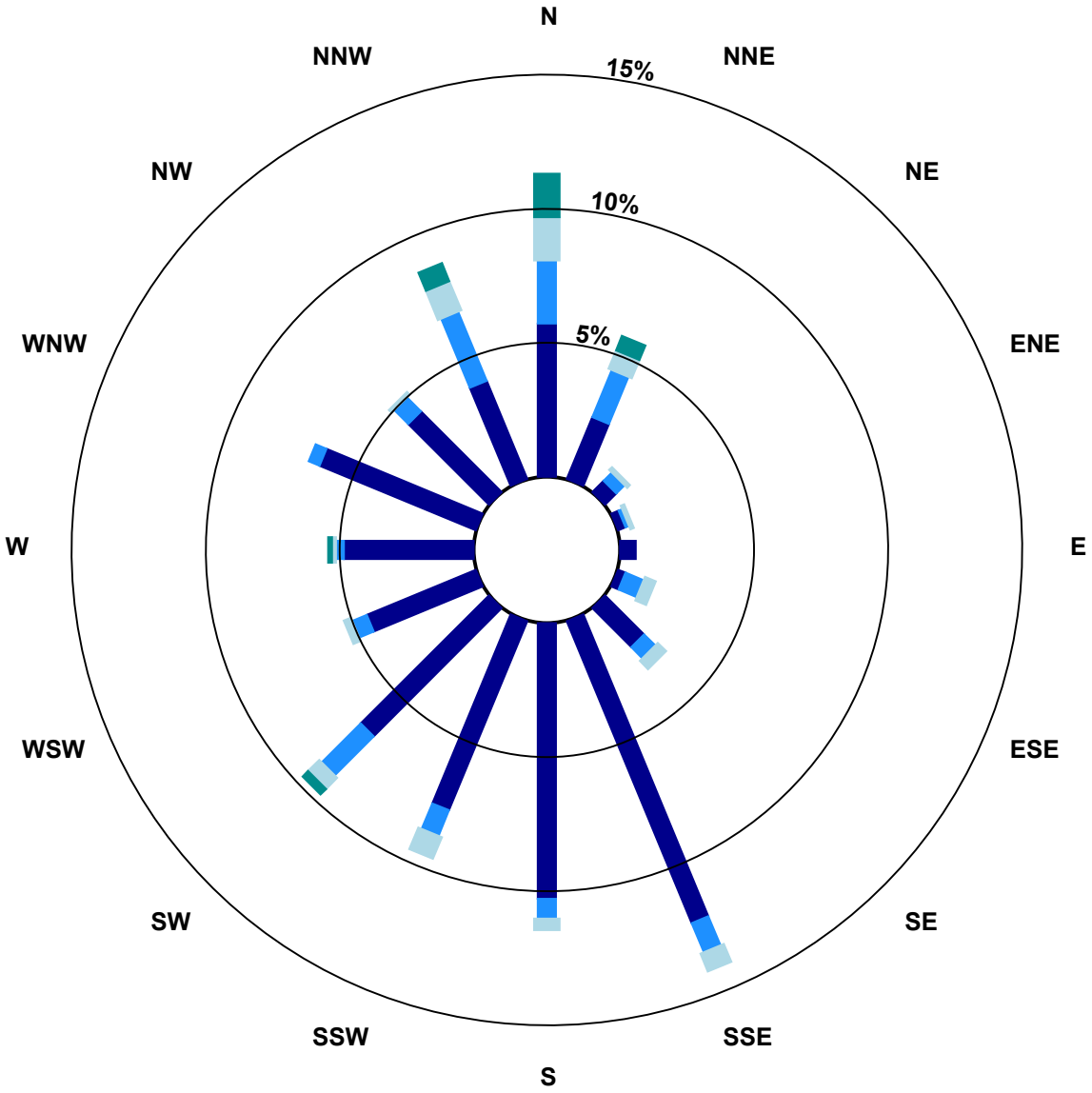
Total Number of Hours: 720

Wood Buffalo Environmental Association

Wind Rose Sep 2024

Nitrogen Oxides (NO_X) - ppb

Fort Hills



Classes (ppb)

0 - 20

21 - 40

11 - 80

81 - 159

> 159

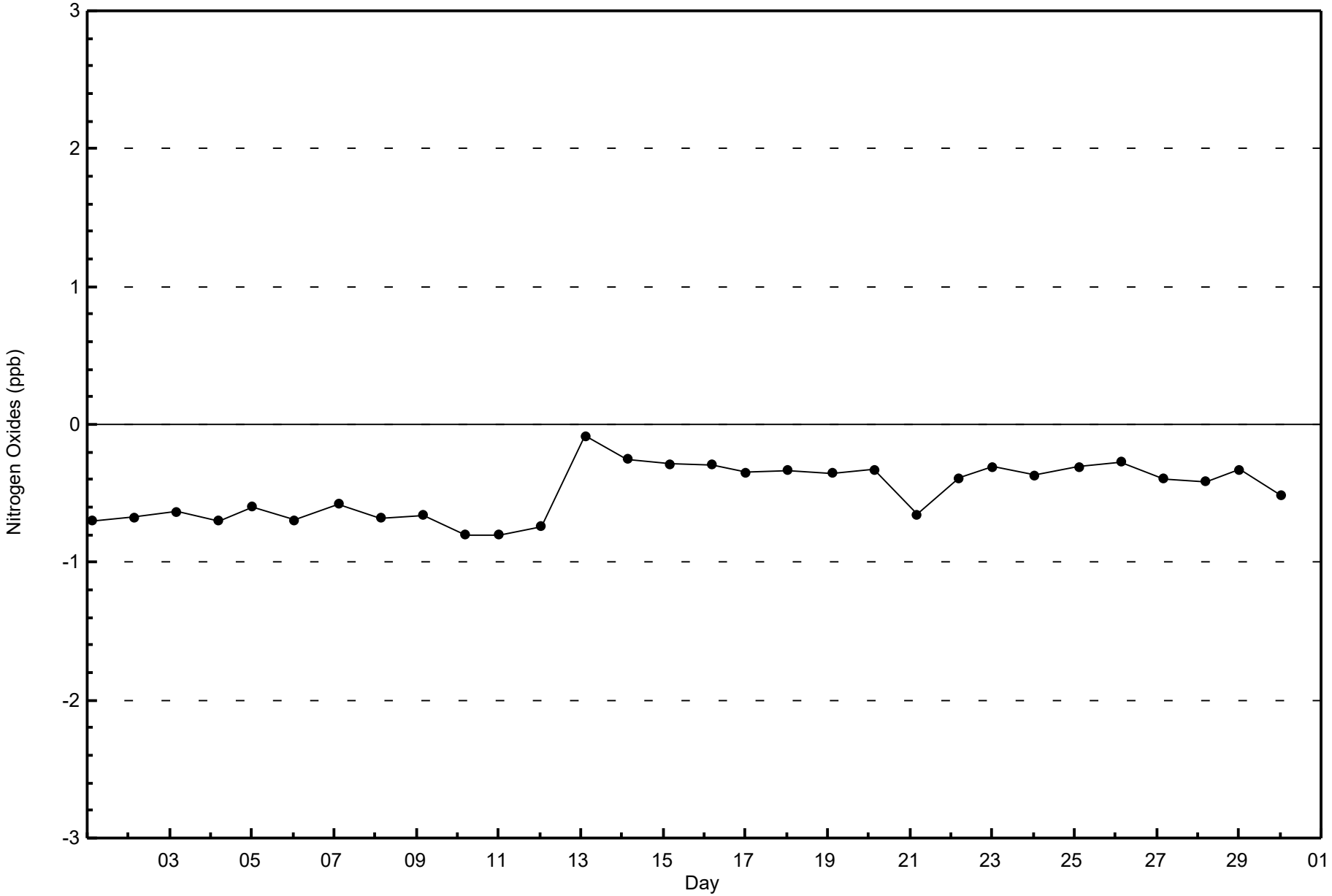
Total Number of Valid Hours: 681

Wood Buffalo Environmental Association

Zero Responses

Nitrogen Oxides (NO_X) - ppb

Fort Hills - September 2024

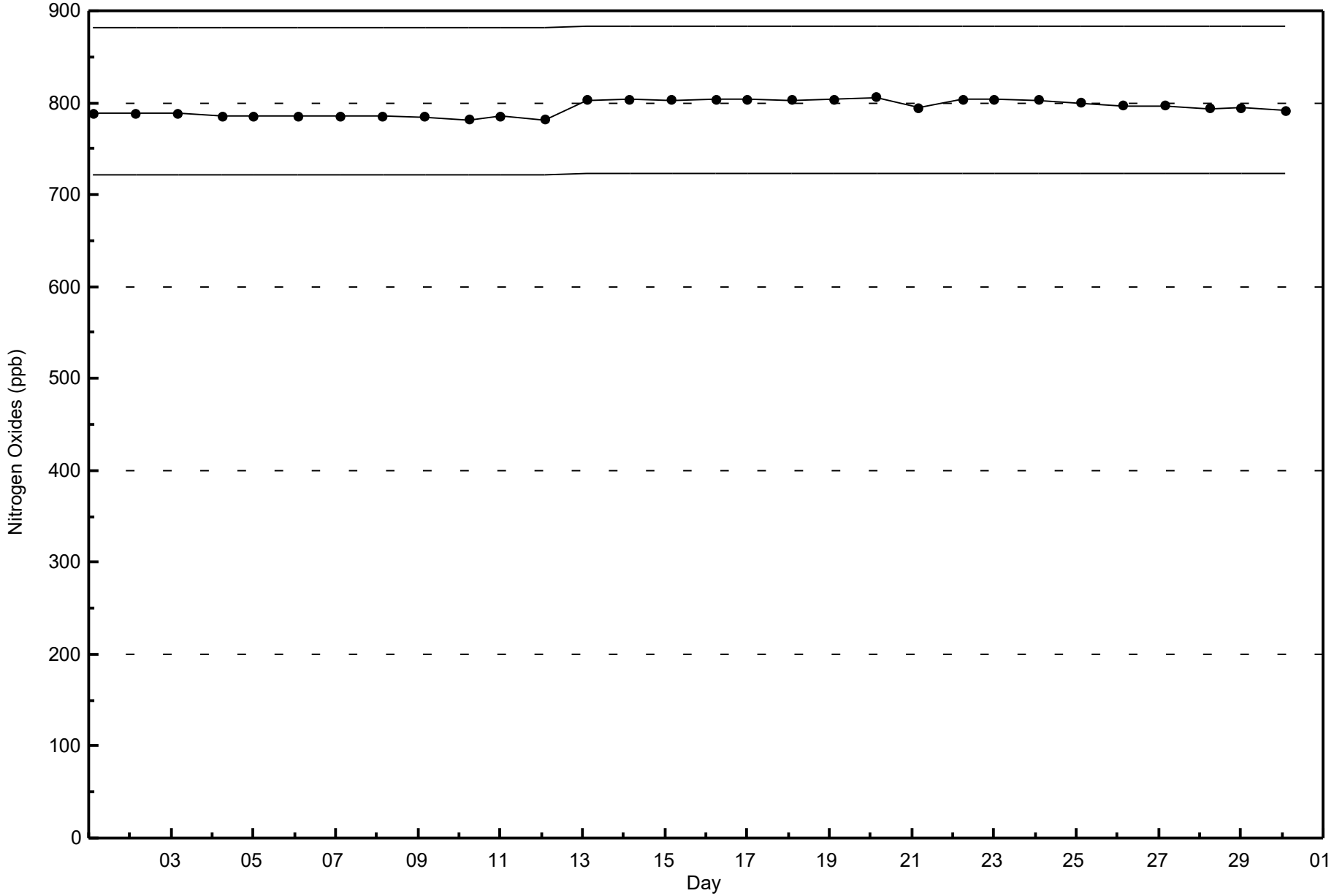


Wood Buffalo Environmental Association

Span Responses

Nitrogen Oxides (NO_X) - ppb

Fort Hills - September 2024



Wood Buffalo Environmental Association

Summary of Hour Averages

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

Fort Hills - September 2024

Number of Exceedences (AAAQO): 1-hr: 44 24-hr: 5

Maximum Value: 158.1 $\mu g/m^3$ on Sep 12 21:00

Maximum Daily Average: 90.1 $\mu g/m^3$ on Sep 12

Minimum Value: 0.8 $\mu g/m^3$ on Sep 28 02:00

Minimum Daily Average: 2.5 $\mu g/m^3$ on Sep 27

Maximum Diurnal Average: 23.8 $\mu g/m^3$ at hour 20

Minimum Diurnal Average: 14.7 $\mu g/m^3$ at hour 2

Monthly Average: 19.00 $\mu g/m^3$

Percentiles: P_1 = 1.1 P_{10} = 3.3 Q_1 = 5.1 Median = 8.3 Q_3 = 16.3 P_{90} = 52.6 P_{99} = 127.7

Hours in Service:	720
Hours of Data:	715
Hours of Missing Data:	5
Hours of Calibration:	2
Percent Operational Time:	99.6

Day	Hourly Period Ending At (MST)																								Daily	Daily
	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24	Average	Maximum
1-Sep	7.6	5.9	9.3	15.1	15.0	12.1	11.2	13.4	8.6	7.7	6.6	7.8	9.1	5.6	3.5	4.0	4.1	4.9	4.3	5.5	5.7	9.7	31.6	22.3	9.6	31.6
2-Sep	13.4	12.5	13.8	14.0	12.1	12.7	15.9	14.1	11.9	12.0	11.6	13.9	9.5	4.0	3.9	5.6	9.0	12.4	10.5	9.9	28.7	27.3	17.1	11.9	12.8	28.7
3-Sep	6.0	7.4	7.6	15.7	15.7	13.3	13.5	11.8	7.9	6.1	5.3	6.4	6.9	7.3	7.6	5.9	4.9	4.8	6.4	7.2	7.5	5.4	5.1	5.0	7.9	15.7
4-Sep	4.2	3.7	3.9	4.6	6.4	7.2	6.8	7.1	7.9	C	C	7.7	7.5	5.4	4.6	4.0	3.5	3.7	4.0	9.5	15.5	16.2	10.5	7.8	6.9	16.2
5-Sep	7.0	8.3	6.1	6.9	7.7	6.7	5.1	5.5	6.0	7.8	8.8	14.0	10.1	11.7	15.2	13.4	13.7	14.5	15.0	14.9	11.5	10.8	12.8	13.3	10.3	15.2
6-Sep	13.2	12.0	9.6	8.3	7.4	7.8	10.8	8.3	5.7	5.8	7.2	9.4	10.4	10.9	11.4	11.8	11.6	11.3	12.5	14.1	14.1	23.2	21.8	18.6	11.5	23.2
7-Sep	12.3	14.8	11.8	12.6	14.9	22.0	31.1	46.4	56.4	60.0	76.2	88.3	105.7	110.0	77.3	44.9	29.4	29.6	37.2	39.1	48.9	52.0	56.5	49.8	47.0	110.0
8-Sep	47.6	47.6	61.2	60.8	70.4	79.3	85.1	92.9	81.2	67.2	94.2	107.9	103.8	107.9	105.2	87.5	80.6	104.7	143.6	109.2	86.2	52.0	21.6	44.1	80.9	143.6
9-Sep	54.5	54.0	65.6	66.4	57.7	51.0	44.9	38.5	32.0	33.0	36.8	32.8	21.4	14.4	8.9	6.5	7.5	10.8	7.4	6.4	5.2	8.0	18.4	33.0	29.8	66.4
10-Sep	33.1	24.5	17.8	17.1	18.4	17.9	15.4	13.5	12.1	11.1	9.4	9.0	12.5	12.7	10.9	8.8	11.5	11.0	22.0	27.5	53.9	14.5	8.6	7.5	16.7	53.9
11-Sep	6.5	5.5	6.1	10.4	8.8	7.5	6.6	12.5	22.4	19.3	21.1	19.4	19.5	12.9	12.8	16.3	21.9	29.4	50.8	60.8	22.3	35.8	33.6	22.0	20.2	60.8
12-Sep	31.2	31.9	48.4	110.1	54.0	41.5	52.5	52.6	46.4	54.0	60.9	59.7	65.0	128.2	157.5	143.6	122.5	126.1	125.8	129.3	158.1	128.3	126.1	108.5	90.1	158.1
13-Sep	127.9	104.0	106.5	93.9	89.7	96.5	97.5	92.0	95.4	97.2	103.1	104.0	99.6	116.7	91.4	75.5	65.1	60.3	59.7	64.5	52.3	44.1	36.0	33.5	83.6	127.9
14-Sep	23.6	17.7	19.6	22.2	25.4	27.9	25.6	25.6	29.2	32.1	30.2	33.1	30.0	30.5	17.5	20.6	20.7	19.5	27.9	24.8	34.4	45.0	33.6	20.6	26.5	45.0
15-Sep	16.6	15.2	15.7	16.2	15.2	12.5	11.3	13.7	11.0	8.1	6.0	6.0	6.0	7.4	11.9	13.2	13.4	12.7	18.1	30.6	14.6	4.7	15.5	3.7	12.5	30.6
16-Sep	5.9	7.3	10.4	13.7	13.7	14.6	9.2	5.8	5.2	5.0	4.2	3.6	3.8	3.7	3.9	3.3	4.1	3.4	4.7	3.0	4.0	3.0	5.6	3.1	6.0	14.6
17-Sep	2.9	2.9	5.0	3.6	3.6	6.2	6.3	7.7	4.8	4.5	4.1	5.2	6.1	6.7	5.3	7.3	6.2	5.3	15.2	23.2	19.3	39.1	33.0	8.6	9.7	39.1
18-Sep	6.5	6.5	7.2	6.3	8.1	8.5	7.3	6.4	6.2	6.8	8.6	20.7	16.9	10.5	7.1	5.5	6.5	5.5	36.1	39.1	9.4	5.4	5.2	7.5	10.6	39.1
19-Sep	13.4	9.7	6.5	5.8	5.7	5.2	5.8	6.2	6.2	15.3	DF	DF	10.7	9.2	8.4	10.0	12.2	18.3	11.8	13.7	32.5	22.7	10.5	7.8	11.3	32.5
20-Sep	8.5	8.4	8.6	11.7	15.2	8.4	8.8	10.6	8.4	9.0	9.1	10.6	9.8	10.1	7.0	7.9	7.8	6.0	7.4	33.0	20.7	4.0	8.6	22.1	10.9	33.0
21-Sep	6.9	3.4	6.3	9.6	3.2	3.6	3.6	3.5	4.3	4.6	5.7	9.4	12.1	12.6	14.7	12.9	9.8	6.2	13.4	5.5	5.6	4.7	5.1	4.5	7.1	14.7
22-Sep	4.2	4.9	5.6	6.6	5.0	4.5	4.7	5.7	6.7	6.2	6.3	8.6	9.7	4.5	6.8	DF	7.4	12.2	6.4	7.1	5.7	5.3	5.4	6.5	6.4	12.2
23-Sep	5.9	5.9	5.0	4.6	6.6	5.6	5.5	5.0	4.3	5.0	6.1	5.9	8.3	7.6	14.3	12.9	13.1	9.2	4.4	4.3	3.4	4.6	4.7	5.2	6.6	14.3
24-Sep	4.1	3.6	3.0	2.9	2.7	2.7	2.3	2.3	2.6	2.3	1.9	1.8	2.5	2.5	2.7	2.6	2.4	2.8	15.1	8.3	8.6	6.0	7.0	6.2	4.1	15.1
25-Sep	5.2	6.8	6.0	6.0	8.9	8.3	8.6	9.2	7.8	9.7	8.2	8.8	9.4	3.8	5.0	5.6	4.0	3.1	3.2	3.4	3.0	3.0	3.5	4.5	6.0	9.7
26-Sep	2.9	3.5	3.2	4.1	5.8	6.4	7.1	10.3	9.7	7.4	7.2	4.2	3.4	3.6	3.2	2.8	3.1	3.3	3.1	3.1	3.3	3.8	3.6	3.9	4.7	10.3
27-Sep	3.7	3.7	4.1	3.9	3.4	3.9	3.9	3.7	3.0	2.8	2.6	1.4	1.3	1.6	1.7	1.5	3.5	1.7	1.3	2.0	2.1	1.8	1.1	1.0	2.5	4.1
28-Sep	0.8	0.8	0.8	0.8	1.1	1.0	1.6	2.3	1.8	2.1	2.3	2.5	2.5	2.5	2.6	3.5	3.5	4.3	6.7	6.4	7.7	9.5	8.9	6.2	3.4	9.5
29-Sep	6.5	6.1	5.0	5.3	8.4	9.1	8.4	7.6	6.2	6.1	7.1	7.0	7.0	6.5	5.4	4.3	4.6	4.9	6.1	5.7	4.2	3.0	2.9	2.9	5.8	9.1
30-Sep	2.7	2.8	3.3	4.3	5.7	5.1	8.3	14.1	13.5	15.2	17.7	7.8	4.7	4.0	3.4	5.4	4.9	3.6	4.1	3.9	3.8	4.5	5.8	7.0	6.5	17.7
	16.2	14.7	16.1	18.8	17.2	17.0	17.5	18.3	17.5	18.0	20.3	21.3	20.8	22.5	21.0	18.9	17.1	18.2	22.8	23.8	23.1	19.9	18.7	16.6	Diurnal Average	
	127.9	104.0	106.5	110.1	89.7	96.5	97.5	92.9	95.4	97.2	103.1	107.9	105.7	128.2	157.5	143.6	122.5	126.1	143.6	129.3	158.1	128.3	126.1	108.5	Diurnal Maximum	

C - Calibration DF - DAS Failure

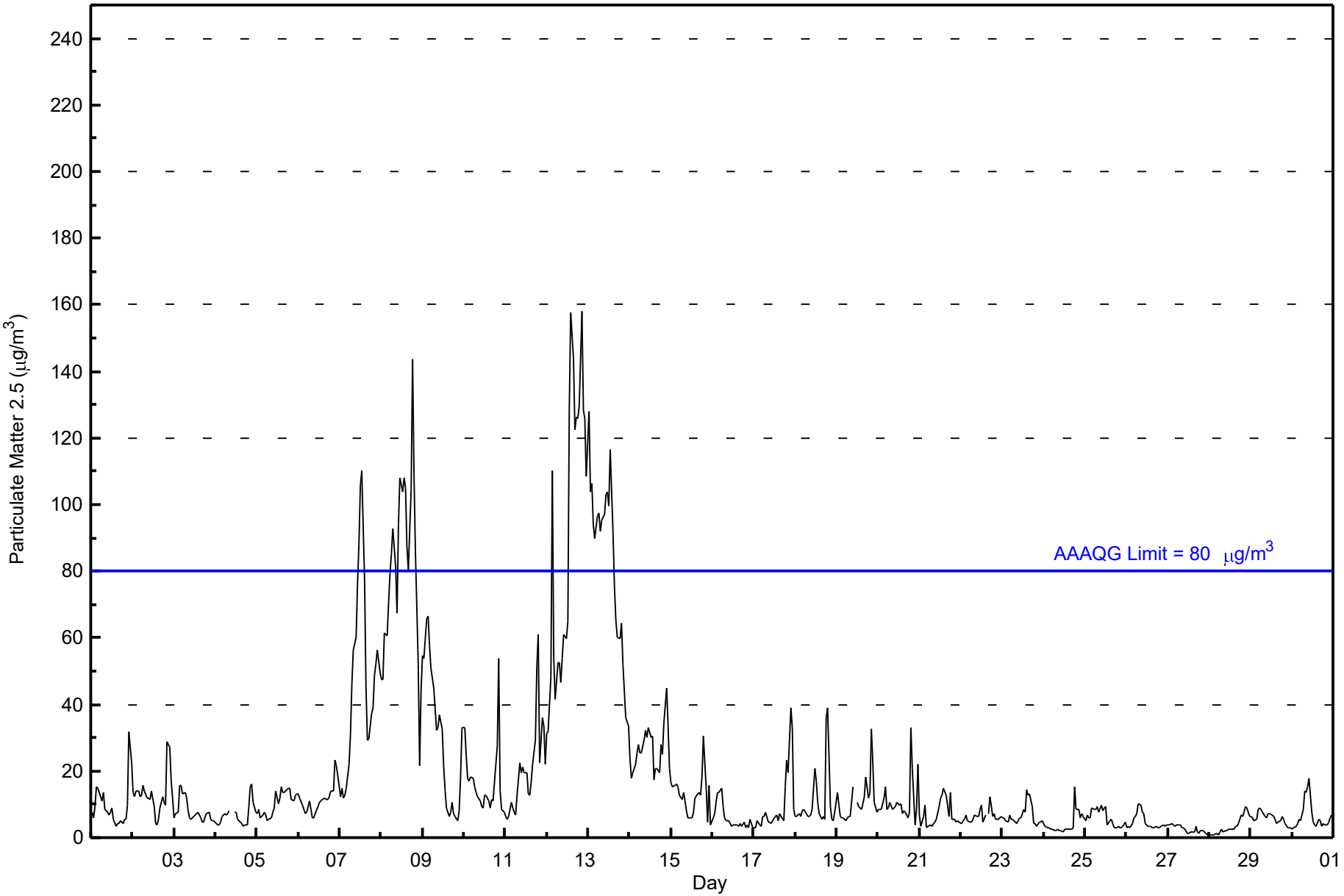
Alberta Ambient Air Quality Guideline/Objectives: 1-hr 80 $\mu g/m^3$ 24-hr 29 $\mu g/m^3$

Wood Buffalo Environmental Association

Hourly Averages

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

Fort Hills - September 2024



Wood Buffalo Environmental Association
Cumulative Frequency Distribution

Particulate Matter 2.5 ($PM_{2.5}$) - $\mu g/m^3$
Fort Hills - September 2024

Concentration Ranges ($\mu g/m^3$)	Number of Hours	%	Cumulative %
0 - 5	203	28.39	28.39
6 - 15	326	45.59	73.99
16 - 25	53	7.41	81.40
26 - 80	89	12.45	93.85
> 81.0	44	6.15	100.00

Total Number of Valid Hours: 715

Total Number of Hours: 720

Wood Buffalo Environmental Association

Frequency Distribution

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

Fort Hills - September 2024

Concentration Ranges ($\mu g/m^3$)	**Wind Direction** N	NNE	NE	ENE	E	ESE	SE	SSE	S	SSW	SW	WSW	W	WNW	NW	NNW	**Totals**
0 - 5	8	3	1	0	0	1	4	26	24	24	36	16	18	22	15	5	203
6 - 15	49	17	4	0	2	6	13	57	51	32	14	13	13	13	12	30	326
16 - 25	3	2	2	2	1	2	1	3	1	1	6	1	4	8	6	10	53
26 - 80	15	15	1	1	0	0	1	14	4	5	13	4	2	2	0	12	89
> 81.0	6	5	0	1	1	1	3	7	2	4	0	2	1	1	3	7	44
Totals	81	42	8	4	4	10	22	107	82	66	69	36	38	46	36	64	715

Total Number of Valid Hours: 715

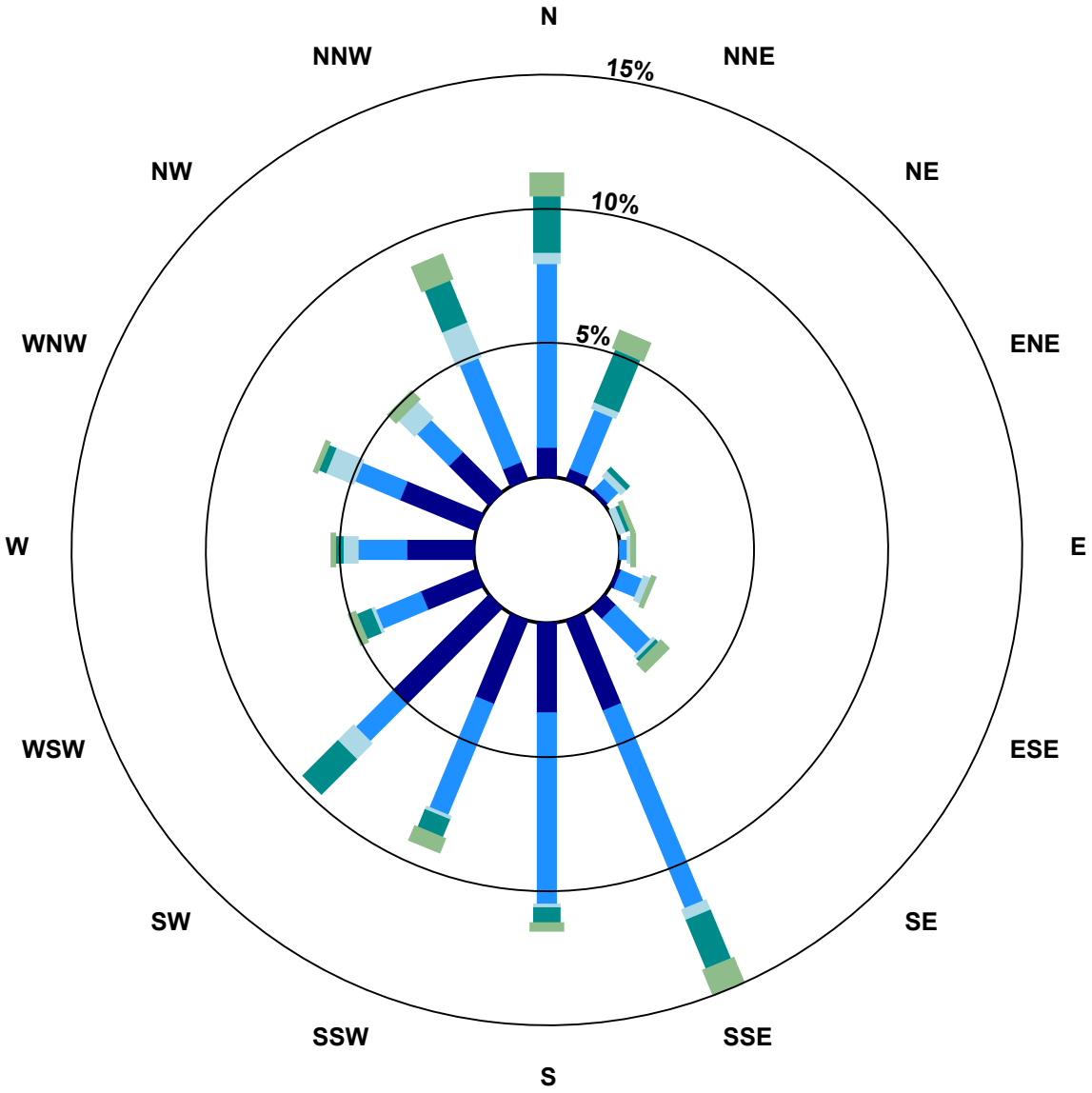
Total Number of Hours: 720

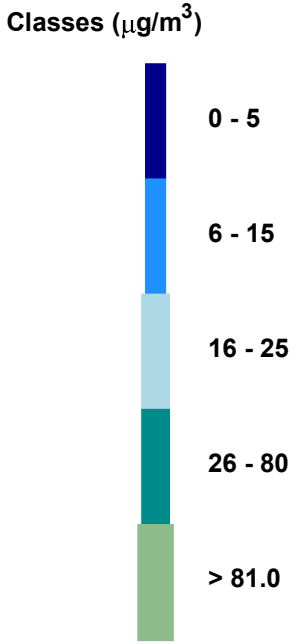
Wood Buffalo Environmental Association

Wind Rose Sep 2024

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

Fort Hills





Total Number of Valid Hours: 715

Maximum Value: 30.3 C on Sep 2 16:00

Maximum Daily Average: 20.8 C on Sep 2

Minimum Value: 3.2 C on Sep 19 06:00

Minimum Daily Average: 8.1 C on Sep 30

Maximum Diurnal Average: 19.0 C at hour 16

Minimum Diurnal Average: 8.8 C at hour 7

Monthly Average: 13.45 C

Percentiles: P_1 = 4.4 P_{10} = 7.0 Q_1 = 9.9 Median = 13.0 Q_3 = 16.3 P_{90} = 20.2 P_{99} = 28.5

Hours in Service:	720
Hours of Data:	717
Hours of Missing Data:	3
Hours of Calibration:	0
Percent Operational Time:	99.6

Day	Hourly Period Ending At (MST)																								Daily	Daily
	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24	Average	Maximum
1-Sep	14.8	14.3	13.7	14.1	13.6	13.2	12.4	13.6	15.2	17.0	19.8	22.4	24.6	26.5	28.2	28.6	28.8	28.5	26.8	23.9	20.9	20.2	18.7	17.3	19.9	28.8
2-Sep	16.4	15.9	15.3	14.4	13.8	13.7	14.0	15.0	17.1	19.9	22.7	24.9	27.2	29.0	29.9	30.3	30.1	29.2	27.2	24.0	20.0	17.0	16.2	15.6	20.8	30.3
3-Sep	15.2	14.9	14.7	14.4	13.4	12.4	12.4	13.5	14.3	14.2	13.9	14.1	14.0	14.2	14.8	14.7	14.4	14.1	13.7	13.1	12.4	11.9	10.8	9.8	13.6	15.2
4-Sep	9.5	9.3	9.8	9.9	9.5	9.3	9.4	10.1	11.4	13.9	14.7	15.9	16.7	18.7	19.8	20.2	20.0	20.2	19.2	17.1	15.4	14.2	13.3	12.4	14.2	20.2
5-Sep	11.9	10.6	9.5	8.7	8.0	7.0	6.4	7.9	11.1	13.3	14.8	16.4	17.9	19.0	19.9	20.5	20.8	20.8	20.2	19.1	18.0	17.3	16.5	15.7	14.6	20.8
6-Sep	14.2	13.3	13.3	13.1	13.8	12.9	11.5	12.7	14.3	16.5	19.8	22.9	25.1	24.5	24.8	25.0	24.7	23.7	22.6	20.6	18.9	17.4	16.3	15.5	18.2	25.1
7-Sep	14.8	13.9	13.3	12.8	12.4	12.3	12.2	13.0	15.2	17.1	19.6	21.5	22.7	24.6	26.3	27.4	27.2	26.4	24.2	22.6	21.7	20.1	18.4	16.6	19.0	27.4
8-Sep	16.1	14.9	14.0	13.8	13.3	12.6	12.5	13.3	15.6	19.1	20.0	21.6	23.6	24.0	25.0	26.4	27.9	26.5	24.5	22.9	21.3	19.1	17.7	17.2	19.3	27.9
9-Sep	17.3	17.0	16.0	15.4	14.3	14.0	13.6	14.0	15.3	16.3	17.7	18.1	17.6	16.6	15.8	16.0	16.3	15.4	14.4	13.0	12.6	12.3	11.7	11.2	15.1	18.1
10-Sep	10.8	10.2	10.0	8.7	7.4	7.0	7.5	8.0	9.7	11.7	14.1	16.4	18.1	18.5	18.3	18.5	18.0	18.2	16.8	14.3	12.4	11.5	9.6	8.1	12.7	18.5
11-Sep	7.4	6.4	5.5	5.6	4.8	4.3	4.1	6.2	9.1	12.2	14.8	16.7	18.0	19.2	19.9	20.5	20.4	19.5	18.0	17.2	16.6	14.3	13.1	12.2	12.7	20.5
12-Sep	11.6	11.4	11.8	11.3	10.8	12.2	11.7	11.3	11.1	12.1	14.0	14.3	14.8	15.3	15.4	14.7	14.5	14.0	13.3	11.5	10.1	9.5	9.1	7.8	12.2	15.4
13-Sep	8.1	7.1	7.4	6.1	5.8	6.3	6.6	6.6	7.4	8.6	10.5	12.5	13.8	14.5	14.7	14.8	14.8	14.7	14.6	14.3	13.8	13.4	12.8	12.0	10.9	14.8
14-Sep	11.6	11.6	11.6	11.7	11.0	10.0	8.2	8.7	11.3	14.5	16.4	17.7	18.6	20.2	21.1	21.2	20.8	19.5	18.0	16.1	13.9	11.7	11.0	10.7	14.5	21.2
15-Sep	10.1	9.3	8.4	8.0	7.6	7.1	6.3	7.2	8.4	11.8	13.4	14.0	15.4	16.4	17.1	17.3	17.2	16.9	15.1	12.3	10.9	9.6	8.7	8.5	11.5	17.3
16-Sep	8.1	7.9	7.8	8.6	8.7	8.0	7.9	8.9	10.1	11.3	13.4	15.7	18.0	19.2	20.1	20.2	19.8	19.9	17.8	15.8	15.3	14.6	13.6	12.2	13.5	20.2
17-Sep	11.1	11.1	9.9	9.1	8.6	8.4	8.0	8.9	10.0	12.3	15.1	17.6	19.3	20.7	21.9	22.8	22.6	22.0	20.4	18.7	16.8	14.2	13.6	14.1	14.9	22.8
18-Sep	12.7	12.0	12.1	12.2	11.2	11.5	11.8	13.0	14.3	16.5	17.3	16.6	17.8	18.4	19.0	19.3	19.0	18.2	15.6	13.5	11.6	9.8	8.6	7.4	14.1	19.3
19-Sep	6.9	6.0	5.2	4.3	3.9	3.2	3.2	4.1	6.5	10.0	DF	DF	17.7	18.8	18.9	18.4	18.3	17.2	16.2	15.4	13.8	12.1	12.3	12.3	11.1	18.9
20-Sep	11.8	10.7	10.8	10.0	9.3	10.5	10.1	10.2	11.1	12.8	14.3	15.7	16.0	16.1	16.3	16.3	15.7	14.9	13.7	11.4	9.4	8.4	8.0	7.1	12.1	16.3
21-Sep	6.8	7.0	6.1	5.6	5.7	5.0	4.7	5.4	6.2	8.7	10.0	11.0	12.1	13.6	14.7	15.2	15.5	15.2	14.7	13.7	11.7	10.7	11.0	10.9	10.0	15.5
22-Sep	10.9	9.7	8.9	7.9	9.2	9.0	8.5	8.5	9.4	10.9	12.6	14.2	15.8	17.6	18.7	DF	18.9	17.1	14.6	14.1	12.8	11.5	10.9	10.5	12.3	18.9
23-Sep	10.3	9.4	7.7	6.7	6.1	5.6	6.8	6.6	6.6	7.6	11.3	13.3	14.9	15.8	16.1	15.9	15.3	14.5	13.4	12.9	13.0	13.0	13.0	12.4	11.2	16.1
24-Sep	11.5	11.3	10.8	10.3	9.9	9.9	10.0	11.2	11.8	13.1	16.0	19.8	21.1	21.6	21.7	21.9	21.7	20.5	17.1	13.4	12.2	11.5	10.4	10.4	14.5	21.9
25-Sep	10.8	10.9	9.5	9.9	10.3	9.5	9.7	10.6	11.5	12.5	13.3	14.7	15.4	16.1	16.5	16.8	16.7	16.5	15.8	14.7	14.4	13.6	13.2	12.2	13.1	16.8
26-Sep	12.3	12.3	11.9	11.4	11.7	11.4	10.9	10.4	10.3	10.7	10.8	11.8	12.3	13.0	14.4	15.1	14.5	13.4	12.1	10.3	8.7	8.1	7.4	6.4	11.3	15.1
27-Sep	6.0	6.1	6.0	6.4	6.3	5.7	5.5	5.6	6.3	7.9	10.0	11.3	12.7	13.8	14.4	14.1	13.9	13.0	12.0	11.5	11.1	10.4	10.1	9.8	9.6	14.4
28-Sep	9.4	9.3	9.4	9.5	9.6	9.4	9.1	8.9	9.2	9.9	10.4	10.6	11.0	11.5	12.2	13.1	13.1	12.3	10.6	10.2	8.4	7.6	6.0	5.7	9.9	13.1
29-Sep	5.9	5.5	5.2	5.3	5.5	5.4	5.6	5.4	5.9	6.6	8.5	10.7	12.4	12.5	12.1	11.9	11.7	11.2	10.3	9.6	9.1	8.7	8.1	7.8	8.4	12.5
30-Sep	8.0	7.8	6.9	5.8	4.9	4.7	4.0	4.7	4.7	5.4	9.2	11.3	12.1	12.4	12.8	12.6	11.9	11.4	10.0	9.0	8.0	6.4	6.0	5.2	8.1	12.8
	11.1	10.6	10.1	9.7	9.3	9.0	8.8	9.4	10.7	12.5	14.4	16.0	17.2	18.1	18.7	19.0	18.8	18.2	16.8	15.2	13.8	12.7	11.9	11.2	Diurnal Average	
	17.3	17.0	16.0	15.4	14.3	14.0	14.0	15.0	17.1	19.9	22.7	24.9	27.2	29.0	29.9	30.3	30.1	29.2	27.2	24.0	21.7	20.2	18.7	17.3	Diurnal Maximum	

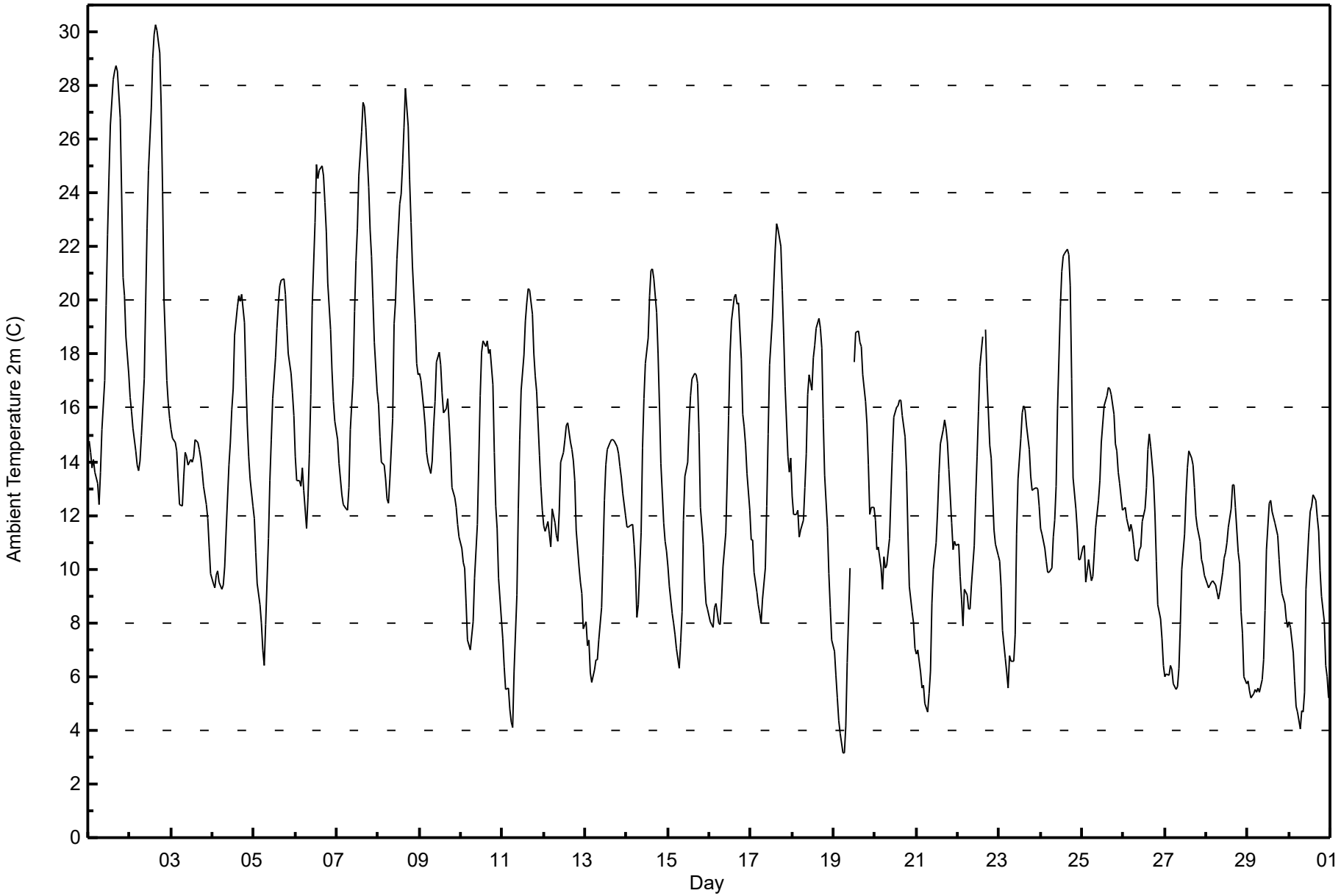
DF - DAS Failure

Wood Buffalo Environmental Association

Hourly Averages

Ambient Temperature 2m (AT2) - C

Fort Hills - September 2024



Concentration Ranges (C)	Number of Hours	%	Cumulative %
-50 - -20	0	0.00	0.00
-20 - 0	0	0.00	0.00
0 - 10	185	25.80	25.80
10 - 20	454	63.32	89.12
> 20	78	10.88	100.00

Total Number of Valid Hours: 717

Total Number of Hours: 720

Wood Buffalo Environmental Association

Summary of Hour Averages

Relative Humidity 2m (RH2) - %

Fort Hills - September 2024

Maximum Value: 99.5 % on Sep 13 08:00

Maximum Daily Average: 87.7 % on Sep 23

Minimum Value: 24.4 % on Sep 2 16:00

Minimum Daily Average: 50.9 % on Sep 30

Maximum Diurnal Average: 88.6 % at hour 7

Minimum Diurnal Average: 46.3 % at hour 16

Monthly Average: 70.08 %

Percentiles: P_1 = 30.9 P_{10} = 42.3 Q_1 = 55.9 Median = 71.3 Q_3 = 85.6 P_{90} = 93.1 P_{99} = 99.2

Hours in Service:	720
Hours of Data:	717
Hours of Missing Data:	3
Hours of Calibration:	0
Percent Operational Time:	99.6

Day	Hourly Period Ending At (MST)																								Daily	Daily
	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24	Average	Maximum
1-Sep	62.3	64.0	68.5	67.7	71.5	74.1	78.3	75.3	70.7	67.2	60.5	55.4	51.0	43.6	36.0	35.0	34.0	32.8	39.3	50.1	64.9	63.7	67.9	77.5	58.8	78.3
2-Sep	76.4	78.0	79.5	81.6	82.9	85.9	85.1	80.9	70.5	63.1	56.8	50.4	41.0	29.8	25.8	24.4	26.3	27.7	32.8	46.0	59.8	70.0	71.8	75.2	59.2	85.9
3-Sep	75.0	75.2	76.1	75.6	81.0	84.9	83.3	76.4	72.3	70.8	69.5	67.4	68.6	66.0	62.0	62.5	64.8	65.7	68.6	72.0	76.4	78.8	84.3	89.6	73.6	89.6
4-Sep	93.0	94.9	95.1	93.6	92.9	94.3	94.9	92.4	85.3	72.0	66.5	58.2	55.3	43.3	37.6	35.1	36.2	33.7	36.4	45.8	58.7	64.7	66.8	67.6	67.3	95.1
5-Sep	75.1	82.3	90.5	94.7	94.9	95.3	95.3	90.2	78.8	70.6	63.5	56.9	49.6	44.1	42.4	40.5	38.3	34.3	38.7	45.2	49.4	50.5	52.4	55.3	63.7	95.3
6-Sep	62.9	67.4	64.6	65.0	63.1	67.8	74.1	71.0	68.3	64.4	56.5	48.2	42.9	47.3	46.5	47.9	48.6	51.1	55.5	63.4	70.9	77.8	83.1	83.4	62.1	83.4
7-Sep	84.9	86.2	87.9	88.1	91.3	92.2	92.0	87.2	78.6	71.3	62.4	55.5	54.2	45.3	37.9	33.7	34.1	37.3	45.9	51.9	54.5	61.3	69.0	75.9	65.8	92.2
8-Sep	75.9	80.2	83.1	85.2	88.0	92.0	92.9	89.3	78.9	63.1	60.6	57.2	53.2	53.2	51.2	45.2	40.5	48.7	56.6	58.2	66.5	73.4	72.0	65.3	67.9	92.9
9-Sep	60.7	61.3	66.4	68.3	75.2	80.2	86.2	86.4	81.5	77.2	67.8	63.1	65.8	68.2	67.6	65.3	62.7	64.8	66.3	67.0	66.8	70.7	79.0	82.0	70.9	86.4
10-Sep	82.7	82.4	82.8	87.4	92.3	93.5	90.4	87.4	80.3	71.4	62.5	51.9	41.2	40.4	40.8	39.4	42.7	41.5	45.9	55.1	65.3	68.5	78.7	85.5	67.1	93.5
11-Sep	91.2	93.6	95.1	90.5	93.1	94.4	96.7	92.1	78.0	65.2	55.7	48.8	44.0	37.4	34.3	34.8	36.0	39.0	45.4	48.7	49.6	62.2	68.0	73.2	65.3	96.7
12-Sep	74.4	79.7	71.2	74.8	81.8	76.9	86.6	92.6	94.6	89.9	80.9	77.4	71.1	66.2	67.7	72.8	70.9	71.5	77.3	86.2	91.8	95.6	95.5	97.8	81.0	97.8
13-Sep	98.4	99.0	99.2	99.3	99.4	99.5	99.5	99.5	99.5	98.8	89.9	82.0	77.1	73.4	71.5	70.8	70.8	71.7	73.9	76.4	78.9	80.0	82.1	83.5	86.4	99.5
14-Sep	84.1	83.9	80.8	79.9	81.6	86.9	94.0	90.3	80.1	66.9	56.1	51.2	49.5	42.8	33.8	38.7	41.9	47.6	50.5	52.6	63.4	77.2	79.6	82.3	66.5	94.0
15-Sep	88.3	91.9	95.9	96.9	97.2	97.3	98.4	99.0	98.8	75.1	62.2	59.4	54.8	51.9	50.0	50.0	50.6	52.7	59.9	73.7	81.4	87.6	91.1	93.9	77.4	99.0
16-Sep	93.7	94.6	96.3	95.6	95.0	95.4	92.5	88.3	82.7	77.7	69.7	60.6	49.9	44.4	40.5	38.2	41.2	41.4	50.2	59.0	61.4	64.0	69.7	76.0	69.9	96.3
17-Sep	79.4	80.9	84.7	87.2	88.6	92.6	93.7	90.6	83.4	74.8	64.6	54.9	48.8	45.1	40.6	37.7	38.6	41.3	46.4	52.6	61.9	72.3	78.2	72.6	67.1	93.7
18-Sep	78.4	80.9	81.7	80.7	85.2	83.4	81.5	75.2	71.0	65.2	63.6	60.5	50.9	44.4	38.3	34.0	32.8	34.6	42.2	49.0	56.0	71.3	79.1	82.5	63.4	85.2
19-Sep	82.8	87.6	87.0	88.5	92.5	91.5	91.4	88.0	77.1	65.3	DF	DF	42.2	38.1	39.1	42.6	44.4	48.7	49.4	53.4	61.0	71.7	66.6	61.2	66.8	92.5
20-Sep	62.4	66.7	64.8	69.4	72.7	64.9	68.8	70.3	65.7	58.8	53.1	46.6	45.0	44.5	37.4	35.8	40.1	42.4	48.2	57.4	63.6	69.6	74.3	79.6	58.4	79.6
21-Sep	83.3	80.3	87.7	91.3	92.4	91.9	91.0	88.6	86.0	75.0	71.3	66.6	62.7	58.9	57.5	55.9	52.8	53.5	57.0	61.7	78.8	86.0	84.1	82.4	74.9	92.4
22-Sep	81.0	91.9	93.1	96.1	85.0	84.5	86.9	85.6	81.9	75.6	69.5	64.4	58.0	51.6	46.7	DF	43.9	54.7	71.7	76.7	86.4	91.6	92.5	91.9	76.6	96.1
23-Sep	90.9	91.4	95.6	97.1	98.2	98.6	99.0	99.0	99.1	99.1	83.7	70.4	64.8	61.1	61.7	67.2	76.3	82.6	89.4	93.8	95.7	96.5	96.7	97.6	87.7	99.1
24-Sep	98.8	99.2	99.2	99.1	98.3	97.3	97.2	93.6	91.6	89.8	80.3	54.0	43.7	38.5	34.4	32.7	32.8	34.6	50.7	70.3	71.9	78.9	80.9	83.8	73.0	99.2
25-Sep	83.3	83.0	90.1	85.6	83.4	88.5	87.3	83.9	80.0	77.7	76.1	69.2	69.2	67.6	66.8	66.7	68.6	71.9	76.7	82.3	85.8	89.3	89.2	92.5	79.8	92.5
26-Sep	89.3	88.4	92.4	95.4	90.2	88.2	93.6	93.4	92.3	88.5	88.3	76.6	69.6	63.7	55.2	52.0	59.0	59.3	60.8	69.1	83.5	83.7	85.0	86.7	79.3	95.4
27-Sep	90.4	90.9	90.8	86.6	86.2	89.7	91.4	87.7	82.9	77.4	69.9	65.1	59.2	53.2	49.9	51.0	50.7	59.7	70.5	78.0	82.7	89.4	86.5	85.4	76.1	91.4
28-Sep	83.8	81.9	79.4	78.6	79.6	80.2	77.0	77.1	76.0	72.0	68.5	68.7	65.2	60.5	55.6	49.3	49.4	56.3	63.5	70.7	79.8	81.7	89.8	93.2	72.4	93.2
29-Sep	92.2	94.2	94.7	92.7	92.7	93.1	89.8	90.9	88.4	83.9	76.0	65.7	54.2	52.9	55.4	54.9	50.5	54.7	60.5	61.7	62.0	62.2	62.9	61.7	72.8	94.7
30-Sep	59.0	56.9	58.3	62.6	66.8	67.8	70.3	68.0	71.5	70.0	50.3	39.5	34.9	32.2	30.8	29.9	29.4	31.7	36.0	40.6	45.2	54.6	57.7	58.2	50.9	71.5
	81.1	83.0	84.4	85.2	86.4	87.4	88.6	86.3	81.5	74.6	67.5	60.2	54.6	50.3	47.2	46.3	47.0	49.6	55.5	62.3	69.1	74.8	77.8	79.8	Diurnal Average	
	98.8	99.2	99.2	99.3	99.4	99.5	99.5	99.5	99.5	99.1	89.9	82.0	77.1	73.4	71.5	72.8	76.3	82.6	89.4	93.8	95.7	96.5	96.7	97.8	Diurnal Maximum	

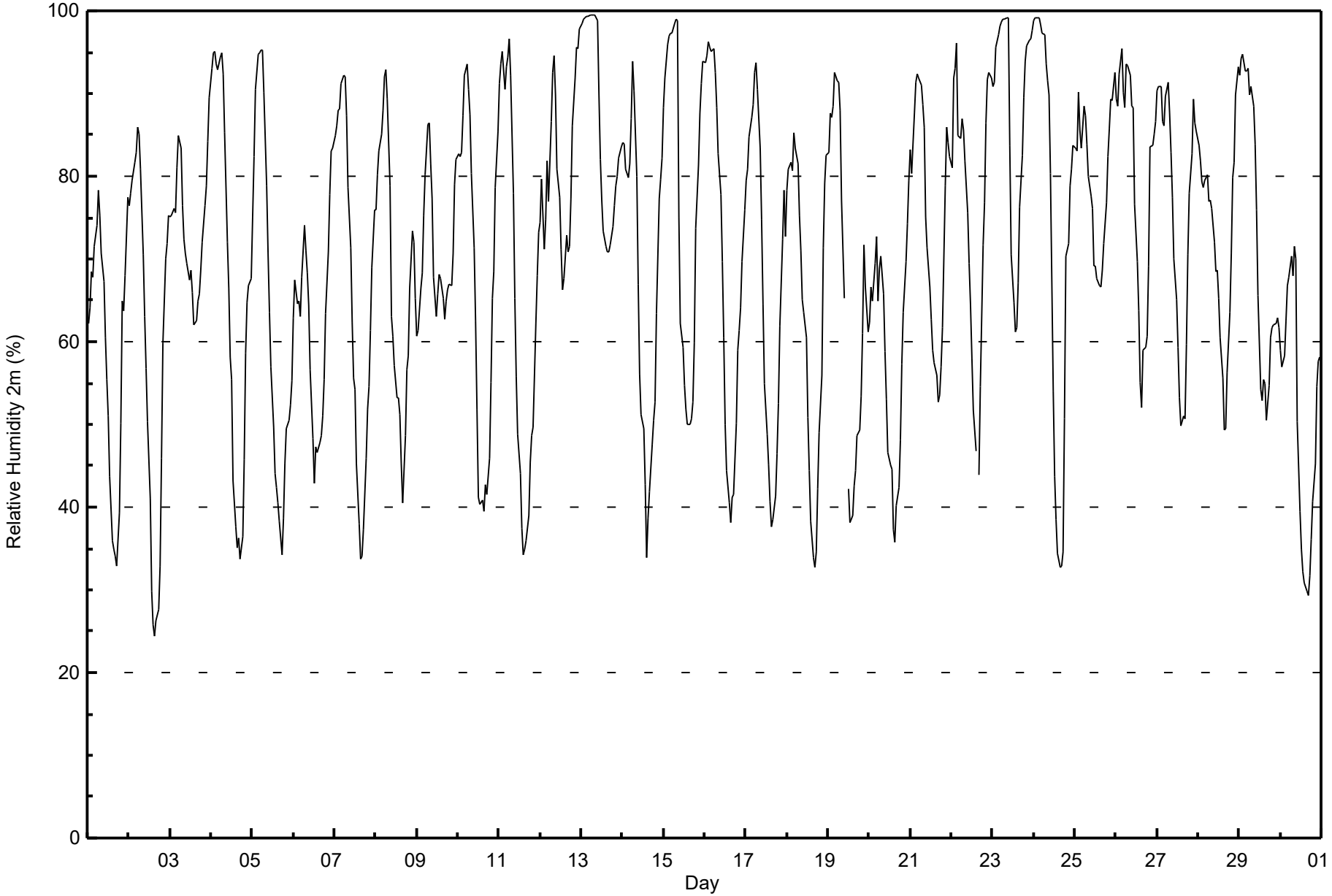
DF - DAS Failure

Wood Buffalo Environmental Association

Hourly Averages

Relative Humidity 2m (RH2) - %

Fort Hills - September 2024



Concentration Ranges (%)	Number of Hours	%	Cumulative %
0 - 20	0	0.00	0.00
20 - 40	55	7.67	7.67
40 - 60	155	21.62	29.29
60 - 80	249	34.73	64.02
80 - 100	258	35.98	100.00

Total Number of Valid Hours: 717

Total Number of Hours: 720

Wood Buffalo Environmental Association

Summary of Hour Averages

Wind Speed 10m (WS10) - km/h

Fort Hills - September 2024

Maximum Speed: 26 km/h on Sep 2 22:00

Maximum Daily Speed Average: 13.5 km/h on Sep 20

Minimum Speed Value: 0 km/h on Sep 12 04:00

Minimum Daily Speed Average: 0.4 km/h on Sep 22

Maximum Diurnal Speed Average: 6.2 km/h at hour 14

Minimum Diurnal Speed Average: 0.8 km/h at hour 20

Monthly Average Velocity: 2.5 km/h 235.0 deg

Percentiles: P_1 = 1 P_{10} = 3 Q_1 = 5 Median = 9 Q_3 = 13 P_{90} = 17 P_{99} = 23

Hours in Service:	720
Hours of Data:	717
Hours of Missing Data:	3
Percent Operational Time:	99.6

Day	Hourly Period Ending At (MST)																								Daily	Daily
	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24	Average	Maximum
1-Sep	SSW4	S6	SSE9	S14	S12	SSE11	S10	S12	S14	SSW11	S13	S17	SSW18	SSW19	SW18	SW20	SW18	SW17	SW11	SW6	SSW6	WSW6	SW2	SSE3	SSW10.5	SW20
2-Sep	S6	S6	SSE6	SSE7	SSE7	SSE10	SSE9	S10	S10	S8	S12	S15	SSW16	SW20	SW19	SW19	SW21	WSW15	WNW10	NNW17	N24	NNE26	NNE24	NNE16	SSW3.6	NNE26
3-Sep	N19	NNE13	N7	N11	NNW8	NNW6	WNW5	NNW5	N14	N13	N12	N11	NNE16	NNE14	NE10	NNE9	NE10	NNE11	NNE10	N10	NNE11	NNE10	N5	NNW5	N9.6	N19
4-Sep	NNW4	WNW3	W3	SSW6	SSW5	S4	S5	SSW6	SSW7	NNW7	WNW6	NW5	SE2	WNW10	NW15	WNW11	WNW12	WNW13	WNW10	W7	WSW6	SW4	WSW6	NNW10	WNW4.8	NW15
5-Sep	N15	N6	WNW3	SW3	S3	SSW5	S5	SSE4	S7	SSW7	S11	S12	SSE13	S15	SSE16	SSE18	SSE19	SE20	SSE21	SSE22	SSE21	SSE21	SSE20	S12	SSE10.2	SSE22
6-Sep	S8	SSE7	SSE15	SSE15	S18	S13	SSW9	S15	SSW22	SSW17	SSW15	SSW16	SSW15	SSW15	S14	S18	SSW17	SSW15	SSW9	S7	SW5	NW3	W4	S2	S11.3	SSW22
7-Sep	SSW2	S4	S5	SSE6	SSE8	SSE10	SSE10	SSE11	S11	SSE11	SSE12	S15	S15	SSW16	SSW17	SW18	SSW17	SSW14	SSW11	SW13	SW11	SW8	SW3	S5	SSW9.4	SW18
8-Sep	SSE4	SSE5	SE5	SSE8	SSE6	SSE6	SSE9	SSE7	SSW4	SSE2	SE7	SSE8	WSW2	SSW5	SSE6	SSE6	SSW2	N4	NNE7	N10	NNE14	NNE22	NNE21	N17	ENE2.0	NNE22
9-Sep	NNE14	ENE3	NNE7	NNE18	NNE12	NNE11	NNW12	NNE10	NNE10	W6	NNW4	WNW5	W13	W16	W18	WSW17	WSW18	W21	W23	WNW18	WNW13	W8	SW9	SW9	WNW7.4	W23
10-Sep	SW9	SW9	SW7	SW12	SSW10	SW11	SW13	SW13	SSW14	SSW14	S11	SW4	WNW18	WNW16	WNW13	W13	NW12	WNW10	NW7	N6	N7	N10	N7	NNW5	W6.5	WNW18
11-Sep	NNW5	NNW6	N7	N7	N6	NNW5	NNW4	NNW3	NNW5	NNW3	NE2	ESE3	SE4	SE6	W3	WNW4	NNW5	N8	NNE8	NNE7	E4	NNW5	NNW6	NNW5	N3.6	N8
12-Sep	N4	S2	SW1	WSW0	SW1	SSE12	SSE10	SW3	NNW5	N4	NNE5	NNE7	NE7	ENE9	E9	SE9	SE11	SSE10	SSE6	W1	NNW2	NNW4	ESE1	N0	ESE2.2	SSE12
13-Sep	WNW1	NNW5	NNW4	NNW6	NNW6	N3	NW5	NW5	NW5	NNW7	N13	N17	N14	N15	NNE16	N16	N14	N12	N11	N12	NNW11	NNW10	WNW5	W6	N8.5	N17
14-Sep	WNW5	W6	WNW9	WNW6	W9	WSW6	S5	SSE6	SSW6	WSW10	WSW10	WSW9	SW8	SW7	WNW17	NW15	NW14	NW9	NNE12	NE9	NNE4	NNW3	N9	N13	WNW4.8	WNW17
15-Sep	N7	NNW7	NNW5	N6	NNW4	NW3	NNW5	NNW5	NNW4	N4	NNE6	E1	E1	SE4	ESE6	SE6	ESE7	ESE6	ENE5	N5	NNW7	NW4	NW2	SW3	NNE2.4	NNW7
16-Sep	SE8	SSE8	SSE9	SSE11	SSE14	SSE11	S9	S14	SSW13	SSW12	SSW19	SW18	SW20	SW18	WSW18	WSW11	WSW15	SW15	SW8	SSW9	SW7	SW11	SSW10	SSW9	SSW10.8	SW20
17-Sep	SE10	SSE11	SSE9	SSE10	SSE7	SSE11	SE11	SSE12	SSW14	SSW14	SSW12	S10	SSE11	S9	SSW8	ESE7	SE11	SSE10	SE10	ESE7	ENE2	NNW2	SSE6	SSE8	SSE8.3	SSW14
18-Sep	S6	SSE6	SSE9	S7	SSE9	SSE15	SSE18	S13	SSW10	NW6	NW16	WNW11	W12	W16	W16	WNW11	WNW10	NW8	NNW8	N5	NNW5	W4	SW3	SW2	WSW3.9	SSE18
19-Sep	SSW3	SSW3	SSE5	SSE6	S8	SSE8	SSE8	SSE8	SSE8	SSE10	DF	DF	SSE9	SSE9	SSW8	SSE8	SSE7	NNW5	NE12	NE6	NNW5	NNW7	N9	N12	SE2.9	N12
20-Sep	N12	N8	N10	N9	N11	N15	N13	NNE15	NNE17	NNE14	N18	N21	N22	N22	N21	N20	NNW20	N16	N12	NNW7	NW8	NW8	NNW7	NNW5	N13.5	N22
21-Sep	NNW6	NNW4	NW3	WNW4	SW4	S6	SSE6	S4	S5	SSE9	SSE10	SSE12	SSE12	S13	SSE13	SSE13	SSE13	SSE12	SSE15	SE15	SW12	SE6	SE9	SE5	SSE6.8	SE15
22-Sep	SSE2	N3	N3	NNE2	SSE4	SSE5	SSE8	S7	SSW8	S5	SSE5	SW6	SW5	SSW7	SE7	DF	SE4	N11	N9	NNW8	N7	WNW3	NW3	N8	S0.4	N11
23-Sep	N11	N9	NW3	W3	WNW2	NW3	NNE3	NW4	WSW2	SW2	SSW4	S5	SE8	S10	S12	S12	S15	SSE14	SSE12	S10	S13	SSE12	S10	SSE9	S4.7	S15
24-Sep	SSE9	SSE8	SSE9	SSE7	S8	S8	S10	SSW16	SSW13	SSW10	SW13	W21	W23	WNW23	WNW22	WNW19	WNW14	NW9	NNW2	NE1	N2	WSW2	N3	N2	WSW6.1	WNW23
25-Sep	SSW2	S4	SSW2	SSE5	S5	NW3	N6	NNW5	NNE6	NNW3	W4	SW9	SW9	S11	S12	S14	SSW11	S7	S6	SSE6	SW7	S6	SSW3	SSW5	SSW4.1	S14
26-Sep	SW6	W7	NNW4	NNW7	NW4	NW5	WSW5	SW7	W6	WSW8	WSW10	W14	W13	W14	NW10	WSW4	SSE11	WSW12	W10	WSW3	SSW8	S5	SSW6	SSE5	WSW5.7	W14
27-Sep	SSE7	S8	S6	SSE7	SSE9	SW4	S9	SW7	SSW12	SW13	SW17	SSW14	SW15	SW12	SW12	SW13	SW8	S8	S10	S11	S13	SSW11	SSW13	SW16	SSW9.9	SW17
28-Sep	SW18	SW17	SW19	WSW21	WSW21	W14	W11	WSW15	WSW15	WSW17	WSW16	WSW19	WSW18	SW19	WSW15	W13	W5	ESE6	ESE6	SE6	NNW5	N4	N3	NNW3	WSW10.4	WSW21
29-Sep	NNE2	NW3	NW3	N2	NNE3	NNW8	N9	N11	N15	N13	N16	NNE17	NNE18	N20	N19	N18	N14	N12	NNW9	NW7	NW8	NW7	NW9	WNW7	N9.8	N20
30-Sep	NW13	NW15	WNW11	WNW4	NNW4	WNW6	W8	WSW7	S9	SSE8	WSW8	WNW15	W18	W23	WNW20	WNW25	WNW21	WNW15	WNW10	WNW9	W9	W8	WSW8	WSW8	W10.3	WNW25
	NW0.8	WSW1.3	SSW1.5	SSW1.7	SSW2.8	S2.6	S3.2	SSW4.1	SW4.1	SW3.4	SW3.6	SW4.6	WSW5.2	WSW6.2	WSW5.5	WSW5.5	WSW4.5	WSW3.3	WNW1.2	NW0.8	WNW2.1	NW1.9	WNW1.1	WNW1.3	Diurnal Average	
	N19	SW17	SW19	WSW21	WSW21	SSE15	SSE18	SSW16	SSW22	WSW17	SSW19	W21	W23	W23	WNW22	WNW25	WNW21	W21	W23	SSE22	N24	NNE26	NNE24	N17	Diurnal Maximum	

DF - DAS Failure

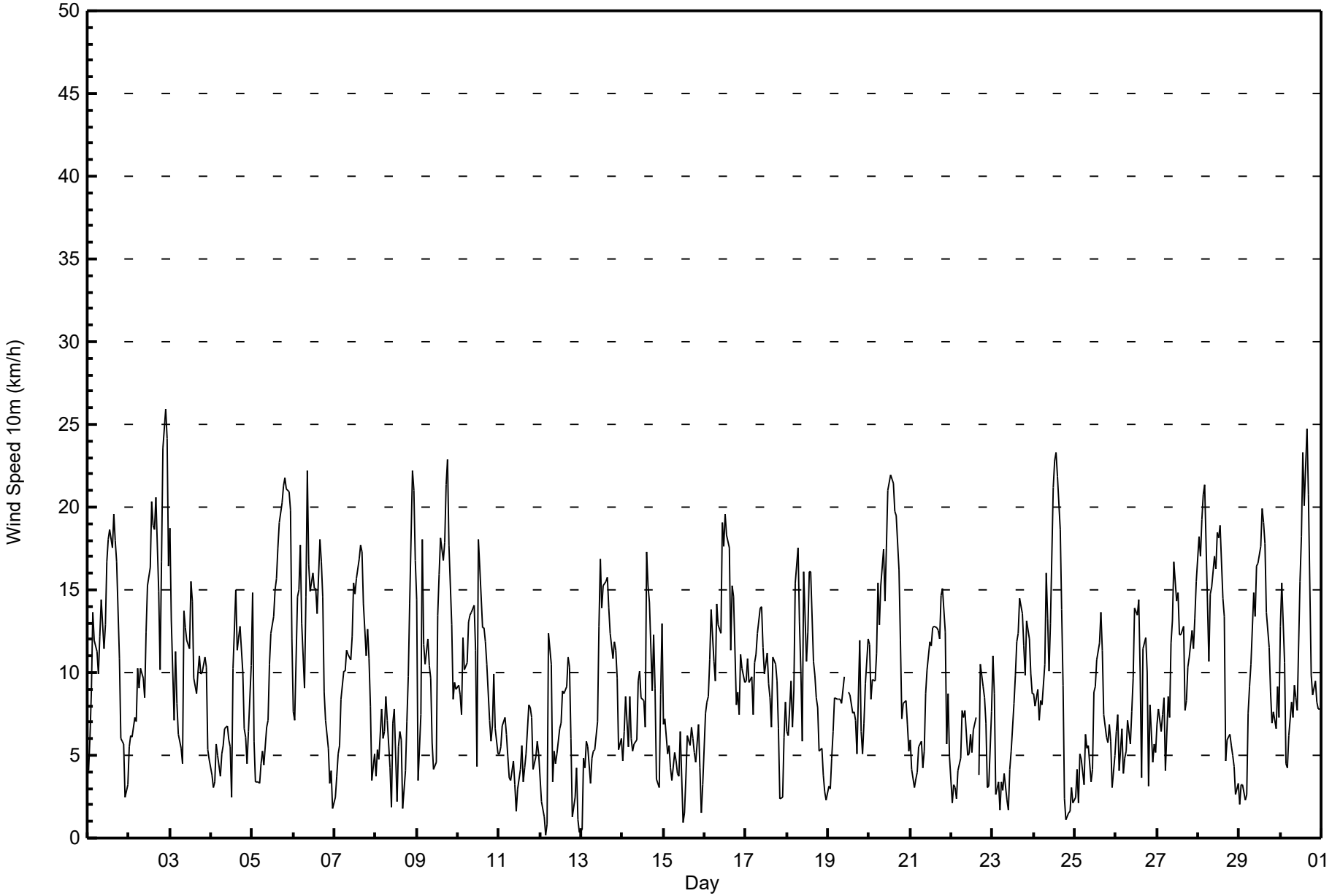
All monthly, daily, and diurnal averages have been calculated using vector methods

Wood Buffalo Environmental Association

Hourly Averages

Wind Speed 10m (WS10) - km/h

Fort Hills - September 2024



Wind Speed Ranges (km/h)	Number of Hours	%	Cumulative %
0 - 5	181	25.24	25.24
6 - 11	305	42.54	67.78
12 - 19	196	27.34	95.12
20 - 28	35	4.88	100.00
29 - 38	0	0.00	100.00
> 38	0	0.00	100.00

Total Number of Valid Hours: 717

Total Number of Hours: 720

Wood Buffalo Environmental Association

Frequency Distribution

Wind Speed 10m (WS10) - km/h

Fort Hills - September 2024

Wind Speed Ranges (km/h)	Wind Direction																
	N	NNE	NE	ENE	E	ESE	SE	SSE	S	SSW	SW	WSW	W	WNW	NW	NNW	**Totals**
0 - 5	16	7	2	3	3	2	6	12	17	14	16	7	8	13	17	38	181
6 - 11	29	16	5	1	1	8	14	68	37	24	23	14	12	17	12	24	305
12 - 19	29	15	1	0	0	0	1	22	28	27	26	13	13	12	7	2	196
20 - 28	7	4	0	0	0	0	1	5	0	1	4	2	5	5	0	1	35
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	81	42	8	4	4	10	22	107	82	66	69	36	38	47	36	65	717

Total Number of Valid Hours: 717

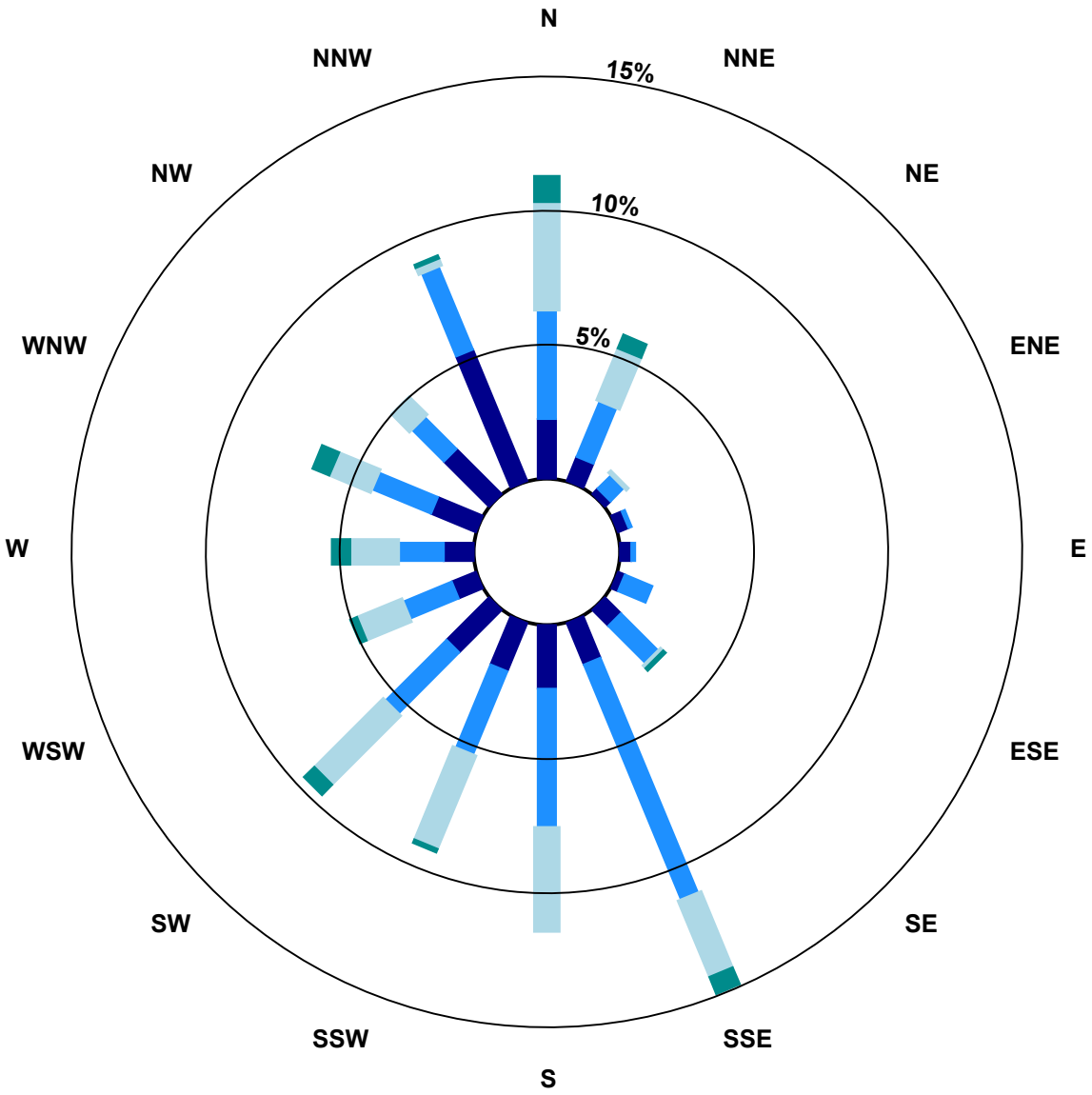
Total Number of Hours: 720

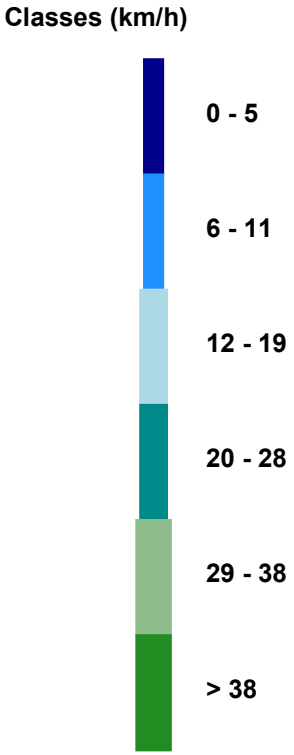
Wood Buffalo Environmental Association

Wind Rose Sep 2024

Wind Speed 10m (WS10) - km/h

Fort Hills





Total Number of Valid Hours: 717

Wood Buffalo Environmental Association

Summary of Hour Standard Deviations

Wind Speed 10m (WS10) - km/h

Fort Hills - September 2024

Number of Exceedences (AAAQO): 1-hr: 0 24-hr: 0
Maximum Value: 7 km/h on Sep 24 12:00

Minimum Value: 1 km/h on Sep 15 21:00

Percentiles: P_1 = 1 P_{10} = 1 Q_1 = 1 Median = 2 Q_3 = 3 P_{90} = 4 P_{99} = 6

Hours in Service:	720
Hours of Data:	717
Hours of Missing Data:	3
Hours of Calibration:	0
Percent Operational Time:	99.6

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

DF - DAS Failure

Wood Buffalo Environmental Association

Summary of Hour Averages

Wind Direction 10m (WD10) - deg

Fort Hills - September 2024

Direction of Maximum Speed: 24 deg on Sep 2 22:00
Direction of Maximum Daily Speed Average: 1.2 deg on Sep 20

Direction of Minimum Speed: 243 deg on Sep 12 04:00
Direction of Minimum Daily Speed Average: 0.4 deg on Sep 22

Monthly Average Direction: 235.0 deg

Hours in Service:	720
Hours of Data:	717
Hours of Missing Data:	3
Percent Operational Time:	99.6

Day	Hourly Period Ending At (MST)																								Daily
	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24	Average
1-Sep	195	169	154	169	173	168	177	177	190	192	188	189	200	211	225	228	223	228	217	224	207	249	216	152	199.3
2-Sep	180	178	160	155	154	153	153	181	188	171	170	187	198	215	219	230	230	246	301	335	8	24	21	13	210.6
3-Sep	9	16	351	10	330	337	301	334	10	7	359	11	13	20	36	33	34	27	18	6	25	22	350	332	9.7
4-Sep	331	292	267	204	199	174	189	212	211	328	301	304	141	301	322	303	300	298	289	281	237	234	238	340	282.6
5-Sep	5	351	287	216	184	192	178	166	170	198	185	169	166	184	168	167	157	145	149	151	155	155	159	179	163.2
6-Sep	185	165	159	150	171	177	192	184	201	198	199	207	206	199	188	181	195	208	208	180	234	304	274	191	190.9
7-Sep	209	188	171	157	147	147	155	161	183	154	165	180	181	201	213	220	208	211	207	220	235	234	215	176	191.6
8-Sep	166	167	144	152	153	161	158	162	193	161	127	163	250	195	162	163	207	354	18	11	15	13	13	11	77.8
9-Sep	13	60	15	19	33	19	348	18	27	272	331	288	277	271	263	248	257	273	278	291	285	271	219	225	298.3
10-Sep	225	220	228	233	209	228	225	217	210	205	183	217	285	303	302	273	314	302	312	360	5	2	349	331	259.5
11-Sep	342	334	350	350	352	336	330	331	344	336	52	122	126	141	269	297	331	351	17	24	81	335	348	347	352.8
12-Sep	4	185	214	243	221	156	147	235	339	6	31	18	45	74	89	124	144	150	159	274	335	346	118	11	108.7
13-Sep	302	342	339	339	332	11	322	307	325	348	360	2	1	3	17	10	359	356	355	355	346	338	300	275	351.5
14-Sep	296	281	298	297	280	243	175	147	208	237	252	257	220	236	287	305	326	322	24	51	30	341	354	358	295.7
15-Sep	2	347	343	349	333	315	347	329	345	354	19	97	81	143	107	133	102	114	61	351	344	315	311	215	11.5
16-Sep	145	149	159	166	162	155	172	187	211	202	206	215	231	228	237	255	237	230	217	202	220	217	212	193	205.7
17-Sep	140	166	154	155	151	151	146	168	193	200	195	182	165	175	195	116	145	149	130	112	78	334	155	166	161.9
18-Sep	190	153	147	170	160	150	156	176	211	319	326	296	268	279	262	283	284	311	340	350	327	279	215	223	245.0
19-Sep	192	212	160	158	178	154	148	163	161	150	DF	DF	155	165	195	159	154	348	37	49	344	342	3	9	141.1
20-Sep	3	1	4	354	355	7	11	18	17	18	8	10	8	6	4	357	347	358	360	332	325	325	339	328	1.2
21-Sep	330	343	307	285	220	181	168	172	184	151	160	161	166	171	162	166	168	163	156	141	230	124	136	124	166.1
22-Sep	158	9	0	23	163	151	154	174	196	191	166	219	215	207	138	DF	125	359	359	346	354	300	318	359	190.8
23-Sep	2	354	307	266	293	309	19	309	254	230	193	190	145	184	183	183	176	166	166	175	169	160	180	168	179.4
24-Sep	156	161	152	159	183	186	180	204	211	192	216	270	275	285	291	299	297	323	345	43	355	244	360	1	247.5
25-Sep	202	179	197	163	169	323	354	348	12	346	270	227	216	179	178	182	200	185	177	158	216	187	200	195	196.4
26-Sep	215	262	328	332	313	318	241	232	270	251	245	273	265	274	309	250	158	240	277	256	208	191	204	157	254.5
27-Sep	152	184	179	156	162	234	170	216	210	221	216	203	218	226	227	222	220	176	185	173	186	194	201	215	201.1
28-Sep	219	218	227	240	256	276	275	256	248	255	242	246	253	235	240	265	267	120	115	124	336	3	349	341	246.0
29-Sep	13	315	323	4	20	345	354	358	3	6	8	15	13	10	5	360	357	349	344	319	318	323	324	302	355.4
30-Sep	311	310	293	282	330	284	262	248	187	161	255	283	277	273	287	286	291	296	294	282	277	262	244	238	278.5
	310.6	238.8	209.9	192.8	192.7	183.7	181.8	200.8	214.0	216.3	224.0	235.8	238.8	243.1	249.7	247.0	238.4	257.2	290.6	312.1	296.2	317.7	292.6	294.7	
	Diurnal Average																								

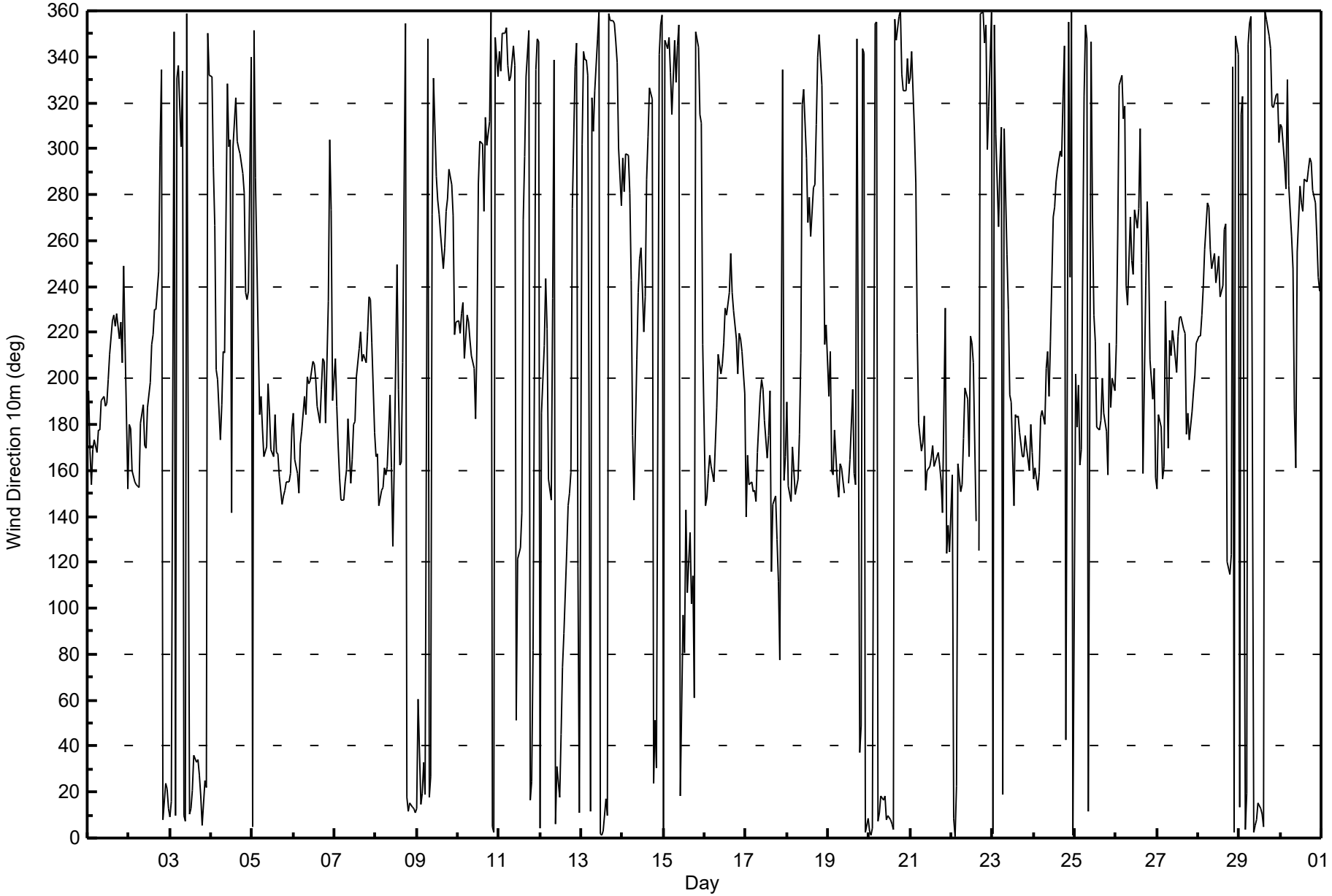
DF - DAS Failure
All monthly, daily, and diurnal averages have been calculated using vector methods

Wood Buffalo Environmental Association

Hourly Averages

Wind Direction 10m (WD10) - deg

Fort Hills - September 2024



Wood Buffalo Environmental Association

Summary of Hour Standard Deviations

Wind Direction 10m (WD10) - deg

Fort Hills - September 2024

Number of Exceedences (AAAQO): 1-hr: 0 24-hr: 0
Maximum Value: 101 deg on Sep 12 04:00

Minimum Value: 7 deg on Sep 5 22:00

Percentiles: P_1 = 7 P_{10} = 10 Q_1 = 13 Median = 17 Q_3 = 26 P_{90} = 49 P_{99} = 86

Hours in Service:	720
Hours of Data:	717
Hours of Missing Data:	3
Hours of Calibration:	0
Percent Operational Time:	99.6

Day	Hourly Period Ending At (MST)																								Daily
	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24	Maximum
1-Sep	32	16	9	7	10	10	19	12	11	16	17	14	16	15	23	15	14	10	8	30	10	22	58	29	58
2-Sep	17	21	11	16	9	7	11	12	15	20	18	14	14	14	18	13	10	17	30	15	21	11	11	13	30
3-Sep	13	14	19	18	11	8	20	40	14	15	15	16	13	17	19	18	16	14	16	14	9	11	15	12	40
4-Sep	24	18	26	20	28	38	29	23	25	52	45	58	83	52	25	27	17	17	12	18	15	20	16	47	83
5-Sep	14	29	49	40	36	26	17	21	16	20	20	22	22	21	17	15	11	8	7	7	7	7	7	10	49
6-Sep	11	11	11	11	7	15	20	13	10	11	13	12	15	12	14	14	11	8	12	26	27	30	13	78	78
7-Sep	39	19	24	17	9	9	10	10	10	15	14	15	16	15	13	13	9	8	8	9	10	13	60	32	60
8-Sep	26	19	32	14	12	16	10	13	27	59	22	35	69	19	24	25	53	56	16	13	31	16	11	10	69
9-Sep	13	80	47	13	25	23	20	31	19	50	87	43	28	19	13	14	20	14	16	12	15	18	19	11	87
10-Sep	11	17	18	13	9	10	11	11	11	12	18	73	18	20	20	16	17	13	14	14	13	16	15	11	73
11-Sep	10	10	10	16	9	19	24	28	17	43	78	79	57	39	62	47	54	14	8	15	46	30	15	18	79
12-Sep	51	75	92	101	86	11	12	58	12	17	38	42	33	23	25	20	13	11	14	54	19	26	77	88	101
13-Sep	89	10	21	11	15	50	48	17	21	17	18	14	15	14	12	15	15	14	14	14	13	14	21	12	89
14-Sep	25	13	10	21	12	33	25	24	30	18	19	25	29	60	19	20	15	12	13	13	47	13	13	15	60
15-Sep	17	15	15	8	14	17	13	19	33	58	35	94	91	84	46	51	32	19	17	14	10	17	70	38	94
16-Sep	18	11	10	11	8	9	14	11	10	12	10	14	16	16	19	20	10	12	12	15	14	10	12	9	20
17-Sep	13	15	17	13	16	9	9	16	13	13	16	23	23	29	41	37	17	11	10	17	59	64	77	33	77
18-Sep	36	9	12	18	11	16	8	22	17	47	16	30	25	18	16	33	29	23	8	17	18	44	32	51	51
19-Sep	31	36	20	16	15	15	12	20	20	18	DF	DF	35	33	36	14	8	81	11	22	33	9	12	10	81
20-Sep	12	15	12	15	16	12	11	11	13	13	15	15	16	16	17	18	14	16	13	17	10	8	12	25	25
21-Sep	20	27	21	30	46	27	23	27	18	17	17	20	24	27	21	16	11	10	9	18	12	24	8	30	46
22-Sep	64	71	51	56	24	17	10	16	18	29	48	34	38	36	29	DF	42	29	19	20	14	56	60	11	71
23-Sep	13	21	66	34	59	48	35	23	51	62	30	24	28	23	13	11	10	7	12	16	11	19	19	15	66
24-Sep	18	15	10	26	19	19	17	10	10	10	21	17	15	15	16	15	18	13	24	74	79	61	24	54	79
25-Sep	68	39	70	18	23	58	18	30	27	41	30	13	10	13	17	16	21	19	29	22	21	26	45	24	70
26-Sep	51	35	31	12	47	45	80	19	45	13	13	14	14	14	28	62	10	47	22	62	10	38	20	24	80
27-Sep	17	11	29	15	22	48	14	23	17	10	14	19	22	21	19	9	20	7	15	10	13	27	9	9	48
28-Sep	9	10	10	10	12	11	12	12	15	16	21	13	16	13	22	20	24	22	19	57	27	16	55	51	57
29-Sep	45	30	65	71	53	15	15	14	15	14	15	13	13	12	14	16	13	13	10	12	15	21	10	15	71
30-Sep	13	12	17	51	32	27	9	15	15	15	26	20	19	19	20	17	15	13	11	13	12	16	19	34	51
	89	80	92	101	86	58	80	58	51	62	87	94	91	84	62	62	54	81	30	74	79	64	77	88	
	Diurnal Maximum																								

DF - DAS Failure

WOOD BUFFALO ENVIRONMENTAL ASSOCIATION

CONTINUOUS AMBIENT AIR QUALITY
MONITORING PROGRAM
MONTHLY REPORT

AMS25
WASKŌW OHCI PIMÂTISIWIN
SEPTEMBER 2024

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

October 31, 2024

WOOD BUFFALO ENVIRONMENTAL ASSOCIATION - WASKŌW OHCI PIMÂTISIWIN (AMS25)
SEPTEMBER 2024

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	687	33	33	100	18.9	0	3.9	0
H2S(ppb) Average	683	37	37	100	3.1	0	0.7	0
Temperature 2 m (C) Average	720	0	0	100	31.1	0	20.2	0
Relative Humidity (%) Average	706	0	14	98.06	100	-	89.5	-
Wind Speed 10 m (km/h) Average	713	0	7	99.03	16	0	6	0
Wind Direction 10 m (deg) Average	713	0	7	99.03	-	-	-	-

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

WOOD BUFFALO ENVIRONMENTAL ASSOCIATION - WASKŌW OHCI PIMÂTISIWIN (AMS25)
SEPTEMBER 2024

MONTHLY SUMMARY FOR AIR QUALITY/ METEOROLOGICAL MONITORING MEASUREMENTS

					Percentile						
Parameter	Number	Mean	StnDev	Total	Min	P10	Q1	Median	Q3	P90	Max
SO2 (ppb) Average	687	0.81	2.4	-	0	0	0	0.1	0.3	1.5	18.9
H2S (ppb) Average	683	0.26	0.3	-	0	0.1	0.1	0.2	0.3	0.6	3.1
Temperature 2 m (C) Average	720	12.55	5.9	-	-0.1	5	8.5	12.1	16	20.3	31.1
Relative Humidity (%) Average	706	75.41	19.4	-	26.5	46.4	61.6	77.3	93.2	99.4	100
Wind Speed 10 m (km/h) Average	713	3.9	3	-	0	1	2	3	6	7	16
Wind Direction 10 m (deg) Average	713	-	-	-	-	-	-	-	-	-	-

WOOD BUFFALO ENVIRONMENTAL ASSOCIATION - WASKŌW OHCI PIMÂTISIWIN (AMS25)

SEPTEMBER 2024

OPERATIONAL NOTES

Parameter	Period Start	Period End	Duration (Hours)	Notes
Relative Humidity	23 Sep 2024 23:00	24 Sep 2024 04:00	6	Sensor operated out of range
Relative Humidity	24 Sep 2024 08:00	24 Sep 2024 09:00	2	Sensor operated out of range
Relative Humidity	26 Sep 2024 05:00	26 Sep 2024 09:00	5	Sensor operated out of range
Relative Humidity	27 Sep 2024 07:00	27 Sep 2024 07:00	1	Sensor operated out of range
Wind Speed, Wind Direction	01 Sep 2024 22:00	01 Sep 2024 22:00	1	Flat line in sensor output signal
Wind Speed, Wind Direction	07 Sep 2024 02:00	07 Sep 2024 02:00	1	Flat line in sensor output signal
Wind Speed, Wind Direction	12 Sep 2024 19:00	12 Sep 2024 19:00	1	Flat line in sensor output signal
Wind Speed, Wind Direction	18 Sep 2024 01:00	18 Sep 2024 01:00	1	Flat line in sensor output signal
Wind Speed, Wind Direction	19 Sep 2024 02:00	19 Sep 2024 02:00	1	Flat line in sensor output signal
Wind Speed, Wind Direction	24 Sep 2024 21:00	24 Sep 2024 22:00	2	Flat line in sensor output signal

Wood Buffalo Environmental Association

Summary of Hour Averages

Sulphur Dioxide (SO_2) - ppb

Waskow ohci Pimatisiwin - September 2024

Number of Exceedences (AAAQO): 1-hr: 0 24-hr: 0
Maximum Value: 18.9 ppb on Sep 1 12:00 Maximum Daily Average: 3.9 ppb on Sep 8

Minimum Value: 0.0 ppb on Sep 1 17:00
Maximum Diurnal Average: 3.1 ppb at hour 12
Monthly Average: 0.81 ppb

Minimum Daily Average: 0.0 ppb on Sep 3
Minimum Diurnal Average: 0.1 ppb at hour 4
Percentiles: P_1 = 0.0 P_{10} = 0.0 Q_1 = 0.0 Median = 0.1 Q_3 = 0.3 P_{90} = 1.5 P_{99} = 12.7

Hours in Service:	720
Hours of Data:	687
Hours of Missing Data:	33
Hours of Calibration:	33
Percent Operational Time:	100.0

Day	Hourly Period Ending At (MST)																								Daily	Daily
	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24	Average	Maximum
1-Sep	0.1	0.1	0.2	0.2	Z	0.3	2.0	1.8	4.1	5.9	10.4	18.9	6.8	0.4	0.1	0.1	0.0	0.0	0.0	0.0	0.1	0.0	0.0	0.0	2.2	18.9
2-Sep	0.0	0.0	0.0	0.0	0.0	Z	0.0	0.0	0.5	2.2	7.9	3.8	0.3	0.1	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.6	7.9
3-Sep	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
4-Sep	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
5-Sep	0.0	0.0	Z	0.0	0.0	0.0	0.0	0.0	0.0	2.9	11.1	8.9	14.4	15.0	9.3	5.9	2.1	1.8	0.9	1.1	1.7	2.8	2.2	3.2	3.6	15.0
6-Sep	3.4	1.0	0.7	Z	1.2	0.8	1.1	4.6	1.3	0.6	0.3	0.2	0.2	0.3	0.9	0.4	0.2	0.4	0.3	0.3	0.2	0.2	0.1	0.2	0.8	4.6
7-Sep	0.1	0.1	0.1	0.1	Z	0.1	0.2	0.2	0.8	2.0	15.6	10.2	5.5	0.6	0.2	0.1	0.0	0.0	0.1	0.0	0.0	0.0	0.0	0.0	1.6	15.6
8-Sep	0.0	0.0	0.0	0.0	0.0	Z	0.0	0.0	0.3	1.0	12.7	13.2	10.0	10.3	7.5	7.4	7.9	5.5	3.1	3.3	3.1	1.7	1.0	0.4	3.9	13.2
9-Sep	Z	0.2	0.1	0.2	0.1	0.1	0.0	0.0	0.0	0.3	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	0.5
10-Sep	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
11-Sep	0.0	0.0	Z	0.0	0.0	0.0	0.1	0.0	0.1	0.1	13.2	7.7	1.2	0.5	0.4	0.5	0.4	0.3	0.2	0.2	0.2	0.1	0.0	0.0	1.1	13.2
12-Sep	0.0	0.0	0.0	Z	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	0.0	0.0	0.0	0.0	0.0	0.1
13-Sep	0.0	0.0	0.0	0.1	Z	0.3	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	0.3
14-Sep	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
15-Sep	Z	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	0.2	0.2	0.2	0.3	0.6	0.2	0.1	0.1	0.0	0.1	0.1	0.6
16-Sep	0.0	Z	0.1	0.2	0.1	0.2	0.1	0.1	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	0.0	0.0	0.0	0.1	0.6
17-Sep	0.0	0.0	Z	0.0	0.0	0.0	0.0	0.1	0.2	0.1	2.1	6.7	11.5	7.8	1.3	0.4	0.7	4.2	1.6	0.8	0.3	0.2	0.1	0.2	1.7	11.5
18-Sep	0.1	0.1	0.1	Z	0.2	0.2	0.2	0.4	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	0.4
19-Sep	0.0	0.1	0.1	0.1	Z	0.2	C	C	C	1.0	1.2	1.7	1.0	0.7	0.5	0.3	0.3	0.8	0.7	0.4	0.3	0.2	1.1	1.0	0.6	1.7
20-Sep	0.3	0.3	0.6	0.5	0.4	Z	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	0.3	0.5	0.3	0.2	0.6
21-Sep	Z	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.3	1.0	6.2	9.0	11.6	7.3	3.0	2.0	1.1	0.9	0.6	0.4	0.3	0.3	0.2	1.9	11.6
22-Sep	0.2	Z	0.2	0.1	0.2	0.1	0.1	0.1	0.2	0.4	7.2	11.4	2.0	0.4	0.3	1.3	9.0	4.8	1.5	0.9	0.5	0.5	0.4	0.3	1.8	11.4
23-Sep	0.2	0.2	Z	0.2	0.2	0.1	0.1	0.1	0.2	0.2	0.2	0.3	8.4	12.5	14.1	4.7	2.8	0.6	0.6	0.6	0.2	0.4	0.3	0.1	2.1	14.1
24-Sep	0.1	0.0	0.0	Z	0.0	0.0	0.1	0.2	0.1	0.0	0.1	0.0	0.0	0.0	0.1	0.0	0.0	0.0	0.1	0.2	0.1	0.1	0.2	0.2	0.1	0.2
25-Sep	0.2	0.1	0.1	0.2	Z	0.2	0.3	0.1	0.3	0.4	0.9	0.7	0.5	0.3	0.3	0.3	0.2	0.2	0.1	0.2	0.3	0.3	0.1	0.1	0.3	0.9
26-Sep	0.1	0.1	0.1	0.2	0.2	Z	0.2	0.2	0.2	0.2	0.2	0.1	0.1	0.0	0.1	0.0	0.0	0.0	0.5	3.2	0.6	0.6	0.6	0.2	0.3	3.2
27-Sep	Z	0.1	0.1	0.1	0.2	0.1	0.0	0.0	0.1	0.0	2.7	1.2	0.0	0.0	0.0	0.0	0.0	0.2	0.0	0.1	0.0	0.0	0.0	0.0	0.2	2.7
28-Sep	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	0.1	0.2	0.3	0.1	0.1	0.2	0.2	0.3	0.1	0.3
29-Sep	0.6	0.3	Z	0.3	0.3	0.4	0.6	1.0	0.6	0.5	0.5	0.6	0.6	1.2	1.5	0.8	0.3	0.2	0.2	0.4	0.3	0.2	0.1	0.2	0.5	1.5
30-Sep	0.2	0.1	0.2	Z	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	0.4	0.1	0.0	0.0	0.2	0.8
	0.2	0.1	0.1	0.1	0.1	0.1	0.2	0.3	0.4	0.6	3.0	3.1	2.4	2.1	1.5	0.9	0.9	0.7	0.4	0.4	0.3	0.3	0.3	0.2	Diurnal Average	
	3.4	1.0	0.7	0.5	1.2	0.8	2.0	4.6	4.1	5.9	15.6	18.9	14.4	15.0	14.1	7.4	9.0	5.5	3.1	3.3	3.1	2.8	2.2	3.2	Diurnal Maximum	

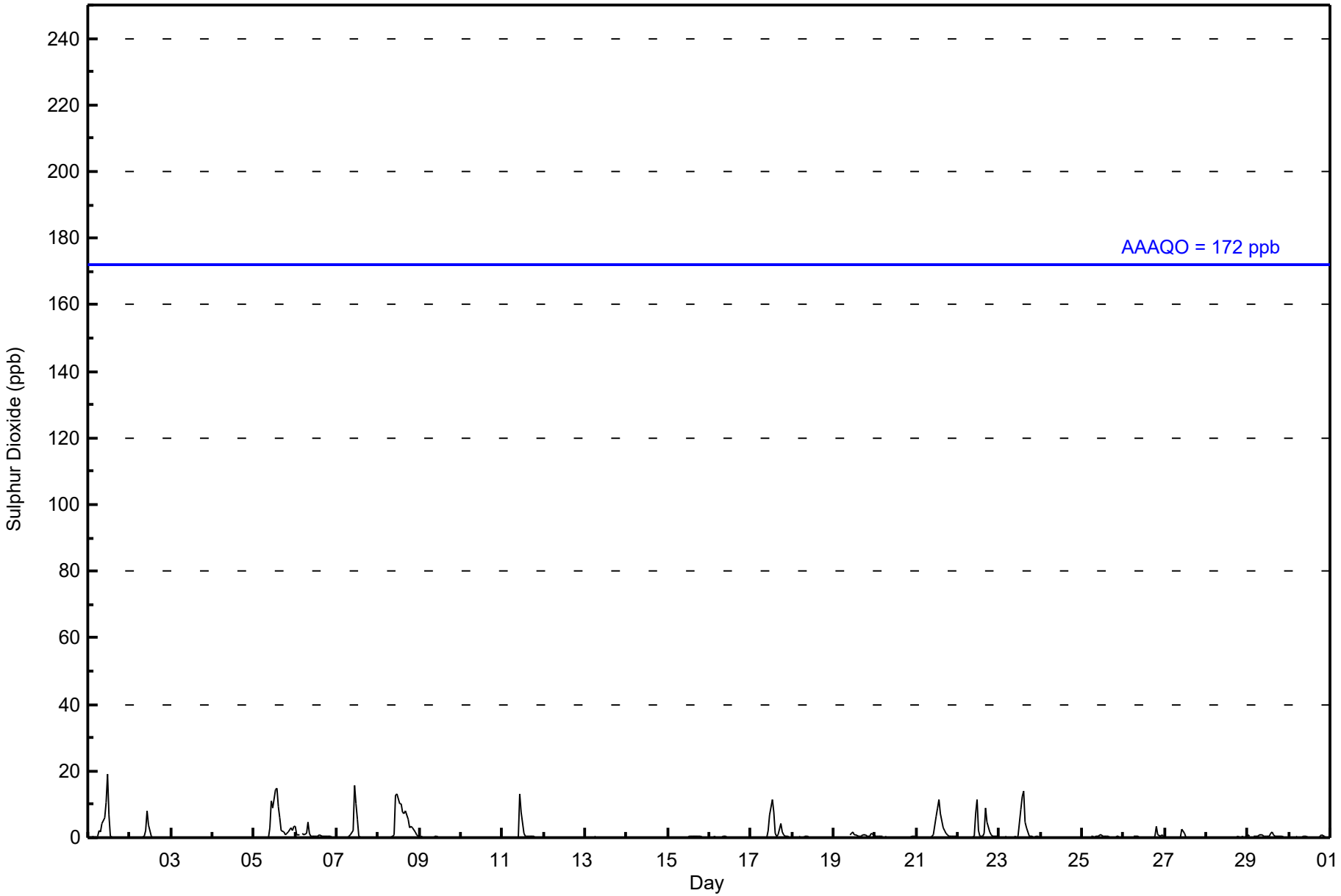
Z - zerospan C - Calibration
Alberta Ambient Air Quality Objectives (AAAQO): 1-hr 172 ppb 24-hr 48 ppb

Wood Buffalo Environmental Association

Hourly Averages

Sulphur Dioxide (SO_2) - ppb

Waskow ohci Pimatisiwin - September 2024



Sulphur Dioxide (SO_2) - ppb

Waskow ohci Pimatisiwin - September 2024

Concentration Ranges (ppb)	Number of Hours	%	Cumulative %
0 - 10	674	98.11	98.11
11 - 20	13	1.89	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: 687

Total Number of Hours: 720

Sulphur Dioxide (SO_2) - ppb

Waskow ohci Pimatisiwin - September 2024

Concentration Ranges (ppb)	Wind Direction																
	N	NNE	NE	ENE	E	ESE	SE	SSE	S	SSW	SW	WSW	W	WNW	NW	NNW	**Totals**
0 - 10	24	4	9	4	10	21	67	78	45	45	47	63	83	69	52	46	667
11 - 20	0	0	0	0	0	0	10	3	0	0	0	0	0	0	0	0	13
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	4	9	4	10	21	77	81	45	45	47	63	83	69	52	46	680

Total Number of Valid Hours: 680

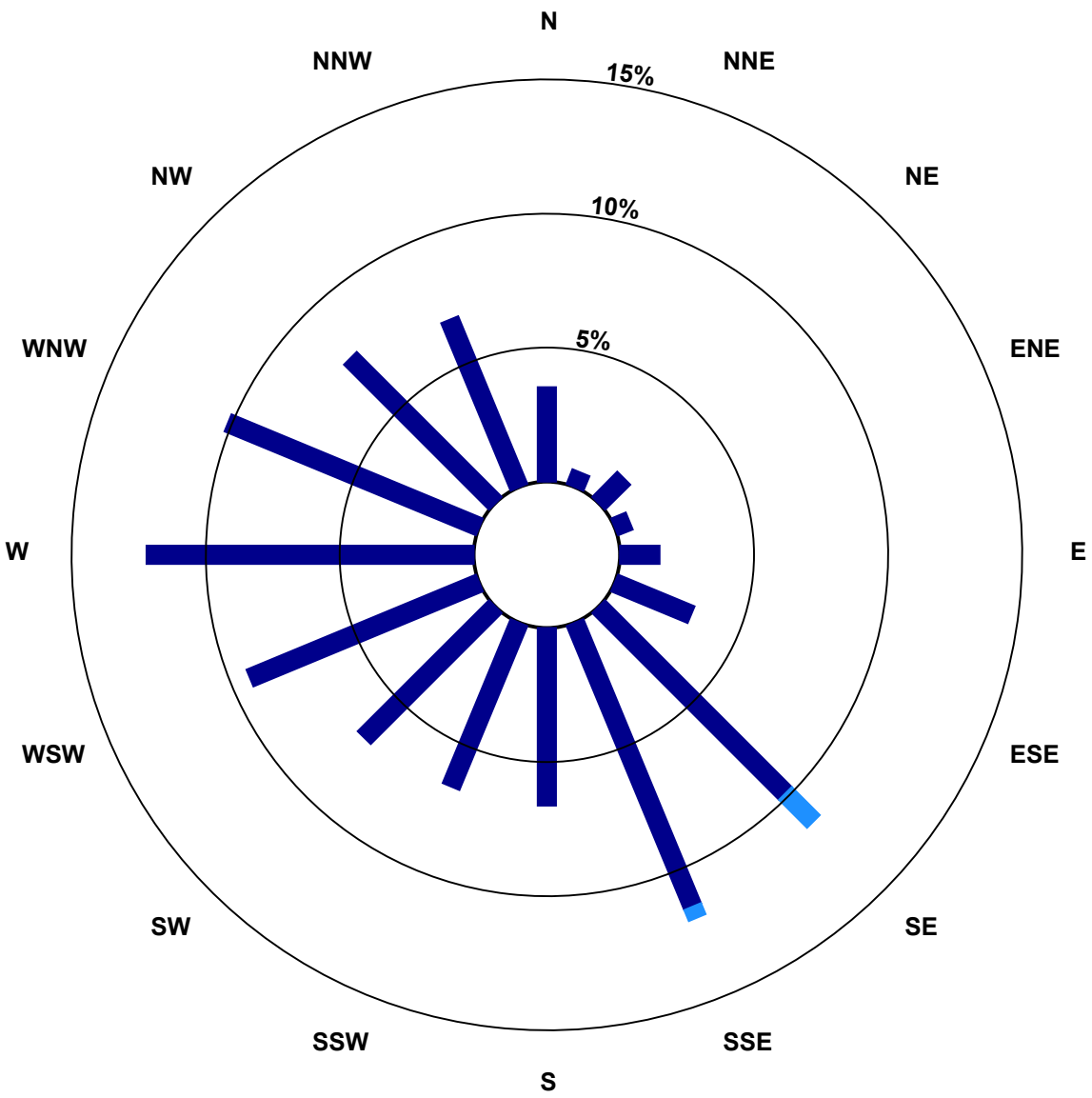
Total Number of Hours: 720

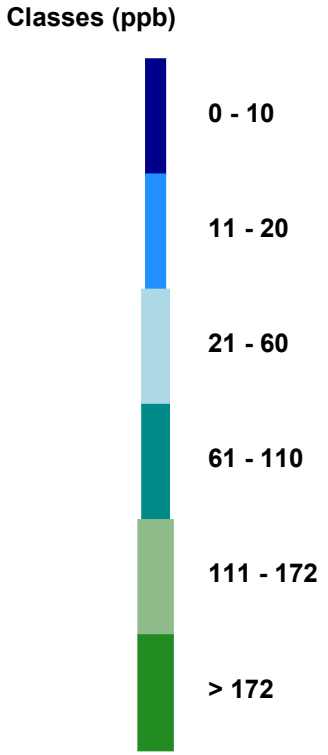
Wood Buffalo Environmental Association

Wind Rose Sep 2024

Sulphur Dioxide (SO_2) - ppb

Waskow ohci Pimatisiwin





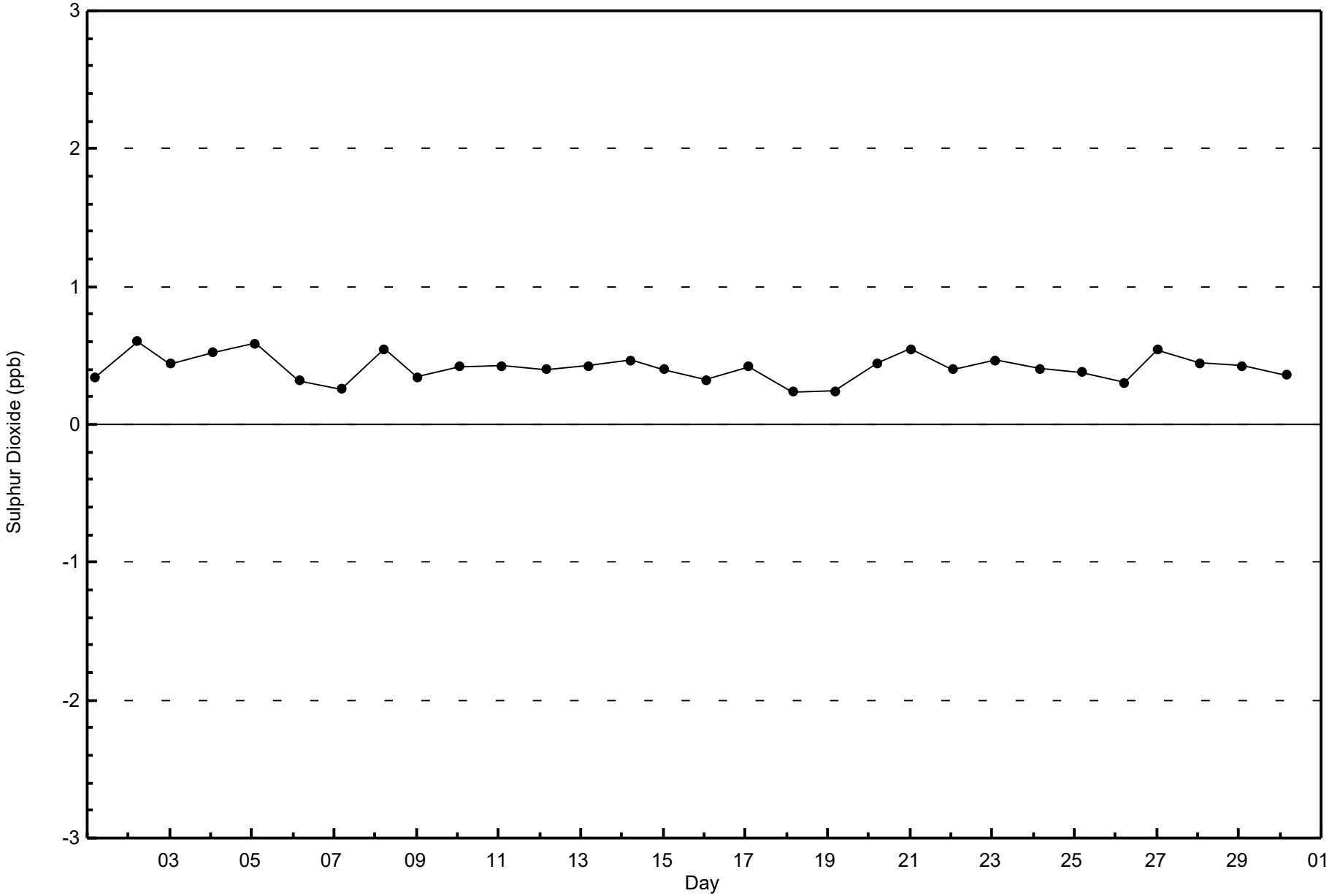
Total Number of Valid Hours: 680

Wood Buffalo Environmental Association

Zero Responses

Sulphur Dioxide (SO_2) - ppb

Waskow ohci Pimatisiwin - September 2024



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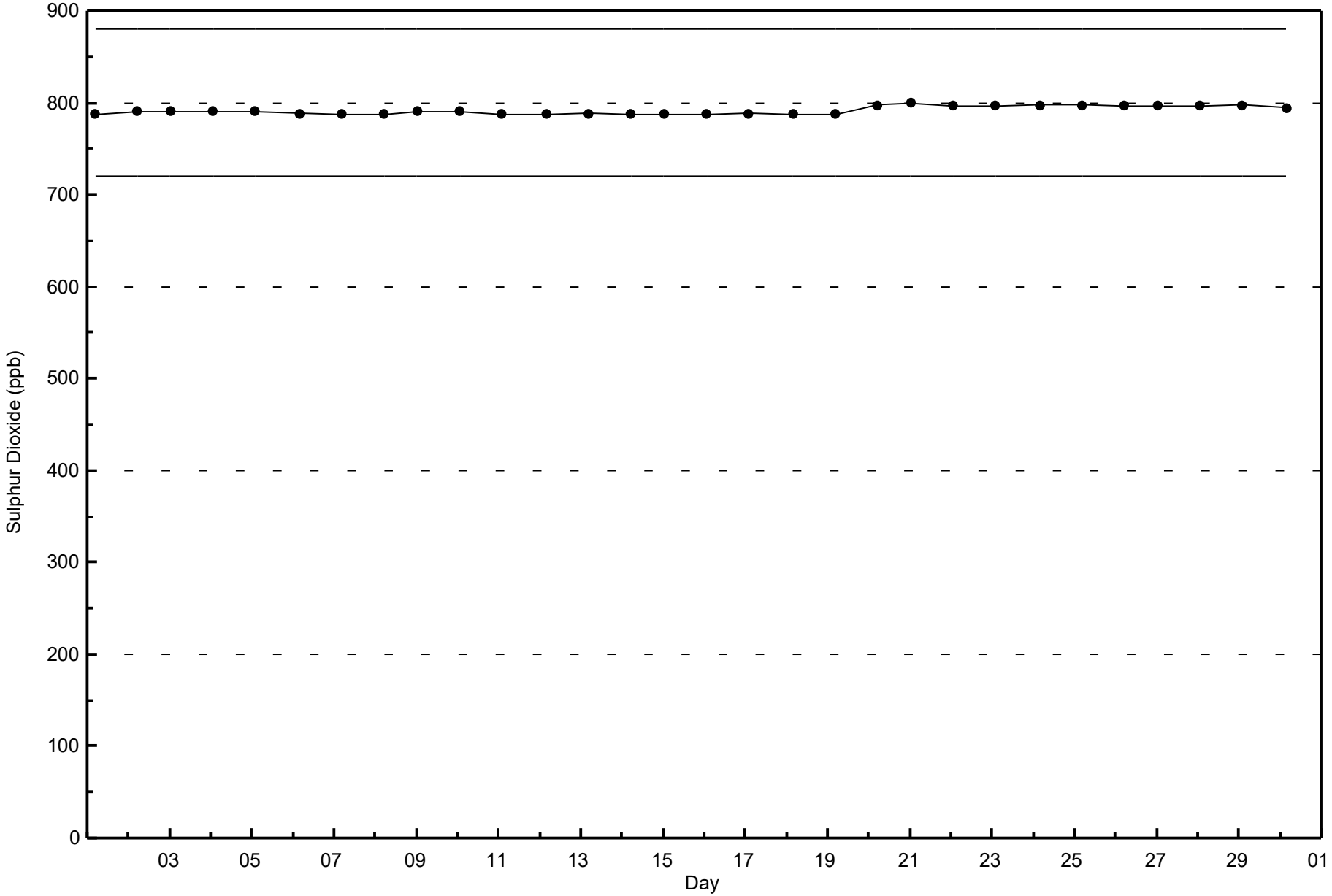
Span Responses

Sulphur Dioxide (SO_2) - ppb

Waskow ohci Pimatisiwin - September 2024



Wood Buffalo Environmental Association

Summary of Hour Averages

Hydrogen Sulphide (H_2S) - ppb

Waskow ohci Pimatisiwin - September 2024

Number of Exceedences (AAAQO): 1-hr: 0 24-hr: 0
Maximum Value: 3.1 ppb on Sep 5 21:00 Maximum Daily Average: 0.7 ppb on Sep 8

Minimum Value: 0.0 ppb on Sep 9 17:00 Minimum Daily Average: 0.0 ppb on Sep 30
Maximum Diurnal Average: 0.5 ppb at hour 11 Minimum Diurnal Average: 0.1 ppb at hour 17
Monthly Average: 0.26 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} = 1.4

Hours in Service:	720
Hours of Data:	683
Hours of Missing Data:	37
Hours of Calibration:	37
Percent Operational Time:	100.0

Day	Hourly Period Ending At (MST)																								Daily	Daily
	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24	Average	Maximum
1-Sep	1.2	0.7	0.3	0.2	0.3	Z	0.4	0.5	0.7	0.5	0.7	1.1	0.4	0.1	0.1	0.1	0.1	0.0	0.0	0.1	0.1	0.2	0.1	0.1	0.3	1.2
2-Sep	Z	0.2	0.2	0.2	0.2	0.2	0.7	1.0	0.9	1.3	1.4	0.6	0.2	0.1	0.0	0.0	0.1	0.1	0.1	0.1	0.3	0.3	0.3	0.2	0.4	1.4
3-Sep	0.2	Z	0.2	0.1	0.2	0.2	C	C	C	C	C	C	C	0.2	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	--	0.2
4-Sep	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	0.0	0.1	0.0	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.2
5-Sep	0.1	0.1	0.1	Z	0.1	0.2	0.1	0.1	0.2	0.3	1.0	1.0	0.5	0.3	0.2	0.2	0.2	0.3	1.0	1.6	3.1	0.9	0.5	0.7	0.6	3.1
6-Sep	0.7	0.4	0.2	0.2	Z	0.2	0.2	0.7	0.3	0.2	0.1	0.1	0.1	0.1	0.2	0.2	0.1	0.2	0.1	0.2	0.2	0.1	0.2	0.2	0.2	0.7
7-Sep	0.2	0.2	0.2	0.2	0.6	Z	0.6	1.3	1.5	1.0	2.7	1.5	0.6	0.2	0.1	0.0	0.0	0.0	0.1	0.0	0.0	0.1	0.1	0.1	0.5	2.7
8-Sep	Z	0.2	0.1	0.2	0.2	0.2	0.4	1.2	1.3	1.4	1.9	2.4	1.0	0.5	0.4	0.3	0.3	0.3	0.3	0.7	0.7	0.5	0.4	0.2	0.7	2.4
9-Sep	0.2	Z	0.3	0.5	0.6	0.4	0.4	0.3	0.2	0.2	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	0.2	0.6
10-Sep	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	0.0	0.1	0.0	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1
11-Sep	0.1	0.1	0.1	Z	0.2	0.2	0.2	0.4	0.8	0.6	0.9	0.8	0.4	0.3	0.2	0.2	0.2	0.2	0.2	0.1	0.2	0.2	0.2	0.1	0.3	0.9
12-Sep	0.1	0.1	0.1	0.1	Z	0.2	0.2	0.3	0.7	0.4	0.3	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	0.2	0.7
13-Sep	0.1	0.1	0.1	0.3	0.4	Z	0.5	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	0.1	0.1	0.2	0.5
14-Sep	Z	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	0.2	0.2	0.1	0.1	0.1	0.1	0.2
15-Sep	0.2	Z	0.2	0.2	0.2	0.2	0.2	0.2	0.3	0.3	0.2	0.2	0.2	0.2	0.2	0.2	0.2	0.2	0.2	0.2	0.2	0.2	0.2	0.2	0.2	0.3
16-Sep	0.1	0.1	Z	0.5	0.6	0.8	0.5	0.7	0.8	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	0.0	0.1	0.3	0.8
17-Sep	0.1	0.1	0.1	Z	0.4	0.2	0.2	0.4	0.5	0.2	0.3	0.3	0.3	0.2	0.1	0.1	0.1	0.2	0.3	0.3	0.4	0.3	0.3	0.4	0.3	0.5
18-Sep	0.7	0.4	0.4	0.5	Z	0.6	0.5	0.6	0.4	0.2	0.1	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	0.3	0.7
19-Sep	0.1	0.1	0.1	0.1	0.1	Z	0.5	1.0	1.2	1.3	1.0	0.7	0.5	0.2	0.1	0.1	0.1	0.2	0.2	0.2	0.2	0.2	0.3	0.4	0.4	1.3
20-Sep	Z	0.3	0.3	0.3	0.3	0.3	0.4	0.4	0.4	0.4	0.4	0.2	0.2	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.2	0.2	0.1	0.2	0.4
21-Sep	0.1	Z	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.5	0.9	0.9	0.7	0.4	0.3	0.2	0.1	0.2	0.3	0.7	0.3	0.2	1.3	0.5	0.4	1.3
22-Sep	0.1	0.1	Z	0.1	0.1	0.1	0.1	0.2	0.4	0.5	0.6	0.5	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	0.6
23-Sep	0.2	0.2	0.2	Z	0.2	0.1	0.1	0.1	0.2	0.2	0.2	0.2	0.3	0.9	1.2	0.6	0.5	0.2	0.3	0.4	0.4	0.7	0.7	0.5	0.4	1.2
24-Sep	0.6	0.4	0.3	0.2	Z	0.2	0.2	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	0.2	0.1	0.1	0.2	0.6
25-Sep	0.4	0.7	0.4	0.3	0.2	Z	0.7	0.8	0.7	0.7	0.8	0.6	0.4	0.5	0.4	0.4	0.2	0.3	0.2	0.2	0.2	0.2	0.1	0.1	0.4	0.8
26-Sep	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
27-Sep	0.1	Z	0.1	0.1	0.2	0.3	0.6	0.3	0.2	0.1	0.1	0.1	0.0	0.0	0.0	0.0	0.0	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.6
28-Sep	0.1	0.1	Z	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	0.1	0.1	0.1	0.1	0.2	0.1	0.2	0.1	0.2
29-Sep	0.1	0.1	0.1	Z	0.2	0.3	0.5	1.0	0.6	0.6	0.5	0.4	0.3	0.2	0.1	0.1	0.0	0.0	0.1	0.1	0.0	0.0	0.0	0.0	0.2	1.0
30-Sep	0.1	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	0.1
	0.2	0.2	0.2	0.2	0.2	0.2	0.3	0.5	0.5	0.4	0.5	0.4	0.3	0.2	0.2	0.1	0.1	0.1	0.2	0.2	0.3	0.2	0.2	0.2	Diurnal Average	
	1.2	0.7	0.4	0.5	0.6	0.8	0.7	1.3	1.5	1.4	2.7	2.4	1.0	0.9	1.2	0.6	0.5	0.3	1.0	1.6	3.1	0.9	1.3	0.7	Diurnal Maximum	

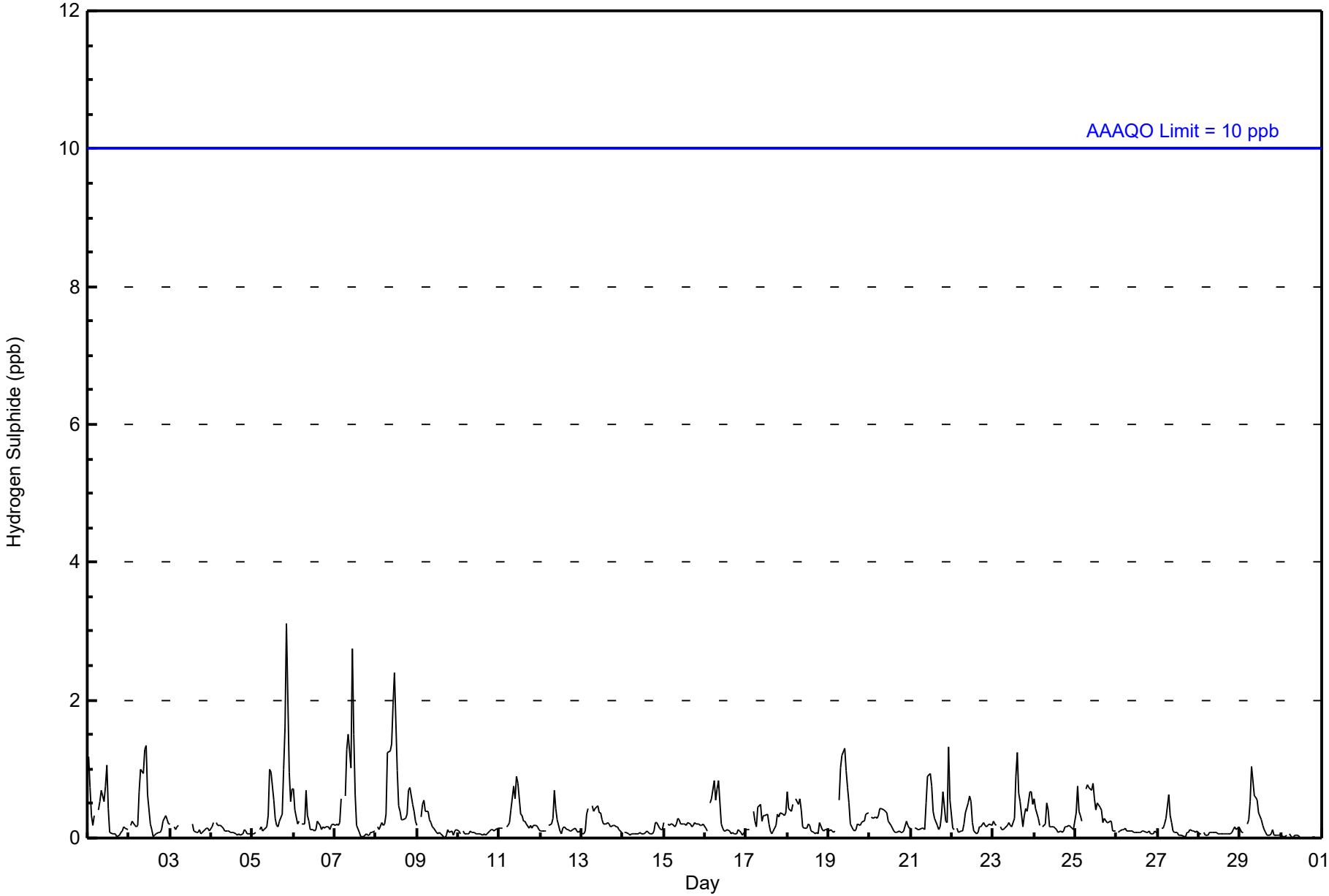
Z - zerospan C - Calibration
Alberta Ambient Air Quality Objectives (AAAQO): 1-hr 10 ppb 24-hr 3 ppb

Wood Buffalo Environmental Association

Hourly Averages

Hydrogen Sulphide (H_2S) - ppb

Waskow ohci Pimatisiwin - September 2024



Hydrogen Sulphide (H_2S) - ppb

Waskow ohci Pimatisiwin - September 2024

Concentration Ranges (ppb)	Number of Hours	%	Cumulative %
0 - 2	681	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: 683

Total Number of Hours: 720

Wood Buffalo Environmental Association

Frequency Distribution

Hydrogen Sulphide (H_2S) - ppb

Waskow ohci Pimatisiwin - September 2024

Concentration Ranges (ppb)	Wind Direction																
	N	NNE	NE	ENE	E	ESE	SE	SSE	S	SSW	SW	WSW	W	WNW	NW	NNW	**Totals**
0 - 2	20	4	9	4	10	21	75	82	45	48	45	61	86	67	51	46	674
3 - 4	0	0	0	0	0	0	2	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	20	4	9	4	10	21	77	82	45	48	45	61	86	67	51	46	676

Total Number of Valid Hours: 676

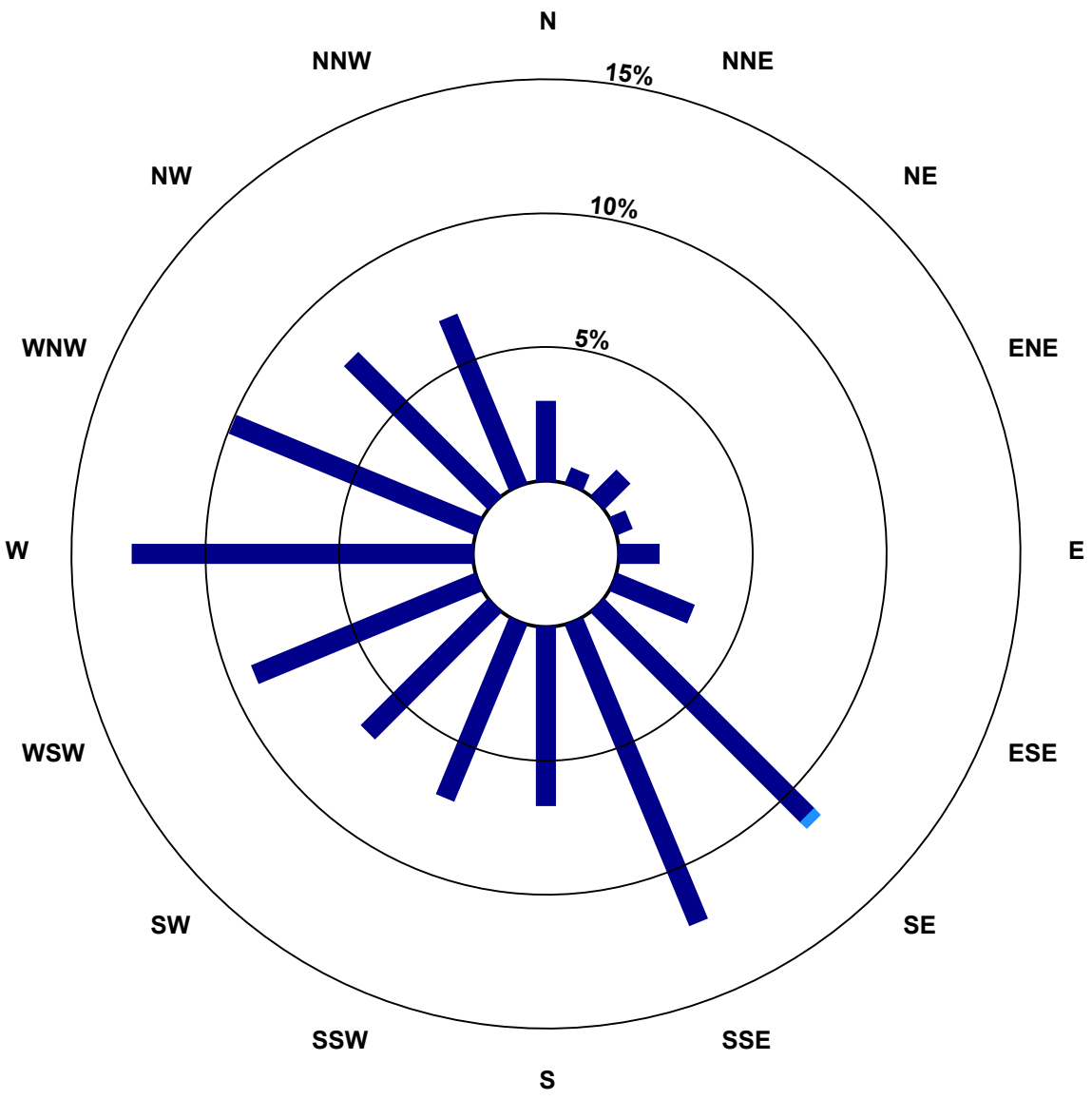
Total Number of Hours: 720

Wood Buffalo Environmental Association

Wind Rose Sep 2024

Hydrogen Sulphide (H_2S) - ppb

Waskow ohci Pimatisiwin



Classes (ppb)

0 - 2

3 - 4

5 - 7

8 - 11

> 11

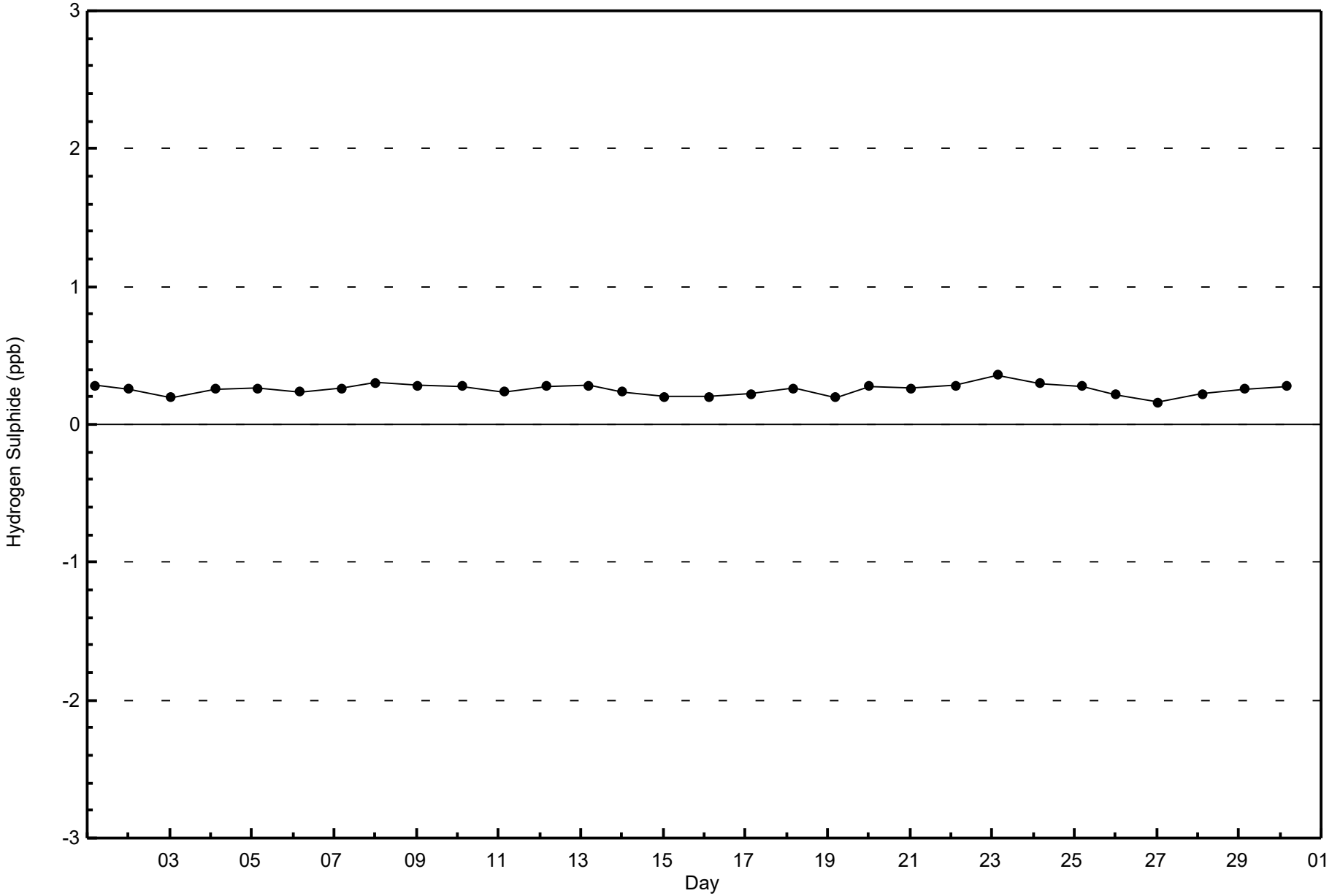
Total Number of Valid Hours: 676

Wood Buffalo Environmental Association

Zero Responses

Hydrogen Sulphide (H_2S) - ppb

Waskow ohci Pimatisiwin - September 2024

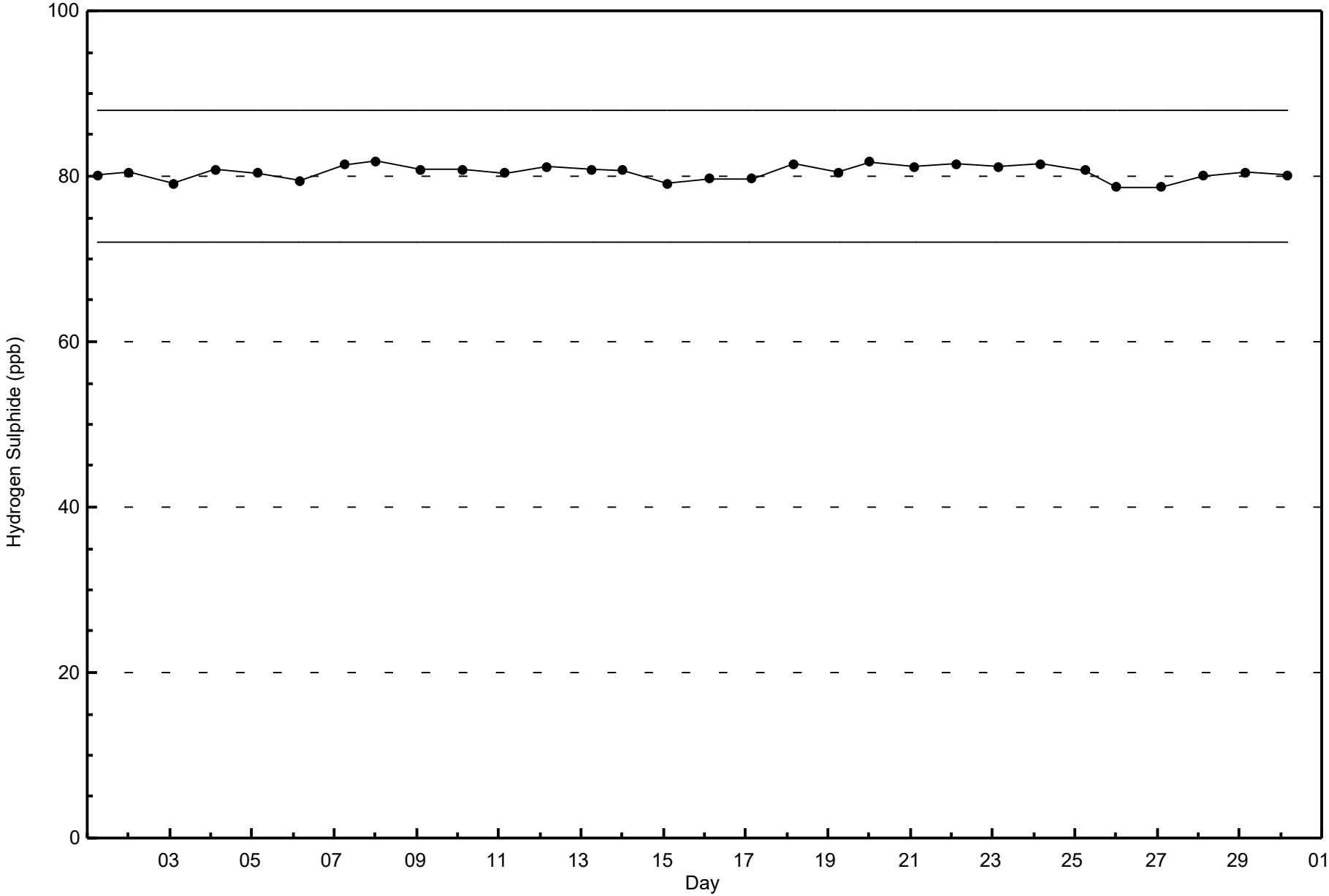


Wood Buffalo Environmental Association

Span Responses

Hydrogen Sulphide (H_2S) - ppb

Waskow ohci Pimatisiwin - September 2024



Maximum Value: 31.1 C on Sep 2 15:00

Maximum Daily Average: 20.2 C on Sep 2

Minimum Value: -0.1 C on Sep 30 07:00

Minimum Daily Average: 6.4 C on Sep 30

Maximum Diurnal Average: 19.1 C at hour 16

Minimum Diurnal Average: 6.9 C at hour 7

Monthly Average: 12.55 C

Percentiles: P_1 = 1.6 P_{10} = 5.0 Q_1 = 8.5 Median = 12.1 Q_3 = 16.0 P_{90} = 20.3 P_{99} = 29.1

Hours in Service:	720
Hours of Data:	720
Hours of Missing Data:	0
Hours of Calibration:	0
Percent Operational Time:	100.0

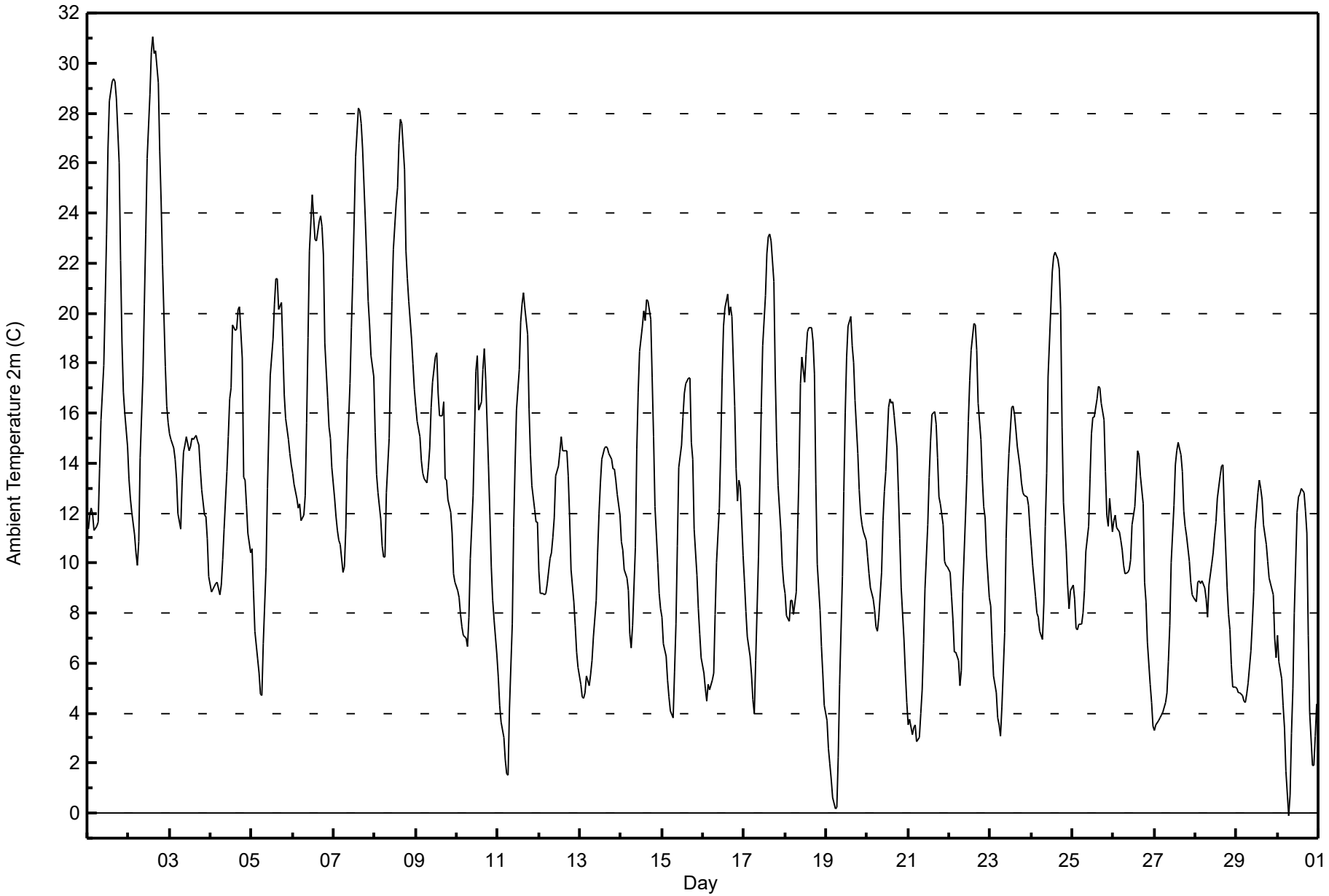
Day	Hourly Period Ending At (MST)																								Daily	Daily
	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24	Average	Maximum
1-Sep	11.3	11.9	12.2	12.0	11.3	11.4	11.6	13.7	15.8	17.9	20.4	23.2	26.6	28.5	29.3	29.4	29.3	28.6	26.0	22.1	18.9	16.8	16.0	14.6	19.1	29.4
2-Sep	13.4	12.6	12.0	11.1	10.4	9.9	10.9	14.2	17.5	20.4	23.1	26.2	28.8	30.4	31.1	30.4	30.5	29.2	26.5	24.4	21.9	17.8	16.3	15.6	20.2	31.1
3-Sep	15.1	14.9	14.6	14.2	13.4	12.0	11.4	13.2	14.4	14.7	15.0	14.5	14.7	15.0	15.0	15.1	14.9	14.7	13.8	12.9	11.9	11.8	11.0	9.5	13.7	15.1
4-Sep	8.8	9.0	9.1	9.2	9.2	8.8	9.1	10.1	11.3	13.7	15.0	16.5	17.0	19.5	19.3	19.3	20.1	20.2	18.2	13.4	13.3	12.3	11.2	10.4	13.5	20.2
5-Sep	10.6	8.9	7.3	6.2	5.6	4.7	4.7	6.7	9.9	13.0	15.4	17.5	18.9	20.4	21.4	21.3	20.1	20.4	18.6	16.7	15.8	14.9	14.4	13.9	13.6	21.4
6-Sep	13.6	13.1	12.6	12.2	12.4	11.7	11.9	12.7	15.6	19.0	22.5	24.7	23.8	22.9	22.9	23.6	23.9	23.5	22.3	18.8	16.6	15.5	15.0	13.8	17.7	24.7
7-Sep	12.6	11.8	11.3	10.9	10.7	9.6	9.9	11.4	14.2	17.2	19.4	21.4	23.8	26.2	28.2	28.1	27.6	26.6	23.7	22.1	20.5	19.5	18.3	17.4	18.4	28.2
8-Sep	15.2	13.6	12.8	11.8	10.7	10.2	10.2	12.8	15.0	18.1	20.5	22.5	24.4	25.0	26.8	27.8	27.6	25.8	22.5	21.4	20.5	18.9	18.0	16.9	18.7	27.8
9-Sep	16.3	15.7	15.0	14.1	13.6	13.4	13.2	13.8	14.6	16.2	17.2	18.3	18.4	16.8	15.9	15.9	16.5	13.4	13.3	12.5	12.0	11.2	9.6	9.2	14.4	18.4
10-Sep	8.9	8.6	8.0	7.4	7.1	7.0	6.7	7.8	10.2	12.7	15.2	17.7	18.3	16.1	16.5	17.8	18.6	17.3	13.9	11.9	9.8	8.5	7.7	6.3	11.7	18.6
11-Sep	5.4	4.3	3.6	3.0	2.2	1.6	1.5	4.2	7.6	11.4	13.9	16.1	17.8	19.6	20.4	20.8	20.2	19.1	16.2	14.3	13.1	12.1	11.7	11.7	11.3	20.8
12-Sep	9.7	8.8	8.8	8.8	8.8	9.2	10.2	10.4	11.0	11.8	13.5	13.9	14.5	15.0	14.5	14.5	14.5	13.5	11.8	9.7	8.5	7.5	6.5	5.8	10.9	15.0
13-Sep	5.2	4.7	4.6	4.8	5.5	5.1	5.5	6.1	7.1	8.5	10.4	11.9	13.2	14.2	14.6	14.7	14.6	14.4	14.1	13.8	13.8	13.3	12.8	11.9	10.2	14.7
14-Sep	10.8	10.5	9.8	9.4	8.9	7.1	6.6	7.5	10.6	14.5	16.8	18.4	19.5	20.1	19.7	20.6	20.5	19.8	17.4	15.0	12.2	10.0	8.8	8.1	13.4	20.6
15-Sep	7.8	6.7	6.3	5.3	4.7	4.1	3.8	5.7	7.6	10.7	13.8	14.7	15.9	16.8	17.2	17.4	17.4	14.8	14.2	11.4	9.5	8.2	7.1	6.2	10.3	17.4
16-Sep	5.6	5.0	4.5	5.1	4.9	5.3	5.6	8.0	10.0	12.2	14.5	17.4	19.5	20.2	20.7	19.9	20.3	19.8	16.3	13.8	12.5	13.3	13.1	10.3	12.4	20.7
17-Sep	9.3	8.0	7.1	6.3	5.5	4.5	4.0	6.1	10.3	13.2	16.2	18.7	20.7	22.4	23.1	23.2	22.9	21.2	17.4	14.8	13.1	11.3	9.9	9.2	13.3	23.2
18-Sep	8.8	7.9	7.7	8.5	8.5	8.0	8.8	11.4	13.8	17.2	18.2	17.3	18.3	19.2	19.4	19.4	18.8	17.6	13.2	9.9	8.1	6.7	5.5	4.3	12.4	19.4
19-Sep	3.7	2.6	2.0	1.4	0.6	0.2	0.2	2.2	5.1	9.5	12.9	16.0	18.3	19.5	19.9	18.7	18.0	16.5	14.4	12.9	12.0	11.5	11.3	10.9	10.0	19.9
20-Sep	10.2	9.5	9.0	8.6	8.1	7.5	7.3	7.9	9.6	11.7	12.9	13.6	16.3	16.6	16.4	16.5	15.9	14.6	12.9	11.0	9.0	6.9	5.6	4.4	10.9	16.6
21-Sep	3.5	3.7	3.1	3.4	3.5	2.9	3.0	4.0	4.9	6.8	8.9	11.5	13.4	14.9	15.9	16.0	15.6	14.2	12.7	12.4	11.5	10.1	9.9	9.8	9.0	16.0
22-Sep	9.6	8.7	7.7	6.4	6.4	6.1	5.1	5.7	8.8	11.9	13.5	15.7	17.3	18.5	19.6	19.5	18.5	16.4	14.9	13.4	12.3	11.8	10.3	8.6	12.0	19.6
23-Sep	8.3	6.8	5.5	4.8	3.8	3.5	3.1	4.3	7.2	11.0	13.0	14.4	16.2	16.3	16.0	15.3	14.7	13.8	13.2	12.8	12.7	12.7	12.3	11.4	10.5	16.3
24-Sep	10.7	9.9	8.7	8.0	7.9	7.3	6.9	8.4	11.5	13.6	17.5	20.2	21.7	22.3	22.4	22.2	21.8	20.2	15.4	12.4	10.5	9.1	8.2	8.9	13.6	22.4
25-Sep	9.1	8.5	7.4	7.3	7.5	7.6	8.0	8.9	10.4	11.5	13.4	15.1	15.8	15.9	16.6	17.1	17.0	16.4	15.7	13.6	11.9	11.5	12.6	11.2	12.1	17.1
26-Sep	11.7	11.9	11.4	11.3	10.9	10.5	9.9	9.6	9.6	9.7	10.1	11.6	12.2	13.3	14.5	14.3	13.5	12.4	9.2	8.4	6.9	5.1	4.4	3.5	10.2	14.5
27-Sep	3.3	3.5	3.7	3.8	3.9	4.0	4.4	4.8	6.1	7.5	10.0	12.3	13.9	14.5	14.8	14.3	13.6	12.1	11.5	11.1	10.1	9.2	8.7	8.6	8.7	14.8
28-Sep	8.5	9.2	9.3	9.2	9.3	9.0	8.6	7.9	9.1	10.0	10.4	11.1	11.6	12.6	13.5	13.9	14.0	12.1	9.0	7.9	7.3	6.0	5.0	5.0	9.6	14.0
29-Sep	5.0	4.8	4.8	4.7	4.5	4.4	4.7	5.2	6.5	7.6	8.8	11.4	12.8	13.3	13.0	12.5	11.5	10.7	10.1	9.4	9.2	8.8	7.0	6.2	8.2	13.3
30-Sep	7.1	6.1	5.4	4.3	3.4	1.7	-0.1	0.7	3.2	5.0	8.0	12.0	12.6	12.8	13.0	12.8	12.1	11.2	7.1	4.0	1.9	1.9	3.1	4.4	6.4	13.0
	9.3	8.7	8.2	7.8	7.4	6.9	6.9	8.2	10.3	12.6	14.7	16.5	17.9	18.6	19.0	19.1	18.8	17.7	15.5	13.6	12.2	11.1	10.4	9.6	Diurnal Average	
	16.3	15.7	15.0	14.2	13.6	13.4	13.2	14.2	17.5	20.4	23.1	26.2	28.8	30.4	31.1	30.4	30.5	29.2	26.5	24.4	21.9	19.5	18.3	17.4	Diurnal Maximum	

Wood Buffalo Environmental Association

Hourly Averages

Ambient Temperature 2m (AT2) - C

Waskow ohci Pimatisiwin - September 2024



Concentration Ranges (C)	Number of Hours	%	Cumulative %
-50 - -20	0	0.00	0.00
-20 - 0	1	0.14	0.14
0 - 10	257	35.69	35.83
10 - 20	381	52.92	88.75
> 20	81	11.25	100.00

Total Number of Valid Hours: 720

Total Number of Hours: 720

Wood Buffalo Environmental Association

Summary of Hour Averages

Relative Humidity 2m (RH2) - %

Waskow ohci Pimatisiwin - September 2024

Maximum Value: 100.0 % on Sep 7 04:00

Maximum Daily Average: 89.5 % on Sep 12

Minimum Value: 26.5 % on Sep 2 15:00

Minimum Daily Average: 60.2 % on Sep 30

Maximum Diurnal Average: 94.6 % at hour 7

Minimum Diurnal Average: 50.5 % at hour 16

Monthly Average: 75.41 %

Percentiles: P_1 = 32.0 P_{10} = 46.4 Q_1 = 61.6 Median = 77.3 Q_3 = 93.2 P_{90} = 99.4 P_{99} = 100.0

Hours in Service:	720
Hours of Data:	706
Hours of Missing Data:	14
Hours of Calibration:	0
Percent Operational Time:	98.1

Day	Hourly Period Ending At (MST)																								Daily	Daily
	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24	Average	Maximum
1-Sep	91.0	83.5	74.4	74.5	80.0	80.1	80.1	73.4	69.9	66.1	60.8	55.9	48.8	40.8	35.6	36.3	34.9	33.6	41.7	55.1	69.6	77.5	79.6	84.8	63.7	91.0
2-Sep	90.3	93.3	94.6	96.4	97.9	98.7	99.0	87.3	75.5	66.3	58.8	51.1	40.0	32.0	26.5	26.9	28.2	30.0	35.8	45.0	51.1	69.2	73.1	75.3	64.3	99.0
3-Sep	77.5	75.4	77.0	79.2	81.1	88.5	93.1	82.7	73.6	71.4	67.3	68.5	67.2	66.7	66.2	65.5	66.8	68.2	72.3	77.0	81.6	81.0	85.1	93.2	76.1	93.2
4-Sep	97.0	96.7	96.0	95.3	97.2	98.8	97.8	94.1	87.5	74.3	67.7	61.7	62.1	44.5	41.7	42.2	39.3	37.0	45.3	68.7	66.9	69.7	71.8	72.9	71.9	98.8
5-Sep	75.2	86.4	93.8	96.8	94.9	95.7	96.8	87.9	78.8	71.8	64.6	55.6	49.1	44.9	41.9	41.4	45.7	46.6	51.6	58.4	61.9	63.1	62.2	65.1	67.9	96.8
6-Sep	63.2	63.1	64.4	67.0	66.2	69.9	70.3	71.2	64.4	58.1	51.0	45.4	50.3	56.5	58.6	55.0	51.9	55.9	58.6	73.8	81.9	85.3	87.4	93.9	65.1	93.9
7-Sep	97.8	98.9	99.8	100.0	100.0	100.0	100.0	99.9	86.7	72.4	63.7	59.8	52.5	43.7	35.2	35.2	35.2	39.7	49.1	52.8	58.1	61.5	66.4	69.6	69.9	100.0
8-Sep	79.4	88.2	91.1	96.2	98.9	99.8	100.0	95.5	83.7	72.3	64.4	58.0	52.9	51.9	48.4	46.6	49.7	55.7	67.7	68.2	67.6	73.1	78.0	75.5	73.5	100.0
9-Sep	75.0	78.9	80.1	82.1	84.8	82.4	83.5	87.1	85.5	78.2	74.3	64.8	64.6	69.5	71.0	70.0	67.0	89.0	80.1	73.8	72.9	76.7	85.7	88.9	77.7	89.0
10-Sep	90.6	89.6	89.8	92.5	93.2	92.3	92.6	87.1	77.4	67.0	59.4	52.0	48.1	59.5	63.8	57.6	45.3	49.5	70.2	82.2	90.0	92.2	92.4	95.4	76.2	95.4
11-Sep	97.2	98.4	99.0	99.1	99.3	99.4	99.6	99.2	90.6	72.6	61.7	55.9	51.8	46.1	43.0	41.7	42.6	46.8	59.3	66.2	73.1	78.6	79.2	77.9	74.1	99.6
12-Sep	86.7	90.8	89.4	90.8	92.2	96.5	98.5	99.8	99.6	96.7	88.7	81.0	74.7	74.6	76.9	75.7	74.1	79.7	86.8	96.2	99.1	99.6	99.8	100.0	89.5	100.0
13-Sep	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	94.4	86.3	82.4	77.9	75.6	74.8	75.1	75.4	76.9	79.0	79.3	81.0	83.5	83.2	88.5	100.0
14-Sep	86.3	86.9	89.9	90.3	91.1	95.3	95.7	91.5	78.9	67.7	58.7	51.8	50.7	50.9	54.7	51.8	51.1	52.0	62.5	66.8	76.7	89.3	91.9	94.3	74.0	95.7
15-Sep	95.7	97.9	99.4	99.7	99.9	100.0	100.0	100.0	100.0	89.5	70.7	64.3	59.5	57.2	56.7	56.0	57.6	70.1	77.1	90.4	96.3	98.3	99.1	99.6	84.8	100.0
16-Sep	99.9	100.0	100.0	100.0	100.0	100.0	100.0	100.0	97.7	79.4	67.6	55.3	45.8	42.9	41.1	43.9	42.9	43.1	56.9	67.1	74.6	69.4	69.6	82.5	74.2	100.0
17-Sep	89.5	93.9	96.7	98.3	99.4	99.6	99.7	100.0	86.5	71.0	62.5	54.4	49.4	43.6	41.7	40.4	41.8	48.7	64.5	75.6	81.6	87.6	92.9	97.2	75.7	100.0
18-Sep	98.4	98.1	97.9	97.8	96.5	98.2	95.6	84.8	76.2	66.1	65.1	63.8	55.2	48.4	39.9	37.0	34.5	37.3	58.4	73.0	78.9	83.9	87.3	91.7	73.5	98.4
19-Sep	93.1	96.6	97.7	98.6	98.6	99.1	99.5	99.9	94.9	78.4	65.0	52.6	44.5	38.5	39.3	45.2	54.7	59.1	66.1	73.3	76.6	78.3	76.0	75.7	75.1	99.9
20-Sep	79.5	82.3	83.5	82.6	83.2	88.5	89.5	87.6	79.2	69.8	65.5	59.7	47.3	44.2	42.8	35.5	39.1	44.3	50.6	58.6	66.7	75.5	83.2	89.6	67.8	89.6
21-Sep	92.8	92.8	95.1	94.2	93.0	94.7	94.1	90.4	86.5	82.8	77.7	67.4	61.8	58.6	55.5	52.3	53.0	60.9	69.9	72.1	78.7	91.5	90.5	88.8	79.0	95.1
22-Sep	85.9	92.5	95.7	99.1	99.8	99.8	99.8	100.0	89.1	74.4	66.7	58.8	51.3	49.0	47.2	48.3	53.8	64.2	69.5	77.3	82.2	82.9	89.1	96.3	78.0	100.0
23-Sep	98.2	99.0	99.7	100.0	100.0	100.0	100.0	100.0	97.1	81.2	73.0	69.4	63.0	65.7	71.0	78.0	80.7	86.7	91.6	97.2	100.0	100.0	OR	OR	88.7	100.0
24-Sep	OR	OR	OR	OR	100.0	100.0	100.0	OR	OR	95.1	77.4	59.9	46.2	39.9	34.8	33.5	35.6	41.6	61.6	75.5	82.5	88.0	91.8	90.1	69.6	100.0
25-Sep	90.9	93.3	97.5	97.2	96.4	96.4	95.9	90.9	86.3	84.0	78.4	77.0	73.5	76.8	72.2	70.2	72.0	76.6	79.8	90.5	97.5	99.8	93.7	98.4	86.9	99.8
26-Sep	93.3	94.0	98.5	98.6	OR	OR	OR	OR	OR	100.0	98.5	88.4	75.6	68.9	59.3	63.5	70.5	68.1	85.6	84.3	90.1	98.1	99.5	100.0	86.0	100.0
27-Sep	100.0	100.0	100.0	100.0	100.0	100.0	OR	99.8	91.2	83.7	73.3	64.4	59.0	52.4	49.6	53.6	62.5	74.8	78.0	79.4	92.7	97.9	96.9	91.7	82.6	100.0
28-Sep	84.7	77.4	76.1	77.6	76.4	80.4	81.7	84.3	80.4	74.9	70.5	66.1	60.9	56.1	51.0	49.2	49.3	60.3	75.8	80.9	83.4	90.9	95.5	95.5	74.1	95.5
29-Sep	95.8	96.3	95.1	94.3	96.3	96.7	95.2	93.7	89.4	83.0	75.6	63.0	56.6	51.6	51.5	56.1	59.3	56.2	59.5	64.4	66.9	66.7	74.8	76.5	75.6	96.7
30-Sep	68.7	67.4	67.5	72.2	76.1	83.5	91.7	88.7	77.5	71.0	59.9	41.9	36.5	32.9	31.8	30.7	31.7	33.8	49.3	65.1	76.2	72.3	62.1	56.8	60.2	91.7
	88.7	90.1	91.0	92.1	92.8	94.3	94.6	92.0	85.1	77.3	69.4	61.8	56.0	52.9	50.8	50.5	51.5	56.2	65.1	72.9	78.5	82.6	84.1	86.2	Diurnal Average	
	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	98.5	88.4	82.4	77.9	76.9	78.0	80.7	89.0	91.6	97.2	100.0	100.0	99.8	100.0	Diurnal Maximum	

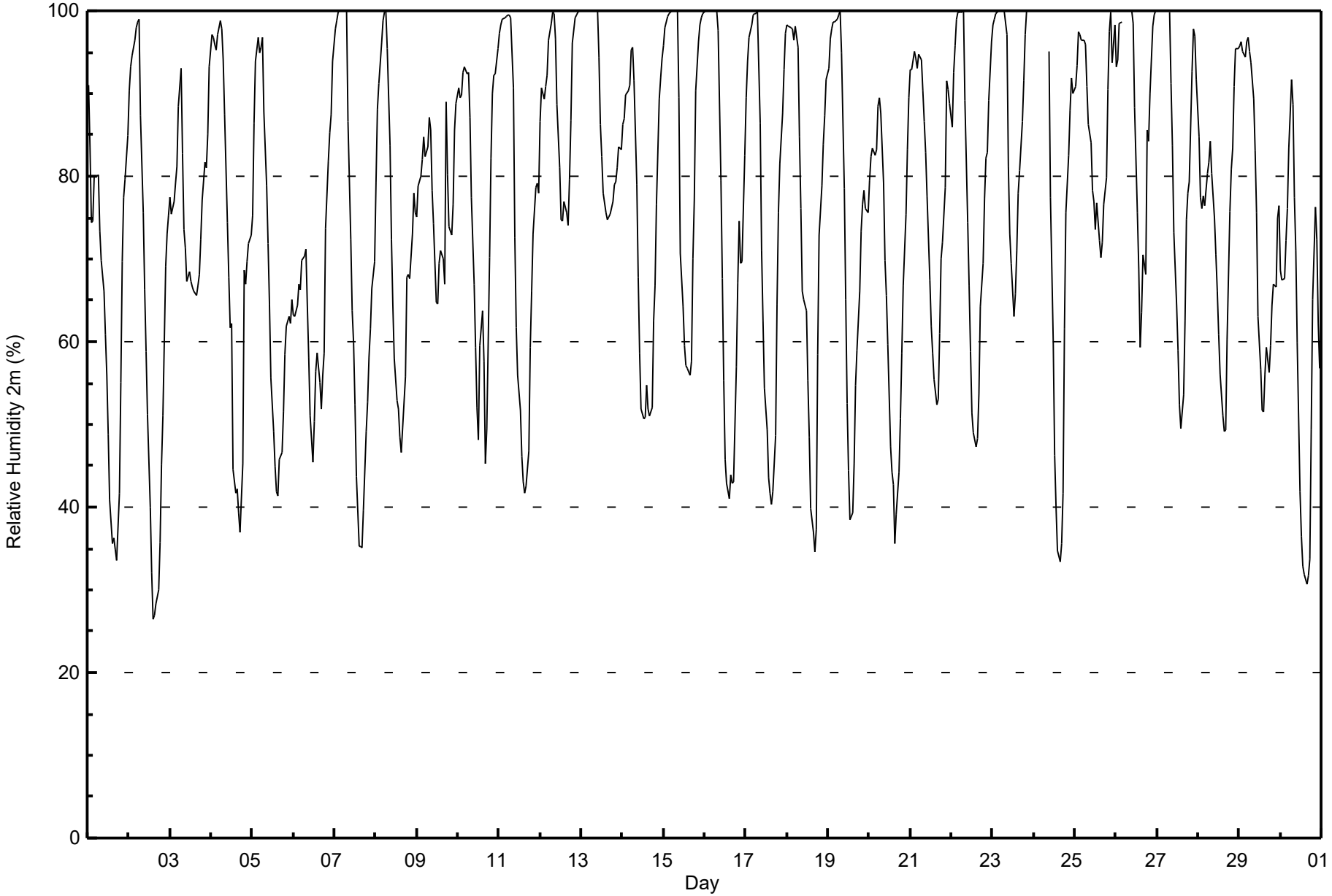
OR - Out of Range

Wood Buffalo Environmental Association

Hourly Averages

Relative Humidity 2m (RH2) - %

Waskow ohci Pimatisiwin - September 2024



Concentration Ranges (%)	Number of Hours	%	Cumulative %
0 - 20	0	0.00	0.00
20 - 40	35	4.96	4.96
40 - 60	136	19.26	24.22
60 - 80	218	30.88	55.10
80 - 100	272	38.53	93.63

Total Number of Valid Hours: 706

Total Number of Hours: 720

Wood Buffalo Environmental Association

Summary of Hour Averages

Wind Speed 10m (WS10) - km/h

Waskow ohci Pimatisiwin - September 2024

Maximum Speed: 16 km/h on Sep 2 20:00

Maximum Daily Speed Average: 4.7 km/h on Sep 13

Minimum Speed Value: 0 km/h on Sep 2 03:00

Minimum Daily Speed Average: 0.3 km/h on Sep 15

Maximum Diurnal Speed Average: 1.8 km/h at hour 3

Minimum Diurnal Speed Average: 1.1 km/h at hour 23

Monthly Average Velocity: 1.3 km/h 247.2 deg

Percentiles: $P_1 = 0$ $P_{10} = 1$ $Q_1 = 2$ Median = 3 $Q_3 = 6$ $P_{90} = 7$ $P_{99} = 12$

Hours in Service:	720
Hours of Data:	713
Hours of Missing Data:	7
Percent Operational Time:	99.0

Day	Hourly Period Ending At (MST)																								Daily	Daily
	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24	Average	Maximum
1-Sep	ESE1	SE4	SSE3	SE2	SSE3	SSE4	SSE4	SSE5	SE6	SE7	SE7	SE6	SSE4	SSW8	SW9	SW6	SSW7	SW6	S4	SSW3	S2	UO	WNW1	S1	S3.6	SW9
2-Sep	SSE2	ESE1	WNW0	SW1	SW1	SSW1	SSE4	SSE4	SSE5	SE6	SE6	SE6	SSE7	SSW5	SW7	SW8	SW7	SW5	SW4	NW16	NW13	N10	N10	N9	WSW1.0	NW16
3-Sep	NNW9	N9	NNW5	NNW5	NW5	WNW1	WNW2	NW3	N5	NNW5	NNW8	N7	N6	N6	N5	N3	N4	NNE4	N4	NNW3	NW3	NW5	WNW4	W3	NNW4.4	NNW9
4-Sep	W2	WNW2	SW3	NW1	S2	SW1	SW2	SW3	W4	WNW7	W5	SW5	S4	NW9	NW6	NW5	NW7	WNW8	W3	WSW2	WSW3	WNW4	W4	WNW5	W3.2	NW9
5-Sep	NW8	W4	W3	WSW3	WNW3	WSW1	SW2	S2	SSE3	SE4	SE6	SE7	SE8	SE7	SE7	SE7	ESE5	ESE4	SE5	SE4	SE5	SE5	SE6	SSE7	SSE3.1	SE8
6-Sep	SSE8	SSE5	S4	SSE6	SSE5	SSE5	SSE6	S3	S5	S6	SSW6	SSW7	S6	SSE6	SSE7	SSE8	S5	SE3	S3	SE1	SSE1	W2	NE1	SSE1	SSE4.2	SSE8
7-Sep	SE0	UO	SE1	SSE2	SSE3	SSE2	SSE3	SSE5	SE4	SE6	SE7	SE6	SE6	SSE6	SSW6	SSW6	SSW6	SSW4	SSW5	SW6	SW4	WSW5	W5	WNW3	S3.2	SE7
8-Sep	SE1	S2	SE2	SSE1	SE1	SSE1	SSE2	SE3	SE4	E2	SSE4	SSE6	SE5	WSW1	NE2	E1	N3	N3	NNW3	NNW4	NNW5	NNW5	NNW7	NNW6	NE0.4	NNW7
9-Sep	NNW2	NW1	NW3	NNW1	N2	NNW4	NW5	NNW7	NW3	NNW5	SSW1	WNW7	WNW9	WNW8	WSW6	WSW6	WSW7	SW7	W8	WNW8	W7	SW4	SSW5	SW5	W3.8	WNW9
10-Sep	WSW6	W7	W4	W6	WSW6	WSW6	SW4	SW5	SW5	SSW5	S6	SSW6	WSW7	SW4	SSW3	SSW4	WNW6	NW5	WSW2	W2	WSW2	WNW4	WNW3	W2	WSW3.9	W7
11-Sep	WSW2	W3	W3	WSW3	W3	WSW2	W3	NW1	NNE1	ESE2	SE3	E2	N4	NE3	NNE1	NE1	NNW4	NNW4	NNW3	NW1	W1	NNW0	SE1	ESE1	NW0.9	NNW4
12-Sep	W2	W2	NW3	W2	SW1	SE3	SSE1	NNW2	NNW3	NNW4	N3	NE2	NE2	E3	E4	E3	E3	E2	UO	W2	W3	W1	W2	SSW1	N0.5	NNW4
13-Sep	W2	W2	NW4	W3	W3	W3	WNW3	WNW3	NW4	NW3	NNW6	NNW9	NNW8	NNW9	N6	NNW7	NNW7	NNW7	NW7	NW6	NW8	NW7	WNW3	WNW4	NW4.7	NNW9
14-Sep	WNW3	WNW4	W4	WNW2	WSW2	SW2	SSW1	S2	SSW2	S3	WNW2	SSW2	S3	SE4	SSE2	W3	W4	WNW5	NW3	NNE3	NW2	WSW3	WSW3	WNW4	W1.8	WNW5
15-Sep	WNW4	W3	WNW2	WSW2	W2	WNW3	WSW2	WNW3	W2	E1	NE3	NE3	E4	ESE5	SE5	SE4	ESE3	SE1	W0	W2	WSW1	W2	WSW2	WSW0	WSW0.3	ESE5
16-Sep	WSW1	SSW1	WNW0	SSE2	S2	S3	S3	SSE3	SSE5	SSE5	SSE6	S6	SW9	SW9	SSW8	SSW6	SW6	SSW4	SSW3	SSW2	SSE3	S3	S3	SSE2	SSW3.5	SW9
17-Sep	SSE2	S2	SSE2	SSE1	S1	SSW1	WSW2	SSE3	SSE6	SSE7	SSE7	SE6	SE6	SE5	ESE5	SE4	ESE3	SE2	WSW1	WSW2	W2	SSW0	S1	SSE1	SSE2.5	SSE7
18-Sep	UO	WSW0	WNW1	SSW0	W1	SSW3	SSE2	SSE5	S4	W5	NW7	WNW10	WNW9	W8	WNW8	WNW7	NW9	NW5	W2	W3	W2	W2	S1	W1	WNW3.2	WNW10
19-Sep	SW0	UO	SSW2	SSW2	SW1	S2	SSE2	SSE3	SE4	SE5	SE5	SE5	SE5	SE6	SE5	SSE3	SSE2	SE2	WNW1	NW2	WNW2	W3	NW4	NW3	SSE1.6	SE6
20-Sep	W1	WNW1	W2	NW4	NW2	W2	W2	WSW2	SW2	ESE1	NNW2	NNW5	N10	N12	N12	NNW13	NNW11	NNW10	NNW7	NW5	NW3	NW4	WNW3	W4	NNW4.4	NNW13
21-Sep	W4	W1	W1	WSW1	S2	S1	SSW1	WSW2	WSW2	SE4	SE4	SE6	SE7	SE6	SE6	SE7	SSE5	SE2	SE2	SSE4	SW1	ESE2	ESE3	SE4	SSE2.5	SE7
22-Sep	ENE1	NW3	WNW3	W2	W1	WSW1	WSW1	S2	ESE1	SE2	SE4	SE4	SSE5	SE3	ESE4	ESE3	ENE1	NNW2	NNW8	WNW3	WSW2	WNW3	WNW3	WNW4	WSW0.3	NNW8
23-Sep	NW2	W1	W3	WSW3	W2	W3	W1	W3	NW1	SE1	ENE2	ESE3	ESE5	SE6	SSE6	SE7	SSE6	SSE5	SSE6	SE4	SE4	SSE5	SE3	SSE2	SSE2.1	SE7
24-Sep	S2	SSE3	SE1	S1	SSE1	S1	WSW0	SSW1	WNW1	SW4	SW6	W9	W10	W12	W12	NW10	NW8	NW4	SW2	SW1	UO	UO	SW1	NW1	W3.2	W12
25-Sep	WNW0	SW1	W2	W2	W2	WSW2	NW3	NW3	NW1	WNW1	NNW1	W1	S3	SE2	SSE4	SSE3	SSE3	SSE3	SSE3	S3	WSW1	SW3	WNW2	SSW2	SSW1.0	SSE4
26-Sep	SW4	W5	NW4	WNW3	ENE1	WSW3	WSW3	SW2	WSW3	WSW4	WSW5	W7	W8	W6	WNW6	ESE1	SSE3	WNW7	WSW2	W3	S0	SSW1	SE1	WSW1	W2.9	W8
27-Sep	WSW2	SSW2	WSW1	WSW2	WNW1	SSW2	S3	WSW2	S3	WSW4	SSW4	S7	S7	SSW6	SW4	SSW3	SSE2	SSE3	SSE5	SSE4	SSE4	S3	SSE5	SSE5	S3.1	S7
28-Sep	SSW6	SSW9	SW8	SW8	WSW7	W7	W6	SSW2	SSW4	WSW5	WSW7	WSW8	WSW8	SW7	W7	W5	SSW1	ESE0	S1	SSE2	ESE0	W1	WSW2	WNW1	WSW4.1	SSW9
29-Sep	W1	W3	W3	WNW2	WNW2	WNW3	NW3	NNW4	N4	NNW6	NNW6	NNW7	N9	N11	N12	NNW10	NNW9	NW6	NW5	WNW4	WNW6	NW5	NE1	WNW2	NNW4.6	N12
30-Sep	WNW6	WNW6	WNW6	W6	WNW4	SSW3	SSE2	SSE3	SSE4	SSE3	S3	W8	W9	WNW13	W13	WNW12	W11	WNW8	WSW1	SW1	SW2	WSW3	WSW4	W6	W4.6	W13
	W1.5	WSW1.7	W1.8	WSW1.6	WSW1.4	SW1.7	SW1.4	SSW1.2	S1.3	S1.2	S1.3	SSW1.3	SW1.3	WSW1.3	WSW1.4	WSW1.5	W1.8	WNW1.7	W1.3	W1.6	W1.7	W1.6	W1.1	W1.2	Diurnal Average	
	NNW9	SSW9	SW8	SW8	WSW7	W7	W6	NNW7	SE6	WNW7	NNW8	WNW10	N10	WNW13	W13	NNW13	NNW11	NNW10	NNW8	NW16	NW13	N10	N10	N9	Diurnal Maximum	

UO - Unstable Operation

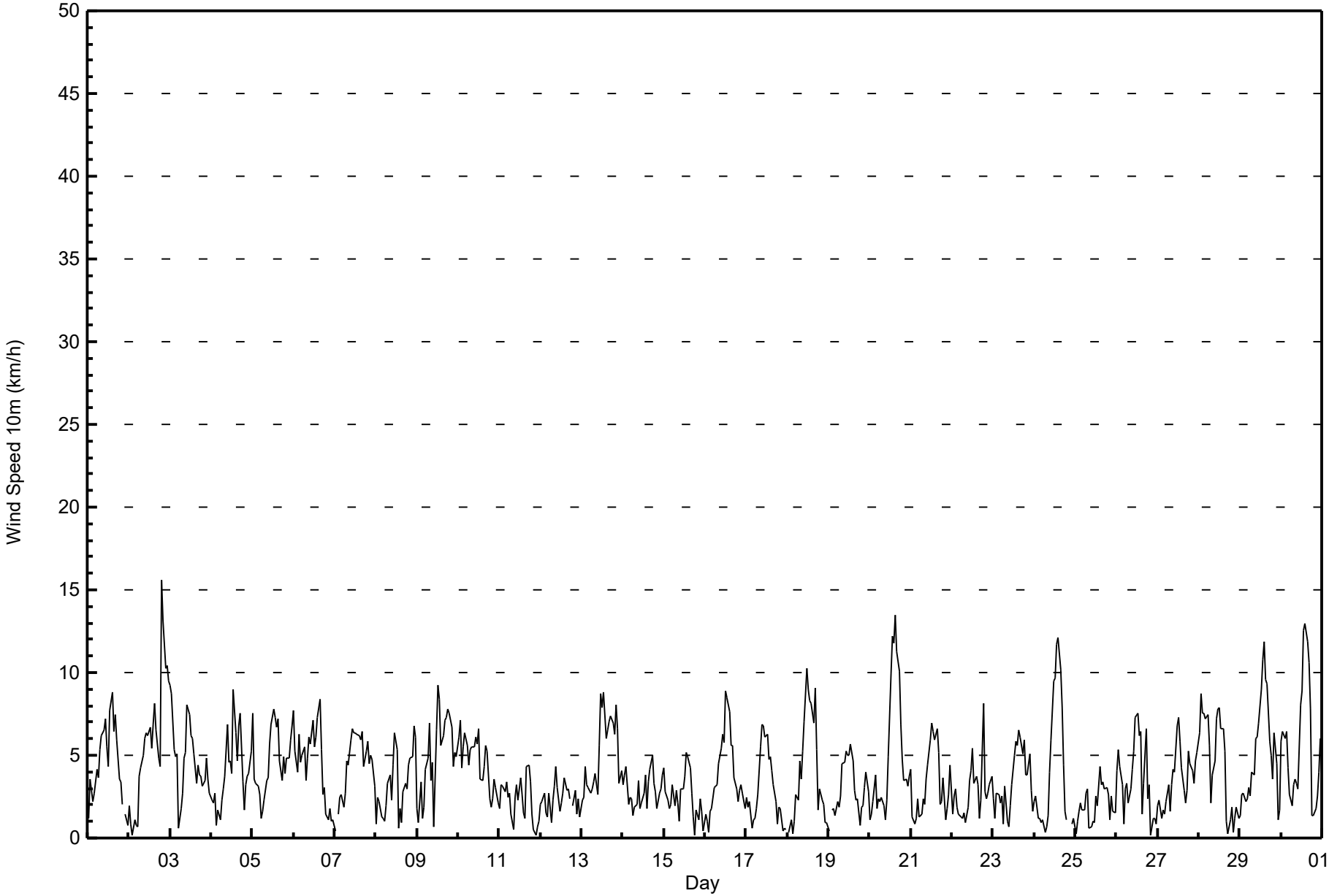
All monthly, daily, and diurnal averages have been calculated using vector methods

Wood Buffalo Environmental Association

Hourly Averages

Wind Speed 10m (WS10) - km/h

Waskow ohci Pimatisiwin - September 2024



Wind Speed Ranges (km/h)	Number of Hours	%	Cumulative %
0 - 5	531	74.47	74.47
6 - 11	171	23.98	98.46
12 - 19	11	1.54	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: 713

Total Number of Hours: 720

Wood Buffalo Environmental Association

Frequency Distribution

Wind Speed 10m (WS10) - km/h

Waskow ohci Pimatisiwin - September 2024

Wind Speed Ranges (km/h)	Wind Direction																
	N	NNE	NE	ENE	E	ESE	SE	SSE	S	SSW	SW	WSW	W	WNW	NW	NNW	**Totals**
0 - 5	11	4	9	4	10	21	50	71	40	36	34	54	71	52	39	25	531
6 - 11	10	0	0	0	0	0	28	17	6	13	15	11	18	19	12	22	171
12 - 19	3	0	0	0	0	0	0	0	0	0	0	0	3	2	2	1	11
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	24	4	9	4	10	21	78	88	46	49	49	65	92	73	53	48	713

Total Number of Valid Hours: 713

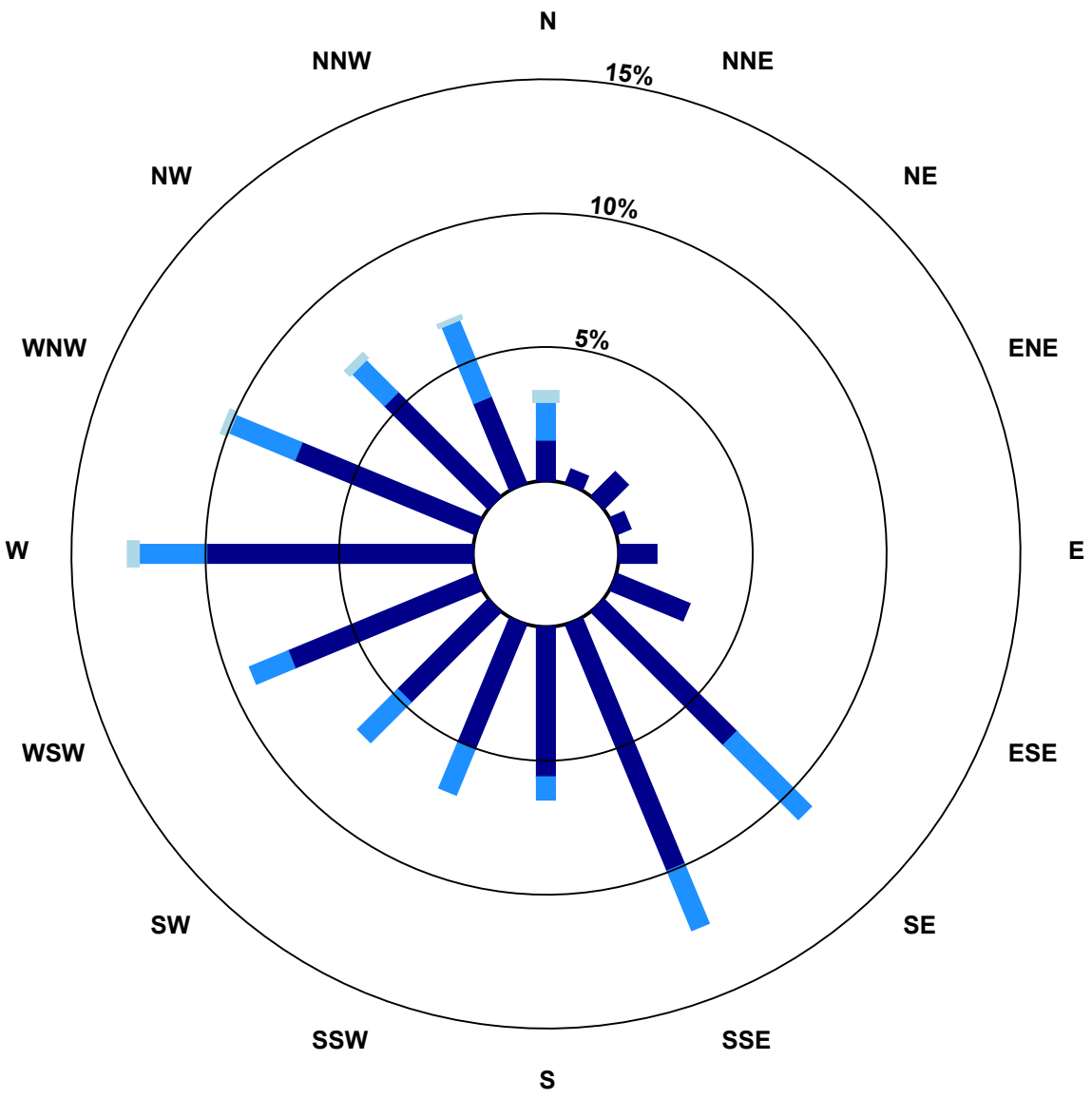
Total Number of Hours: 720

Wood Buffalo Environmental Association

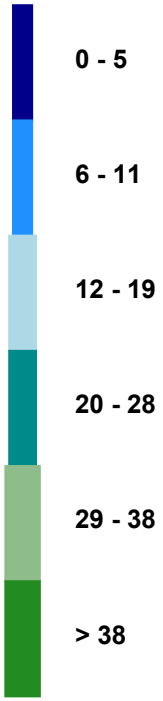
Wind Rose Sep 2024

Wind Speed 10m (WS10) - km/h

Waskow ohci Pimatisiwin



Classes (km/h)



Total Number of Valid Hours: 713

Number of Exceedences (AAAQO): 1-hr: 0 24-hr: 0
Maximum Value: 6 km/h on Sep 26 18:00

Minimum Value: 0 km/h on Sep 4 00:00

Percentiles: P_1 = 1 P_{10} = 1 Q_1 = 1 Median = 1 Q_3 = 2 P_{90} = 3 P_{99} = 5

Hours in Service:	720
Hours of Data:	713
Hours of Missing Data:	7
Hours of Calibration:	0
Percent Operational Time:	99.0

Day	Hourly Period Ending At (MST)																								Daily
	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24	Maximum
1-Sep	1	2	1	1	1	2	2	2	2	2	2	2	2	3	4	3	3	3	1	1	1	UO	1	1	4
2-Sep	1	1	1	1	1	1	2	1	2	2	2	2	3	3	3	3	3	2	2	5	5	4	4	4	5
3-Sep	4	3	2	1	1	1	1	1	1	2	3	3	2	2	2	2	1	2	1	1	1	1	1	0	4
4-Sep	1	1	1	1	1	1	1	1	2	3	2	2	2	4	3	2	3	3	2	1	1	1	1	3	4
5-Sep	2	1	1	1	1	1	1	1	1	1	2	2	2	3	2	3	2	2	2	1	2	2	2	2	3
6-Sep	2	2	2	2	2	2	2	1	3	3	2	3	2	2	2	3	2	1	1	1	1	1	1	1	3
7-Sep	1	UO	1	1	1	1	1	2	1	2	2	2	2	2	3	3	3	2	2	2	2	2	1	2	3
8-Sep	1	1	1	1	1	1	1	1	1	1	2	3	2	1	1	1	2	1	1	1	1	2	2	2	3
9-Sep	1	2	2	1	1	1	2	2	1	3	2	3	3	3	3	3	3	3	4	3	3	2	2	2	4
10-Sep	2	3	2	2	2	2	2	2	2	2	3	3	3	2	1	2	3	2	1	1	1	1	1	1	3
11-Sep	1	0	1	1	1	1	1	1	1	1	1	1	2	1	1	1	1	1	1	1	1	1	1	1	2
12-Sep	1	1	1	1	1	1	1	1	1	1	2	1	1	1	1	1	1	1	UO	1	1	1	1	1	2
13-Sep	1	1	1	1	1	1	1	1	1	2	2	2	2	2	2	2	2	2	2	1	2	2	1	1	2
14-Sep	1	1	2	2	1	1	1	1	1	2	2	2	2	3	1	3	2	2	2	2	1	1	1	1	3
15-Sep	1	1	1	1	1	1	1	1	1	1	1	1	1	2	2	2	1	1	1	1	1	1	1	1	2
16-Sep	1	1	1	1	1	1	1	1	2	2	2	3	4	3	3	2	2	2	1	1	1	2	2	1	4
17-Sep	1	1	1	1	1	1	1	2	2	2	2	2	2	2	2	2	1	1	1	1	1	1	1	1	2
18-Sep	UO	1	1	1	1	1	1	2	2	2	3	4	3	3	3	3	3	2	1	1	1	2	1	1	4
19-Sep	1	UO	1	1	1	1	1	1	2	2	2	2	2	2	2	1	1	1	1	1	1	1	1	1	2
20-Sep	1	1	1	1	2	1	1	1	1	1	2	2	5	5	4	4	3	3	2	1	1	1	1	1	5
21-Sep	1	1	1	1	1	1	1	1	1	1	2	2	2	2	2	3	2	1	1	2	2	1	1	2	3
22-Sep	1	1	1	1	1	1	1	1	1	1	2	2	2	2	1	1	1	1	4	1	1	1	1	1	4
23-Sep	1	1	1	1	2	1	1	1	1	1	1	2	2	2	2	2	2	2	2	2	1	2	1	1	2
24-Sep	1	1	1	1	1	1	1	1	2	2	3	4	4	5	5	4	3	2	1	1	UO	UO	1	1	5
25-Sep	1	1	1	1	1	1	2	2	1	1	1	1	1	1	2	1	1	1	1	1	1	1	2	1	2
26-Sep	2	2	2	1	1	2	2	2	2	2	2	3	3	3	3	2	1	6	1	1	1	1	1	1	6
27-Sep	1	1	1	1	1	1	1	1	1	2	2	3	3	3	2	2	1	2	2	1	2	1	2	2	3
28-Sep	3	4	3	3	3	3	2	1	2	2	3	4	4	3	3	3	1	1	1	1	1	1	1	1	4
29-Sep	1	1	1	1	1	1	2	1	1	2	2	2	3	4	4	3	3	2	1	1	2	3	1	2	4
30-Sep	2	2	2	2	3	1	1	1	1	1	2	4	4	5	5	5	5	4	1	1	1	1	1	2	5
	4	4	3	3	3	3	2	2	3	3	3	4	5	5	5	5	5	6	4	5	5	4	4	4	
	Diurnal Maximum																								

UO - Unstable Operation

Wood Buffalo Environmental Association

Summary of Hour Averages

Wind Direction 10m (WD10) - deg

Waskow ohci Pimatisiwin - September 2024

Direction of Maximum Speed: 309 deg on Sep 2 20:00
Direction of Maximum Daily Speed Average: 319.8 deg on Sep 13

Direction of Minimum Speed: 298 deg on Sep 2 03:00

Direction of Minimum Daily Speed Average: 0.3 deg on Sep 15

Monthly Average Direction: 247.2 deg

Hours in Service:	720
Hours of Data:	713
Hours of Missing Data:	7
Percent Operational Time:	99.0

Day	Hourly Period Ending At (MST)																								Daily
	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24	Average
1-Sep	109	134	156	144	148	166	167	161	135	135	133	129	166	209	221	218	210	230	184	194	174	UO	294	182	175.3
2-Sep	164	117	298	219	235	199	159	147	148	132	133	134	165	199	216	217	230	224	224	309	323	7	3	356	238.0
3-Sep	346	351	344	345	319	289	288	318	4	346	340	359	4	10	1	9	360	14	353	342	316	323	303	274	345.2
4-Sep	264	285	235	310	183	229	220	227	269	293	276	218	185	318	310	310	311	300	279	252	251	284	266	302	279.9
5-Sep	309	263	263	247	301	244	233	180	156	131	129	136	139	133	130	135	119	118	146	139	138	146	146	147	148.2
6-Sep	147	149	169	159	156	160	157	169	169	187	199	201	181	150	152	167	172	144	171	129	157	265	43	155	166.3
7-Sep	146	UO	141	157	155	167	157	151	144	135	138	132	144	168	211	212	212	194	209	222	229	252	280	289	184.0
8-Sep	135	175	146	163	132	147	157	143	136	81	154	153	133	255	46	87	352	352	329	335	339	329	333	334	50.2
9-Sep	340	304	312	347	6	327	317	338	318	328	192	295	303	282	249	244	245	225	270	283	266	224	198	219	277.9
10-Sep	252	264	277	263	257	245	224	219	221	192	187	213	256	227	201	212	286	315	251	272	252	283	293	262	245.0
11-Sep	247	264	268	258	259	257	269	324	28	111	134	92	3	36	26	35	338	345	334	305	269	327	138	110	316.0
12-Sep	271	276	310	259	226	144	163	331	347	340	2	42	40	84	95	89	89	96	UO	274	268	259	266	198	349.1
13-Sep	262	266	306	271	265	270	284	298	318	319	345	336	335	343	353	338	333	331	326	320	319	314	299	282	319.8
14-Sep	284	289	280	292	249	233	210	186	206	183	285	197	180	138	151	259	269	301	306	12	324	257	252	300	260.3
15-Sep	299	281	295	253	273	283	244	284	272	88	44	39	83	114	130	133	109	141	272	275	252	259	239	249	241.6
16-Sep	247	192	300	152	186	172	175	166	156	160	159	188	226	227	210	209	220	211	197	194	157	182	186	165	193.6
17-Sep	166	178	167	156	176	203	253	154	155	164	160	135	134	128	122	135	120	129	249	251	262	199	173	163	153.0
18-Sep	UO	258	288	206	273	212	152	157	184	280	317	302	290	280	287	285	314	311	270	266	261	266	191	272	283.1
19-Sep	226	UO	209	201	226	169	157	155	133	137	129	128	127	126	124	167	155	143	303	307	299	281	305	317	151.1
20-Sep	272	302	270	314	323	281	278	253	236	103	341	342	358	357	355	343	334	335	329	323	312	315	300	276	331.2
21-Sep	281	265	279	250	173	183	204	238	237	146	141	135	131	128	134	141	150	140	135	153	220	115	119	141	150.7
22-Sep	60	325	288	273	269	245	256	174	114	144	143	136	155	145	112	120	63	334	341	303	257	282	298	300	257.9
23-Sep	314	259	264	249	263	268	260	281	312	133	73	115	121	138	147	140	155	150	149	140	138	148	137	153	154.2
24-Sep	172	151	138	191	166	173	250	199	285	230	236	260	273	279	280	304	307	314	224	236	UO	UO	231	314	270.0
25-Sep	295	221	264	273	276	248	326	316	315	295	332	269	178	132	153	168	167	166	155	178	239	235	289	204	210.3
26-Sep	233	272	304	297	59	244	247	234	257	253	254	265	275	260	302	104	165	288	253	262	178	202	132	250	263.8
27-Sep	242	205	252	239	293	209	171	248	186	243	210	172	170	194	218	211	160	165	158	153	151	171	155	167	185.4
28-Sep	197	209	220	224	249	259	272	196	213	256	243	244	250	233	273	262	205	112	179	160	110	275	246	290	237.7
29-Sep	277	273	267	294	283	292	309	328	360	346	348	346	349	350	350	342	329	320	311	290	286	306	34	300	328.4
30-Sep	282	284	283	267	303	205	168	155	167	158	170	280	267	291	278	284	280	300	241	225	229	253	257	264	270.0
	263.6	256.8	266.4	251.0	251.5	229.4	221.7	209.5	184.5	185.1	176.6	208.4	220.0	247.2	247.4	240.1	269.7	288.6	261.8	274.3	275.6	277.4	274.8	270.7	
	Diurnal Average																								

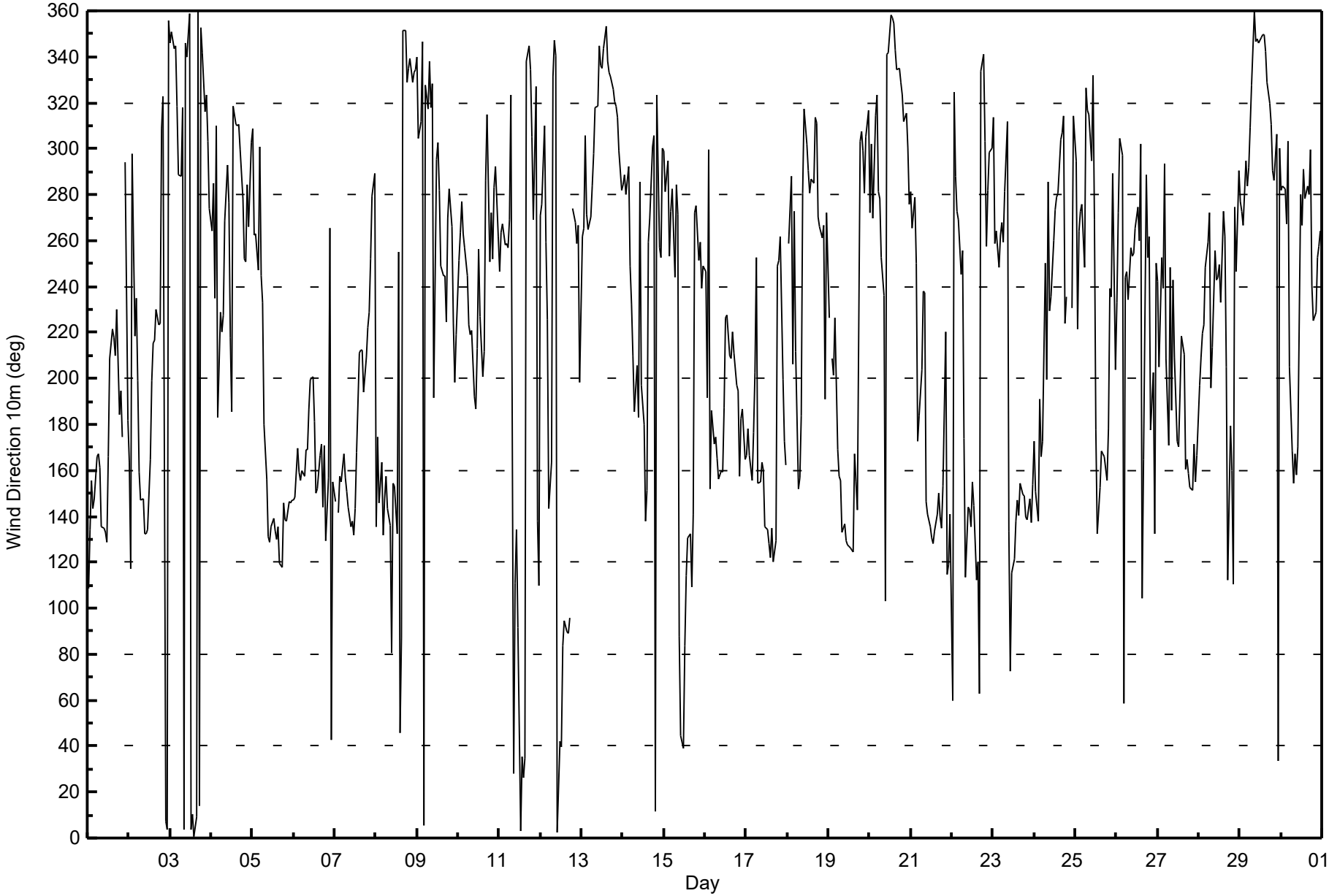
UO - Unstable Operation
All monthly, daily, and diurnal averages have been calculated using vector methods

Wood Buffalo Environmental Association

Hourly Averages

Wind Direction 10m (WD10) - deg

Waskow ohci Pimatisiwin - September 2024



Number of Exceedences (AAAQO): 1-hr: 0 24-hr: 0
Maximum Value: 107 deg on Sep 21 21:00

Minimum Value: 10 deg on Sep 12 20:00

Percentiles: P_1 = 15 P_{10} = 22 Q_1 = 30 Median = 41 Q_3 = 56 P_{90} = 77 P_{99} = 100

Hours in Service:	720
Hours of Data:	713
Hours of Missing Data:	7
Hours of Calibration:	0
Percent Operational Time:	99.0

Day	Hourly Period Ending At (MST)																								Daily
	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24	Maximum
1-Sep	50	37	41	32	26	35	44	29	30	28	30	38	64	47	49	60	48	53	33	21	53	UO	53	86	86
2-Sep	39	60	93	55	54	79	19	27	36	34	32	29	40	62	47	43	53	52	40	22	28	30	30	25	93
3-Sep	22	27	23	19	22	90	46	43	32	24	25	33	32	37	36	46	29	36	23	19	17	17	22	15	90
4-Sep	12	30	32	85	61	84	71	64	74	42	64	64	63	45	62	42	37	31	41	32	38	46	46	40	85
5-Sep	17	26	18	37	44	67	64	54	33	37	39	32	32	34	38	33	37	38	26	30	28	26	25	22	67
6-Sep	23	38	35	28	31	31	23	50	83	46	47	48	41	30	21	30	32	41	39	71	82	77	87	56	87
7-Sep	69	UO	41	24	22	19	17	26	32	33	29	32	38	36	53	59	50	35	40	41	47	51	43	79	79
8-Sep	67	48	35	70	61	73	26	29	27	49	48	34	36	82	58	68	33	24	25	19	22	31	19	20	82
9-Sep	86	103	75	91	58	22	26	31	45	57	105	42	34	43	54	56	51	49	57	45	43	58	32	41	105
10-Sep	46	46	54	50	42	51	46	42	50	48	48	62	54	55	42	55	49	19	37	50	34	29	26	32	62
11-Sep	50	15	26	30	17	27	17	46	80	53	56	80	66	81	90	91	33	20	13	56	85	98	67	30	98
12-Sep	35	41	21	28	56	41	64	23	36	19	58	54	49	38	31	41	35	37	UO	10	23	66	62	62	66
13-Sep	13	25	22	43	45	41	37	29	23	72	28	22	22	22	29	21	20	19	19	17	18	17	30	30	72
14-Sep	50	48	50	92	64	75	100	80	90	55	101	95	96	64	43	68	50	30	29	36	51	18	24	17	101
15-Sep	17	25	25	26	32	18	29	31	64	91	61	60	51	38	41	45	42	68	93	23	60	44	36	83	93
16-Sep	53	46	92	49	27	23	24	27	26	31	34	54	52	51	53	48	51	39	27	44	26	52	65	32	92
17-Sep	36	38	31	64	69	77	36	50	27	28	36	32	33	41	32	46	44	35	59	24	45	68	62	85	85
18-Sep	UO	88	56	89	88	40	35	30	51	50	27	37	36	48	42	48	24	19	44	38	19	49	75	84	89
19-Sep	97	UO	51	53	51	18	21	17	27	39	30	38	38	34	41	32	22	38	85	58	34	17	17	58	97
20-Sep	76	65	48	14	71	35	34	31	49	76	72	26	33	31	32	26	22	18	18	13	18	21	20	17	76
21-Sep	14	71	81	72	27	70	56	57	55	33	34	34	33	36	37	38	35	32	32	49	107	51	32	26	107
22-Sep	53	17	21	30	40	50	69	68	89	86	64	62	42	77	38	48	63	27	21	33	45	54	25	19	89
23-Sep	34	49	35	28	31	35	70	25	72	99	67	47	38	34	32	26	31	22	21	34	28	29	27	35	99
24-Sep	57	38	27	80	105	81	101	88	97	69	64	52	51	45	39	32	23	17	31	89	UO	UO	74	86	105
25-Sep	95	86	56	27	57	57	69	69	104	97	71	86	52	44	34	49	42	30	31	18	75	60	95	81	104
26-Sep	56	34	36	52	84	48	58	86	81	44	53	45	44	54	42	75	31	63	53	40	92	81	56	71	92
27-Sep	32	45	50	33	82	33	26	68	46	50	67	41	54	58	57	56	24	34	27	21	41	45	32	34	82
28-Sep	40	42	42	47	51	45	44	55	56	59	52	49	54	59	56	55	99	74	45	30	59	78	58	85	99
29-Sep	67	18	54	79	64	20	48	17	24	27	25	31	26	24	24	23	20	19	17	29	27	65	69	89	89
30-Sep	41	38	36	33	60	32	43	26	38	56	69	58	49	39	41	43	41	25	52	38	32	32	32	33	69
	97	103	93	92	105	90	101	88	104	99	105	95	96	82	90	91	99	74	93	89	107	98	95	89	
	Diurnal Maximum																								

UO - Unstable Operation

WOOD BUFFALO ENVIRONMENTAL ASSOCIATION

CONTINUOUS AMBIENT AIR QUALITY
MONITORING PROGRAM
MONTHLY REPORT

AMS26
CHRISTINA LAKE
SEPTEMBER 2024

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

October 31, 2024

WOOD BUFFALO ENVIRONMENTAL ASSOCIATION - CHRISTINA LAKE (AMS26)
SEPTEMBER 2024

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	686	34	34	100	18.7	0	3.6	0
H2S (ppb) Average	685	35	35	100	1.2	0	0.5	0
NO2 (ppb) Average	684	36	36	100	11.5	0	4.6	-
NO (ppb) Average	684	36	36	100	15.1	-	4.7	-
NOX (ppb) Average	684	36	36	100	26.1	-	9.3	-
Temperature 2 m (C) Average	720	0	0	100	31.7	-	21.6	-
Relative Humidity (%) Average	720	0	0	100	100	-	98.8	-
Wind Speed 10 m (km/h) Average	720	0	0	100	30	-	19	-
Wind Direction 10 m (deg) Average	720	0	0	100	-	-	-	-

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

WOOD BUFFALO ENVIRONMENTAL ASSOCIATION - CHRISTINA LAKE (AMS26)
SEPTEMBER 2024

MONTHLY SUMMARY FOR AIR QUALITY/ METEOROLOGICAL MONITORING MEASUREMENTS

					Percentile						
Parameter	Number	Mean	StnDev	Total	Min	P10	Q1	Median	Q3	P90	Max
SO2 (ppb) Average	686	0.61	1.4	-	0	0	0.1	0.2	0.6	1.2	18.7
H2S (ppb) Average	685	0.2	0.2	-	0	0.1	0.1	0.2	0.3	0.4	1.2
NO2 (ppb) Average	684	2.81	2	-	0.3	0.8	1.3	2.2	3.8	5.8	11.5
NO (ppb) Average	684	1.08	2	-	0	0	0.1	0.4	1.1	2.6	15.1
NOX (ppb) Average	684	3.89	3.5	-	0.3	1	1.5	2.8	5	8.3	26.1
Temperature 2 m (C) Average	720	13.18	5.7	-	0.5	6.5	9.4	12.1	16.3	21.1	31.7
Relative Humidity (%) Average	720	70.76	20	-	18.3	42.5	54.1	72.6	88.8	96.3	100
Wind Speed 10 m (km/h) Average	720	10	5	-	0	4	6	9	13	17	30
Wind Direction 10 m (deg) Average	720	-	-	-	-	-	-	-	-	-	-

WOOD BUFFALO ENVIRONMENTAL ASSOCIATION - CHRISTINA LAKE (AMS26)
SEPTEMBER 2024

OPERATIONAL NOTES

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

Wood Buffalo Environmental Association

Summary of Hour Averages

Sulphur Dioxide (SO_2) - ppb

Christina Lake - September 2024

Number of Exceedences (AAAQO): 1-hr: 0 24-hr: 0
Maximum Value: 18.7 ppb on Sep 26 07:00 Maximum Daily Average: 3.6 ppb on Sep 30

Minimum Value: 0.0 ppb on Sep 4 21:00 Minimum Daily Average: 0.0 ppb on Sep 12
Maximum Diurnal Average: 1.0 ppb at hour 10 Minimum Diurnal Average: 0.2 ppb at hour 20
Monthly Average: 0.61 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} = 7.1

Hours in Service:	720
Hours of Data:	686
Hours of Missing Data:	34
Hours of Calibration:	34
Percent Operational Time:	100.0

