WOOD BUFFALO ENVIRONMENTAL ASSOCIATION

APRIL 2014 MONTHLY REPORT

CONTINUOUS MONITORING
INTEGRATED MONITORING
May 30, 2014

Operations and Data Collection by:
Wood Buffalo Environmental Association
Fort McMurray, Alberta

QA/QC, Data Validation and Reporting by:
Aurora Atmospherics Inc
Calgary, Alberta

AURORA
ATMOSPHERICS

May 30, 2014

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

RE: Monthly Ambient Air Quality Monitoring Report April 2014
Wood Buffalo Environmental Association

Enclosed is the April 2014 ambient air quality monitoring report for the continuous ambient air quality monitoring stations of the Wood Buffalo Environmental Association regional air quality monitoring network.

The continuous ambient air quality monitoring network stations are:

AMS 1 - Fort McKay – Bertha Ganter
AMS 2 - Mildred Lake
AMS 3 - Lower Camp B (meteorology)
AMS 4 - Buffalo Viewpoint
AMS 5 - Mannix
AMS 6 - Patricia McInnes
AMS 7 - Athabasca Valley
AMS 8 - Fort Chipewyan
AMS 9 - Barge Landing
AMS 11 - Lower Camp (air quality)
AMS 12 - Millennium Mine
AMS 13 – Fort McKay South
AMS 14 - Anzac
AMS 15 - CNRL Horizon
AMS 16 - Shell Muskeg River
AMS 17 – Wapasu
AMS 500 – Cenovus Christina Lake
MAMS – WBEA Mobile

In early January 2014, WBEA commissioned a portable air monitoring station at the Cenovus Energy Christina Lake facility. The survey at this location will be conducted from January to June, 2014 to fulfill Alberta Environment's Environmental Protection and Enhancement Act facility approval number 48522-01-00. This station is equipped with ambient air quality analyzers for SO_2, H_2S, NO, NO_2, NO_X and meteorological sensors for ambient temperature, relative humidity, and wind speed and direction.

Aurora Atmospherics Inc.
15295 Sequoia Drive
Surrey, BC, V3S 8N4
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Fax: 604.597.5015

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

1.0 Concentrations in Excess of Alberta Ambient Air Quality Objectives

There were no ambient concentrations in excess of the air quality objectives as indicated in the Air Monitoring Directive Section III.A.3 (a & b) for SO_2, CO, H_2S, NO_2, NH_3, $PM_{2.5}$ and O_3.

Concentrations reported in near real-time were estimates, and final values were determined after processing of data for reporting. For all parameters except $PM_{2.5}$, the final 5-minute data values were determined by subtracting from the raw 5-minute data values, the daily zero responses interpolated to the time of each raw 5-minute value. The final 5-minute data values were then rounded to one decimal place greater than the reporting precision indicated in the Air Monitoring Directive (AMD). The final 1-hour data values were calculated from final 5-minute data values and then rounded to the reporting precision. The final 24-hour data values were calculated from final 1-hour values.

After data processing and validation, NO_2 concentrations were re-calculated from baseline-corrected NO_X and NO concentrations. Specifically, the NO concentration was subtracted from the NO_X concentration to determine the NO_2 concentration. In cases where the NO_X and/or NO values exceeded the operating range of the analyzer, values reported for NO_2 were determined as the largest of either the difference between baseline-corrected NO_X and NO values, or the NO_2 value reported by the data acquisition system with baseline correction applied.

2.0 Operational Status

2.1 Continuous Monitoring

In April 2014, there were no incidents resulting in a compliance monitoring instrument operating less than 90 % of the time.

There were four incidents of monitoring instruments not required for air quality compliance operating less than 90 % of the time in April 2014.

> The shelter at AMS 8, Fort Chipewyan was replaced from March 11 to March 13 resulting in air quality analyzers and meteorological sensors not being in operation during this period. Reinstallation of the analog type sensors such as ambient temperature, relative humidity, solar radiation sensors and the precipitation collector in the new shelter were accompanied by upgrades to the communications equipment for digital polling and the data acquisition system programming. The additional work resulted in a downtime greater than what would be required for a normal shelter swap. These sensors were not in service from March 11 to April 8, 2014. . The temperature and relative humidity sensors were operational for only 74% of the time. The precipitation collector and the solar radiation sensor were not in service during this reporting period.

2.2 Intermittent Monitoring

The results for passive and integrated monitoring of VOC, RSC, PAH, $PM_{2.5}$ and PM_{10} samples for March and April 2014 are included with this monthly report. The precipitation sample results will be submitted as it becomes available.

The following notes are provided for the intermittent monitoring at the WBEA sites:

1. The 24-hour PM_{10} samples scheduled for March 6 at AMS 7 (Athabasca Valley) was not collected due to sample pump failure.
2. The 24-hour VOC sample scheduled for March 18 at AMS 9 (Barge Landing) was not collected due to deployment error.
3. The 24-hour PM_{10} sample scheduled for April 5 at AMS 15 (CNRL) was not collected due to power failure at the station.
4. The 24-hour PM_{10} sample scheduled for April 5 at AMS 1 (Fort McKay) was exposed for 107 hours due to sampler timer settings.
5. The 24-hour PM_{10} sample scheduled for April 11 at AMS 15 (CNRL) was not collected due to a leaking sample filter holder.
6. The 24-hour $PM_{2.5}$ samples scheduled for April 17 at AMS 7 (Athabasca Valley) was not collected due to deployment error.
7. The 24-hour $PM_{2.5}$ and PM_{10} samples scheduled for April 23 at AMS 1 (Fort McKay) was not collected due to deployment error.
8. The 24-hour $PM_{2.5}$ samples scheduled for April 23 at AMS 7 (Athabasca Valley) was not collected due to sampler processor board error.
9. An SO_2 passive sample at AMS 6 was found damaged on the ground during sample retrieval.
10. An O_3 passive sample at site JP201 was reported as missing for the sampling period of April 2014.
11. The passive sample results for AMS 8 (Fort Chipewyan) were not available in time for this report submission and will be provided at a later date.
12. There were 30 particulate matter (7 – $PM_{2.5}$ and 23 – PM_{10}) filter results invalidated in March and April as these results failed to meet WBEA's internal QA criteria.

3.0 Monitoring Notes

General Network Notes

The Ammonia (NH_3) analyzer currently operates on a 0 to 2500 ppb operating range with a detection level of 25 ppb in the WBEA network. In data processing, values less than 10.5 ppb have been considered below detection levels and are reported as zero.

Monitoring notes for continuous monitoring stations are provided on a station by station basis.

Station 1, Fort McKay

The NH_3 analyzer required additional time to stabilize to levels below ambient concentrations following the automated daily span period. Additional time for stabilization after spanning is an

inherent behavior in the NH_3 analyzer operations resulting from the properties of the NH_3 gas. Data for one hour following the daily spans have been reported as invalid for a total of 30 hours this month.

Maintenance and cleaning of the sample manifold on April 9 interrupted the normal operations of the TRS, O_3 and NH_3 analyzers for 1 hour.

A shelter temperature control failure at the station on April 12 affected the normal operations of the air analyzers for 3 to 6 hours.

Maintenance to the sample inlet, flow audits and zero reference checks on April 15 interrupted the normal operations of the $PM_{2.5}$ analyzer for 1 hour.

Depletion and replacement of the fuel cylinder at the station on April 25 affected the normal operation of the THC analyzer for 2 hours.

The effects of freezing temperatures in the region resulted in a flat-line in the output signals of the wind sensors for 2 hours this month.

The temperature sensors at 2 and 10 m are identical but independent sensors and are not an integrated delta-t system. Although reported values are representative of ambient temperatures, they may not be suitable as measurements of vertical temperature gradients.

Station 2, Mildred Lake

Maintenance and cleaning of the sample manifold on April 17 interrupted the normal operation of the H_2S analyzers for 1 hour.

Station 3, Lower Camp B - Meteorology

No operational issues to report.

Station 4, Buffalo Viewpoint

No operational issues to report.

Station 5, Mannix

A power failure at the station on April 7 and 23 affected the normal operations of all parameters for 6 hours this month. Additional periods of data were invalidated for 1 to 3 hours for each incident to allow for the air quality analyzers to stabilize to ambient conditions.

Maintenance and cleaning of the sample manifold on April 22 interrupted the normal operation of the H_2S analyzers for 1 hour.

Station 6, Patricia McInnes

Maintenance to the sample inlet and flow and zero reference checks on April 8 interrupted the normal operations of the $PM_{2.5}$ analyzer for 1 hour. The $PM_{2.5}$ analyzer experienced 4 episodes of intermittent unstable operations this month, resulting in 29 hours of invalid data.

Maintenance and replacement of the zero air generator scrubbers on April 11 interrupted the normal operation of the THC analyzer for 1 hour.

Depletion and replacement of the fuel cylinder at the station on April 14 affected the normal operation of the THC analyzer for 1 hour.

The normal operation of the TRS analyzer was interrupted on April 23 for 1 hour to verify analyzer response to daily zero and span checks.

The normal operation of the O_3 analyzer was interrupted on April 25 for 2 hours to verify analyzer response to daily zero and span checks.

The NH_3 analyzer required additional time to stabilize to levels below ambient concentrations following the automated daily span period. Additional time for stabilization after spanning is an inherent behavior in the NH_3 analyzer operations resulting from the properties of the NH_3 gas. Data for one hour following the daily span have been reported as invalid for a total of 30 hours this month.

Maintenance and replacement of the in-situ calibrator, span gas cylinders, sample lines and confirmation of analyzer responses to daily span checks between April 22 and 29 interrupted the normal operations of the SO_2, THC, NO_2 and NH_3 analyzers for 3 to 9 hours this month.

Station 7, Athabasca Valley

A power failure at the station on April 23 affected the normal operations of all air quality analyzers for 1 hour.

Maintenance and cleaning of the sample manifold on April 4 interrupted the normal operations of the SO_2, TRS and NO_2 analyzers for 1 to 2 hours.

Depletion and replacement of the carrier gas and fuel cylinders at the station on April 14 and 30 affected the normal operations of the THC analyzer for 3 hours this month.

Maintenance to the sample inlet and flow and zero reference checks on April 14 interrupted the normal operations of the $PM_{2.5}$ analyzer for 1 hour.

The $PM_{2.5}$ analyzer experienced a single episode of unstable operation, resulting in 1 hour of invalid data.

Station 8, Fort Chipewyan

Maintenance to the sample inlet and flow and zero reference checks on April 8 interrupted the normal operations of the $PM_{2.5}$ analyzer for 2 hour. The $PM_{2.5}$ analyzer experienced three instances of unstable operations this month, resulting in 14 hours of invalid data.

The effects of freezing temperatures and snow fall in the region resulted in a flat-line of the output signals of the wind sensors for 5 hours this month.

Reinstallation of the analog type sensors such as ambient temperature and relative humidity in the new shelter were accompanied by upgrades to the communications equipment for digital polling and the data acquisition system programming. The additional work resulted in a downtime greater than what would be required for a normal shelter swap. These sensors were not in service from March 11 to April 8, 2014. The temperature and relative humidity sensors were operational for only 74% of the time.

The precipitation collector and the solar radiation sensor were not in service during this reporting period.

Station 9, Barge Landing

The effects of freezing temperatures and snow fall in the region resulted in a flat-line of the output signals of the wind sensors for 10 hours this month.

Station 11, Lower Camp

Station operator activities on April 1st interrupted the normal operations of the THC analyzer for 3 hours.

Station 12, Millennium Mine

Station operator activities on April 28 interrupted the normal operations of the TRS and NO_2 analyzers for 1 hour.

Maintenance to the sample inlet, flow audits and zero reference checks on April 24 interrupted the normal operations of the $PM_{2.5}$ analyzer for 1 hour.

A flat-line in the output signals of the wind sensor resulted in 1 hour of invalid data this reporting period.

Station 13, Syncrude UE 1

Maintenance to the sample inlet and flow audits and zero reference checks on April 25 interrupted the normal operation of the $PM_{2.5}$ analyzer for 1 hour.

A flat-line in the output signals of the wind sensor resulted in 1 hour of invalid data this reporting period.

Station 14, Anzac

Maintenance to the sample inlet, flow audits and zero reference checks on April 30 interrupted the normal operations of the $PM_{2.5}$ analyzer for 2 hours.

The effects of freezing temperatures in the region resulted in flat-lines of the output signals of the wind sensors for 9 hours this month.

Station 15, CNRL Horizon

A power failure at the station on April 11 affected the normal operations of all air quality analyzers for 3 hours. A flame out in the FID unit of the analyzer following the power failure interrupted the normal operation of the THC analyzer for an additional 2 hours.

Station operator activities on April 16 interrupted the normal operations of all parameters for 2 to 5 hours.

There were two issues associated with operation of the precipitation collector resulting in 53 hours of invalid data. Maintenance to the tipping bucket precipitation collector on April 11 resulted in 3 hours of downtime. Electrical inference in the output signal of the collector between April 14 and 16 resulted in 50 hours data been invalidated.

Maintenance to the sample inlet, flow audits and zero reference checks on April 14 interrupted the normal operations of the $PM_{2.5}$ analyzer for 1 hour.

Station 16, Albian Muskeg River

Maintenance to the sample inlet, flow audits and zero reference checks on April 24 interrupted the normal operations of the $PM_{2.5}$ analyzer for 1 hour.

A flat-line in the output signals of the wind sensor resulted in 1 hour of invalid data this reporting period.

Station 17, Wapasu

Construction at the station on April 4 interrupted the normal operations of all air quality analyzers for 7 hours. An additional 2 hours of data were invalidated following the power interruptions to allow for the air quality analyzers to stabilize to ambient conditions.

Maintenance to the sample inlet, flow audits and zero reference checks on April 9 interrupted the normal operations of the $PM_{2.5}$ analyzer for 3 hours.

Station operator activities on April 10 affected the normal operations of the $PM_{2.5}$ analyzer for 1 hour.

The $PM_{2.5}$ analyzer experienced 4 episodes of intermittent unstable operations this month, resulting in 18 hours of invalid data.

De-icing of the wind sensors on April 10 interrupted the normal operations of the sensors for 1 hour.

The effects of freezing temperature in the region resulted in a flat-line of the output signals of the wind sensors for 2 hours this month.

Station 500, Cenovus Christina Lake

Maintenance and cleaning of the sample manifold on April 10 interrupted the normal operations of the SO_2 and NO_2 analyzers for two hours.

The SO_2 analyzer experienced two episodes of extended stabilization periods after daily span checks on April 22 and 28 resulting in two hours of invalid data.

The H_2S analyzer experienced four instances of unstable operations this month, resulting in 5 hours of invalid data.

The effects of freezing temperatures in the region resulted in flat-lines of the output signals in the wind sensors for 14 hours this month.

Station 101, Portable

Not in operation during this reporting period.

Station 102, Portable

Not in operation during this reporting period.

If additional information is required, please contact either Sanjay Prasad at (403) 703 8931 or the Wood Buffalo Environmental Association at (780) 799 4420.

Yours sincerely,

Aurora Atmospherics Inc.

Sanjay Prasad
Air Quality Scientist

WOOD BUFFALO ENVIRONMENTAL ASSOCIATION
MONTHLY AIR MONITORING SUMMARY
for AMD SECTION III.B.1(c)

APRIL 2014

prepared 29May14:22:36

APPROVAL NUMBERS	REPORT DATE MONTH	REPORT DATE YEAR
289664-00-00	4	2014
254465-00-00		
149968-00-01		
48522-01-00		
240008-00-03		
48263-00-00		
224816-00-03		
189942-00-02		
206355-00-00		
46586-00-00		
216466-00-04		
137467-00-00		
20809-01-00		
241311-00-00		
094-02-00		
305529-00-00		
026-02-00		
228044-00-00		
73203-01-00		

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	99.58	0.044	0	0.009	0
SO2(ppb)	2	100.00	0.079	0	0.017	0
SO2(ppb)	4	100.00	0.067	0	0.012	0
SO2(ppb)	5	98.47	0.077	0	0.037	0
SO2(ppb)	6	98.89	0.049	0	0.010	0
SO2(ppb)	7	99.72	0.031	0	0.006	0
SO2(ppb)	8	100.00	0.005	0	0.001	0
SO2(ppb)	11	100.00	0.057	0	0.010	0
SO2(ppb)	12	100.00	0.081	0	0.021	0
SO2(ppb)	13	100.00	0.077	0	0.014	0
SO2(ppb)	14	100.00	0.016	0	0.003	0
SO2(ppb)	15	98.89	0.030	0	0.007	0
SO2(ppb)	16	100.00	0.074	0	0.010	0
SO2(ppb)	17	99.03	0.024	0	0.004	0
SO2(ppb)	500	99.44	0.009	0	0.002	0
H2S(ppb)	2	99.86	0.003	0	0.001	0
H2S(ppb)	4	100.00	0.002	0	0.001	0
H2S(ppb)	5	98.75	0.005	0	0.002	0
H2S(ppb)	11	100.00	0.003	0	0.001	0
H2S(ppb)	17	98.75	0.001	0	0.000	0
H2S(ppb)	500	99.31	0.001	0	0.000	0
TRS(ppb)	1	99.86	0.003	0	0.001	0
TRS(ppb)	6	99.86	0.001	0	0.000	0
TRS(ppb)	7	99.72	0.001	0	0.000	0
TRS(ppb)	9	100.00	0.003	0	0.001	0
TRS(ppb)	12	99.86	0.002	0	0.001	0
TRS(ppb)	13	100.00	0.003	0	0.001	0
TRS(ppb)	14	100.00	0.001	0	0.000	0
TRS(ppb)	15	98.89	0.001	0	0.000	0
THC(ppm)	1	99.72	2.5	-	2.0	-
THC(ppm)	2	100.00	4.4	-	2.7	-
THC(ppm)	4	100.00	4.8	-	2.9	-
THC(ppm)	5	98.47	6.5	-	2.6	-
THC(ppm)	6	98.47	2.5	-	2.0	-
THC(ppm)	7	99.44	2.2	-	1.9	-
THC(ppm)	9	100.00	2.9	-	2.5	-
THC(ppm)	11	99.58	4.0	-	2.8	-
THC(ppm)	12	100.00	6.0	-	2.6	-
THC(ppm)	13	100.00	4.1	-	2.4	-
THC(ppm)	14	100.00	2.2	-	1.9	-
THC(ppm)	15	98.61	4.8	-	2.7	-
THC(ppm)	16	100.00	4.6	-	2.6	-
THC(ppm)	17	99.03	2.4	-	2.2	-
O3(ppb)	1	99.44	0.0	0	0.0	-
O3(ppb)	6	99.72	0.057	0	0.043	-
O3(ppb)	7	99.86	0.054	0	0.045	-
O3(ppb)	8	100.00	0.050	0	0.049	-
O3(ppb)	13	100.00	0.053	0	0.040	-

WOOD BUFFALO ENVIRONMENTAL ASSOCIATION
MONTHLY AIR MONITORING SUMMARY
for AMD SECTION III.B.1(c)

prepared 29May14:22:36

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228044-00-00		
73203-01-00		

CONTINUOUS AMBIENT MONITORING

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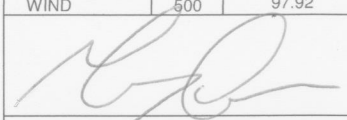
O3(ppb)	14	100.00	0.055	0	0.045	-
O3(ppb)	17	99.03	0.053	0	0.046	-
NO2(ppb)	1	99.17	0.031	0	0.014	-
NO2(ppb)	6	98.47	0.033	0	0.008	-
NO2(ppb)	7	99.58	0.070	0	0.020	-
NO2(ppb)	8	100.00	0.006	0	0.001	-
NO2(ppb)	12	99.86	0.044	0	0.020	-
NO2(ppb)	13	100.00	0.041	0	0.014	-
NO2(ppb)	14	100.00	0.010	0	0.004	-
NO2(ppb)	15	98.89	0.036	0	0.013	-
NO2(ppb)	16	100.00	0.040	0	0.019	-
NO2(ppb)	17	98.75	0.020	0	0.006	-
NO2(ppb)	500	99.72	0.032	0	0.010	-
CO(ppm)	7	99.86	0.400	0	0.200	-
NH3(ppb)	1	94.86	0.000	0	0.000	-
NH3(ppb)	6	95.42	0.000	0	0.000	-
PM2.5(ug/m3)	1	99.86	35.4	-	12	0
PM2.5(ug/m3)	6	95.83	21.9	-	6.2	0
PM2.5(ug/m3)	7	99.58	38.3	-	12.1	0
PM2.5(ug/m3)	8	97.78	10.6	-	5	0
PM2.5(ug/m3)	12	99.86	40.2	-	19.5	0
PM2.5(ug/m3)	13	99.86	26.7	-	9.1	0
PM2.5(ug/m3)	14	99.72	48.7	-	11.8	0
PM2.5(ug/m3)	15	99.44	31	-	8.8	0
PM2.5(ug/m3)	16	99.86	38.1	-	9.6	0
PM2.5(ug/m3)	17	95.97	13.8	-	4.5	0
WIND	1	99.72	-	-	-	-
WIND	2	100.00	-	-	-	-
WIND	4	100.00	-	-	-	-
WIND	5	99.17	-	-	-	-
WIND	6	100.00	-	-	-	-
WIND	7	100.00	-	-	-	-
WIND	8	99.31	-	-	-	-
WIND	9	98.61	-	-	-	-
WIND	11	100.00	-	-	-	-
WIND	12	99.86	-	-	-	-
WIND	13	99.86	-	-	-	-
WIND	14	98.75	-	-	-	-
WIND	15	100.00	-	-	-	-
WIND	16	99.86	-	-	-	-
WIND	17	99.58	-	-	-	-
WIND	500	97.92	-	-	-	-



SIGNATURE OF ASSOCIATION REPRESENTATIVE

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WOOD BUFFALO ENVIRONMENTAL ASSOCIATION

CONTINUOUS AMBIENT AIR QUALITY
MONITORING PROGRAM
MONTHLY REPORT

AMS 1
BERTHA GANTER FORT MCKAY
APRIL 2014

Operations and Data Collection by:
Wood Buffalo Environmental Association
Fort McMurray, Alberta

QA/QC, Data Validation and Reporting by:
Aurora Atmospherics Inc.
Calgary, Alberta

May 30, 2014

WOOD BUFFALO ENVIRONMENTAL ASSOCIATION - FORT McKAY - BERTHA GANTER (AMS 1)
APRIL 2014

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	35	38	99.58	44	0	9	0
TRS(ppb) Average	685	34	35	99.86	3	0	1	0
THC(ppm) Average	683	35	37	99.72	2.5	-	2	-
NMHC(ppm) Average	683	35	37	99.72	0.051	-	0.004	-
CH4(ppm) Average	683	35	37	99.72	2.5	-	2	-
O3 (ppb) Average	683	33	37	99.44	49	0	38	-
NO2 (ppb) Average	679	35	41	99.17	31	0	14	-
NO (ppb) Average	679	35	41	99.17	32	-	5	-
NOX (ppb) Average	679	35	41	99.17	43	-	18	-
NH3 (ppb) Average	644	39	76	94.86	0	0	0	-
PM2.5 (ug/m3) Average	719	0	1	99.86	35.4	-	12	0
Wind Speed 10 m (km/h) Average	718	0	2	99.72	23	-	13	-
Wind Direction 10 m (deg) Average	718	0	2	99.72	-	-	-	-
Temperature 2 m (C) Average	720	0	0	100.00	27.6	-	17.6	-
Temperature 10 m (C) Average	720	0	0	100.00	26.6	-	18.1	-
Relative Humidity (%) Average	720	0	0	100.00	100	-	89	-
Precipitation (mm) Total	720	0	0	100.00	1.8	-	5.8	-
Surface Wetness (% of range) Average	720	0	0	100.00	81	-	13	-
Global Solar Radiation (W/m2) Average	720	0	0	100.00	459	-	150	-

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

WOOD BUFFALO ENVIRONMENTAL ASSOCIATION - BERTHA GANTER FORT McKAY (AMS 1)
APRIL 2014

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	2.1	4	-	0	0	1	1	1	4	44
TRS (ppb) Average	685	0.3	0	-	0	0	0	0	0	0	3
THC (ppm) Average	683	1.91	0.1	-	1.8	1.9	1.9	1.9	1.9	2	2.5
NMHC(ppm) Average	683	0	0.003	-	0	0	0	0	0	0	0.051
CH4(ppm) Average	683	1.91	0.1	-	1.8	1.9	1.9	1.9	1.9	2	2.5
O3 (ppb) Average	683	28.6	11	-	0	12	22	31	37	40	49
NO2 (ppb) Average	679	6.1	5	-	0	1	2	5	9	14	31
NO (ppb) Average	679	1.4	3	-	0	0	0	0	1	4	32
NOX (ppb) Average	679	7.5	7	-	0	1	2	5	11	16	43
NH3 (ppb) Average	644	0	0	-	0	0	0	0	0	0	0
PM2.5 (ug/m3) Average	719	5.73	4	-	0.6	1.9	3	4.7	7.4	10.2	35.4
Wind Speed 10 m (km/h) Average	718	7.9	4	-	0	3	5	8	11	13	23
Wind Direction 10 m (deg) Average	718	-	-	-	-	-	-	-	-	-	-
Temperature 2 m (C) Average	720	6.21	8.3	-	-18.8	-4.9	0.6	6.6	11.5	16.7	27.6
Temperature 10 m (C) Average	720	6.38	8	-	-16.8	-4.5	1.1	7.2	11.3	16.2	26.6
Relative Humidity (%) Average	720	61.4	18	-	21	37	48	61	74	89	100
Precipitation (mm) Total	720	-	-	9.65	0	0	0	0	0	0	1.8
Surface Wetness (% of range) Average	720	0.9	6	-	0	0	0	0	0	0	81
Global Solar Radiation (W/m2) Average	720	102	129	-	0	0	0	32	179	328	459

WOOD BUFFALO ENVIRONMENTAL ASSOCIATION - BERTHA GANTER Fort McKAY (AMS 1)
APRIL 2014

OPERATIONAL NOTES

Notes
Flow and zero reference checks, sample head cleaning

Wood Buffalo Environmental Association

Summary of Hour Averages

Sulphur Dioxide (SO_2) - ppb

Fort McKay - Bertha Ganter - April 2014

Number of Exceedences (AAAQO): 1-hr: 0 24-hr: 0
Maximum Value: 44 ppb on Apr 28 19:00 Maximum Daily Average: 8.8 ppb on Apr 28

Minimum Value: 0 ppb on Apr 5 08:00 Minimum Daily Average: 0.1 ppb on Apr 9
Maximum Diurnal Average: 4.7 ppb at hour 10 Minimum Diurnal Average: 0.7 ppb at hour 6
Monthly Average: 2.1 ppb Percentiles: $P_1 = 0$ $P_{10} = 0$ $Q_1 = 1$ Median = 1 $Q_3 = 1$ $P_{90} = 4$ $P_{99} = 26$

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-Apr	1	Z	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	0	1	0.9	1
2-Apr	1	Z	1	1	1	1	0	1	1	1	0	0	1	1	1	0	1	0	0	0	0	1	1	0	0.5	1
3-Apr	1	Z	1	1	1	1	1	1	1	0	0	0	0	0	0	0	0	1	0	0	1	0	0	0	0.5	1
4-Apr	1	Z	1	10	6	3	5	17	11	14	9	3	1	2	1	1	1	0	0	0	0	1	0	0	3.9	17
5-Apr	0	Z	0	0	0	0	0	0	1	1	0	0	1	0	0	0	0	0	0	0	0	0	0	0	0.3	1
6-Apr	0	Z	0	0	0	0	0	0	0	2	5	1	1	1	1	1	1	1	1	1	1	1	1	1	1.0	5
7-Apr	1	Z	1	1	1	1	1	1	1	2	2	1	1	13	14	3	1	1	1	1	1	1	1	1	2.2	14
8-Apr	1	Z	1	1	1	1	1	1	1	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0.5	1
9-Apr	1	Z	0	0	0	0	0	0	0	C	C	C	C	C	0	0	0	0	0	0	0	0	0	0	0.1	1
10-Apr	0	Z	0	0	0	0	0	0	0	0	1	2	1	1	1	1	1	1	1	1	1	1	1	1	0.6	2
11-Apr	1	Z	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	0.8	1
12-Apr	1	Z	1	1	1	1	1	1	1	1	1	1	1	1	UO	UO	UO	1	1	1	1	1	1	1	0.7	1
13-Apr	1	Z	1	1	1	1	0	0	0	1	0	0	1	1	1	1	1	3	26	31	15	9	4	2	4.3	31
14-Apr	3	Z	7	2	1	1	1	9	30	13	14	15	13	9	7	6	5	2	1	1	2	1	1	1	6.3	30
15-Apr	0	Z	0	0	0	0	0	0	0	0	0	1	0	1	0	1	1	1	1	1	1	1	1	1	0.6	1
16-Apr	1	Z	1	1	1	1	1	1	1	0	1	1	1	4	7	4	2	2	1	1	1	1	1	1	1.3	7
17-Apr	0	Z	0	0	0	0	1	2	37	25	3	2	1	3	1	0	1	1	1	1	1	1	1	1	3.5	37
18-Apr	1	Z	1	1	0	1	1	0	1	1	1	1	1	1	1	1	1	1	5	8	10	6	3	2	2.0	10
19-Apr	1	Z	1	1	1	1	1	2	3	10	11	12	13	14	10	6	5	4	2	1	1	1	1	1	4.5	14
20-Apr	1	Z	1	1	1	1	1	1	1	2	3	2	2	2	1	1	1	1	1	1	1	1	1	1	1.3	3
21-Apr	1	Z	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1.0	1
22-Apr	1	Z	1	1	1	1	1	1	1	1	1	1	1	1	0	0	0	0	0	0	0	0	0	0	0.6	1
23-Apr	0	Z	0	0	0	0	0	0	0	0	0	0	0	0	1	1	1	1	1	1	0	1	0	0	0.4	1
24-Apr	0	Z	0	1	1	1	1	1	1	1	1	1	1	4	12	5	3	1	1	1	1	1	1	1	1.7	12
25-Apr	1	Z	1	1	1	1	1	1	1	1	1	1	1	1	1	1	0	6	4	1	2	1	1	1	1.3	6
26-Apr	1	Z	1	1	1	1	1	3	11	20	10	9	12	4	17	2	1	1	1	1	1	1	1	1	4.2	20
27-Apr	1	Z	1	1	1	1	1	1	1	1	1	1	1	1	1	3	4	2	2	2	2	1	1	1	1.3	4
28-Apr	1	Z	1	1	1	1	1	1	7	7	10	11	17	13	11	13	21	19	44	12	4	3	2	2	8.8	44
29-Apr	1	Z	1	1	1	1	1	2	2	2	2	2	1	1	1	1	1	1	1	1	1	1	1	1	1.1	2
30-Apr	1	Z	1	1	1	1	1	2	4	26	32	13	6	4	4	3	1	1	1	1	1	1	1	1	4.8	32
	0.8	--	0.9	1.0	0.9	0.7	0.8	1.7	4.0	4.7	3.9	2.9	2.8	2.9	3.4	2.0	1.9	1.9	3.4	2.4	1.7	1.2	0.9	0.8	Diurnal Average	
	3	--	7	10	6	3	5	17	37	26	32	15	17	14	17	13	21	19	44	31	15	9	4	2	Diurnal Maximum	

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

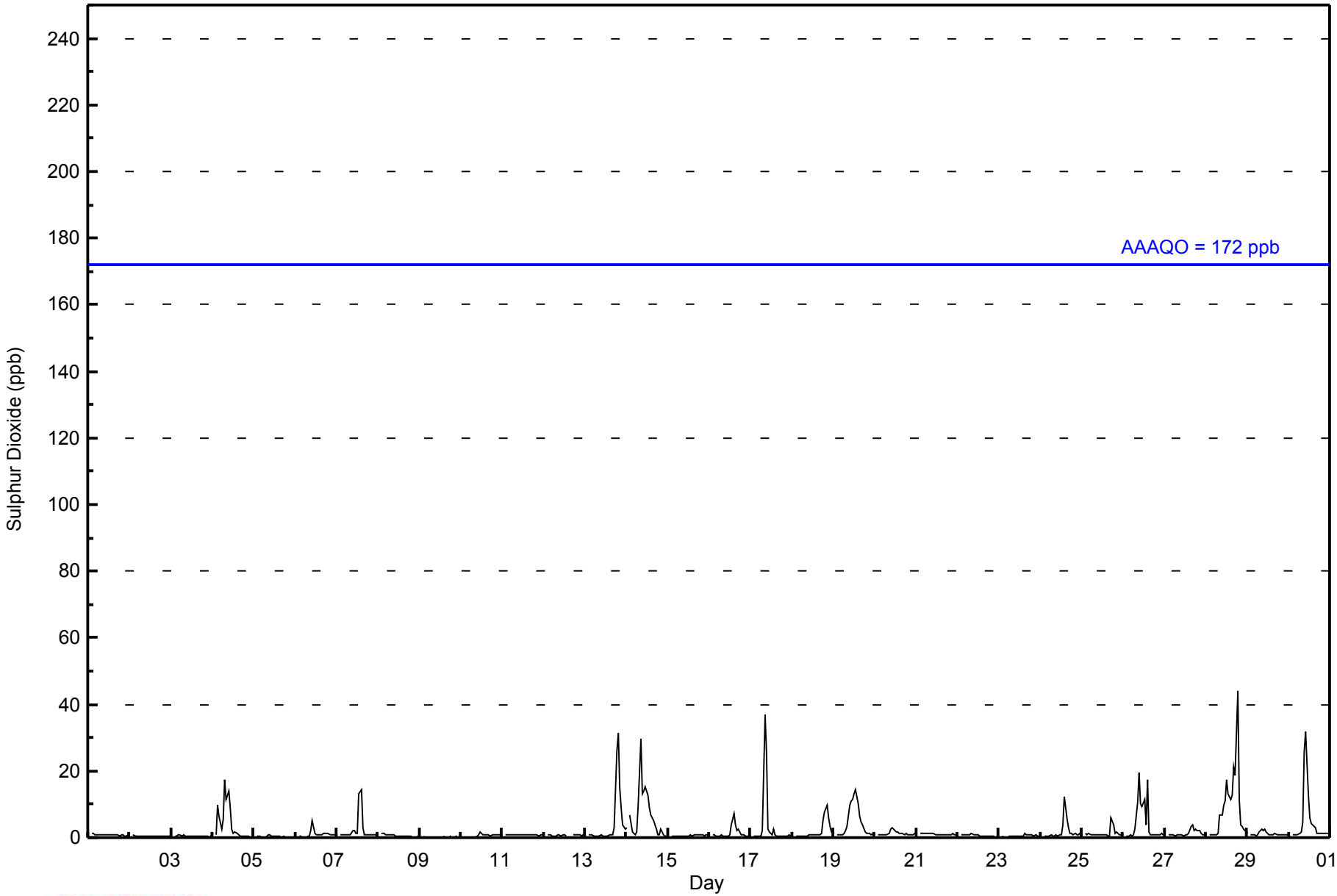
AURORA ATMOSPHERICS INC.

WBEA NETWORK

Hourly Averages

Sulphur Dioxide (SO_2) - ppb

Fort McKay - Bertha Ganter - April 2014



AURORA ATMOSPHERICS INC.

Concentration Ranges (ppb)	Number of Hours	%	Cumulative %
0 - 10	646	94.72	94.72
11 - 20	27	3.96	98.68
21 - 60	9	1.32	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

Sulphur Dioxide (SO_2) - ppb

Fort McKay - Bertha Ganter - April 2014

Concentration Ranges (ppb)	Wind Direction																
	N	NNE	NE	ENE	E	ESE	SE	SSE	S	SSW	SW	WSW	W	WNW	NW	NNW	**Totals**
0 - 10	77	63	52	59	30	24	40	105	51	24	19	15	20	15	22	28	644
11 - 20	0	0	0	1	1	1	1	16	6	0	0	0	1	0	0	0	27
21 - 60	0	0	0	0	0	0	1	4	4	0	0	0	0	0	0	0	9
61 - 110	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
111 - 172	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
> 172	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Totals	77	63	52	60	31	25	42	125	61	24	19	15	21	15	22	28	680

Total Number of Valid Hours: 680

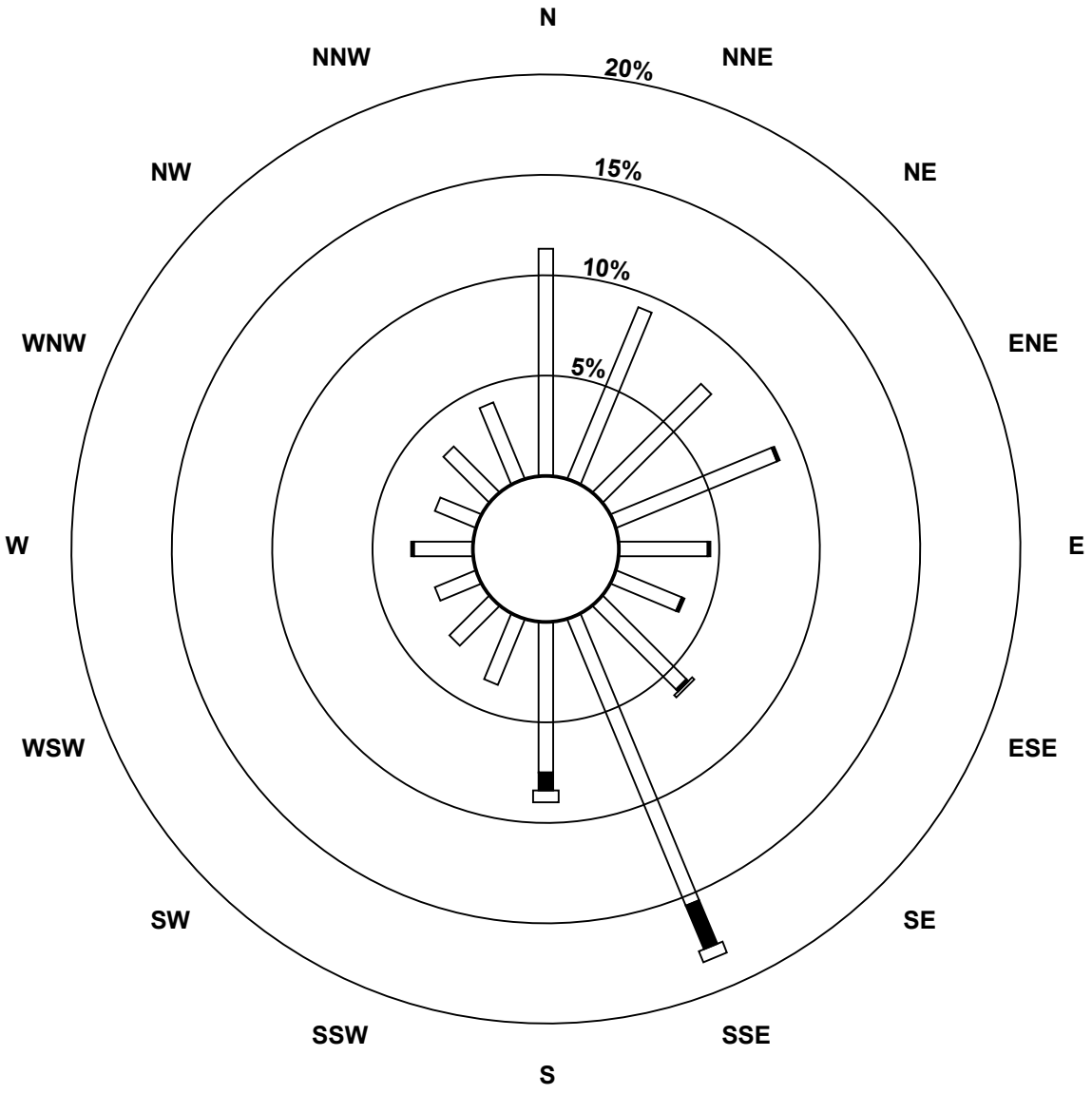
Total Number of Hours: 720

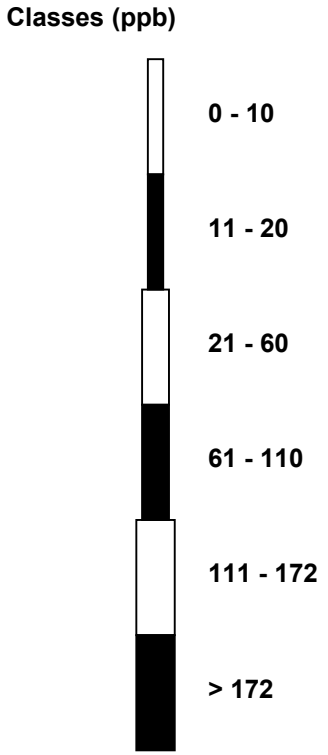
Wood Buffalo Environmental Association

Wind Rose Apr 2014

Sulphur Dioxide (SO_2) - ppb

Fort McKay - Bertha Ganter (AMS 1)





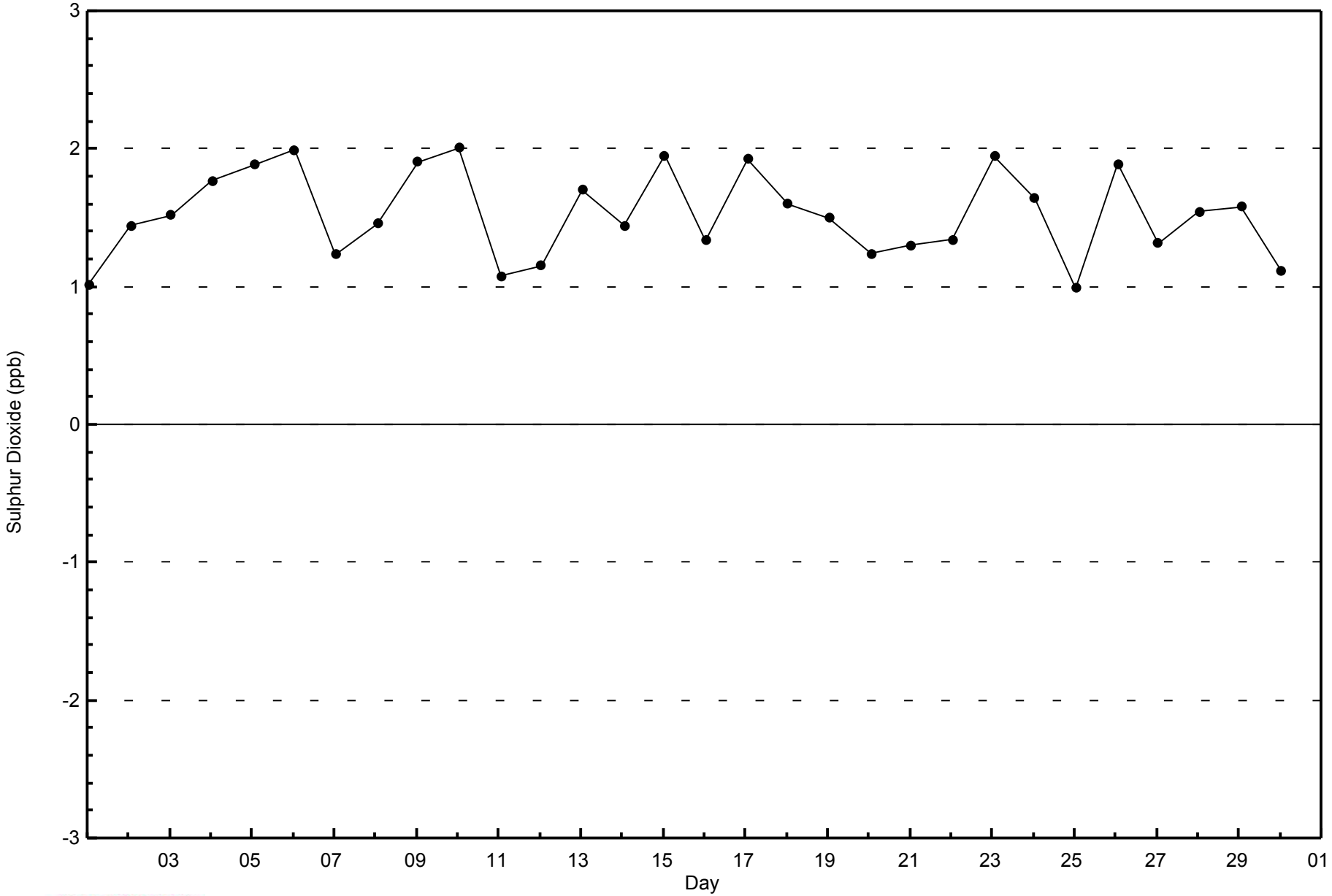
Total Number of Valid Hours: 680

WBEA NETWORK

Zero Responses

Sulphur Dioxide (SO_2) - ppb

Fort McKay - Bertha Ganter - April 2014



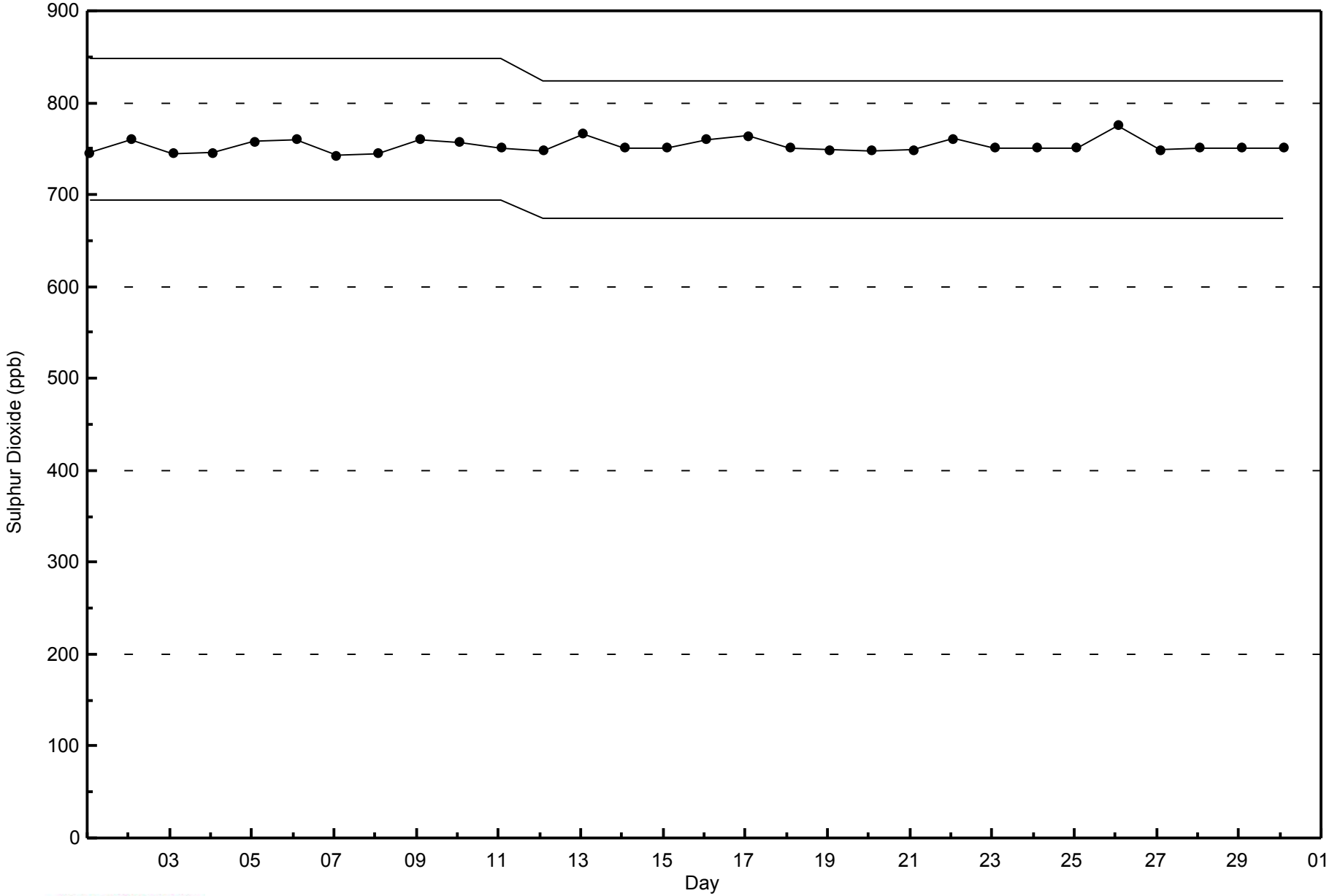
AURORA ATMOSPHERICS INC.

WBEA NETWORK

Span Responses

Sulphur Dioxide (SO_2) - ppb

Fort McKay - Bertha Ganter - April 2014



AURORA ATMOSPHERICS INC.

Wood Buffalo Environmental Association

Summary of Hour Averages

Total Reduced Sulphur (TRS) - ppb

Fort McKay - Bertha Ganter - April 2014

Number of Exceedences (AAAQO): 1-hr: 0 24-hr: 0
Maximum Value: 3 ppb on Apr 30 10:00 Maximum Daily Average: 0.6 ppb on Apr 30

Minimum Value: 0 ppb on Apr 30 05:00 Minimum Daily Average: 0.2 ppb on Apr 11
Maximum Diurnal Average: 0.4 ppb at hour 10 Minimum Diurnal Average: 0.2 ppb at hour 23
Monthly Average: 0.3 ppb Percentiles: $P_1 = 0$ $P_{10} = 0$ $Q_1 = 0$ Median = 0 $Q_3 = 0$ $P_{90} = 0$ $P_{99} = 1$

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-Apr	0	0	Z	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0.2	0
2-Apr	0	0	Z	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0.2	0
3-Apr	0	0	Z	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0.3	0
4-Apr	0	0	Z	0	0	0	0	0	0	1	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0.3	1
5-Apr	0	0	Z	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0.2	0
6-Apr	0	0	Z	0	0	0	0	0	0	1	1	0	0	0	0	0	1	1	0	1	1	0	0	0	0.4	1
7-Apr	0	0	Z	0	0	0	0	1	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0.3	1
8-Apr	1	1	Z	2	2	1	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0.4	2
9-Apr	0	0	Z	0	0	0	0	0	0	0	0	0	0	M	0	0	0	0	0	0	0	0	0	0	0.2	0
10-Apr	0	0	Z	0	0	0	0	0	0	0	C	C	C	C	0	0	0	0	0	0	0	0	0	0	0.2	0
11-Apr	0	0	Z	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0.2	0
12-Apr	0	0	Z	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0.2	0
13-Apr	0	0	Z	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1	1	1	0	0	0	0.3	1
14-Apr	0	0	Z	0	0	0	0	1	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0.3	1
15-Apr	0	0	Z	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0.2	0
16-Apr	0	0	Z	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0.2	0
17-Apr	0	0	Z	0	0	0	0	0	1	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0.3	1
18-Apr	0	0	Z	0	0	1	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0.3	1
19-Apr	0	0	Z	0	0	1	0	1	1	1	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0.4	1
20-Apr	0	0	Z	0	0	0	0	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1	0.3	1
21-Apr	1	1	Z	1	1	1	1	1	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0.4	1
22-Apr	0	0	Z	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0.2	0
23-Apr	0	0	Z	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0.3	0
24-Apr	0	0	Z	0	0	0	0	0	0	0	0	0	0	0	1	0	0	0	0	0	0	0	0	0	0.3	1
25-Apr	0	0	Z	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0.2	0
26-Apr	0	0	Z	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0.2	0
27-Apr	0	0	Z	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0.2	0
28-Apr	0	0	Z	0	0	0	0	0	0	1	1	1	1	0	0	0	0	0	0	0	0	0	0	0	0.4	1
29-Apr	0	0	Z	0	0	0	0	1	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0.3	1
30-Apr	0	0	Z	0	0	1	1	1	2	3	3	1	0	0	0	0	0	0	0	0	0	0	0	0	0.6	3
	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	0.3	0.2	0.2	0.2	Diurnal Average	
	1	1	--	2	2	1	1	1	2	3	3	1	1	0	1	0	1	1	1	1	1	0	0	1	Diurnal Maximum	

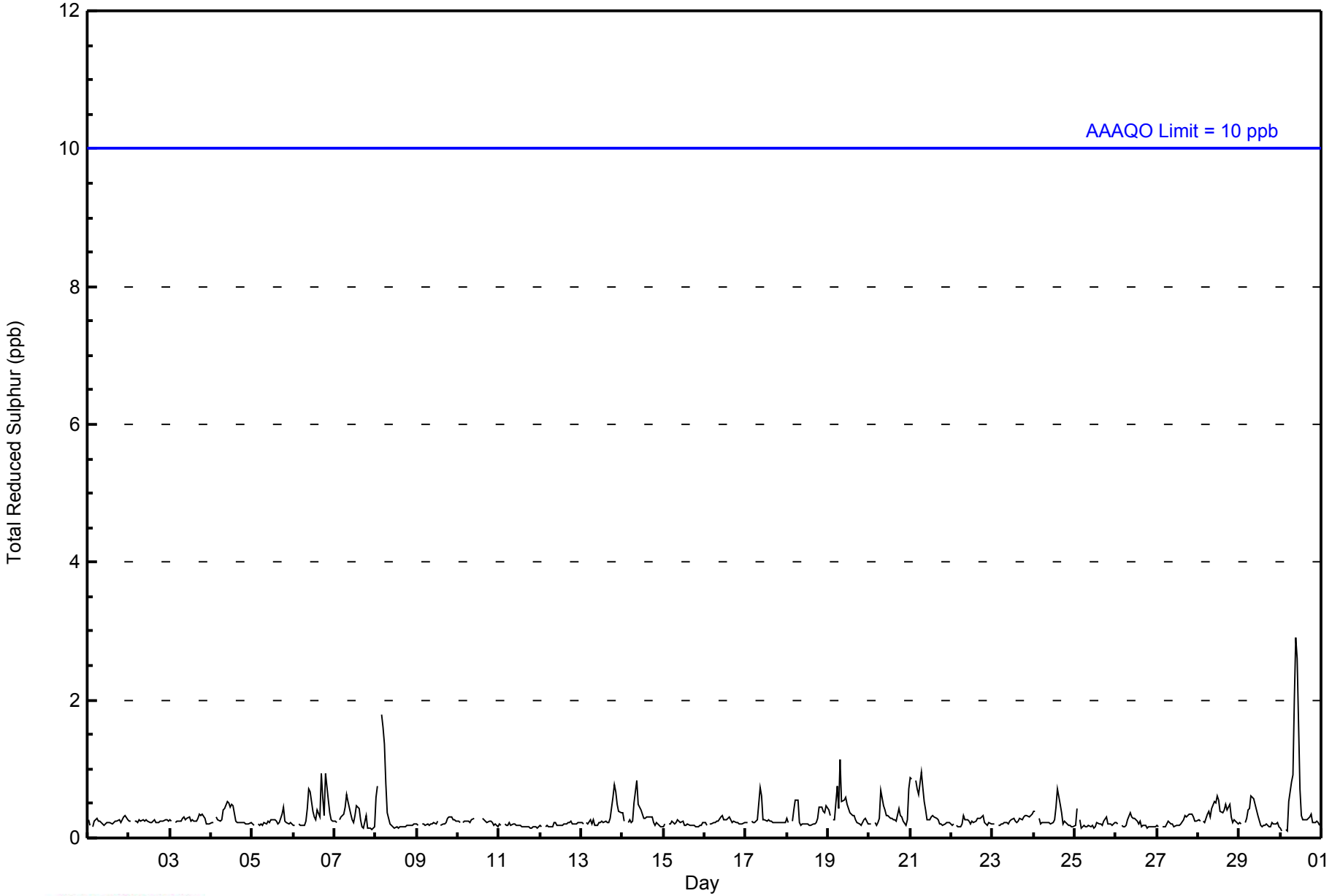
Z - zerospan C - Calibration M - Maintenance
Alberta Ambient Air Quality Objectives (AAAQO): 1-hr 10 ppb 24-hr 3 ppb

WBEA NETWORK

Hourly Averages

Total Reduced Sulphur (TRS) - ppb

Fort McKay - Bertha Ganter - April 2014



AURORA ATMOSPHERICS INC.

Concentration Ranges (ppb)	Number of Hours	%	Cumulative %
0 - 2	683	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: 685

Total Number of Hours: 720

WBEA NETWORK

Frequency Distribution

Total Reduced Sulphur (TRS) - ppb

Fort McKay - Bertha Ganter - April 2014

Concentration Ranges (ppb)	Wind Direction																
	N	NNE	NE	ENE	E	ESE	SE	SSE	S	SSW	SW	WSW	W	WNW	NW	NNW	**Totals**
0 - 2	80	62	53	57	30	26	42	124	59	26	17	16	21	17	24	27	681
3 - 4	0	0	0	0	0	0	0	1	1	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	80	62	53	57	30	26	42	125	60	26	17	16	21	17	24	27	683

Total Number of Valid Hours: 683

Total Number of Hours: 720

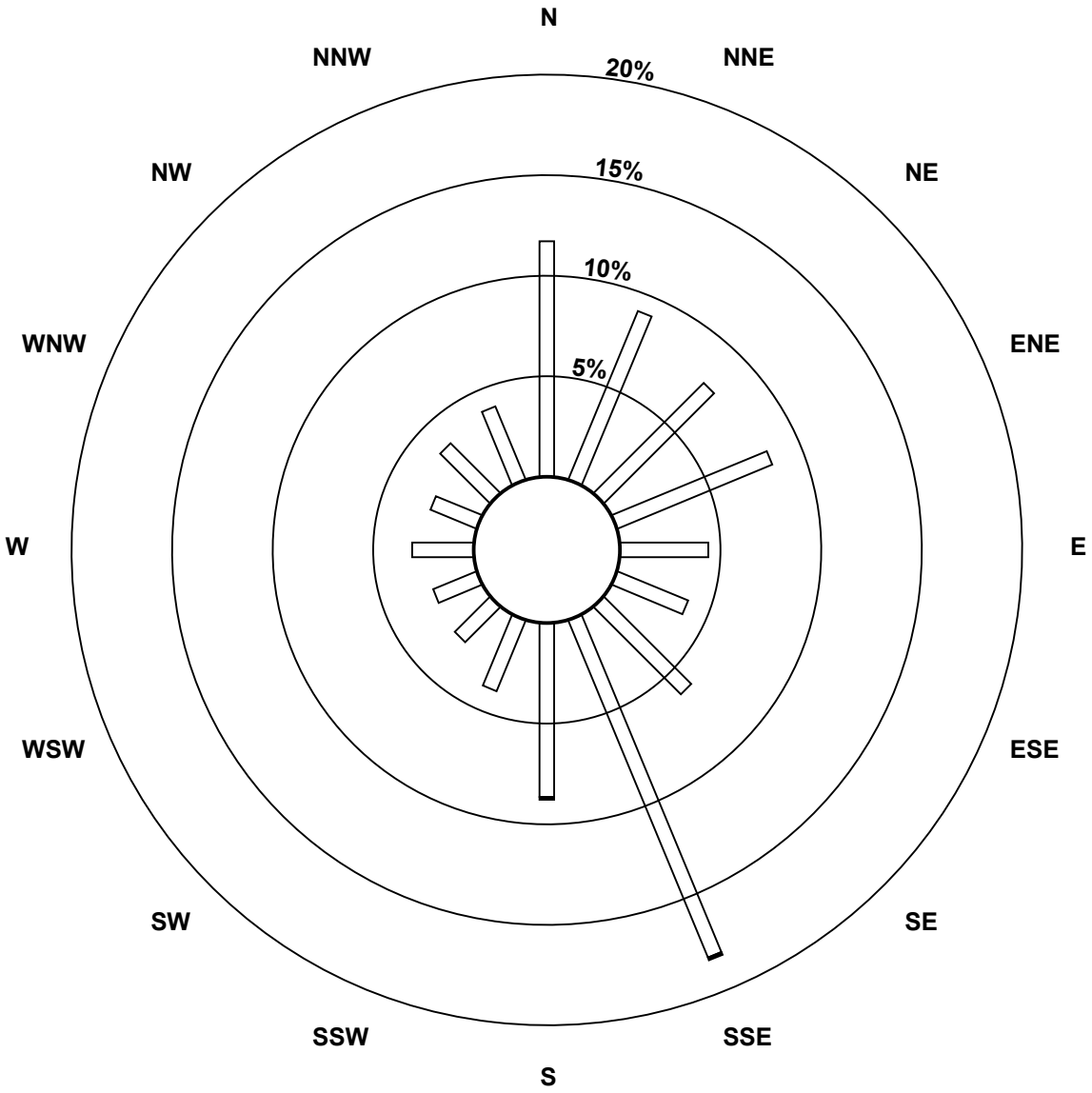
AURORA
ATMOSPHERICS INC.

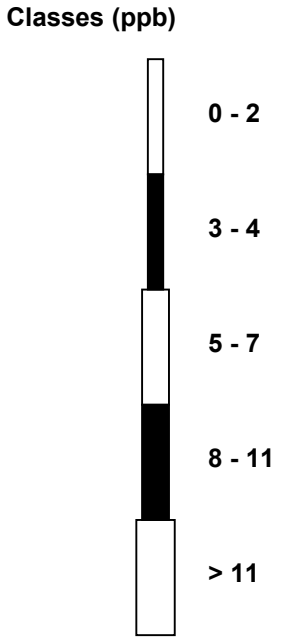
Wood Buffalo Environmental Association

Wind Rose Apr 2014

Total Reduced Sulphur (TRS) - ppb

Fort McKay - Bertha Ganter (AMS 1)





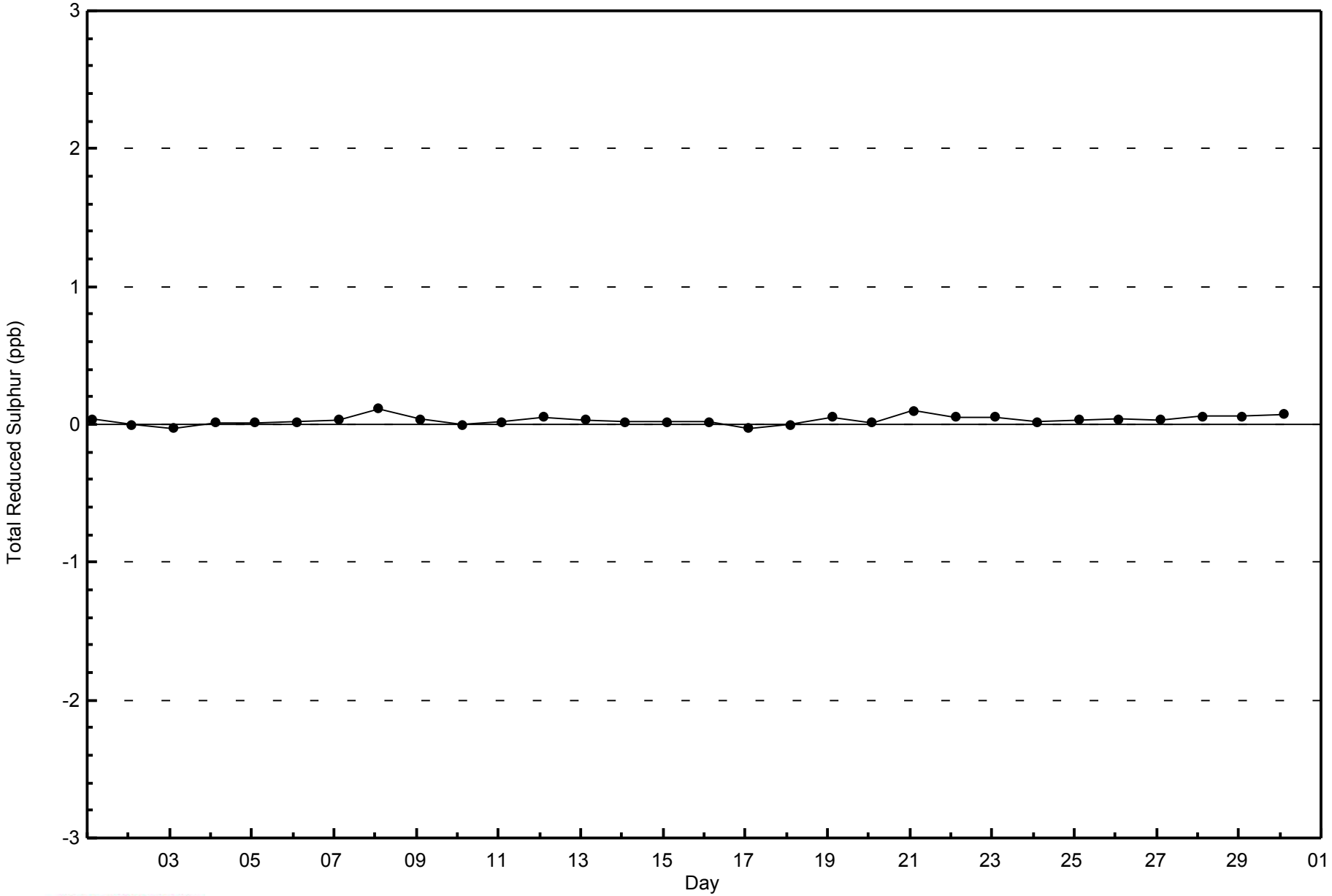
Total Number of Valid Hours: 683

WBEA NETWORK

Zero Responses

Total Reduced Sulphur (TRS) - ppb

Fort McKay - Bertha Ganter - April 2014



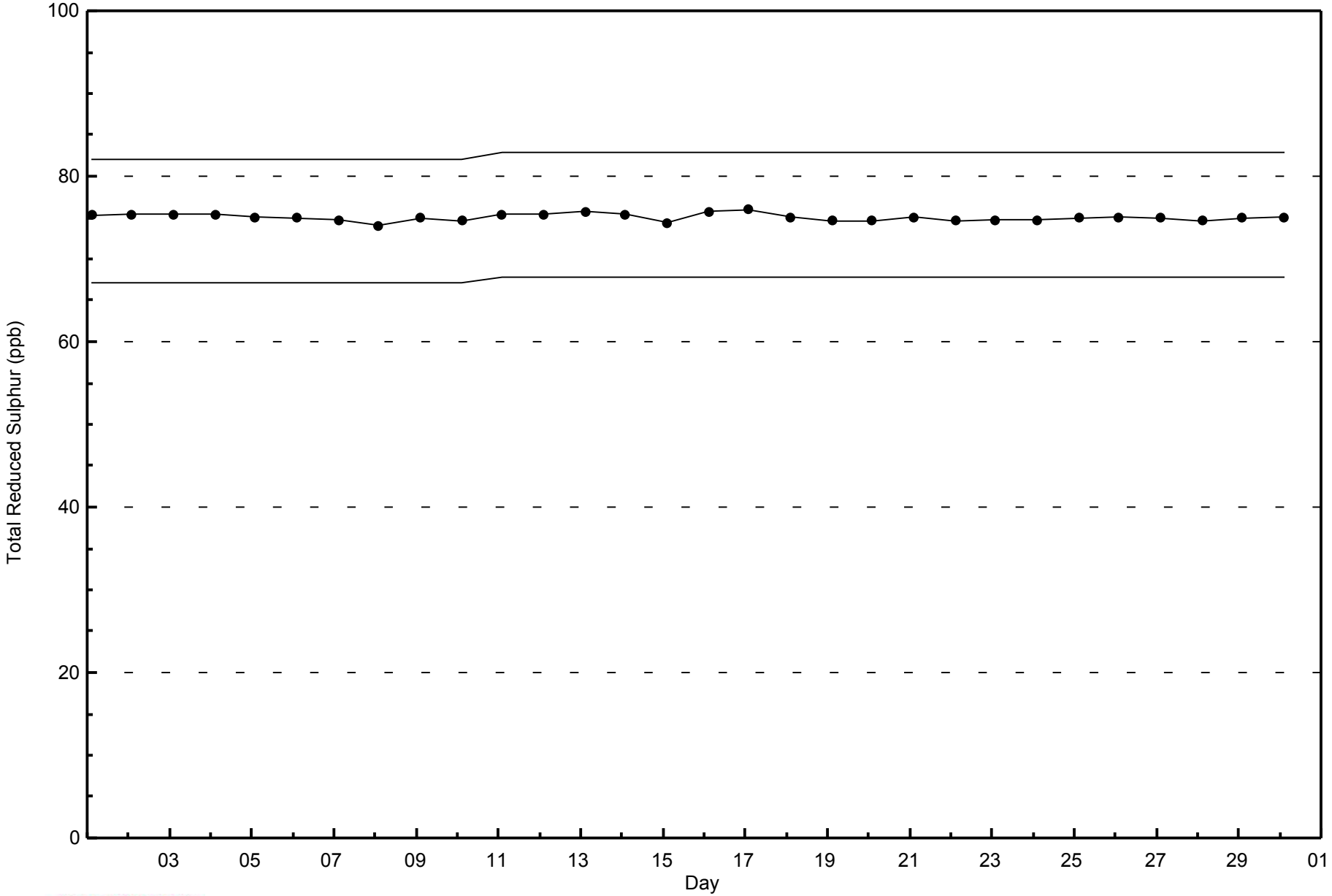
AURORA ATMOSPHERICS INC.

WBEA NETWORK

Span Responses

Total Reduced Sulphur (TRS) - ppb

Fort McKay - Bertha Ganter - April 2014



AURORA
ATMOSPHERICS INC.

Wood Buffalo Environmental Association

Summary of Hour Averages

Total Hydrocarbons (THC) - ppm

Fort McKay - Bertha Ganter - April 2014

Maximum Value: 2.5 ppm on Apr 8 05:00

Maximum Daily Average: 2.0 ppm on Apr 21

Minimum Value: 1.8 ppm on Apr 8 17:00

Minimum Daily Average: 1.9 ppm on Apr 9

Maximum Diurnal Average: 2.0 ppm at hour 8

Minimum Diurnal Average: 1.9 ppm at hour 16

Monthly Average: 1.91 ppm

Percentiles: P_1 = 1.8 P_{10} = 1.9 Q_1 = 1.9 Median = 1.9 Q_3 = 1.9 P_{90} = 2.0 P_{99} = 2.2

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-Apr	2.0	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	2.0	1.9	1.9	1.9	2.1
2-Apr	1.9	Z	1.9	1.9	1.9	1.9	1.9	1.9	1.9	1.9	1.9	1.9	1.9	1.9	1.9	1.9	1.9	1.9	1.9	1.9	1.9	1.9	1.9	1.9	1.9	1.9
3-Apr	1.9	Z	1.9	1.9	1.9	1.9	1.9	1.9	2.0	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	1.9	1.9	1.9	2.0
4-Apr	1.9	Z	1.9	1.9	1.9	1.9	2.0	2.0	2.0	1.9	2.0	2.0	2.1	2.1	2.0	1.9	1.9	1.9	1.9	1.9	1.9	1.9	1.9	1.9	1.9	2.1
5-Apr	1.9	Z	1.9	1.9	1.9	1.9	1.9	1.9	1.9	1.9	1.9	1.9	1.9	1.9	1.9	1.9	1.9	1.9	1.9	1.9	1.9	1.9	1.9	1.9	1.9	1.9
6-Apr	1.9	Z	1.9	1.9	1.9	1.9	1.9	1.9	2.2	2.2	2.1	2.1	2.0	1.9	2.0	2.0	2.1	2.0	1.9	2.0	2.0	2.0	2.0	2.0	2.0	2.2
7-Apr	2.0	Z	2.0	2.0	2.0	2.0	2.0	2.1	2.0	1.9	1.9	1.9	2.0	1.9	1.9	1.9	1.9	1.9	2.0	1.8	1.9	1.9	1.8	1.9	1.9	2.1
8-Apr	2.1	Z	2.1	2.4	2.5	2.5	2.2	2.0	1.9	1.8	1.8	1.8	1.8	1.8	1.8	1.8	1.8	1.8	1.8	1.8	1.8	1.8	1.8	1.8	1.9	2.5
9-Apr	1.8	Z	1.8	1.8	1.8	1.8	1.8	1.8	1.8	C	C	C	C	C	1.8	1.8	1.8	1.9	1.9	1.9	2.0	1.9	1.9	1.9	1.9	2.0
10-Apr	1.9	Z	1.9	1.9	1.9	1.9	1.9	1.9	1.9	1.9	1.9	1.9	1.9	1.9	1.9	1.9	1.9	1.9	1.9	1.9	1.9	1.9	1.9	1.9	1.9	1.9
11-Apr	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	1.8	1.9	1.9	1.9	1.9	1.9	1.9	1.9
12-Apr	2.0	Z	1.9	1.9	1.9	1.9	1.9	1.9	1.9	1.9	1.8	1.9	1.8	1.8	1.8	1.8	1.8	1.9	1.9	1.9	1.9	1.9	1.9	1.9	1.9	2.0
13-Apr	1.9	Z	1.9	1.9	1.9	1.9	1.9	1.9	1.9	1.9	1.9	1.9	1.9	1.9	1.9	1.9	1.9	1.9	1.9	1.9	1.9	1.9	1.9	1.9	1.9	1.9
14-Apr	1.9	Z	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	1.9	1.9	1.9	2.0
15-Apr	1.9	Z	1.9	1.9	1.9	1.9	1.9	1.9	1.9	1.9	1.9	1.9	1.9	1.9	1.9	1.9	1.9	1.9	1.9	1.9	1.9	1.9	1.9	1.9	1.9	1.9
16-Apr	1.9	Z	1.9	1.9	1.9	1.9	2.0	1.9	1.9	1.9	1.9	1.9	1.9	1.9	1.9	1.9	1.9	1.9	1.9	1.9	1.9	1.9	1.9	1.9	1.9	2.0
17-Apr	1.9	Z	1.9	1.9	1.9	1.9	1.9	1.9	1.9	1.9	1.9	1.9	1.9	1.9	1.9	1.9	1.9	1.9	1.9	1.9	1.9	1.9	1.9	1.9	1.9	1.9
18-Apr	1.9	Z	1.9	1.9	1.9	1.9	1.9	1.9	1.9	1.9	1.9	1.9	1.9	1.9	1.9	1.9	1.9	1.9	1.9	1.9	1.9	1.9	1.9	1.9	1.9	1.9
19-Apr	1.9	Z	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	1.9	1.9	2.0
20-Apr	1.9	Z	2.0	2.0	2.0	2.1	2.2	2.2	2.2	2.1	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	2.1	2.0	2.2
21-Apr	2.2	Z	2.2	2.2	2.1	2.1	2.2	2.1	2.0	2.1	2.0	1.9	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	2.2
22-Apr	2.0	Z	1.9	1.9	1.9	1.9	1.9	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	1.9	2.0	1.9	2.1
23-Apr	2.0	Z	2.0	1.9	1.9	1.9	1.9	2.0	2.0	1.9	1.9	1.9	1.9	1.9	1.9	1.9	1.9	1.9	1.9	1.9	1.9	1.9	1.9	1.9	1.9	2.0
24-Apr	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	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
25-Apr	1.9	Z	1.9	1.9	1.9	1.9	1.9	1.9	1.9	1.9	1.9	1.9	M	M	1.9	1.9	1.9	1.9	1.9	1.9	1.9	1.9	1.9	1.9	1.9	1.9
26-Apr	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	1.9	1.9	1.9	1.9	1.9	1.9	1.9	1.9	1.9	1.9	1.9	2.0
27-Apr	1.9	Z	1.9	1.9	1.9	1.9	1.9	1.9	2.0	1.9	1.9	1.9	1.9	1.9	1.9	1.9	1.9	1.9	1.9	1.9	1.9	1.9	1.9	1.9	1.9	2.0
28-Apr	1.9	Z	1.9	2.0	2.0	2.1	2.1	2.0	2.0	2.0	2.0	2.0	2.0	1.9	1.9	1.9	1.9	1.9	1.9	1.9	1.9	1.9	1.9	2.0	2.0	2.1
29-Apr	2.0	Z	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	1.9	1.9	1.9	1.9	1.9	1.9	1.9	1.9	1.9	1.9	1.9	1.9	1.9	1.9	2.0
30-Apr	1.9	Z	1.9	1.9	1.9	2.0	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	1.9	1.9	1.9	1.9	1.8	1.9	2.1
	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	1.9	Diurnal Average	
	2.2	--	2.2	2.4	2.5	2.5	2.2	2.2	2.2	2.2	2.1	2.1	2.1	2.1	2.0	2.0	2.1	2.0	2.0	2.0	2.0	2.0	2.0	2.1	Diurnal Maximum	

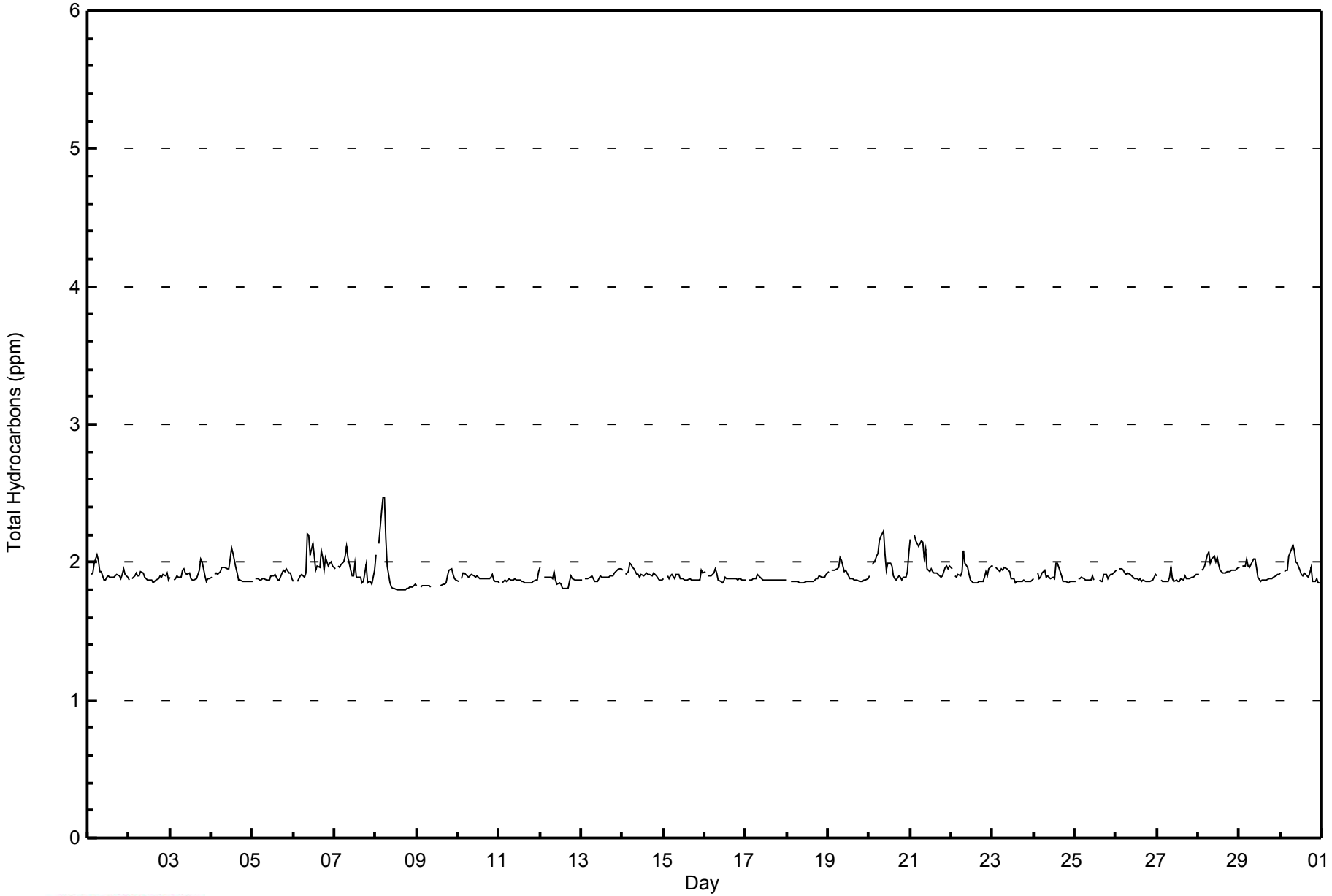
Z - zerospan C - Calibration M - Maintenance

WBEA NETWORK

Hourly Averages

Total Hydrocarbons (THC) - ppm

Fort McKay - Bertha Ganter - April 2014



AURORA
ATMOSPHERICS INC.

Concentration Ranges (ppm)	Number of Hours	%	Cumulative %
0 - 2.0	648	94.88	94.88
2.1 - 3.0	35	5.12	100.00
3.1 - 10.0	0	0.00	100.00
> 10.0	0	0.00	100.00

Total Number of Valid Hours: 683

Total Number of Hours: 720

WBEA NETWORK

Frequency Distribution

Total Hydrocarbons (THC) - ppm

Fort McKay - Bertha Ganter - April 2014

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	76	63	53	60	30	25	40	115	51	20	16	14	20	15	21	28	647
2.1 - 3.0	3	0	0	0	1	0	1	10	10	3	3	1	1	0	1	0	34
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	79	63	53	60	31	25	41	125	61	23	19	15	21	15	22	28	681

Total Number of Valid Hours: 681

Total Number of Hours: 720

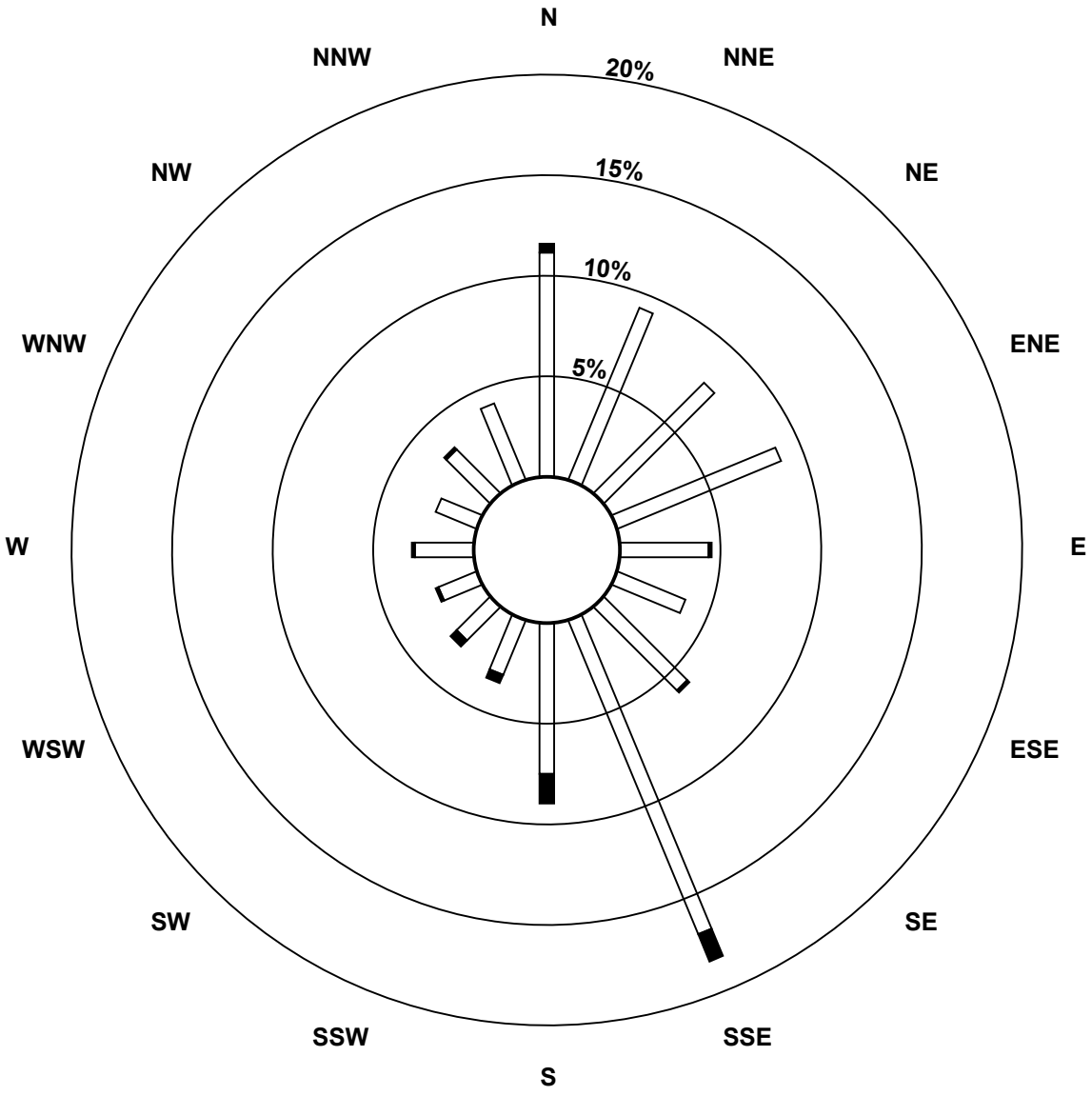
AURORA
ATMOSPHERICS INC.

Wood Buffalo Environmental Association

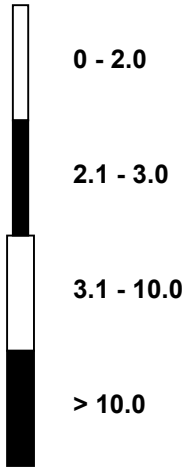
Wind Rose Apr 2014

Total Hydrocarbons (THC) - ppm

Fort McKay - Bertha Ganter (AMS 1)



Classes (ppm)



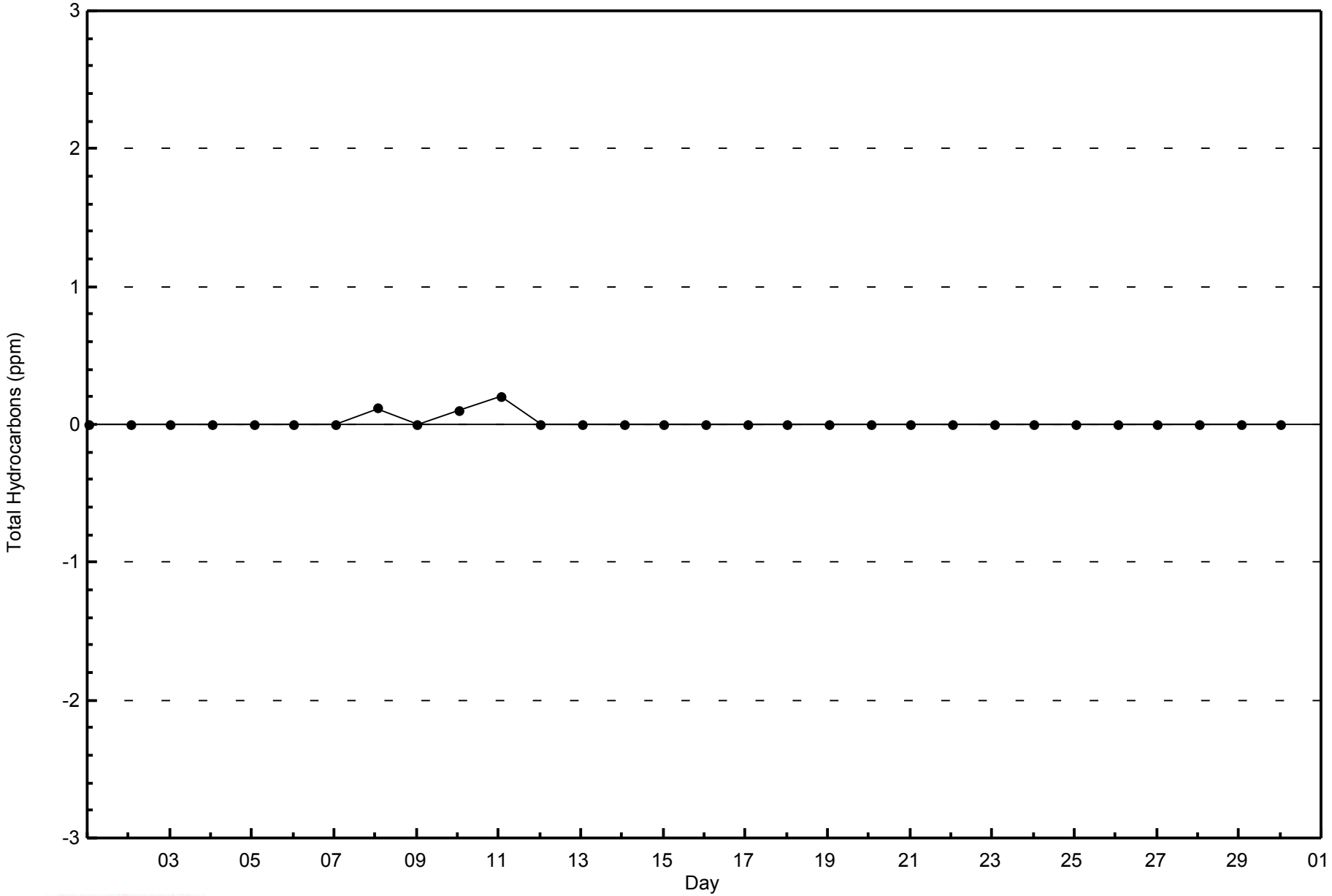
Total Number of Valid Hours: 681

WBEA NETWORK

Zero Responses

Total Hydrocarbons (THC) - ppm

Fort McKay - Bertha Ganter - April 2014



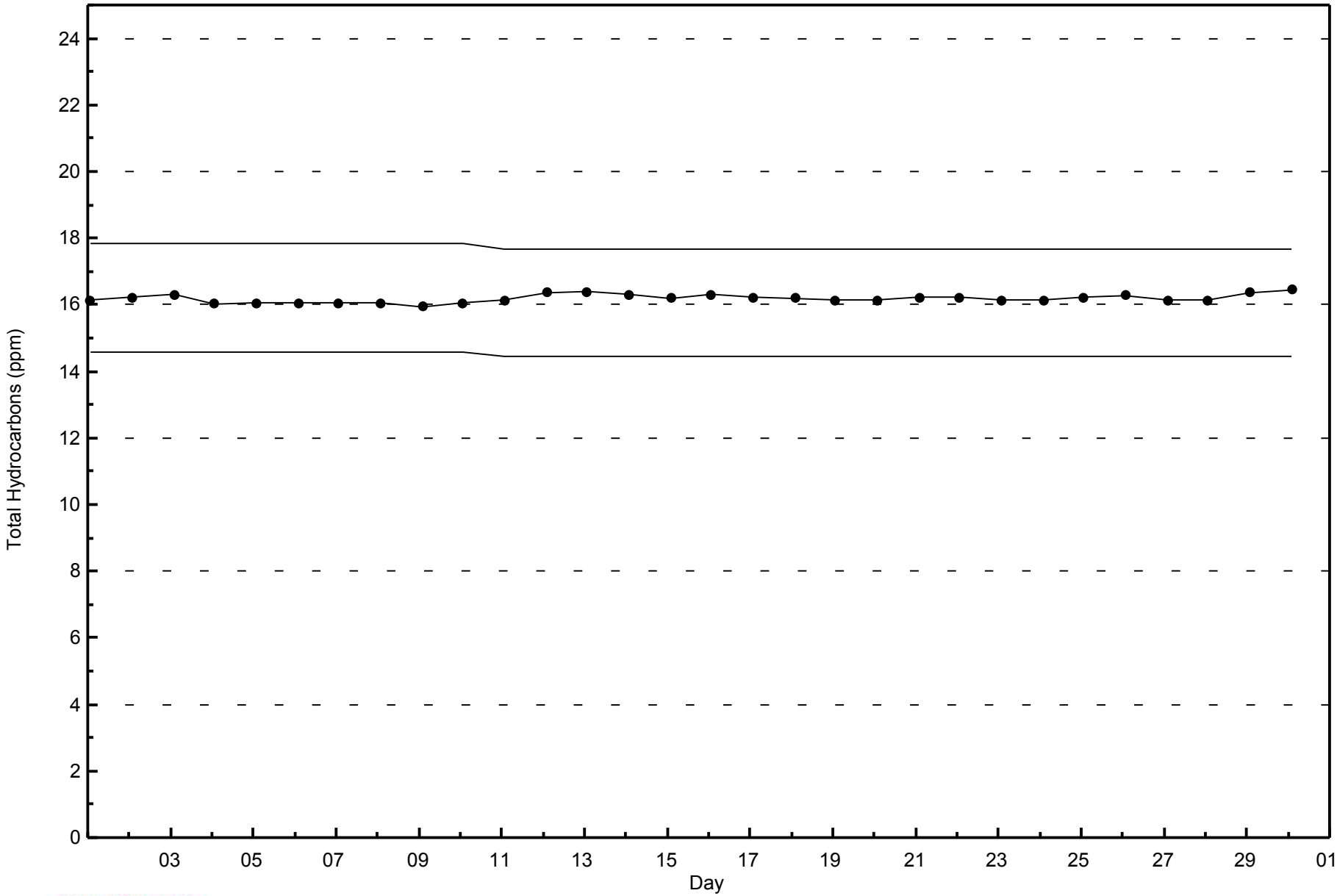
AURORA ATMOSPHERICS INC.

WBEA NETWORK

Span Responses

Total Hydrocarbons (THC) - ppm

Fort McKay - Bertha Ganter - April 2014



AURORA
ATMOSPHERICS INC.

Wood Buffalo Environmental Association

Summary of Hour Averages

Non Methane Hydrocarbons (NMHC) - ppm

Fort McKay - Bertha Ganter - April 2014

Maximum Value: 0.051 ppm on Apr 27 09:00

Maximum Daily Average: 0.004 ppm on Apr 24

Minimum Value: 0.000 ppm on Apr 1 01:00

Minimum Daily Average: 0.000 ppm on Apr 2

Maximum Diurnal Average: 0.002 ppm at hour 9

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-Apr	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-Apr	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-Apr	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
4-Apr	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-Apr	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	0.019	0.011	0.000	0.000	0.000	0.000	0.000	0.001	0.019
6-Apr	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
7-Apr	0.000	Z	0.000	0.000	0.000	0.000	0.000	0.030	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.001	0.030
8-Apr	0.000	Z	0.000	0.007	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.007
9-Apr	0.000	Z	0.000	0.000	0.000	0.000	0.000	0.000	0.000	C	C	C	C	C	0.000	0.000	0.000	0.000	0.010	0.000	0.000	0.000	0.000	0.000	0.001	0.010
10-Apr	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	0.002	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.002
11-Apr	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
12-Apr	0.000	Z	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	0.000	0.000	0.002
13-Apr	0.000	Z	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	0.002
14-Apr	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
15-Apr	0.000	Z	0.000	0.000	0.000	0.000	0.002	0.015	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.001	0.015
16-Apr	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-Apr	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
18-Apr	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
19-Apr	0.000	Z	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000
20-Apr	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	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.001
21-Apr	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-Apr	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	0.003	0.003	0.001	0.000	0.000	0.000	0.000	0.003
23-Apr	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
24-Apr	0.000	Z	0.033	0.000	0.001	0.010	0.037	0.001	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	0.000	0.004	0.037
25-Apr	0.000	Z	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.017	0.000	M	M	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.001	0.017
26-Apr	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-Apr	0.000	Z	0.000	0.000	0.000	0.000	0.000	0.000	0.051	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.017	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.003	0.051
28-Apr	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-Apr	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
30-Apr	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	--	0.001	0.000	0.000	0.000	0.001	0.002	0.002	0.000	0.001	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	Diurnal Average	
	0.000	--	0.033	0.007	0.001	0.010	0.037	0.030	0.051	0.002	0.017	0.002	0.000	0.002	0.001	0.000	0.017	0.019	0.011	0.003	0.003	0.001	0.000	0.000	Diurnal Maximum	

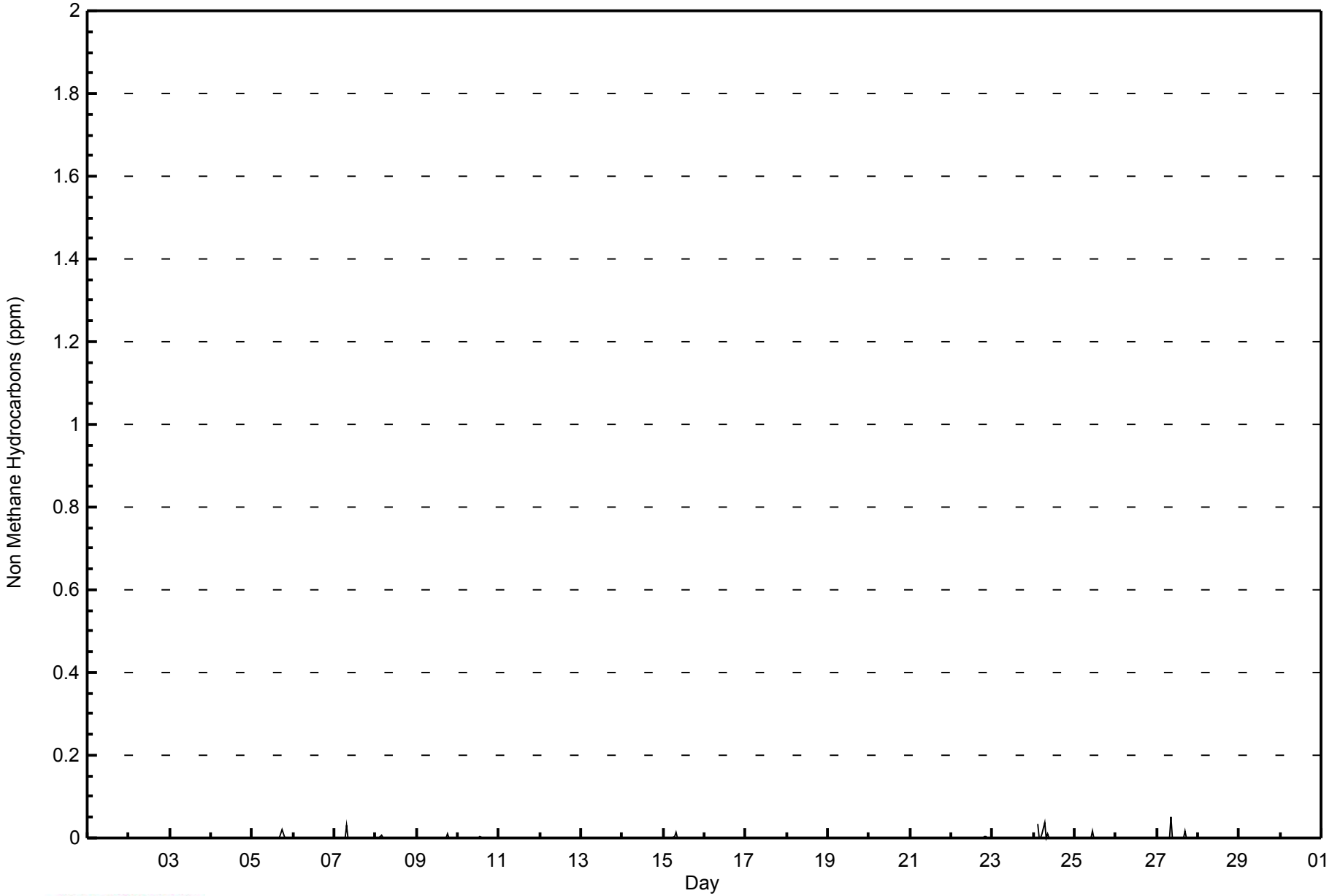
Z - zerospan C - Calibration M - Maintenance

WBEA NETWORK

Hourly Averages

Non Methane Hydrocarbons (NMHC) - ppm

Fort McKay - Bertha Ganter - April 2014



AURORA
ATMOSPHERICS INC.

Concentration Ranges (ppm)	Number of Hours	%	Cumulative %
0 - 0.005	670	98.10	98.10
0.006 - 0.05	13	1.90	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

WBEA NETWORK

Frequency Distribution

Non Methane Hydrocarbons (NMHC) - ppm

Fort McKay - Bertha Ganter - April 2014

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	78	59	50	59	30	25	41	124	60	22	19	15	21	15	22	28	668
0.006 - 0.05	1	4	3	1	1	0	0	1	1	1	0	0	0	0	0	0	13
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	79	63	53	60	31	25	41	125	61	23	19	15	21	15	22	28	681

Total Number of Valid Hours: 681

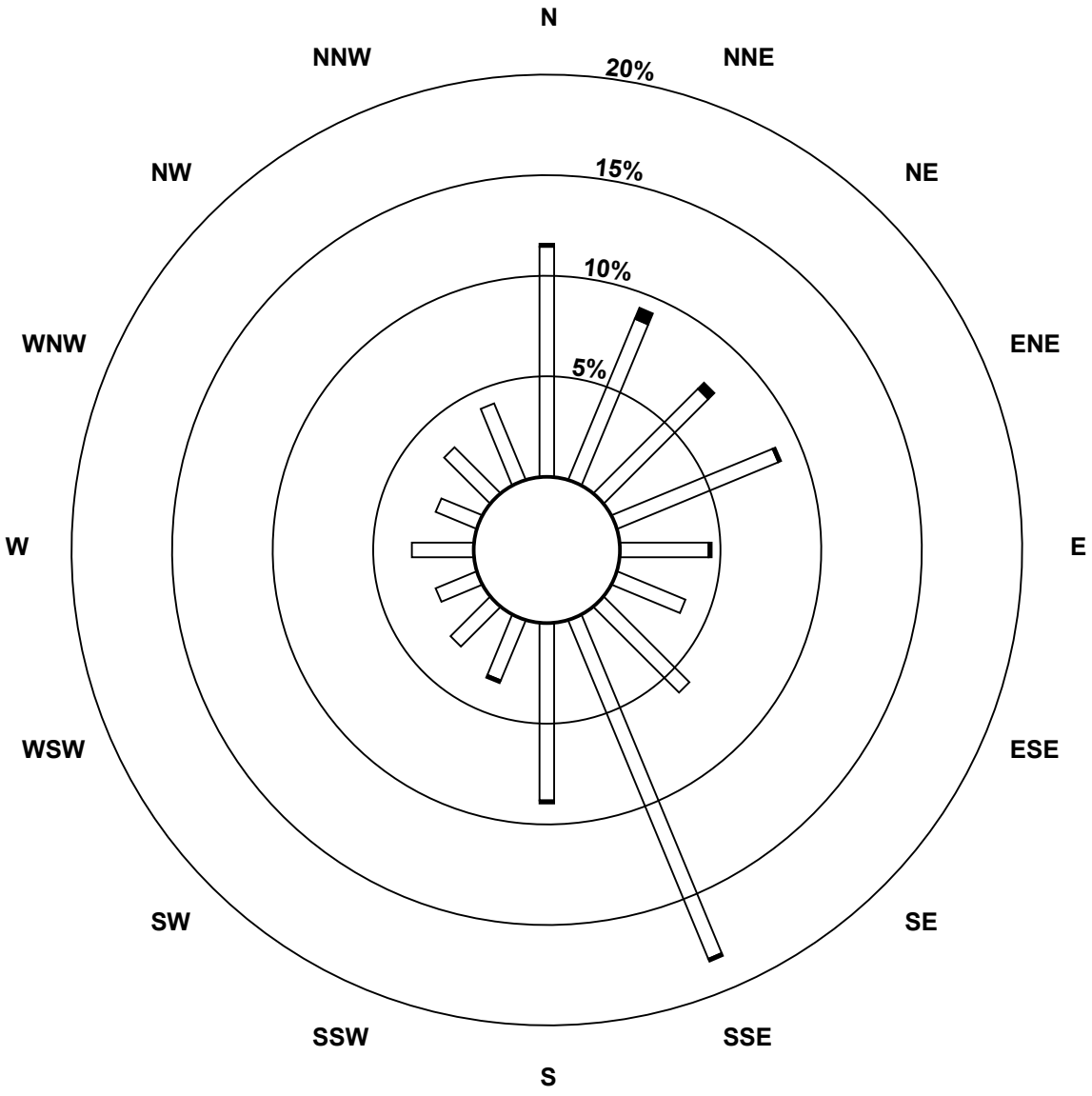
Total Number of Hours: 720

Wood Buffalo Environmental Association

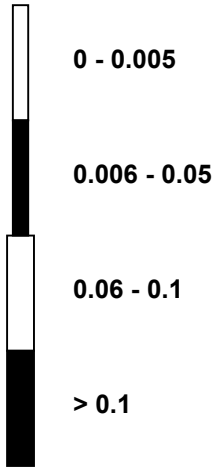
Wind Rose Apr 2014

Non Methane Hydrocarbons (NMHC) - ppm

Fort McKay - Bertha Ganter (AMS 1)



Classes (ppm)



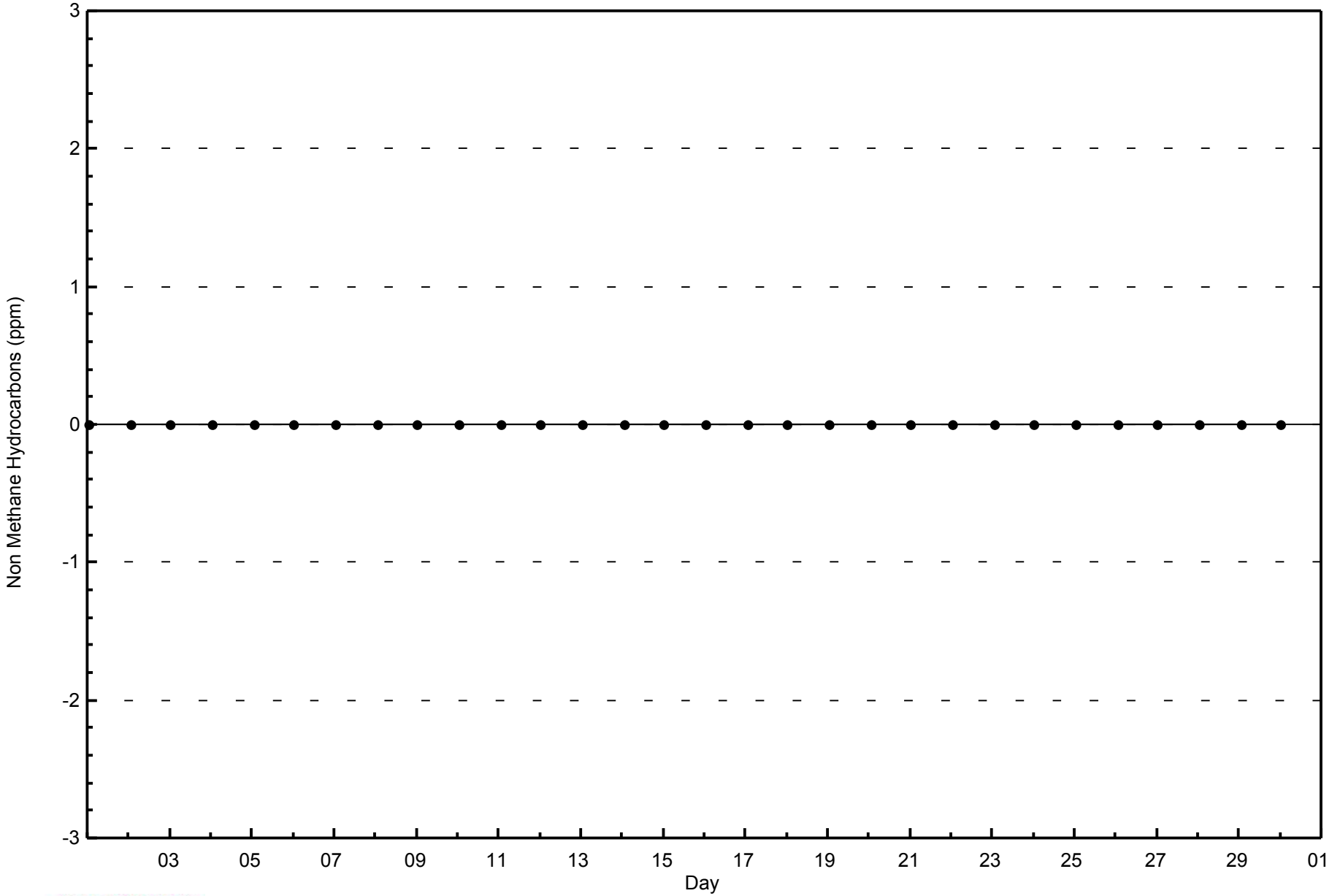
Total Number of Valid Hours: 681

WBEA NETWORK

Zero Responses

Non Methane Hydrocarbons (NMHC) - ppm

Fort McKay - Bertha Ganter - April 2014



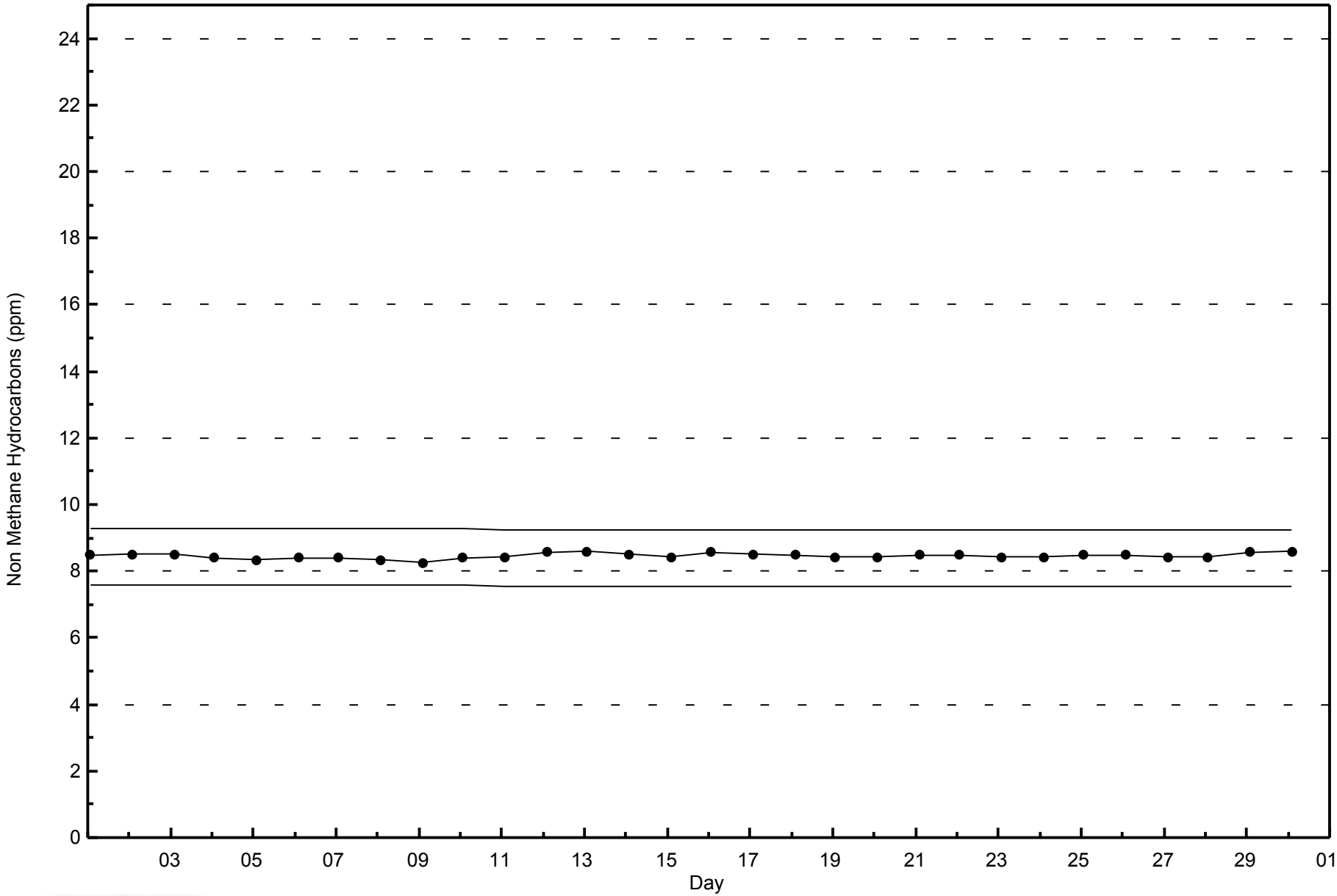
AURORA ATMOSPHERICS INC.

WBEA NETWORK

Span Responses

Non Methane Hydrocarbons (NMHC) - ppm

Fort McKay - Bertha Ganter - April 2014



AURORA
ATMOSPHERICS INC.

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

Maximum Value: 2.5 ppm on Apr 8 05:00 Maximum Daily Average: 2.0 ppm on Apr 21

Minimum Value: 1.8 ppm on Apr 8 17:00 Minimum Daily Average: 1.9 ppm on Apr 9

Maximum Diurnal Average: 2.0 ppm at hour 6 Minimum Diurnal Average: 1.9 ppm at hour 16

Monthly Average: 1.91 ppm Percentiles: P_1 = 1.8 P_{10} = 1.9 Q_1 = 1.9 Median = 1.9 Q_3 = 1.9 P_{90} = 2.0 P_{99} = 2.2

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-Apr	2.0	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	2.0	1.9	1.9	1.9	2.1
2-Apr	1.9	Z	1.9	1.9	1.9	1.9	1.9	1.9	1.9	1.9	1.9	1.9	1.9	1.9	1.9	1.9	1.9	1.9	1.9	1.9	1.9	1.9	1.9	1.9	1.9	1.9
3-Apr	1.9	Z	1.9	1.9	1.9	1.9	1.9	1.9	2.0	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	1.9	1.9	1.9	2.0
4-Apr	1.9	Z	1.9	1.9	1.9	1.9	2.0	2.0	2.0	1.9	2.0	2.0	2.1	2.1	2.0	1.9	1.9	1.9	1.9	1.9	1.9	1.9	1.9	1.9	1.9	2.1
5-Apr	1.9	Z	1.9	1.9	1.9	1.9	1.9	1.9	1.9	1.9	1.9	1.9	1.9	1.9	1.9	1.9	1.9	1.9	1.9	1.9	1.9	1.9	1.9	1.9	1.9	1.9
6-Apr	1.9	Z	1.9	1.9	1.9	1.9	1.9	1.9	2.2	2.2	2.1	2.1	2.0	1.9	2.0	2.0	2.1	2.0	1.9	2.0	2.0	2.0	2.0	2.0	2.0	2.2
7-Apr	2.0	Z	2.0	2.0	2.0	2.0	2.0	2.1	2.0	1.9	1.9	1.9	2.0	1.9	1.9	1.9	1.9	1.9	2.0	1.8	1.9	1.9	1.8	1.9	1.9	2.1
8-Apr	2.1	Z	2.1	2.4	2.5	2.5	2.2	2.0	1.9	1.8	1.8	1.8	1.8	1.8	1.8	1.8	1.8	1.8	1.8	1.8	1.8	1.8	1.8	1.8	1.9	2.5
9-Apr	1.8	Z	1.8	1.8	1.8	1.8	1.8	1.8	1.8	C	C	C	C	C	1.8	1.8	1.8	1.9	1.9	1.9	2.0	1.9	1.9	1.9	1.9	2.0
10-Apr	1.9	Z	1.9	1.9	1.9	1.9	1.9	1.9	1.9	1.9	1.9	1.9	1.9	1.9	1.9	1.9	1.9	1.9	1.9	1.9	1.9	1.9	1.9	1.9	1.9	1.9
11-Apr	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	1.8	1.9	1.9	1.9	1.9	1.9	1.9	1.9
12-Apr	2.0	Z	1.9	1.9	1.9	1.9	1.9	1.9	1.9	1.9	1.8	1.9	1.8	1.8	1.8	1.8	1.8	1.9	1.9	1.9	1.9	1.9	1.9	1.9	1.9	2.0
13-Apr	1.9	Z	1.9	1.9	1.9	1.9	1.9	1.9	1.9	1.9	1.9	1.9	1.9	1.9	1.9	1.9	1.9	1.9	1.9	1.9	1.9	1.9	1.9	1.9	1.9	1.9
14-Apr	1.9	Z	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	1.9	1.9	1.9	2.0
15-Apr	1.9	Z	1.9	1.9	1.9	1.9	1.9	1.9	1.9	1.9	1.9	1.9	1.9	1.9	1.9	1.9	1.9	1.9	1.9	1.9	1.9	1.9	1.9	1.9	1.9	1.9
16-Apr	1.9	Z	1.9	1.9	1.9	1.9	2.0	1.9	1.9	1.9	1.9	1.9	1.9	1.9	1.9	1.9	1.9	1.9	1.9	1.9	1.9	1.9	1.9	1.9	1.9	2.0
17-Apr	1.9	Z	1.9	1.9	1.9	1.9	1.9	1.9	1.9	1.9	1.9	1.9	1.9	1.9	1.9	1.9	1.9	1.9	1.9	1.9	1.9	1.9	1.9	1.9	1.9	1.9
18-Apr	1.9	Z	1.9	1.9	1.9	1.9	1.9	1.9	1.9	1.9	1.9	1.9	1.9	1.9	1.9	1.9	1.9	1.9	1.9	1.9	1.9	1.9	1.9	1.9	1.9	1.9
19-Apr	1.9	Z	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	1.9	1.9	2.0
20-Apr	1.9	Z	2.0	2.0	2.0	2.1	2.2	2.2	2.2	2.1	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	2.1	2.0	2.2
21-Apr	2.2	Z	2.2	2.2	2.1	2.1	2.2	2.1	2.0	2.1	2.0	1.9	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	2.2
22-Apr	2.0	Z	1.9	1.9	1.9	1.9	1.9	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	1.9	2.0	1.9	2.1
23-Apr	2.0	Z	2.0	1.9	1.9	1.9	1.9	2.0	2.0	1.9	1.9	1.9	1.9	1.9	1.9	1.9	1.9	1.9	1.9	1.9	1.9	1.9	1.9	1.9	1.9	2.0
24-Apr	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	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
25-Apr	1.9	Z	1.9	1.9	1.9	1.9	1.9	1.9	1.9	1.9	1.9	1.9	M	M	1.9	1.9	1.9	1.9	1.9	1.9	1.9	1.9	1.9	1.9	1.9	1.9
26-Apr	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	1.9	1.9	1.9	1.9	1.9	1.9	1.9	1.9	1.9	1.9	1.9	2.0
27-Apr	1.9	Z	1.9	1.9	1.9	1.9	1.9	1.9	1.9	1.9	1.9	1.9	1.9	1.9	1.9	1.9	1.9	1.9	1.9	1.9	1.9	1.9	1.9	1.9	1.9	1.9
28-Apr	1.9	Z	1.9	2.0	2.0	2.1	2.1	2.0	2.0	2.0	2.0	2.0	2.0	1.9	1.9	1.9	1.9	1.9	1.9	1.9	1.9	1.9	1.9	2.0	2.0	2.1
29-Apr	2.0	Z	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	1.9	1.9	1.9	1.9	1.9	1.9	1.9	1.9	1.9	1.9	1.9	1.9	1.9	1.9	2.0
30-Apr	1.9	Z	1.9	1.9	1.9	2.0	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	1.9	1.9	1.9	1.9	1.8	1.9	2.1
	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	1.9	Diurnal Average	
	2.2	--	2.2	2.4	2.5	2.5	2.2	2.2	2.2	2.2	2.1	2.1	2.1	2.1	2.0	2.0	2.1	2.0	2.0	2.0	2.0	2.0	2.0	2.1	Diurnal Maximum	

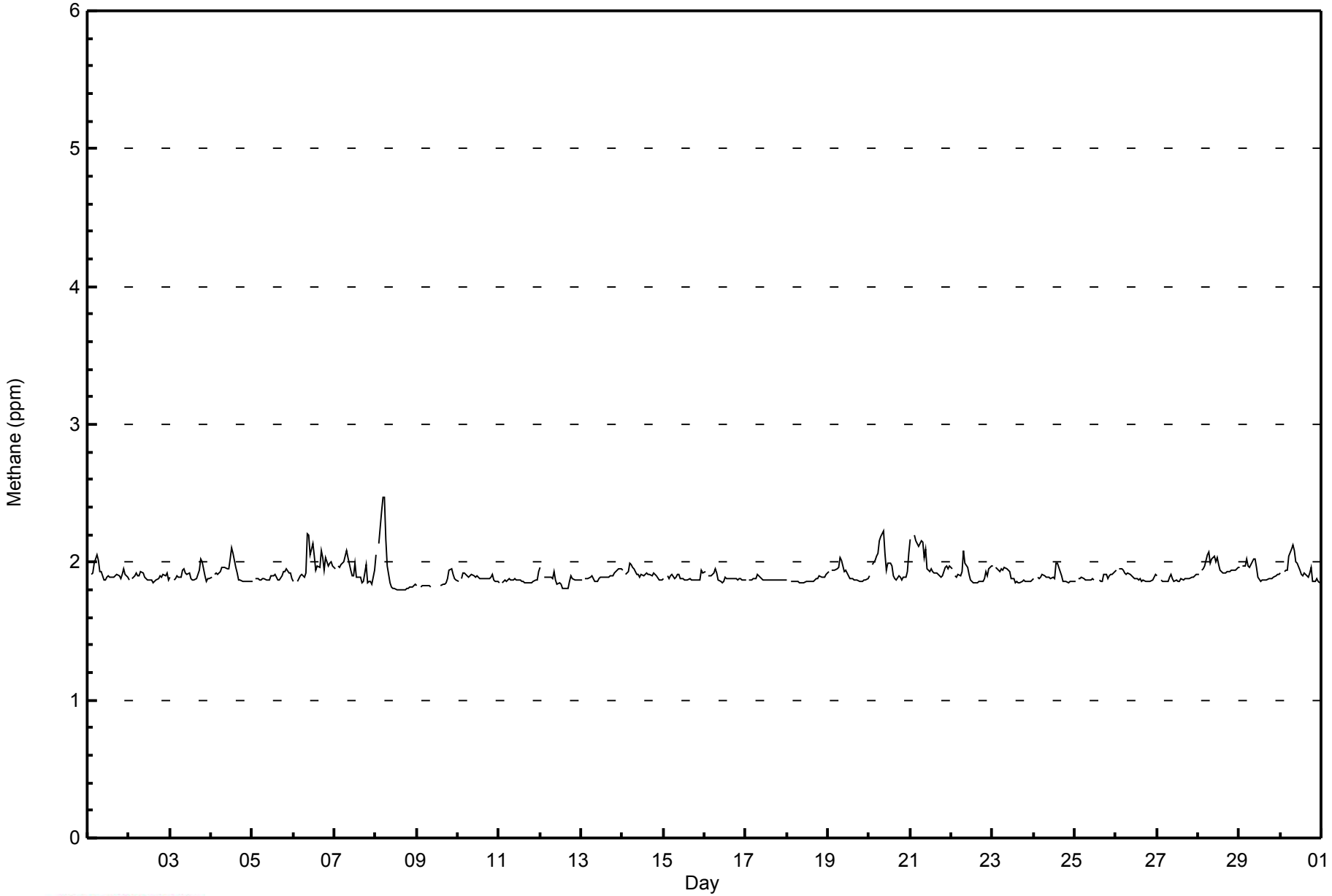
Z - zerospan C - Calibration M - Maintenance

WBEA NETWORK

Hourly Averages

Methane (CH_4) - ppm

Fort McKay - Bertha Ganter - April 2014



AURORA ATMOSPHERICS INC.

Concentration Ranges (ppm)	Number of Hours	%	Cumulative %
0 - 2.0	648	94.88	94.88
2.1 - 3.0	35	5.12	100.00
3.1 - 10.0	0	0.00	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	76	63	53	60	30	25	40	115	51	20	16	14	20	15	21	28	647
2.1 - 3.0	3	0	0	0	1	0	1	10	10	3	3	1	1	0	1	0	34
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	79	63	53	60	31	25	41	125	61	23	19	15	21	15	22	28	681

Total Number of Valid Hours: 681

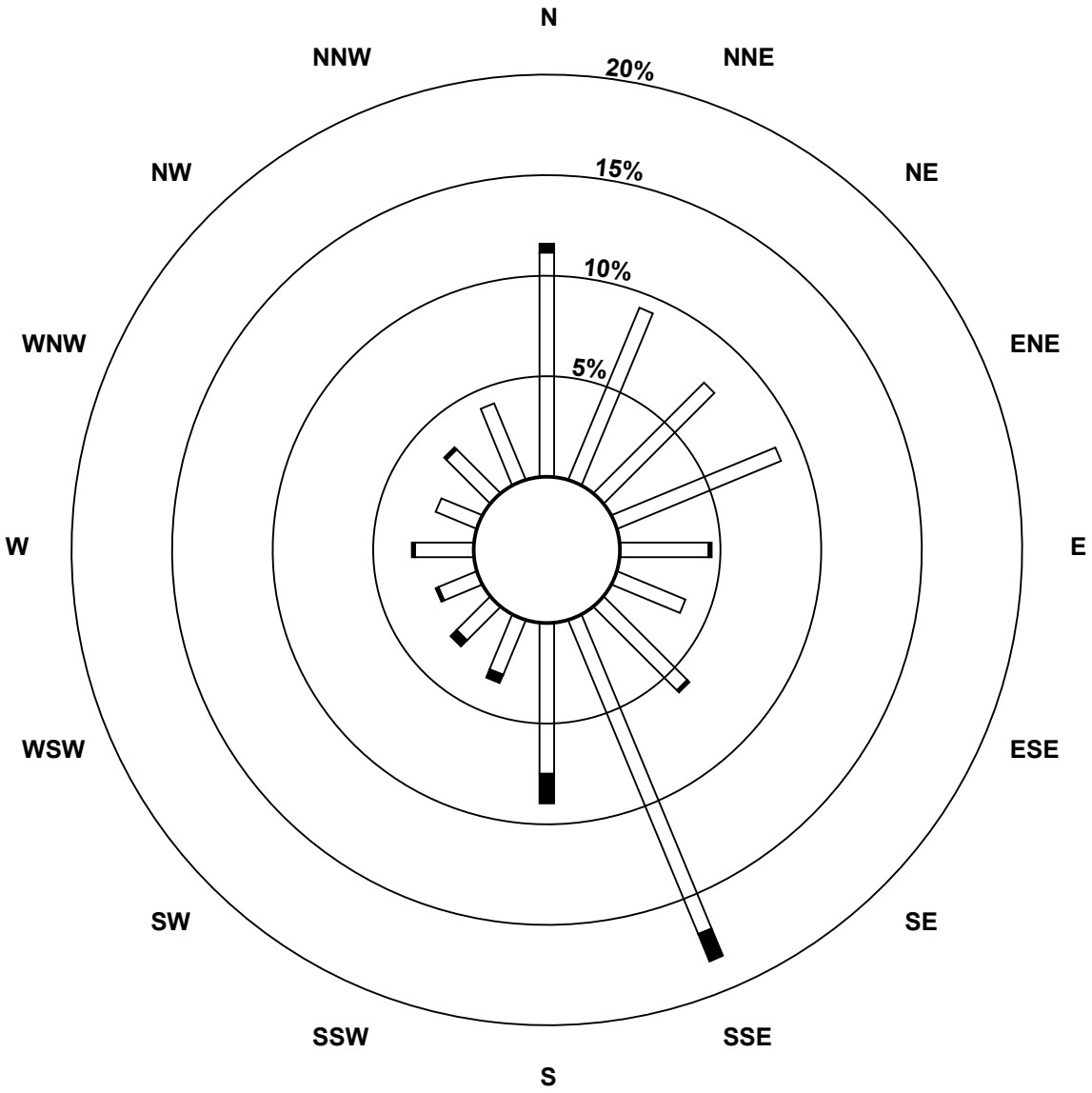
Total Number of Hours: 720

Wood Buffalo Environmental Association

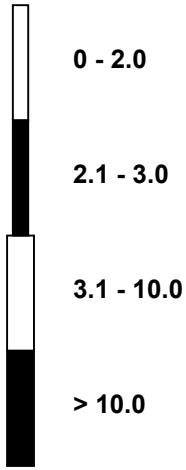
Wind Rose Apr 2014

Methane (CH_4) - ppm

Fort McKay - Bertha Ganter (AMS 1)



Classes (ppm)



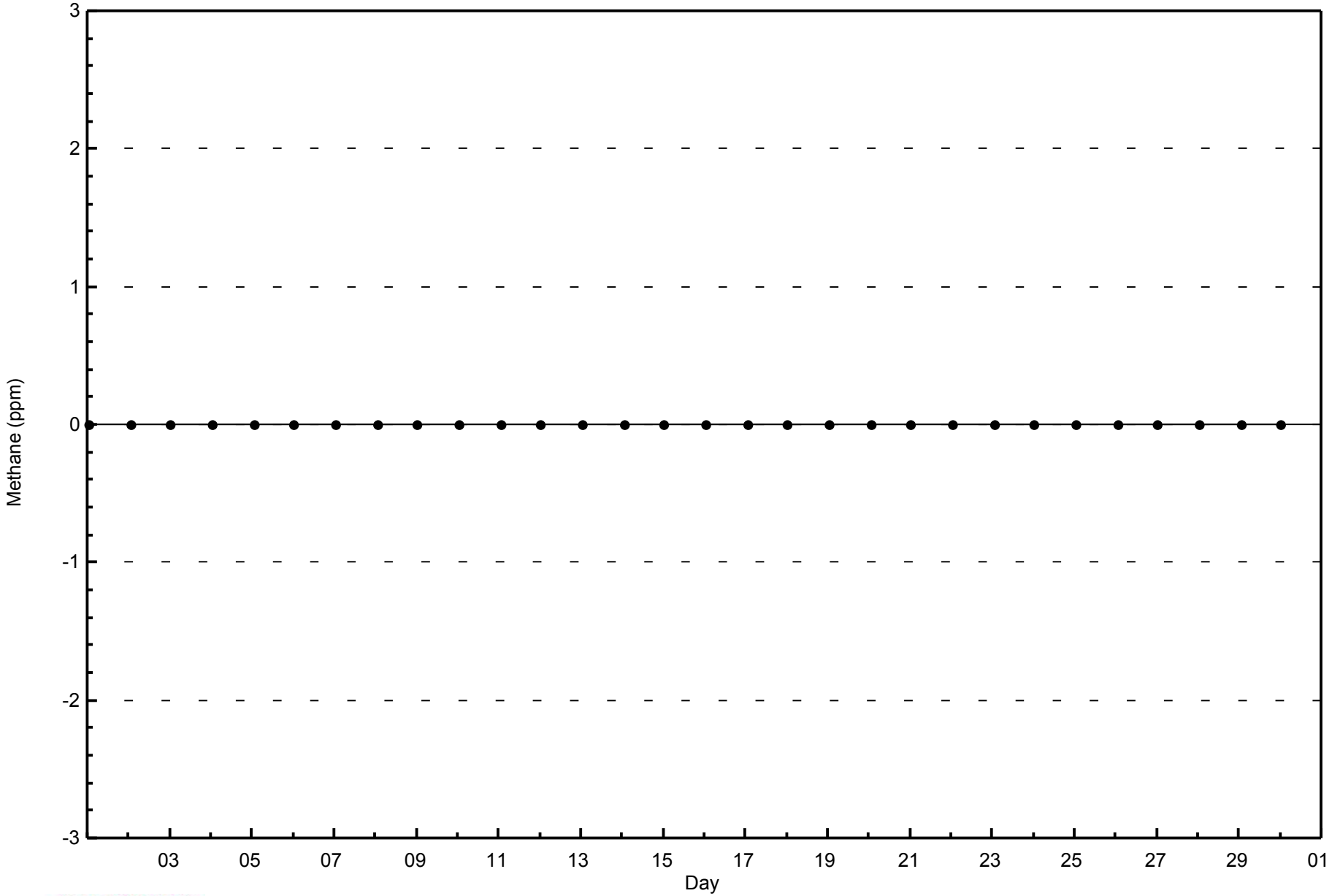
Total Number of Valid Hours: 681

WBEA NETWORK

Zero Responses

Methane (CH_4) - ppm

Fort McKay - Bertha Ganter - April 2014



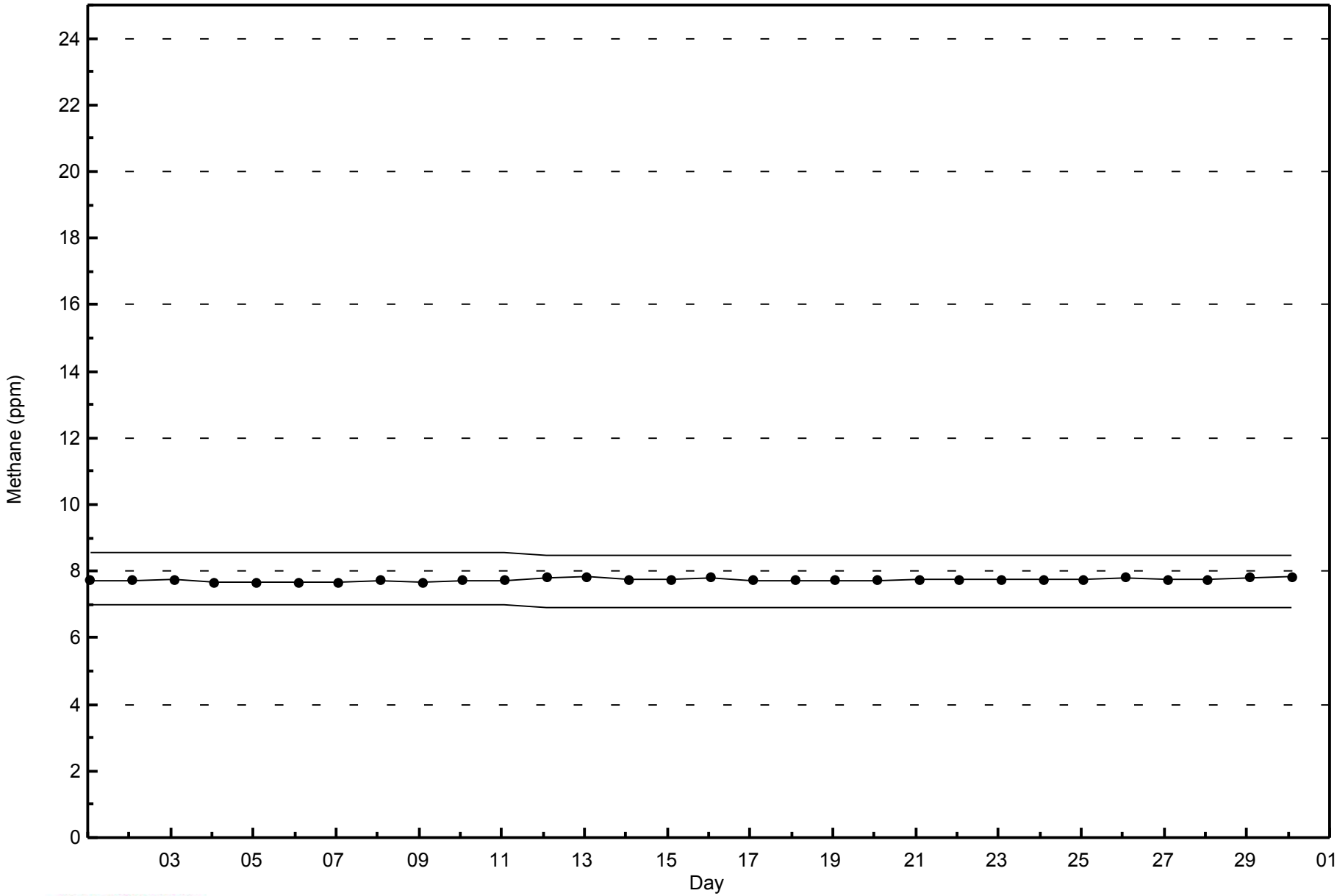
AURORA ATMOSPHERICS INC.

WBEA NETWORK

Span Responses

Methane (CH_4) - ppm

Fort McKay - Bertha Ganter - April 2014



AURORA ATMOSPHERICS INC.

Maximum Value: 32 ppb on Apr 28 07:00

Maximum Daily Average: 4.7 ppb on Apr 28

Minimum Value: 0 ppb on Apr 1 04:00

Minimum Daily Average: 0.1 ppb on Apr 9

Maximum Diurnal Average: 5.0 ppb at hour 8

Minimum Diurnal Average: 0.0 ppb at hour 23

Monthly Average: 1.4 ppb

Percentiles: $P_1 = 0$ $P_{10} = 0$ $Q_1 = 0$ Median = 0 $Q_3 = 1$ $P_{90} = 4$ $P_{99} = 18$

Hours in Service:	720
Hours of Data:	679
Hours of Missing Data:	41
Hours of Calibration:	35
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-Apr	0	Z	0	0	0	0	1	2	2	1	2	4	4	4	2	3	2	1	0	0	0	0	0	0	1.2	4
2-Apr	0	Z	0	0	0	0	1	3	5	3	2	2	2	1	1	1	1	1	0	0	0	0	0	0	1.0	5
3-Apr	0	Z	0	0	0	0	1	9	13	10	9	10	5	4	3	3	4	4	3	0	0	0	0	0	3.5	13
4-Apr	0	Z	0	0	0	0	0	1	1	2	2	1	1	2	0	0	0	0	0	0	0	0	0	0	0.5	2
5-Apr	0	Z	0	0	0	0	0	0	1	1	2	3	3	3	2	1	1	1	1	0	0	0	0	0	0.8	3
6-Apr	0	Z	0	0	0	0	1	4	20	10	5	13	10	4	4	4	1	2	1	1	0	0	0	0	3.5	20
7-Apr	0	Z	0	0	1	4	11	21	8	4	3	1	1	3	2	1	0	0	0	0	0	0	0	0	2.7	21
8-Apr	0	Z	0	0	0	2	3	2	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0.4	3
9-Apr	0	Z	0	0	0	0	0	0	0	C	C	C	C	C	0	0	0	0	0	0	0	0	0	0	0.1	0
10-Apr	0	Z	0	0	0	0	1	2	4	4	4	4	3	2	2	1	1	1	0	0	0	0	0	0	1.3	4
11-Apr	0	Z	0	0	0	0	0	1	1	2	1	1	1	1	1	0	0	0	0	0	0	0	0	0	0.4	2
12-Apr	0	Z	0	0	0	0	0	2	7	2	0	0	UO	UO	UO	UO	UO	UO	1	0	0	0	0	0	--	7
13-Apr	0	Z	0	0	0	0	0	0	0	1	2	2	2	2	1	1	0	1	1	0	0	0	0	0	0.7	2
14-Apr	0	Z	0	0	0	1	3	7	7	4	3	3	3	2	1	1	0	0	0	0	0	0	0	0	1.6	7
15-Apr	0	Z	0	0	0	0	0	1	3	2	2	1	0	1	0	0	0	0	0	0	0	0	0	0	0.5	3
16-Apr	0	Z	0	0	0	0	1	2	1	0	0	1	2	1	1	0	0	0	0	0	0	0	0	0	0.5	2
17-Apr	0	Z	0	0	0	0	0	2	5	3	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0.6	5
18-Apr	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
19-Apr	0	Z	0	0	0	0	2	6	3	2	4	4	2	1	1	1	1	0	0	0	0	0	0	0	1.2	6
20-Apr	0	Z	2	3	3	6	16	21	18	8	3	5	4	3	1	1	0	0	0	0	0	0	0	0	4.1	21
21-Apr	0	Z	0	0	1	3	11	9	4	7	1	3	4	3	1	2	2	1	0	0	0	0	0	0	2.3	11
22-Apr	0	Z	0	0	0	0	4	18	6	6	3	1	0	0	0	0	0	0	0	0	0	0	0	0	1.8	18
23-Apr	0	Z	0	0	0	0	1	2	2	2	2	1	0	0	0	0	0	0	0	0	0	0	0	0	0.5	2
24-Apr	0	Z	0	0	0	0	0	0	1	1	1	1	0	1	4	2	1	0	0	0	0	0	0	0	0.6	4
25-Apr	0	Z	0	0	0	0	0	0	0	0	1	0	0	1	1	0	0	0	0	0	0	0	0	0	0.2	1
26-Apr	0	Z	0	0	0	1	1	2	1	2	1	1	1	1	1	0	0	0	0	0	0	0	0	0	0.5	2
27-Apr	0	Z	0	0	0	0	0	0	1	1	0	0	0	0	0	0	0	1	0	0	0	0	0	0	0.3	1
28-Apr	0	Z	0	1	2	22	32	12	8	7	5	6	5	3	1	1	1	1	1	0	0	0	0	0	4.7	32
29-Apr	0	Z	1	2	11	4	3	4	6	8	3	0	0	0	0	0	0	0	0	0	0	0	0	0	1.8	11
30-Apr	0	Z	0	0	0	8	15	15	8	7	6	2	0	0	0	0	1	2	1	0	0	0	0	0	2.9	15
	0.1	--	0.2	0.2	0.7	1.7	3.7	5.0	4.6	3.5	2.3	2.5	2.0	1.5	1.1	0.8	0.6	0.6	0.4	0.1	0.0	0.0	0.0	0.0	Diurnal Average	
	0	--	2	3	11	22	32	21	20	10	9	13	10	4	4	4	4	4	3	1	0	0	0	0	Diurnal Maximum	

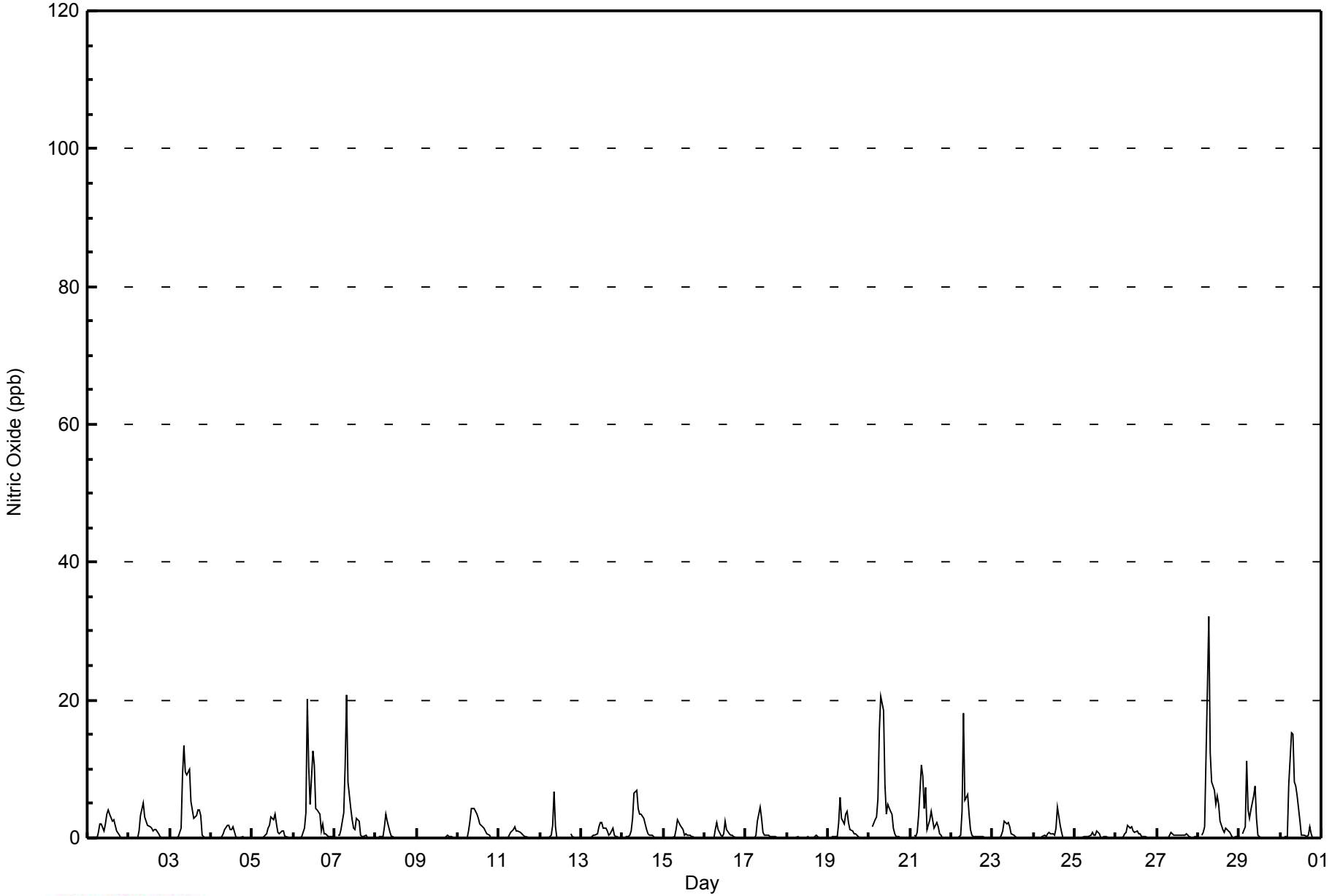
Z - zerospan C - Calibration UO - Unstable Operation

WBEA NETWORK

Hourly Averages

Nitric Oxide (NO) - ppb

Fort McKay - Bertha Ganter - April 2014



AURORA ATMOSPHERICS INC.

Concentration Ranges (ppb)	Number of Hours	%	Cumulative %
0 - 20	675	99.41	99.41
21 - 40	4	0.59	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: 679

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	77	62	52	60	31	25	41	124	61	24	18	15	20	15	21	27	673
21 - 40	0	0	0	0	0	0	1	1	0	0	1	0	1	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	77	62	52	60	31	25	42	125	61	24	19	15	21	15	21	27	677

Total Number of Valid Hours: 677

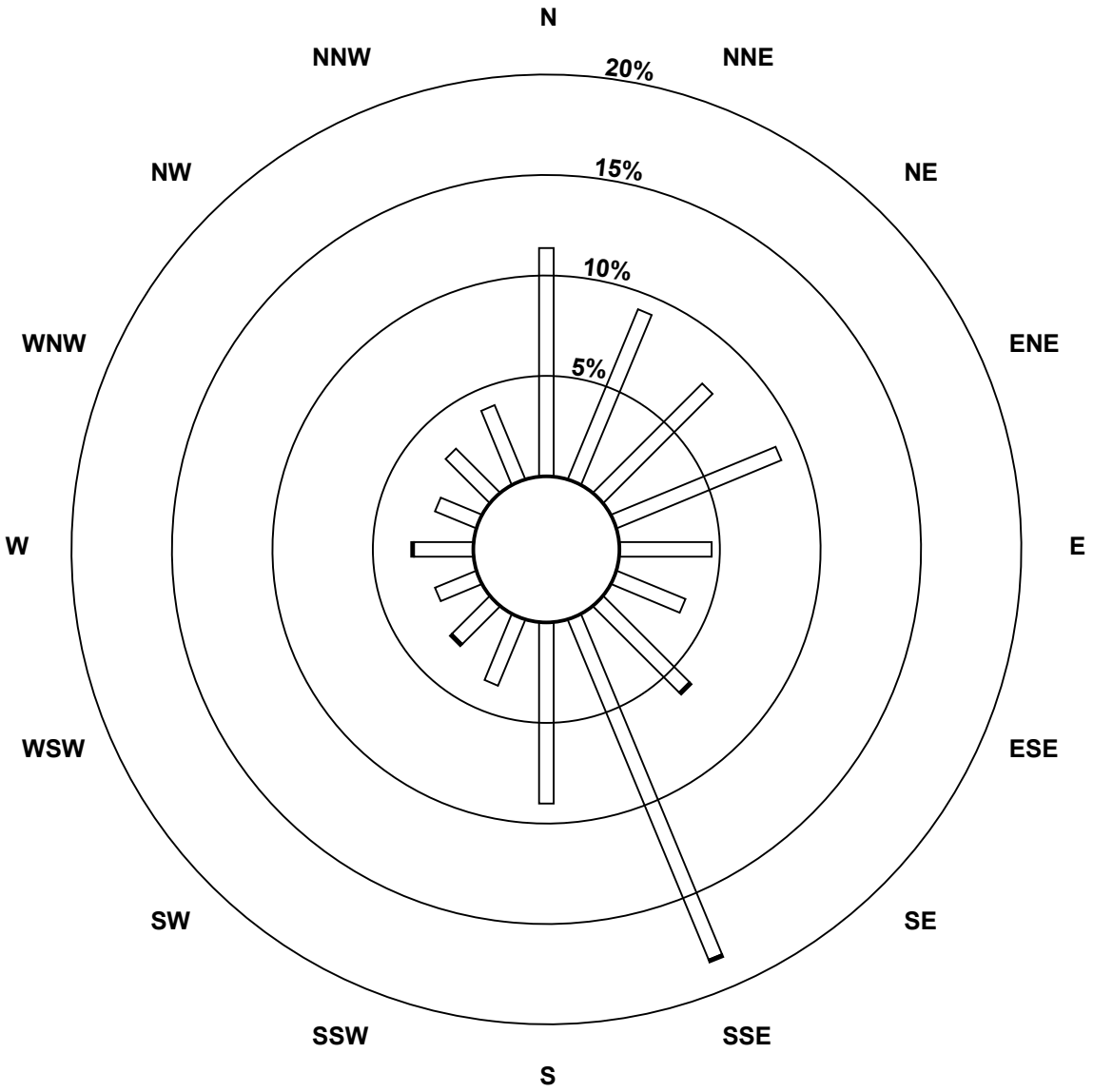
Total Number of Hours: 720

Wood Buffalo Environmental Association

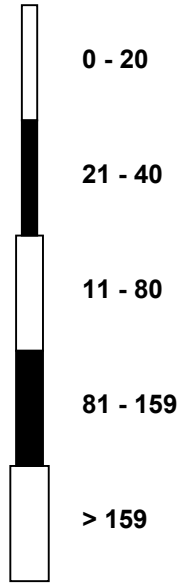
Wind Rose Apr 2014

Nitric Oxide (NO) - ppb

Fort McKay - Bertha Ganter (AMS 1)



Classes (ppb)



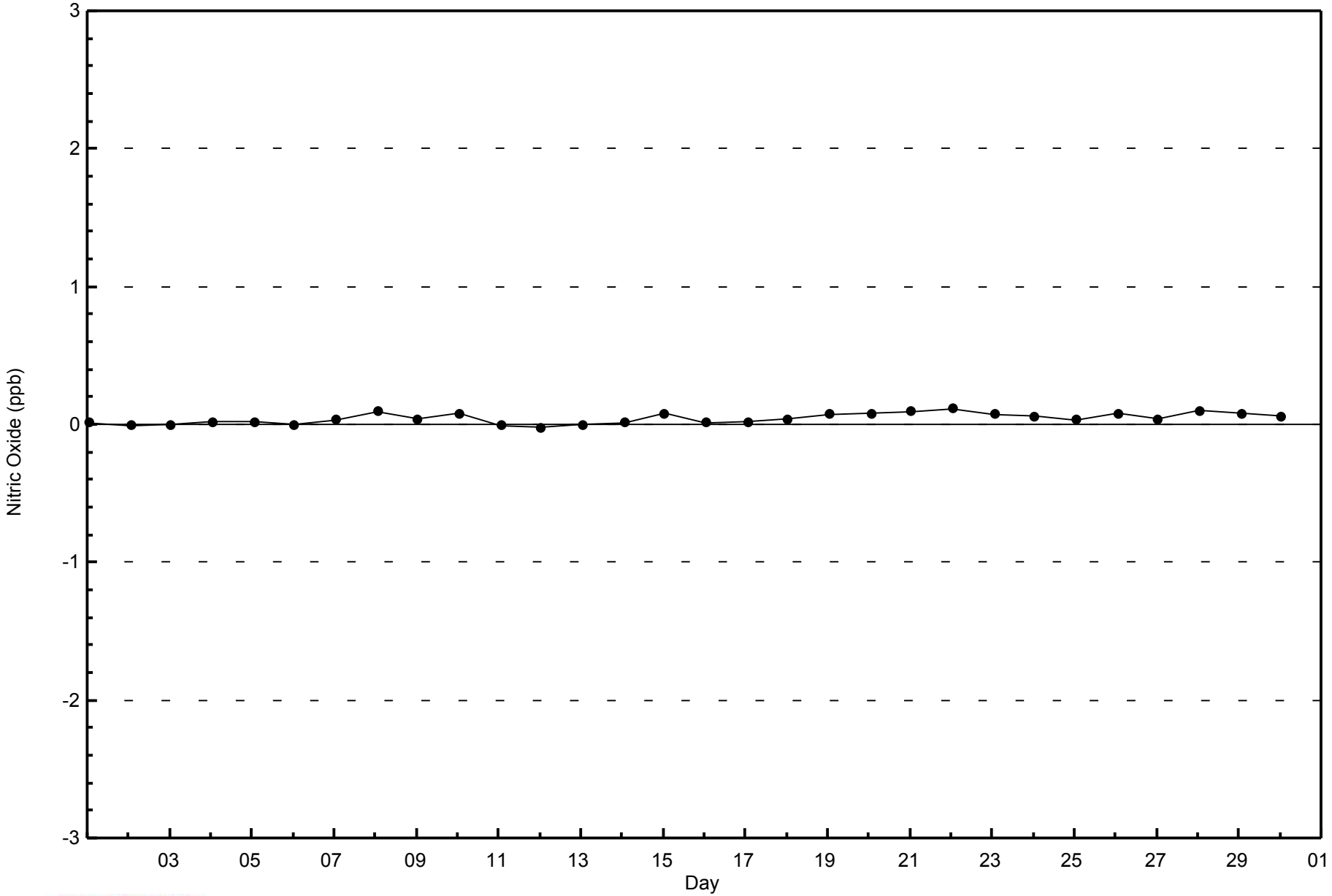
Total Number of Valid Hours: 677

WBEA NETWORK

Zero Responses

Nitric Oxide (NO) - ppb

Fort McKay - Bertha Ganter - April 2014



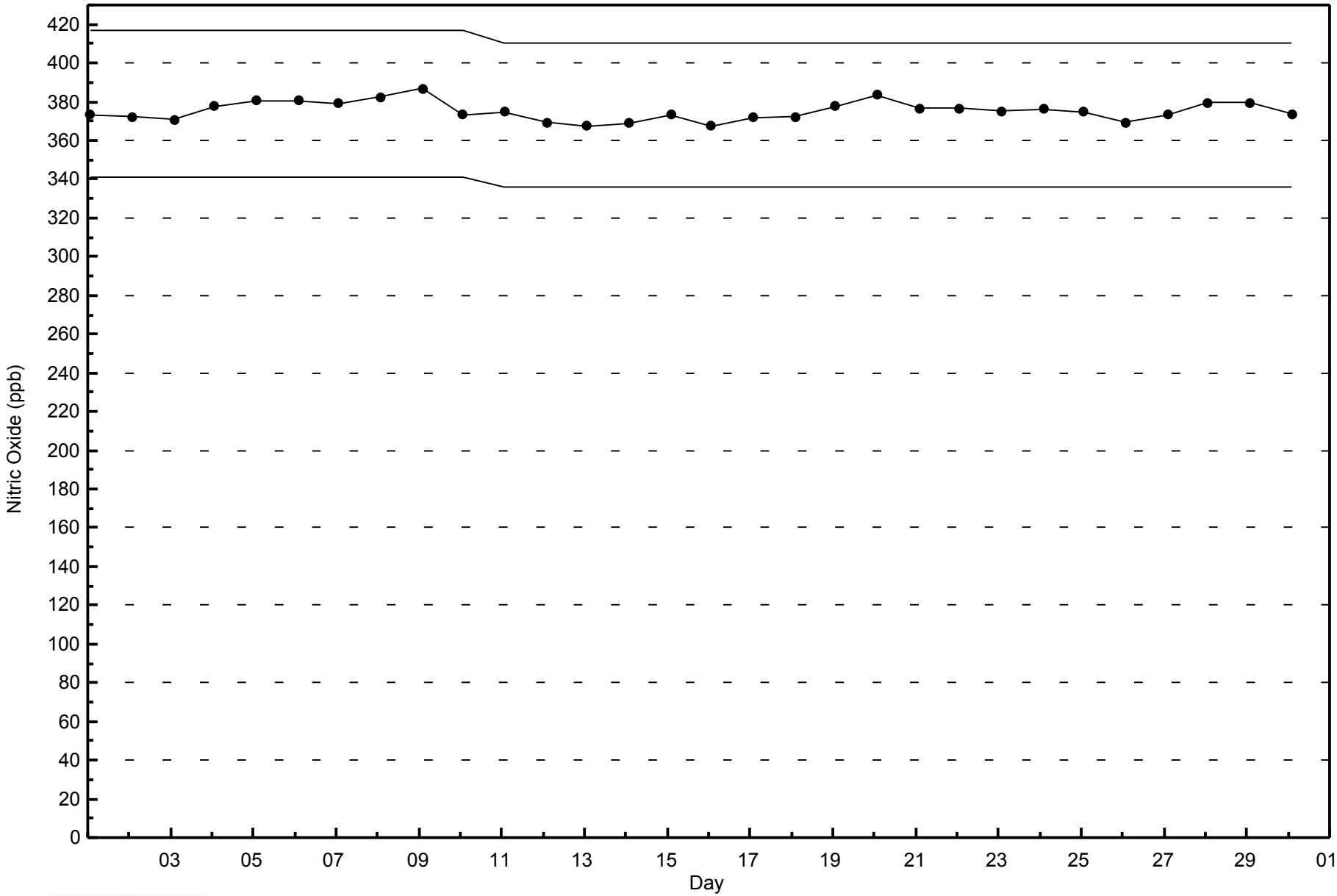
AURORA ATMOSPHERICS INC.

WBEA NETWORK

Span Responses

Nitric Oxide (NO) - ppb

Fort McKay - Bertha Ganter - April 2014



AURORA ATMOSPHERICS INC.

Number of Exceedences (AAAQO): 1-hr: 0 24-hr: 0
Maximum Value: 31 ppb on Apr 6 20:00 Maximum Daily Average: 14.0 ppb on Apr 6

Minimum Value: 0 ppb on Apr 9 09:00 Minimum Daily Average: 2.8 ppb on Apr 9
Maximum Diurnal Average: 9.1 ppb at hour 8 Minimum Diurnal Average: 3.3 ppb at hour 17
Monthly Average: 6.1 ppb Percentiles: $P_1 = 0$ $P_{10} = 1$ $Q_1 = 2$ Median = 5 $Q_3 = 9$ $P_{90} = 14$ $P_{99} = 25$

Hours in Service:	720
Hours of Data:	679
Hours of Missing Data:	41
Hours of Calibration:	35
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-Apr	11	Z	2	4	10	15	13	9	6	3	3	5	6	6	5	6	6	6	6	4	12	16	11	8	7.5	16
2-Apr	4	Z	5	7	8	7	8	8	7	5	4	3	3	3	2	3	3	4	6	4	9	11	10	6	5.6	11
3-Apr	10	Z	4	5	9	10	8	10	10	7	7	9	6	5	4	5	9	14	23	23	9	4	5	5	8.7	23
4-Apr	7	Z	6	10	7	6	9	10	8	10	9	6	6	7	2	1	1	1	1	1	1	1	1	1	4.8	10
5-Apr	0	Z	2	5	1	1	1	1	2	3	4	6	5	7	5	3	3	6	13	13	17	12	11	7	5.4	17
6-Apr	3	Z	3	6	11	11	9	9	21	17	12	21	17	9	14	14	8	14	12	31	29	22	17	14	14.0	31
7-Apr	11	Z	13	11	14	16	17	19	13	8	6	4	4	8	7	3	1	3	9	2	4	3	1	17	8.3	19
8-Apr	15	Z	11	13	14	18	21	13	4	1	1	1	1	1	0	0	1	0	0	0	0	0	1	1	5.1	21
9-Apr	0	Z	0	1	1	1	1	0	0	C	C	C	C	C	0	0	0	2	6	10	14	8	2	3	2.8	14
10-Apr	2	Z	5	8	8	6	8	7	8	7	6	6	5	4	5	6	5	4	4	3	7	3	2	5	5.6	8
11-Apr	4	Z	3	6	4	4	7	8	7	8	5	5	3	2	2	1	1	1	0	1	1	3	1	6	3.6	8
12-Apr	8	Z	2	1	1	1	3	4	10	3	1	0	UO	UO	UO	UO	UO	UO	7	3	2	1	1	1	--	10
13-Apr	1	Z	1	1	1	2	2	1	1	1	3	4	4	3	3	3	2	4	13	16	16	16	14	12	5.3	16
14-Apr	11	Z	12	13	26	22	15	16	14	9	8	8	8	6	5	5	5	5	7	3	6	3	2	3	9.1	26
15-Apr	4	Z	5	4	7	7	5	8	10	8	5	4	2	2	2	1	1	1	1	1	1	1	4	9	3.9	10
16-Apr	9	Z	7	6	8	7	9	9	4	2	1	2	5	3	2	2	2	2	1	1	1	2	1	1	3.6	9
17-Apr	3	Z	3	3	2	3	4	7	10	6	2	2	2	2	1	1	2	1	2	3	2	2	2	2	2.8	10
18-Apr	1	Z	1	1	3	5	5	1	1	1	1	1	1	1	1	1	3	4	5	6	6	6	6	8	2.9	8
19-Apr	8	Z	5	4	3	4	9	12	8	7	8	8	7	5	4	3	3	2	1	1	2	2	1	2	4.7	12
20-Apr	3	Z	9	10	9	8	11	13	14	10	7	10	10	10	6	4	2	3	3	3	14	15	16	13	8.8	16
21-Apr	16	Z	25	21	25	27	25	20	11	18	9	7	10	9	6	8	7	4	5	5	14	20	14	15	13.9	27
22-Apr	12	Z	7	4	5	8	12	25	12	12	8	4	2	2	1	2	2	2	4	4	14	7	16	18	7.9	25
23-Apr	19	Z	14	16	11	14	11	16	13	12	8	3	3	1	1	1	1	1	3	2	2	2	2	4	6.8	19
24-Apr	5	Z	5	5	5	9	8	5	8	6	5	6	4	12	18	10	7	1	1	1	1	0	0	0	5.3	18
25-Apr	0	Z	2	2	2	3	3	2	2	2	4	2	1	3	2	1	1	4	3	3	4	5	8	9	2.9	9
26-Apr	10	Z	14	15	14	12	7	8	5	6	3	2	3	3	3	2	3	2	2	1	1	5	7	6	5.8	15
27-Apr	6	Z	1	1	1	1	1	5	5	3	2	2	2	2	2	3	4	4	4	4	4	5	7	8	3.3	8
28-Apr	7	Z	12	10	7	5	9	7	10	10	8	7	7	5	4	4	5	7	10	10	8	9	10	13	7.9	13
29-Apr	12	Z	13	13	15	9	6	6	8	10	6	2	0	0	0	0	1	0	0	0	2	3	4	3	4.9	15
30-Apr	4	Z	3	4	3	12	15	15	14	16	16	8	3	2	4	3	10	18	14	2	1	7	1	1	7.5	18
	6.9	--	6.4	6.9	7.7	8.4	8.7	9.1	8.1	7.2	5.5	5.1	4.5	4.3	3.9	3.3	3.3	4.2	5.5	5.3	6.8	6.3	5.9	6.6	Diurnal Average	
	19	--	25	21	26	27	25	25	21	18	16	21	17	12	18	14	10	18	23	31	29	22	17	18	Diurnal Maximum	

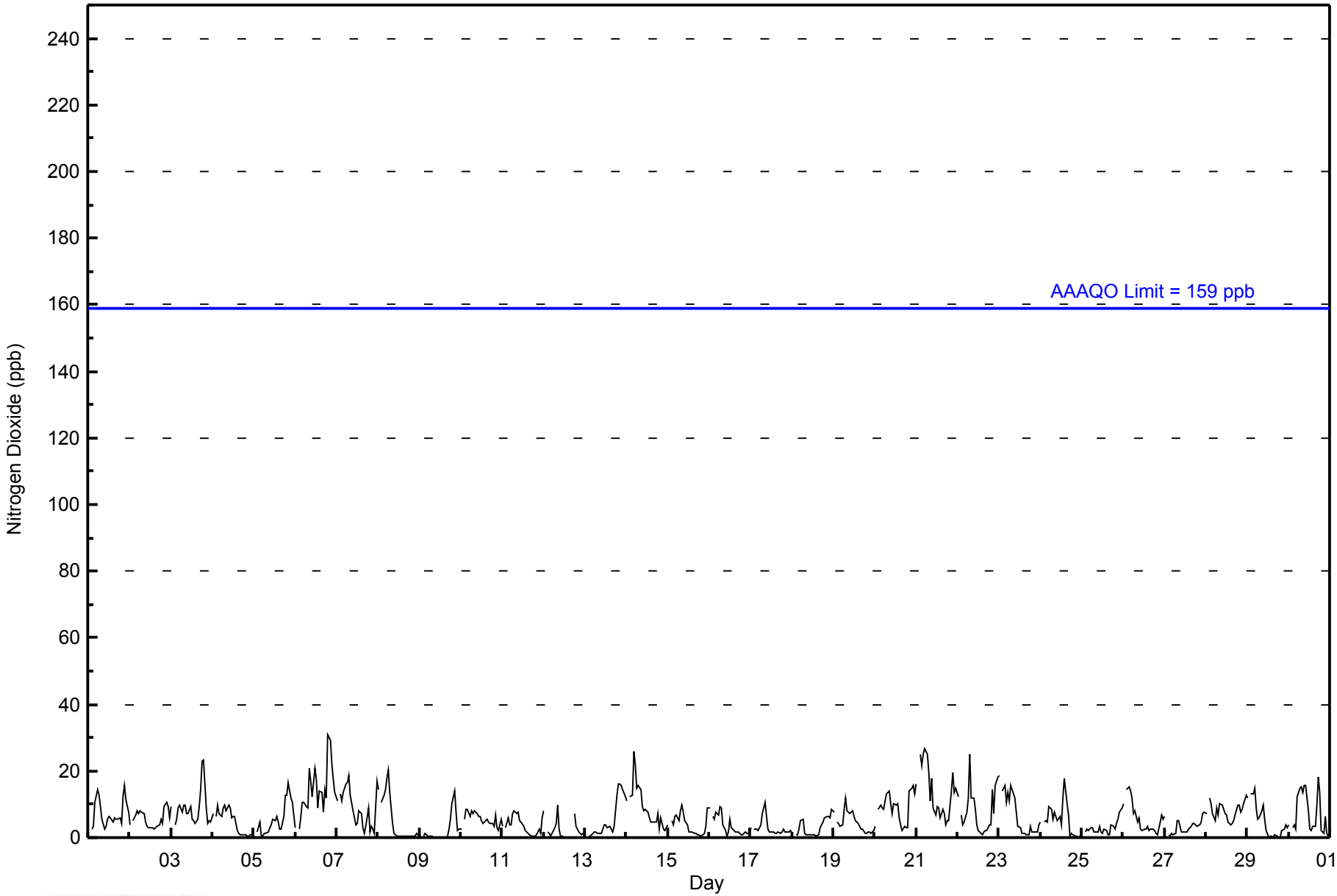
Z - zerospan C - Calibration UO - Unstable Operation
Alberta Ambient Air Quality Objectives (AAAQO): 1-hr 159 ppb

WBEA NETWORK

Hourly Averages

Nitrogen Dioxide (NO_2) - ppb

Fort McKay - Bertha Ganter - April 2014



AURORA ATMOSPHERICS INC.

Concentration Ranges (ppb)	Number of Hours	%	Cumulative %
0 - 20	663	97.64	97.64
21 - 40	16	2.36	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: 679

Total Number of Hours: 720

Nitrogen Dioxide (NO_2) - ppb

Fort McKay - Bertha Ganter - April 2014

Concentration Ranges (ppb)	Wind Direction																
	N	NNE	NE	ENE	E	ESE	SE	SSE	S	SSW	SW	WSW	W	WNW	NW	NNW	**Totals**
0 - 20	74	61	51	60	31	25	42	122	57	23	18	14	21	15	21	26	661
21 - 40	3	1	1	0	0	0	0	3	4	1	1	1	0	0	0	1	16
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	77	62	52	60	31	25	42	125	61	24	19	15	21	15	21	27	677

Total Number of Valid Hours: 677

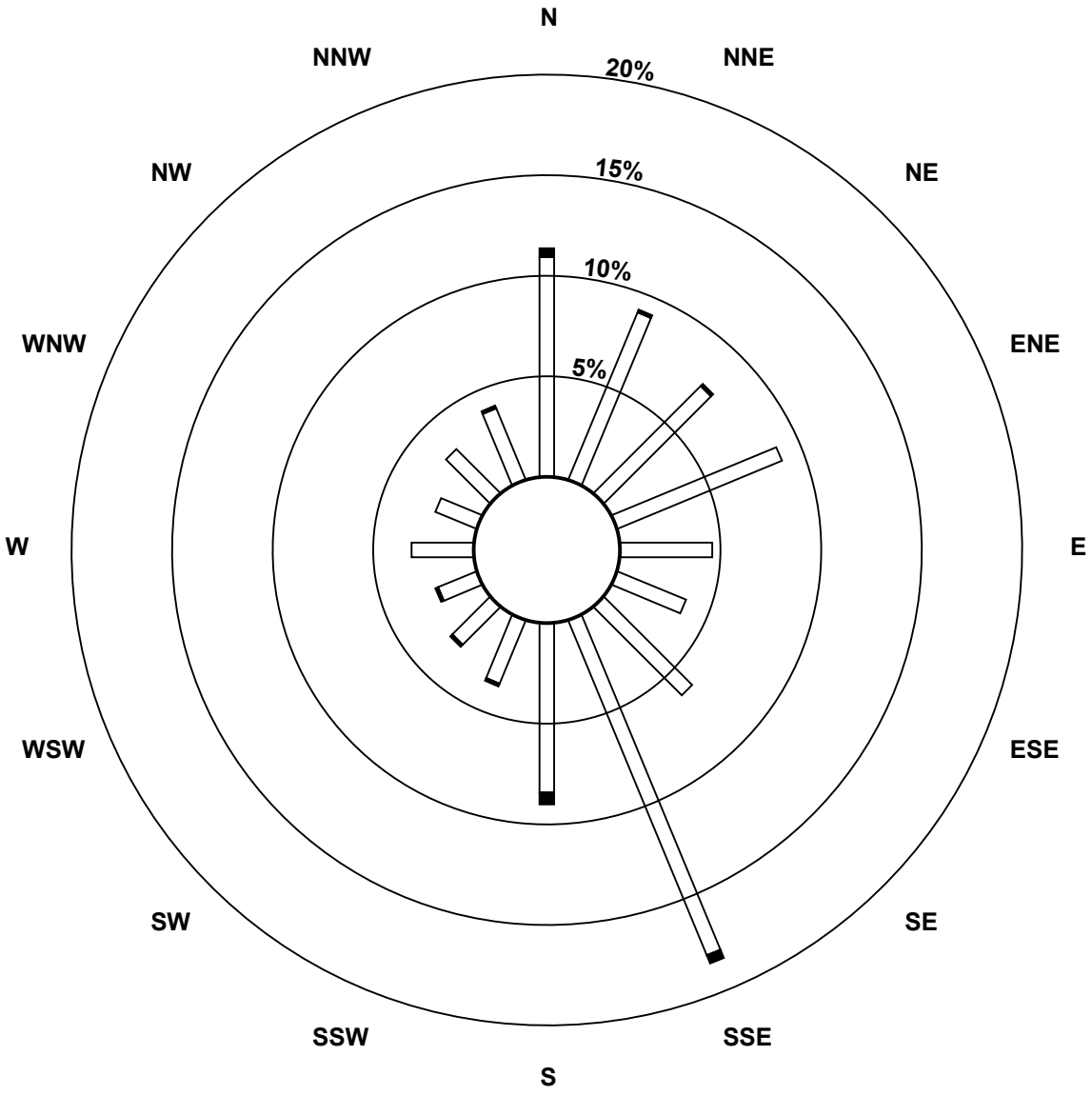
Total Number of Hours: 720

Wood Buffalo Environmental Association

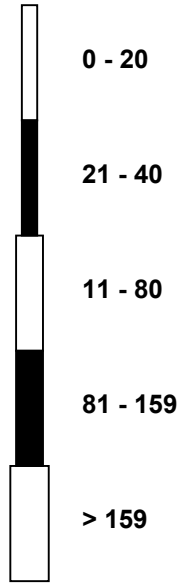
Wind Rose Apr 2014

Nitrogen Dioxide (NO_2) - ppb

Fort McKay - Bertha Ganter (AMS 1)



Classes (ppb)



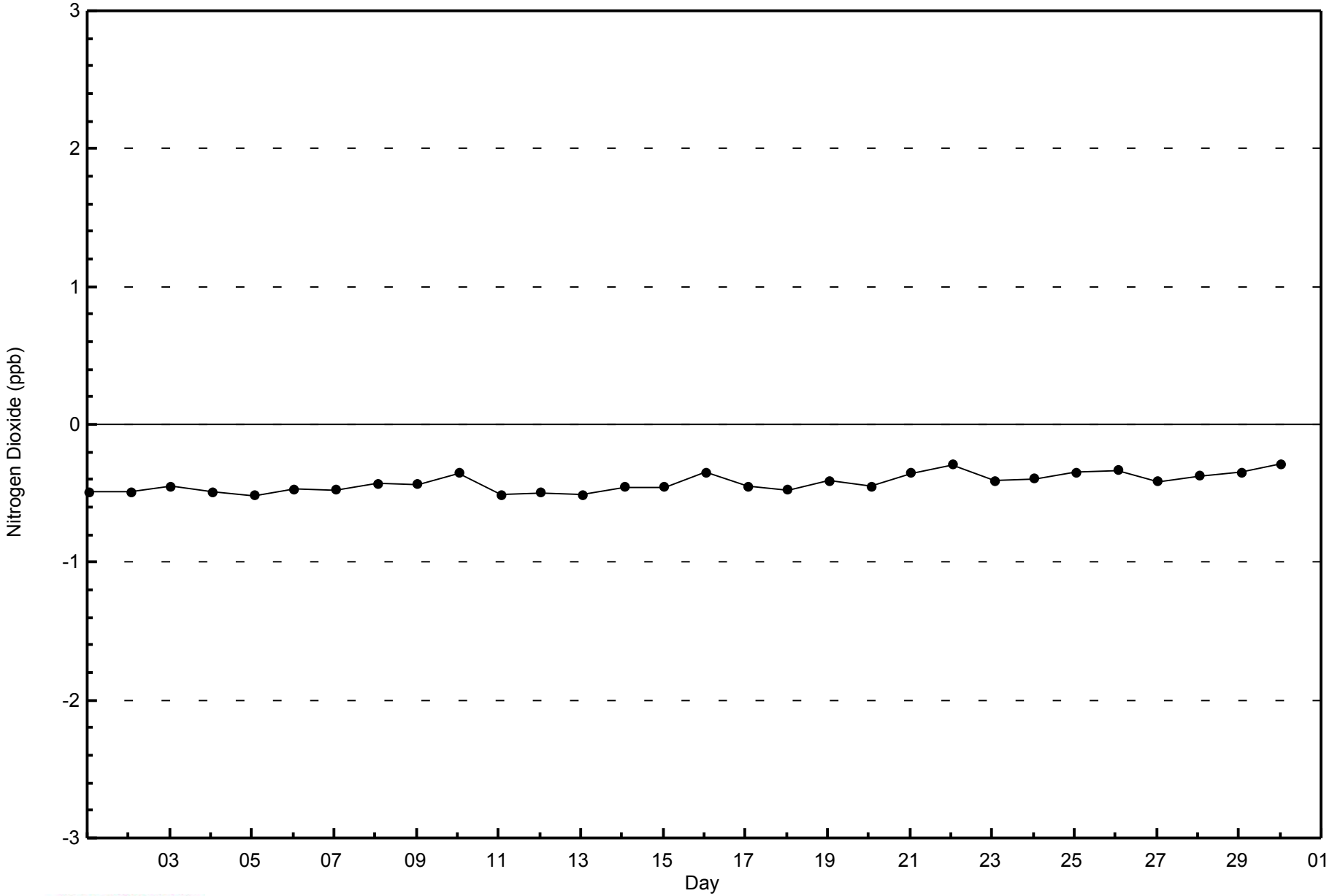
Total Number of Valid Hours: 677

WBEA NETWORK

Zero Responses

Nitrogen Dioxide (NO_2) - ppb

Fort McKay - Bertha Ganter - April 2014



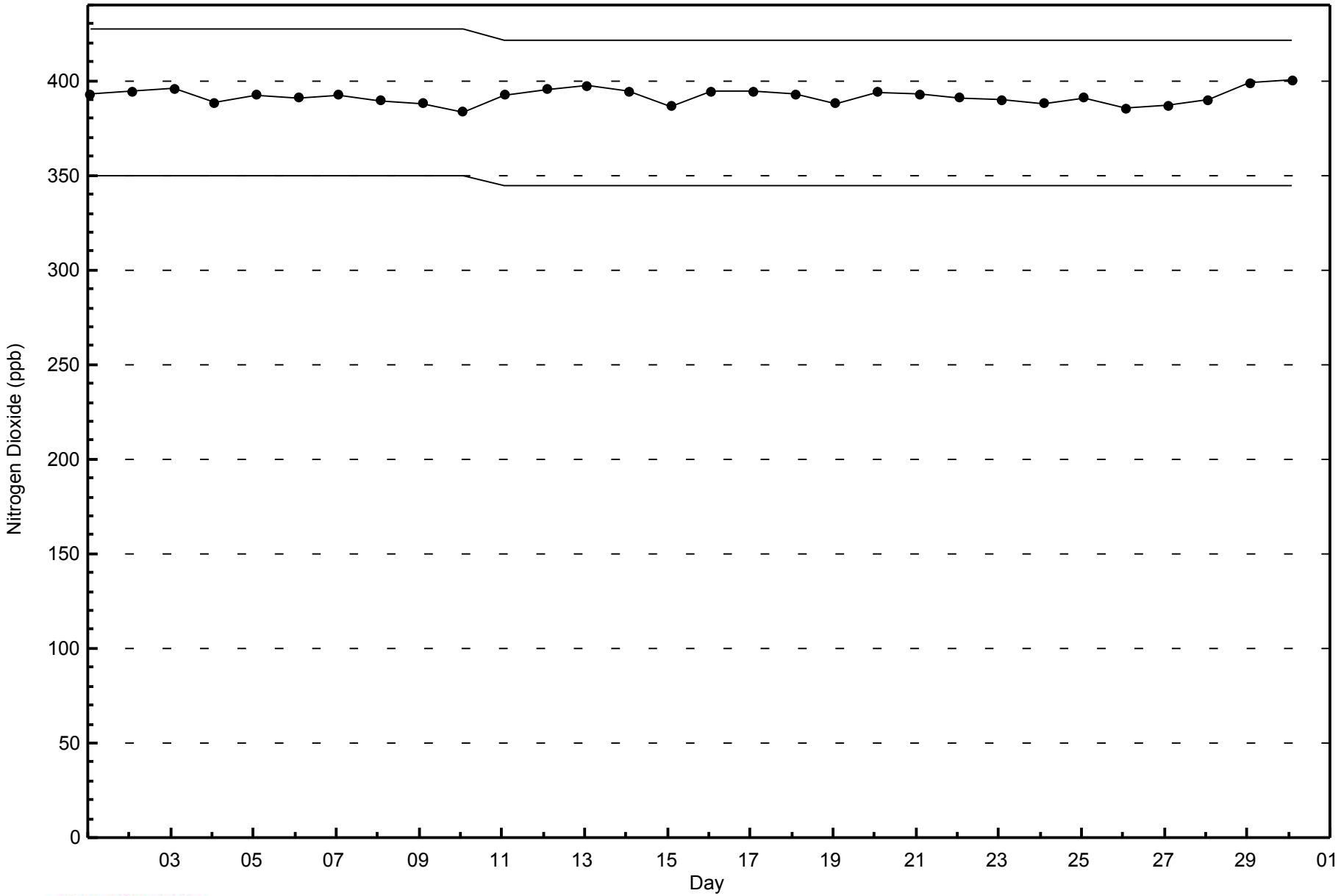
AURORA ATMOSPHERICS INC.

WBEA NETWORK

Span Responses

Nitrogen Dioxide (NO_2) - ppb

Fort McKay - Bertha Ganter - April 2014



AURORA ATMOSPHERICS INC.

Wood Buffalo Environmental Association

Summary of Hour Averages

Nitrogen Oxides (NO_X) - ppb

Fort McKay - Bertha Ganter - April 2014

Maximum Value: 43 ppb on Apr 22 08:00

Maximum Daily Average: 17.5 ppb on Apr 6

Minimum Value: 0 ppb on Apr 25 01:00

Minimum Daily Average: 2.8 ppb on Apr 9

Maximum Diurnal Average: 14.1 ppb at hour 8

Minimum Diurnal Average: 3.9 ppb at hour 17

Monthly Average: 7.5 ppb

Percentiles: $P_1 = 0$ $P_{10} = 1$ $Q_1 = 2$ Median = 5 $Q_3 = 11$ $P_{90} = 16$ $P_{99} = 33$

Hours in Service:	720
Hours of Data:	679
Hours of Missing Data:	41
Hours of Calibration:	35
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-Apr	11	Z	2	4	10	15	13	11	8	4	5	9	10	9	7	8	7	7	7	4	12	15	11	8	8.7	15
2-Apr	4	Z	5	7	8	7	9	11	12	8	6	5	4	4	4	4	5	5	6	4	9	11	9	6	6.6	12
3-Apr	10	Z	4	5	9	10	9	19	23	17	16	19	11	9	7	9	13	18	26	24	9	4	5	5	12.2	26
4-Apr	7	Z	6	10	7	6	9	11	9	12	11	7	8	8	2	1	1	1	1	1	1	1	1	1	5.2	12
5-Apr	0	Z	2	4	0	1	1	1	2	4	5	9	8	10	7	4	3	7	14	13	17	12	11	7	6.2	17
6-Apr	3	Z	3	6	11	11	11	13	41	28	17	33	28	13	18	17	9	16	12	32	29	22	17	14	17.5	41
7-Apr	11	Z	14	11	15	20	27	40	21	12	9	6	5	11	9	3	1	3	9	2	4	3	1	17	11.0	40
8-Apr	15	Z	11	13	15	19	24	16	5	1	1	1	0	0	0	0	0	0	0	0	0	0	1	1	5.5	24
9-Apr	0	Z	0	1	1	1	1	0	0	C	C	C	C	C	0	0	0	3	6	10	14	8	2	2	2.8	14
10-Apr	2	Z	5	8	8	6	9	9	12	11	10	10	8	6	7	7	6	5	5	3	7	3	2	5	6.9	12
11-Apr	4	Z	3	6	4	4	8	9	8	9	6	6	4	3	2	1	1	1	0	1	1	3	1	6	3.9	9
12-Apr	8	Z	2	1	0	1	3	6	16	4	0	0	UO	UO	UO	UO	UO	UO	8	3	2	1	1	1	--	16
13-Apr	1	Z	1	1	1	2	2	2	1	2	4	6	6	5	5	4	2	4	14	16	16	16	14	12	6.0	16
14-Apr	11	Z	12	13	26	23	18	22	21	13	12	12	11	8	6	5	5	5	7	3	6	3	2	3	10.8	26
15-Apr	4	Z	5	4	7	7	5	9	12	10	7	5	2	2	2	1	1	1	1	1	1	1	4	9	4.4	12
16-Apr	9	Z	6	6	7	7	10	11	5	3	1	2	8	4	3	2	2	2	1	1	1	2	1	1	4.1	11
17-Apr	3	Z	3	3	2	3	4	10	15	9	3	2	2	2	2	2	2	1	2	3	2	2	2	2	3.4	15
18-Apr	1	Z	1	1	3	5	6	1	1	1	1	1	1	1	1	1	3	4	5	6	6	6	6	8	3.0	8
19-Apr	8	Z	5	4	3	4	11	18	11	9	11	12	9	6	5	4	3	3	1	1	2	2	1	2	5.9	18
20-Apr	3	Z	10	12	12	14	27	34	33	18	10	15	13	14	7	4	2	4	3	3	14	15	16	13	12.9	34
21-Apr	16	Z	25	22	26	30	35	29	15	25	10	9	13	11	7	11	9	5	5	5	14	20	14	15	16.1	35
22-Apr	12	Z	7	4	5	8	16	43	17	18	12	5	3	2	1	2	2	2	4	4	14	7	16	18	9.7	43
23-Apr	19	Z	14	16	11	14	12	18	15	14	9	4	3	1	1	1	1	1	3	2	2	2	2	4	7.3	19
24-Apr	5	Z	5	5	5	10	9	6	8	7	6	7	4	13	22	12	8	1	1	1	1	0	0	0	5.8	22
25-Apr	0	Z	2	2	2	3	3	2	2	2	5	2	2	4	3	1	1	4	4	3	4	5	8	9	3.1	9
26-Apr	10	Z	14	15	14	13	8	10	6	7	4	3	4	3	4	2	3	2	2	1	1	5	7	6	6.3	15
27-Apr	7	Z	1	1	1	1	1	5	6	4	2	2	2	2	3	4	5	5	4	4	4	5	7	8	3.6	8
28-Apr	7	Z	12	11	9	27	41	19	18	17	13	13	12	7	5	5	6	8	11	10	8	9	10	13	12.7	41
29-Apr	12	Z	14	15	26	13	8	10	14	17	9	3	0	0	0	0	1	0	0	0	2	2	4	3	6.7	26
30-Apr	4	Z	3	4	3	20	30	30	22	23	22	10	3	3	4	4	10	20	14	2	1	7	1	0	10.5	30
	6.9	--	6.6	7.1	8.4	10.1	12.4	14.1	12.7	10.7	7.9	7.5	6.6	5.8	5.0	4.1	3.9	4.8	5.9	5.4	6.8	6.3	5.9	6.6	Diurnal Average	
	19	--	25	22	26	30	41	43	41	28	22	33	28	14	22	17	13	20	26	32	29	22	17	18	Diurnal Maximum	

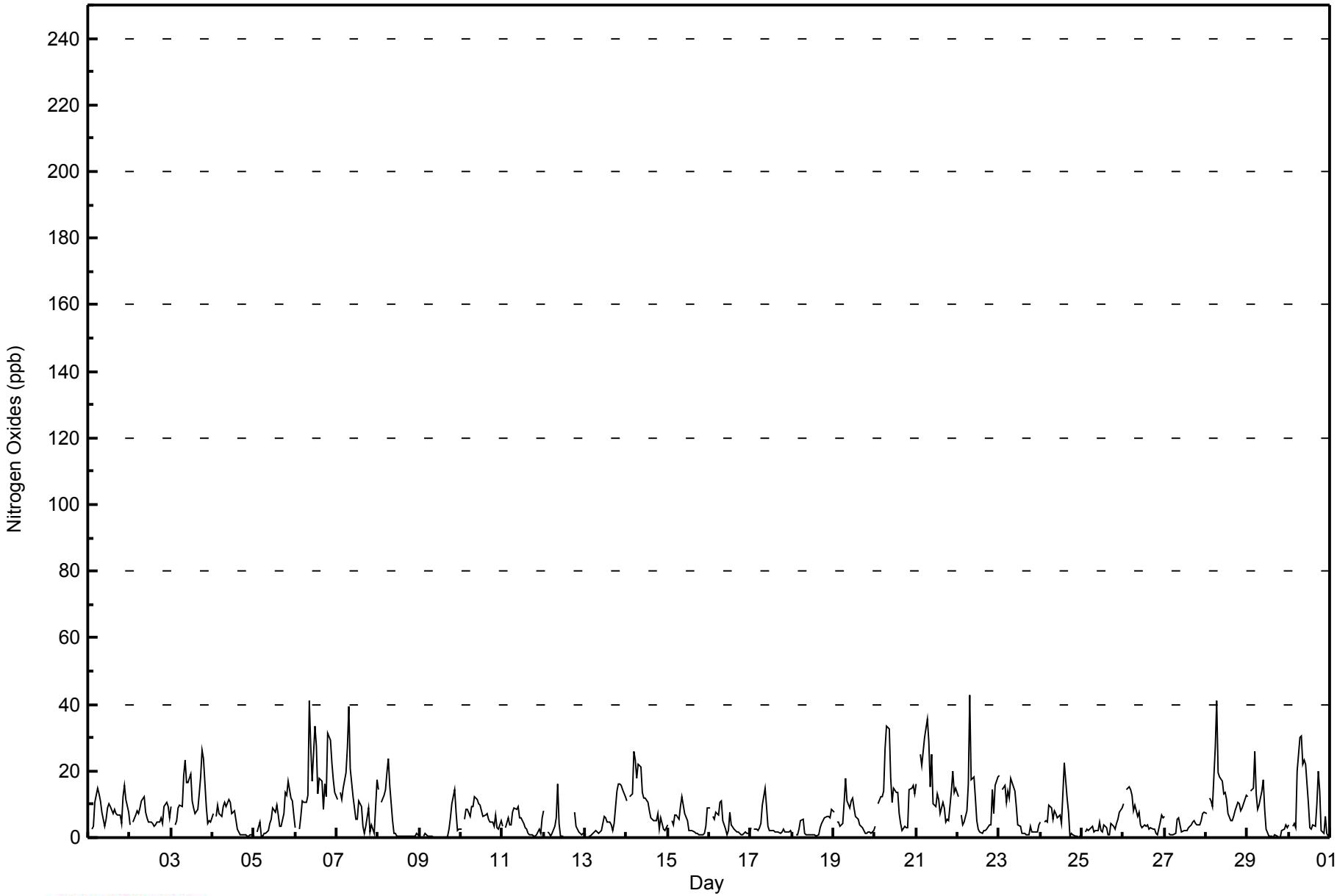
Z - zerospan C - Calibration UO - Unstable Operation

WBEA NETWORK

Hourly Averages

Nitrogen Oxides (NO_X) - ppb

Fort McKay - Bertha Ganter - April 2014



AURORA ATMOSPHERICS INC.

Concentration Ranges (ppb)	Number of Hours	%	Cumulative %
0 - 20	641	94.40	94.40
21 - 40	35	5.15	99.56
11 - 80	3	0.44	100.00
81 - 159	0	0.00	100.00
> 159	0	0.00	100.00

Total Number of Valid Hours: 679

Total Number of Hours: 720

Nitrogen Oxides (NO_X) - ppb

Fort McKay - Bertha Ganter - April 2014

Concentration Ranges (ppb)	Wind Direction																
	N	NNE	NE	ENE	E	ESE	SE	SSE	S	SSW	SW	WSW	W	WNW	NW	NNW	**Totals**
0 - 20	73	60	51	60	31	25	41	109	55	23	17	14	19	15	21	26	640
21 - 40	3	2	1	0	0	0	1	15	6	1	1	1	2	0	0	1	34
11 - 80	1	0	0	0	0	0	0	1	0	0	1	0	0	0	0	0	3
81 - 159	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
> 159	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Totals	77	62	52	60	31	25	42	125	61	24	19	15	21	15	21	27	677

Total Number of Valid Hours: 677

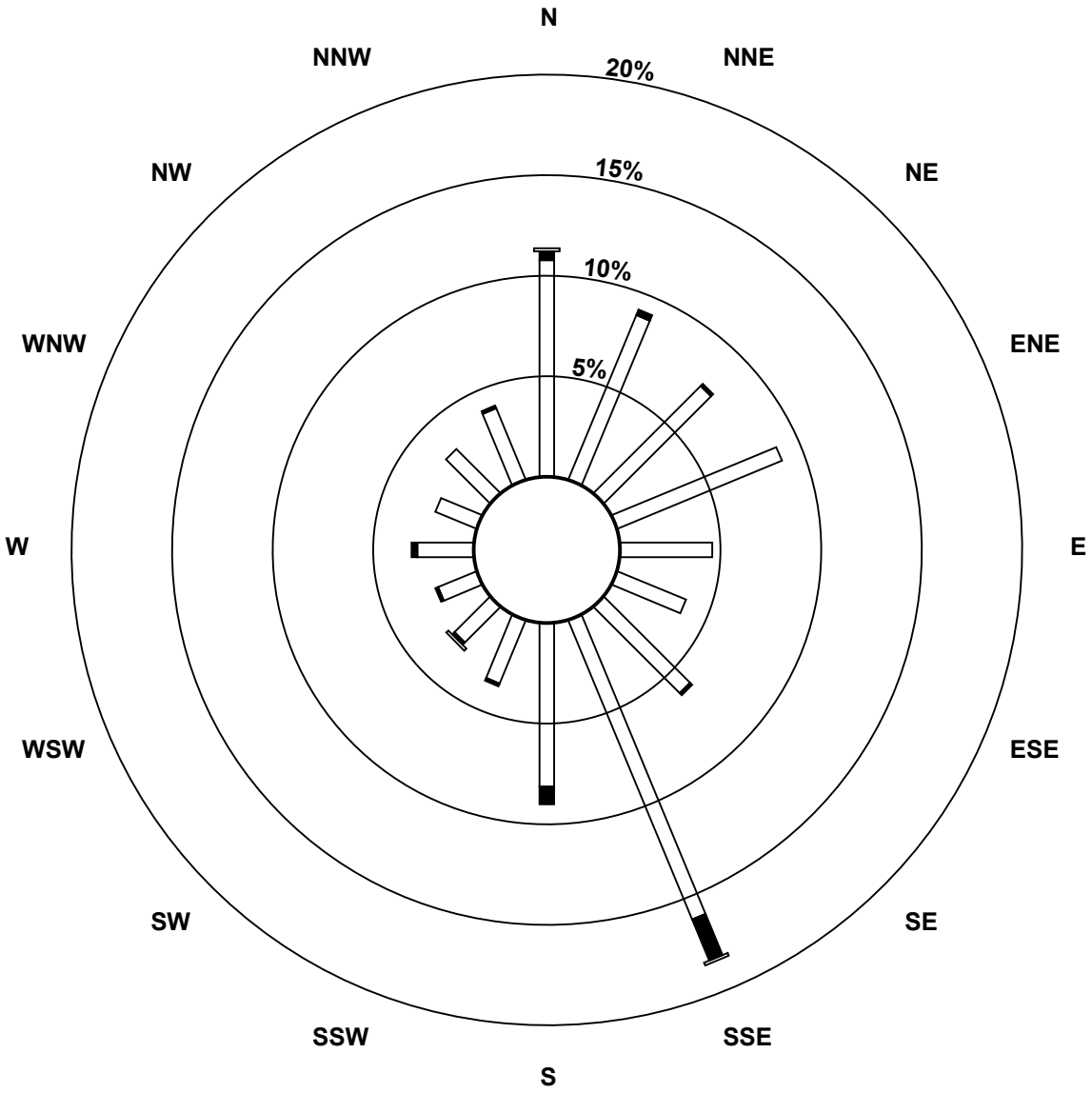
Total Number of Hours: 720

Wood Buffalo Environmental Association

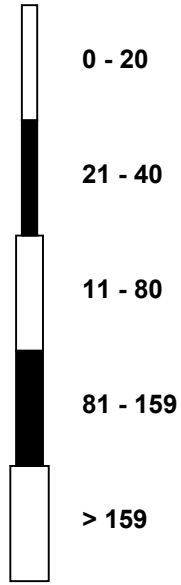
Wind Rose Apr 2014

Nitrogen Oxides (NO_X) - ppb

Fort McKay - Bertha Ganter (AMS 1)



Classes (ppb)



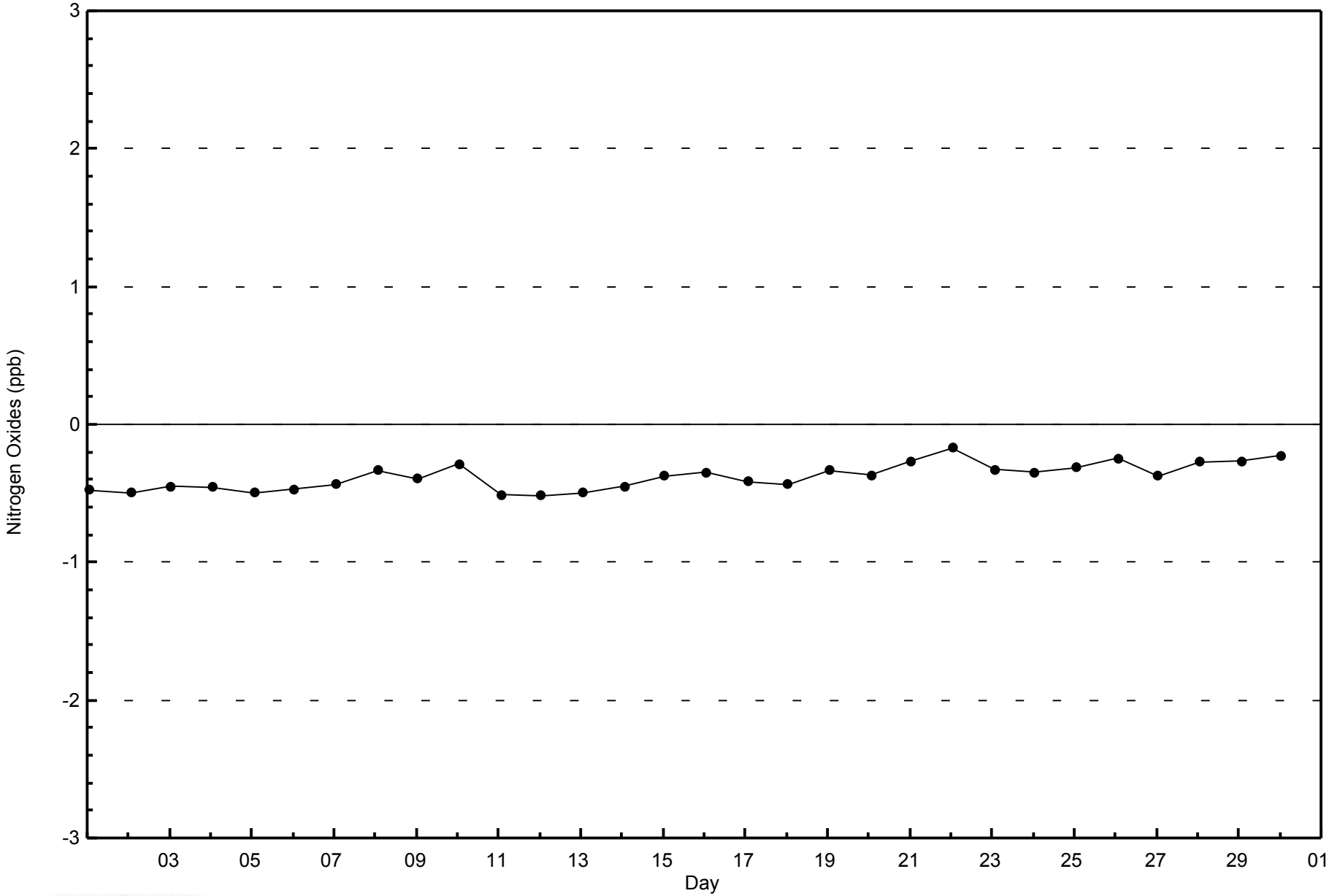
Total Number of Valid Hours: 677

Wood Buffalo Environmental Association

Zero Responses

Nitrogen Oxides (NO_X) - ppb

Fort McKay - Bertha Ganter - April 2014



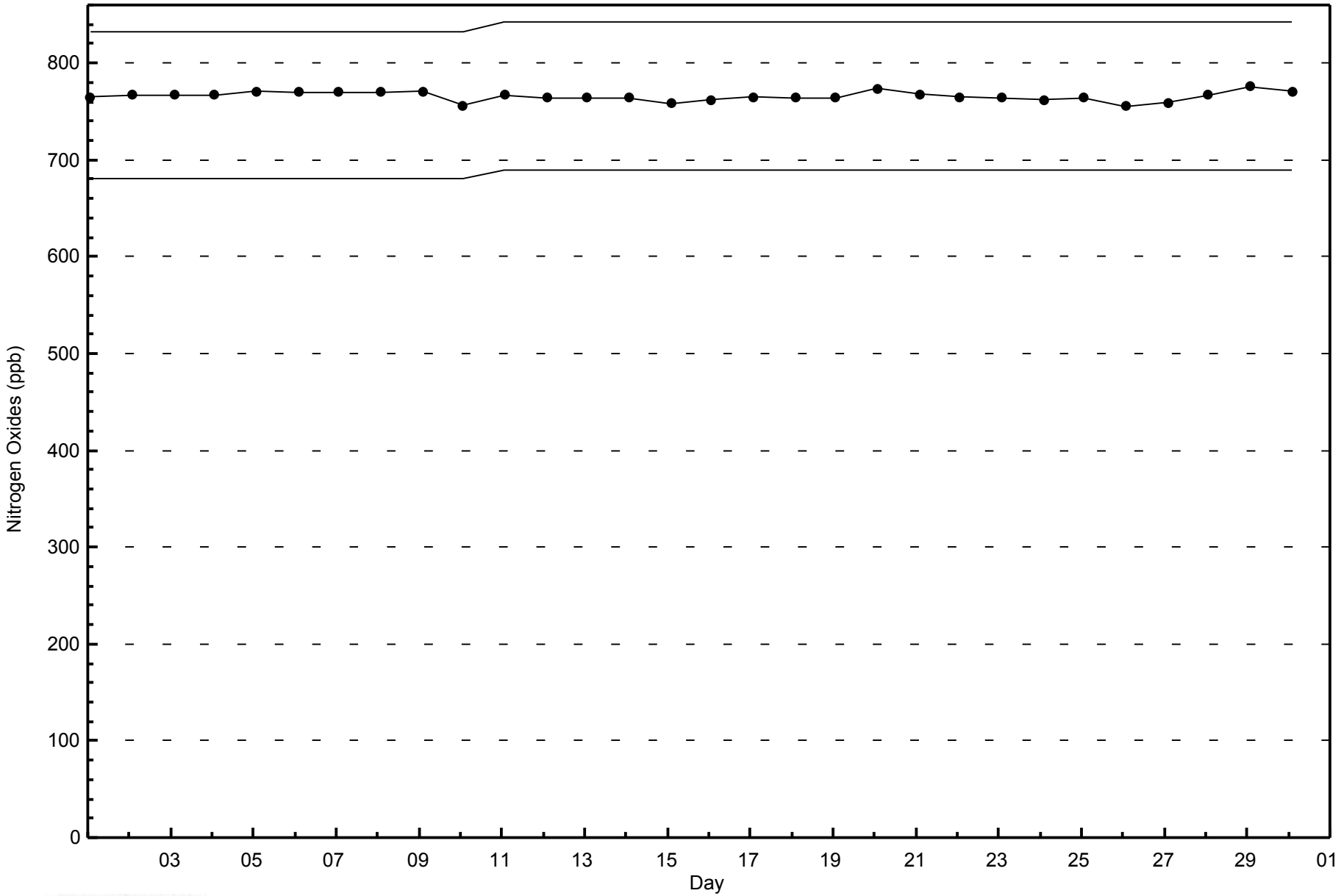
AURORA ATMOSPHERICS INC.

WBEA NETWORK

Span Responses

Nitrogen Oxides (NO_X) - ppb

Fort McKay - Bertha Ganter - April 2014



AURORA ATMOSPHERICS INC.

Wood Buffalo Environmental Association

Summary of Hour Averages

Ozone (O_3) - ppb

Fort McKay - Bertha Ganter - April 2014

Number of Exceedences (AAAQO): 1-hr: 0 24-hr: 0
Maximum Value: 49 ppb on Apr 8 20:00 Maximum Daily Average: 38.1 ppb on Apr 17

Minimum Value: 0 ppb on Apr 29 05:00 Minimum Daily Average: 13.0 ppb on Apr 28
Maximum Diurnal Average: 36.7 ppb at hour 16 Minimum Diurnal Average: 19.3 ppb at hour 6
Monthly Average: 28.6 ppb Percentiles: P_1 = 1 P_{10} = 12 Q_1 = 22 Median = 31 Q_3 = 37 P_{90} = 40 P_{99} = 45

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-Apr	25	Z	32	29	24	20	21	24	28	30	29	28	29	30	31	31	31	30	29	30	22	19	23	27	27.1	32
2-Apr	31	Z	27	24	19	18	16	15	15	18	21	21	23	24	25	24	22	21	20	19	15	14	15	15	20.0	31
3-Apr	11	Z	15	14	10	9	11	10	11	14	18	23	26	27	28	26	24	21	13	12	27	32	33	33	19.5	33
4-Apr	30	Z	32	31	33	34	32	32	34	32	32	34	33	31	36	40	37	36	36	40	41	40	38	36	34.7	41
5-Apr	35	Z	30	29	36	33	31	32	33	35	36	34	35	34	35	37	37	33	26	24	20	23	23	25	31.2	37
6-Apr	28	Z	27	21	17	16	15	18	13	23	29	20	21	31	31	31	38	30	31	14	12	12	11	11	21.7	38
7-Apr	9	Z	5	5	3	2	4	7	19	27	33	37	42	39	37	41	41	38	33	42	39	39	39	21	26.2	42
8-Apr	21	Z	19	13	8	4	5	13	27	32	33	34	35	36	37	38	40	43	48	49	47	46	42	41	30.8	49
9-Apr	42	Z	41	37	38	40	41	41	40	39	38	37	37	M	41	41	41	38	29	23	17	25	30	27	35.6	42
10-Apr	22	Z	19	14	19	22	20	22	C	C	C	29	31	33	34	33	35	35	33	35	32	34	35	32	28.5	35
11-Apr	33	Z	33	30	30	28	25	27	29	28	32	33	34	38	38	38	36	36	37	38	39	33	32	26	32.7	39
12-Apr	21	Z	26	27	27	24	25	24	21	32	35	35	36	36	UO	UO	UO	36	27	30	33	33	31	33	29.7	36
13-Apr	34	Z	34	31	28	27	29	31	31	31	30	30	31	33	33	35	37	36	28	21	17	16	15	18	28.6	37
14-Apr	21	Z	22	20	10	13	19	21	25	32	33	34	35	38	42	43	43	43	39	42	32	36	36	34	31.0	43
15-Apr	33	Z	31	32	30	33	34	31	31	33	36	38	39	40	40	41	42	42	40	39	40	41	39	33	36.5	42
16-Apr	32	Z	32	34	33	32	29	31	36	38	39	39	36	39	39	40	40	40	40	40	39	38	39	38	36.6	40
17-Apr	36	Z	35	34	34	32	32	30	29	34	39	41	43	43	44	44	43	43	43	41	41	40	37	38	38.1	44
18-Apr	36	Z	39	38	36	34	35	40	40	40	40	40	39	39	39	39	37	36	35	33	30	27	22	19	35.3	40
19-Apr	16	Z	9	10	6	7	8	12	19	23	26	30	31	34	35	36	35	35	36	35	32	29	26	23	24.1	36
20-Apr	12	Z	1	1	1	1	4	6	10	20	28	30	35	37	41	42	44	42	40	39	27	24	21	20	22.9	44
21-Apr	17	Z	8	10	7	6	7	16	26	20	30	34	34	36	38	37	38	40	38	37	27	20	25	21	24.9	40
22-Apr	21	Z	24	25	16	17	18	12	25	25	32	40	44	45	45	43	42	41	39	37	28	35	25	21	30.3	45
23-Apr	19	Z	25	21	25	22	25	25	27	29	33	38	40	43	42	41	41	41	38	38	38	38	38	36	33.2	43
24-Apr	35	Z	34	34	30	23	27	31	28	31	33	33	36	30	23	32	34	41	38	37	38	37	37	36	33.0	41
25-Apr	37	Z	30	31	27	27	33	35	34	35	34	37	37	37	38	40	39	36	35	35	31	29	26	22	33.2	40
26-Apr	19	Z	12	12	12	16	22	22	26	25	28	31	33	34	36	36	36	37	36	37	37	31	28	27	27.5	37
27-Apr	25	Z	28	28	28	29	26	22	20	22	24	25	25	23	22	22	21	20	21	20	19	16	11	7	21.9	29
28-Apr	7	Z	3	1	1	1	1	3	6	9	11	15	19	24	27	26	26	24	22	18	17	14	12	9	13.0	27
29-Apr	7	Z	3	2	0	5	10	12	16	17	28	39	41	42	42	41	37	41	41	37	30	25	20	18	24.1	42
30-Apr	12	Z	8	7	6	4	5	10	19	25	26	34	45	47	47	48	42	32	31	36	35	27	33	33	26.6	48
	24.2	--	22.9	21.5	19.7	19.3	20.3	21.8	24.8	27.6	30.6	32.4	34.2	35.3	36.1	36.7	36.5	35.5	33.4	32.7	30.0	29.1	28.1	26.1	Diurnal Average	
	42	--	41	38	38	40	41	41	40	40	40	41	45	47	47	48	44	43	48	49	47	46	42	41	Diurnal Maximum	

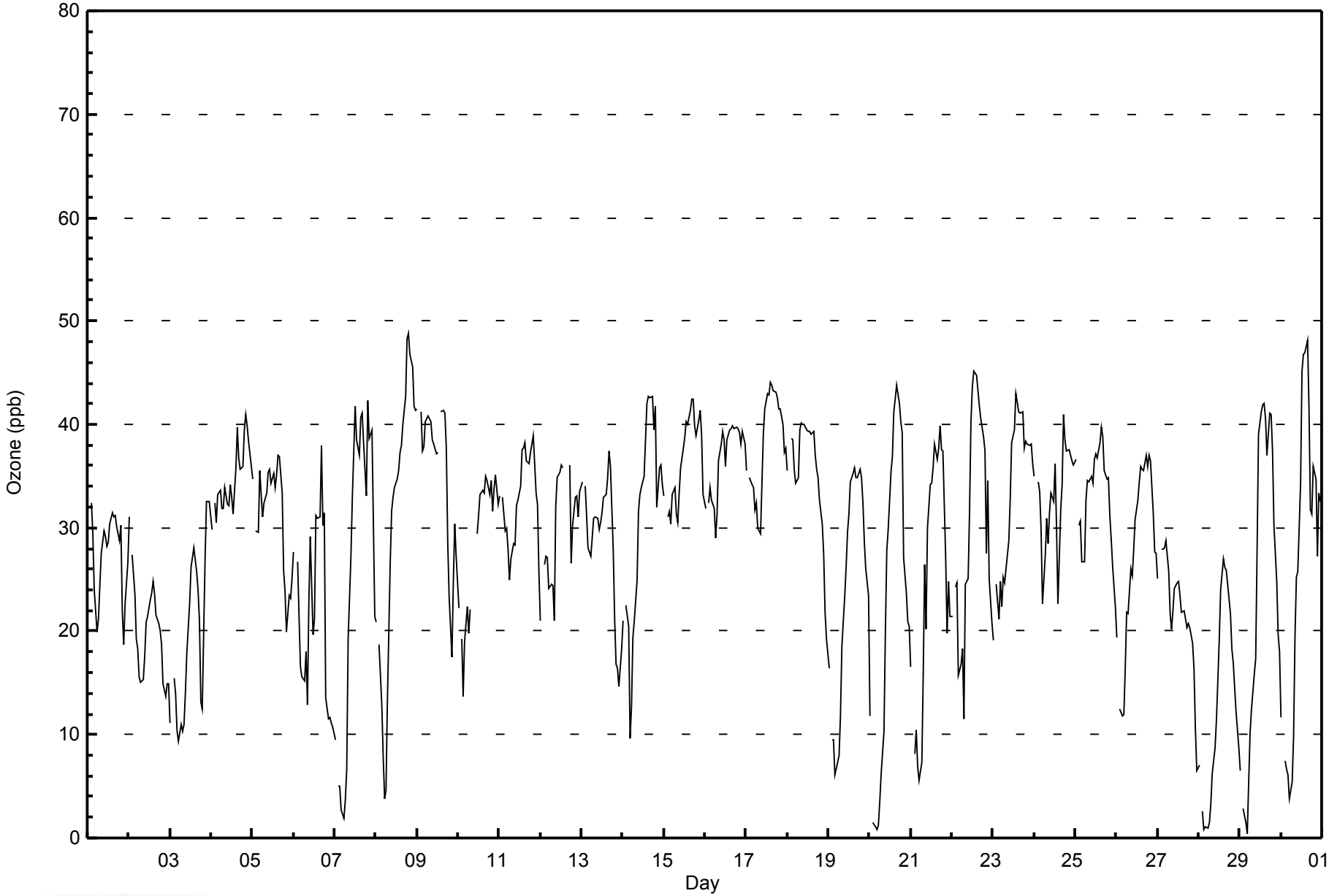
Z - zerospan C - Calibration M - Maintenance UO - Unstable Operation
Alberta Ambient Air Quality Objectives (AAAQO): 1-hr 82 ppb

WBEA NETWORK

Hourly Averages

Ozone (O_3) - ppb

Fort McKay - Bertha Ganter - April 2014



AURORA ATMOSPHERICS INC.

Concentration Ranges (ppb)	Number of Hours	%	Cumulative %
0 - 20	146	21.38	21.38
21 - 50	537	78.62	100.00
51 - 82	0	0.00	100.00
> 83	0	0.00	100.00

Total Number of Valid Hours: 683

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	23	12	2	2	3	1	9	32	19	8	8	3	6	4	1	11	144
21 - 50	54	51	49	56	28	24	33	93	42	16	11	12	15	11	23	19	537
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	77	63	51	58	31	25	42	125	61	24	19	15	21	15	24	30	681

Total Number of Valid Hours: 681

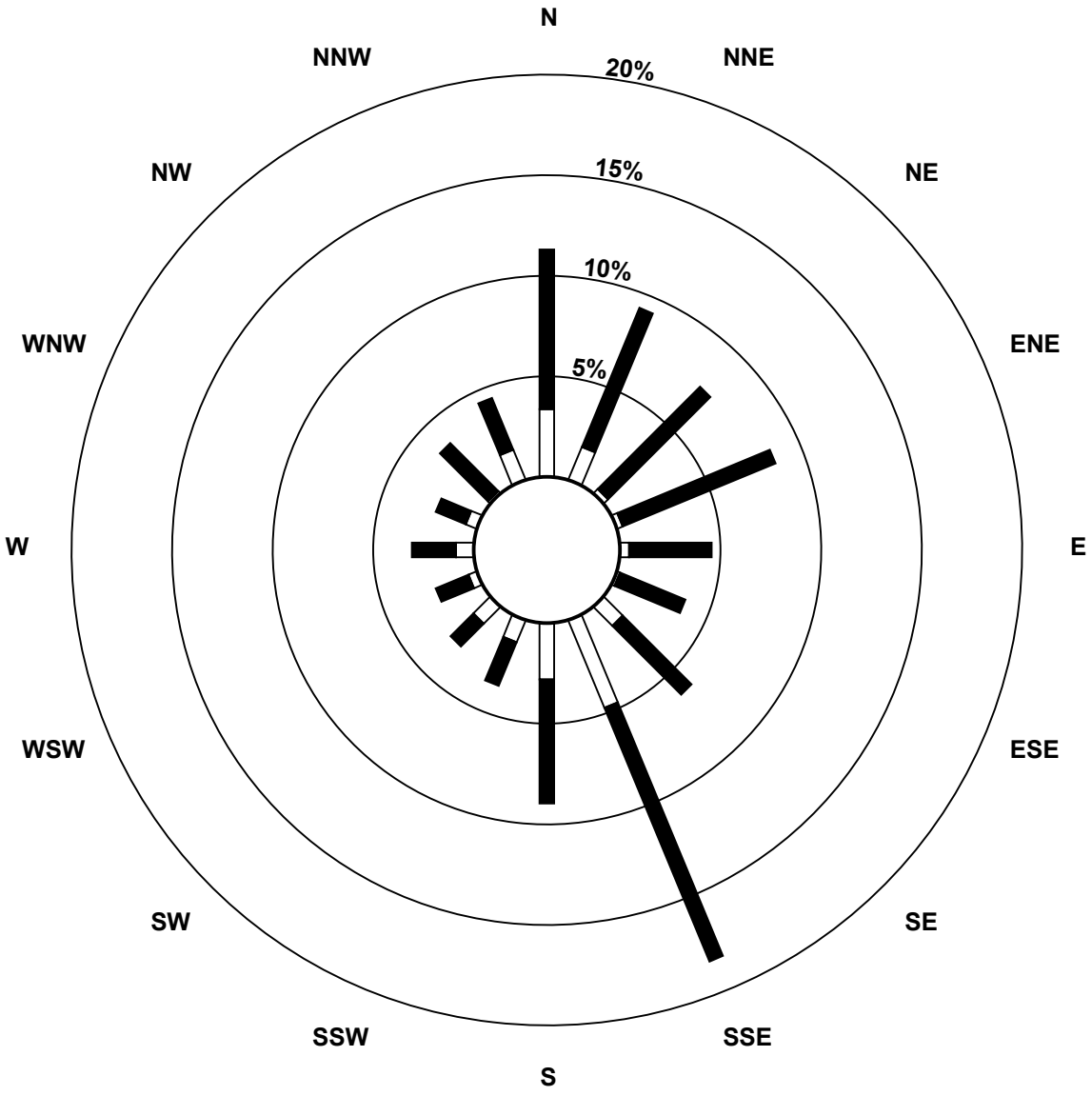
Total Number of Hours: 720

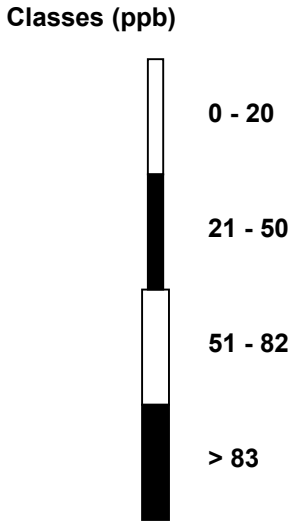
Wood Buffalo Environmental Association

Wind Rose Apr 2014

Ozone (O_3) - ppb

Fort McKay - Bertha Ganter (AMS 1)





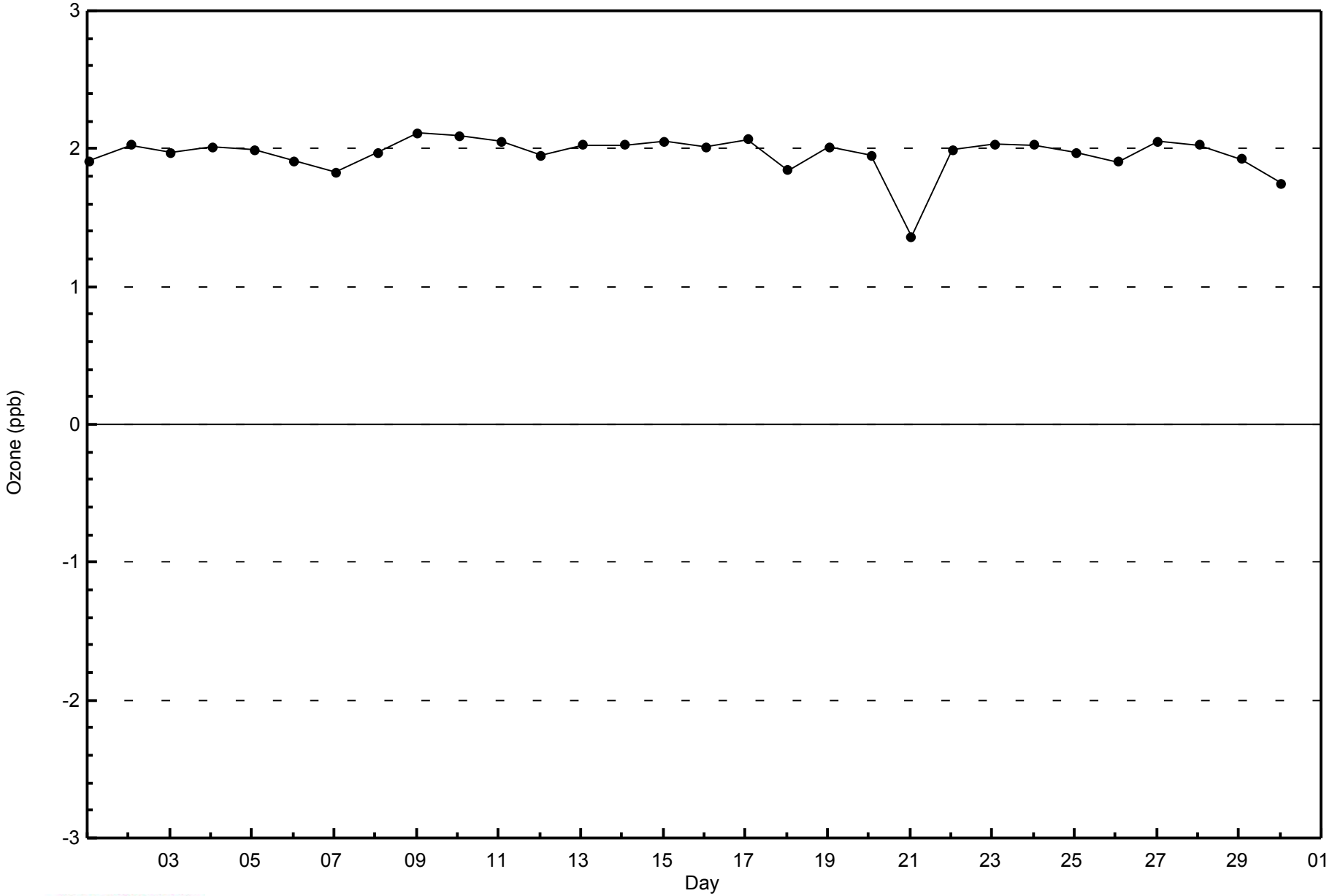
Total Number of Valid Hours: 681

WBEA NETWORK

Zero Responses

Ozone (O_3) - ppb

Fort McKay - Bertha Ganter - April 2014



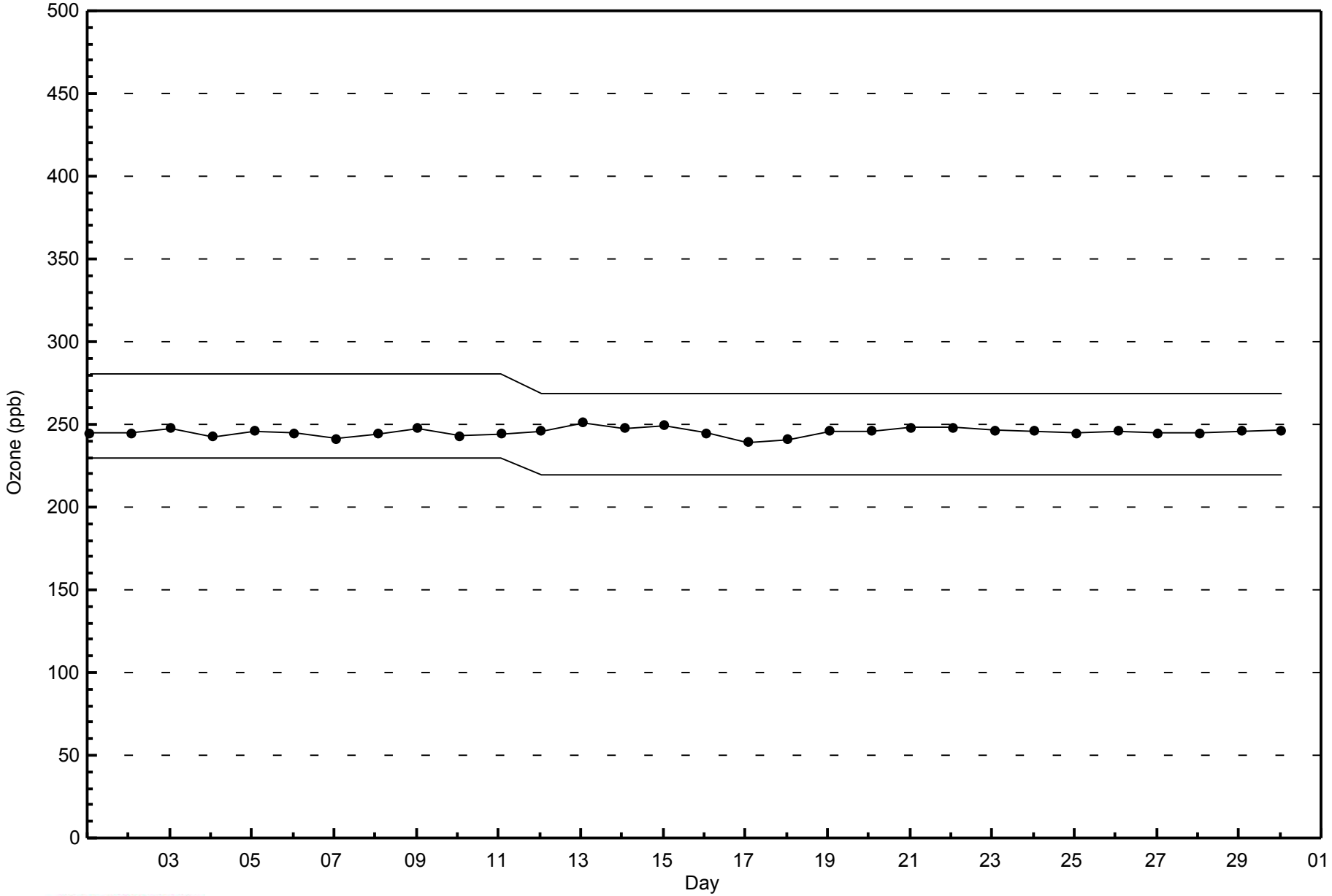
AURORA ATMOSPHERICS INC.

WBEA NETWORK

Span Responses

Ozone (O_3) - ppb

Fort McKay - Bertha Ganter - April 2014



AURORA ATMOSPHERICS INC.

Wood Buffalo Environmental Association

Summary of Hour Averages

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

Fort McKay - Bertha Ganter - April 2014

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

Maximum Value: 35.4 $\mu g/m^3$ on Apr 30 11:00

Maximum Daily Average: 12.0 $\mu g/m^3$ on Apr 30

Minimum Value: 0.6 $\mu g/m^3$ on Apr 7 17:00

Minimum Daily Average: 2.4 $\mu g/m^3$ on Apr 27

Maximum Diurnal Average: 8.5 $\mu g/m^3$ at hour 7

Minimum Diurnal Average: 3.1 $\mu g/m^3$ at hour 16

Monthly Average: 5.73 $\mu g/m^3$

Percentiles: $P_1 = 0.8$ $P_{10} = 1.9$ $Q_1 = 3.0$ Median = 4.7 $Q_3 = 7.4$ $P_{90} = 10.2$ $P_{99} = 20.7$

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	Daily
	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24	Average	Maximum
1-Apr	8.2	6.4	5.6	6.2	10.3	11.7	12.0	12.8	8.2	5.5	5.1	6.2	7.1	5.8	4.2	4.2	3.0	2.8	3.1	2.8	7.0	10.3	10.0	8.3	6.9	12.8
2-Apr	6.1	7.5	8.1	9.4	9.4	9.9	12.4	8.6	10.2	7.8	6.1	5.2	4.8	5.5	4.9	3.7	3.0	3.2	3.2	2.7	3.1	3.6	4.4	4.9	6.2	12.4
3-Apr	6.9	6.3	4.6	5.4	6.9	10.8	13.0	13.5	11.4	9.3	8.5	7.4	4.1	2.9	2.1	1.6	2.0	2.6	3.0	2.7	2.6	3.2	5.3	5.6	5.9	13.5
4-Apr	5.8	5.6	5.4	6.6	5.7	6.1	8.0	9.1	8.9	7.9	6.9	6.9	6.5	5.8	3.9	1.9	1.4	1.7	1.9	2.0	1.9	2.1	2.2	2.7	4.9	9.1
5-Apr	3.1	4.1	5.5	6.0	4.9	4.8	5.1	4.3	3.2	2.3	1.8	2.2	2.2	2.4	2.1	1.9	1.8	1.9	3.0	3.0	3.0	3.0	3.7	4.1	3.3	6.0
6-Apr	5.0	6.0	6.8	7.9	9.0	10.5	11.6	8.9	13.0	11.2	8.8	8.0	5.5	3.0	2.7	2.5	3.9	3.2	2.8	7.5	8.8	7.4	6.4	7.0	7.0	13.0
7-Apr	8.2	9.5	10.2	10.2	11.4	11.0	11.9	12.9	6.7	2.9	1.7	1.1	1.4	5.6	3.2	0.9	0.6	1.0	2.7	2.7	4.6	3.7	2.7	4.0	5.4	12.9
8-Apr	5.9	6.3	6.4	7.4	7.9	8.6	7.2	4.2	2.9	1.8	1.1	0.8	0.7	0.7	0.6	0.6	0.9	0.8	0.7	1.0	1.9	2.3	3.1	3.7	3.2	8.6
9-Apr	3.3	2.7	2.8	4.8	3.0	2.3	1.9	1.5	1.5	1.4	1.5	1.5	1.5	1.6	1.4	0.9	1.1	2.1	2.7	4.1	11.1	7.8	3.6	3.5	2.9	11.1
10-Apr	3.6	3.5	3.8	4.8	6.5	8.6	10.2	9.7	9.8	7.4	6.3	5.4	4.2	2.8	2.9	3.0	2.6	2.2	2.5	2.7	3.9	3.6	4.1	5.4	5.0	10.2
11-Apr	5.6	5.6	6.2	6.5	6.3	6.3	6.6	6.3	6.6	7.2	5.2	4.4	3.9	3.1	2.6	2.1	2.3	2.3	2.6	3.3	4.1	4.9	5.3	7.2	4.9	7.2
12-Apr	8.8	8.0	7.9	7.3	6.6	7.4	10.9	6.5	7.4	4.2	2.2	1.5	1.6	1.7	5.1	8.0	10.3	8.7	10.4	4.7	3.1	2.3	2.0	1.9	5.8	10.9
13-Apr	2.2	2.5	2.7	2.8	4.5	4.9	4.1	2.6	2.2	2.6	2.8	3.7	3.7	3.4	3.7	3.4	3.2	4.6	8.8	6.2	6.4	8.0	9.1	10.8	4.5	10.8
14-Apr	11.1	10.3	10.1	9.8	13.2	13.8	13.2	15.2	21.4	20.8	15.7	11.7	12.1	7.6	5.1	5.5	6.0	4.8	5.9	3.7	4.5	4.4	4.0	3.8	9.7	21.4
15-Apr	3.6	3.8	3.8	3.8	4.2	4.6	4.6	5.2	5.4	4.9	5.0	3.7	2.7	M	3.2	2.7	2.4	2.7	2.7	3.5	4.5	4.5	6.1	10.2	4.3	10.2
16-Apr	10.6	9.1	10.0	9.8	10.2	12.6	12.5	13.0	8.9	5.5	4.2	3.9	4.6	2.5	2.0	2.0	2.0	2.0	1.8	1.7	2.7	3.7	3.8	4.3	6.0	13.0
17-Apr	6.7	7.8	8.3	9.3	8.3	9.9	10.7	11.4	11.3	8.8	7.5	6.0	4.4	3.9	3.3	3.0	2.6	2.9	3.2	6.9	6.2	9.7	6.6	5.2	6.8	11.4
18-Apr	5.5	6.4	6.8	6.9	7.5	8.4	8.4	7.1	6.0	5.0	4.1	3.5	2.9	2.0	1.6	1.6	2.1	2.8	3.2	5.0	4.7	5.4	6.1	5.5	4.9	8.4
19-Apr	7.2	7.9	7.0	6.8	5.9	6.4	7.8	10.8	8.3	7.1	12.5	9.3	5.9	4.1	3.7	3.7	3.9	3.9	3.8	3.6	3.7	4.2	4.2	4.7	6.1	12.5
20-Apr	4.9	5.3	6.2	7.1	9.6	9.4	12.0	13.0	9.8	5.8	3.8	3.4	2.5	2.4	1.8	1.3	1.0	1.4	3.1	3.8	12.6	11.8	22.6	32.2	7.8	32.2
21-Apr	21.4	20.1	14.7	13.4	9.8	13.4	14.1	8.9	6.0	8.3	8.4	8.5	7.4	6.2	5.0	5.3	4.3	3.4	3.5	4.4	6.2	8.2	7.5	9.2	9.1	21.4
22-Apr	8.6	7.7	7.6	7.5	8.0	9.0	13.1	11.6	7.1	5.7	4.6	2.9	2.1	1.6	1.3	1.5	1.9	2.3	3.4	4.2	5.9	5.6	6.6	7.4	5.7	13.1
23-Apr	8.5	7.7	7.4	6.9	6.5	6.7	7.3	5.9	5.4	5.6	4.7	3.6	3.8	3.3	3.0	4.4	6.9	6.1	4.4	4.5	4.3	4.4	4.0	4.2	5.4	8.5
24-Apr	5.0	6.1	5.5	5.4	6.1	6.7	6.2	5.8	5.4	4.7	4.3	3.9	3.9	4.8	10.2	5.9	4.3	2.7	4.1	3.0	3.0	3.1	3.1	3.3	4.8	10.2
25-Apr	3.0	3.4	4.0	3.7	4.2	4.7	4.0	3.7	2.9	2.5	3.4	3.5	3.2	2.6	1.9	1.5	2.4	10.1	10.0	8.0	10.1	9.4	7.2	8.5	4.9	10.1
26-Apr	6.6	6.7	5.8	4.9	4.7	4.8	4.3	4.1	4.4	4.1	3.7	3.8	3.3	4.1	5.7	5.6	6.8	6.7	4.6	4.4	4.2	4.6	4.0	3.1	4.8	6.8
27-Apr	3.5	3.0	2.3	2.5	3.1	3.5	4.0	4.3	4.1	2.5	1.3	1.1	1.0	1.1	1.1	1.4	1.6	1.8	1.8	1.8	1.8	3.9	2.8	2.6	2.4	4.3
28-Apr	2.7	2.7	2.7	2.5	3.2	4.1	4.5	4.3	10.9	15.1	28.9	16.9	9.4	5.4	3.3	2.9	3.4	3.6	5.5	7.4	8.2	4.8	5.3	5.5	6.8	28.9
29-Apr	4.0	4.4	4.5	4.0	4.1	4.3	4.4	4.7	5.7	5.2	4.9	2.7	1.1	0.9	1.0	0.9	1.3	1.1	1.0	1.1	7.4	16.4	17.2	7.2	4.6	17.2
30-Apr	9.7	13.9	16.3	9.5	9.7	8.7	8.7	9.5	8.4	15.9	35.4	10.9	6.8	5.4	8.1	8.1	9.1	22.9	30.7	7.3	5.2	19.5	5.4	2.4	12.0	35.4
	6.5	6.7	6.6	6.6	7.0	7.8	8.5	8.0	7.5	6.6	7.0	5.1	4.1	3.5	3.4	3.1	3.3	3.9	4.7	4.0	5.2	6.2	5.9	6.3	Diurnal Average	
	21.4	20.1	16.3	13.4	13.2	13.8	14.1	15.2	21.4	20.8	35.4	16.9	12.1	7.6	10.2	8.1	10.3	22.9	30.7	8.0	12.6	19.5	22.6	32.2	Diurnal Maximum	

M - Maintenance

Alberta Ambient Air Quality Objectives (AAAQO): 24-hr 30 $\mu g/m^3$

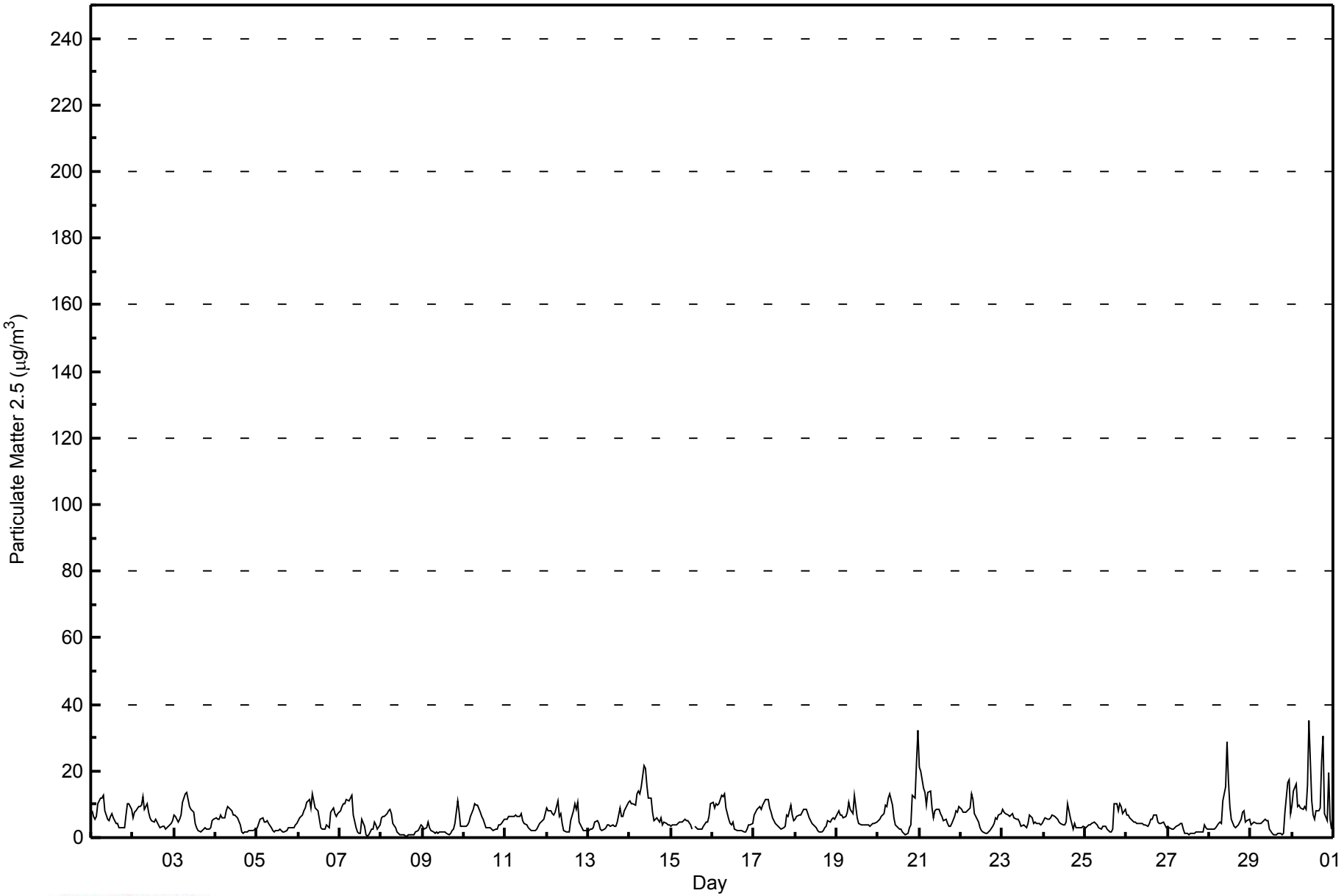
AURORA ATMOSPHERICS INC.

WBEA NETWORK

Hourly Averages

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

Fort McKay - Bertha Ganter - April 2014



AURORA ATMOSPHERICS INC.

Concentration Ranges ($\mu g/m^3$)	Number of Hours	%	Cumulative %
1 - 5	403	56.05	56.05
6 - 15	284	39.50	95.55
16 - 25	13	1.81	97.36
26 - 80	4	0.56	97.91
> 81.0	0	0.00	97.91

Total Number of Valid Hours: 719

Total Number of Hours: 720

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

Fort McKay - Bertha Ganter - April 2014

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**
1 - 5	37	40	36	48	23	19	35	64	21	8	10	7	6	11	20	18	403
6 - 15	48	23	17	15	8	8	8	59	35	15	7	5	10	6	3	15	282
16 - 25	0	0	0	0	0	0	0	4	4	2	2	1	0	0	0	0	13
26 - 80	0	0	0	0	0	0	0	2	1	1	0	0	0	0	0	0	4
> 81.0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Totals	85	63	53	63	31	27	43	129	61	26	19	13	16	17	23	33	702

Total Number of Valid Hours: 717

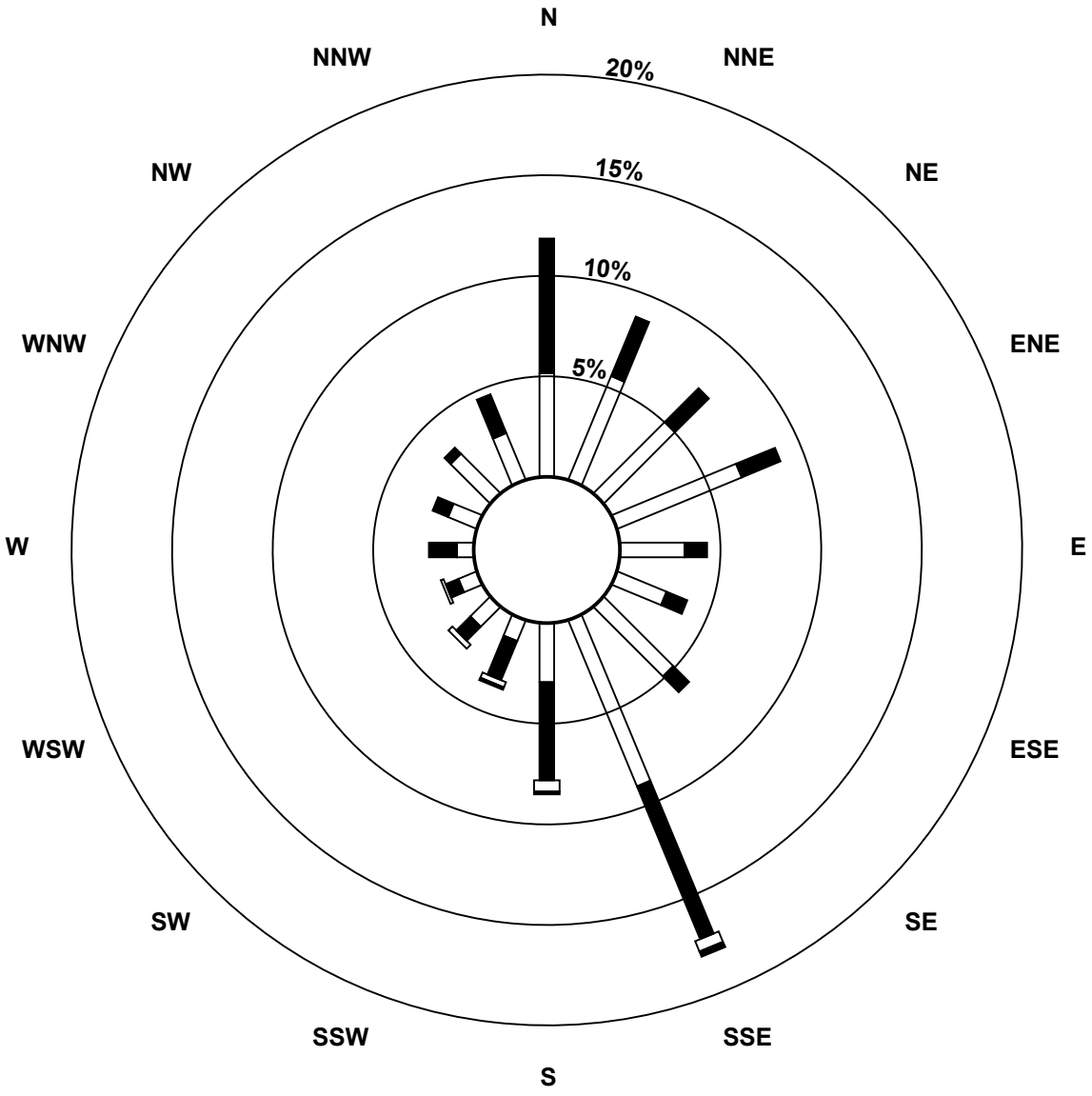
Total Number of Hours: 720

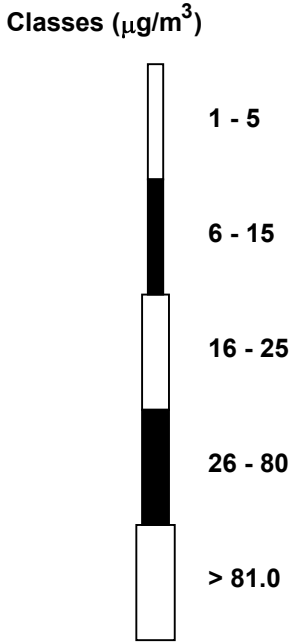
Wood Buffalo Environmental Association

Wind Rose Apr 2014

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

Fort McKay - Bertha Ganter (AMS 1)





Total Number of Valid Hours: 717

Wood Buffalo Environmental Association

Summary of Hour Averages

Ammonia (NH_3) - ppb

Fort McKay - Bertha Ganter - April 2014

Number of Exceedences (AAAQO): 1-hr: 0
Maximum Value: 0 ppb on Apr 1 01:00 Maximum Daily Average: 0.0 ppb on Apr 1

Minimum Value: 0 ppb on Apr 1 01:00 Minimum Daily Average: 0.0 ppb on Apr 1
Maximum Diurnal Average: 0.0 ppb at hour 1 Minimum Diurnal Average: 0.0 ppb at hour 1
Monthly Average: 0.0 ppb Percentiles: $P_1 = 0$ $P_{10} = 0$ $Q_1 = 0$ Median = 0 $Q_3 = 0$ $P_{90} = 0$ $P_{99} = 0$

Hours in Service:	720
Hours of Data:	644
Hours of Missing Data:	76
Hours of Calibration:	39
Percent Operational Time:	94.9

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-Apr	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
2-Apr	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
3-Apr	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
4-Apr	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
5-Apr	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
6-Apr	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
7-Apr	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
8-Apr	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
9-Apr	0	Z	RE	0	0	0	0	0	0	0	0	0	0	M	0	0	0	0	0	0	0	0	0	0	0.0	0
10-Apr	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
11-Apr	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
12-Apr	0	Z	RE	0	0	0	0	0	0	0	0	0	UO	UO	UO	UO	UO	UO	0	0	0	0	0	0	--	0
13-Apr	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
14-Apr	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
15-Apr	0	Z	RE	0	0	0	0	0	0	C	C	C	C	C	C	C	C	C	0	0	0	0	0	0	--	0
16-Apr	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
17-Apr	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
18-Apr	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
19-Apr	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
20-Apr	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
21-Apr	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
22-Apr	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
23-Apr	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
24-Apr	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
25-Apr	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
26-Apr	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
27-Apr	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
28-Apr	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
29-Apr	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
30-Apr	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	Diurnal Average	
	0	--	--	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	Diurnal Maximum	

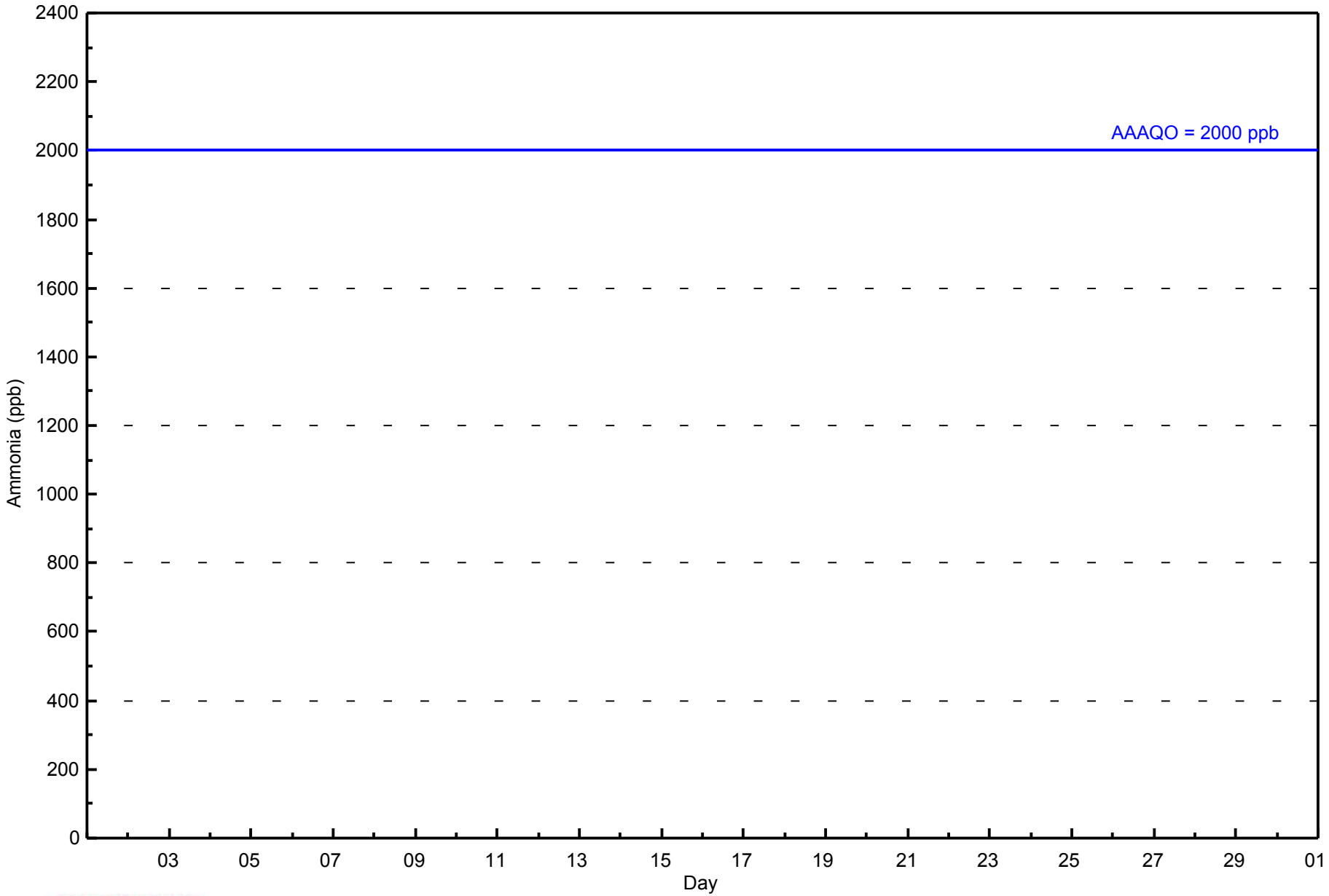
Z - zerospan C - Calibration M - Maintenance UO - Unstable Operation RE - Recovery
Alberta Ambient Air Quality Objectives (AAAQO): 1-hr 2000 ppb

WBEA NETWORK

Hourly Averages

Ammonia (NH_3) - ppb

Fort McKay - Bertha Ganter - April 2014



AURORA ATMOSPHERICS INC.

Concentration Ranges (ppb)	Number of Hours	%	Cumulative %
0 - 5	644	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: 644

Total Number of Hours: 720

Ammonia (NH_3) - ppb
Fort McKay - Bertha Ganter - April 2014

Concentration Ranges (ppb)	Wind Direction																
	N	NNE	NE	ENE	E	ESE	SE	SSE	S	SSW	SW	WSW	W	WNW	NW	NNW	**Totals**
0 - 5	71	57	47	58	30	24	41	121	59	22	17	15	19	15	23	23	642
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	71	57	47	58	30	24	41	121	59	22	17	15	19	15	23	23	642

Total Number of Valid Hours: 642

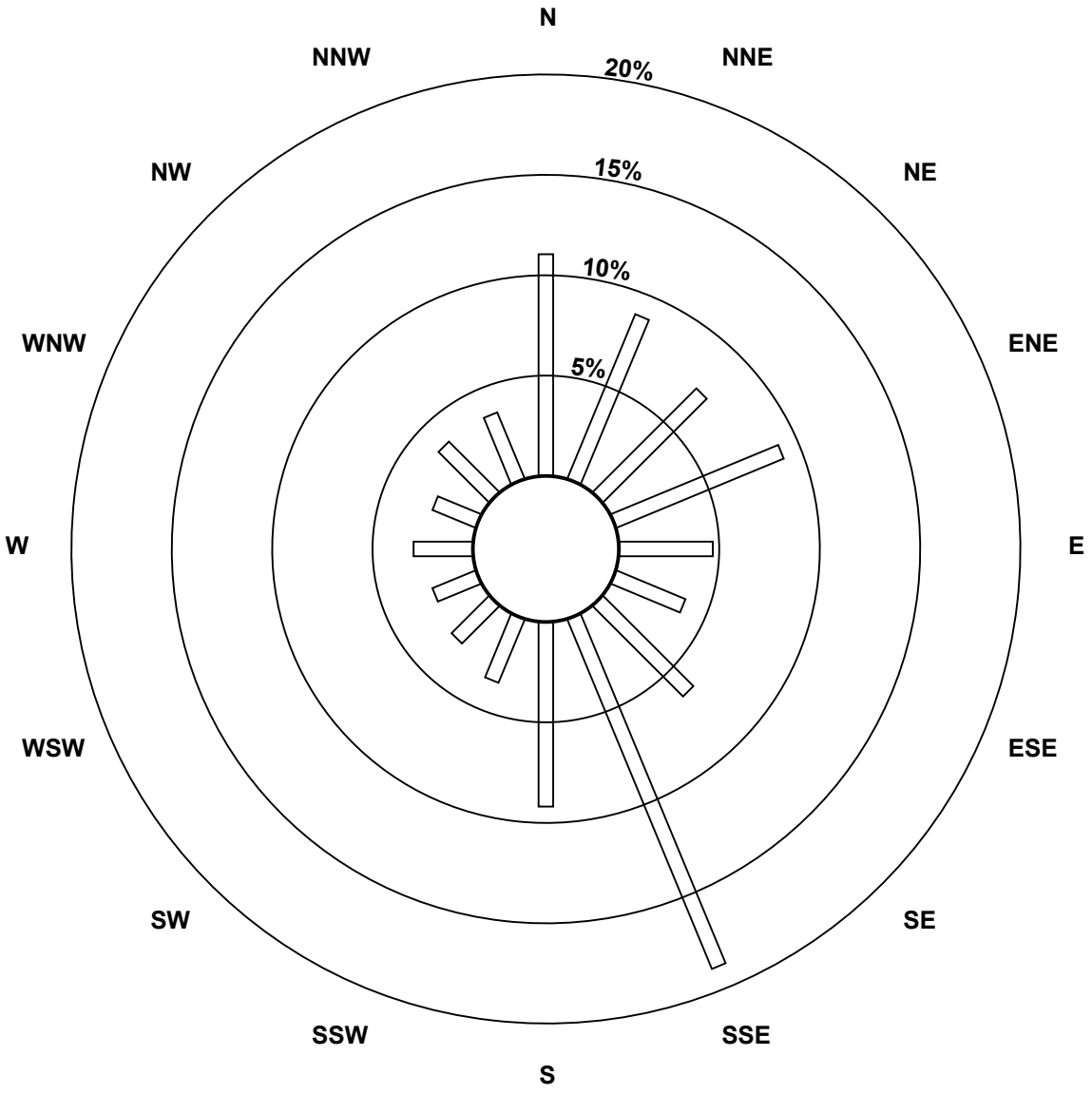
Total Number of Hours: 720

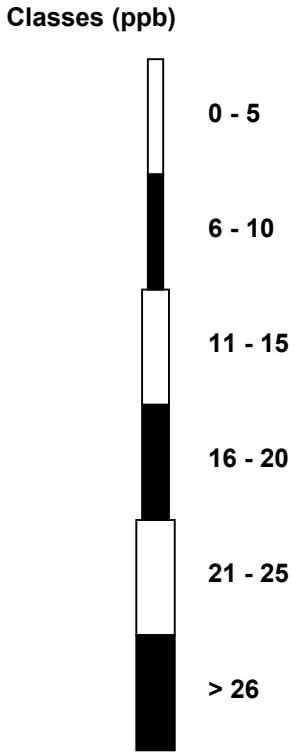
Wood Buffalo Environmental Association

Wind Rose Apr 2014

Ammonia (NH_3) - ppb

Fort McKay - Bertha Ganter (AMS 1)





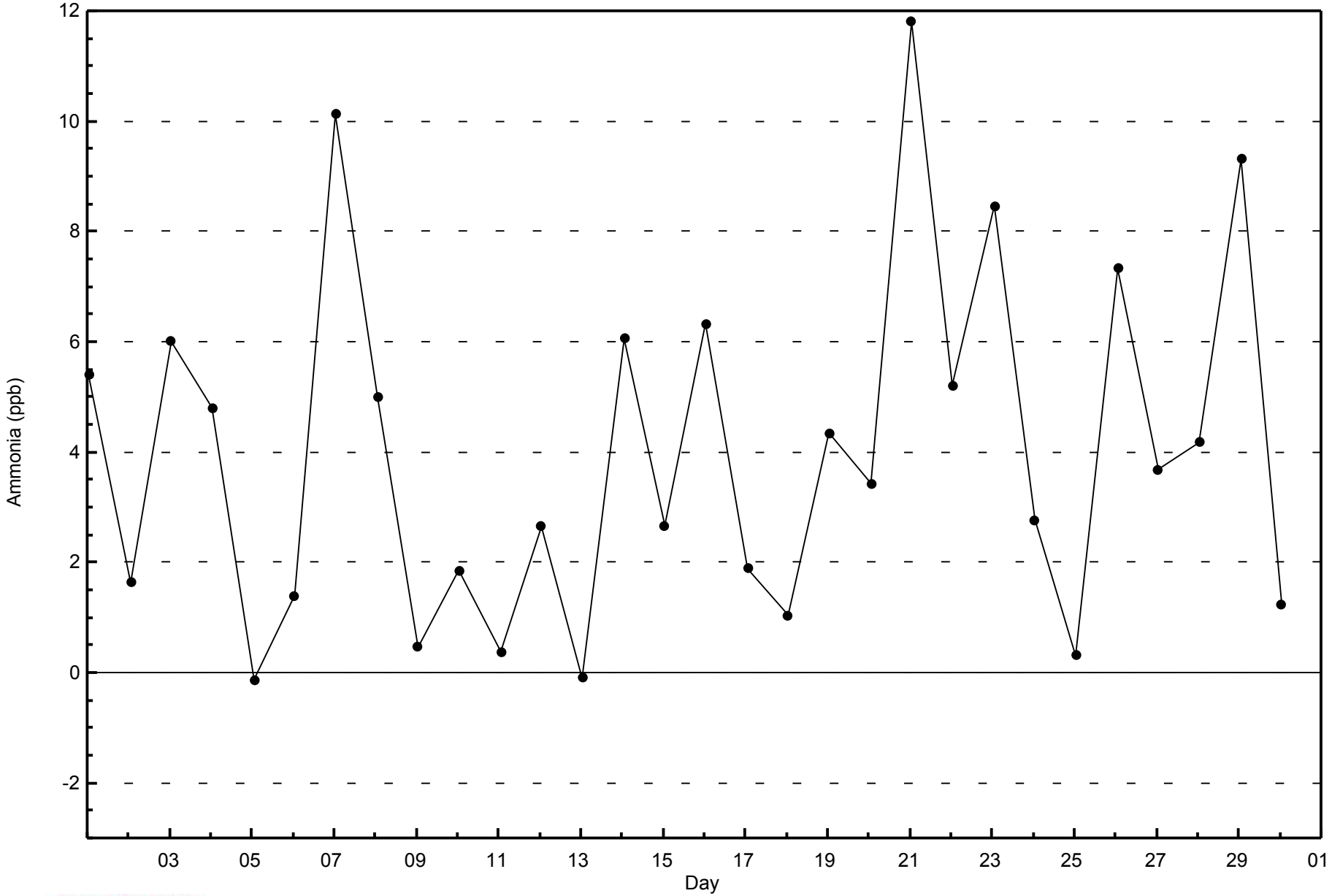
Total Number of Valid Hours: 642

WBEA NETWORK

Zero Responses

Ammonia (NH_3) - ppb

Fort McKay - Bertha Ganter - April 2014



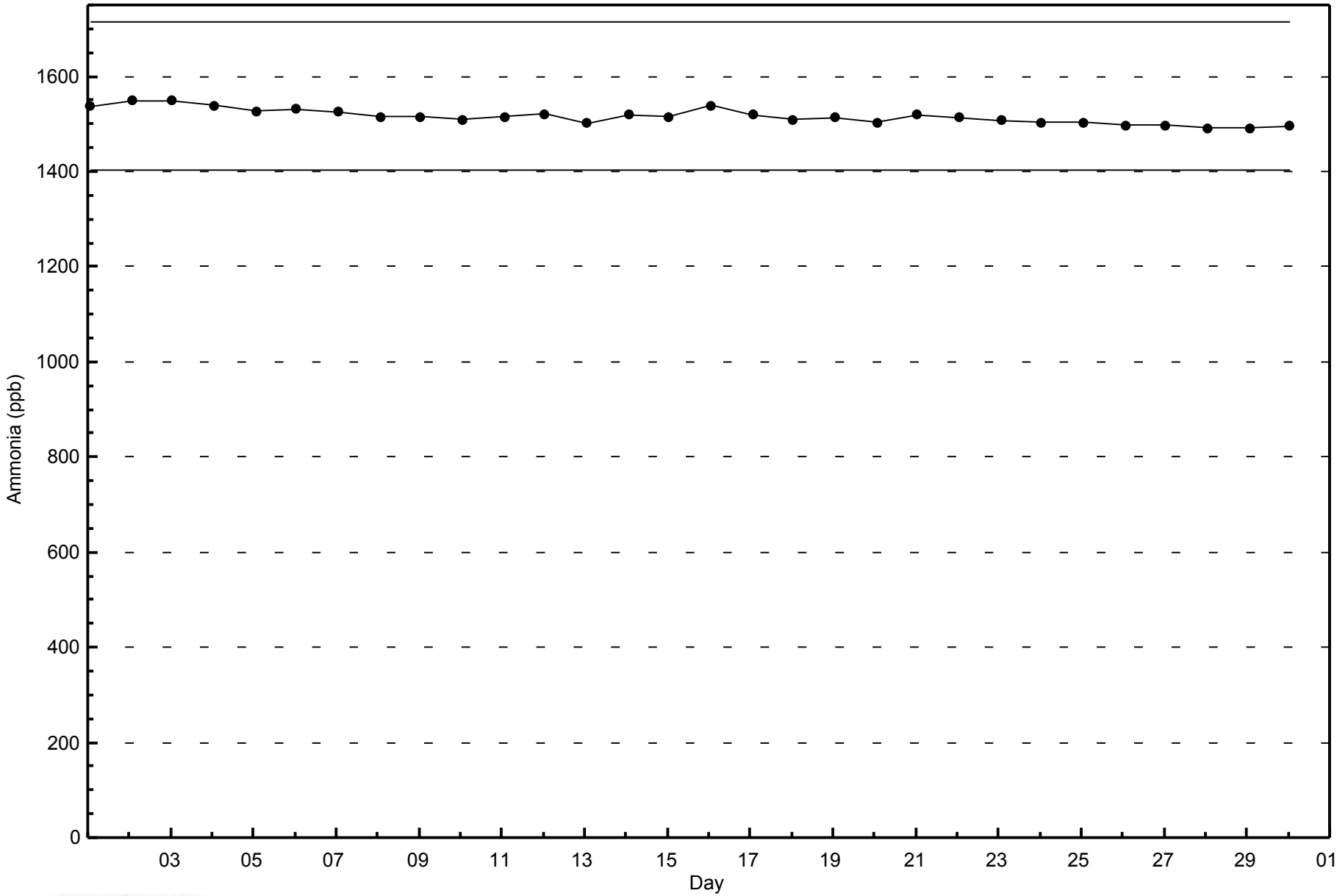
AURORA ATMOSPHERICS INC.

WBEA NETWORK

Span Responses

Ammonia (NH_3) - ppb

Fort McKay - Bertha Ganter - April 2014



AURORA ATMOSPHERICS INC.

Maximum Value: 26.6 C on Apr 30 17:00

Maximum Daily Average: 18.1 C on Apr 30

Minimum Value: -16.8 C on Apr 3 07:00

Minimum Daily Average: -9.0 C on Apr 2

Maximum Diurnal Average: 11.4 C at hour 17

Minimum Diurnal Average: 1.1 C at hour 6

Monthly Average: 6.38 C

Percentiles: P_1 = -13.6 P_{10} = -4.5 Q_1 = 1.1 Median = 7.2 Q_3 = 11.3 P_{90} = 16.2 P_{99} = 25.8

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

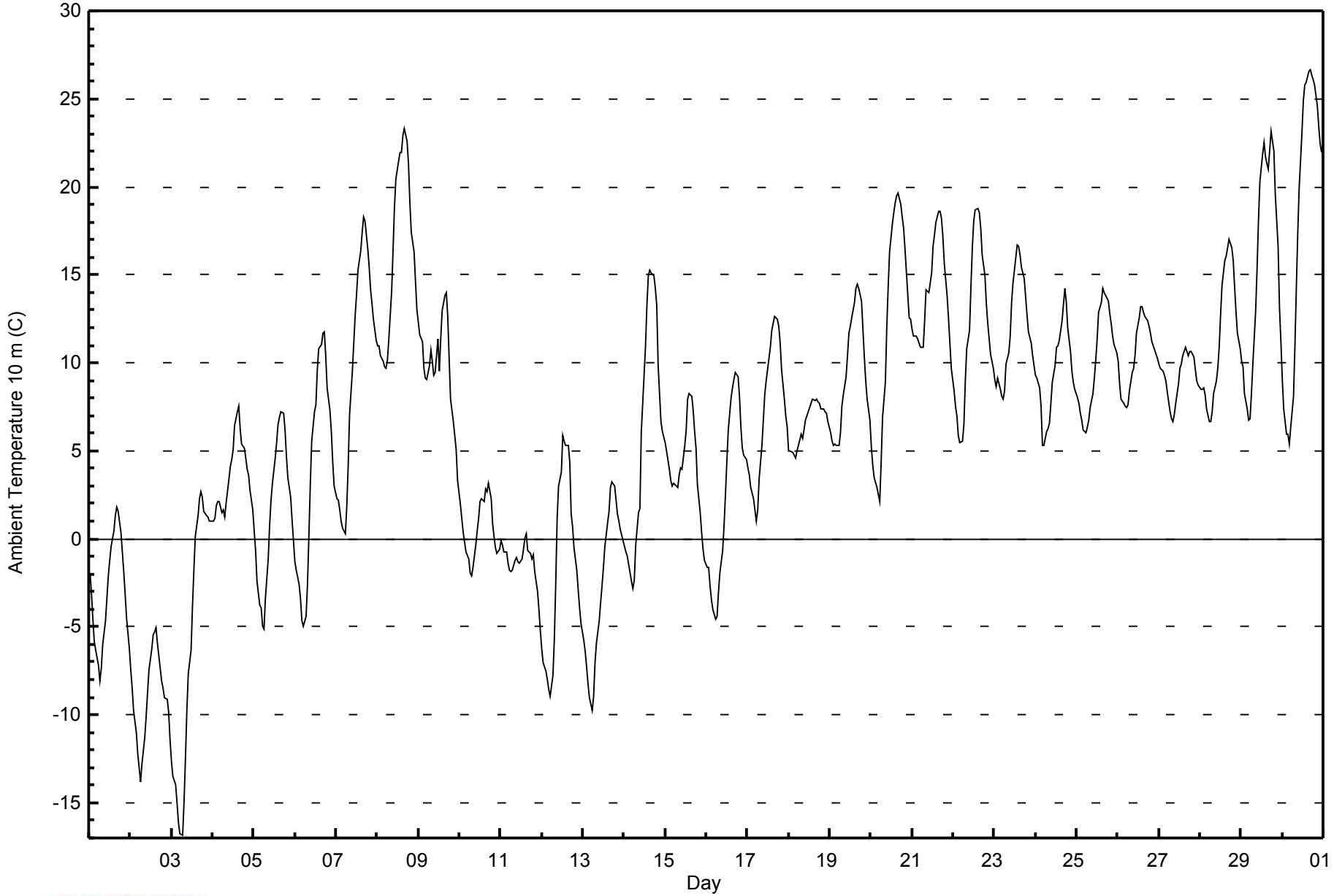
Day	Hourly Period Ending At (MST)																								Daily	Daily
	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24	Average	Maximum
1-Apr	-1.9	-3.1	-4.5	-5.9	-6.4	-7.2	-8.0	-7.4	-6.0	-4.6	-3.4	-2.1	-1.2	-0.5	0.5	1.3	1.8	1.6	0.4	-0.8	-1.8	-3.1	-4.5	-6.3	-3.0	1.8
2-Apr	-7.5	-8.5	-9.7	-11.0	-12.2	-13.0	-13.8	-12.7	-11.3	-10.0	-8.7	-7.5	-6.3	-5.4	-5.3	-5.0	-5.9	-7.3	-8.1	-8.5	-9.0	-9.1	-9.8	-11.4	-9.0	-5.0
3-Apr	-12.6	-13.5	-14.0	-15.0	-16.1	-16.7	-16.8	-14.9	-12.5	-9.7	-7.7	-6.3	-3.8	-1.8	0.1	1.3	2.3	2.7	2.3	1.5	1.3	1.2	1.0	1.0	-6.1	2.7
4-Apr	1.0	1.2	1.9	2.2	2.1	1.5	1.7	1.3	2.1	3.4	4.1	4.5	5.0	6.4	7.2	7.6	6.3	5.4	5.2	4.6	4.0	3.6	2.8	1.6	3.6	7.6
5-Apr	0.4	-0.7	-2.4	-3.8	-3.9	-5.0	-5.2	-3.4	-1.1	0.8	2.2	3.2	4.6	5.4	6.5	6.9	7.3	7.1	6.1	4.7	3.5	2.3	1.1	-0.1	1.5	7.3
6-Apr	-1.3	-1.8	-2.6	-3.4	-4.7	-4.9	-4.4	-2.6	0.1	3.1	5.6	7.2	7.6	9.6	10.8	11.1	11.7	11.7	10.4	8.6	7.3	6.1	4.4	3.0	3.9	11.7
7-Apr	2.3	2.2	1.6	1.0	0.6	0.3	1.8	4.1	7.0	9.5	11.1	12.7	13.9	15.3	16.4	17.4	18.3	18.0	16.5	15.4	14.2	13.4	12.5	11.3	9.9	18.3
8-Apr	10.9	10.9	10.4	10.1	9.8	9.7	10.2	11.4	14.1	16.4	18.9	20.5	21.5	21.9	22.0	22.9	23.3	22.6	21.3	19.1	17.4	16.3	14.6	13.0	16.2	23.3
9-Apr	12.3	11.6	11.2	9.7	9.1	9.0	9.9	10.7	10.1	9.3	9.4	11.4	9.5	11.4	13.0	13.8	14.0	12.6	10.3	7.9	6.7	5.9	5.1	3.3	9.9	14.0
10-Apr	2.0	1.2	0.4	-0.2	-0.8	-1.2	-2.0	-2.1	-1.6	-0.4	0.4	1.2	2.1	2.3	2.1	2.9	2.7	3.1	2.3	0.8	0.1	-0.5	-0.8	-0.6	0.6	3.1
11-Apr	-0.1	-0.3	-0.7	-0.7	-1.4	-1.7	-1.8	-1.8	-1.2	-1.1	-1.3	-1.4	-1.2	-0.6	0.0	0.3	-0.6	-0.8	-1.2	-0.9	-1.9	-3.0	-4.0	-5.2	-1.4	0.3
12-Apr	-6.2	-7.0	-7.5	-8.0	-8.6	-8.9	-7.8	-5.7	-2.5	1.2	3.0	3.8	5.8	5.5	5.3	5.3	4.4	1.4	0.7	-0.5	-1.8	-2.9	-3.9	-4.8	-1.7	5.8
13-Apr	-5.8	-6.4	-7.3	-8.3	-9.0	-9.8	-9.0	-7.0	-5.9	-4.7	-3.6	-2.7	-1.6	-0.4	0.9	1.6	2.9	3.3	3.0	2.2	1.4	1.0	0.5	-0.1	-2.7	3.3
14-Apr	-0.4	-0.7	-1.0	-1.9	-2.4	-2.8	-2.3	-0.3	1.5	1.7	6.1	7.7	11.0	13.3	14.9	15.3	15.1	14.9	14.2	13.3	9.9	6.6	6.1	5.8	6.1	15.3
15-Apr	5.5	5.0	3.9	3.3	3.0	3.2	3.0	2.9	3.6	4.0	4.0	5.3	6.2	8.0	8.2	8.1	7.3	6.1	5.2	3.1	1.5	0.4	-0.6	-1.2	4.1	8.2
16-Apr	-1.7	-1.6	-2.6	-3.4	-4.0	-4.6	-4.4	-3.1	-1.9	-0.7	0.8	2.5	4.4	6.2	8.0	8.6	9.0	9.5	9.2	8.1	6.3	5.2	4.8	4.5	2.5	9.5
17-Apr	4.0	3.6	2.9	2.3	1.7	1.0	1.6	3.4	5.3	6.7	8.1	9.0	10.2	10.9	11.8	12.3	12.7	12.5	12.1	11.1	9.6	7.9	7.0	6.4	7.3	12.7
18-Apr	5.0	5.0	4.9	4.7	4.6	5.0	5.6	5.9	5.7	6.2	6.7	7.2	7.5	7.7	7.9	7.8	7.9	7.8	7.7	7.4	7.4	7.2	7.1	6.7	6.5	7.9
19-Apr	6.0	5.6	5.3	5.4	5.3	5.3	6.1	7.5	8.2	9.2	10.4	11.7	12.1	12.6	13.4	14.2	14.4	14.2	13.5	12.0	10.3	9.0	8.0	6.8	9.4	14.4
20-Apr	5.2	4.2	3.5	2.9	2.5	2.2	4.3	6.9	8.9	12.0	14.3	16.3	17.9	18.5	19.1	19.5	19.6	19.0	18.3	17.7	16.5	13.8	12.6	12.5	12.0	19.6
21-Apr	11.9	11.5	11.5	11.4	11.1	10.8	10.9	12.4	14.2	14.1	13.9	15.1	16.6	17.3	17.9	18.6	18.6	18.2	17.2	15.6	13.9	12.6	11.1	9.7	14.0	18.6
22-Apr	8.4	7.5	7.0	5.9	5.5	5.6	6.5	9.0	10.8	11.8	14.3	16.6	18.0	18.7	18.8	18.6	17.6	16.1	14.9	13.4	12.2	11.3	10.5	9.7	12.0	18.8
23-Apr	9.1	8.7	9.1	8.5	8.1	8.0	8.4	9.9	10.5	11.5	13.4	14.6	16.0	16.7	16.6	16.2	15.4	14.8	13.8	12.7	11.8	11.1	10.4	9.9	11.9	16.7
24-Apr	9.3	9.1	8.6	7.5	5.3	5.3	6.1	6.3	6.6	7.7	8.9	9.9	10.9	11.0	11.3	12.4	13.3	14.3	13.4	12.0	10.6	9.5	8.9	8.5	9.4	14.3
25-Apr	8.0	7.7	7.2	6.7	6.2	6.0	6.3	6.7	7.5	8.3	9.1	10.1	11.4	12.8	13.4	14.3	14.0	13.8	13.5	12.8	12.2	11.5	11.0	10.5	10.1	14.3
26-Apr	10.1	8.8	8.0	7.7	7.5	7.5	7.6	8.4	9.4	9.7	10.4	11.7	12.5	13.2	13.2	12.9	12.7	12.4	12.1	11.7	11.2	10.7	10.5	10.2	10.4	13.2
27-Apr	9.9	9.7	9.5	9.3	9.0	8.3	7.2	6.8	6.7	7.1	7.7	8.8	9.7	9.9	10.4	10.9	10.6	10.4	10.6	10.7	10.3	9.6	9.0	8.7	9.2	10.9
28-Apr	8.5	8.5	8.6	8.2	7.4	6.6	6.7	7.2	8.3	8.9	9.7	10.9	12.7	14.4	15.8	16.1	16.5	17.0	16.6	15.8	14.3	12.9	11.7	10.8	11.4	17.0
29-Apr	10.1	9.8	8.2	7.4	6.7	6.8	8.2	9.9	13.0	15.3	18.0	20.3	21.8	22.5	21.7	21.3	21.0	23.1	22.6	22.1	19.5	16.6	13.1	11.2	15.4	23.1
30-Apr	9.0	7.3	5.9	6.0	5.3	6.3	8.1	10.9	14.2	17.3	19.8	23.1	24.9	25.8	25.9	26.6	26.6	26.3	26.1	25.8	24.6	23.4	22.4	22.0	18.1	26.6
	3.7	3.2	2.6	1.9	1.4	1.1	1.5	2.7	4.1	5.5	6.9	8.2	9.3	10.3	10.9	11.4	11.4	11.1	10.3	9.3	8.1	7.0	6.1	5.2	Diurnal Average	
	12.3	11.6	11.5	11.4	11.1	10.8	10.9	12.4	14.2	17.3	19.8	23.1	24.9	25.8	25.9	26.6	26.6	26.3	26.1	25.8	24.6	23.4	22.4	22.0	Diurnal Maximum	

WBEA NETWORK

Hourly Averages

Ambient Temperature 10 m (AT 10m) - C

Fort McKay - Bertha Ganter - April 2014



AURORA ATMOSPHERICS INC.

Concentration Ranges (C)	Number of Hours	%	Cumulative %
-50 - -20	0	0.00	0.00
-20 - 0	155	21.53	21.53
0 - 10	326	45.28	66.81
10 - 20	209	29.03	95.83
> 20	30	4.17	100.00

Total Number of Valid Hours: 720

Total Number of Hours: 720

Maximum Value: 27.6 C on Apr 30 16:00

Maximum Daily Average: 17.6 C on Apr 30

Minimum Value: -18.8 C on Apr 3 07:00

Minimum Daily Average: -9.0 C on Apr 2

Maximum Diurnal Average: 12.3 C at hour 16

Minimum Diurnal Average: 0.1 C at hour 6

Monthly Average: 6.21 C

Percentiles: P_1 = -14.1 P_{10} = -4.9 Q_1 = 0.6 Median = 6.6 Q_3 = 11.5 P_{90} = 16.7 P_{99} = 24.4

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

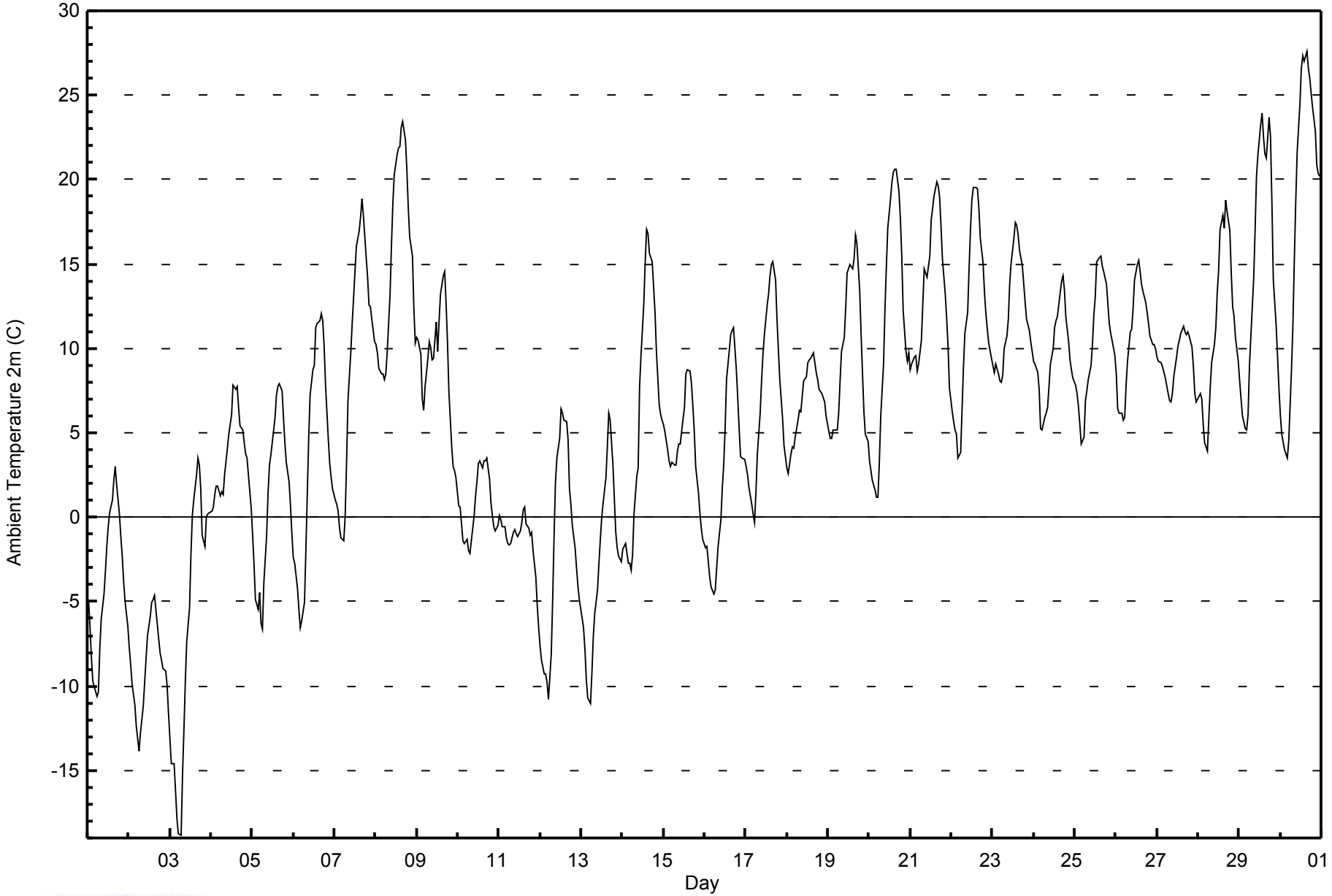
Day	Hourly Period Ending At (MST)																								Daily	Daily
	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24	Average	Maximum
1-Apr	-5.0	-6.4	-8.3	-9.7	-10.1	-10.6	-10.4	-7.8	-6.0	-4.6	-3.2	-1.7	-0.6	0.3	1.0	2.2	3.0	1.9	0.2	-1.2	-2.3	-3.8	-5.0	-6.5	-3.9	3.0
2-Apr	-7.7	-8.7	-9.9	-11.1	-12.3	-13.1	-13.9	-12.8	-11.2	-9.8	-8.4	-7.0	-5.9	-5.1	-4.9	-4.6	-5.4	-7.2	-8.0	-8.4	-9.0	-9.1	-9.9	-11.6	-9.0	-4.6
3-Apr	-13.1	-14.6	-14.6	-16.2	-17.8	-18.8	-18.8	-15.2	-12.6	-9.7	-7.4	-5.4	-2.2	0.1	1.0	2.5	3.5	3.1	1.7	-1.1	-1.7	0.0	0.2	0.3	-6.5	3.5
4-Apr	0.4	0.6	1.3	1.8	1.8	1.3	1.5	1.4	2.5	4.1	4.9	5.5	6.1	7.8	7.6	7.8	6.5	5.4	5.1	4.4	3.8	3.5	2.5	0.5	3.7	7.8
5-Apr	-1.1	-2.8	-4.8	-5.5	-4.4	-6.3	-6.7	-3.9	-1.1	1.4	3.1	3.7	5.2	6.0	7.2	7.8	7.9	7.5	6.0	4.4	3.2	2.1	0.7	-1.0	1.2	7.9
6-Apr	-2.4	-2.7	-4.2	-5.4	-6.5	-6.1	-5.0	-1.9	1.4	4.7	7.3	8.7	9.0	11.2	11.5	11.6	12.0	11.6	10.2	7.8	4.5	3.2	2.4	1.7	3.5	12.0
7-Apr	1.0	0.7	0.4	-0.6	-1.2	-1.4	0.0	3.3	6.9	9.7	11.5	13.0	14.5	16.0	17.0	17.8	18.9	17.9	15.4	14.2	12.5	12.5	11.7	10.4	9.3	18.9
8-Apr	10.2	9.7	8.8	8.5	8.5	8.1	8.5	9.8	13.2	16.0	18.5	20.3	21.4	21.9	21.9	23.1	23.5	22.4	20.6	18.4	16.6	15.4	12.4	10.3	15.3	23.5
9-Apr	10.7	10.5	9.7	7.0	6.3	7.7	9.4	10.4	10.1	9.3	9.4	11.5	9.8	11.7	13.3	14.3	14.5	12.6	10.3	7.4	4.2	3.0	2.8	2.3	9.1	14.5
10-Apr	0.7	0.6	-0.4	-1.4	-1.5	-1.3	-2.0	-2.1	-1.4	0.1	1.3	2.1	3.2	3.3	2.9	3.3	3.3	3.5	2.3	0.8	0.1	-0.5	-0.8	-0.5	0.6	3.5
11-Apr	0.1	-0.1	-0.6	-0.6	-1.2	-1.6	-1.6	-1.5	-0.9	-0.7	-1.0	-1.1	-0.8	-0.3	0.4	0.6	-0.4	-0.7	-1.1	-0.9	-2.0	-3.5	-5.2	-6.6	-1.3	0.6
12-Apr	-7.7	-8.4	-9.3	-9.3	-9.8	-10.8	-8.2	-4.9	-1.2	2.1	3.5	4.7	6.4	6.2	5.8	5.7	4.6	1.6	0.8	-0.5	-1.8	-2.9	-4.0	-4.9	-1.8	6.4
13-Apr	-6.0	-6.5	-7.8	-9.6	-10.7	-11.1	-9.2	-7.1	-5.7	-4.3	-2.7	-1.3	0.1	0.9	2.3	4.2	6.1	5.8	3.1	1.1	-0.9	-1.8	-2.3	-2.6	-2.8	6.1
14-Apr	-1.9	-1.7	-1.5	-2.8	-2.7	-3.1	-2.2	0.2	2.4	2.9	7.7	9.6	12.7	15.1	17.0	16.8	15.6	15.1	13.7	12.2	9.8	6.7	6.1	5.8	6.4	17.0
15-Apr	5.5	5.1	4.0	3.3	3.0	3.2	3.1	3.1	3.9	4.4	4.4	5.8	6.5	8.5	8.7	8.7	7.9	6.6	5.1	3.0	1.5	0.3	-0.7	-1.3	4.3	8.7
16-Apr	-1.8	-1.7	-2.7	-3.6	-4.1	-4.5	-4.3	-3.0	-1.7	-0.1	1.8	3.1	5.3	8.1	9.9	10.8	11.1	11.2	8.7	7.1	5.2	3.6	3.5	3.4	2.7	11.2
17-Apr	3.0	2.5	1.8	0.8	0.2	-0.3	1.5	3.8	6.2	8.0	9.7	10.8	12.6	13.2	14.3	14.9	15.1	14.0	11.8	9.9	8.1	5.8	4.2	3.6	7.3	15.1
18-Apr	2.9	2.6	3.8	4.1	4.1	4.7	5.7	6.3	6.3	7.2	8.1	8.3	9.2	9.3	9.4	9.7	9.2	8.6	8.2	7.6	7.3	7.1	6.8	6.0	6.8	9.7
19-Apr	5.1	4.7	4.7	5.2	5.2	5.2	6.1	8.1	9.8	10.6	12.4	14.5	14.7	14.9	14.7	15.3	16.7	16.2	13.4	10.9	8.5	6.3	4.9	4.5	9.7	16.7
20-Apr	3.4	2.8	2.2	1.6	1.2	1.2	3.3	6.0	9.1	12.3	14.8	17.2	18.9	19.8	20.5	20.6	20.7	19.3	17.7	15.5	12.3	9.8	9.2	9.7	11.2	20.7
21-Apr	8.7	9.0	9.5	9.6	8.7	9.1	10.4	12.7	14.7	14.5	14.2	15.5	17.6	18.3	19.0	19.9	19.6	18.9	17.2	15.3	13.2	11.8	10.2	7.7	13.6	19.9
22-Apr	6.2	5.6	5.2	4.9	3.5	3.9	6.4	8.9	10.9	12.2	14.7	17.1	18.8	19.5	19.5	19.5	18.3	16.6	15.0	13.3	12.1	11.1	10.3	9.4	11.8	19.5
23-Apr	9.0	8.6	9.0	8.5	8.1	8.0	8.4	10.0	10.7	11.7	13.9	15.1	16.5	17.5	17.3	16.7	15.8	14.9	13.8	12.7	11.7	11.0	10.4	9.8	12.0	17.5
24-Apr	9.2	9.1	8.5	7.5	5.3	5.2	5.9	6.2	6.5	7.8	9.1	10.0	11.2	11.7	11.9	13.3	13.9	14.3	13.5	11.9	10.4	9.3	8.7	8.2	9.5	14.3
25-Apr	7.8	7.3	6.6	5.5	4.4	4.8	6.9	7.5	8.2	8.9	10.2	12.0	13.1	15.1	15.4	15.5	14.9	14.5	13.8	12.7	11.5	10.9	10.5	9.6	10.3	15.5
26-Apr	8.5	6.4	6.2	6.2	5.8	5.9	7.8	9.2	11.0	11.1	12.4	14.0	14.9	15.2	14.5	13.8	13.4	12.7	12.1	11.5	10.7	10.2	10.2	10.0	10.6	15.2
27-Apr	9.5	9.3	9.2	8.9	8.6	8.2	7.3	6.9	6.8	7.3	8.3	9.5	10.1	10.5	10.9	11.3	11.0	10.8	11.0	10.8	10.1	8.9	7.3	6.8	9.1	11.3
28-Apr	7.2	7.3	7.0	5.5	4.4	3.9	5.9	7.6	9.2	10.3	11.2	13.3	14.6	17.0	17.9	17.1	18.8	18.1	16.9	14.5	12.4	11.9	10.6	9.3	11.3	18.8
29-Apr	8.1	7.0	6.0	5.3	5.2	6.1	9.0	10.8	14.2	16.9	20.2	21.4	23.3	23.9	22.5	21.5	21.3	23.7	22.5	18.6	14.1	11.4	9.6	7.7	14.6	23.9
30-Apr	6.1	4.9	4.0	3.8	3.5	4.5	8.8	11.5	15.3	18.7	21.6	24.6	26.6	27.4	27.0	27.6	26.6	26.1	25.1	24.3	22.8	20.9	20.4	20.2	17.6	27.6
	2.6	2.0	1.5	0.7	0.2	0.1	1.1	2.8	4.6	6.1	7.7	9.2	10.4	11.5	11.9	12.3	12.3	11.6	10.2	8.6	7.0	5.8	4.9	4.1	Diurnal Average	
	10.7	10.5	9.7	9.6	8.7	9.1	10.4	12.7	15.3	18.7	21.6	24.6	26.6	27.4	27.0	27.6	26.6	26.1	25.1	24.3	22.8	20.9	20.4	20.2	Diurnal Maximum	

WBEA NETWORK

Hourly Averages

Ambient Temperature 2m (AT 2m) - C

Fort McKay - Bertha Ganter - April 2014



AURORA ATMOSPHERICS INC.

Concentration Ranges (C)	Number of Hours	%	Cumulative %
-50 - -20	0	0.00	0.00
-20 - 0	159	22.08	22.08
0 - 10	331	45.97	68.06
10 - 20	196	27.22	95.28
> 20	34	4.72	100.00

Total Number of Valid Hours: 720

Total Number of Hours: 720

Maximum Value: 100 % on Apr 28 06:00

Maximum Daily Average: 89.2 % on Apr 27

Minimum Value: 21 % on Apr 30 14:00

Minimum Daily Average: 46.9 % on Apr 14

Maximum Diurnal Average: 78.9 % at hour 6

Minimum Diurnal Average: 46.2 % at hour 17

Monthly Average: 61.4 %

Percentiles: P_1 = 25 P_{10} = 37 Q_1 = 48 Median = 61 Q_3 = 74 P_{90} = 89 P_{99} = 99

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

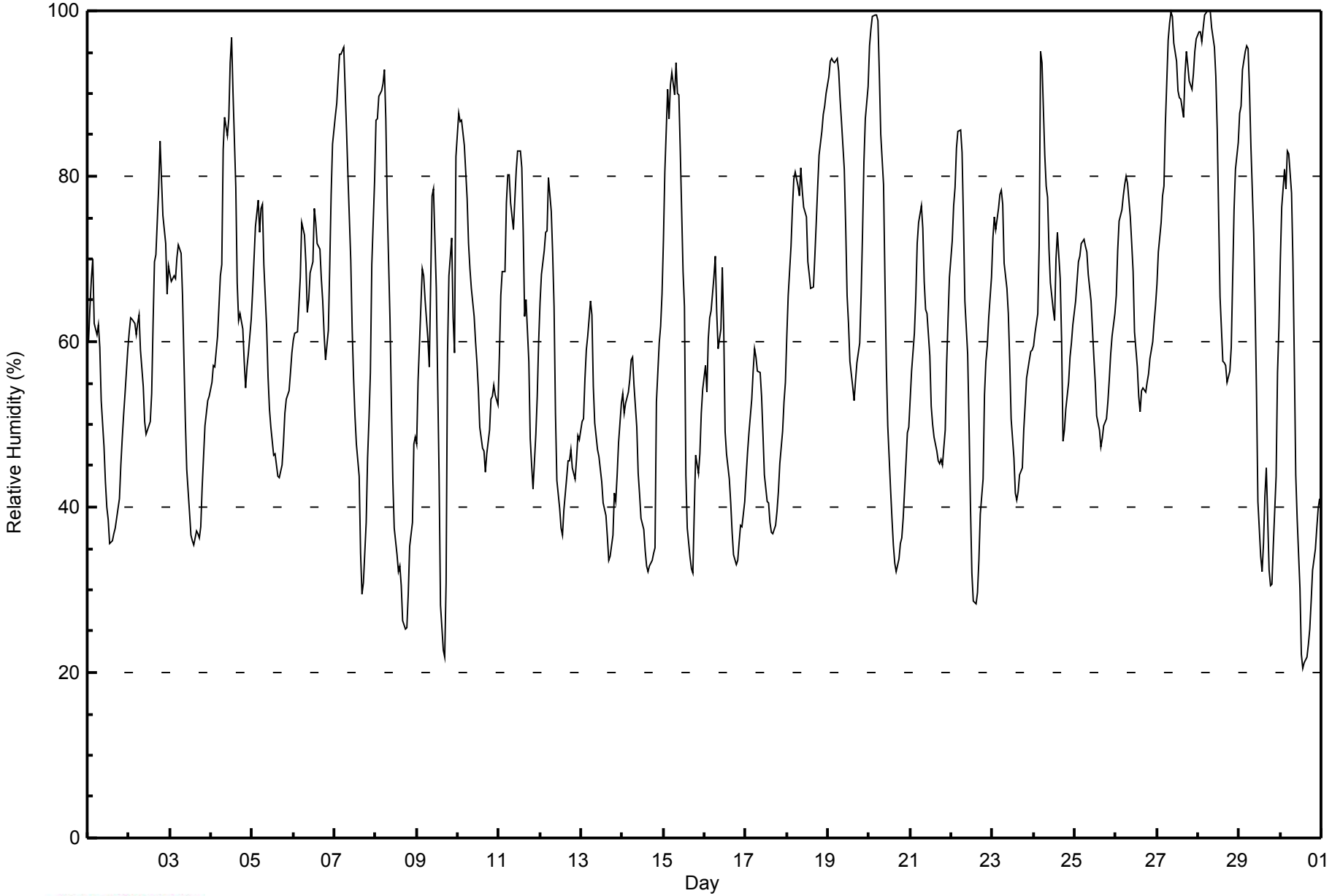
Day	Hourly Period Ending At (MST)																								Daily	Daily
	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24	Average	Maximum
1-Apr	60	64	68	70	62	61	62	59	53	47	43	40	38	36	36	37	38	39	41	45	48	51	54	59	50.4	70
2-Apr	61	63	63	62	61	62	63	59	54	50	49	49	50	54	62	70	70	79	84	80	75	72	66	69	63.7	84
3-Apr	68	67	68	68	70	72	71	66	58	51	45	39	37	36	35	37	37	36	38	42	50	51	53	53	52.0	72
4-Apr	55	57	57	59	61	68	69	83	87	85	87	94	97	90	79	67	63	63	62	58	54	57	59	63	69.7	97
5-Apr	66	70	74	77	73	76	77	69	62	56	52	50	46	46	45	44	44	45	48	51	53	54	56	59	58.0	77
6-Apr	60	61	61	64	68	74	73	70	63	65	68	70	76	74	72	71	68	65	61	58	61	69	78	84	68.1	84
7-Apr	87	89	92	95	95	96	91	85	80	70	62	56	51	48	44	34	30	31	38	46	51	56	69	80	65.5	96
8-Apr	87	87	90	90	91	93	87	77	62	52	43	38	34	32	33	30	26	25	25	30	35	38	48	48	54.3	93
9-Apr	48	55	64	69	68	65	60	57	67	78	78	66	55	44	28	23	22	31	59	68	73	63	59	82	57.6	82
10-Apr	88	87	87	85	84	77	72	69	66	63	60	58	54	50	47	47	44	46	49	53	53	55	54	52	62.5	88
11-Apr	58	66	69	68	77	80	80	77	73	77	81	83	83	81	73	63	65	58	48	45	42	49	53	60	67.1	83
12-Apr	65	68	71	73	73	80	76	71	64	51	43	40	37	37	40	44	46	46	47	45	43	46	49	48	54.2	80
13-Apr	50	51	55	59	61	65	63	55	50	47	46	45	43	41	39	36	34	34	37	42	41	44	48	52	47.3	65
14-Apr	54	51	53	54	55	58	58	55	50	44	41	39	37	35	33	32	33	34	34	35	53	60	62	66	46.9	66
15-Apr	72	81	91	87	91	93	90	94	90	90	83	69	64	44	37	34	33	32	40	46	44	46	51	54	64.8	94
16-Apr	57	54	60	63	64	68	70	64	59	62	69	62	49	46	43	40	37	34	33	34	36	38	38	41	50.9	70
17-Apr	44	47	49	53	56	59	58	56	56	53	49	44	41	41	38	37	37	38	39	42	45	49	53	55	47.5	59
18-Apr	61	66	72	76	80	81	79	78	81	78	76	75	70	68	66	67	70	74	79	82	85	88	89	90	76.2	90
19-Apr	92	94	94	94	94	94	93	89	87	81	74	66	62	58	55	53	55	57	60	66	73	82	87	91	77.0	94
20-Apr	96	98	99	99	99	99	92	85	79	67	57	50	42	39	35	33	32	34	36	36	39	45	49	50	62.1	99
21-Apr	53	56	61	65	72	74	76	74	67	64	63	58	52	50	48	47	46	45	46	45	49	57	63	68	58.4	76
22-Apr	72	76	79	83	85	86	83	75	65	58	50	40	32	29	28	30	34	39	43	54	58	60	63	68	57.9	86
23-Apr	73	75	74	76	78	78	77	70	66	63	58	51	46	42	41	42	44	45	49	52	56	58	59	59	59.6	78
24-Apr	60	61	63	72	95	94	83	79	78	71	67	64	63	70	73	68	60	48	49	52	55	58	60	62	66.8	95
25-Apr	65	67	70	70	72	72	72	71	68	65	62	58	55	51	49	47	48	50	51	53	55	58	61	63	60.6	72
26-Apr	66	71	75	76	78	79	80	79	75	72	68	61	57	53	52	54	54	54	55	56	58	60	62	64	65.0	80
27-Apr	67	71	74	78	79	86	96	99	100	99	96	94	90	90	89	87	92	95	93	91	90	92	95	97	89.2	100
28-Apr	97	97	96	98	99	100	100	100	98	96	92	86	75	65	58	57	57	55	56	59	68	76	81	84	81.3	100
29-Apr	88	88	93	95	96	95	91	84	73	64	54	41	34	32	36	41	45	32	30	31	35	44	56	62	60.0	96
30-Apr	70	76	81	79	83	83	78	70	57	44	39	30	22	21	21	22	23	25	29	32	35	37	40	41	47.4	83
	68.0	70.5	73.4	75.3	77.3	78.9	77.3	73.8	69.7	65.5	61.8	57.1	53.2	50.0	47.9	46.5	46.2	46.3	48.6	50.9	53.8	57.1	60.4	64.1	Diurnal Average	
	97	98	99	99	99	100	100	100	100	99	96	94	97	90	89	87	92	95	93	91	90	92	95	97	Diurnal Maximum	

WBEA NETWORK

Hourly Averages

Relative Humidity (RH) - %

Fort McKay - Bertha Ganter - April 2014



AURORA ATMOSPHERICS INC.

Maximum Value: 1.8 mm on Apr 27 09:00

Maximum Daily Total: 5.8 mm on Apr 27

Minimum Value: 0.0 mm on Apr 1 01:00

Minimum Daily Total: 0.0 mm on Apr 1

Maximum Diurnal Total: 1.8 mm at hour 9

Minimum Diurnal Total: 0.0 mm at hour 1

Monthly Total: 9.65 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} = 0.5

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

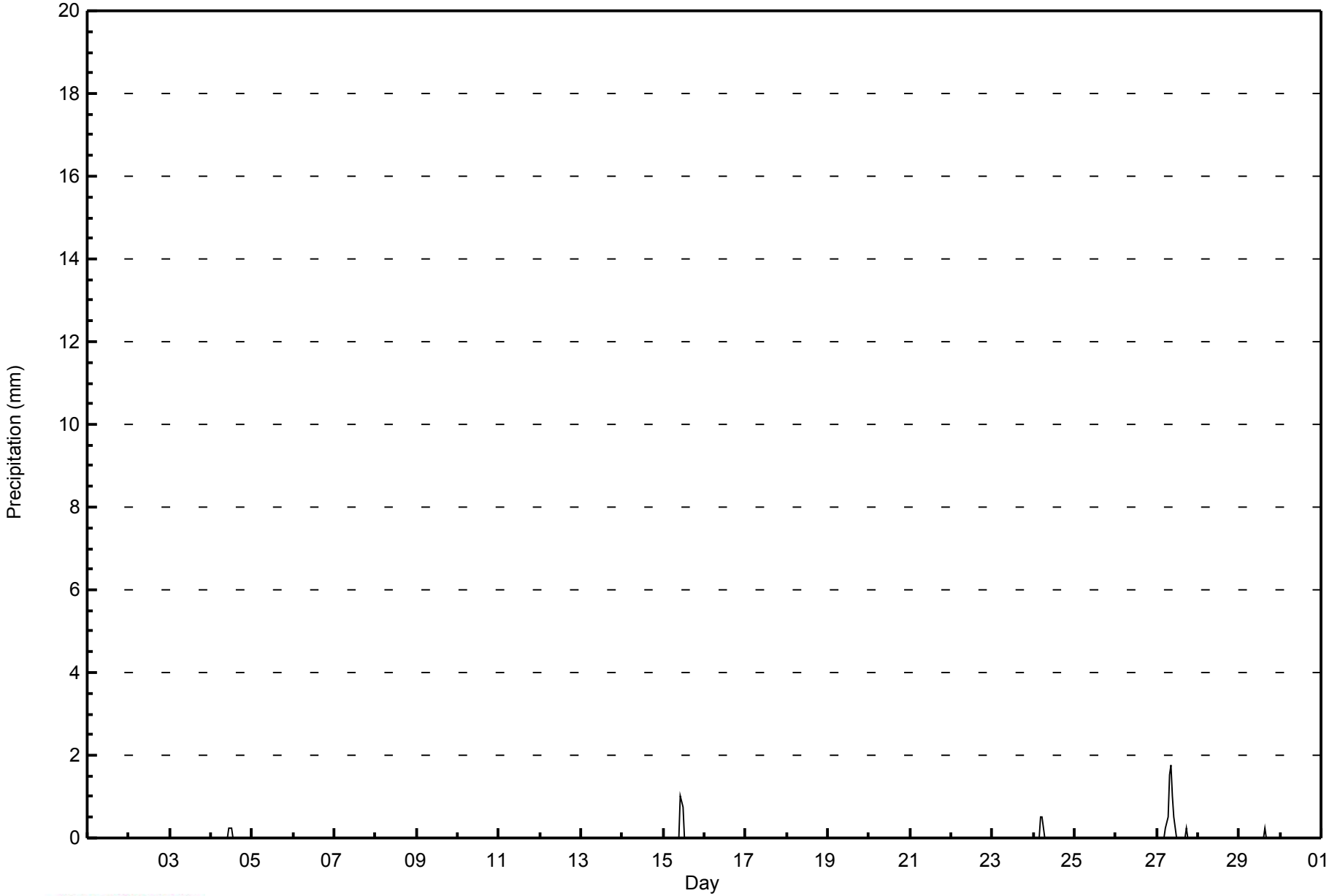
Day	Hourly Period Ending At (MST)																								Daily	Daily
	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24	Average	Maximum
1-Apr	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
2-Apr	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	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-Apr	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	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-Apr	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.3	0.3	0.3	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.8	0.3
5-Apr	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	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-Apr	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	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-Apr	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	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-Apr	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	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-Apr	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	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-Apr	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	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-Apr	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	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-Apr	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	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-Apr	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	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-Apr	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	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-Apr	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	1.0	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	1.8	1.0
16-Apr	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	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-Apr	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	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-Apr	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	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-Apr	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	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-Apr	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	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-Apr	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	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-Apr	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	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-Apr	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	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-Apr	0.0	0.0	0.0	0.0	0.5	0.5	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	1.0	0.5
25-Apr	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	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-Apr	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	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-Apr	0.0	0.0	0.0	0.0	0.0	0.3	0.5	1.5	1.8	1.0	0.5	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	5.8	1.8
28-Apr	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	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-Apr	0.0	0.0	0.0	0.0	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
30-Apr	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
	0.0	0.0	0.0	0.0	0.5	0.8	0.5	1.5	1.8	1.0	1.8	1.0	0.3	0.0	0.0	0.3	0.0	0.3	0.0	0.0	0.0	0.0	0.0	0.0	Diurnal Average	
	0.0	0.0	0.0	0.0	0.5	0.5	0.5	1.5	1.8	1.0	1.0	0.8	0.3	0.0	0.0	0.3	0.0	0.3	0.0	0.0	0.0	0.0	0.0	0.0	Diurnal Maximum	

Wood Buffalo Environmental Association

Hourly Averages

Precipitation (PC) - mm

Fort McKay - Bertha Ganter - April 2014



AURORA ATMOSPHERICS INC.

Concentration Ranges (mm)	Number of Hours	%	Cumulative %
0 - 0.3	711	98.75	98.75
0.4 - 0.5	4	0.56	99.31
0.6 - 0.7	0	0.00	99.31
0.8 - 1.4	3	0.42	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

Maximum Value: 459 W/m2 on Apr 29 13:00

Maximum Daily Average: 150.4 W/m2 on Apr 17

Minimum Value: 0 W/m2 on Apr 30 23:00

Minimum Daily Average: 33.3 W/m2 on Apr 27

Maximum Diurnal Average: 313.3 W/m2 at hour 13

Minimum Diurnal Average: 0.0 W/m2 at hour 22

Monthly Average: 102.0 W/m2

Percentiles: $P_1 = 0$ $P_{10} = 0$ $Q_1 = 0$ Median = 32 $Q_3 = 179$ $P_{90} = 328$ $P_{99} = 422$

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

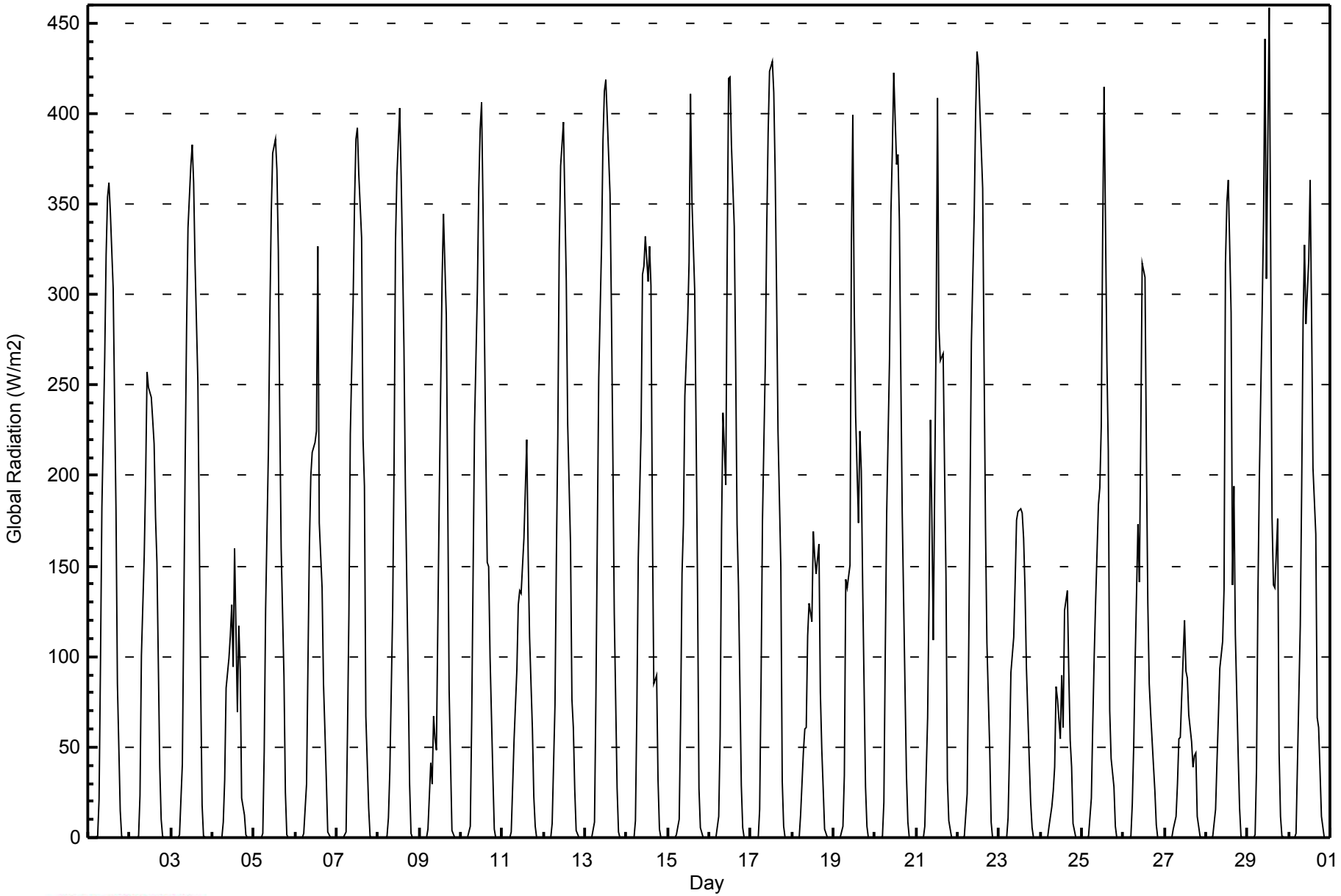
Day	Hourly Period Ending At (MST)																								Daily	Daily
	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24	Average	Maximum
1-Apr	0	0	0	0	0	1	21	96	182	265	322	354	362	345	304	241	181	85	15	1	0	0	0	0	115.6	362
2-Apr	0	0	0	0	0	1	24	101	156	199	257	249	243	230	218	177	152	39	10	0	0	0	0	0	85.7	257
3-Apr	0	0	0	0	0	1	40	123	207	281	337	371	383	362	318	252	168	83	18	1	0	0	0	0	122.8	383
4-Apr	0	0	0	0	0	0	9	32	83	99	112	129	94	160	69	117	92	21	12	1	0	0	0	0	43.0	160
5-Apr	0	0	0	0	0	2	48	126	215	289	345	378	386	369	325	234	160	89	25	2	0	0	0	0	124.7	386
6-Apr	0	0	0	0	0	2	30	97	161	199	213	218	225	326	174	138	85	59	32	3	0	0	0	0	81.8	326
7-Apr	0	0	0	0	0	3	59	123	223	296	352	386	392	366	331	221	194	67	17	1	0	0	0	0	126.3	392
8-Apr	0	0	0	0	0	1	11	36	126	207	329	366	403	366	322	271	195	89	30	2	0	0	0	0	114.7	403
9-Apr	0	0	0	0	0	4	41	29	67	55	48	187	247	307	345	289	191	82	42	4	0	0	0	0	80.8	345
10-Apr	0	0	0	0	0	6	66	147	228	302	359	391	406	350	213	152	150	100	34	5	0	0	0	0	121.1	406
11-Apr	0	0	0	0	0	3	28	54	93	129	136	135	166	192	220	156	111	60	23	6	0	0	0	0	63.0	220
12-Apr	0	0	0	0	0	8	73	156	222	325	372	395	351	307	229	162	77	61	26	4	0	0	0	0	115.4	395
13-Apr	0	0	0	0	0	9	78	167	254	328	385	413	419	399	355	291	211	124	27	3	0	0	0	0	144.3	419
14-Apr	0	0	0	0	0	9	70	154	225	311	316	332	307	327	305	173	85	90	32	5	0	0	0	0	114.2	332
15-Apr	0	0	0	0	0	1	10	67	146	173	244	285	318	411	353	302	224	138	27	5	0	0	0	0	112.7	411
16-Apr	0	0	0	0	0	12	56	170	234	195	321	420	421	383	338	263	173	139	29	6	0	0	0	0	131.6	421
17-Apr	0	0	0	0	0	16	87	175	262	336	389	424	429	411	367	301	225	150	32	6	0	0	0	0	150.4	429
18-Apr	0	0	0	0	0	12	47	60	61	111	129	119	169	155	146	162	81	49	28	5	0	0	0	0	55.6	169
19-Apr	0	0	0	0	0	6	34	143	138	150	329	400	293	233	174	225	203	138	28	6	0	0	0	0	104.2	400
20-Apr	0	0	0	0	0	20	103	179	264	346	380	422	372	377	341	256	180	82	34	8	0	0	0	0	140.2	422
21-Apr	0	0	0	0	0	6	67	133	231	177	109	279	408	282	263	267	203	144	32	10	0	0	0	0	108.9	408
22-Apr	0	0	0	0	1	24	95	181	274	345	400	434	426	402	359	261	171	108	48	9	0	0	0	0	147.4	434
23-Apr	0	0	0	0	0	11	47	91	111	141	176	180	182	179	165	137	93	43	19	5	0	0	0	0	65.9	182
24-Apr	0	0	0	0	0	6	17	26	39	83	77	55	90	61	125	137	91	54	39	8	0	0	0	0	37.8	137
25-Apr	0	0	0	0	1	21	63	99	130	184	193	227	332	415	264	213	70	44	28	7	0	0	0	0	95.5	415
26-Apr	0	0	0	0	1	18	50	97	173	141	221	318	309	212	130	85	69	39	26	7	0	0	0	0	79.0	318
27-Apr	0	0	0	0	0	5	12	30	54	55	78	120	92	88	68	53	39	45	47	11	0	0	0	0	33.3	120
28-Apr	0	0	0	0	1	15	42	67	94	109	137	317	351	363	290	139	194	113	46	16	1	0	0	0	95.6	363
29-Apr	0	0	0	0	1	38	134	198	292	343	441	309	459	330	177	139	138	176	46	12	1	0	0	0	134.8	459
30-Apr	0	0	0	0	3	41	117	194	285	328	284	319	363	288	204	168	66	61	37	12	0	0	0	0	115.4	363
	0.0	0.0	0.0	0.0	0.3	10.2	52.5	111.7	174.4	216.7	259.7	297.7	313.3	299.9	249.5	199.4	142.4	85.7	29.6	5.7	0.1	0.0	0.0	0.0	Diurnal Average	
	0	0	0	0	3	41	134	198	292	346	441	434	459	415	367	302	225	176	48	16	1	0	0	0	Diurnal Maximum	

WBEA NETWORK

Hourly Averages

Global Radiation (GR) - W/m2

Fort McKay - Bertha Ganter - April 2014



AURORA ATMOSPHERICS INC.