Day	Hourly Period Ending At (MST)																								Daily	Daily
	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24	Average	Maximum
1-Sep	0.3	0.4	0.7	0.7	0.9	Z	0.7	1.1	1.1	1.2	0.3	0.3	0.7	0.7	0.5	0.4	0.3	0.3	0.4	0.2	0.6	0.3	0.2	0.1	0.5	1.2
2-Sep	Z	0.2	0.1	0.1	0.1	0.3	0.4	0.7	1.2	2.1	1.6	0.7	0.7	0.6	0.2	0.2	0.5	0.6	1.3	0.5	0.3	0.5	0.2	1.2	0.6	2.1
3-Sep	0.6	Z	0.2	0.1	0.2	0.2	0.1	0.2	0.1	0.1	0.1	0.1	0.1	0.1	0.3	0.3	0.3	0.4	0.3	0.3	0.3	0.4	0.3	0.2	0.2	0.6
4-Sep	0.2	0.2	Z	0.5	0.3	0.4	0.3	0.2	0.6	0.6	0.3	0.2	0.1	0.1	0.0	0.0	0.0	0.1	0.1	0.4	0.0	0.0	0.0	0.0	0.2	0.6
5-Sep	0.0	0.1	0.0	Z	0.2	0.1	0.1	0.2	0.5	0.5	0.5	0.5	0.8	0.7	1.2	1.1	0.5	0.3	0.2	0.1	0.1	0.3	1.6	6.1	0.7	6.1
6-Sep	4.8	0.7	1.5	4.1	Z	0.8	0.5	0.4	0.6	1.1	1.4	1.8	2.6	1.0	0.6	1.5	0.6	0.4	0.3	0.7	0.6	0.4	0.1	0.0	1.2	4.8
7-Sep	0.1	0.1	0.6	0.1	0.0	Z	0.5	0.3	0.3	0.3	0.5	1.0	0.6	1.1	0.4	0.1	0.8	0.5	0.1	0.0	0.2	0.0	0.1	0.4	0.4	1.1
8-Sep	Z	0.2	0.0	0.0	0.0	0.0	0.1	0.1	0.3	1.0	2.4	1.3	1.7	0.5	0.5	1.0	1.6	2.4	0.5	0.5	0.8	0.9	1.1	2.3	0.8	2.4
9-Sep	0.6	Z	1.1	0.5	2.5	4.2	0.6	0.7	1.3	0.5	0.2	0.1	0.1	0.0	0.0	0.0	0.2	0.3	0.1	0.0	0.0	0.0	0.0	0.0	0.6	4.2
10-Sep	0.0	0.0	Z	0.1	0.1	0.1	0.1	0.1	0.0	0.0	0.2	0.1	0.1	0.2	0.1	0.1	0.3	0.2	0.0	0.0	0.1	0.1	0.0	0.1	0.1	0.3
11-Sep	0.0	0.1	0.0	Z	0.1	0.0	0.0	0.2	0.1	0.1	0.1	0.3	0.1	0.1	0.1	0.1	0.1	0.1	0.0	0.0	0.0	0.1	0.0	0.0	0.1	0.3
12-Sep	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
13-Sep	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	0.2	0.2	0.3	0.4	0.4	0.5	0.6	0.4	0.1	0.6
14-Sep	Z	0.2	0.2	0.1	0.0	0.1	0.0	0.0	0.8	1.0	1.1	0.7	0.3	0.2	0.0	0.1	0.2	0.1	0.1	0.0	0.0	0.0	0.0	0.0	0.2	1.1
15-Sep	0.0	Z	0.0	0.1	0.0	0.2	0.2	0.1	0.0	0.0	0.0	0.1	0.0	0.1	0.1	0.6	0.2	0.2	0.0	0.0	0.0	0.0	0.0	0.2	0.1	0.6
16-Sep	0.4	0.3	Z	0.2	0.1	0.0	0.1	0.4	1.2	0.6	0.6	0.4	0.6	0.3	0.1	0.0	0.2	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.2	1.2
17-Sep	0.0	0.1	0.0	Z	0.1	0.1	0.8	0.9	0.7	0.2	1.6	0.8	0.6	0.6	0.7	0.6	0.3	0.1	0.2	0.2	0.3	0.4	0.2	0.2	0.4	1.6
18-Sep	0.2	0.2	0.2	0.2	Z	0.2	0.2	0.3	0.7	0.9	0.6	0.5	0.5	0.5	0.7	0.4	0.5	0.4	0.2	0.1	0.4	0.4	0.5	0.4	0.4	0.9
19-Sep	0.5	0.5	0.5	0.4	0.3	Z	0.3	0.5	0.4	0.3	0.1	0.2	0.2	0.1	0.2	0.1	0.1	0.2	0.3	0.2	0.2	0.2	0.2	0.1	0.3	0.5
20-Sep	Z	0.2	0.1	0.1	0.0	0.2	0.1	0.2	0.3	0.6	0.4	0.5	0.3	0.3	0.2	0.2	0.2	0.2	0.6	0.6	0.5	0.2	0.2	0.3	0.3	0.6
21-Sep	0.1	Z	0.1	0.2	0.1	0.0	0.1	0.1	0.4	0.5	1.3	1.5	1.6	1.1	0.3	0.0	0.0	0.5	0.0	0.0	0.3	0.1	0.0	0.0	0.4	1.6
22-Sep	0.0	2.8	Z	0.1	0.0	0.3	0.9	0.8	0.9	2.0	0.5	0.5	0.2	0.1	0.1	0.1	0.9	0.2	0.1	0.1	0.1	0.0	0.1	0.0	0.5	2.8
23-Sep	0.2	0.2	0.2	Z	0.3	0.3	0.3	0.4	0.6	0.7	0.6	0.3	0.2	0.8	0.3	0.5	0.3	0.3	0.1	0.3	0.6	0.4	0.1	1.0	0.4	1.0
24-Sep	0.7	0.1	0.1	0.0	Z	0.0	0.0	0.0	0.2	0.6	C	C	C	C	2.4	1.0	1.3	1.0	0.0	0.0	0.1	0.0	0.0	0.0	0.4	2.4
25-Sep	0.1	0.0	0.1	0.2	0.2	Z	0.2	0.2	0.6	1.0	0.2	1.0	1.1	1.4	1.2	0.5	0.7	0.8	0.3	0.2	0.7	0.6	0.4	1.0	0.6	1.4
26-Sep	Z	4.7	1.7	3.5	6.1	7.1	18.7	7.7	5.5	2.1	1.2	0.7	0.7	4.2	0.8	0.5	0.6	0.2	0.0	0.0	0.0	0.6	0.4	0.1	2.9	18.7
27-Sep	0.2	Z	0.2	0.1	0.1	0.1	0.0	0.5	0.3	2.4	2.0	1.9	7.2	1.7	0.6	8.0	3.0	0.4	0.6	0.3	0.4	0.3	0.7	0.6	1.4	8.0
28-Sep	0.2	0.1	Z	0.3	0.2	0.5	0.2	0.1	0.1	1.7	0.7	0.4	0.2	0.7	0.4	0.2	0.2	0.2	0.0	0.1	0.0	0.0	0.1	0.1	0.3	1.7
29-Sep	0.1	0.0	0.0	Z	0.1	0.0	0.0	0.0	0.0	0.0	0.0	0.1	0.2	0.1	0.0	0.0	0.0	0.0	0.0	0.1	0.1	0.5	0.6	4.6	0.3	4.6
30-Sep	6.9	12.2	11.9	5.2	Z	1.1	0.8	4.1	2.7	7.2	4.1	6.8	7.1	5.4	2.6	2.3	0.5	1.0	1.0	0.1	0.1	0.2	0.1	0.2	3.6	12.2
	0.6	0.9	0.8	0.7	0.5	0.7	0.9	0.7	0.7	1.0	0.8	0.8	1.0	0.8	0.5	0.7	0.5	0.4	0.2	0.2	0.2	0.2	0.3	0.7	Diurnal Average	
	6.9	12.2	11.9	5.2	6.1	7.1	18.7	7.7	5.5	7.2	4.1	6.8	7.2	5.4	2.6	8.0	3.0	2.4	1.3	0.7	0.8	0.9	1.6	6.1	Diurnal Maximum	

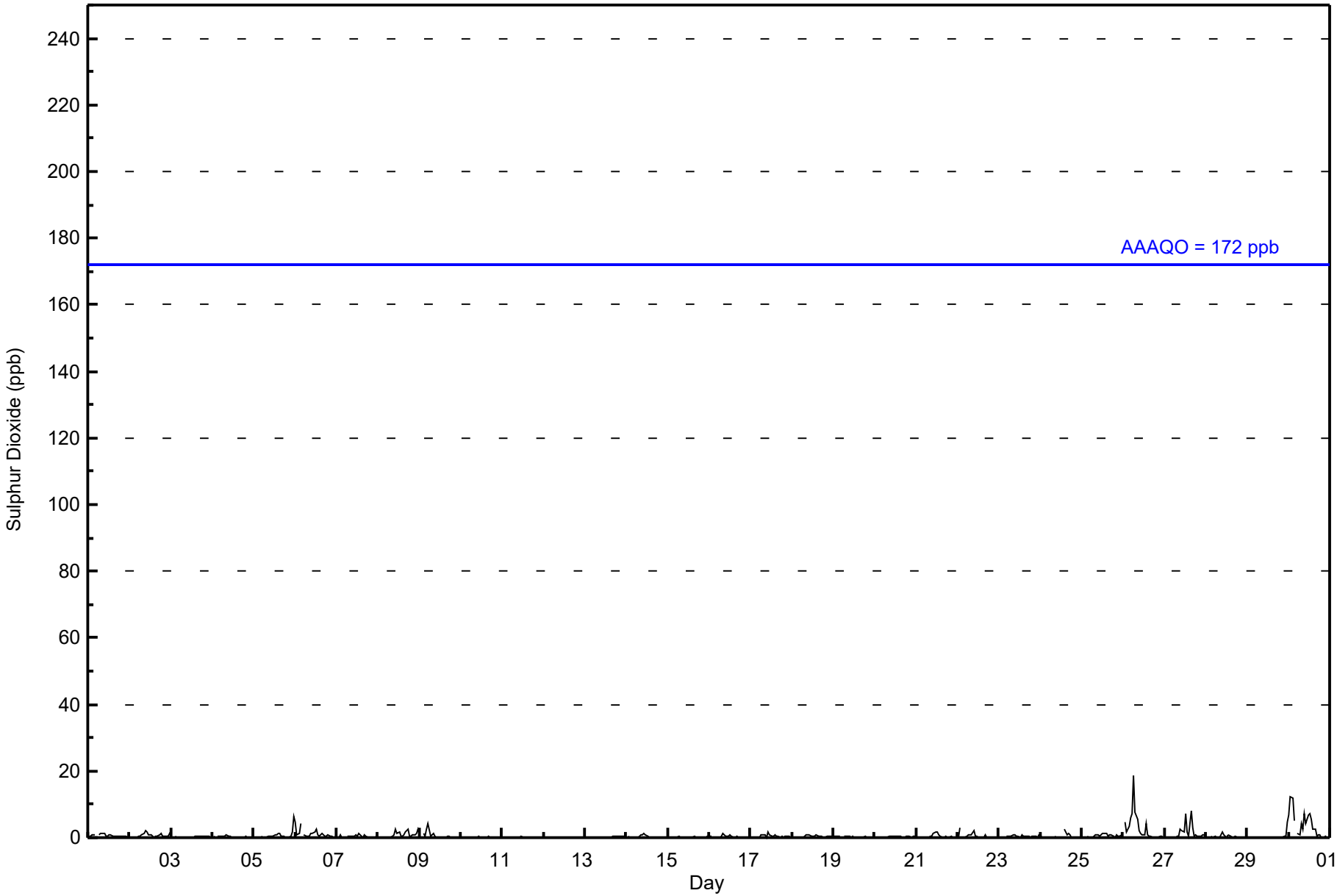
Z - zerospan C - Calibration
Alberta Ambient Air Quality Objectives (AAAQO): 1-hr 172 ppb 24-hr 48 ppb

Wood Buffalo Environmental Association

Hourly Averages

Sulphur Dioxide (SO_2) - ppb

Christina Lake - September 2024



Concentration Ranges (ppb)	Number of Hours	%	Cumulative %
0 - 10	683	99.56	99.56
11 - 20	3	0.44	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: 686

Total Number of Hours: 720

Wood Buffalo Environmental Association

Frequency Distribution

Sulphur Dioxide (SO_2) - ppb

Christina Lake - September 2024

Concentration Ranges (ppb)	Wind Direction																
	N	NNE	NE	ENE	E	ESE	SE	SSE	S	SSW	SW	WSW	W	WNW	NW	NNW	**Totals**
0 - 10	20	31	18	14	10	17	22	25	54	111	94	96	75	60	27	9	683
11 - 20	0	0	0	0	0	0	0	0	0	0	0	0	0	3	0	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	20	31	18	14	10	17	22	25	54	111	94	96	75	63	27	9	686

Total Number of Valid Hours: 686

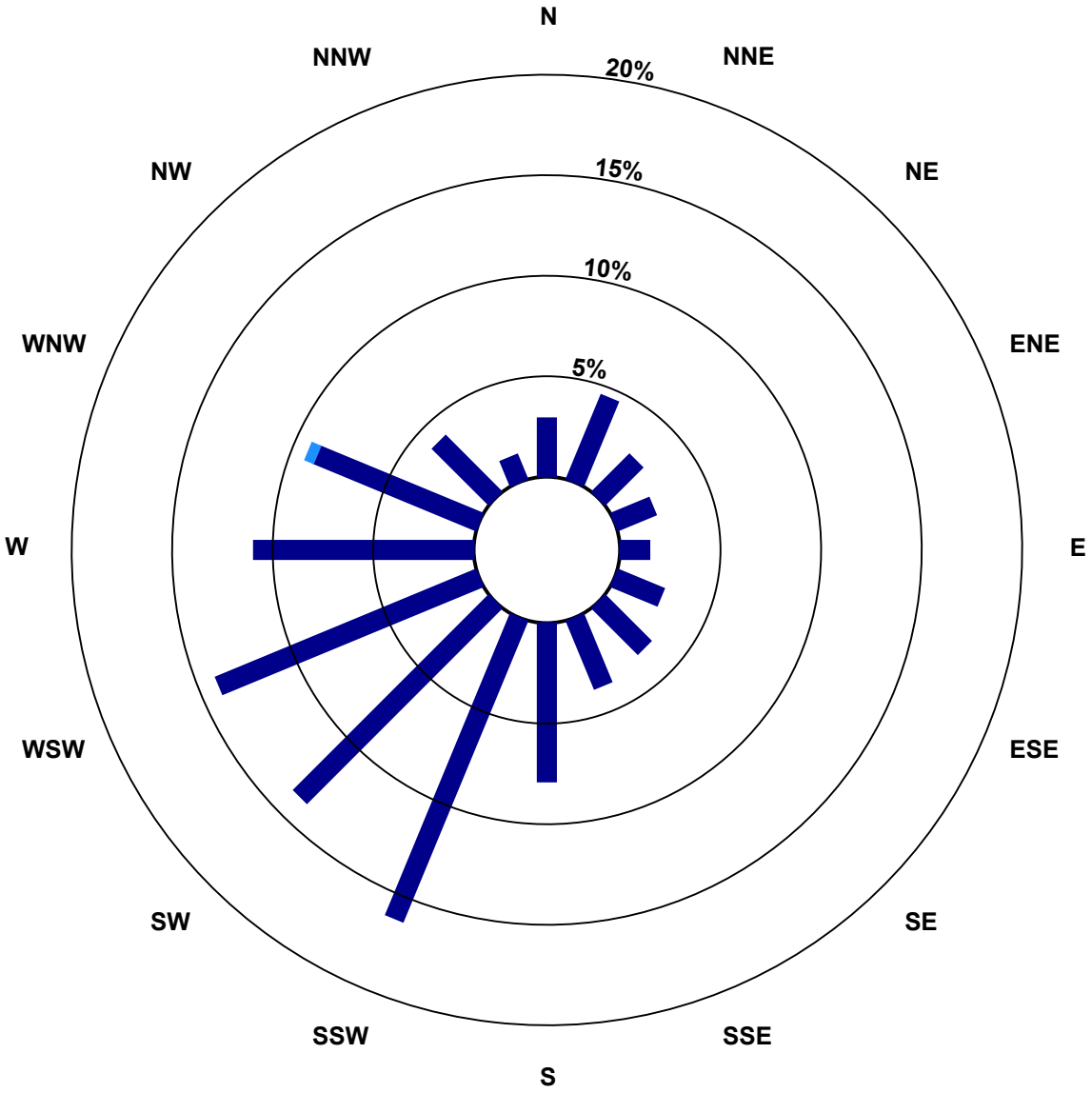
Total Number of Hours: 720

Wood Buffalo Environmental Association

Wind Rose Sep 2024

Sulphur Dioxide (SO_2) - ppb

Christina Lake



Classes (ppb)

0 - 10

11 - 20

21 - 60

61 - 110

111 - 172

> 172

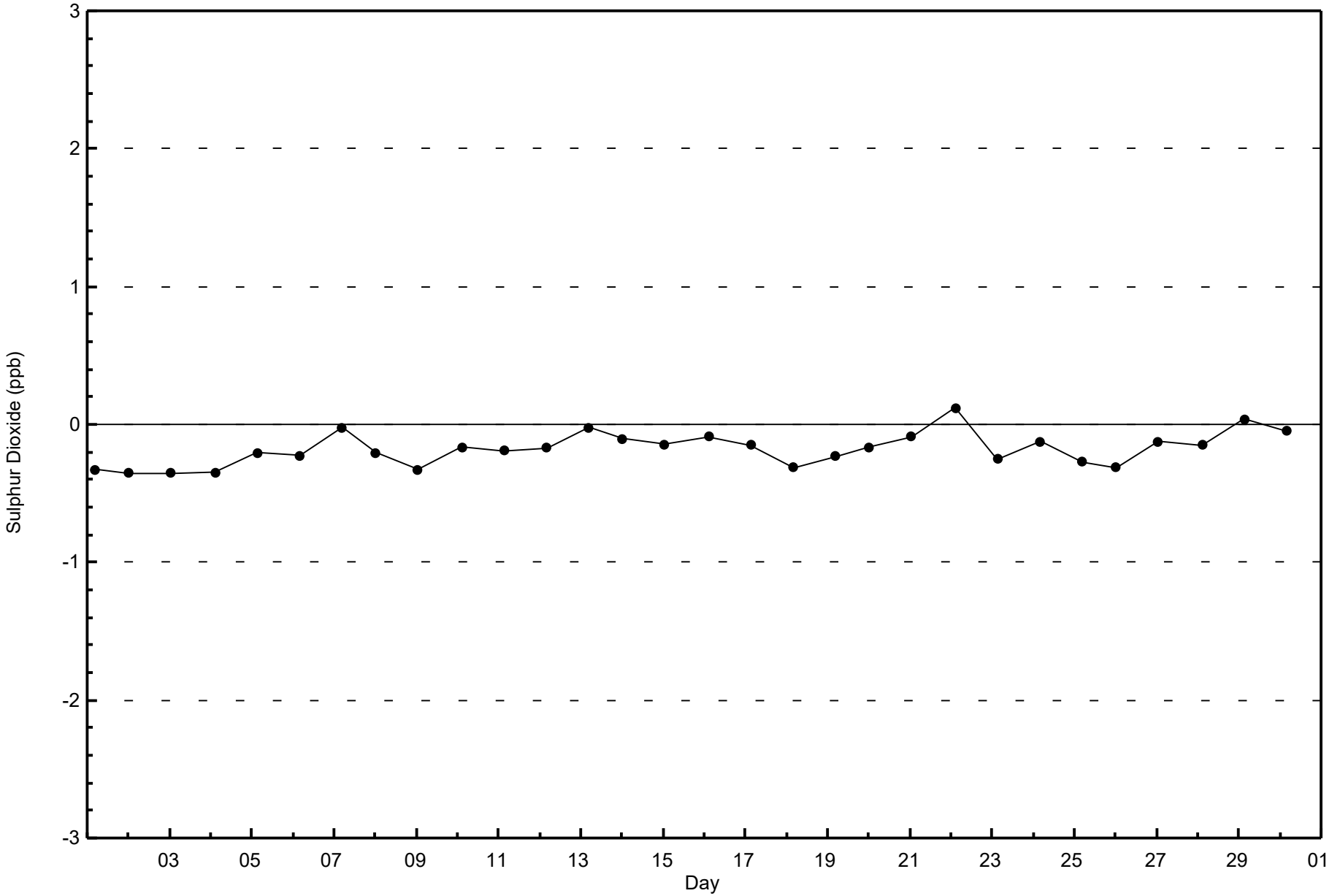
Total Number of Valid Hours: 686

Wood Buffalo Environmental Association

Zero Responses

Sulphur Dioxide (SO_2) - ppb

Christina Lake - September 2024

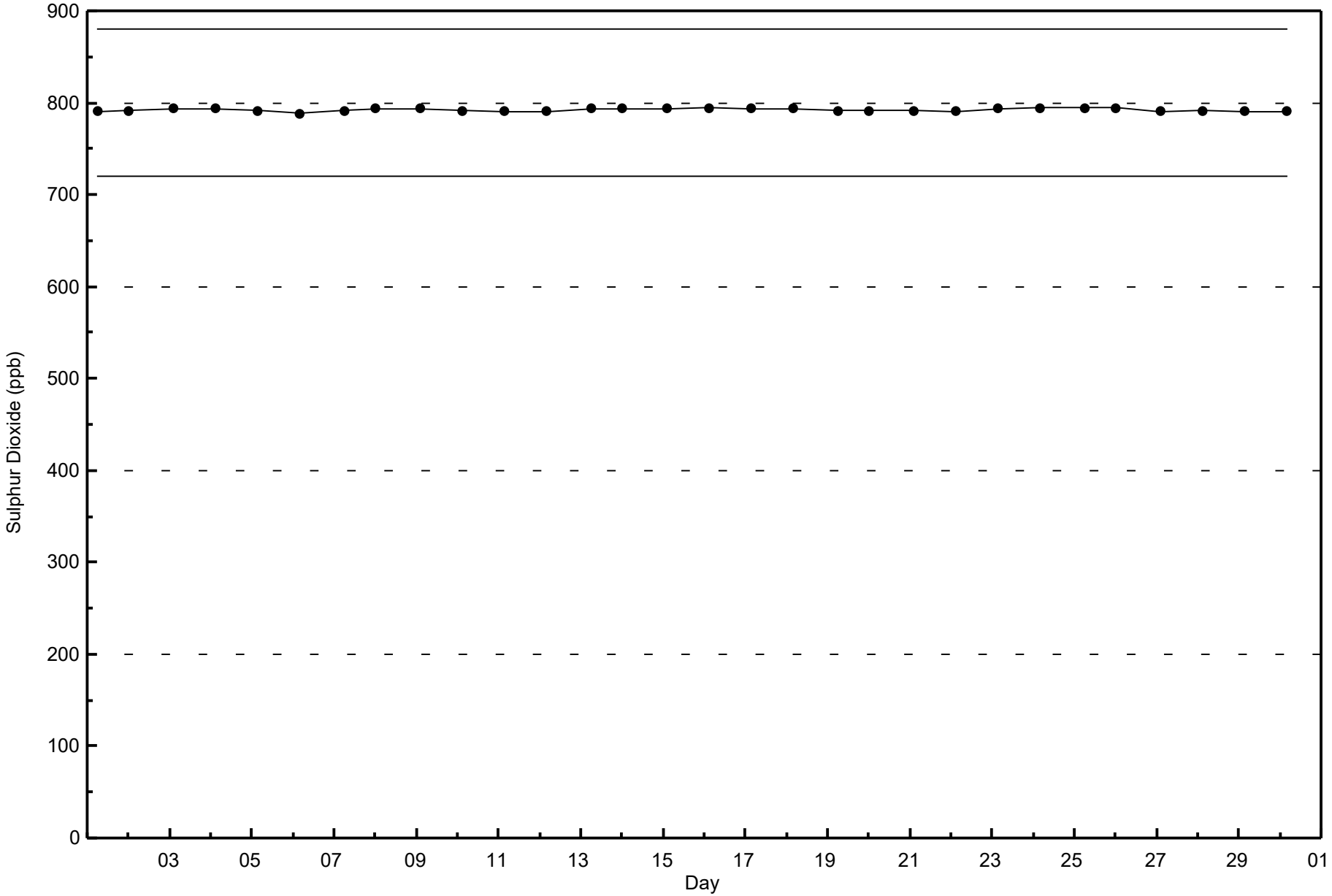


Wood Buffalo Environmental Association

Span Responses

Sulphur Dioxide (SO_2) - ppb

Christina Lake - September 2024



Wood Buffalo Environmental Association

Summary of Hour Averages

Hydrogen Sulphide (H_2S) - ppb

Christina Lake - September 2024

Number of Exceedences (AAAQO): 1-hr: 0 24-hr: 0

Maximum Value: 1.2 ppb on Sep 13 16:00 Maximum Daily Average: 0.5 ppb on Sep 13

Minimum Value: 0.0 ppb on Sep 2 16:00 Minimum Daily Average: 0.1 ppb on Sep 15

Maximum Diurnal Average: 0.3 ppb at hour 8 Minimum Diurnal Average: 0.1 ppb at hour 14

Monthly Average: 0.20 ppb Percentiles: P_1 = 0.0 P_{10} = 0.1 Q_1 = 0.1 Median = 0.2 Q_3 = 0.3 P_{90} = 0.4 P_{99} = 0.8

Hours in Service:	720
Hours of Data:	685
Hours of Missing Data:	35
Hours of Calibration:	35
Percent Operational Time:	100.0

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

Z - zerospan C - Calibration

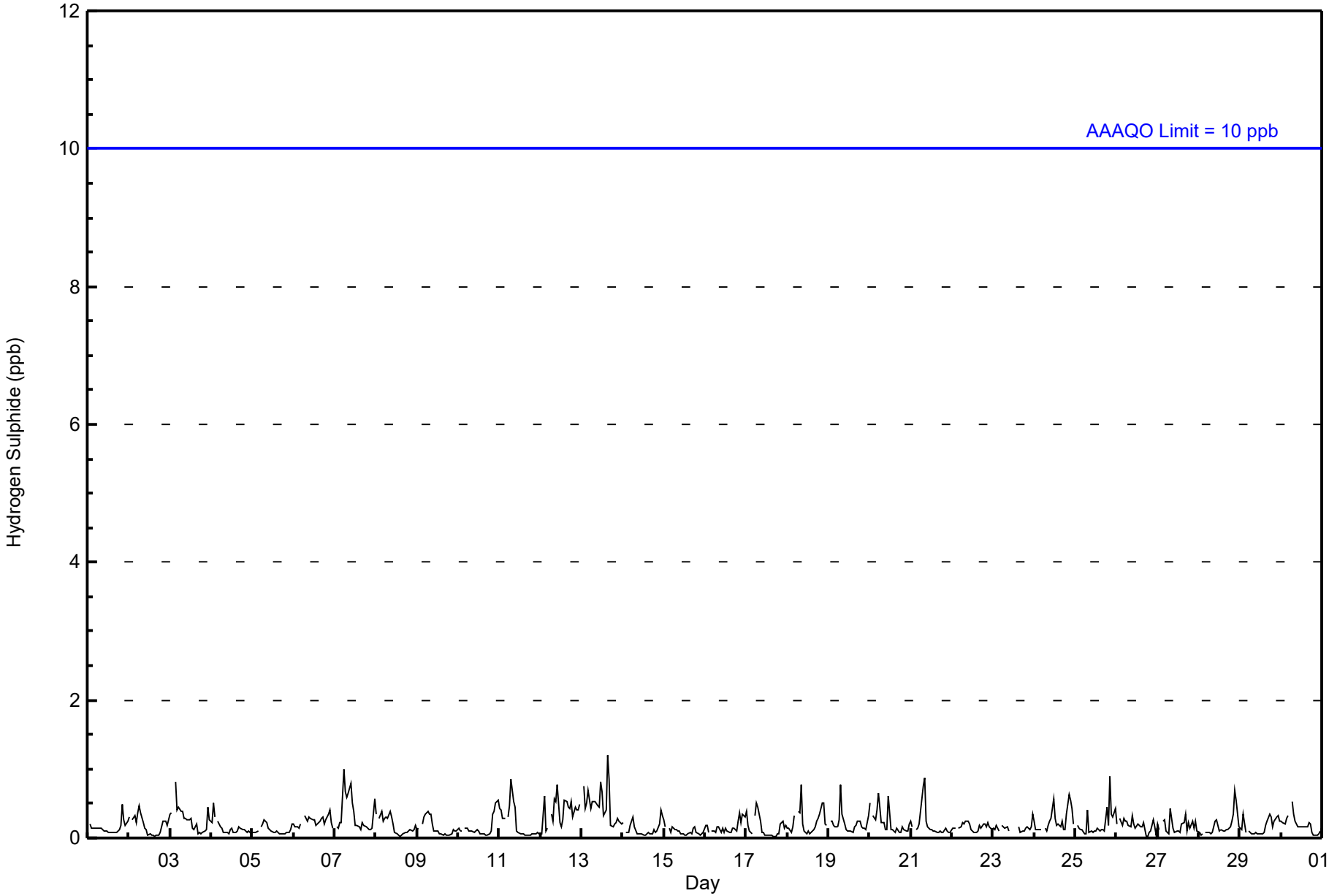
Alberta Ambient Air Quality Objectives (AAAQO): 1-hr 10 ppb 24-hr 3 ppb

Wood Buffalo Environmental Association

Hourly Averages

Hydrogen Sulphide (H_2S) - ppb

Christina Lake - September 2024



Concentration Ranges (ppb)	Number of Hours	%	Cumulative %
0 - 2	685	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: 685

Total Number of Hours: 720

Wood Buffalo Environmental Association

Frequency Distribution

Hydrogen Sulphide (H_2S) - ppb

Christina Lake - September 2024

Concentration Ranges (ppb)	Wind Direction																
	N	NNE	NE	ENE	E	ESE	SE	SSE	S	SSW	SW	WSW	W	WNW	NW	NNW	**Totals**
0 - 2	20	31	19	12	11	17	24	25	50	115	94	91	73	66	27	10	685
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	20	31	19	12	11	17	24	25	50	115	94	91	73	66	27	10	685

Total Number of Valid Hours: 685

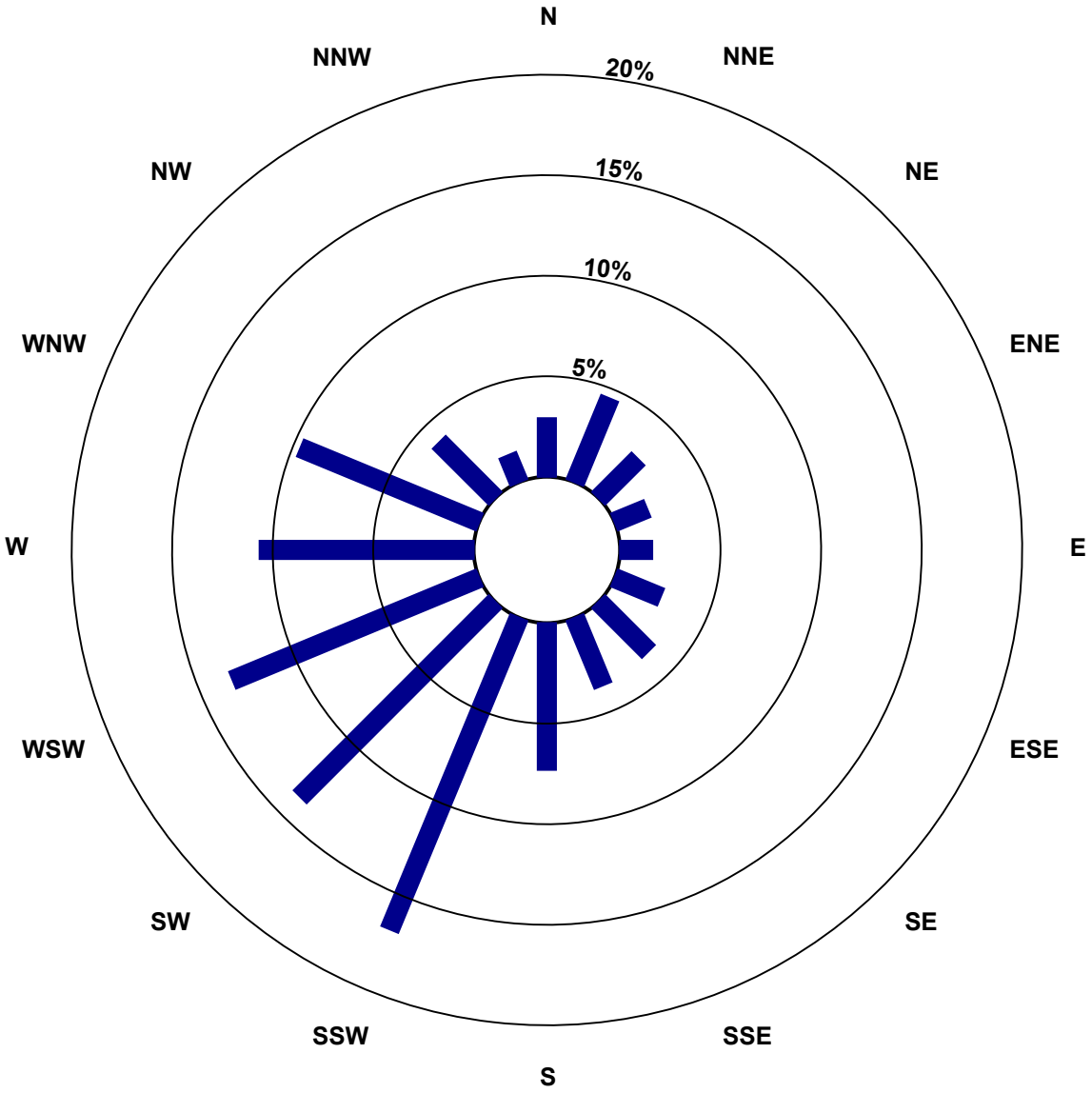
Total Number of Hours: 720

Wood Buffalo Environmental Association

Wind Rose Sep 2024

Hydrogen Sulphide (H_2S) - ppb

Christina Lake



Classes (ppb)

0 - 2

3 - 4

5 - 7

8 - 11

> 11

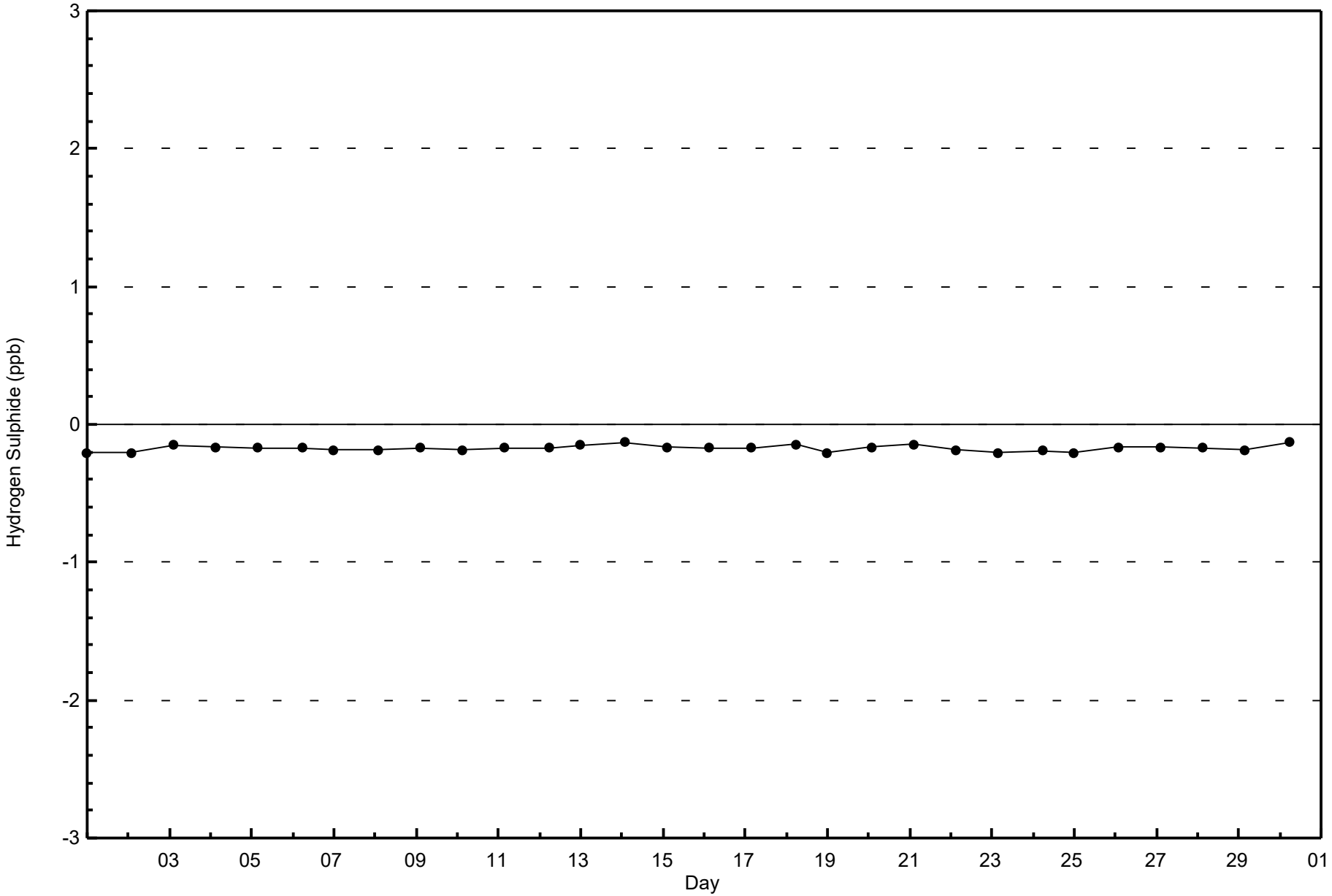
Total Number of Valid Hours: 685

Wood Buffalo Environmental Association

Zero Responses

Hydrogen Sulphide (H_2S) - ppb

Christina Lake - September 2024

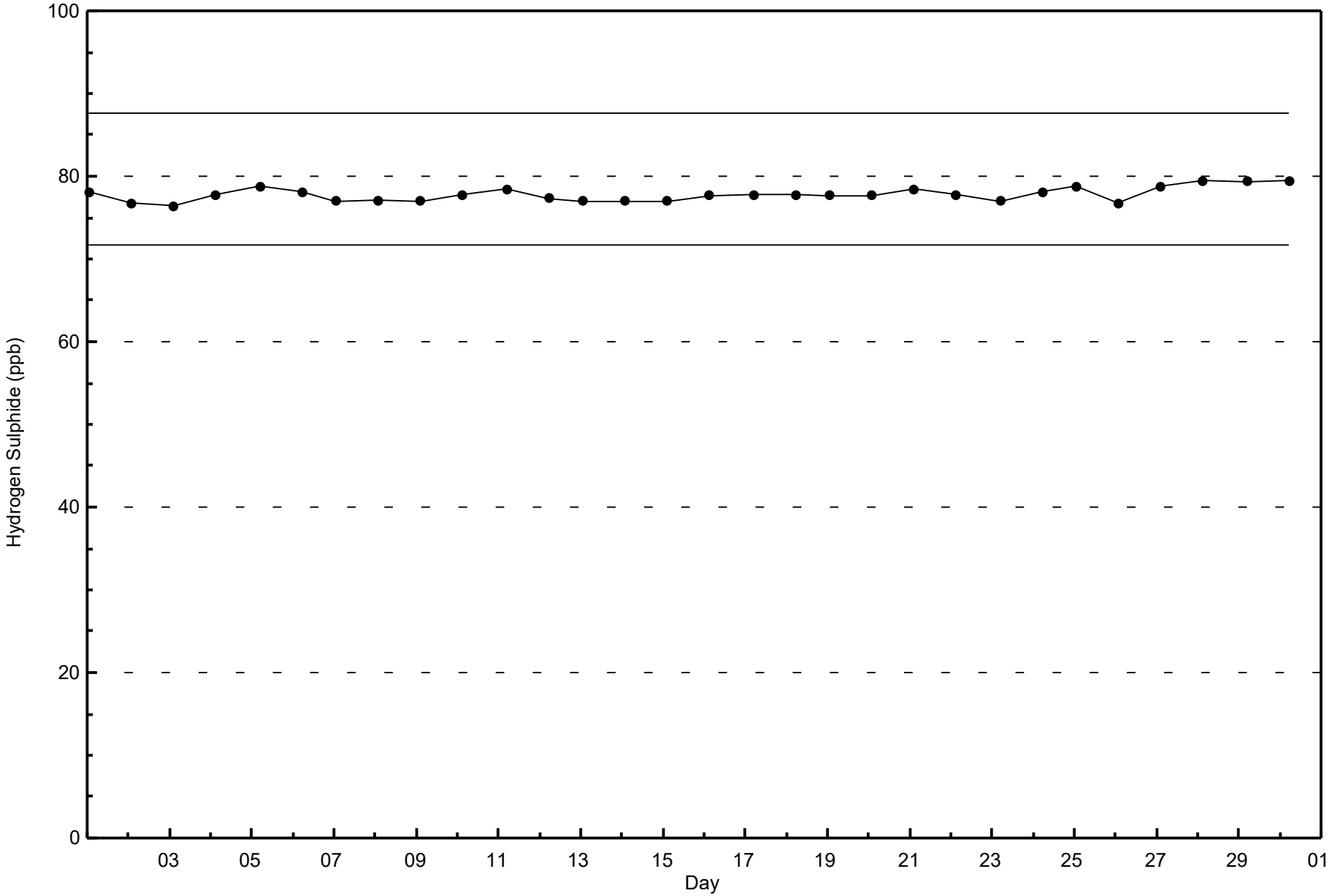


Wood Buffalo Environmental Association

Span Responses

Hydrogen Sulphide (H_2S) - ppb

Christina Lake - September 2024



Wood Buffalo Environmental Association

Summary of Hour Averages

Nitric Oxide (NO) - ppb

Christina Lake - September 2024

Maximum Value: 15.1 ppb on Sep 11 08:00

Maximum Daily Average: 4.7 ppb on Sep 30

Minimum Value: 0.0 ppb on Sep 4 21:00

Minimum Daily Average: 0.2 ppb on Sep 3

Maximum Diurnal Average: 3.2 ppb at hour 8

Minimum Diurnal Average: 0.3 ppb at hour 20

Monthly Average: 1.08 ppb

Percentiles: P_1 = 0.0 P_{10} = 0.0 Q_1 = 0.1 Median = 0.4 Q_3 = 1.1 P_{90} = 2.6 P_{99} = 10.3

Hours in Service:	720
Hours of Data:	684
Hours of Missing Data:	36
Hours of Calibration:	36
Percent Operational Time:	100.0

Day	Hourly Period Ending At (MST)																								Daily	Daily
	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24	Average	Maximum
1-Sep	0.0	0.0	0.0	Z	0.0	0.1	0.3	0.7	0.8	0.5	3.4	6.4	1.4	0.1	0.1	0.7	1.0	0.7	0.1	0.0	0.1	0.0	0.1	0.1	0.7	6.4
2-Sep	0.1	0.7	0.2	0.1	Z	1.9	0.5	3.0	0.7	0.7	0.6	0.1	0.1	0.1	0.1	0.3	0.5	0.2	0.2	0.1	0.2	10.3	1.5	1.3	1.0	10.3
3-Sep	0.2	0.2	0.1	0.1	0.1	Z	0.3	0.2	0.1	0.1	0.2	0.1	0.2	0.1	0.2	0.2	0.1	0.1	0.1	0.7	0.0	0.0	0.1	0.7	0.2	0.7
4-Sep	Z	0.2	3.0	5.5	1.2	0.7	1.3	0.9	0.7	0.6	0.6	0.6	0.4	0.6	3.2	2.7	0.9	0.4	0.7	0.1	0.0	0.0	0.3	0.4	1.1	5.5
5-Sep	0.3	Z	0.5	0.4	0.8	1.2	1.3	6.5	2.0	1.6	0.8	0.5	0.4	0.4	0.2	0.3	0.6	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.8	6.5
6-Sep	0.0	0.0	Z	0.0	0.0	0.0	0.4	0.4	0.6	1.0	2.6	0.5	1.1	0.7	0.8	2.6	2.2	1.9	0.0	0.0	0.0	0.0	0.0	0.0	0.7	2.6
7-Sep	0.1	0.2	0.2	Z	0.1	1.1	2.0	5.6	2.3	1.6	1.4	0.4	0.2	1.2	0.8	0.3	2.0	0.7	0.1	0.1	0.2	0.2	0.2	0.5	0.9	5.6
8-Sep	0.3	2.2	0.3	2.4	Z	4.9	10.9	8.3	1.9	0.4	0.7	0.3	0.4	0.3	0.2	0.6	0.4	0.2	0.0	0.0	0.0	0.0	0.1	0.1	1.5	10.9
9-Sep	0.1	1.1	2.0	0.0	0.4	Z	0.1	0.3	0.6	0.4	1.4	1.3	0.8	0.6	0.6	0.2	0.2	0.1	0.0	0.1	0.1	1.1	0.5	0.1	0.5	2.0
10-Sep	Z	0.2	0.2	0.2	0.2	0.1	1.0	0.6	0.5	C	C	C	C	C	C	0.6	0.1	0.1	0.2	0.6	0.6	2.1	0.2	1.5	--	2.1
11-Sep	1.1	Z	0.2	1.1	2.6	2.0	4.2	15.1	5.2	7.6	0.3	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	1.7	15.1
12-Sep	0.0	0.0	Z	0.1	0.5	0.7	0.2	0.4	0.4	0.7	0.3	0.3	0.7	1.0	0.5	1.0	0.8	0.5	0.9	0.1	0.2	0.2	0.3	0.2	0.4	1.0
13-Sep	0.3	0.5	0.2	Z	0.7	0.6	0.8	1.0	0.9	0.5	0.8	0.9	1.0	2.1	6.1	7.4	7.4	2.1	1.9	2.4	3.4	2.3	1.8	3.5	2.1	7.4
14-Sep	2.6	1.6	0.6	0.3	Z	0.9	1.3	2.6	2.1	1.1	0.9	0.6	0.3	0.2	0.3	1.0	1.4	0.1	0.0	0.3	0.2	0.3	0.3	0.2	0.8	2.6
15-Sep	0.2	0.2	0.6	0.7	0.4	Z	1.4	1.1	1.5	0.7	0.5	0.3	0.3	0.3	0.5	0.4	0.2	0.2	0.1	0.1	0.0	0.1	0.3	0.2	0.4	1.5
16-Sep	Z	0.1	0.1	0.1	0.0	0.4	0.5	0.6	0.8	0.7	3.0	0.3	0.4	0.4	0.5	1.0	1.4	0.5	0.1	0.0	0.5	0.1	0.2	0.2	0.5	3.0
17-Sep	0.0	Z	0.1	0.1	0.2	1.3	1.3	2.2	0.8	0.1	0.9	0.3	0.3	0.2	0.1	0.2	0.1	0.0	0.0	0.2	0.5	0.0	0.1	0.5	0.4	2.2
18-Sep	0.3	1.8	Z	3.1	2.8	5.9	8.0	10.2	6.4	1.4	0.7	0.4	0.7	0.6	1.0	0.6	0.8	0.8	4.4	0.3	1.5	1.4	0.4	0.2	2.3	10.2
19-Sep	0.5	0.7	0.2	Z	0.8	2.3	6.2	11.4	3.4	0.6	0.2	0.1	0.2	0.3	0.3	0.4	0.6	0.8	0.1	0.6	0.7	0.3	0.4	0.1	1.4	11.4
20-Sep	1.6	3.3	1.6	1.1	Z	2.3	3.3	3.2	1.0	0.6	0.5	1.2	0.2	1.2	0.4	0.8	0.7	1.3	0.4	1.2	0.4	0.9	1.5	2.1	1.3	3.3
21-Sep	2.3	1.5	0.7	2.9	3.4	Z	4.7	5.0	3.1	1.2	1.0	0.6	0.7	0.3	0.1	0.6	0.3	0.1	0.0	0.0	0.0	0.0	0.0	0.0	1.2	5.0
22-Sep	Z	0.0	0.0	0.0	0.0	0.1	0.5	1.0	0.8	0.8	0.8	1.1	0.9	0.2	0.3	0.1	4.8	1.6	0.8	0.4	0.1	0.1	0.0	0.1	0.6	4.8
23-Sep	0.1	Z	0.5	0.3	0.6	0.6	1.1	0.4	0.7	1.1	0.6	0.4	0.4	0.4	0.3	0.5	2.6	2.0	2.4	0.1	2.0	2.5	0.0	0.0	0.8	2.6
24-Sep	0.0	0.0	Z	0.0	0.1	0.1	0.5	0.2	0.5	1.5	2.8	5.5	4.5	3.9	1.9	1.1	0.7	0.2	0.1	0.3	0.1	0.6	0.5	0.1	1.1	5.5
25-Sep	0.1	0.0	0.0	Z	0.0	0.0	0.0	0.7	0.2	0.4	0.1	1.3	1.8	0.4	0.7	0.5	0.2	0.2	0.5	0.6	0.4	0.5	0.5	0.8	0.4	1.8
26-Sep	0.8	1.9	0.4	1.0	Z	2.3	13.9	4.6	2.3	1.7	0.6	1.0	1.4	3.1	1.0	0.5	0.3	0.1	0.0	0.0	0.0	0.0	0.1	0.4	1.6	13.9
27-Sep	0.2	0.1	0.1	0.8	0.1	Z	0.1	2.2	0.6	1.9	1.1	0.9	2.4	0.5	0.5	2.7	1.2	0.1	0.4	0.1	0.1	1.0	7.0	0.0	1.0	7.0
28-Sep	Z	0.1	0.0	0.0	0.0	0.1	1.5	0.4	0.3	1.2	0.4	0.3	0.3	0.3	0.1	2.1	3.7	0.6	0.0	0.0	0.0	0.2	0.2	0.2	0.5	3.7
29-Sep	0.1	Z	0.1	0.0	0.1	0.0	0.0	0.1	0.2	0.4	0.1	0.2	0.3	0.2	0.1	0.1	0.1	0.1	0.1	1.1	0.7	0.5	1.6	8.6	0.6	8.6
30-Sep	10.1	15.0	Z	6.0	3.0	3.3	2.6	6.9	5.3	10.3	7.0	11.1	9.9	7.6	4.0	4.0	1.3	0.4	0.4	0.5	0.0	0.2	0.2	0.0	4.7	15.0
	0.9	1.3	0.5	1.1	0.7	1.3	2.3	3.2	1.6	1.4	1.2	1.3	1.1	0.9	0.9	1.1	1.2	0.5	0.5	0.3	0.4	0.8	0.6	0.7	Diurnal Average	
	10.1	15.0	3.0	6.0	3.4	5.9	13.9	15.1	6.4	10.3	7.0	11.1	9.9	7.6	6.1	7.4	7.4	2.1	4.4	2.4	3.4	10.3	7.0	8.6	Diurnal Maximum	

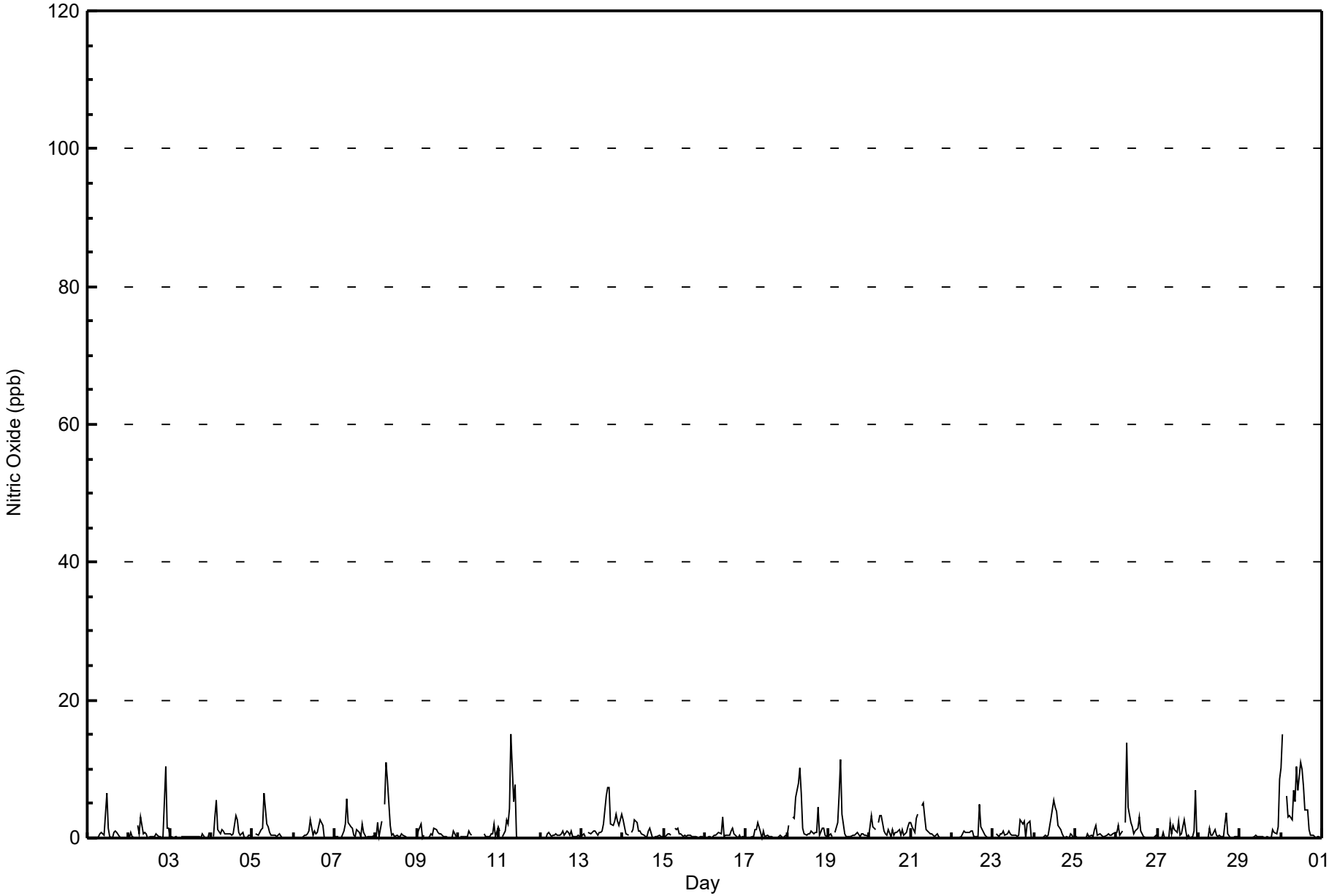
Z - zerospan C - Calibration

Wood Buffalo Environmental Association

Hourly Averages

Nitric Oxide (NO) - ppb

Christina Lake - September 2024



Concentration Ranges (ppb)	Number of Hours	%	Cumulative %
0 - 20	684	100.00	100.00
21 - 40	0	0.00	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: 684

Total Number of Hours: 720

Wood Buffalo Environmental Association

Frequency Distribution

Nitric Oxide (NO) - ppb

Christina Lake - September 2024

Concentration Ranges (ppb)	Wind Direction																
	N	NNE	NE	ENE	E	ESE	SE	SSE	S	SSW	SW	WSW	W	WNW	NW	NNW	**Totals**
0 - 20	21	30	18	13	9	17	24	25	52	111	95	93	72	67	28	9	684
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	21	30	18	13	9	17	24	25	52	111	95	93	72	67	28	9	684

Total Number of Valid Hours: 684

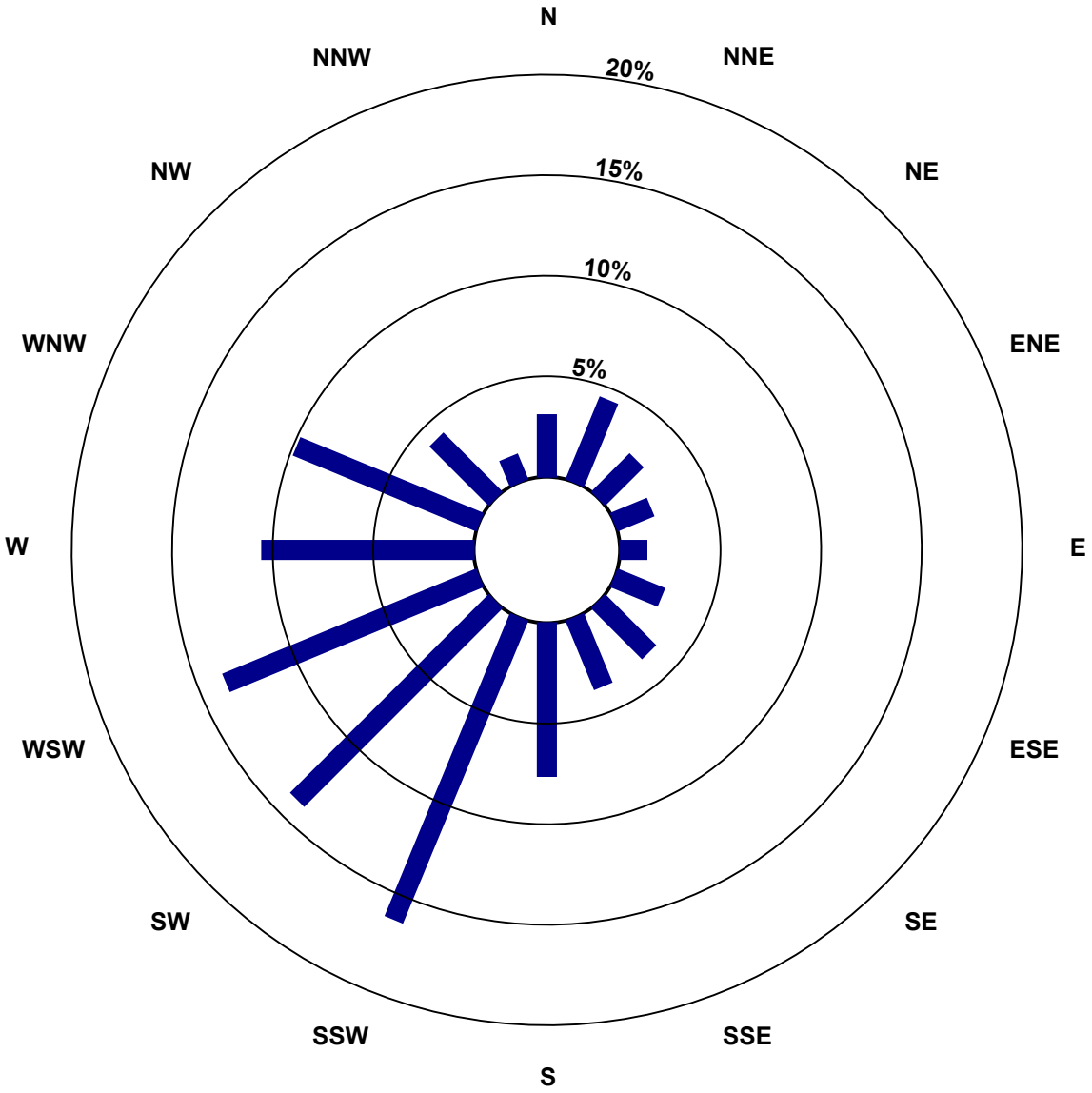
Total Number of Hours: 720

Wood Buffalo Environmental Association

Wind Rose Sep 2024

Nitric Oxide (NO) - ppb

Christina Lake



Classes (ppb)

0 - 20

21 - 40

11 - 80

81 - 159

> 159

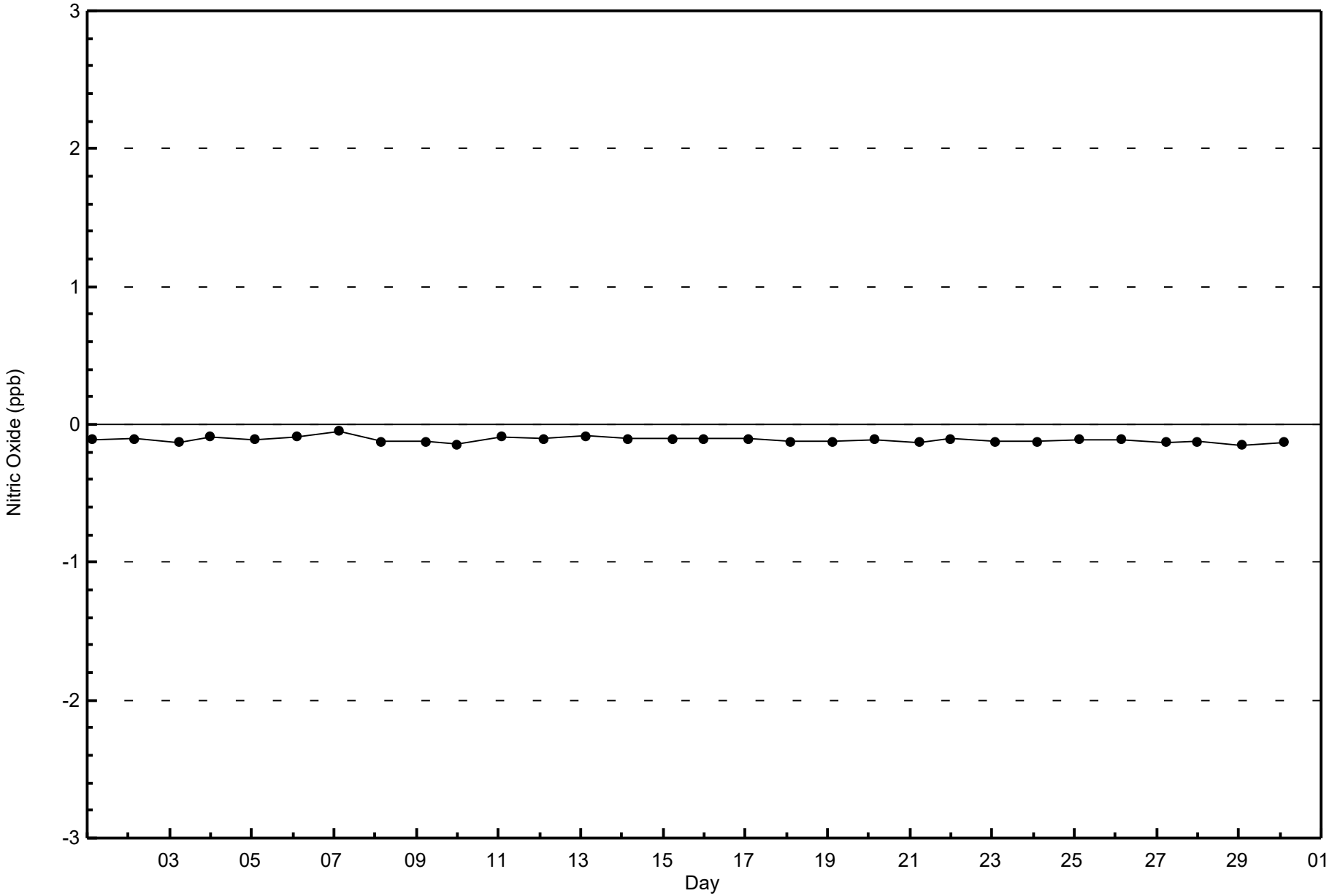
Total Number of Valid Hours: 684

Wood Buffalo Environmental Association

Zero Responses

Nitric Oxide (NO) - ppb

Christina Lake - September 2024

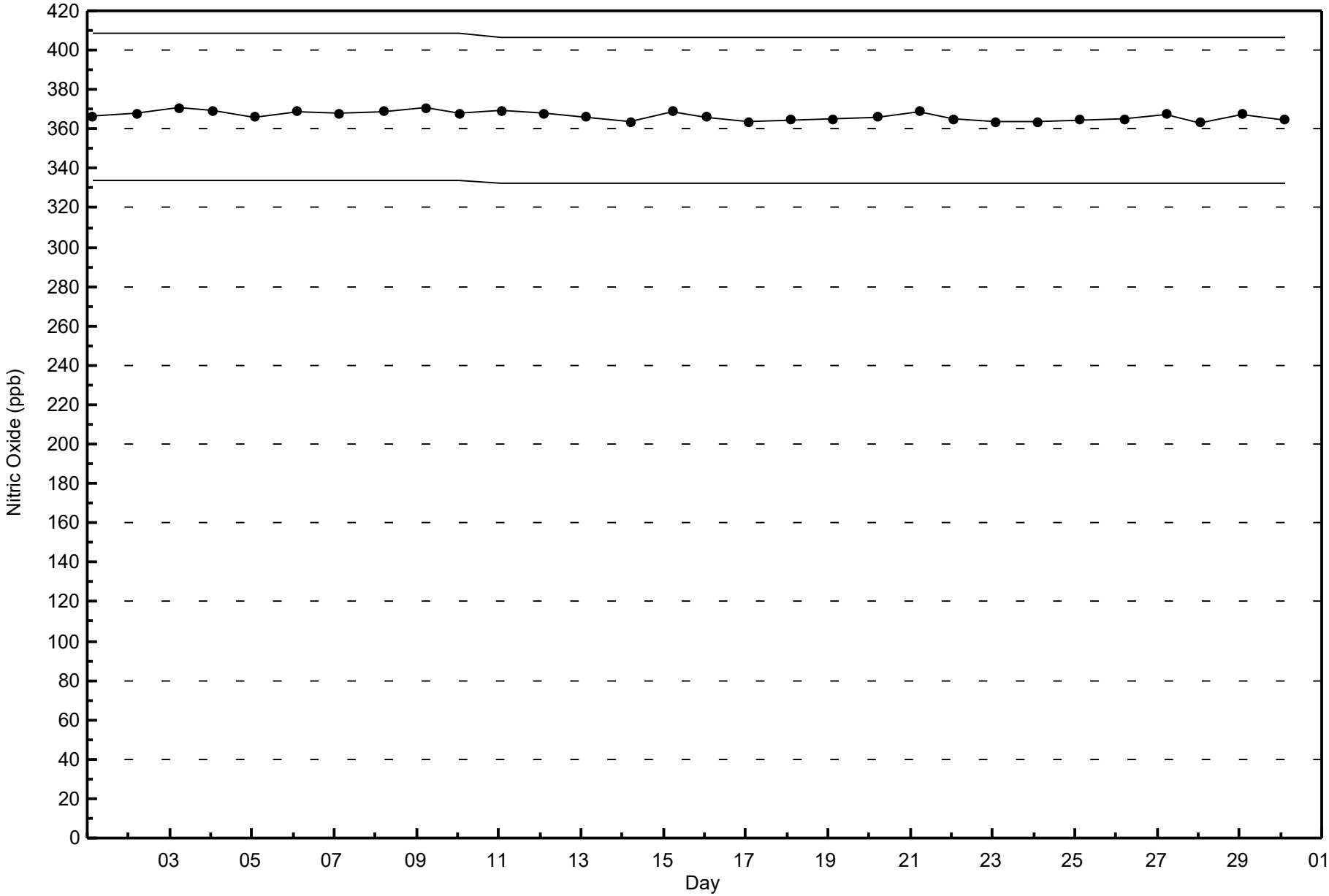


Wood Buffalo Environmental Association

Span Responses

Nitric Oxide (NO) - ppb

Christina Lake - September 2024



Wood Buffalo Environmental Association

Summary of Hour Averages

Nitrogen Dioxide (NO_2) - ppb

Christina Lake - September 2024

Number of Exceedences (AAAQO): 1-hr: 0 24-hr: 0
Maximum Value: 11.5 ppb on Sep 6 00:00 Maximum Daily Average: 4.6 ppb on Sep 30

Minimum Value: 0.3 ppb on Sep 1 01:00
Maximum Diurnal Average: 3.9 ppb at hour 8
Monthly Average: 2.81 ppb

Minimum Daily Average: 1.4 ppb on Sep 11
Minimum Diurnal Average: 1.8 ppb at hour 15
Percentiles: P_1 = 0.4 P_{10} = 0.8 Q_1 = 1.3 Median = 2.2 Q_3 = 3.8 P_{90} = 5.8 P_{99} = 9.1

Hours in Service:	720
Hours of Data:	684
Hours of Missing Data:	36
Hours of Calibration:	36
Percent Operational Time:	100.0

Day	Hourly Period Ending At (MST)																								Daily	Daily
	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24	Average	Maximum
1-Sep	0.3	1.5	2.8	Z	3.1	2.7	2.3	2.3	2.2	1.7	2.6	4.9	2.3	0.9	0.7	1.5	1.8	2.2	2.2	2.9	6.0	2.3	1.3	1.5	2.3	6.0
2-Sep	1.7	4.5	1.8	1.1	Z	6.3	6.0	6.7	2.7	3.0	2.8	0.9	1.0	0.9	1.0	1.1	2.1	3.8	5.5	6.3	7.4	6.4	7.5	5.7	3.7	7.5
3-Sep	1.4	1.9	2.7	2.1	1.8	Z	1.6	1.2	0.7	0.8	0.8	1.3	1.0	0.8	1.1	1.3	1.3	1.6	2.0	3.5	2.0	3.1	2.1	5.3	1.8	5.3
4-Sep	Z	1.8	5.8	9.1	6.9	5.2	4.1	3.2	1.8	1.4	0.9	1.0	0.8	1.6	3.2	3.5	1.8	2.1	6.2	2.5	0.9	0.9	5.5	4.8	3.3	9.1
5-Sep	5.1	Z	6.9	4.3	6.1	6.1	3.0	5.8	3.3	2.5	1.6	1.4	1.7	1.6	1.2	1.4	1.5	0.8	0.8	0.6	0.5	1.0	3.6	11.5	3.1	11.5
6-Sep	8.5	2.4	Z	7.1	7.4	2.4	2.5	2.7	3.2	5.1	7.2	3.7	3.9	2.6	3.3	6.1	6.2	4.5	2.6	2.3	2.6	3.9	7.8	3.5	4.4	8.5
7-Sep	7.0	5.8	8.7	Z	2.6	6.9	4.8	9.0	4.8	5.2	4.7	4.0	3.4	3.4	2.8	2.0	4.5	2.7	1.8	2.1	2.6	3.1	1.7	6.7	4.4	9.0
8-Sep	5.8	4.1	1.2	3.6	Z	2.9	3.9	7.6	4.6	2.5	4.5	2.5	2.4	1.1	1.2	2.9	3.2	4.0	1.3	1.6	2.1	2.0	2.4	4.7	3.1	7.6
9-Sep	2.2	4.6	7.5	2.2	5.8	Z	2.2	2.8	4.0	2.6	2.7	2.2	2.0	1.6	1.4	1.1	1.5	1.4	1.9	1.6	1.3	3.8	3.1	2.1	2.7	7.5
10-Sep	Z	2.1	1.2	2.3	3.3	2.5	3.9	1.5	1.0	C	C	C	C	C	C	1.6	1.2	1.6	3.1	3.0	5.1	3.0	0.9	3.8	--	5.1
11-Sep	2.6	Z	1.1	1.9	1.9	1.8	1.7	4.6	4.2	5.0	0.6	0.6	0.5	0.5	0.4	0.7	0.3	0.3	0.3	0.5	0.4	0.4	0.3	0.5	1.4	5.0
12-Sep	0.4	0.6	Z	2.6	5.0	4.0	2.6	3.4	2.1	2.1	1.7	1.7	2.4	2.7	1.7	2.3	2.0	1.8	2.3	1.2	1.2	1.2	1.5	1.4	2.1	5.0
13-Sep	1.7	1.7	1.2	Z	1.9	1.7	1.7	1.9	2.2	1.7	2.2	2.3	3.4	3.7	6.4	7.7	8.7	6.0	7.1	8.4	9.3	7.5	7.2	8.9	4.5	9.3
14-Sep	7.4	5.3	3.7	3.3	Z	3.6	3.6	4.6	3.3	2.2	2.3	1.8	1.0	0.8	1.2	3.0	2.8	1.3	1.4	1.4	1.5	1.9	2.1	1.5	2.7	7.4
15-Sep	2.2	4.1	3.6	4.0	3.2	Z	3.8	3.5	4.5	2.5	1.4	1.1	1.4	1.2	0.8	1.5	1.0	1.6	1.2	1.1	0.7	0.9	1.3	1.6	2.1	4.5
16-Sep	Z	1.8	1.2	1.2	0.8	1.8	1.7	1.6	2.1	1.2	3.0	1.1	1.0	1.0	1.0	2.0	2.5	1.4	2.4	2.7	5.9	1.2	1.7	1.9	1.8	5.9
17-Sep	0.9	Z	0.9	1.1	1.9	3.0	5.2	4.7	1.7	0.5	2.3	1.3	1.4	1.0	1.0	1.4	0.9	0.4	0.5	4.3	4.1	2.9	3.6	2.5	2.1	5.2
18-Sep	2.7	4.2	Z	5.9	5.1	4.6	4.6	5.7	7.4	3.3	2.5	1.9	1.8	1.5	1.8	1.3	2.1	3.5	10.1	2.2	5.8	7.6	3.8	2.7	4.0	10.1
19-Sep	4.4	5.8	3.2	Z	2.7	3.5	3.4	7.2	4.4	1.1	0.8	0.8	0.9	0.9	1.2	2.3	3.9	7.7	5.9	4.0	3.2	1.8	1.8	1.3	3.1	7.7
20-Sep	3.7	5.3	2.0	2.1	Z	4.3	5.9	5.3	3.5	4.7	3.4	3.3	1.2	2.2	1.5	3.6	5.6	7.9	4.9	6.5	3.2	5.0	6.5	8.5	4.4	8.5
21-Sep	8.4	6.4	2.6	3.3	2.9	Z	2.3	2.7	2.0	1.2	1.2	1.1	1.1	0.8	0.5	0.7	0.5	1.0	0.4	0.4	1.4	0.9	0.7	0.8	1.9	8.4
22-Sep	Z	6.4	2.2	1.7	2.1	3.0	4.3	3.4	2.7	2.4	1.9	1.8	1.2	0.8	1.3	0.9	5.4	2.8	2.0	1.3	0.9	0.8	1.1	1.5	2.3	6.4
23-Sep	1.3	Z	2.9	2.2	2.2	1.7	3.5	1.8	2.4	1.7	1.3	1.2	0.7	0.8	0.8	1.0	2.4	3.0	2.9	1.1	2.9	3.3	0.6	1.1	1.9	3.5
24-Sep	1.2	1.0	Z	0.8	1.1	1.1	1.7	0.8	0.9	1.8	3.2	5.4	5.2	4.6	3.6	3.2	2.6	4.7	2.9	5.8	2.6	5.1	4.0	1.6	2.8	5.8
25-Sep	2.6	1.4	1.9	Z	1.9	1.4	2.5	3.4	1.1	1.4	0.7	2.6	2.6	1.6	2.3	1.7	1.3	2.1	4.4	3.6	4.7	4.0	2.8	3.9	2.4	4.7
26-Sep	2.5	5.9	2.1	4.5	Z	6.4	11.5	6.3	6.2	5.1	2.7	1.9	2.0	3.8	1.9	1.3	1.6	1.5	1.0	0.8	1.0	1.3	3.5	1.2	3.3	11.5
27-Sep	1.1	1.1	3.1	4.3	2.4	Z	1.2	5.5	1.7	2.5	2.1	1.8	3.6	2.1	2.6	5.8	3.8	1.3	2.6	2.7	1.5	3.8	4.6	1.2	2.7	5.8
28-Sep	Z	0.6	0.6	0.8	0.9	2.2	3.5	1.7	1.0	2.1	0.8	0.7	0.7	0.7	0.5	2.2	3.7	1.8	0.7	3.3	0.7	2.0	1.4	0.9	1.5	3.7
29-Sep	1.7	Z	1.3	1.1	1.4	1.3	1.3	0.8	0.7	1.0	0.5	0.5	0.7	0.8	0.3	0.3	0.6	0.7	0.6	2.8	2.8	3.0	3.6	9.4	1.6	9.4
30-Sep	9.4	11.1	Z	4.8	4.4	4.7	4.1	6.0	4.4	5.8	4.7	6.3	6.5	6.2	4.3	5.4	2.4	2.1	4.6	3.5	0.9	1.6	0.7	0.9	4.6	11.1
	3.4	3.7	2.9	3.1	3.2	3.4	3.5	3.9	2.9	2.6	2.3	2.1	2.0	1.8	1.8	2.4	2.6	2.6	2.9	2.8	2.8	2.9	3.0	3.4	Diurnal Average	
	9.4	11.1	8.7	9.1	7.4	6.9	11.5	9.0	7.4	5.8	7.2	6.3	6.5	6.2	6.4	7.7	8.7	7.9	10.1	8.4	9.3	7.6	7.8	11.5	Diurnal Maximum	

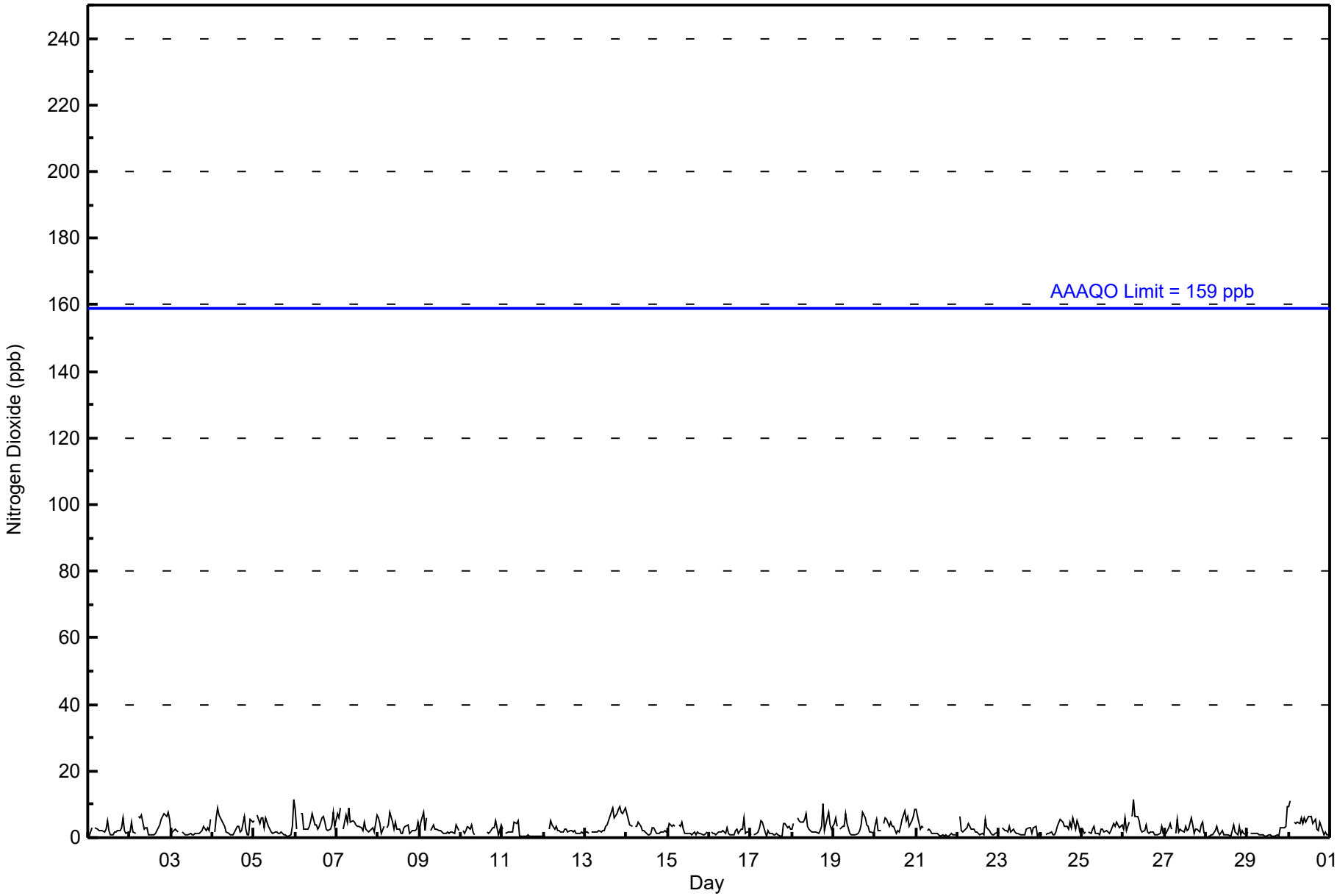
Z - zerospan C - Calibration
Alberta Ambient Air Quality Objectives (AAAQO): 1-hr 159 ppb

Wood Buffalo Environmental Association

Hourly Averages

Nitrogen Dioxide (NO_2) - ppb

Christina Lake - September 2024



Nitrogen Dioxide (NO_2) - ppb
Christina Lake - September 2024

Concentration Ranges (ppb)	Number of Hours	%	Cumulative %
0 - 20	684	100.00	100.00
21 - 40	0	0.00	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: 684

Total Number of Hours: 720

Wood Buffalo Environmental Association

Frequency Distribution

Nitrogen Dioxide (NO_2) - ppb

Christina Lake - September 2024

Concentration Ranges (ppb)	Wind Direction																
	N	NNE	NE	ENE	E	ESE	SE	SSE	S	SSW	SW	WSW	W	WNW	NW	NNW	**Totals**
0 - 20	21	30	18	13	9	17	24	25	52	111	95	93	72	67	28	9	684
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	21	30	18	13	9	17	24	25	52	111	95	93	72	67	28	9	684

Total Number of Valid Hours: 684

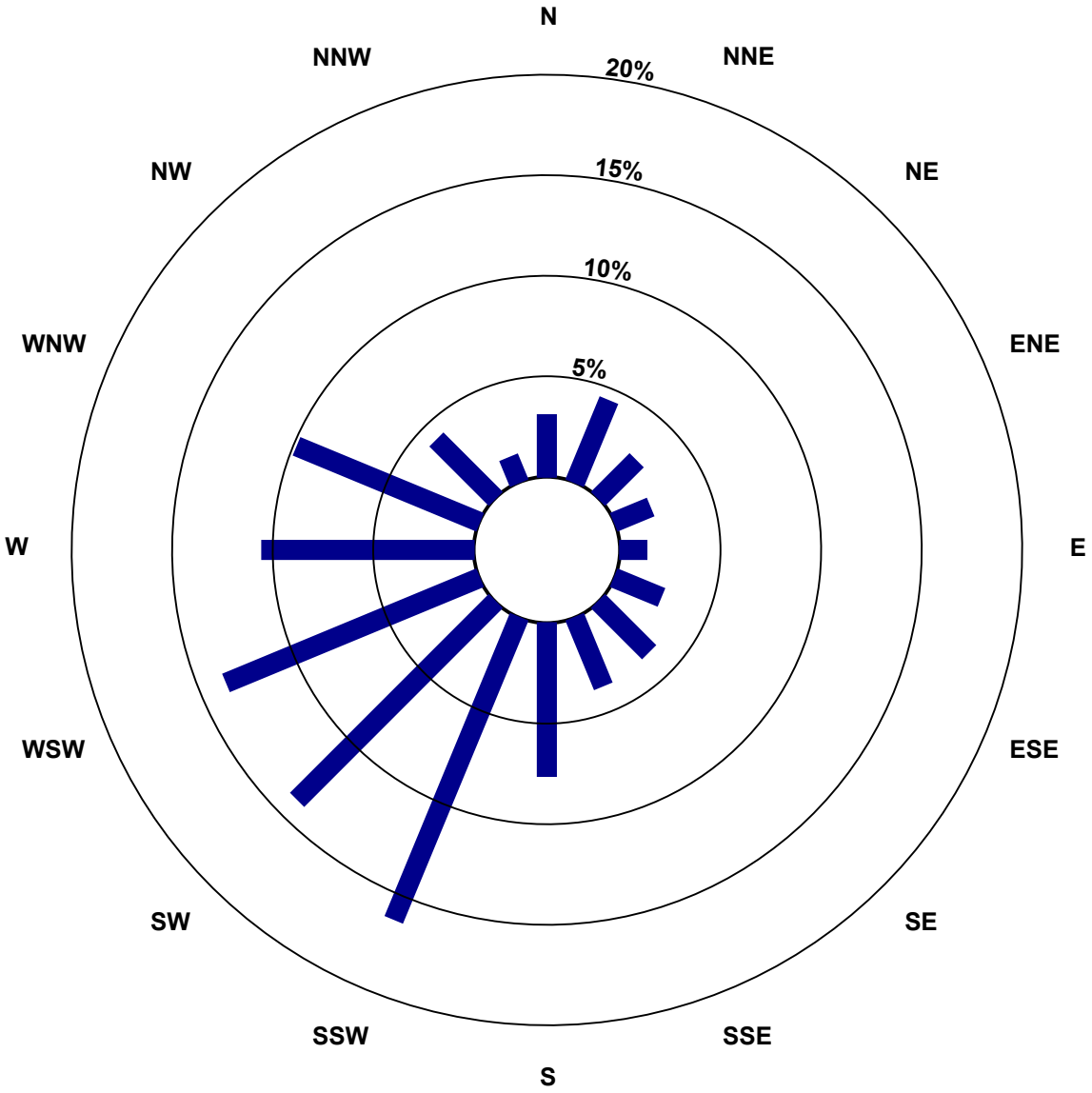
Total Number of Hours: 720

Wood Buffalo Environmental Association

Wind Rose Sep 2024

Nitrogen Dioxide (NO_2) - ppb

Christina Lake



Classes (ppb)

0 - 20

21 - 40

11 - 80

81 - 159

> 159

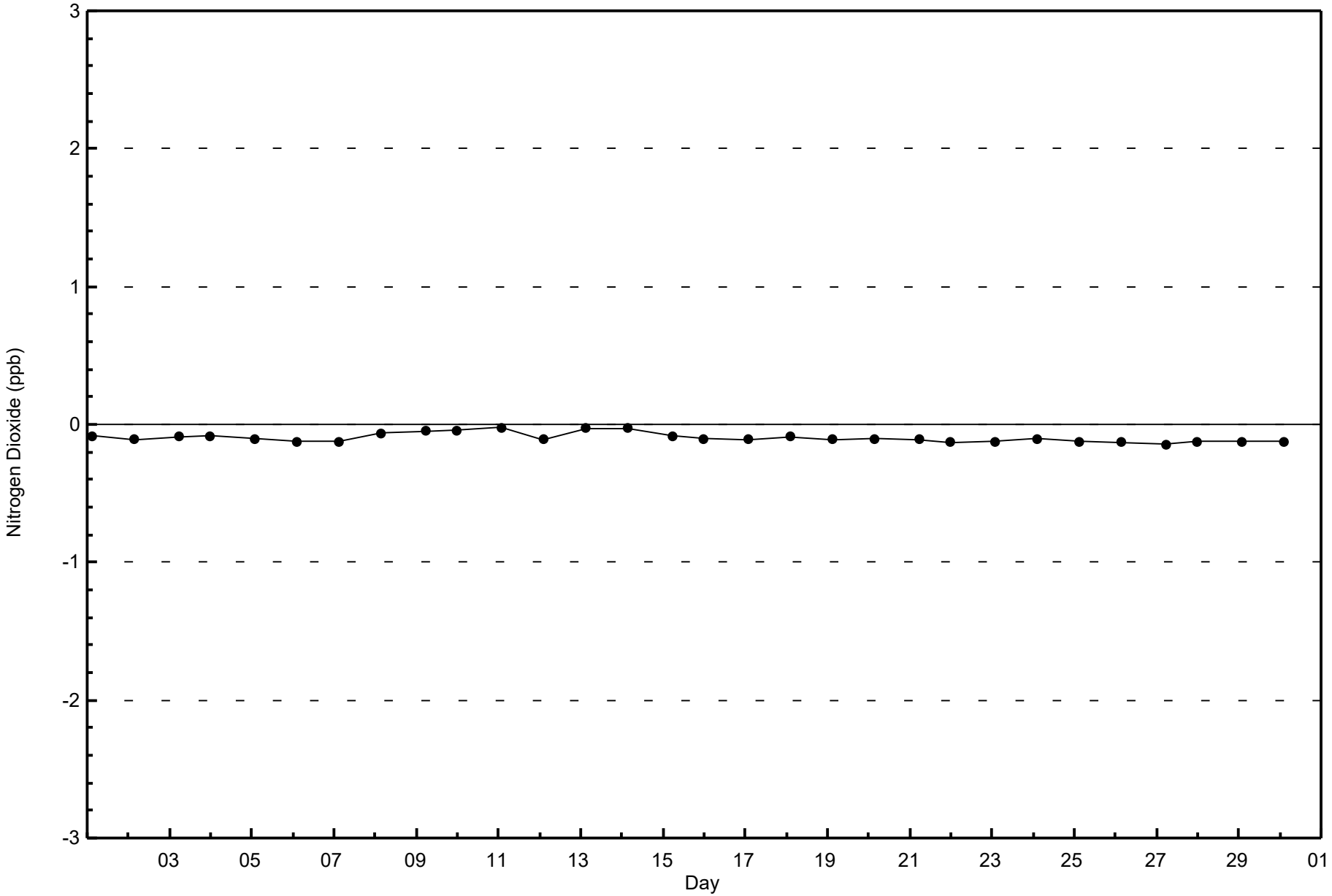
Total Number of Valid Hours: 684

Wood Buffalo Environmental Association

Zero Responses

Nitrogen Dioxide (NO_2) - ppb

Christina Lake - September 2024

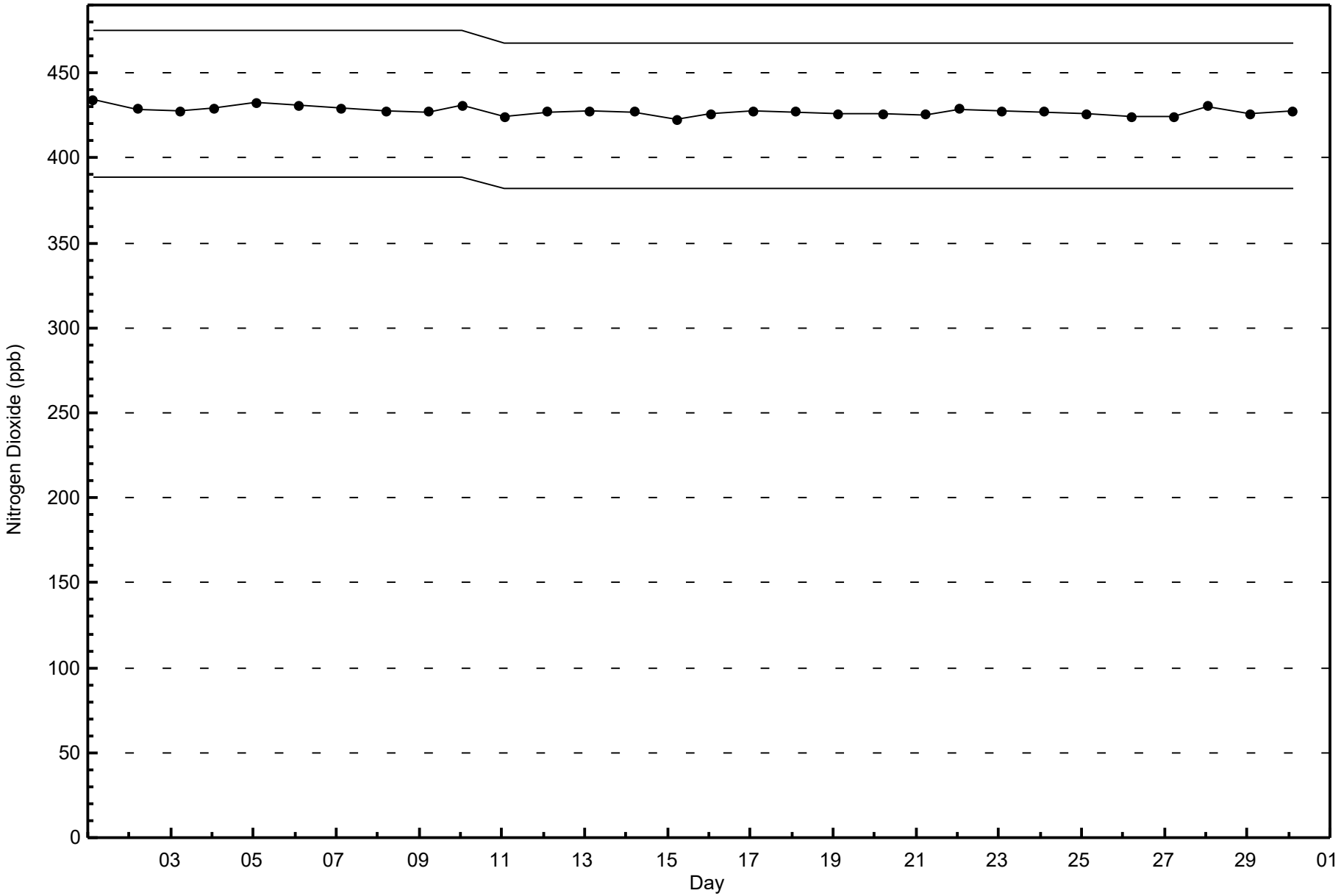


Wood Buffalo Environmental Association

Span Responses

Nitrogen Dioxide (NO_2) - ppb

Christina Lake - September 2024



Wood Buffalo Environmental Association

Summary of Hour Averages

Nitrogen Oxides (NO_X) - ppb

Christina Lake - September 2024

Maximum Value: 26.1 ppb on Sep 30 02:00

Maximum Daily Average: 9.3 ppb on Sep 30

Minimum Value: 0.3 ppb on Sep 11 18:00

Minimum Daily Average: 2.0 ppb on Sep 28

Maximum Diurnal Average: 7.1 ppb at hour 8

Minimum Diurnal Average: 2.6 ppb at hour 15

Monthly Average: 3.89 ppb

Percentiles: P_1 = 0.4 P_{10} = 1.0 Q_1 = 1.5 Median = 2.8 Q_3 = 5.0 P_{90} = 8.3 P_{99} = 16.8

Hours in Service:	720
Hours of Data:	684
Hours of Missing Data:	36
Hours of Calibration:	36
Percent Operational Time:	100.0

Day	Hourly Period Ending At (MST)																								Daily	Daily
	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24	Average	Maximum
1-Sep	0.3	1.5	2.8	Z	3.1	2.8	2.6	3.0	3.0	2.2	6.0	11.3	3.7	1.0	0.8	2.2	2.8	2.9	2.3	2.9	6.1	2.3	1.4	1.6	3.0	11.3
2-Sep	1.8	5.2	2.0	1.2	Z	8.2	6.5	9.7	3.4	3.7	3.4	1.0	1.1	1.0	1.1	1.4	2.6	4.0	5.7	6.4	7.6	16.7	9.0	7.0	4.8	16.7
3-Sep	1.6	2.1	2.8	2.2	1.9	Z	1.9	1.4	0.8	0.9	1.0	1.4	1.2	0.9	1.3	1.5	1.4	1.7	2.1	4.2	2.0	3.1	2.2	6.0	2.0	6.0
4-Sep	Z	2.0	8.8	14.6	8.1	5.9	5.4	4.1	2.5	2.0	1.5	1.6	1.2	2.2	6.4	6.2	2.7	2.5	6.9	2.6	0.9	0.9	5.8	5.2	4.3	14.6
5-Sep	5.4	Z	7.4	4.7	6.9	7.3	4.3	12.3	5.3	4.1	2.4	1.9	2.1	2.0	1.4	1.7	2.1	0.8	0.8	0.6	0.5	1.0	3.6	11.5	3.9	12.3
6-Sep	8.5	2.4	Z	7.1	7.4	2.4	2.9	3.1	3.8	6.1	9.8	4.2	5.0	3.3	4.1	8.7	8.4	6.4	2.6	2.3	2.6	3.9	7.8	3.5	5.1	9.8
7-Sep	7.1	6.0	8.9	Z	2.7	8.0	6.8	14.6	7.1	6.8	6.1	4.4	3.6	4.6	3.6	2.3	6.5	3.4	1.9	2.2	2.8	3.3	1.9	7.2	5.3	14.6
8-Sep	6.1	6.3	1.5	6.0	Z	7.8	14.8	15.9	6.5	2.9	5.2	2.8	2.8	1.4	1.4	3.5	3.6	4.2	1.3	1.6	2.1	2.0	2.5	4.8	4.7	15.9
9-Sep	2.3	5.7	9.5	2.2	6.2	Z	2.3	3.1	4.6	3.0	4.1	3.5	2.8	2.2	2.0	1.3	1.7	1.5	1.9	1.7	1.4	4.9	3.6	2.2	3.2	9.5
10-Sep	Z	2.3	1.4	2.5	3.5	2.6	4.9	2.1	1.5	C	C	C	C	C	C	2.2	1.3	1.7	3.3	3.6	5.7	5.1	1.1	5.3	--	5.7
11-Sep	3.7	Z	1.3	3.0	4.5	3.8	5.9	19.7	9.4	12.6	0.9	0.6	0.5	0.5	0.5	0.8	0.3	0.3	0.3	0.5	0.4	0.4	0.3	0.5	3.1	19.7
12-Sep	0.4	0.6	Z	2.7	5.5	4.7	2.8	3.8	2.5	2.8	2.0	2.0	3.1	3.7	2.2	3.3	2.8	2.3	3.2	1.3	1.4	1.4	1.8	1.6	2.5	5.5
13-Sep	2.0	2.2	1.4	Z	2.6	2.3	2.5	2.9	3.1	2.2	3.0	3.2	4.4	5.8	12.5	15.1	16.1	8.1	9.0	10.8	12.7	9.8	9.0	12.4	6.7	16.1
14-Sep	10.0	6.9	4.3	3.6	Z	4.5	4.9	7.2	5.4	3.3	3.2	2.4	1.3	1.0	1.5	4.0	4.2	1.4	1.4	1.7	1.7	2.2	2.4	1.7	3.5	10.0
15-Sep	2.4	4.3	4.2	4.7	3.6	Z	5.2	4.6	6.0	3.2	1.9	1.4	1.7	1.5	1.3	1.9	1.2	1.8	1.3	1.2	0.7	1.0	1.6	1.8	2.5	6.0
16-Sep	Z	1.9	1.3	1.3	0.8	2.2	2.2	2.2	2.9	1.9	6.0	1.4	1.4	1.4	1.5	3.0	3.9	1.9	2.5	2.7	6.4	1.3	1.9	2.1	2.3	6.4
17-Sep	0.9	Z	1.0	1.2	2.1	4.3	6.5	6.9	2.5	0.6	3.2	1.6	1.7	1.2	1.1	1.6	1.0	0.4	0.5	4.5	4.6	2.9	3.7	3.0	2.5	6.9
18-Sep	3.0	6.0	Z	9.0	7.9	10.5	12.6	15.9	13.8	4.7	3.2	2.3	2.5	2.1	2.8	1.9	2.9	4.3	14.5	2.5	7.3	9.0	4.2	2.9	6.3	15.9
19-Sep	4.9	6.5	3.4	Z	3.5	5.8	9.6	18.6	7.8	1.7	1.0	0.9	1.1	1.2	1.5	2.7	4.5	8.5	6.0	4.6	3.9	2.1	2.2	1.4	4.5	18.6
20-Sep	5.3	8.6	3.6	3.2	Z	6.6	9.2	8.5	4.5	5.3	3.9	4.5	1.4	3.4	1.9	4.4	6.3	9.2	5.3	7.7	3.6	5.9	8.0	10.6	5.7	10.6
21-Sep	10.7	7.9	3.3	6.2	6.3	Z	7.0	7.7	5.1	2.4	2.2	1.7	1.8	1.1	0.6	1.3	0.8	1.1	0.4	0.4	1.4	0.9	0.7	0.8	3.1	10.7
22-Sep	Z	6.4	2.2	1.7	2.1	3.1	4.8	4.4	3.5	3.2	2.7	2.9	2.1	1.0	1.6	1.0	10.2	4.4	2.8	1.7	1.0	0.9	1.1	1.6	2.9	10.2
23-Sep	1.4	Z	3.4	2.5	2.8	2.3	4.6	2.2	3.1	2.8	1.9	1.6	1.1	1.2	1.1	1.5	5.0	5.0	5.3	1.2	4.9	5.8	0.6	1.1	2.7	5.8
24-Sep	1.2	1.0	Z	0.8	1.2	1.2	2.2	1.0	1.4	3.3	6.0	10.9	9.7	8.5	5.5	4.3	3.3	4.9	3.0	6.1	2.7	5.7	4.5	1.7	3.9	10.9
25-Sep	2.7	1.4	1.9	Z	1.9	1.4	2.5	4.1	1.3	1.8	0.8	3.9	4.4	2.0	3.0	2.2	1.5	2.3	4.9	4.2	5.1	4.5	3.3	4.7	2.9	5.1
26-Sep	3.3	7.8	2.5	5.5	Z	8.7	25.4	10.9	8.5	6.8	3.3	2.9	3.4	6.9	2.9	1.8	1.9	1.6	1.0	0.8	1.0	1.3	3.6	1.6	4.9	25.4
27-Sep	1.3	1.2	3.2	5.1	2.5	Z	1.3	7.7	2.3	4.4	3.2	2.7	6.0	2.6	3.1	8.5	5.0	1.4	3.0	2.8	1.6	4.8	11.6	1.2	3.8	11.6
28-Sep	Z	0.7	0.6	0.8	0.9	2.3	5.0	2.1	1.3	3.3	1.2	1.0	1.0	1.0	0.6	4.3	7.4	2.4	0.7	3.3	0.7	2.2	1.6	1.1	2.0	7.4
29-Sep	1.8	Z	1.4	1.1	1.5	1.3	1.3	0.9	0.9	1.4	0.6	0.7	1.0	1.0	0.4	0.4	0.7	0.8	0.7	3.9	3.5	3.5	5.2	18.0	2.3	18.0
30-Sep	19.5	26.1	Z	10.8	7.4	8.0	6.7	12.9	9.7	16.1	11.7	17.4	16.4	13.8	8.3	9.4	3.7	2.5	5.0	4.0	0.9	1.8	0.9	0.9	9.3	26.1
	4.3	4.9	3.4	4.2	3.9	4.7	5.8	7.1	4.4	4.0	3.5	3.4	3.1	2.7	2.6	3.5	3.9	3.1	3.3	3.1	3.2	3.7	3.6	4.2	Diurnal Average	
	19.5	26.1	9.5	14.6	8.1	10.5	25.4	19.7	13.8	16.1	11.7	17.4	16.4	13.8	12.5	15.1	16.1	9.2	14.5	10.8	12.7	16.7	11.6	18.0	Diurnal Maximum	

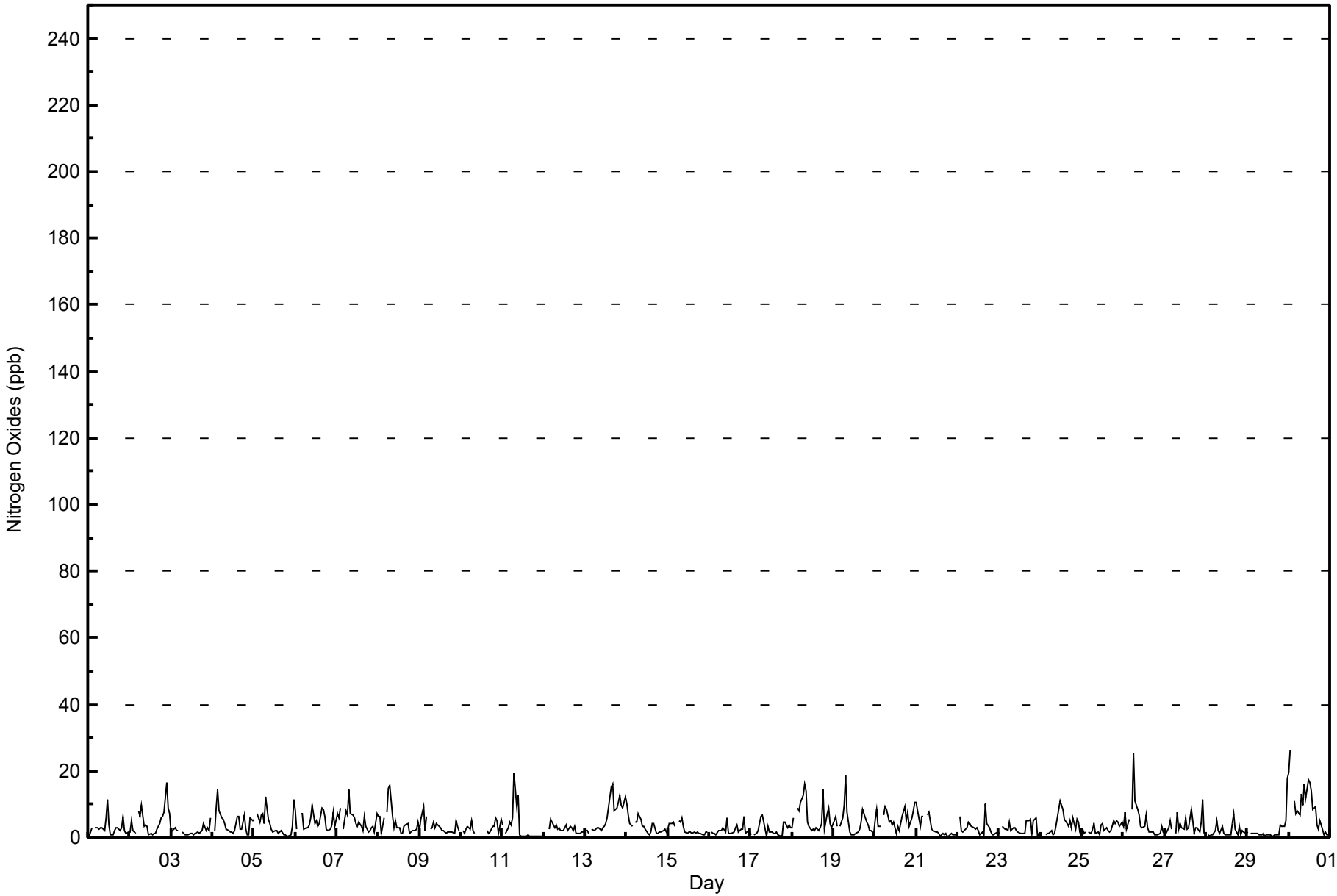
Z - zerospan C - Calibration

Wood Buffalo Environmental Association

Hourly Averages

Nitrogen Oxides (NO_X) - ppb

Christina Lake - September 2024



Nitrogen Oxides (NO_X) - ppb
Christina Lake - September 2024

Concentration Ranges (ppb)	Number of Hours	%	Cumulative %
0 - 20	682	99.71	99.71
21 - 40	2	0.29	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: 684

Total Number of Hours: 720

Wood Buffalo Environmental Association

Frequency Distribution

Nitrogen Oxides (NO_X) - ppb

Christina Lake - September 2024

Concentration Ranges (ppb)	Wind Direction																
	N	NNE	NE	ENE	E	ESE	SE	SSE	S	SSW	SW	WSW	W	WNW	NW	NNW	**Totals**
0 - 20	21	30	18	13	9	17	24	25	52	111	95	93	72	65	28	9	682
21 - 40	0	0	0	0	0	0	0	0	0	0	0	0	0	2	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	21	30	18	13	9	17	24	25	52	111	95	93	72	67	28	9	684

Total Number of Valid Hours: 684

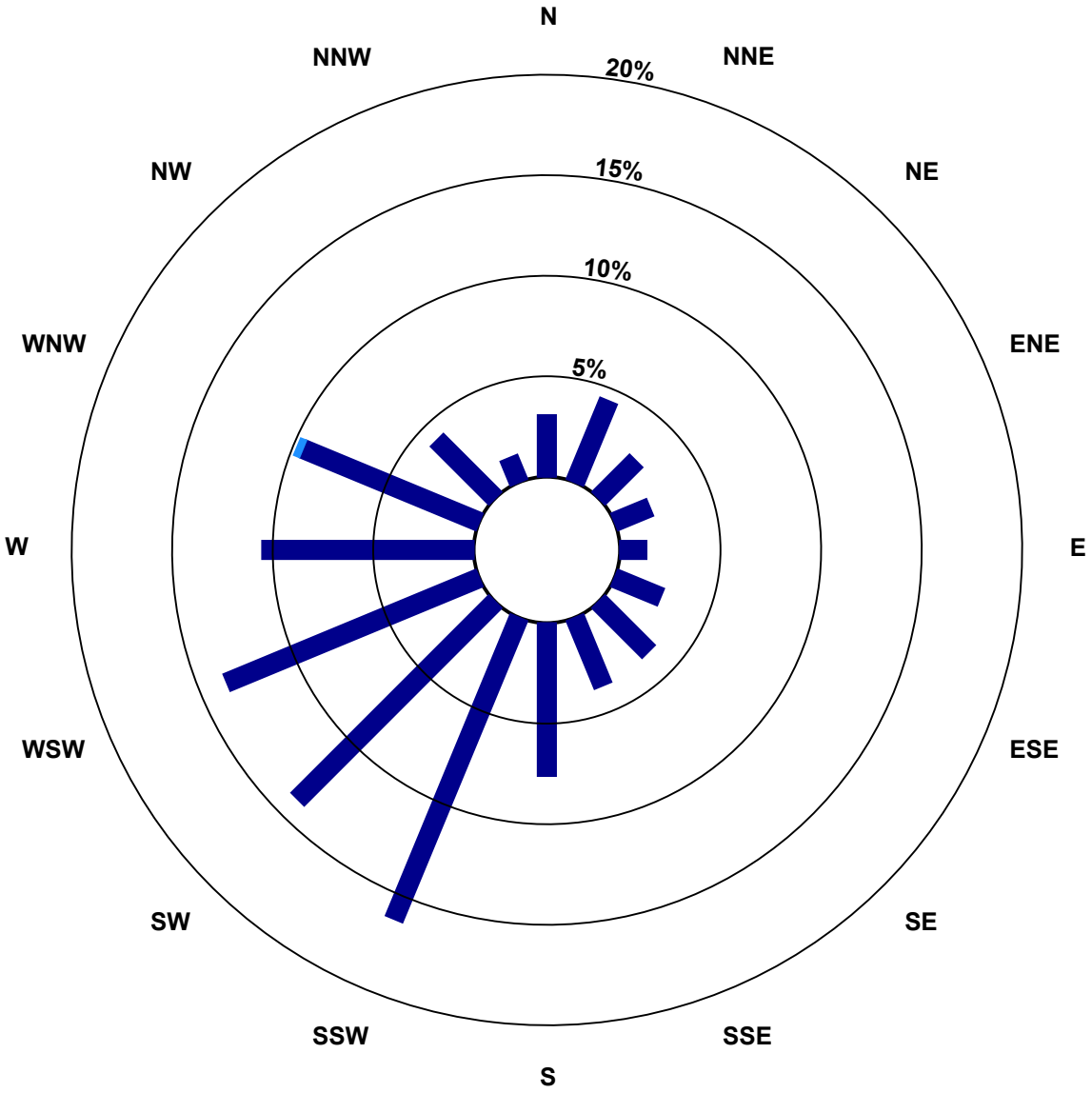
Total Number of Hours: 720

Wood Buffalo Environmental Association

Wind Rose Sep 2024

Nitrogen Oxides (NO_X) - ppb

Christina Lake



Classes (ppb)

0 - 20

21 - 40

11 - 80

81 - 159

> 159

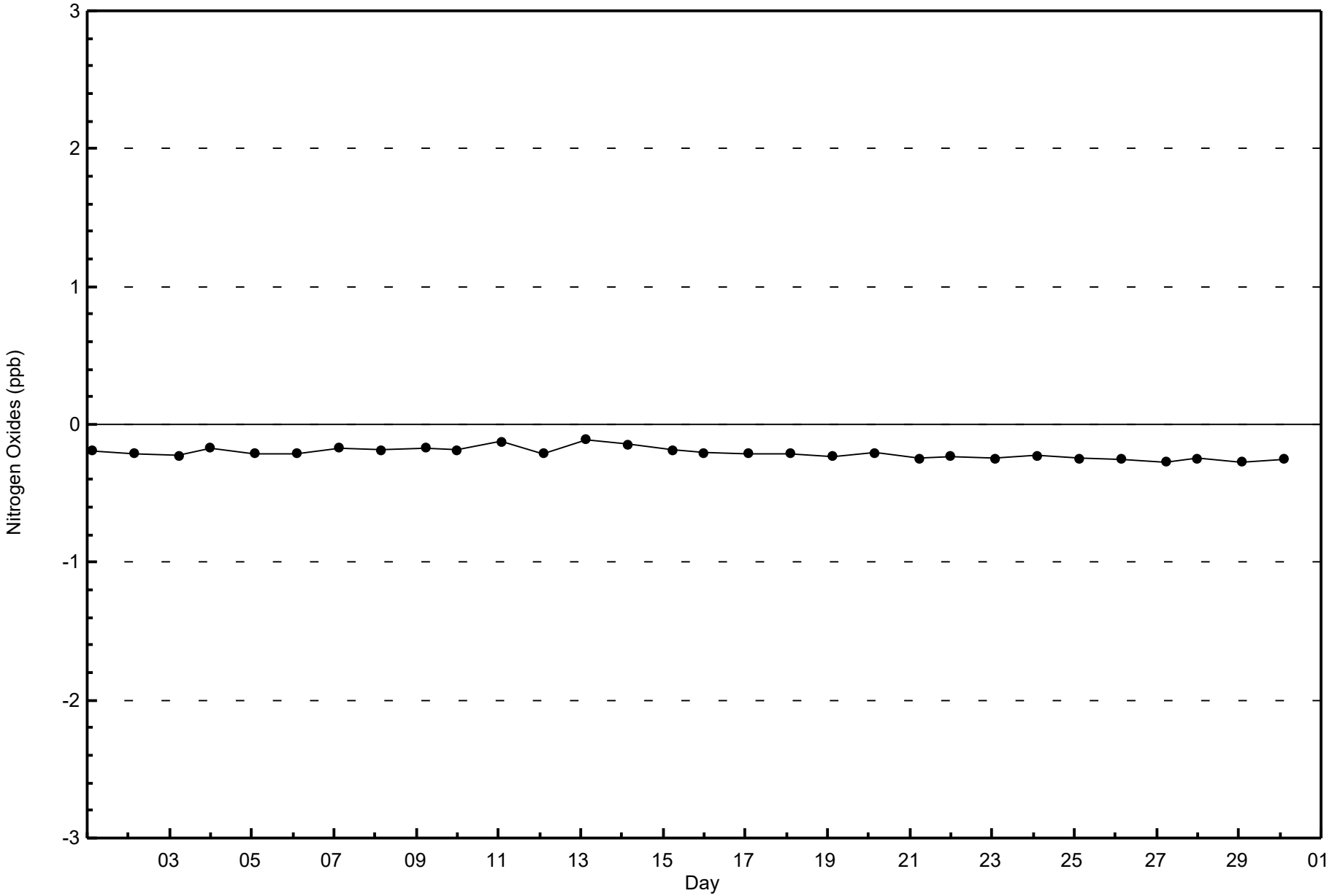
Total Number of Valid Hours: 684

Wood Buffalo Environmental Association

Zero Responses

Nitrogen Oxides (NO_X) - ppb

Christina Lake - September 2024

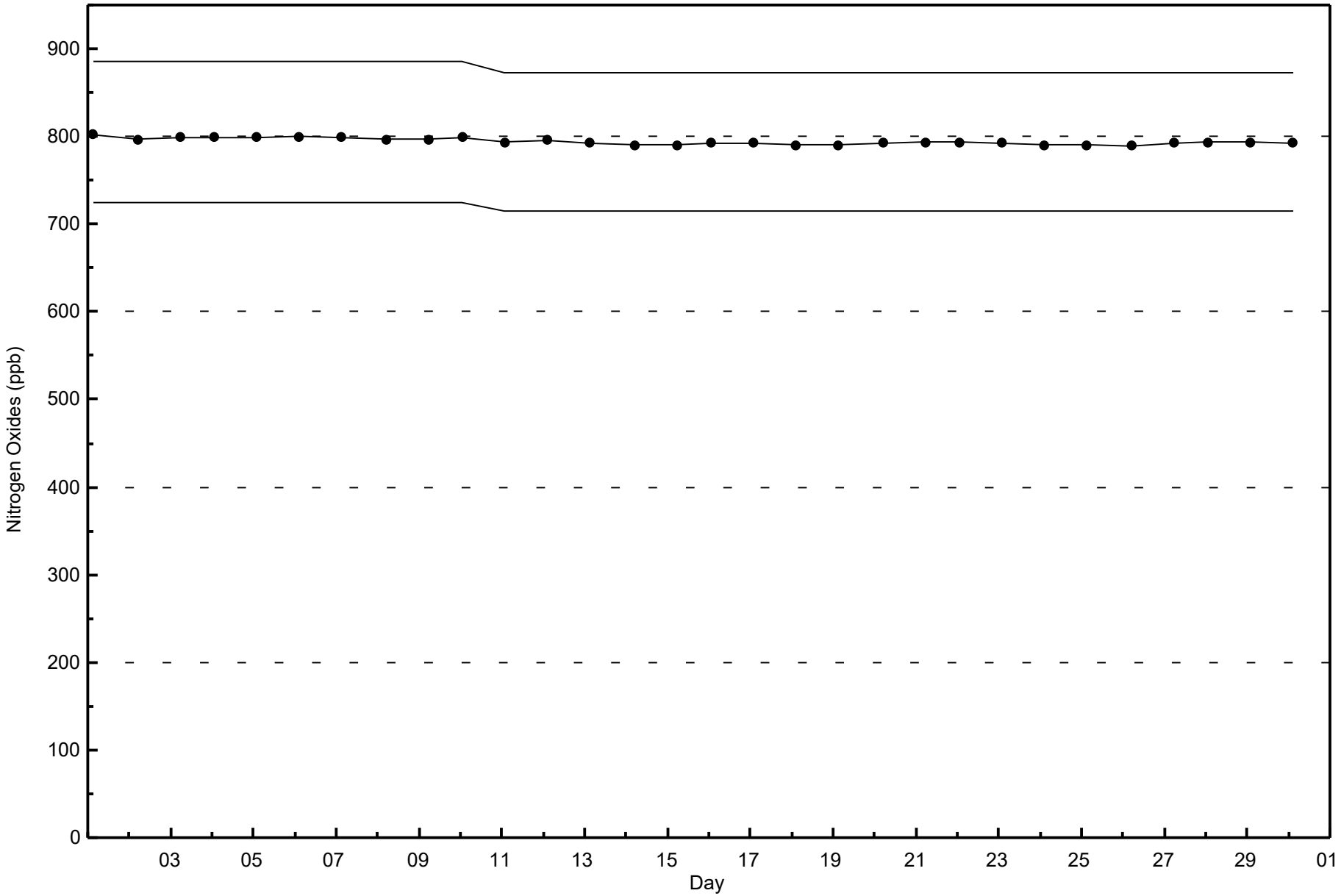


Wood Buffalo Environmental Association

Span Responses

Nitrogen Oxides (NO_X) - ppb

Christina Lake - September 2024



Maximum Value: 31.7 C on Sep 2 15:00

Maximum Daily Average: 21.6 C on Sep 2

Minimum Value: 0.5 C on Sep 21 07:00

Minimum Daily Average: 7.1 C on Sep 30

Maximum Diurnal Average: 18.5 C at hour 15

Minimum Diurnal Average: 8.6 C at hour 6

Monthly Average: 13.18 C

Percentiles: P_1 = 2.1 P_{10} = 6.5 Q_1 = 9.4 Median = 12.1 Q_3 = 16.3 P_{90} = 21.1 P_{99} = 29.0

Hours in Service:	720
Hours of Data:	720
Hours of Missing Data:	0
Hours of Calibration:	0
Percent Operational Time:	100.0

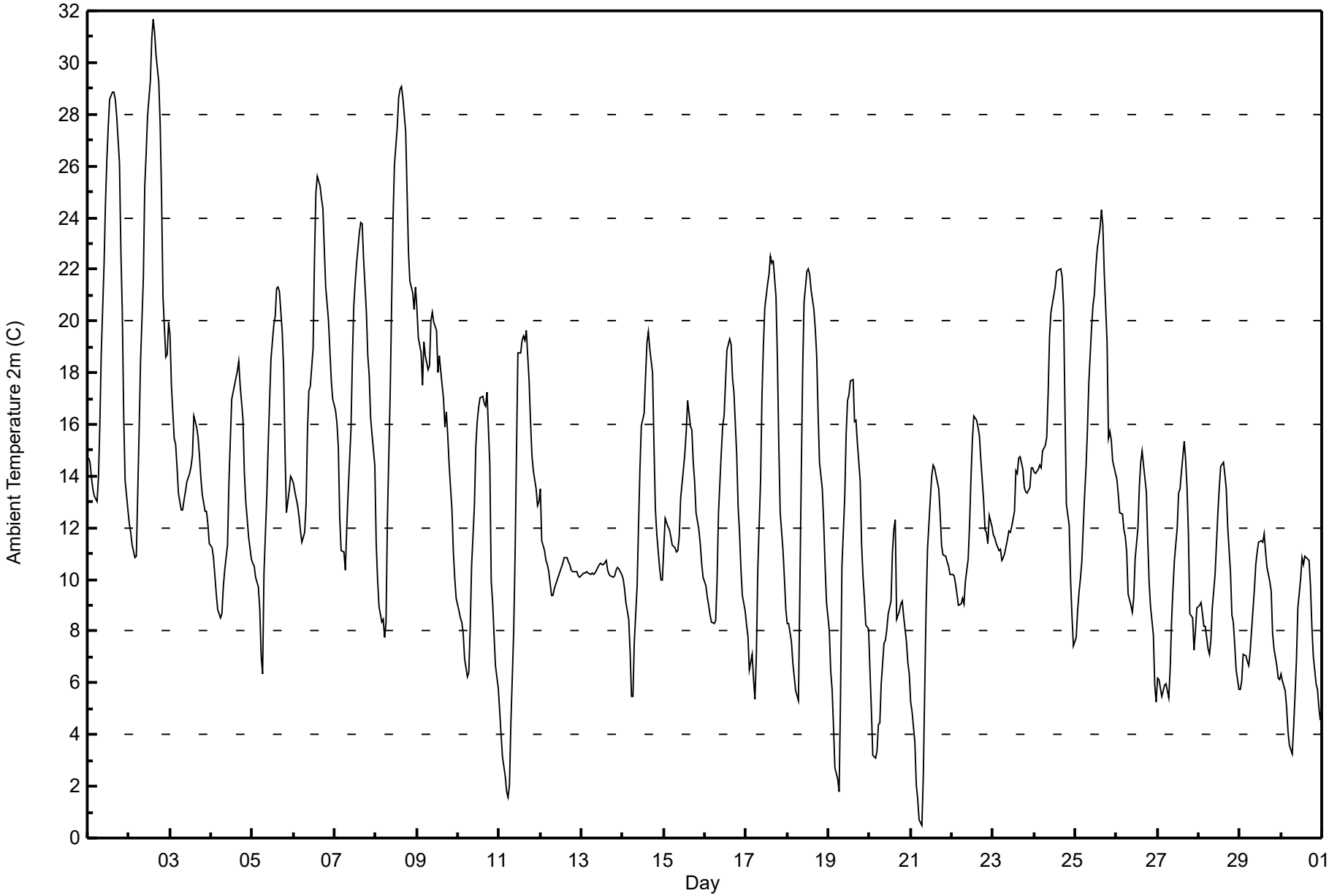
Day	Hourly Period Ending At (MST)																								Daily	Daily
	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24	Average	Maximum
1-Sep	14.7	14.6	14.0	13.5	13.2	13.0	13.9	16.0	18.8	22.2	24.6	26.2	27.5	28.6	28.9	28.8	28.6	27.9	26.1	22.7	20.4	16.3	13.9	12.7	20.3	28.9
2-Sep	12.2	11.8	11.3	10.8	10.9	13.3	15.8	18.4	21.6	25.2	26.4	27.9	29.3	30.9	31.7	31.2	30.3	29.3	27.6	24.8	20.9	18.6	18.7	20.0	21.6	31.7
3-Sep	19.5	17.5	15.5	15.2	14.4	13.3	12.7	12.7	13.1	13.4	13.8	14.1	14.3	14.8	16.3	15.9	15.5	14.8	13.9	13.3	12.7	12.6	12.2	11.4	14.3	19.5
4-Sep	11.2	10.9	10.2	9.4	8.9	8.5	8.7	9.7	10.4	11.3	13.7	15.4	17.0	17.2	17.8	18.0	18.4	17.5	16.2	14.1	13.0	12.3	11.6	10.8	13.0	18.4
5-Sep	10.6	10.5	10.1	9.7	8.8	7.1	6.4	10.2	13.2	15.2	16.9	18.6	19.8	20.2	21.3	21.3	21.2	19.6	18.2	15.0	12.6	13.4	14.0	13.9	14.5	21.3
6-Sep	13.7	13.4	12.8	12.4	11.9	11.5	11.8	12.9	15.7	17.3	17.5	18.9	22.4	25.0	25.6	25.2	24.7	24.4	22.8	21.3	20.0	18.8	17.7	17.0	18.1	25.6
7-Sep	16.5	16.1	15.1	12.3	11.1	11.1	10.4	12.0	13.4	15.8	18.5	20.5	21.5	22.2	23.4	23.8	23.8	22.4	20.3	18.6	17.9	16.3	15.6	14.4	17.2	23.8
8-Sep	11.4	10.0	8.9	8.3	8.4	7.7	8.3	12.4	17.3	20.7	24.0	26.0	27.5	28.6	29.0	29.0	28.7	27.4	25.0	22.7	21.6	21.1	20.4	21.3	19.4	29.0
9-Sep	20.5	19.3	18.8	17.5	19.2	18.7	18.1	18.3	20.0	20.3	20.0	19.6	18.0	18.7	18.0	17.0	15.9	16.5	15.6	14.4	12.7	11.1	10.0	9.3	17.0	20.5
10-Sep	8.8	8.5	8.3	7.9	6.9	6.3	6.4	8.1	10.5	12.9	15.1	16.1	16.6	17.1	17.1	16.8	16.7	17.2	14.4	9.9	9.1	7.8	6.7	5.8	11.3	17.2
11-Sep	4.9	4.0	3.1	2.4	1.8	1.6	2.1	4.5	8.0	11.0	14.9	18.8	18.8	19.2	19.4	19.2	19.7	17.7	16.1	14.8	14.2	13.5	12.9	13.0	11.5	19.7
12-Sep	13.5	11.5	11.1	10.7	10.6	10.3	9.4	9.4	9.7	9.8	10.0	10.3	10.5	10.6	10.8	10.8	10.7	10.6	10.3	10.3	10.3	10.3	10.2	10.1	10.5	13.5
13-Sep	10.2	10.2	10.2	10.3	10.3	10.2	10.2	10.2	10.3	10.5	10.6	10.6	10.6	10.6	10.7	10.4	10.2	10.1	10.1	10.1	10.3	10.5	10.4	10.2	10.3	10.7
14-Sep	10.0	9.7	9.1	8.5	7.2	5.5	5.5	7.6	9.8	12.1	14.3	15.9	16.4	17.8	19.2	19.6	18.9	18.0	15.3	12.7	11.8	10.5	10.0	10.0	12.3	19.6
15-Sep	11.2	12.3	12.0	11.9	11.7	11.4	11.2	11.0	11.1	11.7	13.1	14.3	14.9	15.7	16.9	15.9	15.8	14.5	13.8	12.6	11.9	11.4	10.7	10.1	12.8	16.9
16-Sep	9.8	9.3	9.0	8.6	8.4	8.3	8.4	10.0	12.6	14.9	16.0	16.3	17.6	18.9	19.3	19.1	17.8	17.3	14.8	12.8	11.8	10.4	9.4	8.8	12.9	19.3
17-Sep	8.2	7.8	6.5	7.1	6.1	5.4	7.1	10.3	13.9	17.1	19.0	20.5	21.4	21.8	22.5	22.2	22.4	20.9	18.6	15.2	12.6	11.1	10.0	8.9	14.0	22.5
18-Sep	8.3	8.3	7.6	6.8	6.2	5.7	5.3	9.6	14.1	18.1	20.7	21.9	22.0	21.8	21.2	20.5	19.7	18.7	16.5	14.6	13.5	12.2	10.5	9.1	13.9	22.0
19-Sep	8.0	6.5	5.8	4.3	2.7	2.3	1.8	5.5	10.5	13.2	15.6	16.9	17.1	17.7	17.7	16.1	16.2	15.3	13.8	11.4	10.2	9.3	8.2	8.1	10.6	17.7
20-Sep	6.4	5.0	3.2	3.1	3.4	4.4	4.4	6.0	7.5	7.7	8.1	8.7	9.2	11.0	11.9	12.3	8.5	8.8	9.1	9.2	8.5	7.6	6.8	6.3	7.4	12.3
21-Sep	5.3	4.9	3.7	2.1	1.5	0.7	0.5	2.4	5.7	9.0	11.2	13.1	14.0	14.4	14.3	13.8	13.5	12.6	11.4	10.9	10.9	10.7	10.5	10.2	8.6	14.4
22-Sep	10.2	10.1	9.8	9.4	9.0	9.0	9.3	9.1	9.9	10.8	12.1	13.9	15.4	16.3	16.2	15.9	15.6	14.7	13.1	11.9	11.8	11.4	12.5	12.0	12.1	16.3
23-Sep	11.7	11.6	11.4	11.1	11.2	10.7	10.8	11.0	11.5	11.9	11.8	12.1	12.7	14.2	14.1	14.7	14.7	14.3	13.6	13.4	13.3	13.6	14.3	14.3	12.7	14.7
24-Sep	14.1	14.1	14.2	14.4	14.3	15.0	15.2	15.5	17.2	19.4	20.3	21.0	21.3	21.9	22.0	22.0	21.7	20.5	16.6	12.9	12.1	10.0	8.6	7.5	16.3	22.0
25-Sep	7.8	8.8	9.5	10.0	10.7	13.3	14.3	15.8	17.6	19.8	20.6	21.0	22.1	22.8	23.6	24.3	23.7	21.9	19.2	15.5	15.7	15.4	14.6	14.1	16.7	24.3
26-Sep	13.9	13.3	12.6	12.5	11.9	11.6	11.0	9.4	9.0	8.8	9.3	10.8	12.0	13.6	14.6	15.0	14.4	13.4	11.5	9.9	8.9	7.9	5.9	5.3	11.1	15.0
27-Sep	6.2	6.1	5.5	5.7	5.9	6.0	5.4	6.5	8.4	9.6	10.7	12.0	13.3	13.5	14.1	15.3	14.6	13.5	11.8	8.7	8.5	7.3	8.0	8.9	9.4	15.3
28-Sep	9.0	9.1	8.7	8.2	8.2	7.3	7.1	7.6	8.9	10.2	11.4	12.6	13.6	14.4	14.6	14.1	13.5	12.1	10.3	8.6	8.3	7.5	6.5	5.7	9.9	14.6
29-Sep	5.7	6.1	7.1	7.1	6.8	6.7	7.2	8.0	9.6	10.6	11.0	11.4	11.5	11.5	11.8	11.1	10.5	9.9	9.5	7.9	7.3	6.7	6.2	6.1	8.6	11.8
30-Sep	6.4	6.1	5.7	5.0	4.1	3.6	3.3	4.3	5.5	6.9	8.9	10.0	10.8	10.6	10.9	10.8	10.7	9.8	8.2	7.1	6.0	5.7	5.1	4.5	7.1	10.9
	10.7	10.2	9.7	9.2	8.9	8.6	8.7	10.1	12.2	13.9	15.3	16.5	17.3	18.0	18.5	18.3	17.9	17.0	15.5	13.6	12.6	11.7	11.1	10.7	Diurnal Average	
	20.5	19.3	18.8	17.5	19.2	18.7	18.1	18.4	21.6	25.2	26.4	27.9	29.3	30.9	31.7	31.2	30.3	29.3	27.6	24.8	21.6	21.1	20.4	21.3	Diurnal Maximum	

Wood Buffalo Environmental Association

Hourly Averages

Ambient Temperature 2m (AT2) - C

Christina Lake - September 2024



Concentration Ranges (C)	Number of Hours	%	Cumulative %
-50 - -20	0	0.00	0.00
-20 - 0	0	0.00	0.00
0 - 10	206	28.61	28.61
10 - 20	422	58.61	87.22
> 20	92	12.78	100.00

Total Number of Valid Hours: 720

Total Number of Hours: 720

Wood Buffalo Environmental Association

Summary of Hour Averages

Relative Humidity 2m (RH2) - %

Christina Lake - September 2024

Maximum Value: 100.0 % on Sep 13 00:00

Maximum Daily Average: 98.8 % on Sep 13

Minimum Value: 18.3 % on Sep 2 15:00

Minimum Daily Average: 53.6 % on Sep 1

Maximum Diurnal Average: 85.8 % at hour 6

Minimum Diurnal Average: 50.3 % at hour 15

Monthly Average: 70.76 %

Percentiles: P_1 = 29.8 P_{10} = 42.5 Q_1 = 54.1 Median = 72.6 Q_3 = 88.8 P_{90} = 96.3 P_{99} = 100.0

Hours in Service:	720
Hours of Data:	720
Hours of Missing Data:	0
Hours of Calibration:	0
Percent Operational Time:	100.0

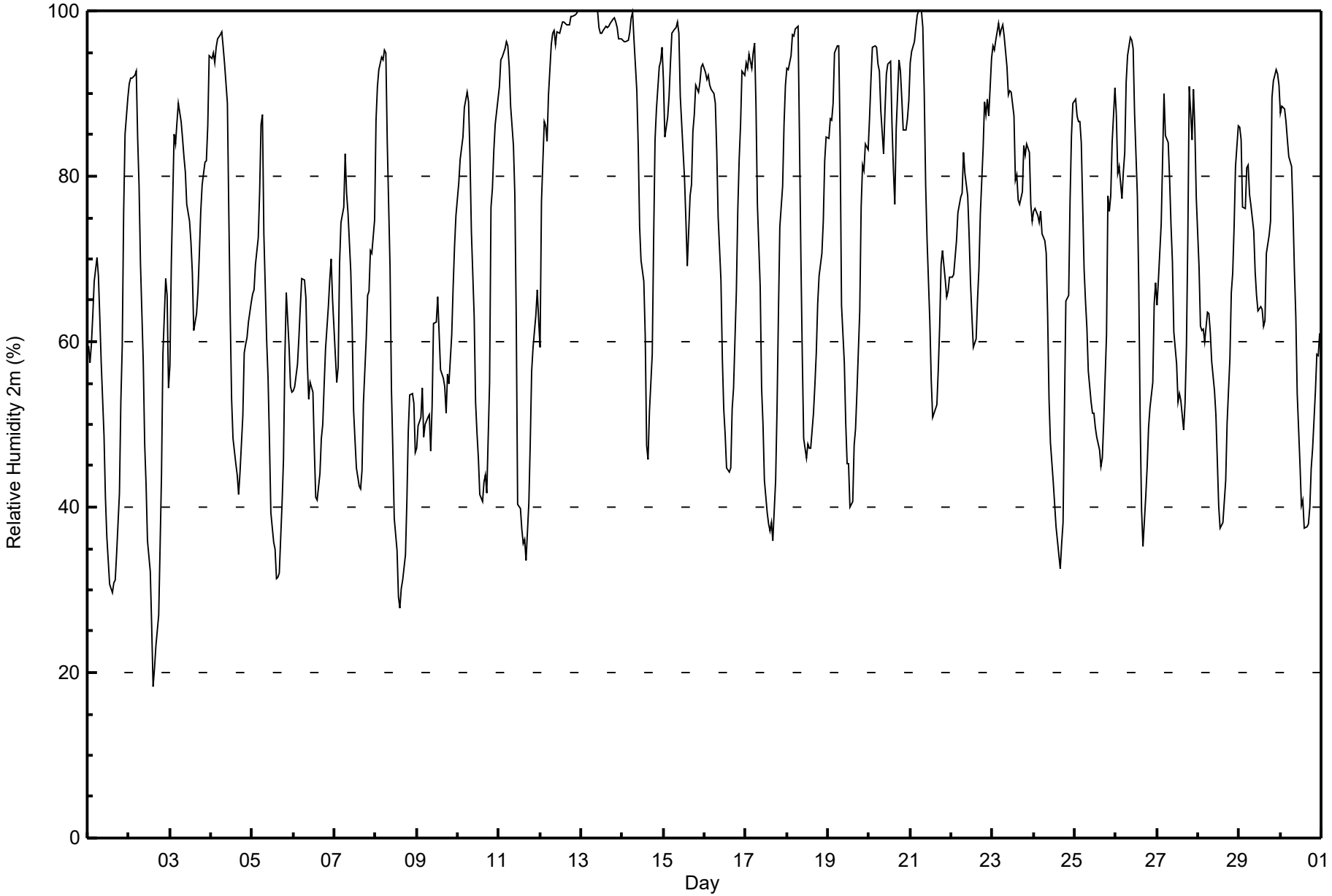
Day	Hourly Period Ending At (MST)																								Daily	Daily
	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24	Average	Maximum
1-Sep	59.5	57.4	59.7	63.3	67.2	70.2	68.0	62.9	57.5	48.6	41.1	36.4	33.6	30.8	29.7	30.8	31.1	34.4	41.7	52.7	59.4	75.6	85.1	89.5	53.6	89.5
2-Sep	91.3	91.8	91.8	92.3	92.7	84.6	78.8	69.5	57.5	47.6	42.8	36.0	32.2	25.5	18.3	20.4	23.3	26.9	35.2	43.9	58.5	67.6	65.5	54.3	56.2	92.7
3-Sep	57.1	69.5	85.0	83.8	86.4	88.8	86.6	84.6	82.4	80.5	76.6	74.6	72.1	68.4	61.3	63.4	66.1	70.7	75.7	78.9	81.7	81.9	86.2	94.5	77.4	94.5
4-Sep	94.2	94.8	93.7	95.6	96.7	97.2	97.4	95.6	93.6	88.7	75.6	63.2	53.0	48.3	45.3	44.0	41.5	44.3	51.0	58.7	59.7	60.4	62.4	64.8	71.6	97.4
5-Sep	65.7	66.3	69.2	72.6	78.1	86.2	87.4	73.1	60.2	55.6	47.9	39.3	35.7	34.8	31.4	31.6	32.1	40.6	45.7	58.1	65.9	59.3	54.5	53.9	56.1	87.4
6-Sep	54.0	54.6	57.2	60.5	64.3	67.6	67.5	65.2	57.5	53.0	55.0	53.9	46.9	41.1	40.8	44.1	48.3	50.0	54.8	59.1	64.2	67.5	70.0	65.1	56.8	70.0
7-Sep	58.4	55.1	57.0	69.5	74.4	76.3	82.8	77.9	75.6	68.4	61.7	51.7	48.2	44.7	42.5	42.2	44.5	52.5	60.4	65.7	66.1	71.0	70.7	74.8	62.2	82.8
8-Sep	86.7	90.8	92.9	94.5	94.1	95.3	94.9	84.2	69.0	54.2	46.7	38.7	34.8	29.1	27.8	30.2	31.2	34.3	40.7	49.2	53.5	53.7	52.6	46.6	59.4	95.3
9-Sep	47.1	49.8	50.9	54.4	48.5	50.0	50.9	51.2	46.7	52.2	62.1	62.4	65.5	60.9	56.5	55.6	54.6	51.4	56.2	54.9	60.9	66.6	71.6	75.3	56.5	75.3
10-Sep	79.1	82.0	83.5	84.7	88.2	90.2	89.0	82.6	73.4	63.1	52.7	49.0	45.9	41.5	40.6	43.1	43.9	41.6	55.1	76.2	78.5	83.0	86.3	89.4	68.4	90.2
11-Sep	90.8	94.0	94.4	95.3	96.2	95.7	93.3	88.6	83.7	77.7	62.9	40.4	39.8	37.3	35.7	36.0	33.5	40.4	47.9	56.5	59.3	63.3	66.3	62.6	66.3	96.2
12-Sep	59.3	76.9	86.6	86.1	84.2	89.8	95.9	97.3	97.7	95.9	97.5	97.4	98.0	98.6	98.7	98.4	98.3	98.3	99.3	99.4	99.5	99.7	100.0	100.0	93.9	100.0
13-Sep	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	98.0	97.3	97.4	97.7	98.2	98.0	98.2	98.5	99.0	99.2	98.6	97.9	96.7	96.7	98.8	100.0
14-Sep	96.5	96.3	96.2	96.4	97.5	99.2	99.9	96.4	90.3	83.7	73.9	69.8	67.2	60.6	47.5	45.8	51.5	58.5	72.4	84.4	88.1	93.2	93.9	95.7	81.4	99.9
15-Sep	91.5	84.8	87.2	89.7	93.8	97.2	97.7	98.0	98.7	97.2	89.7	83.1	79.8	74.7	69.1	77.6	78.9	85.3	87.4	91.1	90.2	91.4	93.2	93.5	88.4	98.7
16-Sep	92.6	91.8	92.2	91.0	90.5	90.1	88.7	83.0	75.1	67.5	58.0	51.9	48.9	44.7	44.2	44.7	51.9	54.4	66.1	75.7	82.0	86.2	92.7	92.2	73.2	92.7
17-Sep	93.8	93.1	94.7	93.0	94.8	96.1	88.6	76.6	66.7	54.3	50.0	43.2	39.4	38.0	37.2	38.1	35.9	43.3	51.8	63.4	73.9	78.8	86.3	91.1	67.6	96.1
18-Sep	93.1	92.8	94.7	97.1	96.9	97.9	98.1	84.8	70.5	58.5	48.2	46.0	47.7	47.2	47.2	51.4	54.7	58.6	64.5	67.9	70.7	74.5	81.9	84.8	72.1	98.1
19-Sep	84.6	86.9	86.8	88.8	94.9	95.8	95.8	84.4	64.4	57.4	50.1	45.3	45.3	39.9	40.7	47.4	49.5	54.0	63.7	76.4	81.4	80.7	83.8	83.2	70.1	95.8
20-Sep	87.1	91.8	95.6	95.8	95.6	93.6	92.7	88.0	82.7	88.0	92.4	93.5	93.9	86.2	80.9	76.5	85.7	94.0	92.8	89.4	85.6	85.6	86.9	89.1	89.3	95.8
21-Sep	93.8	95.2	96.3	97.9	99.5	100.0	100.0	98.0	90.0	79.0	72.4	62.3	55.2	50.8	51.3	52.3	56.6	61.9	69.3	71.0	67.4	65.4	66.2	67.8	75.8	100.0
22-Sep	67.7	68.1	70.2	72.2	75.6	77.5	77.9	83.0	80.4	77.6	72.8	67.2	63.0	59.3	60.3	65.1	68.8	75.4	83.4	89.0	87.5	89.3	87.3	94.2	75.5	94.2
23-Sep	95.8	95.3	96.4	98.5	97.2	97.7	98.4	97.0	93.2	89.9	90.4	90.1	87.3	79.5	80.2	77.1	76.7	78.1	83.7	82.6	83.8	82.8	76.5	74.5	87.6	98.5
24-Sep	75.7	76.1	75.3	74.3	75.7	73.0	72.1	70.8	63.2	53.0	47.9	43.1	40.3	37.7	36.0	32.5	35.6	38.2	51.9	64.9	65.6	77.1	85.0	88.9	60.6	88.9
25-Sep	89.3	87.3	86.7	86.6	84.1	68.9	65.0	61.7	56.4	52.7	51.3	51.4	49.7	48.4	46.9	44.9	46.0	50.4	60.8	77.7	75.7	77.7	84.0	90.7	66.4	90.7
26-Sep	87.5	80.4	81.2	77.2	80.5	82.8	91.4	94.5	96.7	96.4	95.4	87.6	77.6	66.7	50.5	39.7	35.2	41.4	44.9	49.7	52.0	55.0	64.6	67.2	70.7	96.7
27-Sep	64.5	67.5	74.2	82.0	90.1	84.9	84.1	79.7	74.1	69.7	61.1	57.3	52.8	53.8	52.8	49.4	52.5	59.5	72.7	90.9	84.4	90.5	85.7	77.5	71.3	90.9
28-Sep	69.0	61.9	61.4	61.5	60.0	63.6	63.4	61.2	57.6	54.1	51.3	45.8	40.2	37.4	38.1	40.7	43.3	50.2	58.0	66.0	68.3	73.8	81.1	86.1	58.1	86.1
29-Sep	85.9	84.5	76.2	76.2	81.1	81.3	77.9	76.5	73.4	68.5	65.6	63.7	64.3	63.9	61.9	62.5	70.6	72.9	74.7	89.6	91.5	92.8	92.4	91.1	76.6	92.8
30-Sep	87.6	88.5	88.2	86.6	84.5	82.4	81.2	75.7	68.6	63.0	53.8	45.1	40.2	40.8	37.4	37.7	37.9	40.1	44.8	47.1	54.1	58.4	58.2	60.9	60.9	88.5
	80.0	80.8	82.5	83.9	85.4	85.8	85.5	81.4	75.2	69.9	64.8	59.5	56.5	52.9	50.3	50.7	52.6	56.7	63.5	71.0	73.6	76.7	78.9	79.9	Diurnal Average	
	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	98.0	97.4	98.0	98.6	98.7	98.4	98.3	98.5	99.3	99.4	99.5	99.7	100.0	100.0	Diurnal Maximum	

Wood Buffalo Environmental Association

Hourly Averages

Relative Humidity 2m (RH2) - %

Christina Lake - September 2024



Concentration Ranges (%)	Number of Hours	%	Cumulative %
0 - 20	1	0.14	0.14
20 - 40	50	6.94	7.08
40 - 60	185	25.69	32.78
60 - 80	197	27.36	60.14
80 - 100	275	38.19	98.33

Total Number of Valid Hours: 720

Total Number of Hours: 720

Wood Buffalo Environmental Association

Summary of Hour Averages

Wind Speed 10m (WS10) - km/h

Christina Lake - September 2024

Maximum Speed: 30 km/h on Sep 30 13:00

Maximum Daily Speed Average: 18.1 km/h on Sep 30

Minimum Speed Value: 0 km/h on Sep 11 07:00

Minimum Daily Speed Average: 1.3 km/h on Sep 25

Maximum Diurnal Speed Average: 8.8 km/h at hour 15

Minimum Diurnal Speed Average: 3.7 km/h at hour 7

Monthly Average Velocity: 5.1 km/h 250.8 deg

Percentiles: P_1 = 1 P_{10} = 4 Q_1 = 6 Median = 9 Q_3 = 13 P_{90} = 17 P_{99} = 25

Hours in Service:	720
Hours of Data:	720
Hours of Missing Data:	0
Percent Operational Time:	100.0

Day	Hourly Period Ending At (MST)																								Daily	Daily
	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24	Average	Maximum
1-Sep	S13	SSW15	SSW14	SSW13	SSW12	SSW11	SSW12	SSW12	SSW12	SSW13	SSW16	SSW18	SSW18	SW18	SW19	SW18	SW16	WSW13	SW9	SSW9	SSW10	SSW5	S4	S3	SSW12.2	SW19
2-Sep	SE1	SSW3	SSE4	ESE4	SE3	WSW3	SSE4	SSW6	SW4	S4	SSW10	SSW16	SW14	WSW11	WSW12	SW10	WSW8	W8	WSW7	W8	WSW4	SSW4	WSW3	NW16	SW5.2	SSW16
3-Sep	N12	N7	ENE9	NNE10	NNE12	NNE15	NNE15	NNE12	NNE11	NNE11	NNE13	NNE14	NNE11	NNE11	N7	NNE7	NE9	NE10	NE8	E3	E5	NE7	NNE8	NNW6	NNE9.0	NNE15
4-Sep	NNW14	NNW13	NW13	WNW7	W7	WSW6	SW5	W7	W9	W10	WNW14	WNW15	W16	WNW17	WNW19	WNW16	WNW16	WNW11	W6	WSW7	WSW10	WSW8	WSW8	WSW9	WNW9.7	WNW19
5-Sep	WSW8	WSW8	W7	W8	W7	SW4	S2	SSE1	ENE1	E4	E6	ESE3	W4	ENE7	NW1	S6	SSW7	SE8	SSE9	SSE9	SSE9	SSE12	S14	S16	S3.9	S16
6-Sep	S20	SSW20	S20	S20	S19	S16	SSW17	SSW12	SSW12	SW9	SSW12	SW10	SW13	SW13	SW12	SW14	SW10	SW12	SW11	SW11	SW10	SW7	WSW7	WSW9	SSW12.5	S20
7-Sep	WSW8	WSW9	WSW5	WSW3	SSW7	SSW6	SSW3	SW3	S3	SSW4	SW6	SW8	SW8	SW10	SW9	SW9	SW8	SSW7	SSW7	SSW7	SSW7	SSW7	SSW9	W1	SW6.1	SW10
8-Sep	SE4	S3	S3	SSW2	SSW3	SSW2	SSW5	SSW4	SSW2	SSW4	SSE5	SSE7	S8	SSE10	S13	S13	S13	S10	SSE10	SSE11	S13	S12	S11	S17	S7.4	S17
9-Sep	SSW16	SSW10	S6	SE10	S17	S21	S21	SSW17	WSW12	W17	WNW20	WNW20	WNW21	WNW20	WNW23	W23	W19	W16	W10	WNW19	W18	WNW23	WNW18	W13	W12.4	WNW23
10-Sep	W11	W13	WNW15	W11	WSW8	WSW8	WSW8	WSW10	WSW11	WSW12	W13	W13	W12	WSW13	W13	W13	WSW8	WSW7	SW6	SSW5	S2	SW4	S4	SW4	WSW8.9	WNW15
11-Sep	WSW3	SSW5	SSW2	SSW4	S3	SSW3	SE0	S3	NE1	NNE3	ENE5	SE7	ESE12	ESE10	SE10	SE10	SSE12	SE11	SE9	ESE5	ESE7	ESE6	ESE5	ESE6	SE4.7	ESE12
12-Sep	SE10	SE9	NE6	NE6	NE6	NNE9	ENE9	NE6	N8	N10	NNE8	NE8	ENE8	NE7	NNE8	N10	N14	N15	NNE12	NNE13	NNE12	NNE11	N11	NNE10	NNE7.9	N15
13-Sep	N12	NNE13	NNE13	NNE11	NNE12	NNE12	N13	N15	N13	N15	N15	N13	N14	NNW18	NW18	NW16	NW13	WNW13	WNW12	WNW12	WNW11	WNW11	W10	W8	NNW10.5	NNW18
14-Sep	W7	WSW7	WSW7	WSW7	SW5	SW5	SW7	WSW8	WSW7	WSW9	W7	W6	WSW11	WSW9	W11	W7	SW10	SW7	SSW7	SSW6	SSW8	SSW7	SSW5	SW3	WSW6.7	W11
15-Sep	SSW6	WSW6	W6	W8	W8	W9	WNW14	WNW13	W8	SW4	W8	W5	WSW6	SW4	SSW6	S10	SSW10	S7	SSW7	SSW7	SSW8	SSW9	SSW8	SSW10	WSW6.2	WNW14
16-Sep	SSW10	SSW10	SSW11	SSW10	SSW11	SSW11	SSW9	SW11	SSW13	SSW13	SW14	WSW16	SW17	WSW17	WSW18	WSW15	SW12	SW11	SW8	SW6	SW4	SSW4	SW5	SSW6	SW10.5	WSW18
17-Sep	SSW4	SSW4	SSW5	SSW7	SSW6	S5	S4	S4	S6	SSE12	S13	SSW10	SSW11	SW10	SSW5	SSW4	SSE5	ESE7	SE7	S8	S6	SE5	SSW3	SE3	S5.6	S13
18-Sep	S2	SSE1	E3	SSW3	SSW3	WSW3	ESE2	SE2	W1	SE1	W3	WNW9	WNW15	NW19	NW19	NW16	NW18	NW13	NW12	NNW5	NNW8	NNW5	WNW7	W4	NW5.8	NW19
19-Sep	WSW5	WSW4	SW6	SSW3	SSW4	SW5	SSW4	SW2	N1	WNW5	WNW9	WNW8	WNW11	WNW14	WNW13	W9	W7	W7	WSW3	SW4	WSW5	S3	SSW5	SW5	W4.8	WNW14
20-Sep	SW6	SW5	SSW4	SSW4	SSW4	SW5	SW5	WSW6	W6	SW6	SE5	NNE5	ESE4	W6	NW6	NW7	WNW11	WSW7	W8	W11	WNW13	WNW12	WNW11	WNW7	W4.9	WNW13
21-Sep	W5	WSW6	WSW6	SW5	SW5	SSW5	SSW4	SW6	SSW5	SSW7	SW8	WSW11	WSW11	WSW12	SW13	SSW15	S15	S11	SSE9	SSE8	S11	SSE10	SSE11	SSE11	SSW7.3	S15
22-Sep	S13	S15	SSW16	SSW14	SSW9	SSW8	SSW6	SSW6	SW5	SW6	SW8	SW4	SW7	WSW10	WSW9	SW8	SW7	SSW5	S6	S6	SSW7	SW7	WSW9	SW7	SSW7.5	SSW16
23-Sep	SW8	WSW8	WSW9	WSW8	WNW9	WNW9	W6	W7	WSW7	WSW8	WSW7	W8	SW9	WSW12	SW12	SW10	SW11	SW8	SSW6	SW10	SSW10	SW9	SW14	SW15	WSW8.6	SW15
24-Sep	SW15	WSW16	WSW17	WSW17	WSW16	WSW19	WSW18	WSW18	W18	W28	WNW28	WNW27	WNW23	WNW22	W19	W19	W13	WSW8	SW7	SSW10	S9	S6	SE4	ESE7	W13.6	WNW28
25-Sep	SE5	ESE4	ENE3	ESE5	E7	ESE8	E5	SE8	SSE11	SSE11	SSE14	SSW9	WSW8	W9	NW6	N6	W3	NW14	N5	SE3	NNW4	NW6	SW8	WNW7	S1.3	SSE14
26-Sep	NNW19	NW13	NW6	NW13	WNW12	WNW15	WNW25	NW23	NW18	WNW11	W9	W13	W17	WNW16	W22	W22	W17	WSW13	WSW13	SW12	SW13	SW11	SSW11	SSW9	W12.5	WNW25
27-Sep	S7	SE4	ESE5	NE3	NE9	ENE3	E7	W4	N9	NW13	WNW11	WNW11	NW13	W8	W10	WNW13	W14	WSW10	WSW10	SSW9	SW10	SSW10	SW12	WSW14	W4.8	WSW14
28-Sep	WSW18	WSW20	WSW17	WSW17	WSW18	SW16	WSW17	WSW17	WSW16	W16	W15	W16	WSW16	WSW14	WSW12	SW12	SW11	SW10	SW7	S5	SSW6	S5	SE3	E4	WSW11.6	WSW20
29-Sep	ESE4	E4	NE6	E5	ENE7	ENE10	ENE10	ENE13	ENE16	NE16	NE19	NE21	NE23	NE19	NE20	NNE20	NNE17	NNE15	N15	NNW20	NW17	NW19	NW21	NW20	NNE11.2	NE23
30-Sep	WNW19	WNW17	WNW16	WNW16	WNW16	WNW16	W15	WNW15	WNW18	WNW21	WNW23	WNW29	WNW30	WNW25	WNW28	WNW26	W23	W17	WSW13	WSW14	WSW13	WSW15	WSW13	SW16	W18.1	WNW30
	SW4.5	WSW5.0	WSW3.9	SW4.0	SW3.9	SW4.2	WSW3.7	WSW4.4	W4.2	W4.7	W5.3	W6.3	W7.2	W7.9	W8.8	W7.9	WSW7.3	WSW5.3	SW4.2	SW4.6	SW5.0	SW4.3	WSW4.8	WSW4.8	Diurnal Average	
	S20	SSW20	S20	S20	S19	S21	WNW25	NW23	W18	W28	WNW28	WNW29	WNW30	WNW25	WNW28	WNW26	W23	W17	N15	NNW20	WNW18	WNW23	NW21	NW20	Diurnal Maximum	

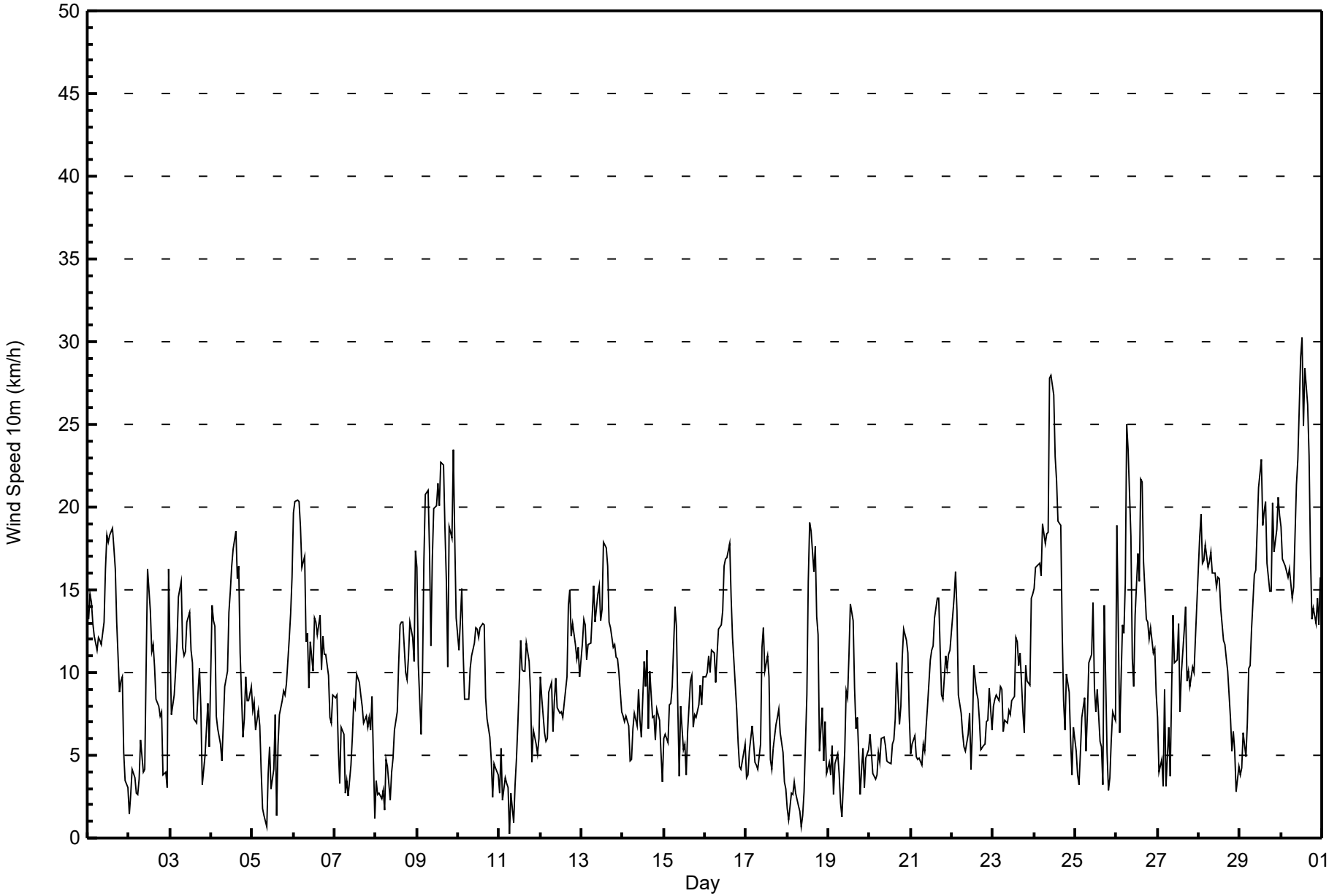
All monthly, daily, and diurnal averages have been calculated using vector methods

Wood Buffalo Environmental Association

Hourly Averages

Wind Speed 10m (WS10) - km/h

Christina Lake - September 2024



Wind Speed Ranges (km/h)	Number of Hours	%	Cumulative %
0 - 5	153	21.25	21.25
6 - 11	314	43.61	64.86
12 - 19	215	29.86	94.72
20 - 28	36	5.00	99.72
29 - 38	2	0.28	100.00
> 38	0	0.00	100.00

Total Number of Valid Hours: 720

Total Number of Hours: 720

Wood Buffalo Environmental Association

Frequency Distribution

Wind Speed 10m (WS10) - km/h

Christina Lake - September 2024

Wind Speed							**Wind Direction**										
Ranges (km/h)	N	NNE	NE	ENE	E	ESE	SE	SSE	S	SSW	SW	WSW	W	WNW	NW	NNW	**Totals**
0 - 5	2	2	2	4	8	10	14	6	18	38	24	11	9	1	1	3	153
6 - 11	8	13	11	8	3	7	11	15	16	56	49	52	40	18	5	2	314
12 - 19	11	16	3	2	0	1	0	4	16	24	23	37	23	32	19	4	215
20 - 28	0	1	3	0	0	0	0	0	5	1	0	1	5	16	3	1	36
29 - 38	0	0	0	0	0	0	0	0	0	0	0	0	0	2	0	0	2
> 38	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Totals	21	32	19	14	11	18	25	25	55	119	96	101	77	69	28	10	720

Total Number of Valid Hours: 720

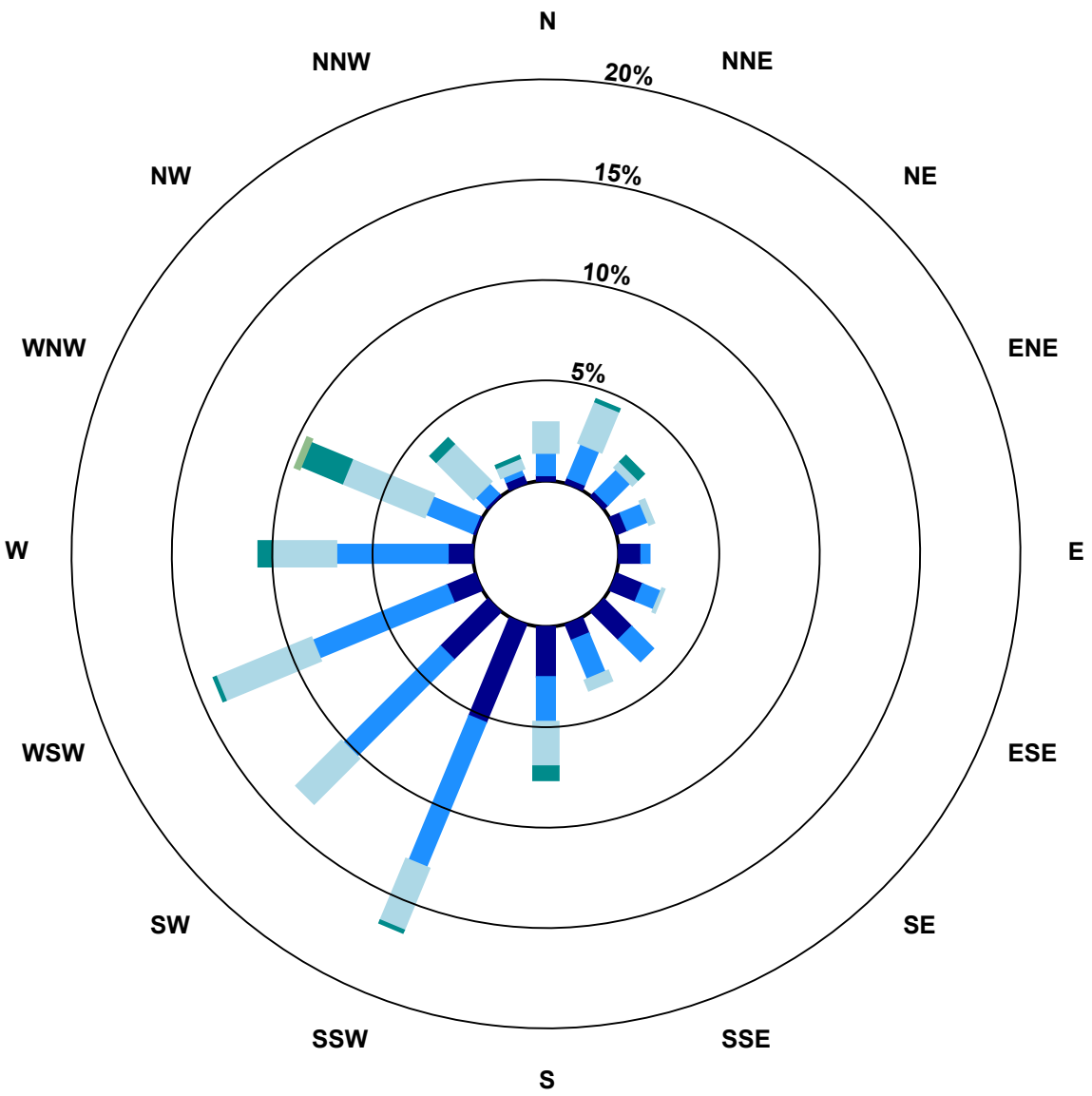
Total Number of Hours: 720

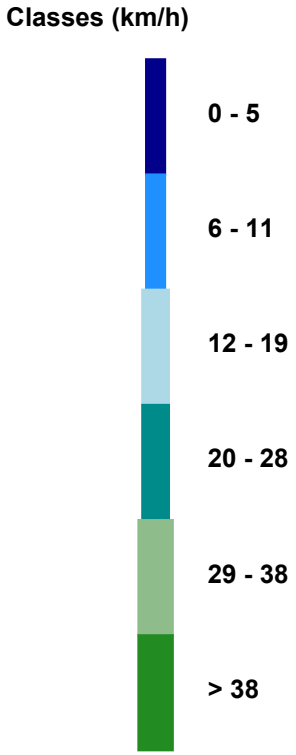
Wood Buffalo Environmental Association

Wind Rose Sep 2024

Wind Speed 10m (WS10) - km/h

Christina Lake





Total Number of Valid Hours: 720

Number of Exceedences (AAAQO): 1-hr: 0 24-hr: 0
Maximum Value: 8 km/h on Sep 24 10:00

Minimum Value: 1 km/h on Sep 11 23:00

Percentiles: P_1 = 1 P_{10} = 1 Q_1 = 2 Median = 2 Q_3 = 4 P_{90} = 4 P_{99} = 7

Hours in Service:	720
Hours of Data:	720
Hours of Missing Data:	0
Hours of Calibration:	0
Percent Operational Time:	100.0

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

Direction of Maximum Speed: 296 deg on Sep 30 13:00
Direction of Maximum Daily Speed Average: 281.2 deg on Sep 30

Direction of Minimum Speed: 124 deg on Sep 11 07:00

Direction of Minimum Daily Speed Average: 1.3 deg on Sep 25

Monthly Average Direction: 250.8 deg

Hours in Service:	720
Hours of Data:	720
Hours of Missing Data:	0
Percent Operational Time:	100.0

Day	Hourly Period Ending At (MST)																								Daily
	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24	Average
1-Sep	188	192	194	197	200	201	206	203	204	195	196	197	206	222	224	231	235	239	218	212	209	201	180	170	207.7
2-Sep	131	205	159	104	143	251	155	201	223	180	213	195	214	239	255	233	245	261	257	267	239	212	247	318	230.3
3-Sep	9	352	64	16	25	16	12	17	21	24	20	18	20	32	10	16	56	44	51	90	92	45	21	334	24.9
4-Sep	336	348	324	295	269	241	231	262	267	280	283	286	280	296	297	295	287	285	261	244	239	244	254	254	284.1
5-Sep	253	254	265	260	265	230	176	150	68	86	89	116	262	63	319	188	197	140	147	157	167	168	177	183	185.5
6-Sep	188	193	191	188	184	189	192	196	201	217	211	223	223	230	230	217	222	227	235	232	220	234	250	247	208.9
7-Sep	255	254	258	241	200	212	193	226	175	209	214	231	232	235	228	236	220	204	201	200	208	207	208	271	222.3
8-Sep	125	176	177	201	201	204	205	207	203	199	159	152	172	162	171	186	186	176	161	162	169	172	177	191	176.3
9-Sep	197	208	180	145	186	186	188	198	255	275	288	293	294	290	289	278	276	271	267	283	281	301	294	278	261.3
10-Sep	274	277	283	274	246	247	243	248	254	254	261	272	269	253	259	259	246	256	221	213	182	215	185	220	255.9
11-Sep	239	208	199	200	178	202	124	183	41	24	59	126	117	116	146	124	147	144	143	110	105	105	110	116	133.4
12-Sep	133	138	34	56	38	25	58	43	10	0	12	39	58	39	21	357	352	10	14	27	22	12	8	15	25.8
13-Sep	11	12	17	14	12	13	355	7	2	11	6	11	7	331	313	312	307	302	296	289	284	285	279	270	339.5
14-Sep	266	258	256	241	228	226	219	240	241	253	265	270	238	242	259	260	235	230	203	198	206	210	211	216	238.2
15-Sep	213	240	267	266	265	278	289	287	280	234	273	265	248	225	202	184	199	185	201	202	199	206	211	206	236.5
16-Sep	208	209	204	207	205	209	208	215	213	198	222	237	226	244	238	243	218	219	218	226	225	200	217	203	219.6
17-Sep	207	202	204	204	204	189	175	185	176	156	185	198	213	219	198	208	166	119	127	169	181	140	212	130	183.2
18-Sep	191	165	96	201	195	248	118	129	264	146	271	295	303	312	310	315	308	307	304	346	327	329	285	276	304.3
19-Sep	243	251	224	198	211	227	206	218	6	288	296	286	286	291	296	277	269	272	243	215	238	185	197	216	261.3
20-Sep	231	226	210	209	207	226	220	254	260	235	146	19	108	275	313	310	295	250	260	280	292	293	295	293	268.7
21-Sep	267	251	237	224	229	209	205	214	211	192	221	248	246	243	224	200	191	178	159	157	184	159	156	159	203.1
22-Sep	169	187	193	195	198	200	204	194	229	232	224	221	232	251	254	234	214	198	171	189	201	214	246	236	209.6
23-Sep	230	245	253	249	291	287	274	268	254	247	249	261	236	237	231	231	235	226	212	219	210	215	227	228	240.2
24-Sep	233	237	241	246	246	248	249	249	265	280	286	288	284	283	278	277	271	258	225	205	183	180	139	117	259.4
25-Sep	127	119	77	103	81	110	86	143	157	164	161	198	251	261	309	358	268	315	353	142	328	310	226	297	182.3
26-Sep	328	306	320	317	296	294	302	309	315	288	274	269	278	282	275	275	273	252	243	229	230	219	207	203	279.9
27-Sep	184	124	103	38	47	66	98	271	350	308	299	298	314	261	264	285	276	242	256	209	217	205	225	239	264.6
28-Sep	241	247	246	239	244	236	246	248	257	270	265	264	256	258	244	227	221	215	216	175	192	181	124	84	242.4
29-Sep	112	92	42	83	57	77	69	65	61	45	53	43	40	47	35	23	18	14	353	333	325	315	318	308	22.3
30-Sep	297	296	298	286	284	282	277	287	286	293	292	295	296	289	285	287	278	271	257	257	244	249	243	232	281.2
	235.7	238.5	239.8	234.9	233.5	235.4	237.9	247.4	264.3	265.2	263.6	270.2	268.5	270.1	269.1	265.2	255.6	251.5	235.5	230.0	228.7	233.5	237.2	238.2	
	Diurnal Average																								

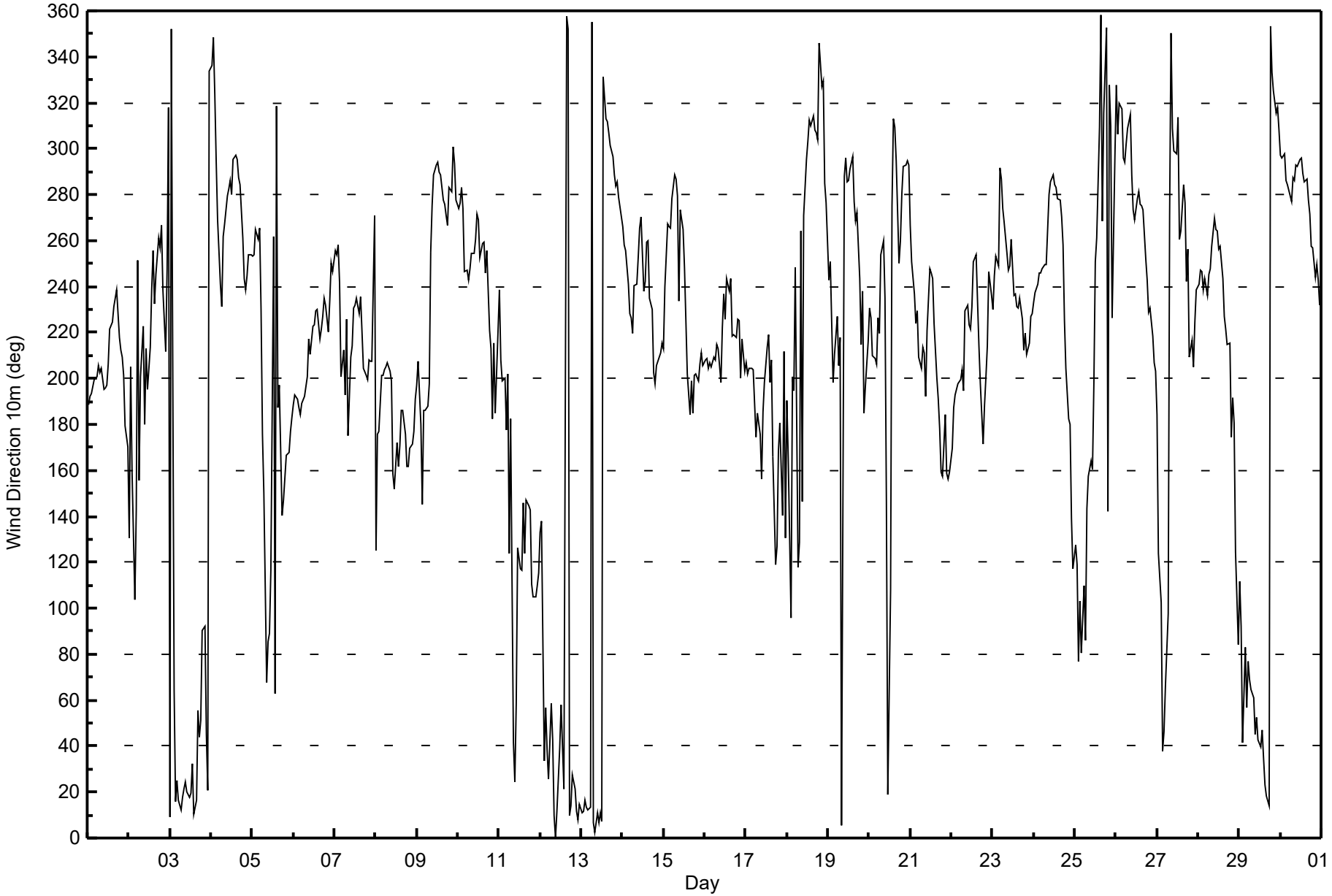
All monthly, daily, and diurnal averages have been calculated using vector methods

Wood Buffalo Environmental Association

Hourly Averages

Wind Direction 10m (WD10) - deg

Christina Lake - September 2024



Number of Exceedences (AAAQO): 1-hr: 0 24-hr: 0
Maximum Value: 98 deg on Sep 5 09:00

Minimum Value: 3 deg on Sep 1 21:00

Percentiles: P_1 = 7 P_{10} = 11 Q_1 = 13 Median = 17 Q_3 = 24 P_{90} = 45 P_{99} = 87

Hours in Service:	720
Hours of Data:	720
Hours of Missing Data:	0
Hours of Calibration:	0
Percent Operational Time:	100.0

Day	Hourly Period Ending At (MST)																								Daily
	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24	Maximum
1-Sep	10	11	11	12	12	14	15	12	14	17	18	17	17	19	16	16	16	16	10	5	3	11	13	15	19
2-Sep	61	32	19	29	47	89	75	43	77	78	18	16	22	29	28	21	15	17	16	15	57	37	63	25	89
3-Sep	31	65	15	15	14	14	15	16	16	14	17	19	18	16	50	30	23	9	9	49	24	18	16	43	65
4-Sep	14	20	19	23	17	16	24	17	18	18	20	19	21	17	15	18	17	15	17	11	11	13	16	17	24
5-Sep	15	16	24	20	27	70	61	77	98	43	36	74	70	30	98	71	30	22	9	10	8	11	12	12	98
6-Sep	12	11	11	11	13	13	15	17	18	22	14	28	18	18	17	13	14	13	16	9	10	28	15	13	28
7-Sep	16	15	21	51	12	8	52	18	68	19	18	14	13	15	14	15	14	11	11	9	12	9	11	81	81
8-Sep	20	26	50	15	39	66	10	10	62	24	29	26	30	25	22	19	13	11	5	7	8	10	9	11	66
9-Sep	12	39	40	12	26	12	11	19	30	21	17	19	15	17	17	17	18	20	19	14	14	14	15	13	40
10-Sep	16	13	13	16	15	12	13	14	17	18	21	26	23	24	21	24	22	20	24	27	69	18	19	35	69
11-Sep	23	12	56	26	38	38	84	22	82	53	30	52	23	33	37	24	20	14	11	23	15	11	10	12	84
12-Sep	15	15	15	12	15	15	22	22	18	18	16	18	56	18	16	23	23	14	14	11	14	16	17	16	56
13-Sep	16	15	15	14	14	13	21	17	20	16	18	15	16	15	13	12	12	11	11	11	11	11	11	14	21
14-Sep	16	17	15	15	13	11	8	11	16	16	30	45	21	28	29	35	18	19	5	11	6	9	23	12	45
15-Sep	16	18	36	18	17	15	11	12	32	43	21	45	28	41	48	14	17	11	9	10	11	10	10	7	48
16-Sep	8	8	11	10	11	11	12	14	13	15	16	13	16	22	20	24	12	11	8	16	53	29	17	11	53
17-Sep	24	23	11	8	7	10	12	24	20	16	21	30	25	29	69	70	51	11	8	20	10	37	30	42	70
18-Sep	80	71	20	42	36	23	36	68	89	95	74	33	18	19	17	16	14	12	11	91	24	56	58	47	95
19-Sep	16	35	22	61	45	11	16	67	87	39	23	28	23	17	16	18	18	13	77	19	13	29	37	17	87
20-Sep	24	8	29	17	32	22	26	20	31	22	48	55	53	43	41	15	38	12	15	16	11	11	12	16	55
21-Sep	23	21	15	13	9	18	24	13	17	17	34	20	24	22	22	17	14	13	9	10	21	11	12	13	34
22-Sep	12	12	11	12	15	15	17	26	19	16	17	49	33	21	18	17	15	12	14	20	5	16	15	11	49
23-Sep	9	14	14	13	27	22	28	22	18	20	20	20	23	16	17	16	14	20	14	12	17	13	12	10	28
24-Sep	11	11	13	13	15	14	15	16	19	16	17	16	17	20	19	18	17	16	27	7	13	12	27	13	27
25-Sep	25	16	17	19	9	15	24	53	16	18	14	33	20	26	60	53	81	11	73	65	84	68	48	61	84
26-Sep	18	22	71	15	27	21	15	21	11	27	25	18	16	18	17	17	17	17	12	9	10	14	7	11	71
27-Sep	13	38	23	90	23	77	45	38	31	18	28	29	26	36	20	23	20	18	27	12	10	10	9	10	90
28-Sep	12	13	14	13	14	12	13	15	19	20	20	20	22	25	24	18	13	13	18	20	9	16	34	13	34
29-Sep	21	24	18	26	17	19	16	14	14	13	15	16	14	16	13	14	16	14	21	13	16	11	14	13	26
30-Sep	14	14	14	16	14	14	16	18	15	14	15	17	17	15	15	14	15	17	18	17	13	15	13	9	18
	80	71	71	90	47	89	84	77	98	95	74	74	70	43	98	71	81	22	77	91	84	68	63	81	
	Diurnal Maximum																								

WOOD BUFFALO ENVIRONMENTAL ASSOCIATION

CONTINUOUS AMBIENT AIR QUALITY
MONITORING PROGRAM
MONTHLY REPORT

AMS27
JACKFISH 2/3
SEPTEMBER 2024

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

October 31, 2024

WOOD BUFFALO ENVIRONMENTAL ASSOCIATION - JACKFISH 2/3 (AMS27)
SEPTEMBER 2024

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	684	34	36	99.72	8.6	0	2.3	0
H2S (ppb) Average	685	35	35	100	1.8	0	0.5	0
NO2 (ppb) Average	682	36	38	99.72	5.4	0	1.3	-
NO (ppb) Average	682	36	38	99.72	4.4	-	0.3	-
NOX (ppb) Average	682	36	38	99.72	6.7	-	1.3	-
Temperature 2 m (C) Average	720	0	0	100	30.2	-	22.2	-
Relative Humidity (%) Average	720	0	0	100	99.3	-	99.1	-
Wind Speed 10 m (km/h) Average	720	0	0	100	17	-	10	-
Wind Direction 10 m (deg) Average	720	0	0	100	-	-	-	-

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

WOOD BUFFALO ENVIRONMENTAL ASSOCIATION - JACKFISH 2/3 (AMS27)
SEPTEMBER 2024

MONTHLY SUMMARY FOR AIR QUALITY/ METEOROLOGICAL MONITORING MEASUREMENTS

					Percentile						
Parameter	Number	Mean	StnDev	Total	Min	P10	Q1	Median	Q3	P90	Max
SO2 (ppb) Average	684	0.52	1.1	-	0	0	0.1	0.1	0.4	1.1	8.6
H2S (ppb) Average	685	0.27	0.2	-	0	0.1	0.2	0.2	0.3	0.4	1.8
NO2 (ppb) Average	682	0.4	0.7	-	0	0	0	0	0.6	1.3	5.4
NO (ppb) Average	682	0.06	0.3	-	0	0	0	0	0	0.1	4.4
NOX (ppb) Average	682	0.45	0.9	-	0	0	0	0	0.6	1.3	6.7
Temperature 2 m (C) Average	720	12.59	5.4	-	1.1	6.2	8.9	11.8	15.8	20	30.2
Relative Humidity (%) Average	720	71.7	18.9	-	22.3	45.6	57.5	72.2	88.4	96.9	99.3
Wind Speed 10 m (km/h) Average	720	6.4	3	-	0	3	4	6	8	10	17
Wind Direction 10 m (deg) Average	720	-	-	-	-	-	-	-	-	-	-

WOOD BUFFALO ENVIRONMENTAL ASSOCIATION - JACKFISH 2/3 (AMS27)
SEPTEMBER 2024

OPERATIONAL NOTES

Parameter	Period Start	Period End	Duration (Hours)	Notes
NO2, SO2	18 Sep 2024 13:00	18 Sep 2024 14:00	2	Maintenance - sample manifold cleaned

Wood Buffalo Environmental Association

Summary of Hour Averages

Sulphur Dioxide (SO_2) - ppb

Jackfish 2/3 - September 2024

Number of Exceedences (AAAQO): 1-hr: 0 24-hr: 0

Maximum Value: 8.6 ppb on Sep 9 22:00

Maximum Daily Average: 2.3 ppb on Sep 9

Minimum Value: 0.0 ppb on Sep 2 07:00

Minimum Daily Average: 0.0 ppb on Sep 12

Maximum Diurnal Average: 1.3 ppb at hour 12

Minimum Diurnal Average: 0.1 ppb at hour 6

Monthly Average: 0.52 ppb

Percentiles: P_1 = 0.0 P_{10} = 0.0 Q_1 = 0.1 Median = 0.1 Q_3 = 0.4 P_{90} = 1.1 P_{99} = 6.1

Hours in Service:	720
Hours of Data:	684
Hours of Missing Data:	36
Hours of Calibration:	34
Percent Operational Time:	99.7

Day	Hourly Period Ending At (MST)																								Daily	Daily
	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24	Average	Maximum
1-Sep	0.1	0.3	0.7	1.0	Z	0.2	0.1	0.3	0.2	0.1	0.1	0.2	0.5	0.2	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.2	0.1	0.2	1.0
2-Sep	0.2	0.2	0.3	0.2	0.3	Z	0.0	0.2	0.3	0.7	0.9	0.5	0.3	0.3	0.4	0.4	0.2	0.3	0.3	0.9	5.3	0.6	0.5	0.5	0.6	5.3
3-Sep	Z	0.2	0.1	0.2	0.1	0.0	0.1	0.1	0.1	0.1	0.2	0.2	0.5	0.4	0.6	0.3	0.2	0.2	0.2	0.2	0.2	0.1	0.2	0.2	0.2	0.6
4-Sep	0.1	Z	0.0	0.1	1.4	0.1	0.1	0.1	0.1	0.0	1.8	3.7	1.2	4.0	3.8	3.3	4.5	6.0	1.1	0.2	0.2	0.1	0.1	0.1	1.4	6.0
5-Sep	0.1	0.1	Z	0.3	0.2	0.0	0.0	0.3	0.6	1.0	6.2	6.1	2.5	0.4	0.4	0.1	0.0	0.1	0.1	0.1	0.1	0.1	0.6	0.8	0.9	6.2
6-Sep	0.8	0.5	0.3	Z	0.1	0.4	1.1	0.4	0.1	0.1	0.1	0.4	0.4	0.3	0.3	0.2	0.3	0.2	0.3	0.5	0.6	0.7	0.4	0.3	0.4	1.1
7-Sep	0.2	0.3	0.3	0.5	Z	0.1	0.0	0.1	0.1	0.1	0.1	0.3	0.4	0.6	0.6	0.5	0.3	0.1	0.0	0.0	0.0	0.0	0.0	0.0	0.2	0.6
8-Sep	0.0	0.0	0.0	0.0	0.3	Z	0.3	0.2	0.1	1.5	0.9	1.8	0.0	0.0	0.3	0.5	0.8	0.5	0.5	0.6	0.8	0.9	1.1	0.9	0.5	1.8
9-Sep	Z	0.5	0.7	1.6	0.4	0.4	0.5	0.7	0.6	0.4	3.6	4.3	6.8	4.5	1.5	2.1	0.2	0.1	0.1	6.1	1.5	8.6	7.8	0.4	2.3	8.6
10-Sep	0.1	Z	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.1	0.0	0.7	0.5	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.2	0.2	0.2	0.1	0.7
11-Sep	0.2	0.2	Z	0.0	0.0	0.0	0.0	0.3	0.2	0.1	C	C	C	C	0.3	0.1	0.0	0.1	0.0	0.1	0.1	0.1	0.2	0.1	0.1	0.3
12-Sep	0.1	0.1	0.2	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	0.0	0.2
13-Sep	0.0	0.1	0.1	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	0.1	0.0	0.1	0.3	3.2	3.1	1.6	0.5	0.4	3.2
14-Sep	0.3	0.3	0.2	0.1	0.2	Z	0.0	0.0	0.1	0.1	0.0	0.0	0.1	0.1	0.1	0.2	0.3	0.2	0.1	0.1	0.2	0.1	0.2	0.2	0.1	0.3
15-Sep	Z	0.0	0.2	0.6	0.2	0.0	0.0	0.5	0.4	0.3	1.0	0.1	0.0	0.1	0.2	0.1	0.1	0.1	0.1	0.0	0.1	0.1	0.0	0.1	0.2	1.0
16-Sep	0.2	Z	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.1	0.1	0.2	0.1	0.1	0.0	0.0	0.0	0.1	0.1	0.1	0.0	0.1	0.0	0.1	0.1	0.2
17-Sep	0.1	0.1	Z	0.0	0.0	0.0	0.0	0.1	0.2	0.3	1.0	0.8	0.5	0.4	0.6	0.4	0.4	0.3	0.3	0.3	0.3	0.2	0.3	0.4	0.3	1.0
18-Sep	0.3	0.4	0.4	Z	0.1	0.1	0.3	0.4	0.4	5.9	5.3	0.6	M	M	1.5	0.2	0.2	0.2	0.3	0.2	0.1	0.1	0.0	0.1	0.8	5.9
19-Sep	0.1	0.3	0.9	0.7	Z	0.0	0.0	0.0	0.0	3.4	2.5	1.7	0.8	0.2	2.3	0.4	0.1	0.0	0.5	0.5	0.2	0.1	0.0	0.0	0.6	3.4
20-Sep	0.1	0.0	0.2	0.2	0.2	Z	0.1	4.9	4.4	0.2	0.2	0.2	0.4	0.7	0.7	0.6	0.0	0.2	0.0	1.9	0.5	0.3	0.3	0.2	0.7	4.9
21-Sep	Z	0.0	0.1	0.2	0.4	0.3	0.1	0.4	0.6	0.6	0.3	0.1	0.1	0.1	0.0	0.0	0.2	0.1	0.2	0.1	0.3	0.3	0.2	0.2	0.2	0.6
22-Sep	0.2	Z	0.0	0.1	0.3	0.1	0.0	0.1	0.1	0.0	0.3	0.2	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	0.3
23-Sep	0.0	0.0	Z	0.0	0.0	0.1	0.1	0.0	0.0	0.0	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.0	0.0	0.0	0.1	0.1	0.0	0.1	0.1	0.1
24-Sep	0.1	0.2	0.2	Z	0.1	0.1	0.1	0.1	0.0	0.0	1.1	2.7	6.2	1.3	2.8	4.2	0.1	0.0	0.0	0.0	0.0	0.0	0.0	0.1	0.8	6.2
25-Sep	0.1	0.1	0.5	0.6	Z	0.0	0.0	0.1	0.1	0.3	0.4	0.6	0.6	1.3	3.7	0.6	1.1	0.3	0.3	0.2	0.4	0.6	0.6	0.1	0.6	3.7
26-Sep	0.2	0.1	0.4	0.3	0.3	Z	1.8	1.5	0.1	0.9	2.4	0.4	0.1	2.1	0.4	0.1	0.1	0.2	0.1	0.4	0.5	0.2	0.2	0.2	0.6	2.4
27-Sep	Z	0.0	0.0	0.1	0.3	0.3	0.1	0.0	0.4	0.3	3.2	4.2	3.1	0.4	2.8	3.1	1.2	0.1	1.3	0.3	0.3	0.1	0.0	0.2	1.0	4.2
28-Sep	0.2	Z	0.3	0.0	0.1	0.0	0.2	0.5	0.2	0.0	0.0	0.1	0.0	0.2	0.2	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.1	0.1	0.1	0.5
29-Sep	0.8	0.7	Z	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	0.1	0.0	0.1	0.4	0.2	0.2	0.1	0.8
30-Sep	0.3	1.7	5.4	Z	2.9	0.2	0.1	0.0	0.1	0.1	3.9	7.3	7.1	4.1	3.8	1.7	0.9	0.1	0.1	0.1	0.3	0.2	0.2	0.3	1.8	7.3
	0.2	0.3	0.5	0.3	0.3	0.1	0.2	0.4	0.3	0.5	1.2	1.3	1.2	0.8	0.9	0.7	0.4	0.3	0.2	0.5	0.5	0.6	0.5	0.2	Diurnal Average	
	0.8	1.7	5.4	1.6	2.9	0.4	1.8	4.9	4.4	5.9	6.2	7.3	7.1	4.5	3.8	4.2	4.5	6.0	1.3	6.1	5.3	8.6	7.8	0.9	Diurnal Maximum	

Z - zerospan C - Calibration M - Maintenance

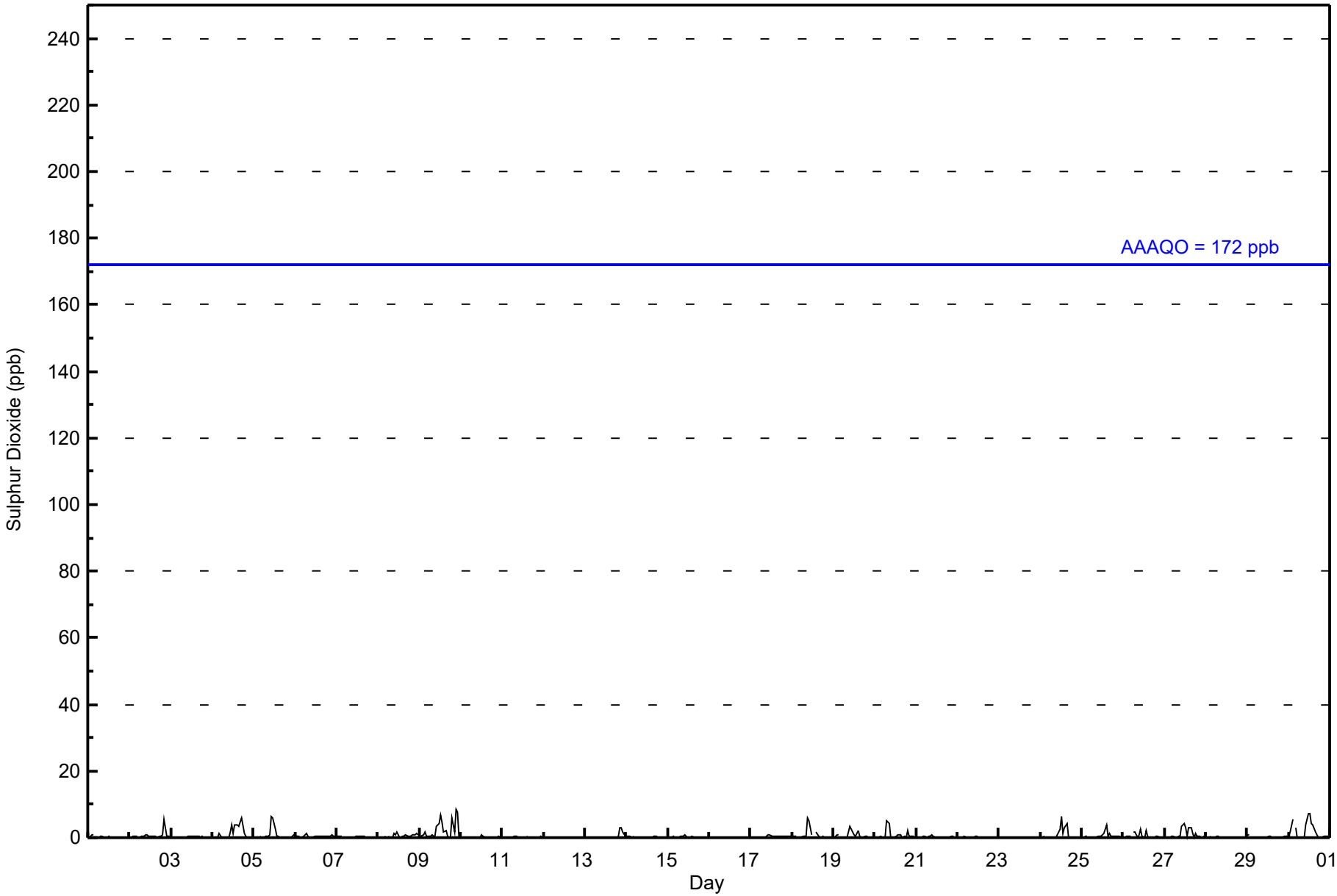
Alberta Ambient Air Quality Objectives (AAAQO): 1-hr 172 ppb 24-hr 48 ppb

Wood Buffalo Environmental Association

Hourly Averages

Sulphur Dioxide (SO_2) - ppb

Jackfish 2/3 - September 2024



Concentration Ranges (ppb)	Number of Hours	%	Cumulative %
0 - 10	684	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: 684

Total Number of Hours: 720

Wood Buffalo Environmental Association

Frequency Distribution

Sulphur Dioxide (SO_2) - ppb

Jackfish 2/3 - September 2024

Concentration Ranges (ppb)	Wind Direction																
	N	NNE	NE	ENE	E	ESE	SE	SSE	S	SSW	SW	WSW	W	WNW	NW	NNW	**Totals**
0 - 10	20	31	18	12	10	16	24	25	52	109	94	97	74	66	27	9	684
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	20	31	18	12	10	16	24	25	52	109	94	97	74	66	27	9	684

Total Number of Valid Hours: 684

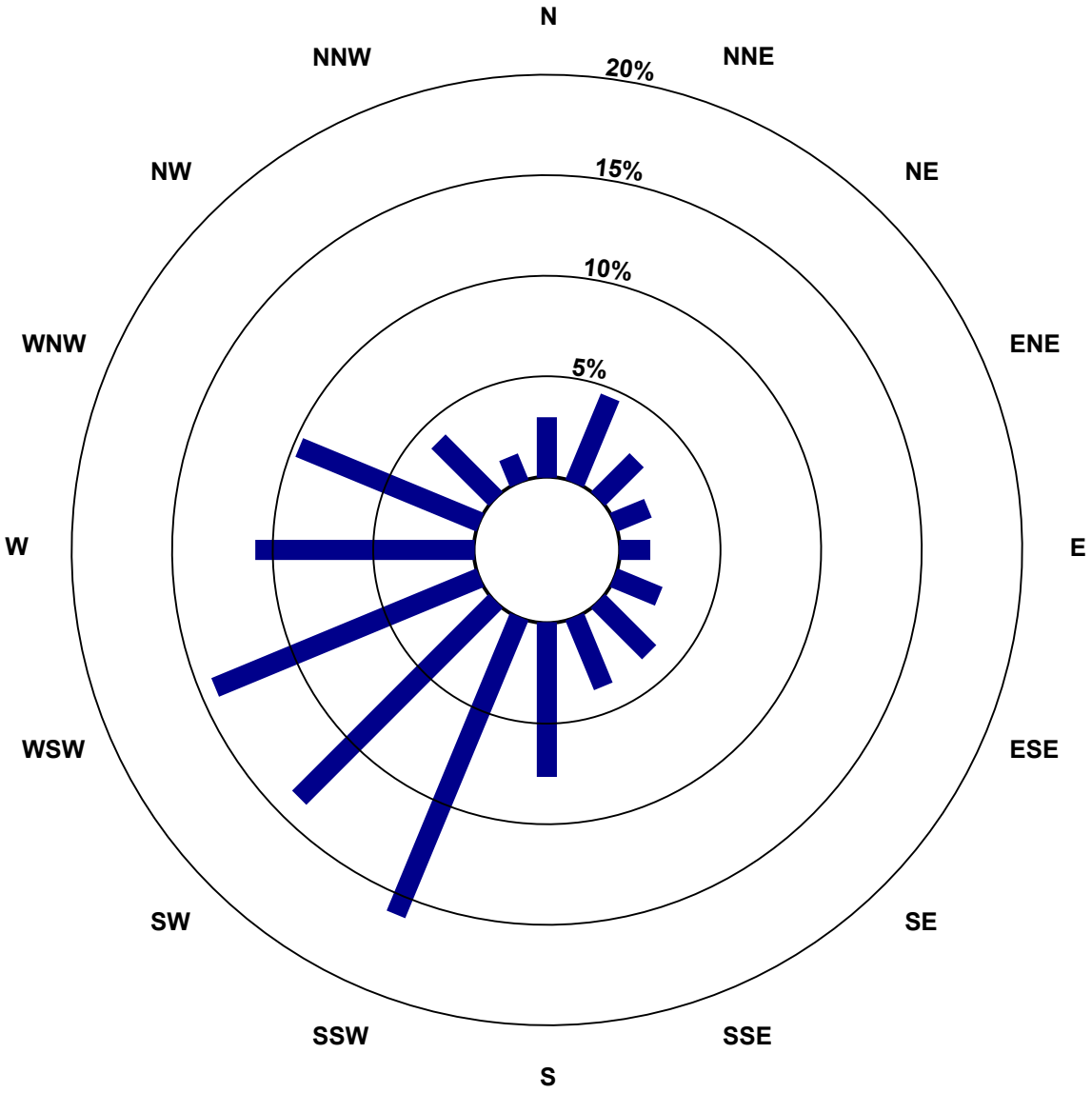
Total Number of Hours: 720

Wood Buffalo Environmental Association

Wind Rose Sep 2024

Sulphur Dioxide (SO_2) - ppb

Jackfish 2/3



Classes (ppb)

0 - 10

11 - 20

21 - 60

61 - 110

111 - 172

> 172

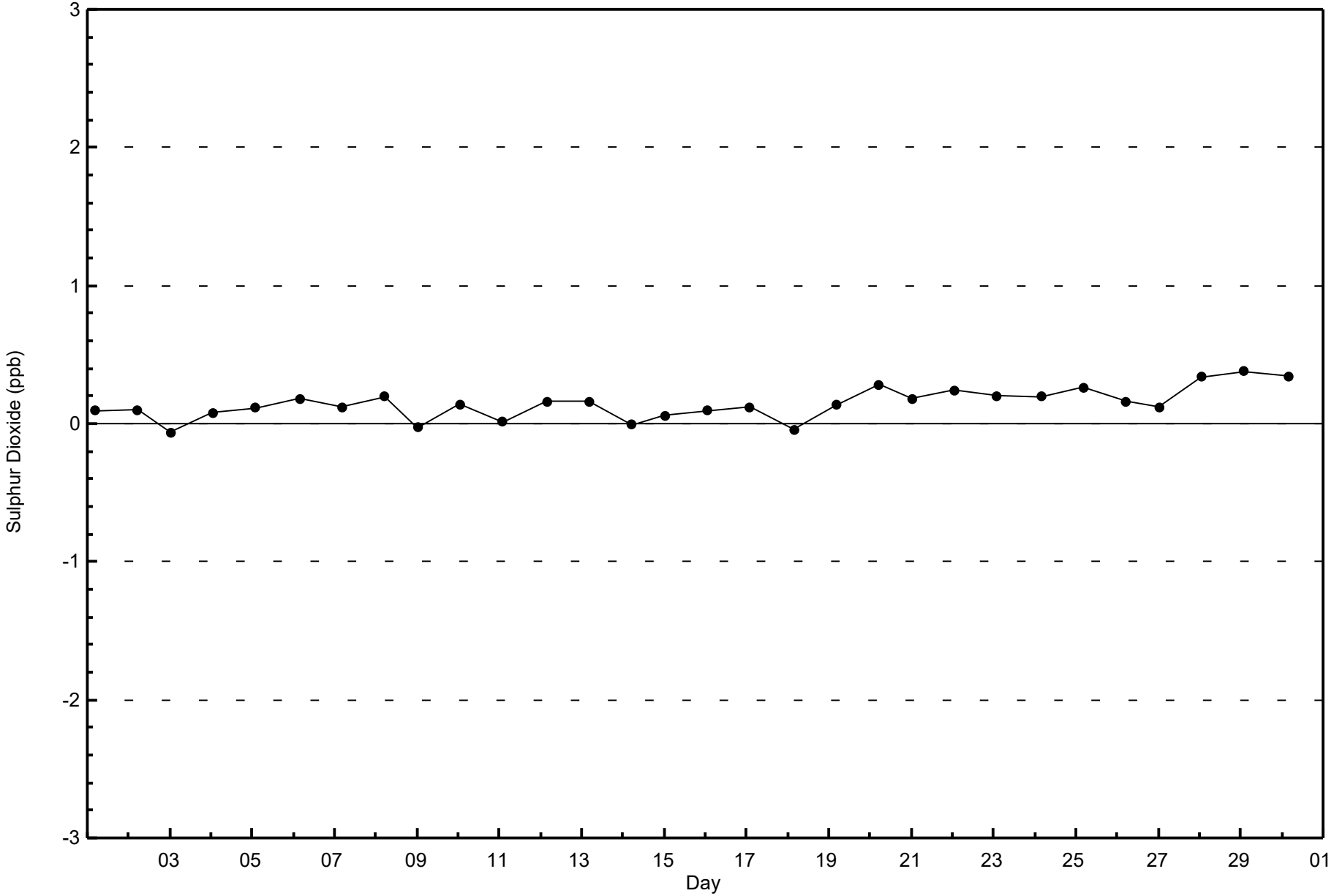
Total Number of Valid Hours: 684

Wood Buffalo Environmental Association

Zero Responses

Sulphur Dioxide (SO_2) - ppb

Jackfish 2/3 - September 2024



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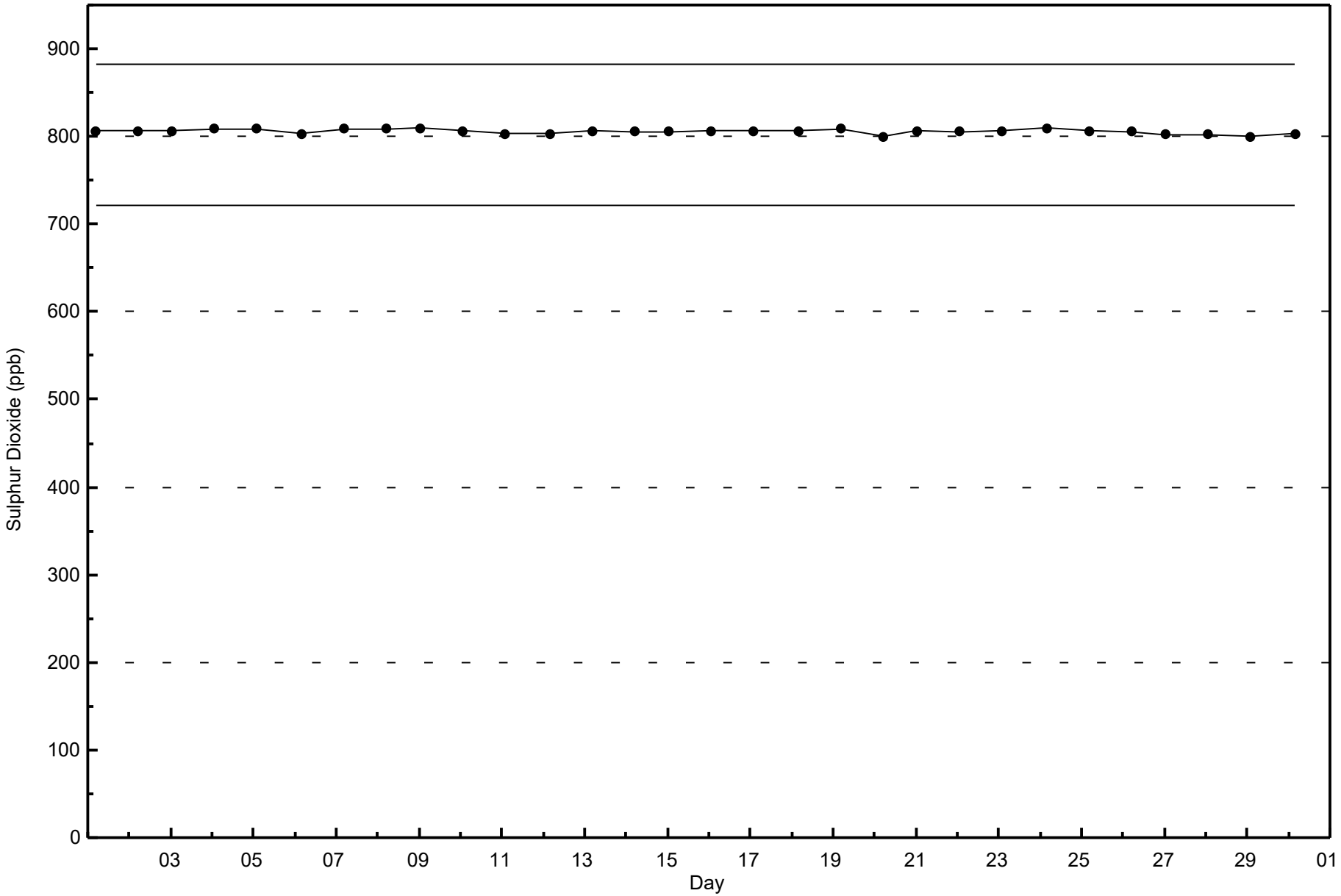
Span Responses

Sulphur Dioxide (SO_2) - ppb

Jackfish 2/3 - September 2024



Wood Buffalo Environmental Association

Summary of Hour Averages

Hydrogen Sulphide (H2S) - ppb

Jackfish 2/3 - September 2024

Number of Exceedences (AAAQO): 1-hr: 0 24-hr: 0

Maximum Value: 1.8 ppb on Sep 11 08:00 Maximum Daily Average: 0.5 ppb on Sep 9

Minimum Value: 0.0 ppb on Sep 13 09:00 Minimum Daily Average: 0.1 ppb on Sep 28

Maximum Diurnal Average: 0.4 ppb at hour 8 Minimum Diurnal Average: 0.2 ppb at hour 14

Monthly Average: 0.27 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} = 1.0

Hours in Service:	720
Hours of Data:	685
Hours of Missing Data:	35
Hours of Calibration:	35
Percent Operational Time:	100.0

Day	Hourly Period Ending At (MST)																								Daily	Daily
	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24	Average	Maximum
1-Sep	0.2	0.2	0.3	0.3	0.3	Z	0.4	0.3	0.3	0.3	0.3	0.3	0.3	0.3	0.3	0.3	0.3	0.3	0.4	0.4	0.4	0.3	0.3	0.3	0.3	0.4
2-Sep	Z	0.4	0.3	0.3	0.3	0.3	0.4	0.4	0.3	0.2	0.2	0.3	0.2	0.2	0.3	0.2	0.4	0.6	0.3	0.6	0.6	0.3	0.2	0.2	0.3	0.6
3-Sep	0.2	Z	0.4	0.4	0.2	0.0	0.2	0.2	0.2	0.1	0.2	0.3	0.2	0.2	0.2	0.3	0.3	0.3	0.3	0.3	0.4	0.4	0.3	0.3	0.3	0.4
4-Sep	0.3	0.4	Z	0.6	0.5	0.6	0.5	0.3	0.2	0.3	0.2	0.2	0.2	0.3	0.1	0.3	0.4	0.4	0.2	0.4	0.2	0.1	0.3	0.3	0.3	0.6
5-Sep	0.3	0.3	0.2	Z	0.3	0.7	0.4	0.2	0.1	0.2	0.3	0.4	0.3	0.2	0.2	0.2	0.2	0.2	0.2	0.2	0.2	0.2	0.3	0.3	0.3	0.7
6-Sep	0.3	0.3	0.3	0.3	Z	0.4	0.6	0.5	0.5	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	0.5	0.3	0.4	0.6
7-Sep	0.4	0.4	0.5	0.5	0.4	Z	0.3	0.4	0.3	0.3	0.2	0.2	0.1	0.2	0.2	0.2	0.2	0.2	0.2	0.2	0.2	0.3	0.2	0.2	0.3	0.5
8-Sep	Z	0.3	0.2	0.3	0.2	0.3	0.5	0.9	0.4	0.3	0.3	0.2	0.2	0.2	0.2	0.2	0.3	0.3	0.3	0.4	0.3	0.3	0.3	0.4	0.3	0.9
9-Sep	0.3	Z	0.5	0.5	0.5	0.6	0.6	0.7	0.7	0.6	0.4	0.5	0.4	0.3	0.3	0.4	0.3	0.3	0.3	0.3	0.3	0.8	0.6	0.3	0.5	0.8
10-Sep	0.5	0.3	Z	0.4	0.2	0.3	0.3	0.3	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	0.7	0.4	0.6	0.3	0.7
11-Sep	0.3	0.2	0.2	Z	0.3	0.5	0.4	1.8	0.2	0.2	0.3	0.2	0.2	0.2	0.2	0.2	0.2	0.2	0.2	0.4	0.4	0.4	0.6	0.2	0.3	1.8
12-Sep	0.2	0.2	0.3	0.2	Z	0.2	0.3	0.2	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	0.3
13-Sep	0.2	0.2	0.2	0.2	0.2	Z	0.3	0.3	0.0	0.2	0.3	0.3	0.3	0.3	0.3	0.3	0.3	0.3	0.3	0.3	0.8	0.9	0.4	0.4	0.3	0.9
14-Sep	Z	0.4	0.2	0.2	0.0	0.3	0.7	0.4	0.4	0.2	0.2	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	0.7
15-Sep	0.2	Z	0.2	0.2	0.2	0.2	0.3	0.4	0.4	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	0.2	0.2	0.4
16-Sep	0.2	0.2	Z	0.3	0.3	0.3	0.2	0.3	0.2	0.2	0.3	0.3	0.3	0.3	0.2	0.2	0.2	0.3	0.3	0.2	0.3	0.2	0.2	0.2	0.2	0.3
17-Sep	0.2	0.2	0.2	Z	0.1	0.2	0.2	0.2	0.2	0.2	0.2	0.1	0.1	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
18-Sep	0.2	0.3	0.2	0.2	Z	0.2	0.2	0.2	0.2	0.2	C	C	C	C	C	0.5	0.2	0.2	0.1	0.2	0.1	0.1	0.2	0.2	0.2	0.5
19-Sep	0.1	0.4	0.7	0.3	0.2	Z	0.2	0.2	0.2	0.4	0.3	0.2	0.2	0.2	0.2	0.1	0.1	0.1	0.1	0.2	0.3	0.8	1.1	0.5	0.3	1.1
20-Sep	Z	0.8	1.0	1.6	1.0	0.3	0.4	0.6	0.6	0.4	0.2	0.2	0.3	0.2	0.2	0.2	0.2	0.2	0.3	0.6	0.2	0.2	0.2	0.2	0.4	1.6
21-Sep	0.1	Z	0.5	1.0	1.1	0.5	0.9	0.4	0.2	0.1	0.1	0.0	0.0	0.1	0.0	0.1	0.0	0.1	0.1	0.1	0.1	0.2	0.2	0.0	0.3	1.1
22-Sep	0.1	0.2	Z	0.2	0.2	0.1	0.1	0.2	0.3	0.3	0.3	0.3	0.2	0.2	0.2	0.2	0.2	0.2	0.3	0.2	0.2	0.2	0.3	0.3	0.2	0.3
23-Sep	0.4	0.3	0.3	Z	0.3	0.2	0.2	0.2	0.2	0.1	0.1	0.0	0.1	0.1	0.1	0.1	0.0	0.1	0.2	0.1	0.1	0.1	0.1	0.1	0.2	0.4
24-Sep	0.1	0.1	0.2	0.2	Z	0.2	0.2	0.2	0.2	0.1	0.1	0.1	0.2	0.1	0.1	0.2	0.1	0.2	0.2	0.1	0.1	0.1	0.1	0.2	0.2	0.2
25-Sep	0.1	0.1	0.2	0.2	0.2	Z	0.3	0.3	0.3	0.3	0.4	0.4	0.4	0.3	0.4	0.3	0.3	0.2	0.3	0.3	0.3	0.2	0.3	0.3	0.3	0.4
26-Sep	Z	0.2	0.3	0.3	0.3	0.4	0.5	0.3	0.2	0.3	0.3	0.2	0.2	0.2	0.2	0.2	0.1	0.2	0.1	0.2	0.2	0.2	0.2	0.2	0.2	0.5
27-Sep	0.2	Z	0.3	0.4	0.4	0.5	0.4	1.0	0.5	0.3	0.4	0.4	0.4	0.4	0.4	0.3	0.3	0.4	0.4	0.3	0.3	0.2	0.3	0.3	0.4	1.0
28-Sep	0.3	0.3	Z	0.2	0.1	0.2	0.1	0.0	0.1	0.1	0.1	0.1	0.1	0.1	0.0	0.0	0.1	0.0	0.0	0.1	0.1	0.0	0.1	0.2	0.1	0.3
29-Sep	0.2	0.5	0.3	Z	0.3	0.2	0.2	0.3	0.3	0.2	0.3	0.3	0.3	0.3	0.3	0.3	0.3	0.2	0.2	0.3	0.3	0.3	0.2	0.2	0.3	0.5
30-Sep	0.2	0.3	0.6	0.4	Z	0.1	0.2	0.2	0.1	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	0.0	0.0	0.2	0.6
	0.2	0.3	0.3	0.4	0.3	0.3	0.3	0.4	0.3	0.3	0.3	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	Diurnal Average	
	0.5	0.8	1.0	1.6	1.1	0.7	0.9	1.8	0.7	0.6	0.4	0.5	0.4	0.4	0.4	0.5	0.4	0.6	0.4	0.6	0.8	0.9	1.1	0.6	Diurnal Maximum	

Z - zerospan C - Calibration

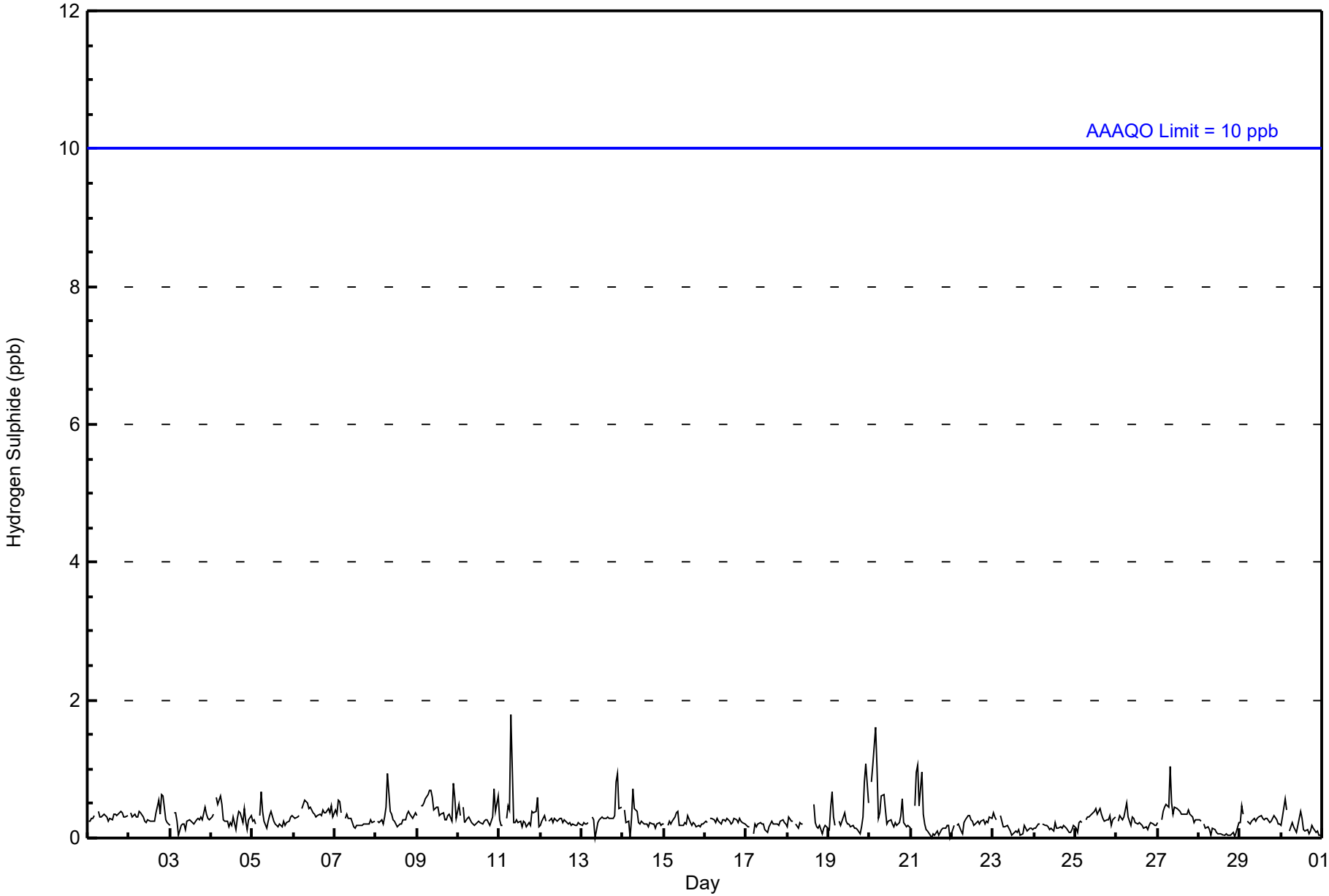
Alberta Ambient Air Quality Objectives (AAAQO): 1-hr 10 ppb 24-hr 3 ppb

Wood Buffalo Environmental Association

Hourly Averages

Hydrogen Sulphide (H2S) - ppb

Jackfish 2/3 - September 2024



Concentration Ranges (ppb)	Number of Hours	%	Cumulative %
0 - 2	685	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: 685

Total Number of Hours: 720

Wood Buffalo Environmental Association

Frequency Distribution

Hydrogen Sulphide (H2S) - ppb

Jackfish 2/3 - September 2024

Concentration Ranges (ppb)	Wind Direction																
	N	NNE	NE	ENE	E	ESE	SE	SSE	S	SSW	SW	WSW	W	WNW	NW	NNW	**Totals**
0 - 2	9	29	24	27	10	7	14	12	22	96	77	132	100	74	33	19	685
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	9	29	24	27	10	7	14	12	22	96	77	132	100	74	33	19	685

Total Number of Valid Hours: 685

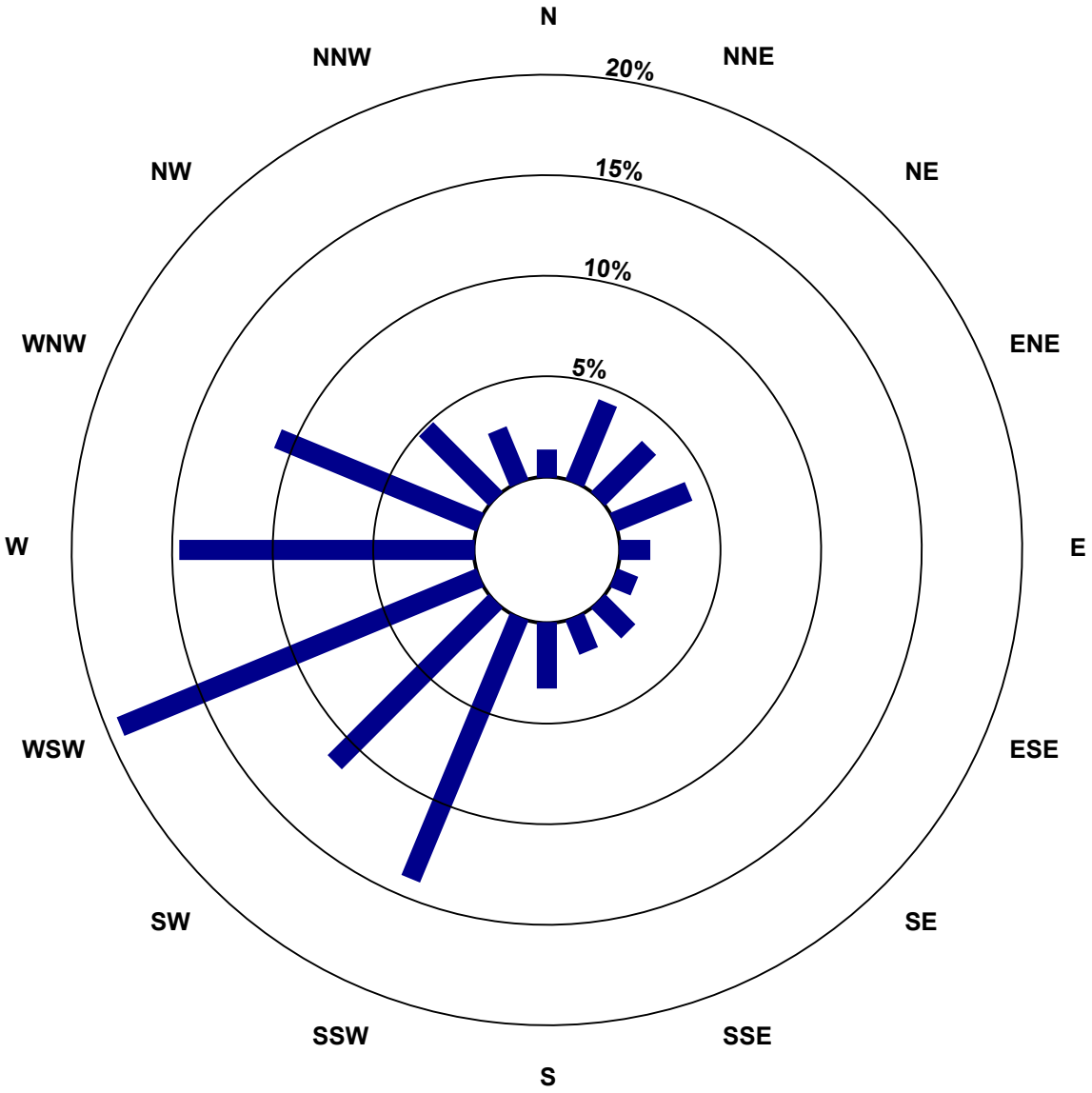
Total Number of Hours: 720

Wood Buffalo Environmental Association

Wind Rose Sep 2024

Hydrogen Sulphide (H2S) - ppb

Jackfish 2/3



Classes (ppb)

0 - 2

3 - 4

5 - 7

8 - 11

> 11

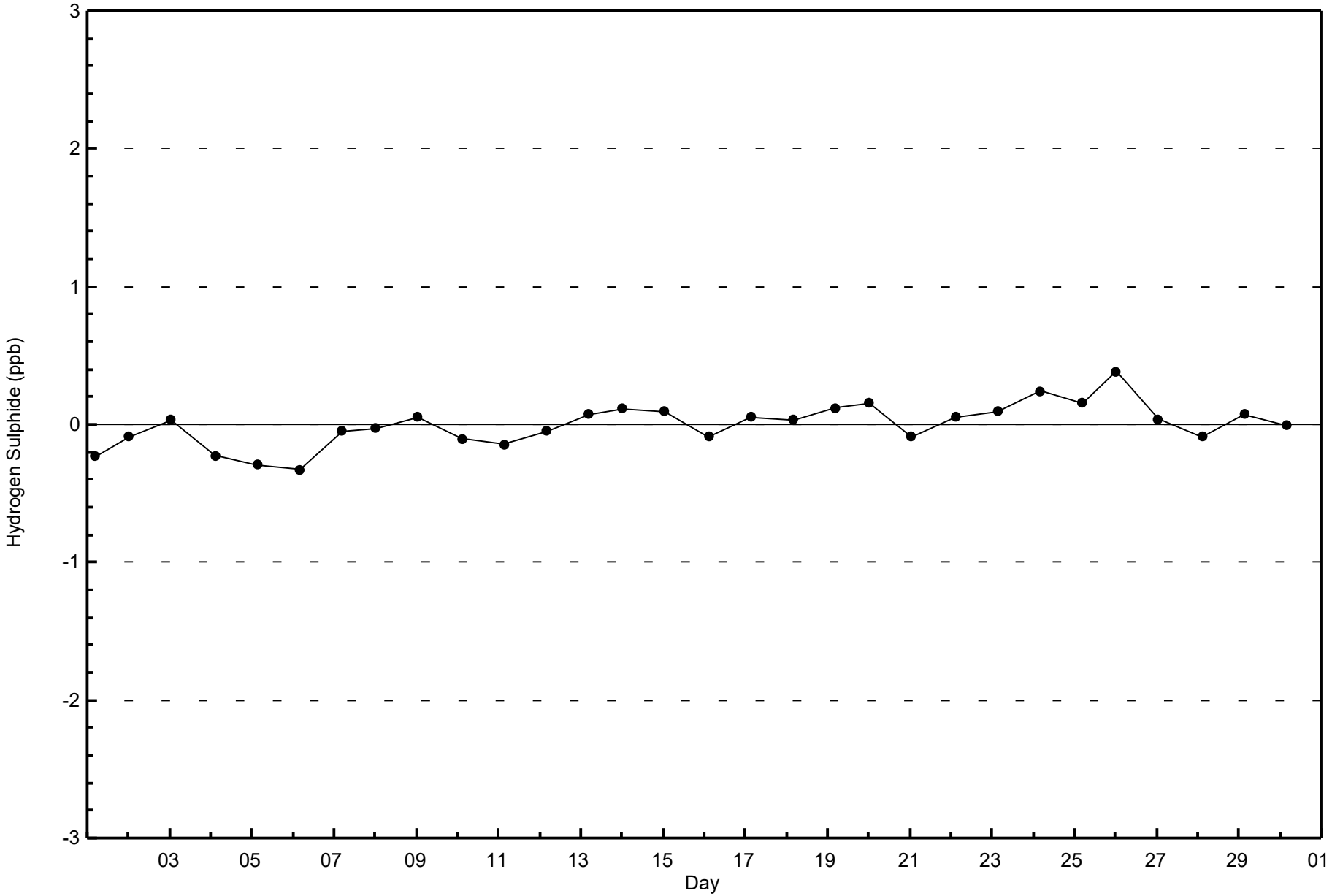
Total Number of Valid Hours: 685

Wood Buffalo Environmental Association

Zero Responses

Hydrogen Sulphide (H2S) - ppb

Jackfish 2/3 - September 2024



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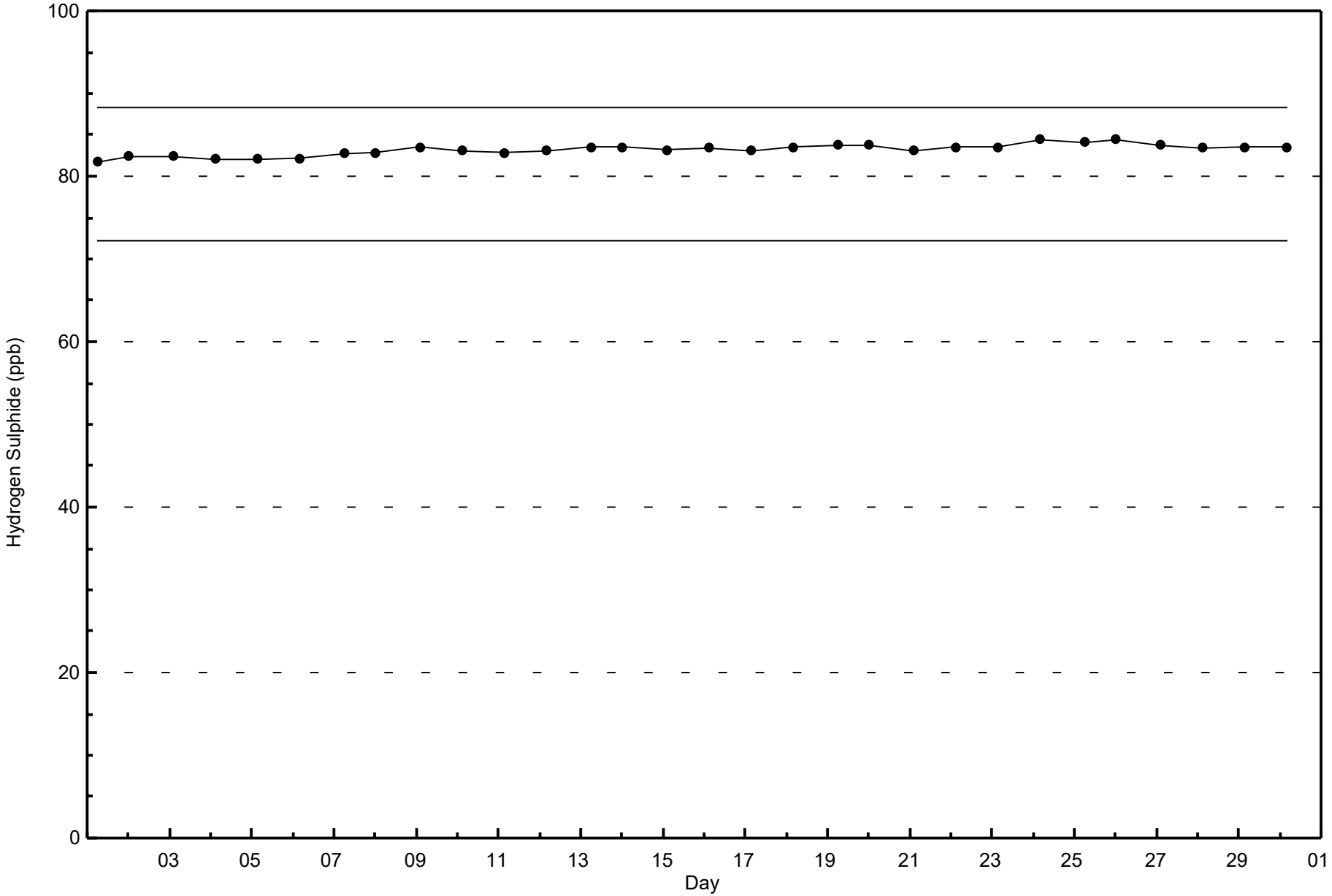
Span Responses

Hydrogen Sulphide (H2S) - ppb

Jackfish 2/3 - September 2024



Wood Buffalo Environmental Association

Summary of Hour Averages

Nitric Oxide (NO) - ppb

Jackfish 2/3 - September 2024

Maximum Value: 4.4 ppb on Sep 21 08:00

Maximum Daily Average: 0.3 ppb on Sep 30

Minimum Value: 0.0 ppb on Sep 1 01:00

Minimum Daily Average: 0.0 ppb on Sep 3

Maximum Diurnal Average: 0.3 ppb at hour 6

Minimum Diurnal Average: 0.0 ppb at hour 1

Monthly Average: 0.06 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} = 1.2

Hours in Service:	720
Hours of Data:	682
Hours of Missing Data:	38
Hours of Calibration:	36
Percent Operational Time:	99.7

Day	Hourly Period Ending At (MST)																								Daily	Daily
	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24	Average	Maximum
1-Sep	0.0	0.0	Z	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	0.0	0.0	0.0	0.0	0.0	0.1
2-Sep	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
3-Sep	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
4-Sep	0.0	0.0	0.0	0.0	0.0	Z	0.0	0.2	0.0	0.0	0.0	0.1	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	0.2
5-Sep	Z	0.0	0.0	0.0	0.0	0.0	0.0	0.2	0.0	0.0	1.7	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	0.1	1.7
6-Sep	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	0.0	0.0	0.0	0.0	0.0	0.1
7-Sep	0.0	0.0	Z	0.0	0.0	1.3	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	0.1	1.3
8-Sep	0.0	0.0	0.0	Z	0.0	0.7	0.0	0.1	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	0.2	3.0
9-Sep	0.0	0.0	0.0	0.0	Z	0.0	0.0	0.0	0.0	0.0	0.0	0.3	0.3	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.2	0.0	0.0	0.0	0.3
10-Sep	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	0.0	0.0	0.0	0.1
11-Sep	Z	0.0	0.0	0.0	0.0	1.2	1.4	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	0.0	0.0	0.0	0.1	1.4
12-Sep	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
13-Sep	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	0.0	0.0	0.2	0.0	0.0	0.0	0.0	0.2
14-Sep	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
15-Sep	0.0	0.0	0.0	0.0	Z	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	0.3
16-Sep	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
17-Sep	Z	0.0	0.0	0.0	0.0	0.1	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	0.2
18-Sep	0.0	Z	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.6	0.2	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	0.6
19-Sep	0.0	0.0	Z	0.0	0.0	2.8	0.0	0.0	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	0.1	2.8
20-Sep	0.0	0.0	0.0	Z	0.0	0.7	0.0	0.4	0.4	0.0	0.0	0.0	0.1	0.6	0.1	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.1	0.7
21-Sep	0.0	0.0	0.0	0.0	Z	0.9	0.1	4.4	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	0.0	0.3	4.4
22-Sep	0.0	0.0	0.0	0.0	0.0	Z	0.0	0.0	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	0.0	0.0	0.2
23-Sep	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
24-Sep	0.0	Z	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	0.0	0.0	0.0	0.0	0.0	0.0	0.3
25-Sep	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
26-Sep	0.0	0.0	0.0	Z	0.0	0.0	0.0	0.0	0.0	0.0	C	C	C	C	C	C	0.5	0.0	0.0	0.0	0.0	0.0	0.0	0.0	--	0.5
27-Sep	0.0	0.0	0.0	0.0	Z	0.0	0.0	0.1	0.3	0.0	0.3	0.3	0.2	0.0	0.0	0.1	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.1	0.3
28-Sep	0.0	0.0	0.0	0.0	0.0	Z	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	0.1
29-Sep	Z	0.0	0.0	0.1	0.0	0.0	0.0	0.0	0.1	0.0	0.0	0.0	0.2	0.1	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.2
30-Sep	0.0	Z	0.9	1.2	0.4	0.1	0.1	0.0	0.4	0.0	0.8	1.2	1.1	0.5	0.5	0.3	0.0	0.0	0.2	0.0	0.0	0.0	0.0	0.0	0.3	1.2
	0.0	0.0	0.0	0.1	0.0	0.3	0.1	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	0.0	0.0	0.0	Diurnal Average	
	0.0	0.0	0.9	1.2	0.4	2.8	1.4	4.4	3.0	0.6	1.7	1.2	1.1	0.6	0.5	0.3	0.5	0.1	0.2	0.0	0.2	0.2	0.0	0.0	Diurnal Maximum	

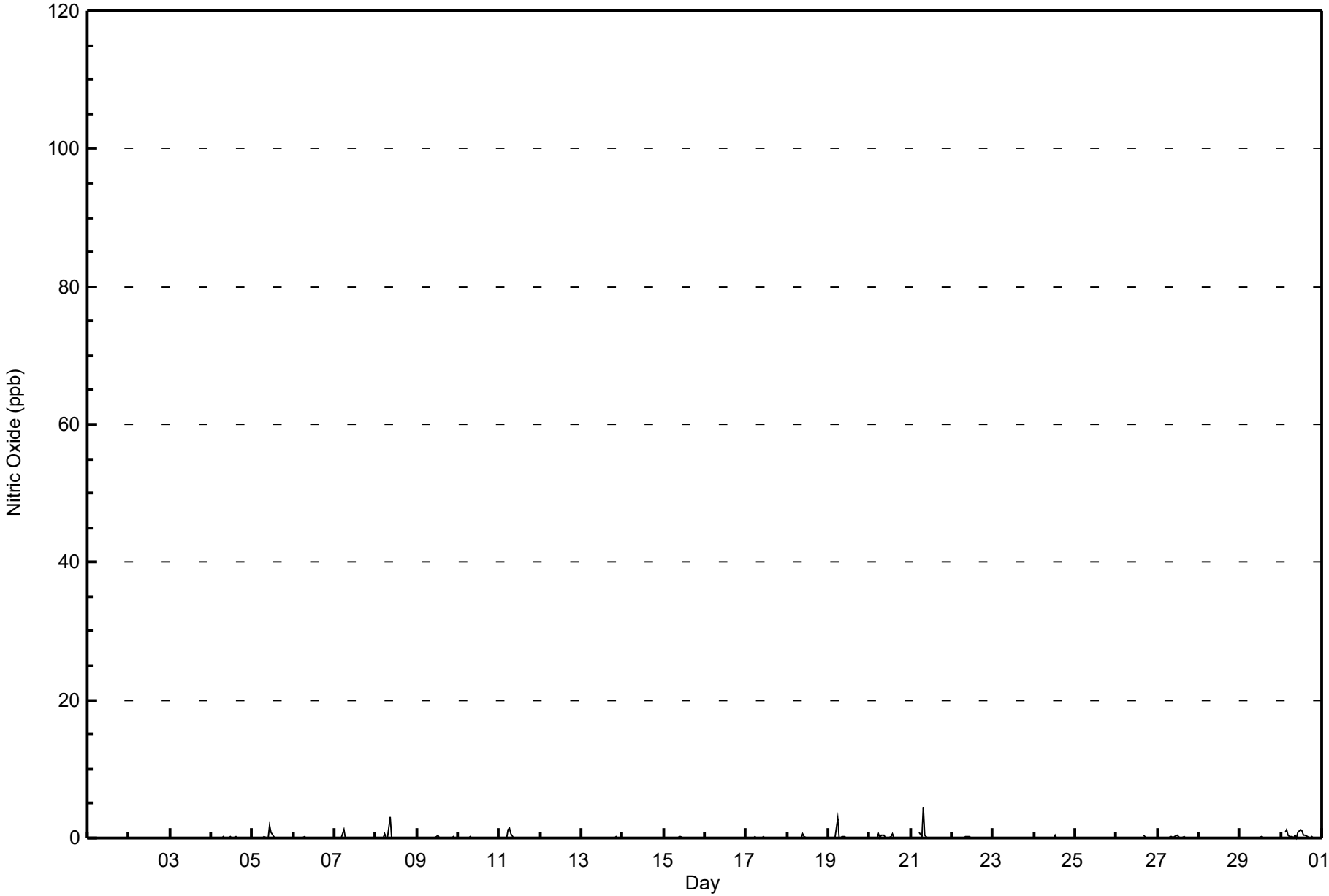
Z - zerospan C - Calibration M - Maintenance

Wood Buffalo Environmental Association

Hourly Averages

Nitric Oxide (NO) - ppb

Jackfish 2/3 - September 2024



Concentration Ranges (ppb)	Number of Hours	%	Cumulative %
0 - 20	682	100.00	100.00
21 - 40	0	0.00	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: 682

Total Number of Hours: 720

Wood Buffalo Environmental Association

Frequency Distribution

Nitric Oxide (NO) - ppb

Jackfish 2/3 - September 2024

Concentration Ranges (ppb)	Wind Direction																
	N	NNE	NE	ENE	E	ESE	SE	SSE	S	SSW	SW	WSW	W	WNW	NW	NNW	**Totals**
0 - 20	9	29	24	27	10	7	13	13	23	97	76	129	100	71	33	21	682
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	9	29	24	27	10	7	13	13	23	97	76	129	100	71	33	21	682

Total Number of Valid Hours: 682

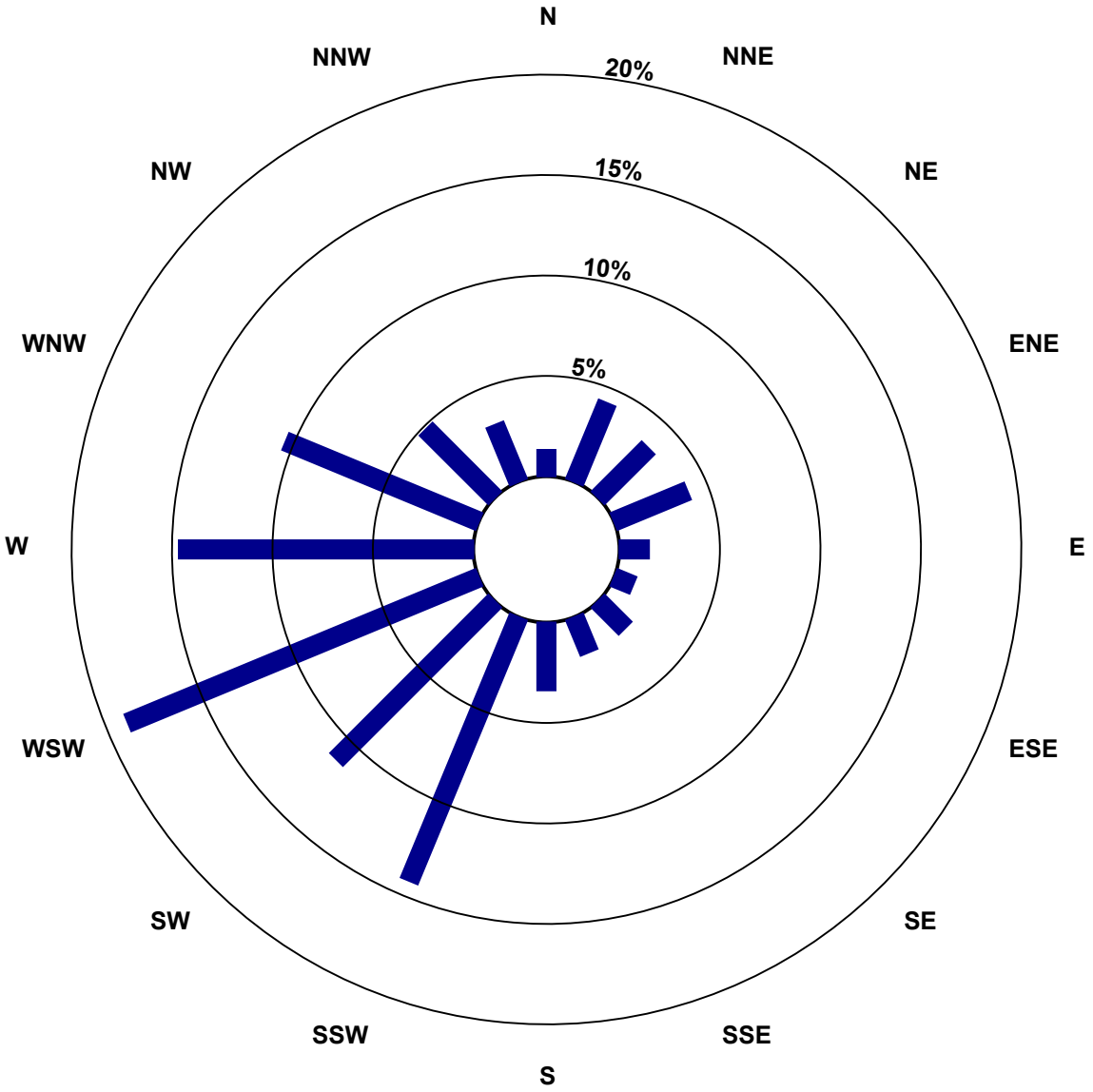
Total Number of Hours: 720

Wood Buffalo Environmental Association

Wind Rose Sep 2024

Nitric Oxide (NO) - ppb

Jackfish 2/3



Classes (ppb)

0 - 20

21 - 40

11 - 80

81 - 159

> 159

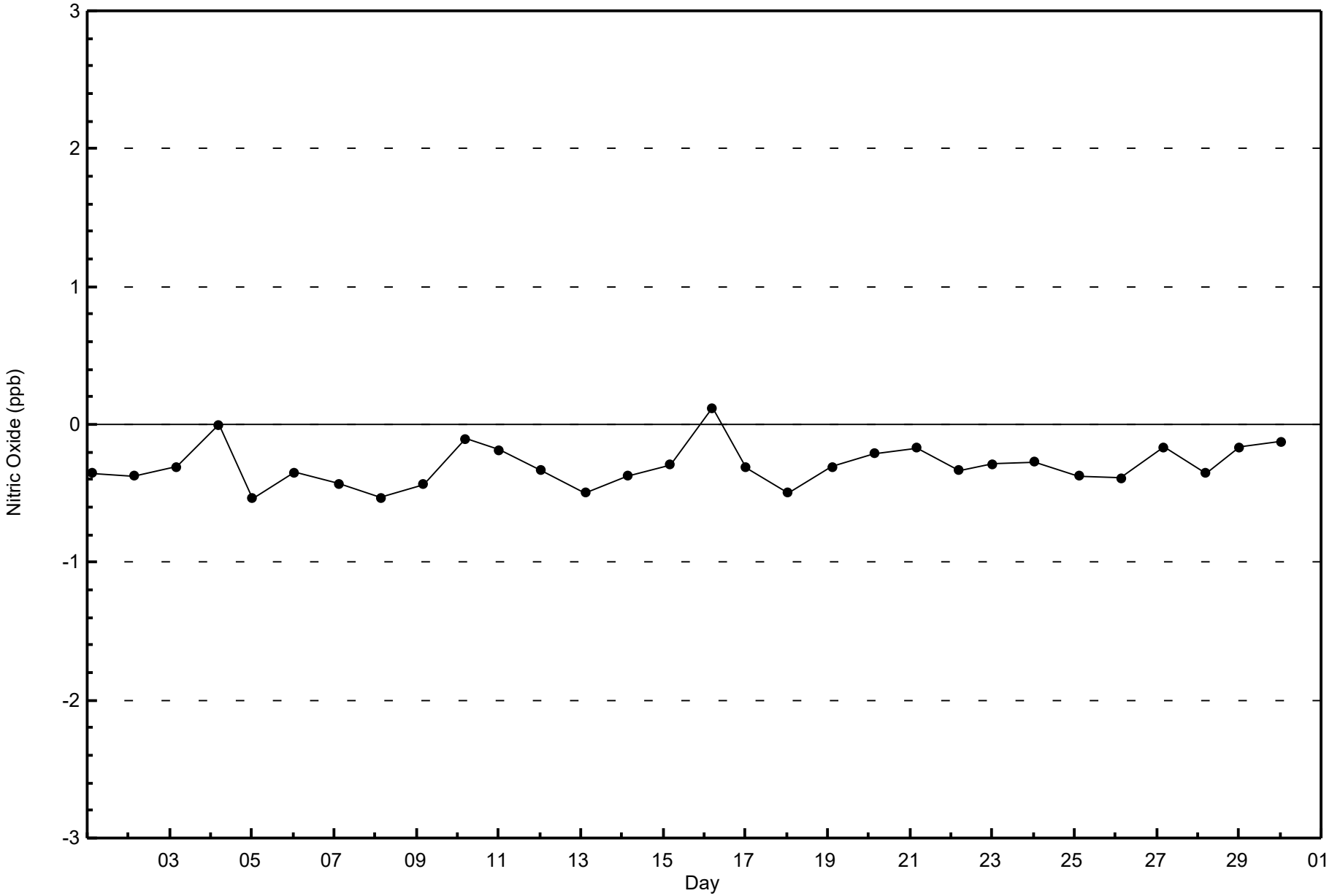
Total Number of Valid Hours: 682

Wood Buffalo Environmental Association

Zero Responses

Nitric Oxide (NO) - ppb

Jackfish 2/3 - September 2024

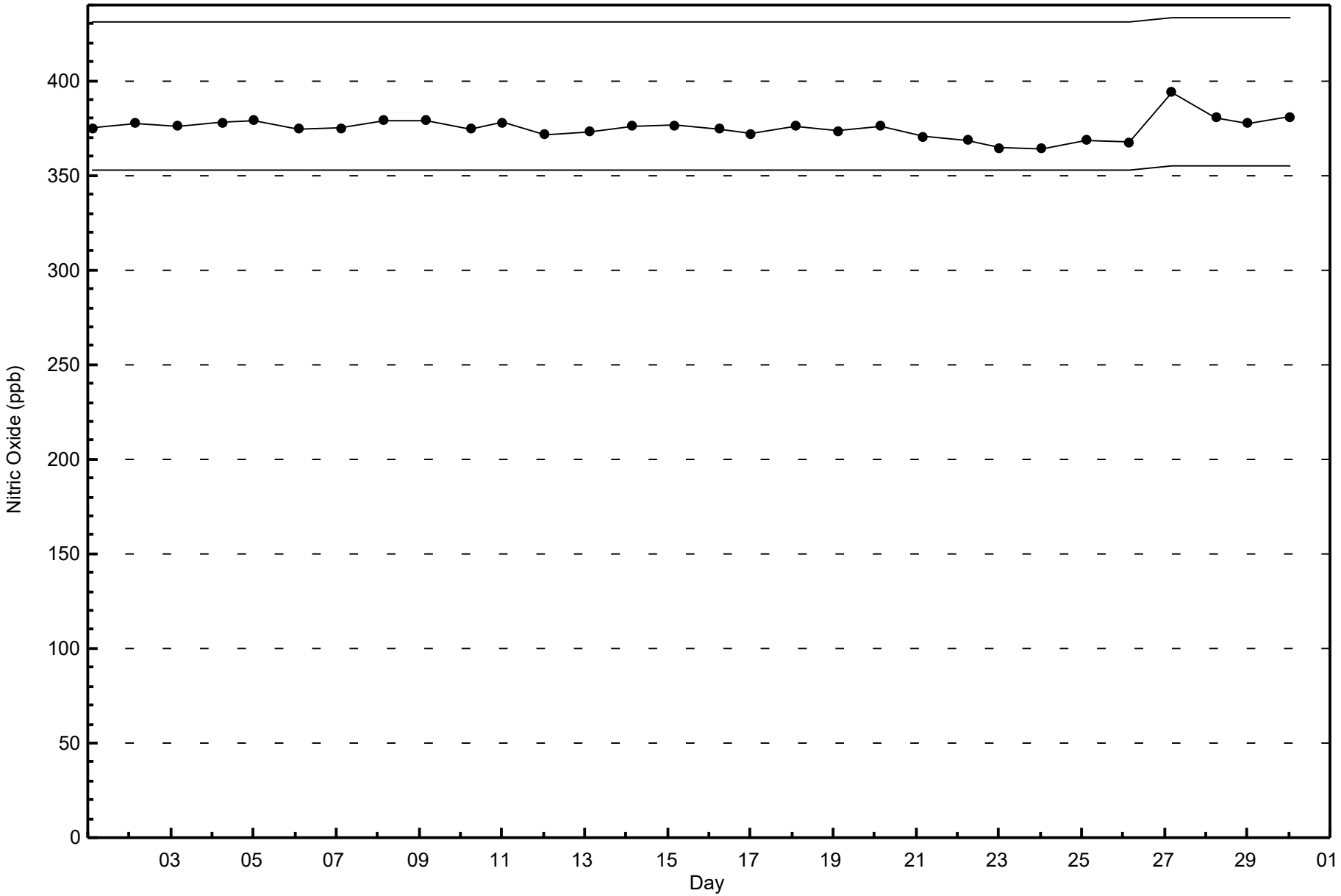


Wood Buffalo Environmental Association

Span Responses

Nitric Oxide (NO) - ppb

Jackfish 2/3 - September 2024



Wood Buffalo Environmental Association

Summary of Hour Averages

Nitrogen Dioxide (NO_2) - ppb

Jackfish 2/3 - September 2024

Number of Exceedences (AAAQO): 1-hr: 0 24-hr: 0
Maximum Value: 5.4 ppb on Sep 13 21:00 Maximum Daily Average: 1.3 ppb on Sep 13

Minimum Value: 0.0 ppb on Sep 1 01:00
Maximum Diurnal Average: 1.0 ppb at hour 6
Monthly Average: 0.40 ppb

Minimum Daily Average: 0.0 ppb on Sep 10
Minimum Diurnal Average: 0.1 ppb at hour 19
Percentiles: P_1 = 0.0 P_{10} = 0.0 Q_1 = 0.0 Median = 0.0 Q_3 = 0.6 P_{90} = 1.3 P_{99} = 2.9

Hours in Service:	720
Hours of Data:	682
Hours of Missing Data:	38
Hours of Calibration:	36
Percent Operational Time:	99.7

Day	Hourly Period Ending At (MST)																								Daily	Daily
	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24	Average	Maximum
1-Sep	0.0	0.1	Z	2.1	1.3	1.5	1.2	1.0	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	0.3	2.1
2-Sep	0.0	0.0	0.0	Z	0.2	0.4	0.3	0.6	0.8	0.4	0.2	0.1	0.0	0.0	0.0	0.1	0.0	0.0	0.0	0.0	1.3	0.0	0.0	0.0	0.2	1.3
3-Sep	0.0	0.0	0.2	1.0	Z	0.6	0.0	0.0	0.0	0.0	0.1	0.1	0.3	0.0	0.1	0.0	0.0	0.0	0.0	0.0	0.2	0.3	0.7	0.3	0.2	1.0
4-Sep	0.3	0.8	1.0	0.8	2.4	Z	0.2	0.0	0.0	0.0	0.1	0.5	0.0	0.7	0.5	0.7	1.2	1.5	0.0	0.0	0.0	0.0	0.0	0.0	0.5	2.4
5-Sep	Z	0.0	0.0	0.3	0.3	0.4	0.1	1.0	0.4	0.4	3.1	2.4	0.8	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	1.3	2.6	0.6	3.1
6-Sep	2.9	Z	0.7	0.4	0.7	1.4	3.1	1.9	0.9	0.7	0.3	0.7	0.6	0.3	0.4	0.7	0.1	0.4	0.1	0.3	0.2	0.5	0.4	0.3	0.8	3.1
7-Sep	0.6	0.7	Z	1.2	1.0	2.9	1.6	1.4	1.3	0.5	1.1	1.2	0.8	1.0	0.4	0.2	0.2	0.2	0.0	0.0	0.0	0.0	0.0	0.0	0.7	2.9
8-Sep	0.0	0.0	0.0	Z	0.6	2.2	2.6	1.9	2.7	1.3	1.1	1.8	0.0	0.0	0.3	0.1	0.8	0.4	0.7	0.6	0.7	0.7	0.9	1.3	0.9	2.7
9-Sep	1.2	1.3	1.4	2.6	Z	1.7	1.6	2.0	1.5	1.1	1.1	1.0	1.8	1.2	0.0	0.3	0.0	0.0	0.0	1.7	0.0	2.6	2.6	0.0	1.2	2.6
10-Sep	0.0	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	0.0	0.0	0.0	0.0	0.0	0.2
11-Sep	Z	0.0	0.0	0.0	0.0	1.4	3.1	3.4	0.6	0.0	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	0.4	3.4
12-Sep	0.0	Z	0.5	0.2	0.6	0.7	1.2	0.7	1.4	0.7	0.2	1.3	0.9	0.9	1.0	0.4	0.2	0.2	0.0	0.0	0.0	0.0	0.0	0.1	0.5	1.4
13-Sep	0.0	0.0	Z	0.0	0.0	0.0	0.4	0.2	1.0	0.9	0.7	0.6	1.5	1.1	1.0	1.8	1.4	1.9	2.3	2.9	5.4	3.7	1.9	0.7	1.3	5.4
14-Sep	0.7	0.0	0.0	Z	0.2	0.6	0.1	0.1	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	0.2	0.7	0.5	0.2	0.7
15-Sep	0.3	0.0	0.7	0.9	Z	0.0	0.8	1.2	1.1	1.1	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	0.0	0.3	1.2
16-Sep	0.0	0.0	0.0	0.0	0.0	Z	0.1	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	0.2
17-Sep	Z	0.0	0.0	0.0	0.0	0.2	0.0	0.0	0.0	0.0	1.0	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	1.0
18-Sep	0.0	Z	0.3	0.2	0.2	0.4	1.0	1.5	1.3	2.9	2.7	0.4	M	M	0.3	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.5	2.9
19-Sep	0.0	0.0	Z	0.0	0.1	2.3	0.0	0.0	0.4	1.1	0.9	0.7	0.0	0.0	0.4	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.3	2.3
20-Sep	0.0	0.0	0.0	Z	0.0	0.7	0.1	2.9	3.5	0.6	0.5	0.9	1.5	2.3	0.6	0.3	0.0	0.0	0.0	2.2	0.3	0.0	0.0	0.0	0.7	3.5
21-Sep	0.0	0.0	0.0	0.0	Z	2.2	0.9	2.3	0.5	0.2	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.3	2.3
22-Sep	0.0	0.2	0.5	0.7	1.3	Z	0.9	0.5	0.8	0.7	0.5	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	0.3	1.3
23-Sep	Z	0.0	0.0	0.0	0.0	0.1	0.0	0.0	0.0	0.1	0.0	0.0	0.0	0.0	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-Sep	0.0	Z	0.2	0.2	0.2	0.1	0.2	0.0	0.0	0.0	0.0	0.3	1.1	0.0	0.2	0.6	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.1	1.1
25-Sep	0.0	0.0	Z	0.3	0.0	0.0	0.0	0.0	0.0	0.2	0.3	0.3	0.6	0.3	1.0	0.3	1.1	0.0	0.0	0.0	0.0	0.3	0.0	0.0	0.2	1.1
26-Sep	0.0	0.0	0.0	Z	0.0	2.0	1.1	0.9	0.0	1.0	C	C	C	C	C	C	0.0	0.0	0.0	0.0	0.1	0.0	0.0	0.0	--	2.0
27-Sep	0.0	0.0	0.0	0.3	Z	2.7	1.1	0.6	0.8	0.2	1.0	1.0	0.7	0.0	0.6	0.6	0.2	0.0	0.6	0.0	0.0	0.0	0.0	0.0	0.5	2.7
28-Sep	0.0	0.0	0.2	0.0	0.0	Z	0.2	0.4	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.4
29-Sep	Z	1.4	0.9	1.1	0.3	0.2	0.0	0.0	0.0	0.0	0.0	0.0	0.5	0.2	0.0	0.0	0.0	0.0	0.0	0.6	0.5	1.0	0.0	0.0	0.3	1.4
30-Sep	0.0	Z	2.9	2.4	0.5	0.0	0.0	0.0	0.0	0.0	0.4	1.4	1.4	0.6	0.4	0.1	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.4	2.9
	0.2	0.2	0.4	0.6	0.4	1.0	0.7	0.8	0.7	0.5	0.6	0.5	0.5	0.3	0.2	0.2	0.2	0.2	0.1	0.3	0.3	0.3	0.3	0.2	Diurnal Average	
	2.9	1.4	2.9	2.6	2.4	2.9	3.1	3.4	3.5	2.9	3.1	2.4	1.8	2.3	1.0	1.8	1.4	1.9	2.3	2.9	5.4	3.7	2.6	2.6	Diurnal Maximum	

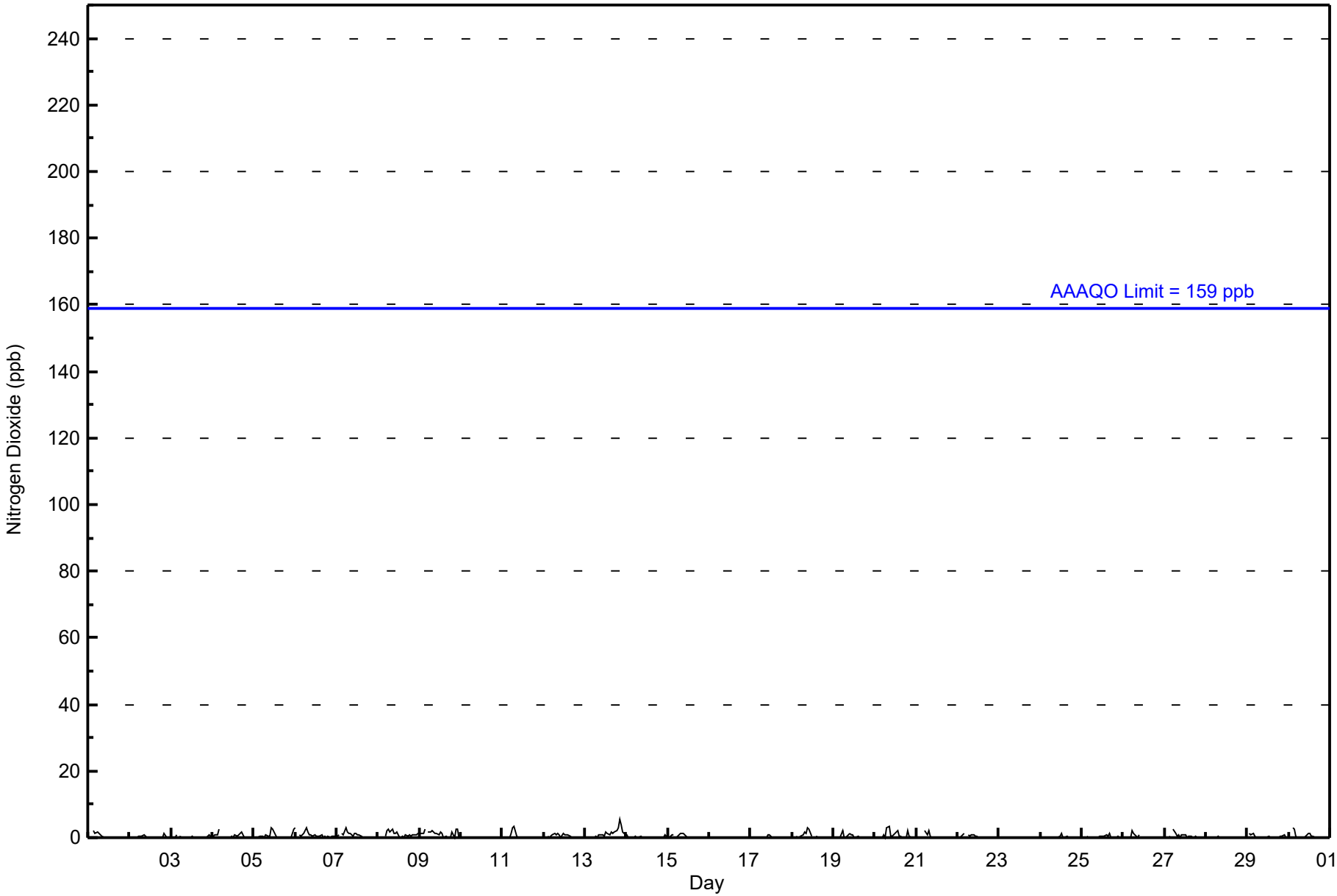
Z - zerospan C - Calibration M - Maintenance
Alberta Ambient Air Quality Objectives (AAAQO): 1-hr 159 ppb

Wood Buffalo Environmental Association

Hourly Averages

Nitrogen Dioxide (NO_2) - ppb

Jackfish 2/3 - September 2024



Nitrogen Dioxide (NO_2) - ppb
Jackfish 2/3 - September 2024

Concentration Ranges (ppb)	Number of Hours	%	Cumulative %
0 - 20	682	100.00	100.00
21 - 40	0	0.00	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: 682

Total Number of Hours: 720

Wood Buffalo Environmental Association

Frequency Distribution

Nitrogen Dioxide (NO_2) - ppb

Jackfish 2/3 - September 2024

Concentration Ranges (ppb)	Wind Direction																
	N	NNE	NE	ENE	E	ESE	SE	SSE	S	SSW	SW	WSW	W	WNW	NW	NNW	**Totals**
0 - 20	9	29	24	27	10	7	13	13	23	97	76	129	100	71	33	21	682
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	9	29	24	27	10	7	13	13	23	97	76	129	100	71	33	21	682

Total Number of Valid Hours: 682

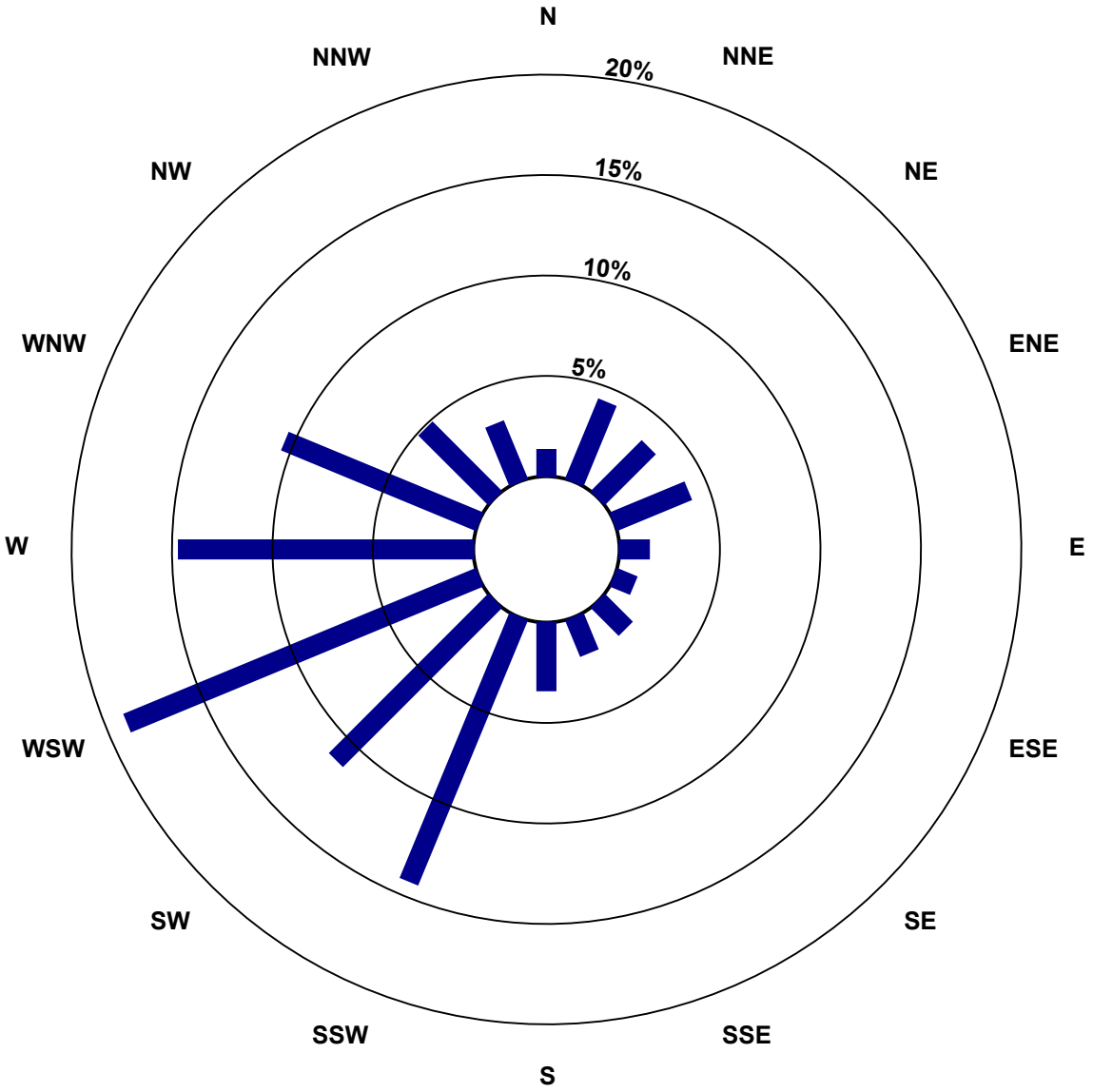
Total Number of Hours: 720

Wood Buffalo Environmental Association

Wind Rose Sep 2024

Nitrogen Dioxide (NO_2) - ppb

Jackfish 2/3



Classes (ppb)

0 - 20

21 - 40

11 - 80

81 - 159

> 159

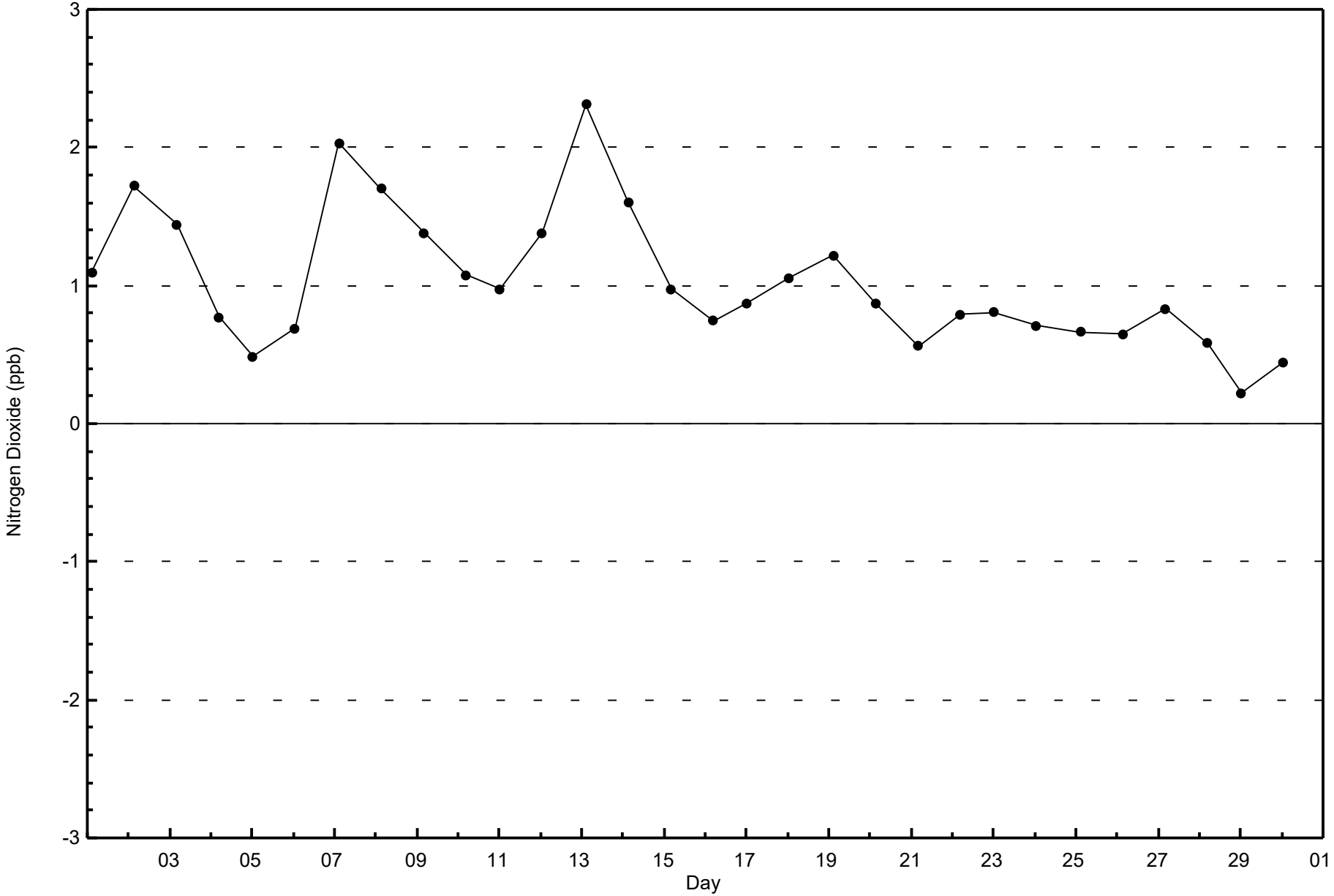
Total Number of Valid Hours: 682

Wood Buffalo Environmental Association

Zero Responses

Nitrogen Dioxide (NO_2) - ppb

Jackfish 2/3 - September 2024

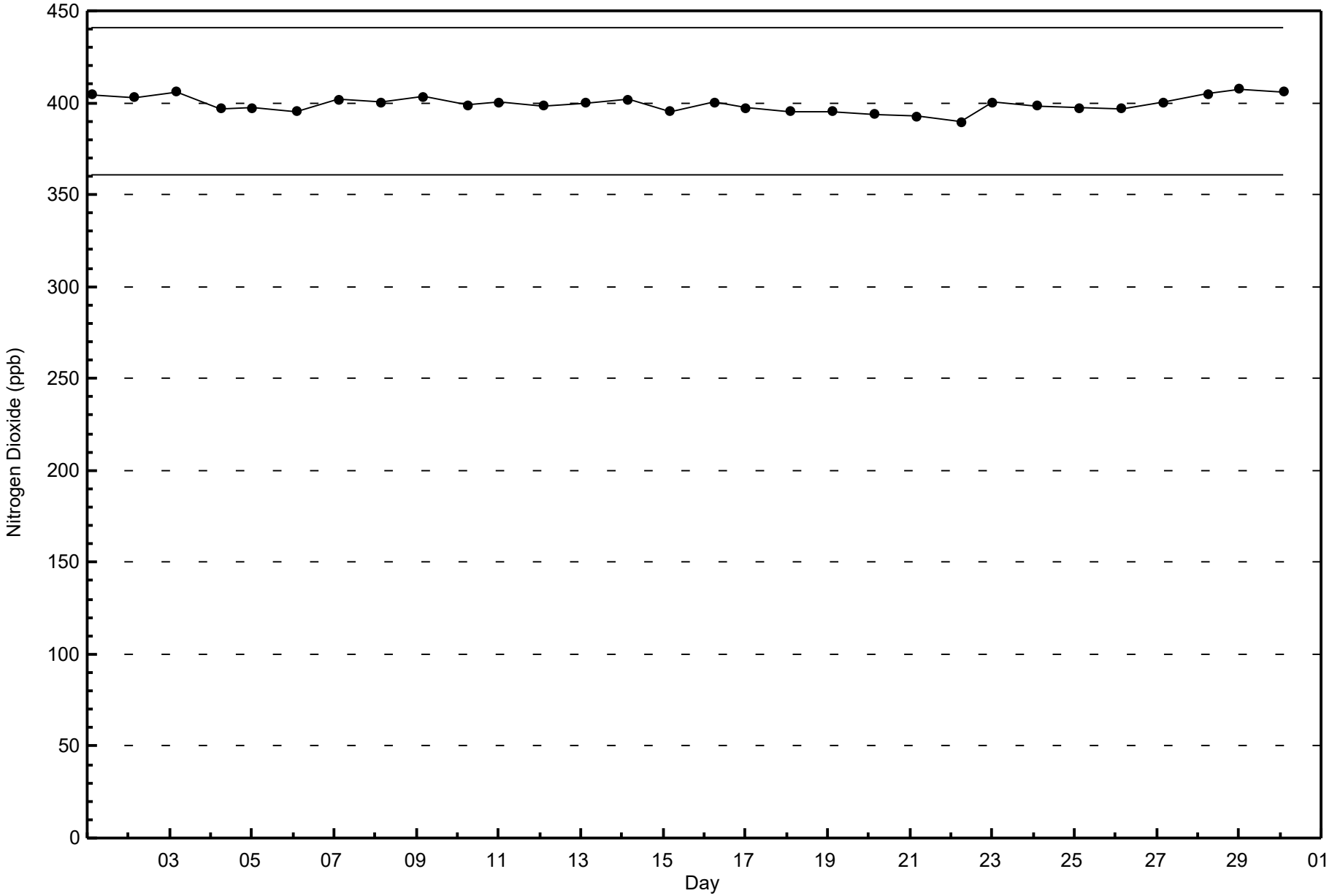


Wood Buffalo Environmental Association

Span Responses

Nitrogen Dioxide (NO_2) - ppb

Jackfish 2/3 - September 2024



Wood Buffalo Environmental Association

Summary of Hour Averages

Nitrogen Oxides (NO_X) - ppb

Jackfish 2/3 - September 2024

Maximum Value: 6.7 ppb on Sep 21 08:00

Maximum Daily Average: 1.3 ppb on Sep 13

Minimum Value: 0.0 ppb on Sep 1 01:00

Minimum Daily Average: 0.0 ppb on Sep 23

Maximum Diurnal Average: 1.3 ppb at hour 6

Minimum Diurnal Average: 0.1 ppb at hour 19

Monthly Average: 0.45 ppb

Percentiles: P_1 = 0.0 P_{10} = 0.0 Q_1 = 0.0 Median = 0.0 Q_3 = 0.6 P_{90} = 1.3 P_{99} = 4.1

Hours in Service:	720
Hours of Data:	682
Hours of Missing Data:	38
Hours of Calibration:	36
Percent Operational Time:	99.7

Day	Hourly Period Ending At (MST)																								Daily	Daily
	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24	Average	Maximum
1-Sep	0.0	0.1	Z	2.2	1.3	1.5	1.2	1.1	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	0.3	2.2
2-Sep	0.0	0.0	0.0	Z	0.2	0.4	0.3	0.6	0.8	0.4	0.2	0.1	0.0	0.0	0.0	0.1	0.0	0.0	0.0	0.0	1.3	0.0	0.0	0.0	0.2	1.3
3-Sep	0.0	0.0	0.2	1.0	Z	0.6	0.0	0.0	0.0	0.0	0.1	0.1	0.3	0.0	0.1	0.0	0.0	0.0	0.0	0.0	0.2	0.3	0.7	0.3	0.2	1.0
4-Sep	0.3	0.8	1.0	0.8	2.4	Z	0.2	0.2	0.0	0.0	0.1	0.6	0.0	0.8	0.6	0.8	1.2	1.6	0.0	0.0	0.0	0.0	0.0	0.0	0.5	2.4
5-Sep	Z	0.0	0.0	0.3	0.3	0.4	0.1	1.2	0.4	0.4	4.8	3.2	1.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	1.3	2.6	0.7	4.8
6-Sep	2.9	Z	0.7	0.4	0.7	1.4	3.2	1.9	0.9	0.7	0.3	0.7	0.6	0.3	0.4	0.7	0.1	0.4	0.1	0.3	0.2	0.5	0.4	0.3	0.8	3.2
7-Sep	0.6	0.7	Z	1.2	1.0	4.2	1.6	1.4	1.3	0.5	1.1	1.2	0.8	1.0	0.4	0.2	0.2	0.2	0.0	0.0	0.0	0.0	0.0	0.0	0.8	4.2
8-Sep	0.0	0.0	0.0	Z	0.6	2.9	2.6	2.0	5.7	1.3	1.1	1.8	0.0	0.0	0.3	0.1	0.8	0.4	0.7	0.6	0.7	0.7	0.9	1.3	1.1	5.7
9-Sep	1.2	1.3	1.4	2.6	Z	1.7	1.6	2.0	1.5	1.1	1.1	1.3	2.1	1.2	0.0	0.3	0.0	0.0	0.0	1.7	0.0	2.8	2.6	0.0	1.2	2.8
10-Sep	0.0	0.0	0.0	0.0	0.0	Z	0.0	0.1	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	0.2
11-Sep	Z	0.0	0.0	0.0	0.0	2.6	4.5	4.0	0.6	0.0	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	0.5	4.5
12-Sep	0.0	Z	0.5	0.2	0.6	0.7	1.2	0.7	1.4	0.7	0.2	1.3	0.9	0.9	1.0	0.4	0.2	0.2	0.0	0.0	0.0	0.0	0.0	0.1	0.5	1.4
13-Sep	0.0	0.0	Z	0.0	0.0	0.0	0.4	0.2	1.0	0.9	0.7	0.6	1.5	1.1	1.0	1.9	1.4	1.9	2.3	2.9	5.6	3.7	1.9	0.7	1.3	5.6
14-Sep	0.7	0.0	0.0	Z	0.2	0.6	0.1	0.1	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	0.2	0.7	0.5	0.2	0.7
15-Sep	0.3	0.0	0.7	0.9	Z	0.0	0.8	1.2	1.1	1.4	0.9	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	0.3	1.4
16-Sep	0.0	0.0	0.0	0.0	0.0	Z	0.1	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	0.2
17-Sep	Z	0.0	0.0	0.0	0.0	0.3	0.0	0.0	0.0	0.0	1.2	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	1.2
18-Sep	0.0	Z	0.3	0.2	0.2	0.4	1.0	1.5	1.3	3.5	2.9	0.4	M	M	0.3	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.6	3.5
19-Sep	0.0	0.0	Z	0.0	0.1	5.1	0.0	0.0	0.6	1.3	0.9	0.7	0.0	0.0	0.4	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.4	5.1
20-Sep	0.0	0.0	0.0	Z	0.0	1.4	0.1	3.3	3.9	0.6	0.5	0.9	1.6	2.9	0.7	0.3	0.0	0.0	0.0	2.2	0.3	0.0	0.0	0.0	0.8	3.9
21-Sep	0.0	0.0	0.0	0.0	Z	3.1	1.0	6.7	0.9	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	0.5	6.7
22-Sep	0.0	0.2	0.5	0.7	1.3	Z	0.9	0.5	0.9	0.8	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	0.3	1.3
23-Sep	Z	0.0	0.0	0.0	0.0	0.1	0.0	0.0	0.0	0.1	0.0	0.0	0.0	0.0	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-Sep	0.0	Z	0.2	0.2	0.2	0.1	0.2	0.0	0.0	0.0	0.0	0.3	1.4	0.0	0.2	0.6	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.1	1.4
25-Sep	0.0	0.0	Z	0.3	0.0	0.0	0.0	0.0	0.0	0.2	0.3	0.3	0.6	0.3	1.0	0.3	1.1	0.0	0.0	0.0	0.0	0.3	0.0	0.0	0.2	1.1
26-Sep	0.0	0.0	0.0	Z	0.0	2.0	1.1	0.9	0.0	1.0	C	C	C	C	C	C	0.5	0.0	0.0	0.0	0.1	0.0	0.0	0.0	--	2.0
27-Sep	0.0	0.0	0.0	0.3	Z	2.7	1.1	0.7	1.1	0.2	1.3	1.3	0.9	0.0	0.6	0.7	0.2	0.0	0.6	0.0	0.0	0.0	0.0	0.0	0.5	2.7
28-Sep	0.0	0.0	0.2	0.0	0.0	Z	0.2	0.5	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	0.5
29-Sep	Z	1.4	0.9	1.2	0.3	0.2	0.0	0.0	0.1	0.0	0.0	0.0	0.7	0.3	0.0	0.0	0.0	0.0	0.0	0.6	0.5	1.0	0.0	0.0	0.3	1.4
30-Sep	0.0	Z	3.8	3.6	0.9	0.1	0.1	0.0	0.4	0.0	1.2	2.6	2.5	1.1	0.9	0.4	0.0	0.0	0.2	0.0	0.0	0.0	0.0	0.0	0.8	3.8
	0.2	0.2	0.4	0.6	0.4	1.3	0.8	1.0	0.8	0.5	0.7	0.6	0.5	0.4	0.3	0.2	0.2	0.2	0.1	0.3	0.3	0.3	0.3	0.2	Diurnal Average	
	2.9	1.4	3.8	3.6	2.4	5.1	4.5	6.7	5.7	3.5	4.8	3.2	2.5	2.9	1.0	1.9	1.4	1.9	2.3	2.9	5.6	3.7	2.6	2.6	Diurnal Maximum	

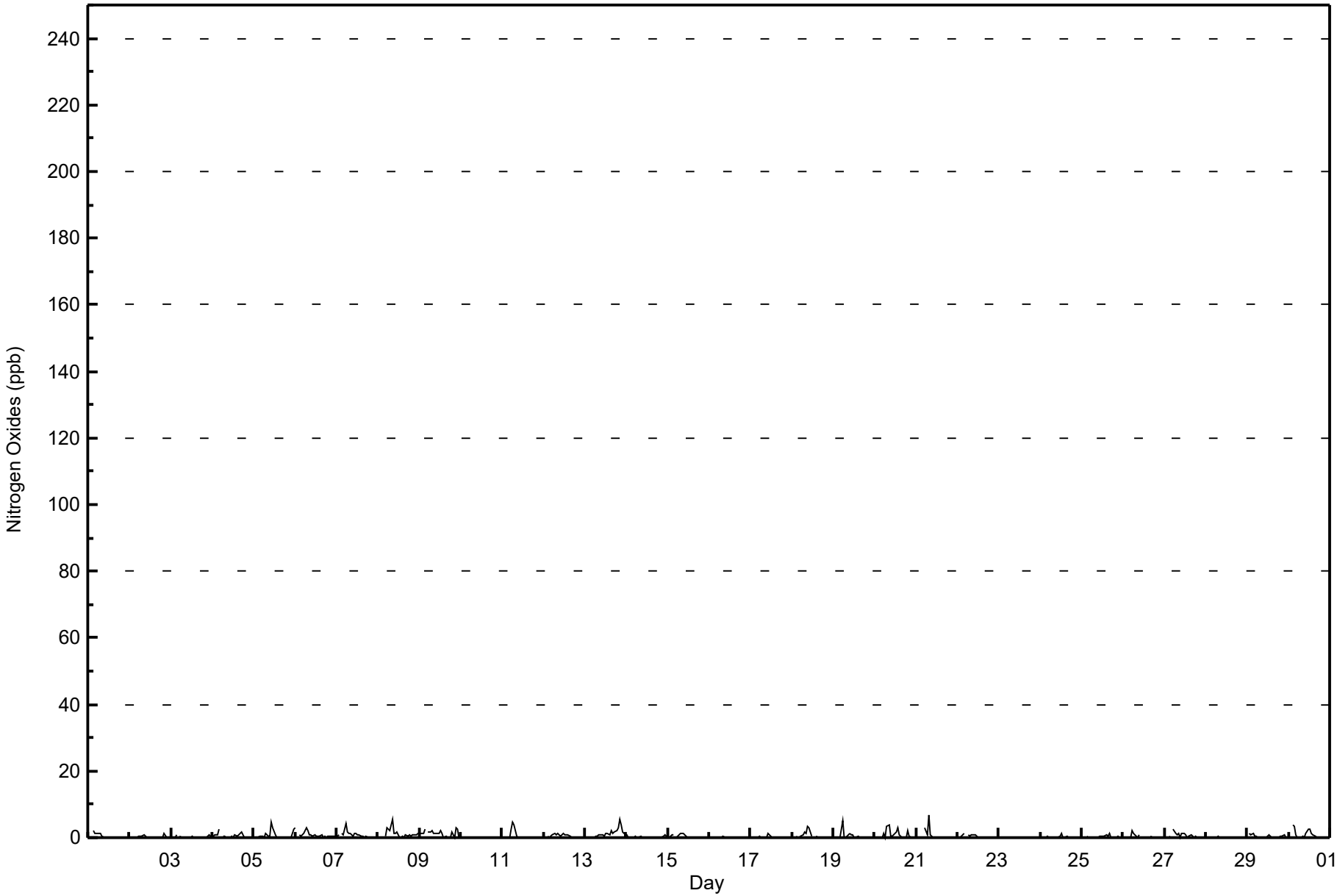
Z - zerospan C - Calibration M - Maintenance

Wood Buffalo Environmental Association

Hourly Averages

Nitrogen Oxides (NO_X) - ppb

Jackfish 2/3 - September 2024



Nitrogen Oxides (NO_X) - ppb
Jackfish 2/3 - September 2024

Concentration Ranges (ppb)	Number of Hours	%	Cumulative %
0 - 20	682	100.00	100.00
21 - 40	0	0.00	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: 682

Total Number of Hours: 720

Wood Buffalo Environmental Association

Frequency Distribution

Nitrogen Oxides (NO_X) - ppb

Jackfish 2/3 - September 2024

Concentration							**Wind Direction**										
Ranges (ppb)	N	NNE	NE	ENE	E	ESE	SE	SSE	S	SSW	SW	WSW	W	WNW	NW	NNW	**Totals**
0 - 20	9	29	24	27	10	7	13	13	23	97	76	129	100	71	33	21	682
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	9	29	24	27	10	7	13	13	23	97	76	129	100	71	33	21	682

Total Number of Valid Hours: 682

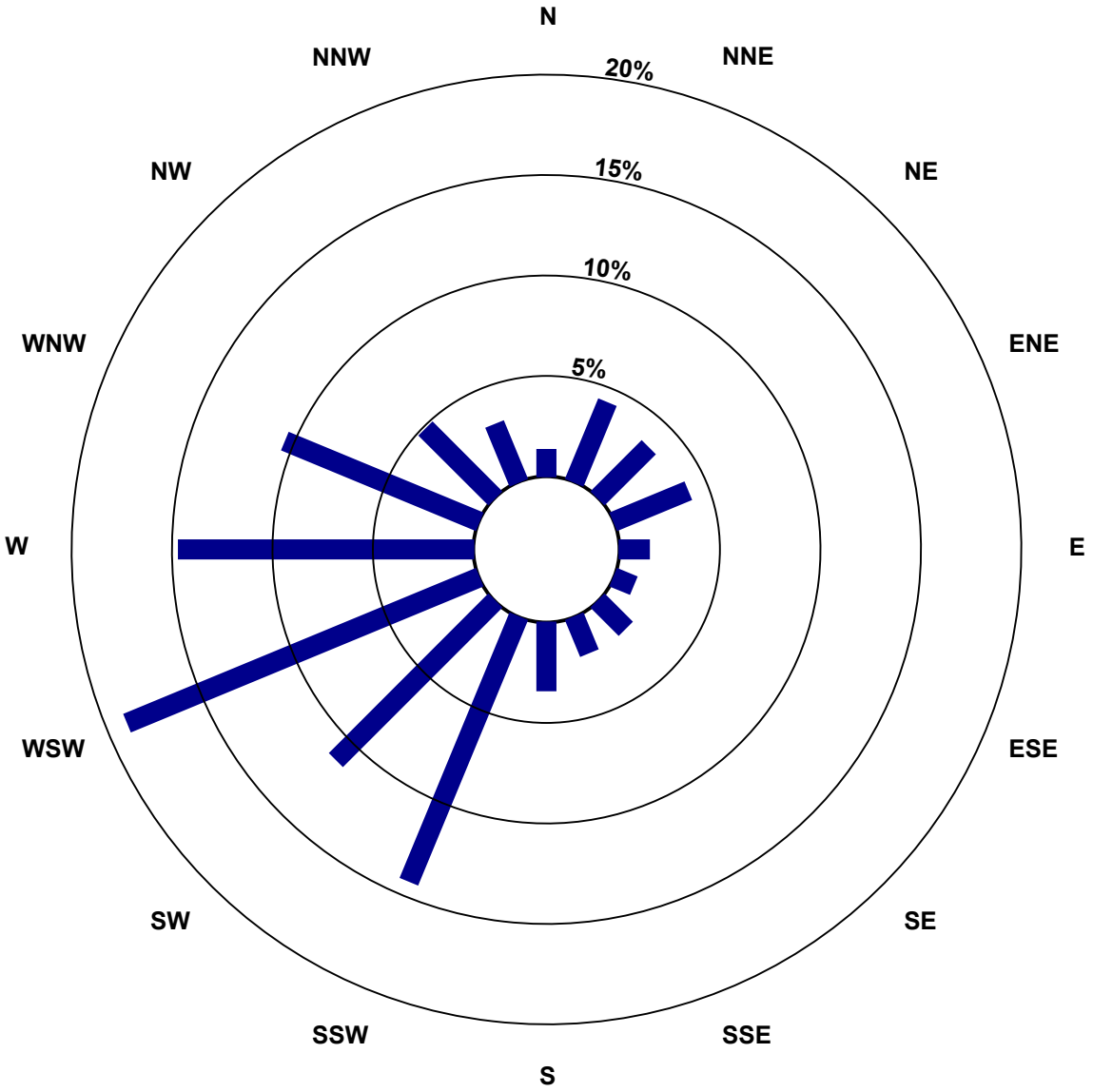
Total Number of Hours: 720

Wood Buffalo Environmental Association

Wind Rose Sep 2024

Nitrogen Oxides (NO_X) - ppb

Jackfish 2/3



Classes (ppb)

0 - 20

21 - 40

11 - 80

81 - 159

> 159

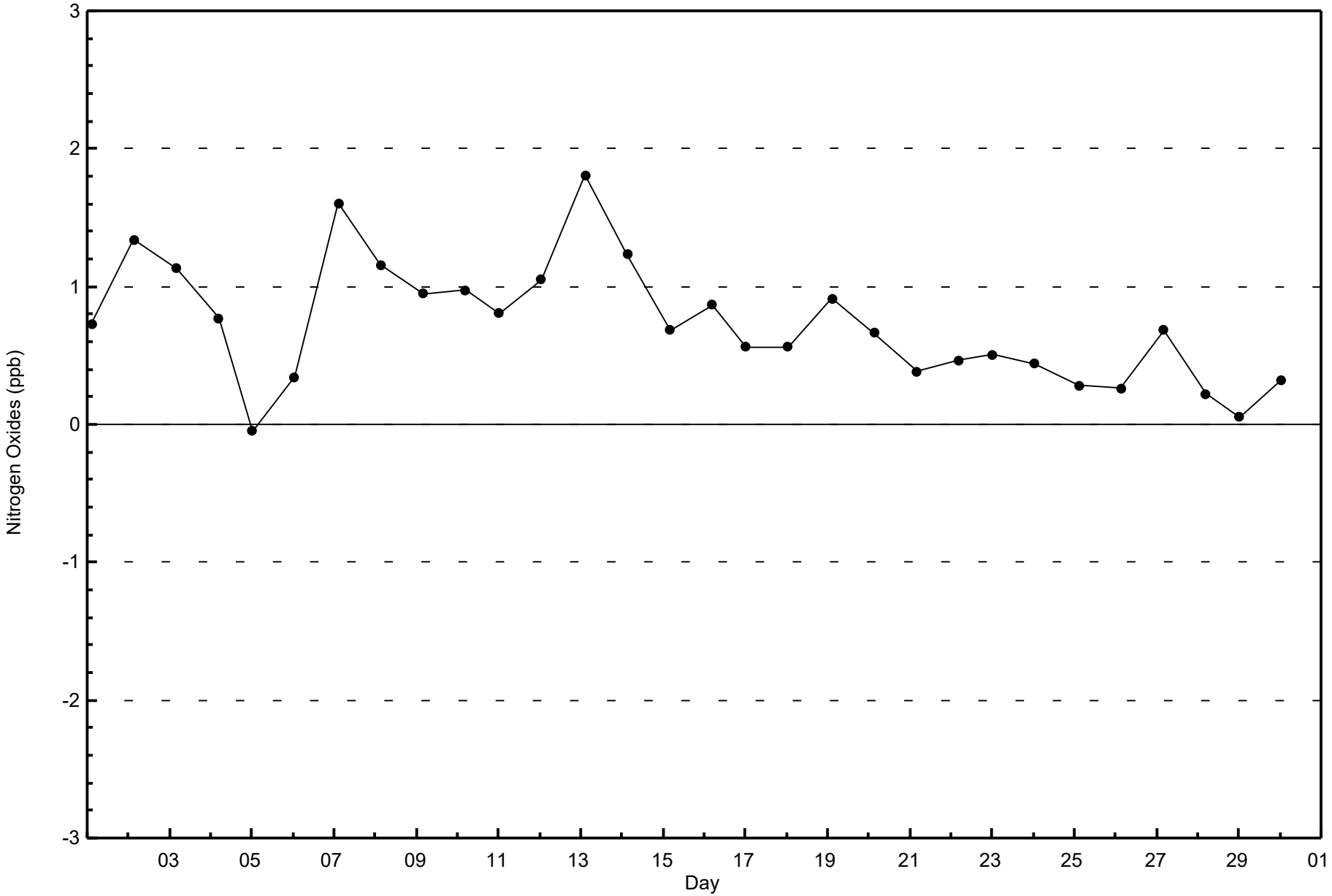
Total Number of Valid Hours: 682

Wood Buffalo Environmental Association

Zero Responses

Nitrogen Oxides (NO_X) - ppb

Jackfish 2/3 - September 2024



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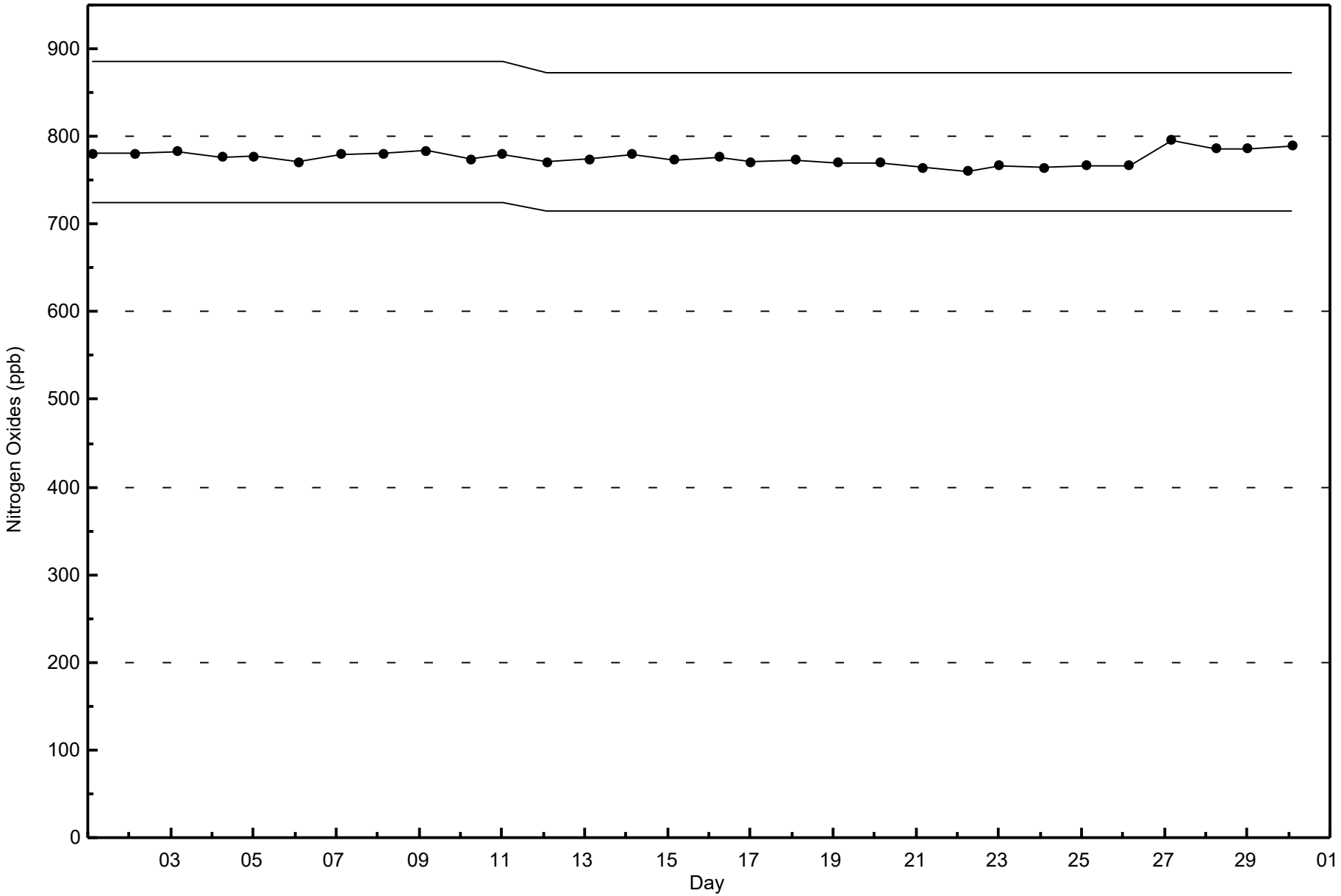
Span Responses

Nitrogen Oxides (NO_X) - ppb

Jackfish 2/3 - September 2024



Maximum Value: 30.2 C on Sep 2 15:00

Maximum Daily Average: 22.2 C on Sep 2

Minimum Value: 1.1 C on Sep 30 07:00

Minimum Daily Average: 5.4 C on Sep 30

Maximum Diurnal Average: 17.5 C at hour 15

Minimum Diurnal Average: 8.7 C at hour 7

Monthly Average: 12.59 C

Percentiles: P_1 = 3.0 P_{10} = 6.2 Q_1 = 8.9 Median = 11.8 Q_3 = 15.8 P_{90} = 20.0 P_{99} = 28.0

Hours in Service:	720
Hours of Data:	720
Hours of Missing Data:	0
Hours of Calibration:	0
Percent Operational Time:	100.0

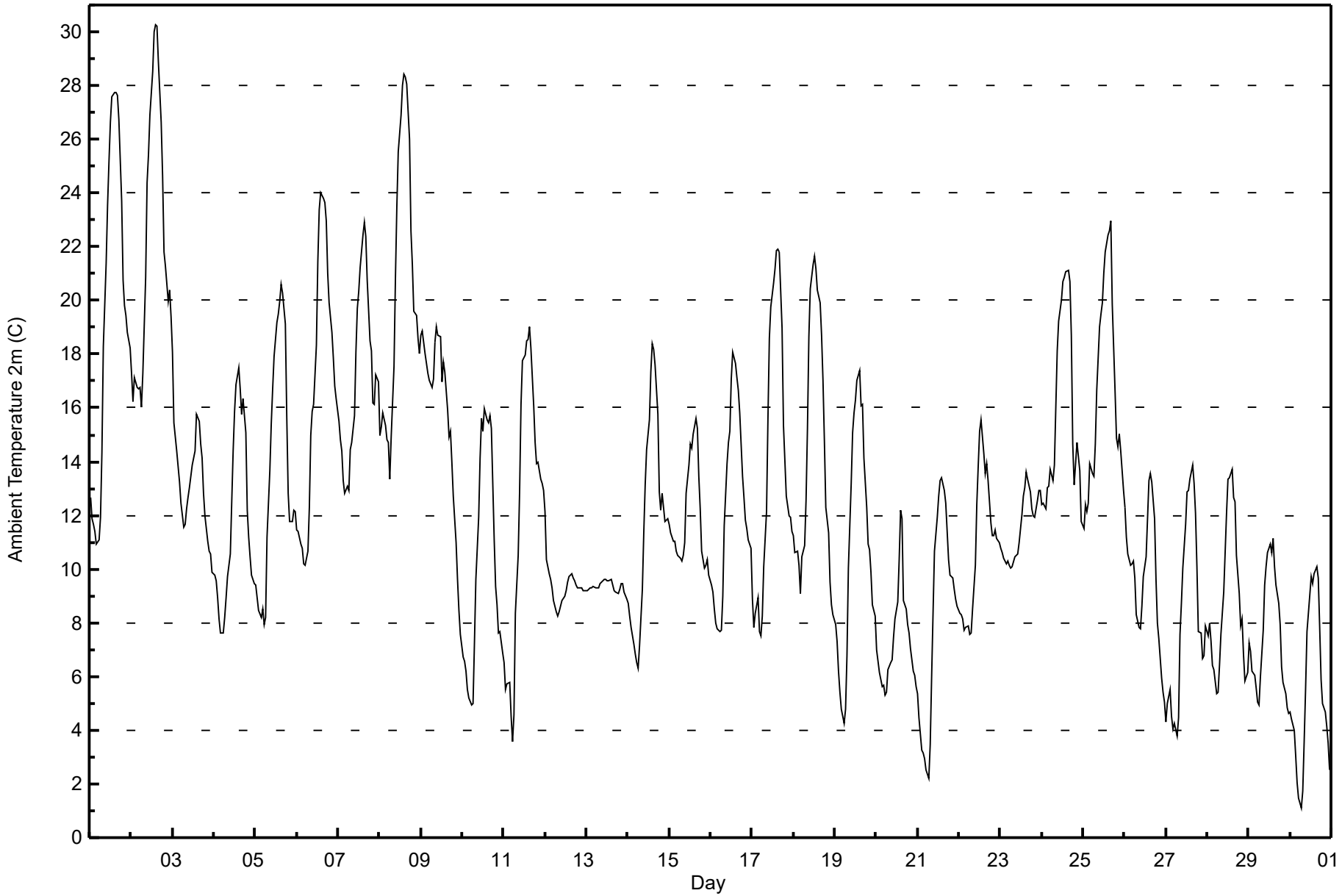
Day	Hourly Period Ending At (MST)																								Daily	Daily
	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24	Average	Maximum
1-Sep	12.7	11.9	11.7	11.4	10.9	11.1	11.9	14.3	18.3	21.4	23.5	25.2	26.6	27.6	27.8	27.8	27.6	26.7	23.7	20.7	19.8	19.4	18.8	18.2	19.5	27.8
2-Sep	17.3	16.3	17.1	16.8	16.7	16.7	16.0	17.3	20.8	24.4	25.4	26.9	28.5	30.0	30.2	30.2	28.9	26.6	24.6	21.8	21.3	20.0	20.4	19.4	22.2	30.2
3-Sep	18.1	15.4	14.4	13.8	13.2	12.4	11.6	11.7	12.2	12.7	13.0	13.9	14.1	14.4	15.8	15.5	14.7	14.1	12.8	12.0	11.0	10.6	10.6	9.9	13.2	18.1
4-Sep	9.8	9.6	8.9	8.1	7.6	7.6	8.2	9.0	9.7	10.6	12.5	14.4	15.8	16.9	17.5	16.7	15.8	16.3	15.1	12.2	11.2	10.5	9.8	9.5	11.8	17.5
5-Sep	9.4	8.9	8.5	8.2	8.5	8.0	8.2	11.2	13.7	15.4	16.7	17.9	19.2	19.5	19.9	20.6	20.3	19.1	15.7	12.8	11.8	11.8	12.2	12.2	13.7	20.6
6-Sep	11.5	11.4	10.9	10.8	10.2	10.1	10.7	12.3	15.0	15.9	16.1	18.3	21.4	23.4	24.0	23.8	23.6	23.0	21.0	19.9	18.8	17.9	16.8	16.3	16.8	24.0
7-Sep	15.5	14.8	14.4	13.3	12.8	13.1	13.0	14.4	14.7	15.7	18.1	19.7	20.3	21.3	22.4	22.9	22.4	20.8	18.5	18.1	16.2	16.1	17.2	17.0	17.2	22.9
8-Sep	15.0	15.3	15.8	15.3	14.8	14.7	13.4	14.9	17.5	20.8	23.5	25.5	26.9	28.0	28.4	28.3	28.1	26.0	22.6	21.3	19.6	19.4	18.6	18.0	20.5	28.4
9-Sep	18.7	18.9	18.0	17.7	17.3	17.0	16.8	17.1	18.5	19.0	18.7	18.7	17.0	17.7	17.3	15.9	14.9	15.1	14.0	12.7	11.0	9.6	8.5	7.5	15.7	19.0
10-Sep	6.7	6.5	6.2	5.5	5.2	5.0	5.0	7.2	9.6	11.9	14.1	15.6	15.1	16.0	15.6	15.5	15.7	15.2	11.1	9.3	8.7	7.6	7.7	6.9	10.1	16.0
11-Sep	6.5	5.5	5.7	5.8	4.5	3.6	4.6	8.3	10.5	12.9	16.2	17.8	18.0	18.5	18.5	19.0	18.2	16.1	14.7	13.9	14.0	13.3	13.2	12.9	12.2	19.0
12-Sep	12.1	10.3	9.8	9.6	9.3	8.8	8.4	8.3	8.4	8.6	8.8	9.0	9.2	9.5	9.7	9.8	9.7	9.6	9.4	9.3	9.3	9.3	9.2	9.2	9.4	12.1
13-Sep	9.2	9.3	9.3	9.3	9.3	9.3	9.3	9.3	9.4	9.6	9.6	9.6	9.5	9.6	9.6	9.4	9.2	9.1	9.1	9.3	9.5	9.5	9.1	8.9	9.3	9.6
14-Sep	8.7	8.3	7.8	7.2	6.9	6.5	6.3	7.2	9.3	11.3	13.1	14.4	15.5	17.3	18.4	18.2	17.6	15.8	12.9	12.2	12.8	11.8	11.8	11.9	11.8	18.4
15-Sep	11.7	11.3	11.0	11.0	10.7	10.5	10.4	10.3	10.5	11.0	12.8	13.9	14.6	14.5	15.1	15.6	15.3	13.5	12.3	10.7	10.0	10.2	10.3	9.8	12.0	15.6
16-Sep	9.4	9.1	8.5	8.0	7.8	7.6	7.7	9.0	11.6	14.0	14.7	15.1	17.1	18.1	17.7	17.1	16.7	15.8	13.5	12.7	11.8	11.5	11.1	10.8	12.3	18.1
17-Sep	8.9	7.8	8.4	8.9	7.7	7.5	8.3	10.1	12.1	15.6	18.6	19.8	20.7	21.2	21.8	21.9	21.8	19.0	15.4	14.0	12.7	12.0	11.9	11.4	14.1	21.9
18-Sep	11.2	10.6	10.7	10.1	9.1	10.5	10.9	12.6	15.2	18.7	20.4	21.3	21.6	21.2	20.4	19.9	18.7	17.0	14.8	12.3	11.4	9.5	8.7	8.3	14.4	21.6
19-Sep	7.9	7.3	6.2	5.4	4.8	4.2	4.8	6.8	10.0	13.2	15.1	15.8	16.3	17.0	17.4	16.1	16.1	14.1	12.3	10.9	10.7	9.9	8.7	8.3	10.8	17.4
20-Sep	7.0	6.6	6.1	5.6	5.7	5.3	5.4	6.2	6.5	6.6	7.4	8.1	8.8	10.4	12.2	11.9	8.8	8.5	7.9	7.6	7.1	6.2	6.0	5.6	7.4	12.2
21-Sep	5.4	4.5	3.3	3.1	2.9	2.5	2.2	3.5	6.0	8.4	10.7	11.9	12.7	13.3	13.4	12.9	12.5	11.4	10.3	9.8	9.7	9.2	8.9	8.6	8.2	13.4
22-Sep	8.4	8.3	8.1	7.7	7.8	7.9	7.6	7.6	8.5	10.1	12.4	13.8	15.1	15.6	14.3	13.6	13.9	13.3	11.7	11.3	11.2	11.5	11.2	11.0	10.9	15.6
23-Sep	10.8	10.6	10.4	10.2	10.3	10.1	10.0	10.1	10.4	10.5	10.5	11.0	12.0	12.7	13.0	13.6	13.4	12.9	12.3	12.0	11.9	12.6	12.9	12.9	11.6	13.6
24-Sep	12.4	12.4	12.2	13.0	13.1	13.7	13.3	13.9	16.0	18.1	19.2	20.0	20.7	20.8	21.1	21.1	20.7	18.7	14.7	13.2	14.7	14.2	13.6	11.8	15.9	21.1
25-Sep	11.5	12.4	12.2	12.4	13.9	13.6	13.4	14.7	16.7	19.0	19.5	19.9	21.0	21.8	22.4	22.6	23.0	19.9	16.6	14.9	14.6	15.0	14.4	13.0	16.6	23.0
26-Sep	12.3	11.2	10.6	10.1	10.2	10.3	9.7	8.3	7.8	7.8	8.6	9.7	10.5	11.9	13.3	13.6	13.2	11.9	9.6	8.0	7.4	5.9	5.4	5.1	9.7	13.6
27-Sep	4.3	5.0	5.5	4.5	4.1	4.2	3.8	4.5	7.6	8.7	10.0	11.7	12.9	12.9	13.4	13.9	13.2	12.1	10.1	7.7	7.6	6.7	6.8	7.9	8.3	13.9
28-Sep	7.5	8.0	7.3	6.4	6.2	5.3	5.4	6.4	7.6	9.1	10.6	12.1	13.4	13.4	13.7	12.7	12.5	10.5	9.1	7.9	8.1	6.8	5.8	6.2	8.8	13.7
29-Sep	7.2	6.9	6.2	6.1	5.6	5.0	5.0	6.0	7.7	9.4	10.1	10.6	10.9	10.6	11.1	10.1	9.4	8.7	8.0	6.3	5.8	5.3	4.8	4.6	7.6	11.1
30-Sep	4.7	4.4	4.0	3.1	2.1	1.5	1.1	1.8	3.6	5.5	7.7	9.0	9.7	9.4	9.8	10.1	9.7	7.8	5.9	5.0	4.7	4.2	3.5	2.5	5.4	10.1
	10.4	10.0	9.6	9.3	9.0	8.8	8.7	9.8	11.5	13.2	14.6	15.7	16.5	17.1	17.5	17.3	16.9	15.6	13.6	12.3	11.8	11.3	10.9	10.5	Diurnal Average	
	18.7	18.9	18.0	17.7	17.3	17.0	16.8	17.3	20.8	24.4	25.4	26.9	28.5	30.0	30.2	30.2	28.9	26.7	24.6	21.8	21.3	20.0	20.4	19.4	Diurnal Maximum	

Wood Buffalo Environmental Association

Hourly Averages

Ambient Temperature 2m (AT2) - C

Jackfish 2/3 - September 2024



Concentration Ranges (C)	Number of Hours	%	Cumulative %
-50 - -20	0	0.00	0.00
-20 - 0	0	0.00	0.00
0 - 10	259	35.97	35.97
10 - 20	389	54.03	90.00
> 20	72	10.00	100.00

Total Number of Valid Hours: 720

Total Number of Hours: 720

Wood Buffalo Environmental Association

Summary of Hour Averages

Relative Humidity 2m (RH2) - %

Jackfish 2/3 - September 2024

Maximum Value: 99.3 % on Sep 13 13:00

Maximum Daily Average: 99.1 % on Sep 13

Minimum Value: 22.3 % on Sep 2 15:00

Minimum Daily Average: 51.7 % on Sep 2

Maximum Diurnal Average: 84.9 % at hour 7

Minimum Diurnal Average: 52.7 % at hour 15

Monthly Average: 71.70 %

Percentiles: P_1 = 31.4 P_{10} = 45.6 Q_1 = 57.5 Median = 72.2 Q_3 = 88.4 P_{90} = 96.9 P_{99} = 99.2

Hours in Service:	720
Hours of Data:	720
Hours of Missing Data:	0
Hours of Calibration:	0
Percent Operational Time:	100.0

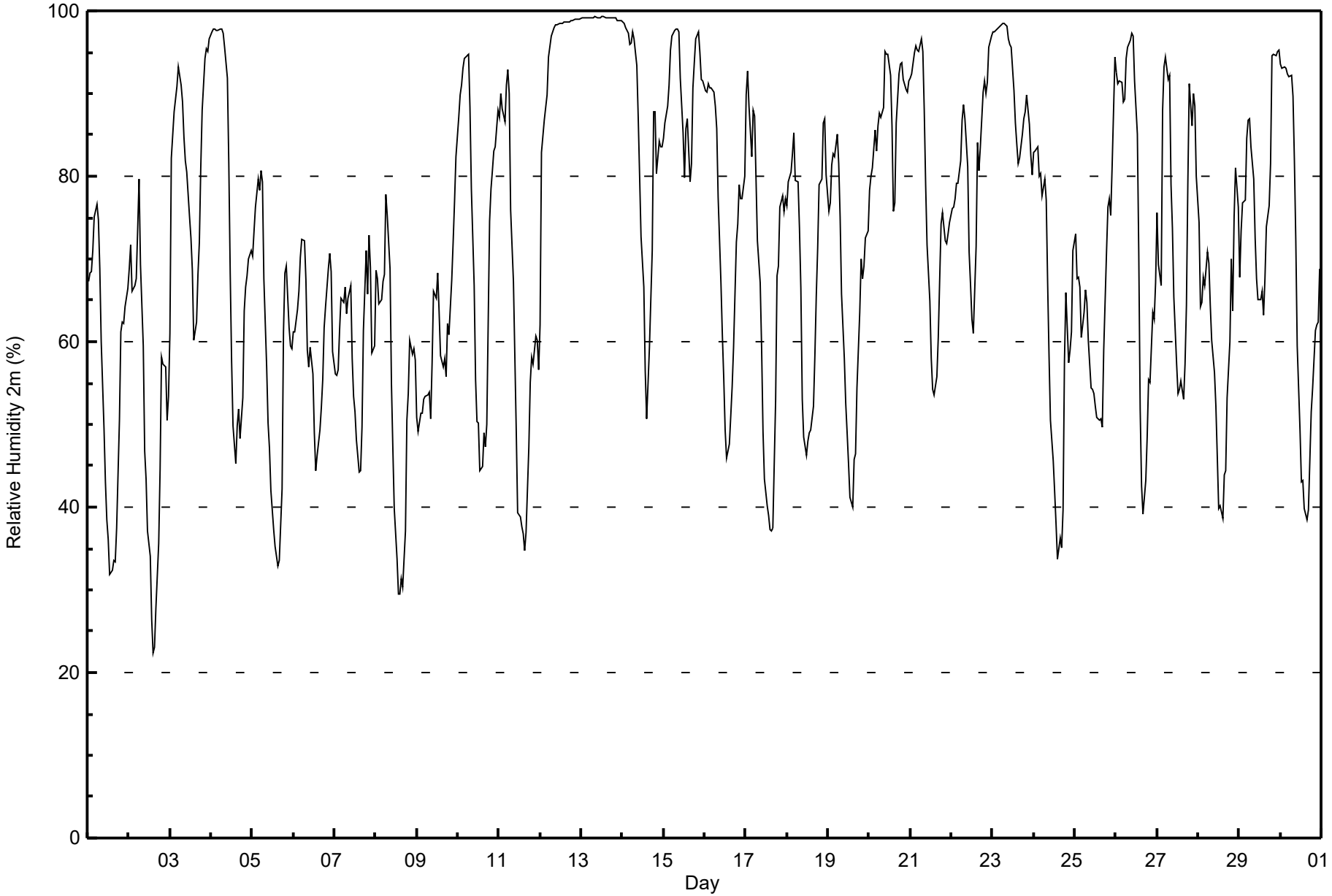
Day	Hourly Period Ending At (MST)																								Daily	Daily
	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24	Average	Maximum
1-Sep	67.2	68.3	68.5	70.9	75.2	76.5	74.8	68.9	60.0	49.5	43.1	38.4	36.1	31.9	32.4	33.5	33.3	37.5	50.5	61.1	62.4	62.1	64.3	66.5	55.5	76.5
2-Sep	68.7	71.7	66.1	66.8	67.6	73.5	79.6	69.2	59.6	46.8	43.4	37.1	34.0	26.5	22.3	23.0	27.7	35.5	44.5	58.2	57.3	57.0	50.5	53.4	51.7	79.6
3-Sep	61.0	82.1	87.8	89.3	90.9	93.2	91.1	89.0	84.7	81.9	80.5	75.1	72.5	68.7	60.2	62.3	68.1	72.0	81.0	88.0	94.3	95.4	95.1	96.5	81.7	96.5
4-Sep	97.4	97.7	97.7	97.6	97.7	97.8	97.9	97.4	95.6	91.8	81.5	68.3	57.7	49.8	45.3	49.8	51.9	48.4	53.2	63.7	66.6	67.9	70.0	71.1	75.6	97.9
5-Sep	70.4	73.4	76.2	79.6	78.3	80.7	79.3	67.6	56.9	50.2	47.1	42.1	37.3	35.2	34.1	32.9	33.5	42.2	61.2	68.3	69.2	61.7	59.4	59.2	58.2	80.7
6-Sep	61.2	61.2	63.9	66.0	70.1	72.3	72.2	67.4	59.0	57.0	59.4	56.2	49.0	44.4	46.3	49.4	52.0	55.4	61.7	64.2	68.8	70.7	68.4	58.7	60.6	72.3
7-Sep	56.1	56.0	56.6	61.4	65.2	64.7	66.6	63.4	65.2	66.8	58.0	53.4	51.6	48.1	44.3	44.4	49.7	61.3	71.1	65.7	72.9	69.0	58.6	59.5	59.6	72.9
8-Sep	68.6	67.6	64.5	65.0	67.3	68.2	77.8	75.2	68.8	55.0	47.2	39.9	33.7	29.6	29.4	31.3	30.4	37.1	50.4	53.7	60.2	58.6	59.2	57.7	54.0	77.8
9-Sep	50.9	49.1	51.4	51.4	53.0	53.3	53.5	53.8	50.6	57.5	66.1	65.2	68.3	63.5	58.3	57.0	57.9	55.7	62.2	60.9	67.5	72.0	77.0	82.4	59.9	82.4
10-Sep	87.1	89.8	90.9	93.1	94.2	94.6	94.8	88.4	78.5	66.7	55.5	50.4	50.2	44.5	45.0	48.9	47.3	50.0	74.6	78.5	80.7	83.0	83.5	87.9	73.3	94.8
11-Sep	87.1	90.0	88.2	86.7	91.0	93.0	90.0	75.9	67.4	58.2	49.3	39.4	38.8	37.6	36.9	34.7	36.9	47.2	55.1	58.2	57.3	60.6	60.2	56.6	62.3	93.0
12-Sep	62.1	82.9	86.7	88.3	89.9	94.4	96.9	97.5	98.0	98.2	98.4	98.4	98.5	98.6	98.6	98.6	98.7	98.7	98.8	98.9	98.9	99.0	99.0	99.0	94.9	99.0
13-Sep	99.1	99.1	99.1	99.2	99.2	99.2	99.2	99.2	99.2	99.2	99.2	99.2	99.3	99.3	99.2	99.2	99.2	99.2	99.2	99.2	99.1	98.9	98.8	98.8	99.1	99.3
14-Sep	98.7	98.4	98.1	97.3	96.0	96.1	97.4	96.7	93.5	87.2	80.1	72.6	66.7	56.4	50.7	54.9	59.3	70.9	87.8	87.8	80.4	84.2	83.5	83.5	82.4	98.7
15-Sep	84.5	86.5	88.6	91.0	95.3	97.0	97.6	97.8	97.8	97.5	91.9	85.2	79.9	85.8	87.0	79.4	81.5	90.7	93.8	96.6	97.5	94.8	91.7	91.5	90.9	97.8
16-Sep	90.4	90.2	91.2	90.6	90.7	90.1	88.5	85.7	77.5	67.1	60.8	55.5	49.3	45.8	47.7	51.0	54.6	59.4	72.0	74.2	79.0	77.3	77.3	80.0	72.8	91.2
17-Sep	89.8	92.8	88.5	82.3	87.9	87.2	79.9	72.1	67.0	59.3	49.2	43.5	40.2	39.0	37.4	37.1	37.4	52.8	68.0	69.2	76.3	77.6	75.7	77.3	66.1	92.8
18-Sep	76.4	79.3	80.5	82.7	85.3	79.6	79.3	73.7	66.5	53.1	48.4	46.2	48.0	49.0	49.4	52.2	58.4	65.6	71.3	79.0	79.7	86.5	87.0	80.2	69.1	87.0
19-Sep	75.7	76.8	81.4	82.6	82.4	85.0	81.5	75.2	65.8	57.9	52.6	49.1	45.3	41.1	40.1	45.8	46.4	54.4	63.6	70.0	67.6	69.1	72.5	73.3	64.8	85.0
20-Sep	78.3	80.0	81.0	85.6	83.1	86.1	87.7	87.1	88.4	95.1	94.8	94.7	92.3	86.1	75.7	76.7	86.5	92.4	93.6	93.8	91.8	90.5	90.2	91.6	87.6	95.1
21-Sep	91.9	92.3	94.9	95.8	95.3	95.2	96.6	95.1	87.9	79.1	71.7	64.9	57.9	54.3	53.5	55.7	60.4	67.4	74.3	75.5	72.2	71.9	73.1	74.4	77.1	96.6
22-Sep	76.1	76.3	77.2	79.1	79.1	81.8	86.7	88.6	87.0	81.2	70.8	67.0	62.7	61.1	71.5	84.1	80.7	83.6	90.1	91.6	90.1	91.3	95.6	97.0	81.3	97.0
23-Sep	97.4	97.4	97.6	97.9	98.1	98.2	98.4	98.5	98.1	96.6	95.9	95.5	90.4	86.4	83.9	81.5	82.2	85.1	86.9	87.8	89.9	86.2	82.6	80.1	91.4	98.5
24-Sep	82.8	83.0	83.5	79.9	80.3	77.6	79.6	77.0	67.1	58.2	50.6	45.6	41.9	38.0	33.8	36.3	35.1	39.6	57.7	66.0	57.5	59.0	61.1	71.0	60.9	83.5
25-Sep	73.1	67.7	67.7	66.6	60.5	63.5	66.3	64.7	60.2	54.4	54.2	53.7	52.1	50.8	50.4	50.7	49.7	59.0	70.8	76.3	77.3	75.2	81.2	94.4	64.2	94.4
26-Sep	92.6	91.2	91.6	91.3	88.9	89.3	94.2	95.6	96.5	97.3	96.9	91.5	85.0	70.6	51.9	42.5	39.1	43.2	48.5	55.4	55.1	63.5	62.7	67.0	75.1	97.3
27-Sep	75.5	69.3	66.8	88.0	93.3	94.4	91.7	92.2	79.0	73.8	65.4	57.3	53.8	54.3	55.2	53.0	57.3	64.4	79.2	91.2	86.1	90.1	88.4	79.9	75.0	94.4
28-Sep	74.5	64.3	64.8	67.7	66.9	70.8	69.4	64.4	60.2	56.3	52.1	46.0	39.8	40.1	38.6	43.9	44.4	53.2	60.1	70.1	63.8	75.1	80.9	76.3	60.2	80.9
29-Sep	67.8	73.3	76.9	77.1	84.5	86.8	86.9	83.5	79.6	72.6	67.5	65.1	65.1	66.2	63.3	67.6	73.9	76.4	81.4	94.6	94.8	94.6	95.2	95.3	78.7	95.3
30-Sep	93.6	93.1	93.2	93.1	92.3	92.1	92.1	89.7	81.9	72.3	59.4	49.3	43.1	43.2	39.8	38.5	39.7	45.5	51.5	54.4	61.4	62.1	62.4	68.7	67.2	93.6
	78.5	80.0	80.7	82.1	83.3	84.4	84.9	81.7	76.6	71.3	66.4	61.5	58.0	54.9	52.7	53.9	55.8	61.5	70.5	75.1	75.9	76.8	76.8	77.6	Diurnal Average	
	99.1	99.1	99.1	99.2	99.2	99.2	99.2	99.2	99.2	99.2	99.2	99.2	99.3	99.3	99.2	99.2	99.2	99.2	99.2	99.2	99.1	99.0	99.0	99.0	Diurnal Maximum	

Wood Buffalo Environmental Association

Hourly Averages

Relative Humidity 2m (RH2) - %

Jackfish 2/3 - September 2024



Concentration Ranges (%)	Number of Hours	%	Cumulative %
0 - 20	0	0.00	0.00
20 - 40	47	6.53	6.53
40 - 60	165	22.92	29.44
60 - 80	233	32.36	61.81
80 - 100	275	38.19	100.00

Total Number of Valid Hours: 720

Total Number of Hours: 720

Maximum Speed: 17 km/h on Sep 28 02:00

Maximum Daily Speed Average: 9.5 km/h on Sep 30

Minimum Speed Value: 0 km/h on Sep 25 21:00

Minimum Daily Speed Average: 2.4 km/h on Sep 20

Maximum Diurnal Speed Average: 5.5 km/h at hour 15

Minimum Diurnal Speed Average: 2.7 km/h at hour 19

Monthly Average Velocity: 3.8 km/h 256.0 deg

Percentiles: $P_1 = 1$ $P_{10} = 3$ $Q_1 = 4$ Median = 6 $Q_3 = 8$ $P_{90} = 10$ $P_{99} = 14$

Hours in Service:	720
Hours of Data:	720
Hours of Missing Data:	0
Percent Operational Time:	100.0

Day	Hourly Period Ending At (MST)																								Daily	Daily
	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24	Average	Maximum
1-Sep	SSW5	SSW5	SSW5	SSW5	SSW6	SSW6	SSW6	SSW6	SW7	SW8	SW9	SW10	SW11	WSW12	WSW13	WSW12	WSW12	WSW9	SW5	SW5	SW6	SW6	SW7	SSW6	SW7.3	WSW13
2-Sep	SSW6	SSW7	SSW8	SW8	SSW8	WSW6	SSW7	SSW7	SW6	SW6	SW8	SW10	SW8	W9	W9	W7	W6	W5	WSW4	W3	W4	WSW2	WNW5	N8	WSW5.4	SW10
3-Sep	NNE4	E2	ENE5	NE4	NE3	NE6	NNE7	NE6	NE7	NE5	NE6	NNE6	NNE6	NNE5	N4	NNE4	ENE4	ENE4	NE3	NE0	SSE1	E1	NNE2	NNW2	NE3.8	NNE7
4-Sep	NNW2	NNW4	NNW4	WNW3	W5	W5	W4	W6	WNW6	W7	WNW8	WNW9	WNW9	WNW10	WNW11	NW6	NW5	NW5	W5	W6	WSW7	WSW7	WSW8	W8	WNW5.8	WNW11
5-Sep	WSW9	WSW9	WSW10	WSW10	W7	W6	W6	NNW2	NE2	E3	E4	NE2	NW4	W4	SSW4	SW5	SW5	SW4	SSW2	S2	S2	SSW4	SSW6	SSW7	WSW3.5	WSW10
6-Sep	SSW6	SSW7	SSW6	SSW7	SSW9	SSW9	SSW8	SSW8	SW11	WSW11	SW11	SW11	SW12	WSW12	WSW10	WSW9	WSW8	WSW7	WSW7	WSW8	WSW8	WSW8	W8	W7	SW8.3	WSW12
7-Sep	W8	W5	W4	W5	WSW6	WSW6	SW6	WSW7	WSW7	WSW7	WSW7	WSW7	WSW8	WSW8	WSW8	WSW7	SW6	SSW4	SSW4	SW6	SSW5	SW6	SW7	SW7	WSW6.0	WSW8
8-Sep	SW6	WSW8	WSW8	WSW7	WSW8	WSW6	SW3	SSW3	SW2	SSW4	S4	SSW4	SSW6	S5	SSW6	SW7	SW7	SSW3	SE3	SE4	S3	S6	S6	SSW5	SSW4.7	WSW8
9-Sep	SSW5	SW5	SW6	SSW5	SSW6	SSW7	SSW7	SSW8	WSW11	WNW10	WNW11	WNW10	WNW11	WNW10	WNW12	WNW11	WNW10	W8	W7	WNW10	WNW11	NW10	NW7	WNW6	W7.1	WNW12
10-Sep	W7	W8	WNW6	W7	W7	W8	W8	W9	W10	W10	W9	W10	W8	WNW7	W8	W7	WSW7	WSW5	SSW3	SSW3	SSW4	SSE1	S3	SSW3	W6.0	W10
11-Sep	SSW3	S2	SSW3	SSW3	SSE1	SSE1	ESE3	ESE4	S5	SE4	SE5	SE6	SSE6	SE8	ESE7	SE8	SSE7	SSE4	SE3	ESE4	ESE5	ESE5	ESE6	SE6	SE4.2	SE8
12-Sep	SE5	SE4	ENE5	NE5	NE5	NE5	ENE5	ENE5	NE4	NNE4	ENE6	E7	ENE5	ENE5	NNE4	N4	NNE6	NNE7	NE7	NE6	NE6	NNE5	NNE5	NNE5	NE4.6	NE7
13-Sep	NNE5	NNE6	NE6	NNE5	NE5	NNE5	N5	N6	NNE6	NNE7	NNE8	NNE6	NNE6	NNW6	NW7	NW7	NNW5	NW4	NW5	NW5	WNW6	WNW6	WNW4	W5	N4.5	NNE8
14-Sep	W5	W5	W5	WSW5	SW6	WSW5	W5	W4	WSW7	W6	W6	W6	W7	W5	W8	WSW8	WSW6	SW4	SSW4	SSW5	WSW7	WSW7	WSW7	WSW7	WSW5.7	WSW8
15-Sep	WSW7	WSW9	WSW8	W10	WSW9	W7	WNW7	WNW5	WNW3	W4	WNW5	W4	WSW3	ENE1	SSE3	SSW4	SW3	SSW4	SSW4	SSW3	SSW4	SSW5	SW6	SSW7	WSW4.4	W10
16-Sep	SW7	SW7	SSW7	SSW7	SSW7	SW7	SSW7	SW7	SW8	SW8	WSW10	WSW12	WSW11	WSW13	WSW12	WSW10	WSW8	WSW6	SW5	WSW5	SW5	SW6	WSW6	SW6	SW7.5	WSW13
17-Sep	SSW6	SSW5	SSW7	SSW7	SSW6	SSW6	SSW6	SSW6	SSW6	SSW6	SSW6	SW8	SW7	WSW6	W5	SSE4	SSW3	SE4	SE3	S2	SSW2	SSW3	SSW4	SSW4	SSW4.7	SW8
18-Sep	SSW4	SSW4	SSW5	SSW5	SSW6	SW9	WSW8	WSW8	W5	SW3	W3	NNW4	NNW7	NNW7	NW8	NW7	NW6	NNW5	NW2	WSW2	E1	NE1	WSW2	WSW3	W3.0	SW9
19-Sep	WSW3	WSW4	W5	W4	WSW4	WSW5	W7	W8	W7	NW4	WNW4	WNW7	W8	WNW8	WNW8	NW5	NNW4	WNW2	W3	SW2	W4	W4	W6	W6	W4.7	WNW8
20-Sep	WSW4	WSW4	WSW4	WSW4	WSW5	WSW7	W4	WNW4	W3	NE1	ENE5	NE4	NE3	NNE2	N4	NNE3	NNE2	WNW3	WNW4	WNW5	NW5	NW5	NW5	WNW4	WNW2.4	WSW7
21-Sep	W3	W4	WSW5	WSW5	WSW5	WSW4	SW5	WSW4	SW5	SW6	WSW9	WSW9	WSW9	W10	WSW10	SW9	SSW7	S4	S3	S3	SSW5	S3	S4	S5	SW5.1	W10
22-Sep	S5	S5	SSW5	SSW5	SW6	SW7	SW7	SW8	SW7	WSW5	WSW5	WSW6	W8	WNW6	WSW5	SW3	SW4	SW4	SW4	SW4	SSW4	WSW7	WSW7	WSW6	SW5.0	W8
23-Sep	W6	W5	WNW4	W4	NNW3	NW4	WNW4	WNW4	W5	W5	W6	W6	WSW6	WSW8	WSW8	WSW8	WSW9	WSW7	WSW7	SW6	SW6	WSW8	SW8	WSW10	WSW5.8	WSW10
24-Sep	WSW10	WSW11	WSW11	W12	W13	W13	WSW12	W13	W13	WNW14	WNW15	WNW13	WNW12	WNW13	WNW12	WNW9	W9	W5	WSW5	SW6	SW8	SW8	SSW7	SSW6	W9.4	WNW15
25-Sep	SSW6	SSW5	SSW4	SSE5	SE9	SSE8	S3	SW4	SSW6	SSW7	SSW6	WSW7	WSW6	W6	NNE1	NE3	SSE1	WNW1	S1	ENE2	N0	NNW2	WSW2	NNW3	SSW2.6	SE9
26-Sep	NNW6	N3	NW3	NNW2	NW4	NW7	NW11	NW10	NW6	NW5	WNW6	WNW8	WNW10	WNW11	WNW13	W12	W11	W11	WSW10	WSW9	WSW8	SW6	SSW7	SSW6	WNW6.3	WNW13
27-Sep	S5	S5	S5	E3	ENE7	ENE5	E5	ENE1	NNW4	NNW5	NW5	WNW6	WNW7	WNW7	WNW6	WNW11	WNW8	WSW7	W4	SW6	SW7	SSW7	SW8	WSW12	W2.9	WSW12
28-Sep	WSW15	W17	WSW14	WSW12	WSW14	WSW12	W13	W15	W13	WNW11	W10	WNW9	W9	WSW9	WSW9	WSW8	SW7	WSW7	WSW5	SSW4	SW5	SSW2	SSE2	E3	WSW8.7	W17
29-Sep	E6	E7	ENE5	ENE6	ENE6	ENE8	ENE7	ENE9	ENE9	ENE10	ENE12	ENE12	ENE13	ENE11	NE10	NE9	NNE7	NNE7	N6	NNW7	NNW7	NNW8	NNW8	NNW6	NE6.5	ENE13
30-Sep	NW8	NW8	NW8	WNW8	WNW9	WNW8	WNW8	WNW8	WNW9	WNW11	WNW12	NW13	NW14	WNW14	WNW15	WNW13	WNW11	WNW8	W7	W8	W11	W9	WSW9	WSW8	WNW9.5	WNW15
	WSW3.6	WSW3.7	WSW3.6	WSW3.6	WSW3.6	WSW3.8	WSW3.6	WSW3.7	WSW4.0	W3.6	W3.7	W4.4	W4.9	W5.4	W5.5	W4.8	W4.1	W3.3	WSW2.7	WSW2.9	WSW3.6	WSW3.4	WSW3.9	WSW3.8	Diurnal Average	
	WSW15	W17	WSW14	WSW12	WSW14	W13	W13	W15	W13	WNW14	WNW15	NW13	NW14	WNW14	WNW15	WNW13	WSW12	W11	WSW10	WNW10	WNW11	NW10	WSW9	WSW12	Diurnal Maximum	

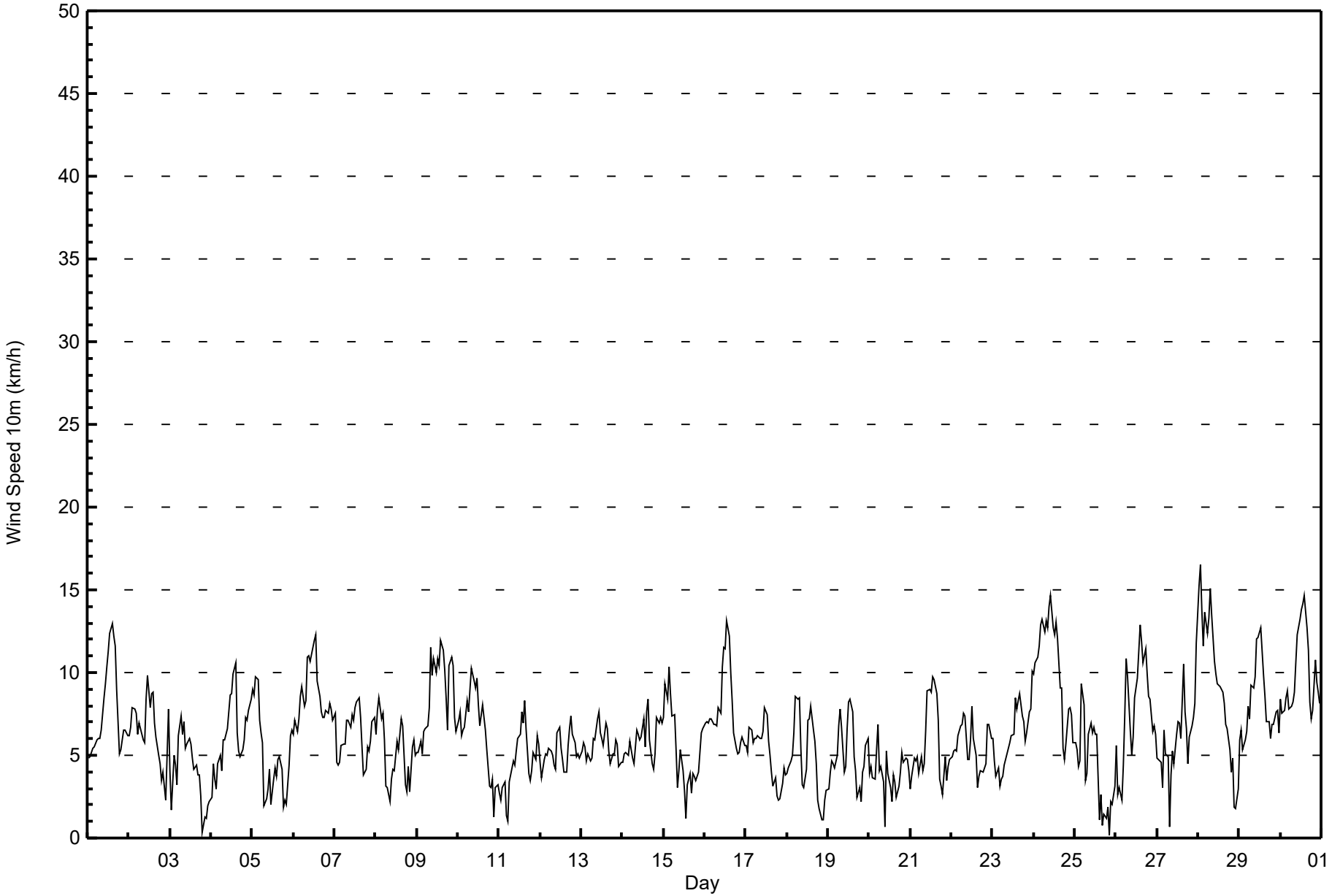
All monthly, daily, and diurnal averages have been calculated using vector methods

Wood Buffalo Environmental Association

Hourly Averages

Wind Speed 10m (WS10) - km/h

Jackfish 2/3 - September 2024



Wind Speed Ranges (km/h)	Number of Hours	%	Cumulative %
0 - 5	297	41.25	41.25
6 - 11	380	52.78	94.03
12 - 19	43	5.97	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: 720

Total Number of Hours: 720

Wood Buffalo Environmental Association

Frequency Distribution

Wind Speed 10m (WS10) - km/h

Jackfish 2/3 - September 2024

Wind Speed Ranges (km/h)	Wind Direction																
	N	NNE	NE	ENE	E	ESE	SE	SSE	S	SSW	SW	WSW	W	WNW	NW	NNW	**Totals**
0 - 5	6	16	16	15	8	5	9	10	21	51	21	33	37	17	17	15	297
6 - 11	3	14	9	10	3	2	5	3	2	53	57	90	58	47	15	9	380
12 - 19	0	0	0	3	0	0	0	0	0	0	1	15	10	12	2	0	43
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	9	30	25	28	11	7	14	13	23	104	79	138	105	76	34	24	720

Total Number of Valid Hours: 720

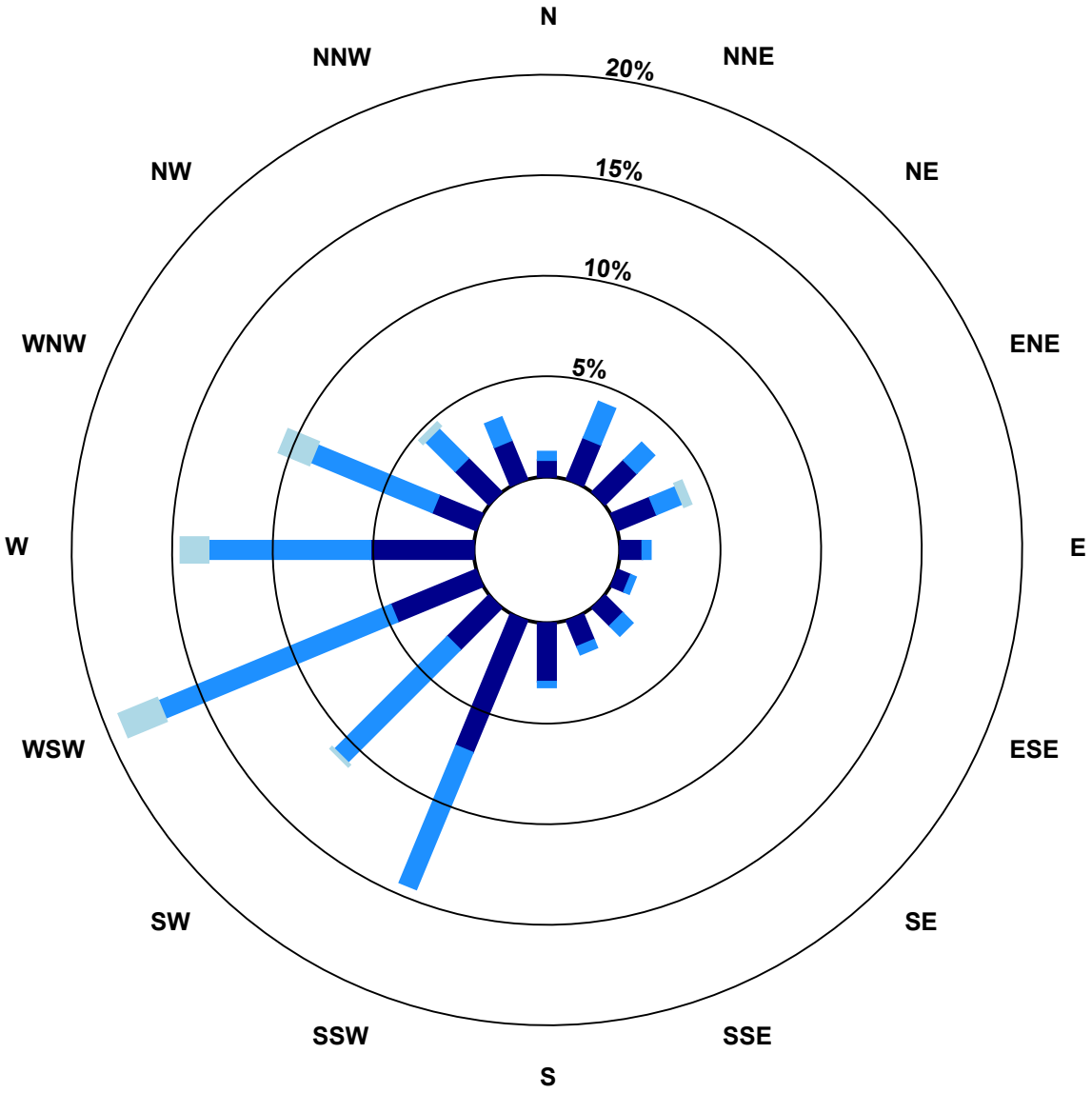
Total Number of Hours: 720

Wood Buffalo Environmental Association

Wind Rose Sep 2024

Wind Speed 10m (WS10) - km/h

Jackfish 2/3



Classes (km/h)

0 - 5

6 - 11

12 - 19

20 - 28

29 - 38

> 38

Total Number of Valid Hours: 720

Number of Exceedences (AAAQO): 1-hr: 0 24-hr: 0
Maximum Value: 6 km/h on Sep 24 11:00

Minimum Value: 0 km/h on Sep 8 08:00

Percentiles: P_1 = 1 P_{10} = 1 Q_1 = 1 Median = 2 Q_3 = 3 P_{90} = 4 P_{99} = 5

Hours in Service:	720
Hours of Data:	720
Hours of Missing Data:	0
Hours of Calibration:	0
Percent Operational Time:	100.0

Day	Hourly Period Ending At (MST)																								Daily
	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24	Maximum
1-Sep	1	2	1	1	2	1	1	2	2	3	3	4	4	5	5	4	4	3	1	1	1	1	1	1	5
2-Sep	1	1	2	2	2	3	1	1	1	2	3	4	3	3	3	3	2	1	1	1	2	1	3	4	4
3-Sep	2	1	2	2	2	3	3	3	2	2	2	2	2	2	2	2	2	2	1	2	1	1	2	1	3
4-Sep	1	2	2	1	1	1	1	2	2	2	3	3	4	4	5	4	2	2	2	1	1	1	2	2	5
5-Sep	2	2	2	2	2	2	2	1	1	1	2	2	2	2	3	2	2	2	1	1	1	2	2	2	3
6-Sep	2	3	2	3	3	3	3	3	4	3	3	3	4	4	3	3	2	2	2	2	2	2	1	2	4
7-Sep	2	1	1	1	2	1	1	2	1	1	2	2	2	2	3	2	2	1	1	1	1	1	2	2	3
8-Sep	1	2	2	1	1	2	1	0	1	1	1	2	3	2	3	3	3	2	1	2	1	2	3	2	3
9-Sep	2	2	2	2	3	2	2	3	4	4	4	4	5	5	5	5	4	4	2	5	5	4	3	2	5
10-Sep	2	3	2	2	2	2	2	3	3	3	4	4	4	3	4	3	2	2	1	1	1	1	1	1	4
11-Sep	1	1	1	0	1	1	1	1	2	2	2	3	3	3	3	3	3	2	1	1	2	1	2	2	3
12-Sep	2	2	1	1	1	1	1	2	1	2	2	3	2	2	2	1	3	3	3	2	2	2	2	2	3
13-Sep	2	2	2	2	2	2	2	3	2	3	3	3	3	3	3	3	2	2	2	2	2	2	2	2	3
14-Sep	2	2	1	1	1	2	1	2	2	2	2	2	3	2	3	3	2	1	1	1	1	1	1	2	3
15-Sep	2	2	2	2	2	2	3	2	1	2	2	2	1	1	2	1	1	1	1	1	1	1	1	1	3
16-Sep	2	2	2	2	2	2	2	2	3	3	4	4	4	5	4	4	3	2	1	2	2	1	1	1	5
17-Sep	1	1	1	1	1	2	1	2	2	2	3	3	3	3	2	2	1	2	1	1	1	1	1	1	3
18-Sep	1	1	1	1	1	2	2	2	2	1	2	2	3	3	3	3	3	2	2	1	1	1	1	1	3
19-Sep	1	1	1	1	1	1	1	1	2	2	2	3	3	3	4	3	2	1	1	1	1	1	2	1	4
20-Sep	1	1	1	1	1	2	1	1	1	1	2	2	1	2	1	1	4	1	2	2	2	2	2	2	4
21-Sep	1	1	1	1	1	1	2	1	1	2	3	3	3	3	3	3	3	2	1	1	3	1	2	2	3
22-Sep	2	2	2	1	1	1	2	2	2	2	2	2	3	3	2	1	1	1	1	1	1	2	2	2	3
23-Sep	2	2	1	2	2	1	1	2	2	2	2	2	2	3	3	3	3	2	2	1	2	3	2	3	3
24-Sep	2	3	3	3	4	4	4	4	5	5	6	5	5	5	5	4	4	2	1	1	2	2	2	1	6
25-Sep	1	2	2	2	4	4	2	2	3	3	3	3	3	2	2	1	1	2	1	1	1	2	2	2	4
26-Sep	3	2	2	1	2	3	5	4	3	2	2	4	4	5	5	5	4	4	3	2	2	2	1	2	5
27-Sep	1	1	2	2	2	1	1	1	1	2	2	2	3	3	3	5	4	2	2	1	2	2	2	3	5
28-Sep	5	5	4	3	4	3	4	4	4	4	4	4	3	3	3	3	2	2	1	1	1	1	1	2	5
29-Sep	2	2	1	2	2	2	2	3	3	4	4	4	5	4	4	4	3	3	3	3	3	3	4	3	5
30-Sep	4	3	3	3	3	3	3	4	4	4	5	6	6	6	6	6	5	4	3	3	3	2	2	2	6
	5	5	4	3	4	4	5	4	5	5	6	6	6	6	6	6	5	4	3	5	5	4	4	4	
	Diurnal Maximum																								

Direction of Maximum Speed: 263 deg on Sep 28 02:00
Direction of Maximum Daily Speed Average: 290.9 deg on Sep 30

Direction of Minimum Speed: 350 deg on Sep 25 21:00
Direction of Minimum Daily Speed Average: 2.4 deg on Sep 20

Monthly Average Direction: 256.0 deg

Hours in Service:	720
Hours of Data:	720
Hours of Missing Data:	0
Percent Operational Time:	100.0

Day	Hourly Period Ending At (MST)																								Daily
	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24	Average
1-Sep	204	200	202	200	205	205	205	204	216	221	224	223	232	239	243	246	258	249	230	233	218	221	227	212	226.1
2-Sep	206	206	213	217	212	241	212	200	229	219	221	227	224	266	263	262	265	269	257	274	270	239	302	349	238.4
3-Sep	31	80	76	43	43	40	27	35	43	37	38	23	27	33	360	12	61	60	54	48	152	79	14	345	37.4
4-Sep	332	337	336	290	280	262	274	278	283	278	295	298	291	301	297	306	312	304	274	260	256	254	254	262	285.3
5-Sep	257	253	246	249	263	263	259	335	42	97	91	43	309	261	212	236	236	223	196	188	188	197	209	204	240.0
6-Sep	205	207	203	205	206	213	208	211	227	237	233	229	226	241	239	237	237	244	245	243	248	246	260	263	230.2
7-Sep	263	276	278	268	257	245	233	238	244	238	240	242	245	248	246	245	232	213	211	217	209	216	228	225	240.2
8-Sep	219	241	238	242	239	244	233	209	220	206	187	204	196	189	211	216	216	199	134	144	190	185	189	201	211.9
9-Sep	209	223	233	205	205	201	196	213	252	282	292	293	301	292	292	287	283	276	274	299	295	307	307	282	272.6
10-Sep	271	281	284	271	271	263	266	265	263	262	266	280	275	289	279	276	255	249	208	206	195	149	188	195	263.8
11-Sep	203	189	193	192	157	162	122	120	177	136	133	131	154	135	123	141	149	152	129	110	119	108	115	126	139.1
12-Sep	136	131	61	55	53	56	76	57	38	23	57	80	71	58	29	356	19	28	41	46	36	32	25	26	49.3
13-Sep	25	29	34	29	34	19	2	6	21	25	26	28	19	340	319	324	332	323	322	319	302	296	286	279	353.7
14-Sep	277	274	268	240	233	251	266	271	258	259	266	266	270	277	261	245	242	229	213	213	239	254	243	251	253.1
15-Sep	253	254	251	261	258	274	285	289	294	279	285	275	250	57	156	198	216	211	200	199	206	208	217	213	247.1
16-Sep	221	216	208	208	210	214	213	228	236	229	247	253	250	253	247	248	242	240	236	237	227	225	243	233	234.5
17-Sep	199	201	211	210	208	201	202	198	194	196	206	233	225	241	263	165	203	138	143	191	192	205	197	198	205.4
18-Sep	199	205	204	204	204	233	247	239	269	235	277	341	333	331	322	317	320	330	310	244	85	34	250	256	269.9
19-Sep	256	255	259	264	254	255	265	261	264	314	293	288	274	282	298	324	348	301	261	221	259	264	260	262	274.2
20-Sep	258	248	252	251	256	256	268	292	262	52	75	51	47	16	355	15	24	289	285	294	307	307	306	295	296.4
21-Sep	266	260	251	250	258	249	236	248	228	227	245	254	244	260	242	233	212	191	182	189	211	175	187	189	233.8
22-Sep	188	190	198	201	214	218	220	215	220	250	252	251	275	292	255	230	221	226	214	216	210	248	257	258	231.2
23-Sep	260	276	282	278	329	306	294	284	273	266	264	266	254	255	248	255	252	245	243	228	227	237	231	246	256.4
24-Sep	250	255	256	263	263	261	255	262	274	287	296	296	290	290	295	295	277	264	237	222	230	216	211	198	266.5
25-Sep	194	193	193	148	146	160	189	221	200	202	203	238	245	272	19	47	160	303	191	74	350	339	249	334	201.0
26-Sep	335	5	319	335	320	312	319	317	323	310	296	290	294	295	291	280	273	264	257	245	240	223	205	204	284.3
27-Sep	187	187	177	89	67	59	96	58	338	338	308	296	287	291	300	295	288	253	264	219	216	210	234	253	263.7
28-Sep	256	263	258	252	255	253	259	261	267	282	276	282	278	253	252	243	231	246	241	202	218	199	168	89	256.6
29-Sep	86	82	63	74	75	71	76	76	70	69	70	64	62	61	50	40	27	28	358	339	334	330	334	329	48.3
30-Sep	317	314	313	294	291	295	287	290	291	292	299	308	307	294	296	299	293	289	275	273	264	266	258	246	290.9
	241.2	242.9	242.7	241.2	241.0	247.4	249.3	253.5	258.3	263.9	268.0	273.9	272.3	276.8	275.3	270.7	264.7	259.6	248.9	242.0	242.0	243.1	242.4	245.4	
	Diurnal Average																								

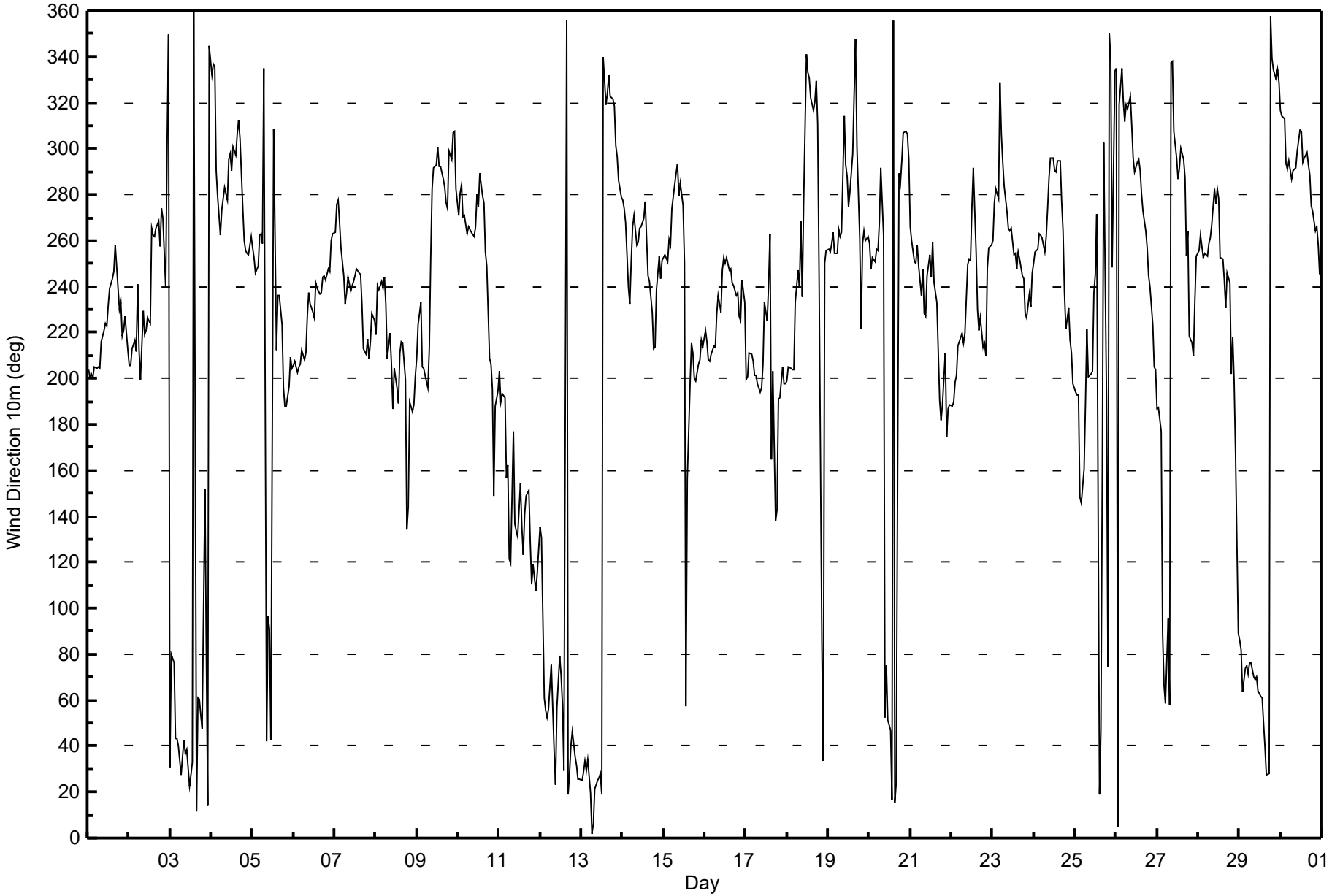
All monthly, daily, and diurnal averages have been calculated using vector methods

Wood Buffalo Environmental Association

Hourly Averages

Wind Direction 10m (WD10) - deg

Jackfish 2/3 - September 2024



Number of Exceedences (AAAQO): 1-hr: 0 24-hr: 0
Maximum Value: 115 deg on Sep 25 21:00

Minimum Value: 7 deg on Sep 11 04:00

Percentiles: P_1 = 12 P_{10} = 17 Q_1 = 21 Median = 35 Q_3 = 50 P_{90} = 61 P_{99} = 95

Hours in Service:	720
Hours of Data:	720
Hours of Missing Data:	0
Hours of Calibration:	0
Percent Operational Time:	100.0

Day	Hourly Period Ending At (MST)																								Daily
	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24	Maximum
1-Sep	33	37	27	25	23	22	19	19	27	31	35	33	37	31	30	28	27	26	17	17	17	19	18	17	37
2-Sep	15	16	20	19	18	49	19	17	23	38	38	38	44	36	38	41	28	20	27	29	58	84	65	58	84
3-Sep	71	94	25	46	70	44	50	50	38	50	50	51	59	59	69	55	46	25	26	103	72	70	70	67	103
4-Sep	76	63	58	59	27	19	33	40	48	43	43	44	50	50	49	53	54	54	38	13	14	15	15	13	76
5-Sep	15	15	15	16	23	16	33	66	73	64	57	90	75	69	79	55	46	34	31	36	85	62	42	41	90
6-Sep	41	45	49	37	34	27	31	31	28	24	23	24	25	26	23	27	24	23	18	19	18	18	14	16	49
7-Sep	17	28	21	13	15	17	19	18	15	16	19	23	22	22	22	24	22	19	23	19	16	18	20	21	28
8-Sep	19	16	16	15	17	18	18	13	27	26	40	60	54	67	51	46	44	75	70	60	91	68	63	59	91
9-Sep	39	40	30	57	51	46	34	35	26	44	47	49	46	49	47	43	39	39	34	43	41	48	46	39	57
10-Sep	23	38	38	26	26	18	22	25	32	33	38	41	40	47	46	48	28	26	14	13	43	56	8	14	56
11-Sep	19	28	21	7	65	63	34	21	54	47	51	54	50	45	44	50	48	66	51	28	32	27	31	39	66
12-Sep	53	55	19	17	20	26	29	29	45	56	33	27	35	36	56	58	59	53	46	43	41	49	55	52	59
13-Sep	50	48	49	48	50	52	64	59	59	57	53	55	52	61	52	56	61	68	56	54	42	44	41	35	68
14-Sep	35	29	24	20	19	28	17	29	20	30	34	40	39	56	41	28	29	24	13	16	18	15	18	19	56
15-Sep	18	17	16	16	18	33	41	45	57	39	48	47	57	78	52	41	55	21	17	21	18	18	19	18	78
16-Sep	19	20	20	18	22	21	23	23	27	31	26	27	31	28	26	25	26	20	20	19	19	16	15	21	31
17-Sep	12	14	13	13	9	13	17	26	39	46	50	38	44	58	60	60	57	34	35	47	44	14	18	20	60
18-Sep	23	19	19	17	10	21	15	17	41	54	68	74	54	58	57	60	56	59	95	89	92	77	48	48	95
19-Sep	57	28	16	15	26	22	15	13	25	62	70	46	46	46	52	63	50	76	31	59	19	17	18	16	76
20-Sep	18	12	13	14	17	18	23	38	40	111	39	52	54	79	52	59	100	33	31	32	46	46	57	50	111
21-Sep	79	43	14	11	12	25	20	16	24	28	29	31	32	33	35	32	41	74	78	94	53	69	68	59	94
22-Sep	56	40	33	28	21	20	19	18	20	39	53	42	40	48	36	40	29	18	15	16	16	28	20	20	56
23-Sep	22	39	36	37	62	48	42	42	36	40	34	41	32	28	28	23	23	20	21	23	26	25	25	22	62
24-Sep	20	20	20	20	23	22	21	25	38	42	45	47	44	44	44	42	42	31	19	18	20	17	17	13	47
25-Sep	17	27	58	58	46	56	81	54	45	46	52	40	38	43	97	66	94	110	76	34	115	87	97	62	115
26-Sep	65	82	68	68	59	50	48	53	59	53	42	46	42	38	41	41	38	25	19	17	21	21	17	16	82
27-Sep	14	24	39	55	20	23	22	85	42	59	67	55	54	49	47	44	42	22	50	18	22	18	23	20	85
28-Sep	20	21	21	20	21	20	22	22	28	39	40	44	45	38	37	28	28	22	16	20	22	39	62	45	62
29-Sep	21	22	22	24	25	23	24	27	29	30	31	31	33	33	44	46	52	52	60	58	55	55	55	52	60
30-Sep	43	46	43	38	39	40	38	43	42	43	41	47	47	44	42	45	41	39	27	28	19	19	18	18	47
	79	94	68	68	70	63	81	85	73	111	70	90	75	79	97	66	100	110	95	103	115	87	97	67	
	Diurnal Maximum																								

WOOD BUFFALO ENVIRONMENTAL ASSOCIATION

CONTINUOUS AMBIENT AIR QUALITY
MONITORING PROGRAM
MONTHLY REPORT

AMS29
SURMONT 2
SEPTEMBER 2024

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

October 31, 2024

WOOD BUFFALO ENVIRONMENTAL ASSOCIATION - SURMONT2 (AMS29)
SEPTEMBER 2024

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	684	35	36	99.86	6.4	0	1.1	0
H2S (ppb) Average	683	36	37	99.86	0.6	0	0.3	0
THC(ppm) Average	684	35	36	99.86	2.9	-	2.5	-
NO2 (ppb) Average	684	36	36	100	9.4	0	4.9	-
NO (ppb) Average	684	36	36	100	4.3	-	0.7	-
NOX (ppb) Average	684	36	36	100	10.8	-	5.6	-
PM2.5 (ug/m3) Average	718	2	2	100	88.9	0	55.3	4
Temperature 2 m (C) Average	720	0	0	100	31.2	-	20.7	-
Relative Humidity (%) Average	720	0	0	100	100.5	-	99.9	-
Wind Speed 10 m (km/h) Average	714	0	6	99.17	17	-	9	-
Wind Direction 10 m (deg) Average	714	0	6	99.17	-	-	-	-

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

WOOD BUFFALO ENVIRONMENTAL ASSOCIATION - SURMONT 2 (AMS29)
SEPTEMBER 2024

MONTHLY SUMMARY FOR AIR QUALITY/ METEOROLOGICAL MONITORING MEASUREMENTS

					Percentile						
Parameter	Number	Mean	StnDev	Total	Min	P10	Q1	Median	Q3	P90	Max
SO2 (ppb) Average	684	0.3	0.5	-	0	0	0	0.1	0.3	0.8	6.4
H2S (ppb) Average	683	0.11	0.1	-	0	0	0.1	0.1	0.1	0.2	0.6
THC (ppm) Average	684	2.33	0.1	-	2.2	2.3	2.3	2.3	2.4	2.4	2.9
NO2 (ppb) Average	684	1.25	1.2	-	0.1	0.3	0.5	0.8	1.5	2.5	9.4
NO (ppb) Average	684	0.22	0.3	-	0	0.1	0.1	0.1	0.2	0.4	4.3
NOX (ppb) Average	684	1.47	1.5	-	0.2	0.4	0.6	1	1.8	2.9	10.8
PM2.5 (ug/m3) Average	718	10.67	18	-	0.5	1.2	2	3.4	7	36.7	88.9
Temperature 2 m (C) Average	720	12.4	5.7	-	-1.3	5.9	8.5	11.5	16.1	19.9	31.2
Relative Humidity (%) Average	720	74.18	19.9	-	20.6	44.3	58.7	76.1	92.5	98.6	100.5
Wind Speed 10 m (km/h) Average	714	4.5	3	-	0	1	2	4	6	9	17
Wind Direction 10 m (deg) Average	714	-	-	-	-	-	-	-	-	-	-

WOOD BUFFALO ENVIRONMENTAL ASSOCIATION - SURMONT 2 (AMS29)
SEPTEMBER 2024

OPERATIONAL NOTES

Parameter	Period Start	Period End	Duration (Hours)	Notes
H2S, SO2, THC	19 Sep 2024 13:00	19 Sep 2024 13:00	1	Maintenance - sample manifold cleaned
Wind Speed, Wind Direction	17 Sep 2024 08:00	17 Sep 2024 08:00	1	Flat line in sensor output signal
Wind Speed, Wind Direction	19 Sep 2024 03:00	19 Sep 2024 06:00	4	Flat line in sensor output signal
Wind Speed, Wind Direction	21 Sep 2024 04:00	21 Sep 2024 04:00	1	Flat line in sensor output signal

Wood Buffalo Environmental Association

Summary of Hour Averages

Sulphur Dioxide (SO_2) - ppb

Surmont 2 - September 2024

Number of Exceedences (AAAQO): 1-hr: 0 24-hr: 0

Maximum Value: 6.4 ppb on Sep 6 08:00 Maximum Daily Average: 1.1 ppb on Sep 6

Minimum Value: 0.0 ppb on Sep 4 02:00 Minimum Daily Average: 0.0 ppb on Sep 11

Maximum Diurnal Average: 0.5 ppb at hour 9 Minimum Diurnal Average: 0.1 ppb at hour 20

Monthly Average: 0.30 ppb Percentiles: P_1 = 0.0 P_{10} = 0.0 Q_1 = 0.0 Median = 0.1 Q_3 = 0.3 P_{90} = 0.8 P_{99} = 2.3

Hours in Service:	720
Hours of Data:	684
Hours of Missing Data:	36
Hours of Calibration:	35
Percent Operational Time:	99.9

Day	Hourly Period Ending At (MST)																								Daily	Daily
	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24	Average	Maximum
1-Sep	0.3	0.3	0.1	0.2	0.3	Z	0.9	0.7	1.1	0.6	0.6	0.4	0.4	0.6	0.3	0.2	0.2	0.2	0.3	0.3	0.4	0.3	0.2	0.2	0.4	1.1
2-Sep	Z	0.3	0.3	0.2	0.2	0.3	0.3	0.5	0.5	0.6	0.8	1.2	1.3	0.7	1.2	1.1	0.9	0.3	0.2	0.2	0.0	0.6	1.4	0.6	0.6	1.4
3-Sep	0.2	Z	0.2	0.5	0.4	0.3	0.3	0.2	0.4	0.4	0.5	1.1	1.7	0.8	0.8	1.1	0.8	0.9	0.4	0.1	0.2	0.3	0.1	0.2	0.5	1.7
4-Sep	0.2	0.0	Z	0.2	0.1	0.1	0.1	0.2	0.1	0.0	0.7	0.6	0.3	0.1	0.1	0.1	0.0	0.2	0.0	0.1	0.0	0.0	0.1	0.0	0.1	0.7
5-Sep	0.0	0.1	0.4	Z	0.0	0.0	0.0	0.0	1.2	0.8	0.8	0.5	0.3	0.0	0.0	0.0	0.0	0.1	0.2	0.0	0.0	0.0	0.0	0.1	0.2	1.2
6-Sep	0.0	0.0	0.0	0.2	Z	0.5	2.2	6.4	5.1	C	C	C	C	C	1.1	1.5	1.1	0.3	0.1	0.1	0.6	0.3	0.3	0.4	1.1	6.4
7-Sep	0.7	1.3	1.6	1.5	0.4	Z	0.2	0.4	0.8	0.8	0.8	0.6	0.4	0.5	0.3	0.1	0.1	0.3	0.4	0.3	0.2	0.1	0.1	0.1	0.5	1.6
8-Sep	Z	0.3	0.4	0.3	0.2	0.2	0.1	0.3	0.3	1.5	0.9	0.6	0.5	0.4	0.7	1.3	0.8	0.4	0.5	0.3	0.3	0.4	0.9	1.4	0.6	1.5
9-Sep	0.8	Z	0.6	0.5	0.4	0.7	0.8	0.8	0.4	0.8	1.6	1.0	0.5	0.1	0.3	0.1	0.1	0.0	0.1	0.1	0.0	0.0	0.0	0.3	0.4	1.6
10-Sep	0.4	0.5	Z	0.3	0.3	0.3	0.1	0.3	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.1	0.5
11-Sep	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
12-Sep	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
13-Sep	0.0	0.0	0.0	0.0	0.0	Z	0.0	0.0	0.1	0.0	0.0	0.1	0.0	0.0	0.0	0.1	0.0	0.0	0.0	0.5	0.4	0.2	0.1	0.2	0.1	0.5
14-Sep	Z	0.3	0.2	0.0	0.0	0.1	0.1	0.2	0.3	0.3	0.1	0.6	0.3	0.1	0.1	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.1	0.6
15-Sep	0.0	Z	0.0	0.0	0.0	0.0	0.0	0.0	0.2	0.2	0.3	0.4	0.6	1.1	1.5	1.2	0.8	0.5	0.2	0.1	0.1	0.0	0.0	0.0	0.3	1.5
16-Sep	0.0	0.0	Z	0.1	0.1	0.0	0.0	1.0	1.2	0.8	0.6	0.1	0.1	0.0	0.1	0.2	0.1	0.1	0.1	0.1	0.2	0.0	0.1	0.0	0.2	1.2
17-Sep	0.0	0.0	0.0	Z	0.0	0.0	0.0	0.1	0.6	0.4	0.3	0.5	0.3	0.5	0.6	0.5	0.3	0.4	0.3	0.2	0.2	0.2	0.2	0.2	0.3	0.6
18-Sep	0.2	0.3	0.2	0.4	Z	0.3	0.3	0.4	0.5	0.5	0.6	0.7	0.5	0.2	0.2	0.2	0.1	0.1	0.1	0.1	0.1	0.1	0.0	0.0	0.3	0.7
19-Sep	0.0	0.0	0.0	0.0	0.0	Z	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	0.2	0.0	0.0	0.2
20-Sep	Z	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	2.2	5.4	3.2	0.9	0.6	1.5	1.2	0.3	0.1	0.1	0.0	0.0	0.7	5.4
21-Sep	0.0	Z	0.0	0.0	0.0	0.0	0.0	0.2	0.1	0.2	0.5	0.6	0.3	0.0	0.5	0.1	0.0	0.0	0.0	0.2	0.5	0.2	0.2	0.5	0.2	0.6
22-Sep	0.4	0.2	Z	0.2	0.1	0.0	0.1	0.2	0.1	0.2	0.5	0.5	0.3	0.4	0.8	0.3	0.2	0.4	0.2	0.1	0.1	0.1	0.1	0.1	0.2	0.8
23-Sep	0.1	0.1	0.1	Z	0.2	0.1	0.1	0.2	0.7	3.2	2.1	1.0	0.9	1.1	0.2	0.1	0.1	0.1	0.1	0.3	1.3	1.0	1.3	0.2	0.6	3.2
24-Sep	0.1	0.2	0.2	0.2	Z	0.2	0.2	0.1	0.1	0.2	0.3	0.3	0.2	0.3	0.3	0.2	0.1	0.1	0.2	0.1	0.1	0.1	0.1	0.1	0.2	0.3
25-Sep	0.3	0.1	0.0	0.1	0.2	Z	0.2	0.8	0.3	0.4	0.5	0.8	1.1	1.4	0.9	0.5	0.5	0.2	0.0	0.0	0.0	0.0	0.0	0.0	0.4	1.4
26-Sep	Z	0.0	0.0	0.0	1.0	0.8	0.3	0.0	0.2	0.0	0.0	0.4	0.1	0.1	0.4	0.2	0.0	0.2	0.1	0.0	0.0	0.2	0.0	0.0	0.2	1.0
27-Sep	0.0	Z	0.1	0.0	0.0	0.0	0.0	0.1	0.0	0.0	0.1	0.0	0.2	0.1	0.1	0.2	0.4	0.2	0.1	0.1	0.0	0.0	0.0	0.0	0.1	0.4
28-Sep	0.1	0.0	Z	0.2	0.2	0.4	0.2	0.1	0.2	0.2	0.2	0.1	0.1	0.2	0.2	0.3	0.2	0.1	0.0	0.1	0.2	0.0	0.0	0.0	0.2	0.4
29-Sep	0.0	0.0	0.0	Z	0.1	0.0	0.0	0.0	0.0	0.0	0.0	0.1	0.2	0.0	0.0	0.0	0.0	0.0	0.0	0.3	0.3	0.3	0.9	2.5	0.2	2.5
30-Sep	2.6	0.1	0.0	0.0	Z	0.3	0.6	0.6	0.7	0.5	0.5	0.3	0.0	0.0	0.0	0.0	0.0	0.2	0.4	0.0	0.0	0.1	0.0	0.1	0.3	2.6
	0.3	0.2	0.2	0.2	0.2	0.2	0.2	0.5	0.5	0.4	0.5	0.4	0.5	0.5	0.5	0.4	0.3	0.2	0.2	0.1	0.2	0.2	0.2	0.2	Diurnal Average	
	2.6	1.3	1.6	1.5	1.0	0.8	2.2	6.4	5.1	3.2	2.1	1.2	2.2	5.4	3.2	1.5	1.1	1.5	1.2	0.5	1.3	1.0	1.4	2.5	Diurnal Maximum	

Z - zerospan C - Calibration M - Maintenance

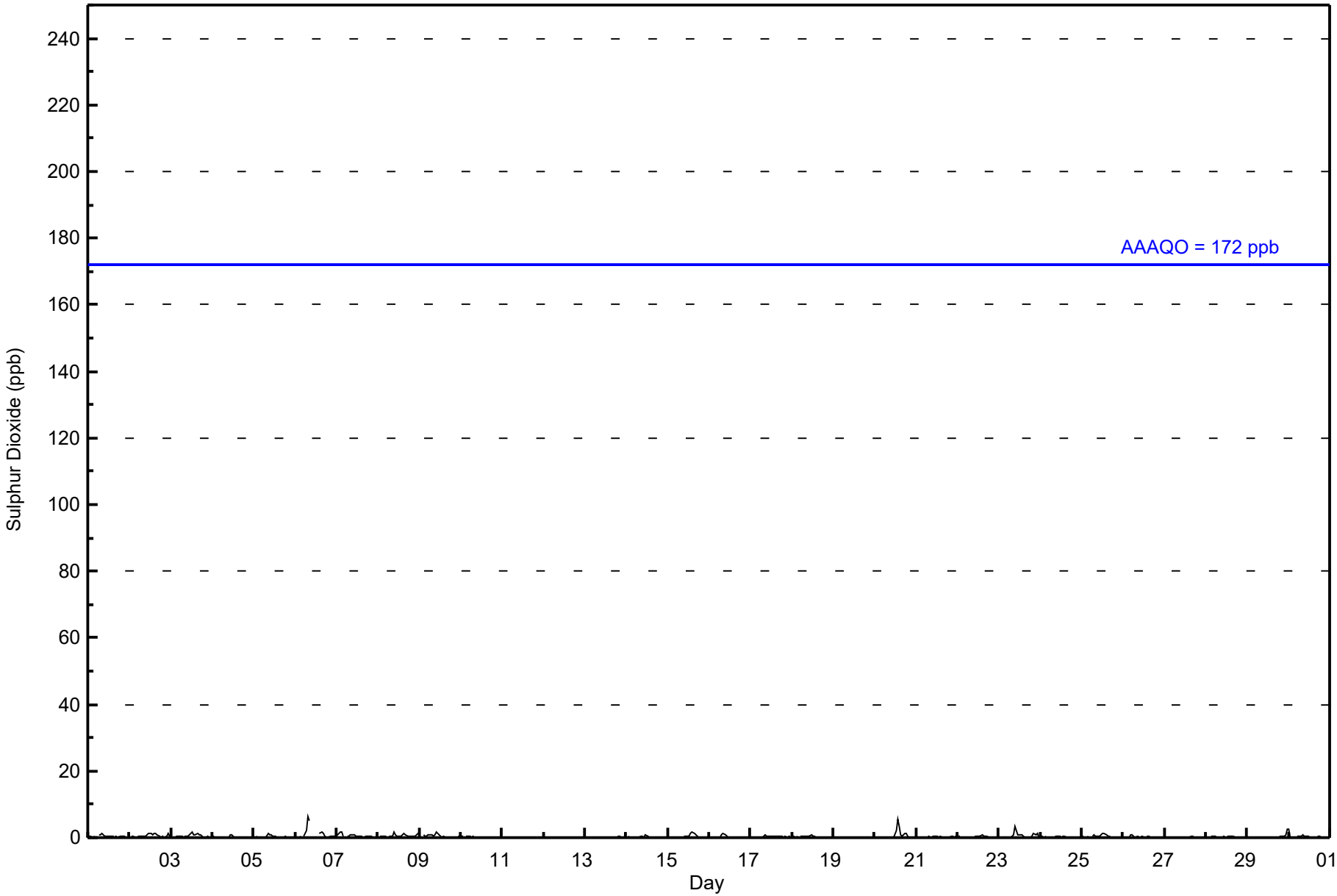
Alberta Ambient Air Quality Objectives (AAAQO): 1-hr 172 ppb 24-hr 48 ppb

Wood Buffalo Environmental Association

Hourly Averages

Sulphur Dioxide (SO_2) - ppb

Surmont 2 - September 2024



Sulphur Dioxide (SO_2) - ppb
Surmont 2 - September 2024

Concentration Ranges (ppb)	Number of Hours	%	Cumulative %
0 - 10	684	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: 684

Total Number of Hours: 720

Wood Buffalo Environmental Association

Frequency Distribution

Sulphur Dioxide (SO_2) - ppb

Surmont 2 - September 2024

Concentration Ranges (ppb)	Wind Direction																
	N	NNE	NE	ENE	E	ESE	SE	SSE	S	SSW	SW	WSW	W	WNW	NW	NNW	**Totals**
0 - 10	13	16	11	9	8	48	38	31	18	30	61	120	158	62	32	24	679
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	13	16	11	9	8	48	38	31	18	30	61	120	158	62	32	24	679

Total Number of Valid Hours: 679

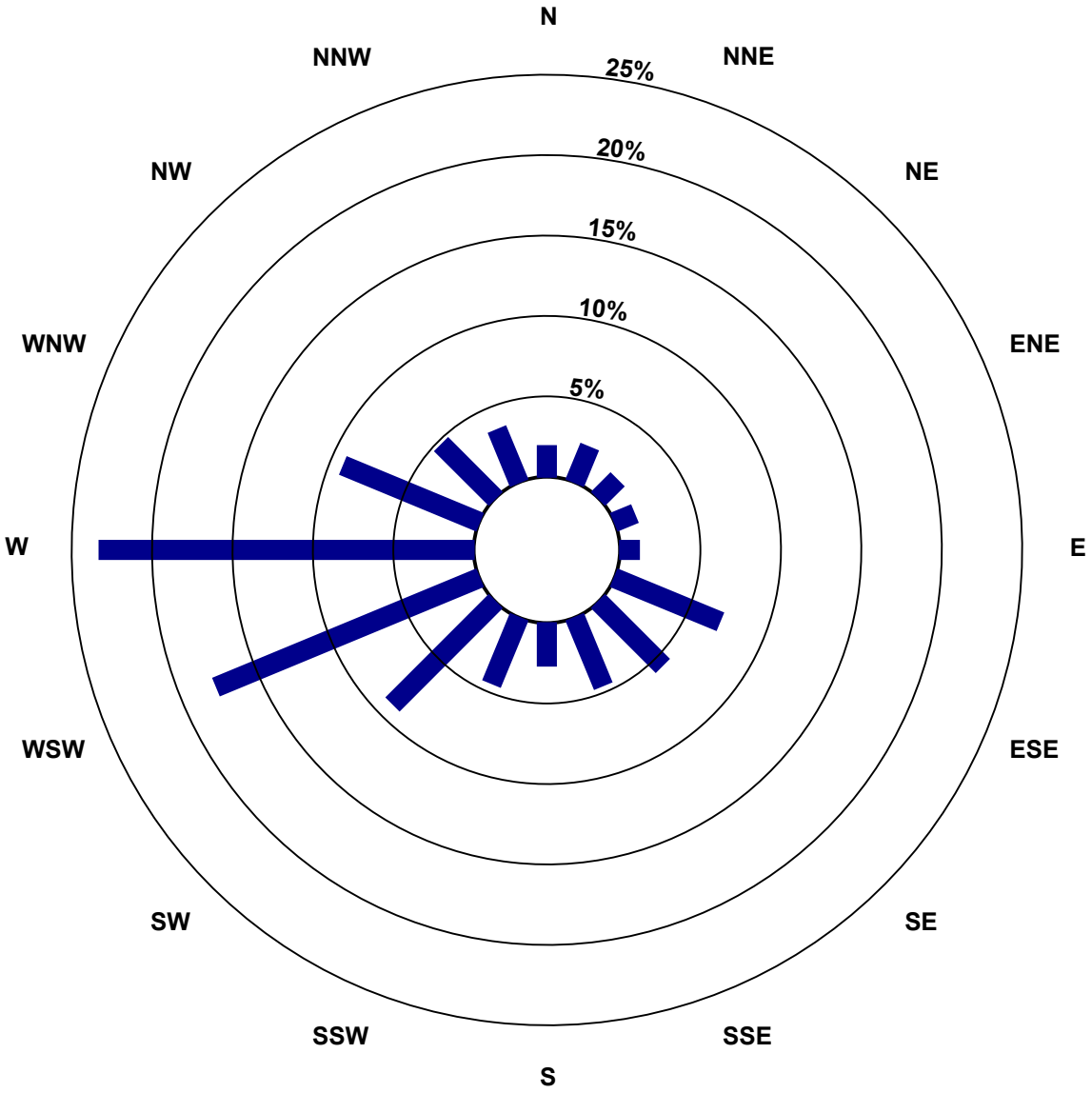
Total Number of Hours: 720

Wood Buffalo Environmental Association

Wind Rose Sep 2024

Sulphur Dioxide (SO_2) - ppb

Surmont 2



Classes (ppb)

0 - 10

11 - 20

21 - 60

61 - 110

111 - 172

> 172

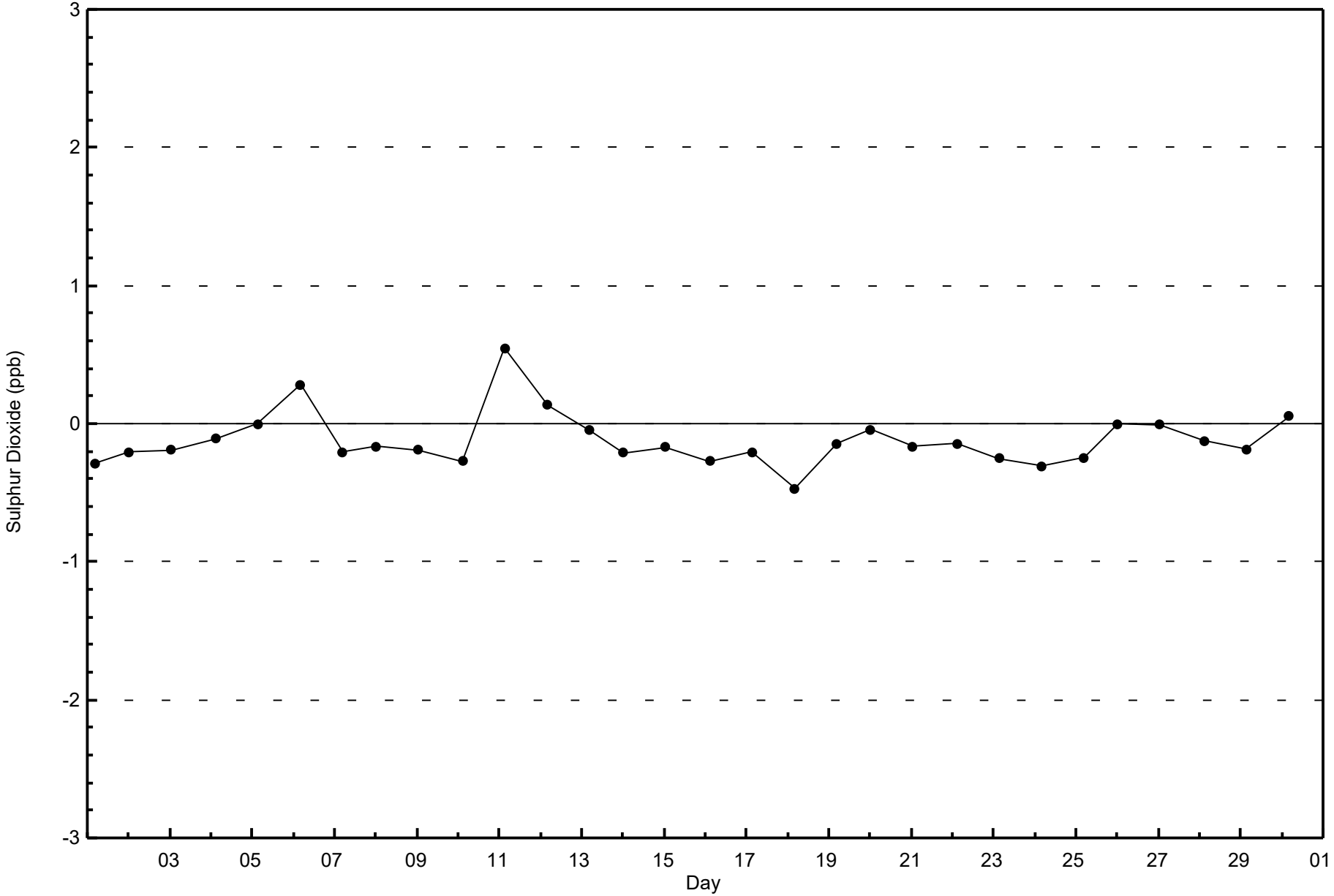
Total Number of Valid Hours: 679

Wood Buffalo Environmental Association

Zero Responses

Sulphur Dioxide (SO_2) - ppb

Surmont 2 - September 2024

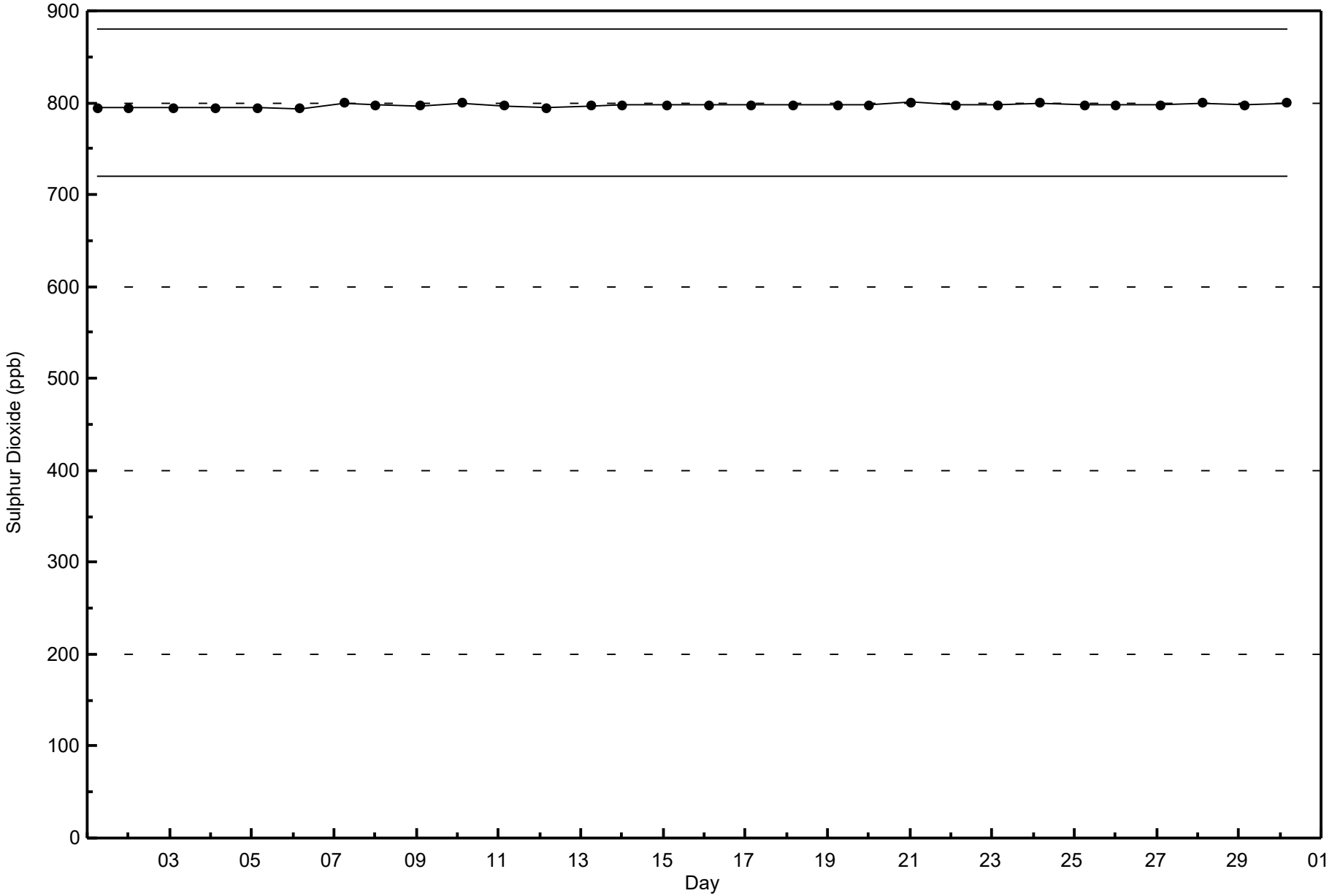


Wood Buffalo Environmental Association

Span Responses

Sulphur Dioxide (SO_2) - ppb

Surmont 2 - September 2024



Wood Buffalo Environmental Association

Summary of Hour Averages

Hydrogen Sulphide (H_2S) - ppb

Surmont 2 - September 2024

Number of Exceedences (AAAQO): 1-hr: 0 24-hr: 0
Maximum Value: 0.6 ppb on Sep 13 09:00 Maximum Daily Average: 0.3 ppb on Sep 13

Minimum Value: 0.0 ppb on Sep 7 16:00
Maximum Diurnal Average: 0.1 ppb at hour 9
Monthly Average: 0.11 ppb

Minimum Daily Average: 0.1 ppb on Sep 27
Minimum Diurnal Average: 0.1 ppb at hour 16
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 in Service:	720
Hours of Data:	683
Hours of Missing Data:	37
Hours of Calibration:	36
Percent Operational Time:	99.9

Day	Hourly Period Ending At (MST)																								Daily	Daily
	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24	Average	Maximum
1-Sep	Z	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	0.0	0.1	0.1	0.1	0.1	0.1	0.1	0.2
2-Sep	0.1	Z	0.2	0.1	0.1	0.1	0.1	0.1	0.2	0.3	0.1	0.1	0.0	0.0	0.0	0.0	0.0	0.0	0.1	0.1	0.1	0.1	0.2	0.2	0.1	0.3
3-Sep	0.2	0.2	Z	0.2	0.2	0.2	0.2	0.2	0.2	0.2	C	C	C	C	C	C	0.5	0.4	0.3	0.2	0.2	0.2	0.1	0.2	--	0.5
4-Sep	0.2	0.3	0.4	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	0.4
5-Sep	0.1	0.1	0.1	0.1	Z	0.1	0.1	0.1	0.3	0.2	0.2	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.3
6-Sep	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	0.2	0.3	0.2	0.1	0.1	0.1	0.1	0.2	0.3
7-Sep	Z	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	0.0	0.1	0.1	0.2	0.2	0.2	0.1	0.1	0.1	0.2
8-Sep	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	0.2	0.1	0.2
9-Sep	0.2	0.2	Z	0.2	0.2	0.2	0.2	0.3	0.2	0.2	0.2	0.2	0.1	0.1	0.1	0.1	0.1	0.0	0.0	0.1	0.1	0.1	0.1	0.1	0.1	0.3
10-Sep	0.1	0.1	0.1	Z	0.1	0.1	0.1	0.1	0.1	0.1	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	0.1
11-Sep	0.1	0.1	0.1	0.1	Z	0.2	0.2	0.2	0.2	0.1	0.0	0.1	0.1	0.1	0.1	0.1	0.0	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.2
12-Sep	0.1	0.1	0.1	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	0.2	0.2	0.2	0.2
13-Sep	Z	0.3	0.2	0.2	0.2	0.2	0.3	0.4	0.6	0.5	0.4	0.4	0.4	0.3	0.3	0.4	0.5	0.5	0.3	0.4	0.3	0.3	0.3	0.2	0.3	0.6
14-Sep	0.2	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	0.0	0.0	0.0	0.1	0.1	0.1	0.1	0.2	0.1	0.1	0.1	0.2
15-Sep	0.0	0.0	Z	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.2	0.2	0.2	0.4	0.5	0.5	0.3	0.3	0.2	0.2	0.3	0.2	0.2	0.1	0.2	0.5
16-Sep	0.1	0.1	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	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1
17-Sep	0.1	0.1	0.1	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	0.1	0.1	0.2	0.2	0.1	0.1	0.1	0.2
18-Sep	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	0.0	0.0	0.0	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1
19-Sep	Z	0.1	0.1	0.1	0.1	0.0	0.1	0.1	0.1	0.1	0.1	0.1	M	0.1	0.1	0.1	0.2	0.3	0.2	0.1	0.1	0.1	0.1	0.1	0.1	0.3
20-Sep	0.1	Z	0.1	0.1	0.1	0.1	0.3	0.1	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	0.1	0.1	0.3
21-Sep	0.1	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	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.2
22-Sep	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	0.2	0.1	0.1	0.1	0.2
23-Sep	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
24-Sep	0.1	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	0.2	0.1	0.2
25-Sep	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
26-Sep	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	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.1	0.1	0.1
27-Sep	0.1	0.1	Z	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	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1
28-Sep	0.1	0.0	0.0	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	0.1	0.2	0.1	0.1	0.1	0.1	0.1	0.2
29-Sep	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	0.0	0.0	0.0	0.0	0.1	0.1	0.4	0.2	0.3	0.2	0.1	0.1	0.4
30-Sep	0.1	0.1	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	0.0	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	0.1	0.1	0.1	0.1	0.1	0.1	0.1	Diurnal Average	
	0.2	0.3	0.4	0.2	0.2	0.2	0.3	0.4	0.6	0.5	0.4	0.4	0.4	0.4	0.5	0.5	0.5	0.5	0.3	0.4	0.3	0.3	0.3	0.2	Diurnal Maximum	

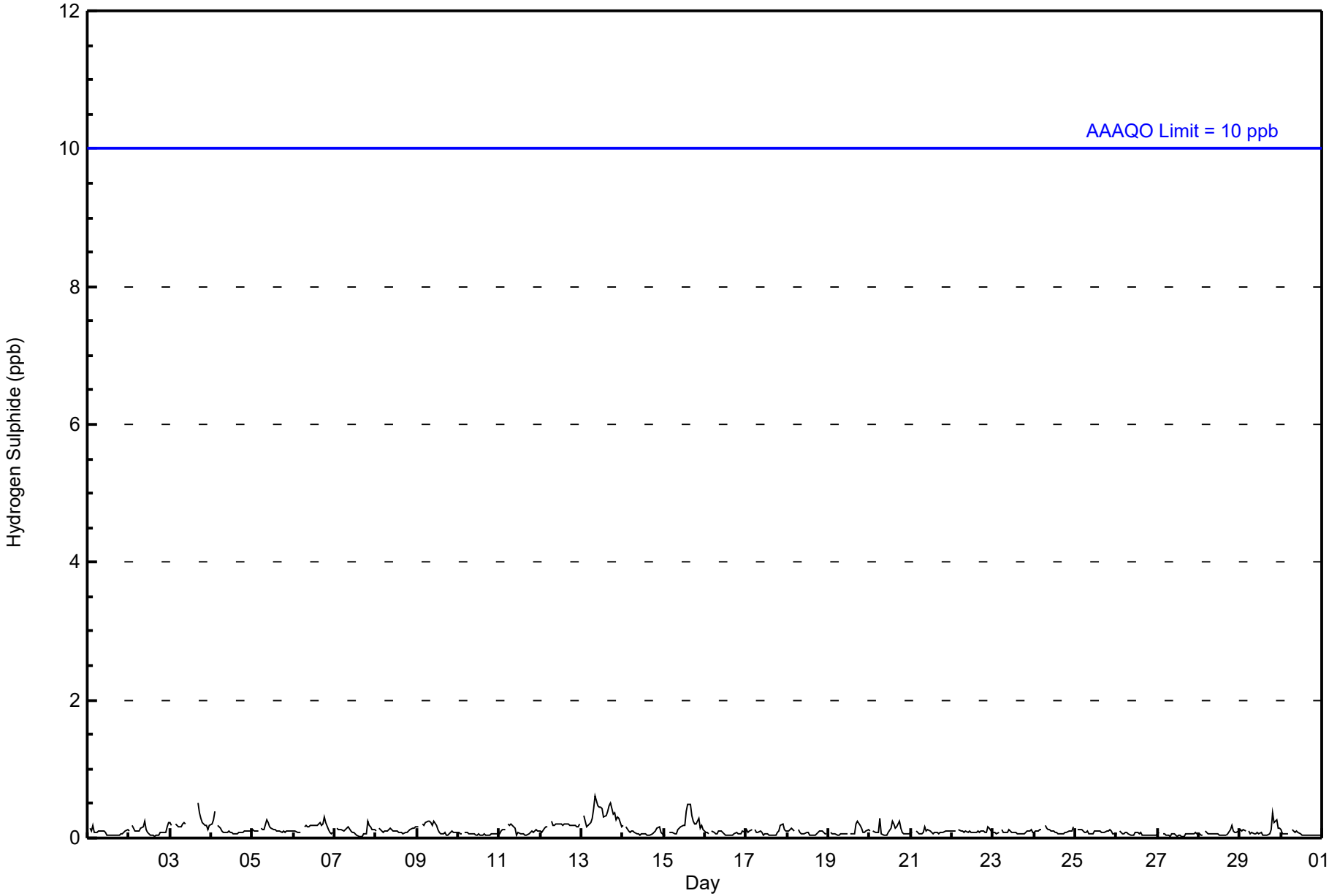
Z - zerospan C - Calibration M - Maintenance
Alberta Ambient Air Quality Objectives (AAAQO): 1-hr 10 ppb 24-hr 3 ppb

Wood Buffalo Environmental Association

Hourly Averages

Hydrogen Sulphide (H_2S) - ppb

Surmont 2 - September 2024



Concentration Ranges (ppb)	Number of Hours	%	Cumulative %
0 - 2	683	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: 683

Total Number of Hours: 720

Wood Buffalo Environmental Association

Frequency Distribution

Hydrogen Sulphide (H_2S) - ppb

Surmont 2 - September 2024

Concentration Ranges (ppb)	Wind Direction																
	N	NNE	NE	ENE	E	ESE	SE	SSE	S	SSW	SW	WSW	W	WNW	NW	NNW	**Totals**
0 - 2	12	16	11	9	9	52	38	29	18	30	60	124	158	62	27	22	677
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	12	16	11	9	9	52	38	29	18	30	60	124	158	62	27	22	677

Total Number of Valid Hours: 677

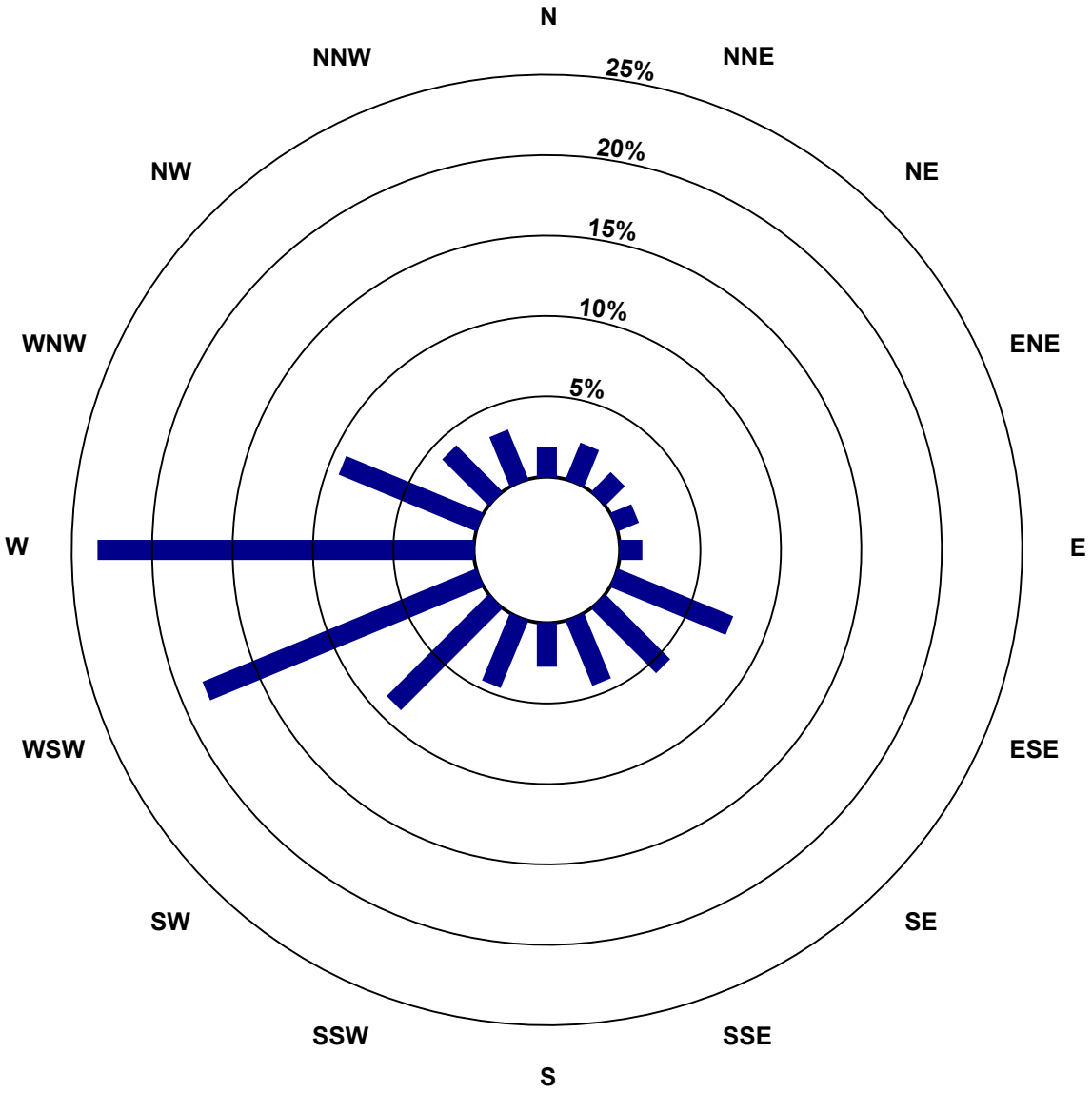
Total Number of Hours: 720

Wood Buffalo Environmental Association

Wind Rose Sep 2024

Hydrogen Sulphide (H_2S) - ppb

Surmont 2



Classes (ppb)

- 0 - 2
- 3 - 4
- 5 - 7
- 8 - 11
- > 11

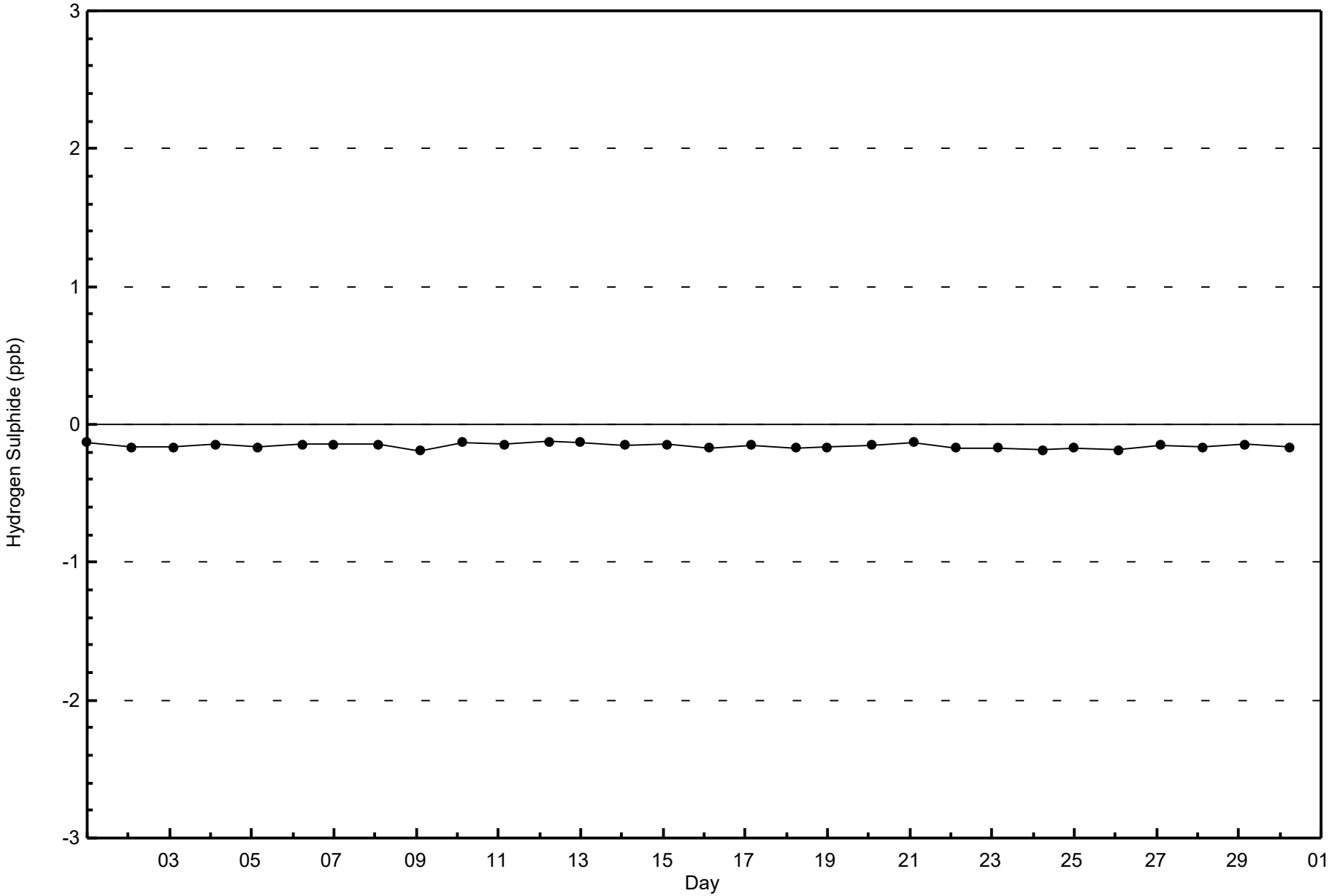
Total Number of Valid Hours: 677

Wood Buffalo Environmental Association

Zero Responses

Hydrogen Sulphide (H_2S) - ppb

Surmont 2 - September 2024

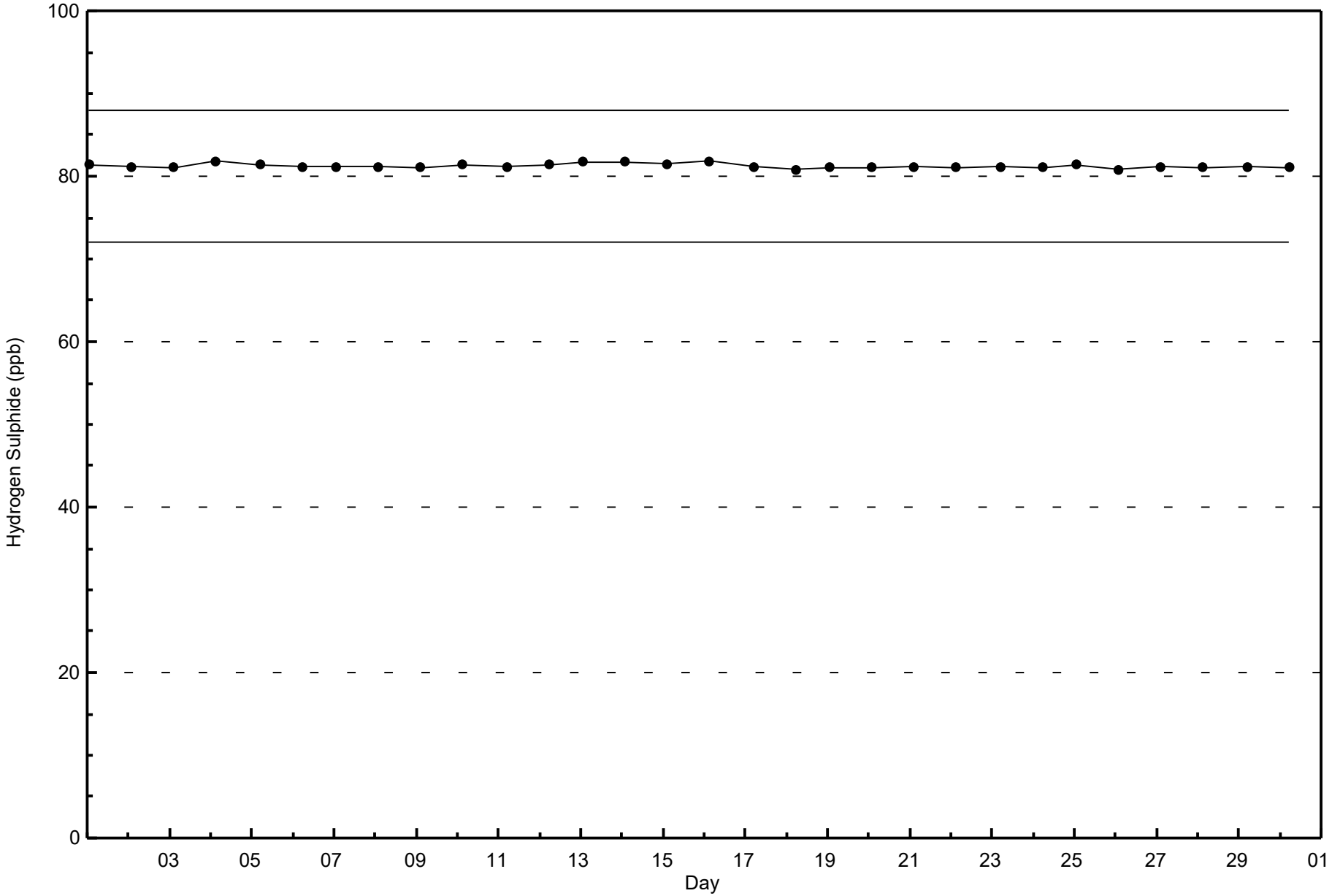


Wood Buffalo Environmental Association

Span Responses

Hydrogen Sulphide (H_2S) - ppb

Surmont 2 - September 2024



Wood Buffalo Environmental Association

Summary of Hour Averages

Total Hydrocarbons (THC) - ppm

Surmont 2 - September 2024

Number of Exceedences (AAAQO): 1-hr: 0 24-hr: 0

Maximum Value: 2.9 ppm on Sep 19 18:00

Maximum Daily Average: 2.5 ppm on Sep 13

Minimum Value: 2.2 ppm on Sep 24 08:00

Minimum Daily Average: 2.2 ppm on Sep 26

Maximum Diurnal Average: 2.4 ppm at hour 6

Minimum Diurnal Average: 2.3 ppm at hour 1

Monthly Average: 2.33 ppm

Percentiles: P_1 = 2.2 P_{10} = 2.3 Q_1 = 2.3 Median = 2.3 Q_3 = 2.4 P_{90} = 2.4 P_{99} = 2.6

Hours in Service:	720
Hours of Data:	684
Hours of Missing Data:	36
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-Sep	2.3	2.3	2.3	2.3	2.2	Z	2.2	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	2.3	2.3	2.4	2.3	2.3	2.4
2-Sep	Z	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	2.3	2.3	2.3	2.3	2.3	2.3	2.3	2.3	2.4
3-Sep	2.3	Z	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	2.3	2.3	2.3	2.3	2.3	2.3	2.3	2.3	2.3	2.3	2.3
4-Sep	2.3	2.3	Z	2.3	2.4	2.4	2.4	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	2.4
5-Sep	2.3	2.3	2.3	Z	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	2.4	2.3	2.3	2.3	2.3	2.4	2.4
6-Sep	2.3	2.3	2.3	2.3	Z	2.3	2.3	2.3	2.3	C	C	C	C	C	2.4	2.4	2.4	2.4	2.6	2.5	2.3	2.3	2.3	2.4	2.4	2.6
7-Sep	2.4	2.3	2.3	2.4	2.4	Z	2.4	2.5	2.5	2.4	2.4	2.4	2.4	2.4	2.3	2.3	2.3	2.3	2.4	2.6	2.4	2.4	2.4	2.4	2.4	2.6
8-Sep	Z	2.4	2.4	2.4	2.5	2.5	2.4	2.5	2.4	2.4	2.4	2.4	2.4	2.4	2.4	2.4	2.3	2.3	2.3	2.4	2.4	2.4	2.4	2.4	2.4	2.5
9-Sep	2.4	Z	2.3	2.4	2.3	2.3	2.3	2.3	2.3	2.5	2.6	2.4	2.4	2.3	2.3	2.2	2.3	2.3	2.3	2.3	2.3	2.3	2.3	2.3	2.3	2.6
10-Sep	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	2.3	2.3	2.4	2.4	2.3	2.4
11-Sep	2.4	2.4	2.4	Z	2.4	2.5	2.5	2.5	2.4	2.3	2.3	2.3	2.3	2.3	2.3	2.3	2.3	2.3	2.3	2.3	2.3	2.3	2.3	2.3	2.4	2.5
12-Sep	2.3	2.3	2.3	2.3	Z	2.5	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	2.4	2.4	2.4	2.5
13-Sep	2.4	2.4	2.4	2.4	2.4	Z	2.4	2.5	2.5	2.5	2.5	2.6	2.7	2.6	2.6	2.6	2.7	2.5	2.4	2.4	2.5	2.4	2.4	2.4	2.5	2.7
14-Sep	Z	2.4	2.4	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	2.3	2.5	2.5	2.4	2.4	2.4	2.5
15-Sep	2.4	Z	2.5	2.5	2.5	2.6	2.6	2.5	2.5	2.4	2.4	2.5	2.4	2.5	2.5	2.6	2.5	2.5	2.4	2.4	2.4	2.4	2.4	2.3	2.5	2.6
16-Sep	2.3	2.3	Z	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	2.3
17-Sep	2.3	2.4	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	2.6	2.4	2.4	2.3	2.6
18-Sep	2.3	2.3	2.3	2.4	Z	2.4	2.4	2.3	2.3	2.3	2.3	2.3	2.3	2.3	2.3	2.2	2.2	2.3	2.3	2.3	2.3	2.3	2.4	2.3	2.3	2.4
19-Sep	2.3	2.3	2.3	2.4	2.4	Z	2.4	2.4	2.3	2.3	2.3	2.3	M	2.4	2.3	2.3	2.8	2.9	2.7	2.6	2.4	2.4	2.4	2.5	2.4	2.9
20-Sep	Z	2.4	2.4	2.5	2.5	2.5	2.4	2.2	2.2	2.2	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	2.5
21-Sep	2.3	Z	2.3	2.4	2.4	2.4	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	2.3	2.3	2.3	2.2	2.3	2.4
22-Sep	2.2	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	2.2	2.3	2.3	2.2	2.4	2.4	2.3	2.3	2.4
23-Sep	2.2	2.2	2.2	Z	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	2.2	2.3	2.2	2.3	2.3	2.3	2.2	2.3	2.4
24-Sep	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	2.3	2.3	2.3	2.3	2.3	2.2	2.3	2.3	2.3	2.3	2.3	2.2	2.3
25-Sep	2.3	2.2	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	2.3	2.2	2.2	2.3	2.3	2.3	2.3	2.3	2.2	2.2	2.3
26-Sep	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	2.3	2.3	2.3	2.3	2.3	2.3	2.3	2.3	2.3	2.2	2.3
27-Sep	2.3	Z	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	2.2	2.3	2.2	2.3	2.3	2.3	2.3
28-Sep	2.3	2.3	Z	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	2.4	2.4	2.4	2.3	2.4
29-Sep	2.3	2.3	2.4	Z	2.4	2.4	2.3	2.4	2.3	2.3	2.3	2.3	2.3	2.3	2.3	2.3	2.3	2.3	2.3	2.4	2.4	2.4	2.3	2.3	2.3	2.4
30-Sep	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	2.3	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	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	
	2.4	2.4	2.5	2.5	2.5	2.6	2.6	2.5	2.5	2.5	2.6	2.6	2.7	2.6	2.6	2.6	2.8	2.9	2.7	2.6	2.5	2.6	2.4	2.5	Diurnal Maximum	

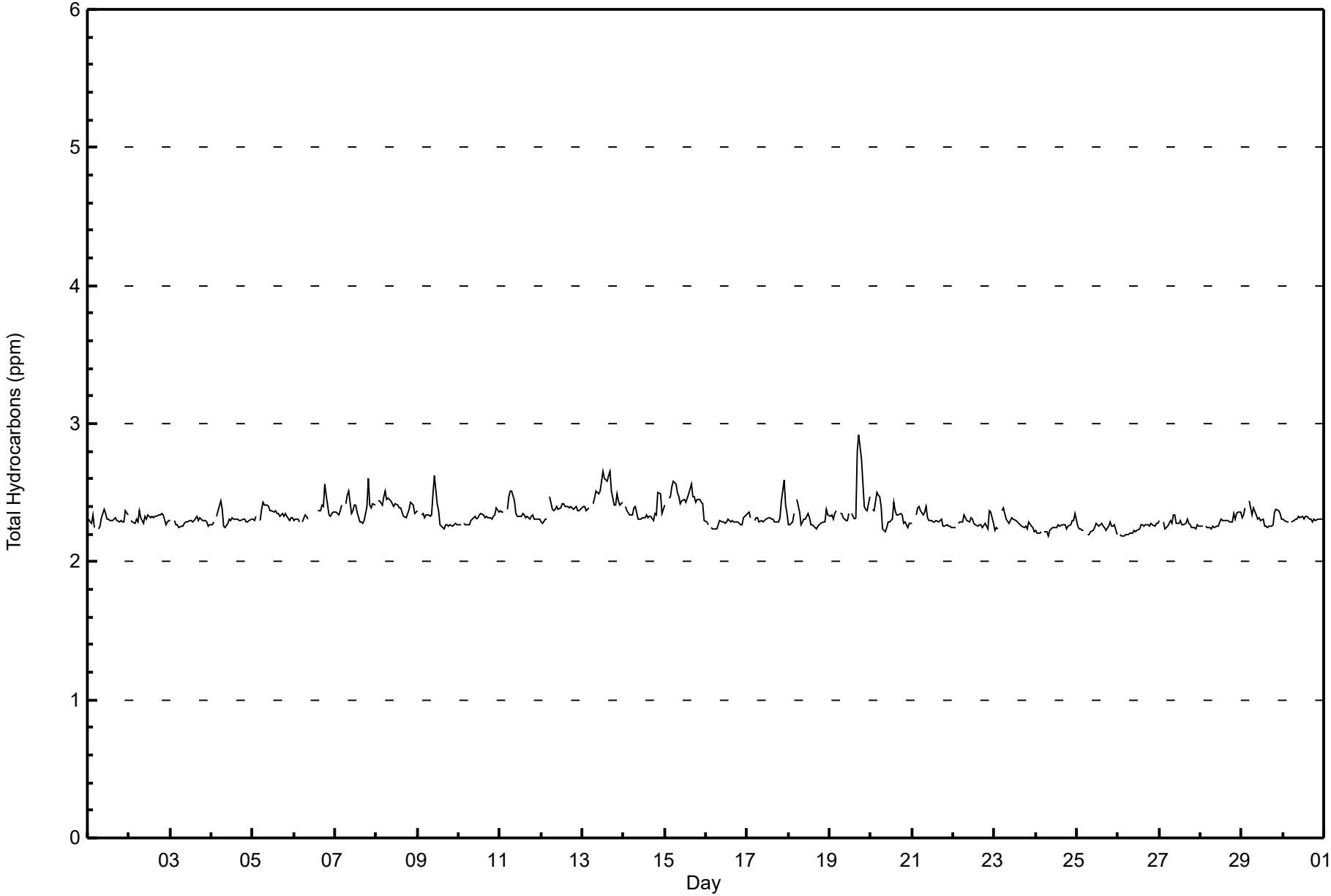
Z - zerospan C - Calibration M - Maintenance

Wood Buffalo Environmental Association

Hourly Averages

Total Hydrocarbons (THC) - ppm

Surmont 2 - September 2024



Concentration Ranges (ppm)	Number of Hours	%	Cumulative %
0 - 2.0	0	0.00	0.00
2.1 - 3.0	684	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: 684

Total Number of Hours: 720

Wood Buffalo Environmental Association

Frequency Distribution

Total Hydrocarbons (THC) - ppm

Surmont 2 - September 2024

Concentration Ranges (ppm)	Wind Direction																
	N	NNE	NE	ENE	E	ESE	SE	SSE	S	SSW	SW	WSW	W	WNW	NW	NNW	**Totals**
0 - 2.0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
2.1 - 3.0	13	16	11	9	8	48	38	31	18	30	61	120	158	62	32	24	679
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	13	16	11	9	8	48	38	31	18	30	61	120	158	62	32	24	679