Concentration Ranges (W/m2)	Number of Hours	%	Cumulative %
0 - 20	337	46.81	46.81
21 - 100	120	16.67	63.47
101 - 300	167	23.19	86.67
301 - 600	96	13.33	100.00
601 - 900	0	0.00	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 (WS) - km/h

Fort McKay - Bertha Ganter - April 2014

Maximum Speed: 23 km/h on Apr 9 09:00

Maximum Daily Speed Average: 10.9 km/h on Apr 15

Minimum Speed Value: 0 km/h on Apr 7 04:00

Minimum Daily Speed Average: 1.9 km/h on Apr 6

Maximum Diurnal Speed Average: 4.0 km/h at hour 13

Minimum Diurnal Speed Average: 0.7 km/h at hour 1

Monthly Average Velocity: 2.0 km/h 90.2 deg

Percentiles: P_1 = 1 P_{10} = 3 Q_1 = 5 Median = 8 Q_3 = 11 P_{90} = 13 P_{99} = 17

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-Apr	S6	SSW2	NNW4	NNW2	N5	N5	N5	N6	N8	N9	NE7	ENE9	ENE9	ENE11	ENE9	ENE9	ENE8	NE8	NE7	NNE5	N6	N6	N7	N7	NE5.2	ENE11
2-Apr	N8	N8	N9	NNE9	NNE8	N8	N8	N8	N9	N10	NNE12	NNE12	NNE10	N12	N13	NNE11	NNE11	N10	NNE10	NNE9	NNE7	NNE7	N7	N7	N9.2	N13
3-Apr	NNW6	NW6	NNW5	NNW6	NNW4	NNW4	N3	N6	NNE7	N7	ENE7	ESE5	SSE4	SE5	ENE5	ENE7	NE5	NE5	N4	NE1	SE8	SE10	SSE13	SSE13	ENE2.1	SSE13
4-Apr	SSE14	SSE12	SSE12	S18	SSE12	SSE10	S13	S17	S14	S15	S12	S11	S8	SW3	WNW7	WNW14	WNW19	NW15	NW17	NW18	NW18	NW13	NW11	NW5	SW4.9	WNW19
5-Apr	WNW6	WNW5	W3	W5	WNW11	NW3	NNE1	SE3	ESE4	E7	E9	ENE7	ENE8	ENE8	ENE10	ENE10	NE7	NE7	NNE7	NNE8	N7	N6	N5	NNW4	NE3.4	WNW11
6-Apr	NNW3	NNW3	NNW2	WNW2	N3	SW2	SSW2	SE3	SSE5	SSE9	SSE8	S9	SSE10	SSE10	SSE11	SSE9	S3	NNE6	NNE6	NNE4	N4	NNW3	W3	W1	SSE1.9	SSE11
7-Apr	W3	SSW2	SSW1	SSE0	SW3	S3	SSE1	SSE2	SSE5	SSE5	SSE4	SSE5	SE9	SSE9	SSE12	S12	SSW10	SSW7	SW6	SW6	SSW6	SW9	SSW7	S7	S4.9	S12
8-Apr	S8	SSW5	S4	SSW4	S3	SSW2	S4	SSE5	SSW8	SW11	WSW11	W15	W16	W17	W16	W15	WSW17	WSW16	W16	W11	WSW9	WNW9	WSW3	SW4	WSW7.9	WSW17
9-Apr	W6	WNW8	W5	S6	SSW5	WSW8	W10	WNW10	WNW23	NW16	NW15	NNW12	NNW15	NNW14	NW20	NW20	NW19	NNW13	ENE6	N4	SW5	WSW5	NNW7	NNW5	NW8.6	WNW23
10-Apr	NNW5	N5	N4	NNW4	N6	NNE7	NNE8	NE8	ENE10	NE9	ENE12	ENE11	ENE13	ENE12	ENE11	NE10	NE9	NNE9	NE9	NE8	NE7	NE8	ENE7	ENE8	NE7.4	ENE13
11-Apr	ENE9	ENE8	ENE8	ENE8	NE7	NE8	NE8	NE9	NE9	NNE11	NNE11	NNE13	NNE14	NNE14	NNE15	NNE14	N15	N15	N14	N14	N10	NNW6	NNW7	NW5	NNE9.4	N15
12-Apr	WNW3	W2	SW1	W1	NW2	SSW2	S4	SSE6	SSE8	SSE4	NNW2	WSW5	NNW12	NW10	N10	N11	NE8	NNE9	NE8	NNE9	NNE9	N10	N12	N10	N3.6	NNW12
13-Apr	N7	N9	NNW5	NW4	NW6	NW6	NW5	N6	NNE6	NE8	ENE11	E11	E10	E7	E7	SE6	SSE6	SE6	S8	SSE3	ENE3	E4	NE2	SSE5	ENE2.9	E11
14-Apr	SSE6	SSE6	SSE7	SSE6	SSE8	SSE7	SSE7	SSE11	SSE13	SSE14	SSE13	SSE12	SSE14	SSE14	SSE13	SSE11	SSE8	SSE9	SE8	ENE4	N12	N12	N11	N10	SSE6.2	SSE14
15-Apr	N10	N11	N9	N10	NNE9	NNE10	NE9	NE8	NE9	NE10	NNE10	NE11	N14	NE12	NE13	NNE14	NNE14	NNE13	NNE14	N14	N14	N12	N10	N8	NNE10.9	NNE14
16-Apr	N8	NE8	N7	NE7	NNE6	N8	N9	NE8	NE8	ENE9	ENE9	NE6	NE2	S9	S15	SSE13	SSE12	SSE13	SE14	ESE12	SE9	SSE6	S8	S8	ESE4.2	S15
17-Apr	S8	SSE7	SSE6	S5	S6	SSE4	SSE7	SSE10	S12	S13	S17	S16	SSE18	SSE17	SSE17	SSE18	SE17	SSE17	SSE15	SE12	SE10	SE6	S3	SE4	SSE10.6	SSE18
18-Apr	SE2	ESE5	E8	E4	E4	E6	E7	ESE10	ESE12	SE11	ESE11	SE9	SSE11	SE10	ESE10	SE10	SSE10	S10	SSE8	S5	SSW3	SSE3	ESE3	S1	SE6.4	ESE12
19-Apr	WNW4	NNW2	NNW2	WNW1	AF	WNW2	N1	SE3	S6	S6	SSE7	SSE9	SSE10	SSE8	ESE7	ENE8	SE13	SE13	SE12	SE10	ESE7	ESE6	NNE4	N6	SE4.2	SE13
20-Apr	NNW2	W2	NNW3	NNW1	W2	NW2	AF	SE2	SSE4	E3	ENE7	E9	ENE7	E8	E10	ENE8	ENE8	ENE5	E4	E2	SSW4	SW2	S4	S5	E2.7	E10
21-Apr	S4	SSW5	SSW5	S4	WSW2	SW3	S6	SSE8	ESE3	N10	N6	NE7	ENE11	ENE10	E10	ENE9	NE9	NE9	NNE9	NNE9	NNE7	NNE6	N6	NNW5	NE3.3	ENE11
22-Apr	NNW5	N6	N6	N5	N4	N5	N6	N6	N6	N8	NNE8	NE11	ENE12	ENE12	ENE14	ENE13	ENE14	ENE13	ENE11	NE8	NNE9	NE8	NNE6	N7	NE7.4	ENE14
23-Apr	N8	N8	NNE9	N9	N9	N11	NNE10	NNE10	NNE13	NNE11	NE9	NE10	ENE11	E16	E16	ENE15	ENE15	E15	ENE12	ENE11	ENE11	ENE10	ENE10	ENE9	NE9.7	E16
24-Apr	ENE9	ENE8	NE9	NE8	NNE6	N7	NNE7	NE7	NNE7	NE8	NE8	NE8	E5	SSW8	W4	WSW3	SE4	ESE11	E13	E14	E13	E11	ESE11	ESE10	ENE5.9	E14
25-Apr	ESE8	ENE5	ENE4	NNE4	E3	ESE3	SSE4	SSE2	NNE2	NE3	E5	ESE6	SSW3	SE4	ESE4	ENE6	ESE4	S7	S9	SSE7	SSE4	SSE5	SSE5	SSE3	SE3.3	S9
26-Apr	SSE2	ESE3	ESE3	E3	SE3	SE4	SSE5	SSE9	S12	SSE14	SSE13	SSE14	SSE15	SSE13	S13	SSE13	SSE13	SSE15	SE13	SE13	SE11	SE10	SSE12	SSE11	SSE9.5	SSE15
27-Apr	SSE8	SE9	SE8	SE7	ESE6	ESE10	ENE4	NE4	NNE4	E2	SSE6	SSE13	SSE17	SSE13	SSE11	SSE12	S11	SSE12	SSE12	SSE12	S10	S7	SSE4	SSE3	SSE7.6	SSE17
28-Apr	SE3	S2	S3	SW2	WSW3	W0	SW2	S3	SSW6	SSE7	SSE8	SSE7	SE4	SSE5	SSE4	E2	SE5	ESE4	SSE4	SSE3	SSE6	SSE9	S6	SSE5	SSE3.9	SSE9
29-Apr	SE2	SSE4	SSE4	SSE5	S6	S8	S11	SSE10	SSE10	SE9	SSE12	SW9	SW10	WSW8	WSW6	NNW4	SSE4	NW8	NW8	NW4	W2	WSW2	SW2	WNW2	SSW3.3	SSE12
30-Apr	W2	WSW3	SW2	WSW3	SSW2	SSW6	SSE4	SSE5	SSE9	S11	S10	S12	S18	S17	S15	S13	SSW9	S6	SSW5	SSW6	SW6	SSW5	SW5	WNW7	S6.6	S18
	NE0.7	NE1.0	NE1.2	ENE0.7	NNE0.9	NE0.9	E1.3	ESE2.4	ESE2.3	E2.6	ESE3.8	ESE3.5	ESE4.0	ESE4.0	ESE3.7	E3.3	ESE3.0	E2.9	E2.8	ENE2.4	NE1.9	NE1.6	NE1.3	NE1.0	Diurnal Average	
	SSE14	SSE12	SSE12	S18	SSE12	N11	S13	S17	WNW23	NW16	S17	S16	SSE18	W17	NW20	NW20	WNW19	SSE17	NW17	NW18	NW18	NW13	SSE13	SSE13	Diurnal Maximum	

AF - Analyzer Failure

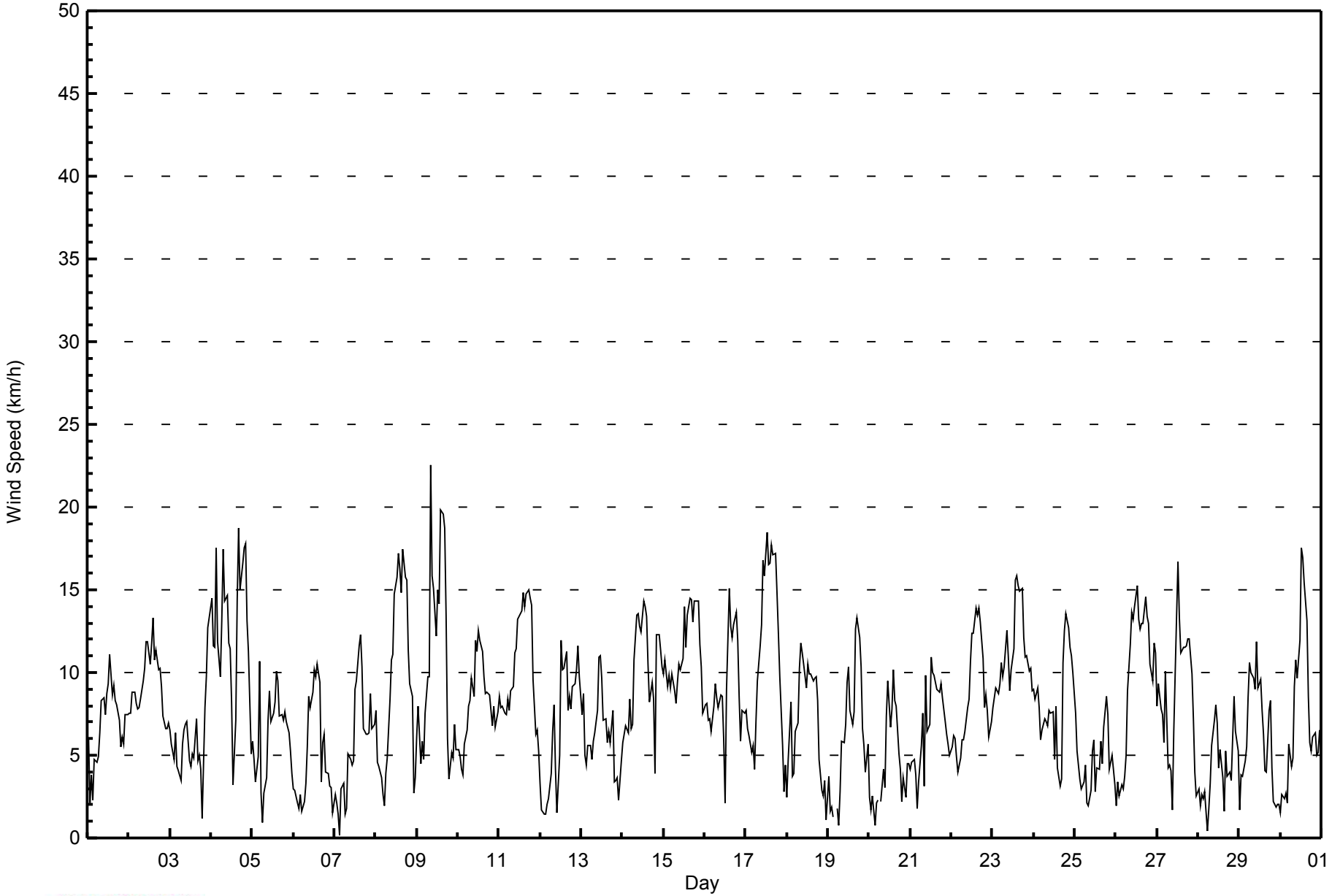
All monthly, daily, and diurnal averages have been calculated using vector methods

WBEA NETWORK

Hourly Averages

Wind Speed (WS) - km/h

Fort McKay - Bertha Ganter - April 2014



AURORA
ATMOSPHERICS INC.

Wind Speed Ranges (km/h)	Number of Hours	%	Cumulative %
0 - 5	219	30.50	30.50
6 - 11	359	50.00	80.50
12 - 19	137	19.08	99.58
20 - 28	3	0.42	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

WBEA NETWORK

Frequency Distribution

Wind Speed (WS) - km/h

Fort McKay - Bertha Ganter - April 2014

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	15	7	7	7	12	11	15	38	16	17	13	9	14	7	8	23	219
6 - 11	57	44	45	44	13	14	20	51	27	11	6	5	3	7	6	6	359
12 - 19	13	12	2	12	6	2	8	40	19	0	0	2	6	2	8	5	137
20 - 28	0	0	0	0	0	0	0	0	0	0	0	0	0	1	2	0	3
29 - 38	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
> 38	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Totals	85	63	54	63	31	27	43	129	62	28	19	16	23	17	24	34	718

Total Number of Valid Hours: 718

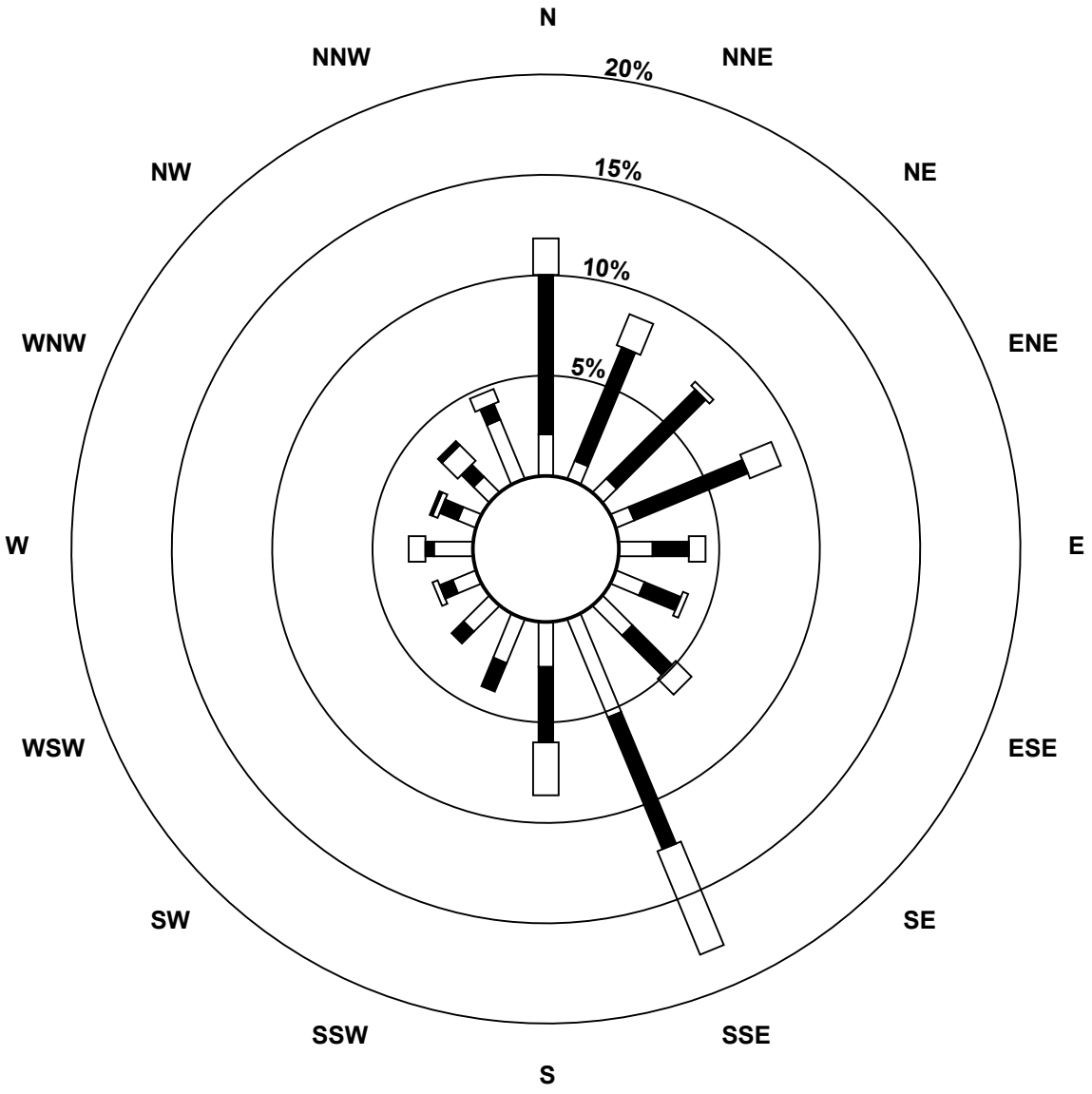
Total Number of Hours: 720

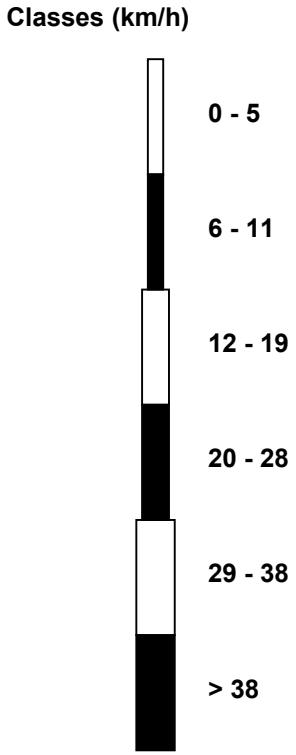
Wood Buffalo Environmental Association

Wind Rose Apr 2014

Wind Speed (WS) - km/h

Fort McKay - Bertha Ganter (AMS 1)





Total Number of Valid Hours: 718

Wood Buffalo Environmental Association

Summary of Hour Standard Deviations

Wind Speed (WS) - km/h

Fort McKay - Bertha Ganter - April 2014

Number of Exceedences (AAAQO): 1-hr: 0 24-hr: 0
Maximum Value: 8 km/h on Apr 9 09:00

Minimum Value: 1 km/h on Apr 10 04:00

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

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-Apr	1	2	2	2	1	1	1	2	3	3	3	3	3	3	3	3	3	3	3	2	2	1	3	3	3
2-Apr	2	3	3	3	3	2	3	3	3	4	4	4	4	4	5	4	5	4	4	4	3	3	2	2	5
3-Apr	1	1	2	1	1	2	1	2	2	2	3	2	2	2	2	2	2	2	1	1	4	3	3	4	4
4-Apr	4	3	3	4	3	3	4	4	3	3	3	3	2	2	3	5	6	6	5	6	7	5	5	1	7
5-Apr	1	1	1	3	3	1	1	1	1	2	2	3	3	3	3	3	3	3	3	3	3	2	1	1	3
6-Apr	1	1	1	1	1	1	1	1	2	1	1	2	2	2	2	2	3	3	2	1	1	1	2	1	3
7-Apr	1	1	1	1	2	1	1	1	1	1	1	2	2	2	2	4	4	2	3	2	2	2	2	2	4
8-Apr	2	1	1	1	2	2	3	2	2	3	5	6	6	8	7	7	7	7	6	5	4	3	2	1	8
9-Apr	3	2	2	1	2	3	4	6	8	5	5	5	5	5	6	7	6	8	2	4	1	1	3	2	8
10-Apr	2	2	1	1	2	3	3	3	3	4	3	4	4	4	4	4	4	4	3	3	3	3	3	2	4
11-Apr	3	3	3	3	3	3	3	3	4	5	4	5	5	5	6	6	6	5	5	5	3	1	1	1	6
12-Apr	1	1	1	1	1	1	1	1	1	2	2	4	5	4	4	5	3	4	3	4	4	4	4	4	5
13-Apr	3	3	1	1	1	1	1	2	2	3	4	4	4	3	3	2	2	2	2	2	1	1	1	2	4
14-Apr	2	1	2	1	2	1	2	2	2	2	3	3	3	3	3	3	2	2	2	2	4	4	4	3	4
15-Apr	4	4	3	3	3	4	4	4	4	4	4	5	5	5	5	6	6	6	6	5	5	5	4	3	6
16-Apr	3	4	2	3	3	3	3	3	3	3	3	3	3	4	4	5	5	4	3	3	2	2	2	2	5
17-Apr	2	2	1	1	1	1	2	3	3	3	4	4	5	4	4	4	5	5	4	3	2	2	1	1	5
18-Apr	1	2	2	3	2	2	2	3	3	3	3	3	3	3	2	3	2	2	2	2	1	1	3	2	3
19-Apr	1	1	1	1	AF	1	1	2	1	2	2	3	2	2	3	3	3	3	3	3	2	1	1	1	3
20-Apr	1	1	1	1	1	1	AF	1	1	2	2	3	3	3	3	3	3	2	1	2	1	1	1	1	3
21-Apr	1	1	1	2	2	1	2	1	2	3	3	3	3	3	3	3	4	3	4	3	2	2	2	1	4
22-Apr	2	1	2	2	1	2	2	2	2	3	3	4	4	5	5	5	5	5	4	3	3	3	2	2	5
23-Apr	2	2	3	3	3	3	3	4	5	4	3	4	5	5	5	5	6	6	4	4	4	3	3	3	6
24-Apr	3	3	3	3	2	2	3	3	3	3	3	3	3	3	2	1	3	3	4	4	4	3	3	3	4
25-Apr	2	2	1	1	1	2	1	1	2	2	2	3	2	3	3	2	2	2	2	2	1	1	1	1	3
26-Apr	1	1	2	1	1	1	1	2	3	3	3	3	4	3	3	3	3	4	3	3	3	3	3	3	4
27-Apr	2	2	2	2	2	3	2	2	2	1	3	4	4	3	3	3	3	3	3	3	2	2	1	1	4
28-Apr	2	1	1	1	2	1	1	1	2	1	1	2	2	2	3	2	2	2	1	1	2	2	2	1	3
29-Apr	2	2	1	1	1	2	3	2	2	1	3	4	4	4	4	4	2	4	3	1	2	1	1	2	4
30-Apr	1	1	1	2	1	2	1	2	2	2	2	3	4	5	3	4	3	2	2	1	2	1	2	2	5
	4	4	3	4	3	4	4	6	8	5	5	6	6	8	7	7	7	8	6	6	7	5	5	4	
	Diurnal Maximum																								

AF - Analyzer Failure

Direction of Maximum Speed: 303 deg on Apr 9 09:00
Direction of Maximum Daily Speed Average: 20.9 deg on Apr 15

Direction of Minimum Speed: 153 deg on Apr 7 04:00

Direction of Minimum Daily Speed Average: 1.9 deg on Apr 6

Monthly Average Direction: 200.4 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-Apr	177	212	346	331	357	356	0	1	5	10	50	62	75	74	71	71	69	44	37	29	10	9	3	10	35.8
2-Apr	4	8	10	17	13	3	7	8	4	8	12	14	19	9	7	14	16	10	14	21	19	20	3	352	10.8
3-Apr	340	326	334	344	338	346	360	11	14	9	68	110	167	140	78	75	47	50	4	40	146	144	162	155	67.3
4-Apr	163	162	164	174	167	164	169	173	172	172	169	173	169	235	292	299	299	307	305	307	312	318	317	304	223.1
5-Apr	296	286	274	274	293	320	28	132	112	101	95	67	76	71	73	69	54	43	23	15	9	9	349	338	36.2
6-Apr	327	348	327	289	351	225	194	140	160	161	149	172	154	153	163	162	174	12	16	27	353	334	273	280	156.2
7-Apr	273	196	202	153	227	184	164	153	149	156	161	164	143	154	156	169	197	202	215	225	210	223	211	180	183.5
8-Apr	181	194	183	206	176	192	180	164	200	214	251	268	268	268	278	263	243	249	278	273	255	300	245	233	249.5
9-Apr	275	289	262	182	202	242	275	299	303	312	320	328	328	329	320	322	316	329	66	4	225	254	345	348	310.0
10-Apr	347	354	359	336	7	25	32	42	63	56	77	72	74	72	68	50	45	31	39	43	42	55	62	74	49.4
11-Apr	77	71	66	62	47	45	50	45	42	28	26	21	19	21	19	17	6	4	2	360	4	341	330	312	22.7
12-Apr	296	275	226	268	325	195	173	155	147	163	339	258	328	324	360	352	41	14	56	22	17	8	0	5	1.6
13-Apr	2	357	344	317	311	305	321	7	25	50	78	87	92	84	94	126	153	131	170	167	71	93	51	158	65.8
14-Apr	153	156	158	151	149	154	162	168	165	158	166	161	166	161	160	165	158	157	142	69	7	9	9	7	149.6
15-Apr	5	1	5	4	14	32	46	47	34	38	33	34	11	41	40	23	26	26	12	8	8	7	9	11	20.9
16-Apr	11	34	10	35	32	9	8	44	39	65	75	42	46	171	180	167	149	148	139	121	130	162	171	170	105.2
17-Apr	169	163	163	173	178	168	163	166	174	178	173	171	150	160	148	149	145	148	149	137	127	133	169	134	156.6
18-Apr	146	116	93	96	79	80	81	112	111	128	123	129	147	131	121	134	153	172	164	170	193	147	110	187	127.7
19-Apr	301	344	338	285	AF	297	357	137	175	185	167	157	160	152	103	77	127	133	141	129	116	103	28	8	133.0
20-Apr	341	268	329	333	262	325	AF	146	151	98	67	83	77	84	86	74	76	68	79	87	199	214	183	189	89.5
21-Apr	185	200	195	175	252	219	179	154	119	354	1	54	73	78	80	69	47	46	25	13	17	12	357	347	52.4
22-Apr	348	352	350	2	349	5	11	9	10	360	21	41	61	65	64	64	67	70	71	44	22	36	16	5	37.1
23-Apr	1	8	17	4	6	7	14	22	23	27	40	53	69	92	87	78	76	81	71	70	66	67	70	66	51.8
24-Apr	67	61	53	55	29	10	32	44	27	37	40	35	95	202	272	242	127	115	90	90	95	98	103	106	73.5
25-Apr	103	77	67	30	86	108	151	158	29	39	83	122	205	139	113	77	120	173	174	168	167	163	164	164	127.3
26-Apr	152	118	122	96	136	137	161	162	169	162	161	168	167	167	171	155	157	155	136	143	144	145	154	152	155.2
27-Apr	155	138	128	136	123	123	71	44	31	86	160	162	157	159	150	161	169	163	168	166	171	178	160	165	151.7
28-Apr	141	185	187	223	244	273	215	189	197	159	155	159	142	161	157	98	143	109	162	165	162	166	170	159	164.4
29-Apr	139	166	163	167	184	182	173	166	149	139	151	216	221	240	254	342	149	324	326	321	280	245	234	296	193.8
30-Apr	270	248	231	242	209	196	167	152	153	171	169	173	169	181	173	175	193	181	198	201	215	203	228	285	184.9
	49.0	44.9	50.5	61.4	18.7	49.7	81.6	103.4	104.2	100.1	103.3	112.5	117.6	123.2	103.2	90.9	101.9	87.7	82.3	63.8	53.8	51.3	41.5	54.3	
	Diurnal Average																								

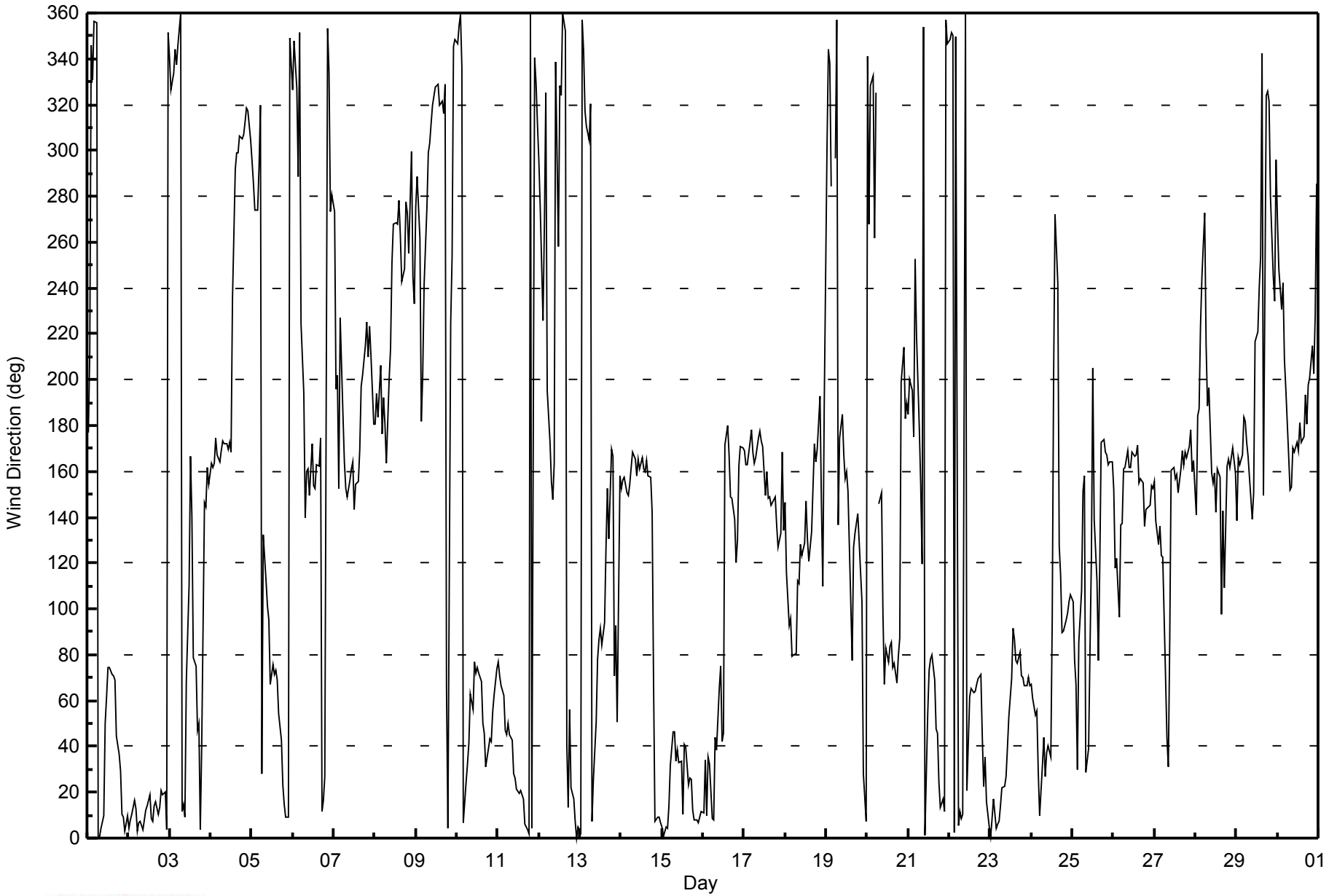
AF - Analyzer Failure
All monthly, daily, and diurnal averages have been calculated using vector methods

WBEA NETWORK

Hourly Averages

Wind Direction (WD) - deg

Fort McKay - Bertha Ganter - April 2014



AURORA ATMOSPHERICS INC.

Number of Exceedences (AAAQO): 1-hr: 0 24-hr: 0
Maximum Value: 101 deg on Apr 12 11:00

Minimum Value: 9 deg on Apr 7 09:00

Percentiles: P_1 = 12 P_{10} = 15 Q_1 = 19 Median = 28 Q_3 = 40 P_{90} = 48 P_{99} = 88

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-Apr	13	74	45	84	16	15	17	28	28	41	51	39	35	29	36	29	33	41	37	46	25	25	24	32	84
2-Apr	28	27	29	35	31	29	29	30	32	35	37	37	45	34	35	37	41	32	32	37	41	42	27	19	45
3-Apr	14	9	28	13	16	13	17	26	36	45	42	58	58	51	58	30	53	39	23	76	25	16	16	16	76
4-Apr	16	16	19	16	16	17	15	16	15	16	15	15	16	64	28	22	19	19	20	20	19	22	21	16	64
5-Apr	13	12	40	55	16	42	91	32	32	24	24	48	36	35	24	27	40	42	37	31	30	30	19	16	91
6-Apr	16	19	47	22	24	65	26	15	19	15	18	21	12	14	18	13	72	39	36	40	23	31	21	57	72
7-Apr	41	70	89	95	36	29	65	30	9	21	36	40	16	18	13	19	35	42	44	28	23	22	22	20	95
8-Apr	17	22	21	27	26	91	68	28	18	22	43	37	37	39	33	40	37	42	33	36	44	35	43	38	91
9-Apr	40	19	40	20	33	40	43	22	20	21	20	25	25	28	24	23	24	44	41	83	18	30	26	27	83
10-Apr	24	20	25	13	30	42	45	42	39	46	25	32	29	28	31	39	49	39	38	41	44	42	37	25	49
11-Apr	27	26	30	36	40	39	44	37	41	39	41	37	34	34	39	38	34	31	30	26	28	21	11	18	44
12-Apr	24	57	45	78	51	30	24	19	15	71	101	75	37	45	44	35	44	42	37	40	38	31	28	30	101
13-Apr	29	26	25	10	11	13	24	39	51	51	30	32	32	54	51	46	34	35	17	39	15	20	19	40	54
14-Apr	17	14	14	12	12	12	15	16	14	16	18	19	15	17	18	18	16	15	14	50	28	32	33	30	50
15-Apr	29	29	29	29	36	44	43	47	47	39	43	44	36	45	41	40	41	42	35	31	30	32	31	35	47
16-Apr	31	49	29	44	45	36	30	39	43	36	40	57	96	40	19	23	25	25	16	15	18	21	17	16	96
17-Apr	16	14	14	14	14	19	16	18	18	21	19	26	19	20	20	18	20	20	18	13	13	20	42	27	42
18-Apr	38	33	15	83	44	17	22	23	19	19	23	24	23	24	25	23	19	18	18	13	21	25	16	58	83
19-Apr	13	40	49	47	AF	65	62	52	29	34	40	30	20	26	32	30	26	18	15	14	18	18	30	13	65
20-Apr	50	19	19	43	44	50	AF	27	18	71	42	24	59	45	28	33	32	28	19	45	10	21	20	15	71
21-Apr	11	15	21	33	52	24	32	12	67	27	37	44	32	26	25	40	43	42	36	30	33	30	24	23	67
22-Apr	23	18	22	22	12	19	26	35	39	39	45	46	35	34	32	30	30	29	26	44	39	41	29	24	46
23-Apr	25	27	35	29	29	29	30	39	37	40	44	37	40	23	23	24	24	25	28	29	28	28	26	30	44
24-Apr	28	30	39	38	39	32	47	46	37	42	44	43	53	22	54	55	88	17	25	18	18	19	17	18	88
25-Apr	18	21	21	22	30	21	24	56	94	82	59	51	83	81	66	47	46	16	16	18	18	15	15	27	94
26-Apr	43	22	46	23	29	18	15	16	17	18	20	21	26	20	17	18	17	16	13	13	13	14	14	15	46
27-Apr	16	14	15	13	21	17	35	36	38	68	25	19	16	16	15	17	16	16	16	15	16	17	14	35	68
28-Apr	19	53	21	28	19	76	45	43	26	23	15	28	45	43	67	75	30	48	22	17	19	15	19	22	76
29-Apr	46	48	26	26	18	15	14	16	15	12	17	47	45	50	64	85	45	42	19	13	58	51	53	48	85
30-Apr	44	21	26	19	33	13	21	15	18	17	16	22	18	20	19	24	19	21	21	13	20	25	28	17	44
	50	74	89	95	52	91	91	56	94	82	101	75	96	81	67	85	88	48	44	83	58	51	53	58	
	Diurnal Maximum																								

AF - Analyzer Failure

Wood Buffalo Environmental Association

SO_2 Calibration Report

Station Information

Calibration Date	April 9, 2014	Previous Calibration	March 10, 2014
Station Name	Bertha Ganter - Fort McKay	Station Number	AMS 1
Reason:	Routine		
Start Time (MST)	9:20	End Time (MST)	13:40
Barometric Pressure	n/a mmHg	Station temp.	21 Deg C
Calibrator Make/Model	Sabio 4010	Serial Number	11571008
Cal Gas Concentration	51 ppm	Cal Gas Expiry Date	May 29th 2014
Gas Cert Reference	LL107923		
DACS make/model	Campbell Scientific CR3000	DACS serial No.	2403
DACS voltage range		DACS channel #	SE1

Analyzer Information

	Before	*After*		*Before*	*After*
Analyzer Range (ppb)	1000	1000	PMT voltage	-689	-689
Analyzer Range (mv)	5000	5000	Lamp voltage	740	731
Calculated slope	1.004030	0.998894	Chamber temp.	42.9	43.0
Calculated intercept	-3.449721	-1.272917	Pressure (mmHg)	718.5	701.5
Analyzer Background	36.6	37.1	Flow (lpm)	0.503	0.493
Analyzer Coefficient	0.780	0.780	Intensity	35700	35750

Analyzer make	Thermo 43C	Analyzer serial #	50911

Calibration Data

Set Point	Total flow rate (cc/min)	Source gas flow rate (cc/min)	Calculated concentration (ppb) (Cc)	Indicated concentration (ppb) (Ic)	Correction factor (Cc/Ic)
as found zero	5500	0.0	0.0	1.1	NA
as found span	5500	81.5	755.7	757.2	0.998
calibrator zero	5500	0.0	0.0	1.1	NA
high point	5500	81.5	755.7	757.2	0.998
second point	5500	45.7	423.8	427.0	0.992
third point	5500	22.8	211.4	212.2	0.996
calibrator zero	5500	0.0	0.0	1.1	NA
as left zero	5500	0.0	0.0	1.7	NA
as left span	5500	81.5	755.7	766.4	0.986
				Average Correction Factor	0.996

Corrected As found	756.1	Previous response	756.1	% change	0.0%

Notes:

no adjustments required; changed inlet filter

Calibration Performed By: Michael Martineau

Wood Buffalo Environmental Association

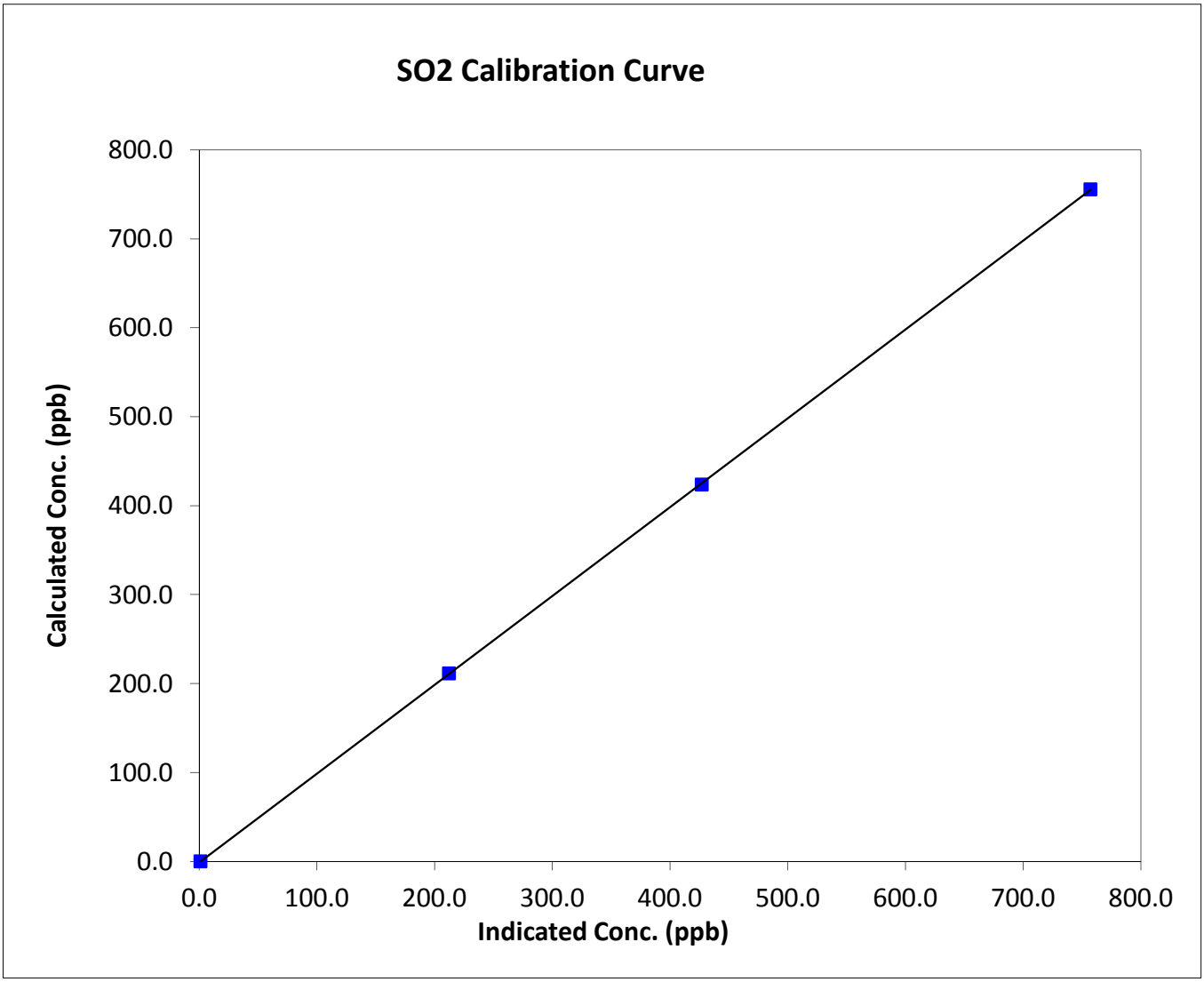
SO_2 Calibration Summary

Station Information

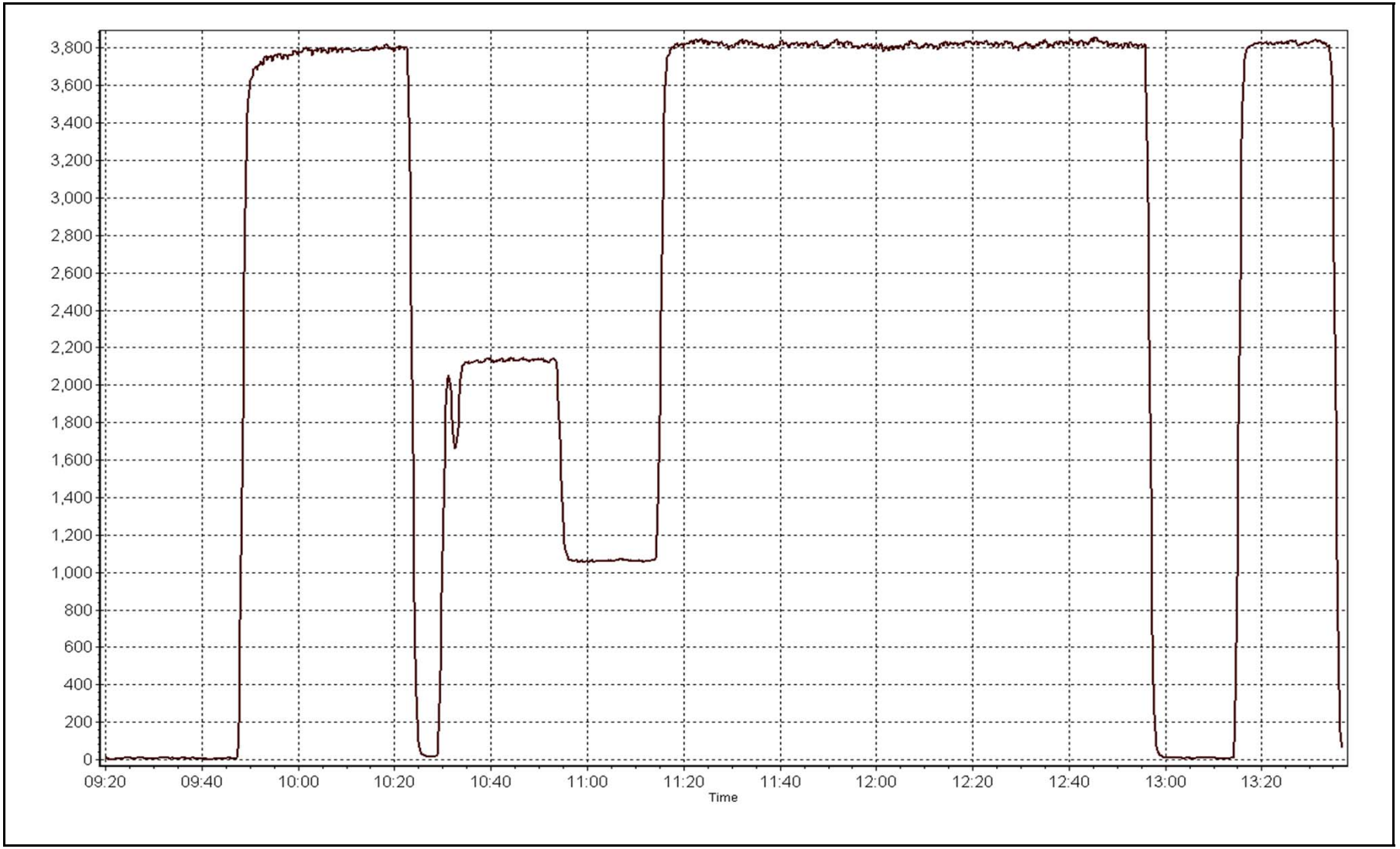
Calibration Date	April 9, 2014	Previous Calibration	March 10, 2014
Station Name	Bertha Ganter - Fort McKay	Station Number	AMS 1
Start Time (MST)	9:20	End Time (MST)	13:40
Analyzer make	Thermo 43C	Analyzer serial #	50911

Calibration Data

Calculated concentration (ppb) (Cc)	Indicated concentration (ppb) (Ic)	Correction factor (Cc/Ic)	Statistical Evaluation	
0.0	1.1	N/A	Correlation Coefficient	0.999990
755.7	757.2	0.9981		
423.8	427.0	0.9924	Slope	0.998894
211.4	212.2	0.9963		
			Intercept	-1.272917



SO2 Calibration Plot Date: April 9, 2014



Wood Buffalo Environmental Association

TRS Calibration Report

Station Information

Calibration Date	April 10, 2014	Previous Calibration	March 7, 2014
Station Name	Bertha Ganter - Fort McKay	Station Number	AMS 1
Reason:	Routine		
Start Time (MST)	10:20	End Time (MST)	12:55
Barometric Pressure	n/a mmHg	Station temp.	22 Deg C
Calibrator Make/Model	Sabio 4010	Serial number	11571008
Cal Gas Concentration	10.6 ppm H2S	Cal Gas Expiry Date	Dec 21 2012
Gas Cert Reference	LL27480	SO2 gas conc.	51.0 ppm SO2
DACS make/model	Campbell Scientific CR3000	DACS serial No.	2403
DACS voltage range	5000	DACS channel #	2

Analyzer Information

	Before	*After*		*Before*	*After*
Analyzer Range (ppb)	100	100	PMT voltage	-859	-859
Analyzer Range (input)	5000	5000	Lamp voltage	1183	1173
Calculated slope	0.994959	0.992978	Chamber temp.	45	45
Calculated intercept	0.004911	0.015244	Pressure	669.0	665.7
Analyzer Background	1.86	1.86	Flow	0.420	0.415
Analyzer Coefficient	1.021	1.021	Intensity	78	78
			Converter temp.	800	800

Analyzer make/model	Thermo 43i-TLE	Analyzer serial #	1218153461
Converter make/model	CDN-101	Converter serial #	305

Calibration Data

Set Point	Total flow rate (cc/min)	Source gas flow rate (cc/min)	Calculated concentration (ppb) (Cc)	Indicated concentration (ppb) (Ic)	Correction factor (Cc/Ic)
as found zero	6500	0.0	0.0	0.0	NA
as found span	6500	46.0	75.0	75.5	0.993
SO2 scrubber check	5500	22.8	211.4	0.6	NA
calibrator zero	6500	0.0	0.0	0.0	NA
high point	6500	46.0	75.0	75.5	0.993
second point	6500	24.6	40.1	40.4	0.993
third point	6500	12.3	20.1	20.2	0.995
calibrator zero	6500	0.0	0.0	0.0	NA
as left zero	6500	0.0	0.0	0.1	NA
as left span	6500	46.0	75.0	75.6	0.992
				Average Correction Factor	0.994

Corrected As found	75.5	Previous response	75.4	% change	-0.2%

Notes:

no adjustments required. Changed inlet filter

Calibration Performed By: Michael Martineau

Wood Buffalo Environmental Association

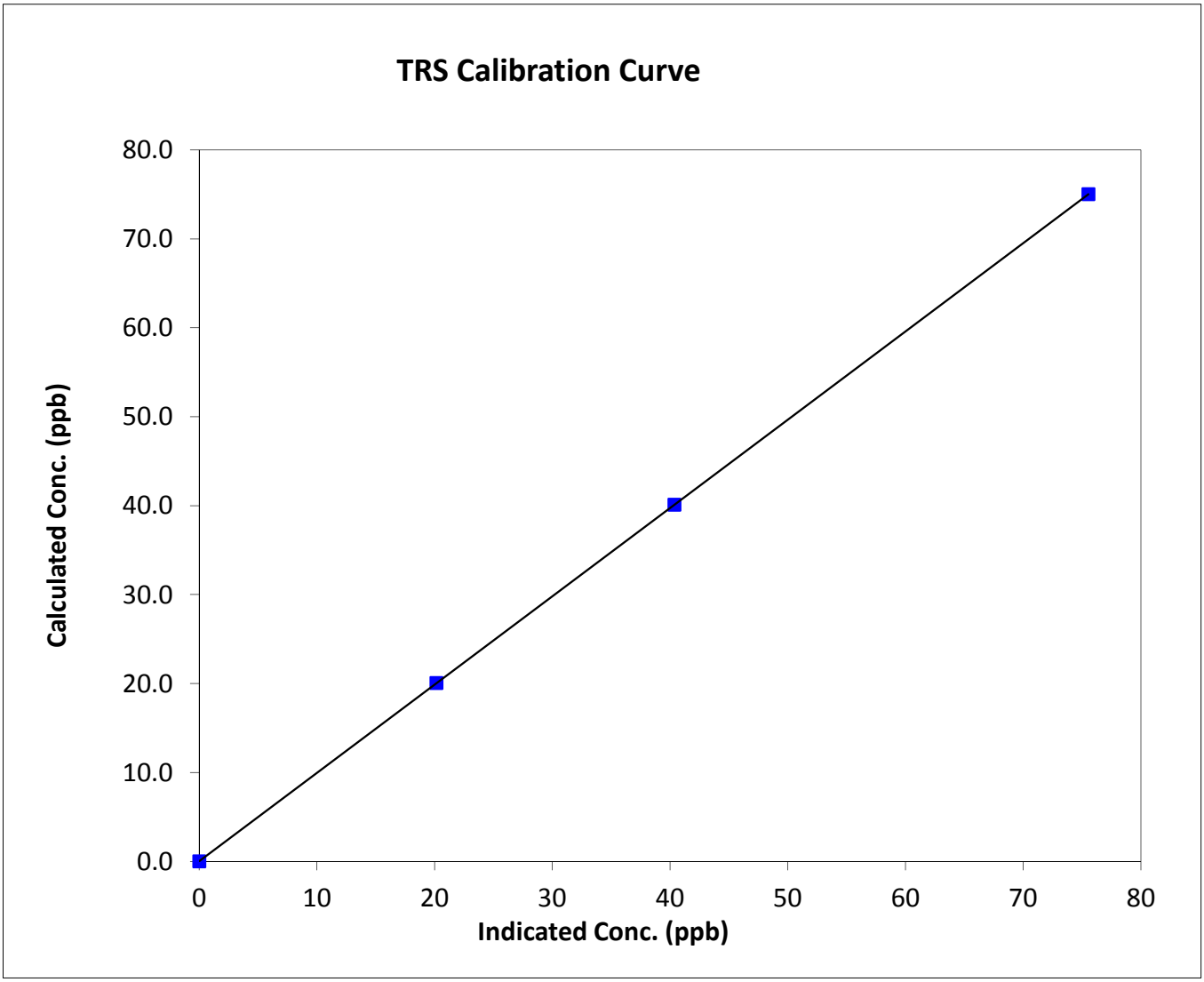
TRS Calibration Summary

Station Information

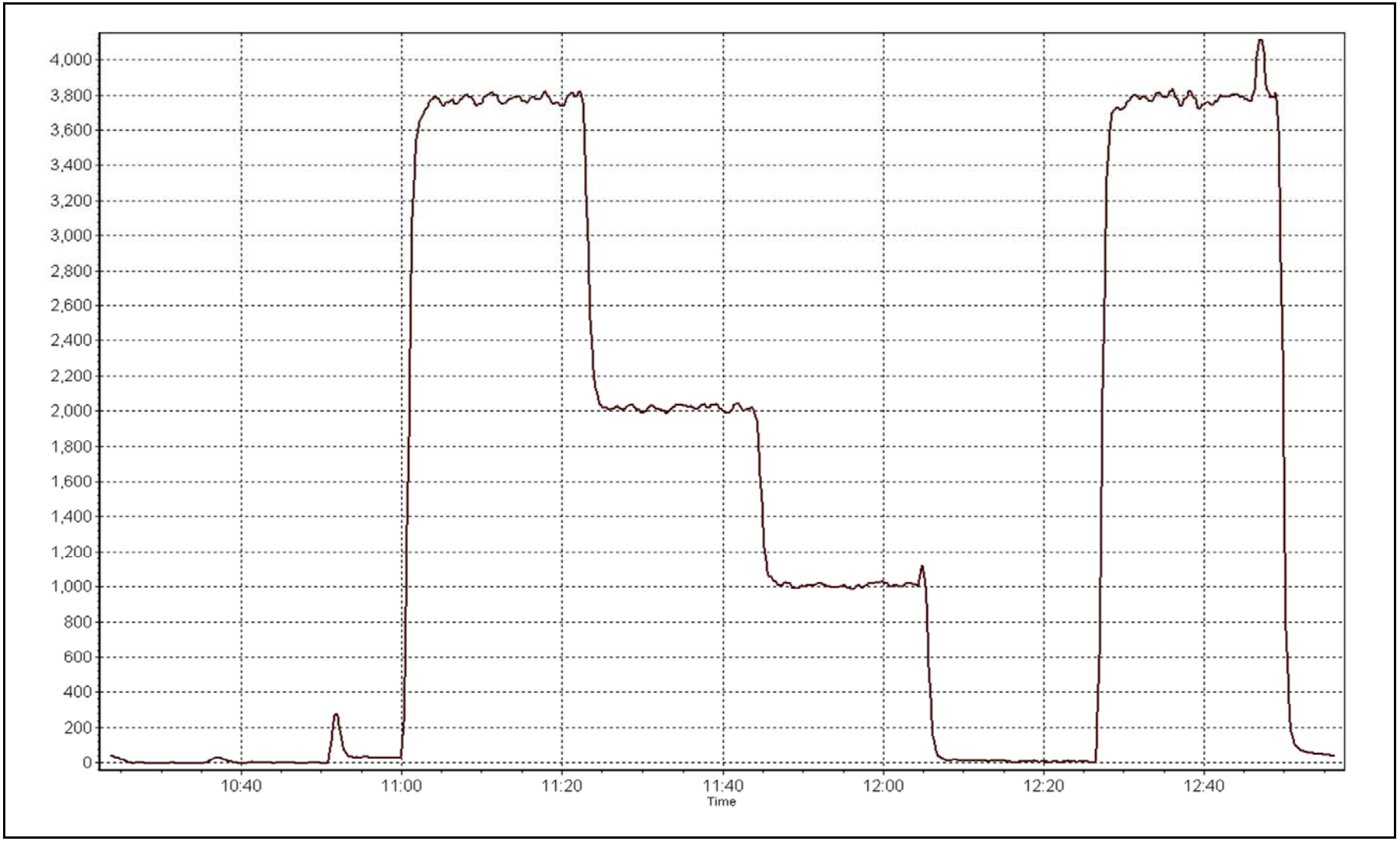
Calibration Date	April 10, 2014	Previous Calibration	March 7, 2014
Station Name	Bertha Ganter - Fort McKay	Station Number	AMS 1
Start Time (MST)	10:20	End Time (MST)	12:55
Analyzer make	Thermo 43i-TLE	Analyzer serial #	1218153461

Calibration Data

Calculated concentration (ppb) (Cc)	Indicated concentration (ppb) (Ic)	Correction factor (Cc/Ic)	Statistical Evaluation	
0.0	0.0	N/A	Correlation Coefficient	1.000000
75.0	75.5	0.9931		
40.1	40.4	0.9935	Slope	0.992978
20.1	20.2	0.9950		
			Intercept	0.015244



TRS Calibration Plot Date: April 10, 2014



Wood Buffalo Environmental Association

THC / NMHC Calibration Report

Station Information

Calibration Date	Wednesday, April 09, 2014	Prev Calibration	Monday, March 10, 2014
Station Name	Bertha Ganter - Fort McKay	Station Number	AMS 1
Reason:	Routine		
Start Time (MST)	9:20	End Time (MST)	13:40
Barometric Pressure	n/a mmHg	Station temp.	21 Deg C
Calibrator Model	Sabio 4010	Serial Number	11571108
Gas Cert Reference	LL107923	Cal Gas Expiry Date	May 29th 2014
CH4 Cal Gas Conc.	510.0 ppm	CH4 Equiv Conc.	1076.5 ppm
C3H8 Cal Gas Conc.	206.0 ppm		
DACS make/model	Campbell Scientific CR3000	DACS serial No.	2403

Analyzer Information

	Before	*After*		*Before*	*After*
THC Range (ppm)	50	50	Internal Temp	30.8	33.8
THC Range (input)	50	50	Flame Temp	405.0	405.0
NMHC Range (ppm)	50	50	Carrier Pressure	40.4	40.4
NMHC Range (input)	50	50	Fuel Pressure	42.1	42.2
THC Calc slope	0.991879	0.998549	Air Pressure	32.2	32.2
THC Calc intercept	0.032103	0.007926			
NMHC Calc slope	1.002182	1.011348			
NMHC Calc intercept	0.006604	-0.005904			

Analyzer make	Thermo 55i	Analyzer serial #	1331259520

THC Calibration Data

Set Point	Dilution air flow rate (cc/min)	Source gas flow rate (cc/min)	Calculated concentration THC (ppm) (Cc)	Indicated concentration (ppb) (Ic)	Correction factor (Cc/Ic)
as found zero	5500	0.0	0.00	0.00	N/A
as found span	5500	81.5	15.95	15.97	0.999
calibrator zero	5500	0.0	0.00	0.00	N/A
high point	5500	81.5	15.95	15.97	0.999
second point	5500	45.7	8.94	8.95	0.999
third point	5500	22.8	4.46	4.45	1.003
calibrator zero	5500	0.0	0.00	0.00	N/A
as left zero	5500	0.0	0.00	0.00	N/A
as left span	5500	81.5	15.95	16.05	0.994
				Average Correction Factor	1.000

Corrected As found	15.97	Previous response	16.05	% change	0.5%

Notes:

changed out nitrogen cylinder and inlet filter after as founds.

Calibration Performed By: Michael Martineau

Wood Buffalo Environmental Association

THC / NMHC Calibration Report

NMHC Calibration Data

Set Point	Dilution air flow rate (cc/min)	Source gas flow rate (cc/min)	Calculated concentration NMHC (ppm) (Cc)	Indicated concentration (ppb) (Ic)	Correction factor (Cc/Ic)
as found zero	5500	0	0.00	0.00	N/A
as found span	5500	81.5	8.39	8.30	1.011
calibrator zero	5500	0.0	0.00	0.00	N/A
high point	5500	81.5	8.39	8.30	1.011
second point	5500	45.7	4.71	4.67	1.008
third point	5500	22.8	2.35	2.33	1.008
calibrator zero	5500	0.0	0.00	0.00	N/A
as left zero	5500	0.0	0.00	0.00	N/A
as left span	5500	81.5	8.39	8.35	1.005
				Average Correction Factor	1.009

Corrected As found	8.30	Previous response	8.37	% change	0.8%

CH4 Calibration Data

Set Point	Dilution air flow rate (cc/min)	Source gas flow rate (cc/min)	Calculated concentration NMHC (ppm) (Cc)	Indicated concentration (ppb) (Ic)	Correction factor (Cc/Ic)
as found zero	5500	0	0.00	0.00	N/A
as found span	5500	81.5	7.56	7.66	0.987
calibrator zero	5500	0.0	0.00	0.00	N/A
high point	5500	81.5	7.56	7.66	0.987
second point	5500	45.7	4.24	4.28	0.990
third point	5500	22.8	2.11	2.12	0.997
calibrator zero	5500	0.0	0.00	0.00	N/A
as left zero	5500	0.0	0.00	0.00	N/A
as left span	5500	81.5	7.56	7.70	0.981
				Average Correction Factor	

Corrected As found	7.66	Previous response	7.68	% change	0.3%

Wood Buffalo Environmental Association

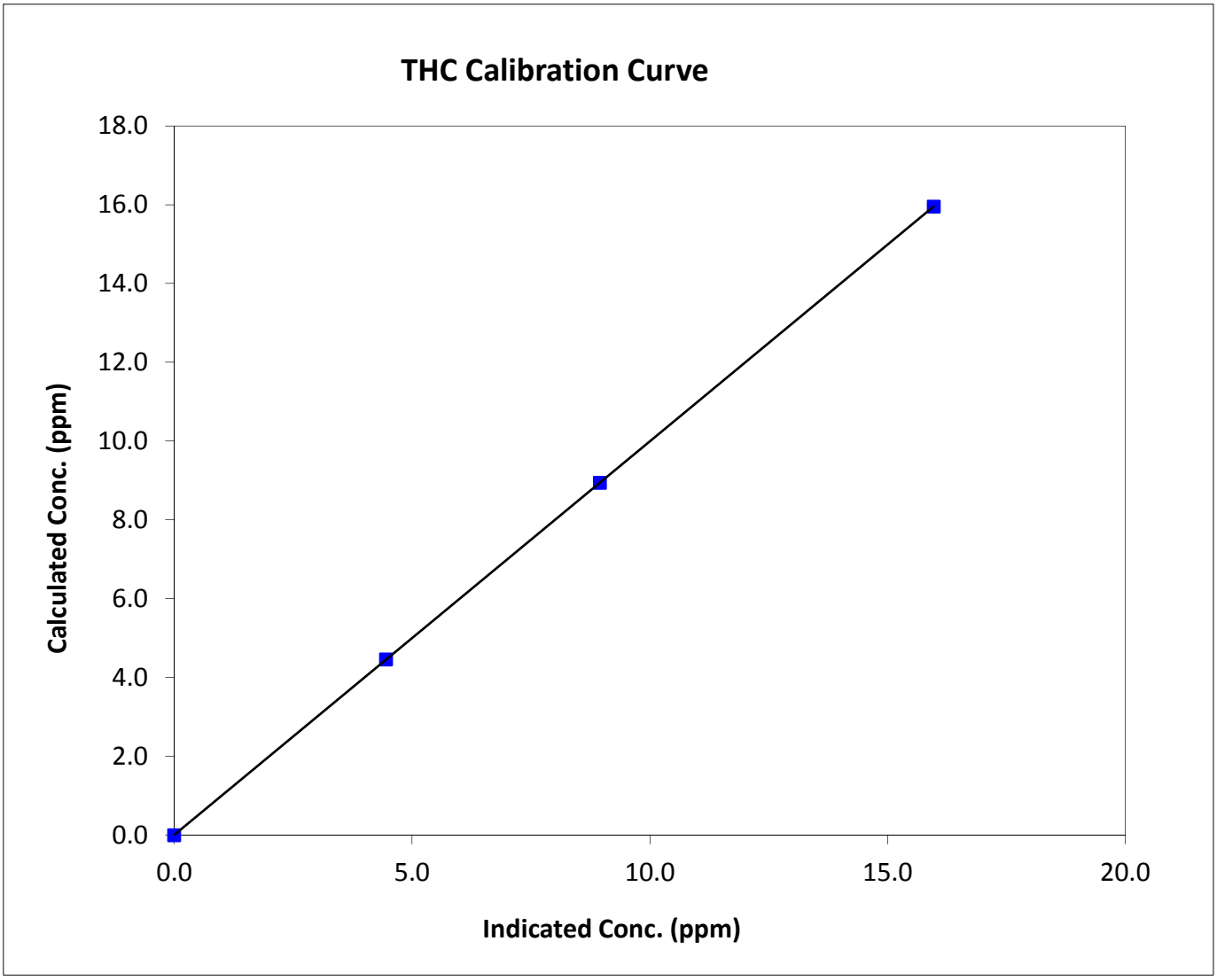
THC Calibration Summary

Station Information

Calibration Date	April 9, 2014	Previous Calibration	March 10, 2014
Station Name	Bertha Ganter - Fort McKay	Station Number	AMS 1
Start Time (MST)	9:20	End Time (MST)	13:40
Analyzer make	Thermo 55i	Analyzer serial #	1331259520

Calibration Data

Calculated concentration (ppm) (Cc)	Indicated concentration (ppm) (Ic)	Correction factor (Cc/Ic)	Statistical Evaluation	
0.00	0.00	N/A	Correlation Coefficient	0.999999
15.95	15.97	0.9989		
8.94	8.95	0.9994	Slope	0.998549
4.46	4.45	1.0028		
			Intercept	0.007926



Wood Buffalo Environmental Association

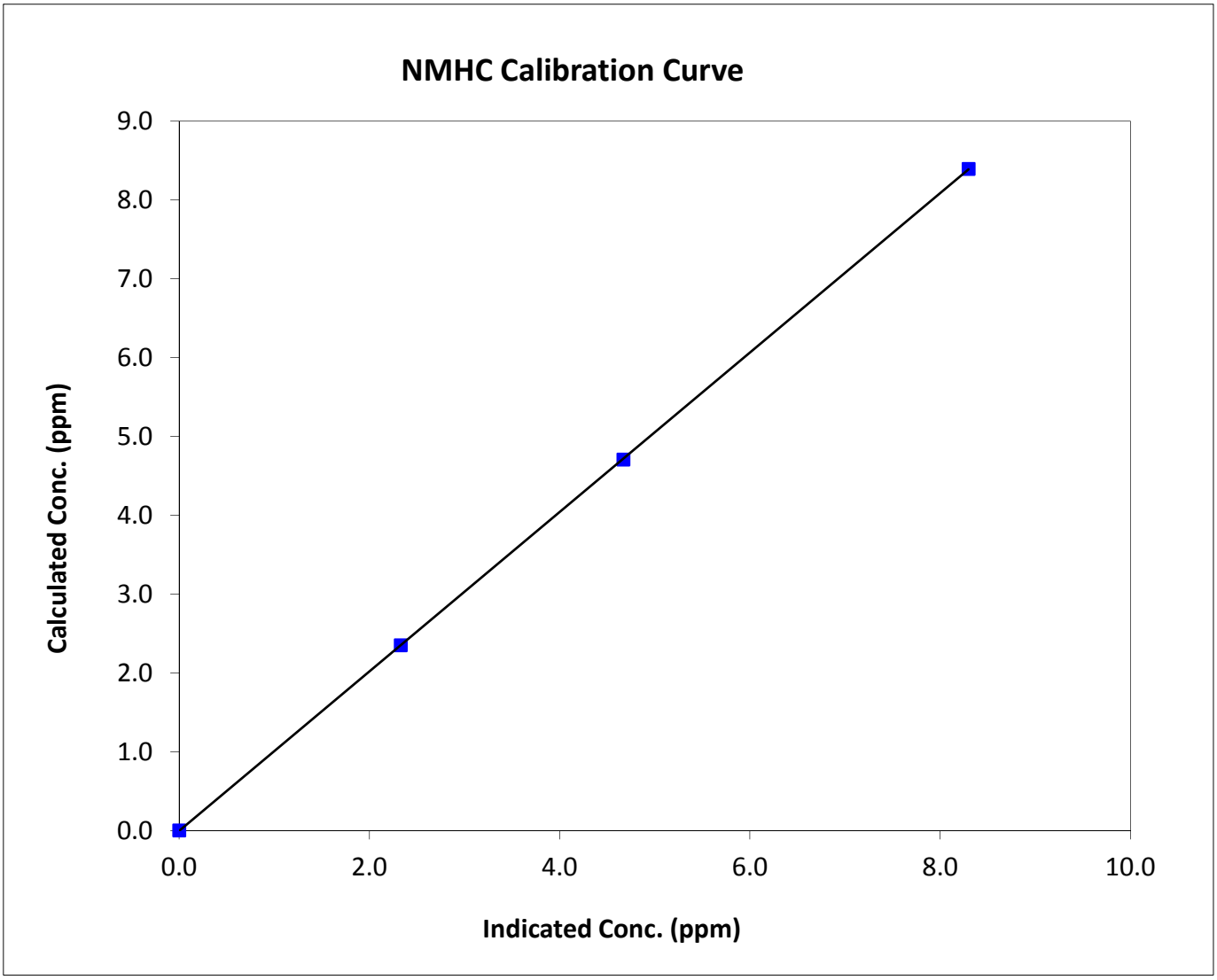
NMHC Calibration Summary

Station Information

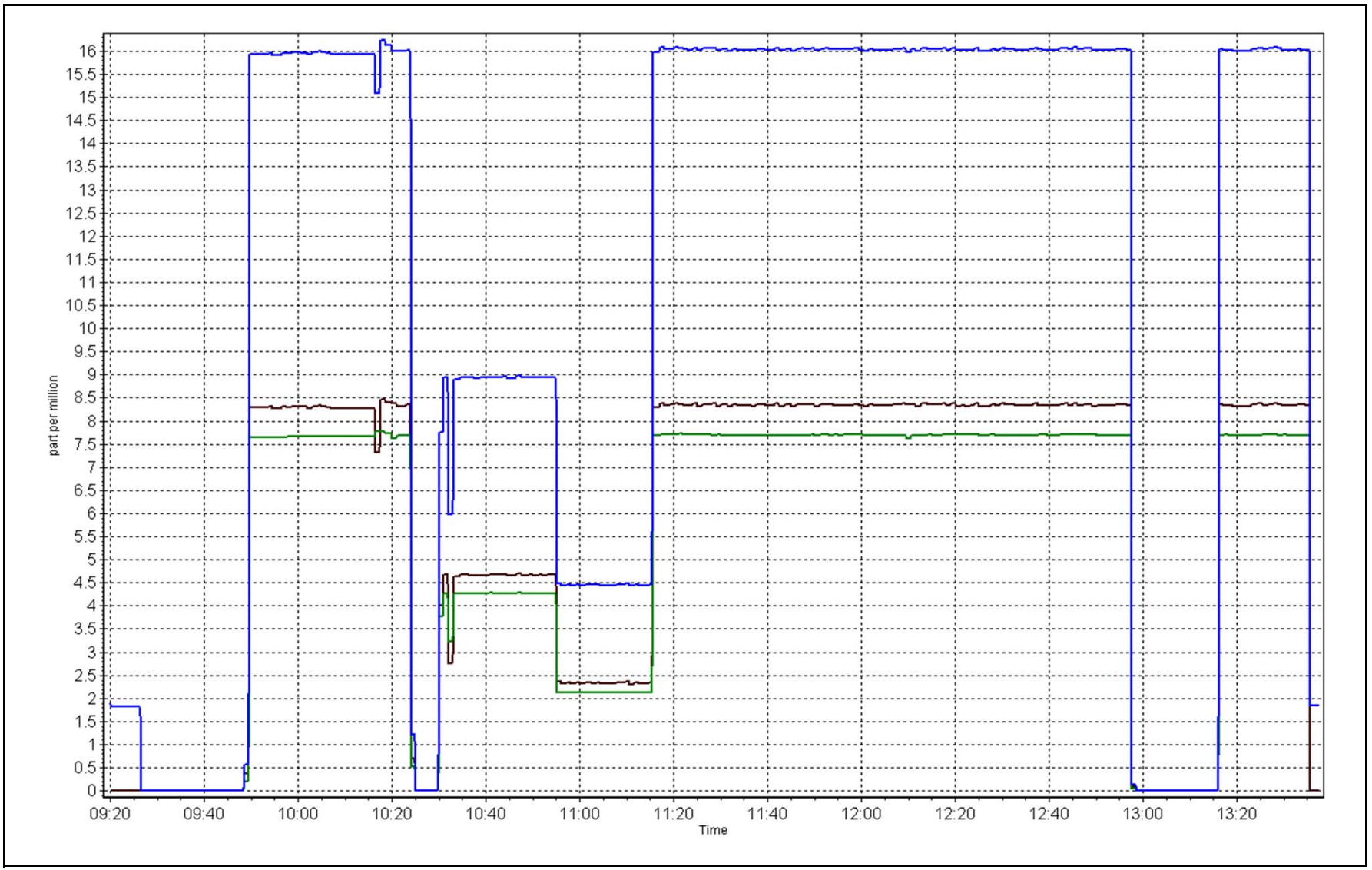
Calibration Date	April 9, 2014	Previous Calibration	March 10, 2014
Station Name	Bertha Ganter - Fort McKay	Station Number	AMS 1
Start Time (MST)	9:20	End Time (MST)	13:40
Analyzer make	Thermo 55i	Analyzer serial #	1331259520

Calibration Data

Calculated concentration (ppm) (Cc)	Indicated concentration (ppm) (Ic)	Correction factor (Cc/Ic)	Statistical Evaluation	
0.00	0.00	N/A	Correlation Coefficient	0.999995
8.39	8.30	1.0114		
4.71	4.67	1.0079	Slope	1.011348
2.35	2.33	1.0079		
			Intercept	-0.005904



THC/NMHC Calibration Plot Date: April 9, 2014



Wood Buffalo Environmental Association

O_3 Calibration Report

Station Information

Calibration Date	April 10, 2014	Previous Calibration	March 11, 2014
Station Name	Bertha Ganter - Fort McKay	Station Number	AMS 1
Reason:	Routine		
Start Time (MST)	8:25	End Time (MST)	10:55
Barometric Pressure	N/A mmHg	Station temp.	23 Deg C
Calibrator Make/Model	Sabio 4010	Serial Number	11571008
NO2 calibration used	Monday, March 10, 2014	Transfer Standard	na
DACS make/model	Campbell Scientific CR3000	DACS serial No.	2403
DACS voltage range	5000	DACS channel #	Diff 7

Analyzer Information

	Before	*After*		*Before*	*After*
Analyzer Range (ppb)	500	500	Bench temp.	29.0	27.8
Analyzer Range (input)	5000	5000	Lamp temp.	56.8	56.7
Calculated slope	1.018241	1.013059	Pressure	688.7	706.7
Calculated intercept	-1.255654	-2.113683	Flow cell A	0.869	0.877
Analyzer Background	-1.6	-1.5	Flow cell B	0.737	0.747
Analyzer Coefficient	1.127	1.127	Cell A Intensity	48400	48250
			Cell B Intensity	53300	53025

Analyzer make	Thermo 49C	Analyzer serial #	49C-60861-328

Calibration Data

Set Point	Dilution air flow rate (cc/min)	Calibrator Lamp Intensity (mA)	Calculated concentration (ppb) (Cc)	Indicated concentration (ppb) (Ic)	Correction factor (Cc/Ic)
as found zero	5500	0.00	0.0	0.6	N/A
as found span	5000	0.98	378.8	374.2	1.012
calibrator zero	5500	0.00	0.0	0.6	N/A
high point	5000	1.10	378.8	374.7	1.011
second point	5000	0.60	192.6	194.4	0.991
third point	5000	0.35	100.6	102.0	0.986
calibrator zero	5500	0.00	0.0	0.6	N/A
as left zero	N/A	0.00	0.0	2.0	N/A
as left span	N/A	Level 1	N/A	247.1	N/A
				Average Correction Factor	0.996

Corrected As found	373.6	Previous response	373.3	% change	-0.1%

Notes:

no adjustments required. Changed inlet filter after as founds

Calibration Performed By: Michael Martineau

Wood Buffalo Environmental Association

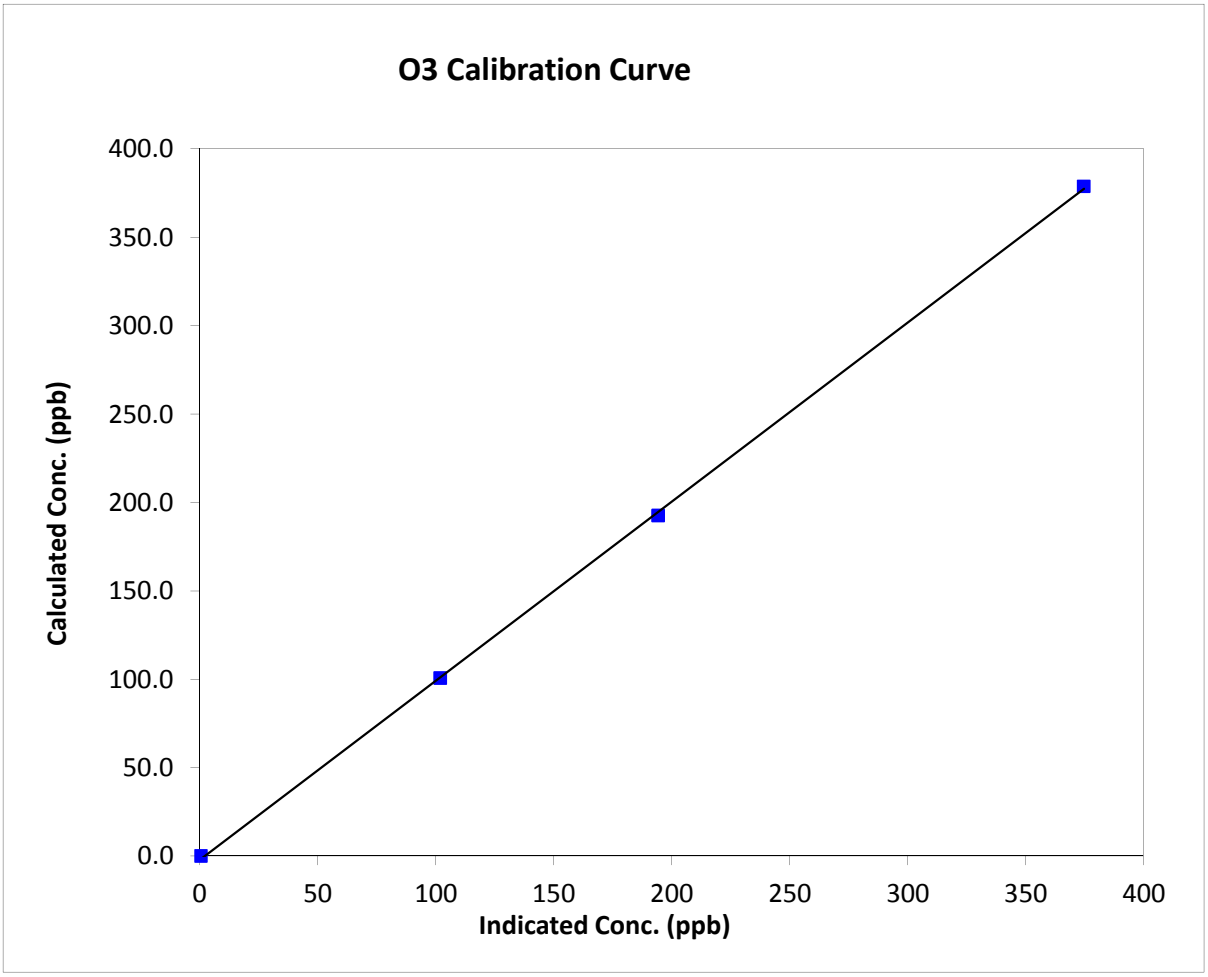
O_3 Calibration Summary

Station Information

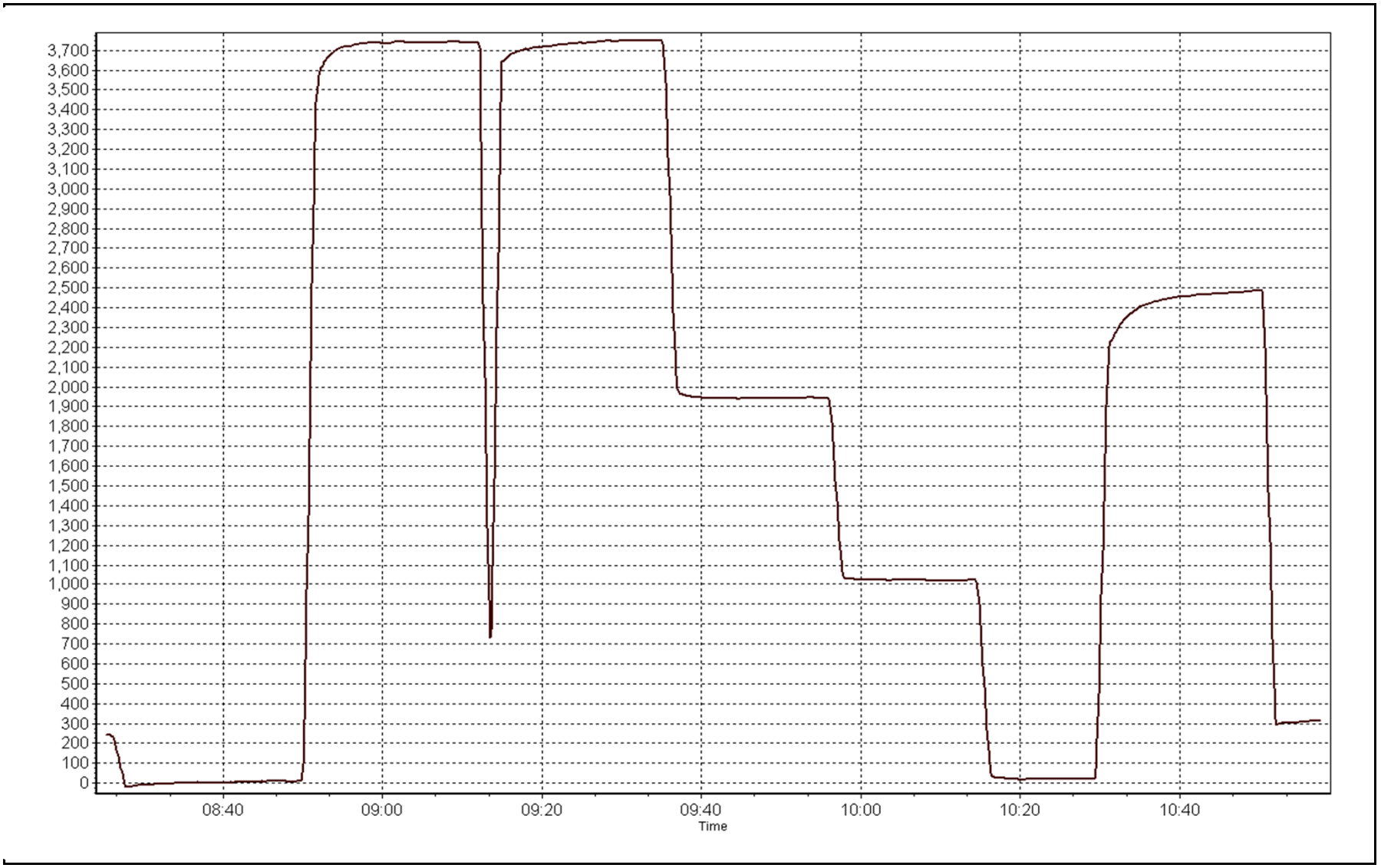
Calibration Date	Thursday, April 10, 2014	Previous Calibration	March 11, 2014
Station Name	Bertha Ganter - Fort McKay	Station Number	AMS 1
Start Time (MST)	8:25	End Time (MST)	10:55
Analyzer make	Thermo 49C	Analyzer serial #	49C-60861-328

Calibration Data

Calculated concentration (ppb) (Cc)	Indicated concentration (ppb) (Ic)	Correction factor (Cc/Ic)	Statistical Evaluation	
0.0	0.6	N/A	Correlation Coefficient	0.999879
378.8	374.7	1.0109		
192.6	194.4	0.9907	Slope	1.013059
100.6	102.0	0.9863		
			Intercept	-2.113683



O3 Calibration Plot Date: April 10, 2014



Wood Buffalo Environmental Association

NO_X-NO-NO_2 Calibration Report

Station Information

Calibration Date	April 9, 2014	Previous Calibration	March 10, 2014
Station Name	Bertha Ganter - Fort McKay	Station Number	AMS 1
Reason:	Routine		
Start Time (MST)	9:20	End Time (MST)	13:40
Barometric Pressure	n/a mmHg	Station Temperature	21.0 Deg C
Calibrator	SABIO 4010	Serial Number	11571108
NO Cal Gas Conc	50.6 ppm	Cal Gas Expiry Date	May 29th 2014
NOx Cal Gas Conc	50.6 ppm	Cal Gas Serial #	LL107923

DACS Information

DACS make & model	Campbell Scientific CR3000	DACS serial No.	2403

Parameter		NOx	NO	NO2
MV conversion	Analyzer Range (ppb)	5000	5000	5000
	Analyzer Range (mv)	5000	5000	5000
Before	Data Slope	0.998075	1.000229	0.999473
	Data Offset	1.092278	0.546978	0.496709
After	Data Slope	1.007124	1.008879	1.000824
	Data Offset	0.476982	-0.013047	-0.215957
Channel #				
Voltage Range		0-5000mv	0-5000mv	0-5000mv

Analyzer Information

Analyzer make/model	Thermo 42i NO/NO2/NOx Analyzer	Analyzer serial #	1218153357

Test Point	before		after	
Concentration range	0-1000	ppb	0-1000	ppb
NO coefficient	0.866	ppb	0.866	ppb
NOX coefficient	0.999	ppb	0.999	ppb
NO2 coefficient	1.000	ppb	1.000	ppb
NO bkgrnd	5.8		5.9	
NOX bkgrnd	6.5		6.5	
Nt coefficient				
Chamber Temp	50.4	Deg C	50.3	Deg C
Moly Temp	322.6	Deg C	322.6	Deg C
PMT Temp	-3.0	Deg C	-2.8	Deg C
O3 flow	ok	ccm	ok	ccm
R Cell Press	200.7	mmHg	198.1	mmHg
Sample Flow	0.500	ccm	0.482	ccm

Notes:

no adjustments required; changed sample inlet filter.

Wood Buffalo Environmental Association

NO_X-NO-NO_2 Calibration Report

Station Information

Calibration Date: April 9, 2014 Station Number: AMS 1

Calibration Data

Set Point	Total flow rate (ccm)	Source gas flow rate (ccm)	Calculated NOx conc (ppb)	Calculated NO conc (ppb)	Calculated NO2 conc (ppb)	Indicated NOx conc (ppb)	Indicated NO conc (ppb)	Indicated NO2 conc (ppb)	NOx Correction factor	NO Correction factor
as found zero	5500	0.0	0.0	0.0	0.0	-0.5	0.0	-0.5	N/A	N/A
as found span	5500	81.5	749.8	749.8	0.0	743.8	742.9	0.9	1.0081	1.0093
calibrator zero	5500	0.0	0.0	0.0	0.0	-0.5	0.0	-0.5	N/A	N/A
high point	5500	81.5	749.8	749.8	0.0	743.8	742.9	0.9	1.0081	1.0093
second point	5500	45.7	420.4	420.4	0.0	417.6	417.5	0.1	1.0068	1.0072
third point	5500	22.8	209.8	209.8	0.0	207.5	207.7	-0.1	1.0107	1.0102
calibrator zero	5500	0.0	0.0	0.0	0.0	-0.5	0.0	-0.5	N/A	N/A
as left zero	5500	0.0	0.0	0.0	0.0	-0.1	0.1	-0.2	N/A	N/A
as left span	5500	81.5	749.8	368.2	381.6	753.8	372.9	380.9	0.9946	0.9875
								Average Correction Factor	1.0085	1.0089

Corrcted As found NO_X= 744.3 NO= 742.9 Percent Change NO_X= 0.8% NO= 0.8%

Previous Response NO_X= 750.2 NO= 749.1

GPT Calibration Data

Dilution Flow 5500 ccm Source Gas Flow 81.50 ccm

O3 Setpoint (ppb)	Indicated NO high point (ppb)	Indicated NO drop conc (ppb)	Calculated NO2 conc (ppb)	Indicated NOx conc (ppb)	Indicated NO conc (ppb)	Indicated NO2 conc (ppb)	NOx Correction factor	NO Correction factor	NO2 Correction factor	Converter Efficiency
Cal zero			0.0			-0.5			N/A	
1st NO2 (300)	N/A	368.2	378.8	746.6	368.2	378.4	0.9896	1.0000	1.0013	99.9%
2nd NO2 (200)	N/A	554.5	192.6	747.5	554.5	193.0	0.9885	1.0000	0.9979	100.2%
3rd NO2 (100)	N/A	646.5	100.6	748.0	646.5	101.5	0.9878	1.0000	0.9912	100.9%
4th NO2 (0)	747.1	N/A	0.4	747.4	747.1	0.4	0.9885	1.0000	N/A	N/A
					Average Correction Factor		0.9886	1.0000	0.9968	100.3%

Calibration Performed By: Michael Martineau

Wood Buffalo Environmental Association

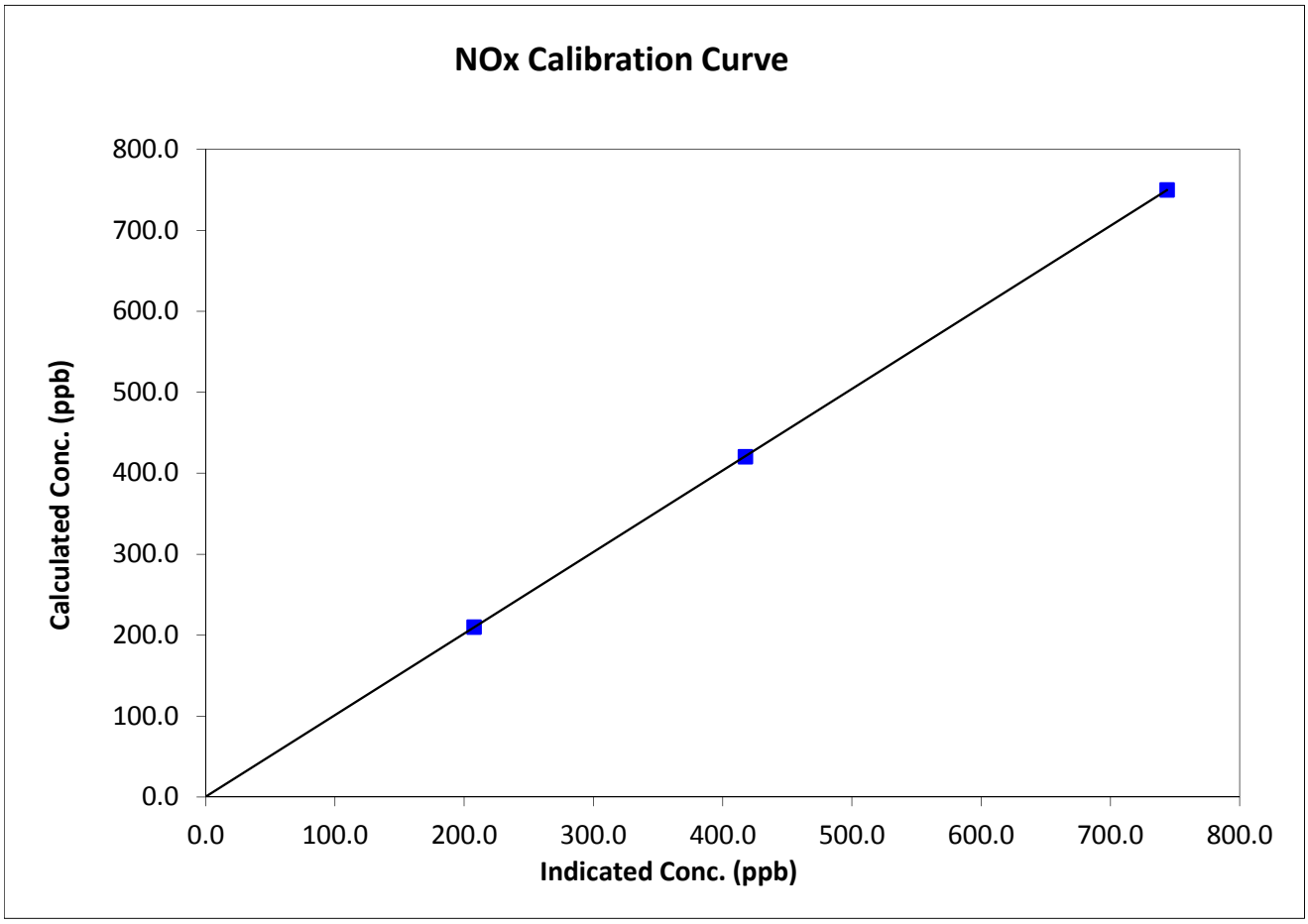
NO_X Calibration Summary

Station Information

Calibration Date	April 9, 2014	Previous Calibration	March 10, 2014
Station Name	Bertha Ganter - Fort McKay	Station Number	AMS 1
Start Time (MST)	9:20	End Time (MST)	13:40
Analyzer make	Thermo 42i NO/NO2/NOx Analyzer	Analyzer serial #	1218153357

Calibration Information

Calculated conc (ppb) (Cc)	Indicated concentration (ppb) (Ic)	Correction factor (Cc/Ic)	Statistical Evaluation	
0.0	-0.5	N/A	Correlation Coefficient	0.999999
749.8	743.8	1.0081		
420.4	417.6	1.0068	Slope	1.007124
209.8	207.5	1.0107		
0.0	-0.5	0.0000	Intercept	0.476982



Wood Buffalo Environmental Association

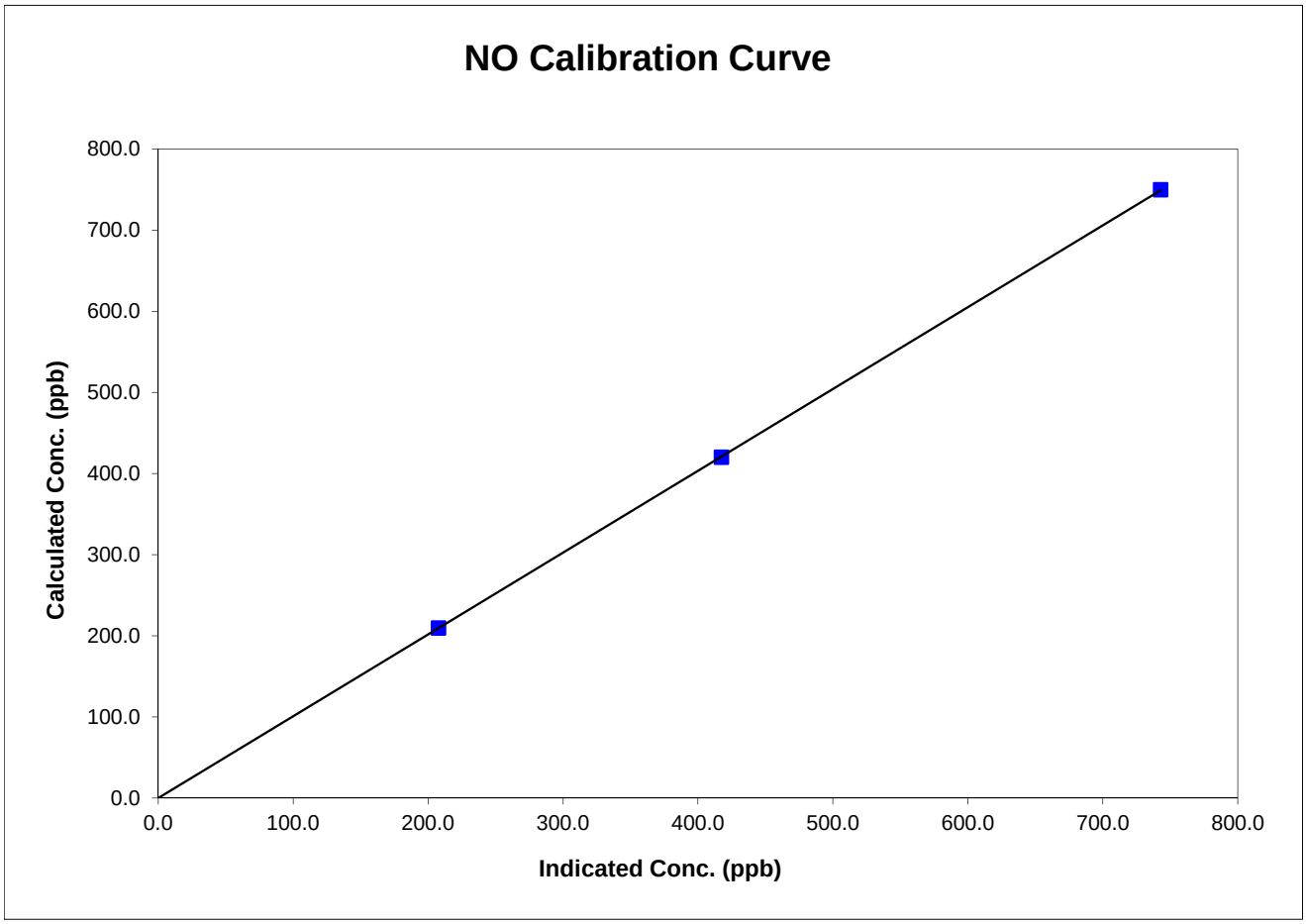
NO Calibration Summary

Station Information

Calibration Date	April 9, 2014	Previous Calibration	March 10, 2014
Station Name	Bertha Ganter - Fort McKay	Station Number	AMS 1
Start Time (MST)	9:20	End Time (MST)	13:40
Analyzer make	Thermo 42i NO/NO2/NOx Analyzer	Analyzer serial #	1218153357

Calibration Information

Calculated conc (ppb) (Cc)	Indicated concentration (ppb) (Ic)	Correction factor (Cc/Ic)	Statistical Evaluation	
0.0	0.0	N/A	Correlation Coefficient	0.999998
749.8	742.9	1.0093		
420.4	417.5	1.0072	Slope	1.008879
209.8	207.7	1.0102		
0.0	0.0	0.0000	Intercept	-0.013047



Wood Buffalo Environmental Association

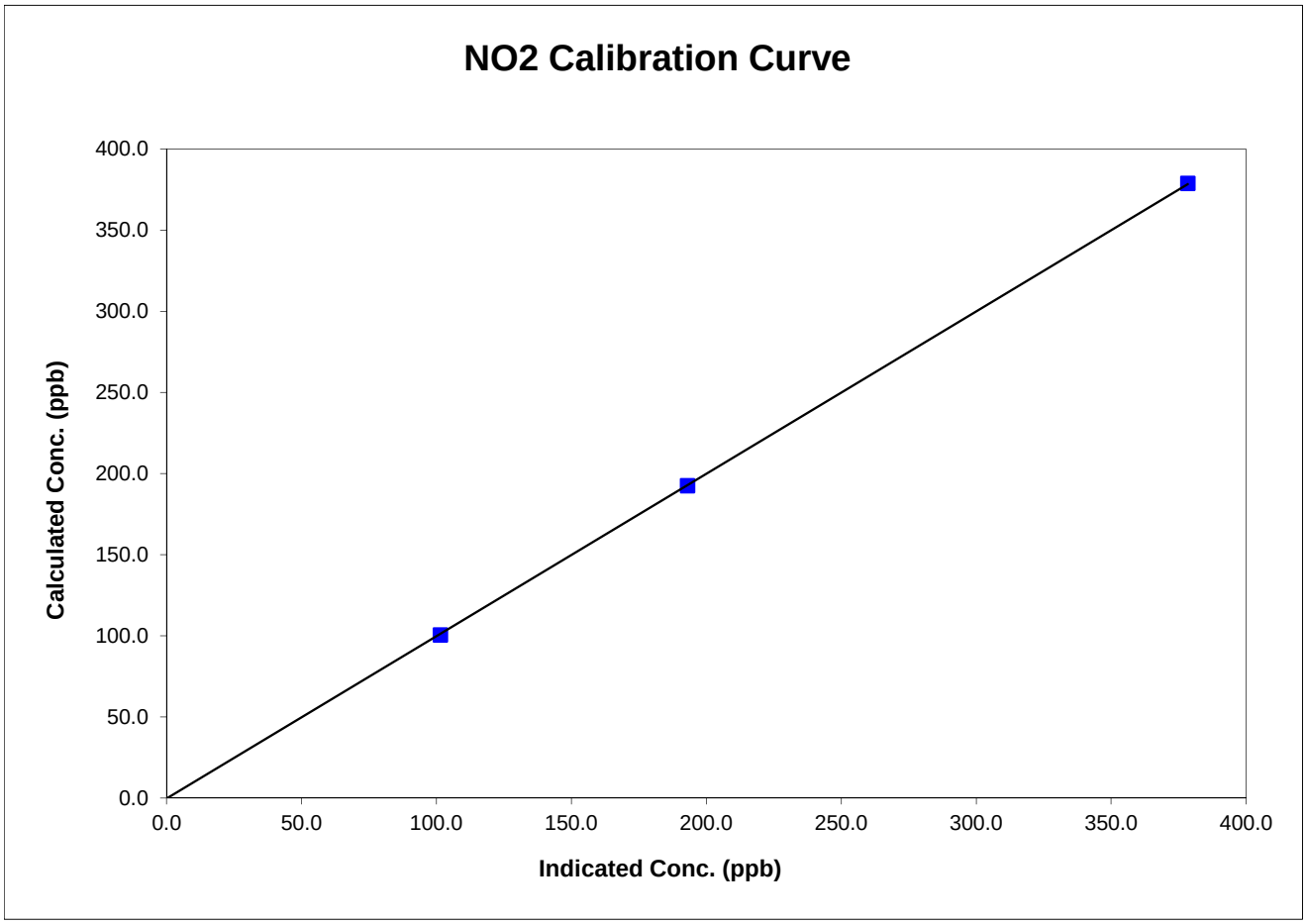
NO_2 Calibration Summary

Station Information

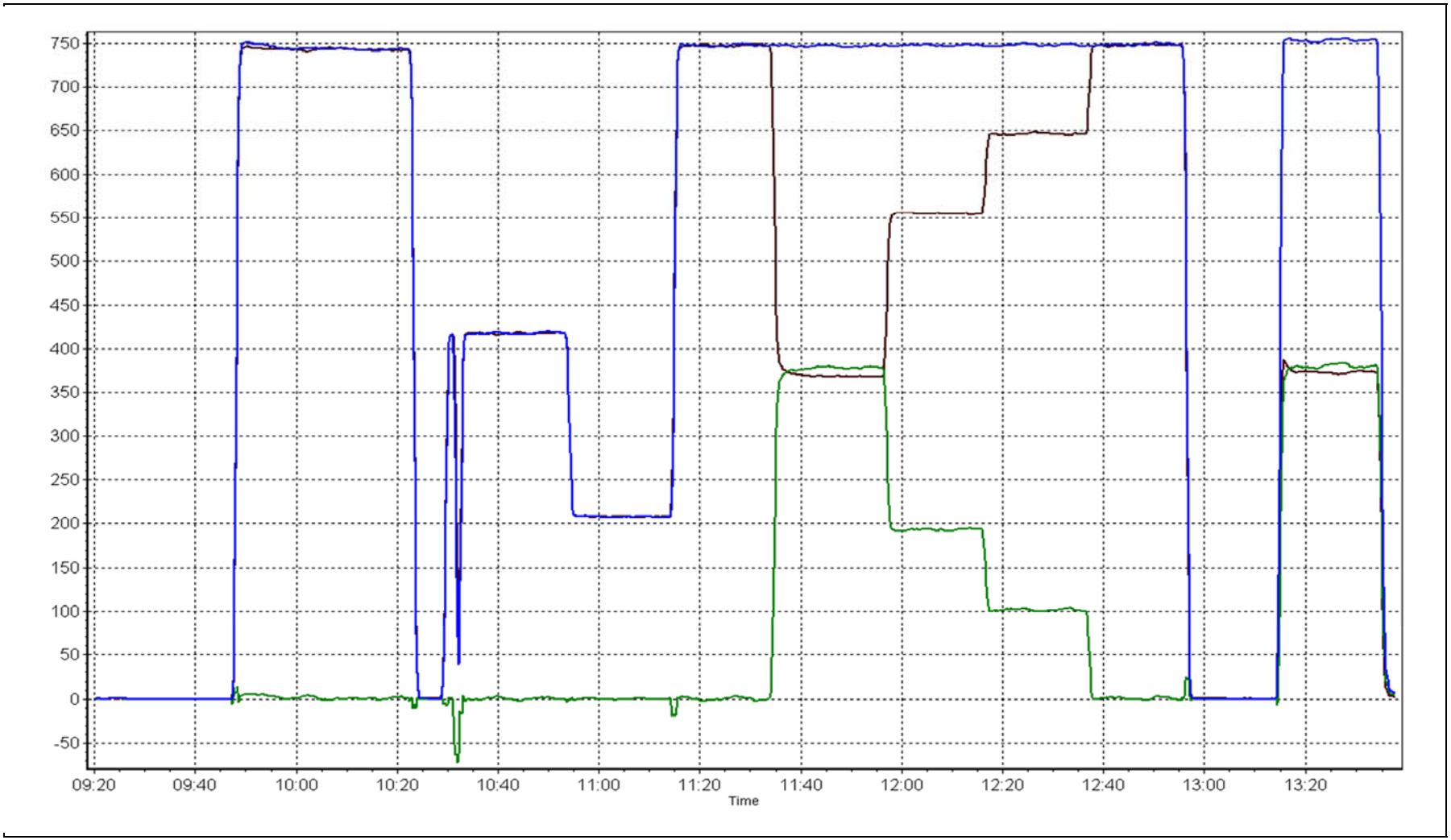
Calibration Date	April 9, 2014	Previous Calibration	March 10, 2014
Station Number	Bertha Ganter - Fort McKay	Station Number	AMS 1
Start Time (MST)	9:20	End Time (MST)	13:40
Analyzer make	Thermo 42i NO/NO2/NOx Analyzer	Analyzer serial #	1218153357

Calibration Information

Calculated conc (ppb) (Cc)	Indicated concentration (ppb) (Ic)	Correction factor (Cc/Ic)	Statistical Evaluation	
0.0	-0.5	N/A	Correlation Coefficient	0.999982
378.8	378.4	1.0013		
192.6	193.0	0.9979	Slope	1.000824
100.6	101.5	0.9912		
			Intercept	-0.215957



NOx, NO & NO_2 Calibration Plot Date: April 9, 2014



Wood Buffalo Environmental Association

Nt-NO_X-NH_3 Calibration Report

Station Information

Calibration Date	April 15, 2014	Previous Calibration	March 11, 2014
Station Name	Bertha Ganter - Fort McKay	Station Number	AMS 1
Reason:	Routine		
Start Time (MST)	9:50	End Time (MST)	13:45
Barometric Pressure	739 mmHg	Station Temperature	21.0 Deg C
Calibrator	Sabio 4010	Serial Number	224632
NH3 Cal Gas Conc	192 ppm	Cal Gas Expiry Date	March 3rd 2012
NOx Cal Gas Conc	50.6 ppm	Cal Gas Serial #	LL156612

DACS Information

DACS make & model	Campbell Scientific CR3000	DACS serial No.	2403

Parameter		Nt	NOx	NH3
MV conversion	Analyzer Range (ppb)	2500	1000	2500
	Analyzer Range (mv)	5000	5000	5000
Before	Data Slope	1.046226		1.016432
	Data Offset	-6.636119		-4.673016
After	Data Slope	1.003909		1.010901
	Data Offset	-8.483341		-4.491262
Channel #		NA	6	7
Voltage Range		NA	0-5000mv	0-5000mv

Analyzer Information

Analyzer make/model	API T201	Analyzer serial #	152
		Converter serial #	147

Test Point	before		after	
Concentration range	0-2500	ppb	0-2500	ppb
Nt coefficient	1.170	ppb	1.170	ppb
NOX coefficient	1.174	ppb	1.174	ppb
NH3 coefficient	1.000		1.000	
NO coefficient	1.171		1.171	
NO2 coefficient	1.000	ppb	1.000	ppb
No bkgrnd	-0.3		-0.3	
Nt bkgrnd	0.0		0.0	
NOX bkgrnd	-0.2		-0.2	
NH3 conv temp	825	DegC	825	Deg C
Chamber Temp	49.9	Deg C	49.9	Deg C
Moly Temp	314.9	Deg C	315.4	Deg C
PMT Temp	7.0	Deg C	7.0	Deg C
O3 flow	85.0	ccm	85.0	ccm
R Cell Press	4.0	mmHg	4.0	mmHg
PMT Voltage		v		v
Sample Flow	550 - 520	ccm	550 - 520	ccm

Notes:

no adjustments required. Changed inlet filter.

Wood Buffalo Environmental Association

$Nt\text{-}NO_x\text{-}NH_3$ Calibration Report

Station Information

Calibration Date: April 15, 2014 Station Number: AMS 1

Calibration Data

Set Point	Total flow rate (ccm)	Source gas flow rate (ccm)	Calculated Nt conc (ppb)	Calculated NOx conc (ppb)	Calculated NH3 conc (ppb)	Indicated Nt conc (ppb)	Indicated NOx conc (ppb)	Indicated NH3 conc (ppb)	Nt Correction factor	NH3 Correction factor
as found zero	5000	0.0	0.0	0.0	0.0	3.3	3.7	-1.2	NA	NA
as found NO	5500	81.5	749.8	749.8	NA	739.5	741.4	-4.7	1.014	NA
calibrator zero	5000	0.0	0.0	0.0	-0.5	3.3	3.7	-1.2	NA	NA
high NO point	5500	81.5	749.8	749.8	NA	739.5	741.4	-4.7	1.014	NA
NO/O3 point	5500	81.5	749.8	749.8	NA	740.2	741.2	-2.5	1.013	NA
as found NH3	6500	54.2	1601.0	NA	1601.0	1599.0	6.0	1584.1	1.001	1.011
first NH3	6500	54.2	1601.0	NA	1601.0	1599.0	6.0	1584.1	1.001	1.011
second NH3	6500	27.1	800.5	NA	800.5	813.0	4.0	803.0	0.985	0.997
third NH3	6500	13.5	398.8	NA	398.8	407.9	2.6	401.4	0.978	0.994
as left zero										
as left span										
								Average Correction Factor	1.0135	1.0003

Corrected As found Nt = 736.3 ppb
NH3 = 1585.3 ppb

Previous response Nt = 723.3 ppb
NH3 = 1579.8 ppb

Nt percent change -1.8%
NH3 percent change -0.3%

Converter efficiency 100.0%

Calibration Performed By: Michael Martineau

Wood Buffalo Environmental Association

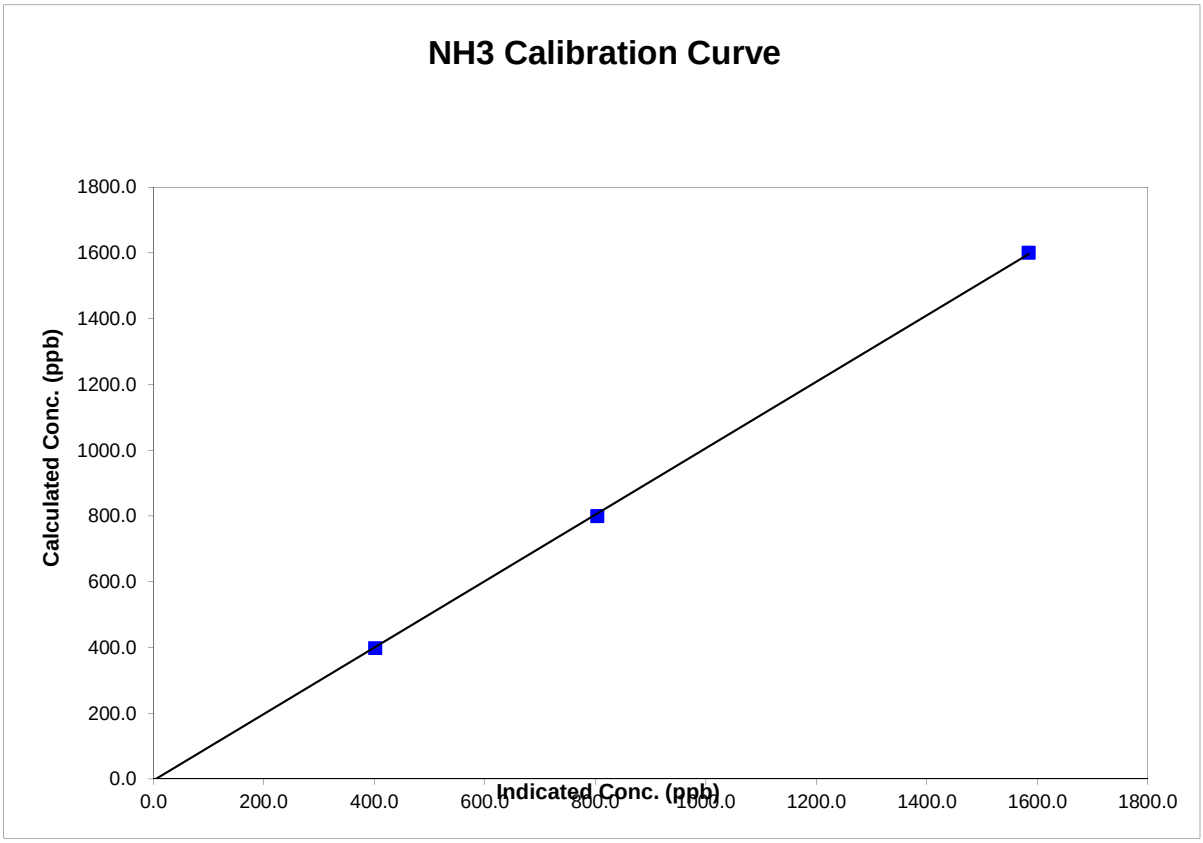
NH3 Calibration Summary

Station Information

Calibration Date	April 15, 2014	Previous Calibration	March 11, 2014
Station Number	Bertha Ganter - Fort McKay	Station Number	AMS 1
Start Time (MST)	9:50	End Time (MST)	13:45
Analyzer make	API T201	Analyzer serial #	152

NH3 Calibration Information

Calculated conc (ppb) (Cc)	Indicated concentration (ppb) (Ic)	Correction factor (Cc/Ic)	Statistical Evaluation	
-0.5	-1.2	N/A	Correlation Coefficient	0.999932
1601.0	1584.1	1.0106		
800.5	803.0	0.9969	Slope	1.010901
398.8	401.4	0.9935		
			Intercept	-4.491262



Wood Buffalo Environmental Association

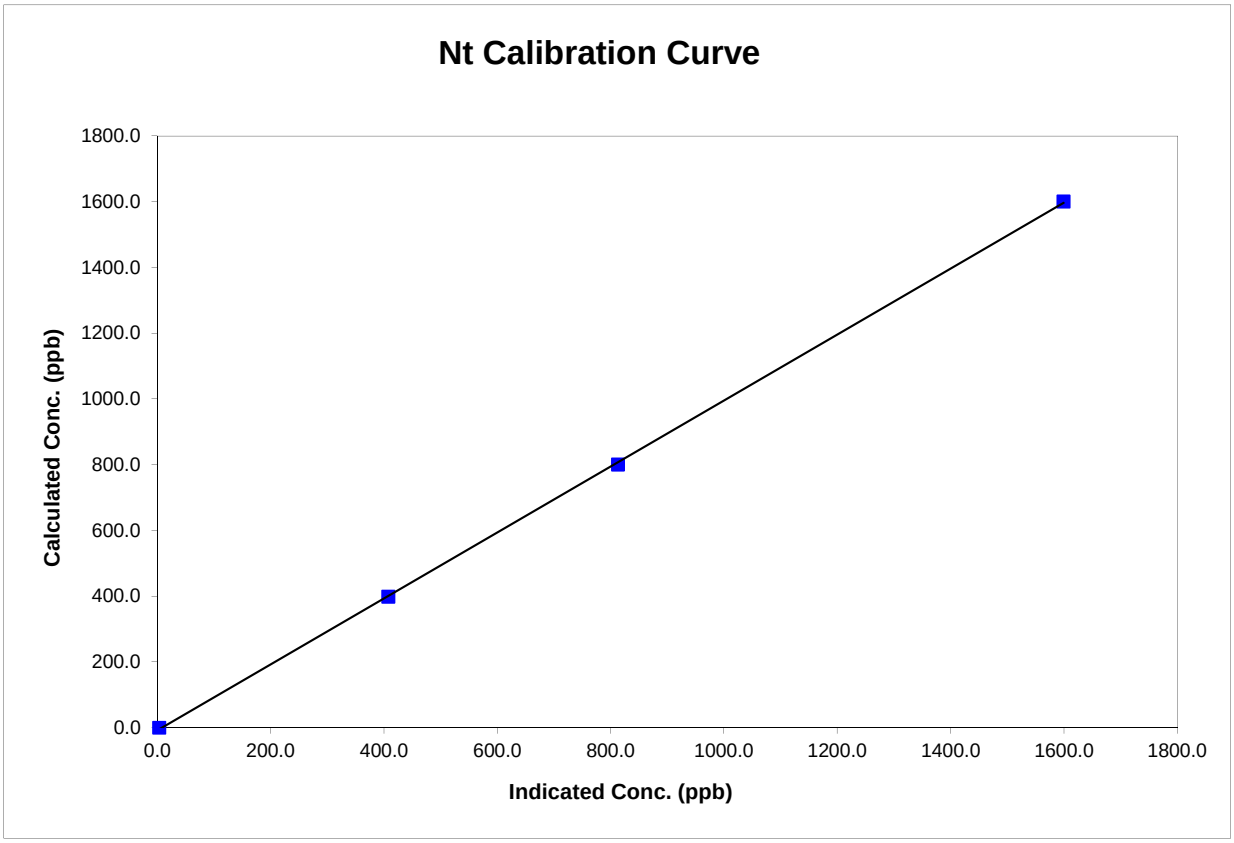
Nt Calibration Summary

Station Information

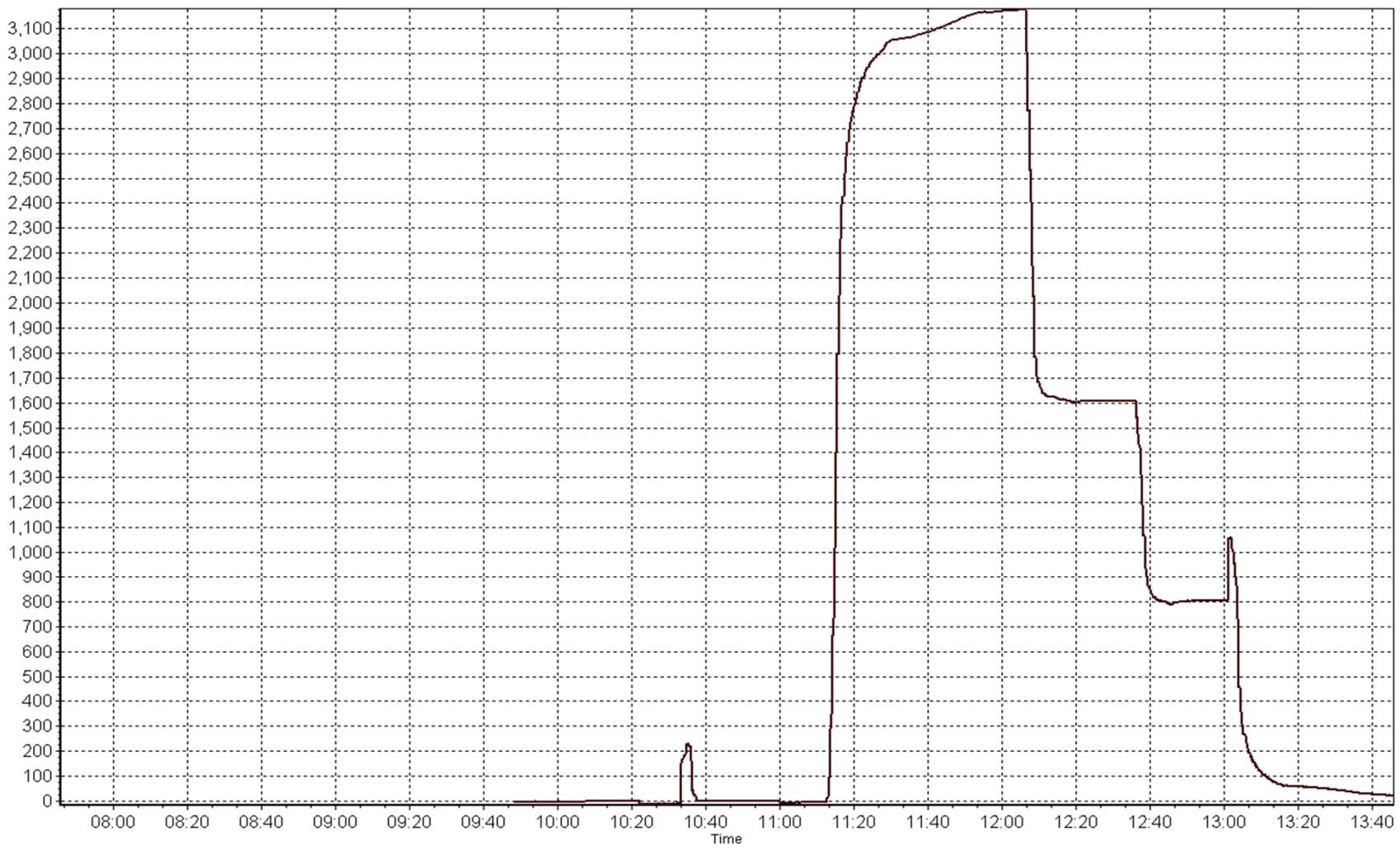
Calibration Date	April 15, 2014	Previous Calibration	March 11, 2014
Station Number	Bertha Ganter - Fort McKay	Station Number	AMS 1
Start Time (MST)	9:50	End Time (MST)	13:45
Analyzer make	API T201	Analyzer serial #	152

Nt (NH_3) Calibration Information

Calculated conc (ppb) (Cc)	Indicated concentration (ppb) (Ic)	Correction factor (Cc/Ic)	Statistical Evaluation	
0.0	3.3	N/A	Correlation Coefficient	0.999928
1601.0	1599.0	1.0012		
800.5	813.0	0.9846	Slope	1.003909
398.8	407.9	0.9777		
			Intercept	-8.483341



NH_3 Calibration Plot Date: April 15, 2014



WOOD BUFFALO ENVIRONMENTAL ASSOCIATION

CONTINUOUS AMBIENT AIR QUALITY
MONITORING PROGRAM
MONTHLY REPORT

AMS 2
MILDRED LAKE
APRIL 2014

Operations and Data Collection by:
Wood Buffalo Environmental Association
Fort McMurray, Alberta

QA/QC, Data Validation and Reporting by:
Aurora Atmospherics Inc.
Calgary, Alberta

May 30, 2014

WOOD BUFFALO ENVIRONMENTAL ASSOCIATION - MILDRED LAKE (AMS 2)
APRIL 2014

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	100.00	79	0	17	0
H2S (ppb) Average	685	34	35	99.86	3	0	1	0
THC (ppm) Average	687	33	33	100.00	4.4	-	2.7	-
Temperature (C) Average	720	0	0	100.00	21.5	-	13.2	-
Wind Speed 10 m (km/h) Average	720	0	0	100.00	26	-	-	-
Wind Direction 10 m (deg) Average	720	0	0	100.00	-	-	-	-

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

WOOD BUFFALO ENVIRONMENTAL ASSOCIATION - MILDRED LAKE (AMS 2)
APRIL 2014

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	3.1	8	-	0	0	0	0	2	9	79
H2S (ppb) Average	685	0.4	0	-	0	0	0	0	0	1	3
THC (ppm) Average	687	2.25	0.3	-	2	2.1	2.1	2.2	2.3	2.6	4.4
Temperature 2 m (C) Average	720	1.6	7.5	-	-19.2	-8.1	-3.4	2	6.1	11.1	21.5
Wind Speed 10 m (km/h) Average	720	11	5	-	0	5	7	11	14	18	26
Wind Direction 10 m (deg) Average	720	-	-	-	-	-	-	-	-	-	-

WOOD BUFFALO ENVIRONMENTAL ASSOCIATION - MILDRED LAKE (AMS 2)
APRIL 2014

OPERATIONAL NOTES

Parameter	Period Start	Period End	Duration (Hours)	Notes
H2S	17 Apr 2014 11:00	17 Apr 2014 11:00	1	Maintenance - sample manifold cleaned

Wood Buffalo Environmental Association

Summary of Hour Averages

Sulphur Dioxide (SO_2) - ppb

Mildred Lake - April 2014

Number of Exceedences (AAAQO): 1-hr: 0 24-hr: 0
Maximum Value: 79 ppb on Apr 28 12:00 Maximum Daily Average: 17.5 ppb on Apr 28

Minimum Value: 0 ppb on Apr 2 04:00 Minimum Daily Average: 0.0 ppb on Apr 15
Maximum Diurnal Average: 7.2 ppb at hour 13 Minimum Diurnal Average: 1.1 ppb at hour 6
Monthly Average: 3.1 ppb Percentiles: $P_1 = 0$ $P_{10} = 0$ $Q_1 = 0$ Median = 0 $Q_3 = 2$ $P_{90} = 9$ $P_{99} = 44$

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-Apr	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
2-Apr	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
3-Apr	0	Z	0	0	0	0	0	0	0	0	13	11	14	27	12	7	6	6	0	12	46	10	4	6	7.5	46
4-Apr	5	Z	6	5	44	7	6	3	2	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	3.6	44
5-Apr	0	Z	0	0	0	0	0	0	0	1	0	1	1	1	9	18	11	1	0	0	0	0	0	0	1.9	18
6-Apr	0	Z	0	0	0	0	0	0	1	2	0	0	0	2	0	0	3	11	2	1	1	0	0	0	1.1	11
7-Apr	0	Z	0	0	0	0	0	0	0	4	4	8	22	18	5	2	0	0	0	0	0	0	0	0	2.8	22
8-Apr	0	Z	0	1	0	0	0	0	0	0	0	0	16	29	28	22	3	0	9	21	15	13	8	5	7.5	29
9-Apr	15	Z	10	30	19	3	4	19	1	0	0	0	0	0	0	0	0	0	0	0	0	3	5	0	4.8	30
10-Apr	0	Z	0	0	0	0	0	0	0	0	0	2	1	1	0	0	0	0	0	0	0	0	0	0	0.3	2
11-Apr	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
12-Apr	0	Z	0	0	0	0	0	0	3	5	5	8	23	7	0	0	0	0	0	0	0	0	0	0	2.2	23
13-Apr	0	Z	0	0	0	0	0	0	0	0	0	0	0	2	6	14	16	15	9	5	6	5	1	0	3.5	16
14-Apr	1	Z	3	3	5	5	3	3	1	1	0	1	1	1	1	1	2	7	7	3	0	1	0	0	2.2	7
15-Apr	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
16-Apr	0	Z	0	0	0	0	0	0	0	0	1	4	16	2	2	3	4	1	0	0	0	3	12	11	2.6	16
17-Apr	14	Z	3	1	5	8	29	22	C	C	C	C	6	3	1	4	1	6	4	1	0	7	9	4	6.7	29
18-Apr	5	Z	0	0	0	0	0	0	0	1	0	0	0	0	1	0	1	0	0	0	3	2	0	1	0.6	5
19-Apr	1	Z	0	0	0	0	0	1	1	1	1	14	41	20	11	20	6	1	0	0	5	10	7	10	6.5	41
20-Apr	2	Z	0	0	0	2	2	2	1	6	5	2	1	0	0	0	0	0	0	0	5	2	0	1	1.2	6
21-Apr	0	Z	0	1	7	3	2	4	1	1	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0.9	7
22-Apr	0	Z	0	0	0	0	0	0	6	1	0	0	1	0	0	0	0	0	0	0	0	0	0	0	0.4	6
23-Apr	0	Z	0	0	0	0	0	0	0	0	0	0	0	0	0	1	1	0	0	0	0	0	0	0	0.1	1
24-Apr	0	Z	0	0	0	0	0	0	0	0	1	2	9	2	5	6	1	0	1	0	0	0	0	0	1.2	9
25-Apr	0	Z	1	0	0	1	21	26	71	22	1	0	1	1	12	46	11	0	1	1	4	1	0	0	9.6	71
26-Apr	0	Z	1	2	2	2	0	0	0	0	0	1	7	2	6	8	19	7	9	5	7	7	5	6	4.2	19
27-Apr	17	Z	11	1	0	0	0	0	0	8	2	1	1	1	1	0	1	1	1	0	1	2	2	1	2.2	17
28-Apr	0	Z	1	2	1	0	0	0	0	3	20	79	54	38	39	39	78	15	15	5	7	2	2	1	17.5	79
29-Apr	3	Z	1	1	1	0	0	1	2	5	3	0	0	0	0	2	2	0	0	0	0	0	0	0	0.9	5
30-Apr	0	Z	0	0	1	1	1	2	3	7	3	0	0	0	0	1	0	0	0	0	0	0	0	15	1.5	15
	2.2	--	1.3	1.6	2.9	1.1	2.3	2.7	3.2	2.3	2.1	4.7	7.2	5.3	4.7	6.4	5.5	2.4	2.0	1.9	3.3	2.3	1.9	2.0	Diurnal Average	
	17	--	11	30	44	8	29	26	71	22	20	79	54	38	39	46	78	15	15	21	46	13	12	15	Diurnal Maximum	

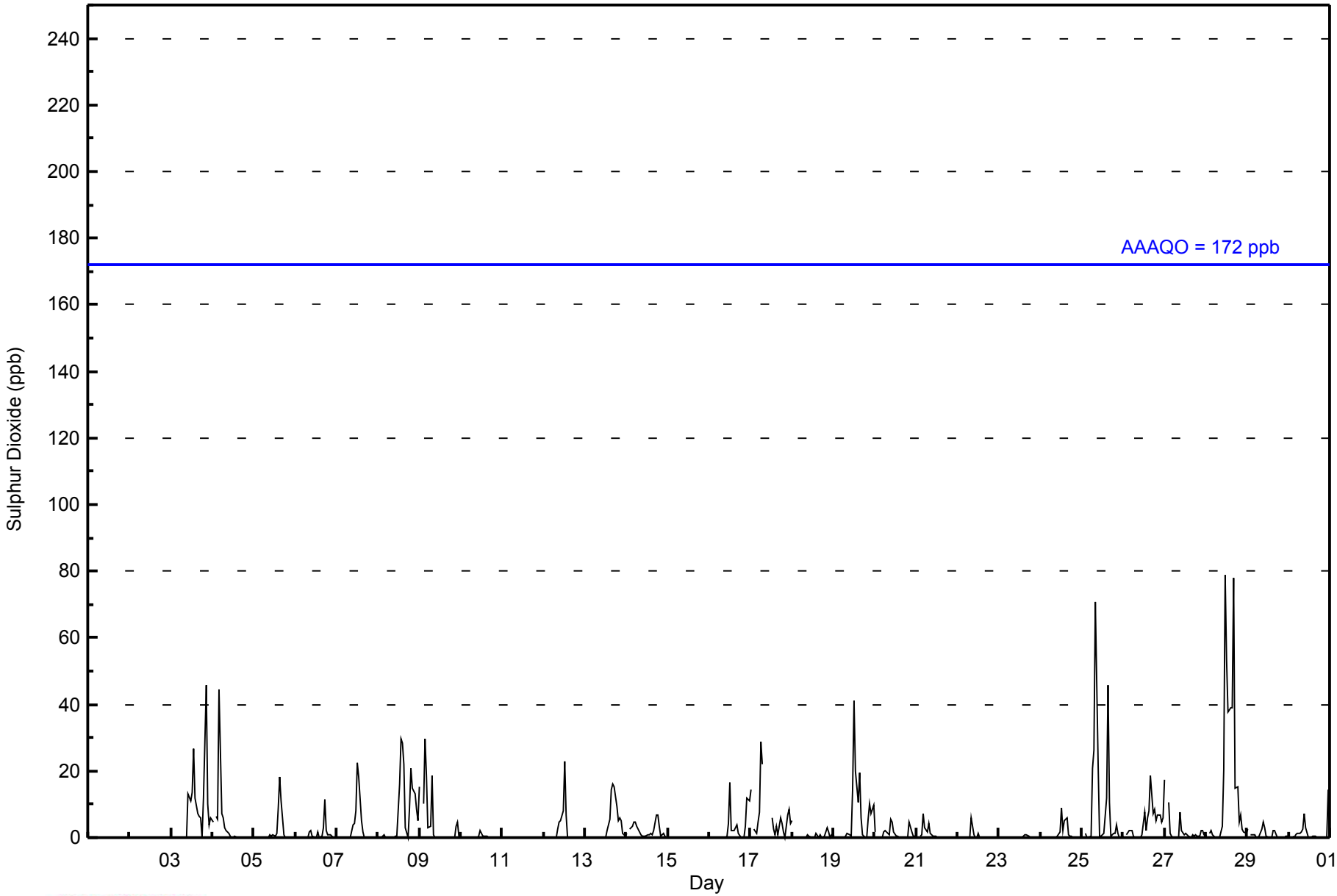
Z - zerospan C - Calibration
Alberta Ambient Air Quality Objectives (AAAQO): 1-hr 172 ppb 24-hr 48 ppb

WBEA NETWORK

Hourly Averages

Sulphur Dioxide (SO_2) - ppb

Mildred Lake - April 2014



AURORA ATMOSPHERICS INC.

Concentration Ranges (ppb)	Number of Hours	%	Cumulative %
0 - 10	627	91.40	91.40
11 - 20	35	5.10	96.50
21 - 60	21	3.06	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: 686

Total Number of Hours: 720

WBEA NETWORK

Frequency Distribution

Sulphur Dioxide (SO_2) - ppb

Mildred Lake - April 2014

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	102	40	16	41	36	63	92	36	38	31	19	7	9	23	14	627
11 - 20	0	1	1	0	0	1	8	9	4	0	3	1	6	1	0	0	35
21 - 60	0	0	0	0	0	0	2	6	5	2	0	1	4	1	0	0	21
61 - 110	0	0	0	0	0	0	1	2	0	0	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	60	103	41	16	41	37	74	109	45	40	34	21	17	11	23	14	686

Total Number of Valid Hours: 686

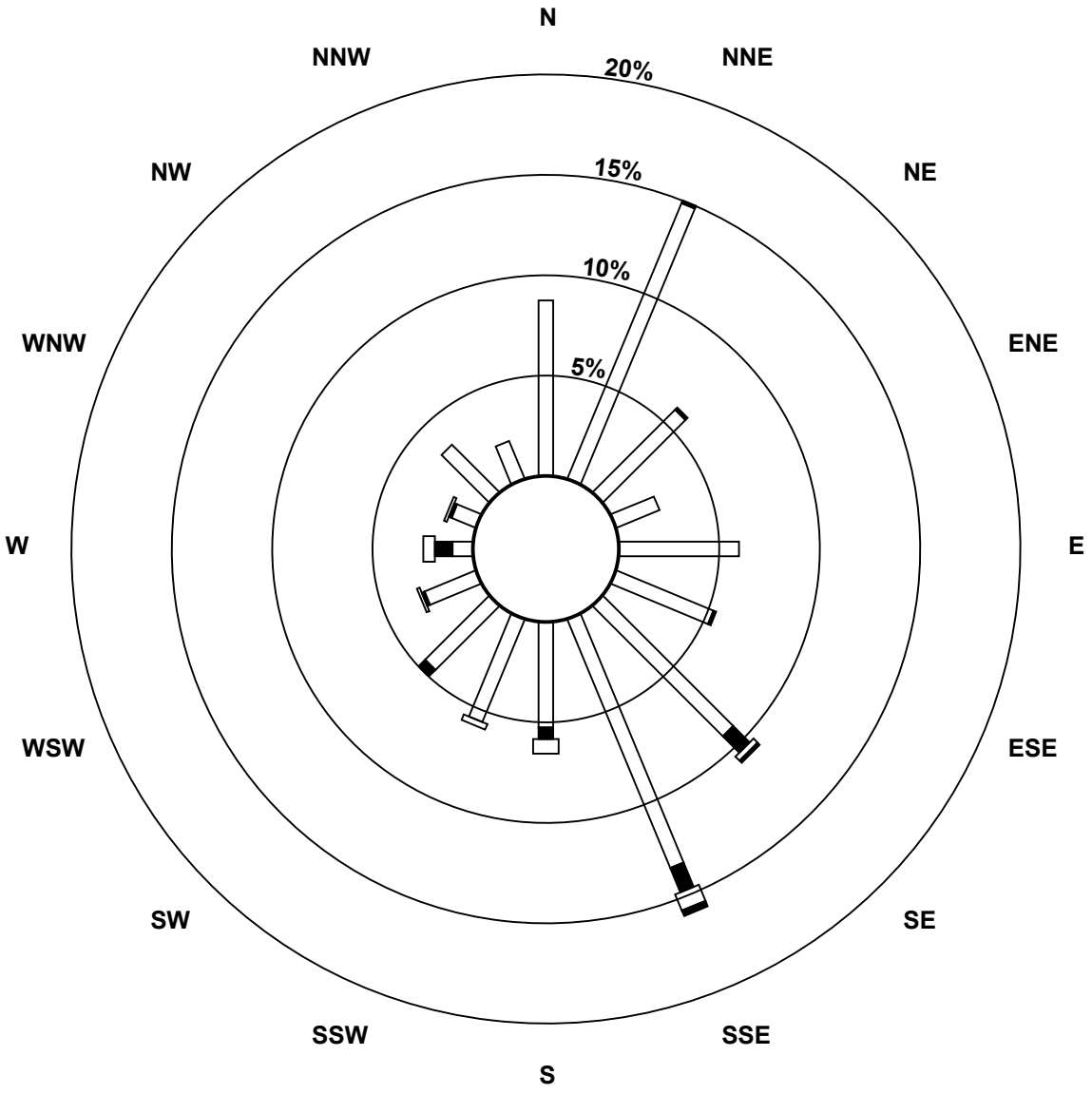
Total Number of Hours: 720

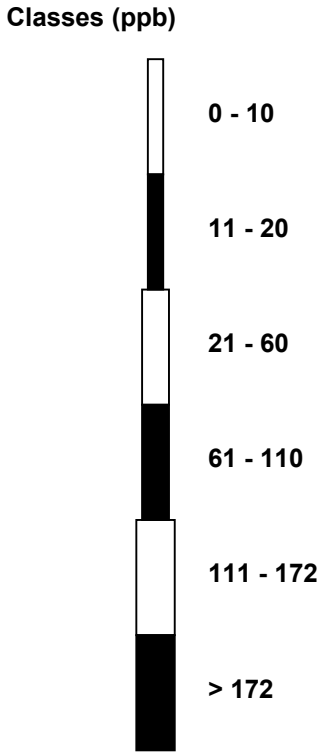
Wood Buffalo Environmental Association

Wind Rose Apr 2014

Sulphur Dioxide (SO_2) - ppb

Mildred Lake (AMS 2)





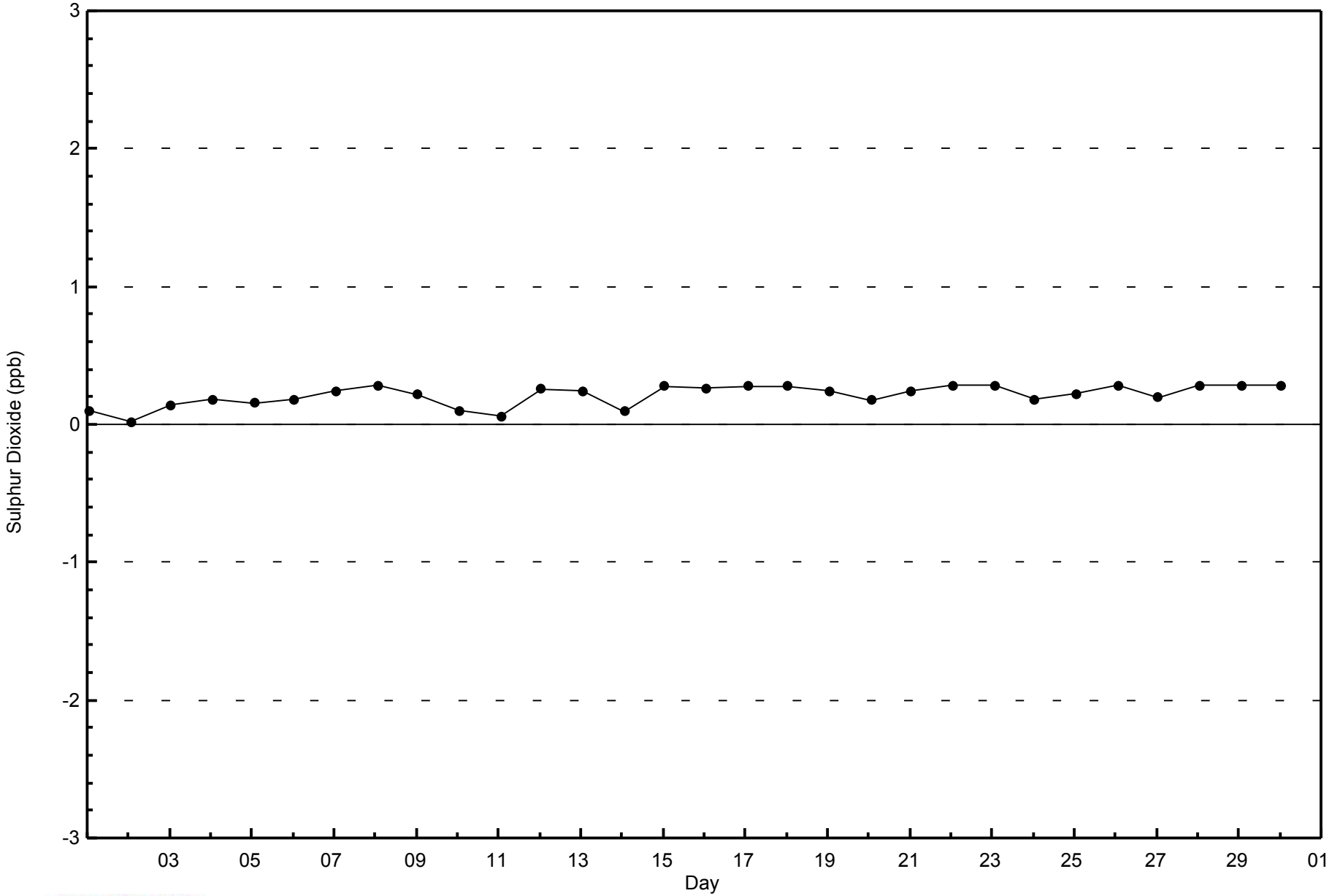
Total Number of Valid Hours: 686

WBEA NETWORK

Zero Responses

Sulphur Dioxide (SO_2) - ppb

Mildred Lake - April 2014



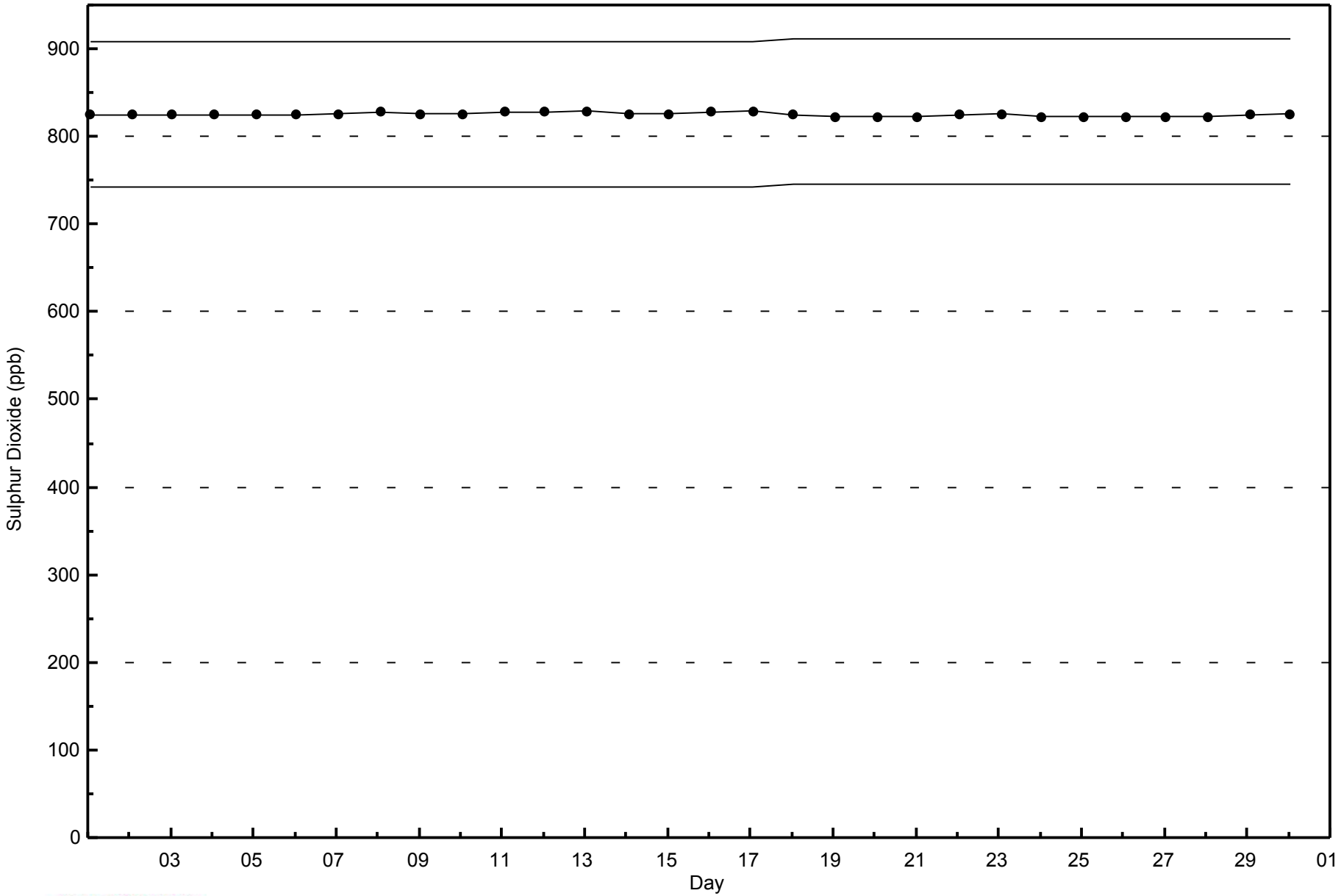
AURORA ATMOSPHERICS INC.

WBEA NETWORK

Span Responses

Sulphur Dioxide (SO_2) - ppb

Mildred Lake - April 2014



AURORA ATMOSPHERICS INC.

Number of Exceedences (AAAQO): 1-hr: 0 24-hr: 0
Maximum Value: 3 ppb on Apr 21 05:00 Maximum Daily Average: 0.9 ppb on Apr 8

Minimum Value: 0 ppb on Apr 8 11:00 Minimum Daily Average: 0.2 ppb on Apr 11
Maximum Diurnal Average: 0.6 ppb at hour 5 Minimum Diurnal Average: 0.3 ppb at hour 18
Monthly Average: 0.4 ppb Percentiles: $P_1 = 0$ $P_{10} = 0$ $Q_1 = 0$ Median = 0 $Q_3 = 0$ $P_{90} = 1$ $P_{99} = 2$

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-Apr	0	0	Z	0	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0.3	1
2-Apr	0	0	Z	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0.3	0
3-Apr	0	0	Z	0	0	0	0	0	0	0	1	1	0	1	0	0	0	0	0	0	1	0	0	0	0.4	1
4-Apr	0	0	Z	1	1	1	1	0	1	0	1	1	1	1	0	0	0	0	0	0	0	0	0	0	0.5	1
5-Apr	0	0	Z	1	1	1	1	0	0	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0.5	1
6-Apr	0	0	Z	0	0	0	1	1	1	1	1	0	0	0	0	0	1	1	0	0	0	0	0	0	0.5	1
7-Apr	1	1	Z	1	1	1	1	0	0	0	0	0	1	0	0	0	0	0	0	0	0	0	0	0	0.4	1
8-Apr	1	2	Z	3	1	1	0	0	0	0	0	0	1	1	1	1	0	0	1	1	1	1	2	0	0.9	3
9-Apr	1	1	Z	2	1	0	0	2	0	0	0	0	0	0	0	0	0	0	0	0	0	1	2	1	0.7	2
10-Apr	0	0	Z	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0.3	0
11-Apr	0	0	Z	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0.2	0
12-Apr	0	0	Z	0	1	1	0	0	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0.4	1
13-Apr	0	0	Z	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0.4	0
14-Apr	0	0	Z	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1	1	0	0	0	0	0	0.4	1
15-Apr	0	0	Z	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0.2	0
16-Apr	0	0	Z	0	0	0	0	0	0	C	C	C	C	0	0	0	0	0	0	0	0	0	0	0	0.2	0
17-Apr	1	0	Z	0	0	1	1	1	0	0	M	1	0	0	0	0	0	0	0	0	0	0	0	0	0.3	1
18-Apr	0	0	Z	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1	0.3	1
19-Apr	1	0	Z	0	0	0	0	0	1	1	0	0	1	0	0	0	0	0	0	0	0	1	0	1	0.4	1
20-Apr	0	0	Z	0	0	1	1	1	1	1	1	0	0	0	0	0	0	0	0	0	1	1	0	1	0.5	1
21-Apr	0	0	Z	1	3	1	1	1	1	0	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0.6	3
22-Apr	0	0	Z	0	0	0	0	0	0	0	0	1	0	0	0	0	0	0	0	0	0	0	0	0	0.3	1
23-Apr	0	0	Z	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0.2	0
24-Apr	0	0	Z	0	0	0	0	0	0	0	1	1	1	0	1	2	0	0	0	0	0	0	0	0	0.4	2
25-Apr	0	0	Z	0	0	0	1	0	1	0	0	0	0	0	0	0	0	0	0	0	0	1	1	1	0.4	1
26-Apr	1	0	Z	0	0	1	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1	0.4	1
27-Apr	0	0	Z	0	0	0	0	0	0	0	0	0	0	0	0	1	0	1	1	1	1	1	1	0	0.4	1
28-Apr	1	1	Z	1	1	1	0	0	0	0	1	1	1	1	1	1	1	0	0	0	1	1	1	1	0.6	1
29-Apr	1	1	Z	1	1	1	0	1	0	1	1	0	0	0	0	0	0	0	0	0	0	0	0	1	0.5	1
30-Apr	1	1	Z	1	1	2	2	2	2	2	1	1	0	0	0	0	0	0	0	0	0	0	0	1	0.7	2
	0.4	0.4	--	0.5	0.6	0.5	0.5	0.5	0.4	0.4	0.4	0.4	0.4	0.4	0.4	0.4	0.3	0.3	0.3	0.3	0.4	0.4	0.5	0.4	Diurnal Average	
	1	2	--	3	3	2	2	2	2	2	1	1	1	1	1	2	1	1	1	1	1	1	2	1	Diurnal Maximum	

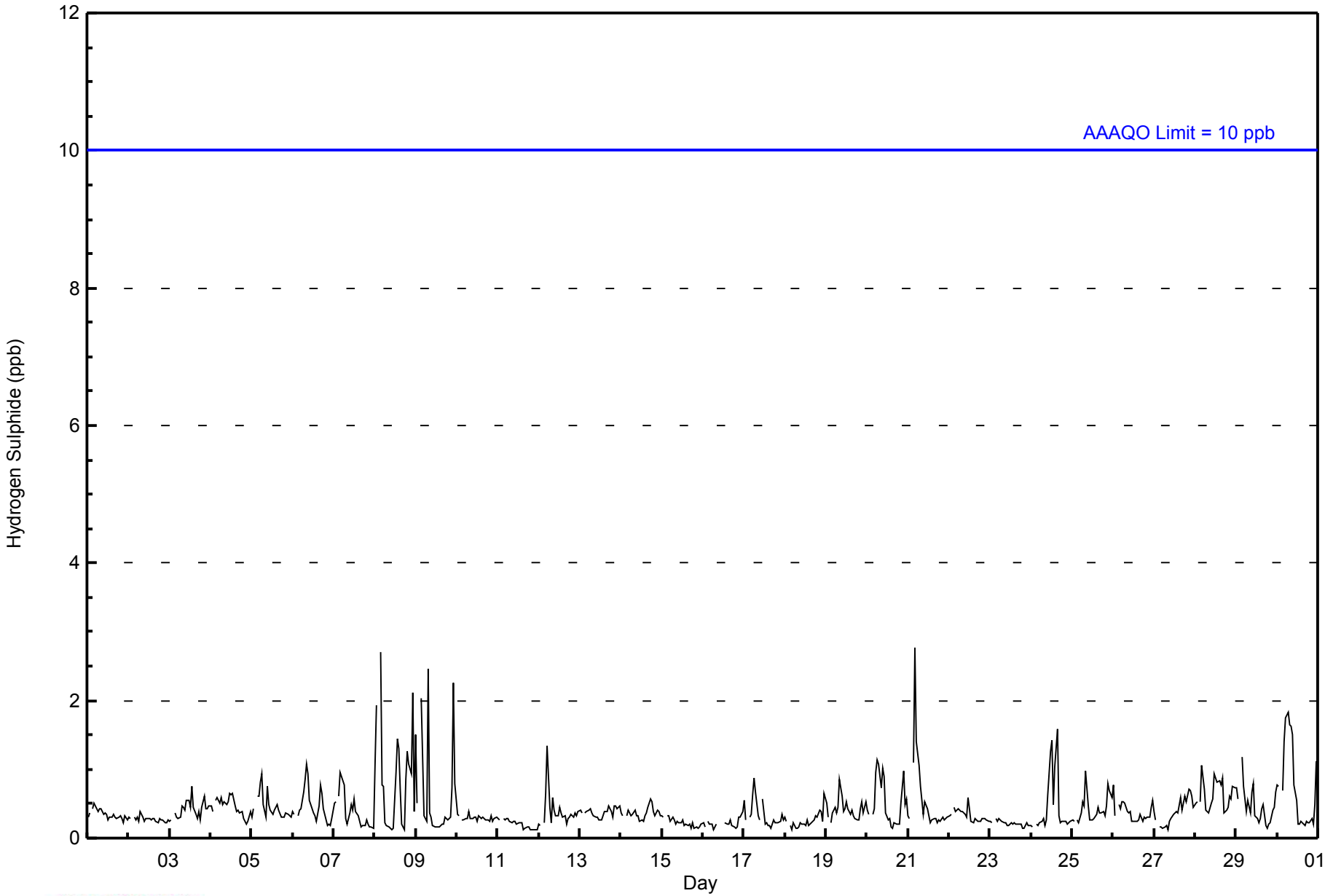
Z - zerospan C - Calibration M - Maintenance
Alberta Ambient Air Quality Objectives (AAAQO): 1-hr 10 ppb 24-hr 3 ppb

WBEA NETWORK

Hourly Averages

Hydrogen Sulphide (H_2S) - ppb

Mildred Lake - April 2014



AURORA ATMOSPHERICS INC.

Concentration Ranges (ppb)	Number of Hours	%	Cumulative %
0 - 2	683	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: 685

Total Number of Hours: 720

Hydrogen Sulphide (H_2S) - ppb
Mildred Lake - April 2014

Concentration	Wind Direction																
Ranges (ppb)	N	NNE	NE	ENE	E	ESE	SE	SSE	S	SSW	SW	WSW	W	WNW	NW	NNW	**Totals**
0 - 2	60	104	40	16	40	37	74	110	43	41	33	20	17	11	22	15	683
3 - 4	0	0	0	0	0	0	1	0	1	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	60	104	40	16	40	37	75	110	44	41	33	20	17	11	22	15	685

Total Number of Valid Hours: 685

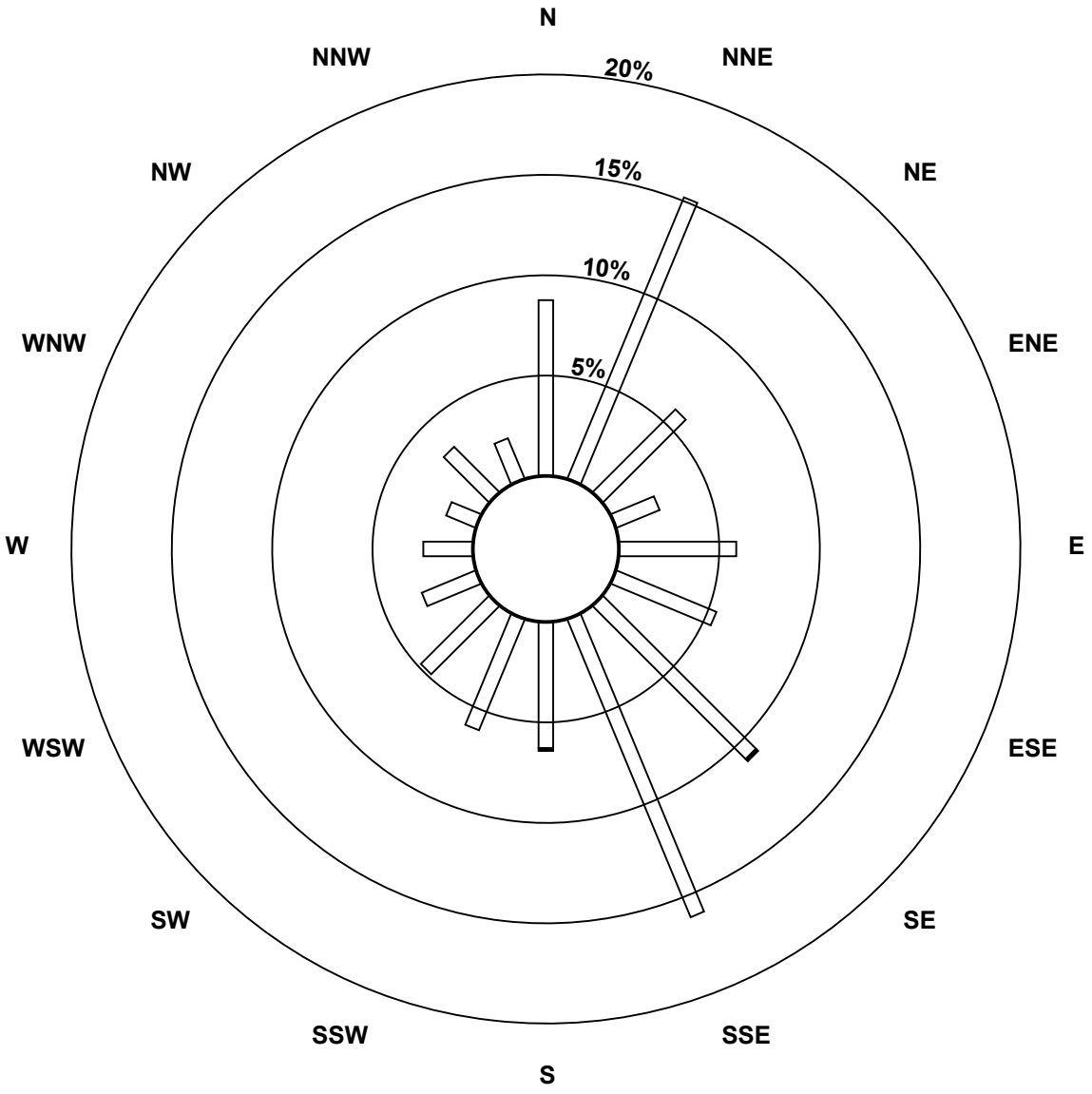
Total Number of Hours: 720

Wood Buffalo Environmental Association

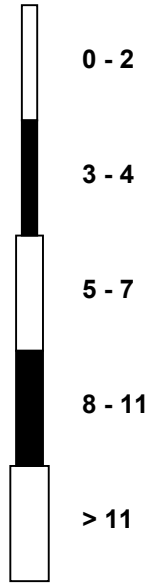
Wind Rose Apr 2014

Hydrogen Sulphide (H_2S) - ppb

Mildred Lake (AMS 2)



Classes (ppb)



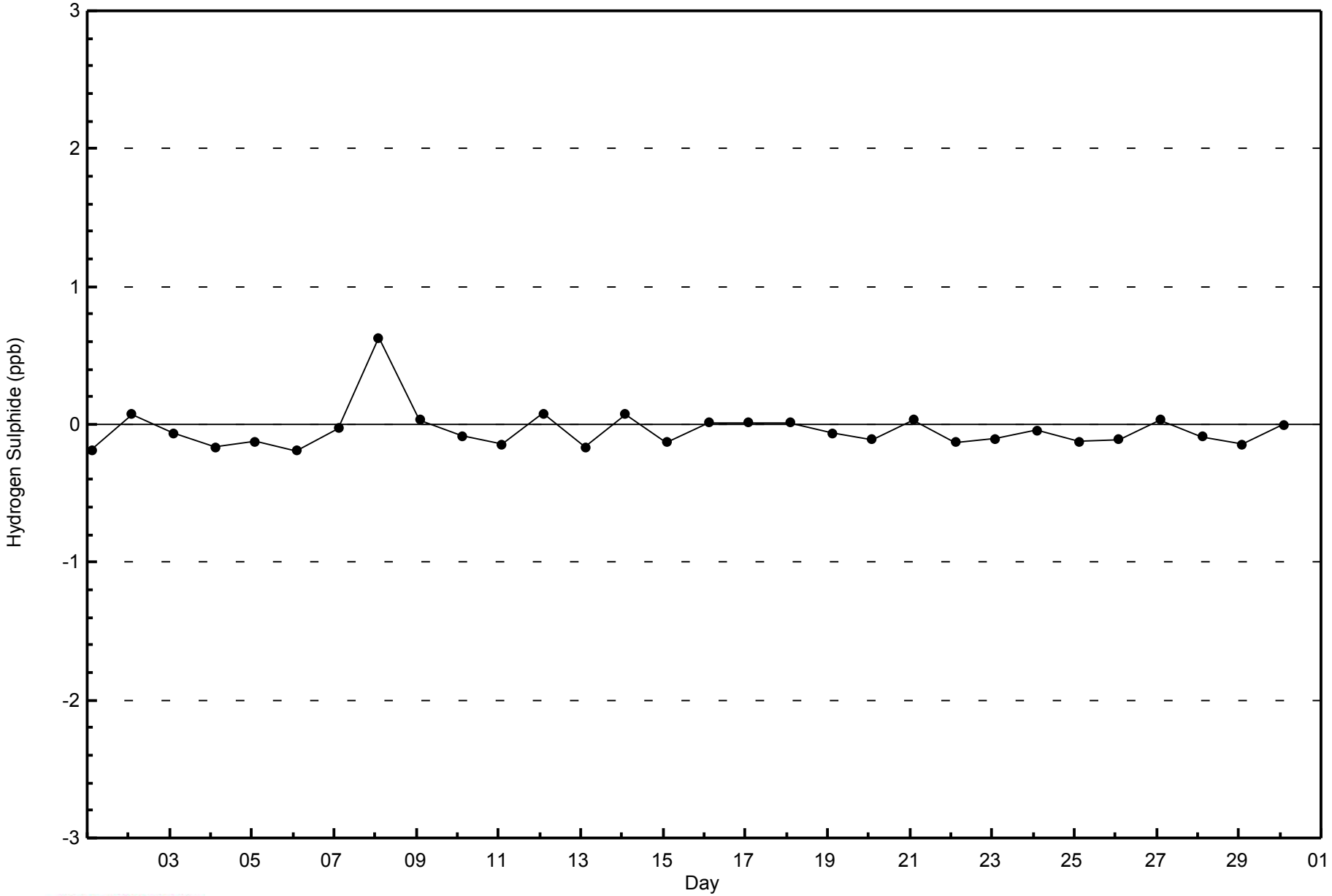
Total Number of Valid Hours: 685

WBEA NETWORK

Zero Responses

Hydrogen Sulphide (H_2S) - ppb

Mildred Lake - April 2014



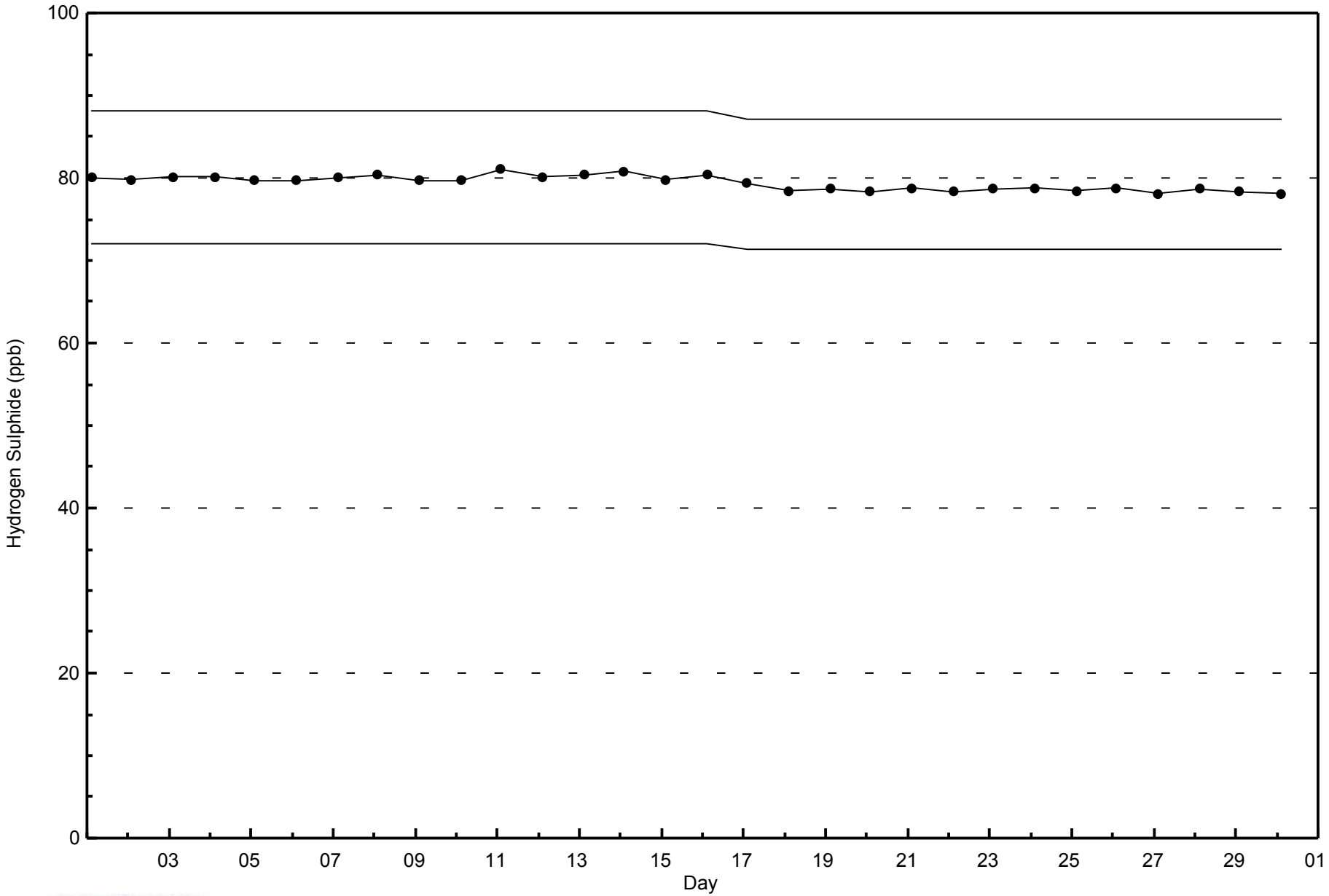
AURORA ATMOSPHERICS INC.

WBEA NETWORK

Span Responses

Hydrogen Sulphide (H_2S) - ppb

Mildred Lake - April 2014



AURORA ATMOSPHERICS INC.

Wood Buffalo Environmental Association

Summary of Hour Averages

Total Hydrocarbons (THC) - ppm

Mildred Lake - April 2014

Maximum Value: 4.4 ppm on Apr 8 04:00

Maximum Daily Average: 2.7 ppm on Apr 8

Minimum Value: 2.0 ppm on Apr 23 15:00

Minimum Daily Average: 2.0 ppm on Apr 23

Maximum Diurnal Average: 2.3 ppm at hour 4

Minimum Diurnal Average: 2.2 ppm at hour 18

Monthly Average: 2.25 ppm

Percentiles: P_1 = 2.0 P_{10} = 2.1 Q_1 = 2.1 Median = 2.2 Q_3 = 2.3 P_{90} = 2.6 P_{99} = 3.3

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-Apr	2.2	Z	2.3	2.9	3.0	2.2	2.2	2.2	2.2	2.2	2.2	2.2	2.2	2.1	2.2	2.2	2.1	2.1	2.1	2.1	2.1	2.1	2.1	2.2	2.2	3.0
2-Apr	2.1	Z	2.1	2.1	2.1	2.1	2.1	2.2	2.2	2.1	2.1	2.1	2.1	2.1	2.1	2.1	2.1	2.1	2.1	2.1	2.1	2.1	2.1	2.1	2.1	2.2
3-Apr	2.1	Z	2.2	2.1	2.2	2.2	2.1	2.2	2.2	2.2	2.2	2.2	2.2	2.3	2.2	2.1	2.1	2.1	2.2	2.2	2.2	2.2	2.2	2.2	2.2	2.3
4-Apr	2.2	Z	2.2	2.2	2.2	2.2	2.3	2.3	2.2	2.3	2.6	2.8	2.9	2.8	3.1	2.8	2.5	2.4	2.6	2.5	2.1	2.1	2.2	3.1	2.5	3.1
5-Apr	3.6	Z	2.9	2.8	2.8	3.3	3.1	2.6	2.2	2.6	2.3	2.3	2.2	2.2	2.2	2.2	2.1	2.1	2.1	2.2	2.2	2.2	2.1	2.1	2.5	3.6
6-Apr	2.1	Z	2.1	2.1	2.1	2.2	2.3	3.1	3.3	2.6	2.5	2.3	2.2	2.1	2.2	2.4	2.6	2.4	2.4	2.2	2.2	2.1	2.2	2.2	2.3	3.3
7-Apr	2.9	Z	2.7	2.8	2.9	2.7	2.6	2.3	2.6	2.5	2.4	2.3	2.2	2.2	2.2	2.3	2.6	2.2	2.3	2.5	2.5	2.3	2.2	2.6	2.5	2.9
8-Apr	2.9	Z	4.2	4.4	2.7	2.8	2.6	2.4	2.7	2.6	2.2	2.4	2.5	2.2	2.8	2.6	2.2	2.1	2.5	3.0	2.9	2.7	2.9	2.4	2.7	4.4
9-Apr	2.8	Z	2.6	2.4	2.6	2.2	2.2	2.4	2.8	2.5	2.0	2.1	2.1	2.1	2.1	2.5	2.6	2.7	2.8	2.4	2.3	2.7	2.6	2.6	2.4	2.8
10-Apr	2.2	Z	2.1	2.1	2.1	2.1	2.1	2.2	2.1	2.1	2.1	2.1	2.1	2.1	2.1	2.1	2.1	2.1	2.1	2.1	2.1	2.1	2.1	2.1	2.1	2.2
11-Apr	2.1	Z	2.1	2.1	2.1	2.1	2.1	2.1	2.1	2.1	2.1	2.1	2.1	2.1	2.1	2.1	2.1	2.1	2.1	2.1	2.1	2.1	2.2	2.1	2.1	2.2
12-Apr	2.2	Z	2.4	2.6	3.4	3.4	2.5	2.2	2.3	2.2	2.2	2.2	2.2	2.2	2.1	2.1	2.1	2.1	2.1	2.1	2.1	2.1	2.1	2.1	2.3	3.4
13-Apr	2.1	Z	2.2	2.1	2.1	2.1	2.2	2.1	2.2	2.2	2.2	2.1	2.1	2.2	2.3	2.3	2.3	2.2	2.2	2.2	2.3	2.4	2.5	2.4	2.2	2.5
14-Apr	2.3	Z	2.2	2.2	2.2	2.2	2.2	2.3	2.4	2.4	2.3	2.2	2.1	2.2	2.2	2.3	2.3	2.3	2.5	2.5	2.2	2.3	2.2	2.1	2.3	2.5
15-Apr	2.1	Z	2.1	2.1	2.1	2.1	2.1	2.1	2.1	2.1	2.1	2.1	2.1	2.1	2.1	2.1	2.1	2.1	2.1	2.1	2.1	2.1	2.1	2.1	2.1	2.1
16-Apr	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	2.2	2.1	2.1	2.1	2.1	2.1	2.1	2.1	2.1	2.2	2.2	2.1	2.2
17-Apr	2.3	Z	2.2	2.2	2.2	2.2	2.3	2.2	2.2	C	C	C	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	2.3
18-Apr	2.2	Z	2.1	2.1	2.1	2.1	2.0	2.1	2.1	2.1	2.1	2.0	2.1	2.0	2.0	2.1	2.1	2.1	2.3	2.4	2.2	2.2	2.1	2.4	2.1	2.4
19-Apr	2.2	Z	2.1	2.1	2.1	2.1	2.1	2.2	2.7	2.4	2.2	2.2	2.1	2.1	2.1	2.1	2.1	2.1	2.1	2.1	2.3	2.2	2.2	2.2	2.2	2.7
20-Apr	2.2	Z	2.1	2.2	2.3	2.4	3.3	3.2	2.7	2.9	3.2	2.3	2.3	2.2	2.1	2.0	2.0	2.1	2.0	2.1	2.4	3.0	2.5	2.5	2.4	3.3
21-Apr	2.2	Z	2.3	2.5	2.5	2.8	2.5	2.5	2.4	2.4	2.6	2.5	2.2	2.1	2.1	2.1	2.1	2.1	2.0	2.1	2.1	2.1	2.2	2.2	2.3	2.8
22-Apr	2.2	Z	2.2	2.2	2.2	2.2	2.3	2.2	2.1	2.2	2.3	2.2	2.2	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.1	2.3
23-Apr	2.0	Z	2.0	2.1	2.0	2.1	2.1	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.1
24-Apr	2.0	Z	2.1	2.0	2.0	2.0	2.0	2.0	2.0	2.1	2.2	2.7	3.0	2.3	2.2	2.2	2.1	2.0	2.1	2.1	2.0	2.0	2.0	2.1	2.1	3.0
25-Apr	2.0	Z	2.1	2.1	2.1	2.0	2.1	2.1	2.2	2.1	2.1	2.1	2.1	2.1	2.1	2.2	2.2	2.2	2.2	2.2	2.3	2.6	2.4	2.4	2.2	2.6
26-Apr	2.8	Z	2.3	2.3	2.3	2.2	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	2.2	2.1	2.1	2.2	2.2	2.2	2.8
27-Apr	2.2	Z	2.3	2.2	2.1	2.0	2.0	2.0	2.0	2.1	2.1	2.1	2.1	2.1	2.1	2.2	2.1	2.2	2.2	2.2	2.2	2.2	2.1	2.1	2.1	2.3
28-Apr	2.2	Z	2.2	2.3	2.4	2.2	2.3	2.5	2.2	2.2	2.1	2.2	2.2	2.3	2.4	2.3	2.3	2.2	2.2	2.4	2.2	2.1	2.3	2.3	2.3	2.5
29-Apr	2.3	Z	2.7	2.6	2.2	2.1	2.1	2.2	2.2	2.3	2.4	2.1	2.0	2.1	2.1	2.1	2.2	2.0	2.0	2.0	2.1	2.5	2.4	2.6	2.2	2.7
30-Apr	2.7	Z	3.0	2.5	2.6	2.8	2.7	2.7	2.7	2.3	2.3	2.3	2.1	2.1	2.1	2.1	2.1	2.1	2.1	2.2	2.8	2.3	2.4	2.6	2.4	3.0
	2.3	--	2.3	2.3	2.3	2.3	2.3	2.3	2.3	2.3	2.3	2.2	2.2	2.2	2.2	2.2	2.2	2.2	2.2	2.2	2.2	2.2	2.2	2.3	Diurnal Average	
	3.6	--	4.2	4.4	3.4	3.4	3.3	3.2	3.3	2.9	3.2	2.8	3.0	2.8	3.1	2.8	2.6	2.7	2.8	3.0	2.9	3.0	2.9	3.1	Diurnal Maximum	

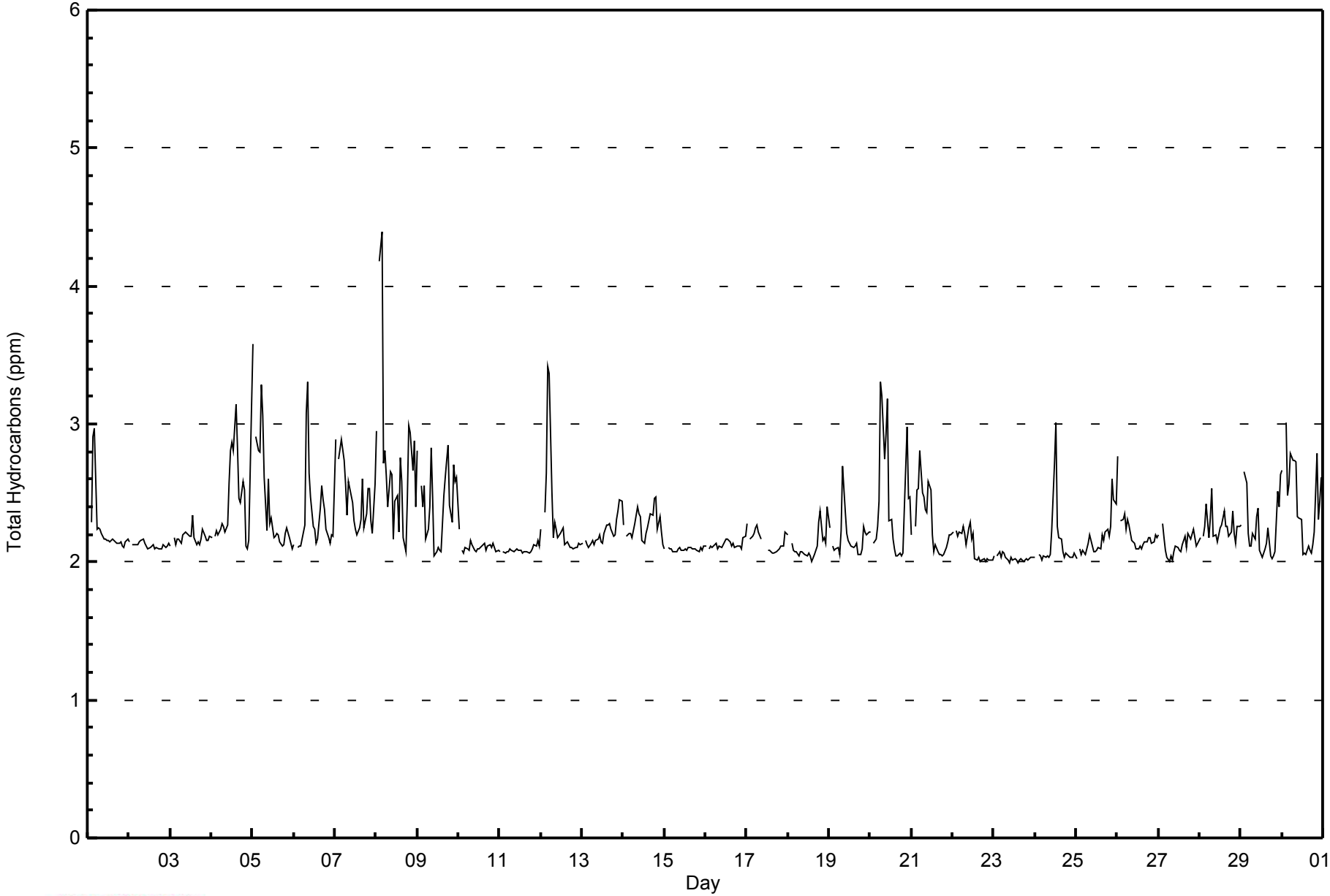
Z - zerospan C - Calibration

WBEA NETWORK

Hourly Averages

Total Hydrocarbons (THC) - ppm

Mildred Lake - April 2014



AURORA ATMOSPHERICS INC.

Concentration Ranges (ppm)	Number of Hours	%	Cumulative %
0 - 2.0	61	8.88	8.88
2.1 - 3.0	612	89.08	97.96
3.1 - 10.0	14	2.04	100.00
> 10.0	0	0.00	100.00

Total Number of Valid Hours: 687

Total Number of Hours: 720

Concentration Ranges (ppm)	N	NNE	NE	ENE	E	ESE	SE	SSE	S	SSW	SW	WSW	W	WNW	NW	NNW	**Totals**
0 - 2.0	4	4	0	8	27	14	1	0	0	0	1	0	0	0	0	2	61
2.1 - 3.0	56	99	41	8	13	23	73	110	41	39	32	21	16	10	18	12	612
3.1 - 10.0	0	0	0	0	1	0	0	0	4	1	1	0	1	1	5	0	14
> 10.0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Totals	60	103	41	16	41	37	74	110	45	40	34	21	17	11	23	14	687

(Wind Direction)

Total Number of Valid Hours: 687

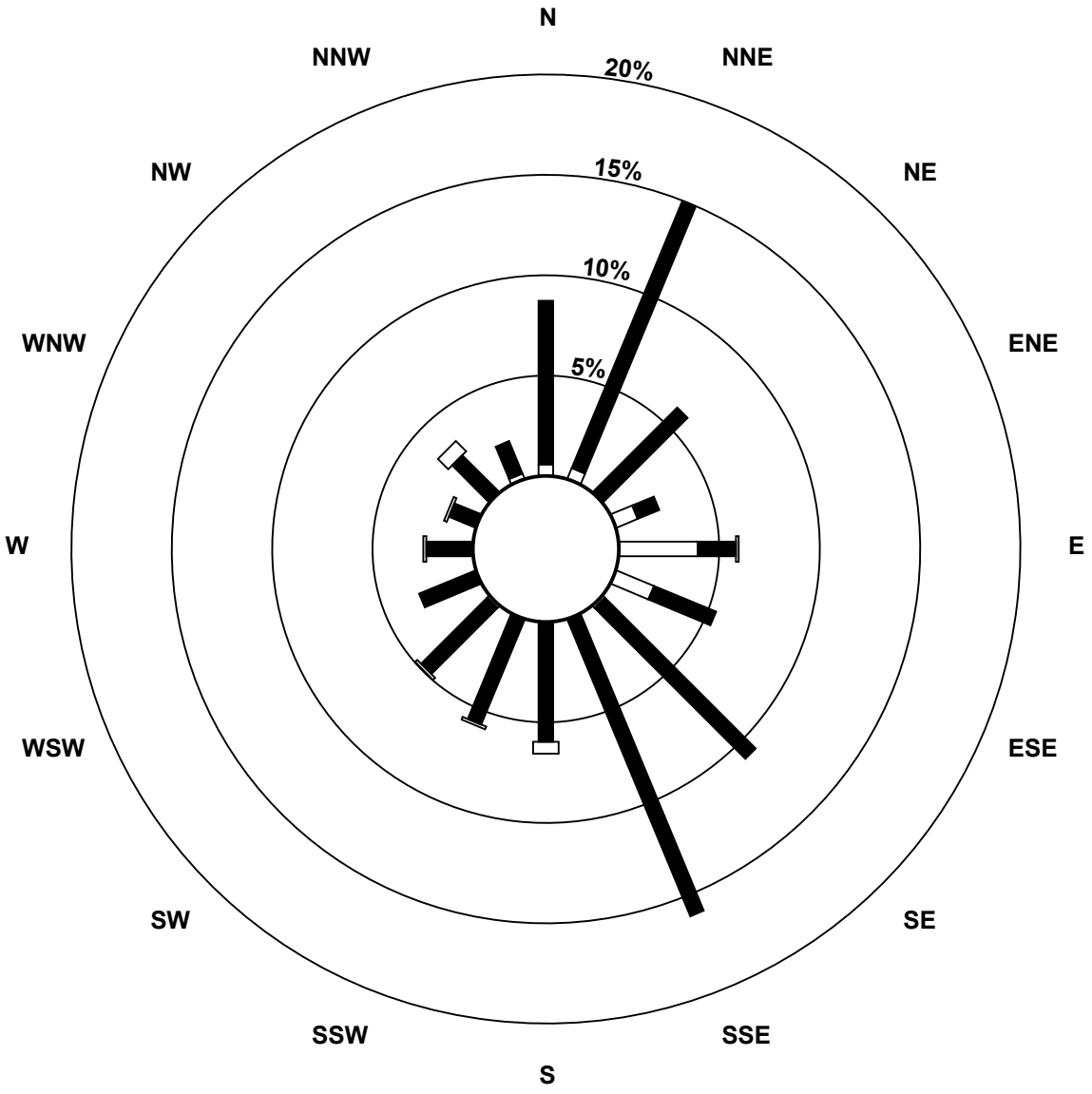
Total Number of Hours: 720

Wood Buffalo Environmental Association

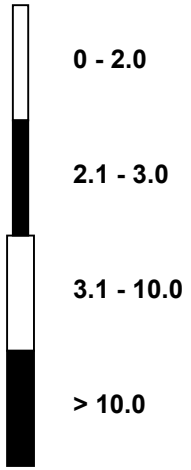
Wind Rose Apr 2014

Total Hydrocarbons (THC) - ppm

Mildred Lake (AMS 2)



Classes (ppm)



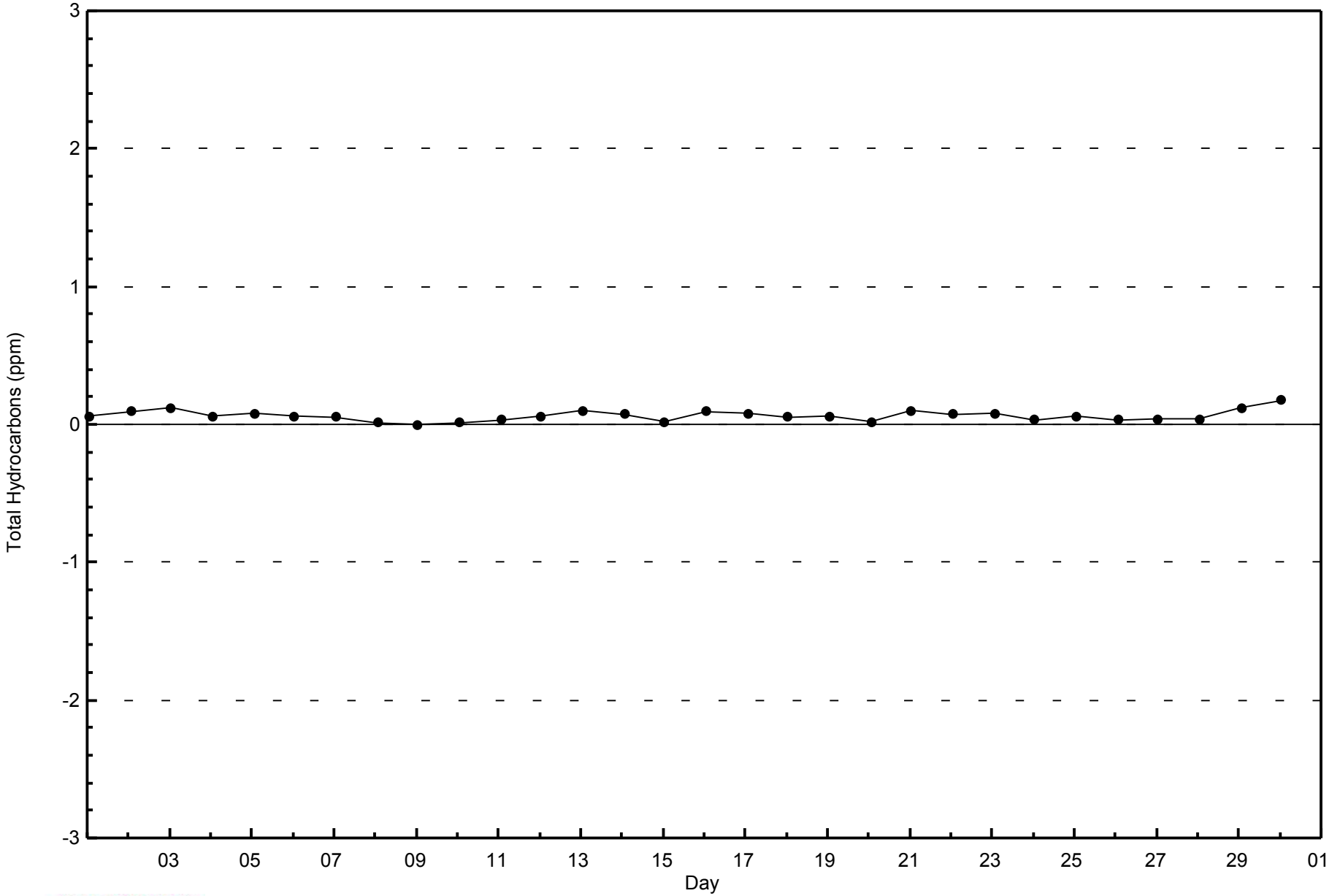
Total Number of Valid Hours: 687

WBEA NETWORK

Zero Responses

Total Hydrocarbons (THC) - ppm

Mildred Lake - April 2014



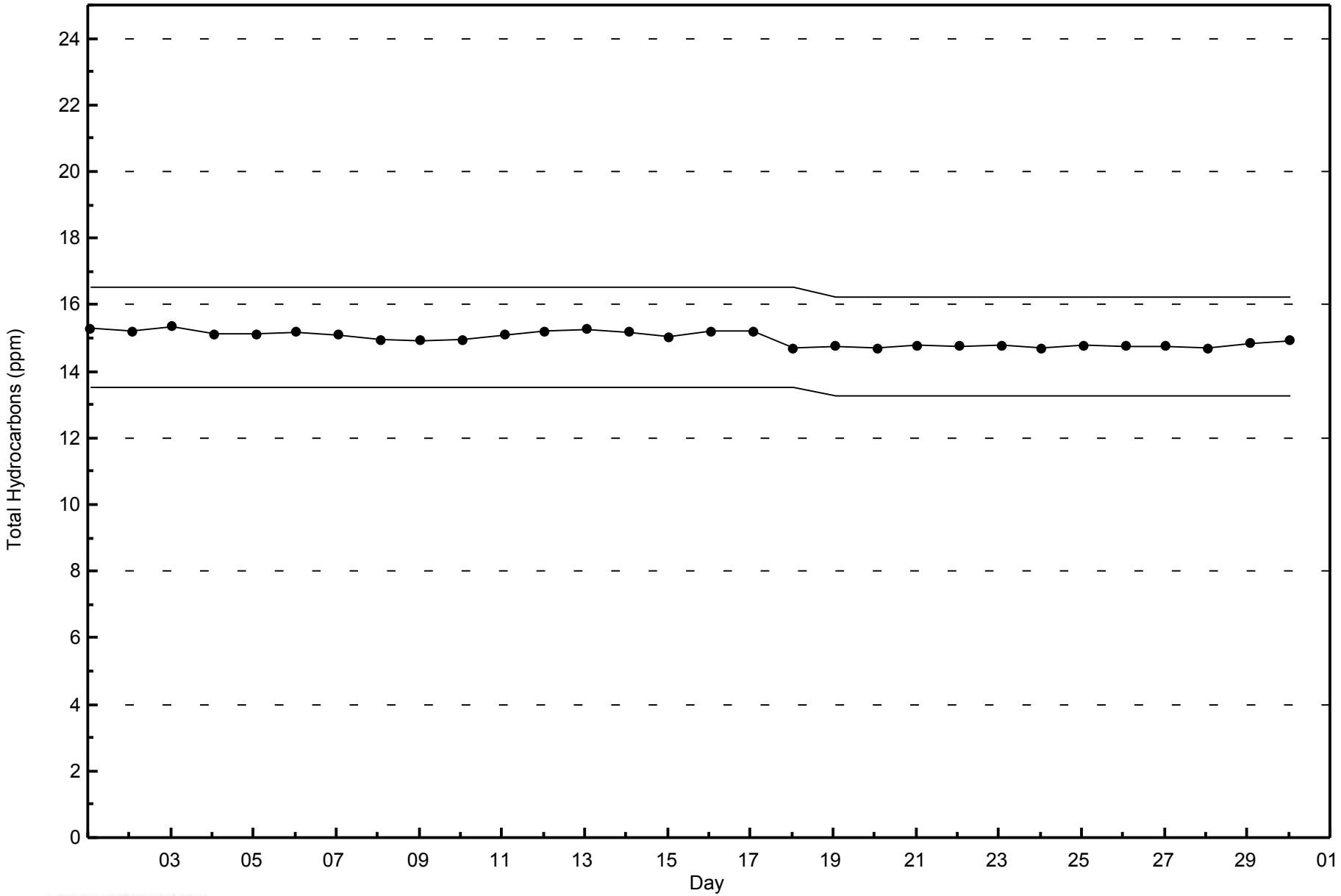
AURORA
ATMOSPHERICS INC.

WBEA NETWORK

Span Responses

Total Hydrocarbons (THC) - ppm

Mildred Lake - April 2014



AURORA ATMOSPHERICS INC.

Maximum Value: 21.5 C on Apr 30 16:00

Maximum Daily Average: 13.2 C on Apr 30

Minimum Value: -19.2 C on Apr 3 06:00

Minimum Daily Average: -12.4 C on Apr 2

Maximum Diurnal Average: 6.6 C at hour 16

Minimum Diurnal Average: -3.2 C at hour 6

Monthly Average: 1.60 C

Percentiles: P_1 = -16.4 P_{10} = -8.1 Q_1 = -3.4 Median = 2.0 Q_3 = 6.1 P_{90} = 11.1 P_{99} = 19.4

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

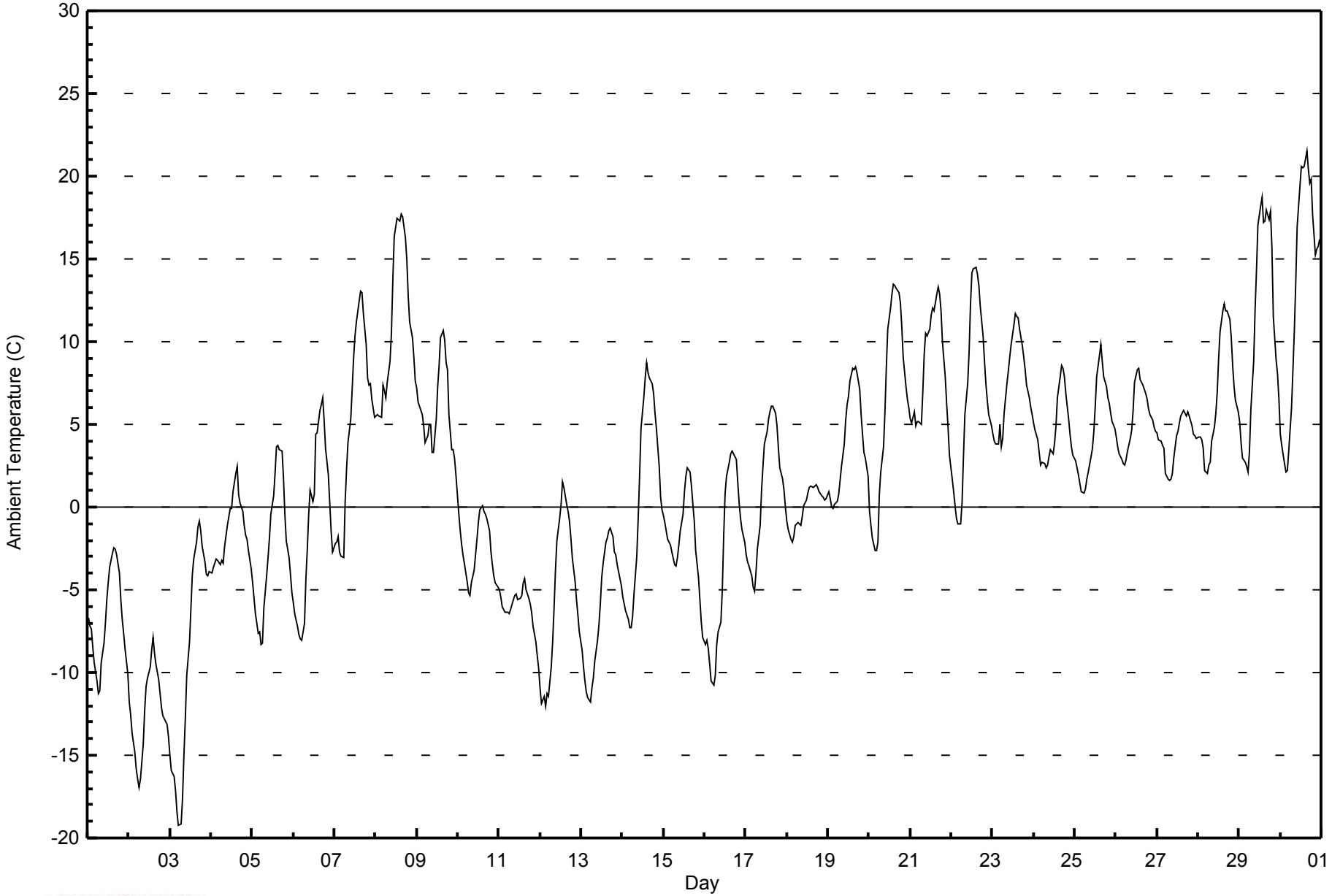
Day	Hourly Period Ending At (MST)																								Daily	Daily
	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24	Average	Maximum
1-Apr	-6.7	-7.2	-7.3	-8.4	-9.4	-10.5	-11.3	-11.1	-9.4	-8.2	-7.1	-5.6	-4.6	-3.6	-2.8	-2.5	-2.6	-2.8	-4.0	-5.6	-6.8	-7.6	-8.5	-10.1	-6.8	-2.5
2-Apr	-11.8	-12.5	-13.7	-14.8	-15.8	-16.5	-16.9	-16.4	-14.3	-12.3	-10.8	-10.3	-9.7	-8.7	-7.9	-8.8	-9.5	-10.4	-11.3	-12.2	-12.6	-12.9	-13.2	-13.9	-12.4	-7.9
3-Apr	-15.0	-15.9	-16.3	-17.2	-18.3	-19.2	-19.2	-17.6	-15.0	-12.8	-10.1	-8.1	-6.1	-4.1	-3.1	-2.1	-1.2	-0.8	-1.5	-2.4	-3.3	-4.1	-4.2	-3.9	-9.2	-0.8
4-Apr	-4.0	-3.7	-3.4	-3.1	-3.2	-3.5	-3.2	-3.4	-2.4	-1.1	-0.6	-0.1	-0.1	0.9	2.0	2.5	0.8	0.3	-0.3	-1.1	-1.7	-1.9	-2.6	-3.8	-1.5	2.5
5-Apr	-4.6	-5.5	-6.5	-7.7	-7.5	-8.3	-8.2	-6.1	-4.2	-3.1	-1.9	-0.4	0.7	2.0	3.7	3.7	3.5	3.4	1.8	-0.4	-2.0	-3.0	-4.1	-5.1	-2.5	3.7
6-Apr	-5.7	-6.4	-7.2	-7.7	-8.0	-8.0	-7.0	-4.3	-2.5	-0.4	1.0	0.4	0.8	4.4	4.4	5.8	6.1	6.6	5.2	3.5	1.9	0.2	-1.4	-2.7	-0.9	6.6
7-Apr	-2.2	-2.1	-1.8	-2.7	-3.0	-3.0	0.3	2.3	3.9	5.4	7.1	9.0	10.3	11.2	12.4	13.1	12.9	11.7	9.9	7.8	7.3	7.5	6.5	5.4	5.4	13.1
8-Apr	5.5	5.6	5.5	5.5	7.4	7.0	6.6	7.6	8.8	10.5	13.7	16.4	17.5	17.4	17.3	17.8	17.5	16.3	14.9	12.7	11.2	10.3	9.1	7.6	11.2	17.8
9-Apr	7.2	6.3	5.8	5.6	4.9	3.9	4.3	5.0	5.0	3.3	3.3	5.3	7.2	8.5	10.2	10.7	10.1	8.7	8.3	5.6	3.5	3.4	3.0	2.0	5.9	10.7
10-Apr	-0.4	-1.4	-2.2	-2.8	-3.4	-4.5	-5.2	-5.4	-4.6	-3.8	-2.8	-2.0	-0.9	-0.1	0.1	-0.2	-0.4	-0.7	-1.5	-2.7	-3.5	-4.1	-4.6	-4.8	-2.6	0.1
11-Apr	-5.0	-5.4	-6.0	-6.4	-6.4	-6.3	-6.4	-6.2	-5.6	-5.3	-5.3	-5.6	-5.5	-5.3	-4.6	-4.3	-5.0	-5.5	-5.9	-6.4	-7.2	-8.2	-9.0	-9.8	-6.1	-4.3
12-Apr	-10.9	-11.9	-11.4	-12.0	-11.3	-11.5	-9.7	-8.1	-6.1	-3.8	-2.0	-0.7	0.2	1.5	1.2	0.2	-0.3	-0.9	-1.9	-3.0	-4.5	-5.6	-6.5	-7.5	-5.3	1.5
13-Apr	-8.6	-9.7	-10.5	-11.2	-11.6	-11.8	-10.9	-10.4	-9.3	-8.1	-7.1	-5.8	-4.2	-3.4	-2.1	-1.8	-1.4	-1.3	-1.8	-2.8	-2.8	-3.4	-3.9	-4.7	-6.2	-1.3
14-Apr	-5.4	-5.8	-6.2	-6.8	-7.3	-7.2	-6.7	-5.3	-3.0	-0.7	1.9	4.8	6.6	7.8	8.8	8.1	7.8	7.4	6.8	5.7	4.8	2.5	0.6	-0.2	0.8	8.8
15-Apr	-0.5	-0.9	-1.9	-2.1	-2.3	-2.8	-3.5	-3.6	-3.0	-2.3	-1.5	-0.4	0.9	1.8	2.4	2.1	1.3	0.1	-0.9	-2.6	-4.2	-5.6	-6.9	-7.9	-1.8	2.4
16-Apr	-8.3	-8.1	-8.6	-9.5	-10.5	-10.8	-10.2	-8.3	-7.5	-6.9	-5.0	-1.7	0.8	1.9	2.7	3.3	3.4	3.3	2.8	1.5	0.2	-0.7	-1.4	-2.1	-3.3	3.4
17-Apr	-2.9	-3.3	-3.6	-4.1	-4.8	-5.1	-4.0	-2.6	-1.1	1.0	2.5	3.8	4.6	5.3	5.7	6.1	6.1	5.7	4.9	3.6	2.4	1.7	1.0	0.0	1.0	6.1
18-Apr	-0.9	-1.3	-2.0	-2.1	-1.8	-1.1	-0.9	-1.0	-1.1	-0.6	0.1	0.4	0.9	1.2	1.3	1.2	1.2	1.4	1.2	0.9	0.7	0.6	0.4	0.5	0.0	1.4
19-Apr	0.9	0.5	0.0	-0.1	0.2	0.4	0.7	1.6	2.5	3.8	5.3	6.1	6.7	7.7	8.4	8.3	8.5	8.1	7.1	5.6	4.4	3.3	3.0	1.9	4.0	8.5
20-Apr	-0.2	-1.1	-1.9	-2.6	-2.6	-2.1	0.7	2.1	3.7	5.8	8.5	10.8	12.0	12.9	13.5	13.4	13.2	13.0	12.4	10.9	9.1	7.3	6.5	6.1	6.3	13.5
21-Apr	5.3	5.1	5.8	4.9	5.2	5.1	5.0	7.0	9.2	10.5	10.3	10.8	11.6	12.0	11.9	12.9	13.3	12.8	11.9	10.0	7.9	6.3	4.8	3.2	8.5	13.3
22-Apr	1.7	0.9	0.1	-0.7	-1.0	-1.1	0.2	3.1	5.6	7.5	9.3	12.2	14.1	14.4	14.5	14.1	13.4	12.1	10.3	8.8	7.5	6.4	5.6	4.9	6.8	14.5
23-Apr	4.4	4.0	3.9	3.8	5.0	3.6	4.2	5.6	7.4	8.2	9.1	9.8	11.0	11.7	11.5	11.5	10.7	9.7	9.1	8.3	7.4	6.6	6.0	5.6	7.4	11.7
24-Apr	5.1	4.7	4.0	3.3	2.6	2.7	2.7	2.3	2.5	3.1	3.5	3.2	3.9	5.0	6.6	7.9	8.5	8.4	7.9	6.8	5.4	4.4	3.6	3.2	4.6	8.5
25-Apr	2.8	2.4	2.0	1.4	0.9	0.9	1.1	1.7	2.2	3.0	3.6	4.5	6.1	7.8	9.2	9.9	8.8	7.9	7.3	6.6	6.3	5.7	5.1	4.7	4.7	9.9
26-Apr	4.2	3.6	3.2	2.9	2.6	2.6	2.9	3.4	4.2	4.7	5.8	7.6	8.3	8.4	7.7	7.5	7.4	6.9	6.5	5.9	5.6	5.3	4.8	4.6	5.3	8.4
27-Apr	4.5	4.0	4.0	3.8	3.5	2.1	1.7	1.6	1.7	2.0	3.0	4.3	4.6	5.1	5.5	5.8	5.7	5.5	5.7	5.5	4.9	4.4	4.3	4.2	4.1	5.8
28-Apr	4.2	4.3	4.1	3.6	2.2	2.0	2.5	2.7	4.0	4.8	5.7	7.0	9.0	10.6	11.9	12.3	11.9	11.9	11.3	10.2	8.6	7.3	6.5	5.8	6.8	12.3
29-Apr	5.2	3.9	3.0	2.7	2.4	2.1	3.4	5.9	8.8	12.0	14.3	17.0	18.2	18.7	17.2	17.3	18.0	17.4	17.9	15.7	11.6	8.9	8.0	6.5	10.7	18.7
30-Apr	4.4	3.7	2.6	2.1	2.2	3.4	6.0	8.3	10.7	13.6	17.0	19.4	20.6	20.5	20.6	21.5	20.4	19.6	19.8	17.7	15.2	15.6	15.8	16.2	13.2	21.5
	-1.3	-1.8	-2.2	-2.7	-3.0	-3.2	-2.7	-1.6	-0.3	1.0	2.4	3.7	4.9	5.8	6.3	6.6	6.3	5.9	5.1	3.8	2.6	1.7	1.0	0.2	Diurnal Average	
	7.2	6.3	5.8	5.6	7.4	7.0	6.6	8.3	10.7	13.6	17.0	19.4	20.6	20.5	20.6	21.5	20.4	19.6	19.8	17.7	15.2	15.6	15.8	16.2	Diurnal Maximum	

WBEA NETWORK

Hourly Averages

Ambient Temperature (AT) - C

Mildred Lake - April 2014



AURORA ATMOSPHERICS INC.

Concentration Ranges (C)	Number of Hours	%	Cumulative %
-50 - -20	0	0.00	0.00
-20 - 0	291	40.42	40.42
0 - 10	340	47.22	87.64
10 - 20	84	11.67	99.31
> 20	5	0.69	100.00

Total Number of Valid Hours: 720

Total Number of Hours: 720

Wood Buffalo Environmental Association

Summary of Hour Averages

Wind Speed (WS) - km/h

Mildred Lake - April 2014

Maximum Speed: 26 km/h on Apr 9 16:00

Maximum Daily Speed Average: 15.3 km/h on Apr 9

Minimum Speed Value: 0 km/h on Apr 6 07:00

Minimum Daily Speed Average: 0.4 km/h on Apr 6

Maximum Diurnal Speed Average: 4.8 km/h at hour 20

Minimum Diurnal Speed Average: 1.9 km/h at hour 14

Monthly Average Velocity: 2.8 km/h 97.5 deg

Percentiles: $P_1 = 2$ $P_{10} = 5$ $Q_1 = 7$ Median = 11 $Q_3 = 14$ $P_{90} = 18$ $P_{99} = 25$

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-Apr	SSW6	SSW7	WSW6	NNW7	N8	NNE9	NNE9	NNE9	NNE10	NNE13	NNE10	NNE10	N10	NNE8	NNE8	N10	NE10	ENE9	NE11	NNE10	NE12	NE10	NE12	NNE11	NNE7.5	NNE13
2-Apr	NNE12	NNE13	NNE15	NNE15	NNE15	NNE14	NNE13	NNE12	NNE14	NNE16	NNE17	NNE19	NNE17	NNE17	NNE20	N19	NNE17	NNE16	NNE15	NNE16	NNE12	NNE12	NNE11	NNE9	NNE14.7	NNE20
3-Apr	N9	N9	N11	N11	N11	N11	N10	NNE11	N9	N7	WSW2	SW7	SW6	S6	SE13	SE13	SE12	SE13	SE15	SE13	SSE16	SSE24	SSE22	SSE19	ESE4.0	SSE24
4-Apr	SSE16	SE19	SE22	SE17	SSE22	SSE22	SSE20	SSE18	SSE19	SSE18	SSE16	SSE14	SSE10	WNW3	NW10	NW17	NW25	NW21	NW23	NW21	NNW18	NW15	NW19	NW12	SSW3.1	NW25
5-Apr	NW10	WNW8	WNW7	W6	WNW10	NW3	E1	NNW4	WNW2	SW7	SSW7	SW7	NW1	NW2	SW6	S3	NNE8	NNE9	NNE11	NNE12	NNE12	N11	N9	N9	NNW3.7	NNE12
6-Apr	N9	N8	N6	N3	N4	N2	WSW0	S6	S6	SSE9	SSW8	SW4	SSW6	SW5	SSW7	S8	SE7	NE1	N10	NNE9	NNE5	N5	NNW3	NE3	NE0.4	N10
7-Apr	SSW4	S6	SSW4	SE2	SE4	SE5	SSE4	SSW6	SSW6	SW5	SSW6	SSW5	S7	SSE7	S7	SSW8	SW8	SSW7	SW10	SW8	SW8	SW10	SW8	SSW6	SSW5.6	SW10
8-Apr	SSE10	SSE9	S6	S5	WSW13	SW6	SSW9	WSW11	WSW11	WSW13	WSW14	SW9	W22	WNW25	W25	W19	WSW23	WSW23	W20	W18	W19	W16	W13	WSW13	WSW12.7	W25
9-Apr	W15	WNW13	WNW12	W16	W17	WSW14	WSW18	WNW18	NW26	NW25	NNW24	NNW18	NNW22	NW19	NNW23	NW26	NW25	NW22	NW18	NNE12	W3	WSW8	W10	NNW10	NW15.3	NW26
10-Apr	N9	NNE10	NNE8	NNE7	NNE7	NNE10	NE13	NE13	NE11	NNE14	NNE12	NNE14	NNE14	NE11	NE14	NE13	NNE13	NE12	NE14	NE12	NE11	NE11	ENE10	ENE9	NE11.0	NNE14
11-Apr	ENE10	ENE10	NE10	NE11	ENE10	E12	E10	E11	NE10	NNE15	NNE17	NNE19	NNE19	NNE21	NNE21	NNE21	NNE20	NNE20	NNE19	NNE18	NNE15	NNE9	N7	NNW6	NNE12.8	NNE21
12-Apr	N4	NNW5	NW4	WNW4	WNW6	W3	SW5	SSW8	SW6	SW7	SSW8	SSW8	S7	WNW7	N16	N18	N16	N14	NE12	NE13	NNE14	NNE15	NNE16	NNE14	N4.8	N18
13-Apr	NNE10	NNE9	N6	N4	NNW7	NNW7	N9	N11	N11	NNE11	NNE12	NNE8	NW5	WSW4	SW3	S6	SSE6	SSE11	SE10	SE8	SSE13	SSE10	SSE15	SSE13	ENE2.0	SSE15
14-Apr	SSE12	SSE17	SSE15	SSE12	SSE13	SSE16	SSE14	SSE14	SSE15	SSE14	SSE16	S16	S15	SSE13	SSE13	SSE13	SSE10	SE11	SE12	ESE11	E13	N15	NNE16	NNE16	SSE9.7	SSE17
15-Apr	N14	NE9	ENE6	NE9	NE10	NE10	ENE11	NE9	NNE11	NE11	NE12	NE14	NE14	NE15	NE16	NNE21	NNE20	NNE20	NNE19	NNE20	NNE20	NNE17	N14	N11	NNE13.4	NNE21
16-Apr	N9	NNE8	NE9	NE8	NNE9	NNE10	NNE11	NE9	E12	ESE12	S2	SW6	S10	SSE15	SSE16	SSE16	SSE15	SE16	SE16	ESE16	SE17	SE17	SE12	SE10	ESE7.2	SE17
17-Apr	SE8	SE11	SE11	SE10	SE9	SE10	SE10	SSE15	SSE15	SSE18	SSE21	SE18	SE19	SE18	SE20	SE19	SE19	SE19	SE17	SE15	ESE12	SE13	SE11	ESE9	SE14.1	SSE21
18-Apr	ESE13	ESE11	E9	E11	E10	ESE13	ESE12	E14	ESE14	ESE13	SE12	ESE14	ESE14	ESE13	ESE13	SE11	SSE11	SSE13	S8	SSE4	SE2	SSW2	SE4	SE4	ESE9.6	ESE14
19-Apr	SSE7	SSW2	SSE2	SSE3	S2	S3	SSW5	SSW4	SSE6	SSE6	S7	SE10	SSE12	SSE9	SSE5	ESE11	SE15	SE15	SE15	SE13	SE13	SE11	SE12	ESE5	SE7.7	SE15
20-Apr	N5	N6	NNE4	NNE4	NNE3	S2	SSW2	SW4	SW5	SW6	NW2	N10	N11	NNE12	NNE12	ENE10	ENE9	ENE5	E6	ESE5	SSE6	S5	S5	S5	NE2.3	NNE12
21-Apr	S4	SSW5	S5	SE7	SE7	SSE3	ESE5	SE6	SSW5	SW5	N13	NNE13	NNE12	N8	NNW11	NE10	NE12	NE12	NNE13	NNE13	NNE11	NNE13	NNE11	N10	NNE5.2	NNE13
22-Apr	N10	N10	N10	N9	N9	N9	NNE7	NNE6	NE4	N8	N13	N10	SSE7	ENE15	E16	E16	E18	E18	ENE16	ENE13	NE11	ENE9	NNE6	N9	NE7.9	E18
23-Apr	N10	NNE9	NNE9	NE8	ENE9	N8	N7	N8	E14	E15	E20	E21	E19	ESE21	E22	E22	E20	E20	E16	E12	E17	E17	E17	E16	E12.9	E22
24-Apr	E15	E13	E13	ESE14	E9	E12	E17	ESE14	E10	NNE6	WNW4	W6	WSW4	SSW6	SSE12	SSE12	SE15	ESE15	ESE11	E16	ESE14	ESE13	ESE13	ESE13	ESE9.5	E17
25-Apr	ESE12	SE7	ESE6	ESE6	E7	SE6	SE9	SSE9	SSE6	SSE5	E8	SE6	SW7	SSW8	SW8	WSW8	SSE7	SSE8	SSE9	SSE6	SSE8	SSE7	S8	S8	SSE6.0	ESE12
26-Apr	SSE6	S8	SE6	ESE7	SE7	SSE10	SSE10	SSE13	SSE13	SSE13	SSE15	SSE17	SE14	S14	SSE15	SSE15	SSE15	SSE15	SE14	SE11	SE15	SSE18	SE13	SSE14	SSE12.3	SSE18
27-Apr	SSE15	SE11	SE11	SE11	ESE16	ESE13	E9	E7	ESE10	SE12	SSE19	SSE18	SSE17	SSE15	SSE15	SSE15	SSE15	SSE14	SSE14	SSE15	SSE13	SE10	SE10	SE10	SE12.4	SSE19
28-Apr	SSE12	SE12	SE9	SSE10	SSW6	S6	SSW6	SSW5	SSW6	SSE6	S7	SSE6	SSW8	SSW7	S7	S8	SE9	SSE7	SE5	SE10	SSE13	SE11	SSE9	SE11	SSE7.4	SSE13
29-Apr	SE10	ESE7	SSE6	SSE7	S10	S9	S10	S9	S7	SSE6	S9	SW11	SW13	SW13	SW12	WSW3	WSW2	NNE6	NNW8	N5	N3	SSW4	S3	S4	S4.8	SW13
30-Apr	S4	S2	SSW4	SSW5	S5	S6	S6	SSE10	SSE10	SSE10	SSE11	SSW12	SSW16	SSW16	S14	SSW12	SSW11	SSW8	WSW11	SW7	SW6	SW3	WSW7	W9	SSW7.5	SSW16
	E2.7	E3.0	E2.7	E2.9	E2.2	ESE2.8	ESE3.0	ESE2.7	ESE2.8	ESE2.4	ESE2.4	ESE2.3	SSE2.2	SE1.9	ESE2.3	E2.9	E3.9	E4.4	ENE3.9	ENE4.8	E4.4	E3.3	E2.7	E2.5	Diurnal Average	
	SSE16	SE19	SE22	SE17	SSE22	SSE22	SSE20	SSE18	NW26	NW25	NNW24	E21	W22	WNW25	W25	NW26	NW25	WSW23	NW23	NW21	NNE20	SSE24	SSE22	SSE19	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 Apr 8 13:00

Minimum Value: 1 km/h on Apr 19 06:00

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

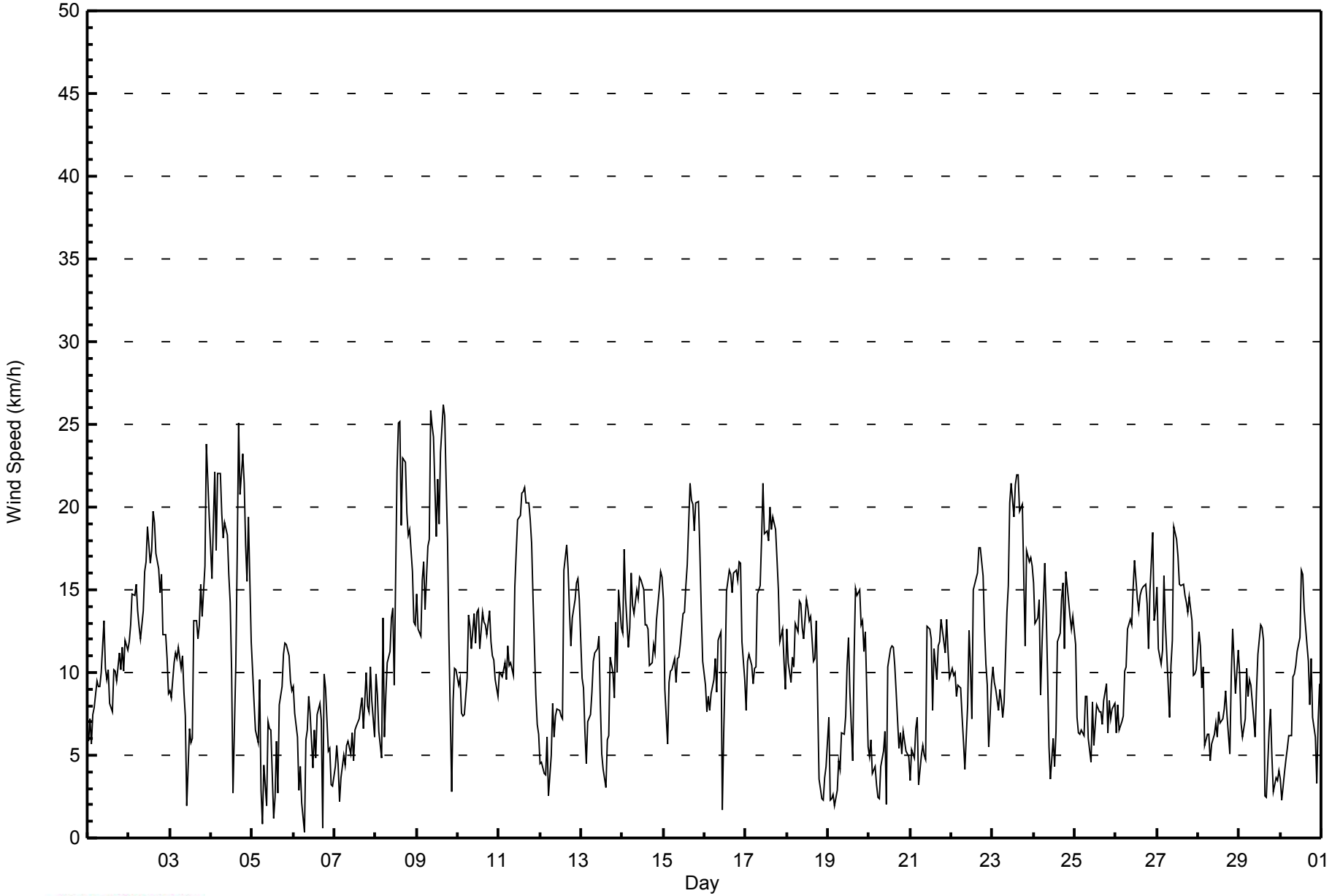
Day	Hourly Period Ending At (MST)																								Daily
	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24	Maximum
1-Apr	2	4	4	2	1	2	2	2	3	4	3	3	4	4	3	3	2	2	3	2	3	3	3	3	4
2-Apr	3	3	3	3	3	3	3	3	3	4	4	4	4	4	5	5	4	4	4	4	3	3	3	2	5
3-Apr	1	1	2	2	2	2	2	2	2	2	2	2	2	2	3	3	3	3	4	4	5	5	4	4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

WBEA NETWORK

Hourly Averages

Wind Speed (WS) - km/h

Mildred Lake - April 2014



AURORA ATMOSPHERICS INC.

Wind Speed Ranges (km/h)	Number of Hours	%	Cumulative %
0 - 5	95	13.19	13.19
6 - 11	319	44.31	57.50
12 - 19	262	36.39	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

WBEA NETWORK

Frequency Distribution

Wind Speed (WS) - km/h

Mildred Lake - April 2014

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	9	4	3	1	1	4	6	7	16	14	9	6	2	4	6	3	95
6 - 11	45	41	21	13	12	10	38	39	28	25	22	7	4	5	2	7	319
12 - 19	10	52	18	3	23	24	34	62	4	4	3	6	8	3	6	2	262
20 - 28	0	11	0	0	6	1	2	6	0	0	0	2	3	1	9	3	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	64	108	42	17	42	39	80	114	48	43	34	21	17	13	23	15	720

Total Number of Valid Hours: 720

Total Number of Hours: 720

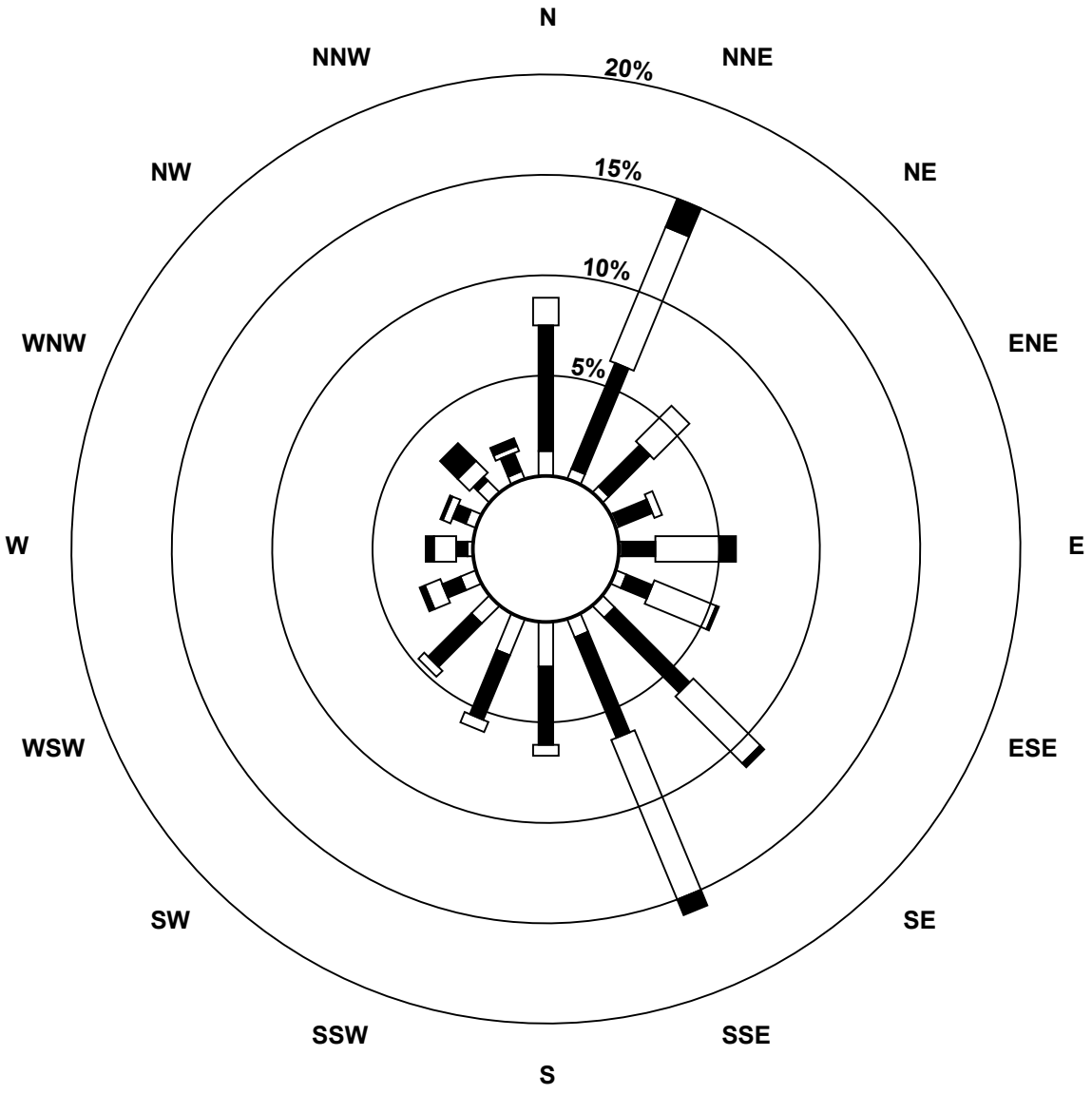
AURORA
ATMOSPHERICS INC.

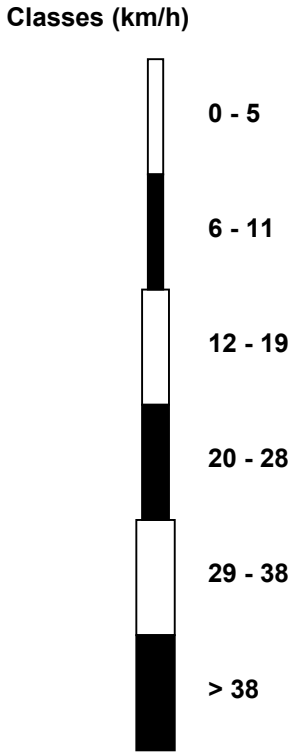
Wood Buffalo Environmental Association

Wind Rose Apr 2014

Wind Speed (WS) - km/h

Mildred Lake (AMS 2)





Total Number of Valid Hours: 720

Direction of Maximum Speed: 316 deg on Apr 9 16:00
Direction of Maximum Daily Speed Average: 306.7 deg on Apr 9

Direction of Minimum Speed: 247 deg on Apr 6 07:00

Direction of Minimum Daily Speed Average: 0.4 deg on Apr 6

Monthly Average Direction: 188.1 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-Apr	210	207	255	327	350	15	25	24	18	26	23	14	6	13	28	360	46	62	37	30	39	39	36	22	21.5
2-Apr	16	17	15	15	21	24	23	21	17	16	21	18	17	18	12	9	16	17	20	21	18	15	28	17	17.8
3-Apr	2	360	357	1	3	359	6	13	10	349	241	230	227	183	143	134	138	136	126	134	147	159	154	151	118.1
4-Apr	147	145	146	144	150	151	147	153	159	160	167	166	166	295	305	308	318	320	314	314	329	323	325	312	195.5
5-Apr	308	298	284	261	301	307	81	335	298	214	209	233	311	320	219	173	18	31	19	18	15	10	8	9	335.3
6-Apr	5	7	5	358	10	359	247	171	171	164	193	231	204	217	199	172	137	54	358	16	24	7	347	46	50.7
7-Apr	212	184	208	132	139	124	162	207	210	215	210	208	175	161	182	205	220	195	231	226	217	235	230	202	203.0
8-Apr	153	154	170	172	247	228	207	246	248	244	245	232	278	283	270	262	250	249	264	268	263	267	281	254	253.4
9-Apr	271	300	294	280	269	252	253	289	309	316	332	332	328	323	333	316	314	316	306	16	275	258	280	337	306.7
10-Apr	9	29	28	33	25	31	39	39	38	14	27	25	31	36	44	35	29	34	38	40	34	44	62	67	34.4
11-Apr	75	64	49	56	71	94	83	89	55	22	24	25	23	24	23	22	22	17	13	13	16	13	357	341	32.0
12-Apr	349	337	324	299	283	270	220	203	228	235	211	199	188	290	357	1	3	4	36	39	33	25	19	14	355.5
13-Apr	26	17	8	4	345	343	352	3	354	19	18	27	318	256	226	171	155	163	135	131	155	155	160	156	63.5
14-Apr	150	154	153	147	150	160	165	163	167	162	160	181	181	166	161	152	151	139	128	116	96	5	13	14	147.4
15-Apr	6	55	67	35	35	45	66	46	33	35	42	38	50	44	41	25	26	27	23	18	14	13	9	4	30.1
16-Apr	5	24	51	34	24	17	15	49	98	107	182	229	189	161	165	150	147	127	126	122	125	124	135	133	116.3
17-Apr	129	124	131	132	141	140	141	152	154	159	166	140	144	134	128	132	129	128	133	131	121	127	137	119	137.5
18-Apr	123	113	95	92	93	108	107	101	108	118	124	123	123	121	122	129	150	160	179	153	135	203	143	134	121.3
19-Apr	149	210	151	151	171	184	192	197	161	164	170	139	147	159	166	122	130	132	127	130	134	145	146	119	144.5
20-Apr	7	7	22	21	25	174	213	218	215	216	308	7	1	24	29	71	78	63	82	110	153	178	177	183	52.1
21-Apr	184	202	191	127	146	167	117	125	210	229	356	23	27	355	348	39	36	39	29	22	19	30	33	9	31.9
22-Apr	4	0	359	5	4	7	13	13	38	353	354	349	168	78	87	80	85	96	76	67	56	69	14	4	44.5
23-Apr	6	12	20	35	61	355	358	10	81	95	100	100	100	106	99	92	87	84	89	85	94	97	96	97	82.6
24-Apr	100	99	89	106	90	87	96	105	99	22	288	267	238	200	166	152	124	121	120	96	106	107	112	111	110.7
25-Apr	117	127	121	105	100	134	144	161	157	152	95	141	220	212	229	241	157	160	156	151	150	154	170	169	153.3
26-Apr	164	172	146	119	142	154	163	167	167	163	165	157	145	170	162	154	149	150	141	141	146	153	145	154	154.3
27-Apr	151	128	132	132	119	108	87	81	102	136	154	150	149	149	159	165	157	158	155	158	154	141	138	145	141.7
28-Apr	152	145	141	158	192	189	204	211	197	168	173	157	200	204	191	188	132	154	136	134	150	143	151	143	162.4
29-Apr	144	121	151	167	172	183	178	188	186	162	174	214	217	214	226	237	246	21	337	5	354	204	173	185	188.6
30-Apr	172	174	198	204	182	180	190	168	152	150	149	200	194	199	187	210	206	206	237	219	221	231	248	267	196.4
	92.1	92.5	89.9	85.8	87.2	102.7	109.8	116.9	119.9	119.5	122.6	119.9	146.7	130.3	113.8	95.4	89.4	91.2	74.0	70.1	87.2	89.1	88.3	85.1	
	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: 95 deg on Apr 5 07:00

Minimum Value: 6 deg on Apr 22 05:00

Percentiles: P_1 = 8 P_{10} = 13 Q_1 = 15 Median = 17 Q_3 = 24 P_{90} = 36 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

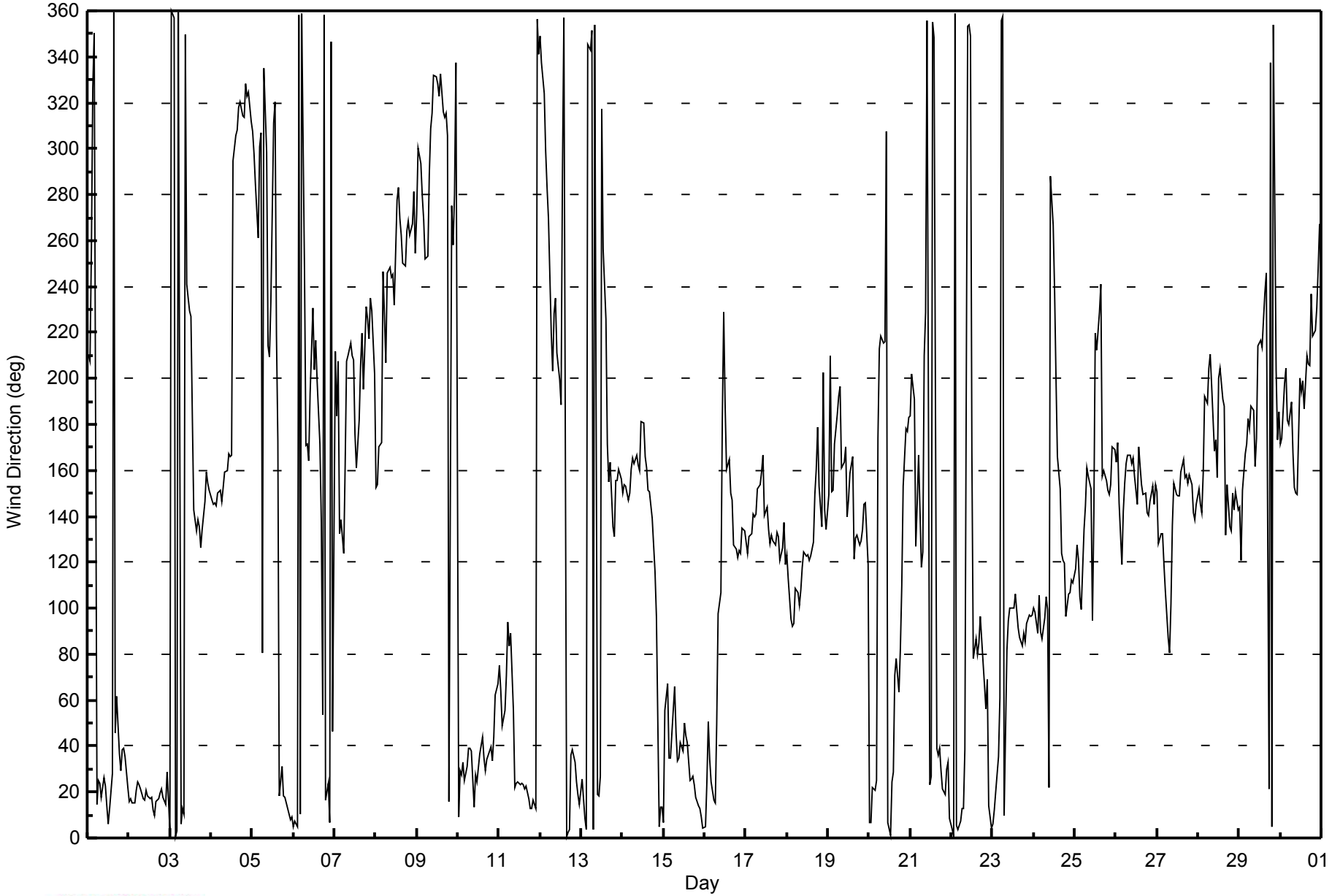
Day	Hourly Period Ending At (MST)																								Daily
	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24	Maximum
1-Apr	35	30	71	36	17	12	15	16	19	24	26	32	29	36	46	27	27	24	17	15	15	16	15	17	71
2-Apr	14	14	12	13	14	15	14	14	16	17	19	18	19	17	15	14	15	15	15	15	14	14	17	15	19
3-Apr	9	9	9	9	9	8	8	14	16	28	89	30	31	51	22	25	23	20	14	16	18	12	13	14	89
4-Apr	16	16	16	17	15	14	16	14	12	13	13	13	14	79	19	17	15	14	14	15	11	13	14	15	79
5-Apr	14	13	41	57	17	90	95	34	70	17	22	30	88	82	37	80	25	20	13	13	13	10	10	11	95
6-Apr	8	11	10	17	12	51	89	22	18	20	27	33	24	41	18	15	29	88	18	15	15	10	50	25	89
7-Apr	52	19	25	78	32	22	23	15	19	22	20	44	37	34	34	18	21	13	26	19	19	21	22	28	78
8-Apr	14	16	12	38	23	36	29	23	21	23	21	26	24	18	20	21	21	21	24	21	20	23	24	21	38
9-Apr	21	16	18	20	21	21	21	18	17	15	12	11	15	17	15	18	15	14	16	36	78	20	24	28	78
10-Apr	17	15	17	18	16	16	19	22	26	19	27	22	24	32	25	23	20	20	17	17	16	16	17	17	32
11-Apr	14	16	16	17	19	13	17	16	26	17	18	17	17	16	17	17	18	15	14	14	15	13	13	9	26
12-Apr	10	13	29	49	20	35	26	17	38	27	24	29	39	65	20	21	17	24	19	16	17	17	16	14	65
13-Apr	16	14	12	14	10	9	13	20	21	28	25	53	67	80	79	55	68	16	17	14	11	13	12	13	80
14-Apr	14	12	15	17	17	11	12	13	13	14	16	18	17	24	22	15	15	16	15	14	18	13	12	11	24
15-Apr	10	34	26	16	16	16	21	20	17	17	18	20	24	28	24	23	19	19	18	15	14	13	11	10	34
16-Apr	11	19	18	21	14	14	14	37	20	19	91	44	34	22	17	22	20	17	16	13	14	14	17	17	91
17-Apr	14	13	15	15	14	16	17	16	17	17	13	25	26	26	21	20	18	17	17	17	15	15	18	20	26
18-Apr	14	14	11	10	11	13	16	14	14	16	19	18	17	24	19	21	18	14	17	31	35	18	14	46	46
19-Apr	23	54	37	40	57	32	21	25	25	38	38	34	26	35	55	24	19	18	14	15	15	16	16	35	57
20-Apr	18	8	15	12	24	52	18	22	21	19	85	27	35	33	31	28	25	30	13	33	17	18	20	23	85
21-Apr	31	25	38	14	19	81	37	30	29	51	19	21	24	40	24	31	22	18	16	15	13	14	14	15	81
22-Apr	8	8	7	8	6	8	14	23	61	38	21	33	56	23	19	20	16	14	15	15	15	16	28	10	61
23-Apr	12	14	16	21	25	15	28	18	25	17	15	13	14	15	14	16	14	15	17	19	13	14	13	13	28
24-Apr	13	14	17	17	20	16	12	16	17	42	53	27	63	27	22	22	17	19	24	13	12	13	13	12	63
25-Apr	15	18	23	32	29	25	19	22	46	55	36	51	30	29	31	37	38	17	20	32	15	18	14	13	55
26-Apr	28	15	15	10	16	15	14	12	14	15	16	22	30	17	14	15	18	15	17	17	17	14	15	15	30
27-Apr	16	16	17	17	13	17	13	17	15	22	14	15	16	16	13	12	14	13	15	14	14	15	15	14	22
28-Apr	14	16	16	12	14	10	25	20	24	29	20	38	23	26	28	22	21	26	21	14	15	14	16	16	38
29-Apr	19	26	20	22	13	14	16	17	24	30	21	20	19	21	30	84	80	36	21	14	42	35	37	26	84
30-Apr	33	47	28	26	18	12	17	14	18	18	20	21	16	14	17	20	18	20	24	18	29	32	26	21	47
	52	54	71	78	57	90	95	37	70	55	91	53	88	82	79	84	80	88	26	36	78	35	50	46	
	Diurnal Maximum																								

WBEA NETWORK

Hourly Averages

Wind Direction (WD) - deg

Mildred Lake - April 2014



AURORA ATMOSPHERICS INC.

Wood Buffalo Environmental Association

SO_2 Calibration Report

Station Information

Calibration Date	April 17, 2014	Previous Calibration	March 13, 2014
Station Name	Mildred Lake	Station Number	AMS 2

Reason: Routine

Start Time (MST)	8:55	End Time (MST)	11:42
Barometric Pressure	mmHg	Station temp.	22 Deg C
Calibrator Make/Model	Sabio 4010	Serial Number	11541008
Cal Gas Concentration	59.4 ppm	Cal Gas Expiry Date	3/26/2012
Gas Cert Reference	cc307191		
DACS make/model	Campbell Scientific CR3000	DACS serial No.	2589
DACS voltage range	0-5v	DACS channel #	SE1

Analyzer Information

	Before	*After*		*Before*	*After*
Analyzer Range (ppb)	1000	1000	PMT voltage	-616	-616
Analyzer Range (mv)	5000	5000	Lamp voltage	903	904
Calculated slope	1.001147	0.999815	Chamber temp.	44.4	44.5
Calculated intercept	0.919626	1.407341	Pressure (mmHg)	707.6	706.0
Analyzer Background	26.7	26.5	Flow (lpm)	0.545	0.543
Analyzer Coefficient	0.915	0.909	Intensity	29000	29000

Analyzer make	TEI 43c	Analyzer serial #	43c-77879-387

Calibration Data

Set Point	Total flow rate (cc/min)	Source gas flow rate (cc/min)	Calculated concentration (ppb) (Cc)	Indicated concentration (ppb) (Ic)	Correction factor (Cc/Ic)
as found zero	5000	0.0	0.0	0.3	NA
as found span	5000	69.9	830.4	834.6	0.995
calibrator zero	5000	0.0	0.0	0.3	0.000
high point	5000	69.9	830.4	830.6	1.000
second point	5000	35.4	420.6	416.6	1.009
third point	5000	17.7	210.3	208.4	1.009
calibrator zero					
as left zero	5000	0.0	0.0	0.3	0.000
as left span	5000	69.9	830.4	830.6	1.000
				Average Correction Factor	1.006

Corrected As found	834.3	Previous response	828.5	% change	-0.7%

Notes:

Small adjustment to span. As found zero used as calibrator zero. Filter changed after third point

Calibration Performed By: Ryan Power

Wood Buffalo Environmental Association

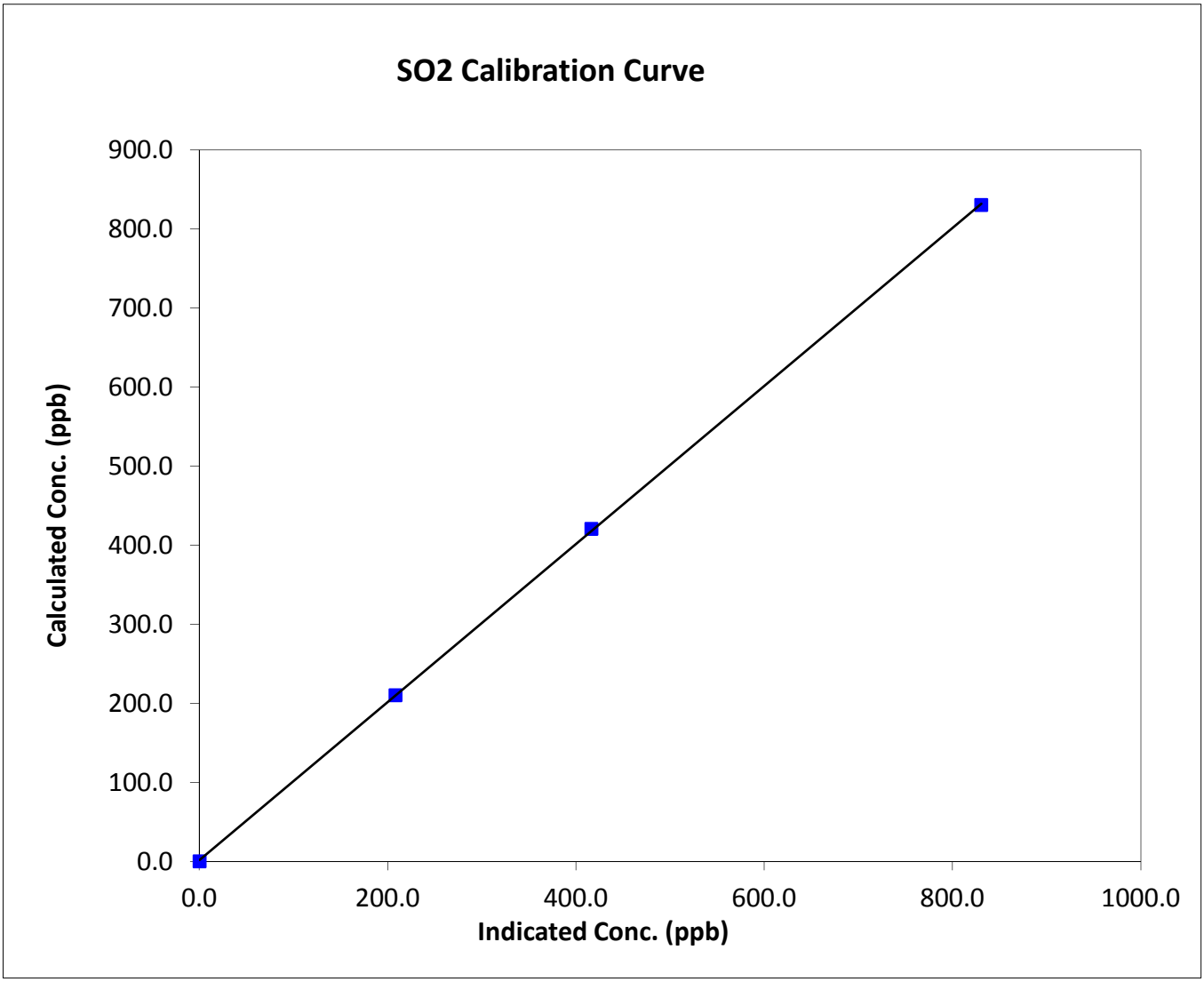
SO_2 Calibration Summary

Station Information

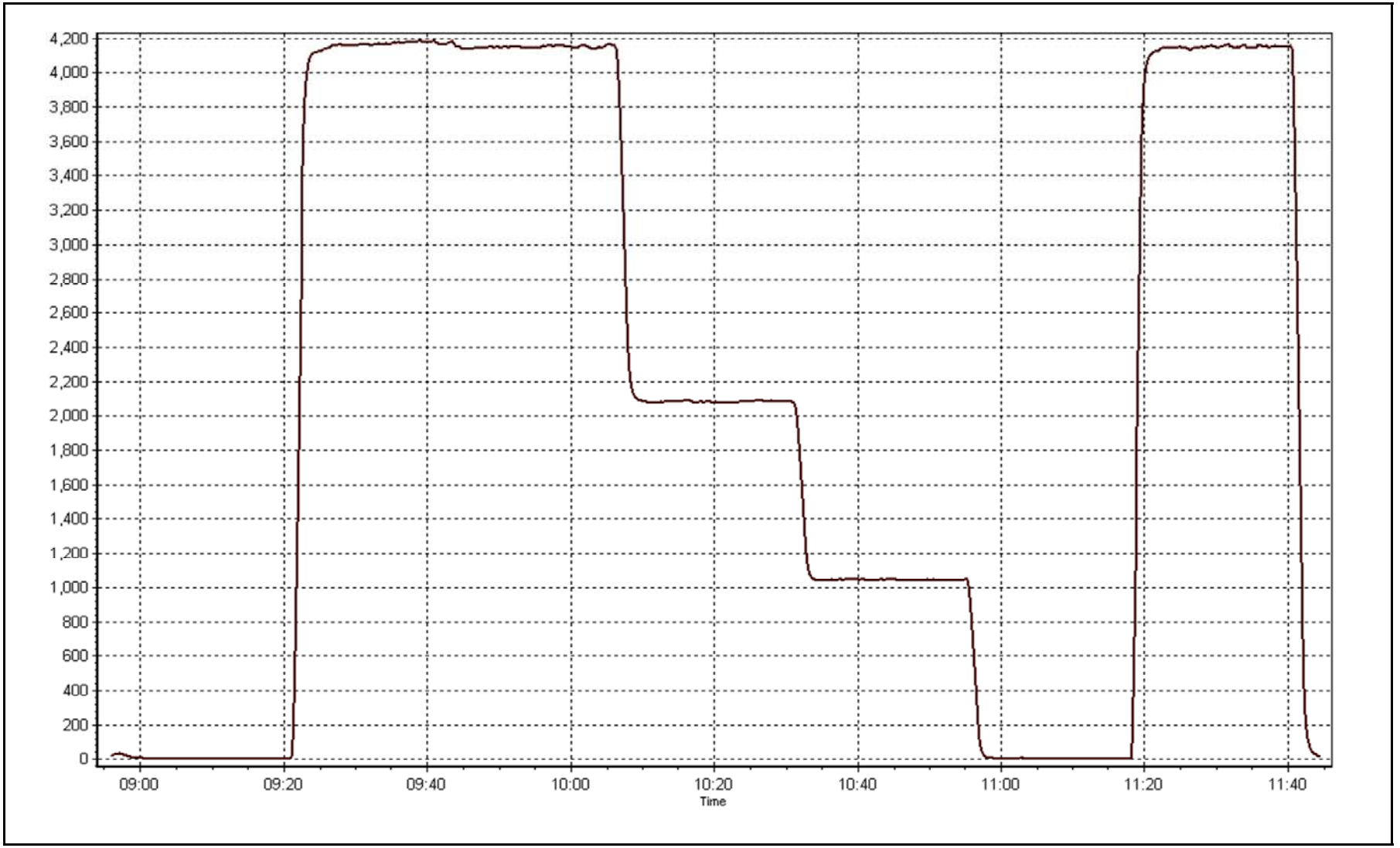
Calibration Date	April 17, 2014	Previous Calibration	March 13, 2014
Station Name	Mildred Lake	Station Number	AMS 2
Start Time (MST)	8:55	End Time (MST)	11:42
Analyzer make	TEI 43c	Analyzer serial #	43c-77879-387

Calibration Data

Calculated concentration (ppb) (Cc)	Indicated concentration (ppb) (Ic)	Correction factor (Cc/Ic)	Statistical Evaluation	
0.0	0.3	N/A	Correlation Coefficient	0.999968
830.4	830.6	0.9998		
420.6	416.6	1.0095	Slope	0.999815
210.3	208.4	1.0090		
			Intercept	1.407341



SO2 Calibration Plot Date: April 17, 2014



Wood Buffalo Environmental Association

H2S Calibration Report

Station Information

Calibration Date	April 16, 2014	Previous Calibration	March 10, 2014
Station Name	Mildred Lake	Station Number	AMS 2
Reason:	Routine		
Start Time (MST)	9:45	End Time (MST)	12:35
Barometric Pressure	mmHg	Station temp.	22 Deg C
Calibrator Make/Model	Sabio 4010	Serial number	11541008
Cal Gas Concentration	5.59 ppm H2S	Cal Gas Expiry Date	3/11/2009
Gas Cert Reference	cc243460	SO2 gas conc.	59.4 ppm SO2
DACS make/model	Campbell Scientific CR3000	DACS serial No.	2589
DACS voltage range	0-5v	DACS channel #	SE2

Analyzer Information

	Before	*After*		*Before*	*After*
Analyzer Range (ppb)	100	100	PMT voltage	-600	-600
Analyzer Range (mv)	5000	5000	Lamp voltage	779	777
Calculated slope	0.987176	0.998132	Chamber temp.	45	45
Calculated intercept	0.056018	0.030540	Pressure	555.0	554.5
Analyzer Background	12.7	12.5	Flow	1.029	1.024
Analyzer Coefficient	0.889	0.875	Intensity	88	88
			Converter temp.	326	325

Analyzer make/model	TEI 450i	Analyzer serial #	815129107
Converter make/model	n/a	Converter serial #	n/a

Calibration Data

Set Point	Total flow rate (cc/min)	Source gas flow rate (cc/min)	Calculated concentration (ppb) (Cc)	Indicated concentration (ppb) (Ic)	Correction factor (Cc/Ic)
as found zero	4000	0.0	0.0	0.0	NA
as found span	4000	57.2	79.9	81.0	0.986
SO2 scrubber check	5000	17.7	210.3	0.1	NA
calibrator zero	4000	0.0	0.0	0.0	NA
high point	4000	57.2	79.9	80.1	0.998
second point	4000	28.6	40.0	39.9	1.001
third point	4000	14.3	20.0	20.0	1.001
calibrator zero					
as left zero	5000	0.0	0.0	0.0	NA
as left span	4000	57.2	79.9	79.8	1.002
				Average Correction Factor	1.000

Corrected As found	81.0	Previous response	80.9	% change	-0.1%

Notes:

As Found zero used as calibrator zero; small adjustment for span performed. Scrubber check after third point. Filter changed during As Lefts

Calibration Performed By: Ryan Power

Wood Buffalo Environmental Association

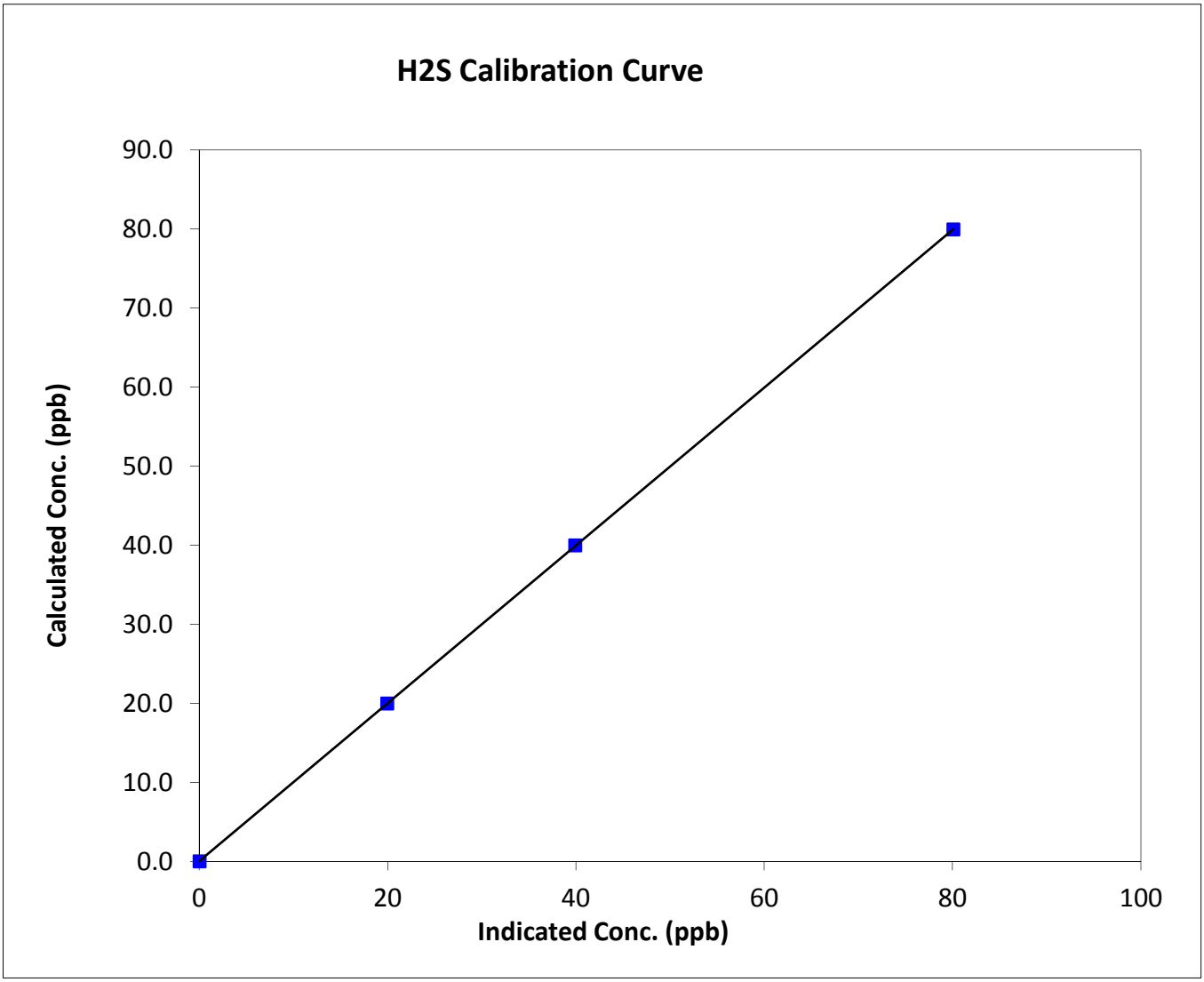
H2S Calibration Summary

Station Information

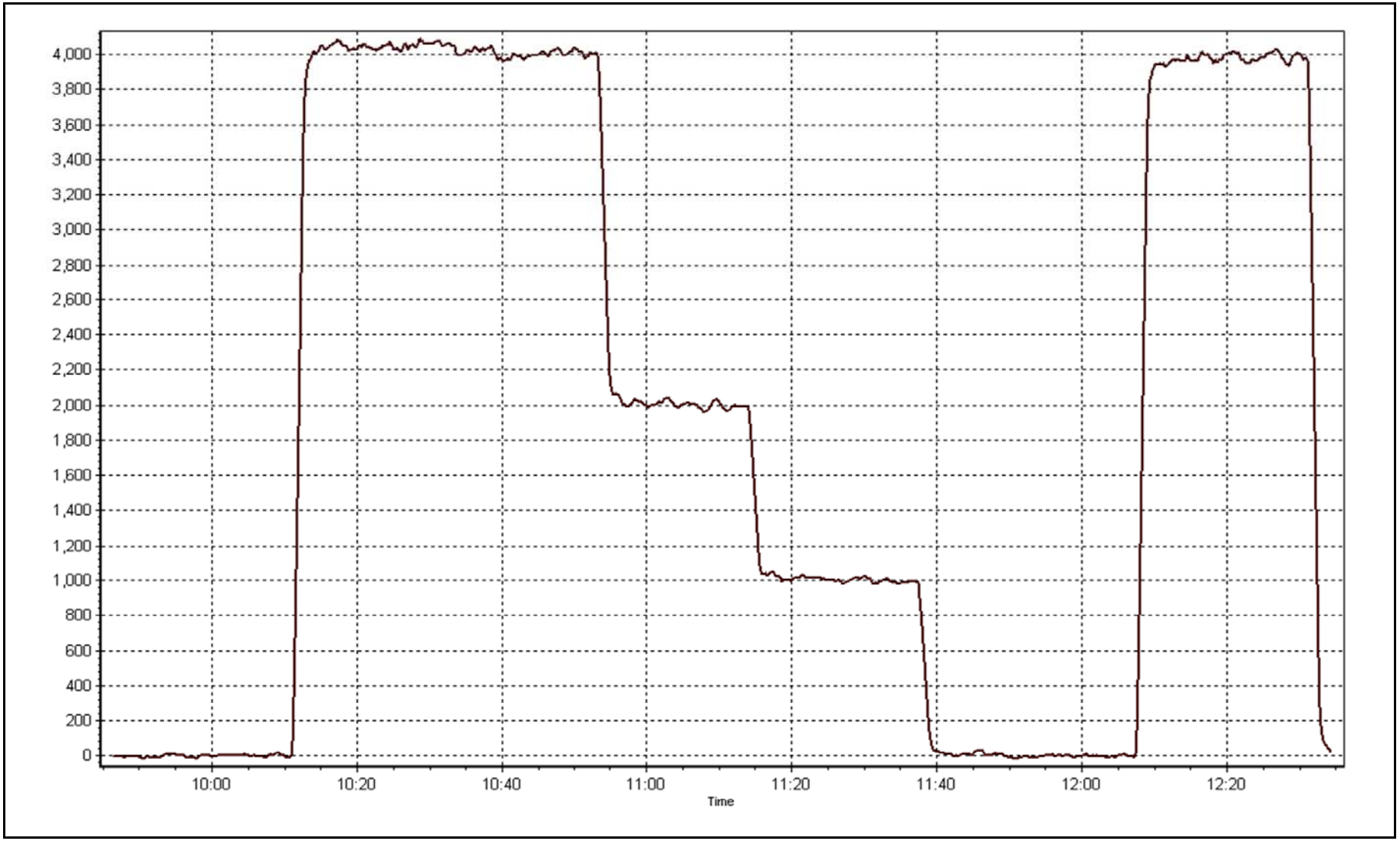
Calibration Date	April 16, 2014	Previous Calibration	March 10, 2014
Station Name	Mildred Lake	Station Number	AMS 2
Start Time (MST)	9:45	End Time (MST)	12:35
Analyzer make	TEI 450i	Analyzer serial #	815129107

Calibration Data

Calculated concentration (ppb) (Cc)	Indicated concentration (ppb) (Ic)	Correction factor (Cc/Ic)	Statistical Evaluation	
0.0	0.0	N/A	Correlation Coefficient	0.999997
79.9	80.1	0.9980		
40.0	39.9	1.0007	Slope	0.998132
20.0	20.0	1.0012		
			Intercept	0.030540



H2S Calibration Plot Date: Wednesday, April 16, 2014



Wood Buffalo Environmental Association

THC Calibration Report

Station Information

Calibration Date	Thursday, April 17, 2014	Previous Calibration	Thursday, March 13, 2014
Station Name	Mildred Lake	Station Number	AMS 2
Reason:	Routine		
Start Time (MST)	8:55	End Time (MST)	11:42
Barometric Pressure	mmHg	Station temp.	22 Deg C
Calibrator Make/Model	Sabio 4010	Serial Number	11541008
Gas Cert Reference	cc307191	Cal Gas Expiry Date	3/26/2012
CH4 Cal Gas Conc.	505 ppm	CH4 Equiv Conc.	1060.5 ppm
C3H8 Cal Gas Conc.	202 ppm		
DACS make/model	Campbell Scientific CR3000	DACS serial No.	2589
DACS voltage range	0-5v	DACS channel #	SE3

Analyzer Information

	Before	*After*		*Before*	*After*
Analyzer Range (ppm)	25	25	Sample Pressure	8.2	8.2
Analyzer Range (mv)	5000	5000	Air or Bypass press	39.8	39.8
Calculated slope	1.000067	1.005953	Fuel Pressure	25.7	25.7
Calculated intercept	-0.013863	-0.038524			
BKG	2.56	2.50			
COEF	5.086	4.969			

Analyzer make	51i-LT	Analyzer serial #	1300156231

Calibration Data

Set Point	Total flow rate (cc/min)	Source gas flow rate (cc/min)	Calculated concentration THC (ppm) (Cc)	Indicated concentration (ppb) (Ic)	Correction factor (Cc/Ic)
as found zero	5000	0.0	0.00	0.08	N/A
as found span	5000	69.9	14.83	15.18	0.977
calibrator zero	5000	0.0	0.00	0.08	N/A
high point	5000	69.9	14.83	14.80	1.002
second point	5000	35.4	7.51	7.49	1.003
third point	5000	17.7	3.75	3.73	1.006
calibrator zero					
as left zero	5000	0.0	0.00	0.07	N/A
as left span	5000	69.9	14.83	14.75	1.005
				Average Correction Factor	1.004

Corrected As found	15.10	Previous response	14.84	% change	-1.7%

Notes:

Span with small adjustment. As Found zero used as calibrator zero. Filter changed after third point

Calibration Performed By: Ryan Power

Wood Buffalo Environmental Association

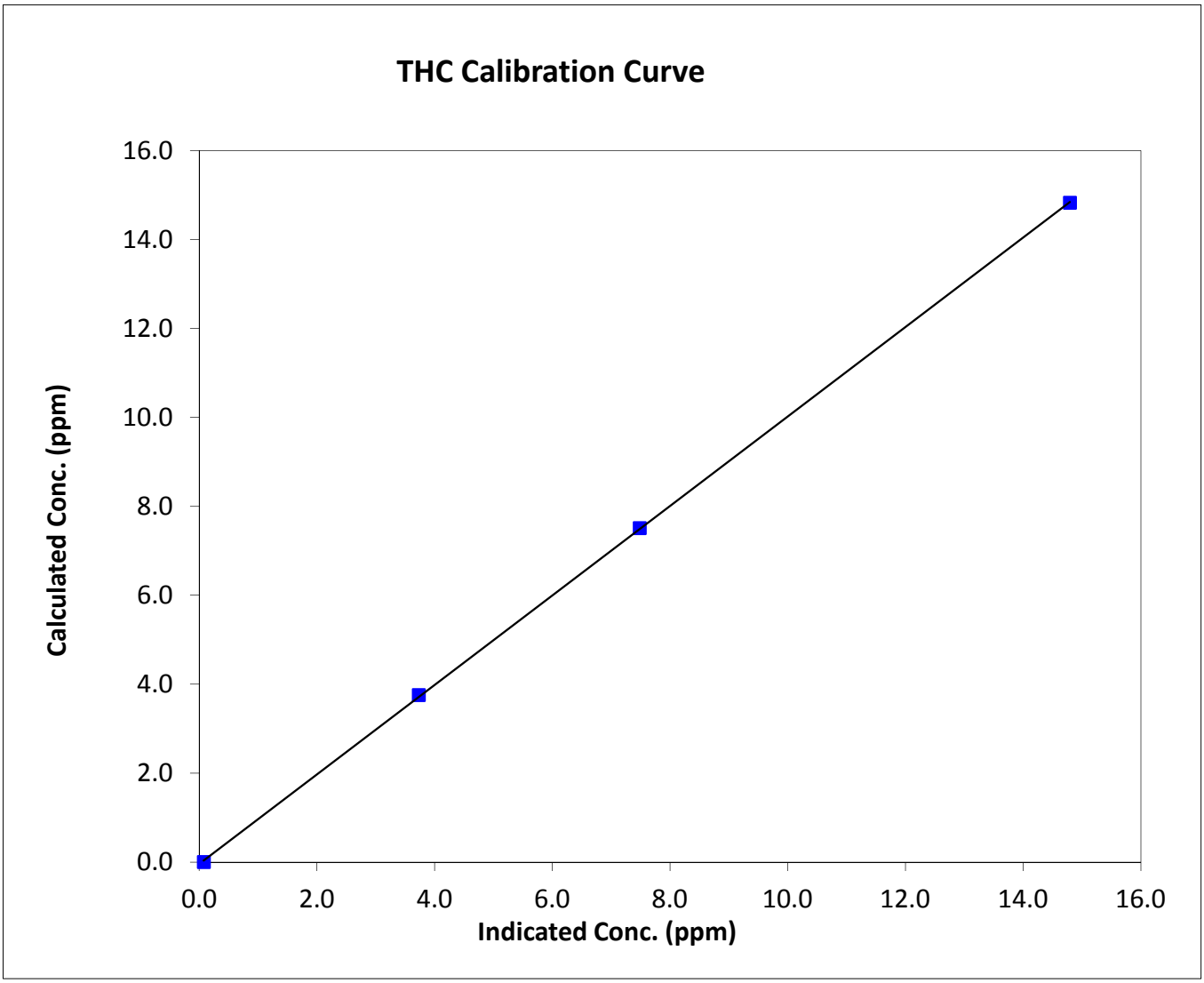
THC Calibration Summary

Station Information

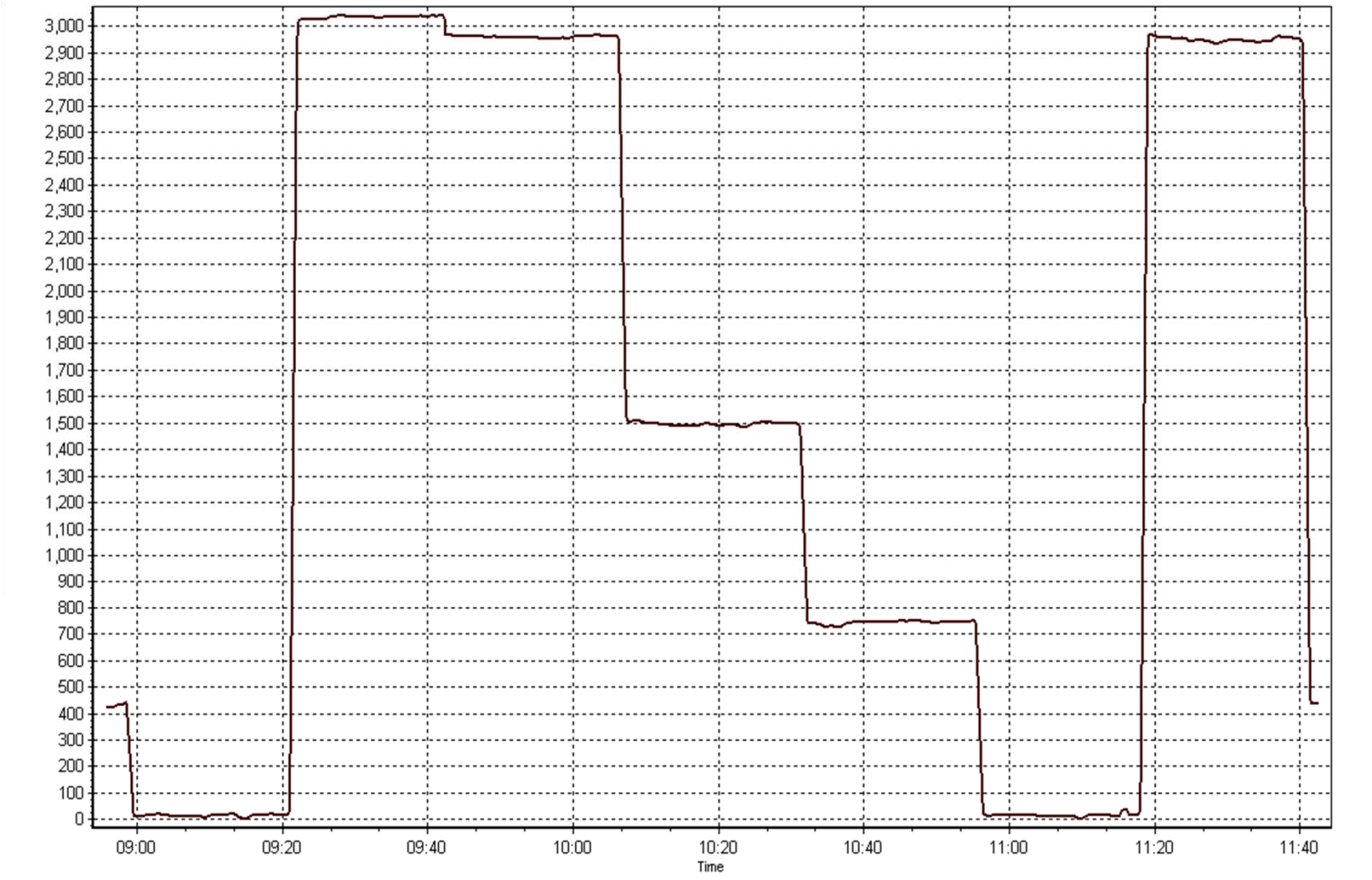
Calibration Date	April 17, 2014	Previous Calibration	March 13, 2014
Station Name	Mildred Lake	Station Number	AMS 2
Start Time (MST)	8:55	End Time (MST)	11:42
Analyzer make	51i-LT	Analyzer serial #	1300156231

Calibration Data

Calculated concentration (ppm) (Cc)	Indicated concentration (ppm) (Ic)	Correction factor (Cc/Ic)	Statistical Evaluation	
0.00	0.08	N/A	Correlation Coefficient	0.999968
14.83	14.80	1.0021		
7.51	7.49	1.0031	Slope	1.005953
3.75	3.73	1.0065		
			Intercept	-0.038524



THC Calibration Plot Date: April 17, 2014



WOOD BUFFALO ENVIRONMENTAL ASSOCIATION

CONTINUOUS AMBIENT AIR QUALITY
MONITORING PROGRAM
MONTHLY REPORT

AMS 3
LOWER CAMP METEOROLOGY
APRIL 2014

Operations and Data Collection by:
Wood Buffalo Environmental Association
Fort McMurray, Alberta

QA/QC, Data Validation and Reporting by:
Aurora Atmospherics Inc.
Calgary, Alberta

May 30, 2014

WOOD BUFFALO ENVIRONMENTAL ASSOCIATION - LOWER CAMP MET TOWER (AMS 3)
APRIL 2014

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	720	0	0	100.00	21.8	-	13.6	-
Temperature 45 m (C) Average	720	0	0	100.00	21.9	-	13.8	-
Temperature 100 m (C) Average	720	0	0	100.00	21.4	-	14.5	-
Temperature 167 m (C) Average	720	0	0	100.00	20.9	-	15.1	-
Relative Humidity 20 m (%) Average	720	0	0	100.00	94	-	-	-
Relative Humidity 45 m (%) Average	720	0	0	100.00	94	-	-	-
Relative Humidity 100 m (%) Average	720	0	0	100.00	96	-	-	-
Relative Humidity 167 m (%) Average	720	0	0	100.00	96	-	-	-
Wind Speed 20 m (km/h) Average	720	0	0	100.00	32	-	-	-
Wind Speed 45 m (km/h) Average	720	0	0	100.00	41	-	-	-
Wind Speed 100 m (km/h) Average	720	0	0	100.00	53	-	-	-
Wind Speed 167 m (km/h) Average	720	0	0	100.00	61	-	-	-
Wind Direction 20 m (deg) Average	720	0	0	100.00	-	-	-	-
Wind Direction 45 m (deg) Average	720	0	0	100.00	-	-	-	-
Wind Direction 100 m (deg) Average	720	0	0	100.00	-	-	-	-
Wind Direction 167 m (deg) Average	720	0	0	100.00	-	-	-	-
Vertical Wind Speed 20 m (km/h) Average	720	0	0	100.00	0.6	-	-	-
Vertical Wind Speed 45 m (km/h) Average	720	0	0	100.00	1.6	-	-	-
Vertical Wind Speed 100 m (km/h) Average	720	0	0	100.00	2.9	-	-	-
Vertical Wind Speed 167 m (km/h) Average	720	0	0	100.00	3.9	-	-	-

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

WOOD BUFFALO ENVIRONMENTAL ASSOCIATION - LOWER CAMP MET TOWER (AMS 3)
APRIL 2014

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	720	1.67	7.4	-	-19.1	-8	-3.2	2.2	6.1	11.1	21.8
Temperature 45 m (C) Average	720	1.58	7.5	-	-19.5	-8.1	-3.3	2.1	6.3	11	21.9
Temperature 100 m (C) Average	720	1.36	7.5	-	-20	-8.5	-3.8	1.8	6.2	10.8	21.4
Temperature 167 m (C) Average	720	1.11	7.5	-	-18.7	-8.9	-4.1	1.4	6.1	10.5	20.9
Relative Humidity 20 m (%) Average	720	56.8	18	-	17	33	43	56	70	83	94
Relative Humidity 45 m (%) Average	720	56.7	18	-	17	33	42	56	70	83	94
Relative Humidity 100 m (%) Average	720	56	18	-	17	32	42	55	69	82	96
Relative Humidity 167 m (%) Average	720	55.4	18	-	17	31	42	54	68	82	96
Wind Speed 20 m (km/h) Average	720	9.4	5	-	0	3	6	9	13	16	32
Wind Speed 45 m (km/h) Average	720	12.5	7	-	0	4	8	11	17	21	41
Wind Speed 100 m (km/h) Average	720	17.2	10	-	0	5	10	16	24	30	53
Wind Speed 167 m (km/h) Average	720	19.6	11	-	0	7	12	18	26	33	61
Wind Direction 20 m (deg) Average	720	-	-	-	-	-	-	-	-	-	-
Wind Direction 45 m (deg) Average	720	-	-	-	-	-	-	-	-	-	-
Wind Direction 100 m (deg) Average	720	-	-	-	-	-	-	-	-	-	-
Wind Direction 167 m (deg) Average	720	-	-	-	-	-	-	-	-	-	-
Vertical Wind Speed 20 m (km/h) Average	720	-0.24	0.3	-	-1.3	-0.6	-0.4	-0.2	-0.1	0	0.6
Vertical Wind Speed 45 m (km/h) Average	720	0.08	0.5	-	-1.9	-0.4	-0.2	0.1	0.4	0.7	1.6
Vertical Wind Speed 100 m (km/h) Average	720	0.28	0.5	-	-1.1	-0.3	0	0.2	0.5	0.9	2.9
Vertical Wind Speed 167 m (km/h) Average	720	0.52	0.9	-	-1.8	-0.4	0	0.3	1	1.7	3.9

WOOD BUFFALO ENVIRONMENTAL ASSOCIATION - LOWER CAMP MET TOWER (AMS 3)
APRIL 2014

OPERATIONAL NOTES

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

Maximum Value: 21.8 C on Apr 30 17:00

Maximum Daily Average: 13.6 C on Apr 30

Minimum Value: -19.1 C on Apr 3 07:00

Minimum Daily Average: -11.8 C on Apr 2

Maximum Diurnal Average: 6.5 C at hour 16

Minimum Diurnal Average: -3.3 C at hour 6

Monthly Average: 1.67 C

Percentiles: P_1 = -15.9 P_{10} = -8.0 Q_1 = -3.2 Median = 2.2 Q_3 = 6.1 P_{90} = 11.1 P_{99} = 20.3

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

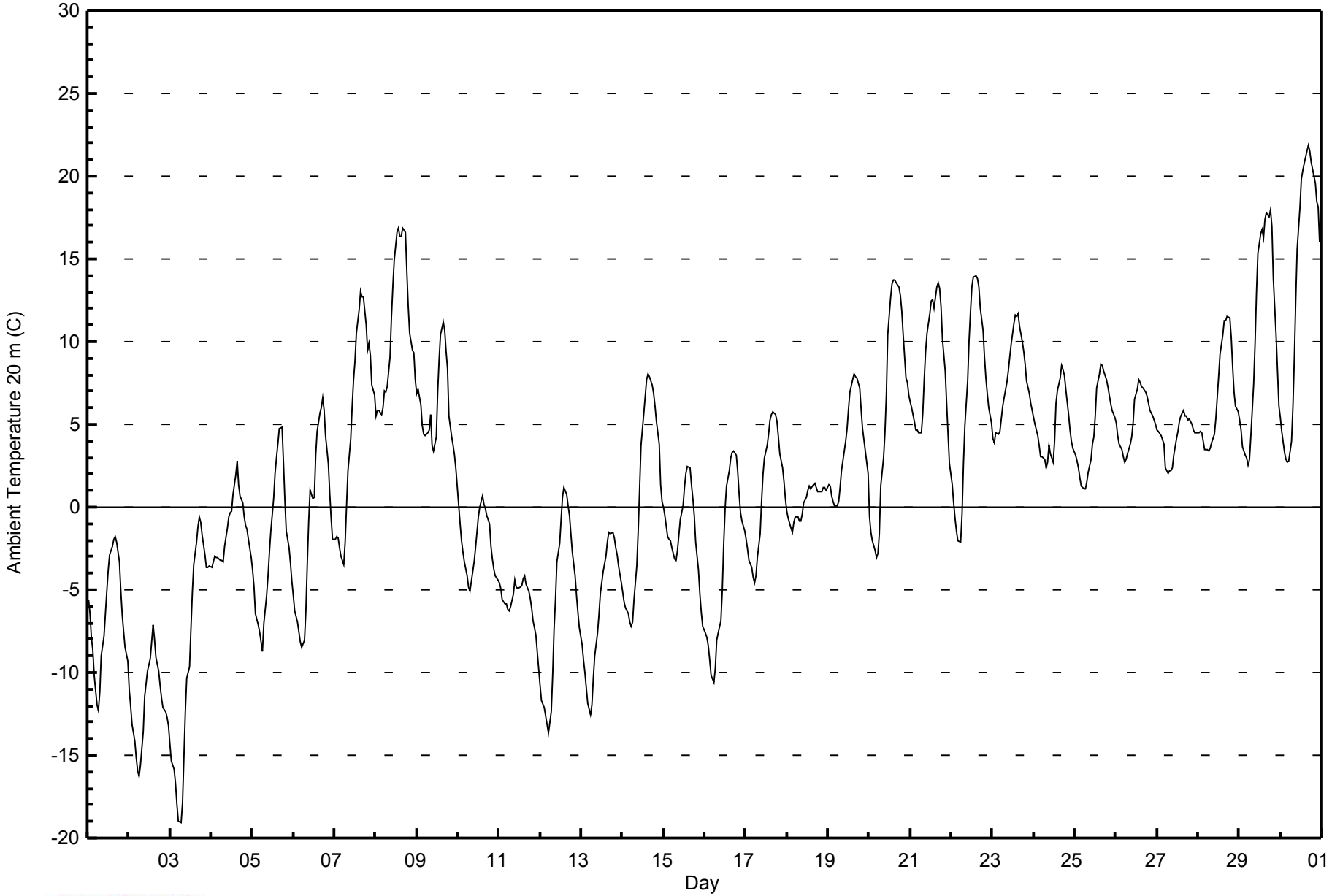
Day	Hourly Period Ending At (MST)																								Daily	Daily
	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24	Average	Maximum
1-Apr	-5.6	-6.5	-7.9	-8.7	-10.1	-12.0	-12.3	-11.2	-9.0	-7.8	-6.5	-5.1	-3.9	-2.9	-2.4	-1.9	-1.8	-2.1	-3.3	-5.1	-6.5	-7.6	-8.5	-9.3	-6.6	-1.8
2-Apr	-11.0	-12.1	-13.2	-14.2	-15.2	-15.9	-16.3	-15.6	-13.6	-11.5	-10.7	-9.9	-9.2	-8.1	-7.1	-8.0	-9.1	-9.9	-10.8	-11.6	-12.1	-12.4	-12.7	-13.2	-11.8	-7.1
3-Apr	-14.4	-15.3	-15.9	-16.7	-17.9	-19.0	-19.1	-17.9	-15.1	-12.3	-10.4	-9.6	-7.4	-5.1	-3.5	-2.1	-1.2	-0.6	-0.9	-1.7	-2.9	-3.7	-3.6	-3.5	-9.2	-0.6
4-Apr	-3.6	-3.3	-3.0	-3.1	-3.1	-3.2	-3.2	-3.3	-2.4	-1.3	-0.6	-0.3	-0.3	0.8	2.0	2.8	1.3	0.7	0.2	-0.6	-1.1	-1.4	-2.0	-3.1	-1.3	2.8
5-Apr	-3.8	-4.8	-6.4	-7.1	-7.6	-8.1	-8.7	-7.0	-5.4	-4.1	-2.7	-1.5	0.5	2.1	3.0	3.8	4.7	4.8	2.7	0.4	-1.4	-2.5	-3.4	-4.5	-2.4	4.8
6-Apr	-5.3	-6.3	-7.0	-7.5	-8.1	-8.5	-8.0	-6.3	-3.4	-0.8	1.0	0.5	0.6	3.1	4.6	5.7	6.0	6.6	5.9	4.3	2.6	0.8	-0.7	-1.9	-0.9	6.6
7-Apr	-1.9	-1.8	-1.9	-2.4	-3.0	-3.5	-2.1	0.1	2.2	4.2	6.1	7.7	8.8	10.5	11.9	13.1	12.8	12.7	11.0	9.5	9.9	9.2	7.4	6.8	5.3	13.1
8-Apr	5.5	5.9	5.9	5.6	6.0	7.0	6.9	7.3	9.1	11.5	13.3	14.9	16.6	16.8	16.4	16.3	16.9	16.6	14.3	12.1	10.5	9.5	9.3	7.7	10.9	16.9
9-Apr	6.9	7.1	6.2	4.9	4.4	4.4	4.5	4.7	5.6	3.7	3.4	4.3	6.9	8.9	10.4	11.2	10.7	9.4	8.4	5.5	4.3	3.8	3.1	2.3	6.0	11.2
10-Apr	0.1	-1.0	-2.0	-2.7	-3.3	-4.1	-4.8	-5.1	-4.5	-3.3	-2.4	-1.6	-0.6	0.0	0.7	0.1	-0.1	-0.5	-1.0	-2.4	-3.2	-3.8	-4.2	-4.4	-2.3	0.7
11-Apr	-4.6	-4.9	-5.6	-5.9	-5.8	-6.2	-6.3	-6.0	-5.2	-4.4	-4.8	-4.9	-4.9	-4.7	-4.3	-4.1	-4.6	-5.1	-5.5	-6.1	-6.8	-7.7	-8.7	-9.7	-5.7	-4.1
12-Apr	-10.8	-11.7	-12.1	-12.6	-13.1	-13.6	-12.4	-10.1	-7.4	-5.6	-3.3	-2.2	-0.8	0.6	1.1	0.8	0.1	-0.5	-1.7	-2.7	-4.1	-5.3	-6.3	-7.3	-5.9	1.1
13-Apr	-8.3	-9.2	-10.0	-10.9	-11.9	-12.5	-11.9	-10.4	-9.0	-7.7	-6.6	-5.2	-4.5	-3.9	-2.9	-2.1	-1.5	-1.6	-1.6	-1.9	-2.4	-2.9	-3.6	-4.6	-6.1	-1.5
14-Apr	-5.2	-5.8	-6.1	-6.4	-6.9	-7.2	-6.9	-5.6	-3.5	-1.4	1.1	3.7	5.7	6.7	7.8	8.0	7.9	7.3	6.8	6.1	5.2	3.8	1.3	0.3	0.7	8.0
15-Apr	0.0	-0.5	-1.8	-1.9	-2.0	-2.5	-3.1	-3.2	-2.6	-1.7	-0.8	0.1	1.2	2.0	2.4	2.4	1.4	0.5	-0.5	-2.1	-3.8	-5.2	-6.4	-7.2	-1.5	2.4
16-Apr	-7.7	-7.9	-8.4	-9.2	-10.2	-10.6	-9.8	-8.1	-7.6	-6.9	-5.0	-2.2	0.0	1.3	2.2	3.0	3.3	3.4	3.2	2.1	0.7	-0.4	-0.9	-1.4	-3.2	3.4
17-Apr	-1.9	-2.5	-3.2	-3.7	-4.2	-4.6	-4.1	-3.0	-1.6	0.4	1.9	3.0	3.7	4.4	5.2	5.6	5.8	5.6	5.1	4.2	3.3	2.4	1.5	0.5	1.0	5.8
18-Apr	-0.2	-0.6	-1.3	-1.5	-0.9	-0.6	-0.6	-0.9	-0.9	-0.5	0.3	0.6	1.0	1.3	1.1	1.3	1.4	1.2	0.9	0.9	1.0	1.2	1.1	1.0	0.3	1.4
19-Apr	1.4	1.3	0.6	0.3	0.1	0.1	0.3	1.2	2.2	3.4	4.0	4.8	5.9	6.9	7.7	8.0	7.9	7.8	7.2	6.0	4.7	4.0	3.4	2.0	3.8	8.0
20-Apr	-0.6	-1.5	-2.0	-2.7	-3.1	-2.8	-1.6	1.3	3.0	4.5	6.8	10.5	12.7	13.5	13.7	13.7	13.6	13.3	12.8	11.8	10.4	7.8	7.5	6.8	6.2	13.7
21-Apr	6.4	6.0	5.2	4.7	4.6	4.5	4.5	5.6	7.7	9.4	10.5	11.7	12.5	12.5	12.0	13.3	13.5	13.3	12.1	10.2	8.2	6.3	4.4	2.6	8.4	13.5
22-Apr	1.4	0.2	-0.7	-1.5	-2.0	-2.1	-0.4	2.7	4.9	7.6	10.1	11.8	13.3	13.9	14.0	13.8	13.3	12.1	10.6	9.1	7.8	6.9	6.0	5.1	6.6	14.0
23-Apr	4.1	3.9	4.5	4.4	4.6	5.4	6.1	6.6	7.6	8.3	9.1	9.8	11.1	11.6	11.5	11.7	11.0	10.0	9.4	8.7	7.6	6.9	6.3	5.8	7.7	11.7
24-Apr	5.4	5.0	4.4	3.7	3.0	3.1	2.9	2.4	2.7	3.7	3.2	2.7	4.0	6.3	7.1	7.8	8.6	8.3	7.9	7.1	5.6	4.6	4.0	3.6	4.9	8.6
25-Apr	3.2	2.8	2.4	1.8	1.3	1.1	1.1	1.5	2.1	2.9	3.8	4.2	5.5	7.2	8.0	8.7	8.6	8.2	7.7	7.3	6.8	6.3	5.8	5.4	4.7	8.7
26-Apr	5.1	4.3	3.8	3.5	3.1	2.7	2.9	3.2	3.8	4.3	5.1	6.5	7.1	7.7	7.6	7.3	7.2	7.0	6.7	6.3	5.9	5.5	5.2	5.0	5.3	7.7
27-Apr	4.7	4.5	4.3	4.1	3.8	2.4	2.1	2.2	2.2	2.4	3.1	4.2	4.6	5.1	5.5	5.8	5.5	5.5	5.3	5.3	5.0	4.7	4.5	4.5	4.2	5.8
28-Apr	4.5	4.5	4.5	4.0	3.5	3.5	3.4	3.6	3.9	4.4	5.3	6.6	7.9	9.2	10.4	11.3	11.3	11.5	11.5	10.2	8.4	7.0	6.1	5.8	6.8	11.5
29-Apr	5.2	4.6	3.6	3.2	3.0	2.5	2.8	4.3	7.4	9.9	12.9	15.3	16.5	16.7	16.3	17.4	17.8	17.6	17.9	17.0	13.8	10.3	8.2	6.1	10.4	17.9
30-Apr	5.4	4.5	3.3	2.9	2.7	2.8	4.0	6.1	9.0	12.6	15.6	18.1	19.8	20.3	20.7	21.5	21.8	21.5	20.9	20.4	19.5	18.5	18.1	16.1	13.6	21.8
	-0.9	-1.4	-2.0	-2.5	-2.9	-3.3	-3.0	-2.0	-0.6	0.8	2.1	3.3	4.5	5.5	6.1	6.5	6.5	6.1	5.4	4.3	3.2	2.2	1.4	0.6	Diurnal Average	
	6.9	7.1	6.2	5.6	6.0	7.0	6.9	7.3	9.1	12.6	15.6	18.1	19.8	20.3	20.7	21.5	21.8	21.5	20.9	20.4	19.5	18.5	18.1	16.1	Diurnal Maximum	

WBEA NETWORK

Hourly Averages

Ambient Temperature 20 m (AT20m) - C

Lower Camp Met Tower - April 2014



AURORA ATMOSPHERICS INC.

Concentration Ranges (C)	Number of Hours	%	Cumulative %
-50 - -20	0	0.00	0.00
-20 - 0	286	39.72	39.72
0 - 10	345	47.92	87.64
10 - 20	82	11.39	99.03
> 20	7	0.97	100.00

Total Number of Valid Hours: 720

Total Number of Hours: 720

Maximum Value: 21.9 C on Apr 30 17:00

Maximum Daily Average: 13.8 C on Apr 30

Minimum Value: -19.5 C on Apr 3 07:00

Minimum Daily Average: -12.1 C on Apr 2

Maximum Diurnal Average: 6.3 C at hour 16

Minimum Diurnal Average: -3.1 C at hour 6

Monthly Average: 1.58 C

Percentiles: P_1 = -16.0 P_{10} = -8.1 Q_1 = -3.3 Median = 2.1 Q_3 = 6.3 P_{90} = 11.0 P_{99} = 20.2

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

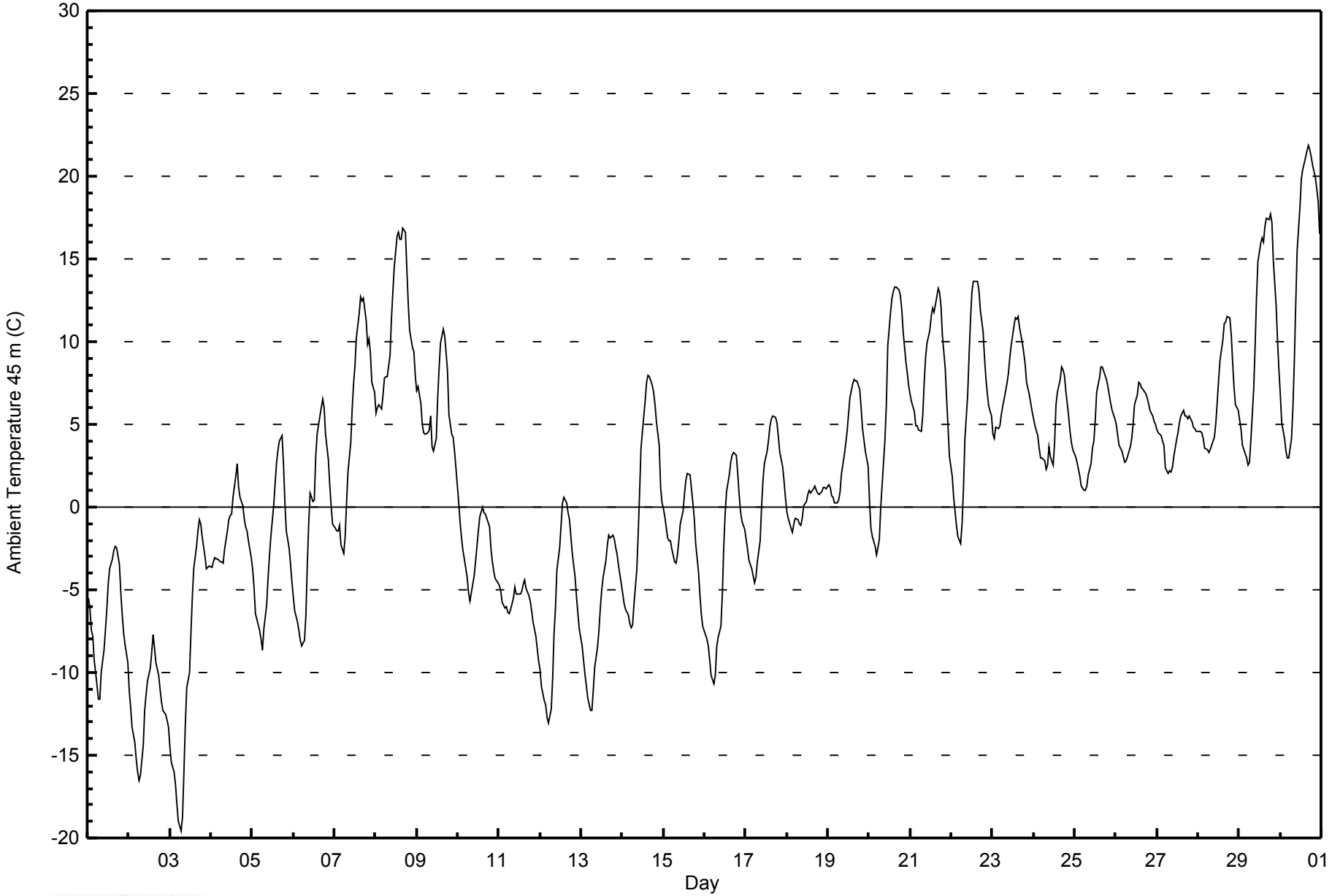
Day	Hourly Period Ending At (MST)																								Daily	Daily
	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24	Average	Maximum
1-Apr	-5.5	-6.2	-7.5	-7.8	-9.3	-10.8	-11.6	-11.6	-10.0	-8.6	-7.5	-6.2	-4.7	-3.7	-3.1	-2.6	-2.4	-2.5	-3.5	-5.2	-6.5	-7.6	-8.3	-9.4	-6.8	-2.4
2-Apr	-11.1	-12.2	-13.3	-14.3	-15.3	-16.0	-16.5	-16.2	-14.4	-12.3	-11.3	-10.5	-9.7	-8.8	-7.8	-8.5	-9.4	-10.2	-11.0	-11.7	-12.3	-12.6	-12.8	-13.3	-12.1	-7.8
3-Apr	-14.5	-15.4	-16.0	-16.8	-17.9	-19.0	-19.5	-18.8	-16.0	-13.1	-10.9	-10.0	-7.7	-5.4	-3.7	-2.4	-1.4	-0.8	-1.0	-1.7	-2.9	-3.7	-3.6	-3.6	-9.4	-0.8
4-Apr	-3.6	-3.3	-3.0	-3.1	-3.1	-3.3	-3.3	-3.4	-2.5	-1.5	-0.7	-0.5	-0.4	0.6	1.8	2.6	1.2	0.6	0.1	-0.7	-1.2	-1.5	-2.0	-3.1	-1.4	2.6
5-Apr	-3.7	-4.8	-6.4	-7.1	-7.5	-8.0	-8.7	-7.4	-5.9	-4.4	-3.0	-1.8	0.1	1.4	2.6	3.4	4.0	4.4	2.6	0.3	-1.5	-2.5	-3.4	-4.5	-2.6	4.4
6-Apr	-5.4	-6.3	-6.9	-7.5	-8.0	-8.4	-8.1	-6.5	-3.5	-1.1	0.9	0.3	0.4	3.0	4.4	5.5	6.0	6.5	6.0	4.4	2.9	1.3	0.1	-1.0	-0.9	6.5
7-Apr	-1.2	-1.5	-1.4	-1.1	-2.3	-2.8	-1.8	0.2	2.1	3.9	5.9	7.5	8.5	10.3	11.7	12.7	12.5	12.7	11.2	9.8	10.1	9.3	7.5	6.9	5.5	12.7
8-Apr	5.7	6.0	6.2	5.9	6.7	7.8	7.9	7.9	9.2	11.4	13.0	14.5	16.4	16.6	16.2	16.2	16.9	16.6	14.4	12.3	10.6	9.7	9.4	7.9	11.1	16.9
9-Apr	7.0	7.3	6.3	5.0	4.5	4.4	4.5	4.6	5.5	3.6	3.4	4.2	6.6	8.4	9.9	10.8	10.4	9.3	8.2	5.6	4.4	4.2	3.4	2.4	6.0	10.8
10-Apr	0.2	-0.9	-1.9	-2.6	-3.2	-4.2	-5.1	-5.7	-5.2	-4.1	-3.3	-2.4	-1.4	-0.6	0.0	-0.3	-0.4	-0.7	-1.2	-2.5	-3.3	-3.9	-4.4	-4.6	-2.6	0.2
11-Apr	-4.8	-5.0	-5.7	-6.1	-6.0	-6.3	-6.5	-6.2	-5.5	-4.8	-5.2	-5.3	-5.2	-5.1	-4.7	-4.4	-4.9	-5.3	-5.7	-6.3	-7.0	-7.8	-8.6	-9.3	-5.9	-4.4
12-Apr	-9.8	-10.8	-11.7	-11.9	-12.7	-13.0	-12.2	-10.4	-7.7	-6.1	-3.8	-2.5	-1.1	0.2	0.6	0.3	-0.3	-0.8	-1.8	-2.8	-4.2	-5.4	-6.4	-7.4	-5.9	0.6
13-Apr	-8.4	-9.2	-10.0	-10.8	-11.5	-12.3	-12.3	-11.0	-9.6	-8.5	-7.5	-6.1	-5.0	-4.2	-3.2	-2.3	-1.7	-1.8	-1.7	-1.9	-2.4	-2.9	-3.6	-4.6	-6.4	-1.7
14-Apr	-5.3	-5.9	-6.1	-6.5	-7.0	-7.3	-7.1	-5.8	-3.8	-1.6	0.9	3.5	5.5	6.5	7.6	7.9	7.9	7.3	7.0	6.2	5.2	3.7	1.2	0.2	0.6	7.9
15-Apr	-0.1	-0.6	-1.9	-2.0	-2.0	-2.6	-3.3	-3.4	-2.9	-2.0	-1.1	-0.3	0.8	1.6	2.0	1.9	1.1	0.2	-0.7	-2.2	-3.9	-5.3	-6.4	-7.2	-1.7	2.0
16-Apr	-7.7	-8.0	-8.4	-9.3	-10.2	-10.7	-10.1	-8.5	-7.9	-7.2	-5.3	-2.5	-0.4	0.9	1.9	2.7	3.1	3.3	3.1	2.1	0.7	-0.3	-0.9	-1.4	-3.4	3.3
17-Apr	-1.9	-2.5	-3.2	-3.7	-4.2	-4.6	-4.3	-3.3	-2.0	0.0	1.6	2.6	3.4	4.1	4.9	5.4	5.6	5.5	5.1	4.3	3.3	2.4	1.6	0.6	0.9	5.6
18-Apr	-0.3	-0.7	-1.3	-1.5	-1.0	-0.7	-0.7	-1.1	-1.1	-0.7	0.1	0.4	0.7	1.0	0.9	1.1	1.2	1.1	0.8	0.8	0.9	1.2	1.2	1.1	0.1	1.2
19-Apr	1.3	1.2	0.7	0.6	0.3	0.3	0.4	1.0	2.1	3.1	3.8	4.6	5.6	6.6	7.5	7.7	7.7	7.6	7.1	6.0	4.8	4.1	3.4	2.5	3.8	7.7
20-Apr	0.4	-1.3	-1.7	-2.3	-2.8	-2.5	-2.0	0.0	2.7	4.1	6.2	9.8	11.8	12.6	13.1	13.3	13.3	13.2	12.8	11.9	10.6	8.7	8.0	7.3	6.1	13.3
21-Apr	6.8	6.4	5.7	4.9	4.9	4.7	4.6	5.6	7.5	9.1	9.9	10.7	11.5	12.0	11.8	12.7	13.2	13.0	12.1	10.3	8.4	6.6	4.8	3.1	8.3	13.2
22-Apr	1.9	0.6	-0.3	-1.1	-1.8	-2.2	-1.1	1.1	4.1	6.8	9.2	11.3	13.0	13.6	13.7	13.6	13.1	12.0	10.6	9.1	7.8	6.9	6.1	5.5	6.4	13.7
23-Apr	4.4	4.2	4.9	4.7	4.9	5.6	6.1	6.5	7.4	8.1	9.0	9.7	10.9	11.4	11.4	11.5	10.9	9.9	9.4	8.7	7.6	6.8	6.3	5.8	7.7	11.5
24-Apr	5.4	4.9	4.3	3.6	3.0	3.0	2.8	2.3	2.6	3.6	3.1	2.6	3.9	6.2	7.0	7.7	8.5	8.3	8.0	7.1	5.5	4.6	3.9	3.5	4.8	8.5
25-Apr	3.1	2.7	2.3	1.8	1.3	1.0	1.0	1.3	2.0	2.7	3.6	4.0	5.3	7.0	7.8	8.4	8.5	8.2	7.7	7.3	6.8	6.3	5.8	5.4	4.6	8.5
26-Apr	5.0	4.3	3.7	3.4	3.1	2.7	2.8	3.1	3.6	4.1	5.0	6.2	6.8	7.5	7.5	7.2	7.1	6.9	6.7	6.3	5.9	5.5	5.2	5.0	5.2	7.5
27-Apr	4.7	4.5	4.3	4.0	3.8	2.3	2.0	2.2	2.1	2.3	3.1	4.1	4.5	5.1	5.5	5.8	5.5	5.5	5.4	5.5	5.2	4.8	4.7	4.6	4.2	5.8
28-Apr	4.6	4.6	4.5	4.1	3.5	3.4	3.3	3.5	3.7	4.3	5.1	6.4	7.7	8.9	10.1	11.1	11.2	11.5	11.5	10.4	8.7	7.2	6.2	5.9	6.7	11.5
29-Apr	5.3	4.6	3.8	3.2	3.0	2.5	2.7	4.1	7.1	9.6	12.6	14.9	16.0	16.3	16.0	17.0	17.5	17.3	17.7	17.2	14.9	12.2	10.1	8.3	10.6	17.7
30-Apr	6.7	5.1	4.2	3.4	2.9	3.0	4.2	6.1	8.8	12.3	15.5	18.2	19.8	20.4	20.8	21.5	21.9	21.6	21.2	20.7	19.9	19.3	18.5	16.6	13.8	21.9
	-0.7	-1.3	-1.9	-2.4	-2.8	-3.1	-3.1	-2.3	-0.9	0.4	1.7	2.9	4.1	5.1	5.8	6.3	6.2	6.0	5.4	4.4	3.3	2.4	1.6	0.8	Diurnal Average	
	7.0	7.3	6.3	5.9	6.7	7.8	7.9	7.9	9.2	12.3	15.5	18.2	19.8	20.4	20.8	21.5	21.9	21.6	21.2	20.7	19.9	19.3	18.5	16.6	Diurnal Maximum	

WBEA NETWORK

Hourly Averages

Ambient Temperature 45 m (AT45m) - C

Lower Camp Met Tower - April 2014



AURORA ATMOSPHERICS INC.

Concentration Ranges (C)	Number of Hours	%	Cumulative %
-50 - -20	0	0.00	0.00
-20 - 0	290	40.28	40.28
0 - 10	344	47.78	88.06
10 - 20	79	10.97	99.03
> 20	7	0.97	100.00

Total Number of Valid Hours: 720

Total Number of Hours: 720

Maximum Value: 21.4 C on Apr 30 17:00
Maximum Daily Average: 14.5 C on Apr 30

Minimum Value: -20.0 C on Apr 3 07:00
Minimum Daily Average: -12.8 C on Apr 2
Maximum Diurnal Average: 5.7 C at hour 17
Minimum Diurnal Average: -3.0 C at hour 7
Monthly Average: 1.36 C
Percentiles: P_1 = -16.8 P_{10} = -8.5 Q_1 = -3.8 Median = 1.8 Q_3 = 6.2 P_{90} = 10.8 P_{99} = 19.9

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

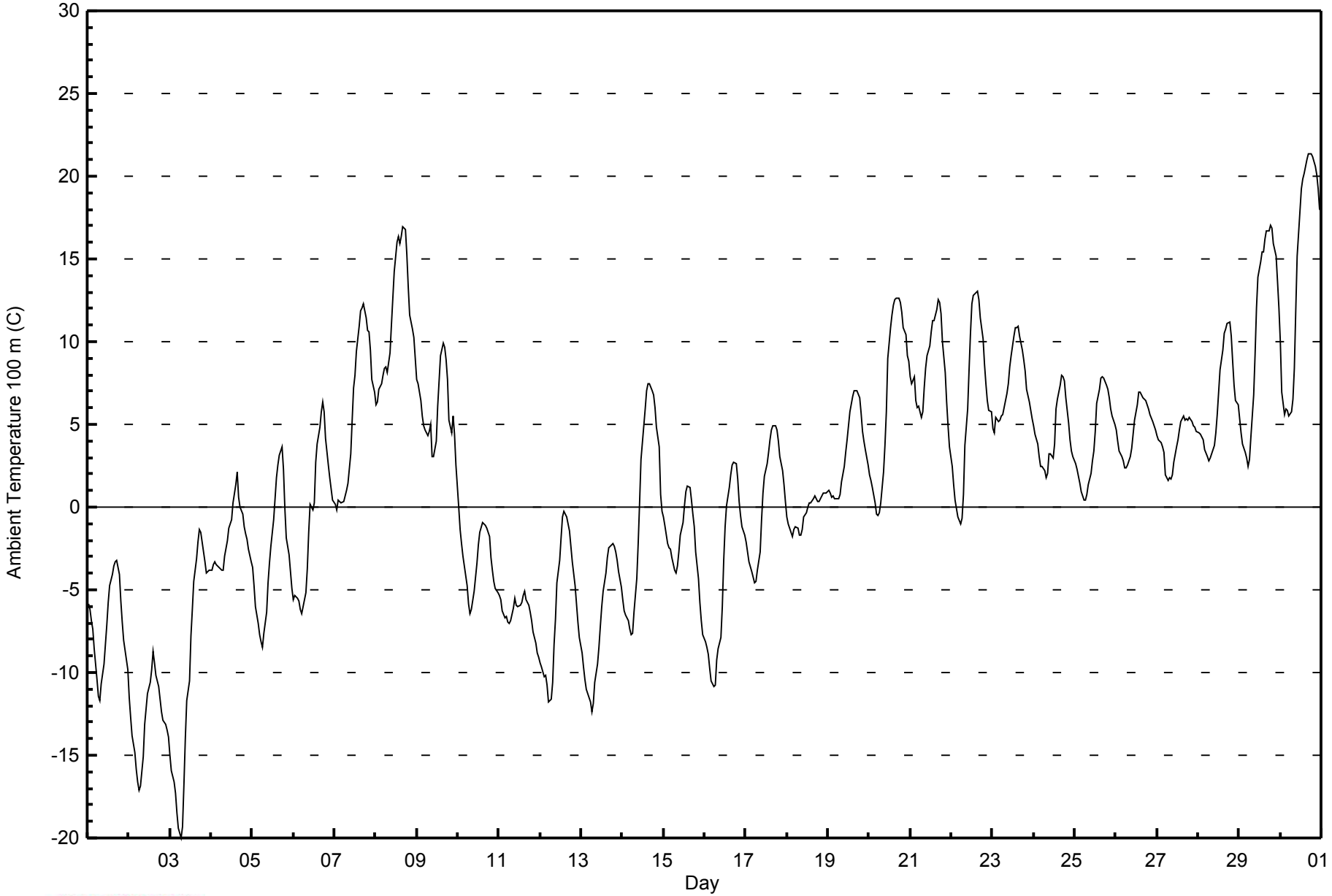
Day	Hourly Period Ending At (MST)																								Daily	Daily
	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24	Average	Maximum
1-Apr	-5.9	-6.2	-6.8	-7.4	-8.6	-10.4	-11.5	-11.7	-10.6	-9.5	-8.3	-7.1	-5.7	-4.7	-4.1	-3.6	-3.3	-3.2	-4.1	-5.7	-7.0	-8.1	-8.6	-9.8	-7.2	-3.2
2-Apr	-11.6	-12.7	-13.8	-14.8	-15.9	-16.6	-17.1	-16.9	-15.1	-13.2	-12.2	-11.3	-10.6	-9.8	-8.7	-9.4	-10.1	-10.9	-11.6	-12.4	-12.9	-13.2	-13.5	-13.9	-12.8	-8.7
3-Apr	-15.0	-15.9	-16.6	-17.3	-18.5	-19.4	-20.0	-19.3	-16.8	-14.0	-11.7	-10.5	-7.8	-6.2	-4.5	-3.2	-2.1	-1.4	-1.5	-2.2	-3.3	-4.0	-3.9	-3.9	-9.9	-1.4
4-Apr	-3.8	-3.5	-3.3	-3.5	-3.5	-3.7	-3.8	-3.8	-3.0	-2.1	-1.2	-1.0	-0.7	0.2	1.4	2.1	0.6	0.0	-0.4	-1.2	-1.6	-1.9	-2.5	-3.3	-1.8	2.1
5-Apr	-3.7	-4.8	-6.0	-7.0	-7.7	-8.2	-8.5	-7.6	-6.3	-4.6	-3.4	-2.3	-0.7	0.5	1.8	2.5	3.2	3.6	2.3	-0.1	-1.9	-2.9	-3.9	-4.9	-2.9	3.6
6-Apr	-5.6	-5.4	-5.5	-5.7	-6.2	-6.4	-5.6	-5.1	-3.7	-1.5	0.2	-0.1	0.2	2.7	3.8	4.8	5.8	6.4	5.8	4.1	2.6	1.8	1.1	0.4	-0.5	6.4
7-Apr	0.2	-0.1	0.4	0.3	0.3	0.3	0.7	1.0	1.5	3.2	5.2	7.2	8.0	9.4	10.9	11.9	12.0	12.3	11.4	10.7	10.6	9.5	7.7	6.9	5.9	12.3
8-Apr	6.2	6.4	7.1	7.5	8.0	8.4	8.4	8.1	9.3	11.0	12.6	14.3	16.1	16.3	16.0	16.4	17.0	16.7	15.2	13.3	11.6	10.7	10.3	9.0	11.5	17.0
9-Apr	7.7	7.4	6.4	5.5	4.9	4.7	4.3	4.6	5.0	3.1	3.0	3.9	6.1	7.6	9.1	9.9	9.6	8.9	7.7	5.3	4.5	5.5	4.4	2.5	5.9	9.9
10-Apr	0.0	-1.3	-2.2	-3.0	-3.5	-4.7	-5.8	-6.5	-6.1	-5.1	-4.3	-3.4	-2.3	-1.5	-1.0	-1.0	-1.1	-1.3	-1.8	-3.0	-3.8	-4.5	-4.9	-5.2	-3.2	0.0
11-Apr	-5.4	-5.6	-6.3	-6.7	-6.6	-6.9	-7.1	-6.8	-6.1	-5.5	-6.0	-6.0	-5.9	-5.8	-5.4	-5.1	-5.6	-6.0	-6.3	-6.9	-7.5	-8.2	-8.8	-9.1	-6.5	-5.1
12-Apr	-9.4	-9.6	-10.2	-10.2	-10.8	-11.8	-11.6	-10.6	-8.3	-6.8	-4.6	-3.2	-1.9	-0.6	-0.2	-0.6	-1.0	-1.4	-2.4	-3.3	-4.8	-5.9	-7.0	-7.9	-6.0	-0.2
13-Apr	-8.8	-9.6	-10.4	-11.0	-11.3	-11.8	-12.4	-11.9	-10.6	-9.5	-8.5	-7.2	-6.0	-5.1	-4.0	-3.0	-2.5	-2.4	-2.2	-2.4	-2.7	-3.2	-3.9	-4.8	-6.9	-2.2
14-Apr	-5.6	-6.3	-6.5	-6.9	-7.4	-7.7	-7.6	-6.3	-4.4	-2.2	0.3	2.9	4.9	5.9	7.0	7.4	7.4	7.0	6.7	6.0	4.9	3.6	0.8	-0.2	0.2	7.4
15-Apr	-0.6	-1.1	-2.2	-2.5	-2.5	-3.1	-3.8	-4.0	-3.5	-2.7	-1.7	-1.0	0.1	0.9	1.3	1.2	0.4	-0.4	-1.2	-2.7	-4.4	-5.8	-6.9	-7.7	-2.2	1.3
16-Apr	-8.2	-8.5	-8.9	-9.7	-10.5	-10.8	-10.7	-9.2	-8.6	-7.9	-6.0	-3.2	-1.2	0.1	1.2	2.0	2.5	2.7	2.6	1.7	0.4	-0.5	-1.2	-1.7	-3.9	2.7
17-Apr	-2.1	-2.7	-3.3	-3.9	-4.3	-4.6	-4.5	-3.8	-2.7	-0.8	0.9	1.8	2.6	3.3	4.1	4.7	4.9	4.9	4.6	4.0	3.1	2.2	1.4	0.3	0.4	4.9
18-Apr	-0.6	-1.0	-1.6	-1.8	-1.4	-1.2	-1.3	-1.7	-1.7	-1.3	-0.6	-0.3	0.0	0.3	0.2	0.5	0.7	0.5	0.3	0.4	0.7	0.8	0.8	0.8	-0.3	0.8
19-Apr	1.0	0.9	0.6	0.7	0.5	0.6	0.5	0.8	1.5	2.5	3.3	4.0	4.9	5.8	6.7	7.0	7.0	7.1	6.6	5.7	4.6	4.0	3.5	2.5	3.4	7.1
20-Apr	2.0	1.6	1.2	0.3	-0.4	-0.5	-0.4	0.2	2.1	3.7	5.7	9.0	10.9	11.6	12.2	12.6	12.6	12.6	12.4	11.8	10.9	10.4	9.1	8.8	6.7	12.6
21-Apr	7.9	7.4	7.9	6.4	6.1	6.1	5.4	5.7	7.2	8.4	9.2	9.7	10.6	11.3	11.3	11.9	12.5	12.4	11.7	10.0	8.1	6.3	4.9	3.7	8.4	12.5
22-Apr	2.5	1.3	0.5	-0.1	-0.6	-1.0	-0.7	0.8	3.7	5.9	8.3	10.5	12.3	12.8	13.0	13.0	12.5	11.5	10.1	8.7	7.4	6.5	5.9	5.7	6.3	13.0
23-Apr	4.8	4.5	5.4	5.1	5.2	5.5	5.6	6.0	6.9	7.5	8.4	9.2	10.4	10.9	10.8	11.0	10.4	9.5	8.9	8.2	7.1	6.4	5.8	5.3	7.4	11.0
24-Apr	4.9	4.4	3.8	3.1	2.4	2.5	2.2	1.7	2.0	3.2	3.2	2.9	3.8	5.9	6.6	7.4	7.9	7.8	7.7	6.6	5.1	4.1	3.4	3.0	4.4	7.9
25-Apr	2.6	2.3	1.9	1.4	0.9	0.5	0.5	0.8	1.3	2.0	2.8	3.4	4.6	6.3	7.1	7.8	7.9	7.8	7.3	7.1	6.6	5.9	5.5	5.0	4.1	7.9
26-Apr	4.7	4.0	3.4	3.1	2.8	2.4	2.3	2.6	3.1	3.6	4.4	5.3	6.2	6.9	6.9	6.8	6.6	6.4	6.2	5.9	5.6	5.2	4.9	4.7	4.7	6.9
27-Apr	4.3	4.1	3.9	3.6	3.3	1.9	1.6	1.8	1.7	1.9	2.7	3.6	4.1	4.6	5.2	5.5	5.3	5.4	5.2	5.4	5.2	4.9	4.8	4.6	3.9	5.5
28-Apr	4.5	4.4	4.3	4.1	3.5	3.1	2.8	3.0	3.2	3.8	4.5	5.6	6.9	8.3	9.5	10.5	10.7	11.1	11.2	10.3	8.8	7.4	6.5	6.2	6.4	11.2
29-Apr	5.4	4.5	3.8	3.3	3.0	2.5	2.8	4.3	6.8	9.2	12.0	13.9	14.8	15.5	15.4	16.2	16.7	16.7	17.0	16.9	16.0	15.2	13.6	12.1	10.7	17.0
30-Apr	10.0	7.0	5.6	5.9	5.8	5.5	5.7	6.5	8.4	11.8	15.2	17.9	19.2	19.9	20.2	21.0	21.4	21.4	21.3	21.2	20.6	20.1	19.2	17.9	14.5	21.4
	-0.6	-1.1	-1.6	-2.0	-2.4	-2.8	-3.0	-2.6	-1.5	-0.2	1.1	2.3	3.5	4.4	5.1	5.6	5.7	5.5	5.0	4.1	3.1	2.4	1.6	0.9	Diurnal Average	
	10.0	7.4	7.9	7.5	8.0	8.4	8.4	8.1	9.3	11.8	15.2	17.9	19.2	19.9	20.2	21.0	21.4	21.4	21.3	21.2	20.6	20.1	19.2	17.9	Diurnal Maximum	

WBEA NETWORK

Hourly Averages

Ambient Temperature 100 m (AT100m) - C

Lower Camp Met Tower - April 2014



AURORA ATMOSPHERICS INC.