Total Number of Valid Hours: 679

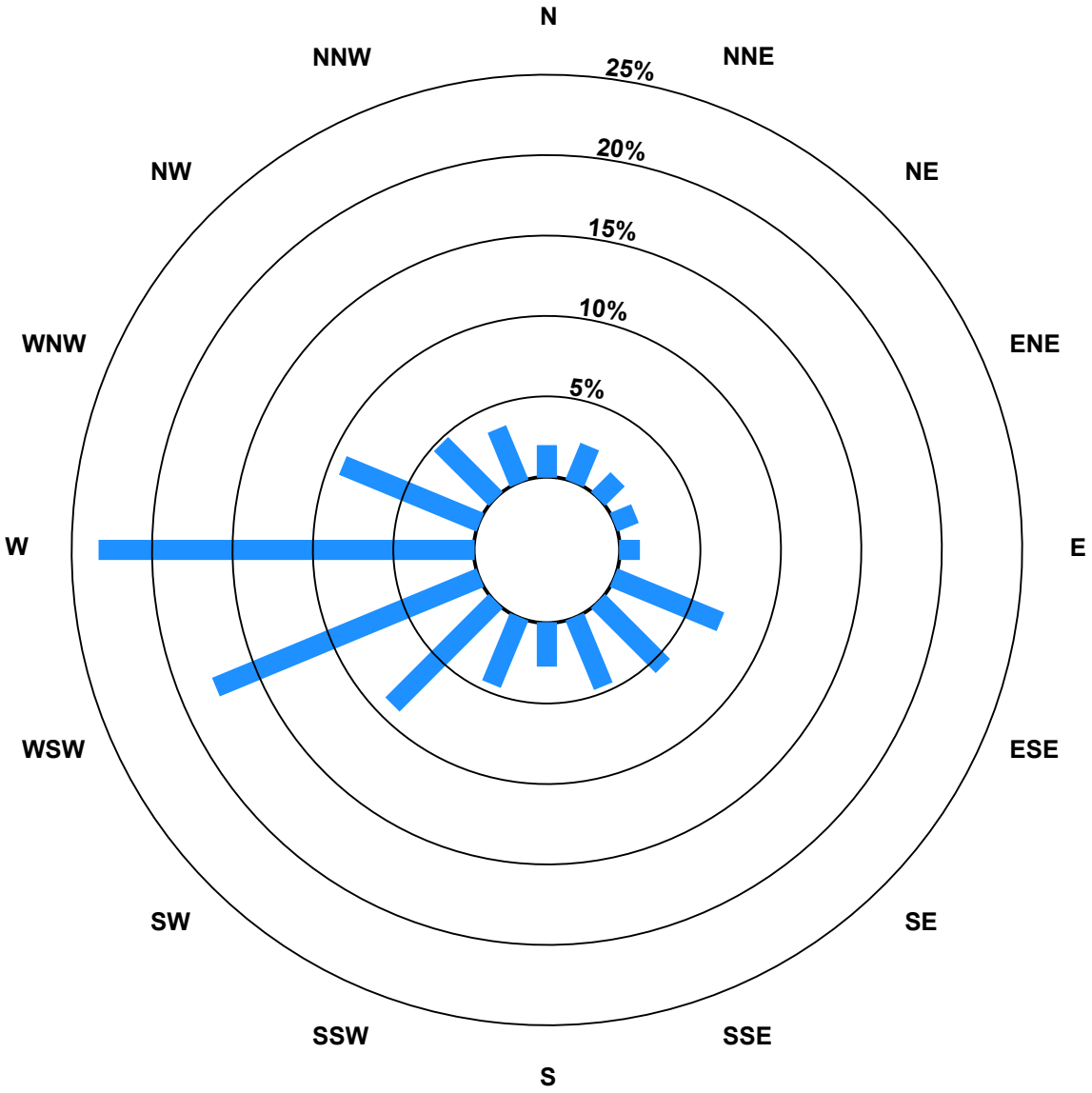
Total Number of Hours: 720

Wood Buffalo Environmental Association

Wind Rose Sep 2024

Total Hydrocarbons (THC) - ppm

Surmont 2



Classes (ppm)

0 - 2.0

2.1 - 3.0

3.1 - 10.0

> 10.0

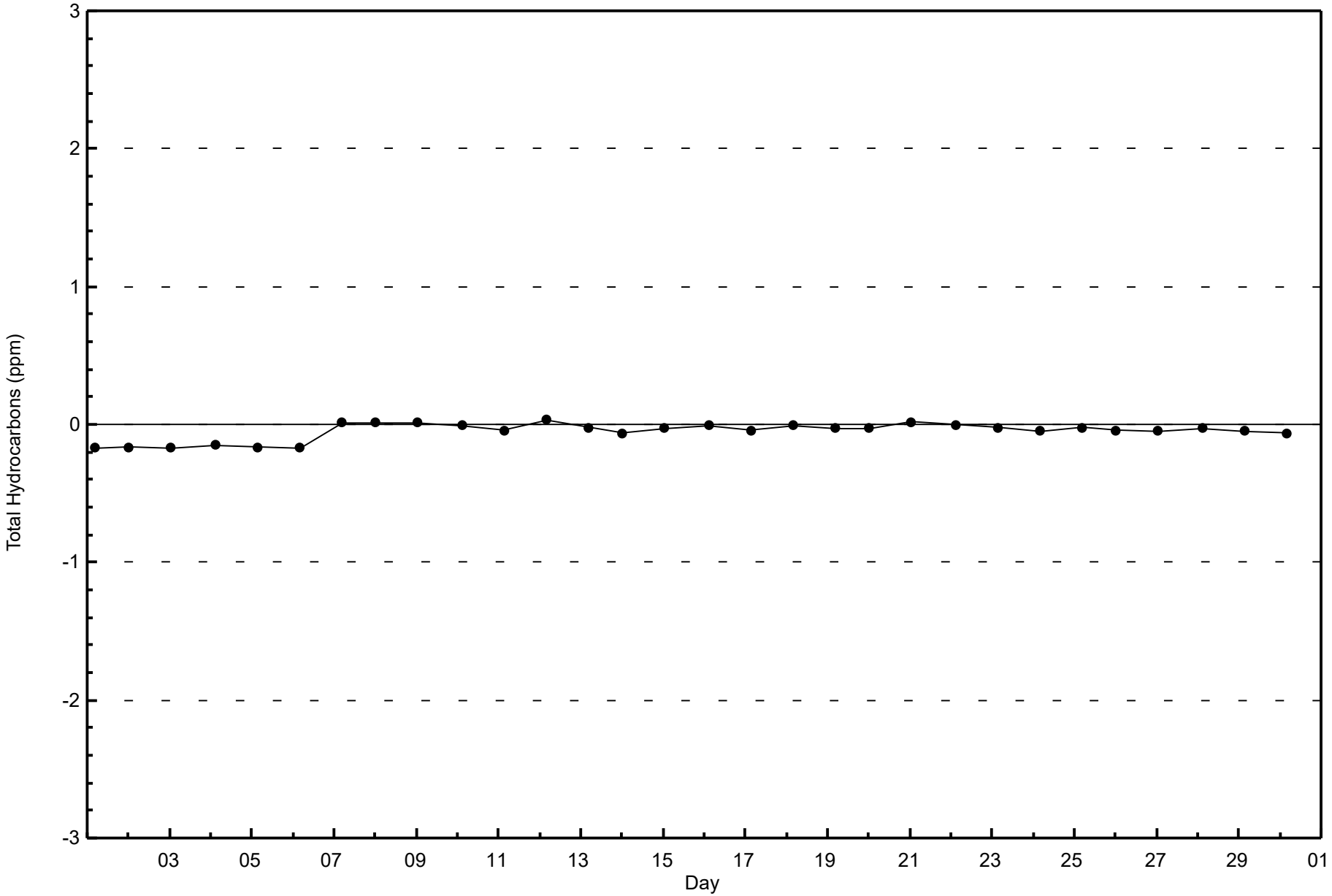
Total Number of Valid Hours: 679

Wood Buffalo Environmental Association

Zero Responses

Total Hydrocarbons (THC) - ppm

Surmont 2 - September 2024

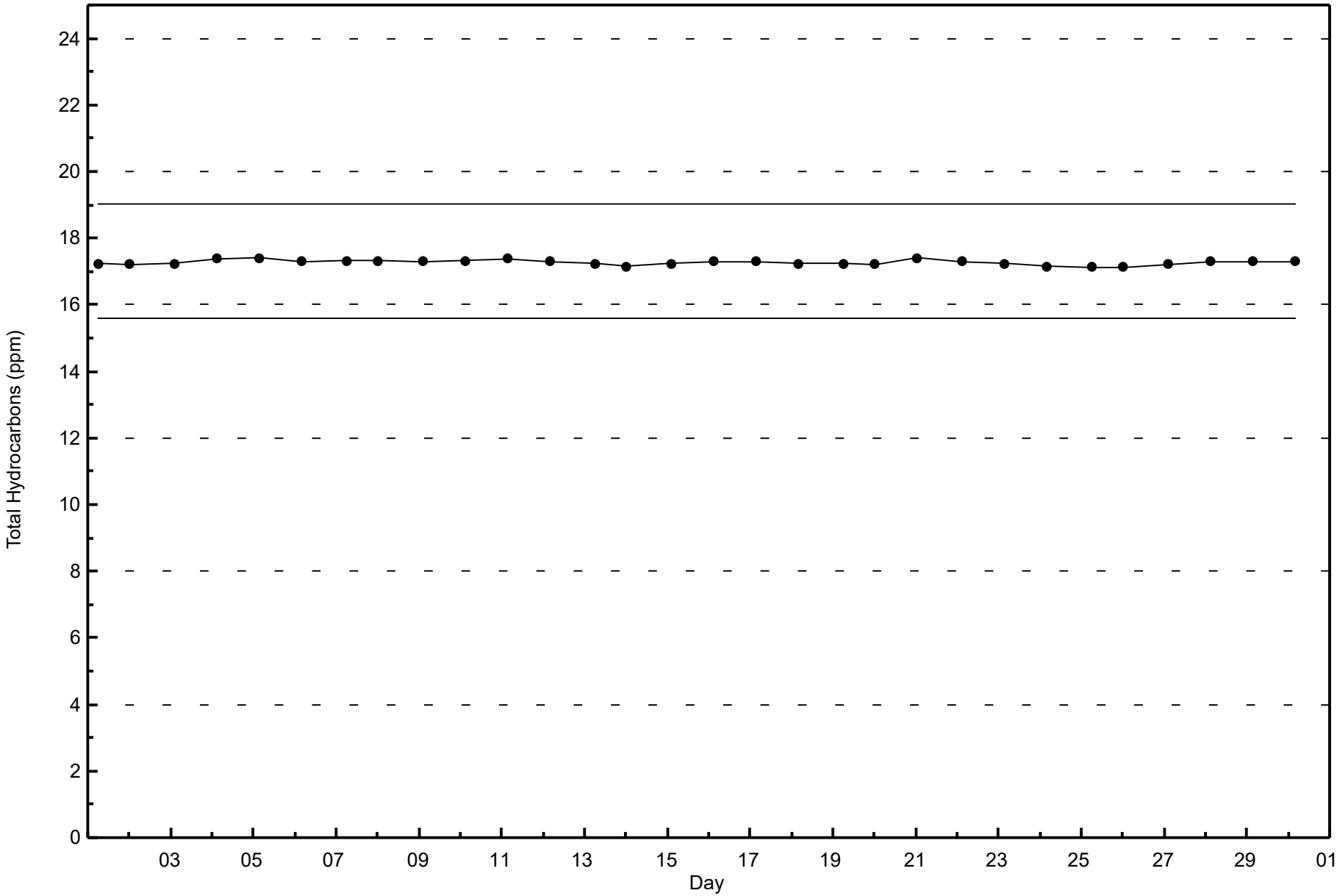


Wood Buffalo Environmental Association

Span Responses

Total Hydrocarbons (THC) - ppm

Surmont 2 - September 2024



Wood Buffalo Environmental Association

Summary of Hour Averages

Nitric Oxide (NO) - ppb

Surmont 2 - September 2024

Number of Exceedences (AAAQO): 1-hr: 0 24-hr: 0

Maximum Value: 4.3 ppb on Sep 11 08:00 Maximum Daily Average: 0.7 ppb on Sep 13

Minimum Value: 0.0 ppb on Sep 26 19:00 Minimum Daily Average: 0.1 ppb on Sep 30

Maximum Diurnal Average: 0.5 ppb at hour 9 Minimum Diurnal Average: 0.1 ppb at hour 3

Monthly Average: 0.22 ppb Percentiles: P_1 = 0.0 P_{10} = 0.1 Q_1 = 0.1 Median = 0.1 Q_3 = 0.2 P_{90} = 0.4 P_{99} = 1.8

Hours in Service:	720
Hours of Data:	684
Hours of Missing Data:	36
Hours of Calibration:	36
Percent Operational Time:	100.0

Day	Hourly Period Ending At (MST)																								Daily	Daily
	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24	Average	Maximum
1-Sep	0.1	0.1	0.1	Z	0.1	0.1	0.2	0.4	0.6	0.4	0.3	0.2	0.3	0.3	0.2	0.3	0.3	0.2	0.2	0.2	0.2	0.2	0.2	0.2	0.2	0.6
2-Sep	0.1	0.3	0.2	0.1	Z	0.1	0.2	0.4	0.4	1.0	0.3	0.3	0.3	0.2	0.2	0.2	0.2	0.2	0.3	0.3	0.2	0.2	0.2	0.2	0.3	1.0
3-Sep	0.2	0.2	0.2	0.2	0.1	Z	0.2	0.3	0.4	0.4	0.2	0.3	0.3	0.4	0.6	0.5	0.3	0.3	0.2	0.1	0.1	0.2	0.1	0.1	0.2	0.6
4-Sep	Z	0.1	0.1	0.1	0.1	0.2	0.3	0.2	0.2	0.2	0.2	0.1	0.2	0.2	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.3
5-Sep	0.1	Z	0.1	0.0	0.0	0.1	0.2	0.4	1.5	1.1	0.5	0.3	0.2	0.2	0.2	0.2	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.3	1.5
6-Sep	0.1	0.1	Z	0.1	0.1	0.1	0.2	0.3	0.1	0.1	0.1	0.2	0.3	0.3	0.2	0.2	0.2	0.2	0.2	0.2	0.2	0.1	0.1	0.1	0.2	0.3
7-Sep	0.1	0.1	0.1	Z	0.1	0.1	0.5	1.0	0.7	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	0.1	0.1	0.2	1.0
8-Sep	0.1	0.1	0.1	0.1	Z	0.1	0.3	0.5	0.7	0.4	0.3	0.3	0.3	0.4	0.3	0.3	0.3	0.3	0.2	0.2	0.2	0.2	0.2	0.2	0.3	0.7
9-Sep	0.2	0.2	0.2	0.2	0.2	Z	0.2	0.2	0.2	0.3	0.9	0.3	0.2	0.1	0.1	0.2	0.1	0.1	0.0	0.0	0.0	0.0	0.0	0.0	0.2	0.9
10-Sep	Z	0.0	0.0	0.1	0.1	0.1	0.1	0.2	0.3	0.1	0.1	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	0.3
11-Sep	0.1	Z	0.0	0.1	1.2	0.4	1.2	4.3	2.2	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	0.5	4.3
12-Sep	0.0	0.0	Z	0.1	0.1	0.1	0.1	0.3	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	0.1	0.3
13-Sep	0.1	0.1	0.1	Z	0.1	0.1	0.2	0.3	0.9	1.2	1.5	2.1	2.2	1.2	1.1	1.7	1.4	0.5	0.1	0.1	0.1	0.1	0.1	0.1	0.7	2.2
14-Sep	0.1	0.1	0.1	0.1	Z	0.1	0.1	0.5	0.4	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	0.5
15-Sep	0.1	0.1	0.1	0.2	0.2	Z	0.2	0.2	0.4	0.5	1.2	1.2	0.7	1.3	1.4	1.9	0.8	0.3	0.1	0.1	0.1	0.1	0.1	0.1	0.5	1.9
16-Sep	Z	0.1	0.0	0.0	0.0	0.0	0.0	0.4	0.6	0.5	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	0.1	0.6
17-Sep	0.1	Z	0.0	0.2	0.1	0.0	0.2	0.5	1.2	0.8	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	0.0	0.2	1.2
18-Sep	0.1	0.1	Z	0.1	0.1	0.1	0.3	0.2	0.4	0.3	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	0.0	0.2	0.4
19-Sep	0.0	0.0	0.0	Z	0.0	0.1	0.3	0.5	0.7	C	C	C	C	C	C	0.2	0.2	0.2	0.2	0.1	0.1	0.1	0.1	0.1	--	0.7
20-Sep	0.1	0.1	0.1	0.1	Z	0.1	0.2	0.1	0.2	0.2	0.2	0.5	1.9	3.1	1.8	0.8	0.6	0.6	0.2	0.1	0.1	0.1	0.1	0.1	0.5	3.1
21-Sep	0.1	0.1	0.1	0.1	0.5	Z	0.2	0.7	1.4	0.7	0.8	0.3	0.2	0.1	0.2	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.3	1.4
22-Sep	Z	0.1	0.1	0.1	0.1	0.1	0.1	0.3	0.3	0.3	1.0	0.6	0.2	0.2	0.1	0.2	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.2	1.0
23-Sep	0.1	Z	0.1	0.1	0.1	0.1	0.1	0.2	0.8	1.1	0.5	0.4	0.3	0.2	0.2	0.3	0.1	0.1	0.1	0.1	0.1	0.2	0.2	0.1	0.2	1.1
24-Sep	0.1	0.1	Z	0.1	0.1	0.1	0.2	0.2	0.2	0.2	0.3	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	0.3
25-Sep	0.1	0.1	0.1	Z	0.1	0.1	0.1	0.1	0.1	0.1	0.2	0.3	0.3	0.4	0.4	0.3	0.3	0.3	0.3	0.2	0.2	0.2	0.1	0.1	0.2	0.4
26-Sep	0.1	0.1	0.1	0.1	Z	0.1	0.1	0.0	0.0	0.1	0.1	0.2	0.1	0.1	0.2	0.1	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.1	0.2
27-Sep	0.0	0.0	0.0	0.0	0.0	Z	0.1	0.1	0.1	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	0.1	0.1	0.1	0.2
28-Sep	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
29-Sep	0.1	Z	0.1	0.1	0.1	0.1	0.1	0.6	0.8	0.3	0.2	0.2	0.3	0.1	0.1	0.1	0.1	0.1	0.1	0.2	0.2	0.1	0.1	0.1	0.2	0.8
30-Sep	0.1	0.1	Z	0.1	0.0	0.1	0.1	0.1	0.1	0.1	0.1	0.2	0.1	0.1	0.1	0.1	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.1	0.2
	0.1	0.1	0.1	0.1	0.1	0.1	0.2	0.5	0.5	0.4	0.4	0.3	0.3	0.4	0.3	0.3	0.2	0.2	0.1	0.1	0.1	0.1	0.1	0.1	Diurnal Average	
	0.2	0.3	0.2	0.2	1.2	0.4	1.2	4.3	2.2	1.2	1.5	2.1	2.2	3.1	1.8	1.9	1.4	0.6	0.3	0.3	0.2	0.2	0.2	0.2	Diurnal Maximum	

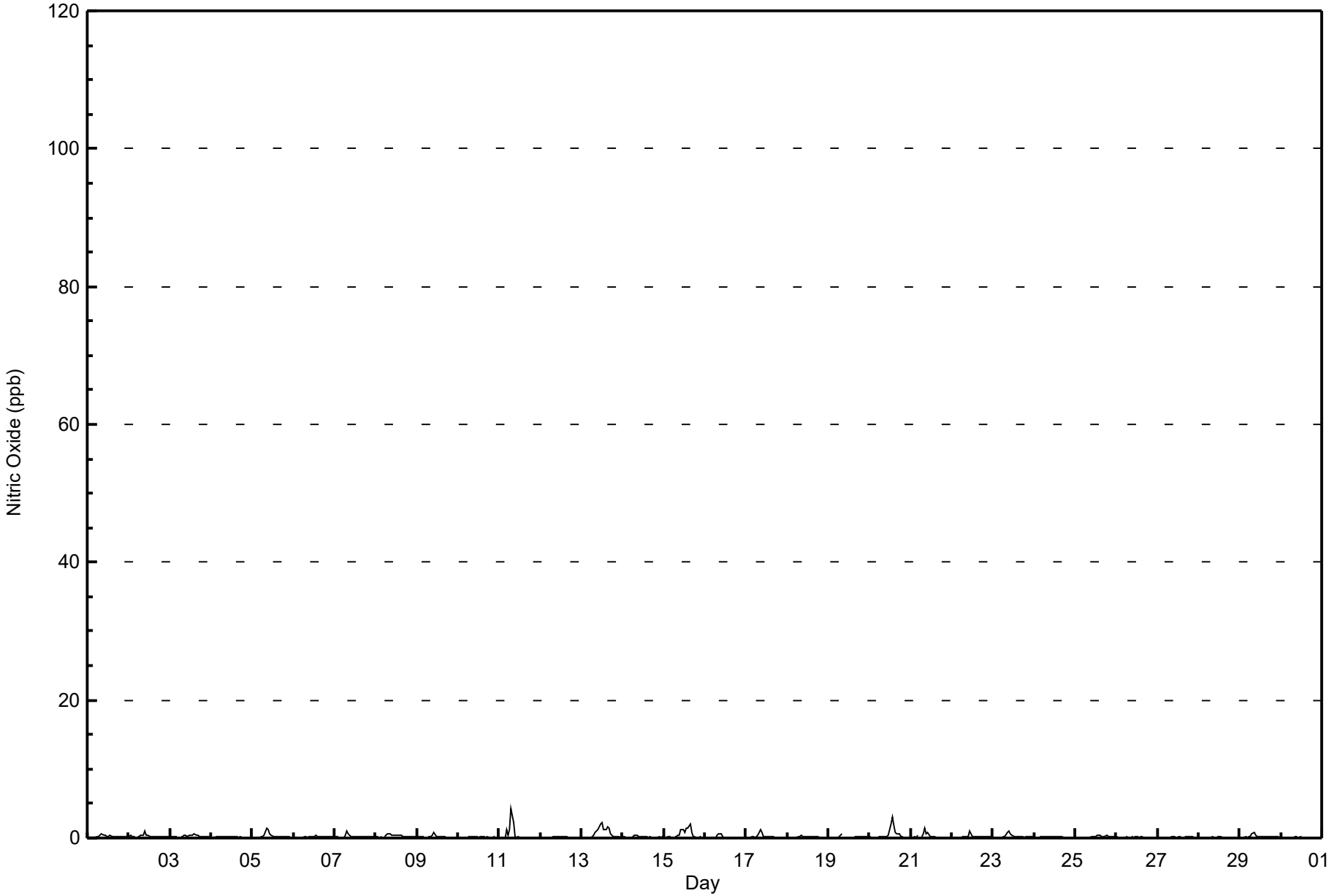
Z - zerospan C - Calibration

Wood Buffalo Environmental Association

Hourly Averages

Nitric Oxide (NO) - ppb

Surmont 2 - September 2024



Concentration Ranges (ppb)	Number of Hours	%	Cumulative %
0 - 20	684	100.00	100.00
21 - 40	0	0.00	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: 684

Total Number of Hours: 720

Wood Buffalo Environmental Association

Frequency Distribution

Nitric Oxide (NO) - ppb

Surmont 2 - September 2024

Concentration Ranges (ppb)	Wind Direction																
	N	NNE	NE	ENE	E	ESE	SE	SSE	S	SSW	SW	WSW	W	WNW	NW	NNW	**Totals**
0 - 20	14	15	10	7	9	53	36	29	18	31	59	123	157	61	32	25	679
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	14	15	10	7	9	53	36	29	18	31	59	123	157	61	32	25	679

Total Number of Valid Hours: 679

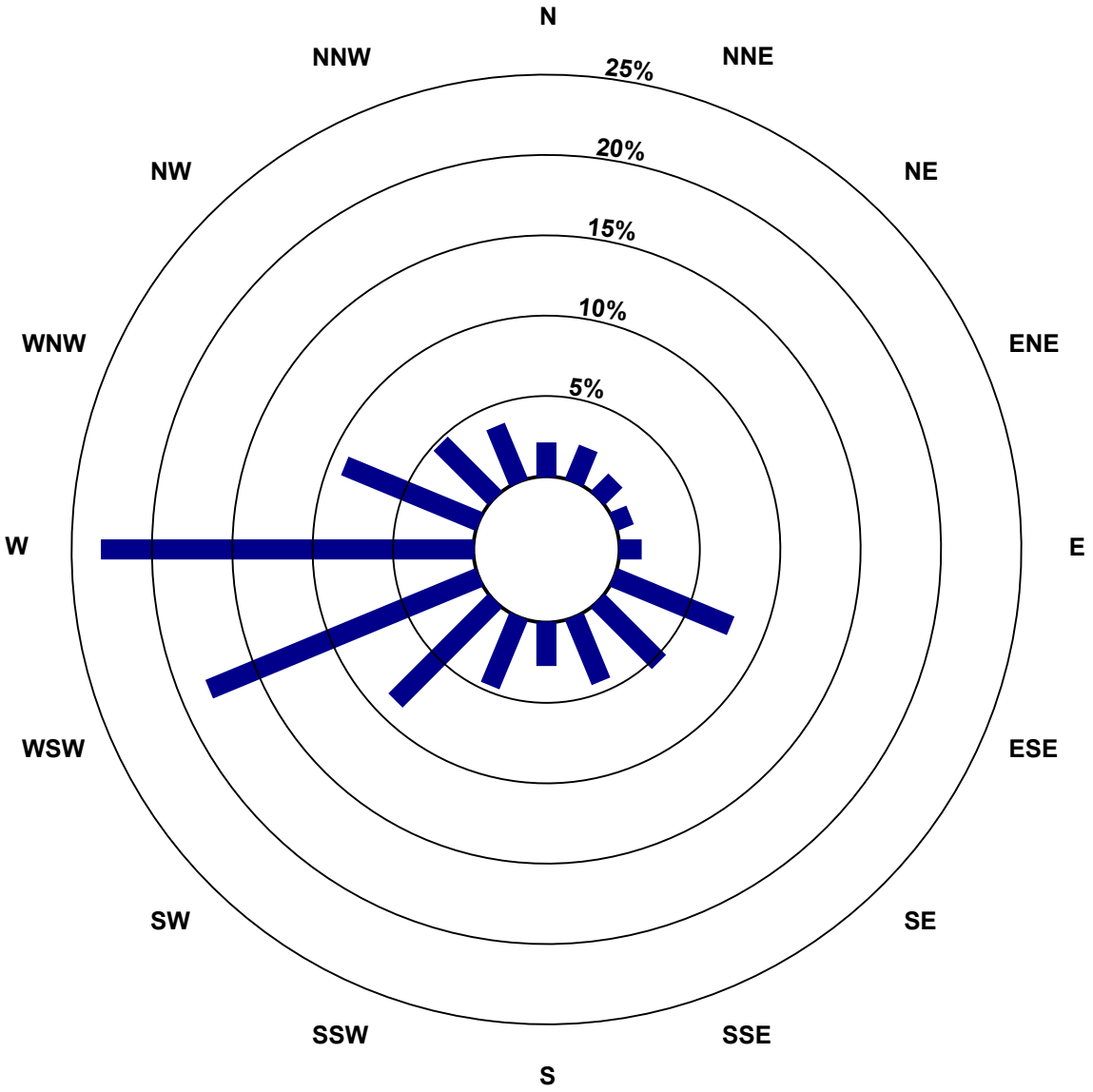
Total Number of Hours: 720

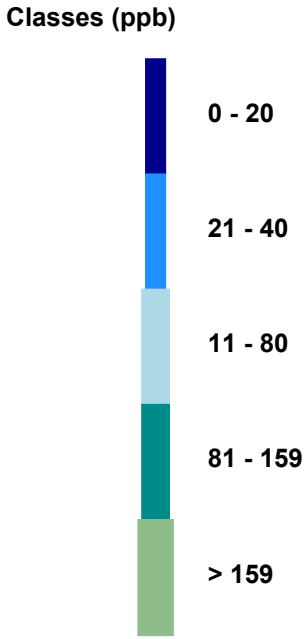
Wood Buffalo Environmental Association

Wind Rose Sep 2024

Nitric Oxide (NO) - ppb

Surmont 2





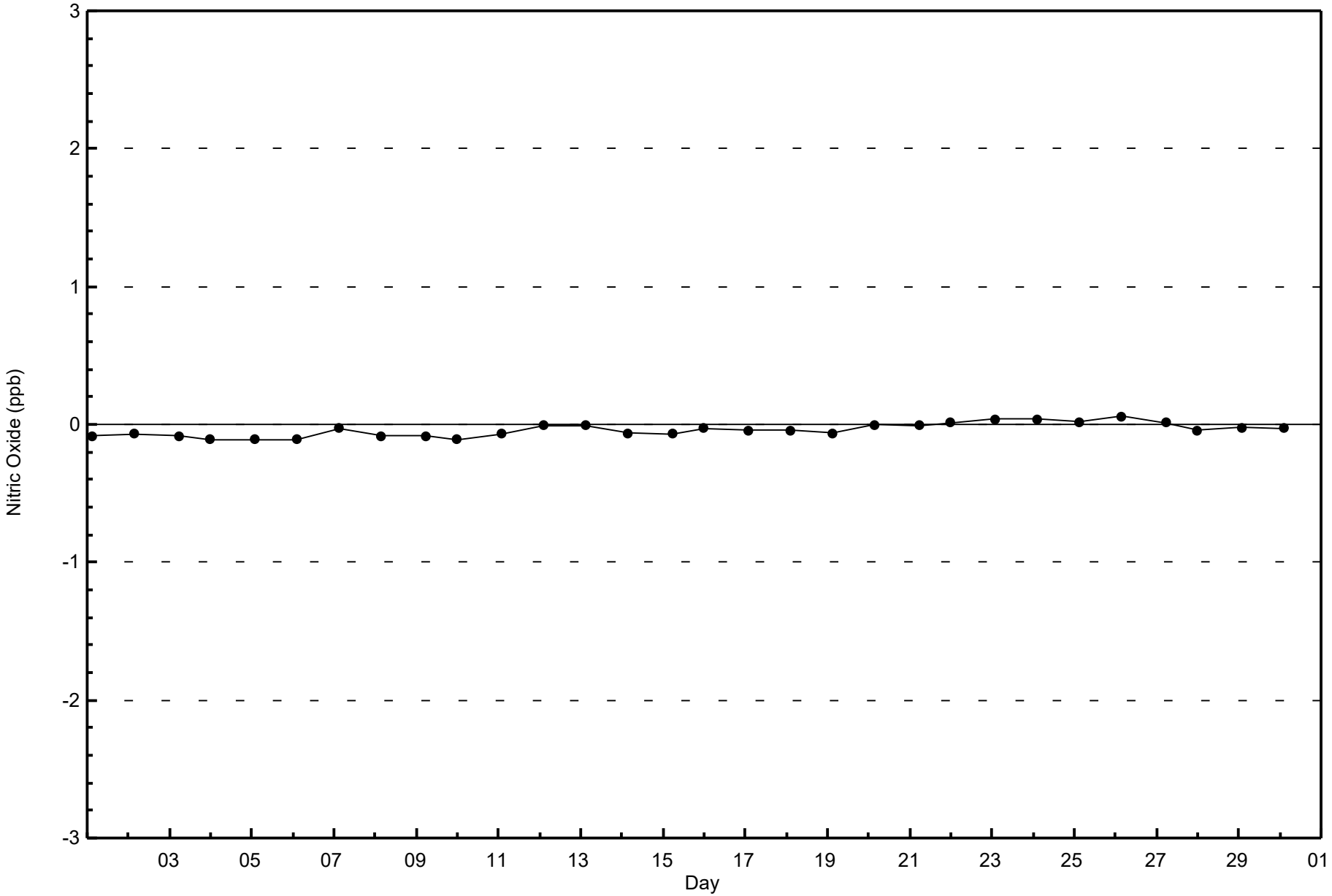
Total Number of Valid Hours: 679

Wood Buffalo Environmental Association

Zero Responses

Nitric Oxide (NO) - ppb

Surmont 2 - September 2024

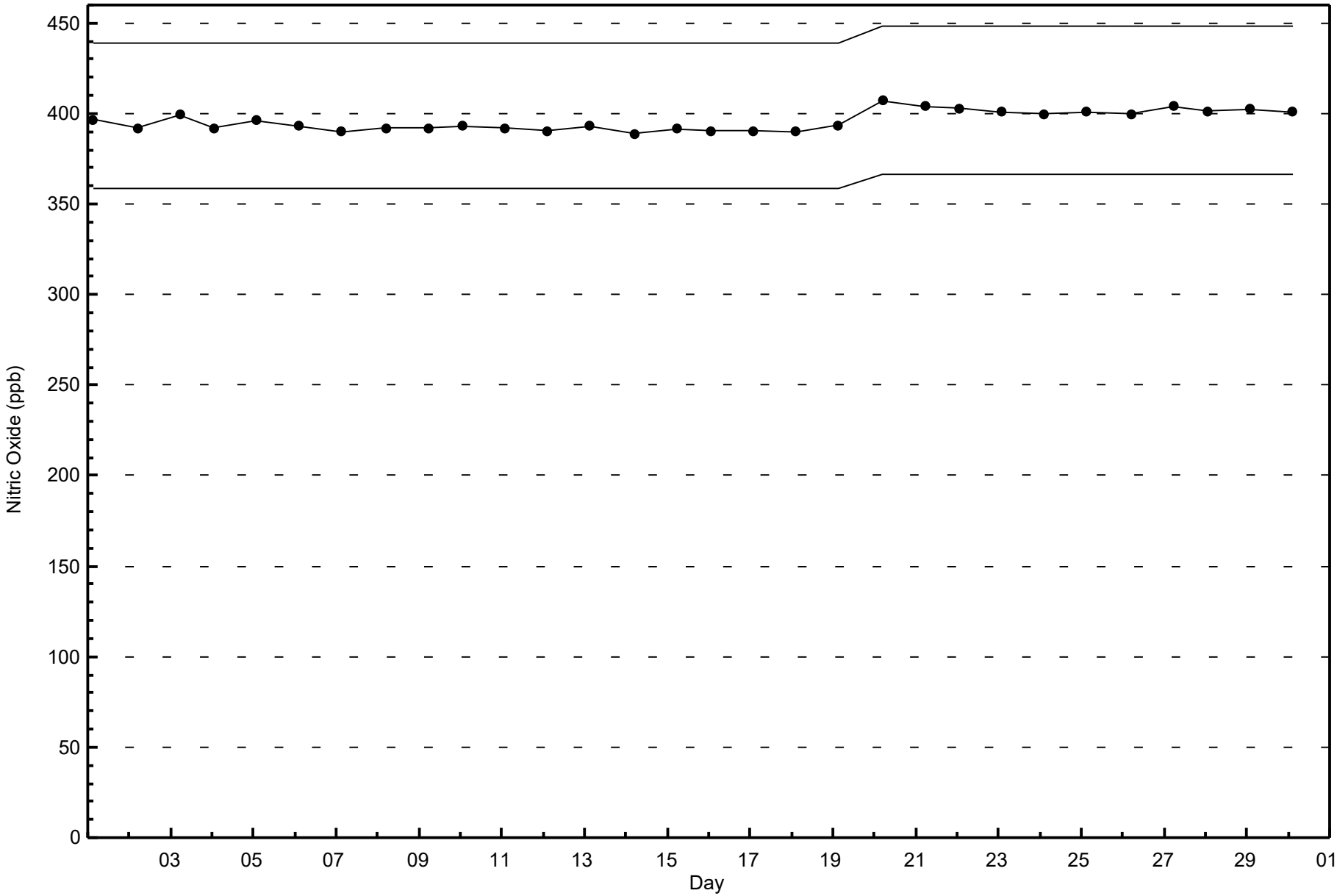


Wood Buffalo Environmental Association

Span Responses

Nitric Oxide (NO) - ppb

Surmont 2 - September 2024



Wood Buffalo Environmental Association

Summary of Hour Averages

Nitrogen Dioxide (NO_2) - ppb

Surmont 2 - September 2024

Number of Exceedences (AAAQO): 1-hr: 0 24-hr: 0
Maximum Value: 9.4 ppb on Sep 13 17:00 Maximum Daily Average: 4.9 ppb on Sep 13

Minimum Value: 0.1 ppb on Sep 21 17:00 Minimum Daily Average: 0.4 ppb on Sep 30
Maximum Diurnal Average: 1.8 ppb at hour 20 Minimum Diurnal Average: 0.9 ppb at hour 4
Monthly Average: 1.25 ppb Percentiles: P_1 = 0.2 P_{10} = 0.3 Q_1 = 0.5 Median = 0.8 Q_3 = 1.5 P_{90} = 2.5 P_{99} = 6.8

Hours in Service:	720
Hours of Data:	684
Hours of Missing Data:	36
Hours of Calibration:	36
Percent Operational Time:	100.0

Day	Hourly Period Ending At (MST)																								Daily	Daily
	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24	Average	Maximum
1-Sep	0.2	0.2	0.8	Z	2.0	1.3	1.4	1.3	1.9	1.1	0.9	0.6	0.5	0.8	0.6	0.5	0.8	0.8	0.7	0.8	0.9	2.6	1.8	1.2	1.0	2.6
2-Sep	2.5	4.3	1.4	1.0	Z	1.2	1.2	2.1	1.1	2.7	0.9	1.0	0.8	0.6	0.5	0.5	0.5	1.1	1.4	2.7	1.2	1.3	1.5	1.5	1.4	4.3
3-Sep	1.5	1.3	1.8	1.4	1.2	Z	1.0	1.6	2.1	1.5	0.7	1.6	1.9	2.0	2.0	2.5	2.0	2.4	2.3	2.5	2.3	1.7	1.6	2.4	1.8	2.5
4-Sep	Z	1.8	1.6	1.4	0.8	0.4	0.3	0.4	0.3	0.3	0.4	0.3	0.3	0.3	0.3	0.3	0.2	0.4	0.3	0.5	0.7	0.6	1.0	1.1	0.6	1.8
5-Sep	0.8	Z	1.0	0.9	1.2	2.1	1.0	0.6	2.5	2.1	1.3	1.1	0.9	0.6	0.5	0.4	0.4	0.4	0.5	0.4	0.5	0.5	0.7	1.0	0.9	2.5
6-Sep	1.0	0.9	Z	0.9	0.9	2.0	3.2	4.5	3.4	1.8	2.2	2.1	1.6	1.5	1.4	1.4	1.4	1.5	3.8	2.8	1.8	1.7	1.7	2.0	2.0	4.5
7-Sep	1.6	1.6	1.9	Z	1.1	1.1	4.5	2.1	1.8	1.0	1.1	1.5	1.4	1.0	0.4	0.4	0.7	1.0	2.0	8.6	4.5	2.7	1.8	1.8	2.0	8.6
8-Sep	1.9	1.1	0.9	1.0	Z	1.0	1.8	1.5	2.9	2.2	1.7	1.5	1.2	1.0	1.3	1.6	1.1	0.8	0.8	0.8	0.8	0.9	1.7	2.2	1.4	2.9
9-Sep	1.9	2.0	2.1	1.6	1.5	Z	2.0	2.8	2.0	2.0	3.6	1.4	0.8	0.5	0.5	0.5	0.5	0.4	0.5	0.5	0.6	0.4	0.5	0.5	1.3	3.6
10-Sep	Z	0.6	0.5	0.4	0.5	0.6	0.9	0.7	0.6	0.4	0.3	0.4	0.4	0.4	0.4	0.4	0.3	0.7	0.5	0.7	1.0	1.3	1.3	2.8	0.7	2.8
11-Sep	1.5	Z	1.1	3.0	3.7	2.4	1.5	1.4	1.6	0.6	0.3	0.3	0.4	0.4	0.4	0.4	0.4	0.4	0.6	0.7	0.6	0.5	0.4	0.5	1.0	3.7
12-Sep	0.4	0.6	Z	0.6	1.2	1.7	1.2	1.5	1.2	1.3	1.3	1.3	1.5	1.4	1.5	1.5	1.5	1.4	1.4	1.4	1.2	1.1	1.1	1.3	1.2	1.7
13-Sep	1.5	1.6	1.7	Z	2.3	2.6	3.8	3.8	5.1	5.5	6.7	7.1	8.2	6.9	6.5	8.5	9.4	6.8	4.0	4.2	5.7	4.5	3.0	3.9	4.9	9.4
14-Sep	3.9	3.2	1.9	1.1	Z	1.0	1.0	1.2	1.0	0.6	0.7	0.8	0.8	0.8	0.7	0.6	0.7	0.6	0.8	2.3	2.5	2.3	0.6	0.5	1.3	3.9
15-Sep	0.4	0.4	0.3	0.2	0.2	Z	0.5	0.4	1.0	1.3	1.7	1.4	1.8	3.7	4.3	6.4	4.2	2.7	2.0	2.9	4.1	1.2	2.1	0.7	1.9	6.4
16-Sep	Z	1.2	0.4	0.6	0.7	0.9	0.6	1.6	2.4	2.4	0.9	0.5	0.3	0.5	0.5	0.5	0.5	0.6	1.4	0.8	0.5	0.8	1.3	1.2	0.9	2.4
17-Sep	1.1	Z	0.6	1.5	1.9	0.9	0.9	1.2	2.9	2.3	0.6	0.8	0.8	1.0	1.3	0.8	0.6	0.5	0.7	3.2	2.7	1.7	0.9	0.5	1.3	3.2
18-Sep	0.4	0.4	Z	1.0	1.0	1.2	2.1	1.1	1.5	1.3	1.1	1.1	0.9	0.8	0.5	0.6	0.3	0.5	0.7	1.1	0.7	0.8	0.5	0.5	0.9	2.1
19-Sep	0.4	0.3	0.3	Z	0.5	0.4	0.7	0.4	1.0	C	C	C	C	C	C	0.9	1.6	1.7	3.5	3.2	2.2	2.5	2.1	1.3	--	3.5
20-Sep	0.9	0.8	0.8	0.5	Z	0.7	1.9	1.2	0.7	0.9	0.9	1.2	4.1	7.7	4.9	2.8	2.1	3.2	3.2	1.1	0.9	0.8	0.3	0.3	1.8	7.7
21-Sep	0.5	0.6	1.0	0.7	0.8	Z	0.3	0.3	0.8	0.8	1.2	0.7	0.5	0.4	0.8	0.2	0.1	0.2	0.2	0.2	1.2	1.2	0.5	0.6	0.6	1.2
22-Sep	Z	0.8	0.8	0.9	1.0	0.9	1.1	0.6	0.6	0.7	1.3	1.0	0.5	0.5	0.5	0.6	0.5	0.4	0.4	0.4	0.4	1.5	1.5	0.7	0.8	1.5
23-Sep	0.4	Z	0.4	0.3	0.2	0.2	0.2	0.4	1.1	1.7	1.4	0.9	0.9	1.1	0.7	0.7	0.6	0.5	0.5	0.7	2.7	1.8	2.1	0.6	0.9	2.7
24-Sep	0.5	0.5	Z	0.6	0.6	0.6	0.7	0.5	0.5	0.3	0.5	0.3	0.4	0.4	0.5	0.6	0.5	0.7	1.3	2.7	1.1	0.5	0.6	1.3	0.7	2.7
25-Sep	0.3	0.2	0.3	Z	0.8	0.4	0.4	0.5	0.3	0.4	0.7	0.9	1.1	1.8	1.7	1.1	1.3	3.4	3.6	1.2	1.3	1.8	0.9	0.8	1.1	3.6
26-Sep	0.5	0.5	0.5	0.5	Z	0.9	0.7	0.4	0.4	1.9	0.5	0.8	0.4	0.3	0.5	0.5	0.4	0.4	0.4	0.5	0.6	0.7	0.3	0.4	0.6	1.9
27-Sep	0.4	0.4	0.4	0.4	0.6	Z	1.0	0.6	1.3	0.7	0.6	0.4	0.6	0.6	0.5	0.7	1.9	1.2	1.0	0.6	0.3	0.5	0.7	0.3	0.7	1.9
28-Sep	Z	0.3	0.3	0.3	0.4	0.5	0.5	0.3	0.3	0.2	0.2	0.3	0.3	0.4	0.3	0.4	0.6	0.5	0.7	1.1	0.7	0.8	0.6	0.7	0.5	1.1
29-Sep	0.8	Z	0.6	0.4	0.3	0.3	0.7	1.4	1.1	0.7	0.7	0.6	0.7	0.3	0.3	0.2	0.4	1.1	1.9	5.0	5.4	4.5	3.6	3.3	1.5	5.4
30-Sep	2.3	0.2	Z	0.2	0.3	0.4	0.5	0.4	0.5	0.5	0.3	0.3	0.1	0.1	0.2	0.2	0.2	0.4	0.4	0.4	0.4	0.5	0.5	0.5	0.4	2.3
	1.1	1.0	0.9	0.9	1.0	1.0	1.3	1.2	1.5	1.4	1.2	1.1	1.2	1.3	1.2	1.2	1.2	1.2	1.4	1.8	1.7	1.5	1.2	1.2	Diurnal Average	
	3.9	4.3	2.1	3.0	3.7	2.6	4.5	4.5	5.1	5.5	6.7	7.1	8.2	7.7	6.5	8.5	9.4	6.8	4.0	8.6	5.7	4.5	3.6	3.9	Diurnal Maximum	

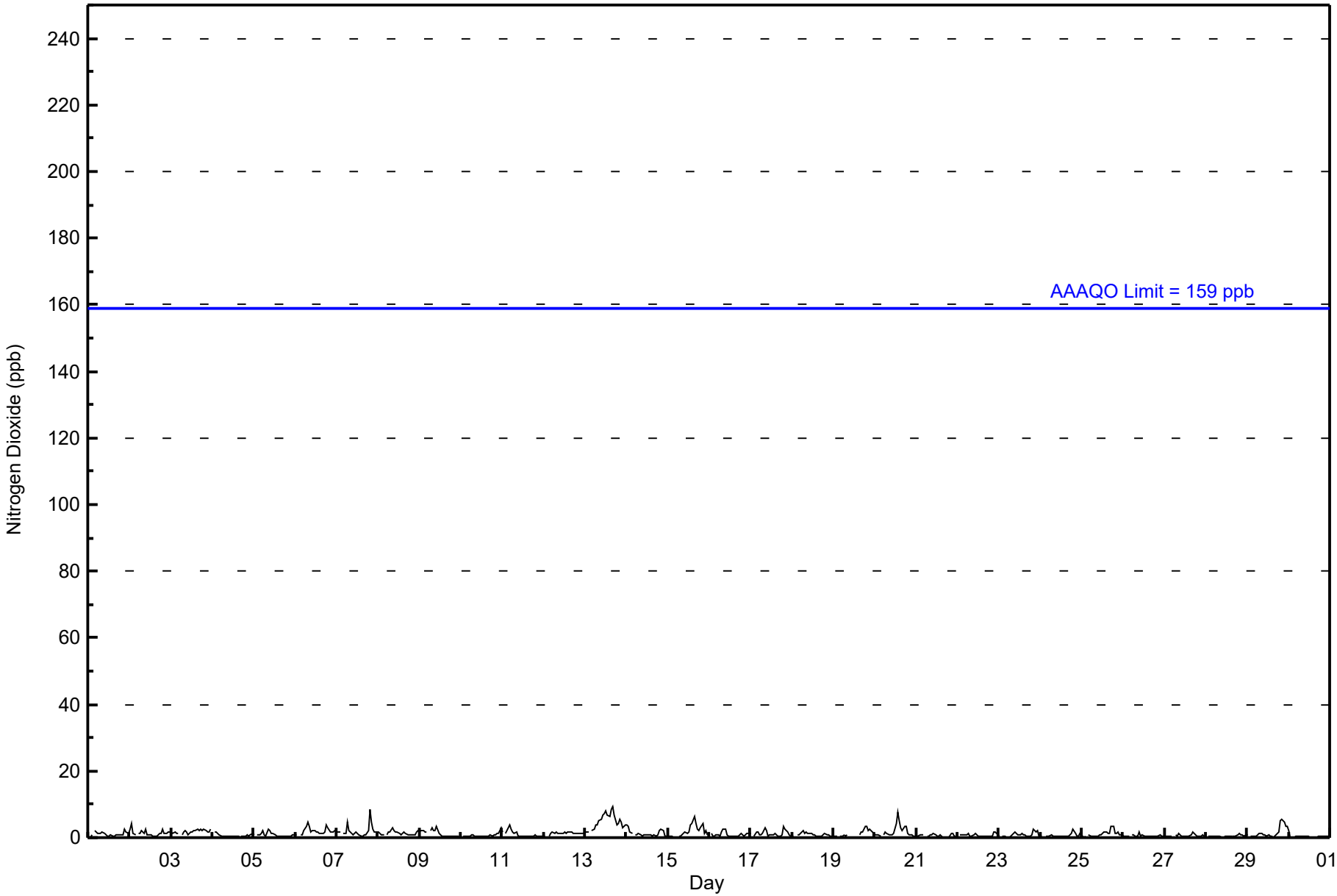
Z - zerospan C - Calibration
Alberta Ambient Air Quality Objectives (AAAQO): 1-hr 159 ppb

Wood Buffalo Environmental Association

Hourly Averages

Nitrogen Dioxide (NO_2) - ppb

Surmont 2 - September 2024



Nitrogen Dioxide (NO_2) - ppb
Surmont 2 - September 2024

Concentration Ranges (ppb)	Number of Hours	%	Cumulative %
0 - 20	684	100.00	100.00
21 - 40	0	0.00	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: 684

Total Number of Hours: 720

Wood Buffalo Environmental Association

Frequency Distribution

Nitrogen Dioxide (NO_2) - ppb

Surmont 2 - September 2024

Concentration Ranges (ppb)	Wind Direction																
	N	NNE	NE	ENE	E	ESE	SE	SSE	S	SSW	SW	WSW	W	WNW	NW	NNW	**Totals**
0 - 20	14	15	10	7	9	53	36	29	18	31	59	123	157	61	32	25	679
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	14	15	10	7	9	53	36	29	18	31	59	123	157	61	32	25	679

Total Number of Valid Hours: 679

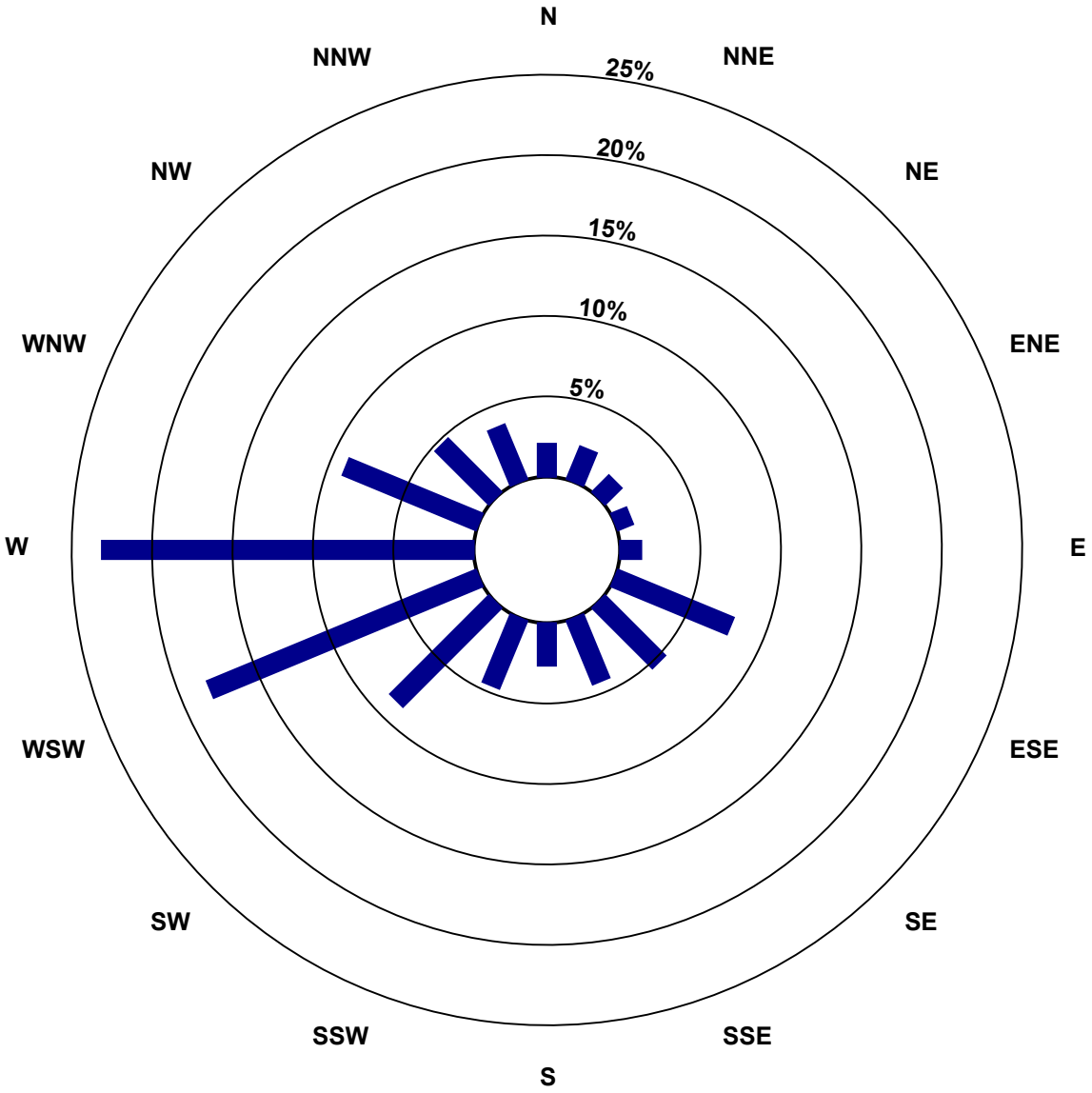
Total Number of Hours: 720

Wood Buffalo Environmental Association

Wind Rose Sep 2024

Nitrogen Dioxide (NO_2) - ppb

Surmont 2



Classes (ppb)

0 - 20

21 - 40

11 - 80

81 - 159

> 159

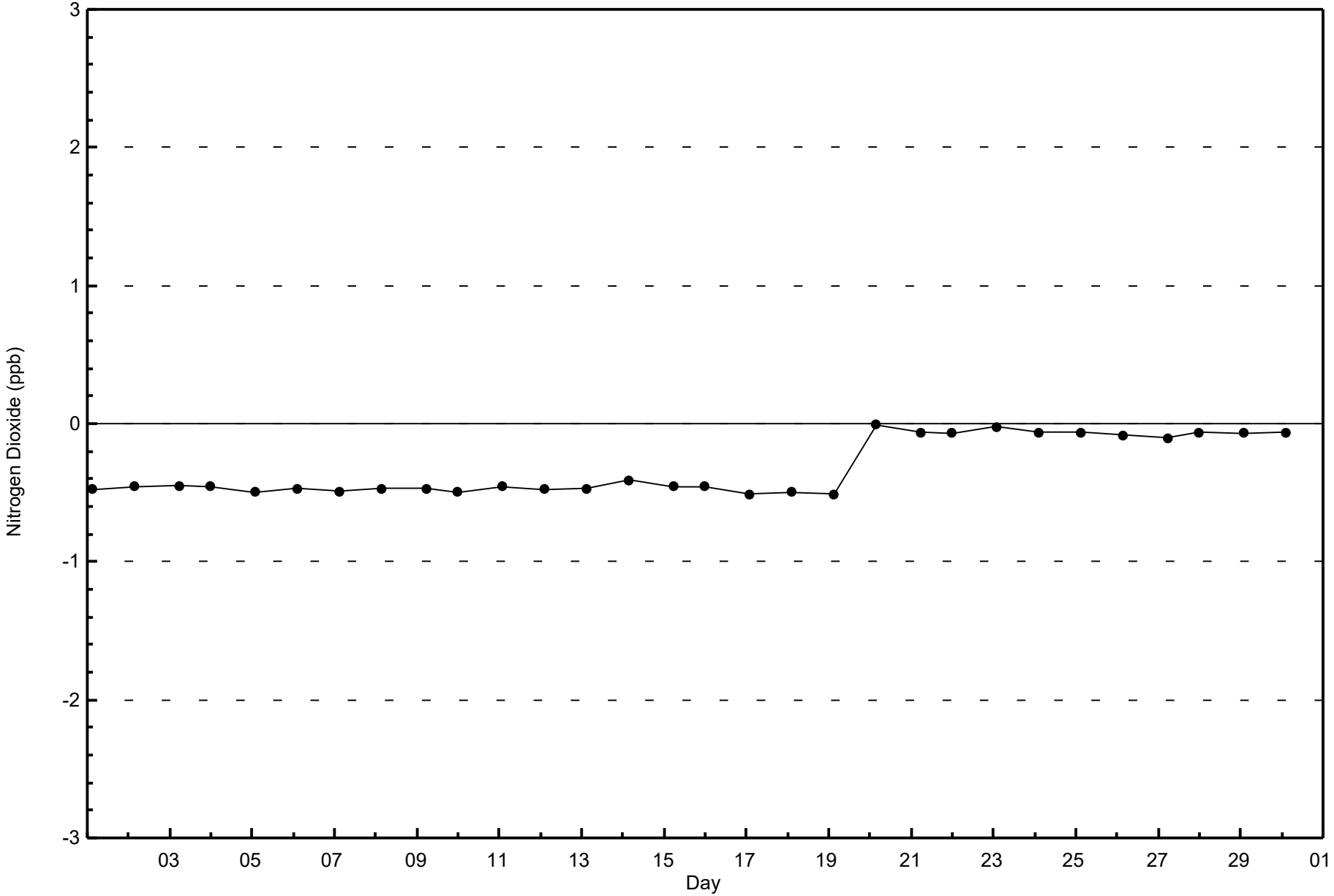
Total Number of Valid Hours: 679

Wood Buffalo Environmental Association

Zero Responses

Nitrogen Dioxide (NO_2) - ppb

Surmont 2 - September 2024

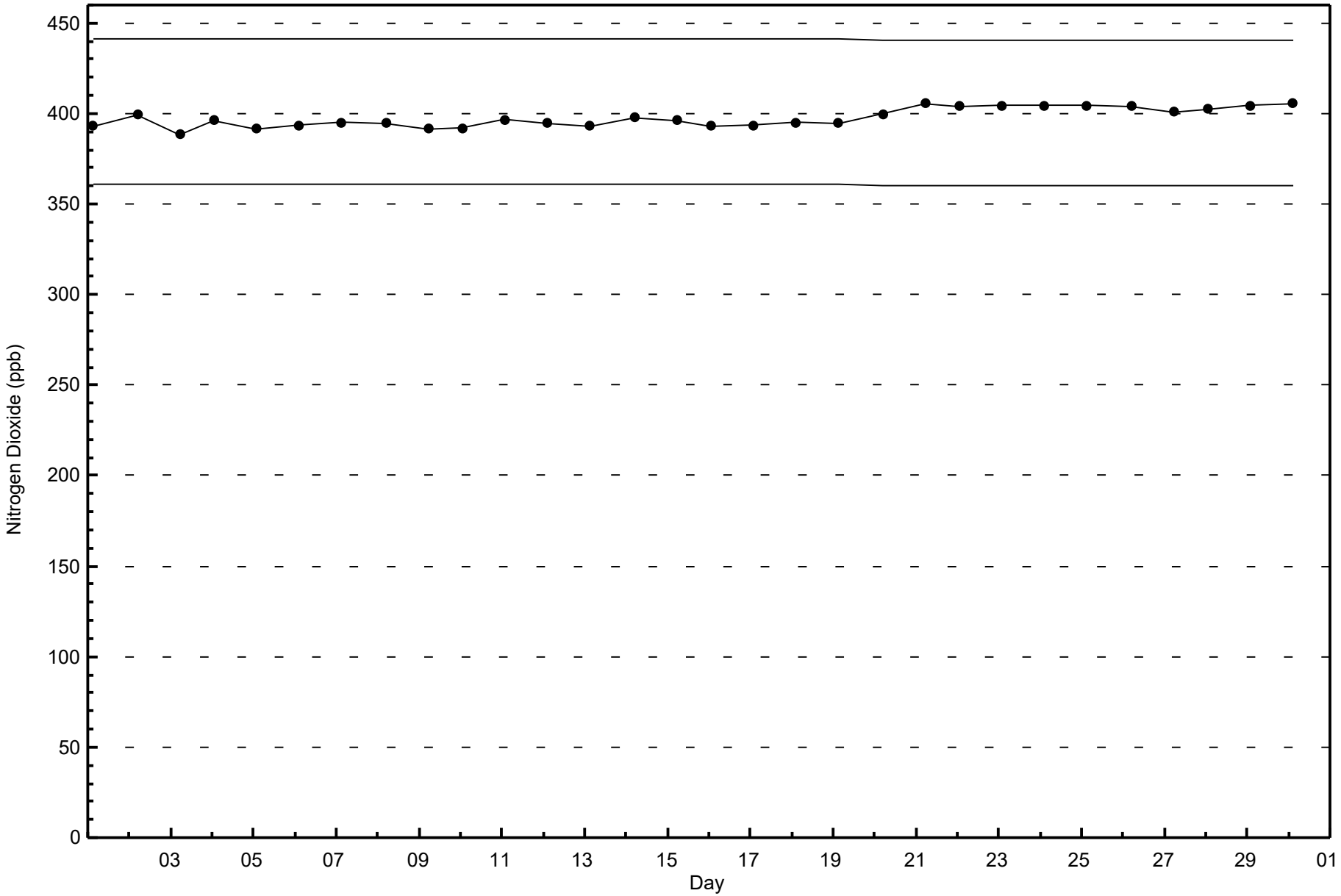


Wood Buffalo Environmental Association

Span Responses

Nitrogen Dioxide (NO_2) - ppb

Surmont 2 - September 2024



Wood Buffalo Environmental Association

Summary of Hour Averages

Nitrogen Oxides (NO_X) - ppb

Surmont 2 - September 2024

Number of Exceedences (AAAQO): 1-hr: 0 24-hr: 0

Maximum Value: 10.8 ppb on Sep 20 14:00

Maximum Daily Average: 5.6 ppb on Sep 13

Minimum Value: 0.2 ppb on Sep 30 13:00

Minimum Daily Average: 0.5 ppb on Sep 30

Maximum Diurnal Average: 2.0 ppb at hour 9

Minimum Diurnal Average: 1.0 ppb at hour 4

Monthly Average: 1.47 ppb

Percentiles: $P_1 = 0.3$ $P_{10} = 0.4$ $Q_1 = 0.6$ Median = 1.0 $Q_3 = 1.8$ $P_{90} = 2.9$ $P_{99} = 8.2$

Hours in Service:	720
Hours of Data:	684
Hours of Missing Data:	36
Hours of Calibration:	36
Percent Operational Time:	100.0

Day	Hourly Period Ending At (MST)																								Daily	Daily
	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24	Average	Maximum
1-Sep	0.3	0.3	0.9	Z	2.1	1.4	1.6	1.7	2.5	1.5	1.2	0.8	0.8	1.1	0.8	0.8	1.1	1.0	0.9	1.0	1.1	2.8	2.0	1.4	1.3	2.8
2-Sep	2.6	4.6	1.6	1.1	Z	1.3	1.4	2.5	1.5	3.7	1.2	1.3	1.1	0.8	0.7	0.7	0.7	1.3	1.7	3.0	1.4	1.5	1.7	1.7	1.7	4.6
3-Sep	1.7	1.5	2.0	1.6	1.3	Z	1.2	1.9	2.5	1.9	0.9	1.9	2.2	2.4	2.6	3.0	2.3	2.7	2.5	2.6	2.4	1.9	1.7	2.5	2.1	3.0
4-Sep	Z	1.9	1.7	1.5	0.9	0.6	0.6	0.6	0.5	0.5	0.6	0.4	0.5	0.5	0.4	0.4	0.3	0.5	0.4	0.6	0.8	0.7	1.1	1.2	0.8	1.9
5-Sep	0.9	Z	1.1	0.9	1.2	2.2	1.2	1.0	4.0	3.2	1.8	1.4	1.1	0.8	0.7	0.6	0.5	0.5	0.6	0.5	0.6	0.6	0.8	1.1	1.2	4.0
6-Sep	1.1	1.0	Z	1.0	1.0	2.1	3.4	4.8	3.5	1.9	2.3	2.3	1.9	1.8	1.6	1.6	1.6	1.7	4.0	3.0	2.0	1.8	1.8	2.1	2.1	4.8
7-Sep	1.7	1.7	2.0	Z	1.2	1.2	5.0	3.1	2.5	1.3	1.4	1.7	1.6	1.2	0.6	0.5	0.8	1.2	2.1	8.8	4.7	2.9	1.9	1.9	2.2	8.8
8-Sep	2.0	1.2	1.0	1.1	Z	1.1	2.1	2.0	3.6	2.6	2.0	1.8	1.5	1.4	1.6	1.9	1.4	1.1	1.0	1.0	1.0	1.1	1.9	2.4	1.6	3.6
9-Sep	2.1	2.2	2.3	1.8	1.7	Z	2.2	3.0	2.2	2.3	4.5	1.7	1.0	0.6	0.6	0.7	0.6	0.5	0.5	0.5	0.6	0.4	0.5	0.5	1.4	4.5
10-Sep	Z	0.6	0.5	0.5	0.6	0.7	1.0	0.9	0.9	0.5	0.4	0.6	0.5	0.6	0.5	0.6	0.4	0.8	0.6	0.8	1.1	1.4	1.4	2.9	0.8	2.9
11-Sep	1.6	Z	1.1	3.1	4.9	2.8	2.7	5.7	3.8	0.8	0.4	0.4	0.5	0.5	0.5	0.5	0.5	0.5	0.7	0.8	0.7	0.6	0.5	0.5	1.5	5.7
12-Sep	0.4	0.6	Z	0.7	1.3	1.8	1.3	1.8	1.3	1.4	1.4	1.4	1.6	1.5	1.6	1.7	1.6	1.5	1.5	1.5	1.3	1.2	1.2	1.4	1.4	1.8
13-Sep	1.6	1.7	1.8	Z	2.4	2.7	4.0	4.1	6.0	6.7	8.2	9.2	10.4	8.1	7.6	10.2	10.8	7.3	4.1	4.3	5.8	4.6	3.1	4.0	5.6	10.8
14-Sep	4.0	3.3	2.0	1.2	Z	1.1	1.1	1.7	1.4	0.8	0.9	0.9	0.9	0.9	0.8	0.7	0.8	0.7	0.9	2.4	2.6	2.4	0.7	0.6	1.4	4.0
15-Sep	0.5	0.5	0.4	0.4	0.4	Z	0.7	0.6	1.4	1.8	2.9	2.6	2.5	5.0	5.7	8.3	5.0	3.0	2.1	3.0	4.2	1.3	2.2	0.8	2.4	8.3
16-Sep	Z	1.3	0.4	0.6	0.7	0.9	0.6	2.0	3.0	2.9	1.1	0.6	0.4	0.6	0.6	0.6	0.6	0.7	1.5	0.8	0.5	0.8	1.3	1.2	1.0	3.0
17-Sep	1.2	Z	0.6	1.7	2.0	0.9	1.1	1.7	4.1	3.1	0.7	0.9	0.9	1.2	1.5	0.9	0.7	0.6	0.8	3.3	2.8	1.8	1.0	0.5	1.5	4.1
18-Sep	0.5	0.5	Z	1.1	1.1	1.3	2.4	1.3	1.9	1.6	1.3	1.3	1.1	1.0	0.7	0.9	0.4	0.6	0.8	1.2	0.8	0.9	0.6	0.5	1.0	2.4
19-Sep	0.4	0.3	0.3	Z	0.5	0.5	1.0	0.9	1.7	C	C	C	C	C	C	1.1	1.8	1.9	3.7	3.3	2.3	2.6	2.2	1.4	--	3.7
20-Sep	1.0	0.9	0.9	0.6	Z	0.8	2.1	1.3	0.9	1.1	1.1	1.7	6.0	10.8	6.7	3.6	2.7	3.8	3.4	1.2	1.0	0.9	0.4	0.4	2.3	10.8
21-Sep	0.6	0.7	1.1	0.8	1.3	Z	0.5	1.0	2.2	1.5	2.0	1.0	0.7	0.5	1.0	0.3	0.2	0.3	0.3	0.3	1.3	1.3	0.6	0.7	0.9	2.2
22-Sep	Z	0.9	0.9	1.0	1.1	1.0	1.2	0.9	0.9	1.0	2.3	1.6	0.7	0.7	0.6	0.8	0.6	0.5	0.5	0.5	0.5	1.6	1.6	0.8	1.0	2.3
23-Sep	0.5	Z	0.5	0.4	0.3	0.3	0.3	0.6	1.9	2.8	1.9	1.3	1.2	1.3	0.9	1.0	0.7	0.6	0.6	0.8	2.8	2.0	2.3	0.7	1.1	2.8
24-Sep	0.6	0.6	Z	0.7	0.7	0.7	0.9	0.7	0.7	0.5	0.8	0.5	0.6	0.5	0.7	0.7	0.6	0.8	1.4	2.8	1.2	0.6	0.7	1.4	0.8	2.8
25-Sep	0.4	0.3	0.4	Z	0.9	0.5	0.5	0.6	0.4	0.5	0.9	1.2	1.4	2.2	2.1	1.4	1.6	3.7	3.9	1.4	1.5	2.0	1.0	0.9	1.3	3.9
26-Sep	0.6	0.6	0.6	0.6	Z	1.0	0.8	0.4	0.4	2.0	0.6	1.0	0.5	0.4	0.7	0.6	0.4	0.4	0.4	0.5	0.6	0.7	0.3	0.4	0.6	2.0
27-Sep	0.4	0.4	0.4	0.4	0.6	Z	1.1	0.7	1.4	0.9	0.8	0.5	0.7	0.7	0.6	0.8	2.1	1.3	1.1	0.7	0.4	0.6	0.8	0.4	0.8	2.1
28-Sep	Z	0.4	0.4	0.4	0.5	0.5	0.6	0.4	0.4	0.3	0.3	0.4	0.4	0.5	0.4	0.5	0.7	0.6	0.8	1.2	0.8	0.9	0.7	0.8	0.6	1.2
29-Sep	0.9	Z	0.7	0.5	0.4	0.4	0.8	2.0	1.9	1.0	0.9	0.8	1.0	0.4	0.4	0.3	0.5	1.2	2.0	5.2	5.6	4.6	3.7	3.4	1.7	5.6
30-Sep	2.4	0.3	Z	0.3	0.3	0.5	0.6	0.5	0.6	0.6	0.4	0.5	0.2	0.2	0.3	0.3	0.2	0.4	0.4	0.4	0.4	0.5	0.5	0.5	0.5	2.4
	1.2	1.1	1.0	1.0	1.2	1.1	1.5	1.7	2.0	1.8	1.6	1.4	1.5	1.7	1.5	1.5	1.4	1.4	1.5	1.9	1.8	1.6	1.3	1.3	Diurnal Average	
	4.0	4.6	2.3	3.1	4.9	2.8	5.0	5.7	6.0	6.7	8.2	9.2	10.4	10.8	7.6	10.2	10.8	7.3	4.1	8.8	5.8	4.6	3.7	4.0	Diurnal Maximum	

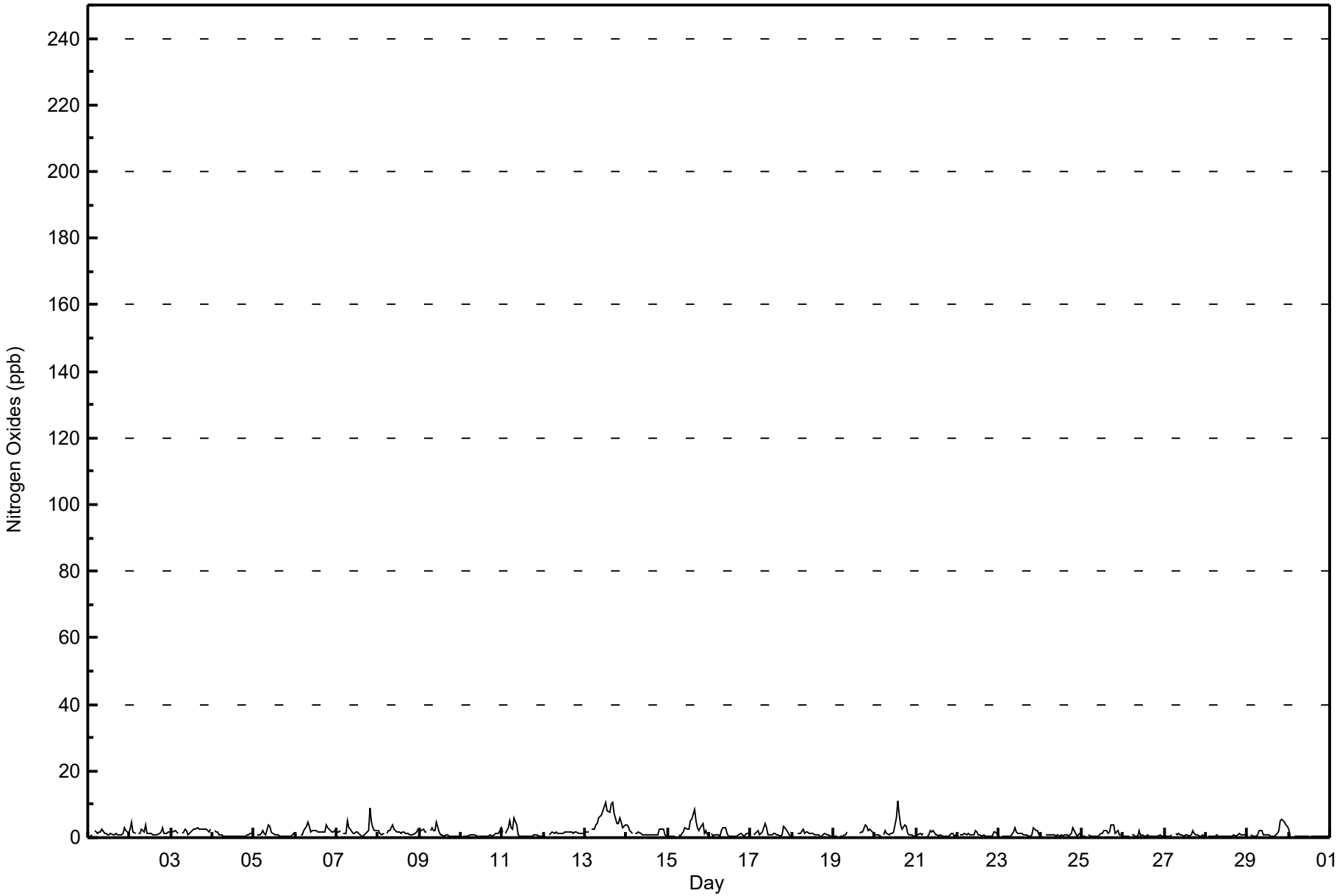
Z - zerospan C - Calibration

Wood Buffalo Environmental Association

Hourly Averages

Nitrogen Oxides (NO_X) - ppb

Surmont 2 - September 2024



Nitrogen Oxides (NO_X) - ppb
Surmont 2 - September 2024

Concentration Ranges (ppb)	Number of Hours	%	Cumulative %
0 - 20	684	100.00	100.00
21 - 40	0	0.00	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: 684

Total Number of Hours: 720

Wood Buffalo Environmental Association

Frequency Distribution

Nitrogen Oxides (NO_X) - ppb

Surmont 2 - September 2024

Concentration Ranges (ppb)	Wind Direction																
	N	NNE	NE	ENE	E	ESE	SE	SSE	S	SSW	SW	WSW	W	WNW	NW	NNW	**Totals**
0 - 20	14	15	10	7	9	53	36	29	18	31	59	123	157	61	32	25	679
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	14	15	10	7	9	53	36	29	18	31	59	123	157	61	32	25	679

Total Number of Valid Hours: 679

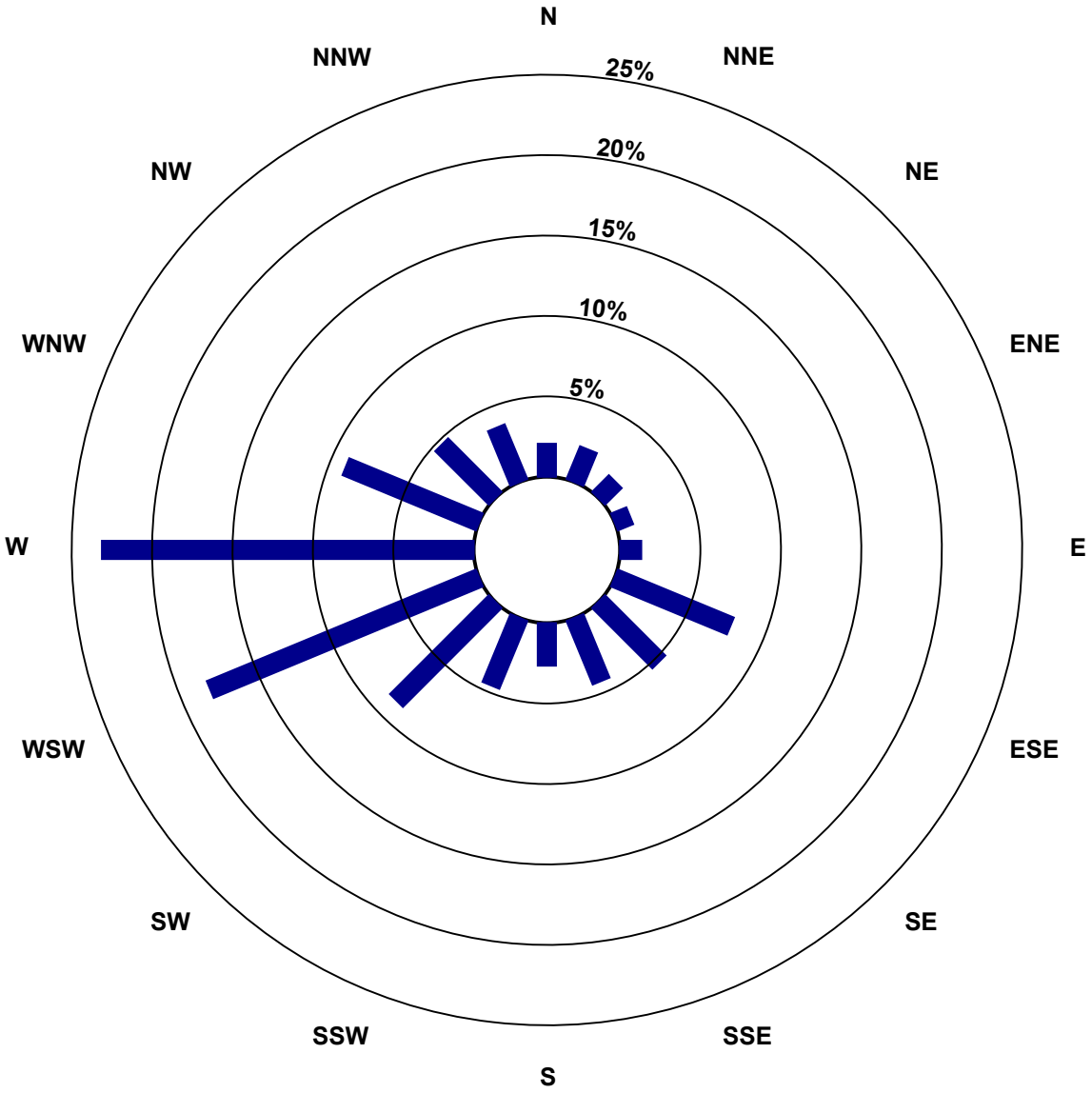
Total Number of Hours: 720

Wood Buffalo Environmental Association

Wind Rose Sep 2024

Nitrogen Oxides (NO_X) - ppb

Surmont 2



Classes (ppb)

0 - 20

21 - 40

11 - 80

81 - 159

> 159

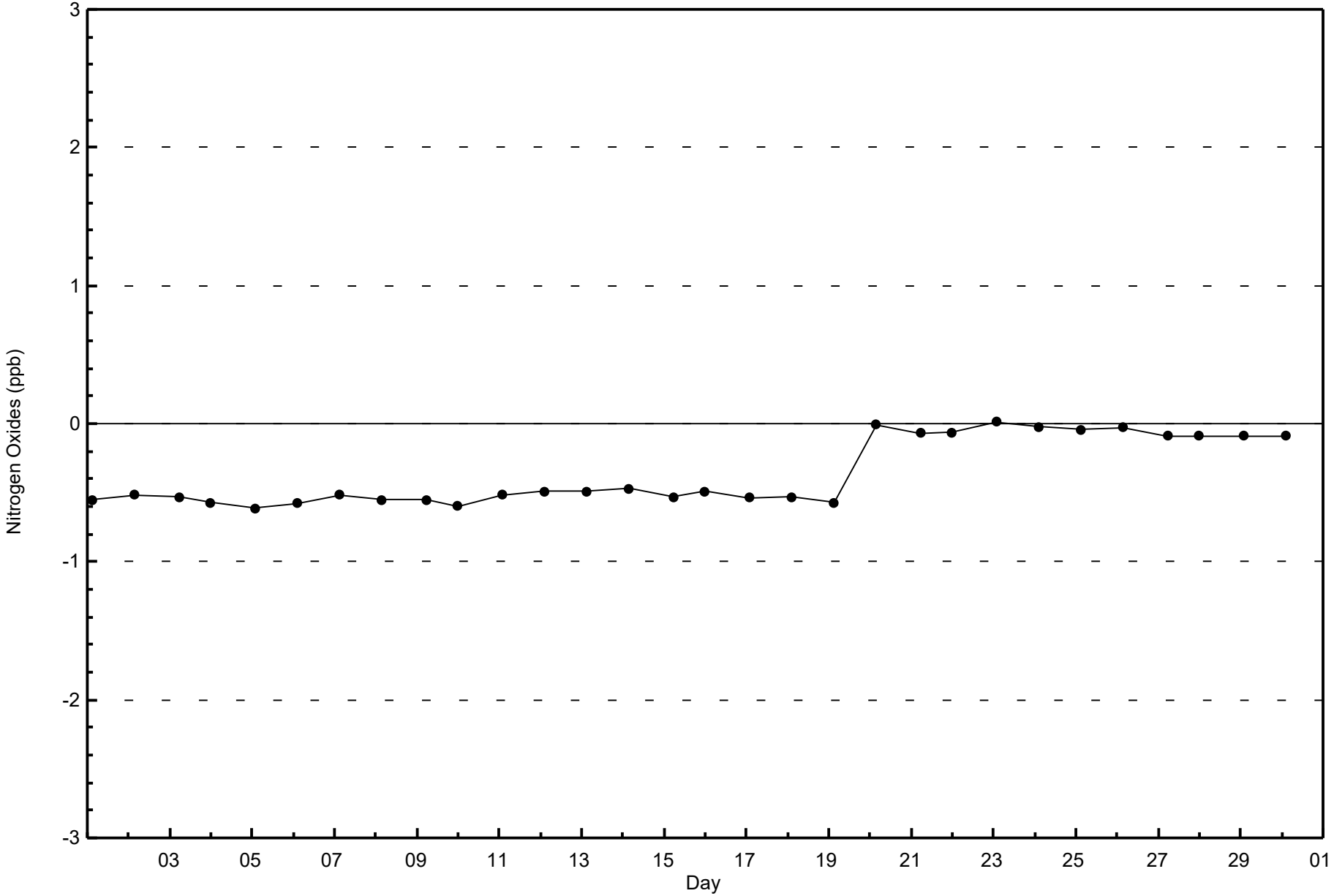
Total Number of Valid Hours: 679

Wood Buffalo Environmental Association

Zero Responses

Nitrogen Oxides (NO_X) - ppb

Surmont 2 - September 2024



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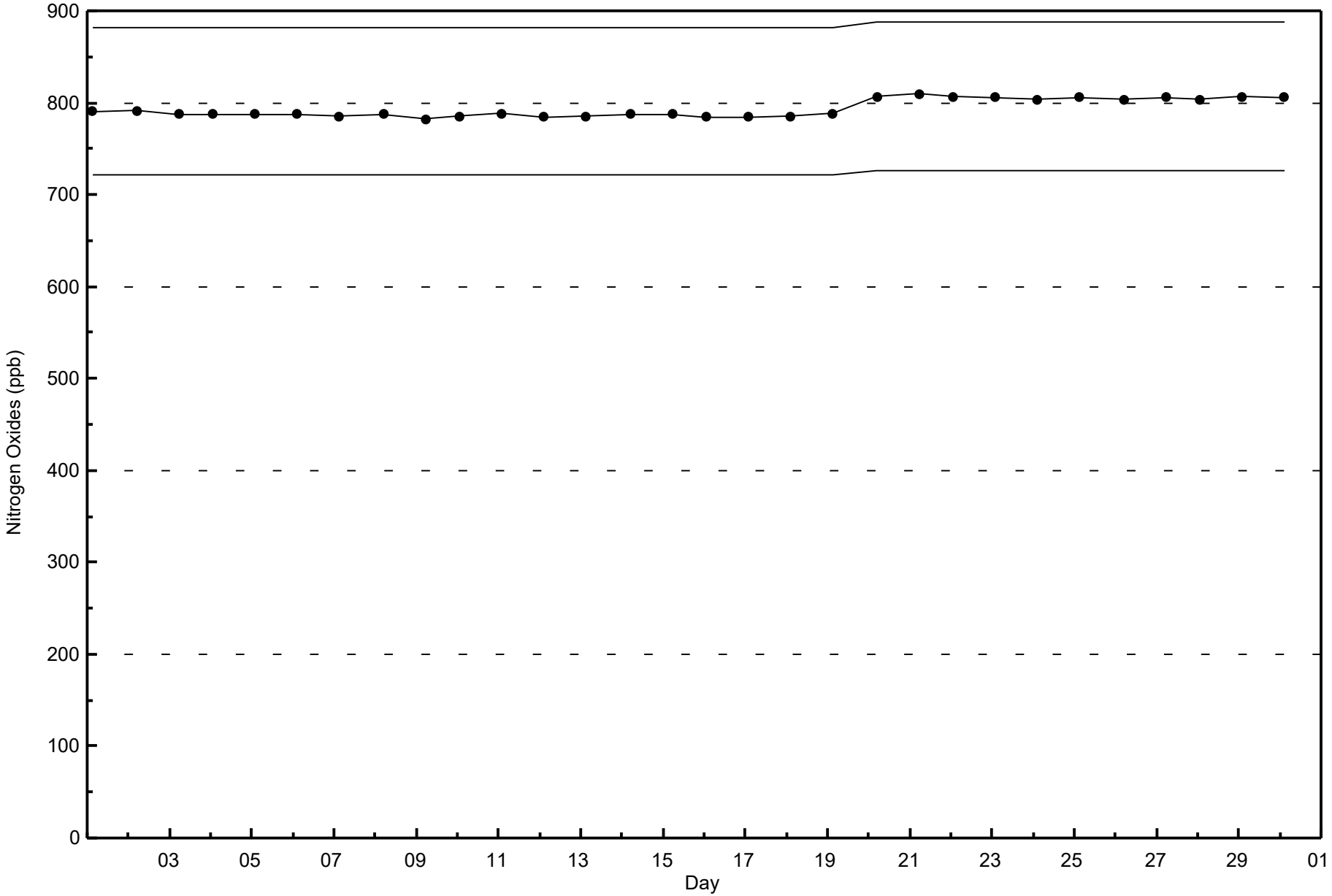
Span Responses

Nitrogen Oxides (NO_X) - ppb

Surmont 2 - September 2024



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Summary of Hour Averages

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

Surmont 2 - September 2024

Number of Exceedences (AAAQO): 1-hr: 7 24-hr: 4

Maximum Value: 88.9 $\mu g/m^3$ on Sep 7 13:00

Maximum Daily Average: 55.3 $\mu g/m^3$ on Sep 12

Minimum Value: 0.5 $\mu g/m^3$ on Sep 28 04:00

Minimum Daily Average: 1.0 $\mu g/m^3$ on Sep 27

Maximum Diurnal Average: 13.2 $\mu g/m^3$ at hour 13

Minimum Diurnal Average: 8.7 $\mu g/m^3$ at hour 17

Monthly Average: 10.67 $\mu g/m^3$

Percentiles: P_1 = 0.6 P_{10} = 1.2 Q_1 = 2.0 Median = 3.4 Q_3 = 7.0 P_{90} = 36.7 P_{99} = 79.5

Hours in Service:	720
Hours of Data:	718
Hours of Missing Data:	2
Hours of Calibration:	2
Percent Operational Time:	100.0

Day	Hourly Period Ending At (MST)																								Daily	Daily
	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24	Average	Maximum
1-Sep	3.7	3.4	3.2	2.7	2.4	2.7	3.2	3.1	3.1	2.8	2.7	2.8	2.8	2.6	2.6	4.4	12.1	13.6	12.5	15.5	13.6	16.8	13.4	10.3	6.5	16.8
2-Sep	8.4	6.2	4.6	4.1	3.9	3.8	3.7	4.0	4.1	3.5	3.5	3.0	2.9	2.9	3.0	2.8	3.2	6.0	11.4	13.2	7.5	6.0	8.3	11.3	5.5	13.2
3-Sep	18.2	14.4	9.7	6.1	5.0	4.2	4.4	5.3	6.6	6.5	5.8	6.3	6.1	5.3	6.2	7.4	6.7	6.2	6.3	6.4	6.1	5.5	4.7	4.8	6.8	18.2
4-Sep	4.7	5.3	5.7	5.4	4.7	4.4	4.1	3.8	3.9	4.0	4.4	4.3	4.6	3.9	3.4	3.2	3.2	3.2	3.2	3.5	3.4	2.9	2.2	2.0	3.9	5.7
5-Sep	1.8	1.5	1.3	1.5	1.5	1.7	1.6	1.6	2.9	3.6	3.9	4.0	4.8	4.7	4.5	3.8	3.2	3.3	3.5	3.6	3.4	2.9	2.7	2.6	2.9	4.8
6-Sep	2.5	2.4	2.4	2.6	2.7	3.4	4.3	4.8	4.8	4.2	4.3	5.8	6.7	6.1	7.4	7.1	8.1	8.8	11.7	16.7	38.5	45.0	53.6	62.7	13.2	62.7
7-Sep	60.0	53.0	54.3	54.7	51.5	53.2	52.4	46.8	40.6	23.2	22.1	51.8	88.9	50.6	14.7	11.7	14.7	24.9	33.1	34.6	30.6	32.9	37.0	43.2	40.9	88.9
8-Sep	52.3	54.6	61.6	76.6	74.9	82.3	79.5	76.3	80.3	81.4	82.2	77.3	64.7	53.0	47.8	40.0	31.9	27.6	24.7	24.6	26.3	25.5	24.1	24.6	53.9	82.3
9-Sep	22.5	18.3	17.2	16.8	15.2	14.7	14.5	12.8	12.0	16.5	24.9	21.6	21.3	12.0	4.0	2.9	2.9	3.3	2.6	5.2	10.4	8.8	13.6	14.0	12.8	24.9
10-Sep	12.0	10.3	8.5	6.9	6.2	6.0	6.1	6.3	6.1	6.3	5.0	4.6	8.2	6.3	4.7	3.7	2.6	2.5	3.7	4.0	12.2	4.3	3.7	2.7	6.0	12.2
11-Sep	2.3	2.5	2.7	3.4	3.9	3.5	3.5	4.1	3.9	2.3	2.0	1.9	2.7	3.0	3.6	3.5	3.6	4.7	15.3	21.2	18.8	15.6	13.0	11.1	6.3	21.2
12-Sep	11.6	14.2	17.9	20.5	22.0	34.0	37.8	35.5	38.8	51.1	59.0	68.0	86.3	85.9	79.2	78.4	75.1	76.2	78.0	73.5	71.3	72.1	71.5	70.3	55.3	86.3
13-Sep	67.6	66.3	64.1	58.7	55.8	55.0	58.1	59.1	59.8	56.2	54.3	50.2	44.4	46.9	46.0	47.0	49.2	41.5	42.8	45.2	44.4	36.5	33.3	30.2	50.5	67.6
14-Sep	30.2	26.7	25.2	24.3	23.5	18.9	16.0	13.9	11.8	9.0	8.3	10.7	14.7	13.9	12.7	9.3	6.0	5.3	6.0	6.4	6.2	7.0	5.5	5.4	13.2	30.2
15-Sep	5.2	5.3	4.8	4.7	4.7	4.3	4.1	4.0	4.4	4.7	5.1	5.8	7.1	8.9	10.0	10.5	9.8	9.2	9.3	7.5	7.6	7.6	6.8	5.8	6.5	10.5
16-Sep	5.1	4.3	3.6	3.1	2.4	2.1	2.0	1.8	1.6	1.6	1.5	2.3	2.2	1.5	1.4	1.4	1.2	1.4	3.0	2.4	2.2	2.6	2.1	3.5	2.3	5.1
17-Sep	3.0	3.1	2.1	2.0	2.6	2.3	2.8	2.8	1.8	1.5	1.4	1.5	1.6	1.5	1.4	1.3	1.3	1.4	2.1	6.8	5.8	6.5	3.2	2.9	2.6	6.8
18-Sep	2.5	2.8	2.9	2.8	2.8	2.6	2.9	2.6	2.3	2.2	2.4	2.4	2.4	1.8	1.6	1.7	2.0	3.5	5.7	6.7	7.1	6.8	6.4	5.8	3.4	7.1
19-Sep	5.6	5.1	5.0	4.6	4.4	4.0	3.9	3.7	3.5	3.7	C	C	3.0	3.3	3.3	3.6	4.4	4.4	5.6	5.4	4.9	4.7	4.7	4.8	4.4	5.6
20-Sep	4.7	3.9	3.7	3.6	3.5	3.4	3.9	3.0	2.8	2.3	2.5	2.7	3.5	4.8	4.1	3.7	3.9	4.9	4.7	3.5	3.3	3.2	3.2	3.1	3.6	4.9
21-Sep	2.8	2.6	2.6	2.5	2.4	2.4	2.3	2.2	2.3	1.2	1.4	2.8	2.7	2.7	2.7	2.7	2.7	2.8	2.9	3.0	3.0	2.8	3.0	2.9	2.6	3.0
22-Sep	3.0	3.1	3.2	3.1	2.9	2.9	2.8	2.8	2.3	1.8	1.9	2.0	1.1	0.9	0.9	1.2	1.0	1.2	1.5	1.3	1.2	1.2	1.4	1.6	1.9	3.2
23-Sep	1.5	1.7	1.6	1.4	1.7	1.8	1.9	1.2	0.9	1.8	1.9	1.6	2.1	1.8	0.8	0.8	0.9	0.8	0.9	1.1	1.4	1.3	1.4	1.3	1.4	2.1
24-Sep	1.4	1.2	1.1	1.1	0.8	0.9	0.9	0.6	0.7	0.7	0.9	1.0	1.3	1.5	1.7	2.2	1.8	2.1	2.3	4.6	3.8	2.6	2.5	1.8	1.6	4.6
25-Sep	1.5	1.2	1.5	1.6	1.0	0.9	1.0	0.9	0.8	0.9	1.1	1.5	1.7	3.1	3.0	2.7	1.1	1.6	2.7	3.2	3.3	2.4	2.2	1.1	1.8	3.3
26-Sep	0.9	1.0	1.1	1.0	1.1	1.4	2.6	2.9	1.9	1.5	2.0	4.6	4.5	3.9	5.6	1.8	1.3	1.2	1.4	1.6	1.4	1.3	1.3	1.4	2.0	5.6
27-Sep	1.2	3.0	2.0	1.3	1.0	1.1	0.8	0.8	0.8	0.7	0.7	0.7	0.8	0.8	0.8	0.9	1.0	1.2	1.2	1.0	0.7	1.1	0.8	0.7	1.0	3.0
28-Sep	0.5	0.7	0.6	0.5	0.6	0.6	0.7	0.6	0.6	0.6	0.6	0.8	0.9	1.1	1.2	1.3	1.3	3.1	4.4	3.9	2.6	3.3	2.3	2.0	1.4	4.4
29-Sep	1.6	2.0	3.2	2.7	2.5	3.1	4.6	5.1	5.3	2.5	2.5	2.1	1.8	1.5	1.7	1.2	2.3	2.2	1.6	3.0	3.3	3.7	3.2	3.1	2.7	5.3
30-Sep	3.2	1.3	1.2	1.5	2.1	2.9	4.9	4.2	5.1	6.0	3.9	2.6	1.5	1.5	2.5	1.5	1.8	1.5	1.4	1.0	1.1	0.9	1.2	1.3	2.3	6.0
	11.4	10.7	10.6	10.7	10.3	10.8	11.0	10.5	10.5	10.1	10.8	12.0	13.2	11.3	9.4	8.8	8.7	9.0	10.2	11.0	11.5	11.1	11.1	11.3	Diurnal Average	
	67.6	66.3	64.1	76.6	74.9	82.3	79.5	76.3	80.3	81.4	82.2	77.3	88.9	85.9	79.2	78.4	75.1	76.2	78.0	73.5	71.3	72.1	71.5	70.3	Diurnal Maximum	

C - Calibration

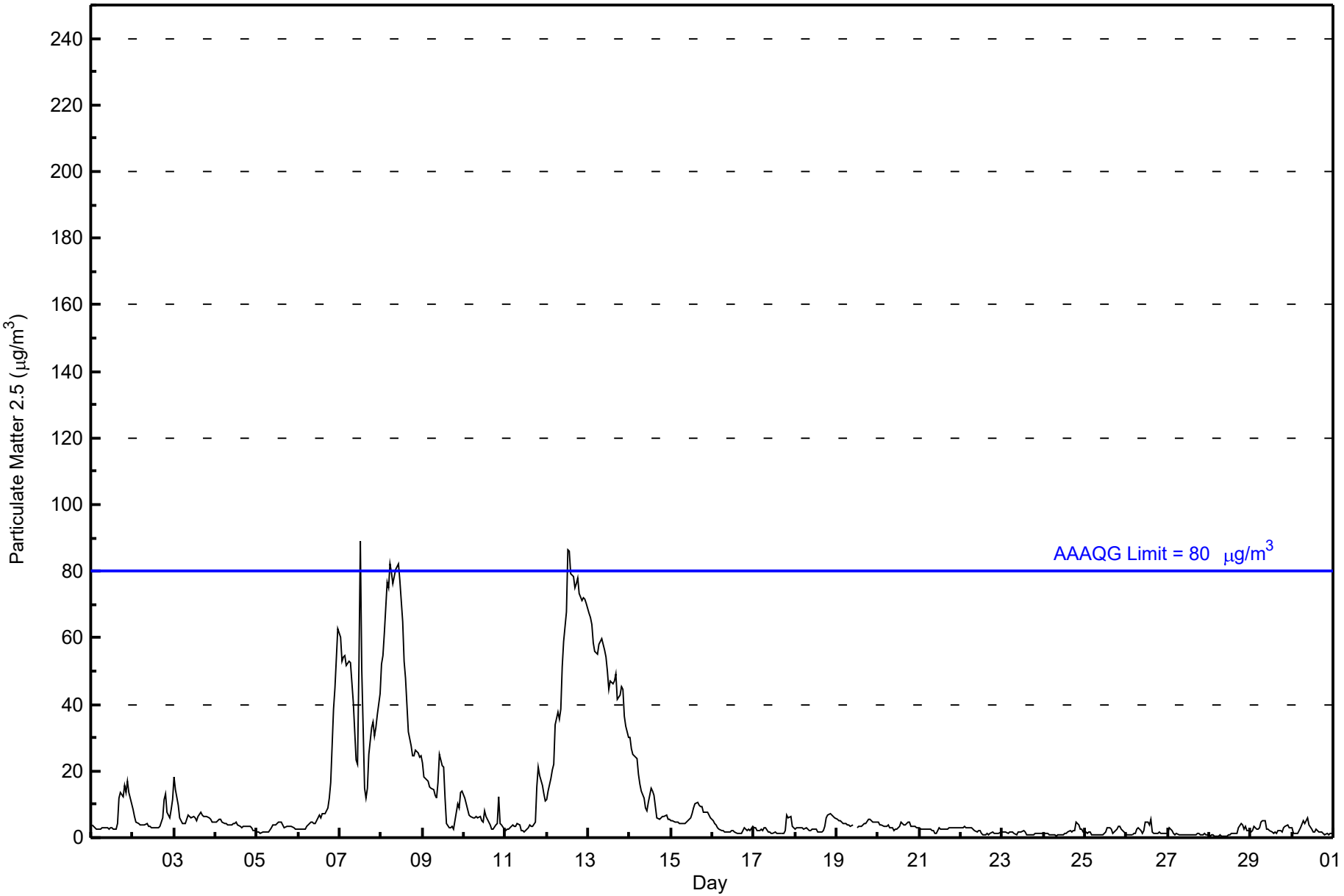
Alberta Ambient Air Quality Guideline/Objectives: 1-hr 80 $\mu g/m^3$ 24-hr 29 $\mu g/m^3$

Wood Buffalo Environmental Association

Hourly Averages

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

Surmont 2 - September 2024



Wood Buffalo Environmental Association

Cumulative Frequency Distribution

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

Surmont 2 - September 2024

Concentration Ranges ($\mu g/m^3$)	Number of Hours	%	Cumulative %
0 - 5	489	68.11	68.11
6 - 15	113	15.74	83.84
16 - 25	30	4.18	88.02
26 - 80	80	11.14	99.16
> 81.0	6	0.84	100.00

Total Number of Valid Hours: 718

Total Number of Hours: 720

Wood Buffalo Environmental Association

Frequency Distribution

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

Surmont 2 - September 2024

Concentration Ranges ($\mu g/m^3$)	**Wind Direction** N	NNE	NE	ENE	E	ESE	SE	SSE	S	SSW	SW	WSW	W	WNW	NW	NNW	**Totals**
0 - 5	7	10	8	6	7	43	23	26	14	23	41	89	113	51	14	8	483
6 - 15	2	0	1	2	2	4	4	0	1	5	15	24	34	5	7	7	113
16 - 25	0	0	0	0	0	1	5	3	2	2	2	5	6	1	3	0	30
26 - 80	5	6	1	0	0	6	6	2	1	2	4	10	10	8	9	10	80
> 81.0	0	0	2	0	0	0	1	1	0	0	1	1	0	0	0	0	6
Totals	14	16	12	8	9	54	39	32	18	32	63	129	163	65	33	25	712

Total Number of Valid Hours: 712

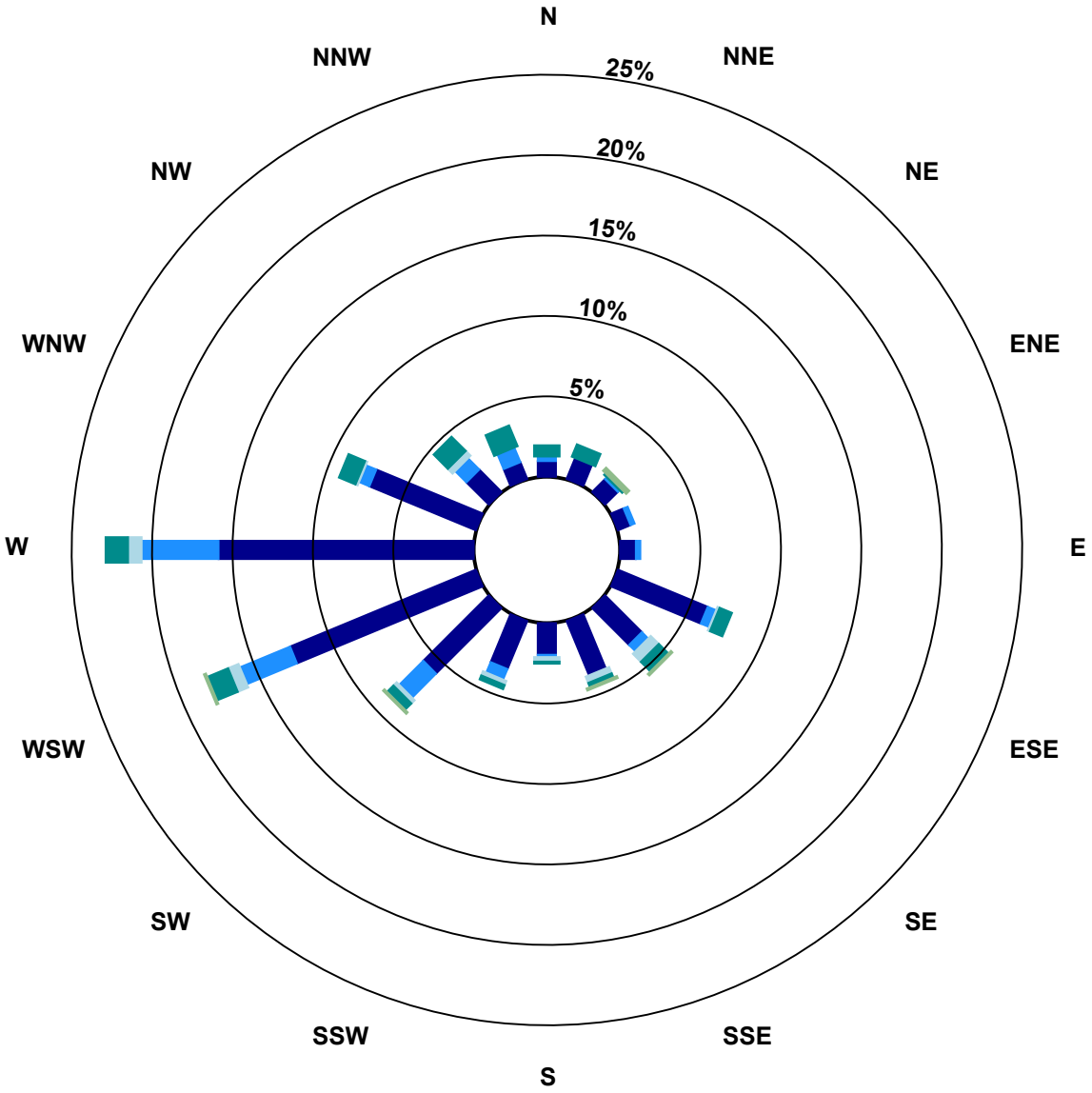
Total Number of Hours: 720

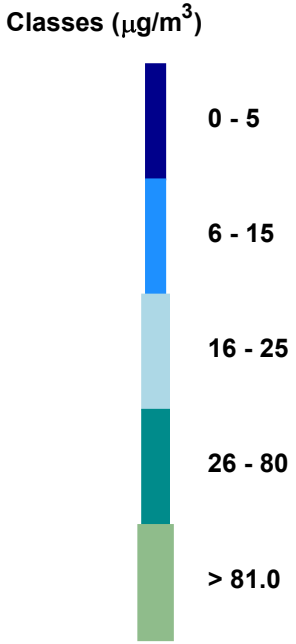
Wood Buffalo Environmental Association

Wind Rose Sep 2024

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

Surmont 2





Total Number of Valid Hours: 712

Maximum Value: 31.2 C on Sep 2 15:00

Maximum Daily Average: 20.7 C on Sep 2

Minimum Value: -1.3 C on Sep 21 05:00

Minimum Daily Average: 6.9 C on Sep 30

Maximum Diurnal Average: 17.9 C at hour 15

Minimum Diurnal Average: 7.8 C at hour 6

Monthly Average: 12.40 C

Percentiles: P_1 = 0.3 P_{10} = 5.9 Q_1 = 8.5 Median = 11.5 Q_3 = 16.1 P_{90} = 19.9 P_{99} = 29.2

Hours in Service:	720
Hours of Data:	720
Hours of Missing Data:	0
Hours of Calibration:	0
Percent Operational Time:	100.0

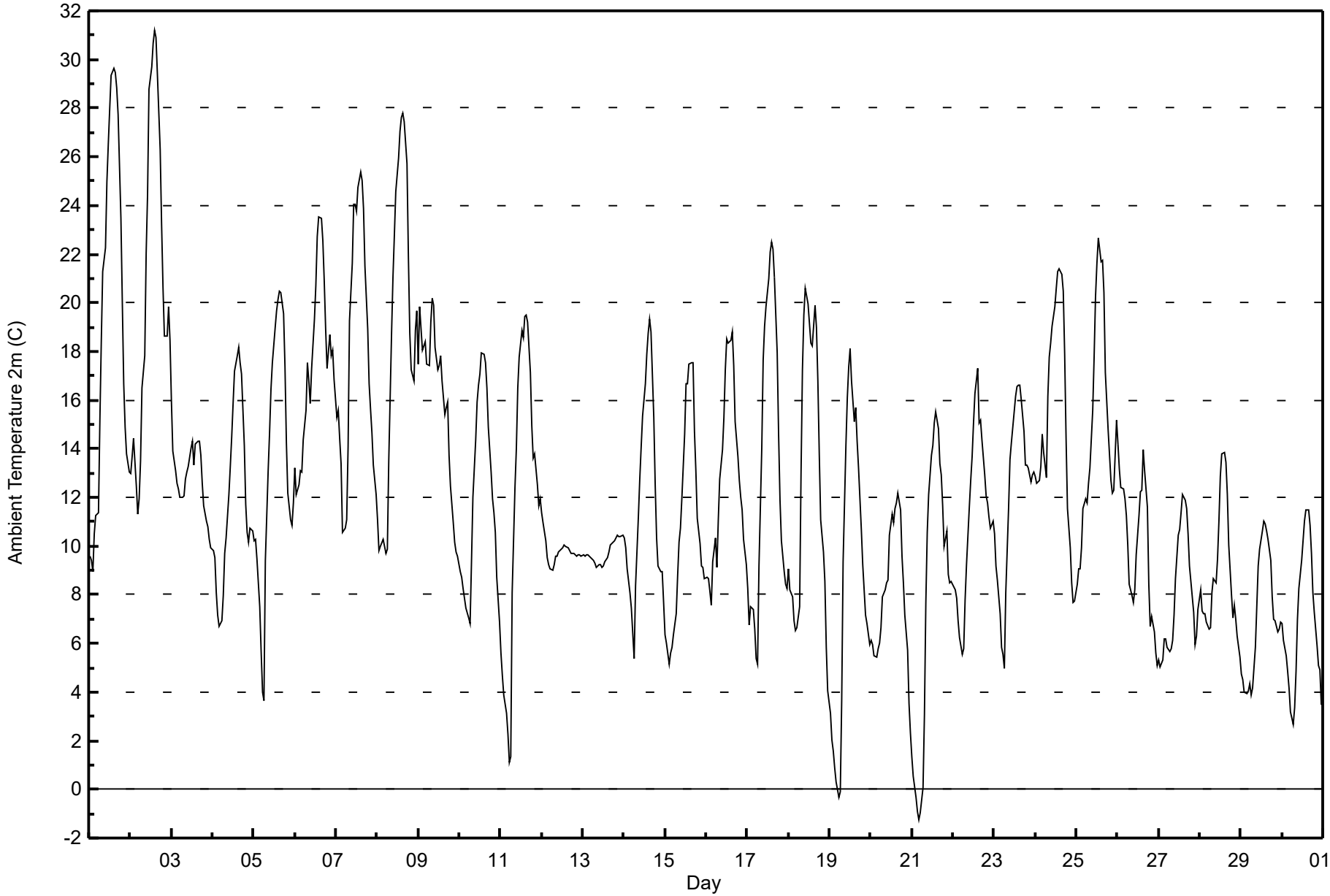
Day	Hourly Period Ending At (MST)																								Daily	Daily
	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24	Average	Maximum
1-Sep	9.6	9.4	8.9	10.5	11.2	11.4	15.2	18.4	21.3	22.2	25.0	26.5	27.9	29.3	29.6	29.5	28.8	27.8	23.5	20.0	16.7	14.9	13.8	13.0	19.4	29.6
2-Sep	13.0	13.7	14.4	12.5	11.3	12.0	13.5	16.5	17.8	22.0	24.5	28.8	29.7	30.7	31.2	30.9	29.4	26.3	23.2	20.7	18.7	18.6	19.8	18.5	20.7	31.2
3-Sep	16.0	13.9	13.1	12.6	12.4	12.0	12.0	12.1	12.8	13.0	13.3	14.0	14.3	13.3	14.2	14.3	14.3	13.7	12.6	11.7	11.0	10.8	10.3	10.0	12.8	16.0
4-Sep	9.8	9.5	8.1	7.2	6.7	6.9	8.0	9.7	10.3	12.1	13.3	14.5	15.9	17.2	17.8	18.2	17.6	17.1	14.1	11.7	10.6	10.1	10.7	10.6	12.0	18.2
5-Sep	10.2	10.3	9.5	7.5	5.7	4.0	3.6	9.4	13.1	14.6	16.5	17.5	19.0	19.7	20.1	20.5	20.4	19.6	17.3	14.2	12.2	11.1	10.9	11.8	13.3	20.5
6-Sep	13.2	12.1	12.5	13.1	13.0	14.4	15.6	17.5	16.8	15.9	17.3	19.3	20.7	22.7	23.6	23.5	22.6	20.9	18.9	17.3	18.7	17.8	18.1	16.9	17.6	23.6
7-Sep	15.3	15.6	14.4	13.4	10.6	10.7	11.1	14.1	19.3	21.6	24.1	24.1	23.8	24.7	25.4	25.0	23.9	21.5	18.9	16.6	15.6	14.7	13.3	12.1	17.9	25.4
8-Sep	11.1	9.8	10.0	10.3	10.0	9.7	9.9	13.5	18.8	21.1	22.8	24.6	25.9	27.0	27.6	27.8	27.5	25.7	21.9	18.7	17.3	16.8	18.9	19.7	18.6	27.8
9-Sep	17.5	19.9	18.0	18.2	18.4	17.5	17.4	19.2	20.2	19.9	18.2	17.3	17.4	17.8	16.8	15.4	15.7	15.9	13.7	12.5	11.0	10.1	9.8	9.6	16.1	20.2
10-Sep	8.9	8.7	8.3	7.9	7.4	7.0	6.8	9.3	12.0	14.3	15.9	16.6	17.1	17.9	17.9	17.6	16.5	14.9	13.0	11.9	11.3	10.5	8.7	6.8	12.0	17.9
11-Sep	5.6	4.7	3.9	3.1	2.3	1.1	1.3	8.1	12.4	14.0	16.5	17.8	18.9	18.6	19.4	19.5	19.2	17.1	15.0	13.6	13.8	12.5	11.7	11.9	11.7	19.5
12-Sep	11.3	11.0	10.2	9.5	9.3	9.1	9.0	9.3	9.6	9.6	9.8	9.8	9.9	10.0	10.0	9.9	9.8	9.7	9.7	9.7	9.6	9.6	9.7	9.6	9.8	11.3
13-Sep	9.7	9.6	9.7	9.6	9.6	9.5	9.4	9.3	9.1	9.2	9.2	9.1	9.2	9.4	9.5	9.8	10.1	10.1	10.2	10.3	10.5	10.4	10.4	10.5	9.7	10.5
14-Sep	10.3	9.9	9.1	8.1	7.5	6.4	5.4	8.4	11.2	12.8	14.1	15.3	16.6	17.9	18.8	19.3	18.8	15.3	12.5	10.4	9.2	9.0	8.9	7.7	11.8	19.3
15-Sep	6.3	6.0	5.2	5.6	5.9	6.3	7.2	8.8	10.1	10.7	11.9	14.6	16.7	16.7	17.5	17.5	17.6	14.7	13.1	11.2	10.1	9.2	9.1	8.6	10.9	17.6
16-Sep	8.7	8.6	8.2	7.6	9.4	10.3	9.1	11.1	12.8	13.9	15.3	17.2	18.5	18.3	18.5	18.8	17.4	15.1	13.7	12.7	12.0	11.5	10.3	9.2	12.8	18.8
17-Sep	8.3	6.7	7.5	7.4	6.6	5.4	5.2	9.2	14.0	17.6	19.1	19.8	21.0	22.1	22.5	22.2	21.1	17.9	14.6	11.9	10.2	8.9	8.4	8.2	13.2	22.5
18-Sep	9.1	8.2	7.9	7.0	6.5	6.6	7.5	13.0	17.3	19.5	20.6	19.9	19.2	18.3	18.2	19.9	19.0	16.8	13.8	11.1	9.8	8.5	5.8	4.1	12.8	20.6
19-Sep	3.1	2.1	1.6	0.9	0.3	-0.3	-0.1	3.6	9.4	14.1	16.1	17.3	18.1	16.8	15.1	15.7	14.3	13.2	10.7	9.2	8.2	7.2	6.8	5.9	8.7	18.1
20-Sep	6.1	5.9	5.5	5.4	5.8	6.0	6.7	7.9	8.2	8.5	8.6	10.5	11.3	11.0	11.5	11.8	12.2	11.5	9.6	8.5	7.2	5.7	3.5	2.3	8.0	12.2
21-Sep	1.3	0.5	-0.3	-0.9	-1.3	-0.9	0.1	3.1	7.7	10.6	12.1	13.7	14.2	15.1	15.5	14.8	13.4	12.9	11.7	10.0	10.6	8.9	8.5	8.6	7.9	15.5
22-Sep	8.3	8.2	7.8	6.9	6.2	5.5	5.8	7.8	9.2	11.6	12.7	13.7	15.0	16.3	17.3	15.1	15.2	14.4	12.9	12.0	11.7	11.2	10.8	11.0	11.1	17.3
23-Sep	10.5	9.2	8.6	7.2	5.9	5.6	4.9	8.1	11.5	13.5	14.2	14.9	16.2	16.5	16.6	16.6	16.0	14.7	13.3	13.3	13.2	12.7	12.9	13.0	12.1	16.6
24-Sep	12.9	12.6	12.7	13.3	14.6	13.9	12.8	16.1	17.8	18.4	19.1	19.8	20.6	21.3	21.4	21.2	20.5	17.9	14.4	11.5	9.9	8.5	7.7	7.7	15.3	21.4
25-Sep	8.4	9.1	9.0	9.9	11.5	11.9	11.8	12.6	13.2	15.6	17.7	20.2	21.6	22.6	21.7	21.7	20.4	17.2	14.7	13.7	12.7	12.2	12.3	15.2	14.9	22.6
26-Sep	14.2	13.2	12.4	12.4	11.9	11.3	10.1	8.4	8.0	7.7	8.2	9.6	11.3	12.3	12.3	13.9	13.1	11.6	8.4	6.7	7.1	6.4	5.6	5.1	10.0	14.2
27-Sep	5.3	5.0	5.3	6.2	6.2	5.8	5.7	5.8	6.1	7.2	8.6	10.4	10.7	11.3	12.1	11.9	11.5	10.5	9.2	8.6	7.3	6.0	6.3	7.4	7.9	12.1
28-Sep	8.2	7.3	7.2	7.2	6.8	6.6	6.7	8.1	8.7	8.5	9.5	11.0	12.9	13.8	13.8	13.5	12.1	10.1	8.0	7.0	7.6	7.0	6.3	5.4	8.9	13.8
29-Sep	4.7	4.5	4.0	3.9	4.0	4.4	3.8	4.1	5.8	7.5	9.2	9.9	10.6	11.1	10.9	10.6	10.3	9.4	7.9	7.0	6.9	6.5	6.6	6.9	7.1	11.1
30-Sep	6.8	6.2	5.5	4.9	4.2	3.2	2.7	3.3	4.9	7.0	8.2	9.4	10.2	11.0	11.5	11.5	10.8	9.7	8.1	7.3	5.9	5.1	4.9	3.5	6.9	11.5
	9.5	9.0	8.6	8.3	8.0	7.8	7.9	10.2	12.3	13.8	15.0	16.2	17.1	17.7	17.9	17.9	17.3	15.8	13.6	12.0	11.2	10.4	10.0	9.7	Diurnal Average	
	17.5	19.9	18.0	18.2	18.4	17.5	17.4	19.2	21.3	22.2	25.0	28.8	29.7	30.7	31.2	30.9	29.4	27.8	23.5	20.7	18.7	18.6	19.8	19.7	Diurnal Maximum	

Wood Buffalo Environmental Association

Hourly Averages

Ambient Temperature 2m (AT2) - C

Surmont 2 - September 2024



Concentration Ranges (C)	Number of Hours	%	Cumulative %
-50 - -20	0	0.00	0.00
-20 - 0	6	0.83	0.83
0 - 10	274	38.06	38.89
10 - 20	371	51.53	90.42
> 20	69	9.58	100.00

Total Number of Valid Hours: 720

Total Number of Hours: 720

Wood Buffalo Environmental Association

Summary of Hour Averages

Relative Humidity 2m (RH2) - %

Surmont 2 - September 2024

Maximum Value: 100.5 % on Sep 13 06:00

Maximum Daily Average: 99.9 % on Sep 13

Minimum Value: 20.6 % on Sep 2 16:00

Minimum Daily Average: 56.0 % on Sep 30

Maximum Diurnal Average: 89.5 % at hour 6

Minimum Diurnal Average: 52.4 % at hour 16

Monthly Average: 74.18 %

Percentiles: P_1 = 29.4 P_{10} = 44.3 Q_1 = 58.7 Median = 76.1 Q_3 = 92.5 P_{90} = 98.6 P_{99} = 100.5

Hours in Service:	720
Hours of Data:	720
Hours of Missing Data:	0
Hours of Calibration:	0
Percent Operational Time:	100.0

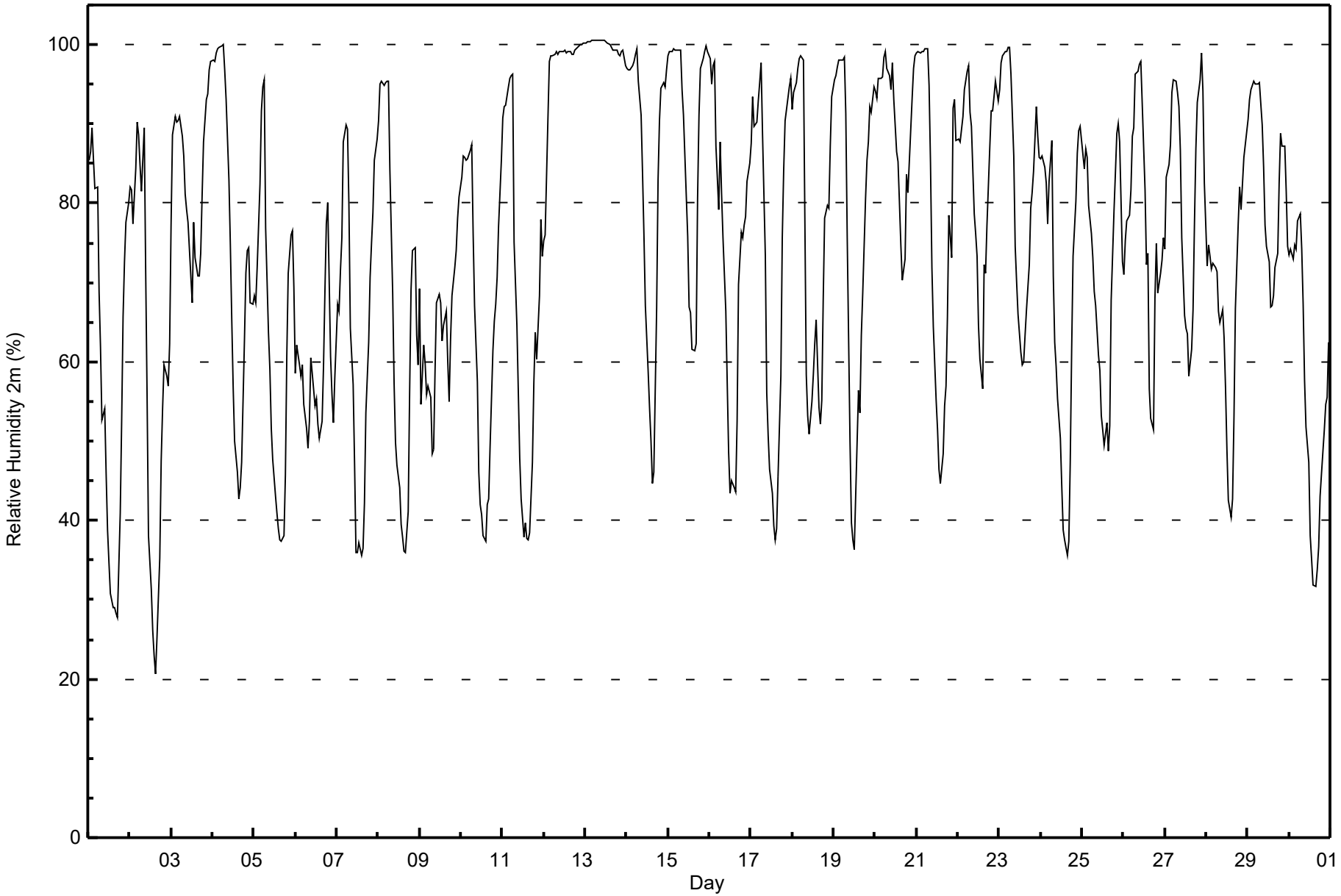
Day	Hourly Period Ending At (MST)																								Daily	Daily
	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24	Average	Maximum
1-Sep	85.4	86.5	89.6	85.6	81.9	82.1	69.0	61.9	52.7	54.2	45.9	38.8	34.6	30.8	29.1	28.9	28.4	27.8	40.9	52.6	65.7	72.5	77.6	80.2	58.4	89.6
2-Sep	82.0	81.6	77.5	84.3	90.3	88.6	84.9	81.4	89.4	71.7	55.9	38.1	31.4	26.2	22.9	20.6	25.1	35.2	47.5	54.2	59.5	58.3	57.0	62.4	59.4	90.3
3-Sep	77.2	88.6	90.9	90.2	90.4	90.9	88.4	86.0	81.2	79.2	77.5	70.8	67.4	77.6	73.1	70.8	70.8	73.6	81.0	87.7	93.2	93.9	96.8	97.8	83.1	97.8
4-Sep	98.1	97.9	98.9	99.6	99.7	99.9	100.0	96.9	93.0	82.9	74.7	65.4	56.7	50.0	46.0	42.8	44.2	47.4	62.9	71.1	74.0	74.4	67.5	67.3	75.5	100.0
5-Sep	68.3	67.5	71.9	82.4	91.7	94.7	95.6	76.9	63.7	59.0	51.5	47.7	43.1	41.0	39.0	37.5	37.3	38.1	45.7	60.9	71.2	76.0	76.5	69.5	62.8	95.6
6-Sep	58.6	62.1	59.5	58.2	59.6	54.7	51.6	49.2	52.4	60.5	58.6	54.4	55.3	52.2	50.4	52.6	59.4	68.8	77.3	80.1	60.8	56.0	52.4	58.1	58.4	80.1
7-Sep	67.3	66.4	71.6	75.7	87.7	89.9	89.3	79.7	64.2	57.2	47.2	35.9	35.9	37.3	35.5	36.5	42.2	53.6	62.5	70.6	74.9	78.8	85.4	88.1	63.9	89.9
8-Sep	90.4	95.1	95.4	94.9	95.2	95.4	95.3	84.4	68.7	57.4	49.9	47.0	44.2	39.6	37.9	36.1	36.0	41.1	56.1	69.0	74.0	74.4	63.3	59.6	66.7	95.4
9-Sep	69.2	54.6	62.1	59.8	55.8	57.0	55.5	48.4	48.9	58.8	67.5	68.6	67.4	62.7	64.7	66.3	60.1	55.0	62.9	68.4	71.8	74.1	78.2	80.7	63.3	80.7
10-Sep	83.4	86.0	85.8	85.4	85.6	86.7	87.4	76.2	67.0	57.5	46.0	41.9	40.8	38.1	37.3	42.0	42.8	49.3	61.5	65.2	67.3	70.6	77.0	85.5	65.3	87.4
11-Sep	90.7	92.2	92.4	94.7	95.8	96.1	96.2	75.1	64.6	56.3	47.9	42.8	37.9	39.7	37.7	37.5	38.4	47.4	57.4	63.8	60.3	68.3	78.0	73.4	66.0	96.2
12-Sep	75.4	75.9	90.7	97.9	98.7	98.7	98.7	99.1	98.8	99.2	99.2	99.2	99.2	99.0	99.1	99.1	98.7	98.8	99.2	99.4	99.8	100.0	100.1	100.2	96.8	100.2
13-Sep	100.3	100.3	100.4	100.4	100.5	100.5	100.5	100.5	100.5	100.5	100.5	100.5	100.4	100.3	100.0	99.7	99.3	99.3	99.3	98.8	98.5	99.2	99.2	97.4	99.9	100.5
14-Sep	97.1	96.8	96.8	97.3	97.8	98.7	99.5	95.4	91.1	83.8	76.1	67.1	58.7	54.1	49.9	44.7	46.2	66.7	83.0	90.5	94.5	95.2	94.7	96.8	82.2	99.5
15-Sep	98.6	99.1	99.1	99.5	99.3	99.3	99.4	99.3	94.3	91.1	85.9	75.8	66.9	66.1	61.6	61.4	62.3	80.7	91.1	97.0	98.3	99.1	99.8	99.2	88.5	99.8
16-Sep	98.2	95.0	97.3	97.8	87.2	79.3	87.8	81.1	75.7	66.4	57.2	48.6	43.4	45.1	44.1	43.6	52.5	69.8	76.3	75.7	77.3	78.4	82.7	85.1	72.7	98.2
17-Sep	87.6	93.4	89.7	90.2	92.9	95.3	97.7	88.8	73.4	56.1	50.7	46.5	43.4	39.4	37.6	38.9	45.6	58.3	75.7	84.2	90.3	93.3	94.7	95.7	73.3	97.7
18-Sep	91.8	93.9	95.3	96.9	98.2	98.6	98.1	78.0	58.4	53.3	51.0	55.0	58.4	62.3	65.3	54.4	52.1	55.1	67.9	78.1	79.7	79.5	87.2	93.4	75.1	98.6
19-Sep	95.6	96.2	97.2	98.1	98.1	98.0	98.5	91.3	75.9	49.9	39.7	37.6	36.3	43.0	56.5	53.6	63.4	68.8	80.7	85.5	87.7	92.2	91.4	94.8	76.2	98.5
20-Sep	94.1	93.3	95.8	95.7	95.9	98.4	99.1	97.0	96.0	94.3	97.8	93.1	86.6	85.2	80.1	74.8	70.3	72.9	83.6	81.4	85.2	93.2	97.0	98.5	90.0	99.1
21-Sep	98.9	99.1	99.0	99.1	99.1	99.4	99.6	94.8	85.1	71.9	64.4	55.1	51.4	46.4	44.7	48.4	54.5	56.9	65.6	78.6	73.1	92.0	93.1	88.0	77.4	99.6
22-Sep	88.0	87.7	89.3	91.0	94.3	96.6	97.4	91.6	89.7	78.7	76.1	73.4	64.6	60.3	56.6	72.3	71.2	77.2	87.1	91.7	91.7	93.5	95.4	92.9	83.7	97.4
23-Sep	94.3	97.7	98.5	99.1	99.2	99.6	99.7	96.2	86.0	74.5	70.1	66.0	61.3	59.6	60.0	63.3	66.5	72.2	79.3	81.3	84.0	92.3	88.5	85.7	82.3	99.7
24-Sep	85.6	86.0	84.6	82.7	77.4	82.7	88.0	70.8	62.5	59.5	55.4	50.3	44.3	38.9	37.5	35.5	37.4	47.3	61.3	73.3	80.3	86.4	89.2	89.6	66.9	89.6
25-Sep	86.2	84.4	86.8	85.8	79.8	76.1	73.2	68.9	67.1	60.8	58.8	53.2	51.5	49.5	52.3	48.8	51.9	67.8	78.9	83.9	88.8	90.1	87.8	72.6	71.0	90.1
26-Sep	71.0	75.3	77.7	78.4	81.6	88.5	89.6	96.3	96.7	97.5	97.9	92.6	81.7	72.3	73.6	56.6	52.9	51.4	67.9	74.8	68.6	71.2	72.9	75.7	77.6	97.9
27-Sep	74.2	83.2	84.9	87.4	94.0	95.6	95.4	94.1	92.1	86.6	75.7	65.8	64.2	63.6	58.2	61.6	66.5	77.3	86.9	92.7	95.6	99.0	94.2	82.6	82.1	99.0
28-Sep	72.1	74.7	73.4	71.6	72.4	71.9	71.4	66.4	65.0	66.5	63.1	56.7	49.0	42.6	40.4	42.7	53.0	66.7	77.4	82.1	79.1	82.3	85.8	88.9	67.3	88.9
29-Sep	90.6	93.1	94.4	95.3	95.1	95.1	95.1	95.3	89.9	84.5	77.2	74.6	72.7	66.9	67.2	68.4	71.9	73.6	82.5	88.9	87.2	87.2	81.5	74.5	83.4	95.3
30-Sep	73.5	74.2	73.0	74.7	74.3	77.8	78.7	74.3	67.3	57.6	51.8	47.4	38.2	35.1	31.8	31.7	33.7	36.7	43.1	45.9	51.5	54.7	55.5	62.4	56.0	78.7
	84.8	85.9	87.3	88.3	89.0	89.5	89.3	83.2	77.0	70.9	65.7	60.3	56.2	54.2	53.0	52.4	54.5	61.2	71.4	77.6	79.5	82.5	83.3	83.2	Diurnal Average	
	100.3	100.3	100.4	100.4	100.5	100.5	100.5	100.5	100.5	100.5	100.5	100.5	100.4	100.3	100.0	99.7	99.3	99.3	99.3	99.4	99.8	100.0	100.1	100.2	Diurnal Maximum	

Wood Buffalo Environmental Association

Hourly Averages

Relative Humidity 2m (RH2) - %

Surmont 2 - September 2024



Concentration Ranges (%)	Number of Hours	%	Cumulative %
0 - 20	0	0.00	0.00
20 - 40	50	6.94	6.94
40 - 60	142	19.72	26.67
60 - 80	207	28.75	55.42
80 - 100	303	42.08	97.50

Total Number of Valid Hours: 720

Total Number of Hours: 720

Wood Buffalo Environmental Association

Summary of Hour Averages

Wind Speed 10m (WS10) - km/h

Surmont 2 - September 2024

Maximum Speed: 17 km/h on Sep 30 14:00

Maximum Daily Speed Average: 9.3 km/h on Sep 30

Minimum Speed Value: 0 km/h on Sep 4 06:00

Minimum Daily Speed Average: 0.3 km/h on Sep 15

Maximum Diurnal Speed Average: 3.9 km/h at hour 15

Minimum Diurnal Speed Average: 1.3 km/h at hour 10

Monthly Average Velocity: 2.4 km/h 260.8 deg

Percentiles: $P_1 = 0$ $P_{10} = 1$ $Q_1 = 2$ Median = 4 $Q_3 = 6$ $P_{90} = 9$ $P_{99} = 13$

Hours in Service:	720
Hours of Data:	714
Hours of Missing Data:	6
Percent Operational Time:	99.2

Day	Hourly Period Ending At (MST)																								Daily	Daily
	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24	Average	Maximum
1-Sep	SSE2	S2	SSE1	SSE2	S2	WSW2	WSW5	S1	SSW3	ESE8	SE7	S7	SSE7	SW8	WSW11	WSW10	W9	W7	WSW3	SW2	WSW2	SW2	SW3	SW2	SW3.2	WSW11
2-Sep	SW2	WSW3	WSW3	SW2	SE1	SW1	S0	WNW2	SSW2	SSE3	ESE4	S4	WSW9	WSW8	W8	W7	W6	WSW3	WSW4	WSW4	WSW4	WNW4	NW7	NNW5	WSW2.9	WSW9
3-Sep	NW6	WNW5	N4	NW4	NW4	WNW4	NNW5	NNW5	NNW6	NNW5	NW5	NW5	NNW4	WNW4	NW5	NNW5	N4	NNW2	W2	WSW1	W3	W3	WNW3	W3	NW3.8	NNW6
4-Sep	WNW3	W3	W2	WSW1	SSW0	NNW0	SW1	W5	W5	W8	WNW9	WNW10	W11	WNW10	WNW8	WNW10	W9	W5	WSW2	SW3	WSW4	WSW5	WSW7	WSW7	W5.1	W11
5-Sep	WSW7	WSW7	W5	WSW3	NW2	WNW1	E0	ESE1	SE3	ESE5	ESE6	ESE6	ESE7	ESE8	ESE8	ESE9	ESE9	ESE7	ESE4	SSE2	S1	S2	SE3	ESE6	SE2.8	ESE9
6-Sep	SE7	ESE7	SSE6	SE8	ESE7	SSE6	SSE7	S5	SE5	ESE6	SE4	ESE5	E6	ESE6	ESE6	SE4	S3	SW3	SW2	WSW2	W6	W6	WSW8	W6	SSE3.3	WSW8
7-Sep	W4	WSW6	W4	W2	SE1	WSW2	WSW2	SSE0	ESE3	SSE5	SE4	SSW6	WSW7	WSW7	WSW9	W7	WSW4	SSW2	SW2	WSW3	WSW2	SSW2	WSW3	SW1	SW2.8	WSW9
8-Sep	SSE1	ESE1	SE0	WSW1	SW1	SW1	WSW2	S1	SE1	SSE5	SE6	SE7	ESE8	ESE9	ESE8	SE7	ESE7	SE4	SSW2	WSW4	SW3	S3	S4	SE4	SE3.0	ESE9
9-Sep	SSE1	WSW3	ESE4	SE5	SE6	SE5	SE6	WSW4	WSW11	WNW11	W11	W12	W10	W12	W12	W12	W10	W12	W8	W11	W13	W12	W10	W10	W6.7	W13
10-Sep	W7	W9	W10	W9	W7	W6	W5	W6	W8	W9	W10	W10	W10	W10	WNW9	W6	WNW6	W3	SSW1	SW2	WSW2	WSW4	W2	W1	W6.2	W10
11-Sep	WSW1	SW1	W1	WSW2	WSW1	ESE0	SSW1	E1	ESE2	ESE7	ESE6	SE7	ESE7	ESE5	ESE6	ESE6	ESE7	E5	ESE2	SE2	SE3	WSW1	SW2	SSW2	ESE2.6	ESE7
12-Sep	WSW2	WSW2	SSE2	NW1	NW1	WNW2	NNE1	NNE2	N1	NE2	NNE3	NNE3	NE3	NE4	NNE3	N4	NNW3	NNE3	N3	NNW4	N4	NNW3	NW3	NNW3	N1.9	NNW4
13-Sep	NNW3	NNW4	NNW4	NW4	NW4	NNW4	NNW4	NW5	NW5	NNW5	N4	NW4	WNW5	NW4	WNW6	WNW8	NW7	NW5	WNW5	WNW4	WNW4	WNW4	W5	W5	NW4.4	WNW8
14-Sep	W5	W5	W4	W4	W4	WSW3	SW2	WNW1	WSW4	W6	W7	WSW7	W8	W8	W8	W8	W5	SW2	SW3	SW2	SW2	WSW2	WSW3	WSW1	W4.1	W8
15-Sep	NNE0	W1	NW0	N0	ENE1	ENE1	NW0	ENE1	NE3	NE3	ENE2	E3	ENE4	NE3	ENE3	NNW0	SSW2	SSW3	SW3	SW4	SW3	SSW2	SSW2	W3	SE0.3	ENE4
16-Sep	WNW3	W4	WSW1	SSW1	W5	WSW7	WNW2	SSE1	ESE3	SSE3	WSW7	WSW8	WSW11	W10	WSW10	W8	W5	SW2	WSW2	W3	W3	W3	WSW2	W3	WSW3.9	WSW11
17-Sep	WSW3	SW2	WSW4	WSW4	SW3	SW2	WSW1	UO	SSE2	SSE4	SE7	ESE8	SSE6	S5	S5	SSE3	SE3	S2	WSW2	SW2	WSW2	SW2	SW3	SW2	S2.3	ESE8
18-Sep	SW3	SSW2	SW2	SW1	SSW1	SSW1	WSW0	W4	WSW3	WNW3	WNW4	NNE3	WNW4	WNW6	WNW5	WNW7	WNW7	W6	W3	WSW4	WSW5	WSW5	W3	WNW2	W3.0	WNW7
19-Sep	NW1	NNE1	UO	UO	UO	UO	SSW0	E1	SE1	W5	NNW4	ENE4	NE5	NNE2	WSW2	NW1	SW1	SW3	WSW2	WSW2	SW1	SW1	WSW1	WSW1	NW0.5	NE5
20-Sep	SSW1	SW1	W1	E0	WSW1	WSW1	W4	W3	W6	WNW4	SSW0	WNW4	NW5	NNW5	NW5	WNW6	WNW6	W6	W6	W6	WSW5	WSW4	SW1	SSW0	W3.0	W6
21-Sep	WNW1	NNW1	N1	UO	NE0	SE1	WSW1	SSE1	E2	ESE6	SSE4	SW6	SW5	W5	SSW4	SSE6	SE5	SSE5	SE4	ESE3	SSE3	SE2	ESE3	ESE5	SSE1.9	ESE6
22-Sep	ESE4	SE6	ESE4	SE2	SE2	WNW1	SW1	ESE1	ESE1	SE2	E6	ESE5	WSW6	WNW4	NW2	ENE2	S3	SE3	SW2	SW3	SW2	W1	WSW1	WNW3	SSE1.1	WSW6
23-Sep	WSW2	WSW1	W2	WNW1	NNW1	SSE1	SSW1	WNW2	W3	WNW3	WSW3	WNW4	WSW2	SW2	WSW6	WSW8	WSW6	WSW5	WSW4	WSW4	SSE3	SSE2	SW4	WSW7	WSW2.8	WSW8
24-Sep	WSW6	WSW6	WSW6	WSW6	WSW7	WSW4	WSW3	W9	W13	W13	W14	W13	W13	W12	W12	W11	W9	W5	SW3	SW3	SW2	WSW2	WSW1	SW2	W7.1	W14
25-Sep	SW3	WSW2	SSW2	SSW3	SE3	ESE5	ESE6	SSE3	ESE7	ESE6	ESE7	SE7	ESE6	NNE5	N7	NNE5	NW3	W3	WSW3	SW1	W1	W3	W3	WNW5	SE1.0	ESE7
26-Sep	WNW6	WNW5	W5	WNW4	WNW5	WNW7	WNW12	WNW8	WNW6	W4	SW3	W6	W10	W11	W8	W9	W7	WSW8	W4	W3	WSW6	WSW5	W4	WSW4	W5.9	WNW12
27-Sep	W3	SW1	SW1	SW3	W2	NE1	NNW2	WNW4	NW4	N5	N5	ENE3	NW3	WSW2	W7	W5	NE3	S1	SSW2	W4	SSW2	SSW2	W3	W7	WNW1.9	W7
28-Sep	W11	WSW9	WSW10	W8	WSW7	W8	W8	W9	W11	W11	W10	W10	W9	W10	W9	WSW6	WSW2	SW2	SW1	SSW2	W1	SSE0	SW1	WSW1	W6.3	W11
29-Sep	SW1	WSW1	SSW0	N0	SSE0	W1	W2	W2	NW2	NW3	N5	N5	NNE7	NNE7	NNE6	NE6	NE4	NNW7	NW6	WNW6	WNW6	WNW6	WNW7	NNW2.8	NNW7
30-Sep	W7	W8	W9	W9	W9	W7	WNW6	W7	WNW8	NW7	W14	W15	W15	W17	W14	W13	W13	W10	W8	WSW8	WSW6	WSW7	WSW7	WSW5	W9.3	W17
	W2.4	WSW2.5	WSW2.1	WSW2.2	WSW1.5	WSW1.6	W1.5	W2.0	W2.0	W1.3	W1.4	WSW2.1	W3.0	W3.6	W3.9	W3.5	W2.7	WSW2.4	WSW2.4	WSW2.8	WSW2.7	WSW2.6	WSW2.9	W2.5	Diurnal Average	
	W11	W9	WSW10	W9	W9	W8	WNW12	W9	W13	W13	W14	W15	W15	W17	W14	W13	W13	W12	W8	W11	W13	W12	W10	W10	Diurnal Maximum	

UO - Unstable Operation

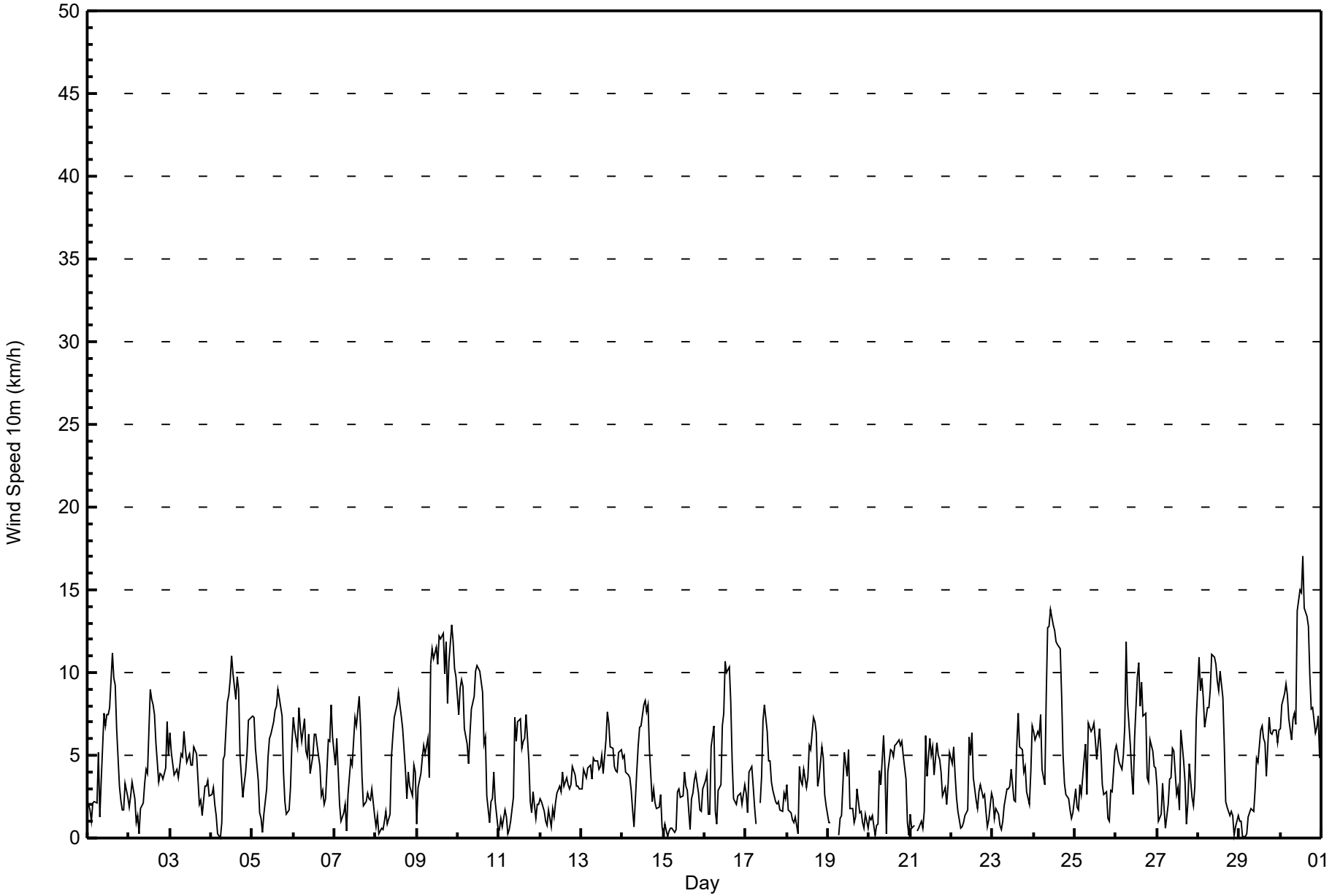
All monthly, daily, and diurnal averages have been calculated using vector methods

Wood Buffalo Environmental Association

Hourly Averages

Wind Speed 10m (WS10) - km/h

Surmont 2 - September 2024



Wind Speed Ranges (km/h)	Number of Hours	%	Cumulative %
0 - 5	480	67.23	67.23
6 - 11	212	29.69	96.92
12 - 19	22	3.08	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: 714

Total Number of Hours: 720

Wood Buffalo Environmental Association

Frequency Distribution

Wind Speed 10m (WS10) - km/h

Surmont 2 - September 2024

Wind Speed							**Wind Direction**										
Ranges (km/h)	N	NNE	NE	ENE	E	ESE	SE	SSE	S	SSW	SW	WSW	W	WNW	NW	NNW	**Totals**
0 - 5	13	13	11	9	7	22	27	26	17	31	61	89	64	38	28	24	480
6 - 11	1	3	1	0	2	32	12	6	1	1	2	40	78	26	5	2	212
12 - 19	0	0	0	0	0	0	0	0	0	0	0	0	21	1	0	0	22
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	14	16	12	9	9	54	39	32	18	32	63	129	163	65	33	26	714

Total Number of Valid Hours: 714

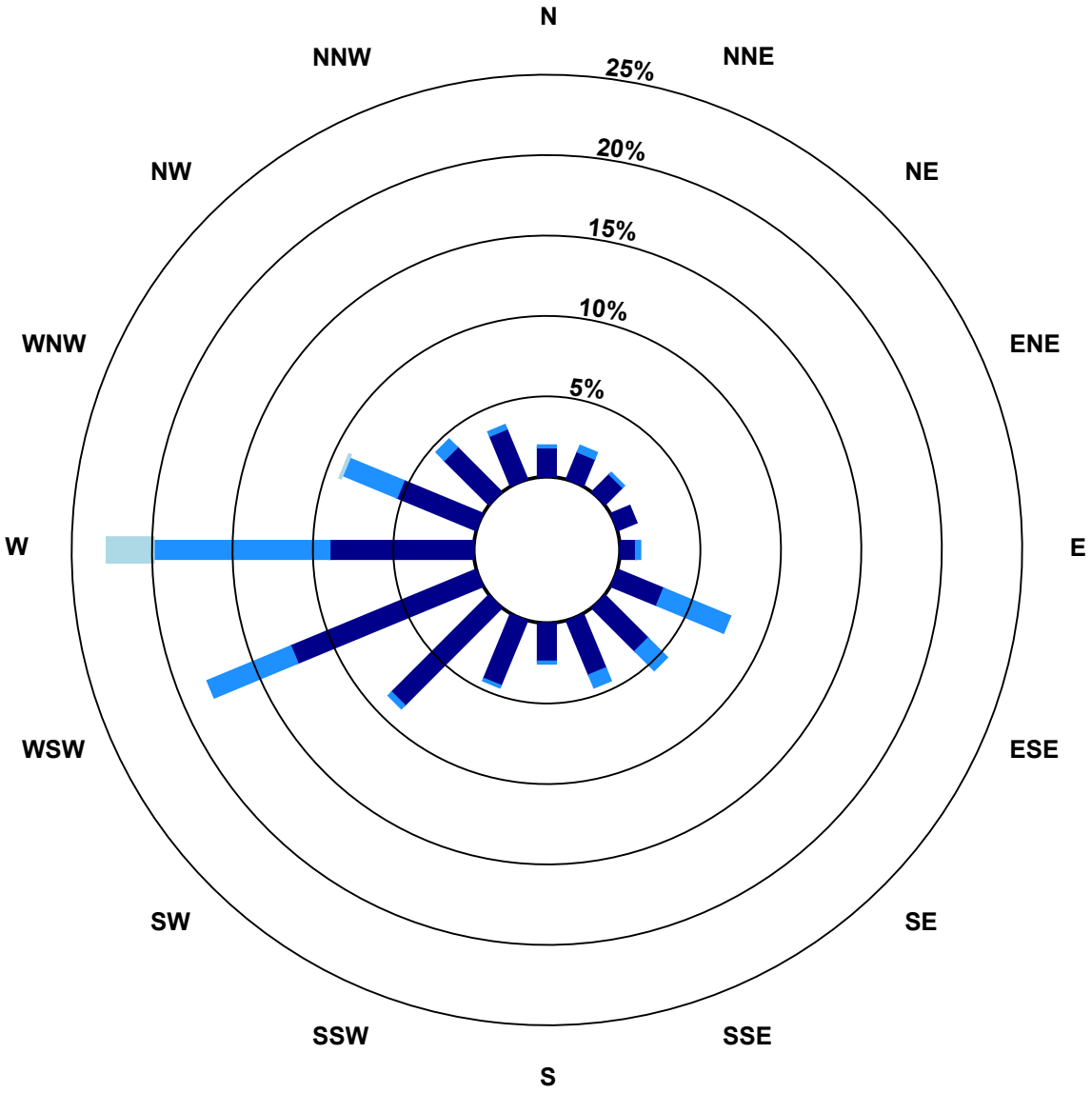
Total Number of Hours: 720

Wood Buffalo Environmental Association

Wind Rose Sep 2024

Wind Speed 10m (WS10) - km/h

Surmont 2



Classes (km/h)

- 0 - 5
- 6 - 11
- 12 - 19
- 20 - 28
- 29 - 38
- > 38

Total Number of Valid Hours: 714

Number of Exceedences (AAAQO): 1-hr: 0 24-hr: 0

Maximum Value: 6 km/h on Sep 30 14:00

Minimum Value: 0 km/h on Sep 10 20:00

Percentiles: $P_1 = 1$ $P_{10} = 1$ $Q_1 = 1$ Median = 2 $Q_3 = 3$ $P_{90} = 4$ $P_{99} = 5$

Hours in Service:	720
Hours of Data:	714
Hours of Missing Data:	6
Hours of Calibration:	0
Percent Operational Time:	99.2

Day	Hourly Period Ending At (MST)																								Daily
	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24	Maximum
1-Sep	1	1	1	1	1	3	2	1	2	2	4	4	3	4	5	4	4	3	2	1	1	1	1	1	5
2-Sep	1	1	1	1	1	1	1	2	1	2	1	3	3	3	3	3	3	1	1	1	2	2	3	3	3
3-Sep	4	3	2	2	2	1	2	2	3	3	2	2	2	2	2	2	1	1	1	1	1	1	1	1	4
4-Sep	1	1	1	1	1	1	1	2	3	3	3	4	4	4	3	4	3	2	1	1	1	2	2	2	4
5-Sep	2	3	2	2	1	1	1	1	1	2	3	3	3	3	4	4	3	3	2	1	1	1	1	3	4
6-Sep	3	2	3	4	3	3	3	3	3	2	2	2	2	2	2	2	1	1	1	1	2	2	2	3	4
7-Sep	2	2	2	2	1	1	1	1	1	2	2	3	3	3	3	2	2	1	1	1	1	1	1	1	3
8-Sep	1	1	1	1	1	1	1	1	1	2	2	3	3	3	3	3	2	2	1	1	1	1	2	2	3
9-Sep	1	2	3	3	3	2	2	3	5	5	4	4	5	5	4	5	4	5	4	5	5	5	4	4	5
10-Sep	3	3	3	3	2	2	2	2	3	3	4	4	4	4	4	2	2	2	1	0	1	2	2	1	4
11-Sep	1	1	1	1	1	1	1	1	1	2	2	3	3	3	3	3	3	2	2	1	1	1	1	1	3
12-Sep	1	1	1	2	1	1	1	1	1	1	1	2	1	2	1	2	2	2	1	2	2	1	1	1	2
13-Sep	1	2	2	2	2	2	1	2	2	2	2	2	2	2	3	3	3	2	2	2	2	2	1	2	3
14-Sep	1	2	1	2	2	1	1	1	1	2	2	3	3	3	3	3	2	1	1	1	1	2	2	1	3
15-Sep	1	1	1	1	1	1	1	1	1	1	1	2	2	2	2	2	1	1	1	1	1	1	1	1	2
16-Sep	1	2	1	1	3	3	1	1	1	2	4	4	4	4	4	3	3	1	1	1	1	1	1	1	4
17-Sep	1	1	1	1	1	1	1	UO	1	2	3	3	3	3	2	2	1	1	1	1	1	1	1	1	3
18-Sep	1	1	1	1	1	1	1	2	2	2	3	2	1	2	3	3	3	3	1	1	1	1	1	1	3
19-Sep	1	1	UO	UO	UO	UO	1	1	1	2	2	2	2	2	1	1	1	1	1	1	1	1	1	1	2
20-Sep	1	1	1	1	1	1	3	2	2	2	2	2	2	2	2	2	2	2	1	1	1	1	1	1	3
21-Sep	1	1	1	UO	1	1	1	1	1	2	2	3	3	3	3	3	2	2	2	1	2	1	2	2	3
22-Sep	2	2	1	1	1	1	1	1	1	1	2	2	2	2	2	1	1	1	1	1	1	1	1	2	2
23-Sep	1	1	1	1	1	1	1	1	1	1	1	2	2	2	2	3	2	2	2	2	2	2	3	3	3
24-Sep	3	2	3	2	3	2	3	4	5	5	5	5	5	4	4	4	4	2	1	1	1	1	1	1	5
25-Sep	1	1	1	2	1	2	2	2	3	3	2	2	2	2	3	2	1	1	1	1	1	1	2	2	3
26-Sep	2	3	2	1	2	3	5	4	2	2	1	3	4	4	3	4	3	3	2	1	2	2	2	2	5
27-Sep	1	1	2	2	1	1	1	1	1	2	2	2	2	2	3	2	1	1	2	5	2	1	2	4	5
28-Sep	4	4	4	4	3	3	3	4	4	4	4	3	3	4	3	2	1	1	1	1	1	1	1	1	4
29-Sep	1	1	1	1	1	1	1	1	2	1	2	2	2	3	2	2	2	4	3	2	3	3	2	3	4
30-Sep	2	2	3	3	3	3	3	3	3	4	5	6	6	6	6	5	5	4	3	3	2	2	2	1	6
	4	4	4	4	3	3	5	4	5	5	5	6	6	6	6	5	5	5	4	5	5	5	4	4	
	Diurnal Maximum																								

UO - Unstable Operation

Wood Buffalo Environmental Association

Summary of Hour Averages

Wind Direction 10m (WD10) - deg

Surmont 2 - September 2024

Direction of Maximum Speed: 278 deg on Sep 30 14:00
Direction of Maximum Daily Speed Average: 273.5 deg on Sep 30

Direction of Minimum Speed: 346 deg on Sep 4 06:00

Direction of Minimum Daily Speed Average: 0.3 deg on Sep 15

Monthly Average Direction: 260.8 deg

Hours in Service:	720
Hours of Data:	714
Hours of Missing Data:	6
Percent Operational Time:	99.2

Day	Hourly Period Ending At (MST)																								Daily
	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24	Average
1-Sep	161	173	168	163	177	252	253	173	201	115	141	176	164	229	245	251	261	271	257	235	244	225	228	228	216.7
2-Sep	226	243	246	222	126	230	179	294	192	148	121	186	247	250	265	279	275	255	247	253	257	284	310	335	255.9
3-Sep	323	300	4	315	316	296	338	343	345	335	320	306	334	292	316	341	352	346	276	253	269	281	303	281	319.2
4-Sep	287	262	266	257	213	346	228	276	281	272	282	283	275	288	289	283	278	277	241	224	240	247	248	248	271.1
5-Sep	249	254	261	250	304	299	79	106	125	118	106	104	103	119	120	113	111	109	122	166	184	184	126	118	130.5
6-Sep	133	122	155	144	116	149	157	174	145	119	124	115	101	109	116	130	187	221	228	241	262	260	256	266	153.4
7-Sep	265	253	274	281	136	250	247	153	117	148	140	205	246	241	255	259	242	209	222	239	244	199	250	228	234.7
8-Sep	164	109	139	241	234	225	250	175	126	157	137	127	121	121	122	126	117	131	202	239	216	189	185	146	143.3
9-Sep	148	239	110	141	138	131	127	245	255	283	281	276	281	280	280	270	265	261	276	277	278	280	278	274	268.0
10-Sep	276	266	271	264	270	267	269	264	273	272	271	262	270	278	284	281	284	265	206	225	246	240	261	259	269.1
11-Sep	239	232	261	239	242	120	198	101	103	104	116	125	113	123	118	104	102	101	110	144	137	257	215	200	121.7
12-Sep	248	255	162	313	307	290	21	25	5	37	12	23	37	39	23	0	339	13	9	338	356	341	311	330	355.1
13-Sep	348	337	331	323	321	340	337	321	312	337	356	320	300	321	297	303	320	315	290	283	284	293	275	275	312.2
14-Sep	274	262	263	264	264	243	230	285	257	276	273	256	267	260	263	275	265	236	235	229	219	250	242	245	260.9
15-Sep	27	277	305	7	67	67	314	67	54	37	74	91	60	52	64	337	193	197	225	220	221	201	207	265	124.1
16-Sep	284	277	253	193	264	255	290	159	109	164	243	246	246	263	256	265	267	224	241	271	261	263	249	264	253.6
17-Sep	248	227	250	248	229	236	245	UO	156	159	126	121	148	171	184	162	137	185	242	236	243	229	222	221	184.6
18-Sep	219	209	231	218	209	205	240	271	248	286	302	21	287	291	287	291	290	279	271	256	242	242	261	297	271.7
19-Sep	318	14	UO	UO	UO	UO	201	90	136	270	338	68	38	32	258	321	216	234	237	247	230	225	253	244	304.7
20-Sep	203	220	262	88	247	243	269	268	275	302	203	299	317	335	304	285	285	278	265	262	253	251	222	199	279.4
21-Sep	293	328	2	UO	38	137	249	148	83	111	148	228	228	263	200	150	146	151	140	116	153	142	104	105	157.7
22-Sep	113	131	122	130	144	300	224	114	109	143	98	123	245	292	317	60	170	145	229	225	214	270	257	289	155.8
23-Sep	247	254	280	289	344	156	193	290	268	286	253	292	257	227	253	248	248	246	246	247	167	160	235	253	250.8
24-Sep	249	249	255	253	253	248	251	271	270	269	271	275	270	272	274	271	262	259	224	218	219	253	241	228	263.1
25-Sep	236	254	206	210	143	113	108	147	120	123	123	124	115	33	2	18	317	263	252	226	267	265	266	284	128.5
26-Sep	284	292	279	290	287	291	286	296	299	266	225	273	275	276	263	266	267	256	265	268	251	249	264	237	273.1
27-Sep	267	235	216	222	269	44	330	284	312	352	354	65	319	258	272	275	38	174	202	279	210	212	265	260	283.4
28-Sep	261	253	256	262	256	264	261	275	267	266	278	268	266	266	265	254	243	217	225	200	276	151	220	247	262.3
29-Sep	236	251	200	8	154	272	267	270	306	319	1	11	13	32	29	47	46	329	304	292	302	303	287	292	332.1
30-Sep	279	270	271	266	271	279	298	279	287	310	272	275	279	278	276	280	278	268	261	257	252	253	253	256	273.5
	259.7	255.6	256.7	247.7	253.2	256.1	263.4	274.1	265.7	265.2	262.7	250.0	264.6	272.2	270.6	272.9	267.4	254.6	250.4	253.2	251.2	256.5	257.5	260.7	
	Diurnal Average																								

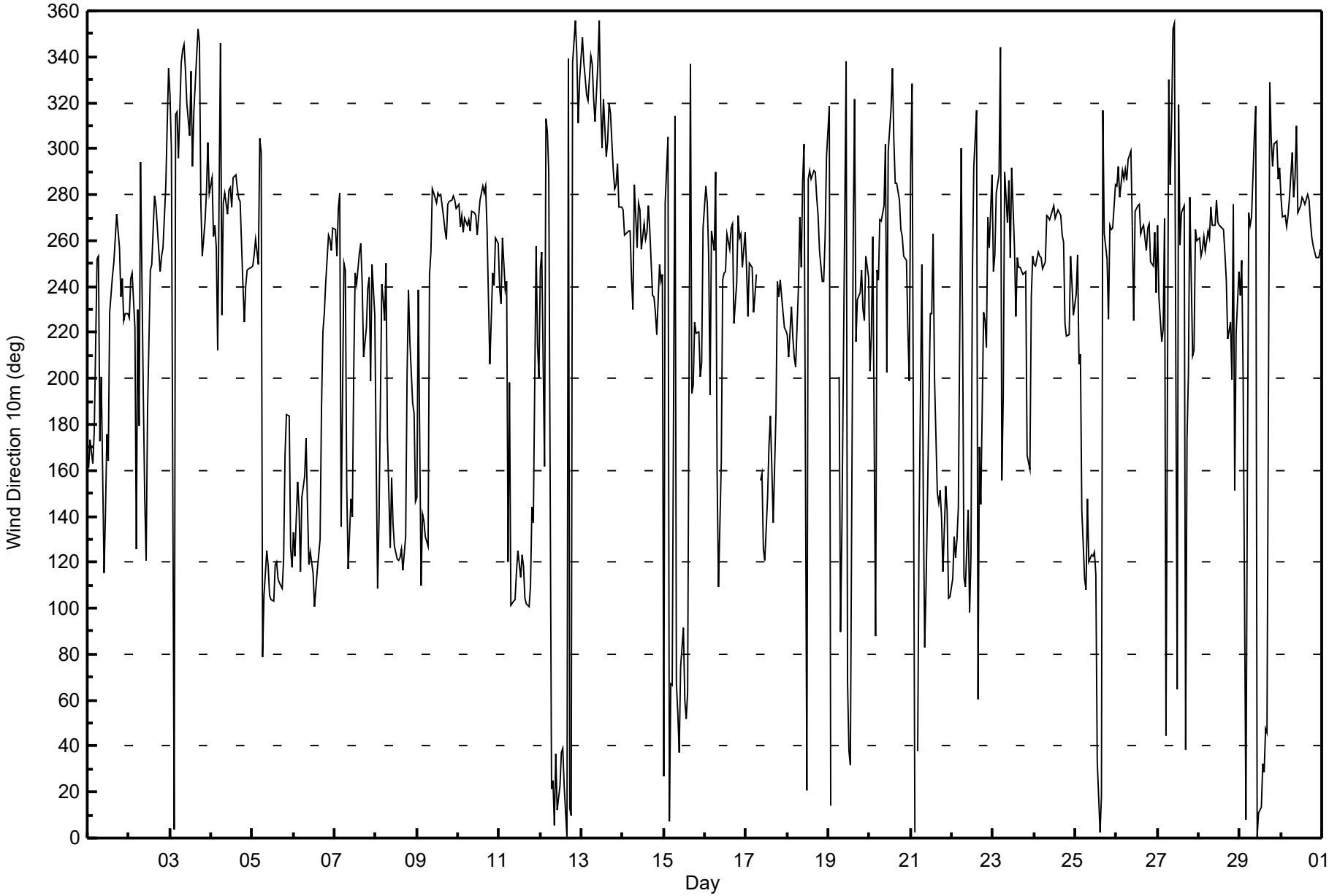
UO - Unstable Operation
All monthly, daily, and diurnal averages have been calculated using vector methods

Wood Buffalo Environmental Association

Hourly Averages

Wind Direction 10m (WD10) - deg

Surmont 2 - September 2024



Wood Buffalo Environmental Association

Summary of Hour Standard Deviations

Wind Direction 10m (WD10) - deg

Surmont 2 - September 2024

Number of Exceedences (AAAQO): 1-hr: 0 24-hr: 0
Maximum Value: 112 deg on Sep 14 08:00

Minimum Value: 11 deg on Sep 18 21:00

Percentiles: P_1 = 14 P_{10} = 28 Q_1 = 37 Median = 47 Q_3 = 62 P_{90} = 80 P_{99} = 99

Hours in Service:	720
Hours of Data:	714
Hours of Missing Data:	6
Hours of Calibration:	0
Percent Operational Time:	99.2

Day	Hourly Period Ending At (MST)																								Daily
	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24	Maximum
1-Sep	26	45	64	58	69	99	50	98	84	35	61	69	64	71	53	56	39	36	31	31	50	21	13	20	99
2-Sep	42	21	13	50	90	35	96	94	69	58	45	76	42	49	47	35	35	48	47	18	25	48	61	84	96
3-Sep	68	70	68	68	57	46	61	57	55	52	62	60	67	49	57	44	59	61	37	52	14	45	52	65	70
4-Sep	57	19	25	29	80	90	65	32	45	37	36	43	40	47	53	44	32	34	37	16	15	21	20	18	90
5-Sep	20	30	33	42	49	70	47	51	45	50	47	55	44	46	43	42	37	37	44	63	64	68	60	48	70
6-Sep	54	46	74	67	51	68	70	86	78	28	36	30	20	31	36	42	35	48	27	42	26	25	25	32	86
7-Sep	35	23	36	84	72	16	16	49	36	44	64	67	42	51	38	40	57	61	25	21	29	38	30	33	84
8-Sep	59	32	61	85	60	62	24	63	33	48	47	42	43	39	41	43	38	49	61	21	41	54	70	64	85
9-Sep	101	80	56	61	52	53	62	98	47	42	37	35	37	38	36	34	37	37	34	36	36	43	40	39	101
10-Sep	40	30	31	31	32	26	29	40	42	40	41	43	44	45	39	49	45	62	60	24	33	39	64	77	77
11-Sep	14	54	66	44	17	90	58	31	45	25	49	48	41	60	50	41	23	27	47	67	61	68	31	45	90
12-Sep	17	25	56	80	102	80	91	75	88	81	48	53	60	33	52	57	83	79	60	56	53	55	52	57	102
13-Sep	59	58	61	61	67	52	60	57	62	55	60	65	61	59	57	52	57	57	51	48	49	49	34	29	67
14-Sep	29	29	27	34	39	29	75	112	36	43	38	44	45	40	41	39	35	46	14	42	56	55	80	86	112
15-Sep	93	90	67	69	46	88	97	83	35	43	74	70	59	65	79	100	62	38	42	24	28	44	25	63	100
16-Sep	32	38	82	90	45	46	99	104	56	68	54	64	48	40	40	41	36	19	49	37	30	34	36	21	104
17-Sep	29	35	14	15	27	58	69	UO	73	58	42	48	58	72	64	68	50	43	47	46	59	28	44	33	73
18-Sep	41	58	56	56	76	58	87	57	79	89	77	72	61	39	56	49	50	34	25	15	11	14	64	58	89
19-Sep	52	49	UO	UO	UO	UO	78	83	82	40	62	79	63	86	43	92	19	21	21	38	44	55	66	89	92
20-Sep	46	69	51	92	85	92	73	74	31	56	106	58	57	44	56	46	40	37	25	22	22	23	50	86	106
21-Sep	53	33	28	UO	20	65	66	66	48	34	75	60	72	62	83	55	54	61	55	44	74	53	36	33	83
22-Sep	41	41	45	62	58	70	83	39	60	79	18	42	38	68	93	74	46	47	48	39	41	83	31	51	93
23-Sep	41	78	35	66	82	70	85	83	66	70	63	58	88	86	52	41	43	38	39	68	82	91	83	43	91
24-Sep	37	34	33	38	32	41	76	39	37	37	37	39	37	40	37	39	35	33	16	30	23	27	17	54	76
25-Sep	43	43	33	49	58	44	40	82	46	65	55	46	36	47	51	54	51	42	28	53	82	38	70	39	82
26-Sep	44	56	52	44	46	46	43	54	50	45	50	39	37	37	35	34	34	33	33	28	22	31	36	18	56
27-Sep	37	37	76	42	56	101	75	48	52	53	59	83	74	89	43	35	42	69	63	69	39	68	79	61	101
28-Sep	35	38	40	41	47	39	39	39	36	37	37	37	48	44	35	43	44	22	51	75	88	90	75	52	90
29-Sep	58	52	93	93	93	81	70	72	81	52	46	56	50	39	52	37	49	53	61	53	54	58	45	47	93
30-Sep	39	29	29	28	32	35	62	37	52	58	36	36	40	35	38	38	37	34	29	29	28	27	25	28	62
	101	90	93	93	102	101	99	112	88	89	106	83	88	89	93	100	83	79	63	75	88	91	83	89	
	Diurnal Maximum																								

UO - Unstable Operation

WOOD BUFFALO ENVIRONMENTAL ASSOCIATION

CONTINUOUS AMBIENT AIR QUALITY
MONITORING PROGRAM
MONTHLY REPORT

AMS30
ELLS RIVER
SEPTEMBER 2024

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

October 31, 2024

WOOD BUFFALO ENVIRONMENTAL ASSOCIATION - ELLS RIVER (AMS30)
SEPTEMBER 2024

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	686	34	34	100	51.5	0	6.3	0
TRS (ppb) Average	685	35	35	100	1.6	0	0.7	0
THC (ppm) Average	686	34	34	100	7.1	-	3.1	-
NMHC (ppm) Average	686	34	34	100	1.646	-	0.366	-
CH4 (ppm) Average	686	34	34	100	6.1	-	2.8	-
NO2 (ppb) Average	685	35	35	100	32.2	0	11.2	-
NO (ppb) Average	685	35	35	100	123	-	19	-
NOX (ppb) Average	685	35	35	100	137.8	-	25.6	-
PM2.5 (ug/m3) Average	719	1	1	100	138.4	0	86.2	4
Temperature 2 m (C) Average	720	0	0	100	31.1	-	20.6	-
Relative Humidity (%) Average	720	0	0	100	97.5	-	85.4	-
Wind Speed 10 m (km/h) Average	708	0	12	98.33	27	-	12	-
Wind Direction 10 m (deg) Average	708	0	12	98.33	-	-	-	-
Global Solar Radiation (W/m2) Average	720	0	0	100	639.3	-	204.7	-

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

WOOD BUFFALO ENVIRONMENTAL ASSOCIATION - ELLS RIVER (AMS30)
SEPTEMBER 2024

MONTHLY SUMMARY FOR AIR QUALITY/ METEOROLOGICAL MONITORING MEASUREMENTS

					Percentile						
Parameter	Number	Mean	StnDev	Total	Min	P10	Q1	Median	Q3	P90	Max
SO2 (ppb) Average	686	0.62	2.7	-	0	0	0	0.1	0.2	0.8	51.5
TRS (ppb) Average	685	0.46	0.2	-	0.3	0.3	0.4	0.4	0.5	0.6	1.6
THC (ppm) Average	686	2.3	0.5	-	2	2	2	2.1	2.3	2.9	7.1
NMHC(ppm) Average	686	0.1	0.183	-	0	0	0	0	0.1	0.3	1.646
CH4(ppm) Average	686	2.2	0.4	-	2	2	2	2.1	2.2	2.5	6.1
NO2 (ppb) Average	685	4.1	5.2	-	0.2	0.3	0.4	1.8	6.1	11.3	32.2
NO (ppb) Average	685	3.73	11.7	-	0	0	0	0.1	1.6	9.4	123
NOX (ppb) Average	685	7.82	15.1	-	0.2	0.3	0.5	2.1	8.3	20.1	137.8
PM2.5 (ug/m3) Average	719	16.52	25.9	-	0.5	2.5	3.9	6.4	13.3	52	138.4
Temperature 2 m (C) Average	720	12.77	5.9	-	0.8	4.9	8.7	12.4	16.1	20.5	31.1
Relative Humidity (%) Average	720	70.62	18.6	-	23.3	43.3	55.7	73	87.5	93.2	97.5
Wind Speed 10 m (km/h) Average	708	7.8	4	-	1	3	5	8	10	13	27
Wind Direction 10 m (deg) Average	708	241.6	-	-	-	-	-	-	-	-	-
Global Solar Radiation (W/m2) Average	720	125.27	173.2	-	0	0	0	13.7	218.1	434.5	639.3

WOOD BUFFALO ENVIRONMENTAL ASSOCIATION - ELLS RIVER (AMS30)
SEPTEMBER 2024

OPERATIONAL NOTES

Parameter	Period Start	Period End	Duration (Hours)	Notes
Wind Speed, Wind Direction	12 Sep 2024 03:00	12 Sep 2024 05:00	3	Flat line in sensor output signal
Wind Speed, Wind Direction	14 Sep 2024 21:00	14 Sep 2024 21:00	1	Flat line in sensor output signal
Wind Speed, Wind Direction	14 Sep 2024 23:00	14 Sep 2024 23:00	1	Flat line in sensor output signal
Wind Speed, Wind Direction	15 Sep 2024 06:00	15 Sep 2024 06:00	1	Flat line in sensor output signal
Wind Speed, Wind Direction	17 Sep 2024 20:00	17 Sep 2024 21:00	2	Flat line in sensor output signal
Wind Speed, Wind Direction	18 Sep 2024 01:00	18 Sep 2024 03:00	3	Flat line in sensor output signal
Wind Speed, Wind Direction	22 Sep 2024 05:00	22 Sep 2024 05:00	1	Flat line in sensor output signal

Wood Buffalo Environmental Association

Summary of Hour Averages

Sulphur Dioxide (SO_2) - ppb

Ells River - September 2024

Number of Exceedences (AAAQO): 1-hr: 0 24-hr: 0
Maximum Value: 51.5 ppb on Sep 5 12:00 Maximum Daily Average: 6.3 ppb on Sep 5

Minimum Value: 0.0 ppb on Sep 3 19:00
Maximum Diurnal Average: 2.7 ppb at hour 12
Monthly Average: 0.62 ppb

Minimum Daily Average: 0.0 ppb on Sep 26
Minimum Diurnal Average: 0.1 ppb at hour 7
Percentiles: P_1 = 0.0 P_{10} = 0.0 Q_1 = 0.0 Median = 0.1 Q_3 = 0.2 P_{90} = 0.8 P_{99} = 12.8

Hours in Service:	720
Hours of Data:	686
Hours of Missing Data:	34
Hours of Calibration:	34
Percent Operational Time:	100.0

Day	Hourly Period Ending At (MST)																								Daily	Daily
	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24	Average	Maximum
1-Sep	1.6	12.1	4.1	1.4	Z	0.4	0.4	0.4	0.7	0.8	0.6	0.8	0.6	0.3	0.3	0.2	0.1	0.1	0.1	0.1	0.2	0.2	0.2	0.2	1.1	12.1
2-Sep	0.2	0.2	0.1	0.1	0.1	Z	0.1	0.2	0.1	0.2	0.3	0.3	0.2	0.2	0.2	0.1	0.1	0.1	0.0	0.1	0.1	0.1	0.0	0.0	0.1	0.3
3-Sep	Z	0.1	0.3	0.2	0.1	0.1	0.1	0.2	0.8	0.2	C	C	C	C	0.1	0.2	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.1	0.8
4-Sep	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
5-Sep	0.0	0.0	Z	0.0	0.0	0.0	0.0	0.0	0.0	0.9	13.7	51.5	18.4	13.1	6.8	6.2	3.4	2.5	2.3	3.2	2.0	1.9	6.9	12.7	6.3	51.5
6-Sep	11.8	8.7	1.5	Z	10.3	2.0	0.9	0.6	0.5	0.4	0.3	0.2	0.2	0.3	0.3	0.2	0.2	0.2	0.3	0.3	0.3	0.3	0.2	0.2	1.7	11.8
7-Sep	0.2	0.1	0.1	0.1	Z	0.1	0.1	0.1	0.2	0.1	0.6	3.1	0.6	0.2	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.3	3.1
8-Sep	0.0	0.1	0.1	0.0	0.0	Z	0.0	0.0	0.0	0.7	2.8	10.5	10.0	13.7	14.4	8.5	4.7	3.6	2.6	2.7	2.9	2.5	1.2	0.5	3.5	14.4
9-Sep	Z	0.2	0.1	0.1	0.1	0.0	0.0	0.3	0.2	0.7	0.5	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	0.7
10-Sep	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	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.1
11-Sep	0.0	0.1	Z	0.0	0.0	0.0	0.0	0.0	0.2	0.3	2.4	5.3	3.8	0.5	0.8	0.9	0.3	0.3	0.2	0.1	0.1	0.0	0.0	0.0	0.7	5.3
12-Sep	0.0	0.0	0.0	Z	0.0	0.3	0.3	0.1	0.2	0.5	0.4	0.2	0.2	0.3	0.3	0.2	0.1	0.0	0.1	0.0	0.0	0.0	0.0	0.1	0.1	0.5
13-Sep	0.1	0.1	0.2	0.3	Z	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	0.1	0.3	0.0	0.0	0.1	0.3
14-Sep	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
15-Sep	Z	0.1	0.1	0.0	0.0	0.1	0.0	0.1	0.2	0.1	0.3	0.9	0.9	0.6	0.4	0.3	0.3	0.2	0.1	0.0	0.1	0.1	0.1	0.1	0.2	0.9
16-Sep	0.0	Z	0.0	0.0	0.1	0.1	0.1	0.1	0.0	0.0	0.1	0.1	0.1	0.1	0.1	0.0	0.1	0.1	0.0	0.1	0.0	0.0	0.0	0.0	0.1	0.1
17-Sep	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	0.3	0.3	0.2	0.2	1.8	3.5	0.9	0.2	0.1	0.1	0.1	0.4	3.5
18-Sep	0.0	0.1	0.1	Z	0.1	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	0.1	0.1	0.1	0.1	0.1	0.3
19-Sep	0.1	0.1	0.1	0.1	Z	0.1	0.1	0.0	0.0	0.1	0.1	0.1	0.1	0.1	0.1	0.0	0.0	0.5	0.8	0.1	0.0	0.1	0.1	0.2	0.1	0.8
20-Sep	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	0.1	0.0	0.0	0.1
21-Sep	Z	0.0	0.0	0.0	0.1	0.0	0.1	0.0	0.0	0.2	1.6	0.9	2.2	2.9	2.4	2.1	0.3	0.5	0.6	0.2	0.1	0.2	0.2	0.1	0.6	2.9
22-Sep	0.2	Z	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.2	13.0	2.4	0.4	0.3	0.3	0.3	0.3	0.7	3.6	0.7	0.4	0.3	0.2	0.2	1.1	13.0
23-Sep	0.2	0.2	Z	0.1	0.2	0.1	0.1	0.1	0.2	0.3	1.1	0.6	2.9	3.9	6.5	4.1	1.3	0.5	0.3	0.2	0.1	0.1	0.1	0.1	1.0	6.5
24-Sep	0.0	0.1	0.1	Z	0.0	0.1	0.0	0.0	0.1	0.1	0.1	0.1	0.1	0.0	0.1	0.0	0.0	0.0	0.0	0.1	0.0	0.0	0.0	0.1	0.1	0.1
25-Sep	0.0	0.0	0.0	0.0	Z	0.0	0.3	0.4	0.6	0.6	0.5	0.3	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	0.6
26-Sep	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
27-Sep	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-Sep	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	0.1	0.0	0.1	0.0	0.1	0.0	0.0	0.0	0.1
29-Sep	0.0	0.1	Z	0.2	0.3	0.4	0.7	0.4	0.2	0.1	0.3	0.8	0.8	1.9	1.4	0.8	0.3	0.2	0.4	0.1	0.0	0.0	0.0	0.0	0.4	1.9
30-Sep	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
	0.6	0.9	0.3	0.1	0.5	0.2	0.1	0.1	0.2	0.2	1.3	2.7	1.4	1.3	1.2	0.8	0.4	0.4	0.5	0.3	0.2	0.2	0.3	0.5	Diurnal Average	
	11.8	12.1	4.1	1.4	10.3	2.0	0.9	0.6	0.8	0.9	13.7	51.5	18.4	13.7	14.4	8.5	4.7	3.6	3.6	3.2	2.9	2.5	6.9	12.7	Diurnal Maximum	

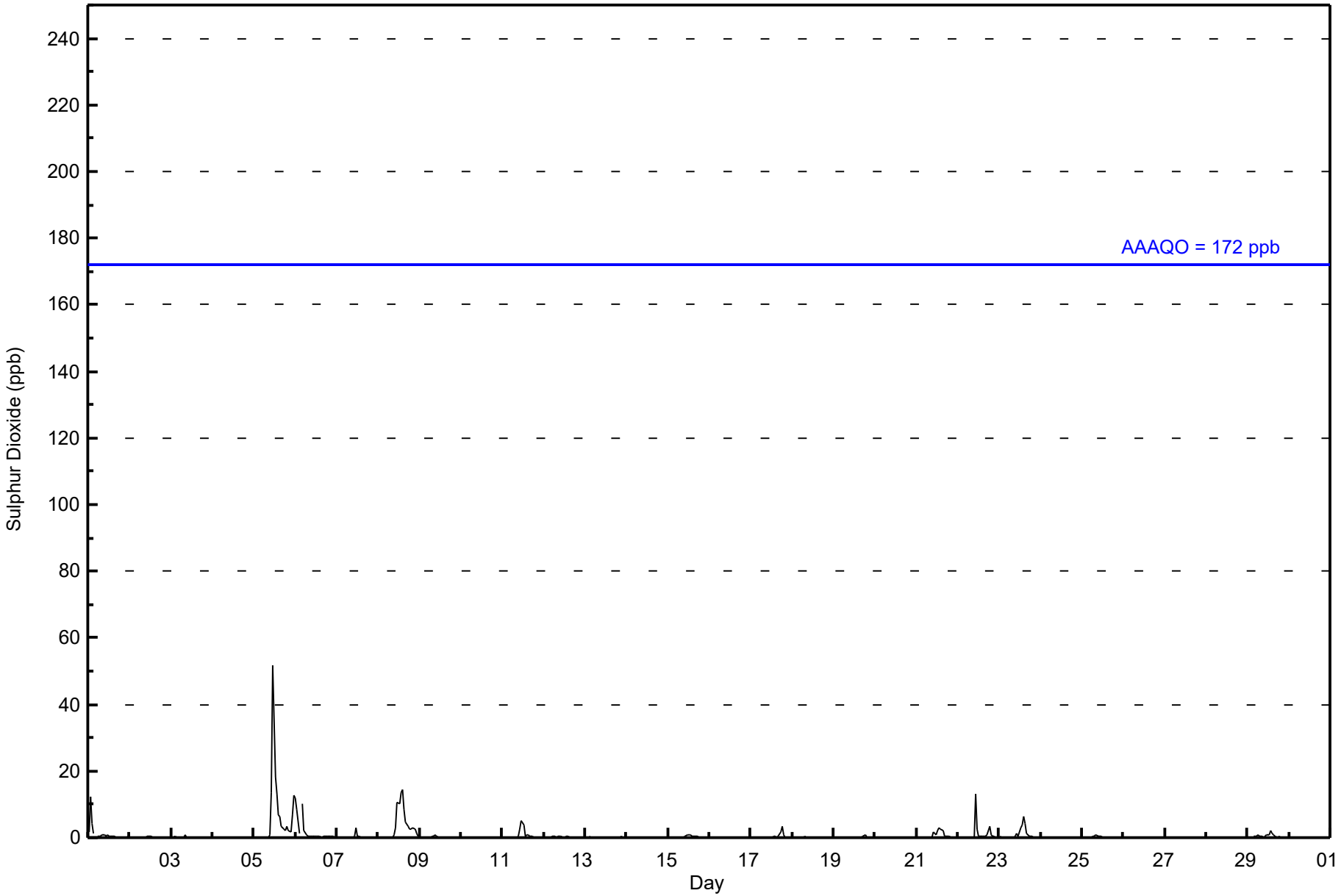
Z - zerospan C - Calibration
Alberta Ambient Air Quality Objectives (AAAQO): 1-hr 172 ppb 24-hr 48 ppb

Wood Buffalo Environmental Association

Hourly Averages

Sulphur Dioxide (SO_2) - ppb

Ells River - September 2024



Sulphur Dioxide (SO_2) - ppb
Ells River - September 2024

Concentration Ranges (ppb)	Number of Hours	%	Cumulative %
0 - 10	675	98.40	98.40
11 - 20	10	1.46	99.85
21 - 60	1	0.15	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: 686

Total Number of Hours: 720

Wood Buffalo Environmental Association

Frequency Distribution

Sulphur Dioxide (SO_2) - ppb

Ells River - September 2024

Concentration Ranges (ppb)	Wind Direction																
	N	NNE	NE	ENE	E	ESE	SE	SSE	S	SSW	SW	WSW	W	WNW	NW	NNW	**Totals**
0 - 10	51	19	7	3	2	12	30	57	93	77	73	48	68	62	33	29	664
11 - 20	0	0	0	0	0	1	3	5	1	0	0	0	0	0	0	0	10
21 - 60	0	0	0	0	0	0	0	1	0	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	51	19	7	3	2	13	33	63	94	77	73	48	68	62	33	29	675

Total Number of Valid Hours: 675

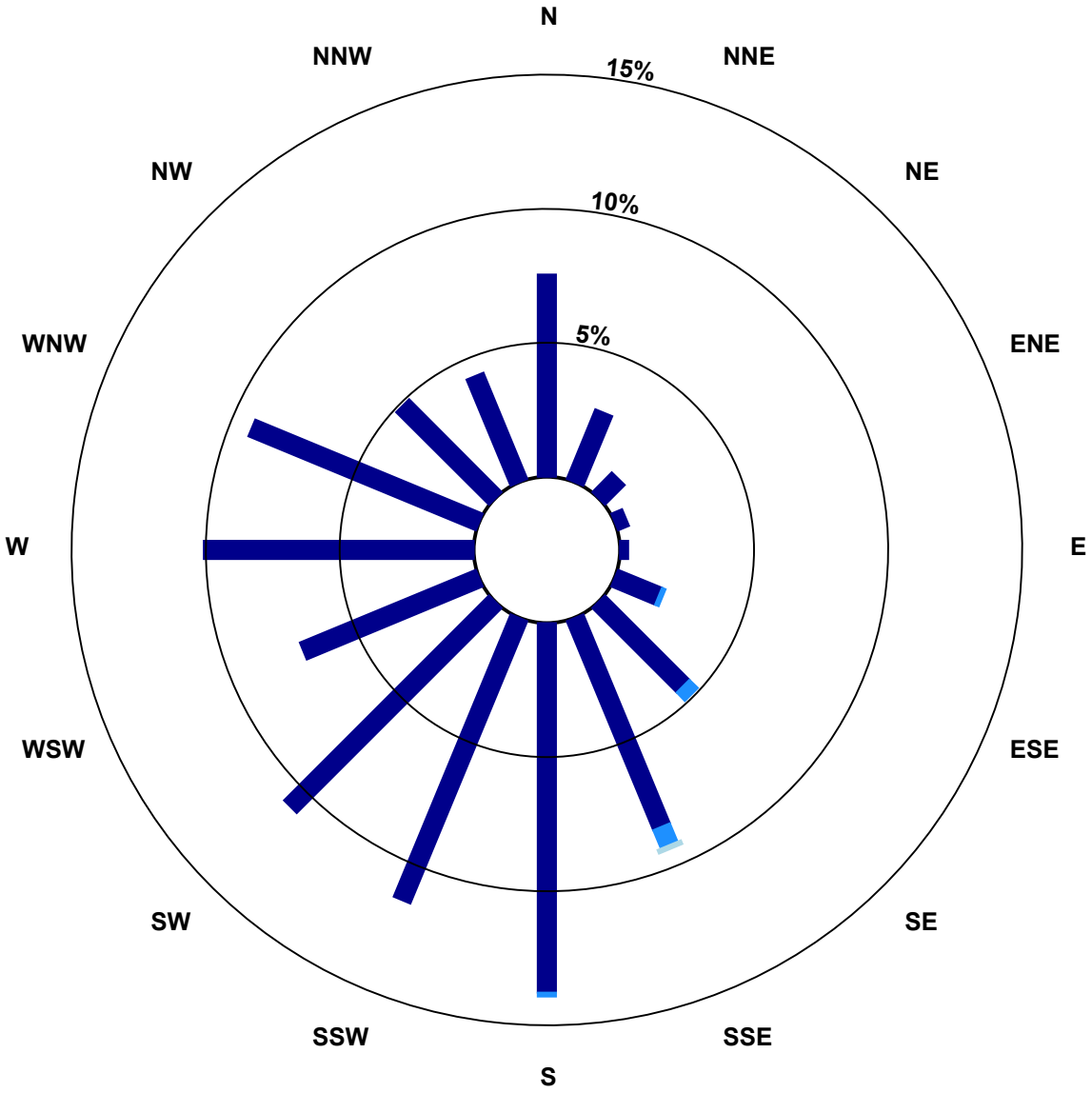
Total Number of Hours: 720

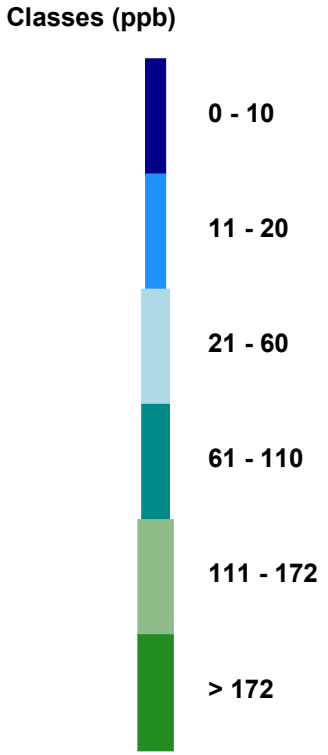
Wood Buffalo Environmental Association

Wind Rose Sep 2024

Sulphur Dioxide (SO_2) - ppb

Ells River





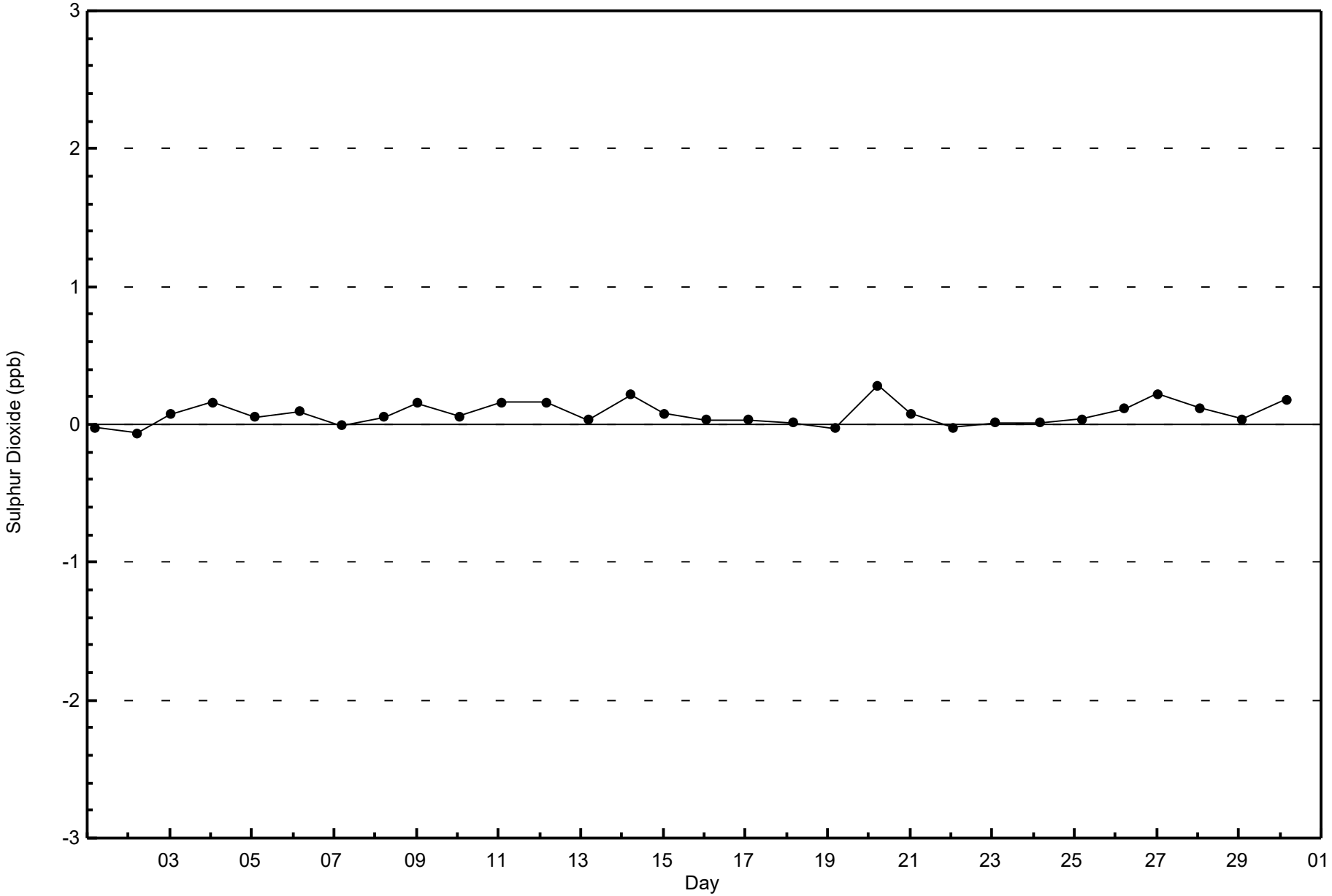
Total Number of Valid Hours: 675

Wood Buffalo Environmental Association

Zero Responses

Sulphur Dioxide (SO_2) - ppb

Ells River - September 2024

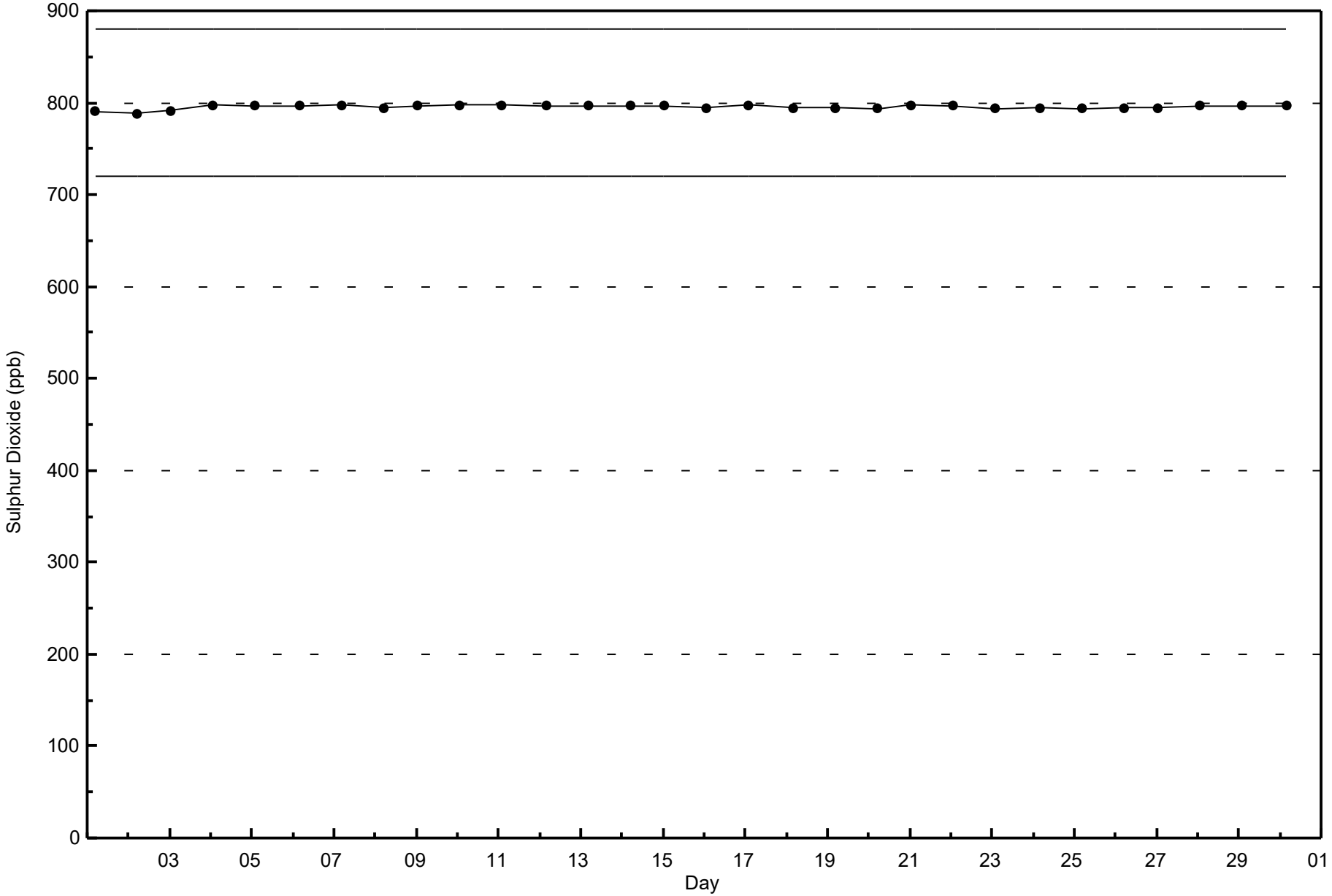


Wood Buffalo Environmental Association

Span Responses

Sulphur Dioxide (SO_2) - ppb

Ells River - September 2024



Wood Buffalo Environmental Association

Summary of Hour Averages

Total Reduced Sulphur (TRS) - ppb

Ells River - September 2024

Number of Exceedences (AAAQO): 1-hr: 0 24-hr: 0
Maximum Value: 1.6 ppb on Sep 25 09:00 Maximum Daily Average: 0.7 ppb on Sep 25

Minimum Value: 0.3 ppb on Sep 27 00:00 Minimum Daily Average: 0.3 ppb on Sep 28
Maximum Diurnal Average: 0.5 ppb at hour 12 Minimum Diurnal Average: 0.4 ppb at hour 17
Monthly Average: 0.46 ppb Percentiles: P_1 = 0.3 P_{10} = 0.3 Q_1 = 0.4 Median = 0.4 Q_3 = 0.5 P_{90} = 0.6 P_{99} = 1.2

Hours in Service:	720
Hours of Data:	685
Hours of Missing Data:	35
Hours of Calibration:	35
Percent Operational Time:	100.0

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

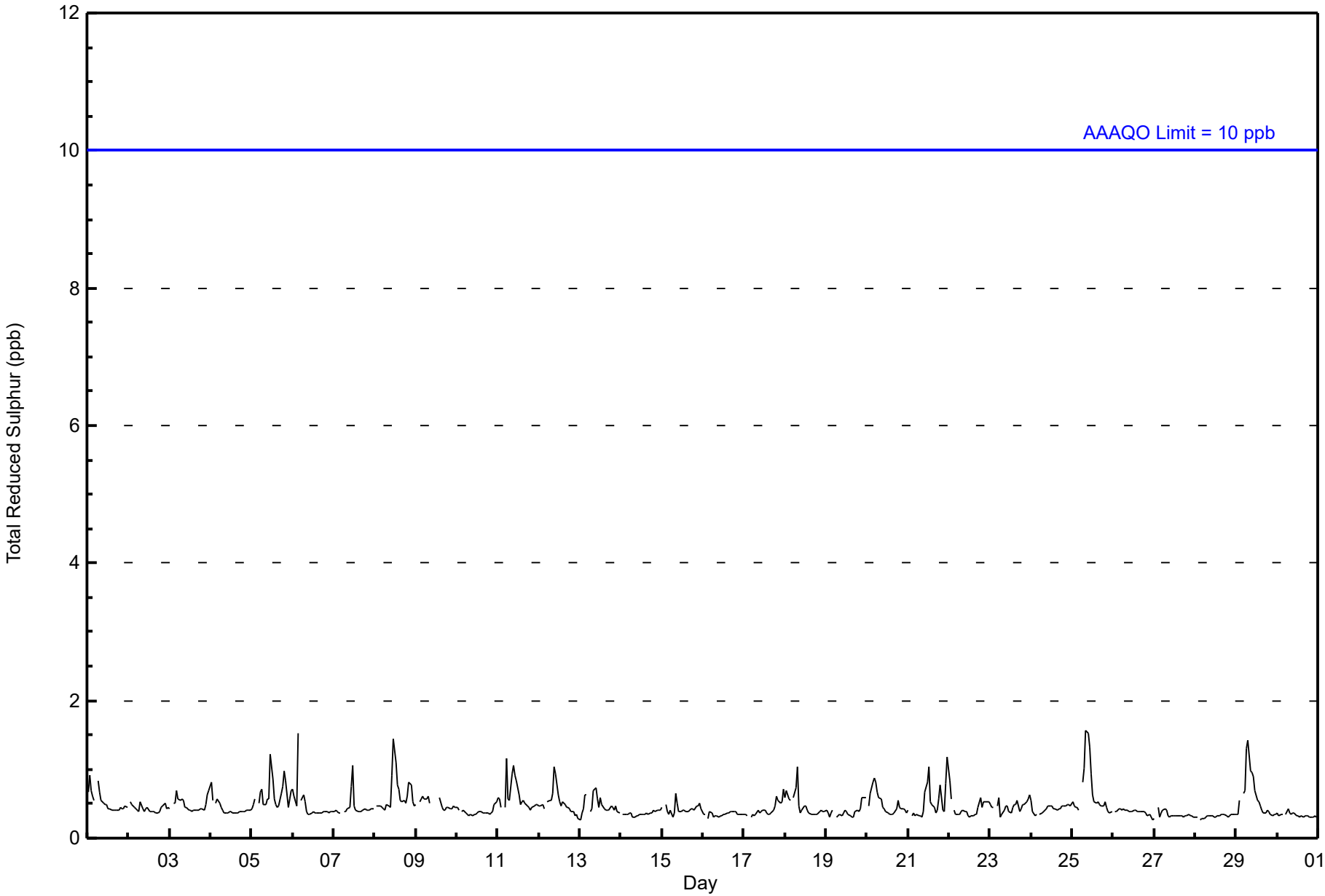
Z - zerospan C - Calibration
Alberta Ambient Air Quality Objectives (AAAQO): 1-hr 10 ppb 24-hr 3 ppb

Wood Buffalo Environmental Association

Hourly Averages

Total Reduced Sulphur (TRS) - ppb

Ells River - September 2024



Concentration Ranges (ppb)	Number of Hours	%	Cumulative %
0 - 2	685	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: 685

Total Number of Hours: 720

Wood Buffalo Environmental Association

Frequency Distribution

Total Reduced Sulphur (TRS) - ppb

Ells River - September 2024

Concentration Ranges (ppb)	Wind Direction																
	N	NNE	NE	ENE	E	ESE	SE	SSE	S	SSW	SW	WSW	W	WNW	NW	NNW	**Totals**
0 - 2	54	21	7	3	2	13	33	62	94	77	73	47	67	59	33	29	674
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	54	21	7	3	2	13	33	62	94	77	73	47	67	59	33	29	674

Total Number of Valid Hours: 674

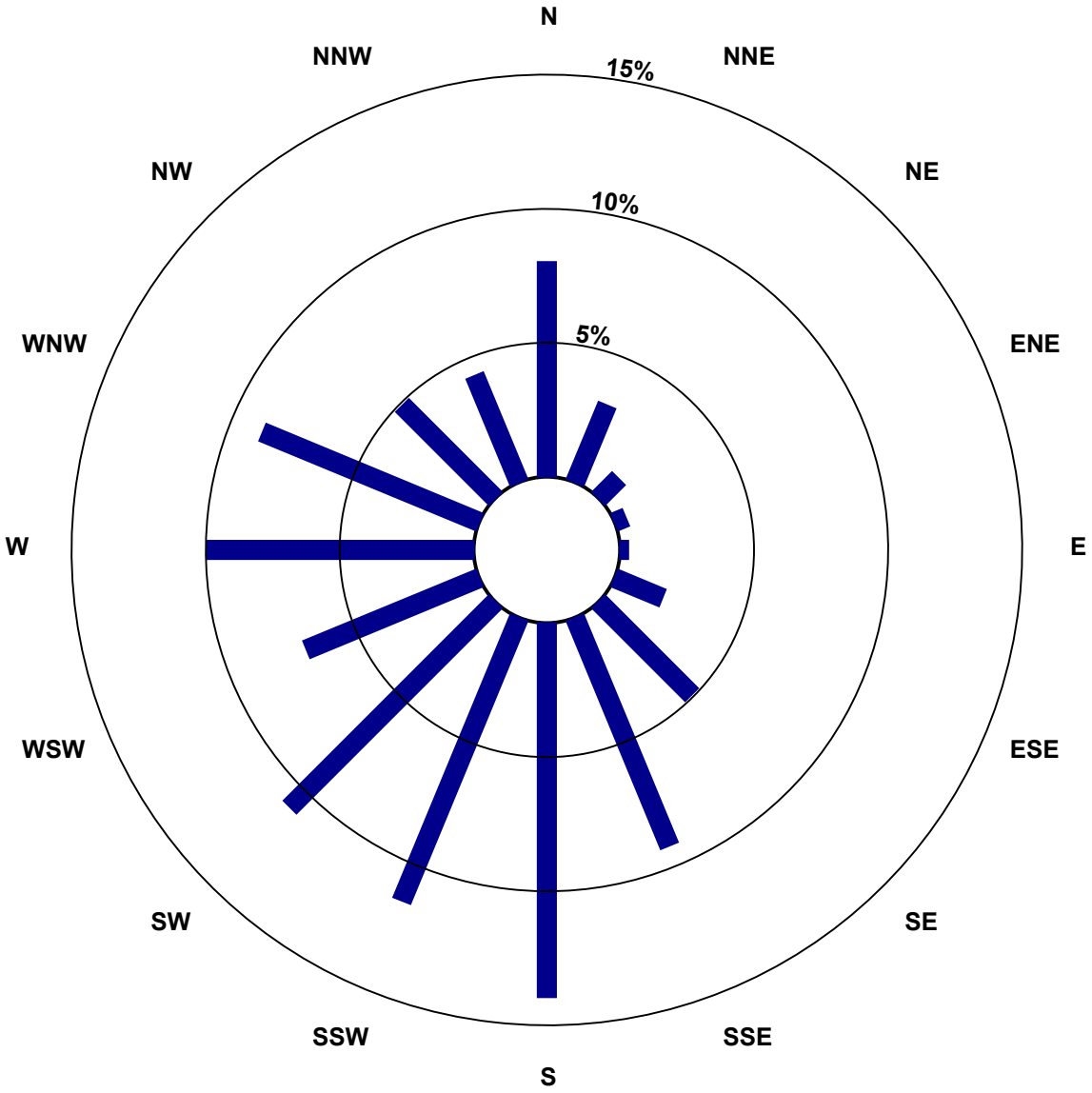
Total Number of Hours: 720

Wood Buffalo Environmental Association

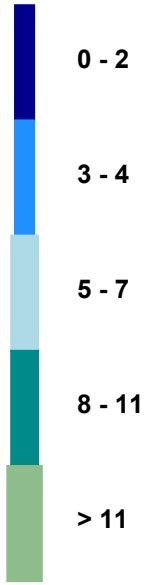
Wind Rose Sep 2024

Total Reduced Sulphur (TRS) - ppb

Ells River



Classes (ppb)



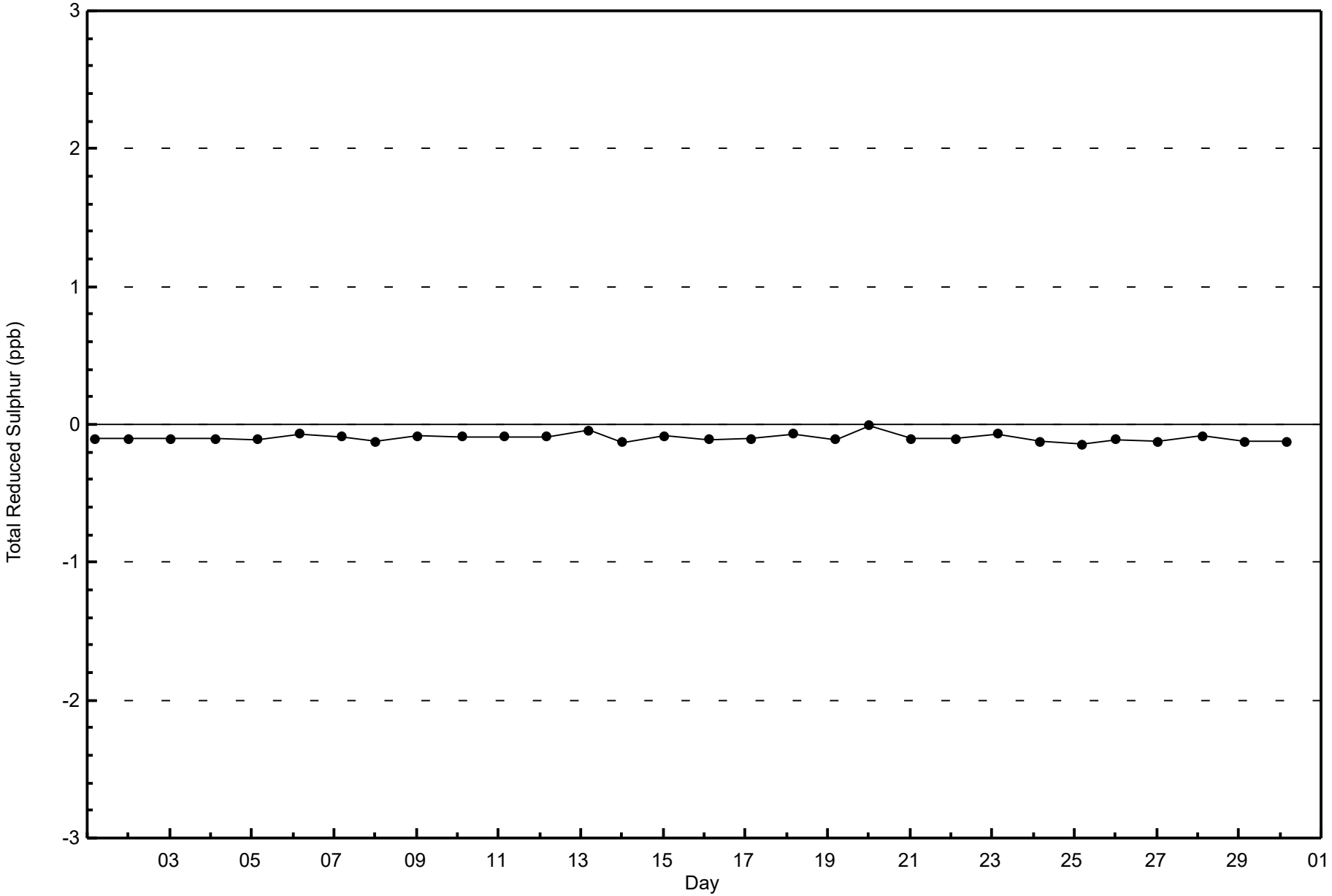
Total Number of Valid Hours: 674

Wood Buffalo Environmental Association

Zero Responses

Total Reduced Sulphur (TRS) - ppb

Ells River - September 2024

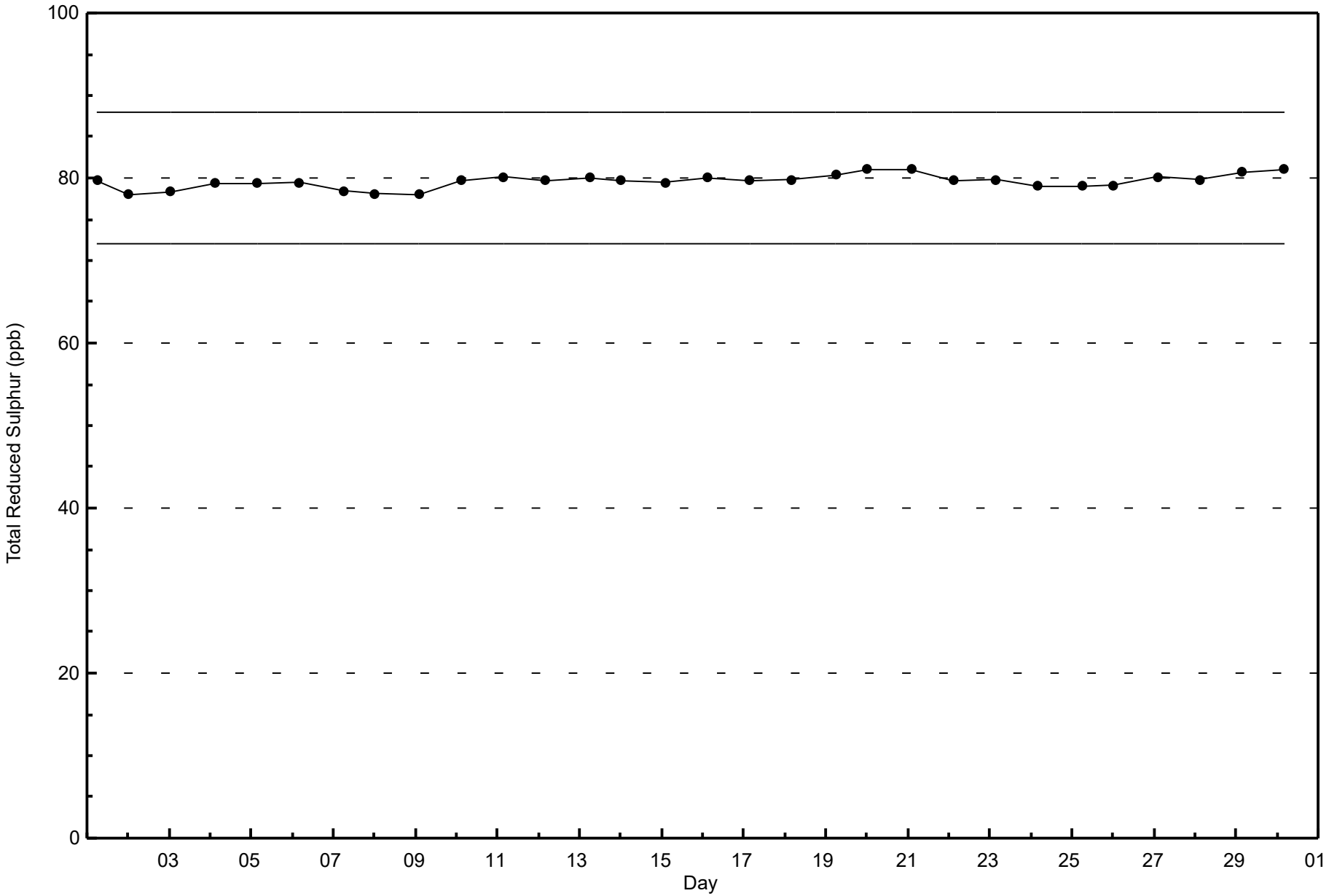


Wood Buffalo Environmental Association

Span Responses

Total Reduced Sulphur (TRS) - ppb

Ells River - September 2024



Wood Buffalo Environmental Association

Summary of Hour Averages

Total Hydrocarbons (THC) - ppm

Ells River - September 2024

Maximum Value: 7.1 ppm on Sep 25 09:00

Maximum Daily Average: 3.1 ppm on Sep 25

Minimum Value: 2.0 ppm on Sep 1 18:00

Minimum Daily Average: 2.0 ppm on Sep 26

Maximum Diurnal Average: 2.6 ppm at hour 9

Minimum Diurnal Average: 2.1 ppm at hour 16

Monthly Average: 2.30 ppm

Percentiles: P_1 = 2.0 P_{10} = 2.0 Q_1 = 2.0 Median = 2.1 Q_3 = 2.3 P_{90} = 2.9 P_{99} = 4.5