Concentration Ranges (C)	Number of Hours	%	Cumulative %
-50 - -20	0	0.00	0.00
-20 - 0	292	40.56	40.56
0 - 10	341	47.36	87.92
10 - 20	79	10.97	98.89
> 20	8	1.11	100.00

Total Number of Valid Hours: 720

Total Number of Hours: 720

Maximum Value: 20.9 C on Apr 30 18:00

Maximum Daily Average: 15.1 C on Apr 30

Minimum Value: -18.7 C on Apr 3 07:00

Minimum Daily Average: -13.2 C on Apr 2

Maximum Diurnal Average: 5.3 C at hour 17

Minimum Diurnal Average: -3.0 C at hour 7

Monthly Average: 1.11 C

Percentiles: P_1 = -17.0 P_{10} = -8.9 Q_1 = -4.1 Median = 1.4 Q_3 = 6.1 P_{90} = 10.5 P_{99} = 19.9

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

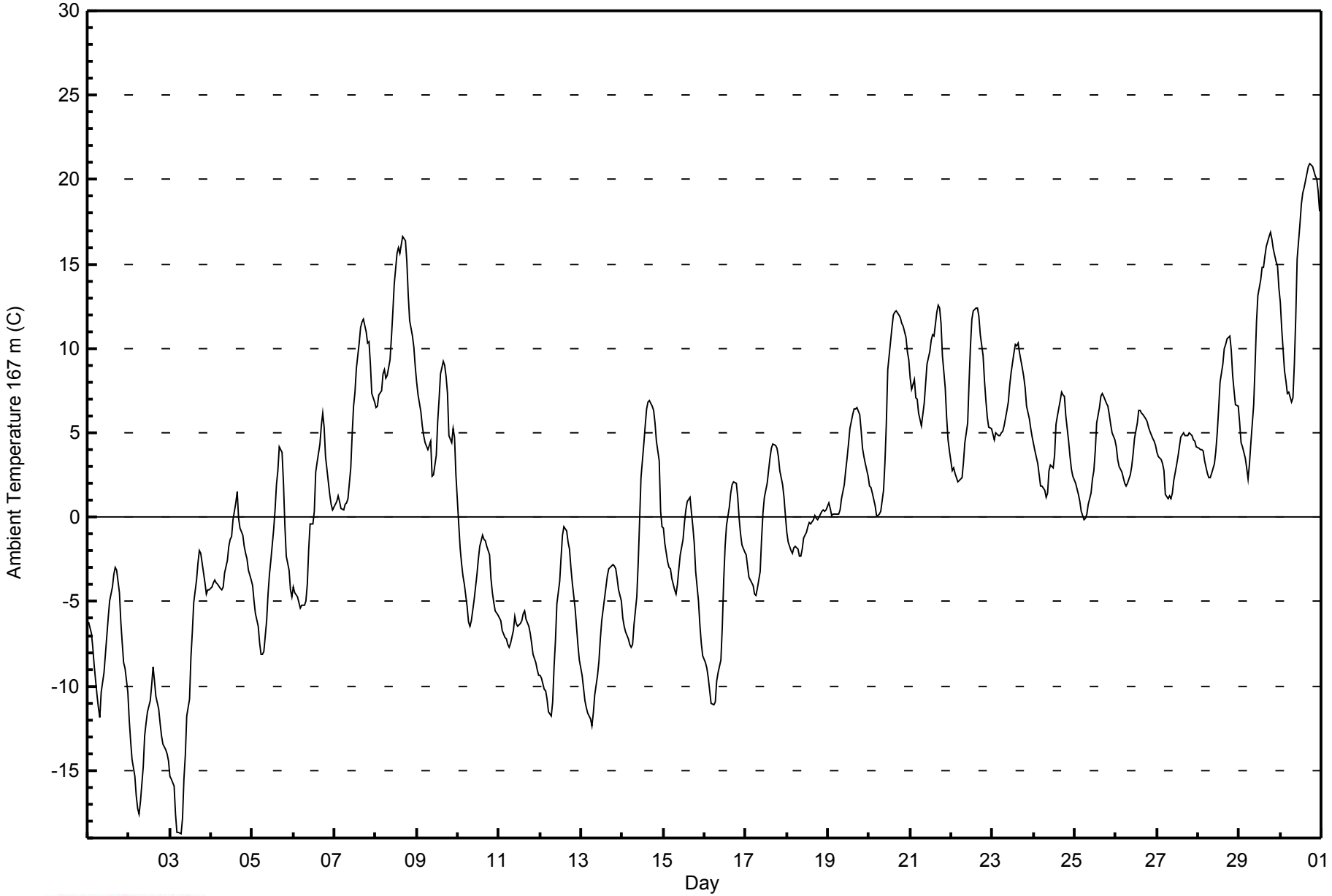
Day	Hourly Period Ending At (MST)																								Daily	Daily
	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24	Average	Maximum
1-Apr	-6.2	-6.5	-6.9	-7.7	-8.8	-10.5	-11.3	-11.9	-10.3	-9.2	-8.1	-7.0	-6.0	-5.0	-4.1	-3.4	-2.9	-3.1	-4.5	-6.2	-7.5	-8.6	-9.0	-10.4	-7.3	-2.9
2-Apr	-12.0	-13.3	-14.4	-15.4	-16.5	-17.2	-17.6	-16.9	-14.8	-12.9	-12.2	-11.5	-10.9	-9.9	-8.8	-9.7	-10.6	-11.4	-12.2	-13.0	-13.5	-13.7	-14.1	-14.4	-13.2	-8.8
3-Apr	-15.3	-15.5	-15.9	-17.6	-18.7	-18.6	-18.7	-17.9	-15.5	-14.1	-11.7	-10.8	-8.3	-6.8	-5.1	-3.7	-2.7	-2.0	-2.1	-2.7	-3.9	-4.5	-4.3	-4.3	-10.0	-2.0
4-Apr	-4.1	-3.8	-3.7	-3.8	-4.0	-4.2	-4.3	-4.1	-3.3	-2.5	-1.7	-1.3	-1.1	-0.1	0.9	1.5	0.0	-0.6	-1.0	-1.7	-2.2	-2.5	-3.1	-3.7	-2.3	1.5
5-Apr	-4.1	-4.9	-5.7	-6.5	-7.5	-8.1	-8.1	-7.9	-6.1	-4.5	-3.4	-2.6	-0.7	0.5	2.0	2.7	4.2	3.8	2.0	-0.5	-2.3	-3.1	-4.3	-4.7	-2.9	4.2
6-Apr	-4.1	-4.5	-4.7	-5.1	-5.4	-5.3	-5.2	-5.0	-4.0	-1.9	-0.4	-0.4	0.4	2.7	3.3	4.4	5.4	6.2	5.3	3.6	2.1	1.4	0.8	0.4	-0.4	6.2
7-Apr	0.8	0.9	1.2	0.9	0.5	0.5	0.8	0.8	1.1	2.9	4.9	6.6	7.4	8.8	10.3	11.2	11.5	11.7	11.0	10.3	10.4	9.1	7.3	6.8	5.7	11.7
8-Apr	6.5	6.6	7.2	7.5	8.5	8.7	8.3	8.4	9.3	10.6	12.2	13.8	15.6	16.0	15.6	16.1	16.7	16.4	15.1	13.1	11.6	10.7	10.0	8.9	11.4	16.7
9-Apr	8.0	7.2	6.2	5.5	4.8	4.4	4.0	4.3	4.5	2.4	2.5	3.7	5.6	7.0	8.5	9.2	9.0	8.4	7.3	4.9	4.4	5.2	4.7	2.5	5.6	9.2
10-Apr	-0.4	-1.8	-2.7	-3.4	-4.0	-5.3	-6.2	-6.5	-6.1	-4.9	-4.1	-3.4	-2.5	-1.7	-1.1	-1.3	-1.4	-1.7	-2.2	-3.6	-4.4	-5.1	-5.5	-5.8	-3.6	-0.4
11-Apr	-6.0	-6.1	-6.7	-7.2	-7.2	-7.6	-7.7	-7.4	-6.7	-5.9	-6.3	-6.4	-6.3	-6.1	-5.7	-5.5	-6.1	-6.5	-6.9	-7.5	-8.1	-8.6	-9.0	-9.4	-7.0	-5.5
12-Apr	-9.3	-9.5	-10.2	-10.3	-10.8	-11.5	-11.8	-11.0	-8.9	-7.3	-5.1	-3.8	-2.4	-1.1	-0.5	-0.8	-1.5	-1.9	-2.9	-3.9	-5.4	-6.5	-7.6	-8.5	-6.4	-0.5
13-Apr	-9.4	-10.1	-10.8	-11.3	-11.6	-11.9	-12.3	-11.6	-10.6	-9.4	-8.5	-7.2	-6.2	-5.4	-4.1	-3.5	-3.0	-2.9	-2.8	-2.9	-3.1	-3.7	-4.3	-5.0	-7.1	-2.8
14-Apr	-5.9	-6.5	-6.8	-7.2	-7.5	-7.7	-7.6	-6.4	-4.7	-2.7	-0.3	2.3	4.3	5.4	6.4	6.8	6.9	6.5	6.4	5.6	4.5	3.3	0.4	-0.6	-0.2	6.9
15-Apr	-0.6	-1.6	-2.6	-3.0	-3.0	-3.6	-4.3	-4.5	-4.0	-3.0	-2.2	-1.3	-0.3	0.5	1.0	1.1	0.3	-0.6	-1.5	-3.2	-4.9	-6.4	-7.5	-8.2	-2.6	1.1
16-Apr	-8.6	-9.0	-9.5	-10.3	-11.0	-11.1	-11.0	-9.7	-9.2	-8.5	-6.5	-3.7	-1.7	-0.5	0.6	1.4	1.9	2.1	2.0	1.2	-0.1	-1.0	-1.7	-2.0	-4.4	2.1
17-Apr	-2.3	-2.9	-3.5	-3.9	-4.0	-4.5	-4.7	-4.2	-3.2	-1.3	0.3	1.2	2.0	2.7	3.5	4.1	4.3	4.3	4.1	3.6	2.7	1.9	1.2	0.1	0.1	4.3
18-Apr	-0.9	-1.5	-2.0	-2.2	-1.8	-1.7	-1.9	-2.3	-2.3	-1.9	-1.2	-0.9	-0.6	-0.3	-0.4	-0.1	0.1	-0.1	-0.1	0.0	0.3	0.4	0.3	0.4	-0.9	0.4
19-Apr	0.8	0.5	0.1	0.2	0.2	0.2	0.2	0.5	1.1	1.9	2.7	3.5	4.4	5.2	6.1	6.4	6.4	6.5	6.1	5.2	4.1	3.6	3.2	2.4	3.0	6.5
20-Apr	1.8	1.8	1.4	0.7	0.1	0.1	0.2	0.3	1.6	3.3	5.6	8.7	10.4	11.2	12.0	12.2	12.3	12.0	11.8	11.5	11.3	10.6	9.8	9.3	6.7	12.3
21-Apr	8.3	7.6	8.2	7.1	7.0	6.2	5.5	6.1	6.7	7.9	9.1	9.8	10.5	10.8	10.7	12.1	12.6	12.4	11.4	9.6	7.7	6.0	4.6	3.9	8.4	12.6
22-Apr	2.7	3.0	2.6	2.4	2.1	2.3	2.3	3.2	4.4	5.6	8.0	10.1	11.7	12.2	12.4	12.4	11.9	10.9	9.5	8.1	6.9	5.9	5.3	5.3	6.7	12.4
23-Apr	4.9	4.6	5.0	4.8	4.9	5.0	5.1	5.4	6.3	6.9	7.8	8.6	9.8	10.2	10.2	10.3	9.7	8.9	8.3	7.6	6.5	5.8	5.3	4.8	7.0	10.3
24-Apr	4.3	3.9	3.2	2.5	1.9	1.9	1.6	1.1	1.4	2.8	3.1	2.9	3.7	5.5	6.0	6.9	7.4	7.3	7.1	6.0	4.5	3.6	2.9	2.4	3.9	7.4
25-Apr	2.0	1.7	1.3	0.9	0.3	-0.1	-0.1	0.2	0.8	1.5	2.2	2.8	4.0	5.6	6.5	7.2	7.3	7.2	6.8	6.6	6.1	5.5	5.0	4.6	3.6	7.3
26-Apr	4.1	3.5	3.0	2.7	2.3	2.0	1.8	2.0	2.5	3.0	3.8	4.7	5.6	6.4	6.3	6.2	6.1	5.8	5.7	5.4	5.1	4.7	4.5	4.3	4.2	6.4
27-Apr	3.8	3.6	3.4	3.1	2.8	1.4	1.1	1.2	1.1	1.4	2.2	3.1	3.6	4.1	4.7	5.0	4.8	4.8	4.8	5.0	4.9	4.6	4.5	4.2	3.5	5.0
28-Apr	4.1	4.0	4.0	3.9	3.3	2.6	2.4	2.4	2.6	3.2	3.9	5.0	6.4	8.0	9.1	10.0	10.2	10.5	10.7	9.9	8.4	7.5	6.7	6.5	6.1	10.7
29-Apr	5.6	4.5	4.2	3.5	2.9	2.2	3.2	4.4	6.7	9.0	11.6	13.1	14.1	14.8	14.8	15.5	16.0	16.6	16.9	16.4	15.9	15.1	14.9	13.6	10.6	16.9
30-Apr	12.7	11.2	8.6	8.1	7.3	7.4	6.9	7.1	9.1	11.9	15.3	17.4	18.6	19.2	19.6	20.4	20.8	20.9	20.9	20.7	20.2	20.0	19.2	18.1	15.1	20.9
	-0.6	-1.1	-1.5	-2.0	-2.4	-2.8	-3.0	-2.7	-1.7	-0.5	0.8	1.9	3.0	4.0	4.7	5.2	5.3	5.1	4.6	3.6	2.7	2.0	1.3	0.7	Diurnal Average	
	12.7	11.2	8.6	8.1	8.5	8.7	8.3	8.4	9.3	11.9	15.3	17.4	18.6	19.2	19.6	20.4	20.8	20.9	20.9	20.7	20.2	20.0	19.2	18.1	Diurnal Maximum	

WBEA NETWORK

Hourly Averages

Ambient Temperature 167 m (AT167m) - C

Lower Camp Met Tower - April 2014



AURORA ATMOSPHERICS INC.

Concentration Ranges (C)	Number of Hours	%	Cumulative %
-50 - -20	0	0.00	0.00
-20 - 0	300	41.67	41.67
0 - 10	338	46.94	88.61
10 - 20	75	10.42	99.03
> 20	7	0.97	100.00

Total Number of Valid Hours: 720

Total Number of Hours: 720

Relative Humidity 20m (RH20m) - %
Lower Camp Met Tower - April 2014

Maximum Value: 94 % on Apr 20 04:00

Maximum Daily Average: 82.2 % on Apr 27

Minimum Value: 17 % on Apr 30 14:00

Minimum Daily Average: 40.1 % on Apr 14

Maximum Diurnal Average: 73.0 % at hour 6

Minimum Diurnal Average: 41.6 % at hour 17

Monthly Average: 56.8 %

Percentiles: $P_1 = 20$ $P_{10} = 33$ $Q_1 = 43$ Median = 56 $Q_3 = 70$ $P_{90} = 83$ $P_{99} = 92$

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

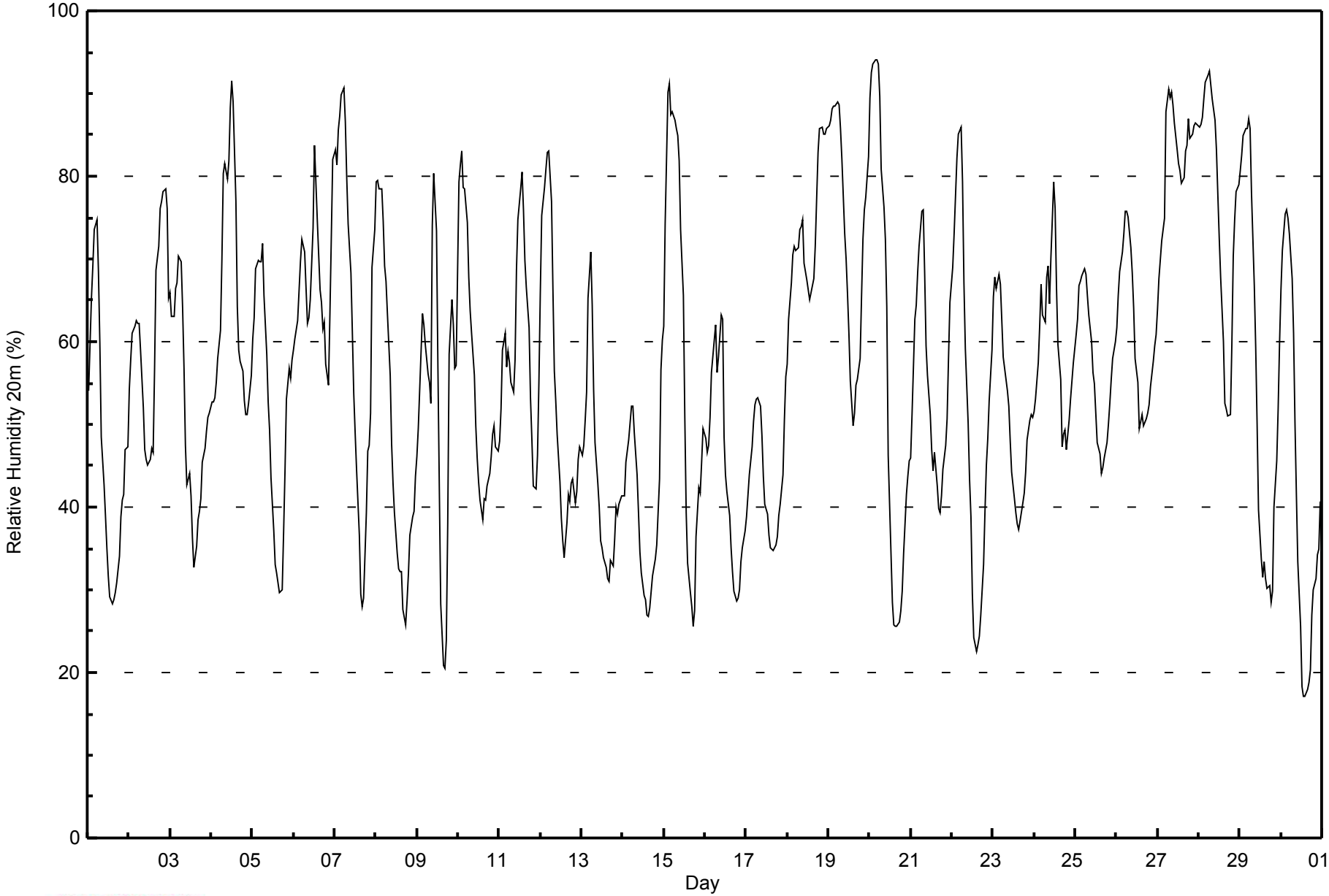
Day	Hourly Period Ending At (MST)																								Daily	Daily
	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24	Average	Maximum
1-Apr	54	60	65	69	74	75	68	60	49	43	39	35	32	29	28	29	30	31	34	39	41	41	47	47	46.6	75
2-Apr	54	58	61	62	63	62	62	59	52	47	46	45	46	47	47	57	69	71	76	77	78	78	76	65	60.8	78
3-Apr	66	63	63	66	67	70	70	64	57	47	43	44	41	36	33	35	39	40	41	45	47	49	51	51	51.2	70
4-Apr	53	53	53	55	58	61	70	80	82	80	82	88	91	89	77	64	59	58	56	53	51	51	52	56	65.5	91
5-Apr	60	63	69	70	70	70	72	66	58	53	49	44	37	33	32	31	30	30	37	44	53	57	56	58	51.7	72
6-Apr	59	60	63	66	70	72	71	66	62	63	65	74	84	79	75	66	65	62	62	57	55	63	72	82	67.2	84
7-Apr	83	81	86	87	90	91	87	80	74	68	61	54	49	45	37	30	28	29	39	47	47	51	69	74	61.9	91
8-Apr	79	80	79	78	75	69	67	63	56	48	43	39	34	33	32	32	28	26	29	32	37	39	39	44	49.2	80
9-Apr	46	50	59	63	62	60	56	55	52	74	80	73	57	42	28	21	20	24	38	58	65	62	57	57	52.6	80
10-Apr	79	81	83	79	78	74	68	64	61	56	50	46	43	41	38	41	41	43	44	46	49	50	47	47	56.2	83
11-Apr	48	52	59	61	57	59	58	55	54	58	69	75	78	81	76	70	67	62	53	48	43	42	46	55	59.3	81
12-Apr	66	75	79	81	83	83	77	66	56	53	49	43	39	36	34	38	42	41	43	43	41	42	46	47	54.2	83
13-Apr	46	48	51	54	65	71	64	54	48	43	40	36	35	34	33	31	31	33	33	36	40	39	40	41	43.6	71
14-Apr	41	41	45	48	50	52	52	49	44	39	35	32	29	29	27	27	28	32	33	34	35	43	57	60	40.1	60
15-Apr	62	74	90	91	87	88	87	86	85	82	74	66	51	39	33	30	28	26	27	36	42	42	45	49	59.2	91
16-Apr	48	47	48	51	56	60	62	56	58	63	63	48	44	42	39	35	32	30	29	29	30	33	35	37	44.8	63
17-Apr	39	41	44	47	50	52	53	53	52	49	44	40	39	37	35	35	35	35	36	39	40	44	51	56	43.6	56
18-Apr	57	63	67	70	72	71	71	74	74	75	70	67	66	65	66	68	71	77	83	86	86	85	85	86	73.1	86
19-Apr	86	87	88	88	89	89	89	86	82	73	70	66	61	55	50	51	55	55	58	65	72	76	77	82	73.0	89
20-Apr	89	93	94	94	94	94	90	81	76	72	64	46	34	29	26	26	26	26	27	30	34	42	44	46	57.3	94
21-Apr	46	51	63	64	68	71	76	76	68	60	56	51	47	44	47	43	40	39	41	45	48	51	58	65	54.9	76
22-Apr	69	73	78	82	85	86	79	67	59	50	43	39	30	24	23	23	24	27	33	39	45	48	53	59	51.6	86
23-Apr	65	68	66	68	67	63	58	57	54	52	48	44	41	39	38	37	38	41	42	44	48	51	51	51	51.3	68
24-Apr	52	53	57	62	67	63	62	68	69	65	70	79	76	66	60	55	47	49	49	47	50	53	55	57	59.7	79
25-Apr	61	63	67	67	68	69	68	66	63	60	56	55	51	48	46	44	45	46	48	50	52	55	58	60	56.9	69
26-Apr	62	66	69	71	73	76	76	75	71	68	64	58	55	50	50	51	50	51	51	52	54	58	59	61	61.3	76
27-Apr	64	68	72	74	75	88	91	89	90	89	86	83	82	81	79	80	83	84	87	85	85	86	87	86	82.2	91
28-Apr	86	86	87	89	91	92	93	91	89	87	83	78	73	68	60	52	52	51	51	60	70	75	78	79	75.9	93
29-Apr	81	83	85	86	86	87	86	78	67	59	50	40	34	31	33	31	30	31	29	30	40	46	52	60	55.5	87
30-Apr	66	71	75	76	75	73	68	61	50	42	33	26	18	17	17	18	19	20	27	30	31	34	35	41	42.7	76
	62.3	65.0	68.8	70.7	72.1	73.0	71.6	68.2	63.8	60.5	57.5	53.8	49.9	46.3	43.3	41.7	41.6	42.3	44.6	47.6	50.4	52.9	56.0	58.6	Diurnal Average	
	89	93	94	94	94	94	93	91	90	89	86	88	91	89	79	80	83	84	87	86	86	86	87	86	Diurnal Maximum	

WBEA NETWORK

Hourly Averages

Relative Humidity 20m (RH20m) - %

Lower Camp Met Tower - April 2014



AURORA
ATMOSPHERICS INC.

Concentration Ranges (%)	Number of Hours	%	Cumulative %
0 - 20	5	0.69	0.69
20 - 40	140	19.44	20.14
40 - 60	269	37.36	57.50
60 - 80	214	29.72	87.22
80 - 100	92	12.78	100.00

Total Number of Valid Hours: 720

Total Number of Hours: 720

Maximum Value: 94 % on Apr 20 06:00

Maximum Daily Average: 82.2 % on Apr 27

Minimum Value: 17 % on Apr 30 14:00

Minimum Daily Average: 39.9 % on Apr 14

Maximum Diurnal Average: 72.3 % at hour 6

Minimum Diurnal Average: 41.9 % at hour 17

Monthly Average: 56.7 %

Percentiles: P_1 = 21 P_{10} = 33 Q_1 = 42 Median = 56 Q_3 = 70 P_{90} = 83 P_{99} = 92

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

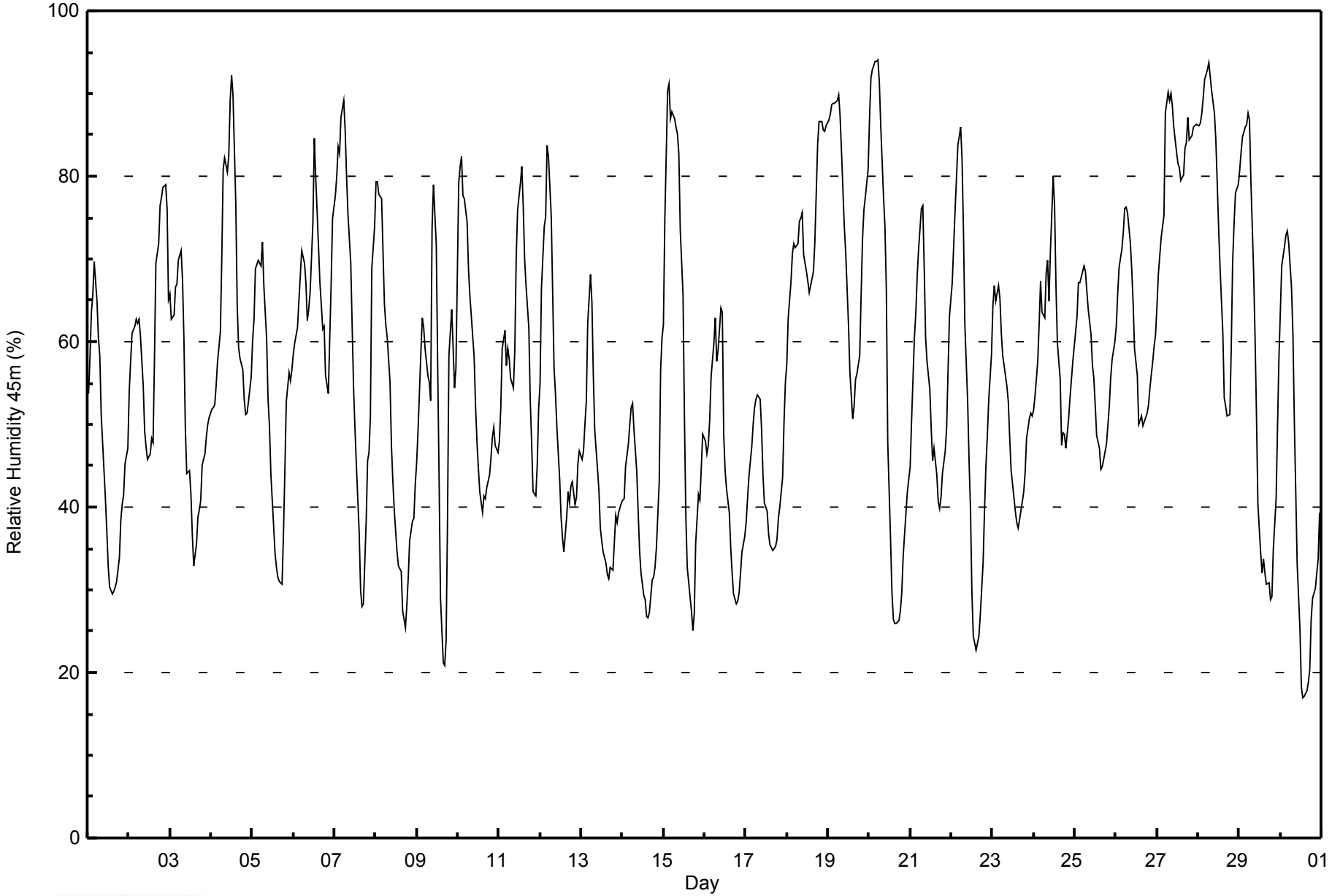
Day	Hourly Period Ending At (MST)																								Daily	Daily
	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24	Average	Maximum
1-Apr	54	58	64	66	70	65	60	58	51	44	41	37	33	30	29	30	30	31	34	38	40	41	45	47	45.8	70
2-Apr	54	58	61	62	63	62	63	61	54	49	47	46	46	48	48	58	69	72	76	77	79	79	76	65	61.4	79
3-Apr	66	63	63	67	67	70	71	67	60	50	44	44	42	37	33	36	39	40	41	45	46	48	50	51	51.6	71
4-Apr	52	52	52	55	58	61	70	81	82	81	83	89	92	90	77	64	59	58	57	53	51	51	53	56	65.7	92
5-Apr	60	63	69	70	69	69	72	67	60	53	50	44	38	34	33	31	31	31	37	44	53	56	55	57	51.9	72
6-Apr	58	60	62	65	68	71	70	67	62	64	66	74	85	80	76	67	64	62	62	56	54	60	67	75	66.4	85
7-Apr	78	80	84	83	87	89	86	80	75	69	62	54	50	45	37	30	28	28	38	46	47	51	69	74	61.2	89
8-Apr	79	79	78	77	71	65	62	61	55	47	43	40	35	33	32	32	27	25	28	32	36	38	39	43	48.2	79
9-Apr	45	49	59	63	62	59	56	55	53	74	79	72	57	43	29	21	21	24	38	58	64	59	54	57	52.2	79
10-Apr	79	81	82	78	77	74	69	65	63	58	52	48	45	42	39	41	41	42	44	46	48	50	47	47	56.7	82
11-Apr	48	52	59	61	57	59	58	56	54	59	70	76	79	81	76	70	67	62	53	48	42	41	45	52	59.4	81
12-Apr	55	66	74	75	84	82	75	66	57	54	50	43	39	36	35	39	42	41	43	43	40	41	45	47	52.9	84
13-Apr	46	47	50	53	62	68	65	56	49	45	42	37	36	35	33	32	31	33	32	36	39	38	39	40	43.5	68
14-Apr	41	41	45	48	50	52	53	49	44	39	35	32	29	29	27	27	27	31	32	33	35	43	57	60	39.9	60
15-Apr	62	75	90	91	87	88	87	86	85	83	74	66	51	39	33	29	27	25	27	36	41	41	45	49	59.0	91
16-Apr	48	46	48	51	56	60	63	58	59	64	64	49	44	42	39	35	32	30	28	29	30	32	35	36	44.8	64
17-Apr	38	41	44	47	50	52	53	54	53	50	44	41	40	37	35	35	35	35	36	39	40	44	50	55	43.6	55
18-Apr	57	63	67	71	72	71	72	75	75	76	70	68	67	66	67	68	72	78	84	87	87	86	85	86	73.8	87
19-Apr	87	87	89	89	89	89	90	87	83	74	71	66	62	56	51	52	55	56	58	66	72	76	77	81	73.5	90
20-Apr	87	92	93	94	94	94	91	86	78	74	66	48	36	30	26	26	26	26	28	30	34	39	42	43	57.6	94
21-Apr	45	51	60	63	68	71	76	76	69	61	58	54	50	46	47	44	41	40	41	44	47	50	56	63	55.0	76
22-Apr	67	71	76	80	84	86	82	73	62	53	46	40	30	24	23	23	24	27	33	39	45	48	53	58	52.0	86
23-Apr	64	67	65	67	65	61	58	57	55	53	48	44	41	40	38	38	38	41	42	44	48	51	51	51	51.2	67
24-Apr	52	53	58	62	67	64	63	68	70	65	71	80	76	67	60	55	47	49	49	47	51	53	55	58	60.0	80
25-Apr	61	63	67	67	68	69	68	66	64	61	57	56	52	49	47	45	45	46	48	50	52	56	58	60	57.2	69
26-Apr	62	66	69	71	73	76	76	76	72	69	65	59	56	50	51	51	50	51	51	52	54	58	59	61	61.6	76
27-Apr	64	68	73	74	75	88	90	89	90	89	86	83	82	81	79	80	83	84	87	84	85	86	86	86	82.2	90
28-Apr	86	87	88	90	92	93	94	92	90	88	84	79	74	69	61	53	52	51	51	59	70	74	78	79	76.4	94
29-Apr	81	83	85	86	86	88	87	79	68	60	51	40	34	32	34	32	31	31	29	29	35	41	50	58	55.4	88
30-Apr	64	69	72	73	73	72	66	61	50	42	33	25	18	17	17	18	19	20	26	29	30	32	34	39	41.7	73
	61.3	64.4	68.1	69.9	71.4	72.3	71.5	69.1	64.8	61.5	58.4	54.5	50.6	46.9	43.7	42.1	41.9	42.3	44.5	47.3	49.9	52.2	55.2	57.8	Diurnal Average	
	87	92	93	94	94	94	94	92	90	89	86	89	92	90	79	80	83	84	87	87	87	86	86	86	Diurnal Maximum	

WBEA NETWORK

Hourly Averages

Relative Humidity 45m (RH45m) - %

Lower Camp Met Tower - April 2014



AURORA ATMOSPHERICS INC.

Concentration Ranges (%)	Number of Hours	%	Cumulative %
0 - 20	5	0.69	0.69
20 - 40	141	19.58	20.28
40 - 60	264	36.67	56.94
60 - 80	220	30.56	87.50
80 - 100	90	12.50	100.00

Total Number of Valid Hours: 720

Total Number of Hours: 720

Maximum Value: 96 % on Apr 28 07:00

Maximum Daily Average: 82.7 % on Apr 27

Minimum Value: 17 % on Apr 30 14:00

Minimum Daily Average: 38.0 % on Apr 30

Maximum Diurnal Average: 70.2 % at hour 7

Minimum Diurnal Average: 42.0 % at hour 17

Monthly Average: 56.0 %

Percentiles: P_1 = 21 P_{10} = 32 Q_1 = 42 Median = 55 Q_3 = 69 P_{90} = 82 P_{99} = 92

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

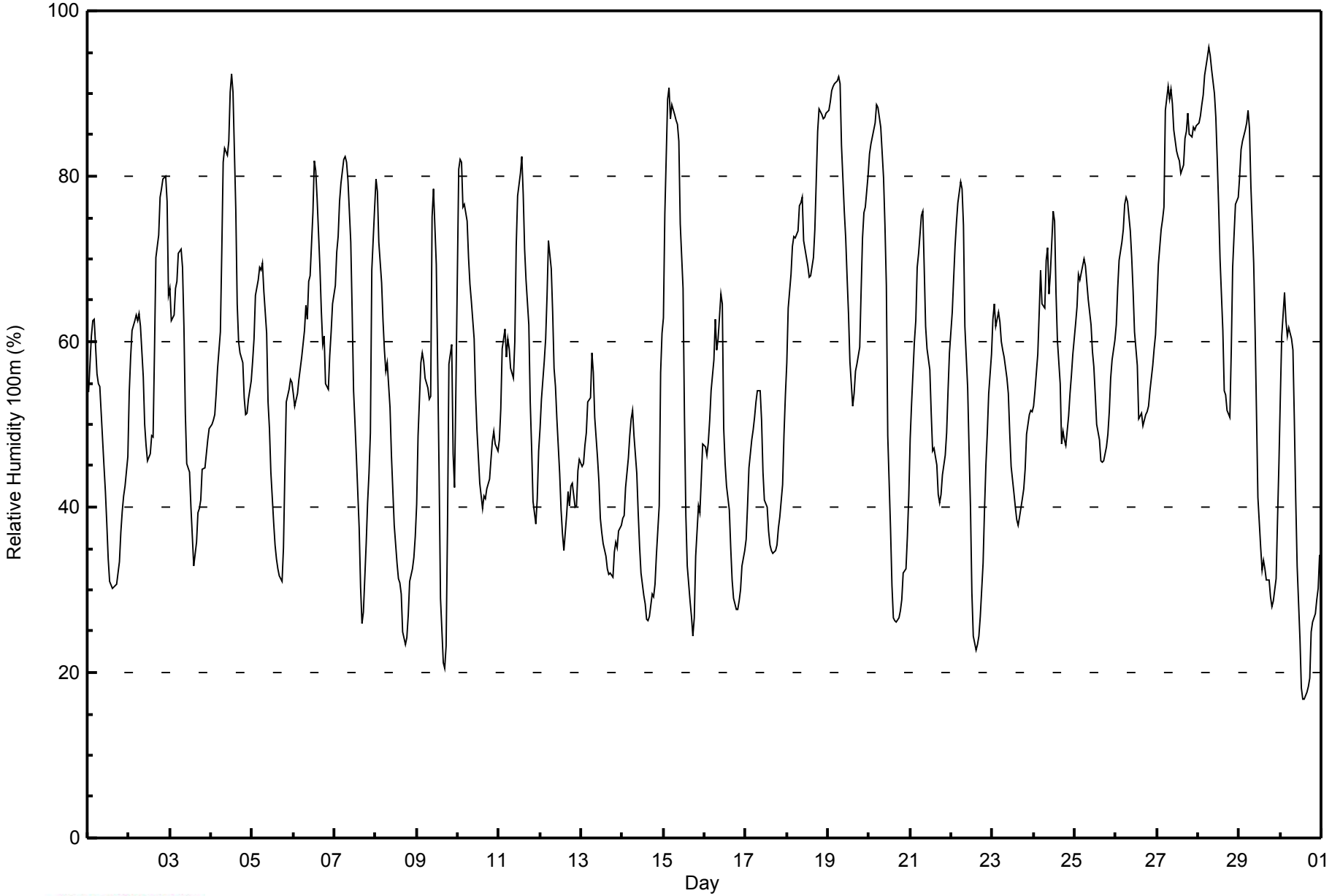
Day	Hourly Period Ending At (MST)																								Daily	Daily
	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24	Average	Maximum
1-Apr	54	57	61	63	63	56	55	55	51	45	42	38	34	31	30	30	31	31	33	37	39	41	43	46	44.4	63
2-Apr	54	58	61	62	63	63	63	62	56	50	47	46	46	49	48	59	70	73	77	79	80	80	77	66	62.1	80
3-Apr	66	63	63	66	67	71	71	69	62	51	45	44	40	36	33	36	39	40	41	45	45	47	48	49	51.6	71
4-Apr	50	51	51	54	57	61	71	82	83	83	84	90	92	90	76	65	60	59	57	53	51	51	53	55	65.8	92
5-Apr	58	60	66	68	69	69	70	66	61	53	49	44	38	35	34	33	32	31	35	44	53	54	55	55	51.3	70
6-Apr	54	52	54	55	57	58	61	64	63	67	68	76	82	81	77	69	64	60	61	55	54	58	61	64	63.1	82
7-Apr	67	71	73	77	79	82	82	82	80	72	63	54	50	46	38	30	26	27	36	41	44	49	69	76	58.9	82
8-Apr	80	78	72	67	63	59	56	58	52	46	42	38	33	31	31	29	25	23	24	27	31	32	34	36	44.6	80
9-Apr	40	49	57	59	58	56	54	53	53	75	79	69	57	44	29	21	20	23	38	57	60	47	42	55	49.8	79
10-Apr	81	82	82	76	77	75	70	67	65	60	54	49	46	43	40	41	41	42	43	46	48	49	48	47	57.2	82
11-Apr	48	52	59	62	58	60	59	57	56	60	71	78	80	82	78	71	67	62	53	47	41	38	41	47	59.5	82
12-Apr	50	53	58	60	66	72	69	64	57	55	51	44	40	37	35	39	42	40	42	43	40	40	44	46	49.4	72
13-Apr	45	45	47	49	53	53	59	56	51	46	43	39	37	36	34	33	32	32	32	35	36	35	37	38	41.7	59
14-Apr	39	39	42	46	49	51	52	49	44	39	35	32	29	28	26	26	27	30	29	31	34	40	56	61	38.9	61
15-Apr	63	75	89	91	87	89	87	87	86	84	74	66	51	39	33	29	27	24	27	34	40	39	43	48	58.9	91
16-Apr	47	46	48	51	54	58	63	59	60	66	65	49	45	43	40	35	31	29	28	28	29	30	33	35	44.6	66
17-Apr	36	40	45	48	49	51	53	54	54	50	44	41	40	37	35	35	34	35	35	37	39	43	49	53	43.3	54
18-Apr	57	64	68	71	73	73	73	76	77	77	72	70	69	68	68	70	74	79	85	88	87	87	87	88	75.1	88
19-Apr	88	89	90	91	91	91	92	91	84	76	72	68	63	58	52	54	56	57	59	66	73	76	76	80	74.8	92
20-Apr	83	84	85	87	89	88	87	86	80	74	67	49	37	31	27	26	26	27	27	29	32	33	36	41	55.4	89
21-Apr	48	52	60	63	69	71	75	76	69	62	59	57	51	47	47	45	42	41	42	44	46	49	54	59	55.3	76
22-Apr	64	68	72	74	77	79	79	74	62	54	47	40	30	24	23	23	24	27	33	40	45	49	54	58	50.8	79
23-Apr	63	65	62	64	62	60	59	58	56	54	49	45	42	40	38	38	39	41	42	44	49	51	52	52	51.0	65
24-Apr	52	54	59	63	69	65	64	70	71	66	68	76	75	66	60	55	48	49	48	47	51	54	56	58	60.2	76
25-Apr	62	64	68	67	68	70	69	67	65	62	59	57	54	50	48	46	45	46	47	49	52	56	58	60	57.9	70
26-Apr	62	66	70	72	74	77	77	77	73	70	66	61	57	51	51	51	50	51	52	52	54	57	59	61	62.2	77
27-Apr	65	69	74	75	76	88	91	89	91	89	86	83	82	82	80	81	85	85	88	85	85	86	86	86	82.7	91
28-Apr	86	87	89	90	92	94	96	95	93	90	87	82	76	70	61	54	54	52	51	59	69	73	77	77	77.2	96
29-Apr	80	83	84	86	86	88	86	79	70	61	51	41	35	32	34	33	31	31	29	28	29	31	39	45	53.8	88
30-Apr	53	61	66	63	61	62	60	59	51	41	33	24	18	17	17	18	18	19	25	26	27	29	30	34	38.0	66
	59.8	62.6	65.8	67.3	68.5	69.6	70.2	69.3	65.8	62.6	59.2	55.0	51.0	47.4	44.1	42.5	42.0	42.2	44.0	46.5	48.7	50.1	53.2	55.9	Diurnal Average	
	88	89	90	91	92	94	96	95	93	90	87	90	92	90	80	81	85	85	88	88	87	87	87	88	Diurnal Maximum	

WBEA NETWORK

Hourly Averages

Relative Humidity 100m (RH100m) - %

Lower Camp Met Tower - April 2014



AURORA
ATMOSPHERICS INC.

Concentration Ranges (%)	Number of Hours	%	Cumulative %
0 - 20	6	0.83	0.83
20 - 40	148	20.56	21.39
40 - 60	274	38.06	59.44
60 - 80	205	28.47	87.92
80 - 100	87	12.08	100.00

Total Number of Valid Hours: 720

Total Number of Hours: 720

Maximum Value: 96 % on Apr 28 08:00

Maximum Daily Average: 83.4 % on Apr 27

Minimum Value: 17 % on Apr 30 14:00

Minimum Daily Average: 34.2 % on Apr 30

Maximum Diurnal Average: 68.7 % at hour 7

Minimum Diurnal Average: 42.1 % at hour 17

Monthly Average: 55.4 %

Percentiles: P_1 = 21 P_{10} = 31 Q_1 = 42 Median = 54 Q_3 = 68 P_{90} = 82 P_{99} = 92

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

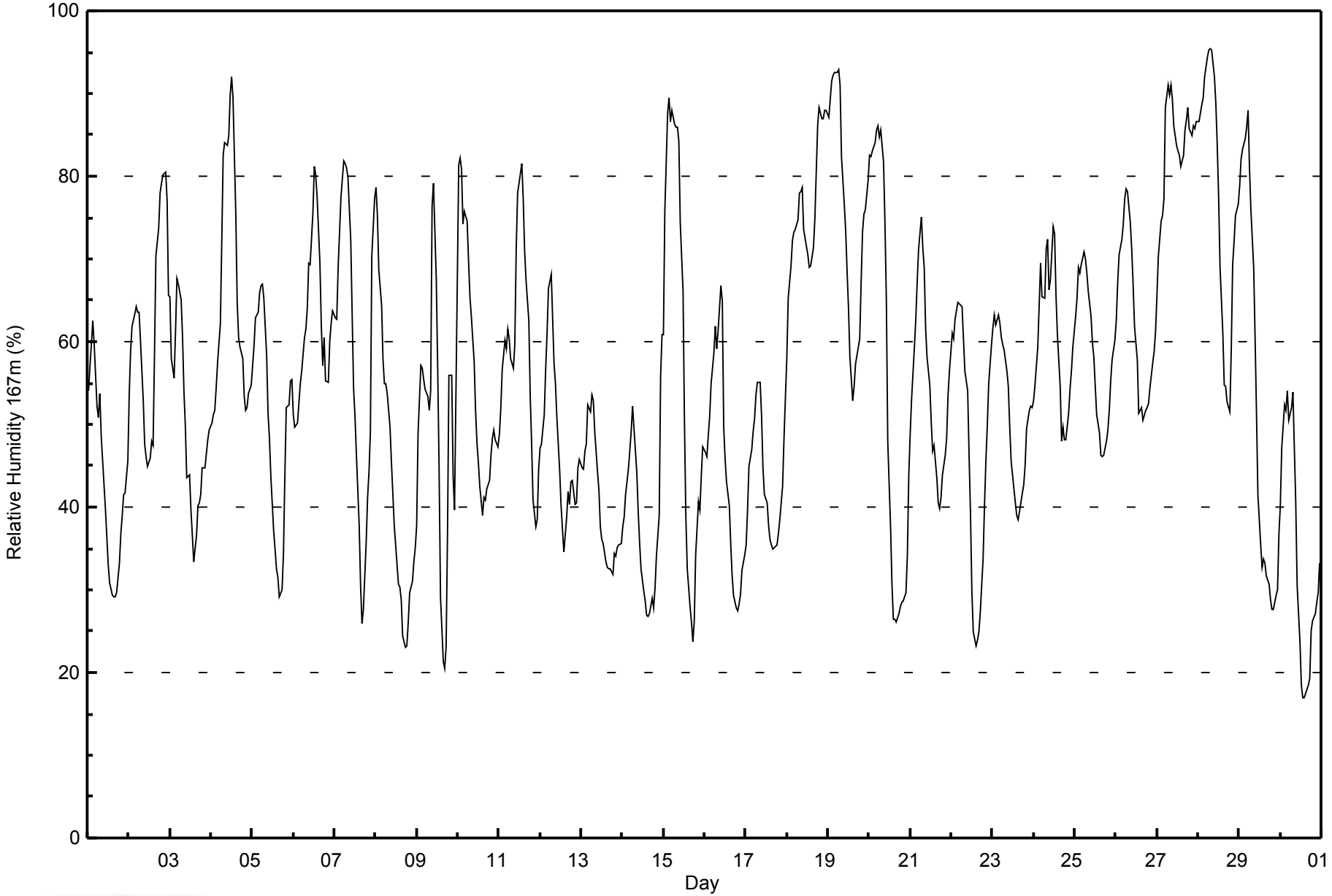
Day	Hourly Period Ending At (MST)																								Daily	Daily
	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24	Average	Maximum
1-Apr	54	57	60	63	60	52	51	54	49	43	40	36	33	31	29	29	29	30	33	37	39	42	42	46	43.2	63
2-Apr	54	59	62	63	64	64	64	60	53	48	46	45	46	48	47	58	70	74	78	79	80	80	77	66	61.9	80
3-Apr	65	58	56	61	68	67	65	61	54	50	44	44	40	37	33	37	40	41	41	45	45	47	48	49	49.7	68
4-Apr	50	51	52	54	57	62	72	83	84	84	85	90	92	90	75	65	61	59	58	53	52	52	54	55	66.2	92
5-Apr	57	60	63	64	66	67	67	65	58	51	48	44	37	35	33	32	29	30	34	44	52	52	55	55	49.9	67
6-Apr	51	50	50	52	55	56	61	62	64	70	69	76	81	80	77	70	62	57	60	55	55	60	62	64	62.5	81
7-Apr	63	63	69	73	77	82	82	81	80	72	63	54	51	46	38	31	26	28	36	41	44	49	70	77	58.2	82
8-Apr	79	75	69	64	58	55	55	54	50	45	42	38	33	31	30	29	24	23	23	26	30	31	33	35	43.0	79
9-Apr	38	49	57	57	55	54	53	52	54	76	79	67	57	45	29	21	21	23	37	56	56	44	40	54	48.9	79
10-Apr	81	82	81	74	76	75	70	65	63	58	52	48	45	43	39	41	41	42	43	46	48	49	48	47	56.6	82
11-Apr	49	52	57	60	59	62	60	58	57	60	71	78	80	82	77	71	67	63	53	48	41	38	38	45	59.3	82
12-Apr	47	48	51	57	61	66	68	63	57	55	51	44	40	37	35	39	42	40	43	43	40	40	45	46	48.3	68
13-Apr	45	45	47	48	52	52	54	53	49	44	42	38	36	36	33	33	32	33	32	34	34	35	35	36	40.7	54
14-Apr	38	39	42	45	47	49	52	50	44	40	36	33	30	29	27	27	27	29	28	30	34	39	56	61	38.7	61
15-Apr	61	76	88	89	87	88	86	86	86	84	74	66	50	39	33	28	26	24	26	34	41	40	44	47	58.4	89
16-Apr	47	46	49	51	55	59	62	59	61	67	65	50	46	43	40	36	32	29	28	28	28	29	32	34	44.8	67
17-Apr	35	40	45	47	49	51	54	55	55	51	45	42	41	38	36	35	35	35	35	37	38	42	48	53	43.4	55
18-Apr	58	65	69	72	73	74	75	78	78	79	74	71	70	69	69	71	75	81	86	88	87	87	88	88	76.0	88
19-Apr	87	89	92	92	93	92	93	91	82	77	73	69	64	58	53	55	57	58	60	67	73	75	76	79	75.3	93
20-Apr	83	82	83	84	86	86	85	86	82	74	65	48	38	31	26	26	26	27	28	28	29	30	34	44	54.6	86
21-Apr	49	53	59	63	67	71	75	71	69	62	58	55	50	47	48	44	41	40	41	44	46	48	54	57	54.6	75
22-Apr	61	60	63	64	65	64	64	60	57	54	46	39	30	25	23	24	25	27	34	40	46	50	55	60	47.3	65
23-Apr	62	63	62	63	62	61	60	59	56	55	50	46	42	41	39	38	39	42	43	45	49	52	52	52	51.4	63
24-Apr	53	55	59	64	70	65	65	71	72	66	68	74	73	66	61	55	48	50	48	48	51	54	56	59	60.5	74
25-Apr	63	65	69	68	69	71	70	68	66	63	60	58	54	51	49	46	46	46	48	49	52	55	58	60	58.6	71
26-Apr	63	67	70	72	74	77	78	78	74	71	67	62	58	51	52	52	50	52	52	53	54	57	59	61	62.8	78
27-Apr	66	70	75	75	77	88	91	90	91	89	86	84	83	82	81	82	86	87	88	86	85	86	86	87	83.4	91
28-Apr	87	88	89	90	92	94	95	96	95	92	89	84	78	69	61	55	55	53	52	59	69	72	75	77	77.6	96
29-Apr	79	82	83	85	86	88	81	76	69	60	51	42	35	33	34	33	32	31	29	28	28	29	30	37	52.5	88
30-Apr	40	47	52	52	54	51	52	54	47	41	30	24	18	17	17	18	18	19	25	26	27	28	30	33	34.2	54
	58.8	61.2	64.0	65.6	67.1	68.1	68.7	67.9	65.3	62.7	59.0	54.9	51.1	47.5	44.2	42.6	42.1	42.3	44.1	46.6	48.5	49.8	52.7	55.4	Diurnal Average	
	87	89	92	92	93	94	95	96	95	92	89	90	92	90	81	82	86	87	88	88	87	87	88	88	Diurnal Maximum	

WBEA NETWORK

Hourly Averages

Relative Humidity 167m (RH167m) - %

Lower Camp Met Tower - April 2014



AURORA ATMOSPHERICS INC.

Concentration Ranges (%)	Number of Hours	%	Cumulative %
0 - 20	6	0.83	0.83
20 - 40	151	20.97	21.81
40 - 60	286	39.72	61.53
60 - 80	188	26.11	87.64
80 - 100	89	12.36	100.00

Total Number of Valid Hours: 720

Total Number of Hours: 720

Wood Buffalo Environmental Association

Summary of Hour Averages

Wind Speed 20 m (WS20m) - km/h

Lower Camp Met Tower - April 2014

Maximum Speed: 32 km/h on Apr 4 03:00

Maximum Daily Speed Average: 14.4 km/h on Apr 17

Minimum Speed Value: 0 km/h on Apr 12 06:00

Minimum Daily Speed Average: 0.5 km/h on Apr 6

Maximum Diurnal Speed Average: 4.2 km/h at hour 8

Minimum Diurnal Speed Average: 1.7 km/h at hour 24

Monthly Average Velocity: 2.7 km/h 118.0 deg

Percentiles: $P_1 = 1$ $P_{10} = 3$ $Q_1 = 6$ Median = 9 $Q_3 = 13$ $P_{90} = 16$ $P_{99} = 23$

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-Apr	SE9	SE10	ESE3	NW1	NNW2	NNW4	N5	NNW6	NNW7	N11	N9	NNW8	N6	N6	N6	N7	N7	N7	NNE9	N7	NNW5	NE2	NNW5	N6	N4.5	N11
2-Apr	NNW6	NNW7	N9	N8	N9	N8	N7	NNW7	NNW10	N12	N15	N15	N13	N13	N14	N16	N14	N14	N12	N12	N11	N10	N8	N7	N10.5	N16
3-Apr	NNW5	NNW6	NNW8	NNW7	NNW4	NNW4	N5	N5	N5	N5	W2	WSW8	SW5	SSE6	SE8	SE12	SE13	SE15	SE14	SE14	SE20	SE20	SE24	SE21	SE4.8	SE24
4-Apr	SE23	SE24	SE32	SE27	SE21	SE23	SE24	SE21	SE17	SE16	SSE15	SSE12	SE8	N1	NW9	NW16	NW21	NW19	NW19	NW18	NW16	NW17	NW14	WNW12	SSE4.4	SE32
5-Apr	WNW11	WNW6	W5	WSW4	NNE2	WNW3	W2	WNW1	WSW1	SW4	SW4	SW5	N2	N4	NNW2	NNE4	NNW4	NNW3	NNW8	N8	NNW7	N7	NNW4	NNW4	NW2.9	WNW11
6-Apr	NNW4	N5	NNW4	NNW4	NNW4	WNW3	NNW2	NNE1	SSE5	SSE7	S4	WSW4	SW2	SSW3	SSW4	SE6	SE9	S1	NNW5	NNW6	NNW4	NNW3	NNW2	NNW1	NW0.5	SE9
7-Apr	SSW1	SE4	SE6	NE1	SE1	SE2	SE6	SE6	SSE4	SSE3	SSE5	ESE3	SSE9	SE6	SSE5	WSW5	WSW9	SW4	WSW12	SW7	SSW9	SW11	SW6	SSE8	S3.8	WSW12
8-Apr	SE7	SSE7	SE11	SE12	SSE5	SE6	SE16	SE13	SSW8	WSW16	WSW16	WSW14	W20	W23	W26	WSW23	WSW25	WSW30	WSW25	W23	W19	W17	W16	W11	WSW11.8	WSW30
9-Apr	W16	WNW12	WNW9	W11	W15	W16	WSW19	W17	WNW23	NW20	NW16	N6	NNW10	NW13	NW16	NW21	NW23	NW18	NW11	N8	SW4	W11	WSW15	WNW9	WNW12.3	WNW23
10-Apr	NNW6	NNW7	N5	NNW4	NNW5	N7	NNE9	N10	N9	N9	N10	N11	NNE10	NNE9	NNE9	NNE10	NNE10	NNE9	NNE9	NNE9	N8	NNE6	NE6	NE5	N7.7	N11
11-Apr	ENE7	NE7	NE7	NE7	E9	E9	E8	ENE7	E9	NNE8	N14	N13	N14	N14	N15	NNE17	N16	N16	N14	N13	N12	N7	NNW4	NNW2	NNE8.9	NNE17
12-Apr	NNW1	NNW2	NW1	NNW1	NNE1	NE0	SE4	SE7	S4	WSW9	WSW7	SW7	SW6	WSW2	N11	N13	N12	N10	NNE9	NNE9	NNE11	N10	N11	N8	N3.3	N13
13-Apr	NNE8	N8	N6	N3	NNW3	NNW3	NNE4	N5	N6	N8	N9	N7	NE6	E5	ENE3	ESE3	SE4	SE14	SE10	SSE6	SSE8	SE13	SSE15	SE10	E2.6	SSE15
14-Apr	SE11	SE14	SE11	SE10	SE12	SE10	SE9	SE10	SSE13	SSE14	SSE15	SSE17	SSE16	SSE16	SSE15	SSE13	SSE13	SSE11	SE12	SE9	ESE8	NNE7	N13	NNW11	SE9.5	SSE17
15-Apr	NNW8	ENE8	ENE3	N6	NNE6	NE7	ENE7	NE5	NNE6	NNE3	NE5	NNE8	NE12	NE11	NE12	NNE16	NNE18	NNE17	NNE14	N14	N13	N11	N9	N7	NNE8.9	NNE18
16-Apr	NNE6	NNE5	N3	NNE6	NNE7	NNE7	N8	ENE7	E10	ESE9	SSW4	SSE7	SE13	SE14	SE14	SE17	SE15	SE16	SE16	SE14	SE13	SE14	SE14	SE14	ESE7.7	SE17
17-Apr	SE16	ESE11	ESE11	ESE10	ESE12	SE13	SE14	SE15	SE14	SE14	SE20	SE19	SE19	SE20	SE17	SE17	SE19	SE18	SE17	SE16	ESE10	SE12	SE11	SE3	SE14.4	SE20
18-Apr	SE9	ESE8	E8	E5	ESE9	ESE12	ESE10	ESE9	ESE10	SE11	SE12	SE12	SE14	SE12	SE11	SE13	SE13	SSE10	SE7	SE2	NW1	NW1	N1	E1	SE7.8	SE14
19-Apr	SSE9	S3	NNW3	NNW3	NNW3	WNW1	NNW2	N1	SSE4	SE7	SSE8	SE12	SE11	SE8	SE7	ESE9	SE13	SE14	SE14	SE10	SE11	SE12	SE9	NNW3	SE6.0	SE14
20-Apr	NNW6	NW4	NW3	NW2	NW2	NNW1	NNW2	NNW1	SW3	WSW7	WSW9	NW6	NNW9	NNW9	N9	NNE8	NE5	ENE5	ENE5	ESE3	SSE4	SE3	SE4	SE8	NNW1.6	NNW9
21-Apr	SE9	SE9	SE12	SE9	SE8	SE9	SE8	SE10	SE6	WSW5	N6	N10	N10	NW4	NW7	N8	N9	NNE9	NNE10	N9	NNW7	NNW6	N7	N7	NE2.4	SE12
22-Apr	N6	N6	NNW3	NW2	NNW2	NNW3	NW2	NNW2	NNW2	NNW5	NNW7	W8	SSE9	ESE14	ESE16	ESE16	E13	E12	E8	NE8	NNE6	ENE5	NE2	NNE4	ENE3.1	ESE16
23-Apr	NNW5	N7	N7	N5	N5	ENE7	E10	E9	E8	ESE9	ESE15	E13	ESE16	ESE18	E18	E18	E17	ENE13	E12	E13	E13	E12	E12	E12	E10.0	E18
24-Apr	E11	E10	E10	ESE12	E9	E8	E9	ESE10	ESE5	NE2	W8	W7	SSW5	SE11	SSE16	SE13	ESE13	SE14	ESE10	E13	E14	E13	E13	ESE12	ESE8.4	SSE16
25-Apr	ESE9	ESE9	ESE4	E3	ESE2	SE5	SSE13	SE12	SSE7	SSE6	E7	SSE6	SSW4	SSW3	SSE7	SSE9	SE8	SE10	SE11	SE8	SE9	SSE9	SSE7	SSE7	SE7.0	SSE13
26-Apr	SSE9	SSE9	SSE7	SE4	SSE4	SSE5	SSE11	SSE13	SE13	SSE14	SSE14	SE16	SE13	SE14	SE14	SE15	SE17	SE16	SE17	SE17	SE15	SE14	SE16	SE15	SE12.4	SE17
27-Apr	SE12	SE13	SE12	SE13	SE13	ESE6	NE2	ESE5	ESE7	SE12	SE17	SE20	SE19	SE15	SSE16	SSE17	SSE16	SSE18	SE19	SSE20	SE15	SE10	SE12	SE7	SE12.9	SE20
28-Apr	SE11	SE11	SE10	SE8	SSE7	SSE7	S6	SSE6	SE7	SSE8	SE6	SE5	SE6	SE8	SSE9	SE8	SSE9	SE8	SE4	SSE10	SSE13	SE10	SSE7	SE5	SE7.9	SSE13
29-Apr	ESE4	ESE7	SE6	SE6	SSE6	SSE9	SE10	SE11	SE7	SE10	SE7	W8	W11	WSW12	WSW15	W5	WSW6	N5	N1	W2	SSW2	SSE2	SE2	SE1	S3.3	WSW15
30-Apr	SE3	SSE3	SSE3	SSE5	SE6	SE8	SE10	SE9	SE10	SSE8	SE15	SSE15	S16	S16	S15	S13	SSW12	SSE12	WSW16	SW9	SW6	SW8	SW13	W12	S8.0	S16
	ESE2.9	ESE3.4	ESE3.1	ESE2.5	ESE2.5	ESE2.9	ESE4.0	ESE4.2	ESE3.3	SE2.4	SSE2.1	SSE2.3	SE2.8	SE3.2	ESE2.8	ESE2.6	ESE2.6	ESE3.3	E2.5	E2.4	ESE2.4	ESE2.0	SE2.0	E1.7	Diurnal Average	
	SE23	SE24	SE32	SE27	SE21	SE23	SE24	SE21	WNW23	NW20	SE20	SE20	W20	W23	W26	WSW23	WSW25	WSW30	WSW25	W23	SE20	SE20	SE24	SE21	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 Apr 9 19:00

Minimum Value: 0 km/h on Apr 12 02:00

Percentiles: $P_1 = 1$ $P_{10} = 2$ $Q_1 = 2$ Median = 3 $Q_3 = 4$ $P_{90} = 6$ $P_{99} = 8$

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

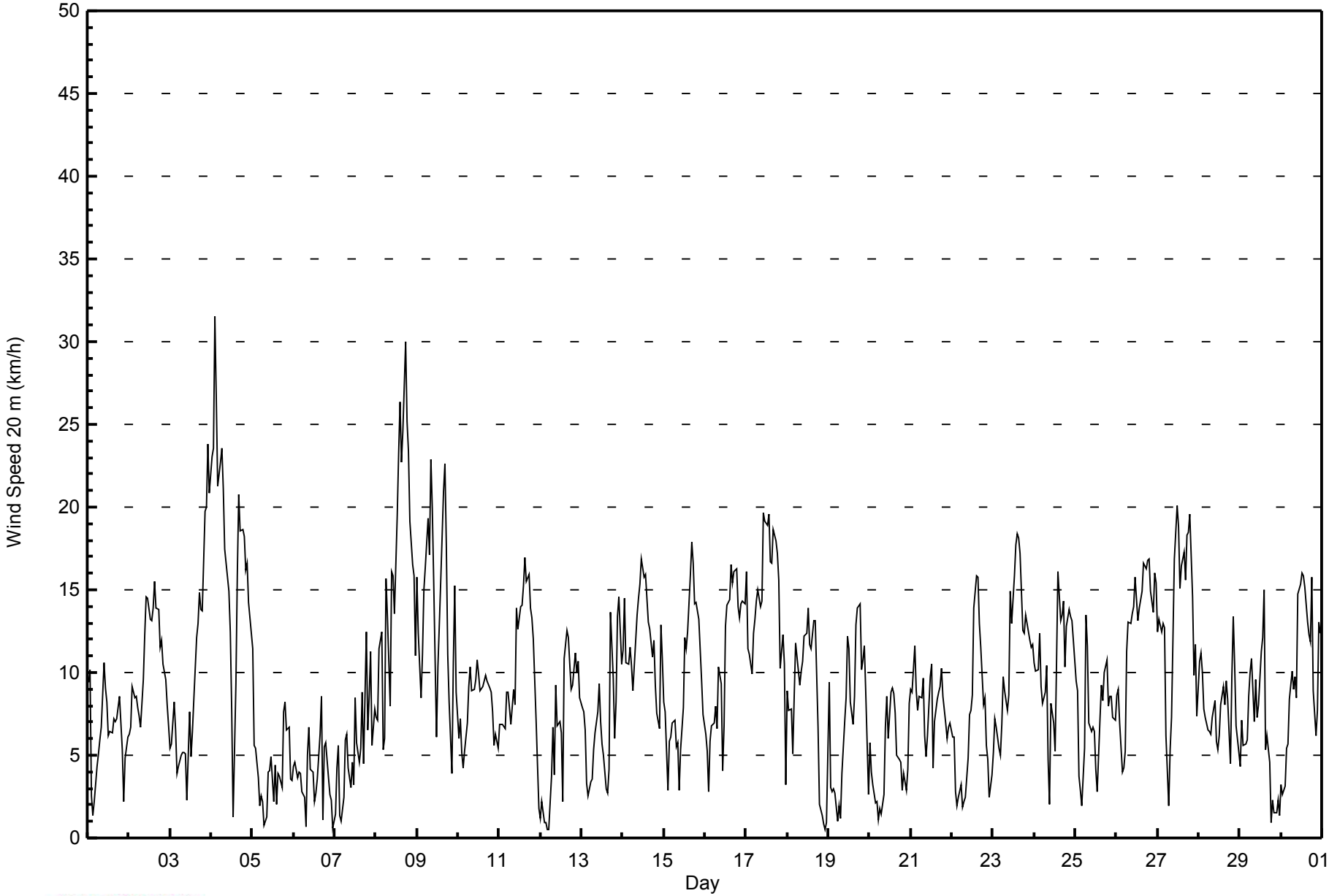
Day	Hourly Period Ending At (MST)																								Daily
	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24	Maximum
1-Apr	2	3	4	1	1	1	1	2	3	4	4	3	3	3	3	3	3	3	3	3	2	2	2	3	4
2-Apr	2	3	3	3	3	3	3	3	3	4	5	5	5	5	6	6	5	5	4	4	4	3	3	3	6
3-Apr	2	2	3	3	2	1	2	2	2	2	2	2	3	3	3	4	5	5	5	4	6	6	7	6	7
4-Apr	7	7	8	8	6	6	7	6	6	5	5	4	4	2	4	6	7	6	7	7	5	5	5	4	8
5-Apr	3	3	3	3	1	2	1	1	1	2	2	2	2	2	2	2	2	3	2	3	2	2	1	1	3
6-Apr	2	2	1	1	1	1	1	1	2	2	3	3	2	2	2	2	2	3	2	3	1	1	1	1	3
7-Apr	1	2	2	2	1	1	2	2	2	1	2	2	3	2	2	3	4	1	5	2	3	3	3	5	5
8-Apr	4	3	3	3	4	5	2	4	5	5	5	4	8	9	9	7	7	9	7	7	6	5	5	3	9
9-Apr	5	4	4	4	5	5	6	6	9	7	6	3	6	5	6	8	8	6	9	5	2	4	4	5	9
10-Apr	3	2	2	2	3	3	4	4	4	4	4	5	4	4	4	4	4	4	4	4	3	3	3	3	5
11-Apr	3	3	3	3	4	4	3	3	3	4	5	5	6	5	6	7	6	6	6	6	5	3	2	1	7
12-Apr	1	0	1	1	1	1	2	2	3	3	3	3	3	3	5	6	5	4	4	4	5	4	4	3	6
13-Apr	3	3	2	1	1	1	2	2	2	3	4	3	3	3	2	2	3	4	3	2	3	4	4	3	4
14-Apr	4	5	4	3	4	3	3	3	3	4	5	5	4	4	4	3	3	2	3	3	3	4	4	3	5
15-Apr	3	5	3	2	3	3	3	2	2	2	3	4	5	5	6	7	7	7	6	5	5	4	3	3	7
16-Apr	3	3	2	2	2	2	3	4	4	4	2	3	5	6	5	6	6	5	5	5	4	3	4	4	6
17-Apr	4	4	2	2	3	3	4	4	5	5	7	6	6	6	6	6	6	6	5	5	4	4	4	2	7
18-Apr	3	3	2	3	5	4	4	4	4	4	4	5	5	4	4	4	4	3	2	2	1	1	1	2	5
19-Apr	2	3	1	1	1	1	1	1	2	3	3	3	3	3	3	4	5	5	5	4	4	3	4	2	5
20-Apr	2	1	1	1	1	1	1	1	2	3	3	4	3	4	4	4	3	3	2	2	2	2	2	3	4
21-Apr	2	2	4	4	3	3	3	3	3	3	4	3	4	3	3	3	3	4	4	3	2	2	3	3	4
22-Apr	2	2	1	1	1	1	1	1	1	2	3	4	5	5	5	6	5	5	4	3	2	3	2	2	6
23-Apr	3	3	3	3	2	3	3	3	4	5	6	5	7	8	7	7	7	6	6	6	5	5	5	5	8
24-Apr	5	4	5	6	4	3	4	4	3	2	4	3	6	5	5	4	5	6	4	6	5	4	5	4	6
25-Apr	4	3	2	2	2	2	4	4	3	3	3	3	2	3	4	3	3	3	3	3	3	3	2	3	4
26-Apr	3	3	2	2	2	2	4	3	4	4	4	5	4	5	5	4	5	5	5	5	4	4	5	5	5
27-Apr	4	4	4	4	4	4	1	3	3	4	5	7	6	5	5	5	4	4	5	4	5	3	3	3	7
28-Apr	3	3	3	2	2	3	2	2	2	2	2	2	2	2	3	2	3	3	2	3	3	4	3	3	4
29-Apr	3	2	3	3	2	3	3	3	2	2	3	4	4	4	8	5	3	2	2	1	1	1	1	1	8
30-Apr	1	1	2	2	2	3	2	2	4	2	5	4	4	5	4	4	4	3	5	4	3	2	2	4	5
	7	7	8	8	6	6	7	6	9	7	7	7	8	9	9	8	8	9	9	7	6	6	7	6	
	Diurnal Maximum																								

WBEA NETWORK

Hourly Averages

Wind Speed 20 m (WS20m) - km/h

Lower Camp Met Tower - April 2014



AURORA
ATMOSPHERICS INC.

Wind Speed Ranges (km/h)	Number of Hours	%	Cumulative %
0 - 5	178	24.72	24.72
6 - 11	308	42.78	67.50
12 - 19	205	28.47	95.97
20 - 28	27	3.75	99.72
29 - 38	2	0.28	100.00
> 38	0	0.00	100.00

Total Number of Valid Hours: 720

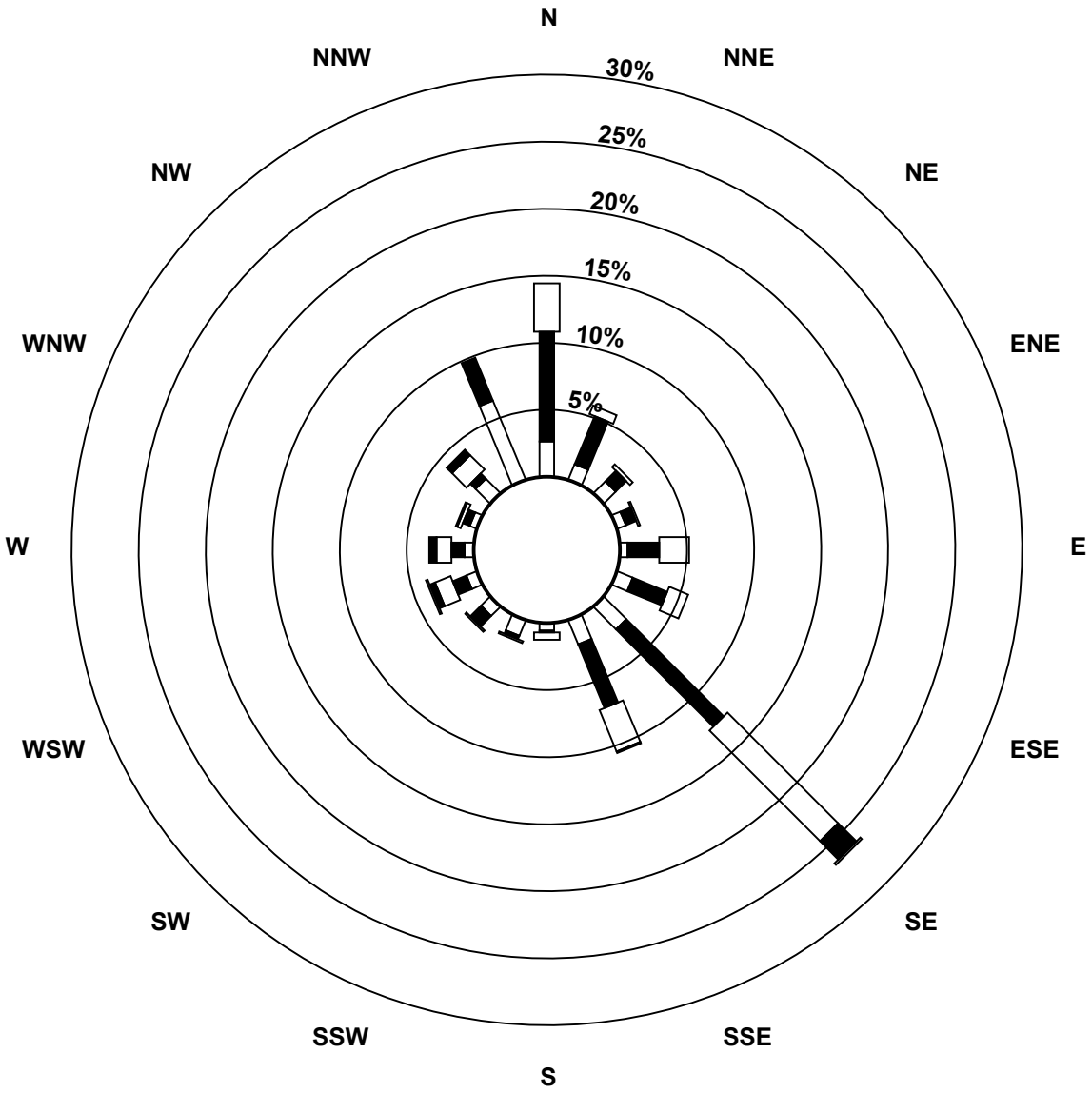
Total Number of Hours: 720

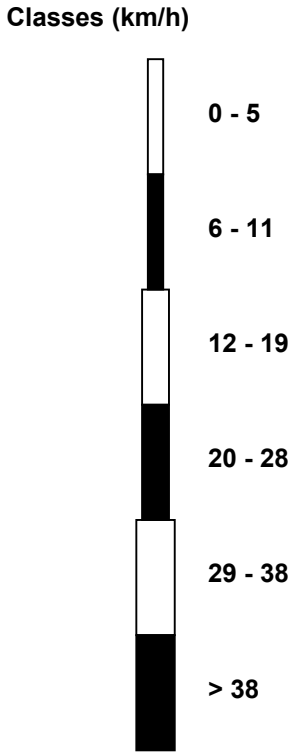
Wood Buffalo Environmental Association

Wind Rose Apr 2014

Wind Speed 20 m (WS20m) - km/h

Lower Camp Met Tower (AMS 3)





Total Number of Valid Hours: 720

Wood Buffalo Environmental Association

Summary of Hour Averages

Wind Speed 45 m (WS45m) - km/h

Lower Camp Met Tower - April 2014

Maximum Speed: 41 km/h on Apr 4 03:00

Maximum Daily Speed Average: 18.4 km/h on Apr 17

Minimum Speed Value: 0 km/h on Apr 12 05:00

Minimum Daily Speed Average: 1.1 km/h on Apr 6

Maximum Diurnal Speed Average: 5.2 km/h at hour 8

Minimum Diurnal Speed Average: 2.3 km/h at hour 11

Monthly Average Velocity: 3.3 km/h 111.1 deg

Percentiles: $P_1 = 1$ $P_{10} = 4$ $Q_1 = 8$ Median = 11 $Q_3 = 17$ $P_{90} = 21$ $P_{99} = 33$

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-Apr	SE10	SE12	ESE5	NW4	NNW4	NNW8	N9	NNW8	NNW8	N15	N11	NNW10	N8	N8	N8	N9	N9	N10	NNE13	N10	NNW7	NE4	NNW7	N9	N6.5	N15
2-Apr	NNW9	NNW9	N13	N12	N12	N11	N10	NNW9	NNW13	N16	N19	N20	N18	N19	N19	N21	N21	N21	N17	N17	N15	N13	N12	N10	N14.7	N21
3-Apr	NNW8	NNW8	NNW11	NNW9	NNW6	NNW6	N7	N7	N6	N6	W2	WSW8	SW5	SSE7	SE9	SE15	SE16	SE19	SE17	SE18	SE26	SE27	SE32	SE29	SE6.2	SE32
4-Apr	SE33	SE34	SE41	SE37	SE29	SE31	SE33	SE29	SE23	SE21	SSE18	SSE16	SE10	N2	NW12	NW19	NW26	NW22	NW23	NW22	NW20	NW20	NW18	WNW16	SSE6.7	SE41
5-Apr	WNW16	WNW8	W9	WSW6	NNE2	WNW4	W4	WNW1	WSW1	SW4	SW4	SW5	N3	N5	NNW3	NNE5	NNW5	NNW4	NNW11	N12	NNW10	N9	NNW5	NNW5	NW4.2	WNW16
6-Apr	NNW6	N6	NNW5	NNW6	NNW6	WNW4	NNW3	NNE1	SSE7	SSE8	S4	WSW4	SW3	SSW2	SSW4	SE7	SE10	S1	NNW8	NNW9	NNW6	NNW5	NNW3	NNW1	NW1.1	SE10
7-Apr	SSW3	SE6	SE8	NE1	SE4	SE7	SE9	SE7	SSE3	SSE3	SSE5	ESE3	SSE9	SE6	SSE5	WSW6	WSW12	SW6	WSW16	SW10	SSW11	SW15	SW8	SSE9	S4.9	WSW16
8-Apr	SE11	SSE9	SE14	SE16	SSE6	SE6	SE16	SE13	SSW11	WSW21	WSW22	WSW18	W25	W30	W35	WSW31	WSW32	WSW41	WSW34	W32	W26	W23	W22	W16	WSW15.9	WSW41
9-Apr	W21	WNW16	WNW11	W15	W21	W23	WSW27	W22	WNW28	NW24	NW20	N9	NNW14	NW16	NW20	NW26	NW28	NW22	NW14	N12	SW4	W16	WSW22	WNW12	WNW16.1	WNW28
10-Apr	NNW9	NNW10	N8	NNW6	NNW8	N10	NNE14	N15	N13	N11	N12	N14	NNE14	NNE12	NNE14	NNE14	NNE15	NNE15	NNE14	NNE13	N11	NNE8	NE8	NE8	N11.1	NNE15
11-Apr	ENE10	NE9	NE10	NE10	E12	E12	E10	ENE9	E12	NNE11	N20	N20	N22	N22	N24	NNE27	N23	N23	N20	N20	N18	N10	NNW7	NNW3	NNE13.2	NNE27
12-Apr	NNW1	NNW2	NW2	NNW2	NNE0	NE1	SE5	SE7	S4	WSW11	WSW8	SW8	SW7	WSW3	N15	N17	N17	N15	NNE14	NNE14	NNE16	N16	N17	N13	N5.2	N17
13-Apr	NNE12	N13	N10	N6	NNW5	NNW6	NNE5	N7	N8	N10	N12	N9	NE7	E5	ENE3	ESE3	SE5	SE17	SE13	SSE7	SSE11	SE18	SSE18	SE14	ENE3.3	SSE18
14-Apr	SE16	SE19	SE15	SE14	SE15	SE14	SE11	SE12	SSE16	SSE16	SSE17	SSE18	SSE17	SSE18	SSE17	SSE14	SSE14	SSE12	SE16	SE13	ESE10	NNE9	N18	NNW15	SE11.4	SE19
15-Apr	NNW12	ENE11	ENE4	N9	NNE10	NE10	ENE10	NE8	NNE8	NNE4	NE7	NNE11	NE17	NE17	NE19	NNE24	NNE28	NNE25	NNE22	N22	N21	N18	N15	N11	NNE13.5	NNE28
16-Apr	NNE9	NNE8	N4	NNE9	NNE12	NNE12	N11	ENE9	E13	ESE12	SSW4	SSE8	SE16	SE18	SE17	SE21	SE20	SE21	SE21	SE18	SE17	SE19	SE19	SE19	ESE9.7	SE21
17-Apr	SE21	ESE16	ESE14	ESE13	ESE17	SE18	SE19	SE20	SE18	SE18	SE24	SE24	SE23	SE23	SE20	SE20	SE24	SE23	SE22	SE20	ESE14	SE16	SE15	SE6	SE18.4	SE24
18-Apr	SE12	ESE10	E11	E8	ESE12	ESE16	ESE13	ESE12	ESE13	SE13	SE15	SE16	SE17	SE15	SE15	SE16	SE17	SSE12	SE8	SE3	NW1	NW0	N1	E2	ESE10.1	SE17
19-Apr	SSE11	S4	NNW3	NNW3	NNW4	WNW1	NNW2	N1	SSE4	SE8	SSE10	SE14	SE14	SE10	SE8	ESE11	SE17	SE18	SE19	SE14	SE15	SE16	SE13	NNW1	SE7.9	SE19
20-Apr	NNW8	NW6	NW4	NW3	NW3	NNW1	NNW3	NNW1	SW3	WSW8	WSW11	NW7	NNW11	NNW12	N12	NNE10	NE7	ENE7	ENE7	ESE5	SSE5	SE6	SE6	SE10	N2.0	N12
21-Apr	SE11	SE11	SE14	SE14	SE11	SE12	SE10	SE13	SE6	WSW6	N9	N12	N13	NW5	NW9	N11	N12	NNE14	NNE17	N13	NNW10	NNW10	N11	N10	NE3.7	NNE17
22-Apr	N9	N9	NNW5	NW3	NNW4	NNW5	NW3	NNW3	NNW3	NNW5	NNW9	W9	SSE10	ESE17	ESE20	ESE20	E17	E16	E12	NE13	NNE8	ENE7	NE4	NNE5	ENE4.3	ESE20
23-Apr	NNW8	N11	N10	N7	N7	ENE10	E13	E11	E10	ESE11	ESE20	E18	ESE21	ESE24	E25	E25	E24	ENE17	E16	E18	E18	E16	E16	E16	E13.6	E25
24-Apr	E15	E14	E14	ESE16	E12	E11	E12	ESE13	ESE6	NE3	W11	W9	SSW6	SE14	SSE20	SE17	ESE17	SE20	ESE15	E18	E18	E18	E18	ESE16	ESE11.2	SSE20
25-Apr	ESE12	ESE11	ESE5	E4	ESE3	SE7	SSE17	SE15	SSE8	SSE8	E8	SSE7	SSW4	SSW2	SSE8	SSE11	SE10	SE14	SE14	SE11	SE11	SSE10	SSE9	SSE8	SE8.7	SSE17
26-Apr	SSE10	SSE10	SSE8	SE5	SSE6	SSE7	SSE14	SSE16	SE16	SSE16	SSE15	SE19	SE16	SE18	SE20	SE21	SE22	SE21	SE22	SE22	SE20	SE18	SE21	SE20	SE15.7	SE22
27-Apr	SE16	SE17	SE17	SE17	SE17	ESE9	NE3	ESE8	ESE10	SE16	SE23	SE27	SE26	SE20	SSE21	SSE21	SSE20	SSE22	SE24	SSE23	SE18	SE14	SE17	SE12	SE16.9	SE27
28-Apr	SE15	SE15	SE13	SE10	SSE9	SSE8	S7	SSE8	SE9	SSE10	SE7	SE6	SE6	SE9	SSE10	SE9	SSE12	SE11	SE6	SSE13	SSE17	SE14	SSE10	SE10	SE10.1	SSE17
29-Apr	ESE8	ESE10	SE8	SE8	SSE9	SSE12	SE14	SE14	SE8	SE10	SE8	W9	W14	WSW15	WSW18	W6	WSW7	N6	N2	W2	SSW2	SSE3	SE4	SE5	S4.4	WSW18
30-Apr	SE6	SSE5	SSE6	SSE8	SE9	SE10	SE11	SE10	SE12	SSE11	SE19	SSE18	S17	S18	S17	S15	SSW14	SSE12	WSW21	SW12	SW9	SW11	SW17	W17	S9.9	WSW21
	ESE3.7	ESE4.5	ESE4.1	ESE3.3	ESE3.3	ESE3.8	ESE4.9	ESE5.2	ESE4.1	SE2.8	SE2.3	SE2.4	SE3.1	ESE3.7	ESE3.2	E3.3	E3.3	E4.1	E3.4	ENE3.5	E3.1	ESE2.7	ESE2.6	E2.5	Diurnal Average	
	SE33	SE34	SE41	SE37	SE29	SE31	SE33	SE29	WNW28	NW24	SE24	SE27	SE26	W30	W35	WSW31	WSW32	WSW41	WSW34	W32	SE26	SE27	SE32	SE29	Diurnal Maximum	

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

Number of Exceedences (AAAQO): 1-hr: 0 24-hr: 0
Maximum Value: 11 km/h on Apr 9 19:00

Minimum Value: 0 km/h on Apr 12 06:00

Percentiles: $P_1 = 1$ $P_{10} = 2$ $Q_1 = 2$ Median = 3 $Q_3 = 5$ $P_{90} = 6$ $P_{99} = 8$

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

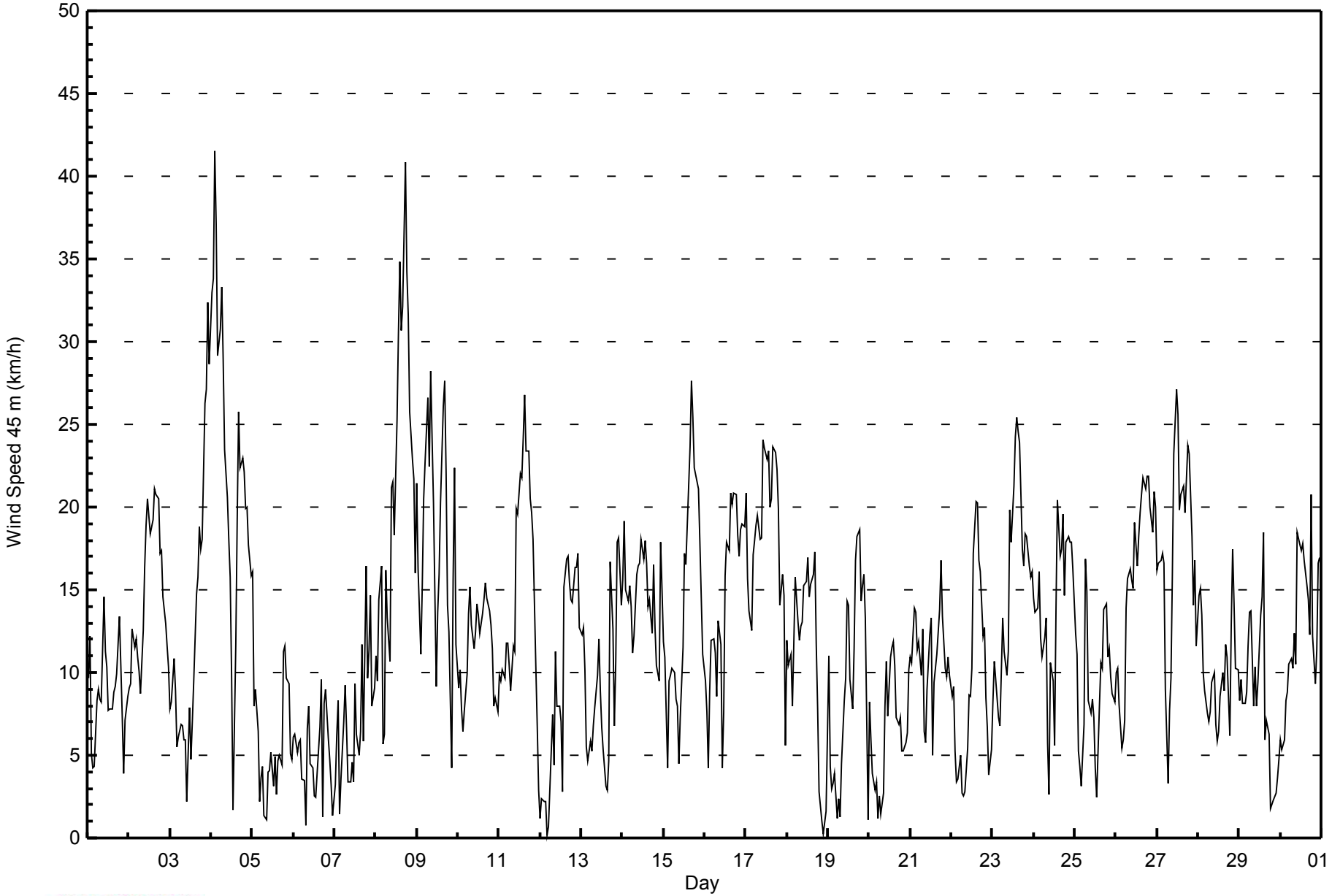
Day	Hourly Period Ending At (MST)																								Daily
	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24	Maximum
1-Apr	3	2	5	2	2	2	1	1	3	5	4	3	3	3	3	4	4	3	4	3	2	2	3	3	5
2-Apr	2	3	3	3	3	3	3	3	3	4	5	5	5	5	6	6	5	5	5	5	4	4	3	3	6
3-Apr	2	2	3	3	2	1	2	2	2	2	2	2	3	3	3	5	5	5	5	5	6	6	7	6	7
4-Apr	6	6	7	7	6	6	7	7	6	6	6	3	5	2	4	6	7	6	7	7	5	6	5	3	7
5-Apr	3	5	4	4	1	2	1	2	1	2	2	2	3	2	2	2	2	4	3	3	2	2	2	2	5
6-Apr	2	2	2	2	1	1	2	1	2	2	3	3	2	2	2	2	2	3	3	3	2	2	1	1	3
7-Apr	1	2	2	2	2	2	1	2	2	2	2	2	3	2	2	3	3	1	7	3	4	4	4	5	7
8-Apr	4	4	3	2	4	5	2	4	6	4	5	4	8	9	9	7	7	8	7	6	6	4	5	3	9
9-Apr	5	5	5	4	5	5	5	5	10	7	6	3	6	6	7	8	8	6	11	7	3	5	3	7	11
10-Apr	4	2	2	2	3	3	6	5	5	4	5	5	4	4	4	4	5	4	4	4	3	3	3	3	6
11-Apr	3	3	3	3	4	4	3	3	3	5	5	6	6	6	7	8	7	6	6	6	6	3	2	1	8
12-Apr	1	1	1	1	0	0	3	1	3	3	3	3	3	4	6	6	6	5	4	4	5	5	4	3	6
13-Apr	4	4	3	2	1	1	2	2	3	4	5	4	4	3	3	2	4	3	3	2	4	4	4	4	5
14-Apr	5	5	4	4	4	3	4	3	3	4	4	5	5	4	4	3	2	3	3	3	4	4	4	3	5
15-Apr	3	6	3	2	3	3	3	3	3	3	4	4	5	6	6	8	8	7	6	6	6	5	4	3	8
16-Apr	3	3	3	2	3	3	3	5	4	6	3	4	5	7	6	6	6	5	5	4	4	3	4	3	7
17-Apr	3	4	2	3	3	3	3	4	5	5	7	6	6	7	6	6	6	6	6	5	4	4	5	3	7
18-Apr	3	3	2	3	6	4	4	4	4	4	4	5	5	5	4	4	4	3	2	2	1	1	1	2	6
19-Apr	3	4	1	2	1	1	1	1	2	3	3	3	3	3	3	4	5	4	4	4	3	3	5	2	5
20-Apr	2	2	1	1	2	1	1	1	2	3	2	4	4	5	5	4	3	3	2	2	2	2	2	3	5
21-Apr	2	2	5	5	3	3	2	2	3	3	5	4	4	3	4	3	4	4	4	4	3	2	3	5	5
22-Apr	2	2	3	1	2	1	1	1	1	2	3	4	5	6	6	6	6	5	5	4	2	3	2	2	6
23-Apr	3	3	3	3	3	3	3	4	4	6	7	5	8	8	7	7	7	7	6	6	5	5	5	5	8
24-Apr	5	5	5	6	4	4	4	4	3	3	5	4	6	6	5	4	6	7	4	6	5	5	5	5	7
25-Apr	4	3	3	2	2	2	3	5	3	4	3	3	2	3	4	3	3	4	3	3	3	3	3	2	5
26-Apr	2	3	3	2	2	2	4	3	4	4	4	5	4	4	4	5	5	5	4	5	4	3	5	5	5
27-Apr	4	4	4	4	4	4	2	3	3	4	5	7	6	6	5	5	5	4	6	3	5	3	3	3	7
28-Apr	3	3	3	2	2	3	2	2	2	2	2	2	2	2	3	2	2	3	2	4	3	4	3	4	4
29-Apr	4	2	3	4	3	3	3	3	2	2	3	5	4	3	10	7	2	3	2	2	1	1	1	1	10
30-Apr	1	1	2	2	2	3	2	3	4	3	5	5	4	4	4	4	5	3	5	4	3	2	3	5	5
	6	6	7	7	6	6	7	7	10	7	7	7	8	9	10	8	8	8	11	7	6	6	7	7	
	Diurnal Maximum																								

WBEA NETWORK

Hourly Averages

Wind Speed 45 m (WS45m) - km/h

Lower Camp Met Tower - April 2014



AURORA ATMOSPHERICS INC.

Wind Speed Ranges (km/h)	Number of Hours	%	Cumulative %
0 - 5	114	15.83	15.83
6 - 11	247	34.31	50.14
12 - 19	247	34.31	84.44
20 - 28	95	13.19	97.64
29 - 38	15	2.08	99.72
> 38	2	0.28	100.00

Total Number of Valid Hours: 720

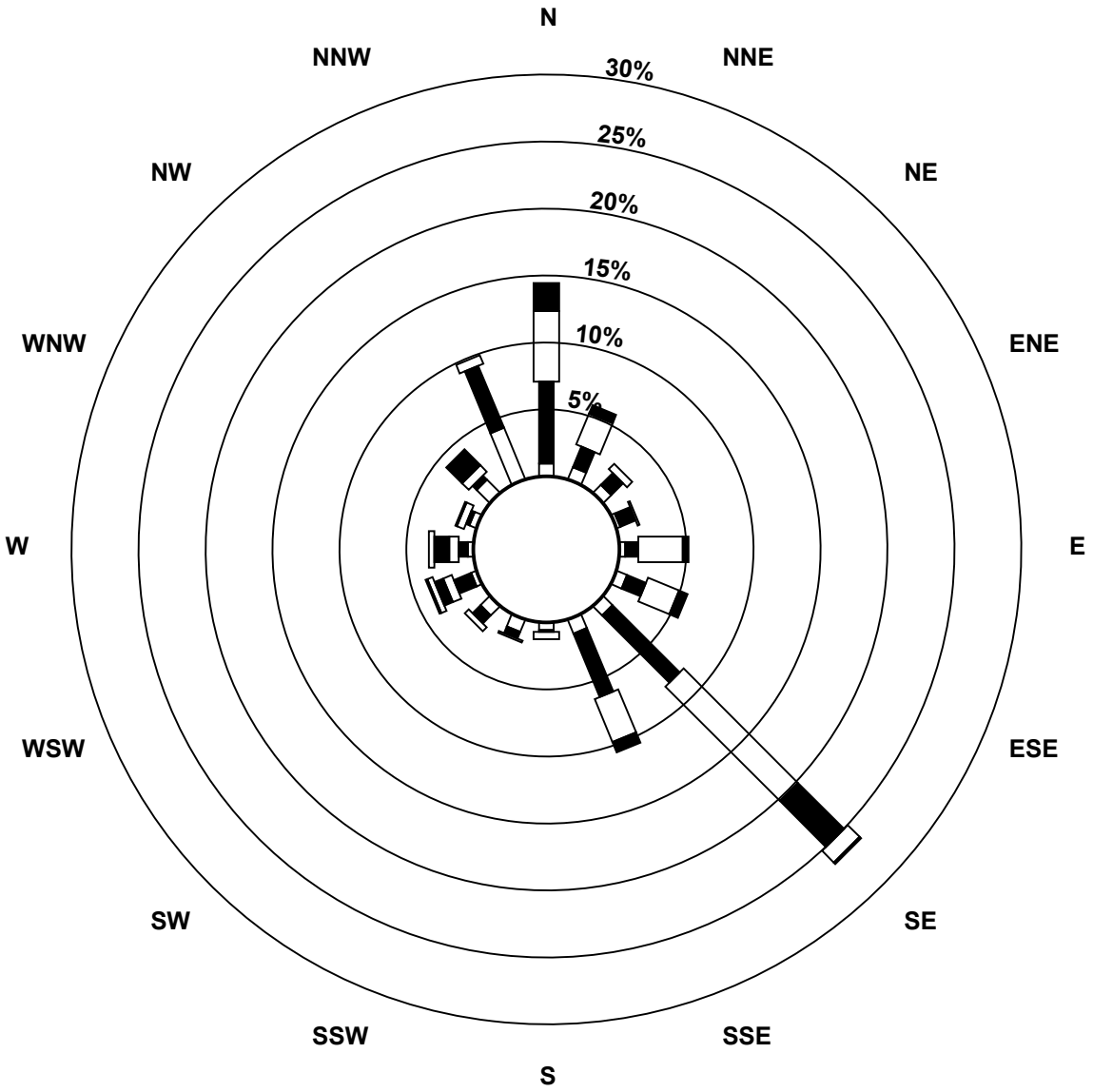
Total Number of Hours: 720

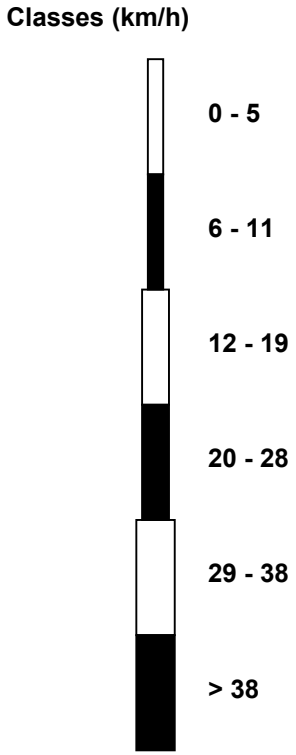
Wood Buffalo Environmental Association

Wind Rose Apr 2014

Wind Speed 45 m (WS45m) - km/h

Lower Camp Met Tower (AMS 3)





Total Number of Valid Hours: 720

Wood Buffalo Environmental Association

Summary of Hour Averages

Wind Speed 100 m (WS100m) - km/h

Lower Camp Met Tower - April 2014

Maximum Speed: 53 km/h on Apr 4 03:00

Maximum Daily Speed Average: 26.2 km/h on Apr 17

Minimum Speed Value: 0 km/h on Apr 19 05:00

Minimum Daily Speed Average: 0.8 km/h on Apr 6

Maximum Diurnal Speed Average: 6.2 km/h at hour 21

Minimum Diurnal Speed Average: 3.2 km/h at hour 11

Monthly Average Velocity: 5.0 km/h 120.3 deg

Percentiles: $P_1 = 1$ $P_{10} = 5$ $Q_1 = 10$ Median = 16 $Q_3 = 24$ $P_{90} = 30$ $P_{99} = 46$

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-Apr	SSW8	S8	SSE5	NW10	NNW10	NNE14	NNE16	NNE12	N11	N18	N12	N12	N10	N9	N10	N10	N11	NNE12	NNE17	NNE16	NNE11	NE8	NNE12	NNE13	N9.3	N18
2-Apr	N14	N13	N17	N17	N18	NNE16	N14	N11	N15	N19	N22	N25	N23	N24	NNE25	N26	N27	N26	NNE23	NNE23	N19	N18	NNE16	NNE15	N19.4	N27
3-Apr	N12	N14	N15	N14	N9	N10	NNW10	NNW7	NNW6	NNW5	WNW3	WSW6	WSW2	SE8	SE11	SE20	SE20	SE24	SE25	SE26	SE37	SSE38	SSE46	SSE42	SE8.5	SSE46
4-Apr	SSE47	SSE46	SSE53	SSE50	SSE40	SE42	SE45	SE41	SE35	SE30	SSE22	SSE20	SSE13	W2	NW18	NW28	NW36	NW31	NW32	NW33	NW29	NW29	NW26	NW25	SSE9.1	SSE53
5-Apr	WNW27	WNW17	W19	WSW15	W7	W10	W8	NNW1	NNE1	SW2	SW3	SW4	NNE3	N4	N3	N5	N5	NNE6	NNE14	N16	N14	N13	N9	N7	NW5.8	WNW27
6-Apr	NNW11	NNW5	NNE3	ESE2	NNE3	NE1	SW4	SSE7	SE11	SE11	S5	WSW5	SSW5	SSW2	SSW5	SSE7	SE8	NNE1	NNW13	N13	N10	N9	NNW6	NNE2	NE0.8	N13
7-Apr	S4	S5	SW8	W10	SW2	S3	SW3	WSW7	SW5	SSE3	SSE3	SSE2	SE9	SE7	SSE6	W9	WSW15	SW9	WSW23	SW23	SW23	SW24	SW15	S10	SW8.0	SW24
8-Apr	SSE20	SSE16	S15	S9	WSW13	SSW8	SSW8	SW10	SW20	WSW28	WSW27	WSW24	W35	W44	W51	WSW42	WSW42	WSW51	WSW48	W51	W42	W38	W35	WSW28	WSW26.2	W51
9-Apr	W37	WNW29	WNW21	W30	W36	WSW34	WSW37	W34	NW39	NW34	NW31	NNW15	NNW19	NW22	NNW27	NW36	NW37	NW32	NW18	NNE17	WNW4	W24	W29	NW17	WNW23.9	NW39
10-Apr	N15	N15	NNE13	NNE11	N13	NNE15	NNE18	NNE21	NNE18	NNE14	N15	N17	NNE16	NNE15	NNE17	NNE19	NNE20	NNE19	NNE18	NNE16	NNE16	NNE12	ENE11	ENE10	NNE15.1	NNE21
11-Apr	E13	E12	ENE13	ENE13	E15	ESE15	E12	E11	E13	NE13	NNE25	NNE26	NNE29	NNE29	NNE32	NNE35	NNE32	N31	N28	N27	N25	N18	N15	NNW11	NNE17.6	NNE35
12-Apr	NNW9	NW9	NW7	WNW6	W6	SW3	SW6	S5	SW6	WSW11	WSW8	WSW8	SW8	W5	N19	N22	N22	N20	NNE19	NE19	NNE23	NNE23	NNE24	N18	N7.8	NNE24
13-Apr	NNE18	N21	N18	N12	NNW11	NNW14	NNW9	N9	N10	N13	N15	N11	NNE8	E5	ENE4	ESE2	SE5	SE17	SE16	SE9	SSE20	SSE27	SSE24	SSE22	ENE4.2	SSE27
14-Apr	SE26	SE30	SE26	SE22	SE23	SE22	SE18	SE17	SSE19	SSE18	SSE18	SSE20	S18	SSE20	SSE18	SSE15	SSE16	SE18	SE26	SE20	ESE17	NE13	N22	N20	SE15.9	SE30
15-Apr	N18	E15	E8	NNE14	NE14	ENE13	ENE14	NE11	NE11	NE7	ENE11	NE15	NE22	NE21	NE24	NNE30	NNE36	NNE33	NNE29	NNE30	NNE29	NNE25	NNE21	NNE17	NNE18.3	NNE36
16-Apr	NE16	NE14	NNE6	NNE11	NNE15	NNE16	NNE14	E11	ESE16	ESE14	S4	SSE9	SSE20	SE24	SE23	SE27	SE27	SE28	SE28	SE26	SE25	SE26	SE28	SE28	ESE14.2	SE28
17-Apr	SE30	SE24	SE18	SE20	SE25	SE27	SE27	SE25	SE23	SE23	SSE31	SE30	SE29	SE28	SE26	SE26	SE31	SE31	SE32	SE31	SE25	SE27	SE26	SE15	SE26.2	SE32
18-Apr	SE21	SE18	ESE18	ESE16	ESE21	ESE22	ESE17	ESE15	ESE17	SE17	SE20	SE20	SE21	SE18	SE19	SE19	SE22	SSE16	SSE11	SE5	SE5	SE4	SE5	SE7	SE15.4	ESE22
19-Apr	SE16	SSE8	SE2	SSE2	SE0	SE3	SW1	SE4	SSE7	SSE9	SSE10	SE16	SE16	SE11	SE9	ESE15	SE21	SE23	SE24	SE22	SE24	SE27	SE26	SSE9	SE12.6	SE27
20-Apr	NNE1	NE4	E4	ESE5	ESE3	SE8	SSE5	W2	WNW2	W5	W9	NNW10	NNW14	N15	N16	NE14	NE10	E10	ENE12	ESE13	SE12	SSE10	SSE9	S10	ENE2.7	N16
21-Apr	S7	SSW6	SSW11	SSE21	SE18	SSE15	SSE8	SE13	S3	WSW5	N12	N14	N14	NNW6	NNW12	N13	NNE16	NNE17	NNE22	NNE20	N15	N15	NNE15	N17	NNE5.2	NNE22
22-Apr	N14	N14	N12	N10	N11	N12	NNE7	NNW5	NNW4	NNW6	NNW10	W7	SE13	ESE23	SE25	ESE25	ESE22	ESE22	E17	ENE19	ENE12	E10	E5	E8	ENE7.0	SE25
23-Apr	NNE11	NE10	E14	ENE11	E13	E14	E17	ESE14	E13	ESE17	ESE28	ESE25	ESE28	ESE32	ESE33	E32	E32	E24	ESE23	ESE26	ESE26	ESE23	ESE24	ESE23	E20.6	ESE33
24-Apr	ESE21	ESE19	ESE19	ESE21	ESE16	E15	ESE17	ESE17	ESE10	E5	WSW7	WSW8	S9	SE19	SSE26	SE21	SE25	SE27	ESE21	E25	ESE27	ESE26	ESE27	ESE24	ESE16.9	ESE27
25-Apr	SE18	SE16	SE9	SE8	SE6	SE9	SSE20	SE18	SSE12	SE9	E11	SE8	S4	S3	SSE8	SSE12	SSE13	SE19	SE20	SE18	SE19	SSE14	SSE12	SSE11	SE12.2	SSE20
26-Apr	S14	S13	SE12	SE12	SE12	SE14	SSE20	SSE19	SE22	SSE18	SSE18	SE24	SE21	SE22	SE25	SE27	SE30	SE30	SE30	SE32	SE30	SE28	SE32	SE29	SE22.1	SE32
27-Apr	SE24	SE25	SE26	SE26	SE23	ESE14	ESE8	SE13	SE16	SE24	SSE35	SE39	SE37	SE31	SSE31	SSE28	SSE29	SSE27	SSE32	SSE27	SSE26	SSE24	SSE28	SE23	SE25.3	SE39
28-Apr	SE24	SE23	SE22	SSE16	SSE14	SSE9	S8	S8	SE11	SSE11	SSE7	SE6	SSE6	SSE7	SSE8	SSE8	SE11	SE12	SE11	SE22	SSE28	SE26	SE20	SE27	SSE14.2	SSE28
29-Apr	SE22	SE15	SE16	SSE17	SSE17	SSE14	SSE15	SSE11	SSE8	SE10	SSE7	W12	W18	WSW15	WSW20	WNW8	W8	N8	N4	NNW5	NNE2	SSE4	SSE8	SSE7	S5.8	SE22
30-Apr	SSE10	SE13	SSE5	SSE10	SSE12	SSE17	SSE15	SSE14	SE16	SE15	SSE21	S18	S19	S19	S18	SSW17	SSW17	S16	WSW27	SW21	SW23	WSW19	WSW26	WSW27	SSW13.7	WSW27
	SE5.6	ESE6.2	SE5.8	SE5.5	SE5.0	SE5.9	SE6.0	SE6.0	SE5.1	SE4.1	SE3.2	SE3.3	SE4.2	SE4.9	ESE3.9	E4.1	ESE4.8	ESE5.9	E5.5	E6.0	ESE6.2	SE5.2	SE5.1	SE4.8	Diurnal Average	
	SSE47	SSE46	SSE53	SSE50	SSE40	SE42	SE45	SE41	NW39	NW34	SSE35	SE39	SE37	W44	W51	WSW42	WSW42	WSW51	WSW48	W51	W42	W38	SSE46	SSE42	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: 14 km/h on Apr 9 19:00

Minimum Value: 1 km/h on Apr 20 03:00

Percentiles: P_1 = 1 P_{10} = 2 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

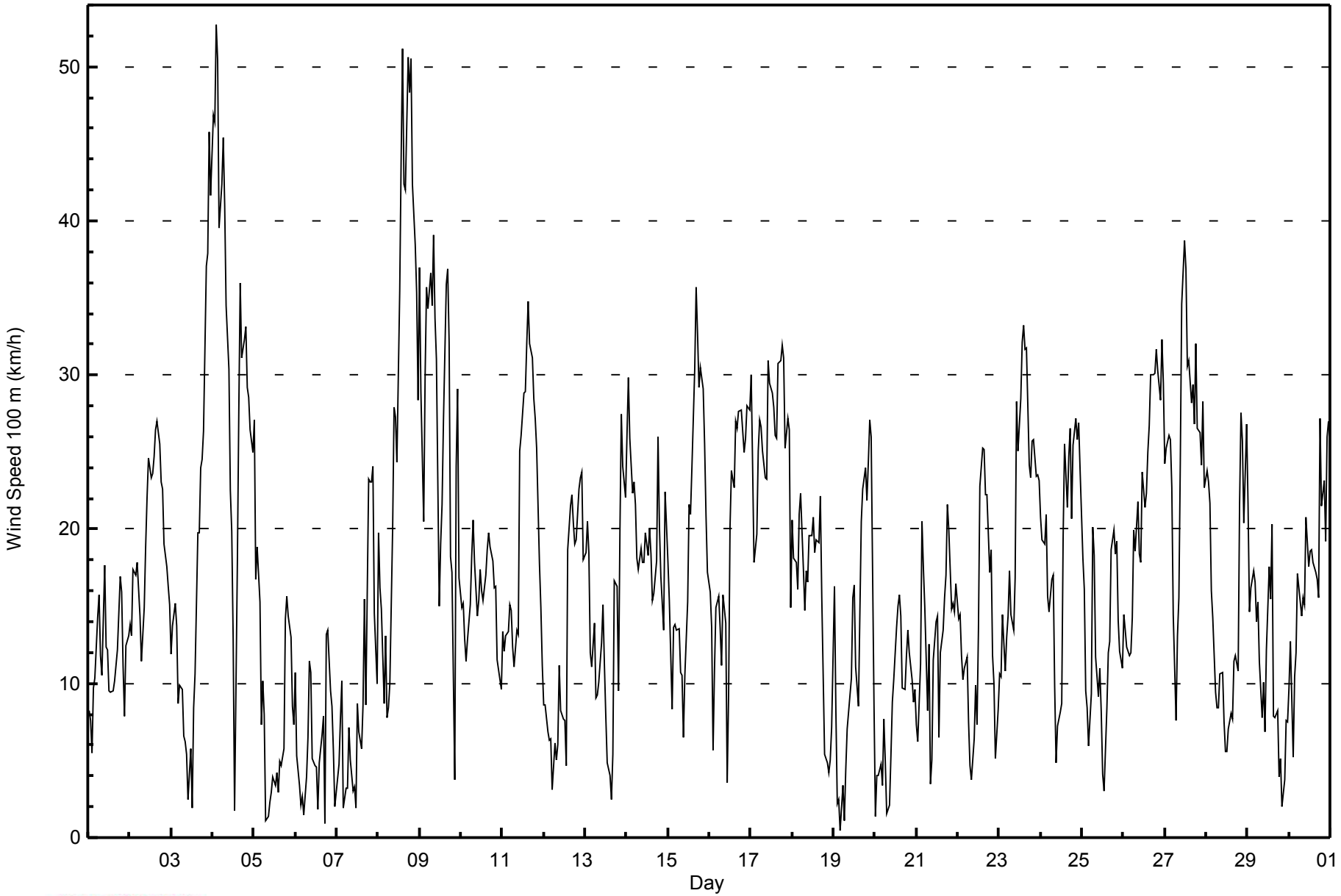
Day	Hourly Period Ending At (MST)																								Daily
	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24	Maximum
1-Apr	3	2	2	2	3	2	2	2	4	4	3	2	3	3	3	3	3	2	3	4	3	3	4	4	4
2-Apr	2	2	2	2	3	2	2	2	3	3	3	3	3	3	3	4	3	3	3	3	3	2	2	3	4
3-Apr	1	2	3	3	2	1	1	2	2	2	2	3	2	4	3	4	4	4	4	5	4	4	4	4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

WBEA NETWORK

Hourly Averages

Wind Speed 100 m (WS100m) - km/h

Lower Camp Met Tower - April 2014



AURORA ATMOSPHERICS INC.

Wind Speed Ranges (km/h)	Number of Hours	%	Cumulative %
0 - 5	78	10.83	10.83
6 - 11	152	21.11	31.94
12 - 19	228	31.67	63.61
20 - 28	178	24.72	88.33
29 - 38	64	8.89	97.22
> 38	20	2.78	100.00

Total Number of Valid Hours: 720

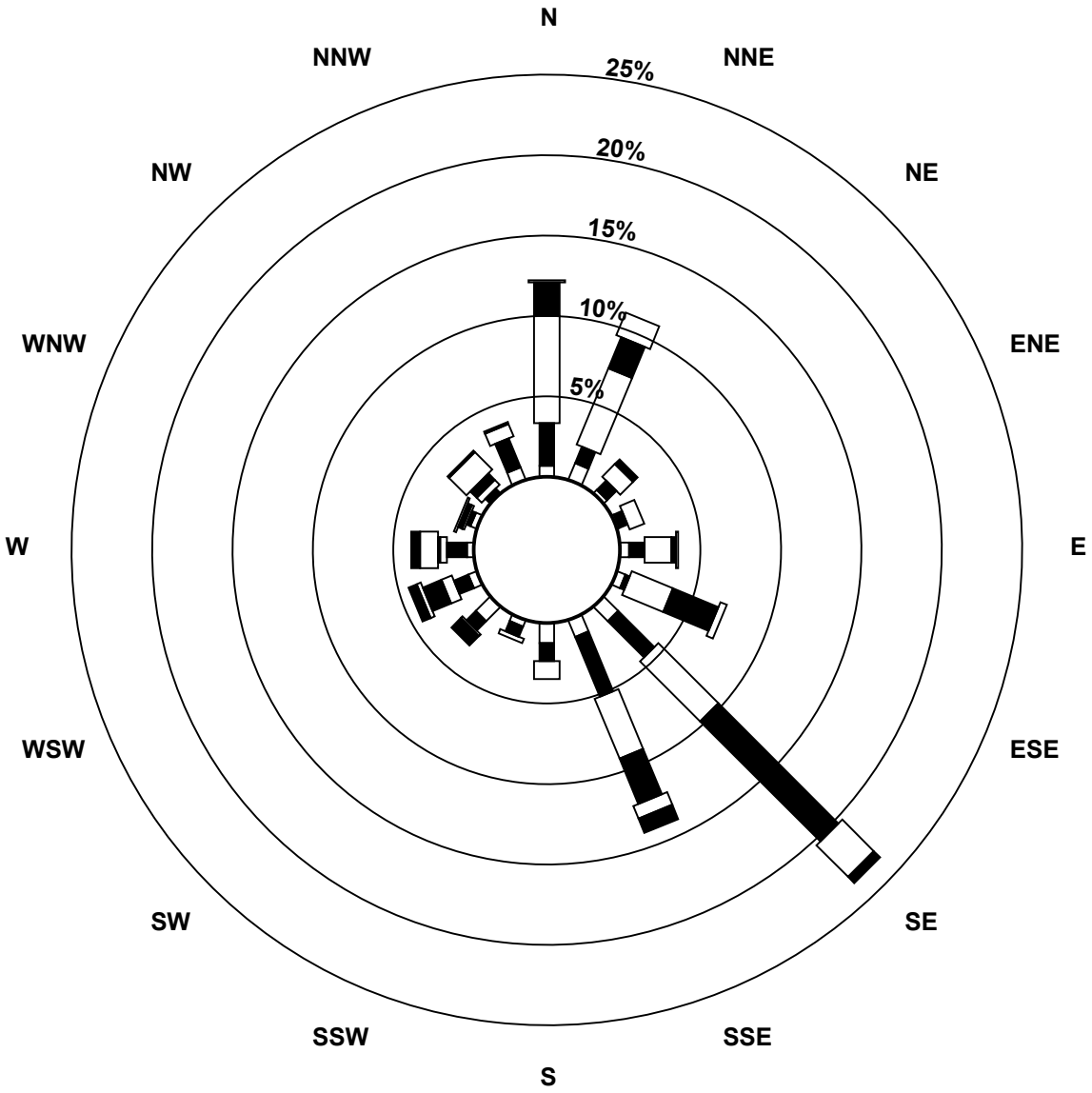
Total Number of Hours: 720

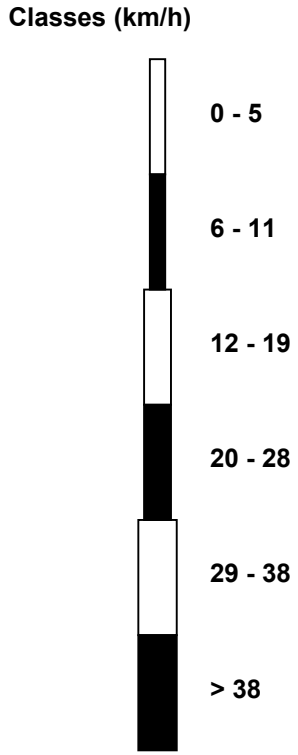
Wood Buffalo Environmental Association

Wind Rose Apr 2014

Wind Speed 100 m (WS100m) - km/h

Lower Camp Met Tower (AMS 3)





Total Number of Valid Hours: 720

Wood Buffalo Environmental Association

Summary of Hour Averages

Wind Speed 167 m (WS167m) - km/h

Lower Camp Met Tower - April 2014

Maximum Speed: 61 km/h on Apr 8 18:00

Maximum Daily Speed Average: 34.9 km/h on Apr 8

Minimum Speed Value: 0 km/h on Apr 5 10:00

Minimum Daily Speed Average: 2.9 km/h on Apr 20

Maximum Diurnal Speed Average: 8.2 km/h at hour 2

Minimum Diurnal Speed Average: 3.2 km/h at hour 11

Monthly Average Velocity: 5.6 km/h 122.3 deg

Percentiles: P_1 = 2 P_{10} = 7 Q_1 = 12 Median = 18 Q_3 = 26 P_{90} = 33 P_{99} = 50

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-Apr	SW17	SW9	SW4	NW12	NNW13	NNE24	NE26	NE17	NNE12	N17	N12	N12	N10	N9	N10	N10	N11	NNE12	NNE18	NNE21	NE18	NE13	NNE19	NNE19	NNE11.1	NE26
2-Apr	NNE17	NNE15	NNE21	NNE20	NNE20	NNE18	NNE17	NNE13	NNE15	N18	N21	N24	N22	NNE24	NNE24	N26	N27	NNE25	NNE24	NNE24	NNE20	N18	NNE18	NNE18	NNE20.2	N27
3-Apr	NNE14	NNE16	NNE19	N18	NNE12	NNE14	NNE15	NNE10	NNE8	NW5	NW3	WNW4	SE1	SE9	SE11	SE21	SE21	SE25	SE27	SE30	SE41	SE42	SE50	SE47	ESE11.1	SSE50
4-Apr	SSE49	SSE48	SSE55	SSE51	SE43	SE46	SE48	SSE43	SSE38	SE35	SSE23	SSE16	S12	W5	WNW23	WNW32	NW42	NW35	NW37	NW39	NW33	NW32	NW30	NW30	S9.2	SSE55
5-Apr	NW29	WNW19	W20	W19	W17	W14	NW8	NNW6	N3	S0	SSW2	SW2	NNE4	NNW3	N2	N4	N4	NNE5	NNE16	NNE18	NNE16	NNE15	NNE9	NE5	NNW6.4	NW29
6-Apr	SSE2	SE6	SE10	SSE14	SE9	SE13	SSE9	SSE9	SSE9	SSE10	S6	SW6	SW6	W2	SSW6	S6	SSE5	NNW4	N15	NNE14	NNE13	NNE9	NNE3	SE1	SE2.9	N15
7-Apr	S5	SW13	W20	W19	W9	WSW8	WSW10	WSW10	SW7	S3	S3	S2	SE9	SE7	S6	WSW10	WSW19	SW12	SW29	SW29	SW29	SW29	WSW18	SSW17	SW11.8	SW29
8-Apr	S23	S22	SSW16	SW12	WSW29	SW20	SW17	SW25	SW29	WSW36	WSW34	WSW30	W41	W50	W58	WSW49	WSW51	WSW61	WSW58	W58	WSW53	WSW49	W40	WSW39	WSW34.9	WSW61
9-Apr	W48	WNW37	WNW28	W38	W46	WSW44	WSW48	W41	WNW45	NW39	NW36	NNW19	NNW23	NW24	NW30	NW39	NW42	NW38	NW21	N20	NW8	W27	W32	NW20	WNW29.5	W48
10-Apr	N19	N18	NNE17	NNE18	NNE18	NNE19	NNE19	NNE20	NNE18	NNE14	N15	N17	NNE16	NNE16	NNE17	NNE18	NNE20	NNE20	NNE19	NNE18	NNE20	NE15	ENE14	ENE11	NNE16.8	NNE20
11-Apr	E16	E14	E14	E17	E17	ESE15	E13	E12	E14	NE14	NNE24	NNE26	NNE29	NNE30	NNE33	NNE36	NNE33	NNE32	N30	N28	N29	N24	NNE23	N16	NNE19.1	NNE36
12-Apr	NNW12	NNW11	NW9	W8	W11	W9	WSW8	SSW7	SW8	WSW12	W8	WSW8	WSW9	W6	NNW19	N22	N23	N21	NNE21	NNE23	NNE27	NNE27	N27	N22	NNW9.4	NNE27
13-Apr	NNE24	N26	N24	N18	NNW14	NNW18	NNW15	N10	NNW10	N13	N15	N11	N8	E4	NE4	ESE3	SE5	SE15	SE17	SE14	SSE25	SSE27	SSE24	SSE25	NE4.7	SSE27
14-Apr	SE31	SE33	SSE30	SE28	SE27	SSE26	SSE22	SSE19	SSE16	SSE18	SSE19	SSE21	S20	SSE20	SSE18	SSE16	SSE17	SE22	SE32	SE26	ESE23	ENE14	NNE23	NNE22	SE18.6	SE33
15-Apr	NNE20	E18	E12	NE16	NE17	ENE16	ENE16	NE13	NE11	NE7	ENE11	NE16	NE23	NE22	NE25	NNE31	NNE37	NNE35	NNE32	NNE33	NNE31	NNE28	NNE24	NNE23	NE20.4	NNE37
16-Apr	NE23	ENE21	NE8	NE12	NE14	NE13	NNE14	E12	ESE16	ESE14	SE4	SSE9	SE21	SE24	SE24	SE27	SE28	SE29	SE30	SE31	SE32	SE32	SE33	SE33	ESE17.1	SE33
17-Apr	SE35	SE30	SE25	SE28	SE30	SE32	SE31	SE27	SE24	SE25	SE31	SE30	SE29	SE29	SE27	SE27	SE32	SE34	SE36	SE37	SE32	SE36	SE35	SE24	SE30.2	SE37
18-Apr	SE29	SE24	ESE24	ESE24	ESE29	ESE26	ESE20	ESE15	ESE18	SE16	SE20	SE20	SE21	SE20	SE19	SE19	SE23	SSE17	SSE11	SSE8	SE8	SSE7	SSE6	SE10	SE17.8	SE29
19-Apr	SSE21	S11	SSE4	S5	S5	SSE6	S4	SSE7	SSE8	SSE8	SE10	SE14	SE15	SE10	ESE8	ESE15	SE21	SE23	SE25	SE25	SE28	SE34	SE33	SE18	SE14.5	SE34
20-Apr	SE5	SE5	SE8	SE10	SE11	SE11	SSE8	SSW3	WNW3	NW6	NW8	NNW12	NNW14	NNW16	N17	NE15	NE11	E10	ENE13	E16	SE18	S15	SSW14	SSW15	ESE2.9	SE18
21-Apr	SSW16	SW14	SW17	S15	SSE13	S13	SSW7	S6	SW5	W3	N11	N14	N14	NNW7	NNW13	NNE13	NNE16	NNE17	NNE24	NNE26	NNE20	NNE20	NE20	NE21	NNE5.2	NNE26
22-Apr	NNE13	NE11	NNE10	NE11	NE12	NE14	NE16	NE8	N2	NW7	NNW11	WNW6	SE13	ESE24	ESE26	ESE25	E24	E24	E20	ENE23	ENE14	E11	ESE7	E12	ENE10.8	ESE26
23-Apr	ENE11	E14	E18	E16	E19	E17	E20	E18	E16	ESE19	ESE31	ESE29	ESE32	ESE35	E37	E35	E34	E28	E27	ESE28	ESE30	ESE29	ESE28	ESE28	E24.8	ESE37
24-Apr	ESE25	ESE23	E22	ESE24	ESE18	E18	ESE19	ESE19	ESE12	E9	S3	SSW3	SSE13	SE21	SE26	SE23	ESE27	SE30	ESE23	E29	ESE33	ESE31	ESE32	ESE28	ESE20.4	ESE33
25-Apr	SE22	SE20	SE13	SE12	SE9	SE11	SE21	SE19	SE13	SE9	E11	SE8	S5	SSE3	SE9	SSE12	SE13	SE19	SE20	SE18	SE21	SSE18	SSE15	SSE13	SE13.5	SE22
26-Apr	S16	S18	SSE15	SE17	SE17	SE19	SSE22	SSE18	SE22	SSE19	SSE19	SE24	SE22	SE23	SE26	SE28	SE32	SE33	SE32	SE34	SE34	SE33	SE36	SE33	SE24.3	SE36
27-Apr	SE29	SE30	SE31	SE30	SE26	ESE19	ESE13	SE17	SE19	SE29	SE38	SE41	SE39	SE34	SSE33	SSE28	SSE31	SSE25	SSE30	SSE27	SSE29	SSE28	SSE31	SSE26	SE28.0	SE41
28-Apr	SE27	SE26	SE24	SSE15	SSE13	S11	S9	S8	SSE9	SE10	SSE7	SSE5	SSE5	SSE4	SSE6	SSE7	SE10	SE11	SE11	SE26	SSE29	SSE25	SSE20	SSE26	SSE14.1	SSE29
29-Apr	SSE26	SE20	SE18	SSE20	SSE17	SSE13	S12	SSW8	SSW6	SE8	S6	W15	W19	WSW18	WSW22	W10	W9	N9	NNW5	NNW8	N7	ESE2	SE3	S7	SSW5.9	SSE26
30-Apr	S9	SSE12	S11	S15	SSE16	S18	S19	SSE15	SSE12	SSE14	SSE19	S19	S21	S22	S21	SSW20	SSW20	SSW19	WSW33	SW25	SW27	WSW25	WSW35	W37	SSW16.7	W37
	SE7.9	SE8.2	SE7.1	SE6.8	SE6.2	SE7.0	SE6.7	SE6.0	SE4.7	SE4.2	SE3.2	SE3.4	SE4.4	SE4.7	ESE3.8	E3.9	ESE4.6	ESE6.0	E5.9	E7.5	ESE8.0	SE6.6	SE6.2	SE6.1	Diurnal Average	
	SSE49	SSE48	SSE55	SSE51	W46	SE46	SE48	SSE43	WNW45	NW39	SE38	SE41	W41	W50	W58	WSW49	WSW51	WSW61	WSW58	W58	WSW53	WSW49	SSE50	SE47	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: 16 km/h on Apr 9 19:00

Minimum Value: 1 km/h on Apr 7 11:00

Percentiles: $P_1 = 1$ $P_{10} = 2$ $Q_1 = 2$ 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

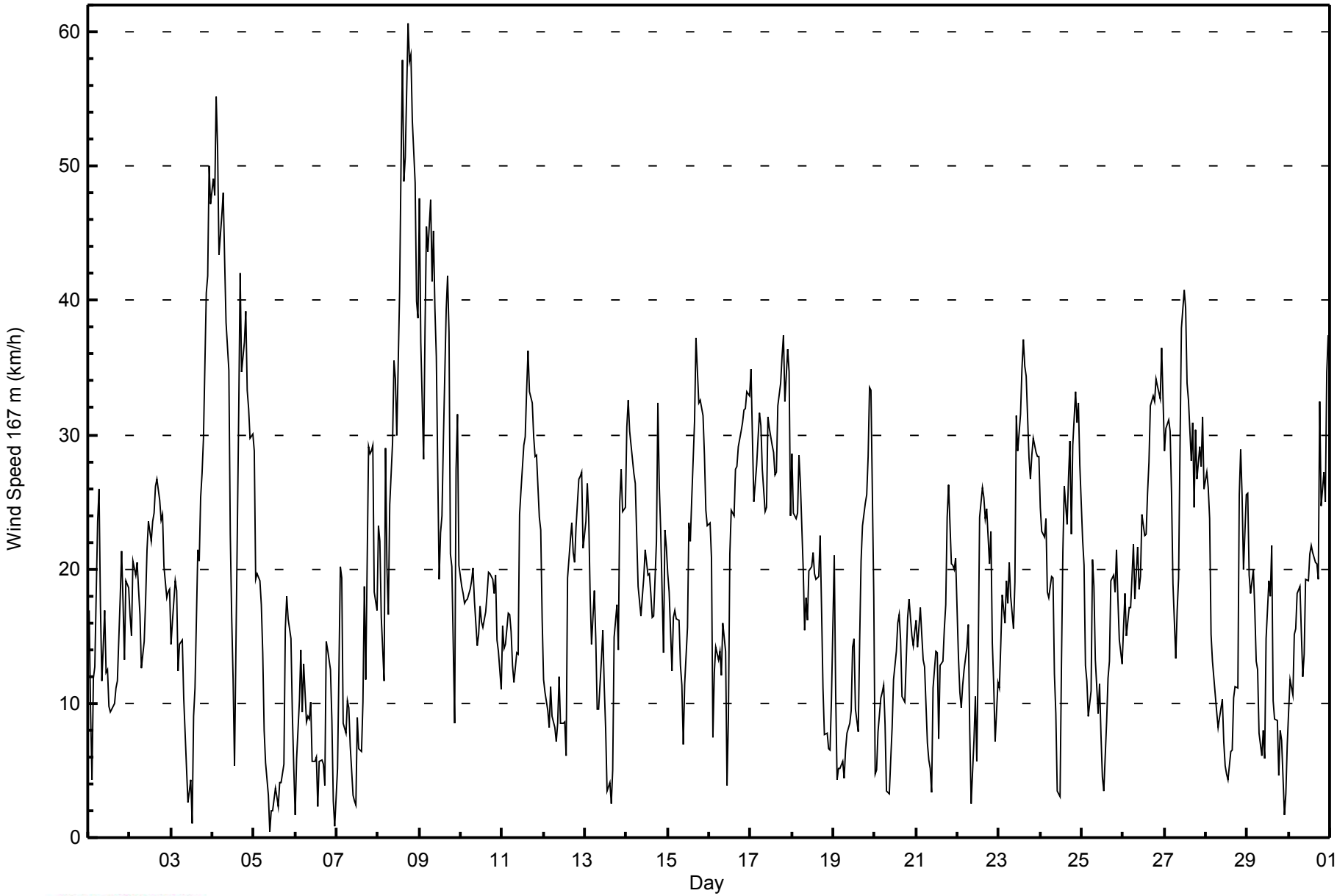
Day	Hourly Period Ending At (MST)																								Daily
	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24	Maximum
1-Apr	5	2	3	3	2	4	2	3	3	4	3	2	2	3	2	2	3	2	3	3	5	4	5	4	5
2-Apr	2	2	3	3	4	3	3	2	2	3	3	3	3	3	3	3	3	3	3	3	3	3	3	3	4
3-Apr	1	1	2	4	2	2	2	3	2	2	2	3	2	3	3	3	3	3	4	5	4	4	4	3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

WBEA NETWORK

Hourly Averages

Wind Speed 167 m (WS167m) - km/h

Lower Camp Met Tower - April 2014



AURORA ATMOSPHERICS INC.

Wind Speed Ranges (km/h)	Number of Hours	%	Cumulative %
0 - 5	53	7.36	7.36
6 - 11	125	17.36	24.72
12 - 19	219	30.42	55.14
20 - 28	177	24.58	79.72
29 - 38	109	15.14	94.86
> 38	37	5.14	100.00

Total Number of Valid Hours: 720

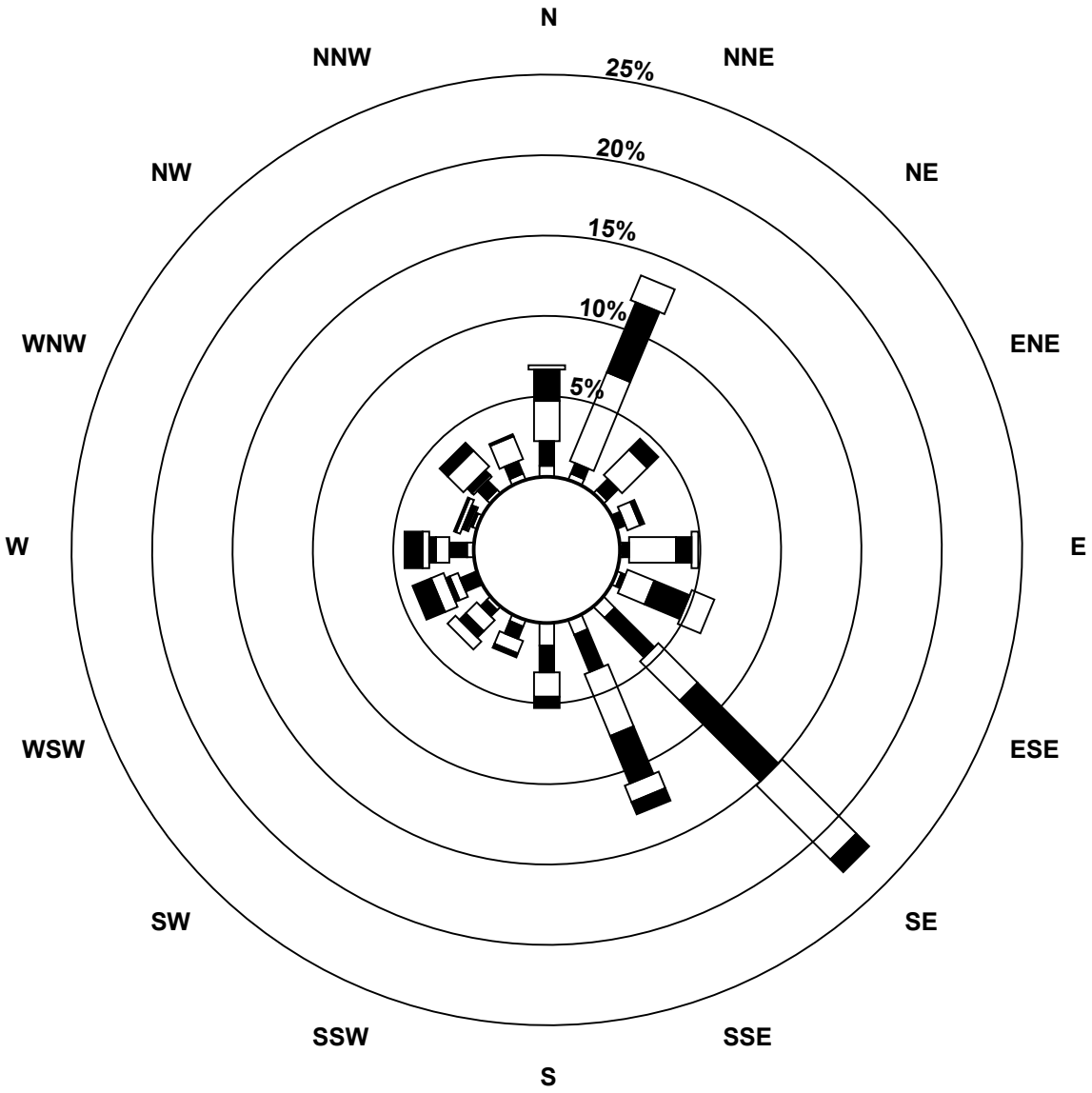
Total Number of Hours: 720

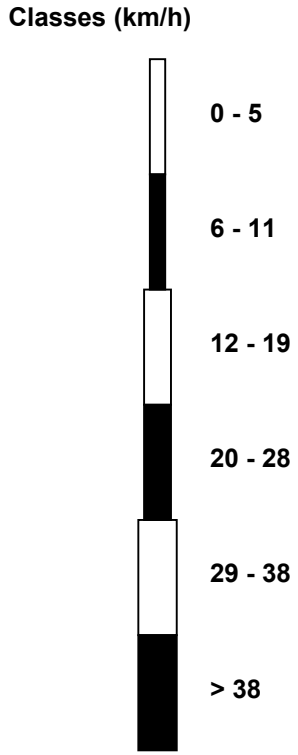
Wood Buffalo Environmental Association

Wind Rose Apr 2014

Wind Speed 167 m (WS167m) - km/h

Lower Camp Met Tower (AMS 3)





Total Number of Valid Hours: 720

Direction of Maximum Speed: 146 deg on Apr 4 03:00
Direction of Maximum Daily Speed Average: 132.6 deg on Apr 17

Direction of Minimum Speed: 49 deg on Apr 12 06:00

Direction of Minimum Daily Speed Average: 0.5 deg on Apr 6

Monthly Average Direction: 344.1 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-Apr	144	145	108	309	341	348	352	348	348	356	349	343	360	349	353	353	357	5	16	359	330	41	348	5	0.5
2-Apr	347	348	352	349	353	355	354	345	346	351	352	357	358	359	4	353	1	2	1	1	354	352	3	7	355.8
3-Apr	332	340	346	346	335	327	350	359	359	6	271	238	234	152	145	133	128	128	126	133	142	143	141	140	131.2
4-Apr	139	140	146	140	144	139	140	136	134	138	152	149	142	360	316	305	310	317	314	310	316	313	316	303	154.6
5-Apr	294	295	272	254	13	290	264	289	238	216	214	224	7	357	343	17	343	345	346	349	347	350	331	346	316.9
6-Apr	348	357	340	332	336	298	340	14	154	152	174	251	225	198	201	138	142	185	331	346	335	341	333	345	306.1
7-Apr	203	131	139	46	126	136	136	141	156	149	151	103	148	145	155	255	250	214	237	236	209	216	235	148	184.3
8-Apr	132	147	142	143	155	131	143	141	212	238	253	250	263	267	265	256	249	247	256	260	260	265	271	261	241.5
9-Apr	270	296	287	264	264	259	254	269	303	310	323	351	336	321	325	315	305	310	314	352	231	259	248	292	294.0
10-Apr	343	345	349	338	346	3	18	5	8	3	356	357	12	26	14	16	16	15	16	13	6	15	48	56	9.0
11-Apr	61	54	43	49	90	91	86	75	79	21	1	11	8	8	11	13	10	2	359	359	2	352	344	348	21.8
12-Apr	344	333	312	333	12	49	125	140	183	243	250	231	225	244	352	350	352	358	22	28	27	11	7	4	352.3
13-Apr	16	9	4	356	347	343	14	8	11	355	352	353	35	94	73	117	134	145	136	152	150	145	149	142	82.6
14-Apr	136	135	137	132	134	137	133	146	148	159	167	163	165	151	154	158	153	155	133	132	115	17	355	348	143.3
15-Apr	343	71	76	7	31	54	60	34	18	19	52	26	37	38	36	12	15	15	20	2	3	2	1	1	21.2
16-Apr	17	30	355	13	12	12	357	73	99	109	198	165	144	141	135	136	137	133	127	125	134	142	137	137	122.0
17-Apr	131	113	116	116	122	132	133	139	135	132	145	138	136	135	136	135	136	135	135	129	119	133	139	145	132.6
18-Apr	132	116	91	98	107	108	108	105	113	138	131	127	136	130	131	132	137	151	144	145	322	307	355	96	124.4
19-Apr	148	170	335	337	328	301	337	355	148	138	149	144	141	136	130	109	140	134	130	132	132	126	129	334	133.8
20-Apr	340	320	306	316	320	328	334	341	227	244	244	323	334	340	1	29	34	75	65	113	152	135	143	140	346.9
21-Apr	138	144	139	139	138	138	135	141	142	240	358	352	357	317	324	356	9	17	15	5	331	342	358	352	42.4
22-Apr	358	352	339	313	331	333	312	327	343	344	339	261	148	121	121	117	99	99	80	55	31	57	39	12	72.4
23-Apr	343	359	9	358	8	58	94	96	99	104	102	96	102	105	92	92	89	78	95	97	89	94	98	94	87.3
24-Apr	98	92	89	106	99	82	101	113	110	35	261	270	205	143	147	141	120	127	119	87	100	97	100	107	113.0
25-Apr	123	123	117	100	105	143	147	146	158	147	97	153	194	200	164	153	146	139	140	142	138	155	153	149	143.3
26-Apr	164	157	148	137	156	155	152	151	146	154	167	138	138	140	139	136	137	134	133	131	135	135	130	129	141.4
27-Apr	131	130	131	130	124	107	48	110	121	135	138	139	138	134	147	149	148	154	146	148	145	136	137	127	137.8
28-Apr	144	140	136	146	147	165	174	164	136	149	142	131	144	141	147	141	147	142	139	149	148	144	149	131	145.7
29-Apr	115	122	140	142	155	153	139	140	138	144	143	259	266	247	241	265	248	5	352	267	199	154	129	144	181.5
30-Apr	135	162	150	148	132	144	146	146	141	150	142	157	179	188	173	190	195	162	247	223	217	234	230	270	180.6
	116.7	108.2	111.3	111.0	109.4	114.4	122.5	122.5	121.6	142.8	147.7	147.3	136.4	129.7	123.5	105.3	112.3	110.9	99.3	86.9	107.7	118.7	124.3	100.9	
	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: 97 deg on Apr 6 08:00

Minimum Value: 6 deg on Apr 8 07:00

Percentiles: P_1 = 9 P_{10} = 13 Q_1 = 15 Median = 20 Q_3 = 28 P_{90} = 49 P_{99} = 89

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

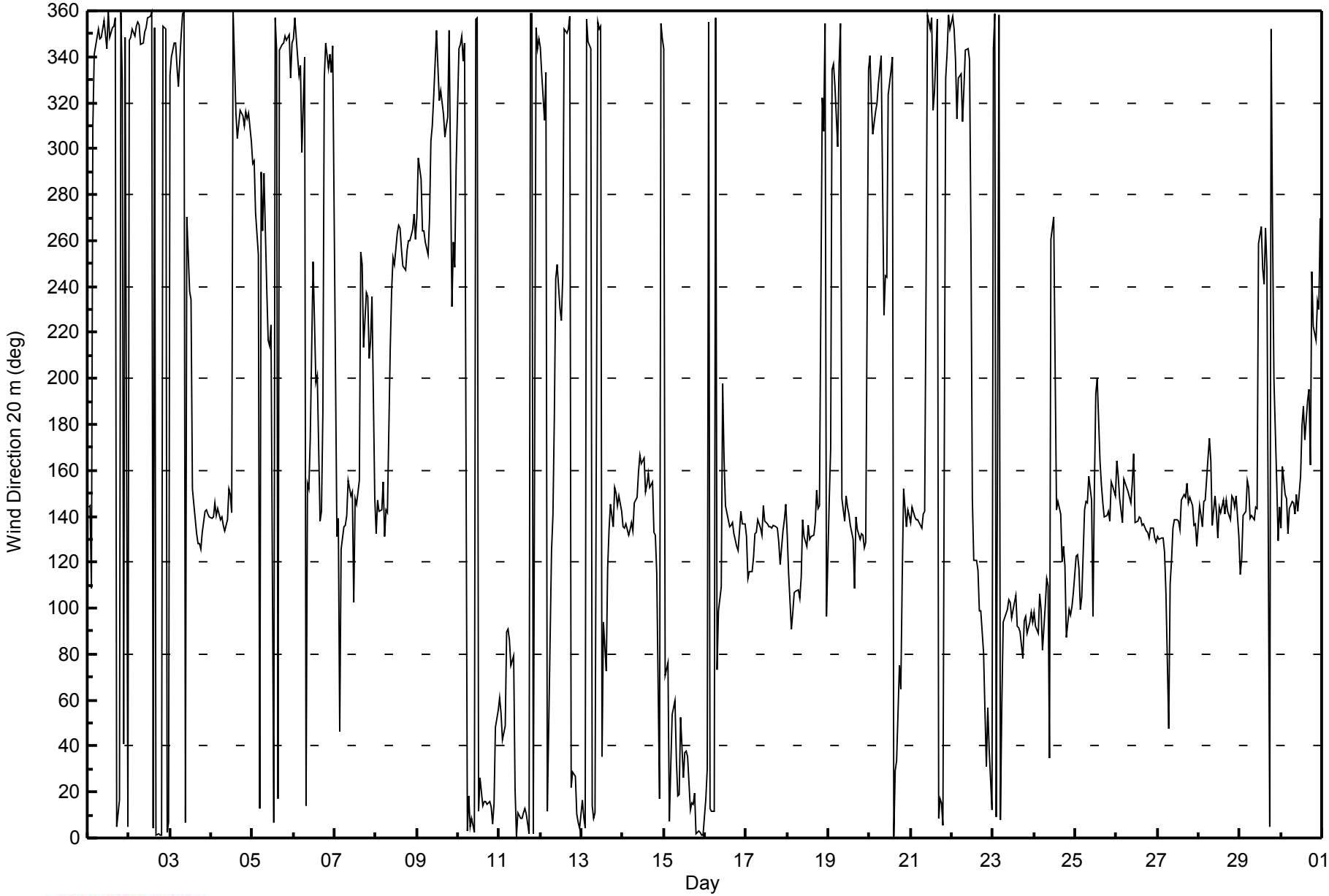
Day	Hourly Period Ending At (MST)																								Daily
	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24	Maximum
1-Apr	12	9	88	90	44	18	12	12	23	22	22	25	33	42	36	31	28	26	20	24	19	67	25	25	90
2-Apr	16	19	16	16	19	19	19	22	18	18	19	18	22	22	23	20	20	19	20	21	17	17	22	24	24
3-Apr	15	15	16	17	19	13	18	22	24	31	72	21	33	28	23	20	18	15	15	14	14	13	13	14	72
4-Apr	12	13	9	13	13	13	13	13	15	17	11	13	23	80	18	17	17	15	16	16	14	14	16	14	80
5-Apr	13	39	35	67	54	50	31	86	75	20	28	27	95	37	82	64	34	74	16	15	15	16	24	18	95
6-Apr	18	29	18	23	21	39	39	97	27	16	40	33	58	56	43	19	11	80	33	21	19	45	36	90	97
7-Apr	64	20	24	89	80	36	18	12	30	37	23	49	22	25	39	36	17	25	20	20	17	24	16	24	89
8-Apr	30	55	10	10	72	51	6	14	45	13	17	15	18	17	17	14	14	13	13	13	14	15	17	16	72
9-Apr	17	16	26	15	14	13	15	17	19	16	18	21	25	24	22	18	18	15	28	40	55	21	10	37	55
10-Apr	16	15	17	21	23	21	25	24	28	27	30	24	30	29	28	25	23	23	21	22	20	30	24	26	30
11-Apr	24	23	23	26	20	22	27	26	21	46	19	22	21	21	23	21	22	19	21	20	20	16	15	19	46
12-Apr	58	13	74	70	83	75	16	12	52	19	29	23	27	92	32	26	24	22	22	20	18	21	21	20	92
13-Apr	20	19	18	22	19	19	25	27	31	30	27	38	50	55	80	62	53	11	15	12	13	12	10	14	80
14-Apr	18	15	17	15	16	16	18	13	12	14	13	15	18	12	16	12	14	11	12	23	23	47	15	14	47
15-Apr	15	40	59	21	23	22	27	26	29	68	49	33	28	28	25	27	20	21	22	19	19	19	18	19	68
16-Apr	26	38	60	19	16	21	18	50	28	26	48	32	22	18	21	17	16	18	16	14	15	11	13	11	60
17-Apr	11	17	11	12	12	12	12	15	17	18	15	16	16	15	18	17	17	16	13	14	17	14	22	53	53
18-Apr	17	20	16	26	23	17	19	20	22	18	17	20	17	22	25	15	15	14	15	56	82	83	94	90	94
19-Apr	17	93	28	24	30	60	35	60	40	18	15	13	14	24	31	26	17	15	16	16	15	15	22	62	93
20-Apr	12	22	13	20	36	76	37	39	71	21	18	53	26	29	29	42	48	36	17	41	40	47	53	10	76
21-Apr	12	14	19	25	16	15	9	12	41	44	40	21	19	50	42	30	24	21	19	21	17	17	26	20	50
22-Apr	12	13	42	26	37	24	43	29	60	38	29	49	48	25	20	23	26	25	30	23	21	31	49	31	60
23-Apr	26	17	32	41	38	28	16	20	32	33	19	22	24	19	21	19	23	22	25	21	19	20	20	21	41
24-Apr	21	20	20	20	19	22	24	19	32	75	20	27	58	25	12	14	21	22	25	21	17	17	18	18	75
25-Apr	19	16	48	48	77	16	10	14	16	22	34	33	38	75	22	16	15	15	14	16	20	19	16	18	77
26-Apr	25	18	12	24	22	20	12	10	16	15	16	17	16	15	14	14	14	13	13	12	13	12	14	16	25
27-Apr	13	14	15	13	14	34	56	24	23	14	14	14	14	16	13	12	13	9	11	7	9	13	12	23	56
28-Apr	14	14	14	8	9	18	17	28	13	12	20	22	19	13	14	14	11	17	24	13	11	15	19	45	45
29-Apr	58	21	21	25	23	15	16	13	15	12	23	37	22	18	21	52	31	34	89	26	38	52	34	44	89
30-Apr	14	22	49	20	16	11	8	11	18	13	13	19	15	12	18	28	16	11	16	11	14	16	7	18	49
	64	93	88	90	83	76	56	97	75	75	72	53	95	92	82	64	53	80	89	56	82	83	94	90	
	Diurnal Maximum																								

WBEA NETWORK

Hourly Averages

Wind Direction 20 m (WD20m) - deg

Lower Camp Met Tower - April 2014



AURORA ATMOSPHERICS INC.

Direction of Maximum Speed: 147 deg on Apr 4 03:00
Direction of Maximum Daily Speed Average: 134.2 deg on Apr 17

Direction of Minimum Speed: 111 deg on Apr 12 05:00

Direction of Minimum Daily Speed Average: 1.2 deg on Apr 6

Monthly Average Direction: 30.9 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-Apr	153	148	123	317	349	346	350	353	357	4	356	352	2	356	0	359	4	12	21	9	341	40	357	9	5.6
2-Apr	352	354	359	355	1	2	360	354	351	357	0	4	5	8	9	360	8	8	8	6	2	359	8	12	2.7
3-Apr	338	345	350	351	345	338	354	1	3	7	284	245	239	151	144	135	130	131	130	137	143	145	144	142	130.5
4-Apr	142	143	147	143	145	141	142	139	135	138	151	147	143	26	318	306	313	320	316	312	320	316	320	305	152.1
5-Apr	297	289	262	256	352	277	255	273	248	220	217	230	8	3	351	17	352	355	355	354	352	355	341	348	319.9
6-Apr	352	360	349	346	350	332	347	34	151	149	172	254	227	201	206	140	140	171	339	355	348	351	345	347	353.0
7-Apr	225	136	146	98	156	148	140	141	165	150	150	105	148	144	154	259	252	213	237	225	213	218	232	152	187.4
8-Apr	135	141	140	142	170	138	148	150	218	238	254	252	265	268	267	257	250	249	257	262	260	265	272	261	244.7
9-Apr	270	300	289	266	263	258	255	271	305	313	326	354	340	323	327	318	307	314	320	4	232	255	250	293	295.2
10-Apr	347	351	355	349	351	10	22	12	19	9	4	2	17	29	17	21	21	22	21	20	14	20	54	61	14.9
11-Apr	68	60	49	54	95	95	90	80	83	26	7	15	16	16	15	18	15	9	4	7	8	1	351	344	26.3
12-Apr	327	322	341	335	111	7	142	141	199	245	254	234	229	257	356	356	357	4	26	32	29	16	12	11	0.4
13-Apr	17	14	8	359	349	344	10	11	15	359	359	360	31	95	65	116	134	146	137	154	147	144	148	141	74.2
14-Apr	136	136	140	135	136	138	133	144	148	158	167	165	167	153	155	161	155	154	134	132	116	24	1	353	141.8
15-Apr	348	75	78	14	34	57	65	39	26	26	59	31	42	44	40	18	19	20	24	9	10	9	9	8	26.3
16-Apr	24	43	10	18	15	15	4	78	103	110	194	161	145	142	136	138	138	134	130	127	134	143	138	140	120.1
17-Apr	135	120	120	120	127	136	136	138	136	133	145	139	137	137	136	137	138	136	135	131	120	134	137	135	134.2
18-Apr	133	121	102	104	112	113	112	109	116	140	134	129	136	131	133	134	140	149	145	140	13	106	108	115	126.5
19-Apr	147	169	349	345	344	348	335	19	149	139	148	145	141	137	129	110	141	136	130	134	135	132	132	355	134.2
20-Apr	348	347	331	328	342	295	329	321	248	249	249	333	340	345	7	34	37	79	71	106	151	137	146	138	7.0
21-Apr	138	141	145	138	139	140	133	140	144	245	3	360	2	325	329	3	16	22	21	16	342	348	359	353	42.5
22-Apr	352	353	350	335	342	349	329	319	344	349	344	264	147	122	123	118	102	103	87	63	39	65	56	32	73.6
23-Apr	349	2	27	14	33	70	98	99	102	107	105	102	106	109	98	96	95	84	98	101	95	98	101	101	91.8
24-Apr	104	97	94	110	103	86	104	116	110	45	263	271	203	145	147	142	122	129	121	92	104	102	104	112	115.8
25-Apr	124	126	121	102	106	144	148	146	154	147	96	150	193	204	162	153	147	141	140	140	138	154	154	149	142.3
26-Apr	165	163	147	133	146	145	149	151	144	154	166	139	139	142	140	138	138	136	135	134	138	138	132	131	141.9
27-Apr	134	133	134	133	129	111	75	114	123	137	141	141	139	137	145	148	146	154	146	152	145	137	138	130	138.9
28-Apr	144	141	139	145	150	166	174	162	139	148	143	134	144	142	148	142	147	143	135	146	146	141	147	133	145.2
29-Apr	122	125	138	140	149	149	141	141	139	143	144	263	266	250	243	279	252	6	0	291	218	155	159	148	176.4
30-Apr	148	160	152	144	138	143	144	143	141	146	143	160	180	187	176	193	196	171	246	222	212	223	227	267	181.7
	115.7	107.9	111.2	108.4	108.1	112.7	121.9	121.9	119.3	134.7	135.4	133.6	124.7	122.3	111.2	95.5	101.7	102.6	91.0	82.5	100.7	114.7	119.7	104.6	
	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: 102 deg on Apr 18 22:00

Minimum Value: 5 deg on Apr 9 23:00

Percentiles: P_1 = 6 P_{10} = 9 Q_1 = 12 Median = 15 Q_3 = 22 P_{90} = 39 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

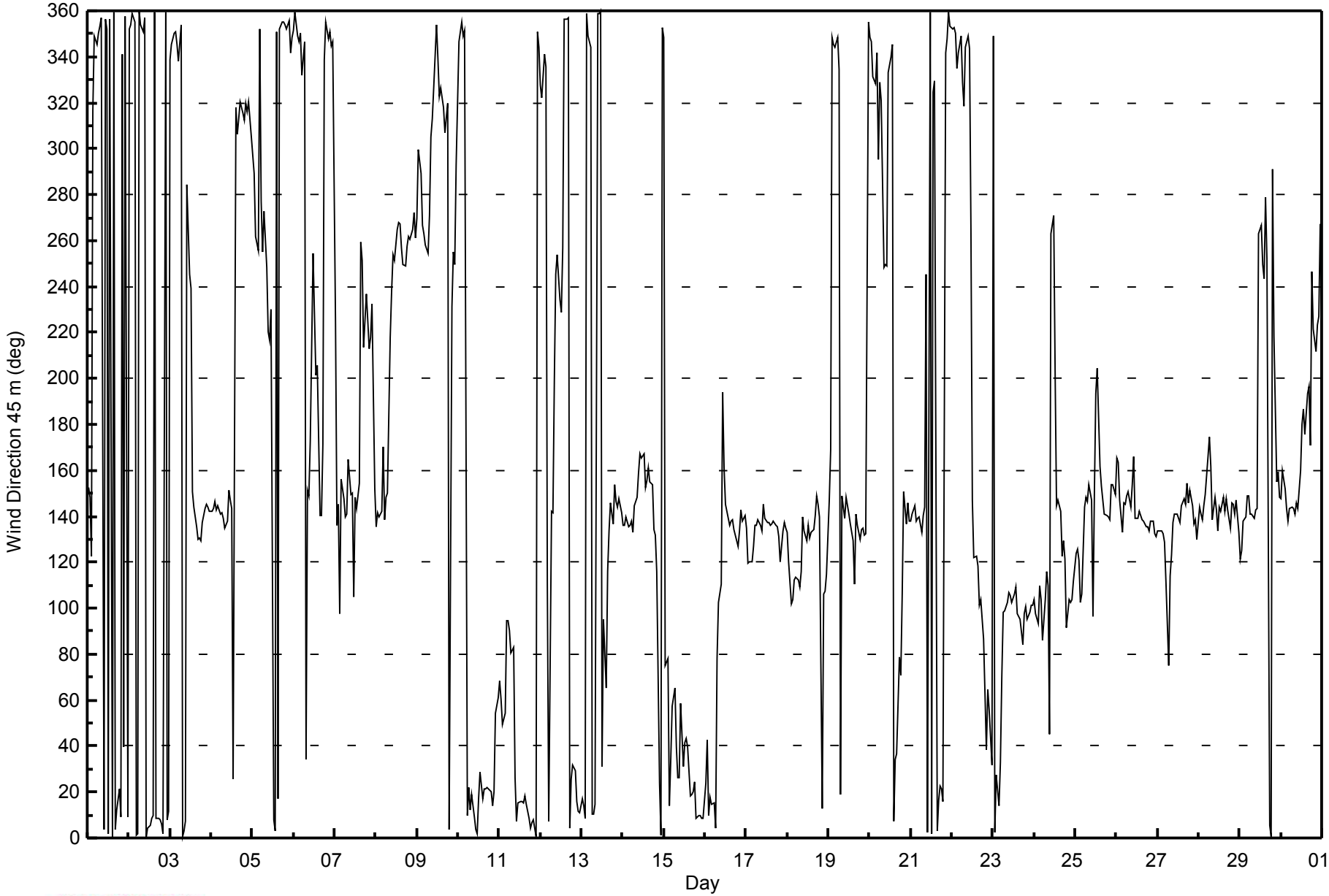
Day	Hourly Period Ending At (MST)																								Daily
	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24	Maximum
1-Apr	14	7	72	30	26	9	7	8	17	15	17	19	27	34	29	23	21	19	14	17	17	47	22	19	72
2-Apr	13	14	12	13	15	15	15	16	13	12	13	13	17	16	18	15	15	14	15	14	14	13	15	19	19
3-Apr	12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

WBEA NETWORK

Hourly Averages

Wind Direction 45 m (WD45m) - deg

Lower Camp Met Tower - April 2014



AURORA ATMOSPHERICS INC.

Direction of Maximum Speed: 149 deg on Apr 4 03:00
Direction of Maximum Daily Speed Average: 138.8 deg on Apr 17

Direction of Minimum Speed: 144 deg on Apr 19 05:00

Direction of Minimum Daily Speed Average: 0.8 deg on Apr 6

Monthly Average Direction: 176.8 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-Apr	193	180	148	312	336	15	23	26	4	6	1	358	360	1	359	2	7	21	27	23	13	34	18	22	11.0
2-Apr	7	4	9	9	11	12	10	2	360	2	4	9	9	11	12	3	10	10	12	12	8	6	15	17	8.7
3-Apr	353	352	351	358	358	355	348	342	340	344	300	256	248	144	138	137	134	135	134	141	146	149	148	147	131.5
4-Apr	148	148	149	147	147	145	145	145	143	143	155	152	157	262	310	304	312	317	313	310	319	317	321	310	166.3
5-Apr	302	288	259	255	264	260	271	347	14	224	223	233	23	2	354	2	5	12	15	9	7	8	358	351	318.2
6-Apr	344	348	31	122	14	47	217	167	146	145	174	244	199	204	206	154	139	33	346	9	8	354	336	25	36.8
7-Apr	189	184	236	264	230	174	218	242	233	167	148	151	138	137	165	261	251	219	237	229	224	225	235	188	221.5
8-Apr	151	157	169	174	244	211	198	215	234	237	249	251	265	269	265	258	248	248	257	262	259	259	274	257	249.8
9-Apr	264	297	285	268	263	257	254	271	304	312	326	340	333	323	327	317	309	313	322	12	285	261	265	306	294.7
10-Apr	357	0	12	13	9	17	24	17	21	14	10	3	20	30	20	24	24	25	26	29	22	31	62	73	20.4
11-Apr	81	80	64	69	99	102	98	90	85	35	13	21	21	19	19	20	17	11	7	8	11	6	4	337	29.2
12-Apr	329	322	306	284	269	221	218	182	225	241	257	239	234	263	354	357	360	6	28	35	30	16	13	10	351.3
13-Apr	17	10	6	5	337	335	342	3	4	360	359	0	12	89	59	117	138	145	139	143	148	149	154	151	61.4
14-Apr	141	142	144	142	142	142	141	145	154	161	167	168	171	156	160	165	159	146	137	132	123	40	9	5	142.5
15-Apr	2	85	82	27	43	61	73	50	37	44	64	37	44	49	43	21	22	22	28	12	12	13	15	21	31.6
16-Apr	37	55	26	30	26	29	15	83	108	115	169	155	147	146	139	141	142	137	134	130	135	142	141	145	121.9
17-Apr	142	135	135	135	139	143	141	142	140	139	147	141	140	140	139	138	140	140	139	136	127	136	140	128	138.8
18-Apr	134	132	120	115	118	123	120	115	123	138	136	131	137	131	134	137	142	147	151	141	125	134	140	130	130.6
19-Apr	145	168	129	166	144	135	235	134	153	148	149	145	142	138	127	115	140	136	133	137	141	143	143	148	140.6
20-Apr	28	54	90	117	112	141	160	259	284	270	277	342	342	349	10	41	43	82	77	106	143	165	166	169	67.7
21-Apr	188	193	203	147	142	153	147	145	175	258	357	1	0	331	332	10	23	29	28	27	8	7	18	11	32.2
22-Apr	354	353	350	355	352	356	14	336	337	329	337	270	138	123	125	118	104	104	90	72	61	83	93	87	70.5
23-Apr	21	36	82	76	92	91	101	103	101	110	112	108	112	112	104	101	98	90	103	106	104	107	110	109	100.9
24-Apr	113	108	102	115	108	97	110	119	117	81	251	255	179	145	148	145	126	132	123	99	109	107	111	119	120.4
25-Apr	128	132	130	129	128	143	147	146	150	144	98	142	186	169	152	153	147	143	144	145	142	151	155	160	143.0
26-Apr	170	174	146	135	143	143	149	152	146	156	163	142	142	145	143	142	142	140	140	139	144	145	141	141	145.4
27-Apr	141	138	139	136	134	121	111	126	128	142	147	146	144	144	149	151	148	156	152	157	152	148	147	145	144.2
28-Apr	146	146	145	153	158	168	179	171	145	148	157	143	154	147	150	150	141	144	139	140	148	146	146	144	148.5
29-Apr	142	137	141	147	155	159	157	157	149	131	153	266	267	250	246	282	265	3	352	338	12	154	154	164	177.1
30-Apr	156	145	166	162	163	157	153	151	145	145	149	170	184	189	181	197	202	189	245	232	228	239	238	256	192.3
	126.9	120.5	125.3	126.6	126.1	124.3	130.8	131.8	127.7	133.8	129.2	129.4	126.7	124.3	112.1	96.5	102.4	104.6	100.8	94.1	114.0	127.9	129.8	126.0	
	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: 100 deg on Apr 3 13:00

Minimum Value: 2 deg on Apr 4 03:00

Percentiles: P_1 = 3 P_{10} = 5 Q_1 = 7 Median = 10 Q_3 = 17 P_{90} = 34 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

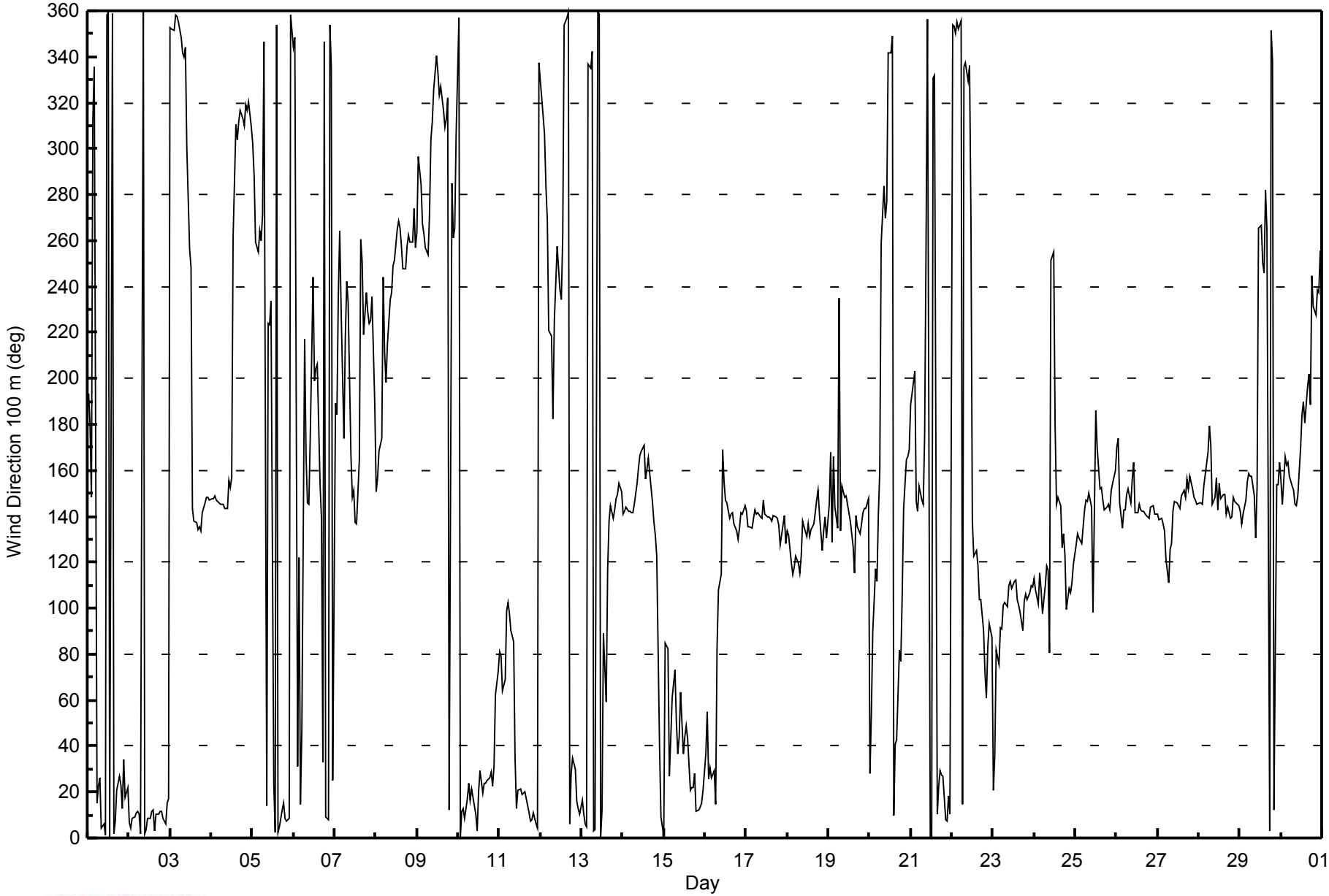
Day	Hourly Period Ending At (MST)																								Daily
	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24	Maximum
1-Apr	20	11	49	19	25	9	6	7	15	8	16	12	17	27	17	14	13	15	8	10	18	23	14	17	49
2-Apr	8	9	7	9	10	9	9	11	9	8	7	8	10	8	11	10	7	7	8	8	7	6	10	12	12
3-Apr	7	5	6	7	8	5	5	14	13	23	64	40	100	25	15	9	9	6	7	6	4	3	3	3	100
4-Apr	3	3	2	3	3	3	3	3	4	6	9	8	12	98	11	10	10	9	9	9	7	7	10	6	98
5-Apr	4	21	10	11	26	11	17	90	78	52	46	48	80	40	67	48	18	45	12	8	7	7	8	10	90
6-Apr	5	34	42	69	54	86	25	40	5	10	33	27	24	78	28	15	22	84	22	13	10	8	28	46	86
7-Apr	40	15	18	13	57	29	33	11	12	38	23	57	13	12	34	18	10	13	16	6	9	12	9	18	57
8-Apr	9	12	9	17	21	32	16	19	8	4	6	5	10	8	7	5	8	6	6	4	6	5	7	3	32
9-Apr	8	9	16	6	5	4	5	8	12	11	10	8	15	15	14	13	11	8	30	32	61	7	6	34	61
10-Apr	9	7	9	11	11	11	12	10	14	14	19	11	19	16	14	13	10	11	10	12	10	17	15	15	19
11-Apr	9	13	13	17	10	12	17	15	11	40	9	9	8	8	8	9	10	10	9	8	6	5	12	5	40
12-Apr	4	4	12	8	17	34	13	17	32	9	18	22	22	71	17	16	16	15	9	10	9	8	7	7	71
13-Apr	8	7	4	11	5	5	9	10	15	14	17	20	46	63	66	68	42	6	5	12	6	5	6	7	68
14-Apr	6	5	4	5	4	5	7	6	7	9	9	11	16	10	10	9	11	8	5	9	11	42	5	7	42
15-Apr	6	26	43	8	15	11	20	18	15	36	29	22	18	20	15	18	9	9	10	7	6	8	8	9	43
16-Apr	14	19	45	15	7	10	8	38	16	15	60	28	12	9	12	8	7	8	7	6	8	6	6	4	60
17-Apr	3	6	7	7	3	4	4	5	7	7	8	7	8	8	8	9	7	6	6	5	7	7	5	10	10
18-Apr	8	10	8	9	8	7	10	11	11	10	8	10	10	15	13	7	6	8	9	18	36	43	32	30	43
19-Apr	7	34	83	44	97	51	64	18	13	13	9	6	7	14	20	15	8	7	7	6	4	4	4	41	97
20-Apr	72	20	17	14	31	6	10	67	50	28	21	37	16	20	21	28	32	17	9	12	12	10	16	13	72
21-Apr	16	18	30	7	10	6	12	4	42	36	20	11	10	45	37	17	15	12	8	10	16	9	8	13	45
22-Apr	5	3	5	5	5	6	12	21	62	27	20	45	43	13	13	13	17	14	21	15	15	24	48	20	62
23-Apr	16	30	15	28	19	10	10	14	20	17	8	9	11	9	9	10	12	12	14	11	9	9	10	10	30
24-Apr	10	11	10	11	11	13	15	12	15	67	34	15	58	14	7	7	11	14	19	11	7	7	7	7	67
25-Apr	9	9	19	25	28	11	3	5	9	15	18	29	47	86	20	10	11	5	7	5	6	11	14	18	86
26-Apr	17	10	8	10	7	8	5	7	8	13	13	8	8	7	5	5	5	5	4	4	5	3	4	6	17
27-Apr	5	5	5	5	7	15	22	10	11	6	4	3	4	6	6	8	6	8	6	7	8	5	3	5	22
28-Apr	4	4	5	4	6	11	10	21	6	6	15	14	13	11	12	18	11	14	6	6	3	4	5	3	21
29-Apr	9	6	5	5	6	6	9	11	15	8	30	28	8	9	16	47	34	28	74	27	62	39	9	6	74
30-Apr	10	5	39	9	7	5	8	7	7	5	7	14	11	11	14	24	15	16	9	4	5	7	4	7	39
	72	34	83	69	97	86	64	90	78	67	64	57	100	98	67	68	42	84	74	32	62	43	48	46	
	Diurnal Maximum																								

WBEA NETWORK

Hourly Averages

Wind Direction 100 m (WD100m) - deg

Lower Camp Met Tower - April 2014



AURORA ATMOSPHERICS INC.

Maximum Value: 0.6 km/h on Apr 8 07:00

Maximum Daily Average: 0.0 km/h on Apr 27

Minimum Value: -1.3 km/h on Apr 9 09:00

Minimum Daily Average: -0.7 km/h on Apr 9

Maximum Diurnal Average: -0.2 km/h at hour 9

Minimum Diurnal Average: -0.3 km/h at hour 16

Monthly Average: -0.24 km/h

Percentiles: P_1 = -1.1 P_{10} = -0.6 Q_1 = -0.4 Median = -0.2 Q_3 = -0.1 P_{90} = 0.0 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-Apr	0.1	0.3	-0.1	-0.2	-0.2	-0.4	-0.3	-0.6	-0.6	-0.7	-0.8	-0.6	0.0	-0.1	-0.4	-0.4	-0.4	-0.3	-0.3	-0.2	-0.2	-0.2	-0.3	-0.3	-0.3	0.3
2-Apr	-0.3	-0.3	-0.6	-0.4	-0.4	-0.4	-0.4	-0.4	-0.7	-0.9	-1.1	-0.8	-0.7	-0.4	-0.6	-0.7	-0.5	-0.8	-0.4	-0.6	-0.6	-0.6	-0.2	-0.2	-0.5	-0.2
3-Apr	-0.2	-0.1	-0.5	-0.4	-0.3	-0.2	-0.4	-0.7	-0.6	-0.4	0.2	-0.4	-0.2	-0.1	0.1	0.2	-0.2	-0.1	-0.1	0.0	-0.2	0.0	-0.1	-0.2	-0.2	0.2
4-Apr	0.0	0.0	-0.3	0.0	-0.1	-0.2	0.1	-0.3	0.1	0.0	0.0	-0.2	-0.2	-0.2	-0.6	-1.0	-1.1	-1.1	-0.9	-0.9	-0.9	-1.0	-0.6	-0.8	-0.4	0.1
5-Apr	-0.7	-0.4	-0.2	-0.3	-0.2	-0.3	-0.1	0.1	0.1	-0.3	-0.4	-0.3	0.3	-0.2	0.1	-0.1	0.0	-0.1	-0.3	-0.3	-0.2	-0.5	-0.2	-0.2	-0.2	0.3
6-Apr	-0.3	-0.3	-0.3	-0.4	-0.3	-0.3	-0.2	0.0	0.0	-0.1	-0.1	-0.3	-0.2	-0.1	-0.3	0.0	0.0	-0.1	-0.3	-0.3	-0.3	-0.2	-0.2	-0.1	-0.2	0.0
7-Apr	-0.1	-0.1	-0.1	-0.1	-0.1	-0.1	0.0	0.1	0.2	0.1	0.4	0.1	0.0	0.1	-0.2	-0.3	-0.5	-0.3	-0.3	-0.3	-0.2	-0.3	-0.2	0.1	-0.1	0.4
8-Apr	-0.2	0.0	0.0	0.2	0.3	0.0	0.6	0.5	-0.1	-0.3	-0.7	-0.6	-1.2	-1.1	-1.1	-0.9	-1.0	-0.8	-1.3	-1.0	-1.0	-0.9	-0.7	-0.5	-0.5	0.6
9-Apr	-0.9	-0.7	-0.5	-0.7	-0.8	-0.8	-0.8	-0.9	-1.3	-1.0	-0.7	-0.2	-0.6	-0.6	-0.4	-0.8	-1.0	-0.8	-0.7	-0.3	-0.3	-0.5	-0.3	-0.5	-0.7	-0.2
10-Apr	-0.2	-0.2	-0.3	-0.2	-0.3	-0.3	-0.3	-0.4	0.1	-0.5	-0.6	-0.7	-0.6	-0.4	-0.2	-0.1	-0.2	-0.3	-0.2	-0.3	-0.2	-0.2	-0.3	-0.2	-0.3	0.1
11-Apr	-0.2	-0.3	-0.2	-0.1	-0.5	-0.4	-0.5	-0.3	-0.5	-0.5	-0.4	-0.2	0.0	-0.2	-0.1	-0.6	-0.4	-0.6	-0.4	-0.4	-0.5	-0.3	-0.2	-0.2	-0.3	0.0
12-Apr	-0.1	-0.1	-0.1	-0.1	0.0	-0.1	0.0	0.0	-0.2	-0.5	-0.2	-0.4	-0.4	-0.3	-0.6	-0.7	-0.5	-0.4	-0.3	-0.1	-0.4	-0.1	-0.3	-0.3	-0.3	0.0
13-Apr	-0.4	-0.3	-0.3	-0.3	-0.2	-0.2	-0.2	-0.2	-0.3	0.0	-0.5	-0.1	-0.2	-0.2	-0.2	-0.4	-0.1	-0.2	-0.1	0.0	0.0	0.2	0.0	0.0	-0.2	0.2
14-Apr	0.0	-0.2	0.0	-0.2	0.0	-0.2	-0.1	-0.1	0.0	-0.1	0.1	0.2	0.2	-0.1	0.2	0.3	0.3	0.0	-0.1	-0.1	-0.2	-0.4	-0.6	-0.5	-0.1	0.3
15-Apr	-0.3	-0.3	-0.2	-0.1	-0.1	-0.2	-0.3	-0.2	-0.2	-0.2	-0.4	-0.1	-0.4	-0.4	-0.4	-0.6	-0.6	-0.6	-0.4	-0.3	-0.3	-0.3	-0.3	-0.2	-0.3	-0.1
16-Apr	-0.4	-0.2	-0.3	-0.4	-0.3	-0.1	-0.5	-0.4	-0.5	-0.2	0.0	0.1	0.0	0.4	-0.1	0.0	-0.1	-0.1	-0.2	-0.2	-0.2	-0.2	-0.1	-0.1	-0.2	0.4
17-Apr	-0.2	-0.4	-0.4	-0.4	-0.3	0.0	-0.2	-0.1	0.0	-0.2	0.2	0.0	-0.2	-0.4	0.2	0.0	0.1	-0.1	-0.3	-0.1	-0.3	-0.1	-0.1	0.0	-0.1	0.2
18-Apr	0.0	-0.2	-0.4	-0.1	-0.1	-0.3	-0.4	-0.5	-0.2	0.2	0.1	-0.2	-0.2	0.0	-0.1	-0.2	0.0	0.0	0.0	0.0	-0.2	-0.1	0.0	-0.1	-0.1	0.2
19-Apr	0.1	0.0	-0.3	-0.3	-0.3	-0.1	-0.2	-0.1	0.0	0.0	0.0	-0.1	0.3	-0.1	-0.2	-0.2	0.2	-0.2	-0.1	-0.1	-0.1	-0.2	-0.1	-0.2	-0.1	0.3
20-Apr	-0.5	-0.3	-0.2	-0.1	-0.2	-0.1	-0.2	-0.3	0.2	-0.3	-0.2	-0.6	-0.3	-0.4	-0.2	-0.2	-0.2	-0.2	-0.3	-0.1	0.0	-0.1	0.0	0.2	-0.2	0.2
21-Apr	0.3	0.3	0.2	-0.2	-0.2	-0.2	0.0	-0.1	0.3	-0.3	-0.1	-0.7	-0.6	-0.1	-0.5	-0.6	-0.5	-0.4	-0.3	-0.5	-0.3	-0.2	-0.4	-0.6	-0.2	0.3
22-Apr	-0.4	-0.3	-0.2	-0.2	-0.2	-0.3	-0.3	-0.5	-0.1	-0.5	-0.5	-0.5	-0.2	-0.1	0.0	-0.3	-0.6	-0.3	-0.2	-0.4	-0.3	-0.4	-0.3	-0.3	-0.3	0.0
23-Apr	-0.4	-0.6	-0.5	-0.5	-0.4	-0.4	-0.4	-0.4	-0.1	-0.3	-0.4	-0.4	-0.4	-0.1	-0.6	-0.6	-0.5	-0.3	-0.2	-0.1	-0.4	-0.5	-0.2	-0.4	-0.4	-0.1
24-Apr	-0.4	-0.5	-0.3	-0.4	-0.6	-0.4	-0.3	-0.3	-0.2	-0.2	-0.5	-0.4	-0.3	-0.1	-0.1	-0.2	-0.2	-0.2	-0.3	-0.4	-0.4	-0.7	-0.4	-0.3	-0.3	-0.1
25-Apr	-0.2	-0.3	-0.2	-0.1	-0.1	-0.1	-0.2	-0.2	0.0	0.0	-0.2	-0.1	-0.4	0.0	0.0	-0.1	0.0	-0.1	0.0	-0.1	-0.2	-0.1	0.0	-0.1	-0.1	0.0
26-Apr	0.0	0.2	-0.1	-0.1	0.0	0.0	0.0	-0.1	0.1	0.2	0.0	-0.1	0.2	-0.1	0.0	0.0	-0.1	0.0	-0.3	-0.2	-0.1	0.0	-0.2	-0.2	0.0	0.2
27-Apr	-0.1	-0.4	0.0	-0.2	-0.2	-0.1	-0.2	-0.1	-0.2	-0.1	-0.1	0.2	0.1	0.4	0.0	0.0	0.1	0.0	0.0	0.0	0.0	0.0	0.0	-0.1	0.0	0.4
28-Apr	0.0	-0.1	-0.1	0.0	0.1	0.0	0.0	-0.1	-0.1	0.0	0.1	-0.2	-0.1	0.0	0.0	-0.1	-0.1	-0.1	-0.1	0.0	0.1	0.0	-0.1	0.0	0.0	0.1
29-Apr	-0.1	-0.3	0.0	-0.2	-0.1	-0.5	-0.2	-0.1	0.4	0.0	0.2	-0.4	-0.6	-0.8	-0.8	-0.5	-0.4	-0.2	0.0	-0.1	-0.1	0.0	0.0	0.0	-0.2	0.4
30-Apr	0.0	-0.1	0.0	0.0	0.0	-0.1	0.2	0.0	-0.2	0.3	0.0	0.0	-0.1	-0.2	0.0	-0.1	-0.3	0.3	-0.5	-0.2	-0.3	-0.2	-0.3	-0.7	-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	-0.3	-0.2	-0.2	-0.2	-0.3	-0.3	-0.3	-0.3	-0.3	-0.3	-0.3	-0.2	-0.2	Diurnal Average	
	0.3	0.3	0.2	0.2	0.3	0.0	0.6	0.5	0.4	0.3	0.4	0.2	0.3	0.4	0.2	0.3	0.3	0.3	0.0	0.0	0.1	0.2	0.0	0.2	Diurnal Maximum	

Number of Exceedences (AAAQO): 1-hr: 0 24-hr: 0
Maximum Value: 4.4 km/h on Apr 15 17:00

Minimum Value: 0.1 km/h on Apr 12 05:00

Percentiles: P_1 = 0.2 P_{10} = 0.6 Q_1 = 1.1 Median = 1.7 Q_3 = 2.3 P_{90} = 2.9 P_{99} = 4.0

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
	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-Apr	1.0	0.9	1.0	0.5	0.3	0.5	0.6	0.9	1.7	2.4	2.1	2.2	2.1	2.2	2.0	2.0	1.9	1.6	2.0	1.7	1.1	1.0	0.9	1.4	2.4
2-Apr	1.2	1.4	1.8	1.7	1.9	1.7	1.5	1.5	2.0	2.4	2.8	3.0	3.0	3.3	3.3	3.1	3.2	3.0	2.7	2.5	2.2	1.9	1.9	1.7	3.3
3-Apr	1.1	1.1	1.5	1.2	0.9	0.7	1.0	1.3	1.4	1.8	1.5	1.5	1.6	1.7	1.8	2.4	2.4	2.5	2.4	2.4	3.3	3.1	3.9	3.4	3.9
4-Apr	3.7	3.8	3.9	4.4	3.5	3.6	4.0	3.6	3.2	2.9	2.2	2.0	1.4	0.8	1.9	2.8	3.7	3.2	3.3	3.3	2.6	2.6	2.4	1.9	4.4
5-Apr	1.8	1.3	1.5	1.3	0.6	0.7	0.4	0.7	1.0	1.2	1.4	1.5	1.7	1.9	1.7	1.6	1.4	1.2	1.4	1.5	1.2	1.2	0.7	0.6	1.9
6-Apr	0.8	0.8	0.6	0.6	0.7	0.4	0.6	0.6	1.0	1.1	1.1	0.8	1.0	1.2	1.1	1.2	1.0	0.6	1.0	1.1	0.6	0.4	0.2	0.2	1.2
7-Apr	0.2	0.3	0.6	0.4	0.2	0.3	0.8	0.8	0.9	1.1	1.5	1.6	1.5	1.6	1.6	1.5	1.5	0.6	1.4	0.8	0.9	1.3	0.7	0.7	1.6
8-Apr	1.5	0.9	1.0	1.3	1.0	0.9	1.3	1.4	1.2	2.1	2.7	2.1	3.2	4.1	4.3	3.4	3.4	4.1	3.3	3.4	2.9	2.5	2.4	1.5	4.3
9-Apr	2.5	2.0	1.5	1.8	2.5	2.4	2.7	2.7	4.0	3.5	2.8	1.4	2.3	2.6	3.2	3.9	3.9	2.8	2.7	2.0	0.6	1.4	1.8	1.8	4.0
10-Apr	1.0	1.2	0.8	0.8	1.1	1.6	2.3	2.6	2.5	2.3	2.4	2.5	2.5	2.6	2.4	2.4	2.6	2.3	2.3	2.1	1.8	1.4	1.5	1.3	2.6
11-Apr	1.5	1.4	1.6	1.6	1.8	1.8	1.7	1.5	2.0	2.3	3.0	3.2	3.6	3.4	3.7	4.1	3.6	3.6	3.0	2.9	2.6	1.4	0.8	0.3	4.1
12-Apr	0.1	0.2	0.2	0.2	0.1	0.1	0.6	1.2	1.4	1.8	1.8	1.6	1.5	1.9	2.5	2.9	2.7	2.3	2.2	2.0	2.5	2.3	2.5	2.0	2.9
13-Apr	1.8	1.8	1.3	0.7	0.3	0.4	0.9	1.6	1.9	2.3	2.5	2.2	2.1	2.0	1.9	1.6	1.5	1.8	1.6	0.7	1.2	2.1	2.0	1.9	2.5
14-Apr	2.2	2.6	2.2	1.9	2.1	1.9	1.7	1.7	2.0	1.8	1.8	2.0	1.8	2.1	2.1	1.4	1.3	1.0	1.8	1.3	1.5	1.9	2.3	1.8	2.6
15-Apr	1.5	2.0	1.0	1.4	1.5	1.5	1.6	1.3	1.6	1.3	1.7	2.3	2.9	2.8	3.0	3.7	4.4	4.0	3.1	3.3	3.1	2.5	2.1	1.6	4.4
16-Apr	1.6	1.6	1.0	1.2	1.4	1.6	1.7	2.0	2.2	2.0	1.7	1.7	2.5	2.7	2.4	3.1	2.7	2.9	2.8	2.3	2.2	2.0	2.4	1.9	3.1
17-Apr	2.1	1.7	1.1	1.4	1.7	1.6	2.0	2.4	2.6	2.5	3.2	3.2	3.2	3.0	3.0	2.9	3.3	3.1	2.8	2.6	2.0	2.1	2.0	1.0	3.3
18-Apr	1.6	1.5	1.3	1.3	1.9	2.3	1.9	1.8	2.1	2.0	2.3	2.3	2.4	2.3	2.3	2.0	2.2	1.4	1.0	0.6	0.5	0.6	0.5	0.6	2.4
19-Apr	1.2	0.8	0.5	0.6	0.3	0.2	0.4	0.7	1.0	1.5	1.2	1.8	2.1	1.9	1.6	2.0	2.5	2.4	2.3	1.9	1.8	1.9	1.7	0.7	2.5
20-Apr	0.6	0.5	0.2	0.2	0.3	0.1	0.3	0.4	1.3	1.5	1.8	2.1	2.2	2.3	2.4	2.1	1.6	1.2	0.8	0.6	0.4	0.5	0.6	0.6	2.4
21-Apr	0.6	0.7	1.3	1.7	1.0	1.2	0.7	1.5	1.4	1.5	2.0	2.4	2.5	1.7	1.6	2.1	2.1	2.1	2.4	1.9	1.2	1.1	0.9	1.0	2.5
22-Apr	0.7	0.8	0.5	0.3	0.3	0.6	0.5	0.6	1.1	1.8	2.0	1.9	2.1	2.5	3.0	3.1	2.6	2.4	2.0	1.9	1.1	1.2	0.6	0.6	3.1
23-Apr	0.8	1.2	1.4	1.1	1.1	1.3	1.8	1.7	1.8	2.1	2.9	2.7	3.3	3.5	3.8	3.4	3.5	2.9	2.8	3.1	2.8	2.5	2.6	2.6	3.8
24-Apr	2.2	1.9	2.2	2.5	1.8	1.7	1.9	2.0	1.2	1.2	1.4	1.4	1.4	1.7	2.4	2.0	2.6	2.9	1.7	2.6	2.6	2.4	2.7	2.4	2.9
25-Apr	1.9	1.6	0.8	0.6	0.7	0.9	1.7	1.8	1.2	1.3	1.7	1.3	1.3	1.5	1.5	1.4	1.3	1.6	1.6	1.3	1.2	0.9	0.8	0.9	1.9
26-Apr	1.0	1.0	0.8	0.7	0.7	0.9	1.7	1.6	2.1	1.9	1.7	2.8	2.3	2.3	2.4	2.4	2.8	2.8	2.8	2.6	2.3	2.1	2.7	2.5	2.8
27-Apr	1.9	2.1	2.3	2.1	2.0	1.5	0.8	1.2	1.6	2.2	2.8	3.4	3.5	2.9	2.6	2.4	2.4	2.1	2.5	1.9	1.6	1.5	1.7	1.5	3.5
28-Apr	1.5	1.4	1.4	0.7	0.5	0.7	0.8	1.0	1.3	1.1	1.3	1.5	1.8	1.9	1.6	1.3	1.0	1.0	0.5	1.2	1.5	1.5	1.3	1.7	1.9
29-Apr	1.6	1.1	0.7	1.1	1.4	1.5	1.8	1.8	1.5	1.7	1.8	2.1	2.5	1.9	2.0	2.1	1.5	1.2	0.8	0.3	0.2	0.1	0.2	0.1	2.5
30-Apr	0.2	0.3	0.4	0.4	0.8	0.9	1.1	1.3	2.0	1.7	2.0	1.7	1.6	1.6	1.7	1.6	1.2	1.0	1.7	0.7	0.8	0.6	1.0	1.5	2.0
	3.7	3.8	3.9	4.4	3.5	3.6	4.0	3.6	4.0	3.5	3.2	3.4	3.6	4.1	4.3	4.1	4.4	4.1	3.3	3.4	3.3	3.1	3.9	3.4	
	Diurnal Maximum																								

Maximum Value: 1.6 km/h on Apr 4 02:00

Maximum Daily Average: 0.6 km/h on Apr 27

Minimum Value: -1.9 km/h on Apr 8 15:00

Minimum Daily Average: -0.9 km/h on Apr 9

Maximum Diurnal Average: 0.2 km/h at hour 7

Minimum Diurnal Average: 0.0 km/h at hour 12

Monthly Average: 0.08 km/h

Percentiles: P_1 = -1.4 P_{10} = -0.4 Q_1 = -0.2 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-Apr	0.5	1.1	0.4	-0.2	-0.1	-0.5	-0.2	-0.4	-0.5	-0.6	-0.6	-0.5	0.2	-0.1	-0.2	-0.4	-0.2	-0.1	0.0	-0.1	-0.1	0.0	-0.2	-0.1	-0.1	1.1
2-Apr	-0.2	-0.2	-0.3	-0.2	-0.1	0.0	-0.3	-0.3	-0.7	-0.7	-0.7	-0.6	-0.3	-0.4	-0.4	-0.5	-0.5	-0.5	-0.3	-0.2	-0.3	-0.3	-0.1	-0.1	-0.3	0.0
3-Apr	-0.2	0.0	-0.3	-0.3	-0.1	-0.1	-0.2	-0.4	-0.2	-0.1	0.5	-0.1	0.0	0.1	0.4	0.6	0.3	0.6	0.5	0.5	1.0	1.0	1.2	1.2	0.2	1.2
4-Apr	1.5	1.6	1.4	1.4	0.9	1.1	1.5	0.9	1.1	1.0	0.6	0.4	0.1	0.0	-0.8	-1.4	-1.7	-1.4	-1.1	-1.2	-1.4	-1.2	-0.8	-1.2	0.1	1.6
5-Apr	-1.1	-0.4	-0.1	-0.4	-0.1	-0.4	-0.2	0.2	0.3	-0.3	-0.3	-0.2	0.3	-0.1	0.5	0.1	-0.1	0.2	-0.1	-0.2	-0.2	-0.3	0.0	0.0	-0.1	0.5
6-Apr	-0.1	-0.3	-0.2	-0.3	-0.2	-0.2	-0.1	0.0	0.2	0.2	0.0	-0.2	-0.2	0.2	-0.1	0.4	0.3	0.0	-0.3	-0.3	-0.2	-0.2	-0.1	0.0	-0.1	0.4
7-Apr	0.0	0.3	0.4	0.1	0.1	0.3	0.6	0.4	0.2	0.4	1.0	0.4	0.4	0.5	-0.1	-0.2	-0.6	-0.1	-0.2	-0.2	0.0	-0.2	-0.3	0.4	0.2	1.0
8-Apr	0.3	0.4	0.6	1.1	0.5	0.4	1.3	1.0	0.1	-0.2	-0.8	-0.7	-1.3	-1.4	-1.9	-1.3	-1.1	-0.9	-1.6	-1.3	-1.3	-1.3	-1.1	-0.8	-0.5	1.3
9-Apr	-1.4	-1.1	-0.7	-1.0	-1.2	-1.2	-1.0	-1.2	-1.8	-1.3	-0.9	-0.4	-0.5	-0.5	-0.5	-1.0	-1.4	-1.4	-1.1	-0.4	-0.3	-0.4	-0.4	-0.5	-0.9	-0.3
10-Apr	-0.3	-0.2	-0.1	0.0	-0.1	-0.2	-0.1	-0.1	0.3	-0.1	-0.2	-0.5	-0.3	-0.3	0.1	0.1	-0.1	0.1	-0.1	0.0	-0.1	0.0	0.0	0.1	-0.1	0.3
11-Apr	0.2	0.1	0.2	0.3	0.1	0.3	0.0	0.2	0.0	-0.3	-0.3	0.0	-0.3	-0.1	-0.1	-0.1	-0.1	-0.4	-0.2	-0.4	-0.4	-0.1	-0.1	-0.1	-0.1	0.3
12-Apr	0.0	-0.1	0.0	-0.1	0.0	0.0	0.3	0.2	-0.1	-0.5	-0.1	-0.2	-0.5	-0.1	-0.5	-0.4	-0.3	-0.2	0.0	0.0	0.0	-0.1	-0.4	-0.1	-0.1	0.3
13-Apr	-0.1	-0.2	-0.2	-0.2	-0.3	-0.1	-0.1	0.0	0.0	0.0	-0.4	0.2	0.2	0.1	-0.2	-0.3	0.2	0.6	0.5	0.3	0.5	1.0	0.9	0.6	0.1	1.0
14-Apr	0.6	0.7	0.6	0.7	0.6	0.5	0.4	0.5	0.4	0.5	0.0	0.4	0.4	0.4	0.7	0.5	0.5	0.2	0.5	0.4	0.3	-0.1	-0.4	-0.3	0.4	0.7
15-Apr	-0.3	0.0	0.1	-0.1	0.2	0.0	0.0	0.1	0.1	0.2	0.0	0.3	-0.1	0.1	0.1	-0.3	-0.2	-0.2	-0.1	-0.4	-0.3	-0.1	-0.2	-0.2	0.0	0.3
16-Apr	-0.3	0.0	-0.3	-0.2	-0.3	-0.2	-0.2	0.1	0.2	0.3	0.3	0.4	0.4	1.0	0.6	0.7	0.9	0.8	0.5	0.6	0.6	0.6	0.7	0.6	0.3	1.0
17-Apr	0.6	0.4	0.1	0.1	0.4	0.8	0.7	0.8	0.8	0.6	1.2	0.7	0.8	0.3	0.8	0.8	0.8	0.8	0.6	0.7	0.5	0.5	0.7	0.2	0.6	1.2
18-Apr	0.4	0.3	0.1	0.2	0.4	0.5	0.5	0.2	0.5	0.8	0.6	0.6	0.6	0.7	0.7	0.5	0.7	0.4	0.2	0.2	0.0	-0.1	0.1	0.2	0.4	0.8
19-Apr	0.5	0.2	-0.2	-0.2	-0.3	0.1	-0.1	-0.1	0.2	0.3	0.2	0.3	0.6	0.4	0.2	0.4	0.9	0.6	0.6	0.5	0.6	0.3	0.5	0.0	0.3	0.9
20-Apr	-0.5	-0.3	-0.2	-0.1	-0.1	0.0	-0.1	-0.2	0.5	-0.1	-0.4	-0.4	-0.2	-0.2	0.0	0.2	0.1	0.3	0.2	0.2	0.2	0.4	0.4	0.7	0.0	0.7
21-Apr	0.9	0.9	0.8	0.3	0.3	0.3	0.3	0.3	0.5	0.0	0.1	-0.5	-0.6	0.0	-0.3	-0.3	-0.2	-0.2	0.0	-0.3	-0.2	-0.3	-0.4	-0.3	0.0	0.9
22-Apr	-0.3	-0.2	-0.1	-0.1	-0.2	-0.2	-0.2	-0.5	0.0	-0.2	-0.2	-0.4	0.2	0.7	0.7	0.8	0.3	0.7	0.5	0.0	-0.3	-0.1	-0.1	-0.2	0.0	0.8
23-Apr	-0.6	-0.5	-0.4	-0.4	-0.2	-0.1	0.1	0.1	0.2	0.6	0.5	0.7	0.7	0.4	0.3	0.6	0.7	0.6	0.5	0.5	0.4	0.2	0.4	0.4	0.2	0.7
24-Apr	0.2	0.1	0.1	0.2	0.2	0.1	0.2	0.3	0.1	-0.2	-0.4	-0.4	-0.1	0.4	0.5	0.4	0.5	0.6	0.4	0.7	0.5	0.3	0.5	0.3	0.2	0.7
25-Apr	0.2	0.2	0.2	0.3	0.2	0.2	0.5	0.5	0.1	0.2	0.2	0.2	-0.3	0.2	0.1	0.1	0.5	0.5	0.4	0.4	0.4	0.1	0.2	0.0	0.2	0.5
26-Apr	0.1	0.4	0.1	0.1	0.1	0.2	0.4	0.4	0.7	0.5	0.2	0.6	0.7	0.6	0.7	0.6	0.6	0.7	0.6	0.8	0.7	0.7	0.8	0.8	0.5	0.8
27-Apr	0.5	0.2	0.5	0.4	0.4	0.3	0.0	0.2	0.5	0.5	0.7	1.1	1.2	1.1	1.0	0.8	1.0	0.7	0.7	0.7	0.6	0.6	0.6	0.5	0.6	1.2
28-Apr	0.4	0.4	0.4	0.3	0.4	0.1	0.1	0.0	0.3	0.2	0.4	0.1	0.2	0.4	0.3	0.4	0.5	0.4	0.2	0.7	0.8	0.5	0.3	0.4	0.3	0.8
29-Apr	0.1	0.1	0.3	0.1	0.0	-0.3	0.3	0.5	0.6	0.5	0.4	-0.6	-0.8	-0.9	-0.7	-0.4	-0.4	0.1	0.1	0.0	0.0	0.1	0.1	0.1	0.0	0.6
30-Apr	0.2	0.0	0.1	0.3	0.5	0.3	0.6	0.2	0.5	0.6	0.7	0.4	-0.2	-0.2	0.1	0.1	-0.2	0.1	-0.4	-0.1	-0.2	0.0	-0.3	-0.9	0.1	0.7
	0.1	0.1	0.1	0.1	0.1	0.1	0.2	0.1	0.2	0.1	0.1	0.0	0.0	0.1	0.1	0.0	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.0	Diurnal Average	
	1.5	1.6	1.4	1.4	0.9	1.1	1.5	1.0	1.1	1.0	1.2	1.1	1.2	1.1	1.0	0.8	1.0	0.8	0.7	0.8	1.0	1.0	1.2	1.2	Diurnal Maximum	

Number of Exceedences (AAAQO): 1-hr: 0 24-hr: 0
Maximum Value: 4.9 km/h on Apr 9 09:00

Minimum Value: 0.1 km/h on Apr 12 06:00

Percentiles: P_1 = 0.2 P_{10} = 0.7 Q_1 = 1.2 Median = 1.7 Q_3 = 2.3 P_{90} = 2.9 P_{99} = 4.0

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
	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-Apr	1.3	0.9	1.1	0.5	0.5	0.7	0.7	0.8	1.7	2.2	2.0	2.2	2.4	2.4	2.2	2.1	1.9	1.7	1.9	1.7	1.4	1.2	1.2	1.6	2.4
2-Apr	1.3	1.4	1.7	1.8	2.1	1.9	1.6	1.6	2.0	2.3	2.6	2.8	3.0	3.1	3.0	3.2	3.1	3.0	2.8	2.5	2.2	1.9	2.0	1.7	3.2
3-Apr	1.2	1.3	1.6	1.4	1.0	0.8	0.9	1.3	1.6	1.9	1.7	1.8	1.7	1.8	1.8	2.3	2.2	2.3	2.4	2.3	2.9	2.8	3.3	3.0	3.3
4-Apr	3.2	3.3	3.0	3.6	2.8	3.0	3.6	3.1	3.1	3.0	2.2	2.0	1.5	1.0	2.1	3.1	4.3	3.6	3.8	3.8	2.9	3.2	2.9	2.0	4.3
5-Apr	1.7	1.4	1.8	1.5	0.9	0.8	0.5	0.8	1.1	1.2	1.4	1.7	1.8	2.0	1.9	1.7	1.5	1.3	1.5	1.5	1.4	1.2	0.9	0.7	2.0
6-Apr	0.8	0.7	0.7	0.6	0.8	0.4	0.5	0.6	0.9	1.1	1.3	1.0	1.0	1.1	1.1	1.3	0.8	0.6	1.2	1.4	0.7	0.3	0.2	0.2	1.4
7-Apr	0.3	0.3	0.7	0.6	0.3	0.5	0.7	0.7	0.9	1.2	1.7	1.6	1.6	1.6	1.8	1.8	1.5	0.6	1.4	0.8	1.1	1.3	0.7	0.9	1.8
8-Apr	1.5	1.1	0.9	1.1	1.3	1.2	1.1	1.8	1.5	2.0	2.4	2.0	3.6	4.5	4.7	3.3	3.4	3.9	3.5	3.7	3.1	2.7	2.6	1.7	4.7
9-Apr	2.8	2.3	1.8	2.1	2.6	2.4	3.1	3.1	4.9	4.0	3.4	1.6	2.6	3.0	3.6	4.5	4.4	3.3	2.9	2.0	0.7	1.2	1.3	2.0	4.9
10-Apr	1.1	1.3	0.9	1.1	1.2	1.6	2.2	2.7	2.7	2.4	2.5	2.4	2.4	2.5	2.5	2.4	2.4	2.3	2.2	2.0	1.8	1.6	1.6	1.4	2.7
11-Apr	1.5	1.4	1.5	1.7	1.9	1.8	1.6	1.6	1.8	2.3	2.9	3.2	3.8	3.6	3.9	4.0	3.8	3.6	3.3	2.8	2.7	1.4	1.0	0.4	4.0
12-Apr	0.2	0.2	0.2	0.2	0.2	0.1	0.7	1.1	1.5	1.6	2.1	1.9	1.7	2.2	2.4	2.9	2.7	2.3	2.0	2.1	2.5	2.5	2.6	1.9	2.9
13-Apr	1.9	1.8	1.4	0.7	0.4	0.5	1.0	1.6	2.1	2.5	2.6	2.6	2.4	2.4	2.0	1.7	1.7	1.5	1.4	0.8	1.5	2.3	2.0	1.9	2.6
14-Apr	2.3	2.4	2.1	1.8	2.0	1.9	1.8	1.7	1.8	2.0	2.2	2.5	2.2	2.0	2.2	1.6	1.2	1.2	1.7	1.3	1.7	2.0	2.1	1.9	2.5
15-Apr	1.6	2.0	1.1	1.3	1.5	1.4	1.5	1.4	1.6	1.3	1.7	2.3	2.9	2.7	2.9	3.7	4.1	3.9	3.4	3.1	2.9	2.7	2.2	1.8	4.1
16-Apr	1.8	1.7	1.1	1.2	1.2	1.5	1.7	2.1	2.2	2.0	1.7	1.9	2.4	2.6	2.5	3.0	2.5	2.6	2.6	2.3	2.2	1.8	2.0	1.7	3.0
17-Apr	1.8	1.6	0.9	1.3	1.4	1.1	1.6	2.0	2.4	2.4	2.9	3.1	3.2	2.8	2.8	2.7	3.1	2.9	2.7	2.2	2.1	2.1	2.1	1.3	3.2
18-Apr	1.7	1.5	1.2	1.6	2.0	2.3	1.9	1.9	2.0	2.0	2.2	2.2	2.2	2.2	2.2	1.9	2.0	1.5	1.0	0.6	0.8	0.7	0.6	0.9	2.3
19-Apr	1.4	0.9	0.5	0.6	0.4	0.3	0.3	0.6	1.0	1.4	1.2	1.6	1.7	1.8	1.7	2.0	2.3	2.2	2.0	1.6	1.6	1.9	1.7	0.9	2.3
20-Apr	0.6	0.6	0.3	0.2	0.3	0.2	0.3	0.5	1.5	1.3	1.5	2.1	2.5	2.6	2.5	2.2	1.7	1.2	0.9	0.6	0.6	0.8	0.9	0.6	2.6
21-Apr	0.6	0.7	1.7	1.6	0.9	1.1	0.5	1.1	1.2	1.5	1.9	2.3	2.3	1.7	1.6	2.1	2.2	2.0	2.2	2.0	1.5	1.3	0.7	0.9	2.3
22-Apr	0.6	0.6	0.5	0.3	0.3	0.6	0.5	0.6	1.2	2.0	2.2	1.9	2.3	2.7	2.8	3.0	2.9	2.7	2.3	2.0	1.2	1.3	0.8	0.7	3.0
23-Apr	0.8	1.2	1.6	1.5	1.4	1.4	1.7	1.8	2.2	2.5	3.0	2.8	3.3	3.3	3.8	3.6	3.5	2.9	2.9	3.0	2.8	2.7	2.7	2.8	3.8
24-Apr	2.4	2.1	2.2	2.4	2.0	1.8	2.1	2.0	1.3	1.4	1.3	1.5	1.5	1.6	2.1	1.9	2.4	2.7	1.8	2.6	2.7	2.4	2.7	2.4	2.7
25-Apr	1.9	1.5	1.0	0.8	0.9	0.9	1.4	1.4	1.2	1.2	1.8	1.4	1.5	1.6	1.7	1.4	1.2	1.5	1.7	1.3	1.2	1.0	0.9	1.1	1.9
26-Apr	1.1	1.3	1.0	0.9	0.8	1.1	1.7	1.6	1.9	1.8	2.0	2.6	2.3	2.0	2.0	2.1	2.4	2.5	2.4	2.4	2.1	1.9	2.6	2.4	2.6
27-Apr	1.7	2.0	2.2	2.0	2.0	1.4	1.0	1.3	1.7	2.0	2.6	3.1	2.9	2.9	2.6	2.5	2.4	2.2	2.3	1.6	1.6	1.5	1.5	1.6	3.1
28-Apr	1.3	1.3	1.3	0.6	0.6	0.8	1.0	1.1	0.9	0.9	1.3	1.7	1.8	1.7	1.4	1.2	0.8	0.7	0.5	1.2	1.4	1.5	1.3	2.0	2.0
29-Apr	1.9	1.0	0.8	1.2	1.6	1.6	1.7	1.5	1.3	1.4	1.8	2.2	2.7	1.9	2.2	2.2	1.6	1.4	1.0	0.4	0.2	0.2	0.2	0.3	2.7
30-Apr	0.3	0.4	0.4	0.5	1.0	0.9	1.1	1.0	1.8	1.6	1.8	1.7	2.2	2.1	2.1	1.8	1.4	1.2	1.9	0.8	1.0	0.7	1.2	1.5	2.2
	3.2	3.3	3.0	3.6	2.8	3.0	3.6	3.1	4.9	4.0	3.4	3.2	3.8	4.5	4.7	4.5	4.4	3.9	3.8	3.8	3.1	3.2	3.3	3.0	
	Diurnal Maximum																								

Maximum Value: 2.9 km/h on Apr 29 00:00

Maximum Daily Average: 1.2 km/h on Apr 27

Minimum Value: -1.1 km/h on Apr 13 15:00

Minimum Daily Average: -0.2 km/h on Apr 1

Maximum Diurnal Average: 0.5 km/h at hour 23

Minimum Diurnal Average: 0.1 km/h at hour 13

Monthly Average: 0.28 km/h

Percentiles: P_1 = -0.8 P_{10} = -0.3 Q_1 = 0.0 Median = 0.2 Q_3 = 0.5 P_{90} = 0.9 P_{99} = 2.3

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-Apr	-0.1	0.0	0.0	-0.1	-0.2	-0.2	0.0	0.0	-0.3	-0.3	-0.4	-0.7	0.1	-0.5	-0.7	-0.5	-0.3	0.3	0.1	0.2	0.1	-0.5	0.0	0.1	-0.2	0.3
2-Apr	0.2	0.3	0.4	0.5	0.6	0.5	0.4	0.1	-0.1	-0.3	-0.4	0.1	0.6	-0.3	0.3	0.4	-0.1	0.3	0.5	0.4	0.2	0.3	0.5	0.1	0.2	0.6
3-Apr	0.1	0.1	0.3	0.3	0.2	0.1	0.0	0.1	-0.2	-0.4	0.9	0.0	0.0	0.1	0.0	-0.1	-0.3	0.4	0.3	0.8	1.2	0.8	1.0	1.1	0.3	1.2
4-Apr	0.8	1.0	0.5	1.0	0.9	0.9	0.8	0.9	2.0	2.1	2.0	1.7	0.4	-0.3	-0.8	-0.6	-0.8	-1.0	-0.9	-0.8	-0.6	-0.7	-0.3	-0.5	0.3	2.1
5-Apr	-0.5	-0.3	2.1	0.9	-0.1	-0.5	0.0	0.0	0.3	-0.3	-0.1	-0.1	-0.3	-0.5	0.7	0.1	-0.6	0.9	0.5	0.2	0.3	0.1	0.1	0.1	0.1	2.1
6-Apr	-0.3	-0.2	0.0	0.0	0.0	-0.1	-0.1	0.2	0.1	0.1	0.1	0.0	0.0	-0.1	0.3	0.1	-0.1	0.0	0.0	0.2	0.0	0.0	0.0	0.0	0.0	0.3
7-Apr	0.0	0.0	0.0	-0.1	-0.1	0.0	0.0	0.0	-0.1	0.5	0.2	0.0	0.2	0.2	-0.3	0.2	-0.1	0.0	0.7	0.7	0.8	0.8	0.2	0.0	0.2	0.8
8-Apr	1.3	0.3	-0.1	-0.1	0.2	0.1	-0.2	-0.3	0.8	0.9	0.5	0.0	-0.4	-0.3	-0.3	0.2	0.4	1.2	0.6	0.1	0.3	0.4	-0.6	0.2	0.2	1.3
9-Apr	-0.1	-0.7	-0.2	-0.5	0.0	0.2	0.7	-0.3	-0.1	-0.6	-0.6	-0.1	-0.1	0.4	-0.2	0.0	-0.5	-0.7	-0.2	0.2	0.1	0.5	0.1	0.2	-0.1	0.7
10-Apr	0.0	0.0	0.1	0.2	0.0	0.1	0.5	0.6	0.8	0.2	0.7	-0.3	-0.1	-0.5	0.7	0.6	0.1	0.4	0.9	0.4	-0.1	0.2	0.0	0.0	0.2	0.9
11-Apr	-0.1	0.0	0.0	0.1	0.0	0.3	0.1	0.3	-0.3	0.1	0.6	0.6	0.4	0.6	0.3	0.6	0.8	0.4	1.1	0.7	0.4	0.3	0.1	-0.1	0.3	1.1
12-Apr	-0.1	0.0	-0.2	-0.1	0.0	-0.1	-0.1	-0.1	0.0	-0.5	-0.2	-0.5	-0.7	0.4	0.2	0.4	0.0	0.4	0.3	0.2	-0.1	0.5	0.5	0.4	0.0	0.5
13-Apr	0.2	0.1	0.2	-0.1	-0.2	-0.1	0.0	-0.4	0.0	-0.1	0.2	0.3	0.1	-0.2	-1.1	-0.8	-0.4	0.4	0.6	0.2	1.5	2.4	2.3	2.2	0.3	2.4
14-Apr	2.0	1.3	1.3	1.2	1.1	1.2	0.6	0.3	0.3	0.8	-0.4	-0.1	-0.1	0.5	0.9	0.1	0.1	0.7	0.6	0.4	0.3	0.7	0.2	0.2	0.6	2.0
15-Apr	0.2	-0.4	-0.1	0.0	0.0	-0.1	-0.2	0.2	0.1	0.6	0.3	0.5	-0.2	0.1	0.1	0.4	-0.2	0.6	0.7	0.6	0.8	0.9	0.4	0.6	0.3	0.9
16-Apr	0.3	0.2	0.2	0.0	0.2	0.2	0.0	0.1	-0.7	0.2	0.5	0.3	0.1	1.1	1.0	0.7	0.8	0.5	0.8	0.7	0.7	0.6	0.7	0.2	0.4	1.1
17-Apr	0.4	0.2	-0.8	-0.3	0.6	0.3	0.3	0.4	0.8	0.5	1.3	0.6	0.9	0.3	0.4	1.2	0.8	1.0	0.9	0.6	0.5	1.0	1.8	1.1	0.6	1.8
18-Apr	0.3	-0.1	-0.1	0.5	0.4	0.4	0.3	0.0	0.3	1.2	0.5	0.6	0.8	1.4	0.7	0.1	0.9	1.2	-0.2	0.3	0.1	0.0	0.2	0.1	0.4	1.4
19-Apr	0.3	0.2	-0.1	-0.1	0.0	-0.1	0.0	0.0	-0.1	0.0	-0.2	0.1	0.4	0.1	-0.3	0.1	0.8	0.7	0.4	0.8	1.0	0.9	1.3	0.0	0.3	1.3
20-Apr	0.1	0.0	0.0	0.0	0.0	0.2	0.0	0.2	0.5	0.0	-0.3	-0.1	0.4	0.2	-0.1	0.5	0.4	0.0	0.0	0.2	0.4	0.3	0.4	0.1	0.1	0.5
21-Apr	-0.2	-0.1	0.2	1.0	0.6	0.5	0.1	0.3	-0.2	-0.1	0.3	-0.4	-0.8	0.2	0.0	-0.2	0.0	-0.3	0.6	0.6	0.6	0.1	0.0	0.3	0.1	1.0
22-Apr	0.0	0.0	0.1	0.1	0.1	0.0	0.0	0.0	0.1	0.6	0.1	0.1	0.2	0.4	0.3	0.9	1.0	0.7	0.8	-0.1	-0.4	-0.3	0.0	0.0	0.2	1.0
23-Apr	0.1	0.0	0.4	0.4	0.5	-0.3	-0.1	0.2	0.2	0.5	-0.3	0.2	0.9	0.2	-0.1	0.4	-0.4	0.5	0.1	0.2	-0.2	0.3	0.3	0.4	0.2	0.9
24-Apr	0.4	0.0	0.0	-0.2	0.0	-0.2	-0.1	-0.1	0.1	0.0	0.3	0.4	0.4	1.2	0.8	0.2	0.3	0.8	0.5	0.2	0.2	0.1	0.3	0.6	0.3	1.2
25-Apr	0.2	0.1	0.1	0.1	0.0	0.3	-0.1	-0.2	0.1	0.1	0.0	0.0	-0.3	0.5	0.1	-0.2	0.3	0.6	0.7	1.0	0.8	0.2	0.4	0.0	0.2	1.0
26-Apr	0.2	0.2	-0.1	-0.2	0.6	1.0	1.2	1.0	1.7	1.5	1.1	0.8	0.5	0.5	0.4	0.6	0.6	0.6	0.8	0.8	0.8	0.5	1.7	1.1	0.8	1.7
27-Apr	0.7	0.7	0.6	0.9	0.3	0.3	-0.1	-0.1	0.4	0.6	0.6	1.0	1.3	1.7	2.6	2.7	2.3	2.9	2.0	1.7	1.7	1.4	1.0	1.5	1.2	2.9
28-Apr	0.5	0.6	0.3	0.7	0.7	0.4	0.1	0.3	0.0	0.1	0.2	-0.3	-0.3	0.0	-0.1	0.0	0.0	0.3	0.5	1.3	1.1	1.4	1.3	2.9	0.5	2.9
29-Apr	2.1	0.1	0.5	0.7	1.3	0.3	0.6	0.3	0.1	-0.1	0.1	-0.4	-0.9	-0.8	-0.5	-0.3	-0.6	0.3	0.2	0.1	0.0	0.1	0.2	0.0	0.2	2.1
30-Apr	0.2	0.5	0.0	0.1	0.4	0.4	0.4	-0.3	0.8	0.4	0.3	0.1	-0.6	-0.2	-0.2	0.1	-0.2	-0.3	0.4	0.6	0.7	0.5	0.6	0.0	0.2	0.8
	0.3	0.1	0.2	0.2	0.3	0.2	0.2	0.1	0.3	0.3	0.3	0.1	0.1	0.2	0.2	0.3	0.2	0.5	0.5	0.5	0.4	0.5	0.5	0.4	Diurnal Average	
	2.1	1.3	2.1	1.2	1.3	1.2	1.2	1.0	2.0	2.1	2.0	1.7	1.3	1.7	2.6	2.7	2.3	2.9	2.0	1.7	1.7	2.4	2.3	2.9	Diurnal Maximum	

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

Maximum Value: 4.9 km/h on Apr 9 16:00

Minimum Value: 0.2 km/h on Apr 7 00:00

Percentiles: P_1 = 0.3 P_{10} = 0.7 Q_1 = 1.2 Median = 1.8 Q_3 = 2.4 P_{90} = 2.9 P_{99} = 4.0

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
	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-Apr	1.4	0.8	1.0	0.9	0.8	1.3	1.1	1.1	1.7	1.7	2.1	1.9	2.8	2.3	2.2	2.2	1.9	1.9	2.0	1.9	2.2	1.8	1.7	2.2	2.8
2-Apr	1.3	1.3	1.5	1.9	2.2	2.0	1.8	1.5	1.7	2.0	2.2	2.3	2.6	2.6	3.2	2.7	2.2	2.5	2.4	2.3	1.8	1.6	2.1	1.8	3.2
3-Apr	0.9	0.9	1.3	1.2	0.8	0.6	0.7	1.1	1.1	1.7	2.1	2.2	1.9	1.8	1.8	2.6	2.6	2.2	2.2	2.1	2.6	2.3	2.5	2.5	2.6
4-Apr	2.2	2.3	2.0	2.0	2.3	2.3	2.1	2.0	2.4	2.7	2.2	1.8	1.7	1.1	2.2	3.0	4.1	3.3	3.7	4.1	2.6	2.7	2.6	1.6	4.1
5-Apr	0.8	1.5	1.6	1.9	1.4	1.2	0.7	0.7	1.3	1.3	1.3	1.7	1.5	1.3	2.3	1.4	1.1	1.5	1.3	1.4	1.1	0.7	0.9	0.6	2.3
6-Apr	0.7	0.9	0.8	1.1	0.7	0.6	0.4	0.6	1.0	0.9	1.4	1.1	0.8	1.0	1.4	1.1	0.6	0.6	1.4	1.4	1.0	0.4	0.2	0.2	1.4
7-Apr	0.4	0.6	0.9	1.1	0.3	0.5	0.4	0.5	0.8	1.2	1.0	1.4	1.4	1.3	1.8	2.1	1.2	0.9	1.2	0.7	1.8	1.4	1.0	0.9	2.1
8-Apr	1.6	1.7	1.3	1.1	1.6	1.6	1.1	2.1	1.5	2.1	2.0	1.2	2.9	3.4	3.4	2.5	3.3	3.6	2.7	2.2	1.9	1.7	1.9	0.9	3.6
9-Apr	2.2	2.1	2.0	1.6	1.7	1.7	2.4	2.7	4.9	4.5	3.2	1.3	3.0	3.6	4.1	4.9	4.3	3.3	2.9	2.5	1.3	1.4	0.8	2.3	4.9
10-Apr	1.2	1.1	1.2	1.3	1.4	2.1	2.8	2.3	2.8	2.3	2.5	2.3	3.0	2.9	2.4	2.5	2.6	2.3	2.5	2.5	2.0	2.0	2.1	1.7	3.0
11-Apr	1.5	1.3	1.4	1.8	2.3	2.1	2.0	2.2	2.2	2.2	2.5	3.1	3.2	3.3	3.4	4.0	3.7	3.3	2.8	2.6	2.6	1.1	1.0	0.5	4.0
12-Apr	0.3	0.2	0.3	0.2	0.4	0.3	0.6	0.7	1.4	1.9	2.4	2.3	2.0	2.9	2.7	2.8	2.6	2.4	2.2	2.5	2.6	2.4	2.4	1.9	2.9
13-Apr	2.1	1.4	1.1	0.8	0.4	0.4	0.7	1.2	2.3	2.6	3.1	3.0	2.9	2.6	2.4	1.9	2.0	1.3	1.4	1.3	1.7	1.9	2.1	1.9	3.1
14-Apr	2.2	2.2	1.6	1.4	1.3	1.4	1.8	1.6	2.0	2.6	2.5	2.8	2.7	2.3	2.7	1.8	1.3	1.7	1.7	1.6	2.3	2.0	1.6	1.3	2.8
15-Apr	1.2	2.1	1.2	1.2	1.5	1.6	1.6	1.7	1.5	1.8	2.1	2.5	3.3	3.4	3.8	4.0	3.9	3.9	3.8	2.9	2.7	2.8	2.2	2.0	4.0
16-Apr	2.5	2.5	1.6	1.4	0.9	0.7	1.2	2.7	2.4	2.6	2.0	1.7	2.9	3.0	3.0	2.9	2.3	2.6	2.6	2.4	2.7	2.3	2.2	1.8	3.0
17-Apr	1.3	1.6	1.6	1.6	1.1	1.0	1.2	2.0	2.1	2.6	3.3	3.2	3.4	3.3	3.2	3.3	2.9	2.6	2.6	2.2	1.9	2.4	2.0	1.9	3.4
18-Apr	1.9	1.7	1.5	1.9	2.2	2.3	2.2	2.2	2.2	2.4	2.5	2.3	2.6	2.5	1.9	2.0	1.8	1.8	1.3	1.1	1.6	1.2	1.1	1.5	2.6
19-Apr	1.8	1.4	0.8	0.7	0.5	0.6	0.3	0.5	1.0	1.1	1.4	1.8	1.8	2.0	1.9	2.2	2.1	2.4	2.0	1.7	1.3	1.6	1.3	1.5	2.4
20-Apr	0.6	0.5	0.3	0.4	0.2	0.3	0.3	0.5	1.3	1.1	1.4	2.4	2.9	3.2	2.7	3.1	2.4	1.5	0.8	0.6	0.7	1.5	1.5	1.2	3.2
21-Apr	1.0	0.9	2.0	1.3	0.8	0.9	0.6	0.6	1.0	1.3	1.7	1.9	1.9	1.8	1.8	1.9	2.5	2.3	2.5	2.5	1.9	1.7	1.0	0.9	2.5
22-Apr	0.5	0.3	0.3	0.3	0.4	0.4	0.4	0.6	0.9	2.1	2.5	2.4	2.7	3.4	3.4	3.1	3.6	2.9	2.7	2.7	1.7	2.0	1.5	1.5	3.6
23-Apr	1.0	1.8	2.1	2.0	2.3	1.8	2.2	2.8	3.2	3.6	3.5	3.3	4.0	3.9	4.0	4.4	3.9	3.8	3.5	3.7	3.4	3.2	3.3	3.3	4.4
24-Apr	2.9	2.7	2.6	3.0	2.7	2.3	2.8	2.4	1.9	2.0	1.0	1.3	2.1	2.2	2.4	2.0	2.8	2.7	1.9	3.0	2.5	2.5	2.3	2.5	3.0
25-Apr	2.2	1.9	1.2	1.2	1.5	1.3	1.5	1.4	1.3	1.2	2.4	1.8	2.0	2.0	2.2	1.7	1.4	1.4	1.4	1.4	1.3	1.7	1.3	1.4	2.4
26-Apr	1.3	1.3	1.2	1.4	1.1	1.3	1.5	1.6	1.8	2.2	2.7	2.9	2.5	2.1	1.9	1.7	2.0	2.1	1.7	1.8	1.8	1.6	2.0	2.1	2.9
27-Apr	1.8	1.8	1.8	1.8	1.8	1.7	1.4	1.7	2.2	2.2	2.0	2.3	2.2	2.3	2.3	2.5	2.4	2.5	2.0	2.4	2.1	1.6	1.2	1.3	2.5
28-Apr	1.4	1.2	1.2	0.9	0.8	1.2	1.0	1.2	0.9	0.9	1.2	1.2	1.1	0.7	1.1	1.1	0.8	0.8	0.5	1.3	1.3	1.7	1.4	1.1	1.7
29-Apr	1.7	1.0	0.9	1.5	1.4	1.2	1.4	1.0	0.9	0.8	1.4	2.7	2.0	1.9	2.6	2.5	2.3	1.6	1.2	0.7	0.3	0.3	0.4	0.3	2.7
30-Apr	0.5	0.5	0.5	0.7	0.8	1.0	1.1	1.1	1.4	1.3	1.5	2.1	2.5	2.4	2.2	2.6	2.0	1.4	2.3	0.9	1.0	0.7	0.9	1.0	2.6
	2.9	2.7	2.6	3.0	2.7	2.3	2.8	2.8	4.9	4.5	3.5	3.3	4.0	3.9	4.1	4.9	4.3	3.9	3.8	4.1	3.4	3.2	3.3	3.3	
	Diurnal Maximum																								

Maximum Value: 3.9 km/h on Apr 4 10:00

Maximum Daily Average: 2.0 km/h on Apr 27

Minimum Value: -1.8 km/h on Apr 13 15:00

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

Maximum Diurnal Average: 0.9 km/h at hour 21

Minimum Diurnal Average: 0.1 km/h at hour 12

Monthly Average: 0.52 km/h

Percentiles: P_1 = -1.2 P_{10} = -0.4 Q_1 = 0.0 Median = 0.3 Q_3 = 1.0 P_{90} = 1.7 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	Daily
	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24	Average	Maximum
1-Apr	1.3	0.7	0.2	-0.2	-0.1	0.1	0.2	0.0	-0.4	-0.7	-0.6	-1.2	-0.6	-0.8	-1.4	-0.9	-0.6	0.3	0.1	0.9	0.2	-0.4	0.0	-0.1	-0.2	1.3
2-Apr	0.3	0.3	0.3	0.4	0.6	0.4	0.3	0.0	0.0	-0.5	-0.9	0.1	0.9	-0.9	-0.1	0.3	-0.5	0.1	0.2	0.2	0.2	0.2	0.1	0.2	0.1	0.9
3-Apr	-0.2	0.3	0.4	0.2	0.2	0.1	0.1	0.6	-0.1	-0.7	0.4	0.2	-0.5	0.1	-0.1	-0.3	-0.3	0.7	1.3	1.6	2.1	1.2	1.7	2.2	0.5	2.2
4-Apr	1.7	1.9	2.0	2.2	1.9	1.5	1.4	1.7	2.9	3.9	2.2	1.4	0.5	-0.5	-1.1	-0.8	-1.4	-1.2	-1.4	-1.7	-1.2	-1.1	-0.6	-0.9	0.5	3.9
5-Apr	-0.9	0.4	1.4	1.6	0.6	-0.3	0.1	-0.1	0.2	-0.5	-0.3	-0.1	-0.5	-1.1	0.4	-0.1	-1.0	1.3	0.7	0.0	0.3	0.2	0.1	0.0	0.1	1.6
6-Apr	0.2	-0.1	0.2	0.7	0.2	0.5	0.2	0.1	0.1	0.2	0.1	0.0	0.3	-0.3	0.6	-0.1	-0.2	-0.1	-0.1	0.2	0.0	0.0	0.0	0.1	0.1	0.7
7-Apr	0.2	1.0	0.2	0.3	-0.1	0.1	0.1	0.1	0.0	0.3	0.0	-0.2	-0.1	0.1	-0.1	0.3	0.1	0.5	1.4	1.5	1.8	1.9	0.9	1.3	0.5	1.9
8-Apr	1.4	0.0	0.6	0.3	1.0	1.2	0.7	1.5	1.8	1.8	1.1	0.1	-0.2	0.4	0.2	0.5	1.1	2.0	1.0	0.8	1.0	0.8	-0.4	0.4	0.8	2.0
9-Apr	0.1	-1.1	-0.3	-0.3	0.3	0.5	1.1	-0.2	-0.8	-1.1	-1.3	-0.5	-0.3	0.3	-0.4	0.1	-0.9	-1.4	-0.1	0.5	0.0	0.3	-0.3	-0.4	-0.3	1.1
10-Apr	-0.3	-0.2	0.2	0.1	0.0	-0.2	0.3	0.7	1.0	0.3	0.3	-0.2	-0.1	-0.7	0.9	0.7	-0.3	0.4	0.7	0.5	0.0	0.0	0.2	0.2	0.2	1.0
11-Apr	0.5	0.5	0.7	0.8	0.5	0.9	0.7	1.0	-0.1	0.3	0.5	1.1	0.4	0.4	0.4	0.5	1.3	0.2	0.8	0.4	0.0	0.2	0.4	-0.1	0.5	1.3
12-Apr	-0.1	0.0	-0.2	-0.1	0.1	0.0	0.1	0.4	0.3	0.0	-0.6	-0.7	-0.8	0.4	0.1	0.4	-0.3	0.1	0.3	0.4	0.1	0.5	0.4	0.1	0.0	0.5
13-Apr	0.0	0.2	0.0	0.0	-0.3	-0.2	-0.1	-0.7	-0.2	-0.6	0.3	0.1	-0.5	-0.4	-1.8	-0.8	-0.6	0.3	0.8	0.8	2.9	3.5	2.8	2.7	0.3	3.5
14-Apr	3.3	2.3	2.4	2.4	1.8	2.2	1.0	0.3	0.0	0.6	-0.3	0.1	0.3	0.6	0.7	0.2	0.3	1.8	1.8	1.1	1.0	1.0	0.2	0.1	1.0	3.3
15-Apr	0.3	-0.1	-0.1	-0.2	0.2	0.3	0.1	0.4	0.1	0.8	0.5	0.4	-0.5	0.3	-0.1	0.1	-0.1	0.3	0.7	0.3	0.6	0.8	0.3	0.7	0.3	0.8
16-Apr	1.2	1.0	0.2	-0.1	0.1	0.2	-0.1	0.1	-0.6	0.7	0.6	0.1	0.0	0.9	1.4	0.9	1.2	0.8	1.7	1.7	1.6	1.2	1.7	0.6	0.7	1.7
17-Apr	1.1	1.0	-0.9	0.2	1.1	0.8	0.9	1.0	1.3	0.5	1.5	0.9	0.8	0.5	0.4	1.5	0.9	1.7	1.9	2.2	2.0	2.7	3.5	2.6	1.3	3.5
18-Apr	1.5	0.5	0.6	1.6	1.7	1.2	0.7	0.7	0.8	1.5	0.9	1.3	1.2	2.3	1.3	0.3	1.3	1.6	-0.5	0.7	0.7	0.8	0.7	0.1	1.0	2.3
19-Apr	0.8	0.7	-0.1	-0.1	0.0	0.1	0.1	0.4	0.1	-0.1	-0.5	-0.2	0.3	-0.1	-0.6	0.5	1.0	0.9	0.9	1.6	1.8	1.5	2.1	1.0	0.5	2.1
20-Apr	0.0	0.3	0.3	0.6	0.6	0.7	0.4	0.2	-0.3	0.1	-0.3	-0.6	0.4	0.3	-0.5	0.5	0.1	0.3	0.4	1.0	1.6	0.5	0.6	0.7	0.3	1.6
21-Apr	0.8	0.6	1.1	0.8	0.5	0.1	0.1	0.1	0.1	-0.3	0.2	-0.9	-1.2	-0.1	-0.3	-0.5	-0.1	-0.4	0.3	0.9	0.8	0.1	-0.2	0.6	0.1	1.1
22-Apr	0.0	0.1	0.2	0.2	0.0	0.2	0.0	0.1	0.0	0.7	-0.3	0.2	0.3	0.7	0.6	1.9	2.0	1.7	1.8	0.5	0.0	-0.3	0.2	0.2	0.5	2.0
23-Apr	0.3	1.1	1.0	1.2	1.5	-0.3	0.2	-0.2	0.4	0.8	0.9	1.1	1.9	1.3	0.7	1.5	0.9	1.4	0.7	1.1	1.3	1.3	1.2	1.7	1.0	1.9
24-Apr	1.2	1.0	0.4	0.6	0.3	0.2	0.5	0.0	0.0	0.8	0.0	0.1	0.8	1.6	0.7	0.7	1.2	1.5	1.1	1.1	1.2	1.3	1.8	1.8	0.8	1.8
25-Apr	1.0	0.5	0.4	0.4	-0.1	0.4	-0.3	-0.4	0.2	-0.1	0.0	-0.2	0.3	0.3	-0.2	-0.5	0.3	0.6	1.1	0.9	1.3	1.0	0.8	0.1	0.3	1.3
26-Apr	0.2	0.2	0.2	0.3	1.0	1.9	2.2	1.7	2.5	2.0	1.5	0.9	0.4	0.6	0.6	1.0	1.2	1.2	1.3	1.6	1.2	1.0	2.7	1.9	1.2	2.7
27-Apr	1.4	1.5	1.6	1.8	0.9	0.7	0.2	0.4	1.0	1.1	1.4	1.9	2.4	2.8	3.8	3.8	3.3	3.5	2.5	2.0	2.4	2.3	1.8	2.6	2.0	3.8
28-Apr	1.0	1.0	0.5	0.5	0.6	0.5	0.4	0.5	-0.2	0.0	0.2	-0.4	-0.4	-0.1	-0.3	-0.1	0.1	0.1	0.8	2.3	1.7	1.7	1.8	3.3	0.6	3.3
29-Apr	3.0	0.5	1.0	1.2	1.4	0.2	0.2	0.3	0.2	0.1	-0.2	-0.4	-0.6	-0.7	-0.4	-0.2	-0.6	0.3	0.3	0.0	0.1	0.0	0.1	0.0	0.3	3.0
30-Apr	0.0	0.4	0.1	0.3	0.8	0.0	0.5	-0.1	0.7	0.3	0.4	0.1	-0.1	0.7	0.2	0.7	0.8	0.6	0.8	1.0	1.2	0.7	0.8	0.3	0.5	1.2
	0.7	0.5	0.5	0.6	0.6	0.5	0.4	0.4	0.4	0.4	0.3	0.1	0.2	0.3	0.2	0.4	0.3	0.7	0.8	0.9	0.9	0.8	0.8	0.8	Diurnal Average	
	3.3	2.3	2.4	2.4	1.9	2.2	2.2	1.7	2.9	3.9	2.2	1.9	2.4	2.8	3.8	3.8	3.3	3.5	2.5	2.3	2.9	3.5	3.5	3.3	Diurnal Maximum	

Vertical Wind Speed 167 m (VW167m) - km/h
Lower Camp Met Tower - April 2014

Number of Exceedences (AAAQO): 1-hr: 0 24-hr: 0
Maximum Value: 5.5 km/h on Apr 9 09:00

Minimum Value: 0.2 km/h on Apr 12 02:00

Percentiles: P_1 = 0.2 P_{10} = 0.7 Q_1 = 1.2 Median = 1.9 Q_3 = 2.5 P_{90} = 3.2 P_{99} = 4.3

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
	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-Apr	1.7	0.8	1.2	1.1	1.0	1.2	0.6	1.1	1.8	1.9	2.4	2.2	2.9	2.7	2.2	2.3	2.0	2.4	1.9	1.5	2.5	2.2	2.2	2.4	2.9
2-Apr	1.6	1.4	1.8	2.4	2.5	2.2	2.0	1.5	1.4	2.0	2.3	2.8	2.9	2.8	3.4	3.1	2.4	2.7	2.8	2.4	2.1	1.7	2.2	2.0	3.4
3-Apr	0.9	0.4	0.7	0.9	0.9	0.8	1.0	0.7	1.0	1.6	1.8	2.4	1.8	2.0	2.4	2.7	3.0	2.3	2.2	2.3	2.6	2.2	2.5	2.3	3.0
4-Apr	2.7	2.6	2.1	2.3	2.4	2.0	1.9	2.5	2.7	2.7	2.3	1.8	1.5	1.4	2.3	3.3	4.0	3.4	3.8	3.9	2.6	2.6	2.9	1.1	4.0
5-Apr	0.7	1.5	1.2	1.9	1.4	0.8	0.8	0.7	1.2	1.4	1.4	1.6	1.9	1.1	2.3	1.5	1.0	1.7	1.5	1.4	1.3	0.7	0.8	0.3	2.3
6-Apr	0.6	1.1	1.1	1.8	1.0	0.8	0.5	0.6	1.0	1.0	1.2	0.8	1.1	1.0	1.4	1.1	0.8	0.8	1.7	1.6	1.3	0.5	0.2	0.3	1.8
7-Apr	0.4	0.7	0.7	1.0	0.6	0.6	0.4	0.3	0.7	0.8	0.4	1.2	1.4	1.2	1.6	2.0	1.2	1.2	1.2	0.7	1.7	1.3	1.3	0.8	2.0
8-Apr	1.3	1.3	1.1	0.9	2.0	1.8	1.6	1.7	1.4	1.6	1.9	1.1	2.6	3.0	2.8	2.2	3.1	3.1	2.4	1.8	1.6	1.5	1.5	1.0	3.1
9-Apr	1.5	1.9	2.3	1.1	1.4	1.4	1.9	2.1	5.5	4.8	3.4	1.5	3.6	3.9	4.3	5.2	4.7	3.1	3.1	3.2	1.7	1.9	1.3	2.4	5.5
10-Apr	1.6	1.1	1.2	1.4	1.6	2.3	3.0	2.4	3.2	2.8	2.8	2.6	3.1	3.3	3.0	2.9	2.8	2.5	2.6	2.4	2.0	2.1	2.0	1.5	3.3
11-Apr	1.1	1.4	1.1	1.6	2.0	1.9	1.8	2.2	2.3	3.0	2.6	3.1	3.1	3.3	3.7	4.1	3.9	3.4	3.0	3.1	2.6	1.2	0.9	0.4	4.1
12-Apr	0.2	0.2	0.4	0.4	0.4	0.4	0.5	0.9	1.5	1.6	2.3	2.5	2.1	3.4	3.3	3.2	2.7	2.6	2.1	2.4	2.5	2.3	2.5	2.0	3.4
13-Apr	2.0	0.9	0.8	0.5	0.4	0.2	0.7	1.3	2.7	2.8	3.5	3.4	3.1	2.5	2.6	2.0	1.7	1.5	1.3	1.7	1.7	2.5	2.5	2.7	3.5
14-Apr	2.4	2.5	1.6	1.6	1.4	1.4	1.6	1.7	1.7	2.5	2.5	2.5	2.4	2.4	2.7	1.9	1.3	1.7	1.2	1.6	2.5	2.4	1.6	1.4	2.7
15-Apr	1.2	2.0	1.2	1.0	1.6	1.5	1.5	2.0	1.5	1.7	2.1	2.5	3.6	4.1	3.8	4.1	4.3	4.1	3.5	3.2	2.7	3.0	2.4	2.0	4.3
16-Apr	2.2	2.4	2.3	1.4	0.9	0.9	1.0	2.6	2.7	2.9	2.1	1.9	3.5	3.8	3.6	3.1	2.7	2.4	2.5	2.3	2.9	2.4	2.2	1.7	3.8
17-Apr	1.5	1.5	1.7	1.4	1.5	1.3	1.4	2.3	2.2	2.9	4.0	3.2	3.9	3.7	3.4	3.6	2.9	2.4	2.1	1.3	1.8	2.1	1.7	1.9	4.0
18-Apr	1.9	1.7	1.5	2.1	1.9	2.1	2.3	2.4	2.5	2.4	2.7	2.7	2.8	2.8	2.0	1.9	1.9	2.3	1.7	1.6	1.9	1.8	1.6	1.9	2.8
19-Apr	1.7	1.3	1.0	0.7	0.5	0.8	0.5	0.7	0.9	1.1	1.5	2.1	2.0	2.0	2.2	2.7	2.2	2.8	2.1	1.7	1.6	1.5	1.4	1.7	2.8
20-Apr	0.9	0.7	0.5	0.3	0.2	0.3	0.4	0.3	1.3	1.4	1.5	2.7	3.6	3.9	3.0	3.3	2.5	2.0	0.8	0.4	0.7	0.9	1.1	0.9	3.9
21-Apr	1.7	1.6	2.4	1.4	0.8	0.9	0.5	0.5	1.1	0.9	2.1	2.0	1.9	1.8	1.8	2.1	3.0	2.4	2.2	2.3	2.3	2.0	1.2	0.8	3.0
22-Apr	0.6	0.4	0.4	0.5	0.5	0.5	0.3	0.4	0.8	2.4	2.5	2.3	3.0	4.3	4.0	3.8	3.8	3.3	2.8	2.6	1.9	2.4	1.9	2.3	4.3
23-Apr	1.5	2.0	2.5	2.2	2.4	2.4	2.5	3.3	3.6	3.8	3.5	3.4	4.0	4.3	4.0	4.4	4.2	4.0	3.8	4.1	3.4	3.3	3.4	3.4	4.4
24-Apr	3.3	2.9	2.9	3.5	2.8	2.7	3.1	2.6	2.0	2.5	1.3	1.8	2.3	2.5	2.9	2.3	2.9	2.8	2.0	2.7	2.3	2.1	2.2	2.4	3.5
25-Apr	2.3	1.9	1.3	1.5	1.9	1.6	1.7	1.7	1.6	1.2	2.7	1.8	1.9	2.3	2.2	1.9	1.8	1.7	1.5	2.0	1.3	1.6	1.5	1.3	2.7
26-Apr	1.0	0.8	1.4	1.5	1.2	1.2	1.6	1.9	2.1	2.5	3.0	3.2	2.8	2.8	2.0	1.5	1.5	1.5	1.2	1.0	1.8	1.6	2.2	2.4	3.2
27-Apr	1.6	1.4	1.5	1.6	2.0	1.8	1.8	2.0	2.3	2.0	2.1	2.3	2.3	2.6	2.6	2.9	2.7	2.9	2.2	2.5	2.2	2.0	1.8	1.6	2.9
28-Apr	1.9	1.6	1.6	1.0	0.7	0.9	0.9	1.0	0.9	1.2	1.2	1.0	0.8	0.7	1.0	1.0	0.9	1.1	0.9	1.0	1.5	1.9	1.7	1.2	1.9
29-Apr	1.7	1.2	0.9	1.4	1.2	1.1	1.0	0.7	0.8	0.9	1.4	1.8	1.4	1.7	2.7	2.5	2.6	1.8	1.2	0.7	0.2	0.2	0.2	0.3	2.7
30-Apr	0.3	0.4	0.5	0.5	0.6	0.8	0.7	0.8	0.8	1.0	1.3	1.8	2.0	1.8	1.6	2.4	1.9	1.6	2.7	1.0	1.1	0.8	0.7	1.2	2.7
	3.3	2.9	2.9	3.5	2.8	2.7	3.1	3.3	5.5	4.8	4.0	3.4	4.0	4.3	4.3	5.2	4.7	4.1	3.8	4.1	3.4	3.3	3.4	3.4	
	Diurnal Maximum																								

WOOD BUFFALO ENVIRONMENTAL ASSOCIATION

CONTINUOUS AMBIENT AIR QUALITY
MONITORING PROGRAM
MONTHLY REPORT

AMS 4
BUFFALO VIEWPOINT
APRIL 2014

Operations and Data Collection by:
Wood Buffalo Environmental Association
Fort McMurray, Alberta

QA/QC, Data Validation and Reporting by:
Aurora Atmospherics Inc.
Calgary, Alberta

May 30, 2014

WOOD BUFFALO ENVIRONMENTAL ASSOCIATION - BUFFALO VIEWPOINT (AMS 4)
APRIL 2014

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	100.00	67	0	12	0
H2S (ppb) Average	686	34	34	100.00	2	0	1	0
THC (ppm) Average	686	34	34	100.00	4.8	-	2.9	-
Temperature (C) Average	720	0	0	100.00	21.6	-	13.5	-
Wind Speed 10 m (km/h) Average	720	0	0	100.00	38	-	-	-
Wind Direction 10 m (deg) Average	720	0	0	100.00	-	-	-	-

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

WOOD BUFFALO ENVIRONMENTAL ASSOCIATION - BUFFALO VIEWPOINT (AMS 4)
APRIL 2014

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	1.3	5	-	0	0	0	0	0	2	67
H2S (ppb) Average	686	0.3	0	-	0	0	0	0	0	0	2
THC (ppm) Average	686	2.3	0.2	-	2.1	2.2	2.2	2.2	2.3	2.5	4.8
Temperature 2 m (C) Average	720	1.34	7.5	-	-19.1	-8.3	-3.5	1.4	6	11	21.6
Wind Speed 10 m (km/h) Average	720	12.7	6	-	1	5	8	12	16	22	38
Wind Direction 10 m (deg) Average	720	-	-	-	-	-	-	-	-	-	-

WOOD BUFFALO ENVIRONMENTAL ASSOCIATION - BUFFALO VIEWPOINT (AMS 4)
APRIL 2014

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

Buffalo Viewpoint - April 2014

Number of Exceedences (AAAQO): 1-hr: 0 24-hr: 0
Maximum Value: 67 ppb on Apr 23 09:00 Maximum Daily Average: 11.9 ppb on Apr 23

Minimum Value: 0 ppb on Apr 1 20:00 Minimum Daily Average: 0.0 ppb on Apr 2
Maximum Diurnal Average: 3.1 ppb at hour 17 Minimum Diurnal Average: 0.2 ppb at hour 1
Monthly Average: 1.3 ppb Percentiles: $P_1 = 0$ $P_{10} = 0$ $Q_1 = 0$ Median = 0 $Q_3 = 0$ $P_{90} = 2$ $P_{99} = 26$

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-Apr	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
2-Apr	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
3-Apr	0	Z	0	0	0	0	0	0	0	0	7	17	8	2	0	0	0	0	0	0	0	0	0	0	1.5	17
4-Apr	0	Z	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0.2	0
5-Apr	0	Z	0	0	0	0	0	0	1	1	5	14	12	19	16	17	21	6	2	0	0	0	0	0	5.1	21
6-Apr	0	Z	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0.2	0
7-Apr	0	Z	0	0	0	0	0	0	0	1	1	1	4	6	2	1	0	0	0	0	0	0	0	0	0.7	6
8-Apr	0	Z	0	0	0	0	0	0	0	C	C	C	C	0	0	0	0	0	0	0	0	0	0	0	0.2	0
9-Apr	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
10-Apr	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
11-Apr	0	Z	0	0	8	1	1	13	12	2	1	0	0	0	0	0	0	0	0	0	0	0	0	0	1.6	13
12-Apr	0	Z	0	0	0	0	0	0	0	0	0	0	0	1	7	1	2	1	0	0	0	0	0	0	0.5	7
13-Apr	0	Z	0	0	0	0	0	0	2	0	0	0	2	8	5	5	5	6	3	2	1	2	1	1	1.9	8
14-Apr	0	Z	1	1	0	0	0	0	0	0	0	0	1	1	0	0	0	0	0	0	0	0	0	0	0.4	1
15-Apr	0	Z	0	0	0	0	7	4	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0.6	7
16-Apr	0	Z	0	0	0	0	0	1	0	0	1	10	3	0	0	0	0	0	0	0	0	0	0	0	0.7	10
17-Apr	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
18-Apr	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
19-Apr	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
20-Apr	0	Z	0	0	0	0	0	0	0	2	5	2	1	0	0	0	0	0	0	0	0	0	0	0	0.5	5
21-Apr	0	Z	0	0	0	0	0	0	0	0	1	0	0	0	1	0	0	0	0	0	0	0	0	0	0.3	1
22-Apr	0	Z	0	0	0	0	0	0	1	6	1	0	2	0	2	2	0	0	7	26	2	24	2	2	3.5	26
23-Apr	1	Z	1	3	7	3	6	30	67	11	1	1	1	0	10	27	38	43	21	2	1	1	0	0	11.9	67
24-Apr	0	Z	4	1	0	16	4	1	1	0	0	1	0	0	0	0	0	0	0	0	0	0	0	0	1.3	16
25-Apr	0	Z	0	0	0	0	0	0	0	0	10	36	11	35	2	1	1	0	0	0	0	0	0	0	4.3	36
26-Apr	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
27-Apr	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
28-Apr	0	Z	0	0	0	0	0	0	0	0	0	1	4	4	6	5	22	20	2	1	0	0	0	0	2.9	22
29-Apr	0	Z	0	0	0	0	0	0	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0.3	1
30-Apr	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
	0.2	--	0.3	0.3	0.6	0.8	0.7	1.7	2.9	0.9	1.2	2.9	1.7	2.6	1.7	2.0	3.1	2.6	1.3	1.1	0.3	1.0	0.3	0.2	Diurnal Average	
	1	--	4	3	8	16	7	30	67	11	10	36	12	35	16	27	38	43	21	26	2	24	2	2	Diurnal Maximum	

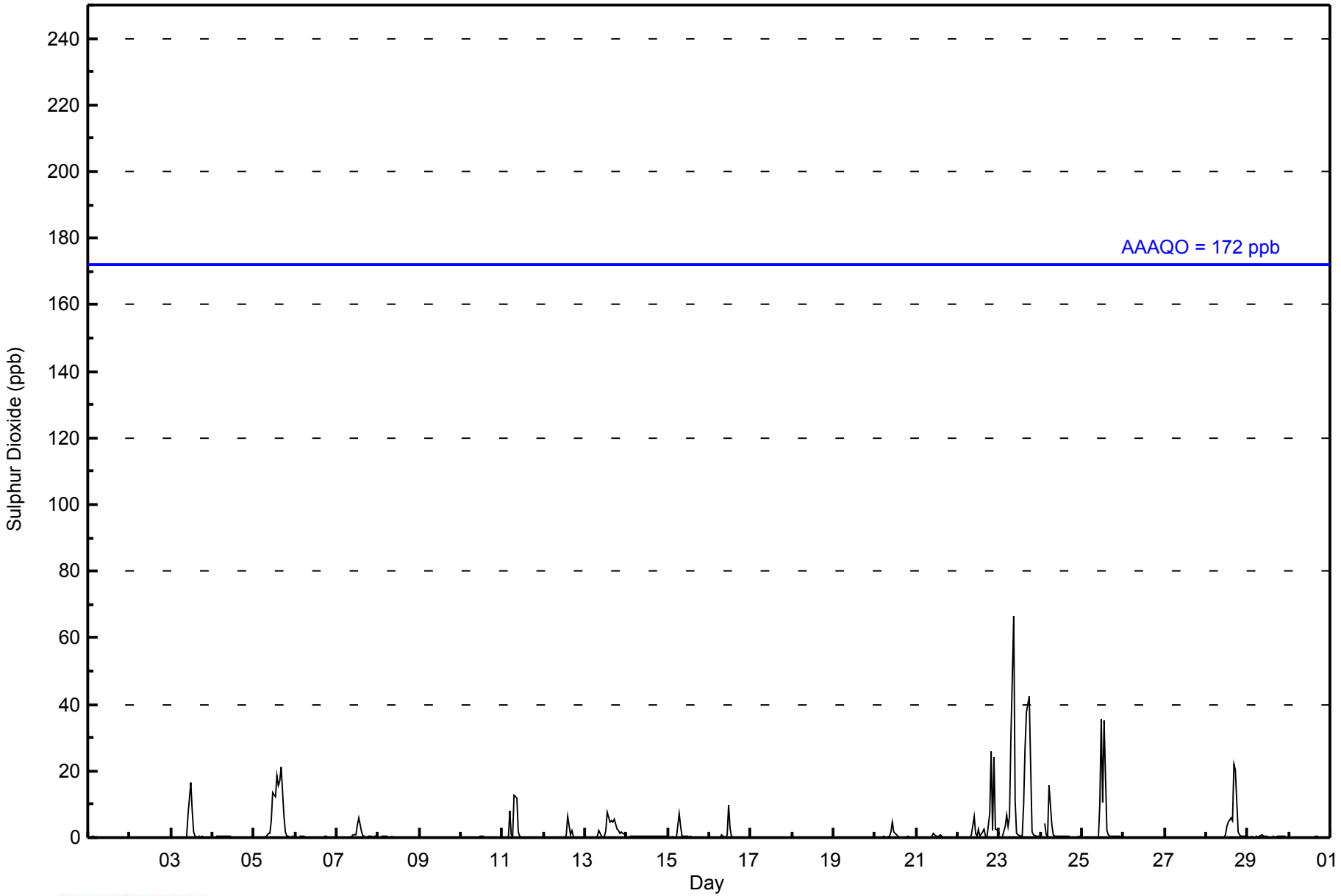
Z - zerospan C - Calibration
Alberta Ambient Air Quality Objectives (AAAQO): 1-hr 172 ppb 24-hr 48 ppb

WBEA NETWORK

Hourly Averages

Sulphur Dioxide (SO_2) - ppb

Buffalo Viewpoint - April 2014



AURORA ATMOSPHERICS INC.

Concentration Ranges (ppb)	Number of Hours	%	Cumulative %
0 - 10	662	96.50	96.50
11 - 20	12	1.75	98.25
21 - 60	11	1.60	99.85
61 - 110	1	0.15	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

WBEA NETWORK

Frequency Distribution

Sulphur Dioxide (SO_2) - ppb

Buffalo Viewpoint - April 2014

Concentration Ranges (ppb)	Wind Direction																
	N	NNE	NE	ENE	E	ESE	SE	SSE	S	SSW	SW	WSW	W	WNW	NW	NNW	**Totals**
0 - 10	121	33	9	18	40	112	115	28	22	13	20	21	12	26	19	53	662
11 - 20	3	2	1	3	1	1	0	0	0	0	0	0	0	0	0	1	12
21 - 60	0	1	1	8	0	1	0	0	0	0	0	0	0	0	0	0	11
61 - 110	0	0	0	1	0	0	0	0	0	0	0	0	0	0	0	0	1
111 - 172	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
> 172	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Totals	124	36	11	30	41	114	115	28	22	13	20	21	12	26	19	54	686

Total Number of Valid Hours: 686

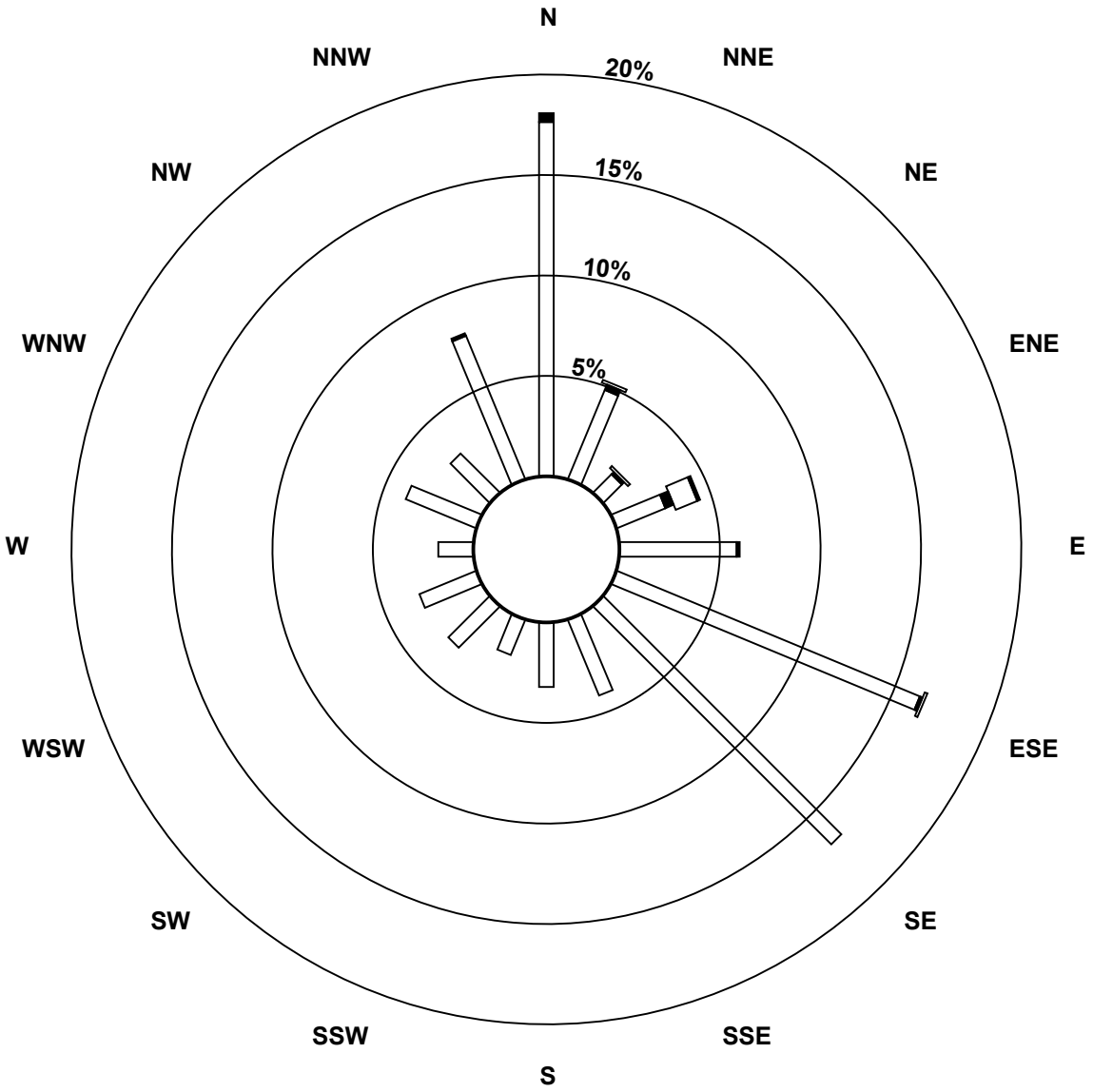
Total Number of Hours: 720

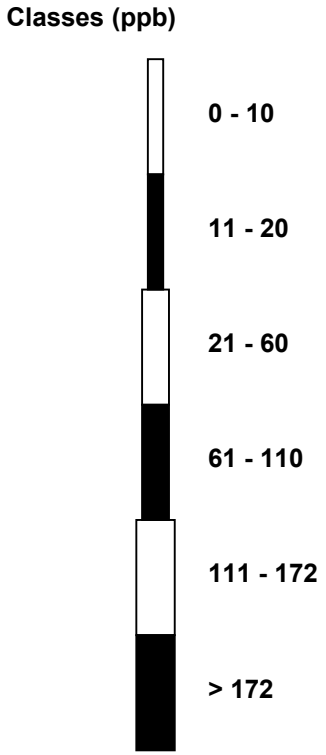
Wood Buffalo Environmental Association

Wind Rose Apr 2014

Sulphur Dioxide (SO_2) - ppb

Buffalo Viewpoint (AMS 4)





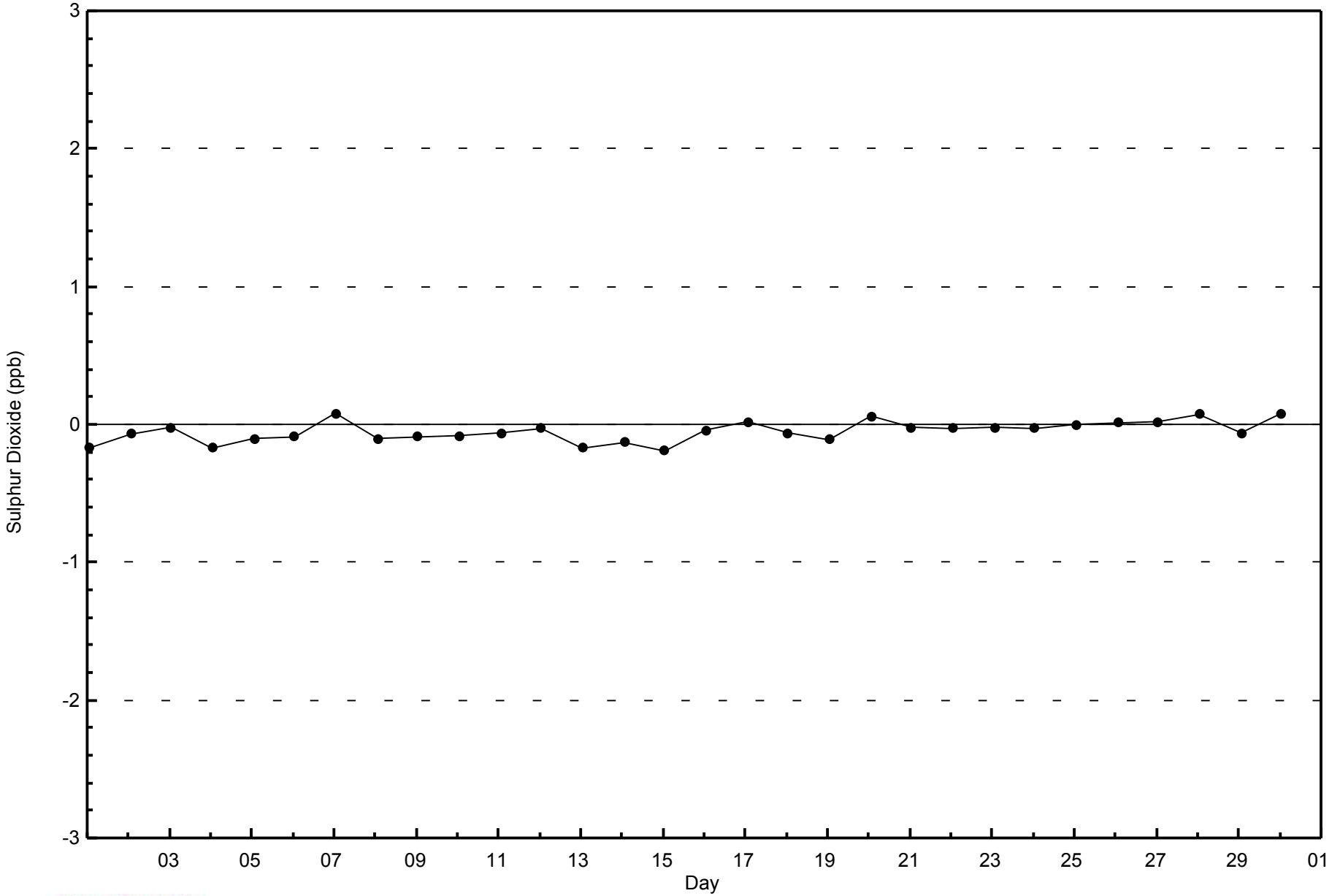
Total Number of Valid Hours: 686

WBEA NETWORK

Zero Responses

Sulphur Dioxide (SO_2) - ppb

Buffalo Viewpoint - April 2014



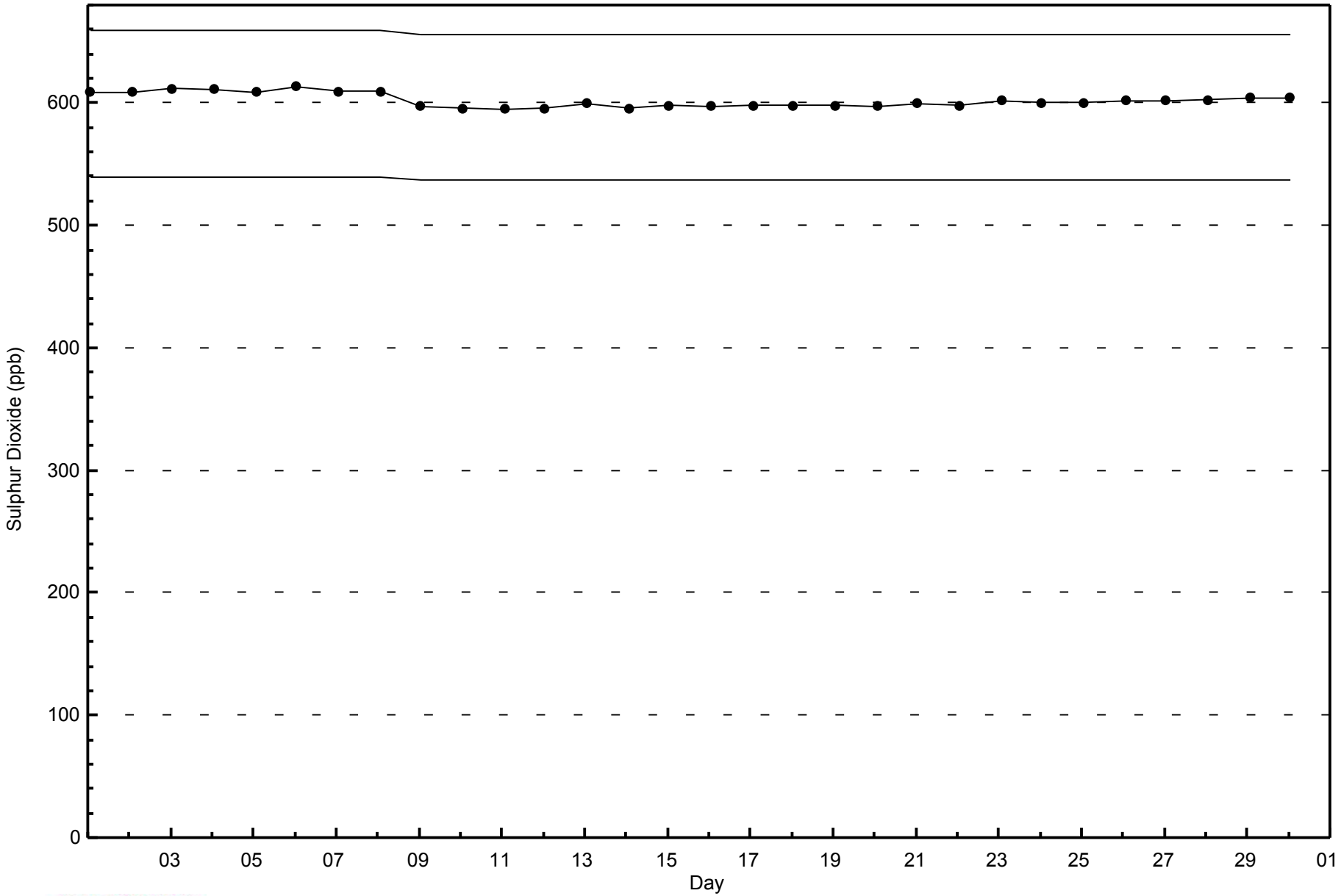
AURORA
ATMOSPHERICS INC.

WBEA NETWORK

Span Responses

Sulphur Dioxide (SO_2) - ppb

Buffalo Viewpoint - April 2014



AURORA ATMOSPHERICS INC.

Number of Exceedences (AAAQO): 1-hr: 0 24-hr: 0
Maximum Value: 2 ppb on Apr 12 01:00 Maximum Daily Average: 0.8 ppb on Apr 20

Minimum Value: 0 ppb on Apr 13 11:00 Minimum Daily Average: 0.1 ppb on Apr 14
Maximum Diurnal Average: 0.3 ppb at hour 5 Minimum Diurnal Average: 0.2 ppb at hour 16
Monthly Average: 0.3 ppb Percentiles: $P_1 = 0$ $P_{10} = 0$ $Q_1 = 0$ Median = 0 $Q_3 = 0$ $P_{90} = 0$ $P_{99} = 2$

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-Apr	0	0	Z	0	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0.2	1
2-Apr	0	0	Z	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0.2	0
3-Apr	0	0	Z	0	0	0	0	0	0	0	1	1	1	0	0	0	0	0	0	0	0	0	0	0	0.3	1
4-Apr	0	0	Z	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1	0	0.2	1
5-Apr	0	0	Z	0	0	0	0	0	1	1	1	1	1	1	1	1	1	0	0	0	0	0	0	0	0.5	1
6-Apr	0	0	Z	2	2	1	1	1	1	0	0	0	0	0	0	0	0	1	1	1	0	0	1	1	0.6	2
7-Apr	1	0	Z	0	0	0	0	0	0	0	0	1	1	1	0	0	0	0	0	0	0	0	0	0	0.4	1
8-Apr	0	0	Z	0	0	0	0	0	0	0	0	0	C	C	C	C	0	0	0	0	0	0	0	0	0.3	0
9-Apr	0	0	Z	0	0	0	0	0	0	0	0	0	1	1	0	0	0	0	0	0	0	0	0	0	0.3	1
10-Apr	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	0
11-Apr	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	0
12-Apr	2	1	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
13-Apr	0	0	Z	0	0	1	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0.2	1
14-Apr	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	0
15-Apr	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	0
16-Apr	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	0
17-Apr	0	0	Z	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0.2	0
18-Apr	0	0	Z	1	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0.3	1
19-Apr	0	0	Z	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0.2	0
20-Apr	0	1	Z	2	2	2	1	1	1	1	2	1	0	0	0	0	0	0	0	1	1	0	0	0	0.8	2
21-Apr	0	0	Z	0	0	0	0	0	0	0	1	1	0	0	0	0	0	0	0	0	0	0	0	0	0.3	1
22-Apr	0	0	Z	0	0	0	0	0	0	1	1	0	0	0	0	0	0	0	0	0	0	1	0	0	0.4	1
23-Apr	0	0	Z	0	0	0	0	1	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0.3	1
24-Apr	0	0	Z	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1	1	1	0	0.3	1
25-Apr	0	0	Z	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0.2	0
26-Apr	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	0
27-Apr	0	0	Z	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0.2	0
28-Apr	0	0	Z	0	0	0	0	0	0	0	0	0	0	0	0	0	1	0	0	0	0	0	0	0	0.3	1
29-Apr	0	0	Z	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1	1	0.3	1
30-Apr	0	0	Z	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0.2	0
	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	0.2	0.2	0.2	0.2	0.2	0.2	0.2	0.3	0.3	0.2	Diurnal Average	
	2	1	--	2	2	2	1	1	1	1	2	1	1	1	1	1	1	1	1	1	1	1	1	1	Diurnal Maximum	

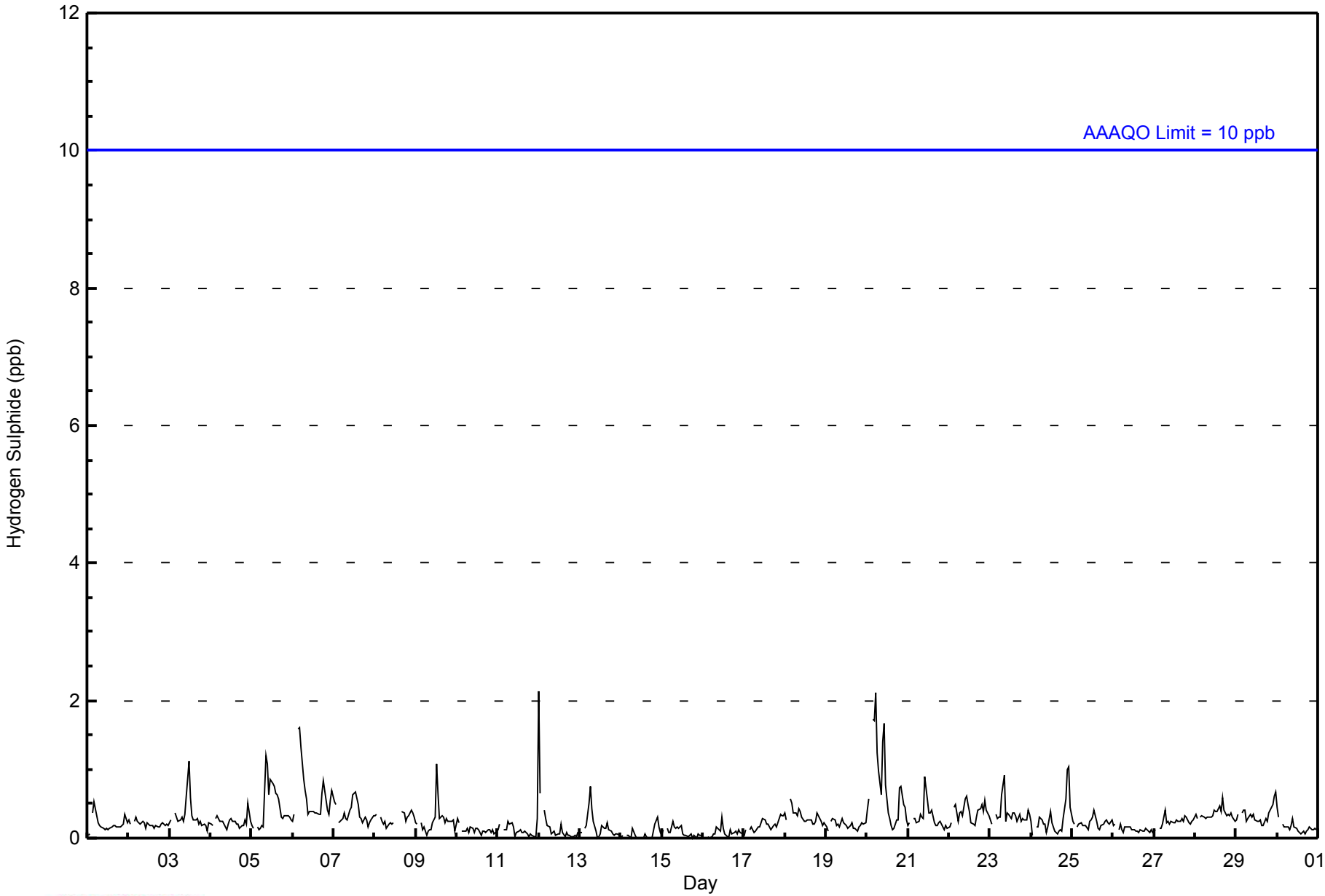
Z - zerospan C - Calibration
Alberta Ambient Air Quality Objectives (AAAQO): 1-hr 10 ppb 24-hr 3 ppb

WBEA NETWORK

Hourly Averages

Hydrogen Sulphide (H_2S) - ppb

Buffalo Viewpoint - April 2014



AURORA ATMOSPHERICS INC.

Concentration Ranges (ppb)	Number of Hours	%	Cumulative %
0 - 2	686	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: 686

Total Number of Hours: 720

WBEA NETWORK

Frequency Distribution

Hydrogen Sulphide (H_2S) - ppb

Buffalo Viewpoint - April 2014

Concentration	Wind Direction																
Ranges (ppb)	N	NNE	NE	ENE	E	ESE	SE	SSE	S	SSW	SW	WSW	W	WNW	NW	NNW	**Totals**
0 - 2	124	38	9	30	40	115	115	29	23	13	20	18	14	26	19	53	686
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	124	38	9	30	40	115	115	29	23	13	20	18	14	26	19	53	686

Total Number of Valid Hours: 686

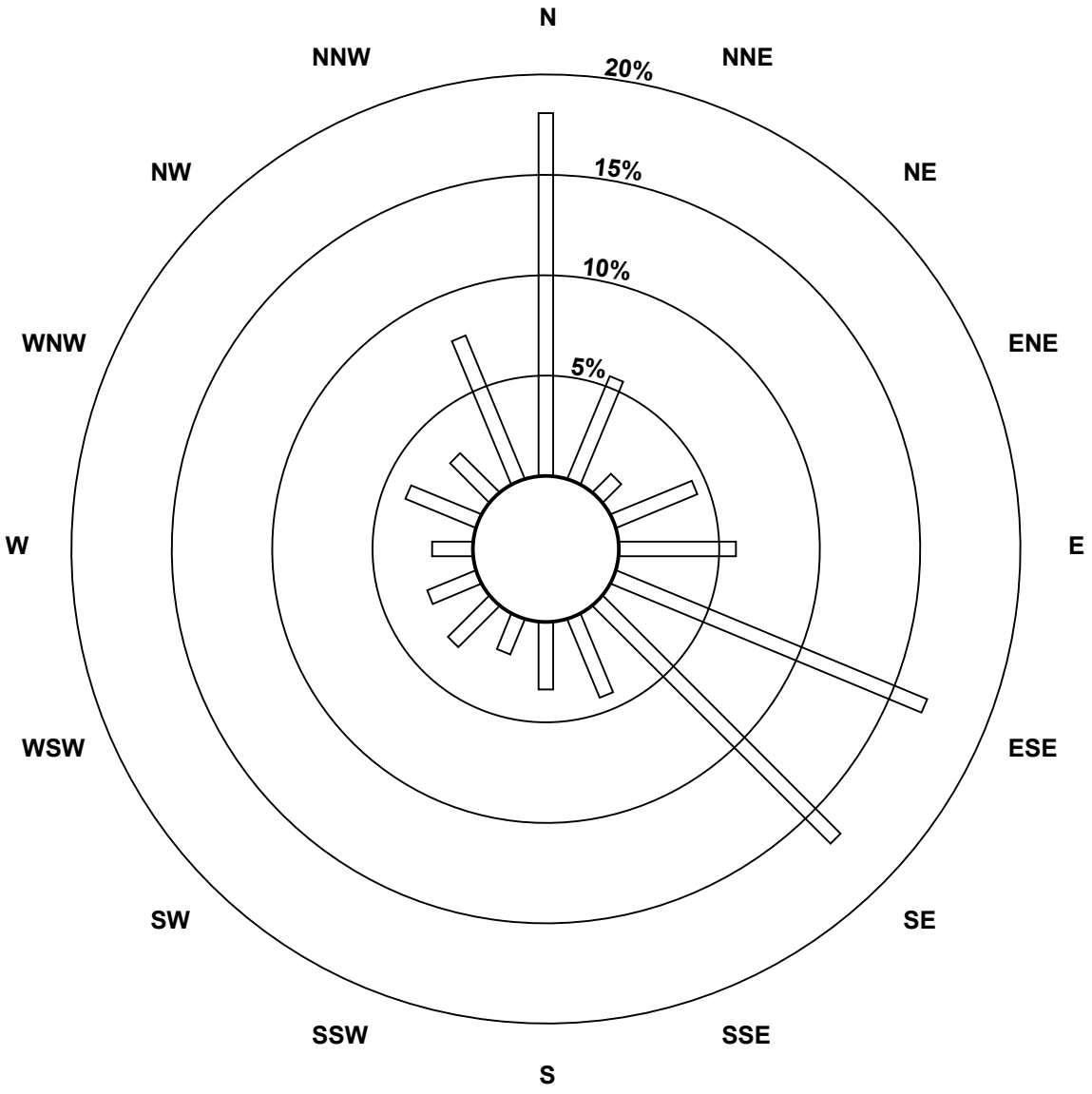
Total Number of Hours: 720

Wood Buffalo Environmental Association

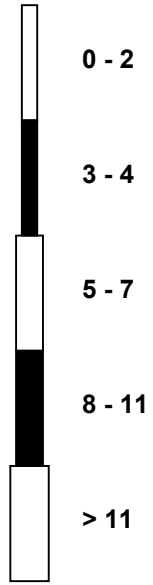
Wind Rose Apr 2014

Hydrogen Sulphide (H_2S) - ppb

Buffalo Viewpoint (AMS 4)



Classes (ppb)



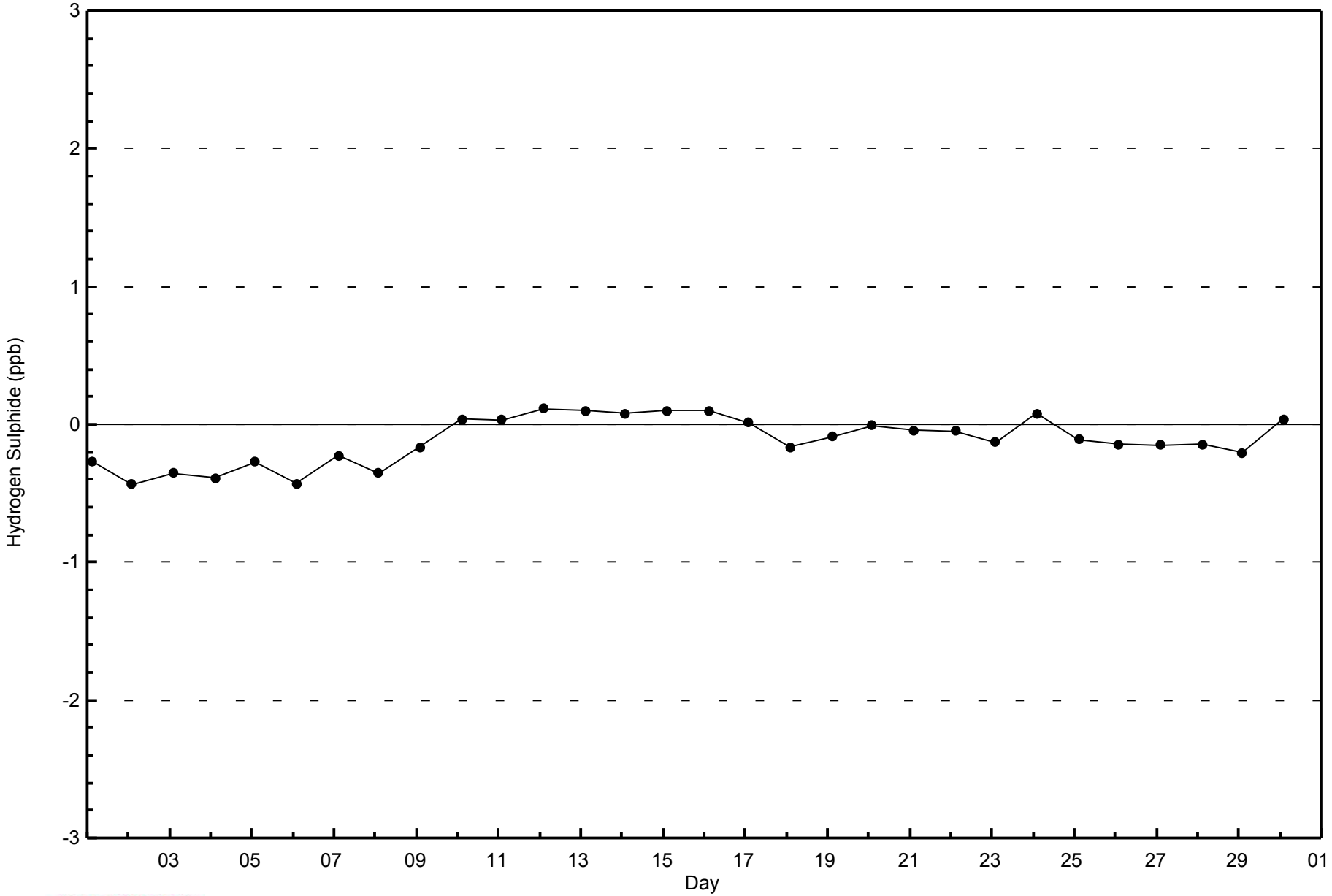
Total Number of Valid Hours: 686

WBEA NETWORK

Zero Responses

Hydrogen Sulphide (H_2S) - ppb

Buffalo Viewpoint - April 2014



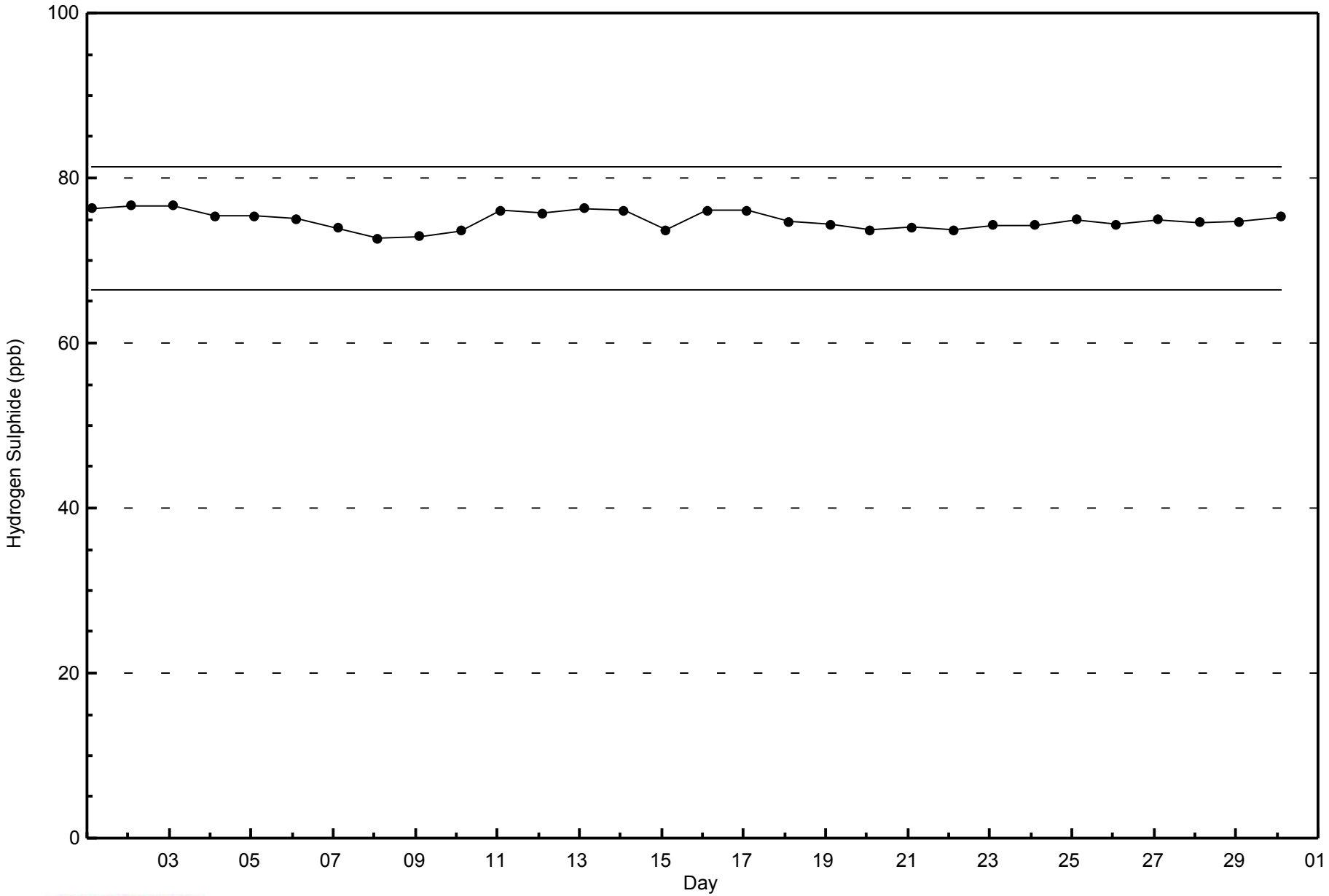
AURORA
ATMOSPHERICS INC.

WBEA NETWORK

Span Responses

Hydrogen Sulphide (H_2S) - ppb

Buffalo Viewpoint - April 2014



AURORA
ATMOSPHERICS INC.

Wood Buffalo Environmental Association

Summary of Hour Averages

Total Hydrocarbons (THC) - ppm

Buffalo Viewpoint - April 2014

Maximum Value: 4.8 ppm on Apr 20 06:00

Maximum Daily Average: 2.9 ppm on Apr 20

Minimum Value: 2.1 ppm on Apr 30 19:00

Minimum Daily Average: 2.2 ppm on Apr 2

Maximum Diurnal Average: 2.4 ppm at hour 6

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 = 2.2 Q_3 = 2.3 P_{90} = 2.5 P_{99} = 3.6

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-Apr	2.2	Z	2.2	2.5	2.5	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	2.2	2.2	2.2	2.2	2.2	2.2	2.5
2-Apr	2.2	Z	2.2	2.2	2.2	2.2	2.2	2.2	2.2	2.2	2.2	2.1	2.2	2.2	2.1	2.2	2.2	2.2	2.2	2.2	2.2	2.2	2.2	2.2	2.2	2.2
3-Apr	2.2	Z	2.3	2.3	2.3	2.2	2.2	2.2	2.2	2.3	2.3	2.3	2.4	2.4	2.3	2.3	2.2	2.2	2.3	2.2	2.2	2.2	2.2	2.2	2.3	2.4
4-Apr	2.2	Z	2.2	2.2	2.2	2.2	2.3	2.3	2.3	2.3	2.3	2.2	2.3	2.3	2.4	2.3	2.3	2.2	2.2	2.3	2.8	2.7	2.7	2.5	2.3	2.8
5-Apr	2.4	Z	2.3	2.3	2.2	2.2	2.2	2.3	2.7	2.6	2.5	2.7	2.6	2.4	2.5	2.4	2.3	2.3	2.2	2.2	2.3	2.3	2.3	2.2	2.4	2.7
6-Apr	2.2	Z	2.6	3.0	3.6	3.6	3.2	3.2	2.8	2.4	2.3	2.5	2.4	2.3	2.3	2.3	2.3	3.1	3.8	2.9	2.4	2.4	3.1	3.3	2.8	3.8
7-Apr	3.1	Z	2.8	2.4	2.4	2.4	2.5	2.4	2.3	2.4	2.6	2.9	2.7	2.6	2.5	2.3	2.3	2.2	2.2	2.2	2.2	2.2	2.2	2.2	2.4	3.1
8-Apr	2.2	Z	2.2	2.2	2.2	2.3	2.3	2.3	2.3	C	C	C	C	2.2	2.1	2.2	2.2	2.1	2.1	2.1	2.1	2.1	2.2	2.1	2.2	2.3
9-Apr	2.1	Z	2.2	2.2	2.1	2.1	2.1	2.1	2.1	2.1	2.3	2.4	2.3	2.4	2.4	2.3	2.4	2.4	2.2	2.2	2.2	2.3	2.2	2.2	2.2	2.4
10-Apr	2.4	Z	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	2.2	2.2	2.2	2.2	2.2	2.2	2.2	2.4
11-Apr	2.2	Z	2.2	2.2	2.2	2.3	2.2	2.2	2.2	2.1	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	2.3	2.2	2.3
12-Apr	2.5	Z	2.4	2.4	2.4	2.3	2.3	2.3	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	2.2	2.2	2.3	2.3	2.5
13-Apr	2.3	Z	2.3	2.3	2.3	2.3	2.4	2.3	2.3	2.2	2.2	2.3	2.3	2.3	2.3	2.3	2.3	2.2	2.3	2.2	2.2	2.2	2.2	2.2	2.3	2.4
14-Apr	2.2	Z	2.2	2.2	2.2	2.2	2.2	2.2	2.2	2.1	2.2	2.2	2.2	2.2	2.2	2.2	2.2	2.2	2.2	2.3	2.3	2.5	2.4	2.3	2.2	2.5
15-Apr	2.3	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	2.2	2.3	2.2	2.3
16-Apr	2.2	Z	2.2	2.2	2.2	2.2	2.2	2.2	2.2	2.3	2.3	2.3	2.3	2.2	2.2	2.2	2.2	2.2	2.2	2.2	2.2	2.2	2.2	2.2	2.2	2.3
17-Apr	2.2	Z	2.2	2.2	2.2	2.2	2.2	2.2	2.3	2.3	2.2	2.2	2.2	2.2	2.2	2.2	2.2	2.2	2.2	2.2	2.2	2.4	2.3	2.3	2.2	2.4
18-Apr	2.3	Z	2.3	2.8	2.5	2.3	2.3	2.3	2.3	2.2	2.2	2.2	2.2	2.2	2.2	2.2	2.2	2.2	2.2	2.2	2.2	2.2	2.3	2.3	2.3	2.8
19-Apr	2.3	Z	2.2	2.2	2.3	2.3	2.2	2.2	2.2	2.2	2.2	2.2	2.2	2.2	2.3	2.3	2.2	2.2	2.2	2.2	2.2	2.2	2.2	2.2	2.2	2.3
20-Apr	2.6	Z	2.4	2.7	4.5	4.8	3.8	3.1	2.7	3.3	3.6	2.9	2.6	2.5	2.3	2.3	2.3	2.3	2.4	3.2	2.9	2.5	2.4	2.3	2.9	4.8
21-Apr	2.3	Z	2.3	2.3	2.3	2.2	2.4	2.4	2.5	2.3	2.9	2.7	2.5	2.5	2.6	2.2	2.2	2.2	2.2	2.2	2.2	2.3	2.2	2.3	2.4	2.9
22-Apr	2.3	Z	2.4	2.4	2.4	2.4	2.4	2.4	2.4	2.4	2.6	2.5	2.4	2.3	2.3	2.3	2.4	2.5	2.4	2.3	2.3	2.3	2.5	2.4	2.4	2.6
23-Apr	2.2	Z	2.3	2.3	2.3	2.3	2.2	2.2	2.2	2.3	2.4	2.4	2.4	2.4	2.4	2.3	2.2	2.3	2.3	2.4	2.4	2.5	2.5	2.5	2.3	2.5
24-Apr	2.4	Z	2.3	2.3	2.3	2.2	2.2	2.3	2.2	2.2	2.2	2.5	2.3	2.1	2.1	2.1	2.1	2.1	2.1	2.4	2.7	3.5	3.2	2.3	2.4	3.5
25-Apr	2.2	Z	2.2	2.2	2.2	2.2	2.2	2.2	2.2	2.1	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	2.3
26-Apr	2.2	Z	2.2	2.2	2.2	2.2	2.2	2.2	2.2	2.2	2.2	2.2	2.2	2.2	2.2	2.2	2.2	2.2	2.2	2.2	2.2	2.2	2.2	2.2	2.2	2.2
27-Apr	2.2	Z	2.2	2.2	2.2	2.2	2.6	2.3	2.2	2.2	2.1	2.1	2.2	2.1	2.1	2.2	2.2	2.2	2.2	2.2	2.2	2.2	2.2	2.2	2.2	2.6
28-Apr	2.2	Z	2.2	2.2	2.2	2.2	2.3	2.3	2.2	2.2	2.2	2.3	2.2	2.3	2.3	2.2	2.3	2.3	2.3	2.3	2.2	2.2	2.2	2.2	2.2	2.3
29-Apr	2.2	Z	2.2	2.2	2.2	2.2	2.2	2.2	2.3	2.2	2.2	2.2	2.2	2.2	2.2	2.2	2.2	2.3	2.3	2.4	2.4	2.5	2.7	2.9	2.3	2.9
30-Apr	2.6	Z	2.3	2.4	2.4	2.4	2.3	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	2.2	2.2	2.2	2.6
	2.3	--	2.3	2.3	2.4	2.4	2.4	2.3	2.3	2.3	2.3	2.3	2.3	2.3	2.3	2.2	2.2	2.2	2.3	2.3	2.3	2.3	2.3	2.3	Diurnal Average	
	3.1	--	2.8	3.0	4.5	4.8	3.8	3.2	2.8	3.3	3.6	2.9	2.7	2.6	2.6	2.4	2.4	3.1	3.8	3.2	2.9	3.5	3.2	3.3	Diurnal Maximum	

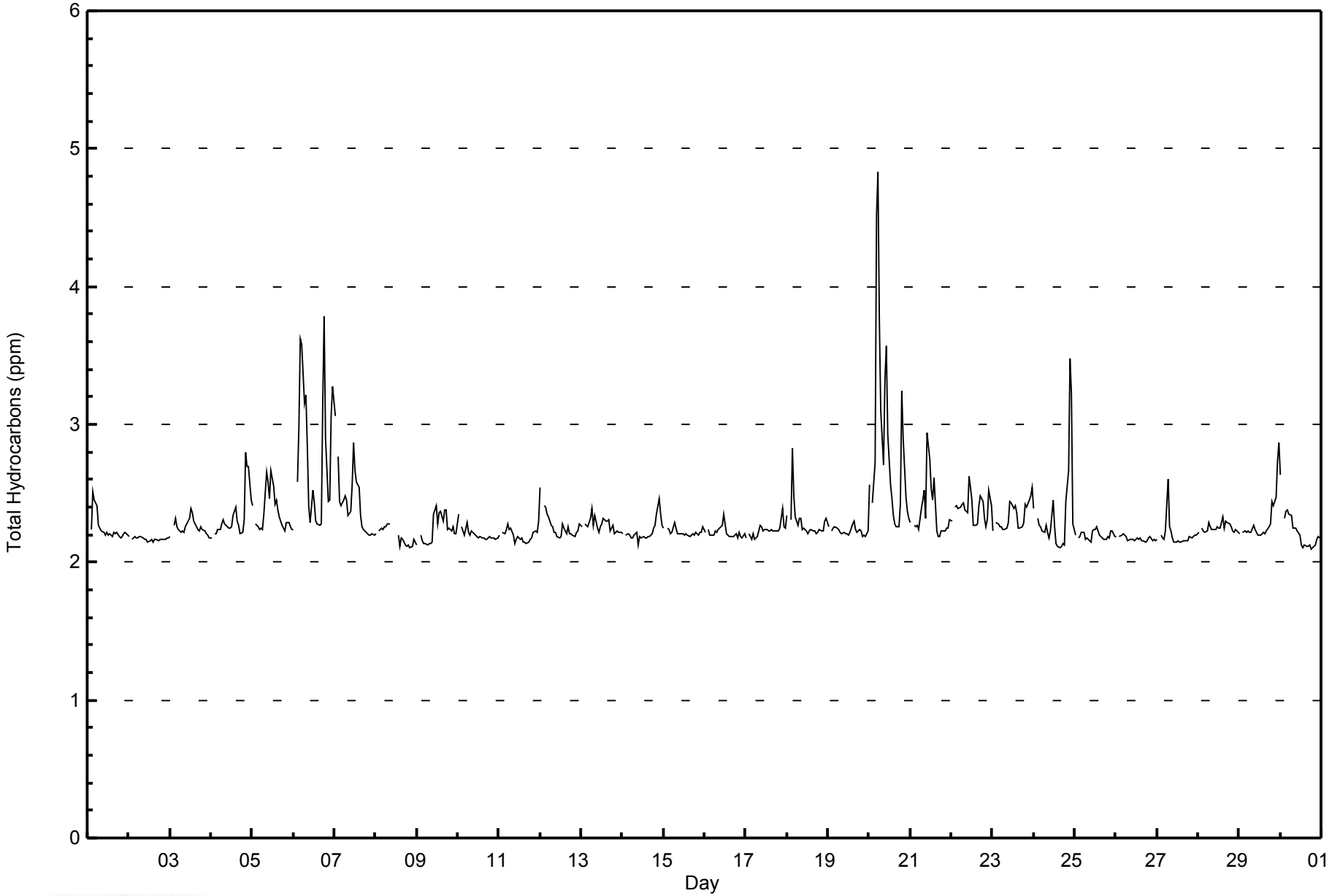
Z - zerospan C - Calibration

WBEA NETWORK

Hourly Averages

Total Hydrocarbons (THC) - ppm

Buffalo Viewpoint - April 2014



AURORA
ATMOSPHERICS INC.

Concentration Ranges (ppm)	Number of Hours	%	Cumulative %
0 - 2.0	0	0.00	0.00
2.1 - 3.0	668	97.38	97.38
3.1 - 10.0	18	2.62	100.00
> 10.0	0	0.00	100.00

Total Number of Valid Hours: 686

Total Number of Hours: 720

WBEA NETWORK

Frequency Distribution

Total Hydrocarbons (THC) - ppm

Buffalo Viewpoint - April 2014

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	124	35	11	30	38	113	114	28	19	12	19	21	11	24	18	51	668
3.1 - 10.0	0	1	0	0	3	1	1	0	3	1	1	0	1	2	1	3	18
> 10.0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Totals	124	36	11	30	41	114	115	28	22	13	20	21	12	26	19	54	686

Total Number of Valid Hours: 686

Total Number of Hours: 720

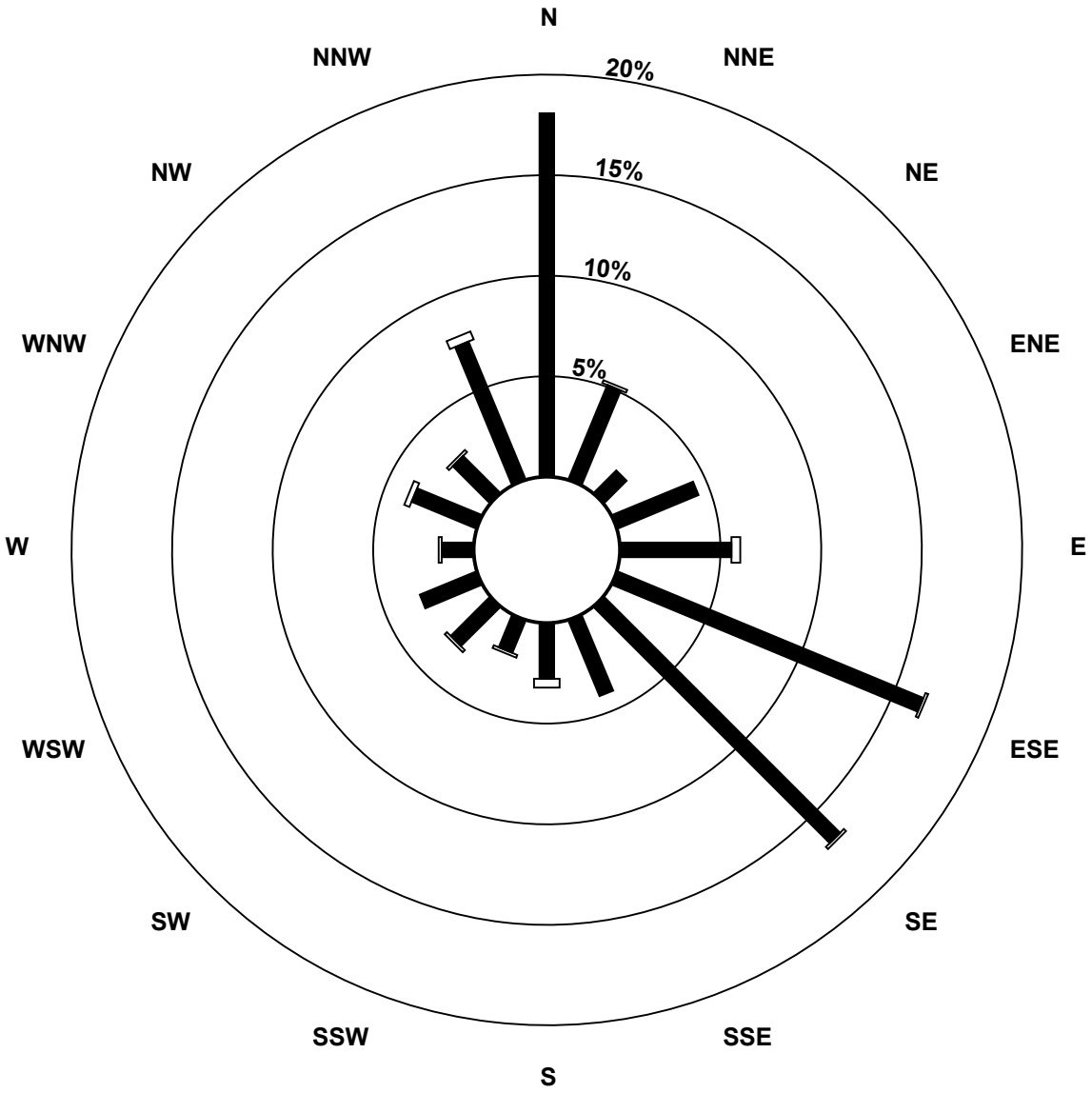
AURORA ATMOSPHERICS INC.

Wood Buffalo Environmental Association

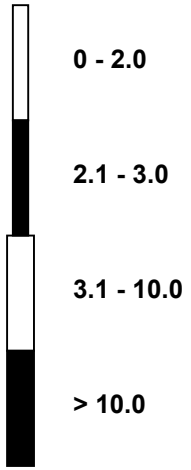
Wind Rose Apr 2014

Total Hydrocarbons (THC) - ppm

Buffalo Viewpoint (AMS 4)



Classes (ppm)



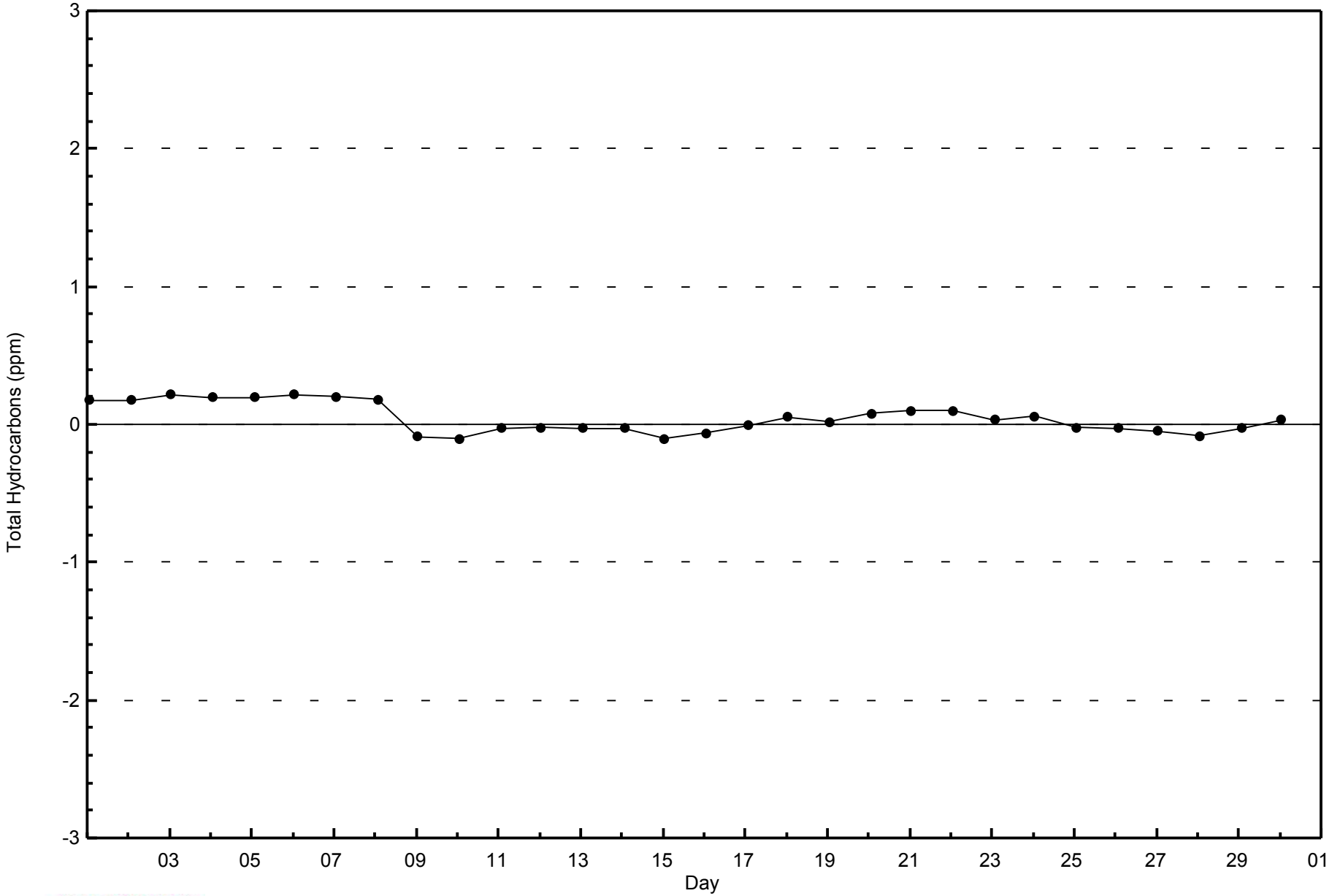
Total Number of Valid Hours: 686

WBEA NETWORK

Zero Responses

Total Hydrocarbons (THC) - ppm

Buffalo Viewpoint - April 2014



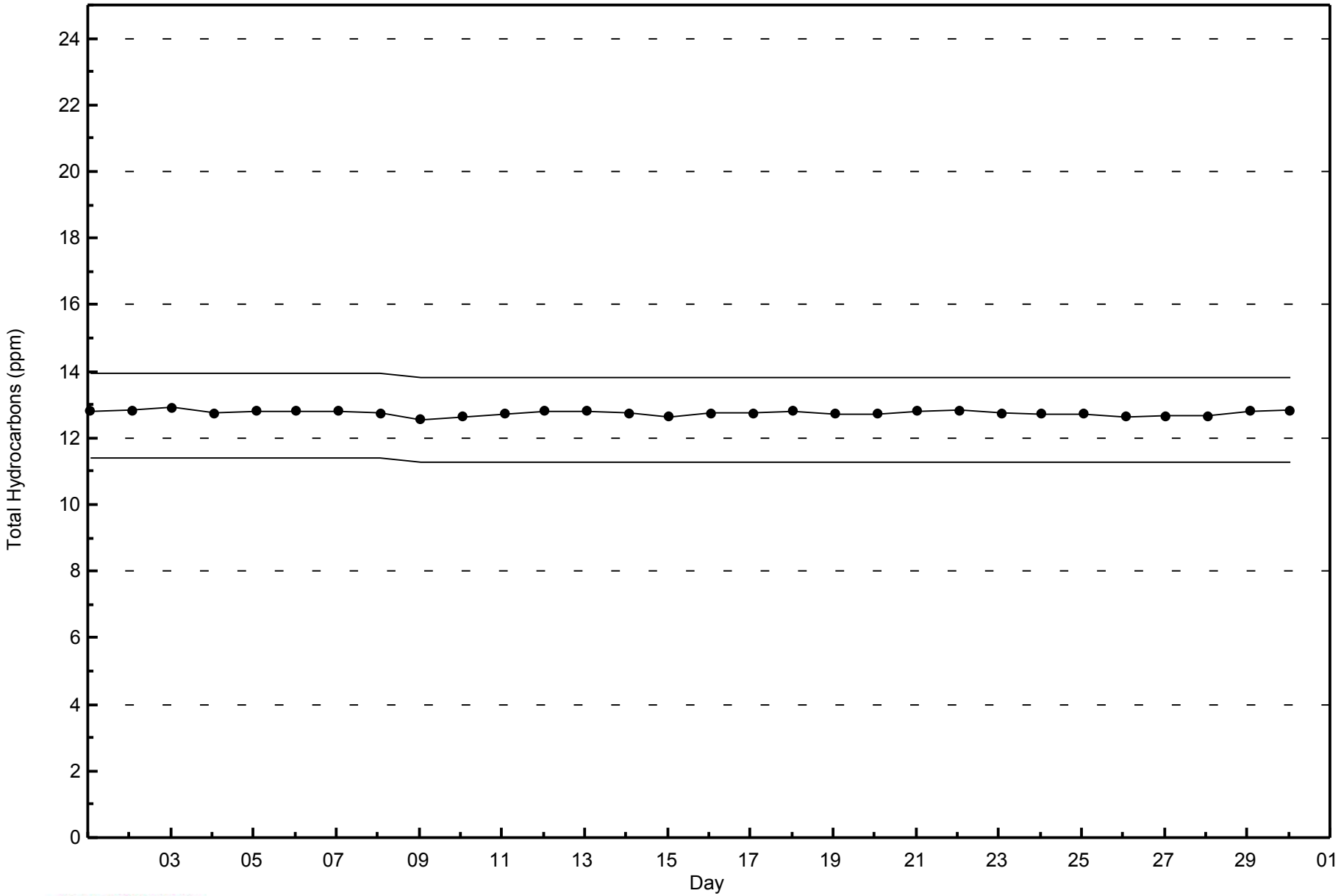
AURORA
ATMOSPHERICS INC.

WBEA NETWORK

Span Responses

Total Hydrocarbons (THC) - ppm

Buffalo Viewpoint - April 2014



AURORA ATMOSPHERICS INC.

Maximum Value: 21.6 C on Apr 30 16:00

Maximum Daily Average: 13.5 C on Apr 30

Minimum Value: -19.1 C on Apr 3 07:00

Minimum Daily Average: -12.3 C on Apr 2

Maximum Diurnal Average: 6.5 C at hour 16

Minimum Diurnal Average: -3.6 C at hour 6

Monthly Average: 1.34 C

Percentiles: P_1 = -16.5 P_{10} = -8.3 Q_1 = -3.5 Median = 1.4 Q_3 = 6.0 P_{90} = 11.0 P_{99} = 20.3

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

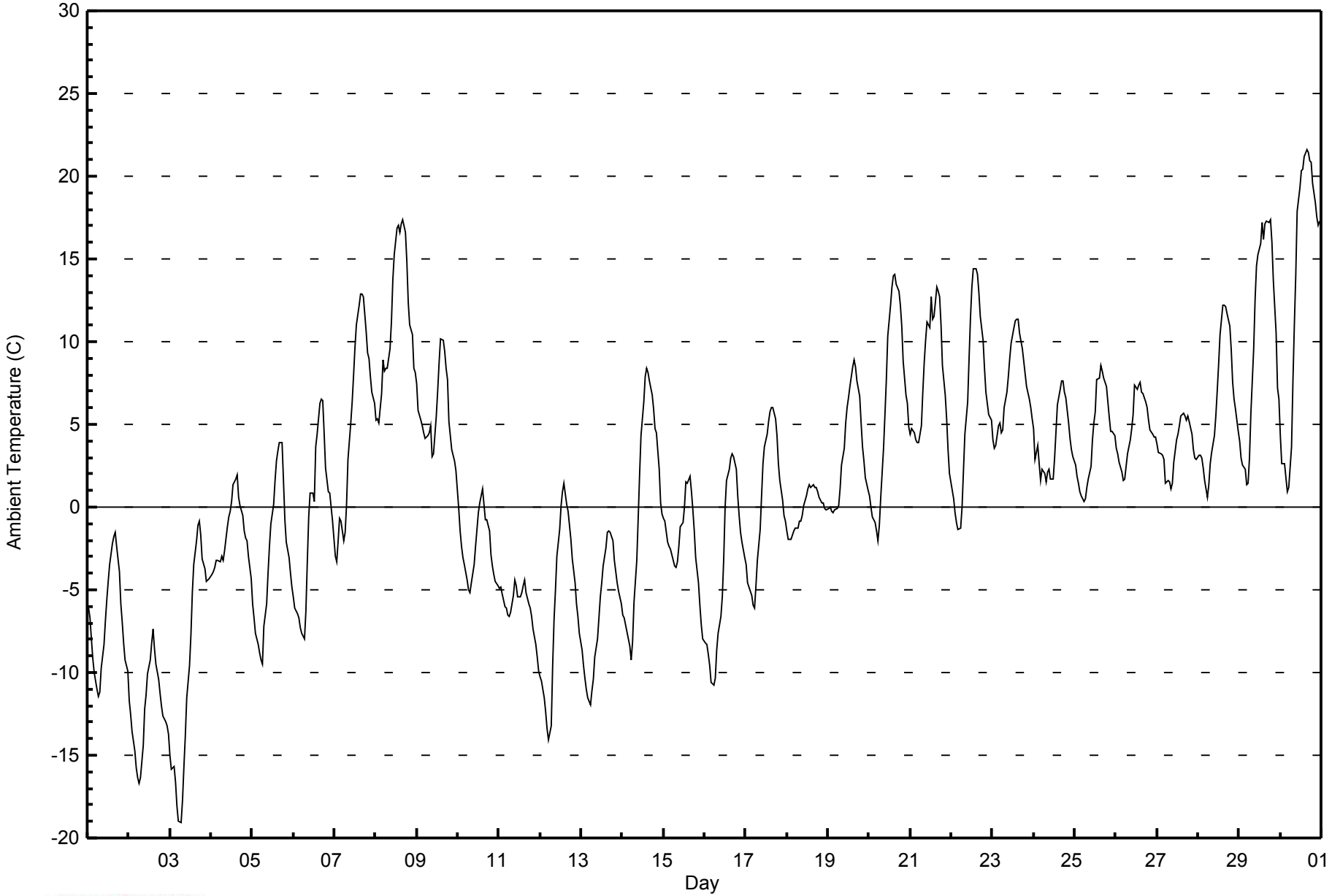
Day	Hourly Period Ending At (MST)																								Daily	Daily
	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24	Average	Maximum
1-Apr	-6.1	-6.7	-8.0	-9.1	-10.0	-11.0	-11.4	-11.2	-9.8	-8.3	-6.9	-5.6	-4.5	-3.5	-2.2	-1.8	-1.6	-2.4	-3.9	-5.8	-7.0	-8.2	-9.2	-9.9	-6.8	-1.6
2-Apr	-11.7	-12.6	-13.6	-14.7	-15.7	-16.4	-16.7	-16.4	-14.4	-12.2	-11.4	-10.1	-9.2	-8.2	-7.4	-8.5	-9.5	-10.4	-11.3	-12.1	-12.7	-12.9	-13.2	-13.7	-12.3	-7.4
3-Apr	-15.0	-15.9	-15.7	-16.6	-18.0	-19.0	-19.1	-17.7	-15.7	-13.8	-11.5	-9.5	-7.7	-5.1	-3.5	-2.0	-1.1	-0.8	-1.7	-3.2	-3.8	-4.5	-4.4	-4.3	-9.6	-0.8
4-Apr	-4.1	-3.9	-3.6	-3.2	-3.2	-3.3	-3.0	-3.2	-2.6	-1.2	-0.6	-0.3	0.3	1.3	1.7	2.0	0.6	0.1	-0.5	-1.4	-1.9	-2.0	-3.0	-4.3	-1.6	2.0
5-Apr	-5.9	-6.7	-7.6	-8.3	-8.8	-9.2	-9.5	-7.2	-5.8	-4.0	-2.4	-1.0	0.2	1.6	2.8	3.4	3.9	3.9	1.6	-0.8	-2.2	-3.1	-4.0	-4.8	-3.1	3.9
6-Apr	-5.4	-6.1	-6.5	-6.7	-7.3	-7.7	-8.0	-6.2	-3.3	-0.6	0.8	0.8	0.3	3.7	4.4	6.2	6.5	6.5	4.5	2.3	0.9	0.9	0.0	-0.9	-0.9	6.5
7-Apr	-3.0	-3.3	-2.1	-0.6	-0.9	-2.1	-1.5	0.2	2.9	5.1	6.4	8.0	9.6	11.1	12.2	12.9	12.8	12.7	10.6	9.3	9.0	7.8	7.0	6.3	5.4	12.9
8-Apr	5.3	5.3	5.1	6.9	8.9	8.3	8.4	8.4	9.6	11.2	13.7	15.3	16.9	17.0	16.6	17.1	17.4	16.6	14.8	12.4	11.0	10.4	8.4	8.2	11.4	17.4
9-Apr	7.5	5.8	5.2	4.9	4.5	4.2	4.4	4.5	4.9	3.0	3.2	5.5	7.0	8.7	10.2	10.1	9.4	8.4	7.7	5.2	3.4	3.1	2.8	2.2	5.7	10.2
10-Apr	-0.1	-1.4	-2.3	-3.1	-3.5	-4.4	-5.0	-5.2	-4.6	-3.5	-2.3	-1.4	-0.4	0.3	1.1	0.2	-0.7	-0.7	-1.5	-2.9	-3.5	-4.1	-4.5	-4.8	-2.4	1.1
11-Apr	-4.9	-4.8	-5.3	-6.0	-6.1	-6.5	-6.6	-6.4	-5.4	-4.4	-4.8	-5.4	-5.4	-5.2	-4.7	-4.4	-5.2	-5.8	-6.1	-6.6	-7.4	-8.3	-9.1	-9.9	-6.0	-4.4
12-Apr	-10.2	-10.5	-11.5	-12.4	-13.4	-14.1	-13.2	-9.5	-6.8	-5.0	-3.0	-1.4	0.0	0.9	1.5	0.1	-0.3	-1.1	-2.0	-3.2	-4.6	-5.8	-6.6	-7.6	-5.8	1.5
13-Apr	-8.7	-9.6	-10.3	-11.0	-11.5	-11.9	-11.1	-10.4	-9.1	-7.9	-6.7	-5.4	-4.5	-3.6	-2.5	-1.5	-1.5	-1.6	-2.1	-3.2	-3.9	-4.5	-5.0	-5.8	-6.4	-1.5
14-Apr	-6.5	-6.7	-7.1	-8.0	-8.4	-9.3	-8.1	-5.8	-3.2	-0.7	2.0	4.3	6.4	7.8	8.3	8.2	7.7	6.8	6.0	4.7	4.5	2.3	0.3	-0.4	0.2	8.3
15-Apr	-0.6	-0.9	-2.1	-2.4	-2.5	-2.9	-3.6	-3.7	-3.3	-2.4	-1.2	-0.9	0.0	1.5	1.5	1.9	1.0	-0.2	-1.4	-3.0	-4.6	-5.9	-7.1	-8.0	-2.1	1.9
16-Apr	-8.2	-8.3	-8.9	-9.6	-10.6	-10.7	-10.3	-8.7	-7.7	-6.6	-5.5	-3.1	0.0	1.6	2.3	2.9	3.2	3.0	2.3	0.7	-0.5	-1.5	-2.1	-3.1	-3.7	3.2
17-Apr	-3.5	-4.5	-4.8	-5.3	-5.9	-6.1	-4.7	-3.2	-1.3	0.7	2.6	3.7	4.4	5.2	5.7	6.0	6.0	5.4	4.3	2.7	1.6	0.5	-0.5	-0.8	0.3	6.0
18-Apr	-1.4	-1.9	-2.0	-1.7	-1.5	-1.3	-1.3	-0.9	-0.8	-0.5	0.1	0.6	1.1	1.3	1.2	1.4	1.2	1.2	1.0	0.6	0.3	0.3	-0.1	-0.2	-0.1	1.4
19-Apr	-0.1	0.0	-0.2	-0.4	-0.2	-0.1	0.1	1.1	2.6	3.6	5.1	6.0	6.6	7.3	8.4	8.9	8.4	7.7	6.7	5.1	3.6	2.8	1.8	1.0	3.6	8.9
20-Apr	0.7	0.0	-0.6	-0.9	-1.4	-2.0	-1.1	0.6	3.5	5.6	7.7	10.4	12.2	13.3	14.0	14.0	13.5	13.0	12.2	10.9	8.8	6.8	6.3	4.8	6.3	14.0
21-Apr	4.4	4.8	4.5	4.1	3.9	3.9	4.9	6.9	8.8	10.1	11.2	10.8	12.7	11.4	11.5	13.3	13.1	12.8	11.0	8.6	6.8	5.3	3.5	2.1	7.9	13.3
22-Apr	1.0	0.5	-0.4	-0.9	-1.4	-1.3	0.0	2.2	4.4	6.3	9.0	11.5	13.3	14.4	14.4	14.0	13.0	11.5	10.0	8.4	6.9	6.3	5.6	5.2	6.4	14.4
23-Apr	4.1	3.5	3.8	4.9	5.1	4.5	4.7	6.0	7.0	7.8	8.9	9.9	10.9	11.3	11.4	11.3	10.5	9.5	8.8	8.1	7.3	6.5	6.0	5.3	7.4	11.4
24-Apr	4.8	2.9	3.7	2.6	1.6	2.3	2.0	1.6	2.1	2.3	1.7	1.7	2.9	4.5	6.2	7.1	7.6	7.6	6.9	6.6	5.1	4.1	3.5	3.1	3.9	7.6
25-Apr	2.5	1.9	1.4	0.9	0.7	0.3	0.5	1.2	1.7	2.4	4.0	5.0	5.7	7.7	7.8	8.5	8.2	7.8	7.2	6.4	5.4	4.6	4.5	4.3	4.2	8.5
26-Apr	3.6	3.3	2.7	2.1	1.6	1.7	2.4	3.2	4.1	4.7	5.6	7.4	7.1	7.3	7.6	7.0	6.9	6.4	6.0	5.3	4.7	4.4	4.3	4.2	4.7	7.6
27-Apr	3.8	3.3	3.2	3.1	2.9	1.5	1.6	1.5	1.1	1.4	2.7	4.1	4.4	4.9	5.5	5.7	5.5	5.2	5.5	5.2	4.4	3.5	2.9	2.9	3.6	5.7
28-Apr	3.1	3.1	2.9	2.3	1.6	0.6	1.4	2.6	3.3	4.4	5.5	7.0	8.7	10.5	12.2	12.2	12.1	11.7	10.9	9.5	7.6	6.5	5.9	4.6	6.3	12.2
29-Apr	4.0	3.0	2.6	2.3	1.4	1.4	3.0	5.7	9.6	12.5	14.6	15.2	16.0	17.2	16.2	17.2	17.3	17.2	17.3	16.0	13.7	10.5	7.2	6.5	10.3	17.3
30-Apr	4.3	2.6	2.7	1.8	0.9	1.2	3.6	7.7	11.0	14.0	17.8	19.3	20.4	20.4	21.2	21.6	21.4	21.0	20.9	19.6	18.4	17.6	17.0	17.3	13.5	21.6
	-1.5	-2.1	-2.5	-2.8	-3.2	-3.6	-3.2	-2.1	-0.6	0.8	2.2	3.4	4.5	5.6	6.2	6.5	6.2	5.8	4.9	3.5	2.4	1.4	0.6	0.0	Diurnal Average	
	7.5	5.8	5.2	6.9	8.9	8.3	8.4	8.4	11.0	14.0	17.8	19.3	20.4	20.4	21.2	21.6	21.4	21.0	20.9	19.6	18.4	17.6	17.0	17.3	Diurnal Maximum	

WBEA NETWORK

Hourly Averages

Ambient Temperature (AT) - C

Buffalo Viewpoint - April 2014



AURORA ATMOSPHERICS INC.

Concentration Ranges (C)	Number of Hours	%	Cumulative %
-50 - -20	0	0.00	0.00
-20 - 0	301	41.81	41.81
0 - 10	331	45.97	87.78
10 - 20	81	11.25	99.03
> 20	7	0.97	100.00

Total Number of Valid Hours: 720

Total Number of Hours: 720

Wood Buffalo Environmental Association

Summary of Hour Averages

Wind Speed (WS) - km/h

Buffalo Viewpoint - April 2014

Maximum Speed: 38 km/h on Apr 9 10:00

Maximum Daily Speed Average: 20.7 km/h on Apr 2

Minimum Speed Value: 1 km/h on Apr 7 00:00

Minimum Daily Speed Average: 1.3 km/h on Apr 6

Maximum Diurnal Speed Average: 5.3 km/h at hour 20

Minimum Diurnal Speed Average: 2.2 km/h at hour 9

Monthly Average Velocity: 3.2 km/h 53.6 deg

Percentiles: $P_1 = 2$ $P_{10} = 5$ $Q_1 = 8$ Median = 12 $Q_3 = 16$ $P_{90} = 22$ $P_{99} = 33$

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-Apr	S12	S7	ESE3	NW10	WNW9	N12	N15	N13	NNW11	NNW14	NNW11	NNW10	NNW11	NNW10	NNW7	N8	NNE9	NNE11	N17	N18	NNE18	NNE11	N12	N15	N9.1	NNE18
2-Apr	N16	N18	N21	N22	N23	N21	N19	N16	NNW16	NNW18	NNW20	N23	NNW23	NNW23	NNW24	NNW28	NNW25	NNW25	N23	N22	NNW20	NNW20	N18	N16	N20.7	NNW28
3-Apr	NNW13	NNW11	NNW13	N15	N14	N14	N14	N13	NNW7	N7	NNW8	NNW9	NW6	E7	ESE11	ESE12	ESE10	ESE13	ESE14	ESE14	ESE18	SE16	SE17	SE16	NE5.5	ESE18
4-Apr	SE17	SE20	SE23	SE22	SE17	SE17	SE19	SE18	SE17	SE19	SE16	SE14	SSE8	W7	WNW15	W23	WNW30	WNW26	WNW24	WNW28	NW20	WNW19	NW20	WNW17	SSW3.6	WNW30
5-Apr	WNW12	SW7	SW8	S7	SW6	WSW5	W9	NW2	NW3	NNW4	N5	N8	NNE8	NNE6	N8	N10	NNE8	N7	N12	N15	N15	N12	N11	N9	NNW4.9	N15
6-Apr	N8	NNE7	N4	WNW3	WNW4	WNW3	SW3	ESE4	ESE4	ESE7	S5	NW4	SE2	NW3	S4	ESE5	ESE7	SE2	NNW9	N10	N8	NW4	W5	NNE1	N1.3	N10
7-Apr	S7	SE8	SSW4	W9	WSW4	SSE3	SE6	S4	WSW6	NNW5	N7	NNE9	ENE7	NNE8	NNW4	WSW10	SW10	S5	SW15	S9	S10	SSW10	S8	SSE9	SSW3.1	SW15
8-Apr	SE12	SE10	SE9	SSW8	SW17	SSW11	SSW14	SSW12	SSW14	SSW13	SW17	WSW18	WSW27	WSW30	WSW30	WSW29	SW28	SW31	WSW32	WSW32	SW26	SW24	WSW15	SW19	SW17.9	WSW32
9-Apr	WSW25	W14	WSW15	WSW22	WSW23	SW20	SW24	WSW23	WNW35	WNW38	WNW24	WNW22	NW26	WNW19	WNW28	WNW37	WNW32	WNW30	W26	NNW20	SW2	SSW11	SW16	WSW19	W20.0	WNW38
10-Apr	NNW11	N12	N12	N11	N13	N16	N16	NNE15	NNE13	N11	N13	N13	N17	N15	N15	N19	N18	N17	N17	N19	N20	NNE16	NNE13	NNE11	N14.5	N20
11-Apr	NE10	ENE10	NE9	NNE13	ENE11	ENE12	ENE12	ENE11	NE12	NNE15	N22	N27	N30	N31	N33	N33	N32	N33	N32	NNW29	NNW26	N18	NNW13	NW9	N18.0	N33
12-Apr	WNW8	W6	SW4	SW5	SSW6	S6	SSE7	S5	WSW9	W10	W8	WNW4	WNW6	NW8	NW18	NNW22	NNW20	NNW22	N18	N17	N23	N23	N23	NNW26	NNW8.5	NNW26
13-Apr	N19	N18	NNW15	N13	NNW11	NW11	NW11	NNW12	NNW10	N14	N14	N10	N9	NNE9	N9	NNE9	ESE11	ESE12	ESE11	SE9	SE12	SE13	SE14	SE15	NNE5.6	N19
14-Apr	SE15	SE15	SE11	SE11	SE12	SE10	SE9	SE8	SE14	SE15	SE15	SE16	SE15	SSE14	SE11	SSE9	ESE11	ESE11	ESE12	ESE11	E11	N15	N22	N20	ESE9.0	N22
15-Apr	N21	NNE14	NE11	N14	N15	NE11	ENE10	NNE12	N13	NNE11	NNE9	N12	N18	NNE17	N21	N25	N30	N31	N27	N33	N35	N33	N25	N20	N18.8	N35
16-Apr	N19	NNE16	NNE12	NNE13	N14	N14	N15	NNE10	E11	E12	ENE6	NNW9	E7	SE11	ESE15	ESE17	ESE17	ESE16	ESE17	ESE14	ESE14	ESE13	ESE12	ESE11	ENE8.6	N19
17-Apr	ESE11	ESE10	ESE10	SE9	SE10	SE11	ESE14	ESE14	ESE13	ESE15	SE17	ESE18	ESE19	ESE19	E19	ESE18	ESE20	ESE18	ESE16	ESE13	ESE11	ESE11	ESE11	ESE9	ESE13.9	ESE20
18-Apr	ESE11	ESE10	E10	E11	E12	E12	E14	ESE13	E13	ESE15	E13	ESE14	ESE15	ESE15	ESE14	ESE12	ESE12	SE11	SE10	ESE5	SE3	SE3	SE5	SE5	ESE10.4	ESE15
19-Apr	SSE5	SSE5	SE6	SE6	SE6	SSE5	SE5	SE6	SE4	SE6	ESE7	ESE11	ESE11	ESE9	E8	ESE11	ESE14	ESE15	ESE15	ESE14	ESE13	SE12	SE9	ESE4	ESE8.3	ESE15
20-Apr	N4	NNE6	NNE6	NNW4	NNW3	S1	S2	SSW4	WSW1	NNW5	NW5	NNW9	NNW9	N11	NNE9	NNE9	NNE8	NE6	E6	E6	SE6	SSE8	SE8	SE11	NNE2.6	N11
21-Apr	SE11	SE7	SE10	ESE13	SE9	ESE6	NNE2	SSE3	NW4	WNW8	NNW14	N17	N14	NW4	NNW12	N12	N8	N16	N17	N19	N19	N16	N14	N9	N6.8	N19
22-Apr	N8	N10	N10	NNE9	N9	N11	N7	NNW5	NNW7	NNW8	NNW11	NNW10	NNE3	E16	E17	E18	E18	E16	ENE16	ENE13	NE11	ENE13	ENE10	ENE10	NE7.9	E18
23-Apr	NNE9	NNE9	NNE9	ENE11	ENE15	NE12	NE10	NE13	ENE14	ENE15	E14	E17	E21	E21	ENE21	ENE22	ENE24	ENE22	ENE20	E19	ENE17	ENE15	E16	ENE15	ENE15.3	ENE24
24-Apr	E16	ESE9	ENE14	E12	ENE11	ENE15	ENE15	E13	E10	ESE5	WSW5	W8	WSW2	SE12	SE13	ESE15	ESE13	ESE12	ESE11	E15	E16	E15	E15	E14	E10.0	E16
25-Apr	ESE10	ESE8	ESE7	ESE5	ESE5	ESE7	ESE9	ESE10	E8	ESE8	NE8	ENE10	E10	ENE7	ESE8	SE9	SE9	SE9	SE9	SE7	ESE6	SE8	SE8	SE8	ESE7.4	ESE10
26-Apr	SE8	SE7	SE7	ESE7	ESE9	SE9	SE10	SE12	SE12	SE14	SE13	SE14	ESE14	ESE12	ESE13	ESE17	ESE17	ESE15	ESE13	ESE14	ESE12	ESE12	ESE12	SE12	ESE11.7	ESE17
27-Apr	ESE10	ESE10	ESE11	ESE13	ESE14	E9	E9	E7	ESE8	ESE9	SE15	SE20	SE19	SE17	SE16	SE14	SE14	SE14	SE14	SE14	SE14	SE11	SE11	SE11	SE12.4	SE20
28-Apr	SE10	SE9	SE8	SSE6	SSE6	SSE6	SSE6	SSE5	SSE6	SE7	SSE7	SSE5	S6	S4	NNW2	ESE6	ESE10	ESE8	ESE6	ESE9	SE13	SE12	SE11	SE12	SE6.9	SE13
29-Apr	SE12	SE7	SE6	SE11	SE12	SSE10	SE9	SSE7	S5	ESE7	W8	W12	W13	WSW12	WNW12	SW5	NW8	N8	N2	N4	SSE4	SSE7	ESE9	SE9	S2.7	W13
30-Apr	SE9	SSE9	SSE9	SE12	SE11	SE10	SSE9	SE10	ESE8	ESE9	SSE10	S15	SSE17	S15	SSE13	S15	SSE14	SSW10	SW15	SSW10	S9	S9	SSW12	SW15	S10.2	SSE17
	ENE2.8	ENE3.6	E3.7	ENE2.9	E2.5	ENE3.2	E3.1	E3.4	ENE2.2	NE2.8	NNE2.4	NNE3.4	NE3.2	NE2.8	NNE3.8	NNE3.8	NE4.2	NE4.4	NE3.6	NNE5.3	NE5.0	NE3.6	NE3.2	ENE2.6	Diurnal Average	
	WSW25	SE20	SE23	SE22	WSW23	N21	SW24	WSW23	WNW35	WNW38	WNW24	N27	N30	N31	N33	WNW37	N32	N33	WSW32	N33	N35	N33	N25	NNW26	Diurnal Maximum	

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

Number of Exceedences (AAAQO): 1-hr: 0 24-hr: 0
Maximum Value: 11 km/h on Apr 29 15:00

Minimum Value: 0 km/h on Apr 30 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

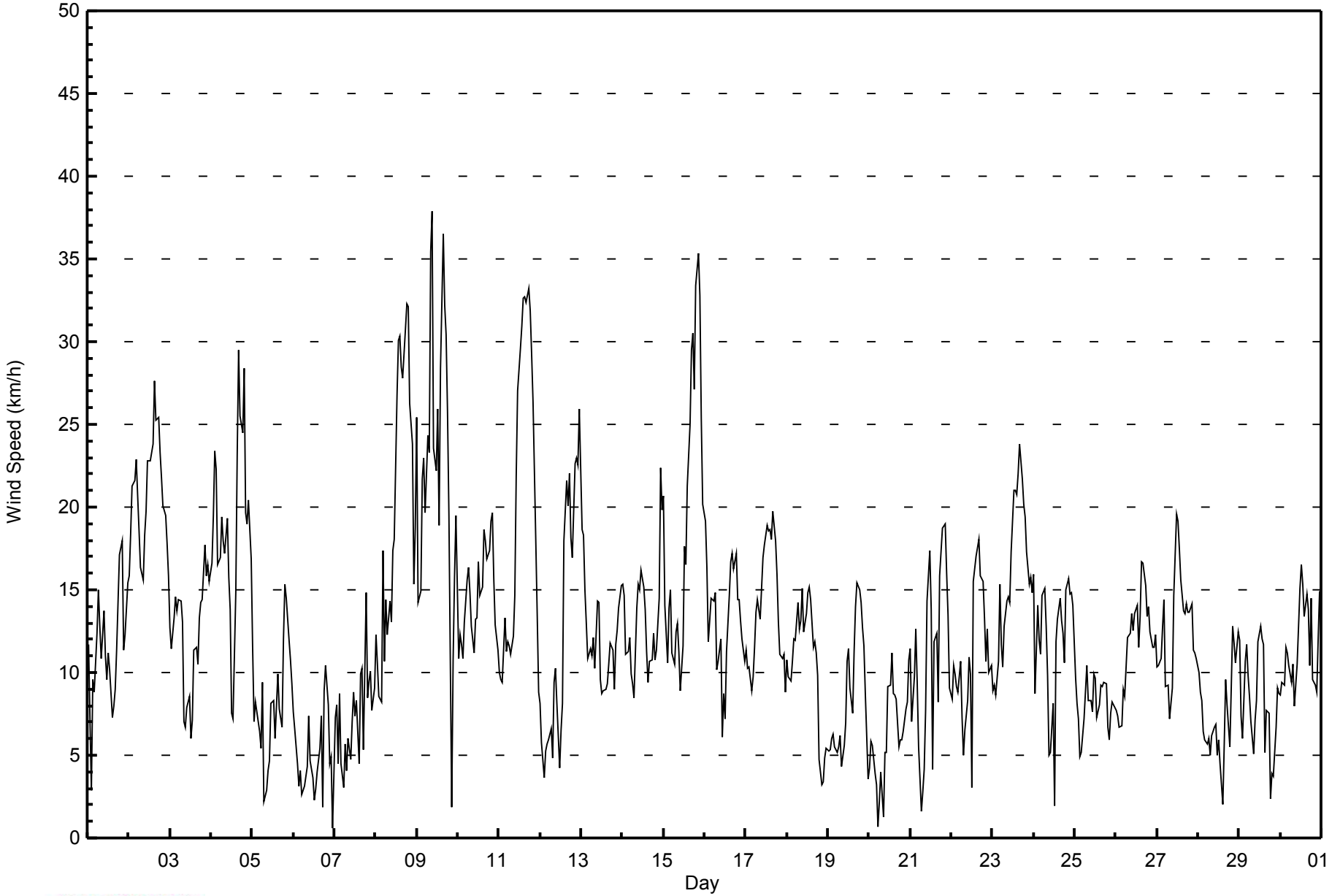
Day	Hourly Period Ending At (MST)																								Daily
	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24	Maximum
1-Apr	3	2	2	3	2	2	2	3	2	4	3	3	2	3	2	2	2	2	3	3	3	3	4	2	4
2-Apr	2	3	3	3	3	3	3	3	2	3	3	4	4	3	4	4	3	4	3	4	3	3	3	3	4
3-Apr	2	2	2	3	2	2	2	4	2	1	2	2	2	3	3	3	3	3	4	4	4	4	4	4	4
4-Apr	4	5	5	5	4	4	5	4	4	5	5	3	3	5	3	6	6	5	6	7	3	3	4	3	7
5-Apr	3	1	2	1	2	2	3	2	1	1	2	2	2	2	2	2	1	1	4	2	2	1	1	1	4
6-Apr	1	1	1	1	1	1	2	1	2	2	2	2	2	1	1	2	2	1	3	1	1	1	1	2	3
7-Apr	1	2	2	3	1	2	2	2	1	1	1	2	2	2	2	4	3	2	4	1	2	2	2	2	4
8-Apr	2	2	2	2	4	2	3	3	3	3	5	4	7	7	8	6	7	8	6	6	5	5	4	7	8
9-Apr	5	4	3	4	5	4	5	6	9	7	7	6	6	4	7	7	6	7	6	7	3	2	4	4	9
10-Apr	4	2	3	2	2	4	3	3	3	3	3	4	4	3	3	3	3	3	3	4	4	3	3	2	4
11-Apr	2	3	3	3	3	3	3	3	3	5	4	5	5	5	5	5	6	6	5	5	6	3	2	2	6
12-Apr	1	2	1	1	1	1	1	1	2	2	2	2	3	3	4	6	5	5	4	4	4	4	5	4	6
13-Apr	4	3	3	2	2	2	2	2	2	3	4	4	3	2	3	2	3	3	2	2	2	2	2	3	4
14-Apr	3	3	3	3	3	2	3	4	3	3	4	4	5	4	4	3	2	2	2	2	3	6	3	3	6
15-Apr	4	3	3	3	3	3	4	3	2	3	2	4	4	4	5	6	5	5	5	5	5	5	4	3	6
16-Apr	3	4	3	3	3	3	3	3	3	3	3	3	4	5	5	5	4	4	4	3	3	3	3	2	5
17-Apr	2	1	2	2	1	2	3	3	3	4	5	5	5	5	5	5	5	5	4	3	2	2	2	3	5
18-Apr	3	2	2	3	3	3	4	4	4	4	3	3	4	4	4	3	3	3	3	1	1	1	1	2	4
19-Apr	1	1	1	1	1	1	1	1	1	2	2	4	3	3	3	4	3	3	4	3	3	2	2	2	4
20-Apr	2	1	1	1	1	2	1	1	2	1	2	3	3	3	2	3	2	1	1	1	1	1	1	1	3
21-Apr	1	3	3	1	2	2	1	1	2	2	4	4	3	4	5	3	3	3	3	3	3	4	3	3	5
22-Apr	1	2	1	1	2	1	1	1	1	2	2	3	3	4	4	4	5	4	4	5	3	4	3	3	5
23-Apr	2	2	2	4	4	3	3	4	4	4	4	5	6	6	5	6	6	6	6	5	5	4	5	5	6
24-Apr	5	4	4	4	3	4	4	4	3	2	2	2	3	3	4	4	3	4	3	4	4	3	3	3	5
25-Apr	3	2	3	2	3	2	3	3	2	2	3	3	3	3	3	3	3	2	3	1	1	1	1	2	3
26-Apr	1	1	1	1	1	1	2	3	4	4	3	4	3	3	4	4	4	4	3	3	2	2	2	3	4
27-Apr	2	2	2	3	4	3	3	2	2	2	5	5	5	4	4	4	4	3	4	3	3	2	2	1	5
28-Apr	2	2	1	1	1	2	1	2	2	2	2	2	2	2	2	2	2	2	1	3	2	2	2	2	3
29-Apr	2	2	3	3	2	2	2	2	2	2	3	3	4	4	11	3	2	3	2	2	1	1	1	1	11
30-Apr	0	2	2	1	1	1	2	2	1	2	4	4	5	4	4	4	4	3	5	2	1	1	2	4	5
	5	5	5	5	5	4	5	6	9	7	7	6	7	7	11	7	7	8	6	7	6	6	5	7	
	Diurnal Maximum																								

WBEA NETWORK

Hourly Averages

Wind Speed (WS) - km/h

Buffalo Viewpoint - April 2014



AURORA ATMOSPHERICS INC.

Wind Speed Ranges (km/h)	Number of Hours	%	Cumulative %
0 - 5	75	10.42	10.42
6 - 11	280	38.89	49.31
12 - 19	271	37.64	86.94
20 - 28	69	9.58	96.53
29 - 38	25	3.47	100.00
> 38	0	0.00	100.00

Total Number of Valid Hours: 720

Total Number of Hours: 720

WBEA NETWORK

Frequency Distribution

Wind Speed (WS) - km/h

Buffalo Viewpoint - April 2014

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	3	0	0	0	9	8	8	9	2	5	5	1	4	8	8	75
6 - 11	27	24	8	12	15	52	60	18	10	7	4	3	8	4	7	21	280
12 - 19	63	14	3	14	24	57	51	4	4	5	7	5	3	6	1	10	271
20 - 28	21	0	0	5	2	1	4	0	0	0	5	5	2	6	3	15	69
29 - 38	12	0	0	0	0	0	0	0	0	0	1	5	0	6	0	1	25
> 38	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Totals	128	41	11	31	41	119	123	30	23	14	22	23	14	26	19	55	720

Total Number of Valid Hours: 720

Total Number of Hours: 720

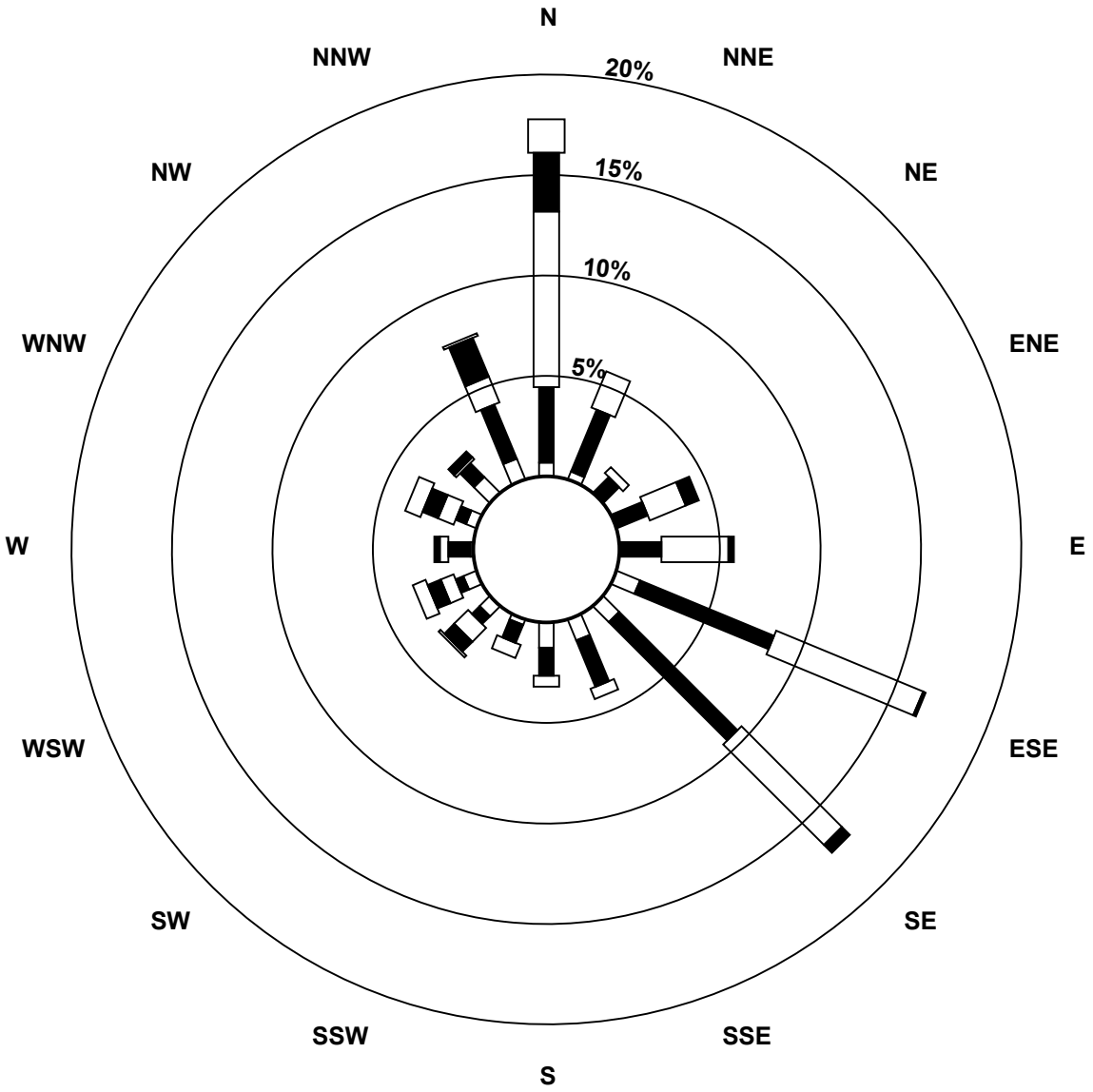
AURORA ATMOSPHERICS INC.

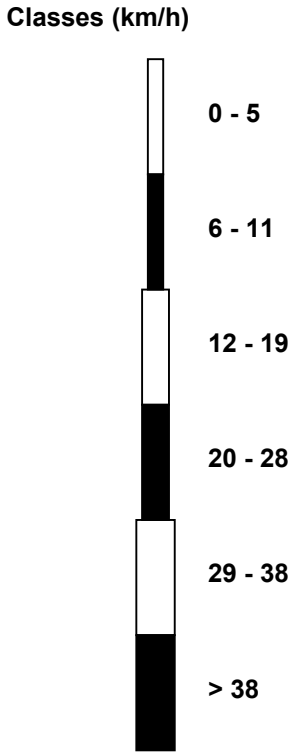
Wood Buffalo Environmental Association

Wind Rose Apr 2014

Wind Speed (WS) - km/h

Buffalo Viewpoint (AMS 4)





Total Number of Valid Hours: 720

Direction of Maximum Speed: 293 deg on Apr 9 10:00
Direction of Maximum Daily Speed Average: 350.6 deg on Apr 2

Direction of Minimum Speed: 30 deg on Apr 7 00:00

Direction of Minimum Daily Speed Average: 1.3 deg on Apr 6

Monthly Average Direction: 358.8 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-Apr	191	169	114	313	291	356	356	358	344	345	347	345	340	340	344	360	13	12	1	8	13	22	10	5	355.4
2-Apr	358	358	357	358	0	360	356	355	346	343	345	352	345	345	343	339	347	347	350	351	348	348	356	357	350.6
3-Apr	343	343	346	356	359	359	1	357	337	351	337	346	325	99	102	109	104	106	106	116	121	126	129	129	54.1
4-Apr	132	128	130	131	126	128	131	131	132	136	143	142	157	262	282	281	290	283	284	296	305	302	305	291	212.3
5-Apr	282	221	217	188	214	253	260	319	315	338	356	4	22	27	6	8	14	6	357	2	5	3	2	8	344.9
6-Apr	2	12	351	283	292	294	233	123	114	123	176	313	146	322	185	115	110	143	334	351	4	307	277	30	358.4
7-Apr	175	144	207	262	240	153	135	182	258	341	2	14	58	27	334	250	236	191	218	181	187	200	187	156	204.7
8-Apr	127	136	135	203	221	198	208	197	196	203	232	241	242	243	239	239	228	227	237	242	235	236	254	232	226.8
9-Apr	242	271	248	243	238	231	232	246	282	293	303	295	305	299	299	297	301	295	280	327	225	209	234	249	275.5
10-Apr	338	8	4	6	1	2	11	14	12	9	359	358	356	2	5	357	357	3	3	8	7	17	26	27	5.3
11-Apr	42	64	53	29	73	68	68	72	39	13	359	357	358	356	359	354	355	350	350	346	348	350	343	317	4.5
12-Apr	293	272	216	223	197	176	154	182	249	264	272	294	284	304	320	340	334	343	359	10	10	356	353	347	330.9
13-Apr	356	356	346	351	329	313	316	345	338	350	350	1	8	16	2	14	108	110	113	127	137	140	137	136	17.3
14-Apr	136	134	136	133	139	142	144	132	136	132	129	143	140	148	136	147	120	112	111	113	99	360	355	0	121.1
15-Apr	355	21	49	6	10	36	65	23	11	14	18	1	4	19	2	357	359	358	1	350	350	351	352	358	3.7
16-Apr	5	16	22	21	5	7	3	27	83	91	78	345	98	144	105	111	111	105	111	112	112	119	121	120	74.2
17-Apr	123	117	119	129	130	127	120	122	112	116	127	113	106	102	99	105	109	107	110	112	109	113	120	116	113.8
18-Apr	114	108	95	83	96	97	100	108	98	104	100	108	104	112	112	109	114	127	136	117	128	137	130	142	108.5
19-Apr	162	167	127	130	133	151	146	144	124	132	106	106	110	110	85	112	110	111	107	111	117	126	128	103	118.9
20-Apr	9	16	21	342	334	188	189	201	238	335	313	347	336	353	19	21	24	46	95	99	139	147	143	130	31.7
21-Apr	132	142	129	120	127	114	29	150	325	302	343	349	359	323	337	2	7	359	0	2	5	8	4	358	10.1
22-Apr	352	355	7	17	360	6	355	343	344	343	333	335	19	98	95	91	89	91	73	64	49	68	71	59	46.2
23-Apr	15	16	26	60	67	48	49	56	68	64	81	83	85	85	73	70	72	72	74	80	76	75	80	76	69.3
24-Apr	95	106	67	86	68	70	77	87	95	123	253	276	258	137	126	117	115	110	117	84	84	80	84	93	94.6
25-Apr	102	110	119	113	118	121	121	115	96	112	42	74	95	58	114	126	126	136	146	139	120	128	133	132	113.2
26-Apr	135	139	125	117	116	126	135	135	135	131	138	125	112	121	117	112	111	111	112	115	116	119	120	125	121.8
27-Apr	119	113	113	119	108	96	92	101	106	121	129	128	130	129	133	137	138	128	130	130	131	133	133	134	124.2
28-Apr	133	139	140	157	165	148	159	160	150	127	155	166	185	175	348	112	123	115	117	107	127	132	135	126	137.3
29-Apr	128	128	135	143	140	147	138	160	176	111	274	279	268	256	293	225	311	7	8	352	155	157	123	134	173.0
30-Apr	138	147	162	141	142	146	150	136	122	117	160	182	162	170	166	184	168	193	225	198	185	177	198	228	169.2
	76.2	77.2	79.2	75.1	82.9	75.2	87.2	89.5	69.6	55.3	21.5	17.9	35.3	52.7	29.1	29.1	45.2	43.1	34.8	32.2	48.5	52.3	54.0	64.8	
	Diurnal Average																								

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

Number of Exceedences (AAAQO): 1-hr: 0 24-hr: 0
Maximum Value: 97 deg on Apr 28 15:00

Minimum Value: 4 deg on Apr 29 23:00

Percentiles: P_1 = 7 P_{10} = 11 Q_1 = 13 Median = 16 Q_3 = 21 P_{90} = 35 P_{99} = 80

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

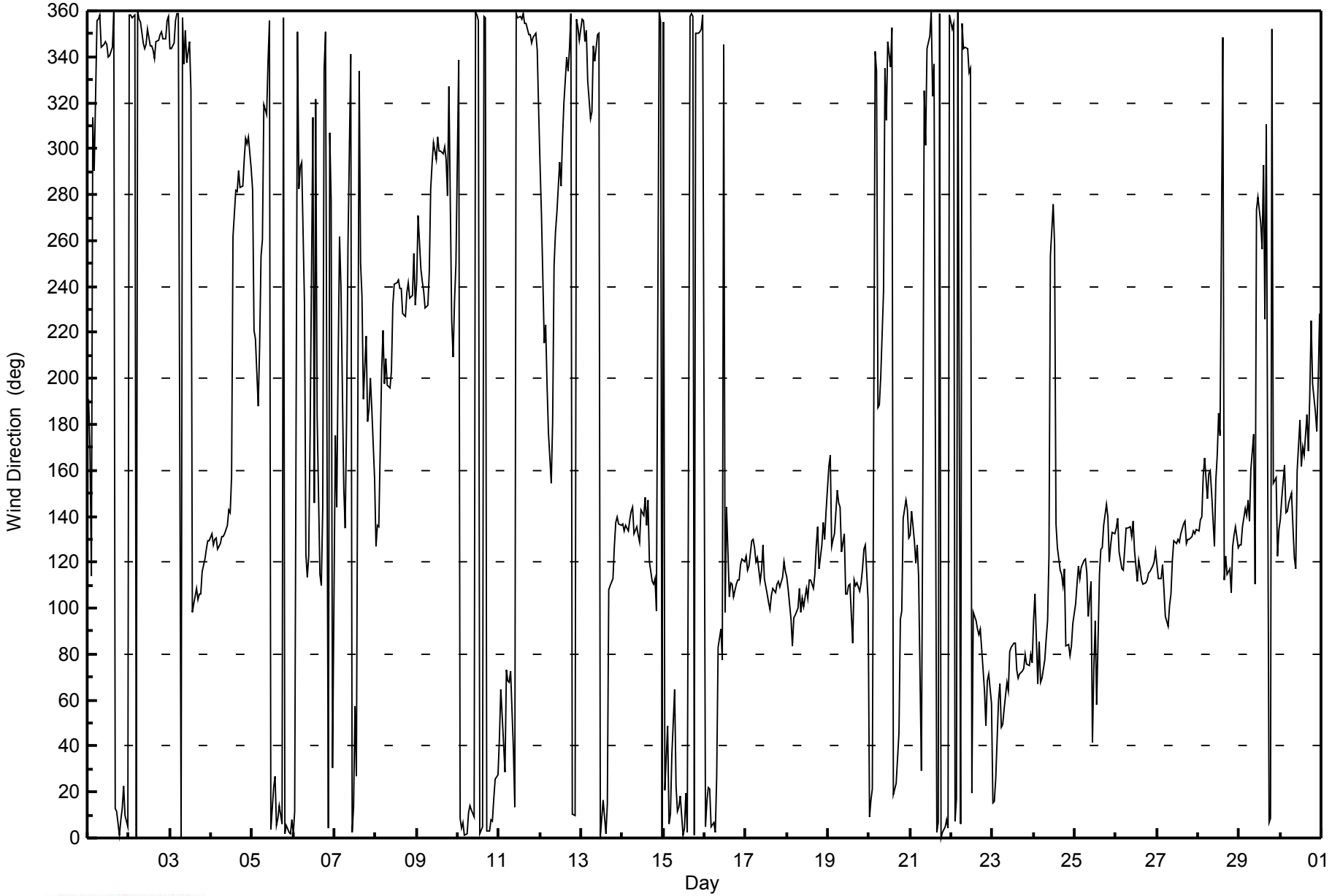
Day	Hourly Period Ending At (MST)																								Daily
	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24	Maximum
1-Apr	15	23	72	29	23	11	8	11	11	11	18	17	14	15	27	29	24	14	11	12	12	13	12	14	72
2-Apr	11	10	10	11	10	11	11	11	12	11	11	12	12	12	13	10	11	9	10	11	10	10	11	13	13
3-Apr	7	8	9	11	9	8	9	13	19	15	17	17	42	69	21	20	20	16	15	15	16	15	16	15	69
4-Apr	15	15	14	15	15	15	15	16	16	16	16	18	23	55	15	13	13	13	13	13	10	12	10	10	55
5-Apr	14	23	16	24	36	41	16	61	60	42	55	22	23	46	19	15	16	15	11	10	10	8	7	7	61
6-Apr	8	11	22	35	28	55	43	17	28	27	44	62	80	55	36	28	19	69	21	14	12	29	27	83	83
7-Apr	14	23	52	26	42	69	28	48	28	33	18	16	39	28	58	33	24	26	14	19	17	16	21	16	69
8-Apr	11	12	16	37	13	13	14	14	14	16	16	16	15	14	14	13	16	14	12	11	11	13	17	13	37
9-Apr	13	13	15	12	12	12	14	13	15	12	11	12	12	13	13	13	11	12	12	38	81	11	13	16	81
10-Apr	26	12	12	12	9	12	16	15	17	22	18	20	16	19	19	14	11	15	13	12	12	14	15	15	26
11-Apr	17	18	23	16	16	16	17	19	19	26	13	12	12	12	11	12	12	11	11	11	10	10	9	20	26
12-Apr	11	15	34	18	19	14	13	30	22	23	32	64	47	47	17	18	15	10	14	13	14	12	12	11	64
13-Apr	11	11	11	10	17	8	16	19	23	14	17	33	35	31	26	21	34	17	14	12	13	13	12	12	35
14-Apr	12	14	15	13	15	14	18	26	18	17	20	22	21	23	26	25	18	13	14	13	18	35	10	12	35
15-Apr	10	26	18	12	13	17	22	15	13	15	16	14	14	18	14	13	12	12	12	11	9	10	10	10	26
16-Apr	11	15	16	15	12	15	12	25	23	26	67	33	54	35	23	19	17	17	15	13	14	14	14	13	67
17-Apr	12	9	11	11	12	11	15	16	18	20	23	20	18	20	20	19	16	17	15	14	13	13	12	19	23
18-Apr	14	13	16	16	17	17	16	18	19	17	19	18	18	18	17	18	18	19	18	19	15	9	18	32	32
19-Apr	36	16	12	8	12	19	18	20	40	36	46	23	19	24	44	29	18	15	16	15	14	13	10	49	49
20-Apr	34	8	13	20	24	90	44	26	83	38	44	25	27	25	28	24	18	21	19	20	27	22	18	7	90
21-Apr	5	43	17	6	7	56	70	50	63	33	17	12	18	86	25	20	20	12	11	9	10	12	15	14	86
22-Apr	17	10	9	9	11	8	9	21	19	19	21	24	75	21	21	18	16	18	16	20	17	17	16	22	75
23-Apr	20	12	22	23	15	14	17	20	19	18	19	18	18	17	18	16	16	17	16	17	17	18	17	18	23
24-Apr	23	32	17	20	16	17	18	19	22	34	55	15	81	17	19	16	17	20	15	16	15	15	15	16	81
25-Apr	17	16	16	20	25	16	17	18	18	21	44	31	31	54	36	28	18	21	16	12	12	10	12	11	54
26-Apr	10	16	15	10	10	15	16	18	20	20	23	27	17	22	21	15	15	14	15	14	14	14	14	15	27
27-Apr	14	15	14	15	16	22	21	18	18	18	16	16	16	16	16	16	18	15	17	15	14	11	10	11	22
28-Apr	11	11	13	10	10	17	15	27	33	32	31	47	36	55	97	50	18	16	13	14	14	12	16	11	97
29-Apr	12	16	37	21	11	15	16	25	41	26	40	20	23	32	55	83	33	37	76	30	49	11	4	8	83
30-Apr	9	7	19	8	7	8	11	13	16	15	43	20	22	19	21	23	18	24	23	13	8	6	12	14	43
	36	43	72	37	42	90	70	61	83	42	67	64	81	86	97	83	34	69	76	38	81	35	27	83	
	Diurnal Maximum																								

WBEA NETWORK

Hourly Averages

Wind Direction (WD) - deg

Buffalo Viewpoint - April 2014



AURORA ATMOSPHERICS INC.

Wood Buffalo Environmental Association

SO_2 Calibration Report

Station Information

Calibration Date	April 8, 2014	Previous Calibration	March 7, 2014
Station Name	Buffalo Viewpoint	Station Number	AMS 4
Reason:	Routine		
Start Time (MST)	9:05	End Time (MST)	12:19
Barometric Pressure	747 mmHg	Station temp.	23 Deg C
Calibrator Make/Model	Sabio 4010	Serial Number	11061107
Cal Gas Concentration	51.00 ppm	Cal Gas Expiry Date	5/29/2014
Gas Cert Reference	LL107926		
DACS make/model	Campbell Scientific CR3000	DACS serial No.	2586
DACS voltage range	0-5V	DACS channel #	11

Analyzer Information

	Before	*After*		*Before*	*After*
Analyzer Range (ppb)	1000	1000	PMT voltage	-592	-592
Analyzer Range (mv)	5000	5000	Lamp voltage	832	831
Calculated slope	0.999722	0.996503	Chamber temp.	45.2	45.0
Calculated intercept	-0.665593	-0.259297	Pressure (mmHg)	674.7	672.6
Analyzer Background	9.5	9.2	Flow (lpm)	0.480	0.477
Analyzer Coefficient	0.999	0.969	Intensity	85	85

Analyzer make	TEI 43i	Analyzer serial #	JC1327300932

Calibration Data

Set Point	Total flow rate (cc/min)	Source gas flow rate (cc/min)	Calculated concentration (ppb) (Cc)	Indicated concentration (ppb) (Ic)	Correction factor (Cc/Ic)
as found zero	5000	0.0	0.0	0.0	NA
as found span	5000	58.8	599.8	614.8	0.976
calibrator zero	5000	0.0	0.0	0.3	NA
high point	5000	58.8	599.8	601.8	0.997
second point	5000	29.4	299.9	302.2	0.992
third point	5000	14.7	149.9	150.0	1.000
calibrator zero					
as left zero	5000	0.0	0.0	0.2	NA
as left span	5000	58.8	599.8	601.6	0.997
				Average Correction Factor	0.996

Corrected As found	614.8	Previous response	600.6	% change	-2.3%

Notes:

Span adjusted, filter changed after third point.

Calibration Performed By: Ryan Power

Wood Buffalo Environmental Association

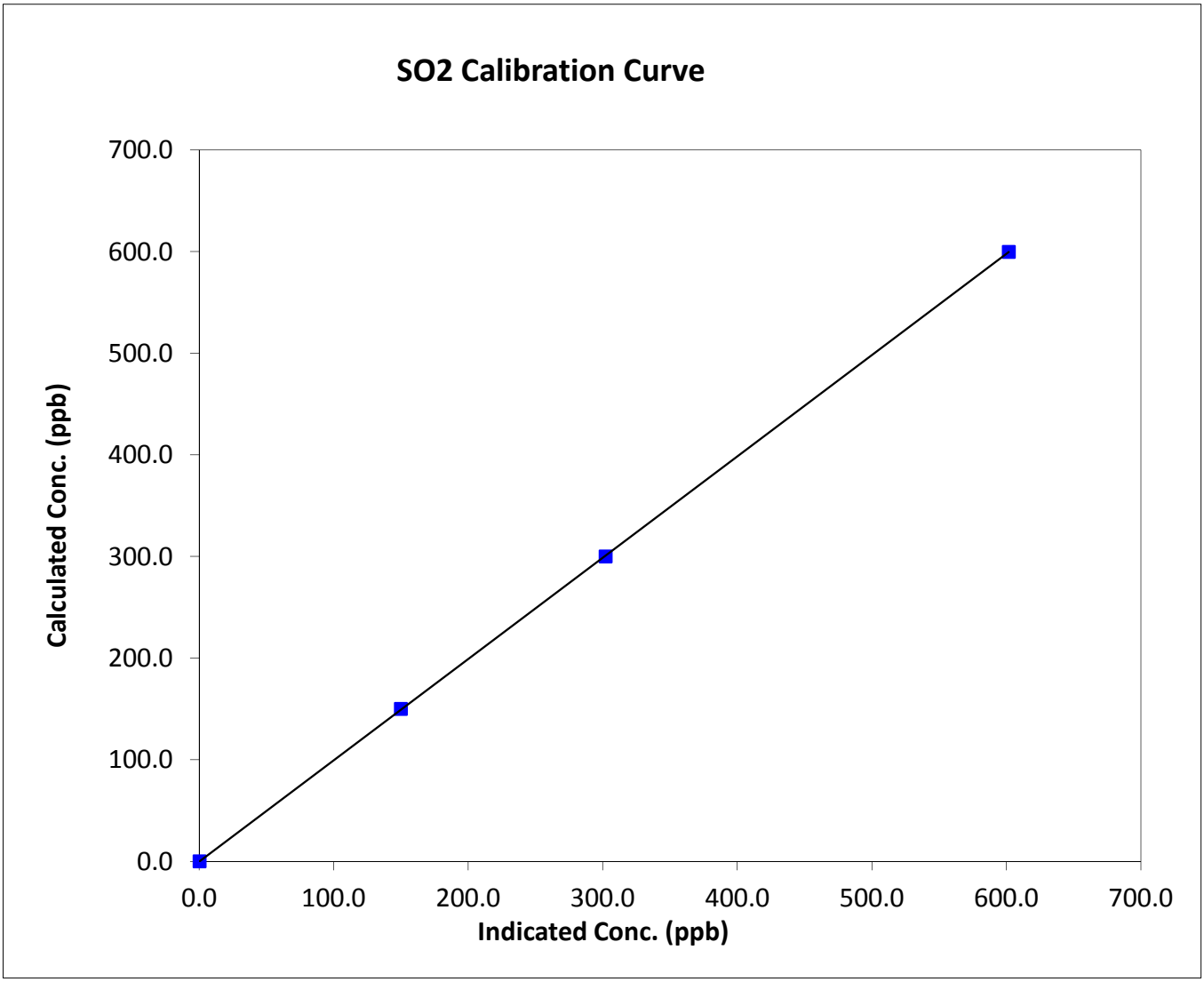
SO_2 Calibration Summary

Station Information

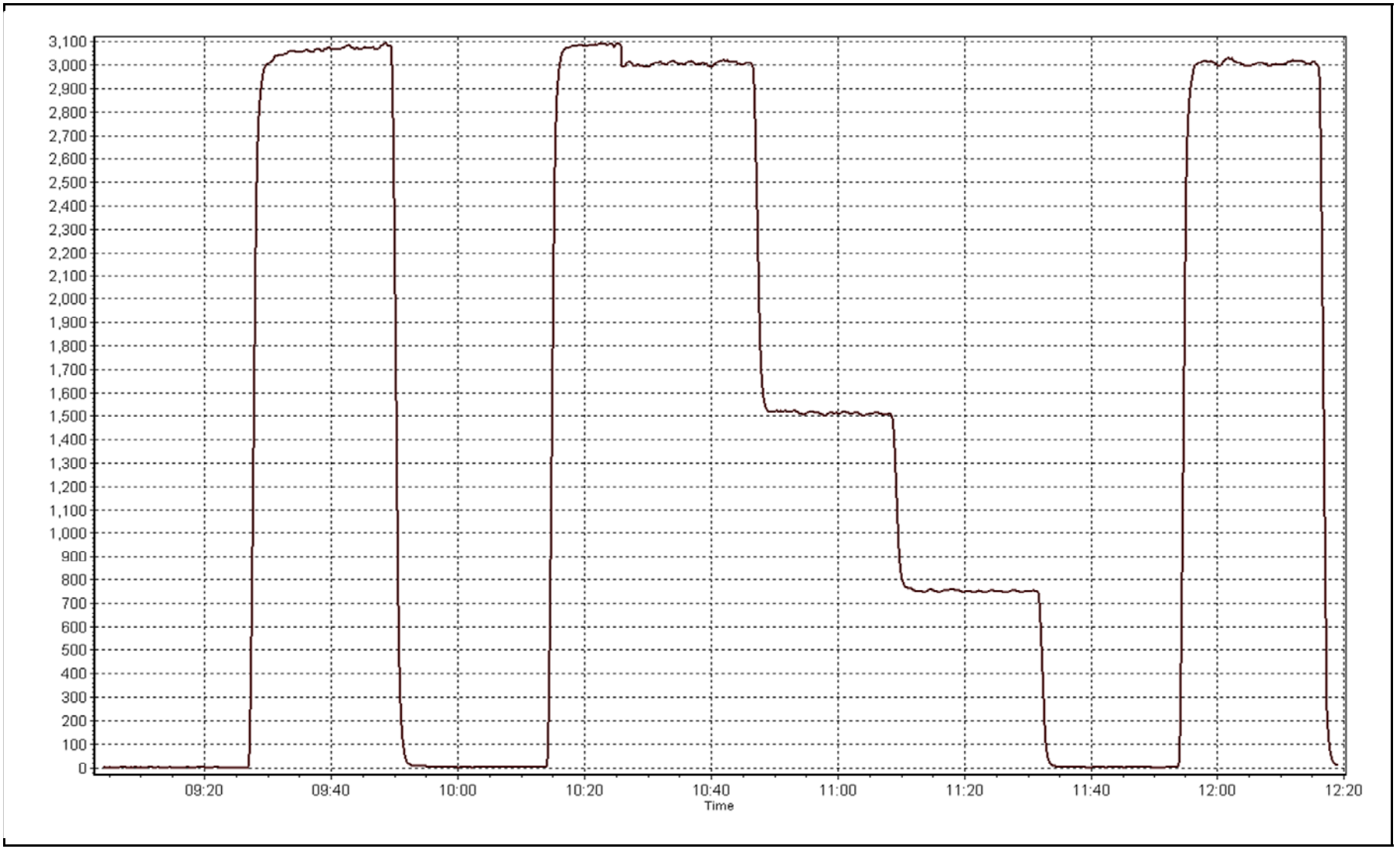
Calibration Date	April 8, 2014	Previous Calibration	March 7, 2014
Station Name	Buffalo Viewpoint	Station Number	AMS 4
Start Time (MST)	9:05	End Time (MST)	12:19
Analyzer make	TEI 43i	Analyzer serial #	JC1327300932

Calibration Data

Calculated concentration (ppb) (Cc)	Indicated concentration (ppb) (Ic)	Correction factor (Cc/Ic)	Statistical Evaluation	
0.0	0.3	N/A	Correlation Coefficient	0.999992
599.8	601.8	0.9966		
299.9	302.2	0.9923	Slope	0.996503
149.9	150.0	0.9996		
			Intercept	-0.259297



SO2 Calibration Plot Date: April 8, 2014



Wood Buffalo Environmental Association

H2S Calibration Report

Station Information

Calibration Date	April 8, 2014	Previous Calibration	March 6, 2014
Station Name	Buffalo Viewpoint	Station Number	AMS 4
Reason:	Routine		
Start Time (MST)	12:06	End Time (MST)	15:30
Barometric Pressure	NA mmHg	Station temp.	23 Deg C
Calibrator Make/Model	Sabio 4010	Serial number	11551008
Cal Gas Concentration	9.75 ppm H2S	Cal Gas Expiry Date	2/22/2016
Gas Cert Reference	LL101590	SO2 gas conc.	51.0 ppm SO2
DACS make/model	Campbell Scientific CR3000	DACS serial No.	2586
DACS voltage range	0-5V	DACS channel #	

Analyzer Information

	Before	*After*		*Before*	*After*
Analyzer Range (ppb)	100	100	PMT voltage	-615	-616
Analyzer Range (mv)	5000	5000	Lamp voltage	880	878
Calculated slope	0.992061	0.992113	Chamber temp.	45	45
Calculated intercept	-0.151060	-0.338776	Pressure	526.5	526.8
Analyzer Background	18.3	17.6	Flow	1.012	1.010
Analyzer Coefficient	1.102	1.102	Intensity	94	94
			Converter temp.	328	331

Analyzer make/model	TEI 450i	Analyzer serial #	1336160094
Converter make/model	NA	Converter serial #	NA

Calibration Data

Set Point	Total flow rate (cc/min)	Source gas flow rate (cc/min)	Calculated concentration (ppb) (Cc)	Indicated concentration (ppb) (Ic)	Correction factor (Cc/Ic)
as found zero	5000	0.0	0.0	-0.3	NA
as found span	6000	46.2	75.1	73.7	1.019
SO2 scrubber check	5000	29.4	299.9	3.2	NA
calibrator zero	6000	0.0	0.0	0.1	NA
high point	6000	46.2	75.1	75.8	0.990
second point	6000	25.8	41.9	42.8	0.980
third point	6000	15.4	25.0	25.9	0.968
calibrator zero					
as left zero	5000	0.0	0.0	-0.1	NA
as left span	6000	46.2	75.1	78.0	0.963
				Average Correction Factor	0.979

Corrected As found	74.0	Previous response	75.8	% change	2.4%

Notes:

Zero and span both adjusted. Filter changed after As Founds. Scrubber check after calibrator zero

Calibration Performed By: Ryan Power

Wood Buffalo Environmental Association

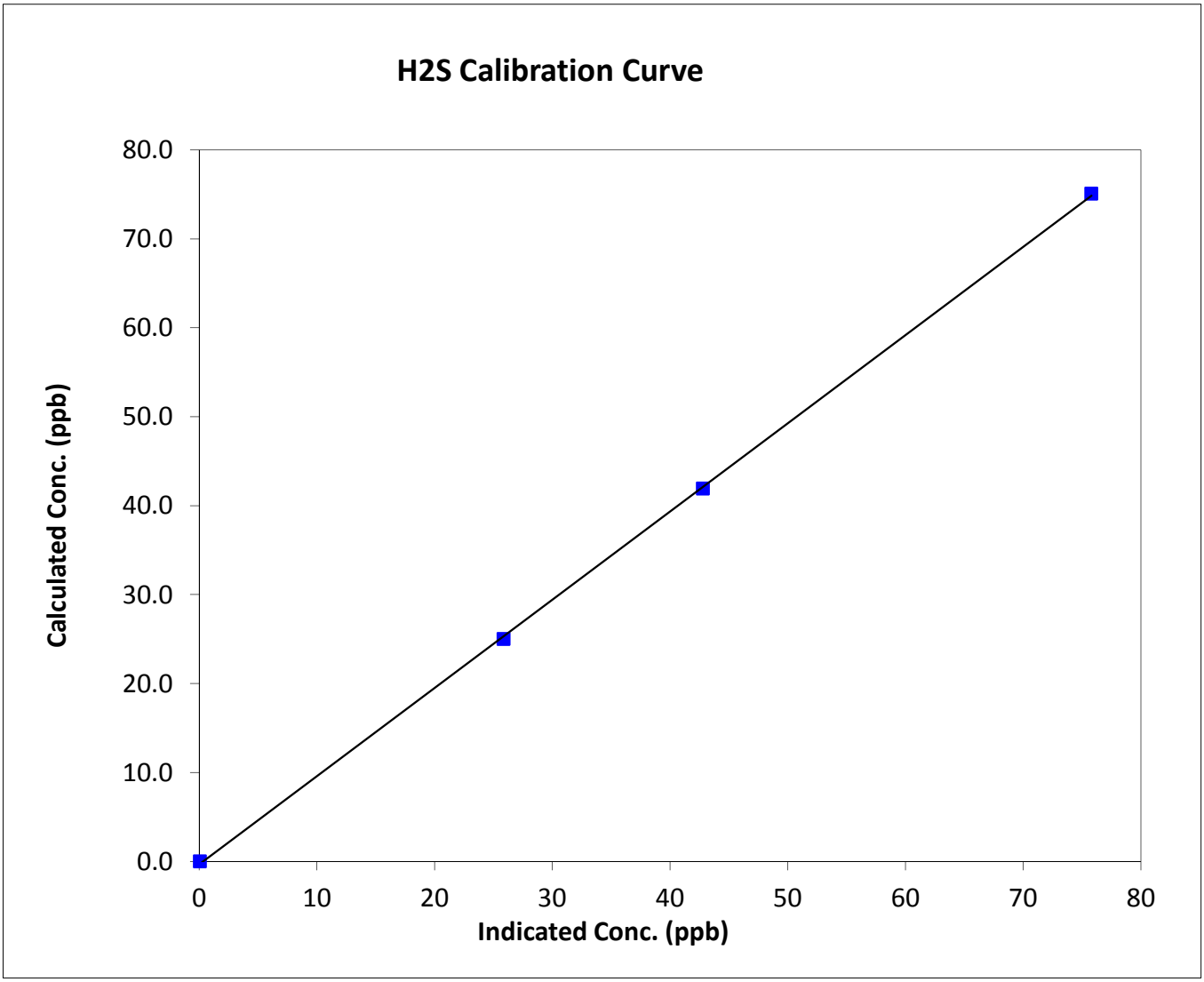
H2S Calibration Summary

Station Information

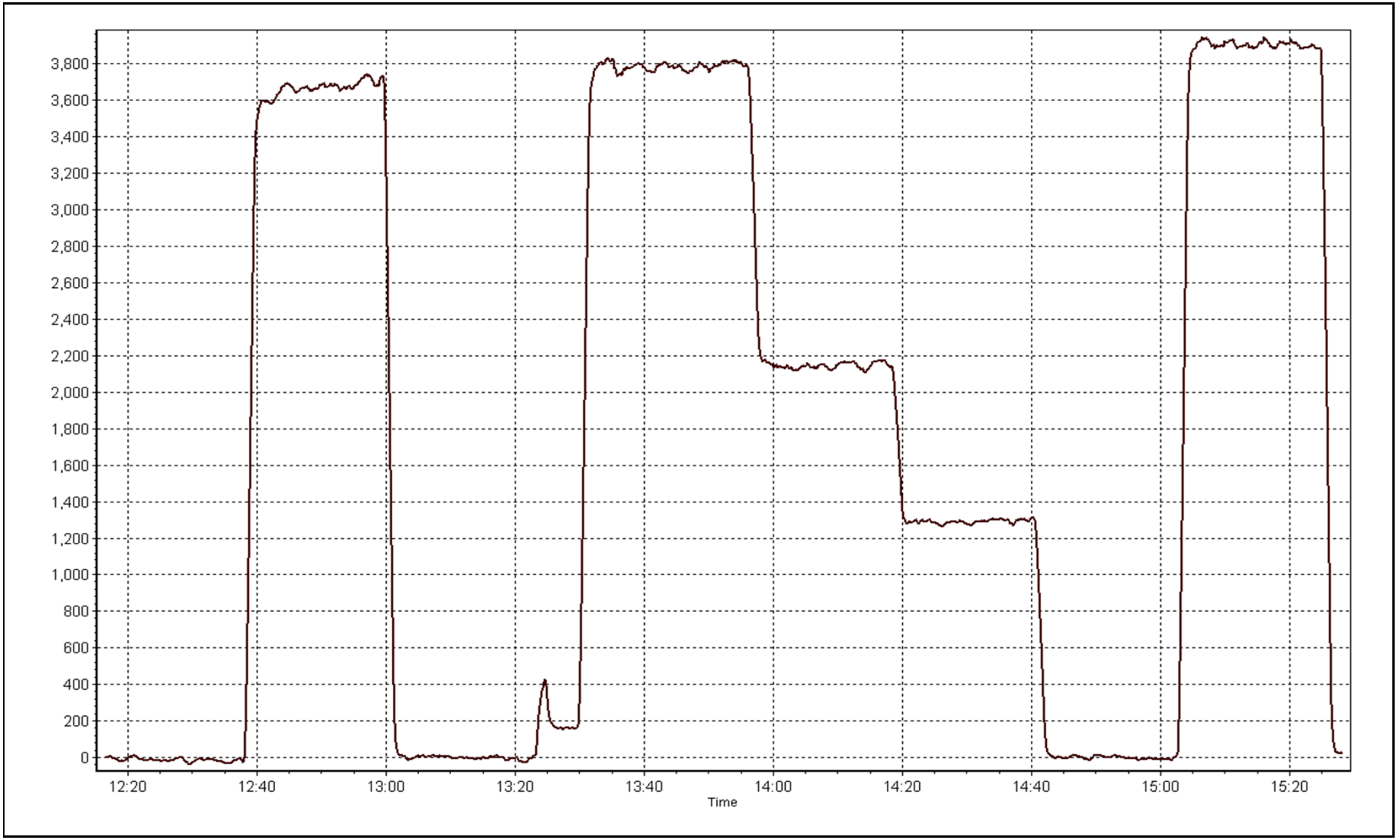
Calibration Date	April 8, 2014	Previous Calibration	March 6, 2014
Station Name	Buffalo Viewpoint	Station Number	AMS 4
Start Time (MST)	12:06	End Time (MST)	15:30
Analyzer make	TEI 450i	Analyzer serial #	1336160094

Calibration Data

Calculated concentration (ppb) (Cc)	Indicated concentration (ppb) (Ic)	Correction factor (Cc/Ic)	Statistical Evaluation	
0.0	0.1	N/A	Correlation Coefficient	0.999917
75.1	75.8	0.9904		
41.9	42.8	0.9796	Slope	0.992113
25.0	25.9	0.9677		
			Intercept	-0.338776



H2S Calibration Plot Date: Tuesday, April 08, 2014



Wood Buffalo Environmental Association

THC Calibration Report

Station Information

Calibration Date	Tuesday, April 08, 2014	Previous Calibration	Friday, March 07, 2014
Station Name	Buffalo Viewpoint	Station Number	AMS 4
Reason:	Routine		
Start Time (MST)	9:05	End Time (MST)	12:17
Barometric Pressure	747 mmHg	Station temp.	23 Deg C
Calibrator Make/Model	Sabio 4010	Serial Number	11061107
Gas Cert Reference	LL107926	Cal Gas Expiry Date	5/29/2014
CH4 Cal Gas Conc.	515 ppm	CH4 Equiv Conc.	1067.8 ppm
C3H8 Cal Gas Conc.	201 ppm		
DACS make/model	Campbell Scientific CR3000	DACS serial No.	2586
DACS voltage range	0-5V	DACS channel #	19

Analyzer Information

	Before	*After*		*Before*	*After*
Analyzer Range (ppm)	25	25	Sample Pressure	8.5	8.5
Analyzer Range (mv)	5000	5000	Air or Bypass press	30.4	30.4
Calculated slope	0.996274	1.001017	Fuel Pressure	19.6	15.7
Calculated intercept	-0.025248	-0.044087			
BKG	1.5	1.8			
COEF	4.210	4.239			

Analyzer make	TEI 51i-LT	Analyzer serial #	1201650671

Calibration Data

Set Point	Total flow rate (cc/min)	Source gas flow rate (cc/min)	Calculated concentration THC (ppm) (Cc)	Indicated concentration (ppb) (Ic)	Correction factor (Cc/Ic)
as found zero	5000	0.0	0.00	0.21	N/A
as found span	4997	58.8	12.56	12.71	0.988
calibrator zero	5000	0.0	0.00	0.01	N/A
high point	5000	58.8	12.56	12.57	0.999
second point	5000	29.4	6.28	6.35	0.989
third point	5005	14.7	3.14	3.20	0.980
calibrator zero					
as left zero	5000	0.0	0.00	0.01	N/A
as left span	5000	58.8	12.56	12.69	0.990
				Average Correction Factor	0.989

Corrected As found	12.50	Previous response	12.64	% change	1.1%

Notes:

Zero and span adjusted. Filter changed after third point

Calibration Performed By: Ryan Power

Wood Buffalo Environmental Association

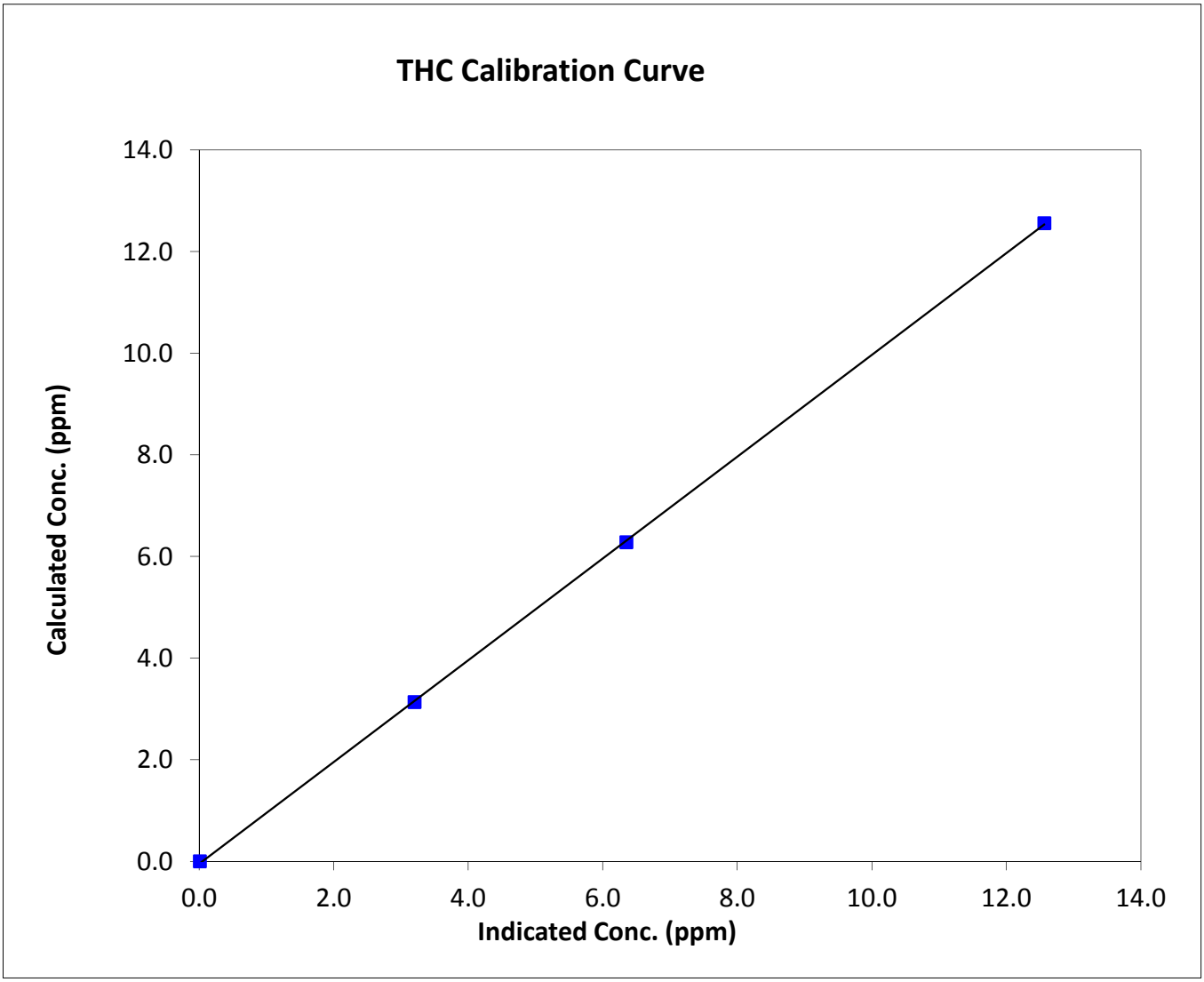
THC Calibration Summary

Station Information

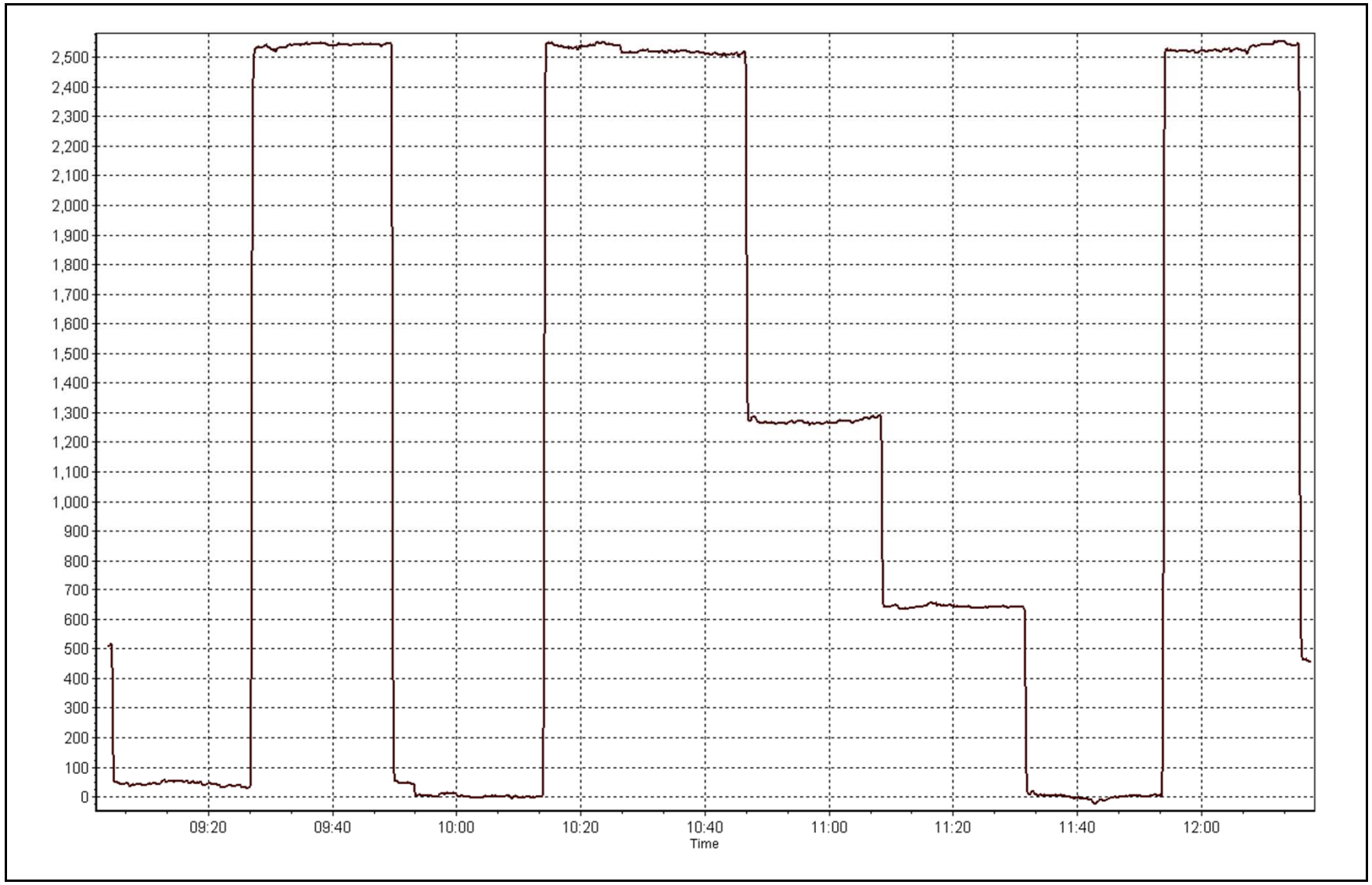
Calibration Date	April 8, 2014	Previous Calibration	March 7, 2014
Station Name	Buffalo Viewpoint	Station Number	AMS 4
Start Time (MST)	9:05	End Time (MST)	12:17
Analyzer make	TEI 51i-LT	Analyzer serial #	1201650671

Calibration Data

Calculated concentration (ppm) (Cc)	Indicated concentration (ppm) (Ic)	Correction factor (Cc/Ic)	Statistical Evaluation	
0.00	0.01	N/A	Correlation Coefficient	0.999961
12.56	12.57	0.9993		
6.28	6.35	0.9887	Slope	1.001017
3.14	3.20	0.9800		
			Intercept	-0.044087



THC Calibration Plot Date: April 8, 2014



WOOD BUFFALO ENVIRONMENTAL ASSOCIATION

CONTINUOUS AMBIENT AIR QUALITY
MONITORING PROGRAM
MONTHLY REPORT

AMS 5
MANNIX
APRIL 2014

Operations and Data Collection by:
Wood Buffalo Environmental Association
Fort McMurray, Alberta

QA/QC, Data Validation and Reporting by:
Aurora Atmospherics Inc.
Calgary, Alberta

May 30, 2014

WOOD BUFFALO ENVIRONMENTAL ASSOCIATION - MANNIX (AMS 5)
APRIL 2014

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	676	33	44	98.47	77	0	37	0
H2S (ppb) Average	678	33	42	98.75	5	0	2	0
THC (ppm) Average	676	33	44	98.47	6.5	-	2.6	-
Temperature 2 m (C) Average	717	0	3	99.58	22	-	13.9	-
Temperature 20 m (C) Average	717	0	3	99.58	21.3	-	14.2	-
Temperature 45 m (C) Average	717	0	3	99.58	21	-	14.4	-
Temperature 75 m (C) Average	717	0	3	99.58	20.8	-	14.9	-
Temperature 90 m (C) Average	717	0	3	99.58	20.7	-	15.2	-
Relative Humidity 2 m (%) Average	717	0	3	99.58	96	-	-	-
Relative Humidity 20 m (%) Average	717	0	3	99.58	97	-	-	-
Relative Humidity 45 m (%) Average	717	0	3	99.58	98	-	-	-
Relative Humidity 75 m (%) Average	717	0	3	99.58	98	-	-	-
Relative Humidity 90 m (%) Average	717	0	3	99.58	99	-	-	-
Wind Speed 20 m (km/h) Average	714	0	6	99.17	39	-	-	-
Wind Speed 45 m (km/h) Average	714	0	6	99.17	46	-	-	-
Wind Speed 75 m (km/h) Average	714	0	6	99.17	51	-	-	-
Wind Speed 90 m (km/h) Average	714	0	6	99.17	51	-	-	-
Wind Direction 20 m (deg) Average	714	0	6	99.17	-	-	-	-
Wind Direction 45 m (deg) Average	714	0	6	99.17	-	-	-	-
Wind Direction 75 m (deg) Average	714	0	6	99.17	-	-	-	-
Wind Direction 90 m (deg) Average	714	0	6	99.17	-	-	-	-
Vertical Wind Speed 20 m (km/h) Average	714	0	6	99.17	1.1	-	-	-
Vertical Wind Speed 45 m (km/h) Average	714	0	6	99.17	1.7	-	-	-
Vertical Wind Speed 75 m (km/h) Average	714	0	6	99.17	1.6	-	-	-
Vertical Wind Speed 90 m (km/h) Average	714	0	6	99.17	5.0	-	-	-

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

WOOD BUFFALO ENVIRONMENTAL ASSOCIATION - MANNIX (AMS 5)
APRIL 2014

MONTHLY SUMMARY FOR AIR QUALITY/ METEOROLOGICAL MONITORING MEASUREMENTS

					Percentile						
Parameter	Number	Mean	StnDev	Total	Min	P10	Q1	Median	Q3	P90	Max
SO2 (ppb) Average	676	3.8	11	-	0	0	0	0	1	9	77
H2S (ppb) Average	678	0.4	0	-	0	0	0	0	0	1	5
THC (ppm) Average	676	2.28	0.3	-	2	2.1	2.2	2.2	2.3	2.5	6.5
Temperature 2 m (C) Average	717	1.48	7.3	-	-18.2	-8.3	-3.5	1.7	5.9	11	22
Temperature 20 m (C) Average	717	1.36	7.4	-	-18.5	-8.5	-3.7	1.6	6	10.9	21.3
Temperature 45 m (C) Average	717	1.2	7.5	-	-18.6	-8.7	-3.9	1.4	5.9	10.6	21
Temperature 75 m (C) Average	717	1.03	7.5	-	-17.3	-8.8	-4.2	1.4	5.8	10.3	20.8
Temperature 90 m (C) Average	717	0.96	7.5	-	-17.4	-9	-4.3	1.4	5.7	10.2	20.7
Relative Humidity 2 m (%) Average	717	58.7	18	-	19	35	45	57	73	85	96
Relative Humidity 20 m (%) Average	717	57.4	19	-	17	32	43	56	72	84	97
Relative Humidity 45 m (%) Average	717	57.1	19	-	16	32	43	56	71	84	98
Relative Humidity 75 m (%) Average	717	57.2	19	-	16	32	43	55	71	85	98
Relative Humidity 90 m (%) Average	717	57.7	19	-	16	32	43	56	72	86	99
Wind Speed 20 m (km/h) Average	714	12.2	6	-	0	5	8	12	15	20	39
Wind Speed 45 m (km/h) Average	714	15.9	8	-	1	7	11	15	20	26	46
Wind Speed 75 m (km/h) Average	714	17	9	-	1	7	11	16	22	28	51
Wind Speed 90 m (km/h) Average	714	18.9	9	-	0	8	13	18	24	30	51
Wind Direction 20 m (deg) Average	714	-	-	-	-	-	-	-	-	-	-
Wind Direction 45 m (deg) Average	714	-	-	-	-	-	-	-	-	-	-
Wind Direction 75 m (deg) Average	714	-	-	-	-	-	-	-	-	-	-
Wind Direction 90 m (deg) Average	714	-	-	-	-	-	-	-	-	-	-
Vertical Wind Speed 20 m (km/h) Average	714	0.07	0.3	-	-0.9	-0.4	-0.2	0.2	0.3	0.5	1.1
Vertical Wind Speed 45 m (km/h) Average	714	0.25	0.5	-	-1.2	-0.4	-0.1	0.3	0.6	0.8	1.7
Vertical Wind Speed 75 m (km/h) Average	714	0.1	0.4	-	-1.2	-0.4	-0.1	0.1	0.3	0.6	1.6
Vertical Wind Speed 90 m (km/h) Average	714	0.28	1.1	-	-1.6	-0.8	-0.4	0	0.6	1.5	5

WOOD BUFFALO ENVIRONMENTAL ASSOCIATION - MANNIX (AMS 5)
APRIL 2014

OPERATIONAL NOTES

Parameter	Period Start	Period End	Duration (Hours)	Notes
ALL MET PARAMETERS	07 Apr 2014 09:00	07 Apr 2014 11:00	3	Station power failure
AIR QUALITY ANALYZERS	23 Apr 2014 13:00	23 Apr 2014 16:00	4	Station power failure followed by stabilization period
ALL MET PARAMETERS	23 Apr 2014 13:00	23 Apr 2014 15:00	3	Flatline in sensor output signal
SO2	07 Apr 2014 09:00	07 Apr 2014 15:00	7	Station power failure followed by stabilization period
H2S	07 Apr 2014 09:00	07 Apr 2014 12:00	4	Station power failure followed by stabilization period
H2S	22 Apr 2014 11:00	22 Apr 2014 11:00	1	Maintenance - sample manifold cleaned
THC	07 Apr 2014 09:00	07 Apr 2014 15:00	7	Station power failure followed by stabilization period

Wood Buffalo Environmental Association

Summary of Hour Averages

Sulphur Dioxide (SO_2) - ppb

Mannix - April 2014

Number of Exceedences (AAAQO): 1-hr: 0 24-hr: 0
Maximum Value: 77 ppb on Apr 5 17:00 Maximum Daily Average: 36.8 ppb on Apr 2

Minimum Value: 0 ppb on Apr 10 20:00 Minimum Daily Average: 0.0 ppb on Apr 26
Maximum Diurnal Average: 7.6 ppb at hour 10 Minimum Diurnal Average: 1.4 ppb at hour 1
Monthly Average: 3.8 ppb Percentiles: $P_1 = 0$ $P_{10} = 0$ $Q_1 = 0$ Median = 0 $Q_3 = 1$ $P_{90} = 9$ $P_{99} = 65$

Hours in Service:	720
Hours of Data:	676
Hours of Missing Data:	44
Hours of Calibration:	33
Percent Operational Time:	98.5

Day	Hourly Period Ending At (MST)																								Daily	Daily
	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24	Average	Maximum
1-Apr	0	Z	0	0	0	3	1	0	2	14	8	17	3	10	18	2	3	1	0	0	1	0	0	0	3.8	18
2-Apr	2	Z	25	47	75	22	60	70	74	66	17	13	41	21	21	27	40	34	28	26	69	45	20	2	36.8	75
3-Apr	15	Z	7	5	10	7	9	9	6	45	9	1	1	0	0	1	1	1	1	1	1	0	0	0	5.6	45
4-Apr	0	Z	1	1	1	1	1	1	1	1	1	1	0	0	0	0	0	0	0	0	5	4	10	5	1.4	10
5-Apr	1	Z	0	0	0	0	0	1	3	7	15	24	22	24	39	63	77	73	19	2	3	1	3	3	16.6	77
6-Apr	1	Z	1	0	0	0	0	1	0	1	1	1	0	1	1	1	6	3	3	3	2	2	1	0	1.2	6
7-Apr	0	Z	0	0	0	0	0	0	PF	PF	PF	PF	PF	PF	PF	0	0	0	0	0	0	0	0	0	--	0
8-Apr	0	Z	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0.2	0
9-Apr	0	Z	0	0	0	0	0	0	0	0	8	2	2	5	2	2	3	5	0	1	8	1	1	0	1.8	8
10-Apr	1	Z	1	0	1	1	0	5	2	31	14	17	5	3	2	2	1	0	0	0	0	0	0	0	3.8	31
11-Apr	0	Z	0	0	0	0	0	0	0	0	0	0	0	0	1	3	3	14	47	63	23	21	3	6	8.1	63
12-Apr	1	Z	1	0	0	0	0	0	0	1	8	2	0	2	3	1	0	3	1	0	0	1	39	55	5.2	55
13-Apr	1	Z	2	1	1	1	1	2	1	1	2	4	13	13	7	5	14	7	5	4	4	3	1	1	4.2	14
14-Apr	0	Z	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	7	1.1	7
15-Apr	9	Z	0	0	0	0	0	0	0	0	0	0	0	0	0	3	4	4	0	0	1	11	19	5	2.6	19
16-Apr	0	Z	0	0	0	0	0	0	0	0	0	0	0	0	0	1	0	0	0	1	0	0	0	0	0.3	1
17-Apr	0	Z	0	0	0	0	0	0	0	0	0	1	1	0	0	0	0	0	0	1	0	0	0	0	0.3	1
18-Apr	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
19-Apr	0	Z	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0.2	0
20-Apr	0	Z	0	0	0	1	1	1	5	43	24	17	2	1	9	1	2	1	1	1	1	1	1	1	4.9	43
21-Apr	1	Z	1	1	1	1	0	0	0	1	11	2	9	7	2	4	2	0	0	0	14	5	1	5	3.0	14
22-Apr	6	Z	5	4	5	6	4	2	4	C	C	C	1	1	1	1	1	0	1	1	0	1	0	1	2.1	6
23-Apr	0	Z	0	0	0	0	0	0	0	0	0	0	PF	PF	PF	PF	1	1	0	0	0	0	0	0	0.3	1
24-Apr	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
25-Apr	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
26-Apr	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
27-Apr	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
28-Apr	0	Z	0	0	0	0	0	0	0	0	0	4	24	32	31	28	9	2	1	0	0	0	0	0	5.8	32
29-Apr	0	Z	0	0	0	0	0	0	1	1	1	0	0	0	0	0	0	3	4	1	1	1	1	1	0.8	4
30-Apr	1	Z	1	0	0	0	0	0	0	0	0	0	0	0	0	1	1	0	0	0	0	0	0	0	0.2	1
	1.4	--	1.6	2.1	3.2	1.5	2.7	3.2	3.6	7.6	4.3	3.9	4.6	4.4	5.1	5.1	5.7	5.2	3.8	3.6	4.5	3.3	3.5	3.1	Diurnal Average	
	15	--	25	47	75	22	60	70	74	66	24	24	41	32	39	63	77	73	47	63	69	45	39	55	Diurnal Maximum	

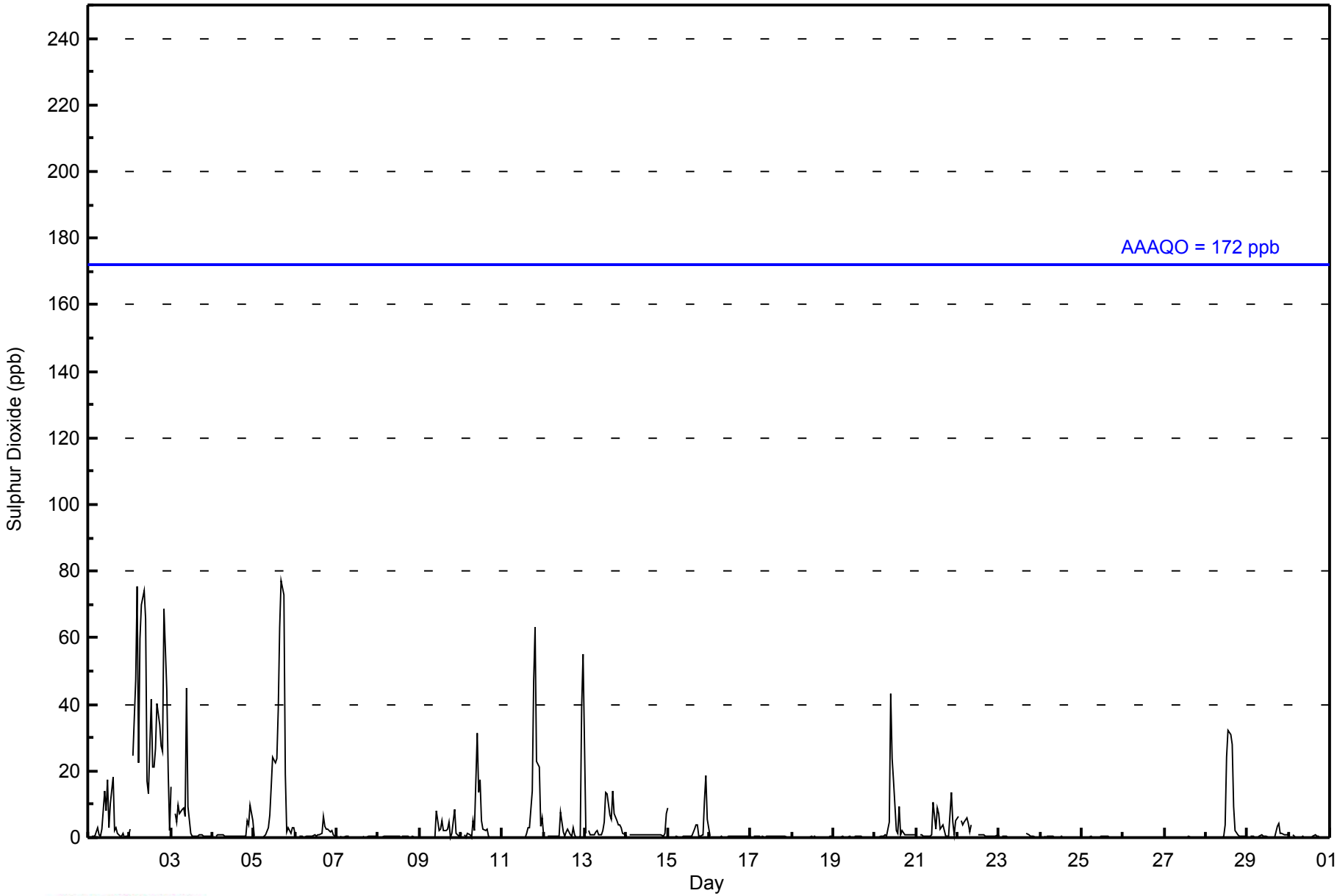
Z - zerospan C - Calibration PF - Power Failure
Alberta Ambient Air Quality Objectives (AAAQO): 1-hr 172 ppb 24-hr 48 ppb

WBEA NETWORK

Hourly Averages

Sulphur Dioxide (SO_2) - ppb

Mannix - April 2014



AURORA ATMOSPHERICS INC.

Concentration Ranges (ppb)	Number of Hours	%	Cumulative %
0 - 10	617	91.27	91.27
11 - 20	20	2.96	94.23
21 - 60	30	4.44	98.67
61 - 110	9	1.33	100.00
111 - 172	0	0.00	100.00
> 172	0	0.00	100.00

Total Number of Valid Hours: 676

Total Number of Hours: 720

WBEA NETWORK

Frequency Distribution

Sulphur Dioxide (SO_2) - ppb

Mannix - April 2014

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	55	22	29	52	52	159	58	17	13	15	34	16	23	21	17	617
11 - 20	7	4	1	0	0	0	1	0	0	0	0	0	0	1	2	4	20
21 - 60	11	8	1	1	1	2	1	0	0	0	0	0	1	1	2	1	30
61 - 110	5	1	0	2	1	0	0	0	0	0	0	0	0	0	0	0	9
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	68	24	32	54	54	161	58	17	13	15	34	17	25	25	22	676

Total Number of Valid Hours: 676

Total Number of Hours: 720

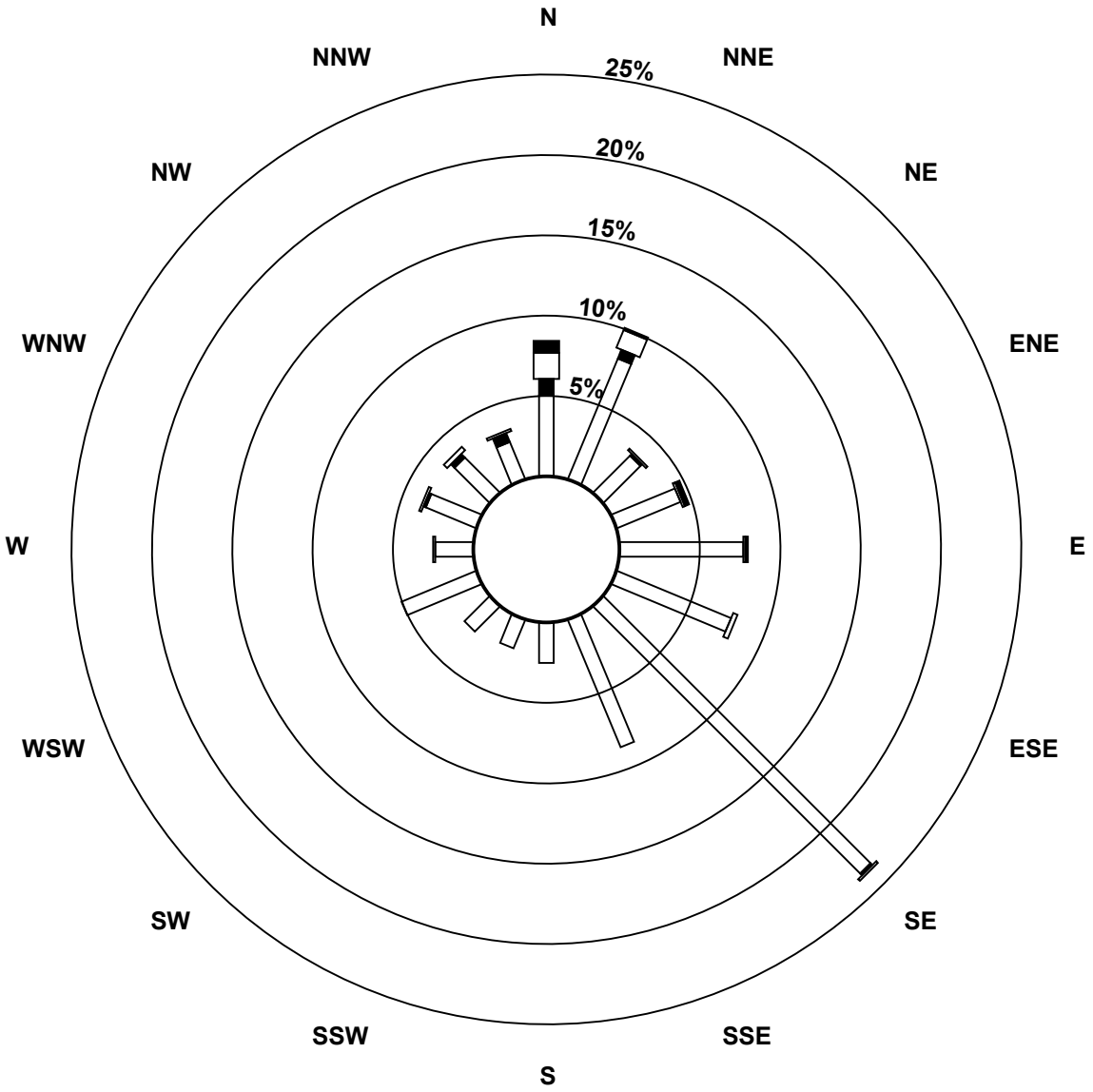
AURORA ATMOSPHERICS INC.

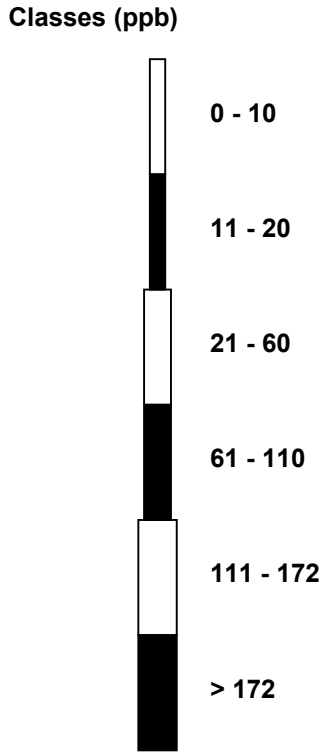
Wood Buffalo Environmental Association

Wind Rose Apr 2014

Sulphur Dioxide (SO_2) - ppb

Mannix (AMS 5)





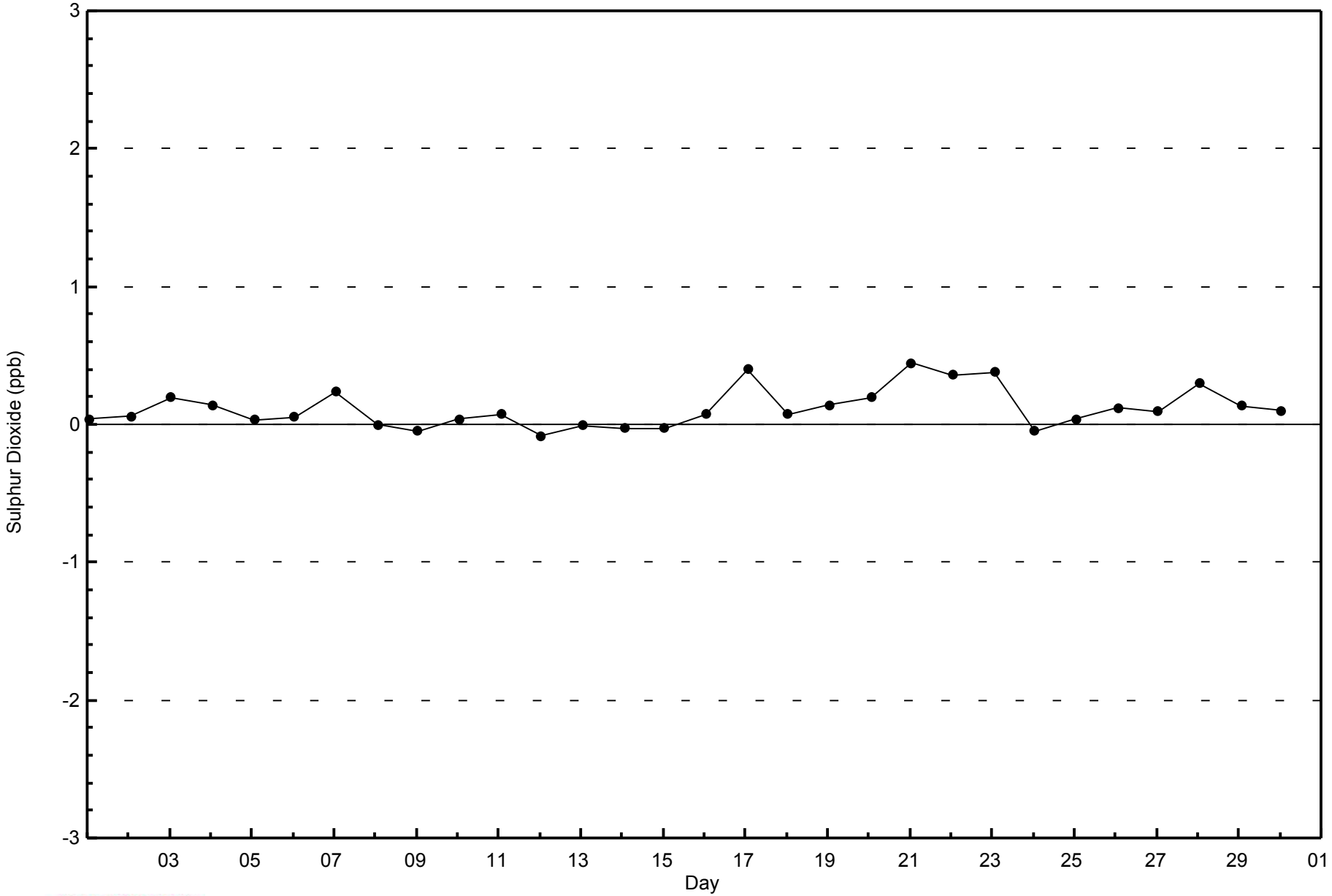
Total Number of Valid Hours: 676

WBEA NETWORK

Zero Responses

Sulphur Dioxide (SO_2) - ppb

Mannix - April 2014



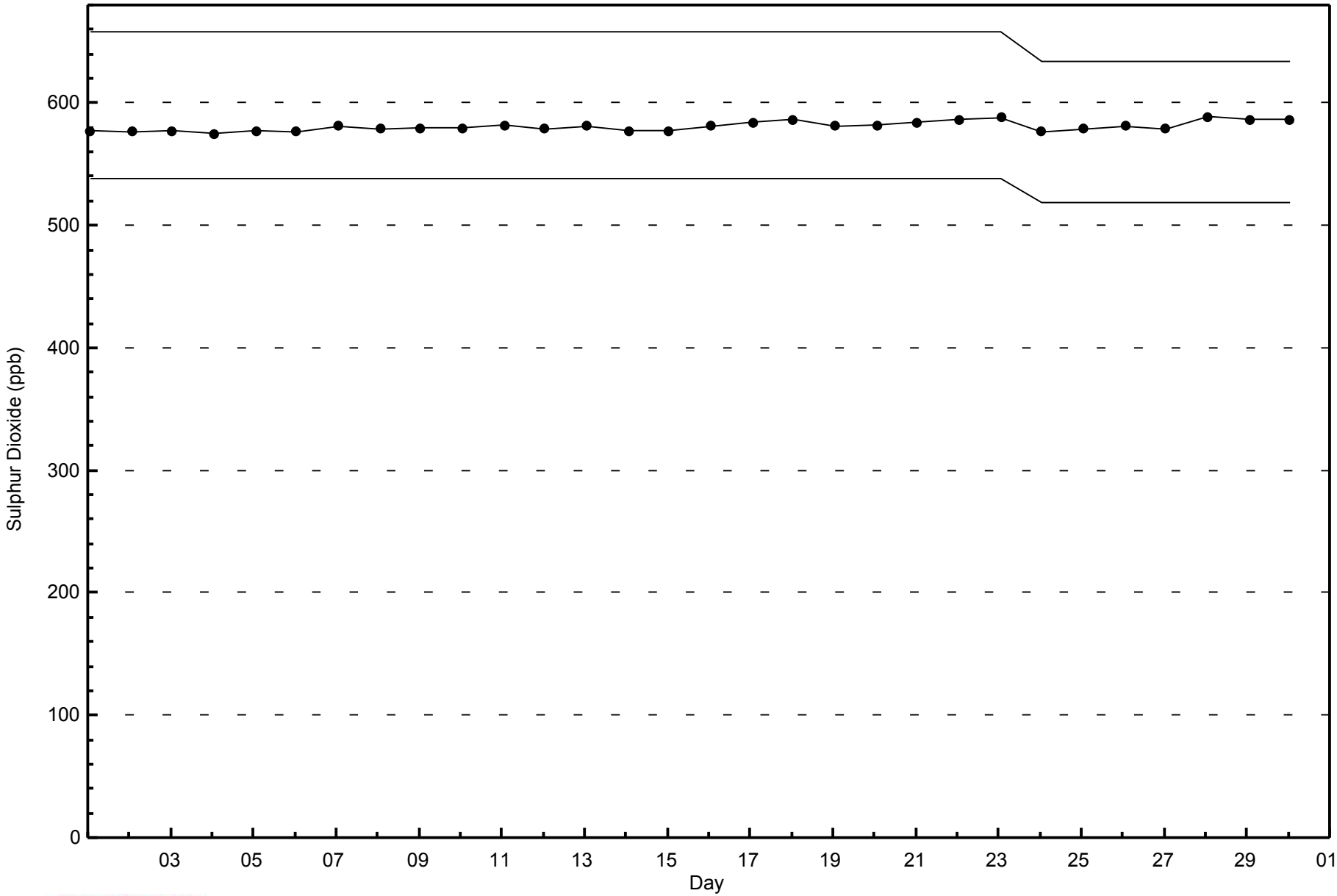
AURORA
ATMOSPHERICS INC.

WBEA NETWORK

Span Responses

Sulphur Dioxide (SO_2) - ppb

Mannix - April 2014



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Wood Buffalo Environmental Association

Summary of Hour Averages

Hydrogen Sulphide (H_2S) - ppb

Mannix - April 2014

Number of Exceedences (AAAQO): 1-hr: 0 24-hr: 0
Maximum Value: 5 ppb on Apr 29 21:00 Maximum Daily Average: 1.7 ppb on Apr 2

Minimum Value: 0 ppb on Apr 30 14:00 Minimum Daily Average: 0.1 ppb on Apr 18
Maximum Diurnal Average: 0.6 ppb at hour 10 Minimum Diurnal Average: 0.3 ppb at hour 16
Monthly Average: 0.4 ppb Percentiles: $P_1 = 0$ $P_{10} = 0$ $Q_1 = 0$ Median = 0 $Q_3 = 0$ $P_{90} = 1$ $P_{99} = 3$

Hours in Service:	720
Hours of Data:	678
Hours of Missing Data:	42
Hours of Calibration:	33
Percent Operational Time:	98.8

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-Apr	0	0	Z	0	0	1	0	0	0	0	0	1	0	0	1	0	0	0	0	0	1	1	0	1	0.4	1
2-Apr	1	0	Z	1	2	1	2	3	4	3	3	2	2	2	1	1	2	2	1	1	2	2	1	1	1.7	4
3-Apr	1	2	Z	1	2	2	2	2	1	3	2	1	1	1	1	0	0	0	0	0	0	0	0	0	1.0	3
4-Apr	0	0	Z	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1	1	0.3	1
5-Apr	0	0	Z	0	0	0	0	1	1	1	1	1	1	1	1	1	2	2	1	0	1	1	1	1	0.8	2
6-Apr	0	0	Z	0	0	0	0	1	0	0	0	0	0	1	0	0	0	1	1	1	0	1	1	1	0.5	1
7-Apr	1	0	Z	1	1	1	1	0	PF	PF	PF	PF	0	0	0	0	0	0	0	0	0	0	0	0	0.5	1
8-Apr	0	0	Z	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0.2	0
9-Apr	0	0	Z	0	0	0	0	0	0	0	1	2	1	1	1	0	0	0	0	0	1	1	0	0	0.4	2
10-Apr	1	1	Z	0	0	0	0	0	0	1	1	1	0	0	0	0	0	0	0	0	0	1	1	1	0.4	1
11-Apr	0	0	Z	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1	1	0	0	0	1	0.3	1
12-Apr	0	1	Z	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1	0	0	1	1	0.3	1
13-Apr	0	0	Z	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0.3	0
14-Apr	0	0	Z	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1	1	1	0.3	1
15-Apr	1	1	Z	1	1	1	1	1	1	0	0	0	0	C	C	C	0	0	0	0	0	1	0	0	0.5	1
16-Apr	0	0	Z	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0.2	1
17-Apr	0	0	Z	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0.2	0
18-Apr	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	0
19-Apr	0	0	Z	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0.2	0
20-Apr	0	1	Z	1	1	1	1	0	1	2	2	1	1	0	0	0	0	0	0	0	0	0	0	0	0.6	2
21-Apr	0	0	Z	0	0	0	1	0	0	0	1	0	0	0	0	0	0	0	0	0	1	1	0	1	0.4	1
22-Apr	1	1	Z	1	2	2	3	1	1	1	M	0	0	0	0	0	0	0	0	0	0	0	0	0	0.7	3
23-Apr	0	1	Z	0	0	1	0	0	0	0	0	0	PF	PF	PF	PF	0	0	0	0	0	0	0	0	0.3	1
24-Apr	0	0	Z	0	0	0	0	0	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0.3	1
25-Apr	0	0	Z	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0.3	0
26-Apr	0	0	Z	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0.3	0
27-Apr	0	0	Z	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0.4	0
28-Apr	0	0	Z	0	0	0	0	0	0	0	0	0	1	1	1	1	0	0	0	0	0	0	0	0	0.4	1
29-Apr	0	0	Z	0	0	0	0	1	0	0	0	0	0	0	0	0	0	1	0	1	5	3	2	1	0.8	5
30-Apr	1	1	Z	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0.2	1
	0.4	0.4	--	0.4	0.5	0.5	0.5	0.5	0.5	0.6	0.5	0.5	0.4	0.4	0.4	0.3	0.4	0.4	0.4	0.4	0.5	0.5	0.5	0.4	Diurnal Average	
	1	2	--	1	2	2	3	3	4	3	3	2	2	2	1	1	2	2	1	1	5	3	2	1	Diurnal Maximum	

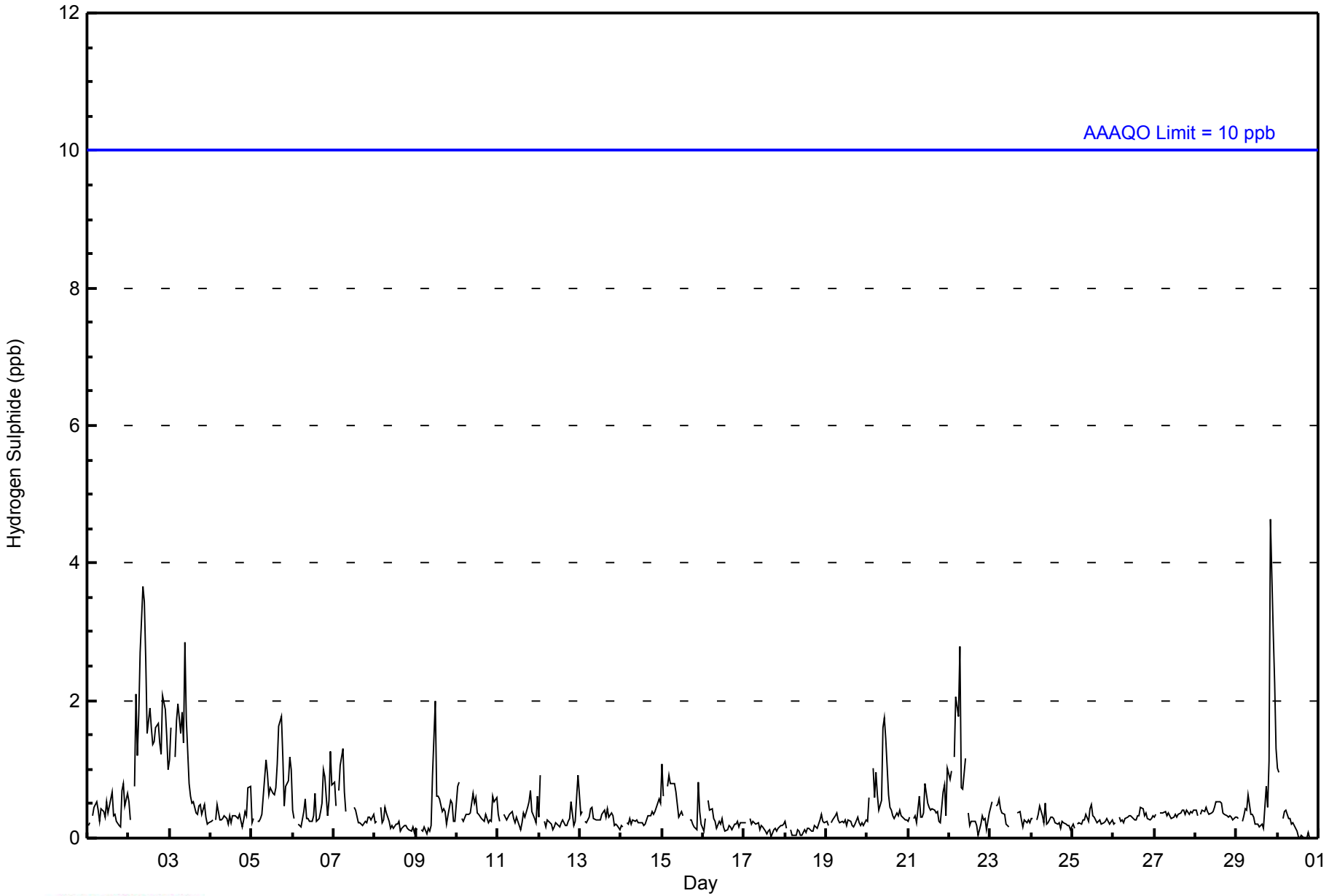
Z - zerospan C - Calibration M - Maintenance PF - Power Failure
Alberta Ambient Air Quality Objectives (AAAQO): 1-hr 10 ppb 24-hr 3 ppb

WBEA NETWORK

Hourly Averages

Hydrogen Sulphide (H_2S) - ppb

Mannix - April 2014



AURORA ATMOSPHERICS INC.

Concentration Ranges (ppb)	Number of Hours	%	Cumulative %
0 - 2	670	98.82	98.82
3 - 4	7	1.03	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: 678

Total Number of Hours: 720

WBEA NETWORK

Frequency Distribution

Hydrogen Sulphide (H_2S) - ppb

Mannix - April 2014

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	69	21	32	54	56	160	59	18	13	13	34	16	25	26	20	670
3 - 4	4	0	0	0	0	0	0	0	0	0	1	0	0	1	0	1	7
5 - 7	0	0	0	0	0	0	0	0	0	1	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	58	69	21	32	54	56	160	59	18	14	14	34	16	26	26	21	678

Total Number of Valid Hours: 678

Total Number of Hours: 720

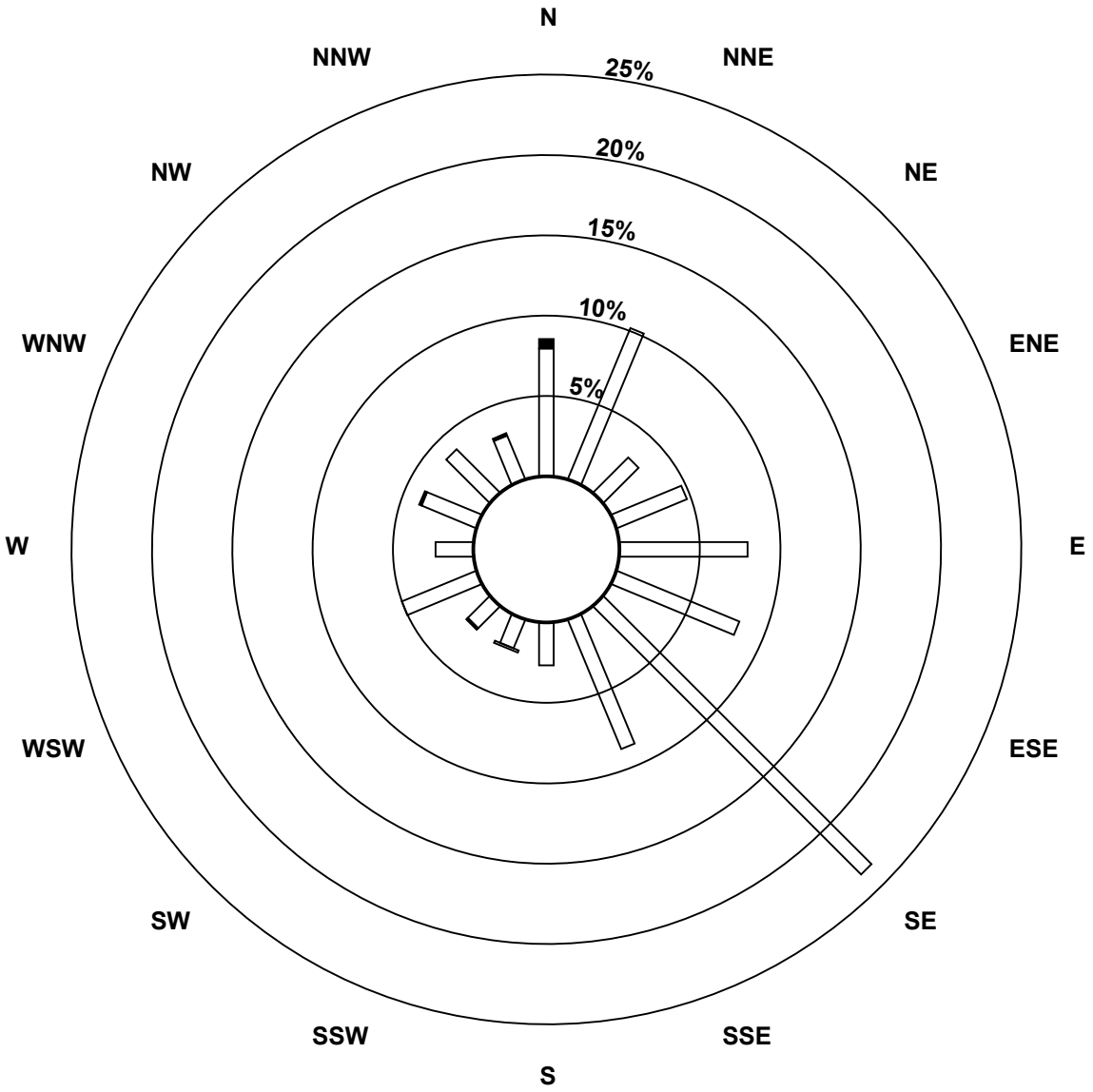
AURORA ATMOSPHERICS INC.

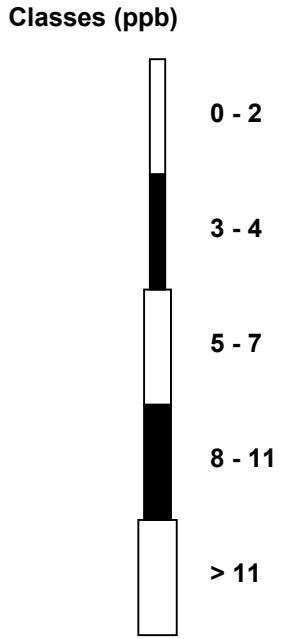
Wood Buffalo Environmental Association

Wind Rose Apr 2014

Hydrogen Sulphide (H_2S) - ppb

Mannix (AMS 5)





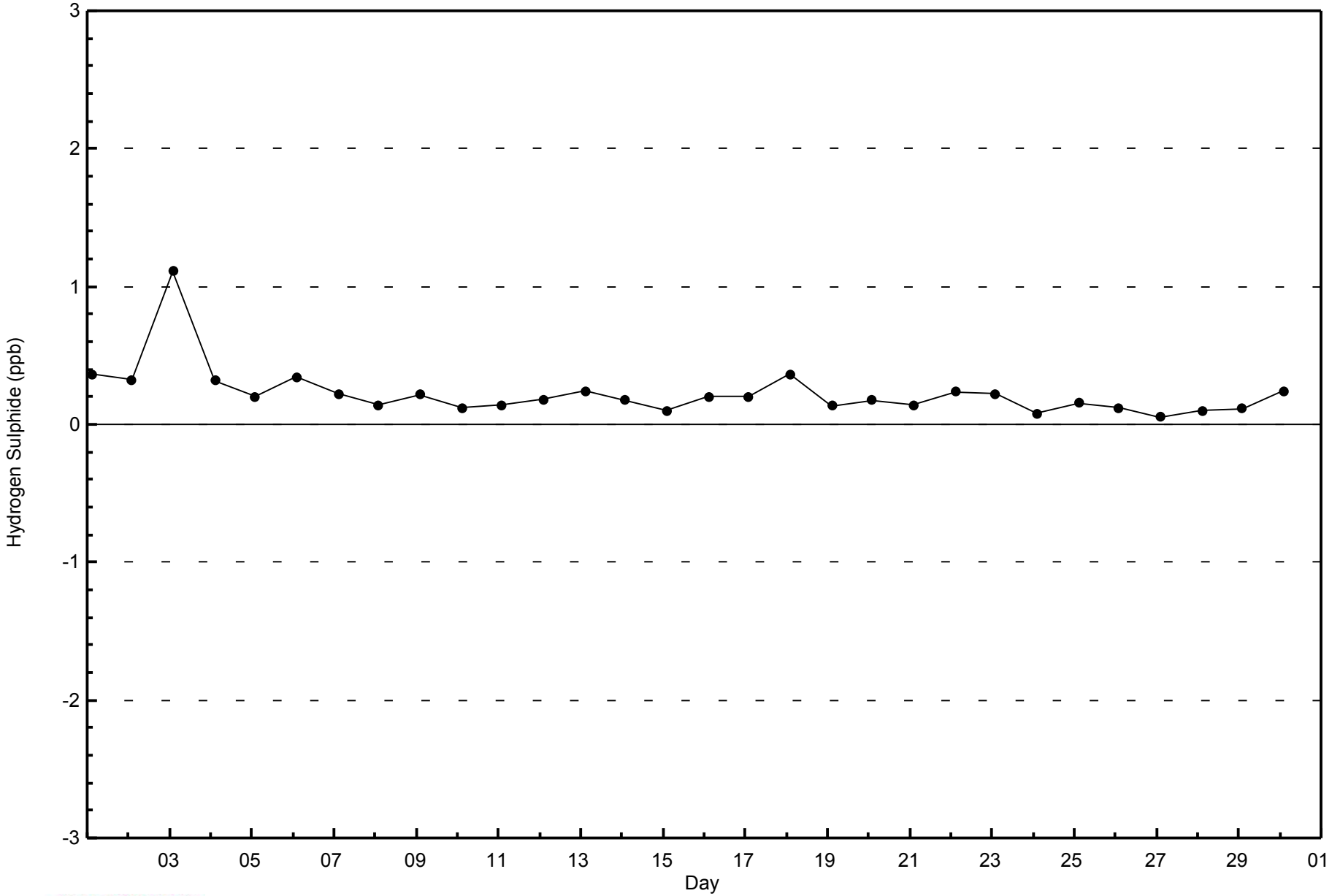
Total Number of Valid Hours: 678

WBEA NETWORK

Zero Responses

Hydrogen Sulphide (H_2S) - ppb

Mannix - April 2014



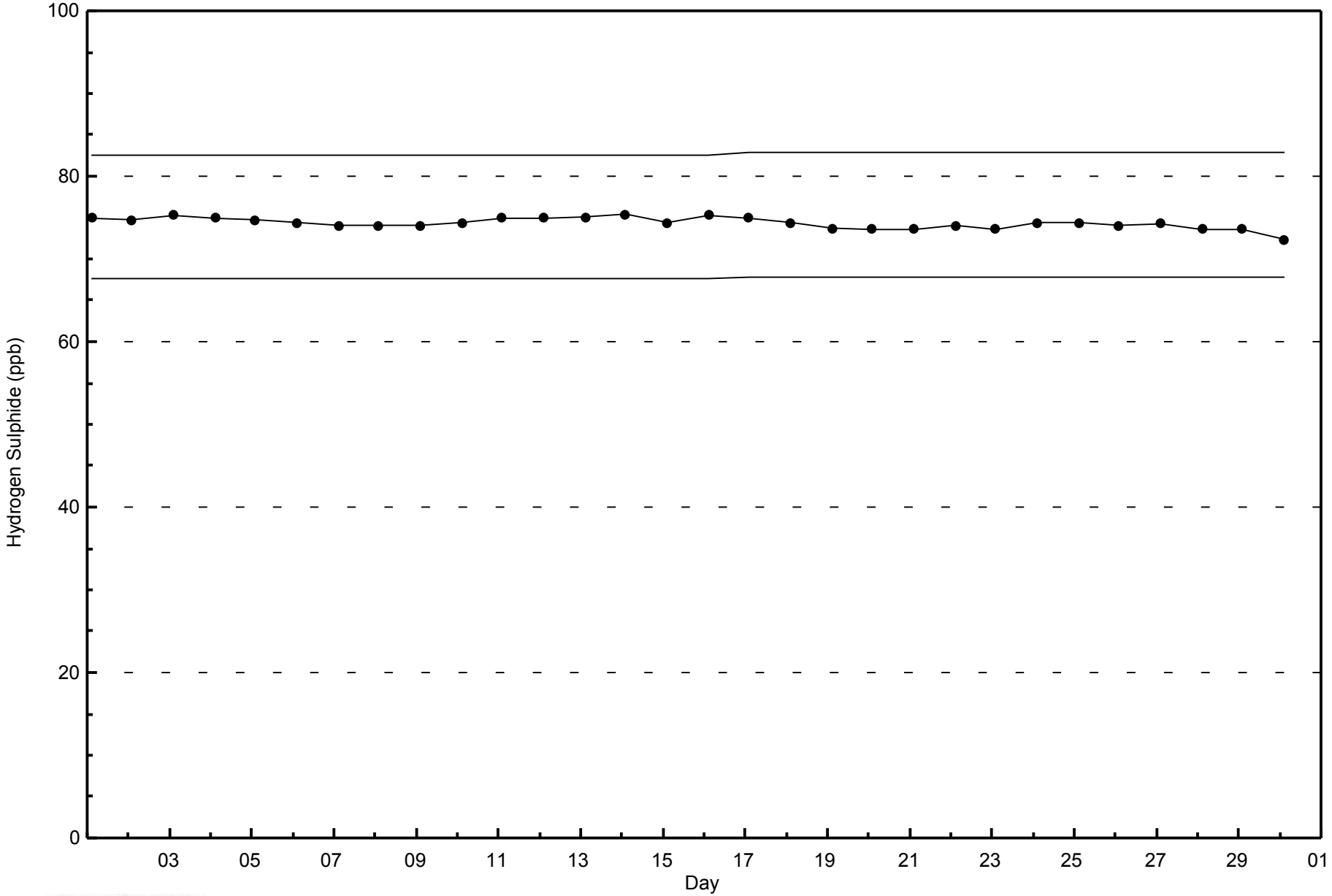
AURORA ATMOSPHERICS INC.

WBEA NETWORK

Span Responses

Hydrogen Sulphide (H_2S) - ppb

Mannix - April 2014



AURORA
ATMOSPHERICS INC.

Wood Buffalo Environmental Association

Summary of Hour Averages

Total Hydrocarbons (THC) - ppm

Mannix - April 2014

Maximum Value: 6.5 ppm on Apr 29 21:00

Maximum Daily Average: 2.6 ppm on Apr 29

Minimum Value: 2.0 ppm on Apr 27 15:00

Minimum Daily Average: 2.1 ppm on Apr 27

Maximum Diurnal Average: 2.4 ppm at hour 21

Minimum Diurnal Average: 2.2 ppm at hour 16

Monthly Average: 2.28 ppm

Percentiles: P_1 = 2.0 P_{10} = 2.1 Q_1 = 2.2 Median = 2.2 Q_3 = 2.3 P_{90} = 2.5 P_{99} = 3.4

Hours in Service:	720
Hours of Data:	676
Hours of Missing Data:	44
Hours of Calibration:	33
Percent Operational Time:	98.5

Day	Hourly Period Ending At (MST)																								Daily	Daily
	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24	Average	Maximum
1-Apr	2.2	Z	2.3	2.3	2.5	2.4	2.3	2.4	2.5	2.4	2.3	2.3	2.4	2.4	2.4	2.4	2.3	2.3	2.3	2.4	2.6	2.6	2.5	2.6	2.4	2.6
2-Apr	2.4	Z	2.2	2.3	2.3	2.3	2.2	2.2	2.2	2.2	2.2	2.2	2.2	2.2	2.2	2.2	2.2	2.2	2.2	2.2	2.2	2.2	2.2	2.5	2.2	2.5
3-Apr	2.5	Z	2.3	2.3	2.4	2.4	2.5	2.5	2.5	3.0	2.5	2.4	2.4	2.3	2.3	2.3	2.3	2.4	2.4	2.2	2.2	2.2	2.2	2.2	2.4	3.0
4-Apr	2.2	Z	2.2	2.2	2.2	2.3	2.2	2.2	2.2	2.2	2.2	2.1	2.1	2.1	2.4	2.2	2.2	2.2	2.1	2.2	2.3	2.3	2.8	2.7	2.3	2.8
5-Apr	2.2	Z	2.2	2.2	2.2	2.3	2.3	2.7	2.9	3.0	2.6	2.5	2.3	2.3	2.3	2.3	2.4	2.3	2.4	2.3	2.4	2.5	2.5	2.5	2.4	3.0
6-Apr	2.5	Z	2.3	2.2	2.2	2.2	2.5	2.7	2.2	2.2	2.1	2.1	2.2	2.4	2.2	2.4	2.6	2.6	3.4	2.5	2.3	2.4	3.4	2.7	2.5	3.4
7-Apr	2.9	Z	2.6	2.8	3.0	3.2	2.7	2.2	PF	PF	PF	PF	PF	PF	PF	2.3	2.3	2.2	2.2	2.2	2.2	2.1	2.1	2.1	--	3.2
8-Apr	2.1	Z	2.1	2.1	2.1	2.1	2.2	2.1	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.1	2.1	2.1	2.1	2.1	2.2
9-Apr	2.1	Z	2.1	2.1	2.1	2.1	2.0	2.1	2.1	2.1	2.7	3.4	2.4	2.4	2.4	2.3	2.3	2.3	2.1	2.2	2.3	2.3	2.2	2.2	2.3	3.4
10-Apr	2.5	Z	2.4	2.2	2.1	2.2	2.3	2.2	2.3	2.3	2.3	2.3	2.3	2.3	2.2	2.2	2.2	2.3	2.3	2.4	2.4	2.6	2.3	2.3	2.3	2.6
11-Apr	2.3	Z	2.5	2.5	2.4	2.3	2.4	2.4	2.4	2.1	2.2	2.2	2.1	2.2	2.2	2.1	2.2	2.2	2.2	2.3	2.3	2.2	2.3	2.2	2.3	2.5
12-Apr	2.3	Z	2.3	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	2.1	2.3	2.5	2.3	2.4	2.3	2.3	2.2	2.5
13-Apr	2.3	Z	2.2	2.2	2.2	2.3	2.3	2.4	2.3	2.3	2.3	2.3	2.3	2.4	2.4	2.3	2.3	2.3	2.4	2.4	2.2	2.2	2.2	2.2	2.3	2.4
14-Apr	2.2	Z	2.2	2.2	2.2	2.2	2.2	2.2	2.2	2.2	2.2	2.1	2.1	2.1	2.1	2.1	2.1	2.3	2.4	2.4	2.4	2.4	2.4	2.2	2.2	2.4
15-Apr	2.5	Z	2.3	2.4	2.4	2.3	2.3	2.3	2.3	2.3	2.3	2.3	2.2	2.3	2.3	2.3	2.2	2.2	2.2	2.3	2.2	2.2	2.2	2.2	2.3	2.5
16-Apr	2.2	Z	2.3	2.3	2.4	2.4	2.4	2.3	2.3	2.3	2.3	2.3	2.2	2.2	2.2	2.2	2.2	2.2	2.3	2.4	2.5	2.3	2.2	2.2	2.3	2.5
17-Apr	2.3	Z	2.4	2.3	2.2	2.3	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	2.3	2.4	2.5	2.5	2.4	2.3	2.5
18-Apr	2.4	Z	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	2.1	2.1	2.1	2.1	2.4	2.6	2.3	2.2	2.2	2.6
19-Apr	2.2	Z	2.1	2.1	2.2	2.2	2.1	2.1	2.1	2.1	2.1	2.1	2.1	2.2	2.2	2.2	2.4	2.2	2.2	2.3	2.2	2.2	2.2	2.6	2.2	2.6
20-Apr	2.6	Z	2.5	2.8	2.8	2.8	3.2	2.4	2.3	3.0	3.5	2.9	2.6	2.4	2.2	2.2	2.2	2.2	2.4	2.4	2.5	2.3	2.2	2.2	2.5	3.5
21-Apr	2.2	Z	2.2	2.3	2.5	2.3	2.3	2.2	2.2	2.4	2.7	2.5	2.2	2.2	2.4	2.2	2.2	2.2	2.3	2.2	2.4	2.5	2.4	2.3	2.3	2.7
22-Apr	2.4	Z	2.4	2.5	2.6	2.6	2.7	2.5	2.5	C	C	C	2.2	2.2	2.2	2.3	2.2	2.2	2.3	2.2	2.3	2.3	2.2	2.2	2.3	2.7
23-Apr	2.3	Z	2.4	2.4	2.4	2.2	2.3	2.3	2.4	2.2	2.1	2.2	PF	PF	PF	PF	2.6	2.6	2.4	2.2	2.2	2.2	2.2	2.2	2.3	2.6
24-Apr	2.1	Z	2.3	2.1	2.3	2.3	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	2.2	2.2	2.2	2.1	2.1	2.2	2.3
25-Apr	2.1	Z	2.2	2.2	2.2	2.2	2.2	2.1	2.1	2.2	2.2	2.2	2.1	2.1	2.1	2.1	2.1	2.1	2.1	2.1	2.1	2.1	2.1	2.1	2.1	2.2
26-Apr	2.1	Z	2.1	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	2.1	2.1	2.1	2.1	2.1	2.1	2.2
27-Apr	2.1	Z	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	2.0	2.0	2.0	2.0	2.0	2.0	2.1	2.1	2.1	2.2
28-Apr	2.1	Z	2.1	2.1	2.2	2.1	2.1	2.1	2.1	2.1	2.1	2.1	2.1	2.2	2.2	2.2	2.2	2.2	2.2	2.2	2.2	2.2	2.1	2.2	2.2	2.2
29-Apr	2.2	Z	2.2	2.2	2.2	2.2	2.2	2.2	2.2	2.3	2.2	2.1	2.1	2.1	2.2	2.2	2.1	2.4	2.2	3.1	6.5	4.5	3.9	3.0	2.6	6.5
30-Apr	2.4	Z	2.3	2.2	2.3	2.3	2.3	2.2	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	2.1	2.1	2.2	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	2.2	2.2	2.2	2.2	2.2	2.3	2.3	2.4	2.4	2.3	2.3	Diurnal Average	
	2.9	--	2.6	2.8	3.0	3.2	3.2	2.7	2.9	3.0	3.5	3.4	2.6	2.4	2.4	2.4	2.6	2.6	3.4	3.1	6.5	4.5	3.9	3.0	Diurnal Maximum	

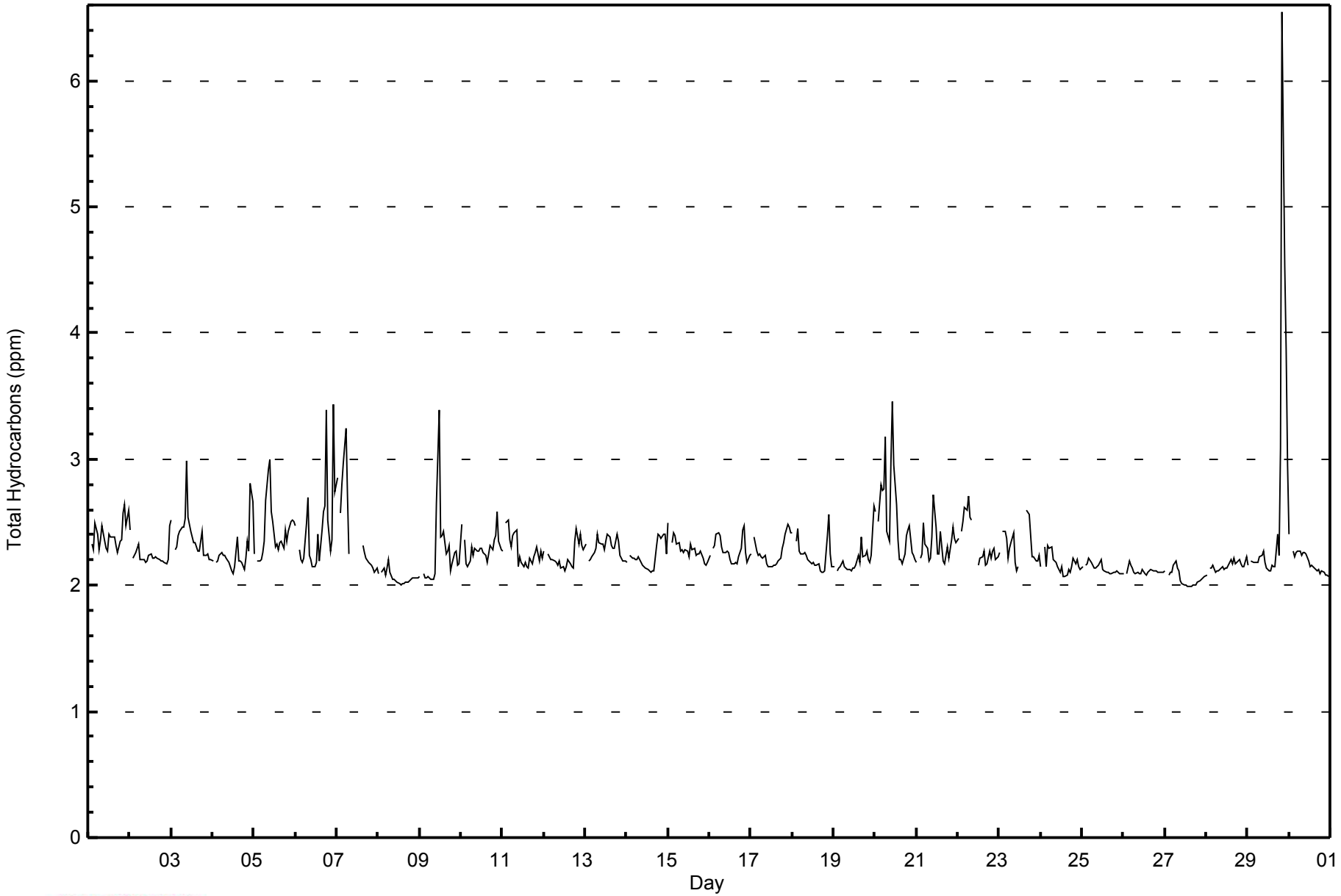
Z - zerospan C - Calibration PF - Power Failure

WBEA NETWORK

Hourly Averages

Total Hydrocarbons (THC) - ppm

Mannix - April 2014



AURORA ATMOSPHERICS INC.

Concentration Ranges (ppm)	Number of Hours	%	Cumulative %
0 - 2.0	26	3.85	3.85
2.1 - 3.0	640	94.67	98.52
3.1 - 10.0	10	1.48	100.00
> 10.0	0	0.00	100.00

Total Number of Valid Hours: 676

Total Number of Hours: 720

WBEA NETWORK

Frequency Distribution

Total Hydrocarbons (THC) - ppm

Mannix - April 2014

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	12	1	0	0	2	10	1	0	0	0	26
2.1 - 3.0	57	68	24	32	54	54	148	56	17	12	12	23	15	24	23	21	640
3.1 - 10.0	0	0	0	0	0	0	1	1	0	1	1	1	1	1	2	1	10
> 10.0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Totals	57	68	24	32	54	54	161	58	17	13	15	34	17	25	25	22	676

Total Number of Valid Hours: 676

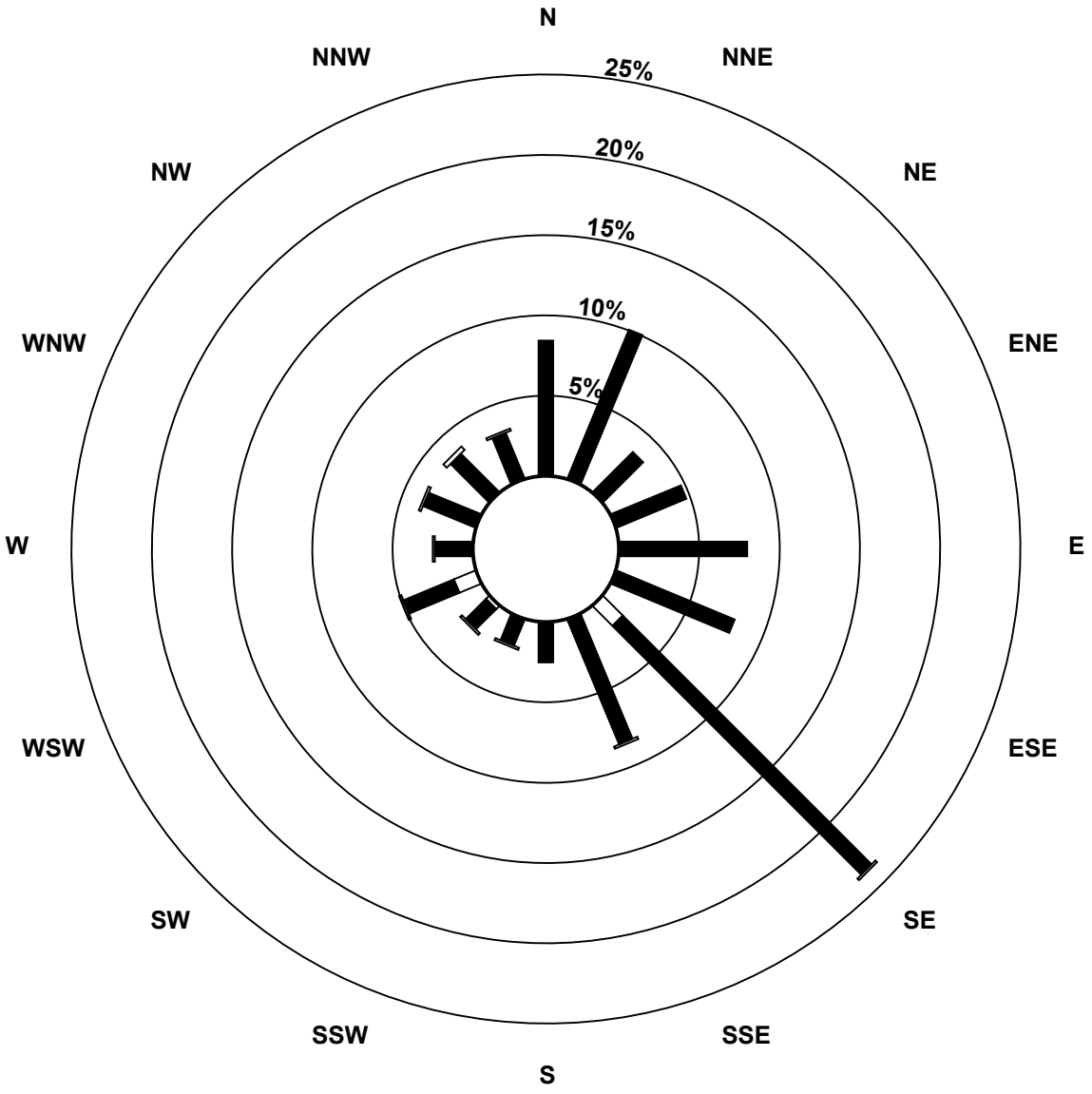
Total Number of Hours: 720

Wood Buffalo Environmental Association

Wind Rose Apr 2014

Total Hydrocarbons (THC) - ppm

Mannix (AMS 5)



Classes (ppm)

0 - 2.0

2.1 - 3.0

3.1 - 10.0

> 10.0

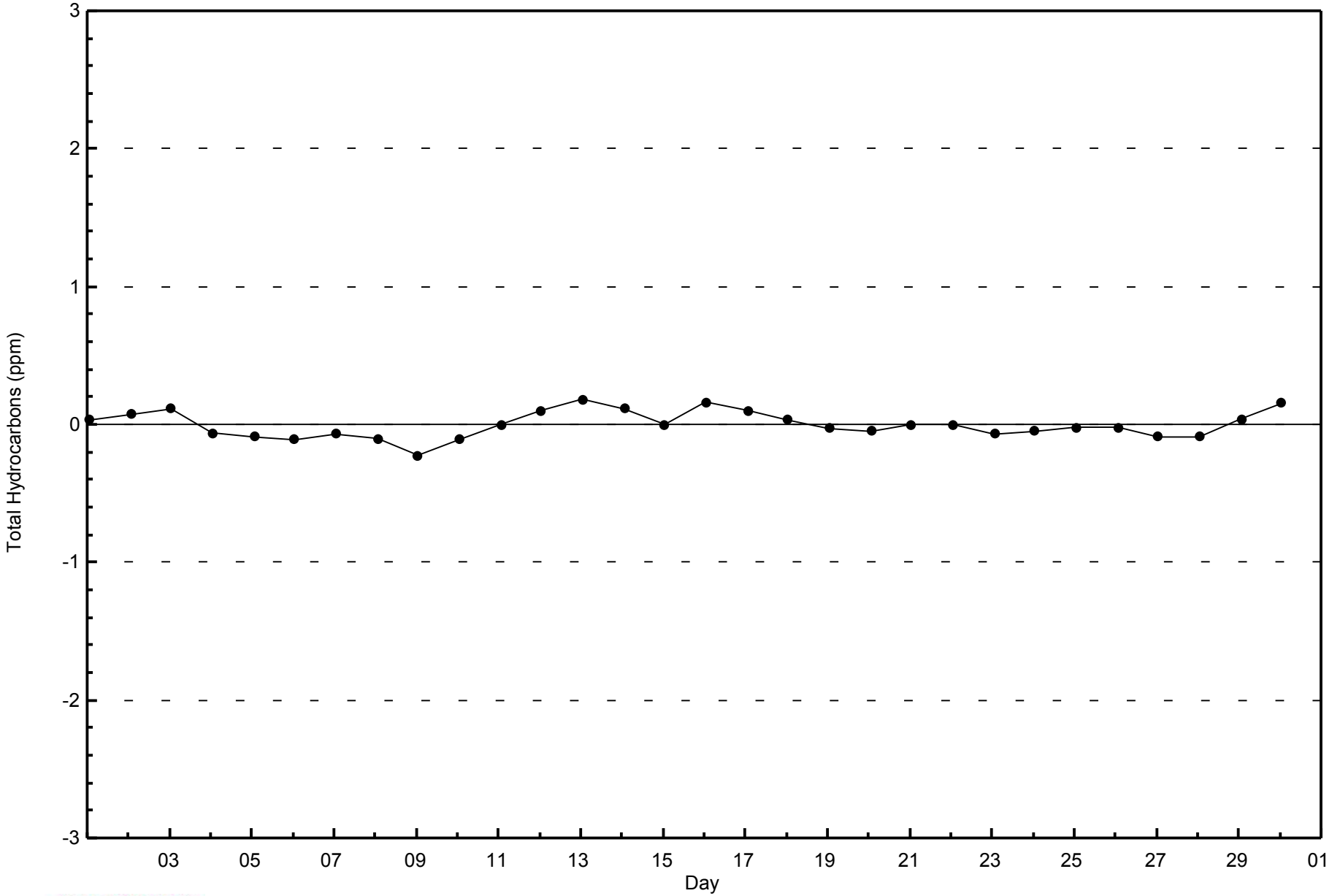
Total Number of Valid Hours: 676

WBEA NETWORK

Zero Responses

Total Hydrocarbons (THC) - ppm

Mannix - April 2014



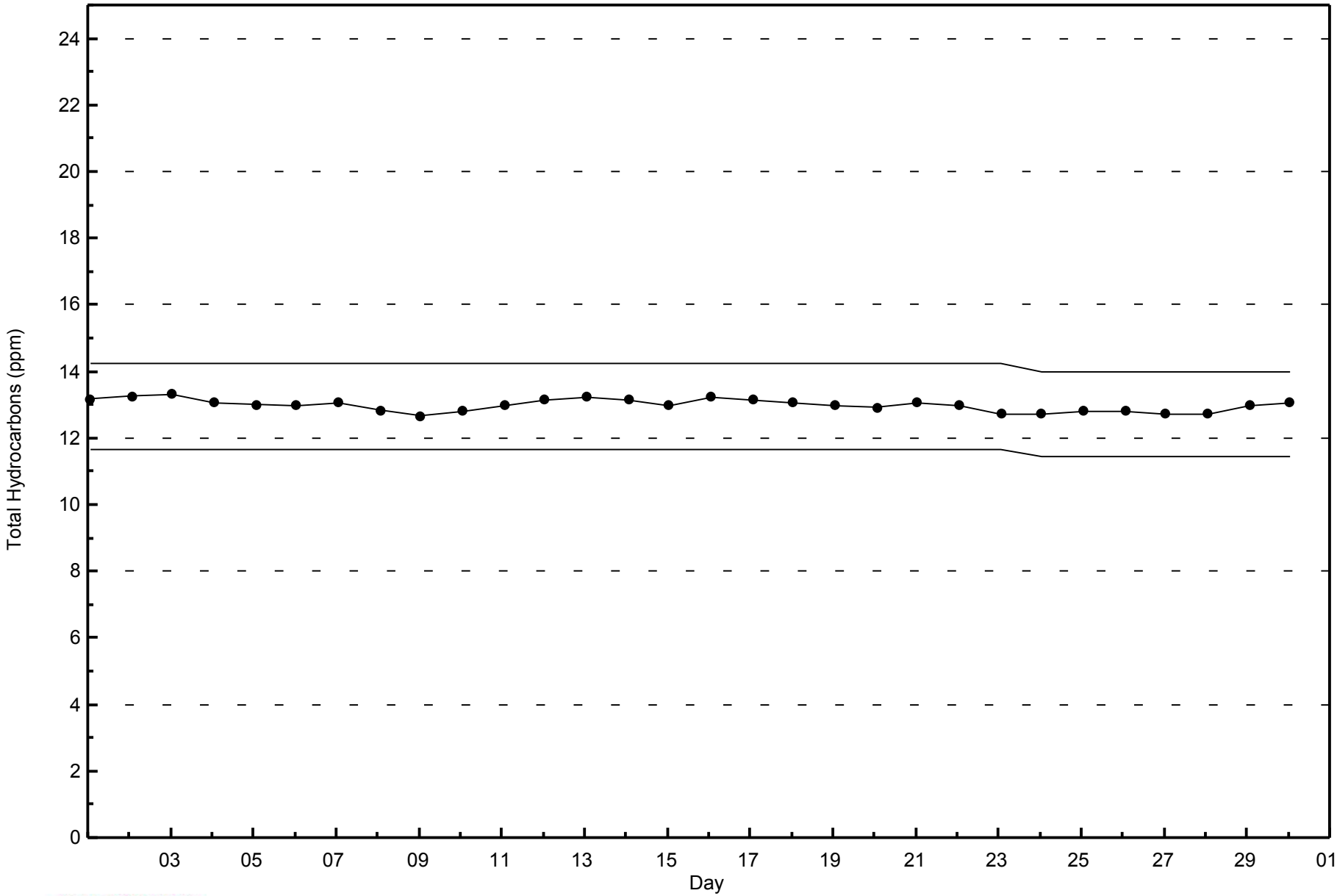
AURORA ATMOSPHERICS INC.

WBEA NETWORK

Span Responses

Total Hydrocarbons (THC) - ppm

Mannix - April 2014



AURORA ATMOSPHERICS INC.

Maximum Value: 22.0 C on Apr 30 16:00

Maximum Daily Average: 13.9 C on Apr 30

Minimum Value: -18.2 C on Apr 3 06:00

Minimum Daily Average: -11.7 C on Apr 2

Maximum Diurnal Average: 6.2 C at hour 16

Minimum Diurnal Average: -3.1 C at hour 6

Monthly Average: 1.48 C

Percentiles: P_1 = -15.6 P_{10} = -8.3 Q_1 = -3.5 Median = 1.7 Q_3 = 5.9 P_{90} = 11.0 P_{99} = 20.3

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-Apr	-7.2	-8.1	-9.0	-9.8	-9.5	-10.2	-11.1	-11.1	-9.5	-7.9	-6.8	-5.4	-4.0	-3.1	-2.2	-2.1	-2.2	-2.5	-3.6	-5.4	-6.6	-7.8	-9.1	-9.8	-6.8	-2.1
2-Apr	-11.0	-12.2	-13.2	-14.4	-15.3	-16.2	-16.3	-15.5	-13.3	-11.0	-9.9	-9.4	-8.7	-7.9	-7.0	-7.4	-8.8	-9.8	-10.8	-11.6	-12.2	-12.6	-13.0	-13.6	-11.7	-7.0
3-Apr	-14.3	-14.6	-15.1	-16.1	-17.5	-18.2	-18.0	-16.5	-14.5	-12.6	-10.5	-9.0	-7.1	-5.3	-3.8	-2.6	-1.6	-1.2	-1.8	-2.8	-3.8	-4.4	-4.2	-4.0	-9.1	-1.2
4-Apr	-3.8	-3.8	-3.5	-3.2	-3.7	-3.5	-3.4	-3.6	-2.7	-1.5	-0.8	-0.6	-0.1	1.0	1.5	1.9	0.7	0.0	-0.5	-1.4	-1.8	-2.0	-2.7	-4.2	-1.7	1.9
5-Apr	-5.5	-6.6	-7.7	-8.5	-8.8	-9.3	-8.5	-6.5	-5.6	-3.4	-2.1	-0.7	0.3	0.8	1.7	2.5	3.0	3.3	3.0	1.0	-1.0	-2.3	-3.1	-3.6	-2.8	3.3
6-Apr	-3.0	-3.4	-3.7	-4.2	-4.6	-5.0	-5.6	-5.2	-3.1	-0.7	1.0	1.7	1.2	2.3	3.9	4.4	5.3	5.8	5.0	3.6	1.8	0.4	-0.9	-1.7	-0.2	5.8
7-Apr	-2.2	-2.3	-2.1	-2.7	-2.5	-2.0	0.7	2.1	MS	MS	MS	7.2	8.4	10.0	11.7	12.7	12.9	12.0	10.3	8.6	7.5	7.1	6.5	5.3	5.2	12.9
8-Apr	5.5	5.1	4.9	4.9	7.4	6.7	6.2	7.0	9.5	11.7	14.1	15.4	16.9	17.2	16.8	17.2	17.4	16.8	14.9	12.4	11.0	10.3	8.8	7.9	11.1	17.4
9-Apr	7.7	6.0	4.6	4.5	4.6	4.2	4.7	4.6	4.8	3.2	2.7	4.4	6.8	8.8	10.4	10.7	10.1	8.5	8.0	5.5	3.4	2.3	1.8	1.6	5.6	10.7
10-Apr	0.4	-1.2	-2.2	-3.0	-3.5	-4.5	-5.1	-4.8	-4.3	-3.5	-2.5	-1.5	-0.7	-0.1	0.9	0.6	-0.3	-0.7	-1.3	-2.7	-3.5	-4.0	-4.0	-4.5	-2.3	0.9
11-Apr	-4.6	-4.9	-5.4	-5.7	-6.2	-6.6	-6.8	-6.5	-5.8	-4.7	-4.1	-4.3	-4.8	-4.5	-4.2	-4.1	-4.9	-5.4	-5.8	-6.7	-7.4	-8.2	-8.7	-9.9	-5.9	-4.1
12-Apr	-10.1	-10.6	-11.6	-12.5	-12.8	-12.9	-11.6	-8.9	-6.2	-5.2	-2.7	-1.4	-0.1	0.8	1.2	1.1	0.1	-0.6	-2.0	-3.3	-4.7	-5.9	-6.7	-7.8	-5.6	1.2
13-Apr	-8.7	-9.6	-10.4	-11.2	-11.5	-11.5	-10.5	-10.1	-8.7	-7.4	-6.2	-5.2	-4.7	-3.8	-3.1	-2.6	-2.3	-2.1	-2.1	-2.5	-3.1	-3.8	-4.6	-5.4	-6.3	-2.1
14-Apr	-5.9	-6.6	-7.1	-7.6	-8.2	-8.5	-8.0	-6.0	-3.1	-0.9	1.9	4.6	6.3	7.2	7.7	7.6	7.4	6.9	6.2	5.4	4.5	3.4	2.2	0.6	0.4	7.7
15-Apr	0.8	-0.4	-2.2	-2.4	-2.7	-3.4	-4.1	-4.1	-3.6	-2.9	-1.7	-0.2	0.8	1.3	1.7	1.8	1.3	0.2	-1.1	-2.5	-4.1	-5.7	-6.9	-7.8	-2.0	1.8
16-Apr	-8.1	-8.2	-8.4	-9.0	-10.1	-10.2	-9.9	-8.6	-8.1	-7.3	-5.2	-2.3	-0.2	0.9	1.7	2.6	2.8	2.9	2.4	1.2	-0.1	-1.3	-1.6	-2.2	-3.6	2.9
17-Apr	-2.7	-3.2	-3.7	-4.2	-4.7	-5.1	-4.7	-3.5	-1.7	0.4	1.9	3.3	3.9	4.5	5.2	5.5	5.4	5.1	4.5	3.4	2.3	1.3	0.5	-0.3	0.6	5.5
18-Apr	-0.9	-1.3	-1.6	-1.9	-1.5	-1.3	-1.3	-1.2	-1.2	-1.0	-0.3	0.3	0.5	0.7	0.6	0.9	0.9	0.6	0.4	0.3	0.3	0.5	0.2	0.3	-0.3	0.9
19-Apr	0.5	0.4	0.1	-0.1	0.0	0.1	0.5	1.3	2.3	3.6	4.7	5.5	5.9	6.5	7.3	7.7	7.7	7.3	6.7	5.4	4.2	3.3	2.7	1.7	3.6	7.7
20-Apr	0.8	-0.2	-0.2	-0.7	-0.6	-0.9	0.6	1.8	3.4	5.7	7.9	10.9	12.2	13.5	13.3	13.4	13.0	12.6	12.1	11.0	8.5	6.4	6.2	5.7	6.5	13.5
21-Apr	5.0	5.2	5.2	4.7	4.6	4.5	4.7	5.6	7.6	10.6	12.1	12.7	13.1	12.1	11.5	12.7	13.4	13.2	12.0	9.8	7.8	6.5	4.7	2.9	8.4	13.4
22-Apr	1.6	0.7	-0.1	-0.5	-1.0	-0.6	1.4	3.5	5.4	7.2	9.4	12.1	13.3	13.6	13.7	13.4	12.4	11.1	9.7	8.4	7.2	6.2	5.6	5.4	6.6	13.7
23-Apr	5.4	5.5	5.2	5.1	5.1	5.1	5.2	5.8	6.5	7.5	8.6	9.5	10.4	10.9	11.1	11.1	10.2	9.1	8.5	7.9	7.2	6.6	5.9	5.2	7.4	11.1
24-Apr	4.5	3.5	3.8	2.7	2.0	2.2	2.0	1.3	1.8	2.7	2.7	2.4	3.9	5.1	6.4	7.1	7.8	7.6	7.2	6.4	5.0	4.1	3.4	3.0	4.1	7.8
25-Apr	2.5	2.0	1.5	1.2	0.8	0.2	0.4	0.9	1.6	2.5	3.6	4.5	5.9	6.8	7.7	8.4	8.0	7.8	7.1	6.5	6.0	5.4	4.7	4.3	4.2	8.4
26-Apr	3.9	3.2	3.1	2.9	2.3	2.1	2.4	3.1	3.8	4.4	5.5	6.8	7.6	7.5	7.3	7.1	7.0	6.6	6.2	5.6	5.2	4.8	4.6	4.4	4.9	7.6
27-Apr	3.9	3.7	3.6	3.4	3.0	1.8	1.9	1.7	1.4	1.7	2.8	3.9	4.4	4.9	5.4	5.6	5.6	5.4	5.2	5.1	4.8	4.5	4.3	4.0	3.8	5.6
28-Apr	4.0	4.0	3.9	3.2	2.8	2.8	2.9	3.2	3.7	4.4	5.4	6.6	8.1	9.6	10.5	11.2	11.3	11.5	11.1	9.8	8.3	7.1	6.1	5.3	6.5	11.5
29-Apr	4.6	3.9	3.3	2.6	1.7	1.5	2.5	5.3	8.6	10.2	13.2	15.3	16.4	16.8	16.9	16.9	18.1	18.3	17.7	16.1	12.8	11.0	8.9	7.5	10.4	18.3
30-Apr	6.9	4.9	4.4	3.9	3.5	4.1	5.3	6.9	9.4	13.2	16.8	19.1	21.0	21.0	20.9	22.0	21.7	20.7	20.5	18.8	17.5	17.5	16.7	16.3	13.9	22.0
	-1.0	-1.6	-2.1	-2.6	-2.9	-3.1	-2.8	-1.9	-0.7	0.7	2.1	3.5	4.6	5.3	5.9	6.2	6.1	5.7	5.0	3.8	2.6	1.7	0.9	0.2	Diurnal Average	
	7.7	6.0	5.2	5.1	7.4	6.7	6.2	7.0	9.5	13.2	16.8	19.1	21.0	21.0	20.9	22.0	21.7	20.7	20.5	18.8	17.5	17.5	16.7	16.3	Diurnal Maximum	

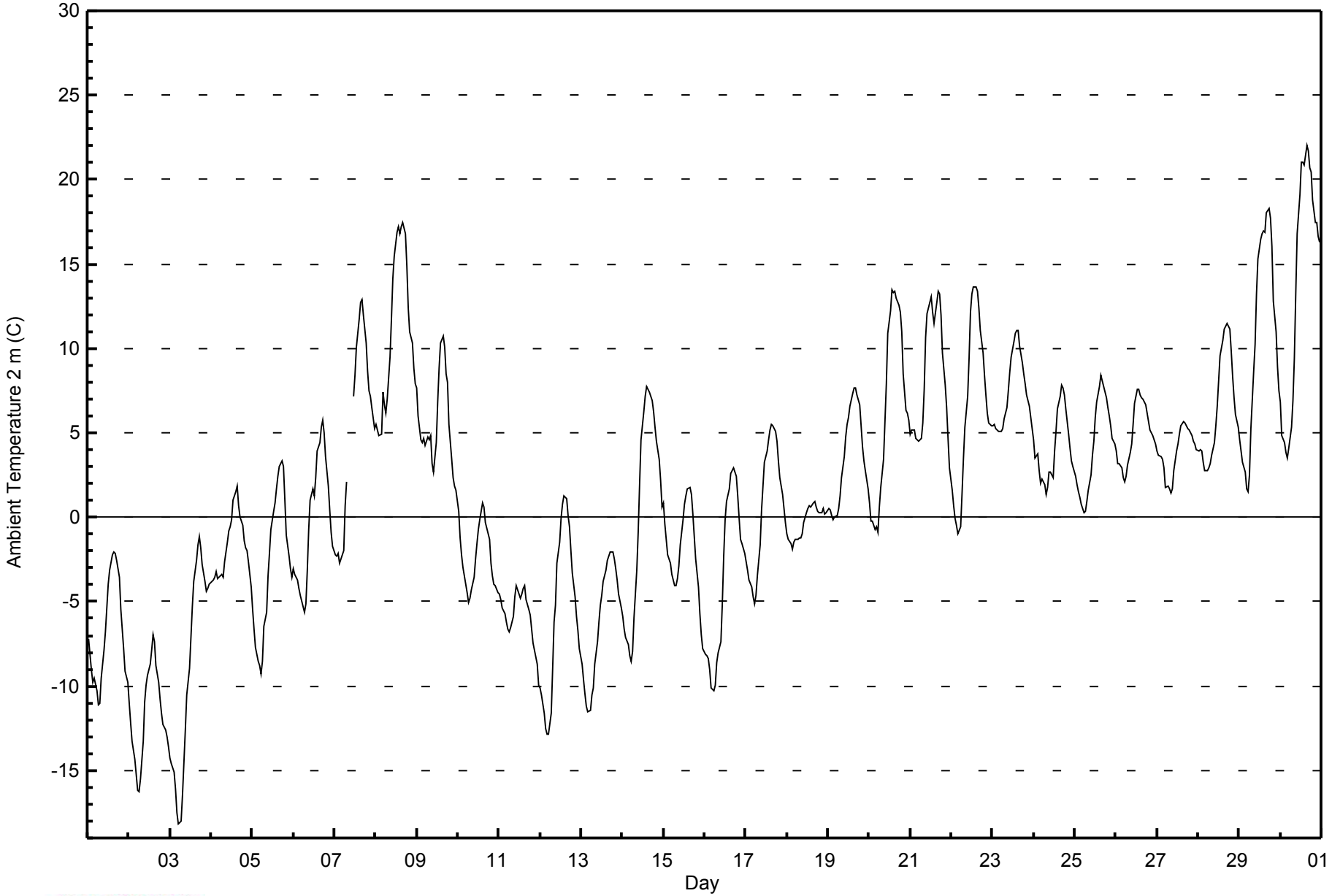
MS - Missing

WBEA NETWORK

Hourly Averages

Ambient Temperature 2 m (AT2m) - C

Mannix - April 2014



AURORA ATMOSPHERICS INC.

Concentration Ranges (C)	Number of Hours	%	Cumulative %
-50 - -20	0	0.00	0.00
-20 - 0	290	40.45	40.45
0 - 10	341	47.56	88.01
10 - 20	79	11.02	99.02
> 20	7	0.98	100.00

Total Number of Valid Hours: 717

Total Number of Hours: 720

Maximum Value: 21.3 C on Apr 30 17:00 — Maximum Daily Average: 14.2 C on Apr 30

Minimum Value: -18.5 C on Apr 3 07:00 — Minimum Daily Average: -12.4 C on Apr 2

Maximum Diurnal Average: 5.8 C at hour 17 — Minimum Diurnal Average: -3.0 C at hour 7

Monthly Average: 1.36 C — Percentiles: P_1 = -16.6 P_{10} = -8.5 Q_1 = -3.7 Median = 1.6 Q_3 = 6.0 P_{90} = 10.9 P_{99} = 19.7

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-Apr	-6.2	-6.9	-8.0	-8.7	-9.0	-9.9	-11.2	-11.6	-10.5	-9.0	-8.0	-6.7	-5.6	-4.5	-3.5	-3.2	-2.8	-2.9	-3.7	-5.4	-6.6	-7.8	-9.1	-9.8	-7.1	-2.8
2-Apr	-11.0	-12.3	-13.4	-14.5	-15.5	-16.4	-16.7	-16.4	-14.5	-12.4	-11.4	-10.5	-9.9	-9.1	-8.1	-8.3	-9.6	-10.4	-11.2	-12.0	-12.6	-12.9	-13.4	-13.8	-12.4	-8.1
3-Apr	-14.4	-14.7	-15.5	-16.5	-17.5	-18.1	-18.5	-17.4	-15.6	-13.8	-11.6	-9.9	-7.8	-5.6	-4.0	-2.7	-1.7	-1.2	-1.8	-2.7	-3.7	-4.4	-4.2	-4.0	-9.5	-1.2
4-Apr	-3.8	-3.8	-3.6	-3.2	-3.8	-3.6	-3.5	-3.8	-2.9	-1.8	-1.1	-0.9	-0.6	0.5	1.3	1.7	0.6	-0.1	-0.5	-1.4	-1.7	-2.0	-2.6	-3.8	-1.8	1.7
5-Apr	-4.9	-6.1	-7.3	-8.0	-8.3	-8.6	-8.3	-7.5	-6.0	-4.2	-3.5	-2.4	-0.9	0.5	1.8	2.7	2.9	3.4	3.1	1.3	-0.8	-1.9	-2.8	-3.2	-2.9	3.4
6-Apr	-2.8	-3.2	-3.6	-4.1	-4.6	-4.9	-5.8	-5.4	-3.5	-1.2	0.6	1.2	0.9	2.6	4.0	4.4	5.4	5.8	5.6	4.3	2.7	1.9	1.0	0.5	0.1	5.8
7-Apr	-0.3	-0.2	0.4	0.3	0.5	0.4	0.8	1.2	MS	MS	MS	7.0	8.2	9.9	11.6	12.2	12.5	12.2	11.0	9.7	9.3	8.3	7.3	6.5	6.1	12.5
8-Apr	6.0	6.1	6.0	6.9	8.6	8.0	7.3	8.1	9.6	11.3	13.6	15.0	16.5	16.9	16.5	17.0	17.4	16.9	15.4	13.0	11.6	10.8	9.7	8.7	11.5	17.4
9-Apr	8.2	6.6	5.5	5.1	5.0	4.5	4.8	4.7	4.8	3.1	2.8	4.1	6.3	7.6	9.2	9.9	9.6	8.6	8.1	5.8	4.0	3.0	2.7	2.4	5.7	9.9
10-Apr	0.8	-1.0	-2.1	-2.8	-3.3	-4.6	-5.6	-5.9	-5.4	-4.7	-3.8	-2.9	-2.0	-1.2	-0.3	-0.4	-0.8	-1.0	-1.5	-2.8	-3.6	-4.1	-4.3	-4.8	-2.8	0.8
11-Apr	-4.9	-5.2	-5.7	-6.1	-6.5	-7.0	-7.2	-7.1	-6.4	-5.5	-4.6	-5.0	-5.5	-5.2	-5.0	-4.8	-5.5	-5.9	-6.2	-6.8	-7.6	-8.1	-8.5	-9.0	-6.2	-4.6
12-Apr	-8.9	-10.0	-11.0	-12.0	-12.6	-12.8	-12.4	-10.3	-7.6	-6.0	-3.9	-2.8	-1.4	-0.5	-0.1	-0.2	-0.9	-1.2	-2.2	-3.3	-4.7	-5.9	-6.8	-7.8	-6.0	-0.1
13-Apr	-8.8	-9.6	-10.3	-10.9	-11.1	-11.3	-11.4	-11.4	-10.4	-9.3	-8.3	-7.3	-6.2	-5.0	-4.0	-3.1	-2.6	-2.3	-2.1	-2.4	-3.0	-3.7	-4.6	-5.3	-6.9	-2.1
14-Apr	-5.9	-6.6	-7.2	-7.7	-8.3	-8.7	-8.4	-6.7	-4.1	-1.9	0.8	3.4	5.4	6.5	7.1	7.3	7.2	6.9	6.3	5.5	4.6	3.5	2.1	0.6	0.1	7.3
15-Apr	0.8	-0.6	-2.4	-2.6	-2.8	-3.5	-4.2	-4.2	-3.8	-3.2	-1.9	-0.8	0.0	0.8	1.4	1.4	0.8	-0.2	-1.3	-2.4	-4.1	-5.6	-6.9	-7.7	-2.2	1.4
16-Apr	-8.2	-8.3	-8.6	-9.2	-10.1	-10.5	-10.4	-9.2	-8.5	-7.9	-6.1	-3.2	-0.8	0.4	1.3	2.3	2.6	2.9	2.5	1.3	0.0	-1.0	-1.5	-2.1	-3.9	2.9
17-Apr	-2.6	-3.1	-3.7	-4.1	-4.7	-5.2	-5.0	-4.1	-2.4	-0.4	1.0	2.3	3.0	3.9	4.6	5.1	5.2	5.0	4.5	3.5	2.5	1.5	0.7	-0.1	0.3	5.2
18-Apr	-0.9	-1.3	-1.6	-1.9	-1.6	-1.4	-1.5	-1.5	-1.5	-1.3	-0.6	-0.2	0.1	0.2	0.2	0.5	0.6	0.2	0.1	0.1	0.3	0.5	0.4	0.4	-0.5	0.6
19-Apr	0.5	0.4	0.1	0.0	0.1	0.1	0.3	0.9	1.7	2.9	4.0	4.6	5.2	6.0	6.9	7.2	7.4	7.1	6.6	5.5	4.2	3.5	2.9	2.3	3.4	7.4
20-Apr	2.1	1.6	1.3	0.5	-0.1	-0.3	0.3	0.9	2.2	4.6	6.4	9.1	10.7	11.8	12.5	12.7	12.7	12.5	12.3	11.5	10.7	9.6	8.8	8.2	6.8	12.7
21-Apr	7.0	6.7	6.1	5.0	5.0	4.8	4.8	5.1	7.1	9.7	10.1	10.9	11.6	11.4	10.9	12.1	12.8	12.8	12.0	10.2	8.4	6.8	5.0	3.8	8.3	12.8
22-Apr	2.9	1.7	1.0	0.3	-0.1	-0.2	0.8	2.4	4.3	6.0	8.0	10.8	12.5	13.0	13.1	12.9	12.1	10.9	9.7	8.4	7.3	6.1	5.5	5.4	6.4	13.1
23-Apr	5.4	5.5	5.2	5.1	5.0	5.0	5.1	5.6	6.3	7.2	8.4	9.3	10.1	10.2	10.3	10.9	10.1	9.1	8.5	7.9	7.2	6.5	5.8	5.2	7.3	10.9
24-Apr	4.4	3.4	3.7	2.6	1.9	2.1	1.8	1.1	1.6	2.4	2.3	2.0	3.7	4.8	5.8	6.8	7.5	7.5	7.1	6.4	4.9	4.0	3.3	2.9	3.9	7.5
25-Apr	2.4	1.9	1.5	1.2	0.7	0.1	0.1	0.5	1.1	2.0	2.9	3.7	4.9	6.1	7.2	7.8	7.7	7.5	7.0	6.6	6.1	5.6	5.0	4.6	3.9	7.8
26-Apr	4.1	3.4	3.1	2.9	2.4	2.0	2.1	2.5	3.2	3.6	4.7	5.8	6.6	7.0	6.9	6.8	6.7	6.4	6.0	5.6	5.1	4.8	4.6	4.4	4.6	7.0
27-Apr	3.9	3.6	3.6	3.4	2.9	1.6	1.7	1.6	1.3	1.5	2.5	3.6	4.1	4.6	5.2	5.4	5.4	5.2	5.0	5.1	4.9	4.6	4.5	4.2	3.7	5.4
28-Apr	4.1	4.1	4.0	3.6	3.0	2.8	2.6	2.8	3.2	3.9	4.7	6.1	7.6	9.1	10.1	10.9	11.0	11.2	11.1	9.9	8.5	7.3	6.4	5.4	6.4	11.2
29-Apr	4.7	4.1	3.5	2.8	2.0	1.7	2.2	4.5	7.7	9.6	12.4	14.4	15.3	15.7	16.0	16.3	17.2	17.0	17.1	16.8	15.5	15.0	12.8	11.6	10.7	17.2
30-Apr	9.4	7.9	6.8	5.2	4.4	4.3	5.1	6.2	8.5	12.3	15.9	18.1	19.5	19.9	20.2	21.2	21.3	21.0	20.9	20.3	19.4	18.9	18.0	17.1	14.2	21.3
	-0.6	-1.2	-1.7	-2.3	-2.6	-3.0	-3.0	-2.5	-1.4	-0.1	1.3	2.6	3.7	4.6	5.3	5.8	5.8	5.5	5.0	4.0	3.0	2.2	1.4	0.8	Diurnal Average	
	9.4	7.9	6.8	6.9	8.6	8.0	7.3	8.1	9.6	12.3	15.9	18.1	19.5	19.9	20.2	21.2	21.3	21.0	20.9	20.3	19.4	18.9	18.0	17.1	Diurnal Maximum	

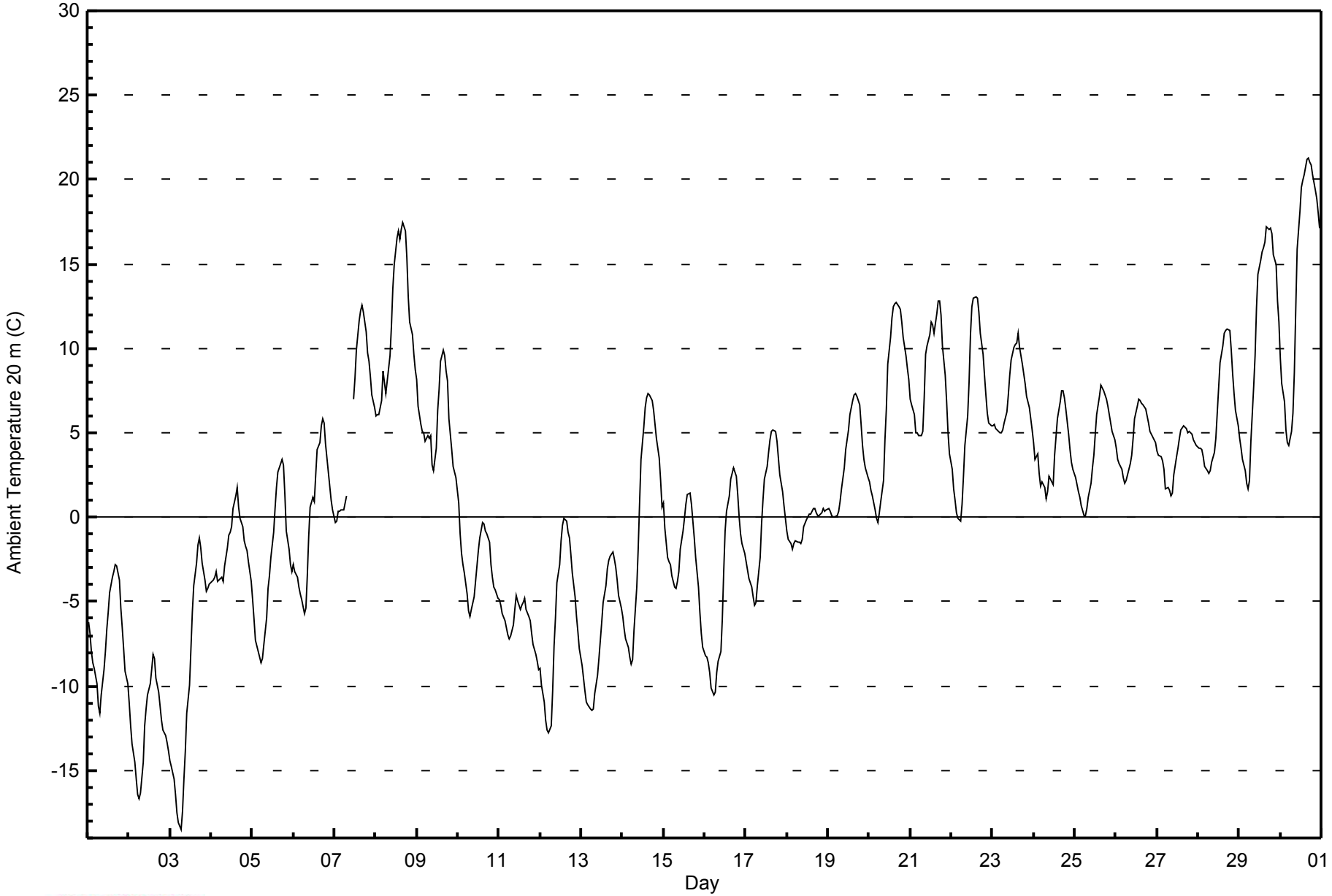
MS - Missing

WBEA NETWORK

Hourly Averages

Ambient Temperature 20 m (AT20m) - C

Mannix - April 2014



AURORA ATMOSPHERICS INC.

Concentration Ranges (C)	Number of Hours	%	Cumulative %
-50 - -20	0	0.00	0.00
-20 - 0	288	40.17	40.17
0 - 10	346	48.26	88.42
10 - 20	77	10.74	99.16
> 20	6	0.84	100.00

Total Number of Valid Hours: 717

Total Number of Hours: 720

Maximum Value: 21.0 C on Apr 30 17:00

Maximum Daily Average: 14.4 C on Apr 30

Minimum Value: -18.6 C on Apr 3 07:00

Minimum Daily Average: -12.7 C on Apr 2

Maximum Diurnal Average: 5.4 C at hour 17

Minimum Diurnal Average: -3.2 C at hour 7

Monthly Average: 1.20 C

Percentiles: P_1 = -16.9 P_{10} = -8.7 Q_1 = -3.9 Median = 1.4 Q_3 = 5.9 P_{90} = 10.6 P_{99} = 19.8

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-Apr	-6.2	-6.8	-7.6	-8.2	-8.6	-9.9	-11.4	-11.9	-10.9	-9.4	-8.4	-7.1	-6.0	-4.9	-3.9	-3.6	-3.2	-3.2	-4.0	-5.6	-6.8	-8.0	-9.3	-10.0	-7.3	-3.2
2-Apr	-11.2	-12.6	-13.6	-14.8	-15.8	-16.7	-17.0	-16.7	-14.9	-12.8	-11.7	-10.9	-10.3	-9.5	-8.6	-8.8	-10.0	-10.7	-11.5	-12.3	-12.9	-13.2	-13.6	-14.1	-12.7	-8.6
3-Apr	-14.6	-15.0	-15.6	-16.6	-17.5	-17.8	-18.6	-17.7	-15.9	-14.2	-12.1	-10.1	-7.9	-6.0	-4.4	-3.0	-2.0	-1.5	-2.0	-2.9	-3.9	-4.6	-4.4	-4.1	-9.7	-1.5
4-Apr	-4.0	-3.9	-3.7	-3.4	-4.0	-3.8	-3.8	-4.0	-3.1	-2.1	-1.4	-1.2	-0.9	0.2	1.0	1.5	0.4	-0.3	-0.7	-1.5	-1.9	-2.2	-2.8	-3.9	-2.1	1.5
5-Apr	-4.7	-5.4	-6.7	-7.1	-7.6	-8.1	-8.4	-7.8	-6.2	-4.6	-3.9	-2.7	-1.3	0.1	1.4	2.4	2.6	3.1	2.8	1.2	-0.7	-1.5	-2.5	-3.0	-2.9	3.1
6-Apr	-2.8	-3.1	-3.6	-4.3	-4.6	-5.0	-5.4	-5.1	-3.7	-1.5	0.3	0.9	0.7	2.2	3.6	4.3	5.3	5.7	5.7	4.3	2.7	1.9	1.4	1.0	0.0	5.7
7-Apr	0.4	1.2	1.3	1.1	1.0	0.7	0.8	1.0	MS	MS	MS	6.9	7.9	9.6	11.3	11.8	12.2	12.0	11.1	10.0	9.7	8.5	7.4	6.8	6.3	12.2
8-Apr	6.1	6.2	6.6	8.0	8.9	8.4	7.9	8.4	9.5	11.0	13.3	14.7	16.3	16.6	16.2	16.8	17.2	16.8	15.3	13.1	11.6	10.8	9.8	8.9	11.6	17.2
9-Apr	8.2	6.7	5.7	5.1	5.0	4.5	4.7	4.5	4.7	2.9	2.6	3.9	6.0	7.2	8.8	9.5	9.3	8.5	8.0	5.7	4.2	3.6	2.9	2.5	5.6	9.5
10-Apr	0.7	-1.2	-2.3	-3.0	-3.4	-4.8	-5.9	-6.2	-5.8	-5.1	-4.2	-3.3	-2.4	-1.6	-0.8	-0.7	-1.2	-1.3	-1.8	-3.1	-3.9	-4.4	-4.6	-5.1	-3.1	0.7
11-Apr	-5.1	-5.5	-6.0	-6.4	-6.8	-7.3	-7.5	-7.4	-6.7	-5.8	-5.0	-5.3	-5.9	-5.6	-5.4	-5.2	-5.8	-6.2	-6.4	-7.1	-7.8	-8.3	-8.6	-9.1	-6.5	-5.0
12-Apr	-9.0	-9.8	-10.3	-11.2	-11.9	-12.6	-12.5	-10.7	-8.1	-6.3	-4.4	-3.2	-1.8	-0.9	-0.4	-0.6	-1.2	-1.5	-2.5	-3.5	-5.0	-6.1	-7.1	-8.0	-6.2	-0.4
13-Apr	-9.0	-9.7	-10.5	-11.1	-11.3	-11.5	-11.7	-11.7	-10.8	-9.8	-8.8	-7.7	-6.7	-5.5	-4.5	-3.5	-2.9	-2.6	-2.3	-2.6	-3.2	-3.9	-4.8	-5.5	-7.1	-2.3
14-Apr	-6.1	-6.8	-7.3	-7.9	-8.5	-8.9	-8.7	-6.9	-4.6	-2.3	0.4	3.0	4.9	6.1	6.7	7.0	7.0	6.7	6.2	5.4	4.5	3.4	2.0	0.5	-0.2	7.0
15-Apr	0.7	-0.9	-2.7	-2.8	-3.0	-3.7	-4.4	-4.4	-4.1	-3.5	-2.2	-1.1	-0.4	0.4	1.0	1.0	0.4	-0.6	-1.5	-2.6	-4.3	-5.8	-7.0	-7.9	-2.5	1.0
16-Apr	-8.4	-8.6	-8.9	-9.5	-10.3	-10.8	-10.7	-9.6	-8.9	-8.4	-6.4	-3.5	-1.1	0.0	0.9	1.9	2.3	2.6	2.2	1.2	-0.1	-1.1	-1.7	-2.3	-4.1	2.6
17-Apr	-2.8	-3.3	-3.8	-4.2	-4.8	-5.4	-5.3	-4.4	-2.7	-0.8	0.6	1.9	2.6	3.5	4.2	4.7	4.8	4.7	4.3	3.4	2.4	1.4	0.6	-0.2	0.1	4.8
18-Apr	-1.0	-1.4	-1.8	-2.1	-1.7	-1.6	-1.8	-1.8	-1.8	-1.7	-0.9	-0.5	-0.3	-0.1	-0.2	0.2	0.2	-0.1	-0.1	0.0	0.2	0.4	0.3	0.4	-0.7	0.4
19-Apr	0.5	0.2	0.1	0.1	0.1	0.1	0.1	0.7	1.4	2.5	3.6	4.3	4.9	5.7	6.5	6.8	6.9	6.8	6.4	5.3	4.0	3.3	2.9	2.5	3.2	6.9
20-Apr	2.2	1.9	1.5	0.5	-0.1	-0.3	0.1	0.7	1.9	4.2	6.0	8.7	10.2	11.4	12.1	12.2	12.4	12.2	12.1	11.5	10.9	10.6	9.8	8.8	6.7	12.4
21-Apr	7.6	7.4	6.8	5.9	5.5	5.1	4.9	5.0	6.9	9.3	9.7	10.4	11.2	11.1	10.6	11.7	12.4	12.4	11.7	10.1	8.4	6.7	4.9	3.8	8.3	12.4
22-Apr	3.3	2.2	1.4	1.4	1.8	1.2	1.1	2.1	3.9	5.5	7.5	10.4	12.1	12.5	12.6	12.5	11.8	10.6	9.4	8.2	7.0	5.9	5.3	5.2	6.5	12.6
23-Apr	5.2	5.2	5.0	4.9	4.8	4.8	4.9	5.3	6.0	6.9	8.1	9.0	9.8	9.9	10.0	10.6	9.9	8.9	8.3	7.7	7.0	6.3	5.6	5.0	7.0	10.6
24-Apr	4.2	3.2	3.5	2.4	1.6	1.9	1.5	0.9	1.3	2.1	2.1	1.9	3.7	4.5	5.5	6.6	7.2	7.2	6.9	6.2	4.7	3.7	3.1	2.7	3.7	7.2
25-Apr	2.1	1.7	1.3	0.9	0.5	-0.1	-0.2	0.2	0.8	1.7	2.5	3.3	4.6	5.7	6.8	7.6	7.4	7.3	6.7	6.4	5.9	5.4	4.9	4.5	3.7	7.6
26-Apr	3.9	3.2	2.9	2.7	2.2	1.8	1.9	2.2	2.9	3.3	4.3	5.4	6.2	6.7	6.6	6.5	6.4	6.2	5.8	5.3	4.9	4.6	4.4	4.2	4.3	6.7
27-Apr	3.7	3.5	3.3	3.1	2.6	1.4	1.5	1.4	1.0	1.3	2.3	3.3	3.8	4.4	4.9	5.1	5.1	5.0	4.8	4.9	4.7	4.5	4.3	4.1	3.5	5.1
28-Apr	4.0	4.0	3.8	3.6	3.0	2.6	2.4	2.5	2.8	3.6	4.3	5.8	7.4	8.8	9.7	10.6	10.7	10.9	10.8	9.7	8.3	7.2	6.3	5.4	6.2	10.9
29-Apr	4.6	4.1	3.5	2.7	1.9	1.6	1.9	4.1	7.3	9.1	12.0	14.0	14.9	15.3	15.5	15.9	16.7	16.7	16.8	16.6	15.8	15.6	13.9	12.6	10.6	16.8
30-Apr	11.1	10.0	8.1	6.0	4.6	4.4	5.0	5.9	8.2	11.9	15.5	17.7	19.0	19.5	19.9	20.8	21.0	20.9	20.9	20.5	20.0	19.4	18.5	17.5	14.4	21.0
	-0.5	-1.1	-1.7	-2.1	-2.5	-3.0	-3.2	-2.7	-1.7	-0.4	0.9	2.3	3.4	4.2	4.9	5.4	5.4	5.2	4.8	3.9	2.9	2.1	1.4	0.8	Diurnal Average	
	11.1	10.0	8.1	8.0	8.9	8.4	7.9	8.4	9.5	11.9	15.5	17.7	19.0	19.5	19.9	20.8	21.0	20.9	20.9	20.5	20.0	19.4	18.5	17.5	Diurnal Maximum	

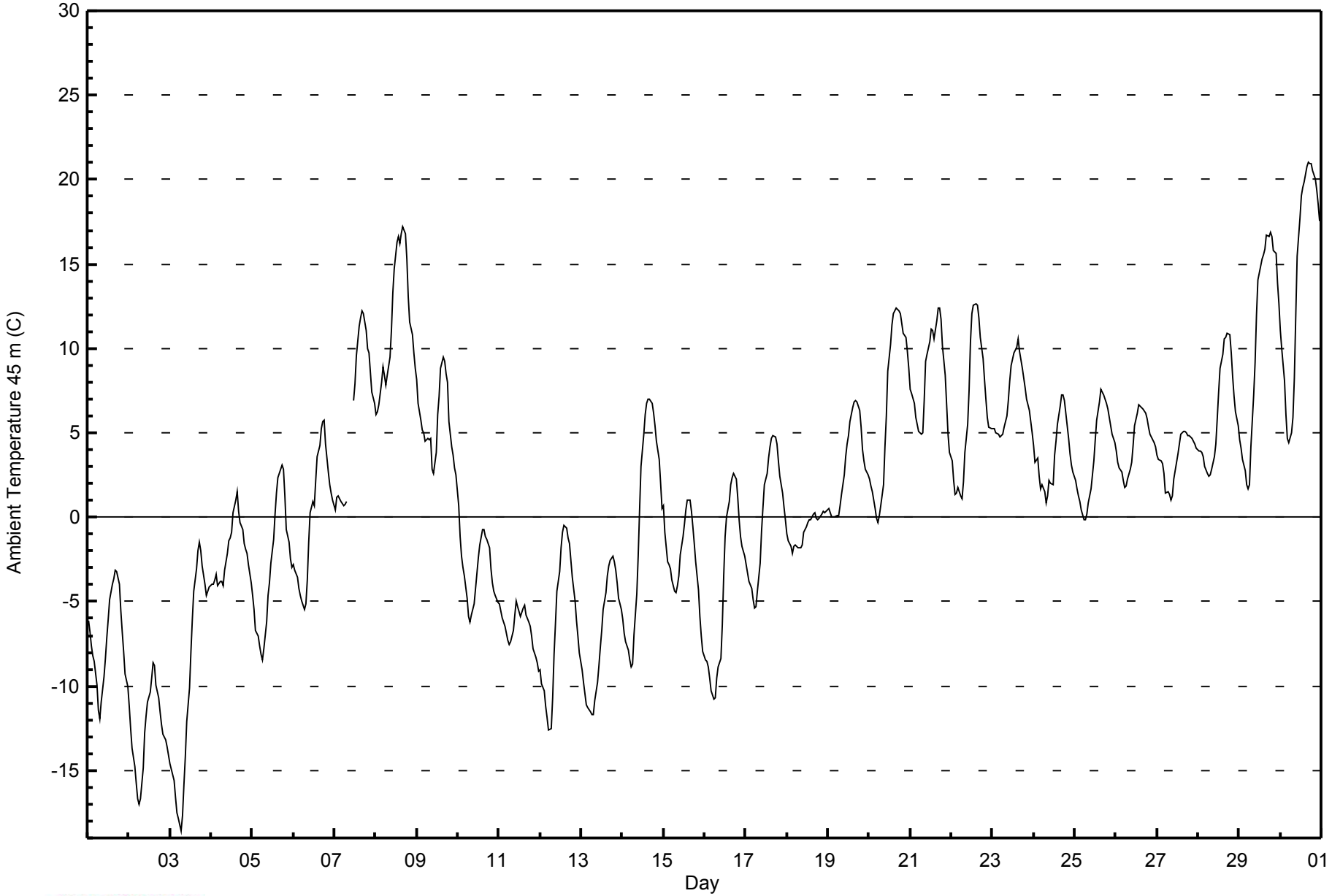
MS - Missing

WBEA NETWORK

Hourly Averages

Ambient Temperature 45 m (AT45m) - C

Mannix - April 2014



AURORA ATMOSPHERICS INC.

Concentration Ranges (C)	Number of Hours	%	Cumulative %
-50 - -20	0	0.00	0.00
-20 - 0	293	40.86	40.86
0 - 10	342	47.70	88.56
10 - 20	76	10.60	99.16
> 20	6	0.84	100.00

Total Number of Valid Hours: 717

Total Number of Hours: 720

Maximum Value: 20.8 C on Apr 30 19:00

Maximum Daily Average: 14.9 C on Apr 30

Minimum Value: -17.3 C on Apr 3 07:00

Minimum Daily Average: -13.0 C on Apr 2

Maximum Diurnal Average: 5.1 C at hour 17

Minimum Diurnal Average: -3.2 C at hour 7

Monthly Average: 1.03 C

Percentiles: P_1 = -16.7 P_{10} = -8.8 Q_1 = -4.2 Median = 1.4 Q_3 = 5.8 P_{90} = 10.3 P_{99} = 19.3

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-Apr	-6.3	-7.0	-7.5	-8.0	-8.6	-10.1	-11.6	-12.1	-11.2	-9.8	-8.7	-7.5	-6.4	-5.2	-4.3	-3.9	-3.5	-3.5	-4.3	-5.8	-7.0	-8.2	-9.4	-10.2	-7.5	-3.5
2-Apr	-11.4	-12.8	-13.9	-15.1	-16.1	-17.0	-17.3	-17.0	-15.2	-13.1	-12.1	-11.3	-10.7	-9.9	-9.0	-9.2	-10.3	-11.0	-11.8	-12.6	-13.2	-13.5	-13.9	-14.4	-13.0	-9.0
3-Apr	-14.9	-15.2	-15.6	-16.5	-17.3	-16.8	-17.3	-17.1	-16.1	-14.5	-12.4	-10.5	-8.3	-6.4	-4.8	-3.4	-2.4	-1.8	-2.3	-3.1	-4.2	-4.8	-4.6	-4.4	-9.8	-1.8
4-Apr	-4.2	-4.1	-4.0	-3.7	-4.3	-4.0	-4.1	-4.3	-3.4	-2.4	-1.7	-1.4	-1.0	0.1	0.8	1.3	0.1	-0.6	-1.0	-1.8	-2.1	-2.4	-3.1	-4.0	-2.3	1.3
5-Apr	-4.6	-5.4	-5.9	-6.6	-7.2	-8.0	-8.4	-7.9	-6.7	-5.2	-4.2	-3.1	-1.7	-0.1	1.0	2.1	2.3	2.7	2.6	1.1	-0.5	-1.2	-2.1	-2.7	-2.9	2.7
6-Apr	-2.8	-3.1	-3.7	-4.2	-4.6	-5.0	-5.4	-5.1	-3.9	-1.7	0.0	0.7	0.7	2.0	3.4	4.0	5.0	5.6	5.7	4.2	2.7	1.9	1.4	1.3	0.0	5.7
7-Apr	0.6	1.5	1.5	1.4	1.2	0.7	0.7	0.9	MS	MS	MS	6.4	7.5	9.2	11.1	11.5	11.9	11.8	11.0	9.9	9.8	8.5	7.2	6.7	6.2	11.9
8-Apr	6.1	6.3	7.1	8.4	9.1	8.5	8.0	8.5	9.4	10.8	13.0	14.4	16.0	16.3	15.9	16.5	16.9	16.5	15.1	13.0	11.5	10.7	9.7	8.8	11.5	16.9
9-Apr	8.1	6.7	5.7	5.0	4.9	4.4	4.5	4.3	4.4	2.6	2.4	3.6	5.7	6.8	8.5	9.2	9.0	8.3	7.8	5.5	4.2	4.2	3.1	2.6	5.5	9.2
10-Apr	0.7	-1.4	-2.6	-3.2	-3.7	-5.1	-6.2	-6.5	-6.2	-5.5	-4.6	-3.7	-2.8	-2.0	-1.1	-1.1	-1.5	-1.6	-2.1	-3.4	-4.2	-4.8	-4.9	-5.4	-3.4	0.7
11-Apr	-5.5	-5.8	-6.3	-6.8	-7.2	-7.6	-7.8	-7.7	-7.0	-6.2	-5.3	-5.7	-6.2	-5.9	-5.8	-5.6	-6.2	-6.5	-6.7	-7.4	-8.1	-8.5	-8.7	-9.3	-6.8	-5.3
12-Apr	-9.2	-9.7	-10.1	-10.6	-11.0	-11.3	-11.6	-10.9	-8.5	-6.5	-4.8	-3.6	-2.2	-1.3	-0.8	-1.0	-1.6	-1.9	-2.9	-3.8	-5.3	-6.4	-7.4	-8.3	-6.3	-0.8
13-Apr	-9.3	-10.0	-10.8	-11.3	-11.5	-11.8	-12.0	-12.0	-11.2	-10.1	-9.1	-8.1	-7.1	-5.8	-4.8	-3.9	-3.2	-2.9	-2.7	-2.8	-3.4	-4.1	-5.0	-5.7	-7.4	-2.7
14-Apr	-6.2	-6.9	-7.4	-7.9	-8.5	-8.8	-8.9	-7.2	-4.8	-2.6	0.1	2.7	4.7	5.7	6.4	6.7	6.7	6.5	6.0	5.3	4.3	3.2	2.1	0.6	-0.3	6.7
15-Apr	0.6	-1.2	-2.9	-3.0	-3.3	-4.0	-4.7	-4.7	-4.4	-3.8	-2.5	-1.5	-0.7	0.0	0.6	0.7	0.0	-0.9	-1.8	-2.9	-4.6	-6.1	-7.3	-8.2	-2.8	0.7
16-Apr	-8.7	-8.9	-9.2	-9.8	-10.5	-11.0	-11.0	-9.9	-9.2	-8.7	-6.6	-3.9	-1.6	-0.4	0.5	1.5	2.0	2.2	1.9	0.9	-0.4	-1.4	-1.9	-2.5	-4.4	2.2
17-Apr	-2.9	-3.4	-3.9	-4.3	-5.0	-5.5	-5.6	-4.7	-3.2	-1.2	0.2	1.4	2.2	3.0	3.8	4.3	4.4	4.4	4.0	3.2	2.3	1.3	0.5	-0.3	-0.2	4.4
18-Apr	-1.2	-1.6	-2.0	-2.3	-2.0	-1.9	-2.1	-2.1	-2.2	-2.0	-1.2	-0.9	-0.7	-0.5	-0.5	-0.2	-0.1	-0.3	-0.4	-0.2	0.1	0.2	0.2	0.3	-1.0	0.3
19-Apr	0.5	0.1	-0.1	0.0	0.0	0.1	-0.1	0.4	1.1	2.3	3.2	3.8	4.5	5.3	6.1	6.5	6.6	6.4	6.1	5.1	3.8	3.1	2.8	2.5	2.9	6.6
20-Apr	2.2	1.8	1.6	0.6	0.2	-0.1	0.0	0.6	1.6	4.1	5.7	8.3	9.9	11.0	11.7	11.9	12.1	11.9	11.8	11.4	10.9	10.9	10.2	9.2	6.6	12.1
21-Apr	8.2	7.8	7.3	7.1	6.4	5.5	5.0	5.1	6.6	9.0	9.3	10.0	10.8	10.8	10.3	11.3	12.1	12.1	11.4	10.0	8.2	6.5	5.0	3.8	8.3	12.1
22-Apr	3.6	3.1	2.6	2.5	2.5	2.4	2.1	2.1	3.5	5.2	7.1	10.1	11.6	12.1	12.2	12.2	11.5	10.3	9.1	7.9	6.8	5.6	5.1	5.0	6.5	12.2
23-Apr	5.0	5.0	4.7	4.6	4.5	4.5	4.6	5.0	5.7	6.6	7.8	8.7	9.5	9.6	9.7	10.3	9.6	8.6	8.0	7.4	6.7	6.1	5.4	4.7	6.8	10.3
24-Apr	3.9	3.0	3.2	2.1	1.4	1.6	1.2	0.6	1.0	1.9	1.9	2.1	3.5	4.2	5.2	6.3	6.9	6.9	6.6	5.9	4.4	3.5	2.8	2.4	3.4	6.9
25-Apr	1.9	1.4	1.0	0.7	0.2	-0.4	-0.5	-0.1	0.5	1.4	2.1	2.9	4.2	5.3	6.5	7.3	7.1	7.0	6.5	6.1	5.7	5.2	4.7	4.3	3.4	7.3
26-Apr	3.7	3.0	2.7	2.4	2.0	1.6	1.6	1.9	2.6	3.0	4.0	4.9	5.8	6.3	6.2	6.1	6.1	5.8	5.5	5.1	4.7	4.3	4.2	3.9	4.1	6.3
27-Apr	3.5	3.2	3.1	2.9	2.3	1.2	1.3	1.1	0.8	1.0	2.0	3.0	3.5	4.1	4.6	4.8	4.8	4.7	4.6	4.6	4.5	4.3	4.1	4.0	3.2	4.8
28-Apr	3.9	3.8	3.7	3.5	2.9	2.4	2.2	2.3	2.5	3.1	4.0	5.4	7.2	8.6	9.4	10.3	10.4	10.6	10.6	9.5	8.1	7.0	6.2	5.5	6.0	10.6
29-Apr	4.6	4.3	3.6	2.9	1.9	1.6	2.0	4.0	7.1	8.7	11.7	13.7	14.5	15.0	15.2	15.6	16.4	16.4	16.6	16.4	15.9	15.4	14.5	13.4	10.5	16.6
30-Apr	12.2	11.2	9.1	7.9	7.1	8.4	6.5	6.0	8.0	11.6	15.3	17.5	18.7	19.2	19.6	20.5	20.7	20.7	20.8	20.5	20.1	19.6	18.7	17.7	14.9	20.8
	-0.6	-1.1	-1.6	-2.0	-2.5	-2.9	-3.2	-2.9	-2.0	-0.8	0.6	1.9	3.0	3.9	4.6	5.1	5.1	4.9	4.5	3.6	2.7	2.0	1.3	0.7	Diurnal Average	
	12.2	11.2	9.1	8.4	9.1	8.5	8.0	8.5	9.4	11.6	15.3	17.5	18.7	19.2	19.6	20.5	20.7	20.7	20.8	20.5	20.1	19.6	18.7	17.7	Diurnal Maximum	

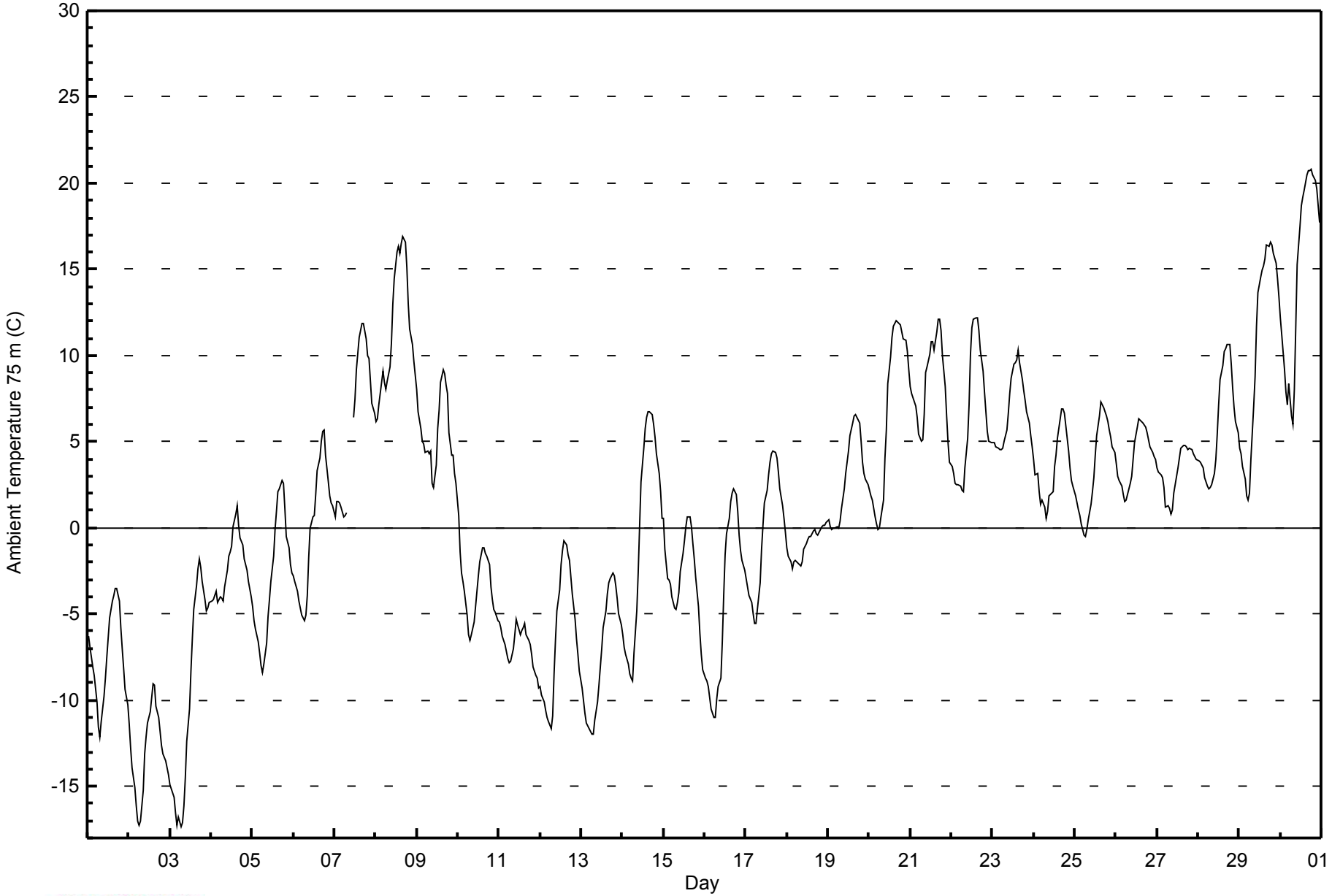
MS - Missing

WBEA NETWORK

Hourly Averages

Ambient Temperature 75 m (AT75m) - C

Mannix - April 2014



AURORA ATMOSPHERICS INC.

Concentration Ranges (C)	Number of Hours	%	Cumulative %
-50 - -20	0	0.00	0.00
-20 - 0	303	42.26	42.26
0 - 10	335	46.72	88.98
10 - 20	73	10.18	99.16
> 20	6	0.84	100.00

Total Number of Valid Hours: 717

Total Number of Hours: 720

Maximum Value: 20.7 C on Apr 30 19:00

Maximum Daily Average: 15.2 C on Apr 30

Minimum Value: -17.4 C on Apr 2 07:00

Minimum Daily Average: -13.1 C on Apr 2

Maximum Diurnal Average: 5.0 C at hour 17

Minimum Diurnal Average: -3.2 C at hour 7

Monthly Average: 0.96 C

Percentiles: P_1 = -16.4 P_{10} = -9.0 Q_1 = -4.3 Median = 1.4 Q_3 = 5.7 P_{90} = 10.2 P_{99} = 19.4

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-Apr	-6.4	-7.0	-7.5	-8.0	-8.7	-10.2	-11.6	-12.1	-11.4	-10.0	-8.9	-7.6	-6.5	-5.3	-4.4	-4.1	-3.6	-3.7	-4.4	-5.9	-7.2	-8.3	-9.4	-10.3	-7.6	-3.6
2-Apr	-11.5	-12.8	-14.0	-15.2	-16.2	-17.2	-17.4	-17.1	-15.4	-13.3	-12.3	-11.5	-10.9	-10.0	-9.2	-9.3	-10.5	-11.1	-11.9	-12.7	-13.3	-13.7	-14.1	-14.5	-13.1	-9.2
3-Apr	-15.0	-15.3	-15.6	-16.4	-17.1	-16.6	-16.9	-16.9	-16.2	-14.6	-12.6	-10.5	-8.4	-6.5	-4.8	-3.5	-2.5	-1.9	-2.4	-3.3	-4.3	-4.9	-4.7	-4.5	-9.8	-1.9
4-Apr	-4.3	-4.2	-4.1	-3.8	-4.4	-4.1	-4.2	-4.4	-3.5	-2.5	-1.8	-1.6	-1.2	-0.1	0.7	1.2	0.0	-0.7	-1.1	-1.9	-2.2	-2.6	-3.2	-4.1	-2.4	1.2
5-Apr	-4.6	-5.4	-5.8	-6.5	-7.0	-7.9	-8.4	-7.9	-6.7	-5.3	-4.3	-3.2	-1.8	-0.3	0.9	1.9	2.1	2.6	2.4	1.1	-0.5	-1.1	-2.1	-2.6	-2.9	2.6
6-Apr	-2.9	-3.1	-3.7	-4.2	-4.6	-5.0	-5.4	-5.1	-3.9	-1.8	-0.2	0.6	0.7	1.9	3.1	4.0	5.0	5.5	5.6	4.1	2.7	1.9	1.4	1.5	-0.1	5.6
7-Apr	0.8	1.7	1.6	1.4	1.2	0.6	0.6	0.8	MS	MS	MS	6.3	7.4	9.1	10.9	11.3	11.8	11.7	10.9	9.9	9.8	8.5	7.2	6.6	6.2	11.8
8-Apr	6.2	6.4	7.3	8.5	9.1	8.5	8.0	8.5	9.3	10.6	12.8	14.3	15.9	16.2	15.8	16.4	16.8	16.4	15.0	12.9	11.4	10.6	9.6	8.8	11.5	16.8
9-Apr	8.0	6.7	5.7	5.0	4.8	4.3	4.4	4.2	4.3	2.4	2.2	3.5	5.6	6.7	8.3	9.0	8.8	8.2	7.7	5.4	4.2	4.4	3.2	2.6	5.4	9.0
10-Apr	0.7	-1.5	-2.7	-3.2	-3.7	-5.2	-6.4	-6.7	-6.4	-5.6	-4.7	-3.8	-2.9	-2.1	-1.3	-1.3	-1.6	-1.8	-2.3	-3.5	-4.3	-4.9	-5.1	-5.6	-3.6	0.7
11-Apr	-5.6	-6.0	-6.5	-6.9	-7.3	-7.7	-8.0	-7.8	-7.2	-6.3	-5.4	-5.8	-6.3	-6.1	-5.9	-5.7	-6.3	-6.6	-6.9	-7.5	-8.2	-8.6	-8.8	-9.4	-7.0	-5.4
12-Apr	-9.3	-9.7	-10.1	-10.5	-10.9	-10.8	-11.1	-11.0	-8.6	-6.7	-5.0	-3.7	-2.3	-1.4	-0.9	-1.2	-1.7	-2.0	-3.0	-4.0	-5.4	-6.5	-7.5	-8.5	-6.3	-0.9
13-Apr	-9.4	-10.1	-10.9	-11.5	-11.6	-11.9	-12.2	-12.2	-11.3	-10.3	-9.3	-8.2	-7.2	-6.0	-5.0	-4.0	-3.3	-3.0	-2.8	-2.9	-3.5	-4.2	-5.1	-5.7	-7.6	-2.8
14-Apr	-6.2	-6.9	-7.3	-7.9	-8.3	-8.6	-9.0	-7.3	-5.0	-2.9	-0.1	2.5	4.5	5.6	6.3	6.6	6.6	6.4	5.9	5.2	4.2	3.1	2.1	0.6	-0.4	6.6
15-Apr	0.5	-1.3	-3.0	-3.2	-3.4	-4.1	-4.8	-4.9	-4.5	-3.9	-2.5	-1.6	-0.9	-0.1	0.5	0.5	-0.1	-1.0	-2.0	-3.0	-4.7	-6.2	-7.4	-8.3	-2.9	0.5
16-Apr	-8.8	-9.0	-9.3	-10.0	-10.6	-11.1	-11.1	-10.1	-9.4	-8.8	-6.8	-4.0	-1.7	-0.5	0.4	1.4	1.9	2.1	1.8	0.8	-0.5	-1.5	-2.0	-2.6	-4.6	2.1
17-Apr	-3.0	-3.5	-4.0	-4.3	-5.0	-5.6	-5.7	-4.9	-3.2	-1.4	0.0	1.3	2.1	2.9	3.7	4.1	4.3	4.2	3.9	3.1	2.2	1.2	0.5	-0.3	-0.3	4.3
18-Apr	-1.3	-1.7	-2.1	-2.5	-2.1	-2.0	-2.2	-2.2	-2.3	-2.1	-1.4	-1.1	-0.8	-0.7	-0.6	-0.3	-0.2	-0.5	-0.5	-0.3	0.0	0.1	0.1	0.3	-1.1	0.3
19-Apr	0.4	0.0	-0.2	-0.1	0.0	0.1	-0.1	0.2	1.0	2.2	3.0	3.7	4.4	5.3	6.0	6.4	6.4	6.3	5.9	4.9	3.7	3.0	2.7	2.5	2.8	6.4
20-Apr	2.2	1.8	1.6	0.7	0.3	0.0	-0.1	0.4	1.6	3.9	5.5	8.2	9.7	10.9	11.5	11.7	11.9	11.8	11.7	11.3	10.9	10.8	10.3	9.4	6.6	11.9
21-Apr	8.5	7.9	7.4	7.4	7.0	5.6	5.0	5.1	6.4	8.7	9.2	9.9	10.6	10.6	10.2	11.2	11.9	11.9	11.3	9.9	8.1	6.4	5.0	3.8	8.3	11.9
22-Apr	3.6	3.1	2.7	2.5	2.5	2.5	2.1	2.1	3.6	5.0	7.0	9.9	11.5	12.0	12.1	12.0	11.3	10.2	9.0	7.8	6.6	5.5	4.9	4.8	6.4	12.1
23-Apr	4.9	4.8	4.6	4.5	4.4	4.4	4.5	4.9	5.6	6.5	7.7	8.6	9.4	9.5	9.6	10.2	9.4	8.4	7.9	7.3	6.6	5.9	5.2	4.6	6.6	10.2
24-Apr	3.8	2.9	3.1	2.0	1.2	1.5	1.1	0.4	0.8	1.7	1.9	2.1	3.5	4.1	5.1	6.2	6.8	6.8	6.5	5.7	4.3	3.3	2.7	2.3	3.3	6.8
25-Apr	1.7	1.3	0.9	0.6	0.1	-0.5	-0.6	-0.3	0.4	1.2	2.0	2.8	4.1	5.2	6.4	7.2	7.0	6.8	6.3	6.0	5.6	5.1	4.6	4.3	3.3	7.2
26-Apr	3.6	2.9	2.6	2.3	1.8	1.5	1.5	1.8	2.4	2.9	3.8	4.8	5.7	6.2	6.1	6.0	5.9	5.7	5.4	5.0	4.6	4.2	4.1	3.8	3.9	6.2
27-Apr	3.4	3.1	2.9	2.8	2.2	1.1	1.1	1.0	0.7	0.9	1.9	2.9	3.4	4.0	4.5	4.7	4.7	4.6	4.5	4.5	4.4	4.2	4.1	3.9	3.1	4.7
28-Apr	3.8	3.7	3.6	3.4	2.9	2.3	2.2	2.2	2.4	3.0	3.8	5.2	6.9	8.4	9.3	10.2	10.3	10.5	10.5	9.4	8.0	6.9	6.2	5.5	5.9	10.5
29-Apr	4.7	4.5	3.7	3.1	1.9	1.7	2.4	3.9	7.0	8.7	11.5	13.5	14.4	14.8	15.1	15.4	16.3	16.2	16.4	16.3	15.8	15.3	14.7	13.7	10.5	16.4
30-Apr	12.6	12.1	9.6	9.1	9.1	9.4	7.4	6.4	8.1	11.6	15.2	17.3	18.5	19.0	19.5	20.3	20.6	20.7	20.7	20.4	20.1	19.7	18.7	17.7	15.2	20.7
	-0.6	-1.2	-1.7	-2.0	-2.4	-2.8	-3.2	-3.0	-2.1	-0.9	0.4	1.8	2.9	3.8	4.5	4.9	5.0	4.8	4.4	3.5	2.6	1.9	1.3	0.7	Diurnal Average	
	12.6	12.1	9.6	9.1	9.1	9.4	8.0	8.5	9.3	11.6	15.2	17.3	18.5	19.0	19.5	20.3	20.6	20.7	20.7	20.4	20.1	19.7	18.7	17.7	Diurnal Maximum	

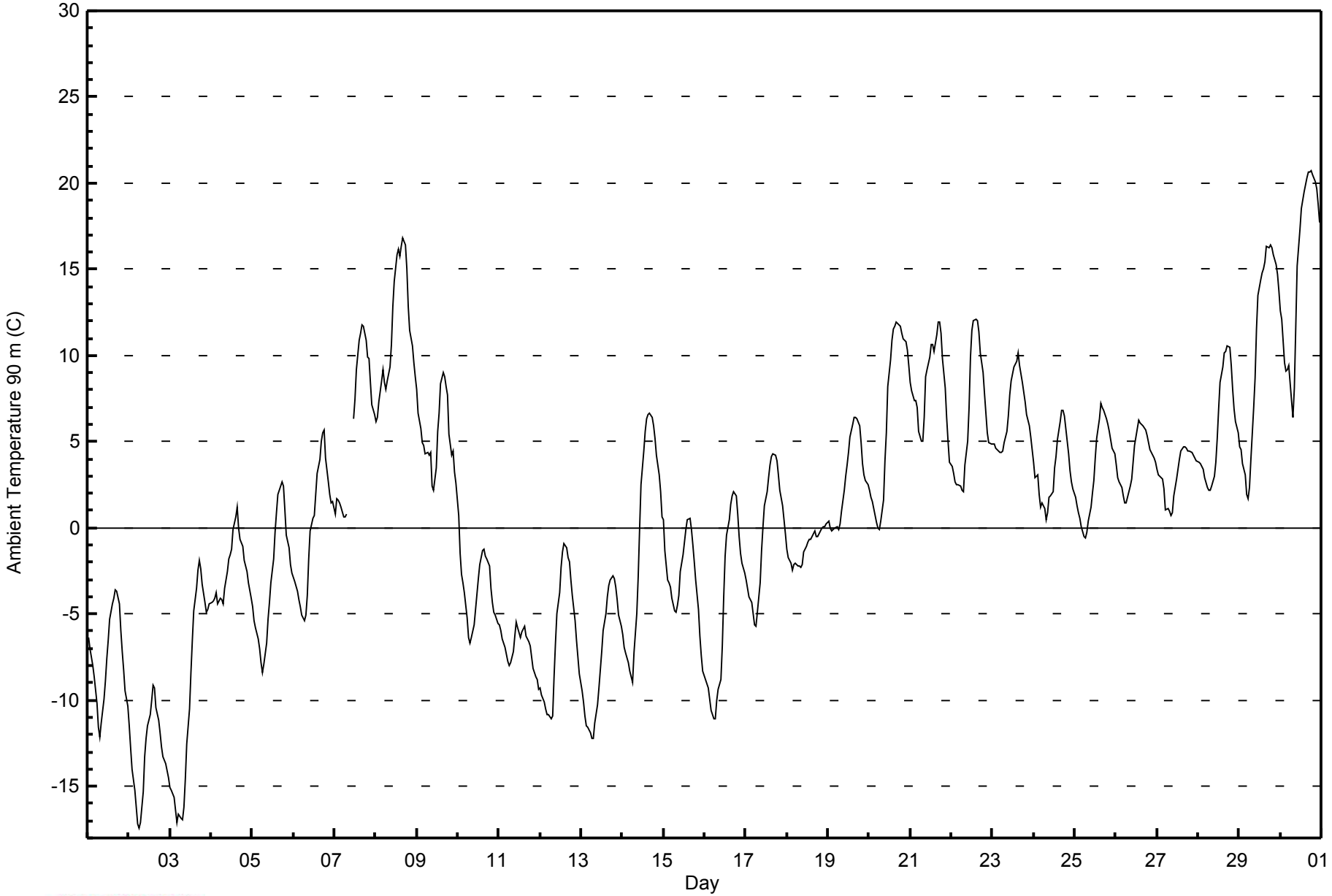
MS - Missing

WBEA NETWORK

Hourly Averages

Ambient Temperature 90 m (AT90m) - C

Mannix - April 2014



AURORA ATMOSPHERICS INC.

Concentration Ranges (C)	Number of Hours	%	Cumulative %
-50 - -20	0	0.00	0.00
-20 - 0	308	42.96	42.96
0 - 10	332	46.30	89.26
10 - 20	71	9.90	99.16
> 20	6	0.84	100.00

Total Number of Valid Hours: 717

Total Number of Hours: 720

Wood Buffalo Environmental Association

Summary of Hour Averages

Relative Humidity (RH) - %

Mannix - April 2014

Maximum Value: 96 % on Apr 28 07:00

Maximum Daily Average: 85.9 % on Apr 27

Minimum Value: 19 % on Apr 30 14:00

Minimum Daily Average: 40.4 % on Apr 14

Maximum Diurnal Average: 73.7 % at hour 6

Minimum Diurnal Average: 44.2 % at hour 17

Monthly Average: 58.7 %

Percentiles: P_1 = 24 P_{10} = 35 Q_1 = 45 Median = 57 Q_3 = 73 P_{90} = 85 P_{99} = 94

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-Apr	63	67	71	75	74	67	62	60	53	47	43	39	37	33	32	32	32	33	37	42	44	47	50	51	49.7	75
2-Apr	55	61	64	66	67	68	67	65	58	51	50	48	49	51	49	54	69	76	80	80	79	80	80	78	64.4	80
3-Apr	73	69	69	69	73	76	75	68	58	56	49	48	44	39	37	41	43	43	46	50	51	52	53	53	55.7	76
4-Apr	53	54	56	56	60	65	75	86	86	84	85	91	94	92	80	72	66	65	64	59	58	57	58	64	70.1	94
5-Apr	68	71	74	76	75	75	73	65	62	54	48	42	37	38	36	36	36	35	36	43	52	59	62	64	55.0	76
6-Apr	55	54	54	56	57	61	67	68	63	64	68	65	78	85	76	72	68	66	69	68	61	66	77	81	66.5	85
7-Apr	83	85	83	88	90	90	85	78	MS	MS	MS	55	52	46	35	28	27	31	39	47	54	58	72	82	62.3	90
8-Apr	83	83	82	80	67	68	68	64	53	46	41	38	33	31	31	29	25	24	25	28	32	33	38	40	47.6	83
9-Apr	40	51	63	63	58	57	53	53	54	76	86	76	60	48	33	24	23	27	30	48	68	71	63	59	53.5	86
10-Apr	72	84	82	80	79	79	74	68	64	61	54	49	47	44	40	42	44	44	44	48	51	52	52	50	58.5	84
11-Apr	52	52	53	56	61	65	60	57	57	55	58	75	85	84	82	77	73	69	59	55	48	43	41	48	61.1	85
12-Apr	55	64	67	71	72	72	67	58	51	52	46	42	39	38	36	39	44	44	45	48	45	44	46	47	51.3	72
13-Apr	48	49	53	56	59	59	56	54	48	45	43	39	38	37	37	35	35	34	36	38	39	37	36	38	43.7	59
14-Apr	38	42	48	48	54	56	55	50	43	39	35	32	30	28	28	29	29	31	33	35	37	42	49	59	40.4	59
15-Apr	56	70	91	94	93	91	89	87	84	85	75	61	56	45	39	35	33	29	31	37	44	44	48	52	61.2	94
16-Apr	52	51	50	52	59	63	64	62	64	69	66	53	48	45	42	37	34	32	32	34	35	39	38	40	48.4	69
17-Apr	42	45	49	52	54	56	56	55	53	50	45	42	41	38	37	36	36	37	38	42	46	50	55	60	46.4	60
18-Apr	64	70	73	74	76	76	76	79	78	78	74	71	70	69	70	72	74	82	88	89	91	90	91	91	77.7	91
19-Apr	91	92	93	93	94	94	94	91	83	75	69	65	63	58	54	54	58	59	63	70	76	79	80	84	76.4	94
20-Apr	87	91	92	92	91	91	85	82	76	68	60	48	39	31	28	27	27	28	29	33	39	45	45	49	57.6	92
21-Apr	56	61	65	68	73	75	78	76	69	56	52	50	46	49	54	45	41	40	42	47	50	49	55	62	56.6	78
22-Apr	68	73	77	79	82	81	74	66	58	53	47	36	29	26	26	27	29	31	38	43	48	54	59	63	52.8	82
23-Apr	63	63	65	65	65	64	63	61	59	56	50	46	43	41	40	40	41	44	45	47	49	50	52	54	52.7	65
24-Apr	57	67	60	68	75	69	69	76	76	75	82	87	80	75	67	58	52	52	54	50	53	56	58	60	65.7	87
25-Apr	65	68	73	72	71	73	73	70	67	63	58	56	52	51	48	46	47	48	51	53	56	59	62	64	60.2	73
26-Apr	66	71	72	74	76	78	79	77	72	70	63	58	55	51	53	52	51	52	54	56	57	60	62	63	63.5	79
27-Apr	67	72	76	77	81	91	91	92	93	94	92	89	86	84	83	83	85	88	92	90	89	88	88	89	85.9	94
28-Apr	89	90	90	93	95	96	96	96	93	89	86	80	74	66	60	51	52	51	54	64	71	75	79	81	77.9	96
29-Apr	84	86	87	88	90	93	89	77	65	58	48	39	30	30	32	32	29	29	29	31	41	48	57	59	56.3	93
30-Apr	62	69	69	69	69	65	61	56	49	40	32	26	19	19	19	19	21	24	26	31	35	35	36	38	41.2	69
	63.7	67.5	70.1	71.7	73.0	73.7	72.5	69.9	65.2	62.3	58.8	54.9	51.7	49.2	46.2	44.2	44.2	44.9	47.0	50.2	53.2	55.3	58.1	60.8	Diurnal Average	
	91	92	93	94	95	96	96	96	93	94	92	91	94	92	83	83	85	88	92	90	91	90	91	91	Diurnal Maximum	

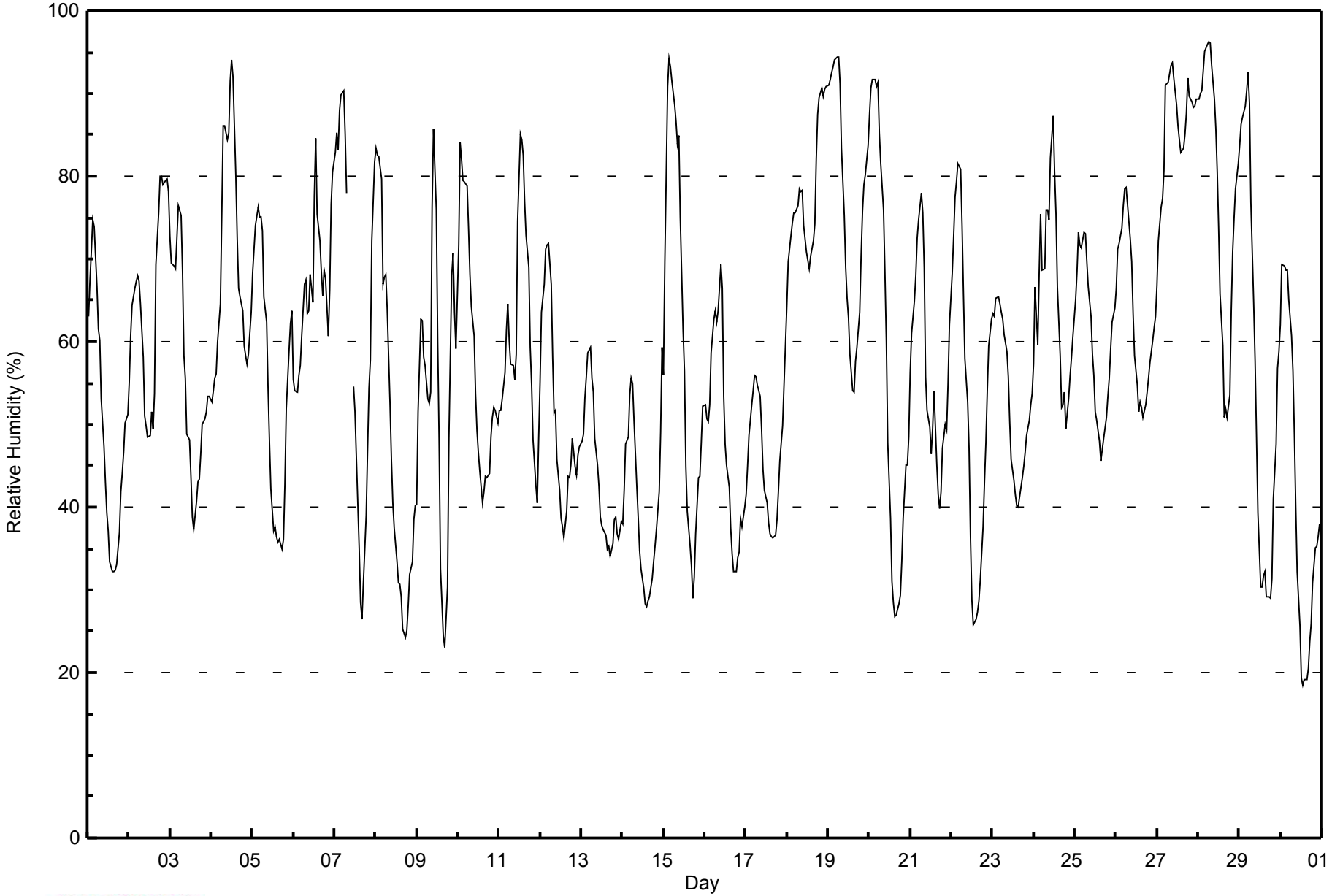
MS - Missing

WBEA NETWORK

Hourly Averages

Relative Humidity (RH) - %

Mannix - April 2014



AURORA
ATMOSPHERICS INC.

Concentration Ranges (%)	Number of Hours	%	Cumulative %
0 - 20	4	0.56	0.56
20 - 40	128	17.85	18.41
40 - 60	260	36.26	54.67
60 - 80	217	30.26	84.94
80 - 100	108	15.06	100.00

Total Number of Valid Hours: 717

Total Number of Hours: 720

Maximum Value: 97 % on Apr 28 08:00

Maximum Daily Average: 85.8 % on Apr 27

Minimum Value: 17 % on Apr 30 14:00

Minimum Daily Average: 37.6 % on Apr 30

Maximum Diurnal Average: 72.2 % at hour 6

Minimum Diurnal Average: 43.2 % at hour 17

Monthly Average: 57.4 %

Percentiles: P_1 = 22 P_{10} = 32 Q_1 = 43 Median = 56 Q_3 = 72 P_{90} = 84 P_{99} = 95

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-Apr	57	61	66	70	70	62	60	60	53	47	43	39	37	33	31	31	31	31	34	38	41	43	47	49	47.2	70
2-Apr	53	59	63	65	66	67	67	65	59	52	50	48	47	51	48	53	70	76	80	80	79	79	80	77	63.9	80
3-Apr	72	68	67	68	72	75	77	72	61	59	51	49	43	37	35	39	41	42	45	48	49	50	52	52	55.1	77
4-Apr	51	53	54	55	59	64	76	87	87	85	86	92	94	91	79	70	64	64	62	57	56	55	56	61	69.0	94
5-Apr	65	68	72	73	72	72	71	69	64	57	51	44	39	37	35	34	34	33	34	39	48	54	59	59	53.4	73
6-Apr	52	52	51	53	55	58	65	66	63	65	69	66	79	83	75	72	67	64	65	63	56	59	64	66	63.7	83
7-Apr	71	71	73	77	80	84	82	82	MS	MS	MS	54	51	44	34	27	25	29	36	43	48	52	69	78	57.6	84
8-Apr	81	79	77	69	60	60	62	57	51	45	40	37	32	30	29	28	24	23	23	26	30	31	35	37	44.4	81
9-Apr	38	49	59	60	56	55	52	51	52	75	82	72	57	47	31	22	21	24	28	47	65	67	58	54	51.0	82
10-Apr	71	83	81	78	78	78	75	71	66	62	55	50	46	44	40	41	43	42	42	47	49	51	50	49	58.0	83
11-Apr	51	51	52	55	61	64	59	56	57	55	58	75	86	85	84	78	73	68	58	53	46	40	37	42	60.2	86
12-Apr	48	58	62	67	68	69	67	62	55	53	47	43	40	37	35	39	43	42	44	46	43	42	44	45	50.0	69
13-Apr	46	47	50	52	53	55	55	56	51	47	44	40	39	38	36	33	33	32	34	36	36	34	33	35	42.3	56
14-Apr	36	40	46	47	52	55	55	52	43	38	34	31	29	27	27	27	28	30	32	34	36	40	48	58	39.3	58
15-Apr	54	69	91	95	92	90	87	84	82	84	74	61	57	43	37	32	30	26	29	34	41	41	45	50	59.6	95
16-Apr	50	49	49	51	57	62	64	63	64	70	68	53	47	44	41	36	33	30	30	32	33	35	36	38	47.2	70
17-Apr	40	44	47	51	53	55	56	56	54	50	45	42	40	37	36	35	35	35	37	40	44	48	53	58	45.5	58
18-Apr	63	69	72	74	76	76	77	79	79	79	75	72	71	70	71	73	75	83	88	90	91	90	91	91	78.1	91
19-Apr	91	93	94	95	95	96	95	93	85	77	71	67	64	59	54	54	58	59	63	70	76	79	80	82	77.0	96
20-Apr	83	85	86	88	89	89	86	85	81	73	65	51	40	32	28	26	26	27	27	30	31	32	34	39	55.7	89
21-Apr	48	54	59	67	71	74	78	77	70	58	56	54	49	49	53	46	42	40	41	45	48	47	53	59	55.8	78
22-Apr	64	69	72	76	78	79	76	70	62	56	50	38	28	24	25	26	27	30	36	42	47	53	59	62	52.1	79
23-Apr	63	63	64	65	64	63	62	61	59	56	50	45	43	42	42	39	40	43	44	46	48	50	52	53	52.3	65
24-Apr	57	66	59	68	75	68	69	76	76	75	83	89	80	76	67	59	52	52	53	49	52	55	58	60	65.7	89
25-Apr	65	69	73	71	71	73	74	71	68	64	59	57	53	51	48	46	46	47	49	52	54	57	59	62	60.0	74
26-Apr	65	70	72	74	76	79	79	78	74	71	66	60	57	52	53	52	51	52	54	55	57	60	61	63	63.8	79
27-Apr	67	73	77	78	81	91	91	92	94	94	91	88	86	84	83	84	86	88	92	89	88	88	88	89	85.8	94
28-Apr	89	90	91	93	95	97	97	97	95	91	88	81	74	66	59	50	51	50	53	63	70	74	77	81	78.1	97
29-Apr	84	86	87	88	90	92	90	80	67	59	49	40	31	31	32	32	29	30	29	29	32	33	40	43	54.2	92
30-Apr	52	56	56	61	64	63	61	57	50	41	32	25	18	17	17	17	18	20	24	27	29	31	32	35	37.6	64
	60.8	64.6	67.4	69.4	71.0	72.2	72.2	70.8	66.3	63.4	59.7	55.4	51.9	48.8	45.5	43.3	43.2	43.8	45.5	48.3	50.8	52.4	54.9	57.6	Diurnal Average	
	91	93	94	95	95	97	97	97	95	94	91	92	94	91	84	84	86	88	92	90	91	90	91	91	Diurnal Maximum	

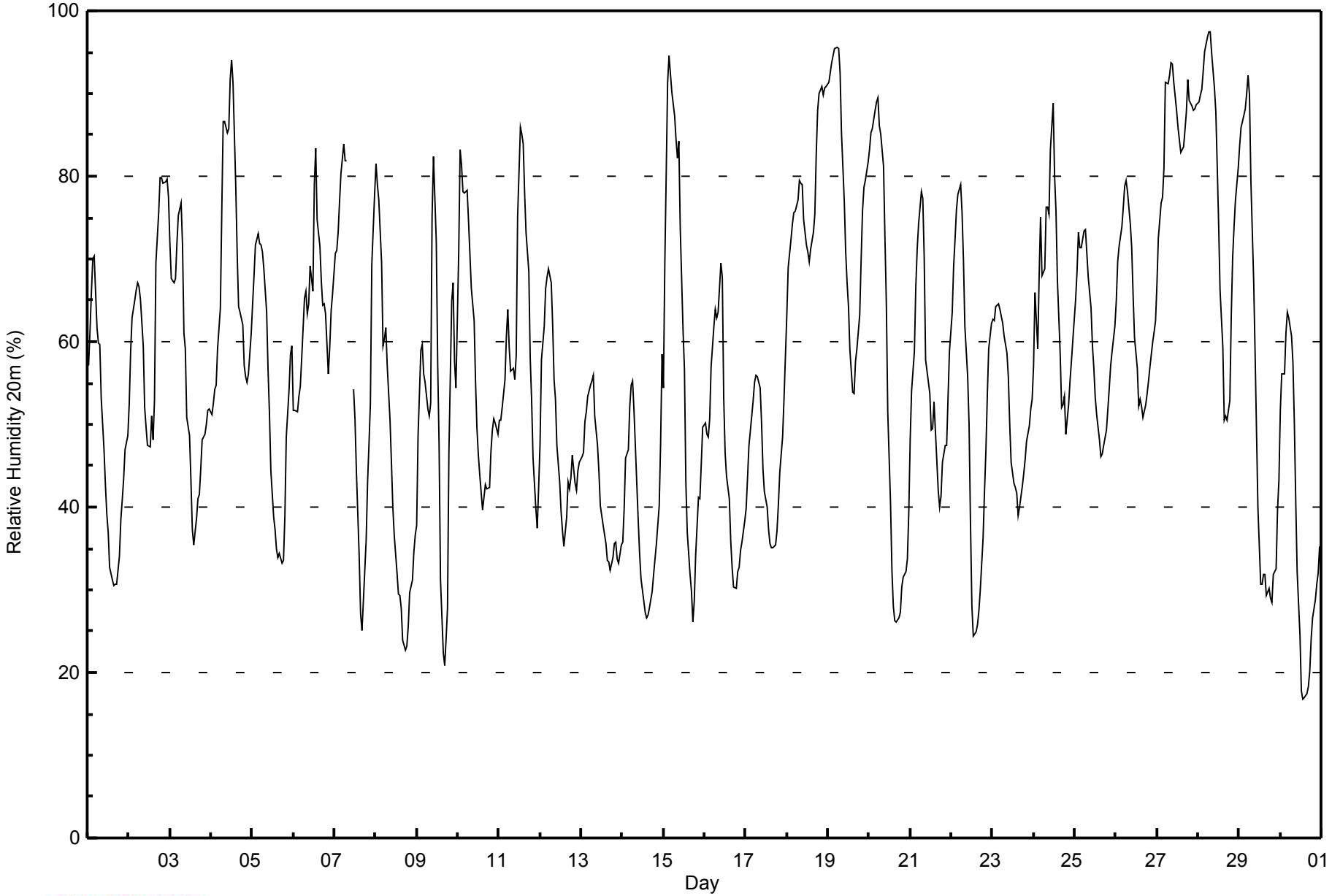
MS - Missing

WBEA NETWORK

Hourly Averages

Relative Humidity 20m (RH20m) - %

Mannix - April 2014



AURORA ATMOSPHERICS INC.

Concentration Ranges (%)	Number of Hours	%	Cumulative %
0 - 20	5	0.70	0.70
20 - 40	141	19.67	20.36
40 - 60	267	37.24	57.60
60 - 80	208	29.01	86.61
80 - 100	96	13.39	100.00

Total Number of Valid Hours: 717

Total Number of Hours: 720

Wood Buffalo Environmental Association

Summary of Hour Averages

Relative Humidity 45m (RH45m) - %

Mannix - April 2014

Maximum Value: 98 % on Apr 28 08:00

Maximum Daily Average: 86.2 % on Apr 27

Minimum Value: 16 % on Apr 30 14:00

Minimum Daily Average: 35.6 % on Apr 30

Maximum Diurnal Average: 72.0 % at hour 7

Minimum Diurnal Average: 43.1 % at hour 17

Monthly Average: 57.1 %

Percentiles: P_1 = 21 P_{10} = 32 Q_1 = 43 Median = 56 Q_3 = 71 P_{90} = 84 P_{99} = 96

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-Apr	56	60	64	68	67	60	59	59	53	47	43	39	37	33	31	30	31	30	33	37	40	42	46	48	46.4	68
2-Apr	52	59	63	65	67	67	67	66	60	52	50	48	47	51	48	53	70	76	80	80	79	80	80	78	64.1	80
3-Apr	72	67	67	68	72	73	77	71	61	60	51	48	43	37	35	39	41	41	44	48	48	50	51	52	54.8	77
4-Apr	51	52	54	55	59	64	77	87	87	86	87	93	95	92	78	70	63	63	61	56	55	55	56	60	69.0	95
5-Apr	63	64	68	68	67	68	70	69	64	57	52	44	39	37	35	34	34	33	33	37	46	49	54	55	51.7	70
6-Apr	50	49	49	52	54	58	62	62	64	66	70	66	80	85	76	72	67	64	62	62	54	58	62	63	62.8	85
7-Apr	66	64	71	75	79	83	82	83	MS	MS	MS	53	51	44	34	27	24	28	35	41	46	51	69	77	56.4	83
8-Apr	81	78	73	63	57	57	58	54	50	45	39	36	31	29	29	27	23	22	22	25	29	30	33	35	42.8	81
9-Apr	37	47	58	59	55	54	51	51	52	76	82	71	57	47	31	21	20	23	27	46	62	62	53	52	49.8	82
10-Apr	71	83	82	78	78	78	75	71	67	63	55	50	46	44	40	41	43	42	42	47	49	51	50	49	58.1	83
11-Apr	51	51	52	56	61	64	60	57	57	56	59	76	87	86	84	78	73	68	58	52	45	39	35	41	60.2	87
12-Apr	46	56	57	62	65	65	65	63	56	53	48	43	39	37	35	39	43	42	43	46	42	42	44	45	49.1	65
13-Apr	46	46	50	51	53	54	55	56	51	48	45	40	39	38	36	34	33	32	34	34	35	33	33	34	42.1	56
14-Apr	35	39	44	47	52	54	56	52	43	39	34	31	29	27	26	27	27	29	31	33	35	39	47	57	38.9	57
15-Apr	53	70	92	94	92	90	87	84	82	85	74	61	56	42	36	31	29	25	28	33	41	40	45	49	59.2	94
16-Apr	50	49	48	51	57	62	64	63	64	70	68	53	46	43	41	35	32	30	29	31	32	34	35	38	47.0	70
17-Apr	39	43	47	50	53	55	56	56	55	51	45	42	40	37	35	35	35	35	37	40	43	48	52	57	45.2	57
18-Apr	63	69	73	75	76	76	78	80	80	80	75	73	72	70	72	74	76	84	89	91	91	90	91	91	78.7	91
19-Apr	92	93	95	96	96	96	96	94	86	78	72	67	65	59	54	54	58	60	64	70	76	79	79	81	77.5	96
20-Apr	83	84	84	88	89	89	87	86	82	73	65	52	40	32	28	26	26	26	27	29	30	28	31	42	55.4	89
21-Apr	48	53	57	66	71	75	79	78	70	58	57	54	50	49	52	46	42	40	41	45	47	47	53	57	55.7	79
22-Apr	61	67	70	71	70	73	73	70	62	56	51	38	28	24	25	26	27	30	36	42	47	54	59	62	50.9	73
23-Apr	63	63	64	65	64	63	62	61	59	56	50	45	43	42	42	39	40	43	44	46	48	50	52	53	52.3	65
24-Apr	57	66	59	69	75	68	69	77	77	76	83	87	78	76	68	58	52	52	53	49	52	55	58	60	65.7	87
25-Apr	65	69	74	71	72	74	74	71	68	65	60	57	54	52	49	46	47	47	49	52	54	57	58	62	60.3	74
26-Apr	65	70	72	74	77	80	80	79	75	72	66	61	57	52	53	52	51	52	54	55	57	60	61	63	64.2	80
27-Apr	67	73	77	78	81	92	91	92	94	94	91	88	86	85	83	84	86	88	92	89	89	88	88	89	86.2	94
28-Apr	89	90	91	93	95	97	98	98	98	92	89	82	75	67	60	51	51	50	53	63	70	74	77	81	78.5	98
29-Apr	84	86	86	88	90	92	90	80	68	59	49	40	31	30	32	32	29	30	29	28	29	29	35	39	53.6	92
30-Apr	45	46	51	56	61	61	60	57	50	41	32	24	17	16	17	17	18	19	23	25	26	29	30	34	35.6	61
	60.0	63.5	66.5	68.3	70.2	71.5	72.0	70.9	66.8	63.9	60.1	55.5	51.9	48.9	45.5	43.3	43.1	43.6	45.1	47.8	49.9	51.4	54.0	56.8	Diurnal Average	
	92	93	95	96	96	97	98	98	98	94	91	93	95	92	84	84	86	88	92	91	91	90	91	91	Diurnal Maximum	

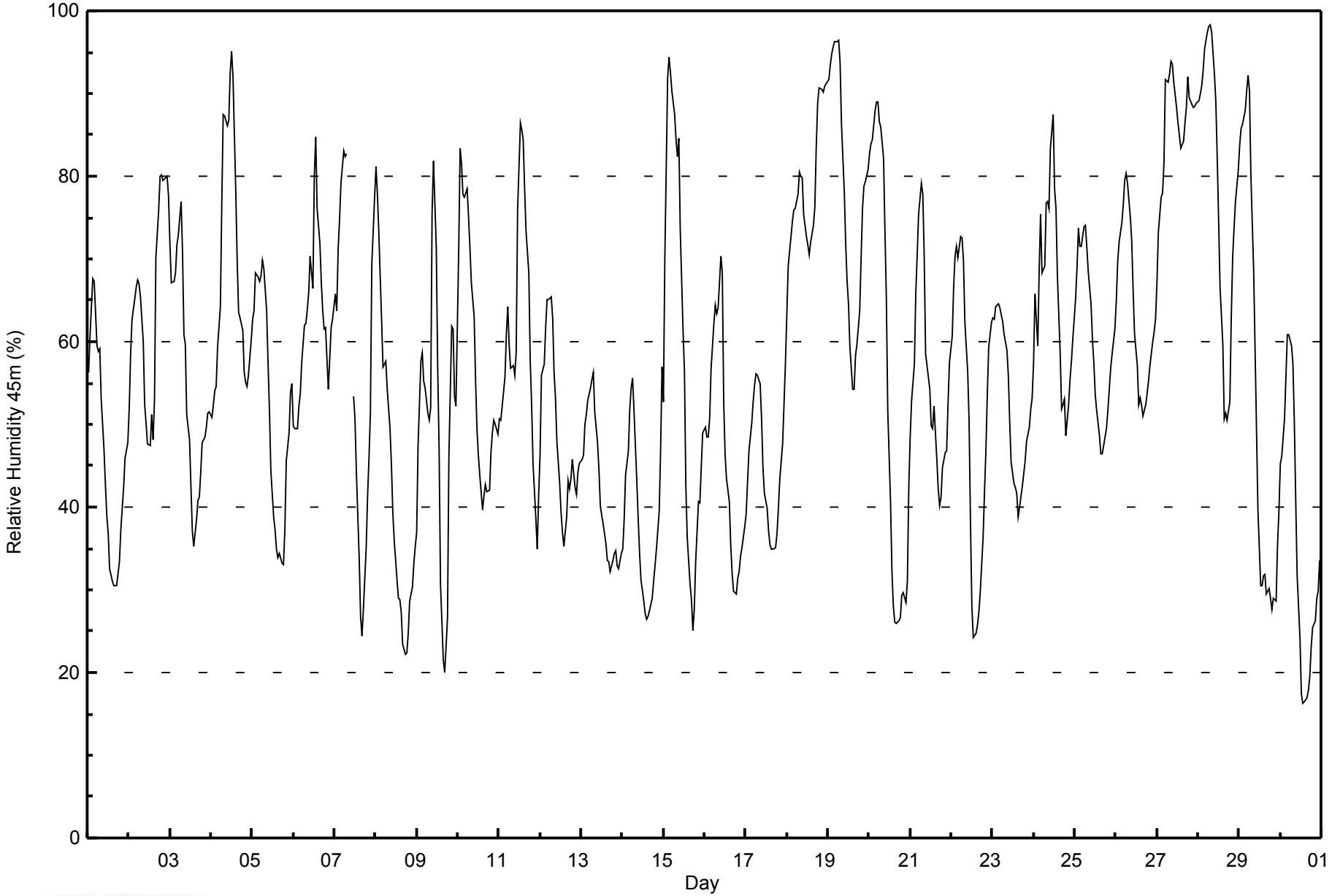
MS - Missing

WBEA NETWORK

Hourly Averages

Relative Humidity 45m (RH45m) - %

Mannix - April 2014



AURORA ATMOSPHERICS INC.

Concentration Ranges (%)	Number of Hours	%	Cumulative %
0 - 20	6	0.84	0.84
20 - 40	145	20.22	21.06
40 - 60	266	37.10	58.16
60 - 80	200	27.89	86.05
80 - 100	100	13.95	100.00

Total Number of Valid Hours: 717

Total Number of Hours: 720

Wood Buffalo Environmental Association

Summary of Hour Averages

Relative Humidity 75m (RH75m) - %

Mannix - April 2014

Maximum Value: 98 % on Apr 28 09:00

Maximum Daily Average: 87.2 % on Apr 27

Minimum Value: 16 % on Apr 30 14:00

Minimum Daily Average: 32.8 % on Apr 30

Maximum Diurnal Average: 71.3 % at hour 7

Minimum Diurnal Average: 43.7 % at hour 17

Monthly Average: 57.2 %

Percentiles: P_1 = 21 P_{10} = 32 Q_1 = 43 Median = 55 Q_3 = 71 P_{90} = 85 P_{99} = 97

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-Apr	57	61	64	67	67	59	58	58	53	48	43	40	38	33	32	31	31	31	33	37	39	42	45	47	46.4	67
2-Apr	51	58	63	66	67	68	68	66	61	53	51	48	48	52	49	53	71	76	80	81	80	81	81	78	64.6	81
3-Apr	73	67	68	70	71	65	67	62	61	60	52	49	43	38	36	39	42	42	45	48	49	50	52	52	54.1	73
4-Apr	51	53	55	55	60	65	78	88	88	87	88	93	95	91	78	70	64	63	62	57	55	55	56	60	69.5	95
5-Apr	62	63	64	65	65	66	69	68	65	59	53	45	40	38	36	34	35	34	33	36	43	45	50	50	50.8	69
6-Apr	49	48	48	51	53	58	62	62	66	68	71	67	81	86	77	73	67	63	61	62	54	58	61	61	62.7	86
7-Apr	65	63	72	75	80	84	83	83	MS	MS	MS	55	52	45	35	27	25	28	35	42	46	52	71	79	56.9	84
8-Apr	81	77	70	60	56	56	57	54	49	45	40	36	31	29	29	27	24	22	22	25	29	30	33	35	42.4	81
9-Apr	37	48	58	59	55	54	52	51	52	76	82	71	57	48	31	21	20	23	26	46	60	55	50	51	49.3	82
10-Apr	71	84	82	78	78	79	76	72	68	64	57	51	47	45	40	42	43	42	42	47	49	51	50	49	58.6	84
11-Apr	51	51	53	57	62	65	61	58	58	57	60	77	87	86	85	79	74	69	59	53	46	38	31	40	60.8	87
12-Apr	45	52	54	58	62	58	59	62	57	53	49	44	40	38	36	39	44	43	44	46	43	42	45	46	48.2	62
13-Apr	46	47	51	51	53	55	56	57	52	49	45	41	40	39	36	34	34	33	34	34	34	32	32	34	42.4	57
14-Apr	34	37	42	47	51	53	56	52	44	39	35	32	29	28	27	27	28	29	31	33	35	40	45	54	38.6	56
15-Apr	52	70	92	94	92	90	87	85	83	85	75	62	57	43	37	31	29	25	27	33	41	41	45	49	59.3	94
16-Apr	49	49	49	51	57	63	65	64	65	71	69	54	47	44	41	36	32	30	29	31	32	34	35	38	47.4	71
17-Apr	39	43	47	50	53	55	57	57	56	52	46	43	41	38	36	35	35	36	37	40	43	47	52	57	45.6	57
18-Apr	64	70	73	76	77	77	79	82	81	81	77	74	73	72	73	75	78	84	90	91	91	91	92	92	79.7	92
19-Apr	92	94	96	97	97	97	97	95	87	79	74	69	66	60	55	55	59	61	65	71	77	79	80	81	78.6	97
20-Apr	83	84	85	88	88	89	87	86	83	74	67	53	41	33	29	27	27	27	27	29	29	28	32	46	55.8	89
21-Apr	50	53	59	65	70	77	79	78	72	59	58	55	51	50	52	47	43	41	42	45	47	47	52	57	56.1	79
22-Apr	59	61	64	64	64	65	66	68	64	57	52	39	29	25	25	26	28	30	37	42	48	54	60	63	49.6	68
23-Apr	64	64	65	65	65	64	63	62	60	57	51	46	44	43	42	39	41	43	45	46	49	50	53	54	53.2	65
24-Apr	58	66	60	70	77	69	70	78	78	77	83	85	78	77	69	59	53	53	54	49	53	56	58	61	66.4	85
25-Apr	66	70	75	72	73	75	75	73	70	66	62	59	55	53	49	47	47	48	50	52	54	57	59	62	61.2	75
26-Apr	66	71	73	75	78	81	82	80	76	73	67	63	58	53	54	53	52	53	55	56	58	61	62	64	65.2	82
27-Apr	68	74	79	79	83	92	92	93	95	94	92	89	87	86	84	85	88	89	93	90	89	89	89	89	87.2	95
28-Apr	90	91	92	94	96	98	98	98	98	97	91	84	75	67	61	52	52	51	54	64	71	74	77	81	79.4	98
29-Apr	84	85	86	87	90	92	89	80	69	60	50	41	31	31	32	32	30	31	29	28	27	28	34	37	53.5	92
30-Apr	40	40	45	47	49	43	51	55	50	41	31	24	18	16	17	17	18	19	23	26	26	28	29	33	32.8	55
	59.9	63.2	66.0	67.7	69.6	70.4	71.3	70.9	67.7	65.0	61.1	56.3	52.6	49.5	46.1	43.9	43.7	44.0	45.4	48.0	49.9	51.2	53.7	56.7	Diurnal Average	
	92	94	96	97	97	98	98	98	98	97	92	93	95	91	85	85	88	89	93	91	91	91	92	92	Diurnal Maximum	

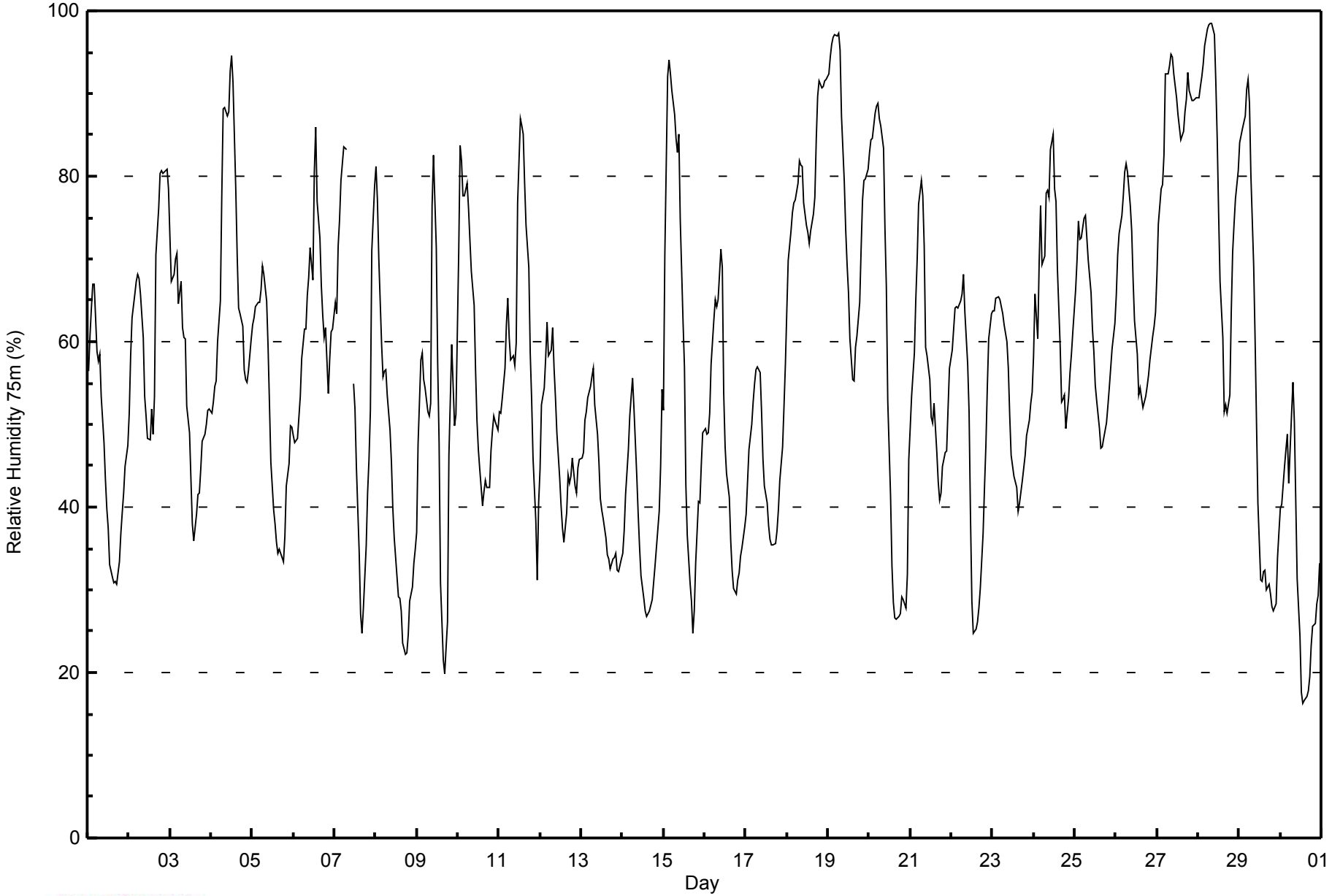
MS - Missing

WBEA NETWORK

Hourly Averages

Relative Humidity 75m (RH75m) - %

Mannix - April 2014



AURORA ATMOSPHERICS INC.

Concentration Ranges (%)	Number of Hours	%	Cumulative %
0 - 20	7	0.98	0.98
20 - 40	140	19.53	20.50
40 - 60	269	37.52	58.02
60 - 80	194	27.06	85.08
80 - 100	107	14.92	100.00

Total Number of Valid Hours: 717

Total Number of Hours: 720

Wood Buffalo Environmental Association

Summary of Hour Averages

Relative Humidity 90m (RH90m) - %

Mannix - April 2014

Maximum Value: 99 % on Apr 28 09:00

Maximum Daily Average: 88.0 % on Apr 27

Minimum Value: 16 % on Apr 30 14:00

Minimum Daily Average: 31.7 % on Apr 30

Maximum Diurnal Average: 71.4 % at hour 7

Minimum Diurnal Average: 44.2 % at hour 17

Monthly Average: 57.7 %

Percentiles: P_1 = 21 P_{10} = 32 Q_1 = 43 Median = 56 Q_3 = 72 P_{90} = 86 P_{99} = 98

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-Apr	57	61	65	67	68	59	58	58	54	49	44	41	38	34	32	31	32	31	34	37	40	42	45	48	46.8	68
2-Apr	51	58	63	67	68	69	68	67	61	54	52	49	49	53	50	54	71	77	81	82	81	82	82	79	65.4	82
3-Apr	74	68	68	70	70	63	62	58	61	61	53	49	44	38	36	40	42	42	45	49	49	51	52	53	54.1	74
4-Apr	52	53	55	56	61	66	79	89	89	88	89	94	96	92	79	71	65	64	63	57	56	56	57	61	70.3	96
5-Apr	62	63	64	64	63	66	70	69	66	61	53	46	40	39	36	35	35	34	34	36	42	45	49	48	50.9	70
6-Apr	49	48	49	51	54	59	62	62	67	69	73	69	83	87	78	73	66	63	60	62	54	58	62	60	63.2	87
7-Apr	64	63	72	75	80	84	85	84	MS	MS	MS	56	52	45	35	28	25	28	36	42	46	52	72	80	57.4	85
8-Apr	81	77	69	59	55	56	57	54	50	46	40	37	32	30	29	28	24	22	23	25	29	31	33	35	42.6	81
9-Apr	37	48	58	59	56	55	52	51	53	77	85	72	58	48	31	22	20	23	26	47	59	52	49	51	49.6	85
10-Apr	71	84	82	78	78	80	77	74	69	66	58	51	48	45	41	43	44	43	43	47	50	52	51	50	59.4	84
11-Apr	52	52	54	58	63	66	61	59	59	58	61	78	88	87	86	80	75	70	59	54	47	38	30	40	61.5	88
12-Apr	44	51	55	57	58	54	55	61	57	54	50	44	41	38	36	40	45	44	44	46	43	42	45	46	48.0	61
13-Apr	46	47	51	52	54	55	57	58	53	50	46	42	40	39	37	35	34	33	34	34	35	33	32	34	43.0	58
14-Apr	35	37	41	47	50	53	56	52	44	40	36	32	30	28	27	27	28	29	31	33	35	40	45	53	38.7	56
15-Apr	52	71	93	94	93	91	88	85	84	86	75	63	58	43	37	31	29	25	28	34	41	41	46	50	59.8	94
16-Apr	50	49	50	52	58	64	66	65	66	72	70	54	48	45	42	36	33	30	30	31	32	34	35	38	48.0	72
17-Apr	39	43	47	50	53	55	58	58	57	52	46	43	41	38	36	36	36	36	37	40	43	47	52	58	46.1	58
18-Apr	64	71	74	76	78	78	80	83	82	82	78	75	74	73	74	76	78	85	91	92	91	92	92	92	80.6	92
19-Apr	93	95	97	98	98	98	98	97	88	80	74	70	66	61	56	56	60	62	66	72	78	80	80	81	79.3	98
20-Apr	83	85	85	88	88	89	88	87	84	75	68	54	42	33	29	27	27	27	27	29	29	28	33	46	56.4	89
21-Apr	50	54	60	65	69	77	80	78	72	60	59	56	52	51	53	47	44	41	42	45	47	47	52	57	56.6	80
22-Apr	59	61	63	64	64	65	66	68	64	58	52	39	29	25	26	26	28	31	37	43	48	55	61	64	49.9	68
23-Apr	64	65	66	66	66	65	64	63	61	58	52	47	44	44	43	40	41	44	45	47	49	51	53	55	53.8	66
24-Apr	59	66	61	70	77	70	71	79	79	78	84	85	79	78	70	60	53	54	54	50	54	57	59	62	67.1	85
25-Apr	67	71	75	73	73	76	76	73	71	67	62	60	55	54	50	48	48	49	51	53	55	57	60	63	61.9	76
26-Apr	66	71	74	76	78	81	83	81	77	74	68	63	59	54	55	54	53	54	55	57	58	61	63	64	65.9	83
27-Apr	69	75	79	80	84	93	93	94	96	95	93	90	88	87	85	86	89	90	93	91	90	90	90	90	88.0	96
28-Apr	90	92	93	94	96	98	99	99	99	98	94	87	78	68	61	52	53	52	54	64	71	75	78	81	80.3	99
29-Apr	84	84	86	87	91	92	87	80	70	61	51	41	32	31	33	33	30	31	30	28	28	28	33	36	53.6	92
30-Apr	39	37	43	43	41	39	46	52	50	41	31	25	18	16	17	17	18	20	23	26	26	28	29	33	31.7	52
	60.2	63.4	66.4	67.9	69.5	70.6	71.4	71.3	68.4	65.9	62.0	57.1	53.4	50.2	46.7	44.4	44.2	44.5	45.9	48.5	50.2	51.5	54.1	57.0	Diurnal Average	
	93	95	97	98	98	98	99	99	99	98	94	94	96	92	86	86	89	90	93	92	91	92	92	92	Diurnal Maximum	

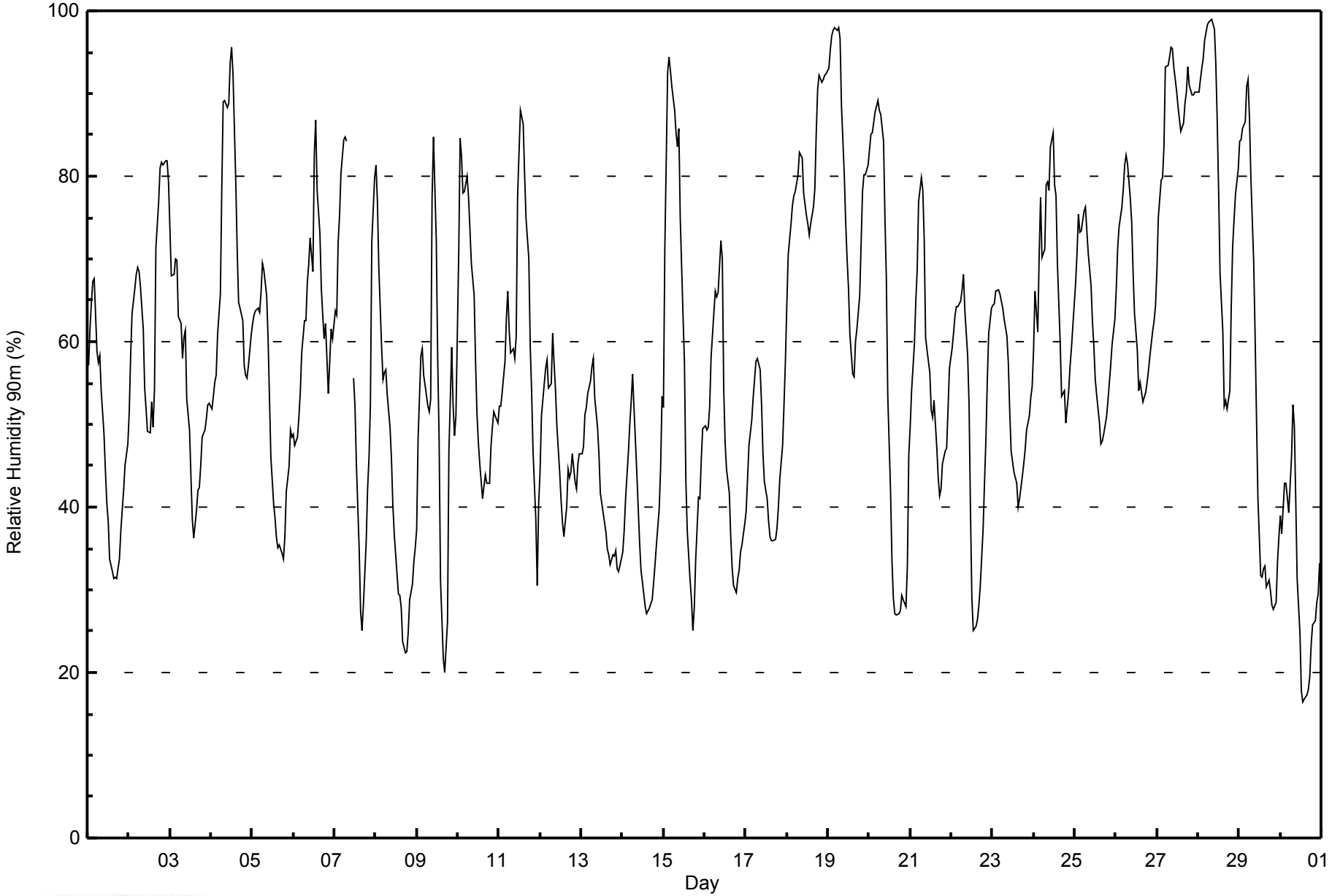
MS - Missing

WBEA NETWORK

Hourly Averages

Relative Humidity 90m (RH90m) - %

Mannix - April 2014



AURORA
ATMOSPHERICS INC.

Concentration Ranges (%)	Number of Hours	%	Cumulative %
0 - 20	6	0.84	0.84
20 - 40	138	19.25	20.08
40 - 60	269	37.52	57.60
60 - 80	191	26.64	84.24
80 - 100	113	15.76	100.00

Total Number of Valid Hours: 717

Total Number of Hours: 720

Wood Buffalo Environmental Association

Summary of Hour Averages

Wind Speed 20 m (WS20m) - km/h

Mannix - April 2014

Maximum Speed: 39 km/h on Apr 8 15:00

Maximum Daily Speed Average: 19.9 km/h on Apr 9

Minimum Speed Value: 0 km/h on Apr 7 15:00

Minimum Daily Speed Average: 1.5 km/h on Apr 20

Maximum Diurnal Speed Average: 4.7 km/h at hour 21

Minimum Diurnal Speed Average: 1.3 km/h at hour 13

Monthly Average Velocity: 3.2 km/h 90.3 deg

Percentiles: $P_1 = 2$ $P_{10} = 5$ $Q_1 = 8$ Median = 12 $Q_3 = 15$ $P_{90} = 20$ $P_{99} = 31$

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-Apr	SSW12	SSW9	SE6	S1	WNW9	N11	N13	NNE13	NNE11	NNE12	NNE11	N9	NW11	NW9	NNW9	NW11	NNW6	NNE9	NNE15	NNE16	NNE15	NNE12	NNE10	NE10	N7.0	NNE16
2-Apr	NNE12	NNE15	N17	NNE18	NNE21	NNE14	N16	N14	N10	N11	NNW13	N17	N16	N17	N19	NNE19	N18	N21	N19	N20	N20	N18	N16	N14	N16.5	NNE21
3-Apr	N12	N9	NNW9	N12	N8	N9	N8	N7	NNE5	WNW5	NE4	NE5	ENE6	E6	ESE8	SE9	SE10	ESE13	ESE13	SE15	SE18	SE20	SE22	SE22	E5.4	SE22
4-Apr	SE23	SE23	SE22	SE22	SE19	SE17	SE21	SE18	SE17	SE17	SSE15	SSE13	SSE12	WSW7	WNW14	WNW20	WNW29	WNW23	WNW24	WNW26	WNW21	WNW22	NW23	WNW14	SSW4.3	WNW29
5-Apr	W13	WSW12	WSW12	WSW13	WSW12	WSW7	NW4	NNW4	E3	SSE1	WNW4	NNW7	NW4	NE3	ENE4	E4	ENE7	ENE6	NE7	NNE11	NNE12	NNE7	N4	NE2	NW2.7	W13
6-Apr	ESE4	ESE6	SE8	SE9	SE9	SE7	SSW4	S3	SE5	SE6	SSE5	WNW2	NNE1	E3	S3	ESE6	ESE7	E2	WNW7	N11	N8	NNW4	W6	NNW2	ESE2.1	N11
7-Apr	SSW5	SSW8	SSW5	WNW2	W2	WSW5	SSW3	WSW5	MS	MS	MS	E5	E8	E8	ESE0	SW12	WSW12	SW8	SW14	SW10	SSW10	SSW13	SW10	S8	SSW5.3	SW14
8-Apr	SSE12	SSE13	SSE9	S8	WSW15	SSW7	SSE6	SSW11	SW18	SW19	WSW23	W23	W34	WSW38	WSW39	WSW29	WSW32	WSW34	WSW31	WSW30	WSW25	WSW25	W22	WSW18	WSW19.4	WSW39
9-Apr	W27	W22	W13	WSW15	WSW21	WSW22	WSW25	W30	WNW31	WNW35	NW27	NW14	NW24	NW18	NW21	WNW32	NW32	WNW29	WNW27	NW16	WNW3	WSW11	WSW12	W15	WNW19.9	WNW35
10-Apr	NNW10	NNE14	NNE14	N14	N14	NNE14	NNE13	NNE14	NNE13	NNE12	NNE12	NNE14	NNE15	NNE14	NNE15	N16	NNE16	NNE16	NNE17	NNE16	NNE14	NNE12	ENE13	NE11	NNE13.5	NNE17
11-Apr	E13	E13	E13	ENE15	E14	E13	E12	ENE13	ENE13	ENE14	E11	NE11	NNE20	NNE24	N24	N25	NNE27	N25	N23	N21	NNE26	N21	NNE17	NNW9	NE14.5	NNE27
12-Apr	NNW8	W7	W10	WSW8	WSW10	WSW8	WSW7	SSW4	S4	SE4	W5	WNW7	W6	W12	NW13	NNW18	NNW17	N15	NNE16	NNE14	NNE21	NNE20	NNE23	NNE19	NNW6.8	NNE23
13-Apr	NNE19	N17	N11	N10	NNW9	NNW11	N9	N10	NNW10	NW12	NW14	NW11	NW9	NNW7	NE8	NE6	SE8	ESE9	SE9	SE11	SE12	SSE14	SSE15	SSE13	NNE3.8	NNE19
14-Apr	SE15	SE13	SE10	SE11	SE12	SE11	SE10	SE8	SSE12	SSE14	SSE16	SSE19	SSE18	SE16	SE15	SE12	SE11	SE10	SE11	SE10	ESE13	ENE12	NNE16	NNE16	SE10.5	SSE19
15-Apr	NNE13	ENE17	NE12	NE12	NE14	ENE17	ENE16	NE12	NE12	NE10	E8	NE10	NNE14	NE17	NE17	NE19	N26	N26	NNE28	NNE24	N25	N23	N17	N15	NNE15.5	NNE28
16-Apr	NNE14	NE12	NE13	ENE11	NE10	NE10	NNE10	E11	E13	E13	E5	E10	ESE14	SE14	SE14	SE16	SE16	ESE14	SE12	ESE11	SE10	SSE11	SE14	SE15	ESE9.4	SE16
17-Apr	SE14	SE10	ESE9	SE10	SE10	SE9	SE11	SE11	SE10	SE17	SE20	SE15	SE17	SE17	SE16	SE16	SE16	SE16	SE14	SE13	ESE10	SE10	SE10	SE9	SE12.9	SE20
18-Apr	SE12	SE11	E10	E13	ESE13	ESE12	ESE10	ESE10	ESE12	ESE12	ESE12	ESE13	ESE12	ESE12	ESE12	SE12	SE14	SE11	SSE6	SSE4	ESE4	SE6	SSE5	SSE6	ESE9.7	SE14
19-Apr	SE9	S5	SW3	SSW3	S3	SSE4	S3	SSE6	SSE7	SE8	SE8	ESE10	SE11	ESE8	E9	ESE10	ESE13	ESE13	ESE13	SE13	SE12	SE13	SE8	SE5	SE7.7	ESE13
20-Apr	SE5	NE4	E5	ENE6	E6	ESE4	SE3	SW3	W4	W3	NW7	NW10	NW13	NW13	NNE11	NNE11	NE7	ENE10	E6	E6	SSE7	S9	S9	SSE11	ENE1.5	NW13
21-Apr	SSE9	SSE9	SSE6	SE7	SE7	SE7	SSE3	SE5	ESE3	NNW3	NNW14	N13	N10	NW10	NW10	NNE10	NNE11	NNE13	NNE16	N15	NNE16	NNE17	NNE15	NNE9	NNE5.3	NNE17
22-Apr	N9	N6	NNW4	N6	N6	N7	N6	NNW2	WNW2	NW5	WNW8	NNW3	ENE11	E17	ENE19	E20	E19	E19	ENE17	ENE14	ENE12	E13	E13	ENE12	ENE7.9	E20
23-Apr	ENE12	E17	E20	E18	ENE19	ENE16	ENE14	ENE13	E18	E16	E18	E18	AF	AF	AF	E23	ENE25	E25	E20	E21	E18	E22	E19	E17	E18.2	ENE25
24-Apr	ESE17	ESE13	E15	E13	E14	ENE13	E16	E12	ESE9	SE6	SW5	W10	SE9	SE13	SE14	SE16	ESE14	ESE13	ESE11	E19	E17	E17	E16	ESE14	ESE11.3	E19
25-Apr	ESE13	SE9	SE8	ESE8	ESE8	SE9	SE9	SE12	SE9	ESE7	ENE12	ENE12	ENE7	E8	ESE6	SE5	SSE10	SSE11	SSE11	SSE8	SE9	SSE9	SSE10	SSE9	SE8.0	ESE13
26-Apr	SSE11	SSE11	SE9	SE8	SE9	SE11	SSE10	SSE10	SE12	SSE15	SE17	SE15	SE13	SE12	SE14	SE14	SE13	SE14	SE13	SE14	SE13	SE12	SE12	SE13	SE12.0	SE17
27-Apr	SE13	SE12	SE14	SE12	SE11	E10	ESE10	ESE9	ESE10	SE12	SE15	SE18	SE20	SE16	SE16	SE17	SE15	SSE14	SE14	SE16	SE16	SE14	SE12	SE10	SE13.3	SE20
28-Apr	SE11	SE9	SE8	SE6	SE8	SSE8	S7	SSE8	SE7	SSE7	SSE6	ESE4	ESE4	SE4	ESE6	E4	E7	SE6	SE7	SE11	SE12	SE9	SE10	SE8	SE7.2	SE12
29-Apr	SE11	SE8	SE8	SE9	SSE11	SSE10	SSE9	SSE6	SE5	ESE7	ESE7	S4	WSW11	W13	WNW12	WSW5	WNW8	NW9	N4	NNW5	SSW1	SW5	SSE1	SE4	S2.5	W13
30-Apr	SE7	SSE8	SSE7	SSE9	SSE10	SSE11	SE12	SE13	SE8	SE9	SE11	SSE14	S17	S16	S17	S15	S14	S10	SW10	SW9	SSW11	SW10	SW12	WSW12	S9.8	S17
	ESE4.2	ESE4.3	ESE4.5	E4.5	ESE3.4	E4.0	E3.9	ESE3.5	ESE3.8	ESE3.4	ESE2.0	E2.6	E1.3	E1.6	ENE2.5	ENE2.8	ENE3.2	ENE3.6	NE3.1	ENE4.3	ENE4.7	E3.5	E3.1	E3.1	Diurnal Average	
	W27	SE23	SE22	SE22	WSW21	WSW22	WSW25	W30	WNW31	WNW35	NW27	WSW23	W34	WSW38	WSW39	WNW32	NW32	WSW34	WSW31	WSW30	NNE26	WSW25	NNE23	SE22	Diurnal Maximum	

AF - Analyzer Failure MS - Missing

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

Wood Buffalo Environmental Association

Summary of Hour Standard Deviations

Wind Speed 20 m (WS20m) - km/h

Mannix - April 2014

Number of Exceedences (AAAQO): 1-hr: 0 24-hr: 0
Maximum Value: 9 km/h on Apr 9 11:00

Minimum Value: 1 km/h on Apr 12 03:00

Percentiles: P_1 = 1 P_{10} = 2 Q_1 = 3 Median = 4 Q_3 = 5 P_{90} = 6 P_{99} = 8

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-Apr	3	3	3	2	2	5	3	3	3	4	3	3	3	4	3	3	3	2	4	3	4	3	2	2	5
2-Apr	3	3	4	4	5	4	4	3	3	3	4	4	5	4	5	5	5	5	5	5	5	5	4	3	5
3-Apr	4	3	3	3	3	2	3	2	1	2	2	2	3	3	3	3	4	5	5	5	6	7	7	7	7
4-Apr	7	7	7	7	7	6	7	6	5	5	4	4	3	3	3	6	6	5	6	6	5	5	6	3	7
5-Apr	2	2	2	3	2	5	2	2	1	1	2	3	3	2	2	3	2	2	2	2	3	1	2	2	5
6-Apr	2	2	3	3	3	2	2	1	2	2	2	2	1	2	2	2	3	2	3	2	3	1	1	1	3
7-Apr	2	2	3	1	2	1	2	2	MS	MS	MS	2	2	3	3	6	4	3	4	2	3	4	2	3	6
8-Apr	3	3	3	2	5	2	2	3	4	5	6	6	9	8	8	7	8	9	8	8	6	5	5	5	9
9-Apr	5	5	3	4	6	6	6	6	8	8	9	5	6	5	7	9	8	7	6	6	4	2	2	3	9
10-Apr	4	4	4	3	4	4	4	4	3	3	4	4	4	4	4	4	4	4	4	4	3	3	3	3	4
11-Apr	2	4	3	3	4	4	3	3	3	3	4	4	6	6	6	7	7	6	7	6	6	6	5	2	7
12-Apr	2	2	1	1	2	3	2	2	2	2	4	3	4	4	5	6	6	5	5	4	5	5	6	5	6
13-Apr	5	4	3	3	3	3	3	3	3	4	4	5	4	4	3	3	4	3	3	3	3	4	4	3	5
14-Apr	4	4	3	3	4	3	4	3	4	4	5	6	6	5	5	4	4	3	4	4	4	3	4	4	6
15-Apr	4	5	3	3	3	4	4	3	3	2	3	3	6	5	5	5	7	6	6	6	7	6	5	4	7
16-Apr	3	3	3	4	2	2	2	4	4	4	3	5	5	5	5	5	6	5	5	4	4	3	5	5	6
17-Apr	5	5	3	4	4	4	5	4	4	6	7	6	6	6	6	6	6	6	5	5	4	4	4	4	7
18-Apr	5	4	3	3	4	4	4	4	4	4	5	5	5	5	4	5	4	4	2	1	2	2	1	2	5
19-Apr	3	3	1	1	1	1	2	2	2	3	3	4	4	3	3	4	5	5	5	5	4	4	3	2	5
20-Apr	4	2	1	1	2	2	1	1	2	2	3	4	4	4	4	4	3	3	3	2	2	2	2	2	4
21-Apr	2	3	4	3	2	2	2	2	1	4	4	4	3	5	4	4	3	3	4	4	3	4	3	2	5
22-Apr	3	1	2	2	2	2	2	1	2	2	2	3	5	5	5	5	5	6	6	5	4	4	4	3	6
23-Apr	3	4	5	4	4	4	4	4	4	6	6	7	AF	AF	AF	6	7	7	6	6	7	7	6	5	7
24-Apr	6	5	4	5	4	4	4	4	3	4	2	2	6	4	4	5	6	5	5	5	5	4	5	5	6
25-Apr	4	4	3	3	3	4	4	4	3	3	3	4	4	4	3	3	3	3	3	2	3	2	3	2	4
26-Apr	3	3	2	3	2	3	3	3	4	4	6	5	5	4	5	5	5	5	4	5	4	4	4	4	6
27-Apr	4	4	5	4	5	3	4	4	4	4	5	6	5	6	5	5	5	4	3	4	4	4	4	2	6
28-Apr	3	3	3	2	2	2	2	3	3	3	2	2	2	2	2	2	2	2	4	4	4	3	3	3	4
29-Apr	4	3	3	4	2	2	2	2	2	2	3	4	4	5	7	7	4	3	2	2	1	2	1	2	7
30-Apr	2	1	2	2	3	3	3	3	3	3	3	5	6	6	5	6	5	4	3	2	2	2	2	2	6
	7	7	7	7	7	6	7	6	8	8	9	7	9	8	8	9	8	9	8	8	7	7	7	7	
	Diurnal Maximum																								

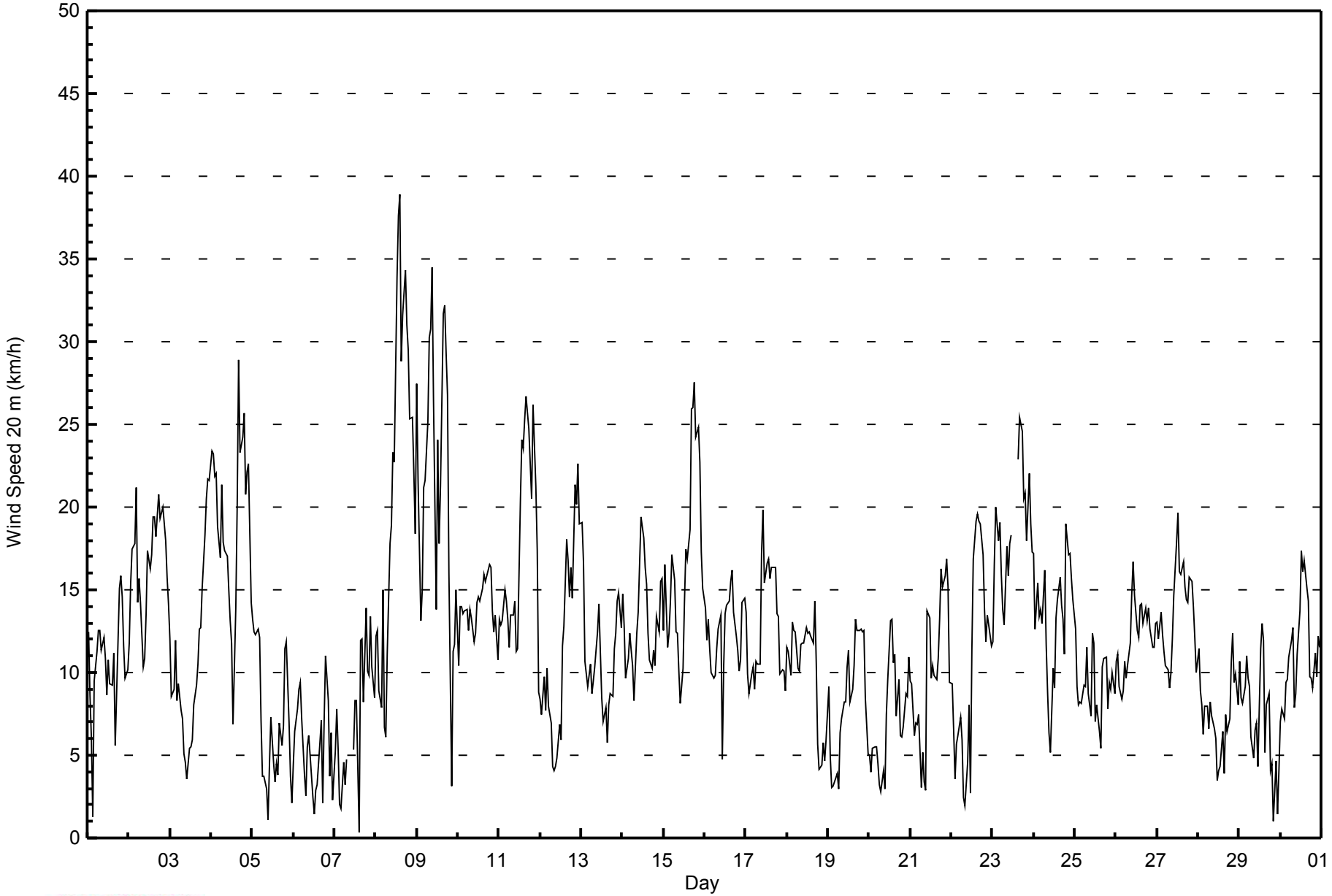
AF - Analyzer Failure MS - Missing

WBEA NETWORK

Hourly Averages

Wind Speed 20 m (WS20m) - km/h

Mannix - April 2014



AURORA ATMOSPHERICS INC.

Wind Speed Ranges (km/h)	Number of Hours	%	Cumulative %
0 - 5	85	11.90	11.90
6 - 11	262	36.69	48.60
12 - 19	290	40.62	89.22
20 - 28	62	8.68	97.90
29 - 38	14	1.96	99.86
> 38	1	0.14	100.00

Total Number of Valid Hours: 714

Total Number of Hours: 720

WBEA NETWORK

Frequency Distribution

Wind Speed 20 m (WS20m) - km/h

Mannix - April 2014

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	2	5	1	8	7	10	8	7	7	4	3	4	6	3	8	85
6 - 11	22	12	11	8	15	26	73	38	6	6	6	8	5	5	10	11	262
12 - 19	23	46	10	22	31	24	76	16	5	2	5	10	5	3	8	4	290
20 - 28	13	10	0	2	6	0	10	0	0	0	0	7	2	8	4	0	62
29 - 38	0	0	0	0	0	0	0	0	0	0	0	6	2	5	1	0	14
> 38	0	0	0	0	0	0	0	0	0	0	0	1	0	0	0	0	1
Totals	60	70	26	33	60	57	169	62	18	15	15	35	18	27	26	23	714

Total Number of Valid Hours: 714

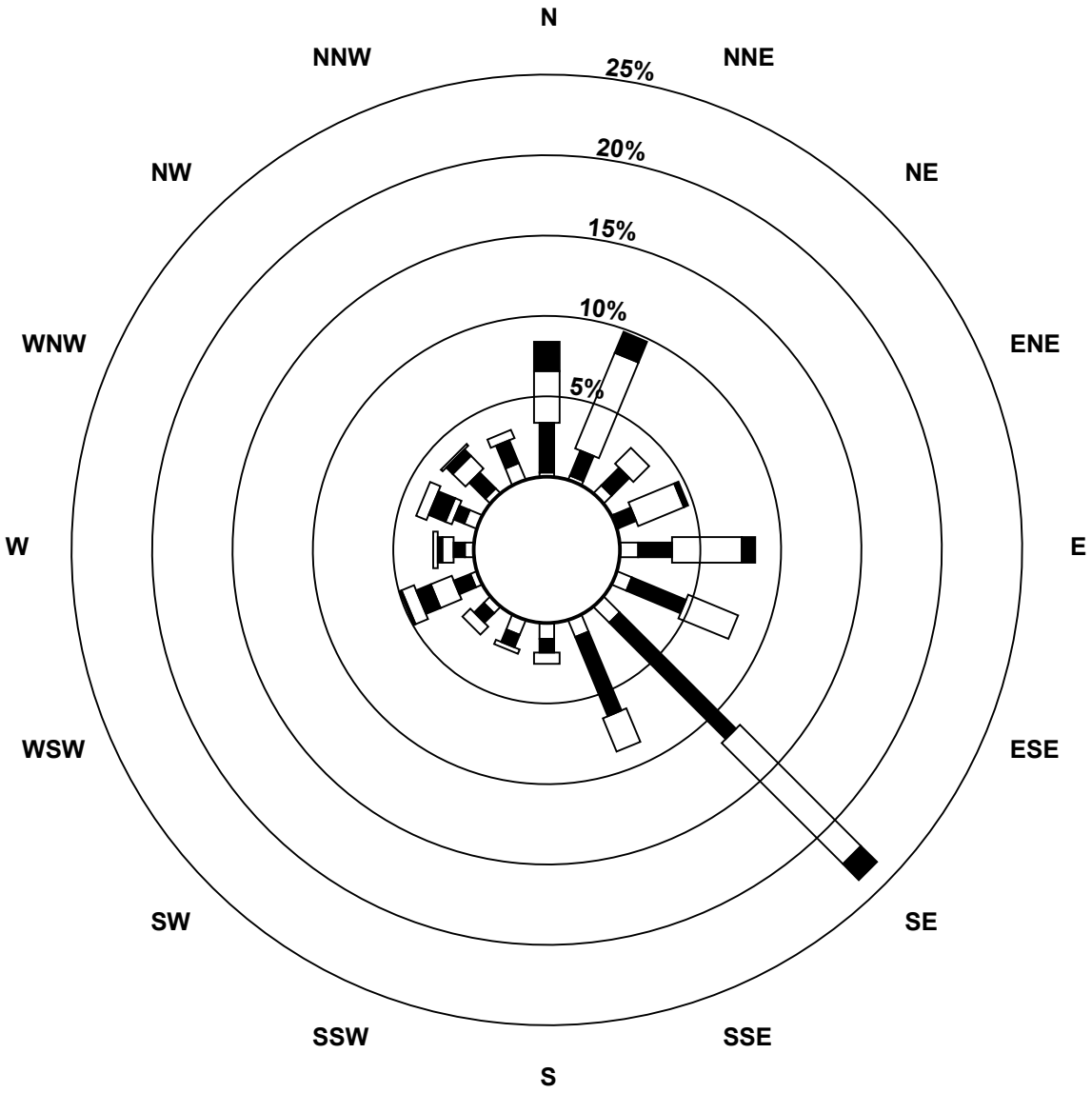
Total Number of Hours: 720

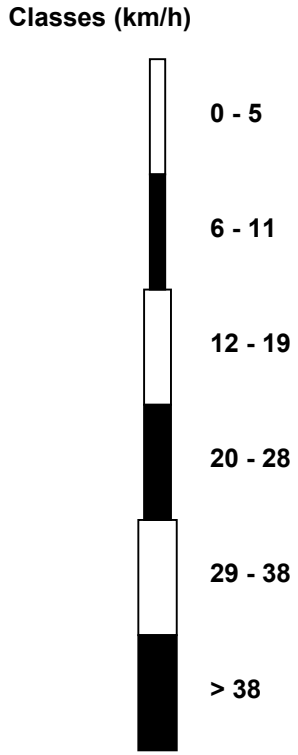
Wood Buffalo Environmental Association

Wind Rose Apr 2014

Wind Speed 20 m (WS20m) - km/h

Mannix (AMS 5)





Total Number of Valid Hours: 714

Wood Buffalo Environmental Association

Summary of Hour Averages

Wind Speed 45 m (WS45m) - km/h

Mannix - April 2014

Maximum Speed: 46 km/h on Apr 8 15:00

Maximum Daily Speed Average: 25.4 km/h on Apr 8

Minimum Speed Value: 1 km/h on Apr 6 13:00

Minimum Daily Speed Average: 2.4 km/h on Apr 20

Maximum Diurnal Speed Average: 6.2 km/h at hour 1

Minimum Diurnal Speed Average: 1.9 km/h at hour 13

Monthly Average Velocity: 4.1 km/h 93.8 deg

Percentiles: $P_1 = 3$ $P_{10} = 7$ $Q_1 = 11$ Median = 15 $Q_3 = 20$ $P_{90} = 26$ $P_{99} = 39$

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-Apr	SSW19	SSW14	SSE8	WSW2	WNW15	N17	N18	NNE16	NNE13	NNE14	NNE12	N10	NW13	NNW11	NNW11	NW12	N7	NNE10	NNE18	NNE21	NNE19	NE16	NNE13	NE14	N8.7	NNE21
2-Apr	NNE16	NNE20	N23	NNE23	NNE26	NNE18	N20	N17	N12	N12	NNW16	N20	N20	N20	NNE23	NNE24	N24	N27	N26	N26	N27	N24	N21	NNE18	N20.9	N27
3-Apr	NNE16	N12	N12	N17	N12	N14	N11	N9	N5	WNW5	NE4	ENE5	E6	E7	ESE9	SE11	SE13	ESE16	ESE16	SE20	SE24	SE28	SE30	SE30	E7.2	SE30
4-Apr	SE31	SE33	SE30	SE31	SE25	SE24	SE30	SE26	SE23	SE21	SSE18	SSE16	SSE13	WSW9	WNW17	WNW24	WNW35	WNW30	WNW30	WNW33	WNW27	WNW28	NW28	WNW20	SSW5.3	WNW35
5-Apr	W18	W17	WSW22	WSW22	W19	W12	WNW7	NNW5	E2	S1	NW5	NNW8	NW5	NE3	ENE5	E4	ENE7	ENE6	NE8	NNE16	NNE15	NE8	NNE6	E5	NW4.1	WSW22
6-Apr	ESE6	ESE9	SE13	SE14	SE14	SE11	SSE7	SSE6	SE6	SE7	SSE6	WNW3	NNE1	ENE3	S4	ESE5	ESE7	E3	NW11	N16	N13	N6	NW6	N3	ESE3.3	N16
7-Apr	S7	SSW13	WSW10	WNW10	W8	W9	SW6	WSW7	MS	MS	MS	E5	E10	E9	S1	SW15	WSW14	SW12	SW21	SW17	SSW18	SSW22	SW15	S15	SW8.7	SSW22
8-Apr	SSE19	SSE19	S15	SSW15	WSW22	SSW12	SSW10	SW19	SW25	SW25	WSW28	WSW26	W39	WSW45	WSW46	WSW34	WSW39	WSW44	WSW39	WSW37	WSW33	WSW32	W27	WSW25	WSW25.4	WSW46
9-Apr	W34	WNW28	W19	WSW21	WSW28	WSW29	WSW32	W35	WNW38	WNW44	NW33	NW18	NW29	NW21	NW26	WNW40	NW40	WNW37	WNW33	NNW20	NW6	WSW18	WSW18	W20	WNW25.3	WNW44
10-Apr	NNW15	NNE19	NNE19	NNE18	NNE18	NNE18	NNE15	NNE16	NNE15	NNE14	NNE14	NNE16	NNE17	NNE17	NNE18	N19	NNE19	NNE19	NNE21	NNE21	NNE18	NNE16	NE16	ENE12	NNE16.6	NNE21
11-Apr	E15	E15	E15	ENE17	E16	E15	E13	ENE15	ENE15	ENE16	E13	NE14	NNE26	NNE30	N30	N33	NNE34	N32	N29	N27	NNE34	N29	NNE25	N12	NNE18.2	NNE34
12-Apr	NNW11	WNW8	WNW13	W10	W15	W13	WSW9	SSW6	S5	SE4	W6	WNW8	W7	W12	NNW15	NNW22	NNW21	N19	NNE21	NNE19	NNE27	NNE26	NNE29	NNE25	NNW9.4	NNE29
13-Apr	NNE25	N22	N15	N13	NNW13	NNW15	N12	N11	NNW12	NNW15	NNW16	NNW13	NW10	NNW8	NE9	NE7	SE10	ESE10	SE11	SE16	SE17	SSE19	SSE19	SE17	NNE5.1	NNE25
14-Apr	SE20	SE18	SE15	SE15	SE18	SE17	SE14	SE10	SSE15	SSE16	SSE19	SSE24	SSE21	SSE21	SE18	SE15	SE14	SE14	SE15	ESE14	ESE17	ENE16	NNE20	NNE22	SE13.7	SSE24
15-Apr	NNE17	ENE19	NE14	NE16	NE18	ENE21	ENE19	NE15	NE15	NE12	E10	NE12	NNE17	NE21	NE19	NE22	NNE34	NNE34	NNE36	NNE32	N33	N31	N23	N20	NNE19.7	NNE36
16-Apr	NNE18	NE14	ENE15	ENE13	NE12	NE11	NNE12	E13	ESE15	ESE16	ESE6	ESE12	ESE16	SE17	SE18	SE19	SE20	ESE17	ESE16	ESE15	SE13	SE14	SE20	SE20	ESE12.0	SE20
17-Apr	SE18	SE14	ESE12	SE15	SE14	SE13	SE14	SE13	SE12	SE21	SE25	SE19	SE21	SE20	ESE19	SE20	SE21	SE21	ESE18	SE18	ESE14	ESE14	SE15	SE13	SE16.8	SE25
18-Apr	SE15	SE15	ESE13	E17	ESE17	ESE16	ESE13	ESE12	ESE15	ESE14	ESE14	ESE15	ESE15	ESE15	ESE15	SE15	SE18	SE13	SSE7	SE5	SE6	SE9	SSE8	SSE9	ESE12.4	SE18
19-Apr	SE15	S8	SSW6	S7	S7	SSE7	S5	SSE7	SSE9	SE9	ESE9	ESE11	SE13	ESE9	E10	ESE12	ESE16	ESE15	ESE16	SE17	SE16	SE18	SE14	SE11	SE10.4	SE18
20-Apr	SE9	E4	E8	E8	E7	ESE7	SE4	SSW3	WSW4	W3	NW8	NW11	NW15	NW15	NNE12	NNE13	NE8	ENE11	E9	E9	SSE12	S17	S16	S16	ESE2.4	S17
21-Apr	S16	S14	S10	SE14	SSE13	SSE15	S7	SE6	SE3	NNW3	NNW16	N17	N11	NW11	NNW12	NNE11	NNE13	NNE16	NNE21	NNE22	NNE21	NNE23	NNE21	NNE13	NNE5.6	NNE23
22-Apr	N14	N11	N9	N12	N12	N14	NNE10	N3	WNW2	NNW6	NW9	NNW4	ENE13	E20	ENE22	E23	E23	E24	ENE20	ENE17	ENE15	E16	E16	ENE14	ENE10.4	E24
23-Apr	ENE14	E20	ENE24	E21	ENE22	ENE19	ENE16	E15	E20	E20	E22	E23	AF	AF	AF	E28	ENE31	E30	E25	E25	E22	E28	E24	E21	E22.1	ENE31
24-Apr	ESE21	ESE16	E19	E17	E16	ENE16	E20	E15	ESE11	ESE9	SW5	W9	SE14	SE17	SE17	SE19	ESE18	ESE18	ESE15	E23	E21	E21	E20	ESE18	ESE14.6	E23
25-Apr	ESE16	SE12	ESE11	ESE11	ESE11	ESE11	SE11	SE14	SE11	ESE8	ENE14	ENE13	ENE8	E9	ESE7	SE6	SE13	SSE13	SSE13	SE11	SE13	SSE13	SSE14	SSE13	SE10.2	ESE16
26-Apr	SSE15	SSE16	SE13	SE11	SE12	SE15	SSE12	SSE12	SE14	SSE17	SE21	SE17	SE15	SE15	SE17	SE17	ESE16	SE17	SE17	SE18	SE17	SE17	SE16	SE18	SE15.4	SE21
27-Apr	SE18	SE16	SE18	SE16	SE15	ESE13	ESE13	ESE11	ESE13	SE16	SE19	SE22	SE24	SE21	SE20	SE21	SE19	SSE18	SE18	SE20	SE20	SE20	SE18	SE15	SE17.3	SE24
28-Apr	SE17	SE14	SE12	SE11	SE12	SSE11	S10	SSE10	SE9	SSE7	SSE7	ESE4	SE4	SE4	ESE7	ESE5	ESE8	SE8	SE10	SE14	SE17	SE14	SE15	SE14	SE9.9	SE17
29-Apr	SE17	SE13	SE13	SE14	SSE15	SSE14	SSE12	SSE8	SSE5	SE7	ESE7	S5	WSW13	W14	WNW14	W6	WNW9	NNW10	N5	NNW6	W3	SW3	SSE5	SSE8	S3.8	SE17
30-Apr	SE11	SE16	SSE15	SSE18	SSE17	SSE17	SSE17	SSE15	SE9	SE11	SE14	SSE17	S24	S25	S23	S21	S23	S14	WSW14	SW15	SSW20	SW16	SW21	WSW19	S14.7	S25
	ESE6.2	ESE6.1	ESE5.7	ESE5.5	ESE4.2	ESE5.0	ESE4.8	ESE4.4	ESE4.4	ESE4.1	ESE2.7	E3.2	E1.9	E2.0	ENE2.9	ENE3.5	ENE4.1	ENE4.6	NE4.1	ENE5.8	ENE6.0	E4.9	E4.5	ESE4.4	Diurnal Average	
	W34	SE33	SE30	SE31	WSW28	WSW29	WSW32	W35	WNW38	WNW44	NW33	WSW26	W39	WSW45	WSW46	WNW40	NW40	WSW44	WSW39	WSW37	NNE34	WSW32	SE30	SE30	Diurnal Maximum	

AF - Analyzer Failure MS - Missing

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 Apr 9 11:00

Minimum Value: 1 km/h on Apr 19 04:00

Percentiles: P_1 = 1 P_{10} = 2 Q_1 = 3 Median = 3 Q_3 = 5 P_{90} = 6 P_{99} = 8

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-Apr	3	3	3	3	2	5	3	3	3	4	3	3	3	4	3	3	3	2	4	3	3	3	2	3	5
2-Apr	3	3	3	3	5	3	3	3	3	2	4	3	4	4	3	4	5	4	3	4	4	3	3	3	5
3-Apr	4	3	2	3	2	2	3	2	2	2	2	2	3	4	3	3	4	5	4	4	6	7	7	6	7
4-Apr	6	6	6	6	6	7	7	5	5	5	3	3	3	3	3	6	6	5	6	5	5	5	5	3	7
5-Apr	2	2	1	2	1	7	3	3	2	1	2	3	3	2	2	3	2	2	2	2	3	2	2	3	7
6-Apr	3	2	3	3	3	3	3	1	2	2	2	2	1	2	2	2	2	3	4	2	2	1	2	1	4
7-Apr	3	2	2	2	3	2	3	2	MS	MS	MS	3	2	3	3	6	5	3	4	2	4	3	2	2	6
8-Apr	3	3	2	2	6	3	2	3	4	5	6	6	9	8	9	8	8	9	8	8	6	6	6	6	9
9-Apr	5	4	3	4	5	6	6	5	9	7	10	5	6	4	7	8	7	6	5	6	4	4	3	3	10
10-Apr	4	4	5	3	4	4	4	3	3	3	4	4	4	4	4	3	3	3	3	4	3	3	3	3	5
11-Apr	2	3	2	3	3	3	3	2	3	3	3	4	5	5	5	6	7	6	7	6	5	4	5	2	7
12-Apr	2	2	1	1	1	3	2	2	2	2	4	3	4	4	5	5	6	4	5	5	5	5	6	5	6
13-Apr	4	4	4	3	2	2	3	2	3	3	4	5	4	4	3	3	4	3	3	3	3	4	4	4	5
14-Apr	4	3	3	3	4	3	4	3	4	3	5	5	6	4	4	4	3	3	4	4	4	3	4	3	6
15-Apr	4	5	3	3	3	4	4	3	3	2	3	3	7	6	5	5	7	6	5	5	6	5	5	3	7
16-Apr	3	3	3	4	2	2	2	4	4	4	4	5	5	5	5	5	6	5	6	5	4	4	5	4	6
17-Apr	4	5	3	4	4	4	5	4	3	6	6	6	6	6	6	6	6	6	5	5	4	4	4	4	6
18-Apr	6	4	3	3	4	4	5	4	5	4	4	4	4	4	4	5	4	4	2	1	3	2	1	2	6
19-Apr	3	4	1	1	1	2	2	1	2	3	3	3	4	3	3	4	4	4	5	5	4	4	4	2	5
20-Apr	4	1	1	1	1	3	1	1	2	2	3	4	3	4	4	4	3	3	3	3	3	1	2	1	4
21-Apr	1	2	3	3	2	3	4	2	2	4	3	4	3	4	4	4	3	3	4	3	3	4	3	2	4
22-Apr	2	1	2	2	2	2	3	1	2	3	2	3	5	4	5	5	5	5	7	5	4	4	4	3	7
23-Apr	3	4	5	4	4	4	3	4	5	6	6	7	AF	AF	AF	6	7	7	7	7	7	7	6	5	7
24-Apr	6	6	4	4	4	4	4	4	3	4	2	2	8	4	4	5	6	6	5	5	5	4	4	4	8
25-Apr	4	5	4	3	3	4	4	5	3	3	3	4	4	4	3	4	3	3	3	2	2	2	3	2	5
26-Apr	3	2	2	3	2	3	3	3	4	4	5	5	5	4	5	5	5	5	4	5	4	4	4	4	5
27-Apr	4	4	4	4	5	3	4	4	3	4	4	5	5	5	5	5	4	4	3	4	4	4	3	2	5
28-Apr	3	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2	4	4	3	3	3	4	4
29-Apr	3	4	3	4	2	2	3	2	2	2	3	5	4	4	8	7	4	3	2	3	2	2	2	2	8
30-Apr	2	1	2	2	3	3	3	3	3	3	3	4	5	5	4	6	5	5	3	3	2	2	2	2	6
	6	6	6	6	6	7	7	5	9	7	10	7	9	8	9	8	8	9	8	8	7	7	7	6	
	Diurnal Maximum																								

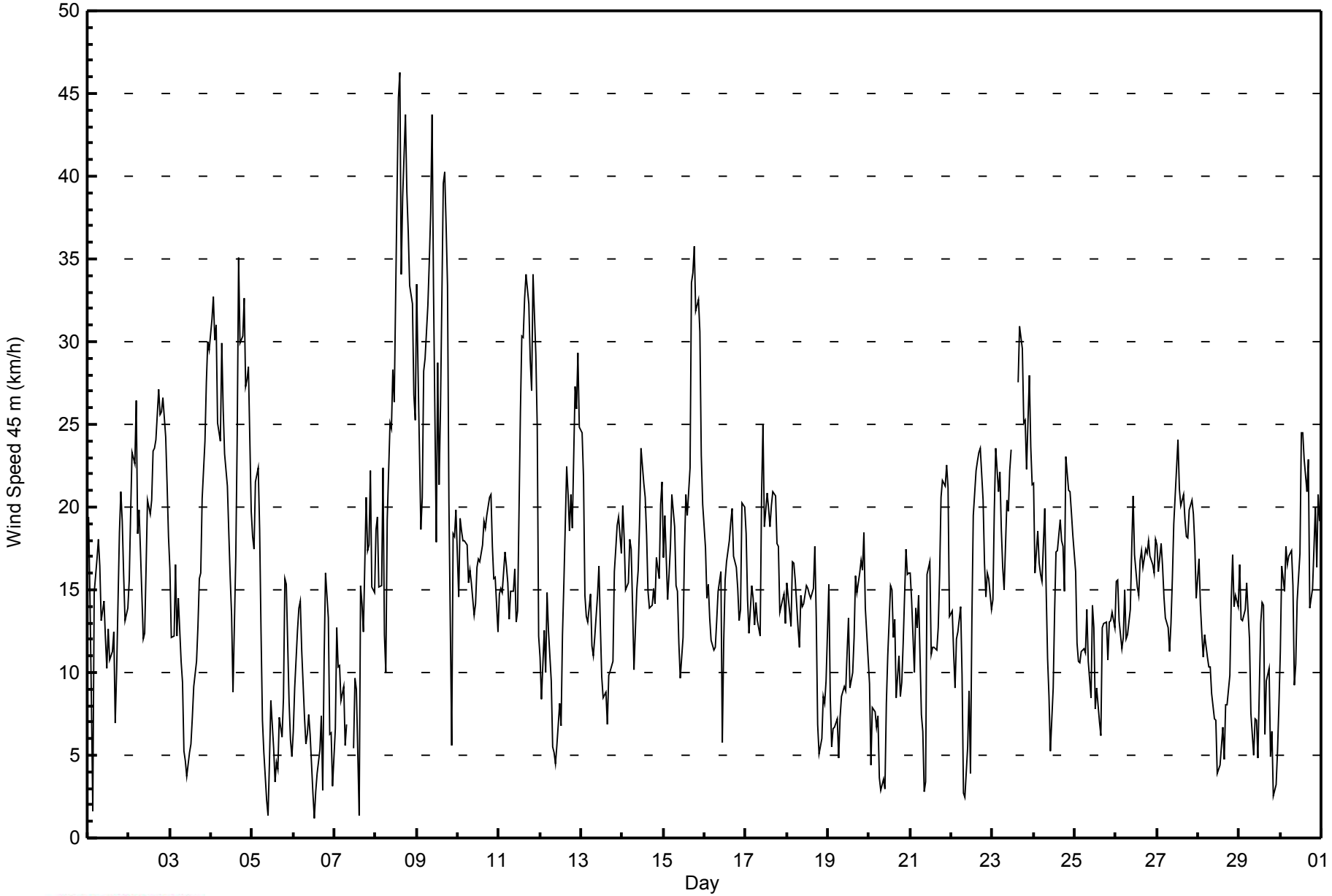
AF - Analyzer Failure MS - Missing

WBEA NETWORK

Hourly Averages

Wind Speed 45 m (WS45m) - km/h

Mannix - April 2014



AURORA ATMOSPHERICS INC.