Hours in Service:	720
Hours of Data:	686
Hours of Missing Data:	34
Hours of Calibration:	34
Percent Operational Time:	100.0

Day	Hourly Period Ending At (MST)																								Daily	Daily
	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24	Average	Maximum
1-Sep	2.2	2.3	2.2	2.2	Z	2.4	3.0	2.9	2.7	2.6	2.5	2.4	2.2	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.1	2.0	2.2	3.0
2-Sep	2.1	2.1	2.1	2.1	2.2	Z	2.2	2.2	2.1	2.1	2.4	2.5	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	2.5
3-Sep	Z	2.0	2.2	2.2	2.6	2.6	2.4	2.6	2.4	2.1	C	C	C	C	2.1	2.2	2.1	2.1	2.1	2.1	2.1	2.4	2.8	3.2	2.3	3.2
4-Sep	3.2	Z	2.3	2.2	2.1	2.2	2.1	2.1	2.1	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.1	2.1	3.2
5-Sep	2.3	2.4	Z	2.4	2.1	2.1	2.1	2.1	2.1	2.2	2.3	2.7	2.3	2.1	2.1	2.1	2.1	2.0	2.0	2.1	2.1	2.1	2.4	2.3	2.2	2.7
6-Sep	2.6	2.2	2.1	Z	2.5	2.6	2.9	2.3	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	2.2	2.1	2.1	2.2	2.9
7-Sep	2.1	2.1	2.1	2.1	Z	2.1	2.2	2.3	2.6	2.6	2.8	2.8	2.5	2.1	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.2	2.8
8-Sep	2.0	2.1	2.1	2.1	2.1	Z	2.2	2.2	2.2	2.1	2.8	2.6	2.7	2.6	2.5	2.3	2.3	2.4	2.4	2.8	3.2	2.7	2.3	2.3	2.4	3.2
9-Sep	Z	2.4	2.5	2.7	2.3	2.2	2.7	2.7	2.2	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	2.2	2.7
10-Sep	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	2.2	2.3	2.9	3.1	2.1	3.1
11-Sep	3.3	3.3	Z	2.5	2.6	2.9	2.8	3.0	4.2	4.6	3.3	2.4	2.1	2.1	2.2	2.2	2.3	2.3	2.3	2.3	2.4	2.5	2.9	3.0	2.8	4.6
12-Sep	2.9	3.0	3.0	Z	2.9	2.5	2.1	2.1	2.9	4.2	3.2	2.8	2.5	2.4	2.4	2.1	2.1	2.1	2.1	2.1	2.1	2.2	2.2	2.2	2.5	4.2
13-Sep	2.2	2.2	2.8	3.9	Z	3.4	3.1	2.7	3.6	3.9	2.4	2.1	2.6	2.2	2.1	2.2	2.2	2.2	2.3	2.4	2.3	2.4	2.2	2.1	2.6	3.9
14-Sep	2.1	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	2.1	2.0	2.1	2.2	2.4	2.3	2.3	2.4	2.6	2.1	2.6
15-Sep	Z	2.8	3.2	3.0	2.9	2.9	2.5	2.7	3.5	2.9	2.2	2.1	2.2	2.2	2.1	2.1	2.2	2.3	2.3	2.3	2.8	3.1	3.1	2.8	2.6	3.5
16-Sep	2.4	Z	2.2	2.2	2.3	2.2	2.2	2.2	2.2	2.1	2.1	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.1	2.1	2.1	2.4
17-Sep	2.1	2.1	Z	2.2	2.1	2.1	2.1	2.1	2.3	2.2	2.4	2.3	2.2	2.1	2.0	2.0	2.0	2.0	2.1	2.0	2.1	2.1	2.1	2.3	2.1	2.4
18-Sep	2.3	2.4	2.5	Z	2.6	2.9	2.9	3.2	2.3	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	2.0	2.1	2.2	3.2
19-Sep	2.1	2.1	2.1	2.1	Z	2.1	2.1	2.1	2.1	2.2	2.3	2.3	2.2	2.1	2.0	2.0	2.0	2.1	2.2	2.5	2.8	3.8	3.7	3.7	2.4	3.8
20-Sep	3.1	3.0	3.3	4.2	3.4	Z	3.0	2.5	2.4	2.3	2.4	2.2	2.0	2.0	2.0	2.0	2.1	2.1	2.2	2.1	2.5	2.5	2.5	2.5	2.5	4.2
21-Sep	Z	2.4	2.3	2.2	2.1	2.1	2.1	2.1	2.1	2.2	2.5	2.9	2.6	2.3	2.1	2.1	2.1	2.1	2.1	2.1	2.1	2.1	2.1	2.2	2.2	2.9
22-Sep	2.1	Z	2.1	2.1	2.1	2.3	2.5	2.5	2.2	2.1	2.1	2.1	2.1	2.1	2.1	2.1	2.1	2.2	2.2	2.2	3.0	2.9	2.7	3.2	2.3	3.2
23-Sep	2.9	3.0	Z	3.0	3.1	3.0	2.5	2.5	2.5	2.6	2.5	2.3	2.2	2.4	2.3	2.2	2.4	2.1	2.2	2.3	2.3	2.2	2.3	2.4	2.5	3.1
24-Sep	2.3	2.2	2.2	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	2.1	2.0	2.0	2.1	2.0	2.0	2.1	2.3
25-Sep	2.1	2.1	2.1	2.1	Z	2.2	4.6	6.7	7.1	6.5	5.7	3.5	2.3	2.1	2.2	2.3	2.1	2.1	2.1	2.1	2.1	2.1	2.1	2.0	3.1	7.1
26-Sep	2.0	2.0	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	2.1	2.1	2.0	2.1
27-Sep	Z	2.1	2.2	2.2	2.2	2.2	2.2	2.3	2.1	2.1	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.3	2.2	2.1	2.0	2.0	2.1	2.3
28-Sep	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	2.3	2.0	2.3
29-Sep	2.3	2.3	Z	3.3	3.6	3.9	5.8	4.5	3.4	2.6	2.4	2.2	2.1	2.0	2.1	2.1	2.1	2.2	2.4	2.4	2.1	2.0	2.0	2.0	2.7	5.8
30-Sep	2.0	2.0	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	2.1	2.0	2.1
	2.3	2.3	2.3	2.4	2.4	2.4	2.6	2.6	2.6	2.6	2.4	2.3	2.2	2.1	2.1	2.1	2.1	2.1	2.1	2.2	2.2	2.3	2.3	2.4	Diurnal Average	
	3.3	3.3	3.3	4.2	3.6	3.9	5.8	6.7	7.1	6.5	5.7	3.5	2.7	2.6	2.5	2.3	2.4	2.4	2.4	2.8	3.2	3.8	3.7	3.7	Diurnal Maximum	

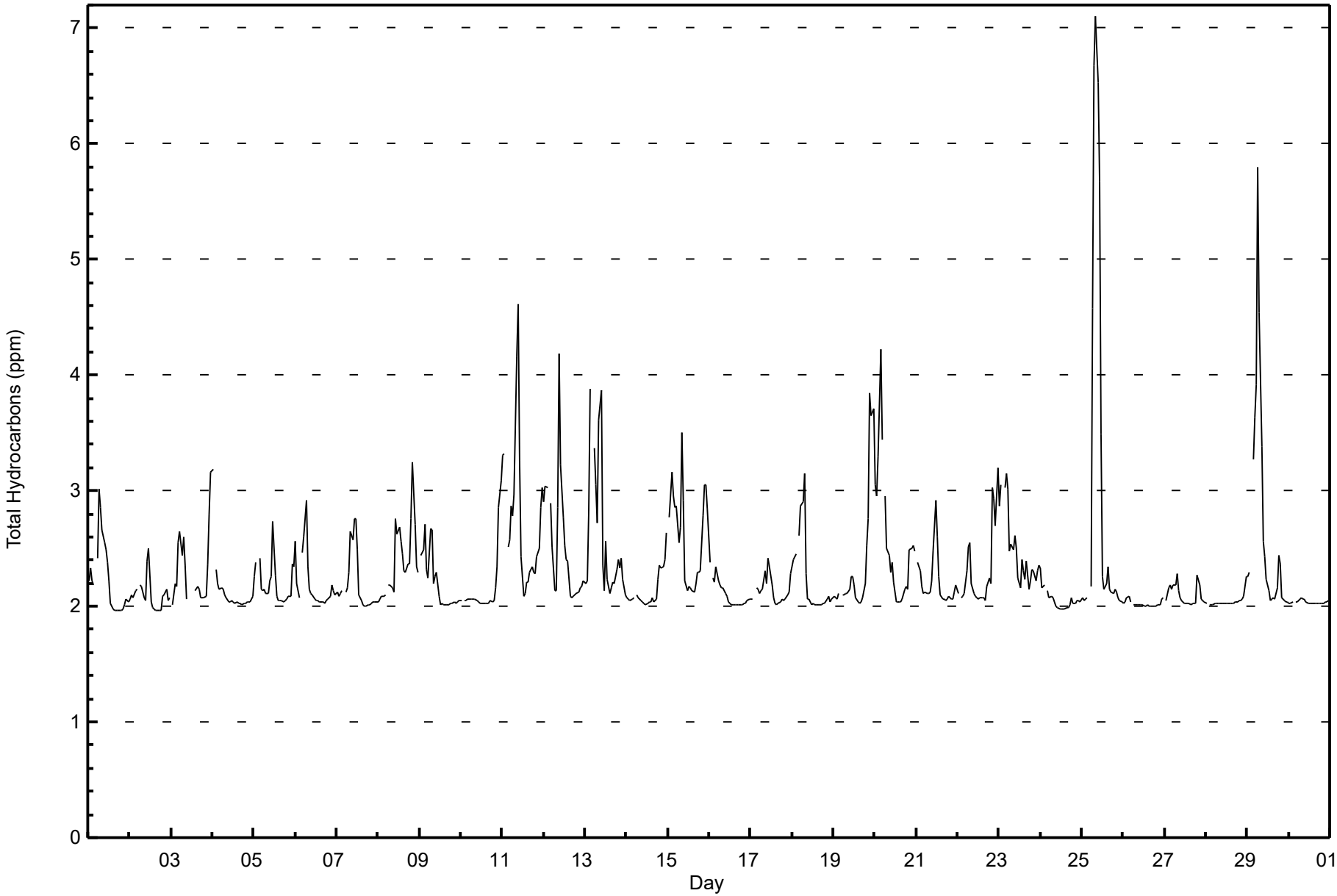
Z - zerospan C - Calibration

Wood Buffalo Environmental Association

Hourly Averages

Total Hydrocarbons (THC) - ppm

Ells River - September 2024



Wood Buffalo Environmental Association

Cumulative Frequency Distribution

Total Hydrocarbons (THC) - ppm

Ells River - September 2024

Concentration Ranges (ppm)	Number of Hours	%	Cumulative %
0 - 2.0	198	28.86	28.86
2.1 - 3.0	446	65.01	93.88
3.1 - 10.0	42	6.12	100.00
> 10.0	0	0.00	100.00

Total Number of Valid Hours: 686

Total Number of Hours: 720

Wood Buffalo Environmental Association

Frequency Distribution

Total Hydrocarbons (THC) - ppm

Ells River - September 2024

Concentration Ranges (ppm)	Wind Direction																
	N	NNE	NE	ENE	E	ESE	SE	SSE	S	SSW	SW	WSW	W	WNW	NW	NNW	**Totals**
0 - 2.0	3	3	0	0	0	1	5	5	8	36	46	25	23	31	10	1	197
2.1 - 3.0	43	15	7	3	2	12	28	58	84	39	26	19	38	27	13	22	436
3.1 - 10.0	5	1	0	0	0	0	0	0	2	2	1	4	7	4	10	6	42
> 10.0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Totals	51	19	7	3	2	13	33	63	94	77	73	48	68	62	33	29	675

Total Number of Valid Hours: 675

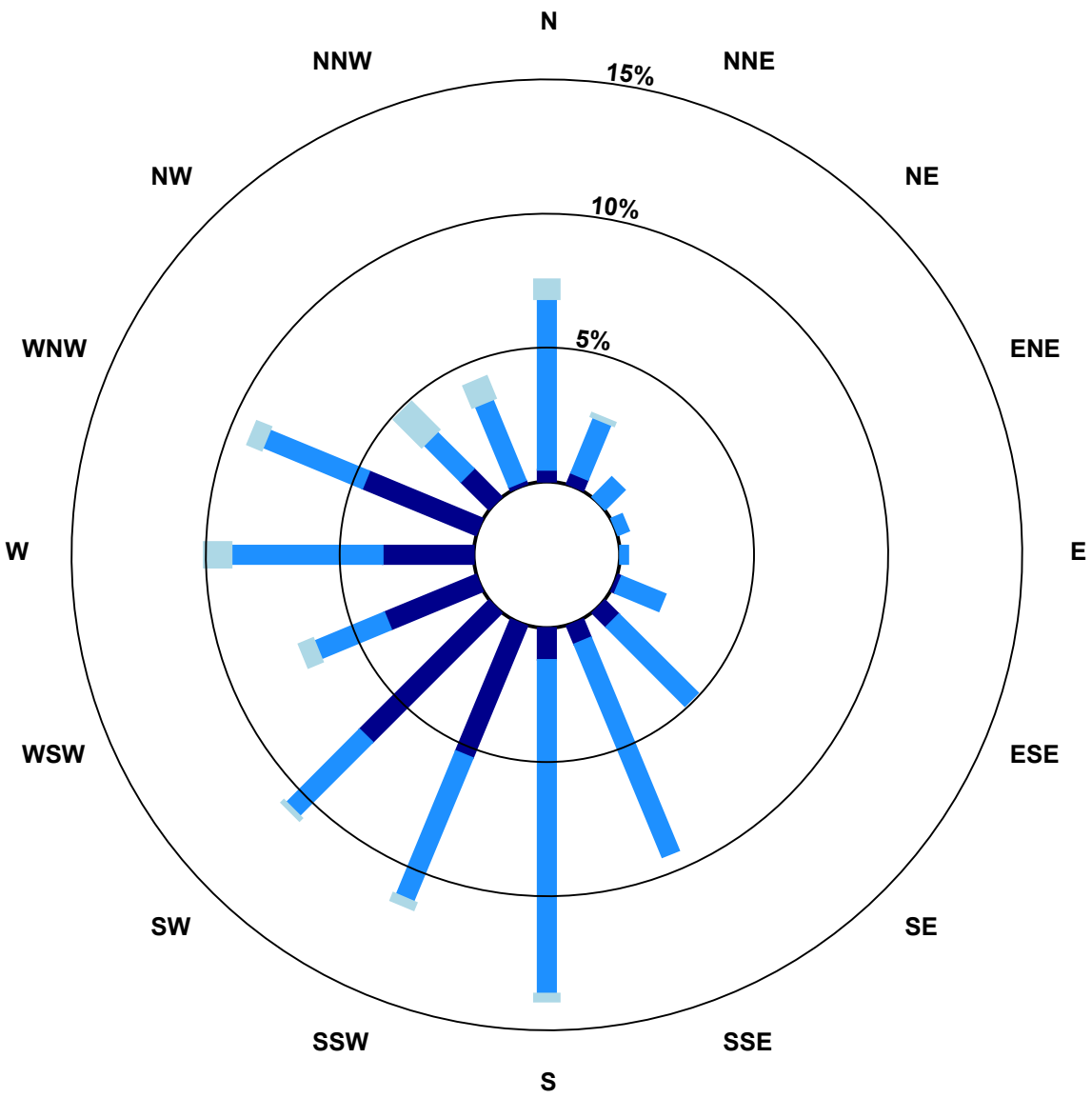
Total Number of Hours: 720

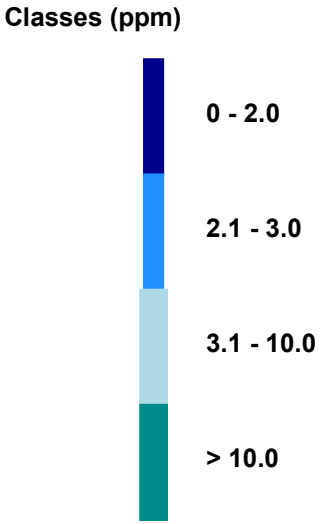
Wood Buffalo Environmental Association

Wind Rose Sep 2024

Total Hydrocarbons (THC) - ppm

Ells River





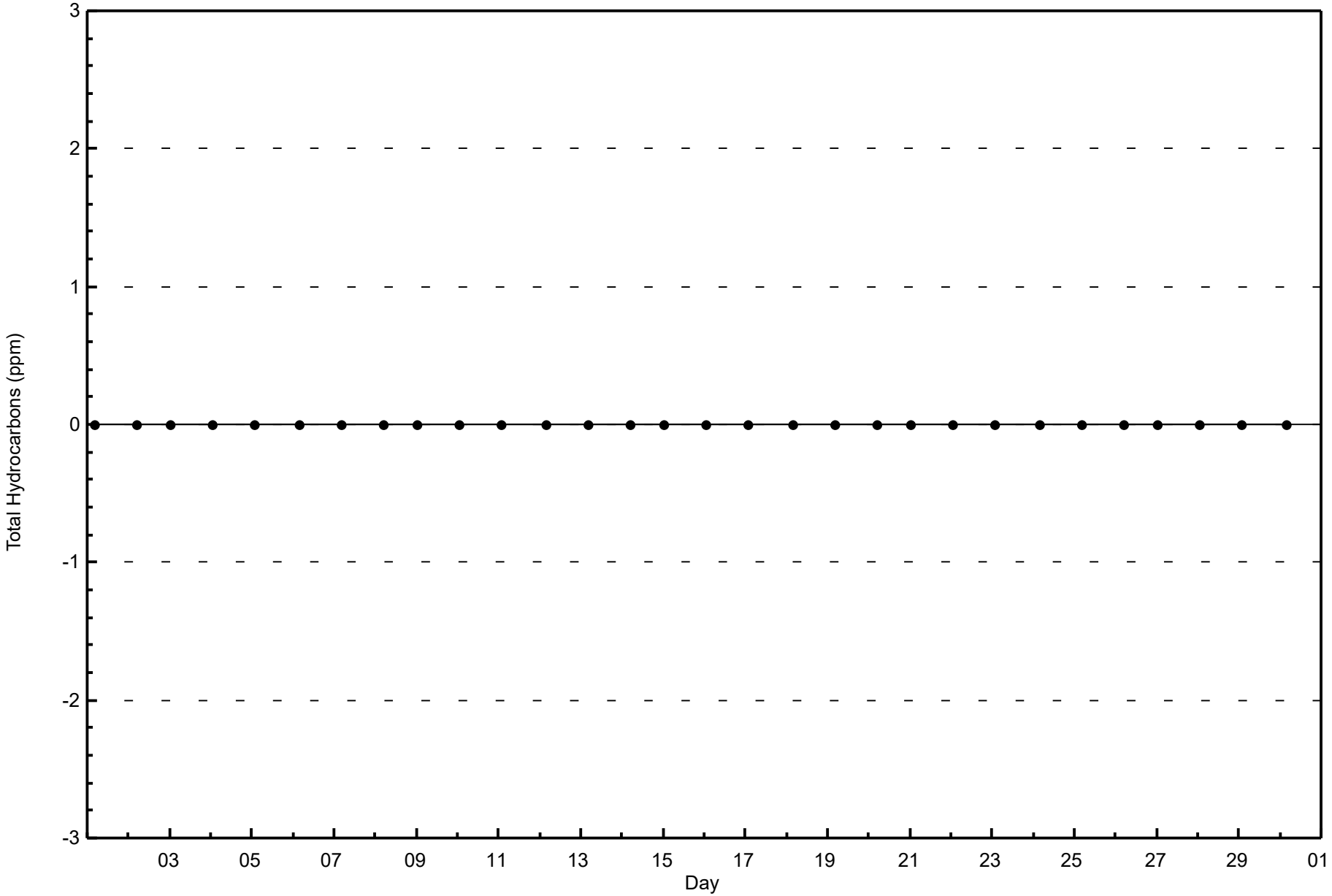
Total Number of Valid Hours: 675

Wood Buffalo Environmental Association

Zero Responses

Total Hydrocarbons (THC) - ppm

Ells River - September 2024

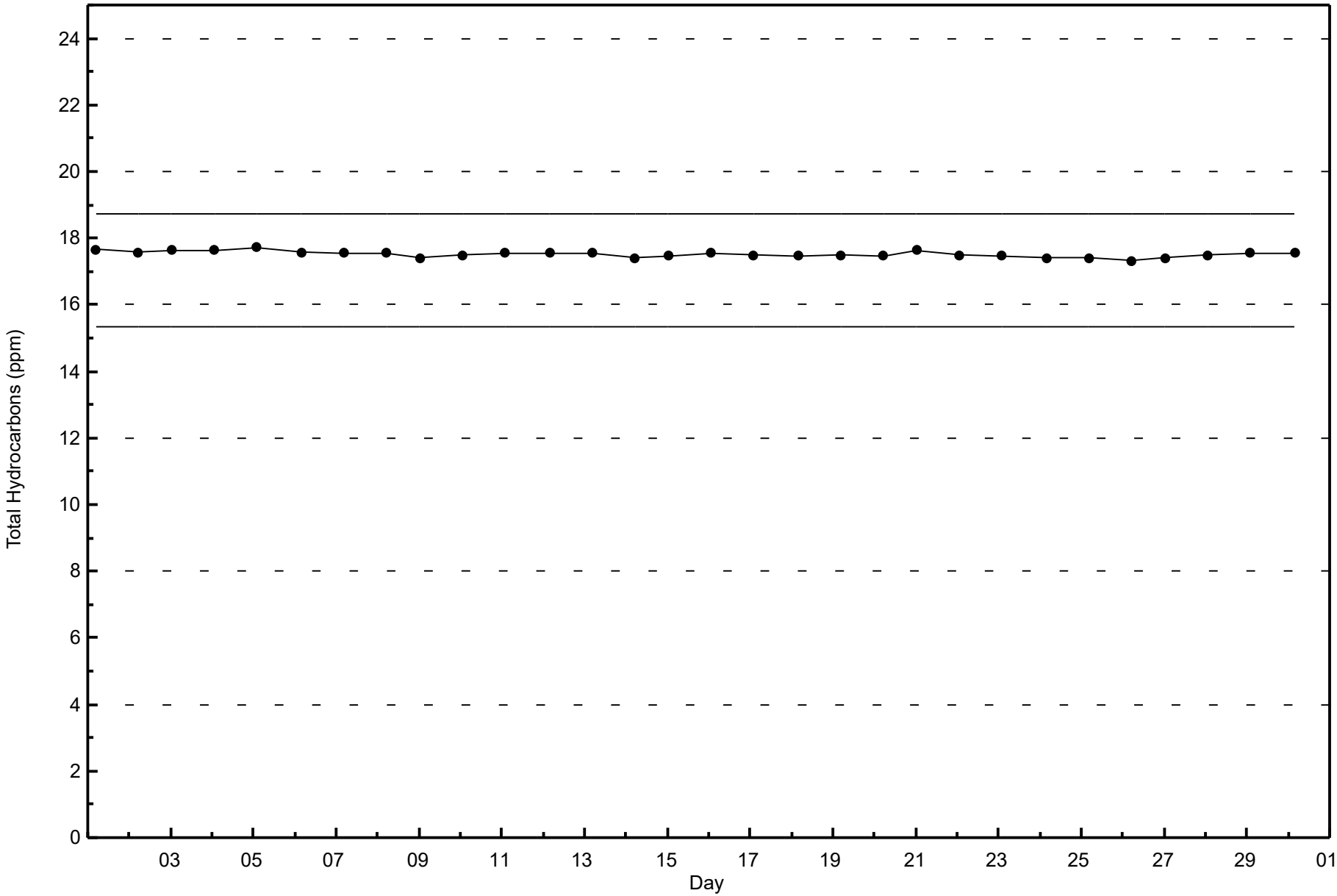


Wood Buffalo Environmental Association

Span Responses

Total Hydrocarbons (THC) - ppm

Ells River - September 2024



Wood Buffalo Environmental Association

Summary of Hour Averages

Non Methane Hydrocarbons (NMHC) - ppm

Ells River - September 2024

Maximum Value: 1.646 ppm on Sep 11 10:00

Maximum Daily Average: 0.366 ppm on Sep 11

Minimum Value: 0.000 ppm on Sep 1 15:00

Minimum Daily Average: 0.000 ppm on Sep 30

Maximum Diurnal Average: 0.177 ppm at hour 10

Minimum Diurnal Average: 0.023 ppm at hour 16

Monthly Average: 0.100 ppm

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} = 0.8

Hours in Service:	720
Hours of Data:	686
Hours of Missing Data:	34
Hours of Calibration:	34
Percent Operational Time:	100.0

Day	Hourly Period Ending At (MST)																								Daily	Daily
	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24	Average	Maximum
1-Sep	0.092	0.187	0.114	0.057	Z	0.203	0.511	0.467	0.336	0.228	0.205	0.195	0.118	0.012	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.009	0.019	0.009	0.120	0.511
2-Sep	0.000	0.002	0.000	0.000	0.000	Z	0.000	0.009	0.000	0.000	0.186	0.299	0.027	0.000	0.000	0.000	0.000	0.000	0.000	0.094	0.066	0.095	0.031	0.037	0.037	0.299
3-Sep	Z	0.000	0.018	0.006	0.064	0.339	0.225	0.245	0.137	0.000	C	C	C	C	0.078	0.120	0.100	0.028	0.020	0.014	0.000	0.057	0.143	0.235	0.096	0.339
4-Sep	0.250	Z	0.060	0.012	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.004	0.000	0.000	0.009	0.001	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.011	0.015	0.250
5-Sep	0.048	0.037	Z	0.077	0.003	0.000	0.000	0.000	0.000	0.095	0.119	0.383	0.122	0.021	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.201	0.199	0.057	0.383
6-Sep	0.375	0.097	0.000	Z	0.308	0.278	0.411	0.110	0.000	0.000	0.000	0.000	0.000	0.000	0.003	0.001	0.000	0.000	0.005	0.007	0.018	0.070	0.033	0.006	0.075	0.411
7-Sep	0.004	0.000	0.000	0.000	Z	0.000	0.000	0.057	0.224	0.247	0.393	0.417	0.260	0.008	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.070	0.417
8-Sep	0.002	0.000	0.000	0.000	0.000	Z	0.000	0.000	0.002	0.000	0.382	0.331	0.379	0.338	0.274	0.184	0.194	0.240	0.265	0.509	0.721	0.431	0.167	0.098	0.196	0.721
9-Sep	Z	0.205	0.242	0.411	0.159	0.117	0.244	0.316	0.048	0.075	0.125	0.020	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.085	0.411
10-Sep	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	0.006	0.000	0.000	0.046	0.135	0.268	0.374	0.036	0.374
11-Sep	0.575	0.592	Z	0.212	0.223	0.306	0.290	0.345	0.983	1.646	0.779	0.200	0.000	0.004	0.087	0.098	0.190	0.242	0.189	0.172	0.263	0.293	0.353	0.386	0.366	1.646
12-Sep	0.325	0.360	0.346	Z	0.304	0.182	0.017	0.015	0.306	0.506	0.514	0.469	0.371	0.249	0.226	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.182	0.514
13-Sep	0.000	0.000	0.296	0.658	Z	0.613	0.478	0.304	0.633	0.552	0.041	0.000	0.064	0.000	0.000	0.061	0.006	0.004	0.000	0.002	0.065	0.144	0.073	0.000	0.174	0.658
14-Sep	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	0.007	0.005	0.001	0.084	0.193	0.186	0.160	0.182	0.267	0.047	0.267
15-Sep	Z	0.208	0.267	0.301	0.283	0.252	0.164	0.205	0.475	0.468	0.115	0.047	0.056	0.051	0.023	0.014	0.064	0.128	0.134	0.134	0.246	0.342	0.408	0.373	0.207	0.475
16-Sep	0.160	Z	0.050	0.020	0.043	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.012	0.160
17-Sep	0.000	0.000	Z	0.000	0.000	0.000	0.000	0.000	0.020	0.000	0.119	0.135	0.069	0.005	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.116	0.020	0.135
18-Sep	0.134	0.117	0.141	Z	0.177	0.324	0.383	0.553	0.065	0.000	0.040	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	0.084	0.553
19-Sep	0.000	0.000	0.000	0.000	Z	0.000	0.000	0.000	0.000	0.000	0.000	0.002	0.003	0.000	0.000	0.000	0.000	0.017	0.033	0.343	0.412	0.729	0.945	0.832	0.144	0.945
20-Sep	0.418	0.398	0.450	0.528	0.344	Z	0.225	0.134	0.082	0.106	0.175	0.083	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.178	0.320	0.300	0.261	0.174	0.528
21-Sep	Z	0.177	0.140	0.042	0.000	0.000	0.000	0.000	0.000	0.063	0.183	0.381	0.308	0.120	0.015	0.000	0.000	0.000	0.000	0.003	0.000	0.000	0.031	0.079	0.067	0.381
22-Sep	0.037	Z	0.000	0.000	0.000	0.040	0.092	0.100	0.018	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.060	0.096	0.072	0.521	0.544	0.429	0.511	0.110	0.544
23-Sep	0.332	0.506	Z	0.486	0.502	0.405	0.189	0.187	0.132	0.235	0.196	0.097	0.032	0.178	0.143	0.114	0.205	0.034	0.094	0.159	0.126	0.110	0.162	0.183	0.209	0.506
24-Sep	0.153	0.025	0.002	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	0.022	0.054	0.011	0.000	0.000	0.000	0.000	0.012	0.153
25-Sep	0.000	0.000	0.000	0.000	Z	0.025	0.669	1.035	1.016	0.936	0.788	0.449	0.064	0.000	0.013	0.083	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.221	1.035
26-Sep	0.000	0.000	0.024	0.021	0.005	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	0.002	0.024
27-Sep	Z	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	0.000	0.000	0.000	0.000	0.000	0.081	0.049	0.000	0.000	0.000	0.006	0.081
28-Sep	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	0.079	0.003	0.079
29-Sep	0.084	0.096	Z	0.314	0.415	0.496	0.816	0.557	0.348	0.161	0.189	0.091	0.043	0.000	0.000	0.000	0.000	0.004	0.108	0.166	0.014	0.001	0.000	0.000	0.170	0.816
30-Sep	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
	0.120	0.120	0.086	0.126	0.113	0.143	0.157	0.155	0.161	0.177	0.157	0.124	0.066	0.034	0.029	0.023	0.025	0.026	0.036	0.065	0.097	0.115	0.125	0.135	Diurnal Average	
	0.575	0.592	0.450	0.658	0.502	0.613	0.816	1.035	1.016	1.646	0.788	0.469	0.379	0.338	0.274	0.184	0.205	0.242	0.265	0.509	0.721	0.729	0.945	0.832	Diurnal Maximum	

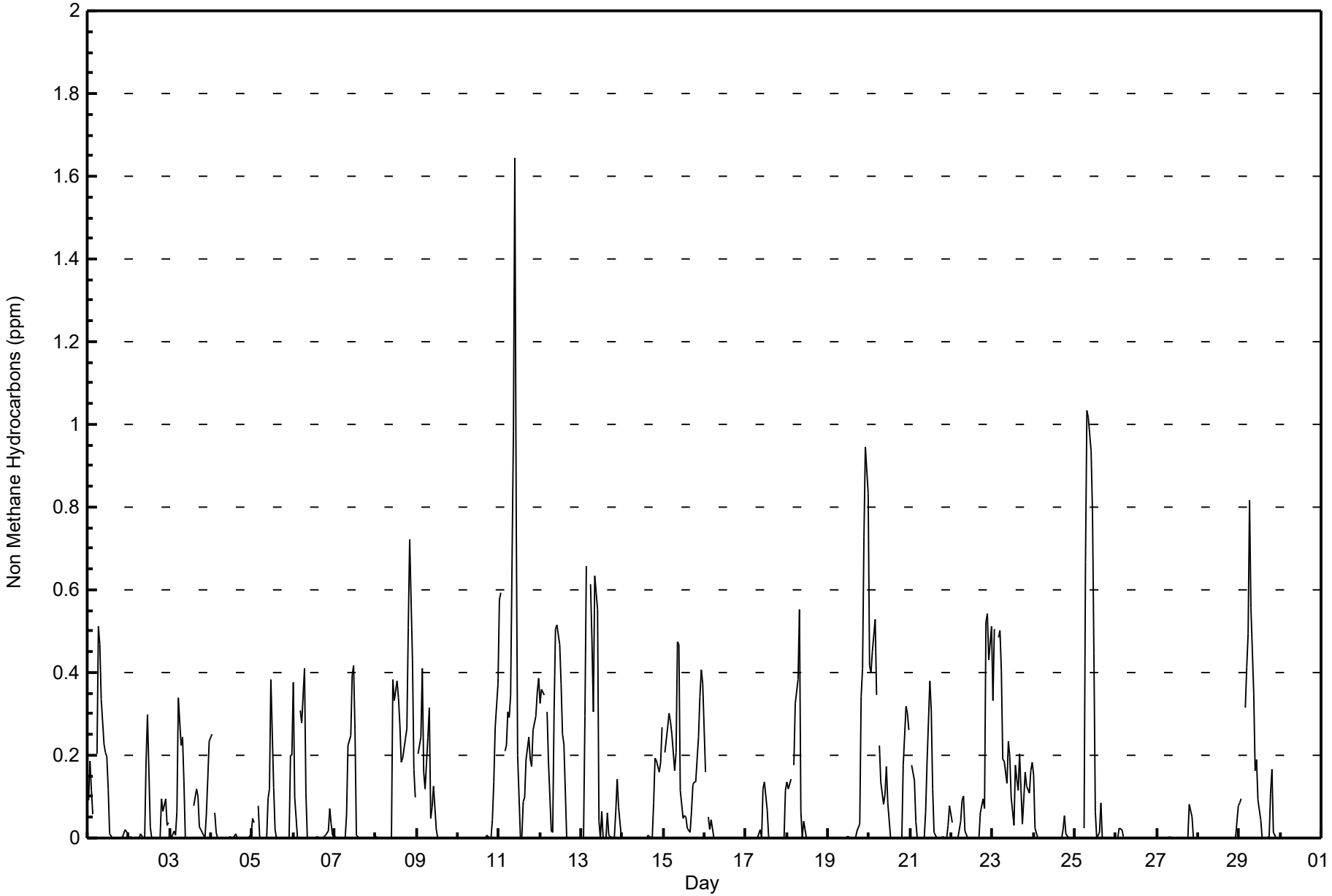
Z - zerospan C - Calibration

Wood Buffalo Environmental Association

Hourly Averages

Non Methane Hydrocarbons (NMHC) - ppm

Ells River - September 2024



Wood Buffalo Environmental Association

Cumulative Frequency Distribution

Non Methane Hydrocarbons (NMHC) - ppm

Ells River - September 2024

Concentration Ranges (ppm)	Number of Hours	%	Cumulative %
0 - 0.005	384	55.98	55.98
0.006 - 0.05	61	8.89	64.87
0.06 - 0.1	78	11.37	76.24
> 0.1	163	23.76	100.00

Total Number of Valid Hours: 686

Total Number of Hours: 720

Wood Buffalo Environmental Association

Frequency Distribution

Non Methane Hydrocarbons (NMHC) - ppm

Ells River - September 2024

Concentration Ranges (ppm)	Wind Direction																
	N	NNE	NE	ENE	E	ESE	SE	SSE	S	SSW	SW	WSW	W	WNW	NW	NNW	**Totals**
0 - 0.005	15	4	1	2	0	6	15	34	53	61	66	39	34	37	9	5	381
0.006 - 0.05	7	4	1	0	0	3	2	5	9	7	2	1	8	6	3	3	61
0.06 - 0.1	10	5	3	0	1	1	5	10	12	5	3	0	3	3	7	7	75
> 0.1	19	6	2	1	1	3	11	14	20	4	2	8	23	16	14	14	158
Totals	51	19	7	3	2	13	33	63	94	77	73	48	68	62	33	29	675

Total Number of Valid Hours: 675

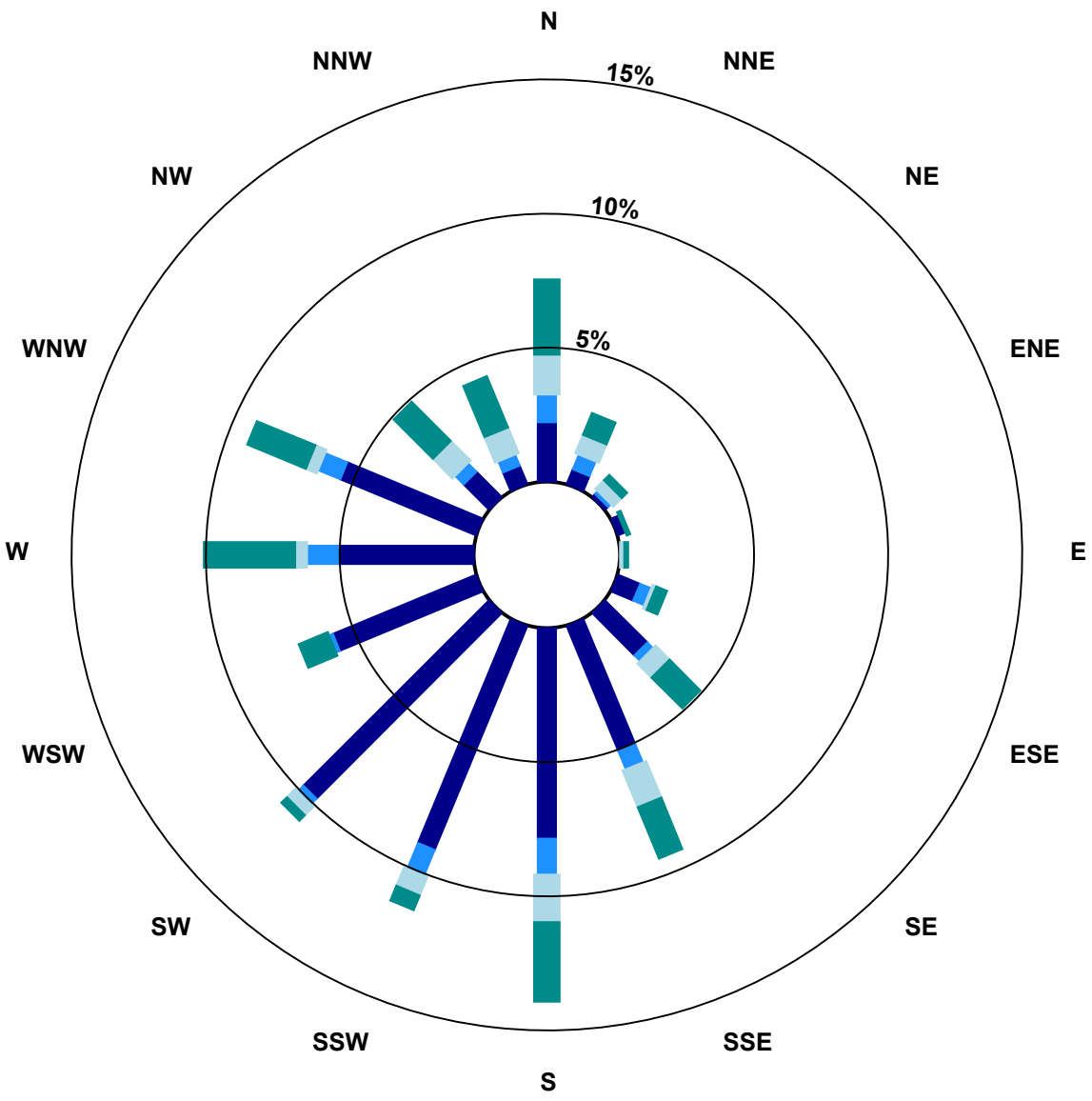
Total Number of Hours: 720

Wood Buffalo Environmental Association

Wind Rose Sep 2024

Non Methane Hydrocarbons (NMHC) - ppm

Ells River



Classes (ppm)

0 - 0.005

0.006 - 0.05

0.06 - 0.1

> 0.1

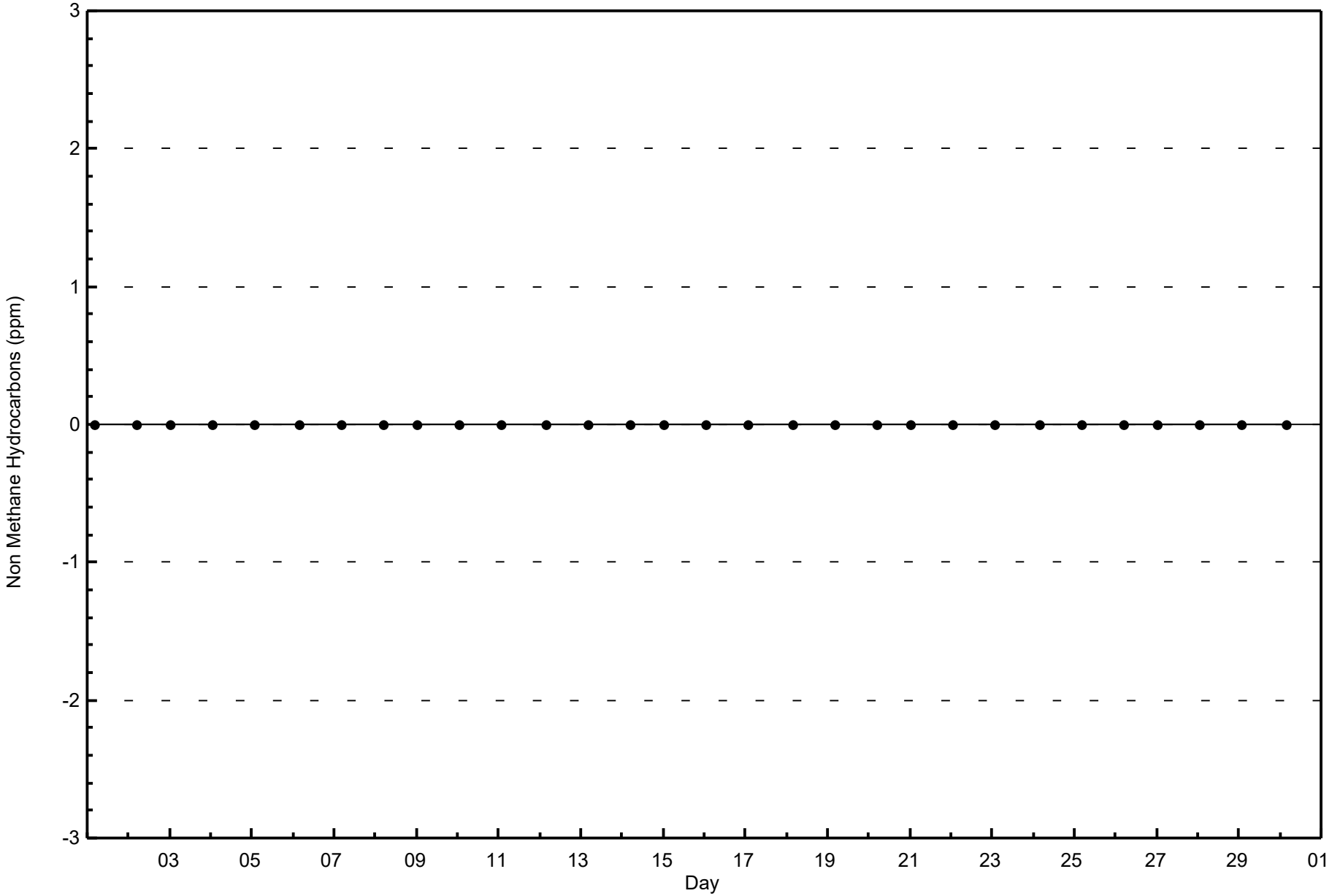
Total Number of Valid Hours: 675

Wood Buffalo Environmental Association

Zero Responses

Non Methane Hydrocarbons (NMHC) - ppm

Ells River - September 2024

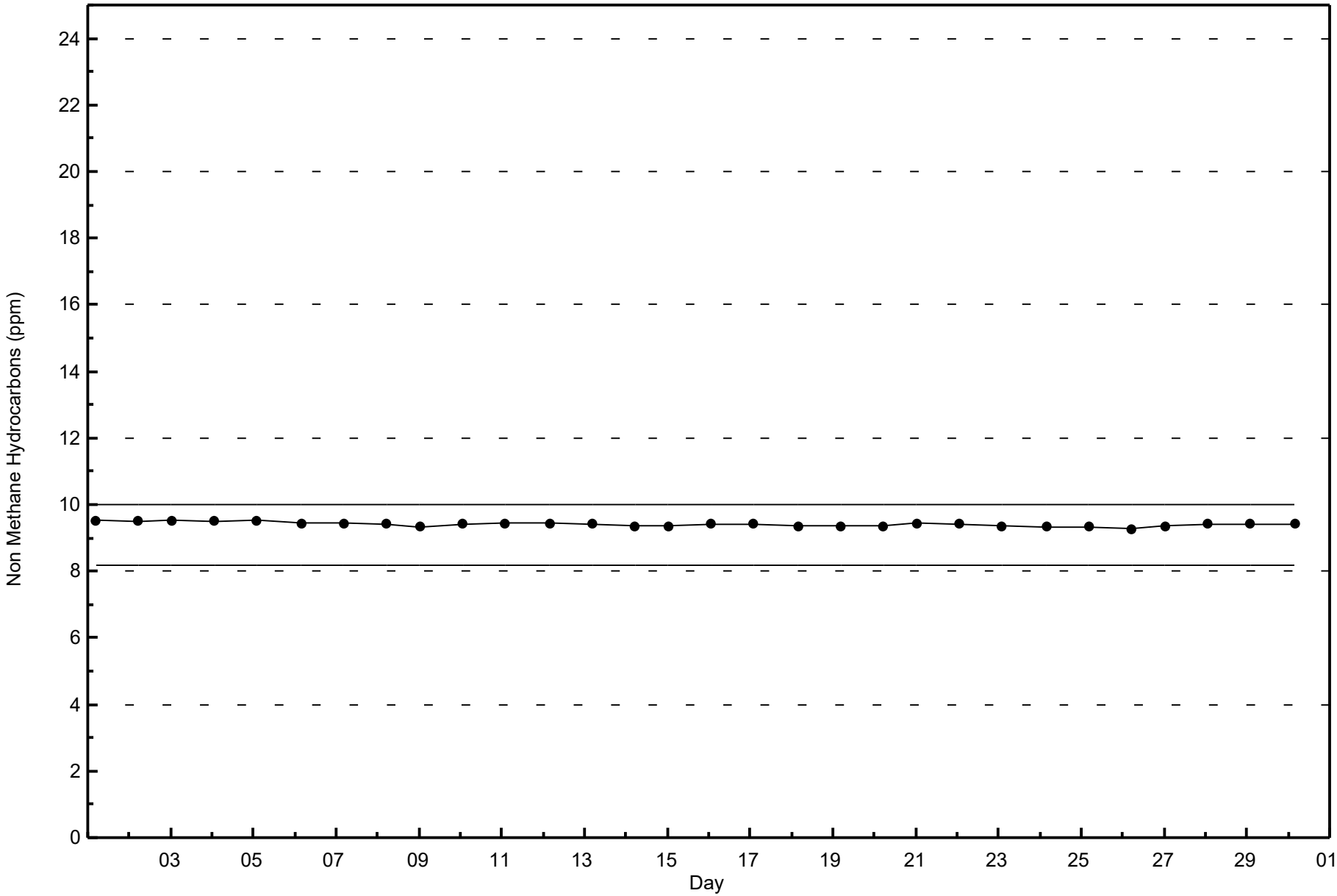


Wood Buffalo Environmental Association

Span Responses

Non Methane Hydrocarbons (NMHC) - ppm

Ells River - September 2024



Wood Buffalo Environmental Association

Summary of Hour Averages

Methane (CH_4) - ppm

Ells River - September 2024

Number of Exceedences (AAAQO): 1-hr: 0 24-hr: 0
Maximum Value: 6.1 ppm on Sep 25 09:00 Maximum Daily Average: 2.8 ppm on Sep 25

Minimum Value: 2.0 ppm on Sep 1 18:00 Minimum Daily Average: 2.0 ppm on Sep 26
Maximum Diurnal Average: 2.4 ppm at hour 9 Minimum Diurnal Average: 2.0 ppm at hour 16
Monthly Average: 2.20 ppm Percentiles: P_1 = 2.0 P_{10} = 2.0 Q_1 = 2.0 Median = 2.1 Q_3 = 2.2 P_{90} = 2.5 P_{99} = 3.7

Hours in Service:	720
Hours of Data:	686
Hours of Missing Data:	34
Hours of Calibration:	34
Percent Operational Time:	100.0

Day	Hourly Period Ending At (MST)																								Daily	Daily
	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24	Average	Maximum
1-Sep	2.1	2.1	2.1	2.1	Z	2.2	2.5	2.4	2.3	2.3	2.3	2.2	2.1	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.1	2.5
2-Sep	2.1	2.1	2.1	2.1	2.2	Z	2.2	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	2.1	2.0	2.0	2.1	2.2
3-Sep	Z	2.0	2.2	2.2	2.5	2.3	2.2	2.4	2.2	2.1	C	C	C	C	2.1	2.1	2.0	2.1	2.1	2.1	2.1	2.3	2.7	2.9	2.2	2.9
4-Sep	2.9	Z	2.3	2.2	2.1	2.2	2.1	2.1	2.1	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.1	2.1	2.9
5-Sep	2.2	2.3	Z	2.3	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	2.0	2.0	2.1	2.1	2.1	2.2	2.1	2.1	2.3
6-Sep	2.2	2.1	2.1	Z	2.2	2.3	2.5	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	2.1	2.1	2.1	2.1	2.1	2.5
7-Sep	2.1	2.1	2.1	2.1	Z	2.1	2.2	2.2	2.4	2.3	2.4	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	2.1	2.4
8-Sep	2.0	2.1	2.1	2.1	2.1	Z	2.2	2.2	2.2	2.1	2.4	2.3	2.3	2.2	2.2	2.1	2.1	2.1	2.1	2.3	2.5	2.3	2.2	2.2	2.2	2.5
9-Sep	Z	2.2	2.2	2.3	2.2	2.1	2.4	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	2.0	2.1	2.1	2.4
10-Sep	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	2.6	2.7	2.1	2.7
11-Sep	2.7	2.7	Z	2.3	2.3	2.6	2.5	2.6	3.2	3.0	2.5	2.2	2.1	2.1	2.1	2.1	2.1	2.1	2.1	2.1	2.2	2.2	2.5	2.6	2.4	3.2
12-Sep	2.6	2.7	2.7	Z	2.6	2.3	2.1	2.1	2.5	3.7	2.7	2.3	2.2	2.2	2.2	2.1	2.1	2.1	2.1	2.1	2.1	2.2	2.2	2.2	2.3	3.7
13-Sep	2.2	2.2	2.5	3.2	Z	2.8	2.6	2.4	3.0	3.3	2.3	2.1	2.5	2.2	2.1	2.1	2.2	2.2	2.3	2.4	2.3	2.3	2.2	2.1	2.4	3.3
14-Sep	2.1	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	2.1	2.0	2.1	2.2	2.2	2.1	2.2	2.2	2.4	2.1	2.4
15-Sep	Z	2.6	2.9	2.7	2.6	2.6	2.4	2.5	3.0	2.4	2.1	2.1	2.1	2.1	2.1	2.1	2.1	2.2	2.2	2.2	2.5	2.7	2.6	2.5	2.4	3.0
16-Sep	2.2	Z	2.2	2.2	2.3	2.2	2.2	2.2	2.2	2.1	2.1	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.1	2.1	2.1	2.3
17-Sep	2.1	2.1	Z	2.2	2.1	2.1	2.1	2.1	2.3	2.2	2.3	2.2	2.1	2.1	2.0	2.0	2.0	2.0	2.1	2.0	2.1	2.1	2.1	2.2	2.1	2.3
18-Sep	2.2	2.3	2.3	Z	2.4	2.5	2.5	2.6	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	2.0	2.1	2.2	2.6
19-Sep	2.1	2.1	2.1	2.1	Z	2.1	2.1	2.1	2.1	2.2	2.3	2.3	2.2	2.1	2.0	2.0	2.0	2.1	2.2	2.2	2.4	3.1	2.7	2.9	2.2	3.1
20-Sep	2.6	2.6	2.8	3.7	3.1	Z	2.7	2.4	2.4	2.2	2.2	2.1	2.0	2.0	2.0	2.0	2.1	2.1	2.2	2.1	2.3	2.2	2.2	2.2	2.4	3.7
21-Sep	Z	2.2	2.2	2.1	2.1	2.1	2.1	2.1	2.1	2.2	2.3	2.5	2.3	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
22-Sep	2.1	Z	2.1	2.1	2.1	2.3	2.4	2.4	2.2	2.1	2.1	2.1	2.1	2.1	2.1	2.1	2.1	2.1	2.2	2.1	2.5	2.4	2.3	2.7	2.2	2.7
23-Sep	2.5	2.5	Z	2.5	2.6	2.6	2.3	2.4	2.4	2.4	2.3	2.2	2.1	2.2	2.2	2.1	2.2	2.1	2.1	2.2	2.2	2.1	2.1	2.2	2.3	2.6
24-Sep	2.2	2.1	2.2	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	2.1	2.0	2.0	2.0	2.2
25-Sep	2.1	2.1	2.1	2.1	Z	2.1	3.9	5.6	6.1	5.6	4.9	3.0	2.2	2.1	2.2	2.3	2.1	2.1	2.1	2.1	2.1	2.1	2.1	2.0	2.8	6.1
26-Sep	2.0	2.0	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	2.1	2.1	2.0	2.1
27-Sep	Z	2.1	2.2	2.2	2.2	2.2	2.2	2.3	2.1	2.1	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	2.1	2.3
28-Sep	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	2.2	2.0	2.2
29-Sep	2.2	2.2	Z	3.0	3.2	3.4	5.0	4.0	3.0	2.4	2.2	2.1	2.1	2.0	2.1	2.1	2.1	2.2	2.3	2.2	2.1	2.0	2.0	2.0	2.5	5.0
30-Sep	2.0	2.0	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	2.1	2.0	2.1
	2.2	2.2	2.2	2.3	2.3	2.3	2.4	2.4	2.4	2.4	2.3	2.2	2.1	2.1	2.1	2.0	2.1	2.1	2.1	2.1	2.1	2.2	2.2	2.2	Diurnal Average	
	2.9	2.7	2.9	3.7	3.2	3.4	5.0	5.6	6.1	5.6	4.9	3.0	2.5	2.2	2.2	2.3	2.2	2.2	2.3	2.4	2.5	3.1	2.7	2.9	Diurnal Maximum	

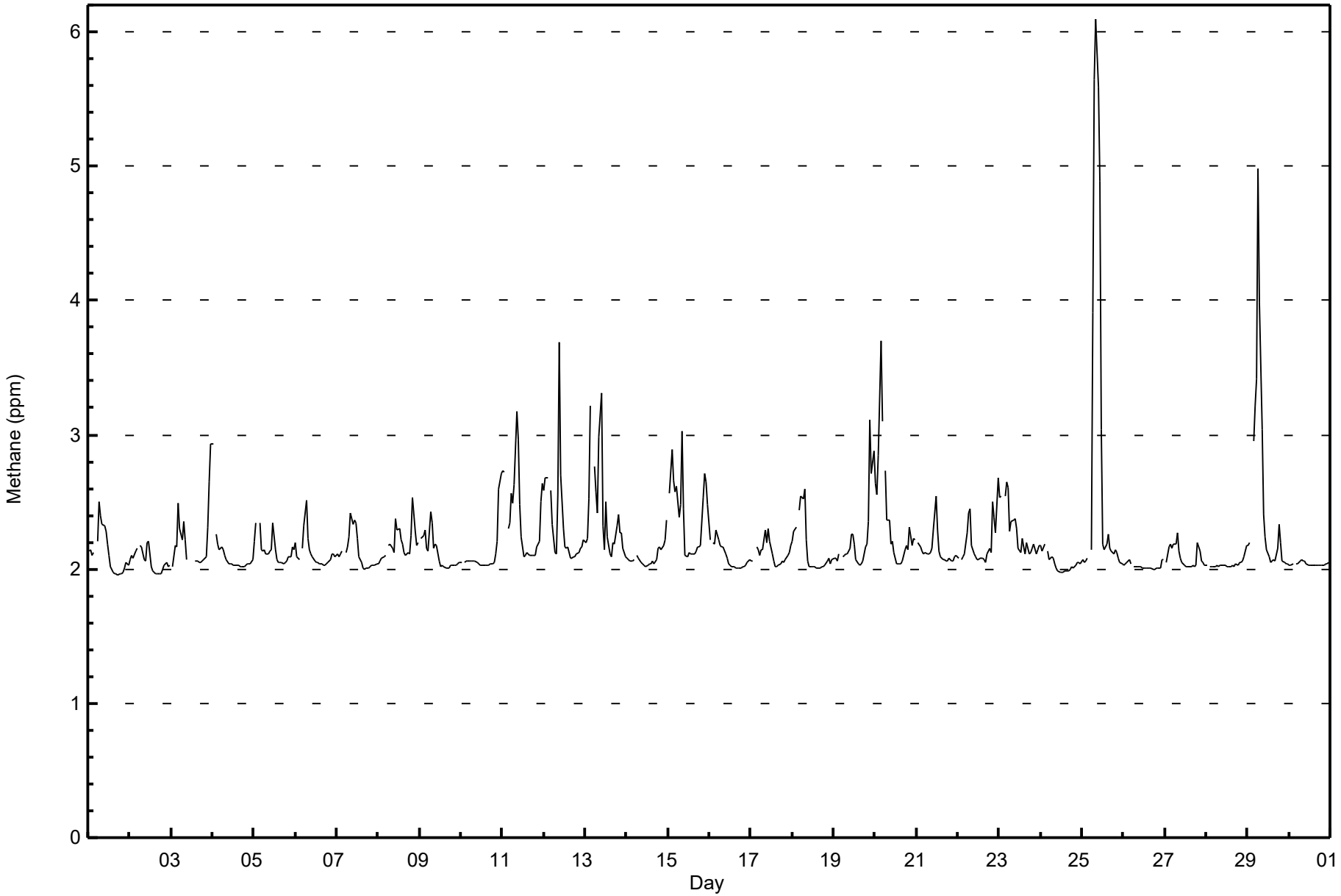
Z - zerospan C - Calibration

Wood Buffalo Environmental Association

Hourly Averages

Methane (CH_4) - ppm

Ells River - September 2024



Methane (CH_4) - ppm
Ells River - September 2024

Concentration Ranges (ppm)	Number of Hours	%	Cumulative %
0 - 2.0	206	30.03	30.03
2.1 - 3.0	464	67.64	97.67
3.1 - 10.0	16	2.33	100.00
> 10.0	0	0.00	100.00

Total Number of Valid Hours: 686

Total Number of Hours: 720

Wood Buffalo Environmental Association

Frequency Distribution

Methane (CH_4) - ppm

Ells River - September 2024

Concentration Ranges (ppm)	Wind Direction																
	N	NNE	NE	ENE	E	ESE	SE	SSE	S	SSW	SW	WSW	W	WNW	NW	NNW	**Totals**
0 - 2.0	3	6	0	0	0	1	5	5	8	36	46	25	25	31	13	1	205
2.1 - 3.0	46	12	7	3	2	12	28	58	86	41	27	22	40	29	15	26	454
3.1 - 10.0	2	1	0	0	0	0	0	0	0	0	0	1	3	2	5	2	16
> 10.0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Totals	51	19	7	3	2	13	33	63	94	77	73	48	68	62	33	29	675

Total Number of Valid Hours: 675

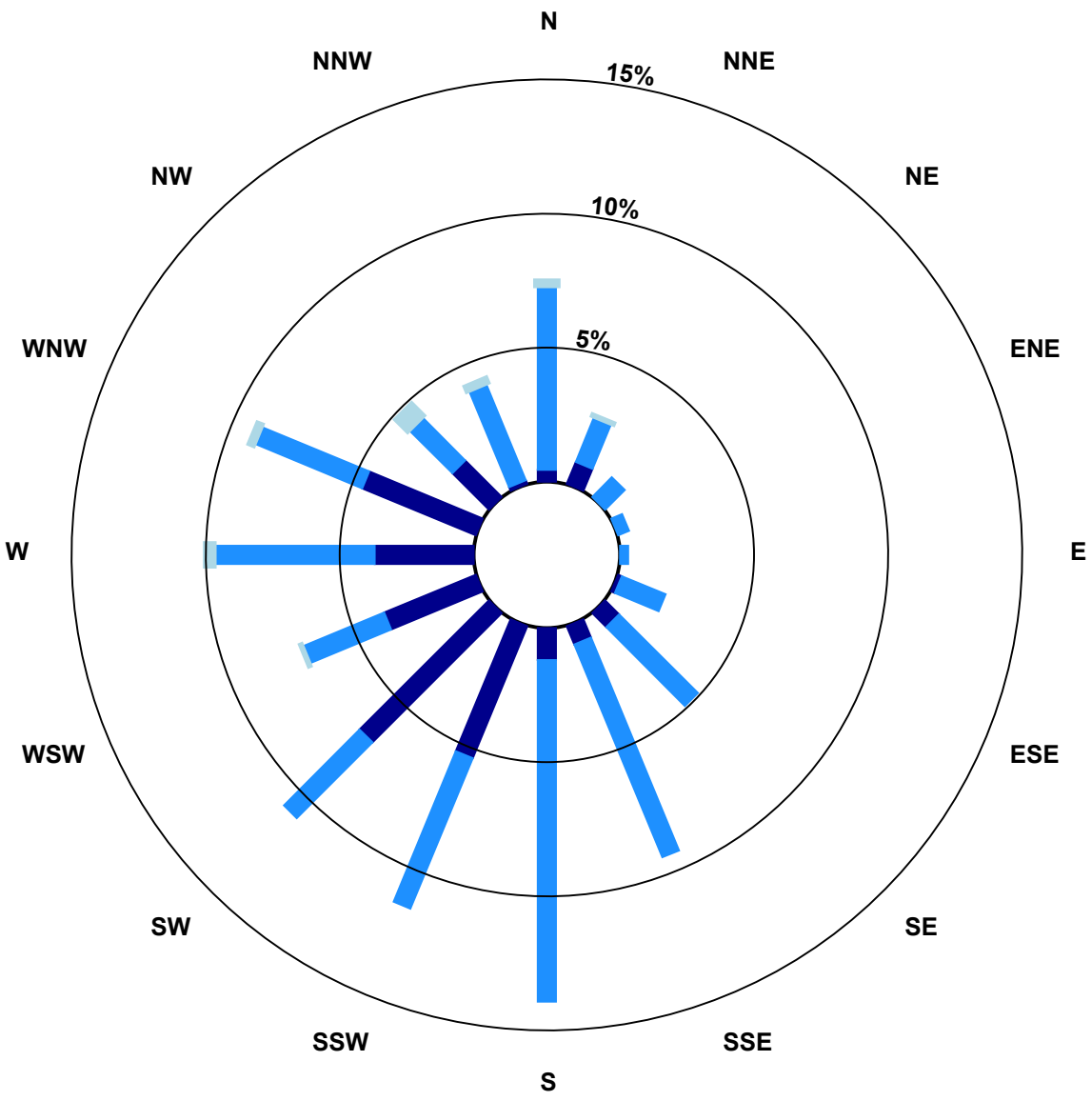
Total Number of Hours: 720

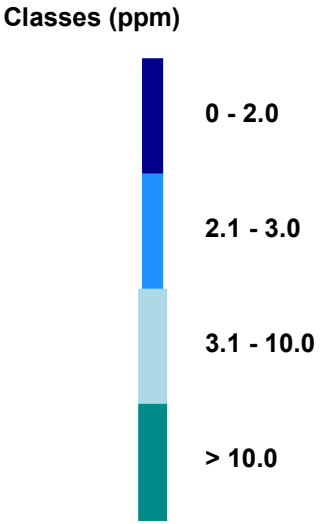
Wood Buffalo Environmental Association

Wind Rose Sep 2024

Methane (CH_4) - ppm

Ells River





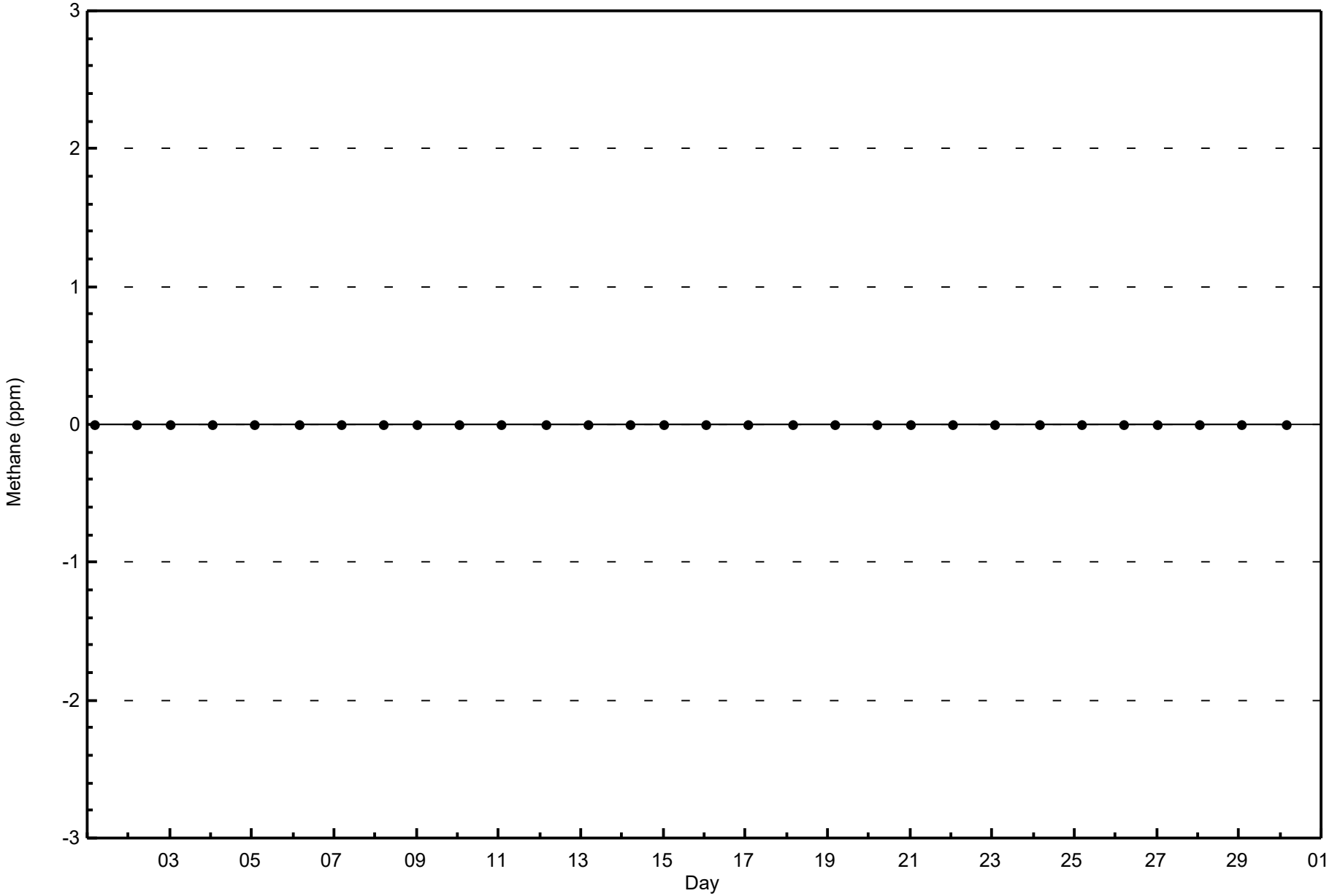
Total Number of Valid Hours: 675

Wood Buffalo Environmental Association

Zero Responses

Methane (CH_4) - ppm

Ells River - September 2024

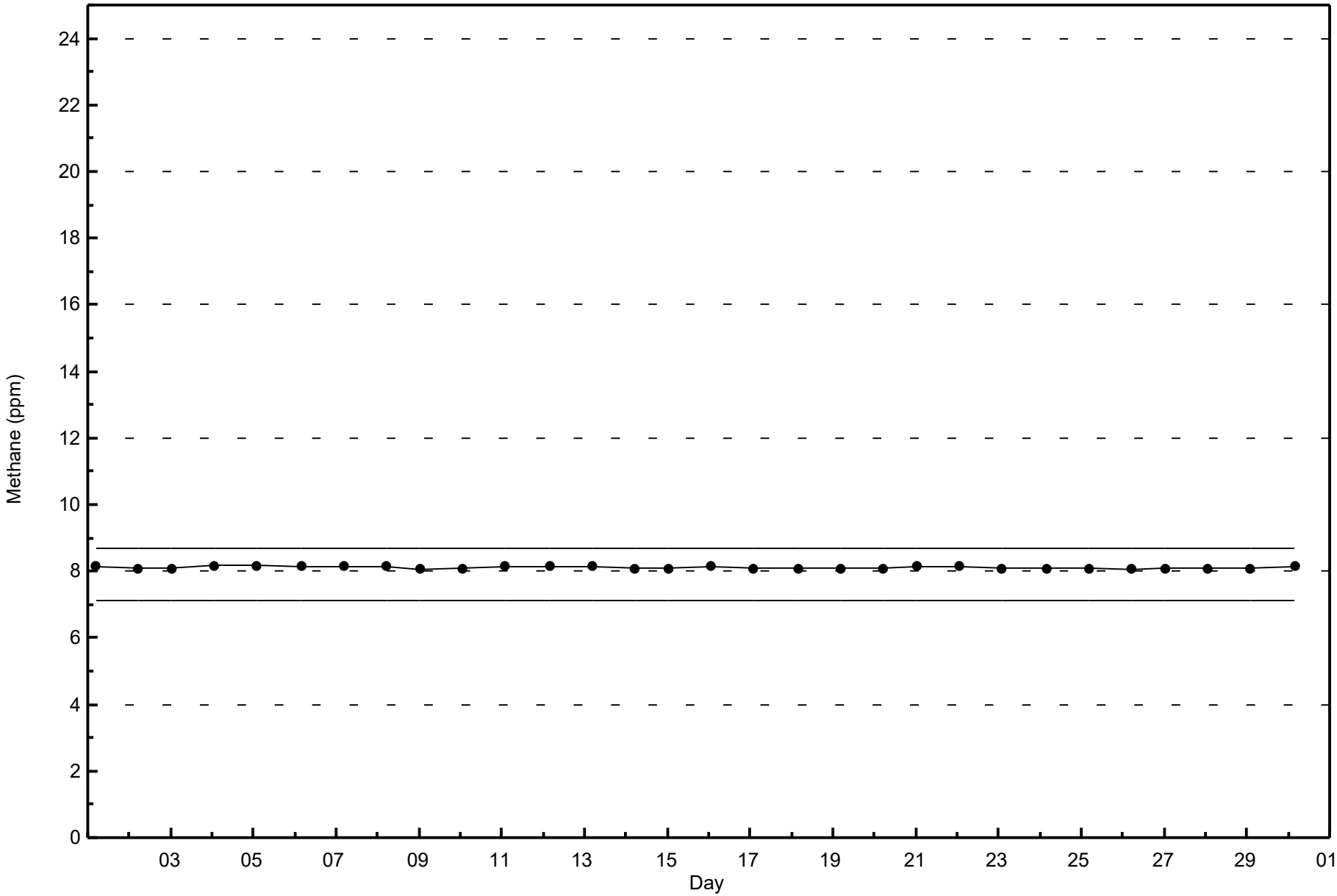


Wood Buffalo Environmental Association

Span Responses

Methane (CH_4) - ppm

Ells River - September 2024



Wood Buffalo Environmental Association

Summary of Hour Averages

Nitric Oxide (NO) - ppb

Ells River - September 2024

Maximum Value: 123.0 ppb on Sep 29 07:00

Maximum Daily Average: 19.0 ppb on Sep 29

Minimum Value: 0.0 ppb on Sep 1 15:00

Minimum Daily Average: 0.0 ppb on Sep 30

Maximum Diurnal Average: 11.3 ppb at hour 9

Minimum Diurnal Average: 0.1 ppb at hour 19

Monthly Average: 3.73 ppb

Percentiles: P_1 = 0.0 P_{10} = 0.0 Q_1 = 0.0 Median = 0.1 Q_3 = 1.6 P_{90} = 9.4 P_{99} = 64.6

Hours in Service:	720
Hours of Data:	685
Hours of Missing Data:	35
Hours of Calibration:	35
Percent Operational Time:	100.0

Day	Hourly Period Ending At (MST)																								Daily	Daily
	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24	Average	Maximum
1-Sep	0.0	0.0	Z	0.1	0.0	1.1	12.6	11.4	11.9	8.8	6.6	4.3	1.2	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	2.5	12.6
2-Sep	0.0	0.0	0.0	Z	0.0	0.1	0.0	2.8	0.0	0.0	7.3	3.9	0.2	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.1	0.6	7.3
3-Sep	0.1	0.8	0.5	0.7	Z	2.5	0.5	3.8	4.2	1.2	1.1	0.7	0.9	1.6	1.5	0.9	1.7	0.6	0.6	0.8	0.1	0.7	2.2	8.1	1.6	8.1
4-Sep	8.2	3.2	0.3	0.1	0.1	Z	0.1	0.1	0.1	0.1	0.1	0.3	0.1	0.1	0.1	0.1	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.1	0.6	8.2
5-Sep	Z	0.6	0.2	0.2	0.1	0.1	0.1	0.1	0.4	2.8	6.6	24.2	6.0	2.2	0.6	0.5	0.6	0.7	0.2	0.1	0.1	0.0	0.1	0.1	2.0	24.2
6-Sep	0.1	Z	0.1	0.1	0.1	2.5	14.0	3.1	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	0.9	14.0
7-Sep	0.8	0.0	Z	0.1	0.1	0.1	0.1	4.7	12.8	9.5	4.3	1.7	1.4	0.1	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	1.6	12.8
8-Sep	0.0	0.0	0.0	Z	0.0	0.3	0.2	0.2	0.4	0.3	2.7	3.5	1.1	0.5	0.4	0.2	0.0	0.0	0.0	0.1	0.4	0.0	0.0	0.0	0.5	3.5
9-Sep	0.5	0.3	0.3	4.2	Z	0.0	1.6	3.6	1.0	1.6	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	0.6	4.2
10-Sep	0.0	0.0	0.0	0.0	0.0	Z	0.1	0.0	0.1	0.1	0.0	0.1	0.0	0.0	0.4	0.0	0.0	0.0	0.0	0.0	0.1	0.8	6.9	13.1	0.9	13.1
11-Sep	Z	31.9	10.0	3.0	4.4	7.7	5.6	15.4	60.6	65.6	28.1	10.8	1.7	1.8	2.3	1.6	0.9	0.9	0.3	0.0	0.0	0.1	4.6	9.5	11.6	65.6
12-Sep	3.8	Z	4.5	2.3	1.6	0.8	0.0	0.1	7.3	41.8	11.7	3.8	2.2	3.3	2.2	0.2	0.1	0.1	0.0	0.0	0.0	0.1	0.0	1.0	3.8	41.8
13-Sep	0.1	0.3	Z	57.7	41.8	30.9	17.6	6.4	41.0	44.9	2.4	0.9	3.8	1.1	0.2	0.4	1.0	0.4	0.3	0.1	0.0	0.0	0.0	0.0	10.9	57.7
14-Sep	0.0	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	0.1	0.1	0.1	0.0	0.0	0.0	0.7	0.1	2.4	0.2	2.4
15-Sep	5.3	4.5	13.2	12.6	Z	8.6	3.4	13.0	43.8	23.0	3.7	2.4	2.2	2.0	1.5	1.6	1.4	0.8	0.2	0.0	6.7	15.1	14.5	7.0	8.1	43.8
16-Sep	0.4	0.1	0.0	0.2	5.0	Z	0.1	0.0	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	0.0	0.0	0.3	5.0
17-Sep	Z	0.0	0.1	0.2	0.0	0.0	0.5	0.6	5.0	1.9	10.2	5.5	2.8	0.7	0.1	0.1	0.3	0.5	0.2	0.0	0.0	0.0	0.1	0.1	1.3	10.2
18-Sep	0.2	Z	4.1	5.7	7.0	11.6	14.8	27.7	2.3	0.1	0.2	0.1	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.3	0.0	0.0	3.2	27.7
19-Sep	0.1	0.0	Z	0.1	0.0	0.0	0.0	0.0	0.6	2.2	6.8	9.0	4.4	0.7	0.1	0.0	0.0	0.0	0.1	1.4	2.4	32.6	48.1	43.5	6.6	48.1
20-Sep	13.5	10.2	12.7	Z	20.0	19.3	13.0	9.2	6.7	C	C	C	C	C	0.1	0.0	0.1	0.3	0.0	0.0	4.2	0.7	0.0	0.1	6.1	20.0
21-Sep	1.0	0.0	0.0	0.0	Z	0.0	0.0	0.0	0.0	1.7	11.4	29.3	6.9	2.1	0.7	0.3	0.3	0.1	0.0	0.1	0.0	0.1	0.2	0.1	2.4	29.3
22-Sep	0.1	0.0	0.1	0.1	0.1	Z	2.6	4.8	2.5	0.7	3.6	0.4	0.2	0.4	0.5	1.1	0.2	0.2	0.1	0.3	11.3	6.8	1.1	21.9	2.6	21.9
23-Sep	Z	18.0	12.7	12.1	13.8	8.8	1.8	3.7	10.9	14.1	9.9	4.0	3.4	8.5	4.5	1.1	1.7	0.4	0.3	0.1	1.0	0.1	0.1	0.7	5.7	18.0
24-Sep	0.1	Z	1.5	0.1	1.4	0.1	0.1	0.4	0.2	0.1	0.1	0.1	0.0	0.1	0.0	0.1	0.0	0.0	0.1	0.0	0.1	0.0	0.1	0.1	0.2	1.5
25-Sep	0.1	0.1	Z	0.1	0.4	0.3	52.9	90.2	98.6	85.2	64.5	19.8	1.0	0.5	1.2	3.0	0.3	0.2	0.1	0.0	0.0	0.0	0.0	0.0	18.2	98.6
26-Sep	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	0.1	1.2	0.1	1.2
27-Sep	0.0	0.0	1.6	1.4	Z	0.0	0.2	2.1	0.4	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.1	0.0	0.0	0.2	0.3	0.0	0.0	0.0	0.3	2.1
28-Sep	0.0	0.0	0.0	0.0	0.0	Z	0.1	0.1	0.1	0.1	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	0.1	0.0	0.2
29-Sep	Z	0.4	20.1	35.9	54.2	65.0	123.0	79.8	26.9	7.9	9.9	6.7	3.1	1.1	0.7	0.3	0.1	0.1	0.7	0.0	0.0	0.0	0.0	0.0	19.0	123.0
30-Sep	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
	1.4	2.8	3.3	5.5	6.0	6.4	8.8	9.5	11.3	10.8	6.6	4.5	1.5	0.9	0.6	0.4	0.3	0.2	0.1	0.1	0.9	1.9	2.6	3.6	Diurnal Average	
	13.5	31.9	20.1	57.7	54.2	65.0	123.0	90.2	98.6	85.2	64.5	29.3	6.9	8.5	4.5	3.0	1.7	0.9	0.7	1.4	11.3	32.6	48.1	43.5	Diurnal Maximum	

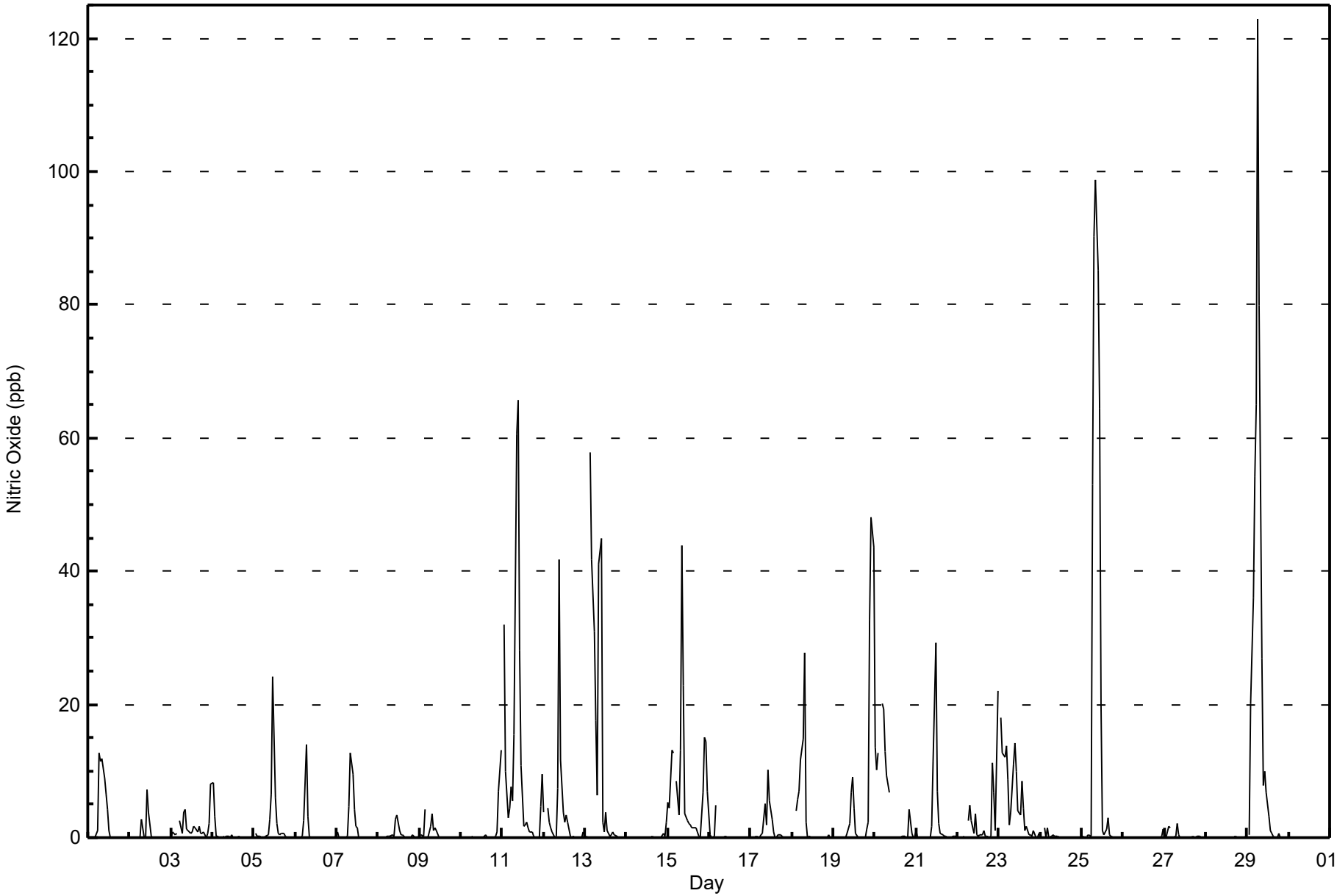
Z - zerospan C - Calibration

Wood Buffalo Environmental Association

Hourly Averages

Nitric Oxide (NO) - ppb

Ells River - September 2024



Concentration Ranges (ppb)	Number of Hours	%	Cumulative %
0 - 20	655	95.62	95.62
21 - 40	11	1.61	97.23
11 - 80	15	2.19	99.42
81 - 159	4	0.58	100.00
> 159	0	0.00	100.00

Total Number of Valid Hours: 685

Total Number of Hours: 720

Concentration Ranges (ppb)	Wind Direction																
	N	NNE	NE	ENE	E	ESE	SE	SSE	S	SSW	SW	WSW	W	WNW	NW	NNW	**Totals**
0 - 20	48	18	7	3	2	13	31	64	88	79	72	47	66	56	25	25	644
21 - 40	1	0	0	0	0	0	2	1	2	0	0	0	2	1	1	1	11
11 - 80	2	0	0	0	0	0	0	0	0	0	1	0	4	1	4	3	15
81 - 159	0	1	0	0	0	0	0	0	0	0	0	1	0	0	2	0	4
> 159	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Totals	51	19	7	3	2	13	33	65	90	79	73	48	72	58	32	29	674

Total Number of Valid Hours: 674

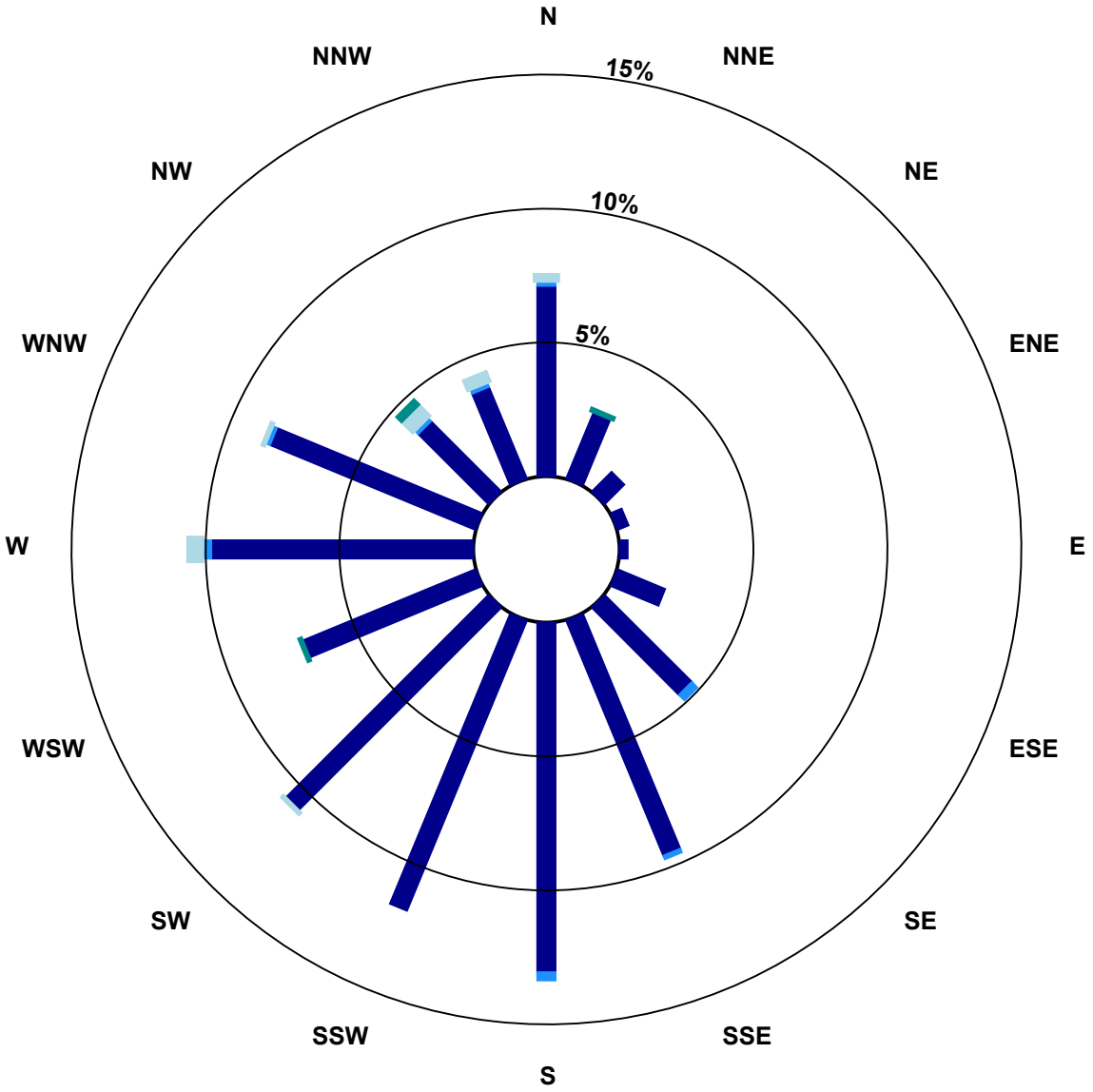
Total Number of Hours: 720

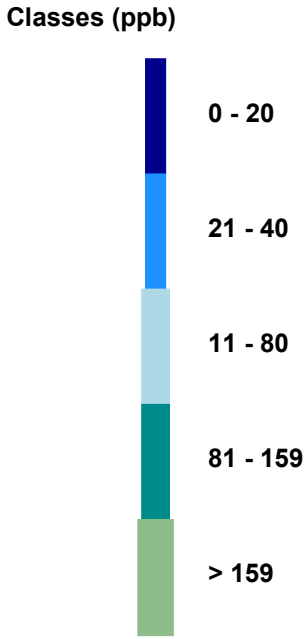
Wood Buffalo Environmental Association

Wind Rose Sep 2024

Nitric Oxide (NO) - ppb

Ells River





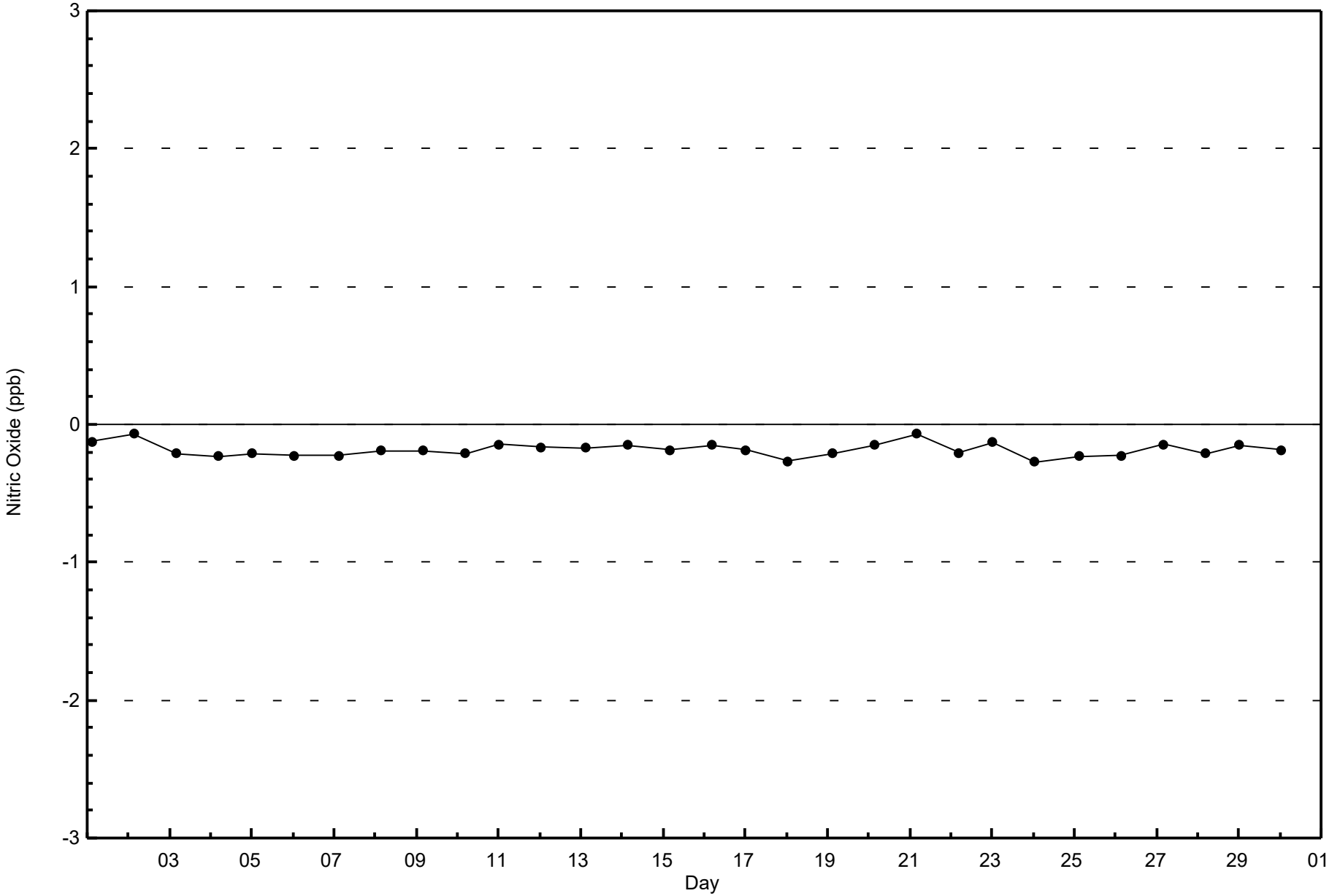
Total Number of Valid Hours: 674

Wood Buffalo Environmental Association

Zero Responses

Nitric Oxide (NO) - ppb

Ells River - September 2024

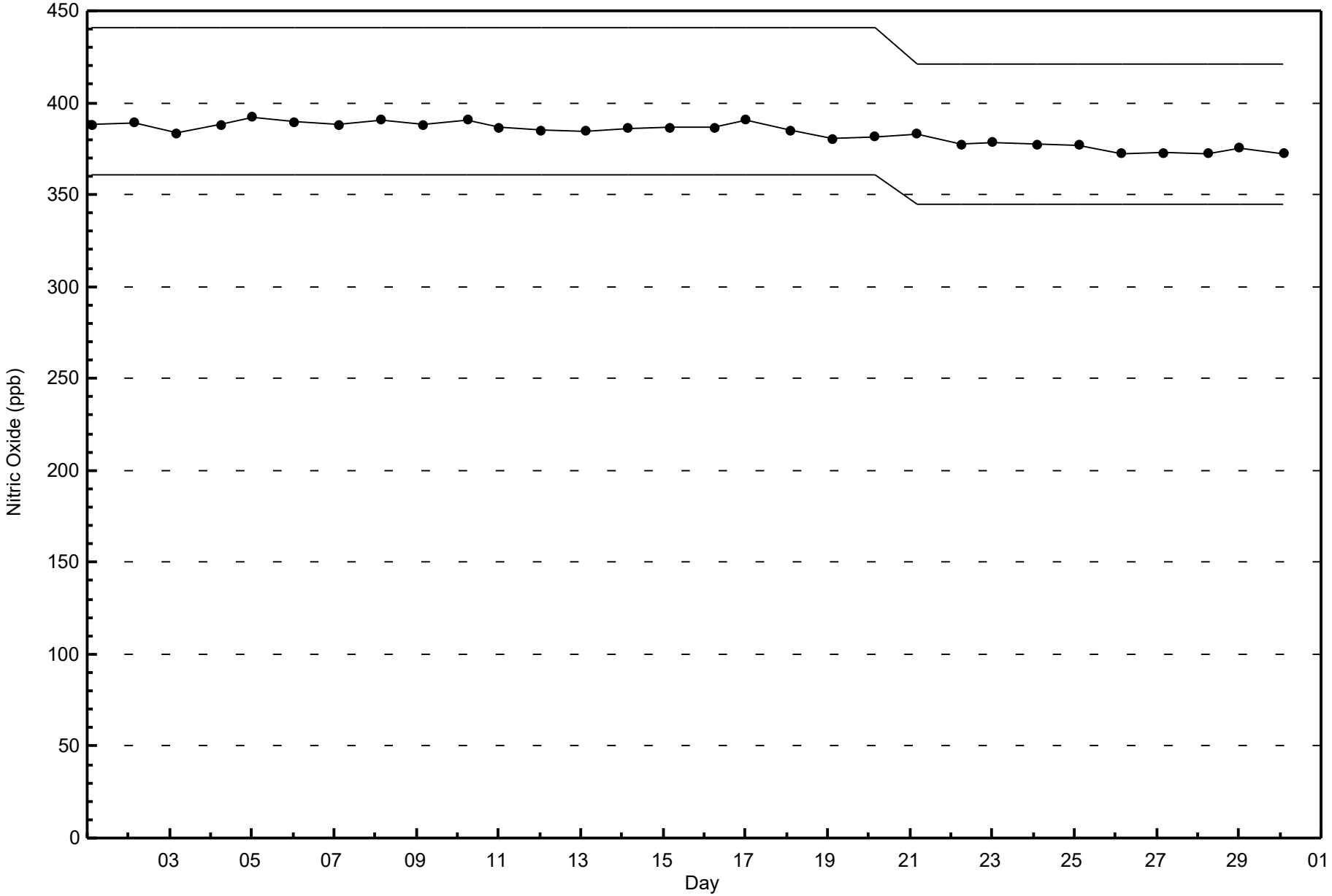


Wood Buffalo Environmental Association

Span Responses

Nitric Oxide (NO) - ppb

Ells River - September 2024



Wood Buffalo Environmental Association

Summary of Hour Averages

Nitrogen Dioxide (NO_2) - ppb

Ells River - September 2024

Number of Exceedences (AAAQO): 1-hr: 0 24-hr: 0
Maximum Value: 32.2 ppb on Sep 8 21:00 Maximum Daily Average: 11.2 ppb on Sep 20

Minimum Value: 0.2 ppb on Sep 5 07:00 Minimum Daily Average: 0.2 ppb on Sep 30
Maximum Diurnal Average: 5.7 ppb at hour 11 Minimum Diurnal Average: 2.1 ppb at hour 16
Monthly Average: 4.10 ppb Percentiles: P_1 = 0.2 P_{10} = 0.3 Q_1 = 0.4 Median = 1.8 Q_3 = 6.1 P_{90} = 11.3 P_{99} = 20.8

Hours in Service:	720
Hours of Data:	685
Hours of Missing Data:	35
Hours of Calibration:	35
Percent Operational Time:	100.0

Day	Hourly Period Ending At (MST)																								Daily	Daily
	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24	Average	Maximum
1-Sep	5.6	6.6	Z	3.1	4.1	9.3	14.0	11.8	10.7	9.4	8.3	7.8	3.8	1.0	0.5	0.4	0.3	0.3	0.3	0.3	0.4	0.4	0.4	0.5	4.3	14.0
2-Sep	0.4	0.6	0.4	Z	0.5	0.7	0.6	3.5	0.6	0.5	9.4	8.6	1.3	0.4	0.4	0.3	0.3	0.3	0.3	0.9	2.6	6.2	6.0	6.5	2.2	9.4
3-Sep	1.8	2.4	6.3	4.3	Z	13.3	5.4	12.6	7.9	3.0	2.6	1.1	2.0	4.1	4.9	5.2	6.3	3.8	4.7	6.4	3.7	12.7	15.7	12.2	6.2	15.7
4-Sep	8.4	5.0	2.7	1.0	0.4	Z	0.4	0.3	0.3	0.4	0.5	1.1	0.3	0.5	0.4	0.5	0.3	0.3	0.2	0.2	0.3	0.2	0.2	1.3	1.1	8.4
5-Sep	Z	12.7	8.3	5.6	1.4	0.3	0.2	0.2	0.4	3.1	7.0	17.4	9.2	5.1	2.5	2.4	3.4	3.9	3.1	2.9	3.4	3.5	10.4	3.2	4.8	17.4
6-Sep	8.8	Z	1.9	3.0	3.8	18.0	20.5	7.8	0.9	0.8	0.7	0.6	0.6	0.7	0.6	0.6	0.6	0.6	0.7	0.9	0.9	1.5	0.7	0.5	3.3	20.5
7-Sep	1.4	0.5	Z	0.5	0.5	0.5	0.8	3.4	9.6	11.6	10.1	7.7	6.8	1.2	0.8	0.6	0.5	0.5	0.5	0.6	0.7	0.7	0.7	0.7	2.6	11.6
8-Sep	0.7	1.3	0.7	Z	0.8	0.9	0.9	1.2	1.3	1.5	8.6	13.1	9.0	6.7	5.5	4.1	3.2	3.3	3.1	17.5	32.2	11.3	5.1	10.1	6.2	32.2
9-Sep	19.3	18.9	19.3	21.9	Z	4.6	11.4	10.4	3.9	4.7	3.6	0.7	0.4	0.4	0.4	0.3	0.4	0.3	0.4	0.4	0.3	0.3	0.4	0.4	5.4	21.9
10-Sep	0.4	0.3	0.3	0.3	0.2	Z	0.3	0.3	0.3	0.3	0.4	0.4	0.5	0.5	0.5	0.4	0.4	0.8	0.4	0.6	3.8	9.9	17.4	14.3	2.3	17.4
11-Sep	Z	8.9	6.7	4.2	3.6	3.2	1.7	5.8	18.1	26.7	20.1	11.4	4.3	4.6	6.5	6.4	6.6	9.5	9.7	9.5	14.2	9.9	11.4	12.6	9.4	26.7
12-Sep	11.1	Z	7.9	6.3	5.5	5.5	2.3	2.1	8.0	18.2	15.2	13.5	9.9	11.3	10.3	2.6	1.9	2.3	2.3	1.8	0.9	0.7	0.6	0.8	6.1	18.2
13-Sep	0.4	0.7	Z	7.2	10.0	6.5	4.6	4.9	8.9	15.2	6.6	3.0	8.6	5.8	2.7	3.9	5.9	4.5	9.2	12.7	6.4	9.3	2.6	0.5	6.1	15.2
14-Sep	0.5	0.4	0.3	Z	0.6	0.3	0.3	0.4	0.5	0.5	0.5	0.6	0.5	0.6	0.9	1.4	1.3	1.9	4.7	9.7	7.8	4.8	5.2	8.8	2.3	9.7
15-Sep	12.7	11.2	9.7	5.6	Z	2.5	2.1	3.6	10.1	11.7	6.0	5.2	5.0	4.7	4.5	5.3	7.6	8.3	6.4	5.7	8.6	10.8	9.7	6.6	7.1	12.7
16-Sep	2.6	2.4	0.9	1.2	4.6	Z	1.0	0.6	0.5	0.5	0.6	0.6	0.5	0.4	0.4	0.4	0.4	0.3	0.3	0.3	0.3	0.4	0.4	0.4	0.9	4.6
17-Sep	Z	0.5	0.6	1.0	2.0	1.0	1.7	1.5	4.9	2.6	8.4	7.1	5.5	2.7	0.8	0.9	2.3	3.8	4.3	3.1	2.1	1.4	1.5	4.0	2.8	8.4
18-Sep	3.3	Z	4.2	5.1	4.1	12.7	13.7	17.2	5.5	0.7	1.0	0.6	0.6	0.4	0.3	0.3	0.3	0.3	0.3	0.5	0.4	1.3	0.3	0.3	3.2	17.2
19-Sep	0.4	0.3	Z	0.3	0.2	0.2	0.2	0.3	0.9	2.8	7.1	11.1	7.9	2.8	1.6	0.9	0.9	2.6	7.4	16.9	21.6	26.0	24.1	22.6	6.9	26.0
20-Sep	18.9	18.9	17.7	Z	20.6	19.5	17.9	15.7	11.8	C	C	C	C	C	0.8	0.9	1.6	4.5	7.4	8.3	11.8	14.2	5.5	6.1	11.2	20.6
21-Sep	6.2	3.5	1.7	0.6	Z	0.3	0.3	0.3	0.3	1.8	7.6	13.2	7.4	3.7	2.5	2.3	2.6	2.2	1.9	3.4	1.9	1.9	2.8	2.7	3.1	13.2
22-Sep	2.5	1.9	1.3	1.1	0.8	Z	2.5	1.9	2.6	1.3	3.7	1.2	1.1	1.8	2.0	3.8	2.5	4.2	6.7	6.1	19.0	18.7	12.4	14.1	4.9	19.0
23-Sep	Z	8.3	7.7	4.2	2.2	1.3	2.0	2.0	4.5	8.0	8.3	5.2	5.1	14.5	11.3	6.0	8.5	3.6	5.1	5.7	8.0	2.3	2.1	3.8	5.6	14.5
24-Sep	3.5	Z	1.0	0.5	1.1	0.4	0.5	0.5	0.6	0.4	0.4	0.4	0.3	0.2	0.3	0.2	0.3	0.6	0.5	0.5	0.4	0.3	0.3	0.2	0.6	3.5
25-Sep	0.6	0.5	Z	0.6	0.8	2.2	9.9	10.2	16.5	17.0	16.4	17.4	5.5	2.4	4.6	8.9	2.9	2.6	2.8	2.3	1.0	0.4	0.4	0.3	5.5	17.4
26-Sep	0.3	0.3	0.6	Z	0.5	0.8	0.4	0.4	0.4	0.3	0.3	0.3	0.3	0.3	0.3	0.2	0.3	0.4	0.3	0.3	0.2	0.2	0.6	2.5	0.5	2.5
27-Sep	1.1	0.4	5.5	7.0	Z	3.6	3.9	7.6	1.4	0.3	0.4	0.5	0.3	0.3	0.3	0.3	1.1	0.3	0.4	14.6	8.0	1.4	0.6	0.4	2.6	14.6
28-Sep	0.3	0.3	0.2	0.2	0.3	Z	0.3	0.2	0.2	0.2	0.2	0.3	0.3	0.3	0.4	0.3	0.3	2.3	0.7	0.7	1.3	0.9	1.6	3.7	0.7	3.7
29-Sep	Z	3.4	8.8	8.8	8.8	8.4	14.8	17.4	14.7	11.1	10.1	7.7	5.7	3.0	3.2	2.7	2.1	3.4	10.8	5.4	0.7	0.4	0.3	0.2	6.6	17.4
30-Sep	0.2	Z	0.3	0.3	0.3	0.3	0.3	0.2	0.3	0.3	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	0.2	0.2	0.4
	4.5	4.4	4.6	3.8	3.1	4.7	4.5	4.8	4.9	5.3	5.7	5.5	3.5	2.8	2.3	2.1	2.2	2.4	3.2	4.6	5.4	5.1	4.7	4.7	Diurnal Average	
	19.3	18.9	19.3	21.9	20.6	19.5	20.5	17.4	18.1	26.7	20.1	17.4	9.9	14.5	11.3	8.9	8.5	9.5	10.8	17.5	32.2	26.0	24.1	22.6	Diurnal Maximum	

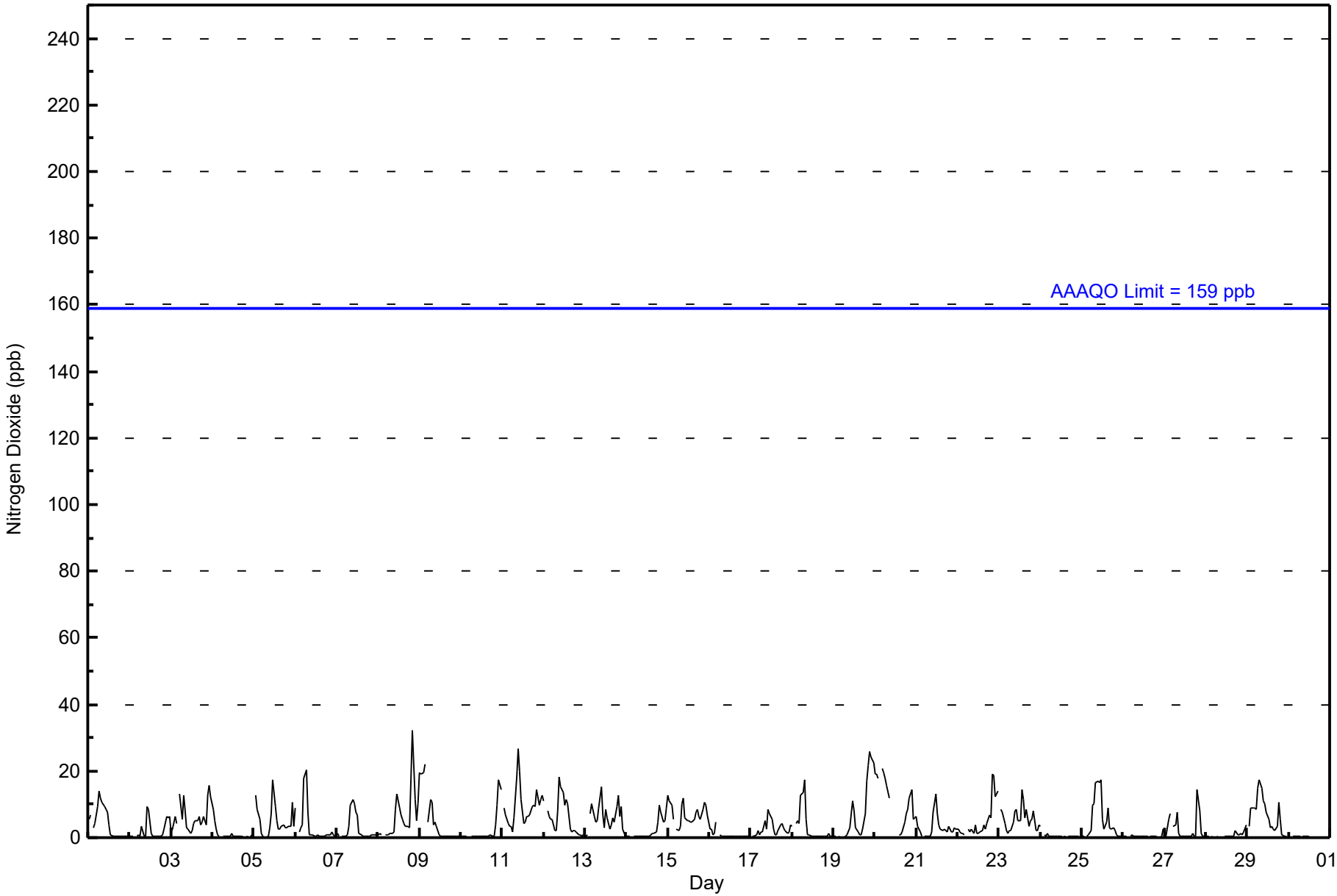
Z - zerospan C - Calibration
Alberta Ambient Air Quality Objectives (AAAQO): 1-hr 159 ppb

Wood Buffalo Environmental Association

Hourly Averages

Nitrogen Dioxide (NO_2) - ppb

Ells River - September 2024



Nitrogen Dioxide (NO_2) - ppb
Ells River - September 2024

Concentration Ranges (ppb)	Number of Hours	%	Cumulative %
0 - 20	676	98.69	98.69
21 - 40	9	1.31	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: 685

Total Number of Hours: 720

Wood Buffalo Environmental Association

Frequency Distribution

Nitrogen Dioxide (NO_2) - ppb

Ells River - September 2024

Concentration Ranges (ppb)	Wind Direction																
	N	NNE	NE	ENE	E	ESE	SE	SSE	S	SSW	SW	WSW	W	WNW	NW	NNW	**Totals**
0 - 20	49	19	7	3	2	13	33	65	90	78	73	48	72	57	30	26	665
21 - 40	2	0	0	0	0	0	0	0	0	1	0	0	0	1	2	3	9
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	51	19	7	3	2	13	33	65	90	79	73	48	72	58	32	29	674

Total Number of Valid Hours: 674

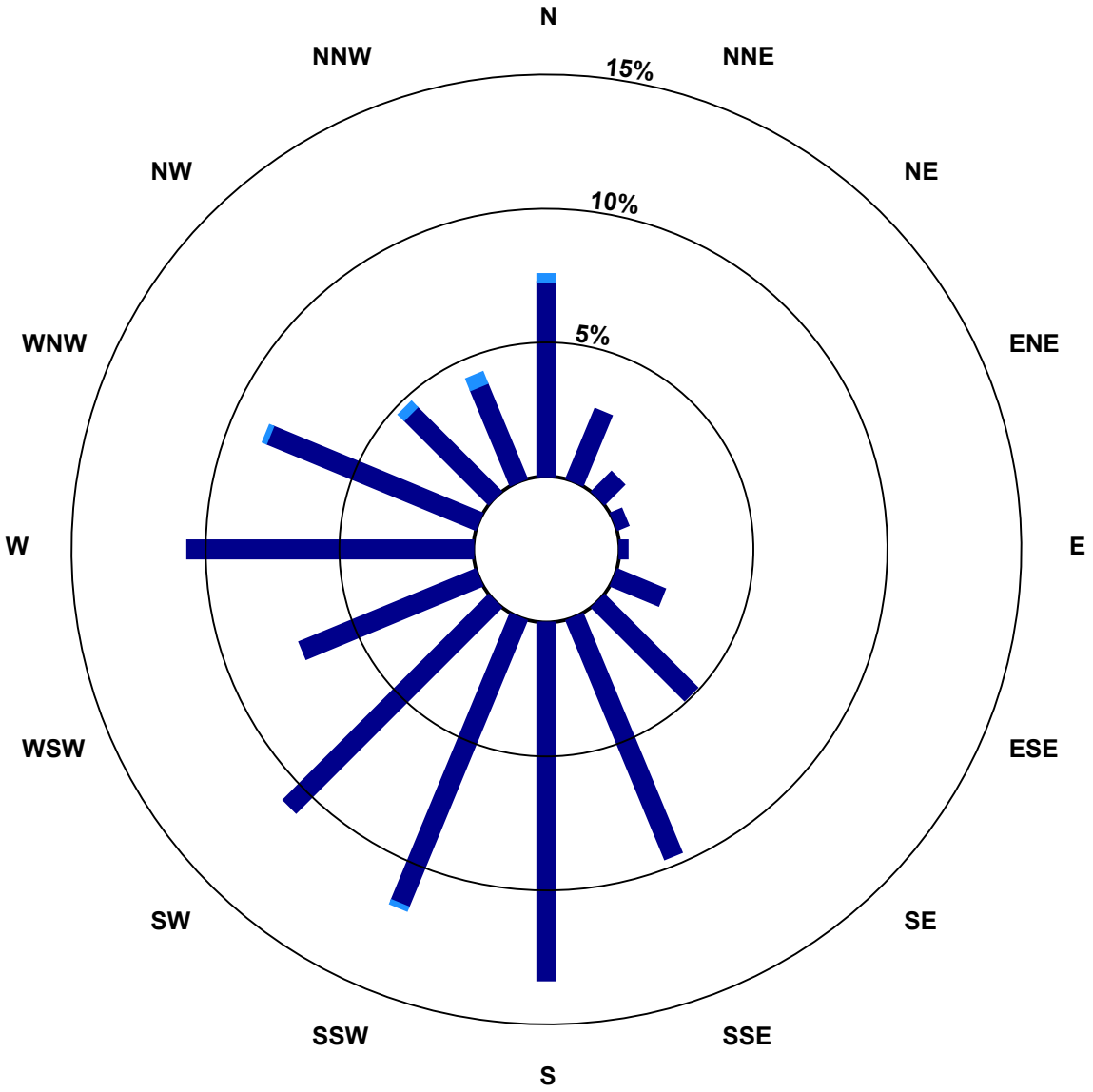
Total Number of Hours: 720

Wood Buffalo Environmental Association

Wind Rose Sep 2024

Nitrogen Dioxide (NO_2) - ppb

Ells River



Classes (ppb)

0 - 20

21 - 40

11 - 80

81 - 159

> 159

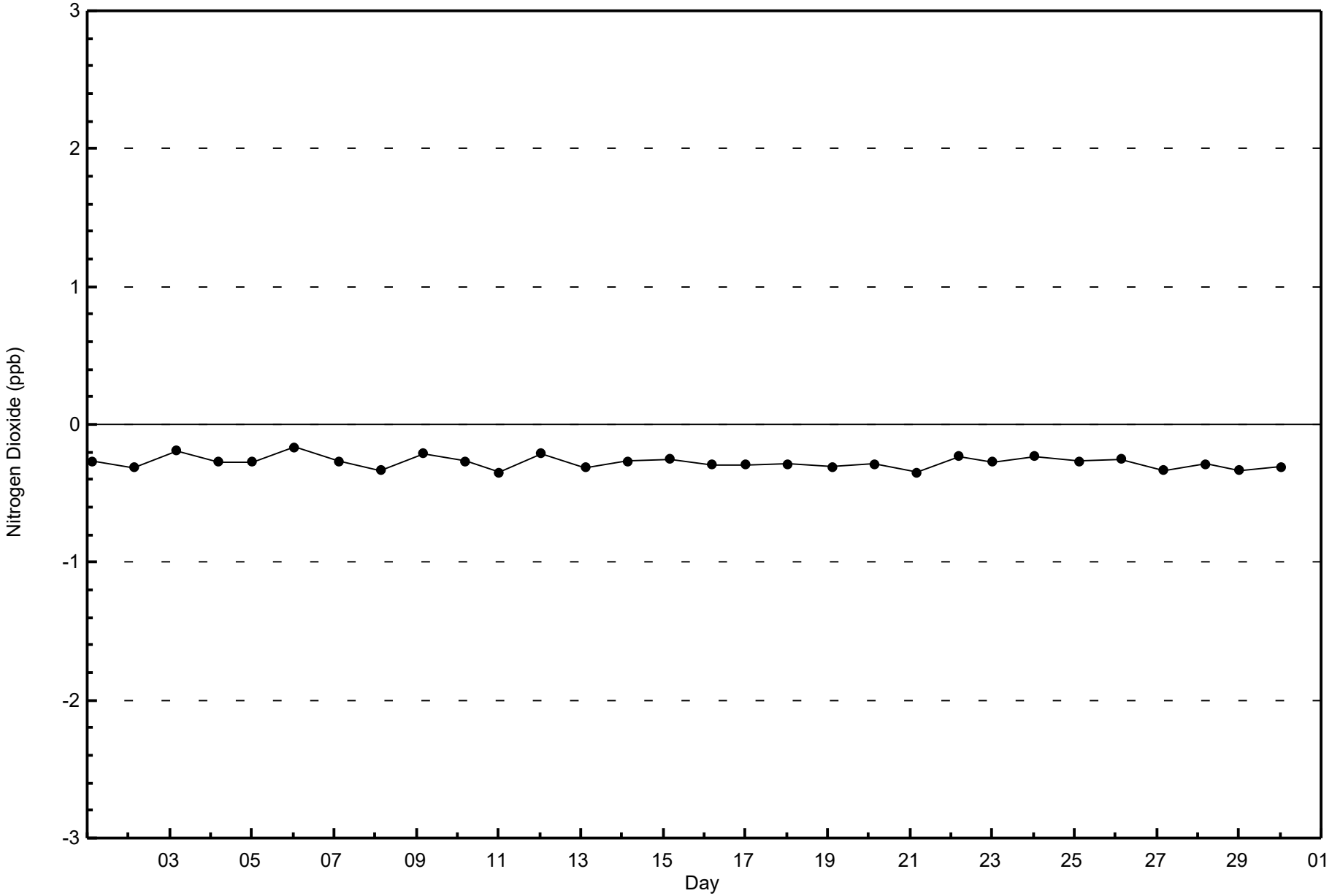
Total Number of Valid Hours: 674

Wood Buffalo Environmental Association

Zero Responses

Nitrogen Dioxide (NO_2) - ppb

Ells River - September 2024

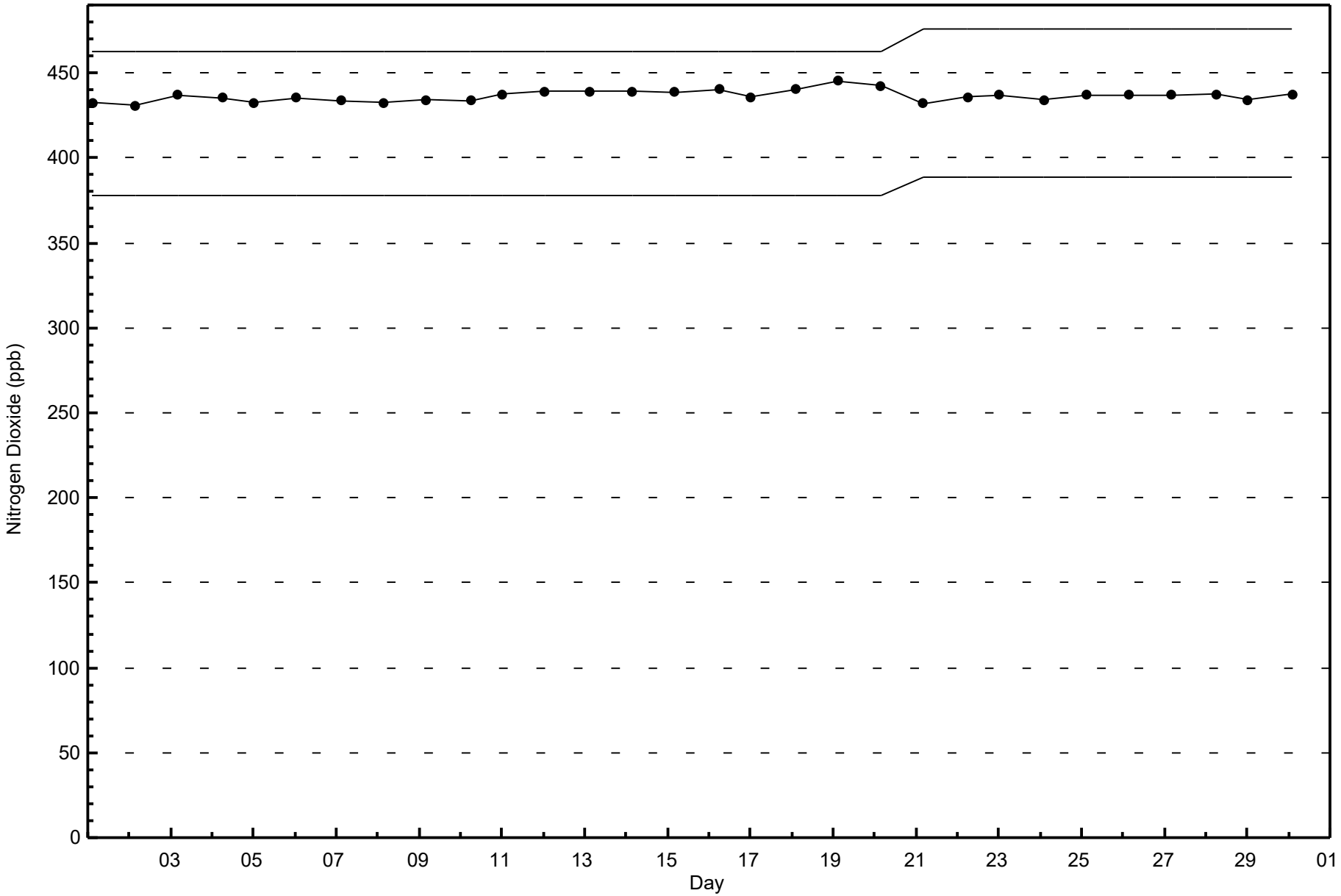


Wood Buffalo Environmental Association

Span Responses

Nitrogen Dioxide (NO_2) - ppb

Ells River - September 2024



Wood Buffalo Environmental Association

Summary of Hour Averages

Nitrogen Oxides (NO_X) - ppb

Ells River - September 2024

Maximum Value: 137.8 ppb on Sep 29 07:00

Maximum Daily Average: 25.6 ppb on Sep 29

Minimum Value: 0.2 ppb on Sep 30 21:00

Minimum Daily Average: 0.2 ppb on Sep 30

Maximum Diurnal Average: 16.2 ppb at hour 10

Minimum Diurnal Average: 2.5 ppb at hour 17

Monthly Average: 7.82 ppb

Percentiles: P_1 = 0.2 P_{10} = 0.3 Q_1 = 0.5 Median = 2.1 Q_3 = 8.3 P_{90} = 20.1 P_{99} = 79.1

Hours in Service:	720
Hours of Data:	685
Hours of Missing Data:	35
Hours of Calibration:	35
Percent Operational Time:	100.0

Day	Hourly Period Ending At (MST)																								Daily	Daily
	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24	Average	Maximum
1-Sep	5.6	6.6	Z	3.2	4.1	10.4	26.6	23.2	22.6	18.2	14.9	12.1	5.0	1.0	0.5	0.4	0.3	0.3	0.3	0.3	0.4	0.4	0.4	0.5	6.8	26.6
2-Sep	0.4	0.6	0.4	Z	0.5	0.8	0.6	6.3	0.6	0.5	16.7	12.5	1.5	0.4	0.4	0.3	0.3	0.3	0.3	0.9	2.6	6.2	6.0	6.6	2.9	16.7
3-Sep	1.9	3.2	6.8	5.0	Z	15.8	5.9	16.4	12.1	4.2	3.7	1.8	2.9	5.7	6.4	6.1	8.0	4.4	5.3	7.2	3.8	13.4	17.9	20.3	7.7	20.3
4-Sep	16.6	8.2	3.0	1.1	0.5	Z	0.5	0.4	0.4	0.5	0.6	1.4	0.4	0.6	0.5	0.6	0.3	0.3	0.2	0.2	0.3	0.2	0.2	1.4	1.7	16.6
5-Sep	Z	13.3	8.5	5.8	1.5	0.4	0.3	0.3	0.8	5.9	13.6	41.6	15.2	7.3	3.1	2.9	4.0	4.6	3.3	3.0	3.5	3.5	10.5	3.3	6.8	41.6
6-Sep	8.9	Z	2.0	3.1	3.9	20.5	34.5	10.9	1.0	0.9	0.8	0.7	0.6	0.7	0.6	0.6	0.6	0.6	0.7	0.9	0.9	1.5	0.7	0.5	4.2	34.5
7-Sep	2.2	0.5	Z	0.6	0.6	0.6	0.9	8.1	22.4	21.1	14.4	9.4	8.2	1.3	0.8	0.6	0.5	0.5	0.5	0.6	0.7	0.7	0.7	0.7	4.2	22.4
8-Sep	0.7	1.3	0.7	Z	0.8	1.2	1.1	1.4	1.7	1.8	11.3	16.6	10.1	7.2	5.9	4.3	3.2	3.3	3.1	17.6	32.6	11.3	5.1	10.1	6.6	32.6
9-Sep	19.8	19.2	19.6	26.1	Z	4.6	13.0	14.0	4.9	6.3	4.6	0.7	0.4	0.4	0.4	0.3	0.4	0.3	0.4	0.4	0.3	0.3	0.4	0.4	6.0	26.1
10-Sep	0.4	0.3	0.3	0.3	0.2	Z	0.4	0.3	0.4	0.4	0.4	0.5	0.5	0.5	0.9	0.4	0.4	0.8	0.4	0.6	3.9	10.7	24.3	27.4	3.3	27.4
11-Sep	Z	40.8	16.7	7.2	8.0	10.9	7.3	21.2	78.7	92.3	48.2	22.2	6.0	6.4	8.8	8.0	7.5	10.4	10.0	9.5	14.2	10.0	16.0	22.1	21.0	92.3
12-Sep	14.9	Z	12.4	8.6	7.1	6.3	2.3	2.2	15.3	60.0	26.9	17.3	12.1	14.6	12.5	2.8	2.0	2.4	2.3	1.8	0.9	0.8	0.6	1.8	9.9	60.0
13-Sep	0.5	1.0	Z	64.9	51.8	37.4	22.2	11.3	49.9	60.1	9.0	3.9	12.4	6.9	2.9	4.3	6.9	4.9	9.5	12.8	6.4	9.3	2.6	0.5	17.0	64.9
14-Sep	0.5	0.4	0.3	Z	0.6	0.3	0.3	0.4	0.6	0.5	0.5	0.6	0.5	0.6	0.9	1.5	1.4	2.0	4.7	9.7	7.8	5.5	5.3	11.2	2.4	11.2
15-Sep	18.0	15.7	22.9	18.2	Z	11.1	5.5	16.6	53.9	34.7	9.7	7.6	7.2	6.7	6.0	6.9	9.0	9.1	6.6	5.7	15.3	25.9	24.2	13.6	15.2	53.9
16-Sep	3.0	2.5	0.9	1.4	9.6	Z	1.1	0.6	0.6	0.7	0.6	0.6	0.5	0.4	0.4	0.4	0.4	0.3	0.3	0.3	0.3	0.4	0.4	0.4	1.1	9.6
17-Sep	Z	0.5	0.7	1.2	2.0	1.0	2.2	2.1	9.9	4.5	18.6	12.6	8.3	3.4	0.9	1.0	2.6	4.3	4.5	3.1	2.1	1.4	1.6	4.1	4.0	18.6
18-Sep	3.5	Z	8.3	10.8	11.1	24.3	28.5	44.9	7.8	0.8	1.2	0.7	0.6	0.4	0.3	0.3	0.3	0.3	0.3	0.5	0.4	1.6	0.3	0.3	6.4	44.9
19-Sep	0.5	0.3	Z	0.4	0.2	0.2	0.2	0.3	1.5	5.0	13.9	20.1	12.3	3.5	1.7	0.9	0.9	2.6	7.5	18.3	24.0	58.6	72.2	66.1	13.5	72.2
20-Sep	32.4	29.1	30.4	Z	40.6	38.8	30.9	24.9	18.5	C	C	C	C	C	0.9	0.9	1.7	4.8	7.4	8.3	16.0	14.9	5.5	6.2	17.3	40.6
21-Sep	7.2	3.5	1.7	0.6	Z	0.3	0.3	0.3	0.3	3.5	19.0	42.5	14.3	5.8	3.2	2.6	2.9	2.3	1.9	3.5	1.9	2.0	3.0	2.8	5.4	42.5
22-Sep	2.6	1.9	1.4	1.2	0.9	Z	5.1	6.7	5.1	2.0	7.3	1.6	1.3	2.2	2.5	4.9	2.7	4.4	6.8	6.4	30.3	25.5	13.5	36.0	7.5	36.0
23-Sep	Z	26.3	20.4	16.3	16.0	10.1	3.8	5.7	15.4	22.1	18.2	9.2	8.5	23.0	15.8	7.1	10.2	4.0	5.4	5.8	9.0	2.4	2.2	4.5	11.4	26.3
24-Sep	3.6	Z	2.5	0.6	2.5	0.5	0.6	0.9	0.8	0.5	0.5	0.5	0.3	0.3	0.3	0.3	0.3	0.6	0.6	0.5	0.5	0.3	0.4	0.3	0.8	3.6
25-Sep	0.7	0.6	Z	0.7	1.2	2.5	62.8	100.4	115.1	102.2	80.9	37.2	6.5	2.9	5.8	11.9	3.2	2.8	2.9	2.3	1.0	0.4	0.4	0.3	23.7	115.1
26-Sep	0.3	0.3	0.6	Z	0.5	0.8	0.4	0.4	0.4	0.3	0.3	0.3	0.3	0.3	0.3	0.2	0.3	0.4	0.3	0.3	0.2	0.2	0.7	3.7	0.5	3.7
27-Sep	1.1	0.4	7.1	8.4	Z	3.6	4.1	9.7	1.8	0.3	0.4	0.5	0.3	0.3	0.3	0.3	1.2	0.3	0.4	14.8	8.3	1.4	0.6	0.4	2.9	14.8
28-Sep	0.3	0.3	0.2	0.2	0.3	Z	0.4	0.3	0.3	0.3	0.3	0.3	0.3	0.3	0.4	0.3	0.3	2.5	0.7	0.7	1.3	0.9	1.6	3.8	0.7	3.8
29-Sep	Z	3.8	28.9	44.7	63.0	73.4	137.8	97.2	41.6	19.0	20.0	14.4	8.8	4.1	3.9	3.0	2.2	3.5	11.5	5.4	0.7	0.4	0.3	0.2	25.6	137.8
30-Sep	0.2	Z	0.3	0.3	0.3	0.3	0.3	0.2	0.3	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	0.2	0.2	0.4
	5.8	7.2	7.9	9.2	9.1	11.0	13.3	14.3	16.2	16.2	12.3	10.0	5.0	3.7	2.9	2.5	2.5	2.6	3.3	4.7	6.3	7.0	7.3	8.3	Diurnal Average	
	32.4	40.8	30.4	64.9	63.0	73.4	137.8	100.4	115.1	102.2	80.9	42.5	15.2	23.0	15.8	11.9	10.2	10.4	11.5	18.3	32.6	58.6	72.2	66.1	Diurnal Maximum	

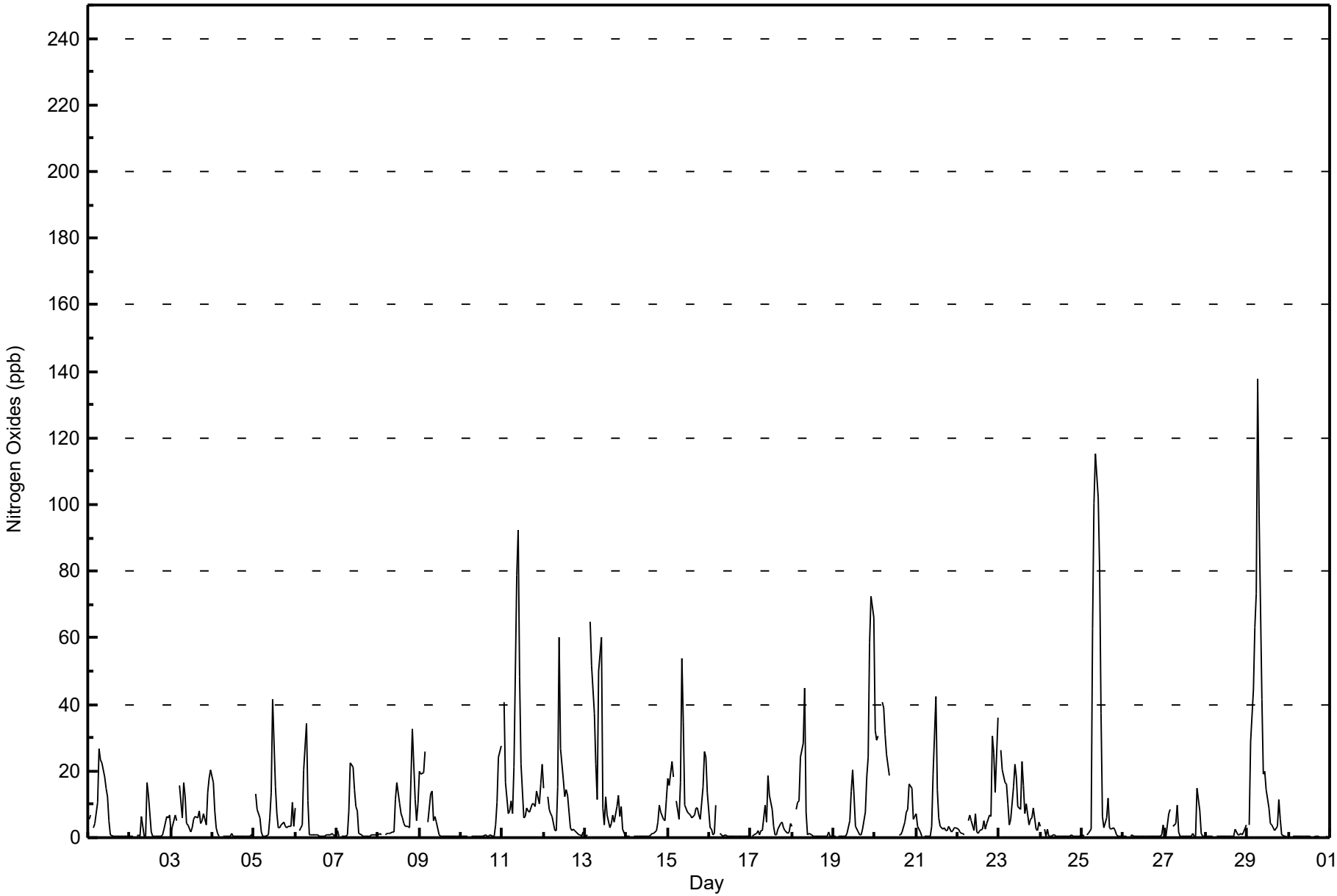
Z - zerospan C - Calibration

Wood Buffalo Environmental Association

Hourly Averages

Nitrogen Oxides (NO_X) - ppb

Ells River - September 2024



Nitrogen Oxides (NO_X) - ppb
Ells River - September 2024

Concentration Ranges (ppb)	Number of Hours	%	Cumulative %
0 - 20	619	90.36	90.37
21 - 40	38	5.55	95.91
11 - 80	21	3.07	98.98
81 - 159	6	0.88	99.85
> 159	0	0.00	99.85

Total Number of Valid Hours: 685

Total Number of Hours: 720

Wood Buffalo Environmental Association

Frequency Distribution

Nitrogen Oxides (NO_X) - ppb

Ells River - September 2024

Concentration Ranges (ppb)	Wind Direction																
	N	NNE	NE	ENE	E	ESE	SE	SSE	S	SSW	SW	WSW	W	WNW	NW	NNW	**Totals**
0 - 20	45	18	7	3	1	13	29	62	82	76	71	44	65	52	21	19	608
21 - 40	3	0	0	0	1	0	3	2	7	3	1	3	1	4	5	5	38
11 - 80	3	0	0	0	0	0	1	1	1	0	1	0	5	2	4	3	21
81 - 159	0	1	0	0	0	0	0	0	0	0	0	1	0	0	2	2	6
> 159	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Totals	51	19	7	3	2	13	33	65	90	79	73	48	71	58	32	29	673

Total Number of Valid Hours: 674

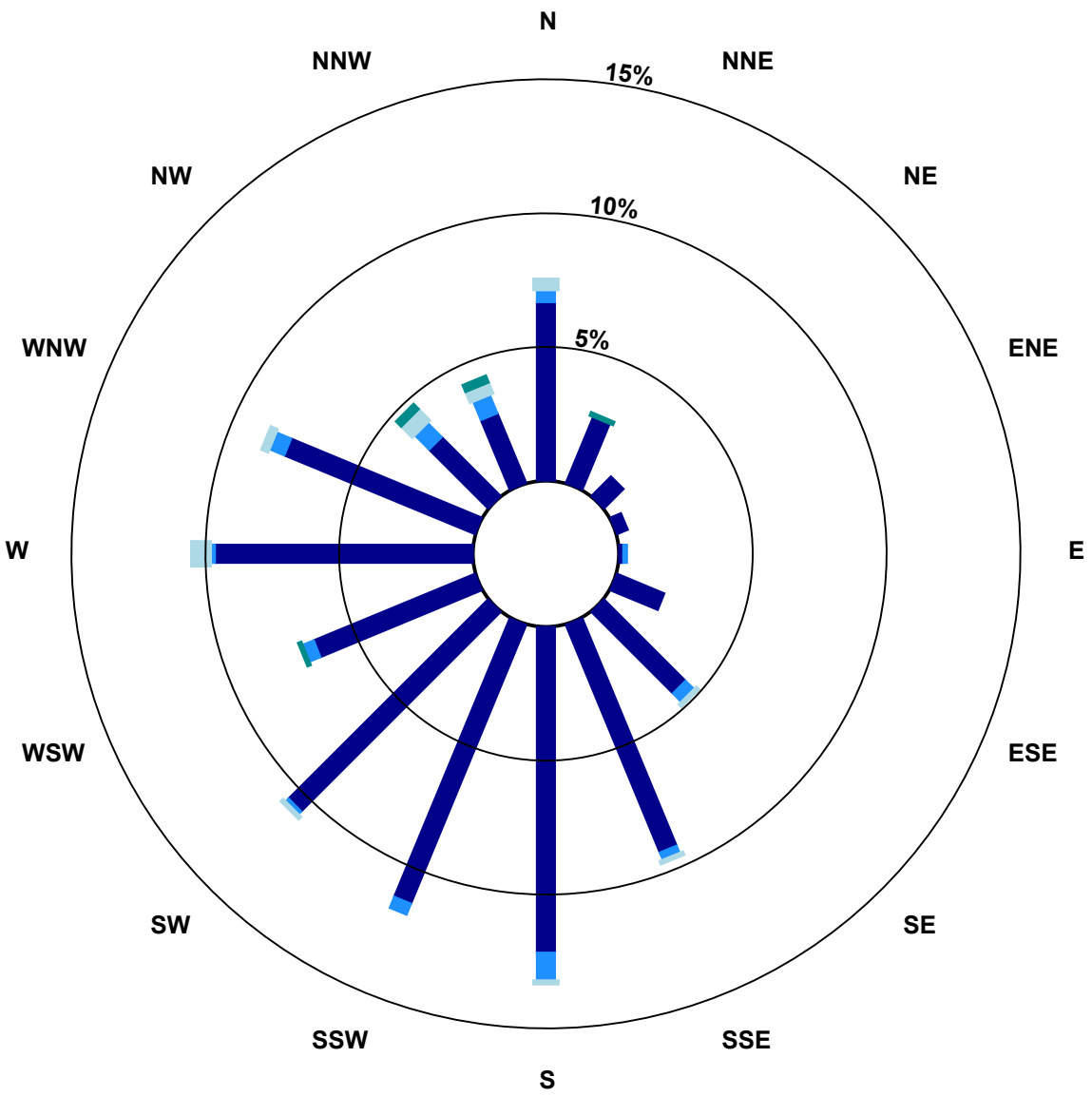
Total Number of Hours: 720

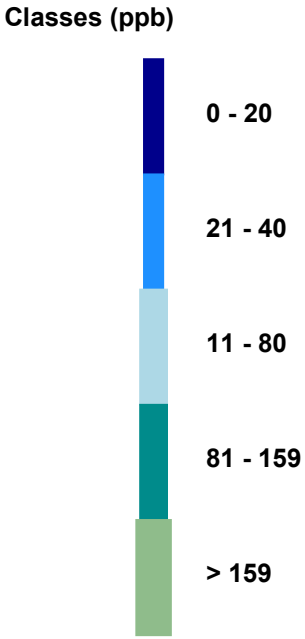
Wood Buffalo Environmental Association

Wind Rose Sep 2024

Nitrogen Oxides (NO_X) - ppb

Ells River





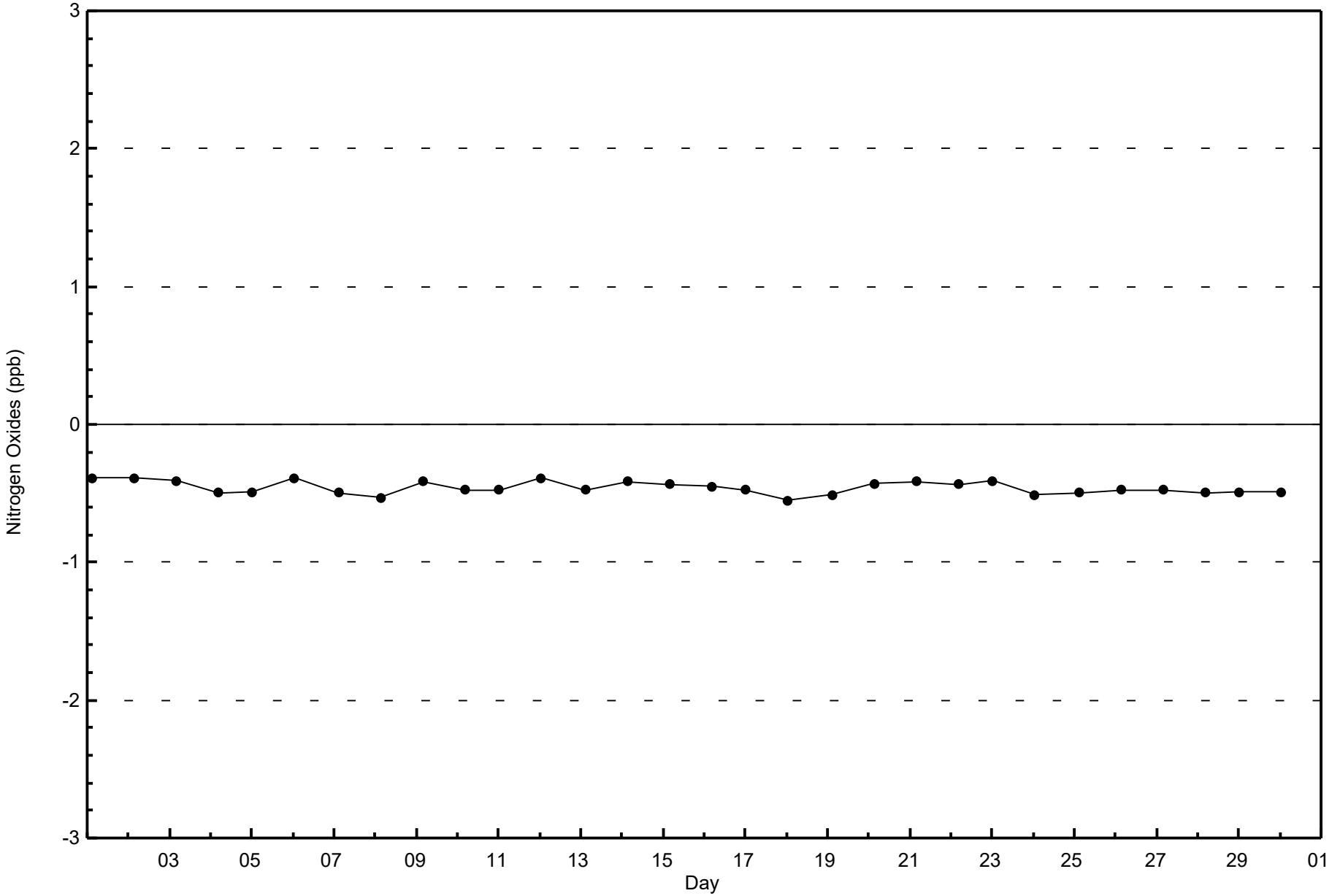
Total Number of Valid Hours: 674

Wood Buffalo Environmental Association

Zero Responses

Nitrogen Oxides (NO_X) - ppb

Ells River - September 2024

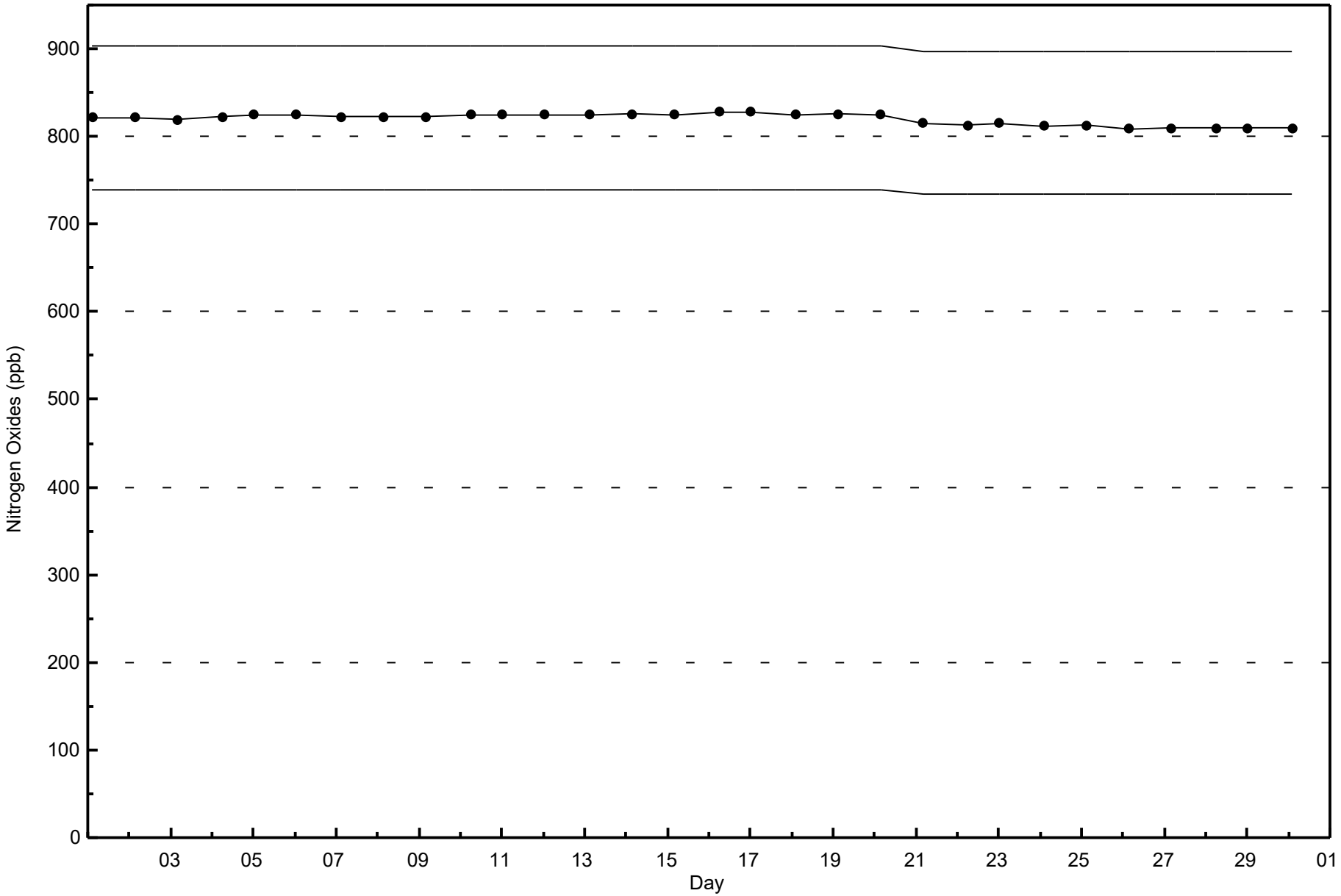


Wood Buffalo Environmental Association

Span Responses

Nitrogen Oxides (NO_X) - ppb

Ells River - September 2024



Wood Buffalo Environmental Association

Summary of Hour Averages

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

Ells River - September 2024

Number of Exceedences (AAAQO): 1-hr: 40 24-hr: 4

Maximum Value: 138.4 $\mu g/m^3$ on Sep 12 18:00

Maximum Daily Average: 86.2 $\mu g/m^3$ on Sep 13

Minimum Value: 0.5 $\mu g/m^3$ on Sep 28 04:00

Minimum Daily Average: 1.8 $\mu g/m^3$ on Sep 28

Maximum Diurnal Average: 20.9 $\mu g/m^3$ at hour 12

Minimum Diurnal Average: 14.0 $\mu g/m^3$ at hour 3

Monthly Average: 16.52 $\mu g/m^3$

Percentiles: P_1 = 0.9 P_{10} = 2.5 Q_1 = 3.9 Median = 6.4 Q_3 = 13.3 P_{90} = 52.0 P_{99} = 118.4

Hours in Service:	720
Hours of Data:	719
Hours of Missing Data:	1
Hours of Calibration:	1
Percent Operational Time:	100.0

Day	Hourly Period Ending At (MST)																								Daily	Daily
	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24	Average	Maximum
1-Sep	9.7	15.2	9.6	8.8	11.5	13.0	15.3	11.9	8.4	7.3	8.2	9.9	7.6	3.8	2.8	3.0	2.9	3.0	4.1	6.0	8.1	9.6	9.7	10.0	8.3	15.3
2-Sep	11.4	11.7	12.0	10.8	9.8	10.2	9.2	8.6	8.6	7.6	9.6	13.2	6.0	3.8	3.4	3.7	5.1	7.8	9.6	14.0	15.0	22.7	11.8	7.4	9.7	22.7
3-Sep	5.0	4.7	6.0	8.9	13.2	14.8	14.6	12.7	8.9	5.3	5.0	4.3	5.1	5.2	6.2	6.1	6.3	5.0	4.7	4.5	4.2	4.7	4.8	5.3	6.9	14.8
4-Sep	5.6	5.0	4.6	5.0	5.3	5.7	6.3	6.7	6.7	5.9	6.3	7.7	6.6	4.8	4.1	3.6	3.7	3.3	3.7	3.8	4.6	4.9	4.5	4.1	5.1	7.7
5-Sep	5.1	5.7	5.6	5.6	4.2	3.9	3.8	4.1	4.1	5.8	6.5	23.3	15.0	13.9	13.3	12.7	12.2	11.7	11.3	12.5	12.0	9.8	17.3	9.5	9.5	23.3
6-Sep	17.4	8.3	5.7	6.2	6.9	8.6	10.1	6.6	4.9	5.8	7.7	9.0	10.1	11.6	11.3	11.3	11.2	11.6	11.6	10.7	9.7	10.8	11.7	12.0	9.6	17.4
7-Sep	12.0	12.5	14.2	16.2	18.7	24.2	35.3	52.7	55.8	68.0	82.5	97.8	117.8	92.5	57.2	37.2	30.2	33.8	38.4	41.6	54.1	58.0	57.1	57.8	48.6	117.8
8-Sep	60.7	65.5	66.5	70.6	78.8	80.4	78.9	86.3	79.5	71.3	99.3	117.0	111.9	107.2	101.5	82.7	75.2	77.2	72.2	82.8	89.3	69.4	29.5	18.7	78.0	117.0
9-Sep	32.9	36.6	38.1	46.6	58.2	52.0	45.1	41.0	36.7	36.5	37.4	30.2	15.5	13.8	8.0	5.0	5.4	7.4	7.0	6.4	5.6	7.0	19.0	30.9	25.9	58.2
10-Sep	32.1	28.0	22.0	18.0	18.6	15.3	12.7	10.9	10.3	10.6	8.9	8.5	17.1	18.5	18.8	17.6	11.3	10.7	10.0	8.6	8.6	8.6	7.7	7.2	14.2	32.1
11-Sep	8.1	7.7	6.3	5.3	5.3	6.4	5.0	5.3	7.8	11.1	12.1	11.7	12.6	11.3	12.8	14.8	17.1	17.0	16.8	16.7	18.3	18.1	18.4	19.9	11.9	19.9
12-Sep	19.9	18.8	19.1	19.0	19.2	28.1	49.8	52.4	51.3	53.9	58.1	62.0	65.6	71.6	104.9	126.6	118.6	138.4	123.3	121.7	122.7	123.1	127.6	117.1	75.5	138.4
13-Sep	114.5	110.1	106.9	109.5	107.3	107.3	103.4	96.7	93.5	97.9	108.7	101.5	98.5	115.0	99.8	85.0	61.9	55.1	55.3	57.7	53.0	43.7	45.6	41.3	86.2	115.0
14-Sep	35.7	30.7	25.3	22.7	24.2	23.4	24.1	23.3	25.3	26.4	26.8	26.0	22.4	27.4	28.5	22.0	17.0	16.3	15.7	24.0	24.9	20.8	20.8	20.9	23.9	35.7
15-Sep	18.3	15.1	14.6	14.1	13.1	13.5	12.9	12.5	13.7	9.8	5.0	5.2	6.5	7.0	7.7	8.5	10.7	11.7	11.9	12.4	11.8	11.2	10.8	8.2	11.1	18.3
16-Sep	6.2	6.9	7.0	6.9	7.6	7.8	7.3	6.0	4.9	4.2	3.5	3.0	2.7	2.7	2.5	2.3	1.9	1.7	1.6	1.7	1.9	2.2	2.6	2.7	4.1	7.8
17-Sep	2.6	2.7	2.6	2.9	3.1	2.7	2.9	3.0	3.7	3.7	5.6	6.3	6.9	6.0	3.5	3.5	5.4	4.7	4.6	4.9	5.0	4.9	5.1	6.4	4.3	6.9
18-Sep	7.0	7.2	8.4	9.0	7.5	9.1	11.0	11.0	4.5	3.5	5.4	15.9	16.3	10.7	5.9	4.4	4.1	4.2	4.8	5.4	5.2	5.2	5.3	5.0	7.3	16.3
19-Sep	5.1	5.1	4.9	4.9	4.9	5.3	5.3	6.2	6.6	7.6	8.1	8.2	8.2	8.5	7.9	7.1	7.0	7.5	9.9	10.0	11.8	15.5	15.5	11.7	8.0	15.5
20-Sep	7.9	7.4	7.2	7.6	6.2	5.9	6.2	5.9	5.4	6.4	8.1	C	6.5	7.1	5.5	4.0	4.2	5.3	5.6	5.9	6.4	6.2	4.3	4.0	6.0	8.1
21-Sep	3.8	3.5	2.9	2.6	2.5	2.7	2.9	3.3	3.0	3.4	5.4	12.2	13.5	12.5	13.4	11.2	7.2	5.9	7.1	7.6	5.3	4.6	5.4	5.5	6.1	13.5
22-Sep	5.0	4.6	4.5	4.8	4.6	4.6	4.6	4.5	5.1	4.8	13.4	4.5	4.2	3.9	3.9	5.9	5.2	4.8	4.8	4.7	5.2	5.1	5.5	6.5	5.2	13.4
23-Sep	5.8	5.6	5.3	4.7	4.8	4.6	4.4	4.7	5.1	5.1	5.0	4.8	5.3	11.6	13.4	9.5	9.8	4.2	3.7	3.1	2.9	3.3	3.5	3.3	5.6	13.4
24-Sep	2.1	2.5	2.7	2.5	2.5	2.3	2.1	1.9	1.7	1.4	1.3	1.3	1.6	1.5	1.8	1.7	1.5	2.0	2.0	2.4	2.6	3.1	3.0	3.0	2.1	3.1
25-Sep	3.0	2.9	3.0	3.0	3.1	3.6	5.7	7.0	7.4	6.7	5.9	6.6	3.6	2.9	3.3	3.9	3.0	2.8	3.1	3.1	2.3	1.9	2.1	2.3	3.8	7.4
26-Sep	2.2	2.2	2.5	4.1	6.6	6.7	9.1	8.9	8.6	8.4	7.6	4.9	3.2	3.2	3.0	2.7	2.7	3.1	3.0	3.0	3.1	3.1	3.3	3.3	4.5	9.1
27-Sep	3.3	3.4	3.4	3.4	3.1	3.2	3.2	2.8	2.2	1.7	1.4	1.2	1.2	1.1	1.2	1.2	1.2	1.3	1.4	2.2	2.0	1.5	1.2	1.0	2.0	3.4
28-Sep	0.8	0.7	0.6	0.5	0.5	0.7	1.2	1.3	1.2	1.2	1.0	0.9	0.8	1.0	1.7	2.8	2.9	3.0	3.0	3.1	3.5	3.6	3.8	4.4	1.8	4.4
29-Sep	4.2	4.5	5.5	5.7	6.2	6.3	7.8	7.2	6.6	5.5	5.4	4.8	4.4	5.0	4.5	3.9	4.0	3.9	5.6	4.6	3.2	3.0	2.9	2.6	4.9	7.8
30-Sep	2.5	2.8	3.2	4.2	4.8	5.9	6.9	6.5	12.0	14.8	13.2	5.5	3.7	2.9	2.4	2.9	3.2	2.5	2.6	2.6	2.5	2.5	2.6	2.2	4.8	14.8
	15.0	14.6	14.0	14.5	15.4	15.9	16.9	17.1	16.4	16.7	19.1	20.9	20.0	19.6	18.5	16.9	15.1	15.6	15.3	16.3	16.8	16.3	15.4	14.5	Diurnal Average	
	114.5	110.1	106.9	109.5	107.3	107.3	103.4	96.7	93.5	97.9	108.7	117.0	117.8	115.0	104.9	126.6	118.6	138.4	123.3	121.7	122.7	123.1	127.6	117.1	Diurnal Maximum	

C - Calibration

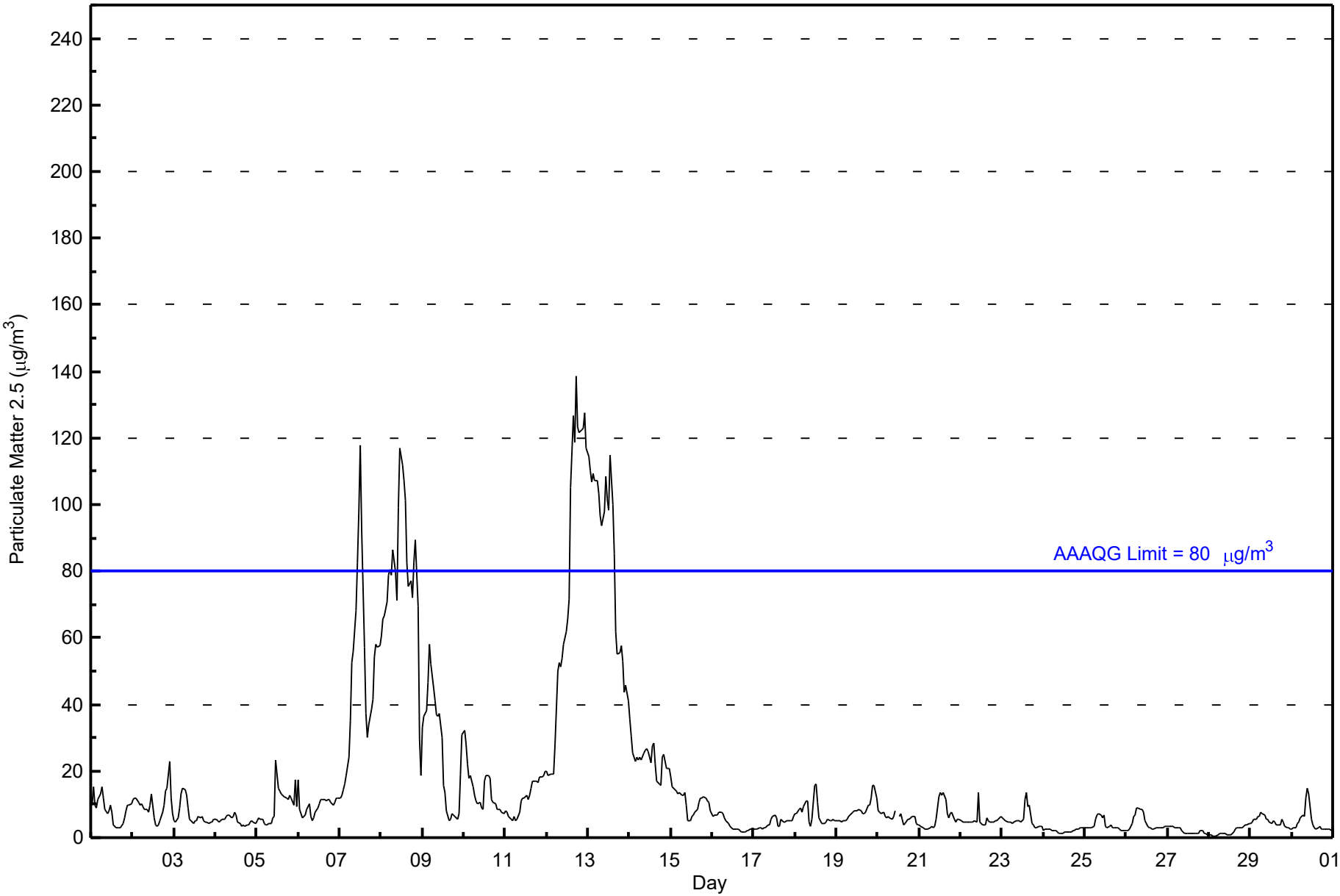
Alberta Ambient Air Quality Guideline/Objectives: 1-hr 80 $\mu g/m^3$ 24-hr 29 $\mu g/m^3$

Wood Buffalo Environmental Association

Hourly Averages

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

Ells River - September 2024



Wood Buffalo Environmental Association
Cumulative Frequency Distribution

Particulate Matter 2.5 ($PM_{2.5}$) - $\mu g/m^3$
Ells River - September 2024

Concentration Ranges ($\mu g/m^3$)	Number of Hours	%	Cumulative %
0 - 5	309	42.98	42.98
6 - 15	253	35.19	78.16
16 - 25	51	7.09	85.26
26 - 80	67	9.32	94.58
> 81.0	39	5.42	100.00

Total Number of Valid Hours: 719

Total Number of Hours: 720

Wood Buffalo Environmental Association

Frequency Distribution

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

Ells River - September 2024

Concentration Ranges ($\mu g/m^3$)	**Wind Direction** N	NNE	NE	ENE	E	ESE	SE	SSE	S	SSW	SW	WSW	W	WNW	NW	NNW	**Totals**
0 - 5	19	7	0	2	0	2	9	21	45	43	47	28	32	34	9	8	306
6 - 15	9	8	4	0	2	4	16	31	46	25	17	9	26	18	19	15	249
16 - 25	4	3	1	0	0	0	1	3	3	3	7	5	6	5	4	1	46
26 - 80	14	2	2	1	0	0	2	8	4	7	5	5	4	5	1	7	67
> 81.0	8	1	0	0	0	7	5	3	2	2	0	3	5	2	1	0	39
Totals	54	21	7	3	2	13	33	66	100	80	76	50	73	64	34	31	707

Total Number of Valid Hours: 707

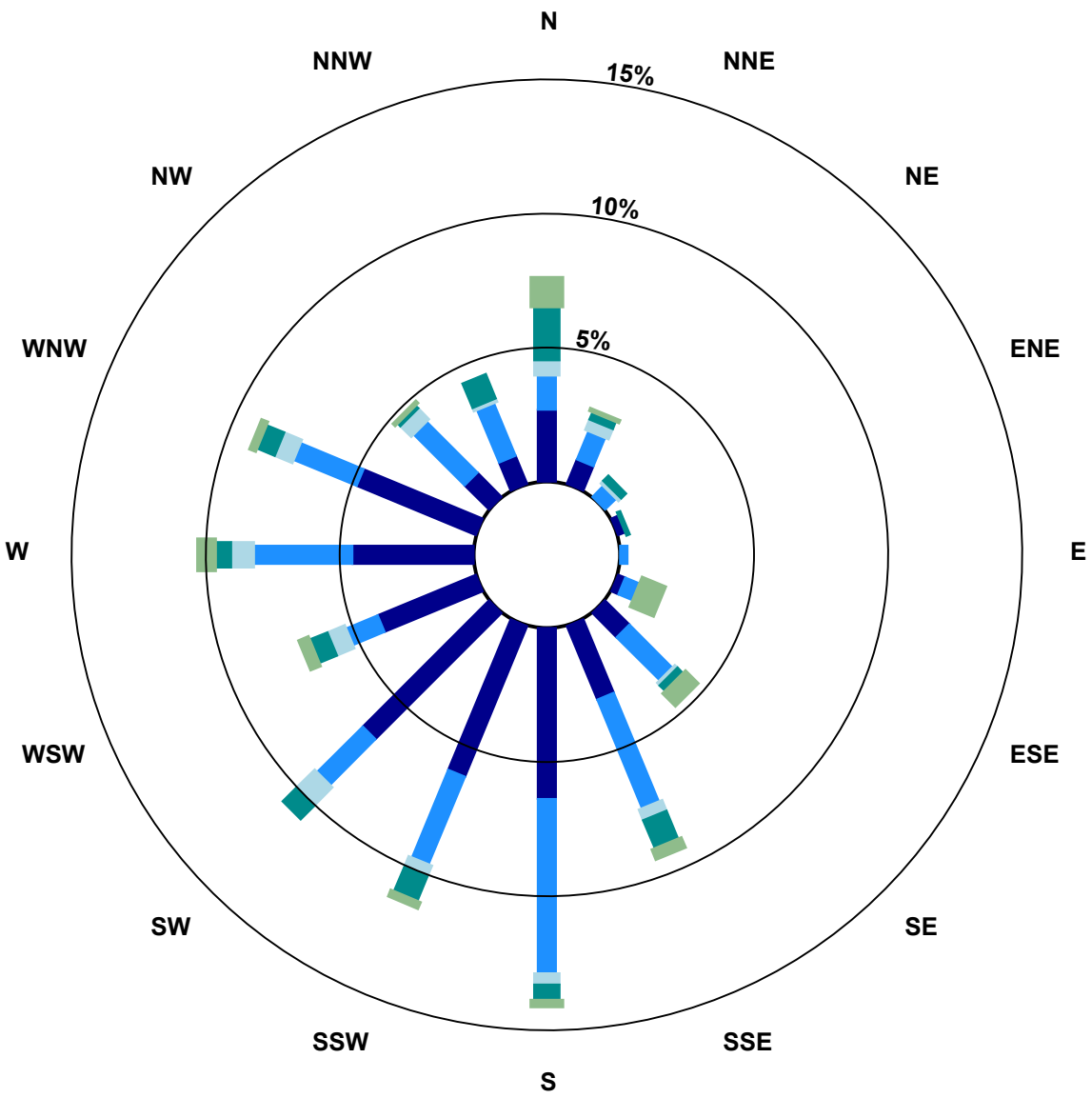
Total Number of Hours: 720

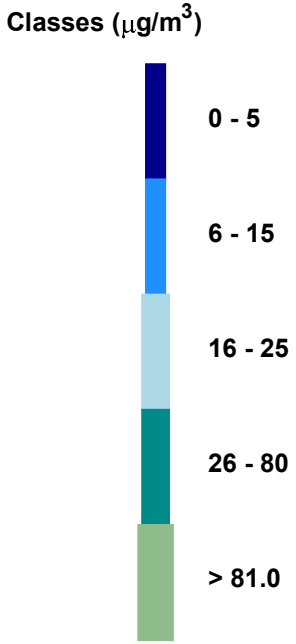
Wood Buffalo Environmental Association

Wind Rose Sep 2024

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

Ells River





Total Number of Valid Hours: 707

Maximum Value: 31.1 C on Sep 2 15:00
Maximum Daily Average: 20.6 C on Sep 2

Minimum Value: 0.8 C on Sep 30 08:00
Minimum Daily Average: 7.1 C on Sep 30
Maximum Diurnal Average: 19.1 C at hour 16
Minimum Diurnal Average: 7.1 C at hour 6
Monthly Average: 12.77 C
Percentiles: P_1 = 2.0 P_{10} = 4.9 Q_1 = 8.7 Median = 12.4 Q_3 = 16.1 P_{90} = 20.5 P_{99} = 29.2

Hours in Service:	720
Hours of Data:	720
Hours of Missing Data:	0
Hours of Calibration:	0
Percent Operational Time:	100.0

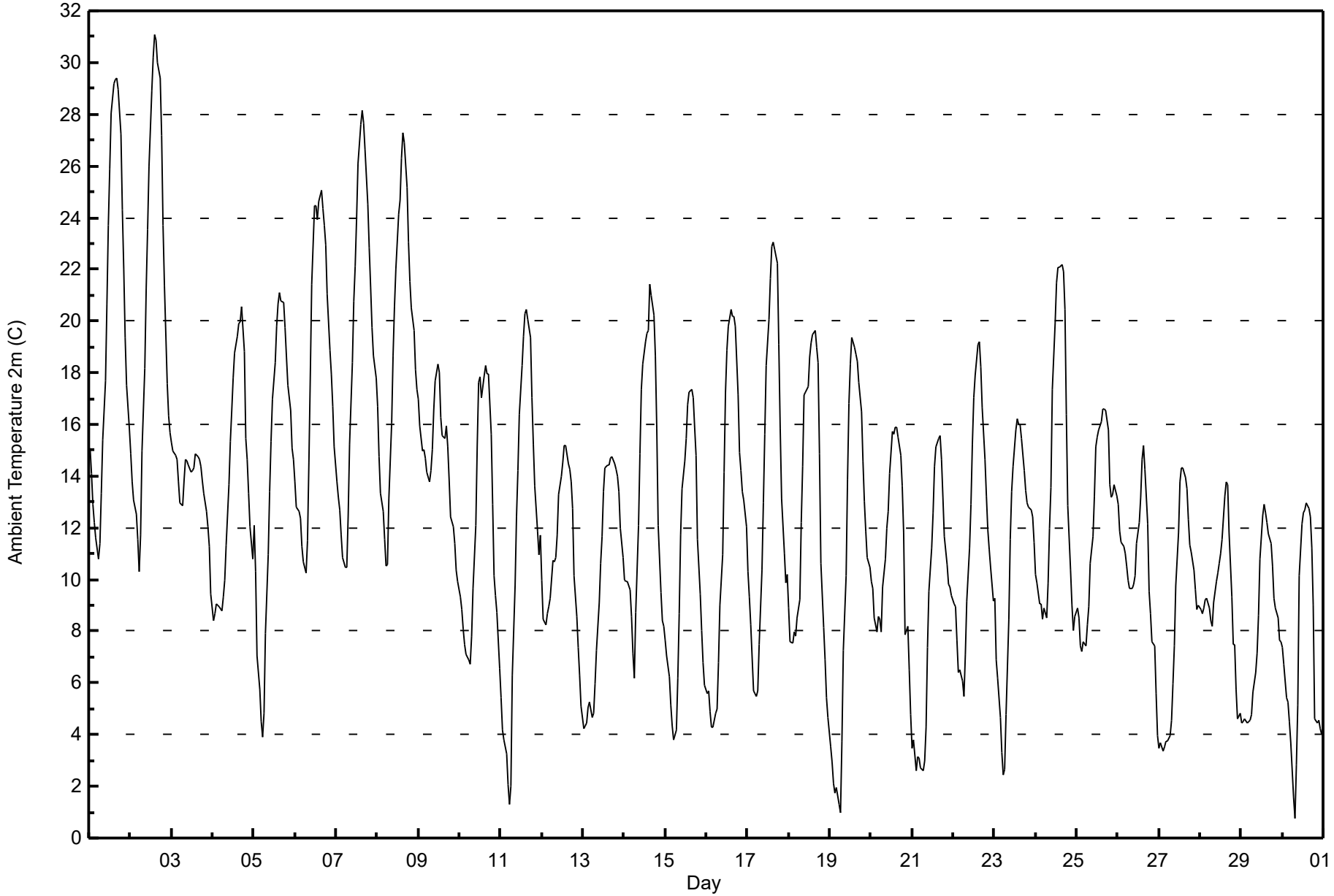
Day	Hourly Period Ending At (MST)																								Daily	Daily
	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24	Average	Maximum
1-Sep	15.1	14.1	12.9	12.2	11.6	10.8	11.4	13.4	15.4	17.7	20.7	23.7	25.9	28.0	29.2	29.3	29.4	29.0	27.2	24.3	22.0	19.4	17.5	15.8	19.8	29.4
2-Sep	14.8	13.8	13.1	12.5	11.6	10.3	11.7	15.0	18.2	21.2	23.6	26.0	28.9	30.2	31.1	30.8	30.0	29.4	27.2	23.7	21.4	17.5	16.3	15.6	20.6	31.1
3-Sep	15.3	15.0	14.8	14.7	13.8	12.9	12.9	13.9	14.7	14.6	14.5	14.2	14.2	14.3	14.9	14.8	14.7	14.4	13.9	13.4	12.6	12.1	11.3	9.4	13.8	15.3
4-Sep	8.4	8.7	9.1	9.0	9.0	8.8	9.3	10.0	11.3	13.7	15.4	16.6	17.8	18.8	19.4	19.9	20.0	20.5	18.8	15.4	14.6	13.3	12.0	10.8	13.8	20.5
5-Sep	12.1	10.3	7.0	5.8	4.5	3.9	4.8	7.9	11.0	13.4	15.3	17.0	18.4	19.8	20.7	21.1	20.8	20.7	19.7	18.6	17.5	16.6	15.1	14.6	14.0	21.1
6-Sep	13.8	12.8	12.7	12.4	11.3	10.7	10.3	11.5	14.5	17.9	21.4	24.5	24.5	23.9	24.6	25.1	24.3	23.7	23.0	21.1	18.9	18.0	16.7	15.1	18.0	25.1
7-Sep	13.8	13.2	12.7	11.7	10.8	10.5	10.5	12.5	15.3	18.4	20.8	22.1	24.0	26.1	27.6	28.1	27.7	26.6	24.5	22.8	21.3	19.7	18.7	17.8	19.0	28.1
8-Sep	16.7	14.8	13.4	12.6	11.6	10.5	10.6	13.1	16.1	18.6	20.5	22.0	24.1	24.7	26.3	27.3	26.9	25.2	23.0	21.5	20.5	19.6	18.1	17.4	19.0	27.3
9-Sep	17.0	15.9	15.0	15.0	14.7	14.1	13.8	14.2	15.0	16.6	17.7	18.3	18.0	16.3	15.6	15.5	15.9	15.1	13.8	12.4	12.0	11.4	10.4	9.9	14.7	18.3
10-Sep	9.3	8.8	8.1	7.5	7.1	6.9	6.7	7.8	9.7	12.1	15.2	17.6	17.8	17.0	17.9	18.3	17.9	17.9	15.6	12.9	10.2	9.4	8.7	6.6	12.0	18.3
11-Sep	5.4	4.2	3.8	3.2	2.1	1.3	2.0	6.3	9.8	12.4	14.2	16.4	18.3	19.4	20.3	20.5	20.1	19.4	17.0	15.3	13.6	11.9	11.0	11.7	11.6	20.5
12-Sep	10.0	8.4	8.3	8.7	8.9	9.3	10.7	10.7	10.9	11.7	13.3	14.0	14.6	15.2	15.2	14.5	14.3	13.8	12.7	10.1	8.6	7.4	6.3	5.1	10.9	15.2
13-Sep	4.2	4.3	4.5	5.1	5.2	4.7	4.8	5.9	7.3	9.1	10.7	11.7	13.4	14.3	14.4	14.5	14.7	14.7	14.5	14.3	14.0	13.4	12.0	10.9	10.1	14.7
14-Sep	10.0	9.9	9.9	9.6	8.6	7.2	6.2	8.7	12.1	14.8	17.4	18.3	19.2	19.5	19.7	21.4	21.0	20.2	18.7	15.8	12.1	9.5	8.4	8.2	13.6	21.4
15-Sep	7.6	7.1	6.2	5.2	4.4	3.8	4.2	6.2	8.7	11.7	13.5	14.6	15.5	16.8	17.3	17.3	17.0	15.9	14.8	11.6	9.4	8.0	6.8	5.9	10.4	17.3
16-Sep	5.6	5.7	4.9	4.3	4.3	4.8	5.0	6.8	9.0	10.9	14.2	17.3	18.9	19.8	20.5	20.2	20.2	19.8	17.2	14.9	14.2	13.4	13.1	12.1	12.4	20.5
17-Sep	10.3	9.4	8.3	5.7	5.6	5.5	5.7	7.5	10.3	13.0	15.6	18.3	20.1	21.7	22.9	23.1	22.8	22.2	19.1	15.8	13.1	11.0	9.9	10.2	13.6	23.1
18-Sep	8.9	7.6	7.5	8.0	7.8	8.5	9.2	12.2	14.4	17.1	17.2	17.5	18.6	19.2	19.5	19.7	19.0	18.4	14.9	10.6	8.1	6.9	5.4	4.7	12.5	19.7
19-Sep	3.5	2.9	2.1	1.7	2.0	1.3	1.0	3.7	7.3	10.2	13.9	16.8	18.3	19.4	19.0	18.7	18.5	17.6	16.5	14.6	13.0	11.9	10.8	10.5	10.6	19.4
20-Sep	9.9	9.7	8.5	8.0	8.6	8.5	8.0	9.7	10.8	12.0	12.6	14.1	15.7	15.6	15.9	15.9	15.5	14.8	13.6	11.8	7.9	8.2	6.5	4.8	11.1	15.9
21-Sep	3.4	3.8	2.6	3.2	3.1	2.7	2.6	3.0	4.3	7.4	9.6	11.2	12.6	14.4	15.1	15.5	15.6	14.7	13.2	11.6	10.6	9.8	9.7	9.4	8.7	15.6
22-Sep	9.1	9.0	7.6	6.4	6.5	6.1	5.5	7.1	9.2	11.2	12.9	15.2	17.0	17.9	19.1	19.2	18.2	16.7	14.6	13.2	11.9	11.2	10.4	9.2	11.9	19.2
23-Sep	9.2	6.9	6.2	4.7	3.3	2.4	2.7	4.7	8.4	11.5	13.4	14.4	15.8	16.2	16.0	16.0	15.5	14.2	13.4	13.0	12.8	12.7	12.4	11.4	10.7	16.2
24-Sep	10.2	9.9	9.0	9.0	8.5	8.9	8.5	9.9	12.0	13.6	17.4	19.9	21.5	22.1	22.1	22.2	21.9	20.4	16.4	12.9	10.3	9.0	8.0	8.6	13.8	22.2
25-Sep	8.9	8.5	7.4	7.2	7.6	7.4	8.2	8.9	10.6	11.6	13.2	15.1	15.5	15.8	16.1	16.6	16.6	16.5	15.8	13.7	13.2	13.3	13.7	13.2	12.3	16.6
26-Sep	12.9	11.9	11.4	11.3	11.0	10.5	10.0	9.6	9.7	9.8	10.2	11.4	12.2	13.2	14.6	15.2	14.3	12.2	9.6	8.7	7.6	7.4	5.6	3.9	10.6	15.2
27-Sep	3.5	3.7	3.4	3.5	3.7	3.7	3.9	4.6	6.0	7.5	9.8	11.8	13.8	14.3	14.3	14.0	13.5	12.3	11.3	11.1	10.4	9.6	8.8	9.0	8.6	14.3
28-Sep	8.9	8.7	8.9	9.2	9.2	8.9	8.4	8.2	9.1	9.9	10.2	10.7	11.0	11.6	13.2	13.8	13.6	11.8	9.3	7.5	7.5	5.7	4.6	4.8	9.4	13.8
29-Sep	4.4	4.5	4.6	4.4	4.5	4.5	4.8	5.7	6.4	7.2	8.6	10.8	12.5	12.9	12.6	12.2	11.8	11.4	10.5	9.3	8.9	8.5	7.6	7.6	8.2	12.9
30-Sep	7.4	6.7	5.4	5.3	4.5	3.7	1.6	0.8	2.8	5.2	10.1	12.1	12.6	12.7	13.0	12.7	12.4	11.2	9.0	4.6	4.4	4.6	4.2	4.0	7.1	13.0
	9.7	9.0	8.3	7.9	7.5	7.1	7.2	8.6	10.7	12.7	14.8	16.5	17.7	18.4	18.9	19.1	18.8	18.0	16.3	14.2	12.8	11.7	10.7	9.9	Diurnal Average	
	17.0	15.9	15.0	15.0	14.7	14.1	13.8	15.0	18.2	21.2	23.6	26.0	28.9	30.2	31.1	30.8	30.0	29.4	27.2	24.3	22.0	19.7	18.7	17.8	Diurnal Maximum	

Wood Buffalo Environmental Association

Hourly Averages

Ambient Temperature 2m (AT2) - C

Ells River - September 2024



Concentration Ranges (C)	Number of Hours	%	Cumulative %
-50 - -20	0	0.00	0.00
-20 - 0	0	0.00	0.00
0 - 10	253	35.14	35.14
10 - 20	386	53.61	88.75
> 20	81	11.25	100.00

Total Number of Valid Hours: 720

Total Number of Hours: 720

Wood Buffalo Environmental Association

Summary of Hour Averages

Relative Humidity 2m (RH2) - %

Ells River - September 2024

Maximum Value: 97.5 % on Sep 24 06:00

Maximum Daily Average: 85.4 % on Sep 13

Minimum Value: 23.3 % on Sep 2 15:00

Minimum Daily Average: 52.2 % on Sep 30

Maximum Diurnal Average: 89.1 % at hour 7

Minimum Diurnal Average: 46.4 % at hour 16

Monthly Average: 70.62 %

Percentiles: P_1 = 30.2 P_{10} = 43.3 Q_1 = 55.7 Median = 73.0 Q_3 = 87.5 P_{90} = 93.2 P_{99} = 97.2

Hours in Service:	720
Hours of Data:	720
Hours of Missing Data:	0
Hours of Calibration:	0
Percent Operational Time:	100.0

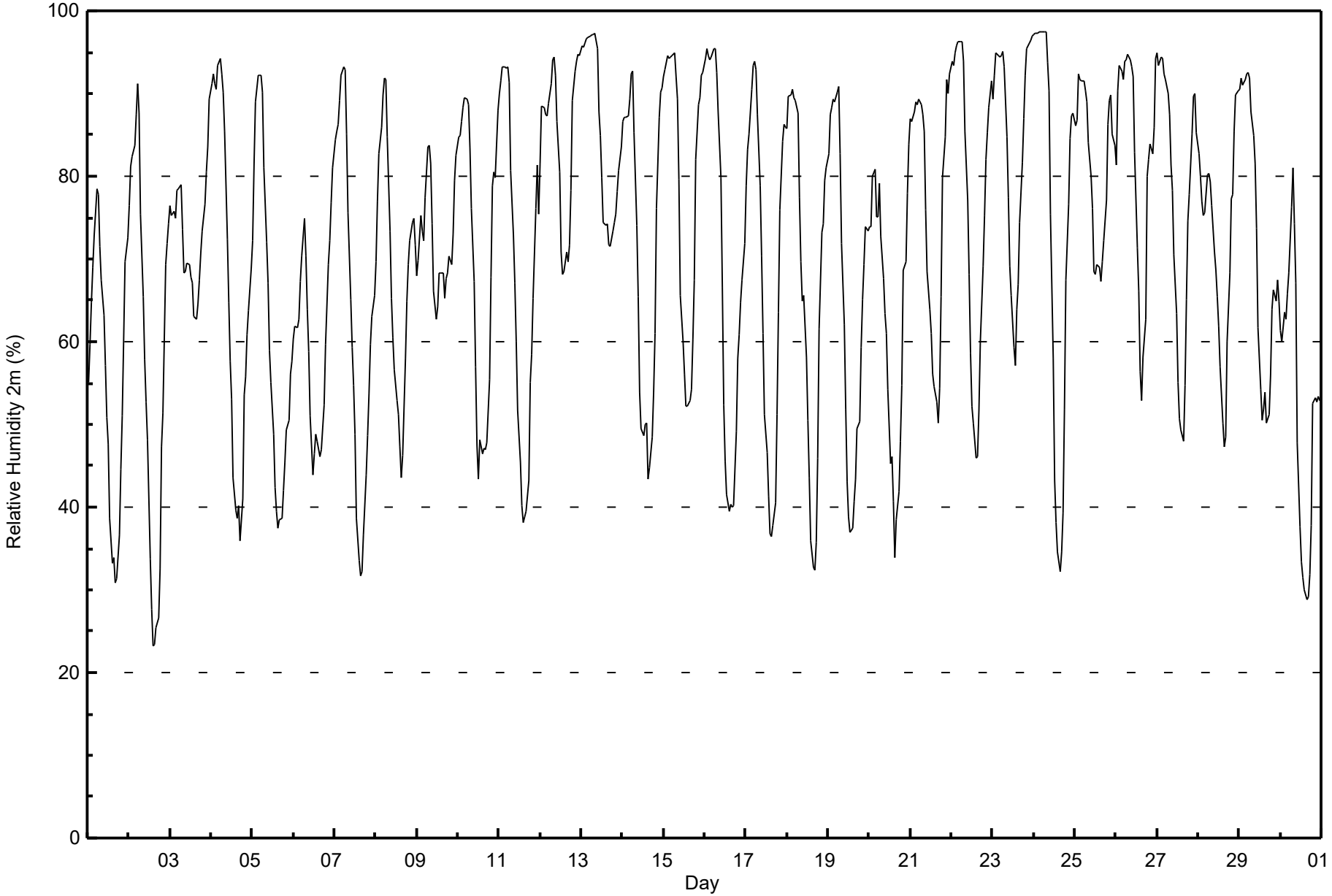
Day	Hourly Period Ending At (MST)																								Daily	Daily
	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24	Average	Maximum
1-Sep	55.1	59.6	64.7	69.0	73.0	78.5	77.8	71.5	67.4	63.2	57.2	50.8	47.7	38.6	33.2	33.9	30.8	31.3	36.6	44.5	51.0	60.1	69.6	72.6	55.7	78.5
2-Sep	76.4	81.1	82.5	83.7	87.4	91.2	87.6	75.4	65.5	57.7	52.6	48.1	33.6	27.6	23.3	23.4	25.4	26.7	32.5	47.3	51.3	69.4	71.9	74.3	58.2	91.2
3-Sep	76.4	75.3	75.8	75.0	78.3	78.5	79.0	73.5	68.4	68.5	69.6	69.3	67.9	67.1	63.1	62.8	64.6	67.4	70.7	73.4	76.7	80.6	83.5	89.4	73.1	89.4
4-Sep	91.1	92.4	91.3	90.4	93.4	94.3	92.4	90.1	85.4	72.4	64.7	57.6	53.0	43.5	39.6	38.6	40.1	35.9	40.9	53.6	55.8	60.8	63.7	68.8	67.1	94.3
5-Sep	72.1	81.4	89.0	92.1	92.2	92.2	90.2	81.0	72.1	67.2	59.1	55.1	48.8	42.4	39.5	37.5	38.5	38.7	42.0	45.4	49.3	50.6	56.0	57.7	62.1	92.2
6-Sep	60.3	61.9	61.7	62.7	67.3	70.3	75.0	70.4	64.0	58.9	51.0	44.0	46.5	48.8	48.0	46.2	46.9	49.7	52.4	59.6	69.2	72.1	76.7	81.0	60.2	81.0
7-Sep	84.4	85.3	86.3	89.1	92.1	93.2	92.9	85.1	75.6	65.1	59.3	54.7	48.8	38.7	33.5	31.7	32.2	36.7	43.9	48.7	53.7	59.6	63.0	65.7	63.3	93.2
8-Sep	69.7	77.0	82.7	85.9	89.9	91.9	91.7	84.7	73.5	65.2	60.4	56.6	52.9	51.3	47.3	43.6	46.3	57.9	64.9	69.4	72.1	74.4	74.9	71.7	69.0	91.9
9-Sep	67.9	69.8	75.3	73.4	72.2	77.5	83.5	83.7	81.5	74.3	66.2	62.7	64.2	68.2	68.4	68.3	65.3	67.6	68.2	70.4	69.4	73.0	79.4	82.5	72.2	83.7
10-Sep	84.8	85.0	86.6	88.2	89.6	89.4	88.7	83.4	76.2	67.3	57.0	47.5	43.3	48.1	46.4	47.2	46.9	47.8	55.4	67.7	78.8	80.5	79.8	87.9	69.7	89.6
11-Sep	90.0	91.6	93.2	93.3	93.0	93.2	91.3	80.7	72.9	67.1	59.9	51.6	45.4	40.2	38.1	38.8	39.5	43.2	55.0	58.6	65.2	76.1	81.4	75.4	68.1	93.3
12-Sep	81.5	88.5	88.2	87.5	87.2	88.8	91.1	94.0	94.4	92.3	86.7	80.5	70.8	68.1	68.4	70.9	69.6	71.7	78.3	89.1	92.8	93.9	94.8	94.5	84.3	94.8
13-Sep	95.7	95.7	96.1	96.6	96.9	96.9	97.1	97.2	97.3	95.4	87.9	84.9	79.9	74.3	74.1	74.2	71.8	71.6	73.3	74.4	75.5	78.2	80.7	83.6	85.4	97.3
14-Sep	86.6	87.2	87.2	87.3	89.3	92.4	92.8	85.3	74.1	65.4	54.0	49.4	48.7	50.0	50.2	43.3	44.7	48.4	53.9	61.0	76.1	87.1	90.1	90.7	70.6	92.8
15-Sep	92.1	92.9	94.5	94.3	94.4	94.5	94.9	92.1	89.4	79.7	65.7	60.0	56.0	52.2	52.2	53.0	54.2	60.3	67.5	82.0	88.7	89.5	92.2	92.6	78.5	94.9
16-Sep	94.2	95.5	94.6	94.1	94.3	95.5	95.5	92.6	87.8	79.9	66.6	52.4	45.6	41.6	39.5	40.4	39.9	40.1	49.2	58.0	60.8	64.8	67.4	71.9	69.3	95.5
17-Sep	78.8	83.3	85.0	90.6	93.4	93.8	92.9	87.4	78.8	70.4	61.0	51.1	46.6	41.3	36.7	36.4	37.8	40.5	51.2	63.5	76.0	84.2	86.2	85.9	68.9	93.8
18-Sep	85.8	89.6	89.8	90.4	89.4	89.2	87.7	77.4	69.6	65.0	65.6	58.2	50.6	43.5	35.9	32.7	32.4	35.8	46.0	61.5	73.3	74.3	79.6	81.0	66.8	90.4
19-Sep	82.8	87.4	88.4	89.4	89.0	90.2	90.8	82.7	71.8	62.0	51.8	43.0	38.8	36.9	37.5	40.6	43.4	49.5	50.4	59.3	65.1	69.4	73.9	73.4	65.3	90.8
20-Sep	74.0	73.9	80.0	80.9	75.0	75.2	79.1	72.8	67.6	63.4	61.1	54.2	45.3	46.2	40.6	33.8	38.5	41.8	48.0	54.8	68.6	69.6	77.9	84.0	62.8	84.0
21-Sep	86.9	86.7	87.8	88.9	88.7	89.3	88.7	87.5	85.3	76.0	68.4	63.9	61.0	56.1	54.5	52.7	50.1	54.3	65.4	79.8	84.8	91.8	90.1	92.3	76.3	92.3
22-Sep	93.9	93.4	94.8	95.8	96.2	96.2	96.2	93.8	85.4	77.2	68.1	58.6	52.1	50.2	46.0	46.0	51.6	59.9	69.2	75.2	82.0	85.2	88.3	91.6	77.0	96.2
23-Sep	89.3	92.2	94.9	94.7	94.4	94.5	95.0	93.2	84.8	77.5	69.2	65.6	59.2	57.1	63.8	66.9	74.4	81.7	87.0	92.2	95.5	96.1	96.5	96.9	83.9	96.9
24-Sep	97.1	97.4	97.3	97.4	97.4	97.5	97.5	97.4	93.8	90.3	75.5	57.9	43.3	38.1	34.6	32.2	34.7	39.2	51.9	67.4	76.6	84.5	87.4	87.6	73.9	97.5
25-Sep	86.2	86.8	92.4	91.8	91.5	91.5	90.3	89.0	84.0	79.9	76.1	68.4	68.2	69.3	68.9	67.3	69.6	72.3	77.1	86.2	89.1	89.8	85.0	83.8	81.4	92.4
26-Sep	81.4	90.3	93.4	92.8	91.6	93.9	94.0	94.7	94.1	93.2	92.0	82.9	71.3	66.2	56.4	52.9	58.2	62.7	80.0	82.0	83.9	82.7	85.9	94.3	82.1	94.7
27-Sep	94.9	93.4	94.4	94.2	92.3	91.7	90.0	87.5	81.4	78.4	70.5	63.3	55.0	50.7	49.4	48.0	54.7	65.1	74.6	77.8	85.2	89.6	90.0	85.3	77.4	94.9
28-Sep	82.6	80.0	77.0	75.2	75.6	80.2	80.3	79.4	76.5	70.9	68.6	65.4	61.9	56.9	50.1	47.3	48.4	60.0	68.4	77.2	77.9	85.4	89.8	90.3	71.9	90.3
29-Sep	90.5	91.9	91.0	91.7	92.3	92.5	91.8	87.9	84.9	81.5	73.7	61.7	54.2	50.5	51.9	53.8	50.2	51.2	55.9	63.9	66.2	64.9	67.5	64.9	71.9	92.5
30-Sep	61.4	60.0	63.6	62.7	65.7	68.3	76.2	80.9	74.3	67.2	47.8	37.7	33.4	31.5	30.1	28.8	29.2	31.9	37.8	52.5	53.3	52.8	53.4	53.0	52.2	80.9
	82.1	84.2	86.0	86.6	87.4	88.7	89.1	85.1	79.2	73.1	65.6	58.6	53.1	49.8	47.4	46.4	47.7	51.4	58.3	66.5	72.1	76.4	79.2	80.8	Diurnal Average	
	97.1	97.4	97.3	97.4	97.4	97.5	97.5	97.4	97.3	95.4	92.0	84.9	79.9	74.3	74.1	74.2	74.4	81.7	87.0	92.2	95.5	96.1	96.5	96.9	Diurnal Maximum	

Wood Buffalo Environmental Association

Hourly Averages

Relative Humidity 2m (RH2) - %

Ells River - September 2024



Concentration Ranges (%)	Number of Hours	%	Cumulative %
0 - 20	0	0.00	0.00
20 - 40	55	7.64	7.64
40 - 60	158	21.94	29.58
60 - 80	234	32.50	62.08
80 - 100	273	37.92	100.00

Total Number of Valid Hours: 720

Total Number of Hours: 720

Wood Buffalo Environmental Association

Summary of Hour Averages

Global Radiation (GR) - W/m2

Ells River - September 2024

Maximum Value: 639.3 W/m2 on Sep 2 13:00

Maximum Daily Average: 204.7 W/m2 on Sep 1

Minimum Value: 0.0 W/m2 on Sep 1 01:00

Minimum Daily Average: 36.8 W/m2 on Sep 25

Maximum Diurnal Average: 425.4 W/m2 at hour 13

Minimum Diurnal Average: 0.0 W/m2 at hour 4

Monthly Average: 125.27 W/m2

Percentiles: P_1 = 0.0 P_{10} = 0.0 Q_1 = 0.0 Median = 13.7 Q_3 = 218.1 P_{90} = 434.5 P_{99} = 589.4

Hours in Service:	720
Hours of Data:	720
Hours of Missing Data:	0
Hours of Calibration:	0
Percent Operational Time:	100.0

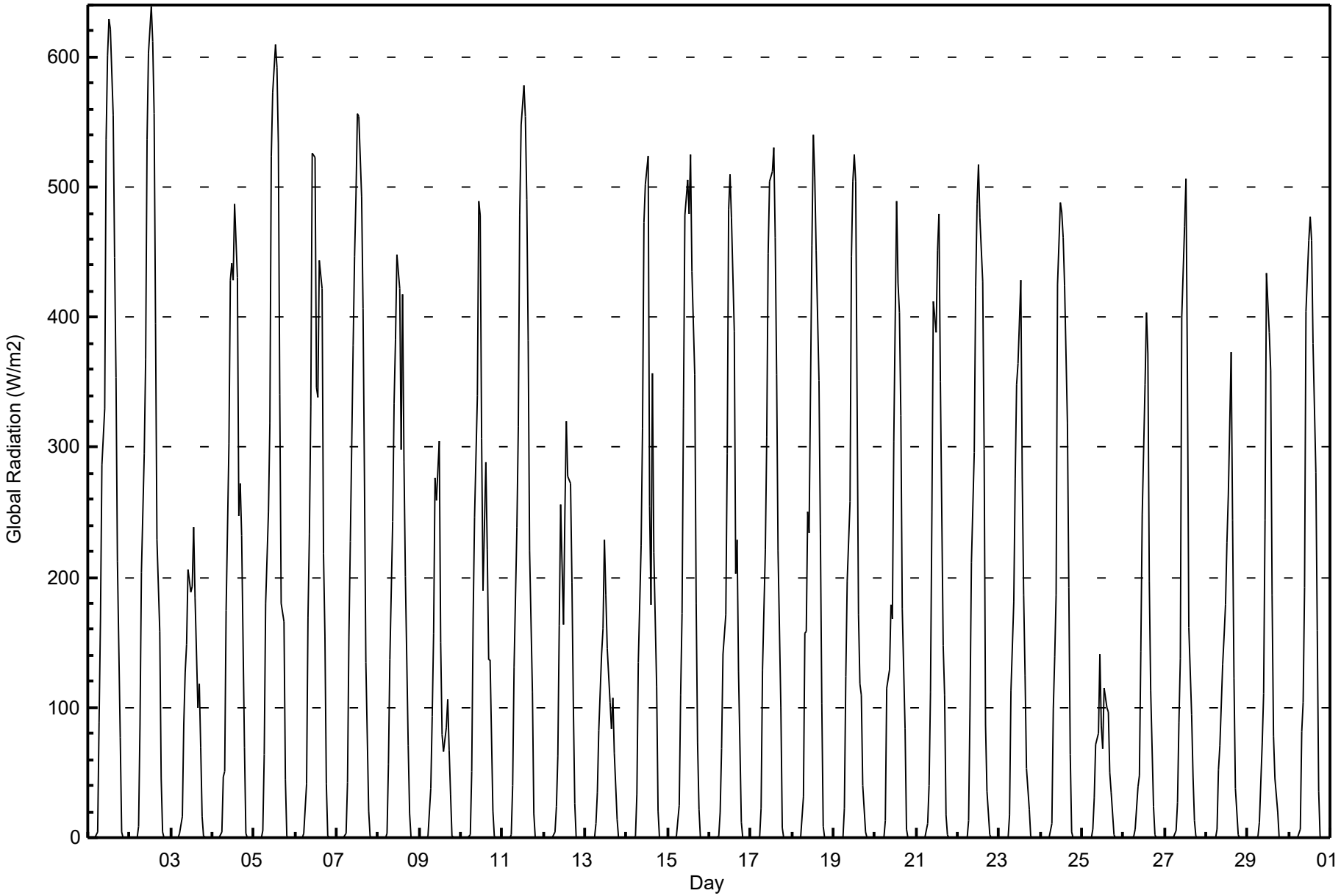
Day	Hourly Period Ending At (MST)																								Daily	Daily
	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24	Average	Maximum
1-Sep	0.0	0.0	0.0	0.0	0.0	4.7	89.0	168.2	286.7	329.7	536.4	600.7	628.7	621.3	555.2	446.2	353.1	212.5	76.9	4.5	0.1	0.1	0.0	0.0	204.7	628.7
2-Sep	0.1	0.0	0.0	0.0	0.0	8.7	86.6	203.4	295.2	368.3	536.5	603.0	639.3	611.5	556.0	394.8	229.0	157.9	45.6	3.9	0.0	0.0	0.0	0.0	197.5	639.3
3-Sep	0.0	0.0	0.0	0.0	0.0	3.3	16.2	86.4	126.8	149.0	205.6	188.6	192.9	238.4	184.9	99.4	118.7	69.0	16.5	0.8	0.0	0.0	0.0	0.1	70.7	238.4
4-Sep	0.0	0.0	0.0	0.0	0.0	4.0	46.7	50.9	174.3	302.5	428.5	441.4	428.7	487.1	431.0	247.0	272.1	232.0	69.4	3.2	0.1	0.1	0.0	0.0	150.8	487.1
5-Sep	0.0	0.0	0.2	0.0	0.1	5.3	64.4	180.3	250.6	318.7	523.6	573.0	609.3	592.1	533.8	340.2	180.4	165.6	43.9	1.4	0.0	0.0	0.0	0.0	182.6	609.3
6-Sep	0.1	0.1	0.0	0.0	0.0	3.4	41.3	169.1	233.4	331.5	526.1	522.4	345.7	338.1	443.9	422.3	217.8	154.9	41.6	1.5	0.0	0.0	0.0	0.0	158.0	526.1
7-Sep	0.0	0.0	0.0	0.0	0.0	3.1	42.8	155.5	227.8	378.6	447.3	493.5	555.9	554.7	492.7	406.4	276.6	134.9	20.7	1.4	0.1	0.0	0.0	0.0	174.7	555.9
8-Sep	0.0	0.1	0.1	0.1	0.0	2.8	56.9	136.6	242.5	334.1	383.1	448.0	421.8	298.4	417.7	288.6	200.8	71.0	18.7	0.5	0.0	0.0	0.0	0.0	138.4	448.0
9-Sep	0.0	0.0	0.0	0.0	0.0	1.2	37.5	92.9	157.4	276.7	258.8	304.8	149.4	79.5	66.6	84.3	106.2	67.4	33.7	0.6	0.0	0.0	0.1	0.0	71.5	304.8
10-Sep	0.0	0.0	0.0	0.0	0.0	2.3	50.6	168.6	246.7	339.3	488.8	478.8	306.6	189.4	288.5	221.3	136.4	136.3	20.7	0.7	0.0	0.0	0.0	0.0	128.1	488.8
11-Sep	0.0	0.0	0.0	0.0	0.0	1.9	40.5	130.8	238.7	315.6	478.2	547.6	577.8	554.4	490.0	382.0	219.8	111.3	18.3	0.2	0.0	0.0	0.0	0.0	171.1	577.8
12-Sep	0.0	0.0	0.0	0.0	0.0	0.0	4.5	23.6	63.0	162.6	256.4	164.0	249.6	320.2	278.1	272.2	196.7	100.9	26.3	0.3	0.0	0.0	0.0	0.0	88.3	320.2
13-Sep	0.0	0.0	0.0	0.0	0.0	0.3	11.3	35.2	82.1	141.0	160.8	228.6	186.4	145.1	104.6	84.0	107.8	65.3	13.9	0.0	0.0	0.0	0.0	0.0	56.9	228.6
14-Sep	0.0	0.0	0.0	0.0	0.0	0.9	34.0	134.7	224.0	315.0	473.1	501.8	523.8	255.3	179.0	356.4	219.0	116.0	20.7	0.2	0.1	0.0	0.0	0.0	139.7	523.8
15-Sep	0.0	0.0	0.0	0.0	0.0	0.8	25.1	109.2	172.6	329.7	478.2	505.3	479.8	525.0	435.5	356.1	180.2	72.7	22.1	0.2	0.0	0.0	0.1	0.0	153.9	525.0
16-Sep	0.0	0.0	0.0	0.0	0.0	0.9	19.1	68.3	141.5	171.0	294.8	482.4	510.1	476.0	388.9	202.6	229.3	128.1	12.3	0.1	0.0	0.1	0.1	0.1	130.2	510.1
17-Sep	0.2	0.1	0.1	0.0	0.0	1.0	23.3	129.2	221.7	308.3	448.6	504.0	511.9	530.4	460.5	355.5	220.4	100.1	7.9	0.1	0.0	0.0	0.0	0.0	159.3	530.4
18-Sep	0.1	0.0	0.0	0.0	0.0	0.0	31.8	157.1	158.3	251.0	234.4	455.5	539.8	507.7	450.9	351.0	233.2	103.6	8.3	0.1	0.0	0.0	0.1	0.1	145.1	539.8
19-Sep	0.1	0.1	0.1	0.0	0.1	0.3	22.4	123.4	197.6	258.1	447.4	504.4	524.6	504.5	171.5	118.1	109.1	40.6	4.7	0.0	0.0	0.0	0.0	0.0	126.1	524.6
20-Sep	0.0	0.0	0.0	0.0	0.0	0.0	13.5	115.3	128.9	179.2	167.8	304.9	489.1	426.1	403.8	324.0	176.1	83.2	6.5	0.0	0.0	0.0	0.0	0.0	117.4	489.1
21-Sep	0.0	0.0	0.0	0.0	0.0	0.0	11.0	40.3	111.2	250.2	412.7	388.5	451.5	479.0	350.1	147.5	109.2	17.5	1.9	0.0	0.0	0.0	0.0	0.0	115.4	479.0
22-Sep	0.0	0.0	0.0	0.0	0.0	0.0	12.5	99.4	211.7	296.6	423.3	486.9	517.0	476.3	426.9	298.4	86.3	36.1	2.0	0.0	0.0	0.0	0.0	0.0	140.6	517.0
23-Sep	0.0	0.0	0.0	0.0	0.0	0.1	17.0	112.5	180.9	275.7	348.3	365.0	428.9	277.0	186.5	124.7	53.4	21.7	1.3	0.0	0.0	0.0	0.0	0.0	99.7	428.9
24-Sep	0.0	0.0	0.0	0.0	0.0	0.0	11.2	99.0	138.4	186.8	425.4	488.0	480.3	461.4	424.0	318.4	192.3	63.5	4.0	0.1	0.1	0.1	0.0	0.0	137.2	488.0
25-Sep	0.0	0.0	0.0	0.0	0.0	0.0	6.5	30.4	71.7	80.7	140.9	86.1	67.9	115.5	99.4	96.8	50.2	34.7	1.8	0.1	0.0	0.0	0.0	0.0	36.8	140.9
26-Sep	0.0	0.0	0.0	0.0	0.0	0.0	0.6	6.2	39.5	48.2	142.8	247.9	347.7	403.9	371.8	196.9	112.8	24.4	2.4	0.1	0.1	0.1	0.0	0.0	81.1	403.9
27-Sep	0.0	0.0	0.0	0.0	0.0	0.0	5.3	27.4	89.0	138.0	400.3	469.4	506.7	358.0	161.5	94.9	46.1	12.7	0.6	0.0	0.0	0.0	0.0	0.1	96.3	506.7
28-Sep	0.0	0.0	0.0	0.0	0.0	0.0	6.9	51.6	70.7	133.1	154.8	179.3	226.4	263.7	373.4	244.1	122.6	37.6	1.7	0.0	0.0	0.1	0.0	0.0	77.8	373.4
29-Sep	0.0	0.0	0.0	0.0	0.0	0.0	1.5	12.1	73.2	110.7	243.7	434.4	388.6	359.1	186.8	77.7	46.1	19.0	0.4	0.0	0.0	0.0	0.0	0.0	81.4	434.4
30-Sep	0.0	0.0	0.0	0.0	0.0	0.0	6.5	81.5	103.6	192.3	405.1	458.6	477.0	458.6	380.1	281.4	159.6	35.3	1.2	0.1	0.1	0.1	0.0	0.0	126.7	477.0
	0.0	0.0	0.0	0.0	0.0	1.5	27.9	100.0	165.3	242.4	362.4	415.2	425.4	396.9	343.1	254.4	165.4	87.5	18.2	0.7	0.0	0.0	0.0	0.0	Diurnal Average	
	0.2	0.1	0.2	0.1	0.1	8.7	89.0	203.4	295.2	378.6	536.5	603.0	639.3	621.3	556.0	446.2	353.1	232.0	76.9	4.5	0.1	0.1	0.1	0.1	Diurnal Maximum	

Wood Buffalo Environmental Association

Hourly Averages

Global Radiation (GR) - W/m2

Ells River - September 2024



Wood Buffalo Environmental Association

Summary of Hour Averages

Wind Speed 10m (WS10) - km/h

Ells River - September 2024

Maximum Speed: 27 km/h on Sep 20 16:00

Maximum Daily Speed Average: 10.1 km/h on Sep 20

Minimum Speed Value: 1 km/h on Sep 23 06:00

Minimum Daily Speed Average: 0.4 km/h on Sep 15

Maximum Diurnal Speed Average: 3.9 km/h at hour 6

Minimum Diurnal Speed Average: 1.7 km/h at hour 19

Monthly Average Velocity: 2.7 km/h 235.3 deg

Percentiles: P_1 = 1 P_{10} = 3 Q_1 = 5 Median = 8 Q_3 = 10 P_{90} = 13 P_{99} = 22