Wind Speed Ranges (km/h)	Number of Hours	%	Cumulative %
0 - 5	48	6.72	6.72
6 - 11	142	19.89	26.61
12 - 19	343	48.04	74.65
20 - 28	131	18.35	93.00
29 - 38	41	5.74	98.74
> 38	9	1.26	100.00

Total Number of Valid Hours: 714

Total Number of Hours: 720

WBEA NETWORK

Frequency Distribution

Wind Speed 45 m (WS45m) - km/h

Mannix - April 2014

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	1	2	4	5	3	5	3	6	1	2	2	2	3	2	3	48
6 - 11	9	4	6	4	12	23	25	17	6	3	1	4	7	5	8	8	142
12 - 19	23	41	13	21	16	42	97	34	8	6	7	6	9	4	5	11	343
20 - 28	16	22	2	5	22	2	27	3	5	2	4	8	2	5	3	3	131
29 - 38	7	8	0	1	1	0	7	0	0	0	0	6	2	7	2	0	41
> 38	0	0	0	0	0	0	0	0	0	0	0	5	1	2	1	0	9
Totals	59	76	23	35	56	70	161	57	25	12	14	31	23	26	21	25	714

Total Number of Valid Hours: 714

Total Number of Hours: 720

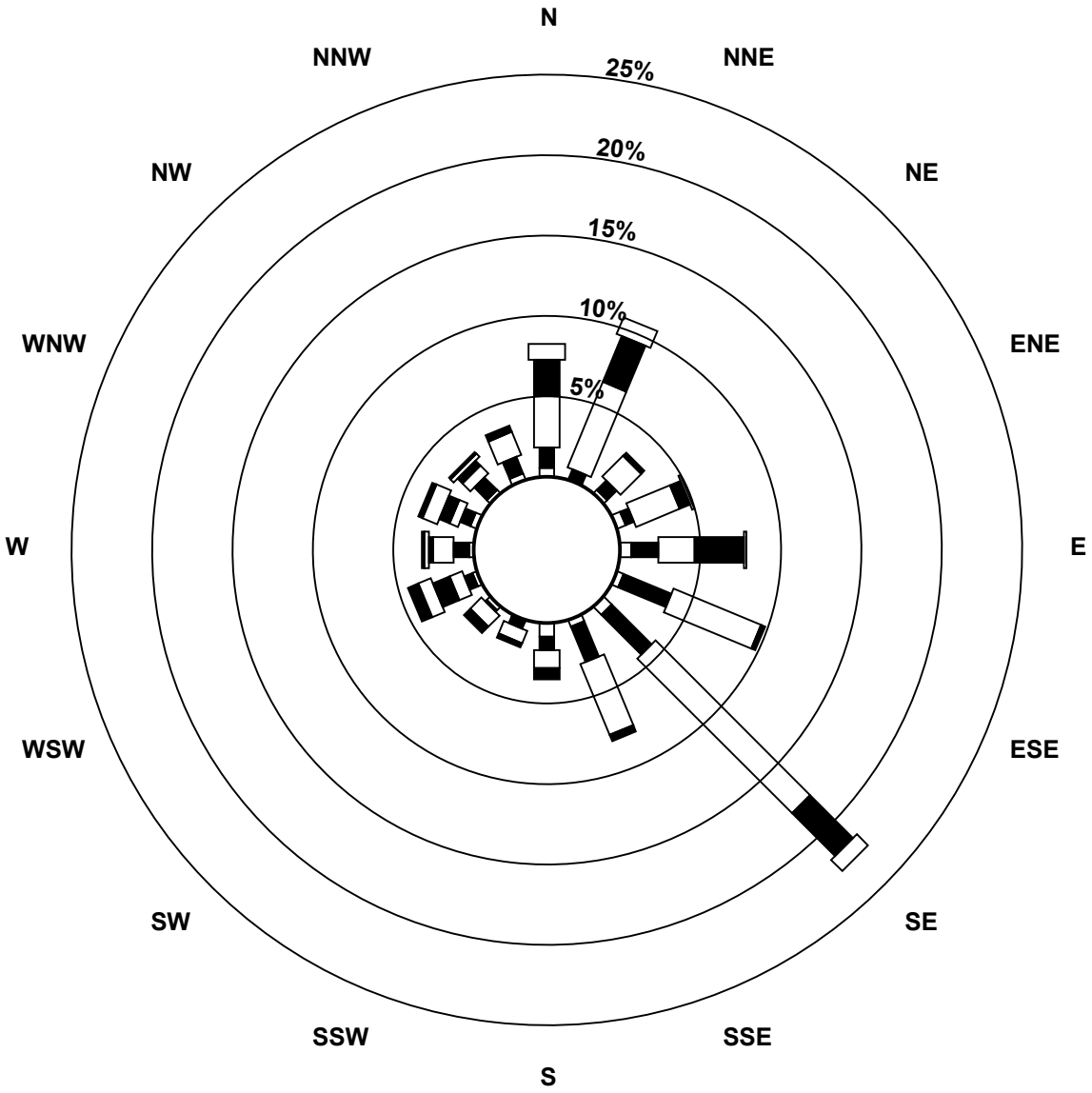
AURORA ATMOSPHERICS INC.

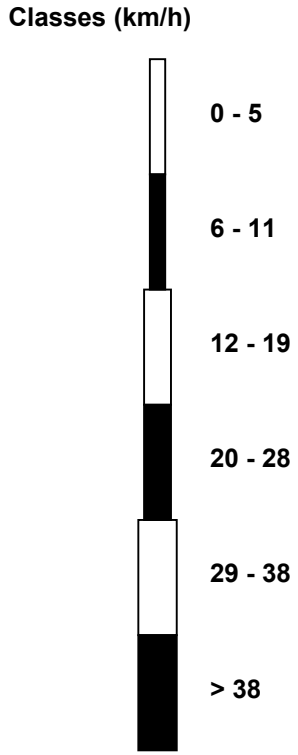
Wood Buffalo Environmental Association

Wind Rose Apr 2014

Wind Speed 45 m (WS45m) - km/h

Mannix (AMS 5)





Total Number of Valid Hours: 714

Wood Buffalo Environmental Association

Summary of Hour Averages

Wind Speed 75 m (WS75m) - km/h

Mannix - April 2014

Maximum Speed: 51 km/h on Apr 8 15:00

Maximum Daily Speed Average: 29.9 km/h on Apr 8

Minimum Speed Value: 1 km/h on Apr 6 13:00

Minimum Daily Speed Average: 2.5 km/h on Apr 20

Maximum Diurnal Speed Average: 6.8 km/h at hour 1

Minimum Diurnal Speed Average: 1.6 km/h at hour 13

Monthly Average Velocity: 3.9 km/h 94.7 deg

Percentiles: P_1 = 2 P_{10} = 7 Q_1 = 11 Median = 16 Q_3 = 22 P_{90} = 28 P_{99} = 42

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-Apr	SSW23	SSW18	S10	WNW5	WNW17	N19	NNE23	NNE20	NNE14	NNE15	NNE13	N11	NW13	NNW11	NNW12	NW12	N7	NNE10	NNE20	NNE24	NNE23	NE20	NE16	NE17	N9.8	NNE24
2-Apr	NNE18	NNE21	NNE26	NNE25	NNE29	NNE21	NNE22	NNE19	N13	N13	N17	N22	N21	N22	NNE25	NNE25	N27	NNE30	NNE28	N28	N29	N26	N23	NNE20	NNE22.8	NNE30
3-Apr	NNE19	N15	N14	N18	N14	NNE16	NNE16	NNE14	N5	NW4	ENE4	ENE5	E5	E7	ESE9	SE10	SE11	SE13	ESE12	SE18	SE22	SE26	SE30	SE32	E7.6	SE32
4-Apr	SE33	SE36	SE34	SE34	SE24	SE25	SE32	SE28	SE24	SE23	SSE20	SSE18	SSE15	WSW11	WNW19	WNW26	WNW38	WNW32	WNW33	WNW36	NW30	WNW30	NW30	WNW23	SSW6.1	WNW38
5-Apr	WNW22	W18	W25	W24	W22	W16	WNW11	NNW8	NNE1	S1	NW4	NNW9	NNW6	NE3	ENE5	E5	ENE8	ENE6	NE10	NNE18	NE16	ENE10	ENE5	E7	NW4.8	W25
6-Apr	SE8	SE9	SE13	SE17	SE16	SE14	SSE11	SSE9	SE7	SE7	SSE7	W2	N1	NE3	S4	SE4	ESE5	ENE2	NW13	N18	NNE15	N7	NNW5	NE2	ESE3.8	N18
7-Apr	S7	SW13	W16	W16	W14	W13	WSW8	W10	MS	MS	MS	E5	E8	E8	S2	SW16	WSW15	SW14	SW24	SW21	SSW22	SSW27	SW17	S17	SW11.0	SSW27
8-Apr	SSE24	SSE25	S20	SW21	WSW29	SW17	SW14	SW24	SW31	SW28	WSW31	WSW28	W42	WSW49	WSW51	WSW37	WSW43	WSW49	WSW44	WSW42	WSW40	WSW38	W31	WSW31	WSW29.9	WSW51
9-Apr	W38	W32	W23	W25	WSW34	WSW35	WSW38	W38	WNW41	WNW47	NW37	NW21	NW31	NW22	NW28	WNW42	NW44	WNW41	WNW37	NNW22	NW8	WSW23	WSW24	W25	WNW28.6	WNW47
10-Apr	NNW18	NNE22	NNE22	NNE21	NNE20	NNE20	NNE17	NNE17	NNE16	NNE14	NNE15	NNE17	NNE17	NNE17	NNE19	NNE20	NNE20	NNE21	NNE23	NNE24	NNE21	NNE19	ENE18	ENE14	NNE18.4	NNE24
11-Apr	E15	E13	E15	ENE18	E17	E13	E13	ENE15	ENE15	ENE17	E13	NE15	NNE28	NNE33	NNE33	NNE36	NNE38	NNE35	N32	NNE31	NNE38	NNE34	NNE31	N14	NNE20.0	NNE38
12-Apr	NNW12	WNW10	WNW13	WNW11	WNW15	WNW13	W12	SW6	SSW6	SSE4	W6	WNW8	W7	W13	NNW16	NNW24	NNW22	N20	NNE24	NNE22	NNE31	NNE29	NNE34	NNE28	NNW11.2	NNE34
13-Apr	NNE29	NNE25	N17	N16	NNW15	NNW17	N13	N11	NNW12	NNW15	NNW16	NNW13	NW10	N9	NE9	NE7	SE9	ESE8	SE9	SE17	SE22	SE24	SSE25	SSE23	NNE5.5	NNE29
14-Apr	SE26	SE24	SE19	SE17	SE23	SE21	SE15	SE11	SSE16	SSE18	SSE20	SSE25	SSE23	SSE21	SE18	SE16	SE15	SE11	SE12	ESE12	ESE14	ENE16	NNE22	NNE24	SE15.0	SE26
15-Apr	NE19	ENE21	NE16	NE19	NE20	ENE24	ENE21	NE18	ENE16	ENE13	E10	NE13	NNE19	NE23	NE21	NE25	NNE38	NNE38	NNE40	NNE36	NNE37	N34	N26	NNE23	NE22.0	NNE40
16-Apr	NNE19	NE16	ENE17	ENE15	NE13	NE13	NE12	E12	ESE13	ESE13	ESE6	ESE11	SE13	SE15	SE16	SE15	SE18	ESE14	ESE13	ESE12	ESE12	SE15	SE19	SE17	E11.3	NNE19
17-Apr	SE16	SE13	ESE10	SE14	SE14	SE11	SE12	SE11	SE10	SE20	SE25	SE18	SE18	SE17	SE16	SE17	SE17	SE16	SE14	SE15	ESE11	SE12	SE14	SE12	SE14.5	SE25
18-Apr	SE14	SE12	ESE12	E15	ESE14	ESE12	ESE10	ESE10	ESE12	ESE11	ESE10	ESE11	ESE11	ESE11	ESE11	SE12	SE17	SE14	SSE8	SE7	SE8	SE11	SSE11	SE14	SE11.3	SE17
19-Apr	SE19	SSE12	S8	SSE10	SSE10	SSE11	SSE8	SSE8	SSE9	SE8	SE8	ESE9	SE11	ESE8	E10	ESE10	ESE12	ESE11	ESE12	SE13	SE13	SE18	SE17	SE16	SE10.8	SE19
20-Apr	SSE14	SE5	ESE5	E7	ESE4	ESE6	SE3	S3	SW3	W2	NW8	NW11	NW15	NW15	NNE13	NNE14	NE9	ENE12	E9	E10	SE14	S22	S18	S18	ESE2.5	S22
21-Apr	S19	SSW18	SSW11	SSE15	SSE18	S20	S12	SSE8	S2	NW3	NNW16	N17	N11	NW11	NNW12	NNE13	NNE13	NNE17	NNE23	NNE25	NNE25	NNE27	NNE26	NNE15	NNE5.0	NNE27
22-Apr	NNE13	NNE11	NNE10	NNE10	NE10	NE14	NE13	NNE4	NW3	NNW5	NW9	N4	ENE14	E19	ENE23	E23	E22	E24	ENE23	ENE19	ENE16	E17	E16	ENE15	ENE11.9	E24
23-Apr	E16	E21	E25	E21	E23	ENE20	ENE18	E16	E22	E19	E20	E21	AF	AF	AF	E30	E34	E33	E26	E24	E21	E25	E23	E21	E22.5	E34
24-Apr	ESE20	ESE16	E19	E15	E17	ENE17	E21	E13	ESE9	ESE9	S5	WSW6	SE14	SE18	SE18	SE16	ESE15	ESE14	ESE15	E23	E21	E21	E18	ESE15	ESE14.2	E23
25-Apr	ESE12	SE11	ESE9	ESE9	ESE9	ESE9	SE9	SE13	SE9	ESE7	ENE15	ENE13	ENE8	E9	ESE7	SE6	SE13	SE14	SSE14	SE13	SE14	SSE17	SSE17	SSE16	SE10.1	SSE17
26-Apr	SSE19	SSE19	SE16	SE9	SE13	SE17	SSE14	SE13	SE14	SSE18	SE21	SE14	SE13	SE13	SE13	SE15	SE13	SE14	SE13	SE14	SE17	SE18	SE19	SE20	SE15.2	SE21
27-Apr	SE16	SE13	SE15	SE12	SE11	E12	ESE11	ESE9	ESE10	SE13	SE21	SE25	SE26	SE23	SE23	SE23	SE21	SSE21	SE21	SE23	SE24	SE24	SE21	SE19	SE17.9	SE26
28-Apr	SE21	SE16	SE13	SE12	SE13	SSE13	SSE12	SSE12	SSE9	SE7	SSE7	SE4	SE4	SE4	ESE6	ESE5	ESE7	SE7	SE8	SE12	SE20	SE17	SSE19	SE18	SE10.9	SE21
29-Apr	SE19	SE15	SE13	SE17	SSE19	SSE17	SSE16	S8	S5	SE7	SE6	SSW5	WSW14	W15	WNW15	W7	WNW10	NNW10	N5	NNW7	NW3	SW1	SSE7	SSE9	S4.7	SSE19
30-Apr	SE14	SE19	SSE21	SSE24	SSE26	SSE27	SSE27	SSE19	SE11	SE12	SSE17	SSE18	S26	S27	S25	S23	S26	S16	WSW17	SW18	SSW24	SW21	SW27	WSW25	S18.4	S27
	ESE6.8	ESE6.3	ESE5.3	ESE5.1	ESE4.1	ESE5.2	ESE5.0	ESE4.2	ESE3.8	ESE3.7	ESE2.6	E3.1	E1.6	ENE1.7	ENE2.7	ENE3.3	ENE3.8	ENE4.3	NE4.2	NE6.1	ENE6.2	E5.3	E4.9	ESE4.8	Diurnal Average	
	W38	SE36	SE34	SE34	WSW34	WSW35	WSW38	W38	WNW41	WNW47	NW37	WSW28	W42	WSW49	WSW51	WNW42	NW44	WSW49	WSW44	WSW42	WSW40	WSW38	NNE34	SE32	Diurnal Maximum	

AF - Analyzer Failure MS - Missing

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

Wood Buffalo Environmental Association

Summary of Hour Standard Deviations

Wind Speed 75 m (WS75m) - km/h

Mannix - April 2014

Number of Exceedences (AAAQO): 1-hr: 0 24-hr: 0
Maximum Value: 9 km/h on Apr 3 22:00

Minimum Value: 1 km/h on Apr 12 04:00

Percentiles: $P_1 = 1$ $P_{10} = 2$ $Q_1 = 3$ Median = 4 $Q_3 = 5$ $P_{90} = 6$ $P_{99} = 9$

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-Apr	3	3	4	6	2	5	2	3	3	4	3	3	3	3	3	3	3	2	3	2	3	3	2	3	6
2-Apr	2	2	2	2	4	3	2	3	3	2	4	3	4	3	3	4	5	3	3	3	3	2	2	3	5
3-Apr	4	3	1	2	2	2	2	3	2	2	2	3	3	3	4	4	4	5	4	7	8	9	9	8	9
4-Apr	8	7	7	7	8	9	8	6	6	5	4	3	3	4	3	7	6	5	6	5	5	5	6	3	9
5-Apr	3	2	2	2	2	6	3	3	2	2	2	2	3	2	2	3	2	2	3	2	3	2	2	2	6
6-Apr	3	4	4	4	4	3	4	2	2	3	2	2	1	2	2	2	3	3	4	2	2	2	2	1	4
7-Apr	3	3	3	2	2	2	3	2	MS	MS	MS	2	3	2	4	6	5	3	4	2	4	3	2	2	6
8-Apr	3	2	2	2	7	4	2	4	3	5	7	6	9	8	9	8	8	8	8	7	6	5	6	6	9
9-Apr	5	4	4	4	5	5	6	5	9	7	9	5	7	4	7	8	7	5	5	7	4	3	2	4	9
10-Apr	4	4	5	3	3	4	4	3	3	3	3	3	4	4	3	3	3	3	3	3	3	2	3	3	5
11-Apr	2	4	3	3	3	3	3	3	3	3	3	4	5	4	5	5	6	5	7	6	4	3	4	3	7
12-Apr	2	3	2	1	1	1	3	2	2	2	4	4	4	3	5	5	6	4	4	4	4	4	6	5	6
13-Apr	4	5	4	3	2	2	3	2	3	3	4	5	4	3	3	3	4	3	3	5	2	3	4	4	5
14-Apr	5	3	3	3	4	4	5	4	3	3	4	5	6	5	4	4	4	4	5	5	5	3	3	2	6
15-Apr	3	5	3	3	3	3	4	2	3	2	3	4	8	6	5	5	6	5	4	5	6	4	4	3	8
16-Apr	3	3	3	4	2	3	2	3	4	4	4	5	5	6	6	6	8	5	5	5	5	5	6	6	8
17-Apr	6	5	3	5	5	5	5	5	4	8	8	7	7	7	6	7	7	6	6	6	4	4	6	6	8
18-Apr	7	6	5	4	4	4	4	4	4	3	4	4	3	4	4	5	5	4	2	1	3	2	1	1	7
19-Apr	2	5	2	1	2	1	2	2	2	3	3	3	4	3	3	4	4	4	4	4	5	6	4	3	6
20-Apr	4	2	2	1	1	2	1	1	1	2	2	4	3	4	5	4	4	3	3	4	4	2	4	2	5
21-Apr	1	2	2	2	2	3	5	2	1	4	3	4	3	4	4	4	3	3	4	3	3	4	3	3	5
22-Apr	2	1	1	1	2	2	2	2	2	3	2	3	5	5	5	5	5	6	7	6	4	5	5	3	7
23-Apr	4	5	5	5	4	4	4	5	5	6	6	7	AF	AF	AF	6	7	7	8	8	7	8	7	6	8
24-Apr	7	7	5	5	4	4	5	4	3	4	2	2	8	5	5	6	6	5	6	6	6	5	5	4	8
25-Apr	3	5	4	3	3	4	4	5	3	3	3	5	5	4	3	4	3	3	3	3	4	2	3	2	5
26-Apr	2	2	3	4	4	4	3	3	4	4	6	6	5	5	5	6	5	5	5	6	5	5	4	5	6
27-Apr	5	5	6	4	5	4	4	3	3	5	6	6	5	6	5	5	5	5	3	3	3	4	4	2	6
28-Apr	3	3	4	2	2	2	2	2	2	3	2	2	2	2	2	2	2	2	4	6	4	3	2	5	6
29-Apr	5	5	4	5	2	2	3	2	2	3	3	5	4	4	8	7	5	3	2	2	2	1	1	1	8
30-Apr	2	2	2	1	1	1	4	4	2	3	3	4	5	5	4	7	4	5	3	4	2	2	1	2	7
	8	7	7	7	8	9	8	6	9	8	9	7	9	8	9	8	8	8	8	8	8	9	9	8	
	Diurnal Maximum																								

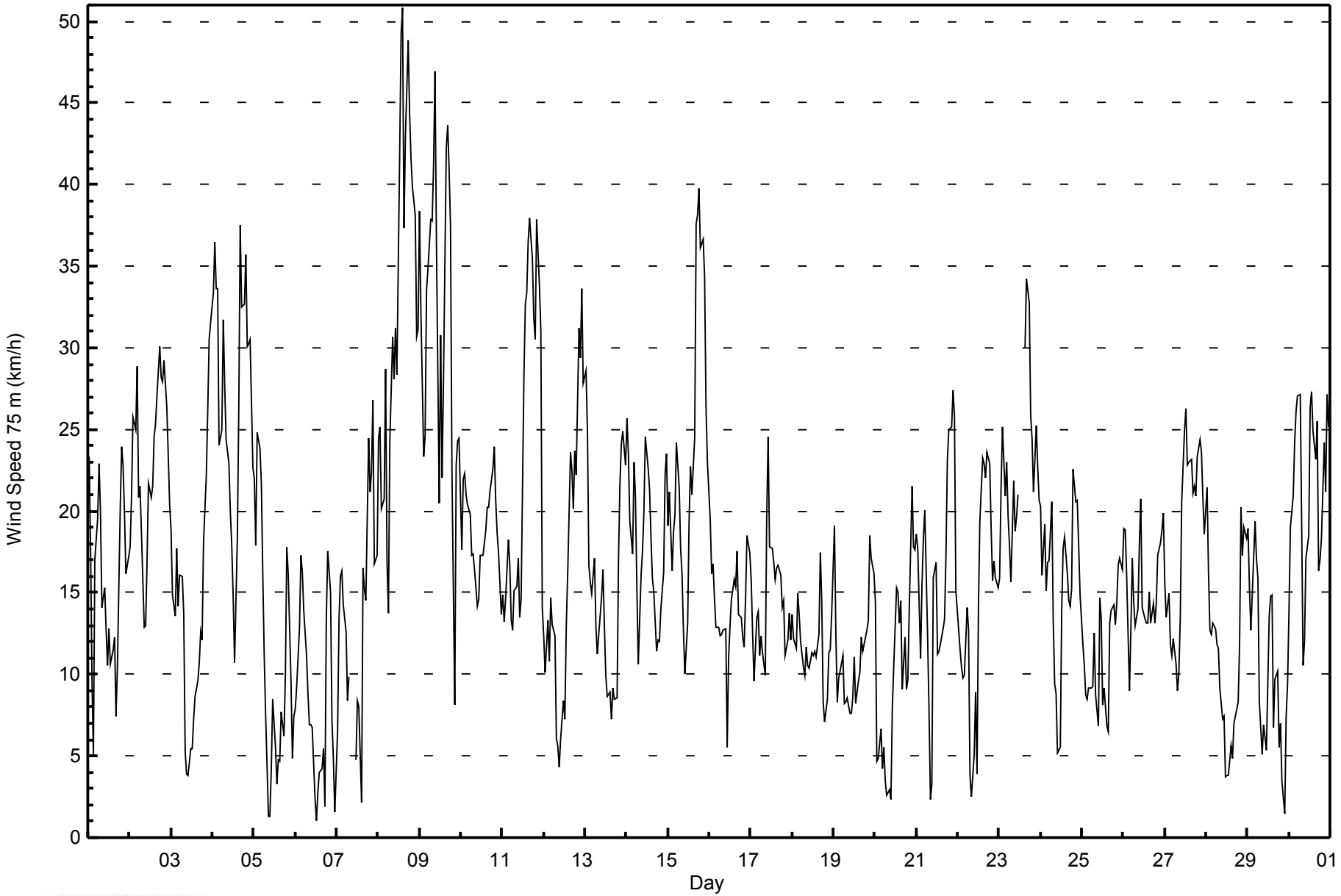
AF - Analyzer Failure MS - Missing

WBEA NETWORK

Hourly Averages

Wind Speed 75 m (WS75m) - km/h

Mannix - April 2014



AURORA
ATMOSPHERICS INC.

Wind Speed Ranges (km/h)	Number of Hours	%	Cumulative %
0 - 5	48	6.72	6.72
6 - 11	139	19.47	26.19
12 - 19	295	41.32	67.51
20 - 28	163	22.83	90.34
29 - 38	55	7.70	98.04
> 38	14	1.96	100.00

Total Number of Valid Hours: 714

Total Number of Hours: 720

WBEA NETWORK

Frequency Distribution

Wind Speed 75 m (WS75m) - km/h

Mannix - April 2014

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	2	3	5	3	4	6	1	7	1	2	0	2	1	5	3	48
6 - 11	6	4	5	4	10	32	31	16	4	2	1	4	3	5	6	6	139
12 - 19	12	31	15	20	21	21	96	28	6	3	6	3	9	6	5	13	295
20 - 28	8	39	5	6	20	1	31	15	8	4	7	4	6	3	3	3	163
29 - 38	3	19	0	0	3	0	7	0	0	0	1	8	3	7	4	0	55
> 38	0	1	0	0	0	0	0	0	0	0	0	7	1	4	1	0	14
Totals	32	96	28	35	57	58	171	60	25	10	17	26	24	26	24	25	714

Total Number of Valid Hours: 714

Total Number of Hours: 720

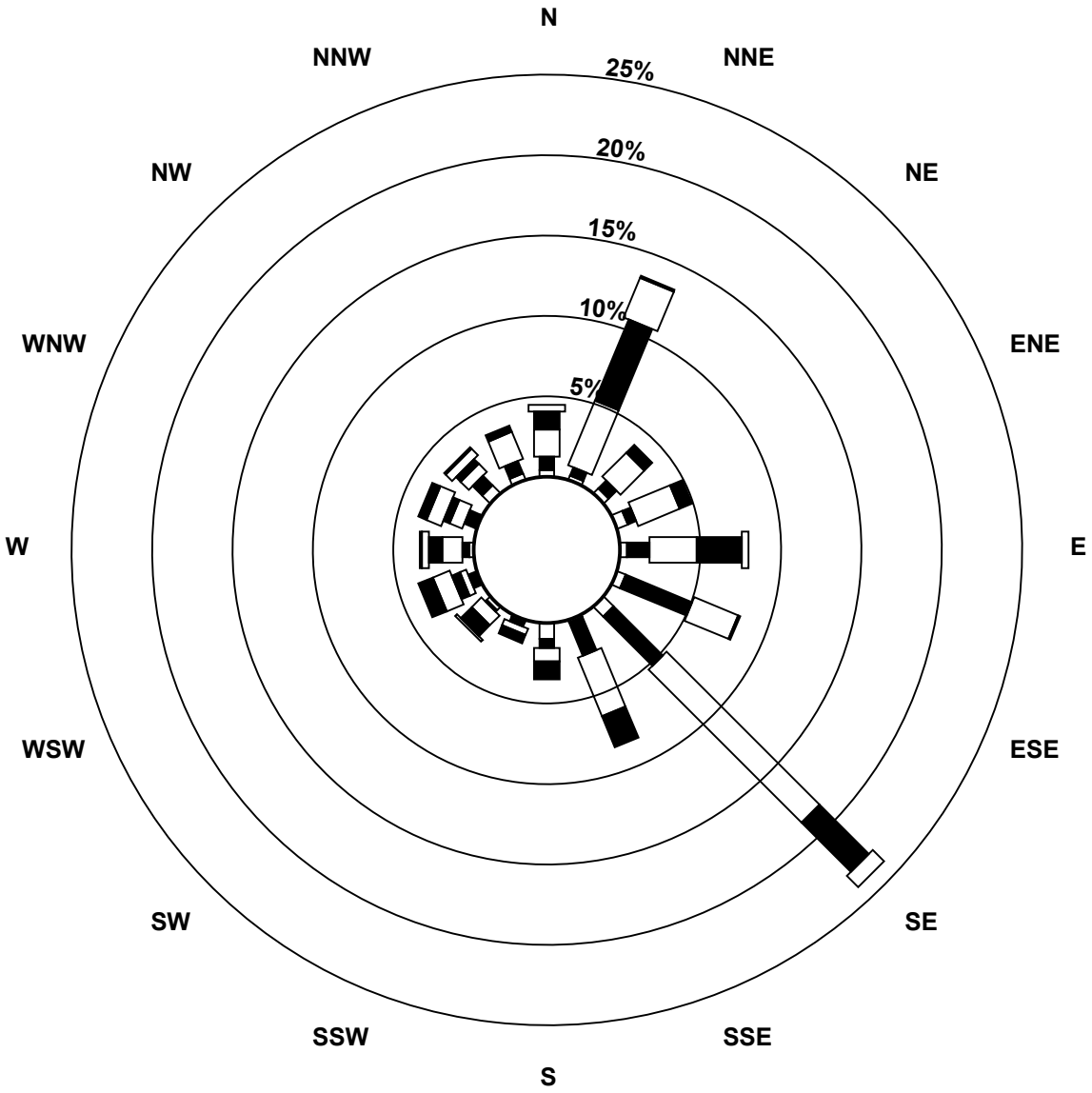
AURORA ATMOSPHERICS INC.

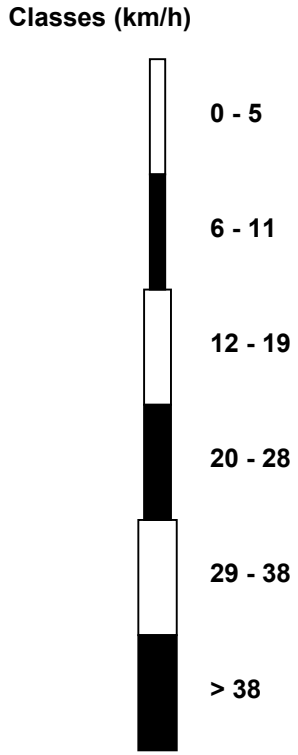
Wood Buffalo Environmental Association

Wind Rose Apr 2014

Wind Speed 75 m (WS75m) - km/h

Mannix (AMS 5)





Total Number of Valid Hours: 714

Wood Buffalo Environmental Association

Summary of Hour Averages

Wind Speed 90 m (WS90m) - km/h

Mannix - April 2014

Maximum Speed: 51 km/h on Apr 8 15:00

Maximum Daily Speed Average: 31.2 km/h on Apr 8

Minimum Speed Value: 0 km/h on Apr 7 00:00

Minimum Daily Speed Average: 3.3 km/h on Apr 20

Maximum Diurnal Speed Average: 8.3 km/h at hour 1

Minimum Diurnal Speed Average: 2.4 km/h at hour 13

Monthly Average Velocity: 5.2 km/h 93.4 deg

Percentiles: P_1 = 2 P_{10} = 8 Q_1 = 13 Median = 18 Q_3 = 24 P_{90} = 30 P_{99} = 44

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 Average	Daily Maximum
	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24		
1-Apr	SSW25	SSW19	SSW11	WNW7	WNW17	N21	N25	NNE22	NNE15	N16	NNE13	N11	NW13	NW11	NNW12	NW12	NNW8	NNE11	NNE20	NNE25	NNE25	NE22	NNE18	NE19	N10.3	SSW25
2-Apr	NNE19	N21	N26	N26	N30	NNE22	N22	N19	N13	N13	NNW17	N22	N21	N22	N25	N26	N28	N31	N29	N28	N30	N27	N24	N21	N23.4	N31
3-Apr	N20	N16	N14	N18	N15	NNE16	N16	NNE14	N5	NW4	NE4	ENE6	E6	E9	ESE9	ESE12	ESE14	ESE18	ESE21	ESE22	SE26	SE31	SE34	SE36	E9.6	SE36
4-Apr	SE37	SE40	SE38	SE37	SE28	SE29	SE35	SE31	SE27	SE25	SE21	SE19	SSE16	WSW12	WNW19	W27	WNW38	WNW33	W33	WNW36	WNW31	WNW31	NW31	WNW24	S6.7	SE40
5-Apr	WNW23	W18	W24	W24	W23	W17	W13	NNW9	NNW1	SSW2	NW4	NNW9	NW6	NNE3	NE5	ENE5	ENE8	ENE6	NNE10	NNE18	NE16	ENE10	E5	E11	NW5.0	W24
6-Apr	SE10	ESE13	SE15	SE20	SE19	SE16	SE13	SSE10	SE9	SE9	SSE7	WSW2	NW2	NNE3	S4	SE5	E7	NE2	NW14	N18	NNE15	N7	NW4	ENE0	ESE4.8	SE20
7-Apr	S6	SW15	WSW19	W18	W16	WSW14	WSW9	W11	MS	MS	MS	E5	E10	E9	S3	SW17	WSW15	SW15	SW26	SW23	SSW24	SSW28	SW18	S18	SW11.9	SSW28
8-Apr	SSE27	SSE28	S22	SW23	WSW31	SW19	SW16	SW27	SW33	SW29	WSW32	WSW28	WSW42	WSW49	WSW51	WSW37	SW44	SW50	WSW45	WSW42	WSW41	WSW40	W32	WSW33	SW31.2	WSW51
9-Apr	WSW39	W33	W25	WSW26	WSW35	WSW36	WSW39	WSW38	W42	WNW47	NW38	NW22	NW31	WNW22	WNW28	WNW42	WNW44	WNW42	WNW38	NNW23	NW9	WSW25	WSW26	W27	W29.7	WNW47
10-Apr	NNW19	N23	NNE24	NNE23	N22	N21	NNE18	NNE18	NNE17	N15	NNE15	NNE17	NNE18	NNE18	NNE19	N21	NNE21	NNE22	NNE23	NNE25	NNE22	NNE20	NE18	NE14	NNE19.1	NNE25
11-Apr	ENE16	E17	E16	ENE19	ENE18	E17	E14	ENE16	ENE16	ENE18	ENE15	NE15	N29	N33	N34	N37	N39	N36	N33	N32	N39	N35	N33	NNW15	NNE20.9	N39
12-Apr	NNW13	WNW10	WNW12	WNW11	W14	WNW12	W11	SW7	SSW6	SSE4	W6	WNW8	W7	W13	NW16	NNW24	NNW23	NNW21	NNE25	NNE23	NNE32	NNE31	N35	N29	NNW12.0	N35
13-Apr	N30	N26	N18	N17	NNW16	NNW18	NNW14	N11	NNW13	NW15	NNW17	NNW13	NW10	NNW9	NNE9	NE8	ESE10	ESE11	ESE11	SE20	SE24	SE27	SE29	SE26	NNE5.6	N30
14-Apr	SE29	SE27	SE23	SE21	SE28	SE25	SE18	SE13	SE17	SSE18	SE21	SSE25	SSE23	SE23	SE20	SE17	SE17	ESE15	ESE17	ESE18	ESE23	ENE18	NNE22	NNE24	SE17.6	SE29
15-Apr	NE20	ENE22	NE17	NE20	NE21	ENE26	ENE23	NE19	NE17	NE13	ENE11	NE14	NNE20	NE24	NE22	NE26	N39	N39	N41	N37	N38	N36	N27	N24	NNE23.0	N41
16-Apr	NNE21	NE17	NE17	ENE15	NE13	NE14	NE13	E16	E17	E19	ESE7	E14	ESE17	SE18	ESE20	ESE21	ESE22	ESE20	ESE21	ESE20	ESE18	SE18	ESE22	ESE21	E14.8	ESE22
17-Apr	ESE20	ESE17	ESE17	ESE17	ESE17	ESE16	ESE18	ESE16	ESE13	SE23	SE27	SE21	ESE22	ESE23	ESE21	ESE22	ESE24	ESE24	ESE22	ESE23	ESE19	ESE19	ESE19	ESE16	ESE19.7	SE27
18-Apr	ESE18	ESE17	E17	E22	E23	ESE21	ESE15	ESE14	ESE17	ESE17	ESE16	ESE19	ESE19	ESE17	ESE16	ESE15	SE19	SE16	SSE9	SE9	SE11	SE13	SE13	SE16	ESE15.7	ESE23
19-Apr	SE22	SSE15	SSE10	SSE11	SSE12	SSE13	SSE10	SSE9	SE9	SE8	ESE9	ESE11	ESE13	ESE9	E11	ESE13	ESE18	ESE18	ESE20	ESE21	ESE19	SE21	SE21	SE19	SE13.5	SE22
20-Apr	SE17	SE6	ESE7	E9	ESE7	ESE8	ESE5	SSE3	SW3	W2	NW8	NW10	NW15	NW15	NNE14	NNE15	NE10	ENE13	ENE11	E13	SE16	S22	S18	SSW19	ESE3.3	S22
21-Apr	SSW19	SSW20	SSW12	S17	S19	S23	S15	SSE8	SW3	WNW4	NW16	NNW17	N11	NW12	NW12	NNE13	NNE14	NNE18	NNE24	N26	NNE27	NNE30	NNE27	NNE16	N4.8	NNE30
22-Apr	NNE12	NNE11	NNE9	NNE9	NE9	NE14	NE13	NNE4	NW3	NW5	NW9	NNW4	ENE15	ENE22	ENE25	E26	E28	E29	ENE25	ENE21	ENE17	E19	E20	ENE17	ENE13.2	E29
23-Apr	ENE17	ENE23	ENE27	E24	ENE25	ENE21	ENE19	ENE17	ENE24	E24	E27	E30	AF	AF	AF	ENE33	ENE37	ENE36	E30	E32	E28	E35	E30	E26	E26.7	ENE37
24-Apr	ESE28	E20	E22	E21	E19	ENE19	E24	E18	E14	ESE11	SSE6	WSW4	ESE17	SE19	SE20	ESE19	ESE22	ESE22	ESE18	E28	E26	E26	E25	E24	E18.5	E28
25-Apr	ESE22	ESE14	ESE13	ESE13	ESE15	ESE14	ESE12	SE15	ESE11	ESE9	ENE15	ENE14	ENE8	E10	ESE8	SE7	SE14	SE15	SSE15	SE15	SE16	SE18	SSE19	SSE18	ESE12.4	ESE22
26-Apr	SSE21	SSE21	SE18	ESE13	SE15	SE20	SE16	SE14	SE15	SE18	SE22	ESE19	ESE16	SE16	ESE18	ESE20	ESE19	ESE19	ESE19	ESE19	SE20	SE21	SE22	SE22	SE18.0	SE22
27-Apr	ESE19	ESE18	ESE20	ESE18	ESE16	E18	ESE17	ESE14	ESE16	ESE18	SE23	SE27	SE29	SE25	SE25	SE25	SE23	SE23	SE24	SE26	SE27	SE27	SE23	SE21	SE21.3	SE29
28-Apr	SE24	SE18	SE15	SE14	SE13	SE14	SSE13	SE12	SE10	SE8	SSE8	SE4	SE4	SE4	ESE6	ESE5	E9	SE8	ESE9	ESE17	SE23	SE20	SE21	SE22	SE12.3	SE24
29-Apr	SE22	SE19	SE16	SE21	SE21	SE19	SSE17	S8	S6	SE9	SE7	SSW6	SW14	W15	WNW15	WSW8	WNW9	NNW10	NNW6	NNW7	NW4	SW1	SSE8	SSE11	SSE5.4	SE22
30-Apr	SE14	SE16	SSE22	SSE21	SSE24	SSE26	SSE29	SSE21	SE12	SE13	SSE19	SSE19	S27	S28	SSE26	S24	S27	S17	SW18	SW20	SSW26	SW23	SW30	WSW28	S19.0	SW30
	ESE8.3	ESE7.6	ESE6.6	ESE6.4	ESE5.3	ESE6.7	ESE6.2	ESE5.1	ESE4.8	ESE4.9	ESE3.5	E4.1	E2.4	E2.4	ENE3.3	ENE4.1	ENE5.0	ENE5.5	NE5.1	ENE7.6	ENE7.8	E6.7	E6.1	ESE6.1	Diurnal Average	
	WSW39	SE40	SE38	SE37	WSW35	WSW36	WSW39	WSW38	W42	WNW47	NW38	E30	WSW42	WSW49	WSW51	WNW42	WNW44	SW50	WSW45	WSW42	WSW41	WSW40	N35	SE36	Diurnal Maximum	

AF - Analyzer Failure MS - Missing

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

Wood Buffalo Environmental Association

Summary of Hour Standard Deviations

Wind Speed 90 m (WS90m) - km/h

Mannix - April 2014

Number of Exceedences (AAAQO): 1-hr: 0 24-hr: 0
Maximum Value: 9 km/h on Apr 8 15:00

Minimum Value: 1 km/h on Apr 12 04:00

Percentiles: P_1 = 1 P_{10} = 2 Q_1 = 3 Median = 3 Q_3 = 5 P_{90} = 6 P_{99} = 8

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-Apr	3	3	4	6	2	5	2	3	3	4	3	3	3	3	3	3	3	2	3	2	3	3	1	3	6
2-Apr	2	2	2	2	4	3	2	3	3	2	4	3	4	3	3	3	5	3	2	3	3	2	2	2	5
3-Apr	4	2	1	2	2	1	2	2	2	2	2	3	3	4	4	4	4	5	5	4	6	7	7	7	7
4-Apr	7	6	6	6	6	7	6	5	5	5	3	3	3	4	3	7	6	5	6	5	5	4	6	3	7
5-Apr	3	1	2	3	1	5	2	3	2	2	2	3	3	2	2	3	2	2	3	2	3	2	2	3	5
6-Apr	3	3	3	3	4	2	5	1	2	2	2	2	2	2	2	2	2	3	3	2	3	2	2	1	5
7-Apr	3	4	3	2	2	2	3	2	MS	MS	MS	3	2	3	4	6	5	3	4	2	5	3	2	2	6
8-Apr	3	2	2	2	7	4	3	4	3	5	6	6	9	8	9	8	8	8	8	7	6	5	6	6	9
9-Apr	5	4	4	4	5	5	6	6	9	7	8	5	6	4	7	8	7	5	5	6	4	4	2	4	9
10-Apr	4	5	5	3	3	4	4	3	3	3	4	3	4	4	3	3	3	3	3	3	2	2	3	3	5
11-Apr	2	3	2	3	3	3	3	2	3	3	3	4	5	4	4	5	6	5	7	6	4	3	3	3	7
12-Apr	2	3	2	1	1	1	2	2	2	2	4	4	4	3	5	5	6	5	4	4	4	4	6	5	6
13-Apr	4	5	4	3	2	2	3	2	3	3	4	5	3	3	3	3	4	3	3	4	2	3	4	4	5
14-Apr	4	3	2	3	3	4	4	3	4	4	4	5	6	4	4	4	4	3	3	4	4	3	3	2	6
15-Apr	3	5	3	3	3	3	4	2	3	2	3	4	8	6	5	5	6	4	4	4	5	4	4	3	8
16-Apr	3	3	3	4	3	3	2	4	4	4	5	5	5	5	5	5	6	5	5	5	5	4	5	4	6
17-Apr	4	4	4	4	4	3	3	4	3	6	6	6	6	6	6	6	5	5	5	5	4	4	4	5	6
18-Apr	6	5	5	3	4	4	5	4	5	4	4	4	4	4	4	4	4	4	2	1	3	2	1	1	6
19-Apr	2	6	2	1	2	1	2	2	2	3	3	3	4	3	4	4	5	5	5	4	4	5	4	3	6
20-Apr	5	2	2	1	1	1	2	1	1	2	2	5	3	4	5	4	4	3	3	3	4	2	4	2	5
21-Apr	1	3	3	2	2	3	5	2	2	4	3	4	3	4	5	4	3	4	4	3	4	4	3	3	5
22-Apr	2	1	1	1	2	2	2	3	2	3	2	3	6	4	5	5	5	6	8	6	5	5	5	4	8
23-Apr	4	5	5	4	4	4	4	5	5	6	6	7	AF	AF	AF	7	7	8	7	8	8	8	7	5	8
24-Apr	6	6	5	5	4	4	5	5	3	5	3	2	8	4	4	5	7	7	6	5	5	5	4	5	8
25-Apr	3	4	4	3	4	4	4	4	3	2	3	5	5	4	4	4	3	3	3	2	3	2	3	1	5
26-Apr	2	2	3	3	3	3	3	3	4	4	5	5	5	5	4	4	6	4	3	4	4	4	4	5	6
27-Apr	3	3	4	3	4	5	5	4	4	4	5	5	5	5	5	5	4	5	3	3	3	3	3	2	5
28-Apr	3	2	3	2	2	2	2	2	2	3	2	2	2	2	2	2	3	2	3	4	3	3	2	5	5
29-Apr	4	4	3	5	2	2	4	2	2	2	3	5	4	4	8	7	5	3	2	2	2	1	2	1	8
30-Apr	2	1	2	2	3	2	2	3	2	2	3	4	5	5	4	7	4	5	3	4	2	2	1	2	7
	7	6	6	6	7	7	6	6	9	7	8	7	9	8	9	8	8	8	8	8	8	8	7	7	
	Diurnal Maximum																								

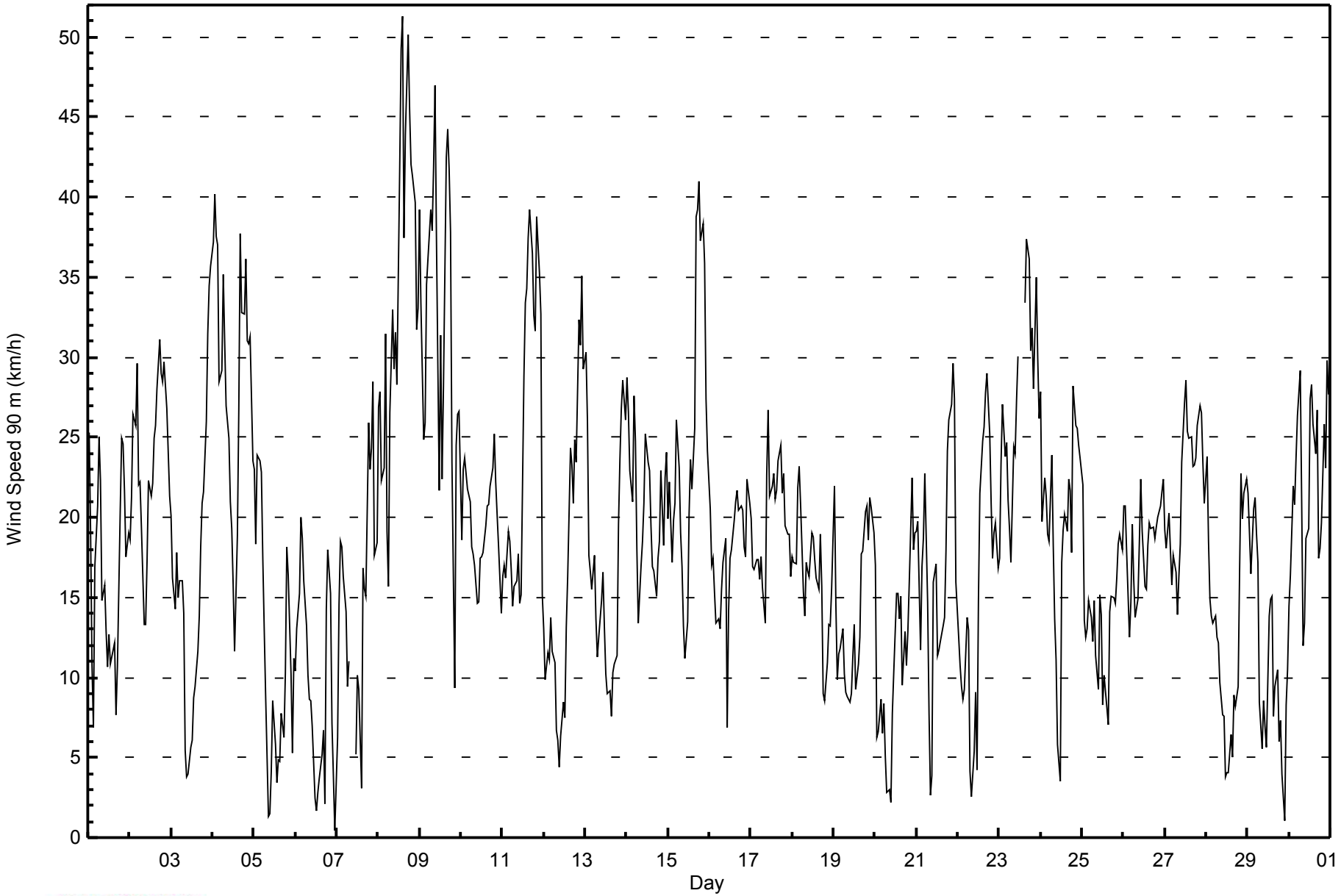
AF - Analyzer Failure MS - Missing

WBEA NETWORK

Hourly Averages

Wind Speed 90 m (WS90m) - km/h

Mannix - April 2014



AURORA ATMOSPHERICS INC.

Wind Speed Ranges (km/h)	Number of Hours	%	Cumulative %
0 - 5	38	5.32	5.32
6 - 11	105	14.71	20.03
12 - 19	267	37.39	57.42
20 - 28	216	30.25	87.68
29 - 38	66	9.24	96.92
> 38	22	3.08	100.00

Total Number of Valid Hours: 714

Total Number of Hours: 720

WBEA NETWORK

Frequency Distribution

Wind Speed 90 m (WS90m) - km/h

Mannix - April 2014

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	1	3	3	2	2	2	4	2	2	1	3	2	1	1	7	2	38
6 - 11	3	7	3	7	10	17	14	12	3	3	1	2	4	5	7	7	105
12 - 19	11	25	17	20	14	65	46	12	6	5	7	4	8	6	9	12	267
20 - 28	25	22	7	12	17	31	51	13	7	5	6	5	6	4	1	4	216
29 - 38	18	4	0	3	6	0	12	1	0	0	3	7	3	6	3	0	66
> 38	5	0	0	0	0	0	1	0	0	0	2	9	1	4	0	0	22
Totals	63	61	30	44	49	115	128	40	18	14	22	29	23	26	27	25	714

Total Number of Valid Hours: 714

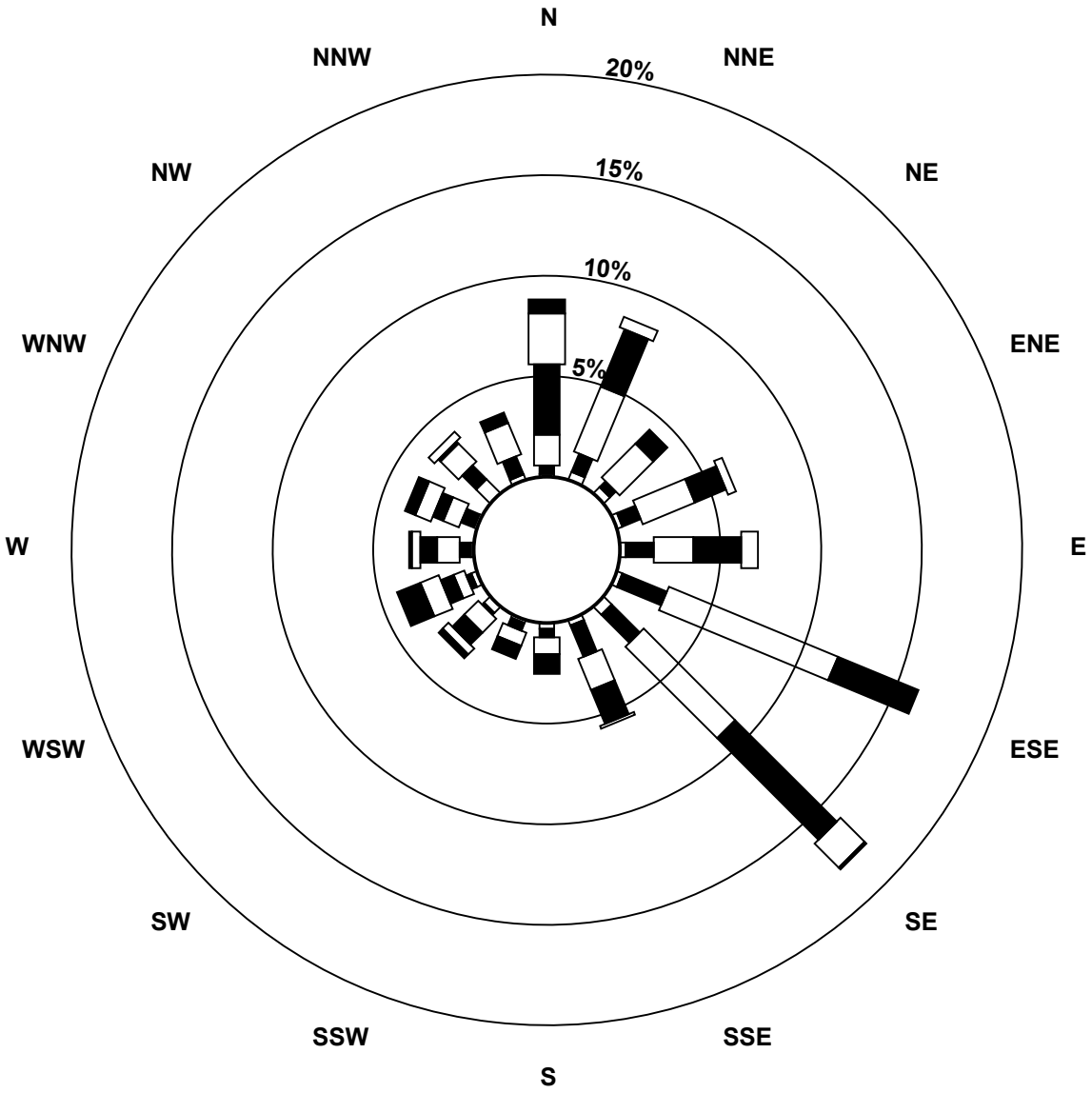
Total Number of Hours: 720

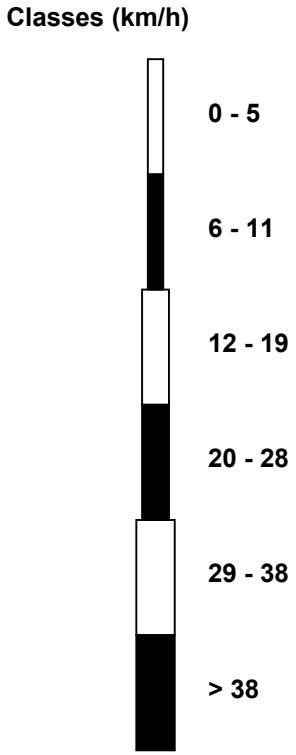
Wood Buffalo Environmental Association

Wind Rose Apr 2014

Wind Speed 90 m (WS90m) - km/h

Mannix (AMS 5)





Total Number of Valid Hours: 714

Wood Buffalo Environmental Association

Summary of Hour Averages

Wind Direction 20 m (WD20m) - deg

Mannix - April 2014

Direction of Maximum Speed: 255 deg on Apr 8 15:00
Direction of Maximum Daily Speed Average: 284.4 deg on Apr 9

Direction of Minimum Speed: 123 deg on Apr 7 15:00

Direction of Minimum Daily Speed Average: 1.5 deg on Apr 20

Monthly Average Direction: 170.1 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-Apr	210	194	143	175	283	358	8	13	22	16	17	358	315	324	337	311	346	20	16	16	26	33	33	41	3.5
2-Apr	17	13	10	14	14	15	10	10	0	4	341	9	11	8	11	12	9	10	11	10	8	6	6	11	9.1
3-Apr	10	1	342	352	356	358	4	6	13	292	34	50	77	90	109	126	126	119	115	134	135	132	134	136	92.7
4-Apr	136	137	137	136	132	130	134	135	135	140	152	153	161	237	288	284	292	291	285	293	301	300	310	298	204.9
5-Apr	273	250	252	247	252	246	308	331	94	168	292	337	316	48	69	85	59	71	35	16	15	13	356	34	317.0
6-Apr	107	107	127	138	137	137	192	174	140	132	164	289	25	80	169	107	103	87	300	5	5	329	281	335	114.2
7-Apr	195	193	202	293	274	244	198	244	MS	MS	MS	87	94	84	123	231	250	217	231	215	195	212	216	180	209.1
8-Apr	152	160	161	182	238	196	164	211	224	226	251	259	260	256	255	254	240	239	251	257	251	250	269	252	242.8
9-Apr	260	281	266	257	253	247	249	262	285	296	308	320	311	308	307	302	305	301	286	325	296	240	249	270	284.4
10-Apr	338	12	20	10	10	12	25	14	20	19	20	20	23	21	15	9	15	17	15	18	20	29	57	55	18.6
11-Apr	80	95	85	77	84	94	87	74	71	67	82	44	12	13	10	9	12	9	10	11	14	9	12	345	34.4
12-Apr	343	266	260	247	251	249	241	201	182	130	278	282	269	275	323	331	337	351	18	28	17	23	14	12	335.9
13-Apr	18	10	2	359	345	338	350	5	337	323	326	324	305	345	41	52	126	117	126	141	145	148	147	147	22.2
14-Apr	142	140	133	136	136	137	133	133	148	156	151	162	157	144	145	146	136	130	131	124	104	66	21	14	132.4
15-Apr	22	63	48	41	51	66	70	50	53	54	79	46	22	53	51	48	11	11	13	14	10	5	4	8	32.2
16-Apr	14	35	56	63	34	36	25	89	101	101	95	99	123	136	131	129	132	123	124	122	127	149	131	133	102.3
17-Apr	132	129	117	129	132	127	130	129	129	135	137	135	130	127	126	130	128	124	125	129	117	125	131	130	129.0
18-Apr	134	134	98	94	104	105	111	113	109	113	113	112	115	119	120	125	137	144	151	149	113	141	164	153	120.2
19-Apr	131	190	229	194	175	162	173	157	151	133	124	122	126	116	96	117	113	120	109	127	129	132	128	127	129.6
20-Apr	136	51	87	76	88	102	133	223	261	265	305	319	305	317	32	33	52	68	85	101	151	182	173	166	65.6
21-Apr	165	167	158	134	140	146	152	135	103	347	327	349	4	306	326	17	22	21	17	11	19	27	22	13	20.6
22-Apr	2	356	345	7	358	3	10	343	295	324	300	347	64	83	78	87	94	93	76	68	74	81	93	69	63.3
23-Apr	73	80	79	88	77	68	73	77	80	96	99	101	AF	AF	AF	80	77	82	87	95	97	98	97	93	85.9
24-Apr	113	109	85	100	83	74	86	100	104	127	235	278	142	145	145	136	116	123	118	93	93	92	98	103	107.7
25-Apr	106	127	125	105	111	126	132	140	128	116	63	70	65	81	115	145	147	150	156	147	143	150	158	155	124.1
26-Apr	160	158	139	130	140	137	148	150	143	154	141	124	132	136	130	130	126	129	131	131	136	134	136	139	137.6
27-Apr	131	130	129	129	130	100	105	108	116	129	136	140	141	140	145	141	143	149	141	142	143	140	139	143	134.8
28-Apr	140	132	126	130	137	150	176	150	146	153	168	110	120	134	112	100	99	141	136	130	139	137	143	125	136.2
29-Apr	128	125	130	143	154	158	153	149	140	121	118	176	243	279	295	257	289	325	354	331	206	225	163	141	176.8
30-Apr	146	149	154	155	147	149	143	145	133	137	141	159	186	186	171	186	184	181	236	214	201	223	218	238	175.3
	112.0	111.9	101.4	100.5	103.6	99.1	101.3	107.3	105.7	112.9	104.6	79.7	87.1	79.3	67.6	72.3	70.0	71.7	53.5	60.0	72.1	85.6	84.2	96.2	
	Diurnal Average																								

AF - Analyzer Failure MS - Missing

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

Wood Buffalo Environmental Association

Summary of Hour Standard Deviations

Wind Direction 20 m (WD20m) - deg

Mannix - April 2014

Number of Exceedences (AAAQO): 1-hr: 0 24-hr: 0
Maximum Value: 101 deg on Apr 7 15:00

Minimum Value: 6 deg on Apr 12 05:00

Percentiles: P_1 = 8 P_{10} = 10 Q_1 = 11 Median = 14 Q_3 = 19 P_{90} = 34 P_{99} = 77

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-Apr	11	14	25	98	8	25	10	11	14	19	16	29	21	29	31	15	43	16	9	8	12	13	15	12	98
2-Apr	12	9	9	9	9	12	9	10	19	17	16	14	15	14	12	12	13	11	10	10	11	11	11	10	19
3-Apr	13	16	11	10	12	11	15	14	29	57	50	33	38	56	30	21	20	17	16	11	10	11	10	11	57
4-Apr	11	10	10	10	11	12	11	11	10	11	13	12	12	35	14	10	13	10	10	11	10	10	9	9	35
5-Apr	15	8	8	8	10	74	45	47	33	76	39	29	51	49	34	53	17	16	12	9	13	12	21	63	76
6-Apr	18	14	13	10	12	14	50	46	15	16	37	65	68	36	36	20	20	84	31	10	11	25	21	70	84
7-Apr	32	14	29	52	69	16	34	26	MS	MS	MS	23	17	21	101	31	19	20	17	19	17	20	12	17	101
8-Apr	10	9	9	19	10	33	21	17	10	10	13	12	12	13	13	12	13	13	12	10	10	11	9	11	33
9-Apr	10	8	11	11	11	10	11	9	13	10	13	15	10	16	15	12	11	11	10	42	62	18	8	22	62
10-Apr	23	11	12	10	9	13	16	12	14	20	22	14	15	16	16	15	13	12	10	10	10	11	15	14	23
11-Apr	17	14	13	12	15	14	17	12	16	12	19	31	10	10	10	11	11	10	14	12	10	11	12	12	31
12-Apr	10	12	6	7	6	13	16	31	39	44	79	48	54	24	27	21	19	17	14	13	10	11	12	12	79
13-Apr	11	10	13	13	16	12	17	20	22	18	20	30	30	38	37	44	37	21	16	13	10	10	11	10	44
14-Apr	10	10	11	10	9	10	12	13	14	14	15	14	14	18	14	12	11	11	11	16	12	31	13	11	31
15-Apr	13	17	13	12	10	13	16	10	9	11	24	20	21	14	17	17	13	12	10	10	11	11	11	11	24
16-Apr	10	17	13	19	15	20	12	24	16	15	64	34	22	15	15	14	15	18	16	17	18	14	12	10	64
17-Apr	11	14	15	13	13	14	15	17	15	13	13	18	17	18	19	17	16	16	16	14	15	15	12	12	19
18-Apr	13	13	21	12	12	14	18	19	19	17	17	16	17	19	19	18	12	13	11	12	18	14	17	10	21
19-Apr	11	42	17	23	24	25	31	12	17	20	22	19	20	26	20	22	19	17	15	14	12	11	12	14	42
20-Apr	39	25	14	16	16	27	25	42	33	76	25	33	16	26	32	24	30	15	20	35	17	18	22	6	76
21-Apr	6	12	59	14	13	15	46	15	30	86	17	18	28	45	17	24	19	14	10	10	11	11	11	10	86
22-Apr	11	12	34	11	12	12	15	54	82	50	25	92	27	19	16	15	12	13	16	19	22	17	13	17	92
23-Apr	14	13	11	11	13	12	14	15	13	15	14	14	AF	AF	AF	13	13	13	16	14	14	13	14	13	16
24-Apr	25	26	15	14	14	15	16	15	15	49	47	12	75	12	13	11	18	18	26	13	12	11	11	12	75
25-Apr	11	18	18	13	15	18	18	17	17	21	16	21	56	39	41	51	14	13	11	11	11	10	9	10	56
26-Apr	13	9	9	13	12	11	12	13	14	14	13	19	20	16	15	15	16	13	13	12	11	11	11	13	20
27-Apr	11	12	12	12	15	16	14	14	17	12	11	10	10	12	11	12	12	11	9	9	10	10	9	9	17
28-Apr	11	10	11	10	11	12	16	15	18	22	30	58	36	38	25	41	15	18	13	12	10	12	13	11	58
29-Apr	12	14	13	32	11	10	12	17	29	19	24	54	24	17	33	70	31	20	42	16	68	12	63	18	70
30-Apr	12	10	20	9	10	10	10	9	14	14	12	23	21	16	16	26	16	26	10	12	10	15	8	13	26
	39	42	59	98	69	74	50	54	82	86	79	92	75	56	101	70	43	84	42	42	68	31	63	70	
	Diurnal Maximum																								

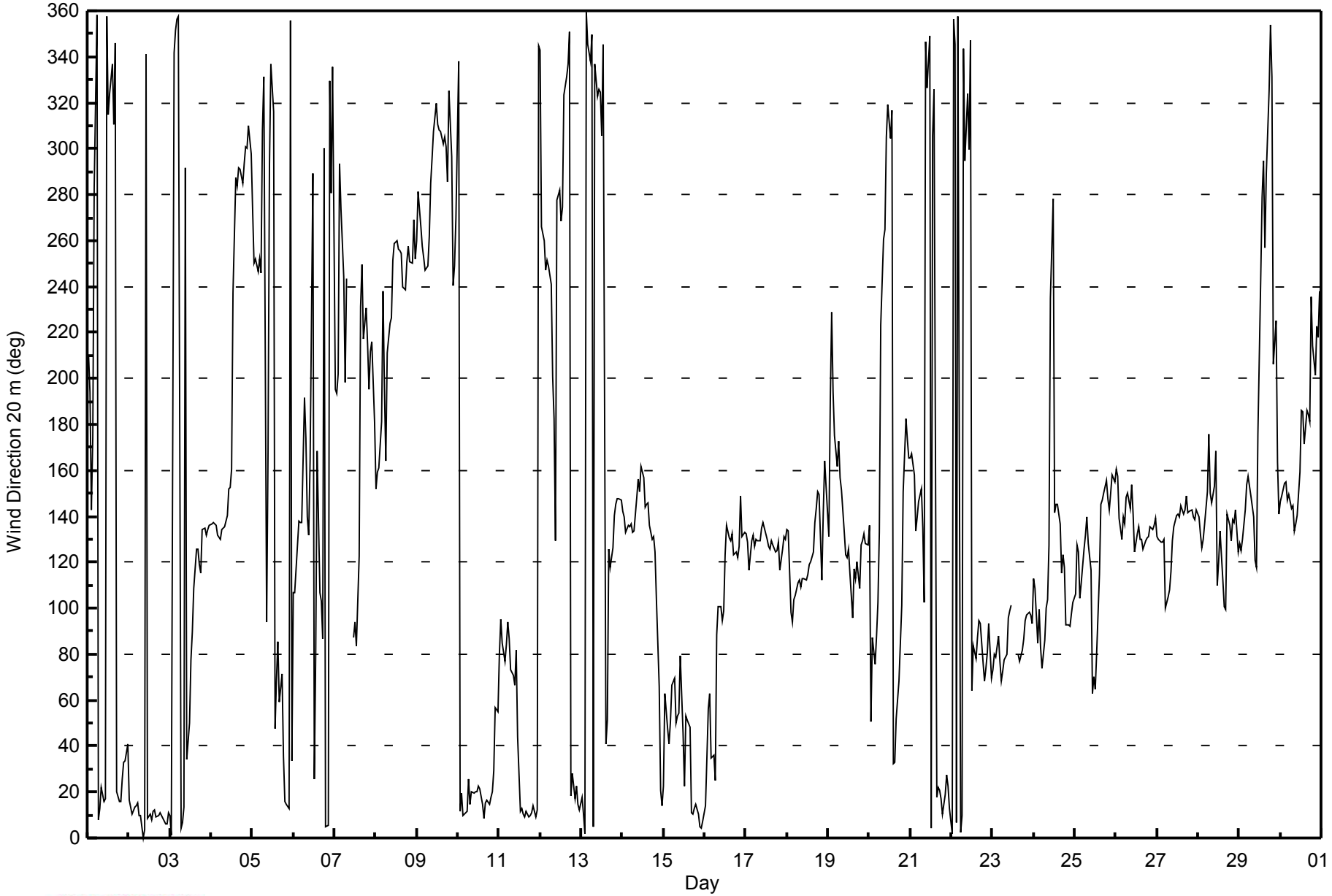
AF - Analyzer Failure MS - Missing

WBEA NETWORK

Hourly Averages

Wind Direction 20 m (WD20m) - deg

Mannix - April 2014



AURORA ATMOSPHERICS INC.

Wood Buffalo Environmental Association

Summary of Hour Averages

Wind Direction 45 m (WD45m) - deg

Mannix - April 2014

Direction of Maximum Speed: 255 deg on Apr 8 15:00
Direction of Maximum Daily Speed Average: 241.6 deg on Apr 8

Direction of Minimum Speed: 20 deg on Apr 6 13:00
Direction of Minimum Daily Speed Average: 2.4 deg on Apr 20

Monthly Average Direction: 169.2 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-Apr	212	200	165	251	294	3	9	17	23	16	19	1	318	328	337	315	350	22	18	17	27	35	33	39	3.9
2-Apr	17	15	11	13	14	17	11	10	3	6	345	9	9	9	12	12	10	11	11	10	9	7	7	14	10.0
3-Apr	12	5	352	356	1	4	3	8	6	299	42	63	83	98	109	124	124	120	117	132	132	131	134	135	91.8
4-Apr	136	137	137	136	131	130	134	134	136	139	152	151	160	238	289	285	293	292	286	295	303	301	313	301	196.1
5-Apr	281	262	253	252	262	265	299	338	79	175	307	339	326	39	70	89	60	68	36	18	21	35	16	79	311.6
6-Apr	120	116	127	135	135	134	160	160	140	133	165	284	20	67	170	113	104	83	316	7	9	355	311	359	108.7
7-Apr	174	198	244	288	278	260	235	250	MS	MS	MS	97	95	86	186	230	247	216	230	217	201	211	221	187	219.0
8-Apr	153	160	177	205	239	213	197	217	225	226	250	258	260	256	255	255	240	239	251	257	252	251	269	253	241.6
9-Apr	260	282	268	258	255	249	251	262	286	297	310	320	313	309	308	303	305	302	287	330	317	240	250	271	285.2
10-Apr	341	12	20	13	13	13	27	16	21	20	19	20	22	20	16	10	18	18	17	20	22	29	56	58	19.3
11-Apr	81	96	85	77	84	95	89	76	71	66	82	45	13	15	11	10	13	10	10	10	14	10	12	349	32.8
12-Apr	343	283	282	270	266	260	248	203	184	139	279	287	272	279	327	336	340	351	21	27	18	22	14	13	338.6
13-Apr	18	10	4	360	346	340	351	5	335	327	330	331	314	348	40	48	127	116	124	137	143	147	147	146	27.1
14-Apr	144	140	134	134	135	136	134	133	149	156	150	162	157	147	145	146	137	128	129	123	106	67	22	15	131.7
15-Apr	28	65	49	40	50	66	69	49	56	54	80	47	23	52	50	47	12	12	13	15	11	6	6	10	31.9
16-Apr	18	38	57	63	39	42	30	91	102	102	102	103	123	133	130	127	130	122	122	121	124	142	132	131	103.2
17-Apr	130	127	120	129	130	127	127	126	127	133	136	132	129	126	123	126	125	124	123	126	118	123	128	129	127.2
18-Apr	131	129	104	96	105	108	111	113	111	113	113	113	115	118	121	124	135	144	152	146	125	139	154	148	120.8
19-Apr	132	176	194	179	169	161	173	152	151	132	123	122	124	115	95	116	113	119	111	124	127	131	130	136	131.2
20-Apr	143	94	99	85	96	108	129	204	251	276	307	320	306	320	29	33	48	66	86	101	148	180	172	174	101.6
21-Apr	172	183	174	145	150	162	175	142	124	336	328	352	6	308	328	16	22	22	19	13	20	27	23	17	25.3
22-Apr	10	0	356	8	10	11	16	354	299	330	306	342	65	83	77	87	95	92	76	69	76	82	94	71	58.8
23-Apr	75	82	77	87	77	70	75	80	81	96	100	101	AF	AF	AF	81	78	81	87	96	96	98	97	93	86.7
24-Apr	114	110	86	99	84	75	87	100	104	123	216	273	134	142	142	133	115	122	118	94	93	93	98	104	107.9
25-Apr	108	127	123	106	111	122	128	134	128	115	63	69	67	82	115	141	144	147	155	142	140	148	155	157	124.1
26-Apr	162	158	140	128	135	135	147	147	142	154	141	126	131	133	126	128	123	127	127	128	133	134	137	139	136.4
27-Apr	129	128	128	127	127	102	106	111	115	128	135	140	141	139	145	143	143	149	142	143	143	140	138	141	134.5
28-Apr	141	133	128	132	138	150	174	151	146	150	168	123	130	135	112	106	104	136	132	127	139	139	146	128	137.4
29-Apr	129	128	129	139	152	157	157	160	154	124	119	183	241	277	294	260	290	330	354	338	279	221	162	150	169.7
30-Apr	137	144	150	157	153	153	150	149	134	137	143	161	186	185	172	187	184	183	237	220	205	228	221	241	178.0
	115.9	117.7	107.5	106.2	106.6	103.0	106.2	110.8	109.7	112.4	105.9	83.3	90.1	85.6	66.9	70.7	71.4	70.8	54.1	60.6	74.0	91.4	91.3	104.7	
	Diurnal Average																								

AF - Analyzer Failure MS - Missing
All monthly, daily, and diurnal averages have been calculated using vector methods

Wood Buffalo Environmental Association

Summary of Hour Standard Deviations

Wind Direction 45 m (WD45m) - deg

Mannix - April 2014

Number of Exceedences (AAAQO): 1-hr: 0 24-hr: 0
Maximum Value: 96 deg on Apr 7 15:00

Minimum Value: 2 deg on Apr 21 01:00

Percentiles: P_1 = 4 P_{10} = 7 Q_1 = 8 Median = 11 Q_3 = 16 P_{90} = 29 P_{99} = 73

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-Apr	7	8	19	82	4	16	6	9	10	16	14	25	19	25	27	12	39	13	6	6	9	9	12	10	82
2-Apr	10	5	5	6	6	8	5	6	14	11	13	11	13	11	8	8	9	7	6	6	6	6	6	7	14
3-Apr	9	9	6	5	7	7	9	11	25	51	44	40	39	36	28	18	16	12	11	7	7	7	6	7	51
4-Apr	7	7	7	7	8	8	6	6	7	8	11	9	12	32	13	9	12	8	8	8	7	8	8	8	32
5-Apr	13	8	3	5	7	59	25	37	75	76	40	24	48	52	41	56	15	17	10	6	14	15	16	33	76
6-Apr	15	12	6	6	7	8	34	16	16	13	34	58	84	47	32	21	18	87	20	6	5	18	22	57	87
7-Apr	30	19	18	12	18	7	27	16	MS	MS	MS	21	14	19	96	27	15	15	14	15	12	17	10	15	96
8-Apr	7	5	9	13	6	21	22	10	7	8	11	11	11	11	11	11	11	11	10	8	8	9	8	8	22
9-Apr	9	6	8	8	8	8	9	8	13	8	12	14	10	14	14	10	9	9	8	42	54	8	6	20	54
10-Apr	20	8	9	7	6	10	12	9	10	16	19	11	11	13	14	11	10	8	7	8	8	8	12	11	20
11-Apr	15	12	10	9	13	10	14	10	13	10	17	29	6	6	7	8	8	7	11	9	6	6	8	9	29
12-Apr	7	14	7	5	4	6	14	24	31	39	69	40	44	26	25	19	17	14	10	9	7	8	9	9	69
13-Apr	8	8	8	10	13	8	13	17	17	16	18	24	23	29	34	38	33	17	13	9	7	8	9	8	38
14-Apr	7	7	6	6	5	5	8	10	13	11	13	11	11	16	12	10	8	6	7	13	9	29	11	7	29
15-Apr	12	16	11	11	9	11	15	10	7	10	21	18	16	13	15	15	10	9	6	8	7	7	7	7	21
16-Apr	8	14	11	15	15	16	11	21	13	10	58	28	17	14	12	11	11	13	12	13	13	12	9	6	58
17-Apr	7	9	9	7	8	9	10	12	11	10	10	16	13	14	15	13	12	11	11	9	11	10	8	8	16
18-Apr	9	9	16	9	8	9	13	16	14	12	12	11	12	14	14	14	9	11	10	14	12	9	8	6	16
19-Apr	5	35	14	14	18	16	18	10	14	15	18	15	17	23	17	19	15	13	11	9	8	6	7	9	35
20-Apr	12	30	9	11	10	18	18	36	37	74	24	33	14	23	25	21	26	14	16	27	13	11	12	6	74
21-Apr	2	12	22	11	10	8	25	11	46	87	13	12	25	46	19	17	15	12	7	6	8	8	7	6	87
22-Apr	8	7	6	6	7	7	11	51	72	50	21	79	19	17	13	13	10	10	15	16	20	15	12	16	79
23-Apr	12	11	11	10	11	11	13	13	12	12	10	10	AF	AF	AF	12	11	11	14	11	12	10	10	10	14
24-Apr	22	23	13	12	13	14	13	12	11	39	48	13	45	10	11	8	14	13	23	11	10	9	8	8	48
25-Apr	7	13	13	10	12	13	13	12	12	16	14	21	51	33	38	46	11	11	9	9	9	8	7	7	51
26-Apr	10	7	6	7	8	8	9	11	12	12	10	15	15	13	11	11	12	9	8	7	7	7	8	11	15
27-Apr	7	8	8	7	11	13	12	11	13	8	8	8	8	9	10	9	9	9	8	8	8	7	6	6	13
28-Apr	7	5	5	3	8	11	8	11	14	20	26	47	33	36	21	30	12	14	8	8	7	8	11	7	47
29-Apr	6	8	7	18	8	7	10	14	31	13	23	55	24	15	31	65	29	19	36	11	49	34	22	15	65
30-Apr	5	3	11	4	6	6	8	8	12	10	9	20	16	9	13	24	10	25	5	10	8	15	4	9	25
	30	35	22	82	18	59	34	51	75	87	69	79	84	52	96	65	39	87	36	42	54	34	22	57	
	Diurnal Maximum																								

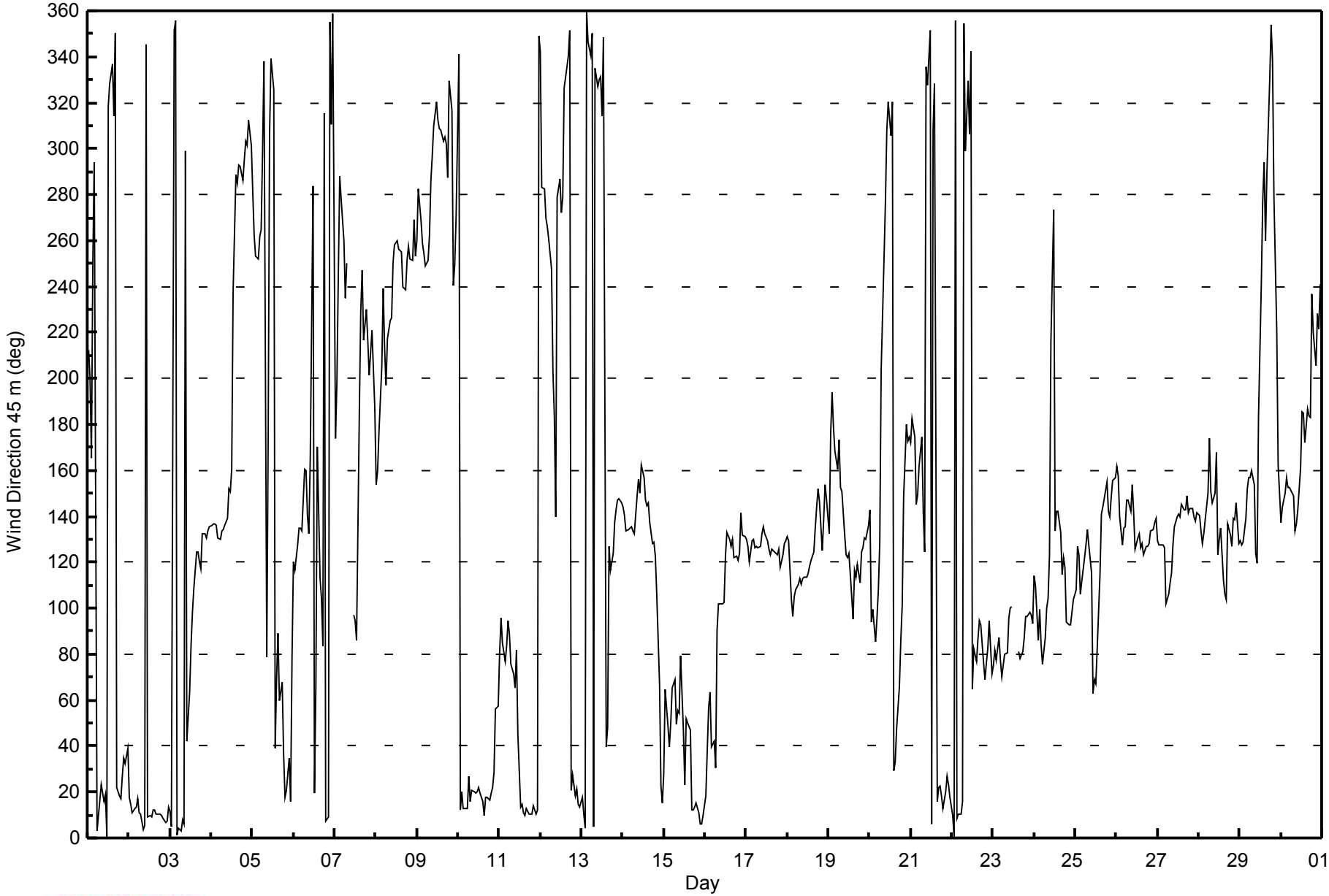
AF - Analyzer Failure MS - Missing

WBEA NETWORK

Hourly Averages

Wind Direction 45 m (WD45m) - deg

Mannix - April 2014



AURORA ATMOSPHERICS INC.

Wood Buffalo Environmental Association

Summary of Hour Averages

Wind Direction 75 m (WD75m) - deg

Mannix - April 2014

Direction of Maximum Speed: 255 deg on Apr 8 15:00
Direction of Maximum Daily Speed Average: 240.7 deg on Apr 8

Direction of Minimum Speed: 4 deg on Apr 6 13:00
Direction of Minimum Daily Speed Average: 2.5 deg on Apr 20

Monthly Average Direction: 170.6 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-Apr	213	205	190	301	297	8	15	22	25	16	21	3	322	331	340	320	354	24	21	20	30	41	37	41	7.2
2-Apr	22	16	14	15	14	19	14	14	6	7	349	9	9	10	14	13	11	12	12	11	9	9	10	16	11.8
3-Apr	16	10	1	3	11	25	12	19	9	311	57	76	96	99	111	126	125	124	120	132	133	133	136	137	86.1
4-Apr	138	139	139	139	134	134	137	137	139	141	152	151	160	241	289	286	294	293	287	296	305	303	314	302	200.6
5-Apr	288	274	265	263	271	272	289	341	25	188	318	340	331	37	64	85	67	68	40	24	36	63	67	96	316.7
6-Apr	131	127	133	136	137	136	152	163	142	136	166	270	4	45	176	129	105	59	325	11	16	11	328	46	114.6
7-Apr	173	214	259	280	273	262	252	261	MS	MS	MS	98	95	88	189	229	246	217	230	219	205	212	225	191	226.6
8-Apr	158	163	190	217	240	222	214	221	224	225	249	258	259	255	255	254	239	238	251	257	251	251	267	252	240.7
9-Apr	260	281	270	259	254	250	252	262	286	298	312	320	313	309	309	303	306	303	288	332	324	245	252	271	284.8
10-Apr	344	13	21	18	16	15	27	19	22	20	20	22	22	20	19	13	21	20	19	22	25	32	58	61	21.3
11-Apr	81	95	85	78	83	95	89	77	72	67	81	47	16	18	14	12	14	13	11	12	14	12	14	353	32.2
12-Apr	345	298	292	287	282	282	267	219	199	157	278	288	277	280	328	338	342	353	22	28	20	22	15	14	342.2
13-Apr	18	12	5	1	346	342	352	4	337	331	333	334	322	350	40	52	127	117	124	139	142	145	148	147	32.0
14-Apr	144	143	138	136	137	137	136	136	151	156	151	161	156	149	146	146	140	130	128	121	107	70	30	23	133.2
15-Apr	38	68	53	43	52	67	70	53	59	59	82	49	26	53	50	47	14	14	15	17	12	9	9	14	34.1
16-Apr	25	44	59	65	49	51	42	89	102	103	110	105	126	134	132	129	131	123	123	120	122	137	133	132	100.9
17-Apr	131	129	122	131	132	128	128	129	128	135	137	135	131	128	125	127	126	125	125	126	119	125	130	130	128.9
18-Apr	130	128	105	98	106	111	113	114	112	113	115	115	116	118	122	126	137	146	155	145	135	140	149	145	124.2
19-Apr	138	164	172	164	160	157	164	153	151	133	124	123	124	114	97	117	116	118	113	125	129	134	136	144	135.8
20-Apr	149	130	106	96	111	113	129	176	233	280	310	323	309	323	30	33	47	65	84	98	143	176	180	190	115.3
21-Apr	188	204	202	167	166	173	183	162	189	313	327	354	7	311	331	19	23	25	21	16	23	29	29	30	23.4
22-Apr	32	26	23	25	35	36	42	17	319	330	310	349	66	83	77	85	93	91	77	70	78	84	94	75	64.7
23-Apr	80	84	79	88	80	74	78	83	83	95	99	100	AF	AF	AF	82	79	82	88	96	96	98	97	94	87.1
24-Apr	115	109	87	99	85	78	88	99	104	123	190	257	130	139	141	132	114	122	118	92	93	92	97	104	107.3
25-Apr	109	128	123	109	113	122	127	134	129	112	65	70	67	84	115	133	143	145	154	140	140	149	153	159	125.8
26-Apr	161	158	141	127	135	138	147	146	144	152	143	129	132	133	127	129	124	128	127	129	135	136	140	141	138.6
27-Apr	131	129	129	127	126	101	109	114	115	129	138	141	142	140	146	144	144	148	143	144	144	142	140	142	137.0
28-Apr	142	137	134	141	144	149	167	151	147	146	166	136	133	132	114	107	105	137	132	128	141	142	150	137	140.8
29-Apr	136	135	133	138	149	154	163	175	177	131	130	193	240	275	292	259	290	334	352	341	312	219	164	167	173.0
30-Apr	144	145	152	158	162	165	155	155	143	142	149	162	185	185	171	188	183	185	238	222	210	232	224	244	180.4
	121.5	122.2	111.1	110.3	118.0	110.9	112.0	113.7	114.5	115.0	110.1	83.6	79.4	78.7	58.1	60.1	59.6	59.5	39.8	51.9	71.3	93.8	96.7	114.6	
	Diurnal Average																								

AF - Analyzer Failure MS - Missing
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 Apr 5 09:00

Minimum Value: 3 deg on Apr 3 04:00

Percentiles: P_1 = 4 P_{10} = 5 Q_1 = 7 Median = 10 Q_3 = 14 P_{90} = 25 P_{99} = 80

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-Apr	6	6	14	81	8	10	5	7	9	15	11	23	18	24	24	14	35	12	5	4	8	7	9	9	81
2-Apr	8	4	4	5	5	7	5	5	12	9	12	9	10	10	6	7	7	5	4	4	4	4	5	6	12
3-Apr	6	6	4	3	12	9	6	6	25	55	47	38	38	28	25	18	15	13	12	8	7	7	5	6	55
4-Apr	5	5	5	5	7	6	5	6	6	7	9	8	12	31	12	8	11	7	7	8	7	8	8	7	31
5-Apr	10	7	3	6	6	21	11	27	98	81	46	21	43	60	35	39	13	16	8	4	19	10	27	15	98
6-Apr	14	12	6	5	5	5	22	10	15	12	28	63	91	61	38	17	20	86	18	5	4	19	20	72	91
7-Apr	26	21	12	7	8	7	7	6	MS	MS	MS	30	16	21	94	25	13	13	12	13	10	15	9	14	94
8-Apr	6	6	11	8	5	13	18	6	5	6	10	10	10	9	10	10	10	10	9	7	6	7	8	6	18
9-Apr	8	5	8	8	7	6	8	7	12	7	11	13	10	13	14	10	8	9	7	43	47	7	6	19	47
10-Apr	20	7	7	6	5	9	10	7	9	15	16	9	10	11	11	9	9	7	5	6	6	7	11	9	20
11-Apr	13	13	9	7	10	10	13	9	11	10	16	27	5	5	5	6	6	5	10	8	4	4	6	11	27
12-Apr	6	20	4	5	5	6	11	22	28	35	62	41	42	20	23	19	16	14	9	7	6	7	7	8	62
13-Apr	6	7	8	9	12	7	11	16	15	14	18	22	23	30	32	31	27	17	13	9	5	5	6	5	32
14-Apr	4	4	4	4	3	4	7	10	10	8	10	9	11	14	10	8	7	9	9	14	13	28	9	6	28
15-Apr	11	14	9	9	8	11	13	8	7	9	16	17	15	12	14	15	9	7	5	7	6	6	6	6	17
16-Apr	7	12	10	13	14	13	11	19	14	12	50	25	16	11	11	11	11	13	13	13	14	11	8	8	50
17-Apr	8	10	11	9	8	10	10	12	11	9	9	13	13	13	14	13	12	11	12	10	13	12	10	12	14
18-Apr	11	11	16	9	11	12	15	16	15	13	14	13	13	14	14	14	7	10	8	10	10	6	5	3	16
19-Apr	3	25	8	9	12	10	11	9	13	14	16	14	16	22	17	19	15	14	13	10	9	7	6	7	25
20-Apr	6	24	14	11	15	16	14	33	38	80	20	36	13	24	21	20	22	13	15	22	11	7	13	7	80
21-Apr	6	9	16	14	7	5	11	14	63	95	13	11	22	47	22	15	12	11	6	5	8	6	5	6	95
22-Apr	9	6	6	7	13	10	9	47	71	54	20	83	18	15	12	11	9	9	13	15	18	13	12	13	83
23-Apr	11	9	9	9	10	11	11	13	11	11	11	11	AF	AF	AF	10	9	9	12	11	12	10	10	10	13
24-Apr	21	22	12	13	11	12	10	13	14	33	48	55	24	8	9	9	15	14	22	11	9	9	9	11	55
25-Apr	10	13	15	13	14	14	13	11	12	17	13	18	43	30	35	39	9	9	9	7	9	6	6	5	43
26-Apr	8	6	5	10	8	6	8	9	11	11	9	15	13	13	12	12	12	10	9	9	7	6	6	9	15
27-Apr	8	9	8	9	12	14	15	13	13	10	7	6	7	7	8	8	8	7	6	6	6	5	5	4	15
28-Apr	5	4	6	4	7	9	7	9	11	16	23	44	29	38	22	23	14	13	10	11	6	6	8	5	44
29-Apr	5	7	8	9	6	5	7	13	33	11	27	59	24	15	29	74	31	21	30	11	23	65	8	10	74
30-Apr	6	4	5	4	4	3	4	6	10	8	8	18	15	8	11	22	9	25	5	10	8	15	3	8	25
	26	25	16	81	15	21	22	47	98	95	62	83	91	61	94	74	35	86	30	43	47	65	27	72	
	Diurnal Maximum																								

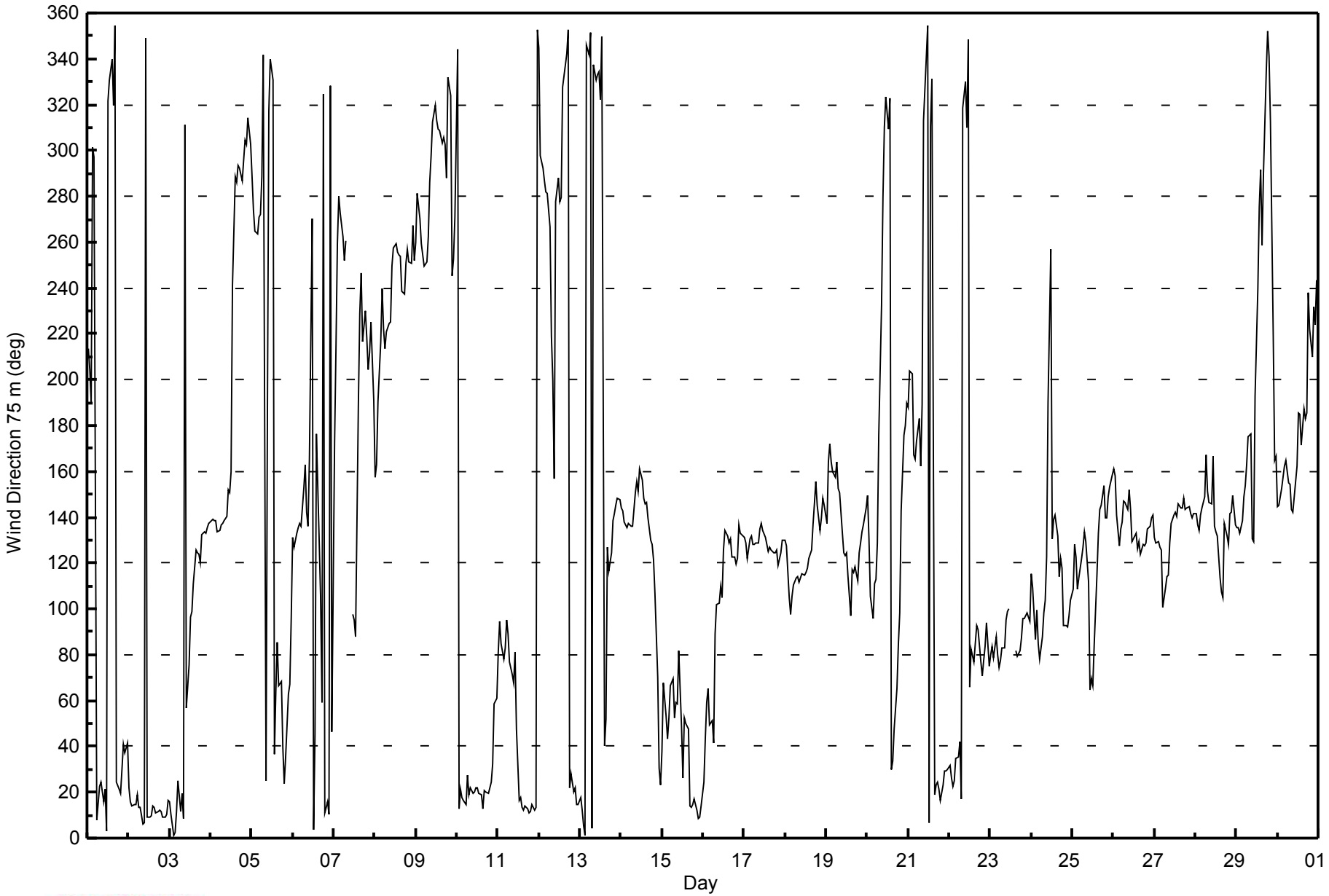
AF - Analyzer Failure MS - Missing

WBEA NETWORK

Hourly Averages

Wind Direction 75 m (WD75m) - deg

Mannix - April 2014



AURORA ATMOSPHERICS INC.

Wood Buffalo Environmental Association

Summary of Hour Standard Deviations

Wind Direction 90 m (WD90m) - deg

Mannix - April 2014

Number of Exceedences (AAAQO): 1-hr: 0 24-hr: 0
Maximum Value: 104 deg on Apr 5 09:00

Minimum Value: 2 deg on Apr 14 05:00

Percentiles: P_1 = 3 P_{10} = 5 Q_1 = 6 Median = 9 Q_3 = 14 P_{90} = 26 P_{99} = 77

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-Apr	6	6	13	42	11	8	5	6	10	14	11	21	17	23	23	13	33	12	4	4	8	7	8	8	42
2-Apr	7	4	4	4	5	6	5	5	11	9	11	9	9	10	6	6	6	5	4	4	4	4	4	5	11
3-Apr	6	6	4	3	15	8	6	5	26	51	45	39	40	31	28	17	13	10	8	6	6	6	5	6	51
4-Apr	6	5	6	5	6	5	5	5	6	7	10	7	13	29	12	8	11	7	7	7	6	8	8	7	29
5-Apr	8	6	3	6	5	7	7	24	104	75	51	21	41	57	35	39	13	17	8	4	20	9	25	10	104
6-Apr	12	7	4	3	3	4	21	10	14	13	26	56	67	79	34	19	20	89	17	5	5	19	22	91	91
7-Apr	30	21	9	6	5	6	5	5	MS	MS	MS	45	16	21	83	23	12	13	12	12	11	16	9	14	83
8-Apr	6	6	12	7	5	11	16	5	5	6	10	10	9	8	9	9	10	10	8	6	6	7	7	5	16
9-Apr	7	5	7	7	6	6	7	7	12	7	11	12	10	12	13	9	8	8	7	42	44	8	5	17	44
10-Apr	20	6	6	5	5	8	10	7	8	15	16	9	9	11	10	8	9	7	4	5	6	7	10	9	20
11-Apr	12	12	8	7	10	9	13	9	10	10	16	27	4	5	5	5	5	5	10	7	4	4	5	11	27
12-Apr	6	20	5	6	4	7	7	21	29	36	57	41	39	18	22	17	16	14	8	6	5	6	7	7	57
13-Apr	6	6	7	9	12	6	10	15	14	14	17	21	21	29	31	32	26	16	13	9	4	5	6	4	32
14-Apr	4	4	4	4	2	3	6	9	10	8	9	9	11	14	10	8	7	6	6	10	9	28	9	6	28
15-Apr	10	14	9	9	8	10	13	8	7	9	16	17	15	13	14	15	8	6	4	6	5	5	6	6	17
16-Apr	8	11	10	13	14	13	12	19	13	10	49	22	15	12	11	10	10	11	9	9	11	10	7	5	49
17-Apr	6	7	7	6	6	6	6	11	10	8	9	13	13	13	13	12	10	9	9	6	8	8	7	10	13
18-Apr	9	8	13	7	7	8	14	16	13	10	11	10	11	11	12	12	7	10	7	9	7	5	4	2	16
19-Apr	3	21	7	8	10	8	8	9	12	15	19	13	17	23	18	19	14	12	10	7	7	5	5	6	23
20-Apr	6	19	11	7	8	9	9	29	36	84	19	40	12	23	19	19	22	14	14	19	11	7	15	4	84
21-Apr	7	8	15	11	5	4	9	14	57	88	13	10	21	44	23	14	12	10	5	4	7	6	4	6	88
22-Apr	8	7	7	9	15	12	9	49	70	42	19	73	19	16	11	12	9	9	14	13	18	14	12	12	73
23-Apr	11	9	9	9	10	11	11	14	11	11	9	10	AF	AF	AF	10	9	10	13	11	11	9	9	9	14
24-Apr	18	19	13	12	10	12	10	12	10	33	50	79	21	8	9	7	12	10	20	10	8	8	8	7	79
25-Apr	5	11	11	10	11	12	13	11	11	15	13	18	44	33	34	38	9	9	9	7	10	6	6	5	44
26-Apr	7	5	6	8	6	6	7	9	12	12	10	13	15	15	11	9	11	8	6	6	6	6	6	9	15
27-Apr	5	6	5	6	10	13	12	13	10	7	7	7	6	7	8	8	8	7	6	5	5	5	4	4	13
28-Apr	5	3	5	5	7	9	7	9	11	17	23	47	34	42	24	29	17	13	8	9	5	6	8	4	47
29-Apr	6	6	6	8	5	6	11	13	32	13	33	60	23	15	28	69	29	21	27	11	25	63	5	6	69
30-Apr	5	5	5	5	3	3	3	5	9	8	8	18	15	8	11	23	9	26	5	10	9	14	4	7	26
	30	21	15	42	15	13	21	49	104	88	57	79	67	79	83	69	33	89	27	42	44	63	25	91	
	Diurnal Maximum																								

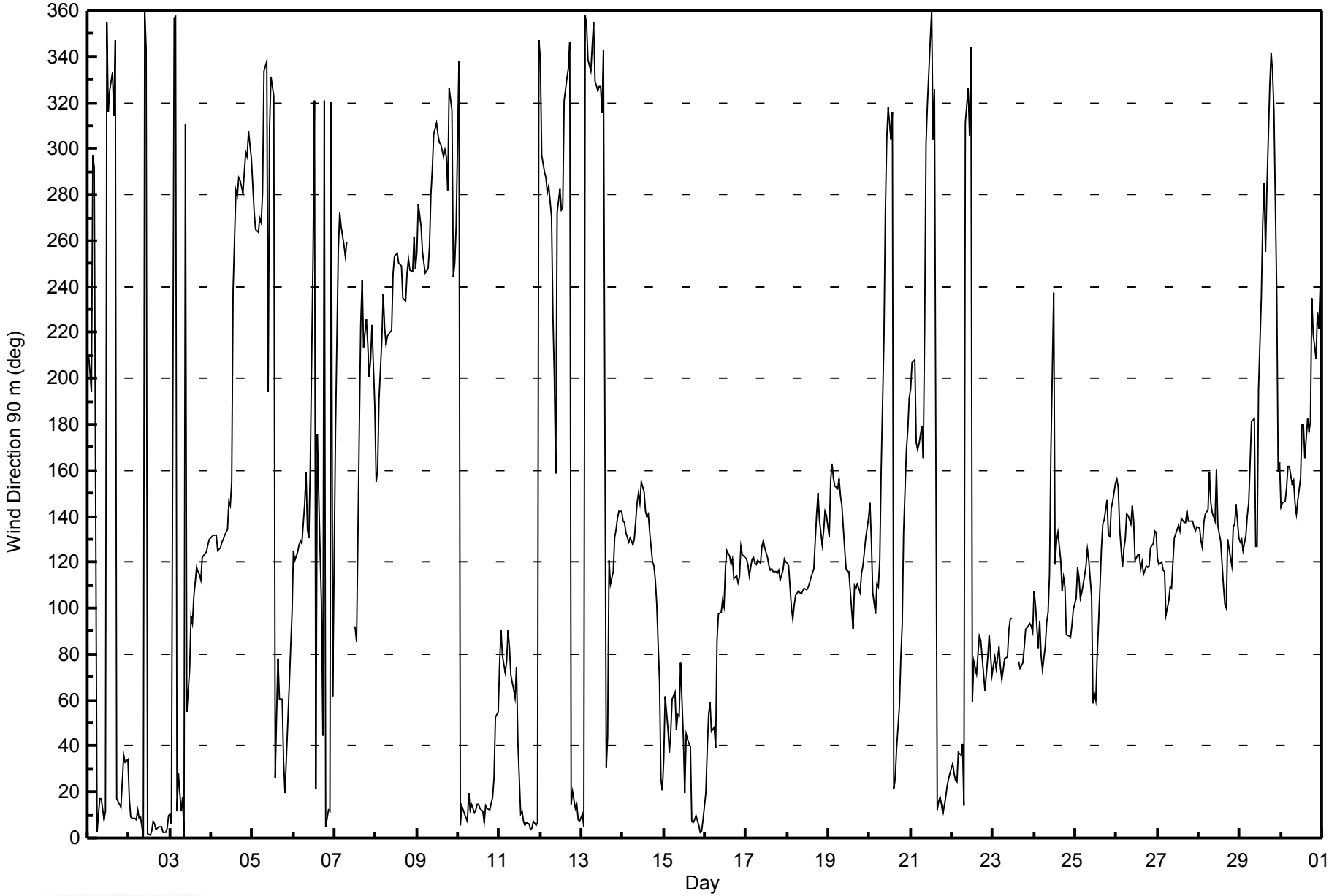
AF - Analyzer Failure MS - Missing

WBEA NETWORK

Hourly Averages

Wind Direction 90 m (WD90m) - deg

Mannix - April 2014



AURORA
ATMOSPHERICS INC.

Wood Buffalo Environmental Association

Summary of Hour Averages

Vertical Wind Speed 20 m (VW20m) - km/h

Mannix - April 2014

Maximum Value: 1.1 km/h on Apr 23 16:00

Maximum Daily Average: 0.6 km/h on Apr 23

Minimum Value: -0.9 km/h on Apr 8 19:00

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

Maximum Diurnal Average: 0.1 km/h at hour 9

Minimum Diurnal Average: 0.0 km/h at hour 20

Monthly Average: 0.07 km/h

Percentiles: P_1 = -0.7 P_{10} = -0.4 Q_1 = -0.2 Median = 0.2 Q_3 = 0.3 P_{90} = 0.5 P_{99} = 0.7

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	Daily
	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24	Average	Maximum
1-Apr	-0.2	-0.1	0.3	-0.1	-0.2	-0.4	-0.3	-0.2	-0.1	-0.1	-0.2	0.0	0.2	-0.2	-0.1	-0.2	0.2	-0.1	-0.5	-0.3	-0.1	0.1	0.0	0.2	-0.1	0.3
2-Apr	-0.2	-0.5	-0.5	-0.4	-0.6	-0.1	-0.5	-0.5	-0.1	-0.4	-0.3	-0.6	-0.2	-0.4	-0.7	-0.3	-0.4	-0.5	-0.5	-0.8	-0.7	-0.6	-0.4	-0.3	-0.4	-0.1
3-Apr	-0.3	-0.3	-0.2	-0.4	-0.4	-0.3	-0.1	-0.2	0.1	-0.2	0.2	-0.1	0.0	0.1	0.3	0.2	0.3	0.3	0.4	0.2	0.4	0.4	0.6	0.7	0.1	0.7
4-Apr	0.7	0.7	0.7	0.8	0.2	0.4	0.4	0.3	0.2	0.4	0.3	0.4	0.2	-0.1	-0.2	-0.2	-0.6	-0.4	-0.3	-0.5	-0.3	-0.5	-0.7	-0.3	0.1	0.8
5-Apr	-0.2	-0.4	-0.4	-0.5	-0.5	-0.3	0.0	0.0	0.3	0.2	0.1	0.0	-0.2	0.1	0.1	-0.1	0.3	0.1	0.0	-0.1	-0.2	-0.2	-0.2	-0.1	-0.1	0.3
6-Apr	0.1	-0.1	0.1	0.3	0.2	0.2	0.1	0.0	0.0	0.2	0.2	0.0	0.0	0.0	0.3	0.3	0.2	0.1	-0.2	-0.3	-0.3	-0.1	-0.1	0.0	0.1	0.3
7-Apr	-0.2	-0.2	-0.1	-0.1	-0.1	-0.1	0.1	-0.1	MS	MS	MS	0.2	0.3	0.2	0.0	-0.2	-0.2	-0.2	-0.3	-0.2	-0.2	-0.2	-0.2	0.1	-0.1	0.3
8-Apr	0.4	0.6	0.3	0.0	-0.5	-0.1	0.1	-0.2	-0.5	-0.4	-0.2	-0.4	-0.3	-0.8	-0.7	-0.7	-0.6	-0.8	-0.9	-0.6	-0.5	-0.7	-0.2	-0.4	-0.3	0.6
9-Apr	-0.5	-0.3	-0.1	-0.4	-0.4	-0.7	-0.6	-0.6	-0.4	-0.5	-0.8	-0.6	-0.7	-0.3	-0.2	-0.6	-0.8	-0.8	-0.3	-0.5	-0.2	-0.3	-0.4	-0.2	-0.5	-0.1
10-Apr	-0.4	-0.3	-0.3	-0.5	-0.4	-0.3	0.0	-0.3	-0.1	-0.2	0.0	-0.2	-0.3	-0.1	-0.2	-0.5	-0.4	-0.3	-0.4	-0.2	-0.1	0.2	0.3	0.5	-0.2	0.5
11-Apr	0.2	0.4	0.5	0.5	0.6	0.4	0.6	0.5	0.4	0.4	0.3	0.1	-0.6	-0.7	-0.6	-0.5	-0.6	-0.6	-0.5	-0.1	-0.6	-0.6	-0.4	-0.3	-0.1	0.6
12-Apr	-0.3	0.1	-0.1	-0.1	-0.3	-0.1	-0.1	0.2	0.2	0.3	0.0	0.1	-0.2	0.1	-0.3	-0.4	-0.7	-0.3	-0.2	0.2	-0.4	-0.2	-0.3	-0.4	-0.1	0.3
13-Apr	-0.3	-0.5	-0.3	-0.4	-0.3	-0.2	0.0	-0.2	-0.5	-0.2	-0.4	-0.3	-0.4	0.0	0.1	0.3	0.4	0.4	0.4	0.2	0.2	0.4	0.5	0.3	0.0	0.5
14-Apr	0.4	0.4	0.3	0.4	0.4	0.5	0.3	0.1	0.6	0.6	0.6	0.5	0.5	0.4	0.5	0.4	0.1	0.1	0.1	0.2	0.3	0.4	-0.3	-0.2	0.3	0.6
15-Apr	0.0	0.5	0.1	0.2	0.2	0.5	0.4	0.1	0.1	0.2	0.1	0.1	-0.2	0.4	0.3	0.2	-0.7	-0.7	-0.7	-0.6	-0.5	-0.7	-0.5	-0.4	-0.1	0.5
16-Apr	-0.3	0.0	0.2	0.4	0.0	0.1	0.0	0.4	0.2	0.1	0.1	0.4	0.2	0.2	0.3	0.0	0.4	0.5	0.5	0.3	0.3	0.2	0.1	0.2	0.2	0.5
17-Apr	0.3	0.3	0.3	0.3	0.2	0.2	0.4	0.5	0.2	0.2	0.3	0.7	0.6	0.3	0.4	0.3	0.6	0.3	0.4	0.2	0.2	0.2	0.3	0.2	0.3	0.7
18-Apr	0.3	0.3	0.3	0.3	0.3	0.3	0.3	0.2	0.6	0.3	0.5	0.3	0.4	0.5	0.4	0.3	0.3	0.3	0.2	0.1	0.2	0.1	0.1	0.2	0.3	0.6
19-Apr	0.1	0.1	0.0	0.0	0.0	0.1	0.1	0.2	0.0	0.2	0.3	0.2	0.6	0.2	0.3	0.4	0.3	0.5	0.3	0.4	0.2	0.3	0.1	0.3	0.2	0.6
20-Apr	0.2	0.1	0.2	0.3	0.1	0.2	0.2	0.2	0.1	-0.1	-0.2	-0.1	-0.4	-0.3	0.3	0.2	0.1	0.3	0.3	0.3	0.2	0.0	0.2	0.4	0.1	0.4
21-Apr	0.3	0.2	0.1	0.4	0.2	0.5	0.2	0.1	0.2	0.3	-0.1	0.1	-0.1	-0.1	-0.3	0.1	-0.1	-0.1	-0.3	-0.4	-0.2	-0.1	-0.2	-0.2	0.0	0.5
22-Apr	-0.3	-0.2	-0.1	-0.2	-0.2	-0.3	-0.2	0.3	0.4	0.4	0.2	0.1	0.4	0.6	0.4	0.4	0.3	0.5	0.5	0.4	0.5	0.4	0.4	0.3	0.2	0.6
23-Apr	0.5	0.7	0.7	0.6	0.5	0.4	0.6	0.4	0.5	0.6	0.7	0.3	AF	AF	AF	1.1	0.9	0.7	0.7	0.5	0.5	0.5	0.6	0.4	0.6	1.1
24-Apr	0.3	0.3	0.4	0.4	0.4	0.6	0.4	0.2	0.0	0.2	0.0	0.0	0.5	0.4	0.4	0.3	0.5	0.5	0.5	0.4	0.4	0.4	0.3	0.4	0.3	0.6
25-Apr	0.3	0.3	0.4	0.3	0.4	0.4	0.5	0.1	0.4	0.1	0.4	0.4	0.2	0.2	0.2	0.3	0.4	0.3	0.3	0.2	0.2	0.3	0.4	0.3	0.3	0.5
26-Apr	0.4	0.5	0.3	0.1	0.2	0.2	0.3	0.3	0.3	0.2	0.4	0.2	0.3	0.3	0.5	0.3	0.5	0.2	0.3	0.2	0.2	0.3	0.4	0.5	0.3	0.5
27-Apr	0.1	0.0	0.0	0.1	0.3	0.3	0.3	0.5	0.4	0.1	0.2	0.4	0.3	0.4	0.5	0.3	0.5	0.6	0.3	0.4	0.3	0.4	0.6	0.3	0.3	0.6
28-Apr	0.2	0.1	0.1	0.2	0.2	0.2	0.1	0.3	0.1	0.1	0.1	0.2	0.1	0.2	0.3	0.1	0.1	0.3	0.2	0.3	0.3	0.3	0.4	0.2	0.2	0.4
29-Apr	0.1	0.2	0.3	0.3	0.4	0.4	0.2	0.2	0.6	0.5	0.2	0.1	-0.3	-0.2	-0.2	0.2	-0.2	-0.2	0.1	-0.1	0.0	-0.1	0.0	0.1	0.1	0.6
30-Apr	0.2	0.3	0.2	0.3	0.4	0.3	0.3	0.4	0.2	0.5	0.3	0.3	0.2	0.0	0.2	0.1	0.1	0.2	-0.2	-0.2	-0.2	-0.3	-0.4	-0.3	0.1	0.5
	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.0	0.0	0.1	0.1	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.1	Diurnal Average	
	0.7	0.7	0.7	0.8	0.6	0.6	0.6	0.5	0.6	0.6	0.7	0.7	0.6	0.6	0.5	1.1	0.9	0.7	0.7	0.5	0.5	0.5	0.6	0.7	Diurnal Maximum	

AF - Analyzer Failure MS - Missing

Number of Exceedences (AAAQO): 1-hr: 0 24-hr: 0
Maximum Value: 4.2 km/h on Apr 8 15:00

Minimum Value: 0.2 km/h on Apr 29 22:00

Percentiles: P_1 = 0.3 P_{10} = 0.8 Q_1 = 1.3 Median = 1.8 Q_3 = 2.2 P_{90} = 2.7 P_{99} = 3.4

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-Apr	1.6	1.1	0.7	0.6	0.7	1.6	1.7	1.7	1.8	2.1	2.0	2.1	2.1	1.9	1.8	1.7	1.6	1.4	1.7	1.7	1.9	1.5	1.2	1.5	2.1
2-Apr	1.4	1.7	2.2	2.0	2.4	1.9	1.9	1.8	1.8	1.9	2.1	2.4	2.5	2.5	2.5	2.5	2.8	2.7	2.5	2.4	2.6	2.4	2.2	1.8	2.8
3-Apr	1.7	1.3	1.1	1.5	1.0	1.1	1.4	1.3	1.4	1.3	1.4	1.6	1.6	1.8	1.7	1.8	1.9	2.2	2.4	2.2	2.6	3.1	3.0	3.1	3.1
4-Apr	3.3	3.3	3.1	3.2	2.9	2.8	3.1	2.7	2.4	2.2	1.8	1.7	1.4	1.1	1.4	2.0	2.7	2.4	2.5	2.6	2.2	2.3	2.3	1.3	3.3
5-Apr	0.9	1.0	1.2	1.1	0.9	0.9	0.7	1.0	1.0	1.2	1.6	1.8	1.7	1.4	1.5	1.3	1.3	0.9	0.8	1.1	1.2	0.6	0.4	0.6	1.8
6-Apr	0.8	1.0	1.4	1.3	1.4	1.1	0.8	0.7	1.0	1.4	1.3	0.8	0.6	0.8	1.0	1.0	1.1	0.7	0.7	1.2	0.8	0.3	0.2	0.2	1.4
7-Apr	0.4	0.6	0.4	0.4	0.4	0.6	0.5	0.8	MS	MS	MS	1.4	1.5	1.5	1.6	1.9	1.6	1.1	1.8	1.1	1.2	1.7	1.0	0.8	1.9
8-Apr	1.3	1.2	0.7	0.7	1.7	0.9	0.7	1.4	2.1	2.3	2.8	2.5	3.5	4.1	4.2	3.3	3.8	4.2	3.9	3.3	3.3	3.2	1.7	2.3	4.2
9-Apr	3.0	1.8	1.1	2.0	2.8	2.7	3.3	2.9	3.2	3.6	2.9	1.8	2.5	2.2	2.6	3.4	3.3	2.9	2.5	2.2	0.8	1.0	1.0	1.3	3.6
10-Apr	1.3	1.8	1.9	1.6	1.6	1.9	2.0	1.9	2.2	2.1	2.2	2.2	2.3	2.3	2.5	2.2	2.0	2.0	1.9	2.0	1.8	1.7	1.6	1.4	2.5
11-Apr	1.5	1.7	1.5	1.8	1.8	1.8	1.7	1.6	1.7	1.9	1.8	2.0	2.6	2.9	3.2	3.3	3.4	3.2	3.0	2.9	3.1	2.8	2.3	1.0	3.4
12-Apr	0.7	0.5	0.4	0.4	0.7	0.8	1.0	1.3	1.4	1.4	1.8	2.0	1.9	1.9	2.0	2.5	2.2	2.2	2.3	2.0	2.7	2.5	3.0	2.6	3.0
13-Apr	2.5	2.3	1.6	1.4	1.2	1.4	1.5	1.8	1.9	2.0	2.1	2.1	2.0	2.1	2.0	1.8	1.8	1.6	1.6	1.6	1.5	1.9	2.0	1.6	2.5
14-Apr	1.9	1.6	1.5	1.5	1.7	1.6	1.7	1.5	1.9	2.0	2.1	2.2	2.2	2.4	2.0	1.6	1.4	1.6	1.7	1.8	2.0	1.5	1.7	1.8	2.4
15-Apr	1.6	1.9	1.5	1.5	1.6	1.9	1.8	1.5	1.4	1.2	1.4	1.6	2.1	2.2	2.3	2.4	3.4	3.4	3.2	3.0	3.2	3.1	2.3	2.0	3.4
16-Apr	1.6	1.5	1.7	1.6	1.3	1.3	1.4	1.9	2.0	2.0	1.6	2.2	2.4	2.4	2.4	2.7	2.6	2.6	2.4	2.3	2.2	1.6	2.3	2.2	2.7
17-Apr	2.1	2.0	1.8	1.8	1.7	1.7	2.2	2.3	1.9	2.6	2.8	2.6	2.9	2.9	2.6	2.9	3.0	3.0	2.7	2.5	2.0	1.9	1.7	1.3	3.0
18-Apr	1.8	1.9	1.5	1.6	2.0	2.1	2.0	1.9	2.3	2.1	2.2	2.4	2.5	2.3	2.1	2.0	2.1	1.5	0.8	0.5	0.7	0.8	0.4	0.6	2.5
19-Apr	1.4	0.9	0.3	0.3	0.4	0.4	0.6	0.9	1.2	1.6	2.0	2.1	2.0	1.7	1.9	1.9	2.3	2.4	2.3	2.4	2.1	1.9	1.4	0.8	2.4
20-Apr	0.6	0.4	0.5	0.6	0.4	0.6	0.7	0.9	1.2	1.3	1.6	1.9	2.0	2.0	2.1	2.1	1.4	1.2	0.9	0.8	0.6	0.6	0.5	0.5	2.1
21-Apr	0.5	0.7	0.6	1.0	0.7	1.0	0.6	0.9	1.1	1.6	2.0	2.4	1.9	1.6	1.4	2.0	1.8	1.9	1.9	1.7	1.7	2.0	1.7	0.8	2.4
22-Apr	0.7	0.5	0.4	0.5	0.6	0.8	0.9	1.1	1.3	1.6	1.8	1.8	2.1	2.5	2.4	2.5	2.5	2.6	2.4	1.9	1.8	2.0	1.8	1.6	2.6
23-Apr	1.5	2.1	2.2	1.9	2.0	1.9	1.8	1.8	2.2	2.2	2.7	2.9	AF	AF	AF	3.0	3.1	3.3	2.9	2.9	2.7	3.3	2.8	2.4	3.3
24-Apr	2.8	2.1	2.0	2.1	1.9	1.8	2.2	1.9	1.5	1.5	1.0	0.8	2.1	2.0	2.1	2.2	2.5	2.6	1.9	2.3	2.2	2.2	2.0	2.0	2.8
25-Apr	2.0	1.5	1.4	1.3	1.5	1.7	1.8	1.9	1.7	1.4	1.9	2.0	2.0	1.9	1.7	1.7	1.4	1.5	1.1	1.0	1.2	1.0	1.0	0.9	2.0
26-Apr	1.2	1.2	1.1	1.4	1.2	1.6	1.3	1.5	1.6	1.8	2.3	2.7	2.2	2.0	2.4	2.4	2.5	2.4	2.3	2.3	1.8	1.7	1.6	1.9	2.7
27-Apr	2.0	2.0	2.3	2.0	1.9	1.7	1.7	1.6	1.8	2.1	2.1	2.3	2.4	2.3	2.1	2.2	2.2	2.0	1.8	1.9	1.9	1.8	1.6	1.3	2.4
28-Apr	1.4	1.2	1.4	0.9	0.9	0.9	1.0	1.2	1.1	1.2	1.3	1.4	1.4	1.6	1.5	1.3	1.3	1.1	1.1	1.8	1.6	1.3	1.2	1.4	1.8
29-Apr	1.8	1.3	1.4	1.5	1.0	0.9	1.2	1.1	1.3	1.6	1.6	1.7	1.9	1.7	1.9	1.8	1.8	1.5	1.0	0.5	0.3	0.2	0.2	0.3	1.9
30-Apr	0.4	0.5	0.6	0.8	1.2	1.4	1.6	1.6	1.7	1.7	1.7	2.0	2.6	2.6	2.1	2.5	2.3	1.5	1.0	0.9	1.0	0.8	1.2	1.1	2.6
	3.3	3.3	3.1	3.2	2.9	2.8	3.3	2.9	3.2	3.6	2.9	2.9	3.5	4.1	4.2	3.4	3.8	4.2	3.9	3.3	3.3	3.3	3.0	3.1	
	Diurnal Maximum																								

AF - Analyzer Failure MS - Missing

Wood Buffalo Environmental Association

Summary of Hour Averages

Vertical Wind Speed 45 m (VW45m) - km/h

Mannix - April 2014

Maximum Value: 1.7 km/h on Apr 23 16:00

Maximum Daily Average: 0.8 km/h on Apr 23

Minimum Value: -1.2 km/h on Apr 8 18:00

Minimum Daily Average: -0.6 km/h on Apr 9

Maximum Diurnal Average: 0.4 km/h at hour 9

Minimum Diurnal Average: 0.1 km/h at hour 20

Monthly Average: 0.25 km/h

Percentiles: P_1 = -0.9 P_{10} = -0.4 Q_1 = -0.1 Median = 0.3 Q_3 = 0.6 P_{90} = 0.8 P_{99} = 1.1

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	Daily
	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24	Average	Maximum
1-Apr	-0.4	-0.2	0.4	0.1	-0.3	-0.3	-0.3	-0.1	0.2	0.1	-0.1	0.4	0.6	-0.2	0.4	0.0	0.7	0.0	-0.2	-0.1	0.0	0.1	0.1	0.4	0.1	0.7
2-Apr	0.0	-0.5	-0.3	-0.1	-0.3	0.2	-0.3	-0.3	-0.1	-0.5	-0.2	-0.4	0.2	-0.2	-0.6	-0.2	-0.1	-0.4	-0.7	-0.7	-0.7	-0.5	-0.4	-0.1	-0.3	0.2
3-Apr	0.0	0.0	-0.2	-0.4	-0.4	-0.1	0.1	-0.2	0.3	0.0	0.3	0.5	0.1	0.7	0.8	0.6	0.6	0.6	0.9	0.6	0.8	0.6	0.9	1.0	0.3	1.0
4-Apr	1.0	0.9	1.1	0.8	0.7	0.7	0.7	0.5	0.7	0.7	0.6	0.6	0.4	-0.1	-0.1	-0.3	-0.6	-0.6	-0.4	-0.7	-0.5	-0.5	-0.7	-0.5	0.2	1.1
5-Apr	-0.4	-0.4	-0.6	-0.6	-0.5	-0.2	-0.2	0.2	0.5	0.6	0.6	0.2	0.0	0.2	0.2	-0.1	0.4	0.1	0.2	0.2	0.1	0.2	0.0	0.3	0.0	0.6
6-Apr	0.5	0.4	0.4	0.4	0.5	0.4	0.3	0.2	0.2	0.4	0.4	0.1	0.1	0.1	0.6	0.6	0.5	0.3	-0.3	-0.2	-0.1	-0.1	0.0	0.1	0.2	0.6
7-Apr	0.1	0.0	-0.2	-0.3	-0.2	-0.1	0.0	-0.1	MS	MS	MS	0.2	0.3	0.4	0.2	-0.3	-0.2	-0.1	-0.5	-0.3	-0.2	-0.4	-0.3	0.2	-0.1	0.4
8-Apr	0.7	0.8	0.3	-0.1	-0.7	-0.1	0.1	-0.3	-0.5	-0.4	-0.4	-0.5	-0.4	-1.2	-1.1	-1.1	-0.7	-1.2	-1.1	-0.8	-0.8	-0.9	-0.4	-0.5	-0.5	0.8
9-Apr	-0.7	-0.6	-0.2	-0.4	-0.5	-0.7	-0.7	-0.7	-0.5	-0.8	-0.7	-0.5	-0.8	-0.4	-0.1	-0.8	-1.1	-1.0	-0.7	-0.6	-0.1	-0.4	-0.7	-0.6	-0.6	-0.1
10-Apr	-0.1	-0.1	-0.2	-0.3	-0.4	-0.4	0.0	-0.1	0.2	0.1	0.1	0.0	-0.2	0.0	-0.1	-0.4	-0.2	0.0	-0.2	0.1	0.2	0.4	0.5	0.7	0.0	0.7
11-Apr	0.4	0.6	0.8	0.7	1.1	0.7	1.1	0.8	0.5	0.2	0.8	0.4	-0.4	-0.6	-0.5	-0.5	-0.3	-0.8	-0.1	0.1	-0.6	-0.5	-0.3	-0.4	0.1	1.1
12-Apr	-0.4	0.0	-0.2	0.0	-0.3	0.1	0.0	0.2	0.5	0.6	0.2	0.4	-0.1	0.0	-0.2	-0.6	-0.7	-0.2	0.1	0.4	-0.2	-0.3	0.2	0.3	0.0	0.6
13-Apr	-0.4	0.0	-0.2	-0.2	-0.3	-0.5	0.2	-0.1	-0.5	-0.1	-0.5	-0.2	-0.5	0.1	0.4	0.6	0.8	0.6	1.0	0.4	0.5	0.7	0.9	0.6	0.1	1.0
14-Apr	0.8	0.7	0.6	0.7	0.8	0.7	0.7	0.3	1.1	1.1	1.5	1.0	1.1	0.7	0.7	0.9	0.4	0.2	0.3	0.3	0.3	0.6	0.0	0.0	0.6	1.5
15-Apr	0.2	0.8	0.2	0.3	0.4	0.8	0.5	0.5	0.5	0.2	0.3	0.3	0.1	0.7	0.7	0.5	-0.3	-0.5	-0.7	-0.4	-0.4	-0.5	-0.1	-0.4	0.2	0.8
16-Apr	-0.1	0.2	0.2	0.6	0.1	0.4	0.2	0.7	0.5	0.3	0.3	0.5	0.7	0.6	0.4	0.3	0.5	0.9	1.0	0.7	0.8	0.2	0.3	0.4	0.5	1.0
17-Apr	0.8	0.6	0.8	0.5	0.8	0.5	0.6	0.8	0.5	0.4	0.5	0.8	0.8	0.6	0.6	0.5	0.7	0.6	0.7	0.5	0.5	0.4	0.4	0.7	0.6	0.8
18-Apr	0.7	0.5	0.6	0.4	0.7	0.5	0.7	0.8	0.9	0.7	0.7	0.6	0.6	0.9	0.5	0.5	0.5	0.3	0.3	0.1	0.4	0.2	0.3	0.4	0.5	0.9
19-Apr	0.5	0.3	0.1	0.2	0.2	0.3	0.2	0.5	0.1	0.2	0.6	0.3	1.0	0.4	0.7	0.5	0.9	1.1	0.9	0.7	0.3	0.6	0.4	0.5	0.5	1.1
20-Apr	0.4	0.2	0.3	0.4	0.2	0.3	0.4	0.5	0.2	0.4	0.1	0.3	-0.4	-0.3	0.6	0.1	0.4	0.4	0.6	0.5	0.5	0.3	0.4	0.3	0.3	0.6
21-Apr	0.2	0.2	0.3	0.9	0.6	0.8	0.4	0.4	0.2	1.0	0.1	0.4	0.1	0.1	-0.3	0.5	-0.1	0.0	-0.1	-0.3	-0.1	0.0	-0.3	0.1	0.2	1.0
22-Apr	0.0	-0.1	0.0	0.0	0.0	-0.4	-0.2	0.7	1.0	0.8	0.4	0.1	0.3	1.1	0.6	0.6	0.6	0.8	0.8	0.7	0.7	0.4	0.7	0.5	0.4	1.1
23-Apr	0.6	1.0	0.8	0.9	0.7	0.3	0.6	0.6	0.7	0.8	0.7	0.5	AF	AF	AF	1.7	1.0	1.0	0.9	0.7	0.6	0.9	0.9	0.9	0.8	1.7
24-Apr	0.7	0.5	0.8	0.5	0.7	1.0	0.3	0.2	0.0	0.4	0.3	0.1	0.6	0.5	0.4	0.6	0.7	0.9	0.7	0.5	0.5	0.6	0.6	0.6	0.5	1.0
25-Apr	0.4	0.9	0.6	0.5	0.7	1.0	1.0	0.5	0.6	0.2	0.5	0.7	0.2	0.3	0.3	0.6	0.5	0.6	0.3	0.3	0.3	0.4	0.4	0.4	0.5	1.0
26-Apr	0.5	0.6	0.5	0.1	0.4	0.4	0.6	0.8	0.5	0.5	0.6	0.2	0.5	0.7	1.0	0.7	1.0	0.5	0.3	0.3	0.4	0.5	0.6	0.6	0.5	1.0
27-Apr	0.3	0.2	0.2	0.3	0.7	0.6	0.5	0.9	0.8	0.3	0.6	0.8	0.6	0.6	0.9	0.6	0.8	0.9	0.7	0.6	0.7	0.7	0.7	0.6	0.6	0.9
28-Apr	0.6	0.5	0.3	0.5	0.6	0.4	0.4	0.3	0.2	0.5	0.3	0.4	0.3	0.4	0.3	0.1	0.2	0.4	0.5	0.6	0.6	0.6	0.7	0.6	0.4	0.7
29-Apr	0.5	0.5	0.6	0.7	0.6	0.5	0.5	0.3	1.0	0.6	0.4	0.2	-0.3	-0.4	-0.2	0.5	0.1	0.0	0.2	0.0	0.1	0.1	0.3	0.3	0.3	1.0
30-Apr	0.5	0.9	0.7	0.6	0.7	0.6	0.7	0.5	0.2	0.5	0.5	0.6	0.4	0.3	0.5	0.3	0.4	0.4	-0.2	-0.3	-0.3	-0.4	-0.6	-0.5	0.3	0.9
	0.3	0.3	0.3	0.3	0.2	0.3	0.3	0.3	0.4	0.3	0.3	0.3	0.2	0.2	0.3	0.2	0.3	0.2	0.2	0.1	0.2	0.1	0.2	0.2	Diurnal Average	
	1.0	1.0	1.1	0.9	1.1	1.0	1.1	0.9	1.1	1.1	1.5	1.0	1.1	1.1	1.0	1.7	1.0	1.1	1.0	0.7	0.8	0.9	0.9	1.0	Diurnal Maximum	

AF - Analyzer Failure MS - Missing

Number of Exceedences (AAAQO): 1-hr: 0 24-hr: 0
Maximum Value: 4.6 km/h on Apr 8 18:00

Minimum Value: 0.2 km/h on Apr 7 01:00

Percentiles: P_1 = 0.3 P_{10} = 0.8 Q_1 = 1.3 Median = 1.9 Q_3 = 2.4 P_{90} = 2.8 P_{99} = 3.7

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-Apr	1.7	1.2	0.8	0.9	0.5	1.3	1.5	1.6	2.1	2.2	2.2	2.6	2.8	2.6	2.6	2.2	2.1	1.6	1.4	1.5	1.8	1.5	1.2	1.5	2.8
2-Apr	1.3	1.3	1.6	1.7	2.2	1.9	1.5	1.5	2.2	2.1	2.4	2.4	2.9	2.7	2.3	2.4	2.7	2.5	2.0	2.0	2.2	2.0	1.7	1.6	2.9
3-Apr	1.6	1.2	0.8	1.1	1.0	1.0	1.4	1.3	1.6	1.7	1.7	2.0	1.8	2.3	2.4	2.2	2.1	2.2	2.5	2.2	2.6	3.0	2.8	3.1	3.1
4-Apr	3.2	3.2	3.0	3.0	2.8	2.4	2.8	2.4	2.6	2.6	2.1	2.0	1.5	1.3	1.6	2.3	2.8	2.6	2.5	2.6	2.3	2.6	2.7	1.5	3.2
5-Apr	0.8	0.6	0.6	0.5	0.3	0.6	0.9	1.1	1.1	1.3	2.0	2.4	2.3	1.7	1.7	1.7	1.6	1.2	0.8	0.9	1.1	0.6	0.5	0.9	2.4
6-Apr	1.1	1.3	1.1	1.2	1.2	1.0	0.9	0.7	1.1	1.6	1.5	1.0	0.6	0.9	1.2	1.1	1.1	0.7	0.8	0.9	0.6	0.3	0.2	0.2	1.6
7-Apr	0.2	0.8	0.6	0.6	0.5	0.5	0.4	0.8	MS	MS	MS	1.5	1.7	1.7	1.8	2.1	2.0	1.2	1.7	0.8	1.1	1.4	0.8	0.5	2.1
8-Apr	1.4	1.3	0.7	1.0	1.7	0.9	1.0	1.3	2.3	2.5	3.0	2.7	3.7	4.3	4.6	3.6	4.4	4.6	4.2	3.4	3.5	3.4	2.0	2.5	4.6
9-Apr	3.1	1.7	1.3	2.0	2.9	2.9	3.5	3.1	3.4	3.7	3.1	2.2	3.0	2.8	3.2	3.8	3.6	3.2	2.6	2.1	0.9	0.8	1.1	1.6	3.8
10-Apr	1.4	1.7	1.9	1.6	1.3	2.2	2.3	2.0	2.6	2.6	2.5	2.5	2.5	2.6	2.6	2.3	1.9	1.9	1.7	2.1	1.9	1.9	1.6	1.4	2.6
11-Apr	1.6	1.8	1.8	1.9	2.1	2.0	1.9	1.9	2.0	2.1	2.3	2.1	2.3	2.5	2.8	3.1	3.2	2.8	3.2	2.8	2.7	2.5	2.0	1.1	3.2
12-Apr	0.7	0.6	0.3	0.3	0.2	0.5	0.9	1.5	1.6	1.6	2.1	2.5	2.3	2.4	2.6	3.0	2.7	2.7	2.2	2.1	2.4	2.5	3.3	2.8	3.3
13-Apr	2.6	2.2	1.7	1.5	1.2	1.4	1.8	1.9	2.3	2.6	3.0	2.8	2.6	2.8	2.5	2.3	2.2	1.8	1.7	1.4	1.6	2.1	2.5	1.9	3.0
14-Apr	2.0	1.6	1.1	1.3	1.3	1.2	1.6	1.6	2.4	2.3	2.7	2.8	2.9	2.6	2.4	1.9	1.4	1.3	1.7	1.9	2.2	1.7	1.4	1.4	2.9
15-Apr	1.6	2.1	1.4	1.5	1.3	1.9	1.8	1.5	1.4	1.2	1.6	1.8	2.2	2.4	2.4	2.6	3.4	3.0	2.8	2.7	2.9	2.9	2.3	1.9	3.4
16-Apr	1.7	1.7	1.7	1.9	1.4	1.5	1.6	2.1	2.1	2.1	2.1	2.7	2.8	2.7	2.7	2.8	2.5	2.7	2.5	2.5	2.5	2.2	2.3	1.9	2.8
17-Apr	1.8	1.8	1.7	1.5	1.6	1.7	2.1	2.2	2.2	2.5	3.0	3.2	3.0	3.2	2.9	2.8	3.0	3.1	2.7	2.5	2.2	2.0	1.7	1.2	3.2
18-Apr	1.8	1.9	1.8	1.7	2.0	2.2	2.2	2.2	2.4	2.1	2.3	2.5	2.5	2.4	2.2	2.0	2.0	1.6	1.0	0.5	0.9	0.7	0.4	0.7	2.5
19-Apr	0.8	1.0	0.5	0.2	0.3	0.4	0.7	1.1	1.4	1.6	2.1	2.3	2.3	1.9	2.3	2.2	2.5	2.6	2.6	2.5	1.9	1.7	1.3	1.0	2.6
20-Apr	0.7	0.5	0.5	0.6	0.4	0.6	0.8	1.0	1.2	1.6	2.0	2.6	2.5	2.6	2.6	2.5	1.8	1.4	0.9	0.9	0.5	0.3	0.5	0.3	2.6
21-Apr	0.4	0.7	0.7	0.7	0.6	0.9	0.8	0.9	1.2	2.2	2.8	2.9	2.4	2.3	1.8	2.3	2.0	1.9	1.8	1.5	1.7	2.3	1.7	0.6	2.9
22-Apr	0.6	0.4	0.4	0.4	0.5	0.9	0.9	1.1	1.4	2.1	2.3	2.3	2.4	3.0	2.5	2.5	2.6	2.8	2.7	2.4	2.3	2.4	2.3	2.0	3.0
23-Apr	1.9	2.6	2.5	2.3	2.3	2.2	2.4	2.3	2.7	2.5	2.9	3.1	AF	AF	AF	3.5	3.6	3.8	3.5	3.5	3.2	3.6	3.0	2.7	3.8
24-Apr	3.0	2.3	2.6	2.4	2.3	2.4	2.5	2.0	1.6	1.8	1.2	1.0	2.5	2.1	2.5	2.3	2.7	2.8	2.1	2.7	2.6	2.5	2.3	2.1	3.0
25-Apr	1.9	1.7	1.5	1.5	1.8	1.8	1.8	2.1	1.7	1.5	2.0	2.3	2.4	2.4	2.1	2.1	1.8	1.8	1.4	1.1	1.2	1.0	1.1	0.8	2.4
26-Apr	1.3	1.3	1.2	1.5	1.3	1.4	1.6	2.0	2.0	2.0	2.7	2.8	2.6	2.3	2.5	2.6	2.6	2.3	2.3	2.2	1.9	1.7	1.8	1.9	2.8
27-Apr	1.8	1.9	2.2	1.9	2.1	1.8	2.0	1.8	2.0	1.9	2.1	2.5	2.6	2.6	2.6	2.5	2.4	2.3	1.9	2.1	2.1	1.9	1.7	1.2	2.6
28-Apr	1.3	0.8	0.9	0.5	0.8	0.9	0.9	1.4	1.4	1.6	1.6	1.7	1.8	2.0	1.7	1.7	1.6	1.2	0.9	1.7	1.7	1.4	1.2	1.1	2.0
29-Apr	1.4	1.1	1.2	1.8	1.0	0.8	1.3	1.1	1.5	1.8	1.8	2.0	2.4	2.1	2.3	2.3	2.3	2.0	1.2	0.6	0.5	0.2	0.4	0.2	2.4
30-Apr	0.3	0.3	0.6	0.6	1.2	1.3	1.9	1.8	1.4	1.5	1.9	2.4	2.7	2.3	2.3	2.7	2.2	1.9	1.0	0.9	0.9	0.5	0.8	1.0	2.7
	3.2	3.2	3.0	3.0	2.9	2.9	3.5	3.1	3.4	3.7	3.1	3.2	3.7	4.3	4.6	3.8	4.4	4.6	4.2	3.5	3.5	3.6	3.3	3.1	
	Diurnal Maximum																								

AF - Analyzer Failure MS - Missing

Maximum Value: 1.6 km/h on Apr 23 16:00

Maximum Daily Average: 0.5 km/h on Apr 23

Minimum Value: -1.2 km/h on Apr 8 14:00

Minimum Daily Average: -0.5 km/h on Apr 8

Maximum Diurnal Average: 0.2 km/h at hour 15

Minimum Diurnal Average: -0.1 km/h at hour 22

Monthly Average: 0.10 km/h

Percentiles: P_1 = -0.8 P_{10} = -0.4 Q_1 = -0.1 Median = 0.1 Q_3 = 0.3 P_{90} = 0.6 P_{99} = 1.2

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	Daily
	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24	Average	Maximum
1-Apr	-0.7	-0.3	0.0	0.1	0.0	-0.2	0.0	0.2	0.5	0.1	-0.1	0.7	1.1	0.0	0.8	0.1	1.0	0.0	0.1	0.2	0.3	0.3	0.2	0.4	0.2	1.1
2-Apr	0.1	-0.2	0.2	0.2	0.2	0.4	-0.1	-0.1	0.1	-0.4	0.0	0.0	0.5	0.3	-0.3	0.1	0.5	0.1	-0.4	-0.4	-0.3	-0.1	-0.1	0.0	0.0	0.5
3-Apr	0.4	0.1	0.0	0.0	-0.3	0.4	0.3	0.0	0.5	0.2	0.2	0.5	0.2	0.5	0.9	0.4	0.2	0.5	0.4	-0.6	-0.3	-0.6	-0.5	-0.4	0.1	0.9
4-Apr	-0.4	-0.5	-0.5	-0.6	-0.5	-0.4	-0.8	-0.5	-0.3	0.0	0.2	0.3	0.2	-0.1	0.1	0.1	0.3	0.1	0.1	0.1	0.2	0.2	0.2	0.0	-0.1	0.3
5-Apr	-0.1	-0.1	-0.3	-0.3	-0.3	0.0	-0.3	0.1	0.5	1.0	0.8	0.2	0.1	0.3	0.1	-0.3	0.2	0.1	0.2	0.4	0.4	0.3	0.2	0.4	0.2	1.0
6-Apr	0.3	0.0	-0.3	-0.3	-0.1	-0.1	-0.1	0.1	-0.2	0.1	0.2	0.1	0.0	0.0	0.4	0.5	0.3	0.1	-0.1	0.1	0.2	0.1	0.0	0.1	0.1	0.5
7-Apr	0.1	-0.2	-0.1	0.0	-0.2	-0.1	0.0	0.0	MS	MS	MS	-0.3	-0.1	0.3	0.2	-0.2	-0.1	-0.1	-0.7	-0.5	-0.5	-0.5	-0.4	0.1	-0.2	0.3
8-Apr	0.4	0.7	0.0	-0.3	-0.7	-0.2	-0.2	-0.4	-0.6	-0.5	-0.5	-0.2	-0.1	-1.2	-0.9	-0.8	-0.5	-1.1	-1.1	-0.5	-0.8	-0.8	-0.3	-0.5	-0.5	0.7
9-Apr	-0.5	0.0	0.1	-0.3	-0.6	-0.8	-0.5	-0.2	0.3	0.2	0.2	-0.1	0.1	0.0	0.9	0.4	0.1	-0.1	-0.2	-0.1	0.0	-0.4	-0.8	-0.5	-0.1	0.9
10-Apr	0.3	0.3	0.0	-0.3	-0.3	-0.2	0.2	-0.2	0.5	0.2	0.3	0.2	0.0	0.1	0.1	-0.1	0.1	0.4	0.1	0.4	0.2	0.4	0.7	0.5	0.2	0.7
11-Apr	0.4	0.2	0.6	0.6	1.2	0.3	1.2	0.8	0.7	0.3	0.7	0.5	-0.1	0.0	0.0	0.2	0.3	-0.4	0.4	0.8	-0.1	-0.1	0.1	-0.3	0.4	1.2
12-Apr	-0.3	0.0	0.0	0.1	0.0	0.4	0.3	0.0	0.4	0.3	0.3	0.3	-0.1	0.2	0.1	-0.2	-0.3	0.3	0.7	0.4	0.1	0.0	0.9	1.2	0.2	1.2
13-Apr	0.0	0.7	0.2	0.0	-0.2	-0.2	0.6	0.3	-0.5	0.1	-0.2	-0.1	-0.7	0.5	0.6	0.7	0.4	0.3	0.7	-0.3	-0.1	-0.1	0.2	-0.1	0.1	0.7
14-Apr	-0.2	-0.1	-0.1	0.0	-0.1	0.0	0.1	-0.2	0.8	0.8	1.3	0.7	1.0	0.2	0.4	0.4	-0.2	-0.5	-0.6	-0.4	-0.3	0.4	0.5	0.2	0.2	1.3
15-Apr	0.3	0.8	0.4	0.4	0.6	0.9	0.7	0.7	0.7	0.1	0.1	0.4	0.3	0.9	1.2	0.7	0.2	0.1	-0.3	0.0	0.3	0.1	0.3	0.0	0.4	1.2
16-Apr	0.2	0.2	0.1	0.4	0.1	0.6	0.3	0.4	0.1	-0.3	0.3	0.4	0.2	0.0	-0.3	-0.5	-0.5	0.5	0.5	0.3	0.4	-0.5	-0.8	-0.6	0.1	0.6
17-Apr	-0.2	-0.1	0.2	-0.2	0.1	-0.1	-0.1	0.1	-0.2	-0.7	-0.7	0.2	-0.3	0.0	-0.2	-0.1	0.1	-0.3	0.3	-0.2	0.2	-0.2	-0.4	0.0	-0.1	0.3
18-Apr	-0.1	-0.2	0.3	-0.2	0.1	0.1	0.4	0.8	0.7	0.3	0.5	0.3	0.3	0.4	0.1	-0.1	-0.4	-0.2	0.0	-0.1	0.1	-0.1	0.0	0.0	0.1	0.8
19-Apr	-0.2	0.2	0.2	0.2	0.1	0.1	0.2	0.2	-0.2	-0.1	0.3	-0.1	0.7	0.1	0.6	0.0	0.5	0.6	0.6	-0.1	-0.4	-0.4	-0.1	0.0	0.1	0.7
20-Apr	0.1	0.1	0.1	0.3	0.2	0.1	0.1	0.3	0.0	0.4	0.2	0.7	-0.2	-0.3	0.5	0.2	0.5	0.4	0.5	0.3	0.1	0.2	0.1	-0.1	0.2	0.7
21-Apr	0.1	-0.3	-0.1	0.4	0.5	0.7	0.2	0.4	-0.2	1.4	0.3	0.8	0.5	0.5	0.0	0.6	0.0	0.1	0.3	0.1	0.1	0.2	0.0	0.3	0.3	1.4
22-Apr	0.4	0.2	0.4	0.3	0.3	0.2	0.2	0.7	1.2	1.0	0.7	0.0	0.1	1.1	0.7	0.3	0.2	0.3	0.8	0.6	0.6	0.1	0.0	0.4	0.4	1.2
23-Apr	0.7	0.7	0.7	0.6	0.3	0.2	0.3	0.7	0.5	0.5	0.3	-0.3	AF	AF	AF	1.6	1.0	0.9	0.7	0.2	0.0	0.0	-0.1	0.5	0.5	1.6
24-Apr	-0.1	0.1	0.5	0.0	0.4	0.7	0.1	-0.4	-0.4	0.3	0.3	0.1	0.2	0.1	-0.3	-0.2	0.1	0.2	0.2	-0.1	0.0	0.0	0.0	-0.2	0.1	0.7
25-Apr	0.3	0.6	0.3	0.1	0.5	0.7	0.8	0.0	0.2	-0.1	0.6	0.7	0.2	0.2	0.0	0.5	-0.1	0.2	0.1	-0.1	-0.2	0.0	0.2	0.3	0.2	0.8
26-Apr	0.4	0.5	0.0	-0.6	-0.3	-0.3	0.1	0.3	0.3	0.0	0.0	-0.3	-0.2	0.2	0.5	0.1	0.6	-0.2	-0.5	-0.6	-0.4	-0.4	-0.2	-0.3	-0.1	0.6
27-Apr	-0.7	-0.7	-0.7	-0.5	0.3	0.2	0.1	0.8	0.4	-0.5	-0.3	-0.2	-0.3	-0.3	0.1	-0.2	0.1	0.1	0.0	-0.3	0.0	0.0	-0.1	0.0	-0.1	0.8
28-Apr	-0.1	-0.2	-0.4	0.0	0.1	0.1	0.2	0.0	-0.2	0.5	0.0	0.2	0.0	-0.2	0.0	-0.3	-0.2	-0.1	0.0	0.0	-0.1	0.1	0.3	-0.1	0.0	0.5
29-Apr	-0.4	-0.1	-0.2	0.1	0.2	0.4	0.2	0.0	0.7	-0.1	-0.1	0.0	-0.3	-0.3	0.0	0.6	0.5	0.0	0.0	0.0	0.2	0.0	0.2	0.2	0.1	0.7
30-Apr	0.0	0.3	0.5	0.7	0.8	0.3	0.5	0.2	0.1	0.1	-0.1	0.4	0.0	-0.2	0.2	0.2	0.0	0.5	-0.2	-0.5	-0.6	-0.5	-0.7	-0.5	0.0	0.8
	0.0	0.1	0.1	0.0	0.1	0.1	0.2	0.2	0.2	0.2	0.2	0.2	0.1	0.1	0.2	0.2	0.2	0.1	0.1	0.0	0.0	-0.1	0.0	0.0	Diurnal Average	
	0.7	0.8	0.7	0.7	1.2	0.9	1.2	0.8	1.2	1.4	1.3	0.8	1.1	1.1	1.2	1.6	1.0	0.9	0.8	0.8	0.6	0.4	0.9	1.2	Diurnal Maximum	

AF - Analyzer Failure MS - Missing

Number of Exceedences (AAAQO): 1-hr: 0 24-hr: 1
Maximum Value: 4.8 km/h on Apr 23 22:00

Minimum Value: 0.1 km/h on Apr 6 23:00

Percentiles: P_1 = 0.2 P_{10} = 0.7 Q_1 = 1.2 Median = 2.0 Q_3 = 2.7 P_{90} = 3.1 P_{99} = 4.3

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-Apr	1.8	1.2	0.9	0.8	0.5	1.2	1.2	1.5	2.3	2.3	2.4	2.8	3.1	2.9	2.9	2.5	2.3	1.7	1.1	1.2	1.7	1.3	0.9	1.4	3.1
2-Apr	1.1	1.1	1.3	1.5	2.0	1.7	1.3	1.3	2.1	2.2	2.5	2.1	2.8	2.6	2.2	2.2	2.6	2.0	1.7	1.7	1.8	1.6	1.4	1.5	2.8
3-Apr	1.3	1.0	0.6	0.7	1.0	1.1	1.2	1.1	1.7	1.6	2.0	2.2	2.1	2.7	2.8	2.5	2.4	2.7	3.0	2.1	2.6	3.0	2.8	2.8	3.0
4-Apr	3.1	2.7	2.8	2.8	2.7	2.3	2.5	2.4	2.4	2.7	2.0	2.0	1.5	1.4	1.6	2.3	2.9	2.4	2.5	2.5	2.4	2.8	2.6	1.5	3.1
5-Apr	0.8	0.6	0.3	0.3	0.3	0.6	0.9	1.1	1.2	1.6	2.2	2.6	2.7	2.2	2.0	1.9	1.8	1.3	0.7	0.7	1.2	0.8	0.8	1.5	2.7
6-Apr	1.3	1.6	1.2	1.1	1.0	0.9	0.8	0.6	1.0	1.5	1.8	1.2	0.4	0.9	1.3	1.2	1.2	0.9	0.7	0.8	0.6	0.3	0.1	0.2	1.8
7-Apr	0.3	0.9	0.8	0.7	0.5	0.7	0.4	0.5	MS	MS	MS	1.5	2.0	2.0	2.2	2.3	2.2	1.2	1.6	0.9	1.1	1.1	0.9	0.6	2.3
8-Apr	1.1	1.2	0.8	1.0	1.8	1.1	1.3	1.2	1.9	2.1	3.0	3.0	4.3	3.8	4.3	3.9	4.4	4.4	4.1	3.4	3.3	3.3	2.2	2.4	4.4
9-Apr	3.1	1.8	1.4	2.2	2.7	2.8	3.6	3.6	3.7	3.8	3.2	2.2	3.1	3.0	3.6	3.7	3.7	3.2	2.5	2.1	1.2	0.8	1.1	1.9	3.8
10-Apr	1.4	1.6	1.7	1.5	1.4	2.2	2.4	1.9	2.6	2.7	2.7	2.8	2.8	2.8	2.8	2.0	1.9	1.8	1.4	1.9	1.7	1.6	1.4	1.2	2.8
11-Apr	1.9	2.3	1.9	2.0	2.6	2.6	2.4	2.1	2.4	2.4	2.7	2.2	1.8	2.3	2.3	2.8	2.9	2.5	3.1	2.8	2.3	1.9	1.2	1.1	3.1
12-Apr	0.8	0.6	0.2	0.3	0.2	0.5	0.8	1.3	1.6	1.7	2.4	2.7	2.6	2.8	3.0	3.1	2.8	2.8	2.0	1.8	2.0	2.2	3.0	2.9	3.1
13-Apr	2.3	2.1	1.7	1.6	1.1	1.1	1.8	2.1	2.5	3.0	3.3	3.3	2.9	3.2	2.7	2.7	2.5	2.3	2.0	1.3	1.2	1.7	2.2	1.5	3.3
14-Apr	1.5	1.3	1.1	1.1	1.1	1.1	1.6	1.5	2.4	2.3	2.9	3.0	3.2	2.8	2.5	2.0	1.4	1.5	1.8	2.4	3.2	2.2	1.4	1.2	3.2
15-Apr	1.7	2.4	1.3	1.3	1.3	1.7	1.8	1.3	1.4	1.1	2.0	2.2	2.3	2.5	2.6	2.6	3.1	2.6	2.3	2.2	2.8	2.5	2.1	1.7	3.1
16-Apr	1.6	1.9	1.9	2.2	1.7	1.7	1.8	2.6	2.9	3.1	2.3	3.1	3.2	2.9	2.7	2.8	2.6	2.9	2.9	3.1	3.0	2.3	2.4	2.0	3.2
17-Apr	1.9	1.8	2.1	1.6	1.7	1.7	2.0	2.2	2.2	2.6	3.0	3.2	3.2	3.6	3.3	3.1	3.2	3.1	3.0	2.6	2.7	2.3	1.8	1.6	3.6
18-Apr	2.0	2.2	2.5	2.5	3.1	3.0	2.8	2.9	3.0	2.9	2.9	3.0	3.0	2.9	2.6	2.4	1.9	1.5	0.8	0.5	1.1	0.7	0.3	0.4	3.1
19-Apr	0.6	1.0	0.6	0.3	0.2	0.3	0.7	1.0	1.3	1.9	2.5	2.5	2.8	2.4	2.9	2.7	3.1	3.0	3.1	2.5	2.0	1.8	1.3	1.1	3.1
20-Apr	0.7	0.9	1.1	1.0	1.0	1.0	0.8	0.9	1.1	1.7	2.2	2.9	2.7	3.0	2.7	2.8	2.0	1.4	1.3	1.4	0.7	0.4	0.6	0.4	3.0
21-Apr	0.6	0.9	0.7	0.6	0.5	0.8	0.9	0.6	1.1	2.1	3.1	3.3	2.6	2.7	1.8	2.4	2.1	1.9	1.6	1.4	1.9	2.2	1.2	0.7	3.3
22-Apr	0.7	0.5	0.4	0.4	0.7	0.9	0.8	1.2	1.5	2.3	2.5	2.5	2.7	3.5	2.9	3.1	3.3	3.6	3.0	2.5	2.9	3.2	3.1	2.5	3.6
23-Apr	2.4	2.9	3.0	2.9	2.9	2.6	2.8	2.8	3.2	3.5	3.9	4.2	AF	AF	AF	4.0	3.9	4.3	4.3	4.5	4.2	4.8	4.2	3.4	4.8
24-Apr	3.6	2.8	3.0	3.3	2.7	2.6	3.1	2.6	2.3	2.1	1.4	1.2	2.7	2.1	2.4	2.2	3.2	2.8	2.3	3.1	3.1	3.2	3.2	3.2	3.6
25-Apr	2.8	2.1	1.9	2.3	2.5	2.3	2.2	2.0	2.0	1.9	2.3	2.5	2.5	2.8	2.5	2.4	1.9	1.9	1.3	1.0	1.2	0.8	1.0	0.6	2.8
26-Apr	1.1	1.2	0.9	1.6	1.4	1.3	1.6	2.1	2.1	2.1	2.7	3.0	2.7	2.7	2.8	2.7	3.1	2.4	2.1	2.1	1.9	1.7	1.7	2.0	3.1
27-Apr	1.7	1.9	2.1	1.9	2.5	2.6	2.7	2.5	2.7	2.0	2.1	2.5	2.5	2.5	2.7	2.7	2.2	2.2	1.9	1.8	1.8	1.6	1.5	1.1	2.7
28-Apr	1.0	1.0	1.0	0.5	0.6	0.8	0.8	1.3	1.3	1.8	1.8	1.9	1.9	2.0	2.0	2.0	2.2	1.3	1.2	2.1	1.5	1.3	1.0	1.1	2.2
29-Apr	1.2	1.0	1.1	2.1	0.8	0.6	1.0	1.0	1.5	1.6	1.8	2.3	2.6	2.3	2.6	2.7	2.7	2.0	1.3	0.7	0.6	0.2	0.3	0.2	2.7
30-Apr	0.3	0.3	0.4	0.4	0.6	0.7	1.2	1.3	1.0	1.1	1.7	2.5	2.9	2.4	2.1	2.9	2.1	1.8	1.0	1.0	0.9	0.5	0.7	1.1	2.9
	3.6	2.9	3.0	3.3	3.1	3.0	3.6	3.6	3.7	3.8	3.9	4.2	4.3	3.8	4.3	4.0	4.4	4.4	4.3	4.5	4.2	4.8	4.2	3.4	
	Diurnal Maximum																								

AF - Analyzer Failure MS - Missing

Wood Buffalo Environmental Association

Summary of Hour Averages

Vertical Wind Speed 90 m (VW90m) - km/h

Mannix - April 2014

Maximum Value: 5.0 km/h on Apr 9 10:00

Maximum Daily Average: 3.1 km/h on Apr 9

Minimum Value: -1.6 km/h on Apr 17 00:00

Minimum Daily Average: -0.7 km/h on Apr 17

Maximum Diurnal Average: 0.5 km/h at hour 15

Minimum Diurnal Average: 0.1 km/h at hour 20

Monthly Average: 0.28 km/h

Percentiles: P_1 = -1.3 P_{10} = -0.8 Q_1 = -0.4 Median = 0.0 Q_3 = 0.6 P_{90} = 1.5 P_{99} = 4.1

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	Daily
	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24	Average	Maximum
1-Apr	0.5	0.4	0.3	0.8	1.8	0.0	0.0	0.1	0.3	0.1	-0.1	1.0	2.1	0.5	1.5	0.9	1.2	-0.1	0.0	0.0	-0.1	-0.3	-0.3	0.0	0.4	2.1
2-Apr	-0.1	-0.3	0.2	0.2	0.3	0.3	0.0	0.0	0.2	-0.3	0.7	0.4	0.8	0.5	-0.3	0.2	0.8	0.3	-0.4	-0.3	-0.1	0.2	0.0	-0.1	0.1	0.8
3-Apr	0.5	0.3	0.2	0.3	-0.3	-0.2	0.4	0.0	0.5	0.5	-0.1	0.2	-0.2	-0.2	0.3	-0.1	-0.5	-0.4	-0.4	-1.3	-1.1	-1.4	-0.9	-0.5	-0.2	0.5
4-Apr	-0.4	-0.4	-0.4	-0.5	-1.2	-1.0	-1.0	-0.6	-0.3	0.1	0.7	0.6	0.4	1.0	2.1	2.9	4.5	3.5	3.7	4.0	3.4	3.4	3.4	2.5	1.3	4.5
5-Apr	2.5	1.8	2.3	2.2	2.1	1.9	1.1	0.5	0.6	1.2	1.0	0.6	0.3	0.2	-0.1	-0.6	-0.2	-0.2	-0.1	0.2	0.0	-0.1	-0.1	-0.1	0.7	2.5
6-Apr	0.1	-0.6	-0.9	-0.7	-0.2	-0.4	0.2	0.4	-0.2	-0.2	0.2	0.3	0.0	-0.1	0.5	0.3	-0.1	0.1	1.1	0.1	0.1	0.1	0.2	0.0	0.0	1.1
7-Apr	0.2	0.6	1.8	1.9	1.5	1.3	0.8	1.1	MS	MS	MS	-0.7	-0.6	-0.1	0.0	1.0	1.2	0.7	1.0	0.7	0.6	0.9	0.5	0.8	0.7	1.9
8-Apr	1.3	1.6	0.8	0.9	1.6	0.9	0.7	1.0	1.2	1.1	2.4	2.5	4.2	3.5	4.0	2.9	3.1	2.7	3.0	3.8	3.2	2.8	2.9	2.4	2.3	4.2
9-Apr	3.4	3.6	2.6	2.3	3.0	2.6	3.2	3.6	4.6	5.0	4.2	2.1	3.3	2.2	3.8	4.7	4.7	4.3	4.0	1.6	0.7	1.8	1.6	2.1	3.1	5.0
10-Apr	1.4	0.5	-0.1	-0.5	-0.4	-0.2	0.0	-0.4	0.2	0.1	0.2	0.0	-0.3	-0.1	0.0	-0.2	-0.1	0.2	-0.1	0.2	0.0	-0.1	0.0	-0.2	0.0	1.4
11-Apr	-0.3	-0.4	0.0	-0.2	0.4	-0.4	0.5	0.2	0.0	-0.5	-0.1	0.1	-0.1	0.1	0.2	0.7	0.5	-0.2	0.9	1.2	0.0	0.1	0.2	0.3	0.1	1.2
12-Apr	0.2	1.1	1.3	1.3	1.5	1.7	1.6	0.4	0.5	0.3	1.0	1.0	0.4	1.3	1.4	1.2	1.1	1.3	0.6	0.0	0.0	-0.2	1.3	1.6	0.9	1.7
13-Apr	0.0	1.2	0.7	0.5	0.6	0.6	1.2	0.7	0.1	1.0	0.8	0.5	-0.1	0.9	0.2	0.6	-0.1	-0.4	-0.1	-0.5	0.1	0.4	0.6	0.5	0.4	1.2
14-Apr	0.4	0.4	0.2	-0.2	0.0	-0.1	-0.3	-0.3	1.0	1.1	1.7	1.4	1.6	0.4	0.6	0.6	-0.3	-1.2	-1.3	-1.2	-1.0	-0.3	-0.1	-0.2	0.1	1.7
15-Apr	-0.3	-0.1	-0.2	-0.2	-0.2	-0.2	-0.3	0.0	-0.1	-0.4	-0.3	-0.2	0.0	0.0	0.7	0.0	0.5	0.5	-0.2	0.0	0.5	0.5	0.6	0.0	0.0	0.7
16-Apr	-0.1	-0.4	-0.5	-0.3	-0.4	0.1	-0.1	-0.4	-0.6	-1.1	-0.2	-0.5	-0.7	-0.3	-0.9	-1.2	-1.0	-0.3	-0.4	-0.5	-0.4	-0.9	-1.6	-1.6	-0.6	0.1
17-Apr	-0.9	-0.9	-0.3	-0.8	-0.4	-0.6	-0.7	-0.4	-0.8	-1.0	-0.9	-0.2	-1.0	-0.8	-1.0	-1.0	-0.7	-1.1	-0.4	-1.0	-0.5	-1.0	-1.1	-0.5	-0.7	-0.2
18-Apr	-0.9	-0.9	-0.5	-1.0	-0.8	-0.7	-0.4	-0.1	-0.3	-0.5	-0.4	-0.6	-0.5	-0.4	-0.6	-0.8	-0.7	-0.1	0.0	0.0	-0.1	0.0	0.3	0.3	-0.4	0.3
19-Apr	-0.1	0.7	0.4	0.5	0.4	0.5	0.5	0.3	-0.2	-0.5	-0.3	-0.8	-0.1	-0.5	-0.1	-0.6	-0.4	-0.2	-0.3	-0.7	-1.0	-1.0	-0.1	0.4	-0.1	0.7
20-Apr	0.5	0.1	-0.2	-0.1	-0.1	-0.3	-0.2	0.2	0.2	0.5	0.8	1.6	1.1	0.9	0.3	-0.1	0.0	-0.2	0.1	-0.2	0.0	1.2	0.8	0.7	0.3	1.6
21-Apr	0.9	0.5	0.4	1.0	1.0	1.4	0.9	0.6	-0.2	1.6	1.3	1.4	0.8	1.6	0.7	0.5	-0.3	-0.1	0.1	0.0	-0.3	-0.4	-0.6	-0.1	0.5	1.6
22-Apr	0.0	0.0	0.1	0.0	0.1	-0.2	-0.2	0.6	1.2	1.2	1.4	0.1	-0.6	0.1	-0.5	-0.5	-0.8	-0.8	-0.3	-0.3	-0.1	-0.7	-0.9	-0.4	-0.1	1.4
23-Apr	0.0	-0.3	-0.5	-0.2	-0.7	-0.8	-0.6	-0.1	-0.4	-0.4	-0.8	-1.2	AF	AF	AF	0.2	-0.4	-0.4	-0.5	-1.0	-1.0	-1.1	-1.0	-0.4	-0.6	0.2
24-Apr	-0.8	-0.7	-0.4	-0.9	-0.3	-0.2	-0.7	-1.0	-1.0	-0.1	0.5	0.3	-0.5	0.0	-0.3	-0.9	-0.6	-0.5	-0.4	-1.0	-0.7	-0.8	-0.7	-1.1	-0.5	0.5
25-Apr	-0.9	0.0	-0.4	-0.6	-0.2	0.2	0.1	-0.4	-0.2	-0.6	-0.2	0.1	-0.2	-0.3	-0.5	0.2	-0.1	0.2	0.3	-0.3	-0.5	0.4	0.5	0.7	-0.1	0.7
26-Apr	1.0	1.0	0.1	-1.2	-0.7	-0.4	0.3	0.3	0.3	0.2	0.0	-1.1	-0.8	-0.4	-0.5	-0.7	-0.4	-1.0	-1.2	-1.2	-0.9	-0.6	-0.1	-0.4	-0.4	1.0
27-Apr	-1.5	-1.4	-1.4	-1.2	-0.4	-0.6	-0.7	-0.1	-0.3	-1.0	-0.5	-0.1	0.1	-0.2	0.4	0.0	0.2	0.4	0.1	0.0	0.6	0.4	0.1	0.3	-0.3	0.6
28-Apr	0.2	-0.3	-0.7	0.2	0.3	0.3	0.6	0.2	-0.2	0.4	0.1	0.0	-0.3	-0.6	-0.4	-0.7	-0.8	-0.2	-0.4	-0.7	0.2	0.4	0.8	-0.1	-0.1	0.8
29-Apr	-0.6	-0.2	-0.4	0.2	0.5	0.7	0.7	0.2	0.7	-0.5	-0.5	0.1	0.7	1.1	1.5	1.3	1.4	0.5	0.2	0.3	0.5	0.0	0.5	0.4	0.4	1.5
30-Apr	0.4	0.7	1.0	1.1	1.6	1.3	1.4	0.7	0.4	0.3	0.3	1.1	1.0	1.1	1.1	1.3	1.0	1.3	1.0	0.5	0.5	0.9	0.9	1.8	0.9	1.8
	0.2	0.2	0.2	0.2	0.3	0.3	0.3	0.2	0.3	0.3	0.4	0.3	0.4	0.4	0.5	0.4	0.4	0.3	0.3	0.1	0.1	0.1	0.3	0.3	Diurnal Average	
	3.4	3.6	2.6	2.3	3.0	2.6	3.2	3.6	4.6	5.0	4.2	2.5	4.2	3.5	4.0	4.7	4.7	4.3	4.0	4.0	3.4	3.4	3.4	2.5	Diurnal Maximum	

AF - Analyzer Failure MS - Missing

Number of Exceedences (AAAQO): 1-hr: 0 24-hr: 0
Maximum Value: 4.6 km/h on Apr 8 17:00

Minimum Value: 0.2 km/h on Apr 7 00:00

Percentiles: P_1 = 0.3 P_{10} = 0.7 Q_1 = 1.2 Median = 1.9 Q_3 = 2.5 P_{90} = 2.9 P_{99} = 4.1

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-Apr	1.9	1.3	1.0	1.1	0.7	1.3	1.1	1.4	2.2	2.3	2.6	3.2	3.1	3.0	3.3	2.6	2.5	1.8	1.0	1.2	1.7	1.3	0.7	1.5	3.3
2-Apr	1.1	1.1	1.3	1.6	2.1	1.8	1.4	1.3	2.2	2.2	2.5	2.2	2.9	2.7	2.3	2.2	2.7	2.0	1.8	1.8	1.9	1.7	1.3	1.4	2.9
3-Apr	1.4	1.0	0.6	0.7	1.2	1.1	1.2	1.0	1.7	1.6	2.0	2.0	1.9	2.4	2.4	2.3	2.1	2.2	2.4	2.3	2.8	2.9	2.8	2.8	2.9
4-Apr	3.1	2.6	2.8	2.7	2.7	2.1	2.2	2.2	2.4	2.5	2.1	1.9	1.5	1.6	1.5	2.3	2.7	2.4	2.4	2.4	2.3	2.6	2.6	1.5	3.1
5-Apr	0.9	0.8	0.4	0.3	0.4	0.9	0.9	1.2	1.3	1.5	2.3	2.7	2.8	2.3	2.1	1.8	1.7	1.2	0.7	0.7	1.3	0.8	0.8	1.0	2.8
6-Apr	1.2	1.4	1.0	0.8	0.7	0.7	0.7	0.6	0.9	1.3	1.7	1.1	0.4	0.9	1.2	1.0	0.9	0.9	0.8	0.9	0.7	0.3	0.3	0.2	1.7
7-Apr	0.2	1.1	1.0	0.8	0.6	0.8	0.5	0.6	MS	MS	MS	1.3	1.5	1.7	2.1	2.5	2.4	1.4	1.7	1.0	1.3	1.2	0.9	0.6	2.5
8-Apr	1.1	1.1	0.9	1.2	2.0	1.3	1.5	1.3	2.0	2.3	3.3	3.3	4.5	4.2	4.5	4.2	4.6	4.6	4.1	3.8	3.5	3.6	2.5	2.7	4.6
9-Apr	3.3	1.8	1.6	2.5	3.0	3.0	3.8	3.7	3.7	3.6	3.3	2.3	3.0	2.9	3.6	3.5	3.4	3.0	2.4	2.9	1.5	1.0	1.2	2.0	3.8
10-Apr	1.7	1.6	1.8	1.5	1.4	2.3	2.4	2.0	2.6	2.9	2.9	2.9	2.9	3.0	2.8	2.0	1.9	1.8	1.4	1.9	1.6	1.6	1.3	1.1	3.0
11-Apr	1.6	1.7	1.6	1.8	2.2	2.0	1.9	2.0	2.2	2.4	2.4	2.1	1.7	2.3	2.4	3.0	3.0	2.7	3.5	3.1	2.4	1.9	1.0	1.2	3.5
12-Apr	0.8	0.7	0.4	0.3	0.2	0.4	0.7	1.3	1.5	1.6	2.4	2.7	2.8	3.0	3.1	3.0	2.9	2.9	2.0	1.8	1.9	2.2	3.3	3.0	3.3
13-Apr	2.3	2.3	1.8	1.8	1.2	1.0	1.7	2.1	2.5	3.2	3.6	3.4	3.2	3.5	2.7	2.8	2.2	1.8	1.7	1.4	1.1	1.6	2.0	1.4	3.6
14-Apr	1.3	1.2	0.9	0.9	0.7	0.7	1.4	1.4	2.3	2.3	2.9	3.2	3.5	2.9	2.6	1.9	1.3	1.5	1.9	2.1	2.4	1.9	1.4	1.4	3.5
15-Apr	1.8	2.3	1.2	1.3	1.3	1.5	1.7	1.3	1.3	1.1	1.7	2.3	2.5	2.6	2.9	2.7	3.3	2.8	2.3	2.1	2.9	2.7	2.3	1.9	3.3
16-Apr	1.7	2.0	2.0	2.3	1.6	1.7	1.9	2.2	2.3	2.1	2.2	2.6	2.8	2.9	2.5	2.7	2.5	2.5	2.5	2.5	2.5	2.4	2.6	2.0	2.9
17-Apr	2.0	1.7	1.9	1.6	1.8	1.7	2.0	2.1	2.1	2.6	3.1	3.1	3.1	3.2	3.0	2.7	2.9	2.9	2.6	2.4	2.2	2.2	1.7	1.5	3.2
18-Apr	1.9	2.0	1.9	1.6	1.9	2.1	2.2	2.3	2.4	2.2	2.2	2.2	2.2	2.2	2.1	2.1	2.0	1.6	0.8	0.3	1.0	0.5	0.3	0.3	2.4
19-Apr	0.5	0.9	0.7	0.3	0.3	0.2	0.6	0.9	1.3	1.7	2.1	2.1	2.3	2.0	2.2	2.3	2.4	2.4	2.3	2.2	2.1	1.7	1.2	1.1	2.4
20-Apr	0.7	0.8	0.6	0.5	0.6	0.5	0.7	0.8	1.1	1.7	2.3	2.7	2.8	3.1	2.9	3.0	2.0	1.3	1.0	0.9	0.7	0.4	0.7	0.3	3.1
21-Apr	0.8	1.0	0.9	0.6	0.5	0.9	0.9	0.6	1.0	2.2	3.0	3.2	2.9	2.7	1.7	2.5	2.2	2.0	1.6	1.5	2.2	2.2	1.2	0.8	3.2
22-Apr	0.7	0.7	0.5	0.5	0.8	1.1	0.8	1.1	1.6	2.5	2.6	2.6	2.6	3.0	2.7	2.7	2.5	2.8	2.7	2.3	2.7	2.8	2.6	2.2	3.0
23-Apr	2.3	2.6	2.9	2.6	2.6	2.6	2.7	2.5	2.8	2.8	2.8	3.0	AF	AF	AF	3.3	3.4	3.9	3.5	3.6	3.4	3.6	3.3	2.7	3.9
24-Apr	2.9	2.4	2.6	2.4	2.3	2.4	2.4	2.0	1.7	2.0	1.4	1.4	2.5	2.1	2.5	2.2	2.3	2.4	1.9	2.4	2.4	2.4	2.3	2.1	2.9
25-Apr	1.6	1.7	1.6	1.7	1.9	1.8	2.1	2.0	2.0	1.6	2.3	2.5	2.7	2.7	2.2	2.3	1.9	1.9	1.4	1.0	1.2	0.8	1.1	0.5	2.7
26-Apr	1.1	1.1	0.8	1.6	1.3	1.2	1.6	2.0	2.2	2.2	2.9	2.8	2.6	2.6	2.6	2.5	2.6	2.2	2.1	2.1	1.8	1.7	1.7	2.1	2.9
27-Apr	1.7	1.8	2.1	2.0	2.4	1.9	2.1	2.0	2.1	2.0	2.3	2.5	2.5	2.5	2.6	2.5	2.2	2.1	1.7	1.8	1.9	1.6	1.4	1.1	2.6
28-Apr	0.9	0.8	0.8	0.4	0.7	0.8	0.9	1.4	1.3	1.8	1.9	1.8	1.7	1.7	1.6	1.7	1.7	1.2	1.3	2.0	1.5	1.3	1.0	0.8	2.0
29-Apr	1.1	0.8	0.9	2.1	0.7	0.6	1.0	0.9	1.5	1.2	1.7	2.3	2.9	2.4	2.7	2.8	2.8	2.0	1.5	0.8	0.7	0.3	0.3	0.2	2.9
30-Apr	0.3	0.3	0.4	0.4	0.5	0.5	0.9	1.0	0.9	1.0	1.6	2.7	2.8	2.4	2.2	3.1	2.1	1.9	1.2	1.3	1.0	0.8	0.8	1.2	3.1
	3.3	2.6	2.9	2.7	3.0	3.0	3.8	3.7	3.7	3.6	3.6	3.4	4.5	4.2	4.5	4.2	4.6	4.6	4.1	3.8	3.5	3.6	3.3	3.0	
	Diurnal Maximum																								

AF - Analyzer Failure MS - Missing

Wood Buffalo Environmental Association

SO_2 Calibration Report

Station Information

Calibration Date	April 22, 2014	Previous Calibration	March 18, 2014
Station Name	Mannix	Station Number	AMS 5
Reason:	Routine		
Start Time (MST)	9:05	End Time (MST)	11:46
Barometric Pressure	729 mmHg	Station temp.	22 Deg C
Calibrator Make/Model	Sabio 4010	Serial Number	11061107
Cal Gas Concentration	51 ppm	Cal Gas Expiry Date	29-May-14
Gas Cert Reference	LL107934		
DACS make/model	Campbell Scientific CR3000	DACS serial No.	2633
DACS voltage range		DACS channel #	N/A

Analyzer Information

	Before	*After*		*Before*	*After*
Analyzer Range (ppb)	1000	1000	PMT voltage	-645	-645
Analyzer Range (mv)	5000	5000	Lamp voltage	805	805
Calculated slope	0.995489	0.991014	Chamber temp.	44.4	44.4
Calculated intercept	0.021936	-0.046686	Pressure (mmHg)	695.2	696.2
Analyzer Background	16.2	16.1	Flow (lpm)	0.500	0.500
Analyzer Coefficient	0.795	0.790	Intensity	25xxx	25xxx

Analyzer make	TEI 43C	Analyzer serial #	613516797

Calibration Data

Set Point	Total flow rate (cc/min)	Source gas flow rate (cc/min)	Calculated concentration (ppb) (Cc)	Indicated concentration (ppb) (Ic)	Correction factor (Cc/Ic)
as found zero	5000	0.0	0.0	0.5	NA
as found span	5000	58.8	599.8	605.2	0.991
calibrator zero	5000	0.0	0.0	0.5	NA
high point	5000	58.8	599.8	605.0	0.991
second point	5000	29.4	299.9	303.8	0.987
third point	5000	14.7	149.9	150.0	1.000
calibrator zero					
as left zero	5000	0.0	0.0	0.7	0.000
as left span	5000	58.8	599.8	604.0	0.993
				Average Correction Factor	0.993

Corrected As found	604.7	Previous response	602.5	% change	-0.4%

Notes:

As found zero used as calibrator zero. Small adjustment to span, filter changed after third point

Calibration Performed By: Ryan Power

Wood Buffalo Environmental Association

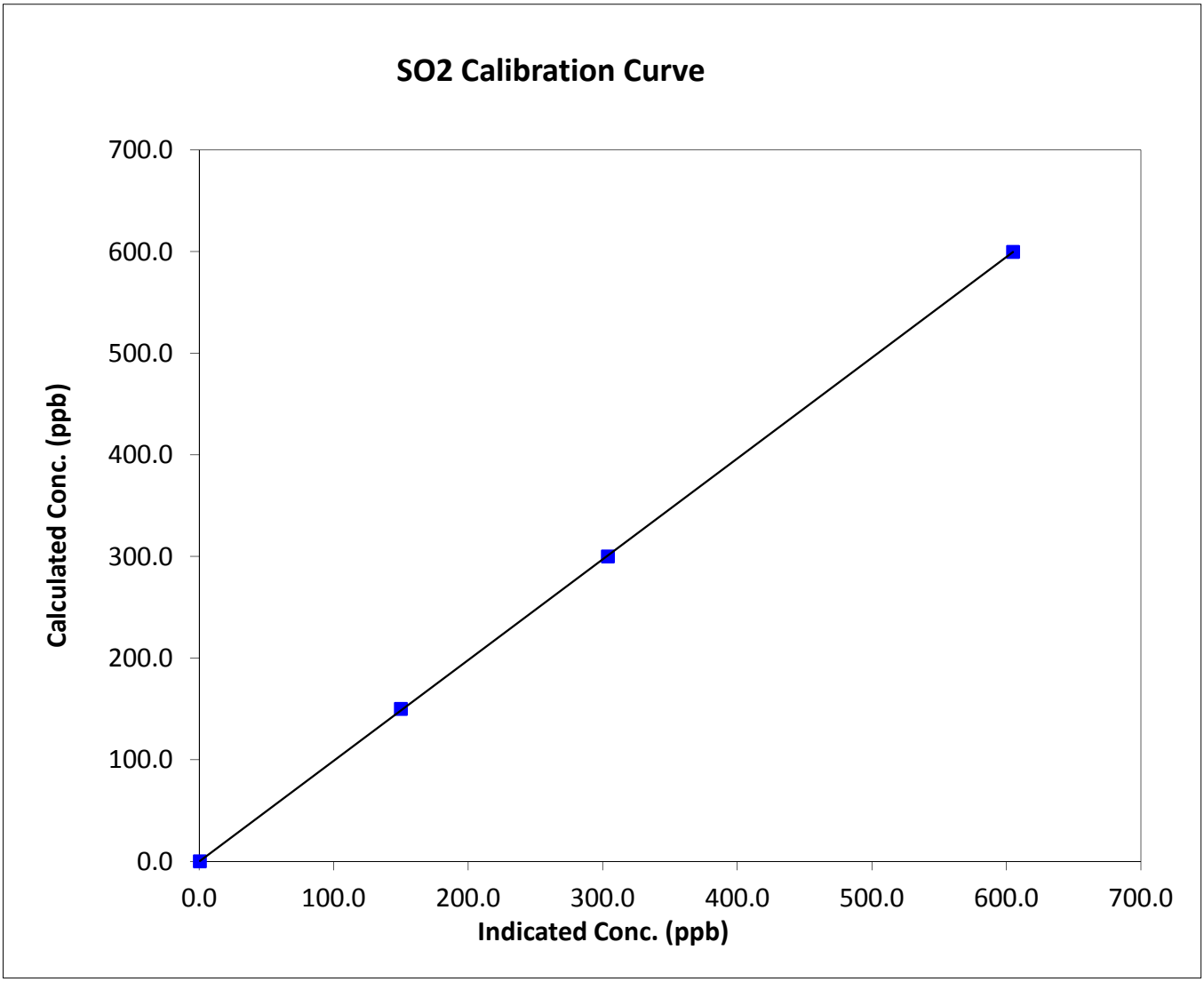
SO_2 Calibration Summary

Station Information

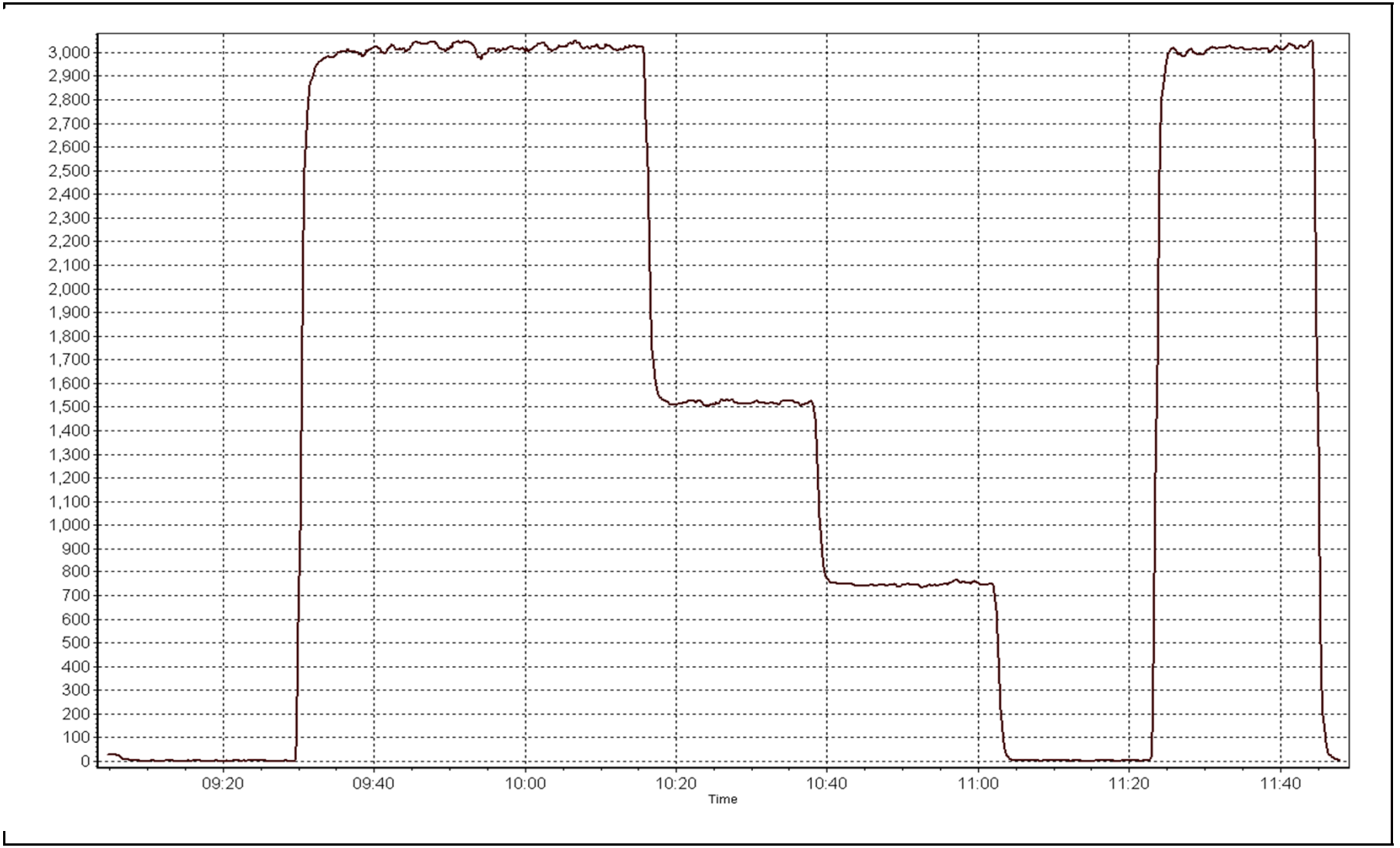
Calibration Date	April 22, 2014	Previous Calibration	March 18, 2014
Station Name	Mannix	Station Number	AMS 5
Start Time (MST)	9:05	End Time (MST)	11:46
Analyzer make	TEI 43C	Analyzer serial #	613516797

Calibration Data

Calculated concentration (ppb) (Cc)	Indicated concentration (ppb) (Ic)	Correction factor (Cc/Ic)	Statistical Evaluation	
0.0	0.5	N/A	Correlation Coefficient	0.999983
599.8	605.0	0.9913		
299.9	303.8	0.9871	Slope	0.991014
149.9	150.0	0.9996		
			Intercept	-0.046686



SO2 Calibration Plot Date: April 22, 2014



Wood Buffalo Environmental Association

H2S Calibration Report

Station Information

Calibration Date	April 15, 2014	Previous Calibration	March 19, 2014
Station Name	Mannix	Station Number	AMS 5
Reason:	Routine		
Start Time (MST)	13:30	End Time (MST)	15:50
Barometric Pressure	734 mmHg	Station temp.	22 Deg C
Calibrator Make/Model	Sabio 4010	Serial number	11061107
Cal Gas Concentration	10.2 ppm H2S	Cal Gas Expiry Date	30-May-13
Gas Cert Reference	LL155272	SO2 gas conc.	51.0 ppm SO2
DACS make/model	Campbell Scientific CR3000	DACS serial No.	2633
DACS voltage range	0-5v	DACS channel #	28

Analyzer Information

	Before	*After*		*Before*	*After*
Analyzer Range (ppb)	100	100	PMT voltage	-624	-624
Analyzer Range (mv)	5000	5000	Lamp voltage	894	894
Calculated slope	1.000046	0.988039	Chamber temp.	45	45
Calculated intercept	-0.038251	-0.037234	Pressure	495.3	494.7
Analyzer Background	14.5	14.4	Flow	1.030	1.040
Analyzer Coefficient	1.110	1.11	Intensity (%)	115	115
			Converter temp.	327	327

Analyzer make/model	TEI 450i	Analyzer serial #	815129108
Converter make/model	N/A	Converter serial #	N/A

Calibration Data

Set Point	Total flow rate (cc/min)	Source gas flow rate (cc/min)	Calculated concentration (ppb) (Cc)	Indicated concentration (ppb) (Ic)	Correction factor (Cc/Ic)
as found zero	5000	0.0	0.0	0.06	NA
as found span	5000	36.8	75.1	75.9	0.989
SO2 scrubber check	5000	29.4	299.9	2.4	NA
calibrator zero	5000	0.0	0.0	0.1	NA
high point	5000	36.8	75.1	75.9	0.989
second point	5000	20.6	42.0	42.9	0.979
third point	5000	12.3	25.1	25.2	0.997
calibrator zero					
as left zero	5000	0.0	0.0	0.2	NA
as left span	5000	36.8	75.1	75.9	0.989
				Average Correction Factor	0.988

Corrected As found	75.8	Previous response	75.1	% change	-1.0%

Notes:

As Founds used for calibrator zero and high point. Scrubber check after third point. No adjustments neeeded

Calibration Performed By: Ryan Power

Wood Buffalo Environmental Association

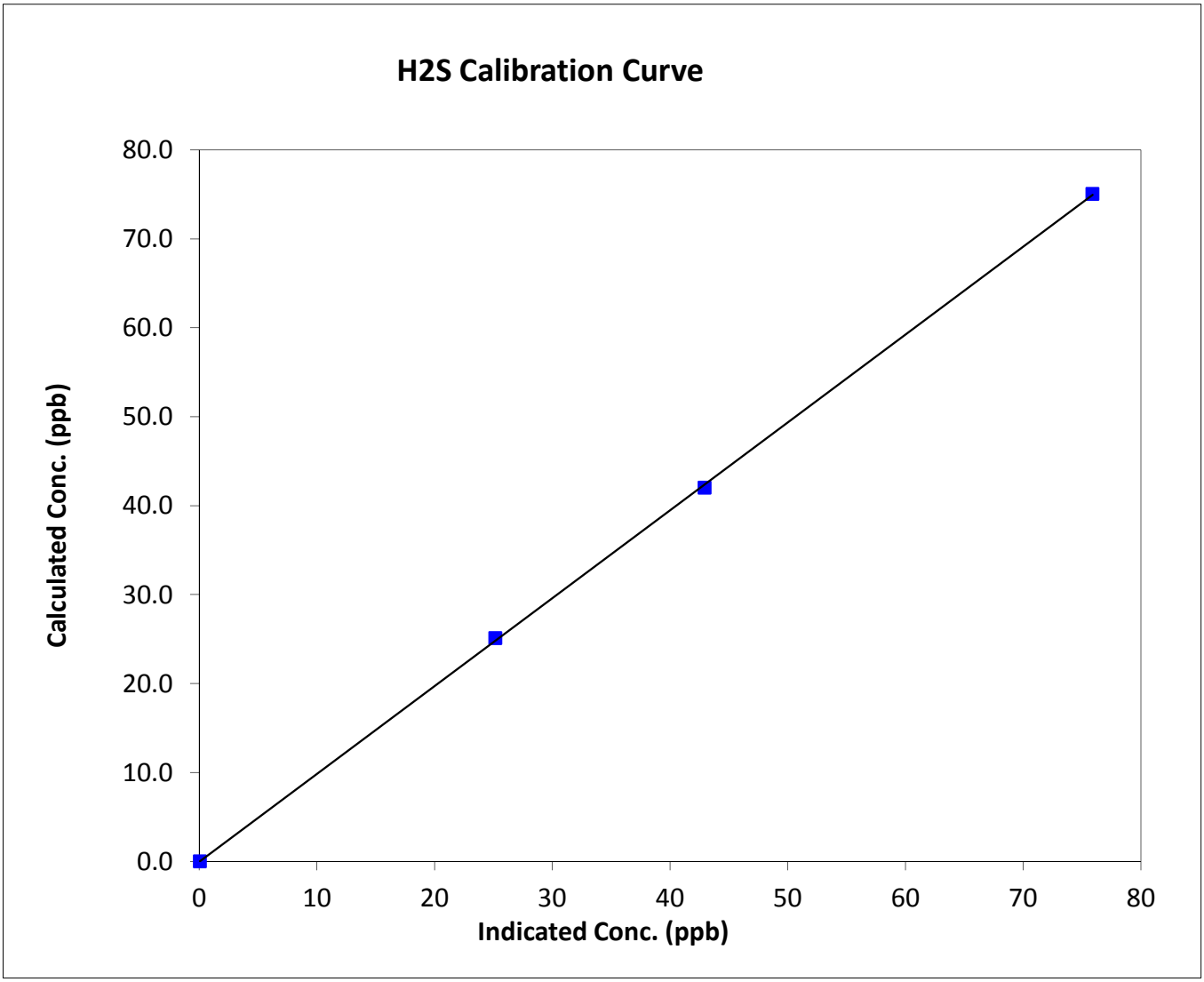
H2S Calibration Summary

Station Information

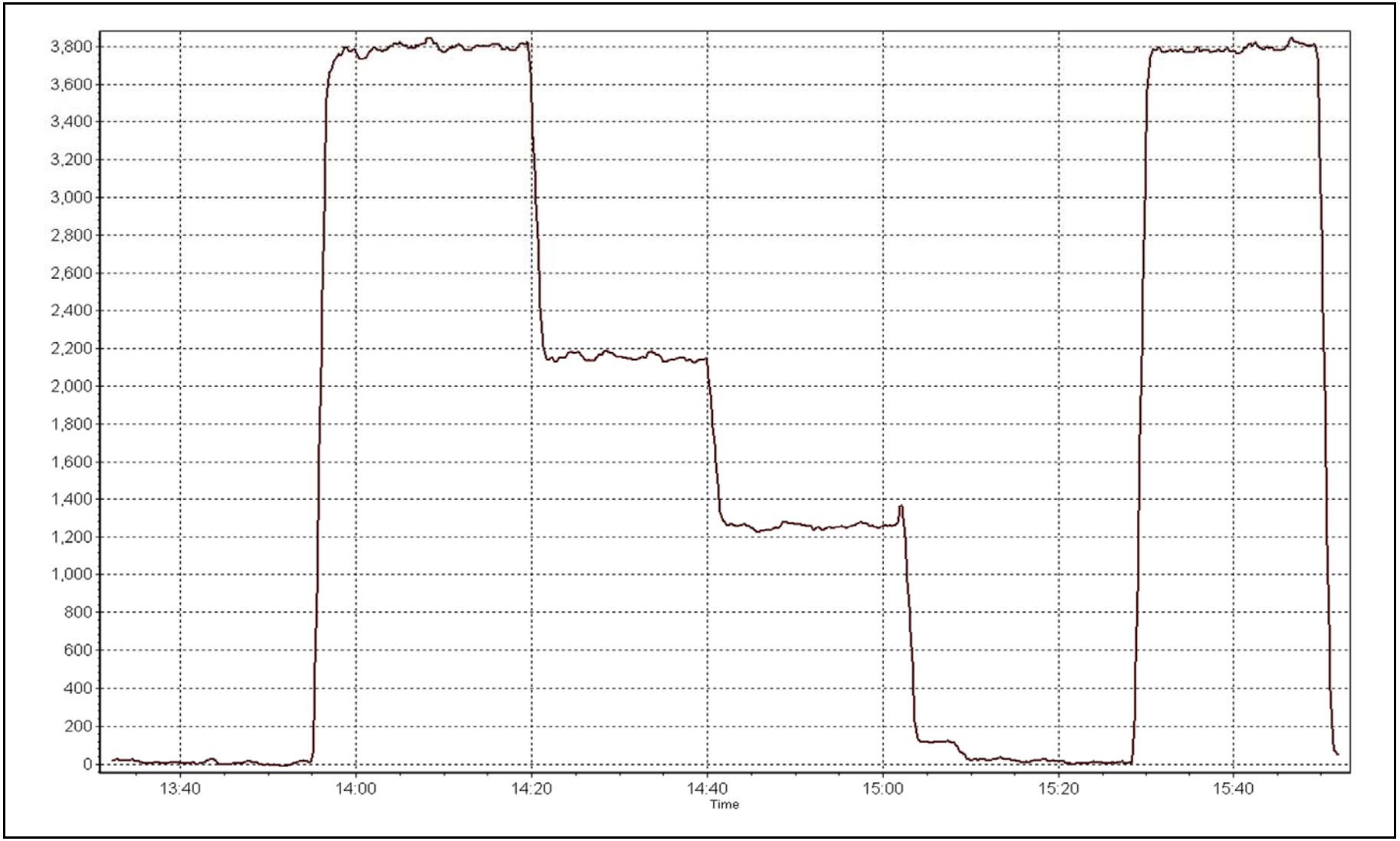
Calibration Date	April 15, 2014	Previous Calibration	March 19, 2014
Station Name	Mannix	Station Number	AMS 5
Start Time (MST)	13:30	End Time (MST)	15:50
Analyzer make	TEI 450i	Analyzer serial #	815129108

Calibration Data

Calculated concentration (ppb) (Cc)	Indicated concentration (ppb) (Ic)	Correction factor (Cc/Ic)	Statistical Evaluation	
0.0	0.1	N/A	Correlation Coefficient	0.999926
75.1	75.9	0.9891		
42.0	42.9	0.9787	Slope	0.988039
25.1	25.2	0.9973		
			Intercept	-0.037234



H2S Calibration Plot Date: Tuesday, April 15, 2014



Wood Buffalo Environmental Association

THC Calibration Report

Station Information

Calibration Date	Tuesday, April 22, 2014	Previous Calibration	Tuesday, March 18, 2014
Station Name	Mannix	Station Number	AMS 5
Reason:	Routine		
Start Time (MST)	9:05	End Time (MST)	11:44
Barometric Pressure	725 mmHg	Station temp.	22 Deg C
Calibrator Make/Model	Sabio 4010	Serial Number	11061107
Gas Cert Reference	LL107934	Cal Gas Expiry Date	29-May-14
CH4 Cal Gas Conc.	515 ppm	CH4 Equiv Conc.	1081.5 ppm
C3H8 Cal Gas Conc.	206 ppm		
DACS make/model	Campbell Scientific CR3000	DACS serial No.	2633
DACS voltage range	0-5v	DACS channel #	

Analyzer Information

	Before	*After*		*Before*	*After*
Analyzer Range (ppm)	25	25	Sample Pressure	6.2	6.3
Analyzer Range (mv)	5000	5000	Air or Bypass press	30.0	30.0
Calculated slope	0.991346	0.995250	Fuel Pressure		
Calculated intercept	0.047166	0.042545			

Analyzer make	TEI 51C-LT	Analyzer serial #	330202750

Calibration Data

Set Point	Total flow rate (cc/min)	Source gas flow rate (cc/min)	Calculated concentration THC (ppm) (Cc)	Indicated concentration (ppb) (Ic)	Correction factor (Cc/Ic)
as found zero	5000	0.0	0.00	-0.01	N/A
as found span	5000	58.8	12.72	12.94	0.983
calibrator zero	5000	0.0	0.00	-0.01	N/A
high point	5000	58.8	12.72	12.74	0.998
second point	5000	29.4	6.36	6.37	0.999
third point	5000	14.7	3.18	3.10	1.026
calibrator zero					
as left zero	5000	0.0	0.00	-0.04	N/A
as left span	5000	58.8	12.72	12.72	1.000
				Average Correction Factor	1.008

Corrected As found	12.95	Previous response	12.78	% change	-1.3%

Notes:

As found zero used as calibrator zero. Small adjustment to span, filter changed after third point

Calibration Performed By: Ryan Power

Wood Buffalo Environmental Association

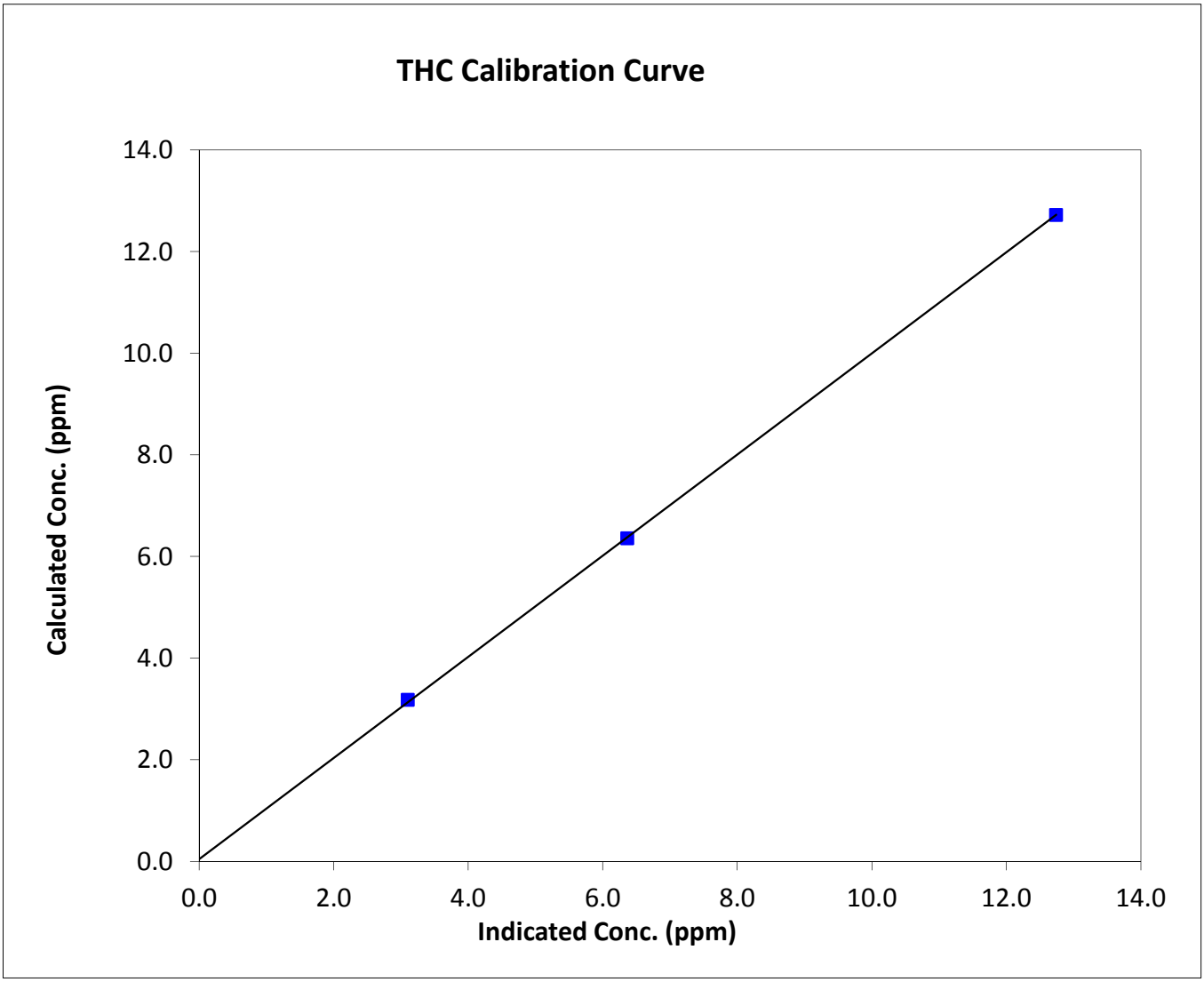
THC Calibration Summary

Station Information

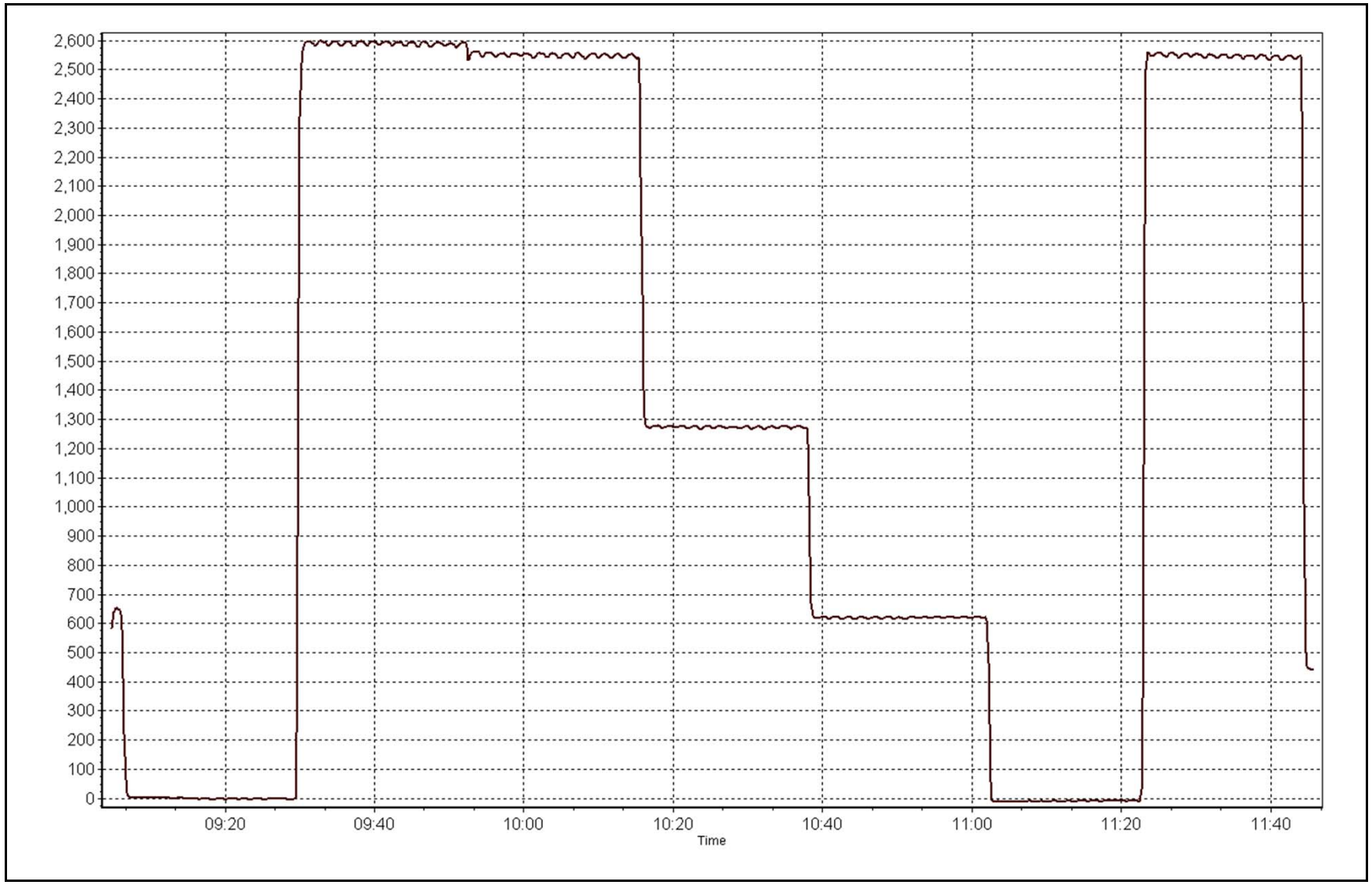
Calibration Date	April 22, 2014	Previous Calibration	March 18, 2014
Station Name	Mannix	Station Number	AMS 5
Start Time (MST)	9:05	End Time (MST)	11:44
Analyzer make	TEI 51C-LT	Analyzer serial #	330202750

Calibration Data

Calculated concentration (ppm) (Cc)	Indicated concentration (ppm) (Ic)	Correction factor (Cc/Ic)	Statistical Evaluation	
0.00	-0.01	N/A	Correlation Coefficient	0.999956
12.72	12.74	0.9983		
6.36	6.37	0.9991	Slope	0.995250
3.18	3.10	1.0257		
			Intercept	0.042545



THC Calibration Plot Date: April 22, 2014



WOOD BUFFALO ENVIRONMENTAL ASSOCIATION

CONTINUOUS AMBIENT AIR QUALITY
MONITORING PROGRAM
MONTHLY REPORT

AMS 6
PATRICIA MCINNES
APRIL 2014

Operations and Data Collection by:
Wood Buffalo Environmental Association
Fort McMurray, Alberta

QA/QC, Data Validation and Reporting by:
Aurora Atmospherics Inc.
Calgary, Alberta

May 30, 2014

WOOD BUFFALO ENVIRONMENTAL ASSOCIATION - PATRICIA McINNES (AMS 6)
APRIL 2014

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	677	35	43	98.89	49	0	10	0
TRS (ppb) Average	685	34	35	99.86	1	0	0	0
THC (ppm) Average	674	35	46	98.47	2.5	-	2	-
NMHC(ppm) Average	674	35	46	98.47	0.358	-	0.04	-
CH4(ppm) Average	674	35	46	98.47	2.1	-	2	-
O3 (ppb) Average	685	33	35	99.72	57	0	43	-
NO2 (ppb) Average	674	35	46	98.47	33	0	8	-
NO (ppb) Average	674	35	46	98.47	31	-	4	-
NOX (ppb) Average	674	35	46	98.47	47	-	11	-
NH3 (ppb) Average	647	40	73	95.42	0	0	0	-
PM2.5 (ug/m3) Average	690	0	30	95.83	21.9	-	6.2	0
Temperature 2 m (C) Average	720	0	0	100.00	21.7	-	13.2	-
Relative Humidity (%) Average	720	0	0	100.00	98	-	-	-
Wind Speed 10 m (km/h) Average	720	0	0	100.00	36	-	-	-
Wind Direction 10 m (deg) Average	720	0	0	100.00	-	-	-	-

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

WOOD BUFFALO ENVIRONMENTAL ASSOCIATION - PATRICIA McINNES (AMS 6)
APRIL 2014

MONTHLY SUMMARY FOR AIR QUALITY/ METEOROLOGICAL MONITORING MEASUREMENTS

					Percentile						
Parameter	Number	Mean	StnDev	Total	Min	P10	Q1	Median	Q3	P90	Max
SO2 (ppb) Average	677	1.4	4	-	0	0	0	0	0	3	49
TRS (ppb) Average	685	0.2	0	-	0	0	0	0	0	0	1
THC (ppm) Average	674	1.91	0.1	-	1.8	1.9	1.9	1.9	1.9	2	2.5
NMHC(ppm) Average	674	0.004	0.025	-	0	0	0	0	0	0	0.358
CH4(ppm) Average	674	1.91	0	-	1.8	1.9	1.9	1.9	1.9	2	2.1
O3 (ppb) Average	685	35	9	-	3	22	30	37	41	45	57
NO2 (ppb) Average	674	4.4	4	-	0	1	2	3	6	9	33
NO (ppb) Average	674	1.6	3	-	0	0	0	1	2	3	31
NOX (ppb) Average	674	6	6	-	0	1	2	4	8	12	47
NH3 (ppb) Average	647	0	0	-	0	0	0	0	0	0	0
PM2.5 (ug/m3) Average	690	4.02	2.9	-	0.1	1	2.1	3.5	5.3	7.4	21.9
Temperature 2 m (C) Average	720	1.44	7.5	-	-17.8	-8.3	-3.4	1.5	5.9	11.1	21.7
Relative Humidity (%) Average	720	58.9	20	-	17	32	44	57	76	87	98
Wind Speed 10 m (km/h) Average	720	12.2	6	-	1	5	8	12	15	20	36
Wind Direction 10 m (deg) Average	720	-	-	-	-	-	-	-	-	-	-

WOOD BUFFALO ENVIRONMENTAL ASSOCIATION - PATRICIA McINNES (AMS 6)
APRIL 2014

OPERATIONAL NOTES

Parameter	Period Start	Period End	Duration (Hours)	Notes
SO2	22 Apr 2014 14:00	22 Apr 2014 14:00	1	Maintenance - replaced calibrator, checked span response
SO2	23 Apr 2014 12:00	23 Apr 2014 14:00	3	Maintenance - flush span lines and response check
SO2	25 Apr 2014 10:00	25 Apr 2014 10:00	1	Maintenance - span response check, delayed response from cal
SO2	28 Apr 2014 14:00	28 Apr 2014 15:00	2	Maintenance - cal ports cleaned and sample lines replaced
SO2	29 Apr 2014 11:00	29 Apr 2014 11:00	1	Maintenance - new span gas cylinder deployed
TRS	23 Apr 2014 13:00	23 Apr 2014 13:00	1	Maintenance - span response check
NMHC, CH4, THC	08 Apr 2014 10:00	08 Apr 2014 10:00	1	Maintenance - replaced scrubbers on zero air generator
NMHC, CH4, THC	14 Apr 2014 10:00	14 Apr 2014 10:00	1	Maintenance - replaced fuel cylinder
NMHC, CH4, THC	22 Apr 2014 14:00	22 Apr 2014 14:00	1	Maintenance - replaced calibrator, checked span response
NMHC, CH4, THC	23 Apr 2014 12:00	23 Apr 2014 14:00	3	Maintenance - flush span lines and response check
NMHC, CH4, THC	25 Apr 2014 09:00	25 Apr 2014 10:00	2	Maintenance - replaced carrier gas
NMHC, CH4, THC	28 Apr 2014 14:00	28 Apr 2014 15:00	2	Maintenance - cal ports cleaned and sample lines replaced
NMHC, CH4, THC	29 Apr 2014 11:00	29 Apr 2014 11:00	1	Maintenance - new span gas cylinder deployed
O3	25 Apr 2014 09:00	25 Apr 2014 10:00	2	Maintenance - daily span response check, wire connection loose
NO2, NO, NOX	08 Apr 2014 09:00	08 Apr 2014 11:00	3	Maintenance - replaced scrubbers on zero air generator
NO2, NO, NOX	22 Apr 2014 14:00	22 Apr 2014 14:00	1	Maintenance - replaced calibrator, checked span response
NO2, NO, NOX	23 Apr 2014 12:00	23 Apr 2014 14:00	3	Maintenance - flush span lines and response check
NO2, NO, NOX	25 Apr 2014 10:00	25 Apr 2014 10:00	1	Maintenance -span response check, delayed response from cal
NO2, NO, NOX	28 Apr 2014 14:00	28 Apr 2014 15:00	2	Maintenance - cal ports cleaned and sample lines replaced
NO2, NO, NOX	29 Apr 2014 11:00	29 Apr 2014 11:00	1	Maintenance - new span gas cylinder deployed
NH3	01 Apr 2014 03:00	30 Apr 2014 03:00	30	Stabilization after daily span
NH3	25 Apr 2014 10:00	25 Apr 2014 10:00	1	Maintenance -span response check, delayed response from cal
NH3	28 Apr 2014 14:00	28 Apr 2014 15:00	2	Maintenance - cal ports cleaned and sample lines replaced
PM2.5	08 Apr 2014 12:00	08 Apr 2014 12:00	1	Flow and zero reference checks, sample head cleaning
PM2.5	08 Apr 2014 21:00	09 Apr 2014 11:00	15	Intermittent unstable operation - excessive baseline drift
PM2.5	09 Apr 2014 13:00	09 Apr 2014 16:00	4	Intermittent unstable operation - excessive baseline drift
PM2.5	09 Apr 2014 18:00	09 Apr 2014 20:00	3	Intermittent unstable operation - excessive baseline drift
PM2.5	12 Apr 2014 07:00	12 Apr 2014 13:00	7	Intermittent unstable operation - excessive baseline drift

Wood Buffalo Environmental Association

Summary of Hour Averages

Sulphur Dioxide (SO_2) - ppb

Patricia McInnes - April 2014

Number of Exceedences (AAAQO): 1-hr: 0 24-hr: 0
Maximum Value: 49 ppb on Apr 20 13:00 Maximum Daily Average: 10.3 ppb on Apr 2

Minimum Value: 0 ppb on Apr 11 18:00 Minimum Daily Average: 0.1 ppb on Apr 18
Maximum Diurnal Average: 3.3 ppb at hour 14 Minimum Diurnal Average: 0.3 ppb at hour 1
Monthly Average: 1.4 ppb Percentiles: $P_1 = 0$ $P_{10} = 0$ $Q_1 = 0$ Median = 0 $Q_3 = 0$ $P_{90} = 3$ $P_{99} = 23$

Hours in Service:	720
Hours of Data:	677
Hours of Missing Data:	43
Hours of Calibration:	35
Percent Operational Time:	98.9

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-Apr	0	Z	0	0	0	0	0	2	C	C	C	C	C	30	19	18	15	17	14	2	0	0	0	0	6.7	30
2-Apr	0	Z	2	1	2	4	6	13	2	0	0	7	18	22	23	29	25	21	15	7	13	14	8	5	10.3	29
3-Apr	1	Z	3	5	5	11	7	3	2	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1.9	11
4-Apr	0	Z	0	1	1	1	1	0	1	1	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0.4	1
5-Apr	0	Z	0	0	0	0	0	0	0	0	1	1	1	3	2	2	4	10	8	6	2	0	0	0	1.9	10
6-Apr	0	Z	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1	1	1	1	0.2	1
7-Apr	0	Z	0	0	0	0	0	0	0	0	0	3	0	0	0	0	0	0	0	0	0	0	0	0	0.3	3
8-Apr	0	Z	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0.2	0
9-Apr	0	Z	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	6	5	0	0	0.6	6
10-Apr	0	Z	1	0	0	1	0	0	9	16	21	9	3	2	1	0	0	0	0	0	0	0	0	0	2.9	21
11-Apr	0	Z	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	8	6	1	4	3	1.0	8
12-Apr	1	Z	0	0	0	0	0	0	0	0	0	0	0	0	0	0	2	4	4	0	0	0	0	1	0.6	4
13-Apr	0	Z	2	1	0	0	0	1	6	6	2	3	5	4	4	3	2	2	2	2	3	3	1	1	2.3	6
14-Apr	0	Z	1	1	0	1	1	1	1	1	1	1	1	1	0	0	0	0	0	0	0	0	0	0	0.5	1
15-Apr	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
16-Apr	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
17-Apr	0	Z	0	0	0	0	0	0	0	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0.2	1
18-Apr	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
19-Apr	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
20-Apr	0	Z	0	0	0	0	0	0	7	24	15	35	49	21	4	6	3	3	1	1	1	1	1	1	7.5	49
21-Apr	1	Z	0	0	0	0	0	0	0	0	0	1	10	5	3	11	3	6	1	0	0	0	0	0	2.0	11
22-Apr	1	Z	2	1	1	1	1	0	0	0	0	0	0	M	0	0	0	0	0	0	0	0	0	0	0.4	2
23-Apr	0	Z	0	0	0	0	0	0	0	0	0	M	M	M	0	0	1	1	0	0	0	0	0	0	0.2	1
24-Apr	0	Z	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0.2	0
25-Apr	0	Z	0	0	0	0	0	0	0	M	0	0	0	0	0	0	0	0	0	1	0	0	0	0	0.2	1
26-Apr	0	Z	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0.2	0
27-Apr	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
28-Apr	0	Z	0	0	0	0	0	0	0	0	0	0	0	M	M	0	1	2	1	0	1	0	0	0	0.4	2
29-Apr	0	Z	0	0	0	0	0	0	0	0	M	0	0	0	0	0	0	0	0	0	0	0	0	0	0.1	0
30-Apr	0	Z	0	0	0	0	0	0	0	0	0	0	0	0	1	1	0	0	0	0	0	0	0	0	0.2	1
	0.3	--	0.5	0.4	0.4	0.7	0.6	0.8	1.1	1.9	1.6	2.3	3.2	3.3	2.1	2.5	2.0	2.3	1.7	1.0	1.2	0.9	0.7	0.5	Diurnal Average	
	1	--	3	5	5	11	7	13	9	24	21	35	49	30	23	29	25	21	15	8	13	14	8	5	Diurnal Maximum	

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

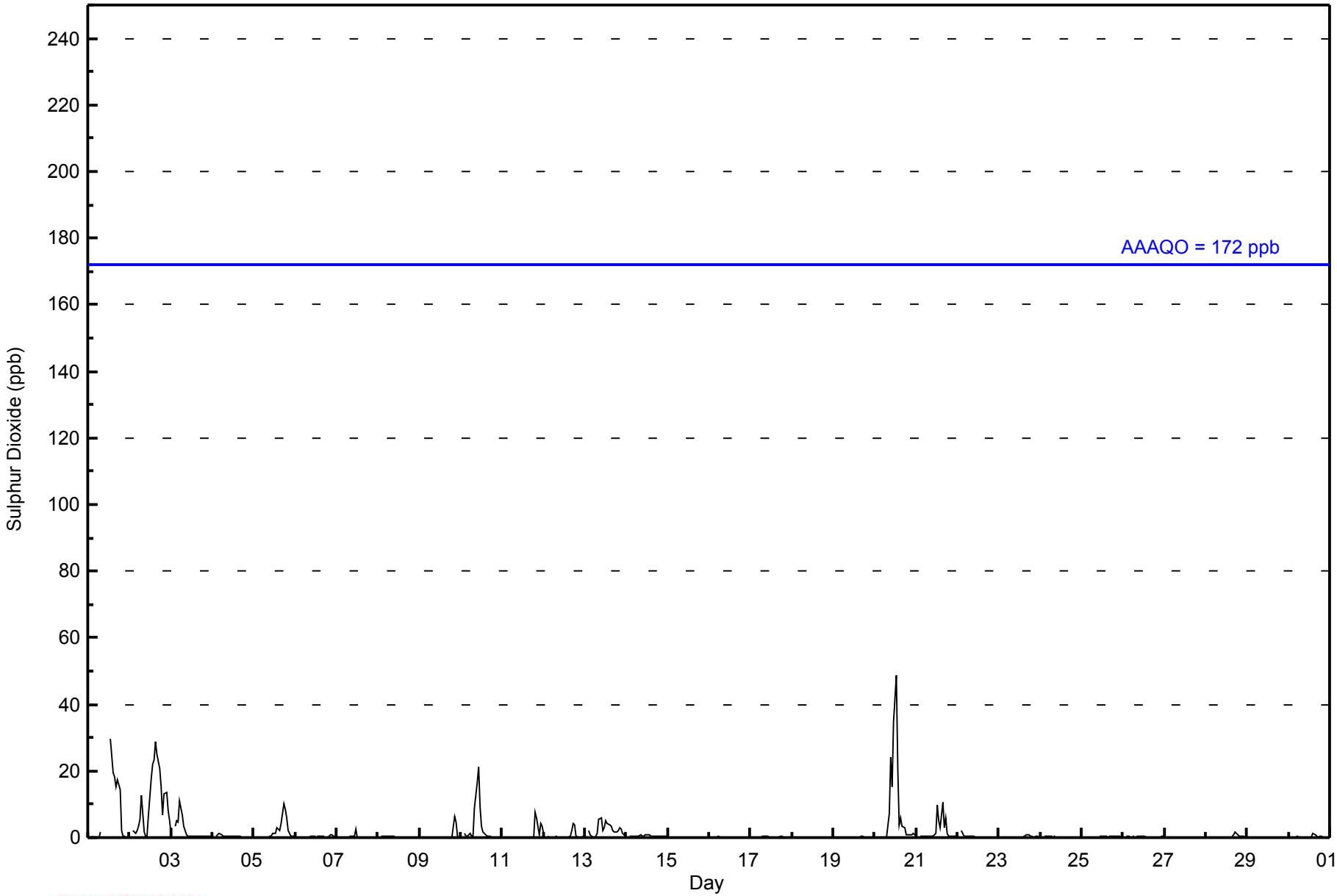
AURORA ATMOSPHERICS INC.

WBEA NETWORK

Hourly Averages

Sulphur Dioxide (SO_2) - ppb

Patricia McInnes - April 2014



AURORA ATMOSPHERICS INC.

Concentration Ranges (ppb)	Number of Hours	%	Cumulative %
0 - 10	652	96.31	96.31
11 - 20	14	2.07	98.38
21 - 60	11	1.62	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: 677

Total Number of Hours: 720

WBEA NETWORK

Frequency Distribution

Sulphur Dioxide (SO_2) - ppb

Patricia McInnes - April 2014

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	37	30	46	59	143	67	10	26	32	27	27	25	19	18	29	652
11 - 20	2	6	1	0	0	0	0	0	0	0	0	0	0	0	0	5	14
21 - 60	2	3	0	0	0	0	0	0	0	0	0	0	0	0	0	6	11
61 - 110	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
111 - 172	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
> 172	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Totals	61	46	31	46	59	143	67	10	26	32	27	27	25	19	18	40	677

Total Number of Valid Hours: 677

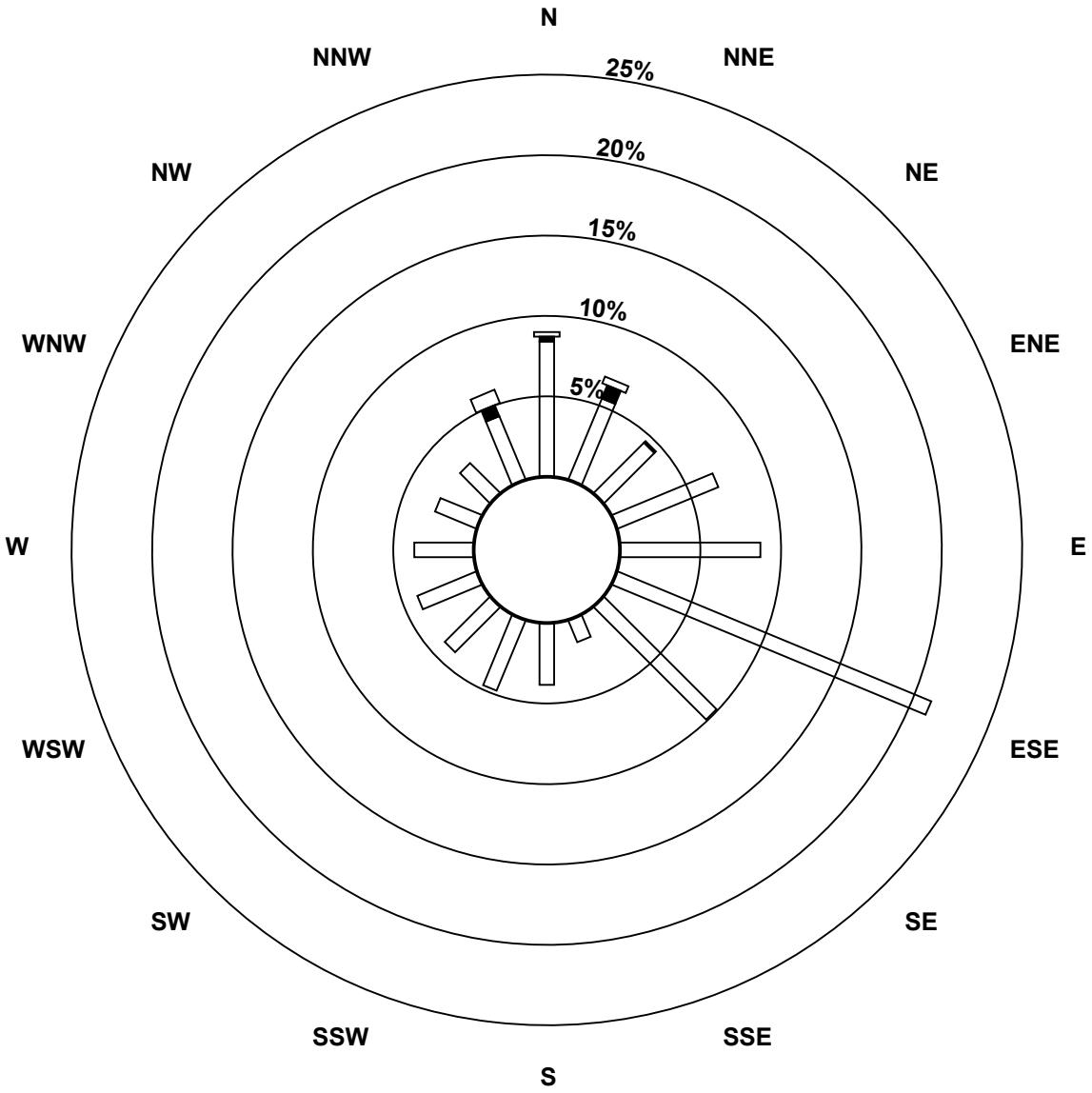
Total Number of Hours: 720

Wood Buffalo Environmental Association

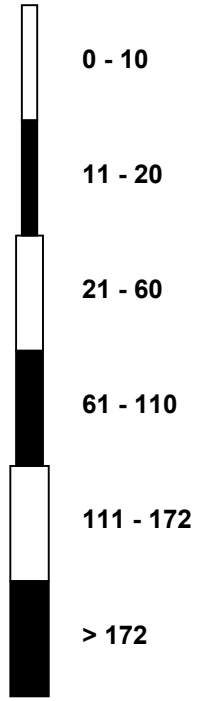
Wind Rose Apr 2014

Sulphur Dioxide (SO_2) - ppb

Patricia McInnes (AMS 6)



Classes (ppb)



0 - 10

11 - 20

21 - 60

61 - 110

111 - 172

> 172

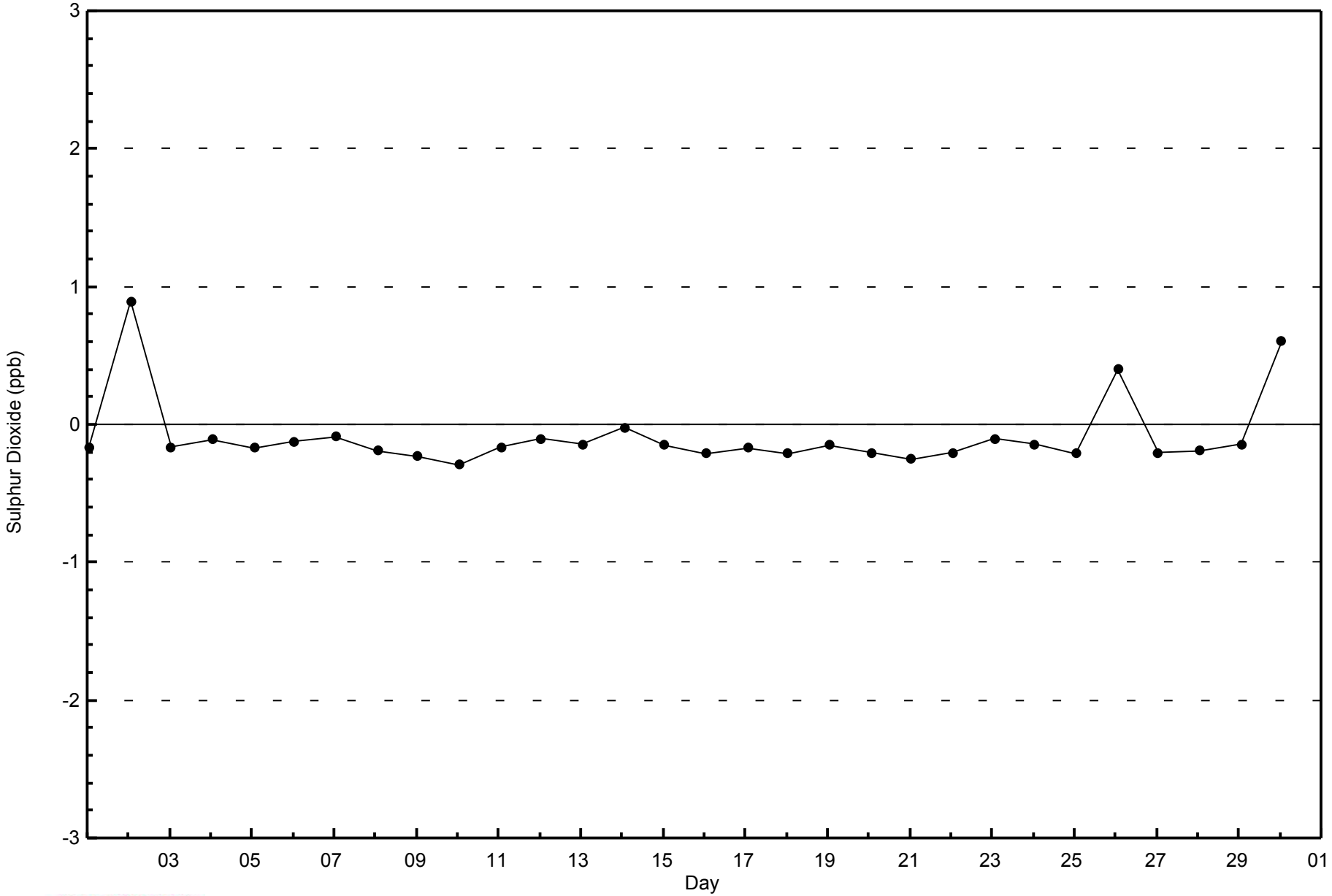
Total Number of Valid Hours: 677

WBEA NETWORK

Zero Responses

Sulphur Dioxide (SO_2) - ppb

Patricia McInnes - April 2014



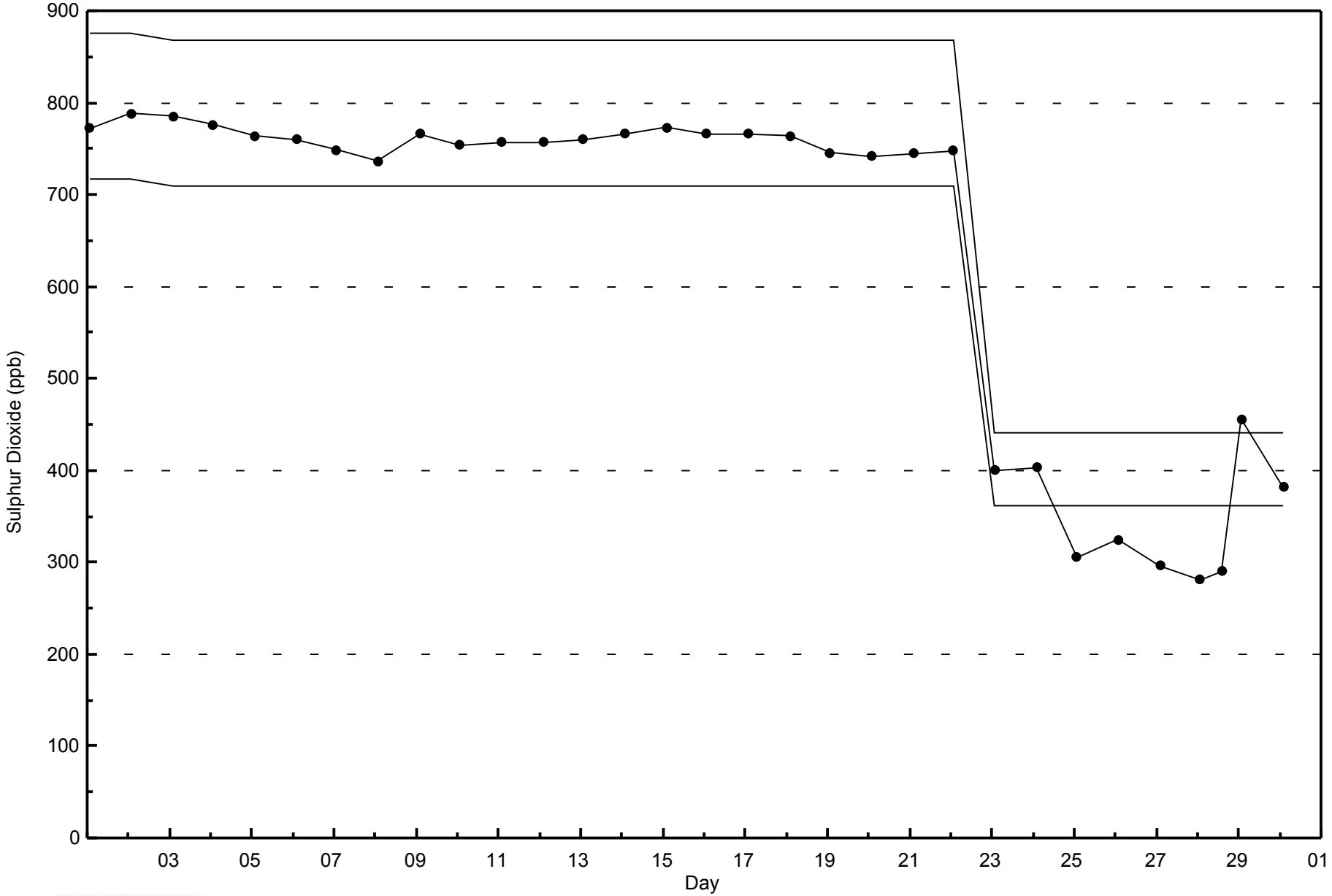
AURORA
ATMOSPHERICS INC.

WBEA NETWORK

Span Responses

Sulphur Dioxide (SO_2) - ppb

Patricia McInnes - April 2014



AURORA ATMOSPHERICS INC.

Number of Exceedences (AAAQO): 1-hr: 0 24-hr: 0
Maximum Value: 1 ppb on Apr 1 14:00 Maximum Daily Average: 0.3 ppb on Apr 1

Minimum Value: 0 ppb on Apr 24 01:00 Minimum Daily Average: 0.1 ppb on Apr 24
Maximum Diurnal Average: 0.2 ppb at hour 13 Minimum Diurnal Average: 0.1 ppb at hour 2
Monthly Average: 0.2 ppb Percentiles: $P_1 = 0$ $P_{10} = 0$ $Q_1 = 0$ Median = 0 $Q_3 = 0$ $P_{90} = 0$ $P_{99} = 0$

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-Apr	0	0	Z	0	0	0	0	0	0	0	0	0	1	1	0	0	0	0	0	0	0	0	0	0	0.3	1
2-Apr	0	0	Z	0	0	0	0	0	0	0	C	C	C	C	0	0	0	0	0	0	0	0	0	0	0.3	0
3-Apr	0	0	Z	0	1	1	1	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0.2	1
4-Apr	0	0	Z	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0.2	0
5-Apr	0	0	Z	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0.2	0
6-Apr	0	0	Z	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0.2	0
7-Apr	0	0	Z	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0.2	0
8-Apr	0	0	Z	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0.2	0
9-Apr	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	0
10-Apr	0	0	Z	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0.2	0
11-Apr	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	0
12-Apr	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	0
13-Apr	0	0	Z	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0.2	0
14-Apr	0	0	Z	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0.2	0
15-Apr	0	0	Z	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0.2	0
16-Apr	0	0	Z	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0.2	0
17-Apr	0	0	Z	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0.2	0
18-Apr	0	0	Z	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0.2	0
19-Apr	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	0
20-Apr	0	0	Z	0	0	0	0	0	0	0	0	1	1	0	0	0	0	0	0	0	0	0	0	0	0.2	1
21-Apr	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	0
22-Apr	0	0	Z	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0.2	0
23-Apr	0	0	Z	0	0	0	0	0	0	0	0	0	M	0	0	0	0	0	0	0	0	0	0	0	0.1	0
24-Apr	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	0
25-Apr	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	0
26-Apr	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	0
27-Apr	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	0
28-Apr	0	0	Z	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0.2	0
29-Apr	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	0
30-Apr	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	0
	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	0.1	0.1	Diurnal Average	
	0	0	--	0	1	1	1	1	0	0	0	1	1	1	0	0	0	0	0	0	0	0	0	0	Diurnal Maximum	

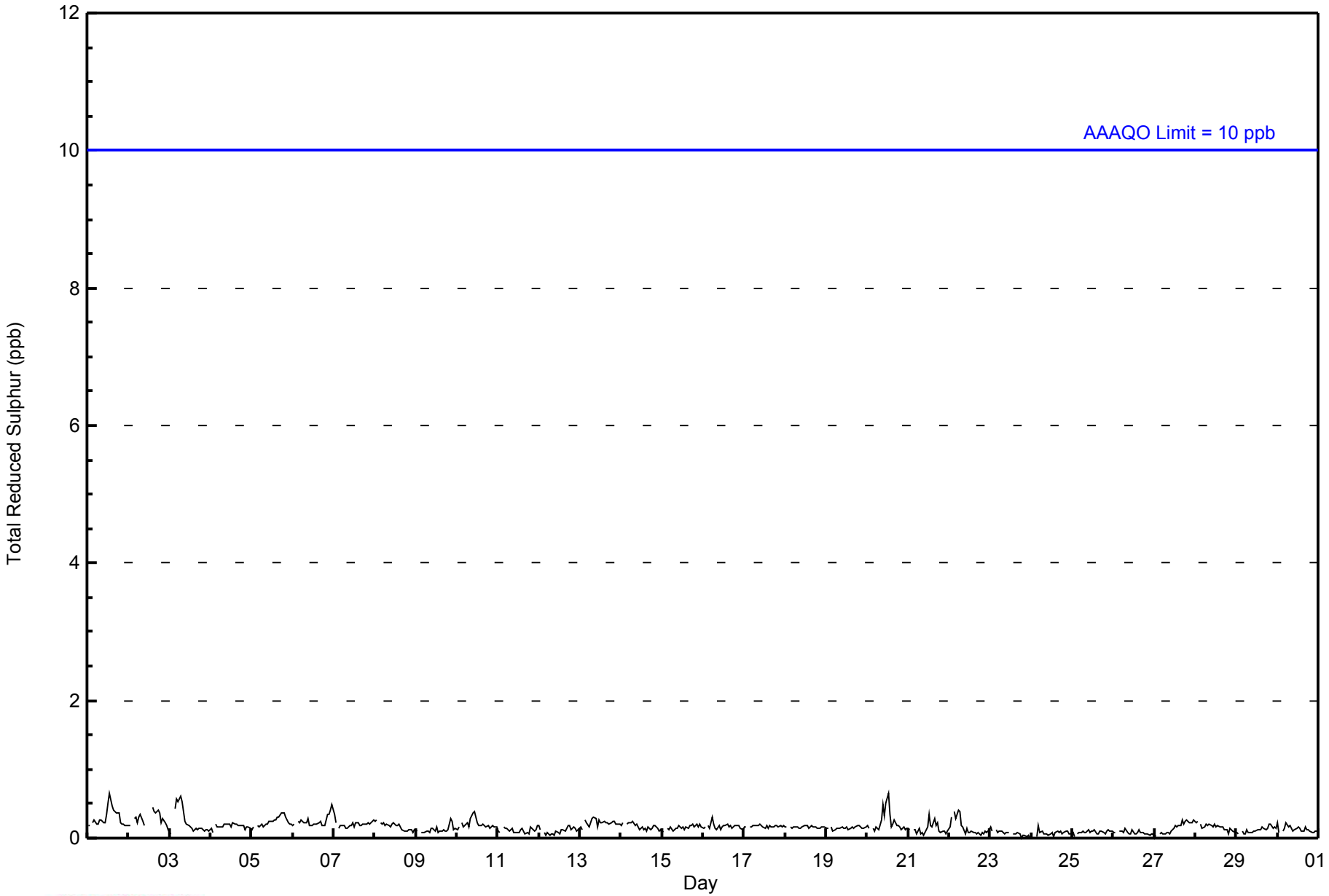
Z - zerospan C - Calibration M - Maintenance
Alberta Ambient Air Quality Objectives (AAAQO): 1-hr 10 ppb 24-hr 3 ppb

WBEA NETWORK

Hourly Averages

Total Reduced Sulphur (TRS) - ppb

Patricia McInnes - April 2014



AURORA ATMOSPHERICS INC.

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

WBEA NETWORK

Frequency Distribution

Total Reduced Sulphur (TRS) - ppb

Patricia McInnes - April 2014

Concentration Ranges (ppb)	Wind Direction																
	N	NNE	NE	ENE	E	ESE	SE	SSE	S	SSW	SW	WSW	W	WNW	NW	NNW	**Totals**
0 - 2	63	48	32	46	63	145	66	12	27	30	27	26	26	19	19	36	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	63	48	32	46	63	145	66	12	27	30	27	26	26	19	19	36	685

Total Number of Valid Hours: 685

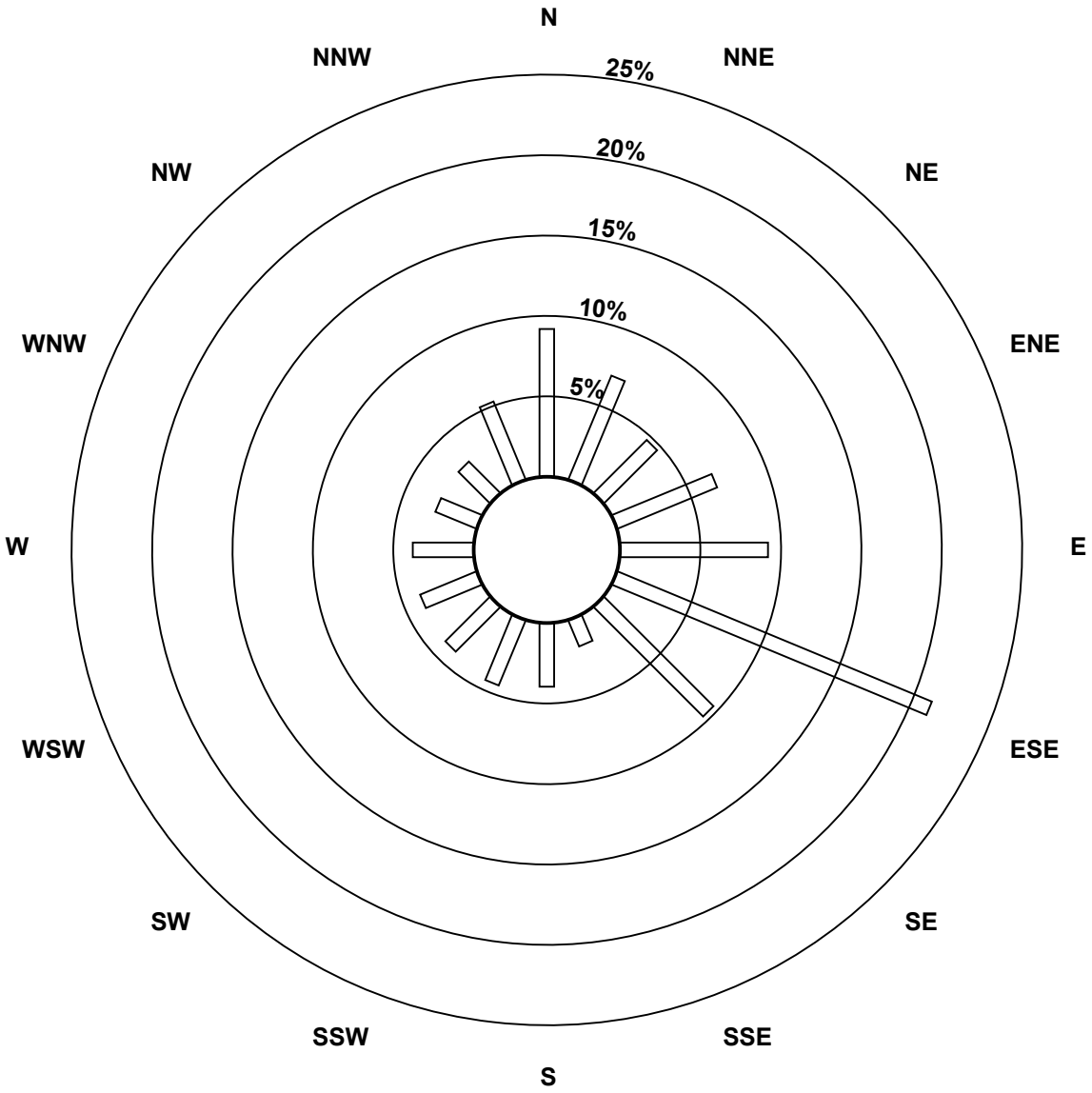
Total Number of Hours: 720

Wood Buffalo Environmental Association

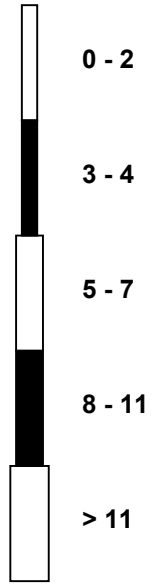
Wind Rose Apr 2014

Total Reduced Sulphur (TRS) - ppb

Patricia McInnes (AMS 6)



Classes (ppb)



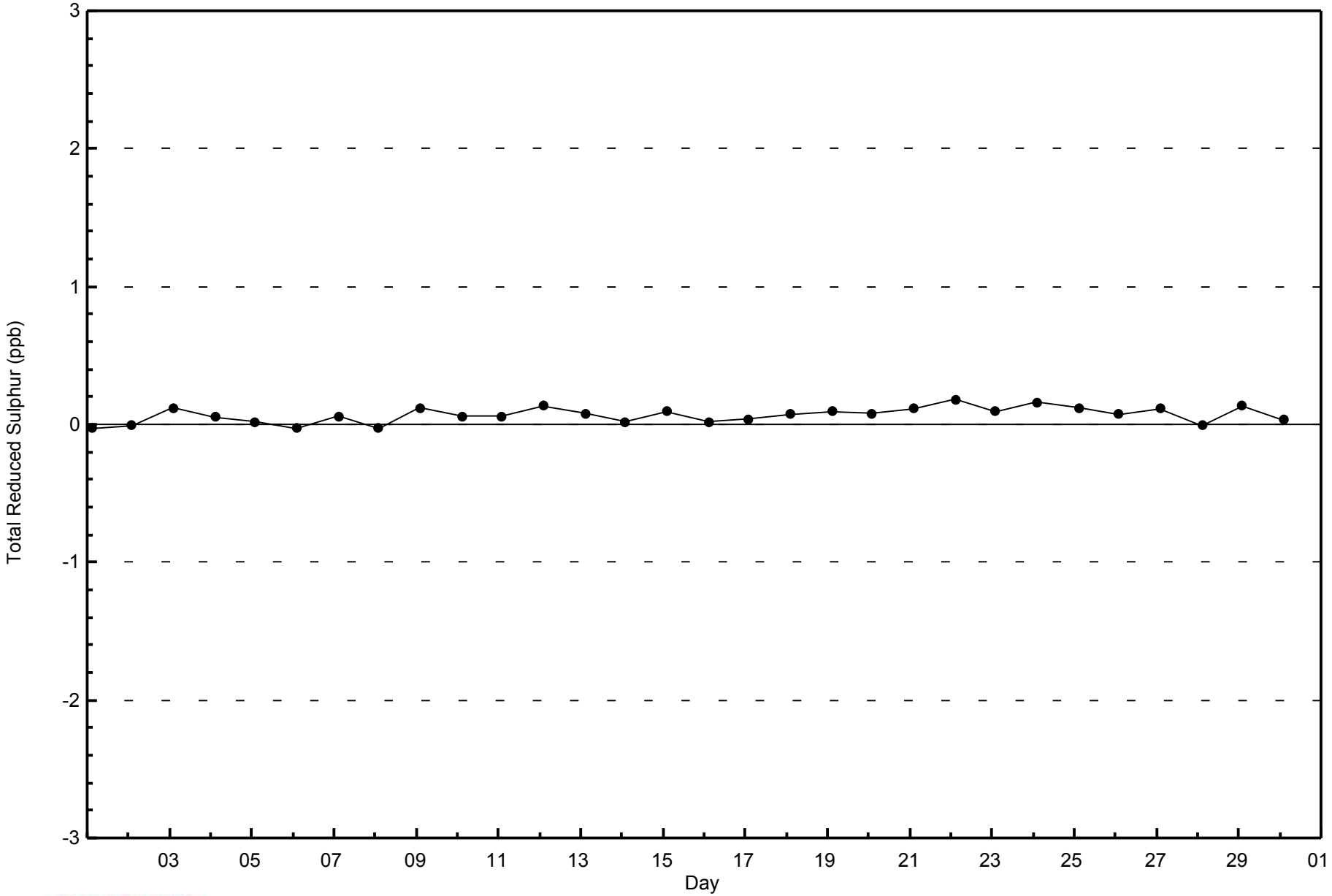
Total Number of Valid Hours: 685

WBEA NETWORK

Zero Responses

Total Reduced Sulphur (TRS) - ppb

Patricia McInnes - April 2014



AURORA
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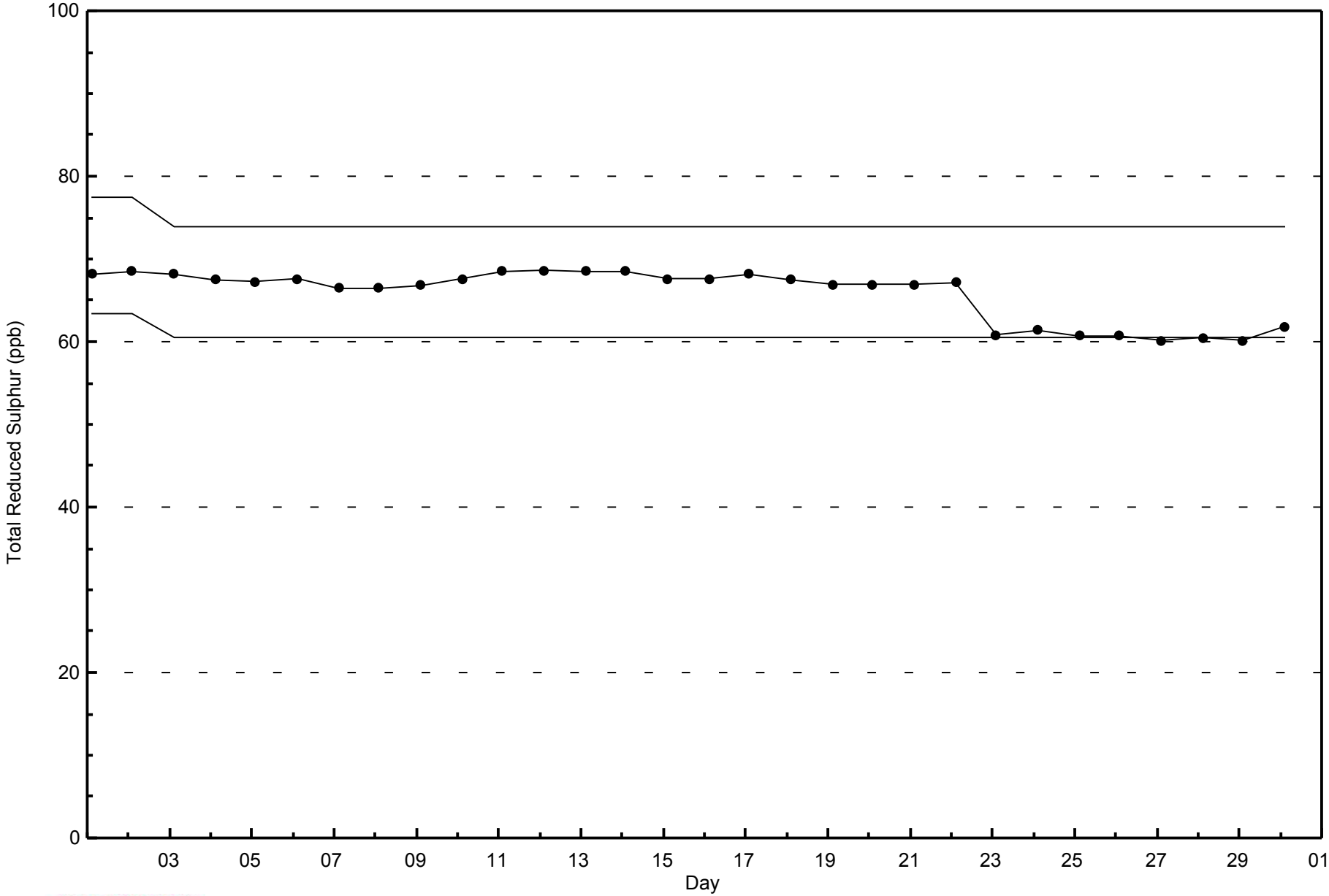
WBEA NETWORK

Span Responses

Total Reduced Sulphur (TRS) - ppb

Patricia McInnes - April 2014



AURORA
ATMOSPHERICS INC.

Wood Buffalo Environmental Association

Summary of Hour Averages

Total Hydrocarbons (THC) - ppm

Patricia McInnes - April 2014

Maximum Value: 2.5 ppm on Apr 7 00:00

Maximum Daily Average: 2.0 ppm on Apr 6

Minimum Value: 1.8 ppm on Apr 8 14:00

Minimum Daily Average: 1.8 ppm on Apr 8

Maximum Diurnal Average: 1.9 ppm at hour 6

Minimum Diurnal Average: 1.9 ppm at hour 15

Monthly Average: 1.91 ppm

Percentiles: P_1 = 1.8 P_{10} = 1.9 Q_1 = 1.9 Median = 1.9 Q_3 = 1.9 P_{90} = 2.0 P_{99} = 2.1

Hours in Service:	720
Hours of Data:	674
Hours of Missing Data:	46
Hours of Calibration:	35
Percent Operational Time:	98.5

Day	Hourly Period Ending At (MST)																								Daily	Daily
	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24	Average	Maximum
1-Apr	1.9	Z	1.9	1.9	2.0	2.0	1.9	2.0	C	C	C	C	C	1.9	1.9	1.9	1.9	1.9	1.9	1.9	1.9	2.0	1.9	2.0	1.9	2.0
2-Apr	2.0	Z	1.9	1.9	1.9	1.9	1.9	1.9	1.9	1.9	1.9	1.9	1.9	1.9	1.9	1.9	1.9	1.9	1.9	1.9	1.9	1.9	1.9	1.9	1.9	2.0
3-Apr	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	1.9	1.9	1.9	1.9	1.9	1.9	1.9	1.9	2.0
4-Apr	1.9	Z	1.9	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	1.9	1.9	1.9	1.9	1.9	1.9	1.9	2.0	2.0
5-Apr	1.9	Z	1.9	1.9	1.9	1.9	2.0	1.9	1.9	1.9	1.9	2.0	1.9	1.9	1.9	1.9	1.9	1.9	2.0	2.0	2.0	1.9	1.9	2.0	1.9	2.0
6-Apr	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	2.1	2.2	2.3	2.5	2.0	2.5
7-Apr	2.3	Z	2.0	1.9	2.0	2.0	2.0	1.9	1.9	1.9	1.9	1.9	1.9	1.9	1.9	1.9	1.9	1.9	1.9	1.9	1.9	1.9	1.9	1.9	1.9	2.3
8-Apr	1.9	Z	1.9	1.9	1.9	1.9	1.9	1.9	1.9	M	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	1.8	1.9
9-Apr	1.9	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
10-Apr	1.9	Z	1.9	1.9	1.9	1.9	1.9	1.9	1.9	1.9	1.9	1.9	1.9	1.9	1.9	1.9	1.9	1.9	1.9	1.9	1.9	1.9	1.9	1.9	1.9	1.9
11-Apr	1.9	Z	1.9	1.9	1.9	1.9	1.9	1.9	1.9	1.9	1.9	1.9	1.9	1.9	1.9	1.9	1.9	1.9	1.9	1.9	1.9	1.9	1.9	1.9	1.9	1.9
12-Apr	1.9	Z	1.9	1.9	1.9	1.9	1.9	1.9	1.9	1.9	1.9	1.9	1.9	1.9	1.9	1.9	1.9	1.9	1.9	1.9	1.9	1.9	1.9	1.9	1.9	1.9
13-Apr	1.9	Z	1.9	1.9	1.9	1.9	1.9	1.9	1.9	1.9	1.9	1.9	1.9	1.9	1.9	1.9	1.9	1.9	1.9	1.9	1.9	1.9	1.9	1.9	1.9	1.9
14-Apr	1.9	Z	1.9	1.9	1.9	1.9	1.9	1.9	1.9	M	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	1.9	2.0
15-Apr	1.9	Z	1.9	1.9	1.9	1.9	1.9	1.9	1.9	1.9	1.9	1.9	1.9	1.9	1.9	1.9	1.9	1.9	1.9	1.9	1.9	1.9	1.9	1.9	1.9	1.9
16-Apr	1.9	Z	1.9	1.9	1.9	1.9	1.9	1.9	1.9	1.9	1.9	1.9	1.9	1.9	1.9	1.9	1.9	1.9	1.9	1.9	1.9	1.9	1.9	1.9	1.9	1.9
17-Apr	1.9	Z	1.9	1.9	1.9	1.9	1.9	1.9	1.9	1.9	1.9	1.9	1.9	1.9	1.9	1.9	1.9	1.9	1.9	1.9	1.9	1.9	1.9	1.9	1.9	1.9
18-Apr	1.9	Z	1.9	1.9	1.9	1.9	1.9	1.9	1.9	1.9	1.9	1.9	1.9	1.9	1.9	1.9	1.9	1.9	1.9	1.9	1.9	1.9	1.9	1.9	1.9	1.9
19-Apr	1.9	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	1.9	1.9	1.9	1.9	1.9	1.9	1.9	1.9	1.9	2.0
20-Apr	1.9	Z	2.0	2.0	1.9	2.0	2.0	1.9	1.9	1.9	1.9	1.9	2.0	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
21-Apr	2.0	Z	1.9	2.0	2.0	1.9	1.9	1.9	1.9	1.9	1.9	1.9	2.0	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
22-Apr	1.9	Z	2.1	2.1	2.0	2.1	2.1	1.9	1.9	1.9	1.9	1.9	1.9	M	1.9	1.9	1.9	1.9	1.9	1.9	1.9	1.9	1.9	1.9	1.9	2.1
23-Apr	1.9	Z	1.9	1.9	1.9	1.9	1.9	1.9	1.9	1.9	1.9	M	M	M	1.9	1.9	1.9	1.9	1.9	1.9	1.9	1.9	1.9	1.9	1.9	1.9
24-Apr	1.9	Z	1.9	1.9	1.9	1.9	1.9	1.9	1.9	1.9	1.9	1.9	1.9	1.9	1.9	1.9	1.9	1.9	1.9	1.9	1.9	1.9	1.9	1.9	1.9	1.9
25-Apr	1.9	Z	1.9	1.9	1.9	1.9	1.9	1.9	M	M	1.9	1.9	1.9	1.9	1.9	1.9	1.9	1.9	1.9	1.9	1.9	1.9	1.9	1.9	1.9	1.9
26-Apr	1.9	Z	1.9	1.9	1.9	1.9	1.9	1.9	1.9	1.9	1.9	1.9	1.9	1.9	1.9	1.9	1.9	1.9	1.9	1.9	1.9	1.9	1.9	1.9	1.9	1.9
27-Apr	1.9	Z	1.9	1.9	1.9	1.9	1.9	1.9	1.9	1.9	1.9	1.9	1.9	1.9	1.9	1.9	1.9	1.9	1.9	1.9	1.9	1.9	1.9	1.9	1.9	1.9
28-Apr	1.9	Z	1.9	1.9	1.9	2.0	2.0	1.9	1.9	1.9	1.9	1.9	1.9	M	M	1.9	1.9	1.9	1.9	1.9	1.9	1.9	2.0	1.9	1.9	2.0
29-Apr	1.9	Z	1.9	1.9	2.0	2.0	2.0	1.9	1.9	1.9	M	1.9	1.9	1.9	1.9	1.9	1.9	1.9	1.9	1.9	1.9	2.0	2.2	2.1	1.9	2.2
30-Apr	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	1.9	1.9	1.9	1.9	1.8	1.9	1.9	1.9	1.9	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	1.9	1.9	1.9	1.9	Diurnal Average	
	2.3	--	2.1	2.1	2.0	2.1	2.1	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	1.9	2.0	2.0	2.1	2.2	2.3	2.5	Diurnal Maximum	

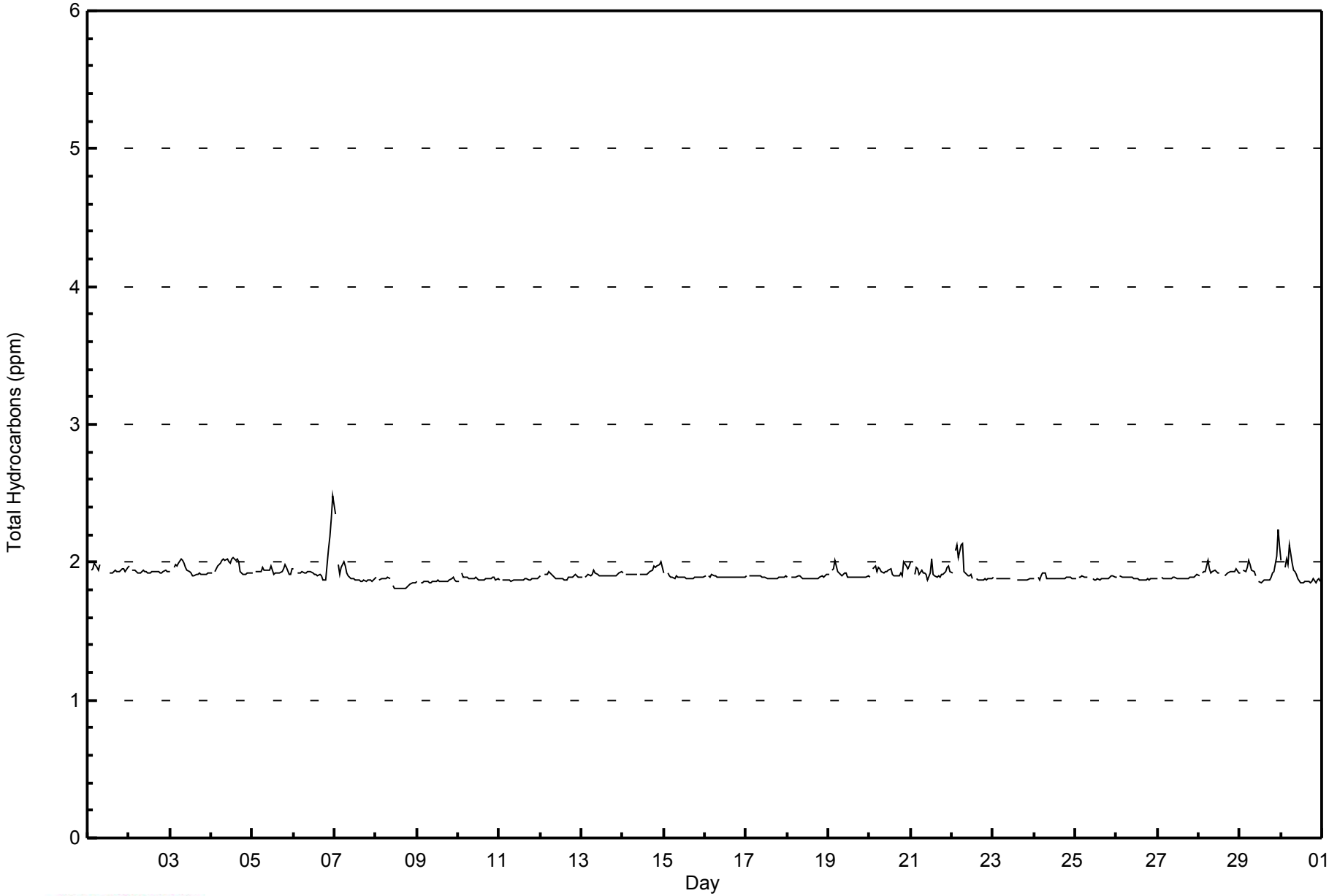
Z - zerospan C - Calibration M - Maintenance

WBEA NETWORK

Hourly Averages

Total Hydrocarbons (THC) - ppm

Patricia McInnes - April 2014



AURORA
ATMOSPHERICS INC.

Concentration Ranges (ppm)	Number of Hours	%	Cumulative %
0 - 2.0	662	98.22	98.22
2.1 - 3.0	12	1.78	100.00
3.1 - 10.0	0	0.00	100.00
> 10.0	0	0.00	100.00

Total Number of Valid Hours: 674

Total Number of Hours: 720

WBEA NETWORK

Frequency Distribution

Total Hydrocarbons (THC) - ppm

Patricia McInnes - April 2014

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	57	46	31	46	59	143	65	10	24	31	25	26	24	19	16	40	662
2.1 - 3.0	4	0	0	0	0	0	0	0	2	1	1	1	1	0	2	0	12
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	61	46	31	46	59	143	65	10	26	32	26	27	25	19	18	40	674

Total Number of Valid Hours: 674

Total Number of Hours: 720

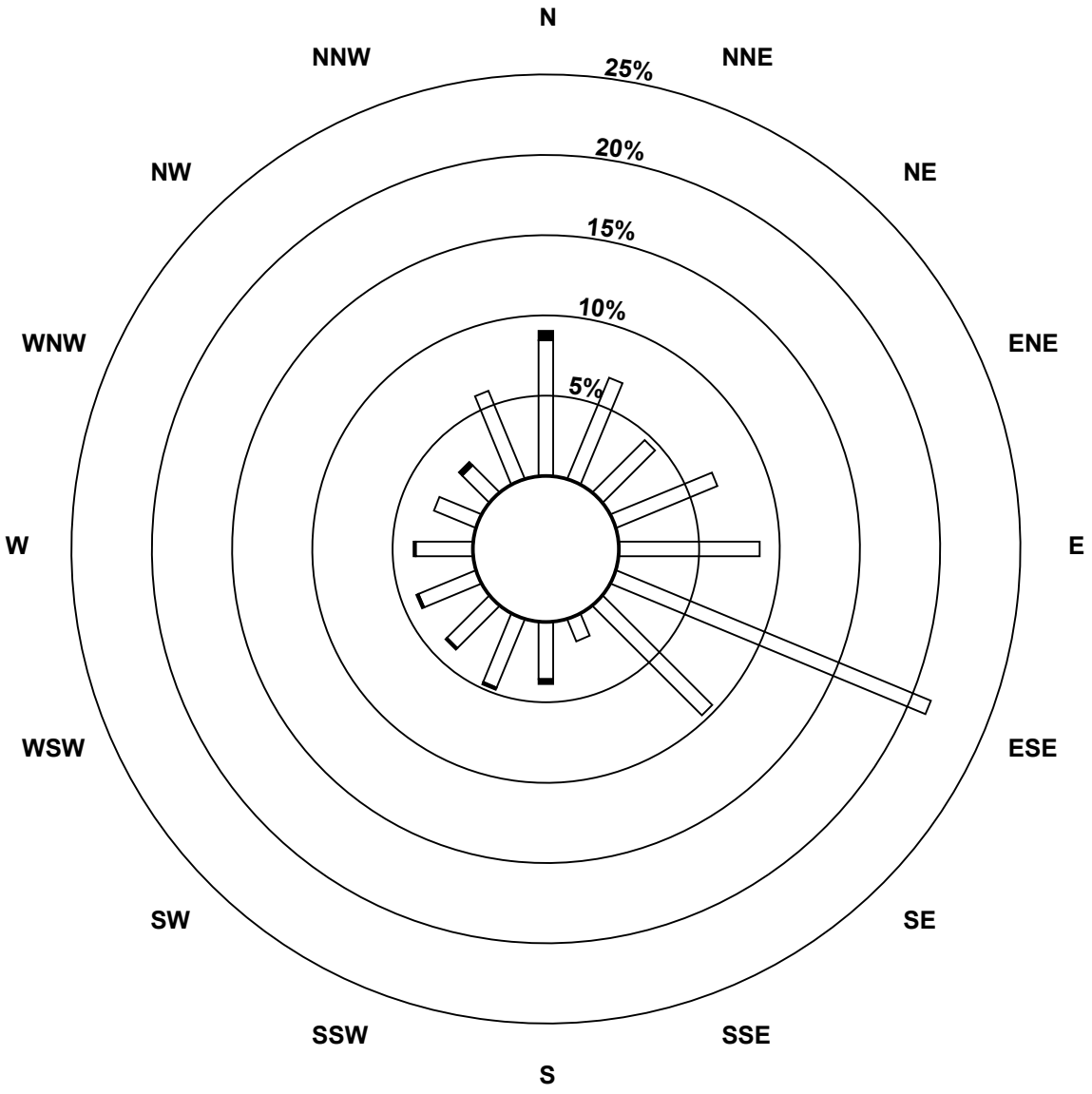
AURORA ATMOSPHERICS INC.

Wood Buffalo Environmental Association

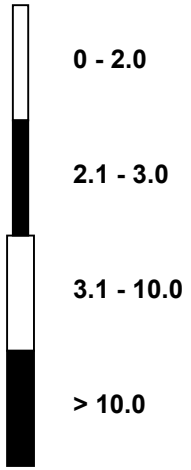
Wind Rose Apr 2014

Total Hydrocarbons (THC) - ppm

Patricia McInnes (AMS 6)



Classes (ppm)



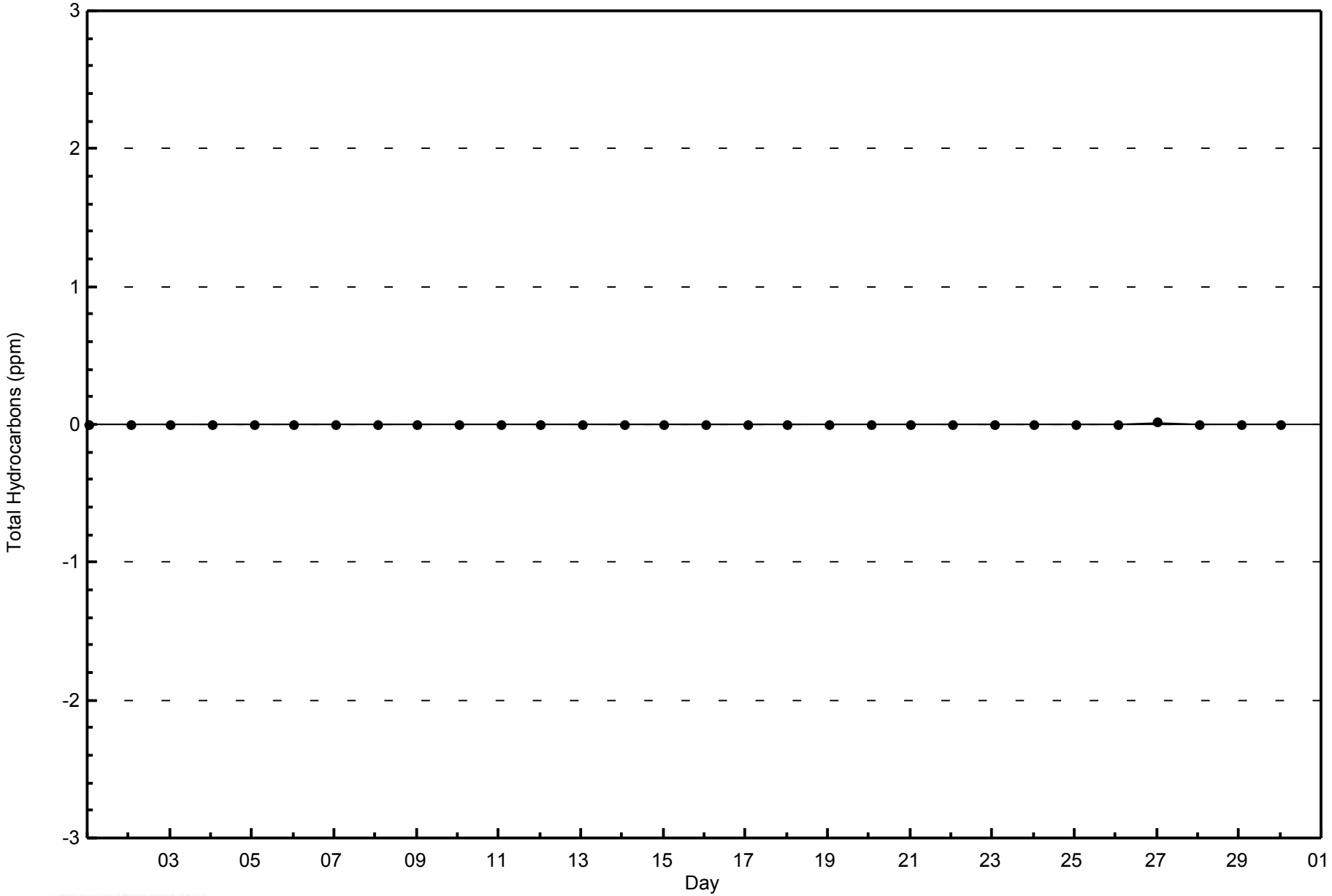
Total Number of Valid Hours: 674

WBEA NETWORK

Zero Responses

Total Hydrocarbons (THC) - ppm

Patricia McInnes - April 2014



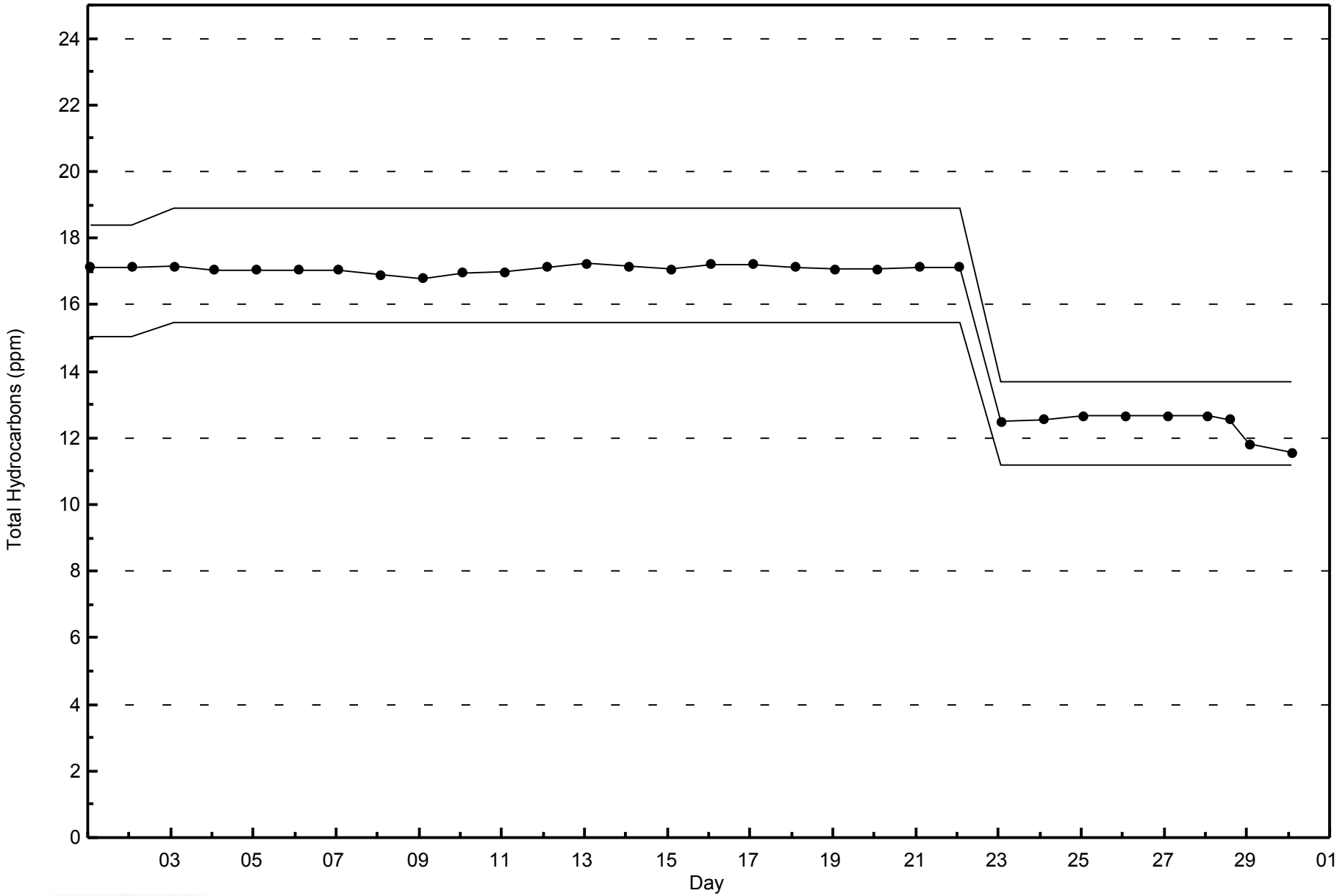
AURORA
ATMOSPHERICS INC.

WBEA NETWORK

Span Responses

Total Hydrocarbons (THC) - ppm

Patricia McInnes - April 2014



AURORA ATMOSPHERICS INC.

Wood Buffalo Environmental Association

Summary of Hour Averages

Non Methane Hydrocarbons (NMHC) - ppm

Patricia McInnes - April 2014

Maximum Value: 0.358 ppm on Apr 7 00:00

Maximum Daily Average: 0.040 ppm on Apr 6

Minimum Value: 0.000 ppm on Apr 1 01:00

Minimum Daily Average: 0.000 ppm on Apr 11

Maximum Diurnal Average: 0.014 ppm at hour 23

Minimum Diurnal Average: 0.000 ppm at hour 14

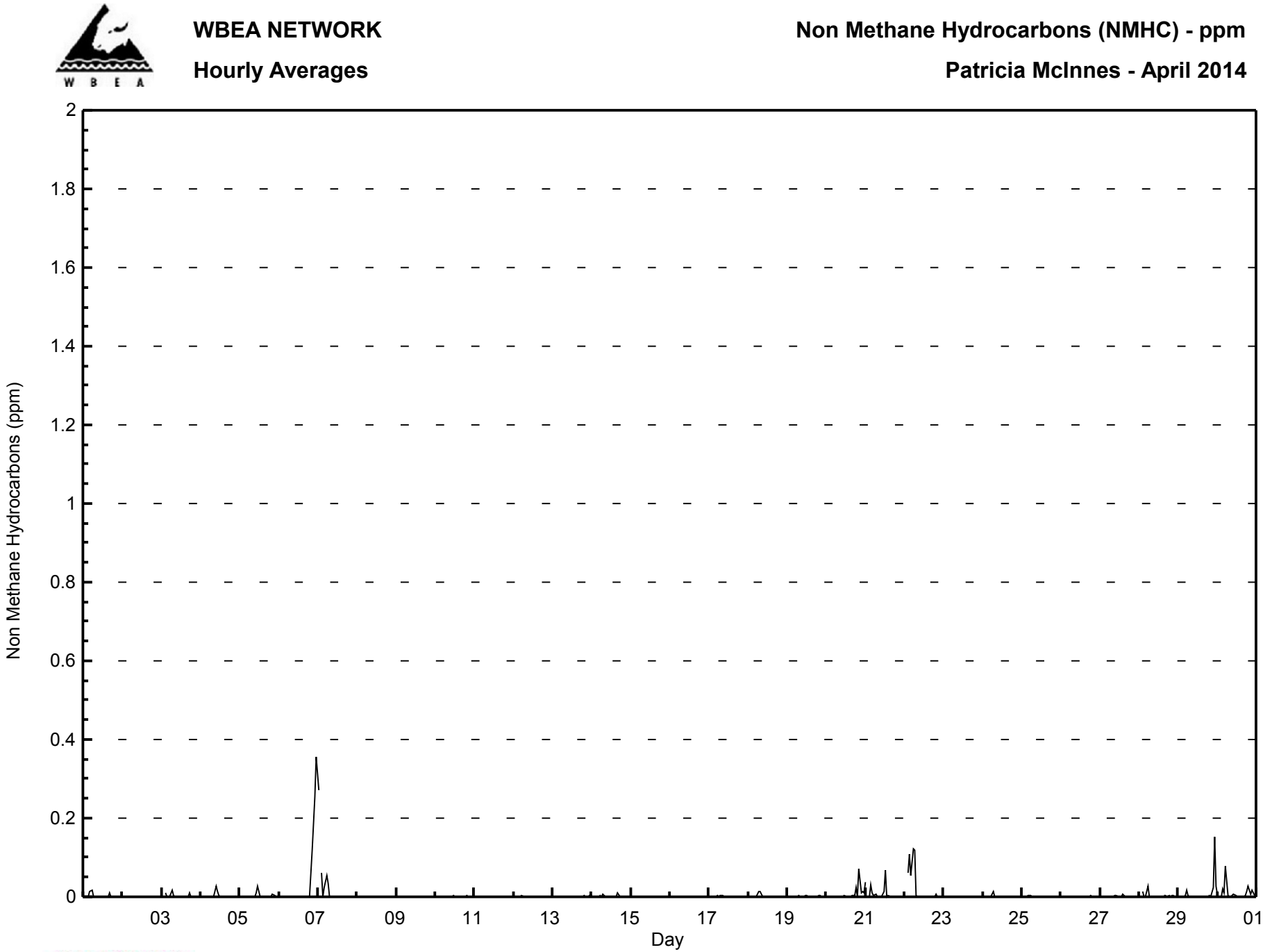
Monthly Average: 0.004 ppm

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:	674
Hours of Missing Data:	46
Hours of Calibration:	35
Percent Operational Time:	98.5

Day	Hourly Period Ending At (MST)																								Daily	Daily
	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24	Average	Maximum
1-Apr	0.000	Z	0.000	0.000	0.014	0.016	0.000	0.000	C	C	C	C	C	0.000	0.000	0.000	0.011	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.002	0.016
2-Apr	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
3-Apr	0.000	Z	0.010	0.001	0.000	0.000	0.018	0.003	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	0.000	0.000	0.000	0.002	0.018
4-Apr	0.000	Z	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.027	0.014	0.005	0.000	0.000	0.000	0.001	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.002	0.027
5-Apr	0.000	Z	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.009	0.026	0.000	0.000	0.000	0.002	0.000	0.000	0.000	0.000	0.006	0.002	0.001	0.000	0.002	0.026
6-Apr	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	0.119	0.188	0.253	0.358	0.040	0.358
7-Apr	0.272	Z	0.061	0.000	0.024	0.054	0.035	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.019	0.272
8-Apr	0.000	Z	0.001	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	0.001
9-Apr	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
10-Apr	0.000	Z	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	0.003	0.000	0.000	0.000	0.000	0.000	0.003
11-Apr	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
12-Apr	0.000	Z	0.000	0.000	0.000	0.003	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.003
13-Apr	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	0.002	0.000	0.000	0.000	0.007	0.000	0.007
14-Apr	0.000	Z	0.000	0.000	0.000	0.003	0.000	0.007	0.000	M	0.000	0.000	0.000	0.000	0.000	0.000	0.010	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.001	0.010
15-Apr	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
16-Apr	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-Apr	0.000	Z	0.000	0.000	0.000	0.004	0.000	0.003	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	0.004
18-Apr	0.000	Z	0.000	0.000	0.000	0.001	0.013	0.013	0.005	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.001	0.013
19-Apr	0.000	Z	0.000	0.000	0.000	0.000	0.000	0.003	0.000	0.000	0.000	0.004	0.002	0.000	0.000	0.001	0.000	0.000	0.000	0.002	0.002	0.000	0.000	0.000	0.001	0.004
20-Apr	0.000	Z	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	0.005	0.002	0.023	0.002	0.070	0.009	0.014	0.010	0.006	0.070
21-Apr	0.037	Z	0.000	0.029	0.009	0.005	0.007	0.000	0.000	0.000	0.000	0.015	0.067	0.000	0.004	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.008	0.067
22-Apr	0.000	Z	0.060	0.108	0.053	0.121	0.120	0.003	0.000	0.000	0.000	0.000	0.000	M	0.000	0.000	0.000	0.001	0.000	0.007	0.001	0.000	0.000	0.000	0.022	0.121
23-Apr	0.000	Z	0.001	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	0.001
24-Apr	0.000	Z	0.000	0.000	0.000	0.000	0.015	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	0.001	0.015
25-Apr	0.000	Z	0.000	0.000	0.003	0.005	0.000	0.000	M	M	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.005
26-Apr	0.000	Z	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.001	0.000	0.000	0.000	0.002	0.000	0.000	0.002	0.000	0.000	0.000	0.000	0.000	0.000	0.002
27-Apr	0.000	Z	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.005	0.004	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	0.001	0.007
28-Apr	0.000	Z	0.012	0.000	0.000	0.027	0.000	0.000	0.000	0.000	0.000	0.000	0.000	M	M	0.002	0.004	0.000	0.003	0.000	0.002	0.003	0.000	0.000	0.003	0.027
29-Apr	0.000	Z	0.000	0.000	0.004	0.017	0.002	0.000	0.000	0.000	M	0.000	0.000	0.000	0.000	0.000	0.001	0.000	0.000	0.003	0.000	0.024	0.153	0.028	0.011	0.153
30-Apr	0.005	Z	0.000	0.020	0.012	0.077	0.004	0.000	0.000	0.002	0.006	0.003	0.000	0.000	0.000	0.001	0.000	0.002	0.015	0.028	0.007	0.016	0.012	0.004	0.009	0.077
	0.010	--	0.005	0.005	0.004	0.011	0.007	0.001	0.000	0.001	0.001	0.002	0.002	0.000	0.000	0.000	0.001	0.000	0.001	0.002	0.007	0.008	0.014	0.014	Diurnal Average	
	0.272	--	0.061	0.108	0.053	0.121	0.120	0.013	0.005	0.027	0.014	0.026	0.067	0.000	0.007	0.002	0.011	0.009	0.023	0.028	0.119	0.188	0.253	0.358	Diurnal Maximum	

Z - zerospan C - Calibration M - Maintenance


WBEA NETWORK
Hourly Averages
Non Methane Hydrocarbons (NMHC) - ppm
Patricia McInnes - April 2014
Non Methane Hydrocarbons (ppm)
2
1.8
1.6
1.4
1.2
1
0.8
0.6
0.4
0.2
0
03
05
07
09
11
13
15
17
19
21
23
25
27
29
01
Day
AURORA
ATMOSPHERICS INC.

Concentration Ranges (ppm)	Number of Hours	%	Cumulative %
0 - 0.005	615	91.25	91.25
0.006 - 0.05	45	6.68	97.92
0.06 - 0.1	9	1.34	99.26
> 0.1	5	0.74	100.00

Total Number of Valid Hours: 674

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	55	44	30	43	56	136	60	9	22	19	21	25	22	19	16	38	615
0.006 - 0.05	2	1	1	3	3	7	5	1	1	12	4	1	2	0	0	2	45
0.06 - 0.1	4	1	0	0	0	0	0	0	2	0	1	0	0	0	1	0	9
> 0.1	0	0	0	0	0	0	0	0	1	1	0	1	1	0	1	0	5
Totals	61	46	31	46	59	143	65	10	26	32	26	27	25	19	18	40	674

Total Number of Valid Hours: 674

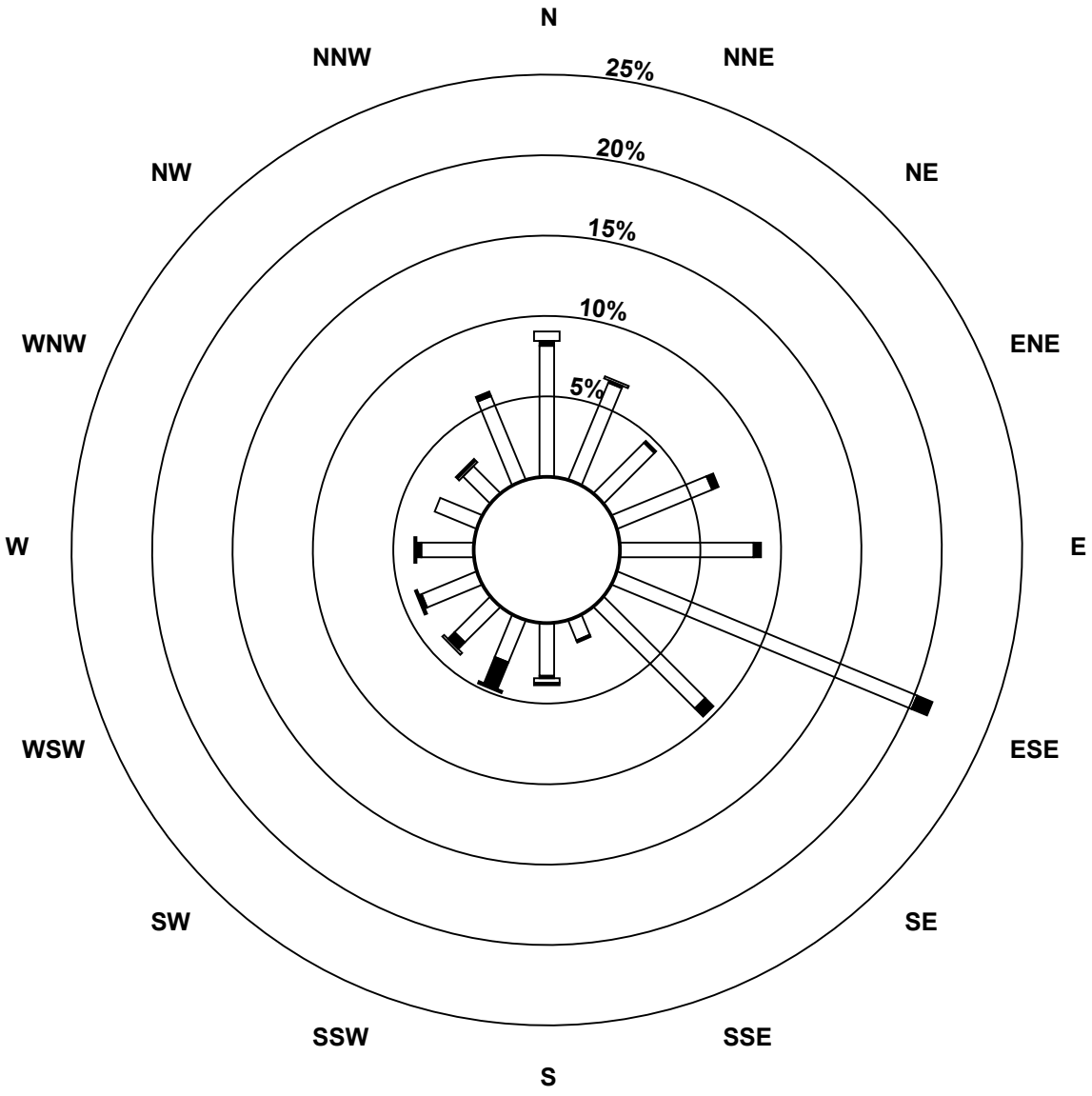
Total Number of Hours: 720

Wood Buffalo Environmental Association

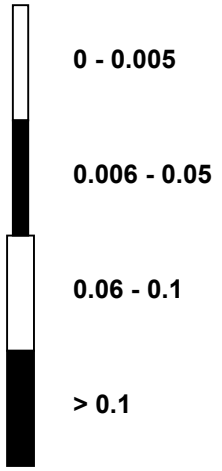
Wind Rose Apr 2014

Non Methane Hydrocarbons (NMHC) - ppm

Patricia McInnes (AMS 6)



Classes (ppm)



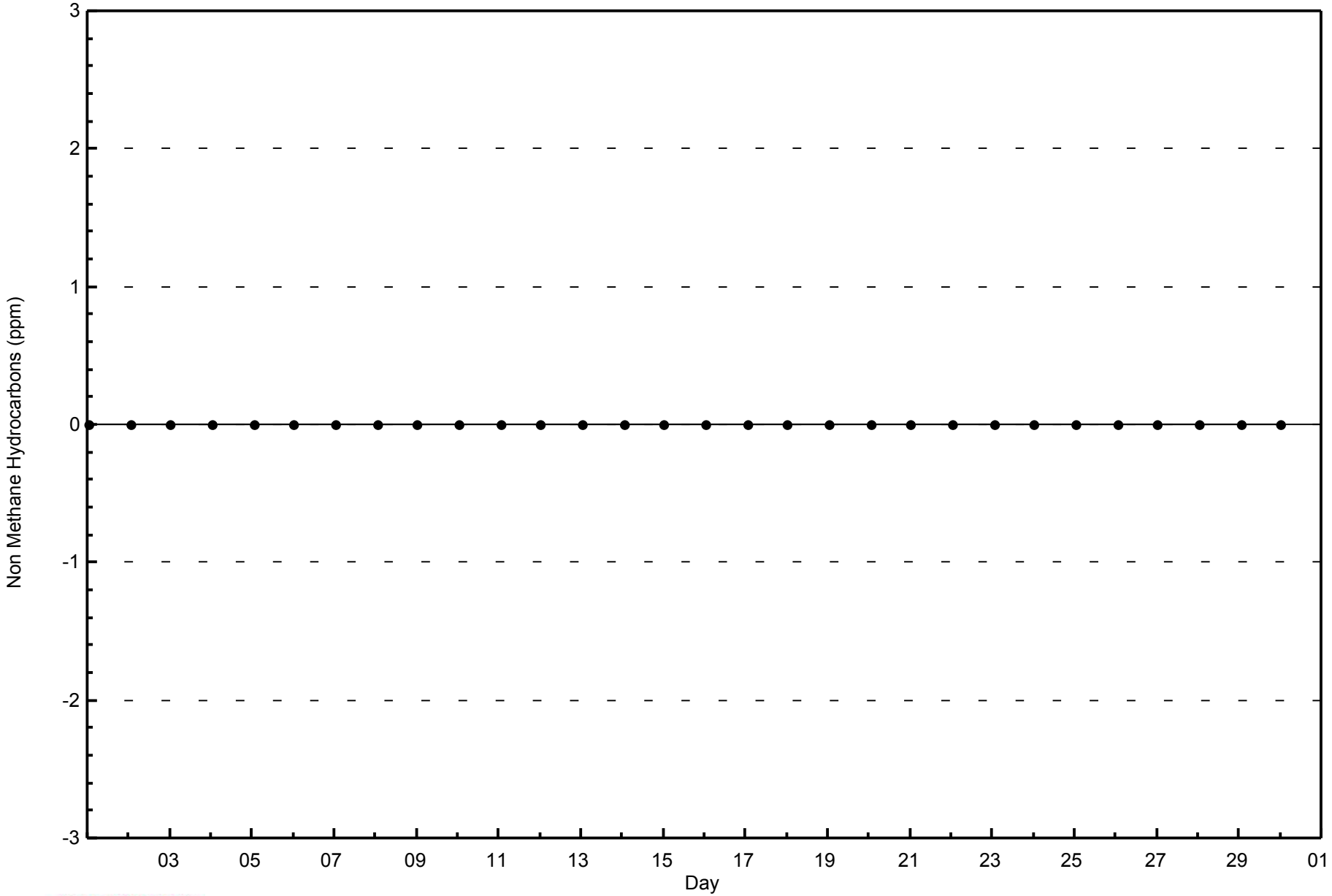
Total Number of Valid Hours: 674

WBEA NETWORK

Zero Responses

Non Methane Hydrocarbons (NMHC) - ppm

Patricia McInnes - April 2014



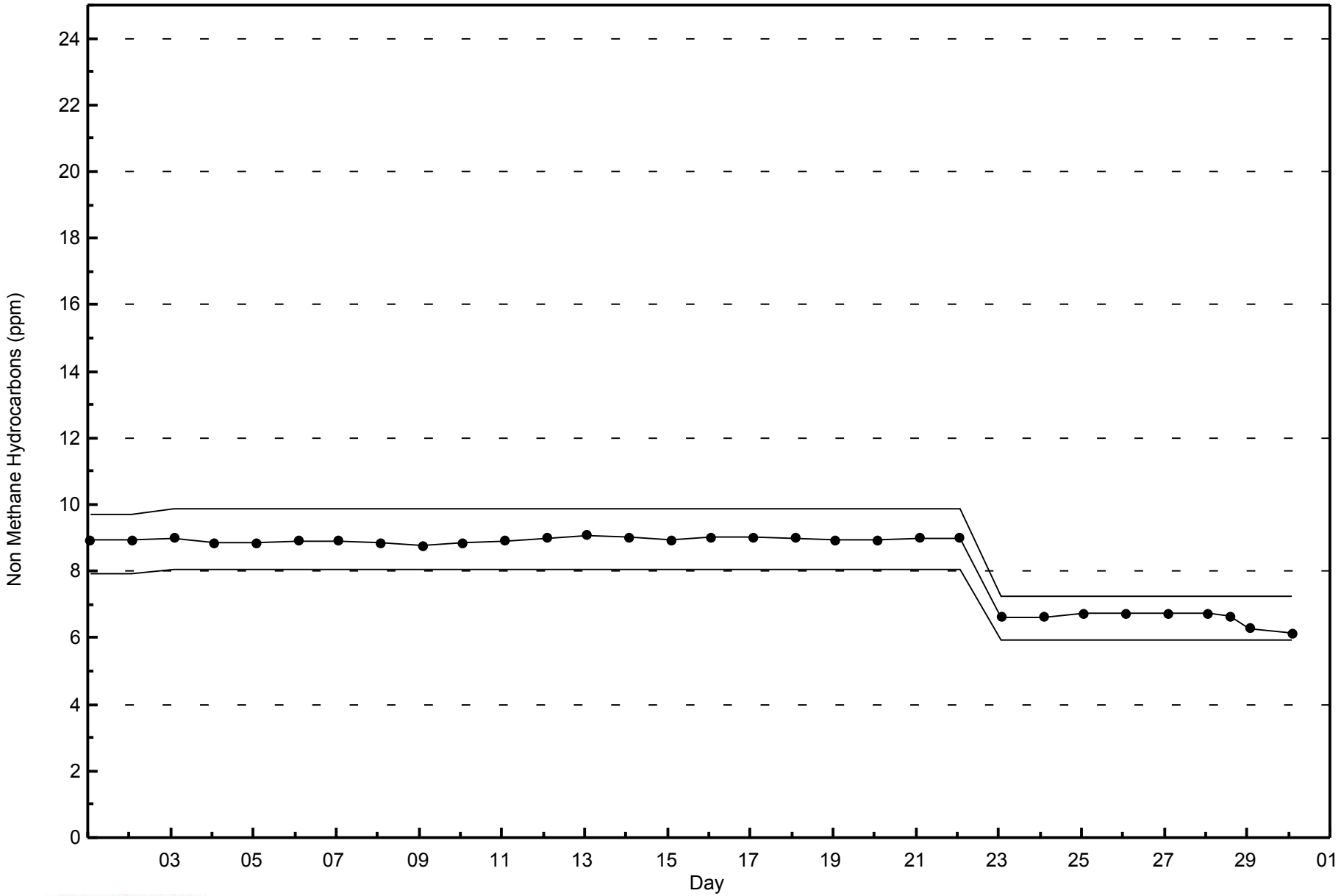
AURORA ATMOSPHERICS INC.

WBEA NETWORK

Span Responses

Non Methane Hydrocarbons (NMHC) - ppm

Patricia McInnes - April 2014



AURORA ATMOSPHERICS INC.

Wood Buffalo Environmental Association

Summary of Hour Averages

Methane (CH_4) - ppm

Patricia McInnes - April 2014

Number of Exceedences (AAAQO): 1-hr: 0 24-hr: 0
Maximum Value: 2.1 ppm on Apr 7 00:00 Maximum Daily Average: 2.0 ppm on Apr 4

Minimum Value: 1.8 ppm on Apr 8 14:00 Minimum Daily Average: 1.8 ppm on Apr 8
Maximum Diurnal Average: 1.9 ppm at hour 6 Minimum Diurnal Average: 1.9 ppm at hour 15
Monthly Average: 1.91 ppm Percentiles: P_1 = 1.8 P_{10} = 1.9 Q_1 = 1.9 Median = 1.9 Q_3 = 1.9 P_{90} = 2.0 P_{99} = 2.0

Hours in Service:	720
Hours of Data:	674
Hours of Missing Data:	46
Hours of Calibration:	35
Percent Operational Time:	98.5

Day	Hourly Period Ending At (MST)																								Daily	Daily
	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24	Average	Maximum
1-Apr	1.9	Z	1.9	1.9	2.0	1.9	1.9	2.0	C	C	C	C	C	1.9	1.9	1.9	1.9	1.9	1.9	1.9	1.9	2.0	1.9	2.0	1.9	2.0
2-Apr	2.0	Z	1.9	1.9	1.9	1.9	1.9	1.9	1.9	1.9	1.9	1.9	1.9	1.9	1.9	1.9	1.9	1.9	1.9	1.9	1.9	1.9	1.9	1.9	1.9	2.0
3-Apr	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	1.9	1.9	1.9	1.9	1.9	1.9	1.9	1.9	2.0
4-Apr	1.9	Z	1.9	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	1.9	1.9	1.9	1.9	1.9	1.9	1.9	2.0	2.0
5-Apr	1.9	Z	1.9	1.9	1.9	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	2.0	2.0	2.0	1.9	1.9	2.0	1.9	2.0
6-Apr	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	2.1	2.1	1.9	2.1
7-Apr	2.1	Z	1.9	1.9	1.9	2.0	1.9	1.9	1.9	1.9	1.9	1.9	1.9	1.9	1.9	1.9	1.9	1.9	1.9	1.9	1.9	1.9	1.9	1.9	1.9	2.1
8-Apr	1.9	Z	1.9	1.9	1.9	1.9	1.9	1.9	1.9	M	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	1.8	1.9
9-Apr	1.9	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
10-Apr	1.9	Z	1.9	1.9	1.9	1.9	1.9	1.9	1.9	1.9	1.9	1.9	1.9	1.9	1.9	1.9	1.9	1.9	1.9	1.9	1.9	1.9	1.9	1.9	1.9	1.9
11-Apr	1.9	Z	1.9	1.9	1.9	1.9	1.9	1.9	1.9	1.9	1.9	1.9	1.9	1.9	1.9	1.9	1.9	1.9	1.9	1.9	1.9	1.9	1.9	1.9	1.9	1.9
12-Apr	1.9	Z	1.9	1.9	1.9	1.9	1.9	1.9	1.9	1.9	1.9	1.9	1.9	1.9	1.9	1.9	1.9	1.9	1.9	1.9	1.9	1.9	1.9	1.9	1.9	1.9
13-Apr	1.9	Z	1.9	1.9	1.9	1.9	1.9	1.9	1.9	1.9	1.9	1.9	1.9	1.9	1.9	1.9	1.9	1.9	1.9	1.9	1.9	1.9	1.9	1.9	1.9	1.9
14-Apr	1.9	Z	1.9	1.9	1.9	1.9	1.9	1.9	1.9	M	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	1.9	2.0
15-Apr	1.9	Z	1.9	1.9	1.9	1.9	1.9	1.9	1.9	1.9	1.9	1.9	1.9	1.9	1.9	1.9	1.9	1.9	1.9	1.9	1.9	1.9	1.9	1.9	1.9	1.9
16-Apr	1.9	Z	1.9	1.9	1.9	1.9	1.9	1.9	1.9	1.9	1.9	1.9	1.9	1.9	1.9	1.9	1.9	1.9	1.9	1.9	1.9	1.9	1.9	1.9	1.9	1.9
17-Apr	1.9	Z	1.9	1.9	1.9	1.9	1.9	1.9	1.9	1.9	1.9	1.9	1.9	1.9	1.9	1.9	1.9	1.9	1.9	1.9	1.9	1.9	1.9	1.9	1.9	1.9
18-Apr	1.9	Z	1.9	1.9	1.9	1.9	1.9	1.9	1.9	1.9	1.9	1.9	1.9	1.9	1.9	1.9	1.9	1.9	1.9	1.9	1.9	1.9	1.9	1.9	1.9	1.9
19-Apr	1.9	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	1.9	1.9	1.9	1.9	1.9	1.9	1.9	1.9	1.9	2.0
20-Apr	1.9	Z	2.0	2.0	1.9	2.0	2.0	1.9	1.9	1.9	1.9	1.9	2.0	1.9	1.9	1.9	1.9	1.9	1.9	1.9	1.9	2.0	1.9	2.0	1.9	2.0
21-Apr	2.0	Z	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	1.9	1.9	1.9	1.9	2.0	2.0	1.9	1.9	2.0
22-Apr	1.9	Z	2.0	2.0	2.0	2.0	2.0	1.9	1.9	1.9	1.9	1.9	1.9	M	1.9	1.9	1.9	1.9	1.9	1.9	1.9	1.9	1.9	1.9	1.9	2.0
23-Apr	1.9	Z	1.9	1.9	1.9	1.9	1.9	1.9	1.9	1.9	1.9	M	M	M	1.9	1.9	1.9	1.9	1.9	1.9	1.9	1.9	1.9	1.9	1.9	1.9
24-Apr	1.9	Z	1.9	1.9	1.9	1.9	1.9	1.9	1.9	1.9	1.9	1.9	1.9	1.9	1.9	1.9	1.9	1.9	1.9	1.9	1.9	1.9	1.9	1.9	1.9	1.9
25-Apr	1.9	Z	1.9	1.9	1.9	1.9	1.9	1.9	M	M	1.9	1.9	1.9	1.9	1.9	1.9	1.9	1.9	1.9	1.9	1.9	1.9	1.9	1.9	1.9	1.9
26-Apr	1.9	Z	1.9	1.9	1.9	1.9	1.9	1.9	1.9	1.9	1.9	1.9	1.9	1.9	1.9	1.9	1.9	1.9	1.9	1.9	1.9	1.9	1.9	1.9	1.9	1.9
27-Apr	1.9	Z	1.9	1.9	1.9	1.9	1.9	1.9	1.9	1.9	1.9	1.9	1.9	1.9	1.9	1.9	1.9	1.9	1.9	1.9	1.9	1.9	1.9	1.9	1.9	1.9
28-Apr	1.9	Z	1.9	1.9	1.9	2.0	2.0	1.9	1.9	1.9	1.9	1.9	1.9	M	M	1.9	1.9	1.9	1.9	1.9	1.9	1.9	2.0	1.9	1.9	2.0
29-Apr	1.9	Z	1.9	1.9	2.0	2.0	2.0	1.9	1.9	1.9	M	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	1.9	2.1
30-Apr	2.0	Z	2.0	2.0	2.0	2.0	2.0	1.9	1.9	1.9	1.9	1.9	1.9	1.9	1.9	1.9	1.9	1.9	1.8	1.9	1.8	1.9	1.9	1.9	1.9	2.0
	1.9	--	1.9	1.9	1.9	1.9	1.9	1.9	1.9	1.9	1.9	1.9	1.9	1.9	1.9	1.9	1.9	1.9	1.9	1.9	1.9	1.9	1.9	1.9	Diurnal Average	
	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	1.9	2.0	2.0	2.0	2.0	2.1	2.1	Diurnal Maximum	

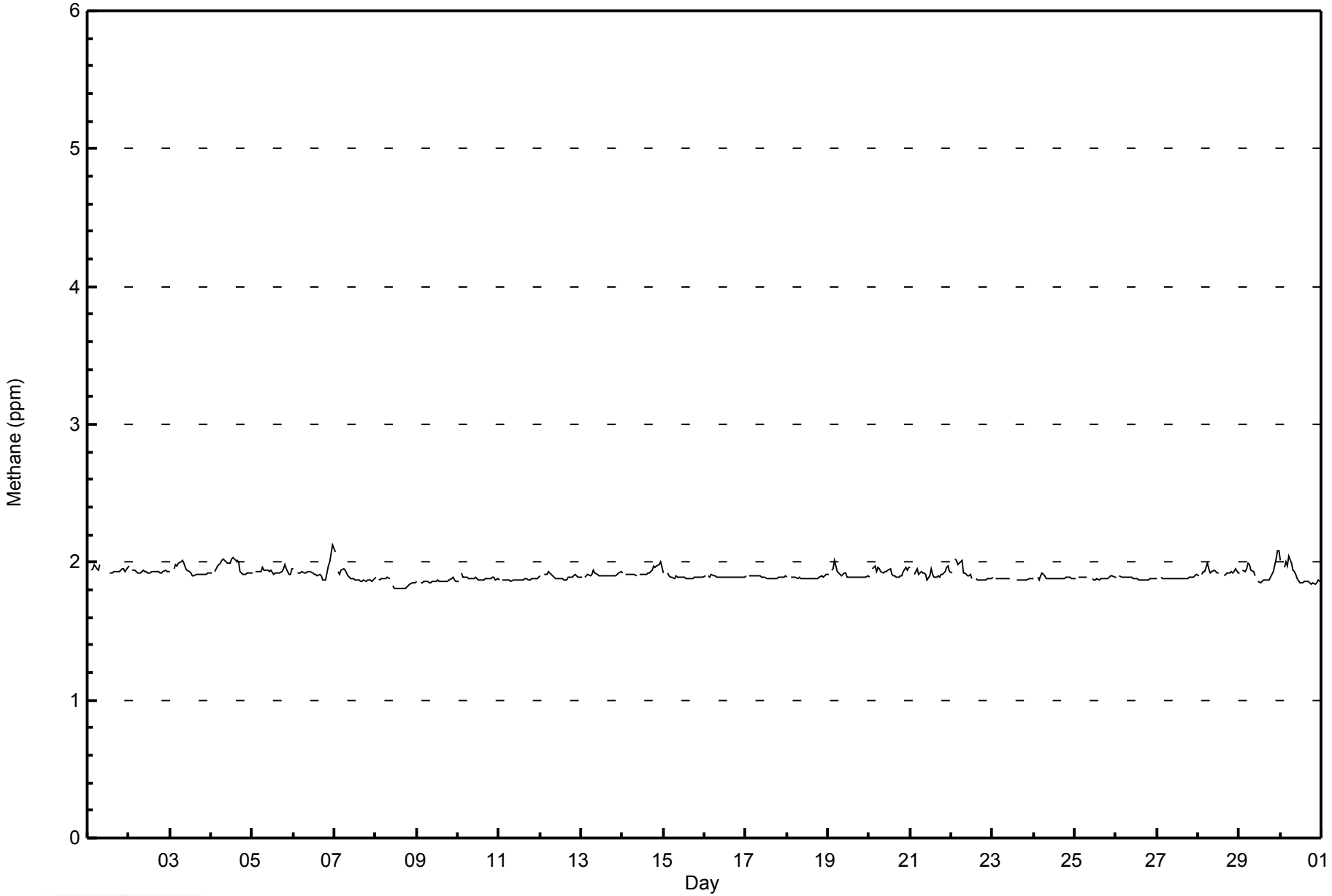
Z - zerospan C - Calibration M - Maintenance

WBEA NETWORK

Hourly Averages

Methane (CH_4) - ppm

Patricia McInnes - April 2014



AURORA ATMOSPHERICS INC.

Concentration Ranges (ppm)	Number of Hours	%	Cumulative %
0 - 2.0	669	99.26	99.26
2.1 - 3.0	5	0.74	100.00
3.1 - 10.0	0	0.00	100.00
> 10.0	0	0.00	100.00

Total Number of Valid Hours: 674

Total Number of Hours: 720

WBEA NETWORK

Frequency Distribution

Methane (CH_4) - ppm

Patricia McInnes - April 2014

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	61	46	31	46	59	143	65	10	25	31	25	26	25	19	17	40	669
2.1 - 3.0	0	0	0	0	0	0	0	0	1	1	1	1	0	0	1	0	5
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	61	46	31	46	59	143	65	10	26	32	26	27	25	19	18	40	674

Total Number of Valid Hours: 674

Total Number of Hours: 720

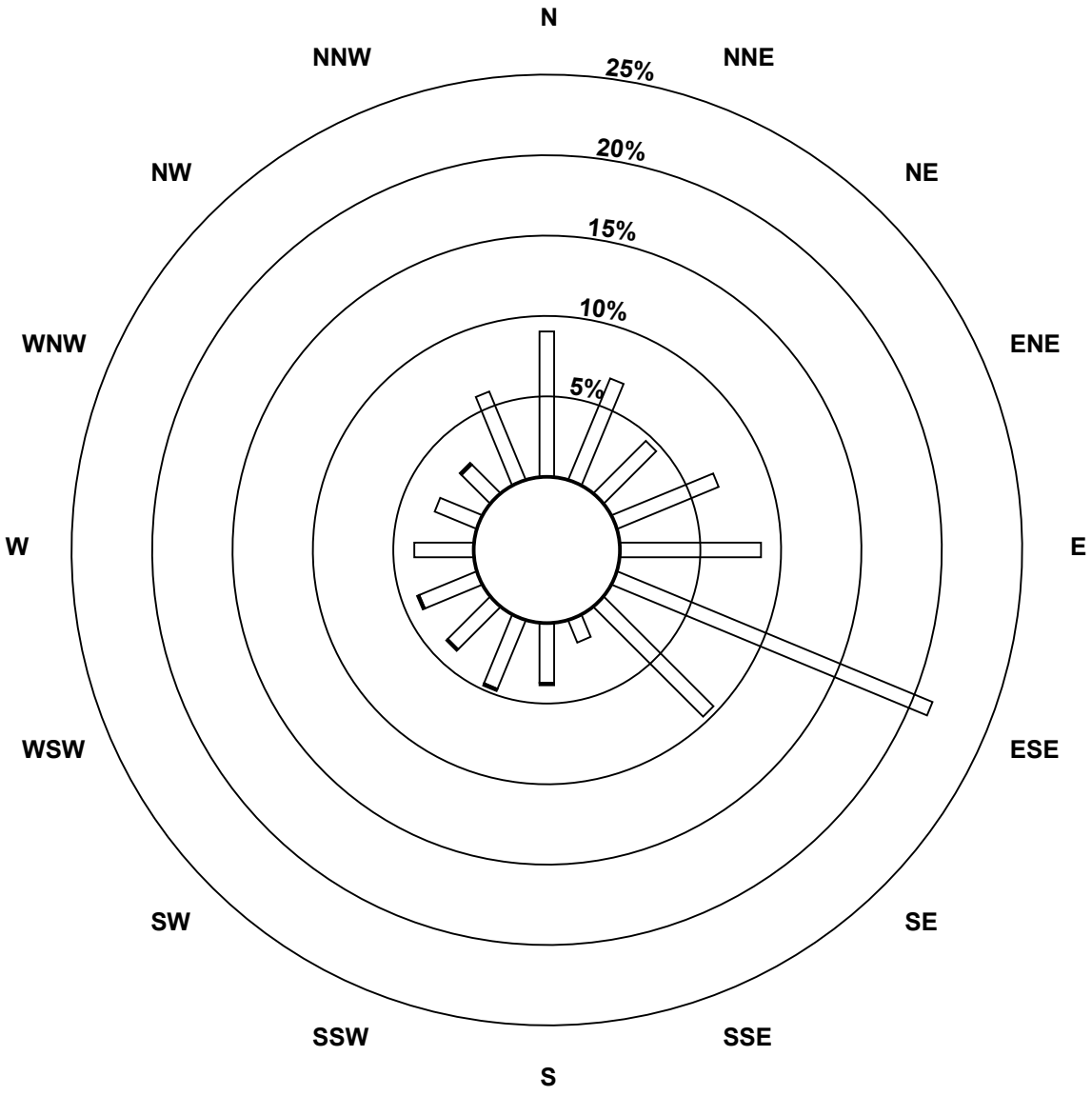
AURORA
ATMOSPHERICS INC.

Wood Buffalo Environmental Association

Wind Rose Apr 2014

Methane (CH_4) - ppm

Patricia McInnes (AMS 6)



Classes (ppm)

0 - 2.0

2.1 - 3.0

3.1 - 10.0

> 10.0

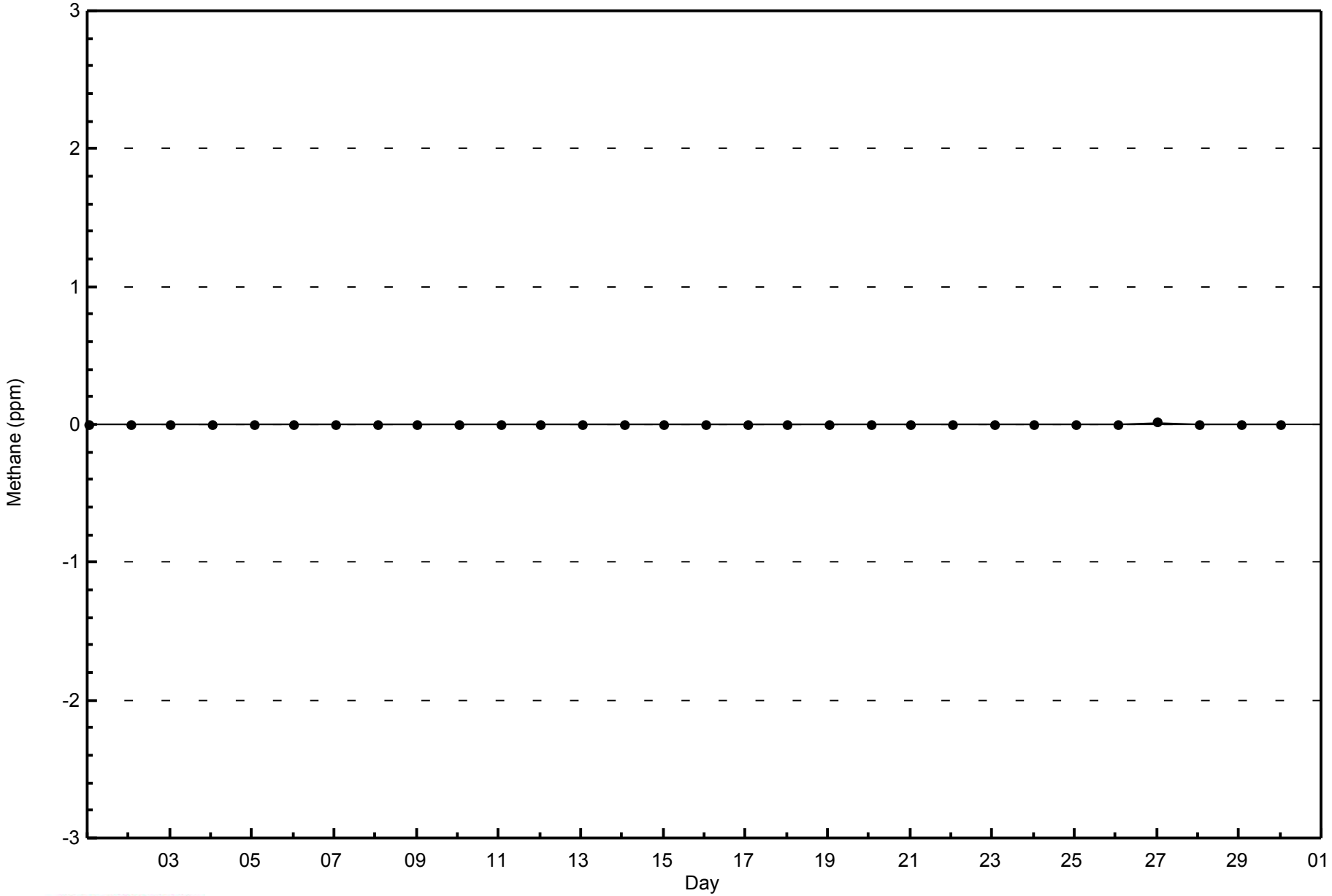
Total Number of Valid Hours: 674

WBEA NETWORK

Zero Responses

Methane (CH_4) - ppm

Patricia McInnes - April 2014



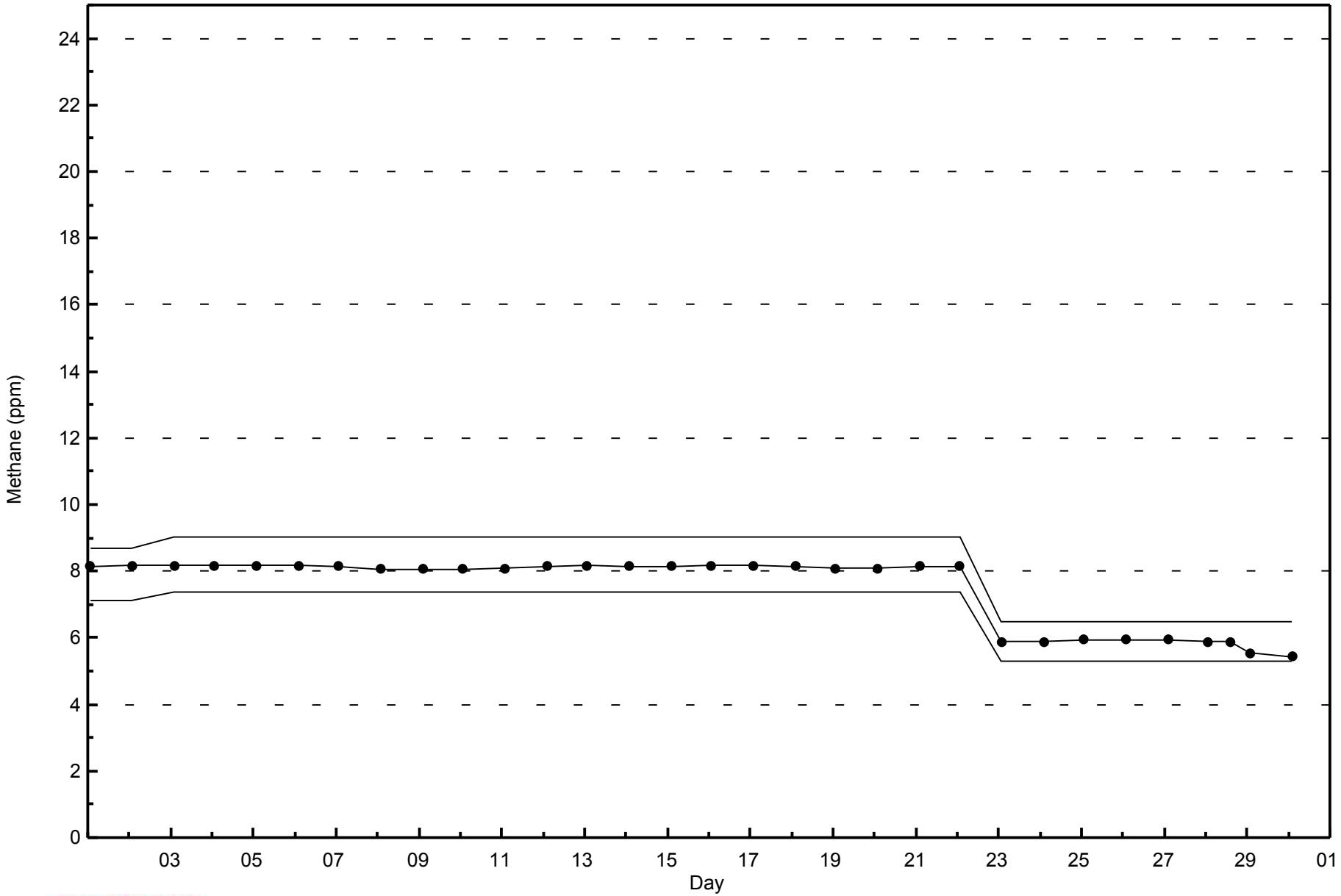
AURORA
ATMOSPHERICS INC.

WBEA NETWORK

Span Responses

Methane (CH_4) - ppm

Patricia McInnes - April 2014



AURORA
ATMOSPHERICS INC.

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

Maximum Value: 57 ppb on Apr 30 16:00 Maximum Daily Average: 43.2 ppb on Apr 23

Minimum Value: 3 ppb on Apr 28 06:00 Minimum Daily Average: 20.6 ppb on Apr 28

Maximum Diurnal Average: 41.7 ppb at hour 15 Minimum Diurnal Average: 25.6 ppb at hour 6

Monthly Average: 35.0 ppb Percentiles: P_1 = 7 P_{10} = 22 Q_1 = 30 Median = 37 Q_3 = 41 P_{90} = 45 P_{99} = 51

Hours in Service:	720
Hours of Data:	685
Hours of Missing Data:	35
Hours of Calibration:	33
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-Apr	42	41	Z	32	25	32	26	30	30	33	34	34	35	36	37	38	37	34	31	30	28	26	29	22	32.3	42
2-Apr	20	17	Z	28	28	28	26	25	C	C	C	28	28	28	28	27	25	23	21	20	19	19	20	20	24.0	28
3-Apr	19	17	Z	14	10	5	9	12	15	18	21	24	28	34	36	37	37	37	37	37	39	40	40	39	26.3	40
4-Apr	39	39	Z	39	41	40	40	39	40	40	37	35	32	37	41	43	43	41	40	42	42	41	41	42	39.7	43
5-Apr	42	38	Z	38	37	36	24	30	34	34	34	36	39	41	42	42	39	34	23	14	28	41	40	35	34.8	42
6-Apr	31	36	Z	38	38	35	37	37	36	33	39	37	36	40	41	36	38	48	48	46	38	32	18	10	35.9	48
7-Apr	14	16	Z	38	22	11	21	32	36	37	41	40	43	44	44	45	46	44	47	45	46	45	42	38	36.4	47
8-Apr	36	34	Z	39	38	36	36	36	37	36	38	40	41	41	41	42	40	42	45	49	52	51	49	48	41.2	52
9-Apr	48	48	Z	47	46	43	43	44	44	44	42	35	38	44	45	46	46	45	45	44	35	33	43	41	43.0	48
10-Apr	40	34	Z	25	28	28	28	28	29	29	30	34	41	42	43	41	39	38	38	38	36	34	39	40	34.7	43
11-Apr	40	41	Z	36	35	34	38	39	38	38	37	37	36	36	38	38	38	41	39	36	37	39	39	39	37.8	41
12-Apr	36	27	Z	27	23	14	25	30	34	37	38	38	38	39	41	40	37	35	37	32	27	32	35	34	32.9	41
13-Apr	34	36	Z	36	34	32	32	30	31	33	37	37	38	38	38	38	37	38	38	36	36	38	39	36	35.8	39
14-Apr	33	33	Z	32	31	28	31	33	37	38	40	44	47	49	50	50	45	44	42	44	43	42	42	36	39.8	50
15-Apr	41	43	Z	38	38	35	38	36	39	40	43	43	44	43	44	44	45	45	45	43	41	40	41	39	41.2	45
16-Apr	36	41	Z	41	38	35	39	43	43	43	43	42	43	42	43	43	42	41	41	42	42	42	41	40	41.1	43
17-Apr	39	40	Z	36	36	36	38	37	38	42	46	46	47	47	47	46	46	46	45	41	40	41	40	40	41.7	47
18-Apr	41	41	Z	41	40	39	41	40	40	41	42	42	42	41	41	41	39	37	34	31	29	29	28	24	37.6	42
19-Apr	25	23	Z	13	9	11	14	18	25	27	30	33	36	41	40	38	38	36	35	33	34	34	32	29	28.5	41
20-Apr	28	26	Z	11	8	6	13	18	20	23	24	33	38	45	47	46	41	43	40	32	26	26	31	24	28.2	47
21-Apr	24	34	Z	27	22	23	19	34	35	38	44	42	40	44	46	45	46	45	43	39	33	26	26	32	35.1	46
22-Apr	33	28	Z	24	23	18	17	30	33	35	40	41	48	48	47	46	45	45	45	43	44	44	44	43	37.5	48
23-Apr	43	43	Z	42	42	40	41	42	43	43	45	46	46	47	47	47	41	41	43	41	43	43	43	43	43.2	47
24-Apr	43	42	Z	40	30	30	32	36	38	38	39	40	40	42	41	40	39	38	36	35	32	35	37	40	37.5	43
25-Apr	39	38	Z	33	28	28	33	35	M	M	38	39	40	41	41	41	40	39	39	36	35	35	36	34	36.6	41
26-Apr	37	36	Z	32	28	27	25	25	28	29	31	33	34	37	39	39	38	38	37	37	36	36	35	34	33.4	39
27-Apr	32	31	Z	29	30	28	28	27	26	27	26	26	26	27	27	27	29	27	25	23	22	21	20	17	26.2	32
28-Apr	18	17	Z	10	4	3	8	14	17	17	19	22	24	26	32	34	33	32	29	26	24	23	20	22	20.6	34
29-Apr	22	20	Z	17	8	4	15	26	29	33	39	43	45	46	47	46	47	45	44	34	34	30	20	13	30.8	47
30-Apr	17	14	Z	13	12	4	13	25	34	37	36	49	51	52	56	57	55	54	50	42	45	38	41	40	36.2	57
	33.1	32.5	--	30.5	27.8	25.6	27.7	31.1	33.1	34.4	36.3	37.4	38.8	40.6	41.7	41.4	40.3	39.9	38.7	36.4	35.5	35.2	35.0	33.1	Diurnal Average	
	48	48	--	47	46	43	43	44	44	44	46	49	51	52	56	57	55	54	50	49	52	51	49	48	Diurnal Maximum	

Z - zerospan C - Calibration M - Maintenance

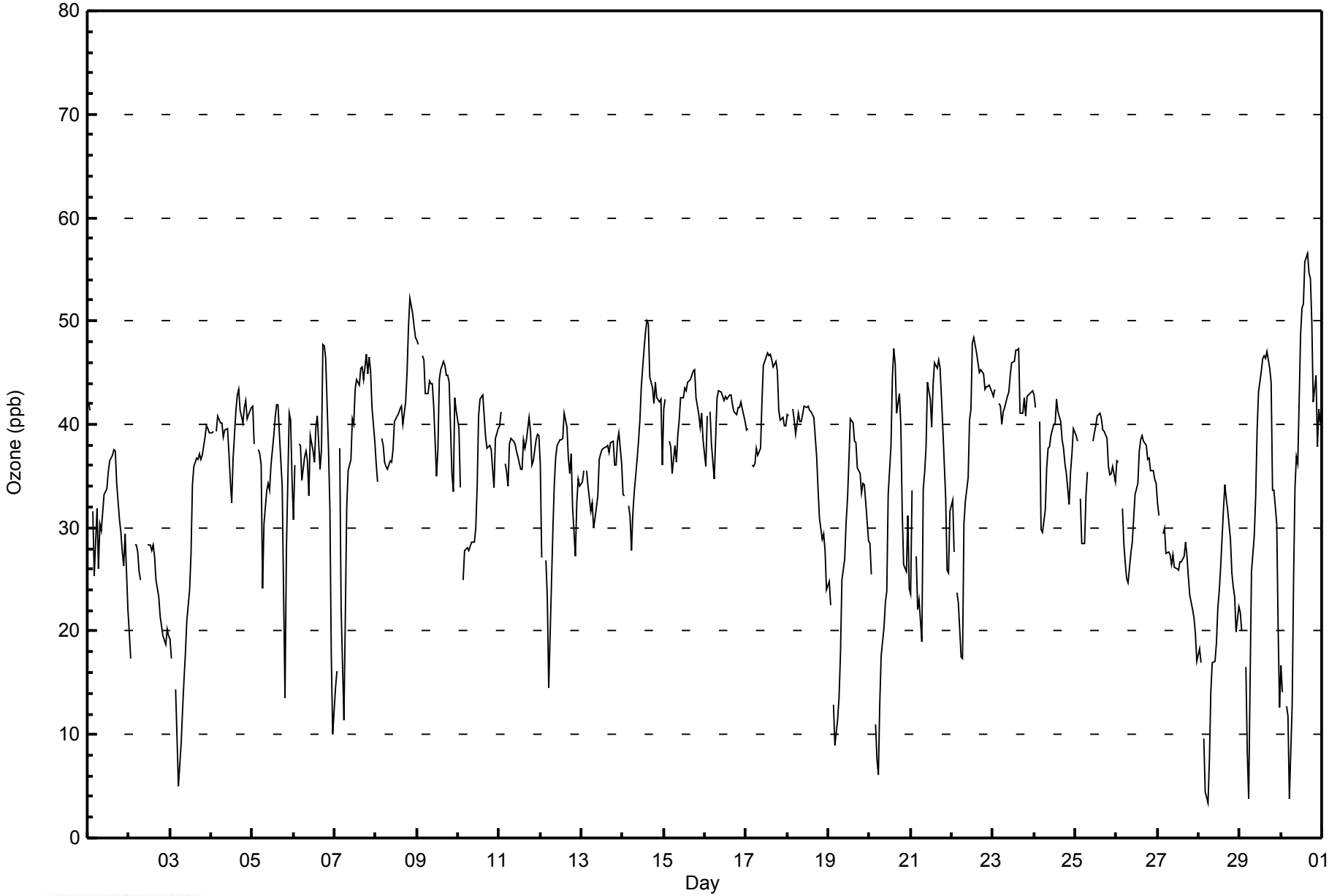
Alberta Ambient Air Quality Objectives (AAAQO): 1-hr 82 ppb

WBEA NETWORK

Hourly Averages

Ozone (O_3) - ppb

Patricia McInnes - April 2014



AURORA ATMOSPHERICS INC.

Concentration Ranges (ppb)	Number of Hours	%	Cumulative %
0 - 20	63	9.20	9.20
21 - 50	614	89.64	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

WBEA NETWORK

Frequency Distribution

Ozone (O_3) - ppb

Patricia McInnes - April 2014

Concentration Ranges (ppb)	Wind Direction																
	N	NNE	NE	ENE	E	ESE	SE	SSE	S	SSW	SW	WSW	W	WNW	NW	NNW	**Totals**
0 - 20	10	1	1	2	0	5	8	2	9	9	1	2	0	2	2	9	63
21 - 50	51	47	31	44	64	140	56	10	14	20	25	22	26	17	17	30	614
51 - 82	0	0	0	0	0	0	0	0	4	1	1	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	61	48	32	46	64	145	64	12	27	30	27	26	26	19	19	39	685

Total Number of Valid Hours: 685

Total Number of Hours: 720

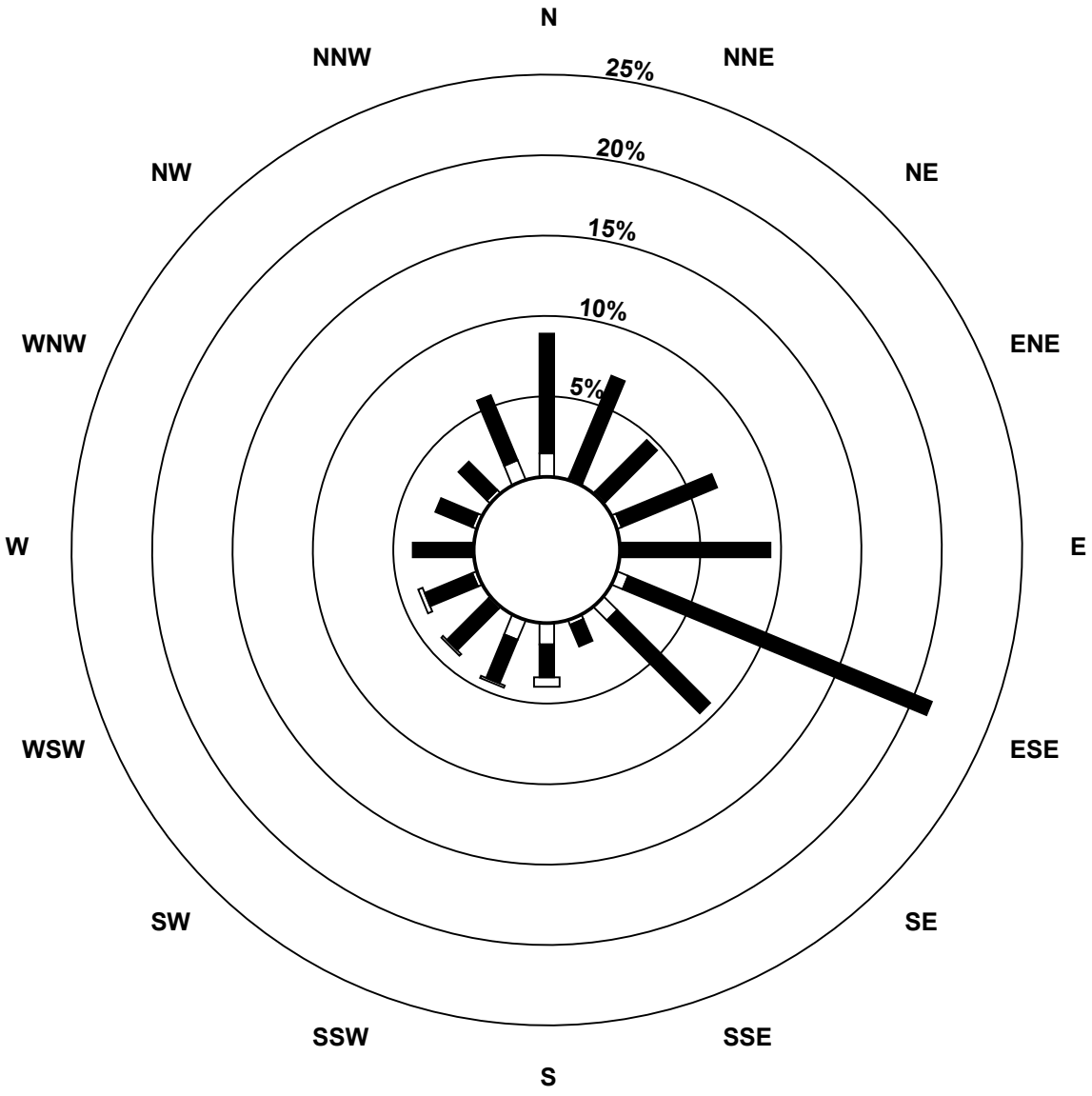
AURORA ATMOSPHERICS INC.

Wood Buffalo Environmental Association

Wind Rose Apr 2014

Ozone (O_3) - ppb

Patricia McInnes (AMS 6)



Classes (ppb)

0 - 20

21 - 50

51 - 82

> 83

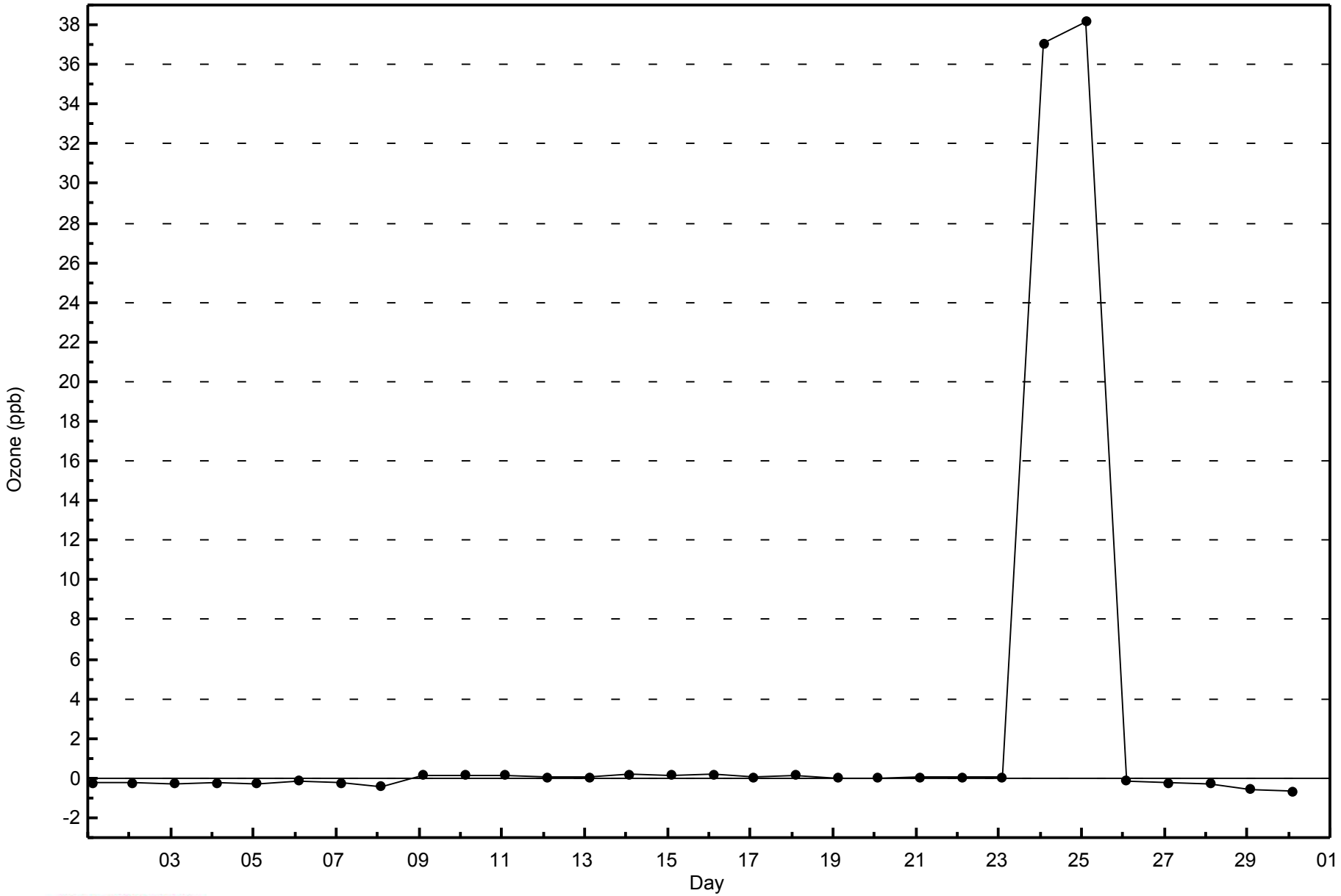
Total Number of Valid Hours: 685

WBEA NETWORK

Zero Responses

Ozone (O_3) - ppb

Patricia McInnes - April 2014



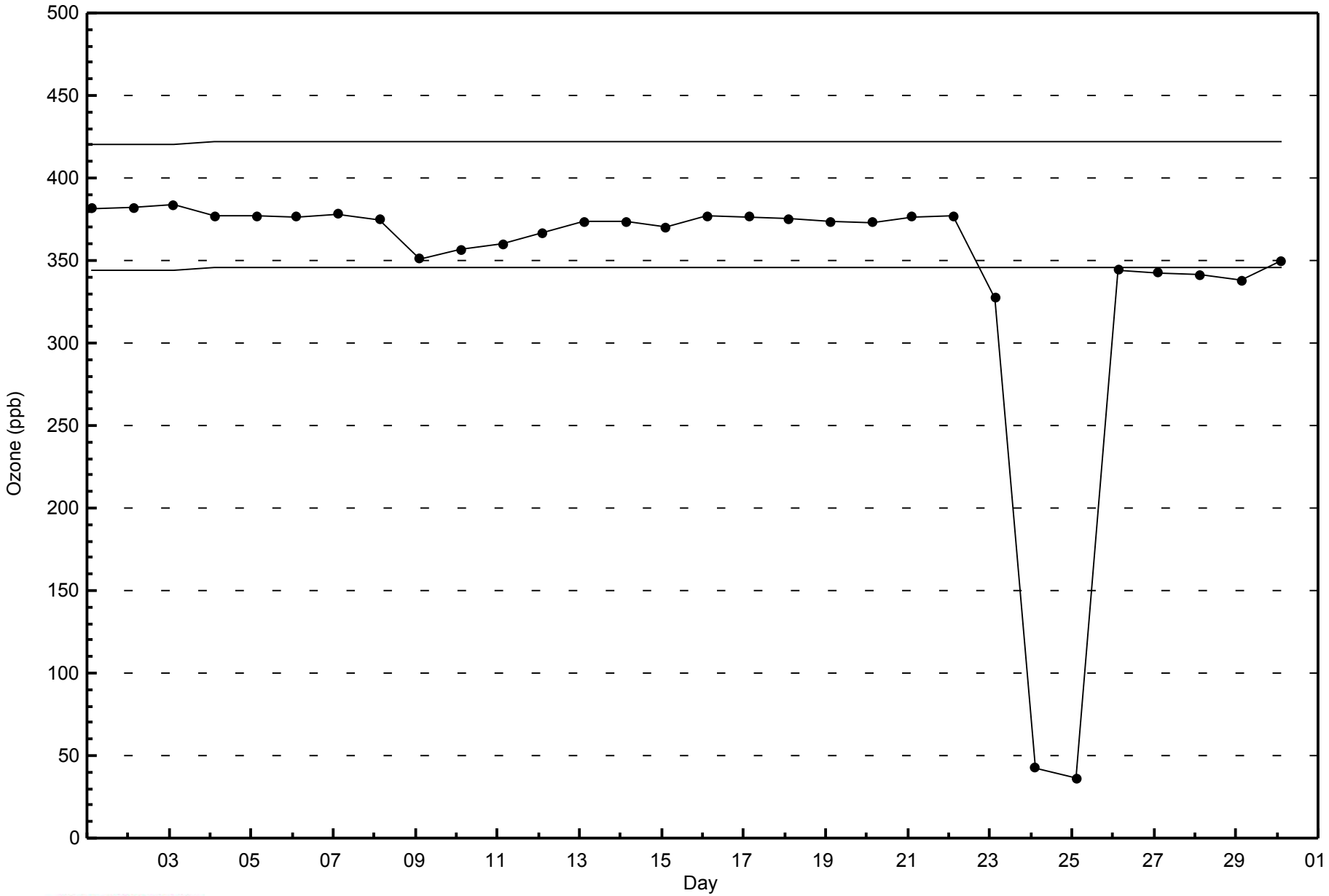
AURORA ATMOSPHERICS INC.

WBEA NETWORK

Span Responses

Ozone (O_3) - ppb

Patricia McInnes - April 2014



AURORA ATMOSPHERICS INC.

Wood Buffalo Environmental Association

Summary of Hour Averages

Nitric Oxide (NO) - ppb

Patricia McInnes - April 2014

Maximum Value: 31 ppb on Apr 24 05:00

Maximum Daily Average: 3.9 ppb on Apr 3

Minimum Value: 0 ppb on Apr 4 22:00

Minimum Daily Average: 0.1 ppb on Apr 8

Maximum Diurnal Average: 4.9 ppb at hour 6

Minimum Diurnal Average: 0.3 ppb at hour 1

Monthly Average: 1.6 ppb

Percentiles: $P_1 = 0$ $P_{10} = 0$ $Q_1 = 0$ Median = 1 $Q_3 = 2$ $P_{90} = 3$ $P_{99} = 13$

Hours in Service:	720
Hours of Data:	674
Hours of Missing Data:	46
Hours of Calibration:	35
Percent Operational Time:	98.5

Day	Hourly Period Ending At (MST)																								Daily	Daily
	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24	Average	Maximum
1-Apr	0	Z	0	1	2	0	2	3	C	C	C	C	C	4	3	3	2	2	1	1	0	0	0	1	1.4	4
2-Apr	0	Z	0	0	0	1	1	3	5	4	4	3	4	3	3	3	4	2	1	1	0	0	0	0	1.9	5
3-Apr	0	Z	0	0	1	3	7	13	14	12	10	8	6	3	2	2	3	3	2	1	1	0	0	0	3.9	14
4-Apr	0	Z	0	1	1	1	2	2	2	2	3	3	2	0	0	0	0	0	0	0	0	0	0	0	0.9	3
5-Apr	0	Z	0	0	0	1	4	3	4	6	7	6	4	3	3	3	3	3	3	3	3	1	1	0	2.6	7
6-Apr	0	Z	0	1	1	2	1	1	2	19	2	2	3	2	2	3	2	0	0	0	0	0	13	21	3.4	21
7-Apr	1	Z	0	0	3	5	3	1	1	1	1	2	0	0	0	0	0	0	0	0	0	0	0	0	0.9	5
8-Apr	0	Z	0	0	0	0	0	0	M	M	M	0	0	0	0	0	0	0	0	0	0	0	0	0	0.1	0
9-Apr	0	Z	0	0	0	0	0	0	0	0	0	1	1	0	0	0	0	0	0	0	0	0	0	0	0.2	1
10-Apr	0	Z	0	0	0	0	1	1	1	2	3	3	1	1	1	1	1	1	0	0	0	0	0	0	0.9	3
11-Apr	0	Z	0	1	2	2	2	3	1	1	1	1	2	2	2	2	1	1	1	0	0	0	0	0	1.1	3
12-Apr	0	Z	0	0	1	5	2	2	1	0	1	1	0	1	0	0	1	1	0	1	1	0	0	0	0.8	5
13-Apr	0	Z	0	0	0	0	0	3	3	3	1	1	2	2	2	2	6	3	2	2	1	1	1	1	1.5	6
14-Apr	1	Z	1	1	1	2	2	2	2	2	2	1	1	0	1	1	2	1	3	1	2	1	0	0	1.3	3
15-Apr	0	Z	0	1	0	9	2	3	2	2	1	1	1	1	1	1	1	1	0	0	0	0	0	0	1.2	9
16-Apr	0	Z	0	1	1	28	2	1	1	1	1	1	1	1	1	1	3	2	2	2	1	1	0	0	2.3	28
17-Apr	0	Z	0	1	1	2	2	2	2	2	1	1	1	1	1	2	2	1	1	2	1	1	0	1	1.1	2
18-Apr	0	Z	0	1	1	2	2	1	1	2	1	1	1	1	1	1	1	3	2	2	1	0	1	1	1.2	3
19-Apr	1	Z	1	0	0	3	3	2	1	1	1	1	2	1	1	3	1	3	1	2	1	1	1	0	1.3	3
20-Apr	0	Z	0	0	0	3	2	2	3	5	7	5	5	2	1	1	19	2	2	4	1	0	0	0	2.9	19
21-Apr	0	Z	0	1	1	1	4	1	0	0	0	1	3	2	1	2	1	1	1	0	0	0	0	0	0.9	4
22-Apr	0	Z	0	0	1	2	6	5	3	3	2	2	1	M	1	1	3	1	1	1	1	1	0	0	1.6	6
23-Apr	0	Z	0	1	2	2	2	2	1	1	1	M	M	M	1	1	14	9	1	1	0	1	0	0	2.0	14
24-Apr	0	Z	0	1	31	15	3	2	1	1	1	1	1	1	1	1	2	1	1	2	2	1	0	0	3.0	31
25-Apr	0	Z	1	1	3	6	2	2	1	M	1	1	1	1	1	1	1	2	2	2	1	2	0	0	1.4	6
26-Apr	0	Z	1	1	1	2	1	1	1	1	1	1	1	1	1	1	2	1	2	2	1	0	1	0	1.0	2
27-Apr	0	Z	1	1	1	2	2	1	2	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1.1	2
28-Apr	1	Z	1	1	0	11	6	2	1	2	2	1	1	M	M	2	3	2	3	1	1	1	2	1	2.0	11
29-Apr	1	Z	0	1	3	12	8	1	1	1	M	0	0	0	0	0	0	0	0	1	0	0	0	1	1.4	12
30-Apr	0	Z	0	1	6	25	11	3	1	1	2	0	0	0	0	0	1	0	0	0	0	0	0	0	2.3	25
	0.3	--	0.3	0.6	2.2	4.9	2.8	2.3	2.1	2.8	2.0	1.8	1.6	1.2	1.1	1.3	2.7	1.6	1.1	1.1	0.7	0.5	0.8	1.0	Diurnal Average	
	1	--	1	1	31	28	11	13	14	19	10	8	6	4	3	3	19	9	3	4	3	2	13	21	Diurnal Maximum	

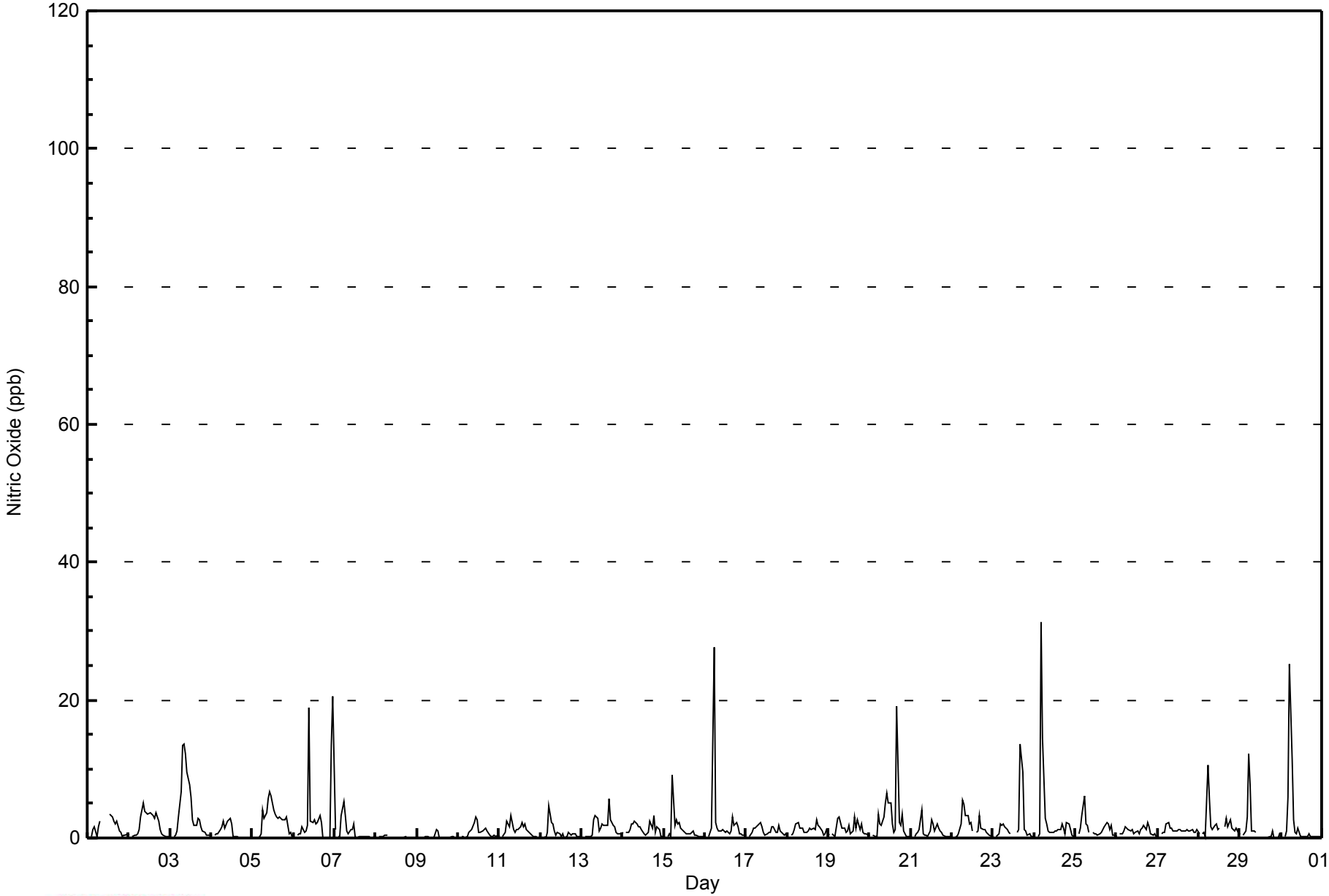
Z - zerospan C - Calibration M - Maintenance

WBEA NETWORK

Hourly Averages

Nitric Oxide (NO) - ppb

Patricia McInnes - April 2014



AURORA ATMOSPHERICS INC.

Concentration Ranges (ppb)	Number of Hours	%	Cumulative %
0 - 20	670	99.41	99.41
21 - 40	4	0.59	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: 674

Total Number of Hours: 720

WBEA NETWORK

Frequency Distribution

Nitric Oxide (NO) - ppb

Patricia McInnes - April 2014

Concentration Ranges (ppb)	Wind Direction																
	N	NNE	NE	ENE	E	ESE	SE	SSE	S	SSW	SW	WSW	W	WNW	NW	NNW	**Totals**
0 - 20	61	46	29	46	59	143	67	10	24	32	25	26	25	19	18	40	670
21 - 40	0	0	2	0	0	0	0	0	2	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	61	46	31	46	59	143	67	10	26	32	25	26	25	19	18	40	674

Total Number of Valid Hours: 674

Total Number of Hours: 720

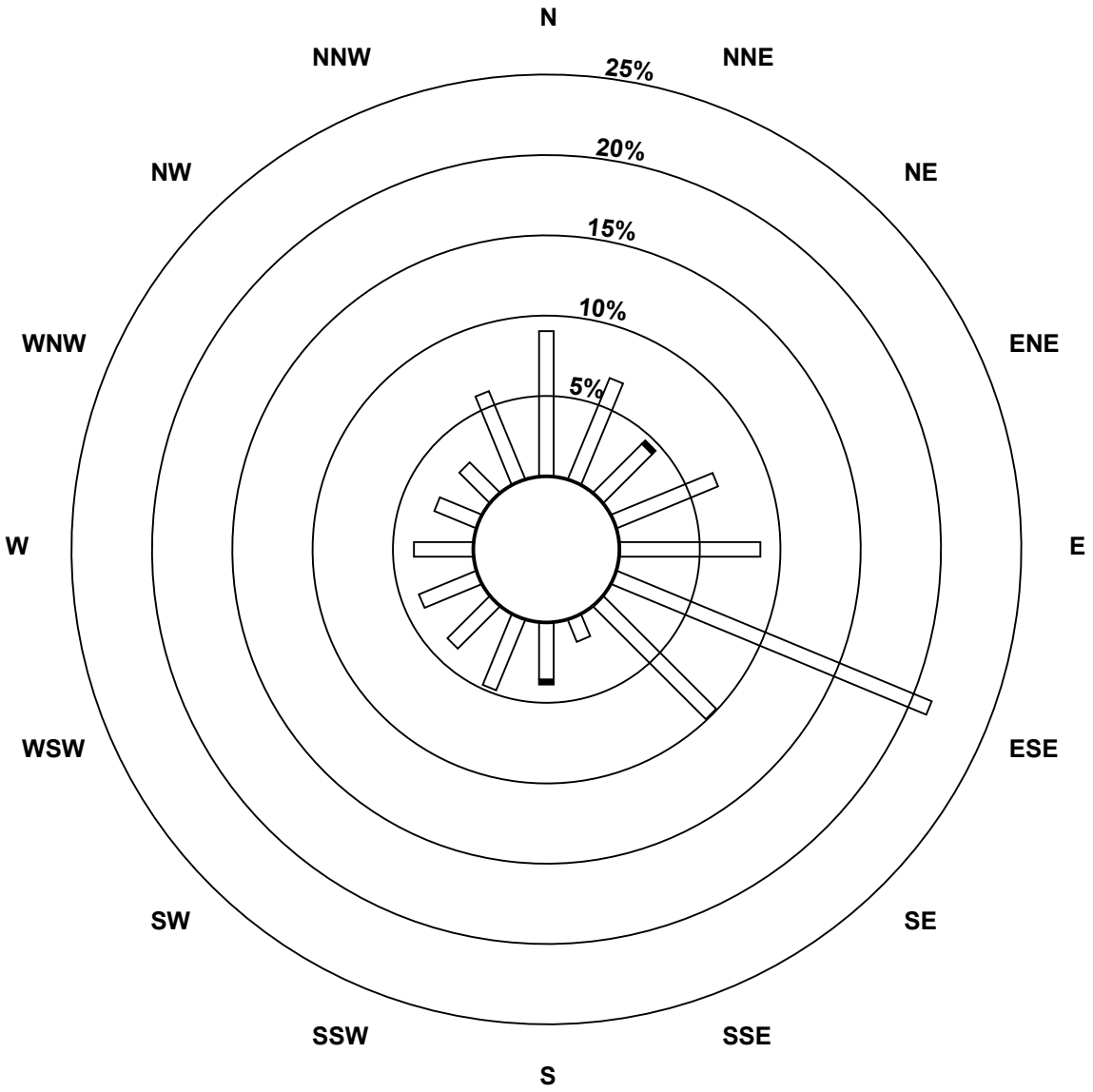
AURORA ATMOSPHERICS INC.

Wood Buffalo Environmental Association

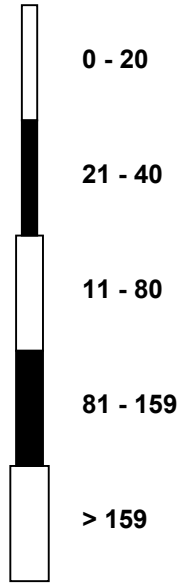
Wind Rose Apr 2014

Nitric Oxide (NO) - ppb

Patricia McInnes (AMS 6)



Classes (ppb)



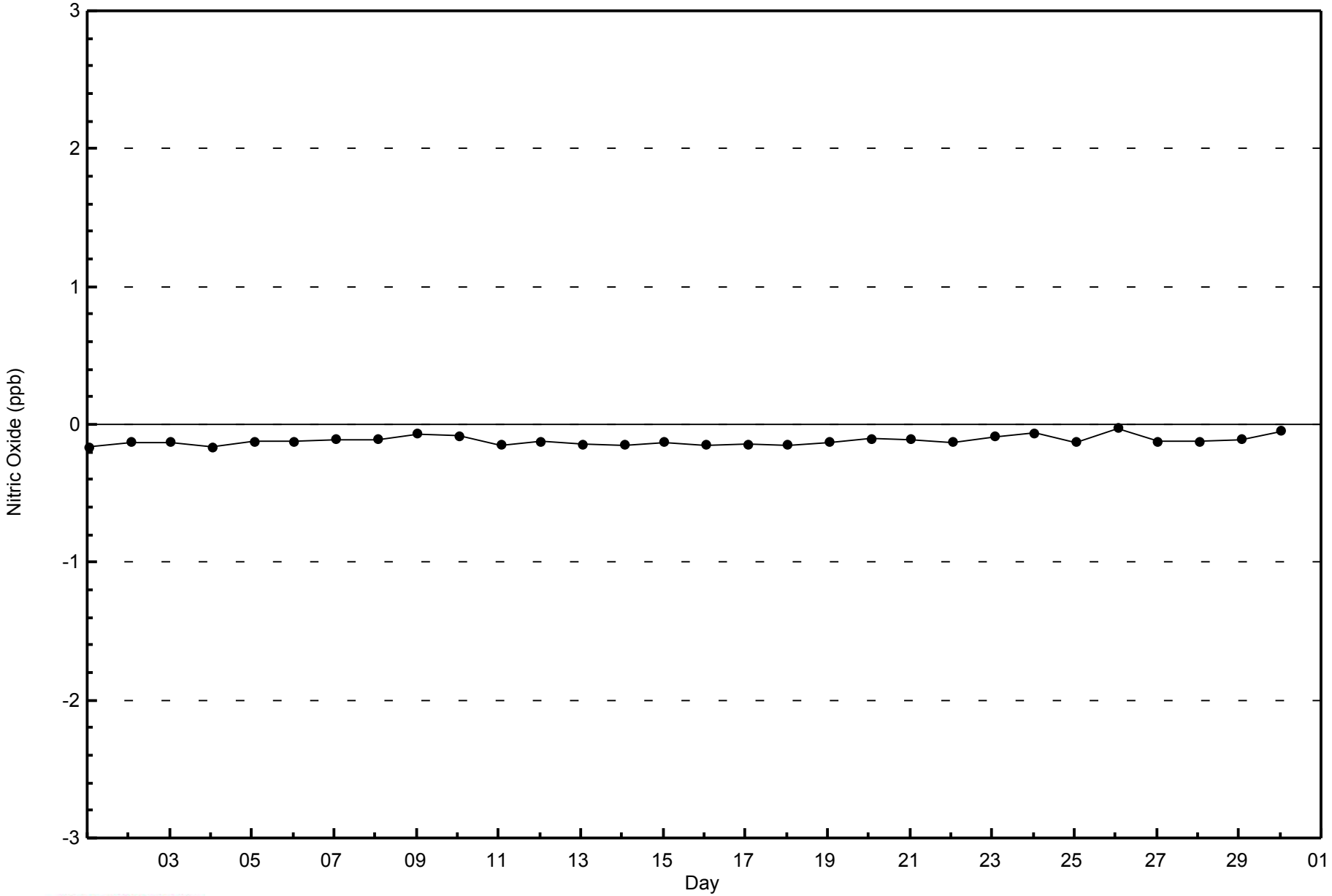
Total Number of Valid Hours: 674

WBEA NETWORK

Zero Responses

Nitric Oxide (NO) - ppb

Patricia McInnes - April 2014



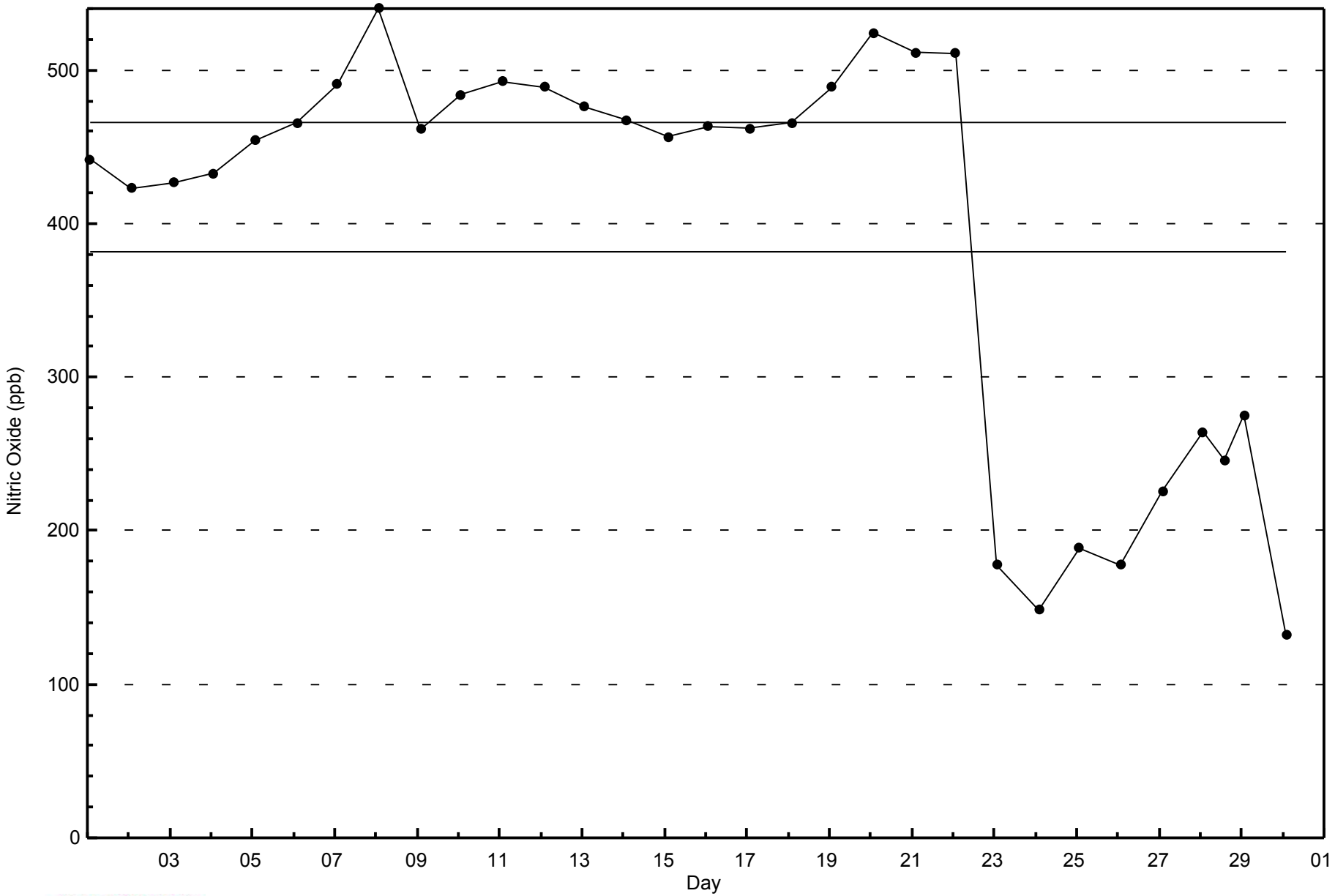
AURORA
ATMOSPHERICS INC.

WBEA NETWORK

Span Responses

Nitric Oxide (NO) - ppb

Patricia McInnes - April 2014



AURORA ATMOSPHERICS INC.

Wood Buffalo Environmental Association

Summary of Hour Averages

Nitrogen Dioxide (NO_2) - ppb

Patricia McInnes - April 2014

Number of Exceedences (AAAQO): 1-hr: 0 24-hr: 0
Maximum Value: 33 ppb on Apr 5 20:00 Maximum Daily Average: 8.5 ppb on Apr 5

Minimum Value: 0 ppb on Apr 29 13:00 Minimum Daily Average: 0.9 ppb on Apr 8
Maximum Diurnal Average: 9.0 ppb at hour 6 Minimum Diurnal Average: 2.2 ppb at hour 15
Monthly Average: 4.4 ppb Percentiles: $P_1 = 0$ $P_{10} = 1$ $Q_1 = 2$ Median = 3 $Q_3 = 6$ $P_{90} = 9$ $P_{99} = 18$

Hours in Service:	720
Hours of Data:	674
Hours of Missing Data:	46
Hours of Calibration:	35
Percent Operational Time:	98.5

Day	Hourly Period Ending At (MST)																								Daily	Daily
	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24	Average	Maximum
1-Apr	2	Z	3	9	14	3	6	8	C	C	C	C	C	6	6	6	6	8	11	10	9	11	9	15	7.8	15
2-Apr	15	Z	7	7	7	8	8	9	9	6	6	6	5	5	5	5	6	6	6	5	6	6	5	5	6.7	15
3-Apr	5	Z	9	10	14	18	14	12	9	8	6	6	5	3	3	3	4	5	4	3	2	2	2	2	6.5	18
4-Apr	2	Z	2	4	4	6	6	7	6	6	6	7	6	2	2	2	1	1	1	1	1	1	1	1	3.2	7
5-Apr	1	Z	1	1	2	4	14	7	6	8	9	8	5	5	5	6	9	13	24	33	17	4	4	9	8.5	33
6-Apr	8	Z	5	6	6	9	6	5	6	12	4	5	6	5	5	10	9	1	0	0	7	7	18	23	7.1	23
7-Apr	13	Z	5	3	15	25	14	3	1	2	2	4	1	0	1	1	1	2	2	4	3	1	1	2	4.5	25
8-Apr	3	Z	1	2	1	2	2	2	M	M	M	0	0	0	0	0	0	0	0	0	0	0	0	0	0.9	3
9-Apr	0	Z	1	0	0	2	1	0	0	0	0	4	4	0	0	0	0	0	0	0	4	6	1	0	1.1	6
10-Apr	1	Z	9	5	3	3	5	3	3	4	5	4	2	2	3	4	6	6	5	5	5	8	3	2	4.1	9
11-Apr	1	Z	2	5	5	5	3	4	3	2	2	3	4	5	3	5	4	3	3	3	3	3	3	3	3.2	5
12-Apr	3	Z	4	2	10	18	7	4	2	1	1	1	1	1	0	1	3	4	3	6	8	5	2	2	3.8	18
13-Apr	2	Z	3	2	2	2	3	7	6	5	2	3	3	3	4	4	6	5	6	7	7	6	5	6	4.2	7
14-Apr	7	Z	5	7	8	11	7	6	4	4	3	3	2	2	2	2	9	8	10	5	6	6	4	8	5.5	11
15-Apr	4	Z	3	6	6	9	6	7	5	5	3	2	2	2	2	2	2	3	3	3	3	3	3	4	3.6	9
16-Apr	6	Z	3	5	7	16	7	3	2	1	1	1	1	2	2	2	4	4	3	3	3	2	2	3	3.6	16
17-Apr	3	Z	3	5	6	6	4	4	4	3	2	2	1	2	2	2	4	2	3	6	6	5	4	4	3.5	6
18-Apr	2	Z	3	3	4	6	5	4	4	4	2	2	2	2	2	3	3	5	7	8	7	6	6	9	4.3	9
19-Apr	6	Z	9	7	4	10	10	6	4	3	2	2	2	2	2	3	3	3	3	4	3	2	2	3	4.2	10
20-Apr	2	Z	6	3	1	6	6	3	5	8	8	9	11	6	3	5	13	7	9	17	17	7	8	9	7.3	17
21-Apr	6	Z	2	9	14	11	16	2	1	1	0	3	9	6	4	6	5	5	7	7	9	14	13	7	6.7	16
22-Apr	5	Z	8	10	10	15	17	10	7	7	5	5	1	M	2	3	4	3	3	4	2	2	1	1	5.7	17
23-Apr	2	Z	1	2	3	5	4	3	1	2	1	M	M	M	1	2	9	7	3	4	2	1	1	1	2.7	9
24-Apr	1	Z	2	3	16	15	9	5	3	2	2	2	2	2	3	2	4	5	3	4	7	5	2	1	4.3	16
25-Apr	1	Z	2	5	10	11	6	4	1	M	1	1	1	1	1	1	3	3	6	6	5	5	2	2	3.5	11
26-Apr	1	Z	4	3	4	4	4	3	2	2	1	1	1	1	1	2	2	3	3	2	2	2	2	1	2.2	4
27-Apr	1	Z	1	1	2	5	3	3	4	2	1	1	2	2	2	2	2	2	3	3	3	2	3	4	2.2	5
28-Apr	2	Z	3	5	0	7	8	3	1	3	3	1	2	M	M	3	4	4	5	3	3	3	5	2	3.3	8
29-Apr	1	Z	3	3	9	10	5	1	1	1	M	0	0	0	0	0	0	1	1	10	4	2	4	2	2.7	10
30-Apr	4	Z	2	4	10	22	15	6	2	1	3	1	0	1	1	1	2	1	2	7	1	5	2	0	4.0	22
	3.6	--	3.7	4.6	6.5	9.0	7.4	4.8	3.6	3.7	3.0	3.1	2.9	2.4	2.2	2.9	4.2	3.9	4.6	5.8	5.2	4.3	3.9	4.3	Diurnal Average	
	15	--	9	10	16	25	17	12	9	12	9	9	11	6	6	10	13	13	24	33	17	14	18	23	Diurnal Maximum	

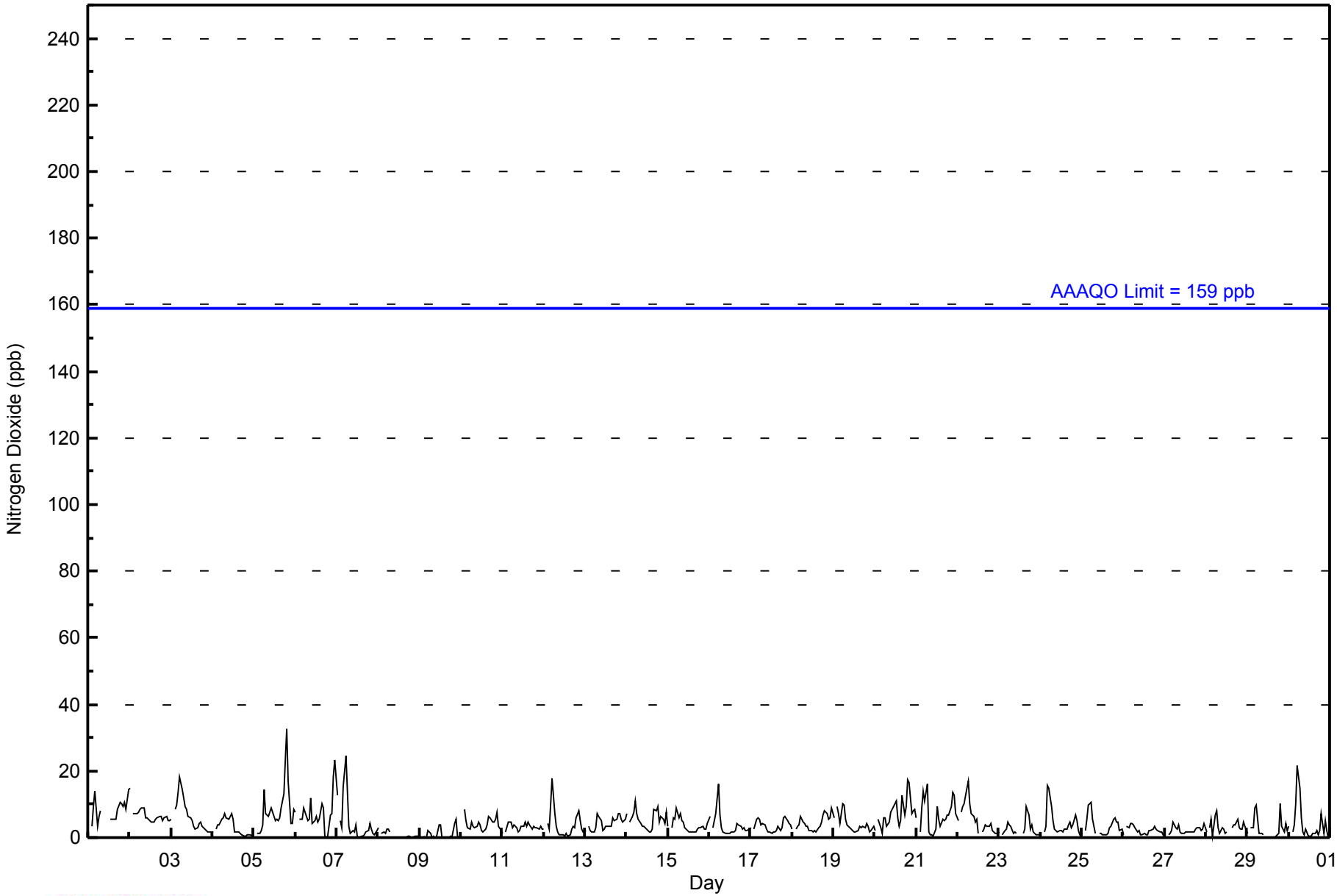
Z - zerospan C - Calibration M - Maintenance
Alberta Ambient Air Quality Objectives (AAAQO): 1-hr 159 ppb

WBEA NETWORK

Hourly Averages

Nitrogen Dioxide (NO_2) - ppb

Patricia McInnes - April 2014



AURORA ATMOSPHERICS INC.

Concentration Ranges (ppb)	Number of Hours	%	Cumulative %
0 - 20	669	99.26	99.26
21 - 40	5	0.74	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: 674

Total Number of Hours: 720

WBEA NETWORK

Frequency Distribution

Nitrogen Dioxide (NO_2) - ppb

Patricia McInnes - April 2014

Concentration Ranges (ppb)	Wind Direction																
	N	NNE	NE	ENE	E	ESE	SE	SSE	S	SSW	SW	WSW	W	WNW	NW	NNW	**Totals**
0 - 20	61	45	30	46	59	143	67	10	24	31	25	26	25	19	18	40	669
21 - 40	0	1	1	0	0	0	0	0	2	1	0	0	0	0	0	0	5
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	61	46	31	46	59	143	67	10	26	32	25	26	25	19	18	40	674

Total Number of Valid Hours: 674

Total Number of Hours: 720

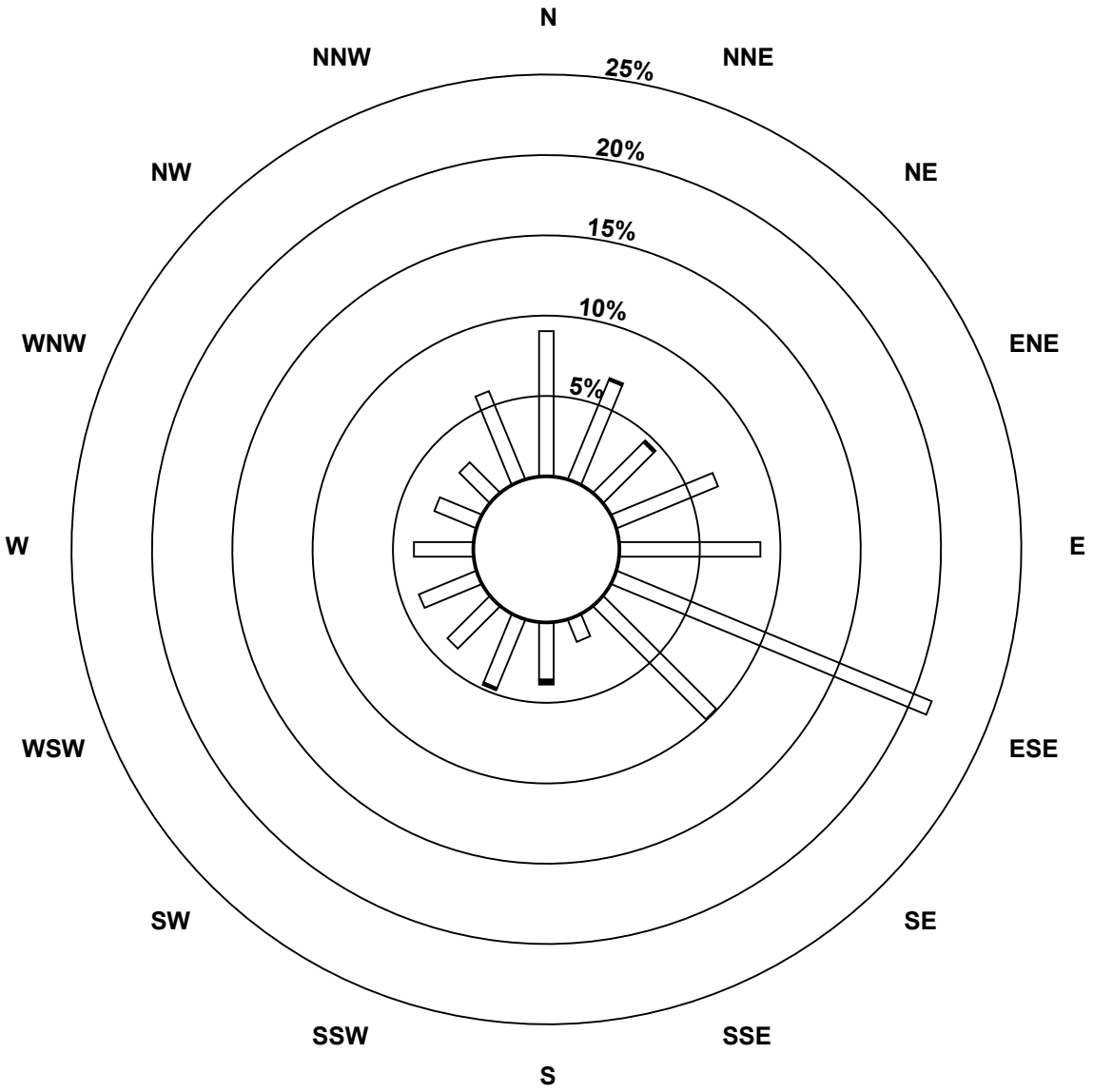
AURORA ATMOSPHERICS INC.

Wood Buffalo Environmental Association

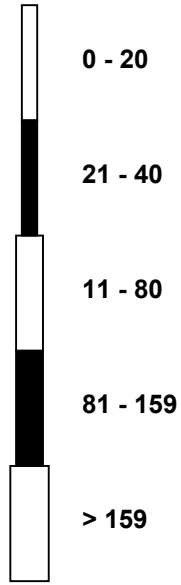
Wind Rose Apr 2014

Nitrogen Dioxide (NO_2) - ppb

Patricia McInnes (AMS 6)



Classes (ppb)



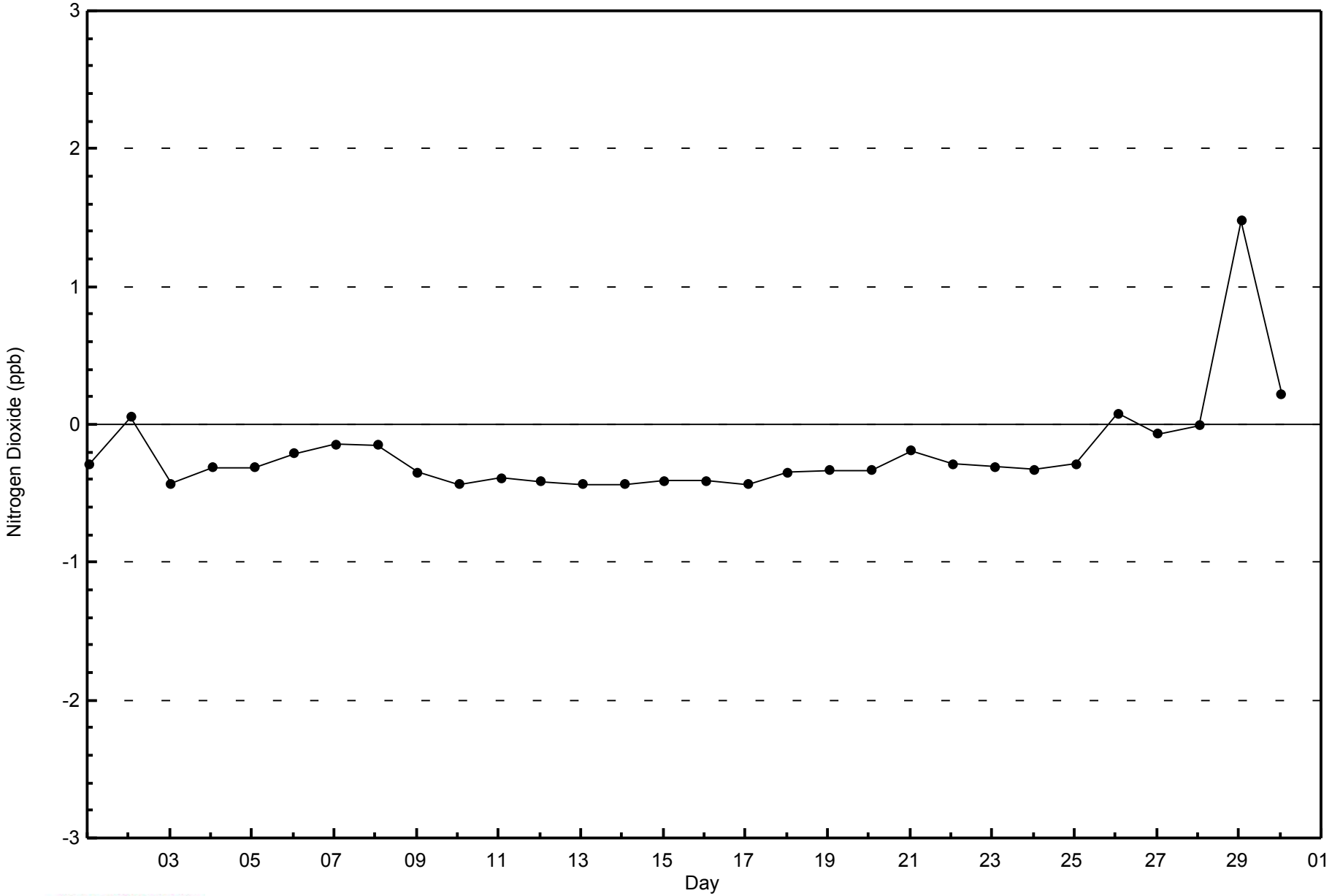
Total Number of Valid Hours: 674

WBEA NETWORK

Zero Responses

Nitrogen Dioxide (NO_2) - ppb

Patricia McInnes - April 2014



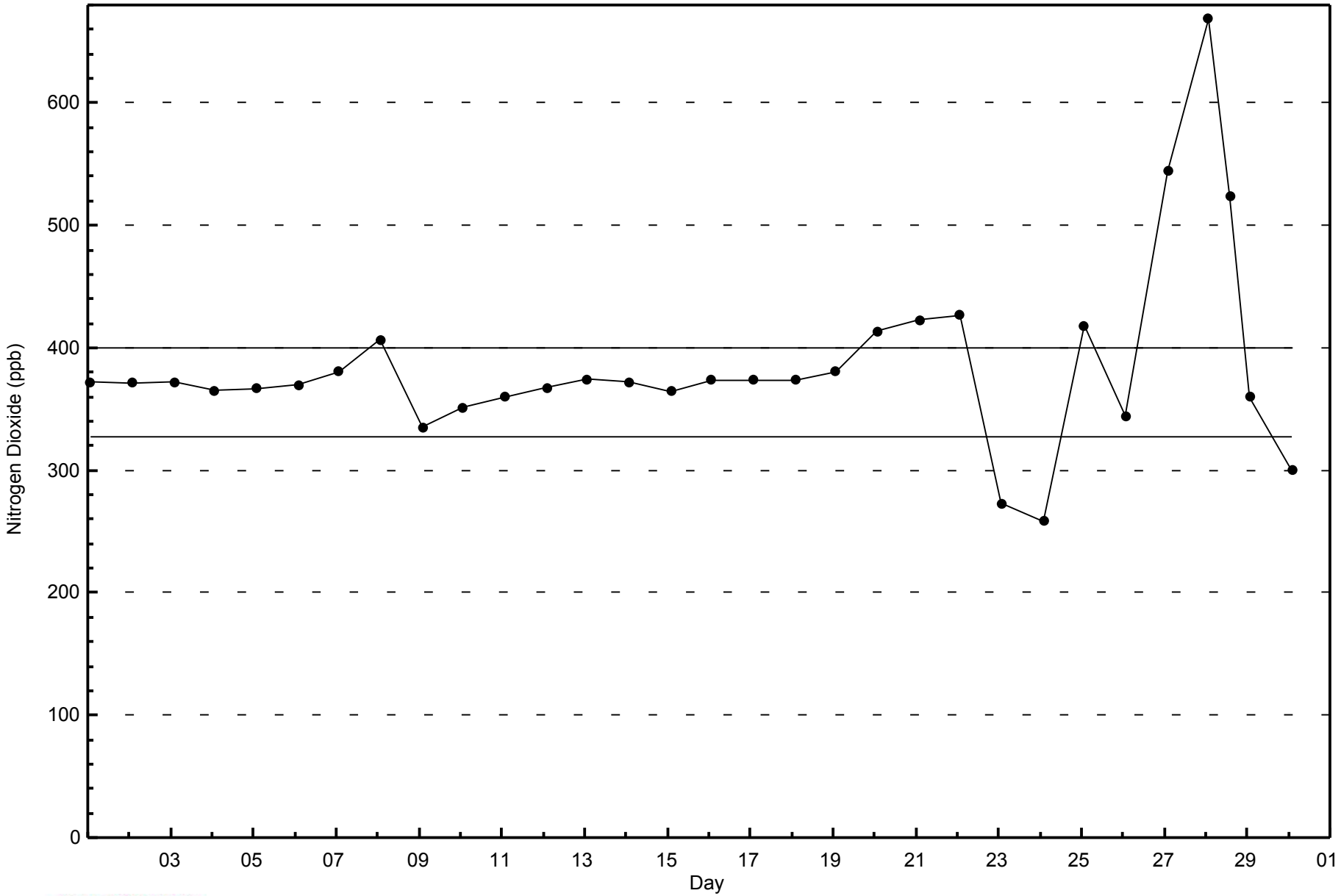
AURORA
ATMOSPHERICS INC.

WBEA NETWORK

Span Responses

Nitrogen Dioxide (NO_2) - ppb

Patricia McInnes - April 2014



AURORA ATMOSPHERICS INC.

Maximum Value: 47 ppb on Apr 24 05:00

Maximum Daily Average: 11.0 ppb on Apr 5

Minimum Value: 0 ppb on Apr 29 15:00

Minimum Daily Average: 0.9 ppb on Apr 8

Maximum Diurnal Average: 13.9 ppb at hour 6

Minimum Diurnal Average: 3.3 ppb at hour 15

Monthly Average: 6.0 ppb

Percentiles: $P_1 = 0$ $P_{10} = 1$ $Q_1 = 2$ Median = 4 $Q_3 = 8$ $P_{90} = 12$ $P_{99} = 31$

Hours in Service:	720
Hours of Data:	674
Hours of Missing Data:	46
Hours of Calibration:	35
Percent Operational Time:	98.5

Day	Hourly Period Ending At (MST)																								Daily	Daily
	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24	Average	Maximum
1-Apr	2	Z	4	11	16	4	8	11	C	C	C	C	C	9	9	8	8	11	12	11	10	11	9	15	9.2	16
2-Apr	15	Z	8	8	8	8	10	12	14	10	9	9	9	8	8	8	10	9	8	6	6	7	5	5	8.6	15
3-Apr	5	Z	9	10	15	21	21	25	23	20	16	13	11	6	4	5	7	8	5	4	3	2	2	2	10.4	25
4-Apr	2	Z	3	5	5	7	8	9	8	8	9	10	8	2	2	2	2	1	1	1	1	1	1	1	4.0	10
5-Apr	1	Z	1	1	2	4	18	10	10	14	15	14	9	9	8	9	12	16	26	35	20	5	5	9	11.0	35
6-Apr	8	Z	6	6	6	11	7	6	7	31	7	7	9	7	8	14	11	1	0	0	7	8	31	44	10.5	44
7-Apr	14	Z	5	3	19	30	17	4	2	3	3	6	1	0	1	1	1	2	2	4	3	1	1	2	5.4	30
8-Apr	3	Z	1	2	2	3	3	2	M	M	M	0	0	0	0	0	0	0	0	0	0	0	0	0	0.9	3
9-Apr	0	Z	1	0	0	2	2	0	0	0	0	5	5	0	0	0	0	0	0	0	4	6	1	0	1.2	6
10-Apr	1	Z	9	5	3	3	5	4	4	6	8	6	3	3	4	5	8	7	5	5	6	8	3	3	4.9	9
11-Apr	2	Z	2	5	7	7	5	7	4	3	4	5	5	7	5	7	5	3	4	3	3	3	3	3	4.4	7
12-Apr	3	Z	4	2	11	22	9	6	3	1	1	2	1	2	0	1	4	4	4	6	9	5	3	2	4.5	22
13-Apr	2	Z	3	3	2	2	3	10	9	8	3	4	5	5	5	5	12	8	7	9	8	6	5	6	5.7	12
14-Apr	8	Z	5	7	9	13	9	8	6	5	5	4	3	2	2	3	11	10	13	6	8	7	4	8	6.8	13
15-Apr	4	Z	3	7	6	18	8	10	7	7	4	3	2	2	2	2	3	4	3	4	3	3	3	4	4.8	18
16-Apr	6	Z	3	6	9	44	9	4	3	3	3	2	2	3	2	3	7	5	5	4	4	3	3	3	5.9	44
17-Apr	3	Z	3	6	7	7	6	6	6	4	2	2	2	2	2	4	5	3	4	8	7	6	5	4	4.6	8
18-Apr	3	Z	3	4	5	8	7	6	5	5	3	3	3	4	3	4	5	7	9	10	8	6	6	10	5.5	10
19-Apr	7	Z	10	8	4	13	13	8	5	4	3	3	4	3	3	6	4	6	4	6	4	3	3	4	5.5	13
20-Apr	3	Z	6	3	1	10	8	5	8	13	15	14	16	8	4	6	32	9	11	21	17	8	8	9	10.2	32
21-Apr	6	Z	2	10	15	12	20	2	1	1	0	4	12	8	5	8	6	6	8	7	9	14	13	7	7.7	20
22-Apr	5	Z	8	10	11	17	23	15	10	10	7	8	2	M	2	4	7	5	5	5	3	3	1	1	7.3	23
23-Apr	2	Z	1	3	5	7	6	5	2	3	2	M	M	M	2	4	23	16	4	5	2	1	1	1	4.7	23
24-Apr	1	Z	2	4	47	29	12	7	4	3	3	3	3	3	4	4	6	6	3	6	9	6	3	1	7.3	47
25-Apr	2	Z	3	7	13	17	8	5	2	M	2	2	2	1	2	2	4	5	8	8	6	7	3	3	5.0	17
26-Apr	1	Z	4	4	5	6	5	4	3	3	1	2	2	1	2	4	4	4	6	4	3	2	2	1	3.2	6
27-Apr	1	Z	1	2	3	7	5	4	5	3	3	2	3	3	3	3	3	3	4	4	4	3	3	5	3.4	7
28-Apr	2	Z	4	6	1	17	14	5	3	5	5	3	3	M	M	5	7	6	8	4	4	4	6	3	5.3	17
29-Apr	2	Z	3	4	12	22	13	2	2	2	M	0	0	0	0	0	0	1	2	11	4	2	4	3	4.1	22
30-Apr	4	Z	2	5	16	47	26	9	2	2	4	1	0	1	2	1	3	1	2	7	1	5	2	0	6.3	47
	3.9	--	4.0	5.2	8.8	13.9	10.3	7.0	5.7	6.5	5.1	4.9	4.4	3.6	3.3	4.2	6.9	5.5	5.7	6.9	5.8	4.8	4.7	5.3	Diurnal Average	
	15	--	10	11	47	47	26	25	23	31	16	14	16	9	9	14	32	16	26	35	20	14	31	44	Diurnal Maximum	

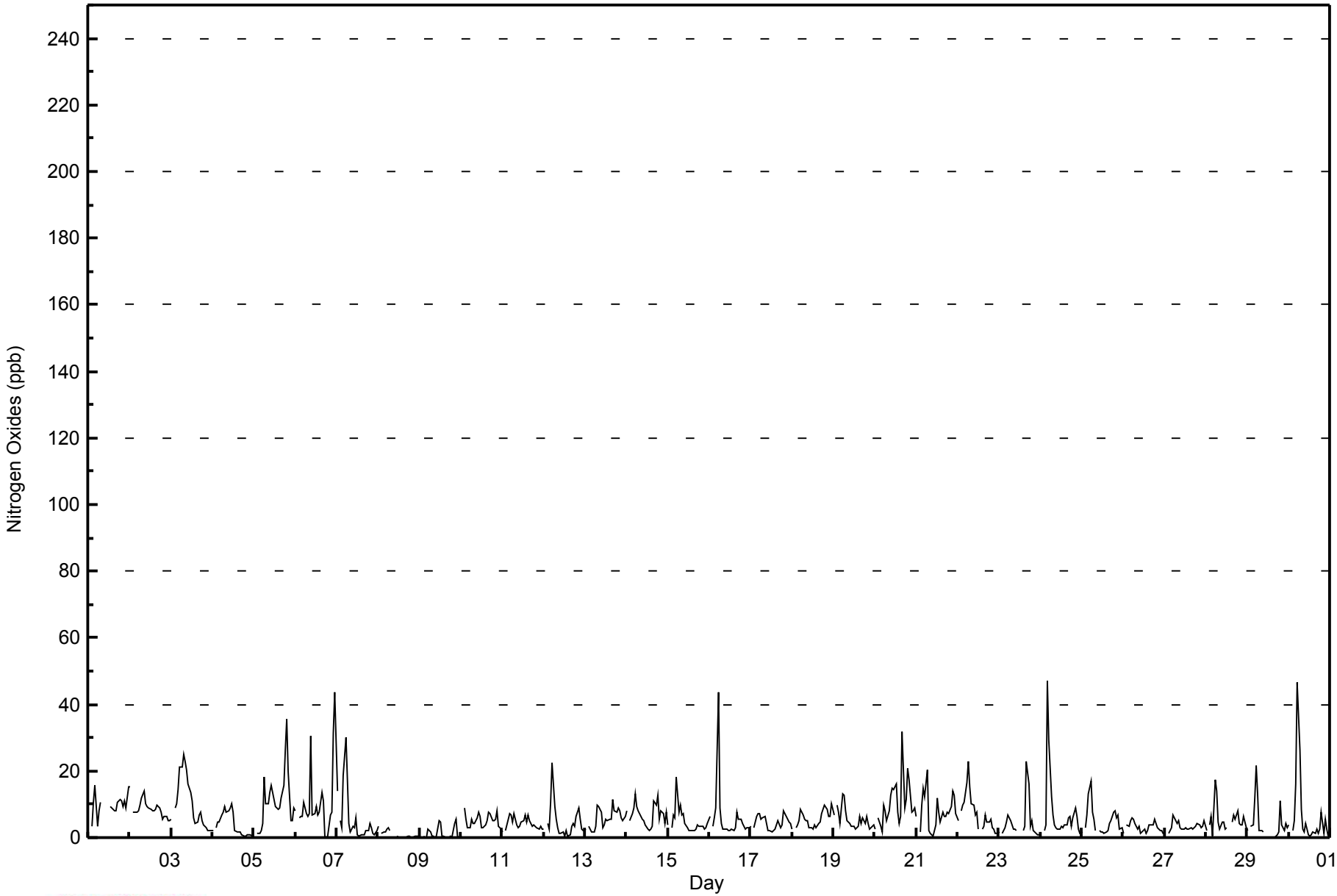
Z - zerospan C - Calibration M - Maintenance

WBEA NETWORK

Hourly Averages

Nitrogen Oxides (NO_X) - ppb

Patricia McInnes - April 2014



AURORA ATMOSPHERICS INC.

Concentration Ranges (ppb)	Number of Hours	%	Cumulative %
0 - 20	653	96.88	96.88
21 - 40	17	2.52	99.41
11 - 80	4	0.59	100.00
81 - 159	0	0.00	100.00
> 159	0	0.00	100.00

Total Number of Valid Hours: 674

Total Number of Hours: 720

WBEA NETWORK

Frequency Distribution

Nitrogen Oxides (NO_X) - ppb

Patricia McInnes - April 2014

Concentration Ranges (ppb)	Wind Direction																
	N	NNE	NE	ENE	E	ESE	SE	SSE	S	SSW	SW	WSW	W	WNW	NW	NNW	**Totals**
0 - 20	59	45	26	46	57	142	67	9	24	29	25	26	25	19	17	37	653
21 - 40	2	1	3	0	2	1	0	1	0	3	0	0	0	0	1	3	17
11 - 80	0	0	2	0	0	0	0	0	2	0	0	0	0	0	0	0	4
81 - 159	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
> 159	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Totals	61	46	31	46	59	143	67	10	26	32	25	26	25	19	18	40	674

Total Number of Valid Hours: 674

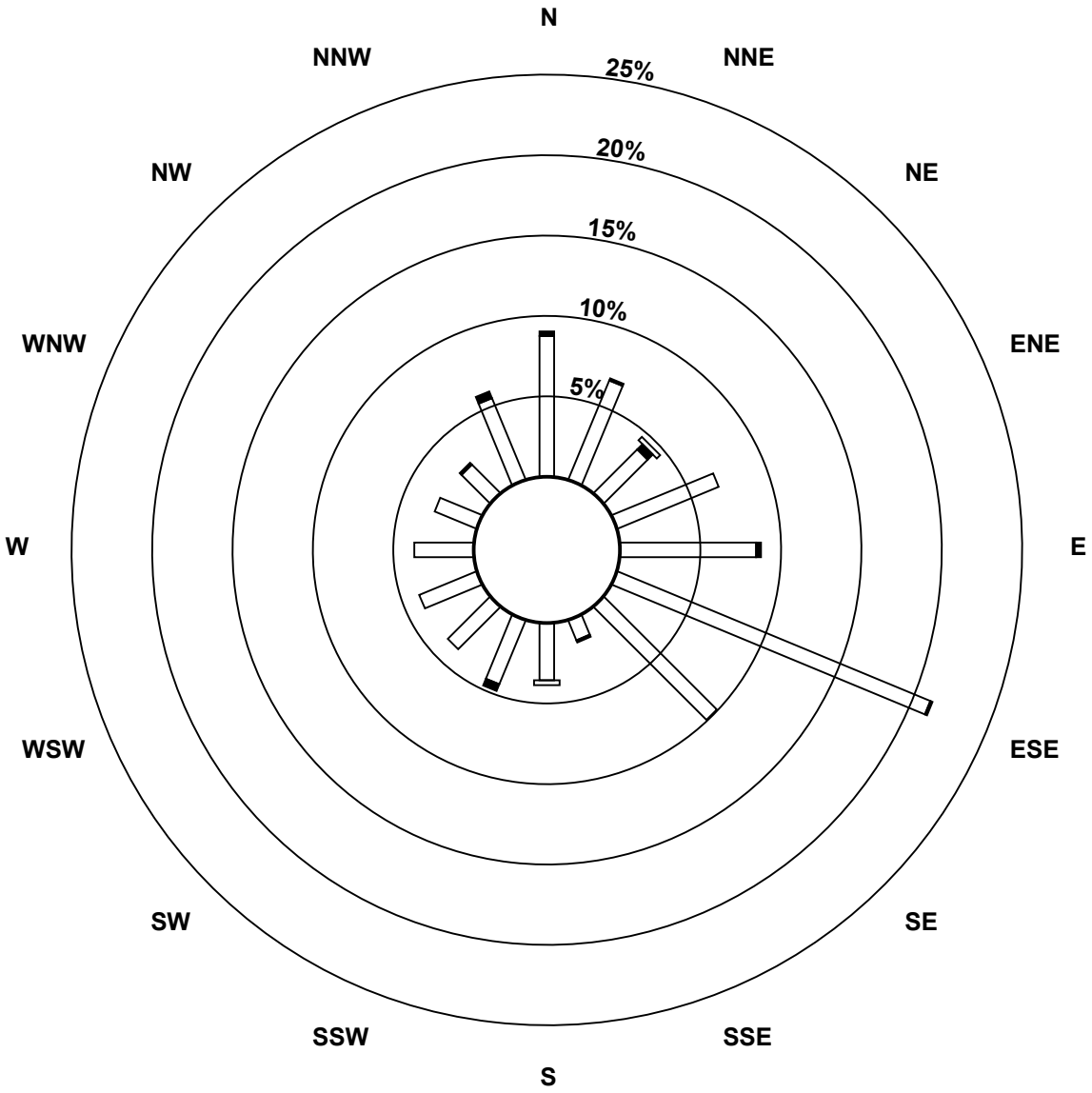
Total Number of Hours: 720

Wood Buffalo Environmental Association

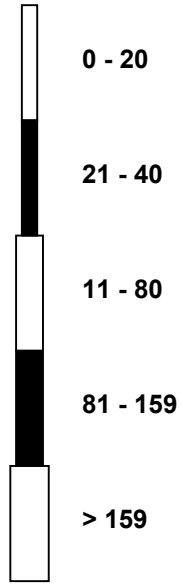
Wind Rose Apr 2014

Nitrogen Oxides (NO_X) - ppb

Patricia McInnes (AMS 6)



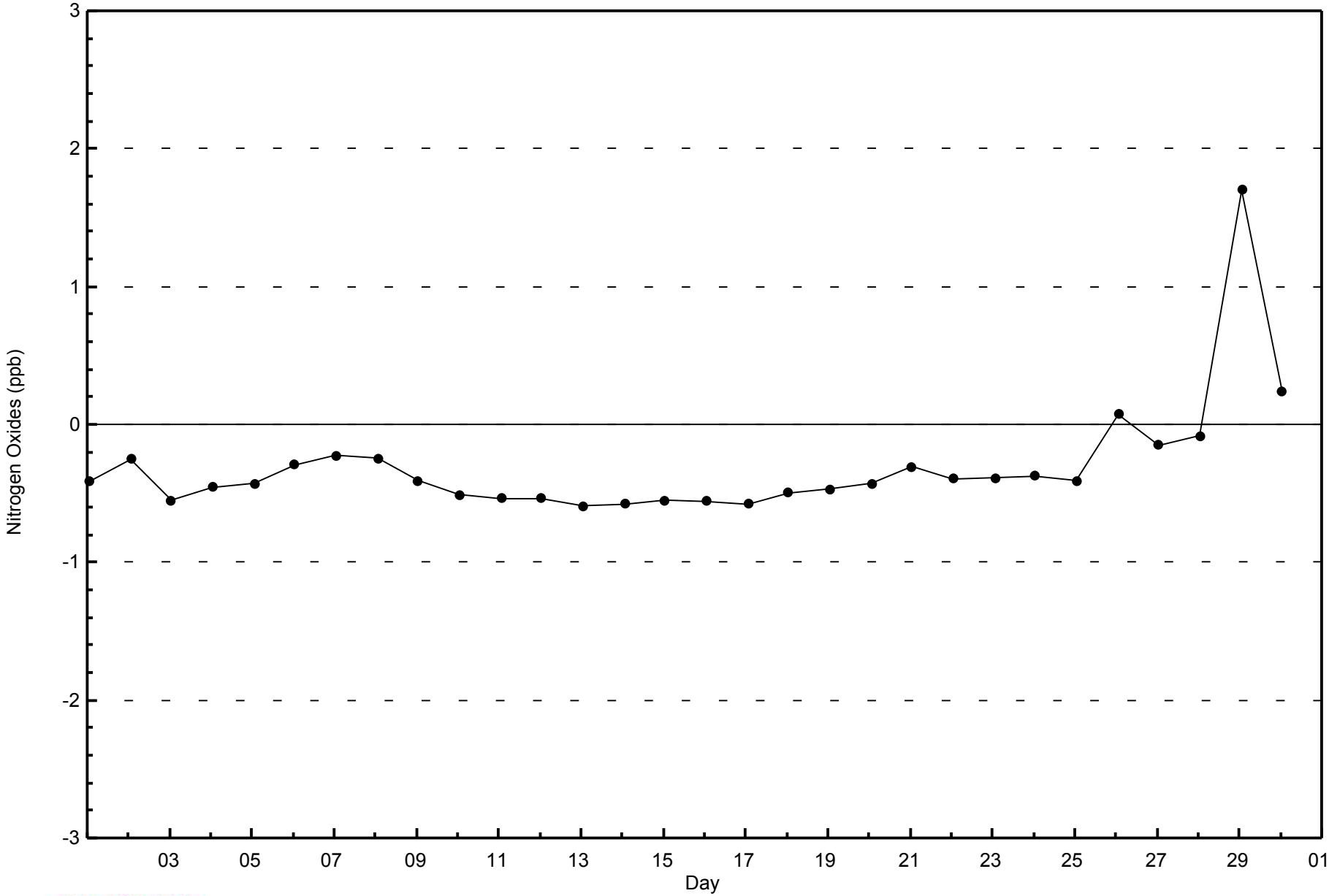
Classes (ppb)



Total Number of Valid Hours: 674

Wood Buffalo Environmental Association
Zero Responses

Nitrogen Oxides (NO_X) - ppb
Patricia McInnes - April 2014



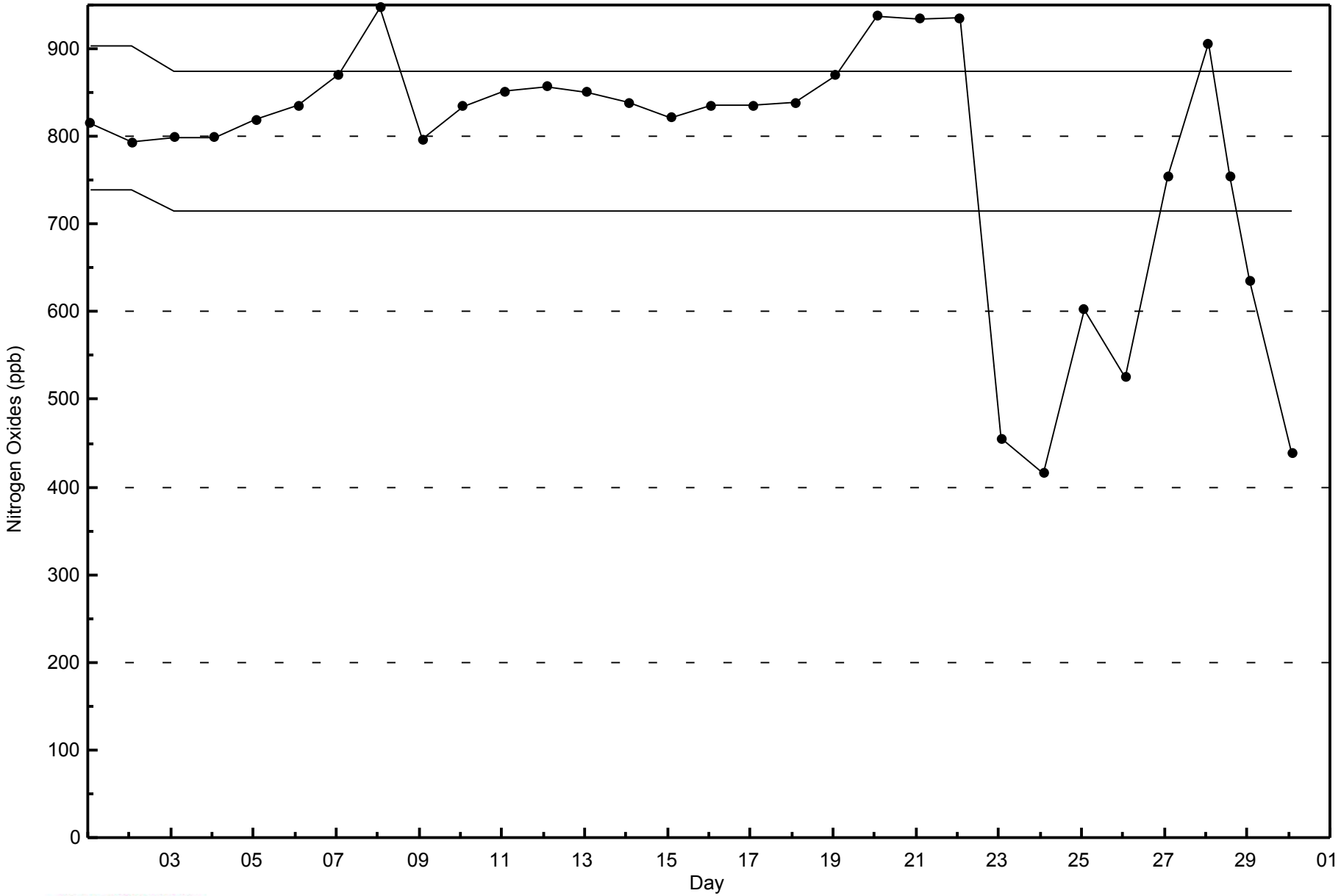
AURORA
ATMOSPHERICS INC.

WBEA NETWORK

Span Responses

Nitrogen Oxides (NO_X) - ppb

Patricia McInnes - April 2014



AURORA ATMOSPHERICS INC.

Number of Exceedences (AAAQO): 1-hr: 0
Maximum Value: 0 ppb on Apr 1 01:00 Maximum Daily Average: 0.0 ppb on Apr 1

Minimum Value: 0 ppb on Apr 1 01:00 Minimum Daily Average: 0.0 ppb on Apr 1
Maximum Diurnal Average: 0.0 ppb at hour 1 Minimum Diurnal Average: 0.0 ppb at hour 1
Monthly Average: 0.0 ppb Percentiles: $P_1 = 0$ $P_{10} = 0$ $Q_1 = 0$ Median = 0 $Q_3 = 0$ $P_{90} = 0$ $P_{99} = 0$

Hours in Service:	720
Hours of Data:	647
Hours of Missing Data:	73
Hours of Calibration:	40
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-Apr	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
2-Apr	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
3-Apr	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
4-Apr	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
5-Apr	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
6-Apr	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
7-Apr	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
8-Apr	0	Z	RE	0	0	0	0	0	C	C	C	C	C	C	C	C	C	C	0	0	0	0	0	0	--	0
9-Apr	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
10-Apr	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
11-Apr	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
12-Apr	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
13-Apr	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
14-Apr	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
15-Apr	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
16-Apr	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
17-Apr	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
18-Apr	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
19-Apr	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
20-Apr	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
21-Apr	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
22-Apr	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
23-Apr	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
24-Apr	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
25-Apr	0	Z	RE	0	0	0	0	0	0	M	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0.0	0
26-Apr	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
27-Apr	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
28-Apr	0	Z	RE	0	0	0	0	0	0	0	0	0	0	M	M	0	0	0	0	0	0	0	0	0	0.0	0
29-Apr	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
30-Apr	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	Diurnal Average	
	0	--	--	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	Diurnal Maximum	

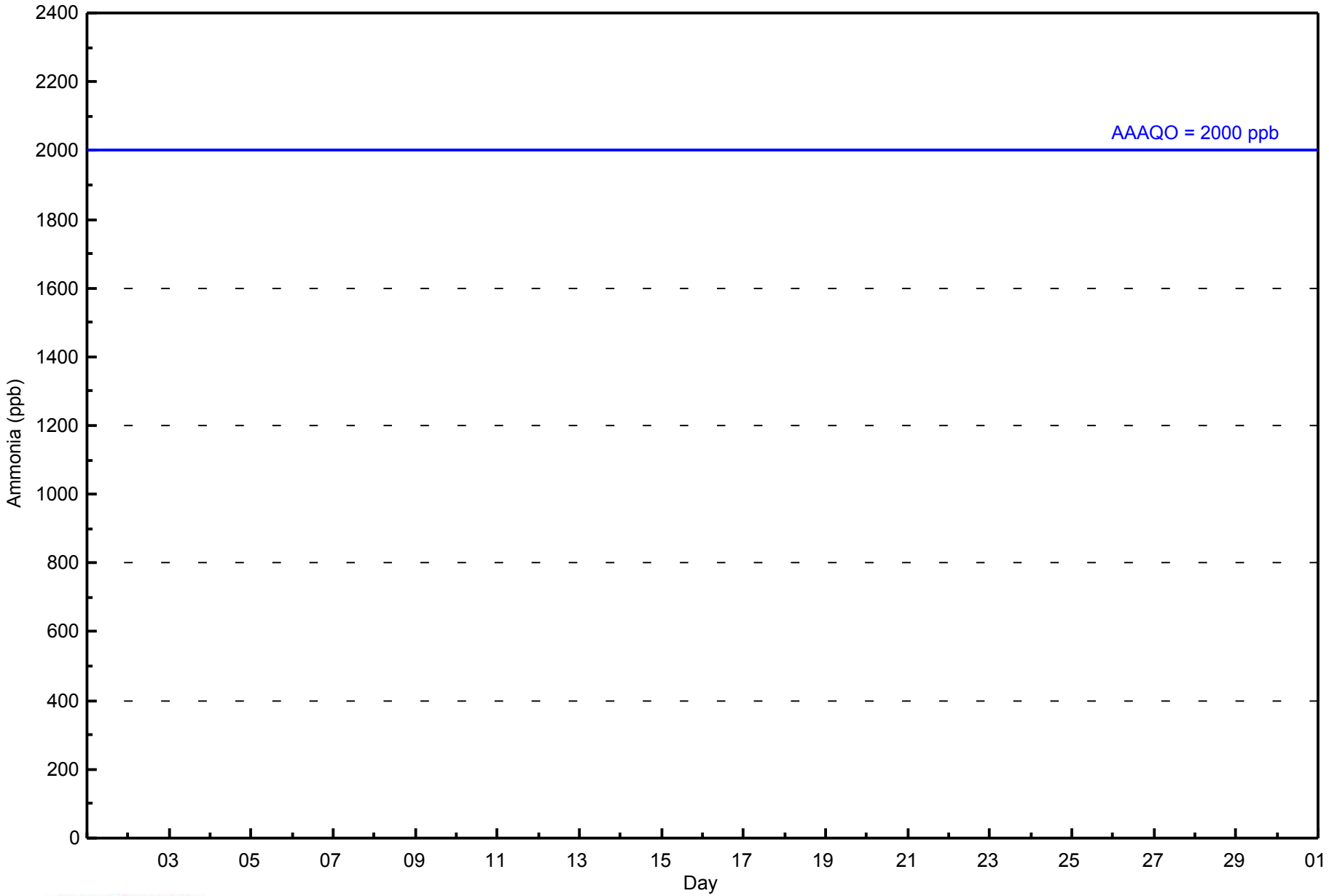
Z - zerospan C - Calibration M - Maintenance RE - Recovery
Alberta Ambient Air Quality Objectives (AAAQO): 1-hr 2000 ppb

WBEA NETWORK

Hourly Averages

Ammonia (NH_3) - ppb

Patricia McInnes - April 2014



AURORA ATMOSPHERICS INC.

Concentration Ranges (ppb)	Number of Hours	%	Cumulative %
0 - 5	647	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: 647

Total Number of Hours: 720

WBEA NETWORK

Frequency Distribution

Ammonia (NH_3) - ppb

Patricia McInnes - April 2014

Concentration Ranges (ppb)	Wind Direction																
	N	NNE	NE	ENE	E	ESE	SE	SSE	S	SSW	SW	WSW	W	WNW	NW	NNW	**Totals**
0 - 5	61	48	30	44	60	137	62	11	25	30	22	22	21	18	18	38	647
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	61	48	30	44	60	137	62	11	25	30	22	22	21	18	18	38	647

Total Number of Valid Hours: 647

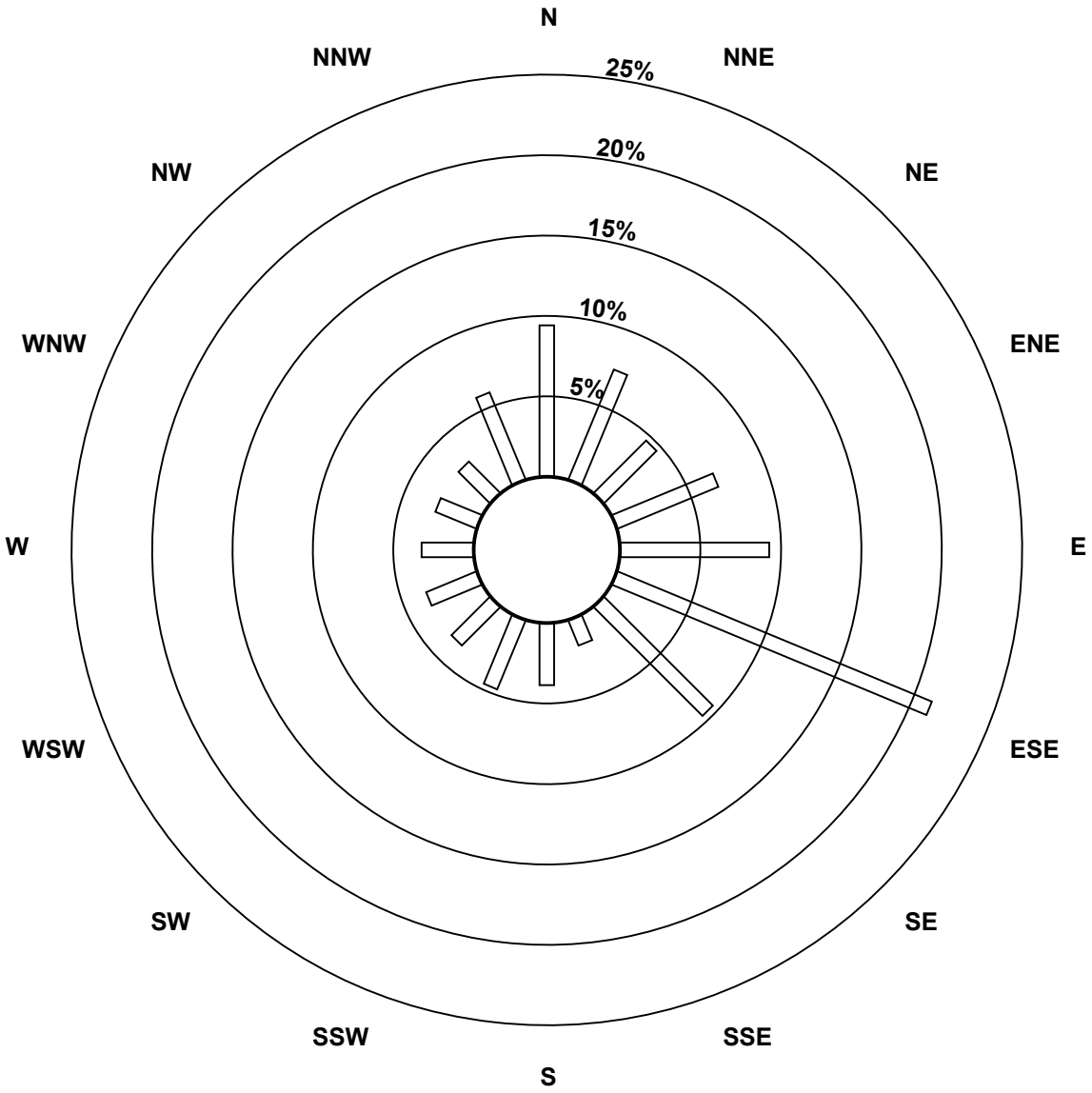
Total Number of Hours: 720

Wood Buffalo Environmental Association

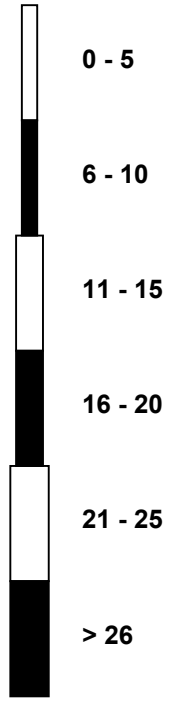
Wind Rose Apr 2014

Ammonia (NH_3) - ppb

Patricia McInnes (AMS 6)



Classes (ppb)



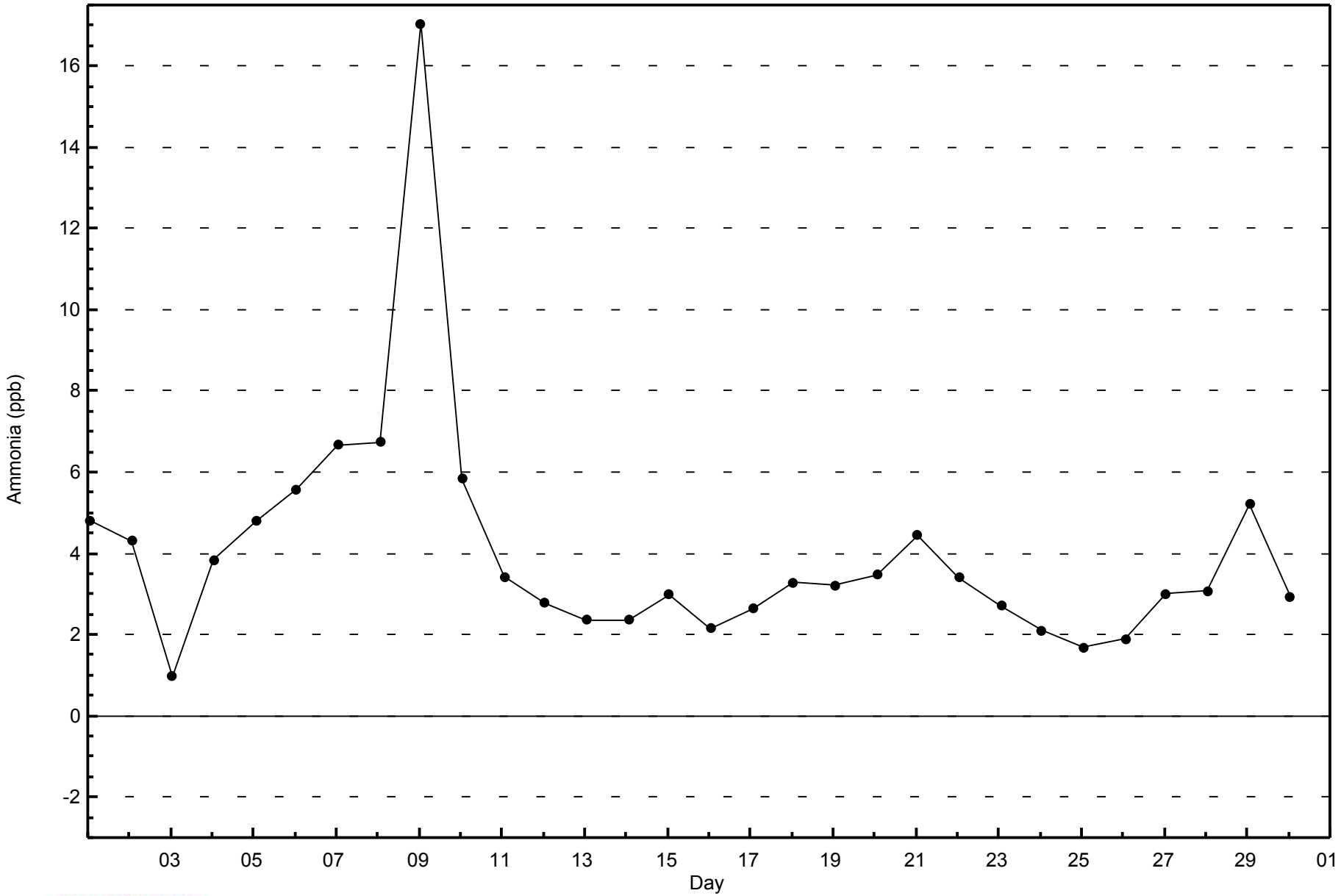
Total Number of Valid Hours: 647

WBEA NETWORK

Zero Responses

Ammonia (NH_3) - ppb

Patricia McInnes - April 2014



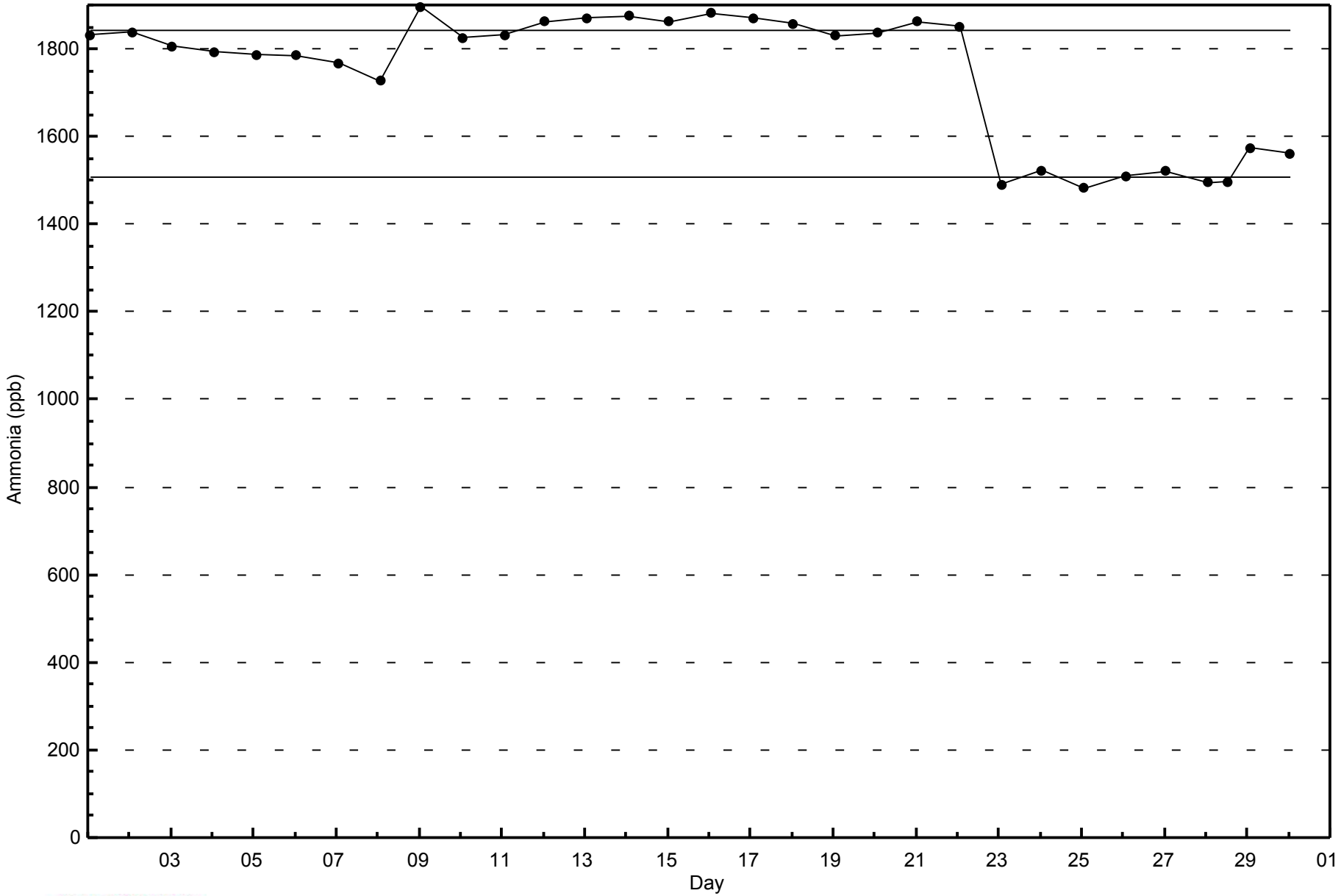
AURORA
ATMOSPHERICS INC.

WBEA NETWORK

Span Responses

Ammonia (NH_3) - ppb

Patricia McInnes - April 2014



AURORA ATMOSPHERICS INC.

Wood Buffalo Environmental Association

Summary of Hour Averages

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

Patricia McInnes - April 2014

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

Maximum Value: 21.9 $\mu g/m^3$ on Apr 20 20:00

Maximum Daily Average: 6.2 $\mu g/m^3$ on Apr 2

Minimum Value: 0.1 $\mu g/m^3$ on Apr 10 05:00

Minimum Daily Average: 1.1 $\mu g/m^3$ on Apr 10

Maximum Diurnal Average: 6.5 $\mu g/m^3$ at hour 20

Minimum Diurnal Average: 2.8 $\mu g/m^3$ at hour 12

Monthly Average: 4.02 $\mu g/m^3$

Percentiles: $P_1 = 0.1$ $P_{10} = 1.0$ $Q_1 = 2.1$ Median = 3.5 $Q_3 = 5.3$ $P_{90} = 7.4$ $P_{99} = 13.3$

Hours in Service:	720
Hours of Data:	690
Hours of Missing Data:	30
Hours of Calibration:	0
Percent Operational Time:	95.8

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-Apr	3.8	2.8	3.6	3.9	7.4	4.3	4.6	4.9	4.3	2.8	3.0	3.5	3.3	5.6	5.9	5.8	5.6	6.7	8.6	10.4	7.3	9.3	5.1	5.4	5.3	10.4
2-Apr	10.0	9.3	5.8	5.9	5.6	5.1	5.0	5.3	5.4	5.2	6.5	6.5	6.8	8.1	7.3	8.1	8.6	7.2	5.5	4.7	4.6	4.4	4.0	3.8	6.2	10.0
3-Apr	3.8	3.9	4.2	4.3	4.9	5.9	5.4	4.3	4.3	5.7	10.9	6.6	6.8	4.1	5.5	5.1	6.1	5.9	5.3	6.6	5.9	5.5	4.9	5.3	5.5	10.9
4-Apr	5.3	5.4	5.4	5.3	5.3	6.2	7.3	8.6	8.3	7.4	7.1	7.3	8.2	8.4	9.4	9.3	6.3	4.0	3.7	3.4	3.3	3.5	3.5	3.4	6.0	9.4
5-Apr	2.9	2.5	2.9	2.8	2.8	2.9	3.2	2.4	1.9	2.0	2.5	3.3	2.3	2.4	2.9	2.4	3.1	5.0	7.8	10.7	7.8	5.1	4.8	5.2	3.8	10.7
6-Apr	5.0	4.3	4.0	4.3	4.5	4.2	3.8	3.8	3.8	4.1	2.9	2.7	3.3	3.2	2.9	2.9	3.0	2.1	2.0	2.4	4.2	5.9	12.1	11.4	4.3	12.1
7-Apr	7.2	5.1	3.5	2.8	3.1	3.2	2.7	1.7	1.2	1.3	1.3	1.5	1.1	1.1	1.1	1.1	1.0	1.4	1.8	3.0	2.8	2.5	2.6	2.6	2.4	7.2
8-Apr	4.5	5.2	4.6	4.2	4.1	3.9	3.4	3.0	2.4	1.9	1.8	M	0.2	0.1	0.3	0.4	0.1	0.2	0.2	0.3	UO	UO	UO	UO	2.1	5.2
9-Apr	UO	UO	UO	UO	UO	UO	UO	UO	UO	UO	UO	0.2	UO	UO	UO	UO	0.1	UO	UO	UO	0.6	0.7	0.3	0.1	--	0.7
10-Apr	0.1	0.2	0.4	0.1	0.1	0.1	0.3	0.3	0.4	0.6	0.7	0.7	0.6	0.9	1.0	1.7	2.8	3.2	2.3	2.3	2.3	2.1	1.2	0.8	1.1	3.2
11-Apr	0.6	0.7	0.6	1.1	1.2	2.5	2.5	3.6	1.8	1.2	0.8	1.2	1.3	1.4	1.3	1.4	1.2	1.1	1.1	1.1	0.9	0.7	0.6	0.7	1.3	3.6
12-Apr	0.7	1.0	0.6	0.7	0.3	1.1	UO	UO	UO	UO	UO	UO	UO	0.4	0.2	0.5	3.7	4.8	3.3	2.6	3.0	3.1	1.4	1.1	--	4.8
13-Apr	1.2	1.0	0.9	1.0	0.6	0.4	1.6	5.3	6.1	5.8	3.5	3.2	4.7	3.9	3.9	3.7	4.4	7.5	8.3	11.7	7.2	4.1	3.5	4.9	4.1	11.7
14-Apr	4.9	1.9	1.5	1.9	2.8	4.3	4.2	4.7	3.5	2.5	3.2	3.1	5.0	4.4	4.7	6.4	11.6	12.9	9.9	6.7	6.6	6.3	4.7	5.3	5.1	12.9
15-Apr	3.6	3.5	4.6	6.0	5.2	4.1	3.7	3.7	3.7	3.6	2.6	2.1	1.9	1.8	1.7	1.5	1.7	2.2	3.4	3.2	3.1	2.3	1.5	1.5	3.0	6.0
16-Apr	1.8	0.5	0.6	1.6	2.2	2.6	1.8	1.2	1.2	1.5	1.8	2.4	2.6	2.9	3.4	4.7	5.3	5.7	5.5	5.5	5.9	3.6	2.9	2.5	2.9	5.9
17-Apr	2.7	3.1	3.3	4.7	5.3	5.8	5.2	5.9	6.0	4.7	4.1	3.5	3.6	4.1	4.3	4.9	6.3	6.2	7.4	10.0	9.7	8.6	7.6	6.6	5.6	10.0
18-Apr	6.0	7.1	7.0	6.1	5.7	6.0	5.5	5.1	4.9	4.2	3.9	3.8	3.3	2.8	3.7	3.2	3.5	4.2	5.0	8.3	7.8	6.5	6.4	6.8	5.3	8.3
19-Apr	5.5	6.2	6.1	6.3	6.2	7.7	6.2	4.9	3.0	2.0	1.7	1.9	2.1	1.8	2.5	2.5	3.0	3.5	3.9	4.4	4.6	6.4	4.4	4.2	4.2	7.7
20-Apr	3.7	4.0	3.7	3.2	2.9	3.5	4.6	3.0	2.5	3.8	4.6	4.3	4.6	2.8	1.5	3.2	5.3	4.9	7.2	21.9	13.4	11.3	13.8	10.2	6.0	21.9
21-Apr	13.1	5.2	4.5	4.4	4.8	4.7	5.2	3.0	2.0	1.5	0.6	3.2	6.7	3.3	4.1	6.3	5.2	5.3	7.1	7.7	9.3	11.4	8.2	6.5	5.5	13.1
22-Apr	6.3	8.2	9.7	10.3	9.5	10.3	10.3	8.0	5.2	3.9	3.6	2.7	1.7	1.8	3.1	3.8	6.1	5.4	4.8	5.1	4.6	4.4	4.1	4.5	5.7	10.3
23-Apr	4.7	4.5	4.5	4.4	4.3	5.4	5.1	4.7	3.7	3.2	3.1	3.0	2.8	2.9	3.6	4.7	4.6	4.8	3.8	4.1	3.8	3.5	3.1	3.1	4.0	5.4
24-Apr	3.1	3.4	3.8	3.4	5.6	4.4	4.0	3.5	3.0	3.1	3.7	3.0	2.9	2.7	2.6	2.7	3.4	3.1	3.4	4.1	5.3	3.6	3.0	2.2	3.5	5.6
25-Apr	2.3	2.2	2.3	2.2	2.4	2.5	2.2	2.0	2.0	2.1	2.2	2.1	2.2	2.0	2.0	2.4	4.5	4.4	15.4	10.6	7.3	10.7	6.1	9.0	4.3	15.4
26-Apr	1.8	1.9	2.4	2.8	2.9	3.1	3.2	3.1	2.4	2.2	1.8	1.8	2.6	3.0	3.7	5.7	5.4	6.5	6.8	7.1	6.1	4.5	3.0	2.1	3.6	7.1
27-Apr	2.3	1.7	1.3	1.8	3.2	3.8	2.6	1.5	1.3	0.7	0.5	0.7	0.7	1.0	1.0	1.2	1.3	1.7	2.2	3.6	1.6	1.4	1.5	1.3	1.7	3.8
28-Apr	0.9	0.9	1.1	1.4	17.9	5.5	2.0	2.6	2.1	2.3	2.3	2.0	2.4	3.1	2.7	2.4	4.7	5.0	7.3	3.6	3.6	2.4	2.9	1.7	3.4	17.9
29-Apr	1.4	1.1	0.9	0.9	1.2	2.5	1.5	1.6	1.6	1.6	1.1	0.3	0.3	0.4	0.5	0.8	1.5	2.3	2.8	12.4	5.1	9.7	20.2	7.5	3.3	20.2
30-Apr	17.5	10.4	4.6	3.8	9.2	15.1	10.1	4.3	1.5	1.4	2.8	1.2	1.1	1.3	2.5	2.6	4.3	3.7	11.3	10.4	3.2	7.8	5.2	2.4	5.7	17.5
	4.4	3.7	3.4	3.5	4.5	4.5	4.2	3.8	3.2	2.9	3.0	2.8	3.0	2.8	3.1	3.5	4.1	4.5	5.4	6.5	5.2	5.2	4.9	4.2	Diurnal Average	
	17.5	10.4	9.7	10.3	17.9	15.1	10.3	8.6	8.3	7.4	10.9	7.3	8.2	8.4	9.4	9.3	11.6	12.9	15.4	21.9	13.4	11.4	20.2	11.4	Diurnal Maximum	

M - Maintenance UO - Unstable Operation

Alberta Ambient Air Quality Objectives (AAAQO): 24-hr 30 $\mu g/m^3$

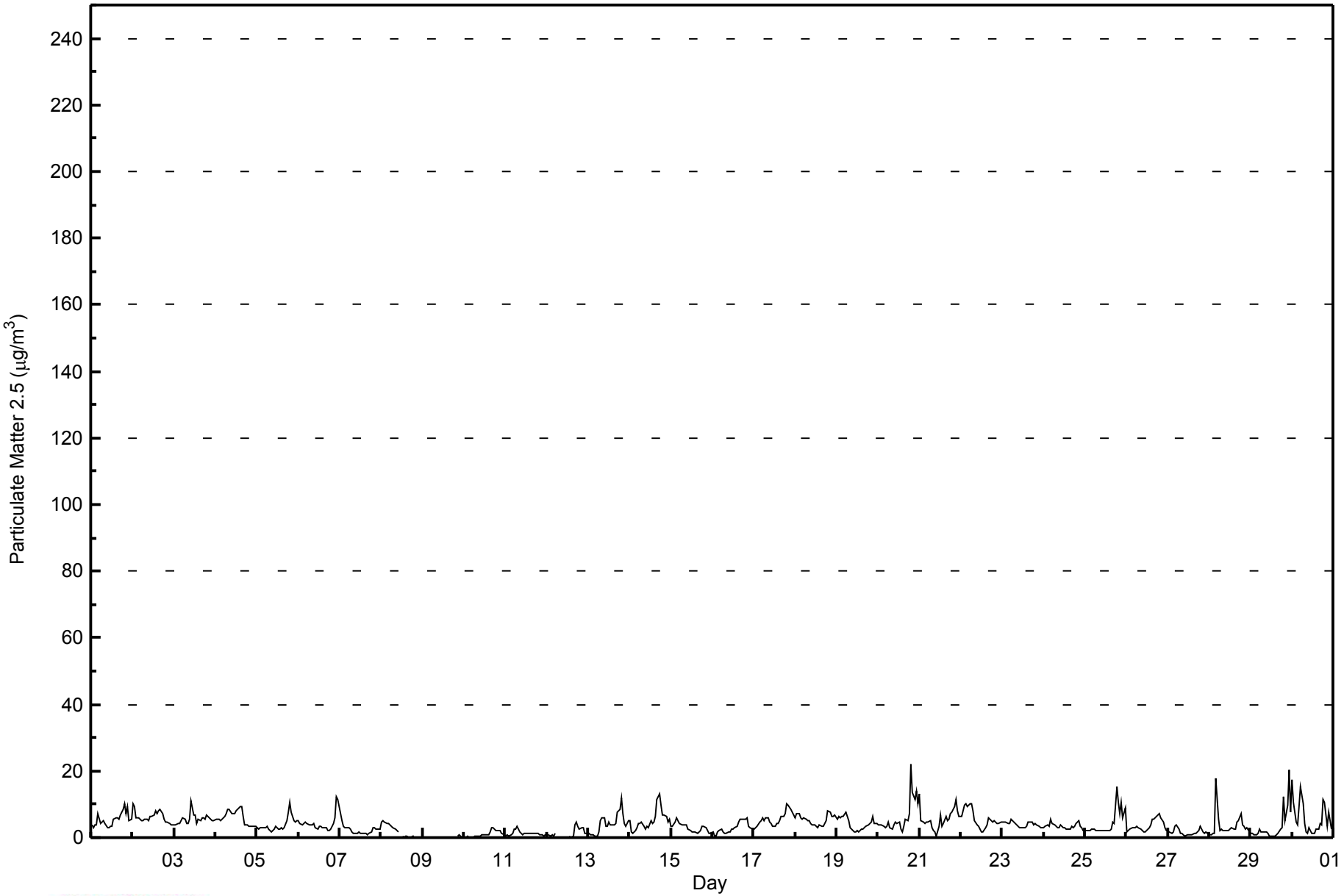
AURORA ATMOSPHERICS INC.

WBEA NETWORK

Hourly Averages

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

Patricia McInnes - April 2014



AURORA ATMOSPHERICS INC.

Concentration Ranges ($\mu g/m^3$)	Number of Hours	%	Cumulative %
1 - 5	478	69.28	69.28
6 - 15	144	20.87	90.15
16 - 25	4	0.58	90.72
26 - 80	0	0.00	90.72
> 81.0	0	0.00	90.72

Total Number of Valid Hours: 690

Total Number of Hours: 720

WBEA NETWORK

Frequency Distribution

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

Patricia McInnes - April 2014

Concentration	**Wind Direction**																
Ranges ($\mu g/m^3$)	N	NNE	NE	ENE	E	ESE	SE	SSE	S	SSW	SW	WSW	W	WNW	NW	NNW	**Totals**
1 - 5	40	33	28	40	59	98	56	8	20	22	21	10	7	9	7	20	478
6 - 15	20	10	4	3	7	46	12	4	5	7	4	0	5	1	1	15	144
16 - 25	0	0	0	0	0	1	0	0	0	1	0	2	0	0	0	0	4
26 - 80	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
> 81.0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Totals	60	43	32	43	66	145	68	12	25	30	25	12	12	10	8	35	626

Total Number of Valid Hours: 690

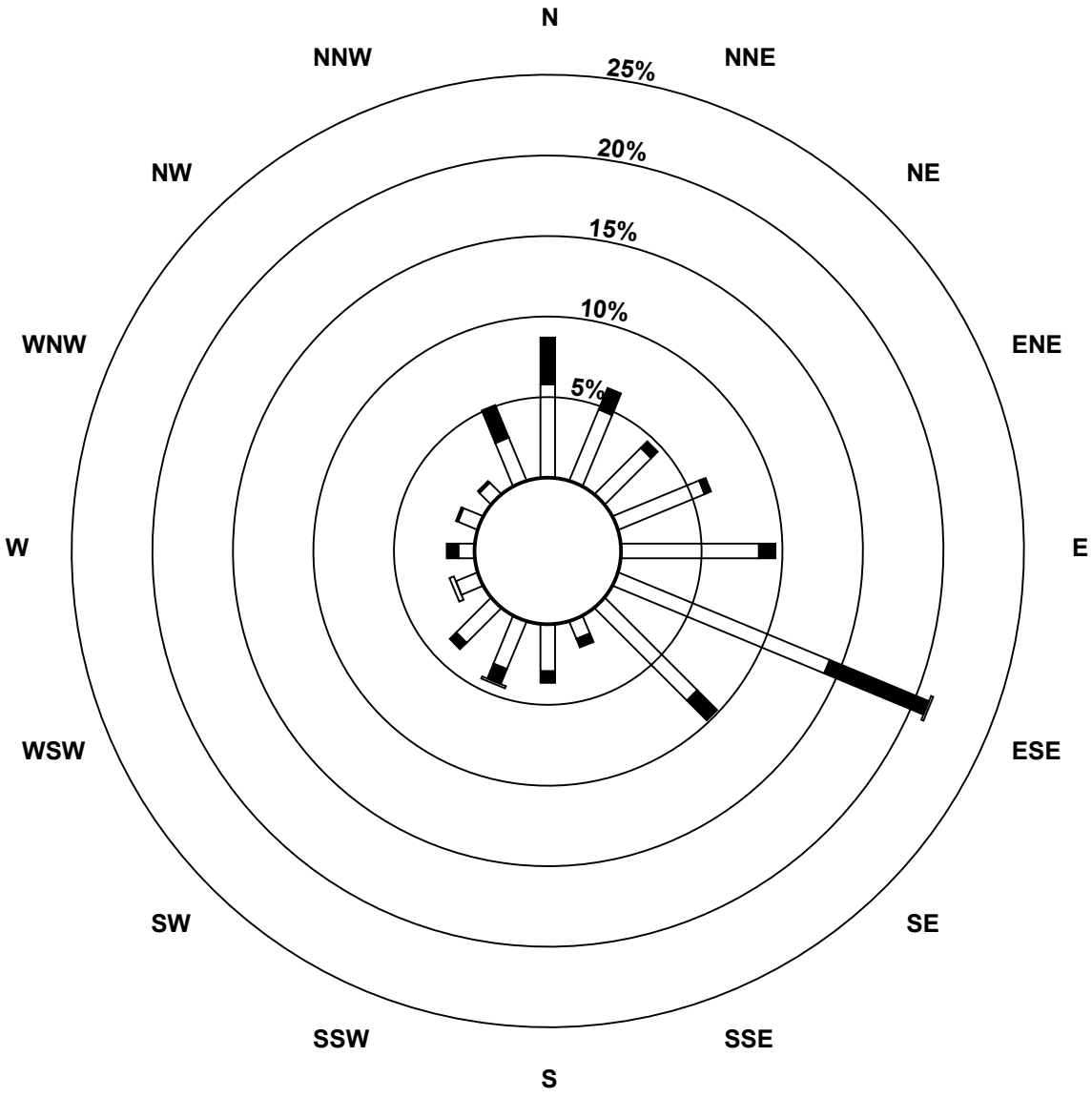
Total Number of Hours: 720

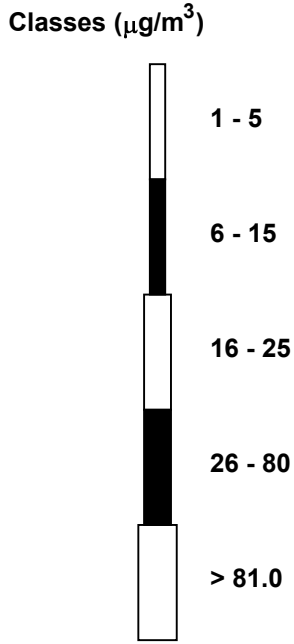
Wood Buffalo Environmental Association

Wind Rose Apr 2014

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

Patricia McInnes (AMS 6)





Total Number of Valid Hours: 690

Maximum Value: 21.7 C on Apr 30 18:00

Maximum Daily Average: 13.2 C on Apr 30

Minimum Value: -17.8 C on Apr 3 07:00

Minimum Daily Average: -11.3 C on Apr 2

Maximum Diurnal Average: 6.5 C at hour 16

Minimum Diurnal Average: -4.0 C at hour 6

Monthly Average: 1.44 C

Percentiles: P_1 = -15.7 P_{10} = -8.3 Q_1 = -3.4 Median = 1.5 Q_3 = 5.9 P_{90} = 11.1 P_{99} = 20.0

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

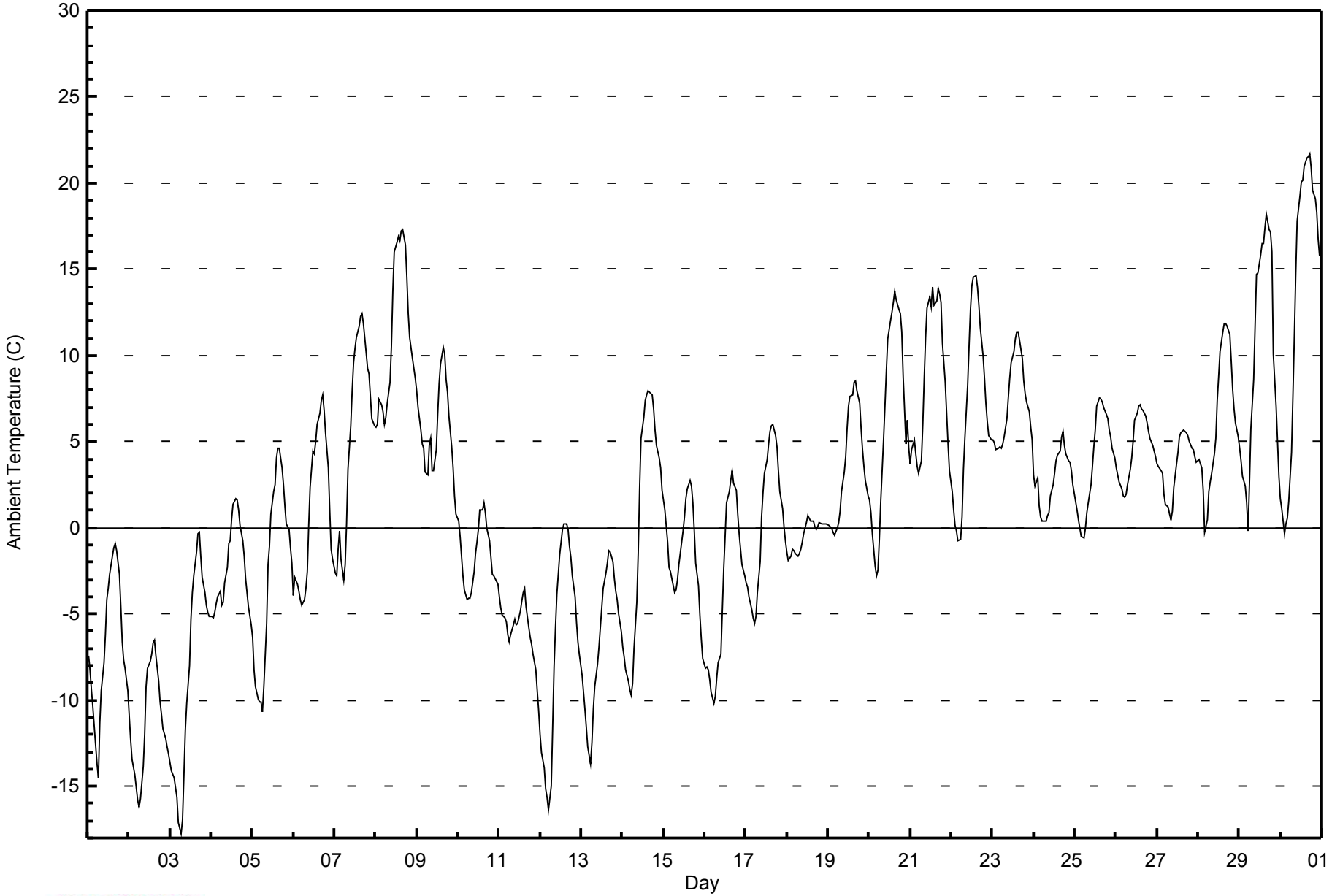
Day	Hourly Period Ending At (MST)																								Daily	Daily
	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24	Average	Maximum
1-Apr	-7.4	-8.2	-9.4	-10.4	-11.5	-13.7	-14.5	-11.3	-9.5	-7.9	-6.2	-4.2	-3.5	-2.7	-1.7	-1.2	-0.9	-1.3	-2.7	-4.6	-6.6	-7.6	-8.1	-9.4	-6.9	-0.9
2-Apr	-10.9	-12.3	-13.4	-14.3	-15.1	-15.8	-16.2	-15.7	-13.8	-12.0	-9.2	-8.1	-7.8	-7.4	-6.7	-6.5	-7.4	-8.9	-10.1	-10.8	-11.6	-12.3	-12.7	-13.1	-11.3	-6.5
3-Apr	-13.6	-14.1	-14.5	-15.1	-15.7	-17.1	-17.8	-17.0	-14.3	-11.7	-10.2	-8.0	-5.3	-3.7	-2.8	-1.4	-0.3	-0.3	-1.6	-2.9	-3.8	-4.5	-4.9	-5.2	-8.6	-0.3
4-Apr	-5.2	-5.2	-4.9	-4.4	-4.0	-3.7	-4.5	-4.3	-3.2	-2.3	-0.9	-0.7	0.4	1.4	1.6	1.6	1.0	0.1	-0.7	-1.7	-2.9	-3.7	-4.6	-5.6	-2.4	1.6
5-Apr	-6.4	-8.3	-9.2	-10.0	-10.1	-10.1	-10.7	-9.2	-5.5	-2.2	-1.1	0.8	2.1	2.5	4.0	4.6	4.6	3.5	2.5	1.2	0.2	-0.1	-1.1	-2.1	-2.5	4.6
6-Apr	-3.9	-2.9	-3.3	-3.7	-4.2	-4.5	-4.1	-3.5	-2.5	0.2	2.4	4.4	4.3	5.0	6.0	6.7	7.4	7.7	6.8	5.5	3.5	1.0	-1.3	-1.8	1.1	7.7
7-Apr	-2.6	-2.8	-1.3	-0.2	-1.8	-3.0	-2.2	0.2	3.4	5.9	7.9	9.6	10.4	11.0	11.7	12.3	12.5	11.8	10.1	9.3	8.9	7.7	6.3	5.9	5.5	12.5
8-Apr	5.8	6.0	7.4	7.1	6.7	6.0	6.4	7.2	8.4	10.6	13.7	16.0	16.6	16.9	16.6	17.2	17.3	16.5	14.5	12.5	11.0	9.9	9.2	8.7	11.2	17.3
9-Apr	7.9	7.0	5.7	4.9	4.7	3.2	3.1	4.8	5.2	3.3	3.3	4.5	6.5	8.3	9.5	10.5	10.0	8.6	7.9	6.5	4.7	3.4	1.9	0.8	5.7	10.5
10-Apr	0.4	-0.5	-1.7	-2.8	-3.6	-4.2	-4.1	-4.1	-3.8	-2.5	-1.5	-0.8	-0.1	1.0	1.0	1.5	0.9	0.0	-0.8	-1.7	-2.7	-2.8	-2.9	-3.3	-1.6	1.5
11-Apr	-4.0	-4.6	-5.1	-5.2	-5.5	-6.2	-6.6	-6.2	-5.6	-5.3	-5.6	-5.5	-4.8	-4.3	-3.7	-3.6	-4.6	-5.8	-6.3	-6.8	-7.4	-8.3	-9.5	-10.6	-5.9	-3.6
12-Apr	-12.0	-13.1	-13.9	-15.1	-15.6	-16.4	-15.0	-11.6	-8.1	-5.8	-3.9	-1.5	-0.8	-0.1	0.2	0.2	-0.1	-1.1	-1.7	-2.8	-4.0	-5.5	-6.6	-7.4	-6.7	0.2
13-Apr	-8.5	-9.5	-10.5	-11.6	-12.7	-13.7	-12.4	-10.5	-9.2	-7.9	-6.9	-5.8	-4.7	-3.6	-2.6	-2.1	-1.3	-1.4	-1.9	-3.0	-3.7	-4.2	-5.0	-6.0	-6.6	-1.3
14-Apr	-6.9	-7.5	-8.2	-8.8	-9.4	-9.7	-9.1	-7.0	-4.3	-1.5	2.3	5.2	6.4	7.4	7.7	8.0	7.9	7.7	6.9	5.7	4.8	4.1	3.4	2.2	0.3	8.0
15-Apr	1.6	1.0	-0.9	-2.3	-2.6	-3.0	-3.8	-3.6	-3.1	-2.1	-1.5	-0.2	0.6	1.7	2.3	2.7	2.4	1.5	-0.2	-2.1	-3.4	-5.0	-6.5	-7.6	-1.4	2.7
16-Apr	-8.1	-8.1	-8.3	-8.8	-9.6	-10.2	-9.8	-8.8	-7.8	-7.3	-4.8	-2.3	-0.5	1.4	2.1	2.8	3.3	2.6	2.1	0.8	-0.4	-1.3	-2.1	-2.8	-3.6	3.3
17-Apr	-3.2	-3.5	-4.0	-4.8	-5.2	-5.5	-5.1	-3.7	-1.9	0.6	2.0	3.2	3.9	4.9	5.6	5.9	6.0	5.3	4.7	3.3	2.1	1.1	0.0	-0.7	0.5	6.0
18-Apr	-1.4	-1.9	-1.6	-1.3	-1.3	-1.5	-1.7	-1.5	-1.2	-0.8	-0.3	0.3	0.7	0.5	0.4	0.4	0.1	-0.1	0.1	0.3	0.3	0.2	0.2	0.2	-0.5	0.7
19-Apr	0.1	0.1	0.0	-0.2	-0.4	0.0	0.3	1.0	2.1	3.2	4.2	5.8	7.1	7.6	7.7	8.4	8.6	8.0	7.2	5.8	4.5	3.6	2.8	1.9	3.7	8.6
20-Apr	1.6	0.9	-0.4	-2.2	-2.8	-2.5	-0.6	1.5	5.1	7.0	9.1	11.0	12.0	12.5	13.1	13.7	13.3	12.7	12.4	11.4	8.8	4.8	6.3	4.6	6.4	13.7
21-Apr	3.7	4.5	5.1	4.3	3.5	3.1	3.9	6.0	8.7	11.0	12.7	13.4	12.9	14.0	12.9	13.1	13.9	13.5	13.1	10.7	8.4	6.6	4.8	3.3	8.6	14.0
22-Apr	2.1	1.1	0.1	-0.2	-0.7	-0.7	0.7	3.4	5.2	8.3	10.5	12.7	14.0	14.6	14.6	14.0	12.9	11.6	10.0	8.6	7.2	6.2	5.4	5.1	6.9	14.6
23-Apr	5.1	5.0	4.6	4.6	4.7	4.6	4.8	5.3	6.3	7.5	8.7	9.6	10.3	10.9	11.4	11.4	10.9	9.8	8.5	7.8	7.3	6.7	5.8	5.1	7.4	11.4
24-Apr	3.1	2.4	2.9	1.3	0.6	0.4	0.4	0.4	0.7	0.9	1.9	2.5	3.1	3.9	4.2	4.5	5.2	5.6	4.8	4.3	3.9	3.8	3.3	2.5	2.8	5.6
25-Apr	1.5	1.1	0.5	0.0	-0.5	-0.6	-0.1	0.9	1.5	2.5	3.5	4.7	5.7	7.1	7.6	7.5	7.3	7.0	6.6	6.3	5.7	5.2	4.6	4.0	3.7	7.6
26-Apr	3.5	3.1	2.7	2.3	1.9	1.8	1.9	2.5	3.4	4.1	5.0	6.2	6.6	7.0	7.1	6.9	6.8	6.5	6.1	5.6	5.2	4.8	4.5	4.1	4.6	7.1
27-Apr	3.8	3.6	3.3	3.1	2.0	1.3	1.2	0.8	0.5	1.0	2.3	3.7	4.4	5.2	5.5	5.7	5.6	5.5	5.4	5.0	4.6	4.6	4.1	3.8	3.6	5.7
28-Apr	3.9	3.7	3.5	2.2	-0.3	0.4	2.1	2.7	3.2	4.3	5.2	7.4	8.8	10.2	11.4	11.9	11.9	11.7	11.2	9.7	8.0	6.9	6.1	5.3	6.3	11.9
29-Apr	4.7	3.9	3.0	2.5	1.4	-0.2	2.6	5.7	8.6	11.7	14.7	14.8	15.8	16.5	16.5	17.4	18.2	17.3	17.1	16.0	10.0	7.1	5.0	3.0	9.7	18.2
30-Apr	1.7	1.1	-0.4	0.2	0.6	1.6	4.4	7.7	11.1	14.7	17.8	19.3	20.1	20.2	21.0	21.4	21.6	21.7	20.9	19.6	19.1	18.3	16.8	15.8	13.2	21.7
	-1.5	-1.9	-2.4	-3.0	-3.5	-4.0	-3.5	-2.3	-0.7	0.9	2.5	3.9	4.8	5.7	6.1	6.5	6.5	5.9	5.1	4.0	2.7	1.7	0.8	0.0	Diurnal Average	
	7.9	7.0	7.4	7.1	6.7	6.0	6.4	7.7	11.1	14.7	17.8	19.3	20.1	20.2	21.0	21.4	21.6	21.7	20.9	19.6	19.1	18.3	16.8	15.8	Diurnal Maximum	

WBEA NETWORK

Hourly Averages

Ambient Temperature (AT) - C

Patricia McInnes - April 2014



AURORA ATMOSPHERICS INC.

Concentration Ranges (C)	Number of Hours	%	Cumulative %
-50 - -20	0	0.00	0.00
-20 - 0	293	40.69	40.69
0 - 10	339	47.08	87.78
10 - 20	81	11.25	99.03
> 20	7	0.97	100.00

Total Number of Valid Hours: 720

Total Number of Hours: 720

Maximum Value: 98 % on Apr 28 08:00

Maximum Daily Average: 86.4 % on Apr 27

Minimum Value: 17 % on Apr 30 15:00

Minimum Daily Average: 38.2 % on Apr 14

Maximum Diurnal Average: 76.9 % at hour 6

Minimum Diurnal Average: 43.8 % at hour 17

Monthly Average: 58.9 %

Percentiles: P_1 = 21 P_{10} = 32 Q_1 = 44 Median = 57 Q_3 = 76 P_{90} = 87 P_{99} = 96

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

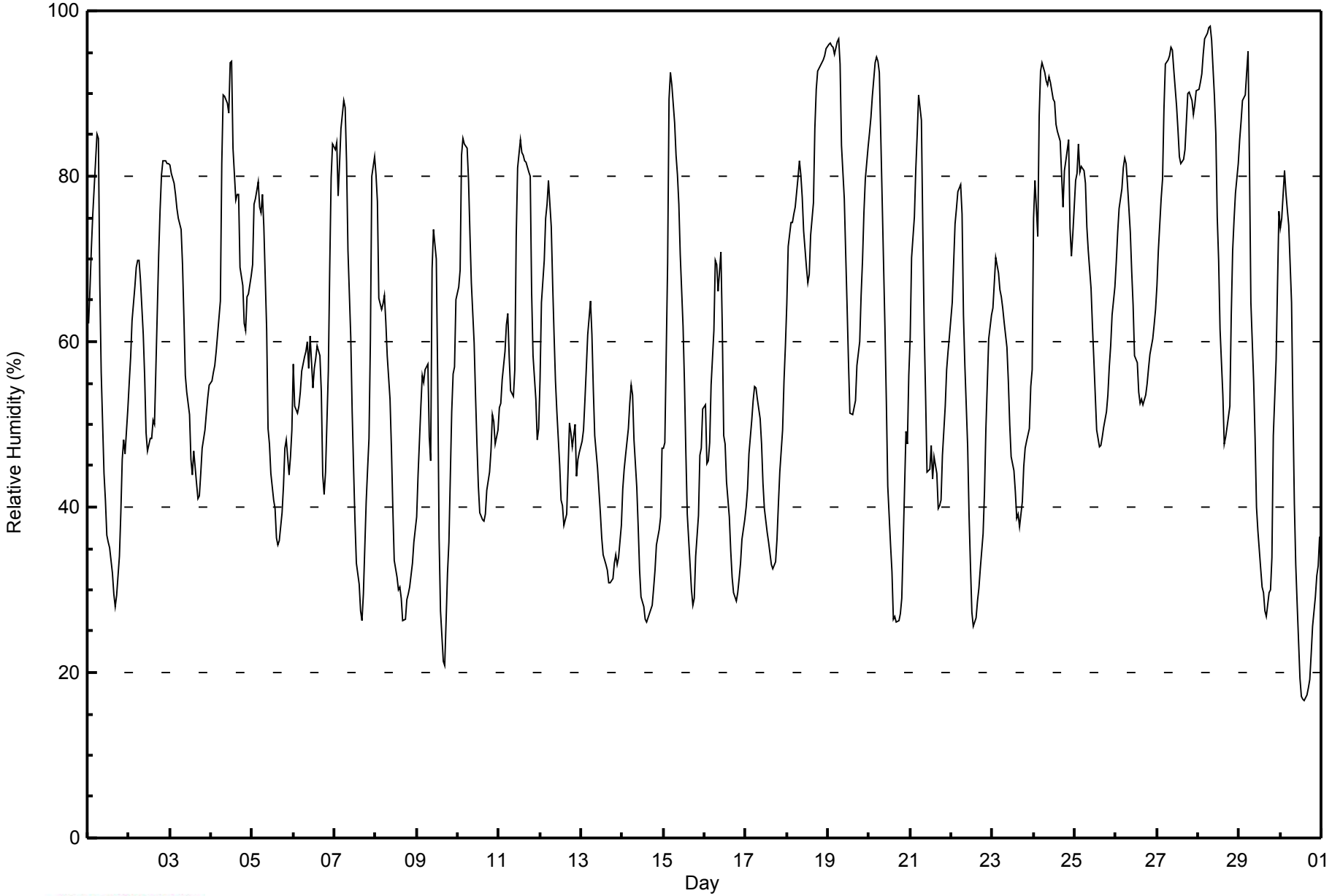
Day	Hourly Period Ending At (MST)																								Daily	Daily
	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24	Average	Maximum
1-Apr	62	66	71	75	79	85	85	67	56	44	41	37	36	35	32	29	28	29	34	39	46	48	46	52	51.0	85
2-Apr	55	58	63	67	69	70	70	67	61	56	49	47	48	48	51	50	57	70	76	80	82	82	82	82	64.1	82
3-Apr	81	80	79	78	76	75	74	69	63	56	54	51	46	44	47	43	41	41	44	47	49	51	53	55	58.2	81
4-Apr	55	56	57	59	61	65	82	90	90	89	88	94	94	83	77	78	78	69	67	62	61	65	66	68	73.0	94
5-Apr	69	77	77	79	76	76	78	74	62	50	48	44	41	40	36	35	36	39	43	47	48	44	46	49	54.7	79
6-Apr	57	52	51	52	54	56	58	59	60	57	61	54	57	58	59	58	54	44	41	44	56	69	80	84	57.4	84
7-Apr	83	84	78	81	86	89	88	82	71	60	52	45	38	33	31	27	26	29	41	45	48	60	80	82	60.0	89
8-Apr	80	77	65	64	64	66	62	58	53	47	40	34	32	30	30	29	26	27	29	30	30	33	36	37	45.0	80
9-Apr	39	44	52	56	55	57	57	49	46	69	74	70	56	36	27	21	21	26	32	36	52	56	57	65	48.0	74
10-Apr	67	69	83	85	84	83	80	73	67	60	53	48	43	39	38	38	39	42	44	47	51	50	48	49	57.5	85
11-Apr	52	53	55	59	62	63	58	54	53	57	73	81	84	83	83	82	82	81	80	66	58	53	48	49	65.4	84
12-Apr	55	65	70	75	77	79	74	67	61	55	52	45	41	40	38	39	45	50	49	47	50	44	46	47	54.6	79
13-Apr	48	49	53	57	61	65	61	54	49	45	42	39	36	34	33	32	31	31	31	33	34	33	34	38	42.6	65
14-Apr	42	45	46	49	53	55	54	48	42	38	32	29	28	26	26	27	27	28	30	32	35	37	39	47	38.2	55
15-Apr	47	48	70	89	93	91	87	83	80	77	71	62	55	47	39	33	30	28	29	34	39	46	47	52	57.3	93
16-Apr	52	45	46	48	55	61	70	69	66	71	61	49	48	43	39	35	31	30	29	30	31	33	36	38	46.5	71
17-Apr	40	42	47	51	53	55	54	53	51	48	43	40	37	36	34	33	32	33	36	40	44	49	55	60	44.4	60
18-Apr	65	72	74	74	75	76	80	82	80	77	73	69	67	68	73	77	86	91	93	93	94	94	95	95	80.1	95
19-Apr	96	96	96	96	95	96	97	94	84	77	71	64	57	51	51	52	53	57	60	66	70	76	80	84	75.7	97
20-Apr	85	87	90	94	94	94	93	85	70	62	53	42	35	32	26	27	26	26	27	29	36	49	48	56	56.9	94
21-Apr	60	70	75	81	85	90	87	74	61	53	44	45	47	43	46	44	40	40	41	46	52	57	59	61	58.4	90
22-Apr	65	69	74	76	78	79	75	63	57	47	39	33	27	26	27	29	30	33	37	42	50	55	60	63	51.4	79
23-Apr	64	67	70	68	66	65	64	62	59	55	50	46	44	42	39	39	38	41	45	47	48	50	55	57	53.4	70
24-Apr	75	80	73	87	93	94	93	92	91	92	91	89	89	86	85	84	80	76	81	82	84	74	70	73	83.9	94
25-Apr	80	80	84	81	81	81	79	74	71	66	62	58	54	49	47	48	48	50	52	54	57	59	63	67	64.3	84
26-Apr	70	73	76	79	81	82	82	79	73	69	64	58	58	54	53	53	52	54	55	57	59	60	62	64	65.2	82
27-Apr	67	71	77	80	88	94	94	95	96	95	93	88	86	82	82	82	83	87	90	90	89	88	89	90	86.4	96
28-Apr	91	91	92	95	97	97	98	98	97	90	85	75	70	61	54	48	48	50	52	63	71	75	78	81	77.4	98
29-Apr	84	87	89	90	93	95	81	65	55	48	40	37	32	30	30	27	27	30	30	34	49	58	67	76	56.4	95
30-Apr	74	75	81	78	76	74	65	52	40	33	28	19	17	17	17	17	18	19	22	26	29	32	33	36	40.8	81
	65.4	67.6	70.5	73.4	75.3	76.9	75.9	71.0	65.5	61.4	57.5	53.1	50.1	46.6	45.0	43.9	43.8	45.0	47.3	49.6	53.4	56.0	58.6	61.9	Diurnal Average	
	96	96	96	96	97	97	98	98	97	95	93	94	94	86	85	84	86	91	93	93	94	94	95	95	Diurnal Maximum	

WBEA NETWORK

Hourly Averages

Relative Humidity (RH) - %

Patricia McInnes - April 2014



AURORA
ATMOSPHERICS INC.

Wood Buffalo Environmental Association

Summary of Hour Averages

Wind Speed (WS) - km/h

Patricia McInnes - April 2014

Maximum Speed: 36 km/h on Apr 8 14:00

Maximum Daily Speed Average: 21.3 km/h on Apr 23

Minimum Speed Value: 1 km/h on Apr 6 17:00

Minimum Daily Speed Average: 1.8 km/h on Apr 6

Maximum Diurnal Speed Average: 5.1 km/h at hour 12

Minimum Diurnal Speed Average: 2.2 km/h at hour 5

Monthly Average Velocity: 3.5 km/h 75.9 deg

Percentiles: $P_1 = 2$ $P_{10} = 5$ $Q_1 = 8$ Median = 12 $Q_3 = 15$ $P_{90} = 20$ $P_{99} = 29$

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-Apr	SW15	SW14	SSW8	WSW2	SW3	W5	W5	NNW12	N12	N16	NNE12	NNE8	N9	N10	NNE10	NNE10	NNE9	NNE12	NNE9	N9	NNW10	N11	NNE9	NNE9	N5.7	N16
2-Apr	N10	N10	N10	NNW14	NNW14	N15	NNW14	N14	N13	N14	N14	NNW16	NNW18	NNW20	NNW18	NNW19	NNW22	NNW22	NNW20	NNW19	NNW19	NNW18	NNW18	N16	NNW16.0	NNW22
3-Apr	N15	N14	NNW13	NNW15	N13	NNW9	NNW8	NNW10	N8	NNE7	NNW4	NNE6	NE2	E9	ESE12	ESE13	ESE14	ESE16	ESE18	ESE21	ESE21	ESE21	ESE20	ESE20	ENE6.7	ESE21
4-Apr	ESE19	ESE18	SE15	ESE15	ESE16	ESE16	ESE16	ESE13	ESE12	ESE12	ESE10	SE7	S7	W13	W14	W14	WNW19	WNW21	W22	WNW19	WNW9	W7	WNW14	WNW13	SSW2.6	W22
5-Apr	W9	WSW10	WSW9	W9	WSW11	WSW9	S4	S4	ESE1	NE4	ENE6	NE8	NNE10	NNE11	NE7	ENE9	ENE7	NNE8	NNE8	NE5	E8	E10	E8	NE5	NE2.1	WSW11
6-Apr	NE2	ESE7	ESE7	ESE9	SE8	ESE9	SE7	SSE6	SE5	E5	ESE5	NE6	NNE10	NNE11	NNE10	NE4	NNW1	WNW17	NW17	NW11	NW7	W6	NW1	S3	NE1.8	NW17
7-Apr	SW5	S5	SW10	SW10	SSE5	SSW4	SSW7	SSW7	S5	ESE5	ESE4	SE3	SSW11	SW11	SSW11	SW14	WSW11	SW10	SW13	SSW9	SSW11	SW13	SW11	S8	SSW7.3	SW14
8-Apr	SE8	S8	SW14	SW15	WSW15	SW14	SW15	SW17	SW18	SW20	WSW21	W29	W32	W36	W29	WSW30	WSW29	SW32	WSW27	WSW23	WSW25	WSW20	WSW21	WSW20	WSW20.5	W36
9-Apr	WSW24	W18	WSW9	WSW16	WSW19	SW12	SW17	W25	W28	WNW33	NW17	N7	NW14	NW21	NW24	WNW33	WNW29	WNW23	W21	W14	NNW9	WSW10	WSW13	WSW13	W16.6	WNW33
10-Apr	WSW12	NW6	N12	NNW10	NNW7	NW7	N12	N16	N14	NNE13	NNE13	NNE15	NNE17	NNE16	NNE16	N17	N17	N17	N15	N13	N14	NNE12	NE11	ENE11	N11.3	N17
11-Apr	ENE15	ENE14	ENE14	ENE13	ENE15	ENE17	E17	ENE15	ENE16	ENE16	ENE15	ENE14	NNE17	NNE20	NNE20	NNE20	N25	N26	N21	N22	N22	N18	NNW13	NW10	NE13.7	N26
12-Apr	NW7	WNW8	WNW8	W5	SW5	SSW3	SSW5	S6	S9	SSW10	S8	ESE4	WNW9	NW5	WNW11	NW15	NNW21	NNW18	NNW17	NNE14	NNE15	NNE20	N17	N20	NNW6.0	NNW21
13-Apr	N17	N15	N12	NNW8	NW7	NW5	NW9	N12	N12	N16	NNW15	N13	N12	NNE11	E7	ESE8	E9	E14	ESE12	ESE11	SE12	SE11	SE11	SE9	NNE5.2	N17
14-Apr	SE7	ESE8	SE10	SE9	SE10	SE9	SE10	ESE8	ESE8	SE9	ESE7	SSE9	S15	SSE15	SSW12	SSE8	ESE10	SE8	ESE11	ESE14	ESE12	E10	NE10	NNE14	SE8.0	S15
15-Apr	NE14	NE13	NE15	NE9	NNE13	NE13	ENE16	NE11	NE12	NE11	NE16	NE14	NE16	NE13	NNE19	NNE21	NNE19	N23	N23	N20	N19	N20	N17	N14	NNE14.7	N23
16-Apr	NNE12	NE14	ENE12	ENE13	NE11	NE10	ENE11	E13	E15	E14	E9	ESE14	SE13	ESE16	ESE19	ESE19	ESE20	ESE19	ESE18	ESE19	ESE16	ESE16	ESE13	SE12	E12.9	ESE20
17-Apr	ESE11	ESE13	ESE11	ESE9	ESE11	ESE13	ESE16	ESE11	E13	ESE17	ESE21	ESE21	ESE21	ESE19	ESE20	ESE20	ESE21	SE20	ESE17	ESE10	ESE10	ESE10	ESE10	ESE10	ESE14.6	ESE21
18-Apr	ESE12	ESE11	ESE11	E12	E12	ESE13	E13	ESE13	E14	E13	E15	E14	E15	ESE16	ESE15	ESE14	ESE13	ESE8	ESE5	ESE7	ESE7	ESE6	E5	ESE4	ESE11.2	ESE16
19-Apr	ESE5	SE4	SE3	S1	ENE1	SE4	SE4	SE6	SSE5	SE7	SE4	E7	E9	E9	E11	ESE13	ESE15	ESE17	E17	ESE14	ESE13	ESE16	ESE11	ESE7	ESE8.1	ESE17
20-Apr	ESE10	SE7	ESE4	NNW3	WNW4	N4	NW2	WNW1	ENE2	NNE6	NE7	NNE10	N11	NNW14	NW14	NNE11	NE10	NE9	E6	ESE6	S5	SSW4	SSW5	SSW4	NNE2.9	NNW14
21-Apr	SSW5	SW6	SSW10	ESE3	SSW6	SSW4	SE5	SW9	SSW8	SSW10	W17	N12	NNE16	N16	NNW22	N17	NNE13	NNE13	N12	N12	N10	N10	NNW12	NNW11	NNW5.0	NNW22
22-Apr	N11	NNW9	N7	N10	N9	N10	N6	ENE7	NE6	NNE5	ENE9	NE12	ENE15	ENE18	ENE20	ENE20	ENE23	ENE24	ENE24	ENE21	ENE22	E17	ENE18	ENE13	ENE12.1	ENE24
23-Apr	ENE13	ENE18	ENE19	E18	E20	E16	E18	ENE21	E22	E23	E24	E26	E25	E26	E28	E28	E24	ENE25	ENE25	ENE19	E20	E20	E21	E23	E21.3	E28
24-Apr	E20	E11	E14	E14	NE9	NE9	ENE11	ENE13	ENE14	E11	E13	ESE12	ESE11	ESE15	ESE12	SE9	ESE8	SE9	S8	SE8	E9	E9	ESE11	ESE16	E10.2	E20
25-Apr	ESE12	E11	E8	E8	E7	ENE8	ESE8	ESE11	SE12	SE9	E8	ENE5	ENE8	ESE7	SE9	SE12	ESE11	SE12	ESE10	SE8	SE7	SE8	SSE8	SE8	ESE8.4	SE12
26-Apr	SE11	SE9	SE7	ESE9	ESE7	SE8	SE9	ESE9	SE11	SE12	SE13	ESE15	ESE13	ESE13	ESE16	ESE17	ESE16	ESE16	ESE15	ESE15	ESE11	ESE12	ESE13	ESE13	ESE11.9	ESE17
27-Apr	ESE12	ESE13	ESE14	ESE12	ESE15	E10	E10	E10	E10	ESE13	ESE14	SE17	SE16	SE16	SE14	SE15	SE17	SE16	SE13	SE12	SE12	SE14	ESE7	SE7	ESE12.4	SE17
28-Apr	ESE10	ESE8	SE7	S4	WSW1	S4	SSW5	S5	S4	ESE5	S3	E2	NNE2	E5	E5	ESE6	E8	ESE8	ESE9	ESE14	ESE13	SE10	SE6	ESE8	SE5.5	ESE14
29-Apr	ESE8	ESE7	ESE6	SE9	SE5	SSW3	SSW8	S8	SE7	SE7	SSE6	WNW11	W12	W14	WNW13	W13	W14	NNW7	NW6	NNE4	WSW3	W4	W4	SW3	WSW2.7	W14
30-Apr	SSW3	SSE4	S4	SSW4	SSW5	S4	SSE6	SSE7	S9	SSE9	SE8	SSW15	S15	S17	S16	SSW18	S14	SW15	SW10	SW5	WSW9	SSW7	SSW7	SW10	SSW8.3	SSW18
	E3.1	E3.4	E3.4	E2.7	E2.2	E2.7	ESE3.6	E3.2	E4.0	E4.6	E4.8	ENE5.1	ENE4.1	NE4.1	NE4.1	ENE3.6	ENE4.5	NE4.1	NE3.4	ENE3.9	ENE3.8	E3.8	E2.9	E2.7	Diurnal Average	
	WSW24	W18	ENE19	E18	E20	ENE17	E18	W25	W28	WNW33	E24	W29	W32	W36	W29	WNW33	WSW29	SW32	WSW27	WSW23	WSW25	ESE21	E21	E23	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: 12 km/h on Apr 9 13:00

Minimum Value: 0 km/h on Apr 12 06:00

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

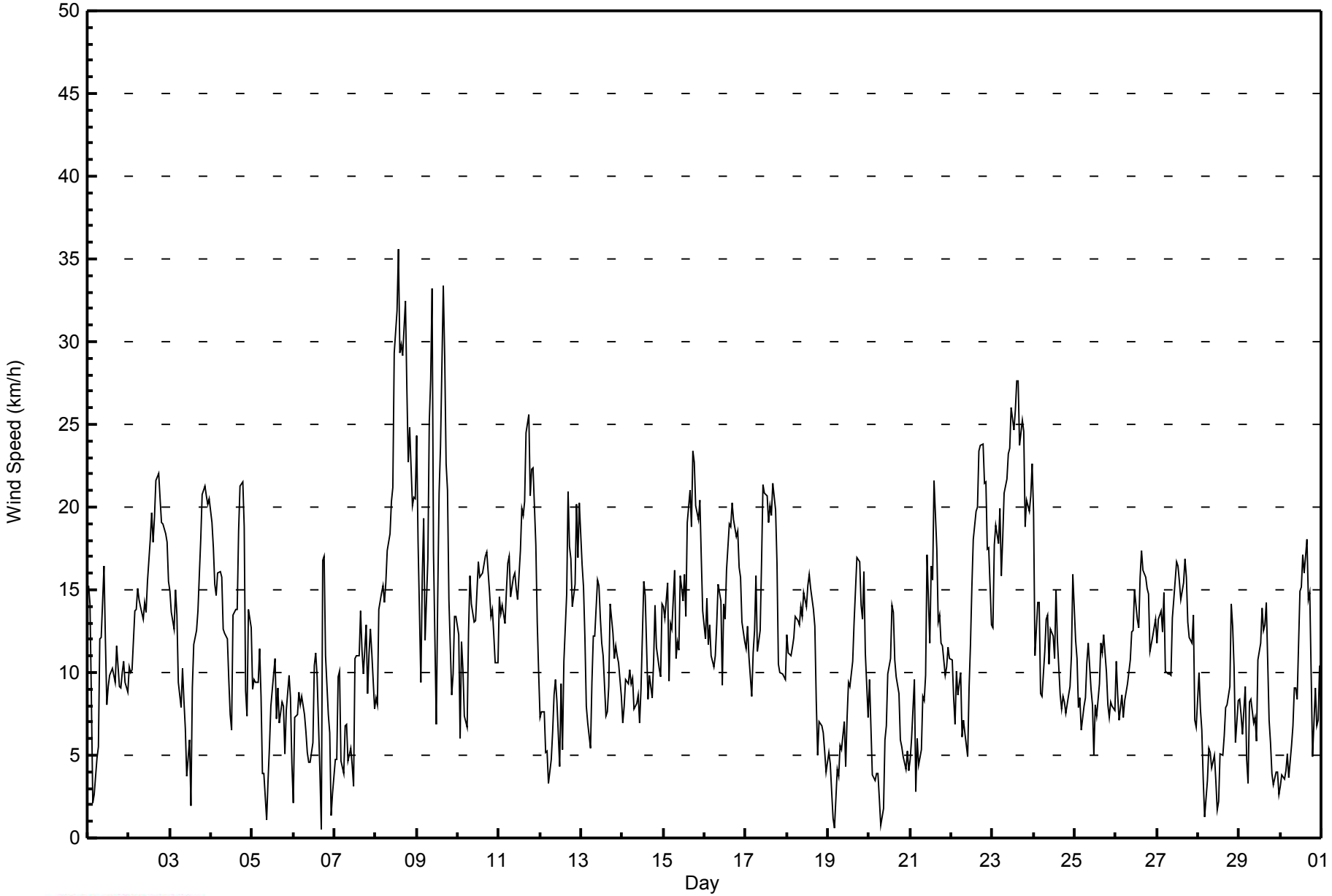
Day	Hourly Period Ending At (MST)																								Daily
	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24	Maximum
1-Apr	2	3	2	2	2	1	1	2	3	3	3	3	3	3	3	3	3	2	3	2	1	2	1	1	3
2-Apr	2	2	2	2	3	3	2	2	2	3	2	4	3	3	3	3	4	4	3	4	4	3	3	3	4
3-Apr	3	2	2	2	2	2	1	2	2	2	2	2	2	3	3	3	3	3	4	4	5	4	4	4	5
4-Apr	4	4	4	3	4	3	3	3	3	2	2	2	2	4	3	3	5	6	6	5	2	1	3	2	6
5-Apr	2	2	1	1	2	2	2	1	1	1	1	2	2	2	3	2	2	1	1	2	4	2	2	1	4
6-Apr	2	2	2	2	2	1	2	2	1	1	2	2	2	2	3	3	4	5	5	3	1	1	2	1	5
7-Apr	1	2	2	2	2	2	2	2	2	1	2	4	3	4	4	4	4	3	4	2	3	3	2	1	4
8-Apr	1	3	2	2	3	2	3	3	3	4	5	8	7	7	7	7	7	9	7	5	5	3	3	4	9
9-Apr	5	5	2	3	4	3	4	7	7	7	7	2	12	6	6	7	7	7	6	3	5	3	2	2	12
10-Apr	2	2	2	2	2	2	3	3	3	3	3	3	3	3	3	3	3	3	3	3	3	2	2	3	3
11-Apr	2	3	3	2	3	3	4	3	3	3	3	3	3	4	4	4	5	5	5	5	4	3	3	2	5
12-Apr	1	1	1	1	1	0	1	1	1	2	3	3	5	4	4	6	4	4	5	3	6	5	4	4	6
13-Apr	3	3	2	2	1	1	2	2	3	4	5	4	5	3	3	3	3	3	3	2	3	2	2	2	5
14-Apr	1	2	2	2	2	2	2	2	2	2	2	4	4	4	3	3	2	2	3	3	3	2	3	3	4
15-Apr	3	3	4	2	2	3	4	2	2	3	3	3	4	4	5	5	5	6	5	4	4	4	3	2	6
16-Apr	3	3	2	3	3	2	3	3	3	3	3	5	4	4	4	5	5	4	5	5	4	3	3	2	5
17-Apr	2	2	2	2	2	3	4	3	3	5	5	6	5	5	5	5	5	5	4	3	2	2	2	2	6
18-Apr	3	3	2	3	3	4	4	4	3	3	3	3	3	4	4	3	3	3	1	1	1	1	1	1	4
19-Apr	2	1	1	1	1	1	1	1	1	2	3	3	3	3	3	3	4	4	4	4	3	3	4	2	4
20-Apr	2	1	1	1	1	1	1	1	1	2	3	3	4	4	5	3	3	2	1	1	1	1	2	1	5
21-Apr	1	3	3	2	2	1	1	2	2	3	5	4	3	4	4	4	3	3	2	2	2	2	2	1	5
22-Apr	2	3	2	2	2	2	2	2	2	2	2	4	5	4	4	5	5	5	4	4	5	5	4	3	5
23-Apr	3	4	4	4	4	4	5	5	5	5	6	7	6	7	8	7	7	6	5	4	6	5	6	6	8
24-Apr	5	5	9	4	2	2	3	3	3	3	3	4	4	4	2	2	3	2	2	2	4	3	3	4	9
25-Apr	3	2	2	2	1	1	2	2	3	2	3	3	3	3	3	3	3	3	3	2	2	3	3	2	3
26-Apr	3	2	1	2	2	2	2	2	3	3	3	4	3	3	4	4	4	3	3	3	3	3	3	3	4
27-Apr	3	3	3	3	4	2	2	2	2	3	3	4	4	4	3	4	4	4	3	3	3	3	2	1	4
28-Apr	2	2	1	1	1	2	1	1	2	2	2	2	2	2	2	3	3	2	3	3	3	2	2	2	3
29-Apr	2	2	2	2	2	2	3	2	2	2	3	3	4	4	3	4	5	3	2	2	1	1	1	1	5
30-Apr	1	1	1	1	1	1	1	1	2	2	2	4	5	4	5	4	4	4	4	1	4	1	1	1	5
	5	5	9	4	4	4	5	7	7	7	7	8	12	7	8	7	7	9	7	5	6	5	6	6	
	Diurnal Maximum																								

WBEA NETWORK

Hourly Averages

Wind Speed (WS) - km/h

Patricia McInnes - April 2014



AURORA
ATMOSPHERICS INC.

Wind Speed Ranges (km/h)	Number of Hours	%	Cumulative %
0 - 5	90	12.50	12.50
6 - 11	266	36.94	49.44
12 - 19	278	38.61	88.06
20 - 28	76	10.56	98.61
29 - 38	10	1.39	100.00
> 38	0	0.00	100.00

Total Number of Valid Hours: 720

Total Number of Hours: 720

WBEA NETWORK

Frequency Distribution

Wind Speed (WS) - km/h

Patricia McInnes - April 2014

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	1	3	6	3	4	12	9	3	14	14	4	4	4	2	4	3	90
6 - 11	18	20	16	11	26	55	41	8	9	15	9	8	4	7	8	11	266
12 - 19	38	20	11	25	21	72	20	1	5	3	14	6	10	6	5	21	278
20 - 28	10	5	0	10	15	12	1	0	0	0	1	8	4	2	2	6	76
29 - 38	0	0	0	0	0	0	0	0	0	0	1	2	4	3	0	0	10
> 38	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Totals	67	48	33	49	66	151	71	12	28	32	29	28	26	20	19	41	720

Total Number of Valid Hours: 720

Total Number of Hours: 720

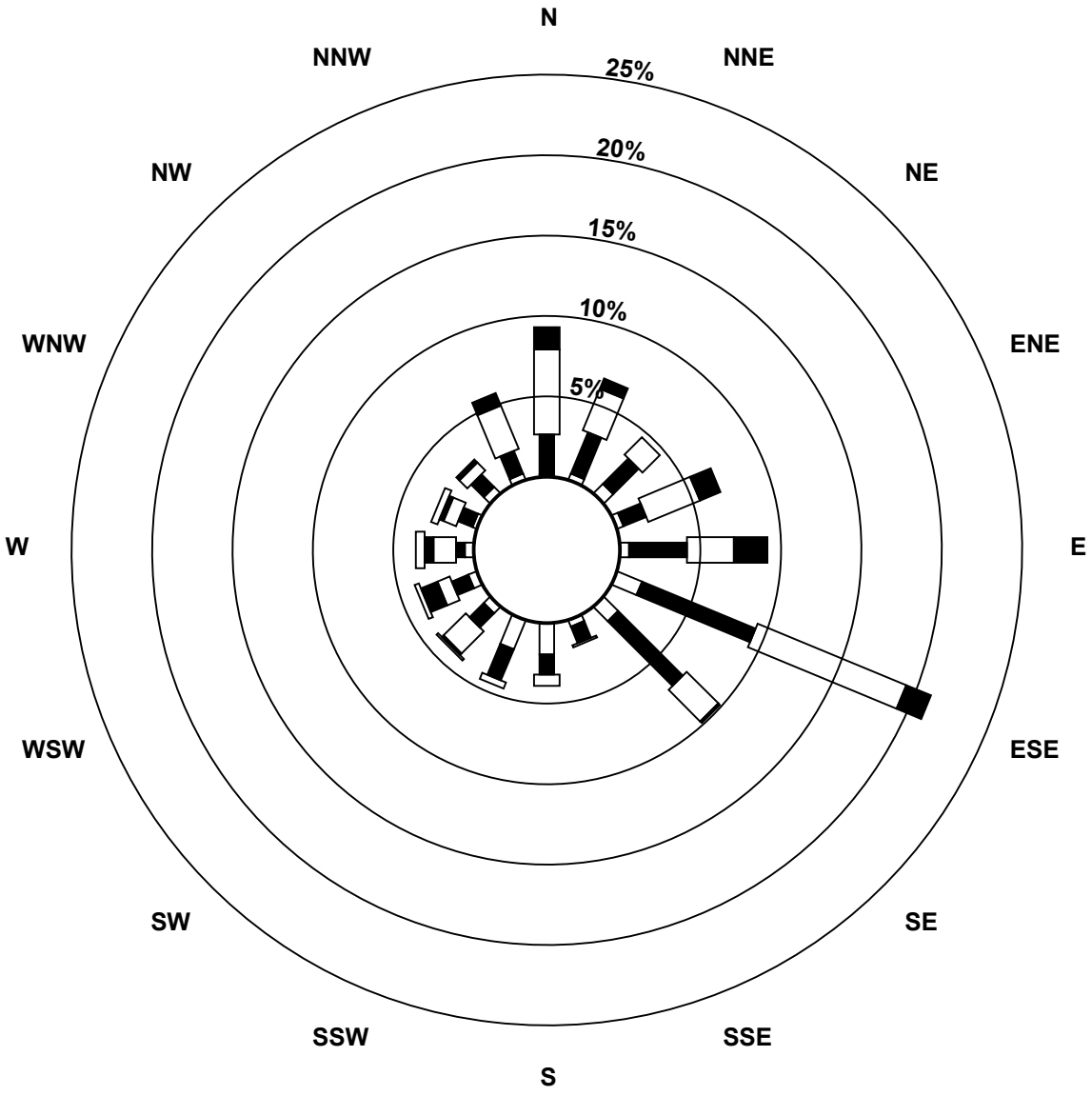
AURORA ATMOSPHERICS INC.

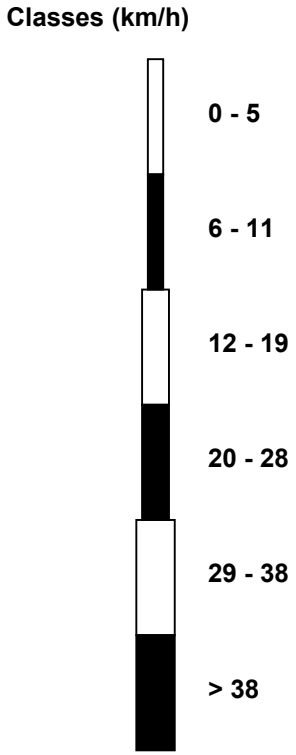
Wood Buffalo Environmental Association

Wind Rose Apr 2014

Wind Speed (WS) - km/h

Patricia McInnes (AMS 6)





Total Number of Valid Hours: 720

Direction of Maximum Speed: 260 deg on Apr 8 14:00
Direction of Maximum Daily Speed Average: 85.0 deg on Apr 23

Direction of Minimum Speed: 342 deg on Apr 6 17:00

Direction of Minimum Daily Speed Average: 1.8 deg on Apr 6

Monthly Average Direction: 340.6 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-Apr	226	223	200	248	227	259	272	338	353	2	25	26	3	9	29	29	27	28	14	359	347	7	18	17	357.4
2-Apr	357	350	350	348	347	350	348	350	3	3	8	348	342	341	342	340	339	341	347	347	346	346	348	353	347.9
3-Apr	354	351	346	346	351	338	341	347	5	15	340	13	36	89	107	102	103	102	104	114	120	119	120	122	70.6
4-Apr	120	122	124	120	123	122	122	120	119	115	119	124	184	265	272	265	284	285	280	292	286	278	295	290	193.7
5-Apr	276	252	256	260	243	243	170	174	103	47	71	53	29	20	52	68	58	30	25	35	85	88	79	48	36.6
6-Apr	55	104	115	120	129	123	136	151	125	80	116	43	25	24	30	50	342	300	310	305	314	272	315	179	42.7
7-Apr	214	184	219	236	166	198	194	210	187	117	102	143	194	230	199	233	255	223	232	204	194	223	223	178	210.0
8-Apr	141	182	216	226	237	228	228	228	222	231	245	262	261	260	262	255	250	235	240	254	256	244	247	250	243.8
9-Apr	257	263	246	254	251	225	232	259	275	302	306	2	306	313	308	295	294	302	278	265	327	239	240	251	278.5
10-Apr	247	318	355	347	329	321	349	356	0	25	28	30	20	24	16	9	7	358	355	351	351	17	48	73	5.4
11-Apr	77	75	78	66	77	76	85	77	68	76	71	61	27	24	32	17	2	356	358	352	354	353	345	324	34.3
12-Apr	304	289	297	269	229	196	194	176	184	203	179	103	302	315	301	325	345	341	342	13	14	16	3	359	333.8
13-Apr	355	358	349	327	312	304	306	349	356	3	347	353	5	33	80	113	100	95	109	123	133	138	135	127	29.7
14-Apr	127	121	127	127	130	134	128	113	120	138	116	159	173	168	192	161	107	128	118	116	102	86	53	15	126.2
15-Apr	38	45	48	47	26	46	73	52	47	50	44	38	45	34	18	21	21	7	359	358	357	354	351	350	24.3
16-Apr	13	39	60	72	52	39	59	82	86	90	86	115	129	104	102	111	108	103	108	110	111	117	123	124	94.0
17-Apr	121	113	116	116	114	123	115	118	93	118	123	113	113	107	105	114	109	126	118	113	115	117	109	115	114.2
18-Apr	110	116	105	96	98	102	100	103	99	100	96	100	98	107	110	109	111	114	111	103	110	110	101	116	104.3
19-Apr	113	146	136	174	58	124	137	127	152	131	139	91	94	99	79	102	109	104	101	102	112	121	121	119	110.9
20-Apr	123	127	104	338	288	352	317	293	77	33	36	31	6	341	325	26	43	42	83	103	182	206	210	200	29.7
21-Apr	210	217	212	114	203	205	142	216	199	213	263	351	12	7	347	4	24	15	6	351	350	353	345	345	340.7
22-Apr	349	347	355	353	350	351	2	78	50	29	73	40	73	65	65	69	70	74	71	70	75	79	74	72	57.3
23-Apr	69	70	75	81	80	80	82	77	82	85	92	96	92	92	93	92	79	75	75	73	89	92	99	99	85.0
24-Apr	95	97	89	82	50	44	64	75	78	82	93	113	113	109	117	132	117	141	187	139	99	95	109	113	98.9
25-Apr	107	99	87	88	89	78	107	122	128	126	92	70	76	105	129	140	120	126	118	132	140	134	148	140	114.5
26-Apr	140	135	124	118	120	128	126	122	129	125	143	117	108	112	112	110	118	113	110	110	110	117	120	123	119.2
27-Apr	116	114	111	109	103	82	85	87	100	115	120	124	126	130	129	131	137	142	135	134	127	125	120	125	119.7
28-Apr	117	122	135	178	240	169	198	179	177	104	172	88	27	96	92	106	96	118	120	115	122	129	125	120	125.0
29-Apr	115	123	113	125	128	195	199	182	135	139	164	293	268	271	285	262	281	329	326	23	255	263	259	226	237.4
30-Apr	198	155	190	199	199	169	150	162	170	168	126	200	187	184	185	196	185	218	225	225	252	211	212	231	193.4
	94.2	94.7	94.3	82.7	88.1	91.6	105.5	97.1	90.9	83.2	85.3	71.2	61.6	54.6	56.0	66.8	56.5	50.4	49.8	61.9	68.7	83.4	80.7	85.1	
	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: 96 deg on Apr 6 17:00

Minimum Value: 5 deg on Apr 12 02:00

Percentiles: P_1 = 8 P_{10} = 11 Q_1 = 13 Median = 15 Q_3 = 21 P_{90} = 32 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

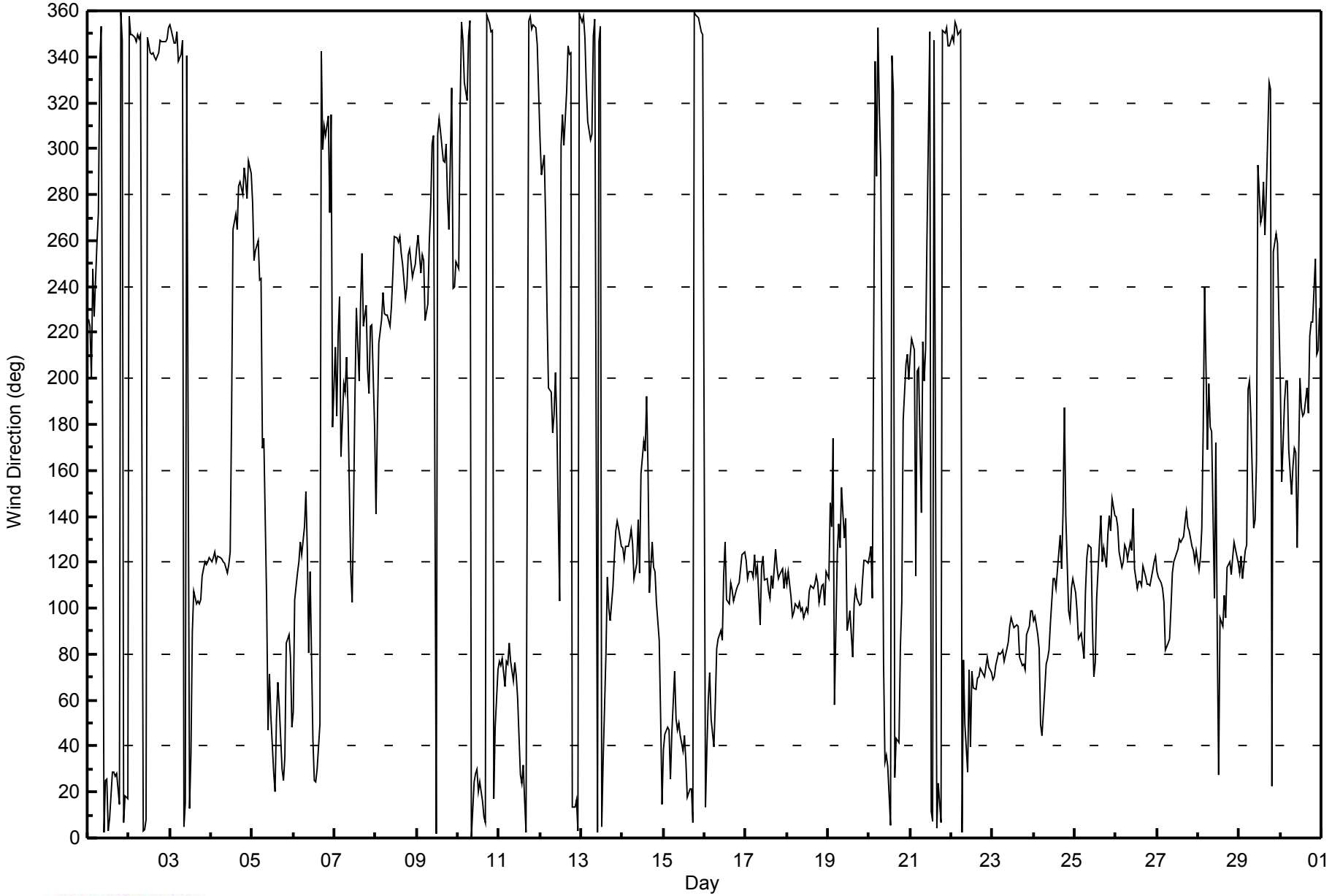
Day	Hourly Period Ending At (MST)																								Daily
	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24	Maximum
1-Apr	9	10	13	77	66	22	21	12	16	16	17	29	30	24	24	26	21	14	14	12	11	17	10	9	77
2-Apr	14	11	11	10	12	11	11	13	14	14	15	21	12	12	15	11	13	11	12	11	12	11	13	13	21
3-Apr	13	12	10	9	12	9	13	10	17	22	55	36	95	27	22	20	15	13	11	13	13	12	12	12	95
4-Apr	12	12	13	13	14	13	13	13	14	12	13	18	35	19	14	12	19	11	13	14	8	12	10	8	35
5-Apr	11	17	11	12	12	20	40	29	76	38	24	16	17	19	39	19	29	13	8	23	20	11	13	29	76
6-Apr	41	13	15	11	12	11	16	17	22	27	46	33	12	13	13	58	96	13	10	8	14	16	79	52	96
7-Apr	22	28	17	9	48	47	12	16	42	28	45	73	28	34	36	27	25	24	12	14	15	11	15	16	73
8-Apr	16	32	10	10	10	9	10	10	10	11	13	14	15	14	15	13	14	14	12	12	11	9	10	11	32
9-Apr	11	13	19	11	10	12	13	14	14	12	13	39	64	18	17	14	14	12	13	14	40	13	7	8	64
10-Apr	8	59	13	11	20	22	12	15	21	18	20	20	16	17	17	17	14	15	14	12	11	17	18	20	59
11-Apr	10	12	12	12	12	12	13	14	14	13	14	15	11	12	12	13	15	15	15	15	14	15	12	10	15
12-Apr	8	5	6	30	8	13	14	14	18	19	37	69	64	75	33	22	15	14	18	13	12	13	14	15	75
13-Apr	13	14	12	16	13	8	12	16	23	17	23	26	31	30	41	37	39	13	13	12	13	13	13	12	41
14-Apr	12	14	11	13	12	13	12	16	18	23	29	33	21	19	26	36	13	14	13	12	17	17	28	11	36
15-Apr	12	13	13	21	11	16	14	17	20	16	15	19	21	36	19	16	16	21	16	16	15	14	13	12	36
16-Apr	19	14	18	16	18	13	20	14	16	19	30	21	24	24	15	17	15	14	14	12	12	13	13	11	30
17-Apr	11	11	11	14	13	13	14	19	15	22	20	17	19	16	17	20	17	16	16	14	11	12	10	12	22
18-Apr	11	13	12	11	12	14	16	16	15	15	14	16	15	16	17	16	14	21	24	11	11	11	14	15	24
19-Apr	16	18	31	35	38	14	19	17	28	28	56	51	34	32	24	18	18	14	12	12	14	12	15	18	56
20-Apr	13	12	29	40	22	24	24	86	65	27	40	25	29	20	28	30	22	17	13	13	35	13	30	13	86
21-Apr	19	39	13	84	27	14	20	24	24	28	20	54	17	26	16	21	20	14	14	12	11	11	9	10	84
22-Apr	10	22	17	10	10	11	18	22	35	54	28	24	19	17	17	15	12	11	11	11	11	13	12	13	54
23-Apr	14	13	12	12	12	13	14	13	13	13	13	13	14	13	13	13	13	13	11	12	13	13	16	17	17
24-Apr	14	19	24	16	17	16	13	12	12	13	18	23	28	17	16	18	22	21	17	21	16	16	12	14	28
25-Apr	14	14	13	12	11	12	14	18	21	25	24	72	31	55	39	18	16	18	15	18	16	13	13	14	72
26-Apr	15	12	15	12	13	18	15	17	20	23	21	20	19	19	15	14	17	14	13	11	12	14	13	14	23
27-Apr	13	12	13	15	13	12	13	12	13	13	13	14	15	15	14	14	15	12	14	13	12	12	13	11	15
28-Apr	11	12	13	25	28	40	13	26	46	39	60	92	79	48	40	51	29	23	18	11	12	13	12	19	92
29-Apr	14	14	15	15	13	27	32	21	23	24	58	21	31	32	20	34	29	45	41	25	17	15	10	38	58
30-Apr	23	32	22	29	26	22	12	17	13	24	29	20	23	16	23	18	28	21	15	14	20	13	16	9	32
	41	59	31	84	66	47	40	86	76	54	60	92	95	75	41	58	96	45	41	25	40	17	79	52	
	Diurnal Maximum																								

WBEA NETWORK

Hourly Averages

Wind Direction (WD) - deg

Patricia McInnes - April 2014



AURORA ATMOSPHERICS INC.

Wood Buffalo Environmental Association

SO_2 Calibration Report

Station Information

Calibration Date	April 1, 2014	Previous Calibration	March 4, 2014
Station Name	Patricia McInnes	Station Number	AMS 6
Reason:	Routine		
Start Time (MST)	8:30	End Time (MST)	12:30
Barometric Pressure	n/a mmHg	Station temp.	Deg C
Calibrator Make/Model	Sabio 4010	Serial Number	11031107
Cal Gas Concentration	51 ppm	Cal Gas Expiry Date	May 29th 2014
Gas Cert Reference			
DACS make/model	Campbell Scientific CR3000	DACS serial No.	2582
DACS voltage range	0-5000mV	DACS channel #	SE 1

Analyzer Information

	Before	*After*		*Before*	*After*
Analyzer Range (ppb)	1000	1000	PMT voltage	-670	-670
Analyzer Range (mv)	5000	5000	Lamp voltage	762	762
Calculated slope	1.004791	1.009563	Chamber temp.	45.3	45.0
Calculated intercept	0.816801	3.146143	Pressure (mmHg)	694.3	693.7
Analyzer Background	4.9	4.9	Flow (lpm)	0.420	0.429
Analyzer Coefficient	1.198	1.198	Intensity	93	93

Analyzer make	Thermo 43i	Analyzer serial #	1008841397

Calibration Data

Set Point	Total flow rate (cc/min)	Source gas flow rate (cc/min)	Calculated concentration (ppb) (Cc)	Indicated concentration (ppb) (Ic)	Correction factor (Cc/Ic)
as found zero	5000	0.0	0.0	-0.3	NA
as found span	5000	78.3	798.7	789.2	1.012
calibrator zero	5000	0.0	0.0	-0.3	NA
high point	5000	78.3	798.7	789.2	1.012
second point	5000	39.1	398.8	391.0	1.020
third point	5000	19.6	199.9	191.8	1.042
calibrator zero	5000	0.0	0.0	-0.3	NA
as left zero	5000	0.0	0.0	0.7	NA
as left span	5000	78.3	798.7	798.8	1.000
				Average Correction Factor	1.025

Corrected As found	789.5	Previous response	794.0	% change	0.6%

Notes:

No adjustments required.

Calibration Performed By: Michael Martineau

Wood Buffalo Environmental Association

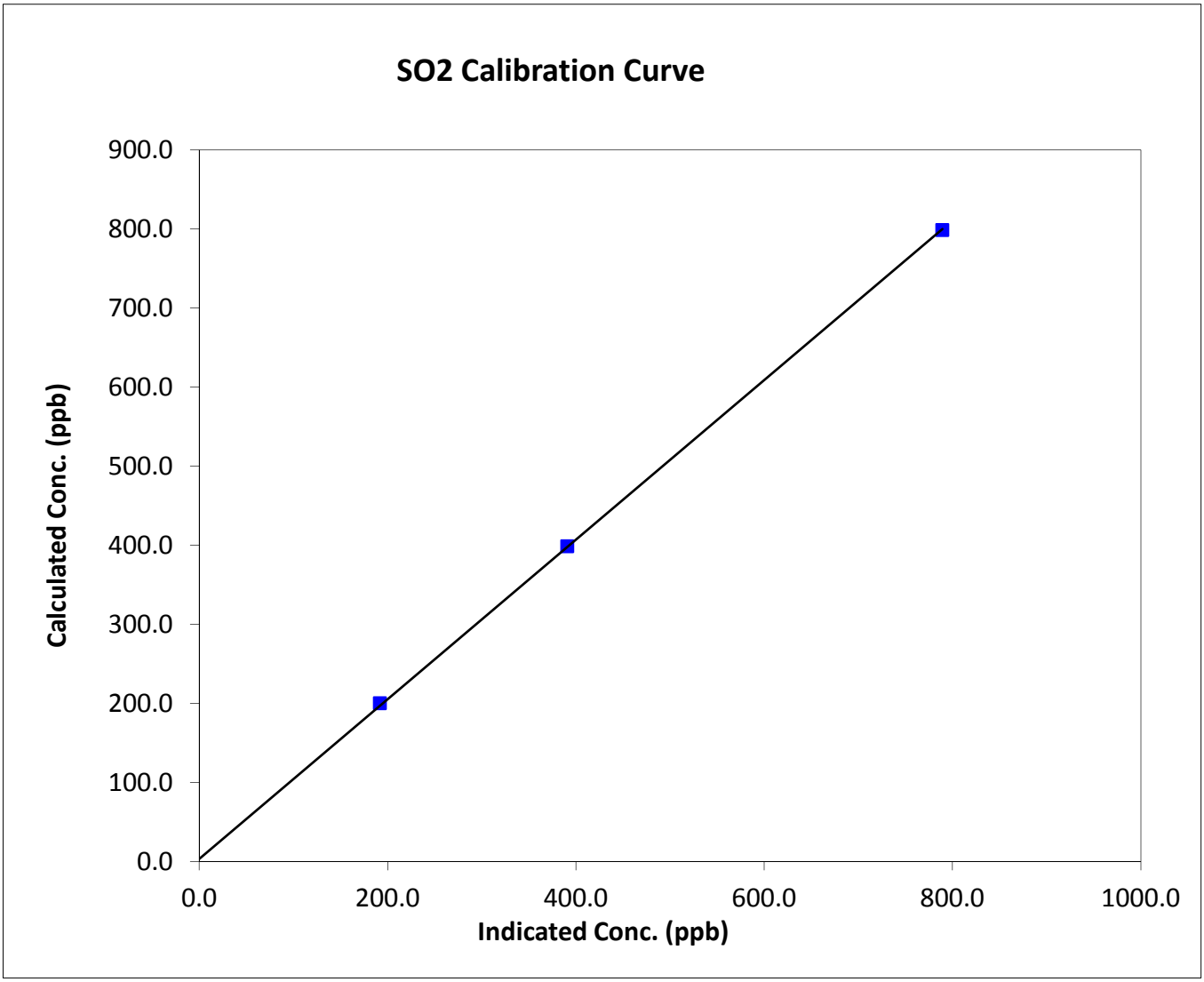
SO_2 Calibration Summary

Station Information

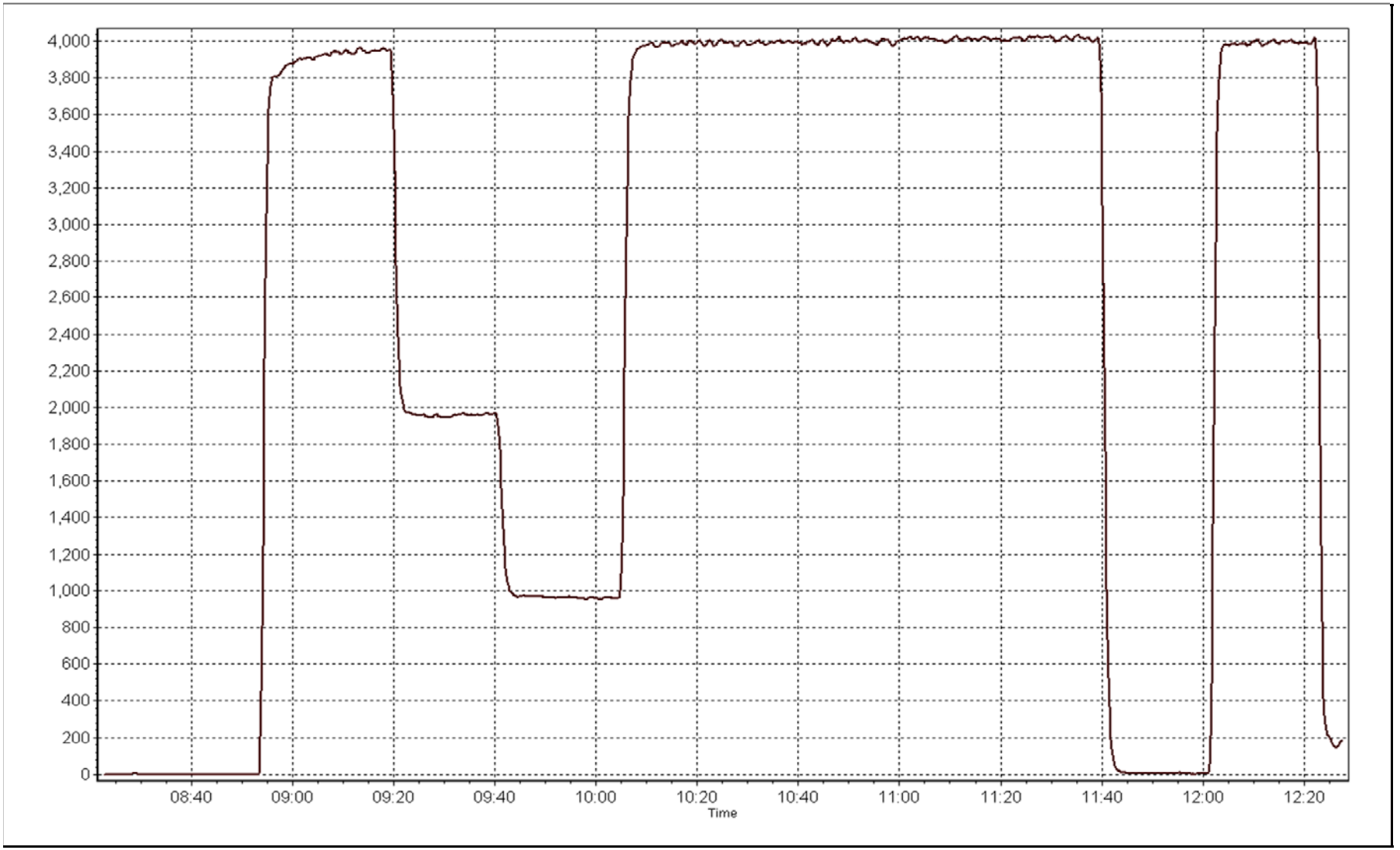
Calibration Date	April 1, 2014	Previous Calibration	March 4, 2014
Station Name	Patricia McInnes	Station Number	AMS 6
Start Time (MST)	8:30	End Time (MST)	12:30
Analyzer make	Thermo 43i	Analyzer serial #	1008841397

Calibration Data

Calculated concentration (ppb) (Cc)	Indicated concentration (ppb) (Ic)	Correction factor (Cc/Ic)	Statistical Evaluation	
0.0	-0.3	N/A	Correlation Coefficient	0.999941
798.7	789.2	1.0120		
398.8	391.0	1.0200	Slope	1.009563
199.9	191.8	1.0423		
			Intercept	3.146143



SO2 Calibration Plot Date: April 1, 2014



Wood Buffalo Environmental Association

TRS Calibration Report

Station Information

Calibration Date	April 2, 2014	Previous Calibration	March 6, 2014
Station Name	Patricia McInnes	Station Number	AMS 6
Reason:	Routine		
Start Time (MST)	10:45	End Time (MST)	13:05
Barometric Pressure	n/a mmHg	Station temp.	22 Deg C
Calibrator Make/Model	Sabio 4010	Serial number	11031107
Cal Gas Concentration	9.7 ppm H2S	Cal Gas Expiry Date	June 12 2013
Gas Cert Reference	LL18921	SO2 gas conc.	51.0 ppm SO2
DACS make/model	Campbell Scientific CR3000	DACS serial No.	2582
DACS voltage range	0-5000mV	DACS channel #	SE 2

Analyzer Information

	Before	*After*		*Before*	*After*
Analyzer Range (ppb)	100	100	PMT voltage	-657	-657
Analyzer Range (input)	5000	5000	Lamp voltage	857	855
Calculated slope	0.994688	1.013789	Chamber temp.	45	45
Calculated intercept	-0.036739	-0.038727	Pressure	699.6	700.2
Analyzer Background	12	12	Flow	0.481	0.481
Analyzer Coefficient	1.047	1.047	Intensity	112	115
			Converter temp.	850	850

Analyzer make/model	TEI 43i	Analyzer serial #	1008841398
Converter make/model	JC Andelle model 26	Converter serial #	20101-07

Calibration Data

Set Point	Total flow rate (cc/min)	Source gas flow rate (cc/min)	Calculated concentration (ppb) (Cc)	Indicated concentration (ppb) (Ic)	Correction factor (Cc/Ic)
as found zero	5000	0.0	0.0	0.0	NA
as found span	5000	36.1	70.0	69.2	1.012
SO2 scrubber check	5000	19.6	199.9	0.9	NA
calibrator zero	5000	0.0	0.0	0.0	NA
high point	5000	36.1	70.0	69.2	1.012
second point	5000	19.3	37.4	36.8	1.019
third point	5000	9.6	18.6	18.6	1.002
calibrator zero	5000	0.0	0.0	0.0	NA
as left zero	5000	0.0	0.0	0.0	NA
as left span	4000	28.8	69.8	70.0	0.998
				Average Correction Factor	1.011

Corrected As found	69.2	Previous response	70.4	% change	1.8%

Notes:

No adjustments required.

Calibration Performed By: Michael Martineau

Wood Buffalo Environmental Association

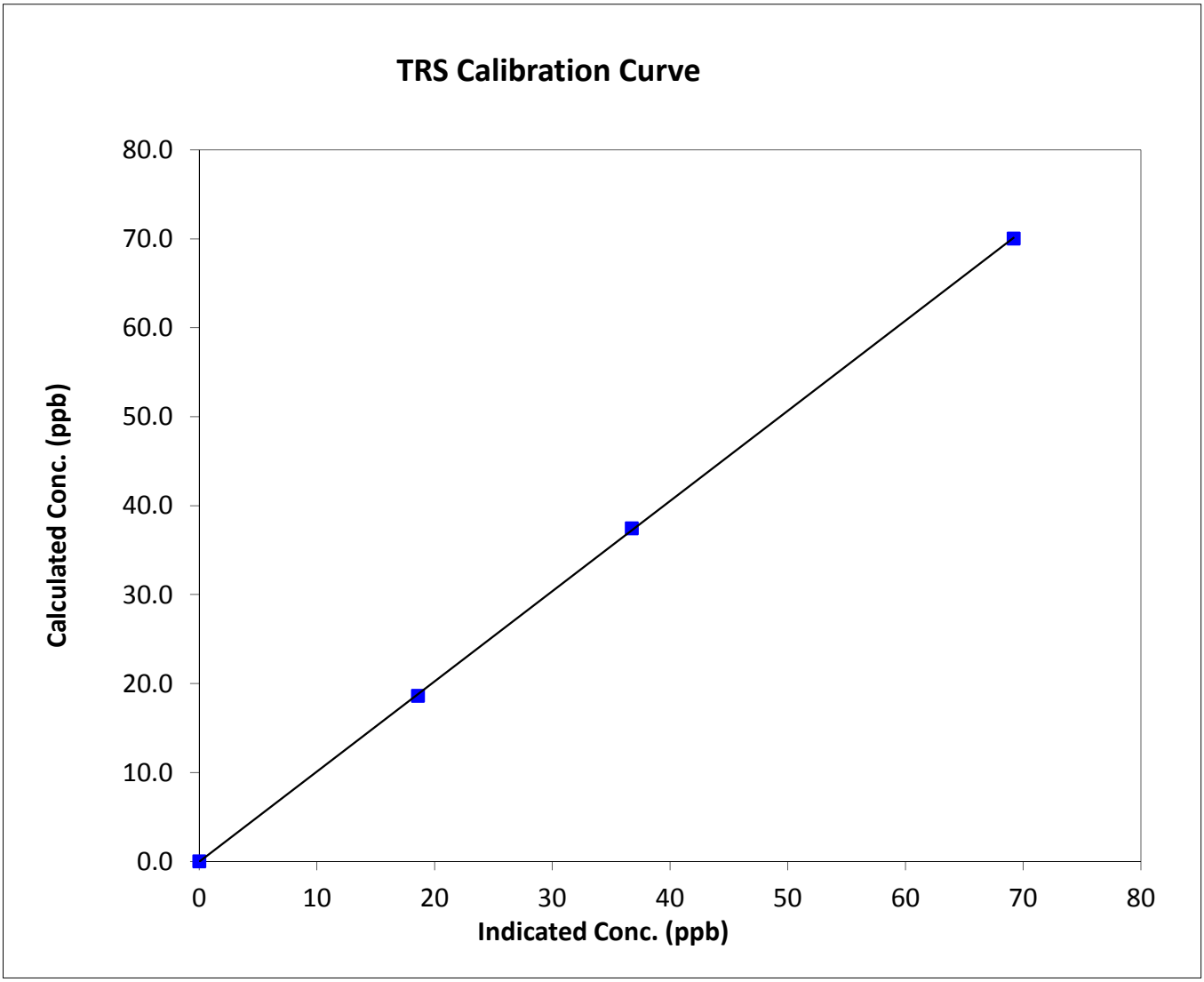
TRS Calibration Summary

Station Information

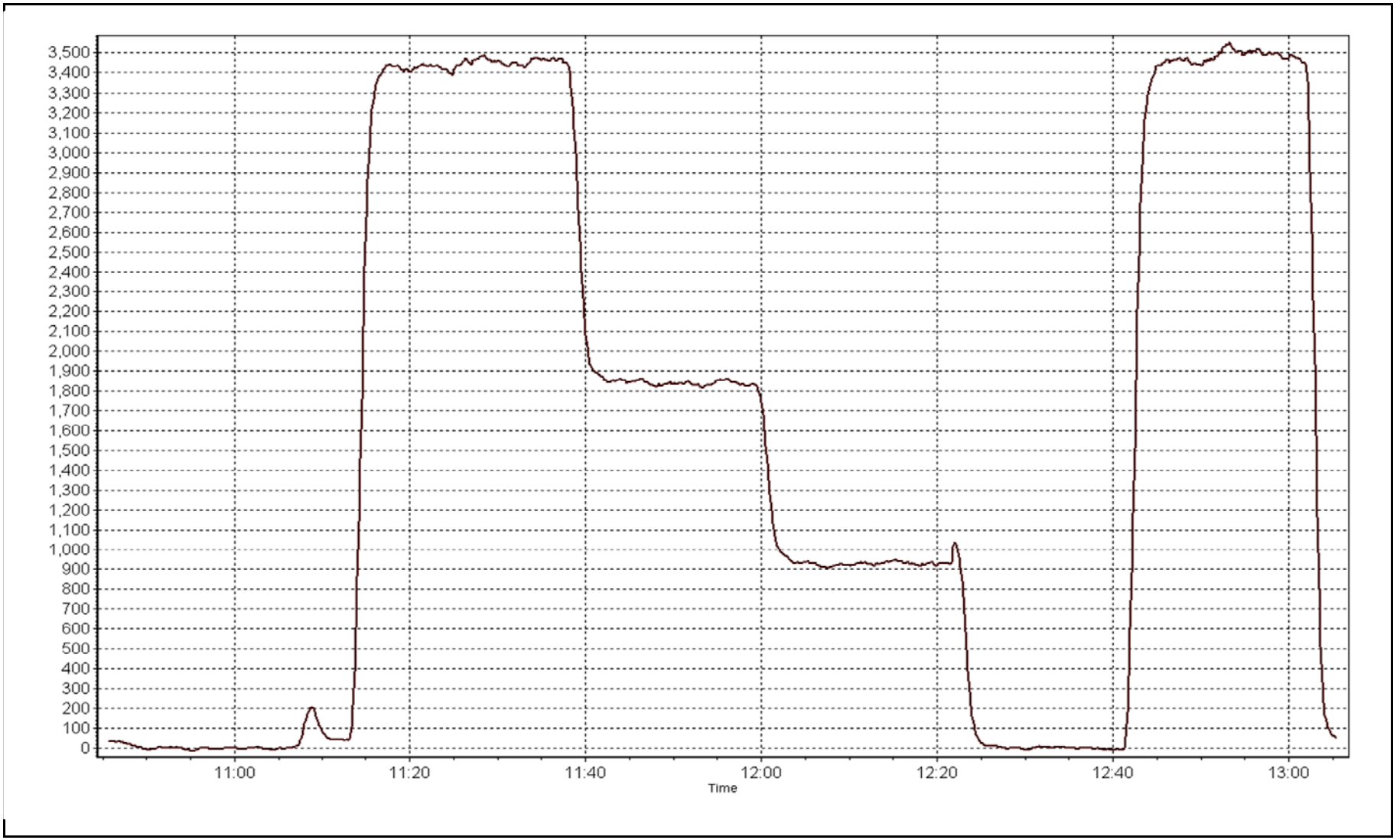
Calibration Date	April 2, 2014	Previous Calibration	March 6, 2014
Station Name	Patricia McInnes	Station Number	AMS 6
Start Time (MST)	10:45	End Time (MST)	13:05
Analyzer make	TEI 43i	Analyzer serial #	1008841398

Calibration Data

Calculated concentration (ppb) (Cc)	Indicated concentration (ppb) (Ic)	Correction factor (Cc/Ic)	Statistical Evaluation	
0.0	0.0	N/A	Correlation Coefficient	0.999967
70.0	69.2	1.0123		
37.4	36.8	1.0187	Slope	1.013789
18.6	18.6	1.0017		
			Intercept	-0.038727



TRS Calibration Plot Date: April 2, 2014



Wood Buffalo Environmental Association

THC / NMHC Calibration Report

Station Information

Calibration Date	Tuesday, April 01, 2014	Prev Calibration	Wednesday, March 19, 2014
Station Name	Patricia McInnes	Station Number	AMS 6
Reason:	Routine		
Start Time (MST)	8:30	End Time (MST)	12:30
Barometric Pressure	n/a mmHg	Station temp.	21 Deg C
Calibrator Model	Sabio 4010	Serial Number	11571008
Gas Cert Reference	LL107929	Cal Gas Expiry Date	May 29th 2014
CH4 Cal Gas Conc.	515.0 ppm	CH4 Equiv Conc.	1078.8 ppm
C3H8 Cal Gas Conc.	205.0 ppm		
DACS make/model	Campbell Scientific CR3000	DACS serial No.	2582

Analyzer Information

	Before	*After*		*Before*	*After*
THC Range (ppm)	50	50	Internal Temp	36.6	36.6
THC Range (input)	50	50	Flame Temp	385.0	385.7
NMHC Range (ppm)	50	50	Carrier Pressure	33.8	33.8
NMHC Range (input)	50	50	Fuel Pressure	40.3	40.3
THC Calc slope	0.995056	0.988806	Air Pressure	28.2	28.2
THC Calc intercept	0.035977	0.027777			
NMHC Calc slope	0.993867	0.986128			
NMHC Calc intercept	0.007970	0.005926			

Analyzer make	Thermo 55i	Analyzer serial #	1118148495

THC Calibration Data

Set Point	Dilution air flow rate (cc/min)	Source gas flow rate (cc/min)	Calculated concentration THC (ppm) (Cc)	Indicated concentration (ppb) (Ic)	Correction factor (Cc/Ic)
as found zero	5000	0.0	0.00	0.00	N/A
as found span	5000	78.3	16.89	17.07	0.990
calibrator zero	5000	0.0	0.00	0.00	N/A
high point	5000	78.3	16.89	17.07	0.990
second point	5000	39.1	8.44	8.49	0.994
third point	5000	19.6	4.23	4.22	1.002
calibrator zero	5000	0.0	0.00	0.00	N/A
as left zero	5000	0.0	0.00	0.00	N/A
as left span	5000	78.3	16.89	17.00	0.994
				Average Correction Factor	0.995

Corrected As found	17.07	Previous response	16.94	% change	-0.8%

Notes:

no adjustments required

Calibration Performed By: Michael Martineau

Wood Buffalo Environmental Association

THC / NMHC Calibration Report

NMHC Calibration Data

Set Point	Dilution air flow rate (cc/min)	Source gas flow rate (cc/min)	Calculated concentration NMHC (ppm) (Cc)	Indicated concentration (ppb) (Ic)	Correction factor (Cc/Ic)
as found zero	5000	0	0.00	0.00	N/A
as found span	5000	78.3	8.83	8.95	0.986
calibrator zero	5000	0.0	0.00	0.00	N/A
high point	5000	78.3	8.83	8.95	0.986
second point	5000	39.1	4.41	4.46	0.988
third point	5000	19.6	2.21	2.23	0.991
calibrator zero	5000	0.0	0.00	0.00	N/A
as left zero	5000	0.0	0.00	0.00	N/A
as left span	5000	78.3	8.83	8.90	0.992
				Average Correction Factor	0.989

Corrected As found	8.95	Previous response	8.87	% change	-0.8%

CH4 Calibration Data

Set Point	Dilution air flow rate (cc/min)	Source gas flow rate (cc/min)	Calculated concentration NMHC (ppm) (Cc)	Indicated concentration (ppb) (Ic)	Correction factor (Cc/Ic)
as found zero	5000	0	0.00	0.00	N/A
as found span	5000	78.3	8.06	8.12	0.993
calibrator zero	5000	0.0	0.00	0.00	N/A
high point	5000	78.3	8.06	8.12	0.993
second point	5000	39.1	4.03	4.02	1.002
third point	5000	19.6	2.02	1.99	1.014
calibrator zero	5000	0.0	0.00	0.00	N/A
as left zero	5000	0.0	0.00	0.00	N/A
as left span	5000	78.3	8.06	8.10	0.996
				Average Correction Factor	

Corrected As found	8.12	Previous response	8.07	% change	-0.7%

Wood Buffalo Environmental Association

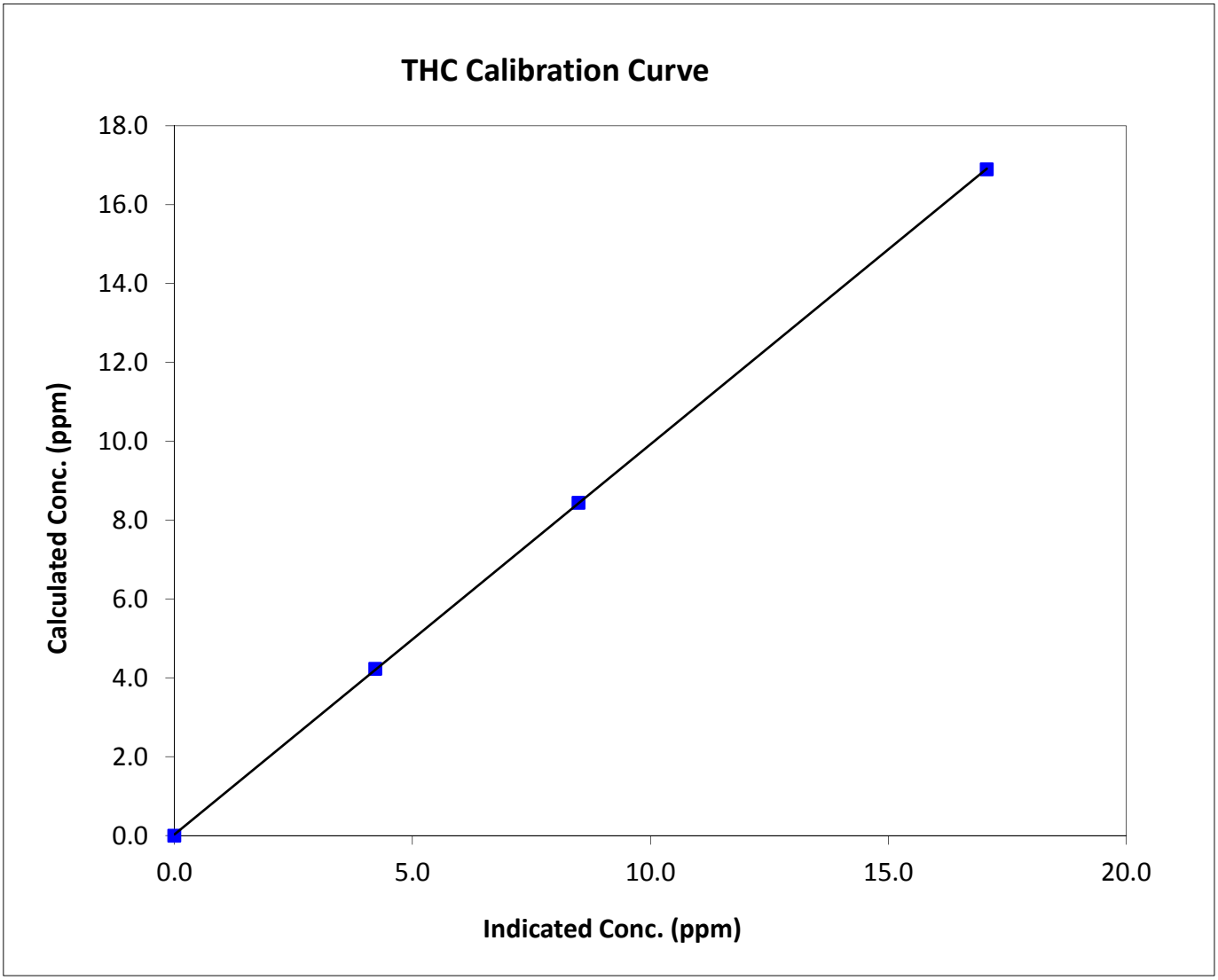
THC Calibration Summary

Station Information

Calibration Date	April 1, 2014	Previous Calibration	March 19, 2014
Station Name	Patricia McInnes	Station Number	AMS 6
Start Time (MST)	8:30	End Time (MST)	12:30
Analyzer make	Thermo 55i	Analyzer serial #	1118148495

Calibration Data

Calculated concentration (ppm) (Cc)	Indicated concentration (ppm) (Ic)	Correction factor (Cc/Ic)	Statistical Evaluation	
0.00	0.00	N/A	Correlation Coefficient	0.999988
16.89	17.07	0.9896		
8.44	8.49	0.9936	Slope	0.988806
4.23	4.22	1.0021		
			Intercept	0.027777



Wood Buffalo Environmental Association

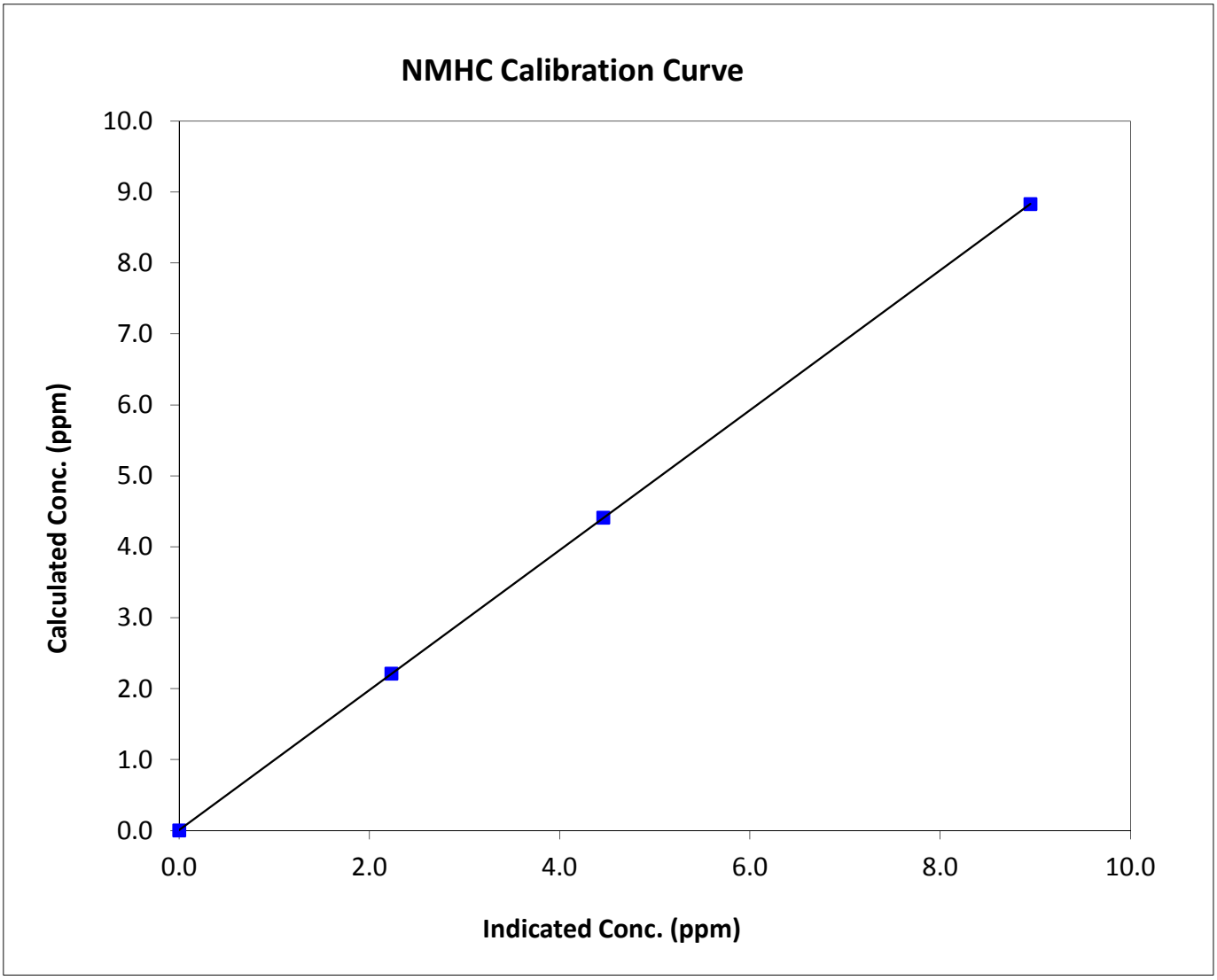
NMHC Calibration Summary

Station Information

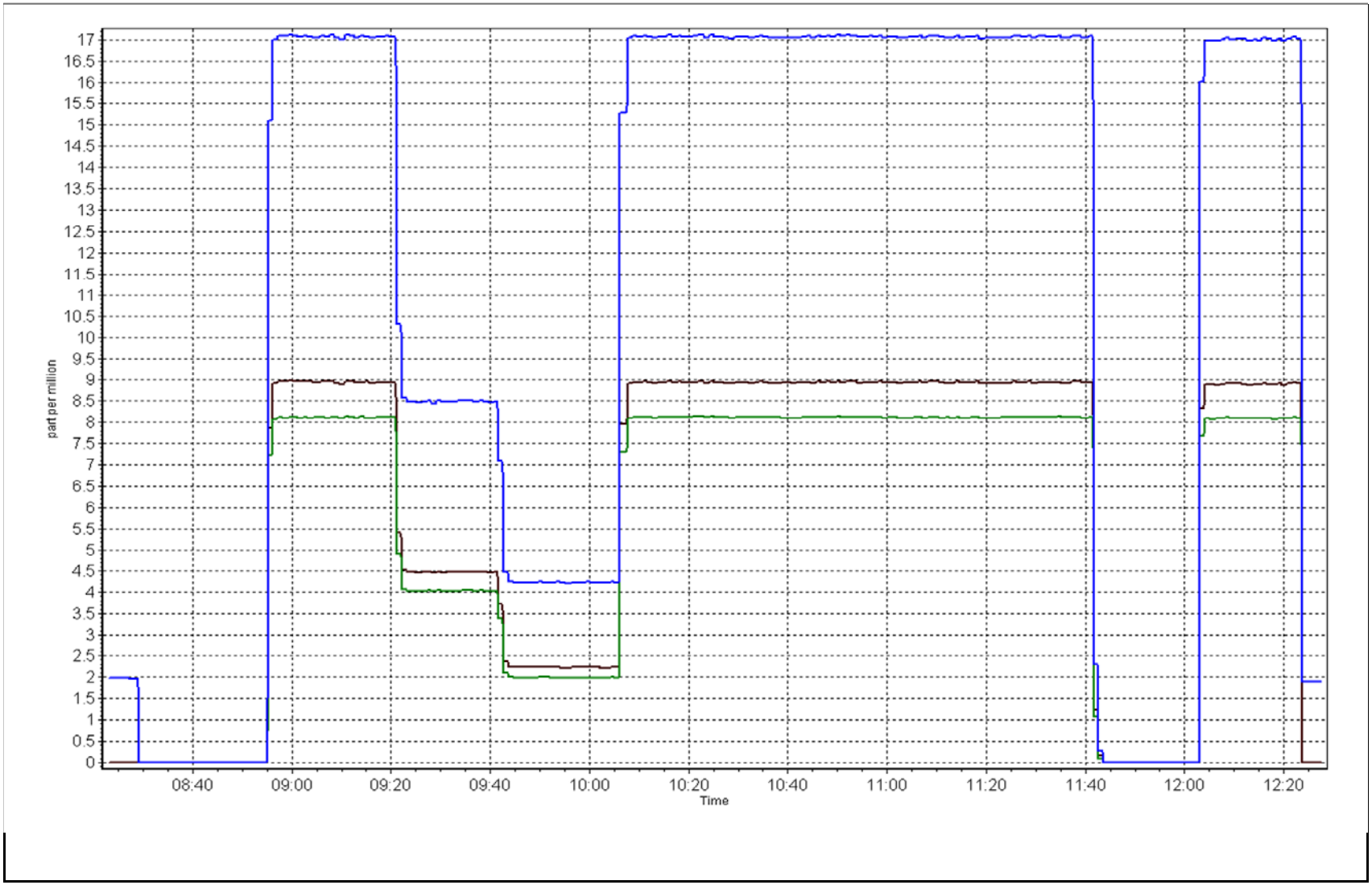
Calibration Date	April 1, 2014	Previous Calibration	March 19, 2014
Station Name	Patricia McInnes	Station Number	AMS 6
Start Time (MST)	8:30	End Time (MST)	12:30
Analyzer make	Thermo 55i	Analyzer serial #	1118148495

Calibration Data

Calculated concentration (ppm) (Cc)	Indicated concentration (ppm) (Ic)	Correction factor (Cc/Ic)	Statistical Evaluation	
0.00	0.00	N/A	Correlation Coefficient	0.999998
8.83	8.95	0.9864		
4.41	4.46	0.9885	Slope	0.986128
2.21	2.23	0.9910		
			Intercept	0.005926



THC/NMHC Calibration Plot Date: April 1, 2014



Wood Buffalo Environmental Association

O_3 Calibration Report

Station Information

Calibration Date	April 2, 2014	Previous Calibration	March 5, 2014
Station Name	Patricia McInnes	Station Number	AMS 6
Reason:	Routine		
Start Time (MST)	8:30	End Time (MST)	10:35
Barometric Pressure	n/a mmHg	Station temp.	23 Deg C
Calibrator Make/Model	Sabio 4010	Serial Number	11031107
NO2 calibration used	Tuesday, March 04, 2014	Transfer Standard	622817829
DACS make/model	Campbell Scientific CR3000	DACS serial No.	2582
DACS voltage range	0-5000mV	DACS channel #	SE4

Analyzer Information

	Before	*After*		*Before*	*After*
Analyzer Range (ppb)	500	500	Bench temp.	35.1	33.4
Analyzer Range (input)	5000	5000	Lamp temp.	53.6	53.6
Calculated slope	0.996851	0.997225	Pressure	665.3	666.2
Calculated intercept	-0.277581	0.675296	Flow cell A	0.608	0.605
Analyzer Background	0.0	0.0	Flow cell B	0.633	0.626
Analyzer Coefficient	1.036	1.036	Cell A Intensity	95500	94380
			Cell B Intensity	87700	86630

Analyzer make	Thermo 49i	Analyzer serial #	1300156234

Calibration Data

Set Point	Dilution air flow rate (cc/min)	Calibrator Lamp Intensity (mA)	Calculated concentration (ppb) (Cc)	Indicated concentration (ppb) (Ic)	Correction factor (Cc/Ic)
as found zero	5000	0.000	0.0	0.0	N/A
as found span	5000	0.950	383.5	384.1	0.999
calibrator zero	5000	0.000	0.0	0.0	N/A
high point	5000	0.953	383.5	384.1	0.999
second point	5000	0.542	194.7	194.9	0.999
third point	5000	0.324	103.4	101.8	1.015
calibrator zero	5000	0.000	0.0	0.2	N/A
as left zero	5000	0.000	0.0	0.2	N/A
as left span	5000	0.950	383.5	384.0	0.999
				Average Correction Factor	1.004

Corrected As found	384.0	Previous response	385.0	% change	0.3%

Notes:

no adjustments required.

Calibration Performed By: Michael Martineau

Wood Buffalo Environmental Association

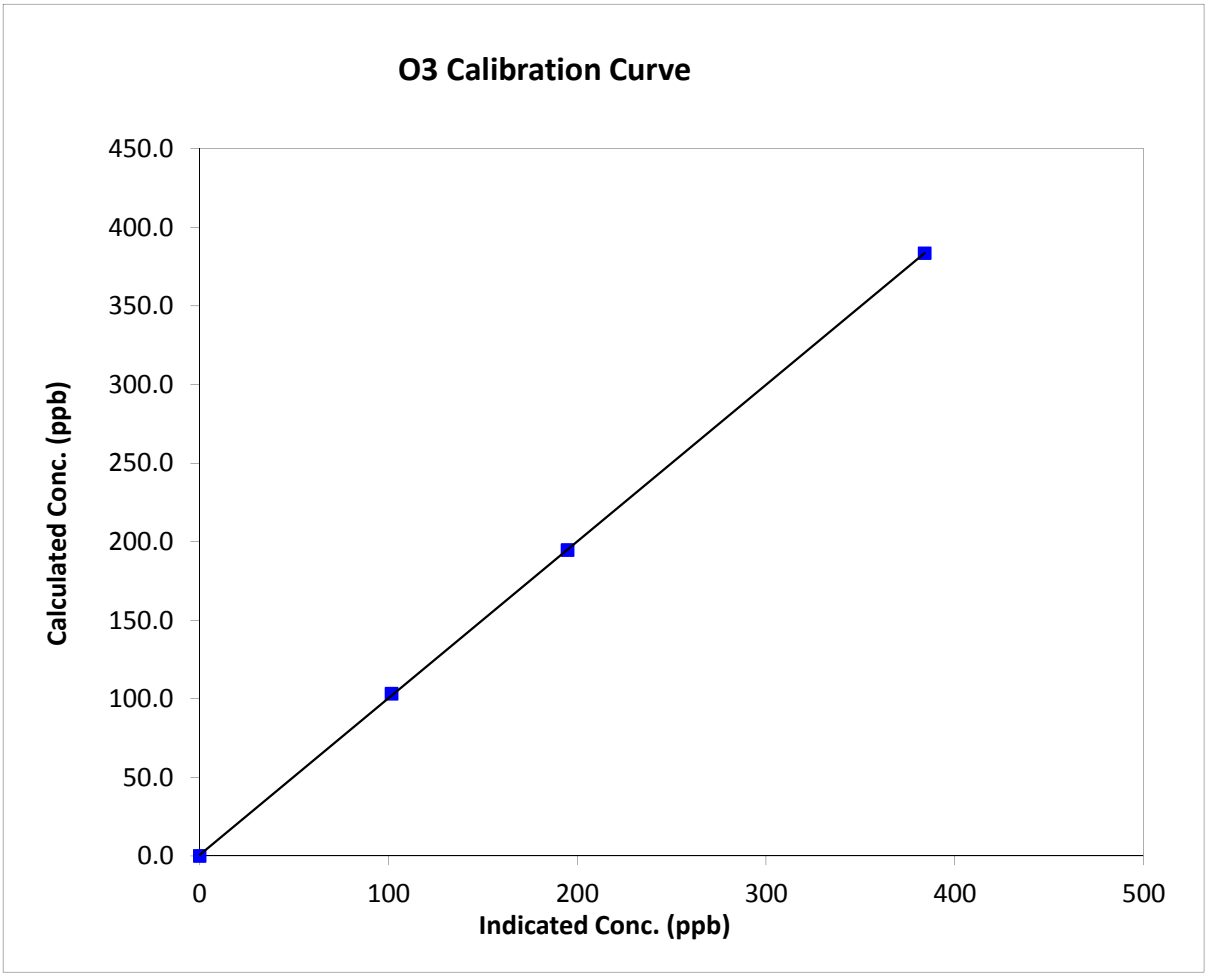
O_3 Calibration Summary

Station Information

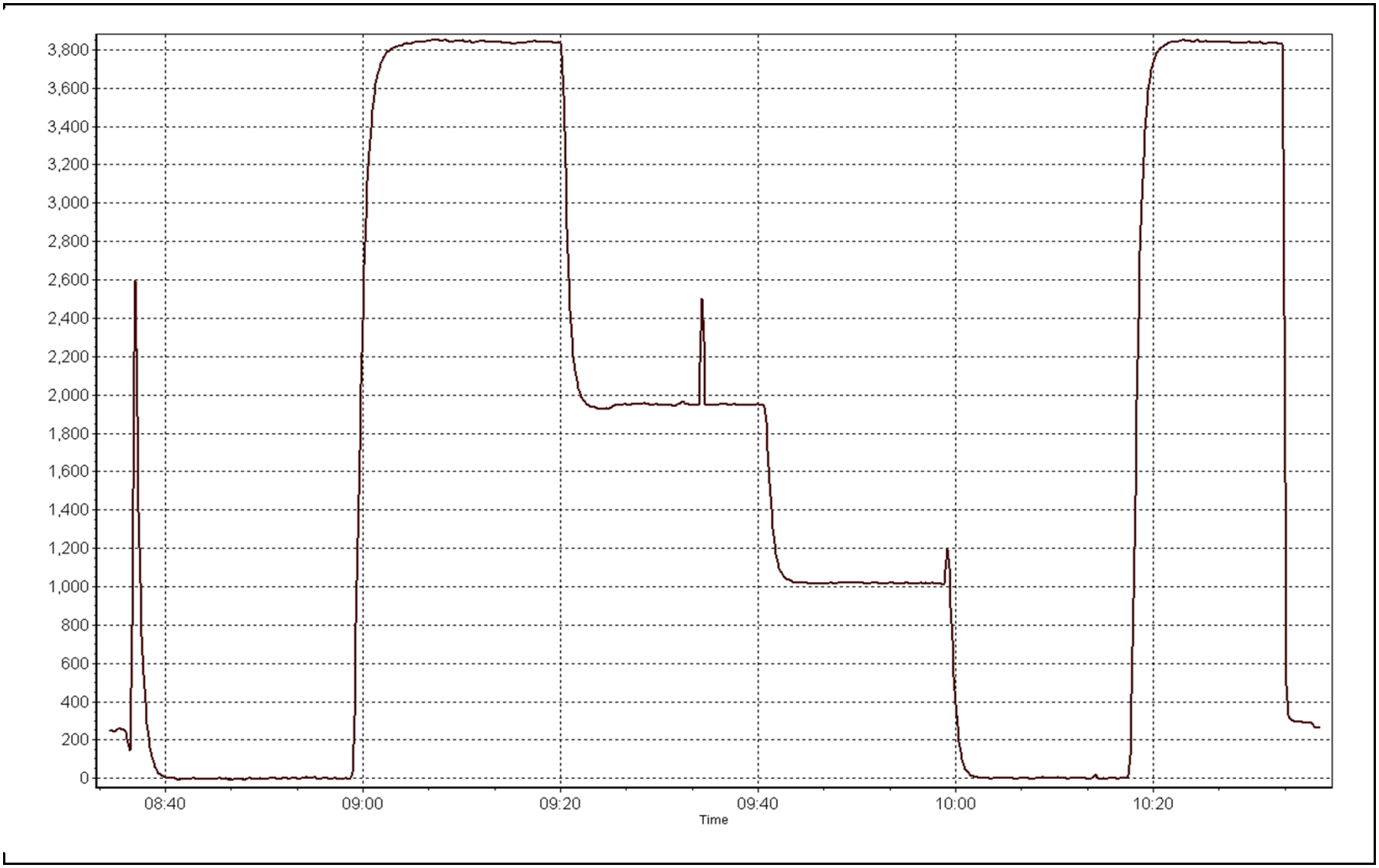
Calibration Date	Wednesday, April 02, 2014	Previous Calibration	March 5, 2014
Station Name	Patricia McInnes	Station Number	AMS 6
Start Time (MST)	8:30	End Time (MST)	10:35
Analyzer make	Thermo 49i	Analyzer serial #	1300156234

Calibration Data

Calculated concentration (ppb) (Cc)	Indicated concentration (ppb) (Ic)	Correction factor (Cc/Ic)	Statistical Evaluation	
0.0	0.0	N/A	Correlation Coefficient	0.999975
383.5	384.1	0.9986		
194.7	194.9	0.9989	Slope	0.997225
103.4	101.8	1.0153		
			Intercept	0.675296



O3 Calibration Plot Date: April 2, 2014



Wood Buffalo Environmental Association

NO_X-NO-NO_2 Calibration Report

Station Information

Calibration Date	April 1, 2014	Previous Calibration	March 19, 2014
Station Name	Patricia McInnes	Station Number	AMS 6
Reason:	Routine		
Start Time (MST)	8:30	End Time (MST)	12:30
Barometric Pressure	n/a mmHg	Station Temperature	22.0 Deg C
Calibrator	SABIO 4010	Serial Number	11031107
NO Cal Gas Conc	51.1 ppm	Cal Gas Expiry Date	May 29th 2014
NOx Cal Gas Conc	51.1 ppm	Cal Gas Serial #	LL107929

DACS Information

DACS make & model	Campbell Scientific CR3000	DACS serial No.	2582

Parameter		NOx	NO	NO2
MV conversion	Analyzer Range (ppb)	1000	1000	1000
	Analyzer Range (mv)	1000	1000	1000
Before	Data Slope	0.993500	0.996355	0.998319
	Data Offset	0.816866	0.881093	-0.287178
After	Data Slope	0.978839	0.982819	0.996112
	Data Offset	-0.238998	-0.521516	0.137059
IP address:		192.168.1.42		
Voltage Range		N/A		

Analyzer Information

Analyzer make/model	Thermo Scientific 42i	Analyzer serial #	1218153460

Test Point	before		after	
Concentration range	0-1000	ppb	0-1000	ppb
NO coefficient	1.035		1.035	
NOX coefficient	1.002		1.002	
NO2 coefficient	1		1.000	
NO bkgrnd	2.8		2.8	
NOX bkgrnd	3.4		3.4	
Chamber Temp	50.6	Deg C	50.7	Deg C
Moly Temp	325	Deg C	326.0	Deg C
PMT Temp	-3	Deg C	-3.0	Deg C
O3 flow	ok	ccm	ok	ccm
R Cell Press	175.9	mmHg	177.4	mmHg
Sample Flow	797	ccm	807	ccm

Notes:

no adjustments required.

Wood Buffalo Environmental Association

NO_X-NO-NO_2 Calibration Report

Station Information

Calibration Date: April 1, 2014 Station Number: AMS 6

Calibration Data

Set Point	Total flow rate (ccm)	Source gas flow rate (ccm)	Calculated NOx conc (ppb)	Calculated NO conc (ppb)	Calculated NO2 conc (ppb)	Indicated NOx conc (ppb)	Indicated NO conc (ppb)	Indicated NO2 conc (ppb)	NOx Correction factor	NO Correction factor
as found zero	5000	0.0	0.0	0.0	0.0	-0.5	-0.2	-0.3	N/A	N/A
as found span	5000	78.3	800.2	800.2	0.0	816.7	813.7	3.0	0.9799	0.9835
calibrator zero	5000	0.0	0.0	0.0	0.0	-0.5	-0.2	-0.3	N/A	N/A
high point	5000	78.3	800.2	800.2	0.0	816.7	813.7	3.0	0.9799	0.9835
second point	5000	39.1	399.6	399.6	0.0	410.2	408.9	1.3	0.9742	0.9774
third point	5000	19.6	200.3	200.3	0.0	205.8	205.1	0.7	0.9734	0.9766
calibrator zero	5000	0.0	0.0	0.0	0.0	-0.5	-0.2	-0.3	N/A	N/A
as left zero	5000	0.0	0.0	0.0	0.0	-0.1	-0.1	0.0	N/A	N/A
as left span	5000	78.3	800.2	429.6	370.6	806.4	433.2	373.2	0.9924	0.9917
							Average Correction Factor		0.9758	0.9791

Corrcted As found NO_X= 817.2 NO= 813.9 Percent Change NO_X= -1.5% NO= -1.4%

Previous Response NO_X= 804.6 NO= 802.3

GPT Calibration Data

Dilution Flow 5000 ccm Source Gas Flow 78.30 ccm

O3 Setpoint (ppb)	Indicated NO high point (ppb)	Indicated NO drop conc (ppb)	Calculated NO2 conc (ppb)	Indicated NOx conc (ppb)	Indicated NO conc (ppb)	Indicated NO2 conc (ppb)	NOx Correction factor	NO Correction factor	NO2 Correction factor	Converter Efficiency
Cal zero			0.0			-0.3			N/A	
1st NO2 (300)	N/A	429.6	383.5	814.5	429.6	384.9	0.9673	1.0000	0.9965	100.4%
2nd NO2 (200)	N/A	618.5	194.7	813.5	618.5	195.1	0.9685	1.0000	0.9979	100.2%
3rd NO2 (100)	N/A	709.8	103.4	813.8	709.8	104.0	0.9682	1.0000	0.9935	100.7%
4th NO2 (0)	813.1	N/A	2.0	815.2	813.1	2.0	0.9665	1.0000	N/A	N/A
					Average Correction Factor		0.9676	1.0000	0.9960	100.4%

Calibration Performed By: Michael Martineau

Wood Buffalo Environmental Association

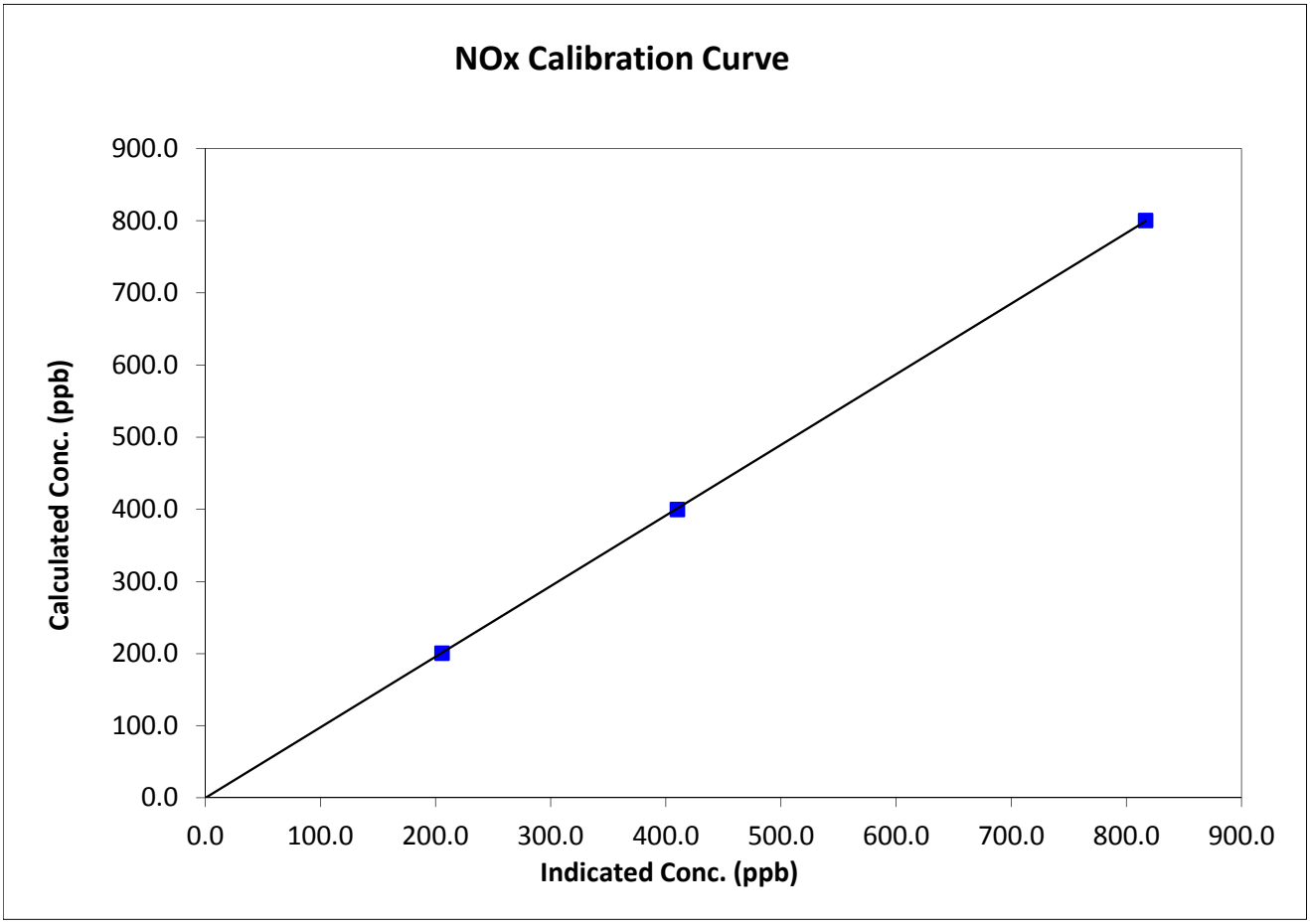
NO_X Calibration Summary

Station Information

Calibration Date	April 1, 2014	Previous Calibration	March 19, 2014
Station Name	Patricia McInnes	Station Number	AMS 6
Start Time (MST)	8:30	End Time (MST)	12:30
Analyzer make	Thermo Scientific 42i	Analyzer serial #	1218153460

Calibration Information

Calculated conc (ppb) (Cc)	Indicated concentration (ppb) (Ic)	Correction factor (Cc/Ic)	Statistical Evaluation	
0.0	-0.5	N/A	Correlation Coefficient	0.999987
800.2	816.7	0.9799		
399.6	410.2	0.9742	Slope	0.978839
200.3	205.8	0.9734		
0.0	-0.5	0.0000	Intercept	-0.238998



Wood Buffalo Environmental Association

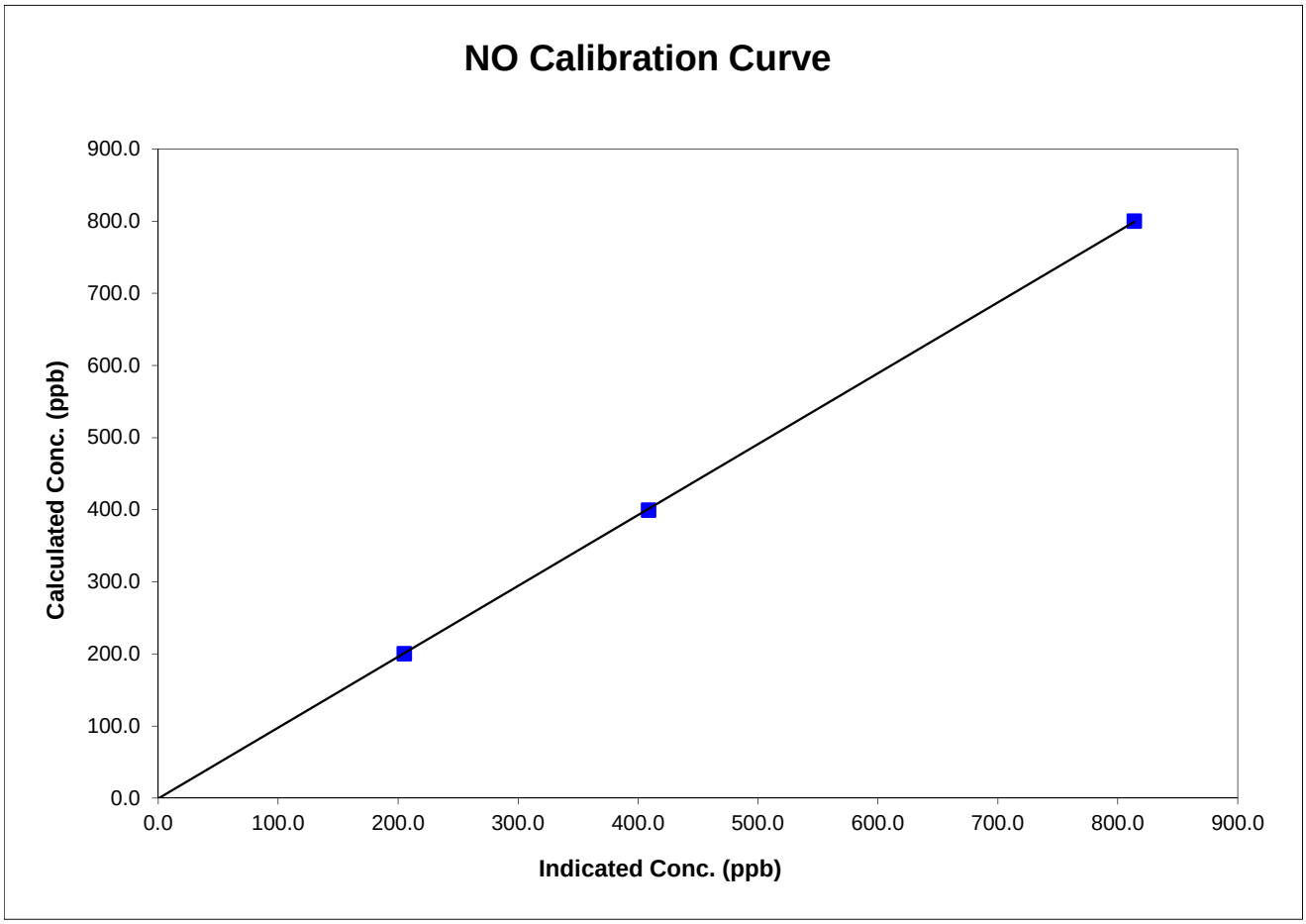
NO Calibration Summary

Station Information

Calibration Date	April 1, 2014	Previous Calibration	March 19, 2014
Station Name	Patricia McInnes	Station Number	AMS 6
Start Time (MST)	8:30	End Time (MST)	12:30
Analyzer make	Thermo Scientific 42i	Analyzer serial #	1218153460

Calibration Information

Calculated conc (ppb) (Cc)	Indicated concentration (ppb) (Ic)	Correction factor (Cc/Ic)	Statistical Evaluation	
0.0	-0.2	N/A	Correlation Coefficient	0.999988
800.2	813.7	0.9835		
399.6	408.9	0.9774	Slope	0.982819
200.3	205.1	0.9766		
0.0	-0.2	0.0000	Intercept	-0.521516



Wood Buffalo Environmental Association

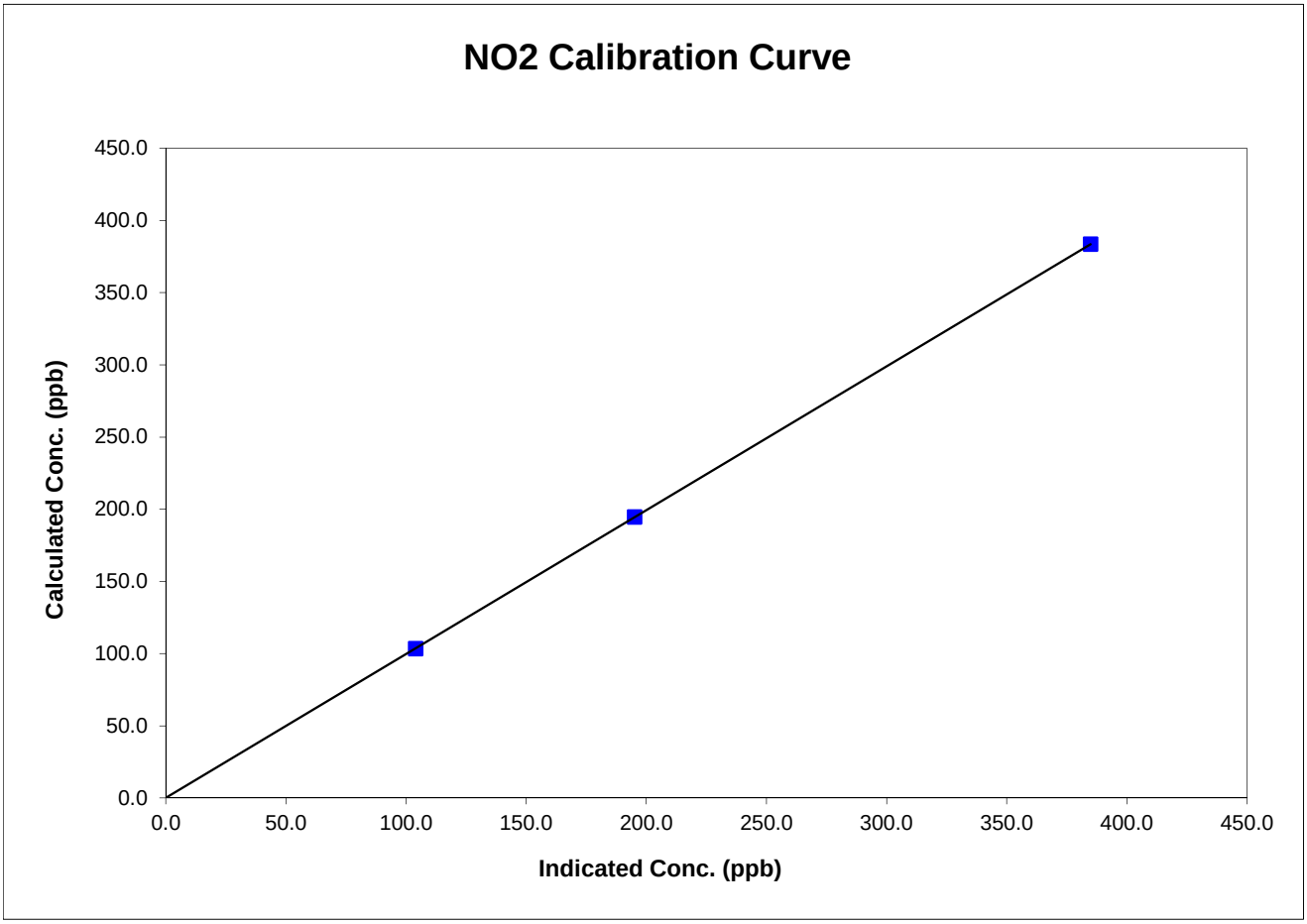
NO_2 Calibration Summary

Station Information

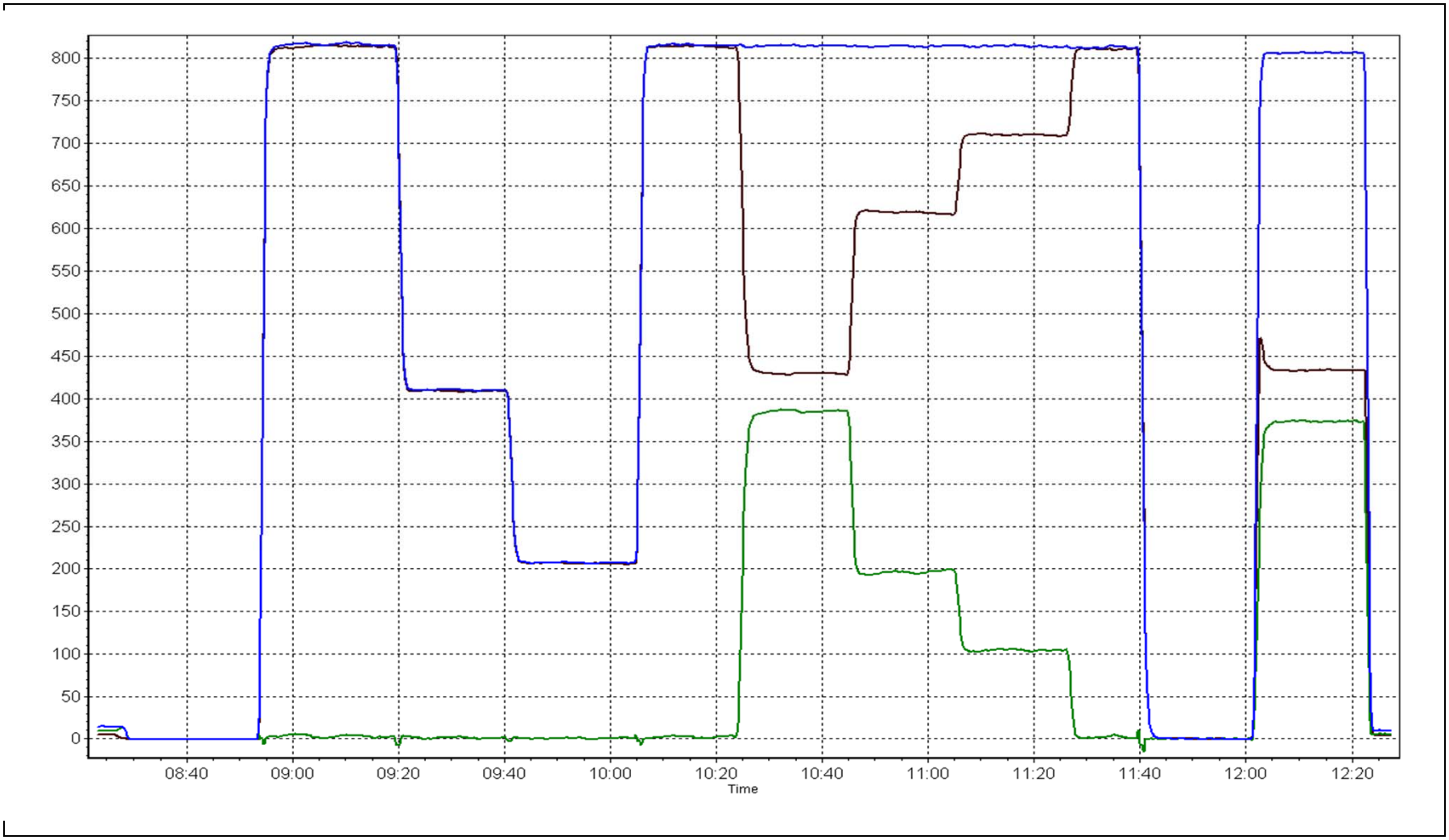
Calibration Date	April 1, 2014	Previous Calibration	March 19, 2014
Station Number	Patricia McInnes	Station Number	AMS 6
Start Time (MST)	8:30	End Time (MST)	12:30
Analyzer make	Thermo Scientific 42i	Analyzer serial #	1218153460

Calibration Information

Calculated conc (ppb) (Cc)	Indicated concentration (ppb) (Ic)	Correction factor (Cc/Ic)	Statistical Evaluation	
0.0	-0.3	N/A	Correlation Coefficient	0.999997
383.5	384.9	0.9965		
194.7	195.1	0.9979	Slope	0.996112
103.4	104.0	0.9935		
			Intercept	0.137059



NOx, NO & NO_2 Calibration Plot Date: April 1, 2014



Wood Buffalo Environmental Association

$Nt\text{-}NO_X\text{-}NH_3$ Calibration Report

Station Information

Calibration Date	April 8, 2014	Previous Calibration	March 18, 2014
Station Name	Patricia McInnis	Station Number	AMS 6
Reason:	Routine		
Start Time (MST)	10:00	End Time (MST)	14:45
Barometric Pressure	715 mmHg	Station Temperature	21.0 Deg C
Calibrator	Sabio 4010	Serial Number	11031107
NH3 Cal Gas Conc	190 ppm	Cal Gas Expiry Date	April 3, 2012
NOx Cal Gas Conc	51.1 ppm	Cal Gas Serial #	LL86349

DACS Information

DACS make & model	Campbell Scientific CR3000	DACS serial No.	2582

Parameter		Nt	NOx	NH3
MV conversion	Analyzer Range (ppb)	2500	1000	2500
	Analyzer Range (mv)	5000	5000	5000
Before	Data Slope	1.031259		1.032584
	Data Offset	-4.701918		-3.678259
After	Data Slope	1.002361		1.002857
	Data Offset	6.413815		6.461686
Channel #				
Voltage Range				

Analyzer Information

Analyzer make/model	Thermo 17c	Analyzer serial #	622817829
		Converter serial #	617817369

Test Point	before		after	
Concentration range	0-1000	ppb	0-1000	ppb
Nt coefficient	0.886	ppb	0.886	ppb
NOX coefficient	0.910	ppb	0.907	ppb
NH3 coefficient	1.000		0.969	
NO coefficient	0.896		0.909	
NO2 coefficient	1.000	ppb	1.000	ppb
No bkgrnd	6.1		5.9	
Nt bkgrnd	5.9		8.4	
NOX bkgrnd	5.3		5.2	
NH3 conv temp	774	DegC	779	Deg C
Chamber Temp	50.1	Deg C	50.0	Deg C
Moly Temp	322.0	Deg C	322.0	Deg C
PMT Temp	-8.7	Deg C	-8.6	Deg C
O3 flow	ok	ccm	ok	ccm
R Cell Press	121.2	mmHg	118.8	mmHg
PMT Voltage	-838.0	v	-838.0	v
Sample Flow 1 NO	446.0	ccm	443.0	ccm
Sample Flow 2 Nox	491.0	ccm	489.0	ccm
Sample Flow 3 Nt	497.0	ccm	493.0	ccm

Notes:

adjusted zero and span for NO high point. Adjusted NH3.

Wood Buffalo Environmental Association

$Nt\text{-}NO_x\text{-}NH_3$ Calibration Report

Station Information

Calibration Date: April 8, 2014 Station Number: AMS 6

Calibration Data

Set Point	Total flow rate (ccm)	Source gas flow rate (ccm)	Calculated Nt conc (ppb)	Calculated NOx conc (ppb)	Calculated NH3 conc (ppb)	Indicated Nt conc (ppb)	Indicated NOx conc (ppb)	Indicated NH3 conc (ppb)	Nt Correction factor	NH3 Correction factor
as found zero	5000	0.0	0.0	0.0	0.0	0.1	0.0	0.1	NA	NA
as found NO	5000	78.3	800.2	800.2	NA	886.3	886.0	0.3	0.903	NA
calibrator zero	5000	0.0	0.0	0.0	0.0	0.0	0.0	0.0	NA	NA
high NO point	5000	78.3	800.2	800.2	NA	794.2	794.7	-0.5	1.008	NA
NO/O3 point	5000	78.3	800.2	800.2	NA	790.3	789.1	1.2	1.013	NA
as found NH3	5000	52.6	1998.8	NA	1998.8	1916.5	1.0	1915.5	1.043	1.043
first NH3	5000	52.6	1998.8	NA	1998.8	1993.2	1.0	1992.3	1.003	1.003
second NH3	5000	26.3	999.4	NA	999.4	980.1	0.8	979.4	1.020	1.020
third NH3	5000	13.2	501.6	NA	501.6	492.6	0.2	492.4	1.018	1.019
as left zero										
as left span										
								Average Correction Factor	1.0101	1.0141

Corrected As found Nt = 886.2 ppb
NH3 = 1915.4 ppb

Previous response Nt = 780.7 ppb
NH3 = 1939.4 ppb

Nt percent change -11.9%
NH3 percent change 1.3%

Converter efficiency 96.9%

Calibration Performed By: Michael Martineau

Wood Buffalo Environmental Association

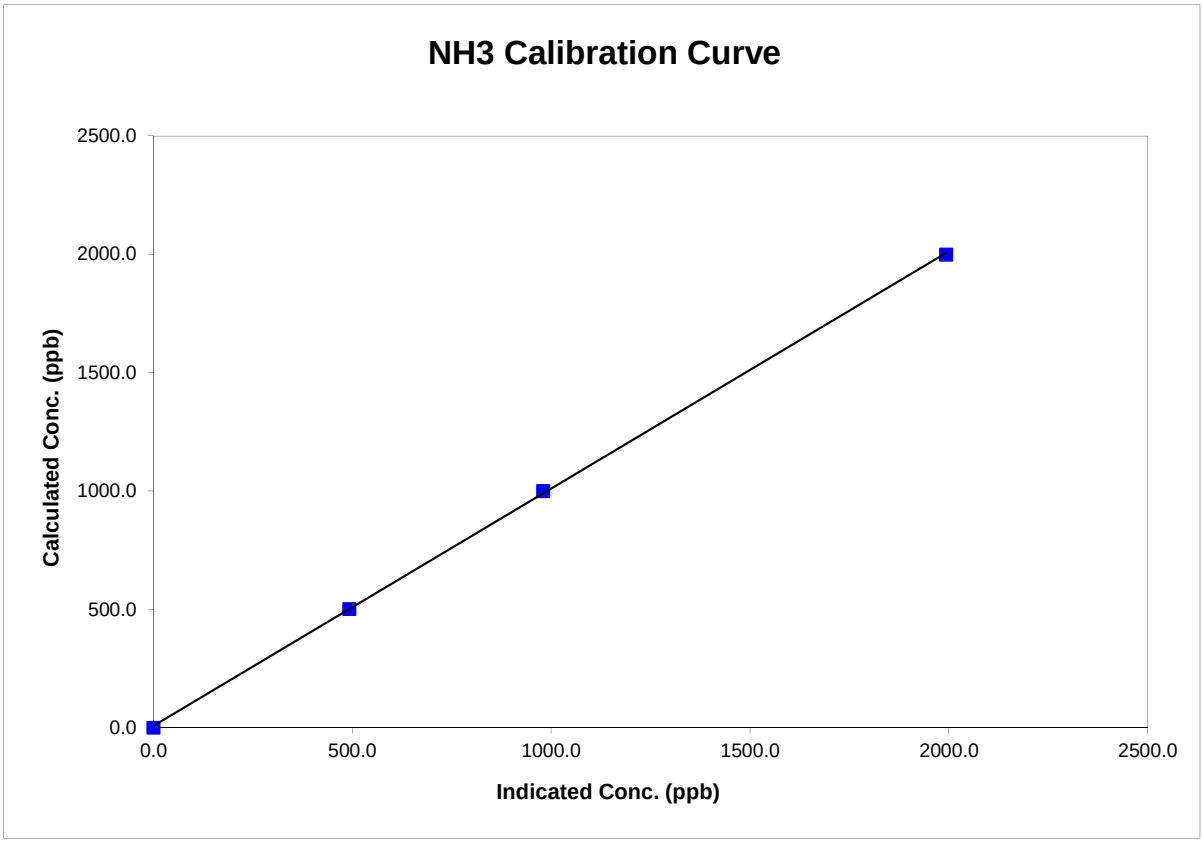
NH3 Calibration Summary

Station Information

Calibration Date	April 8, 2014	Previous Calibration	March 18, 2014
Station Number	Patricia McInnis	Station Number	AMS 6
Start Time (MST)	10:00	End Time (MST)	14:45
Analyzer make	Thermo 17c	Analyzer serial #	622817829

NH3 Calibration Information

Calculated conc (ppb) (Cc)	Indicated concentration (ppb) (Ic)	Correction factor (Cc/Ic)	Statistical Evaluation	
0.0	0.0	N/A	Correlation Coefficient	0.999912
1998.8	1992.3	1.0033		
999.4	979.4	1.0205	Slope	1.002857
501.6	492.4	1.0186		
			Intercept	6.461686



Wood Buffalo Environmental Association

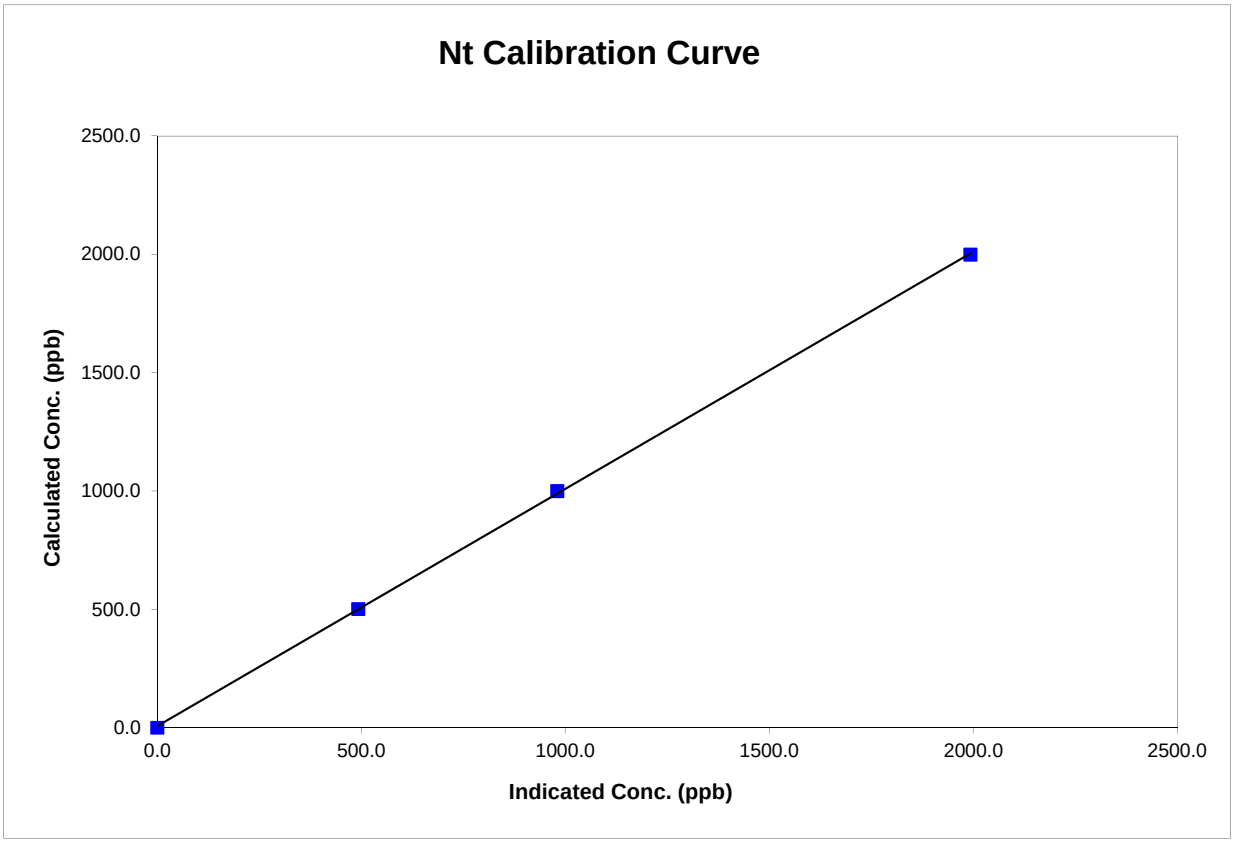
Nt Calibration Summary

Station Information

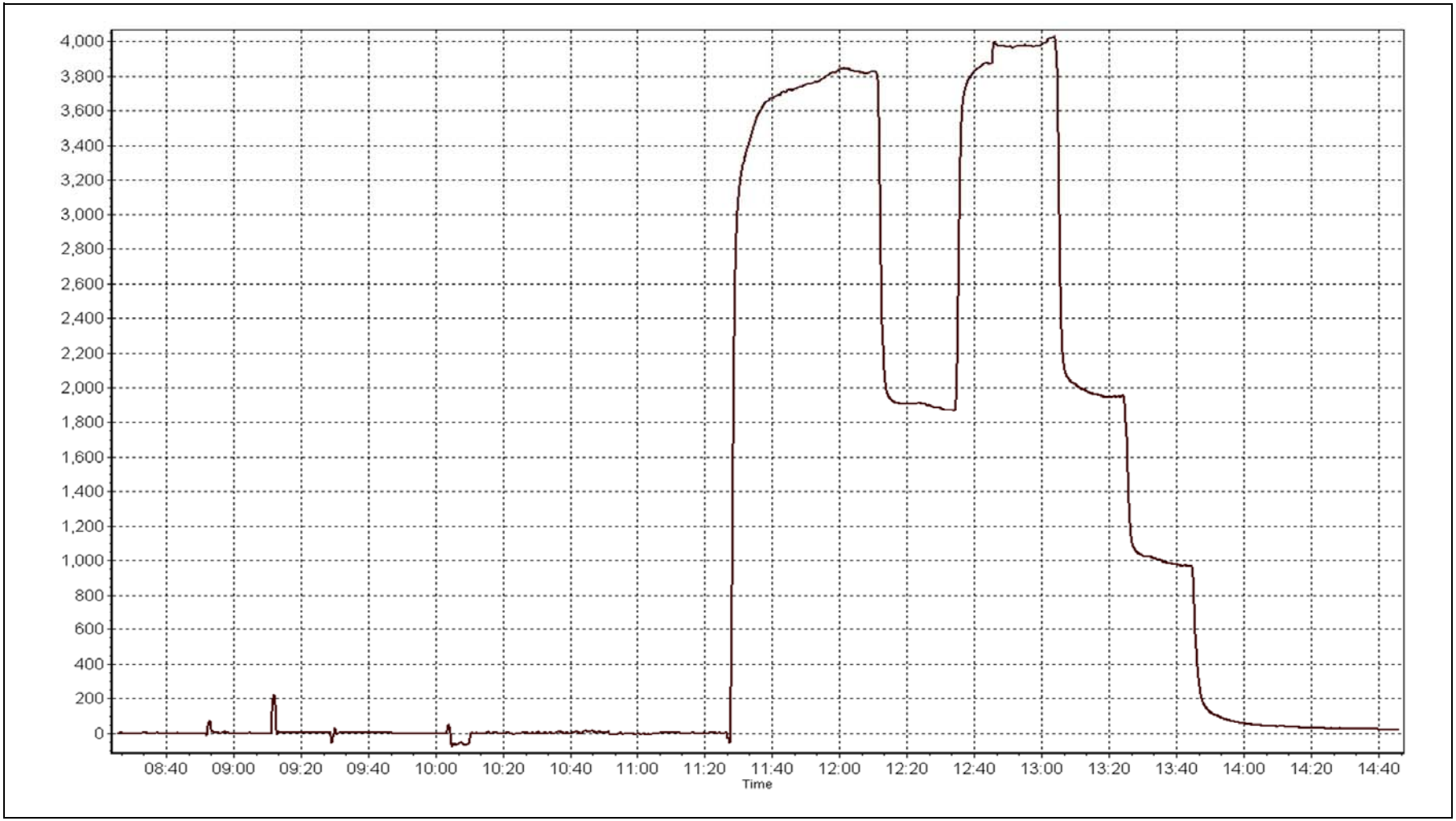
Calibration Date	April 8, 2014	Previous Calibration	March 18, 2014
Station Number	Patricia McInnis	Station Number	AMS 6
Start Time (MST)	10:00	End Time (MST)	14:45
Analyzer make	Thermo 17c	Analyzer serial #	622817829

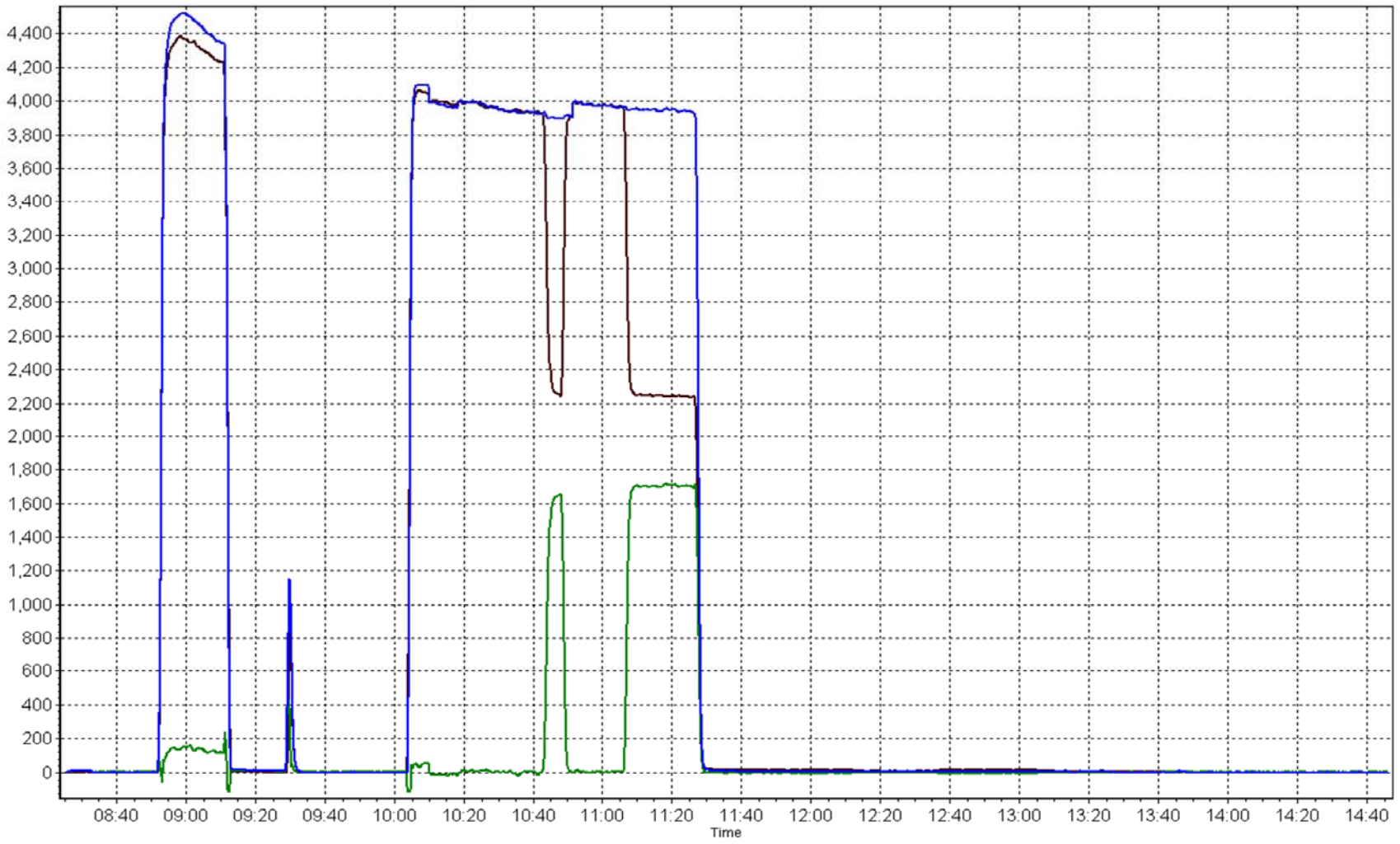
Nt (NH_3) Calibration Information

Calculated conc (ppb) (Cc)	Indicated concentration (ppb) (Ic)	Correction factor (Cc/Ic)	Statistical Evaluation	
0.0	0.0	N/A	Correlation Coefficient	0.999915
1998.8	1993.2	1.0028		
999.4	980.1	1.0197	Slope	1.002361
501.6	492.6	1.0183		
			Intercept	6.413815



NH_3 Calibration Plot Date: April 8, 2014




4,400
4,200
4,000
3,800
3,600
3,400
3,200
3,000
2,800
2,600
2,400
2,200
2,000
1,800
1,600
1,400
1,200
1,000
800
600
400
200
0
08:40
09:00
09:20
09:40
10:00
10:20
10:40
11:00
11:20
11:40
12:00
12:20
12:40
13:00
13:20
13:40
14:00
14:20
14:40
Time

WOOD BUFFALO ENVIRONMENTAL ASSOCIATION

CONTINUOUS AMBIENT AIR QUALITY
MONITORING PROGRAM
MONTHLY REPORT

AMS 7
ATHABASCA VALLEY
APRIL 2014

Operations and Data Collection by:
Wood Buffalo Environmental Association
Fort McMurray, Alberta

QA/QC, Data Validation and Reporting by:
Aurora Atmospherics Inc.
Calgary, Alberta

May 30, 2014

WOOD BUFFALO ENVIRONMENTAL ASSOCIATION - ATHABASCA VALLEY (AMS 7)
APRIL 2014

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	36	38	99.72	31	0	6	0
TRS (ppb) Average	683	35	37	99.72	1	0	0	0
THC (ppm) Average	681	35	39	99.44	2.2	-	1.9	-
NMHC (ppm) Average	681	35	39	99.44	0.101	-	0.011	-
CH4(ppm) Average	681	35	39	99.44	2.1	-	1.9	-
O3 (ppb) Average	685	34	35	99.86	54	0	45	-
NO2 (ppb) Average	682	35	38	99.58	70	0	20	-
NO (ppb) Average	682	35	38	99.58	176	-	33	-
NOX (ppb) Average	682	35	38	99.58	245	-	51	-
PM2.5 (ug/m3) Average	717	0	3	99.58	38.3	-	12.1	0
CO(ppm) Average	685	34	35	99.86	0.4	0	0.2	-
Temperature 2 m (C) Average	720	0	0	100.00	22.8	-	13.0	-
Barometric Pressure (inHg) Average	720	0	0	100.00	29.6	-	-	-
Relative Humidity (%) Average	720	0	0	100.00	98	-	-	-
Wind Speed 10 m (km/h) Average	720	0	0	100.00	37	-	-	-
Wind Direction 10 m (deg) Average	720	0	0	100.00	-	-	-	-

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

WOOD BUFFALO ENVIRONMENTAL ASSOCIATION - ATHABASCA VALLEY (AMS 7)
APRIL 2014

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	0.9	3	-	0	0	0	0	0	1	31
TRS (ppb) Average	683	0.2	0	-	0	0	0	0	0	0	1
THC (ppm) Average	681	1.9	0	-	1.8	1.9	1.9	1.9	1.9	2	2.2
NMHC (ppm) Average	681	0.002	0.008	-	0	0	0	0	0	0	0.101
CH4(ppm) Average	681	1.89	0	-	1.8	1.9	1.9	1.9	1.9	1.9	2.1
O3 (ppb) Average	685	31.6	11	-	2	14	25	34	40	45	54
NO2 (ppb) Average	682	8.9	9	-	0	2	3	6	12	18	70
NO (ppb) Average	682	8.3	19	-	0	0	0	2	7	23	176
NOX (ppb) Average	682	17.2	27	-	0	2	4	8	18	39	245
PM2.5 (ug/m3) Average	717	6.76	4.2	-	0.3	2.9	4	5.7	8.4	11.6	38.3
CO(ppm) Average	685	0.12	0	-	0	0.1	0.1	0.1	0.1	0.2	0.4
Temperature 2 m (C) Average	720	2.04	7.3	-	-17	-7.7	-2.6	2.1	6.5	11.6	22.8
Barometric Pressure (inHg) Average	720	28.99	0.2	-	28.4	28.7	28.8	29	29.2	29.3	29.6
Relative Humidity (%) Average	720	59.1	19	-	17	32	44	57	76	85	98
Wind Speed 10 m (km/h) Average	720	9.7	6	-	0	2	5	9	13	17	37
Wind Direction 10 m (deg) Average	720	-	-	-	-	-	-	-	-	-	-

WOOD BUFFALO ENVIRONMENTAL ASSOCIATION - ATHABASCA VALLEY (AMS 7)
APRIL 2014

OPERATIONAL NOTES

Parameter	Period Start	Period End	Duration (Hours)	Notes
AIR QUALITY ANALYZERS	23 Apr 2014 13:00	23 Apr 2014 13:00	1	Station power failure
SO2	04 Apr 2014 12:00	04 Apr 2014 12:00	1	Maintenance - sample manifold cleaned
TRS	04 Apr 2014 12:00	04 Apr 2014 12:00	1	Maintenance - sample manifold cleaned
NMHC, CH4, THC	14 Apr 2014 11:00	14 Apr 2014 11:00	1	Maintenance - replaced carrier gas
NMHC, CH4, THC	30 Apr 2014 10:00	30 Apr 2014 11:00	2	Maintenance - replaced fuel cylinder
NO2, NO, NOX	04 Apr 2014 11:00	04 Apr 2014 12:00	2	Maintenance - sample manifold cleaned
PM2.5	14 Apr 2014 14:00	14 Apr 2014 14:00	1	Flow and zero reference checks, sample head cleaning
PM2.5	16 Apr 2014 02:00	16 Apr 2014 02:00	1	Unstable operation - excessive baseline drift

Wood Buffalo Environmental Association

Summary of Hour Averages

Sulphur Dioxide (SO_2) - ppb

Athabasca Valley - April 2014

Number of Exceedences (AAAQO): 1-hr: 0 24-hr: 0
Maximum Value: 31 ppb on Apr 1 14:00 Maximum Daily Average: 5.5 ppb on Apr 1

Minimum Value: 0 ppb on Apr 27 08:00 Minimum Daily Average: 0.2 ppb on Apr 25
Maximum Diurnal Average: 2.7 ppb at hour 14 Minimum Diurnal Average: 0.2 ppb at hour 1
Monthly Average: 0.9 ppb Percentiles: $P_1 = 0$ $P_{10} = 0$ $Q_1 = 0$ Median = 0 $Q_3 = 0$ $P_{90} = 1$ $P_{99} = 13$

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-Apr	0	0	0	Z	0	0	0	0	0	0	0	4	9	31	23	17	13	11	13	1	1	0	0	0	5.5	31
2-Apr	0	0	0	Z	0	0	0	0	0	0	0	4	4	5	1	1	0	0	0	0	0	0	0	0	0.9	5
3-Apr	0	0	0	Z	1	1	1	1	C	C	C	C	C	C	1	1	0	1	0	0	0	0	0	0	--	1
4-Apr	0	0	1	Z	1	1	1	1	1	1	1	M	1	0	0	0	0	0	0	0	0	0	0	0	0.5	1
5-Apr	0	0	0	Z	0	0	1	0	0	3	4	1	1	1	1	1	3	8	8	4	2	1	0	0	1.8	8
6-Apr	0	0	0	Z	0	0	1	0	0	0	0	0	0	0	1	1	1	0	0	0	0	0	0	0	0.3	1
7-Apr	0	0	0	Z	1	1	0	1	1	0	5	2	1	0	0	0	0	0	0	0	0	0	0	0	0.6	5
8-Apr	0	0	0	Z	1	1	1	1	1	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0.4	1
9-Apr	0	0	0	Z	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1	1	0	0	0.3	1
10-Apr	0	0	0	Z	0	0	0	0	0	1	3	2	2	2	1	1	0	0	0	0	0	0	0	0	0.7	3
11-Apr	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
12-Apr	0	1	0	Z	0	0	1	1	0	0	0	0	0	0	0	2	3	6	7	1	0	0	0	0	1.1	7
13-Apr	0	0	0	Z	0	0	0	1	3	6	15	12	9	5	6	4	2	2	2	3	3	3	1	1	3.5	15
14-Apr	1	1	1	Z	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	0	0.8	1
15-Apr	0	0	0	Z	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0.3	0
16-Apr	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
17-Apr	0	0	0	Z	0	0	0	1	1	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0.3	1
18-Apr	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
19-Apr	0	0	0	Z	0	0	0	0	0	0	0	1	0	0	0	0	0	0	0	0	0	0	0	0	0.3	1
20-Apr	0	0	0	Z	0	0	0	0	0	3	8	7	25	21	13	6	4	2	1	1	1	1	1	1	4.1	25
21-Apr	1	0	0	Z	0	0	0	0	0	0	0	0	10	7	3	5	2	5	1	0	0	0	0	0	1.7	10
22-Apr	0	0	0	Z	1	1	0	1	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0.3	1
23-Apr	0	0	0	Z	0	0	0	0	0	0	0	0	PF	0	1	1	1	1	0	0	0	0	0	0	0.3	1
24-Apr	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
25-Apr	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
26-Apr	0	0	0	Z	0	0	0	0	0	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0.2	1
27-Apr	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
28-Apr	0	0	0	Z	0	0	0	0	0	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0.3	1
29-Apr	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
30-Apr	0	0	0	Z	0	0	0	0	0	0	0	0	0	0	1	1	1	1	0	0	0	0	0	0	0.4	1
	0.2	0.3	0.3	--	0.3	0.4	0.4	0.4	0.5	0.8	1.5	1.4	2.4	2.7	1.9	1.4	1.2	1.4	1.2	0.5	0.5	0.4	0.3	0.3	Diurnal Average	
	1	1	1	--	1	1	1	1	3	6	15	12	25	31	23	17	13	11	13	4	3	3	1	1	Diurnal Maximum	

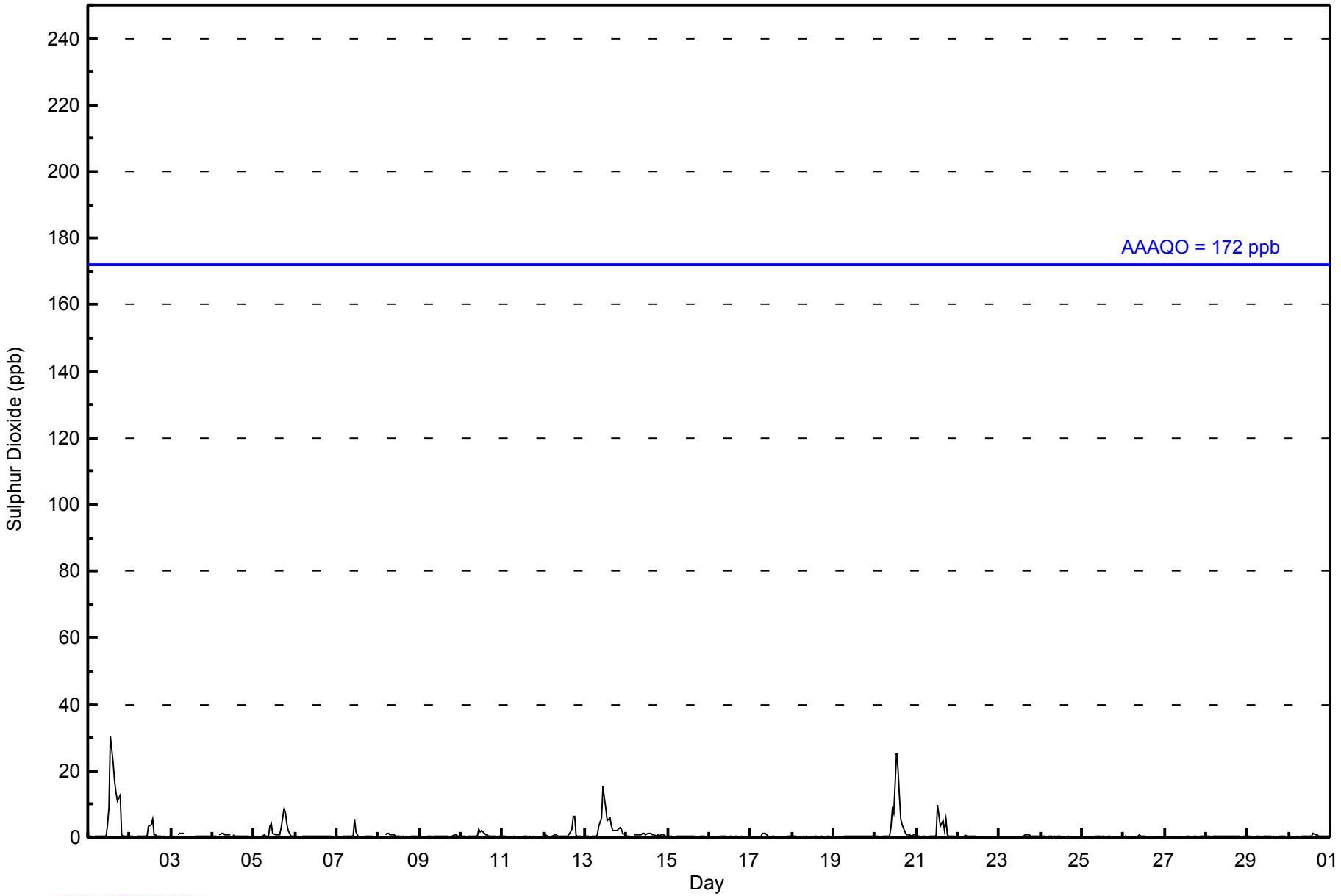
Z - zerospan C - Calibration M - Maintenance PF - Power Failure
Alberta Ambient Air Quality Objectives (AAAQO): 1-hr 172 ppb 24-hr 48 ppb

WBEA NETWORK

Hourly Averages

Sulphur Dioxide (SO_2) - ppb

Athabasca Valley - April 2014



AURORA ATMOSPHERICS INC.

Concentration Ranges (ppb)	Number of Hours	%	Cumulative %
0 - 10	671	98.39	98.39
11 - 20	7	1.03	99.41
21 - 60	4	0.59	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

Concentration Ranges (ppb)	Wind Direction																
	N	NNE	NE	ENE	E	ESE	SE	SSE	S	SSW	SW	WSW	W	WNW	NW	NNW	**Totals**
0 - 10	60	19	16	26	64	77	151	43	13	12	26	26	27	21	20	70	671
11 - 20	5	0	0	0	0	0	0	0	0	0	0	0	0	0	0	2	7
21 - 60	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	3	4
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	66	19	16	26	64	77	151	43	13	12	26	26	27	21	20	75	682

Total Number of Valid Hours: 682

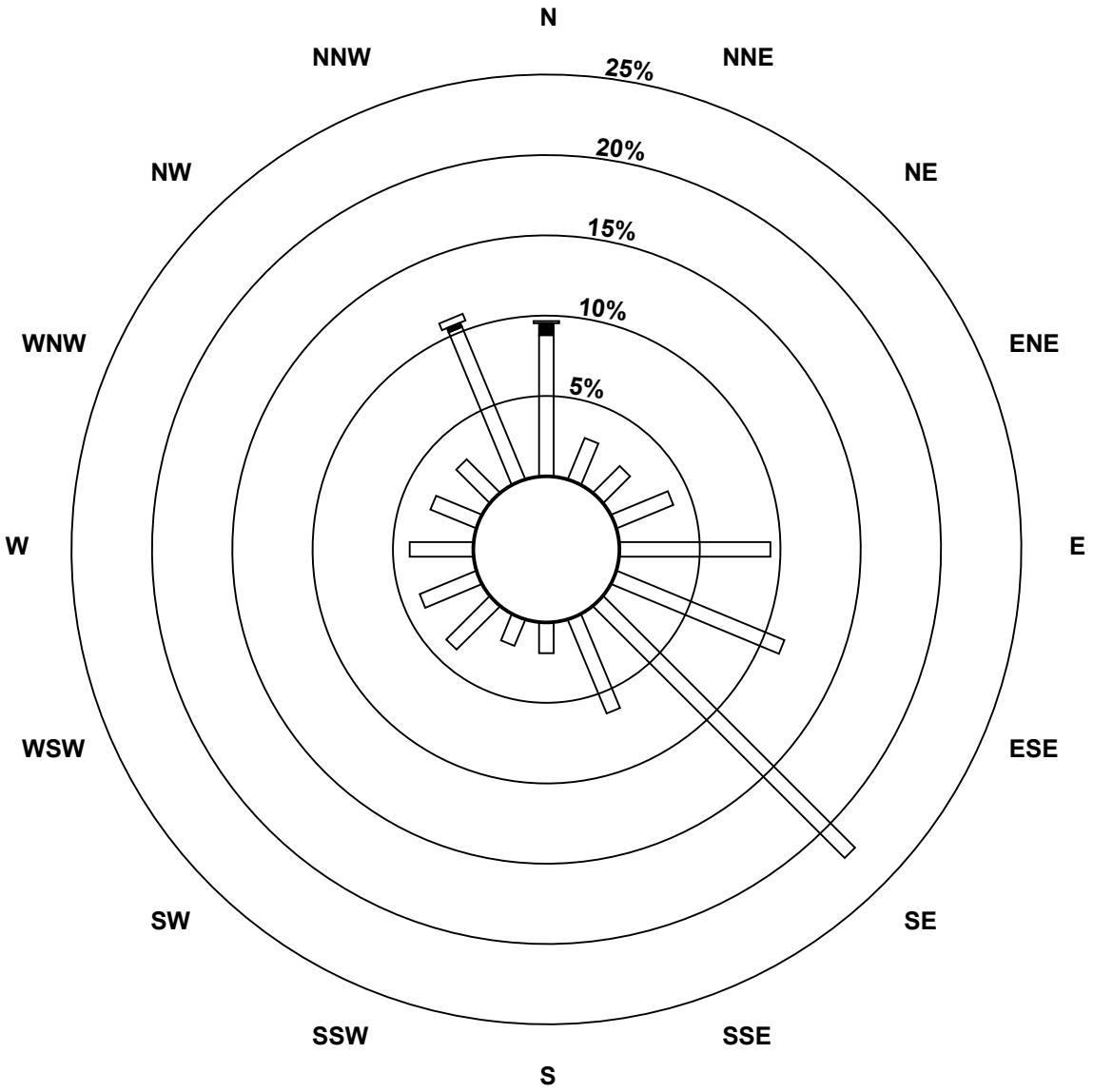
Total Number of Hours: 720

Wood Buffalo Environmental Association

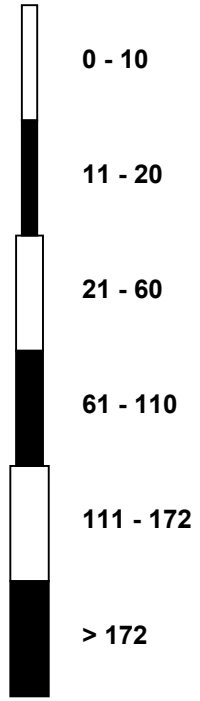
Wind Rose Apr 2014

Sulphur Dioxide (SO_2) - ppb

Athabasca Valley (AMS 7)



Classes (ppb)



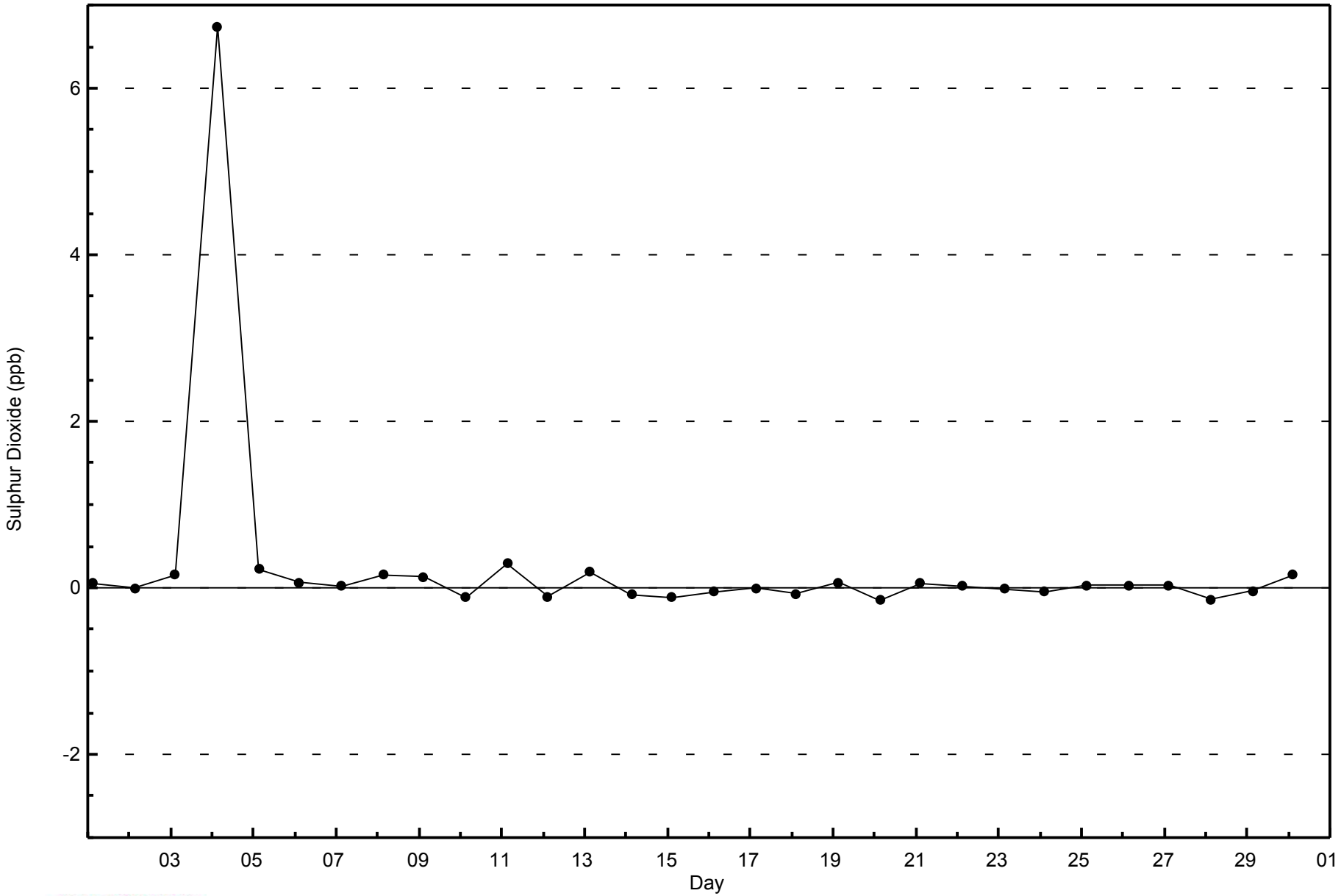
Total Number of Valid Hours: 682

WBEA NETWORK

Zero Responses

Sulphur Dioxide (SO_2) - ppb

Athabasca Valley - April 2014



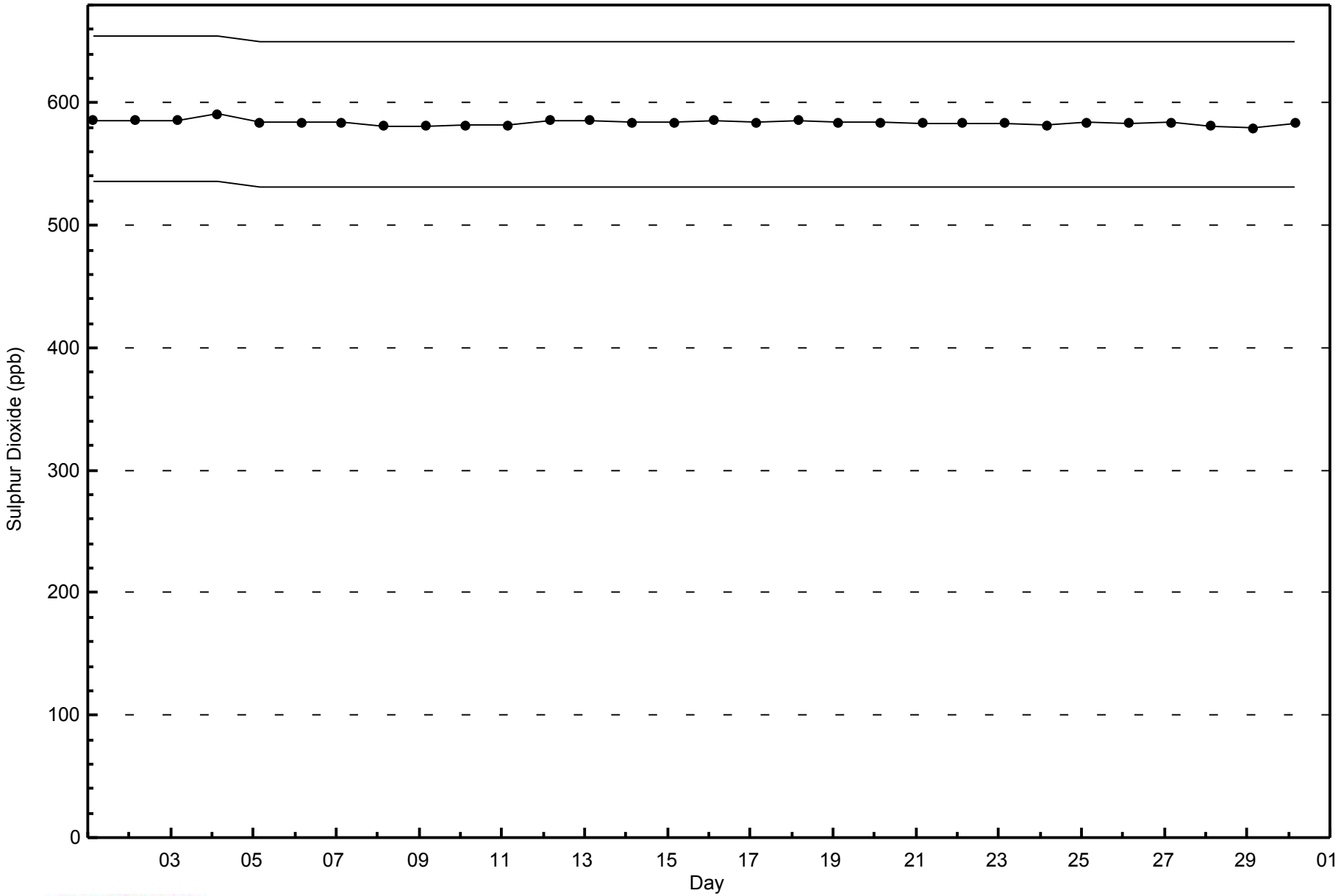
AURORA ATMOSPHERICS INC.

WBEA NETWORK

Span Responses

Sulphur Dioxide (SO_2) - ppb

Athabasca Valley - April 2014



AURORA ATMOSPHERICS INC.