Hours in Service:	720
Hours of Data:	708
Hours of Missing Data:	12
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-Sep	SSE12	S10	S8	S8	S9	S9	S7	S8	S9	S11	S12	S14	S14	SSW14	SW13	SW12	SW13	SW9	SSW8	SSW8	SSW8	SW6	W6	SSW5	SSW8.7	S14
2-Sep	S6	S4	S5	S7	S7	SSE6	S8	S8	S8	SSE10	SSE13	S13	SSW13	SSW13	SW13	SW13	SW13	SW9	WSW8	NW20	NW17	NNE20	NNE25	NNE17	SW3.5	NNE25
3-Sep	N16	NNE12	N8	N11	NW7	NW9	NNW3	NNW6	NNE9	N12	N15	NNE15	NNE16	NNE13	NE5	NNE7	NNE11	N12	N8	N7	N9	N9	NNW5	W3	N8.9	NNE16
4-Sep	WSW1	W4	SW4	SSW4	SW5	SW6	SW9	SW7	WSW8	W10	NW5	NW8	WNW9	NW13	NW15	WNW10	NW12	WNW12	W6	SW6	SW8	WSW7	SW8	WNW8	W6.2	NW15
5-Sep	NNW15	NNW5	SSW4	SSW2	SSW3	SW2	SSW3	SW3	SE3	SE3	SSE10	SSE11	SE13	SSE14	SSE14	SE17	SE15	SE12	SSE13	SSE14	SSE14	SSE13	SSE12	SSE12	SSE7.3	SE17
6-Sep	SSE10	S10	SSE12	SSE10	SSE9	S10	SSW6	S9	SSW15	SSW12	SW11	SW12	SSW12	SSW11	S12	S15	SSW14	SSW10	SW8	SSW4	WNW3	W8	W10	W7	SSW8.8	S15
7-Sep	S6	SW5	SW3	S5	S7	S7	S8	SSE8	SSE7	SE8	SE9	SSE12	S13	SSW14	SSW13	SW12	SSW13	SSW11	SSW11	SSW11	SW9	SW8	SW9	WSW8	SSW8.1	SSW14
8-Sep	WSW5	SSW6	SSW7	S4	S4	SSE5	SSE7	SSE5	SE4	NE2	ESE7	SE10	SE7	SE6	ESE2	SE3	N5	N3	N4	N6	N10	N18	N16	N11	ENE0.9	N18
9-Sep	N8	SSE1	NNW4	N9	NNE9	N10	NNW13	NNE7	WNW1	NNW3	WNW6	W8	WNW15	W14	WSW10	WSW10	WSW11	W13	W18	WNW13	W10	SW8	SSW7	WSW10	WNW6.2	W18
10-Sep	WSW10	SW10	WSW8	SW8	SW10	SW10	SSW10	SSW11	SSW11	S10	SSW10	W11	WSW13	WSW8	SW10	SW8	WNW6	WNW5	WNW5	WNW3	W3	NW6	NW6	NW6	WSW6.7	WSW13
11-Sep	WNW4	W3	W4	WNW5	W2	W1	WSW1	WNW3	NW3	NNW2	N3	E3	SE4	SE1	ESE3	NE5	NE6	NNE8	N5	N3	N1	W2	WNW2	SE3	NNW1.3	NNE8
12-Sep	W2	WNW2	UO	UO	UO	SSE8	SSE10	WNW2	NNW5	N5	N5	N6	NE7	ENE6	ESE10	ESE9	ESE10	ESE8	ESE3	WNW3	W1	W3	SSW2	SSE2	E2.2	SSE10
13-Sep	WSW3	WSW1	WNW4	W5	W5	S1	WSW3	W4	NW4	N9	N13	N13	N13	N14	NNE12	N9	N15	N14	N11	N13	NNW16	NNW9	WNW8	W9	NNW7.1	NNW16
14-Sep	W10	W10	W9	WSW5	SW5	SW8	SSW5	SW5	W7	WSW6	WNW4	NW3	SSW5	SSE4	S1	W8	NW11	NW8	NNW8	NNE7	UO	W3	UO	WNW6	W4.5	NW11
15-Sep	NW6	NW5	WNW4	W4	W3	UO	W3	WSW3	SW2	SE2	N4	NNE3	E2	ESE4	ESE4	ESE10	SE11	SE5	NE1	WNW1	W4	W3	SSW3	SSW3	SSW0.4	SE11
16-Sep	S6	S9	SSW4	S5	S7	S8	S9	SSE7	S6	SSW8	SSW11	SW12	SW14	SW13	SW12	SW9	SW10	SW9	SSW7	SSW8	SSW7	SSW8	SSW8	SSW8	SSW8.0	SW14
17-Sep	S7	S7	S7	SSE6	S8	SSW7	S7	S10	S12	S11	S10	SSE9	SSE12	SE9	SSW8	SE6	SE10	SE9	SE6	UO	UO	W2	SSE5	S10	SSE7.5	S12
18-Sep	UO	UO	UO	W2	S4	S10	SSE9	S8	SW8	WNW8	NW16	WNW15	WSW8	WNW15	W14	WNW15	NW13	NW7	WNW5	SSW2	W2	SW2	SSW2	WSW2	W5.3	NW16
19-Sep	SW1	WSW1	S5	S6	SSW8	S7	S6	S6	SSE7	SSE9	SSE8	S6	SE10	SSE8	S4	SSW5	SE6	N3	NE3	NNE8	NW5	WNW6	NW6	NNW3	S2.9	SE10
20-Sep	NNW5	NNW6	NW5	NW6	NNW7	NNW4	NNW3	NNW10	NNW9	N10	N8	NNE11	N22	NNE24	N24	N27	N21	N19	N14	NNW8	WNW9	WNW11	W6	W4	N10.1	N27
21-Sep	W6	W3	SSW1	S1	S4	S4	S3	S4	S4	SSE6	SSE10	SE10	SE11	SSE12	SSE10	SSE9	SSE11	SE7	SSE7	SSE8	SW5	ESE3	SE5	S2	SSE5.2	SSE12
22-Sep	NNW2	NNW3	WNW3	W2	UO	S1	SW1	SSW2	SW5	WSW5	SSE7	S4	S5	SSE6	SSE4	SSE6	ENE5	N10	N13	NW5	WNW5	SW5	WNW6	NW6	W0.8	N13
23-Sep	NNW5	WNW4	WNW8	W4	WSW1	W1	S2	W4	NW2	WSW2	WSW2	SSE4	SE9	S12	S10	S10	S9	SSE10	SSE10	SSE8	SE10	SSE9	SE6	SSE4	S3.9	S12
24-Sep	S8	S5	S6	S7	SSE6	S9	S8	SSE6	SW5	SW9	SW10	WSW16	W19	WNW21	W21	WNW19	WNW13	NW8	W2	S3	SSW4	WSW3	WNW1	WNW3	WSW5.7	WNW21
25-Sep	SSW3	SSW4	WNW1	S2	WNW1	WSW3	WNW4	NW3	NNE2	WSW1	W2	SSW6	SSW6	S7	SSE9	S10	S8	S6	SSW4	S7	WSW3	SSW9	W8	SW7	SSW3.7	S10
26-Sep	SW10	WSW8	W7	WNW9	W5	SW3	SW7	SW5	W6	SW7	WSW8	W11	W11	WNW8	NNW6	SSW4	SSW9	WNW14	SW5	SSW8	SW4	SW7	SSW5	ENE1	WSW5.9	WNW14
27-Sep	S8	SSW5	SW4	S5	SSE5	S7	S8	SSW8	SSW7	SW8	SSW10	SSW12	SSW10	SSW10	SW8	WSW5	SSE3	S5	S7	S8	S9	S9	S10	SSW11	SSW7.2	SSW12
28-Sep	SSW11	SSW13	SW11	SW15	WSW14	WSW10	W9	W6	WSW6	WSW11	WSW12	WSW14	SW13	SW11	WSW9	WSW8	W3	ESE4	SSE4	SSE6	WSW3	WNW2	WSW3	W2	WSW7.3	SW15
29-Sep	SSW3	W3	WSW2	W1	NW1	W5	NW6	NNW7	NNW10	N13	N14	N17	NNE17	NNE22	N21	N20	NNW17	NNW12	NW8	WNW7	WNW7	WNW7	W8	W7	NNW8.1	NNE22
30-Sep	WNW9	WNW9	W9	WSW11	WNW7	WNW6	W6	S9	SSW7	SSW6	W12	WNW17	W16	W21	WNW22	WNW23	WNW19	WNW16	W4	SW4	SW7	SW8	SW9	SW8	W9.6	WNW23
	WSW2.5	WSW3.2	SW3.2	SW3.1	SW3.3	SSW3.9	SSW3.6	SSW3.3	SSW3.0	SW2.6	SW2.1	SW3.0	SW3.2	SW3.2	WSW3.4	WSW3.3	WSW2.2	WNW2.2	W1.7	WSW2.0	W3.1	W2.6	WSW2.8	WSW3.0	Diurnal Average	
	N16	SSW13	SSE12	SW15	WSW14	WSW10	NNW13	SSW11	SSW15	N13	NW16	N17	N22	NNE24	N24	N27	N21	N19	W18	NW20	NW17	NNE20	NNE25	NNE17	Diurnal Maximum	

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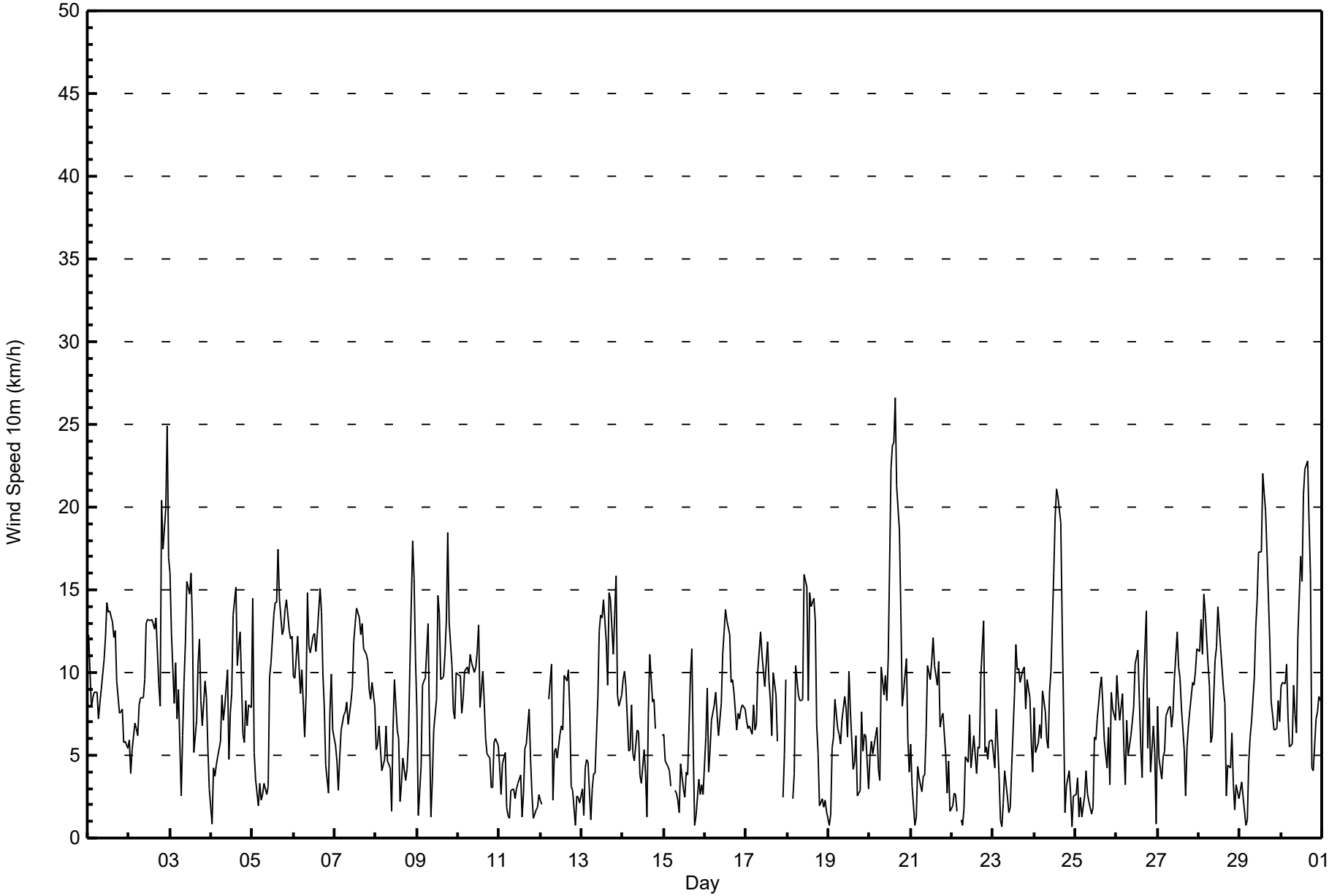
All monthly, daily, and diurnal averages have been calculated using vector methods

Wood Buffalo Environmental Association

Hourly Averages

Wind Speed 10m (WS10) - km/h

Ells River - September 2024



Wind Speed Ranges (km/h)	Number of Hours	%	Cumulative %
0 - 5	237	33.47	33.47
6 - 11	341	48.16	81.64
12 - 19	114	16.10	97.74
20 - 28	16	2.26	100.00
29 - 38	0	0.00	100.00
> 38	0	0.00	100.00

Total Number of Valid Hours: 708

Total Number of Hours: 720

Wood Buffalo Environmental Association

Frequency Distribution

Wind Speed 10m (WS10) - km/h

Ells River - September 2024

Wind Speed							**Wind Direction**										
Ranges (km/h)	N	NNE	NE	ENE	E	ESE	SE	SSE	S	SSW	SW	WSW	W	WNW	NW	NNW	**Totals**
0 - 5	11	2	5	2	2	7	10	12	26	27	22	22	38	26	11	14	237
6 - 11	19	9	2	1	0	6	19	40	65	41	41	22	27	22	16	11	341
12 - 19	18	7	0	0	0	0	4	14	9	12	13	6	6	13	6	6	114
20 - 28	6	4	0	0	0	0	0	0	0	0	0	0	2	3	1	0	16
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	54	22	7	3	2	13	33	66	100	80	76	50	73	64	34	31	708

Total Number of Valid Hours: 708

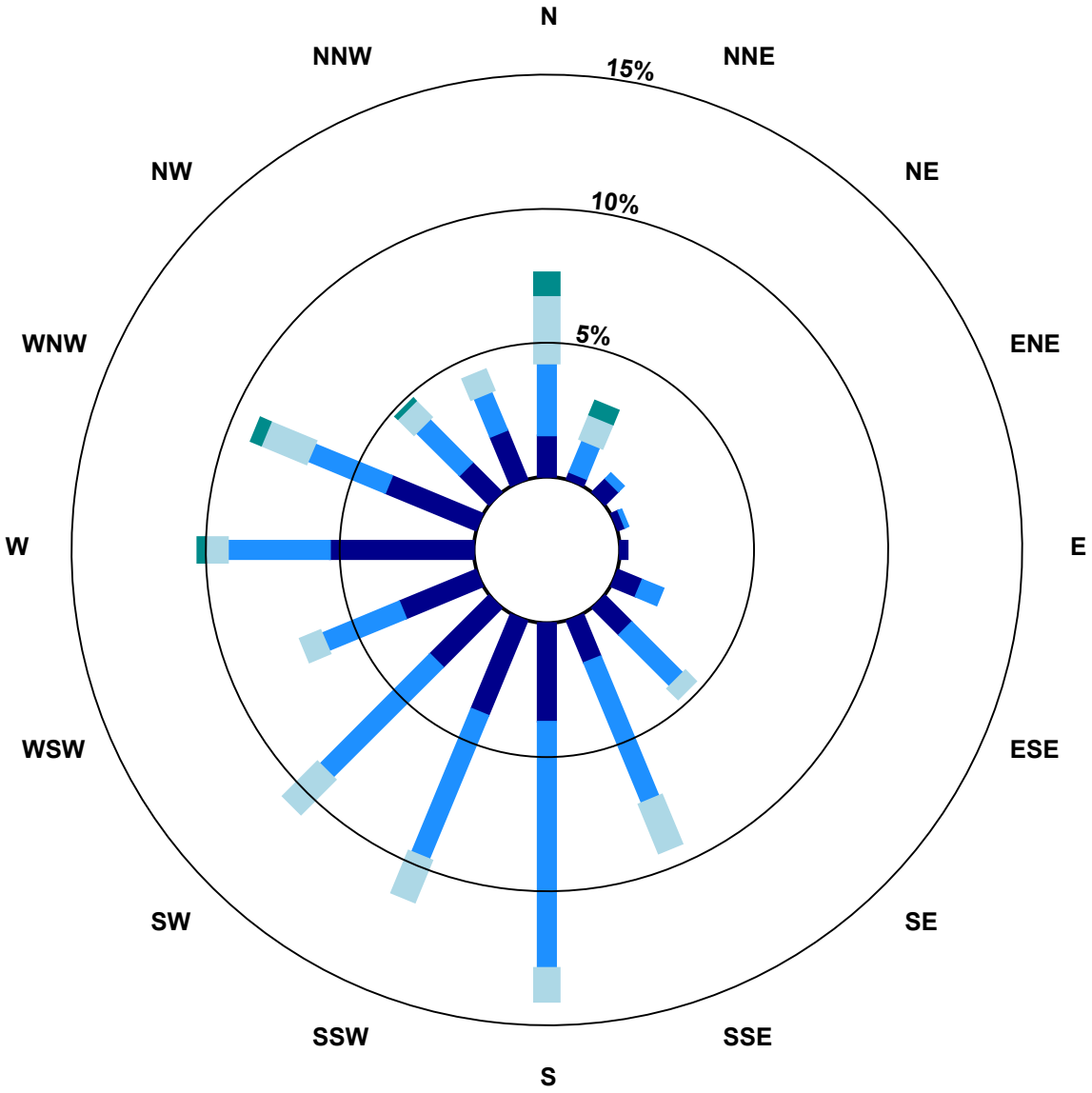
Total Number of Hours: 720

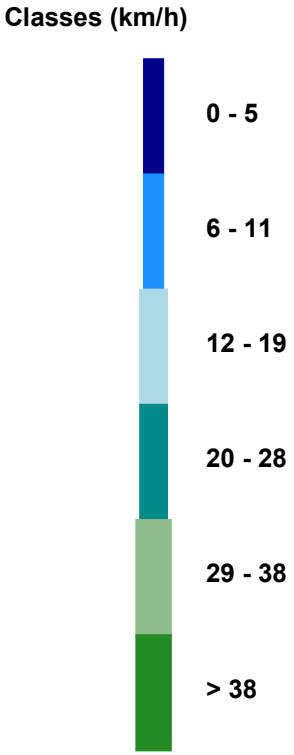
Wood Buffalo Environmental Association

Wind Rose Sep 2024

Wind Speed 10m (WS10) - km/h

Ells River





Total Number of Valid Hours: 708

Wood Buffalo Environmental Association

Summary of Hour Standard Deviations

Wind Speed 10m (WS10) - km/h

Ells River - September 2024

Number of Exceedences (AAAQO): 1-hr: 0 24-hr: 0
Maximum Value: 9 km/h on Sep 26 18:00

Minimum Value: 1 km/h on Sep 16 07:00

Percentiles: P_1 = 1 P_{10} = 1 Q_1 = 2 Median = 2 Q_3 = 3 P_{90} = 4 P_{99} = 6

Hours in Service:	720
Hours of Data:	708
Hours of Missing Data:	12
Hours of Calibration:	0
Percent Operational Time:	98.3

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

UO - Unstable Operation

Wood Buffalo Environmental Association

Summary of Hour Averages

Wind Direction 10m (WD10) - deg

Ells River - September 2024

Direction of Maximum Speed: 1 deg on Sep 20 16:00
Direction of Maximum Daily Speed Average: 350.3 deg on Sep 20

Direction of Minimum Speed: 269 deg on Sep 23 06:00
Direction of Minimum Daily Speed Average: 0.4 deg on Sep 15

Monthly Average Direction: 235.3 deg

Hours in Service:	720
Hours of Data:	708
Hours of Missing Data:	12
Percent Operational Time:	98.3

Day	Hourly Period Ending At (MST)																								Daily
	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24	Average
1-Sep	164	170	171	173	176	182	188	174	173	180	174	180	177	210	236	230	232	226	202	198	199	216	268	204	194.4
2-Sep	179	191	189	184	176	162	172	188	186	167	167	172	193	203	227	227	231	221	258	310	323	23	18	16	216.7
3-Sep	6	12	6	9	323	310	340	332	20	8	8	18	12	26	45	29	19	6	1	8	358	354	333	276	4.9
4-Sep	256	271	236	212	219	222	227	225	258	276	319	316	290	315	320	301	308	296	264	235	225	238	231	290	273.7
5-Sep	347	332	209	212	205	216	206	225	130	134	160	148	144	160	147	144	131	128	148	155	153	157	157	162	152.1
6-Sep	168	180	163	162	163	181	207	183	193	209	216	214	201	209	184	190	193	196	215	204	289	261	262	264	198.2
7-Sep	171	216	223	175	181	181	170	163	153	137	145	165	178	196	212	215	205	203	200	212	221	229	232	245	194.0
8-Sep	240	197	193	190	181	168	167	156	136	42	111	145	145	145	109	139	0	360	354	357	355	1	0	356	66.6
9-Sep	9	161	347	8	16	5	336	18	286	336	289	269	297	271	247	242	252	261	272	282	269	233	213	239	286.5
10-Sep	239	235	248	234	217	217	205	206	198	189	196	260	258	240	230	232	285	294	283	294	267	326	324	311	238.1
11-Sep	294	273	280	290	272	265	252	291	322	332	358	97	127	125	113	47	50	21	7	354	358	280	285	133	348.4
12-Sep	279	297	UO	UO	UO	158	152	302	346	8	10	11	50	59	102	112	114	118	107	284	280	262	198	161	94.4
13-Sep	241	249	293	272	267	189	252	280	309	353	2	360	353	359	16	359	349	354	359	355	341	328	283	270	340.3
14-Sep	270	267	264	258	222	221	193	233	259	244	289	312	193	162	173	274	308	306	328	27	UO	264	UO	299	268.0
15-Sep	312	312	294	275	262	UO	280	255	218	130	360	22	80	113	121	119	131	124	43	297	279	270	196	210	192.6
16-Sep	180	179	197	175	181	177	176	165	179	192	201	233	231	228	221	231	228	219	202	198	201	206	209	208	204.6
17-Sep	173	183	175	164	182	195	183	179	183	175	171	163	164	143	192	138	133	127	126	UO	UO	275	165	185	168.3
18-Sep	UO	UO	UO	275	180	171	156	183	223	284	323	301	255	283	279	296	307	310	299	201	272	216	197	249	272.4
19-Sep	229	237	180	169	201	191	178	179	159	155	148	169	139	160	181	208	145	6	38	21	317	294	305	327	174.8
20-Sep	330	328	311	310	331	344	329	336	345	8	11	32	359	17	6	1	1	359	351	346	292	289	278	267	350.3
21-Sep	269	270	193	186	188	191	176	173	171	157	153	133	139	160	156	148	160	143	148	159	223	112	127	170	159.8
22-Sep	333	339	289	272	UO	189	216	212	215	240	154	185	188	149	150	148	78	6	5	315	297	229	292	307	267.1
23-Sep	335	294	297	273	241	269	190	268	322	246	238	162	137	170	177	185	178	166	157	163	145	150	144	161	176.8
24-Sep	178	185	169	178	163	189	169	166	221	217	236	242	278	287	277	294	303	325	271	188	196	258	299	286	248.1
25-Sep	195	194	283	191	288	252	302	307	12	258	278	206	206	173	168	175	182	179	202	175	242	205	260	223	205.0
26-Sep	219	255	273	282	274	228	233	216	259	224	243	268	275	287	336	211	200	287	233	209	236	220	213	65	249.7
27-Sep	173	202	216	188	166	185	185	193	204	224	204	193	208	202	228	239	161	188	177	171	176	183	178	198	193.5
28-Sep	212	209	221	235	256	258	266	269	252	251	241	241	234	221	241	258	269	116	154	165	249	298	241	278	236.4
29-Sep	211	275	243	267	305	275	311	342	346	350	0	10	16	12	2	349	348	338	316	293	291	296	280	279	341.2
30-Sep	291	284	276	258	291	283	276	191	196	207	281	282	270	279	286	282	286	294	277	229	218	225	223	219	268.2
	240.5	236.4	235.6	226.7	216.0	205.7	205.4	207.8	213.3	221.6	223.5	230.8	229.6	236.1	244.0	246.1	257.3	289.3	264.1	250.7	262.1	260.5	255.2	249.3	
	Diurnal Average																								

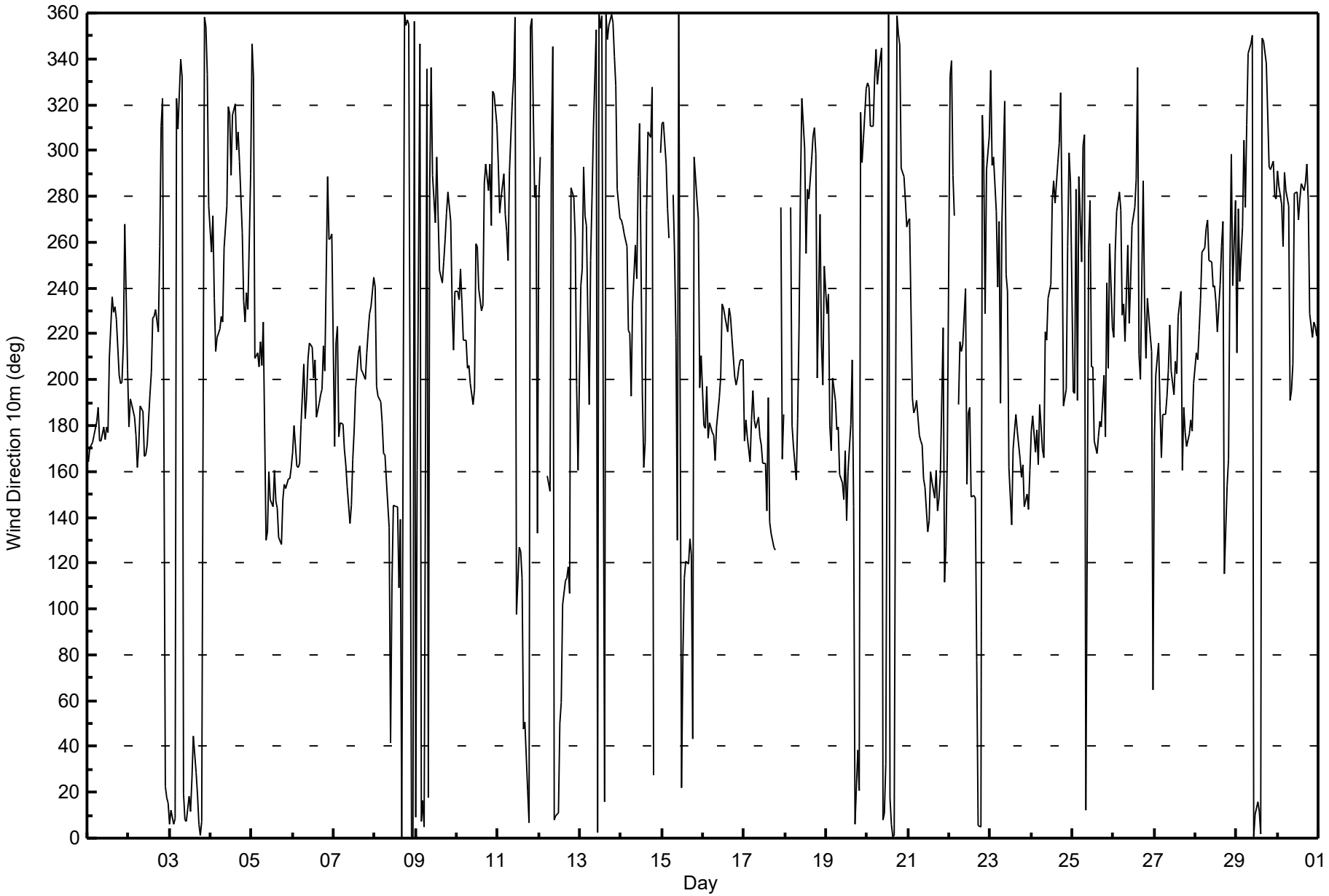
UO - Unstable Operation
All monthly, daily, and diurnal averages have been calculated using vector methods

Wood Buffalo Environmental Association

Hourly Averages

Wind Direction 10m (WD10) - deg

Ells River - September 2024



Wood Buffalo Environmental Association

Summary of Hour Standard Deviations

Wind Direction 10m (WD10) - deg

Ells River - September 2024

Number of Exceedences (AAAQO): 1-hr: 0 24-hr: 0
Maximum Value: 105 deg on Sep 11 14:00

Minimum Value: 5 deg on Sep 17 19:00

Percentiles: P_1 = 7 P_{10} = 11 Q_1 = 15 Median = 22 Q_3 = 33 P_{90} = 59 P_{99} = 89

Hours in Service:	720
Hours of Data:	708
Hours of Missing Data:	12
Hours of Calibration:	0
Percent Operational Time:	98.3

Day	Hourly Period Ending At (MST)																								Daily
	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24	Maximum
1-Sep	11	9	9	6	5	9	16	16	18	21	21	17	24	28	31	26	25	23	14	8	7	24	24	44	44
2-Sep	11	60	13	21	8	12	11	16	18	22	17	19	23	29	31	23	24	19	34	13	21	9	9	11	60
3-Sep	12	11	18	10	22	11	43	22	21	14	12	15	12	16	53	22	13	12	16	11	12	13	20	16	53
4-Sep	57	25	35	29	18	35	17	19	26	24	60	38	47	28	15	25	15	16	20	14	14	21	19	40	60
5-Sep	12	27	35	59	27	48	27	29	56	88	22	24	18	19	15	13	9	8	12	9	8	9	9	10	88
6-Sep	14	15	10	13	6	8	28	21	17	23	24	23	18	18	17	18	13	14	21	60	66	21	13	27	66
7-Sep	30	39	36	17	12	8	9	14	24	17	28	24	19	20	23	22	19	14	13	18	21	19	18	22	39
8-Sep	27	24	16	58	12	15	15	17	24	77	54	26	42	25	76	71	50	25	22	15	18	12	11	12	77
9-Sep	34	95	59	22	19	24	14	39	97	68	70	30	18	22	28	23	23	24	21	18	22	23	28	21	97
10-Sep	24	24	27	21	18	17	14	17	22	25	31	37	26	24	24	23	33	23	12	28	36	15	11	9	37
11-Sep	22	42	25	18	41	60	39	31	22	21	21	62	70	105	86	58	37	10	13	15	44	81	62	57	105
12-Sep	28	21	UO	UO	UO	16	9	74	19	20	34	38	23	32	23	20	14	11	55	30	33	66	59	75	75
13-Sep	38	70	36	26	27	76	51	28	18	14	13	12	12	13	14	21	13	12	11	12	10	28	11	10	76
14-Sep	11	10	15	30	36	20	28	29	23	30	65	71	70	65	76	31	16	15	24	17	UO	11	UO	15	76
15-Sep	9	16	14	11	25	UO	20	34	43	96	43	66	64	67	72	19	12	17	79	19	18	31	26	54	96
16-Sep	19	7	46	22	9	12	6	9	17	15	24	25	29	26	27	24	24	19	11	13	22	20	17	18	46
17-Sep	14	15	16	12	8	18	19	14	16	22	25	23	21	27	39	59	16	9	5	UO	UO	44	17	8	59
18-Sep	UO	UO	UO	57	43	15	11	24	28	30	16	17	42	23	29	18	17	13	11	53	39	84	38	57	84
19-Sep	58	59	15	19	15	11	14	21	22	13	22	42	29	55	56	21	18	83	48	11	36	11	11	68	83
20-Sep	17	13	10	12	10	25	55	15	26	20	20	23	18	17	16	14	14	13	11	16	14	10	15	21	55
21-Sep	22	27	54	67	21	37	52	20	17	21	16	22	24	28	30	21	12	10	19	37	42	37	24	74	74
22-Sep	54	23	37	50	UO	89	70	67	29	40	34	69	49	70	71	37	40	34	15	26	14	49	23	20	89
23-Sep	17	57	17	39	71	89	53	26	33	90	80	58	29	19	20	18	16	16	10	13	9	9	7	52	90
24-Sep	8	22	20	15	22	8	15	14	31	22	26	21	22	18	19	16	17	9	62	48	46	34	51	40	62
25-Sep	68	44	72	60	79	66	40	46	59	68	82	20	24	20	20	23	17	18	22	24	34	21	21	30	82
26-Sep	16	19	15	13	48	86	20	39	24	20	26	23	29	46	51	47	17	43	33	12	42	15	30	73	86
27-Sep	11	26	26	25	23	18	11	19	22	22	31	24	35	35	33	29	58	27	15	8	18	12	10	14	58
28-Sep	19	18	22	22	22	21	21	27	39	24	27	26	24	24	38	29	80	10	16	13	57	61	55	60	80
29-Sep	57	22	50	96	89	37	16	21	15	13	17	10	18	11	13	14	12	11	22	11	17	18	13	20	96
30-Sep	19	16	18	17	35	18	22	12	17	25	33	22	23	22	18	18	17	14	28	22	14	15	17	21	35
	68	95	72	96	89	89	70	74	97	96	82	71	70	105	86	71	80	83	79	60	66	84	62	75	
	Diurnal Maximum																								

UO - Unstable Operation

WOOD BUFFALO ENVIRONMENTAL ASSOCIATION

CONTINUOUS AMBIENT AIR QUALITY
MONITORING PROGRAM
MONTHLY REPORT

AMS506
JACKFISH 1
SEPTEMBER 2024

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

October 31, 2024

WOOD BUFFALO ENVIRONMENTAL ASSOCIATION - JACKFISH 1 (AMS506)
SEPTEMBER 2024

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	686	34	34	100	22.7	0	3.1	0
H2S (ppb) Average	686	34	34	100	4.7	0	0.7	0
NO2 (ppb) Average	662	38	58	97.22	19.5	0	4.3	-
NO (ppb) Average	662	38	58	97.22	18.6	-	2.8	-
NOX (ppb) Average	662	38	58	97.22	38.1	-	7.1	-
Temperature 2 m (C) Average	720	0	0	100	32.1	-	22.5	-
Relative Humidity (%) Average	720	0	0	100	99	-	98.8	-
Wind Speed 10 m (km/h) Average	718	0	2	99.72	12	-	8	-
Wind Direction 10 m (deg) Average	718	0	2	99.72	-	-	-	-

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

WOOD BUFFALO ENVIRONMENTAL ASSOCIATION - JACKFISH 1 (AMS506)
SEPTEMBER 2024

MONTHLY SUMMARY FOR AIR QUALITY/ METEOROLOGICAL MONITORING MEASUREMENTS

					Percentile						
Parameter	Number	Mean	StnDev	Total	Min	P10	Q1	Median	Q3	P90	Max
SO2 (ppb) Average	686	0.61	1.6	-	0	0	0.1	0.2	0.5	1.3	22.7
H2S (ppb) Average	686	0.22	0.3	-	0	0	0.1	0.1	0.3	0.4	4.7
NO2 (ppb) Average	662	1.63	1.9	-	0	0.3	0.6	1	1.9	3.5	19.5
NO (ppb) Average	662	0.54	1.5	-	0	0	0	0.1	0.4	1.3	18.6
NOX (ppb) Average	662	2.17	3.3	-	0	0.4	0.6	1.2	2.3	4.8	38.1
Temperature 2 m (C) Average	720	12.77	5.8	-	0.7	6	9	11.6	16.2	20.9	32.1
Relative Humidity (%) Average	720	73.51	19.4	-	21.7	45.9	58.5	76	91.5	98	99
Wind Speed 10 m (km/h) Average	718	3.8	2	-	0	1	2	3	5	7	12
Wind Direction 10 m (deg) Average	718	-	-	-	-	-	-	-	-	-	-

WOOD BUFFALO ENVIRONMENTAL ASSOCIATION - JACKFISH 1 (AMS506)
SEPTEMBER 2024

OPERATIONAL NOTES

Parameter	Period Start	Period End	Duration (Hours)	Notes
NO2	24 Sep 2024 14:00	25 Sep 2024 09:00	20	Maintenance - stabilization post maintenance
Wind Speed, Wind Direction	22 Sep 2024 18:00	22 Sep 2024 18:00	1	Flat line in sensor output signal
Wind Speed, Wind Direction	22 Sep 2024 21:00	22 Sep 2024 21:00	1	Flat line in sensor output signal

Wood Buffalo Environmental Association

Summary of Hour Averages

Sulphur Dioxide (SO_2) - ppb

Jackfish 1 - September 2024

Number of Exceedences (AAAQO): 1-hr: 0 24-hr: 0

Maximum Value: 22.7 ppb on Sep 30 13:00

Maximum Daily Average: 3.1 ppb on Sep 30

Minimum Value: 0.0 ppb on Sep 1 01:00

Minimum Daily Average: 0.0 ppb on Sep 12

Maximum Diurnal Average: 2.0 ppb at hour 13

Minimum Diurnal Average: 0.1 ppb at hour 4

Monthly Average: 0.61 ppb

Percentiles: P_1 = 0.0 P_{10} = 0.0 Q_1 = 0.1 Median = 0.2 Q_3 = 0.5 P_{90} = 1.3 P_{99} = 6.7

Hours in Service:	720
Hours of Data:	686
Hours of Missing Data:	34
Hours of Calibration:	34
Percent Operational Time:	100.0

Day	Hourly Period Ending At (MST)																								Daily	Daily
	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24	Average	Maximum
1-Sep	0.0	0.1	0.2	0.2	Z	0.0	0.0	0.1	0.1	0.2	0.1	0.1	0.6	0.5	0.1	0.0	0.0	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.6
2-Sep	0.1	0.1	0.1	0.1	0.1	Z	0.7	0.6	0.6	0.8	0.7	0.5	0.5	0.3	0.5	0.5	0.3	0.4	1.3	2.9	1.6	1.9	3.4	0.9	0.8	3.4
3-Sep	Z	0.3	0.2	0.1	0.1	0.1	0.0	0.0	0.0	0.1	0.0	0.0	0.0	0.2	0.3	0.1	0.1	0.2	0.2	0.1	0.0	0.0	0.0	0.0	0.1	0.3
4-Sep	0.0	Z	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.2	0.7	4.7	6.2	6.1	2.6	2.7	4.3	0.5	0.8	0.7	0.5	0.6	0.7	1.4	6.2
5-Sep	1.3	1.2	Z	0.2	0.2	0.6	0.6	1.7	0.9	0.6	0.4	1.6	4.2	1.6	1.4	0.3	0.2	0.3	0.3	0.3	0.2	0.2	0.7	0.4	0.8	4.2
6-Sep	0.5	0.6	0.5	Z	0.4	0.4	0.5	0.4	0.4	0.6	0.4	0.5	0.4	0.8	0.4	0.3	0.2	0.1	0.2	0.2	0.2	0.1	0.2	0.9	0.4	0.9
7-Sep	2.9	3.5	1.1	0.5	Z	0.5	0.2	0.1	0.0	0.0	0.2	0.1	0.2	0.2	0.4	0.5	0.1	0.1	0.0	0.0	0.0	0.0	0.0	0.0	0.5	3.5
8-Sep	0.0	0.0	0.0	0.0	0.0	Z	0.0	0.0	0.1	0.6	0.8	0.7	0.4	0.1	0.3	0.4	0.6	0.4	0.5	0.4	0.8	1.0	0.8	0.7	0.4	1.0
9-Sep	Z	0.5	0.3	0.3	0.4	0.4	0.4	0.3	0.7	1.4	4.3	3.8	4.5	2.8	3.9	0.4	0.7	1.0	0.9	3.3	1.7	8.9	8.4	0.6	2.2	8.9
10-Sep	0.3	Z	0.2	0.2	0.3	0.4	0.5	0.9	1.7	1.9	2.1	2.4	0.9	0.9	3.2	1.2	1.6	2.1	0.5	0.5	0.3	0.3	0.3	0.2	1.0	3.2
11-Sep	0.2	0.1	Z	0.1	0.1	0.3	0.3	0.3	0.3	0.4	0.4	0.4	0.3	0.3	0.2	0.2	0.2	0.1	0.1	0.0	0.0	0.1	0.0	0.0	0.2	0.4
12-Sep	0.0	0.0	0.0	Z	0.1	0.0	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
13-Sep	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	0.1	0.5	0.1	0.1	0.0	0.0	0.0	0.5
14-Sep	0.0	0.0	0.0	0.1	0.0	Z	0.0	0.1	0.7	0.8	1.1	1.3	1.9	2.0	1.1	0.7	0.2	0.1	0.2	0.2	0.1	0.1	0.0	0.1	0.5	2.0
15-Sep	Z	0.1	0.1	0.1	0.0	0.1	0.1	0.2	0.2	0.2	0.6	0.4	0.4	0.5	0.2	0.2	0.1	0.0	0.1	0.0	0.1	0.1	0.0	0.0	0.2	0.6
16-Sep	0.0	Z	0.1	0.1	0.0	0.0	0.0	0.0	0.0	0.0	0.1	0.1	0.1	0.0	0.1	0.0	0.1	0.1	0.2	0.1	0.1	0.1	0.1	0.1	0.1	0.2
17-Sep	0.1	0.1	Z	0.2	0.1	0.1	0.1	0.0	0.2	0.2	0.5	0.5	0.4	0.3	0.4	0.3	0.2	0.2	0.2	0.1	0.0	0.1	0.0	0.0	0.2	0.5
18-Sep	0.0	0.0	0.1	Z	0.1	0.1	0.1	0.1	0.8	2.5	3.2	2.3	1.5	0.7	0.4	0.6	0.8	0.2	0.4	0.1	0.1	0.0	0.1	0.2	0.6	3.2
19-Sep	0.2	0.3	0.3	0.3	Z	0.3	0.3	0.2	C	C	C	C	0.9	3.2	2.5	1.9	0.7	0.6	0.8	0.6	0.3	0.8	0.1	0.4	0.8	3.2
20-Sep	0.4	0.2	0.1	0.1	0.1	Z	0.2	0.2	0.3	0.6	0.2	0.4	0.2	1.3	1.0	0.3	0.2	0.1	0.1	0.0	0.9	0.7	0.6	0.5	0.4	1.3
21-Sep	Z	0.3	0.1	0.2	0.1	0.1	0.0	0.1	0.2	0.3	0.4	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	0.1	0.4
22-Sep	0.0	Z	0.0	0.0	0.0	0.0	0.1	0.0	0.1	0.1	0.8	1.1	0.9	0.6	0.5	0.2	0.1	0.1	0.0	0.0	0.0	0.0	0.0	0.0	0.2	1.1
23-Sep	0.0	0.0	Z	0.0	0.1	0.1	0.0	0.0	0.4	0.7	0.6	0.2	0.3	0.2	0.1	0.1	0.0	0.1	0.1	0.1	0.1	0.0	0.1	0.1	0.1	0.7
24-Sep	0.0	0.0	0.0	Z	0.2	0.1	0.1	0.2	0.7	1.0	7.6	18.9	6.6	4.1	1.9	5.8	1.0	1.6	0.4	0.2	0.2	0.1	0.1	0.0	2.2	18.9
25-Sep	0.1	0.0	0.0	0.1	Z	0.1	0.1	0.3	0.4	0.2	0.2	0.3	0.4	1.2	1.0	1.6	1.0	0.5	0.3	0.3	0.2	0.4	0.6	0.4	0.4	1.6
26-Sep	0.3	0.2	0.1	0.1	0.5	Z	3.5	1.3	1.0	0.5	0.7	0.3	0.5	0.5	0.3	0.3	0.4	0.2	0.1	0.2	0.1	0.0	0.0	0.0	0.5	3.5
27-Sep	Z	0.1	0.1	0.1	0.1	0.1	0.0	0.1	0.3	1.2	2.2	2.3	5.4	0.9	0.7	0.8	0.5	0.5	0.2	0.1	0.0	0.1	0.0	0.0	0.7	5.4
28-Sep	0.0	Z	0.0	0.1	0.0	0.1	0.1	0.1	0.5	0.6	1.2	0.9	0.8	0.3	0.3	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.0	0.3	1.2
29-Sep	0.0	0.0	Z	0.2	0.1	0.1	0.1	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	0.1	0.1	0.1	1.0	0.2	1.0
30-Sep	5.1	5.6	4.0	Z	0.5	0.2	0.1	0.3	0.5	1.4	3.5	12.6	22.7	6.9	1.0	0.4	0.2	0.1	2.1	2.0	0.6	0.8	0.9	0.2	3.1	22.7
	0.5	0.5	0.3	0.1	0.2	0.2	0.3	0.3	0.4	0.6	1.1	1.8	2.0	1.2	0.9	0.7	0.4	0.5	0.3	0.5	0.3	0.6	0.6	0.3	Diurnal Average	
	5.1	5.6	4.0	0.5	0.5	0.6	3.5	1.7	1.7	2.5	7.6	18.9	22.7	6.9	6.1	5.8	2.7	4.3	2.1	3.3	1.7	8.9	8.4	1.0	Diurnal Maximum	

Z - zerospan C - Calibration

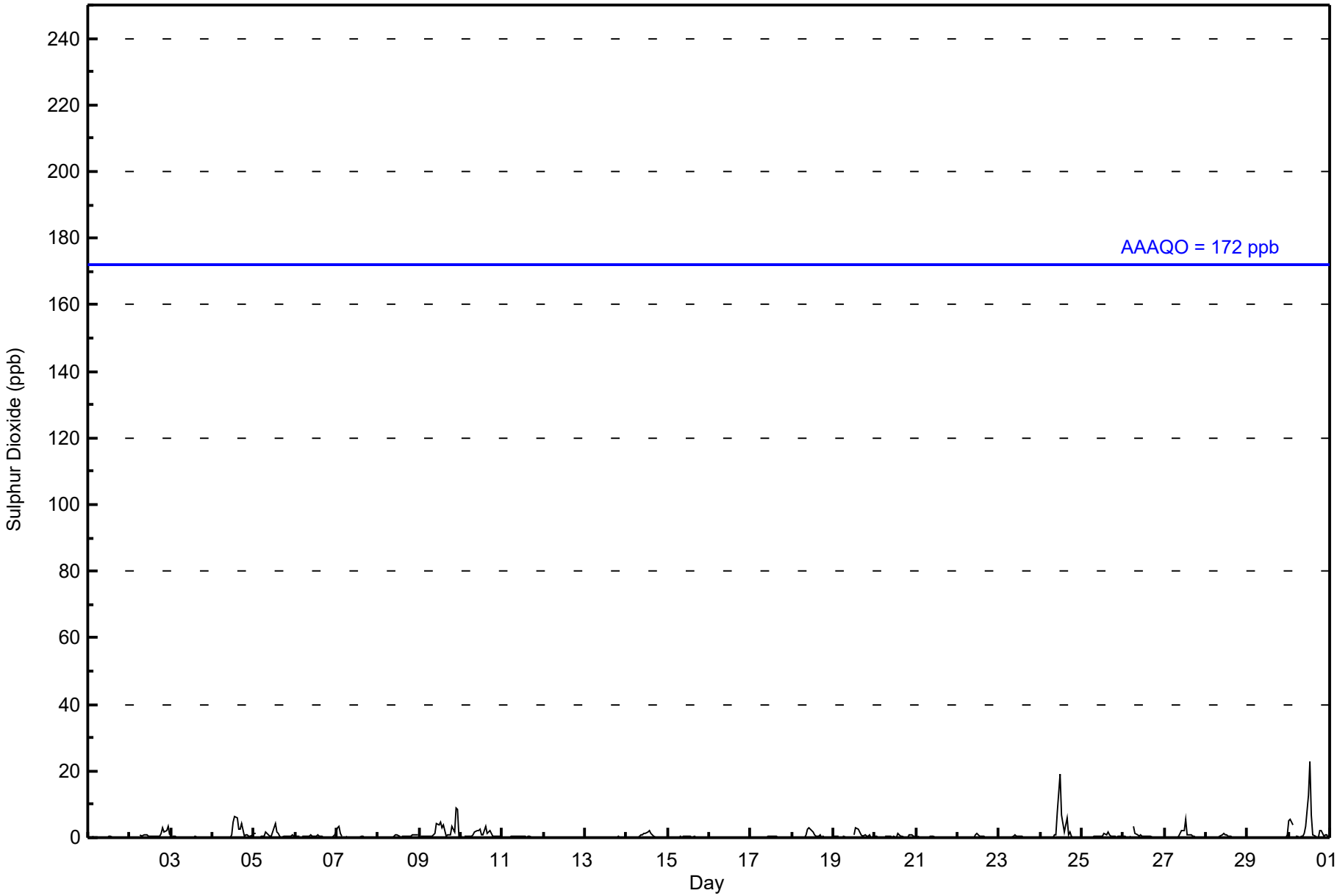
Alberta Ambient Air Quality Objectives (AAAQO): 1-hr 172 ppb 24-hr 48 ppb

Wood Buffalo Environmental Association

Hourly Averages

Sulphur Dioxide (SO_2) - ppb

Jackfish 1 - September 2024



Sulphur Dioxide (SO_2) - ppb
Jackfish 1 - September 2024

Concentration Ranges (ppb)	Number of Hours	%	Cumulative %
0 - 10	683	99.56	99.56
11 - 20	2	0.29	99.85
21 - 60	1	0.15	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: 686

Total Number of Hours: 720

Wood Buffalo Environmental Association

Frequency Distribution

Sulphur Dioxide (SO_2) - ppb

Jackfish 1 - September 2024

Concentration Ranges (ppb)	Wind Direction																
	N	NNE	NE	ENE	E	ESE	SE	SSE	S	SSW	SW	WSW	W	WNW	NW	NNW	**Totals**
0 - 10	13	18	9	2	4	11	17	83	134	100	41	28	27	70	72	52	681
11 - 20	0	0	0	0	0	0	0	0	0	0	0	0	0	2	0	0	2
21 - 60	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1	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	13	18	9	2	4	11	17	83	134	100	41	28	27	72	73	52	684

Total Number of Valid Hours: 684

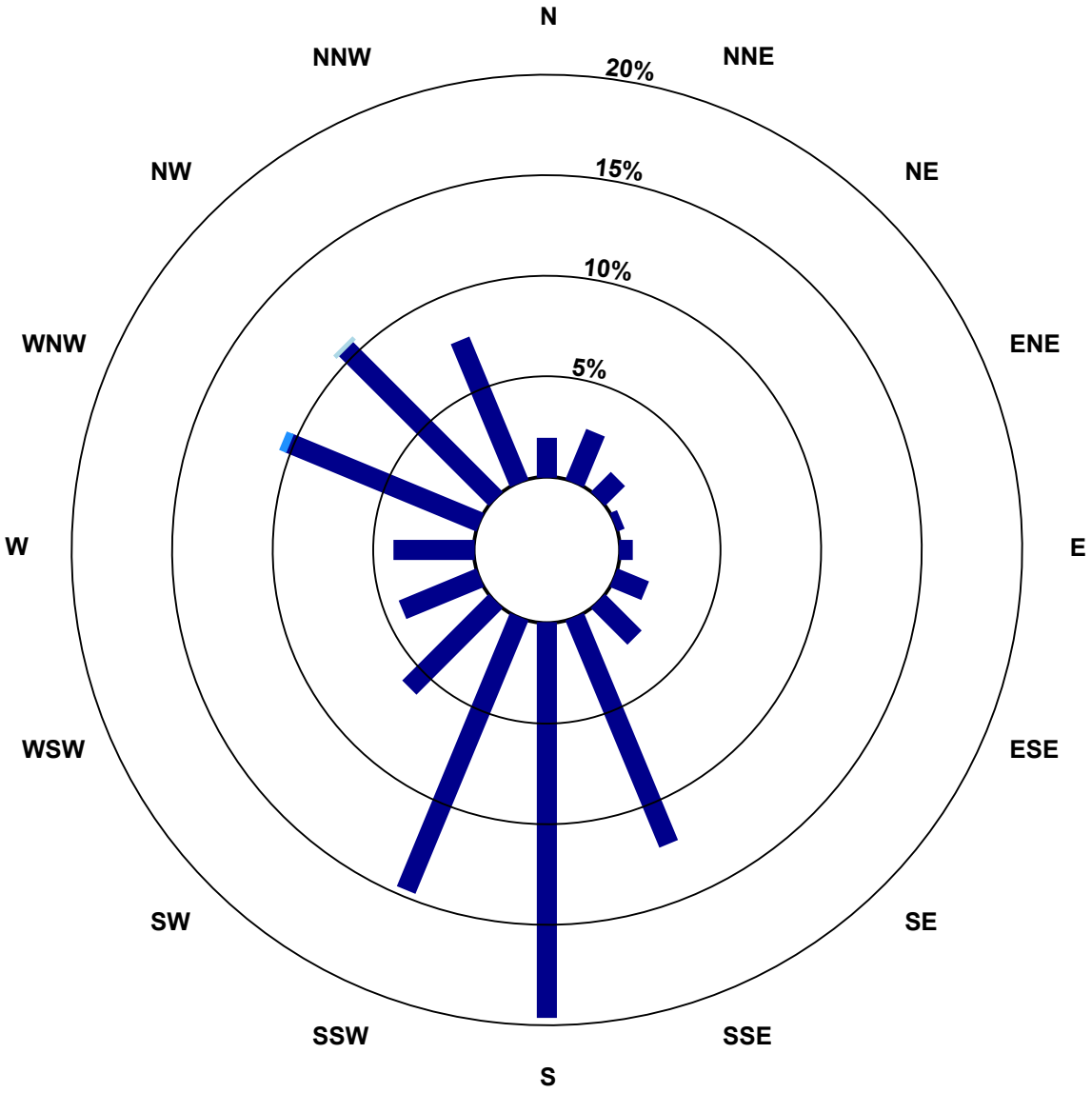
Total Number of Hours: 720

Wood Buffalo Environmental Association

Wind Rose Sep 2024

Sulphur Dioxide (SO_2) - ppb

Jackfish 1



Classes (ppb)

0 - 10

11 - 20

21 - 60

61 - 110

111 - 172

> 172

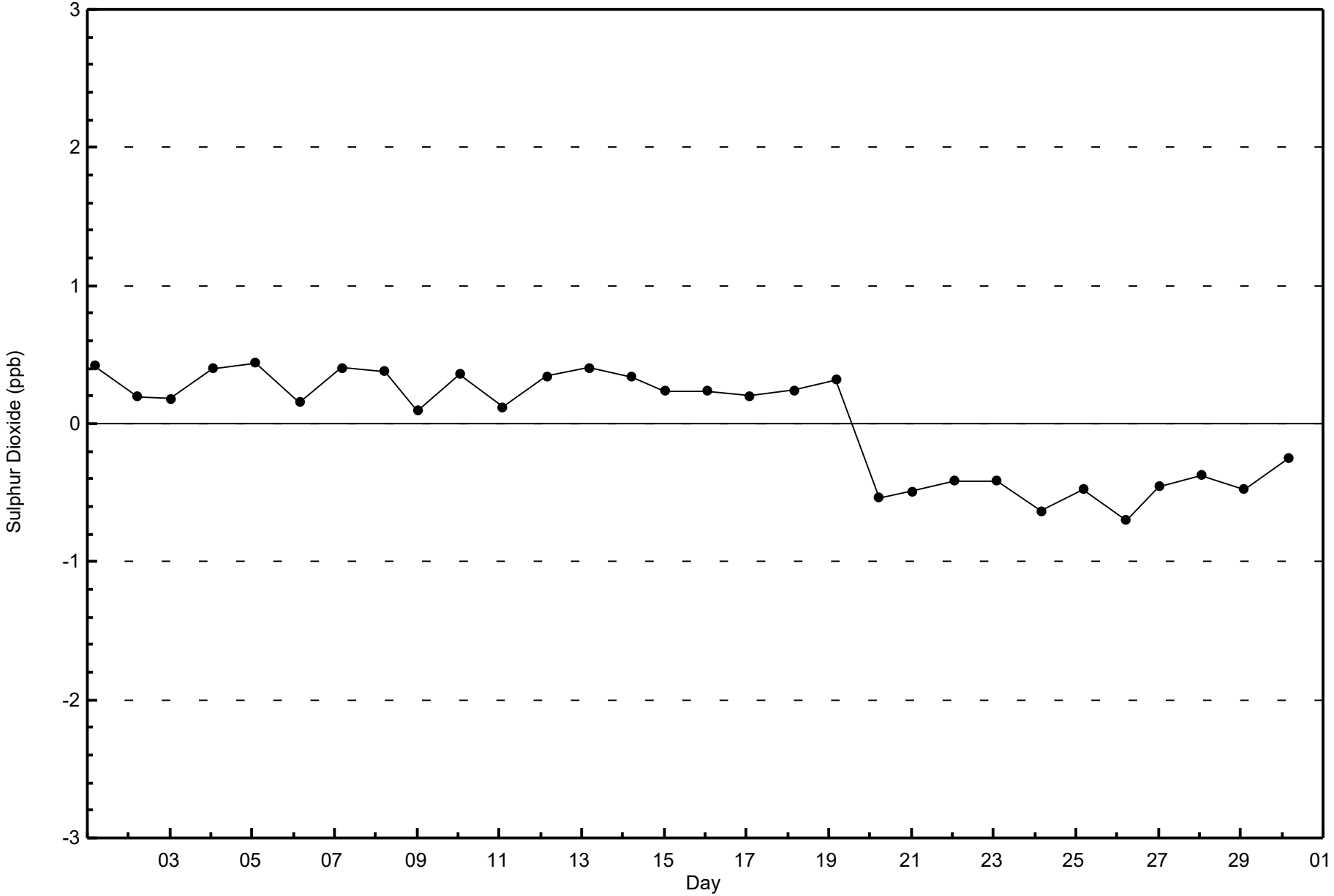
Total Number of Valid Hours: 684

Wood Buffalo Environmental Association

Zero Responses

Sulphur Dioxide (SO_2) - ppb

Jackfish 1 - September 2024

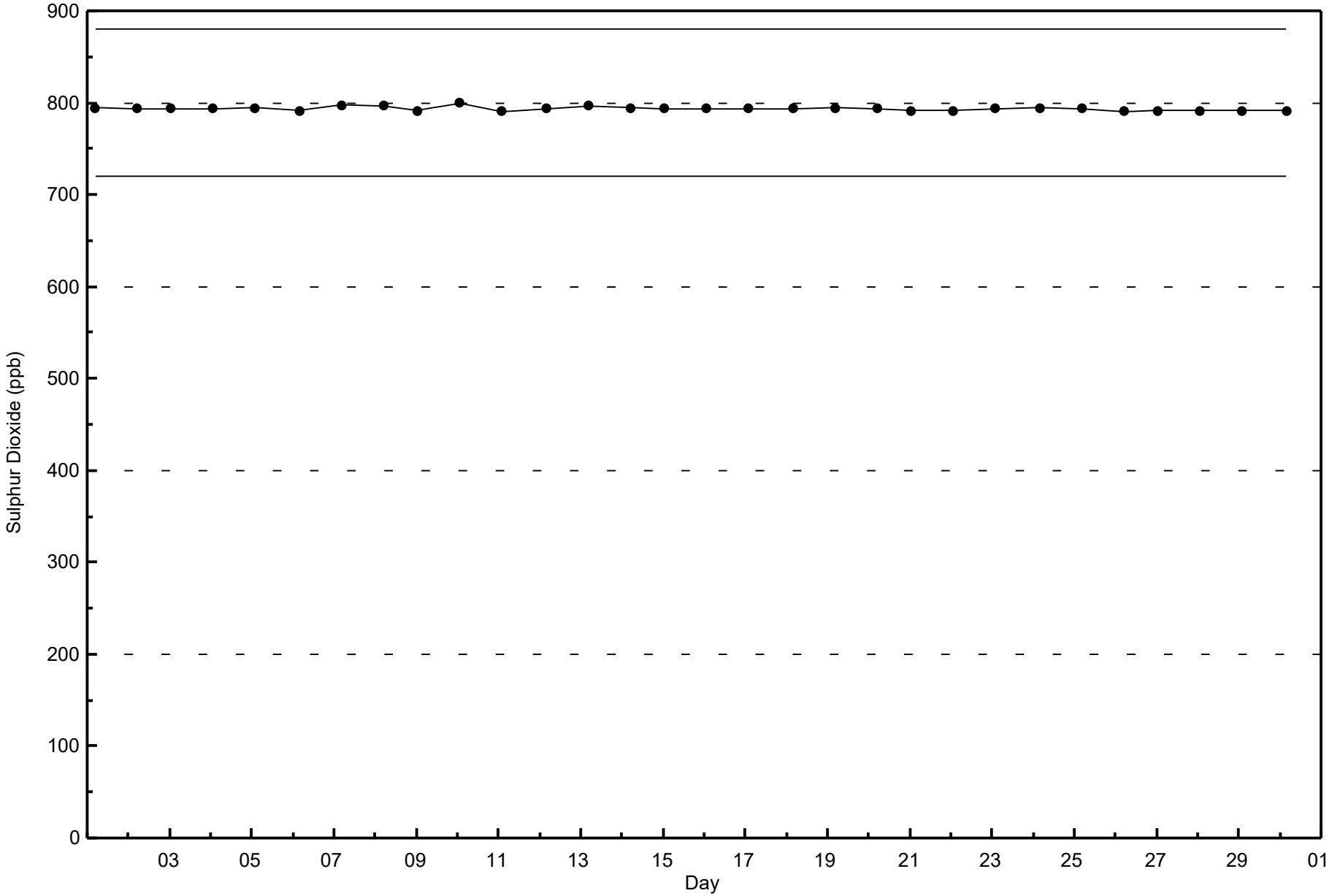


Wood Buffalo Environmental Association

Span Responses

Sulphur Dioxide (SO_2) - ppb

Jackfish 1 - September 2024



Wood Buffalo Environmental Association

Summary of Hour Averages

Hydrogen Sulphide (H2S) - ppb

Jackfish 1 - September 2024

Number of Exceedences (AAAQO): 1-hr: 0 24-hr: 0

Maximum Value: 4.7 ppb on Sep 11 08:00 Maximum Daily Average: 0.7 ppb on Sep 11

Minimum Value: 0.0 ppb on Sep 1 15:00 Minimum Daily Average: 0.1 ppb on Sep 17

Maximum Diurnal Average: 0.6 ppb at hour 8 Minimum Diurnal Average: 0.1 ppb at hour 16

Monthly Average: 0.22 ppb Percentiles: P_1 = 0.0 P_{10} = 0.0 Q_1 = 0.1 Median = 0.1 Q_3 = 0.3 P_{90} = 0.4 P_{99} = 1.4

Hours in Service:	720
Hours of Data:	686
Hours of Missing Data:	34
Hours of Calibration:	34
Percent Operational Time:	100.0

Day	Hourly Period Ending At (MST)																								Daily	Daily
	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24	Average	Maximum
1-Sep	0.2	0.1	0.1	0.1	0.2	Z	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	0.0	0.1	0.1	0.2
2-Sep	Z	0.2	0.2	0.1	0.1	0.1	0.4	0.2	0.1	0.2	0.2	0.2	0.1	0.0	0.0	0.0	0.0	0.1	0.2	0.4	0.3	0.9	0.3	0.4	0.2	0.9
3-Sep	0.1	Z	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	0.1	0.1	0.1	0.1	0.2	0.2	0.2	0.3	0.2	0.3
4-Sep	0.5	0.3	Z	0.5	0.2	0.1	0.2	0.1	0.1	0.1	0.1	0.1	0.2	0.3	0.2	0.1	0.2	0.2	0.1	0.3	0.2	0.1	0.1	0.1	0.2	0.5
5-Sep	0.2	0.1	0.1	Z	0.1	0.9	1.3	1.3	0.5	0.2	0.1	0.1	0.1	0.1	0.1	0.1	0.0	0.1	0.2	0.3	0.2	0.4	0.3	0.2	0.3	1.3
6-Sep	0.2	0.1	0.1	0.1	Z	0.2	0.3	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	0.2	0.3
7-Sep	0.4	0.4	0.2	0.3	0.5	Z	0.5	0.7	0.4	0.3	0.1	0.1	0.1	0.1	0.1	0.0	0.0	0.1	0.1	0.1	0.1	0.2	0.2	0.2	0.2	0.7
8-Sep	Z	0.1	0.1	0.2	0.1	0.4	0.2	0.3	0.3	0.2	0.1	0.1	0.1	0.0	0.1	0.1	0.1	0.2	0.4	0.4	0.3	0.3	0.2	0.2	0.2	0.4
9-Sep	0.2	Z	0.2	0.3	0.3	0.3	0.4	0.4	0.3	0.3	0.2	0.1	0.2	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.3	0.3	0.1	0.2	0.4
10-Sep	0.1	0.1	Z	0.1	0.1	0.3	0.2	0.2	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.0	0.1	0.1	0.0	0.2	0.2	0.2	0.2	0.1	0.1	0.3
11-Sep	0.1	0.1	0.1	Z	0.4	0.9	0.7	4.7	0.7	0.1	0.1	0.3	0.1	0.2	0.6	0.3	0.3	0.2	0.4	1.0	1.9	1.8	1.1	0.8	0.7	4.7
12-Sep	1.1	0.3	0.1	0.1	Z	0.3	0.2	0.3	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	0.2	0.2	0.2	0.3	1.1
13-Sep	0.2	0.2	0.2	0.2	0.2	Z	0.2	0.2	0.2	0.2	0.2	0.2	0.2	0.3	0.3	0.4	0.4	0.4	0.4	0.5	0.2	0.1	0.1	0.1	0.2	0.5
14-Sep	Z	0.2	0.3	0.4	0.1	0.1	0.4	1.4	0.4	0.2	0.2	0.2	0.1	0.1	0.1	0.1	0.1	0.1	0.2	0.6	0.5	0.2	0.1	0.1	0.3	1.4
15-Sep	0.1	Z	0.1	0.1	0.1	0.2	0.1	0.1	0.2	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.3	0.2	0.1	0.1	0.1	0.1	0.1	0.1	0.3
16-Sep	0.2	0.1	Z	0.1	0.1	0.1	0.1	0.2	0.1	0.2	0.1	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.1	0.4	0.1	0.0	0.0	0.1	0.4
17-Sep	0.1	0.2	0.2	Z	0.1	0.1	0.1	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	0.2	0.1	0.1	0.1	0.3
18-Sep	0.1	0.2	0.3	0.6	Z	0.2	0.3	2.2	0.2	C	C	C	C	0.2	0.1	0.1	0.2	0.2	0.3	0.1	0.3	0.5	0.3	0.1	0.3	2.2
19-Sep	0.1	0.1	0.1	0.1	0.3	Z	0.8	1.2	1.2	0.2	0.2	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.2	0.4	0.1	0.3	0.4	0.4	0.3	1.2
20-Sep	Z	0.4	0.7	0.3	1.7	1.3	1.5	0.5	0.2	0.5	0.3	0.3	0.1	0.3	0.2	0.1	0.3	0.1	0.1	0.2	0.5	0.4	0.2	0.2	0.5	1.7
21-Sep	0.2	Z	0.2	0.3	0.4	0.3	0.4	0.8	0.4	0.4	0.2	0.1	0.0	0.0	0.0	0.0	0.1	0.2	0.3	0.3	0.2	0.3	0.1	0.2	0.2	0.8
22-Sep	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	0.0	0.1	0.5	0.7	0.4	0.3	0.3	0.2	0.1	0.2	0.7
23-Sep	0.1	0.1	0.0	Z	0.1	0.1	0.0	0.1	0.2	0.2	0.1	0.1	0.1	0.0	0.0	0.1	0.0	0.1	0.1	0.2	0.3	0.3	0.2	0.2	0.1	0.3
24-Sep	0.1	0.1	0.2	0.2	Z	0.2	0.1	0.1	0.2	0.2	0.3	0.4	0.2	0.2	0.1	0.1	0.1	0.1	0.1	0.1	0.2	0.4	0.6	0.5	0.2	0.6
25-Sep	0.6	0.6	0.6	0.6	0.5	Z	0.2	0.2	0.3	0.3	0.4	0.3	0.2	0.2	0.1	0.1	0.1	0.2	0.6	0.1	0.4	0.5	0.5	0.5	0.4	0.6
26-Sep	Z	0.5	0.2	0.4	0.3	0.3	0.4	0.2	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	0.0	0.1	0.1	0.5
27-Sep	0.2	Z	1.3	0.5	0.0	0.2	0.4	0.1	0.1	0.1	0.1	0.1	0.1	0.0	0.0	0.0	0.0	0.1	0.2	0.3	0.4	0.3	0.2	0.1	0.2	1.3
28-Sep	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	0.0	0.1	0.1	0.1	0.1	0.2	1.6	0.3	0.8	0.2	0.7	0.2	1.6
29-Sep	0.8	0.1	0.1	Z	0.1	0.1	0.1	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.1	0.0	0.0	0.0	0.1	0.2	0.4	0.4	0.4	0.1	0.8
30-Sep	0.4	0.4	0.3	0.1	Z	0.1	0.0	0.1	0.1	0.1	0.1	0.2	0.4	0.1	0.0	0.0	0.0	0.0	0.1	0.1	0.1	0.1	0.1	0.0	0.1	0.4
	0.3	0.2	0.3	0.2	0.3	0.3	0.3	0.6	0.3	0.2	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.2	0.3	0.3	0.3	0.2	0.2	Diurnal Average	
	1.1	0.6	1.3	0.6	1.7	1.3	1.5	4.7	1.2	0.5	0.4	0.4	0.4	0.3	0.6	0.4	0.4	0.5	0.7	1.6	1.9	1.8	1.1	0.8	Diurnal Maximum	

Z - zerospan C - Calibration

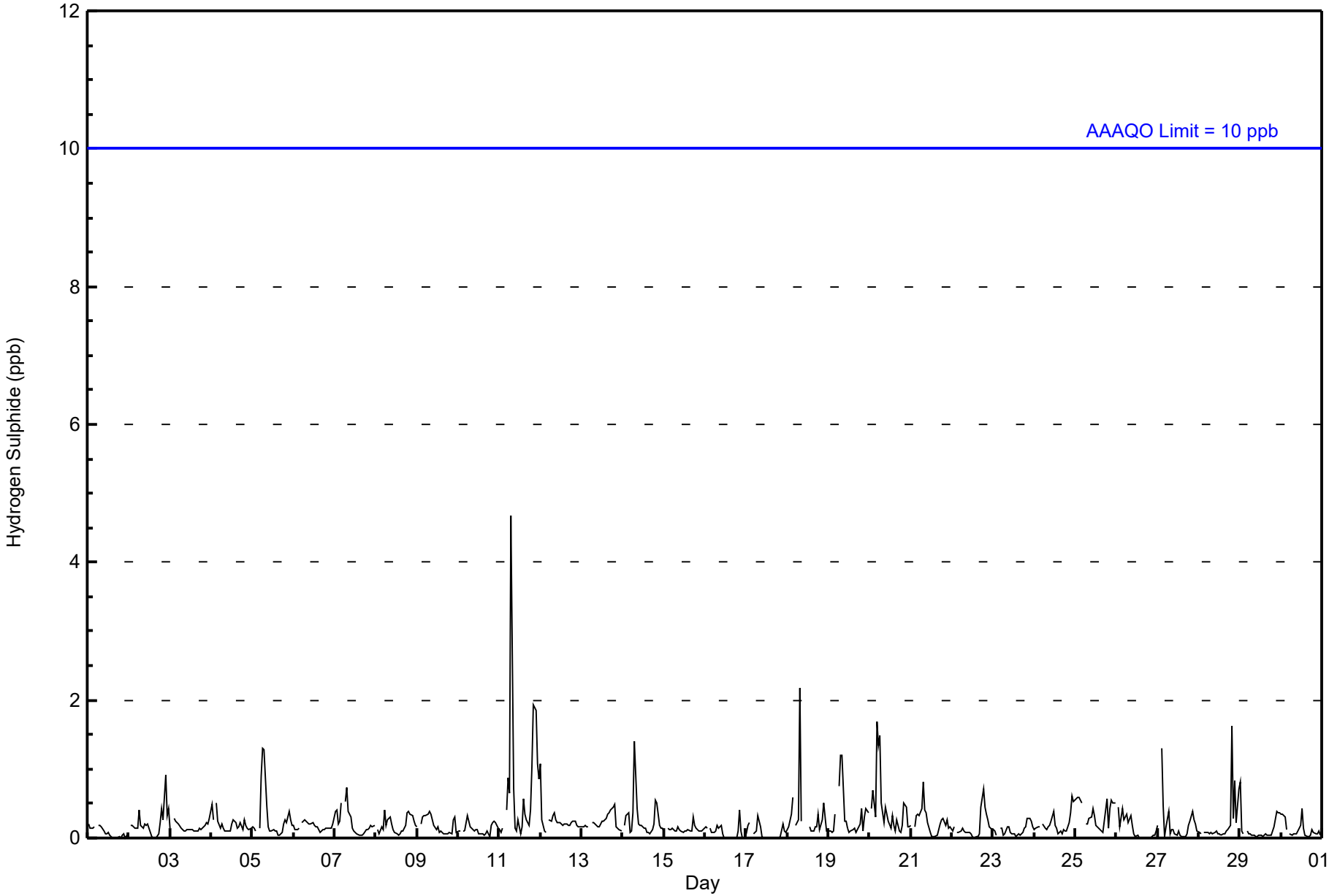
Alberta Ambient Air Quality Objectives (AAAQO): 1-hr 10 ppb 24-hr 3 ppb

Wood Buffalo Environmental Association

Hourly Averages

Hydrogen Sulphide (H2S) - ppb

Jackfish 1 - September 2024



Concentration Ranges (ppb)	Number of Hours	%	Cumulative %
0 - 2	685	99.85	99.85
3 - 4	0	0.00	99.85
5 - 7	1	0.15	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: 720

Wood Buffalo Environmental Association

Frequency Distribution

Hydrogen Sulphide (H2S) - ppb

Jackfish 1 - September 2024

Concentration Ranges (ppb)	Wind Direction																
	N	NNE	NE	ENE	E	ESE	SE	SSE	S	SSW	SW	WSW	W	WNW	NW	NNW	**Totals**
0 - 2	11	18	10	2	4	10	16	82	134	100	43	27	25	76	73	52	683
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	1	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	11	18	10	2	4	10	17	82	134	100	43	27	25	76	73	52	684

Total Number of Valid Hours: 684

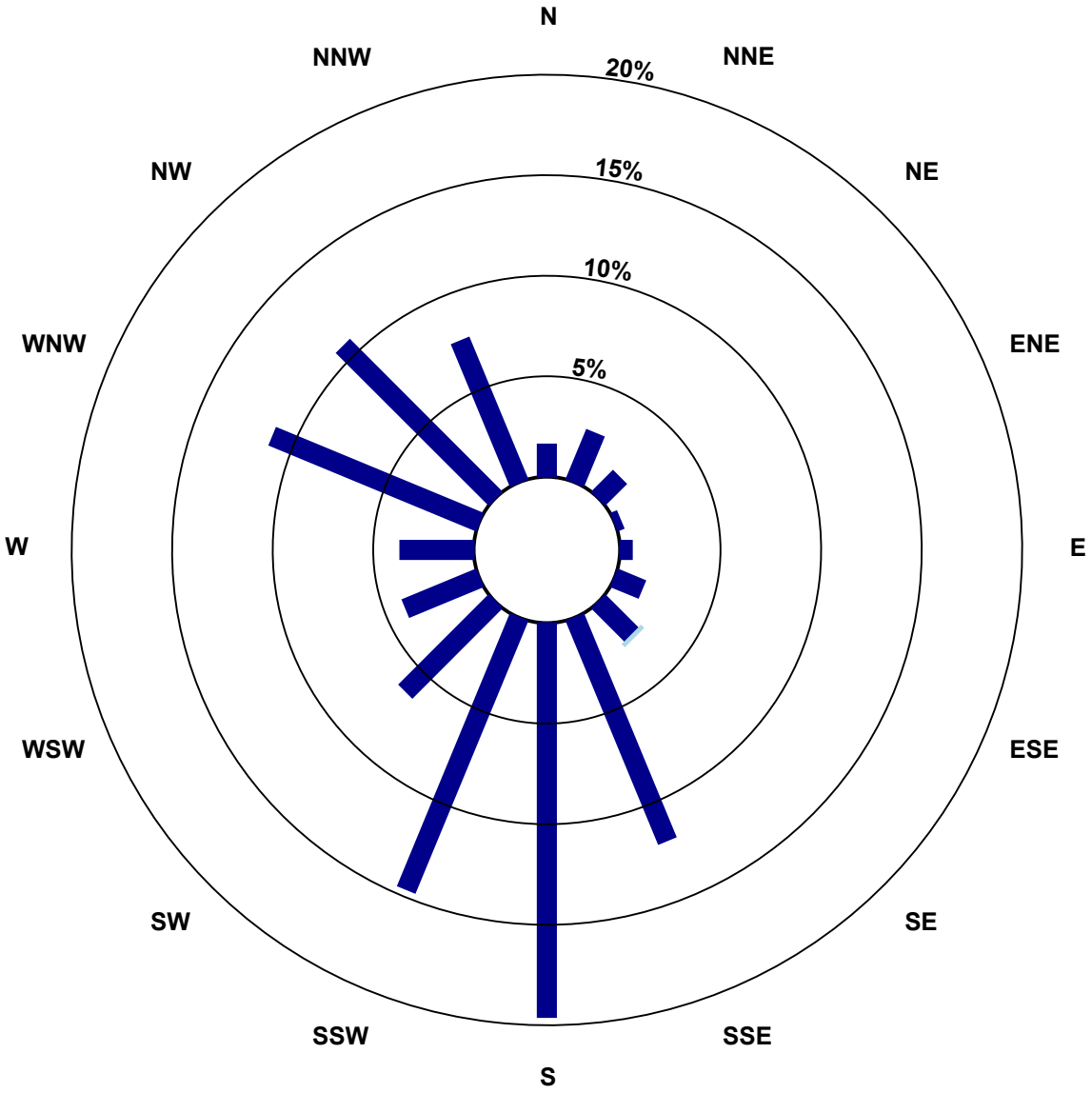
Total Number of Hours: 720

Wood Buffalo Environmental Association

Wind Rose Sep 2024

Hydrogen Sulphide (H2S) - ppb

Jackfish 1



Classes (ppb)

0 - 2

3 - 4

5 - 7

8 - 11

> 11

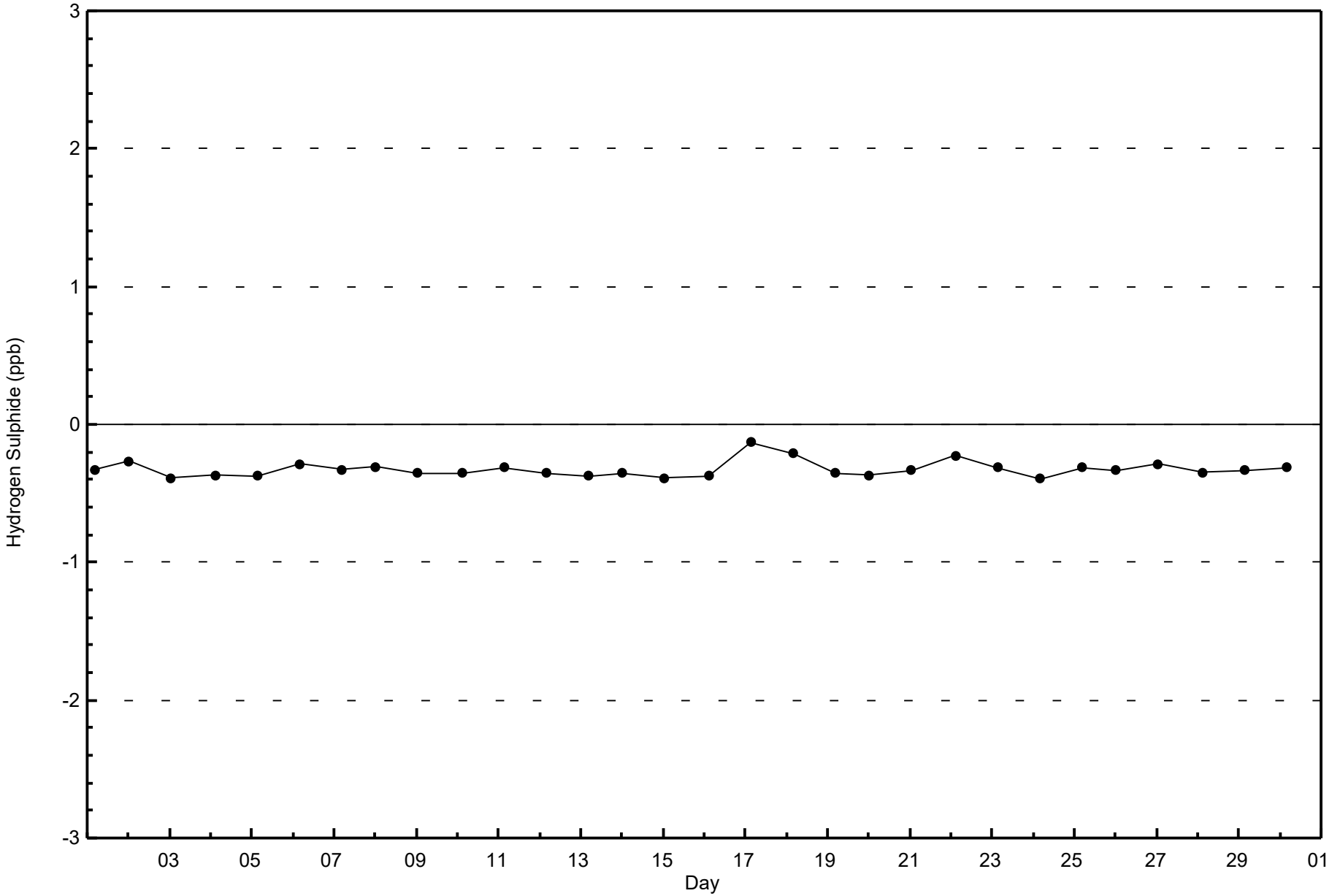
Total Number of Valid Hours: 684

Wood Buffalo Environmental Association

Zero Responses

Hydrogen Sulphide (H2S) - ppb

Jackfish 1 - September 2024



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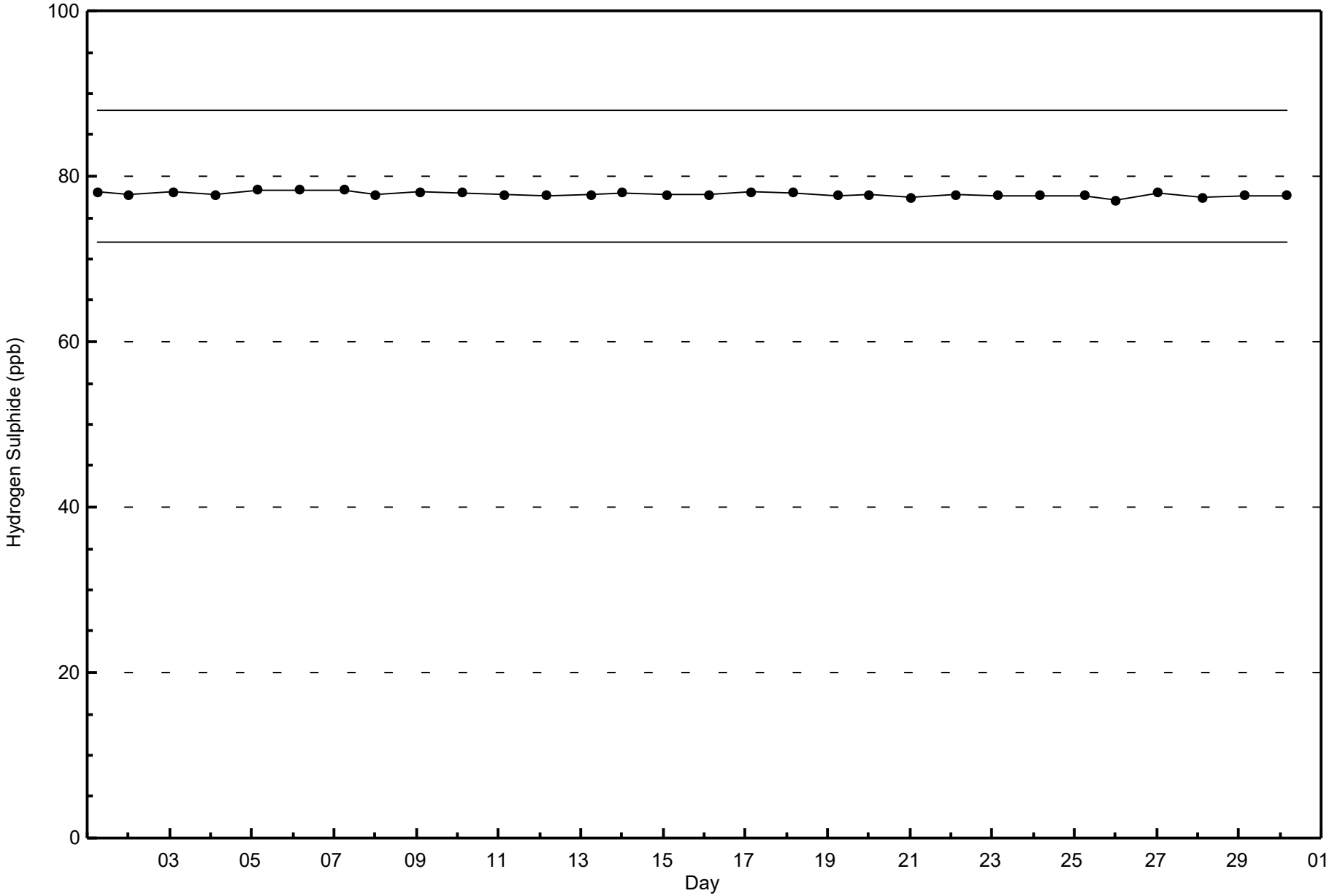
Span Responses

Hydrogen Sulphide (H2S) - ppb

Jackfish 1 - September 2024



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Summary of Hour Averages

Nitric Oxide (NO) - ppb

Jackfish 1 - September 2024

Maximum Value: 18.6 ppb on Sep 30 13:00

Maximum Daily Average: 2.8 ppb on Sep 30

Minimum Value: 0.0 ppb on Sep 1 17:00

Minimum Daily Average: 0.1 ppb on Sep 3

Maximum Diurnal Average: 1.4 ppb at hour 13

Minimum Diurnal Average: 0.1 ppb at hour 2

Monthly Average: 0.54 ppb

Percentiles: P_1 = 0.0 P_{10} = 0.0 Q_1 = 0.0 Median = 0.1 Q_3 = 0.4 P_{90} = 1.3 P_{99} = 7.6

Hours in Service:	720
Hours of Data:	662
Hours of Missing Data:	58
Hours of Calibration:	38
Percent Operational Time:	97.2

Day	Hourly Period Ending At (MST)																								Daily	Daily
	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24	Average	Maximum
1-Sep	0.1	0.0	Z	0.0	0.0	0.3	0.1	0.3	0.2	0.1	0.2	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	0.3
2-Sep	0.1	0.1	0.1	Z	0.1	0.2	1.5	0.1	0.2	0.6	0.6	0.1	0.2	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.1	0.0	1.2	0.0	0.2	1.5
3-Sep	0.0	0.0	0.1	0.0	Z	0.1	0.0	0.1	0.1	0.1	0.1	0.2	0.1	0.2	0.1	0.1	0.0	0.0	0.0	0.0	0.1	0.1	0.1	0.1	0.1	0.2
4-Sep	0.1	0.1	0.2	0.2	0.2	Z	0.1	0.1	0.1	0.1	0.9	0.9	4.7	5.3	4.6	1.4	1.3	2.0	0.1	0.1	0.1	0.0	0.1	0.1	1.0	5.3
5-Sep	Z	0.0	0.0	0.0	0.0	0.3	0.4	1.4	0.7	0.3	0.2	0.5	1.6	0.2	0.2	0.1	0.0	0.0	0.1	0.1	0.2	0.2	0.2	0.1	0.3	1.6
6-Sep	0.1	Z	0.0	0.0	0.1	0.1	0.2	0.6	0.5	0.3	0.7	0.3	0.2	2.2	8.1	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.6	8.1
7-Sep	0.0	0.0	Z	0.0	0.1	0.1	0.5	0.9	0.2	0.1	0.1	0.1	0.0	0.1	0.1	0.1	0.1	0.0	0.0	0.1	0.1	0.1	0.1	0.1	0.1	0.9
8-Sep	0.0	0.0	0.0	Z	0.0	0.2	0.1	0.6	0.6	0.2	0.2	0.1	0.2	0.2	0.2	0.1	0.1	0.1	0.2	0.2	0.1	0.1	0.1	0.0	0.2	0.6
9-Sep	0.0	0.0	0.1	0.1	Z	0.1	0.2	0.2	0.2	0.3	3.4	3.6	3.9	1.3	2.7	0.1	0.1	0.0	0.0	1.4	0.8	8.8	5.7	0.0	1.4	8.8
10-Sep	0.0	0.0	0.0	0.0	0.0	Z	0.4	0.3	0.5	0.4	0.3	0.8	0.0	0.1	1.9	0.5	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.2	1.9
11-Sep	Z	0.0	0.0	0.0	0.0	0.4	3.4	0.5	0.5	0.1	0.3	0.1	0.1	0.4	0.2	0.4	0.0	0.0	0.1	0.0	0.0	0.0	0.0	0.0	0.3	3.4
12-Sep	0.0	Z	0.1	0.1	0.0	0.4	0.6	0.1	0.2	0.2	0.2	0.2	0.3	1.3	0.6	0.2	0.2	0.2	0.1	0.0	0.0	0.0	0.0	0.0	0.2	1.3
13-Sep	0.0	0.0	Z	0.0	0.0	0.1	0.1	0.1	0.3	0.1	0.2	0.1	1.3	0.4	0.3	0.6	0.3	0.9	1.5	7.0	0.4	0.7	0.1	0.1	0.7	7.0
14-Sep	0.1	0.1	0.1	Z	0.1	0.1	0.8	1.1	0.7	0.4	0.4	0.3	0.4	0.4	0.2	0.5	0.0	0.1	0.1	0.2	0.2	0.1	0.0	0.0	0.3	1.1
15-Sep	0.2	0.0	0.1	0.2	Z	0.0	0.1	0.7	0.3	0.5	1.1	0.2	0.2	0.2	0.0	0.0	0.0	0.1	0.1	0.1	0.1	0.1	0.0	0.1	0.2	1.1
16-Sep	0.1	0.0	0.0	0.0	0.0	Z	1.6	2.9	1.4	1.2	0.4	0.1	0.1	0.0	0.0	0.0	0.0	0.0	0.0	0.1	0.1	0.1	0.0	0.0	0.4	2.9
17-Sep	Z	0.1	0.1	0.1	0.2	0.5	0.6	1.2	0.2	0.1	0.5	0.2	0.6	0.1	0.0	0.0	0.0	0.0	0.0	0.0	0.1	0.1	0.0	0.1	0.2	1.2
18-Sep	0.1	Z	0.2	0.1	0.3	1.6	0.9	1.4	2.0	2.7	1.8	0.9	0.8	0.5	0.6	0.2	0.4	0.1	0.4	0.0	0.0	0.0	0.1	0.1	0.7	2.7
19-Sep	0.1	0.1	Z	0.0	0.0	0.0	5.8	7.3	1.2	0.5	3.5	0.8	0.3	1.6	1.1	0.6	0.1	0.0	0.0	0.0	0.0	0.0	0.0	0.0	1.0	7.3
20-Sep	0.0	0.0	0.0	Z	0.0	0.3	0.8	0.6	0.4	0.5	0.8	2.6	0.6	2.7	1.6	0.2	0.4	0.3	0.0	0.0	5.9	2.2	0.8	0.9	0.9	5.9
21-Sep	0.9	0.2	0.0	0.0	Z	6.1	2.3	3.6	3.4	2.1	1.2	0.2	0.1	0.2	0.4	0.2	0.1	0.2	0.2	0.2	0.1	0.1	0.1	0.0	1.0	6.1
22-Sep	0.1	0.1	0.1	0.0	0.1	Z	1.2	1.4	1.0	2.4	0.8	1.1	0.2	0.5	0.0	0.1	0.1	0.4	0.2	0.1	0.1	0.1	0.1	0.0	0.4	2.4
23-Sep	Z	0.1	0.1	0.1	0.1	0.2	0.3	0.1	1.7	0.4	0.4	0.2	0.4	0.1	0.1	0.0	0.0	0.1	0.0	0.1	0.1	0.1	0.1	0.1	0.2	1.7
24-Sep	0.1	Z	0.0	0.0	0.1	0.1	0.5	0.2	C	C	C	C	C	M	M	M	M	M	M	M	M	M	M	M	--	0.5
25-Sep	M	M	M	M	M	M	M	M	M	C	C	C	C	1.3	0.1	0.4	0.4	0.0	0.0	0.0	0.0	0.4	0.1	1.3	--	1.3
26-Sep	0.6	0.7	0.2	Z	0.6	0.7	12.5	1.9	2.0	0.7	1.1	0.3	0.8	0.3	0.2	0.1	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.1	1.0	12.5
27-Sep	0.1	0.1	0.1	0.1	Z	0.2	0.2	0.2	1.2	1.6	1.6	1.4	2.9	1.2	0.1	0.3	0.1	0.0	0.2	0.0	0.1	0.1	0.1	0.0	0.5	2.9
28-Sep	0.0	0.0	0.0	0.0	0.0	Z	1.4	0.0	0.7	0.1	0.7	0.3	0.2	0.0	0.3	0.0	0.0	0.0	0.1	0.2	0.1	0.1	0.1	0.1	0.2	1.4
29-Sep	Z	0.0	0.0	0.0	0.0	0.1	0.1	0.0	0.5	0.4	0.9	0.5	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	2.8	0.2	2.8
30-Sep	9.3	Z	10.2	4.7	0.4	0.1	0.0	0.6	0.4	1.2	3.0	10.0	18.6	4.8	0.4	0.1	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	2.8	18.6
	0.5	0.1	0.5	0.3	0.1	0.5	1.3	1.0	0.8	0.6	0.9	0.9	1.4	0.9	0.8	0.2	0.1	0.2	0.1	0.3	0.3	0.5	0.3	0.2	Diurnal Average	
	9.3	0.7	10.2	4.7	0.6	6.1	12.5	7.3	3.4	2.7	3.5	10.0	18.6	5.3	8.1	1.4	1.3	2.0	1.5	7.0	5.9	8.8	5.7	2.8	Diurnal Maximum	

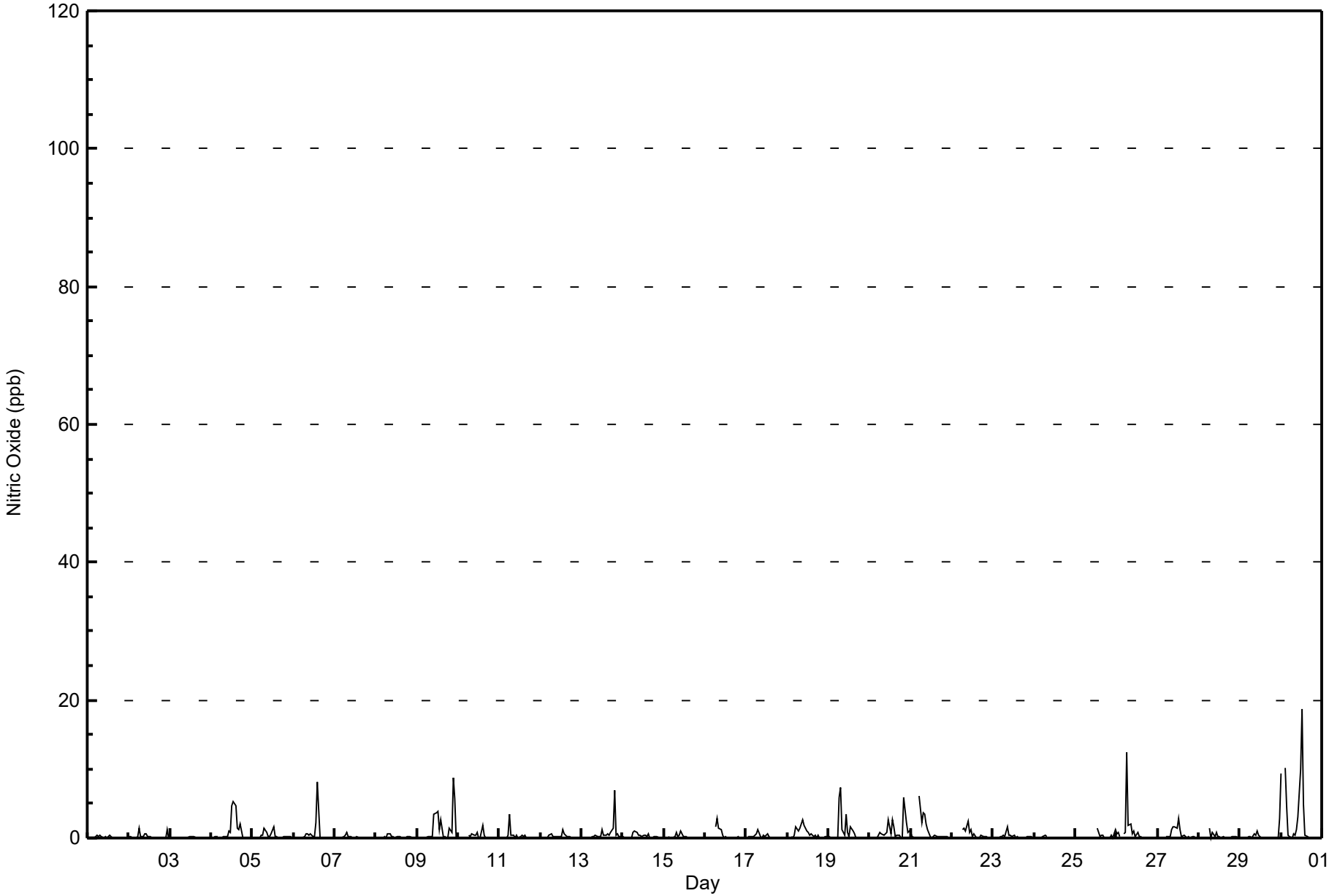
Z - zerospan C - Calibration M - Maintenance

Wood Buffalo Environmental Association

Hourly Averages

Nitric Oxide (NO) - ppb

Jackfish 1 - September 2024



Concentration Ranges (ppb)	Number of Hours	%	Cumulative %
0 - 20	662	100.00	100.00
21 - 40	0	0.00	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: 662

Total Number of Hours: 720

Wood Buffalo Environmental Association

Frequency Distribution

Nitric Oxide (NO) - ppb

Jackfish 1 - September 2024

Concentration Ranges (ppb)	Wind Direction																
	N	NNE	NE	ENE	E	ESE	SE	SSE	S	SSW	SW	WSW	W	WNW	NW	NNW	**Totals**
0 - 20	13	18	10	2	2	11	13	78	123	98	41	28	26	72	73	52	660
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	13	18	10	2	2	11	13	78	123	98	41	28	26	72	73	52	660

Total Number of Valid Hours: 660

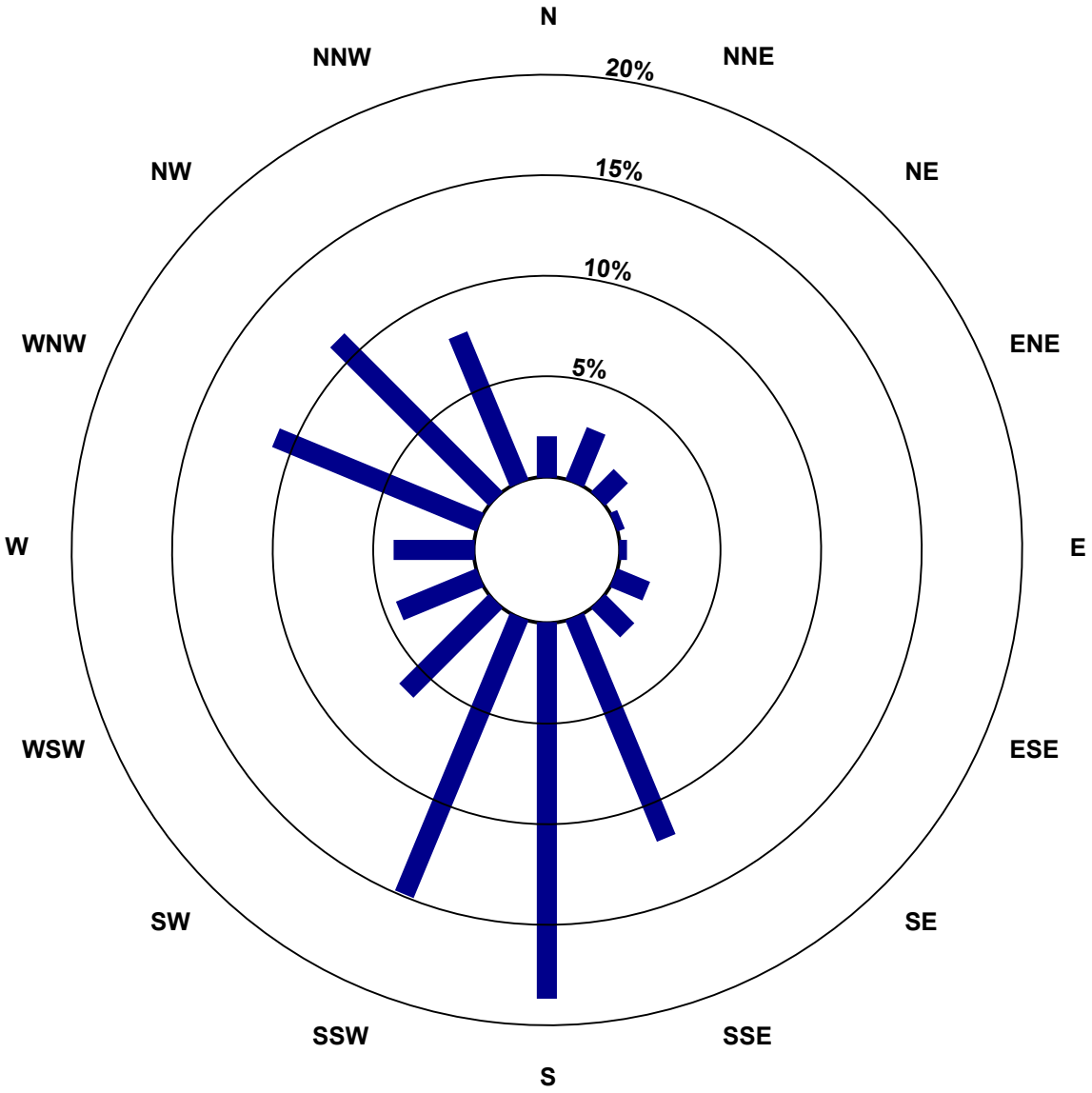
Total Number of Hours: 720

Wood Buffalo Environmental Association

Wind Rose Sep 2024

Nitric Oxide (NO) - ppb

Jackfish 1



Classes (ppb)

0 - 20

21 - 40

11 - 80

81 - 159

> 159

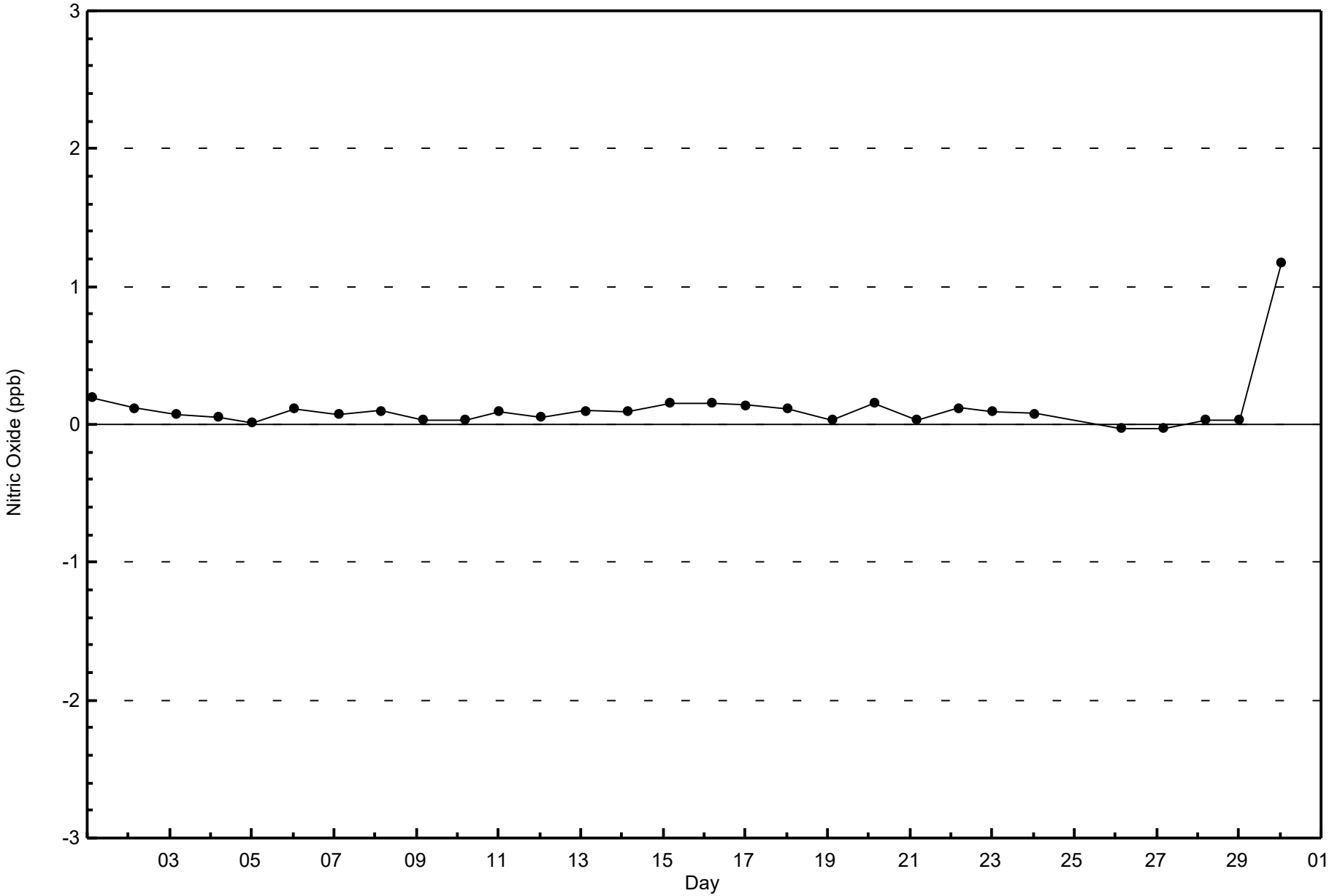
Total Number of Valid Hours: 660

Wood Buffalo Environmental Association

Zero Responses

Nitric Oxide (NO) - ppb

Jackfish 1 - September 2024

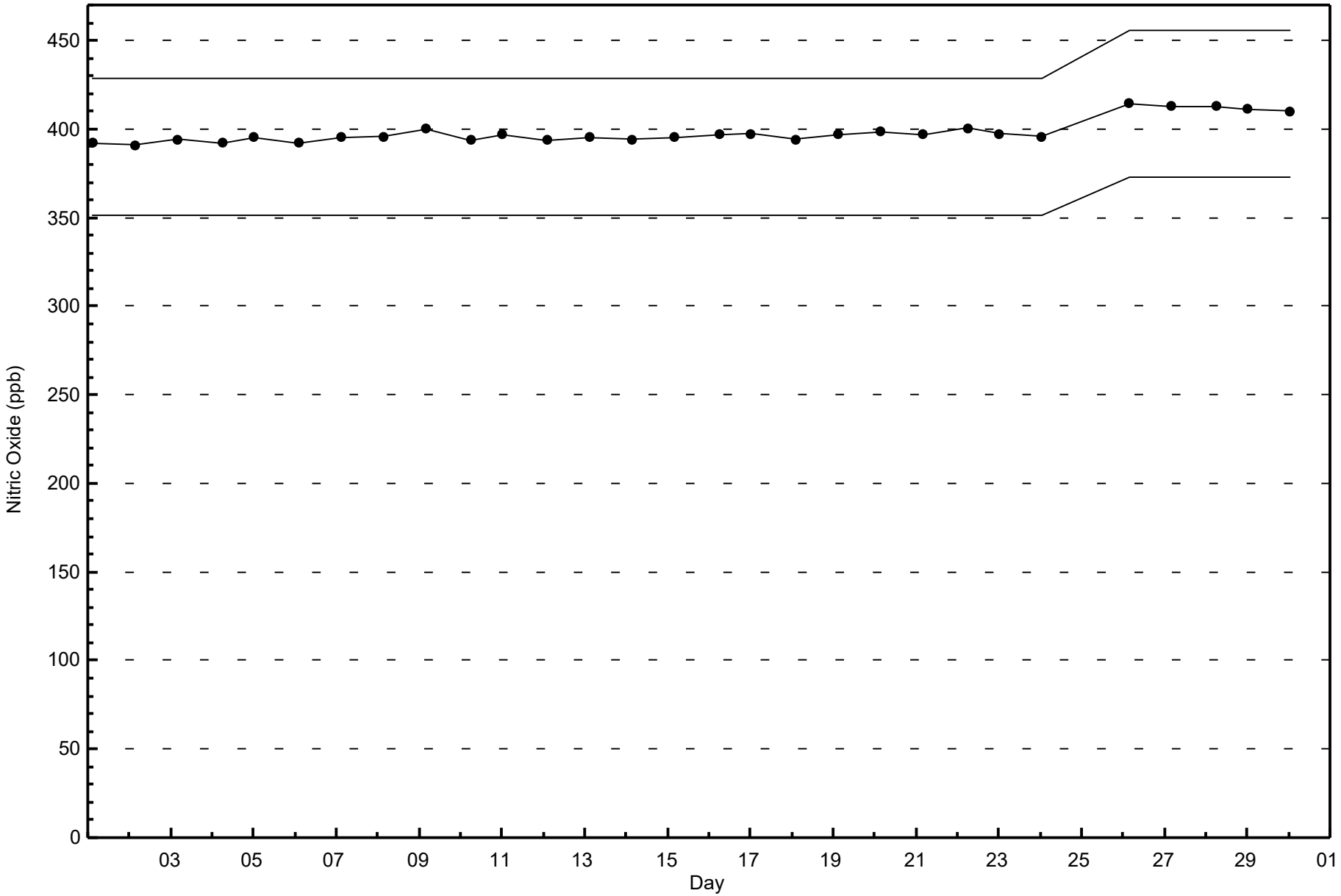


Wood Buffalo Environmental Association

Span Responses

Nitric Oxide (NO) - ppb

Jackfish 1 - September 2024



Wood Buffalo Environmental Association

Summary of Hour Averages

Nitrogen Dioxide (NO_2) - ppb

Jackfish 1 - September 2024

Number of Exceedences (AAAQO): 1-hr: 0 24-hr: 0
Maximum Value: 19.5 ppb on Sep 30 13:00 Maximum Daily Average: 4.3 ppb on Sep 30

Minimum Value: 0.0 ppb on Sep 26 18:00 Minimum Daily Average: 0.6 ppb on Sep 28
Maximum Diurnal Average: 2.5 ppb at hour 13 Minimum Diurnal Average: 1.0 ppb at hour 19
Monthly Average: 1.63 ppb Percentiles: P_1 = 0.1 P_{10} = 0.3 Q_1 = 0.6 Median = 1.0 Q_3 = 1.9 P_{90} = 3.5 P_{99} = 10.3

Hours in Service:	720
Hours of Data:	662
Hours of Missing Data:	58
Hours of Calibration:	38
Percent Operational Time:	97.2

Day	Hourly Period Ending At (MST)																								Daily	Daily
	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24	Average	Maximum
1-Sep	0.2	1.8	Z	2.6	2.0	2.5	1.5	1.3	1.1	0.8	0.9	0.7	0.9	1.9	0.9	0.7	0.4	0.4	0.5	0.5	0.5	0.5	0.6	0.6	1.0	2.6
2-Sep	0.5	0.5	0.4	Z	0.6	1.5	2.7	1.0	1.5	3.2	3.0	0.9	1.4	0.7	0.6	0.5	0.6	0.6	0.9	1.6	3.1	4.7	5.5	1.0	1.6	5.5
3-Sep	1.6	1.1	1.0	1.1	Z	1.3	0.7	0.6	0.5	0.5	0.6	1.1	1.1	1.3	1.1	0.9	0.9	1.0	1.1	1.4	1.0	0.9	1.5	1.7	1.0	1.7
4-Sep	1.4	1.5	2.2	2.0	2.2	Z	0.6	0.5	0.5	0.4	1.0	1.4	5.0	7.1	6.3	3.0	3.6	6.6	0.5	0.9	0.9	0.9	1.0	1.3	2.2	7.1
5-Sep	Z	1.7	0.7	0.8	1.1	2.7	1.9	2.8	1.6	0.9	0.6	1.6	3.6	1.1	1.1	0.5	0.3	0.4	0.4	0.3	0.2	0.7	1.6	1.7	1.2	3.6
6-Sep	2.1	Z	2.3	2.2	1.9	2.0	2.3	2.7	2.4	3.9	4.6	2.1	1.2	2.4	5.6	0.9	0.9	1.0	0.9	1.0	1.1	1.2	1.6	2.2	2.1	5.6
7-Sep	3.5	3.6	Z	2.0	2.1	3.1	2.9	2.1	1.5	1.4	1.4	1.4	1.4	1.5	1.3	1.2	1.0	0.9	0.8	0.8	0.7	0.6	0.5	0.5	1.6	3.6
8-Sep	0.6	0.7	0.8	Z	0.9	2.1	1.4	2.9	1.7	1.8	2.2	1.5	1.2	0.8	1.2	1.0	1.0	1.0	1.2	1.3	2.1	2.2	1.8	2.1	1.5	2.9
9-Sep	2.0	1.9	1.6	1.6	Z	2.1	2.5	2.4	2.1	2.2	5.1	3.4	5.6	3.4	4.6	0.6	1.1	0.6	0.8	5.1	2.6	13.2	11.2	0.6	3.3	13.2
10-Sep	0.4	0.3	0.3	0.3	0.3	Z	2.3	0.9	1.3	1.2	1.1	1.4	0.5	0.6	2.9	1.5	1.1	1.2	0.3	0.3	0.3	0.4	0.4	0.3	0.9	2.9
11-Sep	Z	0.2	0.2	0.2	0.2	1.4	2.3	0.6	0.7	0.5	0.7	0.6	0.8	0.9	0.8	1.2	0.4	0.3	0.3	0.3	0.3	0.2	0.2	0.2	0.6	2.3
12-Sep	0.3	Z	0.6	0.5	0.6	1.1	1.7	1.4	1.8	2.2	1.5	1.4	1.5	1.5	1.2	1.1	1.5	1.1	0.8	0.8	0.7	0.8	0.8	0.9	1.1	2.2
13-Sep	0.8	0.8	Z	0.7	0.8	0.7	1.2	1.9	1.4	1.2	1.4	1.5	2.1	2.2	1.9	3.2	3.3	4.1	5.9	9.8	3.5	3.1	1.9	1.3	2.4	9.8
14-Sep	0.8	0.6	1.2	Z	0.6	0.8	2.3	1.5	1.5	0.9	1.2	1.2	1.3	1.1	1.0	1.6	0.5	0.6	0.5	0.4	0.4	0.5	0.8	0.9	1.0	2.3
15-Sep	0.6	0.8	0.6	1.2	Z	1.1	1.2	2.2	1.8	1.4	2.2	0.8	0.9	1.0	0.4	0.4	0.4	0.4	0.3	0.5	0.4	0.4	0.9	0.4	0.9	2.2
16-Sep	0.2	0.4	0.4	0.6	1.1	Z	3.3	3.7	2.3	2.2	1.5	0.5	0.5	0.4	0.3	0.4	0.4	0.4	0.4	0.5	0.4	0.5	0.5	0.5	0.9	3.7
17-Sep	Z	0.6	0.3	0.2	0.6	0.8	1.5	1.6	0.5	0.4	1.5	1.0	1.7	0.8	0.8	0.6	0.7	0.6	0.4	0.4	0.4	0.3	0.4	0.3	0.7	1.7
18-Sep	0.3	Z	0.6	0.6	1.8	3.2	2.8	2.5	3.3	5.4	5.4	4.0	2.4	1.6	1.4	1.1	1.5	0.6	1.9	0.7	1.2	0.8	2.7	1.5	2.1	5.4
19-Sep	2.5	1.8	Z	1.2	2.3	0.9	4.6	6.5	2.4	1.4	5.3	2.2	1.2	3.3	4.0	4.0	1.4	2.1	1.6	0.9	0.4	1.2	0.5	1.2	2.3	6.5
20-Sep	1.0	0.7	0.6	Z	0.5	0.9	2.0	2.4	1.7	3.7	3.3	4.0	2.1	3.8	3.5	1.9	3.5	1.3	0.6	1.0	8.8	6.5	4.0	4.4	2.7	8.8
21-Sep	4.8	1.3	0.8	1.1	Z	4.5	3.5	1.9	2.0	1.8	1.5	0.6	0.2	0.3	0.7	0.8	0.2	0.2	0.3	0.4	0.5	0.5	0.6	0.7	1.3	4.8
22-Sep	0.9	1.5	1.7	1.6	1.3	Z	4.0	2.8	2.4	2.9	1.7	2.0	1.2	1.1	0.9	0.7	0.6	2.4	1.5	0.5	0.3	0.4	0.9	0.6	1.5	4.0
23-Sep	Z	0.6	0.5	0.3	0.9	1.4	1.0	0.9	2.3	2.0	1.2	0.8	0.9	0.4	0.4	0.3	0.5	0.5	0.4	0.4	0.4	0.4	0.4	0.4	0.8	2.3
24-Sep	0.6	Z	0.7	0.7	0.7	0.8	0.9	0.6	C	C	C	C	C	M	M	M	M	M	M	M	M	M	M	M	--	0.9
25-Sep	M	M	M	M	M	M	M	M	M	C	C	C	C	2.5	1.5	2.9	2.4	1.0	4.1	1.3	1.8	4.8	4.4	5.7	--	5.7
26-Sep	2.8	5.8	2.3	Z	4.4	4.2	14.2	8.2	9.3	6.5	5.0	1.7	1.7	0.4	0.4	0.1	0.2	0.0	0.0	0.4	0.2	0.0	0.0	0.2	3.0	14.2
27-Sep	0.4	0.2	1.5	0.6	Z	1.6	0.9	1.0	2.6	3.8	3.8	3.5	7.8	4.2	1.3	1.8	1.5	0.5	1.0	0.8	0.2	0.0	0.0	0.2	1.7	7.8
28-Sep	0.3	0.5	0.1	0.0	0.4	Z	1.6	0.7	1.8	0.8	1.5	1.2	0.6	0.2	0.8	0.3	0.2	0.6	0.3	0.2	0.4	0.2	0.2	0.2	0.6	1.8
29-Sep	Z	1.0	0.6	0.7	0.8	0.6	0.8	0.6	0.9	1.0	1.4	0.6	0.3	0.3	0.2	0.3	0.5	0.4	0.8	1.9	1.7	3.1	2.4	4.2	1.1	4.2
30-Sep	14.8	Z	12.4	7.5	2.0	0.8	0.8	1.6	1.4	2.5	4.3	11.5	19.5	8.2	1.7	0.9	0.4	0.4	1.6	1.6	1.2	2.0	2.0	0.5	4.3	19.5
	1.8	1.2	1.4	1.3	1.3	1.8	2.4	2.1	1.9	2.0	2.3	2.0	2.5	1.9	1.7	1.2	1.1	1.1	1.0	1.2	1.2	1.8	1.7	1.3	Diurnal Average	
	14.8	5.8	12.4	7.5	4.4	4.5	14.2	8.2	9.3	6.5	5.4	11.5	19.5	8.2	6.3	4.0	3.6	6.6	5.9	9.8	8.8	13.2	11.2	5.7	Diurnal Maximum	

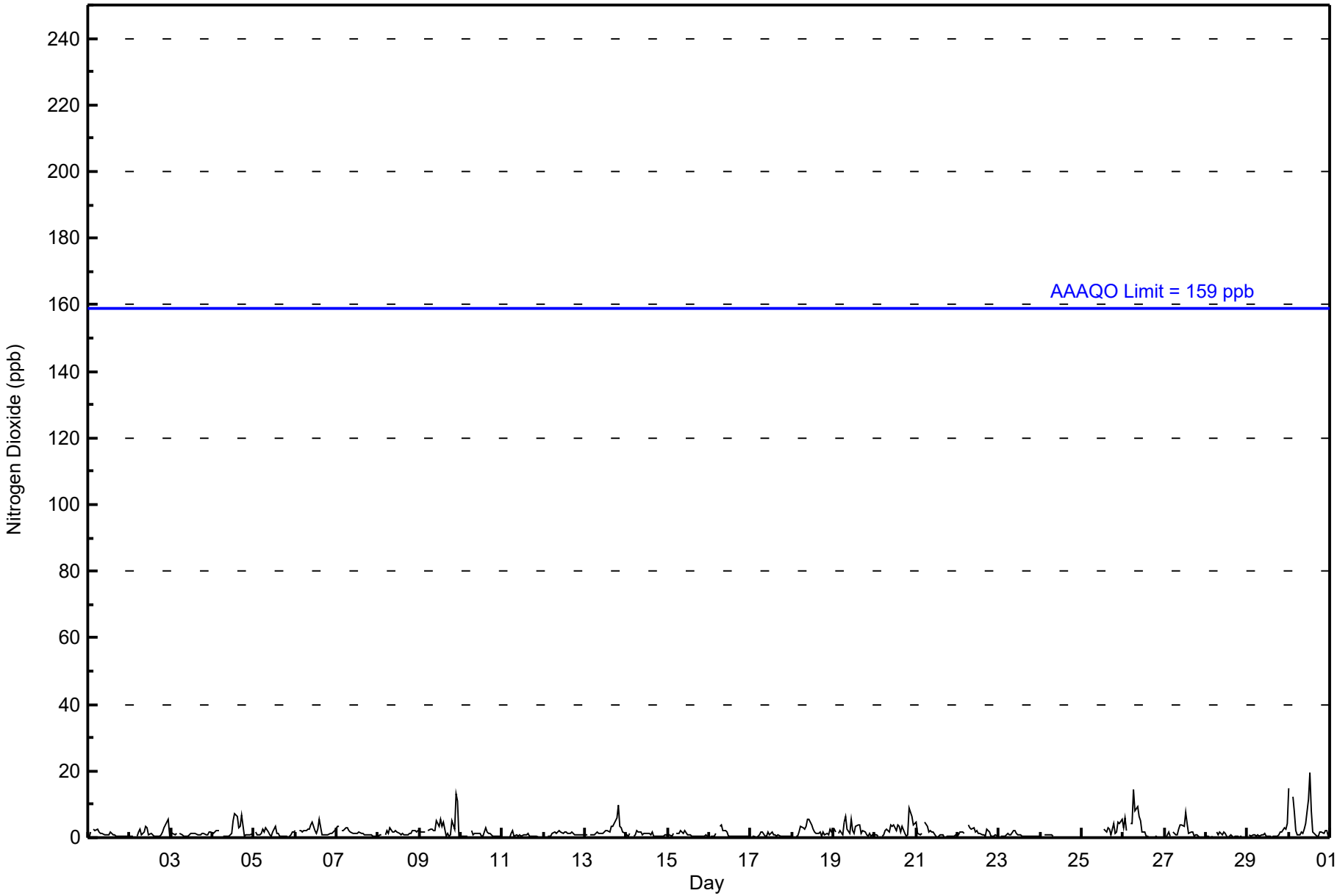
Z - zerospan C - Calibration M - Maintenance
Alberta Ambient Air Quality Objectives (AAAQO): 1-hr 159 ppb

Wood Buffalo Environmental Association

Hourly Averages

Nitrogen Dioxide (NO_2) - ppb

Jackfish 1 - September 2024



Nitrogen Dioxide (NO_2) - ppb
Jackfish 1 - September 2024

Concentration Ranges (ppb)	Number of Hours	%	Cumulative %
0 - 20	662	100.00	100.00
21 - 40	0	0.00	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: 662

Total Number of Hours: 720

Wood Buffalo Environmental Association

Frequency Distribution

Nitrogen Dioxide (NO_2) - ppb

Jackfish 1 - September 2024

Concentration Ranges (ppb)	Wind Direction																
	N	NNE	NE	ENE	E	ESE	SE	SSE	S	SSW	SW	WSW	W	WNW	NW	NNW	**Totals**
0 - 20	13	18	10	2	2	11	13	78	123	98	41	28	26	72	73	52	660
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	13	18	10	2	2	11	13	78	123	98	41	28	26	72	73	52	660

Total Number of Valid Hours: 660

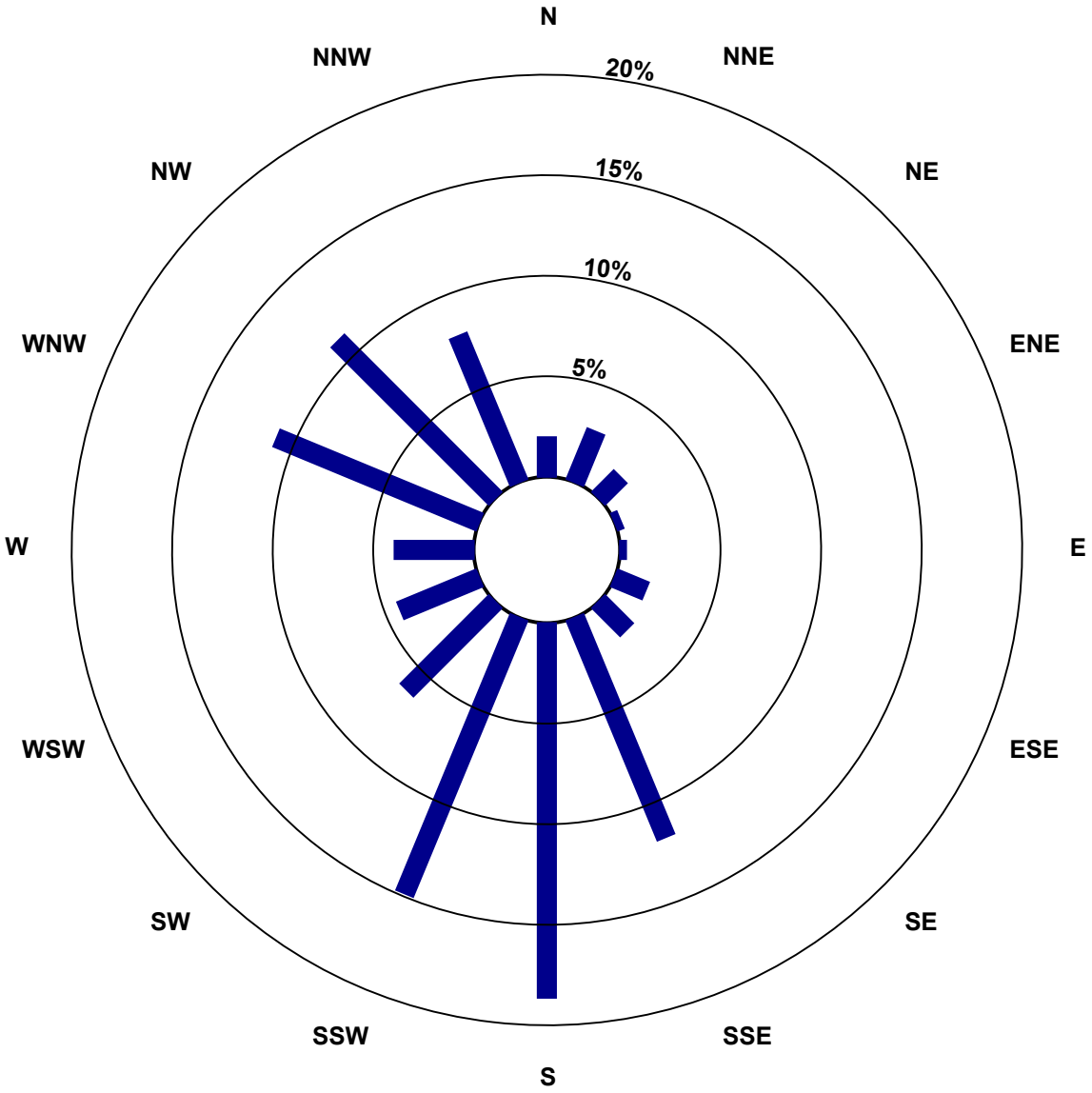
Total Number of Hours: 720

Wood Buffalo Environmental Association

Wind Rose Sep 2024

Nitrogen Dioxide (NO_2) - ppb

Jackfish 1



Classes (ppb)

0 - 20

21 - 40

11 - 80

81 - 159

> 159

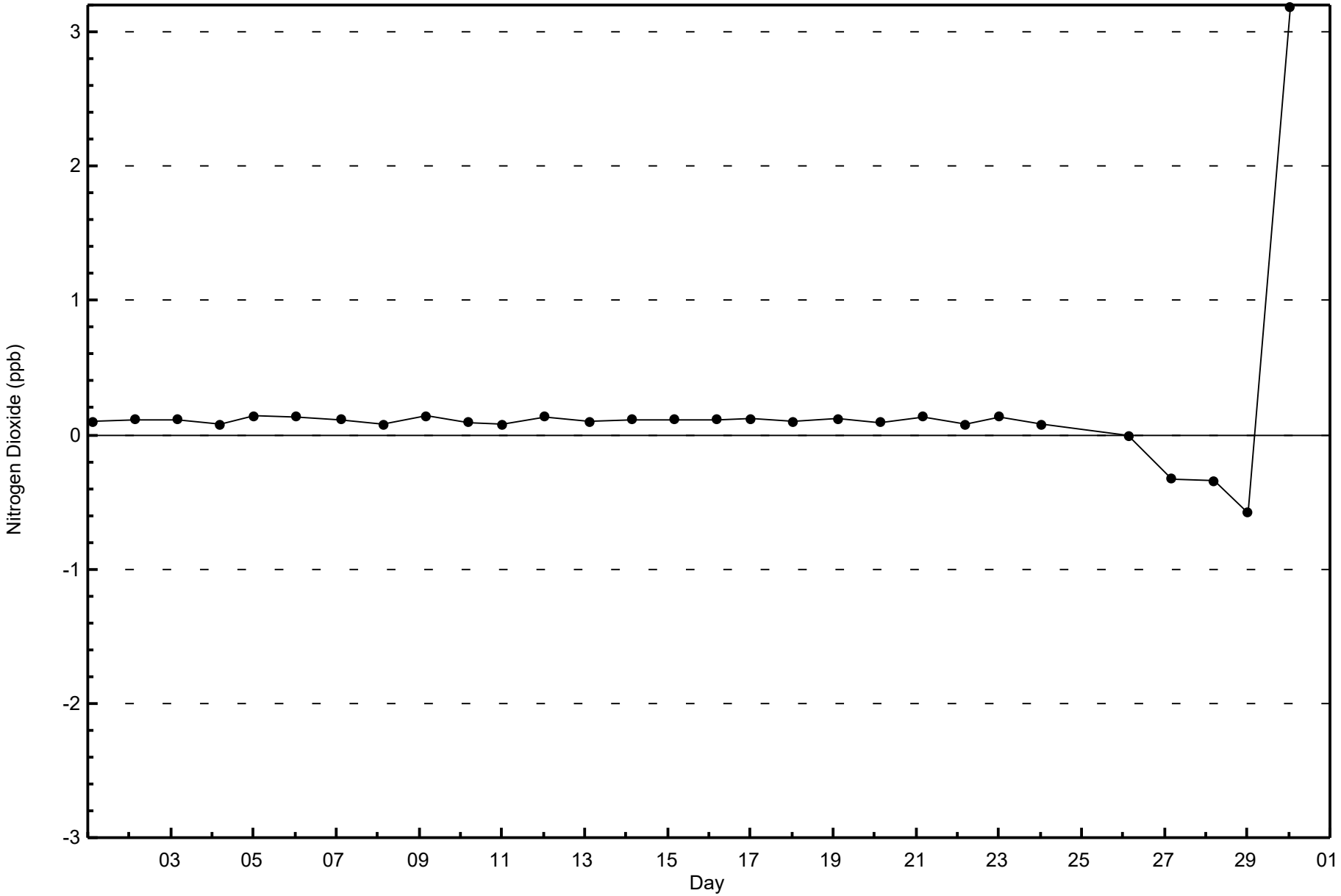
Total Number of Valid Hours: 660

Wood Buffalo Environmental Association

Zero Responses

Nitrogen Dioxide (NO_2) - ppb

Jackfish 1 - September 2024

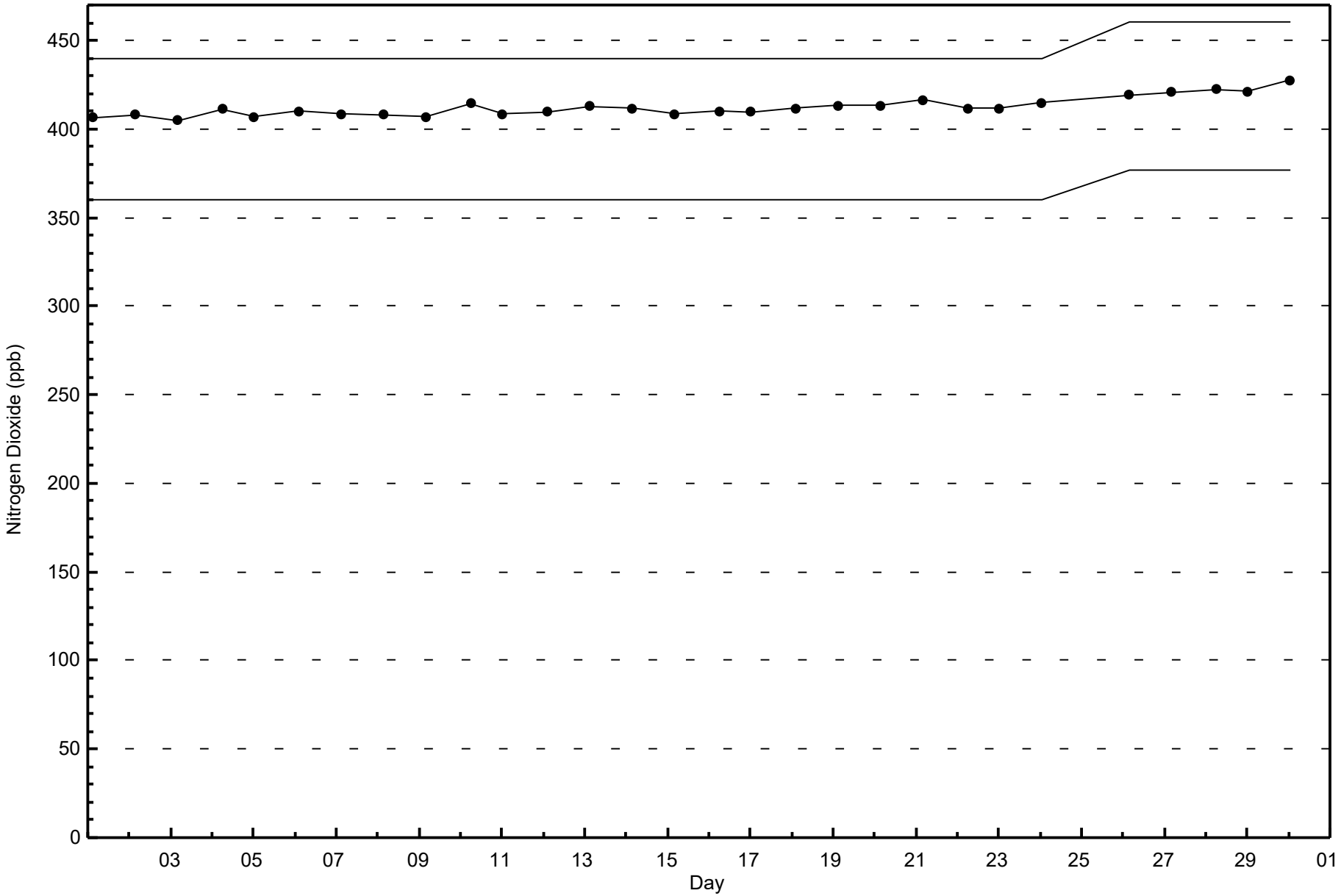


Wood Buffalo Environmental Association

Span Responses

Nitrogen Dioxide (NO_2) - ppb

Jackfish 1 - September 2024



Wood Buffalo Environmental Association

Summary of Hour Averages

Nitrogen Oxides (NO_X) - ppb

Jackfish 1 - September 2024

Maximum Value: 38.1 ppb on Sep 30 13:00

Maximum Daily Average: 7.1 ppb on Sep 30

Minimum Value: 0.0 ppb on Sep 26 18:00

Minimum Daily Average: 0.7 ppb on Sep 28

Maximum Diurnal Average: 3.8 ppb at hour 13

Minimum Diurnal Average: 1.1 ppb at hour 19

Monthly Average: 2.17 ppb

Percentiles: P_1 = 0.1 P_{10} = 0.4 Q_1 = 0.6 Median = 1.2 Q_3 = 2.3 P_{90} = 4.8 P_{99} = 16.8

Hours in Service:	720
Hours of Data:	662
Hours of Missing Data:	58
Hours of Calibration:	38
Percent Operational Time:	97.2

Day	Hourly Period Ending At (MST)																								Daily	Daily
	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24	Average	Maximum
1-Sep	0.3	1.8	Z	2.6	2.0	2.8	1.6	1.6	1.3	0.9	1.1	0.7	1.0	2.2	0.9	0.7	0.4	0.4	0.5	0.5	0.5	0.5	0.6	0.6	1.1	2.8
2-Sep	0.6	0.6	0.5	Z	0.7	1.7	4.2	1.1	1.7	3.8	3.6	1.0	1.6	0.7	0.6	0.5	0.6	0.6	0.9	1.6	3.2	4.7	6.7	1.0	1.8	6.7
3-Sep	1.6	1.1	1.1	1.1	Z	1.4	0.7	0.7	0.6	0.6	0.7	1.3	1.2	1.5	1.2	1.0	0.9	1.0	1.1	1.4	1.1	1.0	1.6	1.8	1.1	1.8
4-Sep	1.5	1.6	2.4	2.2	2.4	Z	0.7	0.6	0.6	0.5	1.9	2.3	9.7	12.4	10.9	4.4	4.9	8.6	0.6	1.0	1.0	0.9	1.1	1.4	3.2	12.4
5-Sep	Z	1.7	0.7	0.8	1.1	3.0	2.3	4.2	2.3	1.2	0.8	2.1	5.2	1.3	1.3	0.6	0.3	0.4	0.5	0.4	0.4	0.9	1.8	1.8	1.5	5.2
6-Sep	2.2	Z	2.3	2.2	2.0	2.1	2.5	3.3	2.9	4.2	5.3	2.4	1.4	4.6	13.7	0.9	0.9	1.0	0.9	1.0	1.1	1.2	1.6	2.2	2.7	13.7
7-Sep	3.5	3.6	Z	2.0	2.2	3.2	3.4	3.0	1.7	1.5	1.5	1.5	1.4	1.6	1.4	1.3	1.1	0.9	0.8	0.9	0.8	0.7	0.6	0.6	1.7	3.6
8-Sep	0.6	0.7	0.8	Z	0.9	2.3	1.5	3.5	2.3	2.0	2.4	1.6	1.4	1.0	1.4	1.1	1.1	1.1	1.4	1.5	2.2	2.3	1.9	2.1	1.6	3.5
9-Sep	2.0	1.9	1.7	1.7	Z	2.2	2.7	2.6	2.3	2.5	8.5	7.0	9.5	4.7	7.3	0.7	1.2	0.6	0.8	6.5	3.4	22.0	16.9	0.6	4.7	22.0
10-Sep	0.4	0.3	0.3	0.3	0.3	Z	2.7	1.2	1.8	1.6	1.4	2.2	0.5	0.7	4.8	2.0	1.1	1.2	0.3	0.3	0.3	0.4	0.4	0.3	1.1	4.8
11-Sep	Z	0.2	0.2	0.2	0.2	1.8	5.7	1.1	1.2	0.6	1.0	0.7	0.9	1.3	1.0	1.6	0.4	0.3	0.4	0.3	0.3	0.2	0.2	0.2	0.9	5.7
12-Sep	0.3	Z	0.7	0.6	0.6	1.5	2.3	1.5	2.0	2.4	1.7	1.6	1.8	2.8	1.8	1.3	1.7	1.3	0.9	0.8	0.7	0.8	0.8	0.9	1.3	2.8
13-Sep	0.8	0.8	Z	0.7	0.8	0.8	1.3	2.0	1.7	1.3	1.6	1.6	3.4	2.6	2.2	3.8	3.6	5.0	7.4	16.8	3.9	3.8	2.0	1.4	3.0	16.8
14-Sep	0.9	0.7	1.3	Z	0.7	0.9	3.1	2.6	2.2	1.3	1.6	1.5	1.7	1.5	1.2	2.1	0.5	0.7	0.6	0.6	0.6	0.6	0.8	0.9	1.2	3.1
15-Sep	0.8	0.8	0.7	1.4	Z	1.1	1.3	2.9	2.1	1.9	3.3	1.0	1.1	1.2	0.4	0.4	0.4	0.5	0.4	0.6	0.5	0.5	0.9	0.5	1.1	3.3
16-Sep	0.3	0.4	0.4	0.6	1.1	Z	4.9	6.6	3.7	3.4	1.9	0.6	0.6	0.4	0.3	0.4	0.4	0.4	0.4	0.6	0.5	0.6	0.5	0.5	1.3	6.6
17-Sep	Z	0.7	0.4	0.3	0.8	1.3	2.1	2.8	0.7	0.5	2.0	1.2	2.3	0.9	0.8	0.6	0.7	0.6	0.4	0.4	0.5	0.4	0.4	0.4	0.9	2.8
18-Sep	0.4	Z	0.8	0.7	2.1	4.8	3.7	3.9	5.3	8.1	7.2	4.9	3.2	2.1	2.0	1.3	1.9	0.7	2.3	0.7	1.2	0.8	2.8	1.6	2.7	8.1
19-Sep	2.6	1.9	Z	1.2	2.3	0.9	10.4	13.8	3.6	1.9	8.8	3.0	1.5	4.9	5.1	4.6	1.5	2.1	1.6	0.9	0.4	1.2	0.5	1.2	3.3	13.8
20-Sep	1.0	0.7	0.6	Z	0.5	1.2	2.8	3.0	2.1	4.2	4.1	6.6	2.7	6.5	5.1	2.1	3.9	1.6	0.6	1.0	14.7	8.7	4.8	5.3	3.6	14.7
21-Sep	5.7	1.5	0.8	1.1	Z	10.6	5.8	5.5	5.4	3.9	2.7	0.8	0.3	0.5	1.1	1.0	0.3	0.4	0.5	0.6	0.6	0.6	0.7	0.7	2.2	10.6
22-Sep	1.0	1.6	1.8	1.6	1.4	Z	5.2	4.2	3.4	5.3	2.5	3.1	1.4	1.6	0.9	0.8	0.7	2.8	1.7	0.6	0.4	0.5	1.0	0.6	1.9	5.3
23-Sep	Z	0.7	0.6	0.4	1.0	1.6	1.3	1.0	4.0	2.4	1.6	1.0	1.3	0.5	0.5	0.3	0.5	0.6	0.4	0.5	0.5	0.5	0.5	0.5	1.0	4.0
24-Sep	0.7	Z	0.7	0.7	0.8	0.9	1.4	0.8	C	C	C	C	C	M	M	M	M	M	M	M	M	M	M	M	--	1.4
25-Sep	M	M	M	M	M	M	M	M	M	C	C	C	C	3.8	1.6	3.3	2.8	1.0	4.1	1.3	1.8	5.2	4.5	7.0	--	7.0
26-Sep	3.4	6.5	2.5	Z	5.0	4.9	26.7	10.1	11.3	7.2	6.1	2.0	2.5	0.7	0.6	0.2	0.2	0.0	0.0	0.4	0.2	0.0	0.0	0.3	4.0	26.7
27-Sep	0.5	0.3	1.6	0.7	Z	1.8	1.1	1.2	3.8	5.4	5.4	4.9	10.7	5.4	1.4	2.1	1.6	0.5	1.2	0.8	0.3	0.1	0.1	0.2	2.2	10.7
28-Sep	0.3	0.5	0.1	0.0	0.4	Z	3.0	0.7	2.5	0.9	2.2	1.5	0.8	0.2	1.1	0.3	0.2	0.6	0.4	0.4	0.5	0.3	0.3	0.3	0.7	3.0
29-Sep	Z	1.0	0.6	0.7	0.8	0.7	0.9	0.6	1.4	1.4	2.3	1.1	0.3	0.3	0.2	0.3	0.5	0.4	0.8	1.9	1.7	3.1	2.4	7.0	1.3	7.0
30-Sep	24.1	Z	22.6	12.2	2.4	0.9	0.8	2.2	1.8	3.7	7.3	21.5	38.1	13.0	2.1	1.0	0.4	0.4	1.6	1.6	1.2	2.0	2.0	0.5	7.1	38.1
	2.3	1.3	1.9	1.5	1.3	2.3	3.7	3.0	2.7	2.7	3.2	2.9	3.8	2.8	2.5	1.4	1.2	1.2	1.1	1.6	1.5	2.2	2.0	1.5	Diurnal Average	
	24.1	6.5	22.6	12.2	5.0	10.6	26.7	13.8	11.3	8.1	8.8	21.5	38.1	13.0	13.7	4.6	4.9	8.6	7.4	16.8	14.7	22.0	16.9	7.0	Diurnal Maximum	

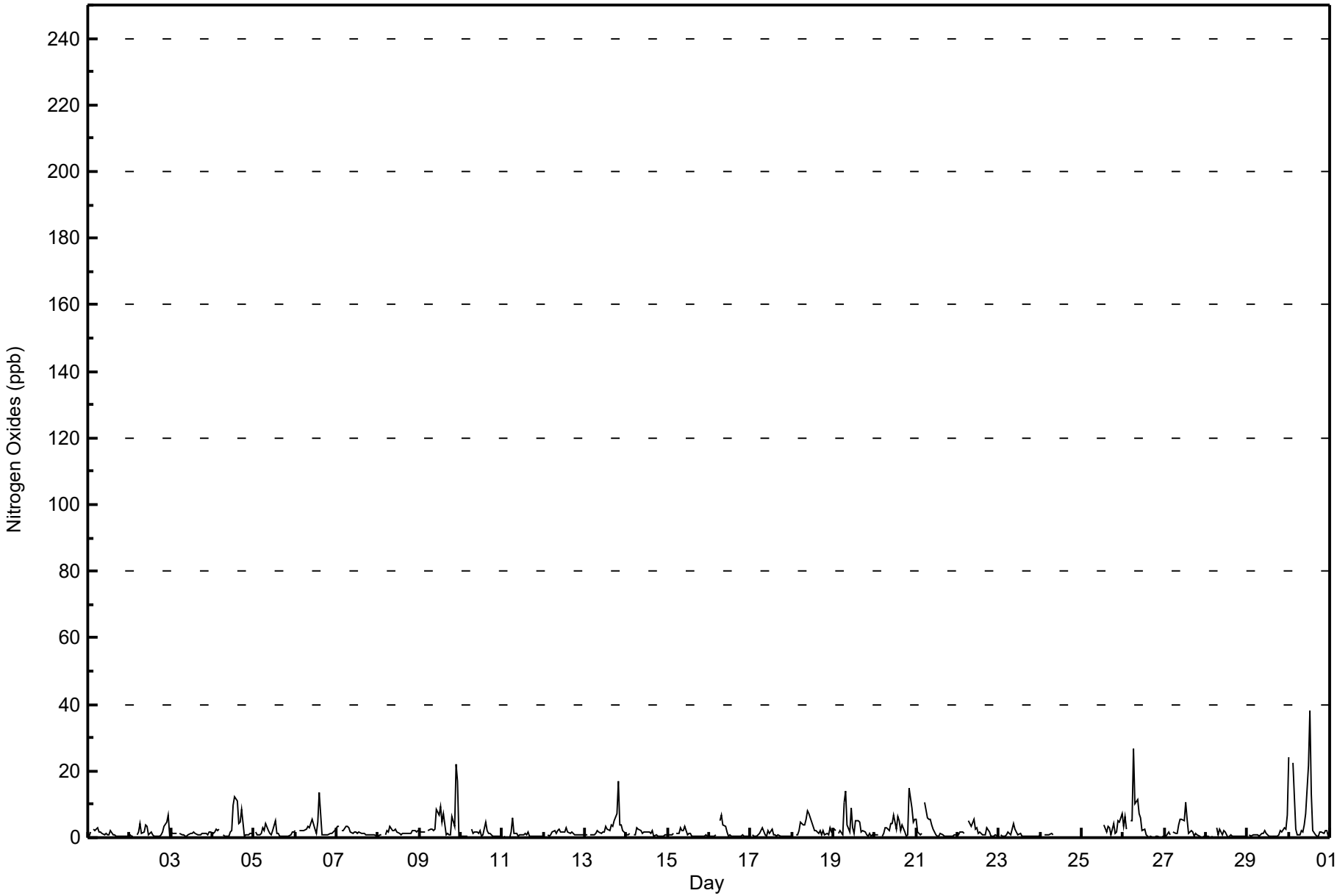
Z - zerospan C - Calibration M - Maintenance

Wood Buffalo Environmental Association

Hourly Averages

Nitrogen Oxides (NO_X) - ppb

Jackfish 1 - September 2024



Nitrogen Oxides (NO_X) - ppb
Jackfish 1 - September 2024

Concentration Ranges (ppb)	Number of Hours	%	Cumulative %
0 - 20	656	99.09	99.09
21 - 40	6	0.91	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: 662

Total Number of Hours: 720

Wood Buffalo Environmental Association

Frequency Distribution

Nitrogen Oxides (NO_X) - ppb

Jackfish 1 - September 2024

Concentration Ranges (ppb)	Wind Direction																
	N	NNE	NE	ENE	E	ESE	SE	SSE	S	SSW	SW	WSW	W	WNW	NW	NNW	**Totals**
0 - 20	13	18	10	2	2	11	13	78	123	98	41	28	26	68	71	52	654
21 - 40	0	0	0	0	0	0	0	0	0	0	0	0	0	4	2	0	6
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	13	18	10	2	2	11	13	78	123	98	41	28	26	72	73	52	660

Total Number of Valid Hours: 660

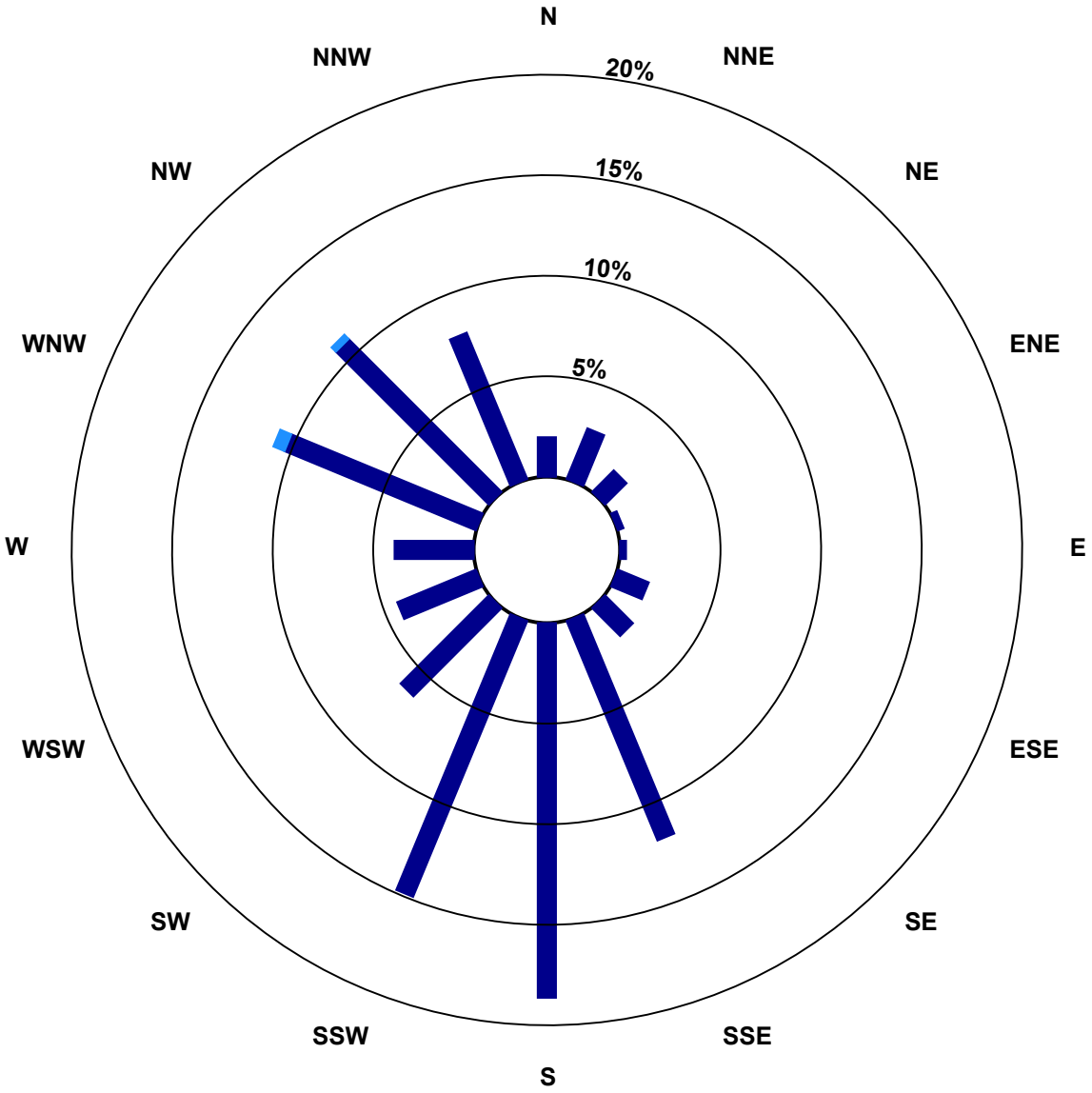
Total Number of Hours: 720

Wood Buffalo Environmental Association

Wind Rose Sep 2024

Nitrogen Oxides (NO_X) - ppb

Jackfish 1



Classes (ppb)

0 - 20

21 - 40

11 - 80

81 - 159

> 159

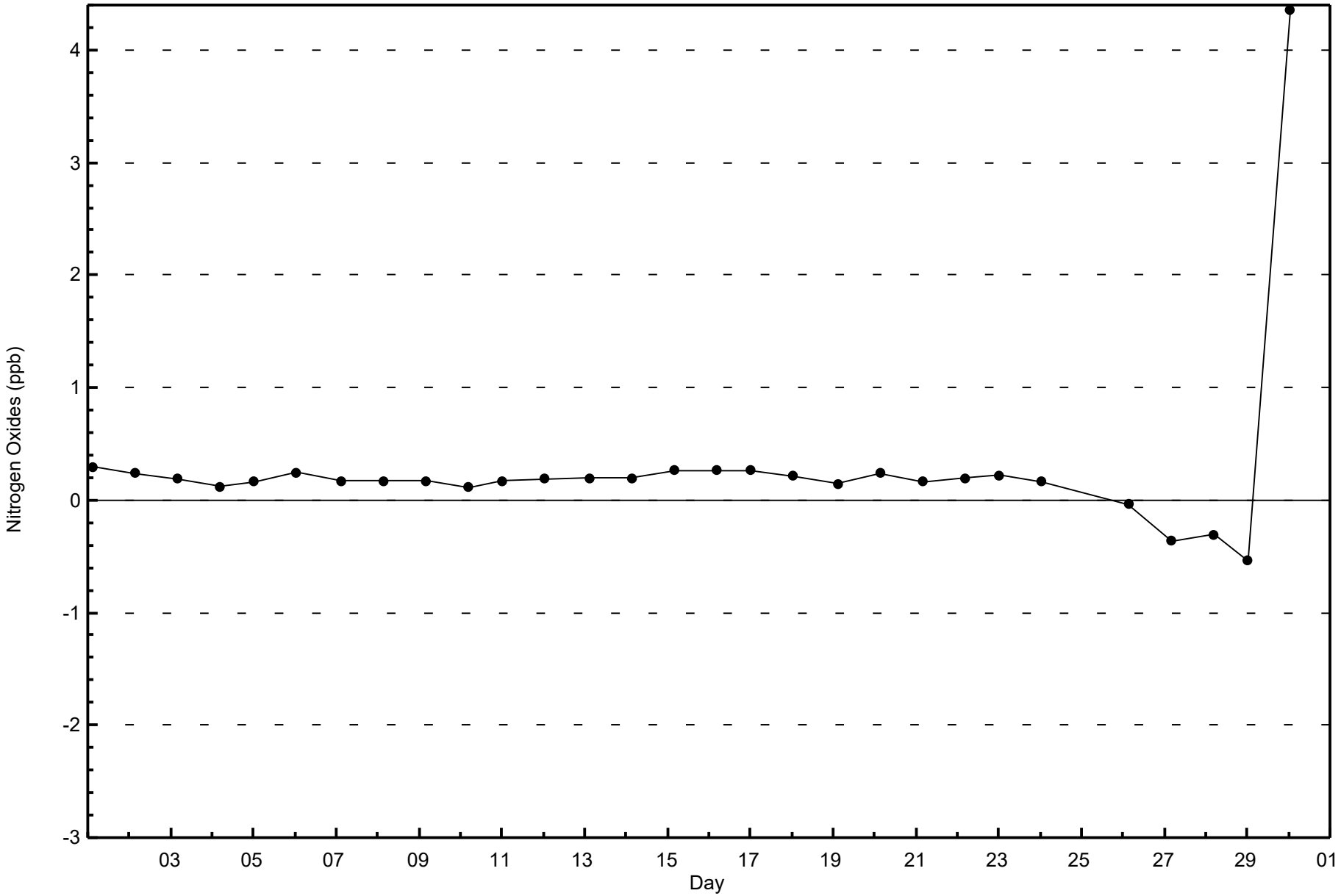
Total Number of Valid Hours: 660

Wood Buffalo Environmental Association

Zero Responses

Nitrogen Oxides (NO_X) - ppb

Jackfish 1 - September 2024

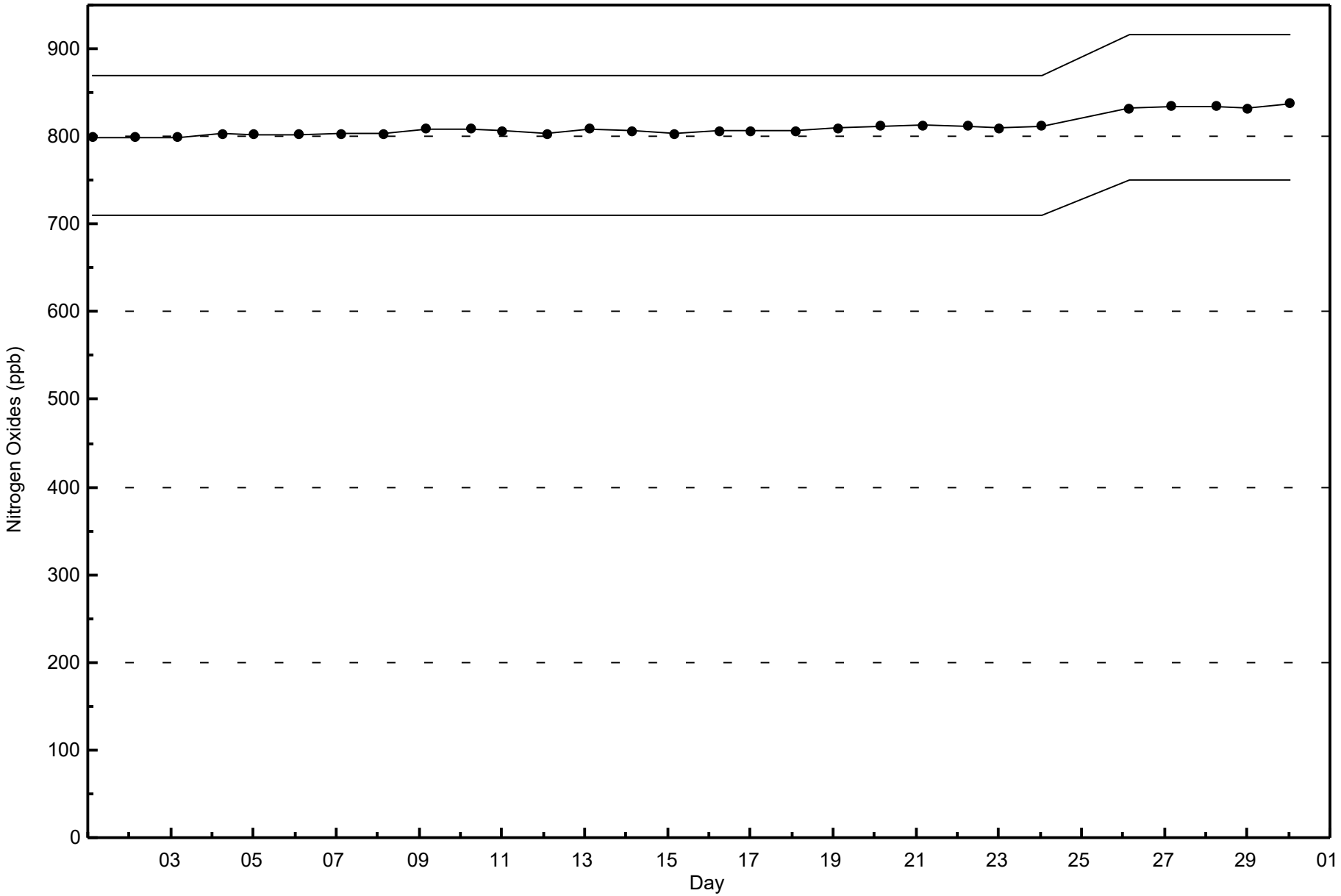


Wood Buffalo Environmental Association

Span Responses

Nitrogen Oxides (NO_X) - ppb

Jackfish 1 - September 2024



Maximum Value: 32.1 C on Sep 2 14:00

Maximum Daily Average: 22.5 C on Sep 2

Minimum Value: 0.7 C on Sep 30 07:00

Minimum Daily Average: 5.6 C on Sep 30

Maximum Diurnal Average: 18.4 C at hour 15

Minimum Diurnal Average: 8.2 C at hour 6

Monthly Average: 12.77 C

Percentiles: P_1 = 2.5 P_{10} = 6.0 Q_1 = 9.0 Median = 11.6 Q_3 = 16.2 P_{90} = 20.9 P_{99} = 29.8

Hours in Service:	720
Hours of Data:	720
Hours of Missing Data:	0
Hours of Calibration:	0
Percent Operational Time:	100.0

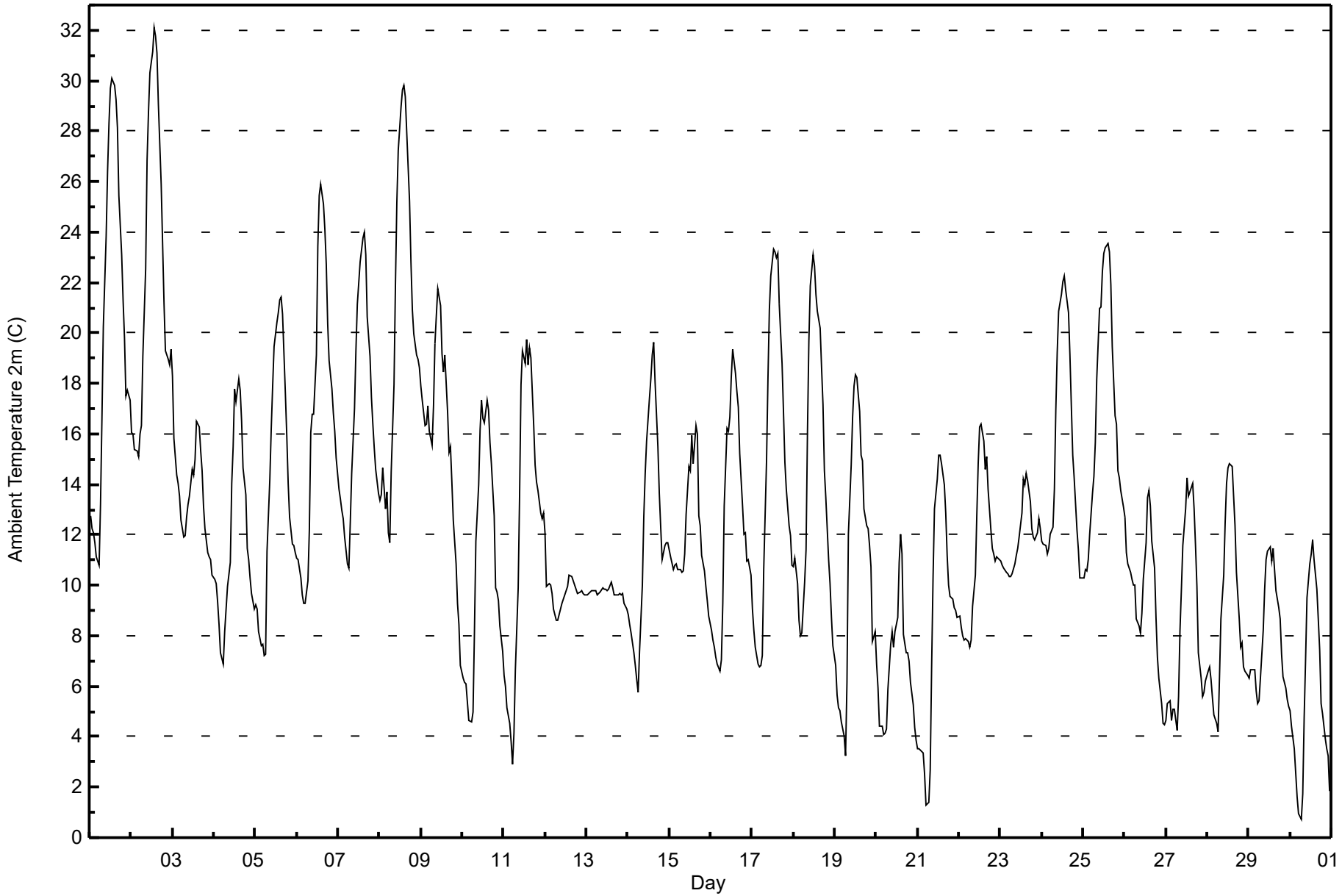
Day	Hourly Period Ending At (MST)																								Daily	Daily
	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24	Average	Maximum
1-Sep	12.8	12.2	12.1	11.7	11.1	10.8	13.2	16.6	20.3	23.9	26.4	28.3	29.7	30.1	29.8	29.3	28.1	25.5	23.1	21.3	19.8	17.5	17.8	17.3	20.4	30.1
2-Sep	16.1	16.0	15.4	15.3	15.1	16.0	16.3	19.1	22.5	26.8	28.7	30.3	31.2	32.1	31.8	31.1	29.1	25.9	23.5	21.2	19.3	19.0	18.8	19.3	22.5	32.1
3-Sep	18.3	15.9	14.4	14.0	13.5	12.6	11.9	11.9	12.7	13.2	13.6	14.6	14.4	15.0	16.5	16.3	15.3	14.5	13.1	12.3	11.3	11.1	11.0	10.4	13.7	18.3
4-Sep	10.3	10.0	9.4	8.4	7.3	6.9	8.2	9.0	10.0	10.9	14.1	15.5	17.8	17.3	18.2	17.8	16.5	14.7	13.6	11.5	11.0	10.3	9.7	9.0	12.0	18.2
5-Sep	9.2	9.1	8.2	7.6	7.6	7.2	7.3	11.3	14.2	16.2	17.9	19.5	20.4	20.8	21.3	21.4	20.7	17.6	16.0	14.1	12.7	11.6	11.6	11.3	14.0	21.4
6-Sep	11.1	11.0	10.3	9.6	9.3	9.3	10.2	12.2	16.0	16.8	16.8	19.1	23.4	25.4	25.9	25.1	24.1	22.7	20.4	18.9	17.8	16.8	16.1	15.1	16.8	25.9
7-Sep	13.8	13.4	13.0	12.6	11.9	10.8	10.7	12.5	14.4	17.0	19.3	21.1	22.0	22.8	23.8	24.0	23.1	20.6	19.1	17.5	16.4	15.5	14.6	13.7	16.8	24.0
8-Sep	13.4	13.6	14.7	13.0	13.7	12.1	11.7	14.5	17.9	21.9	25.2	27.2	29.0	29.7	29.8	29.4	28.0	25.2	22.8	20.9	20.0	19.1	19.0	18.6	20.4	29.8
9-Sep	17.9	17.4	16.3	16.4	17.1	16.1	15.5	17.1	19.6	20.7	21.8	21.1	19.2	18.5	19.1	16.8	15.2	15.5	14.1	12.6	10.9	9.3	8.4	6.8	16.0	21.8
10-Sep	6.3	6.2	6.1	5.4	4.7	4.6	5.0	8.1	11.8	14.0	16.2	17.4	16.6	16.4	17.3	16.9	15.7	14.8	12.7	9.9	9.7	9.4	8.4	7.4	10.9	17.4
11-Sep	6.4	6.0	5.1	4.5	3.8	2.9	4.1	6.7	9.9	13.6	18.0	19.3	18.8	19.7	18.7	19.4	19.0	16.3	14.8	14.1	13.7	12.9	12.6	12.9	12.2	19.7
12-Sep	12.1	9.9	10.1	10.0	9.7	9.1	8.6	8.6	8.8	9.0	9.3	9.6	9.8	10.0	10.4	10.4	10.2	10.0	9.9	9.7	9.7	9.8	9.7	9.6	9.7	12.1
13-Sep	9.6	9.7	9.7	9.8	9.8	9.8	9.6	9.7	9.8	9.9	9.8	9.8	9.8	9.9	10.1	9.9	9.6	9.6	9.6	9.6	9.6	9.7	9.3	9.1	9.7	10.1
14-Sep	8.9	8.5	8.1	7.3	6.8	6.3	5.7	7.4	10.0	12.7	14.4	15.7	17.4	18.2	19.1	19.6	18.1	15.5	13.7	12.3	11.0	11.6	11.7	11.7	12.2	19.6
15-Sep	11.4	11.1	10.6	10.8	10.9	10.6	10.6	10.5	10.6	11.3	12.8	14.7	14.6	15.9	14.8	16.3	16.0	12.8	12.4	11.2	10.6	9.9	9.4	8.8	12.0	16.3
16-Sep	8.2	7.9	7.6	7.2	6.9	6.6	7.1	9.3	13.2	16.2	16.1	16.6	18.2	19.3	18.4	17.7	17.1	15.2	13.2	12.0	12.1	11.0	11.0	10.4	12.4	19.3
17-Sep	9.1	8.2	7.6	6.9	6.7	6.8	7.2	10.7	15.0	18.2	20.9	22.3	23.3	23.2	23.0	23.2	21.1	18.8	16.9	14.9	13.8	12.3	11.9	10.8	14.7	23.3
18-Sep	10.8	11.1	10.1	8.6	8.0	8.1	10.1	11.4	16.1	19.7	21.9	23.1	22.6	21.5	20.9	20.2	18.6	17.2	14.5	13.5	11.0	10.1	8.7	7.6	14.4	23.1
19-Sep	6.8	5.7	5.2	5.1	4.6	4.0	3.3	6.2	12.1	14.8	16.7	17.9	18.4	18.2	16.9	15.2	14.9	13.1	12.3	12.3	11.6	10.7	7.8	8.2	10.9	18.4
20-Sep	6.9	5.9	4.4	4.4	4.1	4.2	4.3	5.9	7.7	8.2	7.5	8.2	8.7	10.9	12.0	11.2	8.0	7.3	7.3	7.0	6.2	5.3	4.4	3.9	6.8	12.0
21-Sep	3.6	3.5	3.4	3.4	2.5	1.3	1.4	2.7	6.8	10.3	13.0	14.2	15.1	15.1	14.8	14.0	12.9	11.2	10.0	9.6	9.4	9.1	9.0	8.7	8.5	15.1
22-Sep	8.8	8.4	8.0	7.8	7.9	7.8	7.6	7.8	9.2	10.4	12.7	14.8	16.2	16.4	15.7	14.6	15.1	13.8	12.2	11.4	11.3	11.0	11.1	11.0	11.3	16.4
23-Sep	11.0	10.8	10.7	10.5	10.5	10.3	10.3	10.5	10.9	11.2	11.5	11.9	12.8	14.2	14.0	14.4	14.1	13.3	12.2	11.9	11.8	12.1	12.6	12.3	11.9	14.4
24-Sep	11.8	11.6	11.6	11.3	11.5	12.0	12.3	13.8	16.9	19.2	20.9	21.5	22.0	22.2	21.7	20.8	19.2	17.1	15.2	14.3	12.2	11.4	10.3	10.3	15.5	22.2
25-Sep	10.3	10.6	10.6	11.0	12.0	13.7	14.3	15.7	18.2	21.0	21.0	22.4	23.2	23.4	23.5	23.2	21.9	19.5	16.7	16.4	14.5	14.3	13.7	13.1	16.8	23.5
26-Sep	12.7	11.3	10.8	10.5	10.3	10.0	10.0	8.7	8.4	8.1	8.9	10.3	11.7	13.5	13.8	13.2	11.7	10.7	8.7	7.2	6.3	5.3	4.5	4.5	9.6	13.8
27-Sep	4.6	5.3	5.4	4.6	5.1	5.1	4.2	5.6	8.2	9.8	11.6	13.0	14.2	13.5	13.7	14.0	13.0	11.6	10.0	7.3	6.3	5.6	5.8	6.2	8.5	14.2
28-Sep	6.6	6.8	6.3	5.6	4.9	4.5	4.2	6.4	8.6	10.4	12.5	14.0	14.6	14.8	14.7	13.5	12.4	10.5	8.7	7.5	7.7	6.8	6.6	6.4	9.0	14.8
29-Sep	6.3	6.7	6.6	6.7	5.8	5.3	5.4	6.3	8.2	9.8	11.0	11.3	11.5	11.0	11.5	10.6	9.8	9.1	8.7	7.3	6.4	5.9	5.5	5.2	8.0	11.5
30-Sep	5.0	4.4	3.5	2.6	1.6	0.9	0.7	1.7	4.8	7.1	9.5	10.9	11.2	11.8	11.0	9.9	8.7	7.4	5.3	4.9	3.9	3.5	3.2	1.8	5.6	11.8
	10.0	9.6	9.2	8.8	8.5	8.2	8.4	9.9	12.4	14.4	16.0	17.2	17.9	18.4	18.4	18.0	16.9	15.2	13.7	12.5	11.6	10.9	10.5	10.0	Diurnal Average	
	18.3	17.4	16.3	16.4	17.1	16.1	16.3	19.1	22.5	26.8	28.7	30.3	31.2	32.1	31.8	31.1	29.1	25.9	23.5	21.3	20.0	19.1	19.0	19.3	Diurnal Maximum	

Wood Buffalo Environmental Association

Hourly Averages

Ambient Temperature 2m (AT2) - C

Jackfish 1 - September 2024



Concentration Ranges (C)	Number of Hours	%	Cumulative %
-50 - -20	0	0.00	0.00
-20 - 0	0	0.00	0.00
0 - 10	250	34.72	34.72
10 - 20	386	53.61	88.33
> 20	84	11.67	100.00

Total Number of Valid Hours: 720

Total Number of Hours: 720

Wood Buffalo Environmental Association

Summary of Hour Averages

Relative Humidity 2m (RH2) - %

Jackfish 1 - September 2024

Maximum Value: 99.0 % on Sep 14 07:00

Maximum Daily Average: 98.8 % on Sep 13

Minimum Value: 21.7 % on Sep 2 15:00

Minimum Daily Average: 54.1 % on Sep 2

Maximum Diurnal Average: 88.6 % at hour 6

Minimum Diurnal Average: 53.1 % at hour 15

Monthly Average: 73.51 %

Percentiles: P_1 = 31.5 P_{10} = 45.9 Q_1 = 58.5 Median = 76.0 Q_3 = 91.5 P_{90} = 98.0 P_{99} = 98.9

Hours in Service:	720
Hours of Data:	720
Hours of Missing Data:	0
Hours of Calibration:	0
Percent Operational Time:	100.0

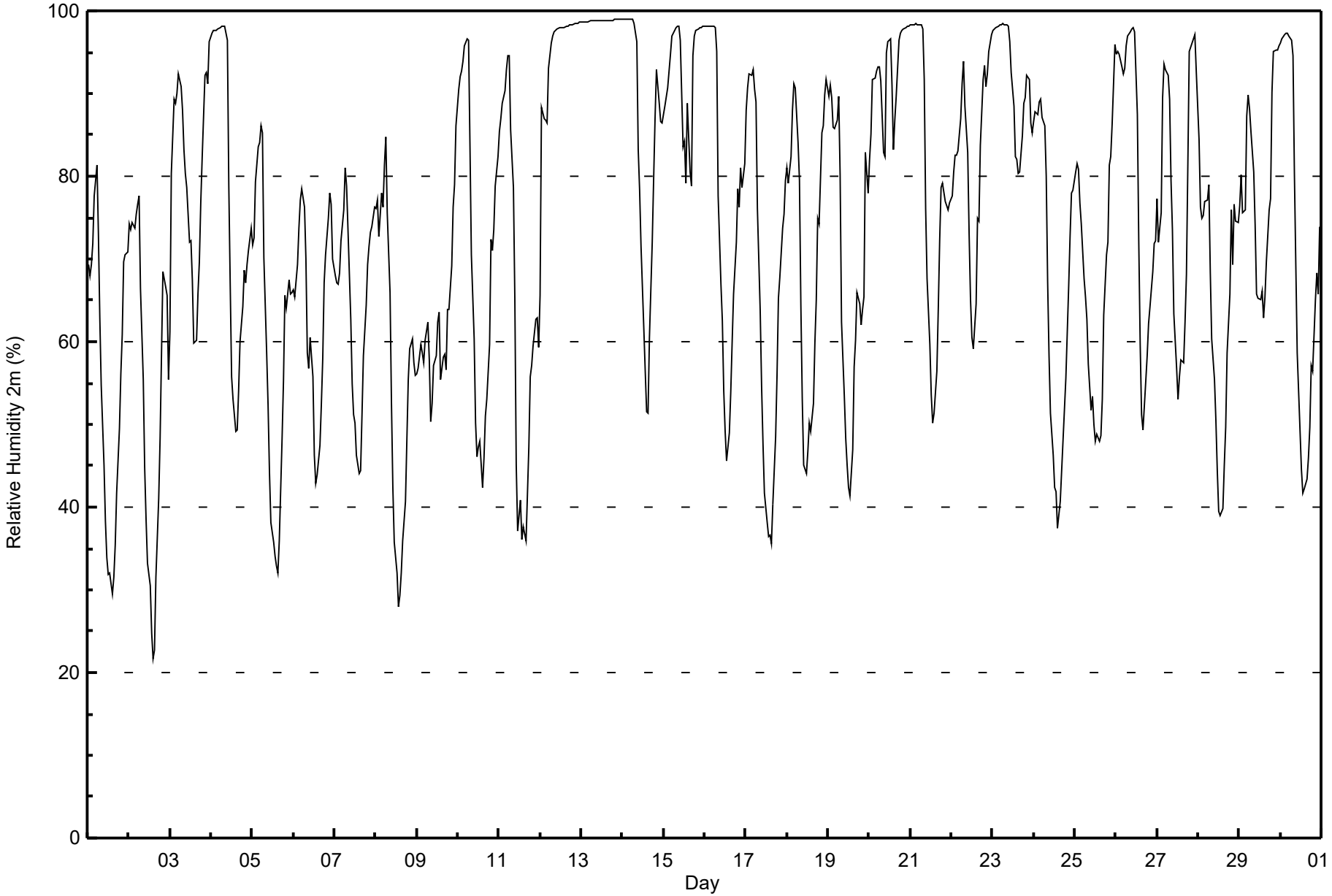
Day	Hourly Period Ending At (MST)																								Daily	Daily
	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24	Average	Maximum
1-Sep	69.2	67.9	69.4	71.9	77.7	81.4	73.0	62.8	54.7	45.1	38.2	33.9	31.9	32.0	29.4	31.5	35.4	41.8	49.5	56.0	60.8	69.6	70.4	70.9	55.2	81.4
2-Sep	74.2	73.6	74.4	73.8	75.4	76.6	77.6	66.5	55.4	44.8	38.5	33.2	30.5	24.8	21.7	22.8	31.5	41.0	48.3	58.5	68.5	66.6	65.6	55.4	54.1	77.6
3-Sep	61.2	80.4	89.4	88.9	90.1	92.4	90.9	87.9	83.3	80.3	78.7	72.1	72.1	67.4	59.8	60.2	65.7	69.7	76.7	82.3	92.3	92.5	91.2	96.3	80.1	96.3
4-Sep	97.2	97.6	97.6	97.6	97.7	98.0	98.2	98.2	98.1	96.4	78.8	67.0	55.8	53.0	49.2	49.3	54.1	60.0	64.2	68.6	67.1	69.2	71.1	73.7	77.4	98.2
5-Sep	71.6	72.6	79.3	83.6	84.0	86.1	85.2	70.1	58.7	52.3	44.2	38.1	35.7	34.0	32.8	32.0	36.0	48.3	55.3	65.7	64.1	67.5	65.7	65.9	59.5	86.1
6-Sep	66.2	65.4	69.4	73.7	77.2	78.5	76.3	70.1	58.6	56.8	60.5	55.7	46.3	42.9	44.0	47.4	52.4	57.9	67.1	70.5	74.9	77.9	76.7	70.0	64.0	78.5
7-Sep	68.0	67.1	66.9	68.3	72.3	75.9	81.0	78.8	73.5	62.6	55.0	51.2	50.2	46.3	44.1	44.4	51.2	58.2	64.4	69.3	71.6	73.3	73.9	76.3	64.3	81.0
8-Sep	76.1	77.1	72.8	78.0	76.3	81.4	84.7	75.7	66.0	52.8	42.4	35.8	32.0	27.9	29.3	32.1	36.0	40.6	48.2	55.5	59.2	60.3	57.4	56.0	56.4	84.7
9-Sep	56.2	56.8	59.6	58.7	57.5	60.2	62.4	57.8	50.4	52.6	57.2	58.3	62.4	63.6	55.4	58.1	58.4	56.6	63.8	63.8	69.2	76.3	79.0	86.1	61.7	86.1
10-Sep	90.6	92.1	92.7	93.9	95.8	96.5	96.4	83.8	70.5	60.4	50.1	46.2	47.2	48.0	42.3	46.0	51.1	53.0	59.7	72.5	71.0	73.6	78.8	82.4	70.6	96.5
11-Sep	85.4	86.9	88.8	90.3	92.9	94.6	94.5	85.5	78.6	65.3	45.1	37.2	40.8	36.1	37.6	36.7	35.9	47.3	55.7	57.1	59.5	62.7	62.9	59.4	64.0	94.6
12-Sep	65.7	88.2	87.0	86.9	86.4	93.0	96.1	97.0	97.4	97.6	97.8	97.9	97.9	98.0	98.1	98.1	98.2	98.2	98.3	98.4	98.4	98.5	98.5	98.6	94.6	98.6
13-Sep	98.6	98.7	98.7	98.7	98.7	98.8	98.8	98.8	98.8	98.8	98.8	98.8	98.9	98.9	98.8	98.8	98.8	98.9	98.9	98.9	98.9	98.9	98.9	98.9	98.8	98.9
14-Sep	98.9	98.9	98.9	98.9	99.0	99.0	99.0	98.5	96.3	83.2	78.2	71.6	61.6	56.5	51.5	51.4	60.5	72.1	79.6	87.0	92.8	88.7	86.7	86.4	83.1	99.0
15-Sep	87.4	88.6	90.7	92.8	94.7	96.9	97.6	97.9	98.1	98.1	96.4	83.6	84.3	79.1	88.9	80.5	78.7	94.6	97.0	97.6	97.7	97.9	98.0	98.1	92.3	98.1
16-Sep	98.1	98.1	98.2	98.2	98.2	98.2	98.0	95.0	77.7	67.0	62.6	54.0	49.2	45.7	49.0	53.9	60.0	65.8	72.1	78.4	76.4	81.1	78.6	81.5	76.4	98.2
17-Sep	87.9	90.6	92.4	92.3	92.8	90.5	89.1	76.0	63.8	54.5	47.6	41.7	38.2	36.4	36.6	35.6	40.4	48.4	56.0	65.2	67.8	73.8	75.4	79.5	65.5	92.8
18-Sep	81.0	79.2	82.3	88.0	91.2	90.7	84.1	79.5	64.4	53.0	45.1	44.1	46.8	50.2	49.1	52.5	59.9	65.1	74.9	74.2	85.2	86.1	89.9	91.7	71.2	91.7
19-Sep	89.7	91.1	89.5	85.9	85.8	86.7	89.6	80.2	62.3	53.4	48.2	45.1	42.3	41.3	47.0	56.9	60.2	66.0	64.6	62.1	64.0	65.5	82.9	77.9	68.3	91.1
20-Sep	82.0	85.0	91.6	91.9	92.7	93.2	93.3	91.5	82.8	82.3	95.0	96.3	96.6	91.0	83.3	86.8	89.7	96.5	97.3	97.6	97.9	98.0	98.1	98.2	92.0	98.2
21-Sep	98.3	98.3	98.4	98.4	98.3	98.3	98.4	97.7	91.7	76.0	67.6	59.7	53.6	50.2	51.4	56.4	64.0	72.2	78.7	79.1	77.0	76.4	76.0	76.7	78.9	98.4
22-Sep	77.7	80.5	82.5	82.6	83.1	87.0	91.1	93.9	88.6	82.9	73.0	65.2	60.4	59.2	64.5	74.9	74.5	83.8	91.6	93.4	90.9	92.3	95.0	97.2	81.9	97.2
23-Sep	97.6	97.9	98.0	98.1	98.2	98.3	98.4	98.4	98.3	98.2	96.3	92.6	88.4	82.3	82.1	80.3	80.6	85.0	88.7	89.4	92.3	91.7	86.5	85.3	91.8	98.4
24-Sep	86.7	87.8	87.5	89.1	89.3	87.1	86.1	80.0	67.2	58.3	51.4	46.3	42.4	41.8	37.5	40.7	44.5	48.1	51.9	55.5	66.7	72.7	78.0	78.4	65.6	89.3
25-Sep	80.5	81.5	80.8	76.8	74.2	67.7	65.3	62.8	57.2	51.6	53.3	50.0	47.9	48.8	48.0	48.6	53.0	63.2	70.5	72.0	81.4	82.4	86.3	95.9	66.7	95.9
26-Sep	94.7	95.1	94.7	93.2	92.4	93.0	95.8	97.0	97.5	97.9	98.0	97.5	87.4	72.1	59.9	51.2	49.4	55.2	58.3	62.1	64.2	68.4	71.9	72.3	80.0	98.0
27-Sep	77.3	72.1	75.6	89.5	93.6	92.9	92.3	89.3	79.4	73.6	63.5	56.7	53.0	55.8	57.8	57.4	62.4	68.1	81.4	95.1	96.0	96.7	97.1	92.6	77.9	97.1
28-Sep	84.3	76.3	74.9	75.3	76.9	77.0	78.9	68.5	60.3	55.5	50.5	44.5	39.5	39.0	39.8	45.1	49.7	58.6	65.8	75.9	69.3	76.5	74.7	74.4	63.8	84.3
29-Sep	76.5	80.1	75.6	76.0	87.2	89.8	88.1	85.5	80.5	74.0	65.7	65.3	65.1	66.1	63.0	65.5	69.7	76.0	77.2	90.2	95.1	95.3	95.3	95.8	79.1	95.8
30-Sep	96.2	96.7	97.0	97.3	97.2	97.0	96.5	94.7	80.4	69.2	58.7	49.3	44.6	41.7	42.1	43.4	45.9	49.7	57.2	56.5	65.1	68.2	65.8	73.9	70.2	97.3
	82.5	84.1	85.2	86.3	87.6	88.6	88.6	84.0	76.3	69.8	64.5	59.6	56.8	54.3	53.1	54.6	58.3	64.7	70.4	74.9	77.8	80.0	80.9	81.5	Diurnal Average	
	98.9	98.9	98.9	98.9	99.0	99.0	99.0	98.8	98.8	98.8	98.8	98.8	98.9	98.9	98.8	98.8	98.8	98.9	98.9	98.9	98.9	98.9	98.9	98.9	Diurnal Maximum	

Wood Buffalo Environmental Association

Hourly Averages

Relative Humidity 2m (RH2) - %

Jackfish 1 - September 2024



Concentration Ranges (%)	Number of Hours	%	Cumulative %
0 - 20	0	0.00	0.00
20 - 40	39	5.42	5.42
40 - 60	158	21.94	27.36
60 - 80	221	30.69	58.06
80 - 100	302	41.94	100.00

Total Number of Valid Hours: 720

Total Number of Hours: 720

Wood Buffalo Environmental Association

Summary of Hour Averages

Wind Speed 10m (WS10) - km/h

Jackfish 1 - September 2024

Maximum Speed: 12 km/h on Sep 29 20:00

Maximum Daily Speed Average: 7.0 km/h on Sep 29

Minimum Speed Value: 0 km/h on Sep 19 19:00

Minimum Daily Speed Average: 1.2 km/h on Sep 27

Maximum Diurnal Speed Average: 2.5 km/h at hour 15

Minimum Diurnal Speed Average: 0.5 km/h at hour 19

Monthly Average Velocity: 1.2 km/h 257.0 deg

Percentiles: $P_1 = 0$ $P_{10} = 1$ $Q_1 = 2$ Median = 3 $Q_3 = 5$ $P_{90} = 7$ $P_{99} = 11$

Hours in Service:	720
Hours of Data:	718
Hours of Missing Data:	2
Percent Operational Time:	99.7

Day	Hourly Period Ending At (MST)																								Daily	Daily
	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24	Average	Maximum
1-Sep	S3	S4	S3	SSE3	SSE4	S4	S4	S3	S4	SSW5	S6	SSW6	SSW6	SSW6	SSW6	SSW6	SW5	SW4	S2	SSW1	S1	S1	SW4	SSW2	SSW3.7	SSW6
2-Sep	SSE2	SSE1	SSE2	SSE1	SSE2	SSW3	SSE2	SSE3	S4	S3	S5	SSW5	SSW6	WSW4	WSW3	W2	W1	SSE1	SSW2	S1	WSW1	WNW3	WNW3	NW11	SW1.7	NW11
3-Sep	NNW7	NNW4	NNE3	NNW6	NNW6	NNW7	NNW9	NNW7	N7	NNW7	NNW7	NNW9	N8	N6	N7	NNW6	NNE3	N4	NNE2	NNE1	SSW1	NNW2	NNW4	NNW5	NNW5.1	NNW9
4-Sep	NW6	NW7	NW8	NW5	NW1	SSE1	SSW1	W2	WNW3	WNW3	NW5	WNW4	NW6	NW6	NW5	WNW5	WNW3	W1	S2	SSW3	SSW3	SSW3	SSW4	SSW4	WNW2.7	NW8
5-Sep	SSW4	SSW5	SSW5	SSW4	SSW2	S2	SSE3	NW2	N4	NE3	NE4	WNW1	NNW2	NNE3	NW1	S2	SSE3	ESE5	SSE3	SSE2	SSE3	SSE3	S4	S4	S1.4	SSW5
6-Sep	S5	S5	S5	SSE5	SSE5	S5	S5	S5	SSW5	S4	S3	SSW5	SSW5	S4	S3	SSW4	SSW4	S3	S1	S3	S3	SSW3	SSW4	SSW3	S3.9	SSE5
7-Sep	SSW2	S0	E1	SSE2	S3	S3	S3	SSW1	SSE2	S2	SSW3	SSW3	SW2	S3	SW4	SSW3	SSE2	S1	SSE2	SSE2	SSE2	SSE2	SSE2	S1	S2.0	SW4
8-Sep	SSW1	SSW3	SSW5	SSW3	SSW4	SSW1	SSE3	SSE3	SSE3	SSE3	SSE4	SSE4	SSE5	SSE5	SSE5	S5	SSW3	S2	SSE3	SSE3	SSE4	SSE3	S4	S4	S3.3	SSE5
9-Sep	S4	S4	SSW2	SSE3	S6	S5	S5	S5	WSW3	WNW5	NW6	WNW6	WNW6	WNW6	NW6	NW6	WNW6	WNW4	NW2	WNW6	WNW5	WNW7	WNW6	WNW4	W3.0	WNW7
10-Sep	WNW3	WNW4	WNW4	NW2	S1	S3	SSW3	SW4	WSW3	WSW4	W5	WNW5	W4	WNW3	WNW4	W3	W1	S0	S1	S2	ESE0	SSW2	S3	S2	WSW2.0	WNW5
11-Sep	S2	S2	S2	S1	SW1	SSW1	S2	SE1	SE3	E3	ESE6	SE8	ESE8	SE6	SE7	SE6	SE8	SSE6	SE4	ESE5	SE5	ESE5	SE6	SE7	SE4.0	SE8
12-Sep	SE7	SE2	NE2	NE3	N2	NNW5	N3	NNW4	NNW5	NW5	NNW6	NNE4	NE3	NNE4	NNW4	NNW5	NNW6	NNW8	NNW8	NNW8	NNW6	NNW7	NNW7	NNW7	N4.1	NNW8
13-Sep	NNW7	NNW8	NNW7	NNW6	NNW7	NNW7	NNW10	NNW9	NNW9	NNW9	NNW9	NNW8	NNW9	NW11	NW10	NW9	NW8	NW7	NW5	WNW4	WNW3	WNW3	W2	W1	NW6.8	NW11
14-Sep	W2	WSW1	SW3	SSW4	SSW3	SSW3	S2	S2	SW3	SW3	SW3	WSW3	WSW3	WSW4	WSW3	SW4	SSW4	S1	SSE0	SSE1	SW1	SSW4	SSW4	SSW3	SW2.4	SSW4
15-Sep	SSW4	SSW4	SW3	SW2	SSW2	WNW2	WNW3	WNW3	NW1	NW1	W3	WSW2	WSW1	SW1	SSE2	S2	SSW1	SSE2	SSE0	SSE1	S1	S1	S1	S0	SW1.2	SSW4
16-Sep	SSE1	S1	S2	SSW1	S2	S2	S2	S3	S3	S4	SSW5	SW6	SSW7	SW7	SW5	SSW5	S3	S2	S1	S1	SSW3	SSW2	SW4	SSW4	SSW3.0	SW7
17-Sep	S4	S4	S4	SSE3	S3	SSE3	SSE3	SSE3	SSE4	SSE5	S5	S4	SSW4	S4	W1	S2	ESE6	ESE5	SE4	S2	S2	SSE3	S2	S3	SSE3.2	ESE6
18-Sep	S3	SSE3	SSE2	SSE1	SSE1	SSW2	SSW3	S2	NNW1	ESE2	NNE1	NW5	NW8	NW10	NW10	NW8	NW8	NW8	NW6	NNW6	NW5	NW5	WNW2	SW1	NW2.8	NW10
19-Sep	WSW1	SSW1	SW1	W1	SW1	SSW2	S2	SE2	WNW1	WNW2	NW4	NW3	WNW4	NW5	WNW4	NW2	W1	N0	NE0	WSW2	WSW1	WSW1	S3	S2	W1.2	NW5
20-Sep	SSW2	SSW2	S1	S3	S2	SSW2	S2	W1	NW5	NW4	N4	NNW5	NNE2	NW2	NNW4	NNW2	NW5	SW0	W0	WNW2	WNW3	WNW3	W2	WNW2	WNW1.4	NW5
21-Sep	WNW2	WSW2	WNW2	WSW2	SW1	SSW2	S3	SSE3	SSE3	SSE3	SSW4	SSW5	SW5	SW4	SSW5	SSW4	SSW4	S3	SSE3	S2	S3	SSE3	SSE4	SSE4	SSW2.7	SSW5
22-Sep	SSE4	SSE4	SSE4	S4	S3	S3	S2	S2	S3	SW0	WSW2	SW0	WSW2	W4	WSW2	SSW2	SSW1	UO	SSE1	SSE0	UO	SW3	SSW3	SSW2	SSW1.9	SSE4
23-Sep	SSW2	WSW2	WNW1	W1	NW2	WNW3	WNW2	WNW2	WNW2	WSW2	SW3	WSW3	SW3	SW4	SSW4	SW3	SW4	S2	S2	S2	S2	SSE2	S3	S4	SW1.8	SSW4
24-Sep	SSW4	SSW4	S5	SSW4	SSW4	SSW5	SW5	SW3	NW5	WNW7	WNW7	WNW8	NW7	NW5	NW6	WNW4	W3	SSW2	S2	SSW2	S1	S1	SSE1	SSE3	WSW2.6	WNW8
25-Sep	SSE3	SSE4	SE4	SE3	SE6	SE7	SSE5	SSE5	SSE5	S5	S5	S4	SSW2	W3	NW3	NNW3	ENE1	NW3	NNW3	W0	NW3	NW3	SW2	NW5	S1.5	SE7
26-Sep	NW10	NW6	NW3	NW6	NW5	NW5	NW9	NW10	NW6	NW3	WNW3	WNW4	WNW5	WNW5	WNW6	WNW5	W3	SW4	SSW4	S3	SSW3	S3	S2	SSE2	WNW3.7	NW10
27-Sep	SSE3	SSE3	SSE2	ENE1	NNE3	N3	E2	WSW2	NW3	NW6	NW4	NW5	NW5	NW4	NW3	WNW4	WNW4	SSW1	W2	S2	SSE2	S1	S3	SSW4	WNW1.2	NW6
28-Sep	SW6	SW5	SSW5	S5	S4	S5	SSW4	SSW6	WSW5	W4	WNW4	WNW4	W5	SW5	SW4	SSW4	S3	SSW3	S0	SSE1	S1	SSE2	SSE3	ESE2	SW2.9	SW6
29-Sep	E1	NE2	NNE3	N4	NNE4	NE5	NNE6	NE6	NNE7	NNE8	NE11	NNE10	NNE12	NNE10	N11	N11	N10	NNW10	NNW11	NW12	NW11	NW11	NW12	NW9	N7.0	NW12
30-Sep	WNW6	WNW6	WNW5	WNW5	WNW5	WNW5	WNW4	WNW4	WNW5	NW6	NW6	WNW8	NW10	WNW8	WNW8	WNW7	WNW6	WNW5	NNW3	NW4	SSW4	SW3	SSW3	SW4	WNW4.9	NW10
	SW1.4	SW1.4	SW1.1	SW1.0	SSW1.1	SW1.2	SW1.1	WSW1.2	W1.2	WNW1.3	WNW1.6	WNW2.1	WNW2.3	WNW2.4	WNW2.5	W2.1	W1.4	W0.9	W0.5	WSW0.7	WSW1.0	WSW1.1	SW1.6	SW1.3	Diurnal Average	
	NW10	NNW8	NW8	NNW6	NNW7	NNW7	NNW10	NW10	NNW9	NNW9	NE11	NNE10	NNE12	NW11	N11	N11	N10	NNW10	NNW11	NW12	NW11	NW11	NW12	NW11	Diurnal Maximum	

UO - Unstable Operation

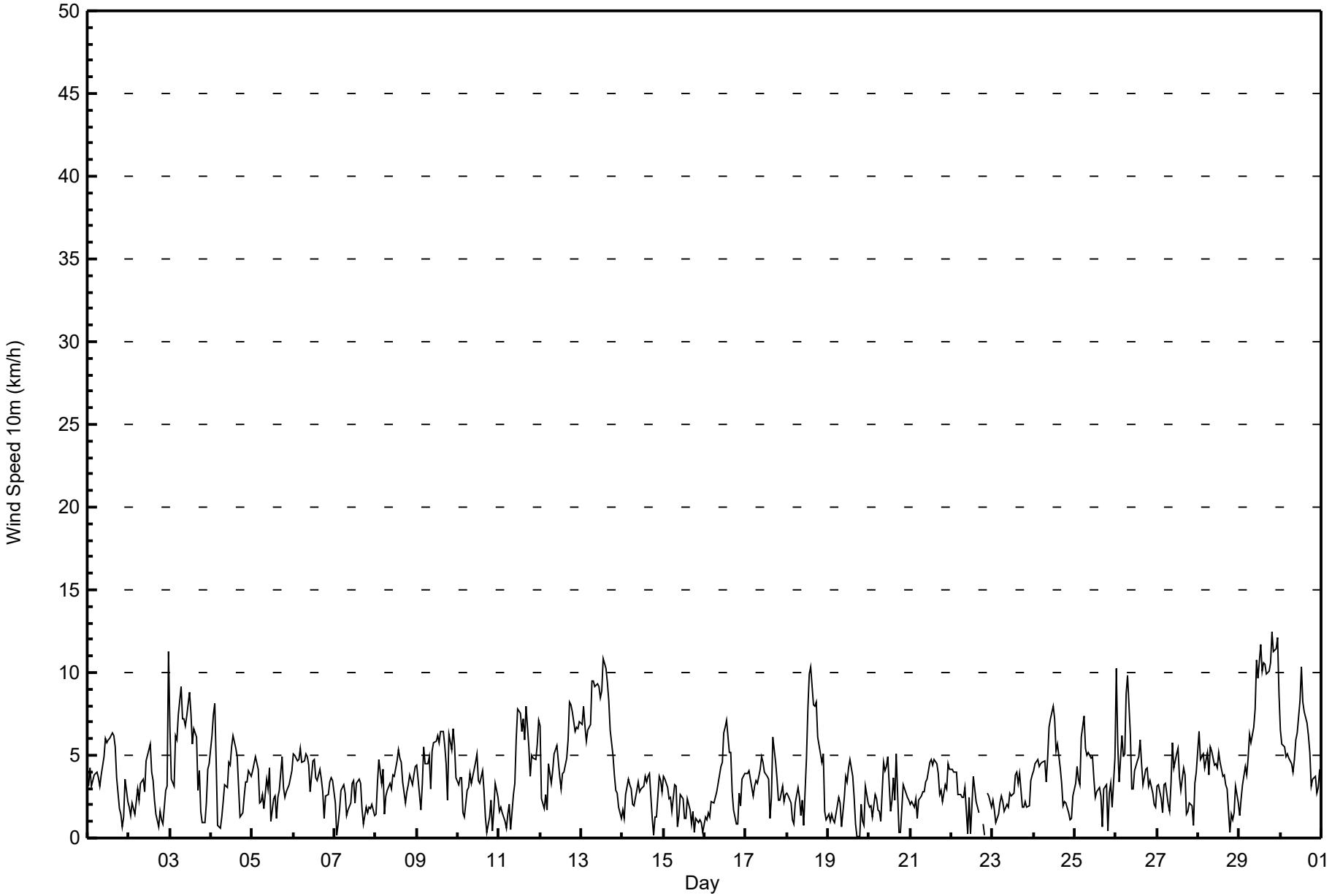
All monthly, daily, and diurnal averages have been calculated using vector methods

Wood Buffalo Environmental Association

Hourly Averages

Wind Speed 10m (WS10) - km/h

Jackfish 1 - September 2024



Wind Speed Ranges (km/h)	Number of Hours	%	Cumulative %
0 - 5	585	81.48	81.48
6 - 11	130	18.11	99.58
12 - 19	3	0.42	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: 718

Total Number of Hours: 720

Wood Buffalo Environmental Association

Frequency Distribution

Wind Speed 10m (WS10) - km/h

Jackfish 1 - September 2024

Wind Speed Ranges (km/h)	Wind Direction																
	N	NNE	NE	ENE	E	ESE	SE	SSE	S	SSW	SW	WSW	W	WNW	NW	NNW	**Totals**
0 - 5	7	13	8	2	4	8	8	87	137	99	40	28	27	60	39	18	585
6 - 11	6	5	2	0	0	3	10	1	2	8	3	0	0	18	36	36	130
12 - 19	0	1	0	0	0	0	0	0	0	0	0	0	0	0	2	0	3
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	13	19	10	2	4	11	18	88	139	107	43	28	27	78	77	54	718

Total Number of Valid Hours: 718

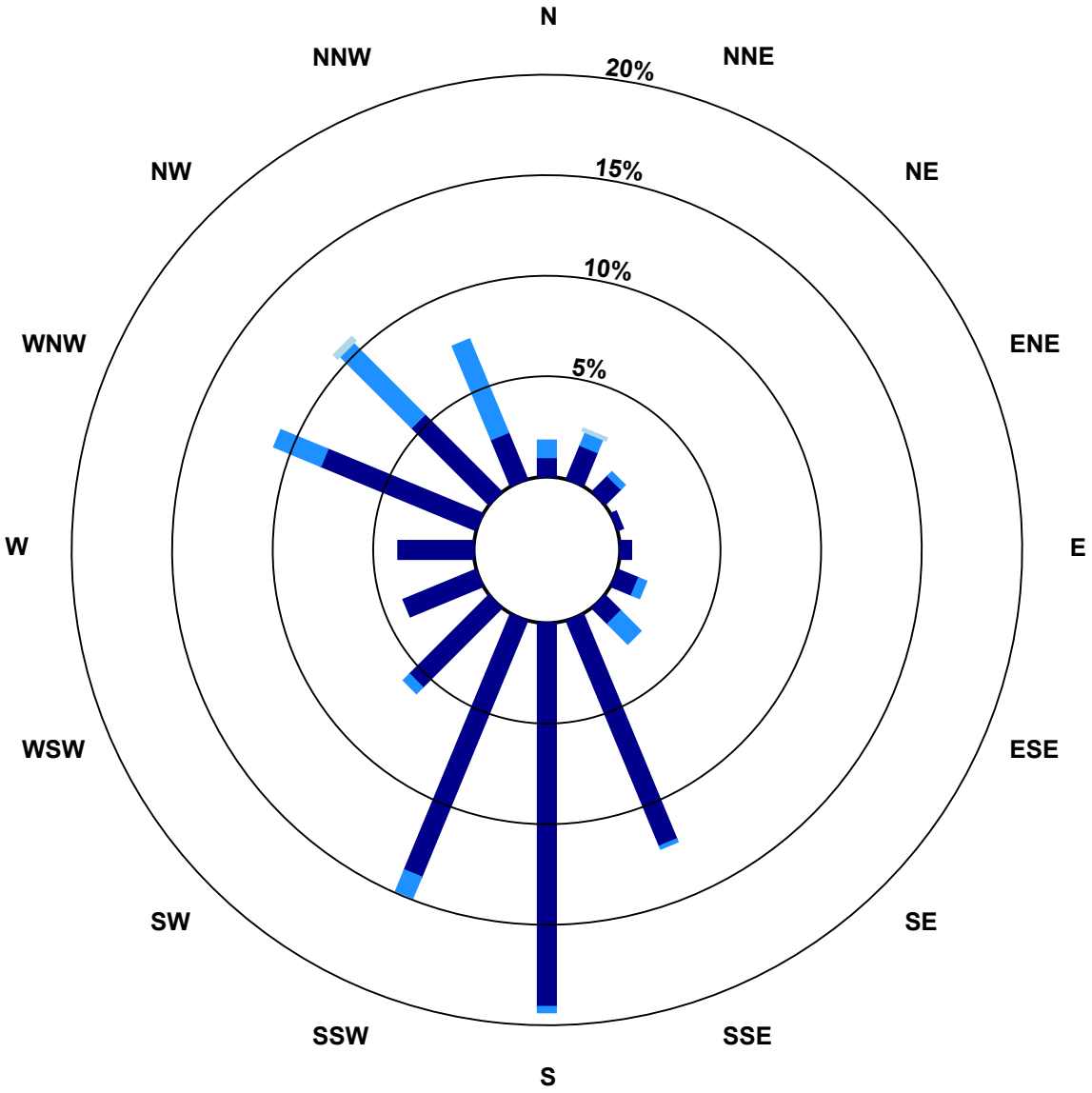
Total Number of Hours: 720

Wood Buffalo Environmental Association

Wind Rose Sep 2024

Wind Speed 10m (WS10) - km/h

Jackfish 1



Classes (km/h)

0 - 5

6 - 11

12 - 19

20 - 28

29 - 38

> 38

Total Number of Valid Hours: 718

Wood Buffalo Environmental Association

Summary of Hour Standard Deviations

Wind Speed 10m (WS10) - km/h

Jackfish 1 - September 2024

Number of Exceedences (AAAQO): 1-hr: 0 24-hr: 0
Maximum Value: 5 km/h on Sep 20 17:00

Minimum Value: 0 km/h on Sep 17 21:00

Percentiles: $P_1 = 1$ $P_{10} = 1$ $Q_1 = 1$ Median = 2 $Q_3 = 2$ $P_{90} = 3$ $P_{99} = 4$

Hours in Service:	720
Hours of Data:	718
Hours of Missing Data:	2
Hours of Calibration:	0
Percent Operational Time:	99.7

Day	Hourly Period Ending At (MST)																								Daily
	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24	Maximum
1-Sep	1	2	1	1	1	1	1	2	2	2	2	2	3	3	3	3	3	2	2	1	1	1	1	2	3
2-Sep	1	1	1	1	1	3	1	2	2	1	2	2	2	2	2	1	2	1	1	1	2	1	3	3	3
3-Sep	2	3	2	2	2	2	2	2	2	2	2	2	2	2	2	2	1	2	1	1	1	1	3	1	3
4-Sep	2	2	2	2	1	1	1	1	2	1	2	2	2	3	2	2	2	2	1	1	1	1	1	1	3
5-Sep	1	1	2	1	1	1	1	2	1	1	2	2	2	2	2	2	2	2	1	1	1	1	2	2	2
6-Sep	3	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2	1	2	2	1	1	1	3
7-Sep	1	1	1	1	1	2	1	1	1	2	2	1	1	2	2	1	1	1	1	1	1	1	1	1	2
8-Sep	1	2	1	1	1	1	2	1	1	1	1	2	2	2	2	2	2	1	1	1	2	1	2	2	2
9-Sep	2	1	1	1	3	2	2	2	3	2	2	2	3	3	3	3	3	2	2	3	3	3	2	1	3
10-Sep	2	2	1	2	1	1	1	1	1	2	2	2	3	2	2	2	1	1	1	1	1	1	2	2	3
11-Sep	1	1	1	1	1	2	1	1	1	1	3	3	3	3	3	2	4	3	1	1	2	1	2	2	4
12-Sep	2	2	1	1	1	1	2	2	1	1	1	2	2	2	1	1	2	2	2	2	2	2	2	2	2
13-Sep	2	2	2	2	2	2	2	2	2	2	3	2	2	2	3	3	2	2	1	2	1	1	1	1	3
14-Sep	1	1	1	1	1	1	1	1	1	1	1	1	2	2	2	2	2	1	1	1	1	1	1	1	2
15-Sep	1	2	2	1	1	1	1	1	2	1	2	1	1	1	2	2	2	1	1	1	1	1	1	1	2
16-Sep	1	1	1	1	1	1	1	1	2	2	2	3	3	3	3	3	1	2	1	1	1	1	1	1	3
17-Sep	1	2	1	2	1	1	1	1	2	2	2	2	2	2	1	1	2	2	1	1	0	1	1	0	2
18-Sep	0	1	1	2	1	1	1	2	1	1	1	2	3	4	4	3	3	3	2	2	2	1	2	1	4
19-Sep	1	1	1	1	1	1	1	2	1	1	2	2	2	2	2	2	1	1	1	2	2	1	1	1	2
20-Sep	1	1	1	1	1	1	1	1	3	2	2	2	2	1	2	2	5	1	1	1	1	1	2	2	5
21-Sep	1	1	2	1	1	1	2	1	1	1	2	2	2	2	2	2	2	2	1	1	1	1	2	1	2
22-Sep	2	1	2	2	1	1	1	1	1	1	1	2	2	2	1	1	1	UO	1	0	UO	2	1	1	2
23-Sep	1	1	1	1	2	2	1	1	1	1	2	1	1	2	2	2	2	1	2	1	1	2	2	2	2
24-Sep	2	2	2	2	2	2	3	2	3	3	3	3	3	2	3	2	2	1	1	1	1	1	1	1	3
25-Sep	1	1	1	1	2	3	2	2	2	2	2	1	2	1	2	2	1	2	1	1	2	3	1	3	3
26-Sep	4	2	2	2	2	2	3	5	2	2	2	2	2	2	3	4	3	2	2	2	2	1	1	1	5
27-Sep	0	1	1	1	1	1	1	1	1	3	2	2	2	2	2	3	3	1	2	1	1	1	2	2	3
28-Sep	3	3	3	3	2	2	2	3	3	3	2	2	2	3	2	2	2	1	1	1	1	1	1	1	3
29-Sep	1	1	1	2	2	2	2	2	3	4	4	4	4	4	4	4	3	3	2	3	3	3	3	2	4
30-Sep	2	1	1	1	1	1	1	2	2	2	2	3	3	3	4	3	3	3	2	2	2	2	1	2	4
	4	3	3	3	3	3	3	5	3	4	4	4	4	4	4	4	5	3	2	3	3	3	3	3	
	Diurnal Maximum																								

UO - Unstable Operation

Wood Buffalo Environmental Association

Summary of Hour Averages

Wind Direction 10m (WD10) - deg

Jackfish 1 - September 2024

Direction of Maximum Speed: 321 deg on Sep 29 20:00
Direction of Maximum Daily Speed Average: 357.2 deg on Sep 29