Wood Buffalo Environmental Association

Summary of Hour Averages

Total Reduced Sulphur (TRS) - ppb

Athabasca Valley - April 2014

Number of Exceedences (AAAQO): 1-hr: 0 24-hr: 0
Maximum Value: 1 ppb on Apr 22 07:00 Maximum Daily Average: 0.4 ppb on Apr 22

Minimum Value: 0 ppb on Apr 11 19:00 Minimum Daily Average: 0.1 ppb on Apr 16
Maximum Diurnal Average: 0.3 ppb at hour 8 Minimum Diurnal Average: 0.2 ppb at hour 1
Monthly Average: 0.2 ppb Percentiles: $P_1 = 0$ $P_{10} = 0$ $Q_1 = 0$ Median = 0 $Q_3 = 0$ $P_{90} = 0$ $P_{99} = 1$

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-Apr	0	0	0	0	Z	0	0	0	0	0	0	0	0	1	1	0	1	0	0	0	0	0	0	0	0.3	1
2-Apr	0	0	0	0	Z	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0.3	0
3-Apr	0	0	0	0	Z	1	1	1	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0.3	1
4-Apr	0	0	0	0	Z	1	1	1	1	1	0	M	1	0	0	0	0	0	0	0	0	0	0	0	0.3	1
5-Apr	0	0	0	0	Z	0	1	0	0	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0.3	1
6-Apr	0	0	0	0	Z	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0.2	0
7-Apr	0	0	0	0	Z	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0.2	0
8-Apr	0	0	0	0	Z	1	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0.3	1
9-Apr	0	0	0	0	Z	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0.2	0
10-Apr	0	0	0	0	Z	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0.2	0
11-Apr	0	0	0	0	Z	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0.1	0
12-Apr	0	0	0	0	Z	0	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0.2	1
13-Apr	0	0	0	0	Z	0	0	0	1	1	1	0	1	0	0	0	0	0	0	0	0	0	0	0	0.4	1
14-Apr	0	0	0	0	Z	0	0	0	0	0	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0.3	1
15-Apr	0	0	0	0	Z	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0.2	0
16-Apr	0	0	0	0	Z	0	0	0	0	C	C	C	C	C	0	0	0	0	0	0	0	0	0	0	0.1	0
17-Apr	0	0	0	0	Z	0	0	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0.1	1
18-Apr	0	0	0	0	Z	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0.1	0
19-Apr	0	0	0	0	Z	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0.2	0
20-Apr	0	0	0	0	Z	0	0	0	0	0	0	0	1	1	0	0	0	0	0	0	0	0	0	0	0.2	1
21-Apr	0	0	0	0	Z	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0.3	0
22-Apr	0	0	0	1	Z	1	1	1	1	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0.4	1
23-Apr	0	0	0	0	Z	0	0	0	0	0	0	0	PF	0	0	0	0	0	0	0	0	0	0	0	0.3	0
24-Apr	0	0	0	0	Z	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0.2	0
25-Apr	0	0	0	0	Z	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0.1	0
26-Apr	0	0	0	0	Z	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0.1	0
27-Apr	0	0	0	0	Z	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0.2	0
28-Apr	0	0	0	0	Z	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0.3	0
29-Apr	0	0	0	0	Z	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1	1	0	0	0	0.3	1
30-Apr	0	0	0	0	Z	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0.2	0
	0.2	0.2	0.2	0.2	--	0.3	0.3	0.3	0.3	0.3	0.3	0.2	0.3	0.2	0.2	0.2	0.2	0.2	0.2	0.2	0.2	0.2	0.2	0.2	Diurnal Average	
	0	0	0	1	--	1	1	1	1	1	1	0	1	1	1	0	1	0	0	1	1	0	0	0	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

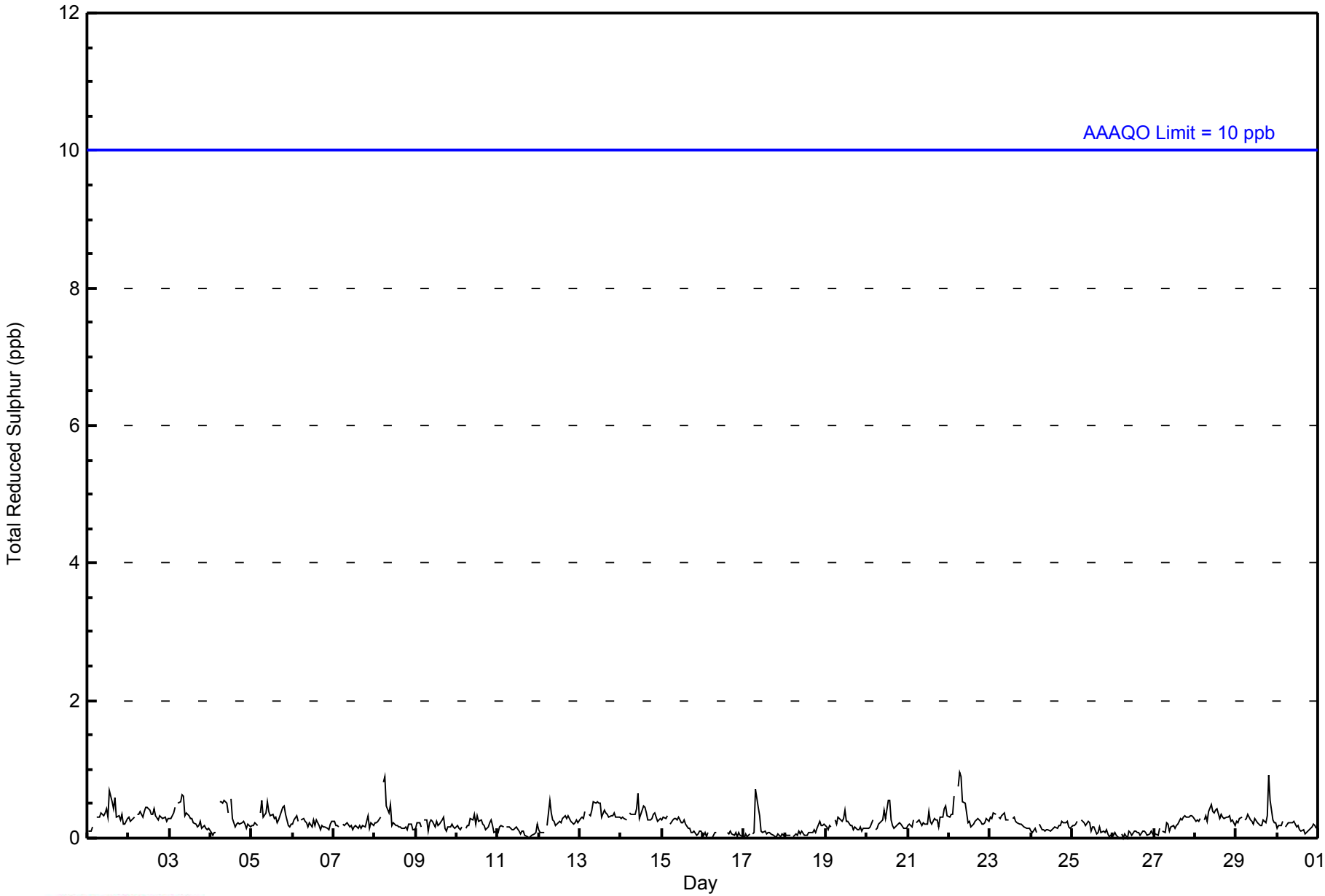
AURORA ATMOSPHERICS INC.

WBEA NETWORK

Hourly Averages

Total Reduced Sulphur (TRS) - ppb

Athabasca Valley - April 2014



AURORA ATMOSPHERICS INC.

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

WBEA NETWORK

Frequency Distribution

Total Reduced Sulphur (TRS) - ppb

Athabasca Valley - April 2014

Concentration Ranges (ppb)	Wind Direction																
	N	NNE	NE	ENE	E	ESE	SE	SSE	S	SSW	SW	WSW	W	WNW	NW	NNW	**Totals**
0 - 2	70	17	15	27	64	76	152	42	13	12	25	26	26	20	19	79	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	70	17	15	27	64	76	152	42	13	12	25	26	26	20	19	79	683

Total Number of Valid Hours: 683

Total Number of Hours: 720

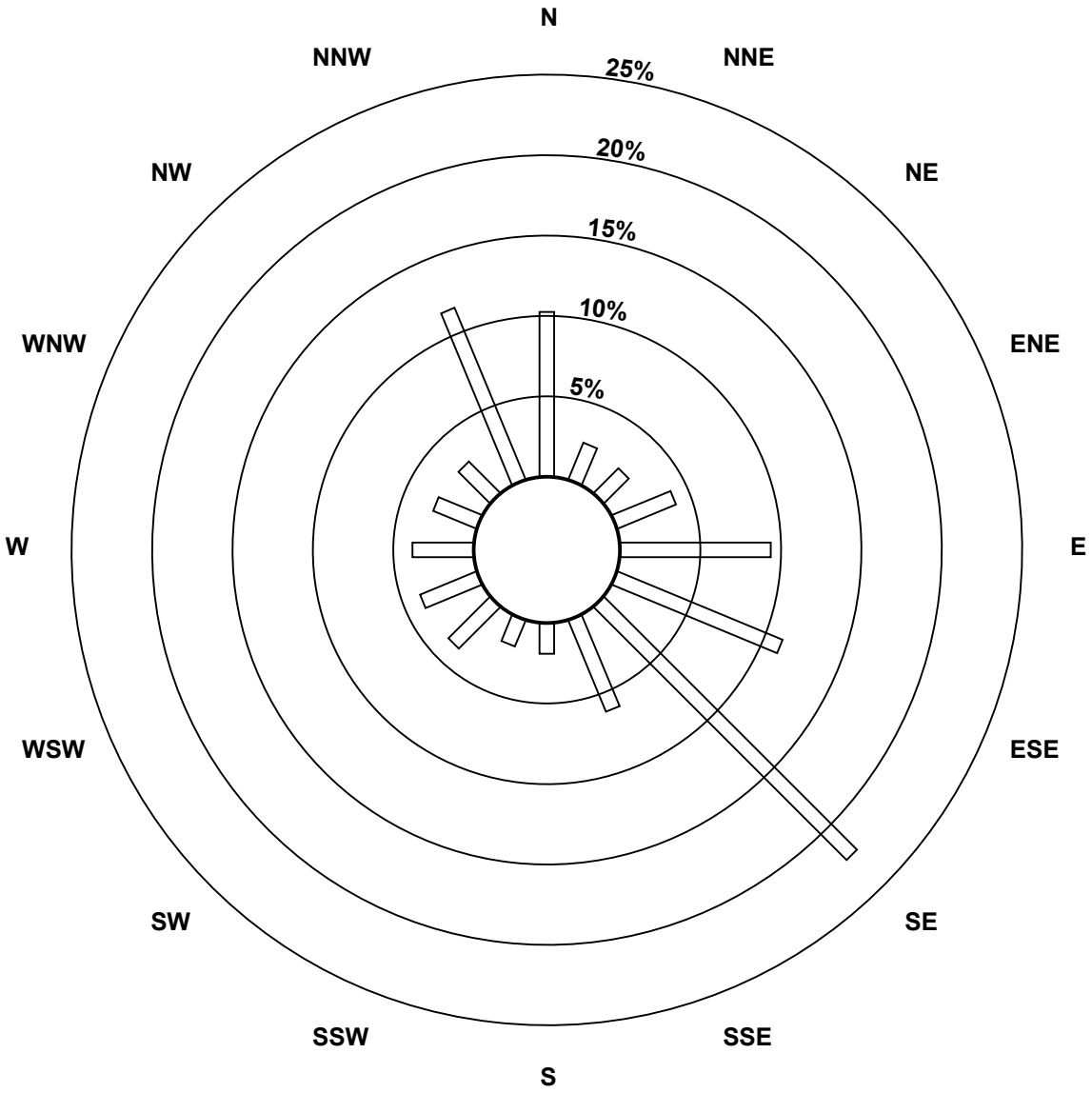
AURORA ATMOSPHERICS INC.

Wood Buffalo Environmental Association

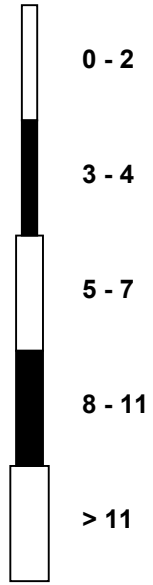
Wind Rose Apr 2014

Total Reduced Sulphur (TRS) - ppb

Athabasca Valley (AMS 7)



Classes (ppb)



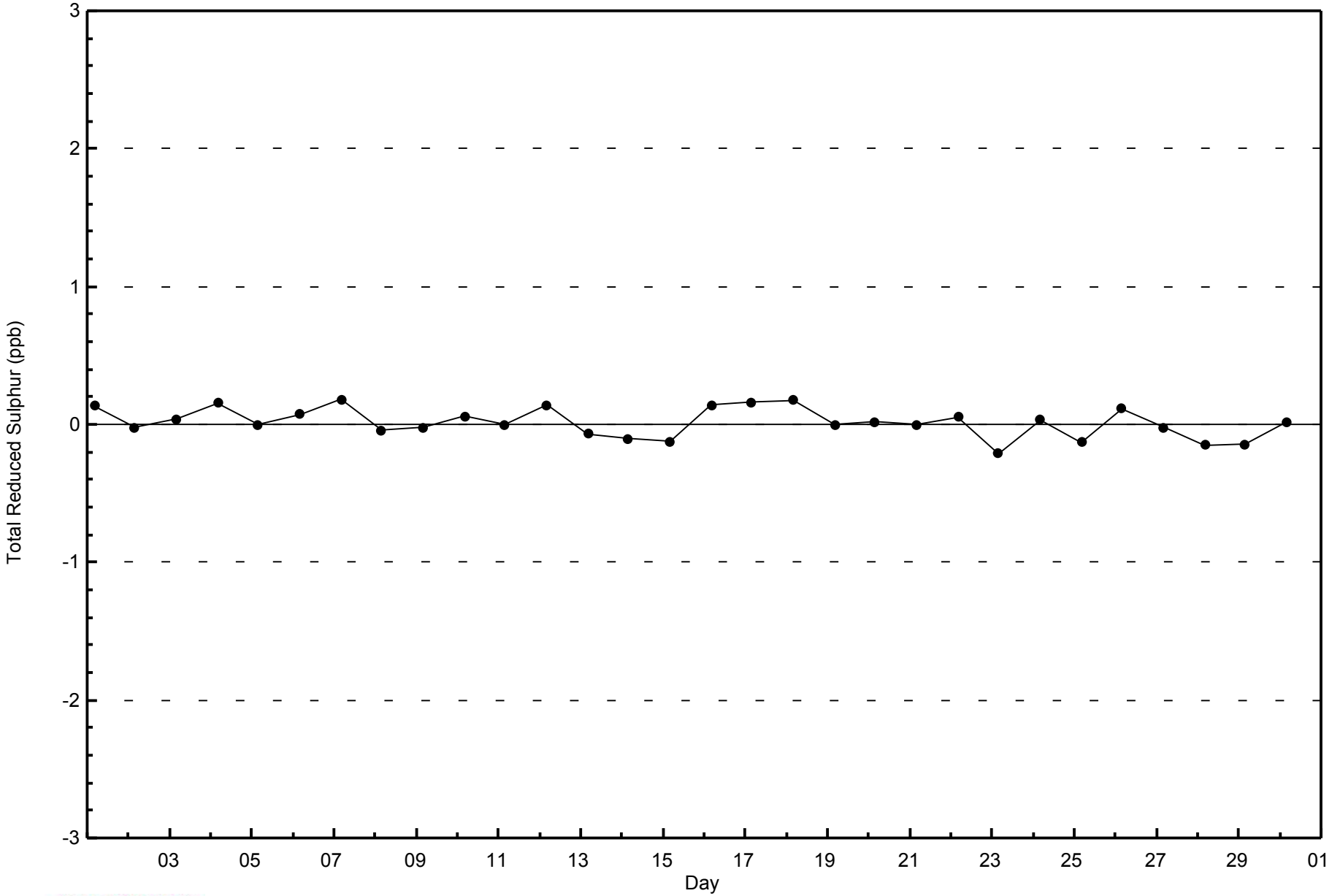
Total Number of Valid Hours: 683

WBEA NETWORK

Zero Responses

Total Reduced Sulphur (TRS) - ppb

Athabasca Valley - April 2014



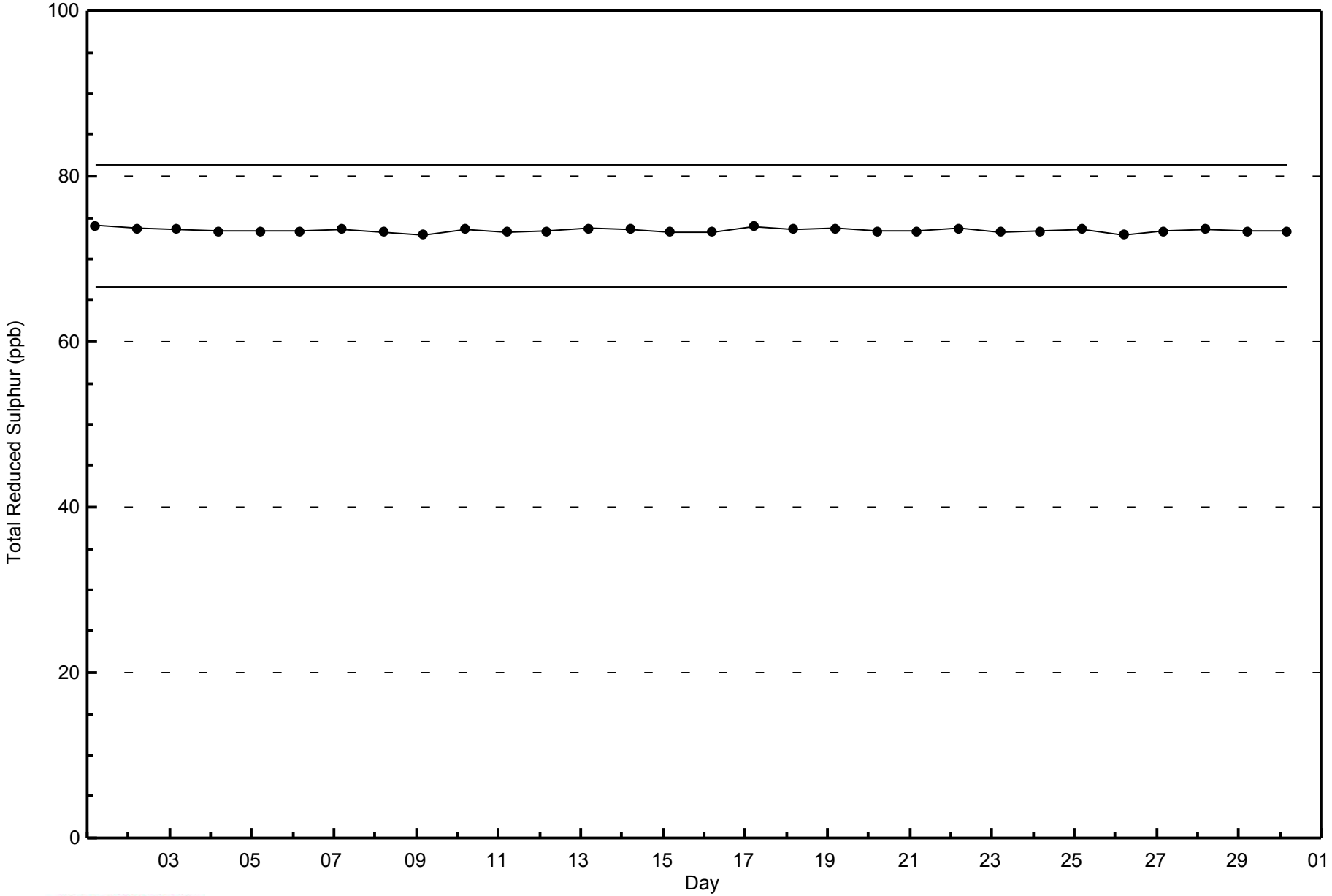
AURORA ATMOSPHERICS INC.

WBEA NETWORK

Span Responses

Total Reduced Sulphur (TRS) - ppb

Athabasca Valley - April 2014



AURORA ATMOSPHERICS INC.

Wood Buffalo Environmental Association

Summary of Hour Averages

Total Hydrocarbons (THC) - ppm

Athabasca Valley - April 2014

Maximum Value: 2.2 ppm on Apr 8 06:00

Maximum Daily Average: 1.9 ppm on Apr 4

Minimum Value: 1.8 ppm on Apr 8 14:00

Minimum Daily Average: 1.8 ppm on Apr 9

Maximum Diurnal Average: 1.9 ppm at hour 6

Minimum Diurnal Average: 1.9 ppm at hour 18

Monthly Average: 1.90 ppm

Percentiles: P_1 = 1.8 P_{10} = 1.9 Q_1 = 1.9 Median = 1.9 Q_3 = 1.9 P_{90} = 2.0 P_{99} = 2.1

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-Apr	1.9	1.9	1.9	Z	2.0	2.0	2.0	1.9	2.0	1.9	1.9	1.9	1.9	1.9	1.9	1.9	1.9	1.9	1.9	1.9	1.9	1.9	1.9	1.9	1.9	2.0
2-Apr	1.9	1.9	1.9	Z	1.9	1.9	1.9	1.9	1.9	1.9	1.9	1.9	1.9	1.9	1.9	1.9	1.9	1.9	1.9	1.9	1.9	1.9	1.9	1.9	1.9	1.9
3-Apr	1.9	1.9	1.9	Z	2.0	2.0	2.0	2.0	C	C	C	C	C	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-Apr	1.9	1.9	1.9	Z	1.9	2.0	2.0	2.0	2.0	2.0	1.9	1.9	2.0	2.0	2.0	2.0	2.0	1.9	1.9	1.9	1.9	1.9	1.9	1.9	1.9	2.0
5-Apr	1.9	1.9	1.9	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	1.9	2.0
6-Apr	1.9	1.9	1.9	Z	1.9	1.9	1.9	1.9	1.9	1.9	1.9	1.9	1.9	1.9	1.9	1.9	1.9	1.9	1.9	1.9	1.9	1.9	1.9	1.9	1.9	1.9
7-Apr	2.0	2.0	2.1	Z	2.1	2.0	2.0	2.0	2.0	1.9	1.9	1.9	1.9	1.9	1.9	1.8	1.8	1.9	1.8	1.9	1.9	1.9	1.9	2.0	1.9	2.1
8-Apr	1.9	1.9	2.0	Z	2.0	2.2	2.1	2.1	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	1.8	1.8	1.8	1.9	2.2
9-Apr	1.8	1.8	1.8	Z	1.8	1.8	1.8	1.8	1.8	1.8	1.8	1.8	1.9	1.9	1.8	1.8	1.8	1.8	1.8	1.9	1.9	1.9	1.9	1.9	1.8	1.9
10-Apr	1.9	1.9	1.9	Z	1.9	1.9	1.9	1.9	1.9	1.9	1.9	1.9	1.9	1.9	1.9	1.9	1.9	1.9	1.9	1.9	1.9	1.9	1.9	1.9	1.9	1.9
11-Apr	1.9	1.9	1.9	Z	1.9	1.9	1.9	1.9	1.9	1.9	1.9	1.9	1.9	1.9	1.9	1.9	1.9	1.9	1.9	1.9	1.9	1.9	1.9	1.9	1.9	1.9
12-Apr	1.9	1.9	1.9	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	1.9	2.0
13-Apr	1.9	1.9	1.9	Z	1.9	1.9	1.9	1.9	1.9	1.9	1.9	1.9	1.9	1.9	1.9	1.9	1.9	1.9	1.9	1.9	1.9	1.9	1.9	1.9	1.9	1.9
14-Apr	1.9	1.9	1.9	Z	1.9	1.9	1.9	1.9	1.9	1.9	M	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	1.9	2.0
15-Apr	1.9	1.9	1.9	Z	1.9	1.9	1.9	1.9	1.9	1.9	1.9	1.9	1.9	1.9	1.9	1.9	1.9	1.9	1.9	1.9	1.9	1.9	1.9	1.9	1.9	1.9
16-Apr	1.9	1.9	1.9	Z	1.9	1.9	1.9	1.9	1.9	1.9	1.9	1.9	1.9	1.9	1.9	1.9	1.9	1.9	1.9	1.9	1.9	1.9	1.9	1.9	1.9	1.9
17-Apr	1.9	1.9	1.9	Z	1.9	1.9	1.9	1.9	1.9	1.9	1.9	1.9	1.9	1.9	1.9	1.9	1.9	1.9	1.9	1.9	1.9	1.9	1.9	1.9	1.9	1.9
18-Apr	1.9	1.9	1.9	Z	1.9	1.9	1.9	1.9	1.9	1.9	1.9	1.9	1.9	1.9	1.9	1.9	1.9	1.9	1.9	1.9	1.9	1.9	1.9	1.9	1.9	1.9
19-Apr	1.9	1.9	1.9	Z	1.9	1.9	1.9	1.9	1.9	1.9	1.9	1.9	1.9	1.9	1.9	1.9	1.9	1.9	1.9	1.9	1.9	1.9	1.9	1.9	1.9	1.9
20-Apr	1.9	1.9	1.9	Z	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	1.9	1.9	1.9	1.9	1.9	1.9	1.9	1.9	2.0
21-Apr	1.9	1.9	1.9	Z	1.9	1.9	1.9	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	2.0	2.0	1.9	2.0
22-Apr	1.9	2.0	2.0	Z	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	1.9	1.9	1.9	1.9	1.9	1.9	1.9	1.9	2.1
23-Apr	1.9	1.9	1.9	Z	1.9	1.9	1.9	1.9	1.9	1.9	1.9	1.9	PF	1.9	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-Apr	1.9	1.9	1.9	Z	1.9	1.9	1.9	1.9	1.9	1.9	1.9	1.9	1.9	1.9	1.9	1.9	1.9	1.9	1.9	1.9	1.9	1.9	1.9	1.9	1.9	1.9
25-Apr	1.9	1.9	1.9	Z	1.9	1.9	1.9	1.9	1.9	1.9	1.9	1.9	1.9	1.9	1.9	1.9	1.9	1.9	1.9	1.9	1.9	1.9	1.9	1.9	1.9	1.9
26-Apr	1.9	1.9	1.9	Z	1.9	1.9	1.9	1.9	1.9	1.9	1.9	1.9	1.9	1.9	1.9	1.9	1.9	1.9	1.9	1.9	1.9	1.9	1.9	1.9	1.9	1.9
27-Apr	1.9	1.9	1.9	Z	1.9	1.9	1.9	1.9	1.9	1.9	1.9	1.9	1.9	1.9	1.9	1.9	1.9	1.9	1.9	1.9	1.9	1.9	1.9	1.9	1.9	1.9
28-Apr	1.9	1.9	1.9	Z	2.0	2.0	2.0	2.0	1.9	1.9	1.9	1.9	1.9	1.9	1.9	1.9	1.9	1.9	1.9	1.9	1.9	1.9	1.9	1.9	1.9	2.0
29-Apr	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	2.0	1.9	2.0
30-Apr	2.0	2.0	2.1	Z	2.0	2.0	1.9	1.9	1.9	M	M	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	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	1.9	1.9	1.9	1.9	Diurnal Average	
	2.0	2.0	2.1	--	2.1	2.2	2.1	2.1	2.0	2.0	1.9	1.9	2.0	2.0	2.0	2.0	2.0	1.9	2.0	2.0	2.0	2.0	2.0	2.0	Diurnal Maximum	

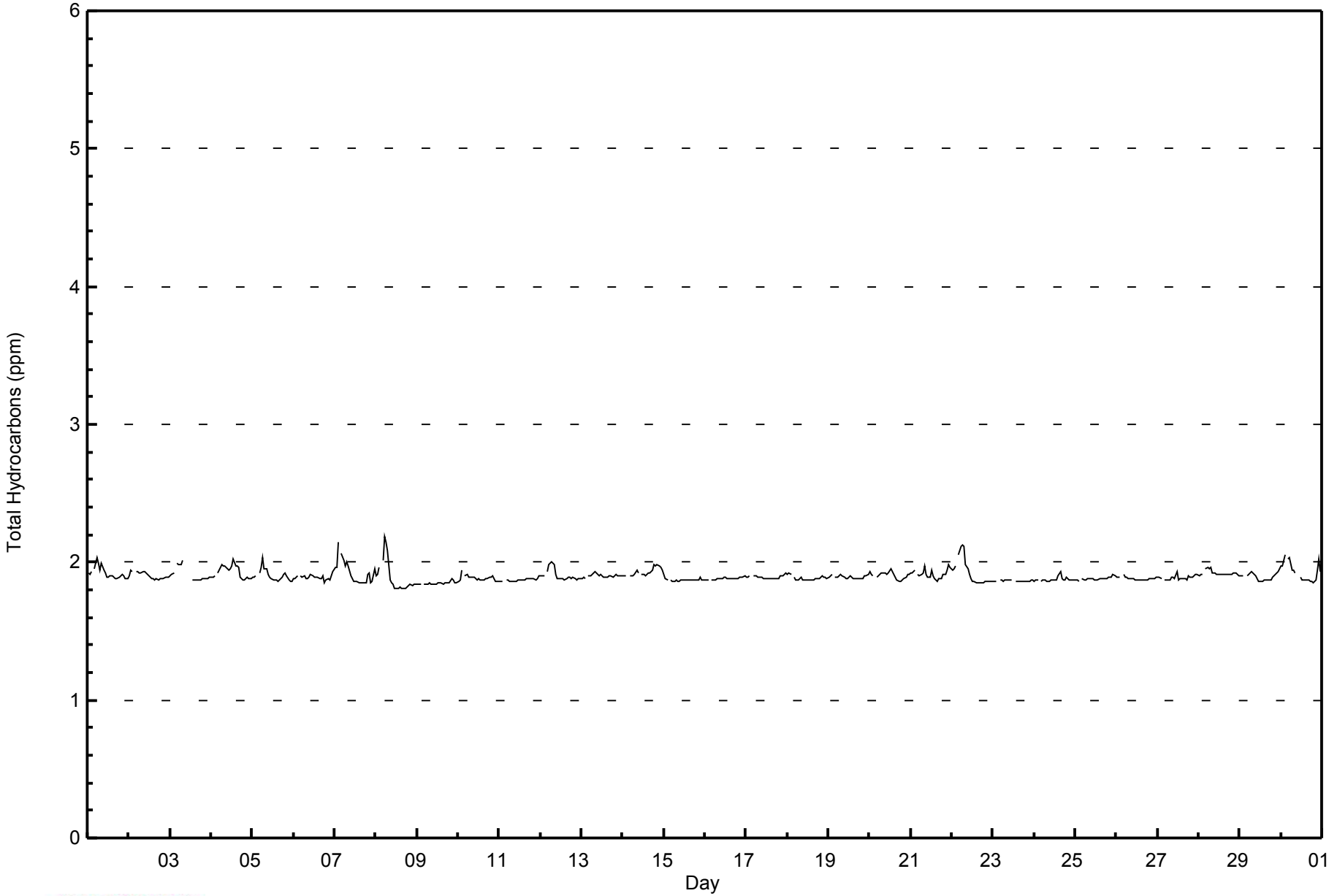
Z - zerospan C - Calibration M - Maintenance PF - Power Failure

WBEA NETWORK

Hourly Averages

Total Hydrocarbons (THC) - ppm

Athabasca Valley - April 2014



AURORA
ATMOSPHERICS INC.

Concentration Ranges (ppm)	Number of Hours	%	Cumulative %
0 - 2.0	671	98.53	98.53
2.1 - 3.0	10	1.47	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

WBEA NETWORK

Frequency Distribution

Total Hydrocarbons (THC) - ppm

Athabasca Valley - April 2014

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	66	17	15	26	64	76	149	42	11	12	26	26	27	21	20	73	671
2.1 - 3.0	0	2	0	0	0	0	3	1	2	0	0	0	0	0	0	2	10
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	66	19	15	26	64	76	152	43	13	12	26	26	27	21	20	75	681

Total Number of Valid Hours: 681

Total Number of Hours: 720

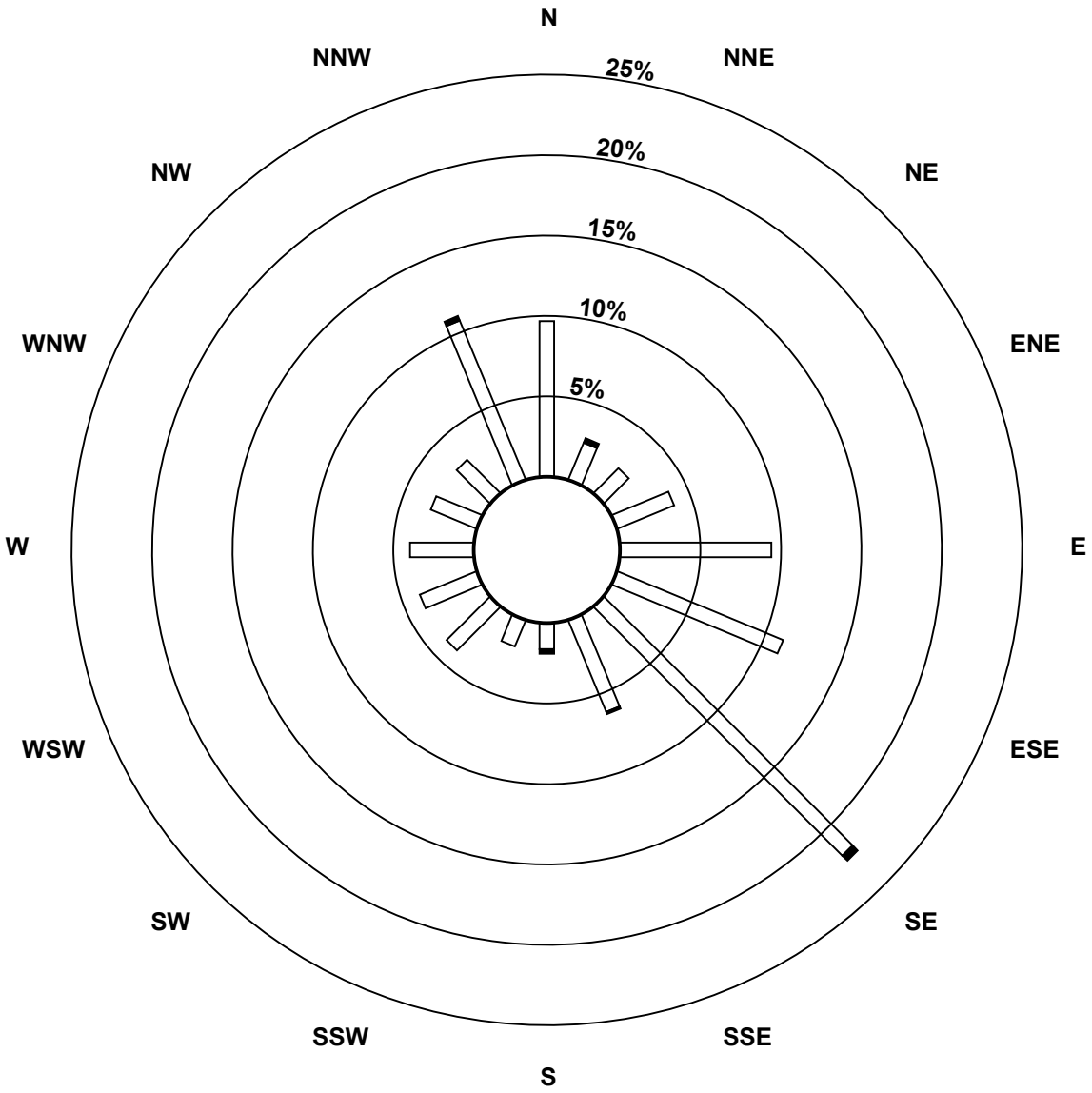
AURORA ATMOSPHERICS INC.

Wood Buffalo Environmental Association

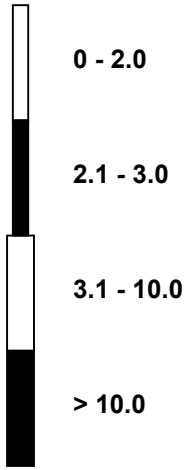
Wind Rose Apr 2014

Total Hydrocarbons (THC) - ppm

Athabasca Valley (AMS 7)



Classes (ppm)



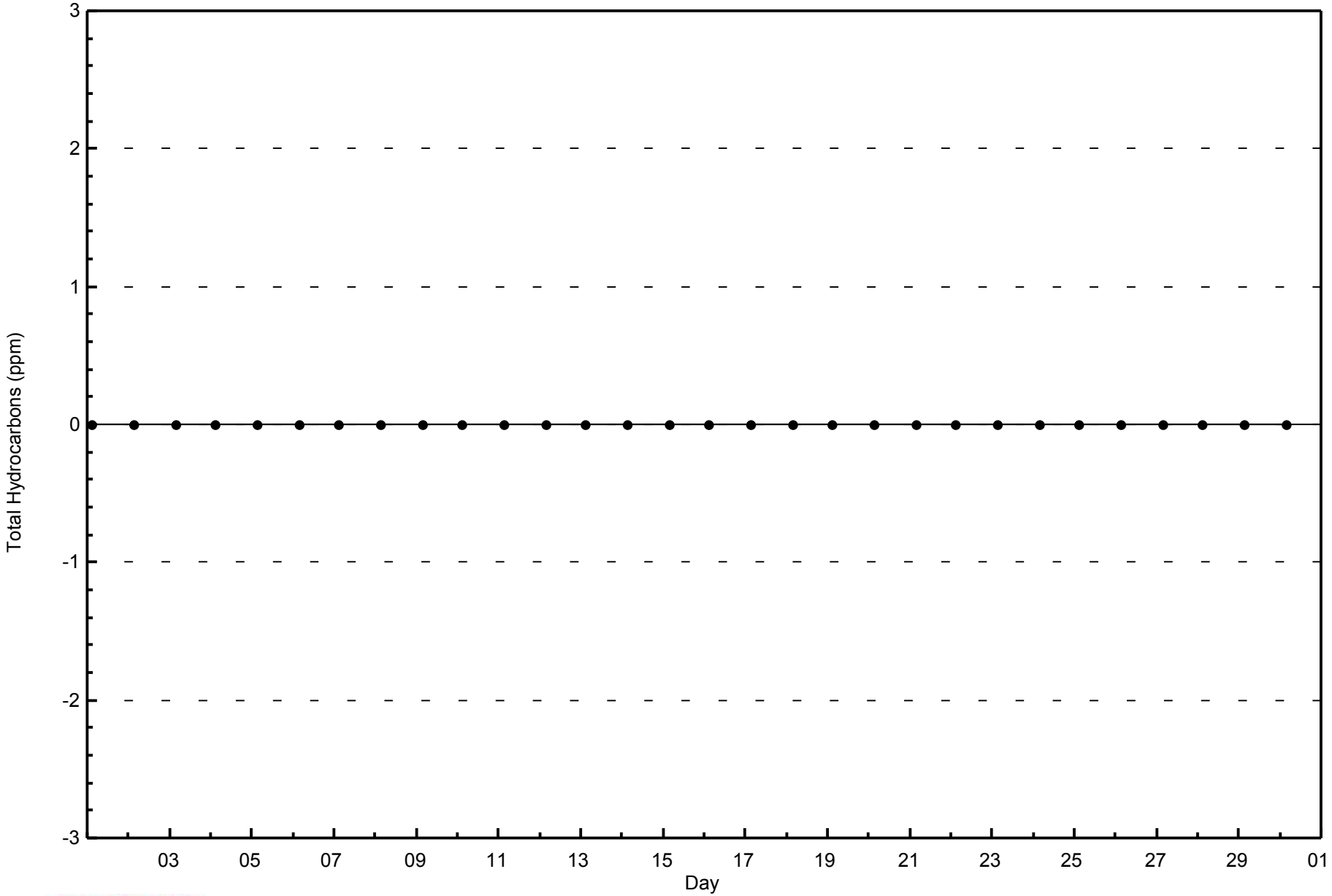
Total Number of Valid Hours: 681

WBEA NETWORK

Zero Responses

Total Hydrocarbons (THC) - ppm

Athabasca Valley - April 2014



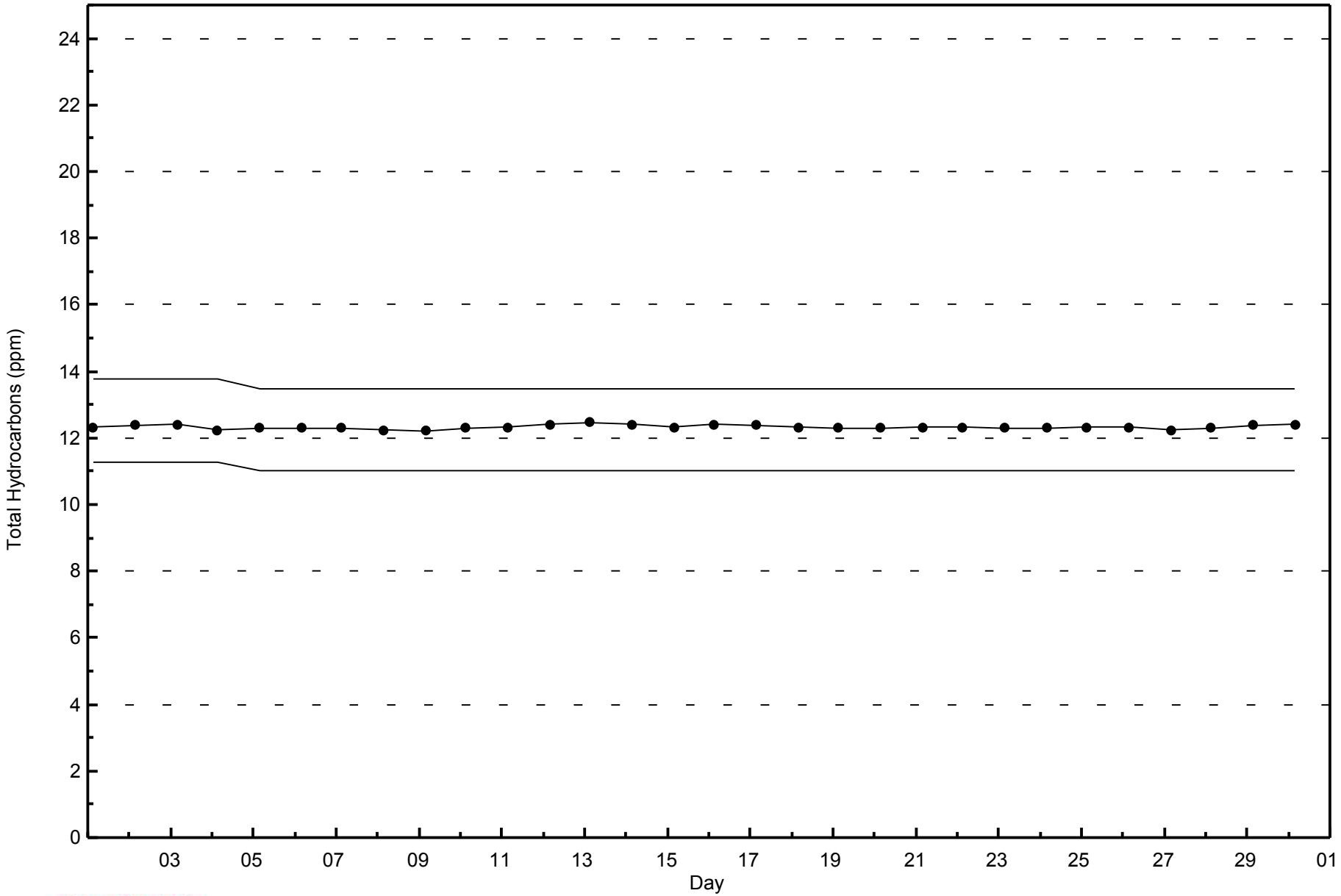
AURORA ATMOSPHERICS INC.

WBEA NETWORK

Span Responses

Total Hydrocarbons (THC) - ppm

Athabasca Valley - April 2014



AURORA ATMOSPHERICS INC.

Wood Buffalo Environmental Association

Summary of Hour Averages

Non Methane Hydrocarbons (NMHC) - ppm

Athabasca Valley - April 2014

Maximum Value: 0.101 ppm on Apr 8 06:00

Maximum Daily Average: 0.011 ppm on Apr 8

Minimum Value: 0.000 ppm on Apr 1 01:00

Minimum Daily Average: 0.000 ppm on Apr 10

Maximum Diurnal Average: 0.007 ppm at hour 9

Minimum Diurnal Average: 0.000 ppm at hour 2

Monthly Average: 0.002 ppm

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

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-Apr	0.000	0.000	0.000	Z	0.000	0.003	0.004	0.001	0.037	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	0.002	0.037
2-Apr	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
3-Apr	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	0.000	0.000
4-Apr	0.000	0.000	0.000	Z	0.000	0.001	0.001	0.001	0.008	0.008	0.008	0.016	0.027	0.038	0.005	0.005	0.003	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.005	0.038
5-Apr	0.000	0.000	0.000	Z	0.000	0.007	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	0.010	0.000	0.000	0.000	0.000	0.001	0.010
6-Apr	0.000	0.000	0.000	Z	0.006	0.000	0.000	0.000	0.000	0.002	0.027	0.010	0.000	0.000	0.000	0.000	0.000	0.018	0.000	0.000	0.000	0.001	0.000	0.000	0.003	0.027
7-Apr	0.008	0.004	0.006	Z	0.001	0.001	0.002	0.010	0.007	0.000	0.001	0.001	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.031	0.034	0.000	0.000	0.007	0.005	0.034
8-Apr	0.001	0.000	0.000	Z	0.030	0.101	0.053	0.051	0.000	0.000	0.000	0.000	0.001	0.000	0.008	0.001	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.011	0.101
9-Apr	0.000	0.000	0.000	Z	0.008	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	0.000	0.000	0.000	0.008
10-Apr	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-Apr	0.000	0.000	0.000	Z	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.007	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	0.007
12-Apr	0.000	0.000	0.000	Z	0.000	0.000	0.004	0.038	0.052	0.002	0.006	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	0.004	0.052
13-Apr	0.000	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	0.008	0.006	0.000	0.000	0.001	0.000	0.000	0.000	0.001	0.008
14-Apr	0.000	0.000	0.000	Z	0.000	0.000	0.000	0.000	0.029	0.002	M	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.026	0.000	0.000	0.000	0.000	0.000	0.003	0.029
15-Apr	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-Apr	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	0.000	0.001
17-Apr	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	0.006	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.006
18-Apr	0.000	0.000	0.000	Z	0.000	0.000	0.000	0.006	0.015	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	0.001	0.015
19-Apr	0.000	0.000	0.000	Z	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.011	0.015	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.001	0.015
20-Apr	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	0.004	0.005	0.000	0.000	0.003	0.002	0.000	0.003	0.000	0.000	0.001	0.005
21-Apr	0.000	0.000	0.000	Z	0.001	0.000	0.000	0.000	0.046	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	0.002	0.046
22-Apr	0.000	0.000	0.000	Z	0.008	0.049	0.060	0.055	0.008	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.001	0.000	0.001	0.000	0.008	0.060
23-Apr	0.000	0.000	0.000	Z	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	PF	0.000	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-Apr	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	0.029	0.051	0.000	0.000	0.000	0.012	0.000	0.001	0.000	0.000	0.004	0.051
25-Apr	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	0.002	0.002	0.000	0.000	0.000	0.000	0.002
26-Apr	0.000	0.000	0.000	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	0.002	0.000	0.002	0.000	0.000	0.000	0.002
27-Apr	0.000	0.000	0.000	Z	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.057	0.000	0.001	0.001	0.001	0.000	0.000	0.024	0.000	0.000	0.001	0.000	0.000	0.004	0.057
28-Apr	0.000	0.000	0.000	Z	0.000	0.000	0.000	0.001	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	0.001
29-Apr	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	0.001	0.000	0.000	0.000	0.001
30-Apr	0.000	0.000	0.000	Z	0.000	0.000	0.000	0.000	0.000	M	M	0.000	0.000	0.001	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.012	0.006	0.002	0.001	0.012
	0.000	0.000	0.000	--	0.002	0.005	0.004	0.006	0.007	0.001	0.002	0.003	0.002	0.002	0.002	0.002	0.000	0.001	0.002	0.002	0.001	0.001	0.000	0.000	Diurnal Average	
	0.008	0.004	0.006	--	0.030	0.101	0.060	0.055	0.052	0.008	0.027	0.057	0.027	0.038	0.029	0.051	0.008	0.018	0.026	0.031	0.034	0.012	0.006	0.007	Diurnal Maximum	

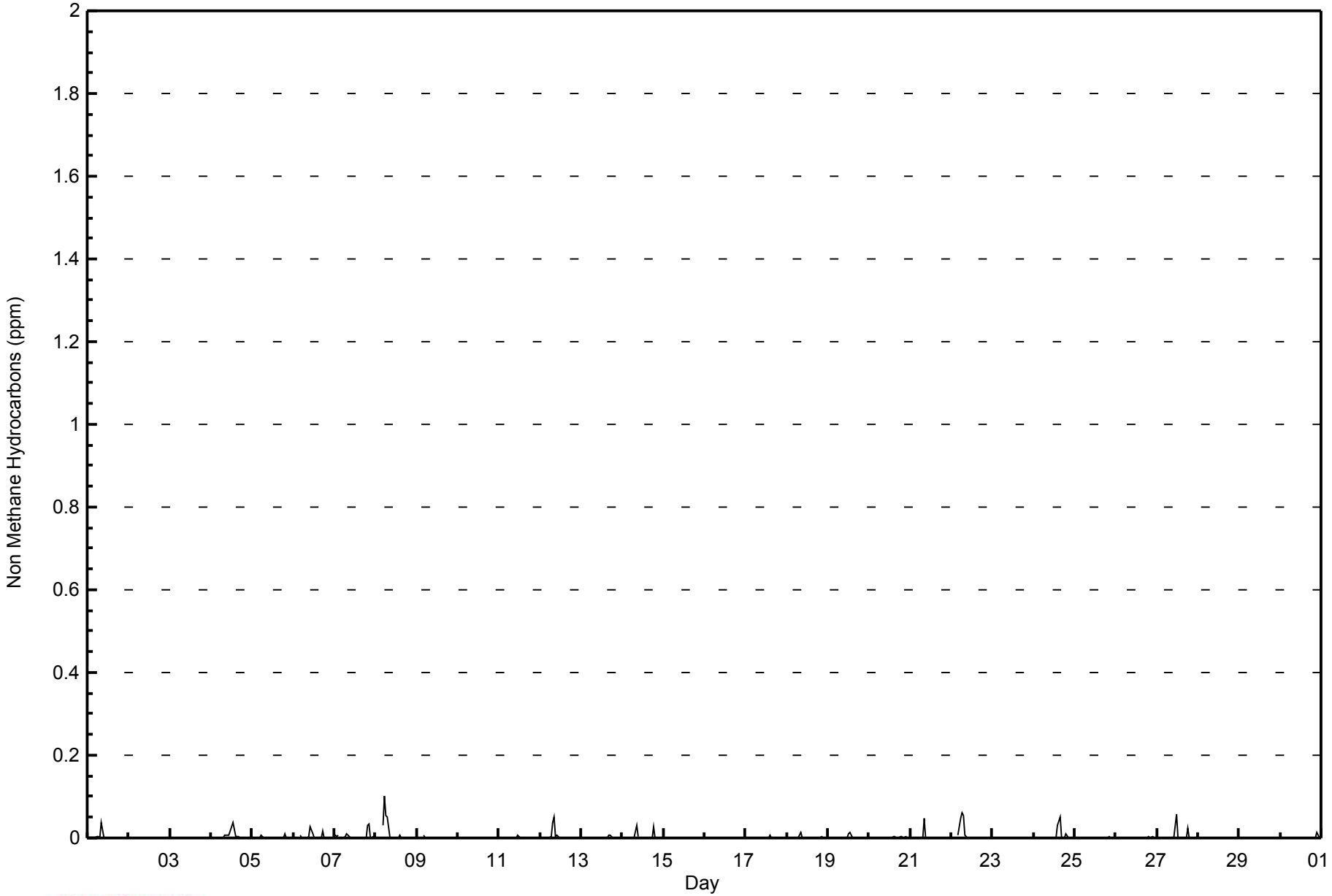
Z - zerospan C - Calibration M - Maintenance PF - Power Failure

WBEA NETWORK

Hourly Averages

Non Methane Hydrocarbons (NMHC) - ppm

Athabasca Valley - April 2014



AURORA ATMOSPHERICS INC.

Concentration Ranges (ppm)	Number of Hours	%	Cumulative %
0 - 0.005	629	92.36	92.36
0.006 - 0.05	48	7.05	99.41
0.06 - 0.1	4	0.59	100.00
> 0.1	0	0.00	100.00

Total Number of Valid Hours: 681

Total Number of Hours: 720

WBEA NETWORK

Frequency Distribution

Non Methane Hydrocarbons (NMHC) - ppm

Athabasca Valley - April 2014

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	64	16	15	24	63	69	135	38	11	9	24	24	26	20	19	72	629
0.006 - 0.05	2	1	0	2	1	7	16	4	2	3	2	2	1	1	1	3	48
0.06 - 0.1	0	2	0	0	0	0	1	1	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
Totals	66	19	15	26	64	76	152	43	13	12	26	26	27	21	20	75	681

Total Number of Valid Hours: 681

Total Number of Hours: 720

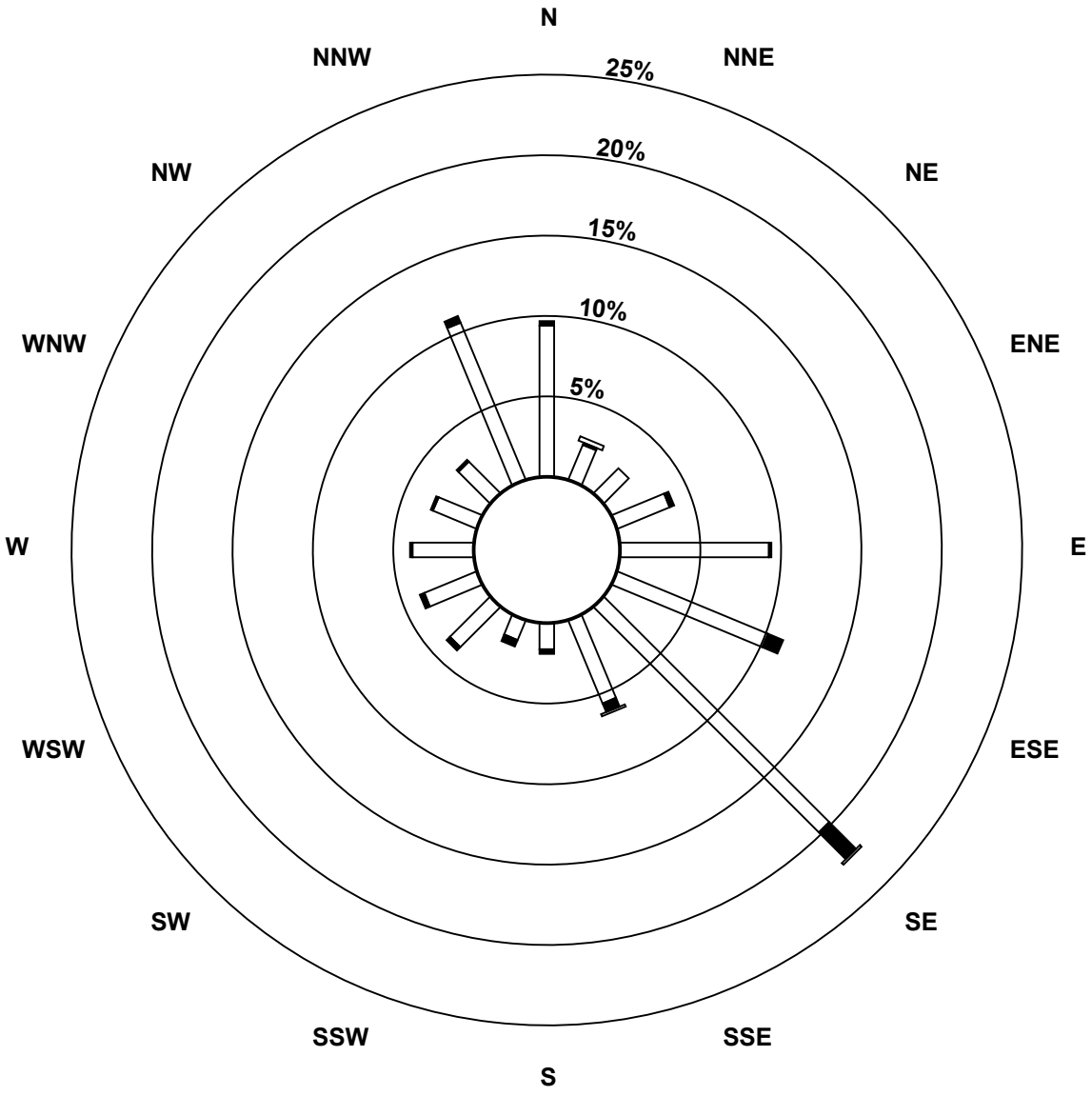
AURORA
ATMOSPHERICS INC.

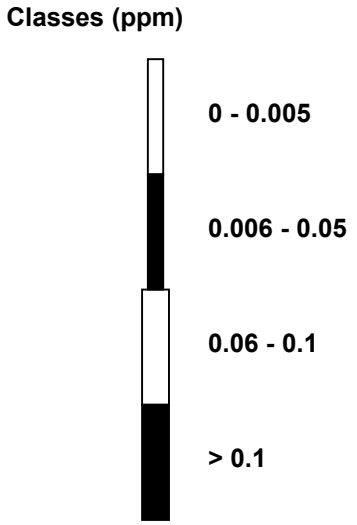
Wood Buffalo Environmental Association

Wind Rose Apr 2014

Non Methane Hydrocarbons (NMHC) - ppm

Athabasca Valley (AMS 7)





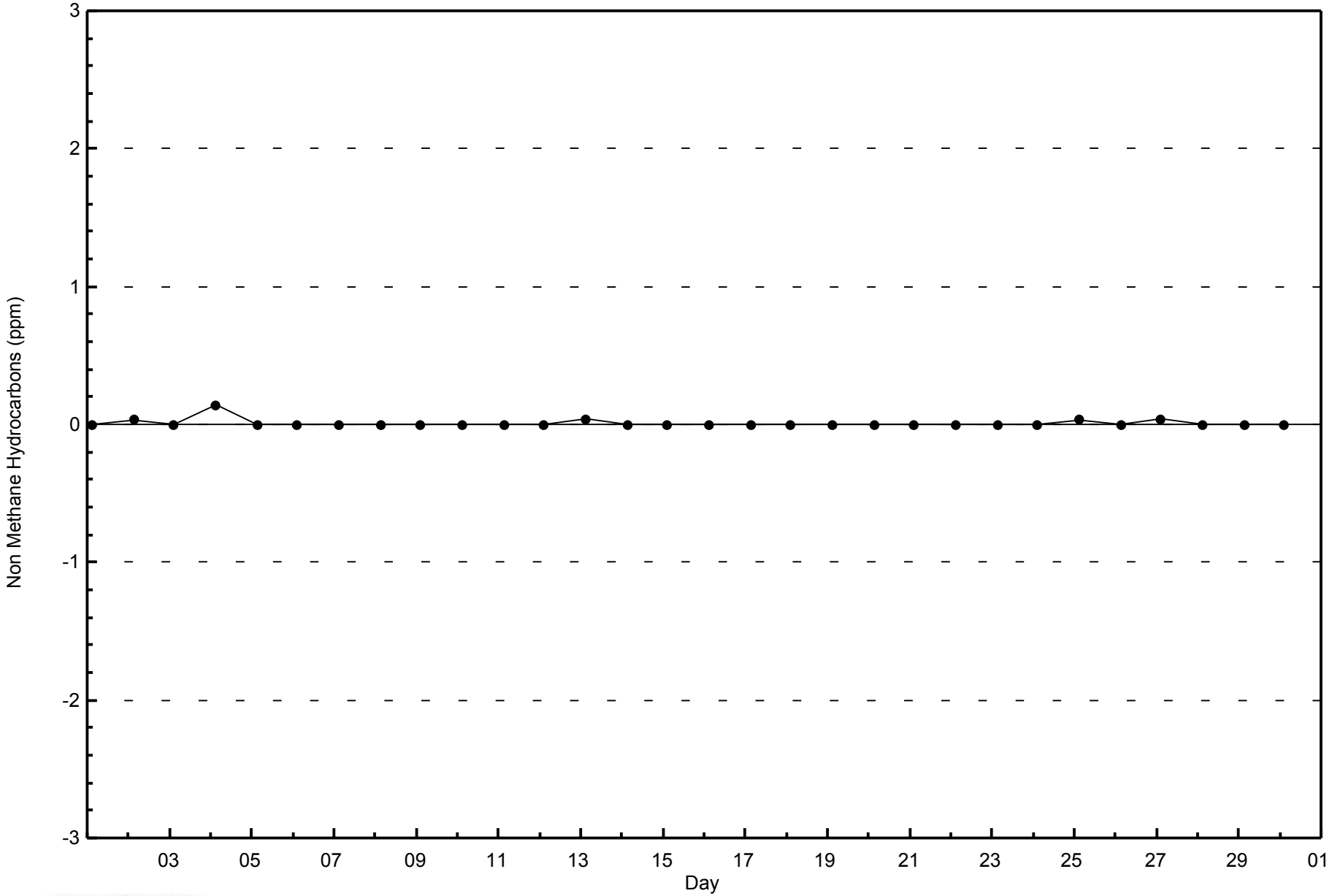
Total Number of Valid Hours: 681

WBEA NETWORK

Zero Responses

Non Methane Hydrocarbons (NMHC) - ppm

Athabasca Valley - April 2014



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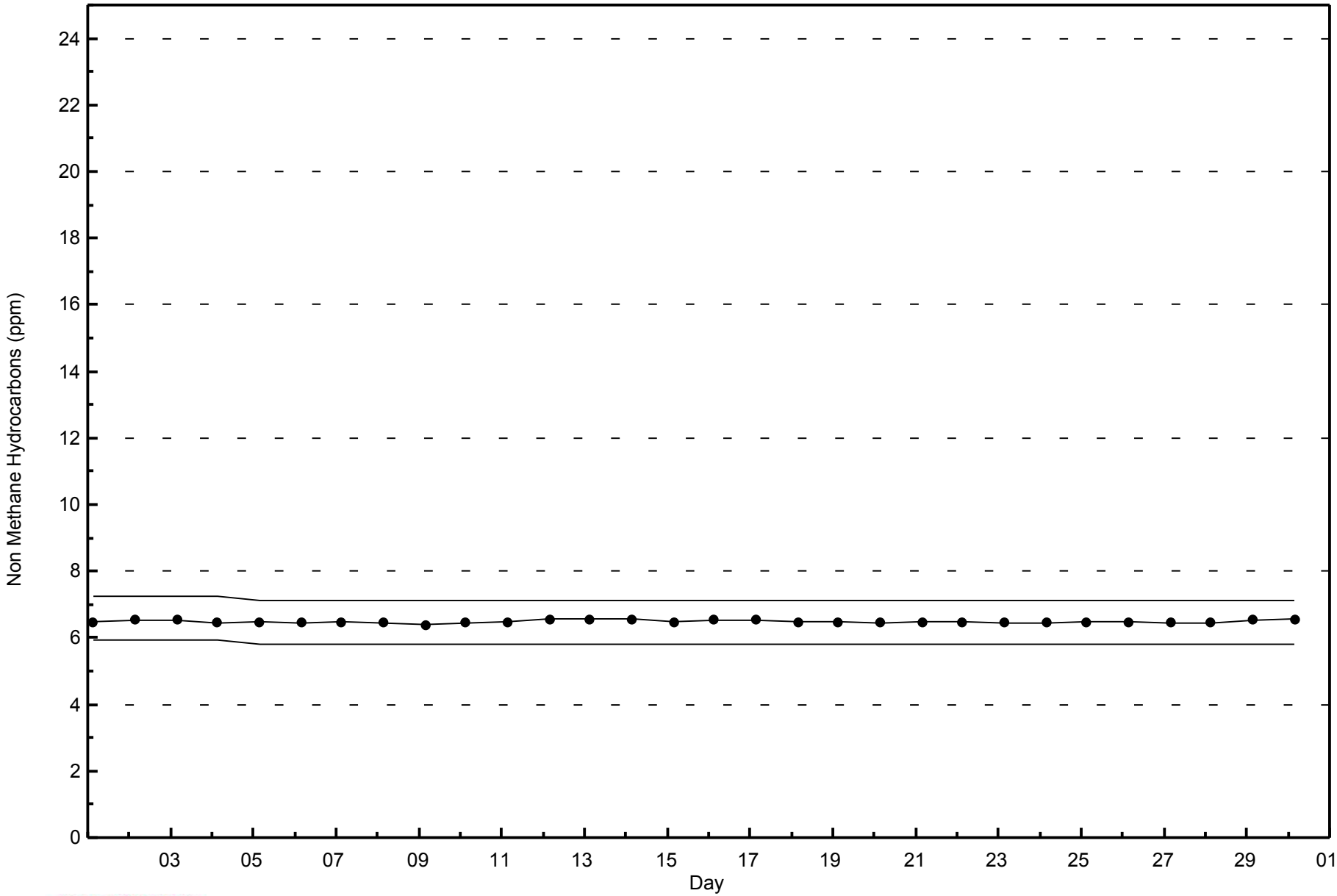
WBEA NETWORK

Span Responses

Non Methane Hydrocarbons (NMHC) - ppm

Athabasca Valley - April 2014



AURORA ATMOSPHERICS INC.

Wood Buffalo Environmental Association

Summary of Hour Averages

Methane (CH_4) - ppm

Athabasca Valley - April 2014

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

Maximum Value: 2.1 ppm on Apr 7 03:00

Maximum Daily Average: 1.9 ppm on Apr 4

Minimum Value: 1.8 ppm on Apr 8 14:00

Minimum Daily Average: 1.8 ppm on Apr 9

Maximum Diurnal Average: 1.9 ppm at hour 6

Minimum Diurnal Average: 1.9 ppm at hour 18

Monthly Average: 1.89 ppm

Percentiles: P_1 = 1.8 P_{10} = 1.9 Q_1 = 1.9 Median = 1.9 Q_3 = 1.9 P_{90} = 1.9 P_{99} = 2.1

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-Apr	1.9	1.9	1.9	Z	2.0	2.0	2.0	1.9	2.0	1.9	1.9	1.9	1.9	1.9	1.9	1.9	1.9	1.9	1.9	1.9	1.9	1.9	1.9	1.9	1.9	2.0
2-Apr	1.9	1.9	1.9	Z	1.9	1.9	1.9	1.9	1.9	1.9	1.9	1.9	1.9	1.9	1.9	1.9	1.9	1.9	1.9	1.9	1.9	1.9	1.9	1.9	1.9	1.9
3-Apr	1.9	1.9	1.9	Z	2.0	2.0	2.0	2.0	C	C	C	C	C	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-Apr	1.9	1.9	1.9	Z	1.9	2.0	2.0	2.0	2.0	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	2.0
5-Apr	1.9	1.9	1.9	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	1.9	2.0
6-Apr	1.9	1.9	1.9	Z	1.9	1.9	1.9	1.9	1.9	1.9	1.9	1.9	1.9	1.9	1.9	1.9	1.9	1.9	1.9	1.9	1.9	1.9	1.9	1.9	1.9	1.9
7-Apr	2.0	2.0	2.1	Z	2.1	2.0	2.0	2.0	2.0	1.9	1.9	1.9	1.9	1.9	1.9	1.8	1.8	1.9	1.8	1.9	1.9	1.9	1.9	1.9	1.9	2.1
8-Apr	1.9	1.9	2.0	Z	2.0	2.1	2.1	2.0	1.9	1.9	1.8	1.8	1.8	1.8	1.8	1.8	1.8	1.8	1.8	1.8	1.8	1.8	1.8	1.8	1.9	2.1
9-Apr	1.8	1.8	1.8	Z	1.8	1.8	1.8	1.8	1.8	1.8	1.8	1.8	1.9	1.9	1.8	1.8	1.8	1.8	1.8	1.9	1.9	1.9	1.9	1.9	1.8	1.9
10-Apr	1.9	1.9	1.9	Z	1.9	1.9	1.9	1.9	1.9	1.9	1.9	1.9	1.9	1.9	1.9	1.9	1.9	1.9	1.9	1.9	1.9	1.9	1.9	1.9	1.9	1.9
11-Apr	1.9	1.9	1.9	Z	1.9	1.9	1.9	1.9	1.9	1.9	1.9	1.9	1.9	1.9	1.9	1.9	1.9	1.9	1.9	1.9	1.9	1.9	1.9	1.9	1.9	1.9
12-Apr	1.9	1.9	1.9	Z	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	1.9	1.9	1.9	1.9	1.9	1.9	2.0
13-Apr	1.9	1.9	1.9	Z	1.9	1.9	1.9	1.9	1.9	1.9	1.9	1.9	1.9	1.9	1.9	1.9	1.9	1.9	1.9	1.9	1.9	1.9	1.9	1.9	1.9	1.9
14-Apr	1.9	1.9	1.9	Z	1.9	1.9	1.9	1.9	1.9	1.9	M	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	1.9	2.0
15-Apr	1.9	1.9	1.9	Z	1.9	1.9	1.9	1.9	1.9	1.9	1.9	1.9	1.9	1.9	1.9	1.9	1.9	1.9	1.9	1.9	1.9	1.9	1.9	1.9	1.9	1.9
16-Apr	1.9	1.9	1.9	Z	1.9	1.9	1.9	1.9	1.9	1.9	1.9	1.9	1.9	1.9	1.9	1.9	1.9	1.9	1.9	1.9	1.9	1.9	1.9	1.9	1.9	1.9
17-Apr	1.9	1.9	1.9	Z	1.9	1.9	1.9	1.9	1.9	1.9	1.9	1.9	1.9	1.9	1.9	1.9	1.9	1.9	1.9	1.9	1.9	1.9	1.9	1.9	1.9	1.9
18-Apr	1.9	1.9	1.9	Z	1.9	1.9	1.9	1.9	1.9	1.9	1.9	1.9	1.9	1.9	1.9	1.9	1.9	1.9	1.9	1.9	1.9	1.9	1.9	1.9	1.9	1.9
19-Apr	1.9	1.9	1.9	Z	1.9	1.9	1.9	1.9	1.9	1.9	1.9	1.9	1.9	1.9	1.9	1.9	1.9	1.9	1.9	1.9	1.9	1.9	1.9	1.9	1.9	1.9
20-Apr	1.9	1.9	1.9	Z	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	1.9	1.9	1.9	1.9	1.9	1.9	1.9	1.9	2.0
21-Apr	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	2.0	2.0	1.9	2.0
22-Apr	1.9	2.0	2.0	Z	2.0	2.1	2.1	2.1	2.0	2.0	1.9	1.9	1.9	1.9	1.9	1.9	1.9	1.9	1.9	1.9	1.9	1.9	1.9	1.9	1.9	2.1
23-Apr	1.9	1.9	1.9	Z	1.9	1.9	1.9	1.9	1.9	1.9	1.9	1.9	PF	1.9	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-Apr	1.9	1.9	1.9	Z	1.9	1.9	1.9	1.9	1.9	1.9	1.9	1.9	1.9	1.9	1.9	1.9	1.9	1.9	1.9	1.9	1.9	1.9	1.9	1.9	1.9	1.9
25-Apr	1.9	1.9	1.9	Z	1.9	1.9	1.9	1.9	1.9	1.9	1.9	1.9	1.9	1.9	1.9	1.9	1.9	1.9	1.9	1.9	1.9	1.9	1.9	1.9	1.9	1.9
26-Apr	1.9	1.9	1.9	Z	1.9	1.9	1.9	1.9	1.9	1.9	1.9	1.9	1.9	1.9	1.9	1.9	1.9	1.9	1.9	1.9	1.9	1.9	1.9	1.9	1.9	1.9
27-Apr	1.9	1.9	1.9	Z	1.9	1.9	1.9	1.9	1.9	1.9	1.9	1.9	1.9	1.9	1.9	1.9	1.9	1.9	1.9	1.9	1.9	1.9	1.9	1.9	1.9	1.9
28-Apr	1.9	1.9	1.9	Z	2.0	2.0	2.0	2.0	1.9	1.9	1.9	1.9	1.9	1.9	1.9	1.9	1.9	1.9	1.9	1.9	1.9	1.9	1.9	1.9	1.9	2.0
29-Apr	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	2.0	1.9	2.0
30-Apr	2.0	2.0	2.1	Z	2.0	2.0	1.9	1.9	1.9	M	M	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	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	1.9	1.9	1.9	1.9	Diurnal Average	
	2.0	2.0	2.1	--	2.1	2.1	2.1	2.1	2.0	2.0	1.9	1.9	2.0	2.0	2.0	2.0	2.0	1.9	2.0	2.0	2.0	2.0	2.0	2.0	Diurnal Maximum	

Z - zerospan C - Calibration M - Maintenance PF - Power Failure

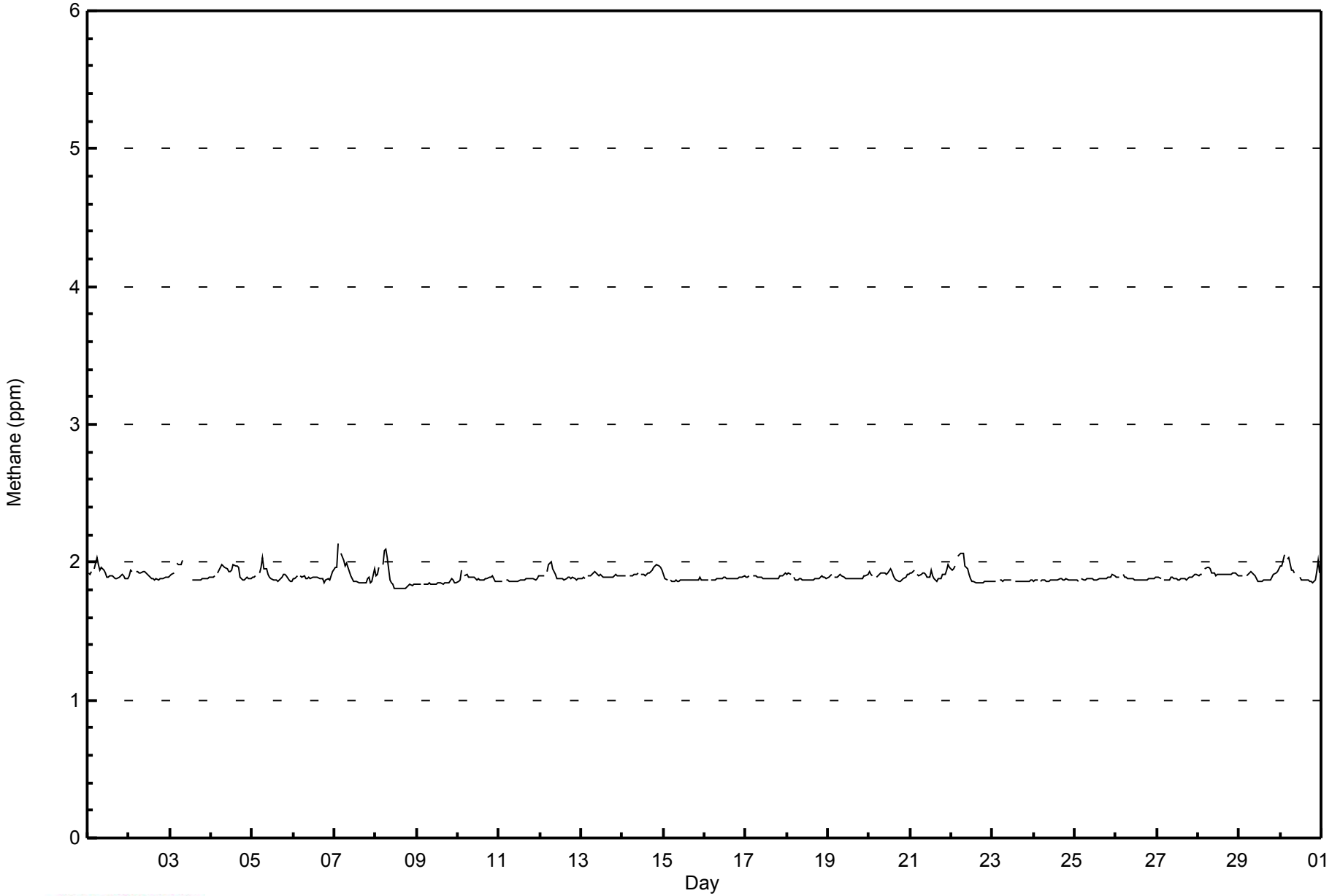
AURORA ATMOSPHERICS INC.

WBEA NETWORK

Hourly Averages

Methane (CH_4) - ppm

Athabasca Valley - April 2014



AURORA
ATMOSPHERICS INC.

Concentration Ranges (ppm)	Number of Hours	%	Cumulative %
0 - 2.0	673	98.83	98.83
2.1 - 3.0	8	1.17	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

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	66	17	15	26	64	76	149	42	12	12	26	26	27	21	20	74	673
2.1 - 3.0	0	2	0	0	0	0	3	1	1	0	0	0	0	0	0	1	8
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	66	19	15	26	64	76	152	43	13	12	26	26	27	21	20	75	681

Total Number of Valid Hours: 681

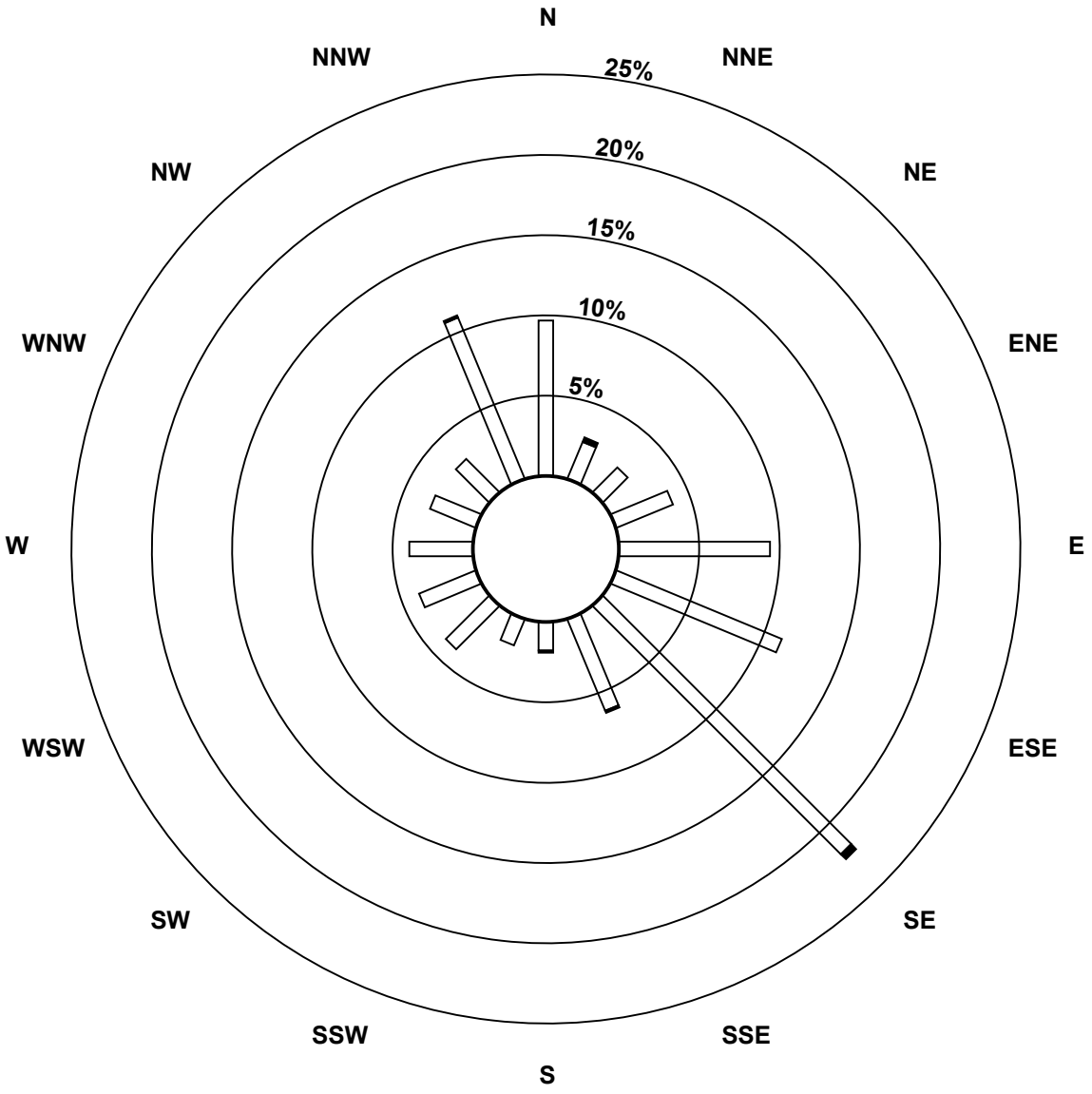
Total Number of Hours: 720

Wood Buffalo Environmental Association

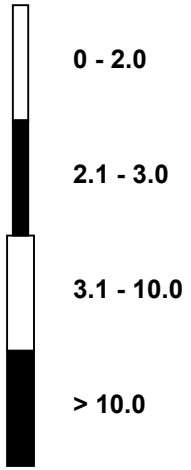
Wind Rose Apr 2014

Methane (CH_4) - ppm

Athabasca Valley (AMS 7)



Classes (ppm)



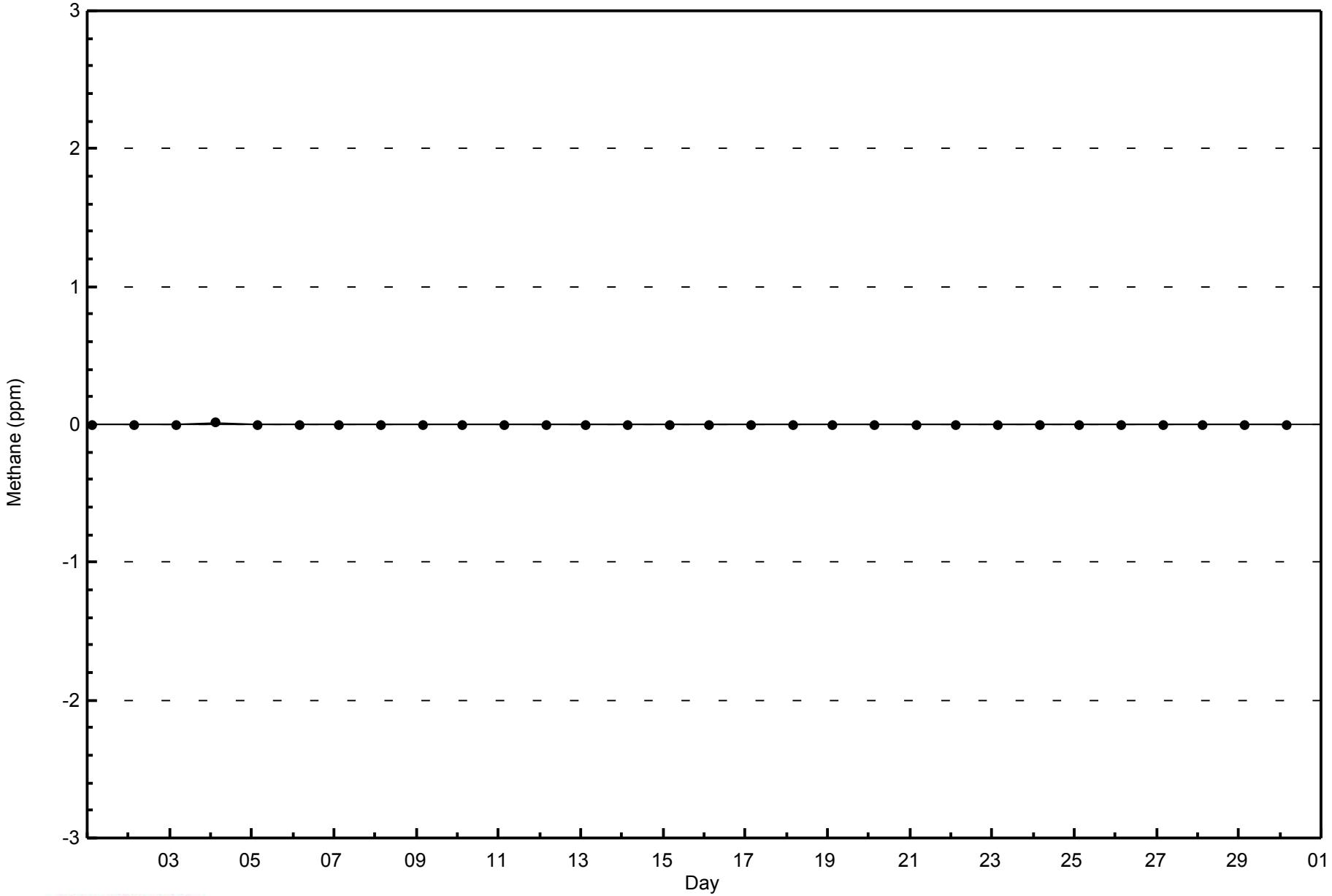
Total Number of Valid Hours: 681

WBEA NETWORK

Zero Responses

Methane (CH_4) - ppm

Athabasca Valley - April 2014



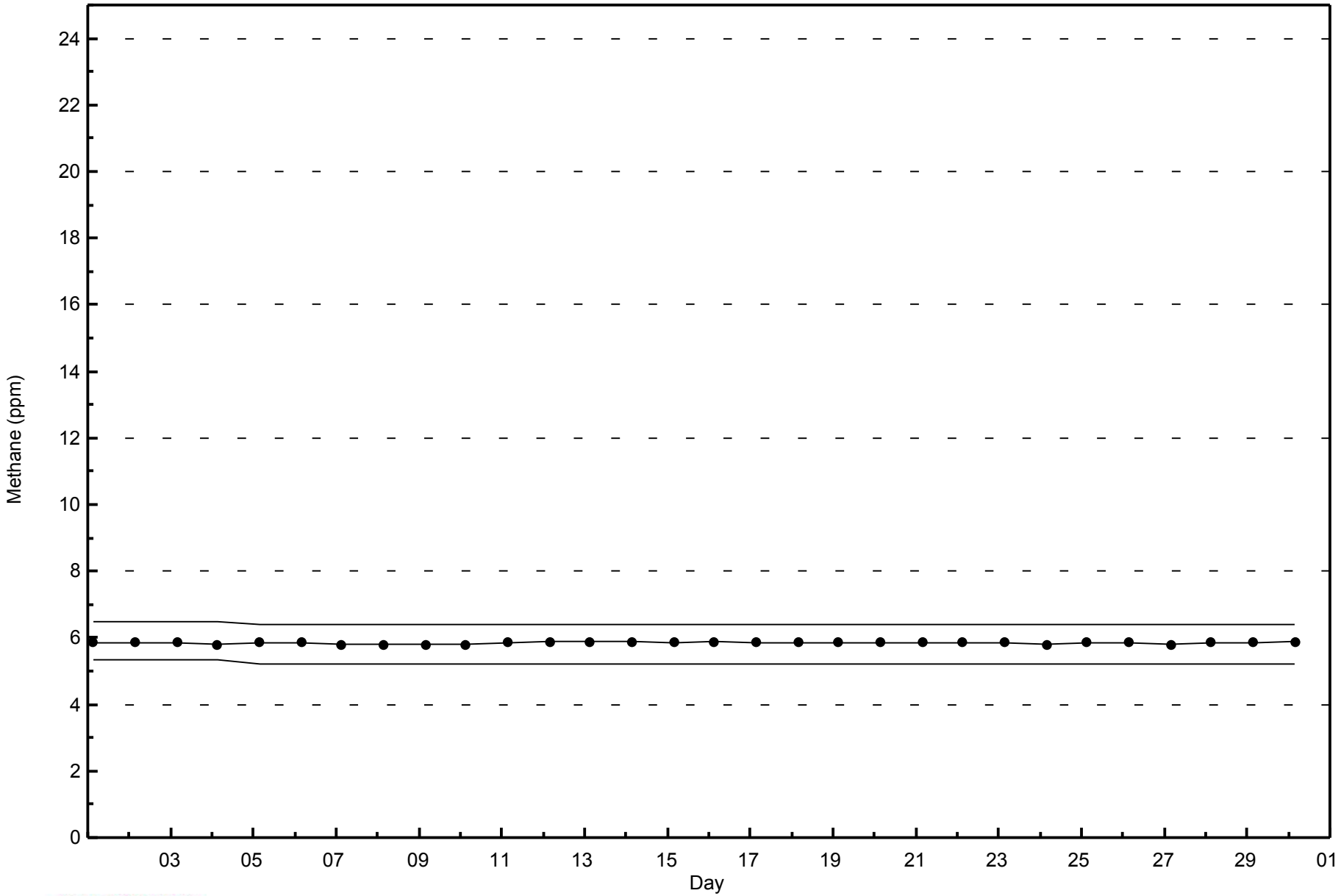
AURORA
ATMOSPHERICS INC.

WBEA NETWORK

Span Responses

Methane (CH_4) - ppm

Athabasca Valley - April 2014



AURORA
ATMOSPHERICS INC.

Wood Buffalo Environmental Association

Summary of Hour Averages

Ozone (O_3) - ppb

Athabasca Valley - April 2014

Number of Exceedences (AAAQO): 1-hr: 0 24-hr: 0
Maximum Value: 54 ppb on Apr 30 16:00 Maximum Daily Average: 45.4 ppb on Apr 23

Minimum Value: 2 ppb on Apr 28 07:00
Maximum Diurnal Average: 39.5 ppb at hour 16
Monthly Average: 31.6 ppb

Minimum Daily Average: 18.6 ppb on Apr 28
Minimum Diurnal Average: 20.3 ppb at hour 6
Percentiles: P_1 = 3 P_{10} = 14 Q_1 = 25 Median = 34 Q_3 = 40 P_{90} = 45 P_{99} = 51

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-Apr	31	33	25	Z	5	2	6	15	23	24	26	29	33	31	30	32	32	34	32	22	17	25	33	28	24.7	34
2-Apr	23	15	22	Z	21	22	20	19	21	21	20	26	26	26	25	21	24	23	19	17	18	17	16	14	20.7	26
3-Apr	13	10	11	Z	5	3	7	9	9	14	16	20	22	28	29	32	34	36	34	33	33	35	36	35	22.0	36
4-Apr	35	35	35	Z	34	22	22	22	C	C	C	C	21	28	36	37	39	39	38	38	36	33	36	39	32.9	39
5-Apr	38	36	31	Z	27	17	4	12	14	25	31	35	36	37	39	37	41	32	17	4	17	38	40	31	27.8	41
6-Apr	18	16	12	Z	9	12	11	24	25	33	29	34	38	37	31	36	35	29	42	33	27	24	21	15	25.7	42
7-Apr	10	9	6	Z	3	3	3	8	14	25	29	38	34	42	43	42	42	35	42	20	11	40	34	25	24.2	43
8-Apr	32	29	21	Z	8	3	4	9	31	33	36	39	40	40	40	41	39	41	45	49	52	52	51	50	34.2	52
9-Apr	49	48	46	Z	45	42	42	43	40	40	36	35	32	35	37	40	42	44	44	41	33	32	44	43	40.5	49
10-Apr	41	34	18	Z	14	13	22	26	25	28	28	35	35	38	38	39	40	38	37	36	33	38	41	42	32.2	42
11-Apr	41	43	41	Z	39	38	37	36	34	35	37	37	37	38	40	41	38	40	38	37	37	38	39	26	37.8	43
12-Apr	27	27	25	Z	12	7	7	12	17	27	36	37	35	37	37	34	36	36	36	35	35	37	36	35	28.8	37
13-Apr	33	32	35	Z	24	23	25	28	30	33	34	34	36	37	36	38	39	40	38	32	31	35	36	34	33.2	40
14-Apr	34	34	33	Z	30	27	26	29	32	31	27	43	44	40	39	44	44	42	39	38	38	45	46	45	37.0	46
15-Apr	45	46	46	Z	43	43	38	32	33	37	33	41	38	40	41	42	43	47	46	46	44	38	42	42	41.1	47
16-Apr	43	44	46	Z	45	44	42	40	39	40	40	41	41	39	40	43	42	41	42	41	40	39	37	34	41.0	46
17-Apr	36	36	33	Z	26	25	32	25	31	35	45	46	46	47	45	46	46	45	46	44	35	34	31	28	37.5	47
18-Apr	30	32	35	Z	38	43	42	41	40	41	42	43	42	42	42	41	38	31	32	30	25	25	23	17	35.4	43
19-Apr	16	16	14	Z	12	8	7	6	14	24	31	30	36	37	39	38	37	37	36	35	32	29	28	26	25.6	39
20-Apr	24	23	19	Z	9	7	6	9	12	17	27	34	37	44	45	46	47	47	47	35	33	24	19	21	27.5	47
21-Apr	21	23	24	Z	22	17	16	20	32	35	38	42	41	44	46	47	46	45	46	32	26	28	23	24	32.0	47
22-Apr	25	19	14	Z	2	3	9	15	26	28	36	46	50	50	49	48	49	49	48	47	46	46	46	45	34.6	50
23-Apr	45	45	45	Z	45	44	44	43	44	44	46	46	PF	48	49	49	48	47	45	45	45	44	44	45	45.4	49
24-Apr	44	41	41	Z	40	37	35	39	40	39	38	37	40	42	40	37	36	35	33	32	36	38	39	39	38.2	44
25-Apr	39	39	39	Z	33	32	32	34	35	36	38	38	40	40	39	39	38	38	37	33	29	34	32	32	36.0	40
26-Apr	34	35	31	Z	23	25	26	25	25	27	30	33	34	38	37	38	37	37	38	33	34	33	33	32	32.1	38
27-Apr	30	29	30	Z	31	31	30	28	23	25	25	25	26	26	25	26	26	26	25	21	19	19	17	16	25.2	31
28-Apr	16	14	14	Z	4	3	2	4	8	12	18	21	24	25	33	34	32	31	28	23	21	20	20	22	18.6	34
29-Apr	21	18	17	Z	11	7	7	12	26	32	36	40	43	44	45	44	44	45	42	27	17	12	15	18	27.2	45
30-Apr	14	12	9	Z	8	7	16	18	23	25	29	40	49	48	52	54	51	51	50	33	26	16	17	29	29.5	54
	30.3	29.2	27.4	--	22.3	20.3	20.7	22.8	26.4	29.9	32.4	36.1	36.3	38.2	38.9	39.5	39.5	38.7	38.0	33.1	30.9	32.3	32.4	31.1	Diurnal Average	
	49	48	46	--	45	44	44	43	44	44	46	46	50	50	52	54	51	51	50	49	52	52	51	50	Diurnal Maximum	

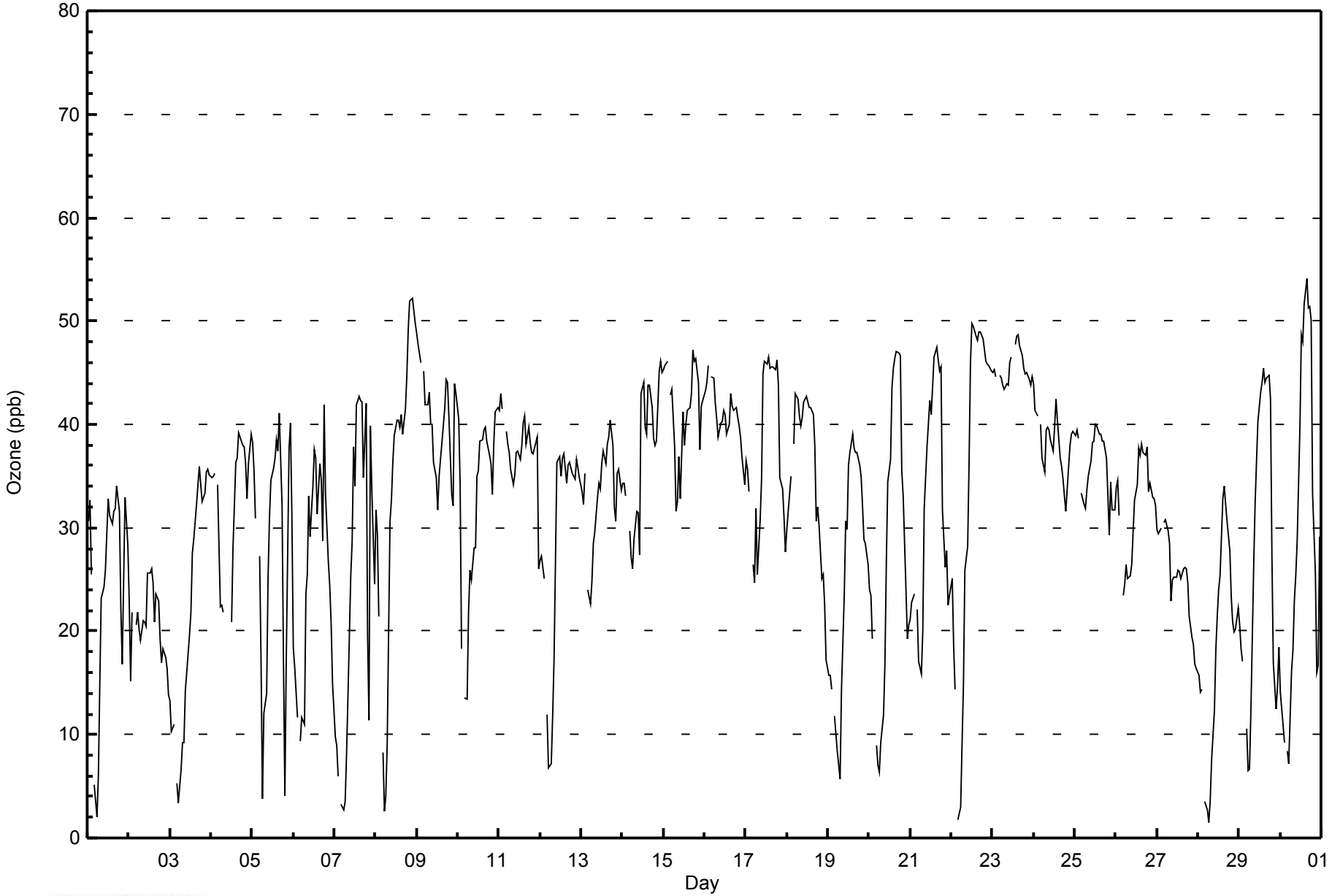
Z - zerospan C - Calibration PF - Power Failure
Alberta Ambient Air Quality Objectives (AAAQO): 1-hr 82 ppb

WBEA NETWORK

Hourly Averages

Ozone (O_3) - ppb

Athabasca Valley - April 2014



AURORA ATMOSPHERICS INC.

Concentration Ranges (ppb)	Number of Hours	%	Cumulative %
0 - 20	123	17.96	17.96
21 - 50	555	81.02	98.98
51 - 82	7	1.02	100.00
> 83	0	0.00	100.00

Total Number of Valid Hours: 685

Total Number of Hours: 720

WBEA NETWORK

Frequency Distribution

Ozone (O_3) - ppb

Athabasca Valley - April 2014

Concentration Ranges (ppb)	N	NNE	NE	ENE	E	ESE	SE	SSE	S	SSW	SW	WSW	W	WNW	NW	NNW	**Totals**
0 - 20	11	7	3	6	3	10	25	10	7	3	4	1	4	4	7	18	123
21 - 50	57	12	13	20	61	67	123	33	5	8	20	23	22	17	14	60	555
51 - 82	0	0	0	0	0	0	0	0	1	1	2	2	1	0	0	0	7
> 83	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Totals	68	19	16	26	64	77	148	43	13	12	26	26	27	21	21	78	685

Wind Direction (column heads N–NNW)

Total Number of Valid Hours: 685

Total Number of Hours: 720

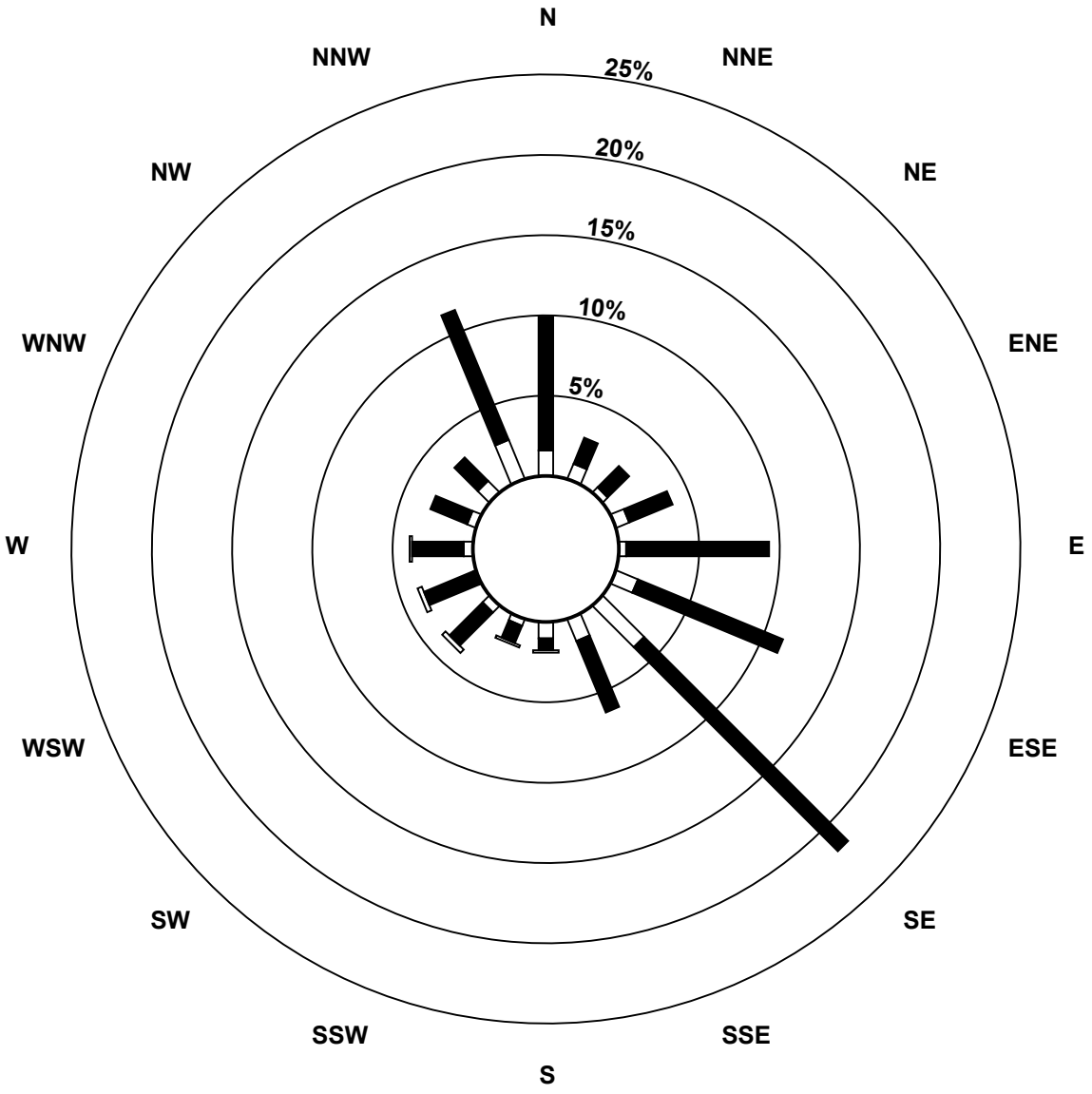
AURORA ATMOSPHERICS INC.

Wood Buffalo Environmental Association

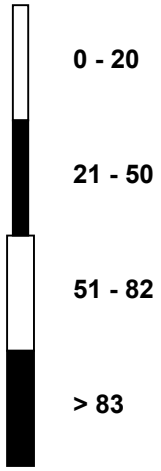
Wind Rose Apr 2014

Ozone (O_3) - ppb

Athabasca Valley (AMS 7)



Classes (ppb)



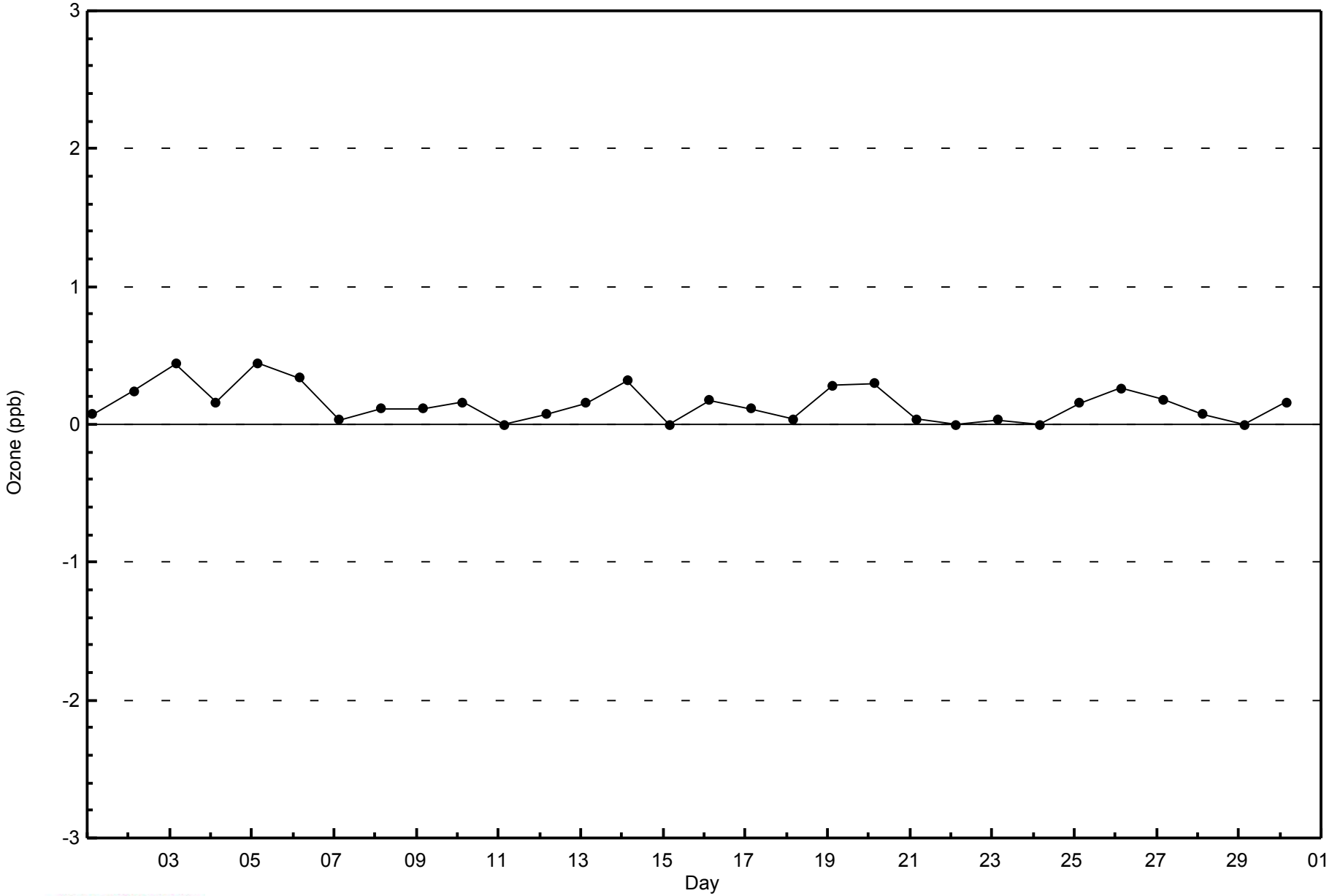
Total Number of Valid Hours: 685

WBEA NETWORK

Zero Responses

Ozone (O_3) - ppb

Athabasca Valley - April 2014



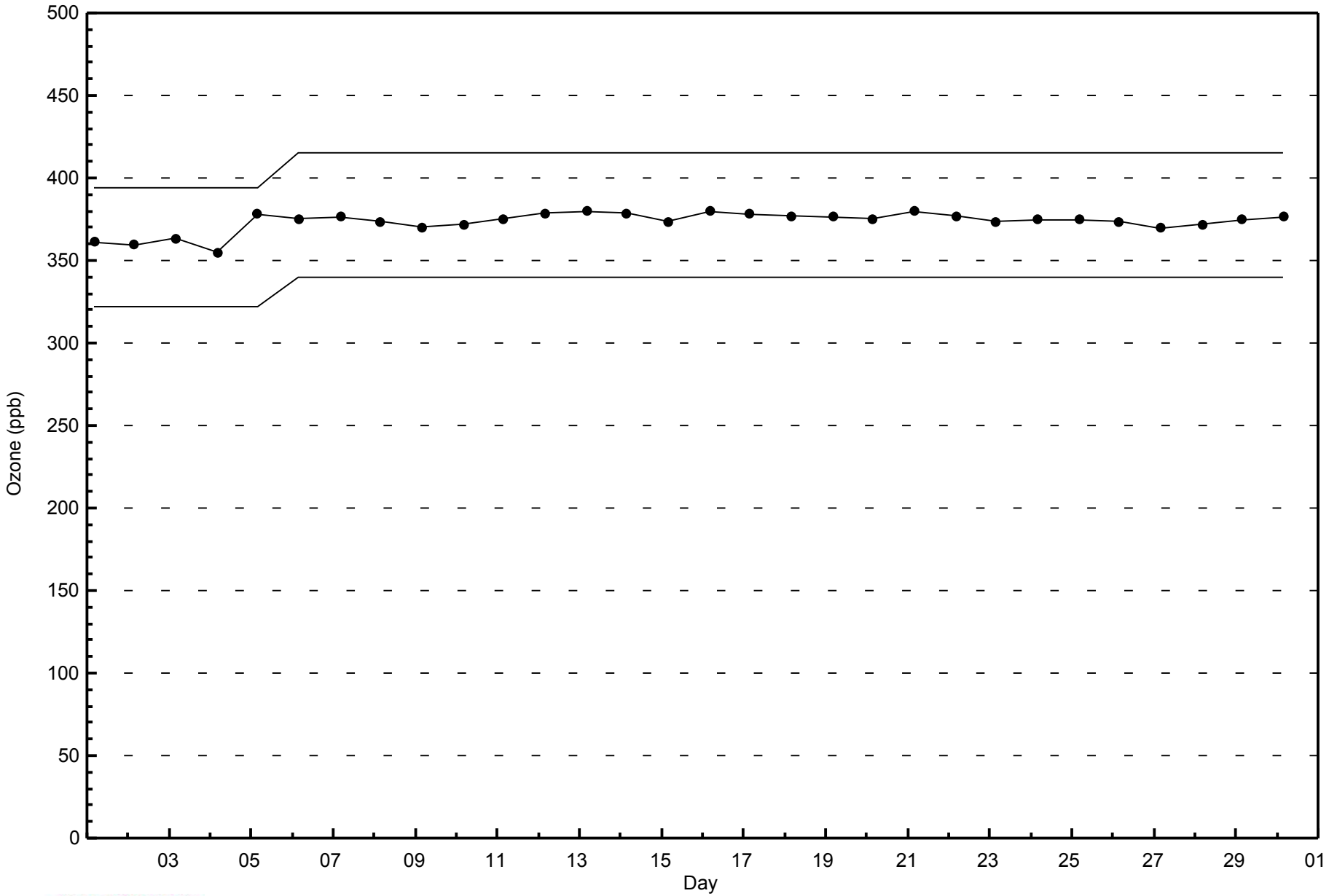
AURORA ATMOSPHERICS INC.

WBEA NETWORK

Span Responses

Ozone (O_3) - ppb

Athabasca Valley - April 2014



AURORA ATMOSPHERICS INC.

Maximum Value: 176 ppb on Apr 8 06:00

Maximum Daily Average: 32.8 ppb on Apr 4

Minimum Value: 0 ppb on Apr 4 21:00

Minimum Daily Average: 0.3 ppb on Apr 23

Maximum Diurnal Average: 25.7 ppb at hour 8

Minimum Diurnal Average: 0.6 ppb at hour 23

Monthly Average: 8.3 ppb

Percentiles: $P_1 = 0$ $P_{10} = 0$ $Q_1 = 0$ Median = 2 $Q_3 = 7$ $P_{90} = 23$ $P_{99} = 102$

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-Apr	11	3	6	Z	19	32	39	26	31	22	33	37	10	16	40	32	50	2	1	6	2	1	0	4	18.4	50
2-Apr	1	0	0	Z	12	8	14	29	12	27	32	9	12	11	20	55	15	3	3	2	2	2	4	5	12.0	55
3-Apr	3	7	1	Z	27	38	47	55	C	C	C	C	C	32	16	9	4	1	2	2	1	0	1	0	13.6	55
4-Apr	0	0	0	Z	11	116	104	107	102	104	M	M	108	19	3	6	3	3	0	2	0	0	0	1	32.8	116
5-Apr	0	0	4	Z	6	33	74	31	38	26	20	20	20	12	20	18	5	3	7	12	8	5	1	6	16.1	74
6-Apr	4	5	14	Z	31	21	40	20	29	9	16	11	5	4	23	14	4	16	0	6	21	3	2	5	13.2	40
7-Apr	12	6	6	Z	52	40	51	50	39	15	12	7	13	3	5	12	3	13	4	26	27	2	5	3	17.7	52
8-Apr	0	0	2	Z	83	176	173	75	56	51	1	3	0	0	7	0	0	0	0	0	0	0	0	0	27.3	176
9-Apr	1	0	0	Z	4	17	15	2	14	19	22	4	7	10	28	45	32	0	0	7	0	0	1	0	10.0	45
10-Apr	0	0	0	Z	0	1	8	12	32	8	29	8	24	15	10	8	3	0	0	0	0	0	0	0	6.9	32
11-Apr	0	1	0	Z	0	2	5	10	12	7	3	3	3	2	1	2	4	0	0	0	0	0	0	0	2.4	12
12-Apr	0	1	2	Z	5	10	83	63	30	20	11	4	6	5	25	41	4	0	0	0	0	0	0	0	13.4	83
13-Apr	0	0	0	Z	0	0	2	3	5	5	9	12	18	8	14	6	3	1	1	1	1	0	0	0	3.9	18
14-Apr	0	0	0	Z	1	2	20	6	7	9	72	2	14	43	47	11	4	2	1	1	1	0	0	0	10.6	72
15-Apr	0	0	0	Z	0	0	8	17	19	12	29	6	12	9	8	7	4	1	0	0	0	0	0	0	5.7	29
16-Apr	0	0	0	Z	1	0	3	9	9	6	5	3	4	7	5	3	3	3	2	1	0	0	0	0	2.9	9
17-Apr	0	0	0	Z	0	1	10	154	92	71	3	1	4	2	6	5	2	3	0	0	0	1	0	1	15.5	154
18-Apr	0	0	0	Z	0	0	0	2	8	2	1	1	1	2	1	1	1	6	0	0	2	0	0	0	1.3	8
19-Apr	0	0	0	Z	0	0	8	37	16	8	4	52	2	9	1	1	1	0	0	0	1	0	0	0	6.2	52
20-Apr	0	0	0	Z	0	1	5	6	9	6	4	2	4	2	2	1	0	0	0	2	0	0	1	1	2.0	9
21-Apr	0	1	1	Z	0	2	4	4	3	1	1	0	2	2	1	1	1	1	0	0	0	0	0	0	1.0	4
22-Apr	0	0	0	Z	7	13	14	12	5	5	2	1	0	0	0	0	0	0	0	0	0	0	0	0	2.6	14
23-Apr	0	0	0	Z	0	0	0	1	0	1	0	1	PF	1	0	0	0	0	0	0	0	0	0	0	0.3	1
24-Apr	0	0	0	Z	0	1	1	0	1	0	1	2	1	1	1	3	2	1	1	1	1	1	0	0	0.8	3
25-Apr	0	0	0	Z	0	1	1	7	3	2	2	1	1	1	1	1	1	1	1	1	4	0	0	0	1.3	7
26-Apr	0	0	0	Z	1	1	1	1	2	3	2	2	2	1	1	2	1	1	1	4	0	0	0	0	1.2	4
27-Apr	0	0	0	Z	0	0	0	1	4	2	2	2	2	2	2	2	2	2	2	1	1	1	1	1	1.3	4
28-Apr	0	0	1	Z	5	8	16	20	24	33	21	1	1	5	0	0	1	1	1	1	1	1	1	0	6.3	33
29-Apr	0	0	0	Z	2	6	11	8	2	2	1	7	5	0	0	3	0	0	0	1	2	3	0	0	2.4	11
30-Apr	0	0	4	Z	3	7	4	5	4	4	3	1	1	9	1	0	1	0	0	3	2	12	0	0	2.8	12
	1.1	0.9	1.5	--	9.0	17.9	25.4	25.7	21.0	16.5	12.2	7.2	10.1	7.8	9.6	9.7	5.2	2.2	1.0	2.7	2.6	1.2	0.6	0.9	Diurnal Average	
	12	7	14	--	83	176	173	154	102	104	72	52	108	43	47	55	50	16	7	26	27	12	5	6	Diurnal Maximum	

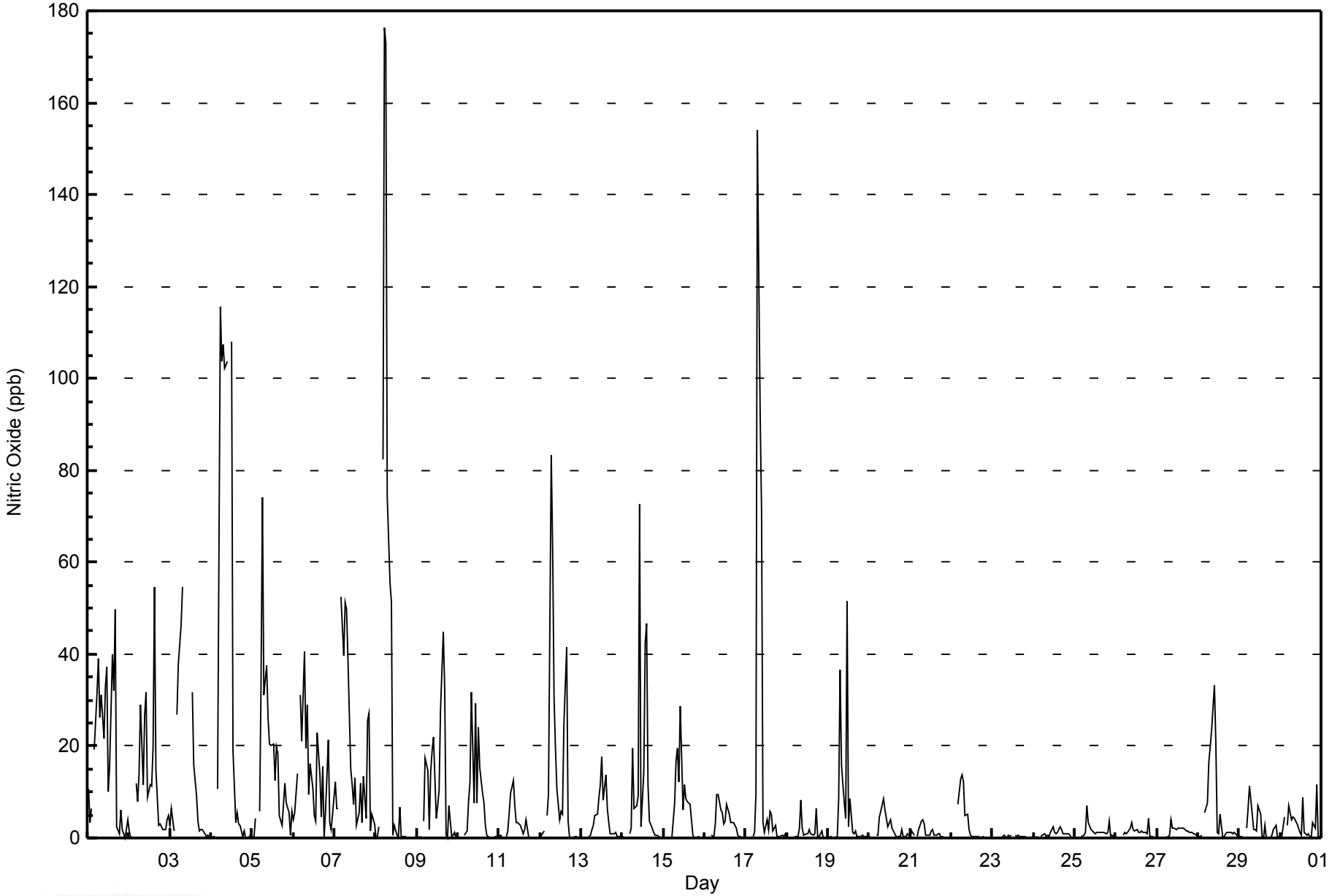
Z - zerospan C - Calibration M - Maintenance PF - Power Failure

WBEA NETWORK

Hourly Averages

Nitric Oxide (NO) - ppb

Athabasca Valley - April 2014



AURORA ATMOSPHERICS INC.

Concentration Ranges (ppb)	Number of Hours	%	Cumulative %
0 - 20	609	89.30	89.30
21 - 40	42	6.16	95.45
11 - 80	19	2.79	98.24
81 - 159	10	1.47	99.71
> 159	2	0.29	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	59	19	14	23	61	71	136	41	8	10	24	25	25	17	17	59	609
21 - 40	5	0	2	3	2	3	1	0	2	2	1	0	2	3	3	13	42
11 - 80	2	0	0	0	1	2	4	0	3	0	1	1	0	1	0	4	19
81 - 159	0	0	0	0	0	1	8	1	0	0	0	0	0	0	0	0	10
> 159	0	0	0	0	0	0	1	1	0	0	0	0	0	0	0	0	2
Totals	66	19	16	26	64	77	150	43	13	12	26	26	27	21	20	76	682

Total Number of Valid Hours: 682

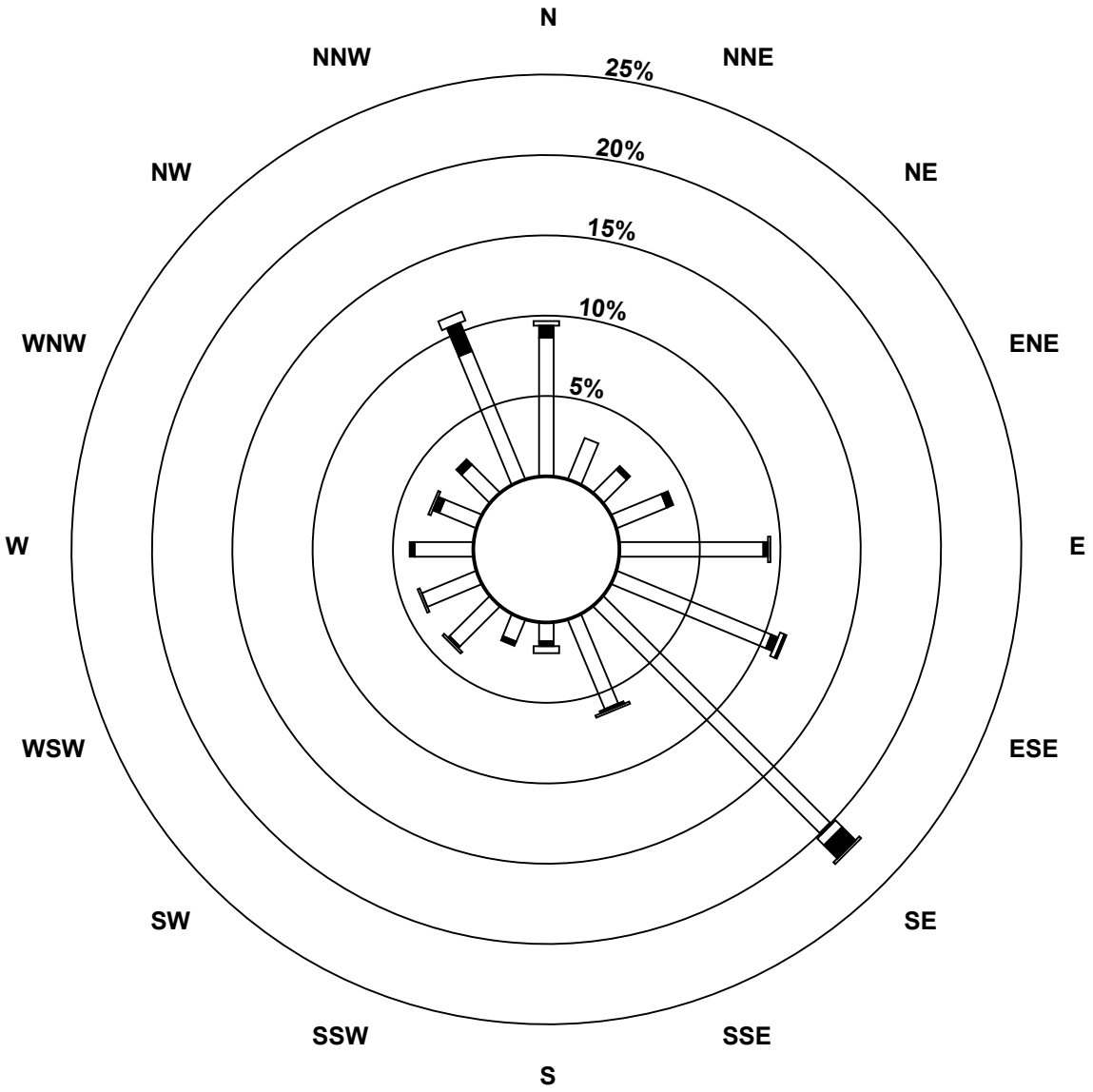
Total Number of Hours: 720

Wood Buffalo Environmental Association

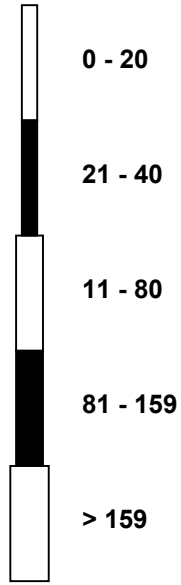
Wind Rose Apr 2014

Nitric Oxide (NO) - ppb

Athabasca Valley (AMS 7)



Classes (ppb)



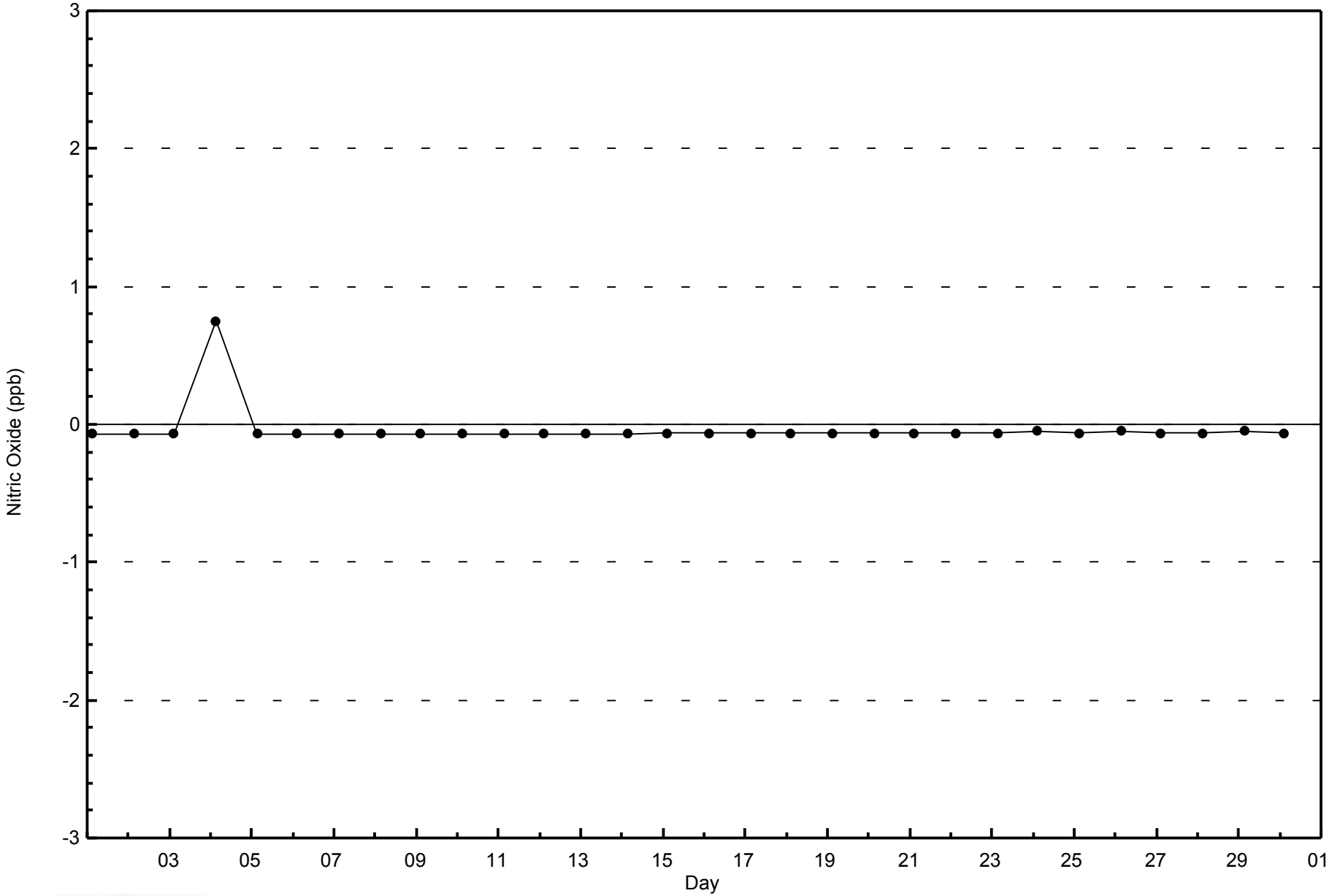
Total Number of Valid Hours: 682

WBEA NETWORK

Zero Responses

Nitric Oxide (NO) - ppb

Athabasca Valley - April 2014



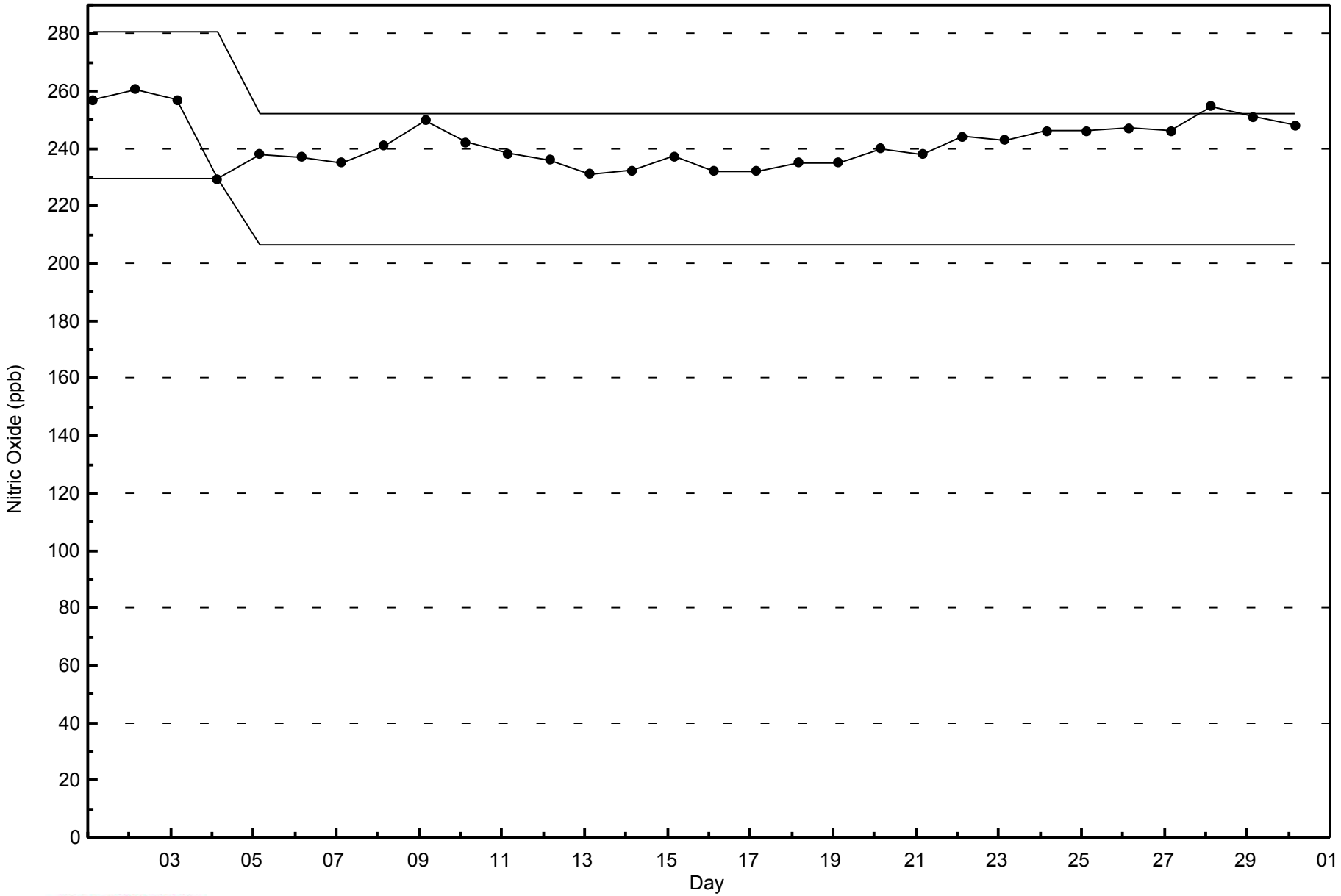
AURORA ATMOSPHERICS INC.

WBEA NETWORK

Span Responses

Nitric Oxide (NO) - ppb

Athabasca Valley - April 2014



AURORA ATMOSPHERICS INC.

Wood Buffalo Environmental Association

Summary of Hour Averages

Nitrogen Dioxide (NO_2) - ppb

Athabasca Valley - April 2014

Number of Exceedences (AAAQO): 1-hr: 0 24-hr: 0
Maximum Value: 70 ppb on Apr 8 07:00 Maximum Daily Average: 19.6 ppb on Apr 1

Minimum Value: 0 ppb on Apr 16 01:00
Maximum Diurnal Average: 17.2 ppb at hour 7
Monthly Average: 8.9 ppb

Minimum Daily Average: 1.2 ppb on Apr 23
Minimum Diurnal Average: 5.4 ppb at hour 12
Percentiles: $P_1 = 0$ $P_{10} = 2$ $Q_1 = 3$ Median = 6 $Q_3 = 12$ $P_{90} = 18$ $P_{99} = 44$

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-Apr	17	11	18	Z	41	45	38	28	38	18	16	11	12	17	12	18	27	8	10	19	23	13	3	10	19.6	45
2-Apr	12	18	13	Z	18	16	20	20	16	19	18	12	10	9	14	23	11	6	8	9	7	7	9	12	13.3	23
3-Apr	12	17	15	Z	25	33	28	35	C	C	C	C	C	11	15	11	9	8	8	10	10	8	8	8	15.0	35
4-Apr	8	8	8	Z	13	53	45	50	44	41	M	M	35	12	6	7	8	6	3	5	6	8	4	2	17.8	53
5-Apr	3	4	8	Z	10	25	42	19	25	19	14	12	17	12	10	16	7	15	30	45	29	8	6	9	16.7	45
6-Apr	21	21	25	Z	34	25	35	15	18	10	15	9	6	6	17	13	13	20	6	14	7	14	13	15	16.2	35
7-Apr	21	19	22	Z	33	33	27	22	24	14	15	8	11	3	1	2	5	14	8	35	40	6	12	16	17.0	40
8-Apr	8	8	12	Z	39	69	70	36	8	33	2	2	2	1	5	2	2	2	1	2	1	0	0	0	13.2	70
9-Apr	1	0	1	Z	7	23	18	3	5	8	17	7	10	9	9	17	20	4	2	8	7	7	2	0	7.9	23
10-Apr	0	4	13	Z	18	17	9	3	6	7	8	3	8	7	10	10	7	6	6	6	8	4	2	2	7.2	18
11-Apr	1	2	0	Z	1	3	7	7	10	7	4	4	4	3	2	4	5	4	6	3	2	2	4	15	4.3	15
12-Apr	12	10	10	Z	15	19	40	29	23	13	4	5	7	5	9	13	5	3	4	3	1	1	2	2	10.2	40
13-Apr	3	5	3	Z	13	13	10	8	8	7	5	8	7	5	12	8	5	4	7	12	13	8	7	8	7.7	13
14-Apr	7	6	6	Z	9	12	13	11	9	12	13	5	7	13	27	15	11	11	13	12	10	4	2	1	9.9	27
15-Apr	1	0	0	Z	1	1	8	14	15	10	17	6	10	8	7	6	5	2	3	1	2	5	1	1	5.3	17
16-Apr	0	0	0	Z	1	1	4	12	9	7	6	4	5	7	6	4	6	3	4	5	6	7	8	9	4.9	12
17-Apr	7	7	6	Z	9	13	12	32	19	18	6	3	4	4	5	6	5	4	3	6	14	13	13	12	9.5	32
18-Apr	13	11	9	Z	8	4	4	5	16	5	3	2	3	3	3	3	5	15	7	7	8	7	4	5	6.5	16
19-Apr	4	7	7	Z	3	5	6	19	12	3	4	15	3	4	4	3	3	2	3	4	6	7	6	6	5.8	19
20-Apr	7	6	3	Z	4	4	6	6	8	7	7	6	9	7	6	4	4	3	2	12	8	9	12	8	6.4	12
21-Apr	6	7	7	Z	8	7	11	7	7	2	2	3	8	6	4	3	5	6	5	15	17	13	16	14	7.9	17
22-Apr	12	15	18	Z	30	28	22	17	10	10	5	2	2	2	1	2	1	0	1	1	1	0	0	0	7.7	30
23-Apr	0	0	0	Z	1	1	2	2	2	3	2	2	PF	2	2	2	1	0	0	1	1	1	1	1	1.2	3
24-Apr	1	2	2	Z	0	2	4	1	1	1	3	6	5	3	5	8	8	8	6	8	3	3	2	3	3.6	8
25-Apr	2	1	0	Z	4	3	5	11	5	4	3	3	2	3	4	4	5	6	6	9	13	7	6	5	4.8	13
26-Apr	4	5	6	Z	10	8	4	4	4	5	3	2	3	3	4	4	5	4	3	7	5	6	5	4	4.7	10
27-Apr	4	3	2	Z	2	1	1	2	8	5	4	4	4	4	5	5	5	5	5	6	7	6	7	6	4.3	8
28-Apr	5	6	6	Z	7	4	7	10	14	11	8	2	2	3	2	3	4	4	5	5	7	7	7	4	5.7	14
29-Apr	4	4	3	Z	7	9	9	8	3	3	3	3	2	2	1	3	1	1	3	15	18	13	5	3	5.3	18
30-Apr	4	5	13	Z	11	14	9	8	6	6	7	5	3	13	5	5	7	5	4	18	17	24	19	8	9.3	24
	6.6	7.0	7.9	--	12.7	16.3	17.2	14.7	12.8	10.6	7.7	5.4	7.2	6.2	7.0	7.4	6.8	5.9	5.7	10.0	9.9	7.2	6.1	6.3	Diurnal Average	
	21	21	25	--	41	69	70	50	44	41	18	15	35	17	27	23	27	20	30	45	40	24	19	16	Diurnal Maximum	

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

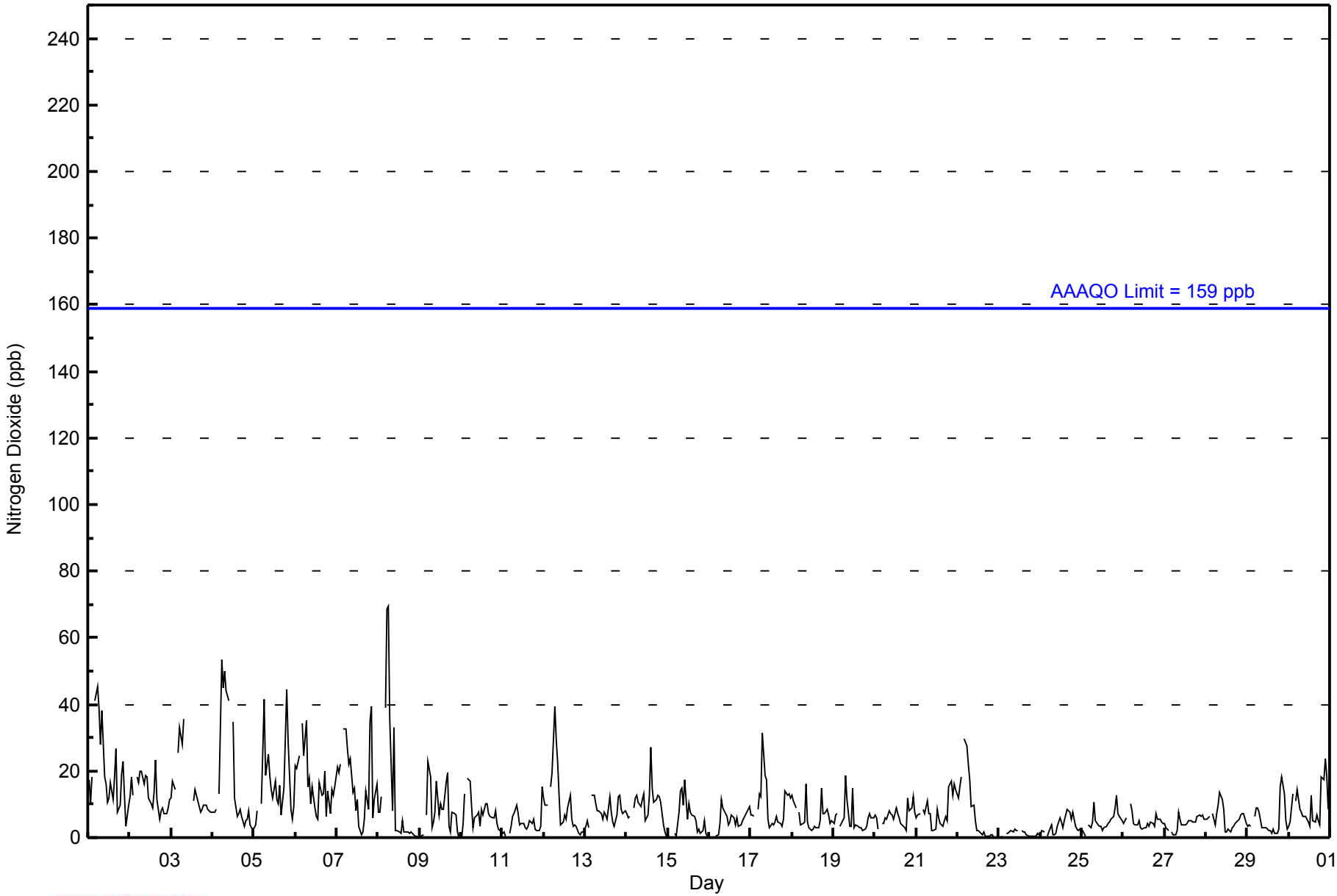
AURORA ATMOSPHERICS INC.

WBEA NETWORK

Hourly Averages

Nitrogen Dioxide (NO_2) - ppb

Athabasca Valley - April 2014



AURORA ATMOSPHERICS INC.

Concentration Ranges (ppb)	Number of Hours	%	Cumulative %
0 - 20	628	92.08	92.08
21 - 40	43	6.30	98.39
11 - 80	11	1.61	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
Athabasca Valley - April 2014

Concentration Ranges (ppb)	Wind Direction																
	N	NNE	NE	ENE	E	ESE	SE	SSE	S	SSW	SW	WSW	W	WNW	NW	NNW	**Totals**
0 - 20	60	15	14	24	61	72	136	41	10	9	26	24	27	19	20	70	628
21 - 40	6	3	2	2	3	4	7	1	3	3	0	2	0	1	0	6	43
11 - 80	0	1	0	0	0	1	7	1	0	0	0	0	0	1	0	0	11
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	66	19	16	26	64	77	150	43	13	12	26	26	27	21	20	76	682

Total Number of Valid Hours: 682

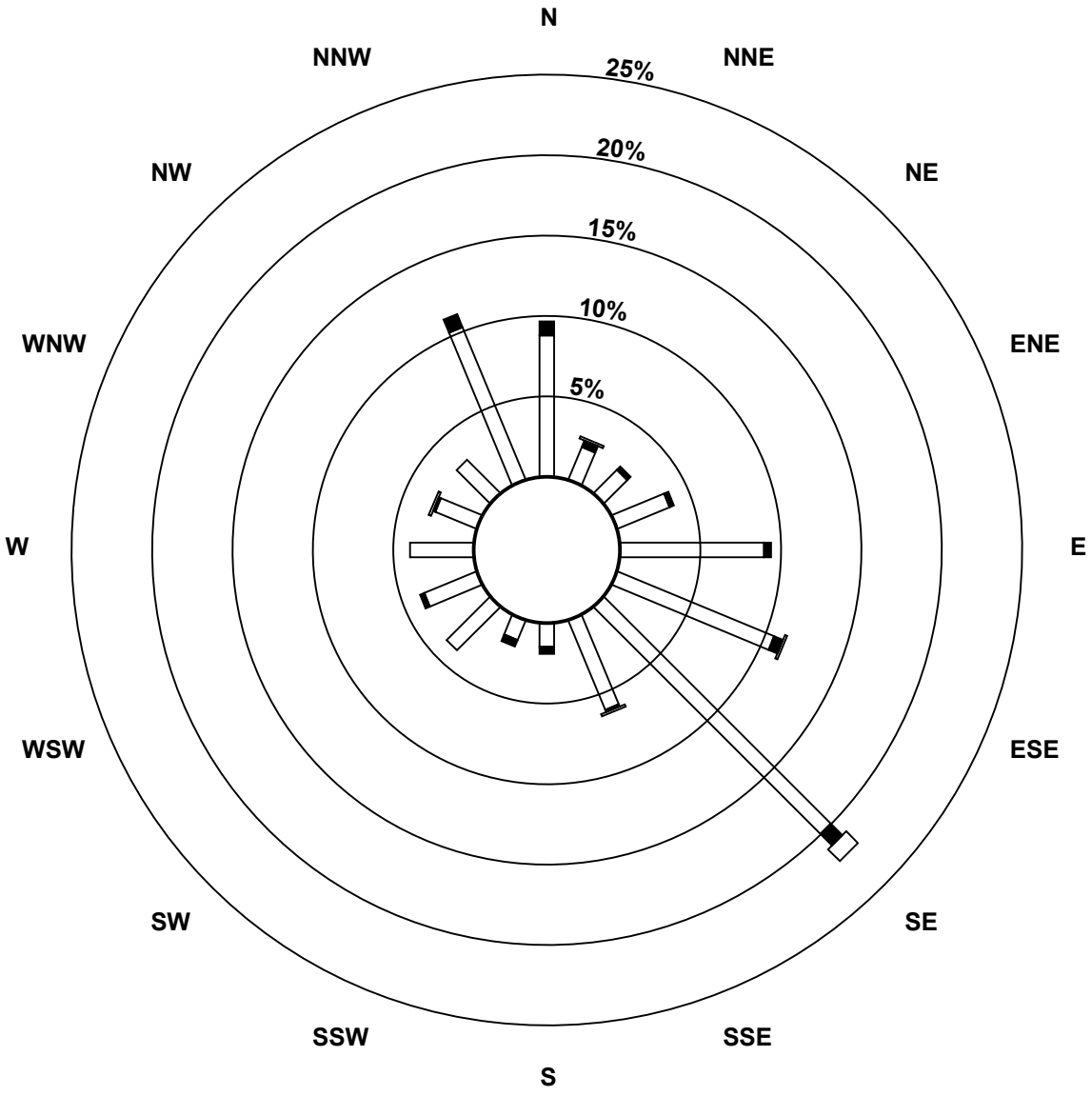
Total Number of Hours: 720

Wood Buffalo Environmental Association

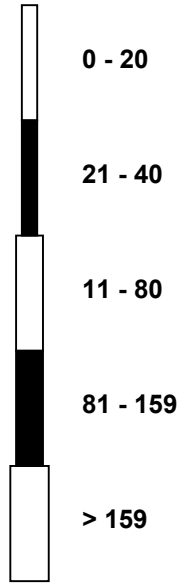
Wind Rose Apr 2014

Nitrogen Dioxide (NO_2) - ppb

Athabasca Valley (AMS 7)



Classes (ppb)



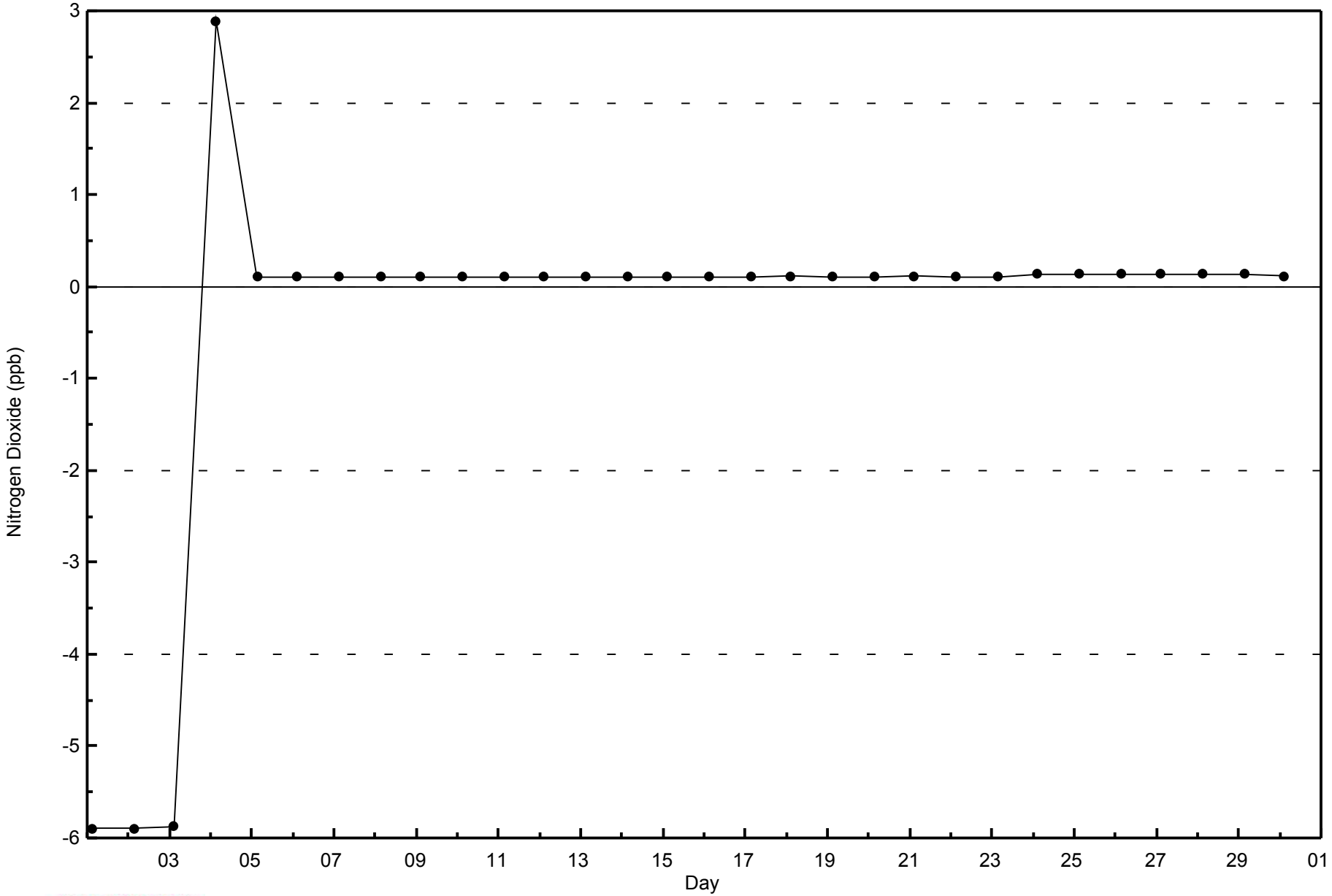
Total Number of Valid Hours: 682

WBEA NETWORK

Zero Responses

Nitrogen Dioxide (NO_2) - ppb

Athabasca Valley - April 2014



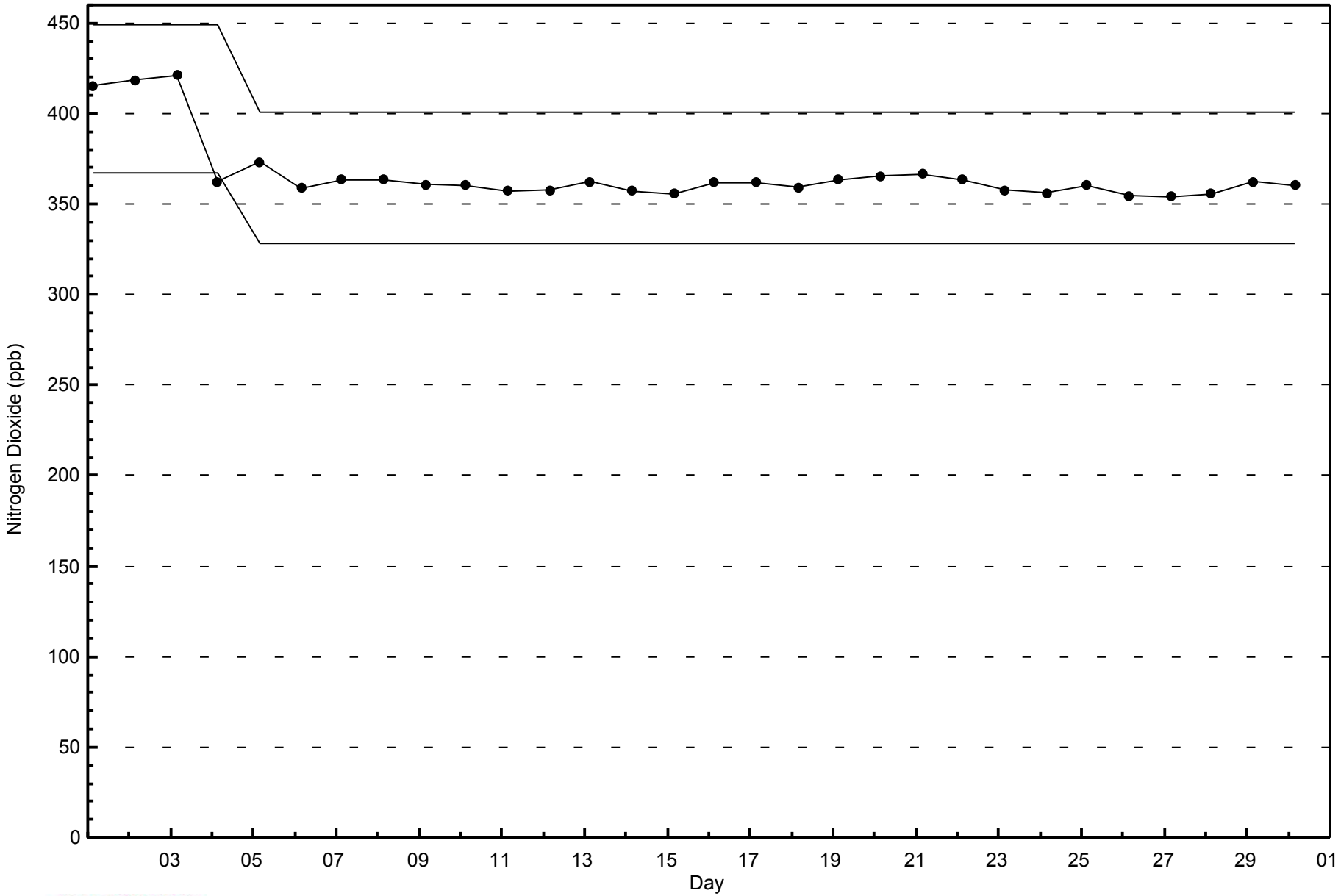
AURORA ATMOSPHERICS INC.

WBEA NETWORK

Span Responses

Nitrogen Dioxide (NO_2) - ppb

Athabasca Valley - April 2014



AURORA ATMOSPHERICS INC.

Wood Buffalo Environmental Association

Summary of Hour Averages

Nitrogen Oxides (NO_X) - ppb

Athabasca Valley - April 2014

Maximum Value: 245 ppb on Apr 8 06:00

Maximum Daily Average: 50.6 ppb on Apr 4

Minimum Value: 0 ppb on Apr 16 01:00

Minimum Daily Average: 1.4 ppb on Apr 23

Maximum Diurnal Average: 42.5 ppb at hour 7

Minimum Diurnal Average: 6.7 ppb at hour 19

Monthly Average: 17.2 ppb

Percentiles: $P_1 = 0$ $P_{10} = 2$ $Q_1 = 4$ Median = 8 $Q_3 = 18$ $P_{90} = 39$ $P_{99} = 146$

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-Apr	28	14	25	Z	60	77	77	54	69	40	49	48	22	32	51	50	76	10	11	25	25	14	3	14	38.0	77
2-Apr	14	18	13	Z	30	24	34	49	28	45	50	21	22	20	33	78	26	8	11	12	9	9	13	17	25.4	78
3-Apr	14	23	16	Z	52	71	74	90	C	C	C	C	C	42	30	20	13	9	10	12	11	9	9	8	28.6	90
4-Apr	8	8	9	Z	24	169	149	157	146	145	M	M	143	31	10	13	11	9	4	6	6	8	4	3	50.6	169
5-Apr	3	4	12	Z	16	59	116	50	63	45	35	32	37	24	30	34	11	17	37	56	36	14	6	15	32.7	116
6-Apr	25	26	39	Z	65	46	76	35	47	20	32	20	11	9	39	26	18	35	7	20	29	18	14	20	29.4	76
7-Apr	33	26	28	Z	85	72	78	72	63	29	26	16	24	6	6	14	9	27	12	60	67	8	17	19	34.7	85
8-Apr	7	8	14	Z	121	245	243	110	64	84	3	5	2	2	12	2	2	2	1	2	1	0	0	0	40.5	245
9-Apr	1	0	1	Z	10	40	33	5	19	27	39	11	17	19	36	61	52	4	2	15	8	7	3	0	17.9	61
10-Apr	0	5	13	Z	18	18	17	15	37	14	37	11	32	22	20	18	10	7	6	6	8	4	3	2	14.1	37
11-Apr	1	2	1	Z	1	5	12	17	22	14	7	8	7	5	3	5	9	5	6	3	2	2	3	15	6.7	22
12-Apr	12	10	11	Z	20	29	123	92	53	32	15	8	13	10	33	54	9	4	4	3	1	1	2	2	23.6	123
13-Apr	3	5	3	Z	13	13	12	10	13	12	14	19	25	14	26	14	8	4	8	13	14	9	7	9	11.7	26
14-Apr	7	6	6	Z	10	14	32	17	16	21	86	7	21	55	74	26	14	13	14	13	11	4	2	0	20.5	86
15-Apr	1	0	0	Z	1	1	15	31	34	22	46	12	22	16	14	14	9	2	3	2	2	5	1	1	11.0	46
16-Apr	0	0	0	Z	1	1	7	21	18	13	12	7	8	14	11	7	9	7	6	6	6	7	8	9	7.9	21
17-Apr	7	7	6	Z	9	15	22	186	111	88	9	4	8	6	10	11	6	7	4	6	14	13	13	13	25.0	186
18-Apr	13	11	9	Z	8	4	4	7	24	7	3	3	3	5	4	4	6	21	8	8	10	7	4	5	7.7	24
19-Apr	4	7	7	Z	3	5	14	55	27	11	8	66	5	12	5	4	4	2	3	4	7	8	6	6	12.0	66
20-Apr	7	6	3	Z	5	5	10	11	17	14	11	8	13	9	7	5	4	3	2	14	8	9	13	8	8.4	17
21-Apr	7	8	8	Z	9	9	15	11	10	3	3	3	10	8	5	4	6	7	5	15	17	13	16	14	8.9	17
22-Apr	12	15	18	Z	37	40	36	29	14	15	7	3	3	2	1	2	1	0	1	1	1	0	0	0	10.4	40
23-Apr	0	0	0	Z	1	1	2	3	2	3	3	3	PF	3	2	2	1	1	1	1	1	1	1	1	1.4	3
24-Apr	1	2	2	Z	0	2	5	1	1	1	5	8	6	4	6	11	10	9	7	8	4	3	2	3	4.4	11
25-Apr	2	1	0	Z	4	4	6	17	9	5	5	4	3	4	5	5	6	7	7	10	16	8	7	5	6.1	17
26-Apr	4	5	6	Z	11	9	5	5	6	8	5	4	5	4	5	5	6	5	4	11	6	6	5	4	5.9	11
27-Apr	4	3	2	Z	2	1	1	3	11	7	6	6	6	6	7	7	7	6	7	7	8	7	8	6	5.6	11
28-Apr	6	6	7	Z	12	11	24	29	37	44	29	3	3	8	2	3	4	5	6	7	8	9	8	5	12.0	44
29-Apr	4	4	4	Z	9	15	20	16	5	5	5	10	8	2	1	6	1	1	2	16	20	16	5	3	7.7	20
30-Apr	4	5	18	Z	14	21	12	12	10	10	9	6	4	22	6	5	8	5	4	22	19	35	19	8	12.1	35
	7.7	7.9	9.4	--	21.8	34.2	42.5	40.4	33.8	27.0	19.9	12.7	17.2	13.9	16.6	17.1	11.9	8.2	6.7	12.8	12.5	8.4	6.7	7.2	Diurnal Average	
	33	26	39	--	121	245	243	186	146	145	86	66	143	55	74	78	76	35	37	60	67	35	19	20	Diurnal Maximum	

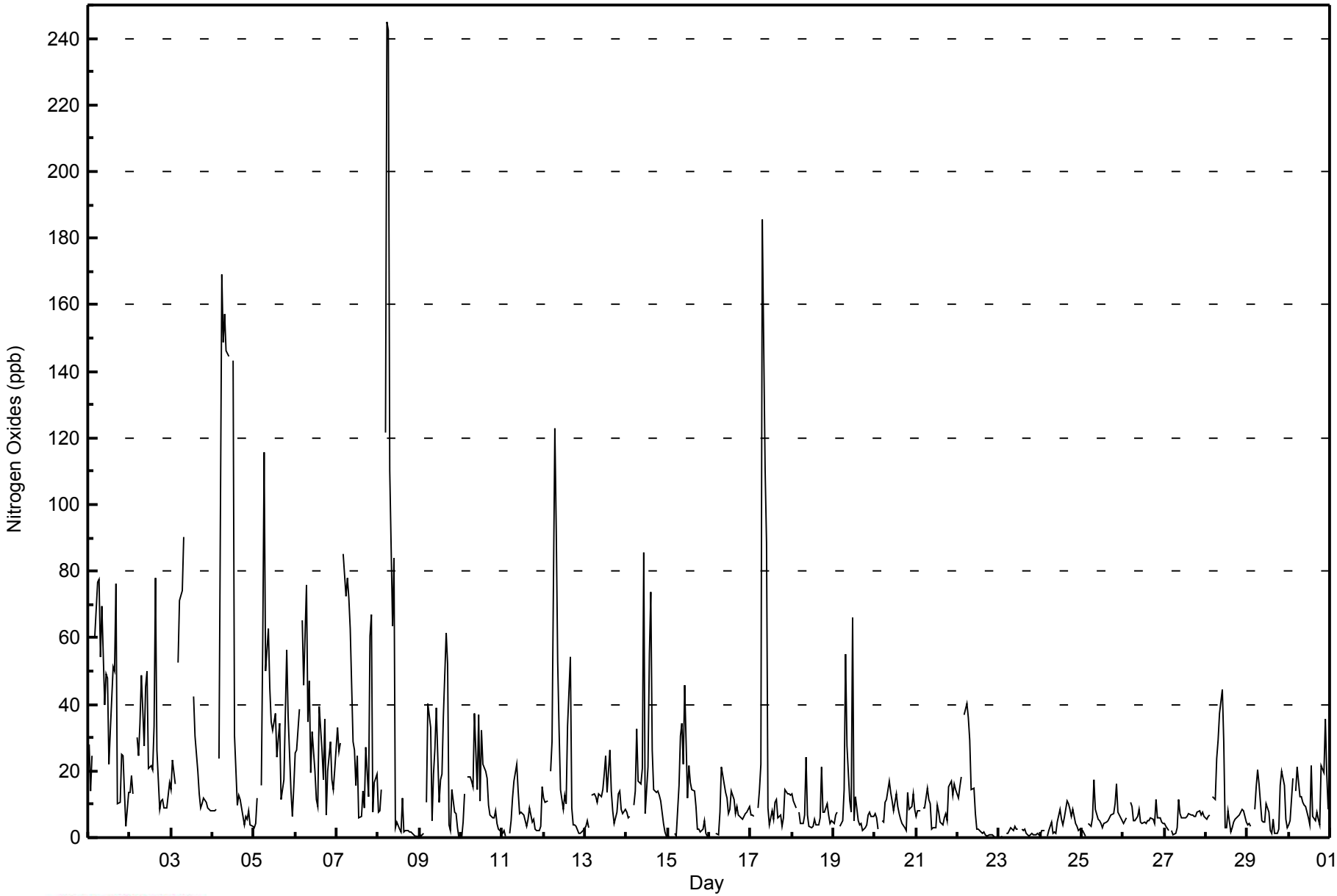
Z - zerospan C - Calibration M - Maintenance PF - Power Failure

WBEA NETWORK

Hourly Averages

Nitrogen Oxides (NO_X) - ppb

Athabasca Valley - April 2014



AURORA ATMOSPHERICS INC.

Concentration Ranges (ppb)	Number of Hours	%	Cumulative %
0 - 20	535	78.45	78.45
21 - 40	83	12.17	90.62
11 - 80	44	6.45	97.07
81 - 159	16	2.35	99.41
> 159	4	0.59	100.00

Total Number of Valid Hours: 682

Total Number of Hours: 720

WBEA NETWORK

Frequency Distribution

Nitrogen Oxides (NO_X) - ppb

Athabasca Valley - April 2014

Concentration Ranges (ppb)	Wind Direction																
	N	NNE	NE	ENE	E	ESE	SE	SSE	S	SSW	SW	WSW	W	WNW	NW	NNW	**Totals**
0 - 20	55	13	13	19	56	67	129	33	6	8	21	22	25	14	15	39	535
21 - 40	4	5	1	4	5	4	7	8	3	2	3	3	1	3	4	26	83
11 - 80	6	1	2	3	3	4	2	0	3	2	2	0	1	4	1	10	44
81 - 159	1	0	0	0	0	2	9	1	1	0	0	1	0	0	0	1	16
> 159	0	0	0	0	0	0	3	1	0	0	0	0	0	0	0	0	4
Totals	66	19	16	26	64	77	150	43	13	12	26	26	27	21	20	76	682

Total Number of Valid Hours: 682

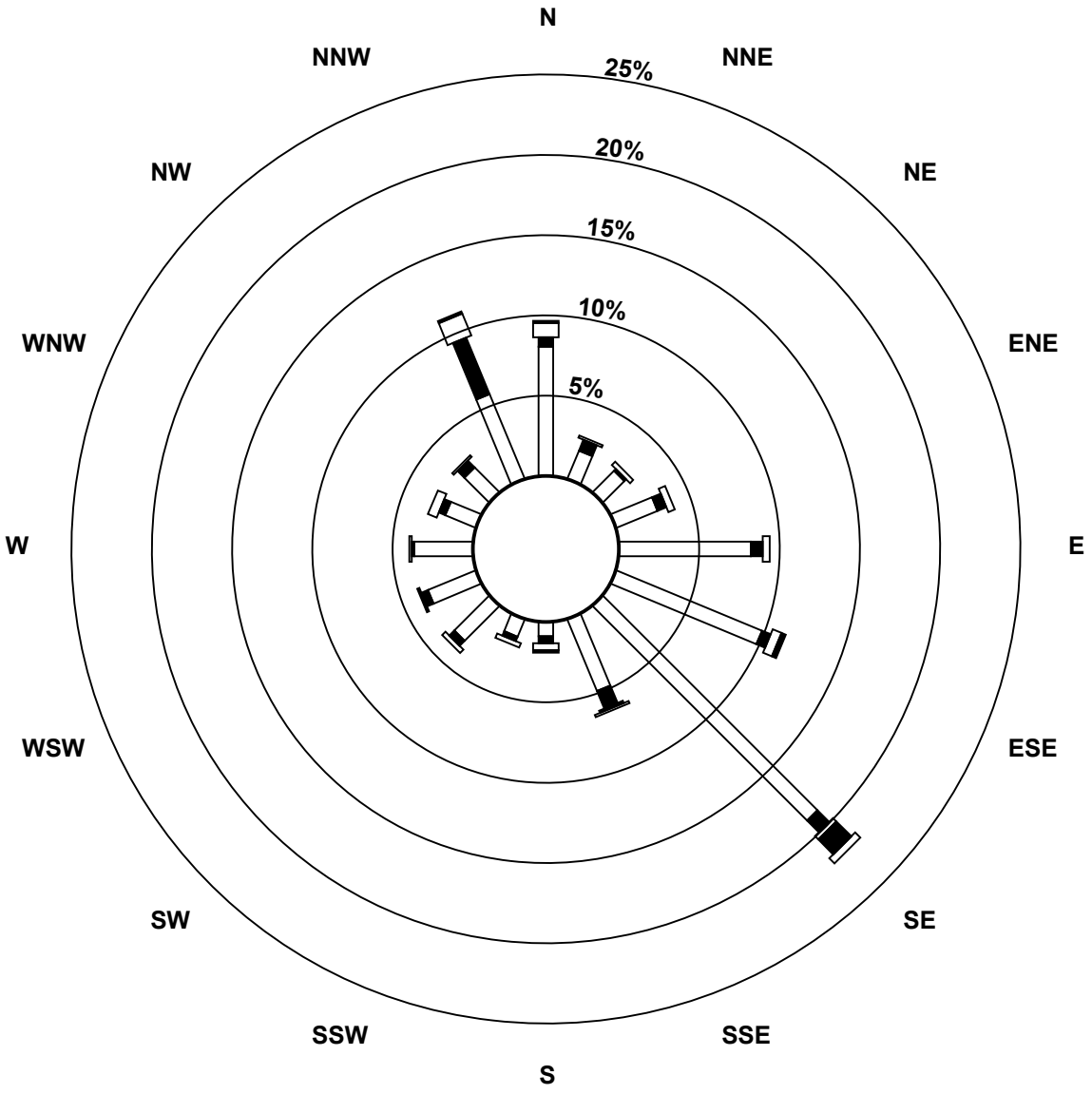
Total Number of Hours: 720

Wood Buffalo Environmental Association

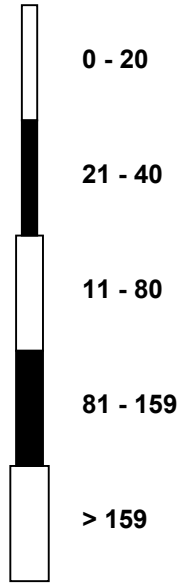
Wind Rose Apr 2014

Nitrogen Oxides (NO_X) - ppb

Athabasca Valley (AMS 7)



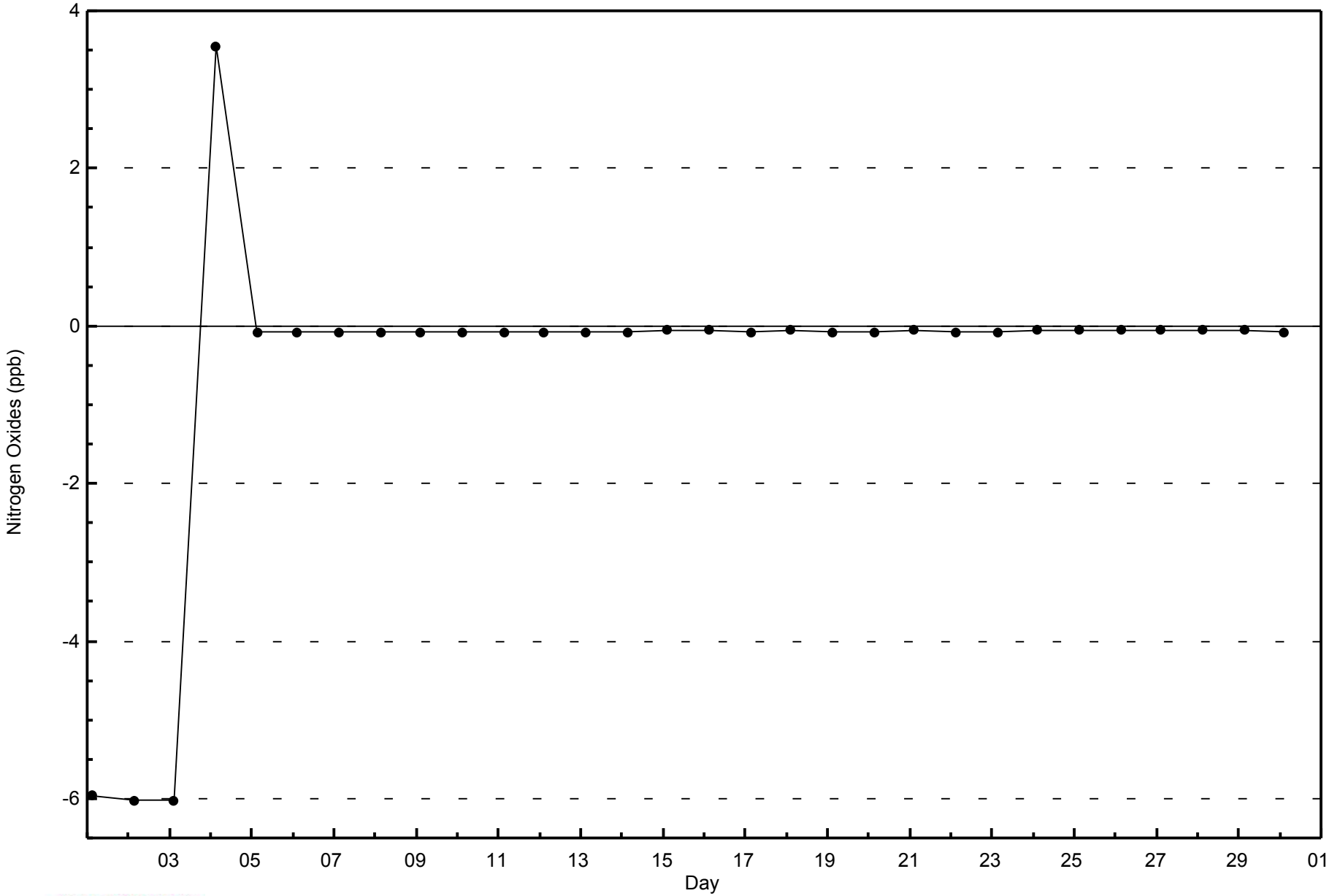
Classes (ppb)



Total Number of Valid Hours: 682

Wood Buffalo Environmental Association
Zero Responses

Nitrogen Oxides (NO_X) - ppb
Athabasca Valley - April 2014



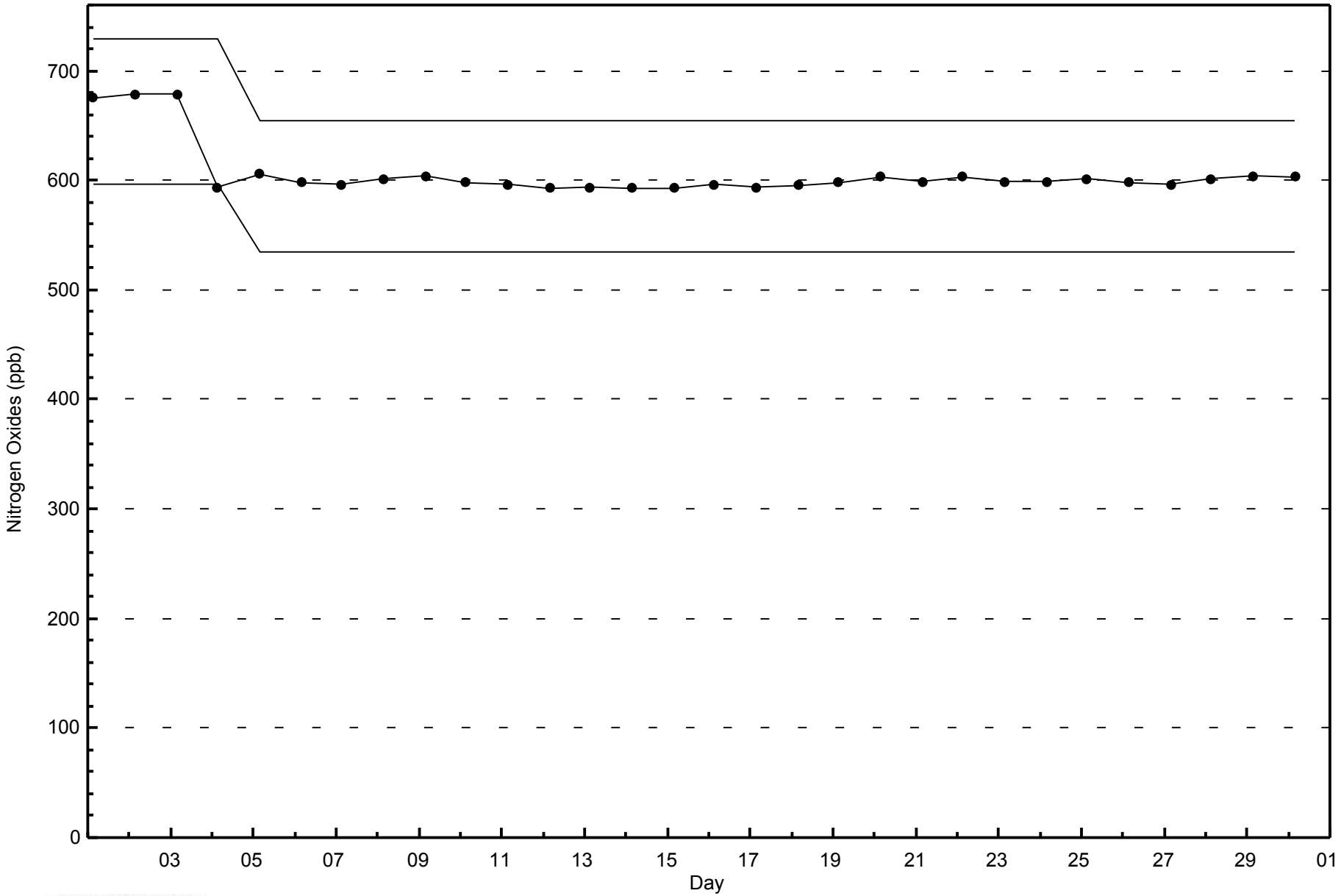
AURORA
ATMOSPHERICS INC.

WBEA NETWORK

Span Responses

Nitrogen Oxides (NO_X) - ppb

Athabasca Valley - April 2014



AURORA ATMOSPHERICS INC.

Wood Buffalo Environmental Association

Summary of Hour Averages

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

Athabasca Valley - April 2014

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

Maximum Value: 38.3 $\mu g/m^3$ on Apr 14 17:00

Maximum Daily Average: 12.1 $\mu g/m^3$ on Apr 14

Minimum Value: 0.3 $\mu g/m^3$ on Apr 16 03:00

Minimum Daily Average: 2.7 $\mu g/m^3$ on Apr 9

Maximum Diurnal Average: 10.2 $\mu g/m^3$ at hour 20

Minimum Diurnal Average: 4.5 $\mu g/m^3$ at hour 4

Monthly Average: 6.76 $\mu g/m^3$

Percentiles: P_1 = 1.4 P_{10} = 2.9 Q_1 = 4.0 Median = 5.7 Q_3 = 8.4 P_{90} = 11.6 P_{99} = 22.4

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-Apr	7.2	7.0	8.6	8.9	9.9	11.0	10.3	10.1	11.0	9.4	8.5	6.5	6.1	9.7	10.0	11.0	10.6	11.5	11.4	14.8	12.6	8.2	5.0	4.8	9.3	14.8
2-Apr	5.8	8.8	6.6	6.4	7.1	5.6	5.4	6.9	6.8	7.3	8.7	7.0	8.1	7.5	7.4	8.4	8.0	9.1	5.3	4.3	3.8	3.4	3.2	3.2	6.4	9.1
3-Apr	3.1	3.6	3.6	4.0	5.1	4.6	4.7	10.0	17.7	15.6	10.9	2.7	3.6	4.5	18.2	10.1	7.8	11.4	8.2	7.9	7.4	6.1	5.6	5.0	7.6	18.2
4-Apr	5.0	4.8	4.8	5.2	5.9	8.0	10.1	10.5	10.4	9.7	9.7	11.4	12.0	12.0	14.1	14.3	10.2	5.7	5.2	4.9	5.1	6.1	4.8	4.4	8.1	14.3
5-Apr	3.9	3.8	4.2	4.0	3.7	6.1	7.8	5.7	6.9	13.7	11.6	5.2	5.4	7.7	7.5	8.2	8.9	12.0	16.2	15.9	11.6	6.8	5.2	5.4	7.8	16.2
6-Apr	7.0	7.3	6.8	6.5	8.4	7.0	7.4	7.3	7.7	7.3	9.9	8.0	7.6	7.8	9.2	7.8	8.9	13.2	7.2	8.2	8.4	6.6	6.3	6.2	7.8	13.2
7-Apr	8.8	10.1	9.9	9.6	9.5	10.4	9.0	7.5	7.9	4.4	5.1	4.9	6.2	7.1	9.8	11.9	12.9	19.4	14.0	26.7	17.4	6.5	5.2	5.0	10.0	26.7
8-Apr	4.3	4.2	4.2	4.1	5.8	8.8	8.5	7.0	7.2	7.2	5.7	6.3	7.1	7.1	7.9	8.1	7.6	7.0	7.1	6.8	6.2	5.0	3.7	2.8	6.2	8.8
9-Apr	2.3	2.3	2.3	2.2	2.7	3.0	2.5	2.3	2.2	2.1	2.1	1.9	2.1	2.2	2.4	2.4	2.9	3.6	3.6	3.8	3.7	3.8	2.9	2.5	2.7	3.8
10-Apr	2.5	2.9	3.1	3.0	2.9	2.9	3.0	2.9	2.8	2.4	2.5	2.5	3.3	3.8	5.4	5.9	6.4	5.9	6.2	5.7	5.9	5.9	4.3	3.9	4.0	6.4
11-Apr	4.6	4.6	4.7	4.6	4.9	6.4	5.0	5.4	5.9	5.8	4.1	4.3	6.2	7.6	4.7	7.7	3.9	4.0	3.7	4.0	4.4	4.3	4.3	4.6	5.0	7.7
12-Apr	3.5	2.9	2.8	2.9	3.0	2.9	15.4	2.8	2.4	2.1	1.9	1.9	3.1	4.1	6.1	7.6	8.0	7.2	6.2	5.8	5.1	5.3	4.8	4.7	4.7	15.4
13-Apr	3.5	2.9	2.7	2.6	3.0	3.3	3.2	3.5	5.3	4.6	3.0	3.6	4.6	6.1	8.0	31.1	20.0	20.2	18.6	20.1	13.6	8.1	6.3	5.3	8.5	31.1
14-Apr	4.8	4.2	4.7	5.0	5.5	6.1	7.7	10.7	8.8	7.3	8.1	10.4	12.1	M	14.0	19.9	38.3	35.5	22.6	20.3	15.0	7.5	5.6	4.5	12.1	38.3
15-Apr	4.5	4.4	4.6	4.3	3.6	2.9	2.9	3.3	3.6	3.8	3.8	3.0	4.5	5.7	6.0	6.7	8.7	7.4	8.4	8.9	7.3	6.1	2.4	1.2	4.9	8.9
16-Apr	0.5	UO	0.3	0.7	1.2	2.1	1.0	1.7	3.4	2.2	5.5	6.4	8.9	8.3	10.8	10.5	11.8	10.2	10.0	10.1	9.8	7.2	6.4	5.4	5.8	11.8
17-Apr	4.6	5.0	5.2	5.5	6.9	7.5	8.2	7.3	7.4	8.1	6.0	8.1	9.4	10.2	11.8	11.9	13.5	12.0	12.1	11.4	13.7	12.7	11.5	9.9	9.2	13.7
18-Apr	7.4	7.4	6.5	5.6	5.9	5.4	5.4	4.9	6.9	4.7	5.0	5.3	5.4	5.0	4.5	4.3	4.3	5.5	5.3	5.0	5.3	7.2	6.4	6.5	5.6	7.4
19-Apr	5.2	5.3	4.8	5.6	6.4	7.2	9.1	11.2	5.5	4.0	4.0	5.2	5.0	6.3	7.4	8.3	8.0	6.8	6.7	6.9	7.4	6.8	4.9	4.1	6.3	11.2
20-Apr	3.5	3.3	3.5	3.9	2.9	2.8	3.1	3.7	4.7	5.4	6.3	5.3	8.4	9.8	11.0	12.3	12.0	11.9	11.9	17.9	13.4	9.8	10.6	14.7	8.0	17.9
21-Apr	8.7	4.8	3.9	3.7	3.6	3.6	3.7	4.1	11.9	3.9	3.4	5.8	14.9	9.3	11.1	11.4	11.3	12.0	11.8	16.3	13.8	10.2	9.0	7.4	8.3	16.3
22-Apr	6.7	7.6	9.1	8.8	10.3	11.1	11.0	9.2	5.6	5.5	4.3	4.6	6.2	7.8	9.1	10.4	8.9	8.1	7.6	8.2	8.2	4.3	3.6	3.7	7.5	11.1
23-Apr	3.7	3.7	3.8	3.7	3.8	3.8	4.0	4.4	4.3	4.2	4.8	5.7	PF	8.3	8.6	8.7	7.9	7.4	6.6	6.5	5.8	5.3	5.6	5.1	5.5	8.7
24-Apr	4.9	4.7	4.3	4.0	3.8	3.8	3.8	3.4	3.5	3.8	4.4	5.1	5.2	5.3	5.9	5.2	4.3	4.9	5.0	5.5	4.5	3.4	3.1	3.2	4.4	5.9
25-Apr	3.3	3.1	2.6	2.9	2.9	2.8	2.9	4.1	4.3	4.9	5.7	6.0	7.0	6.3	9.2	11.2	11.7	8.9	10.6	11.6	13.1	7.8	6.7	4.5	6.4	13.1
26-Apr	4.1	3.8	3.8	3.9	4.8	4.4	4.2	4.7	6.4	6.0	6.6	7.5	12.3	12.6	11.6	10.9	11.6	10.0	8.4	9.6	8.4	7.2	5.0	4.0	7.2	12.6
27-Apr	4.2	3.6	3.2	3.4	4.1	3.5	2.7	2.0	2.1	1.4	1.4	1.5	1.8	2.3	2.7	3.1	3.7	4.1	3.5	3.6	4.0	3.8	3.3	2.6	3.0	4.2
28-Apr	2.3	2.2	2.4	2.5	2.4	2.0	2.8	4.0	4.1	5.4	5.2	4.8	5.0	5.5	6.6	8.6	13.0	13.6	13.3	10.3	8.4	6.1	4.2	3.0	5.7	13.6
29-Apr	2.4	2.2	1.8	1.8	1.8	2.0	2.9	3.5	3.0	3.6	3.7	4.3	5.6	6.4	7.0	7.4	7.2	8.4	9.4	12.3	26.6	21.7	9.1	5.8	6.7	26.6
30-Apr	4.9	4.0	5.0	4.3	4.2	5.7	5.6	6.4	6.7	7.3	6.5	5.1	4.6	7.5	7.2	7.0	9.7	6.8	6.5	13.5	17.7	22.8	21.3	9.3	8.3	22.8
	4.6	4.6	4.5	4.5	4.9	5.2	5.8	5.7	6.2	5.8	5.6	5.3	6.6	7.0	8.5	9.7	10.1	10.1	9.1	10.2	9.6	7.5	6.0	5.1	Diurnal Average	
	8.8	10.1	9.9	9.6	10.3	11.1	15.4	11.2	17.7	15.6	11.6	11.4	14.9	12.6	18.2	31.1	38.3	35.5	22.6	26.7	26.6	22.8	21.3	14.7	Diurnal Maximum	

M - Maintenance UO - Unstable Operation PF - Power Failure

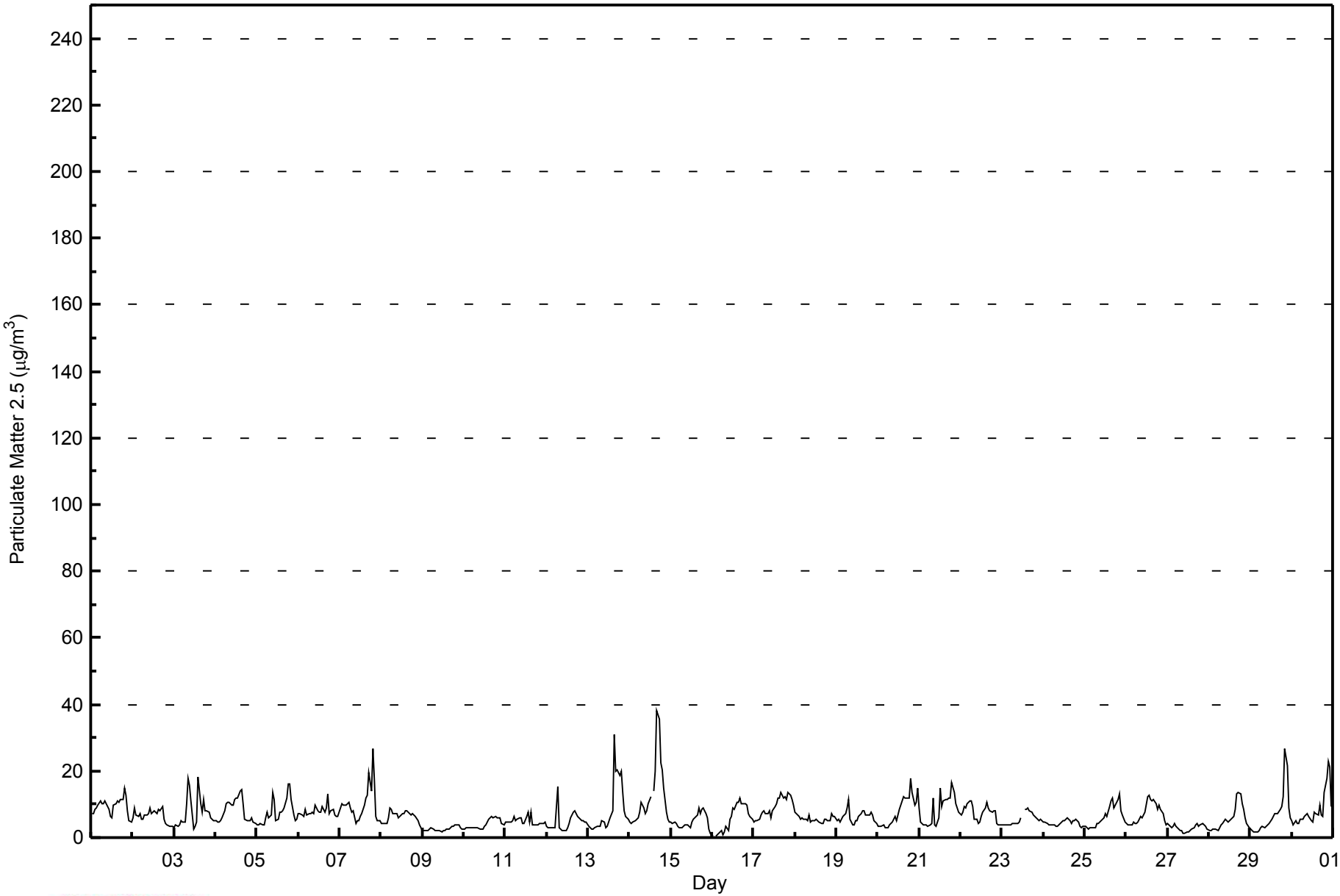
Alberta Ambient Air Quality Objectives (AAAQO): 24-hr 30 $\mu g/m^3$

WBEA NETWORK

Hourly Averages

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

Athabasca Valley - April 2014



AURORA ATMOSPHERICS INC.

Concentration Ranges ($\mu g/m^3$)	Number of Hours	%	Cumulative %
1 - 5	337	47.00	47.00
6 - 15	352	49.09	96.09
16 - 25	20	2.79	98.88
26 - 80	5	0.70	99.58
> 81.0	0	0.00	99.58

Total Number of Valid Hours: 717

Total Number of Hours: 720

WBEA NETWORK

Frequency Distribution

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

Athabasca Valley - April 2014

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**
1 - 5	29	5	4	21	44	40	64	23	6	4	13	17	13	10	13	31	337
6 - 15	38	12	13	5	21	34	92	21	6	7	12	9	14	11	8	49	352
16 - 25	3	1	0	0	1	4	7	0	1	1	1	0	0	0	0	1	20
26 - 80	0	0	0	1	0	2	0	0	0	1	0	1	0	0	0	0	5
> 81.0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Totals	70	18	17	27	66	80	163	44	13	13	26	27	27	21	21	81	714

Total Number of Valid Hours: 717

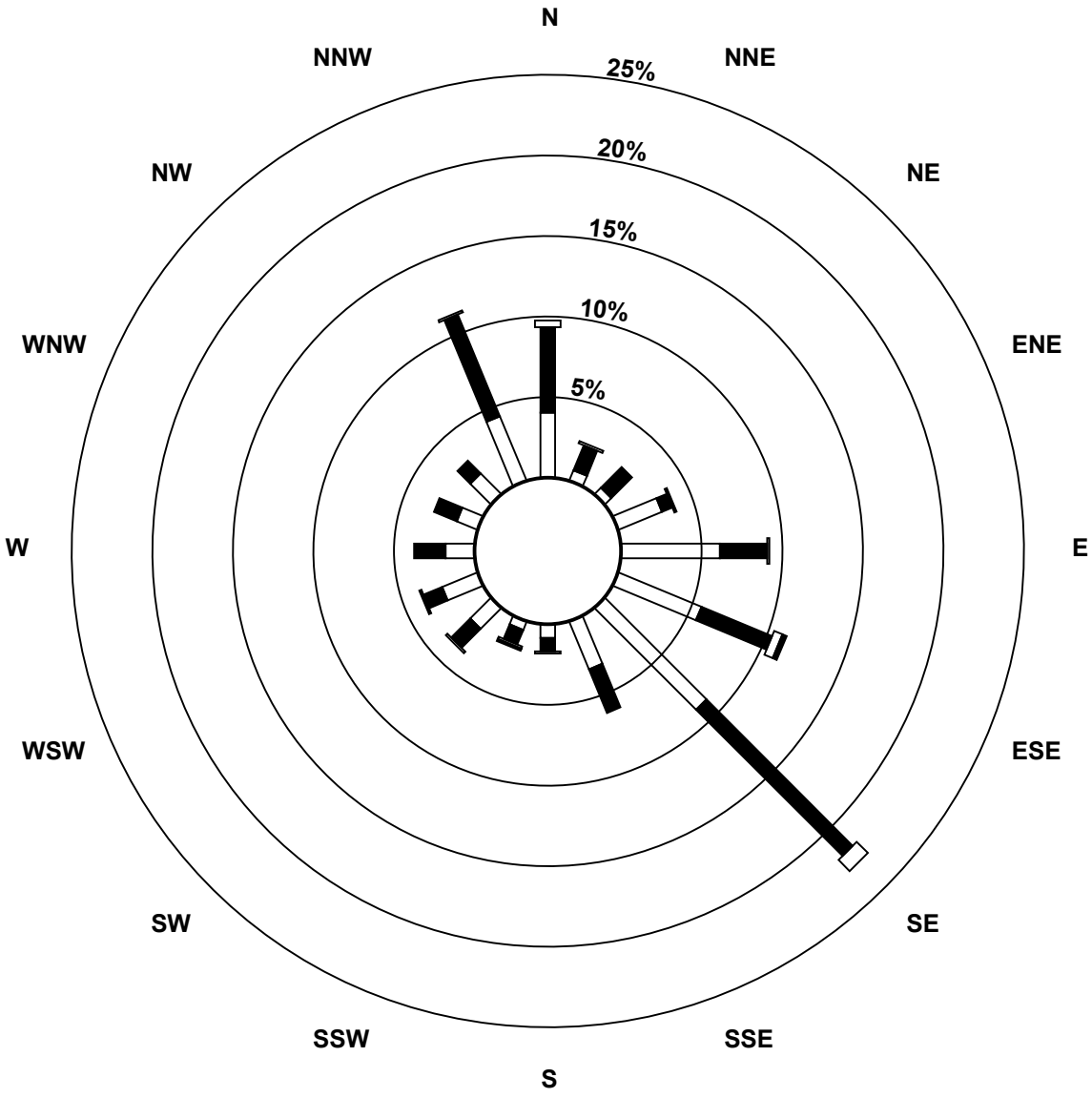
Total Number of Hours: 720

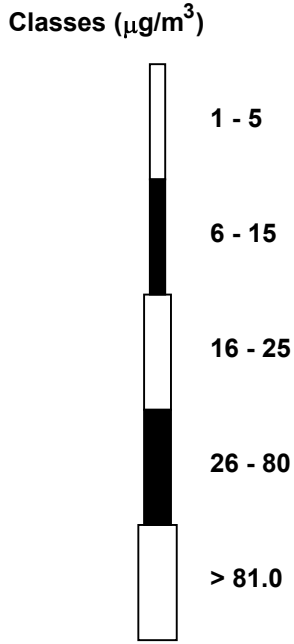
Wood Buffalo Environmental Association

Wind Rose Apr 2014

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

Athabasca Valley (AMS 7)





Total Number of Valid Hours: 717

Wood Buffalo Environmental Association

Summary of Hour Averages

Carbon Monoxide (CO) - ppm

Athabasca Valley - April 2014

Number of Exceedences (AAAQO): 1-hr: 0 24-hr: 0
Maximum Value: 0.4 ppm on Apr 1 09:00 Maximum Daily Average: 0.2 ppm on Apr 4

Minimum Value: 0.0 ppm on Apr 8 18:00 Minimum Daily Average: 0.1 ppm on Apr 15
Maximum Diurnal Average: 0.2 ppm at hour 9 Minimum Diurnal Average: 0.1 ppm at hour 1
Monthly Average: 0.12 ppm Percentiles: P_1 = 0.0 P_{10} = 0.1 Q_1 = 0.1 Median = 0.1 Q_3 = 0.1 P_{90} = 0.2 P_{99} = 0.3

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-Apr	0.1	0.1	0.1	0.2	0.2	Z	0.2	0.2	0.4	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	0.4
2-Apr	0.1	0.1	0.1	0.1	0.1	Z	0.1	0.1	0.1	0.2	0.2	0.2	0.2	0.1	0.1	0.2	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.2
3-Apr	0.1	0.1	0.1	0.1	0.1	Z	0.2	0.2	0.2	0.1	0.2	0.2	0.1	0.2	0.2	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.2
4-Apr	0.1	0.1	0.1	0.1	0.1	Z	0.2	0.3	0.2	0.3	0.3	0.3	0.4	0.2	0.2	0.2	0.2	0.2	0.1	0.2	0.2	0.2	0.2	0.2	0.2	0.4
5-Apr	0.1	0.2	0.2	0.2	0.2	Z	0.4	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	0.1	0.1	0.1	0.2	0.4
6-Apr	0.1	0.1	0.1	0.1	0.2	Z	0.2	0.1	0.1	0.1	0.2	0.2	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	0.2
7-Apr	0.2	0.2	0.2	0.2	0.3	Z	0.2	0.2	0.2	0.2	0.2	0.1	0.1	0.1	0.1	0.1	0.0	0.1	0.1	0.3	0.3	0.1	0.1	0.1	0.2	0.3
8-Apr	0.1	0.1	0.1	0.1	0.2	Z	0.3	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	0.3
9-Apr	0.0	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
10-Apr	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
11-Apr	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
12-Apr	0.1	0.1	0.1	0.3	0.2	Z	0.3	0.2	0.2	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.3
13-Apr	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	0.2	0.2	0.1	0.1	0.1	0.1	0.2
14-Apr	0.1	0.1	0.1	0.1	0.1	Z	0.1	0.1	0.2	0.2	C	C	C	C	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.2
15-Apr	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
16-Apr	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
17-Apr	0.1	0.1	0.1	0.1	0.1	Z	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	0.1	0.1	0.1	0.1	0.2
18-Apr	0.1	0.1	0.1	0.1	0.1	Z	0.1	0.1	0.2	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.2	0.2	0.1	0.1	0.2	0.2	0.1	0.1	0.2
19-Apr	0.1	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	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.2	0.1	0.2	0.1	0.2
20-Apr	0.2	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	0.1	0.1	0.1	0.1	0.2	0.2	0.1	0.2
21-Apr	0.1	0.1	0.1	0.1	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	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.2
22-Apr	0.1	0.1	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	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.2
23-Apr	0.1	0.1	0.1	0.1	0.1	Z	0.1	0.1	0.1	0.1	0.1	0.1	PF	0.1	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-Apr	0.1	0.1	0.1	0.1	0.1	Z	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.2	0.1	0.1	0.3	0.1	0.1	0.1	0.1	0.1	0.3
25-Apr	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	0.2	0.1	0.1	0.1	0.1	0.2
26-Apr	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
27-Apr	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
28-Apr	0.1	0.1	0.1	0.1	0.1	Z	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	0.1	0.1	0.1	0.2
29-Apr	0.1	0.1	0.1	0.1	0.1	Z	0.1	0.2	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.0	0.1	0.2	0.2	0.1	0.1	0.1	0.2
30-Apr	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	0.2	0.2	0.2	0.2	0.1	0.1	0.2
	0.1	0.1	0.1	0.1	0.1	--	0.2	0.1	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	Diurnal Average	
	0.2	0.2	0.2	0.3	0.3	--	0.4	0.3	0.4	0.3	0.3	0.3	0.4	0.2	0.2	0.2	0.2	0.2	0.2	0.3	0.3	0.2	0.2	0.2	Diurnal Maximum	

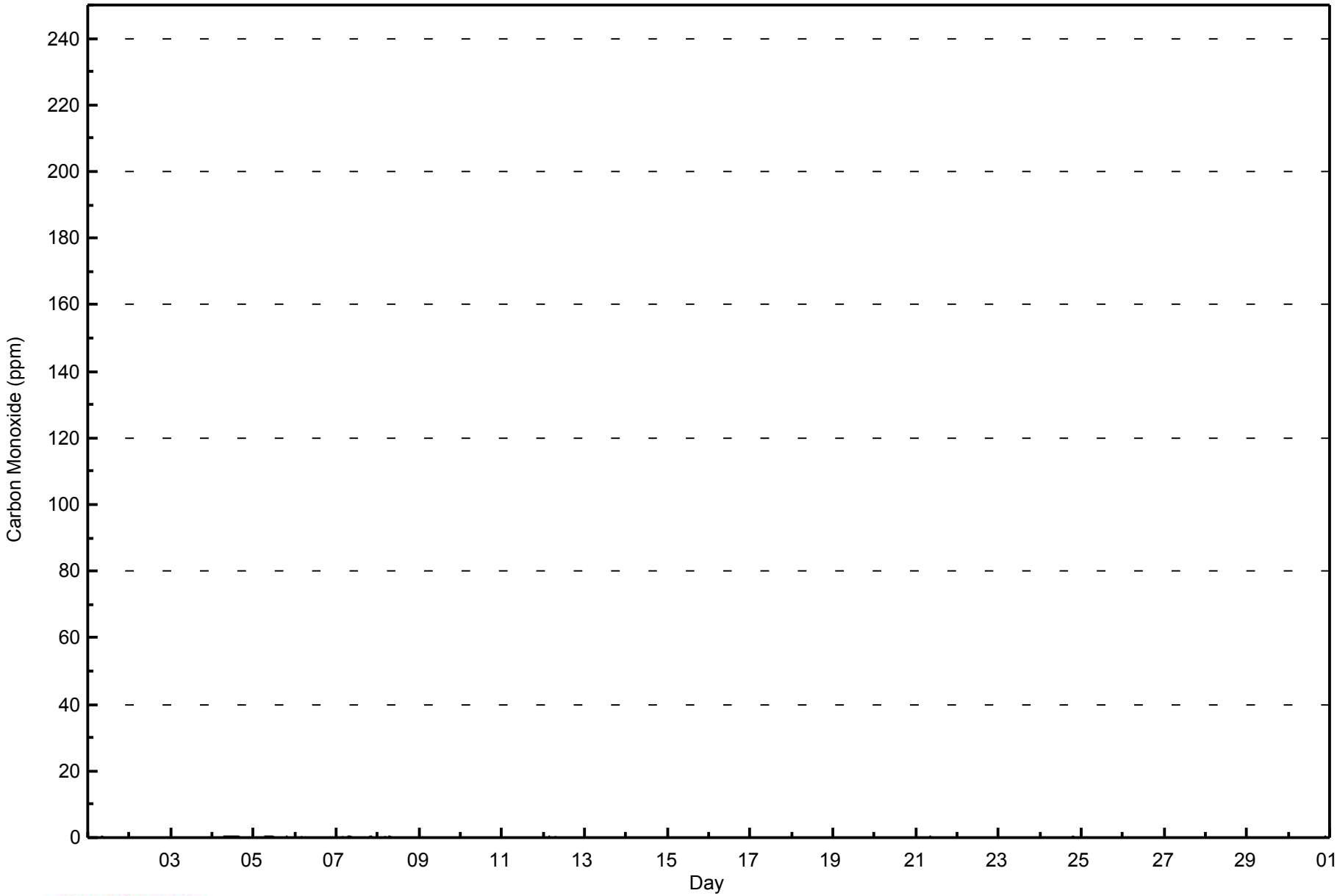
Z - zerospan C - Calibration PF - Power Failure
Alberta Ambient Air Quality Objectives (AAAQO): 1-hr 13 ppm

WBEA NETWORK

Hourly Averages

Carbon Monoxide (CO) - ppm

Athabasca Valley - April 2014



AURORA ATMOSPHERICS INC.

Concentration Ranges (ppm)	Number of Hours	%	Cumulative %
0 - 0.3	682	99.56	99.56
0.4 - 0.5	3	0.44	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

WBEA NETWORK

Frequency Distribution

Carbon Monoxide (CO) - ppm

Athabasca Valley - April 2014

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	69	18	15	27	63	77	153	41	13	12	25	26	25	21	19	78	682
0.4 - 0.5	1	0	0	0	0	0	2	0	0	0	0	0	0	0	0	0	3
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	70	18	15	27	63	77	155	41	13	12	25	26	25	21	19	78	685

Total Number of Valid Hours: 685

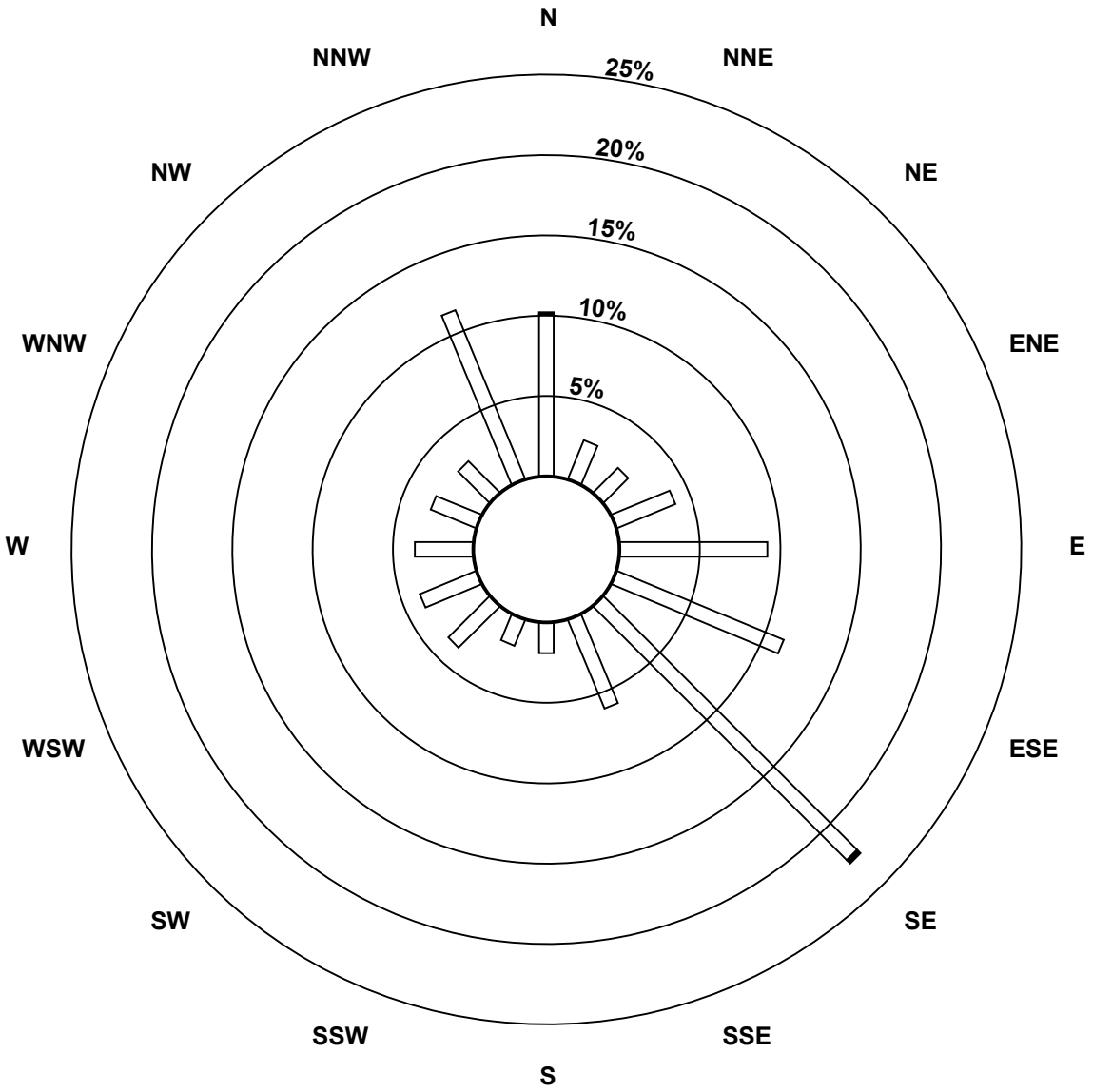
Total Number of Hours: 720

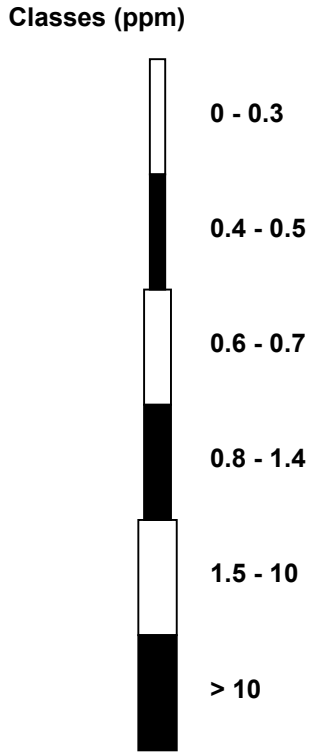
Wood Buffalo Environmental Association

Wind Rose Apr 2014

Carbon Monoxide (CO) - ppm

Athabasca Valley (AMS 7)





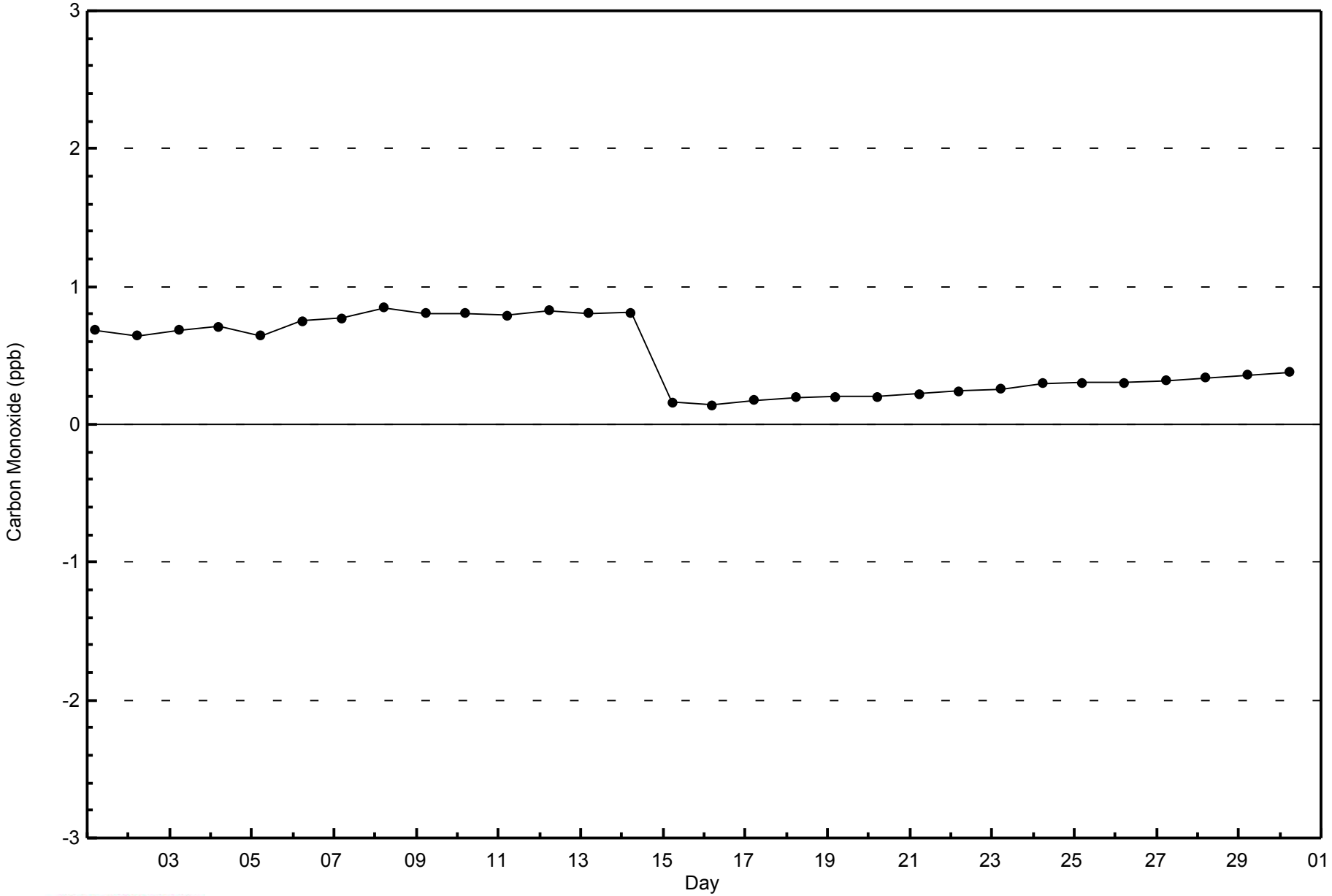
Total Number of Valid Hours: 685

WBEA NETWORK

Zero Responses

Carbon Monoxide (CO) - ppb

Athabasca Valley - April 2014



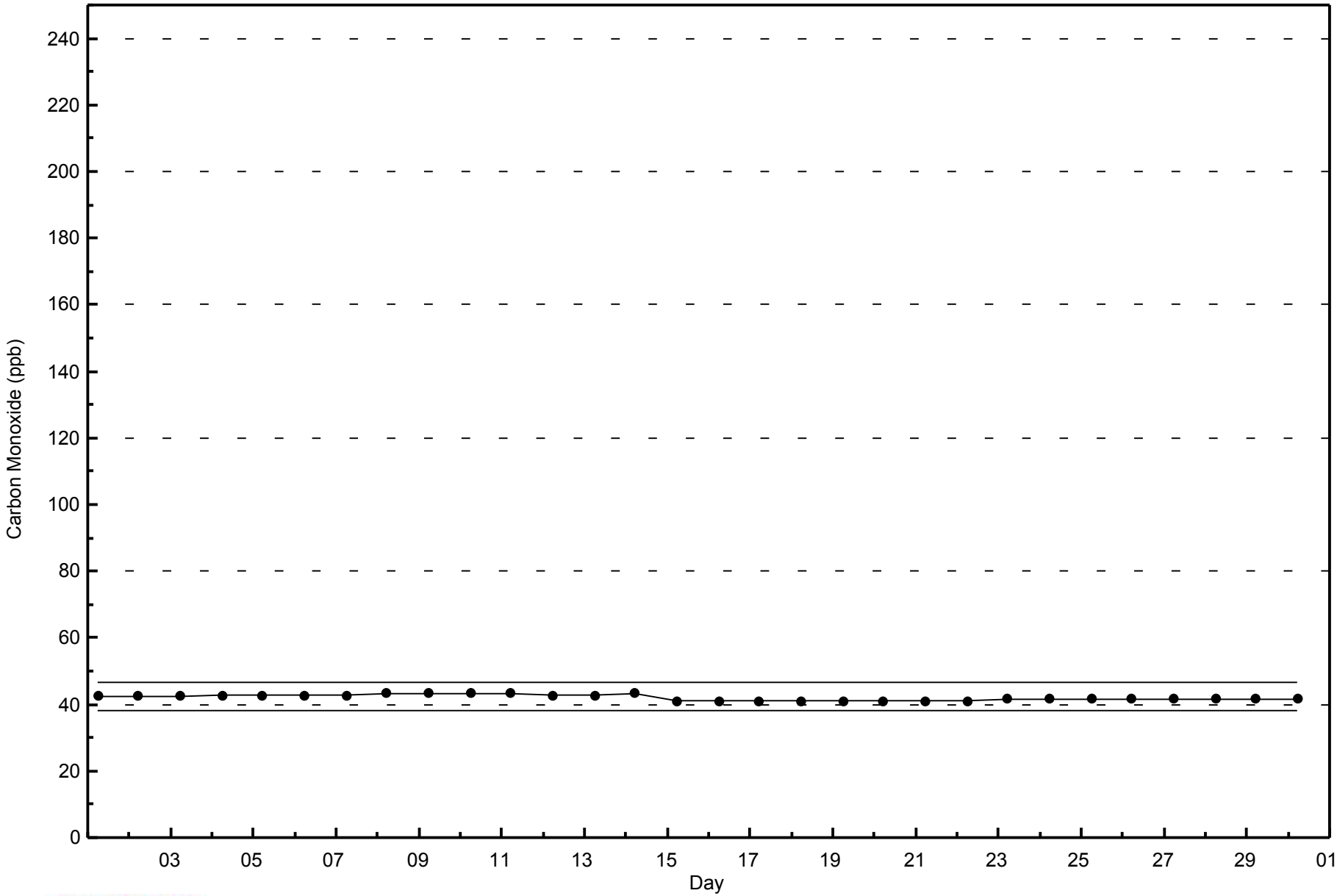
AURORA ATMOSPHERICS INC.

WBEA NETWORK

Span Responses

Carbon Monoxide (CO) - ppb

Athabasca Valley - April 2014



AURORA ATMOSPHERICS INC.

Maximum Value: 22.8 C on Apr 30 17:00

Maximum Daily Average: 13.0 C on Apr 30

Minimum Value: -17.0 C on Apr 3 07:00

Minimum Daily Average: -10.5 C on Apr 2

Maximum Diurnal Average: 7.2 C at hour 17

Minimum Diurnal Average: -3.3 C at hour 6

Monthly Average: 2.04 C

Percentiles: P_1 = -14.5 P_{10} = -7.7 Q_1 = -2.6 Median = 2.1 Q_3 = 6.5 P_{90} = 11.6 P_{99} = 20.8

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

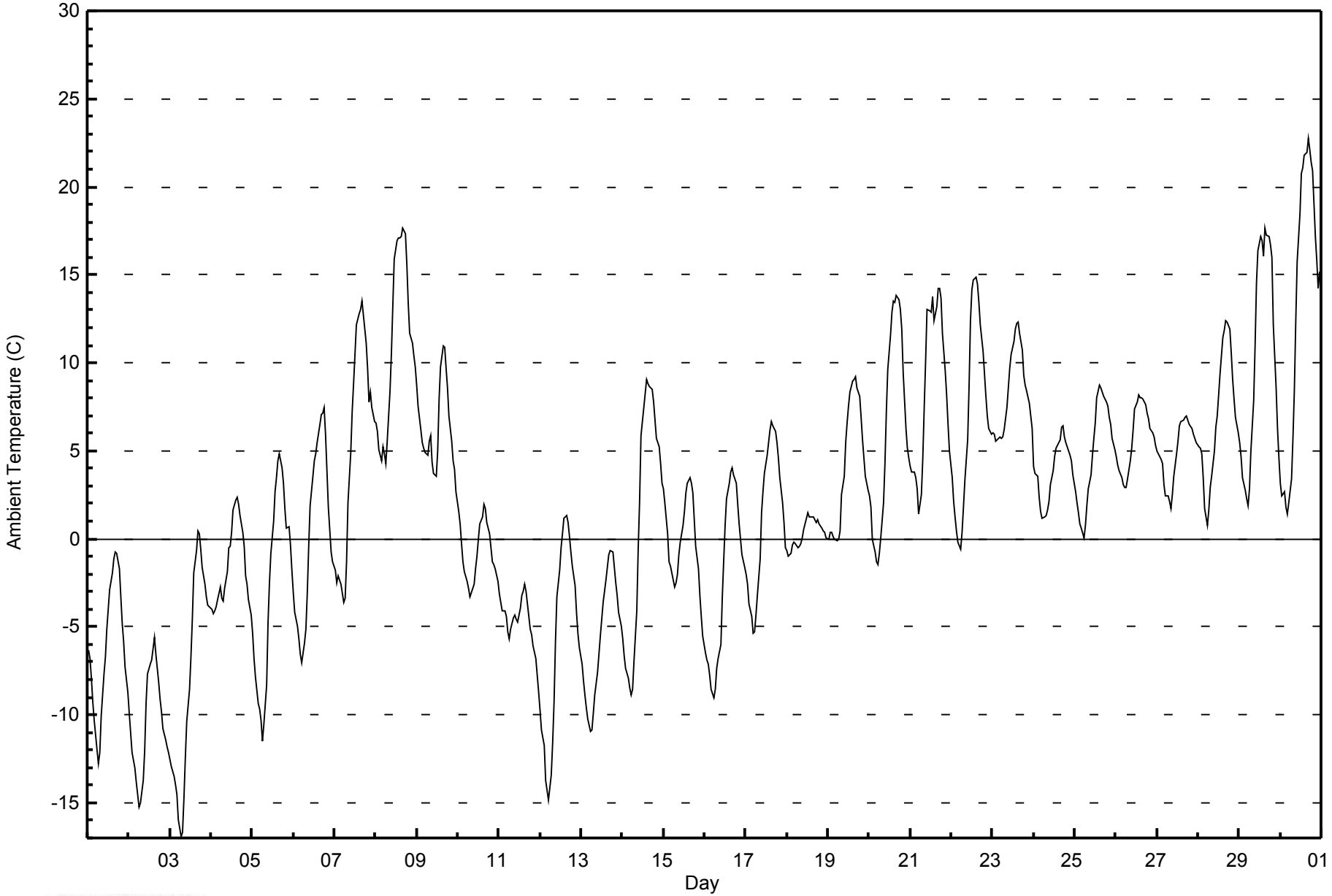
Day	Hourly Period Ending At (MST)																								Daily	Daily
	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24	Average	Maximum
1-Apr	-6.3	-6.8	-7.9	-9.3	-10.3	-12.0	-12.8	-12.1	-10.1	-7.7	-6.7	-5.2	-4.0	-2.9	-1.9	-1.1	-0.8	-0.9	-1.7	-3.3	-4.8	-5.9	-7.2	-8.7	-6.3	-0.8
2-Apr	-9.9	-11.1	-12.2	-13.0	-13.8	-14.5	-15.2	-15.0	-13.8	-12.1	-9.3	-7.7	-7.1	-6.9	-6.3	-5.6	-6.6	-8.1	-9.1	-9.8	-10.8	-11.4	-11.8	-12.1	-10.5	-5.6
3-Apr	-12.5	-12.9	-13.5	-14.0	-14.5	-16.0	-17.0	-16.7	-14.7	-12.5	-10.4	-8.6	-6.7	-4.5	-2.0	-0.6	0.4	0.3	-0.6	-1.6	-2.6	-3.3	-3.7	-3.9	-8.0	0.4
4-Apr	-4.0	-4.2	-4.1	-3.9	-3.4	-2.8	-3.3	-3.6	-2.8	-1.8	-0.5	-0.4	0.4	1.6	2.2	2.3	2.0	1.3	0.3	-0.4	-2.1	-2.6	-3.5	-4.3	-1.6	2.3
5-Apr	-5.4	-6.8	-7.9	-9.3	-9.6	-10.3	-11.5	-10.6	-8.3	-4.8	-2.5	-0.8	1.0	2.6	3.4	4.4	4.8	4.0	3.2	1.7	0.6	0.7	-0.4	-1.8	-2.6	4.8
6-Apr	-3.0	-4.2	-5.0	-5.7	-6.6	-7.1	-5.9	-5.1	-3.1	-0.5	1.9	3.6	4.4	4.8	5.5	6.5	7.1	7.2	7.5	5.9	1.8	0.5	-0.8	-1.3	0.4	7.5
7-Apr	-1.8	-2.5	-2.1	-2.3	-2.5	-3.6	-3.4	-1.3	2.1	4.9	7.2	8.8	10.5	12.2	12.8	13.0	13.5	12.7	11.1	9.7	7.8	8.4	7.5	6.7	5.4	13.5
8-Apr	6.5	6.1	5.1	4.4	5.2	4.8	4.3	5.6	8.4	10.6	13.3	15.9	16.9	17.1	17.1	17.2	17.7	17.3	15.6	13.4	11.6	11.1	10.4	9.8	11.1	17.7
9-Apr	8.7	7.5	6.2	5.5	5.2	4.9	4.7	5.5	5.9	4.3	3.7	3.6	5.0	7.9	9.8	11.0	10.9	9.7	8.5	7.0	5.5	4.4	3.9	2.6	6.3	11.0
10-Apr	1.6	0.9	-0.3	-1.3	-1.8	-2.4	-2.8	-3.3	-3.1	-2.6	-1.7	-1.0	0.0	0.8	1.3	2.0	1.8	0.9	0.3	-0.5	-1.3	-1.4	-1.7	-2.4	-0.8	2.0
11-Apr	-3.1	-3.7	-4.1	-4.1	-4.4	-5.3	-5.7	-5.2	-4.5	-4.3	-4.6	-4.7	-3.9	-3.2	-3.0	-2.5	-3.0	-4.4	-5.1	-5.4	-6.1	-6.8	-7.7	-8.7	-4.7	-2.5
12-Apr	-9.8	-10.9	-11.8	-13.7	-14.3	-14.8	-13.4	-11.6	-9.3	-5.9	-3.3	-1.8	-0.5	0.3	1.2	1.3	0.9	0.1	-0.7	-1.5	-2.7	-4.2	-5.4	-6.1	-5.7	1.3
13-Apr	-7.1	-8.1	-8.9	-9.6	-10.2	-10.9	-10.9	-9.9	-8.9	-7.6	-6.6	-5.5	-4.6	-3.6	-2.3	-1.6	-0.9	-0.7	-0.8	-1.6	-2.5	-3.3	-4.2	-4.9	-5.6	-0.7
14-Apr	-5.7	-6.6	-7.3	-7.9	-8.5	-8.9	-8.5	-6.9	-4.1	-0.6	2.1	5.9	7.4	8.2	9.0	8.8	8.7	8.5	7.7	6.7	5.7	5.2	4.2	3.2	1.1	9.0
15-Apr	2.8	2.0	0.3	-1.3	-1.5	-2.0	-2.8	-2.5	-2.0	-0.9	-0.2	0.7	1.6	2.6	3.2	3.4	3.2	2.6	1.1	-0.5	-1.7	-3.2	-4.4	-5.6	-0.2	3.4
16-Apr	-6.5	-6.9	-7.1	-7.8	-8.6	-9.1	-8.5	-7.3	-6.8	-6.0	-3.3	-1.2	0.8	2.3	3.2	3.8	4.1	3.6	3.2	2.0	0.9	0.0	-0.9	-1.7	-2.4	4.1
17-Apr	-2.0	-2.6	-3.7	-4.4	-5.3	-5.3	-4.3	-3.2	-1.2	1.5	2.7	3.7	4.7	5.5	6.2	6.6	6.4	6.1	5.4	4.6	3.4	2.1	0.9	-0.5	1.1	6.6
18-Apr	-0.6	-1.0	-0.8	-0.3	-0.2	-0.3	-0.5	-0.5	-0.3	0.0	0.5	1.2	1.5	1.2	1.3	1.3	1.1	0.9	1.1	0.9	0.6	0.5	0.3	0.0	0.3	1.5
19-Apr	0.0	0.4	0.4	0.1	-0.1	-0.1	-0.1	0.5	2.5	3.6	5.5	6.6	7.5	8.4	9.0	9.1	9.2	8.5	8.1	6.9	5.6	4.6	3.6	2.8	4.3	9.2
20-Apr	2.5	1.8	0.0	-0.7	-1.3	-1.4	-0.9	0.1	2.1	4.3	7.2	9.6	11.6	12.9	13.5	13.4	13.8	13.6	13.0	11.9	9.5	6.3	5.2	4.6	6.3	13.8
21-Apr	4.1	3.8	3.8	3.5	2.8	1.4	2.5	4.6	7.5	10.1	13.0	12.9	12.9	13.7	12.4	13.2	14.2	14.2	13.7	11.7	9.5	8.2	6.5	5.0	8.5	14.2
22-Apr	3.5	2.1	1.2	0.4	-0.2	-0.6	0.3	1.8	3.3	5.6	8.7	12.4	14.1	14.7	14.9	14.4	13.4	12.2	10.7	9.4	8.1	6.9	6.3	6.0	7.1	14.9
23-Apr	6.0	5.9	5.6	5.7	5.8	5.7	5.8	6.2	7.4	8.6	9.7	10.5	11.2	11.9	12.3	12.3	11.7	10.7	9.3	8.7	8.4	7.7	6.9	6.2	8.3	12.3
24-Apr	4.1	3.7	3.6	2.3	1.6	1.2	1.2	1.3	1.6	2.1	3.1	3.9	4.7	5.1	5.3	5.6	6.3	6.4	5.8	5.5	5.0	4.7	4.4	3.6	3.8	6.4
25-Apr	2.7	2.1	1.5	0.9	0.6	0.1	0.7	1.9	2.8	3.7	4.7	5.7	6.6	8.0	8.7	8.5	8.3	8.1	7.8	7.5	6.9	6.5	5.7	5.1	4.8	8.7
26-Apr	4.6	4.2	3.8	3.5	3.1	2.9	2.9	3.4	4.4	5.1	6.2	7.4	7.8	8.2	8.1	8.0	7.9	7.6	7.1	6.8	6.3	6.0	5.7	5.3	5.7	8.2
27-Apr	5.0	4.9	4.5	4.3	3.1	2.5	2.4	2.1	1.7	2.5	3.5	4.8	5.5	6.4	6.7	6.7	6.9	6.9	6.8	6.5	6.2	6.0	5.7	5.4	4.9	6.9
28-Apr	5.2	5.1	4.8	3.4	1.7	0.8	1.6	2.9	3.6	5.0	6.4	6.9	8.2	9.4	11.4	11.8	12.4	12.3	11.9	10.6	9.1	7.9	6.9	6.0	6.9	12.4
29-Apr	5.4	4.7	3.5	2.7	2.3	1.9	2.8	5.0	7.9	11.0	14.6	16.4	17.2	17.0	16.0	17.7	17.3	17.1	16.7	16.0	12.1	8.6	6.3	4.6	10.2	17.7
30-Apr	3.2	2.4	2.7	1.8	1.4	2.0	3.4	5.7	8.4	12.3	15.7	18.4	20.8	21.0	21.8	22.0	22.8	22.2	21.4	20.9	17.2	15.8	14.2	15.2	13.0	22.8
	-0.4	-1.0	-1.6	-2.3	-2.8	-3.3	-3.2	-2.3	-0.8	0.9	2.7	4.1	5.2	6.1	6.7	7.1	7.2	6.7	6.0	5.0	3.6	2.7	1.8	1.0	Diurnal Average	
	8.7	7.5	6.2	5.7	5.8	5.7	5.8	6.2	8.4	12.3	15.7	18.4	20.8	21.0	21.8	22.0	22.8	22.2	21.4	20.9	17.2	15.8	14.2	15.2	Diurnal Maximum	

WBEA NETWORK

Hourly Averages

Ambient Temperature (AT) - C

Athabasca Valley - April 2014



AURORA ATMOSPHERICS INC.

Concentration Ranges (C)	Number of Hours	%	Cumulative %
-50 - -20	0	0.00	0.00
-20 - 0	271	37.64	37.64
0 - 10	359	49.86	87.50
10 - 20	82	11.39	98.89
> 20	8	1.11	100.00

Total Number of Valid Hours: 720

Total Number of Hours: 720

Maximum Value: 29.6 % on Apr 13 10:00

Maximum Daily Average: 29.5 % on Apr 13

Minimum Value: 28.4 % on Apr 8 18:00

Minimum Daily Average: 28.5 % on Apr 8

Maximum Diurnal Average: 29.0 % at hour 7

Minimum Diurnal Average: 29.0 % at hour 17

Monthly Average: 28.99 %

Percentiles: P_1 = 28.4 P_{10} = 28.7 Q_1 = 28.8 Median = 29.0 Q_3 = 29.2 P_{90} = 29.3 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

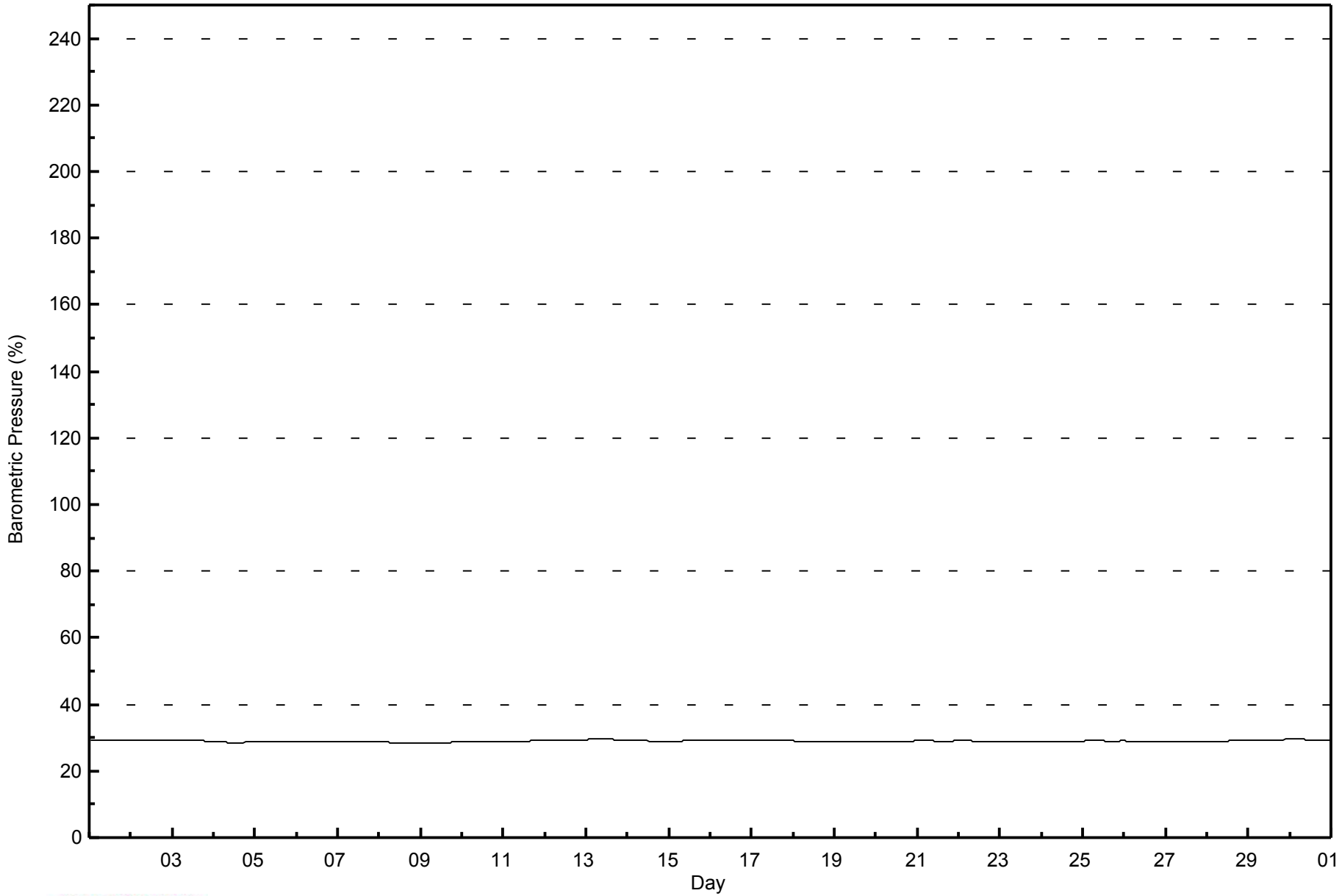
Day	Hourly Period Ending At (MST)																								Daily	Daily
	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24	Average	Maximum
1-Apr	29.1	29.1	29.1	29.1	29.1	29.1	29.1	29.1	29.1	29.1	29.1	29.1	29.1	29.1	29.1	29.1	29.1	29.1	29.1	29.1	29.1	29.1	29.1	29.1	29.1	29.1
2-Apr	29.1	29.1	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	29.3	29.3	29.3	29.3	29.2	29.3
3-Apr	29.3	29.3	29.3	29.3	29.3	29.3	29.3	29.3	29.3	29.3	29.3	29.3	29.2	29.2	29.2	29.1	29.1	29.1	29.0	29.0	29.0	29.0	28.9	28.9	29.2	29.3
4-Apr	28.9	28.8	28.8	28.8	28.7	28.7	28.6	28.6	28.6	28.5	28.5	28.5	28.5	28.5	28.5	28.5	28.5	28.6	28.6	28.7	28.7	28.7	28.7	28.7	28.6	28.9
5-Apr	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
6-Apr	28.8	28.8	28.8	28.7	28.7	28.7	28.7	28.8	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	28.9	28.9	28.9	28.8	28.9
7-Apr	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	28.7	28.9	28.9
8-Apr	28.7	28.7	28.6	28.6	28.6	28.6	28.6	28.6	28.6	28.5	28.5	28.5	28.5	28.5	28.5	28.4	28.4	28.4	28.4	28.4	28.4	28.4	28.4	28.4	28.5	28.7
9-Apr	28.4	28.4	28.5	28.5	28.5	28.5	28.5	28.4	28.5	28.5	28.5	28.5	28.6	28.6	28.6	28.6	28.6	28.6	28.6	28.6	28.7	28.7	28.7	28.7	28.5	28.7
10-Apr	28.7	28.7	28.7	28.7	28.8	28.8	28.8	28.8	28.8	28.8	28.8	28.8	28.9	28.9	28.9	28.9	28.9	28.9	28.9	28.9	29.0	29.0	29.0	29.0	28.8	29.0
11-Apr	29.0	29.0	29.0	29.0	29.0	29.0	29.0	29.0	28.9	28.9	28.9	29.0	29.0	29.0	29.0	29.0	29.0	29.1	29.1	29.2	29.2	29.2	29.2	29.3	29.0	29.3
12-Apr	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	29.3	29.4	29.4	29.4	29.3	29.4
13-Apr	29.4	29.5	29.5	29.5	29.5	29.5	29.5	29.5	29.6	29.6	29.6	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	29.5	29.6
14-Apr	29.3	29.3	29.3	29.3	29.3	29.2	29.2	29.2	29.2	29.1	29.1	29.0	29.0	29.0	28.9	28.9	28.9	28.9	28.8	28.8	28.8	28.8	28.8	28.9	29.1	29.3
15-Apr	28.9	28.9	28.9	28.9	28.9	29.0	29.0	29.0	29.0	29.1	29.1	29.1	29.1	29.1	29.1	29.1	29.1	29.1	29.2	29.2	29.2	29.3	29.3	29.3	29.1	29.3
16-Apr	29.3	29.3	29.3	29.3	29.3	29.3	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	29.2	29.2	29.2	29.3	29.4
17-Apr	29.2	29.2	29.2	29.2	29.2	29.2	29.2	29.2	29.2	29.2	29.1	29.1	29.1	29.1	29.1	29.1	29.1	29.1	29.1	29.1	29.1	29.1	29.1	29.0	29.1	29.2
18-Apr	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	29.0
19-Apr	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	28.9
20-Apr	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	29.0	29.0	29.0	29.0	29.0	29.0	29.0	29.0	29.0	28.9	29.0
21-Apr	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	29.0	29.0	29.0	29.0	29.0	29.0	29.0	29.0	29.0	29.0	29.0	29.1
22-Apr	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	29.0	29.0
23-Apr	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	28.9	28.9	28.8	28.9
24-Apr	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	29.0	29.0	29.0	29.0	28.9	29.0
25-Apr	29.0	29.0	29.0	29.0	29.0	29.0	29.1	29.1	29.1	29.1	29.1	29.0	29.0	29.0	29.0	29.0	29.0	29.0	29.0	29.0	29.0	29.0	29.0	29.0	29.0	29.1
26-Apr	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	29.0	29.0
27-Apr	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	28.7	28.7	28.7	28.8	28.8	28.8	28.8	28.8	28.7	28.9
28-Apr	28.8	28.8	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	29.1	29.1	29.1	29.1	29.1	29.2	29.2	29.2	29.2	29.0	29.2
29-Apr	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	29.5	29.5	29.5	29.4	29.5
30-Apr	29.5	29.5	29.5	29.5	29.5	29.5	29.5	29.5	29.5	29.4	29.4	29.4	29.3	29.3	29.3	29.2	29.2	29.2	29.1	29.1	29.1	29.1	29.1	29.0	29.3	29.5
	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	Diurnal Average	
	29.5	29.5	29.5	29.5	29.5	29.5	29.5	29.5	29.6	29.6	29.6	29.5	29.5	29.5	29.5	29.5	29.4	29.4	29.4	29.4	29.4	29.5	29.5	29.5	Diurnal Maximum	

WBEA NETWORK

Hourly Averages

Barometric Pressure (BP) - %

Athabasca Valley - April 2014



AURORA
ATMOSPHERICS INC.

Maximum Value: 98 inHg on Apr 19 08:00

Maximum Daily Average: 81.8 inHg on Apr 27

Minimum Value: 17 inHg on Apr 30 15:00

Minimum Daily Average: 37.0 inHg on Apr 14

Maximum Diurnal Average: 76.8 inHg at hour 6

Minimum Diurnal Average: 43.7 inHg at hour 17

Monthly Average: 59.1 inHg

Percentiles: P_1 = 22 P_{10} = 32 Q_1 = 44 Median = 57 Q_3 = 76 P_{90} = 85 P_{99} = 96

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

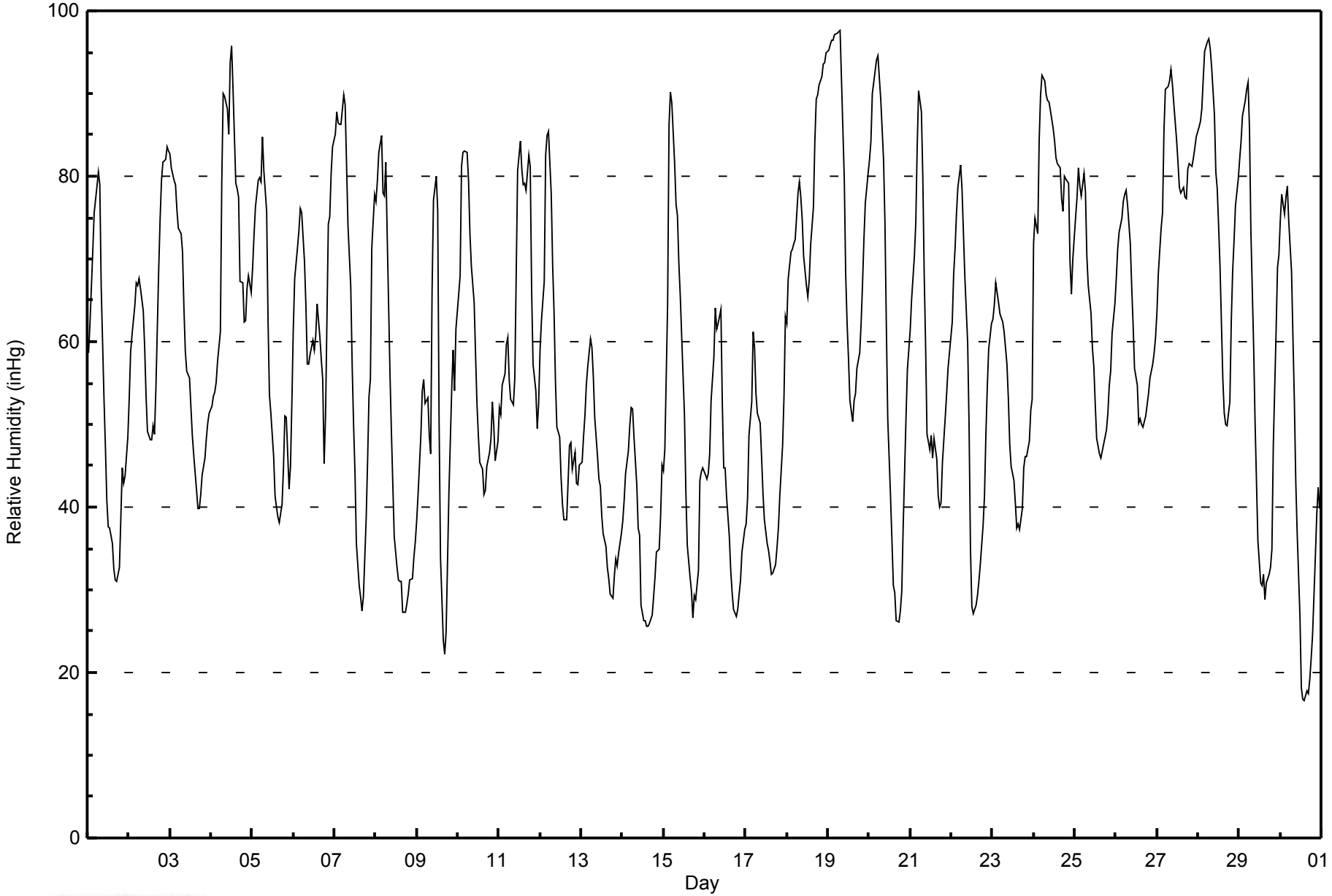
Day	Hourly Period Ending At (MST)																								Daily	Daily
	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24	Average	Maximum
1-Apr	59	62	67	71	76	79	80	79	67	53	47	41	38	38	36	33	31	31	33	39	45	43	44	48	51.5	80
2-Apr	53	59	61	64	67	67	68	66	64	59	53	49	48	48	50	49	54	69	75	80	82	82	84	83	63.9	84
3-Apr	83	81	79	79	76	74	73	71	64	59	56	56	52	49	46	42	40	40	41	44	46	48	50	51	58.4	83
4-Apr	52	53	54	55	58	61	79	90	90	88	85	94	96	91	79	78	78	67	67	62	63	66	68	66	72.5	96
5-Apr	69	73	76	79	80	79	85	81	76	62	54	51	46	41	40	39	38	40	45	51	51	42	45	53	58.2	85
6-Apr	61	68	71	73	76	76	70	64	57	57	59	60	59	61	65	60	58	55	45	51	74	75	80	83	65.0	83
7-Apr	85	88	86	86	86	90	89	81	74	67	57	50	44	36	30	29	27	29	39	46	53	55	71	78	61.6	90
8-Apr	77	80	83	85	78	78	82	73	56	49	43	36	33	31	31	31	27	27	28	30	31	31	34	36	49.5	85
9-Apr	38	42	49	54	56	53	53	49	46	66	77	80	76	50	34	24	22	25	33	42	54	59	54	62	49.9	80
10-Apr	66	68	81	83	83	83	79	73	69	65	58	53	49	45	45	42	42	45	47	48	53	50	46	48	59.2	83
11-Apr	52	51	55	56	60	61	55	53	52	56	68	81	84	81	79	79	78	83	81	66	57	54	50	53	64.4	84
12-Apr	59	63	67	82	85	85	78	69	63	55	50	48	44	40	38	38	43	48	48	45	47	43	43	45	55.3	85
13-Apr	45	48	51	55	57	60	59	56	51	46	43	43	39	37	35	33	31	30	29	32	34	33	34	37	42.4	60
14-Apr	38	41	44	47	50	52	52	48	43	37	37	28	26	26	26	26	26	27	29	32	35	35	39	45	37.0	52
15-Apr	44	47	65	86	90	89	81	77	75	70	66	56	51	42	35	32	30	27	29	29	32	43	44	45	53.5	90
16-Apr	44	43	44	46	53	58	64	62	62	64	53	45	45	41	37	32	30	28	27	28	30	31	35	37	43.2	64
17-Apr	38	41	49	53	61	59	54	51	50	46	42	38	36	35	33	32	32	33	35	37	41	48	53	63	44.2	63
18-Apr	62	68	71	71	72	72	78	79	77	75	70	67	65	67	72	76	84	89	90	91	92	94	94	95	78.0	95
19-Apr	95	96	96	96	97	97	98	98	92	80	68	62	58	53	50	53	54	57	59	62	67	72	77	80	75.7	98
20-Apr	82	84	90	93	94	95	92	89	82	74	62	51	41	36	31	30	26	26	27	30	38	51	57	59	60.0	95
21-Apr	61	65	70	74	84	90	88	80	68	60	49	47	49	46	48	46	41	40	41	45	51	54	57	59	58.9	90
22-Apr	62	68	71	75	79	81	78	73	68	60	50	35	28	27	28	29	31	33	38	41	49	55	59	62	53.4	81
23-Apr	63	64	67	65	63	63	62	61	57	53	48	45	43	40	38	38	37	40	45	46	46	48	52	53	51.6	67
24-Apr	72	75	73	84	90	92	92	90	89	89	88	86	84	82	82	81	77	76	80	80	79	70	66	70	81.1	92
25-Apr	75	78	81	79	78	80	78	70	67	63	59	57	52	48	46	46	47	48	49	51	55	56	61	65	62.1	81
26-Apr	68	71	73	75	77	78	78	77	72	67	62	57	55	50	51	50	50	51	52	54	56	57	59	60	62.4	78
27-Apr	64	68	74	76	85	91	91	92	93	91	89	84	82	79	78	79	78	77	81	82	81	82	83	85	81.8	93
28-Apr	86	87	88	92	95	96	97	95	93	87	81	79	74	69	55	51	50	50	53	62	68	72	76	80	76.5	97
29-Apr	82	84	87	89	91	91	86	73	59	50	43	36	31	31	32	29	31	32	33	35	47	61	69	71	57.2	91
30-Apr	75	78	75	77	79	75	68	61	53	43	37	27	18	17	17	18	17	19	22	25	34	39	42	40	44.0	79
	63.7	66.4	70.0	73.4	75.8	76.8	76.2	72.7	67.7	63.1	58.4	54.7	51.5	47.9	45.5	44.1	43.7	44.7	46.7	48.8	53.0	55.0	57.5	60.3	Diurnal Average	
	95	96	96	96	97	97	98	98	93	91	89	94	96	91	82	81	84	89	90	91	92	94	94	95	Diurnal Maximum	

WBEA NETWORK

Hourly Averages

Relative Humidity (RH) - inHg

Athabasca Valley - April 2014



AURORA
ATMOSPHERICS INC.

Wood Buffalo Environmental Association

Summary of Hour Averages

Wind Speed (WS) - km/h

Athabasca Valley - April 2014

Maximum Speed: 37 km/h on Apr 8 14:00

Maximum Daily Speed Average: 15.9 km/h on Apr 23

Minimum Speed Value: 0 km/h on Apr 29 23:00

Minimum Daily Speed Average: 1.0 km/h on Apr 5

Maximum Diurnal Speed Average: 3.7 km/h at hour 7

Minimum Diurnal Speed Average: 1.4 km/h at hour 16

Monthly Average Velocity: 2.1 km/h 91.0 deg

Percentiles: P_1 = 1 P_{10} = 2 Q_1 = 5 Median = 9 Q_3 = 13 P_{90} = 17 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-Apr	S5	S5	SSE5	SE3	WNW1	ESE3	ENE1	N2	N8	NNW13	NNW13	NNW12	NNW13	NNW14	NNW13	NNW11	NNW9	N8	N6	N5	NNW8	N8	N9	N6	NNW5.8	NNW14
2-Apr	N8	N7	N10	N10	N12	NNW14	NNW15	N11	N11	NNW15	NNW14	NNW16	NNW17	NNW21	NNW19	NNW19	NNW20	NNW23	NNW21	NNW19	NNW21	NNW19	NNW17	NNW15	NNW15.5	NNW23
3-Apr	NNW13	NNW12	NNW13	N10	N10	N10	N8	N9	N8	N8	NNW6	NNW5	NW4	NNW5	E6	ESE9	ESE11	ESE13	SE15	SE17	SE17	SE19	SE17	SE15	ENE3.8	SE19
4-Apr	SE15	SE15	SE14	SE14	SE16	SE15	SE15	SE15	SE15	SE13	SE12	SE9	SE8	WSW8	W15	W14	WNW19	WNW21	WNW23	WNW16	W9	W10	W16	W17	SSW4.9	WNW23
5-Apr	WSW9	SW4	SSW6	SSW5	SSW7	SSW6	SE2	NE1	WNW1	W2	NNW4	NNW5	NW4	NNE2	NNW7	NNW7	N5	N7	NNW3	NNE2	ESE1	ESE8	E6	N2	NW1.0	WSW9
6-Apr	NNE1	NNE2	NE2	NE1	ENE2	NE2	E4	ESE1	ESE2	SE5	N2	NNW5	NNW9	NNW10	NNW10	NNW3	E1	WNW9	NW15	NW8	NW2	WSW2	WNW2	SSE1	NNW2.6	NW15
7-Apr	SSW1	S1	SE4	SE5	SE4	SE2	E1	SE2	E4	E4	ENE2	ENE4	SSE1	SW8	SW12	WSW10	SW8	SW6	SW9	SSW3	S3	SW7	SW6	SSE6	SSW2.8	SW12
8-Apr	SE11	SSE10	SE4	SE4	SSE2	SSE5	SE8	S7	SW20	WSW18	WSW15	W29	W31	W37	W31	W27	W28	WSW25	WSW21	W21	W20	WSW18	WSW18	WSW16	WSW14.6	W37
9-Apr	W19	WSW13	WSW10	WSW12	WSW14	WSW16	WSW16	W22	WNW26	NW34	NW18	N4	ESE1	NNW11	NNW16	WNW32	NW28	NW26	WNW25	W14	NW8	WSW10	WSW19	WSW20	WNW14.8	WNW34
10-Apr	WSW17	W6	NNW13	NNW10	NW5	W5	NNW11	NNW16	NNW15	NNW13	NNW14	NNW15	NNW16	NNW17	NNW17	NNW16	NNW14	NNW17	NNW13	NNW12	NNW12	NNE6	ENE8	E10	NNW10.4	WSW17
11-Apr	E13	E12	E12	E11	E12	E17	E14	E11	E14	E15	E13	ENE10	NE10	NE12	ENE15	NE12	N16	N19	N15	NNW19	N18	N14	N10	NNW7	NE10.0	NNW19
12-Apr	W3	WSW5	SW6	ESE2	S2	SE2	ESE4	ESE5	ESE6	SSE3	SW7	E5	ENE5	ENE4	WNW7	NNW13	NNW19	NNW16	N13	N11	N12	N13	N14	N15	N4.3	NNW19
13-Apr	N11	N9	N6	NNW10	NW7	W5	WSW3	N7	N8	N11	N11	N9	N10	N7	NW2	ENE3	ESE6	ESE9	SE10	SE9	SE10	SE12	SE12	SSE8	NE3.0	SE12
14-Apr	SSE9	SE9	SE10	SE14	SE13	SE14	SE15	SE12	SE10	SSE5	NNW1	SE12	SSE12	S10	S9	SE11	ESE9	ESE8	ESE8	SE8	ESE8	ESE8	ENE8	N11	SE8.4	SE15
15-Apr	ENE10	E9	ENE15	ENE7	NE6	ENE10	E13	ENE9	E12	E11	ENE14	ENE12	ENE14	ENE12	NE13	NE14	NE15	NE14	N17	NNE14	NNE10	N11	N11	NNE10	NE10.4	N17
16-Apr	N7	NNE7	E9	ENE7	NE6	NE6	ENE9	ESE13	E14	ESE11	SE9	SE14	SE14	ESE14	ESE15	ESE18	ESE16	ESE15	ESE16	SE15	SE14	SE12	SE11	SE8	ESE10.2	ESE18
17-Apr	SE10	SE9	ESE6	SE6	ESE5	SE5	SE11	SE12	SE12	SE18	SE19	SE19	SE18	SE17	SE17	SE18	SE18	SE16	ESE13	SE10	SE8	SE6	SE4	SE5	SE11.7	SE19
18-Apr	SE6	SSE6	SSE6	SE6	SE7	ESE11	ESE8	ESE10	ESE9	ESE9	ESE10	ESE12	ESE13	SE14	ESE12	ESE10	ESE7	SSE4	NNE1	N2	ENE1	N2	NNE1	NNE1	ESE6.4	SE14
19-Apr	ENE1	SSE1	ESE3	SE1	NNE1	NW1	NW1	WNW1	SE2	E5	ESE7	ESE7	SE9	SE8	SSE7	SE11	SE14	ESE14	ESE13	ESE12	SE8	SE9	SSE9	SSE7	SE5.9	SE14
20-Apr	SSE6	SE5	ENE2	NNW2	W2	NW1	W1	WNW1	NW1	NW2	NNW8	NNW10	N8	NNW10	N10	N8	NNE7	NE6	E5	SE2	SSW3	SSW2	SSE1	SSW2	N2.2	NNW10
21-Apr	SSE2	SSE5	SE6	SE5	SE6	ESE2	SE6	S3	SW9	SW9	WSW7	NNW12	N12	NNW14	N18	N13	NNW12	N9	N9	N7	NNW8	N10	N9	N11	NNW4.1	N18
22-Apr	N11	N4	N10	N11	NNW7	NNW10	NNE3	NNE3	NW3	WNW2	NW4	E8	ESE14	E15	E18	E18	E23	E21	E18	E14	E13	E11	E10	E8	ENE7.9	E23
23-Apr	E8	E10	E10	E13	E12	E12	E13	E15	E15	E18	ESE19	ESE19	ESE18	ESE19	ESE22	ESE20	E21	E20	E21	E16	E17	E15	ESE14	ESE19	E15.9	ESE22
24-Apr	ESE15	SE6	E8	E9	NNE5	NNE5	NE4	E8	E10	E7	ESE8	SSE10	ESE9	ESE10	SE10	SSE6	SSE5	S3	SW7	SSE4	E7	ESE7	ESE10	SE12	ESE6.3	ESE15
25-Apr	ESE7	ESE7	ENE3	ESE4	E4	E3	ESE5	SE8	SSE11	SSE8	SE7	SSE4	ESE7	SSE6	SSE9	SSE11	SE11	SE13	SE9	SE7	SSE6	SE8	SSE5	SE6	SE6.6	SE13
26-Apr	SE7	SE8	SE6	SE6	SE5	SE7	SE10	SE10	SE10	SE14	SE13	SE14	ESE11	SE11	SE13	SE15	SE14	SE12	ESE11	SE11	ESE7	SE11	SE11	SE11	SE10.4	SE15
27-Apr	SE8	SE10	SE11	ESE9	ESE9	E6	E6	ESE7	SE7	SE10	SE14	SE15	SE16	SE15	SE14	SE14	SE15	SE15	SE14	SE11	SE11	SE10	SE7	SE8	SE10.7	SE16
28-Apr	SE6	SE6	SE6	S1	SW1	SW4	ENE1	SW1	W3	SW2	S3	WNW3	NW3	WNW3	W3	WNW2	SE4	SE7	SE8	SE13	SE11	SE10	SSE7	SE10	SSE3.2	SE13
29-Apr	SSE7	SE7	SE10	SE11	SE9	SE8	SE6	ESE5	E8	E8	SSW4	SW15	SW14	WSW11	WNW12	W9	NNW9	N6	NNW3	WNW2	WSW0	ESE0	NW0	ENE1	S2.0	SW15
30-Apr	ESE0	SSE1	S1	SSE1	SSE3	SE5	SE9	SE7	SE8	ESE6	NE3	SW7	SW12	SSW12	SSW10	SW12	S9	SW9	WSW10	SW4	SSW2	SE3	SE1	SW4	SSW4.3	SSW12
	SE2.2	ESE2.9	ESE3.2	ESE2.9	ESE2.3	ESE2.4	ESE3.7	ESE3.2	ESE2.7	E2.3	E2.2	E2.3	E2.1	NE1.4	NE1.5	NE1.4	NE2.6	NE2.6	NNE1.6	ENE1.8	ENE2.1	ESE2.5	ESE1.6	ESE1.5	Diurnal Average	
	W19	SE15	ENE15	SE14	SE16	E17	WSW16	W22	WNW26	WNW34	SE19	W29	W31	W37	W31	WNW32	W28	NW26	WNW25	W21	NNW21	SE19	WSW19	WSW20	Diurnal Maximum	

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

Wind Speed (WS) - km/h
Athabasca Valley - April 2014

Number of Exceedences (AAAQO): 1-hr: 0 24-hr: 0
Maximum Value: 10 km/h on Apr 8 17:00

Minimum Value: 0 km/h on Apr 28 14:00

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

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

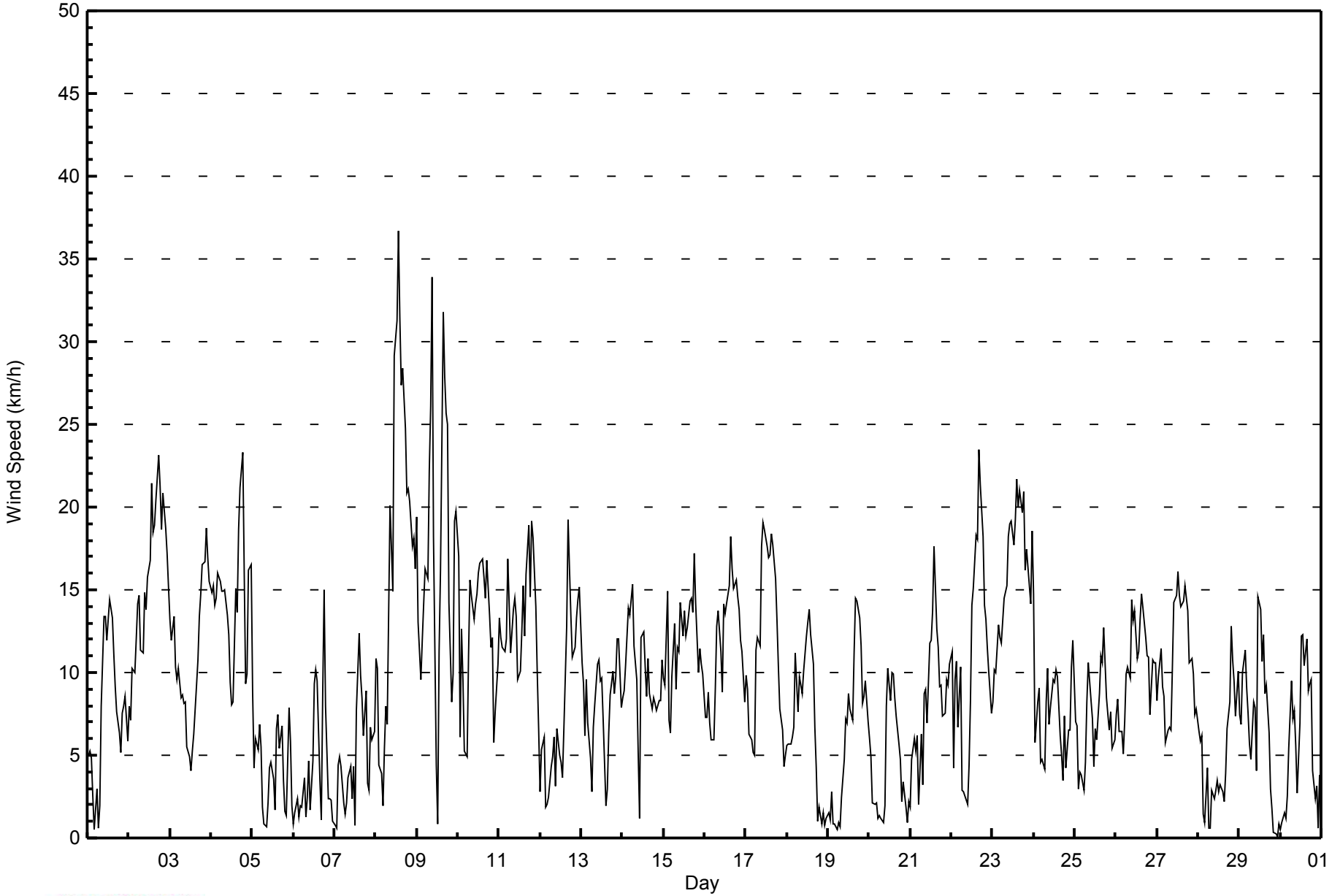
Day	Hourly Period Ending At (MST)																								Daily
	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24	Maximum
1-Apr	2	3	2	2	3	2	1	1	2	3	3	3	2	2	3	3	2	3	2	2	2	2	2	3	3
2-Apr	2	2	3	3	3	3	4	3	3	3	3	4	4	4	3	4	5	5	5	3	4	3	3	3	5
3-Apr	3	2	3	3	3	2	2	2	2	2	1	2	2	2	4	4	3	4	4	5	5	4	4	4	5
4-Apr	3	3	3	3	4	4	3	3	3	3	3	2	2	6	4	3	7	6	7	4	1	1	5	3	7
5-Apr	4	3	3	2	3	3	2	1	1	1	1	1	1	2	2	1	1	2	2	1	1	4	3	1	4
6-Apr	1	1	1	1	2	2	2	2	2	2	2	2	2	2	2	2	2	9	6	4	1	2	1	2	9
7-Apr	1	1	2	2	2	2	2	1	2	1	1	2	3	2	4	4	3	2	3	1	2	3	3	2	4
8-Apr	2	3	3	1	2	2	2	5	4	4	4	10	8	8	8	7	10	7	7	6	5	4	4	3	10
9-Apr	4	3	2	3	3	3	4	5	6	9	8	2	1	7	7	8	6	9	6	3	4	4	3	3	9
10-Apr	4	4	3	2	3	1	4	3	3	3	3	3	3	3	3	3	3	3	3	3	3	2	3	3	4
11-Apr	3	4	3	3	3	4	4	2	3	4	3	3	4	4	5	5	5	5	4	6	5	4	3	2	6
12-Apr	1	2	2	1	1	1	1	1	1	2	3	2	3	2	6	5	4	5	4	3	3	4	4	4	6
13-Apr	3	3	2	3	3	2	1	3	2	3	3	3	3	3	2	3	3	3	3	3	2	3	4	3	4
14-Apr	3	2	2	2	2	3	3	3	2	2	3	4	4	4	4	3	3	2	2	3	3	3	3	3	4
15-Apr	4	5	4	4	3	4	4	3	3	4	4	3	5	5	5	5	5	4	5	4	3	3	3	2	5
16-Apr	3	2	3	2	2	2	4	4	4	4	4	4	4	5	5	5	4	4	4	4	4	3	2	2	5
17-Apr	2	2	2	1	1	2	3	3	3	7	5	6	5	5	5	5	5	5	4	3	3	2	2	2	7
18-Apr	2	2	1	2	2	3	3	3	3	3	3	3	4	4	4	3	2	3	1	1	1	1	1	1	4
19-Apr	1	1	1	2	1	1	1	1	2	3	3	3	3	3	3	3	4	4	4	3	3	3	2	2	4
20-Apr	2	2	1	2	1	1	1	1	1	2	2	2	2	2	3	4	3	2	2	2	4	2	1	2	4
21-Apr	2	4	2	3	3	1	3	3	2	2	6	6	3	4	6	4	3	3	3	2	2	2	2	2	6
22-Apr	2	4	4	3	2	2	2	1	1	1	1	6	4	5	5	5	5	5	4	4	4	3	3	2	6
23-Apr	3	3	3	4	4	3	4	4	5	6	6	7	5	6	7	7	6	5	5	4	5	4	5	6	7
24-Apr	5	4	8	4	2	2	2	2	3	2	3	3	3	4	3	2	2	2	2	2	4	2	3	4	8
25-Apr	3	2	2	1	1	1	2	2	3	3	3	3	3	3	4	3	3	3	3	3	2	2	2	2	4
26-Apr	2	2	2	2	1	2	3	2	4	3	4	4	3	3	4	4	4	3	3	4	2	3	3	3	4
27-Apr	2	4	3	3	3	2	2	2	2	3	4	4	4	4	4	4	4	4	3	3	2	3	2	2	4
28-Apr	2	1	2	1	1	2	1	1	1	2	2	1	1	0	1	1	3	2	2	4	3	2	2	3	4
29-Apr	3	2	3	3	3	2	2	2	1	2	3	5	5	5	6	5	3	3	2	1	1	1	1	1	6
30-Apr	1	1	1	1	2	2	3	3	2	2	1	5	4	5	5	4	4	4	3	1	2	2	1	3	5
	5	5	8	4	4	4	4	5	6	9	8	10	8	8	8	8	10	9	7	6	5	4	5	6	
	Diurnal Maximum																								

WBEA NETWORK

Hourly Averages

Wind Speed (WS) - km/h

Athabasca Valley - April 2014



AURORA ATMOSPHERICS INC.

Wind Speed Ranges (km/h)	Number of Hours	%	Cumulative %
0 - 5	180	25.00	25.00
6 - 11	292	40.56	65.56
12 - 19	215	29.86	95.42
20 - 28	27	3.75	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

WBEA NETWORK

Frequency Distribution

Wind Speed (WS) - km/h

Athabasca Valley - April 2014

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	9	12	6	13	10	16	22	21	10	8	7	4	8	10	14	10	180
6 - 11	49	5	5	9	24	40	80	21	4	4	13	8	4	2	3	21	292
12 - 19	13	2	6	6	28	23	61	2	0	1	5	12	6	3	2	45	215
20 - 28	0	0	0	0	5	2	0	0	0	0	1	3	5	4	2	5	27
29 - 38	0	0	0	0	0	0	0	0	0	0	0	0	4	2	0	0	6
> 38	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Totals	71	19	17	28	67	81	163	44	14	13	26	27	27	21	21	81	720

Total Number of Valid Hours: 720

Total Number of Hours: 720

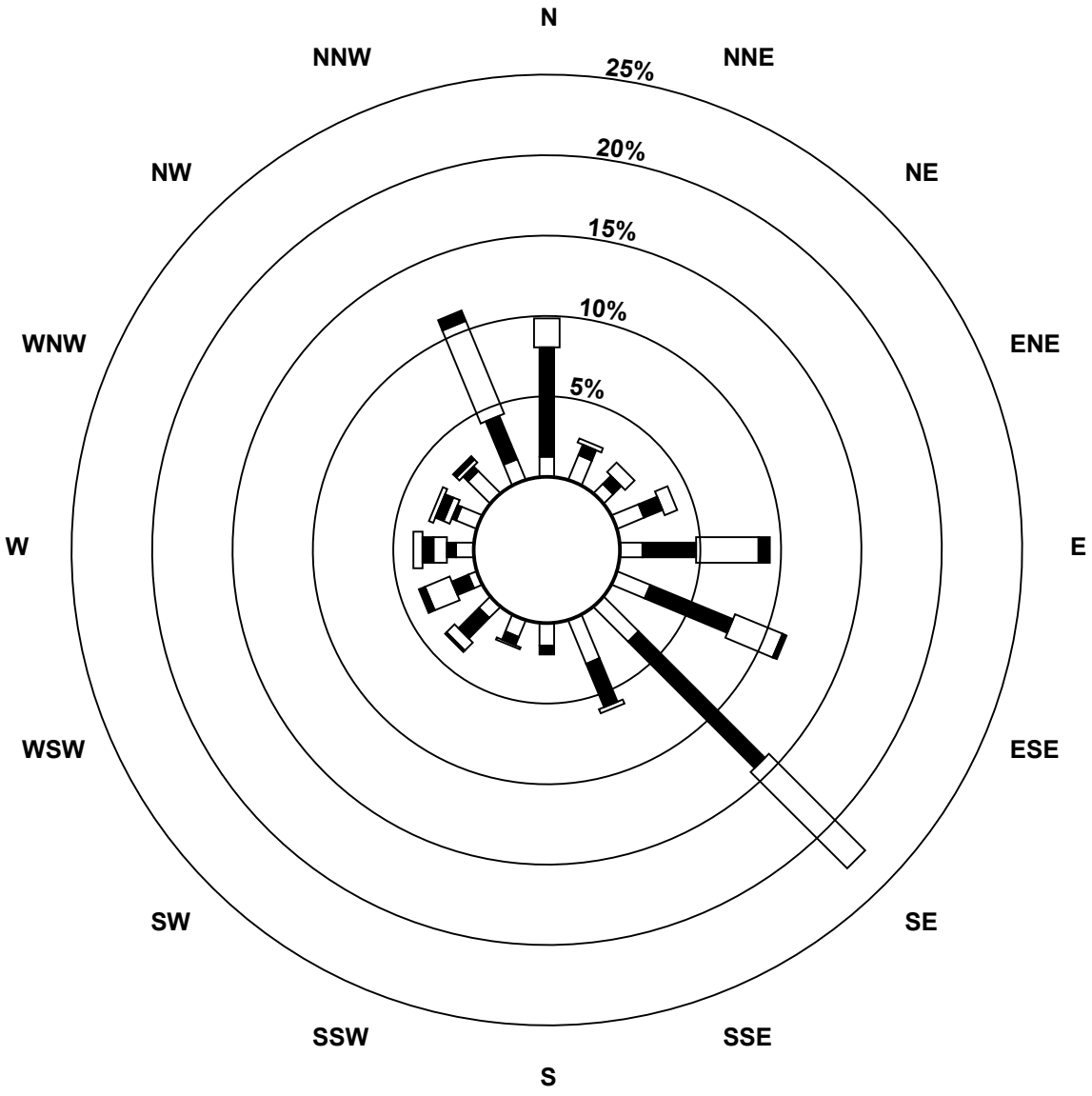
AURORA
ATMOSPHERICS INC.

Wood Buffalo Environmental Association

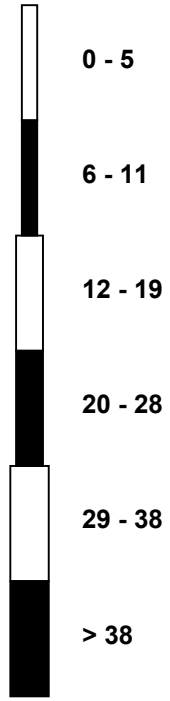
Wind Rose Apr 2014

Wind Speed (WS) - km/h

Athabasca Valley (AMS 7)



Classes (km/h)



Total Number of Valid Hours: 720

Wood Buffalo Environmental Association

Summary of Hour Averages

Wind Direction (WD) - deg

Athabasca Valley - April 2014

Direction of Maximum Speed: 278 deg on Apr 8 14:00
Direction of Maximum Daily Speed Average: 98.2 deg on Apr 23

Direction of Minimum Speed: 320 deg on Apr 29 23:00

Direction of Minimum Daily Speed Average: 1.0 deg on Apr 5

Monthly Average Direction: 342.8 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-Apr	180	182	162	130	300	108	58	355	350	344	339	336	339	336	335	338	340	1	356	350	338	355	6	9	345.2
2-Apr	352	4	354	353	349	346	347	353	349	343	346	347	348	346	344	344	345	343	340	342	341	343	341	341	345.5
3-Apr	344	342	346	356	355	349	350	349	354	355	345	332	311	341	90	107	117	115	125	127	128	133	138	138	65.2
4-Apr	137	141	146	145	138	138	138	143	143	144	142	142	137	252	276	274	289	302	285	299	275	262	271	271	204.5
5-Apr	252	231	213	210	203	197	125	51	293	279	329	335	317	16	337	340	351	354	348	25	109	107	91	3	305.0
6-Apr	14	16	37	55	73	55	101	115	112	141	352	348	343	341	342	343	92	290	317	317	325	243	289	167	338.4
7-Apr	202	171	132	137	135	127	89	125	89	84	64	78	161	227	229	246	231	224	233	210	187	223	215	148	196.8
8-Apr	141	148	135	129	154	152	146	185	234	238	249	276	265	278	267	272	268	242	256	268	270	253	252	253	253.8
9-Apr	260	248	249	252	245	248	252	265	283	304	324	352	114	334	340	303	307	309	287	260	317	238	248	250	282.5
10-Apr	247	277	339	334	310	278	348	347	338	341	341	341	337	342	338	345	347	342	344	344	339	22	68	86	339.8
11-Apr	81	82	86	85	90	86	86	79	80	82	81	67	44	45	59	43	3	354	356	345	350	357	350	330	45.8
12-Apr	278	243	227	116	169	139	122	121	115	168	217	80	71	64	286	339	338	345	351	11	10	11	4	0	358.6
13-Apr	2	1	11	340	325	274	253	2	11	9	359	2	354	3	308	62	106	113	126	132	133	139	144	149	39.4
14-Apr	152	144	145	140	142	142	142	142	143	167	328	131	158	184	171	135	115	123	122	124	121	108	76	11	136.3
15-Apr	74	83	77	74	45	78	84	71	83	83	65	72	59	73	51	49	44	38	3	12	23	5	5	17	52.2
16-Apr	10	29	79	72	51	39	76	113	95	113	126	129	136	108	115	122	115	115	123	126	129	134	144	144	111.6
17-Apr	146	134	123	128	120	124	133	135	127	135	133	132	137	128	125	134	129	127	119	126	133	131	134	136	130.7
18-Apr	146	150	148	137	129	119	113	117	117	110	111	111	110	124	121	119	119	152	22	9	76	358	28	27	119.3
19-Apr	64	151	123	141	31	317	310	288	146	97	113	120	134	143	149	130	135	108	115	121	125	140	149	156	128.2
20-Apr	158	144	63	343	264	310	259	300	310	317	338	341	353	347	358	354	18	35	89	127	193	201	164	196	358.5
21-Apr	160	159	141	135	139	120	139	186	224	224	246	328	351	347	349	355	346	356	352	351	343	352	354	355	344.4
22-Apr	354	357	355	350	347	346	12	19	315	292	325	80	105	100	84	91	85	90	87	95	95	92	82	84	70.6
23-Apr	79	80	96	95	99	98	93	89	96	99	111	110	107	107	105	104	90	85	84	86	99	100	110	114	98.2
24-Apr	107	131	100	94	27	13	50	81	87	94	111	147	120	119	138	160	149	169	218	147	101	106	113	124	113.9
25-Apr	114	102	76	102	97	80	108	143	150	155	134	149	115	159	161	149	145	138	134	141	150	138	153	134	136.1
26-Apr	137	138	138	138	143	139	134	134	125	130	131	124	119	130	133	129	131	125	122	128	121	132	134	135	130.4
27-Apr	135	128	124	120	117	88	96	107	135	146	140	134	134	136	135	138	137	136	138	138	133	132	134	143	131.9
28-Apr	133	142	142	173	227	232	76	226	270	215	173	294	306	294	278	287	132	134	130	129	131	144	157	139	150.4
29-Apr	149	137	138	142	143	145	145	105	83	80	201	218	222	255	296	269	344	351	341	290	256	118	320	73	179.2
30-Apr	104	167	186	159	164	146	140	141	128	104	48	236	220	199	204	225	182	228	240	224	209	140	124	224	192.0
	124.3	122.8	105.1	102.6	110.2	108.1	106.6	104.5	103.3	94.6	81.7	84.9	92.0	46.8	37.9	48.4	48.9	44.9	32.0	69.9	76.0	104.9	112.1	116.6	
	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: 98 deg on Apr 28 08:00

Minimum Value: 6 deg on Apr 29 09:00

Percentiles: P_1 = 9 P_{10} = 12 Q_1 = 15 Median = 20 Q_3 = 30 P_{90} = 57 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

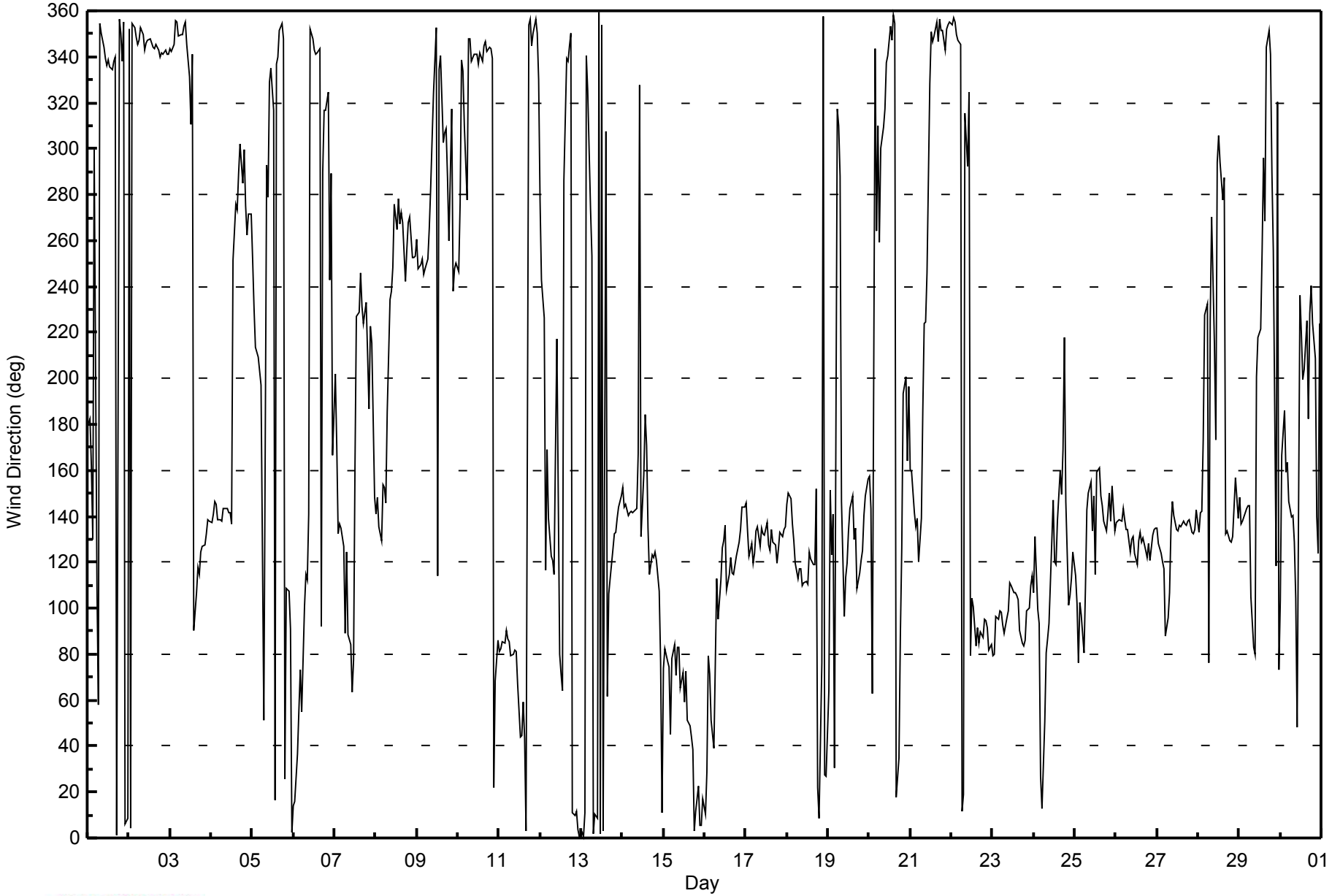
Day	Hourly Period Ending At (MST)																								Daily
	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24	Maximum
1-Apr	41	56	45	67	88	40	94	49	15	13	13	14	11	12	11	13	14	22	19	15	10	19	14	31	94
2-Apr	16	20	18	19	16	15	16	19	17	13	14	15	17	13	13	15	16	13	11	11	10	12	10	10	20
3-Apr	11	12	14	19	19	16	16	16	15	16	17	23	32	30	56	26	21	20	17	16	16	16	16	15	56
4-Apr	14	13	14	15	15	14	15	14	13	13	13	13	14	48	10	11	22	14	13	15	11	10	16	10	48
5-Apr	55	78	26	24	34	36	69	76	70	34	20	21	33	69	7	8	17	16	56	49	84	30	15	48	84
6-Apr	45	38	30	55	54	60	29	90	81	47	64	43	12	12	9	37	82	49	12	15	32	79	55	85	90
7-Apr	73	93	28	35	46	57	72	53	39	18	50	34	85	22	16	30	26	24	14	32	50	20	24	16	93
8-Apr	12	14	40	29	83	21	21	52	11	11	18	12	12	13	15	13	14	14	16	12	13	12	12	11	83
9-Apr	13	12	12	12	10	11	13	16	14	13	20	37	85	42	17	18	15	10	15	12	40	14	9	9	85
10-Apr	9	49	10	11	24	23	14	14	13	13	13	13	12	14	12	12	16	11	14	14	9	34	17	16	49
11-Apr	11	13	13	14	15	11	12	12	14	15	13	21	18	19	19	22	20	18	20	16	18	20	18	11	22
12-Apr	25	14	28	56	50	37	17	18	22	53	26	43	59	67	45	25	17	15	19	15	15	16	20	21	67
13-Apr	18	18	18	12	25	27	30	24	18	20	23	31	22	37	88	78	44	26	18	15	15	14	14	18	88
14-Apr	18	16	13	10	10	10	10	14	17	59	86	19	26	30	38	20	18	19	17	20	18	24	22	20	86
15-Apr	22	24	15	27	27	16	17	18	17	23	17	22	26	29	37	28	25	29	21	15	22	18	17	17	37
16-Apr	21	28	19	23	29	31	23	23	21	29	39	23	23	23	22	19	21	20	17	16	14	15	12	14	39
17-Apr	13	15	22	17	23	26	17	16	19	20	17	21	22	23	22	19	19	24	19	17	13	17	27	22	27
18-Apr	15	16	16	19	17	20	23	22	22	22	21	22	22	19	22	21	25	45	72	30	50	25	40	55	72
19-Apr	65	75	32	93	50	58	32	63	73	67	31	37	30	39	38	24	19	20	20	18	21	18	18	18	93
20-Apr	19	23	57	42	28	67	38	40	46	34	12	12	17	17	23	36	27	23	18	42	65	60	70	66	70
21-Apr	59	51	32	45	27	55	27	71	11	11	43	39	16	15	16	20	13	19	16	16	17	15	14	16	71
22-Apr	13	49	35	16	22	12	55	47	20	25	16	69	22	22	19	17	12	12	12	18	18	18	17	16	69
23-Apr	18	17	21	16	19	19	16	15	19	18	20	22	21	21	20	21	15	16	12	13	18	17	25	22	25
24-Apr	20	58	81	18	36	26	27	14	14	22	30	30	28	25	16	24	39	51	14	40	33	20	20	18	81
25-Apr	22	20	26	22	23	21	25	19	19	23	40	80	41	59	45	20	17	15	18	24	30	16	23	22	80
26-Apr	17	15	15	20	23	17	14	14	22	16	20	22	23	19	17	17	16	18	20	18	21	16	15	15	23
27-Apr	16	18	18	19	23	18	18	22	18	17	15	15	15	16	16	16	15	16	15	15	13	14	15	15	23
28-Apr	15	14	16	59	73	62	82	98	24	64	60	41	28	12	20	30	84	22	18	15	15	16	21	21	98
29-Apr	24	15	17	13	16	25	34	27	6	7	70	15	20	25	35	44	20	28	32	34	87	93	82	74	93
30-Apr	92	77	57	76	69	23	16	17	21	33	58	67	24	37	36	22	33	18	13	18	67	59	93	78	93
	92	93	81	93	88	67	94	98	81	67	86	80	85	69	88	78	84	51	72	49	87	93	93	85	
	Diurnal Maximum																								

WBEA NETWORK

Hourly Averages

Wind Direction (WD) - deg

Athabasca Valley - April 2014



AURORA ATMOSPHERICS INC.

Wood Buffalo Environmental Association

SO_2 Calibration Report

Station Information

Calibration Date	April 3, 2014	Previous Calibration	March 20, 2014
Station Name	Athabasca Valley	Station Number	AMS 7
Reason:	Routine		
Start Time (MST)	8:05	End Time (MST)	13:00
Barometric Pressure	n/a mmHg	Station temp.	21 Deg C
Calibrator Make/Model	Sabio 4010	Serial Number	8400311
Cal Gas Concentration	50.8 ppm	Cal Gas Expiry Date	41557
Gas Cert Reference	LL 105142		
DACS make/model	Campbell Scientific CR3000	DACS serial No.	2575
DACS voltage range	0-5V	DACS channel #	1

Analyzer Information

	Before	*After*		*Before*	*After*
Analyzer Range (ppb)	1000	1000	PMT voltage	-681	-681
Analyzer Range (mv)	5000	5000	Lamp voltage	804	807
Calculated slope	0.997476	0.996265	Chamber temp.	43.7	43.6
Calculated intercept	1.130928	1.318866	Pressure (mmHg)	716.6	714.3
Analyzer Background	10.3	10.3	Flow (lpm)	0.522	0.521
Analyzer Coefficient	0.814	0.814	Intensity	48500	49000

Analyzer make	Thermo 43c	Analyzer serial #	607415781

Calibration Data

Set Point	Total flow rate (cc/min)	Source gas flow rate (cc/min)	Calculated concentration (ppb) (Cc)	Indicated concentration (ppb) (Ic)	Correction factor (Cc/Ic)
as found zero	5000	0.0	0.0	-0.2	NA
as found span	5000	58.8	597.4	593.6	1.006
calibrator zero	5000	0.0	0.0	-0.2	NA
high point	5000	58.8	597.4	599.0	0.997
second point	5000	29.4	298.7	297.6	1.004
third point	5000	14.7	149.4	147.7	1.011
calibrator zero	6000	0.0	0.0	-0.2	NA
as left zero	6000	0.0	0.0	0.3	NA
as left span	5000	58.8	597.4	600.2	0.995
				Average Correction Factor	1.004

Corrected As found	593.8	Previous response	597.8	% change	0.7%

Notes:

no adjustments required. Changed inlet filter.

Calibration Performed By: Michael Martineau

Wood Buffalo Environmental Association

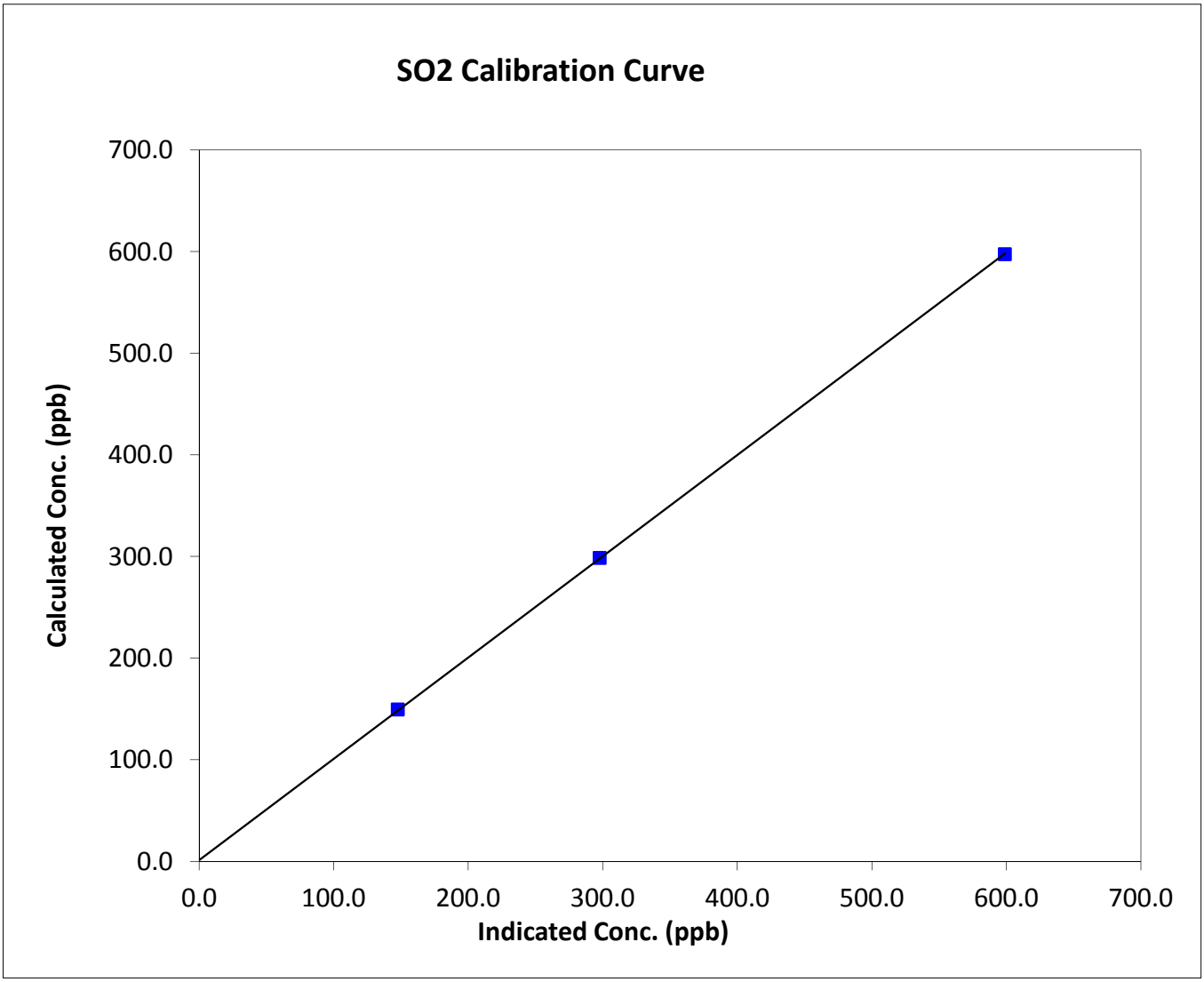
SO_2 Calibration Summary

Station Information

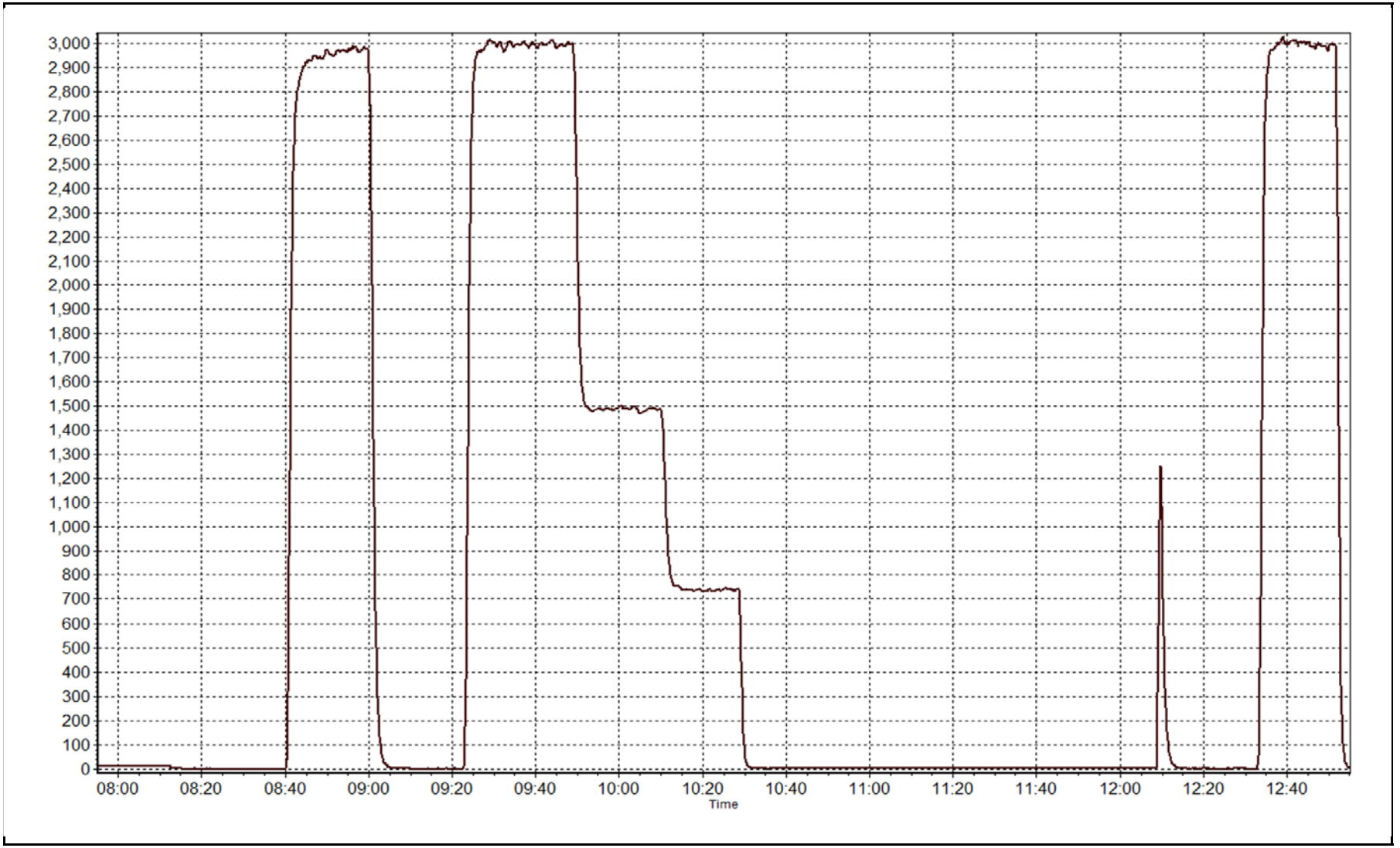
Calibration Date	April 3, 2014	Previous Calibration	March 20, 2014
Station Name	Athabasca Valley	Station Number	AMS 7
Start Time (MST)	8:05	End Time (MST)	13:00
Analyzer make	Thermo 43c	Analyzer serial #	607415781

Calibration Data

Calculated concentration (ppb) (Cc)	Indicated concentration (ppb) (Ic)	Correction factor (Cc/Ic)	Statistical Evaluation	
0.0	-0.2	N/A	Correlation Coefficient	0.999982
597.4	599.0	0.9973		
298.7	297.6	1.0037	Slope	0.996265
149.4	147.7	1.0115		
			Intercept	1.318866



SO2 Calibration Plot Date: April 3, 2014



Wood Buffalo Environmental Association

TRS Calibration Report

Station Information

Calibration Date	April 16, 2014	Previous Calibration	March 24, 2014
Station Name	Athabasca Valley	Station Number	AMS 7
Reason:	Routine		
Start Time (MST)	9:40	End Time (MST)	13:00
Barometric Pressure	747 mmHg	Station temp.	21 Deg C
Calibrator Make/Model	Sabio 4010	Serial number	8400311
Cal Gas Concentration	5.64 ppm H2S	Cal Gas Expiry Date	11/3/2009
Gas Cert Reference	CC 188098	SO2 gas conc.	50.8 ppm SO2
DACS make/model	Campbell Scientific CR3000	DACS serial No.	2575
DACS voltage range	0-5V	DACS channel #	2

Analyzer Information

	Before	*After*		*Before*	*After*
Analyzer Range (ppb)	100	100	PMT voltage	-619	-619
Analyzer Range (input)	5000	5000	Lamp voltage	811	812
Calculated slope	1.009336	1.010925	Chamber temp.	44	44
Calculated intercept	0.096334	-0.033257	Pressure	704.7	685.8
Analyzer Background	16	16.2	Flow	0.169	0.473
Analyzer Coefficient	0.984	0.984	Intensity	43500	43500
			Converter temp.	800	800

Analyzer make/model	TEI 45C	Analyzer serial #	630718530
Converter make/model	CDN-101	Converter serial #	468

Calibration Data

Set Point	Total flow rate (cc/min)	Source gas flow rate (cc/min)	Calculated concentration (ppb) (Cc)	Indicated concentration (ppb) (Ic)	Correction factor (Cc/Ic)
as found zero	6000	0.0	0.0	0.0	NA
as found span	6000	79.8	75.0	74.2	1.011
SO2 scrubber check	5000	8.9	90.4	0.0	NA
calibrator zero	6000	0.0	0.0	0.0	NA
high point	6000	79.8	75.0	74.2	1.011
second point	6000	44.7	42.0	41.7	1.007
third point	6000	26.6	25.0	24.7	1.013
calibrator zero	5000	0.0	0.0	0.0	NA
as left zero	5000	0.0	0.0	0.2	NA
as left span	6000	79.8	75.0	74.3	1.009
				Average Correction Factor	1.010

Corrected As found	74.2	Previous response	74.2	% change	0.1%

Notes:

Replaced flow sensor after as founds and calibrated flow with BIOS. No analyzer adjustments required.

Calibration Performed By: Mike Martineau

Wood Buffalo Environmental Association

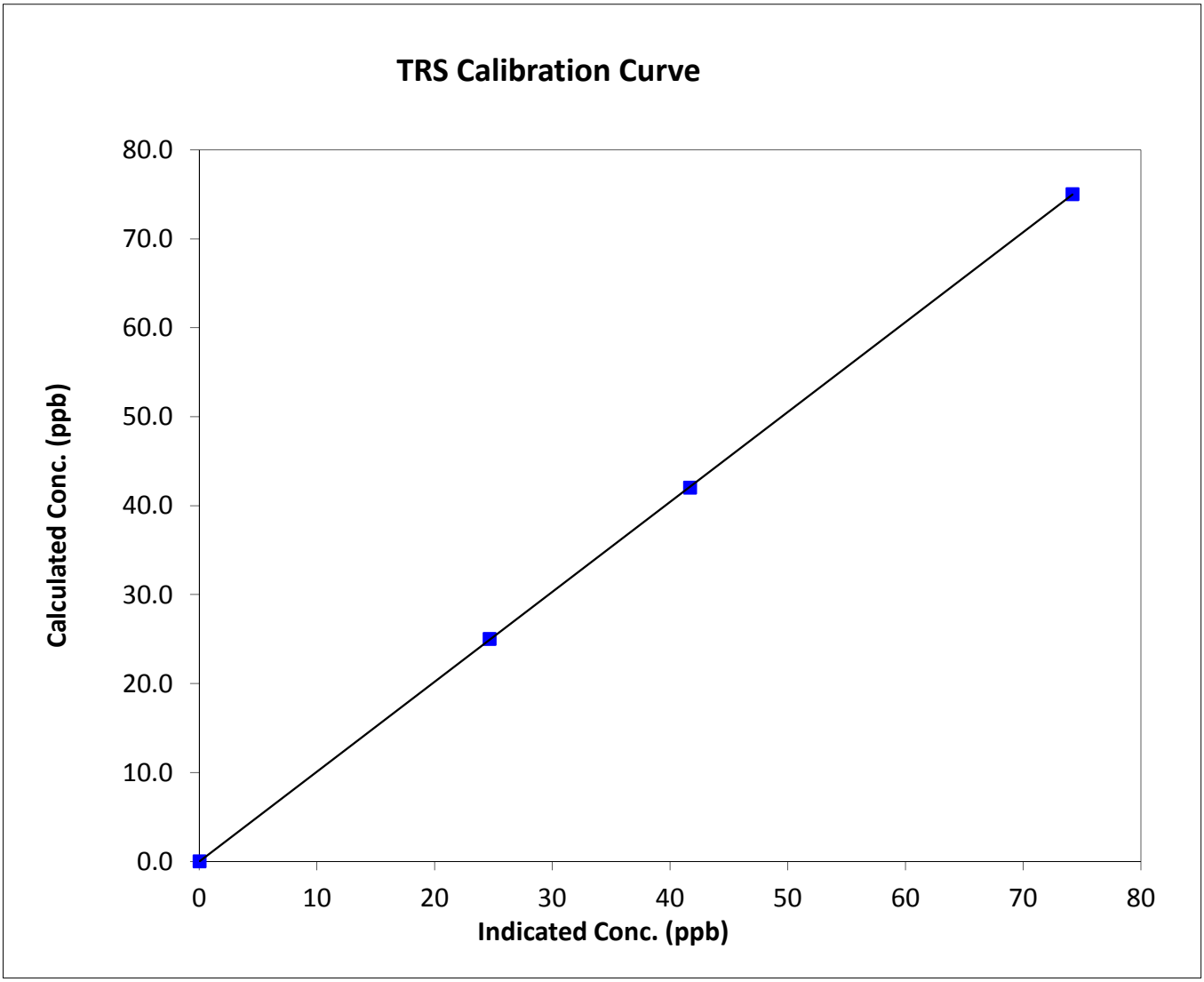
TRS Calibration Summary

Station Information

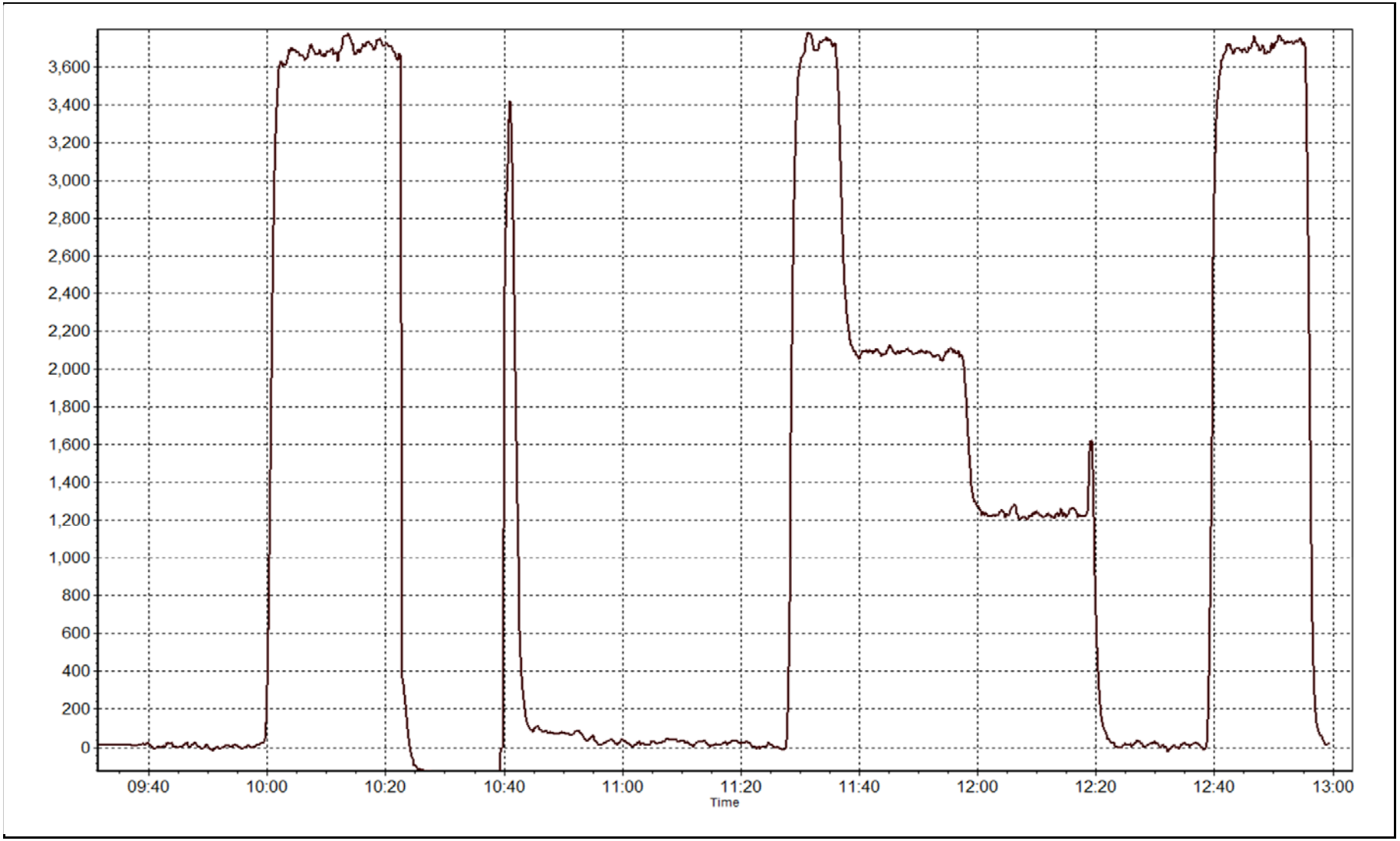
Calibration Date	April 16, 2014	Previous Calibration	March 24, 2014
Station Name	Athabasca Valley	Station Number	AMS 7
Start Time (MST)	9:40	End Time (MST)	13:00
Analyzer make	TEI 45C	Analyzer serial #	630718530

Calibration Data

Calculated concentration (ppb) (Cc)	Indicated concentration (ppb) (Ic)	Correction factor (Cc/Ic)	Statistical Evaluation	
0.0	0.0	N/A	Correlation Coefficient	0.999992
75.0	74.2	1.0110		
42.0	41.7	1.0073	Slope	1.010925
25.0	24.7	1.0131		
			Intercept	-0.033257



TRS Calibration Plot Date: April 16, 2014



Wood Buffalo Environmental Association

THC / NMHC Calibration Report

Station Information

Calibration Date	Thursday, April 03, 2014	Prev Calibration	Thursday, March 20, 2014
Station Name	Athabasca Valley	Station Number	AMS 7
Reason:	Routine		
Start Time (MST)	8:05	End Time (MST)	13:00
Barometric Pressure	mmHg	Station temp.	21 Deg C
Calibrator Model	Sabio 4010	Serial Number	8400311
Gas Cert Reference	LL 105142	Cal Gas Expiry Date	Thursday, October 10, 2013
CH4 Cal Gas Conc.	502.0 ppm	CH4 Equiv Conc.	1063.0 ppm
C3H8 Cal Gas Conc.	204.0 ppm		
DACS make/model	Campbell Scientific CR3000	DACS serial No.	5563

Analyzer Information

	Before	*After*		*Before*	*After*
THC Range (ppm)	50	50	Internal Temp	34.5	33.0
THC Range (input)	50	50	Flame Temp	391.0	389.0
NMHC Range (ppm)	50	50	Carrier Pressure	32.1	32.1
NMHC Range (input)	50	50	Fuel Pressure	41.4	41.4
THC Calc slope	1.004418	1.007743	Air Pressure	32.5	32.5
THC Calc intercept	0.020170	0.022287			
NMHC Calc slope	1.005141	1.009702			
NMHC Calc intercept	0.014154	0.016266			

Analyzer make	Thermo Scientific 55i	Analyzer serial #	1218153354

THC Calibration Data

Set Point	Dilution air flow rate (cc/min)	Source gas flow rate (cc/min)	Calculated concentration THC (ppm) (Cc)	Indicated concentration (ppb) (Ic)	Correction factor (Cc/Ic)
as found zero	5000	0.0	0.00	0.00	N/A
as found span	5000	58.8	12.50	12.40	1.008
calibrator zero	5000	0.0	0.00	0.00	N/A
high point	5000	58.8	12.50	12.40	1.008
second point	5000	29.4	6.25	6.15	1.016
third point	5000	14.7	3.13	3.07	1.018
calibrator zero	6000	0.0	0.00	0.00	N/A
as left zero	6000	0.0	0.00	0.00	N/A
as left span	5000	58.8	12.50	12.39	1.009
				Average Correction Factor	1.014

Corrected As found	12.40	Previous response	12.43	% change	0.2%

Notes:

no adjustments required. Changed inlet filter

Calibration Performed By: Michael Martineau

Wood Buffalo Environmental Association

THC / NMHC Calibration Report

NMHC Calibration Data

Set Point	Dilution air flow rate (cc/min)	Source gas flow rate (cc/min)	Calculated concentration NMHC (ppm) (Cc)	Indicated concentration (ppb) (Ic)	Correction factor (Cc/Ic)
as found zero	5000	0	0.00	0.00	N/A
as found span	5000	58.8	6.60	6.53	1.010
calibrator zero	5000	0.0	0.00	0.00	N/A
high point	5000	58.8	6.60	6.53	1.010
second point	5000	29.4	3.30	3.23	1.021
third point	5000	14.7	1.65	1.61	1.024
calibrator zero	6000	0.0	0.00	0.00	N/A
as left zero	6000	0.0	0.00	0.00	N/A
as left span	5000	58.8	6.60	6.52	1.012
				Average Correction Factor	1.019

Corrected As found	6.53	Previous response	6.55	% change	0.3%

CH4 Calibration Data

Set Point	Dilution air flow rate (cc/min)	Source gas flow rate (cc/min)	Calculated concentration NMHC (ppm) (Cc)	Indicated concentration (ppb) (Ic)	Correction factor (Cc/Ic)
as found zero	5000	0	0.00	0.00	N/A
as found span	5000	58.8	5.90	5.87	1.006
calibrator zero	5000	0.0	0.00	0.00	N/A
high point	5000	58.8	5.90	5.87	1.006
second point	5000	29.4	2.95	2.92	1.011
third point	5000	14.7	1.48	1.46	1.011
calibrator zero	6000	0.0	0.00	0.00	N/A
as left zero	6000	0.0	0.00	0.00	N/A
as left span	5000	58.8	5.90	5.87	1.006
				Average Correction Factor	

Corrected As found	5.87	Previous response	5.88	% change	0.1%

Wood Buffalo Environmental Association

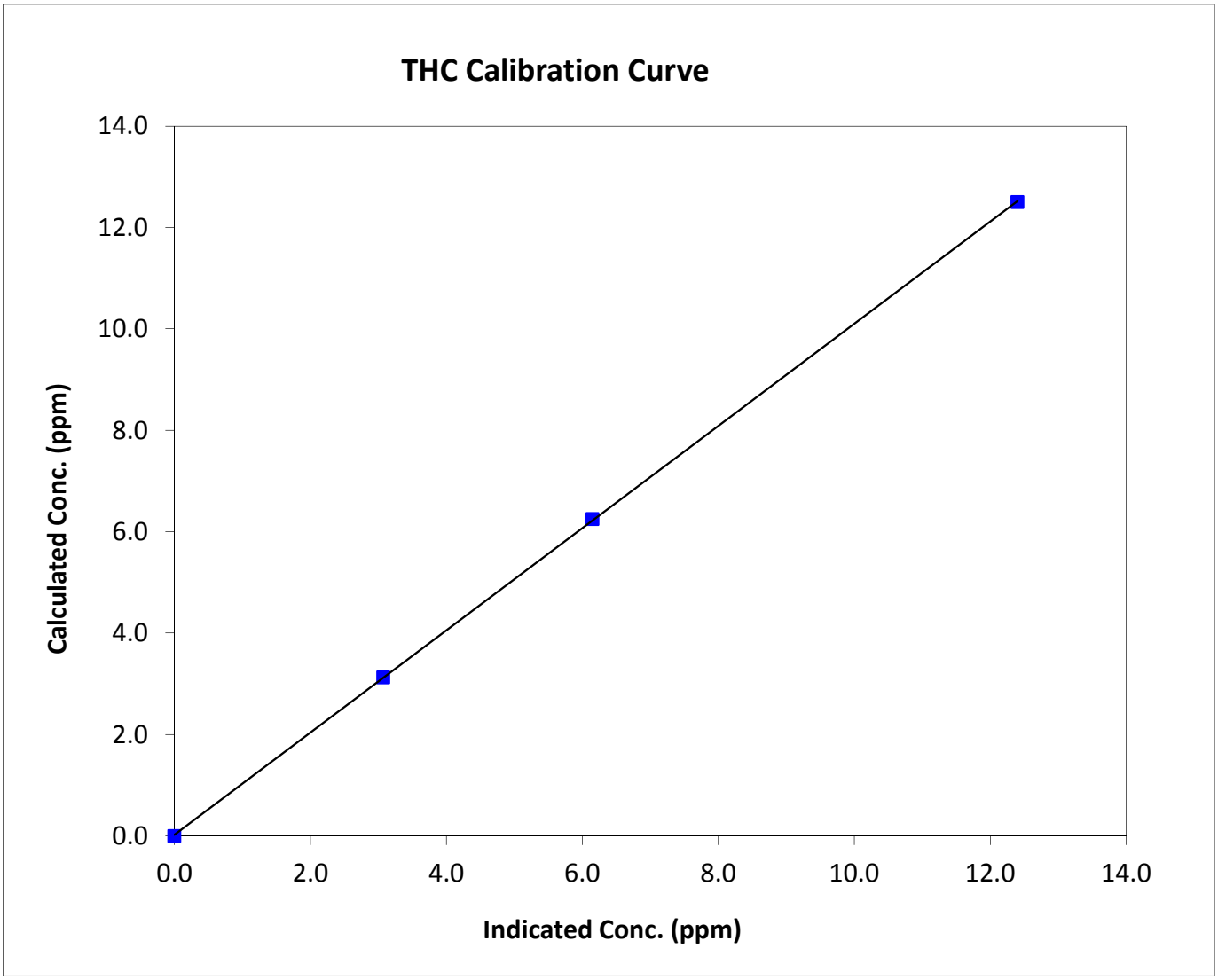
THC Calibration Summary

Station Information

Calibration Date	April 3, 2014	Previous Calibration	March 20, 2014
Station Name	Athabasca Valley	Station Number	AMS 7
Start Time (MST)	8:05	End Time (MST)	13:00
Analyzer make	Thermo Scientific 55i	Analyzer serial #	1218153354

Calibration Data

Calculated concentration (ppm) (Cc)	Indicated concentration (ppm) (Ic)	Correction factor (Cc/Ic)	Statistical Evaluation	
0.00	0.00	N/A	Correlation Coefficient	0.999979
12.50	12.40	1.0081		
6.25	6.15	1.0163	Slope	1.007743
3.13	3.07	1.0180		
			Intercept	0.022287



Wood Buffalo Environmental Association

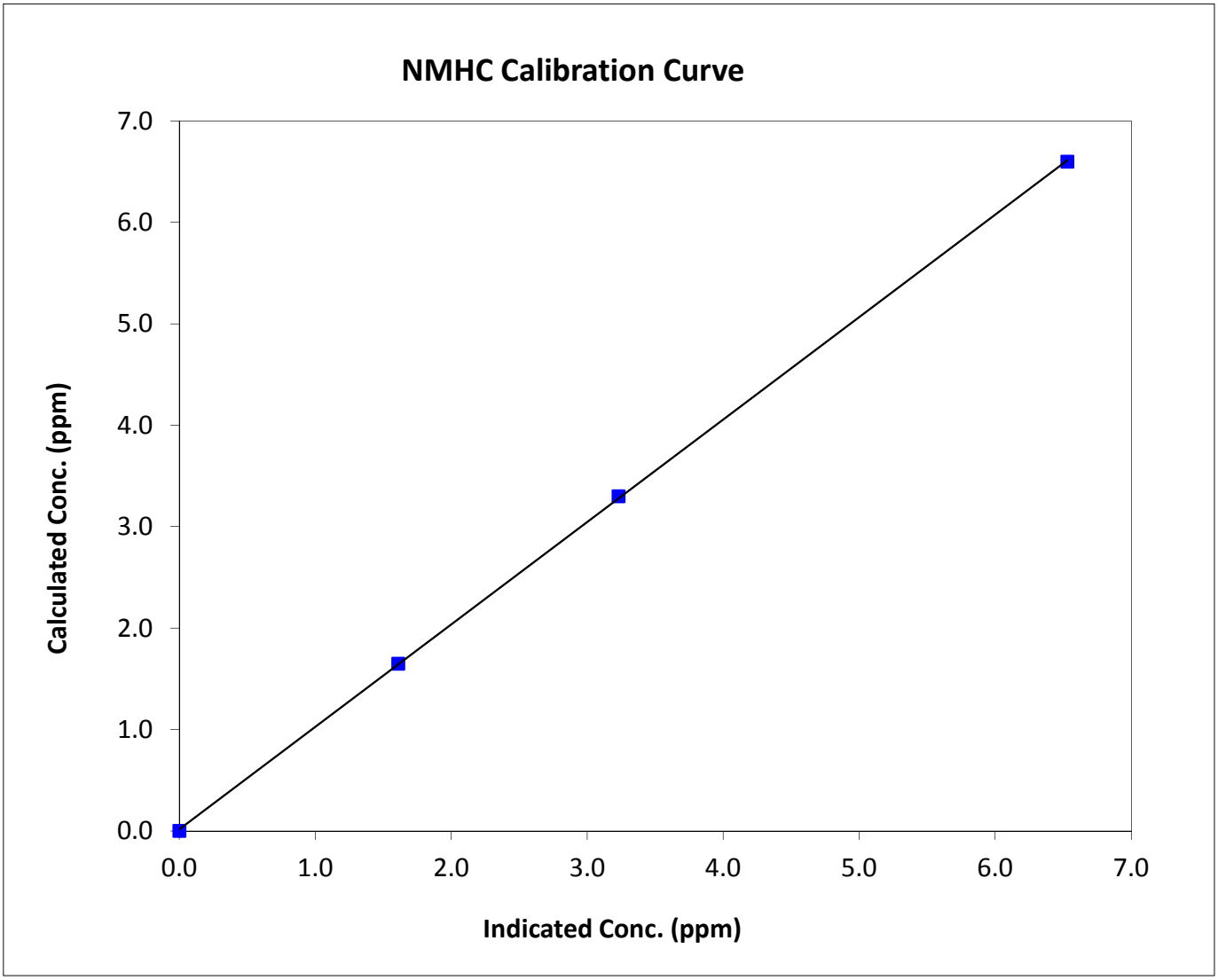
NMHC Calibration Summary

Station Information

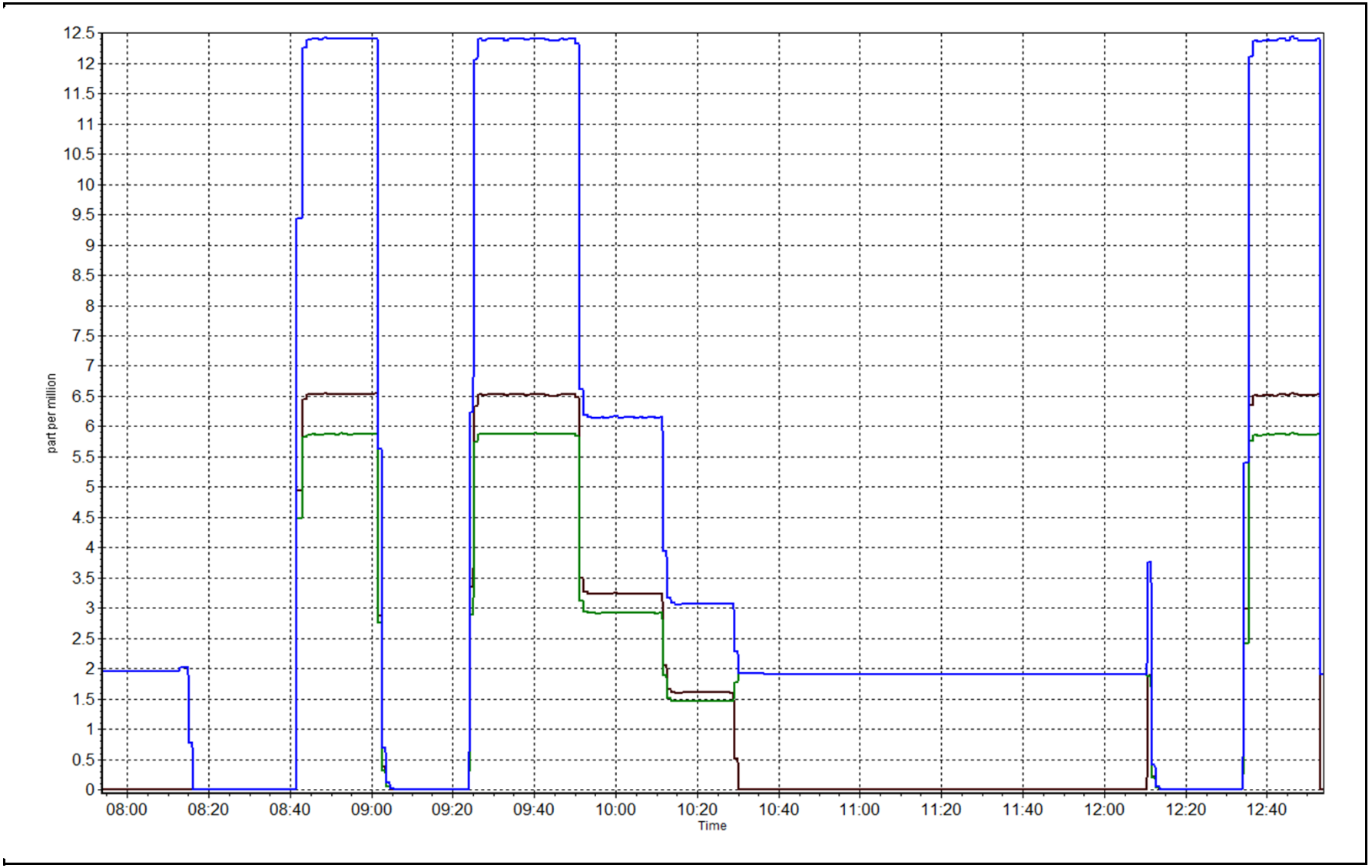
Calibration Date	April 3, 2014	Previous Calibration	March 20, 2014
Station Name	Athabasca Valley	Station Number	AMS 7
Start Time (MST)	8:05	End Time (MST)	13:00
Analyzer make	Thermo Scientific 55i	Analyzer serial #	1218153354

Calibration Data

Calculated concentration (ppm) (Cc)	Indicated concentration (ppm) (Ic)	Correction factor (Cc/Ic)	Statistical Evaluation	
0.00	0.00	N/A	Correlation Coefficient	0.999962
6.60	6.53	1.0103		
3.30	3.23	1.0213	Slope	1.009702
1.65	1.61	1.0244		
			Intercept	0.016266



THC/NMHC Calibration Plot Date: April 3, 2014



Wood Buffalo Environmental Association

O_3 Calibration Report

Station Information

Calibration Date	April 4, 2014	Previous Calibration	March 21, 2014
Station Name	Athabasca Valley	Station Number	AMS 7
Reason:	Routine		
Start Time (MST)	8:35	End Time (MST)	11:30
Barometric Pressure	723.9 mmHg	Station temp.	22 Deg C
Calibrator Make/Model	Sabio 4010	Serial Number	11021107
NO2 calibration used	Thursday, March 20, 2014	Transfer Standard	N/A
DACS make/model	Campbell Scientific CR3000	DACS serial No.	5563
DACS voltage range	0-5V	DACS channel #	5

Analyzer Information

	Before	*After*		*Before*	*After*
Analyzer Range (ppb)	500	500	Bench temp.	28.8	29.0
Analyzer Range (input)	5000	5000	Lamp temp.	70.9	70.8
Calculated slope	0.993706	1.003855	Pressure	715.8	707.7
Calculated intercept	1.435821	-1.893977	Flow cell A	0.677	0.672
Analyzer Background	-0.2	-0.2	Flow cell B	0.741	0.737
Analyzer Coefficient	1.039	1.110	Cell A Intensity	111100	108150
			Cell B Intensity	91250	90800

Analyzer make	TEI 49C	Analyzer serial #	607415760

Calibration Data

Set Point	Dilution air flow rate (cc/min)	Calibrator Lamp Intensity (mA)	Calculated concentration (ppb) (Cc)	Indicated concentration (ppb) (Ic)	Correction factor (Cc/Ic)
as found zero	5000	0.00	0.0	0.0	N/A
as found span	5000	N/A	372.1	356.6	1.044
calibrator zero	5000	0.00	0.0	0.0	N/A
high point	5000	N/A	372.1	370.7	1.004
second point	5000	N/A	187.4	192.2	0.975
third point	5000	N/A	94.1	95.7	0.983
calibrator zero	5000	0.00	0.0	0.0	N/A
as left zero	5000	0.00	0.0	0.0	N/A
as left span	5000	N/A	372.1	373.4	0.997
				Average Correction Factor	0.987

Corrected As found	356.5	Previous response	373.0	% change	4.6%

Notes:

changed inlet filter after as founds. Adjusted span.