Direction of Minimum Speed: 40 deg on Sep 19 19:00

Direction of Minimum Daily Speed Average: 1.2 deg on Sep 27

Monthly Average Direction: 257.0 deg

Hours in Service:	720
Hours of Data:	718
Hours of Missing Data:	2
Percent Operational Time:	99.7

Day	Hourly Period Ending At (MST)																								Daily
	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24	Average
1-Sep	173	173	176	167	167	171	174	191	180	192	187	192	195	199	207	208	219	216	188	198	172	181	224	194	191.7
2-Sep	159	166	153	157	155	203	167	162	178	183	187	192	200	252	257	268	261	162	195	189	258	295	298	323	217.2
3-Sep	333	333	21	335	344	345	336	328	349	345	338	339	350	350	355	343	17	356	14	28	198	347	327	330	343.3
4-Sep	323	326	323	326	308	161	213	280	291	302	305	294	314	310	307	297	285	268	189	195	197	198	201	199	292.2
5-Sep	203	205	201	202	201	176	163	324	1	44	51	295	337	32	319	181	158	123	148	167	161	165	170	174	169.0
6-Sep	184	181	170	166	163	183	175	185	202	184	184	204	206	191	185	195	197	183	172	179	188	204	206	206	187.0
7-Sep	204	184	92	163	188	184	180	201	160	189	202	203	218	191	221	213	168	176	160	162	159	165	164	182	187.2
8-Sep	193	209	213	194	211	208	168	164	154	161	154	149	164	153	164	187	192	172	162	162	166	167	173	183	174.7
9-Sep	182	176	201	162	173	183	180	185	239	297	304	302	303	302	307	305	296	301	319	300	298	302	298	290	276.9
10-Sep	290	294	293	307	190	187	198	228	238	237	273	288	264	297	283	280	272	189	191	172	115	208	182	178	251.2
11-Sep	174	191	176	182	233	194	176	137	124	79	121	127	102	136	127	140	129	147	137	121	126	121	129	127	130.8
12-Sep	126	124	39	37	7	347	11	343	342	322	329	14	43	16	348	340	333	334	342	347	347	336	332	331	348.9
13-Sep	331	333	342	336	331	332	327	329	328	334	333	333	332	321	322	322	321	321	317	302	290	295	277	264	325.9
14-Sep	274	254	216	204	207	209	169	188	216	225	236	252	253	239	246	230	202	174	158	153	218	205	203	194	217.7
15-Sep	204	201	225	217	213	288	295	301	318	308	267	244	240	218	153	174	195	164	152	160	172	185	181	178	224.0
16-Sep	153	177	173	193	180	185	175	177	181	187	200	217	211	217	224	203	175	183	191	188	206	202	220	195	199.3
17-Sep	178	173	174	166	169	166	167	160	153	153	182	171	198	173	267	170	119	115	136	178	176	158	185	173	163.6
18-Sep	172	157	152	163	167	209	202	182	329	113	32	311	326	319	322	320	320	325	318	333	325	324	286	236	313.9
19-Sep	237	211	235	272	231	207	173	145	297	302	316	320	285	309	301	309	263	9	40	246	255	239	171	187	267.7
20-Sep	196	195	184	182	176	196	174	261	312	309	4	339	28	320	343	334	313	232	267	293	294	291	266	290	299.9
21-Sep	283	255	291	248	223	192	189	151	161	166	212	203	215	216	209	201	207	175	165	177	172	158	156	153	193.7
22-Sep	162	159	165	173	180	183	176	185	188	220	245	228	256	278	239	193	193	UO	159	167	UO	215	209	193	193.4
23-Sep	206	243	292	274	317	300	297	295	295	257	233	244	231	227	212	217	216	183	188	182	175	162	185	180	225.8
24-Sep	204	206	190	203	200	208	232	236	304	297	302	302	308	308	306	298	270	203	191	198	178	170	157	147	256.7
25-Sep	156	155	145	144	134	137	148	156	161	170	172	176	205	275	312	348	64	307	335	276	313	316	220	321	170.0
26-Sep	320	322	315	321	310	304	304	309	309	305	296	299	296	293	298	290	265	217	209	190	210	191	188	159	292.6
27-Sep	161	163	147	62	29	349	95	255	313	318	304	311	315	310	304	297	302	206	262	180	150	174	189	202	288.6
28-Sep	214	230	198	186	176	188	202	202	250	278	298	285	280	231	233	198	186	199	171	147	177	156	159	119	215.6
29-Sep	90	55	15	6	29	39	31	38	32	29	35	18	12	15	9	0	356	331	328	321	324	320	318	311	357.2
30-Sep	302	302	301	292	291	293	297	293	299	304	304	301	305	303	299	298	295	294	329	313	208	219	195	214	293.9
	222.3	221.8	218.7	221.1	202.1	215.3	217.9	239.1	276.7	285.3	287.4	284.0	289.0	285.4	289.9	277.6	269.6	272.6	274.4	251.2	236.4	244.8	218.8	224.0	
	Diurnal Average																								

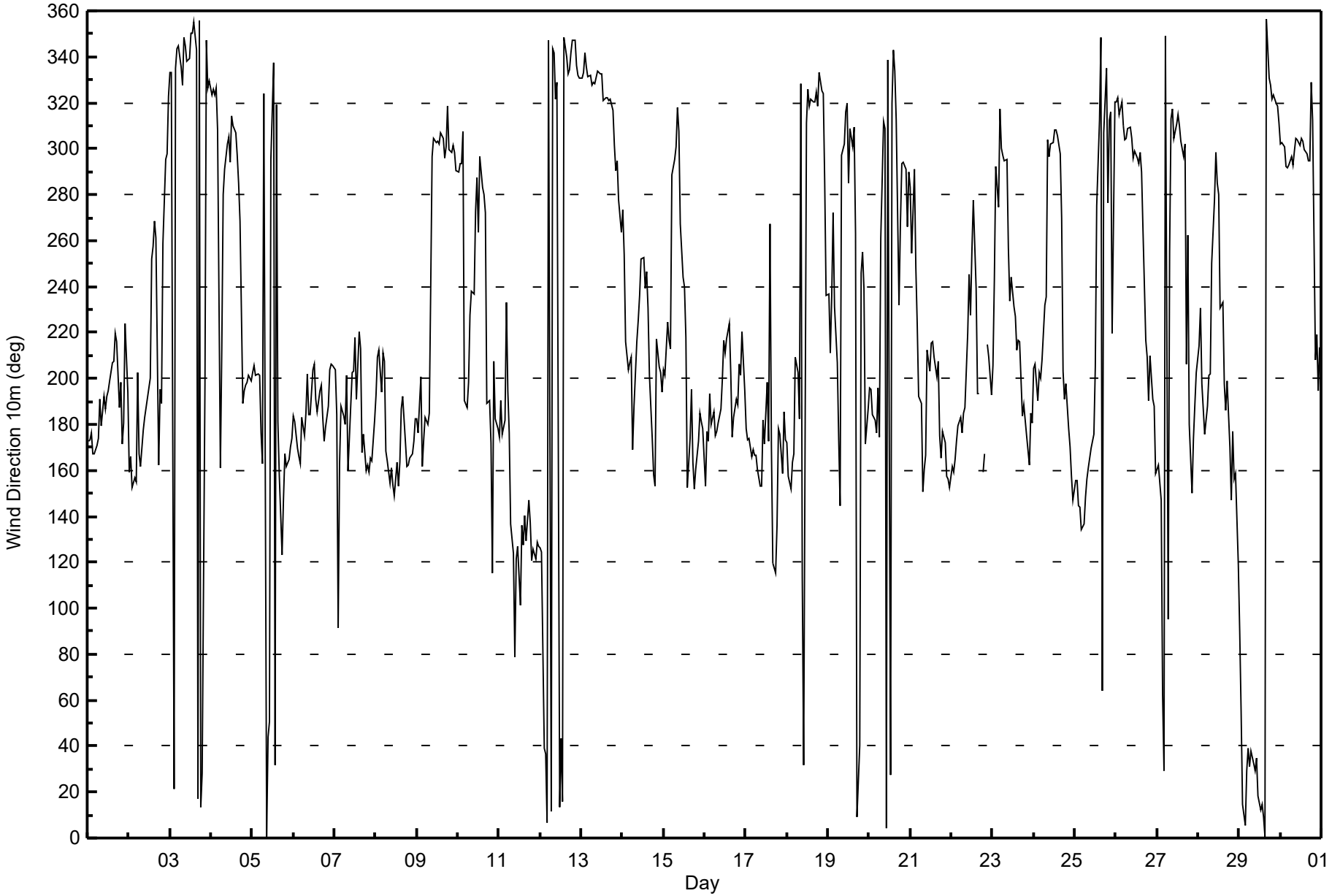
UO - Unstable Operation
All monthly, daily, and diurnal averages have been calculated using vector methods

Wood Buffalo Environmental Association

Hourly Averages

Wind Direction 10m (WD10) - deg

Jackfish 1 - September 2024



Wood Buffalo Environmental Association

Summary of Hour Standard Deviations

Wind Direction 10m (WD10) - deg

Jackfish 1 - September 2024

Number of Exceedences (AAAQO): 1-hr: 0 24-hr: 0
Maximum Value: 111 deg on Sep 22 12:00

Minimum Value: 9 deg on Sep 18 01:00

Percentiles: P_1 = 11 P_{10} = 19 Q_1 = 28 Median = 44 Q_3 = 62 P_{90} = 76 P_{99} = 99

Hours in Service:	720
Hours of Data:	718
Hours of Missing Data:	2
Hours of Calibration:	0
Percent Operational Time:	99.7

Day	Hourly Period Ending At (MST)																								Daily
	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24	Maximum
1-Sep	30	39	33	24	19	18	41	63	65	67	66	62	63	66	58	61	60	67	41	22	51	40	26	39	67
2-Sep	23	31	28	27	34	67	56	37	60	63	66	69	58	74	80	88	94	87	76	50	88	34	61	17	94
3-Sep	24	58	53	24	28	26	23	22	30	30	25	27	31	35	37	29	55	31	31	47	87	40	27	14	87
4-Sep	13	14	14	36	78	47	26	48	58	56	48	60	51	39	44	50	77	91	60	37	35	38	33	28	91
5-Sep	29	34	27	33	62	54	46	62	30	60	64	100	85	96	100	93	75	28	26	9	11	28	41	39	100
6-Sep	54	49	44	43	39	57	58	62	70	69	73	63	69	94	69	64	56	55	94	63	41	29	26	25	94
7-Sep	75	108	49	48	27	28	17	39	39	53	63	44	77	61	54	56	58	25	9	10	11	16	16	65	108
8-Sep	32	38	24	31	28	56	76	13	26	53	52	63	57	46	57	54	56	33	17	18	32	28	38	43	76
9-Sep	40	30	55	31	47	48	39	57	84	55	42	48	46	49	48	58	65	74	81	47	54	34	33	33	84
10-Sep	47	50	40	78	48	33	42	42	61	70	71	69	93	64	69	79	92	106	17	14	80	56	14	17	106
11-Sep	15	23	14	54	67	50	20	80	44	47	47	36	35	49	29	44	34	31	25	16	21	18	24	25	80
12-Sep	23	52	33	34	41	33	38	31	22	13	20	31	68	43	30	22	18	22	25	27	27	22	20	19	68
13-Sep	19	22	28	23	20	21	18	17	17	21	21	21	21	14	16	17	15	19	22	30	44	47	35	41	47
14-Sep	34	49	29	20	21	45	49	41	48	50	58	64	79	74	73	70	53	77	82	43	42	17	28	37	82
15-Sep	34	45	51	61	56	52	57	44	103	70	58	67	82	70	42	57	85	26	74	45	16	16	25	38	103
16-Sep	52	44	30	47	35	45	41	64	79	61	55	56	50	62	61	51	64	68	60	48	39	34	23	19	79
17-Sep	12	13	11	18	19	13	18	21	36	44	63	71	70	68	93	78	32	21	25	19	12	17	24	10	93
18-Sep	9	15	45	50	33	31	31	45	79	68	91	43	30	20	19	23	20	18	17	16	24	15	55	35	91
19-Sep	30	23	26	68	81	60	30	31	71	78	55	83	68	50	54	54	64	90	87	52	81	88	40	49	90
20-Sep	60	36	59	19	47	76	34	63	36	26	40	38	74	65	58	50	61	80	78	36	48	56	59	52	80
21-Sep	44	24	50	43	28	30	27	45	41	58	65	61	73	69	61	61	57	46	29	36	42	23	24	20	73
22-Sep	39	26	38	45	48	25	43	39	44	108	71	111	100	69	72	65	59	UO	48	74	UO	32	40	25	111
23-Sep	31	41	60	37	42	39	59	47	63	63	53	77	68	76	62	58	44	48	43	52	36	48	47	66	77
24-Sep	69	62	54	55	52	63	78	93	90	69	44	38	46	69	70	65	84	73	38	24	21	16	15	10	93
25-Sep	11	12	20	20	24	33	30	36	45	49	47	68	81	77	64	73	95	59	37	83	48	79	65	47	95
26-Sep	20	25	38	13	22	32	26	35	24	41	44	62	57	60	59	91	92	63	62	62	67	38	25	23	92
27-Sep	10	16	26	72	39	40	76	35	26	28	51	41	50	53	55	70	70	76	66	31	22	26	48	80	80
28-Sep	64	92	62	54	60	54	68	56	86	90	64	76	72	65	83	47	53	39	47	46	32	23	15	32	92
29-Sep	72	41	36	35	37	40	34	37	39	38	40	36	34	37	33	29	28	19	16	14	14	14	15	19	72
30-Sep	19	18	21	27	28	33	34	39	47	45	41	35	24	45	54	53	60	59	76	89	57	93	80	43	93
	75	108	62	78	81	76	78	93	103	108	91	111	100	96	100	93	95	106	94	89	88	93	80	80	
	Diurnal Maximum																								

UO - Unstable Operation

WOOD BUFFALO ENVIRONMENTAL ASSOCIATION

CONTINUOUS AMBIENT AIR QUALITY
MONITORING PROGRAM
MONTHLY REPORT

AMS508
KIRBY NORTH
SEPTEMBER 2024

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

October 31, 2024

WOOD BUFFALO ENVIRONMENTAL ASSOCIATION - KIRBY NORTH (AMS 508)
SEPTEMBER 2024

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	683	35	37	99.72	8.6	0	2.5	0
H2S (ppb) Average	684	36	36	100	2.4	0	0.4	0
THC (ppm) Average	680	35	40	99.31	2.6	-	2.4	-
NO2 (ppb) Average	681	36	39	99.58	8.6	0	2.1	-
NO (ppb) Average	681	36	39	99.58	5.9	-	1.6	-
NOX (ppb) Average	681	36	39	99.58	12.1	-	3.1	-
Temperature 2 m (C) Average	720	0	0	100	29.8	-	22.3	-
Relative Humidity (%) Average	720	0	0	100	99.4	-	98.5	-
Wind Speed 10 m (km/h) Average	720	0	0	100	26	-	17	-
Wind Direction 10 m (deg) Average	720	0	0	100	-	-	-	-

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

WOOD BUFFALO ENVIRONMENTAL ASSOCIATION - KIRBY NORTH (AMS508)
SEPTEMBER 2024

MONTHLY SUMMARY FOR AIR QUALITY/ METEOROLOGICAL MONITORING MEASUREMENTS

					Percentile						
Parameter	Number	Mean	StnDev	Total	Min	P10	Q1	Median	Q3	P90	Max
SO2 (ppb) Average	683	0.57	1.3	-	0	0	0	0.1	0.4	1.4	8.6
H2S (ppb) Average	684	0.17	0.2	-	0	0	0.1	0.1	0.2	0.4	2.4
THC (ppm) Average	680	2.29	0.1	-	2.1	2.2	2.2	2.3	2.3	2.4	2.6
NO2 (ppb) Average	681	1.31	1	-	0.1	0.4	0.6	1	1.6	2.6	8.6
NO (ppb) Average	681	0.41	0.8	-	0	0	0	0.1	0.3	1.2	5.9
NOX (ppb) Average	681	1.72	1.7	-	0.2	0.5	0.7	1.1	2	3.7	12.1
Temperature 2 m (C) Average	720	12.55	5.5	-	0	6.1	8.9	11.7	16	20	29.8
Relative Humidity (%) Average	720	71.03	19.1	-	25.7	44.5	56.2	71.3	87.9	96.7	99.4
Wind Speed 10 m (km/h) Average	720	10.1	4	-	1	5	7	10	13	16	26
Wind Direction 10 m (deg) Average	720	-	-	-	-	-	-	-	-	-	-

WOOD BUFFALO ENVIRONMENTAL ASSOCIATION - KIRBY NORTH (AMS508)
SEPTEMBER 2024

OPERATIONAL NOTES

Parameter	Period Start	Period End	Duration (Hours)	Notes
NO2, SO2, THC	11 Sep 2024 15:00	11 Sep 2024 16:00	2	Maintenance - sample manifold cleaned
NO2	11 Sep 2024 12:00	11 Sep 2024 12:00	1	Maintenance - station operator activities
THC	25 Sep 2024 12:00	25 Sep 2024 14:00	3	Maintenance - zero air generator maintenance

Wood Buffalo Environmental Association

Summary of Hour Averages

Sulphur Dioxide (SO_2) - ppb

Kirby North - September 2024

Number of Exceedences (AAAQO): 1-hr: 0 24-hr: 0

Maximum Value: 8.6 ppb on Sep 27 15:00

Maximum Daily Average: 2.5 ppb on Sep 30

Minimum Value: 0.0 ppb on Sep 1 08:00

Minimum Daily Average: 0.0 ppb on Sep 16

Maximum Diurnal Average: 1.4 ppb at hour 16

Minimum Diurnal Average: 0.1 ppb at hour 23

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} = 1.4 P_{99} = 6.9

Hours in Service:	720
Hours of Data:	683
Hours of Missing Data:	37
Hours of Calibration:	35
Percent Operational Time:	99.7

Day	Hourly Period Ending At (MST)																								Daily	Daily
	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24	Average	Maximum
1-Sep	0.1	0.4	0.2	0.2	Z	0.1	0.0	0.0	0.0	0.1	0.0	0.1	0.4	0.1	0.0	0.0	0.0	0.1	0.1	0.1	0.1	0.0	0.1	0.2	0.1	0.4
2-Sep	0.2	0.2	0.1	0.0	0.1	Z	0.3	0.3	0.3	0.2	0.4	0.3	0.3	0.2	0.3	0.3	0.2	0.3	0.5	0.4	0.3	0.1	0.1	0.6	0.3	0.6
3-Sep	Z	0.4	0.5	0.4	0.3	0.1	0.2	0.3	0.3	0.2	0.3	0.1	0.2	0.3	0.4	0.6	0.8	0.6	0.4	0.3	0.2	0.2	0.1	0.1	0.3	0.8
4-Sep	0.2	Z	0.5	0.3	0.8	0.1	0.4	1.2	1.4	1.4	3.0	3.3	2.2	0.6	3.2	3.7	0.4	2.7	1.5	0.1	0.1	0.0	0.0	0.0	1.2	3.7
5-Sep	0.0	0.0	Z	0.0	0.0	0.0	0.0	0.9	0.3	0.0	0.0	0.6	0.3	0.0	0.0	0.0	0.0	0.0	0.1	0.1	0.1	0.1	0.2	0.1	0.1	0.9
6-Sep	0.1	0.0	0.2	Z	0.2	0.2	0.2	0.3	0.2	0.2	0.2	0.8	0.7	0.7	0.5	0.4	0.5	0.5	0.4	0.4	0.4	0.3	0.3	2.7	0.5	2.7
7-Sep	0.5	1.4	0.5	1.4	Z	0.3	0.3	0.2	0.3	0.3	0.2	0.2	0.2	0.1	0.1	0.1	0.1	0.1	0.0	0.0	0.1	0.0	0.0	0.0	0.3	1.4
8-Sep	0.0	0.1	0.2	0.0	0.0	Z	0.0	0.0	0.0	0.3	0.1	0.1	0.0	0.0	0.1	0.2	0.2	0.3	0.4	0.4	0.9	1.1	0.8	0.5	0.2	1.1
9-Sep	Z	0.2	0.2	0.2	0.2	0.1	0.1	0.1	0.1	1.9	1.1	2.2	1.7	5.2	4.0	7.4	6.2	0.2	3.5	0.8	1.2	0.0	0.0	3.4	1.7	7.4
10-Sep	3.8	Z	5.7	0.7	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.9	0.4	2.1	0.2	0.0	1.3	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.7	5.7
11-Sep	0.0	0.0	Z	0.0	0.0	0.0	0.0	0.3	1.5	2.7	0.7	0.3	0.2	0.1	M	M	0.5	0.0	0.3	0.0	0.0	0.0	0.0	0.0	0.3	2.7
12-Sep	0.1	0.1	0.0	Z	0.1	0.0	0.1	C	C	C	C	C	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	0.3
13-Sep	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	0.8	0.4	5.8	0.3	5.8
14-Sep	7.0	0.9	0.1	0.0	0.1	Z	0.0	0.0	0.1	0.0	0.0	0.1	0.0	0.1	0.4	0.1	0.2	0.2	0.1	0.0	0.0	0.1	0.0	0.0	0.4	7.0
15-Sep	Z	0.2	0.1	0.1	0.1	0.1	0.6	0.1	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	0.1	0.6
16-Sep	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-Sep	0.0	0.0	Z	0.0	0.0	0.0	0.0	0.0	0.3	0.7	0.5	0.5	0.6	0.4	0.1	0.0	0.0	0.0	0.0	0.0	0.1	0.1	0.4	0.2	0.2	0.7
18-Sep	0.3	0.3	0.3	Z	0.2	0.1	0.0	0.1	0.6	0.6	2.0	0.1	0.1	0.1	0.1	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.1	0.0	0.2	2.0
19-Sep	0.3	0.3	0.0	0.1	Z	0.0	0.0	0.1	2.9	1.3	1.1	1.2	2.0	1.8	0.1	0.3	0.0	0.0	0.0	0.0	0.0	0.0	0.2	0.9	0.6	2.9
20-Sep	0.1	0.1	0.1	0.1	0.2	Z	0.9	0.3	0.2	0.3	0.6	0.7	0.5	0.6	0.8	0.3	0.2	0.2	0.7	0.6	0.4	0.2	0.0	0.1	0.4	0.9
21-Sep	Z	0.0	0.1	0.1	0.0	0.1	0.1	0.1	0.1	0.1	0.1	0.0	0.0	0.1	0.1	0.1	0.1	0.1	0.1	0.0	0.1	0.1	0.1	0.1	0.1	0.1
22-Sep	0.1	Z	0.2	0.2	0.2	0.2	0.1	0.1	0.1	0.1	0.7	0.3	1.1	0.3	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.2	1.1
23-Sep	0.0	1.7	Z	0.6	0.0	0.0	0.0	0.0	0.0	0.2	0.0	0.1	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.1	0.1	0.1	0.1	1.7
24-Sep	0.1	0.1	0.1	Z	0.1	0.1	0.0	0.0	0.0	6.9	6.1	3.4	1.5	2.0	5.0	5.6	5.0	0.4	0.0	0.0	0.0	0.0	0.0	0.0	1.6	6.9
25-Sep	0.0	0.1	1.1	0.9	Z	0.4	0.5	0.5	0.4	0.3	0.2	0.3	0.3	1.0	0.4	0.1	0.1	0.0	0.2	0.3	0.2	0.3	0.1	0.0	0.3	1.1
26-Sep	0.0	0.0	0.0	0.0	0.0	Z	0.0	0.0	0.0	0.8	2.5	5.0	4.9	4.4	7.3	6.9	1.3	0.2	0.1	0.1	0.1	0.1	0.1	0.1	1.5	7.3
27-Sep	Z	0.1	0.2	0.5	0.8	0.8	0.8	0.6	0.7	0.7	0.7	1.0	2.5	3.0	8.6	6.8	1.6	0.4	0.3	0.0	0.0	0.0	0.0	0.0	1.3	8.6
28-Sep	0.0	Z	0.0	0.0	0.0	0.0	0.0	0.0	0.1	5.6	3.0	2.2	2.0	0.4	0.2	0.2	0.0	0.1	0.1	0.0	0.0	0.0	0.1	0.2	0.6	5.6
29-Sep	0.2	0.7	Z	7.1	2.7	2.3	2.0	2.8	1.3	0.9	1.0	0.6	0.2	0.1	0.0	0.0	0.0	0.0	0.1	0.1	0.4	0.5	0.3	0.2	1.0	7.1
30-Sep	0.0	0.0	0.0	Z	0.0	0.2	5.7	6.1	4.0	3.1	2.1	0.9	2.6	7.8	5.8	8.0	5.7	6.0	0.0	0.0	0.0	0.0	0.1	0.0	2.5	8.0
	0.5	0.3	0.4	0.5	0.2	0.2	0.4	0.5	0.5	1.0	0.9	0.9	0.8	1.1	1.3	1.4	0.8	0.4	0.3	0.1	0.2	0.1	0.1	0.5	Diurnal Average	
	7.0	1.7	5.7	7.1	2.7	2.3	5.7	6.1	4.0	6.9	6.1	5.0	4.9	7.8	8.6	8.0	6.2	6.0	3.5	0.8	1.2	1.1	0.8	5.8	Diurnal Maximum	

Z - zerospan C - Calibration M - Maintenance

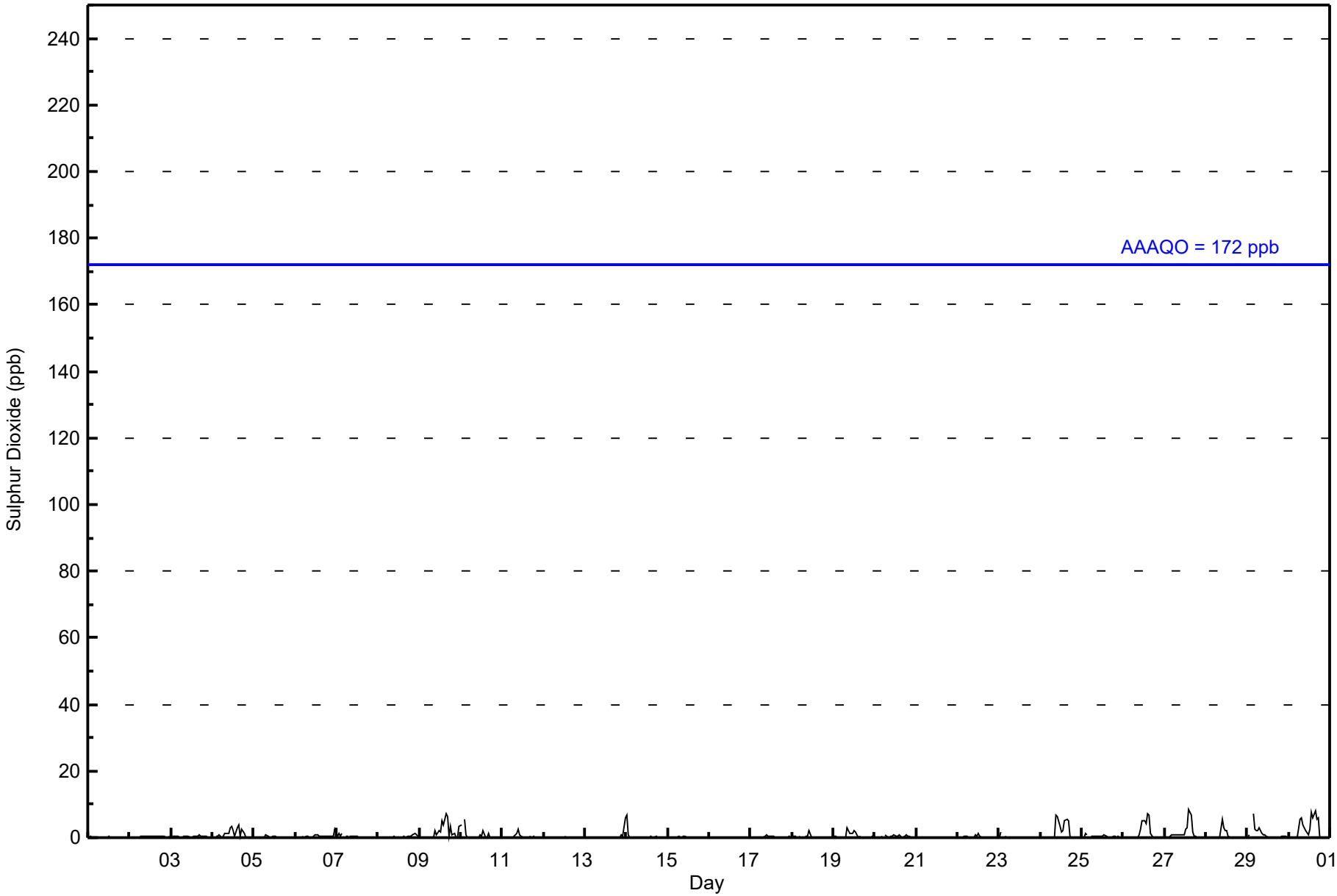
Alberta Ambient Air Quality Objectives (AAAQO): 1-hr 172 ppb 24-hr 48 ppb

Wood Buffalo Environmental Association

Hourly Averages

Sulphur Dioxide (SO_2) - ppb

Kirby North - September 2024



Sulphur Dioxide (SO_2) - ppb
Kirby North - September 2024

Concentration Ranges (ppb)	Number of Hours	%	Cumulative %
0 - 10	683	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: 683

Total Number of Hours: 720

Wood Buffalo Environmental Association

Frequency Distribution

Sulphur Dioxide (SO_2) - ppb

Kirby North - September 2024

Concentration Ranges (ppb)	Wind Direction																
	N	NNE	NE	ENE	E	ESE	SE	SSE	S	SSW	SW	WSW	W	WNW	NW	NNW	**Totals**
0 - 10	30	34	17	12	3	9	16	48	114	67	103	48	33	67	49	33	683
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	30	34	17	12	3	9	16	48	114	67	103	48	33	67	49	33	683

Total Number of Valid Hours: 683

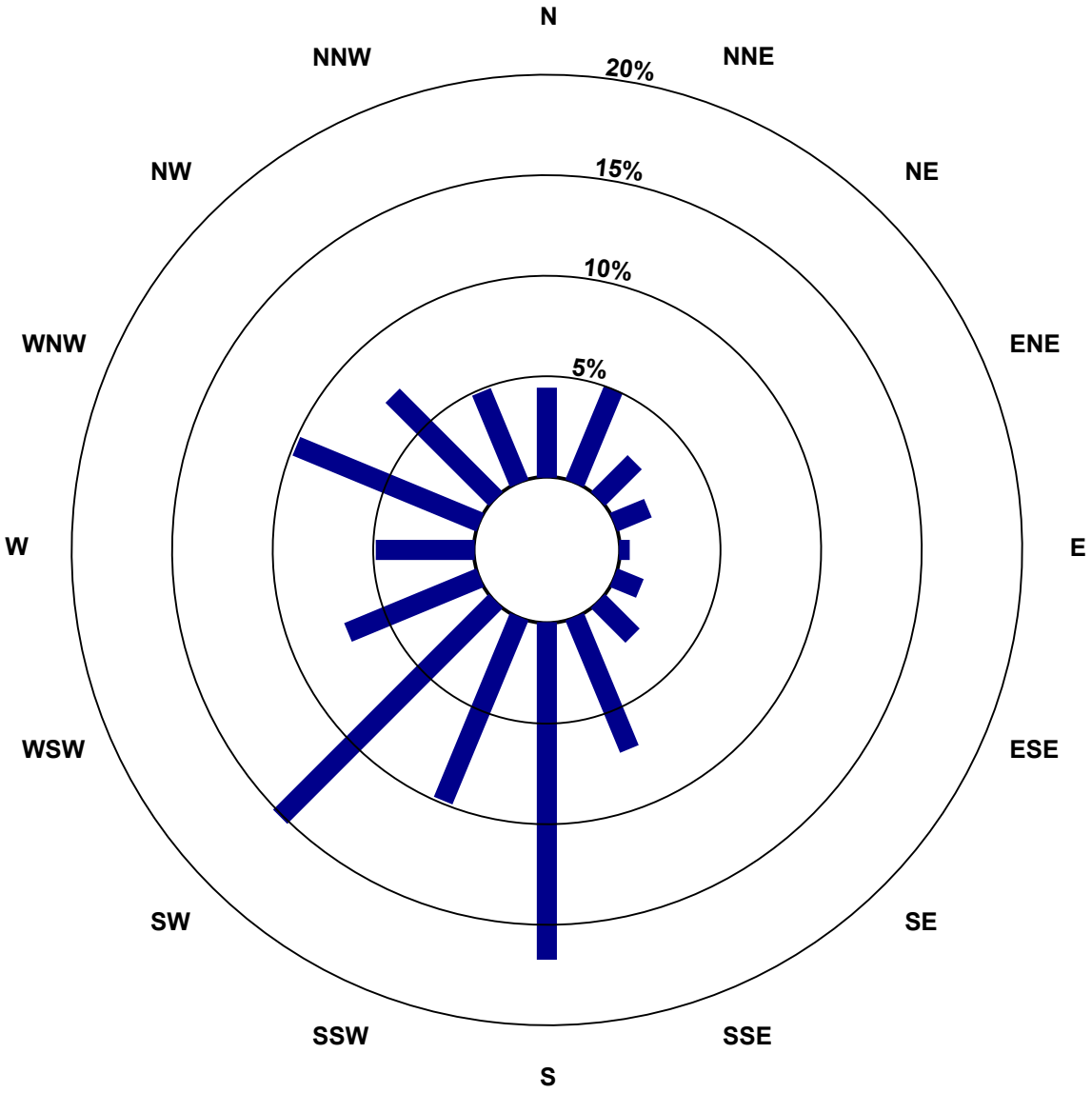
Total Number of Hours: 720

Wood Buffalo Environmental Association

Wind Rose Sep 2024

Sulphur Dioxide (SO_2) - ppb

Kirby North



Classes (ppb)

0 - 10

11 - 20

21 - 60

61 - 110

111 - 172

> 172

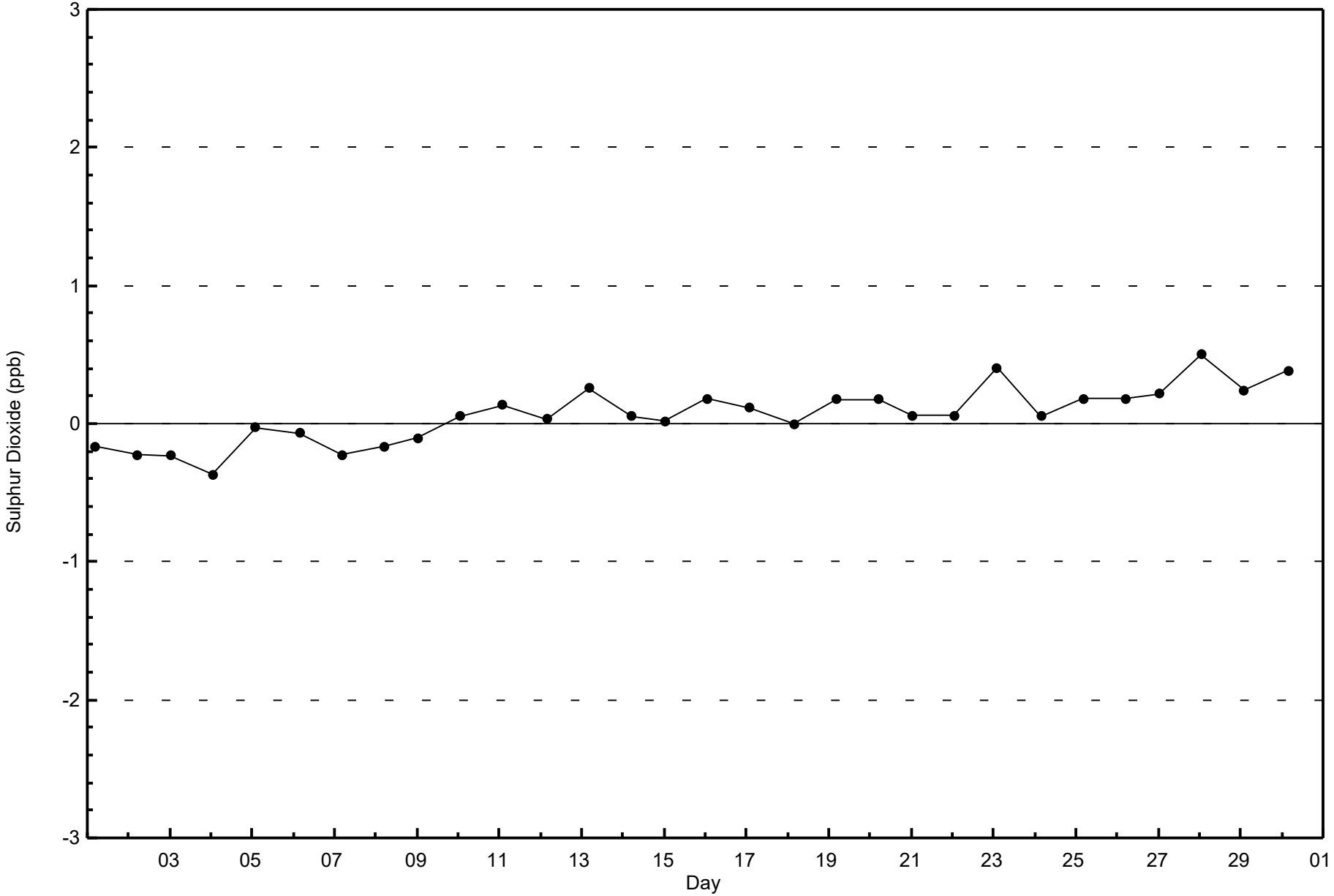
Total Number of Valid Hours: 683

Wood Buffalo Environmental Association

Zero Responses

Sulphur Dioxide (SO_2) - ppb

Kirby North - September 2024



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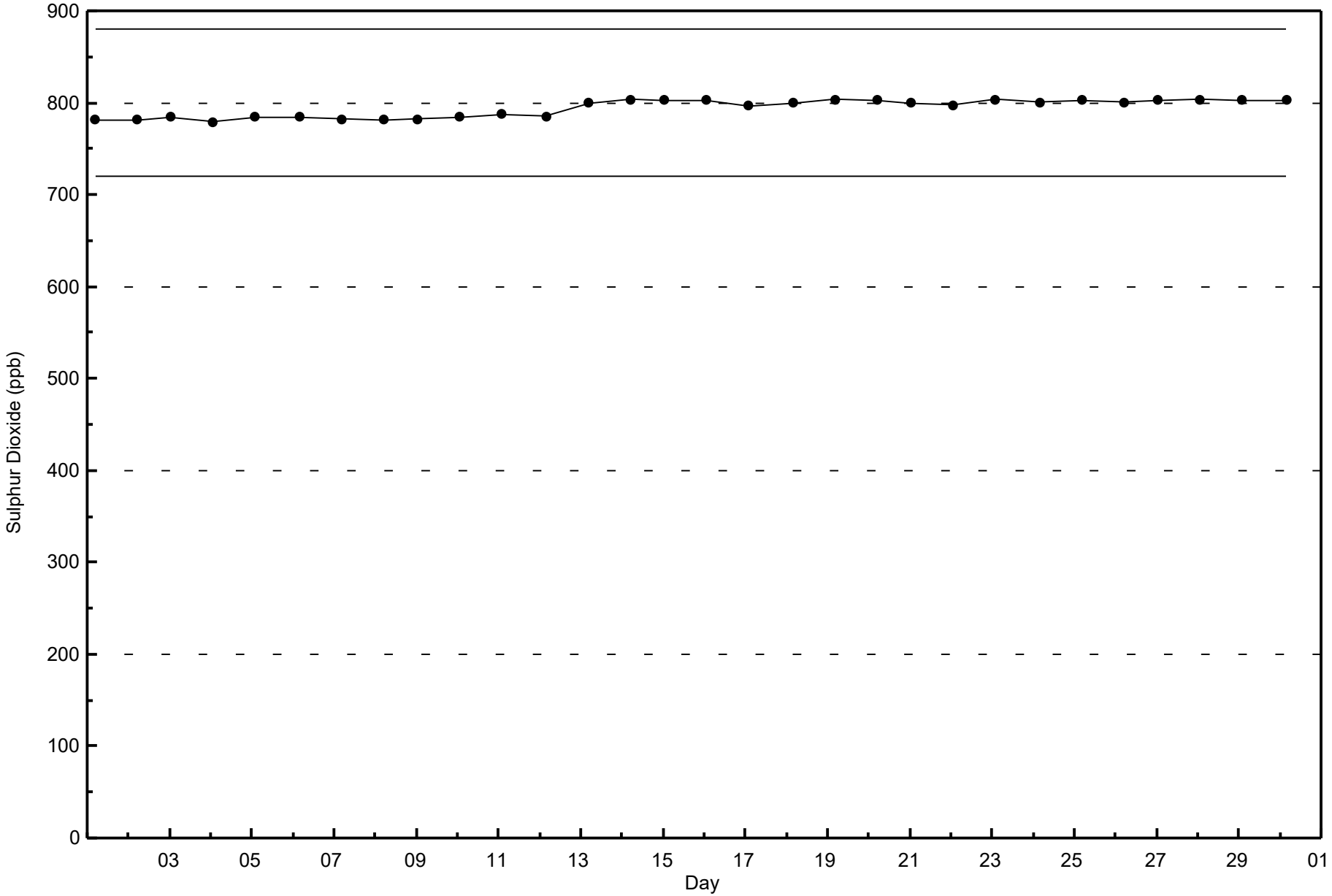
Span Responses

Sulphur Dioxide (SO_2) - ppb

Kirby North - September 2024



Wood Buffalo Environmental Association

Summary of Hour Averages

Hydrogen Sulphide (H_2S) - ppb

Kirby North - September 2024

Number of Exceedences (AAAQO): 1-hr: 0 24-hr: 0

Maximum Value: 2.4 ppb on Sep 7 04:00

Maximum Daily Average: 0.4 ppb on Sep 7

Minimum Value: 0.0 ppb on Sep 5 14:00

Minimum Daily Average: 0.1 ppb on Sep 16

Maximum Diurnal Average: 0.3 ppb at hour 2

Minimum Diurnal Average: 0.1 ppb at hour 21

Monthly Average: 0.17 ppb

Percentiles: P_1 = 0.0 P_{10} = 0.0 Q_1 = 0.1 Median = 0.1 Q_3 = 0.2 P_{90} = 0.4 P_{99} = 1.2

Hours in Service:	720
Hours of Data:	684
Hours of Missing Data:	36
Hours of Calibration:	36
Percent Operational Time:	100.0

Day	Hourly Period Ending At (MST)																								Daily	Daily
	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24	Average	Maximum
1-Sep	0.1	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	0.2
2-Sep	Z	0.2	0.1	0.1	0.1	0.3	0.2	0.1	0.1	0.1	0.1	0.1	0.0	0.1	0.0	0.0	0.0	0.1	0.6	0.4	0.1	0.1	0.0	0.0	0.1	0.6
3-Sep	0.1	Z	0.2	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	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.2
4-Sep	0.1	0.1	Z	0.3	1.0	0.4	0.5	0.9	0.7	0.6	0.4	0.3	0.3	0.2	0.4	0.3	0.3	0.7	1.2	0.1	0.1	0.0	0.0	0.0	0.4	1.2
5-Sep	0.0	0.0	0.0	Z	0.1	0.1	0.1	0.5	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	0.0	0.1	0.1	0.1	0.5
6-Sep	0.1	0.1	0.1	0.1	Z	0.2	0.2	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	0.2	0.2	0.1	0.3	0.2	0.3
7-Sep	1.1	2.2	1.9	2.4	0.3	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	0.2	0.1	0.1	0.1	0.1	0.1	0.4	2.4
8-Sep	Z	0.2	0.1	0.1	0.1	0.1	0.2	0.2	0.2	0.1	0.1	0.1	0.0	0.0	0.0	0.0	0.1	0.1	0.2	0.2	0.2	0.2	0.1	0.1	0.1	0.2
9-Sep	0.1	Z	0.2	0.2	0.2	0.3	0.3	0.3	0.3	0.3	0.4	0.3	0.4	0.5	0.5	0.5	0.2	0.1	0.3	0.8	0.8	0.3	0.4	0.6	0.4	0.8
10-Sep	0.5	0.4	Z	0.2	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	0.2	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.5
11-Sep	0.1	0.1	0.0	Z	0.1	0.1	0.1	0.2	0.1	0.1	0.1	0.1	C	C	C	C	C	C	0.2	0.1	0.1	0.1	0.1	0.1	--	0.2
12-Sep	0.0	0.1	0.1	0.2	Z	0.1	0.1	0.3	0.2	0.2	0.2	0.2	0.2	0.2	0.1	0.1	0.2	0.2	0.2	0.2	0.2	0.2	0.1	0.2	0.2	0.3
13-Sep	0.1	0.2	0.2	0.2	0.2	Z	0.2	0.2	0.1	0.1	0.2	0.2	0.2	0.2	0.2	0.2	0.1	0.1	0.1	0.1	0.1	1.3	2.1	0.3	0.3	2.1
14-Sep	Z	0.2	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.0	0.1	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-Sep	0.1	Z	0.1	0.1	0.1	0.1	1.0	0.6	0.2	0.3	0.5	0.1	0.0	0.0	0.1	0.1	0.1	0.1	0.1	0.1	0.0	0.0	0.0	0.0	0.2	1.0
16-Sep	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	0.0	0.0	0.0	0.0	0.1	0.1	0.0	0.1	0.0	0.0	0.1	0.1	0.1
17-Sep	0.1	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	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1
18-Sep	0.1	0.1	0.1	0.1	Z	0.1	0.2	0.1	0.1	0.6	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	0.1	0.6
19-Sep	0.1	0.1	0.3	0.4	0.3	Z	0.1	0.1	0.4	1.1	0.2	0.2	0.2	0.3	0.1	0.4	0.4	0.3	0.2	1.0	0.1	0.1	0.1	0.5	0.3	1.1
20-Sep	Z	1.5	0.3	0.2	0.1	0.7	0.8	0.1	0.2	0.1	0.1	0.1	0.1	0.1	0.1	0.2	0.1	0.1	1.2	0.4	0.1	0.1	0.1	0.1	0.3	1.5
21-Sep	0.1	Z	0.4	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	0.1	0.1	0.4
22-Sep	0.1	0.1	Z	0.1	0.1	0.1	0.1	0.2	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	0.1	0.1	0.1	0.1	0.2
23-Sep	0.0	0.5	0.8	Z	0.2	0.3	0.7	0.4	0.2	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	0.2	0.8
24-Sep	0.1	0.1	0.1	0.2	Z	0.2	0.1	0.1	0.1	0.2	0.4	0.4	0.4	0.4	0.2	0.3	0.2	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.2	0.4
25-Sep	0.1	0.1	0.1	0.1	0.1	Z	0.2	0.1	0.1	0.2	0.1	0.2	0.2	0.3	0.1	0.1	0.1	0.1	0.1	0.0	0.1	0.1	0.1	0.0	0.1	0.3
26-Sep	Z	0.1	0.0	0.0	0.0	0.2	0.1	0.2	0.0	0.9	0.6	0.5	0.4	0.4	0.1	0.2	0.1	0.1	0.0	0.1	0.0	0.0	0.0	0.0	0.2	0.9
27-Sep	0.1	Z	0.1	0.1	0.1	0.2	0.2	0.3	0.1	0.1	0.1	0.2	0.3	0.2	0.2	0.4	0.2	0.1	0.2	0.1	0.0	0.0	0.0	0.0	0.1	0.4
28-Sep	0.0	0.0	Z	0.0	0.0	0.0	0.0	0.0	0.0	0.1	0.3	0.1	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	0.3
29-Sep	0.1	0.2	0.4	Z	0.3	0.2	0.1	0.2	0.1	0.1	0.1	0.1	0.0	0.0	0.0	0.0	0.0	0.0	0.1	0.2	0.2	0.1	0.1	0.0	0.1	0.4
30-Sep	0.0	0.0	0.1	0.1	Z	1.1	0.7	0.9	1.0	0.7	0.6	0.4	0.3	0.4	0.4	0.4	0.6	0.2	0.1	0.1	0.1	0.1	0.1	0.1	0.4	1.1
	0.1	0.3	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	0.1	0.1	0.2	0.2	0.1	0.1	0.1	0.1	Diurnal Average	
	1.1	2.2	1.9	2.4	1.0	1.1	1.0	0.9	1.0	1.1	0.6	0.5	0.4	0.5	0.5	0.5	0.6	0.7	1.2	1.0	0.8	1.3	2.1	0.6	Diurnal Maximum	

Z - zerospan C - Calibration

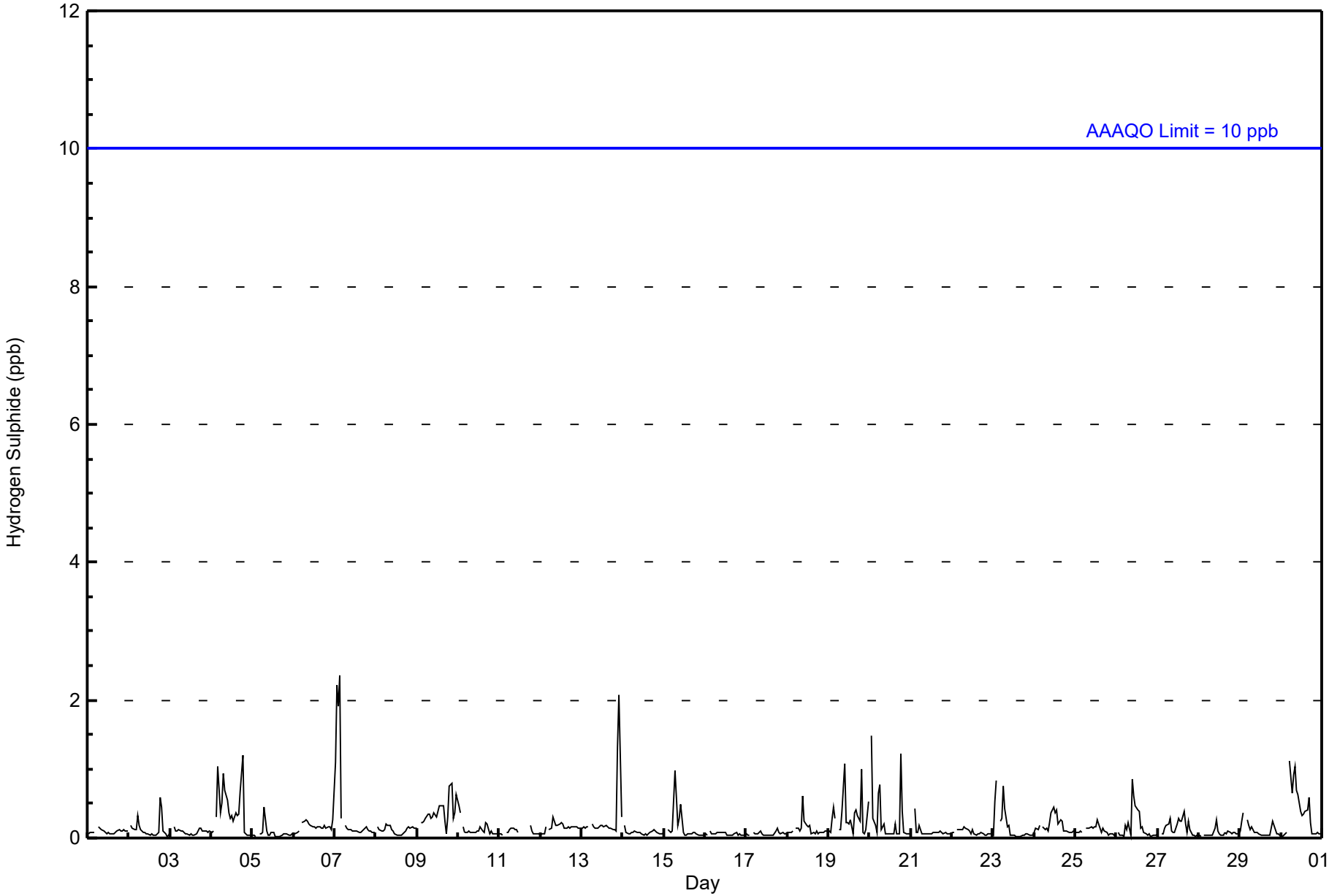
Alberta Ambient Air Quality Objectives (AAAQO): 1-hr 10 ppb 24-hr 3 ppb

Wood Buffalo Environmental Association

Hourly Averages

Hydrogen Sulphide (H_2S) - ppb

Kirby North - September 2024



Hydrogen Sulphide (H_2S) - ppb
Kirby North - September 2024

Concentration Ranges (ppb)	Number of Hours	%	Cumulative %
0 - 2	684	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: 684

Total Number of Hours: 720

Wood Buffalo Environmental Association

Frequency Distribution

Hydrogen Sulphide (H_2S) - ppb

Kirby North - September 2024

Concentration Ranges (ppb)	Wind Direction																
	N	NNE	NE	ENE	E	ESE	SE	SSE	S	SSW	SW	WSW	W	WNW	NW	NNW	**Totals**
0 - 2	30	36	20	11	3	9	14	45	114	66	104	50	34	63	52	33	684
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	36	20	11	3	9	14	45	114	66	104	50	34	63	52	33	684

Total Number of Valid Hours: 684

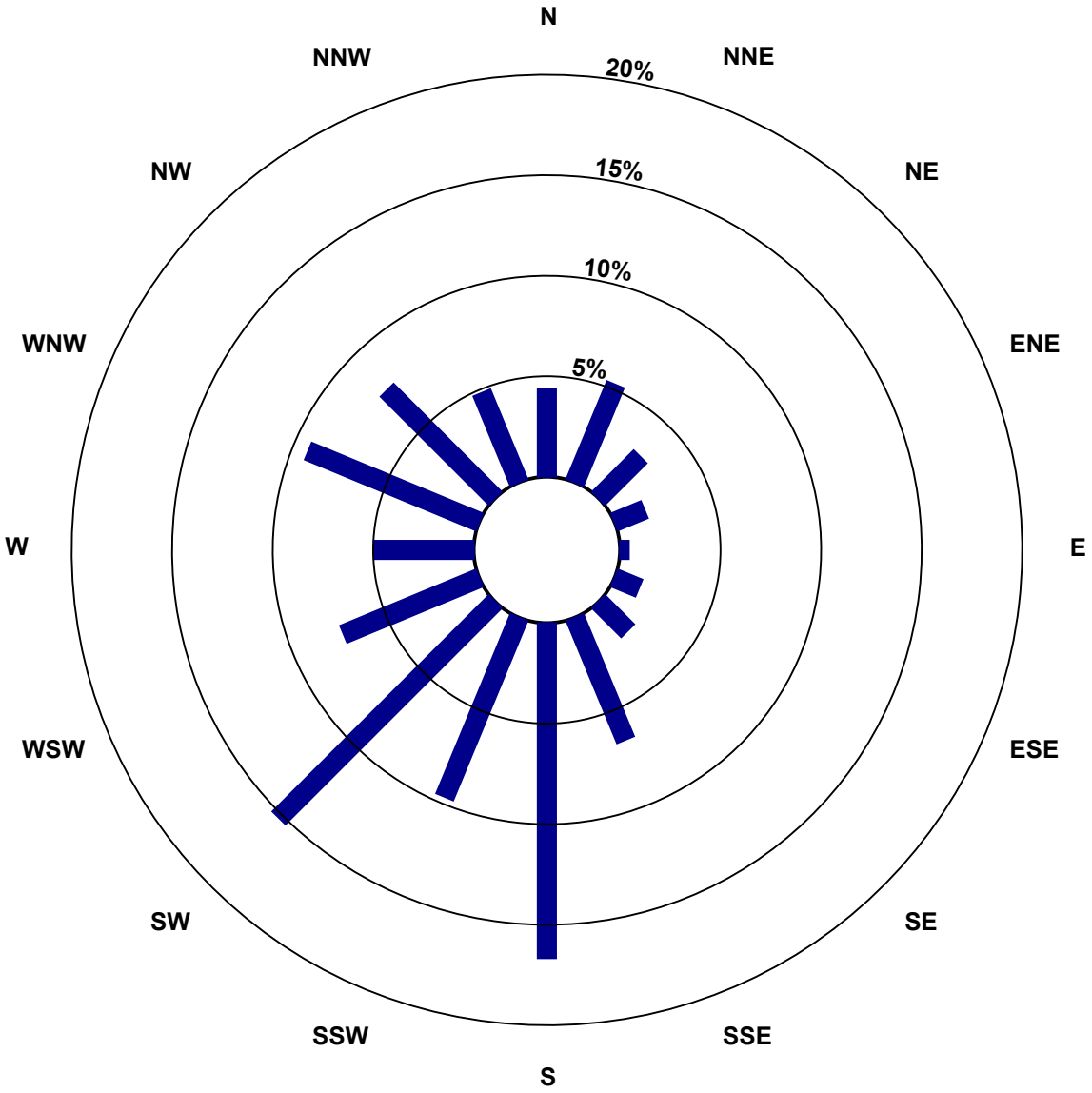
Total Number of Hours: 720

Wood Buffalo Environmental Association

Wind Rose Sep 2024

Hydrogen Sulphide (H_2S) - ppb

Kirby North



Classes (ppb)

0 - 2

3 - 4

5 - 7

8 - 11

> 11

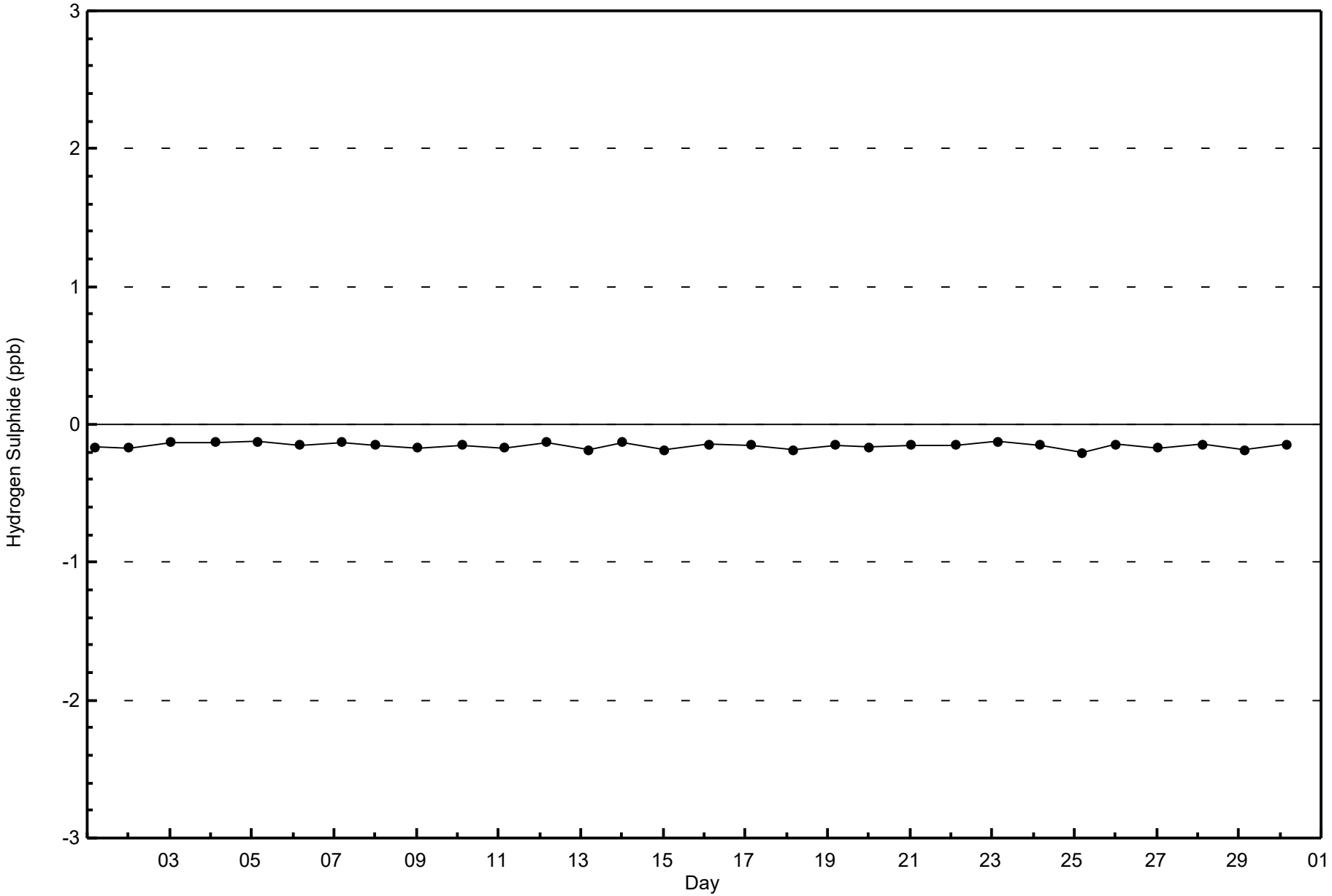
Total Number of Valid Hours: 684

Wood Buffalo Environmental Association

Zero Responses

Hydrogen Sulphide (H_2S) - ppb

Kirby North - September 2024

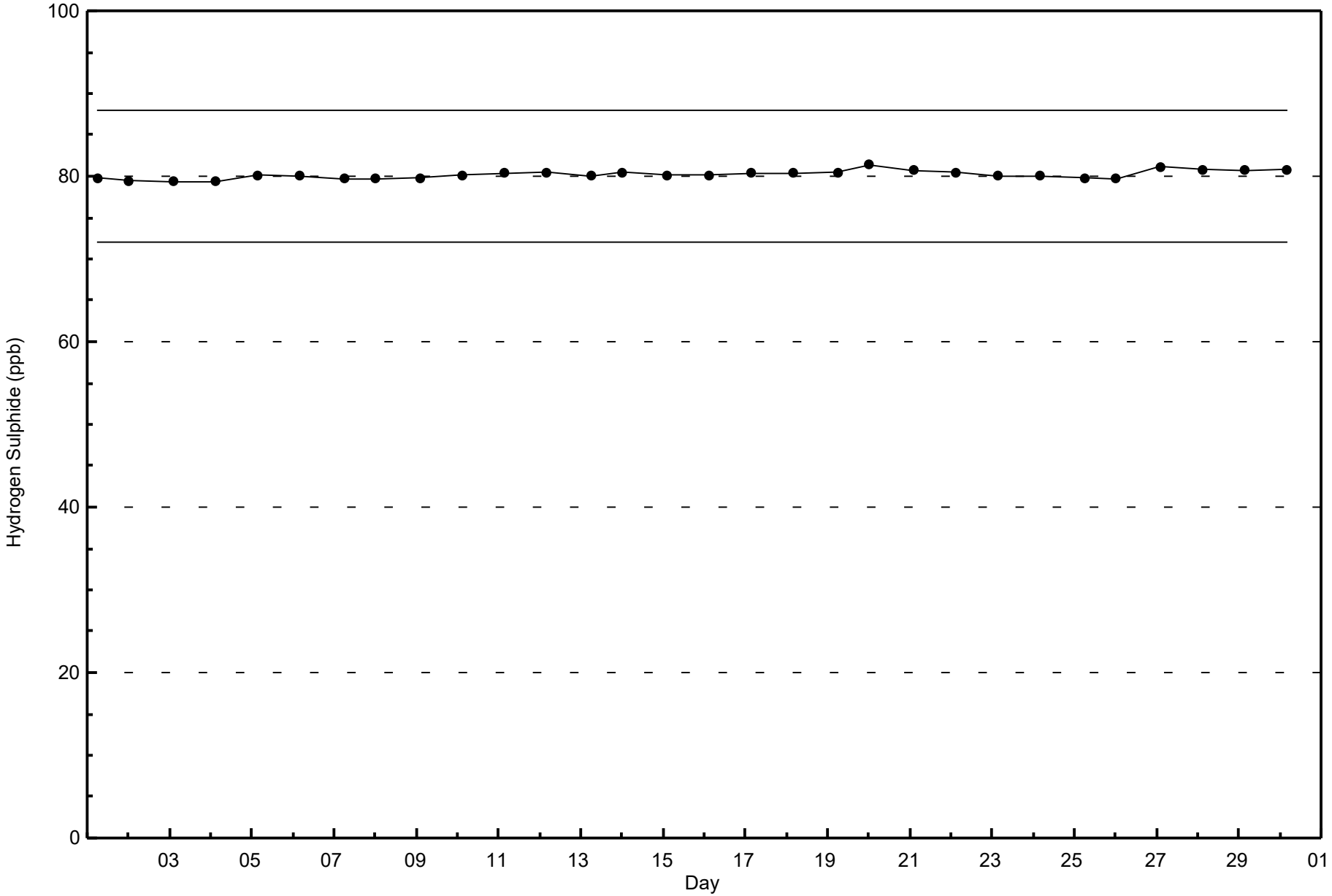


Wood Buffalo Environmental Association

Span Responses

Hydrogen Sulphide (H_2S) - ppb

Kirby North - September 2024



Wood Buffalo Environmental Association

Summary of Hour Averages

Total Hydrocarbons (THC) - ppm

Kirby North - September 2024

Maximum Value: 2.6 ppm on Sep 8 05:00

Maximum Daily Average: 2.4 ppm on Sep 13

Minimum Value: 2.1 ppm on Sep 1 14:00

Minimum Daily Average: 2.2 ppm on Sep 25

Maximum Diurnal Average: 2.3 ppm at hour 2

Minimum Diurnal Average: 2.2 ppm at hour 15

Monthly Average: 2.29 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} = 2.5

Hours in Service:	720
Hours of Data:	680
Hours of Missing Data:	40
Hours of Calibration:	35
Percent Operational Time:	99.3

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

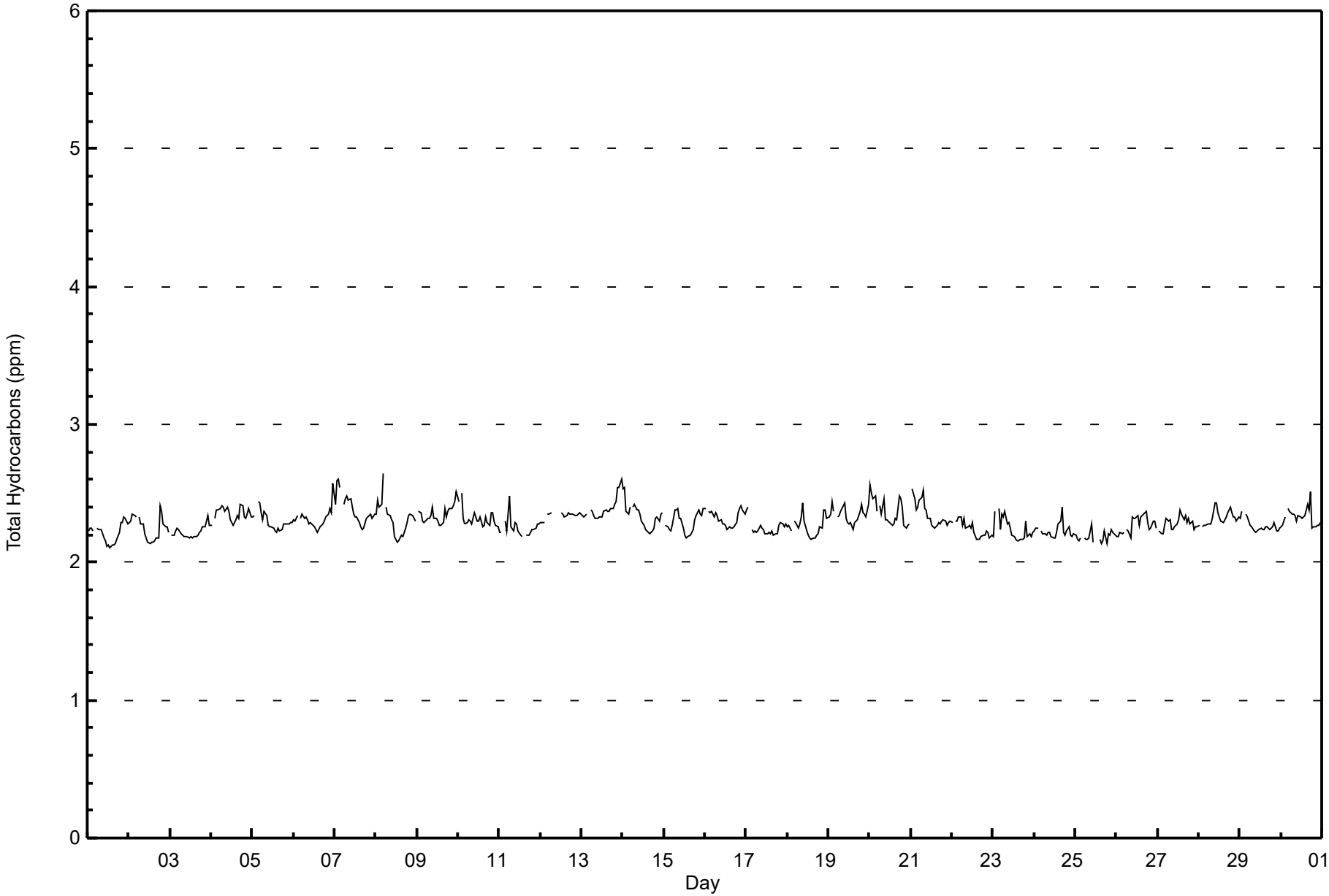
Z - zerospan C - Calibration M - Maintenance

Wood Buffalo Environmental Association

Hourly Averages

Total Hydrocarbons (THC) - ppm

Kirby North - September 2024



Concentration Ranges (ppm)	Number of Hours	%	Cumulative %
0 - 2.0	0	0.00	0.00
2.1 - 3.0	680	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: 680

Total Number of Hours: 720

Wood Buffalo Environmental Association

Frequency Distribution

Total Hydrocarbons (THC) - ppm

Kirby North - September 2024

Concentration Ranges (ppm)	Wind Direction																
	N	NNE	NE	ENE	E	ESE	SE	SSE	S	SSW	SW	WSW	W	WNW	NW	NNW	**Totals**
0 - 2.0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
2.1 - 3.0	30	34	17	12	3	9	16	48	114	66	103	47	32	67	49	33	680
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	30	34	17	12	3	9	16	48	114	66	103	47	32	67	49	33	680

Total Number of Valid Hours: 680

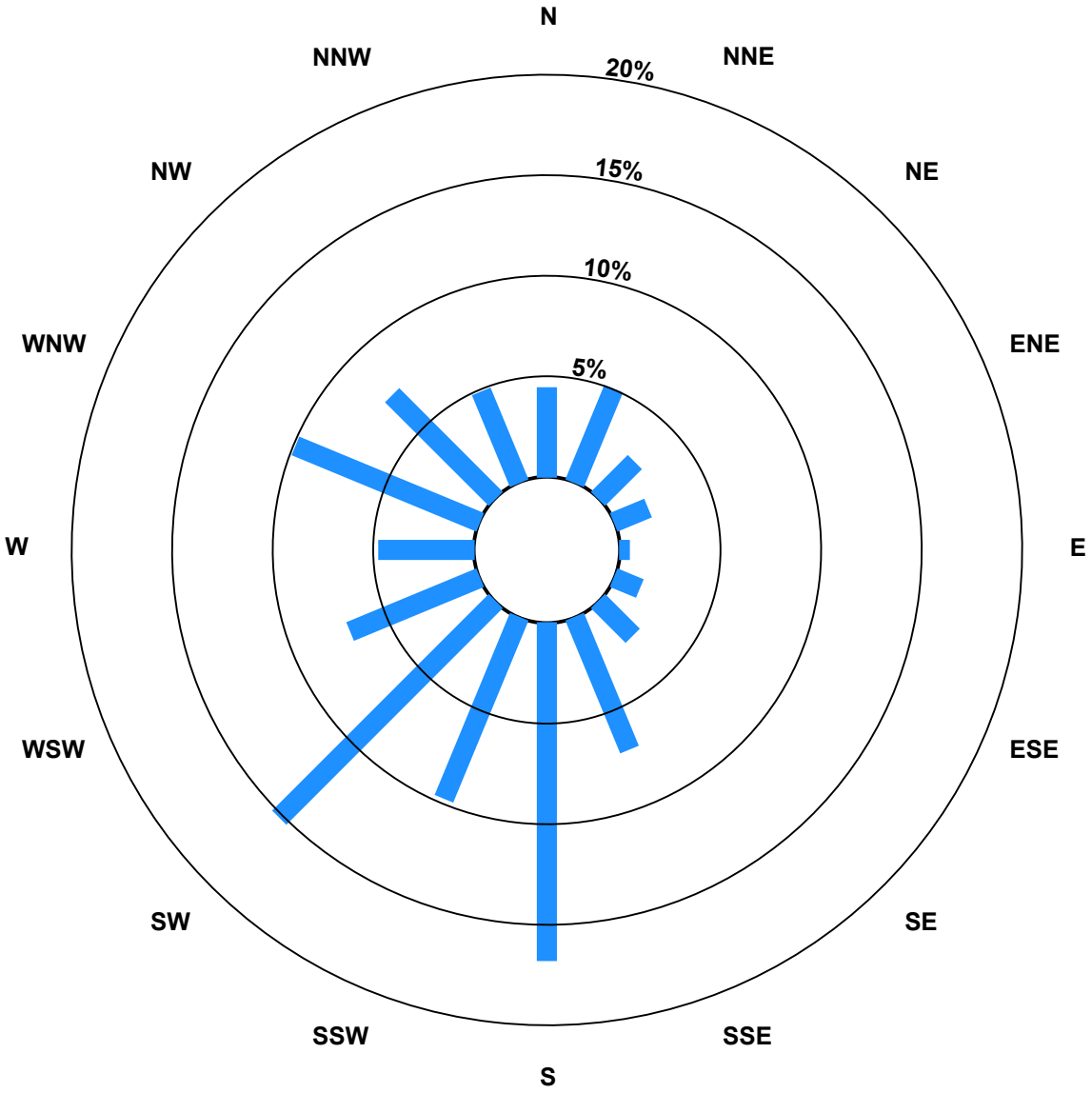
Total Number of Hours: 720

Wood Buffalo Environmental Association

Wind Rose Sep 2024

Total Hydrocarbons (THC) - ppm

Kirby North



Classes (ppm)

0 - 2.0

2.1 - 3.0

3.1 - 10.0

> 10.0

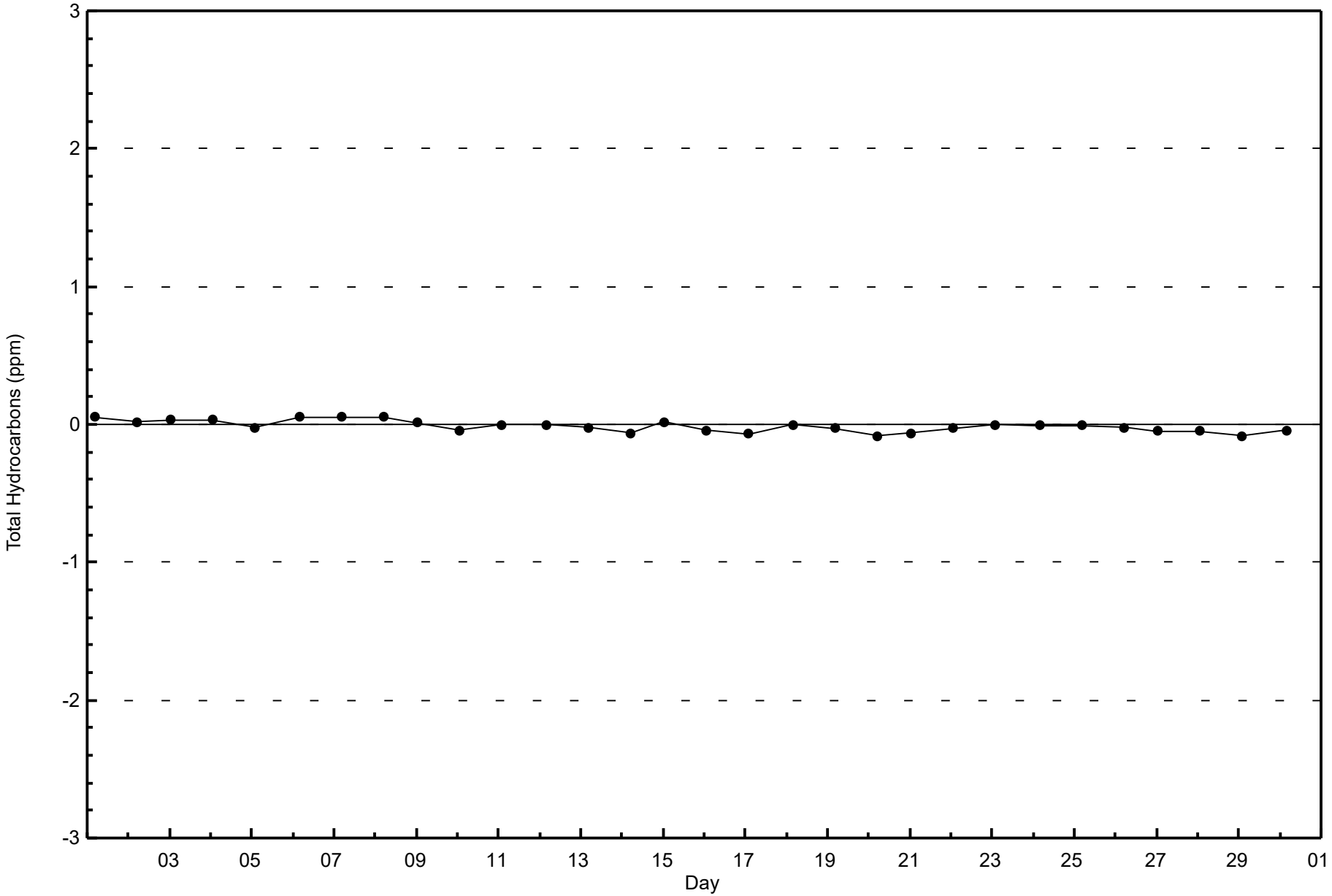
Total Number of Valid Hours: 680

Wood Buffalo Environmental Association

Zero Responses

Total Hydrocarbons (THC) - ppm

Kirby North - September 2024

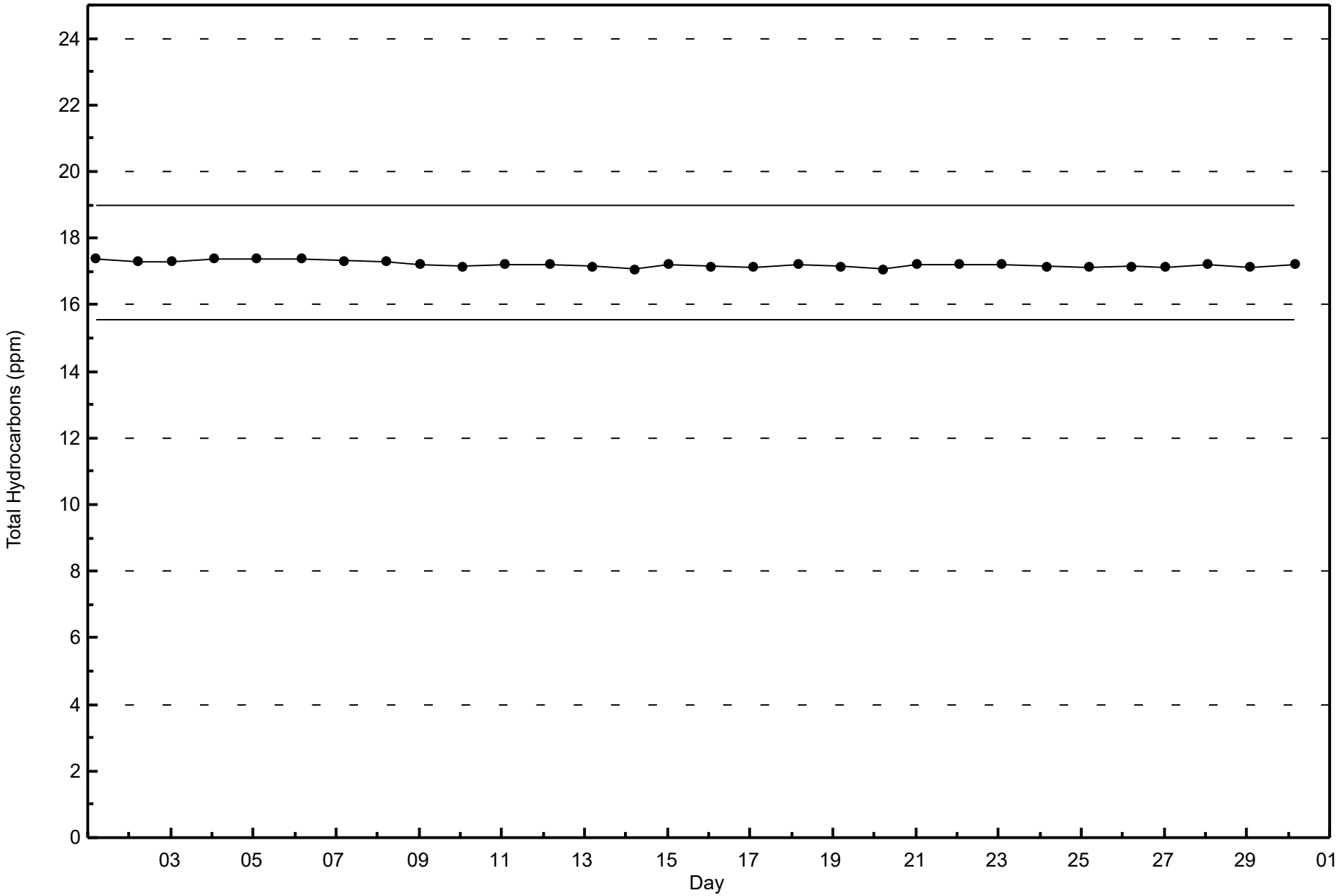


Wood Buffalo Environmental Association

Span Responses

Total Hydrocarbons (THC) - ppm

Kirby North - September 2024



Wood Buffalo Environmental Association

Summary of Hour Averages

Nitric Oxide (NO) - ppb

Kirby North - September 2024

Maximum Value: 5.9 ppb on Sep 24 10:00

Maximum Daily Average: 1.6 ppb on Sep 30

Minimum Value: 0.0 ppb on Sep 1 20:00

Minimum Daily Average: 0.1 ppb on Sep 12

Maximum Diurnal Average: 0.8 ppb at hour 10

Minimum Diurnal Average: 0.1 ppb at hour 22

Monthly Average: 0.41 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} = 4.3

Hours in Service:	720
Hours of Data:	681
Hours of Missing Data:	39
Hours of Calibration:	36
Percent Operational Time:	99.6

Day	Hourly Period Ending At (MST)																								Daily	Daily
	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24	Average	Maximum
1-Sep	0.0	0.0	Z	0.0	0.0	0.0	0.2	0.3	0.3	0.2	0.1	0.0	0.1	0.1	0.0	0.1	0.0	0.1	0.2	0.0	0.0	0.0	0.0	0.0	0.1	0.3
2-Sep	0.0	0.0	0.0	Z	0.0	0.0	0.1	0.1	0.2	0.2	0.1	0.0	0.0	0.1	0.1	0.0	0.1	0.2	0.2	0.1	0.0	0.0	0.0	0.0	0.1	0.2
3-Sep	0.1	0.1	0.4	0.1	Z	0.1	0.1	0.1	0.2	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	0.2	0.1	0.1	0.4
4-Sep	0.0	0.1	0.1	0.2	0.7	Z	0.8	1.1	1.0	1.2	2.4	1.5	1.5	0.4	2.2	2.0	0.3	1.4	0.8	0.1	0.2	0.1	0.3	0.6	0.8	2.4
5-Sep	Z	0.1	0.3	0.0	0.0	0.8	0.2	0.9	0.2	0.0	0.0	0.3	0.2	0.0	0.0	0.1	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.1	0.9
6-Sep	0.0	Z	0.0	0.0	0.0	0.0	0.1	0.2	0.2	0.1	0.1	0.2	0.2	0.1	0.1	0.0	0.0	0.1	0.0	0.0	0.0	0.1	0.0	1.0	0.1	1.0
7-Sep	0.2	0.3	Z	0.3	0.1	0.0	0.1	0.3	0.1	0.1	0.0	0.2	0.0	0.0	0.1	0.1	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.1	0.3
8-Sep	0.0	0.0	0.0	Z	0.0	0.5	0.1	1.6	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	0.1	1.6
9-Sep	0.0	0.1	0.0	0.0	Z	0.0	0.1	0.1	0.3	1.1	1.5	1.9	1.6	3.0	2.2	3.1	2.2	0.5	1.3	0.4	0.6	0.2	0.1	1.5	0.9	3.1
10-Sep	2.0	1.9	2.8	0.2	0.2	Z	0.4	0.6	0.6	0.3	0.3	0.7	0.6	1.4	0.3	0.1	0.7	0.2	0.1	0.1	0.1	0.1	0.0	0.0	0.6	2.8
11-Sep	Z	0.0	0.0	0.0	0.0	0.0	0.5	1.1	0.9	1.2	0.4	M	0.0	0.0	M	M	0.1	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.2	1.2
12-Sep	0.0	Z	0.0	0.1	0.0	0.0	0.1	0.2	0.1	0.0	0.0	0.1	0.2	0.2	0.2	0.1	0.1	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.1	0.2
13-Sep	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	0.2	0.3	0.2	0.1	0.1	0.1	0.0	0.1	0.4	0.5	3.0	0.3	3.0
14-Sep	2.9	0.4	0.0	Z	0.0	0.0	0.1	1.5	0.5	0.2	0.1	0.1	0.2	0.1	0.2	0.1	0.0	0.0	0.1	0.1	0.1	0.1	0.0	0.1	0.3	2.9
15-Sep	0.0	0.0	0.2	0.1	Z	0.7	0.4	0.1	0.1	0.2	0.5	0.6	0.1	0.2	0.1	0.0	0.1	0.2	0.1	0.1	0.1	0.1	0.1	0.1	0.2	0.7
16-Sep	0.1	0.1	0.1	0.1	0.1	Z	0.1	0.3	0.4	0.3	0.3	0.4	0.1	0.1	0.2	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.0	0.1	0.4
17-Sep	Z	0.7	0.0	0.0	0.0	0.0	0.0	0.0	0.4	0.7	0.3	0.1	0.2	0.3	0.0	0.1	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.1	0.7
18-Sep	0.0	Z	0.0	0.0	0.0	0.0	0.0	0.2	2.0	0.6	1.1	0.1	0.3	0.4	0.2	0.0	0.0	0.0	0.0	0.1	0.0	0.1	0.1	0.1	0.2	2.0
19-Sep	0.1	0.2	Z	0.1	0.3	0.1	0.1	1.0	3.5	1.6	1.2	1.2	2.6	1.9	0.1	0.6	0.5	0.1	0.0	0.1	0.3	0.2	1.1	1.1	0.8	3.5
20-Sep	0.1	0.6	0.1	Z	0.4	2.2	1.5	0.1	0.7	0.2	0.1	0.2	0.1	0.2	0.2	0.2	0.0	0.0	1.3	0.3	0.0	0.0	0.0	0.0	0.4	2.2
21-Sep	0.0	0.2	0.1	0.0	Z	0.1	0.1	2.9	0.9	0.8	0.2	0.3	0.1	0.2	0.1	0.1	0.1	0.1	0.0	0.1	0.1	0.0	0.0	0.1	0.3	2.9
22-Sep	0.1	0.1	0.1	0.1	0.1	Z	0.2	0.3	0.4	0.5	1.6	1.2	5.5	1.3	0.3	0.2	0.2	0.3	0.4	0.0	0.4	0.1	0.0	1.3	0.6	5.5
23-Sep	Z	2.8	0.3	1.2	0.2	0.5	0.6	1.0	0.7	1.0	0.7	0.9	0.3	0.3	0.1	0.1	0.3	0.1	0.1	0.1	0.0	0.1	0.0	0.2	0.5	2.8
24-Sep	0.1	Z	0.1	0.0	0.2	0.3	0.2	0.4	0.5	5.9	4.4	2.0	1.2	1.3	2.5	2.5	1.7	0.2	0.1	0.0	0.0	0.0	0.0	0.0	1.0	5.9
25-Sep	0.0	0.0	Z	0.0	0.0	0.0	0.1	0.1	0.3	0.3	C	C	C	C	C	C	0.2	0.1	0.0	0.0	0.0	0.0	0.0	0.0	--	0.3
26-Sep	0.0	0.0	0.0	Z	0.0	0.1	0.2	0.3	0.1	0.5	1.8	2.7	2.7	2.8	3.9	4.4	0.5	0.2	0.1	0.2	0.0	0.0	0.0	0.0	0.9	4.4
27-Sep	0.0	0.0	0.0	0.0	Z	0.0	0.1	0.4	0.6	0.8	0.6	0.7	1.7	2.0	5.8	3.8	1.1	0.3	0.2	0.2	0.1	0.0	0.1	0.3	0.8	5.8
28-Sep	0.1	0.0	0.1	0.1	0.1	Z	0.1	0.0	0.6	4.8	1.9	1.5	1.0	0.1	0.2	0.1	0.1	0.1	0.1	0.0	0.0	0.0	0.0	0.0	0.5	4.8
29-Sep	Z	0.0	0.0	0.1	0.0	0.0	0.0	0.2	0.2	0.2	0.3	0.3	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
30-Sep	0.1	Z	0.3	0.3	0.2	0.6	3.7	3.7	2.5	2.1	1.6	0.7	1.7	4.7	3.0	4.3	2.9	2.5	0.1	0.2	0.1	0.1	0.2	0.1	1.6	4.7
	0.2	0.3	0.2	0.1	0.1	0.3	0.3	0.6	0.6	0.8	0.8	0.7	0.8	0.7	0.8	0.8	0.4	0.2	0.2	0.1	0.1	0.1	0.1	0.3	Diurnal Average	
	2.9	2.8	2.8	1.2	0.7	2.2	3.7	3.7	3.5	5.9	4.4	2.7	5.5	4.7	5.8	4.4	2.9	2.5	1.3	0.4	0.6	0.4	1.1	3.0	Diurnal Maximum	

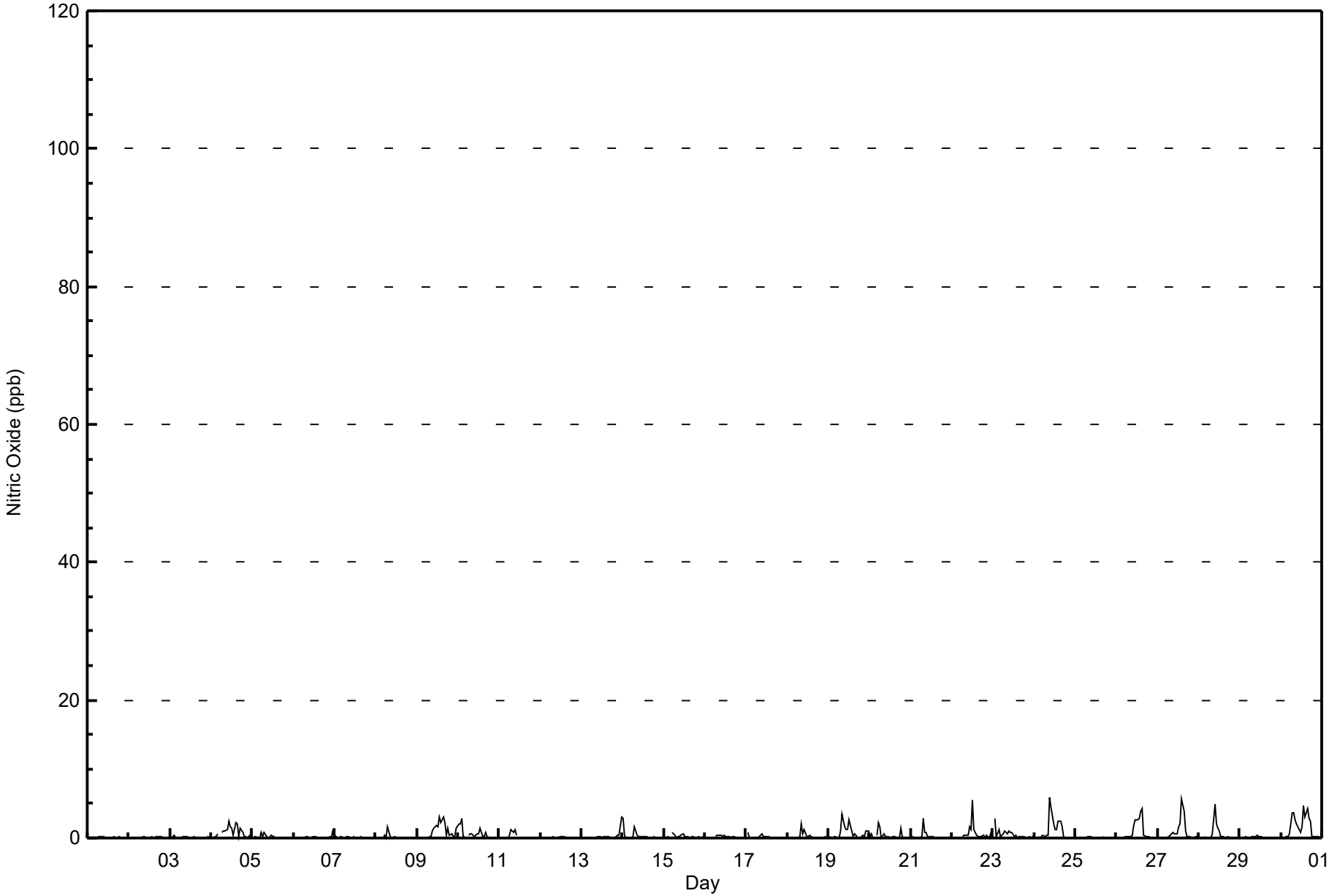
Z - zerospan C - Calibration M - Maintenance

Wood Buffalo Environmental Association

Hourly Averages

Nitric Oxide (NO) - ppb

Kirby North - September 2024



Concentration Ranges (ppb)	Number of Hours	%	Cumulative %
0 - 20	681	100.00	100.00
21 - 40	0	0.00	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: 681

Total Number of Hours: 720

Wood Buffalo Environmental Association

Frequency Distribution

Nitric Oxide (NO) - ppb

Kirby North - September 2024

Concentration Ranges (ppb)	Wind Direction																
	N	NNE	NE	ENE	E	ESE	SE	SSE	S	SSW	SW	WSW	W	WNW	NW	NNW	**Totals**
0 - 20	30	36	22	10	3	8	15	49	114	66	102	45	34	67	49	31	681
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	30	36	22	10	3	8	15	49	114	66	102	45	34	67	49	31	681

Total Number of Valid Hours: 681

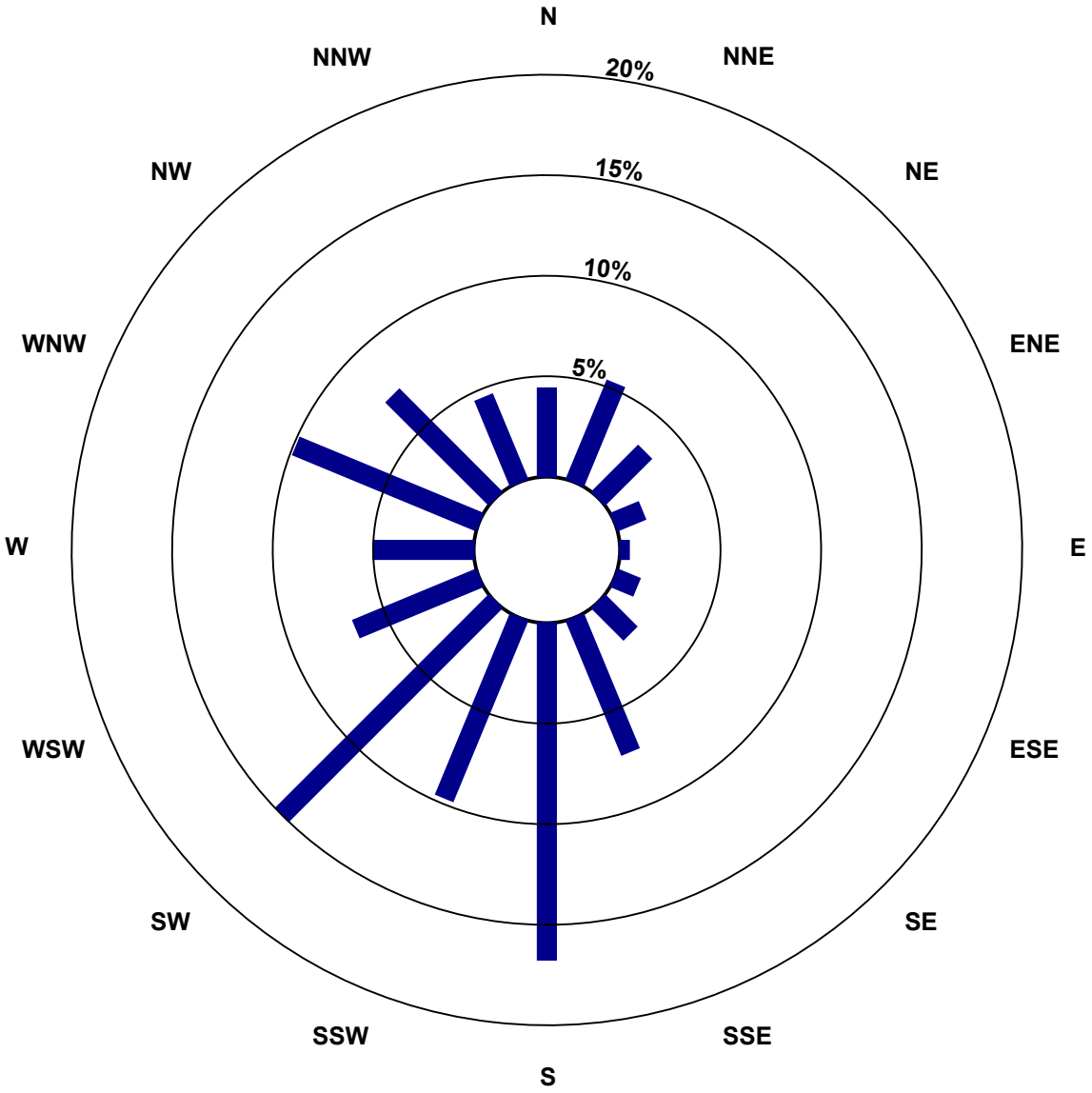
Total Number of Hours: 720

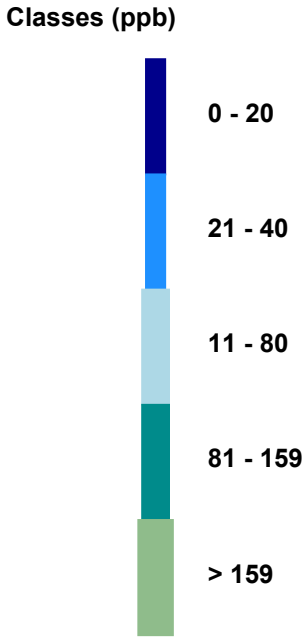
Wood Buffalo Environmental Association

Wind Rose Sep 2024

Nitric Oxide (NO) - ppb

Kirby North





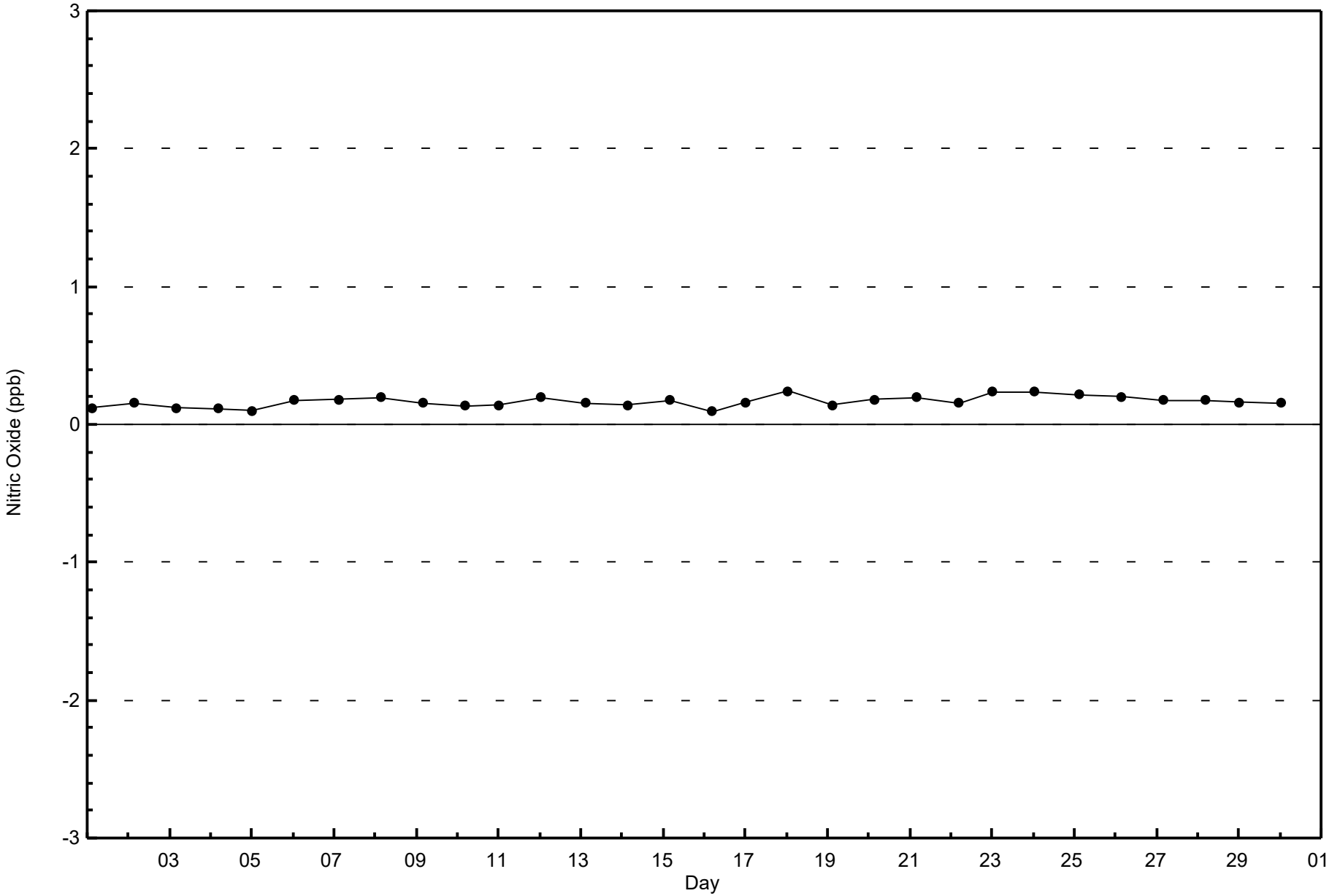
Total Number of Valid Hours: 681

Wood Buffalo Environmental Association

Zero Responses

Nitric Oxide (NO) - ppb

Kirby North - September 2024

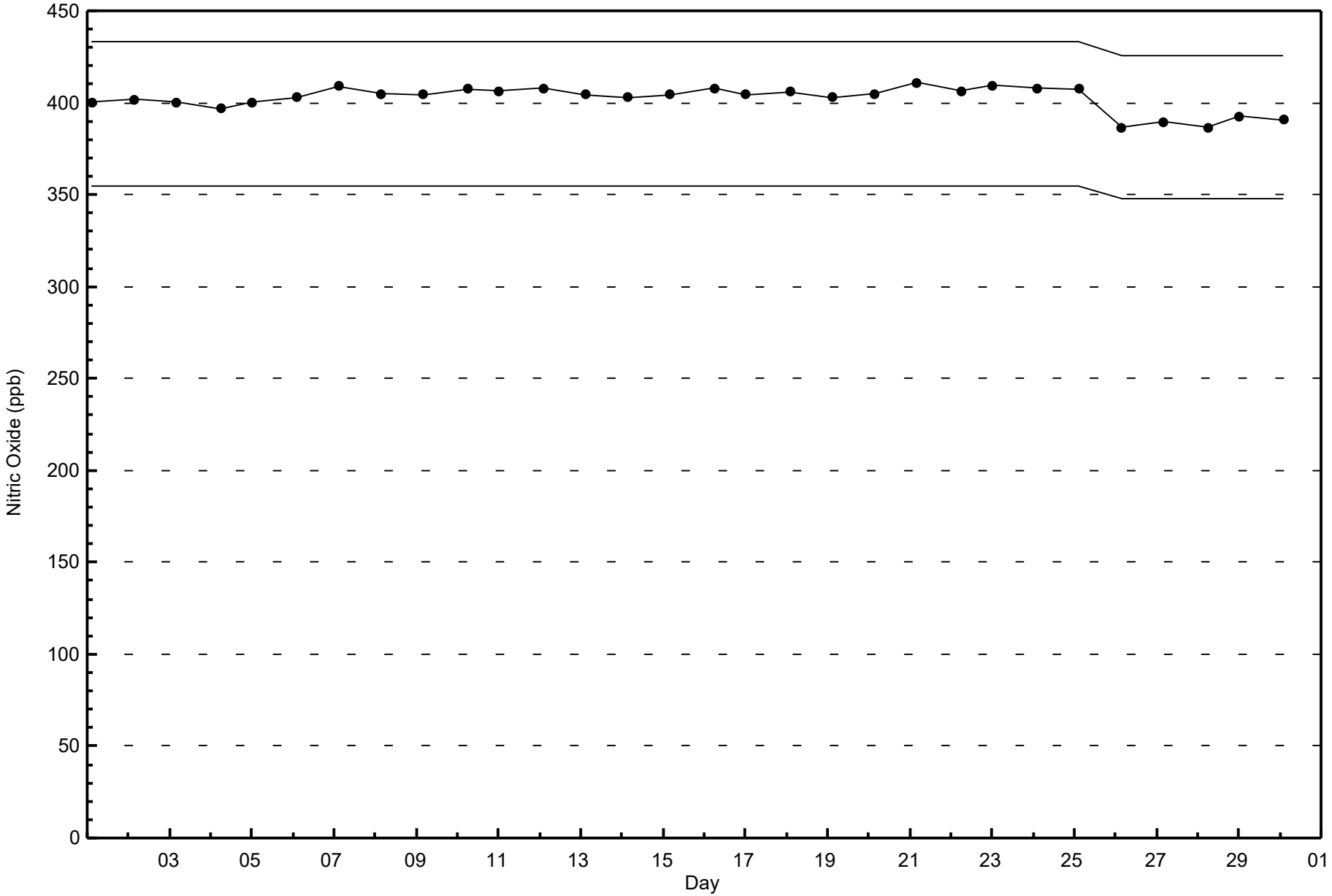


Wood Buffalo Environmental Association

Span Responses

Nitric Oxide (NO) - ppb

Kirby North - September 2024



Wood Buffalo Environmental Association

Summary of Hour Averages

Nitrogen Dioxide (NO_2) - ppb

Kirby North - September 2024

Number of Exceedences (AAAQO): 1-hr: 0 24-hr: 0
Maximum Value: 8.6 ppb on Sep 29 04:00 Maximum Daily Average: 2.1 ppb on Sep 9

Minimum Value: 0.1 ppb on Sep 29 14:00
Maximum Diurnal Average: 1.7 ppb at hour 4
Monthly Average: 1.31 ppb

Minimum Daily Average: 0.7 ppb on Sep 21
Minimum Diurnal Average: 1.0 ppb at hour 22
Percentiles: P_1 = 0.2 P_{10} = 0.4 Q_1 = 0.6 Median = 1.0 Q_3 = 1.6 P_{90} = 2.6 P_{99} = 4.7

Hours in Service:	720
Hours of Data:	681
Hours of Missing Data:	39
Hours of Calibration:	36
Percent Operational Time:	99.6

Day	Hourly Period Ending At (MST)																								Daily	Daily
	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24	Average	Maximum
1-Sep	0.4	1.1	Z	1.0	1.1	1.3	1.1	1.1	1.0	0.8	0.6	0.6	0.7	0.6	0.7	0.7	0.6	0.7	1.9	0.7	0.5	0.7	1.0	0.9	0.9	1.9
2-Sep	0.8	1.1	0.9	Z	1.0	1.3	1.0	1.0	1.6	1.0	0.8	0.8	0.7	0.9	0.8	0.7	1.8	3.5	3.5	2.6	0.7	0.5	0.7	0.5	1.2	3.5
3-Sep	0.5	0.5	1.3	0.8	Z	1.0	1.0	1.3	1.1	0.9	0.9	0.4	0.3	0.5	0.7	0.8	1.0	0.9	0.9	1.1	1.1	1.3	2.0	1.2	0.9	2.0
4-Sep	1.1	1.3	2.0	2.0	1.9	Z	1.4	1.5	1.5	1.4	1.6	1.4	1.4	0.7	2.6	2.2	0.6	1.7	2.1	0.6	0.4	0.6	2.5	1.9	1.5	2.6
5-Sep	Z	1.4	1.5	1.0	0.5	1.6	1.3	2.2	0.6	0.3	0.3	0.9	0.5	0.4	0.2	0.4	0.4	0.2	1.3	0.8	0.3	0.5	0.8	0.7	0.8	2.2
6-Sep	0.8	Z	1.4	1.2	1.3	1.5	1.6	1.8	1.8	1.5	1.4	1.6	1.5	1.4	1.3	1.1	1.1	1.2	1.1	1.2	1.3	1.7	1.4	3.1	1.4	3.1
7-Sep	2.4	3.5	Z	3.2	2.9	1.8	1.7	3.0	2.2	1.7	1.6	1.7	1.6	1.4	1.2	1.3	0.8	0.8	0.9	1.3	1.3	1.8	1.1	1.0	1.7	3.5
8-Sep	0.9	1.2	1.2	Z	1.0	2.5	1.8	1.1	1.8	1.6	1.5	1.1	0.6	0.6	0.7	1.0	1.3	1.9	1.7	1.8	2.9	3.1	2.5	2.2	1.6	3.1
9-Sep	2.0	2.0	2.0	1.8	Z	1.9	1.8	1.9	1.7	2.3	1.5	1.8	2.0	3.8	2.4	5.2	3.8	1.0	2.9	1.4	1.4	1.1	0.9	2.8	2.1	5.2
10-Sep	3.0	2.8	3.8	0.8	0.8	Z	1.0	0.7	0.7	0.5	0.6	0.7	0.9	1.5	0.6	0.8	1.6	0.5	0.7	0.3	0.6	0.5	0.8	0.6	1.1	3.8
11-Sep	Z	0.4	0.3	0.3	0.3	1.9	3.5	4.2	3.7	4.3	1.3	M	0.6	0.6	M	M	1.0	0.6	1.1	0.4	0.4	0.4	0.3	0.3	1.3	4.3
12-Sep	0.4	Z	1.5	4.9	1.2	1.0	2.0	3.9	2.1	1.2	1.3	1.7	2.5	2.0	1.2	1.1	0.9	0.9	1.0	1.0	1.0	0.9	2.5	1.1	1.6	4.9
13-Sep	1.0	1.0	Z	1.0	1.1	1.1	1.0	1.0	1.0	1.1	1.2	1.4	1.4	1.8	2.3	2.3	2.1	2.8	2.5	2.0	2.7	2.4	1.5	3.4	1.7	3.4
14-Sep	3.8	1.3	0.9	Z	1.1	1.3	1.0	1.8	0.8	0.6	0.6	0.6	0.6	0.6	0.8	0.7	0.7	0.6	1.1	1.8	1.0	0.7	0.9	0.7	1.0	3.8
15-Sep	0.6	0.5	0.7	0.4	Z	1.9	1.3	1.0	1.1	0.7	1.0	1.0	0.5	0.4	0.5	0.3	0.5	0.8	0.3	0.5	1.6	0.6	0.4	0.4	0.7	1.9
16-Sep	0.7	0.6	0.6	0.6	0.6	Z	1.2	1.2	0.9	0.9	0.8	0.8	0.4	0.4	0.4	0.3	0.5	0.9	1.7	0.5	0.7	0.9	0.6	0.5	0.7	1.7
17-Sep	Z	2.2	0.4	0.3	0.3	0.4	0.5	0.5	1.3	1.8	1.0	0.9	0.9	0.9	0.6	0.5	0.5	0.4	0.5	0.5	0.9	0.9	1.0	0.9	0.8	2.2
18-Sep	0.9	Z	1.3	1.4	1.5	2.4	1.3	1.6	3.7	2.3	3.4	1.0	1.0	0.9	0.6	0.5	0.4	0.4	0.5	0.8	0.5	0.8	0.9	0.7	1.3	3.7
19-Sep	0.8	3.0	Z	2.3	2.2	0.7	0.7	1.6	3.8	2.9	1.9	1.8	3.1	2.7	0.5	1.5	1.7	0.8	1.1	3.0	2.1	1.2	4.4	4.1	2.1	4.4
20-Sep	1.4	4.0	3.5	Z	2.4	4.1	5.0	1.2	2.4	0.8	0.8	1.2	0.8	1.0	1.0	1.1	0.5	0.6	5.8	2.2	0.9	0.6	0.9	0.8	1.9	5.8
21-Sep	0.5	1.4	1.1	1.2	Z	1.8	0.8	2.0	0.6	0.6	0.4	0.3	0.2	0.4	0.3	0.2	0.3	0.4	0.4	0.4	0.7	0.7	0.9	1.0	0.7	2.0
22-Sep	1.2	1.3	1.4	1.5	1.6	Z	2.1	2.1	1.3	1.1	1.8	1.4	4.7	1.6	0.8	0.7	0.5	1.4	2.3	0.6	0.9	0.7	0.4	3.2	1.5	4.7
23-Sep	Z	3.5	0.8	2.2	0.8	1.5	1.4	2.0	1.2	1.3	0.7	1.0	0.4	0.5	0.3	0.5	0.6	0.5	0.7	1.2	0.8	0.7	0.6	0.9	1.0	3.5
24-Sep	0.8	Z	0.9	0.8	0.9	0.9	0.6	0.5	0.5	4.1	3.7	2.3	1.6	1.9	3.4	4.7	3.8	2.3	1.3	0.9	0.6	0.7	0.4	0.3	1.6	4.7
25-Sep	0.4	0.7	Z	1.6	1.4	1.1	1.3	1.3	1.1	0.9	C	C	C	C	C	C	0.9	1.2	0.4	0.5	0.6	1.0	0.6	0.3	--	1.6
26-Sep	0.3	0.2	0.3	Z	0.3	0.4	0.3	0.9	0.7	1.7	2.8	2.6	2.4	2.7	3.9	5.1	1.0	0.3	0.7	1.1	0.9	1.1	0.8	0.4	1.3	5.1
27-Sep	0.4	0.5	0.4	1.6	Z	2.8	3.0	2.2	1.5	1.2	1.2	1.4	2.7	3.7	6.3	4.2	2.5	1.1	0.9	2.3	2.2	0.8	0.7	0.9	1.9	6.3
28-Sep	0.5	0.3	0.4	0.3	0.4	Z	0.5	0.4	0.9	4.2	1.9	1.4	1.1	0.4	0.4	0.4	0.3	0.9	1.0	0.7	0.6	0.6	0.3	0.3	0.8	4.2
29-Sep	Z	1.0	1.5	8.6	2.8	2.5	1.7	1.8	0.8	0.9	1.1	0.9	0.3	0.1	0.2	0.2	0.1	0.1	1.1	1.9	2.5	1.0	0.7	0.5	1.4	8.6
30-Sep	0.6	Z	0.6	0.7	0.6	1.0	2.8	2.5	1.8	1.6	1.2	0.7	1.2	3.2	2.3	4.5	3.0	3.6	0.5	0.7	0.6	0.6	0.7	0.3	1.5	4.5
	1.0	1.5	1.2	1.7	1.2	1.6	1.5	1.6	1.5	1.5	1.3	1.2	1.3	1.3	1.3	1.5	1.2	1.1	1.4	1.2	1.1	1.0	1.1	1.2	Diurnal Average	
	3.8	4.0	3.8	8.6	2.9	4.1	5.0	4.2	3.8	4.3	3.7	2.6	4.7	3.8	6.3	5.2	3.8	3.6	5.8	3.0	2.9	3.1	4.4	4.1	Diurnal Maximum	

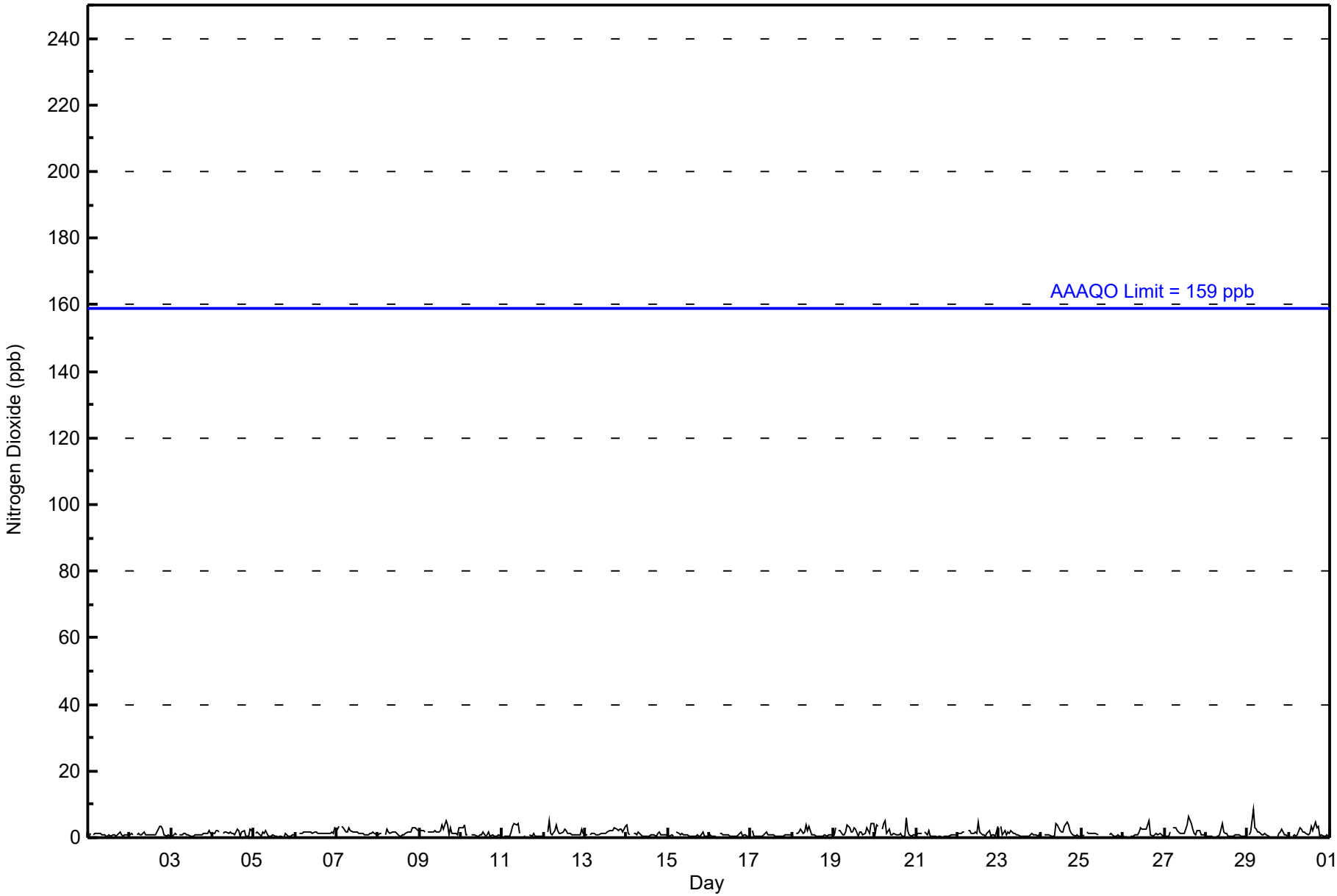
Z - zerospan C - Calibration M - Maintenance
Alberta Ambient Air Quality Objectives (AAAQO): 1-hr 159 ppb

Wood Buffalo Environmental Association

Hourly Averages

Nitrogen Dioxide (NO_2) - ppb

Kirby North - September 2024



Nitrogen Dioxide (NO_2) - ppb
Kirby North - September 2024

Concentration Ranges (ppb)	Number of Hours	%	Cumulative %
0 - 20	681	100.00	100.00
21 - 40	0	0.00	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: 681

Total Number of Hours: 720

Wood Buffalo Environmental Association

Frequency Distribution

Nitrogen Dioxide (NO_2) - ppb

Kirby North - September 2024

Concentration Ranges (ppb)	Wind Direction																
	N	NNE	NE	ENE	E	ESE	SE	SSE	S	SSW	SW	WSW	W	WNW	NW	NNW	**Totals**
0 - 20	30	36	22	10	3	8	15	49	114	66	102	45	34	67	49	31	681
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	30	36	22	10	3	8	15	49	114	66	102	45	34	67	49	31	681

Total Number of Valid Hours: 681

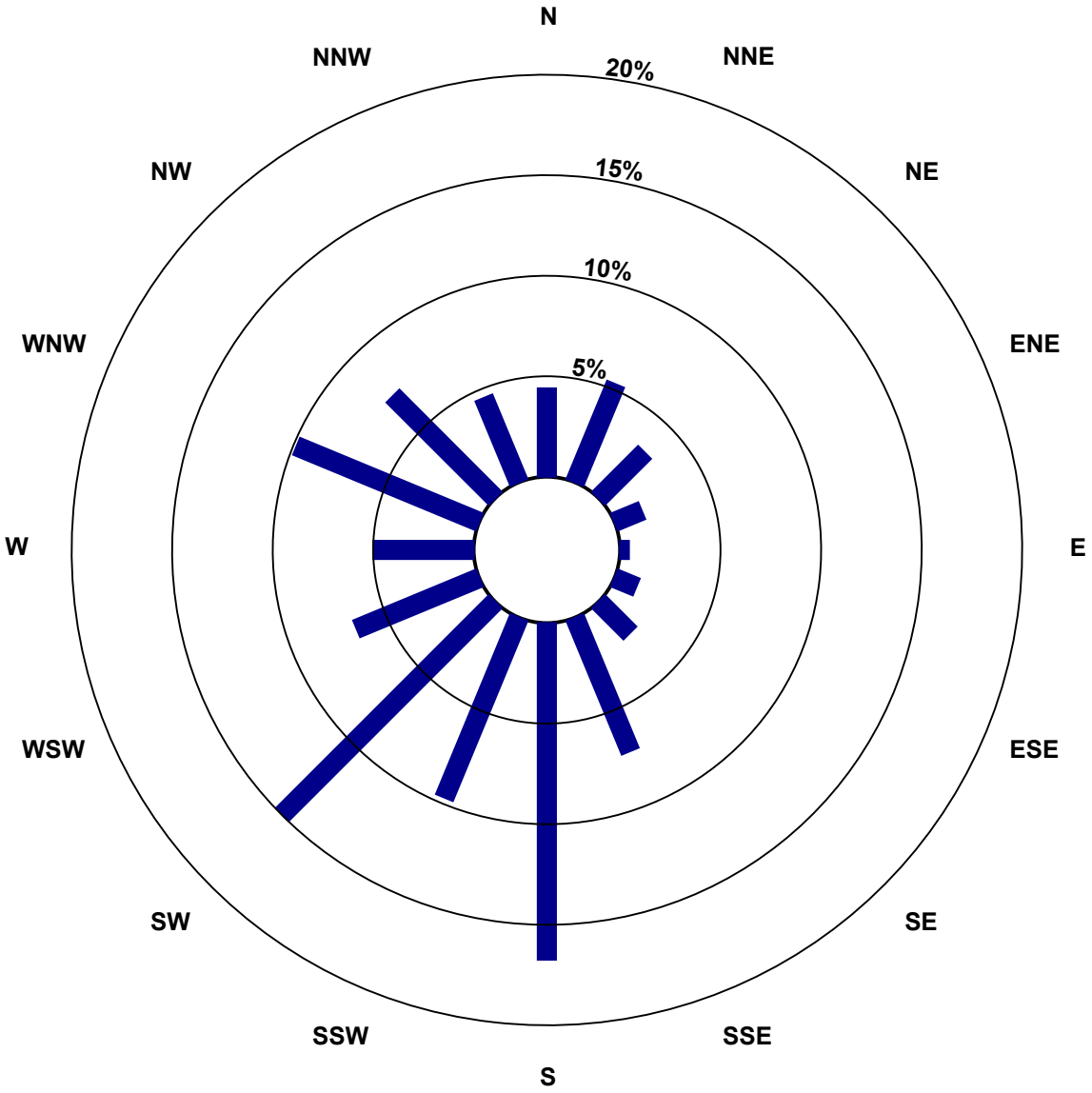
Total Number of Hours: 720

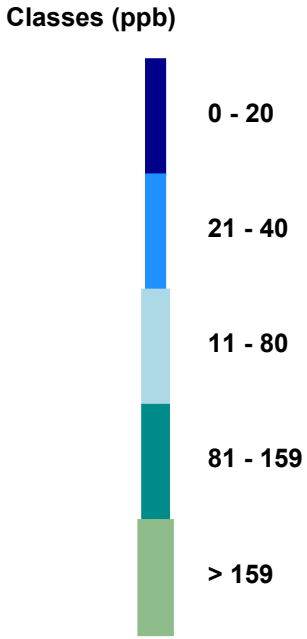
Wood Buffalo Environmental Association

Wind Rose Sep 2024

Nitrogen Dioxide (NO_2) - ppb

Kirby North





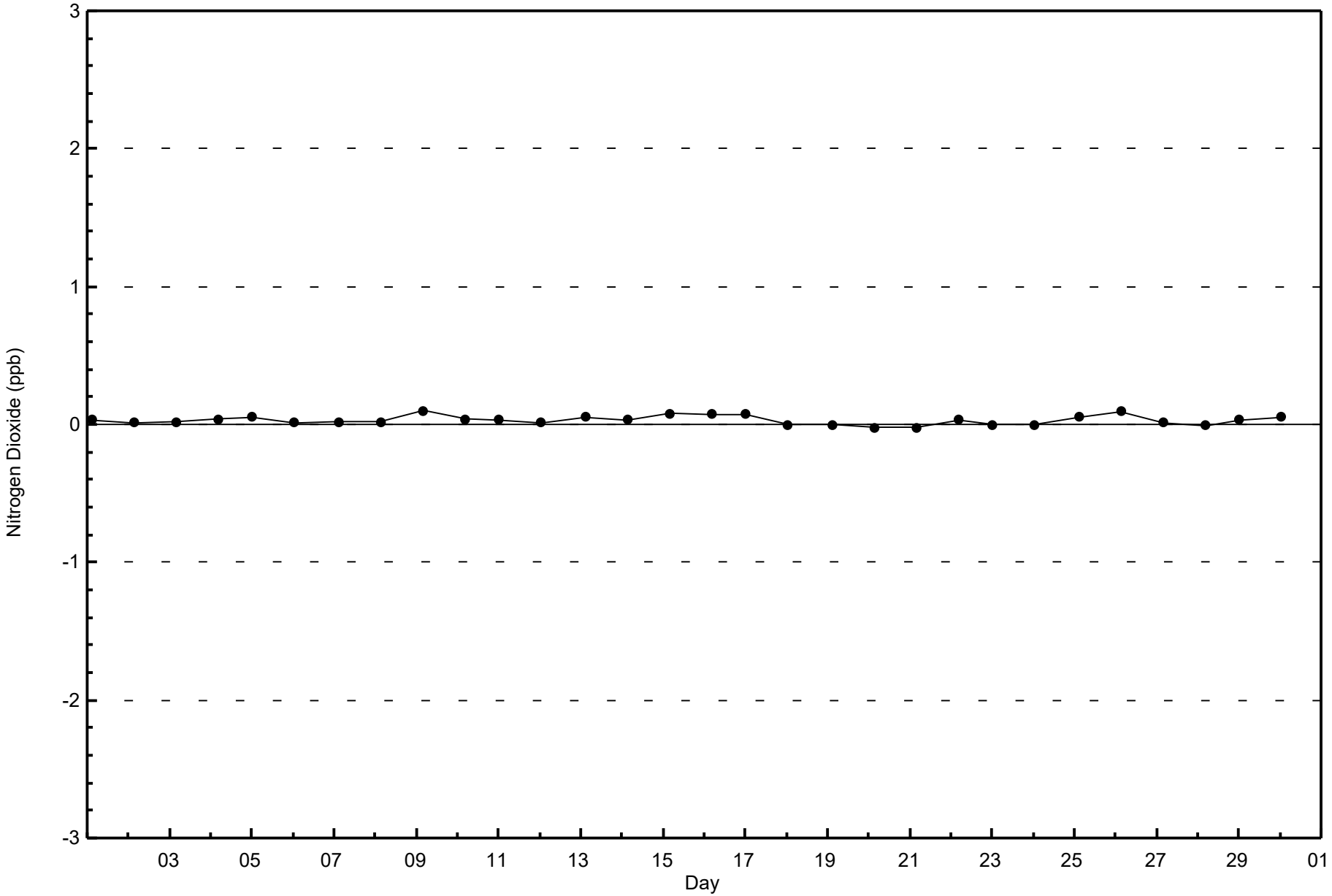
Total Number of Valid Hours: 681

Wood Buffalo Environmental Association

Zero Responses

Nitrogen Dioxide (NO_2) - ppb

Kirby North - September 2024

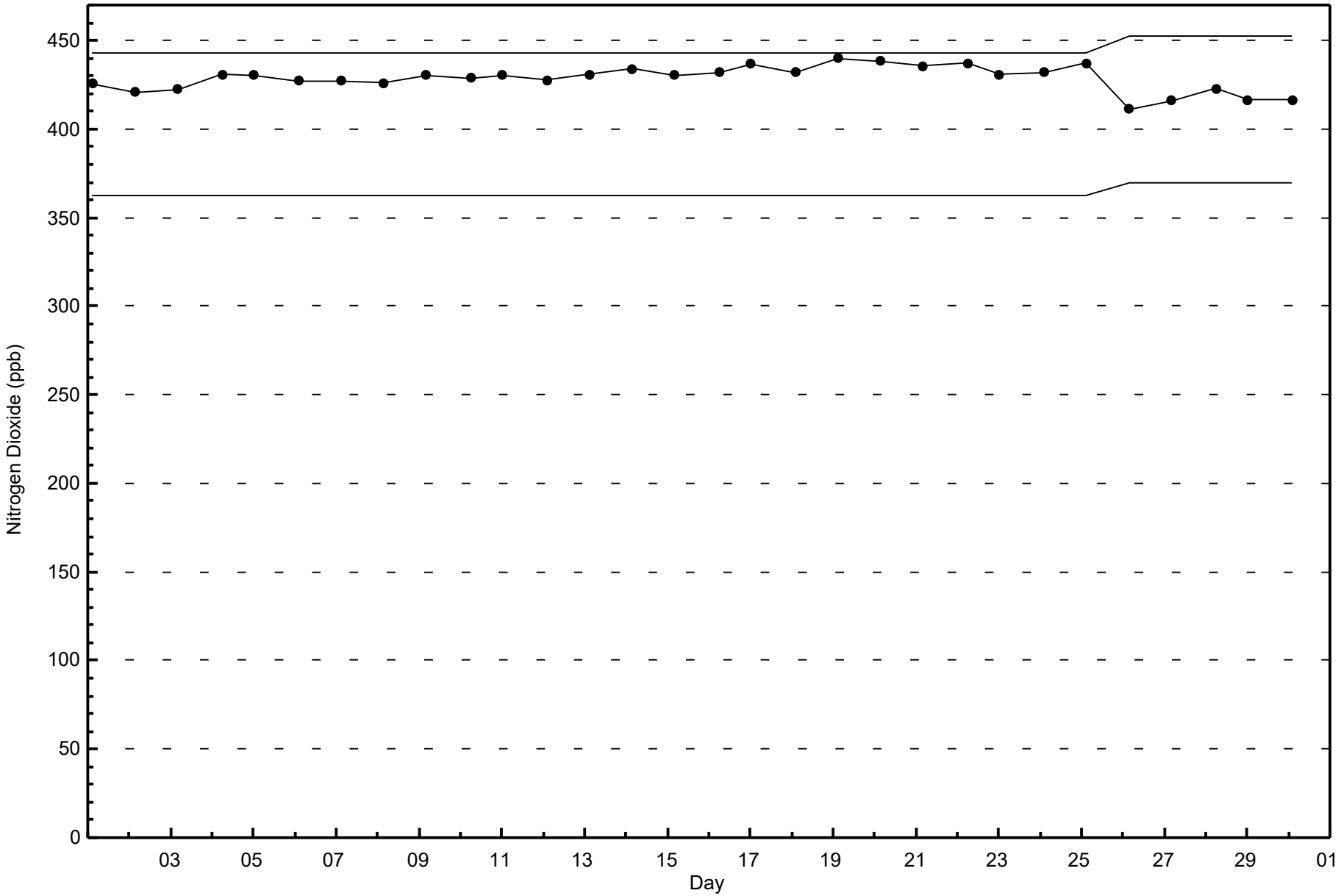


Wood Buffalo Environmental Association

Span Responses

Nitrogen Dioxide (NO_2) - ppb

Kirby North - September 2024



Wood Buffalo Environmental Association

Summary of Hour Averages

Nitrogen Oxides (NO_X) - ppb

Kirby North - September 2024

Maximum Value: 12.1 ppb on Sep 27 15:00

Maximum Daily Average: 3.1 ppb on Sep 9

Minimum Value: 0.2 ppb on Sep 29 14:00

Minimum Daily Average: 0.9 ppb on Sep 16

Maximum Diurnal Average: 2.4 ppb at hour 10

Minimum Diurnal Average: 1.0 ppb at hour 22

Monthly Average: 1.72 ppb

Percentiles: P_1 = 0.3 P_{10} = 0.5 Q_1 = 0.7 Median = 1.1 Q_3 = 2.0 P_{90} = 3.7 P_{99} = 8.4

Hours in Service:	720
Hours of Data:	681
Hours of Missing Data:	39
Hours of Calibration:	36
Percent Operational Time:	99.6

Day	Hourly Period Ending At (MST)																								Daily	Daily
	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24	Average	Maximum
1-Sep	0.4	1.1	Z	1.0	1.1	1.3	1.3	1.4	1.3	1.0	0.7	0.6	0.8	0.7	0.7	0.8	0.6	0.8	2.1	0.7	0.5	0.7	1.0	0.9	0.9	2.1
2-Sep	0.8	1.1	0.9	Z	1.0	1.3	1.1	1.1	1.8	1.2	0.9	0.8	0.7	1.0	0.9	0.7	1.9	3.7	3.7	2.7	0.7	0.5	0.7	0.5	1.3	3.7
3-Sep	0.6	0.6	1.7	0.9	Z	1.1	1.1	1.4	1.3	1.0	1.0	0.5	0.4	0.5	0.8	0.8	1.0	0.9	0.9	1.1	1.1	1.4	2.2	1.3	1.0	2.2
4-Sep	1.1	1.4	2.1	2.2	2.6	Z	2.2	2.6	2.5	2.6	4.0	2.9	2.9	1.1	4.8	4.2	0.9	3.1	2.9	0.7	0.6	0.7	2.8	2.5	2.3	4.8
5-Sep	Z	1.5	1.8	1.0	0.5	2.4	1.5	3.1	0.8	0.3	0.3	1.2	0.7	0.4	0.2	0.5	0.4	0.2	1.3	0.8	0.3	0.5	0.8	0.7	0.9	3.1
6-Sep	0.8	Z	1.4	1.2	1.3	1.5	1.7	2.0	2.0	1.6	1.5	1.8	1.7	1.5	1.4	1.1	1.1	1.3	1.1	1.2	1.3	1.8	1.4	4.1	1.6	4.1
7-Sep	2.6	3.8	Z	3.5	3.0	1.8	1.8	3.3	2.3	1.8	1.6	1.9	1.6	1.4	1.3	1.4	0.8	0.8	0.9	1.3	1.3	1.8	1.1	1.0	1.8	3.8
8-Sep	0.9	1.2	1.2	Z	1.0	3.0	1.9	2.7	2.0	1.7	1.6	1.2	0.6	0.6	0.7	1.0	1.3	1.9	1.7	1.8	2.9	3.1	2.5	2.2	1.7	3.1
9-Sep	2.0	2.1	2.0	1.8	Z	1.9	1.9	2.0	2.0	3.4	3.0	3.7	3.6	6.8	4.6	8.3	6.0	1.5	4.2	1.8	2.0	1.3	1.0	4.3	3.1	8.3
10-Sep	5.0	4.7	6.6	1.0	1.0	Z	1.4	1.3	1.3	0.8	0.9	1.4	1.5	2.9	0.9	0.9	2.3	0.7	0.8	0.4	0.7	0.6	0.8	0.6	1.7	6.6
11-Sep	Z	0.4	0.3	0.3	0.3	1.9	4.0	5.3	4.6	5.5	1.7	M	0.6	0.6	M	M	1.1	0.6	1.1	0.4	0.4	0.4	0.3	0.3	1.5	5.5
12-Sep	0.4	Z	1.5	5.0	1.2	1.0	2.1	4.1	2.2	1.2	1.3	1.8	2.7	2.2	1.4	1.2	1.0	0.9	1.0	1.0	1.0	0.9	2.5	1.1	1.7	5.0
13-Sep	1.0	1.0	Z	1.0	1.1	1.1	1.1	1.1	1.1	1.2	1.3	1.5	1.5	2.0	2.6	2.5	2.2	2.9	2.6	2.0	2.8	2.8	2.0	6.4	1.9	6.4
14-Sep	6.7	1.7	0.9	Z	1.1	1.3	1.1	3.3	1.3	0.8	0.7	0.7	0.8	0.7	1.0	0.8	0.7	0.6	1.2	1.9	1.1	0.8	0.9	0.8	1.3	6.7
15-Sep	0.6	0.5	0.9	0.5	Z	2.6	1.7	1.1	1.2	0.9	1.5	1.6	0.6	0.6	0.6	0.3	0.6	1.0	0.4	0.6	1.7	0.7	0.5	0.5	0.9	2.6
16-Sep	0.8	0.7	0.7	0.7	0.7	Z	1.3	1.5	1.3	1.2	1.1	1.2	0.5	0.5	0.6	0.4	0.6	1.0	1.8	0.6	0.8	1.0	0.7	0.5	0.9	1.8
17-Sep	Z	2.9	0.4	0.3	0.3	0.4	0.5	0.5	1.7	2.5	1.3	1.0	1.1	1.2	0.6	0.6	0.5	0.4	0.5	0.5	0.9	0.9	1.0	0.9	0.9	2.9
18-Sep	0.9	Z	1.3	1.4	1.5	2.4	1.3	1.8	5.7	2.9	4.5	1.1	1.3	1.3	0.8	0.5	0.4	0.4	0.5	0.9	0.5	0.9	1.0	0.8	1.5	5.7
19-Sep	0.9	3.2	Z	2.4	2.5	0.8	0.8	2.6	7.3	4.5	3.1	3.0	5.7	4.6	0.6	2.1	2.2	0.9	1.1	3.1	2.4	1.4	5.5	5.2	2.9	7.3
20-Sep	1.5	4.6	3.6	Z	2.8	6.3	6.5	1.3	3.1	1.0	0.9	1.4	0.9	1.2	1.2	1.3	0.5	0.6	7.1	2.5	0.9	0.6	0.9	0.8	2.2	7.1
21-Sep	0.5	1.6	1.2	1.2	Z	1.9	0.9	4.9	1.5	1.4	0.6	0.6	0.3	0.6	0.4	0.3	0.4	0.5	0.4	0.5	0.8	0.7	0.9	1.1	1.0	4.9
22-Sep	1.3	1.4	1.5	1.6	1.7	Z	2.3	2.4	1.7	1.6	3.4	2.6	10.2	2.9	1.1	0.9	0.7	1.7	2.7	0.6	1.3	0.8	0.4	4.5	2.1	10.2
23-Sep	Z	6.3	1.1	3.4	1.0	2.0	2.0	3.0	1.9	2.3	1.4	1.9	0.7	0.8	0.4	0.6	0.9	0.6	0.8	1.3	0.8	0.8	0.6	1.1	1.6	6.3
24-Sep	0.9	Z	1.0	0.8	1.1	1.2	0.8	0.9	1.0	10.0	8.1	4.3	2.8	3.2	5.9	7.2	5.5	2.5	1.4	0.9	0.6	0.7	0.4	0.3	2.7	10.0
25-Sep	0.4	0.7	Z	1.6	1.4	1.1	1.4	1.4	1.4	1.2	C	C	C	C	C	C	1.1	1.3	0.4	0.5	0.6	1.0	0.6	0.3	--	1.6
26-Sep	0.3	0.2	0.3	Z	0.3	0.5	0.5	1.2	0.8	2.2	4.6	5.3	5.1	5.5	7.8	9.5	1.5	0.5	0.8	1.3	0.9	1.1	0.8	0.4	2.2	9.5
27-Sep	0.4	0.5	0.4	1.6	Z	2.8	3.1	2.6	2.1	2.0	1.8	2.1	4.4	5.7	12.1	8.0	3.6	1.4	1.1	2.5	2.3	0.8	0.8	1.2	2.7	12.1
28-Sep	0.6	0.3	0.5	0.4	0.5	Z	0.6	0.4	1.5	9.0	3.8	2.9	2.1	0.5	0.6	0.5	0.4	1.0	1.1	0.7	0.6	0.6	0.3	0.3	1.3	9.0
29-Sep	Z	1.0	1.5	8.7	2.8	2.5	1.7	2.0	1.0	1.1	1.4	1.2	0.4	0.2	0.3	0.3	0.2	0.2	1.2	1.9	2.5	1.0	0.7	0.5	1.5	8.7
30-Sep	0.7	Z	0.9	1.0	0.8	1.6	6.5	6.2	4.3	3.7	2.8	1.4	2.9	7.9	5.3	8.8	5.9	6.1	0.6	0.9	0.7	0.7	0.9	0.4	3.1	8.8
	1.3	1.8	1.4	1.8	1.3	1.8	1.9	2.3	2.1	2.4	2.1	1.8	2.0	2.0	2.1	2.3	1.5	1.3	1.6	1.2	1.2	1.0	1.2	1.5	Diurnal Average	
	6.7	6.3	6.6	8.7	3.0	6.3	6.5	6.2	7.3	10.0	8.1	5.3	10.2	7.9	12.1	9.5	6.0	6.1	7.1	3.1	2.9	3.1	5.5	6.4	Diurnal Maximum	

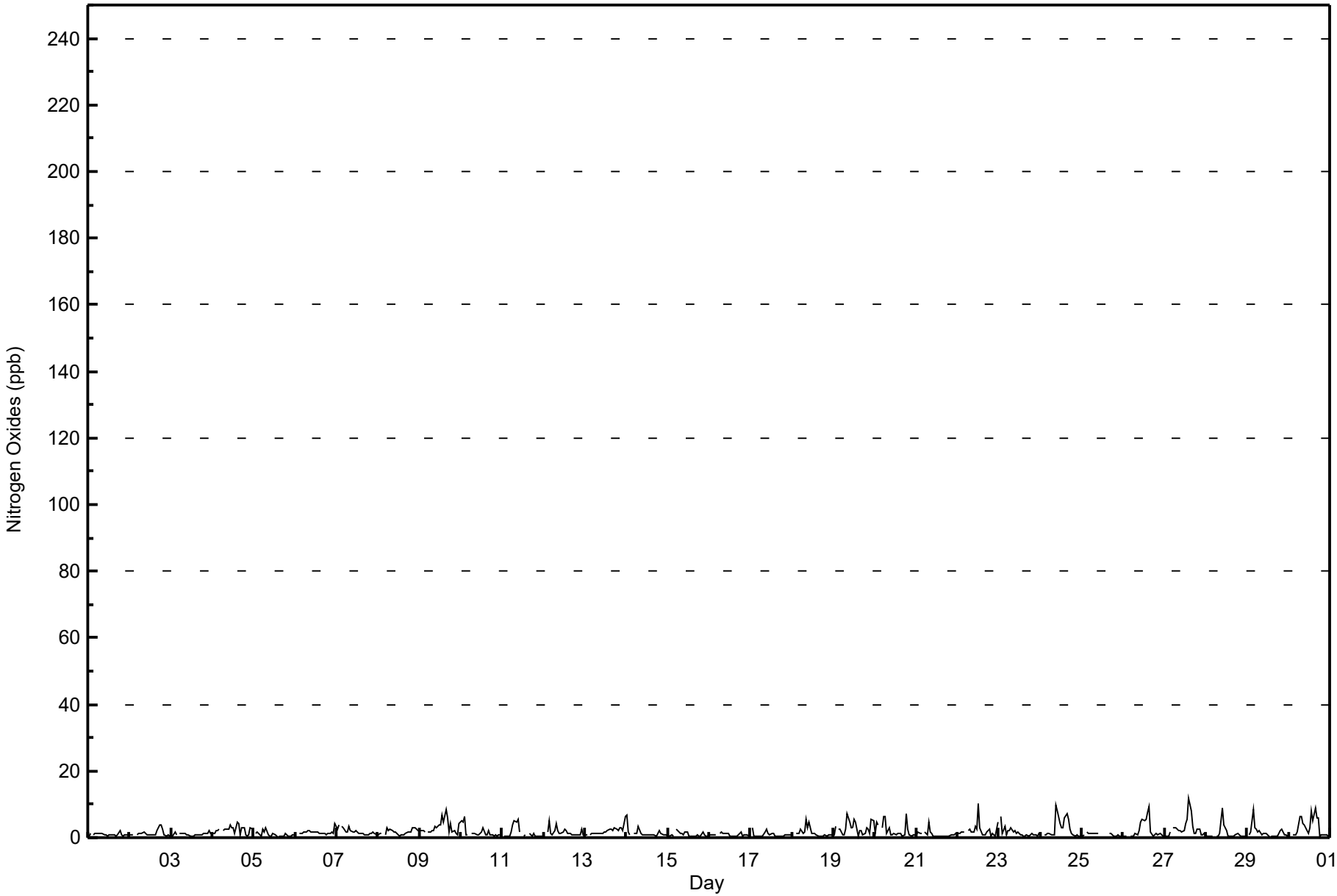
Z - zerospan C - Calibration M - Maintenance

Wood Buffalo Environmental Association

Hourly Averages

Nitrogen Oxides (NO_X) - ppb

Kirby North - September 2024



Nitrogen Oxides (NO_X) - ppb
Kirby North - September 2024

Concentration Ranges (ppb)	Number of Hours	%	Cumulative %
0 - 20	681	100.00	100.00
21 - 40	0	0.00	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: 681

Total Number of Hours: 720

Wood Buffalo Environmental Association

Frequency Distribution

Nitrogen Oxides (NO_X) - ppb

Kirby North - September 2024

Concentration Ranges (ppb)	Wind Direction																
	N	NNE	NE	ENE	E	ESE	SE	SSE	S	SSW	SW	WSW	W	WNW	NW	NNW	**Totals**
0 - 20	30	36	22	10	3	8	15	49	114	66	102	45	34	67	49	31	681
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	30	36	22	10	3	8	15	49	114	66	102	45	34	67	49	31	681

Total Number of Valid Hours: 681

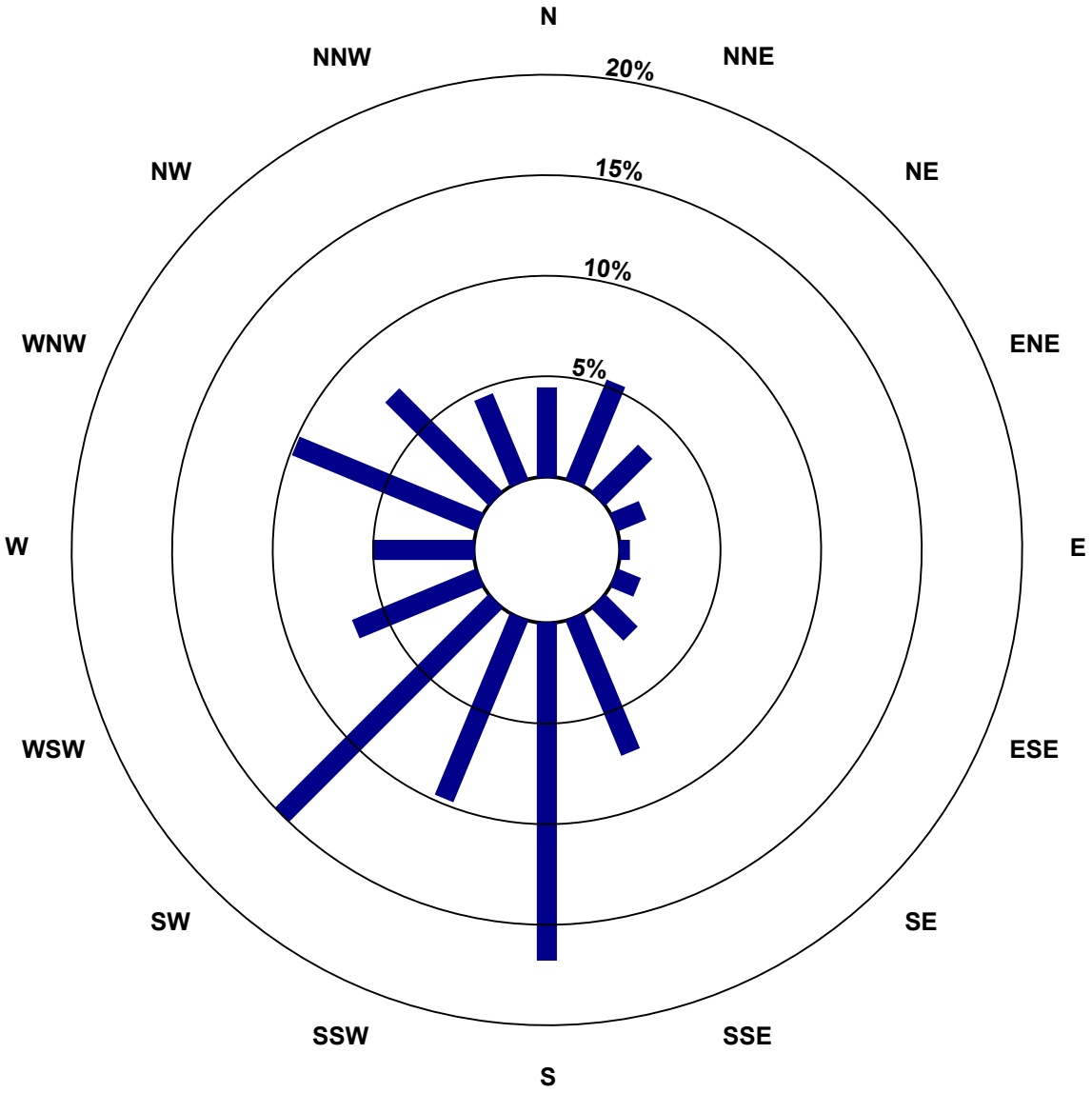
Total Number of Hours: 720

Wood Buffalo Environmental Association

Wind Rose Sep 2024

Nitrogen Oxides (NO_X) - ppb

Kirby North



Classes (ppb)

0 - 20

21 - 40

11 - 80

81 - 159

> 159

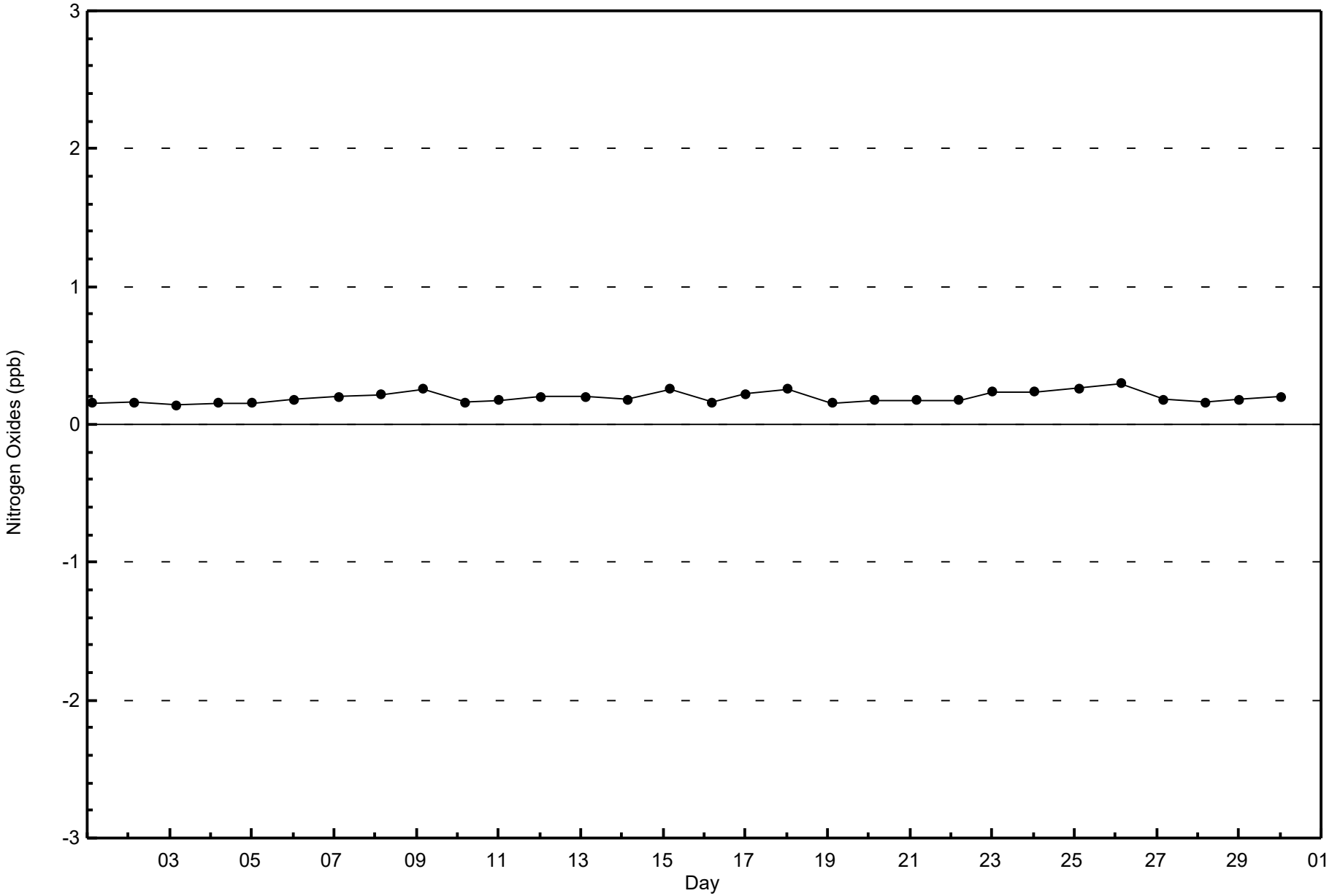
Total Number of Valid Hours: 681

Wood Buffalo Environmental Association

Zero Responses

Nitrogen Oxides (NO_X) - ppb

Kirby North - September 2024

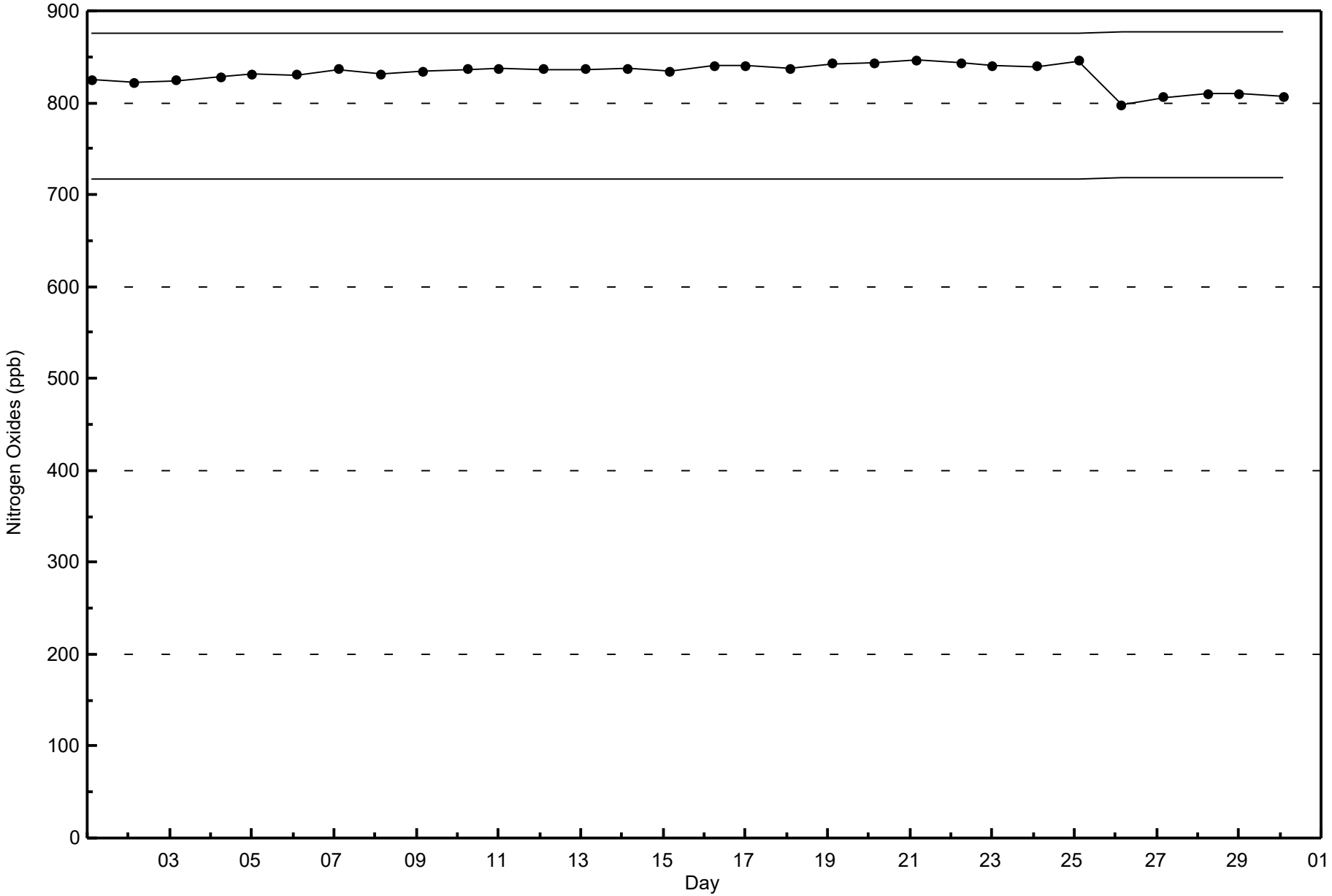


Wood Buffalo Environmental Association

Span Responses

Nitrogen Oxides (NO_X) - ppb

Kirby North - September 2024



Maximum Value: 29.8 C on Sep 2 16:00

Maximum Daily Average: 22.3 C on Sep 2

Minimum Value: 0.0 C on Sep 21 07:00

Minimum Daily Average: 5.5 C on Sep 30

Maximum Diurnal Average: 17.3 C at hour 15

Minimum Diurnal Average: 8.5 C at hour 7

Monthly Average: 12.55 C

Percentiles: P_1 = 2.2 P_{10} = 6.1 Q_1 = 8.9 Median = 11.7 Q_3 = 16.0 P_{90} = 20.0 P_{99} = 28.0

Hours in Service:	720
Hours of Data:	720
Hours of Missing Data:	0
Hours of Calibration:	0
Percent Operational Time:	100.0

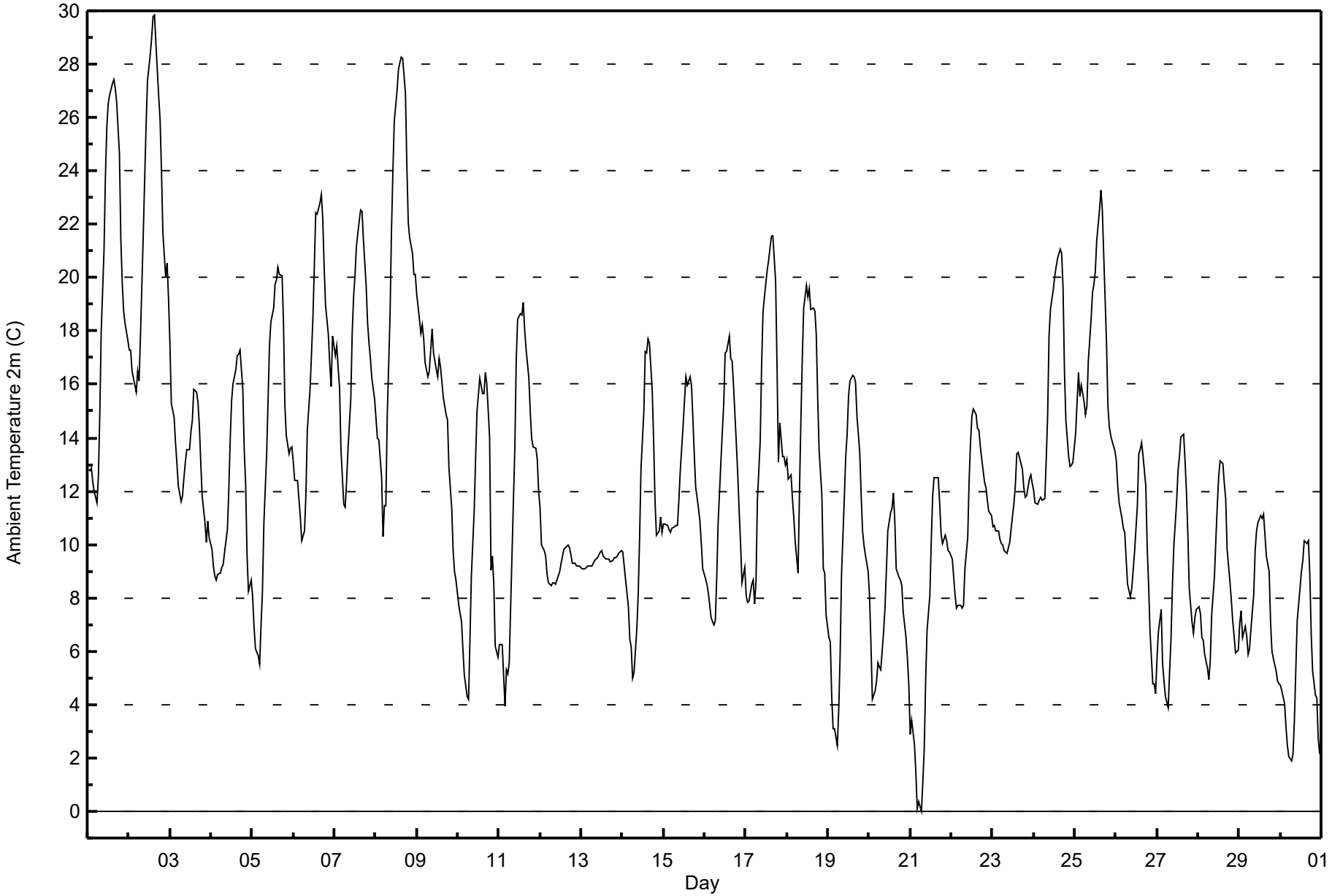
Day	Hourly Period Ending At (MST)																								Daily	Daily
	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24	Average	Maximum
1-Sep	12.8	12.8	12.9	12.4	12.0	11.5	12.5	14.9	18.0	21.0	23.8	25.6	26.5	26.9	27.3	27.4	27.1	26.6	24.6	21.4	19.8	18.8	18.3	17.6	19.7	27.4
2-Sep	17.3	17.3	16.5	15.9	15.7	16.5	16.1	17.8	21.7	23.7	25.7	27.4	28.4	29.0	29.8	29.8	28.8	26.8	25.9	24.0	21.7	20.0	20.6	19.2	22.3	29.8
3-Sep	17.6	15.3	14.7	13.8	13.1	12.2	11.6	11.8	12.5	13.1	13.5	13.5	14.2	14.7	15.8	15.7	15.3	14.4	13.1	11.8	10.8	10.1	10.9	10.2	13.3	17.6
4-Sep	9.8	9.2	8.8	8.7	8.9	8.9	9.1	9.2	9.7	10.6	12.0	13.9	15.4	16.0	16.5	17.1	17.2	17.3	15.8	13.6	12.3	9.6	8.2	8.7	11.9	17.3
5-Sep	8.0	6.9	6.1	5.8	5.5	7.0	8.3	10.8	13.4	15.4	17.5	18.3	18.8	19.7	19.9	20.4	20.1	20.1	18.4	15.2	14.1	13.4	13.6	13.7	13.8	20.4
6-Sep	13.1	12.4	12.4	11.7	11.1	10.1	10.5	11.9	14.3	15.1	15.9	18.5	20.4	22.4	22.4	22.8	23.1	22.2	20.4	19.0	17.9	16.7	15.9	17.8	16.6	23.1
7-Sep	17.1	17.5	16.6	15.9	13.6	11.5	11.4	12.4	13.5	15.5	17.9	19.3	20.1	21.2	22.1	22.5	22.5	21.4	19.6	18.3	17.6	17.0	16.2	15.5	17.3	22.5
8-Sep	14.7	14.0	13.9	12.5	10.3	11.4	11.5	14.8	18.6	21.7	23.9	25.8	27.0	27.8	28.1	28.3	28.2	26.9	24.2	22.0	21.5	20.9	20.1	20.1	20.3	28.3
9-Sep	19.4	18.9	17.9	18.2	17.7	16.8	16.3	16.5	17.3	18.1	17.2	16.6	16.3	17.0	16.7	15.5	15.2	14.9	14.6	12.9	11.4	9.7	9.0	8.6	15.5	19.4
10-Sep	7.7	7.4	7.1	6.1	5.1	4.3	4.2	6.5	8.8	11.2	13.2	15.0	15.6	16.2	15.7	15.6	16.4	16.0	14.0	9.0	9.5	8.5	6.2	5.8	10.2	16.4
11-Sep	6.2	6.3	6.2	4.0	5.3	5.2	5.5	7.6	11.6	13.6	16.9	18.4	18.6	18.6	19.1	18.1	17.3	16.2	15.0	13.9	13.7	13.6	13.2	12.0	12.3	19.1
12-Sep	11.3	10.0	9.8	9.5	8.9	8.5	8.5	8.6	8.5	8.5	8.7	9.0	9.3	9.6	9.8	9.9	10.0	9.9	9.6	9.3	9.3	9.2	9.2	9.2	9.3	11.3
13-Sep	9.1	9.1	9.1	9.2	9.2	9.2	9.2	9.3	9.4	9.5	9.6	9.7	9.8	9.6	9.4	9.4	9.5	9.4	9.4	9.5	9.5	9.6	9.7	9.8	9.4	9.8
14-Sep	9.7	9.2	8.7	7.7	6.5	6.1	5.0	5.2	6.8	8.2	10.3	12.8	15.0	17.3	17.2	17.7	17.6	15.8	13.9	11.6	10.4	10.5	11.0	10.4	11.0	17.7
15-Sep	10.8	10.7	10.7	10.6	10.4	10.6	10.7	10.7	10.7	11.7	12.8	14.4	15.4	16.3	15.9	16.3	16.0	14.7	13.4	12.1	11.4	10.9	10.1	9.1	12.3	16.3
16-Sep	8.7	8.5	8.2	7.7	7.2	7.0	7.1	8.8	10.8	13.1	14.2	15.3	17.2	17.3	17.8	17.0	16.9	15.9	13.8	12.6	11.2	10.0	8.6	9.1	11.8	17.8
17-Sep	8.1	7.8	7.9	8.5	8.6	7.8	8.6	11.7	13.9	16.7	18.7	19.3	20.3	20.6	21.1	21.5	21.6	19.9	16.7	13.1	14.6	13.3	13.3	13.0	14.4	21.6
18-Sep	13.2	12.4	12.6	11.7	11.0	10.1	8.9	11.9	14.6	16.9	18.9	19.7	19.3	19.6	18.8	18.9	18.8	17.8	15.5	13.5	11.8	9.1	8.9	7.4	14.2	19.7
19-Sep	6.5	6.4	4.3	3.1	3.1	2.5	3.8	5.9	8.9	11.8	13.3	14.1	15.5	16.1	16.3	16.3	16.1	14.8	13.5	11.9	10.5	10.0	9.6	9.0	10.1	16.3
20-Sep	8.0	6.2	4.2	4.5	4.9	5.6	5.4	5.3	6.7	7.6	9.0	10.5	11.2	11.4	11.9	10.9	9.1	8.8	8.7	8.5	7.5	6.5	5.7	4.7	7.6	11.9
21-Sep	2.9	3.4	2.5	1.5	0.1	0.3	0.0	1.1	2.4	4.9	6.8	8.1	10.2	11.8	12.5	12.5	12.5	11.5	10.4	10.0	10.3	10.1	9.8	9.7	6.9	12.5
22-Sep	9.5	8.8	8.1	7.6	7.7	7.7	7.6	7.7	9.1	10.3	12.4	13.8	14.8	15.1	14.9	14.3	14.3	13.6	12.8	12.3	12.1	11.7	11.2	11.1	11.2	15.1
23-Sep	10.7	10.7	10.5	10.5	10.2	10.0	10.0	9.8	9.7	9.9	10.1	10.6	11.5	12.2	13.4	13.4	13.3	12.8	12.2	11.8	11.8	12.5	12.6	12.3	11.3	13.4
24-Sep	12.0	11.6	11.5	11.7	11.8	11.7	11.7	13.2	14.8	17.8	18.8	19.6	20.0	20.4	20.7	21.1	20.9	19.6	16.5	14.6	13.3	12.9	13.0	13.1	15.5	21.1
25-Sep	14.2	15.3	16.4	15.6	16.0	15.4	14.9	15.2	16.9	18.5	19.4	19.8	20.2	21.4	22.5	23.3	22.5	20.9	17.5	15.2	14.4	14.1	13.9	13.5	17.4	23.3
26-Sep	13.1	12.2	11.6	11.0	10.6	10.4	9.5	8.5	8.1	8.4	9.0	9.7	11.5	13.4	13.5	13.8	13.3	12.2	9.9	8.5	6.8	4.8	4.8	4.4	10.0	13.8
27-Sep	5.7	6.7	7.6	5.5	4.9	4.3	3.9	5.2	6.5	8.5	9.9	11.6	12.8	13.3	14.0	14.1	13.1	12.0	10.4	8.4	7.1	6.7	7.3	7.6	8.6	14.1
28-Sep	7.6	7.4	6.5	6.4	5.9	5.4	4.9	5.7	7.3	8.8	10.2	11.5	12.6	13.2	13.0	12.3	11.7	9.8	8.6	7.9	7.1	6.6	5.9	6.0	8.4	13.2
29-Sep	7.0	7.5	6.5	6.9	6.6	5.9	6.1	6.8	8.2	9.8	10.5	10.8	11.1	11.0	11.1	10.3	9.6	9.0	7.1	6.0	5.7	5.3	4.9	4.8	7.9	11.1
30-Sep	4.7	4.5	4.0	3.1	2.4	2.1	1.9	2.2	3.4	5.3	7.1	8.4	9.0	9.4	10.1	10.1	10.1	8.9	6.6	5.2	4.4	4.2	2.7	2.2	5.5	10.1
	10.6	10.2	9.8	9.2	8.8	8.5	8.5	9.6	11.2	12.8	14.2	15.4	16.3	16.9	17.3	17.2	16.9	16.0	14.4	12.8	12.0	11.2	10.8	10.5	Diurnal Average	
	19.4	18.9	17.9	18.2	17.7	16.8	16.3	17.8	21.7	23.7	25.7	27.4	28.4	29.0	29.8	29.8	28.8	26.9	25.9	24.0	21.7	20.9	20.6	20.1	Diurnal Maximum	

Wood Buffalo Environmental Association

Hourly Averages

Ambient Temperature 2m (AT2) - C

Kirby North - September 2024



Concentration Ranges (C)	Number of Hours	%	Cumulative %
-50 - -20	0	0.00	0.00
-20 - 0	1	0.14	0.14
0 - 10	264	36.67	36.81
10 - 20	382	53.06	89.86
> 20	73	10.14	100.00

Total Number of Valid Hours: 720

Total Number of Hours: 720

Wood Buffalo Environmental Association

Summary of Hour Averages

Relative Humidity 2m (RH2) - %

Kirby North - September 2024

Maximum Value: 99.4 % on Sep 13 08:00

Maximum Daily Average: 98.5 % on Sep 13

Minimum Value: 25.7 % on Sep 2 16:00

Minimum Daily Average: 51.5 % on Sep 2

Maximum Diurnal Average: 85.6 % at hour 7

Minimum Diurnal Average: 53.1 % at hour 15

Monthly Average: 71.03 %

Percentiles: P_1 = 31.4 P_{10} = 44.5 Q_1 = 56.2 Median = 71.3 Q_3 = 87.9 P_{90} = 96.7 P_{99} = 99.3

Hours in Service:	720
Hours of Data:	720
Hours of Missing Data:	0
Hours of Calibration:	0
Percent Operational Time:	100.0

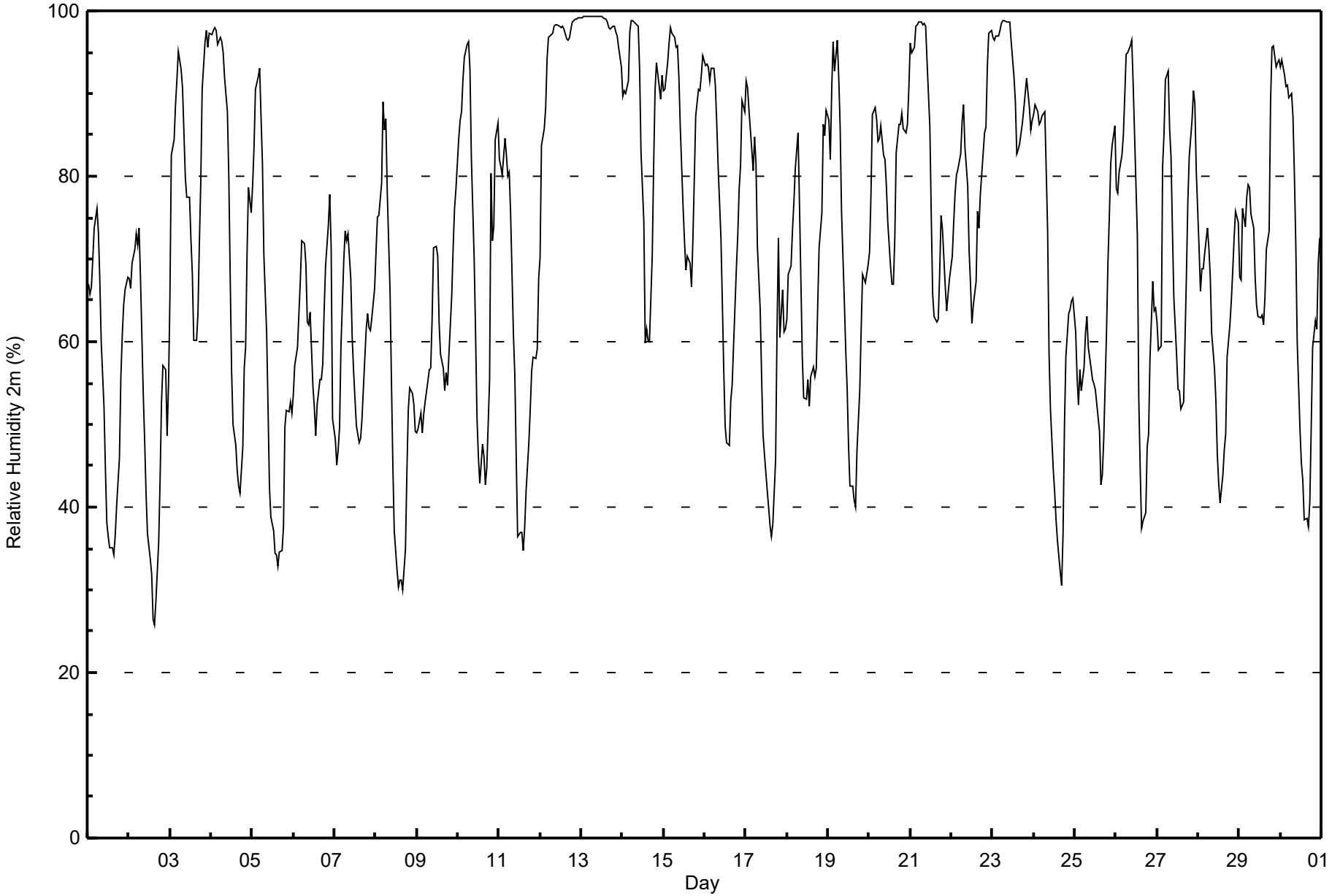
Day	Hourly Period Ending At (MST)																								Daily	Daily
	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24	Average	Maximum
1-Sep	66.9	65.8	66.6	70.1	73.7	76.2	73.2	67.5	60.0	52.0	44.6	38.2	36.5	35.0	35.0	34.3	36.6	40.1	45.9	55.6	60.7	64.3	66.2	67.9	55.5	76.2
2-Sep	67.6	66.5	69.6	71.2	73.0	71.7	73.7	67.8	53.6	48.0	41.5	36.8	33.8	31.9	26.5	25.7	28.7	35.8	43.5	52.7	57.1	56.6	48.6	54.7	51.5	73.7
3-Sep	65.3	82.6	84.4	88.7	91.6	95.1	92.9	90.7	85.2	79.8	77.5	77.5	72.4	68.1	60.2	60.1	63.5	71.9	79.2	90.5	96.2	97.7	95.7	97.3	81.8	97.7
4-Sep	97.1	97.6	97.9	97.6	95.9	96.7	96.2	94.9	91.9	87.8	80.0	67.8	56.5	50.0	47.5	44.5	42.5	41.7	47.2	56.8	59.3	70.6	78.7	75.6	73.8	97.9
5-Sep	79.0	83.5	90.4	92.1	93.0	87.1	81.6	70.4	61.0	51.9	42.4	38.8	37.1	34.3	34.2	32.9	34.6	34.8	37.7	49.7	51.8	51.6	52.7	51.3	57.3	93.0
6-Sep	53.5	57.2	59.4	63.4	67.2	72.2	71.9	69.3	62.3	62.0	63.5	54.6	52.0	48.7	52.3	55.4	55.4	57.3	63.8	69.1	74.1	77.8	71.4	50.6	61.8	77.8
7-Sep	48.2	45.2	47.0	49.7	59.4	69.9	73.3	72.2	73.1	67.7	60.6	56.4	53.1	49.8	47.7	48.2	50.7	54.4	61.6	63.3	61.7	61.3	63.0	66.5	58.5	73.3
8-Sep	70.9	75.0	75.3	79.1	89.1	85.5	87.0	78.2	66.2	55.3	45.1	37.1	32.3	30.3	31.3	31.1	30.0	34.9	44.1	51.7	54.3	53.8	52.4	49.2	55.8	89.1
9-Sep	48.9	49.6	51.3	49.0	51.1	52.6	55.2	56.6	56.7	62.7	71.3	71.5	70.3	62.3	58.4	56.9	54.1	56.3	54.7	58.5	65.6	71.3	76.2	78.5	60.0	78.5
10-Sep	84.5	86.7	87.8	91.7	94.5	95.9	96.3	92.9	82.2	69.9	61.0	50.8	46.1	42.8	47.6	46.2	42.6	44.7	55.4	80.3	72.2	73.9	84.3	86.5	71.5	96.3
11-Sep	82.1	81.3	80.2	84.6	82.6	80.0	80.6	75.4	60.8	56.0	46.0	36.5	37.0	37.0	34.8	37.4	41.8	47.8	51.9	56.4	58.2	58.0	59.1	67.6	59.7	84.6
12-Sep	70.3	83.8	85.8	88.4	94.2	96.7	97.1	97.3	98.2	98.4	98.4	98.1	97.9	98.2	97.9	96.7	96.5	96.7	97.8	98.7	99.0	99.1	99.1	99.2	95.1	99.2
13-Sep	99.2	99.2	99.3	99.3	99.3	99.3	99.4	99.4	99.4	99.4	99.4	99.3	99.3	99.2	99.1	98.6	97.9	97.9	98.1	98.1	97.4	96.9	95.7	93.2	98.5	99.4
14-Sep	89.7	90.4	90.0	91.4	97.4	98.7	98.9	98.7	98.3	98.1	92.9	82.8	74.6	59.8	61.4	60.3	59.9	70.3	81.2	90.4	93.8	90.9	89.2	92.2	85.5	98.9
15-Sep	90.3	90.5	93.7	96.1	97.9	97.3	96.8	95.5	95.8	92.1	85.9	76.3	72.2	68.6	70.4	69.5	66.7	72.4	79.7	87.3	90.5	90.4	92.3	94.7	85.9	97.9
16-Sep	93.5	93.6	93.2	91.6	93.1	93.1	91.0	86.5	81.2	72.6	64.7	56.6	49.8	47.8	47.4	52.9	54.7	59.4	68.8	72.9	78.5	81.3	89.2	87.9	75.0	93.6
17-Sep	91.6	90.7	87.9	83.2	80.8	84.8	81.6	71.6	63.9	55.7	48.8	46.5	42.0	39.9	37.8	36.4	37.9	45.8	61.3	72.6	60.6	66.3	61.2	61.5	62.9	91.6
18-Sep	62.8	68.1	69.1	73.5	76.8	80.8	85.3	76.8	67.6	58.3	53.2	53.0	55.4	52.2	55.8	57.0	55.8	56.8	64.2	71.4	75.6	86.2	84.9	88.0	67.9	88.0
19-Sep	86.7	82.1	90.5	96.2	92.7	96.4	92.0	86.2	75.7	65.0	59.1	54.4	47.5	42.6	42.6	40.8	40.0	46.7	54.1	61.3	68.1	67.6	67.1	69.3	67.7	96.4
20-Sep	70.8	77.9	87.5	88.3	86.9	84.2	84.6	86.1	82.5	82.1	78.8	74.3	69.0	67.0	66.9	72.6	83.0	86.4	86.2	87.6	85.8	85.3	86.2	90.4	81.3	90.4
21-Sep	96.1	94.8	95.7	98.1	98.3	98.7	98.7	98.3	98.5	98.2	93.9	85.9	75.3	65.8	63.0	62.3	62.7	68.3	75.2	73.6	66.6	63.7	65.8	67.7	81.9	98.7
22-Sep	70.3	74.4	78.0	80.1	80.8	82.8	86.6	88.7	83.5	78.8	71.0	66.9	62.2	64.4	67.3	75.7	73.8	77.9	82.7	85.2	86.0	93.2	97.2	97.7	79.4	97.7
23-Sep	96.8	96.4	97.0	96.9	97.7	98.5	98.8	98.8	98.6	98.7	98.6	96.3	92.0	88.9	82.7	83.3	84.0	86.5	88.2	90.0	91.9	88.3	85.6	86.8	92.5	98.8
24-Sep	87.5	88.6	87.9	86.3	86.6	87.3	87.8	80.6	73.3	58.7	51.9	44.5	41.8	38.5	36.0	32.3	30.5	36.7	49.8	58.2	63.5	63.9	64.8	65.2	62.6	88.6
25-Sep	61.2	55.8	52.4	56.7	54.0	57.0	60.9	63.1	59.4	56.8	55.5	55.0	54.3	52.5	49.2	42.8	43.9	48.2	61.3	69.4	75.0	81.5	83.8	86.1	59.8	86.1
26-Sep	78.5	77.9	80.5	82.6	84.9	89.7	94.8	94.9	95.7	96.4	91.2	85.0	72.8	53.2	44.7	37.5	38.4	39.3	47.3	48.8	57.9	67.3	63.7	64.1	70.3	96.4
27-Sep	62.4	59.0	59.5	81.2	85.1	91.6	92.7	85.8	82.4	73.6	65.4	58.2	54.2	54.1	51.8	52.7	60.3	68.2	76.9	82.4	86.9	90.3	88.8	80.7	72.7	92.7
28-Sep	71.3	66.1	68.9	68.9	70.7	73.7	71.3	67.7	61.0	56.8	52.8	46.4	42.8	40.6	43.9	47.0	48.8	58.1	62.0	64.9	68.5	72.5	75.8	74.4	61.5	75.8
29-Sep	67.9	67.5	76.1	73.9	77.4	79.0	78.6	75.4	73.7	67.9	64.4	63.0	63.0	63.2	62.0	65.3	71.2	73.5	89.0	95.7	95.8	93.3	93.7	94.1	76.0	95.8
30-Sep	93.2	94.1	92.2	90.9	90.9	89.5	90.0	87.1	80.2	71.8	60.0	49.3	45.2	43.2	38.5	38.6	37.7	40.6	49.7	59.3	62.6	61.5	69.4	72.5	67.0	94.1
	76.8	78.1	79.8	82.0	83.9	85.4	85.6	82.5	77.4	72.4	67.3	61.9	57.9	54.3	53.1	53.2	54.1	58.3	65.3	71.7	73.8	75.9	76.7	77.0	Diurnal Average	
	99.2	99.2	99.3	99.3	99.3	99.3	99.4	99.4	99.4	99.4	99.4	99.3	99.3	99.2	99.1	98.6	97.9	97.9	98.1	98.7	99.0	99.1	99.1	99.2	Diurnal Maximum	

Wood Buffalo Environmental Association

Hourly Averages

Relative Humidity 2m (RH2) - %

Kirby North - September 2024



Concentration Ranges (%)	Number of Hours	%	Cumulative %
0 - 20	0	0.00	0.00
20 - 40	48	6.67	6.67
40 - 60	173	24.03	30.69
60 - 80	223	30.97	61.67
80 - 100	276	38.33	100.00

Total Number of Valid Hours: 720

Total Number of Hours: 720

Wood Buffalo Environmental Association

Summary of Hour Averages

Wind Speed 10m (WS10) - km/h

Kirby North - September 2024

Maximum Speed: 26 km/h on Sep 30 14:00

Maximum Daily Speed Average: 15.3 km/h on Sep 30

Minimum Speed Value: 1 km/h on Sep 25 23:00

Minimum Daily Speed Average: 3.5 km/h on Sep 25

Maximum Diurnal Speed Average: 8.2 km/h at hour 14

Minimum Diurnal Speed Average: 2.6 km/h at hour 7

Monthly Average Velocity: 4.0 km/h 242.5 deg

Percentiles: $P_1 = 2$ $P_{10} = 5$ $Q_1 = 7$ Median = 10 $Q_3 = 13$ $P_{90} = 16$ $P_{99} = 23$

Hours in Service:	720
Hours of Data:	720
Hours of Missing Data:	0
Percent Operational Time:	100.0

Day	Hourly Period Ending At (MST)																								Daily	Daily
	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24	Average	Maximum
1-Sep	SSE10	SSE10	S9	S10	S10	S11	S11	S10	S11	S12	S14	SSW15	SSW17	SW19	SW17	SW16	SW14	SW10	SW7	SW8	SSW6	S7	S8	S8	SSW10.4	SW19
2-Sep	S8	S9	S10	S10	S10	SSW5	S8	S9	S8	SSW9	SSW11	SSW14	SW14	SW12	SW10	SW10	SW10	WSW10	W7	NW8	NNW6	NNW6	NNW11	N15	SW5.9	N15
3-Sep	N9	NE5	NNE6	N6	N5	NNE13	NNE13	NNE12	NNE11	NNE9	NNE12	N12	NNE9	NNE8	NNW7	N8	NNE6	NNE6	NNE6	NNE3	SSW1	WNW2	NW8	N7	NNE7.2	NNE13
4-Sep	NNW7	NNW9	N6	NW5	WNW11	NW6	WNW7	WNW11	WNW11	WNW11	WNW13	WNW15	WNW17	NW18	WNW15	WNW16	WNW14	WNW13	WNW10	WSW10	WSW11	SW6	SW8	SW6	WNW9.3	NW18
5-Sep	SW5	SSW6	SSW8	S8	S5	SSW6	SSW6	WSW4	NNE4	NE5	N4	NNW6	NW7	S3	SW9	SW8	SW9	SSW8	S6	SSE7	SSE9	S12	S14	S14	SSW4.7	S14
6-Sep	S15	S14	S14	S13	S13	S12	S11	S13	S13	SSW13	SSW14	SSW18	SSW16	SSW15	SW13	SW12	SW11	SW11	SW10	SSW9	SW11	SW11	SW6	W10	SSW11.7	SSW18
7-Sep	W9	WNW11	WNW10	WNW9	WSW6	SSW4	SSW6	S8	S6	SSW6	SSW8	SW9	SSW9	SW9	SW10	SW8	SSW7	SSW6	S7	S8	S8	S8	S10	S9	SW6.6	WNW11
8-Sep	S9	S8	S9	S7	S5	S5	S3	S4	S3	SSE4	S8	SSW9	S10	S11	S11	S12	S10	S7	SSE7	SSE10	SSE11	SSE13	SSE12	SSE14	S8.3	SSE14
9-Sep	S10	SSW8	S10	SSE14	S13	S13	S14	S12	SW13	WNW17	WNW20	WNW21	WNW18	WNW23	WNW23	WNW20	W17	WSW15	W17	WNW15	WNW18	NW17	NW14	WNW12	W10.3	WNW23
10-Sep	W11	W10	WNW10	WSW8	WSW6	SW5	SSW4	SW10	SW12	WSW11	WSW12	WSW14	WSW14	W15	NW11	NW9	W8	WSW5	SSW4	SSE3	SSW6	SSE2	SE2	SSW4	WSW6.6	W15
11-Sep	S6	S6	S6	SE5	SE6	ENE3	NE4	ENE3	SE8	SE7	SE9	SSE13	SSE13	SSE12	SE12	SE13	SE10	SSE10	SE8	E7	ESE9	ESE10	ESE10	ESE10	SE7.5	SE13
12-Sep	ESE9	ESE10	ENE11	NE11	NE11	NE12	NE9	NNE9	NNE11	NE12	NE13	NE10	NNE6	NNE9	N10	N11	NNE14	NNE14	NNE15	NNE12	N11	NNE12	NNE12	NNE11	NNE9.9	NNE15
13-Sep	N11	N11	N12	NNE11	N10	N9	N12	N13	N14	N14	N13	N13	N12	NNW11	NNW14	NNW13	NNW12	NNW8	NNW7	NW8	NW8	WNW9	WNW11	W10	NNW10.1	N14
14-Sep	W11	W10	WSW7	WSW3	SW1	SW5	SSW4	S5	SSW5	SSW9	SSW8	SSW9	SSW8	SW9	SW9	SSW7	SSW6	SSE5	S6	SE2	E2	ESE2	S4	S2	SSW4.8	W11
15-Sep	SW8	SSW8	SW10	SW11	SW11	WSW12	WNW8	NW6	NW4	NW6	NW8	WSW9	SW10	SW12	SW11	SW11	SW10	SW8	S7	S7	S7	S7	S8	S9	SW6.9	SW12
16-Sep	S9	S9	S10	S10	S11	S10	S10	S9	SSW10	SSW13	SW14	SW15	SW17	SW19	WSW17	SW14	SW12	SW8	SSW5	S5	S6	S7	ESE1	SE1	SSW9.2	SW19
17-Sep	SSW3	S3	SSE8	SSE8	SSE8	SSE9	SSE8	SSE8	SSE12	S11	S12	SW11	SW11	WSW11	WSW9	WSW9	SSE7	SSE4	SE4	SE6	SSE7	S6	SSE7	SSE9	S6.7	SSE12
18-Sep	SSE8	SSE8	S8	S8	S9	SSW8	S6	S7	SW5	WNW7	NW6	NW11	NW14	NW16	NW15	NW9	NNW12	NW13	NW9	NW8	NNW7	N4	NNW6	NNW5	WNW4.2	NW16
19-Sep	NNW5	NW6	NW5	WNW2	SW4	SW5	SW6	SW5	W8	WNW5	W9	WNW9	WNW12	WNW13	NW13	NW12	NW11	NW8	NW6	WNW5	SW4	WSW4	WSW6	W6	WNW6.0	WNW13
20-Sep	WNW6	W5	NNW2	WSW5	SW7	W8	W5	N4	NW4	N5	NNE8	ENE10	NE11	ENE7	NNE8	NW10	NW10	NNW4	WNW9	NW9	NNW8	NNW7	NNW6	N5	NNW4.3	NE11
21-Sep	NW3	WNW6	NW4	SW3	WSW1	SSW5	SSE4	SSW5	S7	S8	SW13	SW15	SW13	SW13	SW12	SSW11	S12	S9	SSE9	S9	S11	SSE11	SSE12	S12	SSW7.3	SW15
22-Sep	S12	S11	S10	S10	S9	SSW9	SSW9	S9	SSW10	SW11	WSW8	WSW10	WSW13	WSW10	SW11	SW7	SW8	SSW5	SSW6	SSW6	WSW9	SW8	WSW5	SSW8.0	WSW13
23-Sep	WSW10	W9	WNW8	WNW10	WNW5	NW7	WNW7	WNW6	WSW7	WSW7	WSW9	WSW8	SW10	SW12	SW11	SW12	SW11	SW9	SSW7	S7	SSW9	SSW10	SSW10	SW12	WSW7.2	SW12
24-Sep	SW12	SW13	SW14	SW14	SW15	SW13	SW15	WSW16	WSW15	W23	W24	WNW23	WNW20	WNW20	W20	W17	W17	WSW9	SW8	SSW8	S8	S9	SSE8	SSE10	WSW11.8	W24
25-Sep	SSE10	SE11	SE12	SE10	SSE17	SSE16	SSE14	S11	S13	S13	S12	SSW8	WSW10	W8	NNW9	NNW7	NW10	NW7	NNE5	NE5	NNE6	NNW8	S1	N8	S3.5	SSE17
26-Sep	NNW15	N9	NW9	NNW7	NNW8	NW14	NW20	NW17	NW11	WNW9	WNW13	WNW16	W18	WNW22	W24	W22	WSW19	WSW17	WSW12	SW12	SSW9	S8	S9	SSE9	WNW9.9	W24
27-Sep	SSE9	SSE8	SE8	E10	ENE9	NNE6	NE6	N4	N7	NNW9	NW8	WNW11	W15	W13	W23	WNW21	W12	SW9	W7	SSW7	S9	S10	SSW11	SW13	W4.1	W23
28-Sep	WSW17	WSW16	SW14	SW15	SW15	SW15	SW16	SW17	WSW17	W17	W12	WSW14	SW13	SW13	SW13	SSW12	SW11	SSW6	S5	SSE6	SSE5	SSE3	ESE4	ENE6	SW10.1	W17
29-Sep	ENE10	ENE13	NE13	ENE15	ENE17	NE16	ENE17	NE19	NE18	NE20	NE19	NE21	NE20	NE19	NNE18	NNE19	NNE18	NNE13	N15	N14	NNW12	NNW18	NNW18	NW13	NNE14.1	NE21
30-Sep	NW14	NW15	NW15	NW14	WNW13	WNW15	WNW17	WNW17	WNW18	WNW18	WNW21	WNW25	WNW26	WNW26	WNW25	W21	WNW20	W14	WSW14	SW12	SW12	WSW14	SW11	SW12	WNW15.3	WNW26
	SW3.1	SW3.1	SSW2.9	SSW3.1	SSW3.4	SSW3.0	SW2.6	SW2.9	WSW3.5	W4.0	W4.9	W6.6	W7.5	W8.2	W8.0	W7.3	W6.3	WSW4.6	WSW3.3	SW2.7	SW3.3	SW3.2	SW3.1	SW2.8	Diurnal Average	
	WSW17	WSW16	NW15	ENE15	SSE17	NE16	NW20	NE19	NE18	W23	W24	WNW25	WNW26	WNW26	WNW25	W22	WNW20	WSW17	W17	WNW15	WNW18	NNW18	NNW18	N15	Diurnal Maximum	

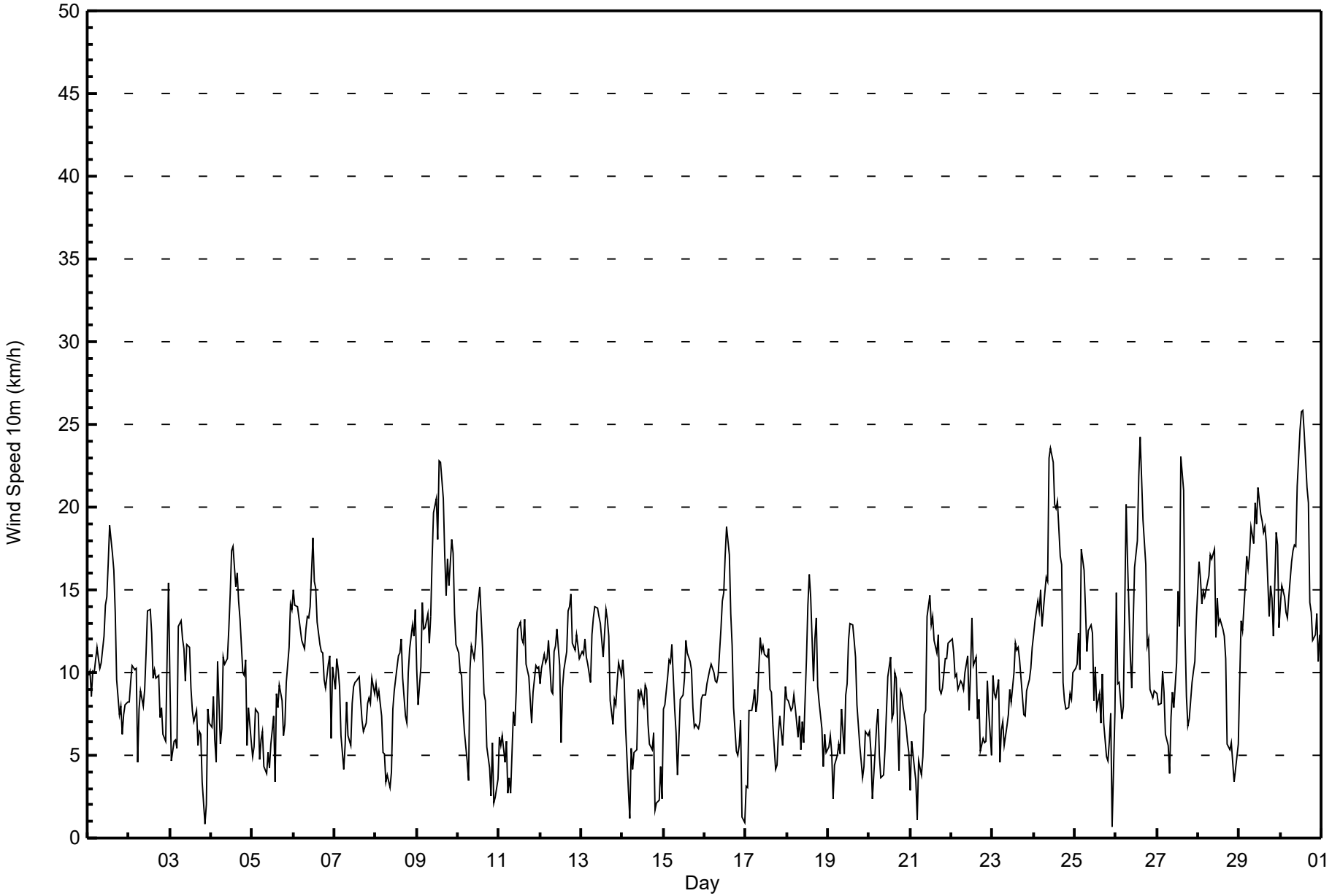
All monthly, daily, and diurnal averages have been calculated using vector methods

Wood Buffalo Environmental Association

Hourly Averages

Wind Speed 10m (WS10) - km/h

Kirby North - September 2024



Wind Speed Ranges (km/h)	Number of Hours	%	Cumulative %
0 - 5	94	13.06	13.06
6 - 11	388	53.89	66.94
12 - 19	211	29.31	96.25
20 - 28	27	3.75	100.00
29 - 38	0	0.00	100.00
> 38	0	0.00	100.00

Total Number of Valid Hours: 720

Total Number of Hours: 720

Wood Buffalo Environmental Association

Frequency Distribution

Wind Speed 10m (WS10) - km/h

Kirby North - September 2024

Wind Speed Ranges (km/h)	Wind Direction																
	N	NNE	NE	ENE	E	ESE	SE	SSE	S	SSW	SW	WSW	W	WNW	NW	NNW	**Totals**
0 - 5	6	3	4	2	1	3	5	9	12	14	10	7	2	5	6	5	94
6 - 11	14	19	6	6	2	6	10	29	86	45	51	24	15	25	29	21	388
12 - 19	12	14	9	4	0	0	3	13	24	10	46	19	11	22	16	8	211
20 - 28	0	0	3	0	0	0	0	0	0	0	0	0	7	16	1	0	27
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	36	22	12	3	9	18	51	122	69	107	50	35	68	52	34	720

Total Number of Valid Hours: 720

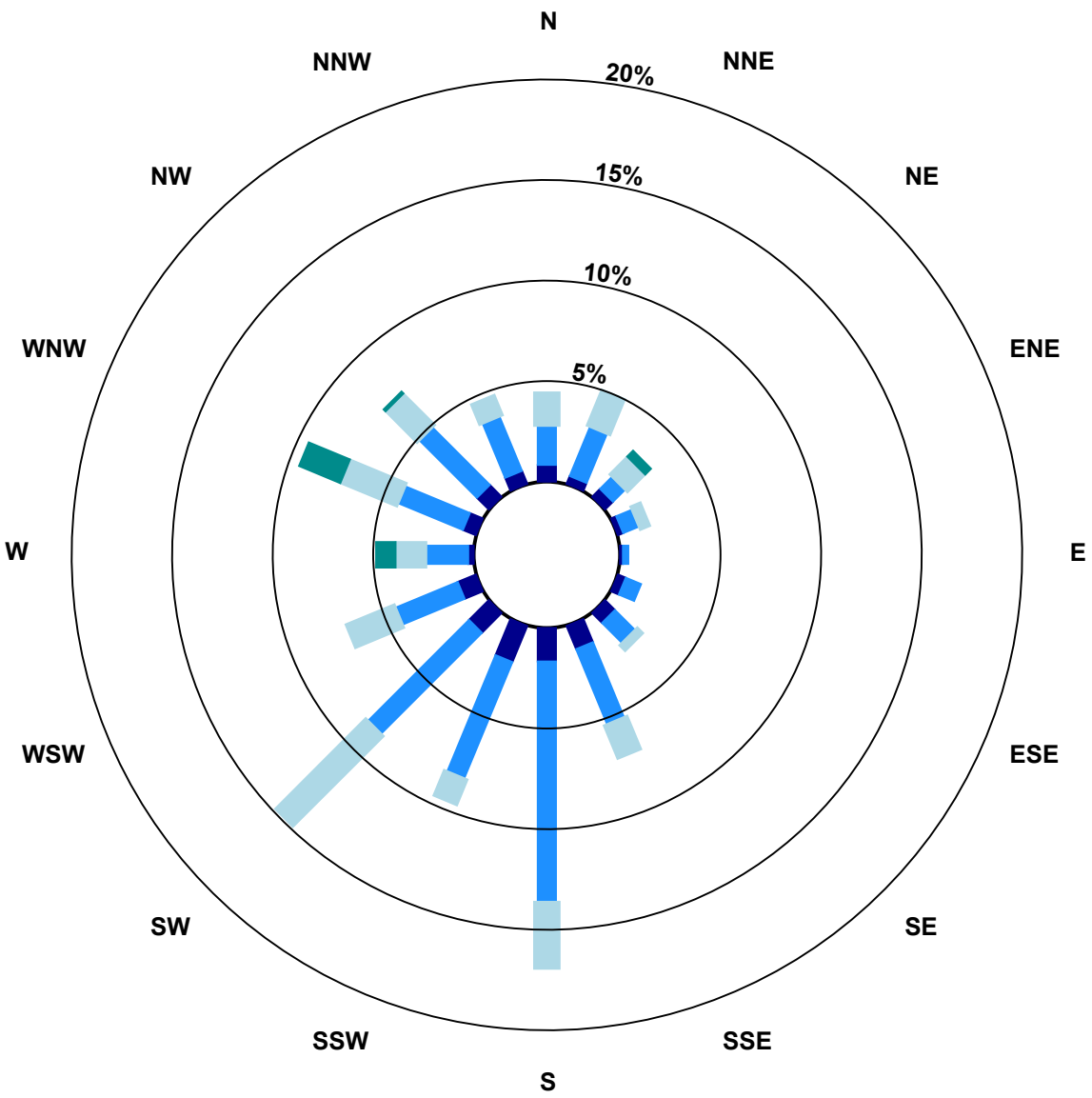
Total Number of Hours: 720

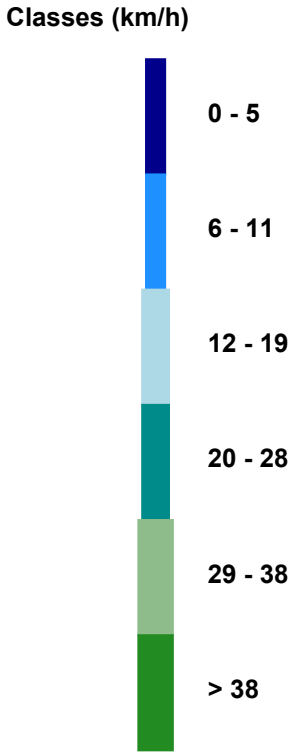
Wood Buffalo Environmental Association

Wind Rose Sep 2024

Wind Speed 10m (WS10) - km/h

Kirby North





Total Number of Valid Hours: 720

Number of Exceedences (AAAQO): 1-hr: 0 24-hr: 0
Maximum Value: 7 km/h on Sep 24 10:00

Minimum Value: 0 km/h on Sep 17 19:00

Percentiles: P_1 = 1 P_{10} = 1 Q_1 = 2 Median = 3 Q_3 = 3 P_{90} = 4 P_{99} = 6

Hours in Service:	720
Hours of Data:	720
Hours of Missing Data:	0
Hours of Calibration:	0
Percent Operational Time:	100.0

Day	Hourly Period Ending At (MST)																								Daily
	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24	Maximum
1-Sep	2	2	2	2	2	2	2	2	3	4	4	4	5	5	4	4	4	3	1	1	1	1	1	1	5
2-Sep	1	1	1	2	2	3	3	2	2	3	3	4	3	4	3	3	3	2	2	2	1	1	3	4	4
3-Sep	4	3	2	2	3	3	3	3	2	2	2	3	2	2	3	3	2	1	1	2	3	2	2	2	4
4-Sep	2	2	2	1	3	2	3	3	3	3	4	4	5	5	5	4	4	4	4	3	2	4	3	3	5
5-Sep	2	2	2	2	2	2	2	2	2	2	2	3	3	3	3	3	3	3	1	1	2	2	4	4	4
6-Sep	4	4	4	3	3	3	3	3	4	3	3	4	4	4	3	2	3	2	1	1	1	2	3	3	4
7-Sep	2	3	2	2	2	1	1	2	2	2	2	2	2	2	2	2	2	1	1	1	1	1	1	1	3
8-Sep	1	1	1	1	1	2	1	1	1	1	2	3	3	4	3	4	3	2	1	2	2	3	3	3	4
9-Sep	3	2	3	3	3	3	3	3	3	4	5	5	5	6	6	6	5	4	5	4	5	5	3	3	6
10-Sep	4	3	3	2	2	2	3	3	3	3	3	4	4	4	5	3	3	1	1	1	3	2	2	2	5
11-Sep	1	1	1	2	2	1	1	3	2	2	3	4	4	4	5	4	3	3	2	1	2	2	2	2	5
12-Sep	2	2	2	1	2	2	2	2	2	3	3	3	3	3	2	2	3	3	3	3	3	2	2	2	3
13-Sep	2	2	3	2	2	2	3	3	3	3	3	3	3	3	3	3	3	3	2	2	2	4	3	2	4
14-Sep	3	3	2	2	2	2	3	1	2	3	2	2	2	3	4	2	2	1	1	1	1	1	3	3	4
15-Sep	2	1	2	2	2	2	3	3	2	2	3	2	3	3	3	3	3	3	1	1	1	1	1	1	3
16-Sep	1	1	2	2	2	2	2	2	3	3	4	4	4	5	5	4	3	2	1	2	2	1	2	1	5
17-Sep	1	2	2	1	1	1	1	2	3	3	4	3	3	4	3	3	2	1	0	2	1	1	1	1	4
18-Sep	2	1	1	1	1	1	2	2	2	2	4	4	3	4	3	4	3	3	2	2	1	1	1	1	4
19-Sep	1	2	2	2	1	1	2	1	3	2	3	3	4	4	4	3	4	2	2	2	1	2	2	2	4
20-Sep	2	2	1	3	2	3	2	1	1	1	2	3	3	2	3	4	3	1	3	2	2	2	1	1	4
21-Sep	2	2	1	2	2	2	2	2	2	2	3	3	3	3	4	4	4	3	2	2	3	3	3	3	4
22-Sep	3	3	2	2	2	2	2	2	3	3	2	3	4	3	3	2	2	1	1	1	2	3	2	4	4
23-Sep	2	3	2	3	2	2	2	2	2	2	2	2	3	3	3	3	3	2	1	1	3	2	2	2	3
24-Sep	2	2	3	3	3	2	3	4	3	7	6	7	6	5	5	5	5	2	1	1	1	1	1	1	7
25-Sep	2	3	3	4	4	4	4	3	4	4	4	3	3	3	3	3	2	2	1	2	3	3	3	3	4
26-Sep	4	2	3	2	3	4	7	5	4	3	3	4	6	6	6	6	5	6	3	2	1	2	1	1	7
27-Sep	2	2	2	2	4	2	2	1	2	2	2	3	4	5	7	6	4	3	5	3	3	2	2	2	7
28-Sep	4	3	3	3	3	3	3	4	4	5	4	4	5	4	4	3	4	1	1	1	2	1	1	1	5
29-Sep	2	3	2	3	3	3	4	4	5	5	5	5	4	4	4	4	4	3	5	4	3	5	5	3	5
30-Sep	3	4	4	4	3	3	4	4	4	5	5	6	7	7	7	6	6	4	2	2	2	3	2	2	7
	4	4	4	4	4	4	7	5	5	7	6	7	7	7	7	6	6	6	5	4	5	5	5	4	
	Diurnal Maximum																								

Direction of Maximum Speed: 283 deg on Sep 30 14:00
Direction of Maximum Daily Speed Average: 282.8 deg on Sep 30

Direction of Minimum Speed: 191 deg on Sep 25 23:00

Direction of Minimum Daily Speed Average: 3.5 deg on Sep 25

Monthly Average Direction: 242.5 deg

Hours in Service:	720
Hours of Data:	720
Hours of Missing Data:	0
Percent Operational Time:	100.0

Day	Hourly Period Ending At (MST)																								Daily
	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24	Average
1-Sep	167	166	169	173	176	175	173	179	191	188	188	203	212	222	224	229	225	227	217	218	194	185	177	176	197.0
2-Sep	179	186	181	182	176	192	174	178	189	207	205	199	220	226	214	221	236	245	279	308	340	342	327	349	218.4
3-Sep	2	53	29	357	8	26	22	23	22	26	32	1	22	19	346	359	19	23	26	17	205	291	325	9	14.8
4-Sep	343	339	350	310	289	310	296	299	298	288	284	300	296	304	290	290	303	284	287	250	238	215	221	228	289.8
5-Sep	222	212	202	190	171	209	209	258	14	38	353	336	321	180	217	233	216	200	187	164	168	169	176	178	198.7
6-Sep	180	179	184	178	182	187	186	187	191	208	206	206	199	213	217	215	220	221	219	210	222	221	226	270	203.0
7-Sep	264	290	294	283	246	205	195	188	184	194	209	217	213	221	214	215	208	200	186	180	183	189	186	190	215.1
8-Sep	188	181	181	184	181	190	172	172	183	165	173	194	188	171	175	176	187	173	156	148	159	165	167	163	173.8
9-Sep	171	193	177	168	170	170	169	190	230	292	300	296	294	290	292	285	266	252	274	297	296	304	304	286	266.4
10-Sep	280	279	282	253	239	216	204	214	236	240	244	253	251	261	321	323	281	245	194	162	196	159	127	201	252.6
11-Sep	171	177	180	142	140	66	44	78	139	132	140	157	158	153	133	129	136	162	135	100	116	116	116	118	136.6
12-Sep	109	107	72	55	38	42	50	29	19	35	41	35	33	22	2	357	15	20	18	28	11	18	13	14	31.5
13-Sep	11	6	10	18	6	6	360	359	1	4	5	3	359	340	329	327	331	340	334	322	321	296	290	280	346.9
14-Sep	281	270	257	237	227	222	206	188	198	200	201	212	213	220	220	213	206	165	172	145	100	120	169	175	213.0
15-Sep	214	207	216	226	232	245	288	309	322	306	304	252	224	220	217	215	219	220	184	186	189	187	185	185	225.2
16-Sep	180	183	181	182	181	181	184	185	194	209	225	223	226	235	239	217	222	220	207	178	181	185	105	139	205.7
17-Sep	198	185	164	161	167	155	156	153	163	179	187	224	221	242	240	237	154	152	131	136	168	174	154	150	179.7
18-Sep	163	164	172	180	179	194	179	180	231	302	311	311	309	313	317	321	331	318	324	322	337	353	329	336	295.0
19-Sep	331	312	310	297	235	231	219	225	267	302	281	283	292	291	323	312	315	317	321	292	222	244	257	264	288.5
20-Sep	292	277	336	257	233	276	270	357	315	356	27	57	50	71	26	323	325	333	283	314	328	332	335	349	332.3
21-Sep	319	289	321	215	244	204	166	193	185	187	220	215	222	228	214	192	180	172	167	174	176	161	162	173	195.9
22-Sep	170	171	173	178	187	193	194	187	208	219	242	241	255	238	225	221	229	205	206	202	193	237	234	245	210.2
23-Sep	244	279	298	296	293	308	301	300	255	254	243	244	227	222	216	220	222	218	197	184	200	204	208	218	237.8
24-Sep	221	219	222	221	224	220	222	239	246	274	280	289	294	284	268	273	268	244	229	211	183	178	167	148	247.3
25-Sep	147	140	140	131	149	159	167	177	183	178	172	207	238	273	334	336	318	324	19	38	13	345	191	354	171.2
26-Sep	343	5	325	343	333	308	320	314	319	299	290	283	276	287	266	267	252	251	242	234	210	178	176	159	282.0
27-Sep	149	147	132	88	69	28	48	6	356	336	317	294	280	279	275	284	259	225	264	213	188	190	212	229	259.6
28-Sep	242	237	228	230	227	228	233	236	247	266	270	252	233	225	215	209	217	194	185	168	166	148	105	60	230.0
29-Sep	66	65	41	61	62	52	58	56	54	49	52	47	35	41	31	20	18	12	350	350	332	333	332	325	31.0
30-Sep	316	313	308	306	300	296	290	291	292	292	294	296	295	283	287	276	288	270	241	236	233	238	215	222	282.8
	219.2	216.0	211.3	199.3	198.1	213.7	216.0	227.4	240.1	260.7	261.2	262.4	261.1	260.9	264.7	263.8	260.2	248.5	244.2	229.5	214.9	215.7	214.2	218.0	
	Diurnal Average																								

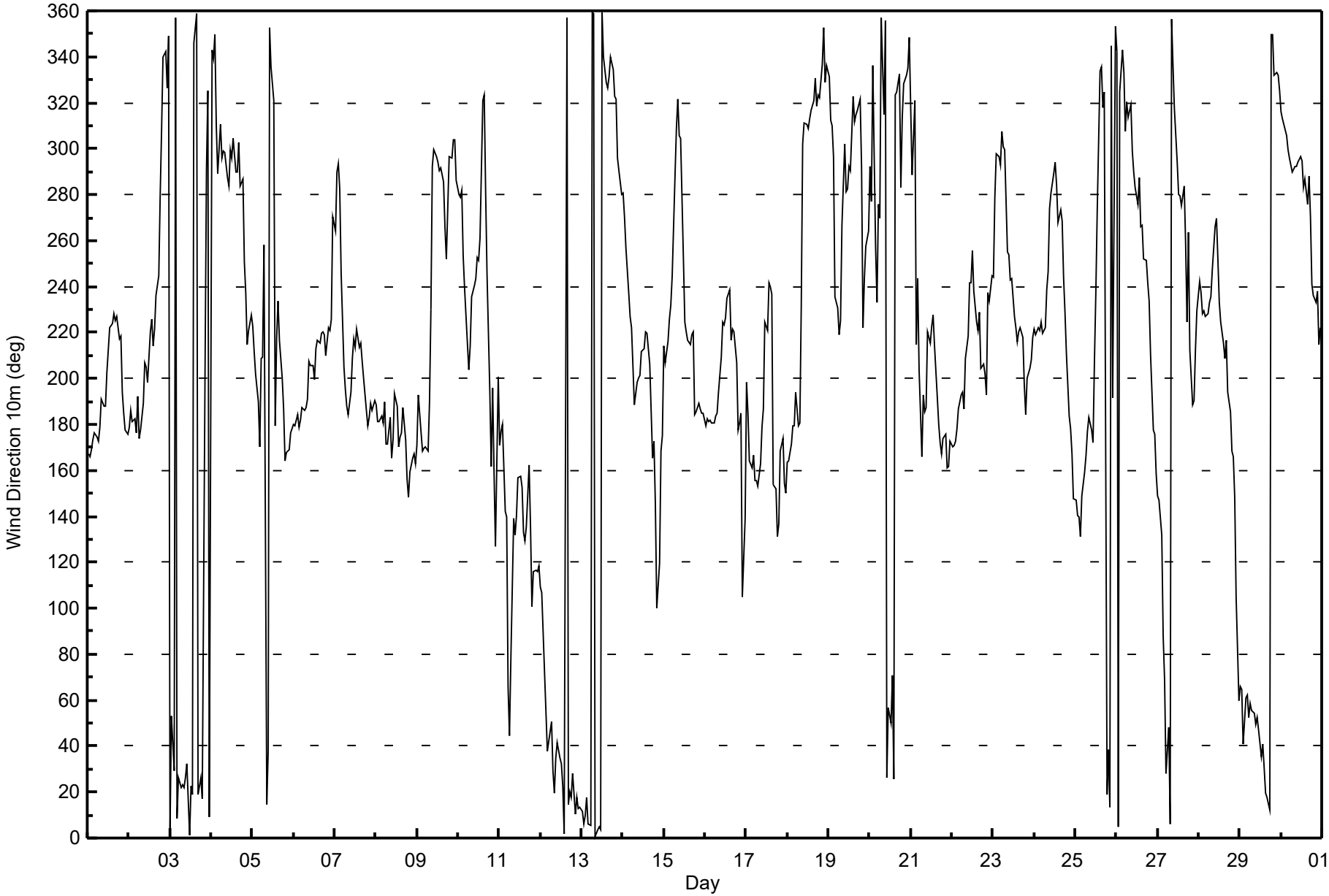
All monthly, daily, and diurnal averages have been calculated using vector methods

Wood Buffalo Environmental Association

Hourly Averages

Wind Direction 10m (WD10) - deg

Kirby North - September 2024



Number of Exceedences (AAAQO): 1-hr: 0 24-hr: 0

Maximum Value: 98 deg on Sep 3 21:00

Minimum Value: 5 deg on Sep 17 04:00

Percentiles: P_1 = 8 P_{10} = 12 Q_1 = 14 Median = 18 Q_3 = 24 P_{90} = 34 P_{99} = 73

Hours in Service:	720
Hours of Data:	720
Hours of Missing Data:	0
Hours of Calibration:	0
Percent Operational Time:	100.0

Day	Hourly Period Ending At (MST)																								Daily
	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24	Maximum
1-Sep	15	14	14	14	13	12	14	17	20	21	22	23	20	17	18	16	17	15	11	12	12	10	9	10	23
2-Sep	10	11	11	11	20	63	38	15	21	25	27	23	21	21	25	21	16	13	23	13	17	12	18	17	63
3-Sep	23	55	27	33	40	12	13	12	14	16	15	18	21	28	43	25	26	9	14	74	98	51	15	14	98
4-Sep	15	17	19	27	15	22	26	17	17	23	24	23	20	21	22	24	21	20	26	22	15	54	20	41	54
5-Sep	40	29	16	15	22	14	22	47	63	39	48	45	47	82	34	33	23	22	15	16	13	15	18	19	82
6-Sep	18	18	20	17	18	16	17	17	22	16	15	16	17	18	15	15	16	13	14	10	7	9	45	23	45
7-Sep	24	19	15	27	30	25	16	13	19	21	23	17	15	14	17	16	16	16	12	12	11	10	10	11	30
8-Sep	9	8	7	8	14	20	28	9	25	29	27	29	27	26	26	24	22	20	15	14	15	16	15	14	29
9-Sep	16	30	19	19	16	15	17	23	15	29	18	19	19	17	18	18	19	13	24	16	16	17	17	20	30
10-Sep	23	19	18	18	19	48	75	16	17	21	25	27	22	21	33	30	30	29	21	43	50	81	61	79	81
11-Sep	44	54	58	40	26	66	30	55	21	19	29	28	25	29	34	22	18	21	13	17	13	13	13	13	66
12-Sep	14	14	15	9	9	11	14	27	13	25	20	17	36	14	15	15	14	13	13	12	14	12	13	12	36
13-Sep	12	15	15	13	14	15	14	16	15	15	16	15	16	17	13	14	14	16	16	14	15	16	15	15	17
14-Sep	16	18	15	64	80	27	68	19	25	17	26	23	25	28	26	30	20	20	19	70	43	52	64	61	80
15-Sep	22	15	12	13	13	12	29	19	28	21	20	23	25	19	18	18	15	19	12	11	10	11	10	10	29
16-Sep	11	11	12	13	13	12	13	17	20	18	17	18	17	16	19	16	16	13	16	35	24	9	58	71	71
17-Sep	49	59	17	5	9	6	7	15	16	24	25	26	27	21	26	30	38	14	6	12	10	10	9	10	59
18-Sep	15	10	12	10	11	12	22	25	36	25	40	27	22	21	18	23	20	17	14	15	14	21	15	16	40
19-Sep	18	13	32	29	30	15	15	26	27	32	29	34	26	28	21	24	20	17	32	35	48	38	27	35	48
20-Sep	17	26	30	39	17	27	41	35	30	29	20	26	21	32	35	32	20	29	18	19	14	14	13	16	41
21-Sep	41	20	25	67	72	40	52	17	19	23	16	17	18	20	26	24	20	18	16	19	22	17	18	19	72
22-Sep	17	16	16	15	15	15	17	16	19	17	27	22	20	23	17	17	14	17	14	13	19	13	15	32	32
23-Sep	15	24	16	17	41	25	17	27	24	18	19	19	24	18	19	17	15	16	17	14	19	17	16	15	41
24-Sep	13	13	13	13	12	15	13	15	14	18	17	19	21	22	18	19	18	15	8	13	12	11	14	6	22
25-Sep	10	13	14	18	18	19	19	19	22	22	23	36	23	37	26	33	18	15	39	39	66	28	92	30	92
26-Sep	22	22	20	19	22	19	19	18	18	20	21	20	22	19	16	18	14	13	13	11	15	13	13	9	22
27-Sep	9	14	19	20	38	28	21	29	22	21	30	31	24	26	17	18	21	27	52	29	17	13	15	12	52
28-Sep	14	13	13	15	15	14	12	13	14	18	28	24	29	23	21	19	19	23	24	14	21	30	18	16	30
29-Sep	11	12	11	12	11	12	13	13	14	13	16	17	16	16	17	14	13	13	19	17	15	14	14	16	19
30-Sep	16	15	16	17	17	15	14	15	16	17	15	17	19	18	20	19	18	17	10	11	12	13	15	12	20
	49	59	58	67	80	66	75	55	63	39	48	45	47	82	43	33	38	29	52	74	98	81	92	79	
	Diurnal Maximum																								

WOOD BUFFALO ENVIRONMENTAL ASSOCIATION

CONTINUOUS AMBIENT AIR QUALITY
MONITORING PROGRAM
MONTHLY REPORT

AMS508
HANGINGSTONE EXPANSION
SEPTEMBER 2024

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

October 31, 2024

WOOD BUFFALO ENVIRONMENTAL ASSOCIATION - HANGINGSTONE EXPANSION (AMS512)
SEPTEMBER 2024

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	686	33	34	99.86	115.4	0	13.9	0
H2S (ppb) Average	684	35	36	99.86	4.1	0	1.1	0
NO2 (ppb) Average	686	34	34	100	12.6	0	4.2	-
NO (ppb) Average	686	34	34	100	5.9	-	0.9	-
NOX (ppb) Average	686	34	34	100	14.2	-	5.2	-
Temperature 2 m (C) Average	720	0	0	100	29.5	-	21.4	-
Relative Humidity (%) Average	720	0	0	100	99.6	-	99.3	-
Wind Speed 10 m (km/h) Average	720	0	0	100	27	-	15	-
Wind Direction 10 m (deg) Average	720	0	0	100	-	-	-	-

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

WOOD BUFFALO ENVIRONMENTAL ASSOCIATION - HANGINGSTONE EXPANSION (AMS512)
SEPTEMBER 2024

MONTHLY SUMMARY FOR AIR QUALITY/ METEOROLOGICAL MONITORING MEASUREMENTS

					Percentile						
Parameter	Number	Mean	StnDev	Total	Min	P10	Q1	Median	Q3	P90	Max
SO2 (ppb) Average	686	3.29	10.5	-	0	0.1	0.2	0.3	1.2	6.1	115.4
H2S (ppb) Average	684	0.28	0.5	-	0	0	0.1	0.1	0.2	0.6	4.1
NO2 (ppb) Average	686	1.41	1.5	-	0	0.2	0.5	1	1.8	3.2	12.6
NO (ppb) Average	686	0.27	0.5	-	0	0	0	0.1	0.3	0.7	5.9
NOX (ppb) Average	686	1.67	1.9	-	0	0.2	0.5	1.1	2	3.8	14.2
Temperature 2 m (C) Average	720	12.54	5.5	-	0.7	6.1	8.8	12	15.9	19.7	29.5
Relative Humidity (%) Average	720	70.66	19.3	-	24.2	44.7	56.3	71.4	87.6	97.4	99.6
Wind Speed 10 m (km/h) Average	720	9.3	4	-	1	5	7	9	11	14	27
Wind Direction 10 m (deg) Average	720	-	-	-	-	-	-	-	-	-	-

WOOD BUFFALO ENVIRONMENTAL ASSOCIATION - HANGINGSTONE EXPANSION (AMS512)
SEPTEMBER 2024

OPERATIONAL NOTES

Parameter	Period Start	Period End	Duration (Hours)	Notes
H2S, SO2	20 Sep 2024 07:00	20 Sep 2024 07:00	1	Maintenance - sample manifold cleaned

Wood Buffalo Environmental Association

Summary of Hour Averages

Sulphur Dioxide (SO_2) - ppb

Hangingstone Expansion - September 2024

Number of Exceedences (AAAQO): 1-hr: 0 24-hr: 0

Maximum Value: 115.4 ppb on Sep 28 02:00 Maximum Daily Average: 13.9 ppb on Sep 24

Minimum Value: 0.0 ppb on Sep 9 15:00 Minimum Daily Average: 0.1 ppb on Sep 12

Maximum Diurnal Average: 9.0 ppb at hour 2 Minimum Diurnal Average: 0.6 ppb at hour 18

Monthly Average: 3.29 ppb Percentiles: P_1 = 0.0 P_{10} = 0.1 Q_1 = 0.2 Median = 0.3 Q_3 = 1.2 P_{90} = 6.1 P_{99} = 50.8

Hours in Service:	720
Hours of Data:	686
Hours of Missing Data:	34
Hours of Calibration:	33
Percent Operational Time:	99.9

Day	Hourly Period Ending At (MST)																								Daily	Daily
	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24	Average	Maximum
1-Sep	Z	1.5	0.2	0.4	0.8	0.5	1.1	1.5	1.1	1.2	0.9	0.5	29.7	26.8	23.9	1.2	0.2	0.2	0.2	1.6	0.3	0.3	0.5	0.5	4.1	29.7
2-Sep	0.6	Z	0.6	0.6	0.4	0.3	0.2	1.8	0.4	0.7	23.3	7.6	7.7	2.8	10.7	0.1	0.1	0.1	0.1	0.3	0.8	0.6	1.1	0.2	2.6	23.3
3-Sep	0.5	0.2	Z	0.0	0.1	0.1	0.1	0.1	1.9	2.9	2.7	1.7	0.9	1.8	1.6	1.0	1.3	1.0	0.7	0.4	0.4	0.4	0.6	0.3	0.9	2.9
4-Sep	0.2	0.1	0.0	Z	0.0	0.1	0.1	0.1	0.1	0.0	0.1	0.1	0.0	0.1	0.1	0.0	0.0	0.1	0.0	0.3	5.3	15.6	17.9	37.0	3.4	37.0
5-Sep	49.1	50.7	1.3	1.2	Z	0.3	0.3	0.3	0.3	0.8	4.6	8.7	2.7	3.8	3.2	7.6	5.9	0.5	0.4	0.3	0.3	0.2	0.3	0.3	6.2	50.7
6-Sep	0.2	0.3	0.2	0.3	0.5	Z	1.8	2.1	1.7	1.4	1.3	30.1	13.5	0.8	0.7	0.5	0.4	4.1	23.8	9.9	14.1	26.7	31.6	6.1	7.5	31.6
7-Sep	Z	0.5	0.3	0.2	0.3	0.3	0.2	0.6	0.4	11.4	5.4	10.9	13.7	5.4	2.7	13.9	4.9	0.3	0.8	0.7	1.0	46.9	20.2	3.7	6.3	46.9
8-Sep	1.3	Z	0.3	0.3	0.3	0.3	0.3	0.3	0.5	0.3	0.8	5.5	7.7	0.8	0.2	0.1	0.2	0.2	0.2	0.2	0.6	0.7	0.7	0.7	1.0	7.7
9-Sep	2.9	1.1	Z	0.4	0.6	0.6	2.5	3.6	0.7	0.8	0.3	0.2	0.1	0.0	0.0	0.0	0.2	0.1	0.1	0.0	0.0	0.0	0.1	0.1	0.6	3.6
10-Sep	0.0	0.3	7.0	Z	1.6	3.9	0.7	2.2	2.4	1.1	0.3	0.9	0.3	0.2	0.0	0.0	0.1	0.3	0.1	0.1	0.9	0.6	0.1	0.1	1.0	7.0
11-Sep	0.1	0.0	0.1	0.1	Z	0.2	0.4	0.7	0.5	0.3	0.3	0.3	0.2	0.2	0.3	0.4	0.3	0.3	0.2	0.1	0.2	0.2	0.3	0.3	0.3	0.7
12-Sep	0.2	0.1	0.1	0.1	0.2	Z	0.3	0.3	0.2	0.2	0.1	0.1	0.1	0.1	0.0	0.1	0.1	0.1	0.2	0.2	0.2	0.1	0.1	0.1	0.1	0.3
13-Sep	Z	0.1	0.1	0.1	0.6	1.2	1.0	1.0	0.8	1.5	2.1	1.1	0.8	0.7	0.7	0.3	0.2	0.2	0.2	0.3	0.3	0.3	0.4	0.3	0.6	2.1
14-Sep	0.2	Z	0.1	0.2	0.3	0.2	1.4	15.6	1.9	0.5	0.3	2.5	0.4	0.3	0.2	7.7	2.0	1.3	0.4	0.3	0.4	0.3	0.3	0.3	1.6	15.6
15-Sep	0.3	0.4	Z	1.6	3.2	1.5	1.4	0.4	0.2	0.3	0.6	0.8	1.2	1.5	0.9	1.0	0.5	0.3	0.1	0.1	0.1	0.2	0.2	0.3	0.7	3.2
16-Sep	0.4	0.2	0.2	Z	0.3	0.3	0.4	1.0	0.9	14.0	17.9	18.6	8.7	13.2	2.6	3.4	0.1	0.2	0.3	0.2	0.1	0.2	0.4	0.2	3.6	18.6
17-Sep	0.3	0.3	0.2	0.3	Z	0.7	0.5	0.6	0.6	1.2	C	C	C	8.9	1.3	5.9	3.9	0.5	0.5	0.4	0.4	0.4	0.4	0.3	1.4	8.9
18-Sep	0.4	0.5	0.4	0.6	2.9	Z	0.7	3.3	0.5	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	0.4	3.3
19-Sep	Z	0.0	0.0	0.0	0.0	0.0	0.0	0.0	4.3	0.9	4.6	2.1	0.0	0.0	0.0	0.1	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.5	4.6
20-Sep	0.0	Z	0.0	0.0	0.0	0.6	M	0.0	0.0	0.2	0.3	0.1	2.3	5.8	3.8	5.4	5.5	0.4	0.2	0.0	0.1	0.1	0.3	0.1	1.1	5.8
21-Sep	0.1	0.1	Z	1.2	0.1	0.1	0.4	1.5	3.0	5.3	18.0	6.7	6.1	12.9	10.6	0.3	0.1	0.1	0.1	0.2	0.2	0.3	0.3	0.3	3.0	18.0
22-Sep	0.5	0.5	0.3	Z	0.5	0.5	0.6	2.7	5.5	0.3	0.9	0.2	0.4	1.3	0.2	0.4	1.0	0.5	0.2	0.2	0.2	0.2	4.1	0.8	0.9	5.5
23-Sep	0.3	0.5	0.4	0.2	Z	0.3	0.5	3.9	1.3	2.3	3.1	22.8	11.5	6.1	11.4	15.0	23.2	0.9	0.3	0.5	0.3	0.3	37.1	45.2	8.1	45.2
24-Sep	3.4	49.8	92.5	48.8	51.1	70.0	Z	1.2	0.4	0.3	0.2	0.1	0.1	0.1	0.0	0.1	0.1	0.0	0.1	0.1	0.2	0.2	0.2	0.3	13.9	92.5
25-Sep	Z	0.0	0.0	0.1	0.7	0.1	0.1	0.3	0.4	4.2	2.1	3.7	0.4	0.2	0.4	0.1	0.2	0.1	0.4	0.2	0.1	0.1	0.1	0.2	0.6	4.2
26-Sep	1.8	Z	0.1	0.2	0.2	0.1	0.2	0.2	0.1	0.2	0.2	0.2	0.1	0.1	0.2	0.2	0.1	0.1	3.0	2.5	2.5	0.5	0.4	0.4	0.6	3.0
27-Sep	0.5	0.7	Z	7.0	0.4	0.2	0.2	0.2	0.3	0.3	0.2	0.2	1.2	0.6	0.6	0.3	2.5	2.9	0.8	0.9	2.7	1.3	57.7	69.9	6.6	69.9
28-Sep	46.9	115.4	88.5	Z	40.0	6.5	0.5	0.2	0.2	0.2	0.2	1.3	1.4	0.6	0.2	5.6	0.3	0.9	0.7	0.4	0.6	0.6	0.8	0.7	13.6	115.4
29-Sep	0.6	0.4	0.9	0.7	Z	1.4	0.7	0.4	0.3	0.3	0.3	0.3	0.3	0.3	0.2	1.9	3.3	1.3	1.0	0.7	0.6	0.3	0.3	0.3	0.7	3.3
30-Sep	0.2	0.2	0.2	0.3	7.0	Z	4.9	11.6	0.6	0.2	0.1	0.0	0.1	0.2	0.1	0.1	0.1	0.2	0.2	15.7	11.3	5.5	44.2	40.0	6.2	44.2
	4.4	9.0	7.8	2.6	4.5	3.5	0.8	1.9	1.1	1.8	3.1	4.4	3.9	3.2	2.6	2.4	1.9	0.6	1.2	1.2	1.5	3.4	7.3	7.0	Diurnal Average	
	49.1	115.4	92.5	48.8	51.1	70.0	4.9	15.6	5.5	14.0	23.3	30.1	29.7	26.8	23.9	15.0	23.2	4.1	23.8	15.7	14.1	46.9	57.7	69.9	Diurnal Maximum	

Z - zerospan C - Calibration M - Maintenance

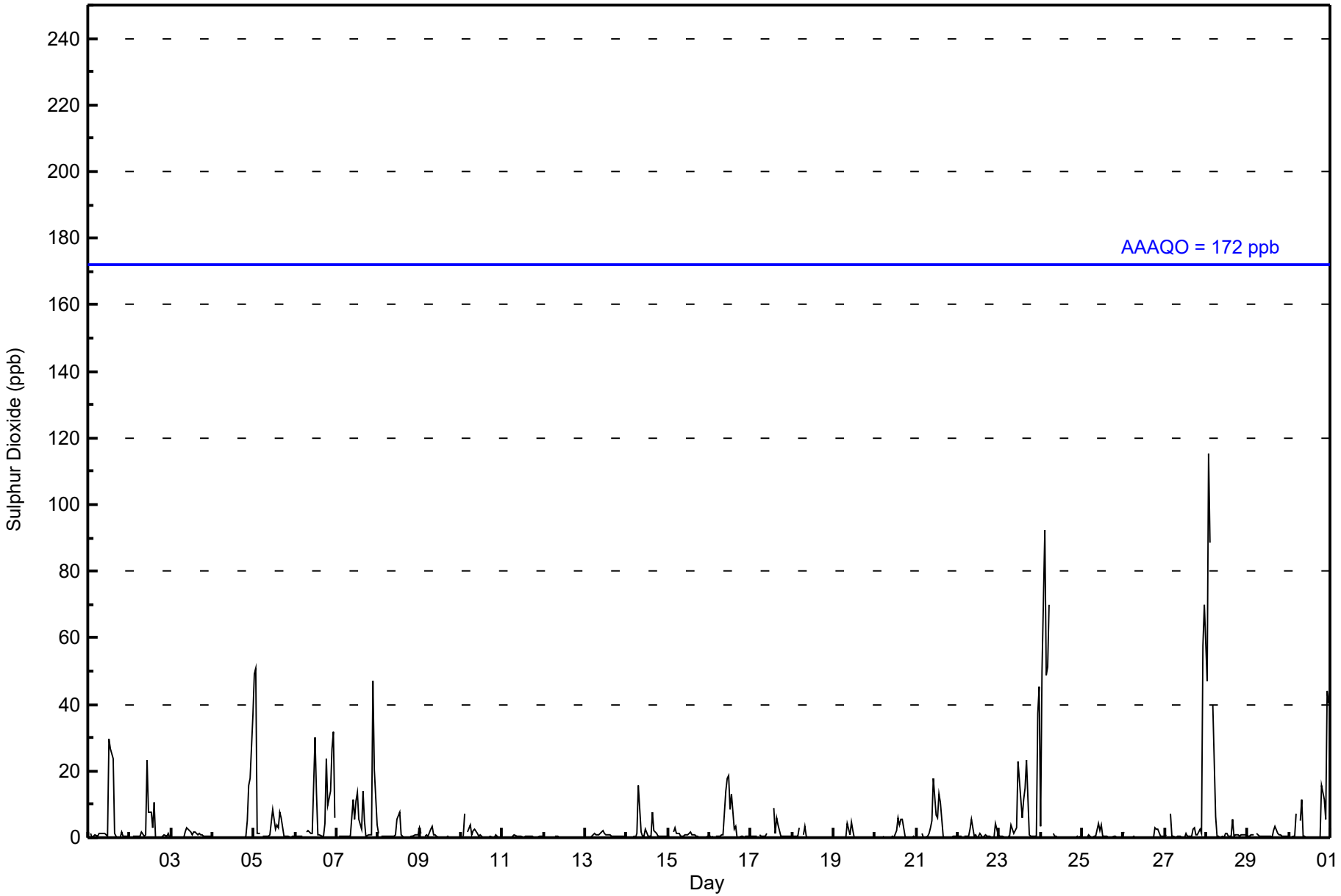
Alberta Ambient Air Quality Objectives (AAAQO): 1-hr 172 ppb 24-hr 48 ppb

Wood Buffalo Environmental Association

Hourly Averages

Sulphur Dioxide (SO_2) - ppb

Hangingstone Expansion - September 2024



Sulphur Dioxide (SO_2) - ppb

Hangingstone Expansion - September 2024

Concentration Ranges (ppb)	Number of Hours	%	Cumulative %
0 - 10	633	92.27	92.27
11 - 20	24	3.50	95.77
21 - 60	24	3.50	99.27
61 - 110	4	0.58	99.85
111 - 172	1	0.15	100.00
> 172	0	0.00	100.00

Total Number of Valid Hours: 686

Total Number of Hours: 720

Wood Buffalo Environmental Association

Frequency Distribution

Sulphur Dioxide (SO_2) - ppb

Hangingstone Expansion - September 2024

Concentration Ranges (ppb)	Wind Direction																
	N	NNE	NE	ENE	E	ESE	SE	SSE	S	SSW	SW	WSW	W	WNW	NW	NNW	**Totals**
0 - 10	18	30	10	4	1	16	15	41	114	96	44	80	68	49	25	22	633
11 - 20	0	0	0	0	0	0	0	0	0	1	13	9	1	0	0	0	24
21 - 60	0	0	0	0	0	0	0	0	0	0	16	7	1	0	0	0	24
61 - 110	0	0	0	0	0	0	0	0	0	0	1	3	0	0	0	0	4
111 - 172	0	0	0	0	0	0	0	0	0	0	1	0	0	0	0	0	1
> 172	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Totals	18	30	10	4	1	16	15	41	114	97	75	99	70	49	25	22	686

Total Number of Valid Hours: 686

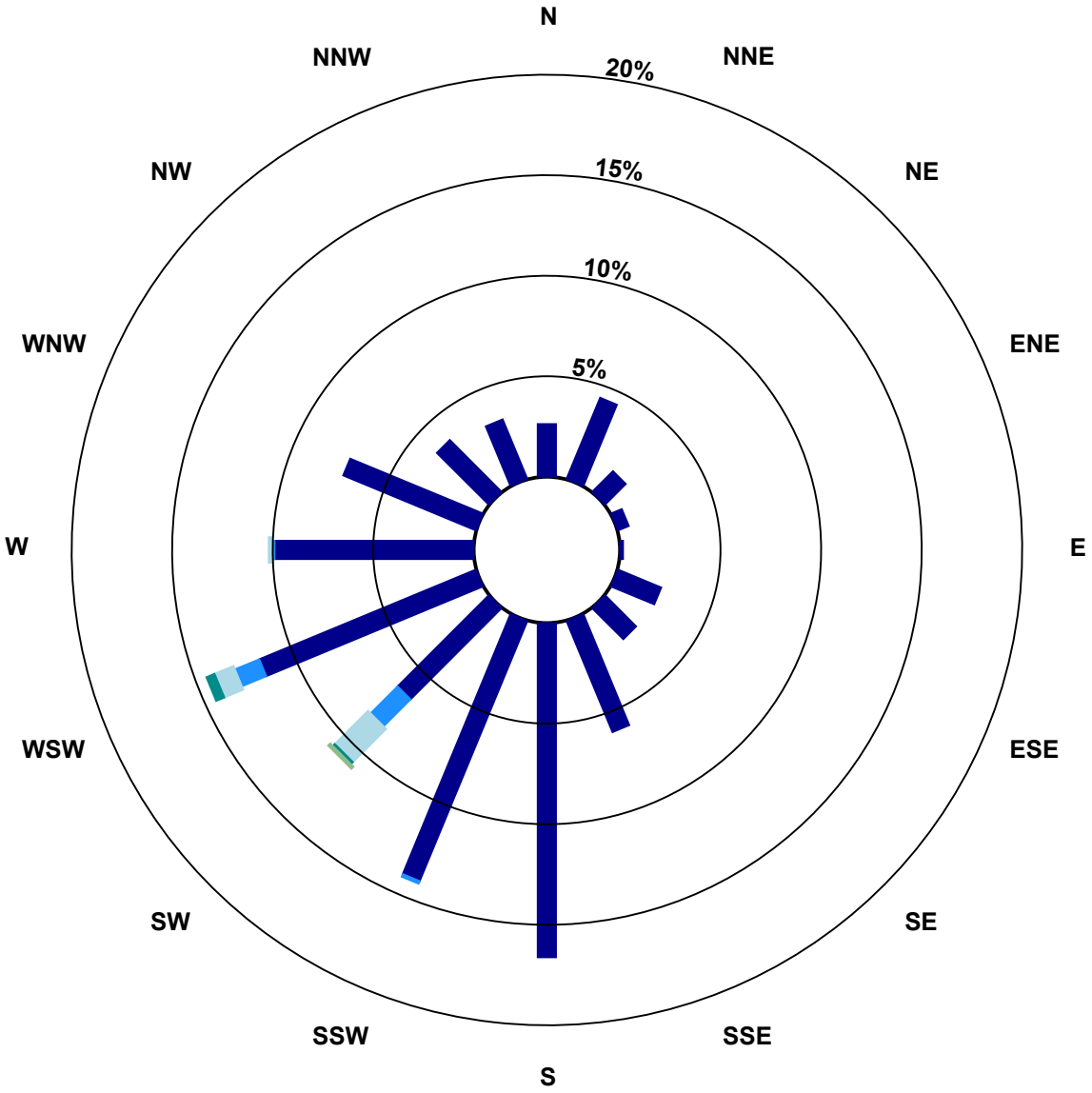
Total Number of Hours: 720

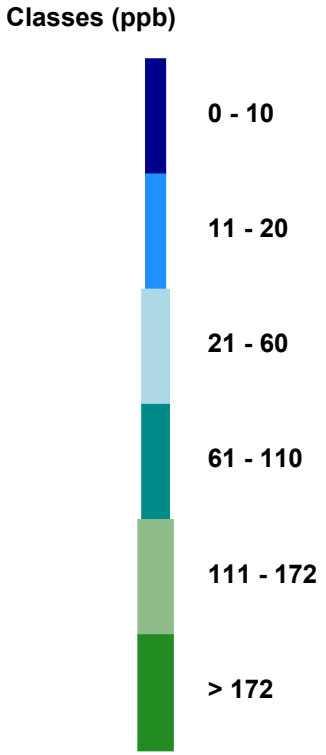
Wood Buffalo Environmental Association

Wind Rose Sep 2024

Sulphur Dioxide (SO_2) - ppb

Hangingstone Expansion





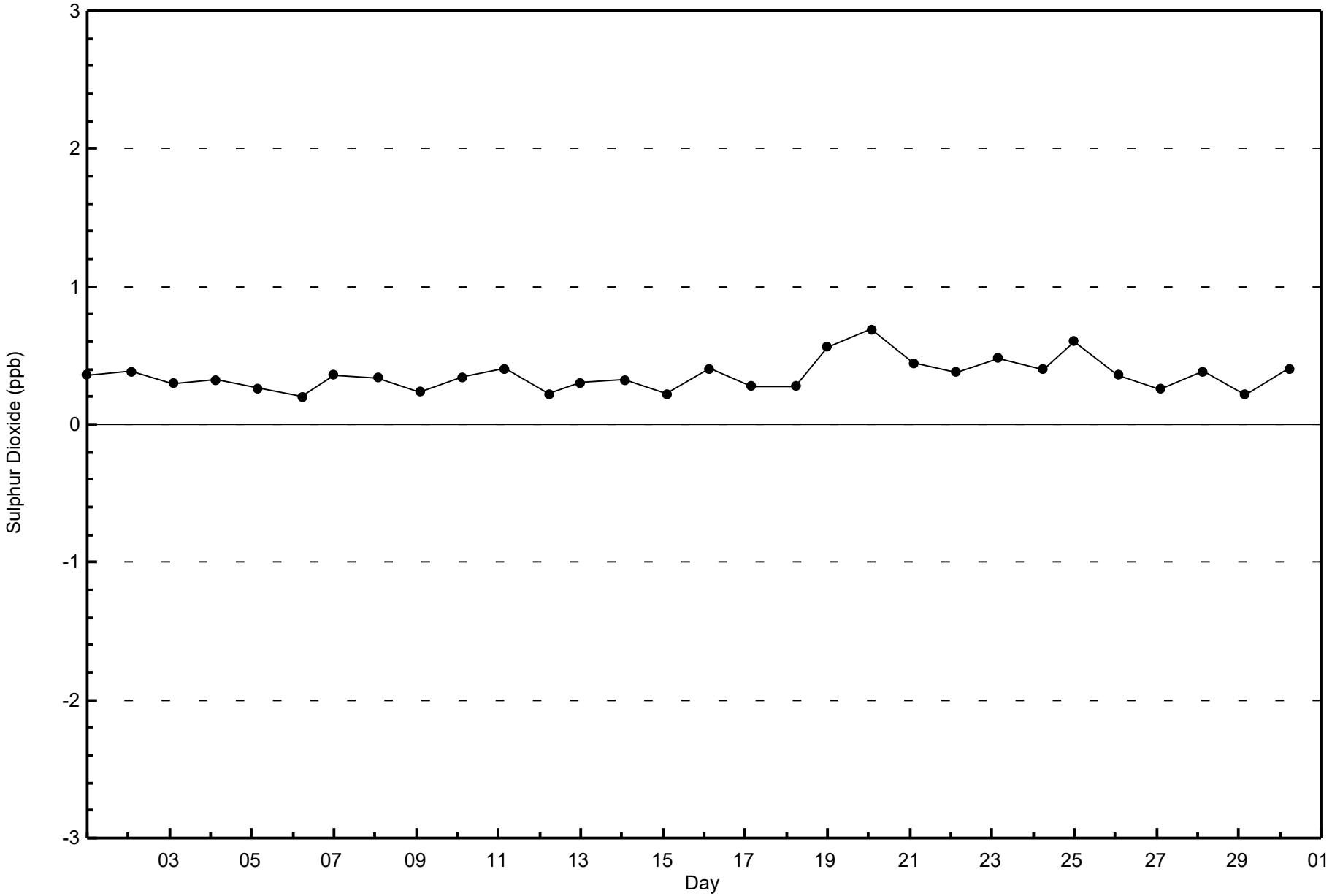
Total Number of Valid Hours: 686

Wood Buffalo Environmental Association

Zero Responses

Sulphur Dioxide (SO_2) - ppb

Hangingstone Expansion - September 2024



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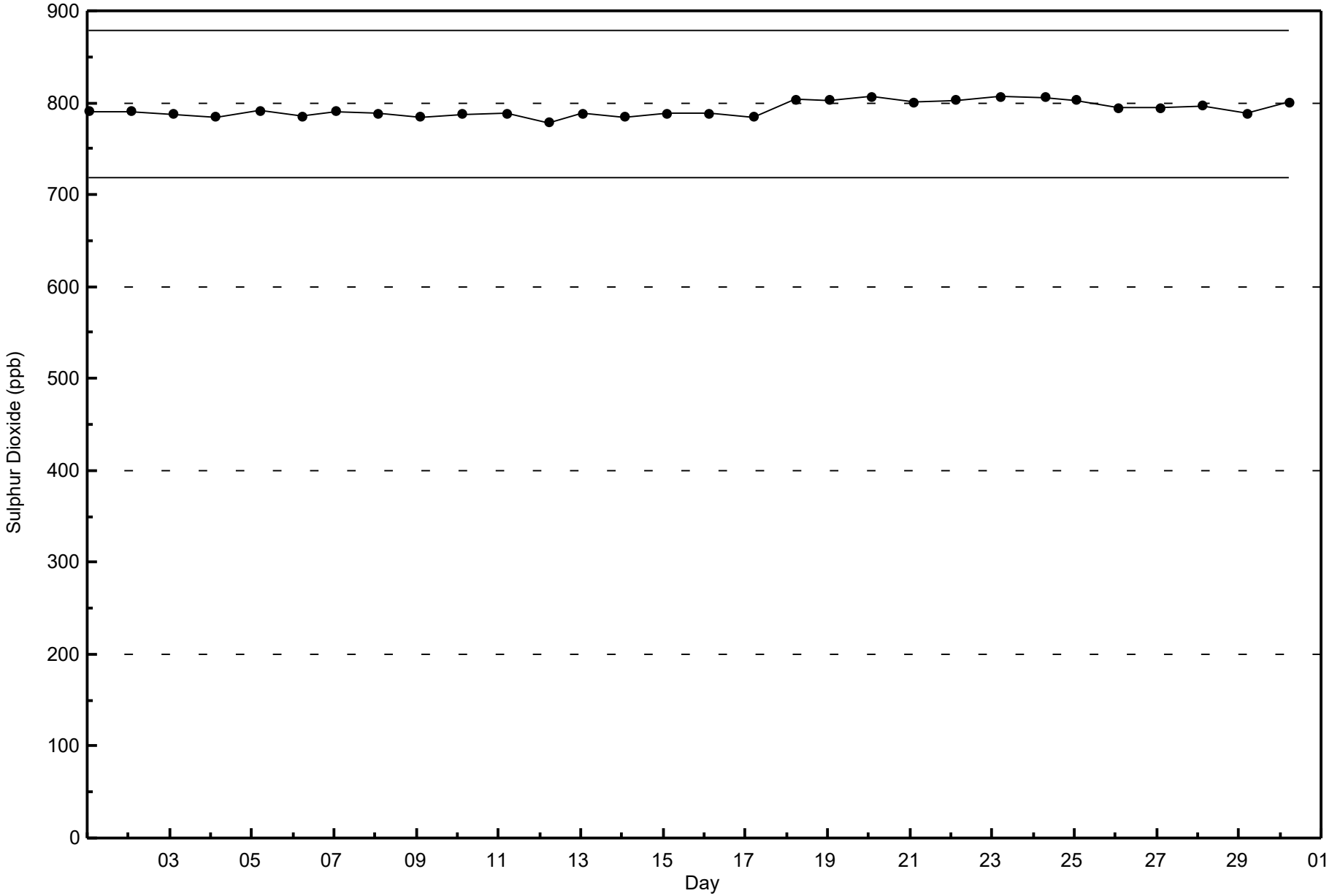
Span Responses

Sulphur Dioxide (SO_2) - ppb

Hangingstone Expansion - September 2024



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Summary of Hour Averages

Hydrogen Sulphide (H_2S) - ppb

Hangingstone Expansion - September 2024

Number of Exceedences (AAAQO): 1-hr: 0 24-hr: 0
Maximum Value: 4.1 ppb on Sep 24 04:00 Maximum Daily Average: 1.1 ppb on Sep 24

Minimum Value: 0.0 ppb on Sep 27 09:00
Maximum Diurnal Average: 0.5 ppb at hour 6
Monthly Average: 0.28 ppb

Minimum Daily Average: 0.1 ppb on Sep 17
Minimum Diurnal Average: 0.1 ppb at hour 15
Percentiles: P_1 = 0.0 P_{10} = 0.0 Q_1 = 0.1 Median = 0.1 Q_3 = 0.2 P_{90} = 0.6 P_{99} = 2.5

Hours in Service:	720
Hours of Data:	684
Hours of Missing Data:	36
Hours of Calibration:	35
Percent Operational Time:	99.9

Day	Hourly Period Ending At (MST)																								Daily	Daily
	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24	Average	Maximum
1-Sep	0.1	Z	0.1	0.1	0.1	0.2	0.2	0.1	0.1	0.1	0.1	0.1	0.4	0.3	0.3	0.1	0.1	0.1	0.2	0.2	0.1	0.1	0.0	0.1	0.1	0.4
2-Sep	0.0	0.0	Z	0.1	0.1	0.1	0.2	0.4	0.1	0.1	0.3	0.3	0.2	0.1	0.2	0.0	0.1	0.2	0.2	0.2	0.4	0.1	0.2	0.1	0.2	0.4
3-Sep	0.6	0.7	0.6	Z	0.1	0.3	0.3	0.2	0.3	0.4	0.3	0.4	0.3	0.4	0.2	0.1	0.1	0.2	0.2	0.3	0.3	0.3	0.4	0.3	0.3	0.7
4-Sep	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	0.2	0.2	1.0	1.5	1.7	2.2	0.4	2.2
5-Sep	2.3	2.4	0.5	0.4	0.1	Z	0.3	0.2	0.1	0.1	0.1	0.2	0.1	0.1	0.1	0.2	0.2	0.2	0.2	0.1	0.1	0.1	0.1	0.1	0.4	2.4
6-Sep	Z	0.1	0.1	0.1	0.1	0.1	0.2	0.1	0.2	0.2	0.2	0.7	0.7	0.2	0.2	0.2	0.2	0.5	0.8	0.2	0.4	0.5	1.1	0.7	0.3	1.1
7-Sep	0.6	Z	0.1	0.1	0.1	0.1	0.2	0.1	0.1	0.5	0.5	0.3	0.5	0.3	0.2	0.7	0.4	0.2	0.2	0.1	0.1	1.5	1.2	0.3	0.4	1.5
8-Sep	0.2	0.1	Z	0.2	0.1	0.1	0.2	0.2	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	0.2
9-Sep	0.2	0.1	0.1	Z	0.1	0.2	0.4	1.1	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	1.1
10-Sep	0.1	0.1	0.9	0.8	Z	1.8	0.4	1.0	0.6	0.3	0.1	0.2	0.1	0.1	0.2	0.1	0.2	0.2	0.1	0.1	0.1	0.3	0.1	0.1	0.3	1.8
11-Sep	0.1	0.1	0.1	0.1	0.1	Z	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	0.1	0.3
12-Sep	Z	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	0.2	0.2	0.2	0.2	0.2	0.2	0.1	0.2	0.2	0.2	0.1	0.2
13-Sep	0.2	Z	0.3	0.3	0.5	0.6	0.5	0.4	0.4	0.5	0.6	0.3	0.3	0.3	0.2	0.2	0.2	0.1	0.1	0.2	0.2	0.1	0.1	0.1	0.3	0.6
14-Sep	0.1	0.2	Z	0.4	0.9	0.1	0.2	1.0	0.3	0.1	0.1	0.1	0.1	0.1	0.1	0.2	0.1	0.2	0.3	0.1	0.1	0.2	0.0	0.0	0.2	1.0
15-Sep	0.0	0.1	0.0	Z	0.4	0.2	0.4	0.5	0.2	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	0.2	0.5
16-Sep	0.1	0.0	0.0	0.0	Z	0.1	0.1	0.1	0.1	0.3	0.5	0.4	0.3	0.4	0.2	0.2	0.3	0.2	0.1	0.1	0.1	0.1	0.1	0.1	0.2	0.5
17-Sep	0.1	0.1	0.1	0.1	0.1	Z	C	C	C	C	C	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.0	0.0	0.0	0.0	0.0	0.1	0.1
18-Sep	Z	0.1	0.0	0.1	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	0.2	0.1	0.2	0.3	0.3	0.2	0.1	0.3
19-Sep	0.1	Z	0.1	0.1	0.1	0.1	0.1	0.2	0.2	0.4	0.2	0.1	0.1	0.1	0.1	0.1	0.2	0.6	0.4	0.1	0.1	0.1	0.1	0.1	0.2	0.6
20-Sep	0.1	0.2	Z	0.1	0.3	0.3	M	0.6	0.2	0.1	0.1	0.1	0.2	0.2	0.2	0.3	0.2	0.1	0.2	0.4	2.4	2.0	1.9	0.3	0.5	2.4
21-Sep	0.1	0.1	0.1	Z	0.1	0.1	0.1	0.2	0.5	0.6	0.3	0.4	0.2	0.2	0.3	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.2	0.6
22-Sep	0.1	0.1	0.0	0.1	Z	0.1	0.1	0.2	0.4	0.1	0.3	0.1	0.1	0.2	0.1	0.1	0.1	0.2	0.1	0.1	0.1	0.0	0.3	0.3	0.1	0.4
23-Sep	0.7	0.5	0.4	0.1	0.2	Z	0.3	0.7	0.1	0.1	0.1	0.5	0.5	0.2	0.5	0.7	1.3	0.2	0.1	0.0	0.0	0.0	0.8	2.8	0.5	2.8
24-Sep	3.0	Z	3.6	4.1	3.7	3.9	3.1	1.3	0.2	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.2	0.7	0.1	0.1	0.0	0.1	0.1	1.1	4.1
25-Sep	0.1	Z	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.2	0.3	0.3	0.2	0.1	0.1	0.1	0.1	0.1	0.2	0.3	2.4	1.2	1.2	2.2	0.4	2.4
26-Sep	0.7	0.7	Z	0.9	0.1	0.1	0.1	0.1	0.2	0.1	0.1	0.1	0.1	0.1	0.1	0.0	0.1	0.1	0.7	0.2	0.1	0.0	0.0	0.0	0.2	0.9
27-Sep	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	0.1	0.4	0.0	0.1	0.0	0.0	0.9	2.2	0.2	2.2
28-Sep	1.5	2.3	2.2	2.0	Z	1.6	0.0	0.1	0.0	0.0	0.0	0.1	0.0	0.1	0.0	0.4	0.3	0.2	0.1	0.0	0.0	0.0	0.0	0.0	0.5	2.3
29-Sep	0.1	0.1	0.1	0.1	0.1	Z	0.2	0.1	0.1	0.1	0.1	0.1	0.1	0.2	0.3	0.3	0.4	0.2	0.1	0.1	0.0	0.0	0.0	0.0	0.1	0.4
30-Sep	Z	0.0	0.0	0.6	0.9	1.2	1.3	1.2	1.1	0.1	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.9	1.7	1.6	1.4	0.5	0.5	1.7
	0.4	0.4	0.4	0.4	0.3	0.5	0.3	0.4	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	0.4	0.4	0.4	Diurnal Average	
	3.0	2.4	3.6	4.1	3.7	3.9	3.1	1.3	1.1	0.6	0.6	0.7	0.7	0.4	0.5	0.7	1.3	0.6	0.8	0.9	2.4	2.0	1.9	2.8	Diurnal Maximum	

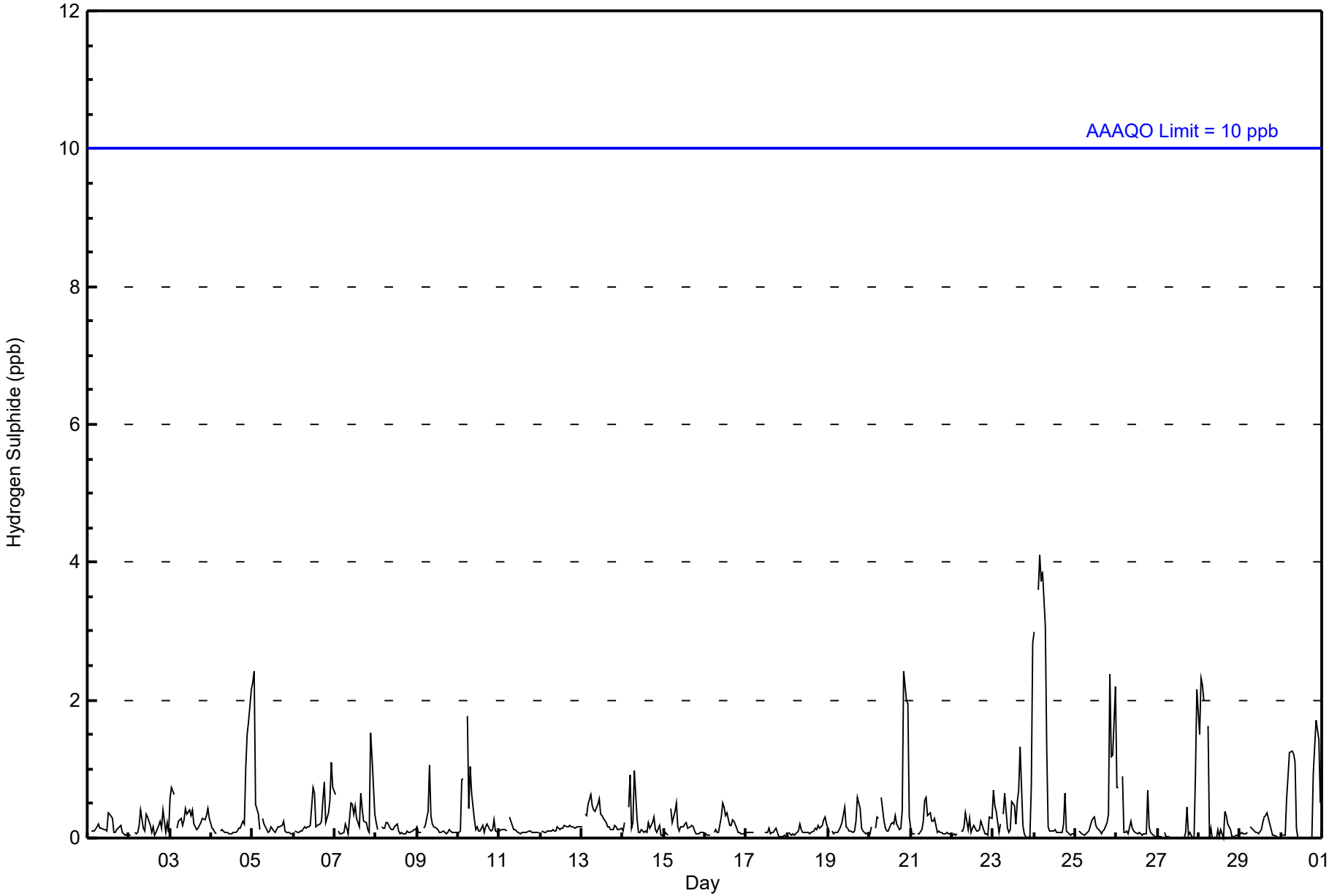
Z - zerospan C - Calibration M - Maintenance
Alberta Ambient Air Quality Objectives (AAAQO): 1-hr 10 ppb 24-hr 3 ppb

Wood Buffalo Environmental Association

Hourly Averages

Hydrogen Sulphide (H_2S) - ppb

Hangingstone Expansion - September 2024



Hydrogen Sulphide (H_2S) - ppb
Hangingstone Expansion - September 2024

Concentration Ranges (ppb)	Number of Hours	%	Cumulative %
0 - 2	677	98.98	98.98
3 - 4	7	1.02	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: 684

Total Number of Hours: 720

Wood Buffalo Environmental Association

Frequency Distribution

Hydrogen Sulphide (H_2S) - ppb

Hangingstone Expansion - September 2024

Concentration Ranges (ppb)	Wind Direction																
	N	NNE	NE	ENE	E	ESE	SE	SSE	S	SSW	SW	WSW	W	WNW	NW	NNW	**Totals**
0 - 2	18	30	11	4	1	16	14	42	112	95	73	95	71	48	25	22	677
3 - 4	0	0	0	0	0	0	0	0	0	0	1	6	0	0	0	0	7
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	18	30	11	4	1	16	14	42	112	95	74	101	71	48	25	22	684

Total Number of Valid Hours: 684

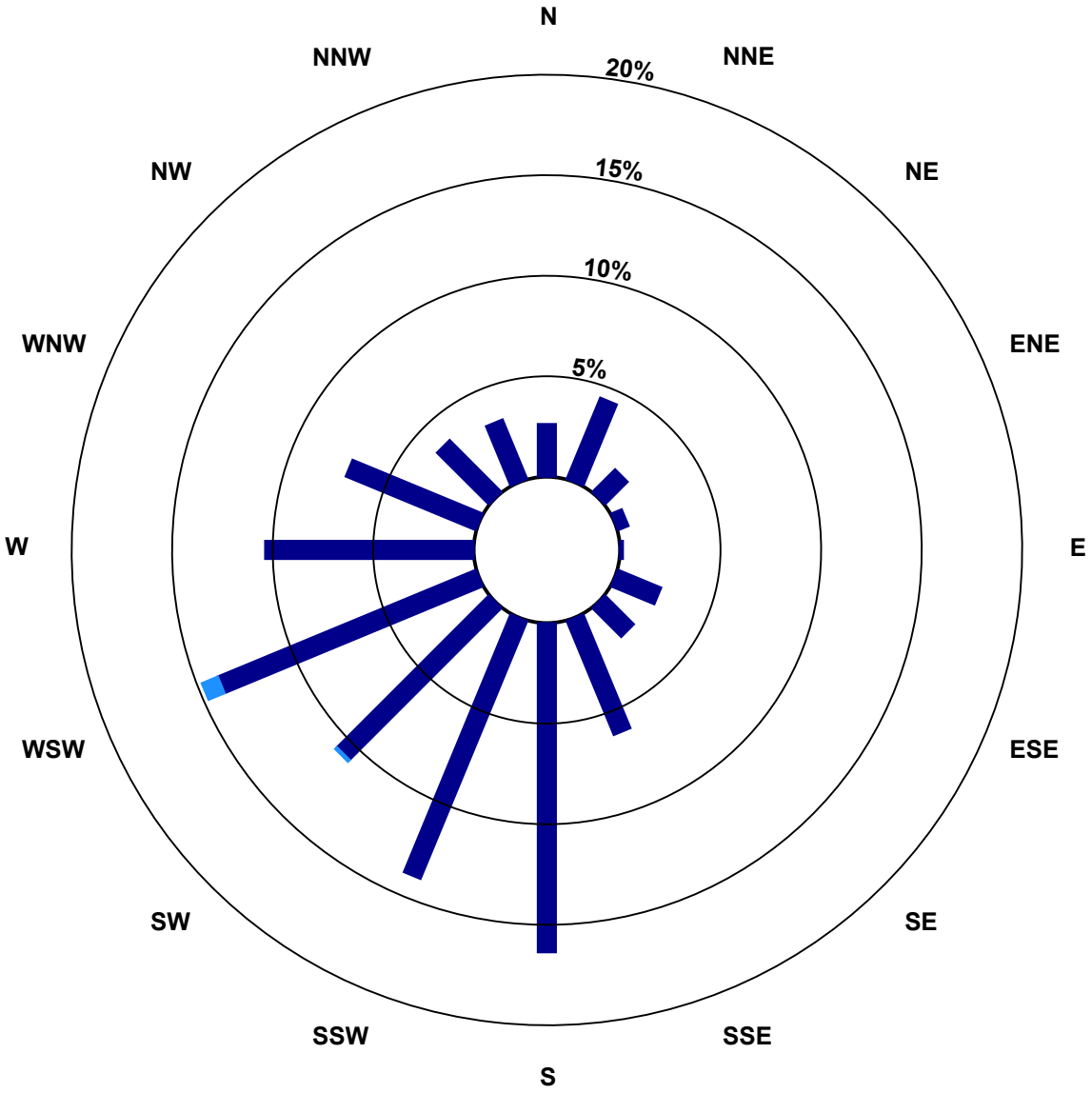
Total Number of Hours: 720

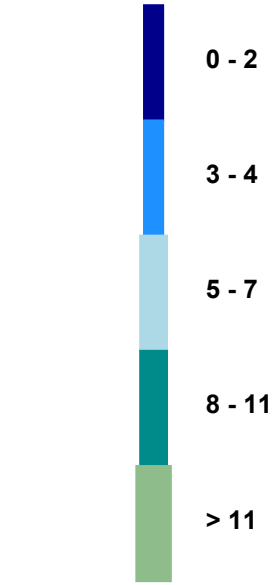
Wood Buffalo Environmental Association

Wind Rose Sep 2024

Hydrogen Sulphide (H_2S) - ppb

Hangingstone Expansion





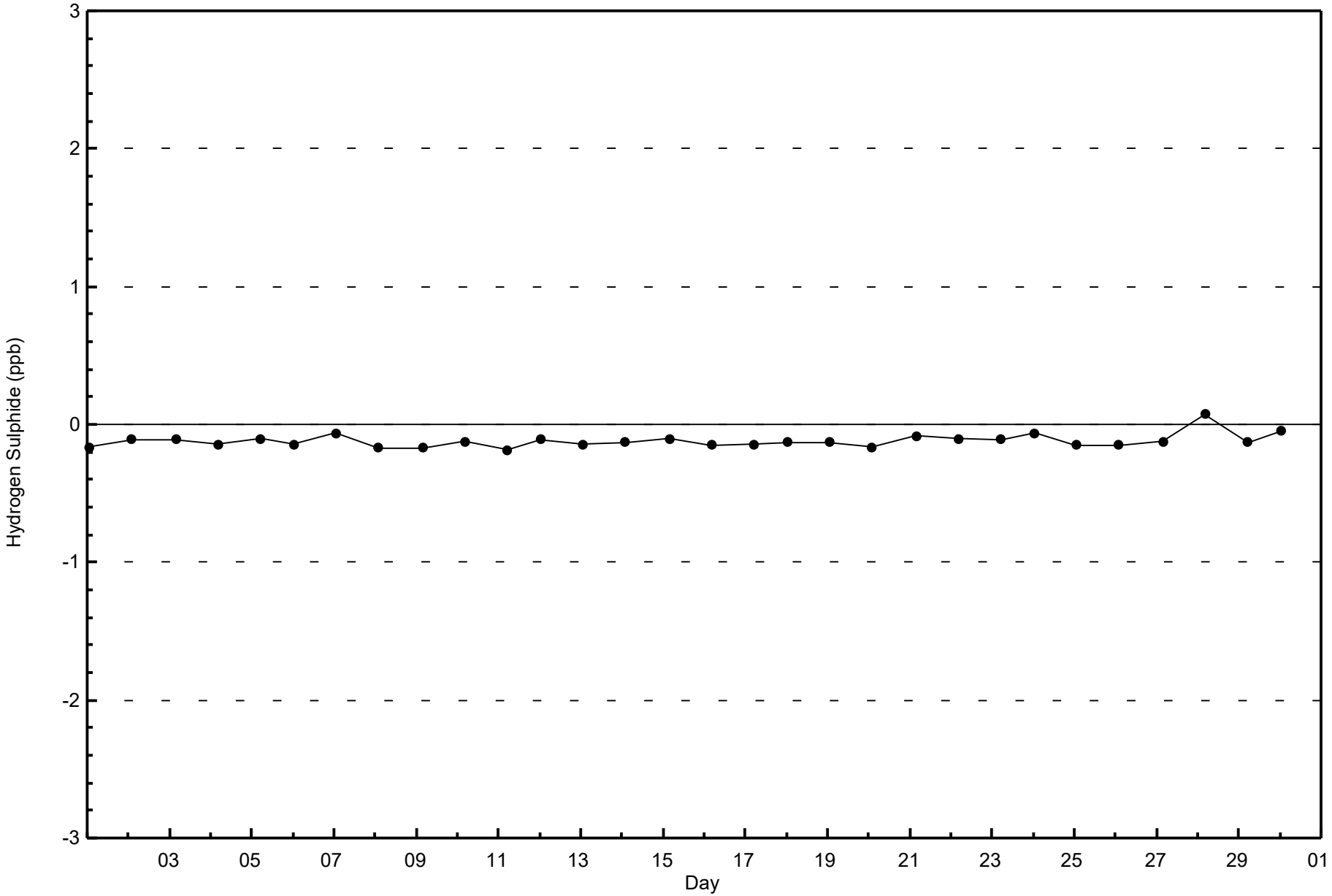
Total Number of Valid Hours: 684

Wood Buffalo Environmental Association

Zero Responses

Hydrogen Sulphide (H_2S) - ppb

Hangingstone Expansion - September 2024



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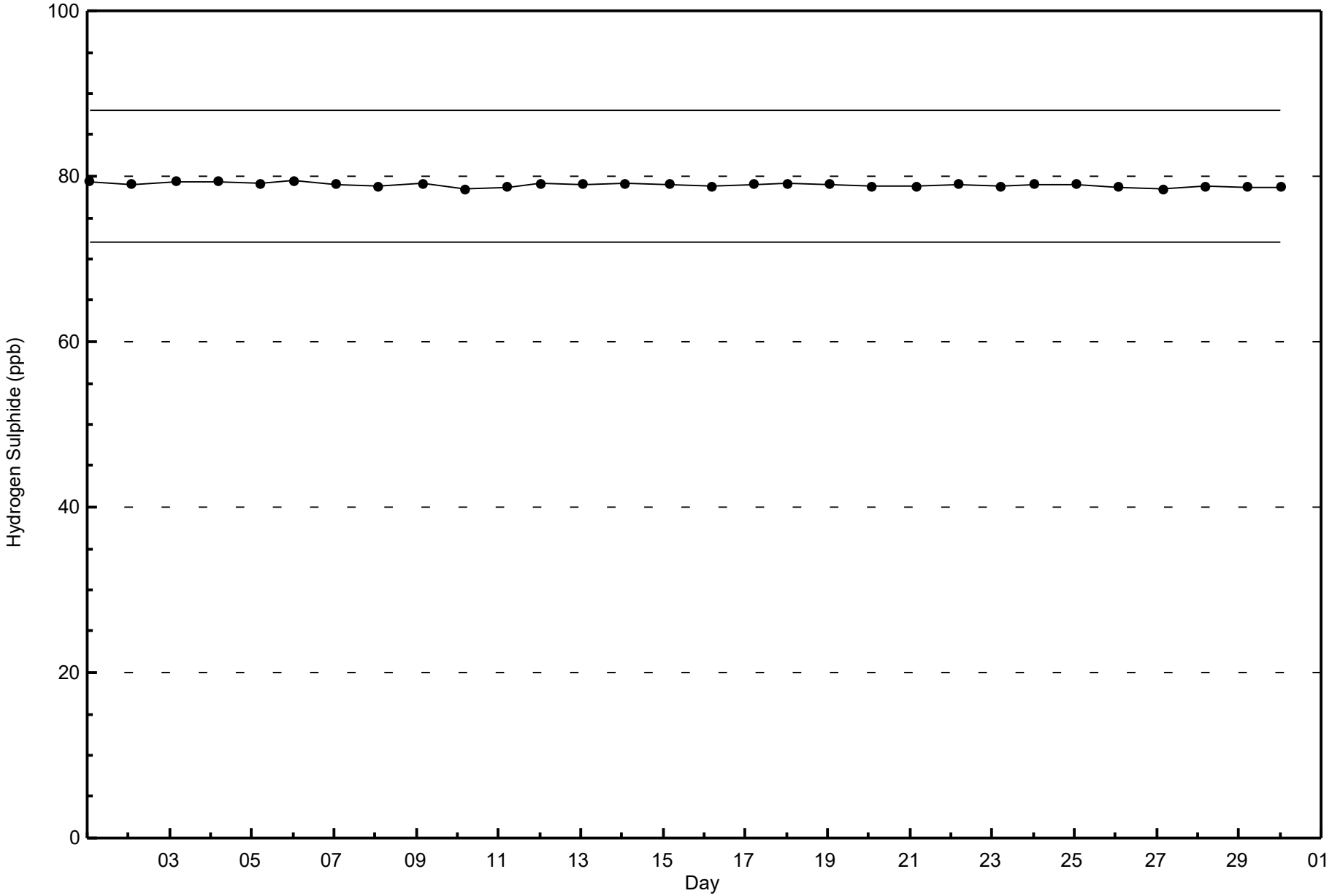
Span Responses

Hydrogen Sulphide (H_2S) - ppb

Hangingstone Expansion - September 2024



Wood Buffalo Environmental Association

Summary of Hour Averages

Nitric Oxide (NO) - ppb

Hangingstone Expansion - September 2024

Maximum Value: 5.9 ppb on Sep 13 14:00

Maximum Daily Average: 0.9 ppb on Sep 13

Minimum Value: 0.0 ppb on Sep 1 03:00

Minimum Daily Average: 0.0 ppb on Sep 26

Maximum Diurnal Average: 0.6 ppb at hour 8

Minimum Diurnal Average: 0.1 ppb at hour 21

Monthly Average: 0.27 ppb

Percentiles: P_1 = 0.0 P_{10} = 0.0 Q_1 = 0.0 Median = 0.1 Q_3 = 0.3 P_{90} = 0.7 P_{99} = 2.5

Hours in Service:	720
Hours of Data:	686
Hours of Missing Data:	34
Hours of Calibration:	34
Percent Operational Time:	100.0

Day	Hourly Period Ending At (MST)																								Daily	Daily
	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24	Average	Maximum
1-Sep	0.0	0.0	0.0	0.0	Z	0.1	0.2	0.4	0.3	0.2	0.1	0.0	0.6	0.6	0.5	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.1	0.6
2-Sep	0.0	0.0	0.0	0.0	0.0	Z	0.1	0.2	0.2	0.1	0.5	0.3	0.2	0.1	0.2	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.1	0.5
3-Sep	Z	0.1	0.0	0.0	0.0	0.0	0.1	0.2	0.4	0.8	0.9	0.6	0.4	0.8	0.4	0.3	0.3	0.2	0.2	0.7	0.0	0.1	0.1	0.1	0.3	0.9
4-Sep	0.1	Z	0.1	0.0	0.1	0.0	0.1	0.0	0.2	0.0	0.1	0.0	0.1	0.1	0.1	0.1	0.1	0.1	0.0	0.1	0.3	0.3	0.4	0.8	0.1	0.8
5-Sep	0.8	1.0	Z	0.2	0.1	0.2	0.6	0.5	0.3	0.1	0.2	0.2	0.1	0.1	0.1	0.2	0.2	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.2	1.0
6-Sep	0.0	0.0	0.0	Z	0.0	0.0	0.0	0.0	0.1	0.1	0.1	0.6	0.3	0.1	0.0	0.1	0.1	0.1	0.2	0.1	0.2	0.2	0.3	0.1	0.1	0.6
7-Sep	0.1	0.1	0.1	0.2	Z	0.2	0.3	0.3	0.2	0.4	0.2	0.4	0.3	0.2	0.1	0.2	0.1	0.0	0.1	0.0	0.0	0.4	0.1	0.1	0.2	0.4
8-Sep	0.0	0.0	0.0	0.0	0.0	Z	0.2	0.4	0.2	0.0	0.0	0.1	0.1	0.0	0.1	0.1	0.0	0.0	0.1	0.0	0.0	0.0	0.0	0.0	0.1	0.4
9-Sep	Z	0.1	0.0	0.0	0.0	0.0	0.2	0.2	0.2	0.4	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	0.1	0.4
10-Sep	0.0	Z	0.4	0.1	0.1	1.0	0.8	1.0	0.6	0.4	0.1	0.2	0.0	0.0	0.8	0.1	0.0	0.1	0.0	0.0	0.0	0.1	0.0	0.1	0.3	1.0
11-Sep	0.6	0.2	Z	0.1	0.6	2.9	1.9	1.2	0.5	0.2	0.1	0.0	0.1	0.1	0.1	0.1	0.2	0.2	0.4	0.1	0.0	0.1	0.0	0.1	0.4	2.9
12-Sep	0.1	0.2	0.1	Z	1.8	0.4	0.1	0.3	0.2	0.2	0.6	0.2	0.3	0.3	0.2	0.2	0.2	0.2	0.0	0.0	0.1	0.0	0.0	0.0	0.2	1.8
13-Sep	0.0	0.0	0.0	0.0	Z	0.2	1.4	1.5	1.6	2.8	3.5	1.7	0.8	5.9	1.2	0.3	0.1	0.1	0.1	0.1	0.1	0.0	0.1	0.1	0.9	5.9
14-Sep	0.2	0.1	0.1	0.2	0.2	Z	0.8	1.4	0.6	0.2	0.1	0.3	0.6	0.0	0.2	0.3	0.2	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.3	1.4
15-Sep	Z	0.1	0.1	0.1	0.5	0.6	1.2	3.3	0.2	0.2	0.8	1.1	1.4	1.1	0.5	0.5	0.2	0.2	0.2	0.1	0.0	0.1	0.0	0.0	0.5	3.3
16-Sep	0.0	Z	0.1	0.1	0.1	0.1	0.1	0.2	0.3	0.8	0.9	1.2	0.7	0.7	0.2	0.3	0.1	0.2	0.1	0.1	0.2	0.1	0.1	0.1	0.3	1.2
17-Sep	0.1	0.1	Z	0.2	0.2	0.2	0.2	0.7	0.4	0.4	0.2	0.0	0.2	0.4	0.2	0.3	0.2	0.2	0.1	0.0	0.0	0.1	0.7	0.1	0.2	0.7
18-Sep	0.0	0.0	0.0	Z	0.0	0.0	0.0	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	0.7	0.4	0.0	0.1	0.7
19-Sep	1.2	0.3	0.0	0.0	Z	0.0	0.1	0.3	0.6	0.2	0.2	0.1	0.0	0.0	0.0	0.0	0.0	0.1	4.0	0.3	0.4	0.1	0.0	0.6	0.4	4.0
20-Sep	0.0	0.0	0.0	0.0	0.0	Z	C	C	C	C	0.3	2.2	5.5	1.6	1.2	1.7	0.7	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.7	5.5
21-Sep	Z	0.1	0.5	0.1	0.1	0.1	0.7	2.2	1.4	1.0	0.7	0.2	0.2	0.4	0.3	0.1	0.0	0.0	0.0	0.0	0.1	0.0	0.1	0.0	0.4	2.2
22-Sep	0.1	Z	0.0	0.1	0.1	0.1	0.1	0.3	0.5	0.4	0.2	0.2	0.1	0.2	0.1	0.1	0.1	0.2	1.1	0.2	0.1	0.2	0.3	0.2	0.2	1.1
23-Sep	0.2	0.2	Z	0.3	0.2	0.3	0.5	0.4	0.2	0.3	0.4	0.9	0.7	0.3	0.5	0.4	0.4	0.1	0.1	0.1	0.1	0.1	0.9	1.2	0.4	1.2
24-Sep	0.3	1.4	2.5	1.5	Z	2.2	0.2	0.2	0.2	0.1	0.1	0.2	0.7	0.1	0.0	0.0	0.0	0.0	0.0	0.2	0.0	0.2	0.1	0.0	0.4	2.5
25-Sep	0.0	0.1	0.0	0.1	Z	0.1	0.0	0.1	0.2	0.2	0.3	0.4	0.2	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
26-Sep	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	0.0	0.0	0.1	0.0	0.0	0.1
27-Sep	Z	0.0	0.1	0.1	0.0	0.1	0.1	0.1	0.2	0.4	0.2	0.1	0.2	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.2	1.5	2.0	0.3	2.0
28-Sep	1.1	Z	2.4	0.2	0.9	0.1	0.1	0.1	0.0	0.1	0.1	0.1	0.1	0.2	0.1	0.2	0.1	0.0	0.0	0.3	0.0	0.0	0.0	0.0	0.3	2.4
29-Sep	0.0	0.1	Z	0.0	0.1	0.0	0.4	0.1	0.6	0.4	0.3	0.3	0.6	0.6	0.5	0.4	1.0	0.4	0.0	0.1	0.1	0.1	0.0	0.1	0.3	1.0
30-Sep	0.0	0.0	0.1	Z	0.3	0.3	0.4	0.7	0.1	0.0	0.1	0.1	0.1	0.1	0.0	0.1	0.1	0.1	0.0	0.2	0.2	0.2	0.8	0.9	0.2	0.9
	0.2	0.2	0.3	0.1	0.2	0.4	0.4	0.6	0.4	0.4	0.4	0.4	0.5	0.5	0.3	0.2	0.1	0.1	0.2	0.1	0.1	0.1	0.2	0.2	Diurnal Average	
	1.2	1.4	2.5	1.5	1.8	2.9	1.9	3.3	1.6	2.8	3.5	2.2	5.5	5.9	1.2	1.7	1.0	0.4	4.0	0.7	0.4	0.7	1.5	2.0	Diurnal Maximum	

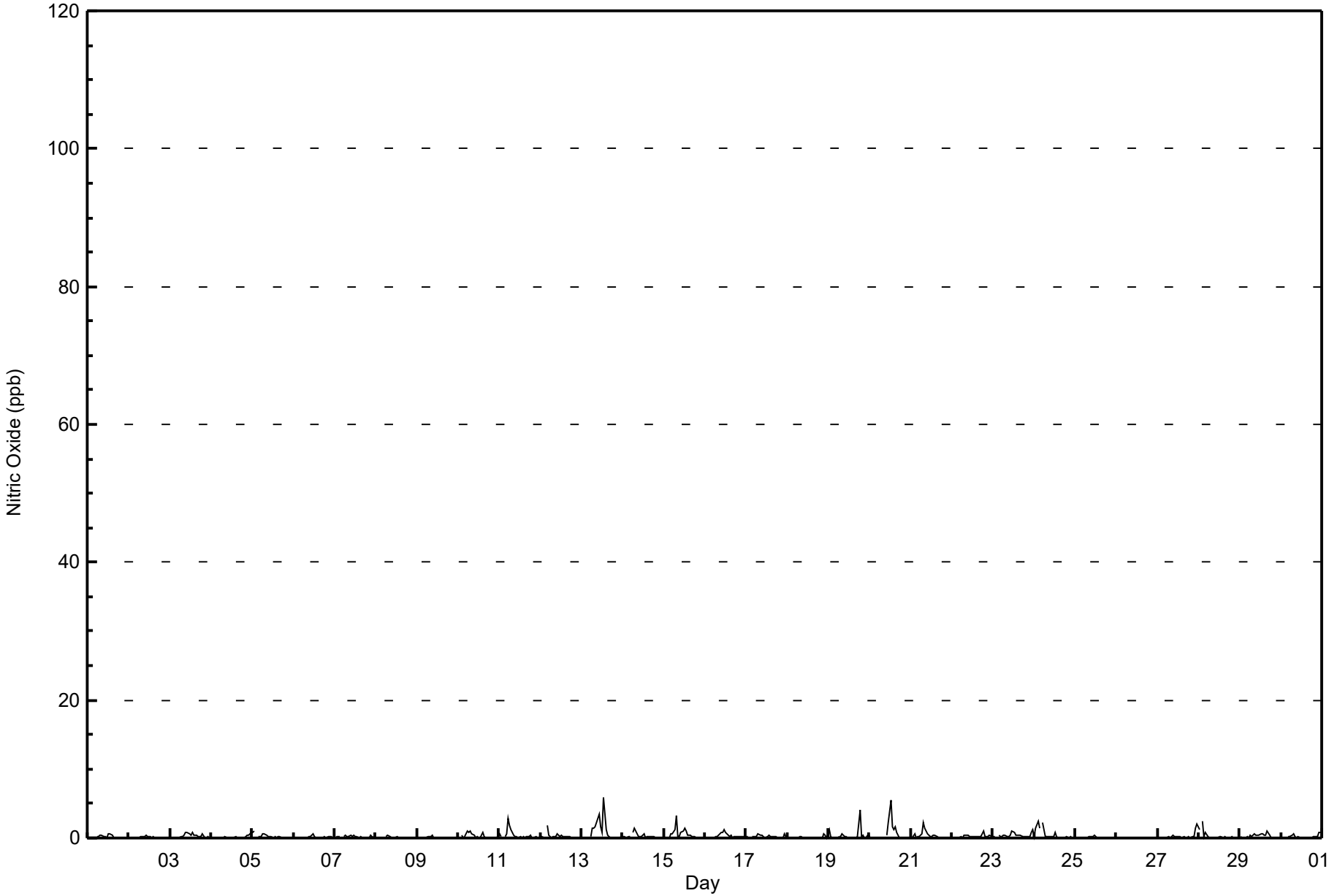
Z - zerospan C - Calibration

Wood Buffalo Environmental Association

Hourly Averages

Nitric Oxide (NO) - ppb

Hangingstone Expansion - September 2024



Concentration Ranges (ppb)	Number of Hours	%	Cumulative %
0 - 20	686	100.00	100.00
21 - 40	0	0.00	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: 686

Total Number of Hours: 720

Wood Buffalo Environmental Association

Frequency Distribution

Nitric Oxide (NO) - ppb

Hangingstone Expansion - September 2024

Concentration Ranges (ppb)	Wind Direction																
	N	NNE	NE	ENE	E	ESE	SE	SSE	S	SSW	SW	WSW	W	WNW	NW	NNW	**Totals**
0 - 20	16	30	11	4	1	15	16	40	115	98	74	99	72	48	25	22	686
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	30	11	4	1	15	16	40	115	98	74	99	72	48	25	22	686

Total Number of Valid Hours: 686

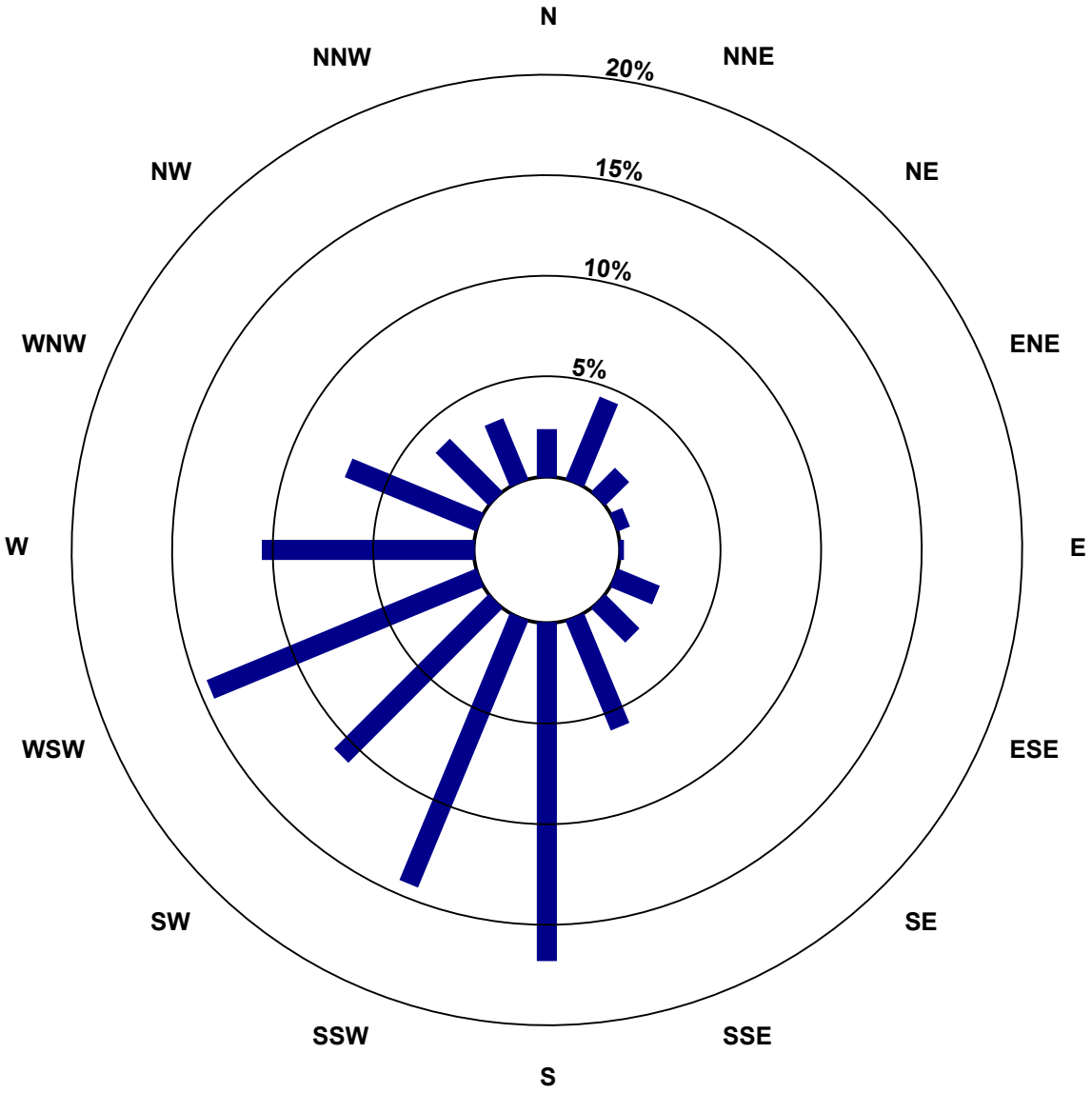
Total Number of Hours: 720

Wood Buffalo Environmental Association

Wind Rose Sep 2024

Nitric Oxide (NO) - ppb

Hangingstone Expansion



Classes (ppb)

0 - 20

21 - 40

11 - 80

81 - 159

> 159

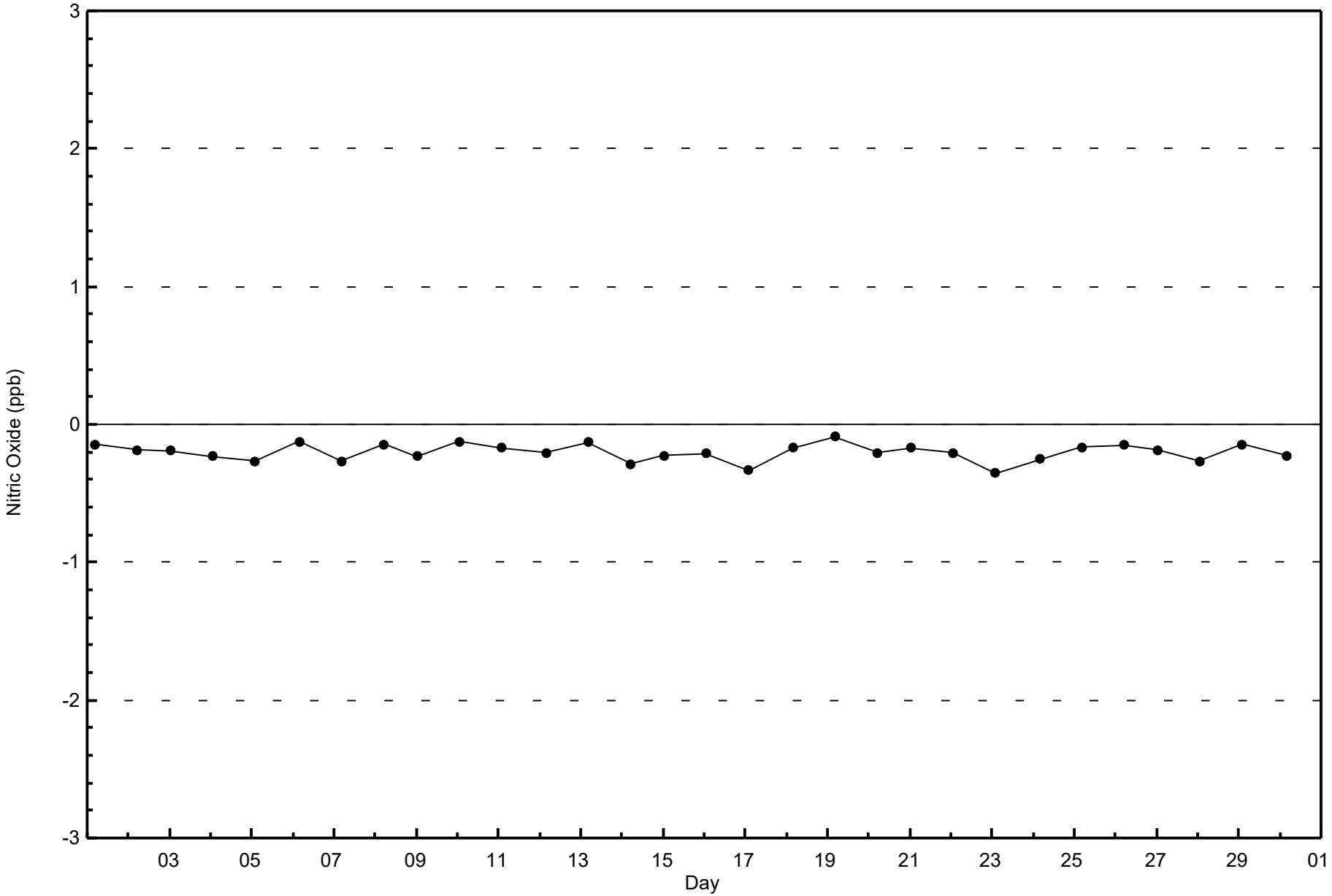
Total Number of Valid Hours: 686

Wood Buffalo Environmental Association

Zero Responses

Nitric Oxide (NO) - ppb

Hangingstone Expansion - September 2024

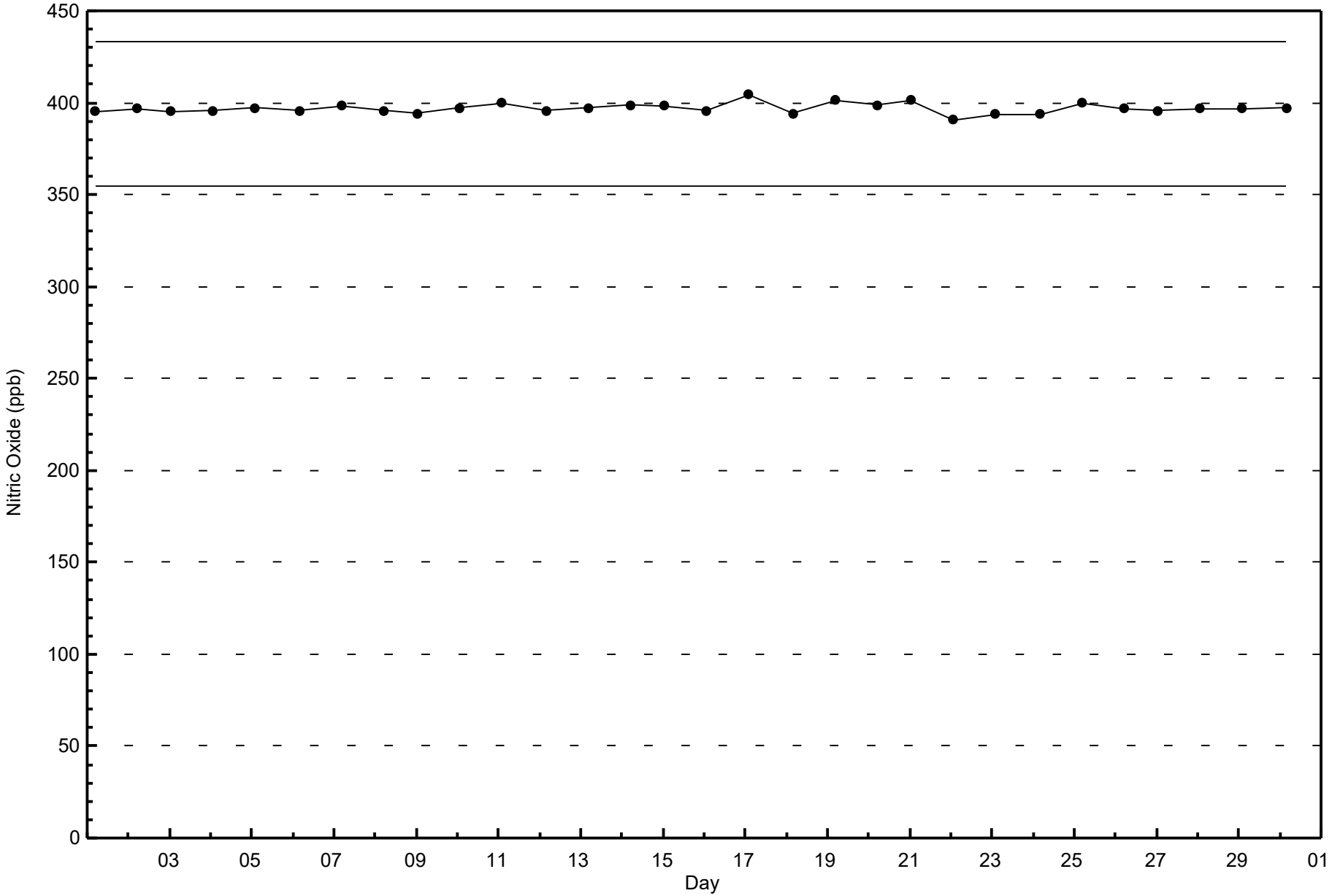


Wood Buffalo Environmental Association

Span Responses

Nitric Oxide (NO) - ppb

Hangingstone Expansion - September 2024



Wood Buffalo Environmental Association

Summary of Hour Averages

Nitrogen Dioxide (NO_2) - ppb

Hangingstone Expansion - September 2024

Number of Exceedences (AAAQO): 1-hr: 0 24-hr: 0

Maximum Value: 12.6 ppb on Sep 29 17:00

Maximum Daily Average: 4.2 ppb on Sep 13

Minimum Value: 0.0 ppb on Sep 4 05:00

Minimum Daily Average: 0.4 ppb on Sep 26

Maximum Diurnal Average: 2.5 ppb at hour 7

Minimum Diurnal Average: 0.9 ppb at hour 16

Monthly Average: 1.41 ppb

Percentiles: P_1 = 0.0 P_{10} = 0.2 Q_1 = 0.5 Median = 1.0 Q_3 = 1.8 P_{90} = 3.2 P_{99} = 7.7

Hours in Service:	720
Hours of Data:	686
Hours of Missing Data:	34
Hours of Calibration:	34
Percent Operational Time:	100.0

Day	Hourly Period Ending At (MST)																								Daily	Daily
	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24	Average	Maximum
1-Sep	1.5	1.2	0.2	0.3	Z	1.2	1.9	1.5	1.2	0.9	0.7	0.4	1.5	1.7	1.5	0.4	0.2	0.2	0.1	1.0	1.3	0.7	0.7	0.5	0.9	1.9
2-Sep	0.6	0.8	0.8	0.6	0.8	Z	1.6	1.6	0.9	0.6	1.4	1.1	0.9	0.4	0.7	0.1	0.1	0.1	0.1	1.3	0.8	2.5	2.2	0.2	0.9	2.5
3-Sep	Z	1.4	1.2	1.2	1.6	2.4	2.3	2.6	3.8	4.4	4.0	3.8	3.4	2.7	1.7	1.3	1.2	1.3	2.6	5.0	3.7	2.9	4.2	1.8	2.6	5.0
4-Sep	1.3	Z	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	0.1	0.8	2.5	2.8	2.1	3.7	0.6	3.7
5-Sep	3.6	4.0	Z	1.8	2.4	3.7	2.7	1.4	0.8	0.4	0.5	0.6	0.2	0.3	0.3	0.6	0.7	0.6	2.7	0.8	0.5	0.2	0.3	0.2	1.3	4.0
6-Sep	0.6	0.7	0.8	Z	1.1	1.2	1.9	1.9	2.1	2.0	2.0	3.5	1.7	0.7	0.7	0.8	2.1	1.0	2.3	1.4	2.0	3.0	3.5	1.9	1.7	3.5
7-Sep	1.9	1.8	1.8	1.7	Z	2.9	3.4	1.5	1.1	1.8	1.8	1.8	1.5	0.7	0.3	1.5	0.5	0.5	1.3	1.1	0.8	3.5	2.0	1.1	1.6	3.5
8-Sep	1.4	1.3	1.3	1.5	1.4	Z	3.2	3.0	0.9	0.4	0.5	0.5	0.5	0.2	0.0	0.0	0.0	0.1	1.3	0.4	0.1	0.6	0.5	0.6	0.9	3.2
9-Sep	Z	1.1	1.4	0.4	0.9	1.0	1.6	1.8	1.4	2.0	0.3	0.3	0.2	0.0	0.0	0.0	0.1	0.3	0.1	0.4	0.4	0.3	0.2	0.2	0.6	2.0
10-Sep	0.2	Z	1.7	0.8	0.8	3.5	2.0	1.9	1.1	0.7	0.3	0.6	0.4	0.2	0.7	0.3	0.4	0.7	1.5	3.4	2.1	3.0	4.2	2.0	1.4	4.2
11-Sep	2.1	1.4	Z	1.7	4.0	7.9	6.1	3.1	1.3	0.6	0.6	0.4	0.4	0.7	0.7	0.7	1.1	1.3	2.6	2.6	1.6	1.6	1.3	0.6	1.9	7.9
12-Sep	0.7	0.7	0.7	Z	4.1	4.0	2.0	2.0	1.8	2.2	3.1	1.6	1.7	1.8	1.6	1.6	1.7	1.8	1.5	1.1	1.1	1.4	1.1	1.1	1.8	4.1
13-Sep	1.1	2.6	1.9	2.1	Z	9.9	12.2	10.3	7.2	7.2	7.7	5.3	5.3	5.6	4.1	2.7	1.7	1.3	1.4	1.3	1.2	1.5	1.9	1.6	4.2	12.2
14-Sep	1.6	1.3	0.8	1.3	1.4	Z	3.5	3.4	1.2	0.5	0.6	1.1	1.0	0.6	0.5	1.1	0.6	0.8	1.5	1.0	1.6	1.3	0.9	0.7	1.2	3.5
15-Sep	Z	1.2	0.8	0.7	1.2	1.7	3.4	4.9	0.8	0.3	1.4	1.9	2.5	2.5	1.8	2.0	1.6	1.2	1.7	1.9	0.7	0.8	0.5	0.5	1.6	4.9
16-Sep	0.7	Z	0.5	0.4	0.7	1.1	1.1	1.0	0.9	1.8	1.5	1.7	1.2	1.2	0.2	0.5	0.2	0.5	1.2	1.2	1.5	1.5	0.7	0.9	1.0	1.8
17-Sep	1.0	0.9	Z	1.0	0.9	1.0	1.4	2.0	1.0	0.6	0.2	0.2	0.6	1.6	1.2	1.2	1.3	2.1	2.4	3.2	2.8	2.2	3.7	0.9	1.5	3.7
18-Sep	0.6	0.6	0.6	Z	3.4	2.1	1.6	2.2	0.9	0.6	0.4	0.5	0.3	0.2	0.1	0.1	0.1	0.0	0.1	0.5	4.9	5.1	3.3	1.7	1.3	5.1
19-Sep	2.5	2.2	0.7	0.5	Z	1.9	3.0	1.7	1.7	0.8	0.7	0.6	0.3	0.3	0.2	0.2	0.1	1.7	10.2	5.5	5.8	2.1	1.4	2.7	2.0	10.2
20-Sep	0.9	0.7	0.5	1.1	1.2	Z	C	C	C	C	1.4	1.6	4.6	4.3	3.1	3.5	3.4	0.5	0.3	0.3	0.3	0.4	0.8	1.0	1.6	4.6
21-Sep	Z	1.3	1.7	1.2	1.0	2.3	4.5	5.1	2.8	1.2	0.9	0.6	0.5	0.8	0.8	0.2	0.3	0.4	0.4	0.4	0.7	0.6	0.5	0.5	1.2	5.1
22-Sep	0.6	Z	0.9	0.8	1.1	1.4	1.4	1.8	1.4	0.6	0.5	0.2	0.2	0.2	0.2	0.2	0.5	0.8	4.3	1.9	0.5	0.5	1.1	0.9	1.0	4.3
23-Sep	0.7	0.3	Z	0.4	0.2	0.5	1.3	0.4	0.1	0.2	0.7	1.0	0.8	0.3	0.7	0.6	1.2	0.8	1.1	1.0	0.5	1.1	2.0	2.5	0.8	2.5
24-Sep	0.5	2.7	5.0	2.8	Z	3.7	0.5	0.4	0.1	0.2	0.2	0.1	0.5	0.1	0.1	0.1	0.2	0.2	0.5	3.9	1.9	1.7	0.6	0.9	1.2	5.0
25-Sep	1.0	0.6	0.7	1.0	Z	1.1	0.8	0.9	1.0	1.5	1.6	1.5	0.8	0.7	0.7	0.7	0.6	0.6	3.4	1.5	0.6	0.4	0.2	0.2	1.0	3.4
26-Sep	0.9	0.2	0.1	0.1	0.1	Z	0.3	0.1	0.3	0.1	0.1	0.1	0.1	0.2	0.2	0.1	0.1	0.1	0.6	1.1	1.3	1.0	0.7	0.9	0.4	1.3
27-Sep	Z	1.0	0.7	1.1	1.2	2.5	2.1	1.8	1.7	1.5	0.6	0.5	0.7	0.4	0.3	0.2	0.4	0.6	1.7	0.6	1.0	0.5	4.7	5.3	1.4	5.3
28-Sep	3.1	Z	6.8	0.9	3.2	0.8	0.2	0.2	0.3	0.2	0.1	0.2	0.4	0.2	0.2	0.7	0.2	1.3	2.4	2.4	1.1	1.5	1.4	1.4	1.3	6.8
29-Sep	2.3	1.2	Z	3.3	3.4	2.8	4.7	1.4	1.6	0.8	0.6	0.8	1.6	2.9	5.2	6.1	12.6	8.6	2.0	1.9	0.7	0.9	0.3	0.1	2.9	12.6
30-Sep	0.2	0.1	0.1	Z	1.4	0.9	1.2	1.5	0.3	0.2	0.2	0.0	0.0	0.1	0.2	0.1	0.0	0.1	0.2	1.2	1.4	0.7	3.3	3.0	0.7	3.3
	1.3	1.3	1.3	1.1	1.6	2.5	2.5	2.1	1.4	1.2	1.2	1.1	1.1	1.1	0.9	0.9	1.1	1.0	1.7	1.7	1.5	1.5	1.7	1.3	Diurnal Average	
	3.6	4.0	6.8	3.3	4.1	9.9	12.2	10.3	7.2	7.2	7.7	5.3	5.3	5.6	5.2	6.1	12.6	8.6	10.2	5.5	5.8	5.1	4.7	5.3	Diurnal Maximum	

Z - zerospan C - Calibration

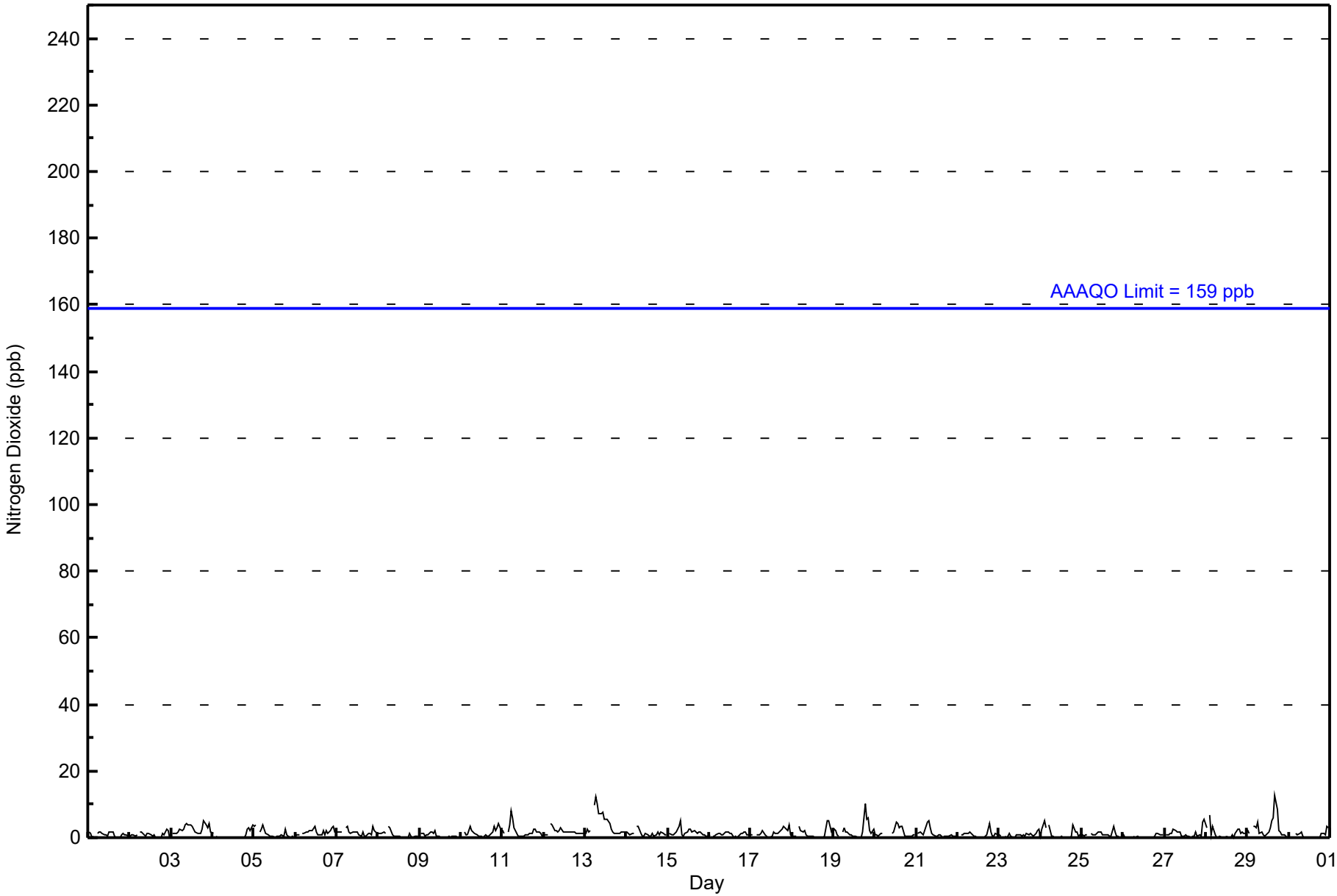
Alberta Ambient Air Quality Objectives (AAAQO): 1-hr 159 ppb

Wood Buffalo Environmental Association

Hourly Averages

Nitrogen Dioxide (NO_2) - ppb

Hangingstone Expansion - September 2024



Nitrogen Dioxide (NO_2) - ppb
Hangingstone Expansion - September 2024

Concentration Ranges (ppb)	Number of Hours	%	Cumulative %
0 - 20	686	100.00	100.00
21 - 40	0	0.00	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: 686

Total Number of Hours: 720

Wood Buffalo Environmental Association

Frequency Distribution

Nitrogen Dioxide (NO_2) - ppb

Hangingstone Expansion - September 2024

Concentration Ranges (ppb)	Wind Direction																
	N	NNE	NE	ENE	E	ESE	SE	SSE	S	SSW	SW	WSW	W	WNW	NW	NNW	**Totals**
0 - 20	16	30	11	4	1	15	16	40	115	98	74	99	72	48	25	22	686
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	30	11	4	1	15	16	40	115	98	74	99	72	48	25	22	686

Total Number of Valid Hours: 686

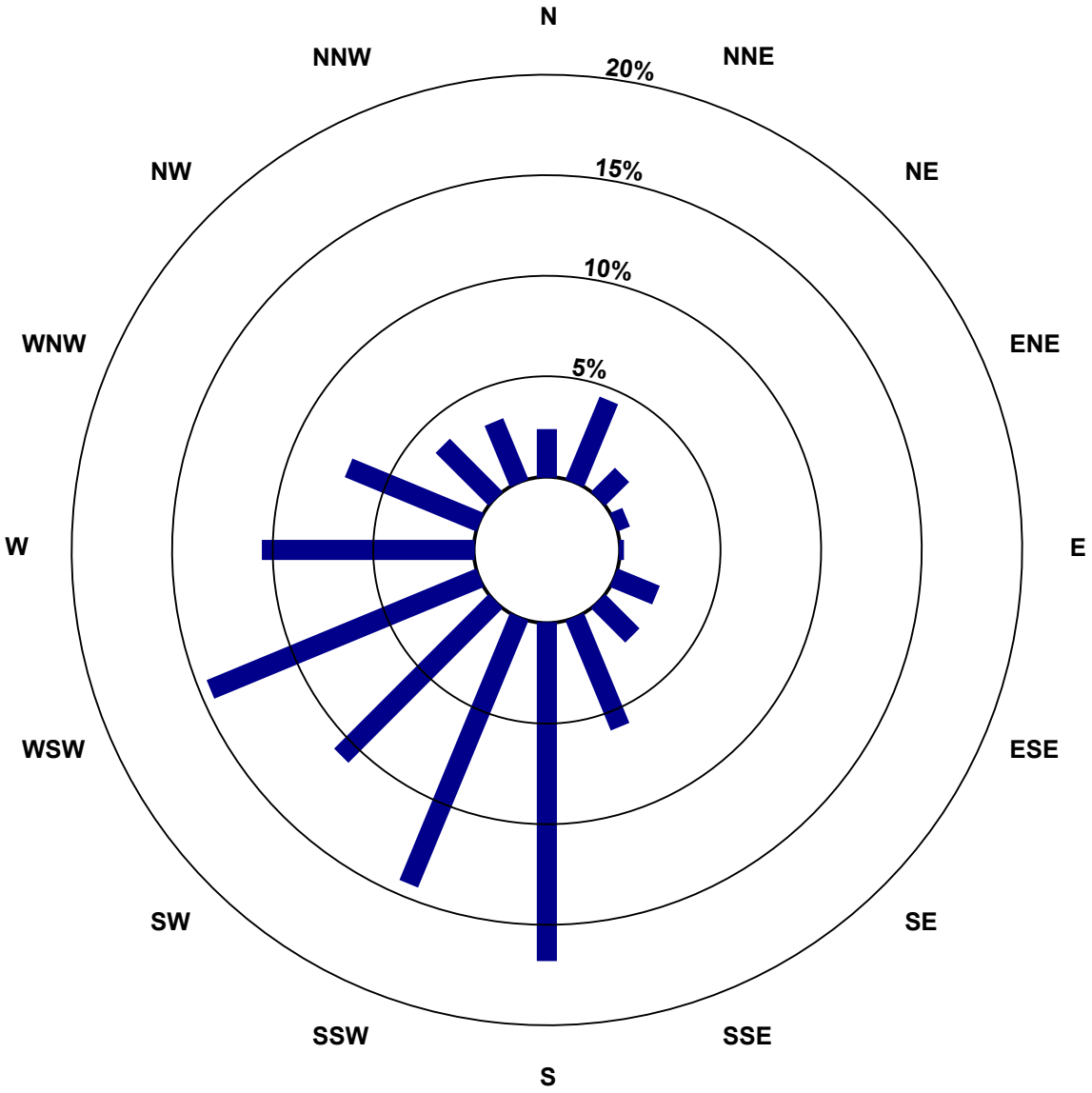
Total Number of Hours: 720

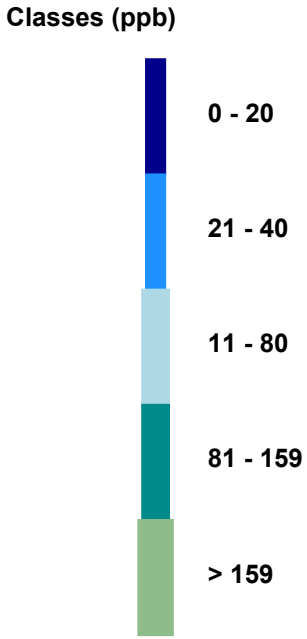
Wood Buffalo Environmental Association

Wind Rose Sep 2024

Nitrogen Dioxide (NO_2) - ppb

Hangingstone Expansion





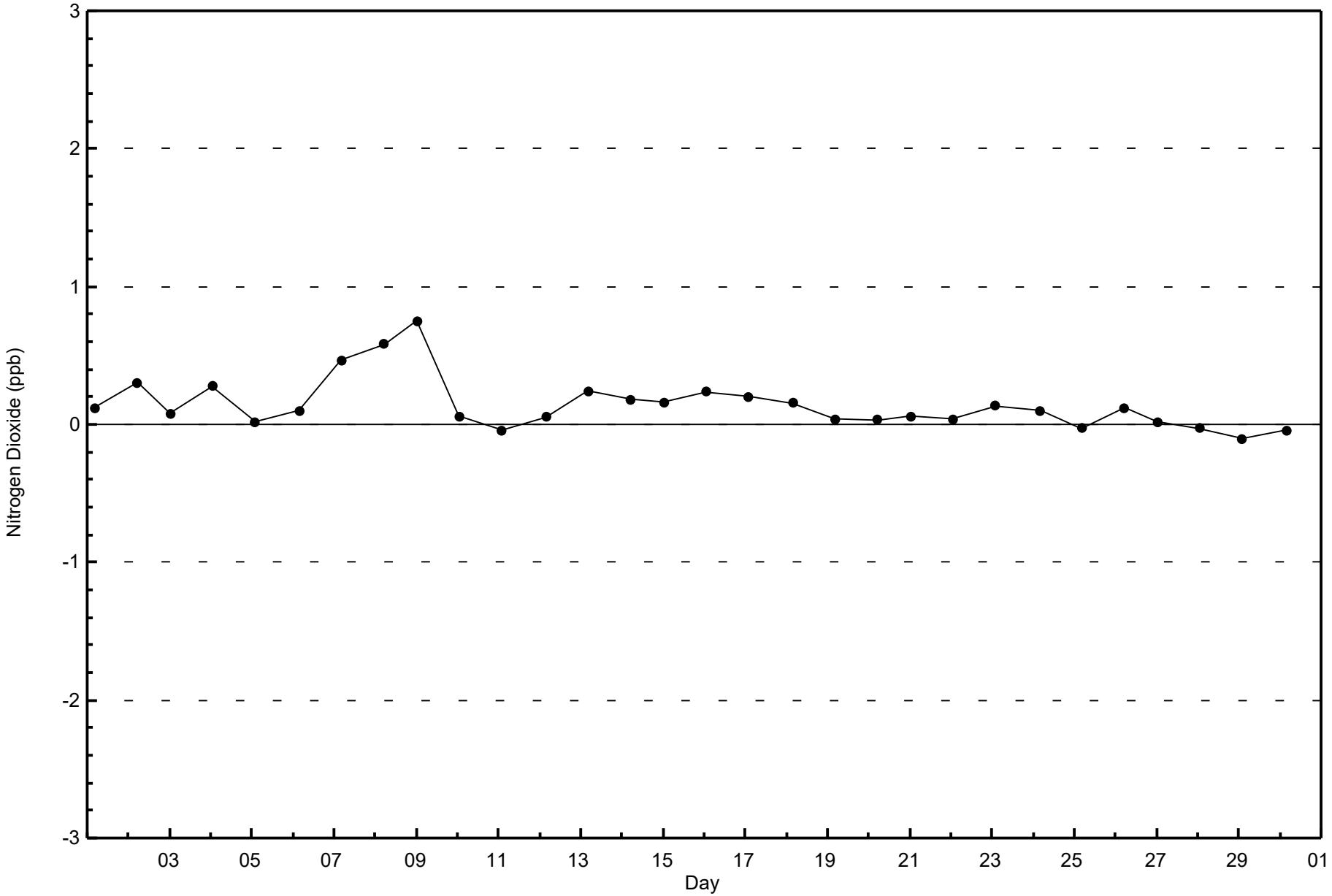
Total Number of Valid Hours: 686

Wood Buffalo Environmental Association

Zero Responses

Nitrogen Dioxide (NO_2) - ppb

Hangingstone Expansion - September 2024

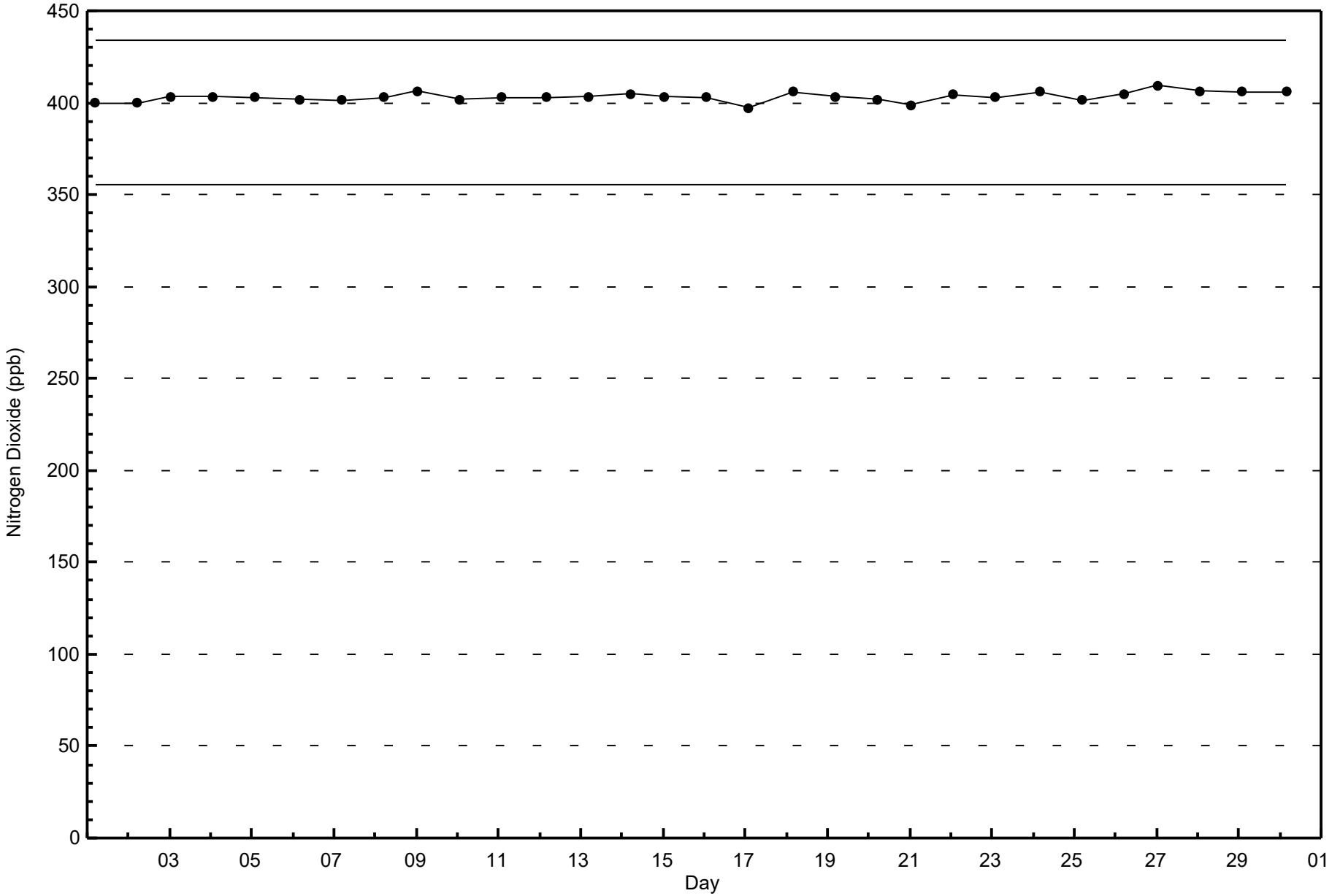


Wood Buffalo Environmental Association

Span Responses

Nitrogen Dioxide (NO_2) - ppb

Hangingstone Expansion - September 2024



Wood Buffalo Environmental Association

Summary of Hour Averages

Nitrogen Oxides (NO_X) - ppb

Hangingstone Expansion - September 2024

Maximum Value: 14.2 ppb on Sep 19 19:00

Maximum Daily Average: 5.2 ppb on Sep 13

Minimum Value: 0.0 ppb on Sep 8 17:00

Minimum Daily Average: 0.4 ppb on Sep 26

Maximum Diurnal Average: 2.9 ppb at hour 7

Minimum Diurnal Average: 1.1 ppb at hour 18

Monthly Average: 1.67 ppb

Percentiles: P_1 = 0.0 P_{10} = 0.2 Q_1 = 0.5 Median = 1.1 Q_3 = 2.0 P_{90} = 3.8 P_{99} = 10.2

Hours in Service:	720
Hours of Data:	686
Hours of Missing Data:	34
Hours of Calibration:	34
Percent Operational Time:	100.0

Day	Hourly Period Ending At (MST)																								Daily	Daily
	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24	Average	Maximum
1-Sep	1.5	1.2	0.2	0.3	Z	1.3	2.1	1.9	1.5	1.1	0.8	0.4	2.1	2.3	2.0	0.4	0.2	0.2	0.1	1.0	1.3	0.7	0.7	0.5	1.0	2.3
2-Sep	0.6	0.8	0.8	0.6	0.8	Z	1.7	1.8	1.1	0.7	1.9	1.4	1.1	0.5	0.9	0.1	0.1	0.1	0.1	1.3	0.8	2.5	2.2	0.2	1.0	2.5
3-Sep	Z	1.5	1.2	1.2	1.6	2.4	2.4	2.8	4.2	5.2	4.9	4.4	3.8	3.5	2.1	1.6	1.5	1.5	2.8	5.7	3.7	3.0	4.3	1.9	2.9	5.7
4-Sep	1.4	Z	0.5	0.1	0.1	0.0	0.1	0.0	0.2	0.0	0.1	0.0	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.9	2.8	3.1	2.5	4.5	0.7	4.5
5-Sep	4.4	5.0	Z	2.0	2.5	3.9	3.3	1.9	1.1	0.5	0.7	0.8	0.3	0.4	0.4	0.8	0.9	0.6	2.7	0.8	0.5	0.2	0.3	0.2	1.5	5.0
6-Sep	0.6	0.7	0.8	Z	1.1	1.2	1.9	1.9	2.2	2.1	2.1	4.1	2.0	0.8	0.7	0.9	2.2	1.1	2.5	1.5	2.2	3.2	3.8	2.0	1.8	4.1
7-Sep	2.0	1.9	1.9	1.9	Z	3.1	3.7	1.8	1.3	2.2	2.0	2.2	1.8	0.9	0.4	1.7	0.6	0.5	1.4	1.1	0.8	3.9	2.1	1.2	1.8	3.9
8-Sep	1.4	1.3	1.3	1.5	1.4	Z	3.4	3.4	1.1	0.4	0.5	0.6	0.6	0.2	0.1	0.1	0.0	0.1	1.4	0.4	0.1	0.6	0.5	0.6	0.9	3.4
9-Sep	Z	1.2	1.4	0.4	0.9	1.0	1.8	2.0	1.6	2.4	0.4	0.3	0.2	0.1	0.0	0.0	0.1	0.3	0.1	0.4	0.4	0.3	0.2	0.2	0.7	2.4
10-Sep	0.2	Z	2.1	0.9	0.9	4.5	2.8	2.9	1.7	1.1	0.4	0.8	0.4	0.2	1.5	0.4	0.4	0.8	1.5	3.4	2.1	3.1	4.2	2.1	1.7	4.5
11-Sep	2.7	1.6	Z	1.8	4.6	10.8	8.0	4.3	1.8	0.8	0.7	0.4	0.5	0.8	0.8	0.8	1.3	1.5	3.0	2.7	1.6	1.7	1.3	0.7	2.4	10.8
12-Sep	0.8	0.9	0.8	Z	5.9	4.4	2.1	2.3	2.0	2.4	3.7	1.8	2.0	2.1	1.8	1.8	1.9	2.0	1.5	1.1	1.2	1.4	1.1	1.1	2.0	5.9
13-Sep	1.1	2.6	1.9	2.1	Z	10.1	13.6	11.8	8.8	10.0	11.2	7.0	6.1	11.5	5.3	3.0	1.8	1.4	1.5	1.4	1.3	1.5	2.0	1.7	5.2	13.6
14-Sep	1.8	1.4	0.9	1.5	1.6	Z	4.3	4.8	1.8	0.7	0.7	1.4	1.6	0.6	0.7	1.4	0.8	0.9	1.6	1.1	1.7	1.4	1.0	0.8	1.5	4.8
15-Sep	Z	1.3	0.9	0.8	1.7	2.3	4.6	8.2	1.0	0.5	2.2	3.0	3.9	3.6	2.3	2.5	1.8	1.4	1.9	2.0	0.7	0.9	0.5	0.5	2.1	8.2
16-Sep	0.7	Z	0.6	0.5	0.8	1.2	1.2	1.2	1.2	2.6	2.4	2.9	1.9	1.9	0.4	0.8	0.3	0.7	1.3	1.3	1.7	1.6	0.8	1.0	1.3	2.9
17-Sep	1.1	1.0	Z	1.2	1.1	1.2	1.6	2.7	1.4	1.0	0.4	0.2	0.8	2.0	1.4	1.5	1.5	2.3	2.5	3.2	2.8	2.3	4.4	1.0	1.7	4.4
18-Sep	0.6	0.6	0.6	Z	3.4	2.1	1.6	2.5	1.0	0.7	0.4	0.5	0.3	0.2	0.1	0.1	0.1	0.0	0.1	0.5	5.0	5.8	3.7	1.7	1.4	5.8
19-Sep	3.7	2.5	0.7	0.5	Z	1.9	3.1	2.0	2.3	1.0	0.9	0.7	0.3	0.3	0.2	0.2	0.1	1.8	14.2	5.8	6.2	2.2	1.4	3.3	2.4	14.2
20-Sep	0.9	0.7	0.5	1.1	1.2	Z	C	C	C	C	1.7	3.8	10.1	5.9	4.3	5.2	4.1	0.5	0.3	0.3	0.3	0.4	0.8	1.0	2.3	10.1
21-Sep	Z	1.4	2.2	1.3	1.1	2.4	5.2	7.3	4.2	2.2	1.6	0.8	0.7	1.2	1.1	0.3	0.3	0.4	0.4	0.4	0.8	0.6	0.6	0.5	1.6	7.3
22-Sep	0.7	Z	0.9	0.9	1.2	1.5	1.5	2.1	1.9	1.0	0.7	0.4	0.3	0.4	0.3	0.3	0.6	1.0	5.4	2.1	0.6	0.7	1.4	1.1	1.2	5.4
23-Sep	0.9	0.5	Z	0.7	0.4	0.8	1.8	0.8	0.3	0.5	1.1	1.9	1.5	0.6	1.2	1.0	1.6	0.9	1.2	1.1	0.6	1.2	2.9	3.7	1.2	3.7
24-Sep	0.8	4.1	7.5	4.3	Z	5.9	0.7	0.6	0.3	0.3	0.3	0.3	1.2	0.2	0.1	0.1	0.2	0.2	0.5	4.1	1.9	1.9	0.7	0.9	1.6	7.5
25-Sep	1.0	0.7	0.7	1.1	Z	1.2	0.8	1.0	1.2	1.7	1.9	1.9	1.0	0.8	0.8	0.7	0.7	0.6	3.4	1.5	0.6	0.4	0.2	0.2	1.0	3.4
26-Sep	0.9	0.2	0.1	0.1	0.1	Z	0.3	0.1	0.4	0.1	0.1	0.1	0.1	0.2	0.2	0.1	0.1	0.1	0.6	1.1	1.3	1.0	0.8	0.9	0.4	1.3
27-Sep	Z	1.0	0.8	1.2	1.2	2.6	2.2	1.9	1.9	1.9	0.8	0.6	0.9	0.5	0.4	0.3	0.5	0.7	1.8	0.7	1.1	0.7	6.2	7.3	1.6	7.3
28-Sep	4.2	Z	9.2	1.1	4.1	0.9	0.3	0.3	0.3	0.3	0.2	0.3	0.5	0.4	0.3	0.9	0.3	1.3	2.4	2.7	1.1	1.5	1.4	1.4	1.5	9.2
29-Sep	2.3	1.3	Z	3.3	3.5	2.8	5.1	1.5	2.2	1.2	0.9	1.1	2.2	3.5	5.7	6.5	13.6	9.0	2.0	2.0	0.8	1.0	0.3	0.2	3.1	13.6
30-Sep	0.2	0.1	0.2	Z	1.7	1.2	1.6	2.2	0.4	0.2	0.3	0.1	0.1	0.2	0.2	0.2	0.1	0.2	0.2	1.4	1.6	0.9	4.1	3.9	0.9	4.1
	1.5	1.4	1.5	1.3	1.8	2.8	2.9	2.7	1.7	1.5	1.5	1.5	1.6	1.5	1.2	1.1	1.3	1.1	1.9	1.8	1.6	1.7	1.9	1.6	Diurnal Average	
	4.4	5.0	9.2	4.3	5.9	10.8	13.6	11.8	8.8	10.0	11.2	7.0	10.1	11.5	5.7	6.5	13.6	9.0	14.2	5.8	6.2	5.8	6.2	7.3	Diurnal Maximum	

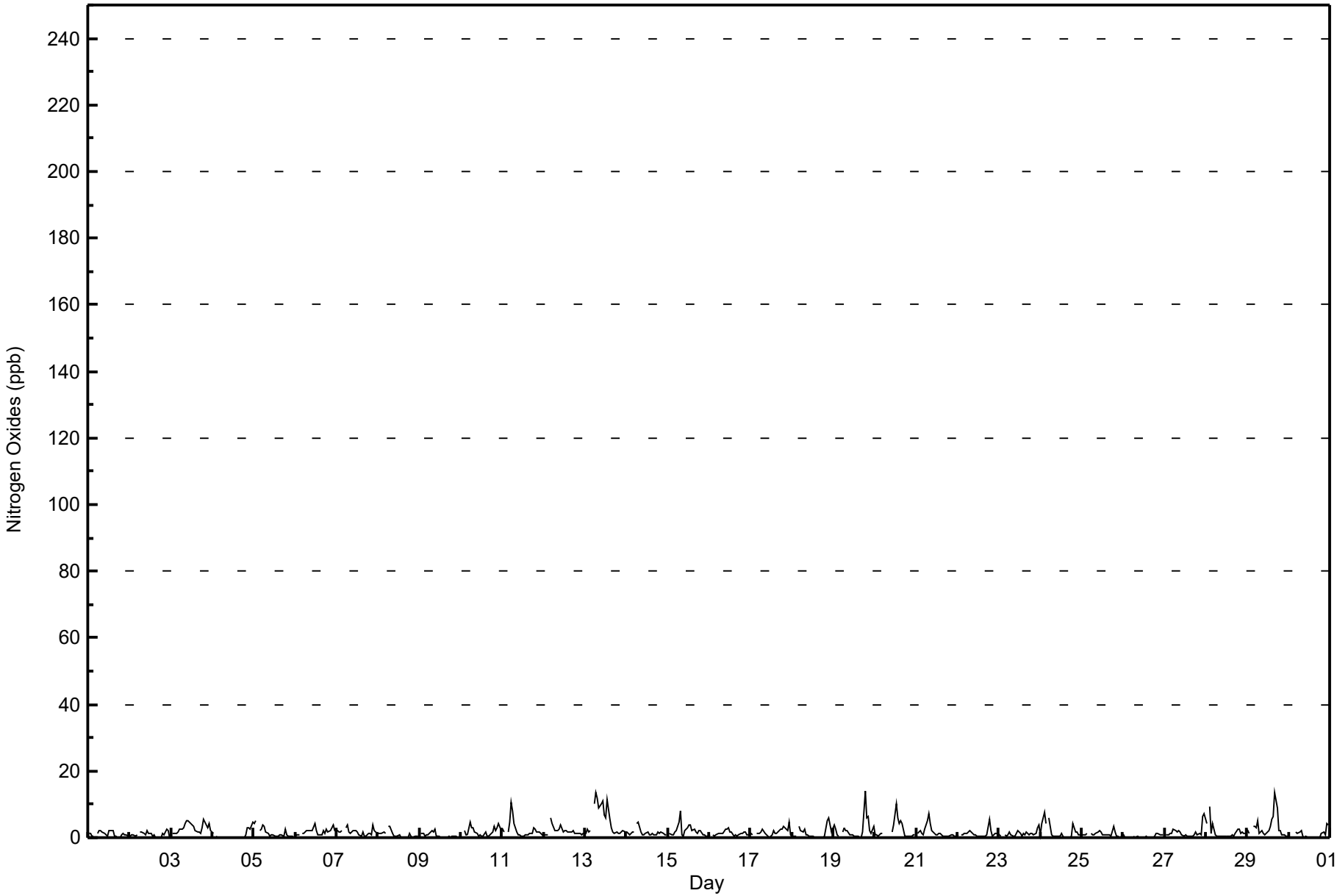
Z - zerospan C - Calibration

Wood Buffalo Environmental Association

Hourly Averages

Nitrogen Oxides (NO_X) - ppb

Hangingstone Expansion - September 2024



Nitrogen Oxides (NO_X) - ppb
Hangingstone Expansion - September 2024

Concentration Ranges (ppb)	Number of Hours	%	Cumulative %
0 - 20	686	100.00	100.00
21 - 40	0	0.00	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: 686

Total Number of Hours: 720

Nitrogen Oxides (NO_X) - ppb

Hangingstone Expansion - September 2024

Concentration Ranges (ppb)	Wind Direction																
	N	NNE	NE	ENE	E	ESE	SE	SSE	S	SSW	SW	WSW	W	WNW	NW	NNW	**Totals**
0 - 20	16	30	11	4	1	15	16	40	115	98	74	99	72	48	25	22	686
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	30	11	4	1	15	16	40	115	98	74	99	72	48	25	22	686

Total Number of Valid Hours: 686

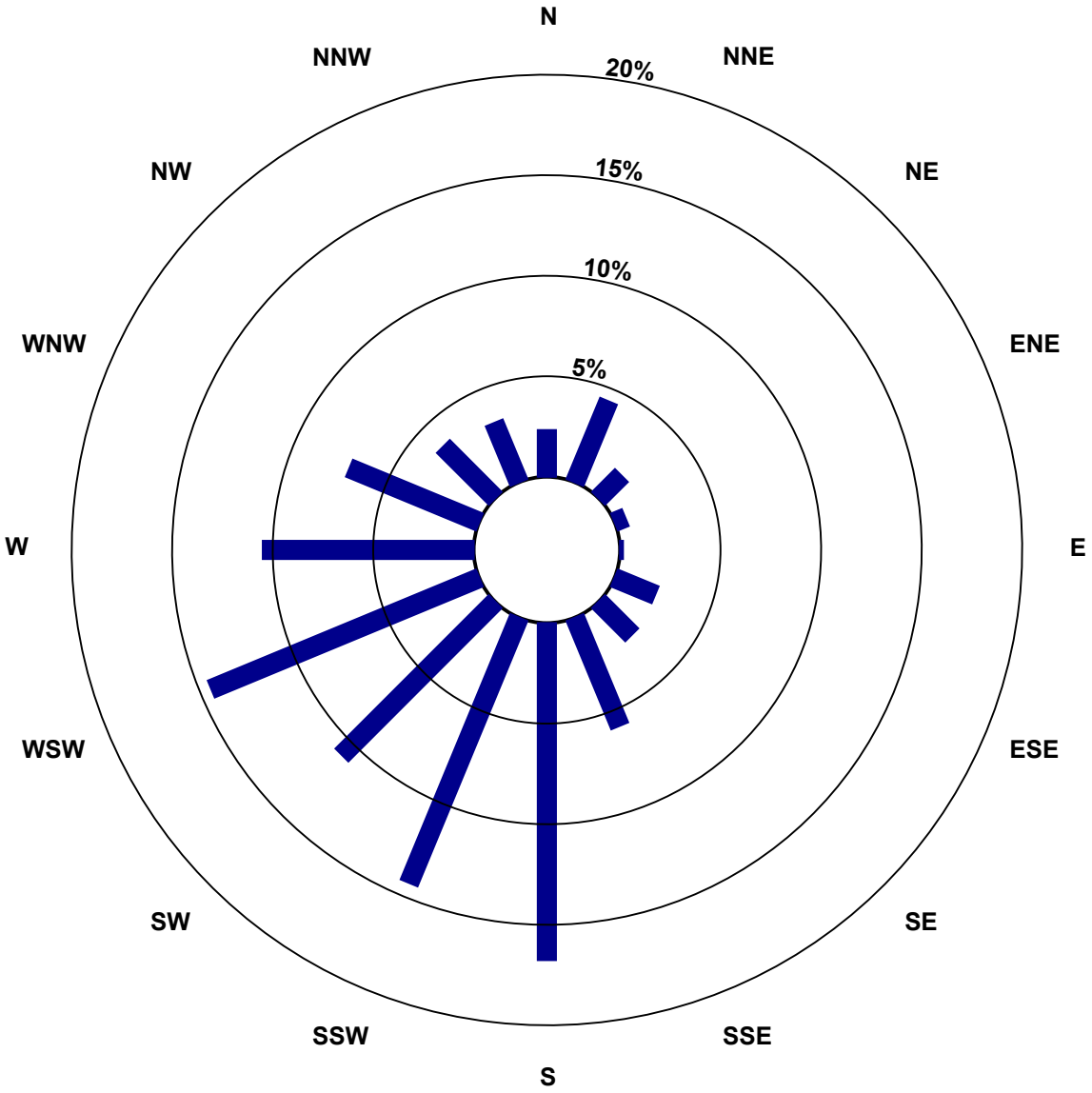
Total Number of Hours: 720

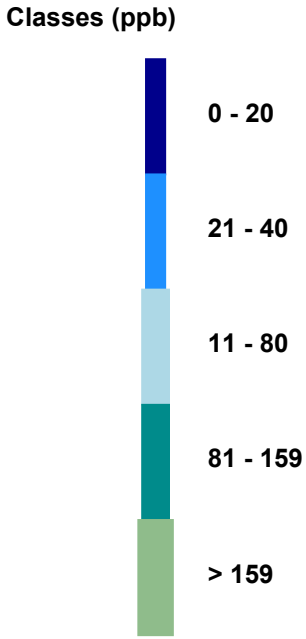
Wood Buffalo Environmental Association

Wind Rose Sep 2024

Nitrogen Oxides (NO_X) - ppb

Hangingstone Expansion





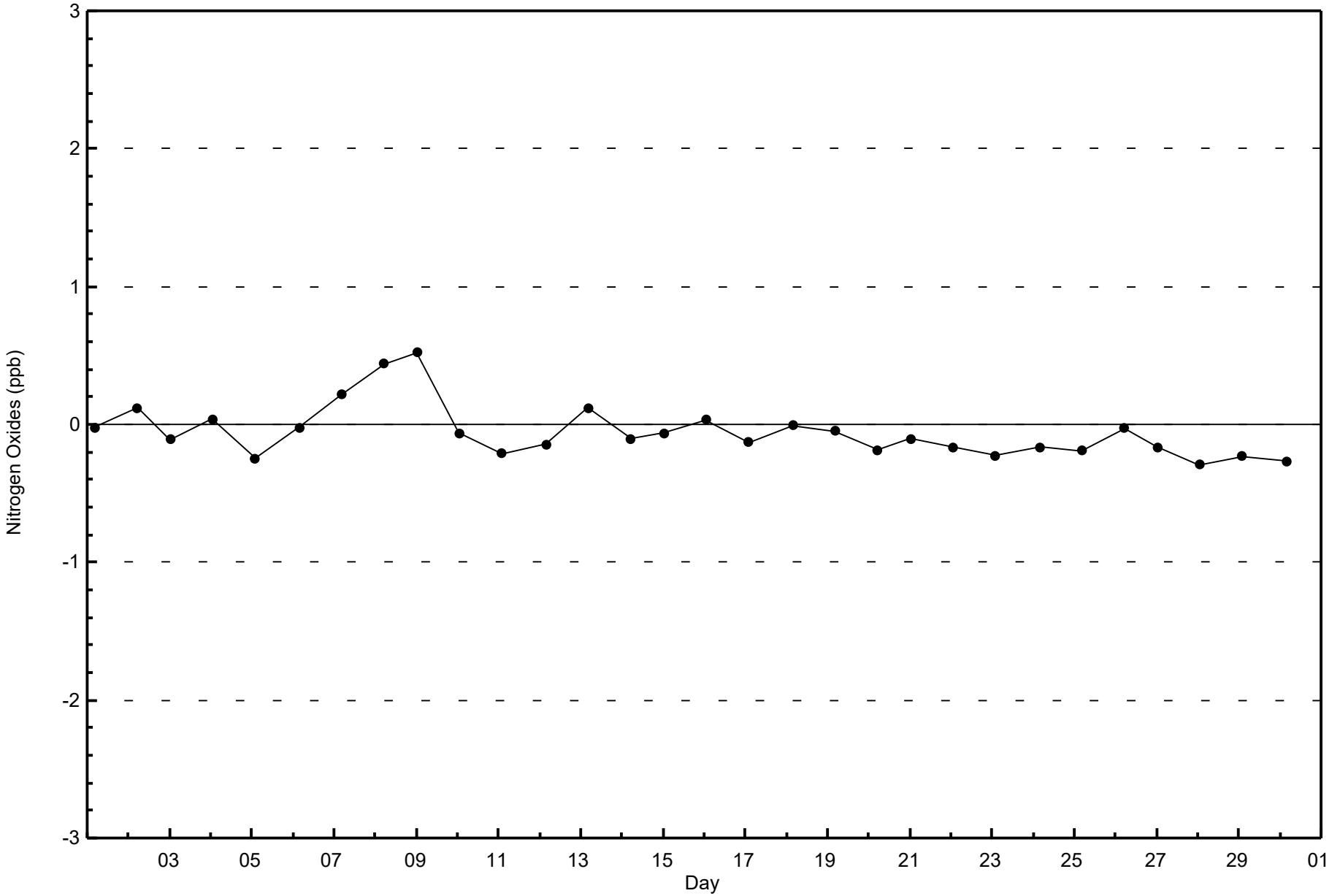
Total Number of Valid Hours: 686

Wood Buffalo Environmental Association

Zero Responses

Nitrogen Oxides (NO_X) - ppb

Hangingstone Expansion - September 2024

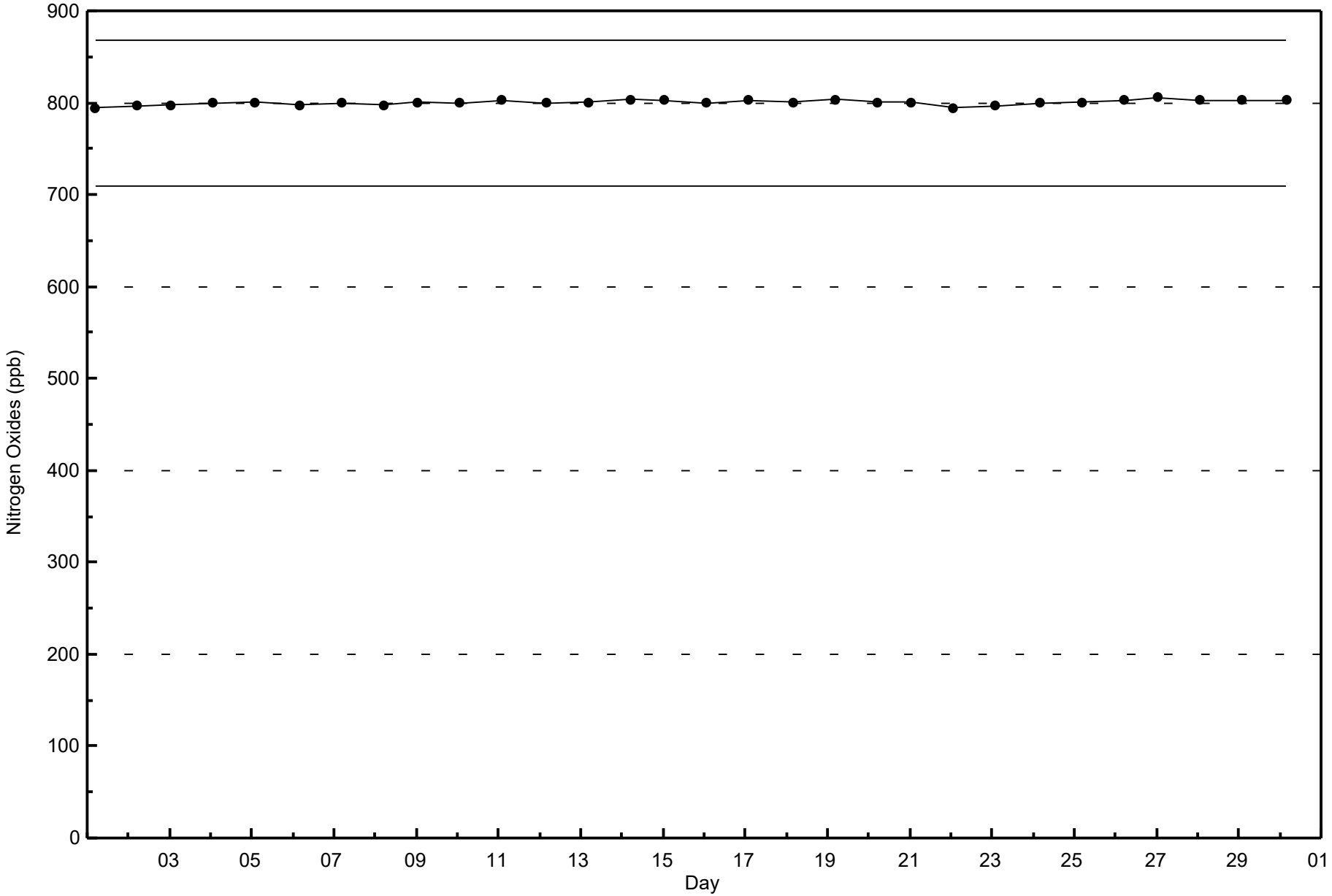


Wood Buffalo Environmental Association

Span Responses

Nitrogen Oxides (NO_X) - ppb

Hangingstone Expansion - September 2024



Maximum Value: 29.5 C on Sep 2 15:00

Maximum Daily Average: 21.4 C on Sep 2

Minimum Value: 0.7 C on Sep 21 03:00

Minimum Daily Average: 5.3 C on Sep 30

Maximum Diurnal Average: 17.0 C at hour 16

Minimum Diurnal Average: 9.3 C at hour 6

Monthly Average: 12.54 C

Percentiles: P_1 = 1.8 P_{10} = 6.1 Q_1 = 8.8 Median = 12.0 Q_3 = 15.9 P_{90} = 19.7 P_{99} = 28.1

Hours in Service:	720
Hours of Data:	720
Hours of Missing Data:	0
Hours of Calibration:	0
Percent Operational Time:	100.0

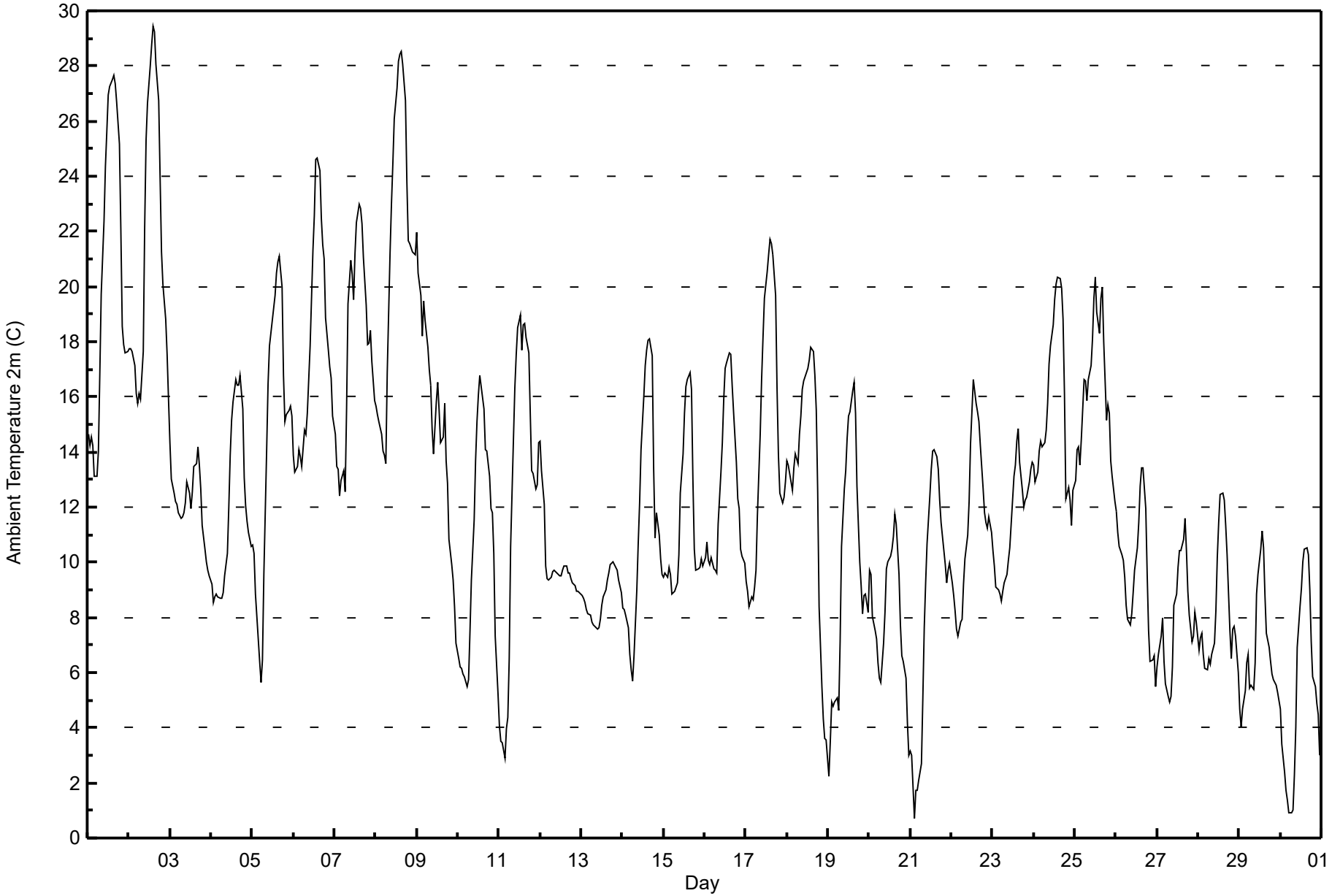
Day	Hourly Period Ending At (MST)																								Daily	Daily
	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24	Average	Maximum
1-Sep	14.7	14.2	14.5	14.3	13.1	13.1	14.0	16.8	19.7	22.4	24.4	25.7	26.9	27.2	27.5	27.6	27.4	26.7	25.2	22.1	18.6	17.9	17.6	17.7	20.4	27.6
2-Sep	17.8	17.7	17.7	17.1	16.1	15.8	16.1	15.9	17.7	22.2	25.3	26.6	28.0	28.8	29.5	29.2	28.1	26.8	24.0	21.2	20.1	18.8	17.6	15.9	21.4	29.5
3-Sep	14.3	13.0	12.5	12.2	12.1	11.8	11.6	11.6	11.8	12.2	12.9	12.5	11.9	12.5	13.5	13.6	14.2	13.5	12.7	11.4	10.5	10.0	9.7	9.5	12.1	14.3
4-Sep	9.2	8.5	8.7	8.9	8.7	8.7	8.7	8.9	9.5	10.3	12.0	13.9	15.1	15.8	16.6	16.4	16.4	16.8	15.5	13.1	12.1	11.5	11.1	10.6	12.0	16.8
5-Sep	10.6	10.3	8.8	7.2	6.4	5.7	6.4	9.6	14.1	16.5	17.8	18.3	19.2	19.7	20.5	20.9	21.1	20.0	16.8	15.1	15.3	15.5	15.7	15.3	14.5	21.1
6-Sep	13.9	13.3	13.5	14.1	13.9	13.5	14.8	14.6	15.4	16.6	17.9	21.3	22.6	24.6	24.7	24.2	22.5	21.5	21.0	18.9	17.7	17.1	16.7	15.3	17.9	24.7
7-Sep	14.6	13.5	13.4	12.4	13.0	13.3	12.5	15.5	19.4	20.9	20.4	19.5	21.2	22.3	23.0	22.9	22.3	21.1	19.3	17.9	17.9	18.4	17.3	15.8	17.8	23.0
8-Sep	15.7	15.3	15.1	14.7	14.0	13.9	13.6	16.9	21.2	23.0	24.5	26.1	27.2	28.2	28.4	28.5	28.1	26.8	23.8	21.7	21.6	21.3	21.2	21.1	21.3	28.5
9-Sep	22.0	20.5	19.7	18.2	19.5	18.8	17.8	17.0	16.4	14.9	14.0	15.8	16.5	15.5	14.3	14.6	15.7	13.7	12.8	10.8	9.9	9.4	8.4	7.1	15.1	22.0
10-Sep	6.5	6.2	6.2	5.9	5.8	5.5	5.7	7.5	9.4	11.6	13.7	15.1	16.1	16.8	16.0	15.6	14.1	14.0	13.1	11.9	11.8	10.3	7.3	5.2	10.5	16.8
11-Sep	4.1	3.5	3.4	2.9	4.0	4.3	6.5	10.6	14.4	16.3	17.5	18.5	18.9	17.7	18.6	18.7	18.2	17.6	15.4	13.3	13.2	12.7	12.8	14.3	12.4	18.9
12-Sep	14.4	13.3	12.1	9.9	9.4	9.3	9.5	9.7	9.7	9.7	9.6	9.5	9.5	9.7	9.9	9.9	9.6	9.6	9.4	9.2	9.2	9.0	9.0	8.9	9.9	14.4
13-Sep	8.8	8.7	8.5	8.3	8.1	8.1	7.8	7.8	7.7	7.6	7.6	7.9	8.4	8.7	9.0	9.3	9.6	9.9	10.0	9.9	9.8	9.7	9.3	8.9	8.7	10.0
14-Sep	8.3	8.3	8.1	7.6	6.7	6.1	5.7	6.6	9.0	10.7	12.2	14.1	16.0	17.1	17.7	18.1	18.1	17.5	13.4	10.9	11.8	11.0	10.1	9.6	11.4	18.1
15-Sep	9.4	9.6	9.4	9.8	9.5	8.8	9.0	9.1	9.2	10.3	12.5	13.9	15.4	16.4	16.6	16.9	16.3	13.0	10.5	9.7	9.7	9.8	10.1	9.9	11.5	16.9
16-Sep	10.2	10.7	10.1	9.9	10.2	9.8	9.7	9.6	11.4	13.3	14.3	15.9	17.0	17.2	17.6	17.6	16.4	15.5	13.6	12.3	11.9	10.5	10.2	10.0	12.7	17.6
17-Sep	9.3	8.9	8.4	8.8	8.7	9.1	9.7	11.7	14.6	16.6	18.2	19.6	20.5	21.2	21.7	21.5	21.2	19.7	16.3	13.9	12.5	12.2	12.4	12.9	14.6	21.7
18-Sep	13.7	13.5	12.9	12.6	13.4	14.0	13.6	14.6	15.3	16.3	16.6	16.9	17.0	17.4	17.8	17.7	16.8	15.5	12.6	8.4	5.5	4.3	3.6	3.5	13.1	17.8
19-Sep	2.2	3.5	5.0	4.8	4.9	5.1	4.6	7.1	10.6	12.7	13.3	14.5	15.3	15.5	16.2	16.6	15.4	12.8	10.0	9.2	8.1	8.8	8.8	8.2	9.7	16.6
20-Sep	9.7	9.6	8.0	7.5	7.2	6.3	5.8	5.7	7.1	8.2	9.8	10.0	10.2	10.5	11.0	11.7	11.4	9.5	7.7	6.6	6.4	5.8	4.1	3.0	8.0	11.7
21-Sep	3.1	3.0	0.7	1.8	1.7	2.1	2.7	5.1	7.6	9.3	10.7	12.4	13.4	14.0	14.1	13.8	13.4	12.3	11.4	10.9	9.9	9.3	9.7	10.0	8.4	14.1
22-Sep	9.2	8.8	8.3	7.6	7.3	7.8	7.9	9.2	10.1	11.0	12.2	14.3	15.5	16.6	15.8	15.5	15.1	14.2	12.7	11.8	11.5	11.2	11.6	11.1	11.5	16.6
23-Sep	10.4	9.9	9.1	9.0	8.9	8.6	9.0	9.3	9.6	10.1	10.5	11.4	13.1	13.5	14.4	14.8	13.6	12.6	12.0	12.3	12.4	12.9	13.4	13.6	11.4	14.8
24-Sep	13.5	12.9	13.3	14.0	14.4	14.2	14.3	14.8	15.8	17.2	17.9	18.6	19.5	20.1	20.3	20.3	19.9	18.8	16.1	12.3	12.7	12.3	11.4	12.6	15.7	20.3
25-Sep	13.0	14.1	14.2	13.5	14.5	16.6	16.6	15.9	16.6	17.2	18.1	19.6	20.3	19.1	18.3	19.6	20.0	18.0	15.2	15.7	15.4	13.7	13.1	12.2	16.3	20.3
26-Sep	11.8	11.1	10.6	10.3	10.0	9.5	8.4	7.9	7.8	8.2	8.9	9.7	10.5	11.4	12.8	13.4	13.4	11.9	9.6	7.5	6.4	6.4	6.6	5.5	9.6	13.4
27-Sep	6.2	6.6	7.3	8.0	6.4	5.6	5.1	4.9	5.1	6.2	8.5	8.8	9.8	10.4	10.4	10.8	11.6	10.4	8.9	8.1	7.1	7.3	8.2	7.8	7.9	11.6
28-Sep	6.8	7.3	7.4	6.7	6.1	6.1	6.5	6.3	6.7	7.1	8.2	10.2	11.4	12.4	12.5	12.3	11.3	10.3	7.5	6.5	7.6	7.7	7.3	6.0	8.3	12.5
29-Sep	4.7	4.0	4.7	5.4	6.4	6.7	5.5	5.5	5.4	6.4	8.8	9.5	10.5	11.1	10.5	8.8	7.4	6.9	6.4	5.9	5.8	5.5	5.3	5.0	6.8	11.1
30-Sep	4.7	3.4	2.4	1.7	1.4	0.9	0.9	1.0	2.3	4.0	6.9	8.4	9.1	10.0	10.5	10.5	10.3	9.0	7.1	5.9	5.5	4.9	4.5	3.0	5.3	10.5
	10.4	10.1	9.8	9.5	9.4	9.3	9.3	10.2	11.7	13.0	14.2	15.3	16.2	16.7	17.0	17.0	16.6	15.5	13.7	12.1	11.6	11.2	10.8	10.3	Diurnal Average	
	22.0	20.5	19.7	18.2	19.5	18.8	17.8	17.0	21.2	23.0	25.3	26.6	28.0	28.8	29.5	29.2	28.1	26.8	25.2	22.1	21.6	21.3	21.2	21.1	Diurnal Maximum	

Wood Buffalo Environmental Association

Hourly Averages

Ambient Temperature 2m (AT2) - C

Hangingstone Expansion - September 2024



Concentration Ranges (C)	Number of Hours	%	Cumulative %
-50 - -20	0	0.00	0.00
-20 - 0	0	0.00	0.00
0 - 10	276	38.33	38.33
10 - 20	375	52.08	90.42
> 20	69	9.58	100.00

Total Number of Valid Hours: 720

Total Number of Hours: 720

Maximum Value: 99.6 % on Sep 13 13:00

Maximum Daily Average: 99.3 % on Sep 13

Minimum Value: 24.2 % on Sep 2 15:00

Minimum Daily Average: 51.0 % on Sep 8

Maximum Diurnal Average: 82.4 % at hour 7

Minimum Diurnal Average: 51.9 % at hour 16

Monthly Average: 70.66 %

Percentiles: P_1 = 29.8 P_{10} = 44.7 Q_1 = 56.3 Median = 71.4 Q_3 = 87.6 P_{90} = 97.4 P_{99} = 99.5

Hours in Service:	720
Hours of Data:	720
Hours of Missing Data:	0
Hours of Calibration:	0
Percent Operational Time:	100.0

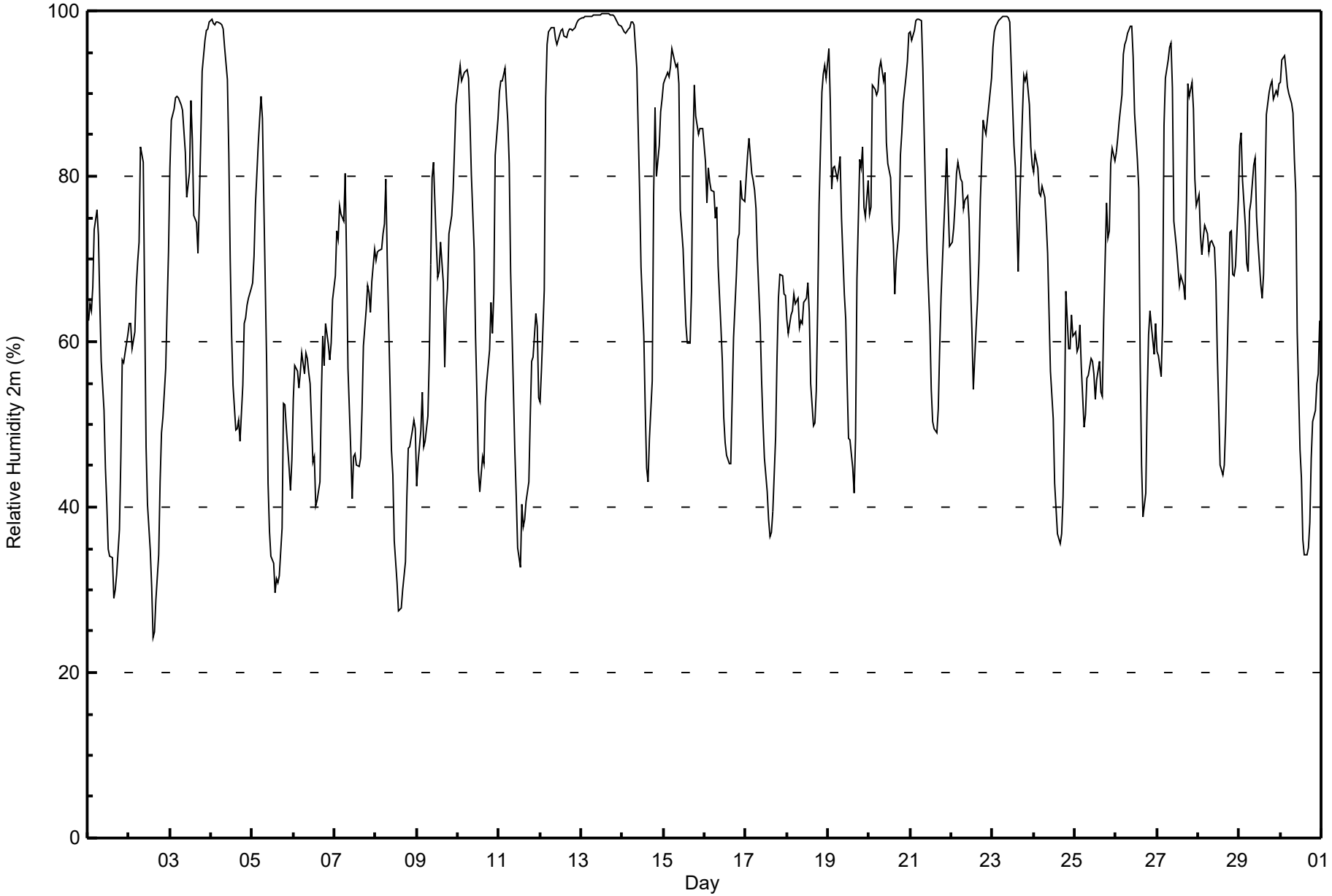
Day	Hourly Period Ending At (MST)																								Daily	Daily
	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24	Average	Maximum
1-Sep	62.5	64.7	63.7	66.6	73.5	76.0	72.8	64.7	57.6	51.6	44.8	40.3	35.0	34.1	33.9	29.0	30.0	31.8	37.3	45.9	57.7	57.4	58.6	60.9	52.1	76.0
2-Sep	62.2	62.2	59.1	61.2	66.6	69.6	72.0	83.6	81.8	64.5	47.3	40.4	34.7	30.3	24.2	25.0	28.8	34.2	43.1	48.9	50.9	56.7	64.0	70.8	53.4	83.6
3-Sep	81.0	86.7	88.1	89.5	89.7	89.6	88.7	88.0	85.4	82.9	77.5	80.6	89.2	84.4	75.2	74.3	70.7	76.9	84.5	92.7	96.5	97.6	97.8	98.6	86.1	98.6
4-Sep	98.9	98.5	98.2	98.7	98.6	98.5	98.4	97.7	95.6	91.8	82.7	70.0	60.9	54.7	49.4	49.5	50.5	47.9	54.7	62.3	62.9	64.4	65.3	66.5	75.7	98.9
5-Sep	67.2	70.3	76.7	83.9	87.0	89.7	86.9	76.8	57.3	42.9	37.2	34.1	33.2	29.7	31.4	30.8	31.7	37.5	52.6	52.3	49.7	44.8	42.1	45.7	53.8	89.7
6-Sep	53.1	57.0	56.5	54.4	56.3	58.7	56.2	58.6	57.9	56.3	54.9	45.5	46.1	40.2	40.9	43.1	53.4	60.6	57.2	62.1	59.7	57.7	59.8	65.0	54.6	65.0
7-Sep	67.9	73.3	72.4	76.5	75.5	74.6	80.3	69.9	56.8	46.8	41.0	46.2	46.4	45.1	44.9	46.0	51.6	59.5	63.9	66.7	65.9	63.6	67.3	71.2	61.4	80.3
8-Sep	69.8	70.8	71.0	71.1	73.0	74.3	79.6	70.0	54.7	46.9	43.8	36.0	30.9	27.4	27.6	27.8	30.0	33.4	41.4	47.1	47.3	49.3	50.6	49.5	51.0	79.6
9-Sep	42.5	45.5	49.3	53.9	47.2	48.0	51.0	58.2	69.4	79.9	81.8	71.8	67.8	68.5	72.0	67.2	56.9	64.0	66.5	73.0	75.2	78.4	83.3	88.7	65.0	88.7
10-Sep	91.9	93.4	91.6	92.0	92.6	92.8	91.8	86.6	80.2	71.0	60.5	53.4	44.6	41.9	46.2	45.2	52.7	55.2	58.9	64.8	61.0	65.7	82.5	87.0	71.0	93.4
11-Sep	90.2	91.6	91.5	93.0	89.6	86.7	81.5	68.5	54.0	46.7	41.4	35.1	32.7	40.3	37.7	38.4	40.7	43.0	50.8	57.6	58.1	63.4	61.8	53.3	60.3	93.0
12-Sep	52.7	56.6	66.4	89.6	95.9	97.4	97.9	98.0	98.0	96.7	95.9	97.1	97.6	97.8	97.0	96.7	97.5	97.8	97.8	97.7	98.0	98.4	98.9	99.0	92.3	99.0
13-Sep	99.1	99.2	99.3	99.4	99.4	99.4	99.4	99.5	99.5	99.5	99.5	99.6	99.6	99.6	99.6	99.6	99.6	99.6	99.5	99.3	99.0	98.7	98.3	98.2	99.3	99.6
14-Sep	97.8	97.4	97.4	97.9	98.0	98.6	98.6	98.2	93.1	85.5	78.1	69.1	60.6	51.9	44.7	43.1	48.3	55.2	77.8	88.3	80.0	83.7	87.7	89.4	80.0	98.6
15-Sep	91.2	91.8	92.5	92.0	93.2	95.4	93.8	93.2	93.6	91.2	75.9	71.2	66.4	62.0	59.8	59.9	66.1	83.1	91.1	87.3	85.1	85.8	85.8	85.8	83.0	95.4
16-Sep	81.7	76.8	81.0	79.3	78.2	78.2	74.9	76.2	69.2	61.7	57.6	50.9	47.8	46.3	45.3	45.2	53.0	60.5	68.0	72.4	73.0	79.6	77.3	77.0	67.1	81.7
17-Sep	79.9	82.6	84.7	80.3	79.4	78.4	76.1	70.4	62.0	55.2	50.2	46.0	41.8	38.4	36.4	36.9	39.4	48.5	58.2	65.3	68.1	68.0	65.7	65.6	61.6	84.7
18-Sep	62.8	61.1	63.2	63.6	65.7	64.6	65.3	61.8	62.5	62.3	64.7	65.2	67.2	63.5	55.0	49.8	50.2	54.0	64.0	76.6	90.2	92.4	93.4	91.8	67.1	93.4
19-Sep	95.4	88.9	78.6	81.1	81.3	79.6	80.8	82.4	74.9	65.8	62.7	55.0	48.2	48.1	44.8	41.7	48.2	67.7	82.1	81.0	83.5	76.2	75.1	79.6	71.0	95.4
20-Sep	75.5	76.3	91.0	90.5	89.9	90.4	93.1	93.9	91.5	92.6	84.0	81.6	79.8	74.5	71.8	65.8	69.8	73.5	82.5	85.2	88.8	92.0	93.9	97.3	84.4	97.3
21-Sep	97.4	96.5	97.6	98.8	99.1	99.1	98.8	93.0	84.7	77.1	70.8	62.0	54.2	50.3	49.5	49.0	51.8	59.2	65.5	69.9	78.2	83.3	77.0	71.5	76.4	99.1
22-Sep	72.0	73.8	76.6	80.3	81.7	79.7	79.3	76.2	77.1	77.6	74.6	67.0	61.3	54.2	61.6	65.0	69.6	77.2	86.7	85.8	85.1	86.8	88.4	91.8	76.2	91.8
23-Sep	95.6	97.4	98.1	98.8	99.1	99.2	99.3	99.3	99.3	99.2	98.7	93.6	83.7	81.0	75.1	68.4	76.1	87.3	92.2	91.4	92.3	88.6	83.6	81.3	90.8	99.3
24-Sep	80.5	82.8	80.9	77.9	77.7	78.9	77.5	74.5	70.6	63.5	56.5	50.7	42.9	39.8	36.8	35.6	36.7	41.3	50.4	66.2	59.1	59.1	63.2	60.6	61.0	82.8
25-Sep	61.2	58.9	59.4	62.0	56.9	49.6	51.3	55.5	56.0	57.9	57.7	56.2	53.1	55.5	57.6	54.0	53.4	62.8	76.7	72.5	73.4	81.6	83.5	81.8	62.0	83.5
26-Sep	82.9	84.6	86.6	89.8	94.8	96.0	96.4	97.4	98.1	98.2	94.4	87.7	82.1	78.5	57.6	45.0	38.7	41.7	53.2	60.8	63.8	60.1	58.5	62.3	75.4	98.2
27-Sep	58.8	58.3	55.7	62.4	86.0	91.8	94.2	95.5	96.1	90.8	74.6	71.2	69.0	66.8	67.9	66.9	65.1	76.2	91.2	89.6	91.3	88.1	79.7	76.5	77.7	96.1
28-Sep	77.8	72.8	70.4	72.5	74.0	73.0	70.8	72.0	72.1	71.3	67.3	58.6	52.0	45.1	43.9	45.1	50.2	57.6	73.2	73.3	68.2	68.0	69.1	77.2	65.7	77.8
29-Sep	83.7	85.3	79.5	74.1	69.5	68.5	75.7	77.0	81.4	82.2	75.1	72.0	67.0	65.3	68.1	77.5	87.5	90.2	91.0	91.5	89.3	90.3	89.9	91.1	80.1	91.5
30-Sep	91.4	94.1	94.6	93.0	90.8	90.1	88.8	87.6	82.1	78.0	61.2	47.0	43.6	36.1	34.3	34.3	35.1	38.1	45.9	50.3	51.6	54.8	56.0	62.6	64.2	94.6
	77.5	78.3	79.0	80.8	82.0	82.2	82.4	80.8	77.1	72.9	67.1	61.8	58.0	55.0	53.0	51.9	54.5	60.5	68.6	72.6	73.4	74.5	75.3	76.6	Diurnal Average	
	99.1	99.2	99.3	99.4	99.4	99.4	99.4	99.5	99.5	99.5	99.5	99.6	99.6	99.6	99.6	99.6	99.6	99.6	99.5	99.3	99.0	98.7	98.9	99.0	Diurnal Maximum	

Wood Buffalo Environmental Association

Hourly Averages

Relative Humidity 2m (RH2) - %

Hangingstone Expansion - September 2024



Concentration Ranges (%)	Number of Hours	%	Cumulative %
0 - 20	0	0.00	0.00
20 - 40	46	6.39	6.39
40 - 60	179	24.86	31.25
60 - 80	238	33.06	64.31
80 - 100	257	35.69	100.00

Total Number of Valid Hours: 720

Total Number of Hours: 720

Wood Buffalo Environmental Association

Summary of Hour Averages

Wind Speed 10m (WS10) - km/h

Hangingstone Expansion - September 2024

Maximum Speed: 27 km/h on Sep 25 07:00

Maximum Daily Speed Average: 13.1 km/h on Sep 30

Minimum Speed Value: 1 km/h on Sep 3 23:00

Minimum Daily Speed Average: 3.0 km/h on Sep 27

Maximum Diurnal Speed Average: 8.8 km/h at hour 14

Minimum Diurnal Speed Average: 3.5 km/h at hour 19

Monthly Average Velocity: 5.2 km/h 226.9 deg

Percentiles: P_1 = 2 P_{10} = 5 Q_1 = 7 Median = 9 Q_3 = 11 P_{90} = 14 P_{99} = 22

Hours in Service: 720

Hours of Data: 720

Hours of Missing Data: 0

Percent Operational Time: 100.0

Day	Hourly Period Ending At (MST)																								Daily	Daily
	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24	Average	Maximum
1-Sep	S12	S10	S13	S13	S11	S11	S11	S12	SSW12	S12	SSW14	SSW16	SW18	WSW16	WSW14	WSW15	W13	W9	WSW7	SSW6	S7	S8	S8	S9	SSW10.0	SW18
2-Sep	S9	S10	S10	SSW9	S8	S9	S8	SSE8	S9	S8	SW11	SW11	SW12	WSW12	WSW9	W11	W9	W6	WNW6	SSW6	W6	NW8	NNW9	NW8	SW5.9	SW12
3-Sep	N9	N9	NNE11	NNE10	NNE7	NNE9	NNE9	NNE8	NNE8	N8	NNE6	NNE8	ESE1	NNW4	NNW4	NNW4	N3	N3	NE4	N5	NNW6	N4	NW1	NW6	NNE5.7	NNE11
4-Sep	WNW6	WSW5	W6	W7	WSW7	WSW7	W8	W9	W10	W10	W10	W14	WNW13	NW15	WNW13	WNW12	WNW9	WNW10	W6	SW6	SW9	SW10	SW10	SW11	W8.3	NW15
5-Sep	SW10	SW10	WSW6	SSW7	SSW7	SSW6	SSW7	SSW7	SSW5	S4	SE2	NW4	W4	W6	WSW8	SW8	SW7	SSW7	S7	S10	S13	S15	S18	S21	SSW7.0	S21
6-Sep	S22	S22	S21	S22	S20	S19	SSW17	SSW16	SSW14	SSW12	SSW11	SW10	WSW8	W10	W7	W6	SSW5	WSW6	SW9	SW8	SW9	SW10	SW10	SW7	SSW11.4	S22
7-Sep	SW6	SSW8	SSW9	SSW8	SSW8	S8	S6	SSW7	SSW9	SW12	SW14	SW12	WSW10	WSW12	WSW11	WSW8	SW8	SSW8	SSW9	S8	SSW10	SW10	SW10	SSW8	SW8.7	SW14
8-Sep	SSW8	SSW8	SSW8	SSW7	SSW9	S10	SSE8	SSE6	S7	S9	S8	SSW9	SSW10	SSW10	S11	S11	SSE13	S10	S8	SSE10	SSE11	SSE12	S14	S13	S9.2	S14
9-Sep	SSW11	S9	SE9	S6	S19	S20	SSW12	SW10	WSW18	WNW16	W14	WNW16	WNW18	WNW17	W16	W14	WSW16	WNW15	WNW19	WNW19	WNW20	WNW17	W11	W10	W10.4	S20
10-Sep	WSW10	WSW10	WSW12	WSW12	WSW11	SW9	SW9	SW9	WSW12	WSW11	W10	WSW12	W14	W13	WNW11	NW13	WNW4	SSW5	SSW7	SSW6	SSW7	SSW6	S7	SSE7	WSW7.9	W14
11-Sep	SSE8	SSE9	SSE9	SE9	SSE9	SE9	ESE8	ESE6	ESE8	ESE9	SE8	SSE8	S11	SSE10	ESE8	ESE10	SE10	ESE10	ESE8	ESE7	SE8	E2	SE7	SE13	SE7.9	SE13
12-Sep	SE14	SE13	SSE13	SE9	ESE6	NE4	NE8	NE9	NE9	ENE6	NE7	NE7	NNE7	NNE8	NNE8	NNE8	NNE8	NNE7	NNE8	NE8	NE6	NNE7	NNE7	N6	ENE5.4	SE14
13-Sep	N6	N7	NNW8	NNW8	N6	NNW5	NNW6	N4	NNW7	NNW7	NNW6	NW8	NNW7	NW7	NW9	NW10	NW10	NW8	WNW6	WNW5	WNW6	W6	W5	W6	NW6.1	NW10
14-Sep	WSW6	WSW7	WSW6	WSW6	SSW6	SSW7	SW7	SW7	WSW7	W8	W8	W8	W8	W11	W11	WSW10	WSW8	SSW4	S5	S5	SW5	S8	SSW8	SSW7	WSW6.2	W11
15-Sep	SSW6	SSW6	SSW6	SSW6	SW8	SW7	SW6	WSW6	W5	WSW5	WNW6	NW8	NNW8	NW8	NNW9	NNW5	N2	S6	SSE8	SSE9	S9	S10	S10	S9	SW3.6	S10
16-Sep	SSW10	S10	S10	SSW11	SSW11	SSW10	S10	S12	S11	SW13	SW13	WSW16	WSW17	WSW16	WSW15	W11	W6	SW7	SSW7	SSW6	SSW6	S6	SSW7	SSW7	SW9.2	WSW17
17-Sep	SSW7	SSW8	S8	S9	S10	S11	S9	S9	S9	S8	S10	S11	SSW10	SW10	SW9	SW8	SSW6	S6	SSE8	SSE8	SSE9	SSE9	SSE9	SSE10	S8.3	S11
18-Sep	S12	S11	S11	S11	S11	S11	SSW11	SW10	WSW11	W9	WNW9	W7	NW14	WNW11	WNW13	WNW16	WNW14	NW9	NW6	WNW3	SW3	SW5	SSW6	SSW6	WSW5.6	WNW16
19-Sep	S7	S9	SSW8	SSW8	S8	S7	S7	SSW9	SSW7	WSW6	WSW8	WSW7	WSW9	WSW10	WSW9	W7	W4	S2	SSE6	S7	S7	SSW6	SSE5	SSE7	SSW6.0	WSW10
20-Sep	S7	SSW3	S4	S5	WSW5	SSW5	WSW5	WSW2	N4	NNE7	NNE9	N10	NNW11	NNW11	NNW11	NNW9	NW10	WNW9	W5	WSW6	WSW7	WSW6	SW5	SSW6	WNW3.0	NNW11
21-Sep	SSW7	SSW8	SSW6	SSW7	S7	S7	SSE7	S7	SSW6	SW9	SW10	SW11	WSW10	SW10	SSW10	SSW13	S13	S10	SSE9	SSE11	S10	SSE12	SSE15	SSE16	S8.5	SSE16
22-Sep	S14	S12	S11	S11	S10	S9	SSW8	SSW8	SW9	SSW8	WSW7	W9	W7	WSW6	NW7	SW6	SSW6	SE1	ESE6	SSE6	S8	S7	SW7	NW3	SSW6.0	S14
23-Sep	SW6	SW7	SW5	WSW6	WSW4	SW5	SW7	WSW5	WSW5	SSW6	SW5	W5	W8	WSW9	SW9	SW10	SW8	SSW6	S8	S11	SSW10	SSW11	SW13	WSW12	SW7.0	SW13
24-Sep	WSW14	SW11	SW11	WSW14	WSW13	WSW13	WSW16	WSW16	WSW17	W18	WNW21	WNW20	W19	W19	W18	W16	W13	WSW8	SW5	S6	S7	S9	SSE9	S10	WSW11.5	WNW21
25-Sep	S10	S10	SSE8	SE8	ESE13	SE20	SSE27	SSE26	SSE24	S9	S6	WSW7	W14	WNW12	N7	NNE4	NW5	WNW3	S4	SW5	WSW8	WSW7	WSW7	WSW8	S5.9	SSE27
26-Sep	SSW7	W7	W4	W6	WNW11	WNW14	WNW11	WNW7	WSW5	WSW8	W12	W13	W14	W13	W14	W16	WSW16	WSW13	SW9	SSW8	SSW8	SSW9	SSW8	S8	W8.5	W16
27-Sep	S9	S8	S8	SSW8	SSE5	NE7	NNE6	NNE5	NNE5	ENE6	NE6	ENE2	WNW4	W8	W7	WNW4	W3	SW5	S7	WSW9	SSW9	SSW9	SW13	WSW14	SW3.0	WSW14
28-Sep	WSW12	SW15	WSW17	WSW16	WSW15	WSW17	WSW16	WSW15	WSW14	WSW14	WNW15	WSW13	W14	WSW15	WSW11	WSW9	WSW6	SW4	S3	S8	S8	S7	SSE8	SSE5	WSW10.2	WSW17
29-Sep	SE7	SE6	ESE7	ESE9	ESE12	ESE11	ENE7	NNE5	NNE6	NNE10	NNE11	NNE11	NNE11	N12	NNE11	N12	N9	NNW8	NNW7	NW8	NW10	NW8	WNW10	WNW10	NNE4.8	N12
30-Sep	WNW10	WSW7	WSW7	WSW9	SW9	WSW11	WSW11	WSW11	WSW11	WSW12	W16	WNW22	WNW23	WNW25	WNW24	WNW24	WNW19	W16	W11	WSW11	WSW15	WSW15	SW13	SW11	W13.1	WNW25
	SSW6.7	SSW6.8	SSW6.4	SSW6.3	SSW6.4	SSW6.1	SSW5.6	SSW5.3	SW5.3	WSW5.1	WSW5.5	W6.7	W8.2	W8.8	W7.5	W6.7	W5.6	WSW4.1	SW3.5	SSW4.7	SSW5.5	SSW5.6	SSW6.3	SSW6.4	Diurnal Average	
	S22	S22	S21	S22	S20	S20	SSE27	SSE26	SSE24	W18	WNW21	WNW22	WNW23	WNW25	WNW24	WNW24	WNW19	W16	WNW19	WNW19	WNW20	WNW17	S18	S21	Diurnal Maximum	

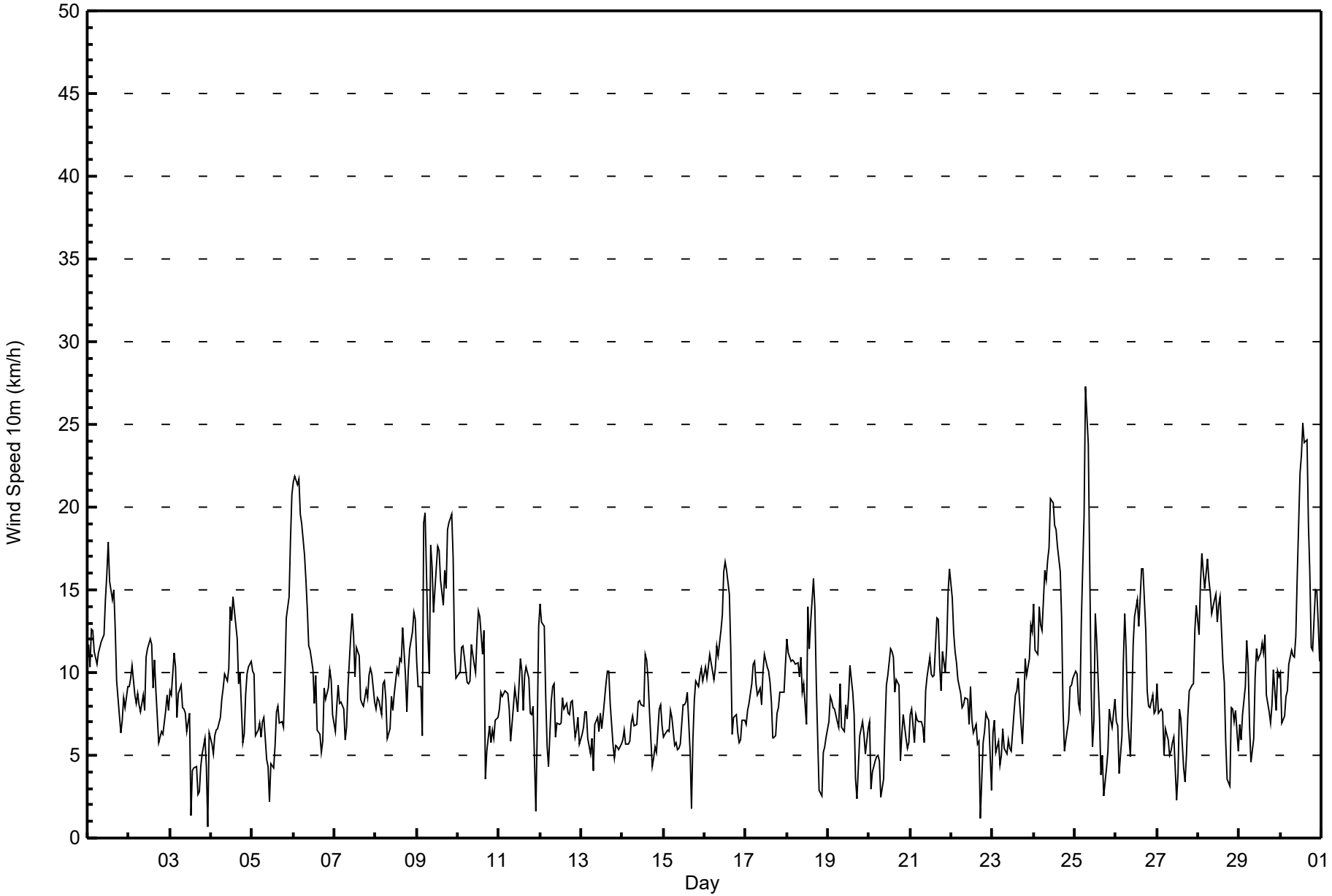
All monthly, daily, and diurnal averages have been calculated using vector methods

Wood Buffalo Environmental Association

Hourly Averages

Wind Speed 10m (WS10) - km/h

Hangingstone Expansion - September 2024



Wind Speed Ranges (km/h)	Number of Hours	%	Cumulative %
0 - 5	78	10.83	10.83
6 - 11	489	67.92	78.75
12 - 19	134	18.61	97.36
20 - 28	19	2.64	100.00
29 - 38	0	0.00	100.00
> 38	0	0.00	100.00

Total Number of Valid Hours: 720

Total Number of Hours: 720

Wind Speed 10m (WS10) - km/h
Hangingstone Expansion - September 2024

Wind Speed Ranges (km/h)	Wind Direction																
	N	NNE	NE	ENE	E	ESE	SE	SSE	S	SSW	SW	WSW	W	WNW	NW	NNW	**Totals**
0 - 5	7	4	2	1	1	1	2	3	8	6	11	9	8	6	4	5	78
6 - 11	10	27	9	3	0	14	10	30	93	89	54	57	41	17	18	17	489
12 - 19	2	0	0	0	0	2	3	6	17	9	11	40	23	18	3	0	134
20 - 28	0	0	0	0	0	0	1	3	7	0	0	0	0	8	0	0	19
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	31	11	4	1	17	16	42	125	104	76	106	72	49	25	22	720

Total Number of Valid Hours: 720

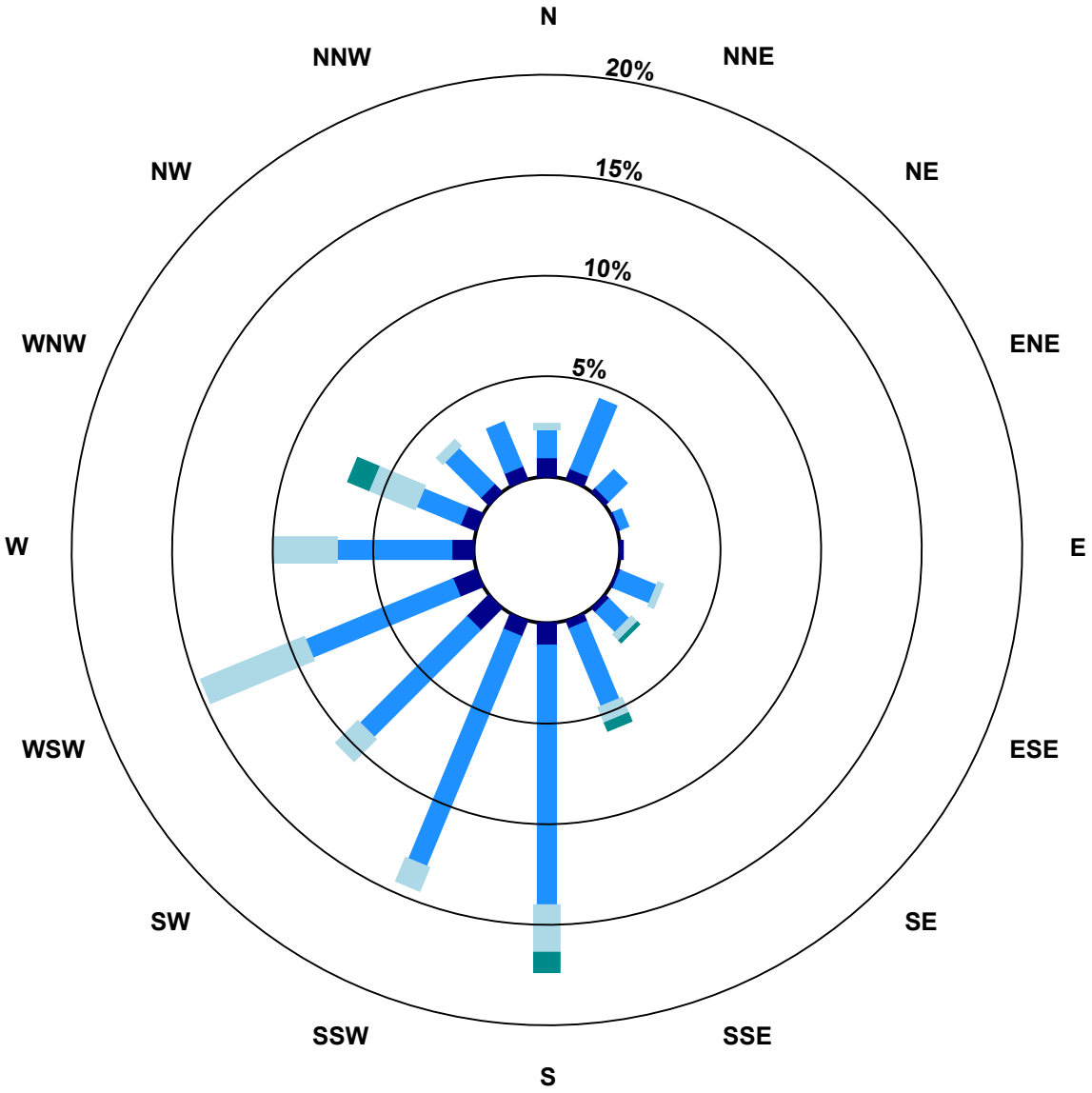
Total Number of Hours: 720

Wood Buffalo Environmental Association

Wind Rose Sep 2024

Wind Speed 10m (WS10) - km/h

Hangingstone Expansion



Classes (km/h)

0 - 5

6 - 11

12 - 19

20 - 28

29 - 38

> 38

Total Number of Valid Hours: 720

Wood Buffalo Environmental Association

Summary of Hour Standard Deviations

Wind Speed 10m (WS10) - km/h

Hangingstone Expansion - September 2024

Number of Exceedences (AAAQO): 1-hr: 0 24-hr: 0
Maximum Value: 7 km/h on Sep 25 07:00

Minimum Value: 1 km/h on Sep 18 22:00

Percentiles: P_1 = 1 P_{10} = 1 Q_1 = 2 Median = 2 Q_3 = 3 P_{90} = 4 P_{99} = 7

Hours in Service:	720
Hours of Data:	720
Hours of Missing Data:	0
Hours of Calibration:	0
Percent Operational Time:	100.0

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

Wood Buffalo Environmental Association

Summary of Hour Averages

Wind Direction 10m (WD10) - deg

Hangingstone Expansion - September 2024

Direction of Maximum Speed: 152 deg on Sep 25 07:00
Direction of Maximum Daily Speed Average: 265.3 deg on Sep 30

Direction of Minimum Speed: 318 deg on Sep 3 23:00

Direction of Minimum Daily Speed Average: 3.0 deg on Sep 27

Monthly Average Direction: 226.9 deg

Hours in Service:	720
Hours of Data:	720
Hours of Missing Data:	0
Percent Operational Time:	100.0

Day	Hourly Period Ending At (MST)																								Daily
	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24	Average
1-Sep	189	180	178	180	182	178	180	184	193	187	197	201	225	243	250	250	265	263	247	209	183	181	183	186	205.7
2-Sep	182	182	191	193	187	184	174	167	183	184	223	224	221	255	254	279	275	269	288	209	270	324	331	316	225.9
3-Sep	358	10	19	31	28	21	29	24	21	9	14	14	102	346	335	348	359	356	51	8	348	6	318	306	11.3
4-Sep	292	255	263	268	256	256	262	263	260	266	260	275	289	305	297	299	295	288	268	220	225	225	229	226	267.3
5-Sep	230	232	247	203	209	193	202	195	197	179	137	306	259	279	240	216	224	203	175	169	170	177	175	176	199.5
6-Sep	177	180	183	188	187	191	193	195	197	203	208	234	246	263	269	274	206	238	223	218	215	219	220	221	203.8
7-Sep	216	204	209	202	201	190	187	199	199	221	222	220	237	251	252	245	225	202	196	189	208	227	220	208	215.7
8-Sep	203	201	203	208	197	191	167	160	175	177	184	204	212	210	187	172	167	183	172	163	163	165	180	183	183.8
9-Sep	202	169	144	171	170	174	202	231	257	282	274	294	292	297	271	262	258	285	295	289	293	290	268	261	260.3
10-Sep	257	249	240	246	245	224	216	226	246	248	261	257	268	271	292	310	285	197	199	205	198	201	182	162	243.6
11-Sep	157	152	159	145	152	132	120	114	120	122	143	150	174	160	117	111	125	111	109	113	126	97	143	143	135.3
12-Sep	144	144	149	146	121	51	38	51	55	63	54	41	30	33	32	14	31	24	25	34	37	23	29	4	58.6
13-Sep	5	349	347	343	1	335	330	352	330	335	329	322	332	318	311	318	314	310	302	287	285	276	271	261	321.2
14-Sep	255	247	257	240	209	211	214	225	251	263	263	261	269	276	266	251	253	201	176	188	219	191	192	200	237.1
15-Sep	200	206	211	213	234	214	220	242	266	256	300	313	328	321	340	348	10	174	159	165	170	172	179	181	220.5
16-Sep	193	189	189	192	199	198	181	176	187	219	229	238	250	250	254	265	261	219	205	207	200	183	201	204	215.4
17-Sep	199	196	182	181	181	185	187	181	187	191	180	185	212	224	216	217	211	175	161	161	158	156	151	158	184.8
18-Sep	170	175	179	179	180	186	202	221	248	277	290	281	308	299	288	300	302	314	306	293	214	231	200	192	246.7
19-Sep	182	188	195	193	187	179	186	198	204	242	249	241	247	241	238	259	278	176	166	182	171	196	154	150	205.2
20-Sep	178	202	183	187	246	207	237	241	1	13	19	8	343	347	340	341	305	302	263	248	239	239	225	201	296.1
21-Sep	208	196	202	212	191	176	168	180	211	227	232	221	256	221	207	192	184	178	166	161	170	148	157	164	189.9
22-Sep	171	179	178	178	182	183	194	212	219	208	248	271	261	257	312	216	208	126	120	165	176	176	217	307	200.8
23-Sep	225	218	234	258	253	224	231	239	251	209	231	263	265	258	219	233	227	198	184	187	206	210	223	237	226.1
24-Sep	243	228	229	239	239	237	242	247	258	277	282	285	279	270	264	260	261	251	222	188	188	179	168	172	249.1
25-Sep	172	172	156	126	120	136	152	158	164	184	181	249	273	302	354	15	304	288	184	217	238	244	250	238	180.4
26-Sep	213	266	263	267	300	303	295	303	253	253	271	278	281	276	266	274	257	252	235	207	207	206	202	185	260.9
27-Sep	180	181	180	201	148	47	17	22	13	65	53	57	290	266	272	286	259	231	183	255	209	209	221	238	221.1
28-Sep	237	234	237	240	237	242	249	247	256	256	282	252	260	258	255	243	240	225	172	171	181	179	166	159	239.3
29-Sep	142	129	116	112	118	104	58	14	12	23	20	16	26	3	14	11	353	330	334	309	315	316	297	290	14.6
30-Sep	289	255	255	242	227	238	241	237	246	255	280	298	287	286	288	286	283	274	259	244	244	244	234	218	265.3
	200.1	198.3	197.8	200.9	195.8	194.0	201.5	207.5	223.4	238.1	253.9	264.0	269.4	274.2	273.1	272.2	260.6	247.2	214.4	204.8	209.0	208.8	203.9	202.7	
	Diurnal Average																								

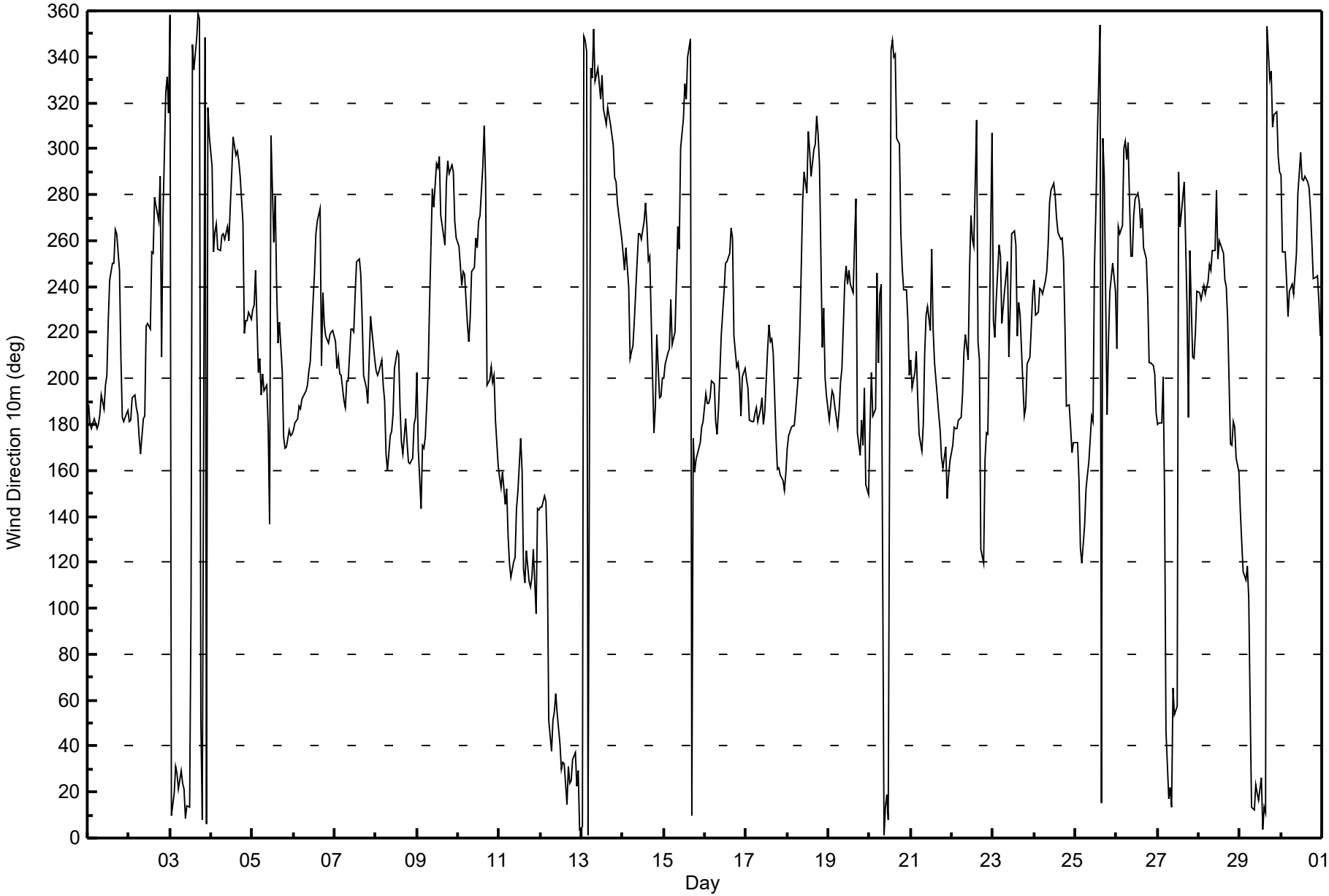
All monthly, daily, and diurnal averages have been calculated using vector methods

Wood Buffalo Environmental Association

Hourly Averages

Wind Direction 10m (WD10) - deg

Hangingstone Expansion - September 2024



Number of Exceedences (AAAQO): 1-hr: 0 24-hr: 0
Maximum Value: 94 deg on Sep 3 23:00

Minimum Value: 6 deg on Sep 11 02:00

Percentiles: P_1 = 7 P_{10} = 12 Q_1 = 16 Median = 21 Q_3 = 26 P_{90} = 34 P_{99} = 77

Hours in Service:	720
Hours of Data:	720
Hours of Missing Data:	0
Hours of Calibration:	0
Percent Operational Time:	100.0

Day	Hourly Period Ending At (MST)																								Daily
	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24	Maximum
1-Sep	16	15	15	15	15	14	15	16	18	18	23	23	28	31	29	24	26	22	22	25	9	9	11	11	31
2-Sep	10	10	12	15	11	13	27	51	20	26	25	28	32	28	41	23	22	22	14	25	40	16	19	45	51
3-Sep	22	16	17	16	18	17	18	19	21	20	26	17	84	37	46	27	59	36	21	34	21	24	94	14	94
4-Sep	22	18	21	22	22	22	24	22	23	24	30	24	23	19	28	16	21	18	21	22	20	22	24	24	30
5-Sep	26	28	29	10	14	13	17	15	26	48	78	63	81	54	47	30	40	22	12	12	16	16	17	17	81
6-Sep	17	18	19	18	18	17	19	18	19	22	21	30	29	26	28	30	53	34	22	21	20	21	22	24	53
7-Sep	22	15	16	16	17	16	30	18	21	26	26	26	30	26	25	25	28	20	14	13	22	25	25	19	30
8-Sep	17	13	14	18	14	13	10	12	18	20	26	34	27	29	26	24	19	16	11	10	12	14	16	17	34
9-Sep	34	16	12	54	17	17	32	37	26	20	22	18	18	17	23	25	24	20	19	18	15	17	23	22	54
10-Sep	22	23	26	25	25	25	23	28	24	27	31	28	27	26	18	28	40	19	19	20	13	8	10	8	40
11-Sep	6	6	6	9	13	10	8	13	20	24	35	42	29	24	30	25	21	16	9	8	15	69	46	19	69
12-Sep	19	16	17	16	20	22	15	16	14	19	14	21	22	18	18	18	19	22	17	17	17	18	18	19	22
13-Sep	16	16	17	15	18	18	17	20	16	17	17	15	18	18	15	14	14	13	12	16	16	17	16	15	20
14-Sep	18	19	21	19	14	15	18	24	23	25	27	29	31	30	26	27	28	37	24	16	43	17	11	14	43
15-Sep	15	18	19	21	28	21	24	27	25	36	42	29	32	38	27	43	63	58	9	7	9	11	13	12	63
16-Sep	16	17	14	14	20	18	16	14	22	25	28	27	27	27	26	27	23	29	22	18	21	16	17	16	29
17-Sep	16	15	12	10	12	13	14	15	18	23	22	26	31	36	33	32	26	16	8	7	6	8	9	10	36
18-Sep	14	14	15	13	13	18	20	27	25	26	20	34	19	23	20	18	16	16	12	15	40	18	11	11	40
19-Sep	11	8	11	11	12	11	14	19	27	26	24	32	26	21	29	51	31	68	9	12	7	18	42	19	68
20-Sep	18	67	32	17	32	25	37	44	57	24	24	25	16	22	21	20	14	16	17	17	15	15	17	12	67
21-Sep	6	14	18	23	14	9	7	12	34	31	31	28	35	31	32	21	19	18	16	16	22	15	15	16	35
22-Sep	18	19	16	14	14	15	16	25	23	25	33	29	41	46	25	52	28	94	17	12	11	12	29	54	94
23-Sep	22	21	34	25	25	24	27	27	27	27	41	37	28	29	29	30	28	18	15	18	23	25	25	27	41
24-Sep	24	26	26	26	25	26	24	25	23	21	21	18	21	22	24	23	22	20	34	14	15	11	8	13	34
25-Sep	11	11	10	22	24	17	15	15	16	72	40	34	22	20	32	56	45	88	36	28	22	23	27	27	88
26-Sep	29	21	25	27	17	19	24	18	42	23	21	20	20	22	24	21	22	23	25	19	17	20	20	14	42
27-Sep	13	15	19	33	37	30	38	22	27	32	26	85	78	29	26	37	49	32	23	39	21	22	23	26	85
28-Sep	27	25	24	25	23	25	23	23	23	24	19	29	25	26	27	28	29	46	33	11	13	14	12	8	46
29-Sep	13	10	13	12	12	13	20	47	36	21	24	20	21	21	16	22	20	18	22	15	17	22	13	16	47
30-Sep	17	22	23	22	25	24	25	27	24	24	24	19	20	20	19	19	20	22	23	25	24	25	27	22	27
	34	67	34	54	37	30	38	51	57	72	78	85	84	54	47	56	63	94	36	39	43	69	94	54	
	Diurnal Maximum																								

Site	Paramter	Date/Time	Reference	Period	Reported	Final	Status
Bertha Ganter	$PM_{2.5}$	7Sep24, 24:00	433774	24-hr	67	67.4	exc
Patricia McInnes	$PM_{2.5}$	7Sep24, 24:00	433775	24-hr	85	85.4	exc
Athabasca Valley	$PM_{2.5}$	7Sep24, 24:00	433776	24-hr	94	93.8	exc
Barge Landing	$PM_{2.5}$	7Sep24, 24:00	433777	24-hr	68	68.1	exc
Ft. McKay S	$PM_{2.5}$	7Sep24, 24:00	433778	24-hr	70	70.5	exc
Anzac	$PM_{2.5}$	7Sep24, 24:00	433779	24-hr	61	61.2	exc
Stony Mtn.	$PM_{2.5}$	7Sep24, 24:00	433780	24-hr	124	123.7	exc
Conklin	$PM_{2.5}$	7Sep24, 24:00	433782	24-hr	107	106.7	exc
Janvier	$PM_{2.5}$	7Sep24, 24:00	433783	24-hr	104	104.4	exc
Fort Hills	$PM_{2.5}$	7Sep24, 24:00	433784	24-hr	47	47.0	exc
Buffalo Viewpoint	$PM_{2.5}$	7Sep24, 24:00	433785	24-hr	69	68.9	exc
Wapasu	$PM_{2.5}$	7Sep24, 24:00	433787	24-hr	40	40.3	exc
Surmont 2	$PM_{2.5}$	7Sep24, 24:00	433788	24-hr	41	40.9	exc
Ells River	$PM_{2.5}$	7Sep24, 24:00	433789	24-hr	49	48.6	exc
Patricia McInnes	$PM_{2.5}$	8Sep24, 24:00	433775	24-hr	89	89.4	exc
Ft. McKay S	$PM_{2.5}$	8Sep24, 24:00	433778	24-hr	104	104.1	exc
Anzac	$PM_{2.5}$	8Sep24, 24:00	433779	24-hr	91	91.5	exc
Wapasu	$PM_{2.5}$	8Sep24, 24:00	433787	24-hr	55	54.8	exc
Stony Mtn.	$PM_{2.5}$	8Sep24, 24:00	433780	24-hr	85	84.7	exc
Conklin	$PM_{2.5}$	8Sep24, 24:00	433782	24-hr	64	63.9	exc
Ells River	$PM_{2.5}$	8Sep24, 24:00	433789	24-hr	78	78.0	exc
Bertha Ganter	$PM_{2.5}$	8Sep24, 24:00	433774	24-hr	102	101.5	exc
Buffalo Viewpoint	$PM_{2.5}$	8Sep24, 24:00	433785	24-hr	96	96.0	exc
Athabasca Valley	$PM_{2.5}$	8Sep24, 24:00	433776	24-hr	102	102.4	exc
Fort Chip	$PM_{2.5}$	8Sep24, 24:00	433790	24-hr	33	32.7	exc
Barge Landing	$PM_{2.5}$	8Sep24, 24:00	433777	24-hr	99	99.0	exc
Janvier	$PM_{2.5}$	8Sep24, 24:00	433783	24-hr	65	65.4	exc
Fort Hills	$PM_{2.5}$	8Sep24, 24:00	433784	24-hr	81	80.9	exc
Surmont 2	$PM_{2.5}$	8Sep24, 24:00	433788	24-hr	54	53.9	exc
Buffalo Viewpoint	$PM_{2.5}$	9Sep24, 24:00	433785	24-hr	32	31.5	exc
Fort Hills	$PM_{2.5}$	9Sep24, 24:00	433784	24-hr	30	29.8	exc
Bertha Ganter	$PM_{2.5}$	9Sep24, 24:00	433774	24-hr	35	34.7	exc
Patricia McInnes	$PM_{2.5}$	9Sep24, 24:00	433775	24-hr	30	30.4	exc
Athabasca Valley	$PM_{2.5}$	9Sep24, 24:00	433776	24-hr	43	43.1	exc
Barge Landing	$PM_{2.5}$	9Sep24, 24:00	433777	24-hr	31	31.3	exc
Ft. McKay S	$PM_{2.5}$	9Sep24, 24:00	433778	24-hr	34	33.7	exc

Site	Paramter	Date/Time	Reference	Period	Reported	Final	Status
Mannix	H_2S	12Sep24, 09:00	432947	1-hr	11	11.3	exc
Bertha Ganter	$PM_{2.5}$	12Sep24, 24:00	433774	24-hr	100	100.0	exc
Mannix	H_2S	12Sep24, 24:00	432982	1-hr	17	16.8	exc
Mannix	H_2S	12Sep24, 24:00	432982	24-hr	3	3.1	exc
Patricia McInnes	$PM_{2.5}$	12Sep24, 24:00	433775	24-hr	98	98.3	exc
Athabasca Valley	$PM_{2.5}$	12Sep24, 24:00	433776	24-hr	134	133.6	exc
Ft. McKay S	$PM_{2.5}$	12Sep24, 24:00	433778	24-hr	100	100.0	exc
Anzac	$PM_{2.5}$	12Sep24, 24:00	433779	24-hr	109	109.3	exc
Fort Hills	$PM_{2.5}$	12Sep24, 24:00	433784	24-hr	90	90.1	exc
Surmont 2	$PM_{2.5}$	12Sep24, 24:00	433788	24-hr	55	55.3	exc
Ells River	$PM_{2.5}$	12Sep24, 24:00	433789	24-hr	76	75.5	exc
Buffalo Viewpoint	$PM_{2.5}$	12Sep24, 24:00	433785	24-hr	97	97.2	exc
Fort Chip	$PM_{2.5}$	12Sep24, 24:00	433790	24-hr	90	90.0	exc
Barge Landing	$PM_{2.5}$	12Sep24, 24:00	433777	24-hr	96	95.8	exc
Wapasu	$PM_{2.5}$	12Sep24, 24:00	433787	24-hr	100	99.5	exc
Conklin	$PM_{2.5}$	12Sep24, 24:00	433782	24-hr	85	85.5	exc
Janvier	$PM_{2.5}$	12Sep24, 24:00	433783	24-hr	105	104.9	exc
Stony Mtn.	$PM_{2.5}$	12Sep24, 24:00	433780	24-hr	91	91.2	exc
Wapasu	$PM_{2.5}$	13Sep24, 24:00	433787	24-hr	94	93.6	exc
Stony Mtn.	$PM_{2.5}$	13Sep24, 24:00	433780	24-hr	98	97.7	exc
Conklin	$PM_{2.5}$	13Sep24, 24:00	433782	24-hr	92	92.3	exc
Janvier	$PM_{2.5}$	13Sep24, 24:00	433783	24-hr	97	96.7	exc
Fort Hills	$PM_{2.5}$	13Sep24, 24:00	433784	24-hr	84	83.6	exc
Surmont 2	$PM_{2.5}$	13Sep24, 24:00	433788	24-hr	51	50.5	exc
Bertha Ganter	$PM_{2.5}$	13Sep24, 24:00	433774	24-hr	107	106.9	exc
Buffalo Viewpoint	$PM_{2.5}$	13Sep24, 24:00	433785	24-hr	105	104.6	exc
Patricia McInnes	$PM_{2.5}$	13Sep24, 24:00	433775	24-hr	105	104.6	exc
Athabasca Valley	$PM_{2.5}$	13Sep24, 24:00	433776	24-hr	144	144.2	exc
Fort Chip	$PM_{2.5}$	13Sep24, 24:00	433790	24-hr	77	76.8	exc
Barge Landing	$PM_{2.5}$	13Sep24, 24:00	433777	24-hr	105	104.9	exc
Ft. McKay S	$PM_{2.5}$	13Sep24, 24:00	433778	24-hr	112	112.5	exc
Anzac	$PM_{2.5}$	13Sep24, 24:00	433779	24-hr	105	104.7	exc
Ells River	$PM_{2.5}$	13Sep24, 24:00	433789	24-hr	86	86.2	exc
Mannix	H_2S	14Sep24, 23:00	433043	1-hr	10	9.5	nae
Barge Landing	$PM_{2.5}$	14Sep24, 24:00	433777	24-hr	31	30.6	exc
Ft. McKay S	$PM_{2.5}$	14Sep24, 24:00	433778	24-hr	34	34.3	exc

Site	Paramter	Date/Time	Reference	Period	Reported	Final	Status
Conklin	$PM_{2.5}$	14Sep24, 24:00	433782	24-hr	34	34.1	exc
Janvier	$PM_{2.5}$	14Sep24, 24:00	433783	24-hr	38	37.6	exc
Bertha Ganter	$PM_{2.5}$	14Sep24, 24:00	433774	24-hr	34	34.1	exc
Athabasca Valley	$PM_{2.5}$	14Sep24, 24:00	433776	24-hr	42	42.4	exc
Stony Mtn.	$PM_{2.5}$	14Sep24, 24:00	433780	24-hr	33	32.3	exc
Mannix	H_2S	20Sep24, 05:00	433271	1-hr	11	10.9	exc
Patricia McInnes	TRS	24Sep24, 05:00	433342	1-hr	0	0	ret

ELECTRONIC TRANSFER SYSTEM
AIRDATA
SUBMISSION REPORT

October 31, 2024
10:24:01 AM
Request # 4733679

Submitted by: EN6138_DENNY
Submission Date: Oct 31, 2024 10:23:27 AM

File Type	File Name
Ambient Data	AMB-WBEA-202409-V00.xml

Total Number of Files: 1

*** End of Report ***

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ELECTRONIC TRANSFER SYSTEM
AIRDATA
SUBMISSION REPORT

October 31, 2024
11:07:46 AM
Request # 4733720

Submitted by: EN6138_DENNY
Submission Date: Oct 31, 2024 11:07:40 AM

File Type	File Name
Calibration Report	CAL-WBEA-202409.pdf

Total Number of Files: 1

*** End of Report ***

ELECTRONIC TRANSFER SYSTEM
AIRDATA
SUBMISSION REPORT

October 31, 2024
1:18:56 PM
Request # 4733792

Submitted by: EN6138_DENNY
Submission Date: Oct 31, 2024 1:18:49 PM

File Type	File Name
Airshed Monitoring Report	WBEA-202409.pdf

Total Number of Files: 1

*** End of Report ***

End of Report