Calibration Performed By: Michael Martineau

Wood Buffalo Environmental Association

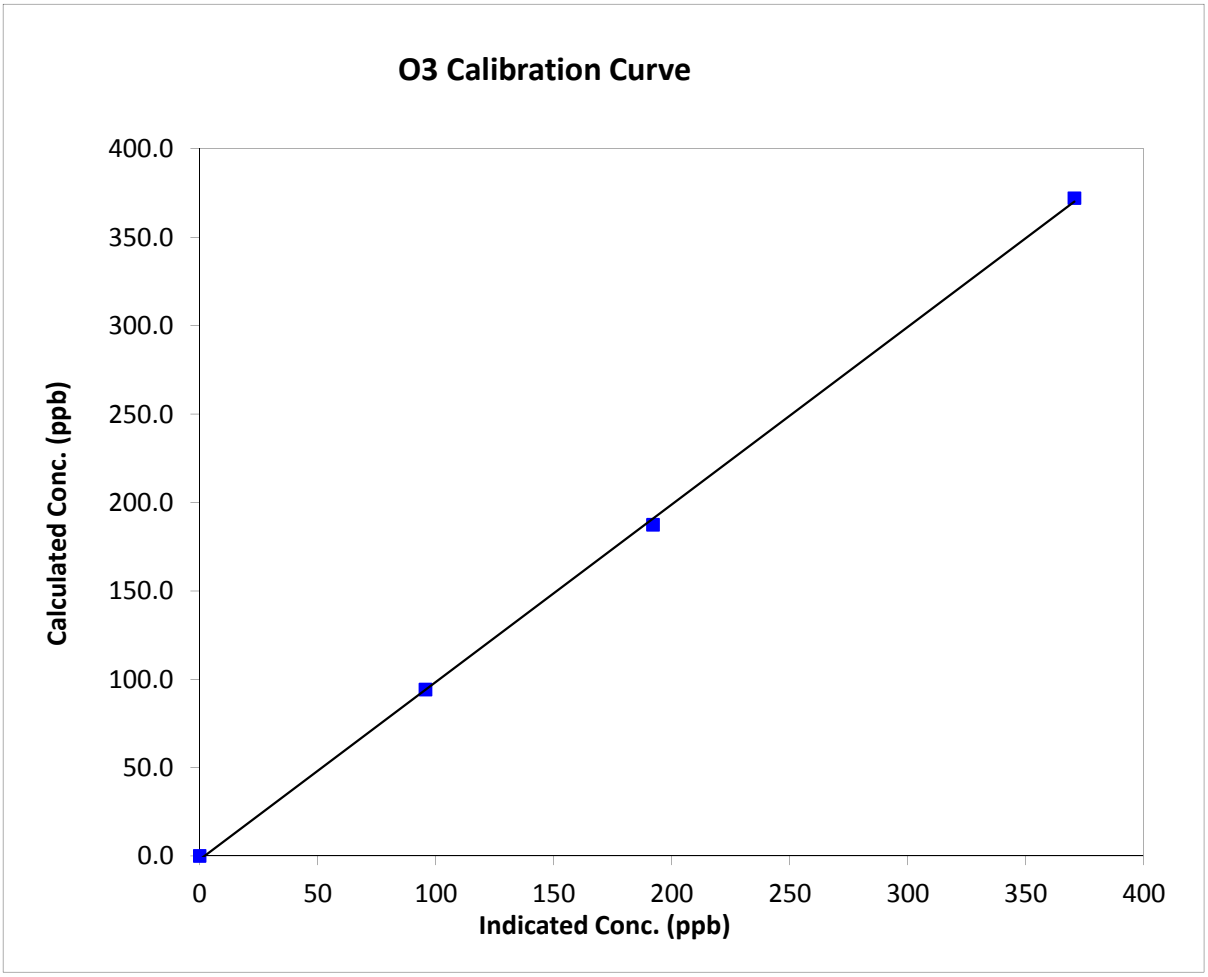
O_3 Calibration Summary

Station Information

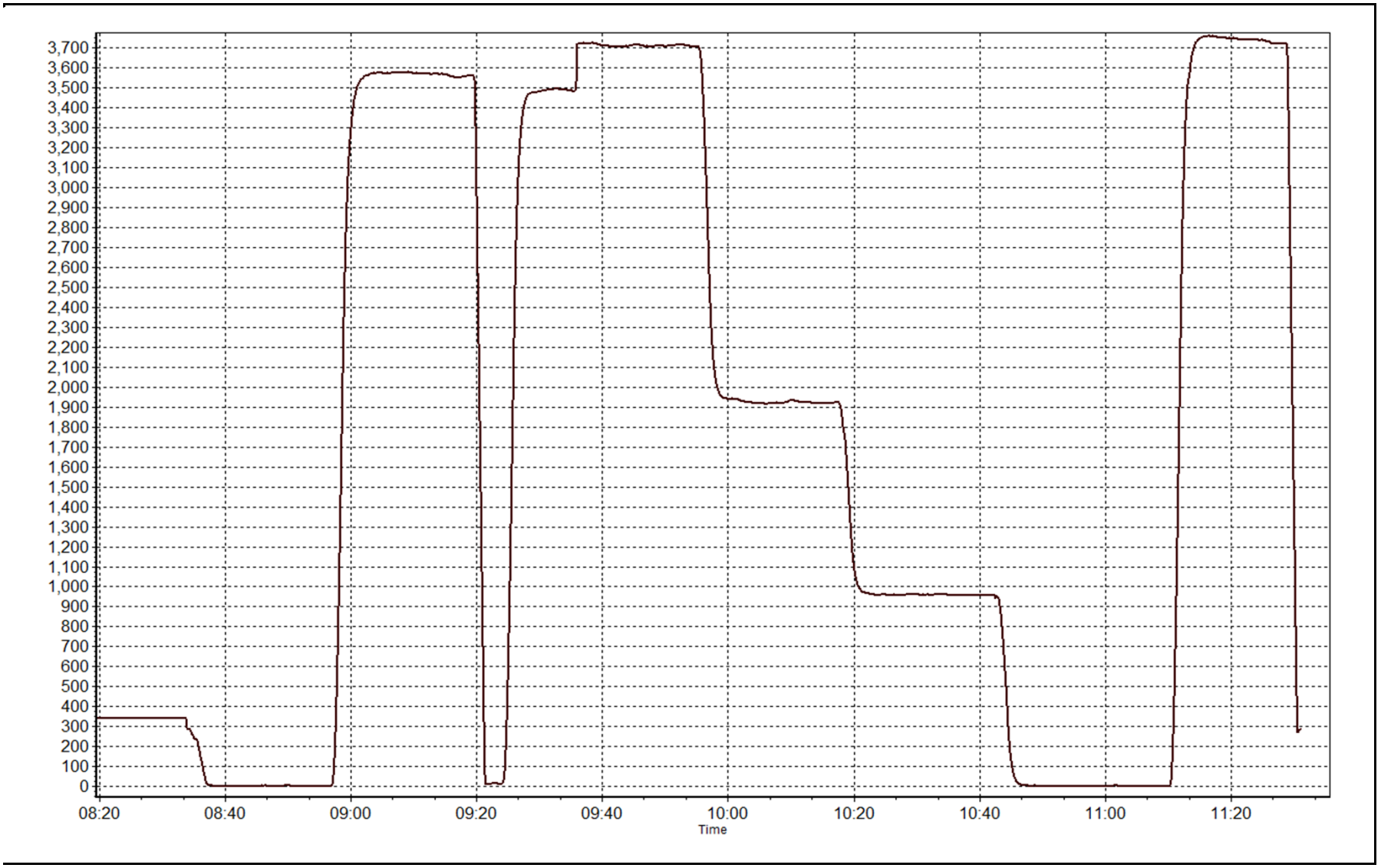
Calibration Date	Friday, April 04, 2014	Previous Calibration	March 21, 2014
Station Name	Athabasca Valley	Station Number	AMS 7
Start Time (MST)	8:35	End Time (MST)	11:30
Analyzer make	TEI 49C	Analyzer serial #	607415760

Calibration Data

Calculated concentration (ppb) (Cc)	Indicated concentration (ppb) (Ic)	Correction factor (Cc/Ic)	Statistical Evaluation	
0.0	0.0	N/A	Correlation Coefficient	0.999730
372.1	370.7	1.0039		
187.4	192.2	0.9750	Slope	1.003855
94.1	95.7	0.9828		
			Intercept	-1.893977



O3 Calibration Plot Date: April 4, 2014



Wood Buffalo Environmental Association

NO_X-NO-NO_2 Calibration Report

Station Information

Calibration Date	April 3, 2014	Previous Calibration	March 22, 2014
Station Name	Athabasca Valley	Station Number	AMS 7
Reason:	Routine		
Start Time (MST)	8:05	End Time (MST)	13:00
Barometric Pressure	n/a mmHg	Station Temperature	21.0 Deg C
Calibrator	Sabio 4010	Serial Number	11021107
NO Cal Gas Conc	51 ppm	Cal Gas Expiry Date	October 10, 2013
NOx Cal Gas Conc	51.2 ppm	Cal Gas Serial #	LL 105142

DACS Information

DACS make & model: Campbell Scientific CR3000 — DACS serial No.: 2575

Parameter		NOx	NO	NO2
MV conversion	Analyzer Range (ppb)	1000	1000	1000
	Analyzer Range (mv)	5000	5000	5000
Before	Data Slope	0.998782	0.998629	0.997461
	Data Offset	2.071352	1.569596	-0.698297
After	Data Slope	0.997225	1.000979	0.991901
	Data Offset	1.424153	1.386788	-1.663780
Channel #		4	5	6
Voltage Range		0 - 5V	0 - 5V	0 - 5V

Analyzer Information

Analyzer make/model: Thermo 42c — Analyzer serial #: 601114773

Test Point	before		after	
Concentration range	1000	ppb	1000	ppb
NO coefficient	0.990	ppb	0.867	ppb
NOX coefficient	1.007	ppb	1.007	ppb
NO2 coefficient	1.000	ppb	1.000	ppb
NO bkgrnd	4.0		3.7	
NOX bkgrnd	9.9		3.9	
Nt coefficient	n/a		n/a	
Chamber Temp	49.6	Deg C	49.7	Deg C
Moly Temp	323.0	Deg C	323.0	Deg C
PMT Temp	-3.6	Deg C	-3.7	Deg C
O3 flow	ok	ccm	ok	ccm
R Cell Press	186.6	mmHg	164.2	mmHg
Sample Flow	0.705	ccm	0.751	ccm

Notes:

Large percent change attributed to pump change stabilization. Diagnostics all OK. Adjusted zero and span.

Wood Buffalo Environmental Association

NO_X-NO-NO_2 Calibration Report

Station Information

Calibration Date: April 3, 2014 Station Number: AMS 7

Calibration Data

Set Point	Total flow rate (ccm)	Source gas flow rate (ccm)	Calculated NOx conc (ppb)	Calculated NO conc (ppb)	Calculated NO2 conc (ppb)	Indicated NOx conc (ppb)	Indicated NO conc (ppb)	Indicated NO2 conc (ppb)	NOx Correction factor	NO Correction factor
as found zero	5000	0.0	0.0	0.0	0.0	-6.1	-0.1	-5.9	N/A	N/A
as found span	5000	58.8	602.1	599.8	2.4	685.1	685.3	0.1	0.8788	0.8752
calibrator zero	5000	0.0	0.0	0.0	0.0	-0.1	-0.1	0.1	N/A	N/A
high point	5000	58.8	602.1	599.8	2.4	603.8	599.2	4.7	0.9973	1.0009
second point	5000	29.4	301.1	299.9	1.2	298.8	296.4	2.5	1.0075	1.0117
third point	5000	14.7	150.5	149.9	0.6	147.1	146.2	1.0	1.0233	1.0256
calibrator zero	6000	0.0	0.0	0.0	0.0	-0.1	-0.1	0.1	N/A	N/A
as left zero	6000	0.0	0.0	0.0	0.0	-0.1	-0.1	0.1	N/A	N/A
as left span	5000	58.8	602.1	225.5	376.6	598.5	231.0	367.5	1.0061	0.9761
								Average Correction Factor	1.0093	1.0127

Corrcted As found NO_X= 691.2 NO= 685.4 Percent Change NO_X= -13.1% NO= -12.6%

Previous Response NO_X= 600.8 NO= 599.0

GPT Calibration Data

Dilution Flow 5000 ccm Source Gas Flow 58.80 ccm

O3 Setpoint (ppb)	Indicated NO high point (ppb)	Indicated NO drop conc (ppb)	Calculated NO2 conc (ppb)	Indicated NOx conc (ppb)	Indicated NO conc (ppb)	Indicated NO2 conc (ppb)	NOx Correction factor	NO Correction factor	NO2 Correction factor	Converter Efficiency
Cal zero			0.0			0.1			N/A	
1st NO2 (300)	N/A	225.5	372.1	601.6	225.5	376.0	0.9893	1.0000	0.9897	101.0%
2nd NO2 (200)	N/A	410.2	187.4	601.7	410.2	191.4	0.9891	1.0000	0.9791	102.1%
3rd NO2 (100)	N/A	503.6	94.1	601.6	503.6	98.1	0.9893	1.0000	0.9586	104.3%
4th NO2 (0)	597.6	N/A	4.7	602.4	597.6	4.9	0.9880	1.0000	N/A	N/A
					Average Correction Factor		0.9889	1.0000	0.9758	102.5%

Calibration Performed By: Michael Martineau

Wood Buffalo Environmental Association

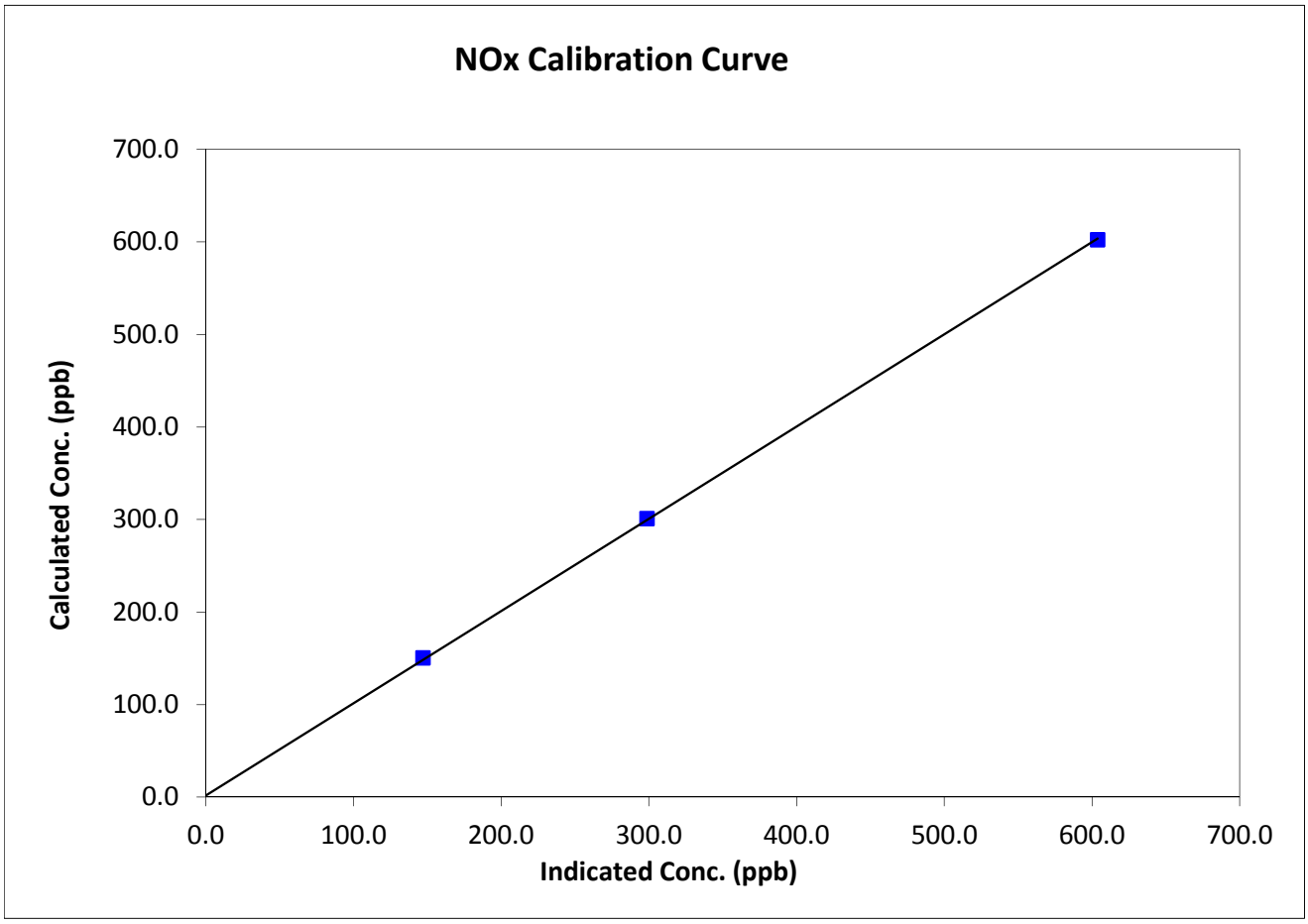
NO_X Calibration Summary

Station Information

Calibration Date	April 3, 2014	Previous Calibration	March 22, 2014
Station Name	Athabasca Valley	Station Number	AMS 7
Start Time (MST)	8:05	End Time (MST)	13:00
Analyzer make	Thermo 42c	Analyzer serial #	601114773

Calibration Information

Calculated conc (ppb) (Cc)	Indicated concentration (ppb) (Ic)	Correction factor (Cc/Ic)	Statistical Evaluation	
0.0	-0.1	N/A	Correlation Coefficient	0.999945
602.1	603.8	0.9973		
301.1	298.8	1.0075	Slope	0.997225
150.5	147.1	1.0233		
0.0	-0.1	0.0000	Intercept	1.424153



Wood Buffalo Environmental Association

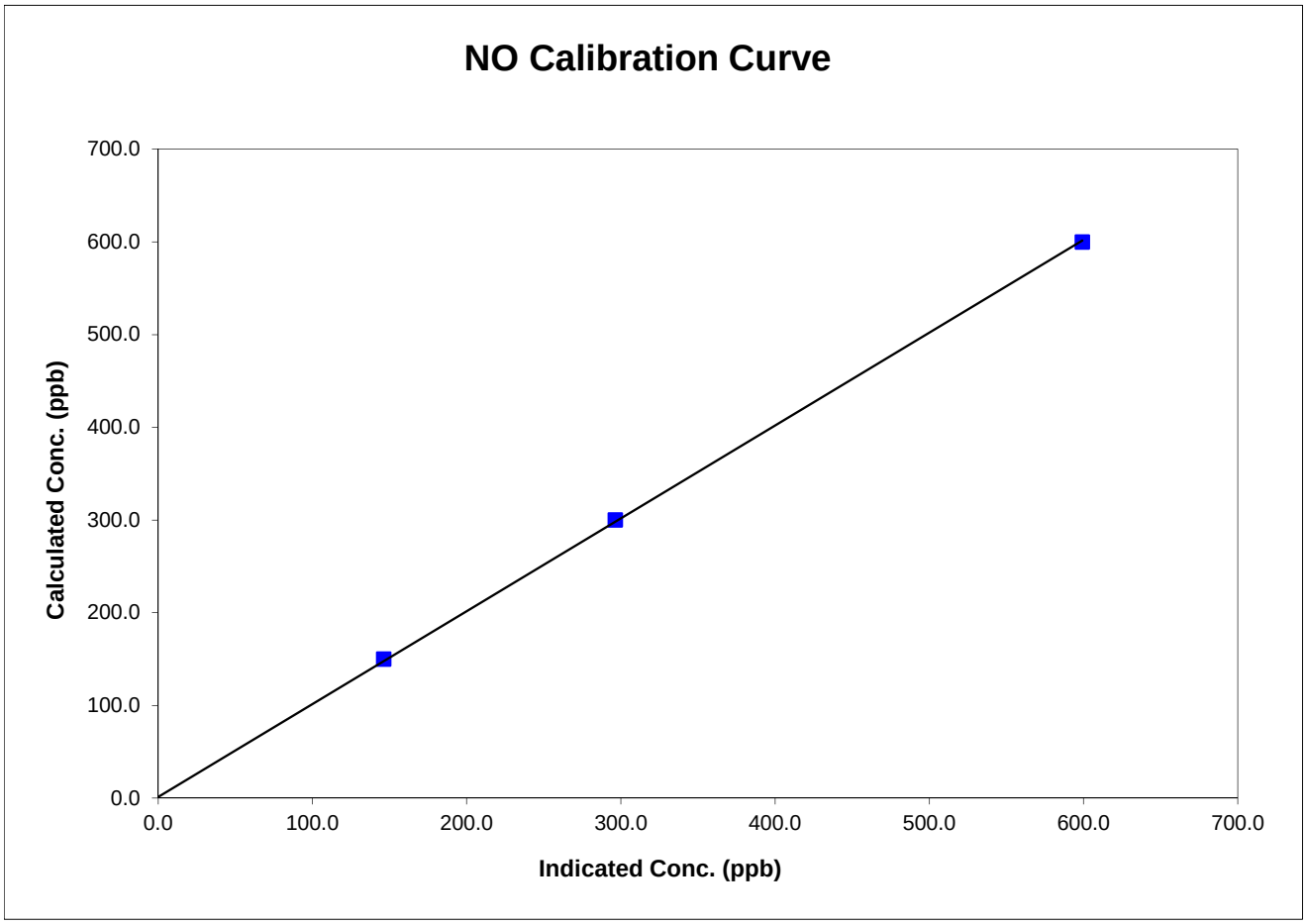
NO Calibration Summary

Station Information

Calibration Date	April 3, 2014	Previous Calibration	March 22, 2014
Station Name	Athabasca Valley	Station Number	AMS 7
Start Time (MST)	8:05	End Time (MST)	13:00
Analyzer make	Thermo 42c	Analyzer serial #	601114773

Calibration Information

Calculated conc (ppb) (Cc)	Indicated concentration (ppb) (Ic)	Correction factor (Cc/Ic)	Statistical Evaluation	
0.0	-0.1	N/A	Correlation Coefficient	0.999947
599.8	599.2	1.0009		
299.9	296.4	1.0117	Slope	1.000979
149.9	146.2	1.0256		
0.0	-0.1	0.0000	Intercept	1.386788



Wood Buffalo Environmental Association

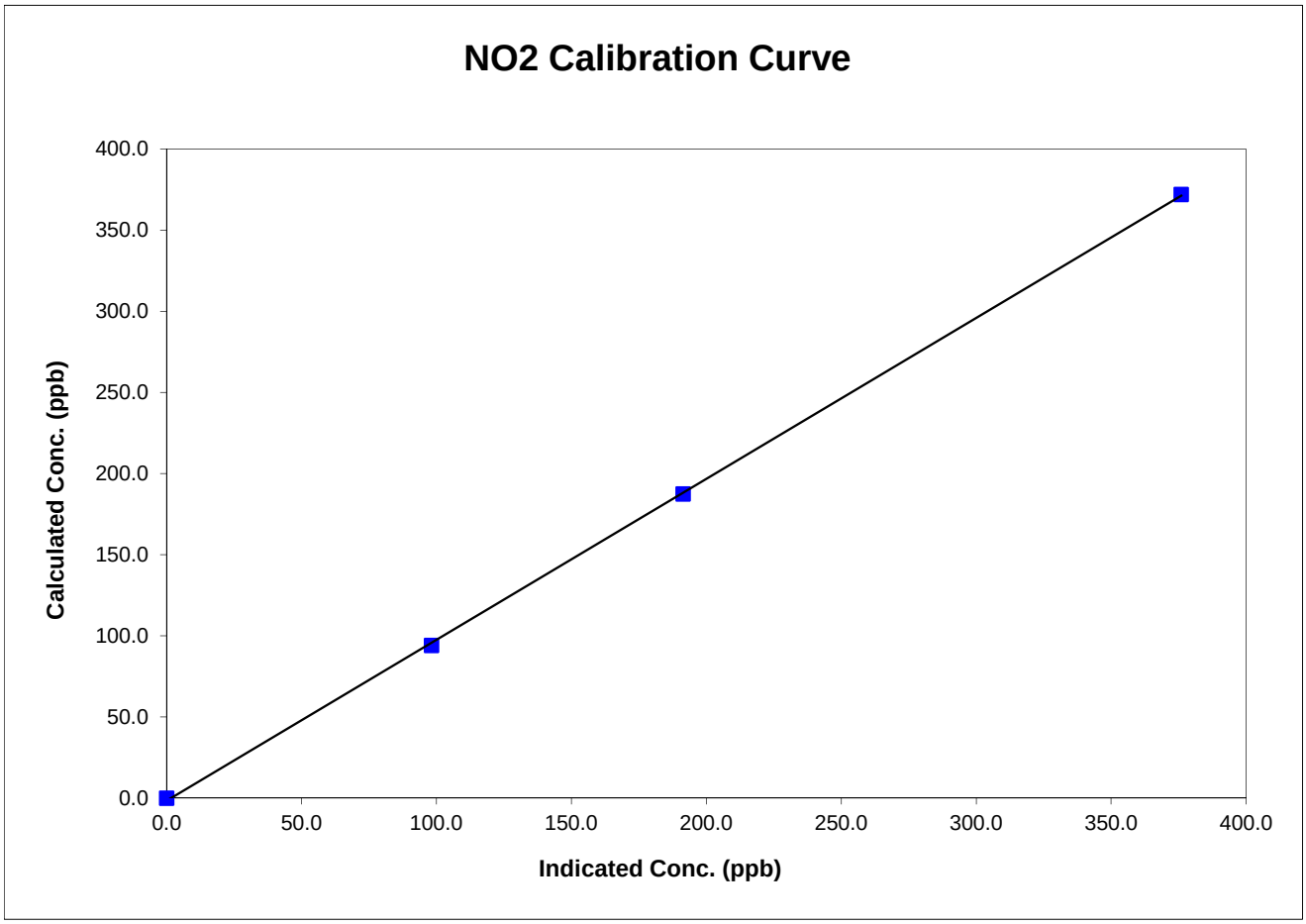
NO_2 Calibration Summary

Station Information

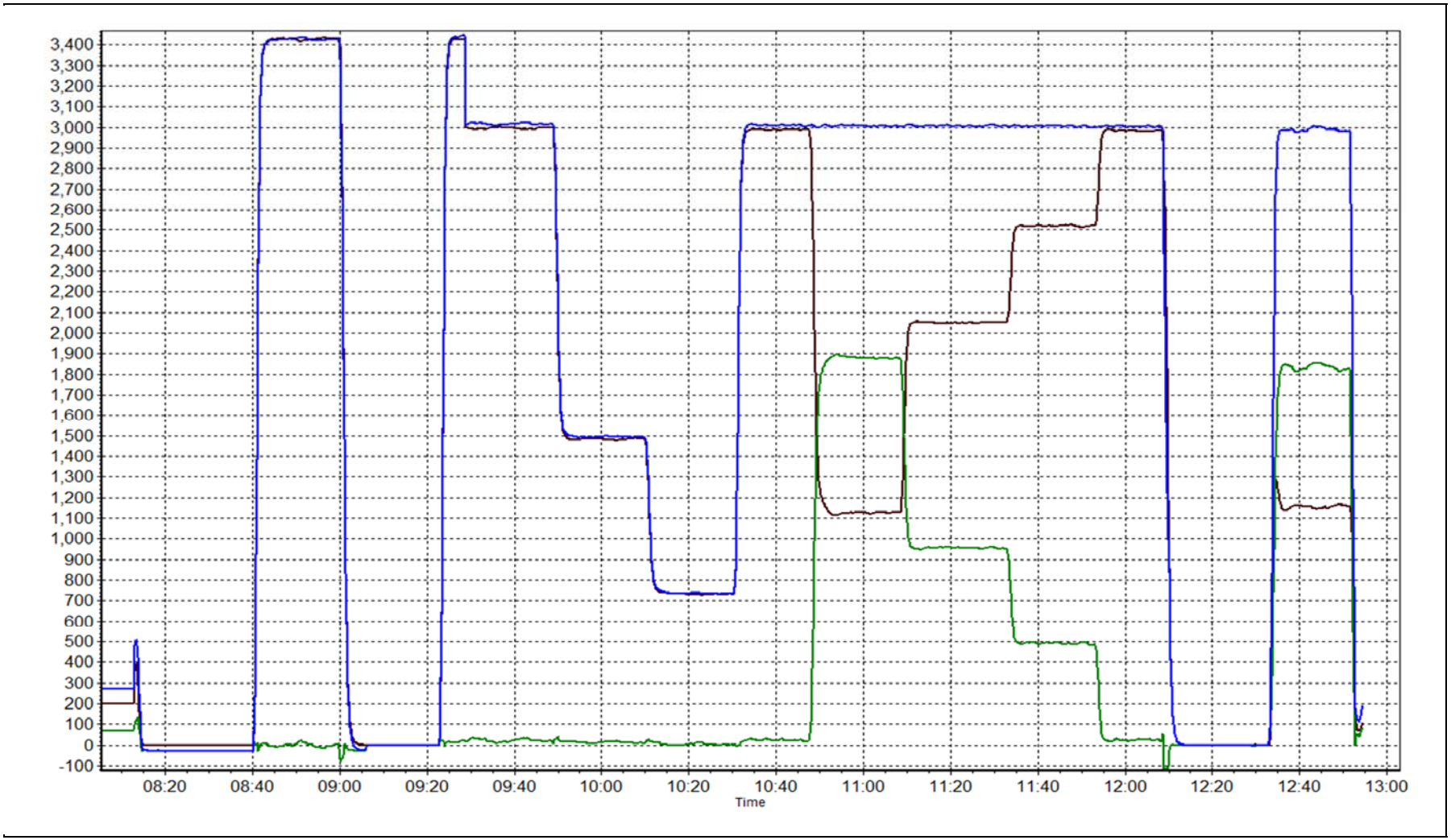
Calibration Date	April 3, 2014	Previous Calibration	March 22, 2014
Station Number	Athabasca Valley	Station Number	AMS 7
Start Time (MST)	8:05	End Time (MST)	13:00
Analyzer make	Thermo 42c	Analyzer serial #	601114773

Calibration Information

Calculated conc (ppb) (Cc)	Indicated concentration (ppb) (Ic)	Correction factor (Cc/Ic)	Statistical Evaluation	
0.0	0.1	N/A	Correlation Coefficient	0.999916
372.1	376.0	0.9897		
187.4	191.4	0.9791	Slope	0.991901
94.1	98.1	0.9586		
			Intercept	-1.663780



NOx, NO & NO_2 Calibration Plot Date: April 3, 2014



Wood Buffalo Environmental Association

CO Calibration Report

Station Information

Calibration Date	April 14, 2014	Previous Calibration	March 24, 2014
Station Name	Athabasca Valley	Station Number	AMS 7
Reason:	Routine		
Start Time (MST)	9:40	End Time (MST)	13:00
Barometric Pressure	747 mmHg	Station temp.	21 Deg C
Calibrator Make/Model	Sabio 4010	Serial number	8400311
Cal Gas Concentration	3060 ppm CO	Cal Gas Expiry Date	11/3/2009
Gas Cert Reference	CC 188098	SO2 gas conc.	50.8 ppm SO2
DACS make/model	Campbell Scientific CR3000	DACS serial No.	2575
DACS voltage range	0-5V	DACS channel #	2

Analyzer Information

	Before	*After*		*Before*	*After*
Analyzer Range (ppb)	50	50	Chamber temp.	48.4	47.8
Analyzer Range (input)	5000	5000	Pressure	737.6	720.8
Calculated slope	0.983703	0.998609	Flow	1.290	1.272
Calculated intercept	-0.204190	0.175364	Intensity	200450	200250
Analyzer Background	0.545	1.249	S/R ratio	1.119203	1.119306
Analyzer Coefficient	1.020	1.020			

Analyzer make	TEI 48C	Analyzer serial #	508011060

Calibration Data

Set Point	Total flow rate (cc/min)	Source gas flow rate (cc/min)	Calculated concentration (ppm) (Cc)	Indicated concentration (ppm) (Ic)	Correction factor (Cc/Ic)
as found zero	5000	0.0	0.0	0.7	NA
as found span	5000	67.6	41.4	43.6	0.949
calibrator zero	5000	0.0	0.0	0.0	NA
high point	5000	67.6	41.4	41.4	1.000
second point	5000	34.2	20.9	20.6	1.017
third point	5000	14.7	9.0	8.8	1.024
calibrator zero	6000	0.0	0.0	0.0	NA
as left zero	6000	0.0	0.0	0.0	NA
as left span	5000	67.6	41.4	41.1	1.005
				Average Correction Factor	1.014

Corrected As found	42.9	Previous response	42.3	% change	-1.5%

Notes:

Adjusted zero; no further maintenance performed.

Calibration Performed By: Mike Martineau

Wood Buffalo Environmental Association

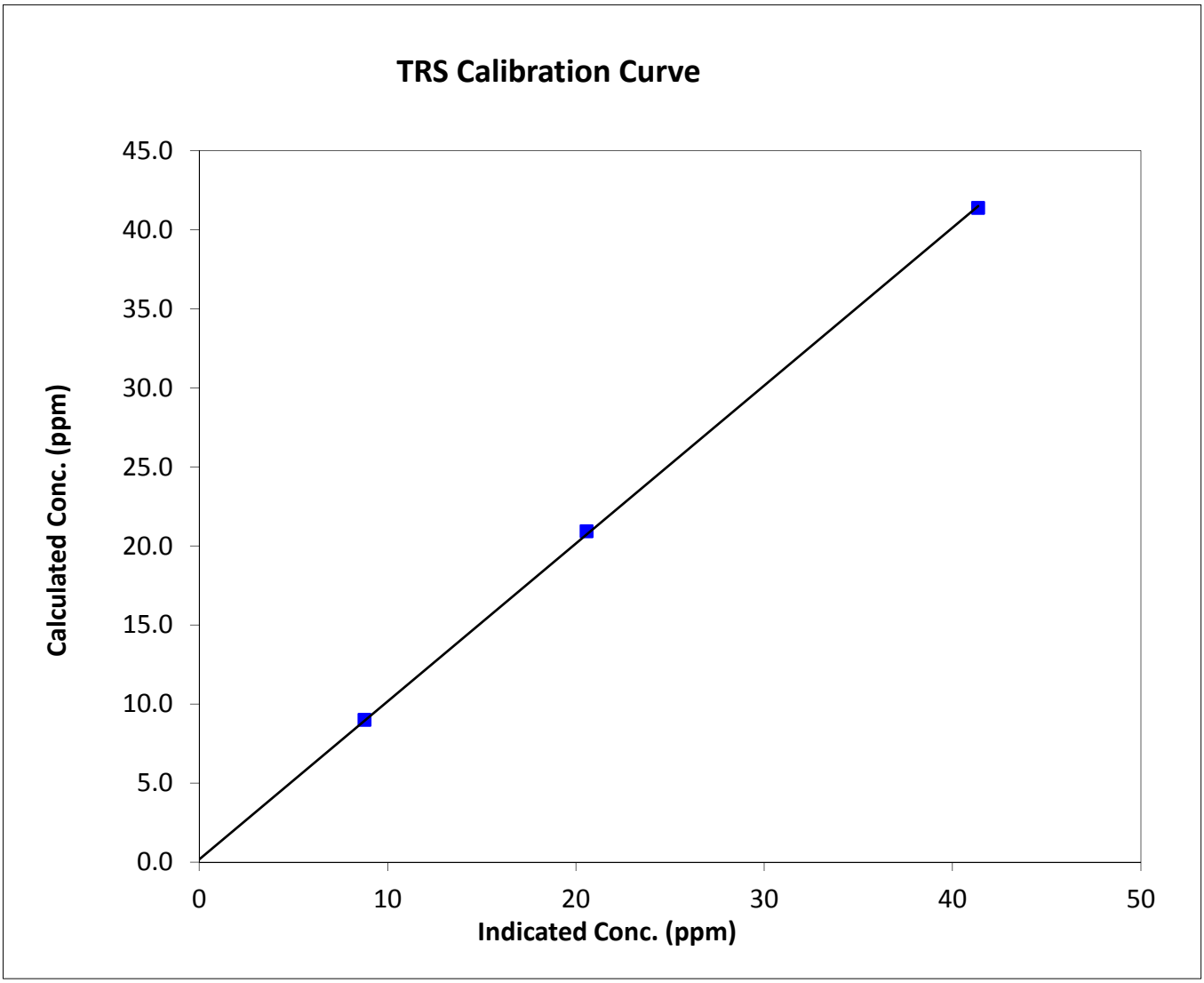
CO Calibration Summary

Station Information

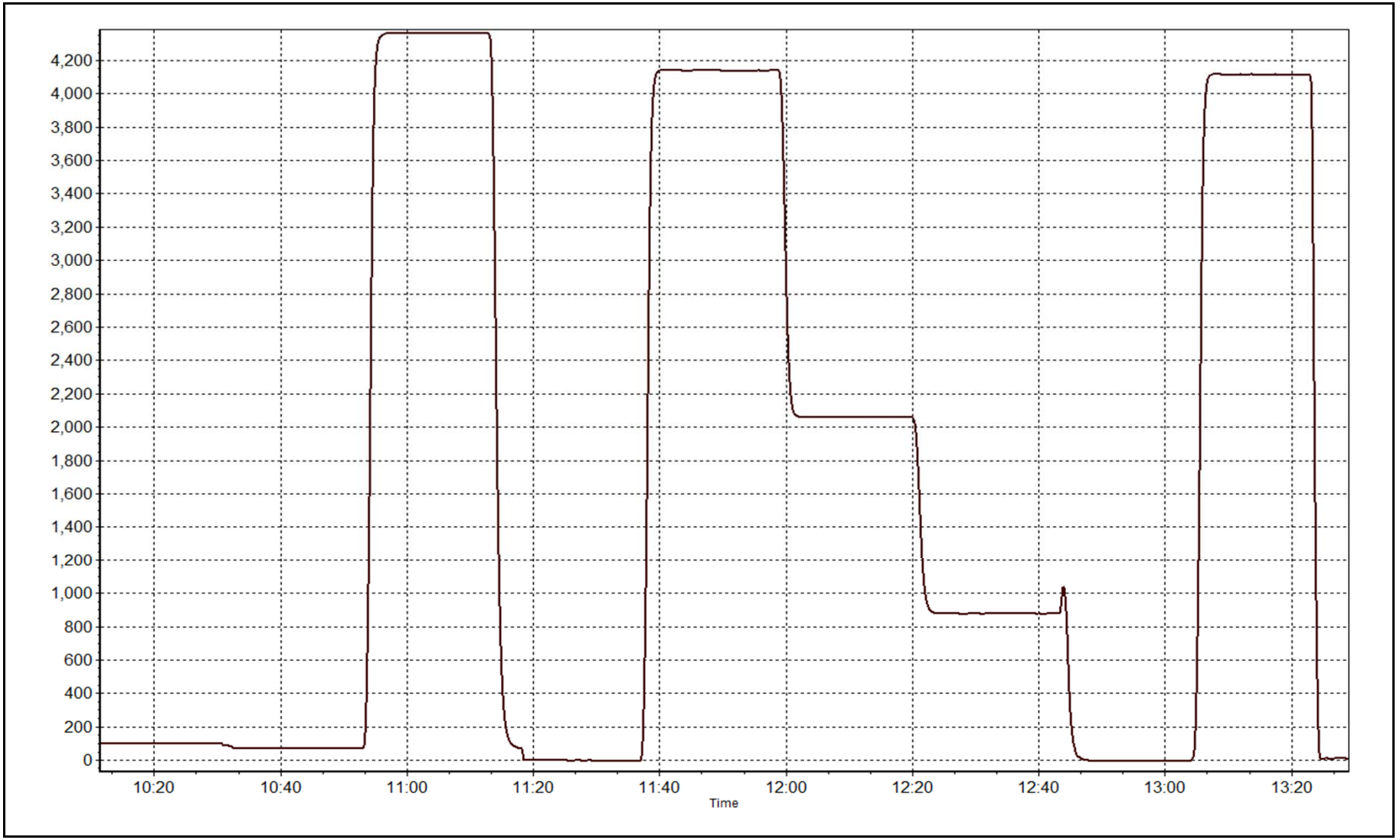
Calibration Date	April 14, 2014	Previous Calibration	March 24, 2014
Station Name	Athabasca Valley	Station Number	AMS 7
Start Time (MST)	9:40	End Time (MST)	13:00
Analyzer make	TEI 48C	Analyzer serial #	508011060

Calibration Data

Calculated concentration (ppm) (Cc)	Indicated concentration (ppm) (Ic)	Correction factor (Cc/Ic)	Statistical Evaluation	
0.0	0.0	N/A	Correlation Coefficient	0.999917
41.4	41.4	1.0001		
20.9	20.6	1.0173	Slope	0.998609
9.0	8.8	1.0242		
			Intercept	0.175364



CO Calibration Plot Date: April 14, 2014



WOOD BUFFALO ENVIRONMENTAL ASSOCIATION

CONTINUOUS AMBIENT AIR QUALITY
MONITORING PROGRAM
MONTHLY REPORT

AMS 8
FORT CHIPEWYAN
APRIL 2014

Operations and Data Collection by:
Wood Buffalo Environmental Association
Fort McMurray, Alberta

QA/QC, Data Validation and Reporting by:
Aurora Atmospherics Inc.
Calgary, Alberta

May 30, 2014

WOOD BUFFALO ENVIRONMENTAL ASSOCIATION - FORT CHIPEWYAN (AMS 8)
APRIL 2014

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	36	36	100.00	5	0	1	0
O3(ppb) Average	686	34	34	100.00	50	0	49	-
NO2(ppb) Average	684	36	36	100.00	6	0	1	-
NO(ppb) Average	684	36	36	100.00	1	-	0	-
NOX(ppb) Average	684	36	36	100.00	7	-	1	-
PM2.5(ug/m3) Average	704	0	16	97.78	10.6	-	5.0	0
Wind Speed 10 m (km/h) Average	715	0	5	99.31	43	-	-	-
Wind Direction 10 m (deg) Average	715	0	5	99.31	-	-	-	-
Temperature 2 m (C) Average	534	0	186	74.17	14.1	-	5	-
Relative Humidity (%) Average	534	0	186	74.17	99	-	-	-
Precipitation (mm) Total	0	0	720	0.00	-	-	-	-
Global Solar Radiation (W/m2) Average	0	0	720	0.00	-	-	-	-

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

WOOD BUFFALO ENVIRONMENTAL ASSOCIATION - FORT CHIPEWYAN (AMS 8)
APRIL 2014

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	0.1	0	-	0	0	0	0	0	0	5
O3(ppb) Average	686	38.2	8	-	10	29	36	39	43	47	50
NO2(ppb) Average	684	0.3	0	-	0	0	0	0	0	1	6
NO(ppb) Average	684	0.1	0	-	0	0	0	0	0	0	1
NOX(ppb) Average	684	0.4	0	-	0	0	0	0	0	1	7
PM2.5(ug/m3) Average	704	2.39	1.4	-	0.1	0.7	1.6	2.2	3.1	4	10.6
Wind Speed 10 m (km/h) Average	715	17.3	8	-	0	7	11	16	21	29	43
Wind Direction 10 m (deg) Average	715	-	-	-	-	-	-	-	-	-	-
Temperature 2 m (C) Average	534	-2.48	6.2	-	-17.1	-11.9	-7.8	-0.5	2	3.8	14.1
Relative Humidity (%) Average	534	69.6	15	-	32	50	60	68	81	90	99
Precipitation (mm) Total	0	-	-	-	-	-	-	-	-	-	-
Global Solar Radiation (W/m2) Average	0	-	-	-	-	-	-	-	-	-	-

WOOD BUFFALO ENVIRONMENTAL ASSOCIATION - FORT CHIPEWYAN (AMS 8)
APRIL 2014

OPERATIONAL NOTES

Parameter	Period Start	Period End	Duration (Hours)	Notes
PM2.5	08 Apr 2014 17:00	08 Apr 2014 18:00	2	Flow and zero reference checks, sample head cleaning
PM2.5	09 Apr 2014 06:00	09 Apr 2014 06:00	1	Intermittent unstable operation - excessive baseline drift
PM2.5	27 Apr 2014 15:00	28 Apr 2014 01:00	11	Intermittent unstable operation - excessive baseline drift
PM2.5	29 Apr 2014 17:00	29 Apr 2014 18:00	2	Intermittent unstable operation - excessive baseline drift
Wind Speed, Wind Direction	09 Apr 2014 09:00	09 Apr 2014 09:00	1	Flatline in sensor output signal
Wind Speed, Wind Direction	12 Apr 2014 07:00	12 Apr 2014 08:00	2	Flatline in sensor output signal
Wind Speed, Wind Direction	19 Apr 2014 06:00	19 Apr 2014 07:00	2	Flatline in sensor output signal
Temperature 2 m	01 Apr 2014 01:00	08 Apr 2014 18:00	183	Sensor not in service
Temperature 2 m	08 Apr 2014 16:00	08 Apr 2014 18:00	3	Maintenance - sensor installation and calibration
Relative Humidity	01 Apr 2014 01:00	08 Apr 2014 15:00	183	Sensor not in service
Relative Humidity	08 Apr 2014 16:00	08 Apr 2014 18:00	3	Maintenance - sensor installation and calibration
Precipitation Collector	01 Apr 2014 01:00	01 May 2014 00:00	720	Sensor not in service
Solar Global Radiation	01 Apr 2014 01:00	01 May 2014 00:00	720	Sensor not in service

Number of Exceedences (AAAQO): 1-hr: 0 24-hr: 0
Maximum Value: 5 ppb on Apr 19 12:00 Maximum Daily Average: 0.5 ppb on Apr 19

Minimum Value: 0 ppb on Apr 7 09:00 Minimum Daily Average: 0.0 ppb on Apr 25
Maximum Diurnal Average: 0.3 ppb at hour 12 Minimum Diurnal Average: 0.0 ppb at hour 6
Monthly Average: 0.1 ppb Percentiles: $P_1 = 0$ $P_{10} = 0$ $Q_1 = 0$ Median = 0 $Q_3 = 0$ $P_{90} = 0$ $P_{99} = 1$

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-Apr	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
2-Apr	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
3-Apr	0	Z	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0.1	0
4-Apr	0	Z	0	0	0	0	0	0	0	0	0	0	0	1	2	2	1	0	0	0	0	0	0	0	0.3	2
5-Apr	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
6-Apr	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
7-Apr	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
8-Apr	0	Z	0	0	0	0	0	0	0	0	0	C	C	C	C	C	C	0	0	0	0	0	0	0	--	0
9-Apr	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
10-Apr	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
11-Apr	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
12-Apr	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
13-Apr	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
14-Apr	0	Z	0	0	0	0	0	0	0	1	1	1	1	0	0	0	0	0	0	0	0	0	0	0	0.3	1
15-Apr	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
16-Apr	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
17-Apr	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
18-Apr	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
19-Apr	0	Z	0	0	0	0	0	0	0	1	3	5	1	0	0	0	0	0	0	0	0	0	0	0	0.5	5
20-Apr	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
21-Apr	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
22-Apr	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
23-Apr	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
24-Apr	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
25-Apr	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
26-Apr	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
27-Apr	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
28-Apr	0	Z	0	0	0	0	0	0	0	0	0	1	1	1	1	1	0	0	0	0	0	0	0	0	0.3	1
29-Apr	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
30-Apr	0	Z	0	0	0	0	0	0	0	0	0	1	1	0	0	0	1	1	0	0	0	0	0	0	0.3	1
	0.1	--	0.1	0.0	0.0	0.0	0.0	0.0	0.1	0.1	0.2	0.3	0.2	0.1	0.2	0.2	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	Diurnal Average	
	0	--	0	0	0	0	0	0	0	1	3	5	1	1	2	2	1	1	0	0	0	0	0	0	Diurnal Maximum	

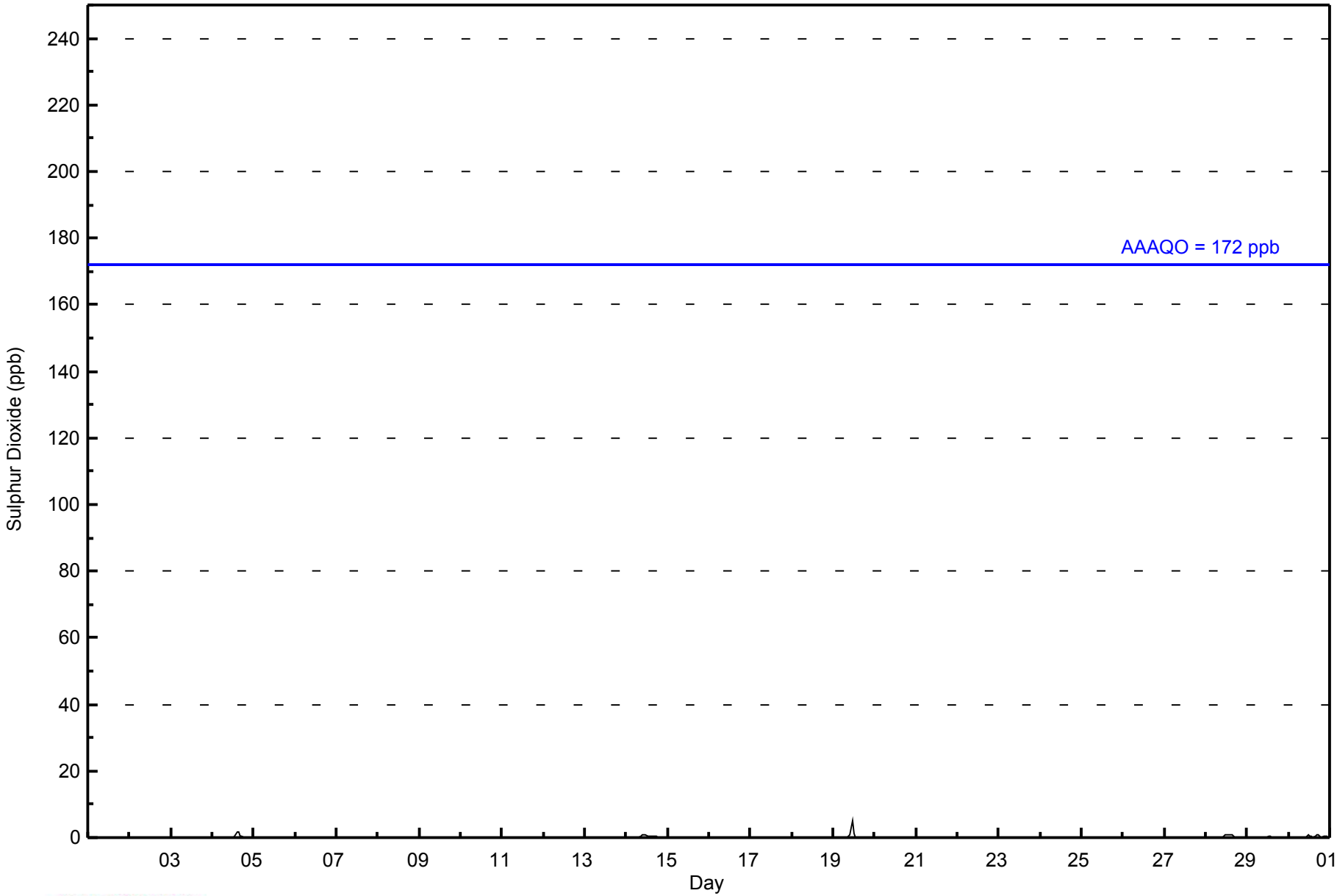
Z - zerospan C - Calibration
Alberta Ambient Air Quality Objectives (AAAQO): 1-hr 172 ppb 24-hr 48 ppb

WBEA NETWORK

Hourly Averages

Sulphur Dioxide (SO_2) - ppb

Fort Chipeywan - April 2014



AURORA ATMOSPHERICS INC.

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

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	8	13	145	273	53	12	17	6	4	4	14	9	21	48	35	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	17	8	13	145	273	53	12	17	6	4	4	14	9	21	48	35	679

Total Number of Valid Hours: 679

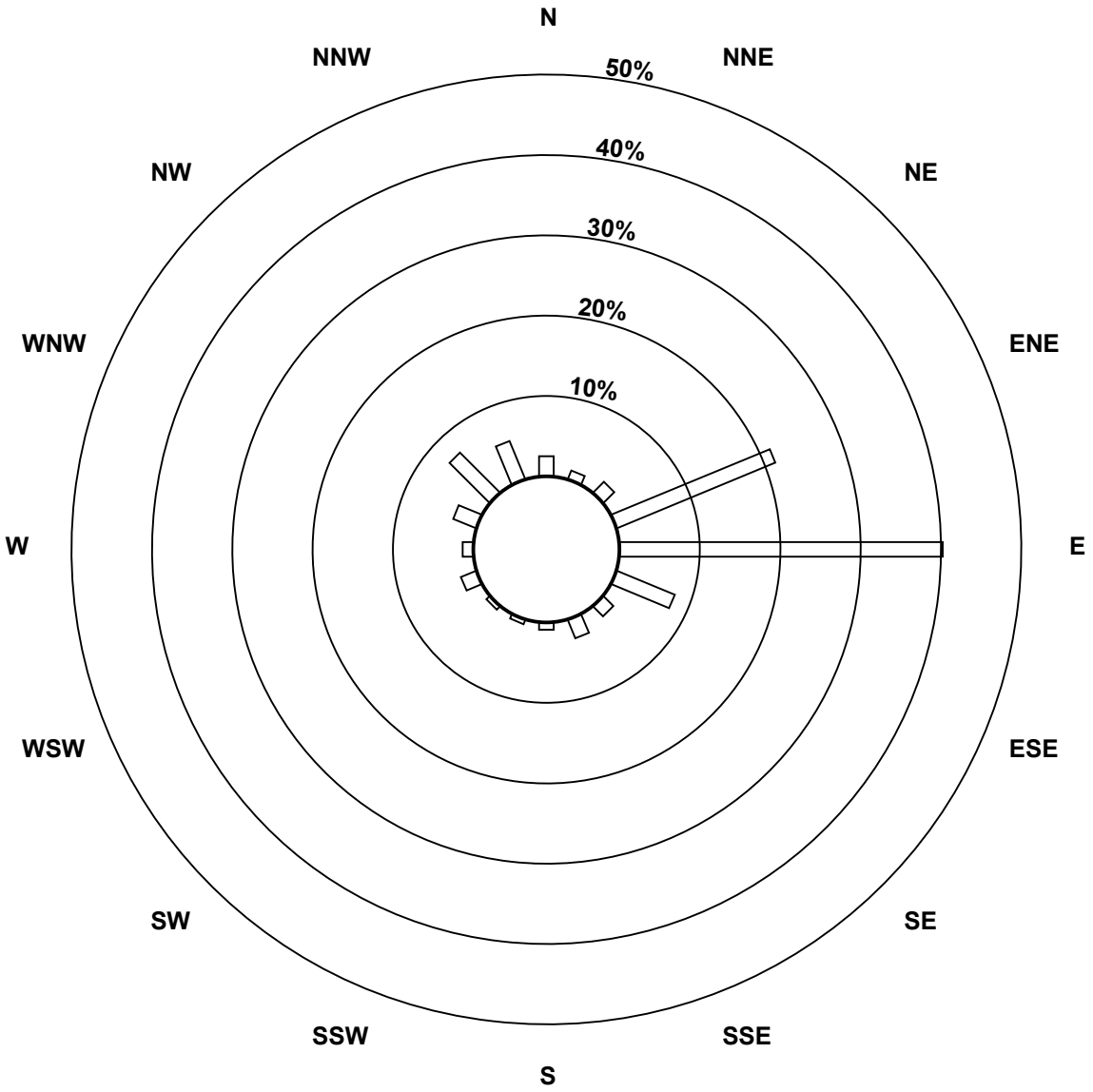
Total Number of Hours: 720

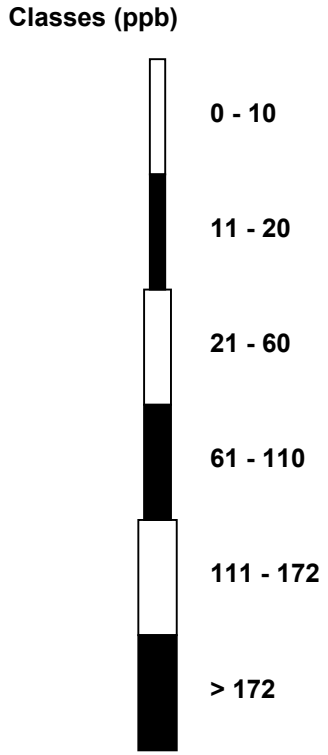
Wood Buffalo Environmental Association

Wind Rose Apr 2014

Sulphur Dioxide (SO_2) - ppb

Fort Chipeywan (AMS 8)





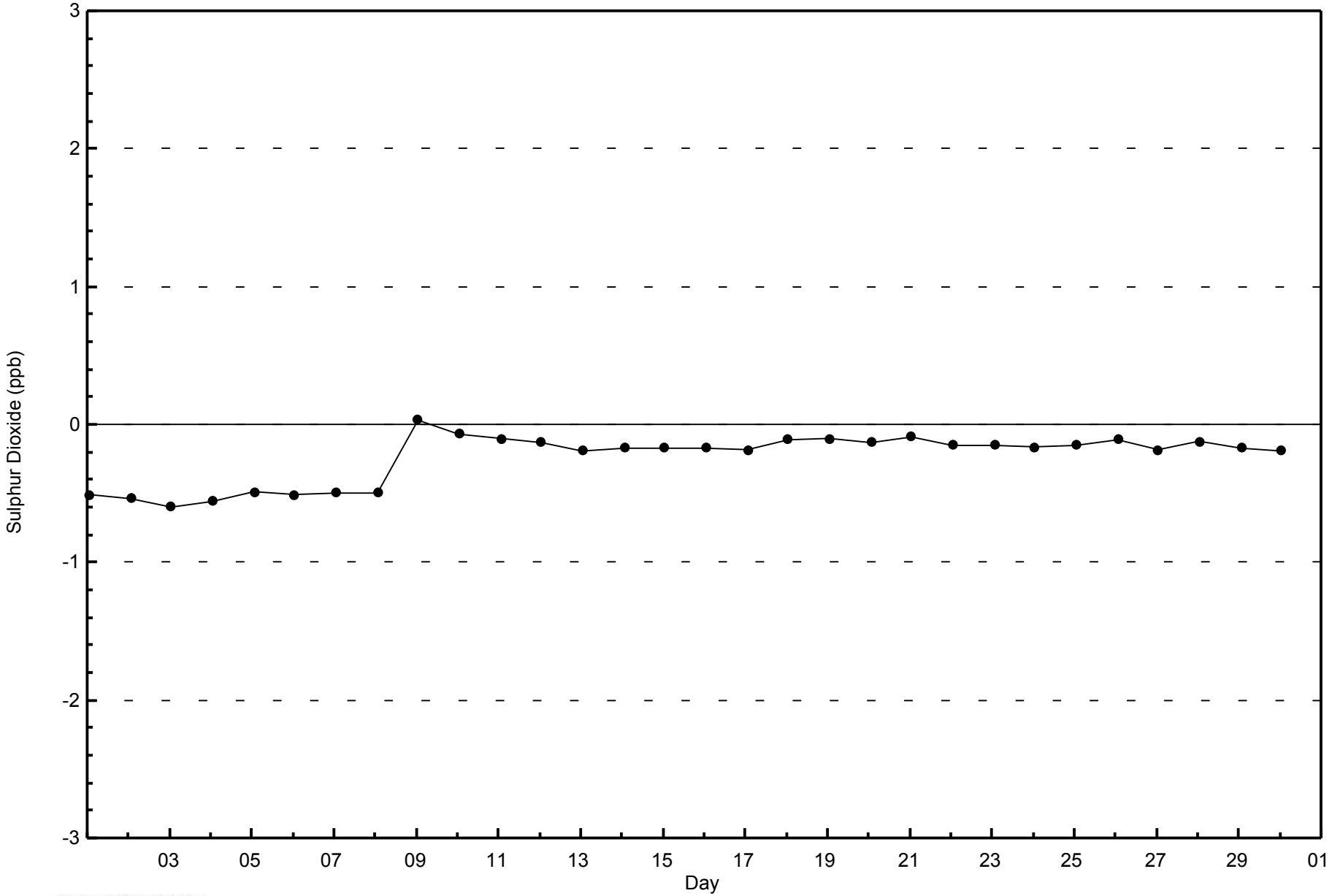
Total Number of Valid Hours: 679

WBEA NETWORK

Zero Responses

Sulphur Dioxide (SO_2) - ppb

Fort Chipeywan - April 2014



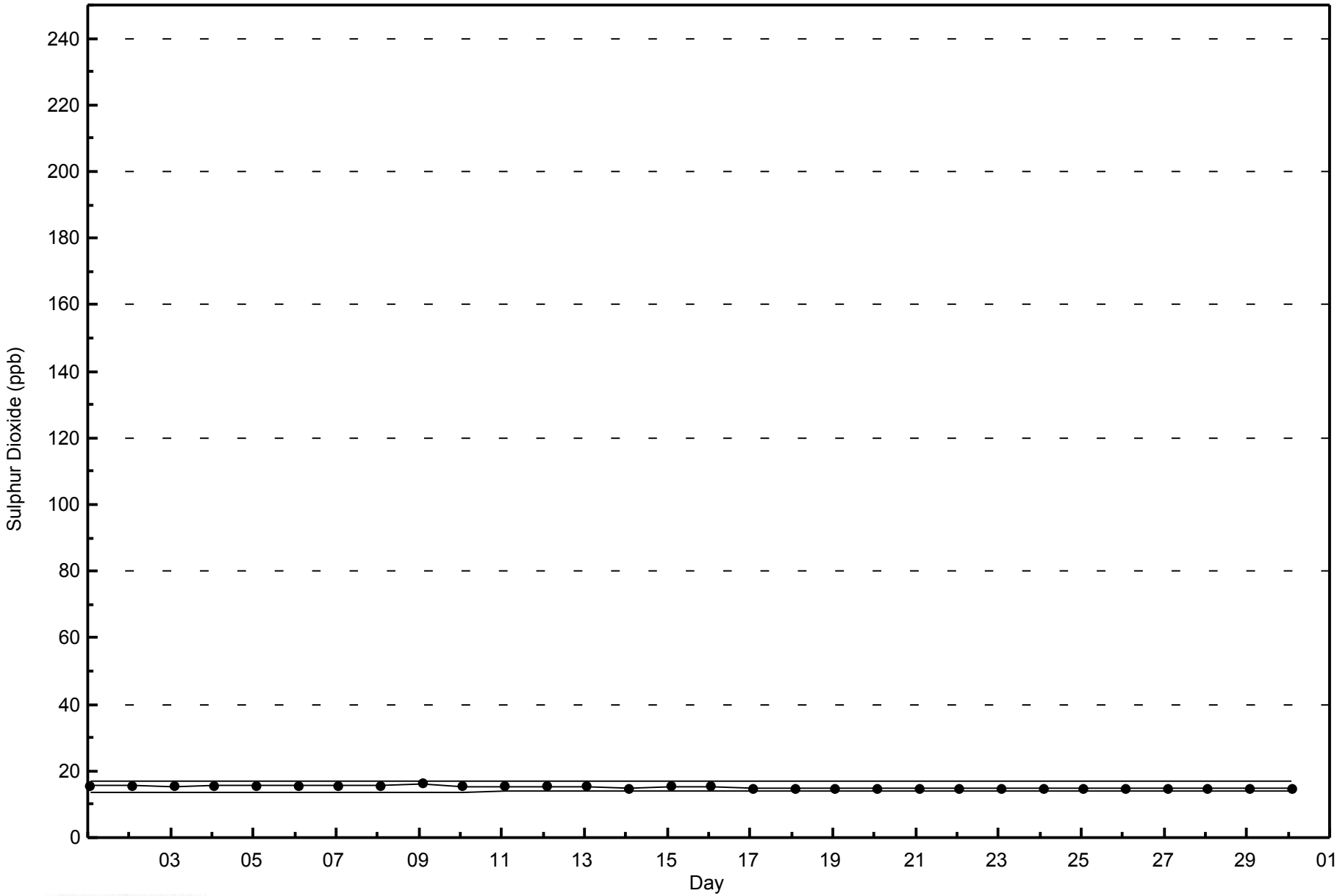
AURORA
ATMOSPHERICS INC.

WBEA NETWORK

Span Responses

Sulphur Dioxide (SO_2) - ppb

Fort Chipeywan - April 2014



AURORA ATMOSPHERICS INC.

Maximum Value: 1 ppb on Apr 19 11:00

Maximum Daily Average: 0.2 ppb on Apr 3

Minimum Value: 0 ppb on Apr 10 01:00

Minimum Daily Average: 0.0 ppb on Apr 26

Maximum Diurnal Average: 0.2 ppb at hour 11

Minimum Diurnal Average: 0.0 ppb at hour 24

Monthly Average: 0.1 ppb

Percentiles: $P_1 = 0$ $P_{10} = 0$ $Q_1 = 0$ Median = 0 $Q_3 = 0$ $P_{90} = 0$ $P_{99} = 1$

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-Apr	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
2-Apr	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
3-Apr	0	Z	1	0	0	0	0	0	0	0	0	0	0	0	0	1	1	0	0	0	0	0	0	0	0.2	1
4-Apr	0	Z	0	0	0	0	0	0	0	0	0	0	0	0	1	1	0	0	0	0	0	0	0	0	0.2	1
5-Apr	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
6-Apr	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
7-Apr	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
8-Apr	0	Z	0	0	0	0	0	0	0	0	0	C	C	C	C	C	C	0	0	0	0	0	0	0	--	0
9-Apr	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
10-Apr	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
11-Apr	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
12-Apr	0	Z	0	0	0	0	0	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0.1	1
13-Apr	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
14-Apr	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
15-Apr	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
16-Apr	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
17-Apr	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
18-Apr	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
19-Apr	0	Z	0	0	0	0	0	0	0	1	1	1	0	0	0	0	0	0	0	0	0	0	0	0	0.2	1
20-Apr	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
21-Apr	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
22-Apr	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
23-Apr	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
24-Apr	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
25-Apr	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
26-Apr	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
27-Apr	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
28-Apr	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
29-Apr	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
30-Apr	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	--	0.1	0.0	0.0	0.1	0.1	0.1	0.1	0.1	0.2	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.0	0.0	Diurnal Average	
	0	--	1	0	0	0	0	1	0	1	1	1	0	0	1	1	1	0	0	0	0	0	0	0	Diurnal Maximum	

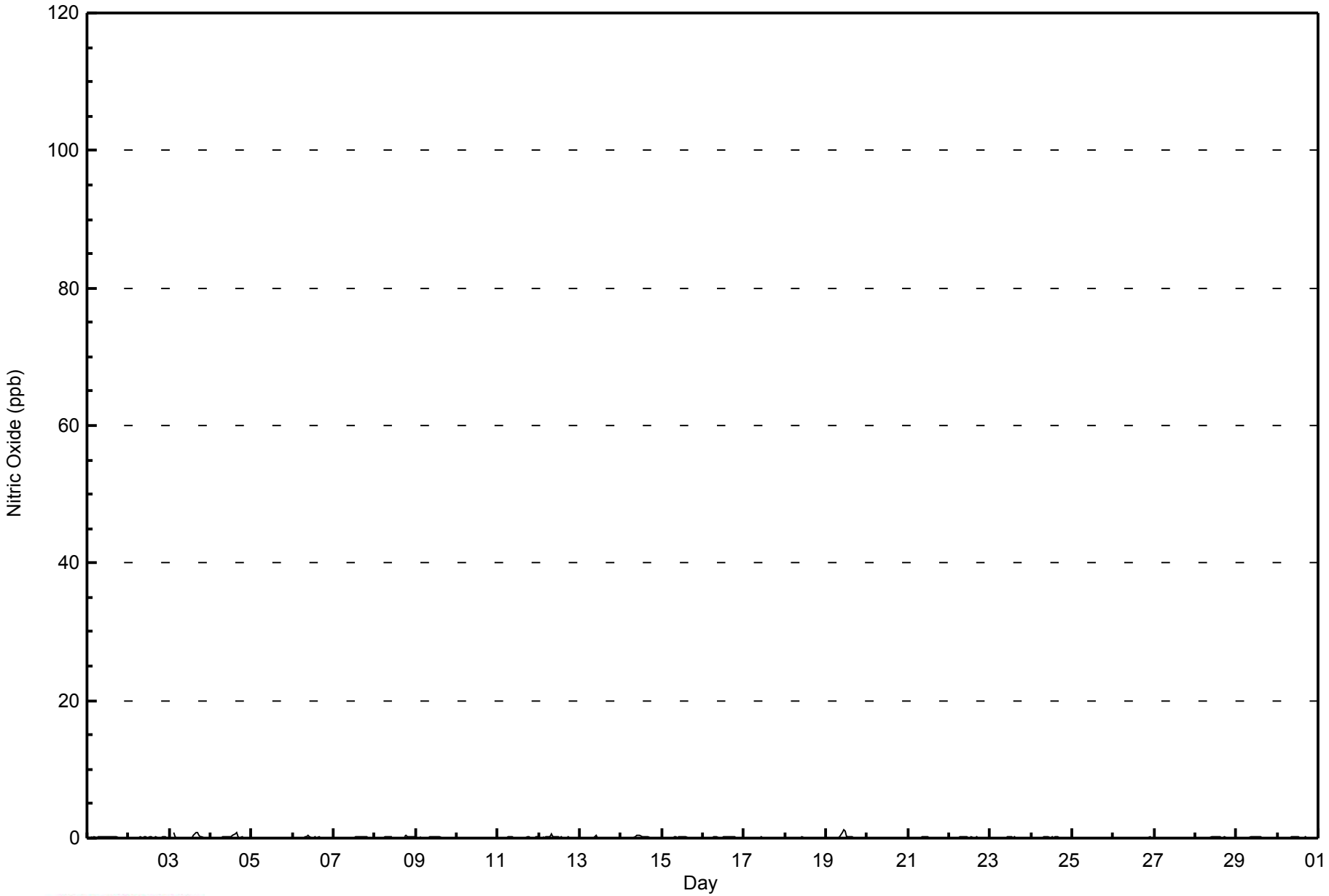
Z - zerospan C - Calibration

WBEA NETWORK

Hourly Averages

Nitric Oxide (NO) - ppb

Fort Chipeywan - April 2014



AURORA
ATMOSPHERICS INC.

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

WBEA NETWORK

Frequency Distribution

Nitric Oxide (NO) - ppb

Fort Chipeywan - April 2014

Concentration Ranges (ppb)	N	NNE	NE	ENE	E	ESE	SE	SSE	S	SSW	SW	WSW	W	WNW	NW	NNW	**Totals**
0 - 20	17	8	13	145	273	53	12	17	6	4	4	14	9	21	48	35	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	17	8	13	145	273	53	12	17	6	4	4	14	9	21	48	35	679

Wind Direction

Total Number of Valid Hours: 679

Total Number of Hours: 720

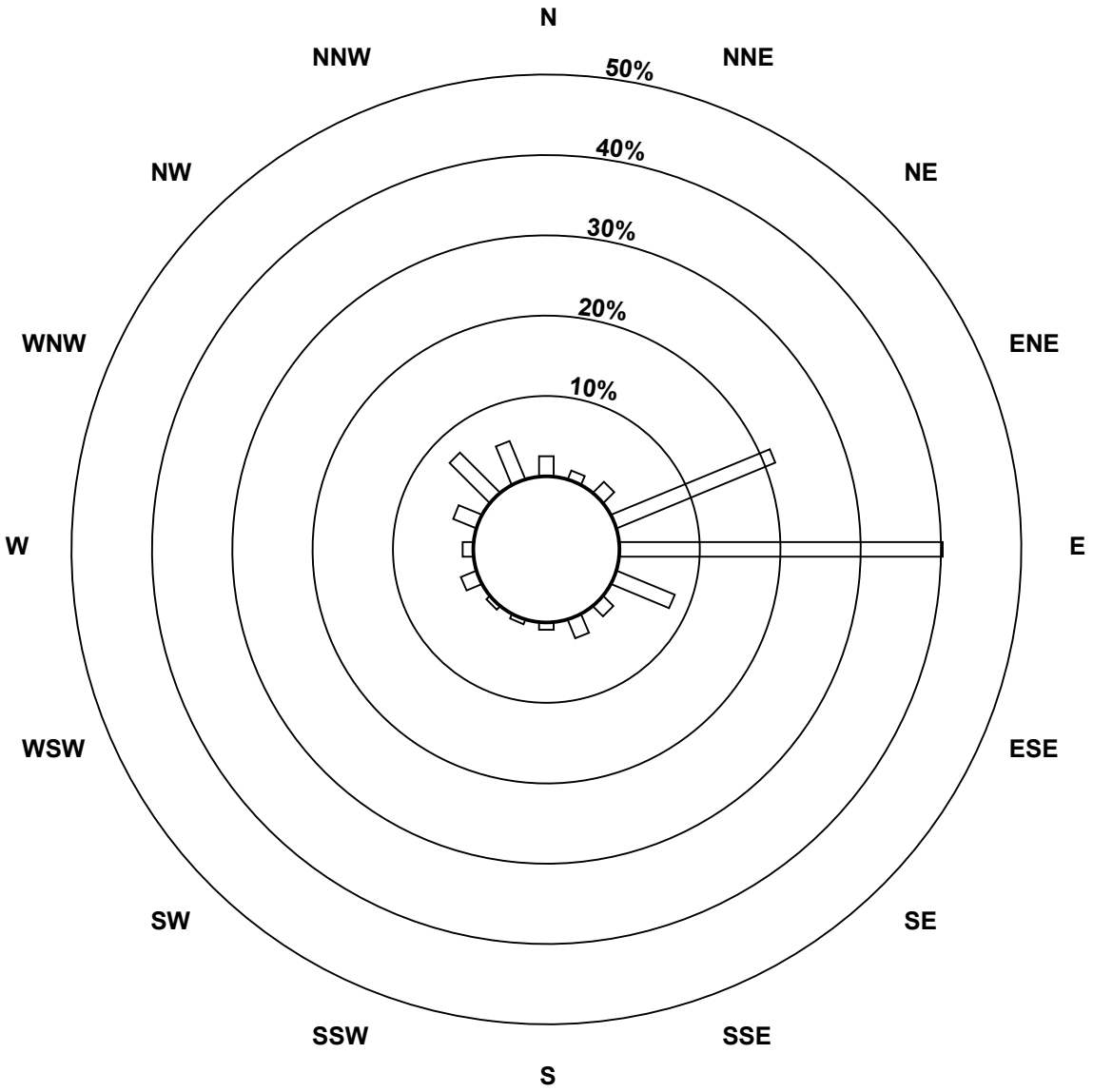
AURORA ATMOSPHERICS INC.

Wood Buffalo Environmental Association

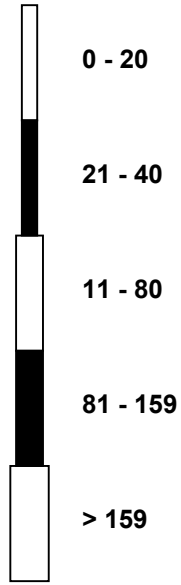
Wind Rose Apr 2014

Nitric Oxide (NO) - ppb

Fort Chipeywan (AMS 8)



Classes (ppb)



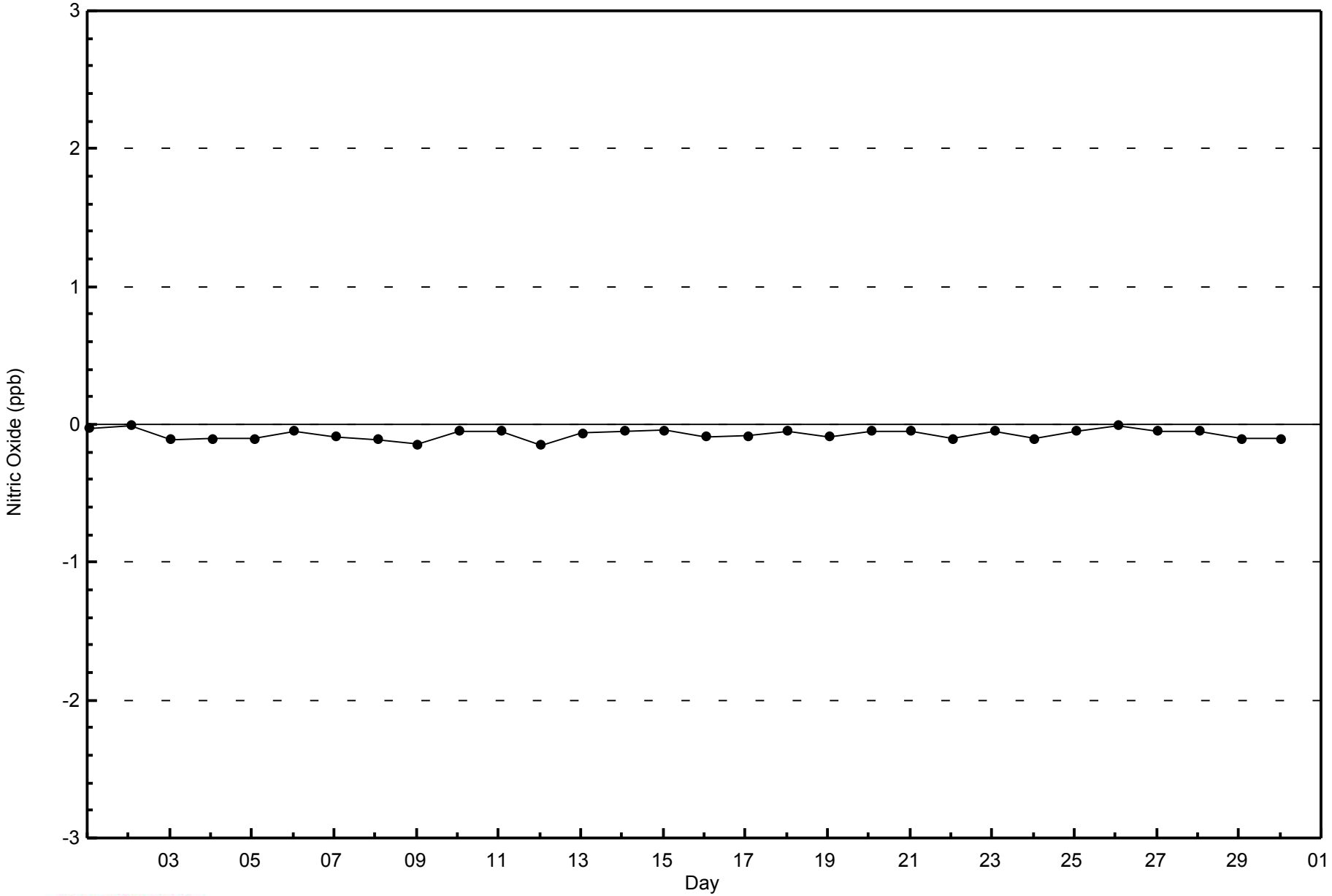
Total Number of Valid Hours: 679

WBEA NETWORK

Zero Responses

Nitric Oxide (NO) - ppb

Fort Chipeywan - April 2014



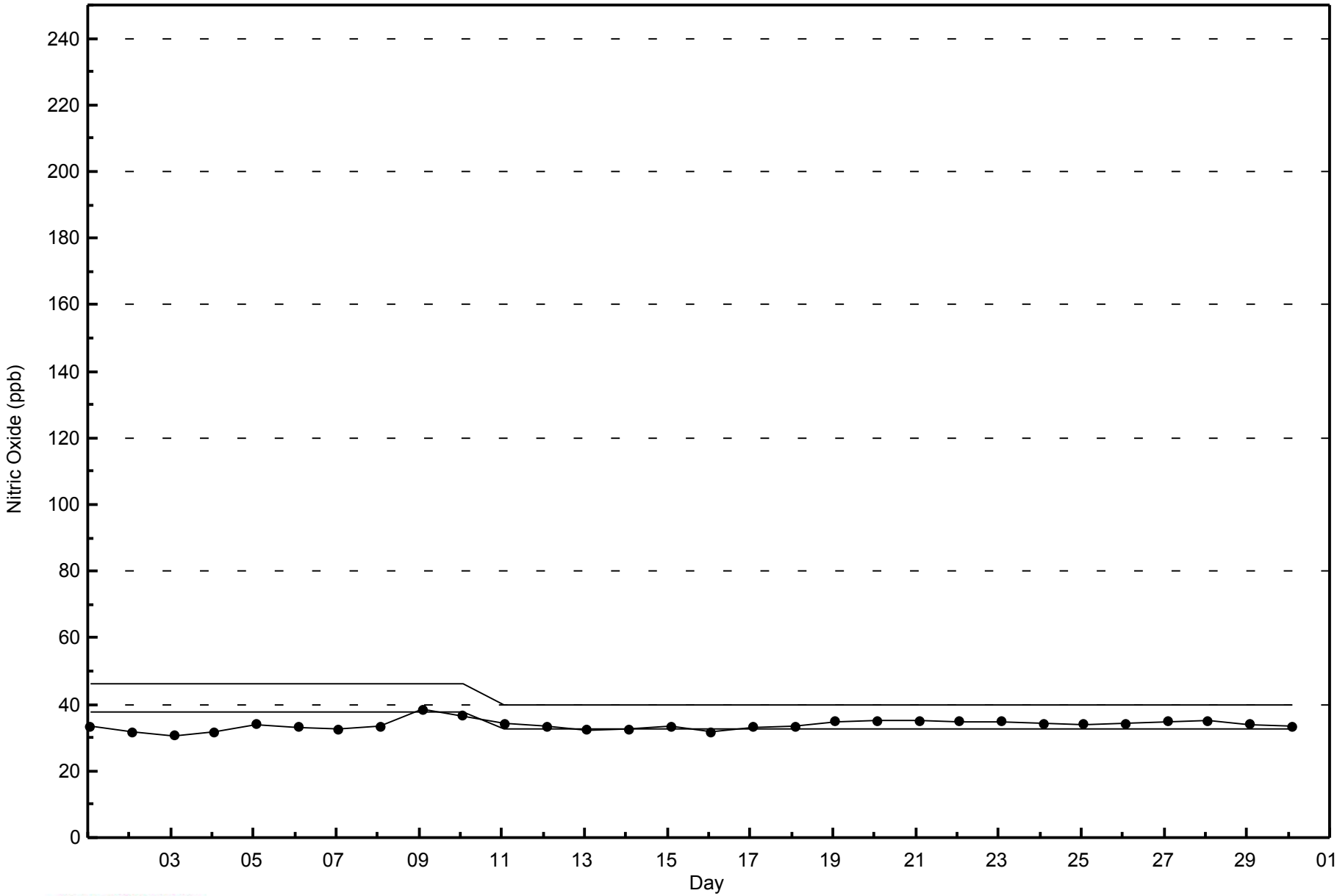
AURORA ATMOSPHERICS INC.

WBEA NETWORK

Span Responses

Nitric Oxide (NO) - ppb

Fort Chipeywan - April 2014



AURORA ATMOSPHERICS INC.

Number of Exceedences (AAAQO): 1-hr: 0 24-hr: 0
Maximum Value: 6 ppb on Apr 3 03:00 Maximum Daily Average: 0.7 ppb on Apr 4

Minimum Value: 0 ppb on Apr 1 06:00 Minimum Daily Average: 0.1 ppb on Apr 29
Maximum Diurnal Average: 0.6 ppb at hour 21 Minimum Diurnal Average: 0.2 ppb at hour 6
Monthly Average: 0.3 ppb Percentiles: $P_1 = 0$ $P_{10} = 0$ $Q_1 = 0$ Median = 0 $Q_3 = 0$ $P_{90} = 1$ $P_{99} = 1$

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-Apr	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
2-Apr	0	Z	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	3	3	1	0	0.3	3
3-Apr	1	Z	6	2	0	1	0	0	0	0	0	0	0	0	0	1	1	1	1	1	0	0	0	0	0.6	6
4-Apr	0	Z	0	0	0	0	0	1	1	1	1	1	1	2	3	3	1	1	0	0	0	0	0	0	0.7	3
5-Apr	0	Z	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	3	1	1	1	0.3	3
6-Apr	0	Z	0	1	1	0	0	0	1	1	0	0	0	0	0	0	0	0	0	1	1	0	0	0	0.4	1
7-Apr	0	Z	0	1	1	0	1	0	0	0	0	0	0	0	0	0	0	1	0	1	0	0	0	0	0.3	1
8-Apr	0	Z	1	1	0	0	1	0	0	0	0	C	C	C	C	C	C	0	1	0	0	0	0	0	--	1
9-Apr	0	Z	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0.2	0
10-Apr	0	Z	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1	0	0	0	0.3	1
11-Apr	1	Z	0	1	1	1	1	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1	0	0.3	1
12-Apr	1	Z	0	0	0	0	1	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0.3	1
13-Apr	0	Z	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0.2	0
14-Apr	0	Z	0	0	0	0	0	0	0	1	1	1	0	1	1	1	1	1	0	0	2	0	0	0	0.5	2
15-Apr	0	Z	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1	0	0	1	0	0.3	1
16-Apr	1	Z	0	0	0	0	1	0	0	0	0	0	0	0	0	0	0	1	1	1	1	0	0	0	0.4	1
17-Apr	0	Z	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1	0	0	0	0	0.3	1
18-Apr	0	Z	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1	0	0	0	0	0	0.4	1
19-Apr	0	Z	0	0	0	0	0	0	1	1	2	1	1	1	0	1	0	0	1	1	1	1	0	0	0.5	2
20-Apr	0	Z	1	1	1	1	0	0	0	0	0	0	0	0	0	0	0	0	0	1	1	0	2	1	0.5	2
21-Apr	1	Z	1	0	0	0	0	0	1	0	0	0	0	0	0	0	0	0	0	0	1	0	0	1	0.4	1
22-Apr	1	Z	1	1	1	1	1	1	0	0	0	0	0	0	0	0	0	0	1	1	1	0	0	0	0.5	1
23-Apr	0	Z	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0.3	0
24-Apr	0	Z	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0.3	0
25-Apr	0	Z	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1	1	1	0	0.4	1
26-Apr	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
27-Apr	0	Z	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0.2	0
28-Apr	0	Z	0	0	0	0	0	0	0	0	0	0	0	1	0	0	0	0	0	1	0	1	0	0	0.3	1
29-Apr	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
30-Apr	0	Z	0	0	0	0	0	0	0	0	0	1	0	0	0	0	1	1	1	0	1	1	0	0	0.3	1
	0.3	--	0.5	0.3	0.3	0.2	0.3	0.3	0.2	0.3	0.3	0.3	0.3	0.3	0.3	0.4	0.3	0.3	0.3	0.4	0.6	0.4	0.4	0.3	Diurnal Average	
	1	--	6	2	1	1	1	1	1	1	2	1	1	2	3	3	1	1	1	1	3	3	2	1	Diurnal Maximum	

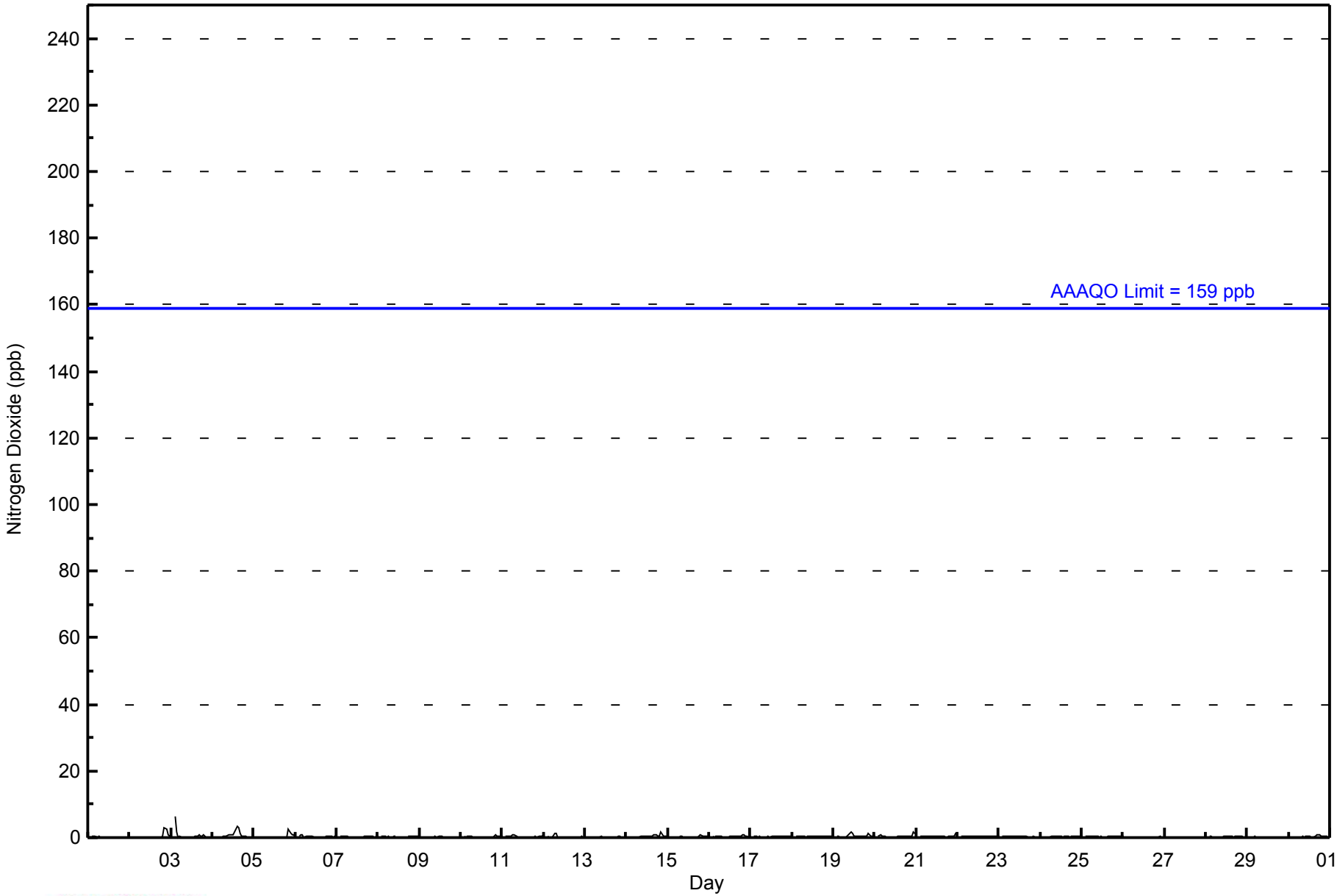
Z - zerospan C - Calibration
Alberta Ambient Air Quality Objectives (AAAQO): 1-hr 159 ppb

WBEA NETWORK

Hourly Averages

Nitrogen Dioxide (NO_2) - ppb

Fort Chipeywan - April 2014



AURORA ATMOSPHERICS INC.

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

Nitrogen Dioxide (NO_2) - ppb
Fort Chipeywan - April 2014

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	8	13	145	273	53	12	17	6	4	4	14	9	21	48	35	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	17	8	13	145	273	53	12	17	6	4	4	14	9	21	48	35	679

Total Number of Valid Hours: 679

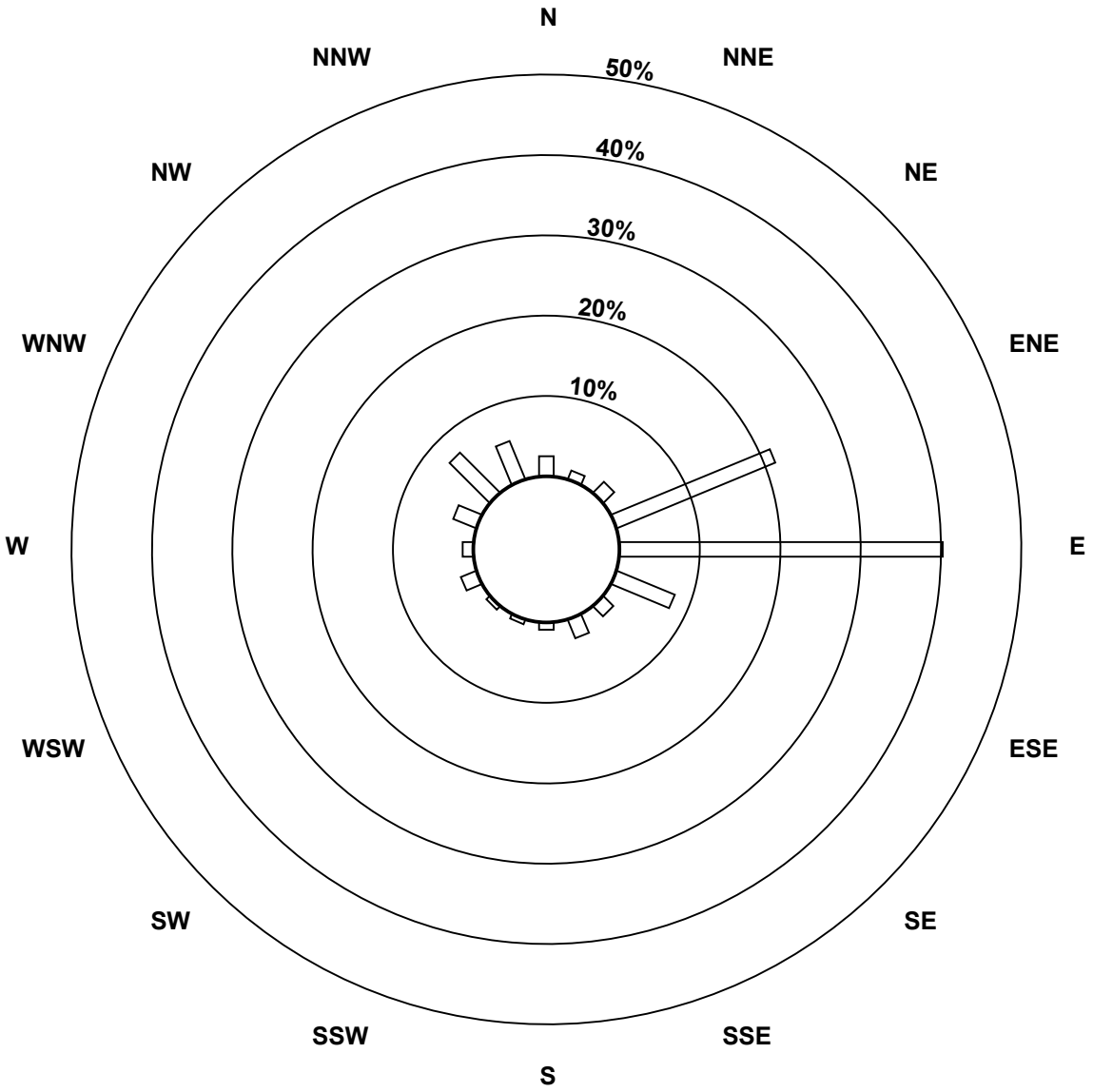
Total Number of Hours: 720

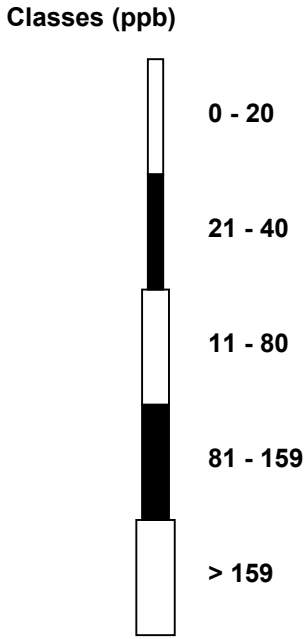
Wood Buffalo Environmental Association

Wind Rose Apr 2014

Nitrogen Dioxide (NO_2) - ppb

Fort Chipeywan (AMS 8)





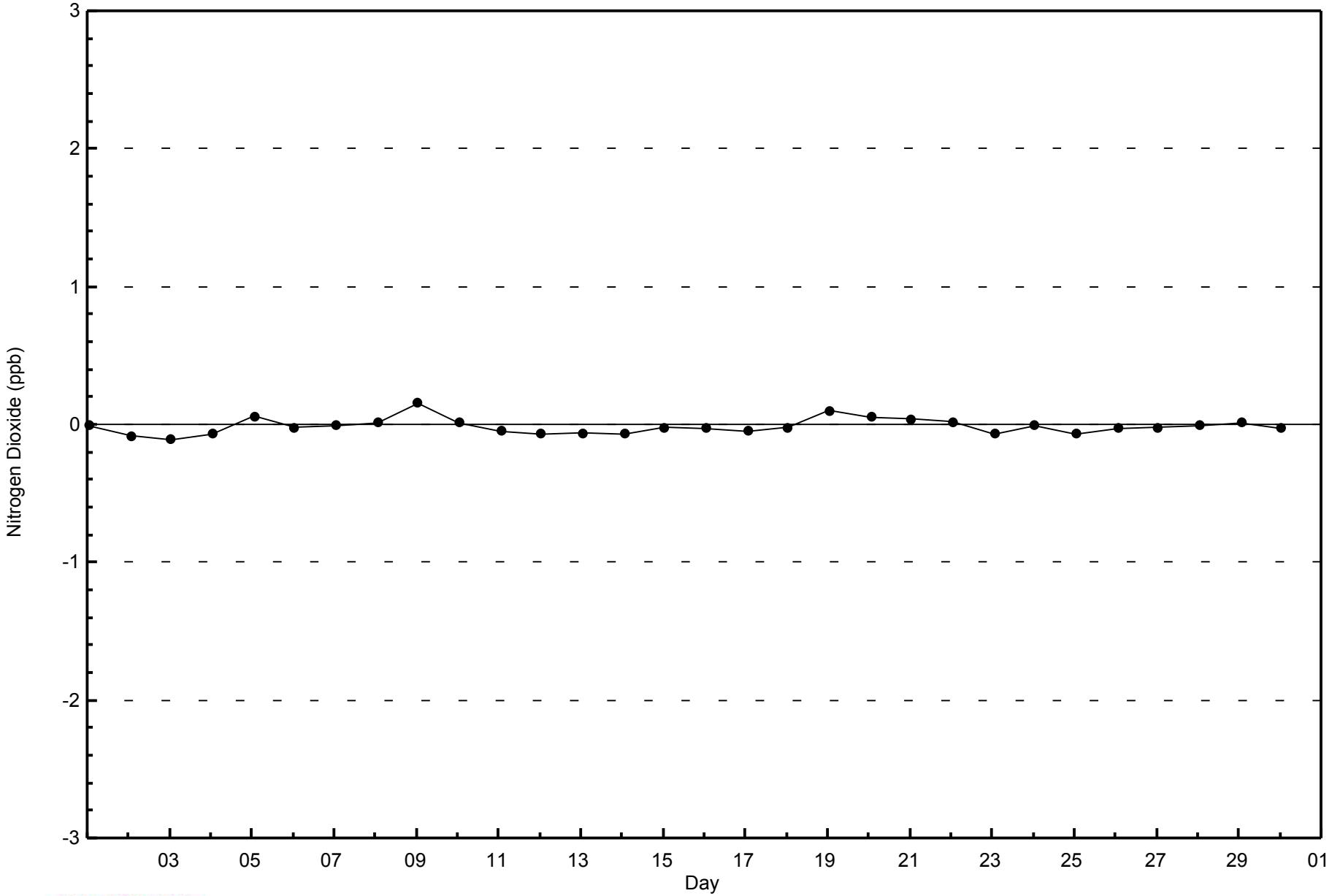
Total Number of Valid Hours: 679

WBEA NETWORK

Zero Responses

Nitrogen Dioxide (NO_2) - ppb

Fort Chipeywan - April 2014



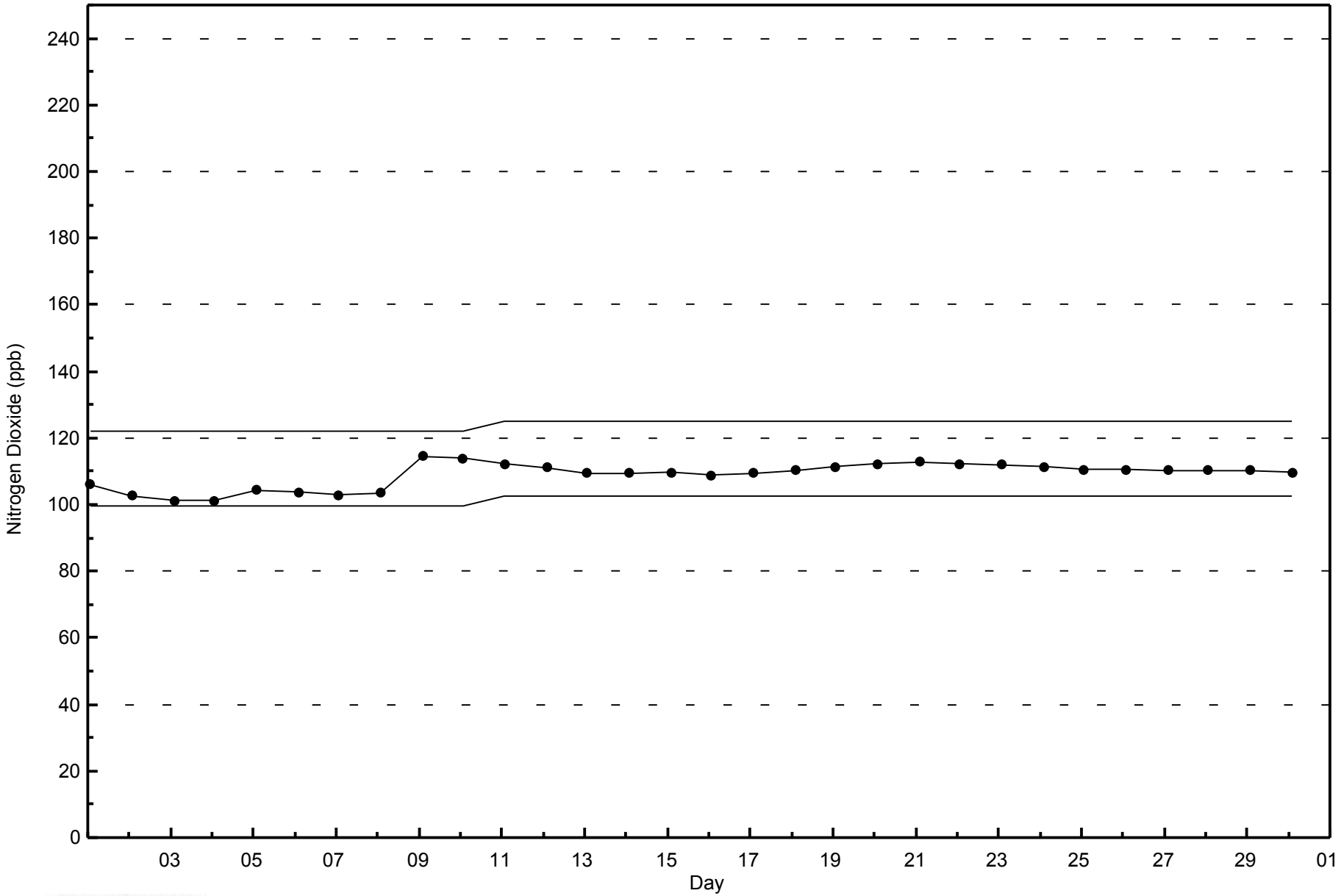
AURORA ATMOSPHERICS INC.

WBEA NETWORK

Span Responses

Nitrogen Dioxide (NO_2) - ppb

Fort Chipeywan - April 2014



AURORA ATMOSPHERICS INC.

Maximum Value: 7 ppb on Apr 3 03:00 — Maximum Daily Average: 0.9 ppb on Apr 4

Minimum Value: 0 ppb on Apr 2 01:00 — Minimum Daily Average: 0.1 ppb on Apr 27

Maximum Diurnal Average: 0.6 ppb at hour 21 — Minimum Diurnal Average: 0.3 ppb at hour 6

Monthly Average: 0.4 ppb — Percentiles: $P_1 = 0$ $P_{10} = 0$ $Q_1 = 0$ Median = 0 $Q_3 = 0$ $P_{90} = 1$ $P_{99} = 2$

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-Apr	0	Z	0	1	0	0	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0.2	1
2-Apr	0	Z	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	3	3	1	0	0.5	3
3-Apr	1	Z	7	2	0	1	0	0	0	0	0	0	0	0	1	1	2	1	1	1	0	0	0	0	0.8	7
4-Apr	0	Z	0	0	0	0	0	1	1	1	1	1	1	2	4	4	1	1	1	0	0	0	0	0	0.9	4
5-Apr	0	Z	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	3	1	1	1	0.4	3
6-Apr	0	Z	0	1	1	0	0	0	1	1	0	0	0	0	0	0	0	0	0	1	1	1	0	0	0.4	1
7-Apr	0	Z	0	0	0	0	1	0	0	0	0	0	0	0	0	0	0	1	1	1	0	0	0	0	0.4	1
8-Apr	0	Z	1	1	0	0	1	0	0	1	1	C	C	C	C	C	C	0	1	0	0	0	0	0	--	1
9-Apr	0	Z	0	0	0	0	0	0	0	1	0	0	1	1	0	0	0	0	0	0	0	0	0	0	0.3	1
10-Apr	0	Z	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1	0	0	0	0.3	1
11-Apr	0	Z	0	0	1	0	1	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1	0	0.4	1
12-Apr	1	Z	0	0	0	0	1	2	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0.4	2
13-Apr	0	Z	0	0	0	0	0	0	0	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0.2	1
14-Apr	0	Z	0	0	0	0	0	0	1	1	1	1	1	1	1	1	1	1	0	0	2	0	0	0	0.6	2
15-Apr	0	Z	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1	1	0	0	1	0.4	1
16-Apr	1	Z	1	0	0	0	1	1	0	0	0	0	0	0	1	1	1	1	1	1	1	0	0	0	0.5	1
17-Apr	0	Z	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0.4	0
18-Apr	0	Z	0	0	0	0	0	0	0	0	0	0	0	0	1	1	0	1	0	0	0	0	0	0	0.4	1
19-Apr	0	Z	0	0	0	0	0	0	1	2	3	2	1	1	1	1	0	0	1	1	1	1	0	0	0.7	3
20-Apr	0	Z	0	1	1	1	0	0	0	0	0	0	0	0	0	0	0	0	0	1	0	0	2	1	0.5	2
21-Apr	1	Z	1	0	0	0	0	0	1	0	1	0	0	0	0	0	0	0	0	0	0	0	0	1	0.5	1
22-Apr	1	Z	1	1	1	1	1	1	1	1	1	0	0	0	0	0	0	0	0	1	1	0	0	0	0.5	1
23-Apr	0	Z	0	0	0	0	0	0	0	0	0	0	1	0	0	0	0	0	0	0	0	0	0	0	0.4	1
24-Apr	0	Z	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0.3	0
25-Apr	0	Z	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1	1	1	0	0.4	1
26-Apr	0	Z	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0.2	0
27-Apr	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
28-Apr	0	Z	0	0	0	0	0	0	0	0	1	0	1	1	1	0	0	0	0	1	0	1	0	0	0.4	1
29-Apr	0	Z	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0.2	0
30-Apr	0	Z	0	0	0	0	0	0	0	0	0	1	0	0	0	1	1	1	1	0	1	1	1	0	0.4	1
	0.4	--	0.6	0.4	0.3	0.3	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	0.6	0.5	0.4	0.4	Diurnal Average	
	1	--	7	2	1	1	1	2	1	2	3	2	1	2	4	4	2	1	1	1	3	3	2	1	Diurnal Maximum	

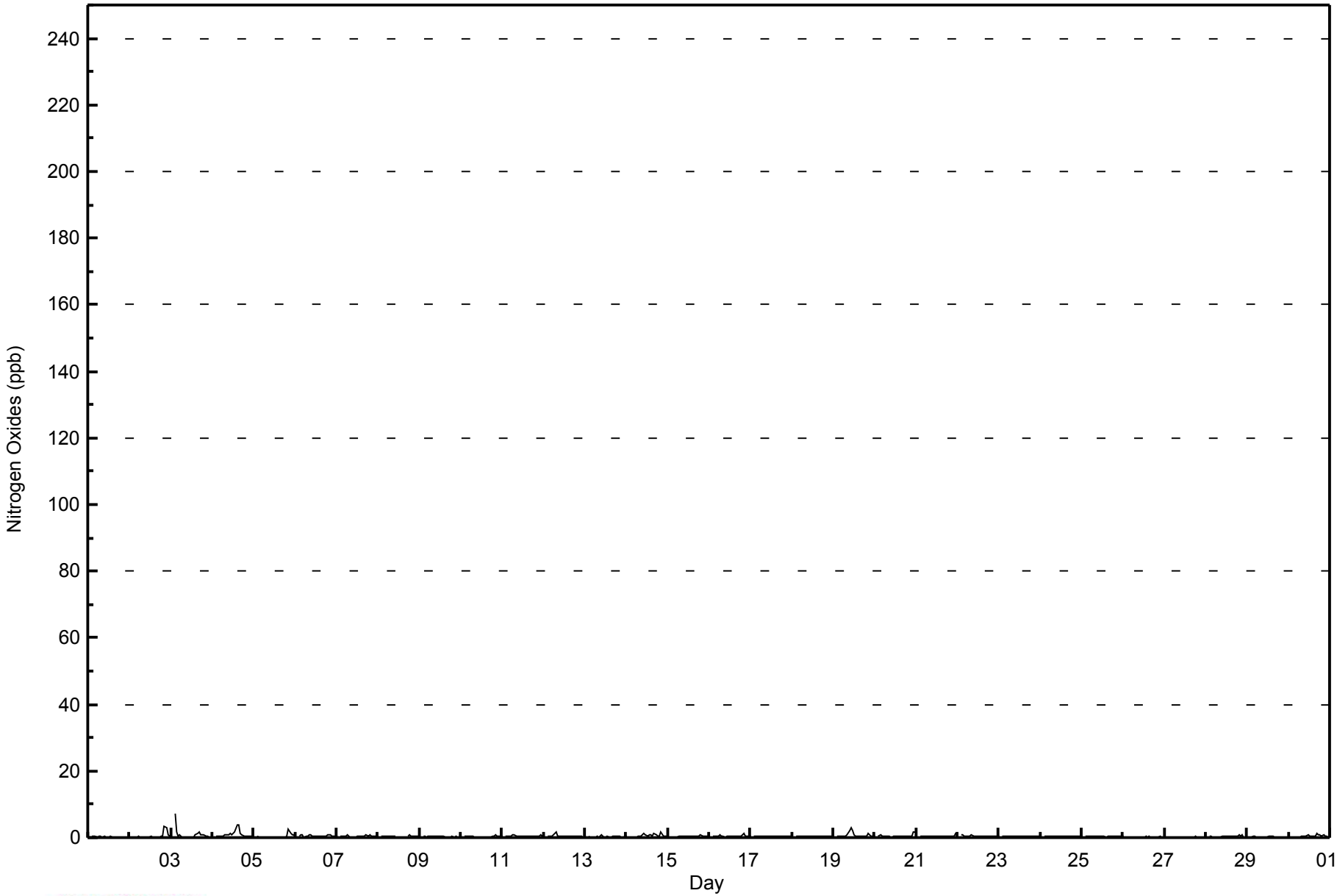
Z - zerospan C - Calibration

WBEA NETWORK

Hourly Averages

Nitrogen Oxides (NO_X) - ppb

Fort Chipeywan - April 2014



AURORA ATMOSPHERICS INC.

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

WBEA NETWORK

Frequency Distribution

Nitrogen Oxides (NO_X) - ppb

Fort Chipeywan - April 2014

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	8	13	145	273	53	12	17	6	4	4	14	9	21	48	35	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	17	8	13	145	273	53	12	17	6	4	4	14	9	21	48	35	679

Total Number of Valid Hours: 679

Total Number of Hours: 720

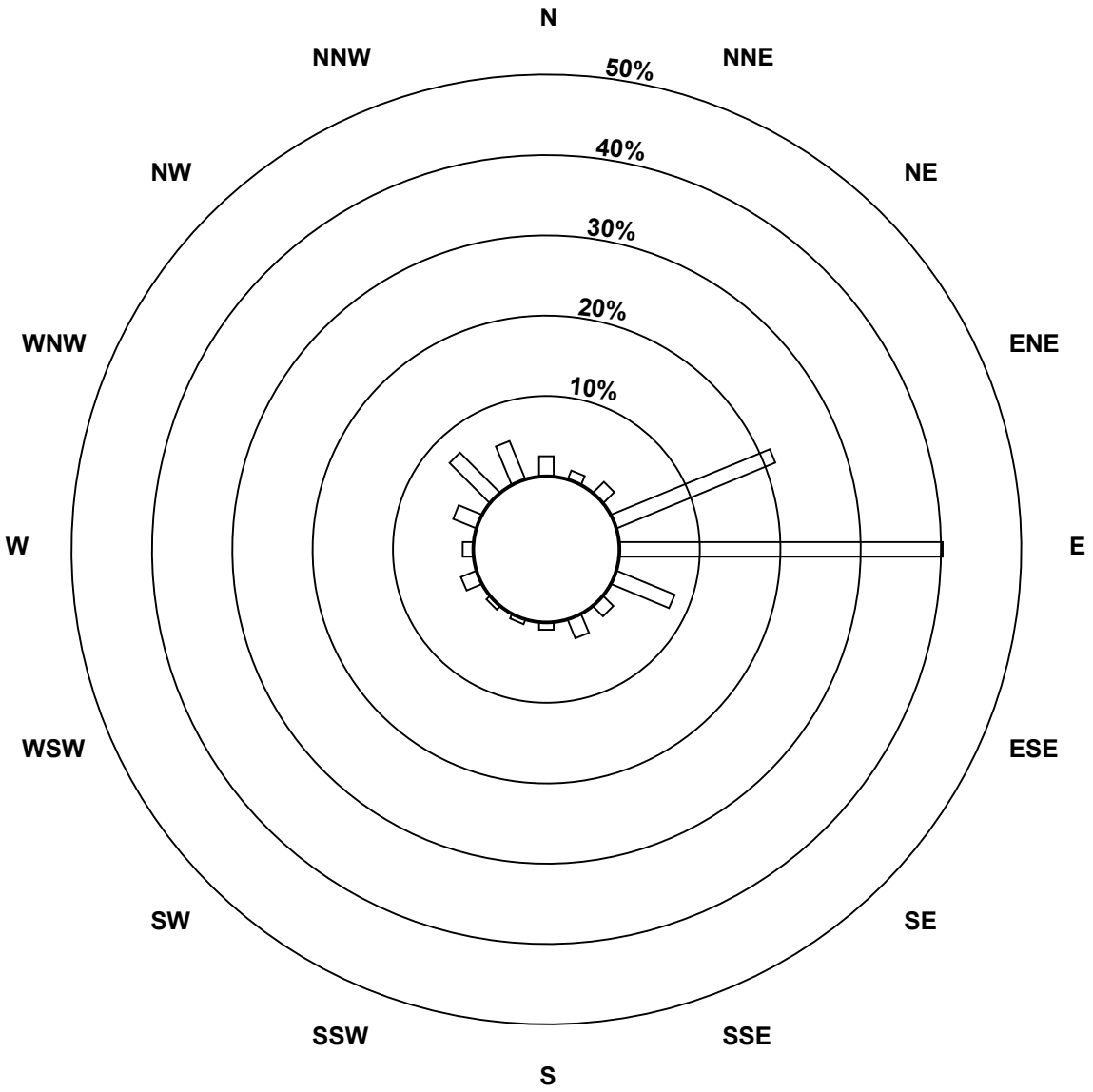
AURORA ATMOSPHERICS INC.

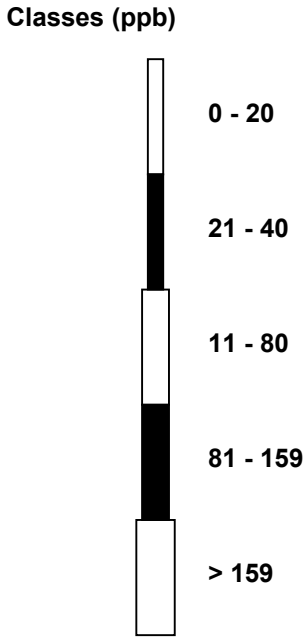
Wood Buffalo Environmental Association

Wind Rose Apr 2014

Nitrogen Oxides (NO_X) - ppb

Fort Chipeywan (AMS 8)

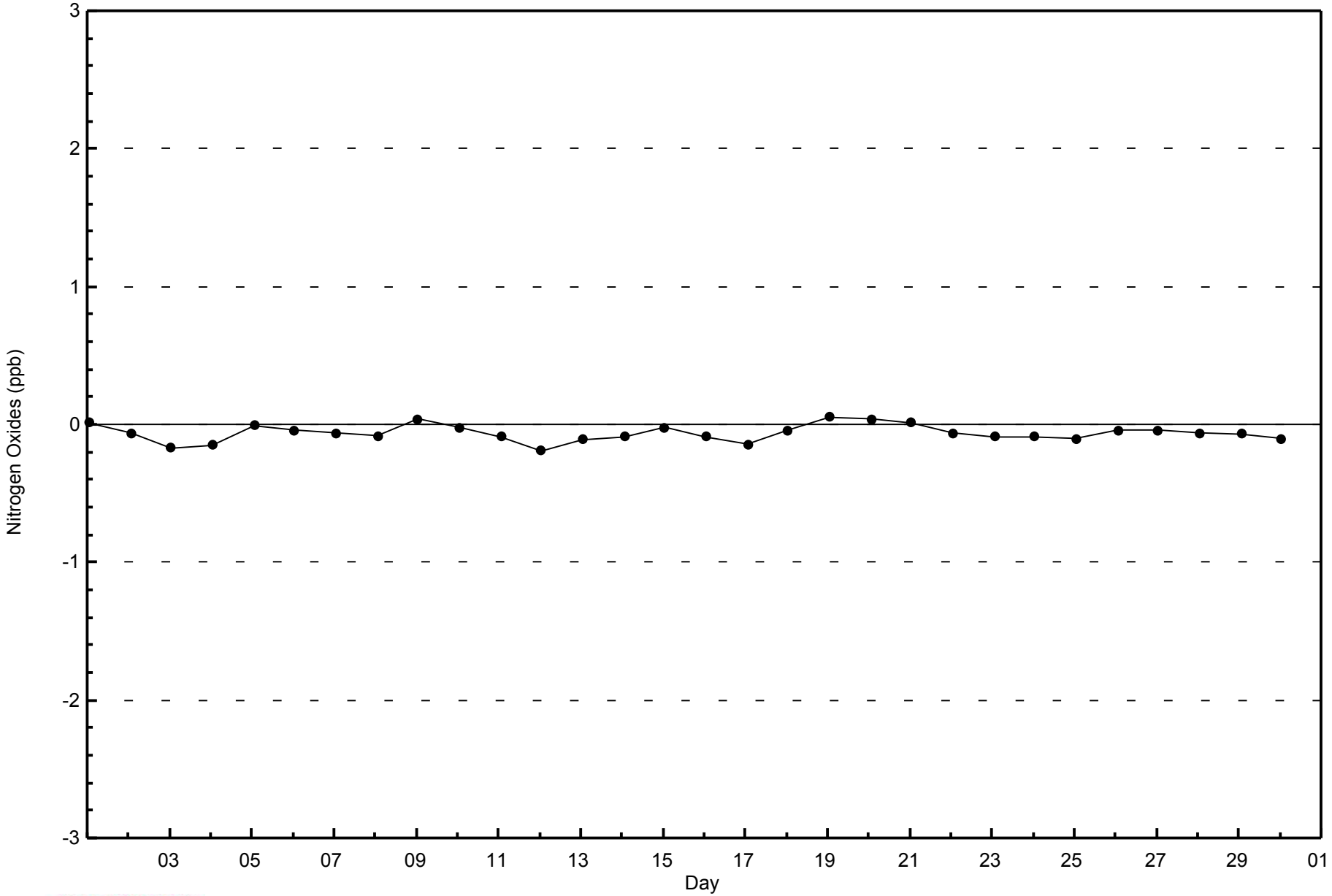




Total Number of Valid Hours: 679

Wood Buffalo Environmental Association
Zero Responses

Nitrogen Oxides (NO_X) - ppb
Fort Chipeywan - April 2014



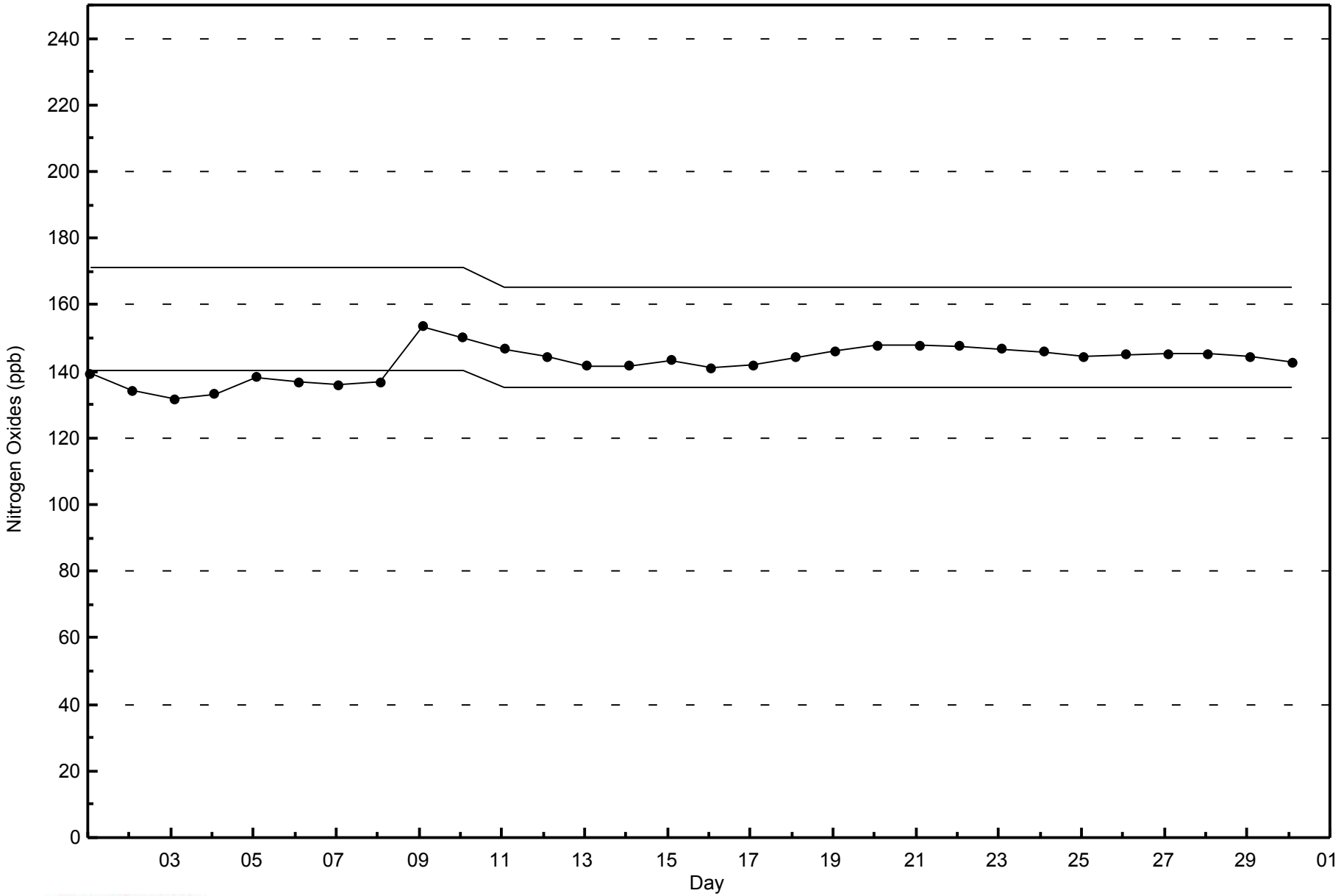
AURORA
ATMOSPHERICS INC.

WBEA NETWORK

Span Responses

Nitrogen Oxides (NO_X) - ppb

Fort Chipeywan - April 2014



AURORA ATMOSPHERICS INC.

Wood Buffalo Environmental Association

Summary of Hour Averages

Ozone (O_3) - ppb

Fort Chipeywan - April 2014

Number of Exceedences (AAAQO): 1-hr: 0 24-hr: 0
Maximum Value: 50 ppb on Apr 22 22:00 Maximum Daily Average: 48.7 ppb on Apr 22

Minimum Value: 10 ppb on Apr 3 02:00 Minimum Daily Average: 15.0 ppb on Apr 2
Maximum Diurnal Average: 39.9 ppb at hour 19 Minimum Diurnal Average: 36.4 ppb at hour 8
Monthly Average: 38.2 ppb Percentiles: P_1 = 13 P_{10} = 29 Q_1 = 36 Median = 39 Q_3 = 43 P_{90} = 47 P_{99} = 50

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-Apr	35	34	Z	32	32	32	31	31	30	28	31	32	31	31	34	37	37	38	37	34	31	29	25	22	32.0	38
2-Apr	20	18	Z	18	18	17	17	17	14	14	13	13	14	14	14	14	14	14	14	14	13	13	13	13	15.0	20
3-Apr	13	10	Z	12	13	13	14	14	14	14	15	17	18	20	22	26	27	28	29	32	34	31	33	32	20.8	34
4-Apr	33	32	Z	31	32	34	37	37	36	39	37	37	36	38	37	36	36	33	31	28	28	28	31	32	33.8	39
5-Apr	33	34	Z	34	32	31	30	30	32	35	36	34	36	37	36	37	37	37	37	38	35	37	36	37	34.9	38
6-Apr	37	38	Z	36	37	39	39	39	40	41	40	40	40	39	40	40	42	43	44	44	43	45	43	42	40.5	45
7-Apr	43	43	Z	44	44	42	39	33	32	31	30	31	32	33	33	35	36	38	39	40	40	39	38	40	37.2	44
8-Apr	41	40	Z	41	39	38	38	37	37	37	38	40	40	39	39	38	C	C	C	C	36	36	41	40	38.7	41
9-Apr	42	45	Z	45	44	42	38	38	39	39	39	39	40	39	39	40	39	39	39	37	37	37	38	36	39.6	45
10-Apr	32	32	Z	37	38	38	37	37	36	36	36	36	36	35	35	33	35	36	37	38	39	39	39	39	36.4	39
11-Apr	38	38	Z	37	37	37	37	37	38	38	38	38	38	38	38	38	39	39	39	40	41	40	39	39	38.4	41
12-Apr	39	40	Z	42	41	42	38	37	38	40	41	41	40	39	39	39	38	36	38	39	40	40	37	36	39.1	42
13-Apr	35	35	Z	33	31	31	31	31	34	33	33	34	33	34	37	37	37	37	40	41	36	38	40	39	35.3	41
14-Apr	38	39	Z	37	37	37	39	39	37	37	41	44	43	45	45	44	44	43	42	42	41	45	47	46	41.3	47
15-Apr	45	43	Z	43	42	42	42	41	41	42	42	42	42	43	43	47	46	47	47	47	46	47	46	46	44.0	47
16-Apr	45	44	Z	43	43	42	42	42	42	42	43	43	41	44	44	45	45	44	45	44	43	44	44	43	43.3	45
17-Apr	44	44	Z	44	43	44	44	44	44	44	44	45	44	47	47	49	48	47	48	49	49	49	48	48	45.9	49
18-Apr	49	49	Z	48	48	48	48	48	48	49	50	50	50	49	49	48	49	49	50	49	47	45	45	44	48.3	50
19-Apr	44	42	Z	42	41	40	38	38	37	37	38	40	41	42	41	41	42	43	43	43	43	44	44	43	41.2	44
20-Apr	42	41	Z	40	41	40	40	40	41	42	42	42	43	44	44	46	46	46	46	46	47	47	44	45	43.2	47
21-Apr	42	39	Z	44	43	42	42	42	44	43	43	44	45	47	47	43	44	43	44	45	46	46	46	44	43.8	47
22-Apr	46	48	Z	47	48	49	49	48	48	48	48	49	48	49	49	49	49	49	49	49	50	50	50	50	48.7	50
23-Apr	50	49	Z	49	49	49	48	48	47	46	47	46	46	47	47	48	49	49	49	48	48	48	48	48	47.9	50
24-Apr	47	47	Z	47	46	45	45	44	44	44	44	43	42	42	41	41	41	42	43	43	42	41	41	41	43.3	47
25-Apr	41	41	Z	40	40	40	41	40	41	41	41	42	42	41	39	40	40	40	40	40	40	40	40	40	40.4	42
26-Apr	40	40	Z	39	39	39	39	39	39	39	38	38	39	41	41	40	41	40	40	40	43	43	42	39	40.0	43
27-Apr	38	37	Z	35	34	35	36	37	38	38	38	37	37	38	38	37	36	35	34	34	34	33	33	32	35.8	38
28-Apr	31	30	Z	28	28	28	28	29	29	31	32	35	36	38	40	39	39	40	38	37	38	36	37	37	34.1	40
29-Apr	37	35	Z	30	28	27	26	25	23	22	22	23	25	26	26	27	27	29	31	30	30	30	31	31	27.9	37
30-Apr	30	30	Z	28	28	28	29	30	31	31	34	37	37	37	37	40	45	47	46	46	45	43	41	39	36.6	47
	38.3	37.9	--	37.6	37.2	37.0	36.6	36.4	36.4	36.7	37.2	37.7	37.8	38.5	38.8	39.2	39.6	39.7	39.9	39.9	39.5	39.5	39.3	38.8	Diurnal Average	
	50	49	--	49	49	49	49	48	48	49	50	50	50	49	49	49	49	49	50	50	50	50	50	50	Diurnal Maximum	

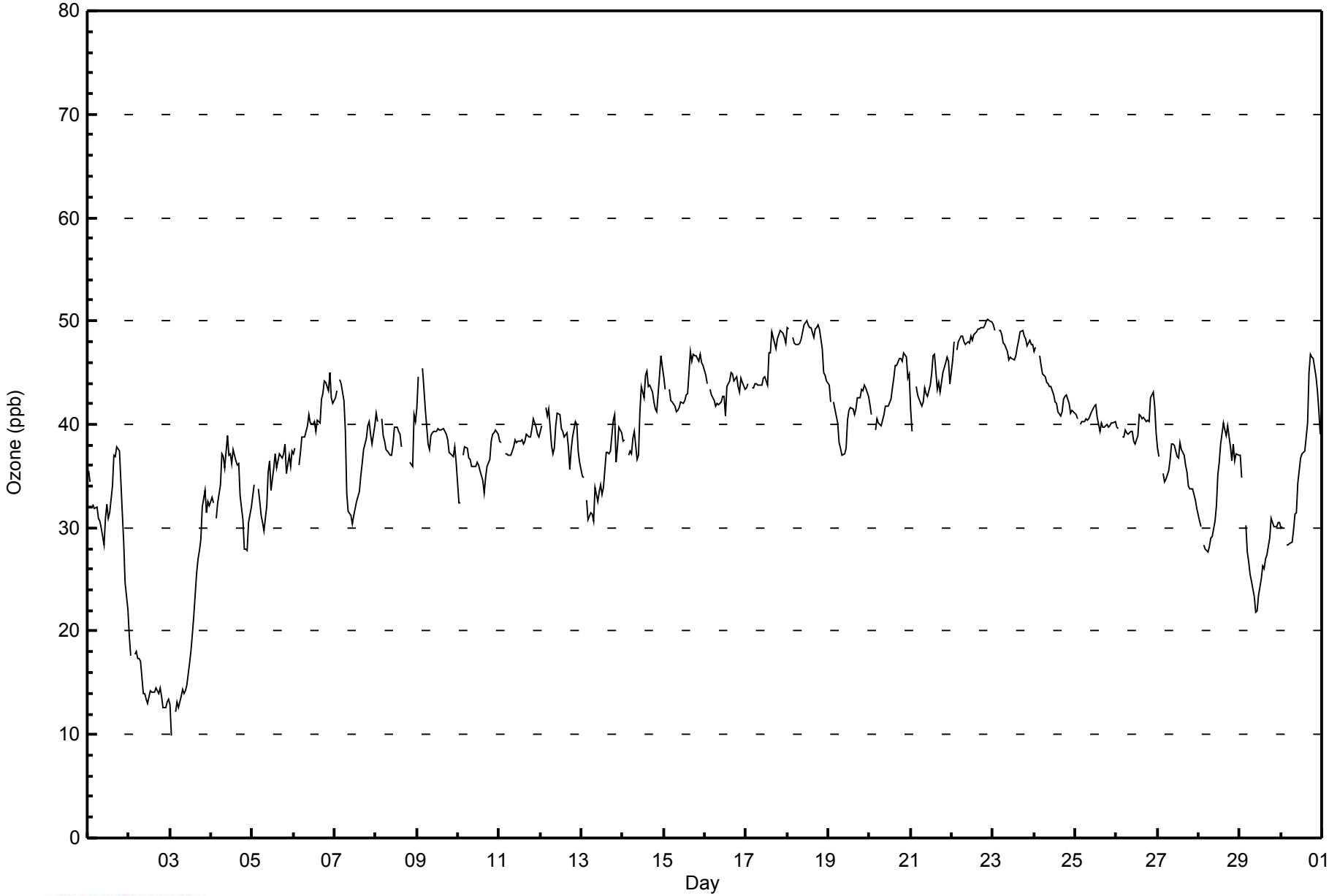
Z - zerospan C - Calibration
Alberta Ambient Air Quality Objectives (AAAQO): 1-hr 82 ppb

WBEA NETWORK

Hourly Averages

Ozone (O_3) - ppb

Fort Chipeywan - April 2014



AURORA ATMOSPHERICS INC.

Concentration Ranges (ppb)	Number of Hours	%	Cumulative %
0 - 20	36	5.25	5.25
21 - 50	650	94.75	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

Concentration Ranges (ppb)	Wind Direction																
	N	NNE	NE	ENE	E	ESE	SE	SSE	S	SSW	SW	WSW	W	WNW	NW	NNW	**Totals**
0 - 20	5	1	1	2	19	5	0	0	0	0	0	0	0	0	0	3	36
21 - 50	12	7	13	142	258	48	13	18	5	4	4	15	8	19	45	34	645
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	17	8	14	144	277	53	13	18	5	4	4	15	8	19	45	37	681

Total Number of Valid Hours: 681

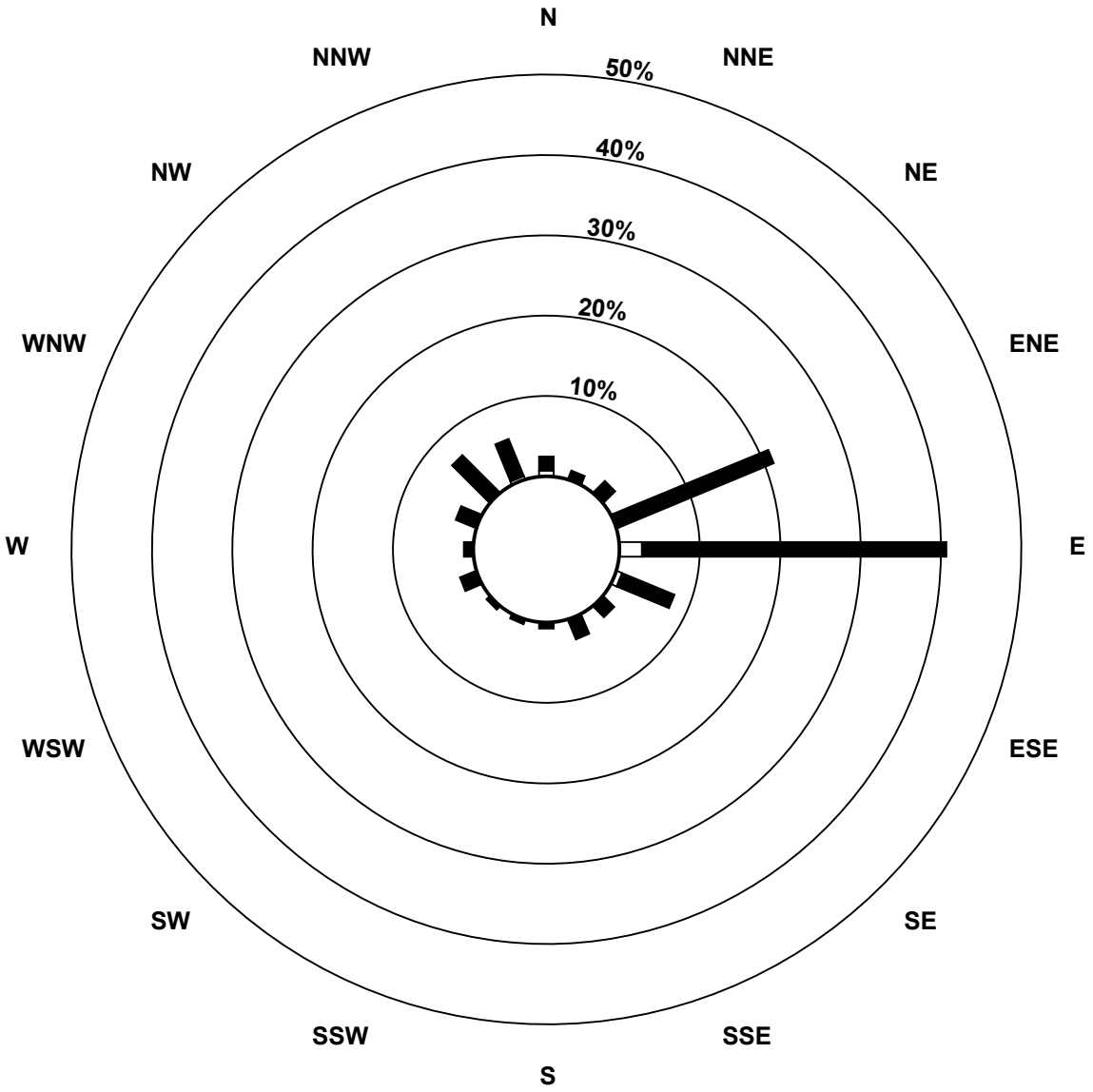
Total Number of Hours: 720

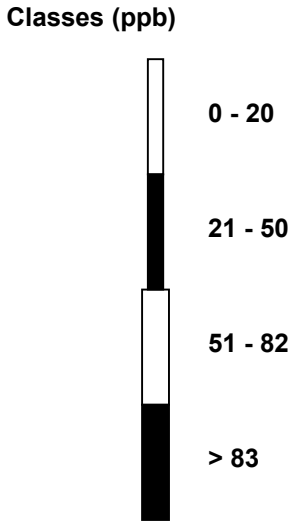
Wood Buffalo Environmental Association

Wind Rose Apr 2014

Ozone (O_3) - ppb

Fort Chipeywan (AMS 8)





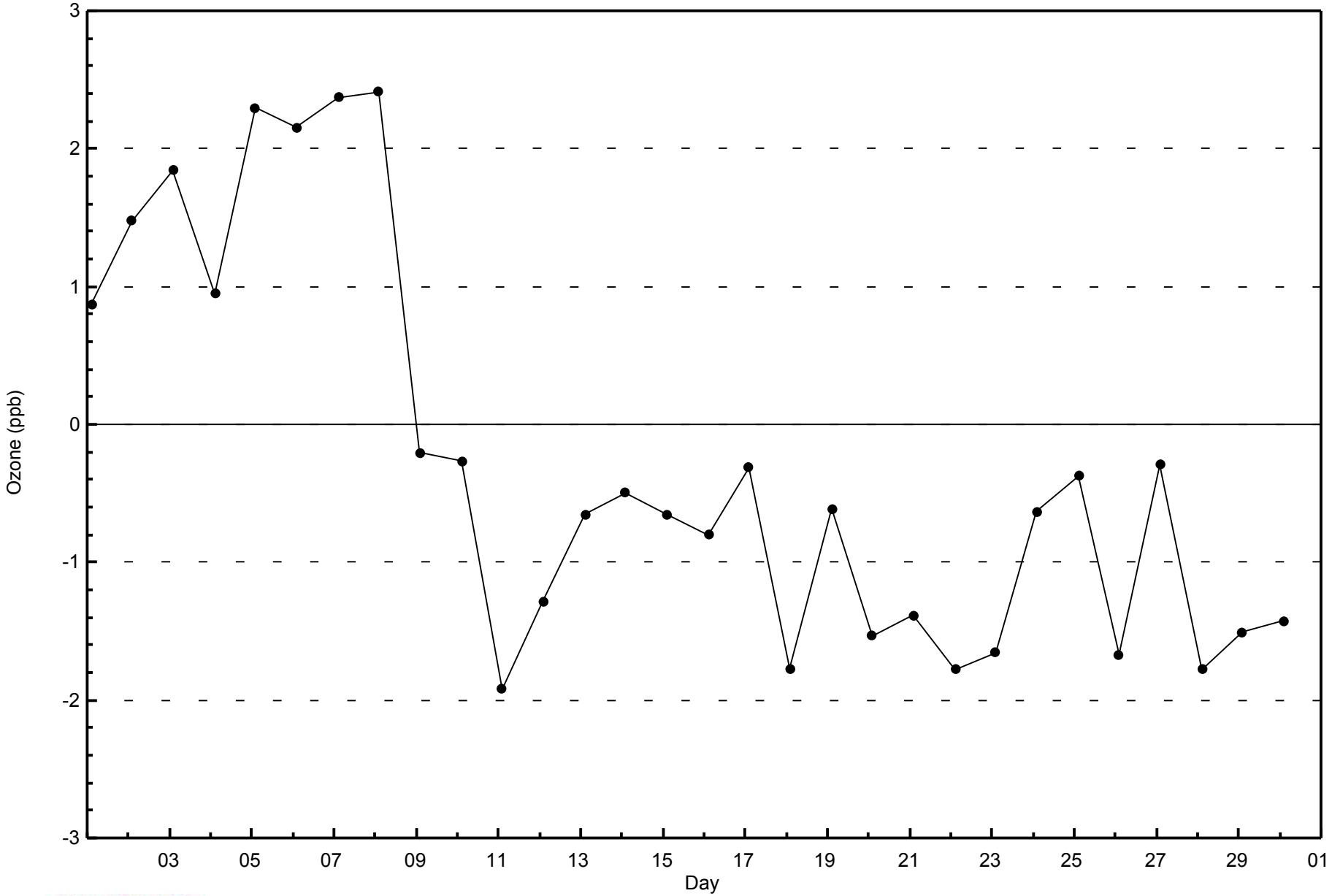
Total Number of Valid Hours: 681

WBEA NETWORK

Zero Responses

Ozone (O_3) - ppb

Fort Chipeywan - April 2014



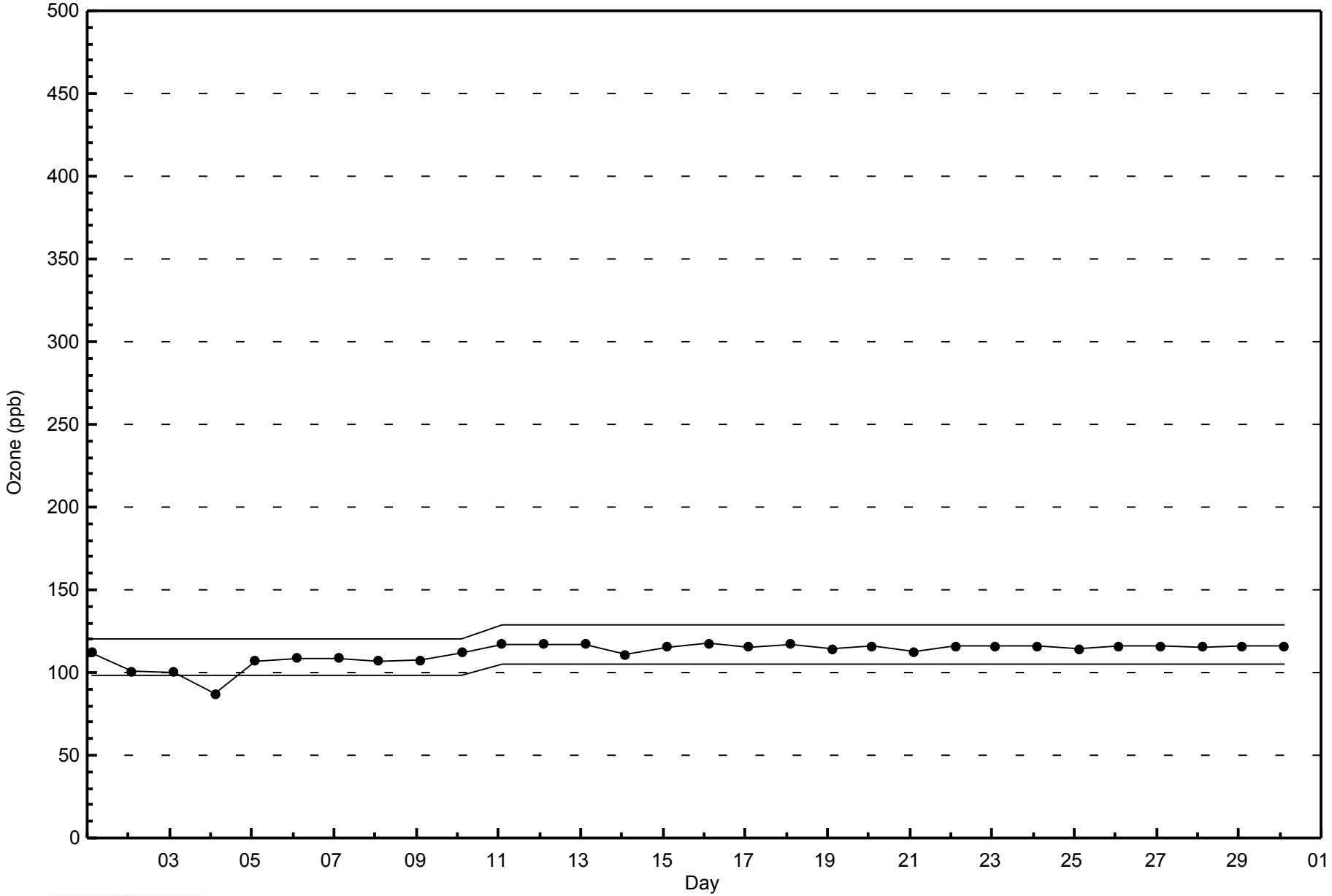
AURORA ATMOSPHERICS INC.

WBEA NETWORK

Span Responses

Ozone (O_3) - ppb

Fort Chipeywan - April 2014



AURORA
ATMOSPHERICS INC.

Wood Buffalo Environmental Association

Summary of Hour Averages

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

Fort Chipeywan - April 2014

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

Maximum Value: 10.6 $\mu g/m^3$ on Apr 3 03:00

Maximum Daily Average: 5.0 $\mu g/m^3$ on Apr 21

Minimum Value: 0.1 $\mu g/m^3$ on Apr 8 23:00

Minimum Daily Average: 0.6 $\mu g/m^3$ on Apr 29

Maximum Diurnal Average: 2.8 $\mu g/m^3$ at hour 21

Minimum Diurnal Average: 2.1 $\mu g/m^3$ at hour 9

Monthly Average: 2.39 $\mu g/m^3$

Percentiles: $P_1 = 0.2$ $P_{10} = 0.7$ $Q_1 = 1.6$ Median = 2.2 $Q_3 = 3.1$ $P_{90} = 4.0$ $P_{99} = 7.1$

Hours in Service:	720
Hours of Data:	704
Hours of Missing Data:	16
Hours of Calibration:	0
Percent Operational Time:	97.8

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-Apr	1.9	2.0	2.1	2.2	2.2	2.2	2.9	2.2	2.3	2.5	2.4	2.9	2.0	1.9	1.7	2.0	1.6	1.7	2.1	1.5	1.1	0.7	0.4	0.4	1.9	2.9
2-Apr	0.3	0.3	0.3	0.3	1.1	4.9	0.7	0.3	0.4	0.6	0.6	0.7	0.8	1.0	1.0	1.1	1.2	1.2	1.2	1.9	7.4	5.2	2.2	1.7	1.5	7.4
3-Apr	3.1	9.0	10.6	2.0	2.3	1.7	1.3	0.8	0.8	0.9	0.8	0.9	0.9	1.0	1.3	1.3	1.6	2.0	1.6	1.6	0.6	0.6	0.6	0.6	2.0	10.6
4-Apr	0.6	0.6	0.8	1.1	1.5	1.9	2.2	4.5	6.1	6.7	6.6	6.5	6.8	6.3	9.7	8.6	4.6	3.1	2.6	2.3	2.1	1.9	2.2	1.8	3.8	9.7
5-Apr	1.5	0.9	0.9	0.9	0.8	0.8	0.7	0.8	0.7	1.1	2.2	1.2	1.3	1.2	1.3	1.3	1.4	1.5	1.6	1.9	4.8	2.2	1.3	1.1	1.4	4.8
6-Apr	0.9	0.9	1.3	0.9	0.8	0.7	0.8	0.8	0.9	1.0	1.1	0.9	0.9	1.0	1.4	1.9	1.9	2.3	2.5	2.9	2.2	1.9	1.3	1.3	1.4	2.9
7-Apr	1.2	1.5	2.0	2.1	2.3	1.9	1.8	1.7	1.9	1.6	1.8	2.0	1.9	1.9	1.8	2.3	2.4	2.4	2.3	2.5	2.4	2.4	2.4	2.9	2.1	2.9
8-Apr	3.1	3.4	3.3	3.3	3.0	3.2	3.3	2.9	2.4	2.2	2.1	2.3	2.5	3.0	2.1	1.8	M	M	0.4	0.7	0.4	0.3	0.1	0.1	2.1	3.4
9-Apr	0.2	0.2	0.3	0.3	0.1	UO	0.5	1.4	1.2	1.5	1.1	1.0	1.0	1.1	0.8	0.6	0.5	0.4	0.2	0.2	0.2	0.4	0.6	0.8	0.6	1.5
10-Apr	1.4	1.5	1.7	2.0	2.2	2.5	3.0	1.6	1.5	1.9	2.5	2.1	1.7	1.7	1.8	2.3	2.0	1.7	1.6	1.6	2.7	1.7	2.1	2.5	2.0	3.0
11-Apr	2.6	3.2	2.2	2.5	2.4	2.5	2.5	3.1	2.0	1.8	1.7	1.8	1.8	1.9	2.0	2.0	2.0	2.0	2.0	2.2	2.2	2.9	3.2	2.5	2.3	3.2
12-Apr	4.5	3.3	2.6	2.5	2.5	2.4	5.8	5.7	1.9	1.6	1.6	1.7	1.8	2.1	2.2	2.3	2.0	2.4	2.0	3.1	1.7	1.7	1.6	1.7	2.5	5.8
13-Apr	1.7	1.6	1.7	1.6	1.6	1.6	1.8	2.7	2.4	3.4	2.3	5.6	5.3	2.1	1.7	3.3	5.4	4.4	3.6	3.0	2.8	2.4	2.0	1.6	2.7	5.6
14-Apr	1.3	1.4	1.2	1.2	1.3	1.3	1.3	1.3	1.6	2.0	2.7	3.1	3.3	3.3	3.1	2.8	2.9	3.4	3.9	4.9	3.9	4.2	3.8	3.4	2.6	4.9
15-Apr	2.1	1.8	2.0	1.9	1.7	1.4	1.3	1.3	1.3	3.2	3.0	2.3	1.6	2.3	2.0	2.1	3.2	2.9	2.8	2.9	3.7	3.5	3.4	3.2	2.4	3.7
16-Apr	3.8	4.4	3.7	3.5	4.1	2.8	2.4	3.0	2.6	2.5	2.2	2.3	2.7	3.8	3.6	3.2	3.3	3.2	3.7	4.3	4.5	2.9	2.1	2.0	3.2	4.5
17-Apr	2.1	2.4	2.4	2.4	2.5	2.8	3.2	2.9	2.4	3.3	2.8	2.9	2.8	2.7	2.6	2.6	2.8	2.8	3.2	3.3	3.7	4.2	4.3	3.5	2.9	4.3
18-Apr	3.0	3.2	3.0	3.0	3.1	3.1	3.1	3.0	3.2	4.1	3.8	3.8	5.2	5.2	5.9	5.3	4.2	4.1	4.4	4.0	3.7	3.9	4.1	3.6	3.9	5.9
19-Apr	4.0	4.0	4.0	3.6	3.2	1.2	2.8	1.9	2.4	4.1	3.8	3.8	3.4	2.9	2.3	2.4	2.2	2.2	2.1	2.4	3.4	2.3	2.0	1.8	2.9	4.1
20-Apr	1.9	2.4	2.1	2.3	2.0	2.0	1.9	2.0	2.3	2.5	2.6	2.2	2.1	1.9	2.0	2.1	2.0	2.3	2.7	4.0	4.4	3.6	7.9	5.3	2.8	7.9
21-Apr	6.7	4.7	4.6	6.2	7.2	7.9	7.1	6.2	4.6	4.1	3.2	3.3	3.5	3.2	3.1	3.9	4.3	4.8	4.4	4.2	4.9	5.2	6.0	5.6	5.0	7.9
22-Apr	4.7	4.6	4.2	3.6	3.2	3.0	2.4	2.3	2.3	2.2	2.1	2.2	2.3	2.4	2.3	2.3	2.0	1.9	2.2	2.7	3.2	3.0	2.6	2.5	2.8	4.7
23-Apr	2.7	3.1	3.6	3.5	3.4	3.4	3.3	3.1	2.9	2.7	2.7	2.8	2.7	2.6	2.5	2.1	1.9	2.0	2.0	2.1	2.2	2.4	2.6	2.5	2.7	3.6
24-Apr	3.3	3.8	3.7	3.5	3.6	3.7	3.5	3.3	3.1	2.7	2.5	2.2	2.0	1.9	1.8	1.9	2.0	2.1	2.2	2.4	2.0	2.0	2.0	1.9	2.6	3.8
25-Apr	2.4	3.1	3.2	3.5	3.6	2.5	2.6	2.8	2.7	2.2	2.1	2.0	2.0	1.9	1.8	2.1	2.2	2.0	2.3	2.3	2.8	2.6	2.8	2.3	2.5	3.6
26-Apr	3.0	3.1	3.2	3.2	3.5	3.4	2.8	2.6	2.2	1.9	2.0	2.1	2.1	2.3	2.0	2.0	2.0	2.1	2.1	2.5	3.5	4.4	4.7	4.1	2.8	4.7
27-Apr	2.9	2.4	2.0	1.4	1.0	0.8	0.9	1.3	1.4	1.9	2.3	2.8	2.3	0.8	UO	UO	UO	UO	UO	UO	UO	UO	UO	UO	--	2.9
28-Apr	UO	0.1	0.3	0.4	0.3	0.3	0.2	0.1	0.2	0.2	0.5	1.0	2.5	3.3	3.9	2.9	2.8	3.4	3.0	3.1	2.6	2.2	1.1	0.9	1.5	3.9
29-Apr	0.8	0.8	0.7	0.7	0.7	0.6	0.5	0.5	0.5	0.4	0.5	0.6	0.7	0.7	0.5	0.5	UO	UO	0.6	0.6	0.5	0.7	0.9	1.0	0.6	1.0
30-Apr	1.0	0.9	0.9	1.2	1.1	1.0	1.3	1.5	1.8	1.9	2.9	3.7	3.4	2.9	2.4	2.5	2.6	2.3	2.1	2.2	2.8	2.2	1.8	0.3	1.9	3.7
	2.4	2.5	2.5	2.2	2.3	2.3	2.3	2.2	2.1	2.3	2.3	2.4	2.5	2.3	2.4	2.5	2.5	2.5	2.3	2.5	2.8	2.5	2.5	2.2	Diurnal Average	
	6.7	9.0	10.6	6.2	7.2	7.9	7.1	6.2	6.1	6.7	6.6	6.5	6.8	6.3	9.7	8.6	5.4	4.8	4.4	4.9	7.4	5.2	7.9	5.6	Diurnal Maximum	

M - Maintenance UO - Unstable Operation

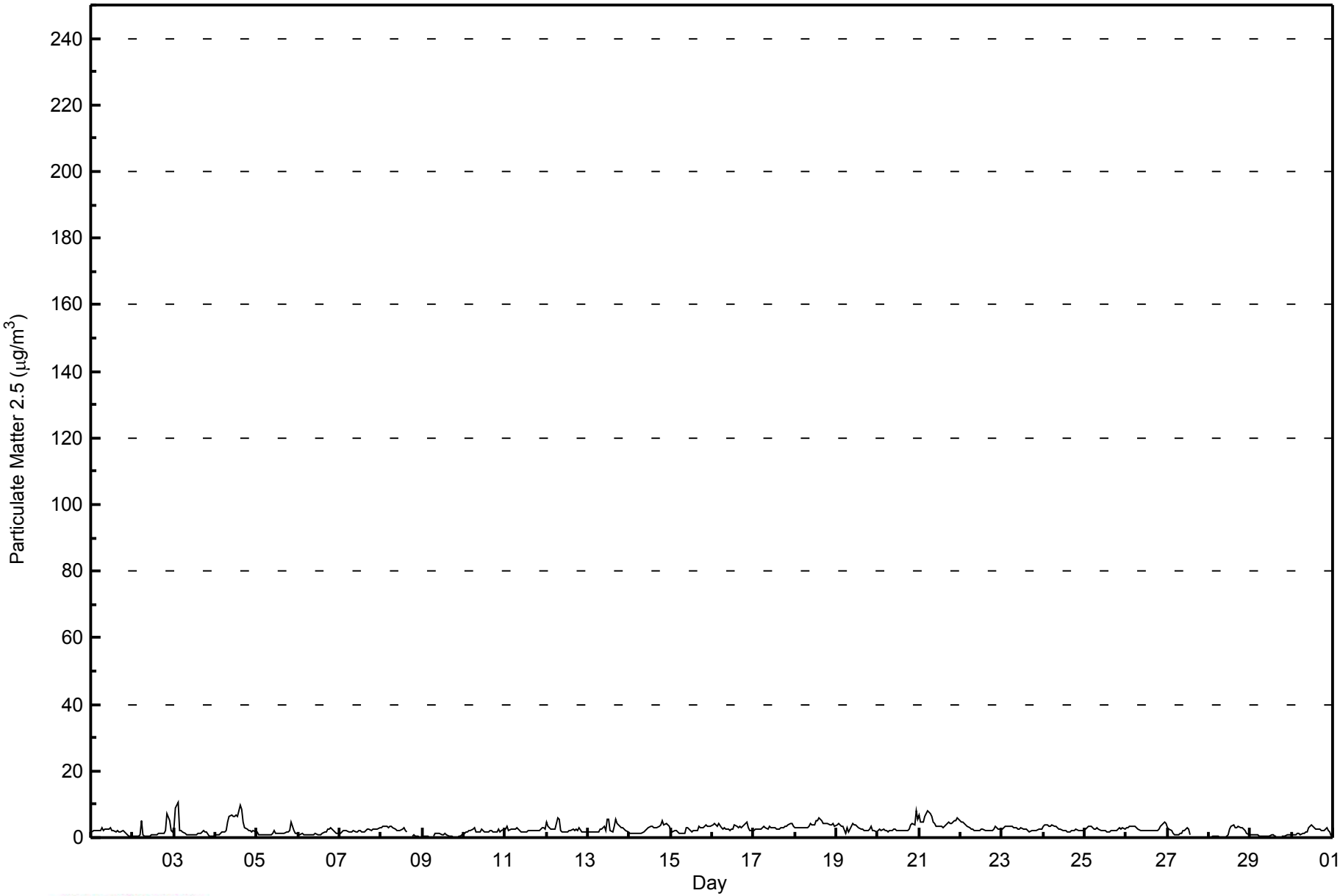
Alberta Ambient Air Quality Objectives (AAAQO): 24-hr 30 $\mu g/m^3$

WBEA NETWORK

Hourly Averages

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

Fort Chipeywan - April 2014



AURORA ATMOSPHERICS INC.

Concentration Ranges ($\mu g/m^3$)	Number of Hours	%	Cumulative %
1 - 5	568	80.68	80.68
6 - 15	24	3.41	84.09
16 - 25	0	0.00	84.09
26 - 80	0	0.00	84.09
> 81.0	0	0.00	84.09

Total Number of Valid Hours: 704

Total Number of Hours: 720

WBEA NETWORK

Frequency Distribution

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

Fort Chipeywan - April 2014

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**
1 - 5	9	5	13	147	241	33	13	7	1	2	4	13	1	9	35	32	565
6 - 15	3	1	1	1	3	1	0	2	2	2	0	1	0	2	1	2	22
16 - 25	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
26 - 80	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
> 81.0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Totals	12	6	14	148	244	34	13	9	3	4	4	14	1	11	36	34	587

Total Number of Valid Hours: 699

Total Number of Hours: 720

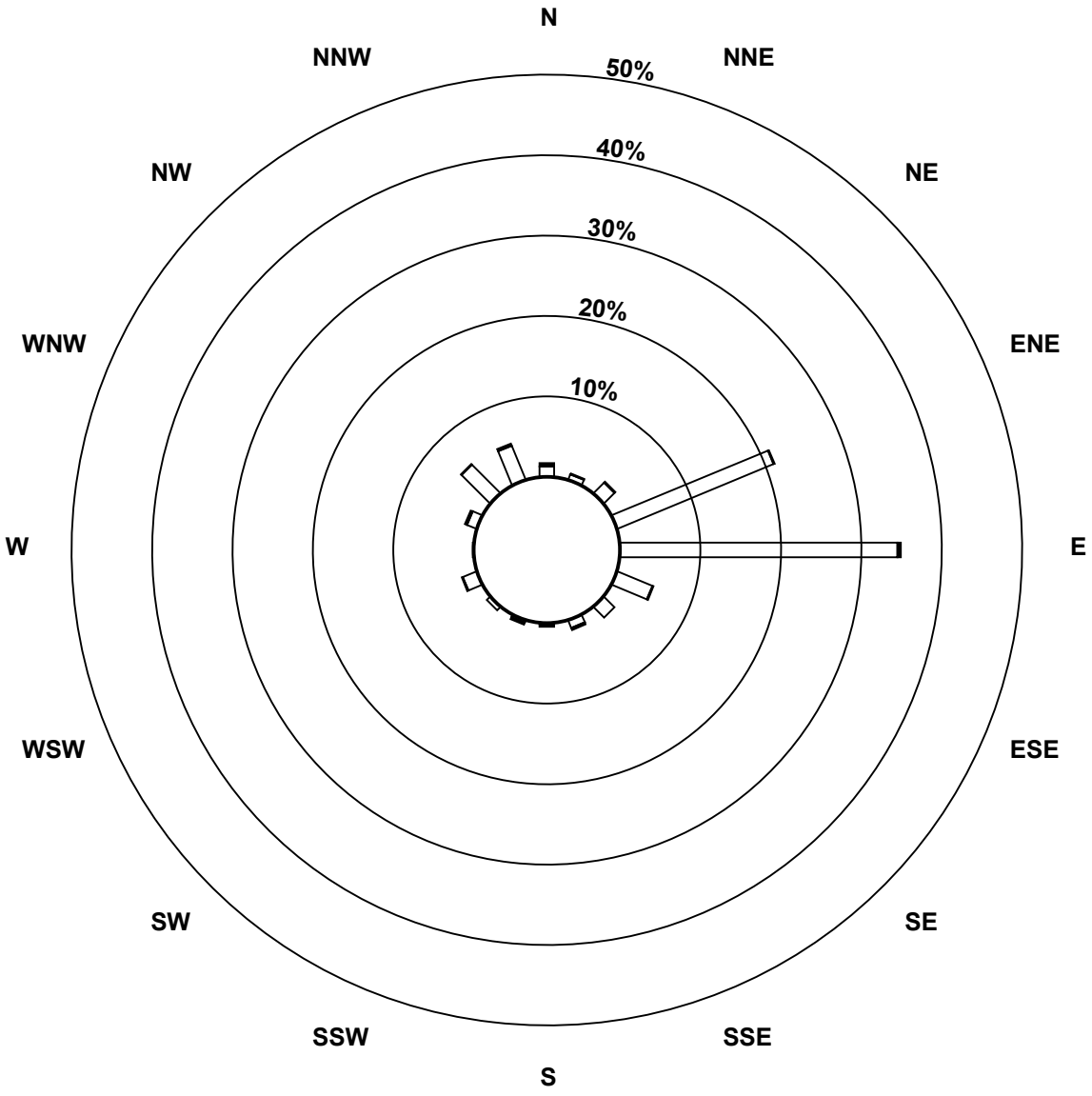
AURORA ATMOSPHERICS INC.

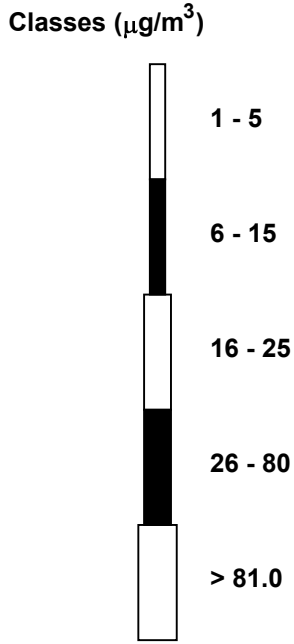
Wood Buffalo Environmental Association

Wind Rose Apr 2014

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

Fort Chipeywan (AMS 8)





Total Number of Valid Hours: 699

Maximum Value: 14.1 C on Apr 30 21:00

Maximum Daily Average: 5.0 C on Apr 30

Minimum Value: -17.1 C on Apr 13 06:00

Minimum Daily Average: -12.2 C on Apr 13

Maximum Diurnal Average: 0.2 C at hour 17

Minimum Diurnal Average: -6.1 C at hour 6

Monthly Average: -2.48 C

Percentiles: P_1 = -15.3 P_{10} = -11.9 Q_1 = -7.8 Median = -0.5 Q_3 = 2.0 P_{90} = 3.8 P_{99} = 12.0

Hours in Service:	720
Hours of Data:	534
Hours of Missing Data:	186
Hours of Calibration:	0
Percent Operational Time:	74.2

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-Apr	AF	AF	AF	AF	AF	AF	AF	AF	AF	AF	AF	AF	AF	AF	AF	AF	AF	AF	AF	AF	AF	AF	AF	AF	--	--
2-Apr	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-Apr	AF	AF	AF	AF	AF	AF	AF	AF	AF	AF	AF	AF	AF	AF	AF	AF	AF	AF	AF	AF	AF	AF	AF	AF	--	--
4-Apr	AF	AF	AF	AF	AF	AF	AF	AF	AF	AF	AF	AF	AF	AF	AF	AF	AF	AF	AF	AF	AF	AF	AF	AF	--	--
5-Apr	AF	AF	AF	AF	AF	AF	AF	AF	AF	AF	AF	AF	AF	AF	AF	AF	AF	AF	AF	AF	AF	AF	AF	AF	--	--
6-Apr	AF	AF	AF	AF	AF	AF	AF	AF	AF	AF	AF	AF	AF	AF	AF	AF	AF	AF	AF	AF	AF	AF	AF	AF	--	--
7-Apr	AF	AF	AF	AF	AF	AF	AF	AF	AF	AF	AF	AF	AF	AF	AF	AF	AF	AF	AF	AF	AF	AF	AF	AF	--	--
8-Apr	AF	AF	AF	AF	AF	AF	AF	AF	AF	AF	AF	AF	AF	AF	AF	M	M	M	10.3	7.9	5.9	5.3	5.1	3.9	--	10.3
9-Apr	3.7	3.8	3.4	2.8	2.2	0.8	0.5	-0.3	-0.8	-0.7	-1.0	-0.6	-0.2	0.6	1.9	2.9	2.9	2.6	0.8	0.1	-0.7	-1.2	-1.7	-2.8	0.8	3.8
10-Apr	-4.6	-6.8	-8.2	-9.3	-10.6	-11.5	-11.8	-11.5	-10.9	-9.8	-8.7	-8.1	-8.5	-8.4	-8.4	-8.4	-8.5	-8.8	-9.4	-9.9	-9.6	-10.1	-10.3	-10.9	-9.3	-4.6
11-Apr	-11.2	-11.4	-11.7	-11.9	-11.9	-12.4	-12.2	-12.1	-12.4	-12.0	-11.1	-10.7	-10.6	-10.6	-10.6	-10.6	-10.7	-10.8	-11.0	-10.9	-10.6	-10.9	-11.2	-12.0	-11.3	-10.6
12-Apr	-12.7	-13.3	-13.7	-14.6	-15.0	-14.7	-15.4	-13.1	-11.3	-7.9	-6.3	-5.5	-4.6	-3.1	-3.0	-3.3	-4.0	-4.9	-6.3	-7.8	-9.3	-10.5	-11.6	-12.9	-9.4	-3.0
13-Apr	-13.8	-14.6	-15.3	-16.2	-16.7	-17.1	-16.6	-13.6	-11.7	-12.4	-12.2	-9.0	-8.1	-7.2	-8.1	-8.2	-8.7	-9.5	-10.3	-11.6	-12.4	-13.6	-13.1	-13.6	-12.2	-7.2
14-Apr	-13.9	-14.4	-14.7	-14.6	-14.9	-15.1	-15.0	-14.3	-11.7	-9.4	-7.1	-5.8	-5.0	-3.0	-1.9	-1.6	-1.9	-2.8	-3.7	-5.1	-5.4	-4.4	-4.3	-4.7	-8.1	-1.6
15-Apr	-5.7	-7.9	-9.7	-10.9	-12.4	-13.3	-13.4	-13.2	-11.8	-10.3	-8.7	-7.9	-6.2	-5.4	-6.2	-6.8	-7.1	-7.4	-7.8	-7.9	-8.3	-9.3	-10.3	-11.3	-9.1	-5.4
16-Apr	-12.2	-13.1	-13.4	-13.8	-14.5	-15.2	-15.2	-14.6	-13.9	-12.9	-10.9	-8.8	-7.2	-5.7	-5.2	-3.5	-3.1	-3.2	-3.9	-5.5	-5.9	-7.2	-10.0	-12.2	-9.6	-3.1
17-Apr	-11.7	-10.6	-10.2	-11.6	-12.6	-11.4	-11.2	-10.5	-9.7	-7.5	-5.8	-4.1	-2.4	-1.5	-0.5	0.1	0.0	0.5	0.0	-0.7	-3.3	-4.9	-5.7	-5.4	-5.9	0.5
18-Apr	-5.1	-5.4	-6.3	-6.9	-6.9	-7.0	-6.3	-5.4	-4.4	-2.6	-0.6	0.3	0.3	0.3	-0.2	-0.2	-0.2	-0.2	-0.2	-0.2	-0.3	0.0	0.1	0.0	-2.4	0.3
19-Apr	-0.1	-0.1	-0.3	-0.2	-1.0	-1.6	-1.2	-1.2	-0.4	0.7	1.5	1.8	1.9	2.1	1.9	1.9	2.0	2.1	1.4	1.7	1.5	1.4	0.5	0.3	0.7	2.1
20-Apr	0.5	-0.3	-0.7	-1.1	-1.5	-2.3	-2.3	-1.4	-0.9	-0.5	0.0	0.5	0.8	0.8	1.3	2.0	2.2	1.9	1.4	2.0	1.6	1.5	3.5	4.1	0.5	4.1
21-Apr	2.7	1.4	1.8	1.3	0.6	-0.2	0.0	1.2	2.6	3.9	5.0	5.0	5.8	6.8	6.7	2.7	3.1	2.7	4.3	4.8	4.6	4.3	3.5	3.0	3.2	6.8
22-Apr	2.2	1.5	0.0	-0.9	-1.3	-1.3	-1.5	-1.2	-0.3	0.8	1.6	1.9	2.0	2.5	2.9	3.4	4.2	4.0	3.6	2.7	3.0	2.8	2.6	2.0	1.5	4.2
23-Apr	1.3	0.6	0.3	-0.2	-0.5	-0.8	-0.8	-0.4	0.4	1.4	2.0	2.6	3.1	3.5	4.0	4.4	3.9	3.4	2.9	2.6	2.0	1.4	0.9	0.3	1.6	4.4
24-Apr	-0.6	-1.3	-1.6	-2.0	-2.5	-2.8	-3.1	-3.0	-2.3	-1.5	-0.7	0.4	1.5	2.4	2.9	2.7	2.9	2.6	2.2	1.7	1.5	0.6	0.0	-0.6	0.0	2.9
25-Apr	-1.4	-2.0	-2.5	-3.0	-3.8	-4.1	-4.1	-3.4	-2.3	-1.0	-0.2	0.5	1.4	1.7	0.9	2.2	2.6	2.6	2.2	1.4	0.7	0.4	0.5	0.2	-0.4	2.6
26-Apr	-0.5	-1.8	-2.9	-3.9	-4.4	-5.0	-4.5	-3.3	-2.5	-1.3	-0.1	0.4	0.4	2.6	3.9	3.9	4.2	3.8	3.2	2.6	4.7	4.0	2.3	1.1	0.3	4.7
27-Apr	1.3	1.9	1.8	1.4	1.6	1.9	1.9	2.0	1.8	1.2	0.5	0.5	1.3	2.0	3.8	4.0	3.9	3.9	3.7	3.7	3.5	3.4	3.1	2.8	2.4	4.0
28-Apr	2.5	2.1	2.3	1.7	1.1	0.8	1.0	1.8	3.0	3.7	4.2	4.9	5.0	4.8	5.0	5.4	5.2	5.2	5.6	5.1	3.5	3.6	3.3	1.9	3.5	5.6
29-Apr	0.9	1.5	1.3	0.9	0.8	0.7	0.8	1.1	1.8	2.2	2.5	2.7	2.9	2.8	2.6	2.3	1.8	1.5	1.9	1.0	0.1	-0.4	-0.4	-0.5	1.4	2.9
30-Apr	-0.6	-1.1	-1.5	-1.2	-2.2	-1.9	0.1	1.7	2.7	2.3	2.9	3.9	4.1	3.8	3.8	5.7	9.9	11.6	11.6	12.5	14.1	13.2	12.2	12.5	5.0	14.1
	-3.6	-4.1	-4.6	-5.2	-5.7	-6.1	-5.9	-5.2	-4.3	-3.3	-2.4	-1.6	-1.0	-0.4	-0.1	0.0	0.2	0.0	0.1	-0.4	-0.8	-1.3	-1.8	-2.4	Diurnal Average	
	3.7	3.8	3.4	2.8	2.2	1.9	1.9	2.0	3.0	3.9	5.0	5.0	5.8	6.8	6.7	5.7	9.9	11.6	11.6	12.5	14.1	13.2	12.2	12.5	Diurnal Maximum	

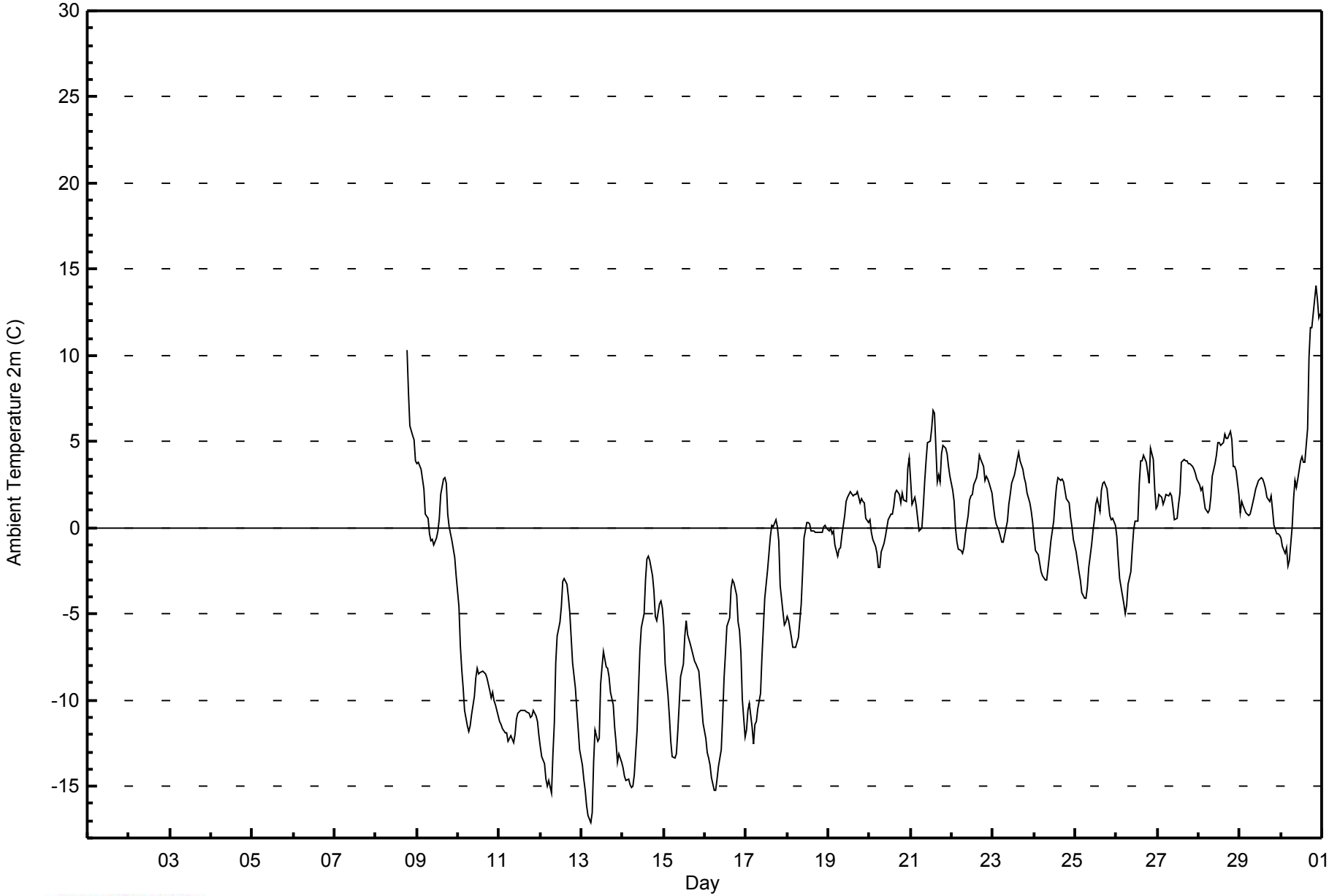
M - Maintenance AF - Analyzer Failure

WBEA NETWORK

Hourly Averages

Ambient Temperature 2m (AT 2m) - C

Fort Chipeywan - April 2014



AURORA ATMOSPHERICS INC.

Concentration Ranges (C)	Number of Hours	%	Cumulative %
-50 - -20	0	0.00	0.00
-20 - 0	291	54.49	54.49
0 - 10	235	44.01	98.50
10 - 20	8	1.50	100.00
> 20	0	0.00	100.00

Total Number of Valid Hours: 534

Total Number of Hours: 720

Wood Buffalo Environmental Association

Summary of Hour Averages

Relative Humidity (RH) - %

Fort Chipeywan - April 2014

Maximum Value: 99 % on Apr 18 21:00

Maximum Daily Average: 90.0 % on Apr 29

Minimum Value: 32 % on Apr 12 16:00

Minimum Daily Average: 43.4 % on Apr 12

Maximum Diurnal Average: 77.2 % at hour 6

Minimum Diurnal Average: 63.3 % at hour 17

Monthly Average: 69.6 %

Percentiles: $P_1 = 36$ $P_{10} = 50$ $Q_1 = 60$ Median = 68 $Q_3 = 81$ $P_{90} = 90$ $P_{99} = 99$

Hours in Service:	720
Hours of Data:	534
Hours of Missing Data:	186
Hours of Calibration:	0
Percent Operational Time:	74.2

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-Apr	AF	AF	AF	AF	AF	AF	AF	AF	AF	AF	AF	AF	AF	AF	AF	AF	AF	AF	AF	AF	AF	AF	AF	AF	--	--
2-Apr	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-Apr	AF	AF	AF	AF	AF	AF	AF	AF	AF	AF	AF	AF	AF	AF	AF	AF	AF	AF	AF	AF	AF	AF	AF	AF	--	--
4-Apr	AF	AF	AF	AF	AF	AF	AF	AF	AF	AF	AF	AF	AF	AF	AF	AF	AF	AF	AF	AF	AF	AF	AF	AF	--	--
5-Apr	AF	AF	AF	AF	AF	AF	AF	AF	AF	AF	AF	AF	AF	AF	AF	AF	AF	AF	AF	AF	AF	AF	AF	AF	--	--
6-Apr	AF	AF	AF	AF	AF	AF	AF	AF	AF	AF	AF	AF	AF	AF	AF	AF	AF	AF	AF	AF	AF	AF	AF	AF	--	--
7-Apr	AF	AF	AF	AF	AF	AF	AF	AF	AF	AF	AF	AF	AF	AF	AF	AF	AF	AF	AF	AF	AF	AF	AF	AF	--	--
8-Apr	AF	AF	AF	AF	AF	AF	AF	AF	AF	AF	AF	AF	AF	AF	AF	M	M	M	48	66	78	89	83	85	--	89
9-Apr	82	78	80	87	93	96	94	89	86	81	78	76	75	72	63	58	58	60	72	73	74	75	64	68	76.4	96
10-Apr	61	66	66	68	69	70	70	69	66	62	56	60	70	70	69	67	65	63	67	60	50	54	54	58	63.9	70
11-Apr	61	62	62	62	62	63	61	61	69	71	68	67	66	63	64	62	63	68	63	46	41	46	48	51	60.3	71
12-Apr	50	49	50	51	55	50	56	49	45	38	34	36	39	36	33	32	34	36	36	40	44	45	50	55	43.4	56
13-Apr	57	59	62	66	68	69	67	56	45	57	63	45	45	42	44	51	61	62	60	62	62	63	58	59	57.7	69
14-Apr	59	61	63	63	64	64	64	63	59	56	56	57	65	51	46	44	48	54	59	64	64	65	78	86	60.5	86
15-Apr	82	65	58	58	59	59	57	55	51	47	45	46	43	39	36	35	42	41	46	46	48	60	68	70	52.3	82
16-Apr	73	76	76	77	77	77	75	72	70	70	65	59	52	49	52	45	44	46	49	56	56	59	67	73	63.1	77
17-Apr	70	63	59	63	67	62	62	61	63	63	63	62	54	55	57	56	59	54	55	57	63	66	68	66	61.1	70
18-Apr	63	62	65	66	66	65	61	58	57	53	52	62	82	88	96	98	99	99	99	99	99	99	98	99	78.6	99
19-Apr	99	99	99	99	99	99	99	99	96	91	87	84	83	81	81	82	81	79	81	79	80	80	85	85	88.7	99
20-Apr	83	85	85	87	87	87	85	84	86	86	86	85	84	85	82	78	76	77	78	74	77	78	66	63	80.9	87
21-Apr	70	76	71	74	77	80	80	75	69	63	57	57	55	50	51	72	69	70	61	58	58	59	62	64	65.8	80
22-Apr	64	68	73	76	77	77	78	78	76	74	71	70	71	69	68	67	63	64	64	65	61	60	60	61	68.9	78
23-Apr	65	68	70	73	74	75	76	74	72	70	69	68	67	66	63	59	60	60	61	63	66	69	68	69	67.7	76
24-Apr	71	72	71	72	74	74	74	74	71	69	67	64	61	58	57	59	58	60	62	63	63	66	67	68	66.3	74
25-Apr	70	71	73	74	77	77	76	74	71	67	63	61	61	65	73	61	60	60	60	63	67	68	68	69	68.0	77
26-Apr	71	76	81	84	85	87	86	85	85	85	84	83	85	72	66	66	65	68	71	75	60	60	68	74	75.9	87
27-Apr	75	74	77	82	81	81	82	81	83	92	96	97	96	94	86	84	84	83	83	84	86	86	86	87	85.0	97
28-Apr	89	91	91	94	96	96	94	92	87	84	83	80	79	79	78	75	75	75	74	76	82	83	84	88	84.4	96
29-Apr	92	90	91	93	93	94	94	92	89	87	87	86	84	84	85	86	88	89	88	91	94	94	94	95	90.0	95
30-Apr	95	95	96	96	96	94	90	85	81	83	81	76	75	75	73	62	43	38	39	39	36	40	54	65	71.3	96
	72.9	73.1	73.6	75.6	77.1	77.2	76.4	73.9	71.7	70.4	68.7	67.2	67.8	65.8	64.7	63.6	63.3	64.0	64.2	65.2	65.7	67.9	69.5	72.0	Diurnal Average	
	99	99	99	99	99	99	99	99	96	92	96	97	96	94	96	98	99	99	99	99	99	99	98	99	Diurnal Maximum	

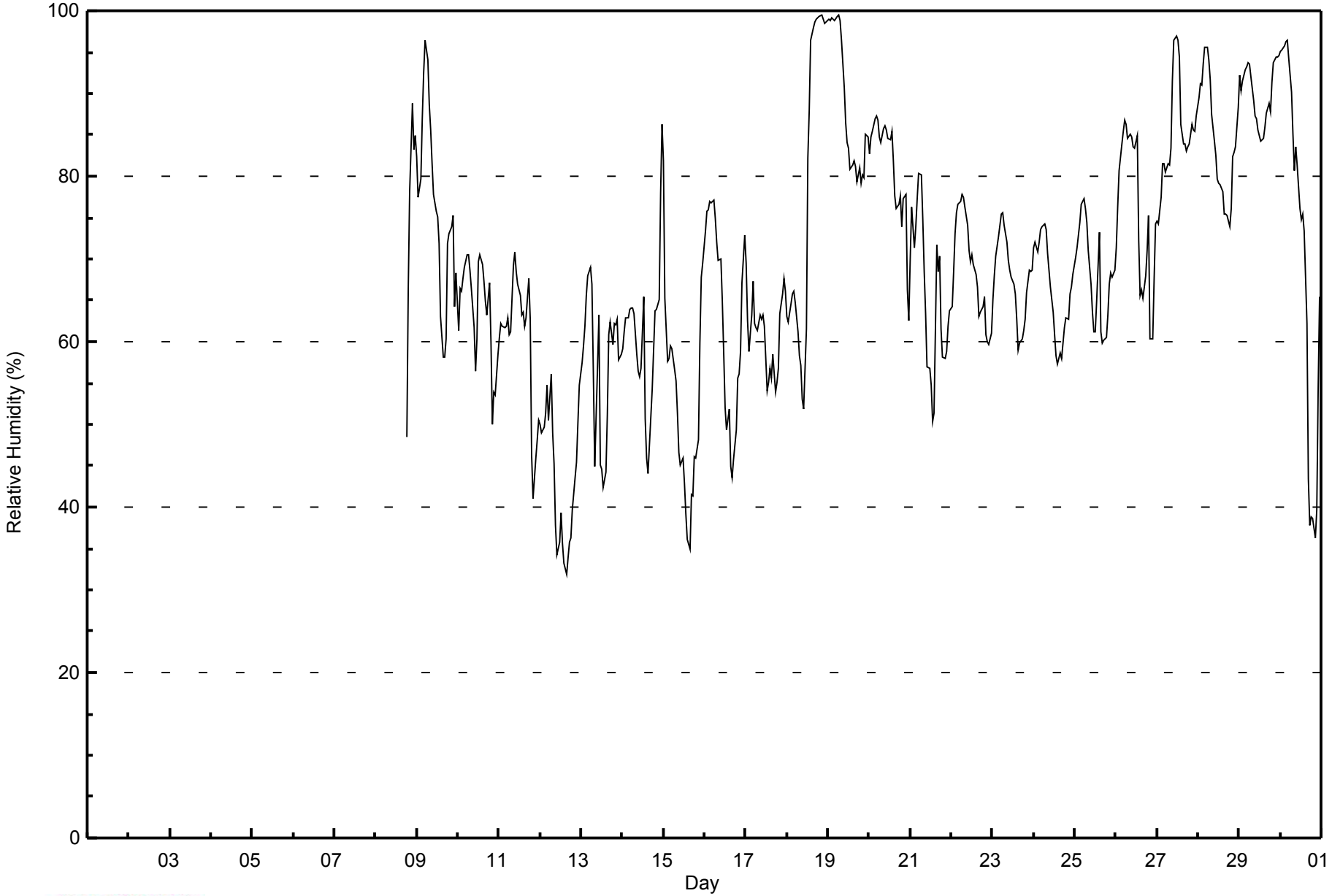
M - Maintenance AF - Analyzer Failure

WBEA NETWORK

Hourly Averages

Relative Humidity (RH) - %

Fort Chipeywan - April 2014



AURORA
ATMOSPHERICS INC.

Concentration Ranges (%)	Number of Hours	%	Cumulative %
0 - 20	0	0.00	0.00
20 - 40	19	3.56	3.56
40 - 60	112	20.97	24.53
60 - 80	258	48.31	72.85
80 - 100	145	27.15	100.00

Total Number of Valid Hours: 534

Total Number of Hours: 720

Maximum Value: -- mm on Apr 1 00:00
Maximum Daily Total: -- mm on Mar 31

Minimum Value: -- mm on Apr 1 00:00
Minimum Daily Total: -- mm on Mar 31
Maximum Diurnal Total: -- mm at hour 0
Minimum Diurnal Total: -- mm at hour 0
Monthly Total: -- mm
Percentiles: P_1 = 0.0 P_{10} = 0.0 Q_1 = 0.0 Median = 0.0 Q_3 = 0.0 P_{90} = 0.0 P_{99} = 0.0

Hours in Service:	720
Hours of Data:	0
Hours of Missing Data:	720
Hours of Calibration:	0
Percent Operational Time:	0.0

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

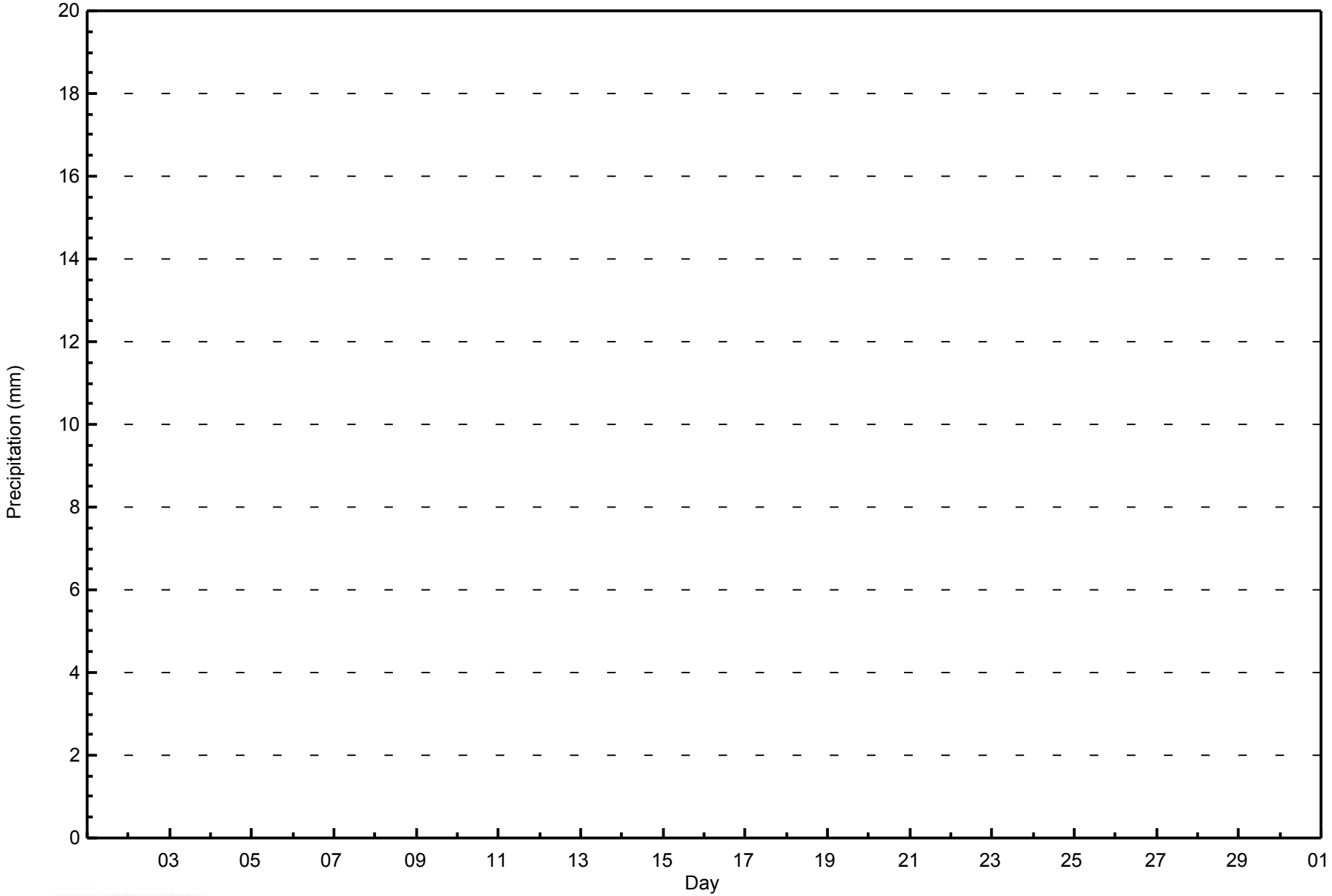
AF - Analyzer Failure

Wood Buffalo Environmental Association

Hourly Averages

Precipitation (PC) - mm

Fort Chipeywan - April 2014



AURORA ATMOSPHERICS INC.

Concentration Ranges (mm)	Number of Hours	%	Cumulative %
0 - 0.3	0	0.00	0.00
0.4 - 0.5	0	0.00	0.00
0.6 - 0.7	0	0.00	0.00
0.8 - 1.4	0	0.00	0.00
1.5 - 10	0	0.00	0.00
> 10	0	0.00	0.00

Total Number of Valid Hours: 0

Total Number of Hours: 720

Maximum Value: -- W/m2 on Apr 1 00:00

Maximum Daily Average: -- W/m2 on Mar 31

Minimum Value: -- W/m2 on Apr 1 00:00

Minimum Daily Average: -- W/m2 on Mar 31

Maximum Diurnal Average: -- W/m2 at hour 0

Minimum Diurnal Average: -- W/m2 at hour 0

Monthly Average: -- W/m2

Percentiles: $P_1 = 0$ $P_{10} = 0$ $Q_1 = 0$ Median = 0 $Q_3 = 0$ $P_{90} = 0$ $P_{99} = 0$

Hours in Service:	720
Hours of Data:	0
Hours of Missing Data:	720
Hours of Calibration:	0
Percent Operational Time:	0.0

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

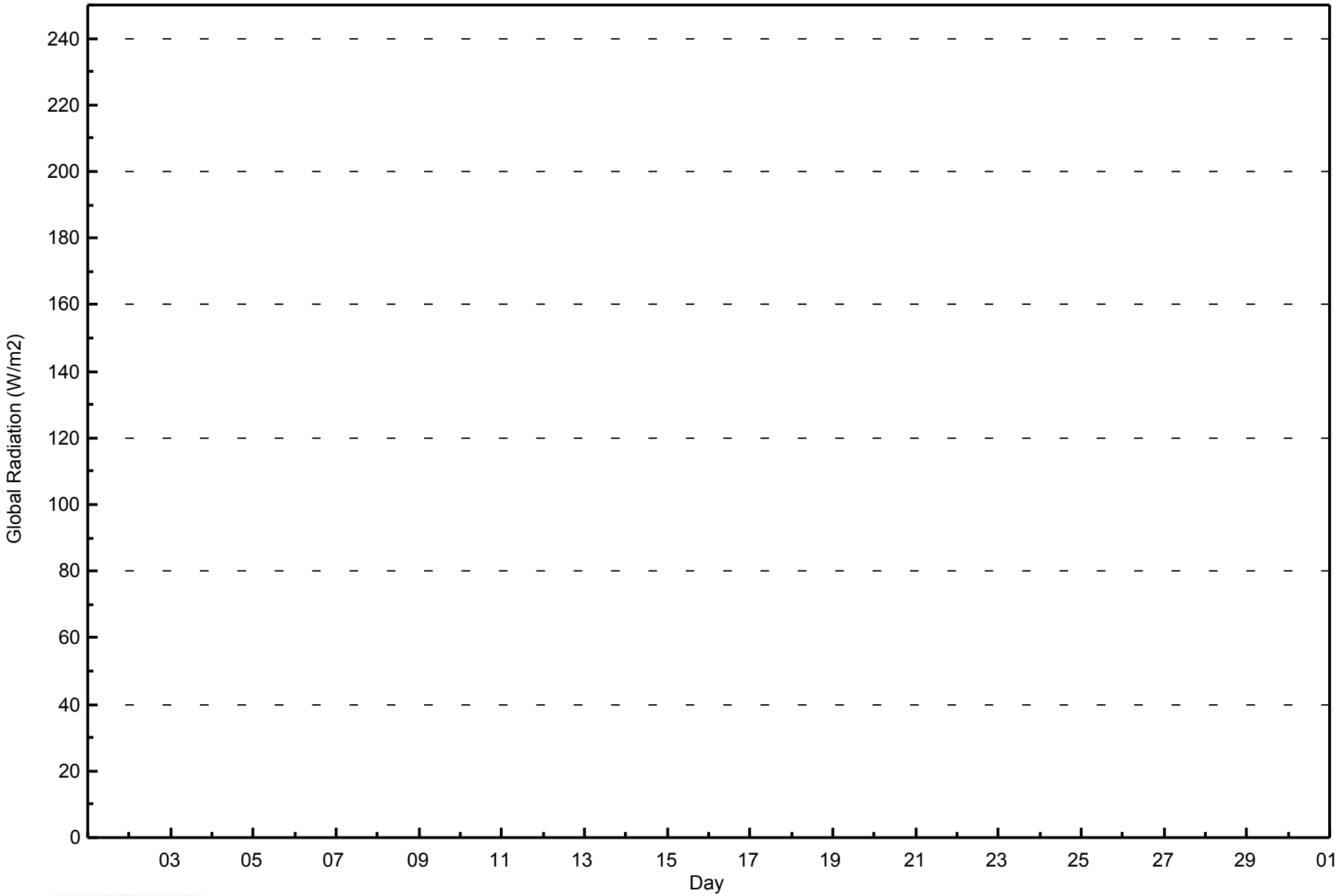
AF - Analyzer Failure

WBEA NETWORK

Hourly Averages

Global Radiation (GR) - W/m2

Fort Chipeywan - April 2014



AURORA ATMOSPHERICS INC.

Concentration Ranges (W/m2)	Number of Hours	%	Cumulative %
0 - 20	0	0.00	0.00
21 - 100	0	0.00	0.00
101 - 300	0	0.00	0.00
301 - 600	0	0.00	0.00
601 - 900	0	0.00	0.00
> 900	0	0.00	0.00

Total Number of Valid Hours: 0

Total Number of Hours: 720

Wood Buffalo Environmental Association

Summary of Hour Averages

Wind Speed (WS) - km/h

Fort Chipeywan - April 2014

Maximum Speed: 43 km/h on Apr 23 23:00

Maximum Daily Speed Average: 39.5 km/h on Apr 23

Minimum Speed Value: 0 km/h on Apr 3 01:00

Minimum Daily Speed Average: 2.2 km/h on Apr 4

Maximum Diurnal Speed Average: 14.1 km/h at hour 15

Minimum Diurnal Speed Average: 11.2 km/h at hour 10

Monthly Average Velocity: 12.2 km/h 77.5 deg

Percentiles: P_1 = 2 P_{10} = 7 Q_1 = 11 Median = 16 Q_3 = 21 P_{90} = 29 P_{99} = 42

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-Apr	NNW5	NNW4	NW6	NW7	NW8	NW8	NNW8	NNW7	NW6	NW6	NW12	WNW7	WSW13	WSW15	WSW15	NW16	NNW13	NNW11	NNW9	N9	N11	N11	N11	NNE8	NW7.5	NW16
2-Apr	NNE7	N6	N6	N7	NNW6	N4	NNW3	N9	NNW5	N7	NE6	ESE11	ESE13	E16	E16	E16	E17	E15	E12	E9	ENE7	ENE6	E6	E5	ENE6.6	E17
3-Apr	E0	E3	E4	E7	E7	E9	E9	ESE11	ESE8	ESE12	E12	E16	E19	E24	E27	E25	E24	E22	E26	E30	E37	E32	E31	E31	E17.6	E37
4-Apr	E32	E32	E31	E31	E23	ESE17	ESE14	SSE17	S21	SSE17	SSE17	S15	SSW8	WSW9	WNW13	WNW14	NW19	NW20	NW21	NW21	NW18	WNW17	NW14	WNW10	ESE2.2	E32
5-Apr	W12	WNW16	WNW15	WNW14	WNW16	WNW17	WNW15	WNW14	NW17	NW16	NW13	WSW14	WSW15	WSW13	WSW12	SW14	WSW11	SW10	SW8	SSE2	E6	E7	E8	E9	W8.6	NW17
6-Apr	E8	E12	E14	ENE12	ENE18	E24	E23	E21	E20	ENE18	E18	E17	E20	E19	E16	E17	E18	E15	E10	E11	ENE16	ENE22	E22	E24	E17.1	E24
7-Apr	E21	E22	ENE19	ENE19	ENE19	ENE16	ENE15	E14	E20	E19	E21	ESE21	E21	E23	E23	E22	ENE19	ENE24	ENE28	ENE28	ENE32	ENE30	E28	ENE26	E21.7	ENE32
8-Apr	E24	E20	E17	E17	E17	E18	E18	E19	E20	E17	E16	E14	E12	E11	E11	WSW4	W16	W19	WNW19	WNW9	WSW14	W17	W15	W13	E5.3	E24
9-Apr	W13	W18	W16	W15	WNW22	WNW17	NW15	NNW14	AF	NW20	NW22	NW19	NW19	NW19	NW15	NNW13	NW12	NW14	NW17	NW13	NNW10	NW10	NW16	NW18	NW15.0	NW22
10-Apr	NW23	NNW17	NW16	NNW15	NW14	NW10	NNW9	NNW10	N8	N7	NNW8	ENE6	ESE14	E17	E18	E20	E21	E19	E14	E14	E14	E15	E14	E14	NE7.2	NW23
11-Apr	E11	E11	E12	E10	ENE12	ENE16	ENE16	ENE16	E15	E18	E20	E23	E24	E27	E28	E24	E21	E14	ESE5	ESE2	WNW2	NW6	NW8	NNW8	E12.9	E28
12-Apr	N4	N1	NW2	WNW0	WNW4	WNW4	AF	AF	SW5	WSW6	WSW11	WSW13	WSW16	WNW19	NW22	NNW21	NW23	NNW18	NNW17	NW15	NNW12	NNW11	NNW8	NNW7	NW9.2	NW23
13-Apr	NNW8	NNW9	NNW11	NNW11	NNW11	NNW12	NNW8	SSW2	N5	E7	ESE9	SSW7	SSW12	S9	ESE12	E16	E19	E20	E19	E17	E19	E18	E19	E20	E6.9	E20
14-Apr	E21	E22	E24	E24	E22	E23	E25	E23	E21	E20	E20	E20	E16	ENE19	ENE19	NE16	NNE15	NNE19	NNE19	NNE18	NE20	NE28	ENE33	ENE31	ENE19.4	ENE33
15-Apr	ENE32	NE32	NE30	NE29	NE27	NE28	NE27	ENE28	NE24	NE14	ENE18	ENE24	ENE18	ENE25	ENE29	ENE28	ENE26	ENE23	E17	ENE17	ENE22	ENE26	ENE24	ENE21	ENE24.2	ENE32
16-Apr	ENE21	ENE24	ENE23	E25	E24	E21	ENE18	E17	E16	E18	E19	E22	E24	E24	E22	ENE20	ENE24	ENE21	ENE19	ENE16	ENE17	E19	E15	E12	E19.7	E25
17-Apr	E8	E10	E14	E16	E12	E13	E15	E15	E13	E14	E17	E21	E24	E24	E23	E25	E25	E21	E20	E19	E18	E17	E16	E15	E17.4	E25
18-Apr	E16	ESE17	E15	E16	E18	E21	E22	E25	E28	E27	E26	ESE27	SSE18	SSE12	ESE21	E21	E21	E24	E22	E17	ESE12	SE15	SE14	SE10	E18.1	E28
19-Apr	SE10	SE10	ESE8	SE11	SE10	AF	AF	SE4	ESE8	ESE8	ESE11	ESE15	ESE14	E15	ESE18	E15	E16	E15	E14	E17	E11	E13	E10	E10	ESE11.5	ESE18
20-Apr	E11	E11	E15	ENE10	E12	E7	E7	E9	E13	ESE13	ESE11	E10	E9	E9	E10	E12	E11	ESE11	E9	E7	E6	E9	E5	ENE5	E9.6	E15
21-Apr	NNE3	NE4	N7	N14	NNW14	N14	NNW8	NW6	NW9	WNW11	NW11	NW12	NNW11	NNW11	NNE8	E8	E15	E8	ESE6	SSE1	NE1	NNW4	N3	NE6	N5.2	E15
22-Apr	ENE18	ENE19	ENE17	ENE18	ENE19	ENE21	ENE22	ENE23	ENE22	ENE22	ENE24	ENE29	ENE29	ENE30	ENE29	ENE27	ENE29	ENE28	ENE26	ENE27	ENE28	ENE31	ENE36	ENE35	ENE25.4	ENE36
23-Apr	ENE33	ENE35	ENE37	ENE38	ENE39	ENE38	ENE36	ENE36	ENE39	ENE38	ENE42	ENE41	ENE39	ENE42	ENE41	ENE42	ENE42	ENE42	ENE42	ENE40	ENE39	ENE41	ENE43	ENE43	ENE39.5	ENE43
24-Apr	ENE40	ENE39	ENE41	ENE41	ENE40	ENE40	ENE39	ENE35	ENE31	ENE31	ENE33	ENE32	ENE27	ENE26	ENE27	ENE33	ENE33	ENE34	ENE32	ENE31	ENE34	ENE35	ENE33	ENE32	ENE34.0	ENE41
25-Apr	ENE30	ENE28	ENE27	ENE27	ENE24	ENE24	ENE24	E20	ENE17	ENE20	E21	ENE21	E22	E18	E20	ENE21	ENE20	ENE19	ENE18	ENE18	ENE21	ENE21	ENE18	ENE19	ENE21.4	ENE30
26-Apr	E17	E17	E16	E15	E15	E15	E15	E13	E14	E15	ESE18	ESE18	ESE19	E22	E22	E20	E21	E18	E16	ESE13	SSE15	SSE16	SE14	SE16	ESE15.6	E22
27-Apr	SE16	SE18	SE18	ESE15	ESE14	E14	E15	E15	E16	E19	E24	E25	E25	ESE19	SE20	SSE18	SSE16	SSE17	SSE14	SSE20	SSE17	SSE19	S20	SSE18	SE15.4	E25
28-Apr	S16	SSE15	S17	ESE7	ESE7	ESE10	E12	E12	E10	E11	E15	E20	E21	E19	E24	E19	E22	ENE24	ENE18	ENE16	E17	ENE13	E12	E11	E13.5	E24
29-Apr	E12	E15	E15	E18	E15	E16	E11	E10	E13	E12	ESE10	ESE12	E11	ESE11	ESE11	ESE12	ESE12	ESE13	ESE12	ESE12	E11	E11	ESE12	ESE10	E12.3	E18
30-Apr	E8	E8	E8	E11	E11	E11	E13	E11	E14	ESE12	ESE17	E18	E20	E17	E17	E14	ESE12	ESE11	E13	E5	NW5	NW4	NW14	W16	E9.1	E20
	ENE11.3	ENE11.6	ENE11.6	ENE12.2	ENE11.4	ENE12.1	ENE12.7	ENE11.9	E12.0	E11.2	E12.4	E13.2	E12.2	E12.7	E14.1	ENE13.9	ENE13.7	ENE13.2	ENE11.8	ENE11.3	ENE11.6	ENE11.9	ENE11.7	ENE11.5	Diurnal Average	
	ENE40	ENE39	ENE41	ENE41	ENE40	ENE40	ENE39	ENE36	ENE39	ENE38	ENE42	ENE41	ENE39	ENE42	ENE41	ENE42	ENE42	ENE42	ENE42	ENE40	ENE39	ENE41	ENE43	ENE43	Diurnal Maximum	

AF - Analyzer Failure

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 Apr 9 10:00

Minimum Value: 0 km/h on Apr 3 03:00

Percentiles: P_1 = 1 P_{10} = 1 Q_1 = 2 Median = 2 Q_3 = 4 P_{90} = 5 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-Apr	2	2	2	1	2	1	2	2	2	4	4	3	4	4	4	5	5	4	3	3	4	4	3	3	5
2-Apr	2	1	1	1	3	2	3	2	2	3	2	2	2	1	2	1	2	2	1	1	1	1	1	2	3
3-Apr	1	1	0	2	2	1	1	3	2	2	2	2	2	3	3	3	3	3	4	5	4	3	2	2	5
4-Apr	2	2	3	3	4	2	2	4	4	3	3	3	2	2	3	4	5	6	6	6	5	5	5	2	6
5-Apr	3	4	3	3	3	3	3	4	5	5	4	4	4	4	3	3	4	2	2	1	2	1	1	1	5
6-Apr	2	2	2	2	4	3	3	3	3	3	2	2	2	2	2	1	1	1	2	1	2	3	3	2	4
7-Apr	3	2	2	3	2	4	2	3	2	1	2	1	1	1	2	2	3	4	3	3	4	4	3	4	4
8-Apr	3	4	3	3	2	2	2	2	2	2	1	1	1	1	2	5	4	6	7	3	6	5	4	3	7
9-Apr	3	4	4	4	5	5	5	5	AF	7	7	6	6	6	6	5	5	6	6	4	4	3	5	6	7
10-Apr	7	6	5	5	4	4	3	5	4	3	3	4	2	2	2	2	2	3	2	2	2	1	1	2	7
11-Apr	1	2	2	3	3	2	2	2	2	1	2	2	2	2	2	2	2	3	3	1	1	1	1	1	3
12-Apr	1	2	2	1	2	2	AF	AF	1	2	3	3	4	6	7	7	7	7	6	5	4	3	3	2	7
13-Apr	2	2	2	2	2	2	4	1	3	3	2	2	3	3	2	2	2	1	1	2	2	2	1	2	4
14-Apr	2	2	2	2	2	2	3	3	3	2	2	2	2	3	3	4	4	5	5	5	5	5	4	4	5
15-Apr	4	5	5	5	4	4	4	4	6	3	3	3	3	5	5	4	4	4	2	2	5	4	4	3	6
16-Apr	3	3	3	2	3	2	2	2	2	1	2	2	2	2	3	3	3	3	3	2	3	2	1	3	3
17-Apr	2	2	2	2	2	2	2	2	1	2	2	3	2	2	2	2	2	2	2	2	1	1	2	1	3
18-Apr	1	1	1	1	2	2	3	3	3	3	3	5	5	2	3	2	2	2	3	2	2	2	2	1	5
19-Apr	1	1	2	1	2	AF	AF	2	2	1	2	1	2	1	2	1	1	1	2	2	2	1	2	1	2
20-Apr	1	2	1	2	2	2	1	2	1	1	1	1	1	1	2	1	1	1	1	1	1	2	1	2	2
21-Apr	2	2	4	3	3	3	5	3	2	3	3	4	4	4	4	1	4	2	1	1	1	1	1	4	5
22-Apr	2	2	2	2	2	3	2	3	3	3	4	4	4	4	3	3	4	4	3	3	4	4	4	4	4
23-Apr	4	4	5	5	5	5	5	5	6	6	6	6	6	6	6	6	6	6	6	6	5	6	5	6	6
24-Apr	4	4	5	5	4	4	5	5	4	5	4	4	4	4	5	5	4	4	3	3	4	3	4	4	5
25-Apr	4	3	3	3	3	3	3	2	3	3	3	3	3	2	2	3	3	4	3	3	3	3	2	2	4
26-Apr	2	2	2	1	2	2	1	2	2	2	1	2	2	2	2	2	3	3	2	3	2	3	2	1	3
27-Apr	2	2	2	2	1	1	1	1	1	2	2	3	3	2	3	2	2	2	2	3	3	3	3	3	3
28-Apr	2	4	3	3	1	1	2	2	2	2	2	2	1	1	3	2	2	3	3	3	3	1	2	2	4
29-Apr	4	2	2	3	2	2	1	1	1	1	2	2	2	2	2	2	1	2	2	1	1	1	2	1	4
30-Apr	1	1	1	2	1	1	1	2	2	2	1	1	2	2	2	2	1	1	2	3	5	2	6	4	6
	7	6	5	5	5	5	5	5	6	7	7	6	6	6	7	7	7	7	7	6	6	6	6	6	
	Diurnal Maximum																								

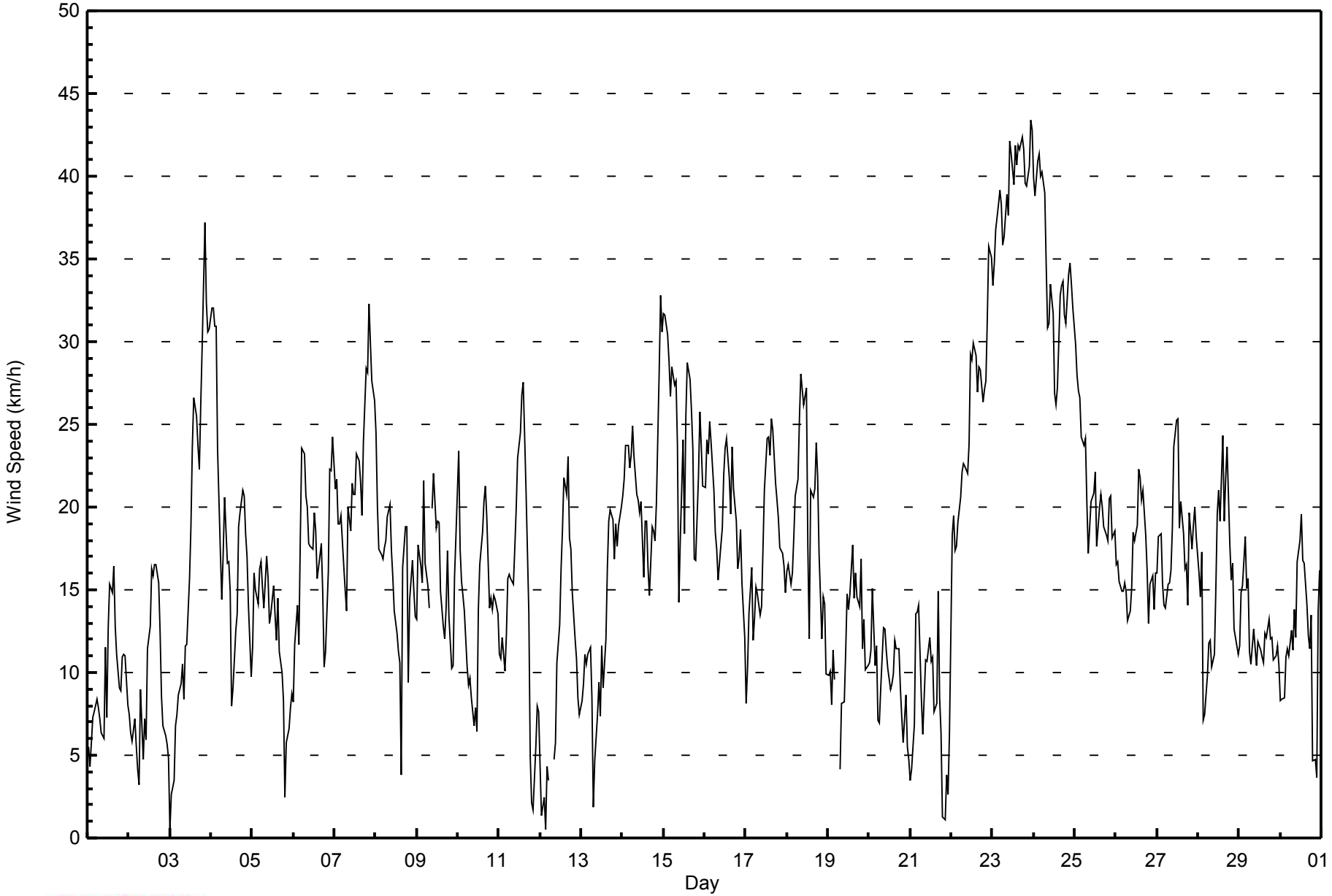
AF - Analyzer Failure

WBEA NETWORK

Hourly Averages

Wind Speed (WS) - km/h

Fort Chipeywan - April 2014



AURORA ATMOSPHERICS INC.

Wind Speed Ranges (km/h)	Number of Hours	%	Cumulative %
0 - 5	35	4.90	4.90
6 - 11	148	20.70	25.59
12 - 19	299	41.82	67.41
20 - 28	161	22.52	89.93
29 - 38	49	6.85	96.78
> 38	23	3.22	100.00

Total Number of Valid Hours: 715

Total Number of Hours: 720

WBEA NETWORK

Frequency Distribution

Wind Speed (WS) - km/h

Fort Chipeywan - April 2014

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	1	2	1	6	2	1	2	0	1	1	1	0	4	3	5	35
6 - 11	12	3	2	4	55	19	5	0	1	2	2	4	0	4	13	22	148
12 - 19	2	4	2	37	130	29	7	15	3	1	1	10	11	13	24	10	299
20 - 28	0	0	6	48	89	4	1	1	2	0	0	0	0	1	8	1	161
29 - 38	0	0	3	37	9	0	0	0	0	0	0	0	0	0	0	0	49
> 38	0	0	0	23	0	0	0	0	0	0	0	0	0	0	0	0	23
Totals	19	8	15	150	289	54	14	18	6	4	4	15	11	22	48	38	715

Total Number of Valid Hours: 715

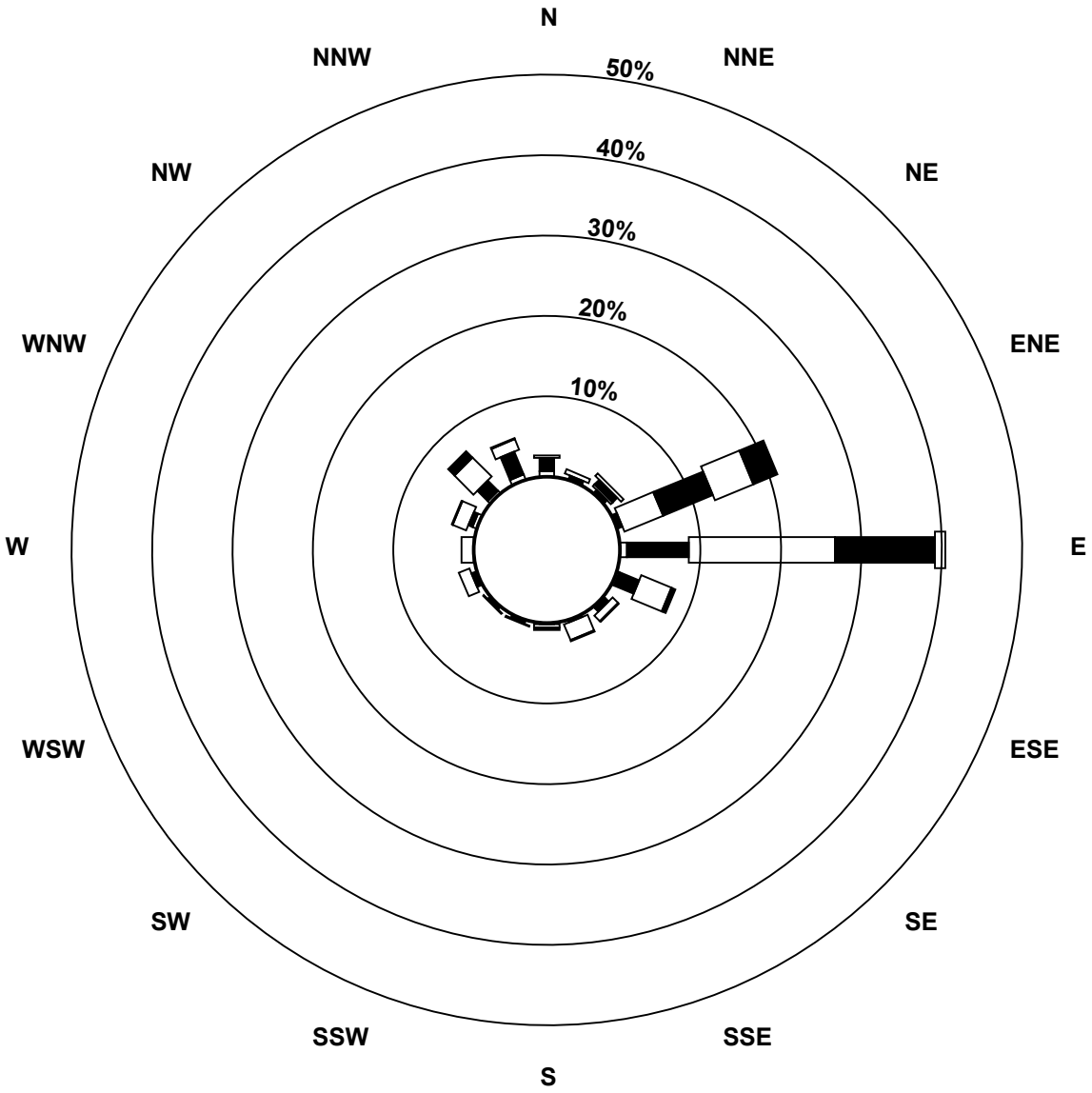
Total Number of Hours: 720

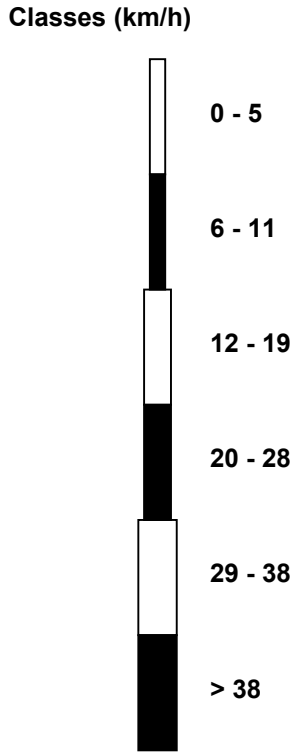
Wood Buffalo Environmental Association

Wind Rose Apr 2014

Wind Speed (WS) - km/h

Fort Chipeywan (AMS 8)





Total Number of Valid Hours: 715

Wood Buffalo Environmental Association

Summary of Hour Averages

Wind Direction (WD) - deg

Fort Chipeywan - April 2014

Direction of Maximum Speed: 73 deg on Apr 23 23:00
Direction of Maximum Daily Speed Average: 67.2 deg on Apr 23

Direction of Minimum Speed: 84 deg on Apr 3 01:00
Direction of Minimum Daily Speed Average: 2.2 deg on Apr 4

Monthly Average Direction: 34.2 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-Apr	343	329	317	306	325	326	327	337	326	312	321	285	246	244	256	313	340	338	340	1	4	1	1	22	321.4
2-Apr	24	9	353	351	345	354	340	351	348	354	44	107	105	99	95	90	89	88	88	87	73	78	91	92	68.7
3-Apr	84	92	100	93	94	92	96	104	102	108	100	89	93	90	83	81	80	80	87	85	87	88	91	91	88.8
4-Apr	91	90	87	90	101	122	119	164	171	161	164	180	204	242	282	302	310	312	310	312	305	295	304	288	116.8
5-Apr	280	290	291	286	286	284	285	287	307	308	313	254	248	250	243	231	243	229	233	165	88	91	91	86	274.2
6-Apr	99	88	85	75	77	85	79	83	85	75	82	96	95	95	91	96	93	94	85	82	70	77	85	85	85.5
7-Apr	89	84	74	73	73	78	74	92	98	100	98	102	101	95	93	89	78	66	65	68	75	78	80	78	82.4
8-Apr	79	81	80	86	94	98	95	101	96	98	98	96	92	89	86	239	263	266	292	289	258	276	273	281	89.0
9-Apr	267	270	276	273	282	291	309	330	AF	319	319	318	316	313	324	327	322	323	312	322	339	317	318	323	308.5
10-Apr	318	327	320	333	317	323	334	345	0	359	344	78	107	100	92	96	97	96	94	85	80	83	84	86	50.5
11-Apr	83	83	86	80	78	77	73	70	90	97	94	93	91	89	86	90	93	100	120	111	290	308	322	342	84.4
12-Apr	350	353	316	282	290	283	AF	AF	225	251	237	254	257	300	321	328	315	329	329	322	339	332	337	339	309.6
13-Apr	332	338	344	341	343	345	346	208	0	84	115	206	197	185	123	99	94	88	87	92	89	95	93	87	80.0
14-Apr	88	93	93	89	93	93	96	98	91	91	87	90	90	71	68	35	27	24	20	17	35	54	65	64	72.1
15-Apr	61	55	52	50	50	54	56	61	56	50	70	72	66	61	65	74	77	77	80	65	69	75	70	66	63.3
16-Apr	63	67	75	85	83	81	77	80	88	94	94	88	84	85	83	75	66	66	67	69	77	91	97	100	79.9
17-Apr	91	90	87	94	94	88	93	99	96	92	95	91	86	85	86	83	86	85	84	87	96	96	90	93	89.5
18-Apr	101	102	101	97	94	87	85	84	84	82	81	102	166	151	115	99	94	88	89	94	112	130	136	132	99.7
19-Apr	127	139	115	136	134	AF	AF	124	115	108	103	104	102	94	102	97	91	90	88	86	82	88	91	93	102.0
20-Apr	94	85	85	76	84	85	95	98	97	103	105	97	93	91	91	93	96	104	96	89	94	88	83	59	91.9
21-Apr	26	53	360	357	347	349	346	325	305	292	311	321	332	343	23	93	91	96	116	157	47	347	3	44	358.7
22-Apr	68	75	72	70	69	69	73	74	76	77	66	75	73	74	74	74	73	69	68	67	73	76	78	75	72.7
23-Apr	71	69	67	66	67	68	66	64	63	64	64	64	64	68	68	69	67	66	67	67	69	69	73	73	67.2
24-Apr	74	72	74	74	74	73	71	68	65	64	64	64	64	64	57	62	66	72	72	72	77	77	75	73	70.0
25-Apr	73	73	70	75	76	75	78	79	70	78	80	74	85	79	89	74	66	64	59	60	64	64	72	78	73.4
26-Apr	83	89	90	91	91	95	94	97	101	98	102	106	109	88	88	87	88	89	97	118	157	160	145	135	102.1
27-Apr	141	139	132	113	108	94	92	87	89	88	86	81	86	121	145	150	152	149	154	159	163	166	170	168	125.8
28-Apr	169	161	172	115	109	105	96	94	94	93	91	89	92	92	85	83	85	75	65	71	86	74	87	91	95.3
29-Apr	91	89	91	87	89	91	99	97	92	98	104	102	100	106	106	108	107	109	106	108	99	101	102	102	98.6
30-Apr	97	94	91	95	100	98	98	97	96	102	102	96	96	101	99	100	109	105	90	92	306	315	314	260	96.3
	76.9	77.5	75.1	72.9	72.3	72.3	73.4	77.6	80.6	79.4	80.4	86.7	90.4	84.9	82.5	78.7	76.0	73.5	69.3	70.6	74.2	76.9	77.4	78.2	
	Diurnal Average																								

AF - Analyzer Failure
All monthly, daily, and diurnal averages have been calculated using vector methods

Number of Exceedences (AAAQO): 1-hr: 0 24-hr: 0
Maximum Value: 92 deg on Apr 2 07:00

Minimum Value: 3 deg on Apr 28 12:00

Percentiles: P_1 = 3 P_{10} = 5 Q_1 = 6 Median = 8 Q_3 = 13 P_{90} = 22 P_{99} = 65

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-Apr	21	27	17	12	13	10	12	20	24	51	21	63	23	17	21	18	25	22	18	24	20	21	20	20	63
2-Apr	15	15	13	10	34	32	92	19	31	26	49	11	9	5	6	5	4	4	3	6	10	10	7	9	92
3-Apr	37	27	10	7	6	5	3	15	13	8	8	3	4	4	5	6	6	6	6	5	5	5	4	3	37
4-Apr	4	4	4	5	10	5	16	12	9	10	11	11	12	17	19	15	15	15	15	16	15	13	15	14	19
5-Apr	12	14	13	12	11	11	12	14	16	18	22	21	18	20	22	11	16	12	8	44	10	10	9	7	44
6-Apr	9	9	5	6	5	6	6	6	6	9	11	5	4	5	5	4	3	4	10	11	8	7	7	5	11
7-Apr	5	5	9	8	7	11	10	9	5	6	4	4	6	3	4	5	9	6	6	6	7	6	6	6	11
8-Apr	7	9	8	10	7	8	9	6	5	5	4	6	4	6	8	86	14	16	32	24	14	15	18	12	86
9-Apr	14	13	13	14	13	13	19	20	AF	17	17	17	16	16	26	25	23	23	16	23	24	21	19	18	26
10-Apr	17	21	19	22	16	20	21	27	37	43	35	69	9	8	6	6	5	5	5	6	5	4	5	5	69
11-Apr	6	7	6	11	8	6	8	10	13	4	4	4	4	4	4	5	6	9	32	26	39	11	8	13	39
12-Apr	10	63	40	91	13	11	AF	AF	10	32	20	18	19	27	22	23	18	22	21	18	21	20	18	18	91
13-Apr	15	12	12	13	12	14	55	44	51	49	22	45	16	26	18	7	5	4	4	4	5	5	4	5	55
14-Apr	5	5	5	5	6	6	7	7	7	6	6	4	6	10	8	16	17	16	19	20	16	11	7	7	20
15-Apr	7	8	9	9	11	8	9	8	15	17	12	7	15	13	11	9	9	8	7	7	10	8	8	8	17
16-Apr	7	7	8	5	6	6	7	7	7	4	4	5	7	5	7	9	7	7	6	6	9	6	5	6	9
17-Apr	11	7	5	5	8	7	6	5	7	6	4	4	5	5	4	5	5	5	4	5	4	5	3	4	11
18-Apr	5	5	4	4	5	4	5	5	6	6	6	23	8	21	6	4	4	5	4	6	9	5	6	5	23
19-Apr	3	8	13	6	12	AF	AF	20	11	10	9	13	7	7	6	8	3	3	5	6	6	6	7	7	20
20-Apr	6	8	4	10	7	9	11	6	6	7	5	5	6	7	10	7	6	4	6	6	12	14	5	28	28
21-Apr	51	46	40	20	18	17	28	25	20	19	25	25	28	26	48	20	12	12	9	67	58	22	29	21	67
22-Apr	7	7	7	5	5	6	7	7	8	8	10	7	8	7	8	7	7	8	7	6	7	7	6	7	10
23-Apr	7	7	7	7	8	8	8	8	8	8	8	8	8	8	8	8	8	8	8	8	8	8	7	7	8
24-Apr	7	7	7	7	7	7	7	8	8	8	7	8	9	10	10	8	8	7	7	7	6	6	6	7	10
25-Apr	7	7	8	7	7	7	6	7	9	8	8	9	9	10	5	10	9	9	9	8	8	6	9	6	10
26-Apr	7	7	6	5	8	5	6	6	6	5	4	6	6	5	6	5	8	6	8	17	8	7	14	6	17
27-Apr	7	5	7	11	5	6	4	4	4	5	5	6	5	16	6	6	7	6	8	8	9	9	8	9	16
28-Apr	11	10	8	30	10	9	7	6	6	4	5	3	3	3	6	10	5	7	7	9	7	9	7	7	30
29-Apr	9	7	8	8	7	6	7	4	3	4	7	6	9	8	9	7	6	6	6	4	4	5	5	6	9
30-Apr	8	6	6	6	4	5	5	6	6	7	4	5	5	5	5	7	10	11	8	76	78	57	21	13	78
	51	63	40	91	34	32	92	44	51	51	49	69	28	27	48	86	25	23	32	76	78	57	29	28	
	Diurnal Maximum																								

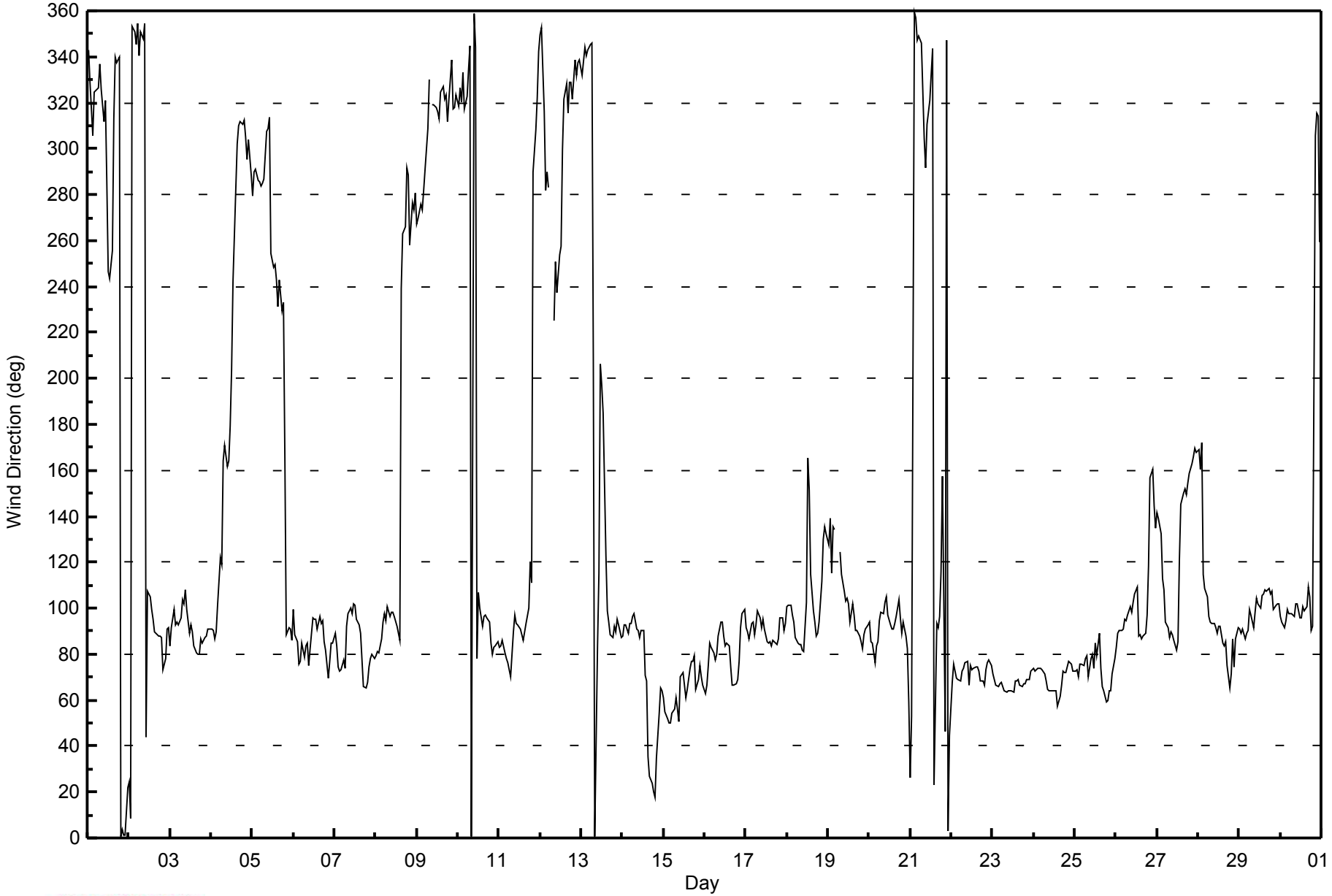
AF - Analyzer Failure

WBEA NETWORK

Hourly Averages

Wind Direction (WD) - deg

Fort Chipeywan - April 2014



AURORA ATMOSPHERICS INC.

Wood Buffalo Environmental Association

SO_2 Calibration Report

Station Information

Calibration Date	April 8, 2014	Previous Calibration	March 13, 2014
Station Name	Fort Chipewyan	Station Number	AMS 8

Reason: Routine

Start Time (MST)	11:20	End Time (MST)	16:20
Barometric Pressure	760 mmHg	Station temp.	21 Deg C
Calibrator Make/Model	API T700	Serial Number	747
Cal Gas Concentration	2.45 ppm	Cal Gas Expiry Date	9/16/2016
Gas Cert Reference	LL103809		
DACS make/model	Campbell Scientific CR3000	DACS serial No.	8205
DACS voltage range	0-5v	DACS channel #	DIFF 1

Analyzer Information

	Before	*After*		*Before*	*After*
Analyzer Range (ppb)	20	20	PMT voltage (mV)	7	7
Analyzer Range (mv)	5000	5000	HV power supply (V)	529	529
Calculated slope	0.989161	0.986565	Chamber temp.	50.0	50.0
Calculated intercept	-0.062569	-0.062386	Pressure (in Hg)	26.4	26.4
Analyzer Background	8.2	7.3	Flow (lpm)	0.619	0.619
Analyzer Coefficient	0.971	0.932	UV Lamp (mV)	4411	4411

Analyzer make	T100u	Analyzer serial #	138

Calibration Data

Set Point	Total flow rate (cc/min)	Source gas flow rate (cc/min)	Calculated concentration (ppb) (Cc)	Indicated concentration (ppb) (Ic)	Correction factor (Cc/Ic)
as found zero	5000	0.0	0.0	-0.48	NA
as found span	5000	36.7	18.0	17.6	1.022
calibrator zero	5000	0.0	0.0	-0.01	NA
high point	5000	36.7	18.0	18.2	0.986
second point	5000	19.8	9.7	10.0	0.973
third point	5000	9.9	4.9	5.0	0.964
calibrator zero	5000	0.0	0.0	0.0	NA
as left zero	5000	0.0	0.0	0.0	NA
as left span	5000	36.6	17.9	16.5	1.085
				Average Correction Factor	0.974

Corrected As found	18.1	Previous response	18.2	% change	0.9%

Notes:

Analyzer was span adjusted; no other maintenance performed.

Calibration Performed By: Zack Eastman

Wood Buffalo Environmental Association

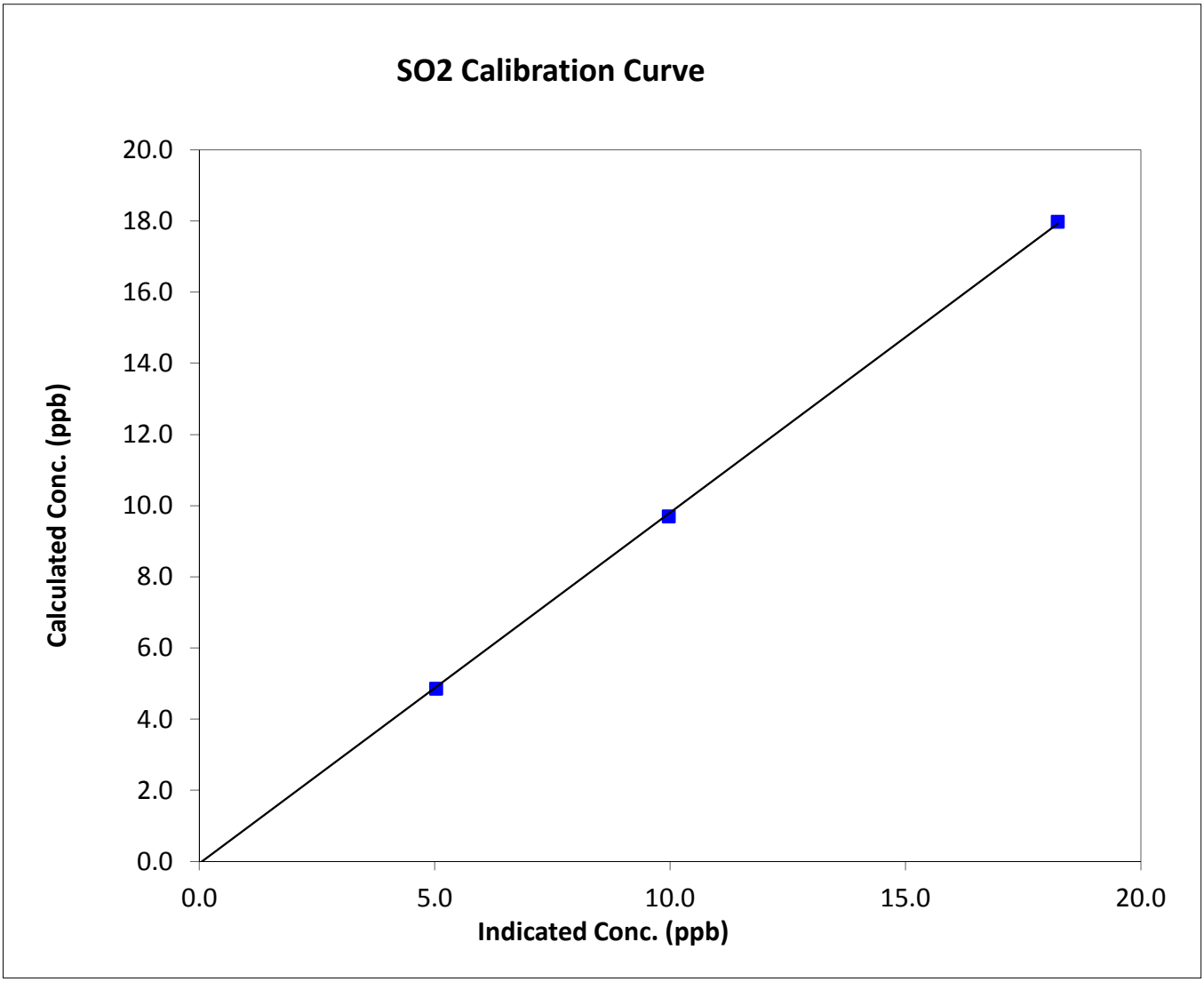
SO_2 Calibration Summary

Station Information

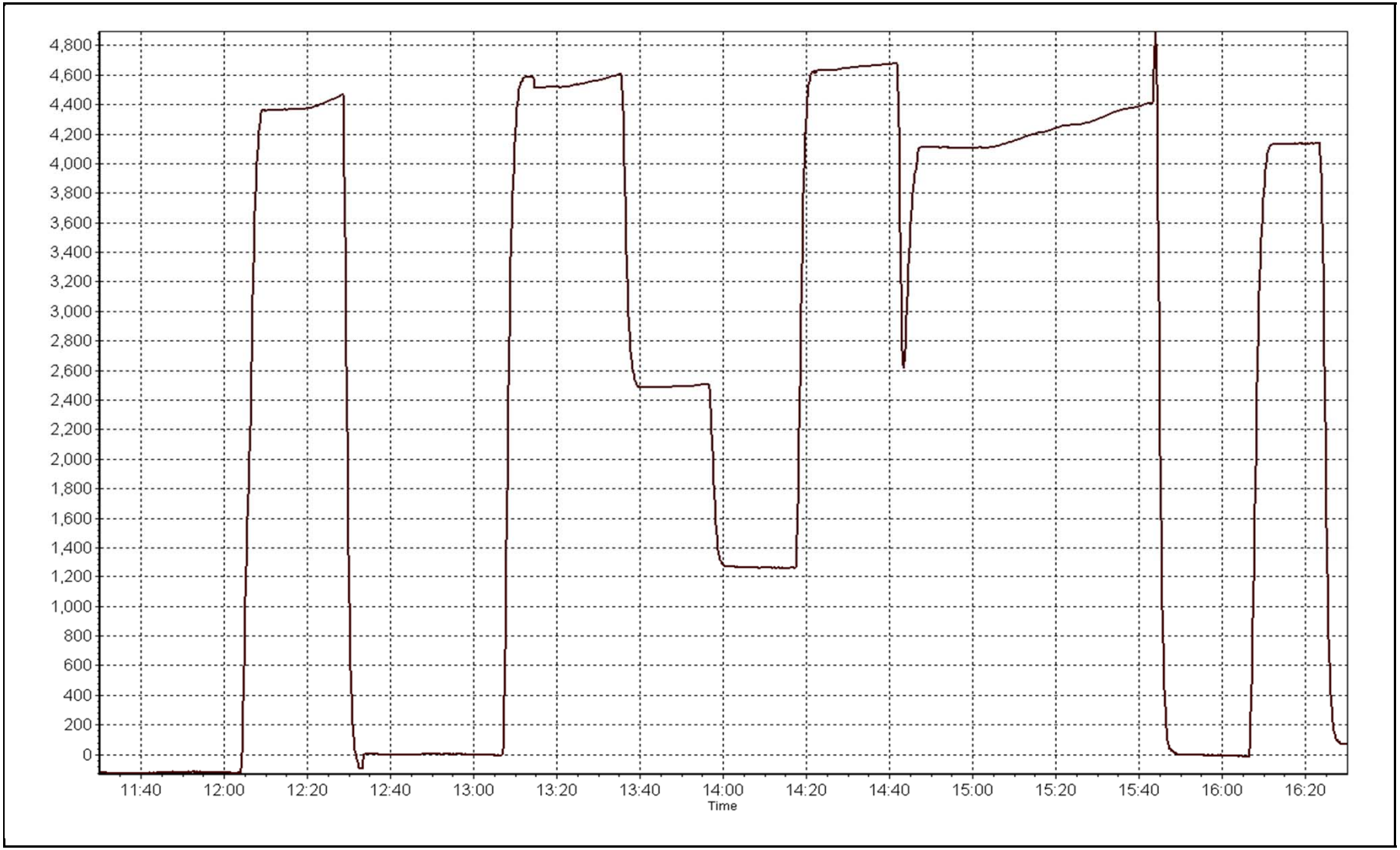
Calibration Date	April 8, 2014	Previous Calibration	March 13, 2014
Station Name	Fort Chipewyan	Station Number	AMS 8
Start Time (MST)	11:20	End Time (MST)	16:20
Analyzer make	T100u	Analyzer serial #	138

Calibration Data

Calculated concentration (ppb) (Cc)	Indicated concentration (ppb) (Ic)	Correction factor (Cc/Ic)	Statistical Evaluation	
0.0	0.0	N/A	Correlation Coefficient	0.999910
18.0	18.2	0.9861		
9.7	10.0	0.9729	Slope	0.986565
4.9	5.0	0.9640		
			Intercept	-0.062386



SO2 Calibration Plot Date: April 8, 2014



Wood Buffalo Environmental Association

O_3 Calibration Report

Station Information

Calibration Date	April 8, 2014	Previous Calibration	March 13, 2014
Station Name	Fort Chipewyan	Station Number	AMS 8
Reason:	Routine	SHOP	
Start Time (MST)	16:20	End Time (MST)	19:25
Barometric Pressure	760 mmHg	Station temp.	21 Deg C
Calibrator Make/Model	API T700	Serial Number	747
NO2 calibration used	April 8th 2014	Transfer Standard	NA
DACS make/model	Campebls CR3000	DACS serial No.	8205
DACS voltage range	0-5V	DACS channel #	Digital

Analyzer Information

	Before	*After*		*Before*	*After*
Analyzer Range (ppb)	200	200	Bench temp. (Deg C)	40.0	40.0
Analyzer Range (input)	5000	5000	Lamp temp. (Deg C)	58.0	58.0
Calculated slope	0.999734	0.994852	Pressure (in Hg)	27.3	27.3
Calculated intercept	-0.423544	-0.218861	Flow cell (LPM)	0.754	0.754
Analyzer Background	-1.00	1.5			
Analyzer Coefficient	0.992	1.059	Cell A Intensity	NA	NA
			Cell B Intensity	NA	NA

Analyzer make	API T400	Analyzer serial #	1020

Calibration Data

Set Point	Dilution air flow rate (cc/min)	O3 Ref -- O3 Drive (mV)	Calculated concentration (ppb) (Cc)	Indicated concentration (ppb) (Ic)	Correction factor (Cc/Ic)
as found zero	5000	0.00	0.0	2.6	N/A
as found span	5000	197.3 -- 818.7	110.0	102.7	1.071
calibrator zero	5000	0.00	0.0	0.2	N/A
high point	5000	197.3 -- 818.7	110.0	110.7	0.994
second point	5000	147.7 -- 778	83.6	84.4	0.991
third point	5000	92.6 -- 719.8	55.3	55.8	0.991
calibrator zero	5000	0.00	0.0	0.1	N/A
as left zero	5000	0.00	0.0	0.1	N/A
as left span	5000	197.3 -- 818.7	110.0	109.3	1.007
				Average Correction Factor	0.992

Corrected As found	100.0	Previous response	110.5	% change	10.4%

Notes:

Zero and span adjusted.

Calibration Performed By: Zack Eastman

Wood Buffalo Environmental Association

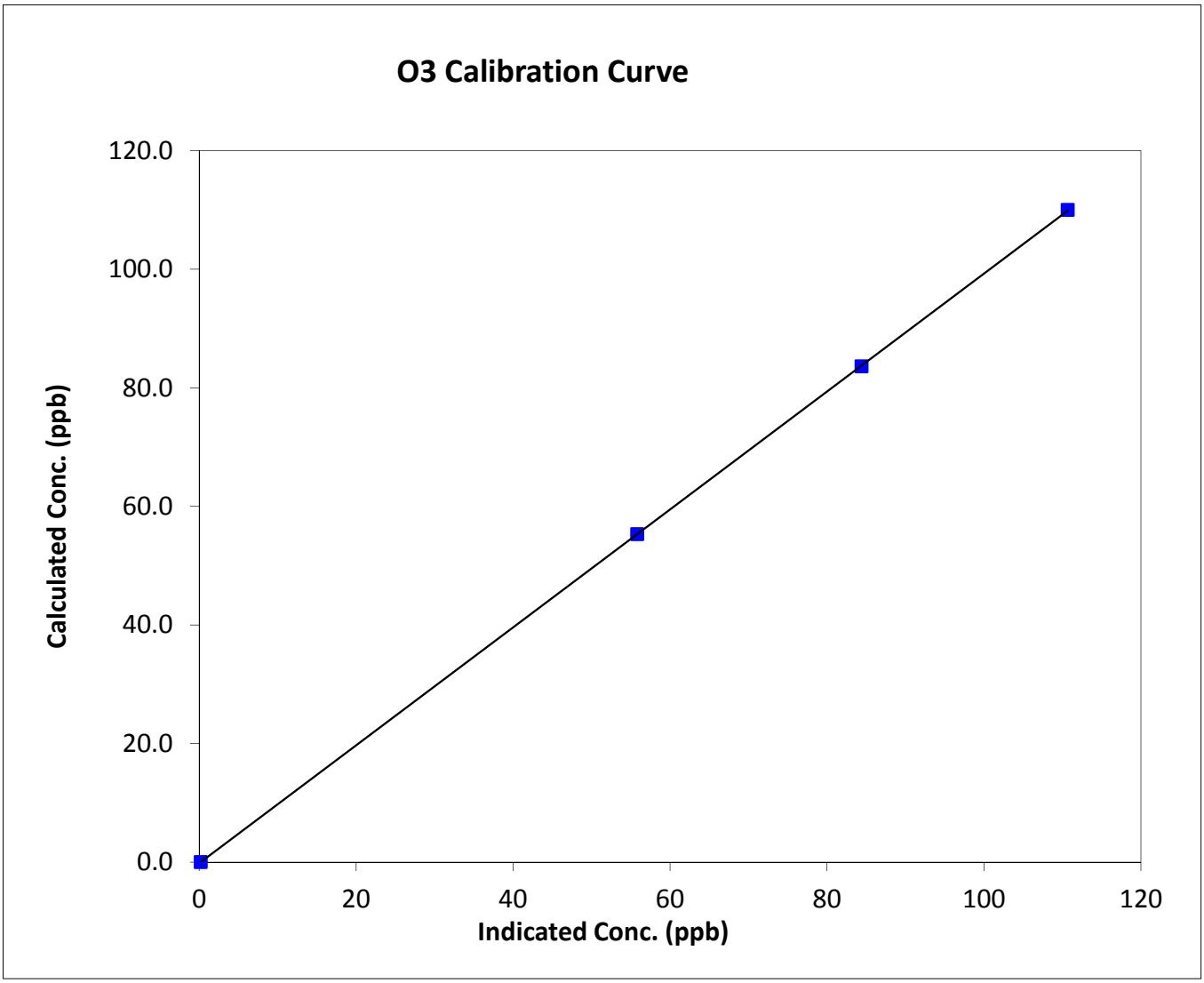
O_3 Calibration Summary

Station Information

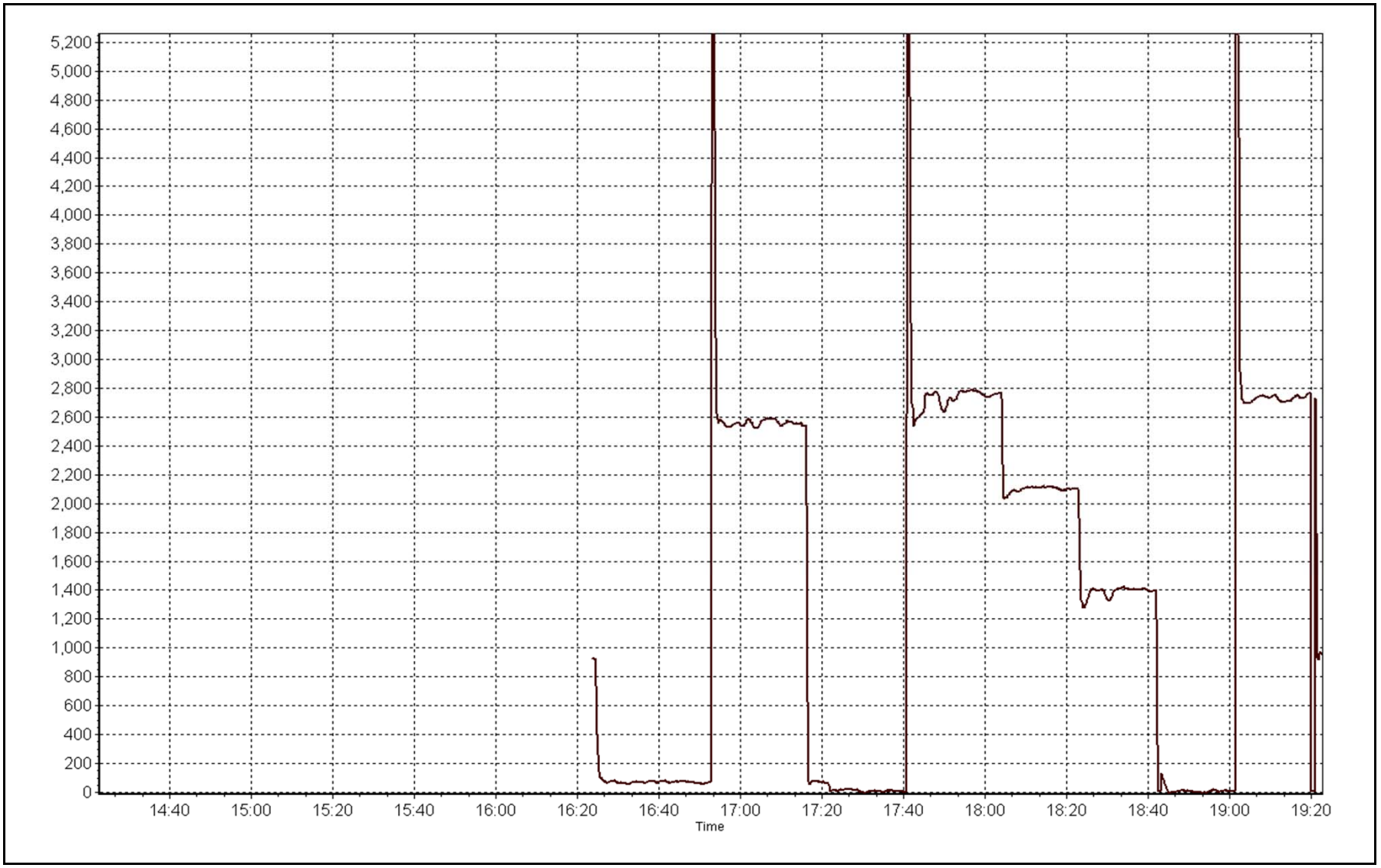
Calibration Date	Tuesday, April 08, 2014	Previous Calibration	March 13, 2014
Station Name	Fort Chipewyan	Station Number	AMS 8
Start Time (MST)	16:20	End Time (MST)	19:25
Analyzer make	API T400	Analyzer serial #	1020

Calibration Data

Calculated concentration (ppb) (Cc)	Indicated concentration (ppb) (Ic)	Correction factor (Cc/Ic)	Statistical Evaluation	
0.0	0.2	N/A	Correlation Coefficient	0.999995
110.0	110.7	0.9939		
83.6	84.4	0.9905	Slope	0.994852
55.3	55.8	0.9910		
			Intercept	-0.218861



O3 Calibration Plot Date: April 8, 2014



Wood Buffalo Environmental Association

NO_X-NO-NO_2 Calibration Report

Station Information

Calibration Date	April 8, 2014	Previous Calibration	March 13, 2014
Station Name	Fort Chipewyan	Station Number	AMS 8
Reason:	Routine		
Start Time (MST)	11:20	End Time (MST)	16:20
Barometric Pressure	760 mmHg	Station Temperature	21.0 Deg C
Calibrator	API T700	Serial Number	747
NO Cal Gas Conc	20.2 ppm	Cal Gas Expiry Date	09-16-2016
NOx Cal Gas Conc	20.2 ppm	Cal Gas Serial #	LL103809

DACS Information

DACS make & model: Campbell Scientific CR3000 — DACS serial No.: 8205

Parameter		NOx	NO	NO2
MV conversion	Analyzer Range (ppb)	200	200	200
	Analyzer Range (mv)	5000	5000	5000
Before	Data Slope	1.015591	1.017063	0.979091
	Data Offset	-0.459175	-0.473780	-0.073667
After	Data Slope	0.994242	0.993900	0.991572
	Data Offset	0.271005	0.304951	0.212929
Channel #		DIFF 3	DIFF 1	DIFF 2
Voltage Range		0 - 5V	0 - 5V	0 - 5V

Analyzer Information

Analyzer make/model: API T200u — Analyzer serial #: 172

Test Point	before		after	
Concentration range	200	ppb	200	ppb
NO coefficient	1.110	mv	1.208	mv
NOX coefficient	1.114	mv	1.214	mv
NO bkgrnd	0.2	mv	0.0	mv
NOX bkgrnd	0.0	mv	0.2	mv
Chamber Temp	40	Deg C	40	Deg C
Moly Temp	317	Deg C	317	Deg C
PMT Temp	8	Deg C	8	Deg C
O3 flow	86	ccm	86	ccm
R Cell Press	2.6	mmHg	2.6	mmHg
Sample Flow	1100	ccm	1100	ccm
PMT Voltage	-807.0	V	-807.0	V

Notes: Zero and span adjusted.

Wood Buffalo Environmental Association

NO_X-NO-NO_2 Calibration Report

Station Information

Calibration Date: April 8, 2014 Station Number: AMS 8

Calibration Data

Set Point	Total flow rate (ccm)	Source gas flow rate (ccm)	Calculated NOx conc (ppb)	Calculated NO conc (ppb)	Calculated NO2 conc (ppb)	Indicated NOx conc (ppb)	Indicated NO conc (ppb)	Indicated NO2 conc (ppb)	NOx Correction factor	NO Correction factor
as found zero	5000	0.0	0.0	0.0	0.0	-0.1	-0.2	-0.1	N/A	N/A
as found span	5000	36.9	149.1	149.1	0.0	138.4	138.4	0.0	1.077	1.077
calibrator zero	5000	0.0	0.0	0.0	0.0	-0.1	-0.1	-0.1	N/A	N/A
high point	5000	36.9	149.1	149.1	0.0	149.9	149.9	-0.1	0.994	0.995
second point	5000	19.8	80.0	80.0	0.0	79.7	79.8	-0.1	1.003	1.002
third point	5000	9.9	40.0	40.0	0.0	40.0	39.9	0.0	1.001	1.002
calibrator zero	5000	0.0	0.0	0.0	0.0	0.1	0.0	0.0	NA	NA
as left zero	5000	0.0	0.0	0.0	0.0	0.1	0.0	0.0	NA	NA
as left span	5000	36.6	147.9	147.9	0.0	148.6	38.4	110.0	NA	NA
								Average Correction Factor	1.000	1.000

Corrcted As found	NO_X=	138.5	NO=	138.5	Percent Change	NO_X=	9.6%	NO= 9.8%
Previous Response	NO_X=	151.9	NO=	152.1				

GPT Calibration Data

Dilution Flow 5000 ccm Source Gas Flow 36.60 ccm

O3 Setpoint (ppb)	Indicated NO high point (ppb)	Indicated NO drop conc (ppb)	Calculated NO2 conc (ppb)	Indicated NOx conc (ppb)	Indicated NO conc (ppb)	Indicated NO2 conc (ppb)	NOx Correction factor	NO Correction factor	NO2 Correction factor	Converter Efficiency
Cal zero			0.0			-0.1			N/A	
1st NO2 (100ppb O3)	N/A	39.6	110.0	150.6	39.6	110.8	0.990	1.000	0.992	100.8%
2nd NO2 (75ppb O3)	N/A	66.0	83.6	150.0	66.0	84.0	0.994	1.000	0.995	100.5%
3rd NO2 (50ppb O3)	N/A	94.3	55.3	149.7	94.3	55.4	0.996	1.000	0.999	100.1%
4th NO2 (0ppb O3)	149.6	N/A	-0.2	149.4	149.6	0.2	0.998	1.000	N/A	N/A
					Average Correction Factor		0.994	1.000	0.995	100.5%

Calibration Performed By: Zach Eastman

Wood Buffalo Environmental Association

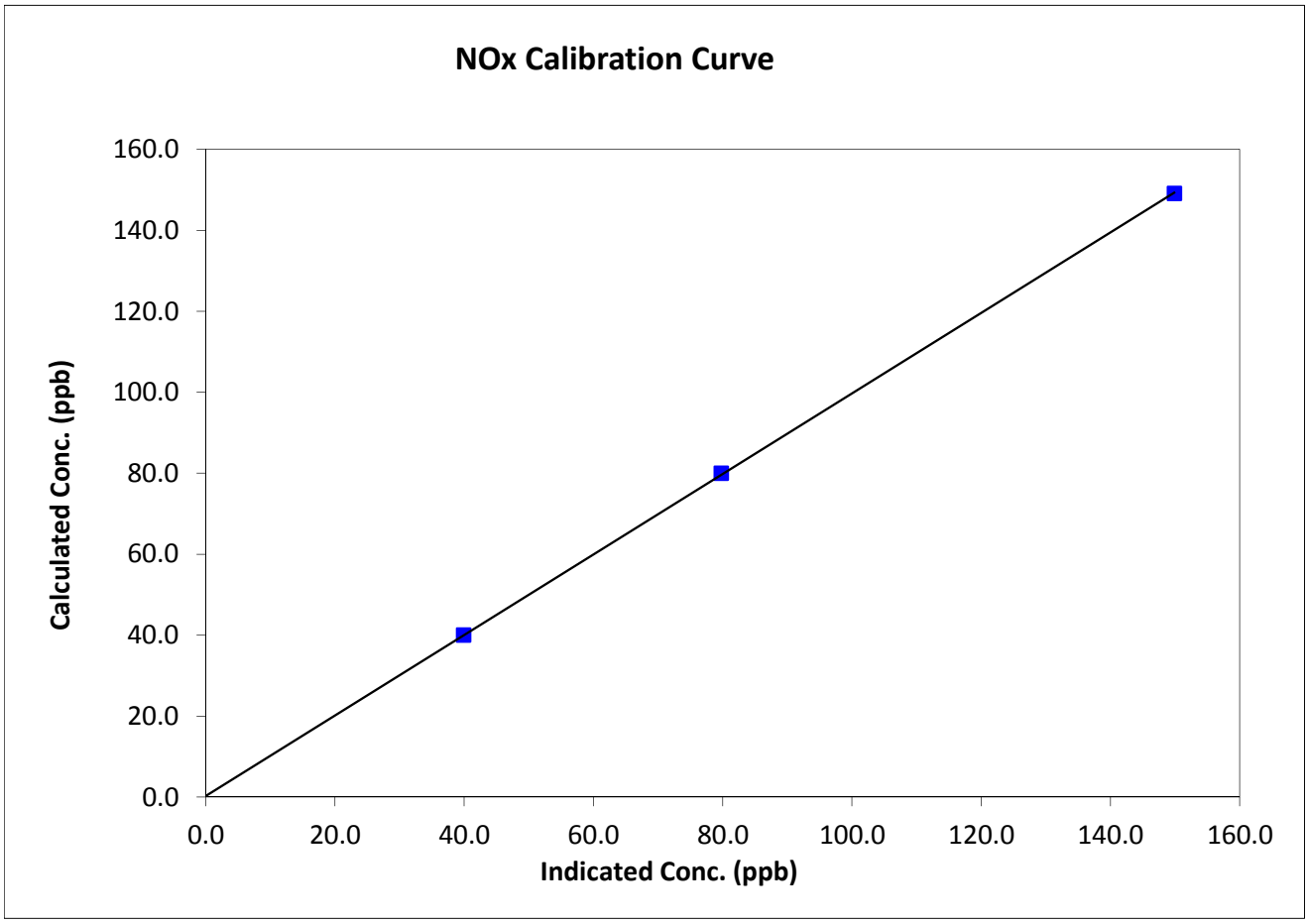
NO_X Calibration Summary

Station Information

Calibration Date	April 8, 2014	Previous Calibration	March 13, 2014
Station Number	Fort Chipewyan	Station Number	AMS 8
Start Time (MST)	11:20	End Time (MST)	16:20
Analyzer make	API T200u	Analyzer serial #	172

Calibration Information

Calculated conc (ppb) (Cc)	Indicated concentration (ppb) (Ic)	Correction factor (Cc/Ic)	Statistical Evaluation	
0.0	-0.1	N/A	Correlation Coefficient	0.999981
149.1	149.9	0.9946		
80.0	79.8	1.0024	Slope	0.994242
40.0	39.9	1.0019		
			Intercept	0.271005



Wood Buffalo Environmental Association

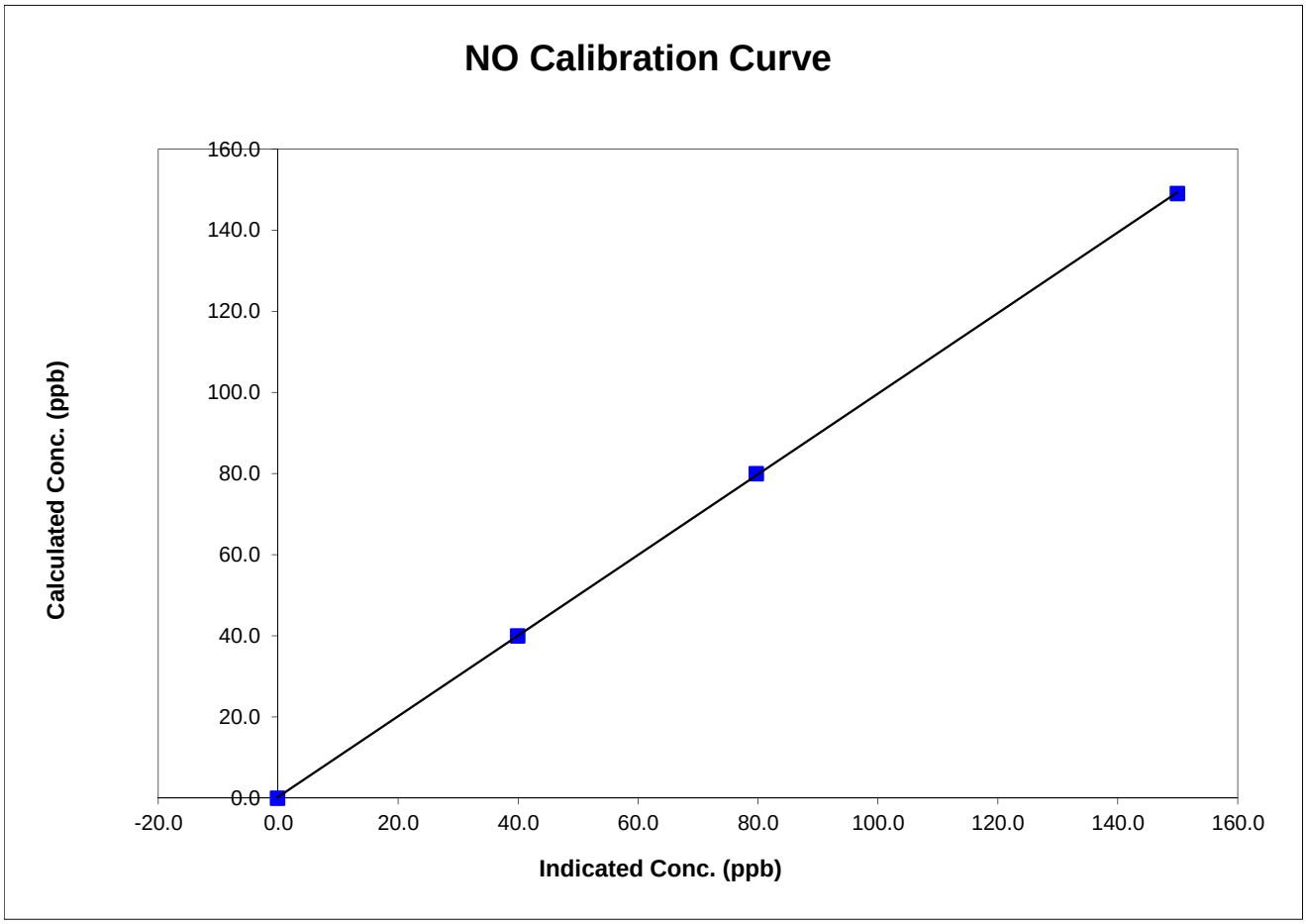
NO Calibration Summary

Station Information

Calibration Date	April 8, 2014	Previous Calibration	March 13, 2014
Station Number	Fort Chipewyan	Station Number	AMS 8
Start Time (MST)	11:20	End Time (MST)	16:20
Analyzer make	API T200u	Analyzer serial #	172

Calibration Information

Calculated conc (ppb) (Cc)	Indicated concentration (ppb) (Ic)	Correction factor (Cc/Ic)	Statistical Evaluation	
0.0	-0.1	N/A	Correlation Coefficient	0.999975
149.1	149.9	0.9944		
80.0	79.7	1.0034	Slope	0.993900
40.0	40.0	1.0009		
			Intercept	0.304951



Wood Buffalo Environmental Association

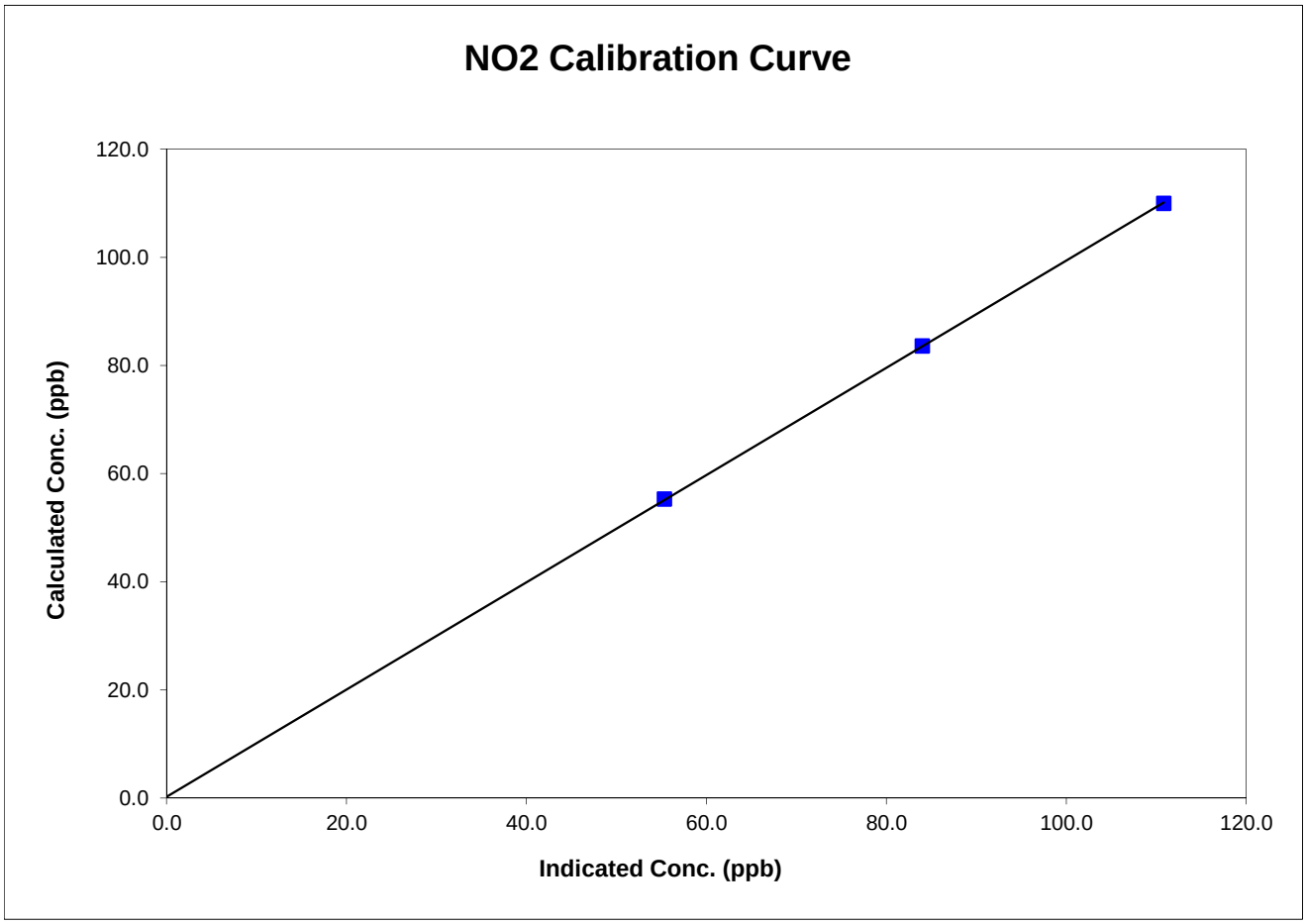
NO_2 Calibration Summary

Station Information

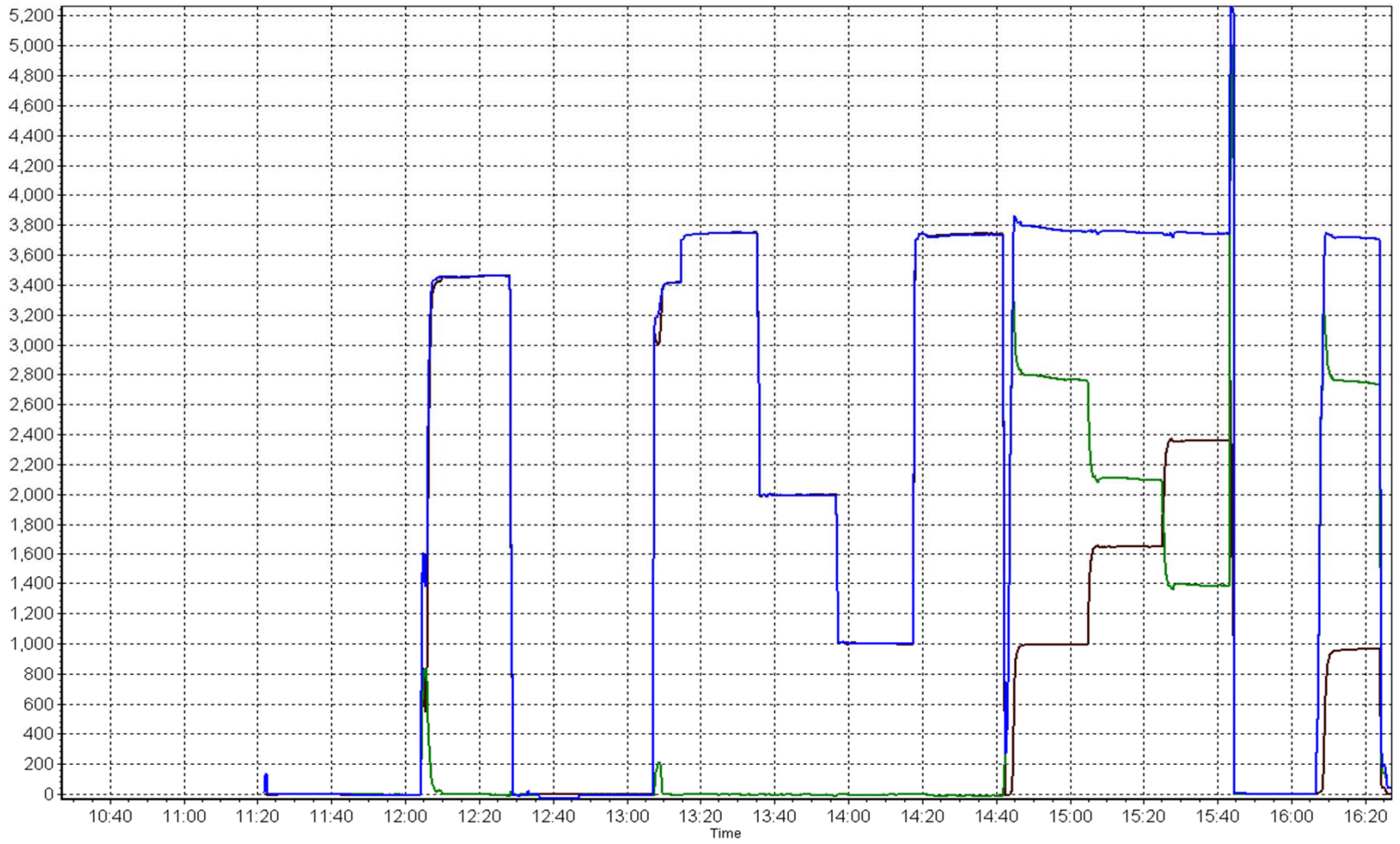
Calibration Date	April 8, 2014	Previous Calibration	March 13, 2014
Station Number	Fort Chipewyan	Station Number	AMS 8
Start Time (MST)	11:20	End Time (MST)	16:20
Analyzer make	API T200u	Analyzer serial #	172

Calibration Information

Calculated conc (ppb) (Cc)	Indicated concentration (ppb) (Ic)	Correction factor (Cc/Ic)	Statistical Evaluation	
0.0	-0.1	N/A	Correlation Coefficient	0.999989
110.0	110.8	0.9921		
83.6	84.0	0.9952	Slope	0.991572
55.3	55.4	0.9986		
			Intercept	0.212929



NOx, NO & NO_2 Calibration Plot **Date:** **April 8, 2014**



WOOD BUFFALO ENVIRONMENTAL ASSOCIATION

CONTINUOUS AMBIENT AIR QUALITY
MONITORING PROGRAM
MONTHLY REPORT

AMS 9
BARGE LANDING
APRIL 2014

Operations and Data Collection by:
Wood Buffalo Environmental Association
Fort McMurray, Alberta

QA/QC, Data Validation and Reporting by:
Aurora Atmospherics Inc.
Calgary, Alberta

May 30, 2014

WOOD BUFFALO ENVIRONMENTAL ASSOCIATION - BARGE LANDING (AMS 9)
APRIL 2014

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
TRS(ppb) Average	685	35	35	100.00	3	0	1	0
THC(ppm) Average	687	33	33	100.00	2.9	-	2.5	-
Temperature (C) Average	720	0	0	100.00	23.5	-	14.8	-
Wind Speed 10 m (km/h) Average	710	0	10	98.61	24	-	-	-
Wind Direction 10 m (deg) Average	710	0	10	98.61	-	-	-	-

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

WOOD BUFFALO ENVIRONMENTAL ASSOCIATION - BARGE LANDING (AMS 9)
APRIL 2014

MONTHLY SUMMARY FOR AIR QUALITY/ METEOROLOGICAL MONITORING MEASUREMENTS

					Percentile						
Parameter	Number	Mean	StnDev	Total	Min	P10	Q1	Median	Q3	P90	Max
TRS(ppb) Average	685	0.2	0	-	0	0	0	0	0	0	3
THC(ppm) Average	687	2.07	0.2	-	1.8	1.9	1.9	2	2.2	2.3	2.9
Temperature (C) Average	720	2.71	7.8	-	-19.7	-7.5	-2.7	3	7.7	12.9	23.5
Wind Speed 10 m (km/h) Average	710	7.8	4	-	0	3	5	7	10	12	24
Wind Direction 10 m (deg) Average	710	-	-	-	-	-	-	-	-	-	-

WOOD BUFFALO ENVIRONMENTAL ASSOCIATION - BARGE LANDING (AMS 9)
APRIL 2014

OPERATIONAL NOTES

Parameter	Period Start	Period End	Duration (Hours)	Notes
Wind Speed, Wind Direction	18 Apr 2014 22:00	18 Apr 2014 23:00	2	Flatline in sensor output signal
Wind Speed, Wind Direction	19 Apr 2014 04:00	19 Apr 2014 05:00	2	Flatline in sensor output signal
Wind Speed, Wind Direction	19 Apr 2014 07:00	19 Apr 2014 07:00	1	Flatline in sensor output signal
Wind Speed, Wind Direction	20 Apr 2014 03:00	20 Apr 2014 07:00	5	Flatline in sensor output signal

Wood Buffalo Environmental Association

Summary of Hour Averages

Total Reduced Sulphur (TRS) - ppb

Barge Landing - April 2014

Number of Exceedences (AAAQO): 1-hr: 0 24-hr: 0
Maximum Value: 3 ppb on Apr 30 10:00 Maximum Daily Average: 0.7 ppb on Apr 30

Minimum Value: 0 ppb on Apr 3 05:00 Minimum Daily Average: 0.0 ppb on Apr 26
Maximum Diurnal Average: 0.3 ppb at hour 9 Minimum Diurnal Average: 0.1 ppb at hour 14
Monthly Average: 0.2 ppb Percentiles: $P_1 = 0$ $P_{10} = 0$ $Q_1 = 0$ Median = 0 $Q_3 = 0$ $P_{90} = 0$ $P_{99} = 1$

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-Apr	0	0	Z	0	0	0	0	C	C	C	C	C	0	0	0	0	0	0	0	0	0	0	0	0	0.2	0
2-Apr	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	0
3-Apr	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	0
4-Apr	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	0
5-Apr	0	0	Z	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1	0	0	0	0.2	1
6-Apr	0	0	Z	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1	0	0	1	0	0	0.3	1
7-Apr	0	0	Z	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0.2	0
8-Apr	1	1	Z	1	1	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0.3	1
9-Apr	0	0	Z	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0.2	0
10-Apr	0	0	Z	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0.2	0
11-Apr	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	0
12-Apr	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	0
13-Apr	0	0	Z	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1	0	0	0	0	0.2	1
14-Apr	0	0	Z	0	0	0	0	1	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0.2	1
15-Apr	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
16-Apr	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
17-Apr	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	0
18-Apr	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	0
19-Apr	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	0
20-Apr	0	0	Z	0	0	0	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0.2	1
21-Apr	0	0	Z	0	0	0	1	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0.3	1
22-Apr	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	0
23-Apr	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	0
24-Apr	0	0	Z	0	0	0	0	0	0	0	0	0	0	0	1	0	0	0	0	0	0	0	0	0	0.1	1
25-Apr	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
26-Apr	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
27-Apr	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	0
28-Apr	0	0	Z	0	0	0	0	0	0	0	0	0	1	0	0	0	0	0	0	0	0	0	0	0	0.2	1
29-Apr	0	0	Z	0	0	1	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0.1	1
30-Apr	0	0	Z	1	1	1	1	2	3	3	2	0	0	0	0	0	0	0	0	0	0	0	0	0	0.7	3
	0.2	0.1	--	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	0.1	0.1	0.1	0.1	0.1	Diurnal Average	
	1	1	--	1	1	1	1	2	3	3	2	0	1	0	1	0	0	0	1	1	1	1	0	0	Diurnal Maximum	

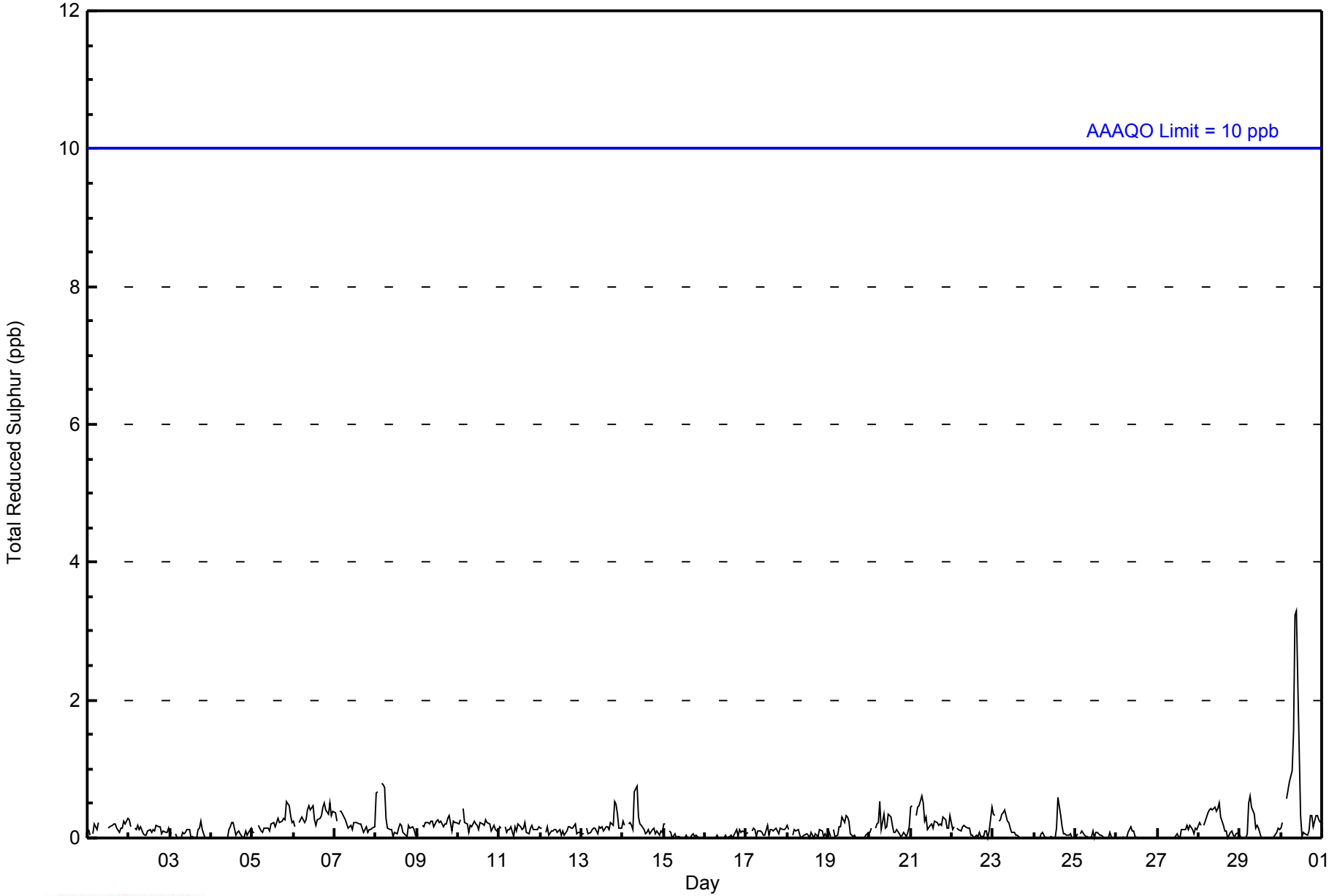
Z - zerospan C - Calibration
Alberta Ambient Air Quality Objectives (AAAQO): 1-hr 10 ppb 24-hr 3 ppb

WBEA NETWORK

Hourly Averages

Total Reduced Sulphur (TRS) - ppb

Barge Landing - April 2014



AURORA ATMOSPHERICS INC.

Concentration Ranges (ppb)	Number of Hours	%	Cumulative %
0 - 2	683	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: 685

Total Number of Hours: 720

WBEA NETWORK

Frequency Distribution

Total Reduced Sulphur (TRS) - ppb

Barge Landing - April 2014

Concentration Ranges (ppb)	Wind Direction																
	N	NNE	NE	ENE	E	ESE	SE	SSE	S	SSW	SW	WSW	W	WNW	NW	NNW	**Totals**
0 - 2	32	99	86	47	22	40	80	63	52	24	18	33	11	11	18	38	674
3 - 4	0	0	0	0	0	0	0	0	2	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	32	99	86	47	22	40	80	63	54	24	18	33	11	11	18	38	676

Total Number of Valid Hours: 676

Total Number of Hours: 720

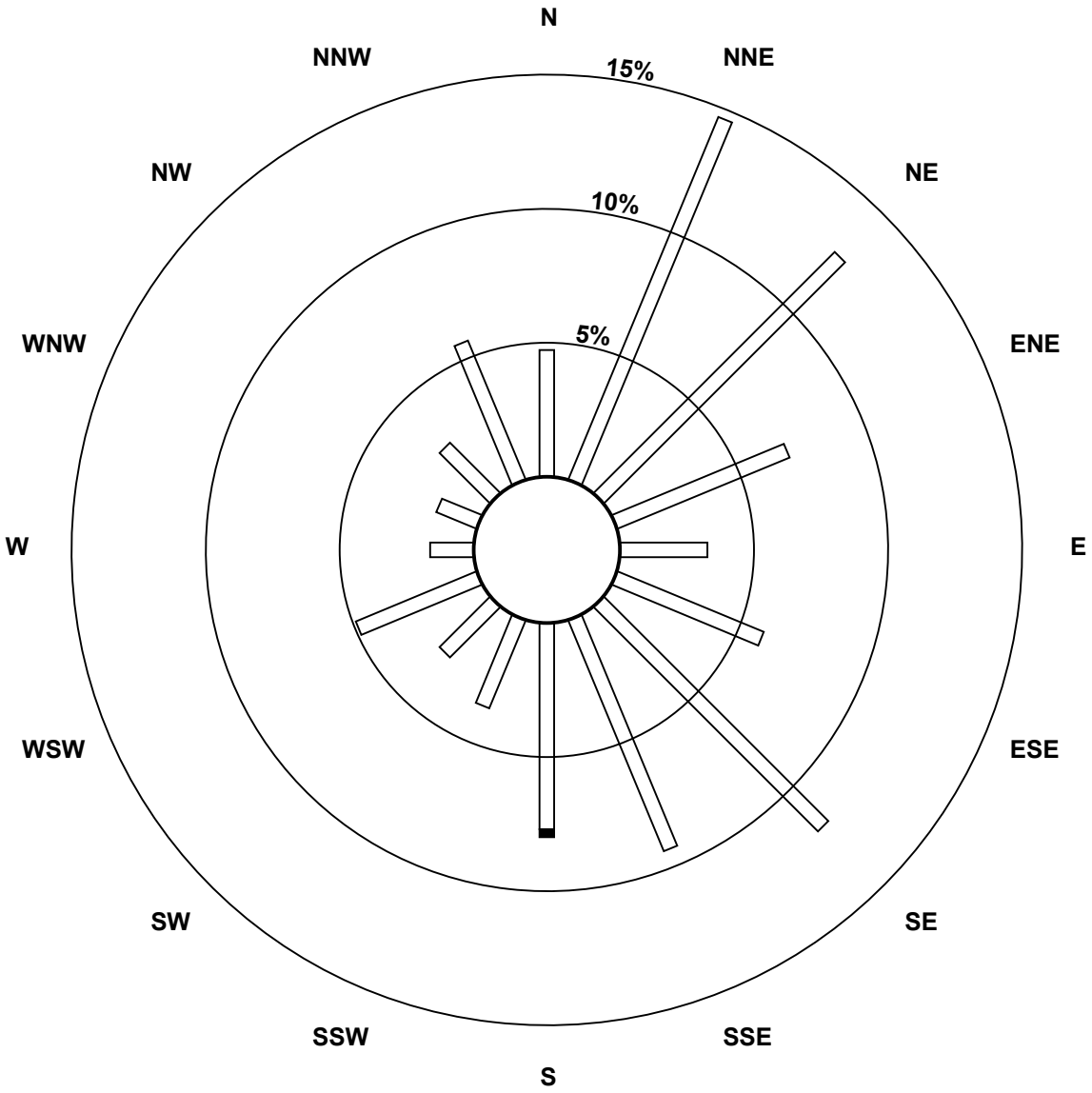
AURORA ATMOSPHERICS INC.

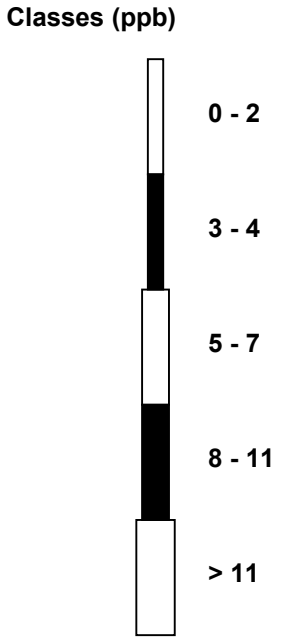
Wood Buffalo Environmental Association

Wind Rose Apr 2014

Total Reduced Sulphur (TRS) - ppb

Barge Landing (AMS 9)





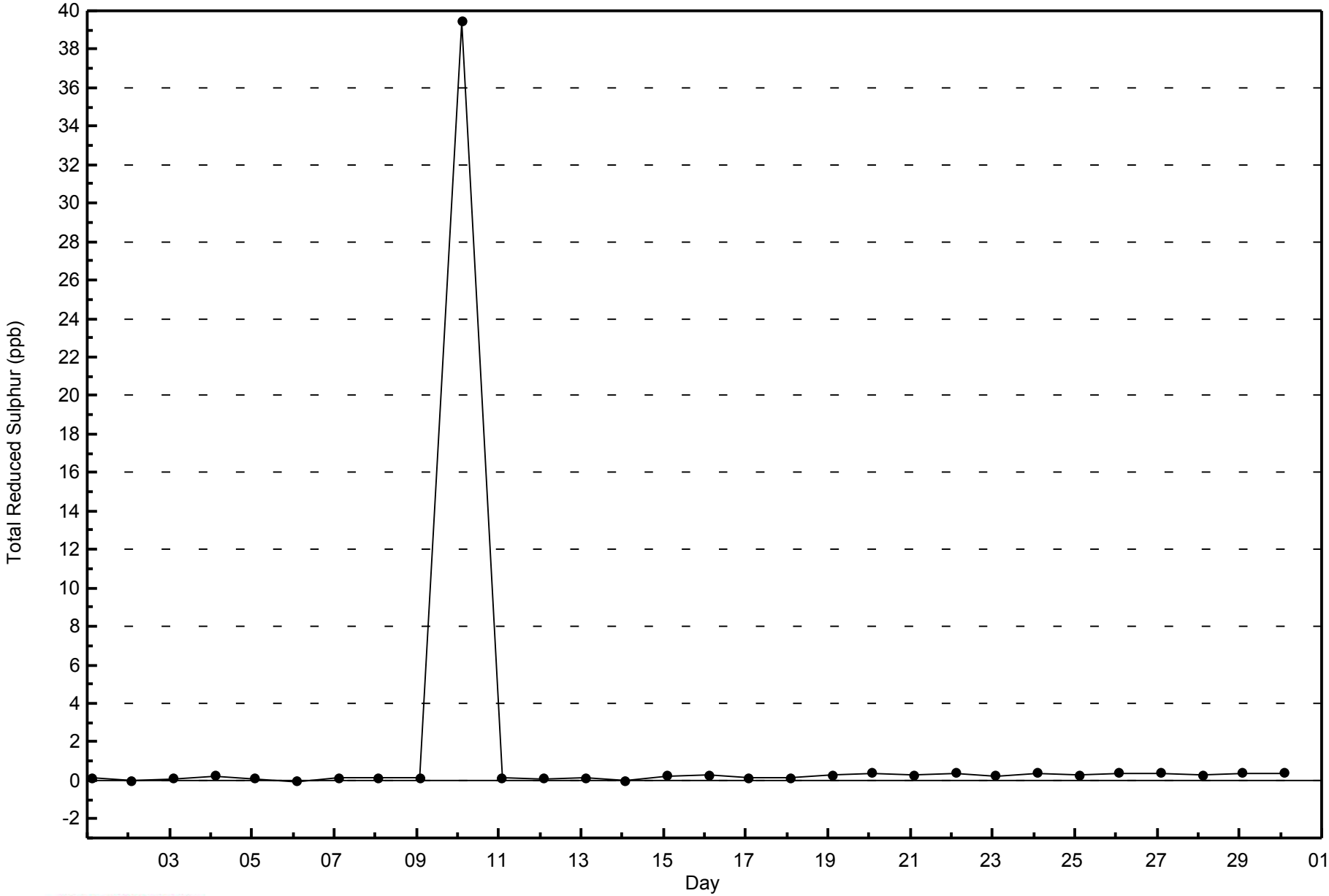
Total Number of Valid Hours: 676

WBEA NETWORK

Zero Responses

Total Reduced Sulphur (TRS) - ppb

Barge Landing - April 2014



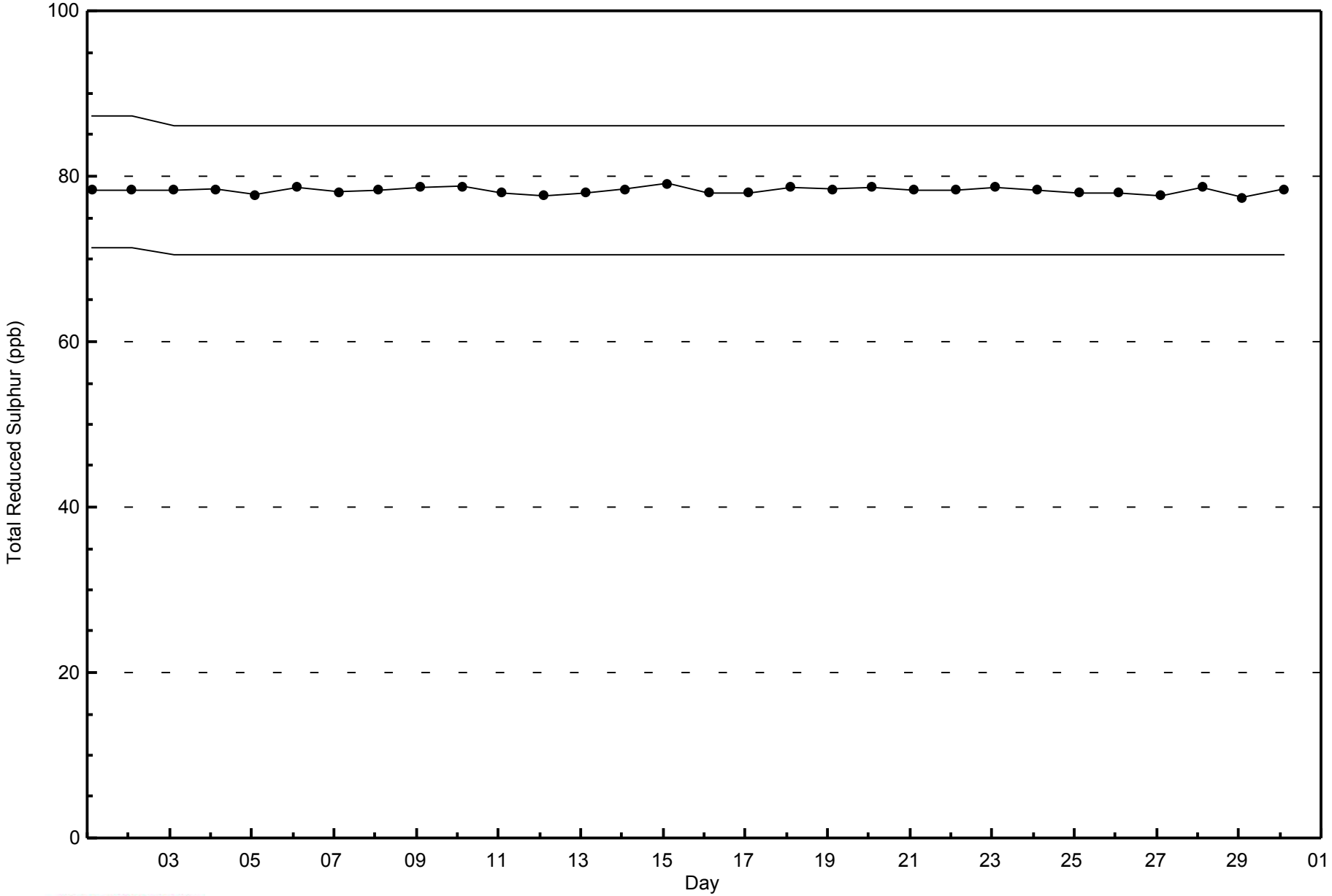
AURORA
ATMOSPHERICS INC.

WBEA NETWORK

Span Responses

Total Reduced Sulphur (TRS) - ppb

Barge Landing - April 2014



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Wood Buffalo Environmental Association

Summary of Hour Averages

Total Hydrocarbons (THC) - ppm

Barge Landing - April 2014

Maximum Value: 2.9 ppm on Apr 20 12:00

Maximum Daily Average: 2.5 ppm on Apr 30

Minimum Value: 1.8 ppm on Apr 8 19:00

Minimum Daily Average: 1.9 ppm on Apr 18

Maximum Diurnal Average: 2.1 ppm at hour 9

Minimum Diurnal Average: 2.0 ppm at hour 17

Monthly Average: 2.07 ppm

Percentiles: P_1 = 1.8 P_{10} = 1.9 Q_1 = 1.9 Median = 2.0 Q_3 = 2.2 P_{90} = 2.3 P_{99} = 2.7

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-Apr	2.1	Z	2.1	2.1	2.3	2.3	2.3	C	C	C	2.2	2.3	2.3	2.2	2.2	2.2	2.2	2.2	2.1	2.1	2.1	2.1	2.2	2.2	2.2	2.3
2-Apr	2.2	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	2.1	2.2
3-Apr	2.0	Z	2.0	2.0	2.0	2.0	2.0	2.1	2.2	2.1	2.3	2.2	2.1	2.1	2.1	2.2	2.3	2.4	2.5	2.1	2.0	2.0	2.0	2.0	2.1	2.5
4-Apr	2.1	Z	2.1	2.0	2.1	2.1	2.1	2.1	2.1	2.1	2.0	2.1	2.1	2.3	2.0	2.0	1.9	1.9	1.9	1.9	1.9	1.9	1.9	2.0	2.0	2.3
5-Apr	1.9	Z	1.9	1.9	1.9	1.9	1.9	1.9	2.0	2.1	2.1	2.1	2.1	2.1	2.0	1.9	1.9	2.0	2.2	2.2	2.2	2.2	2.1	1.9	2.0	2.2
6-Apr	1.9	Z	1.9	1.9	2.0	2.0	2.0	2.2	2.5	2.3	2.4	2.6	2.2	2.0	2.0	2.1	2.2	2.5	2.5	2.7	2.3	2.4	2.3	2.3	2.2	2.7
7-Apr	2.3	Z	2.3	2.3	2.3	2.2	2.2	2.1	2.0	2.1	2.1	2.2	2.2	2.1	2.1	2.1	2.0	2.0	2.2	1.9	2.1	2.1	1.9	2.2	2.1	2.3
8-Apr	2.4	Z	2.3	2.3	2.5	2.4	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	1.8	1.8	1.8	1.8	2.0	2.5
9-Apr	1.8	Z	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	1.9	1.9	2.1	2.1	2.2	2.0	2.0	2.0	1.9	1.9	2.2
10-Apr	1.9	Z	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	1.9	2.0	1.9	1.9	1.9	1.9	1.9	1.9	2.0	2.1
11-Apr	1.9	Z	1.9	1.9	1.9	1.9	1.9	1.9	1.9	2.0	2.0	1.9	2.0	2.0	1.9	1.9	1.9	1.9	2.0	1.9	2.0	2.0	2.0	1.9	1.9	2.0
12-Apr	2.1	Z	2.0	2.0	2.0	2.0	2.0	2.0	2.1	2.0	1.9	1.9	1.9	2.0	1.9	1.9	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.1
13-Apr	2.0	Z	2.0	2.0	2.0	2.0	2.1	2.0	2.0	2.0	2.2	2.2	2.2	2.1	2.1	2.0	2.0	2.0	2.0	2.1	2.2	2.1	2.1	2.1	2.1	2.2
14-Apr	2.0	Z	2.0	2.1	2.0	2.0	2.1	2.1	2.0	2.0	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	2.0	2.0	2.1
15-Apr	2.1	Z	2.2	2.1	2.0	2.0	1.8	1.9	2.0	1.9	2.0	1.9	1.9	1.9	1.9	1.9	1.9	1.9	1.9	1.9	2.0	2.0	2.0	2.1	2.0	2.2
16-Apr	2.1	Z	2.0	1.9	2.0	2.1	2.2	2.0	2.0	2.0	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	2.0	2.2
17-Apr	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	1.8	1.8	1.9	1.9	1.9	1.9	1.9	1.9
18-Apr	1.9	Z	1.9	1.8	1.9	1.8	1.8	1.8	1.8	1.8	1.8	1.8	1.8	1.8	1.8	1.8	1.8	1.8	1.9	1.9	1.9	1.9	2.0	1.9	1.9	2.0
19-Apr	1.9	Z	2.0	2.0	2.0	2.0	2.1	2.2	2.1	2.0	2.0	1.9	1.9	1.9	1.9	1.8	1.9	1.8	1.8	1.8	1.9	1.9	1.9	2.0	1.9	2.2
20-Apr	2.1	Z	2.5	2.3	2.3	2.3	2.3	2.2	2.8	2.2	2.3	2.9	2.6	2.4	2.1	2.0	2.0	2.2	2.0	2.0	2.0	2.0	2.1	2.2	2.2	2.9
21-Apr	2.3	Z	2.4	2.4	2.4	2.4	2.5	2.4	2.1	2.5	2.2	2.2	2.3	2.3	2.2	2.3	2.2	2.2	2.2	2.6	2.6	2.5	2.4	2.5	2.4	2.6
22-Apr	2.1	Z	2.1	2.1	2.1	2.1	2.1	2.4	2.4	2.4	2.2	2.1	2.0	1.9	1.9	2.0	1.9	1.9	2.0	2.0	2.0	2.0	2.3	2.8	2.1	2.8
23-Apr	2.5	Z	2.6	2.4	2.5	2.5	2.5	2.5	2.4	2.4	2.0	2.0	2.0	1.9	1.9	1.9	2.0	1.9	2.0	1.9	2.0	2.0	1.9	2.0	2.2	2.6
24-Apr	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	2.2	2.3	2.2	2.1	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.3
25-Apr	2.0	Z	2.1	2.0	2.1	2.1	2.0	2.0	2.0	2.1	2.2	2.0	2.0	2.1	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.1	2.1	2.1	2.2
26-Apr	2.1	Z	2.2	2.1	2.1	2.1	2.0	2.1	2.1	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.2
27-Apr	2.0	Z	2.0	2.0	2.0	2.0	2.0	2.0	2.0	1.9	1.9	1.9	2.0	1.9	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.1	2.1	2.0	2.1
28-Apr	2.1	Z	2.1	2.1	2.2	2.3	2.2	2.3	2.3	2.3	2.2	2.2	2.2	2.2	2.1	2.1	2.2	2.2	2.2	2.2	2.2	2.2	2.2	2.3	2.2	2.3
29-Apr	2.3	Z	2.2	2.2	2.3	2.5	2.5	2.7	2.7	2.4	2.4	2.3	2.2	2.2	2.2	2.2	2.1	2.2	2.2	2.2	2.3	2.5	2.5	2.4	2.3	2.7
30-Apr	2.6	Z	2.6	2.7	2.8	2.8	2.7	2.7	2.6	2.5	2.4	2.3	2.3	2.3	2.3	2.2	2.3	2.5	2.6	2.2	2.3	2.4	2.3	2.2	2.5	2.8
	2.1	--	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	2.0	2.0	2.1	2.1	2.1	Diurnal Average	
	2.6	--	2.6	2.7	2.8	2.8	2.7	2.7	2.8	2.5	2.4	2.9	2.6	2.4	2.3	2.3	2.3	2.5	2.6	2.7	2.6	2.5	2.5	2.8	Diurnal Maximum	

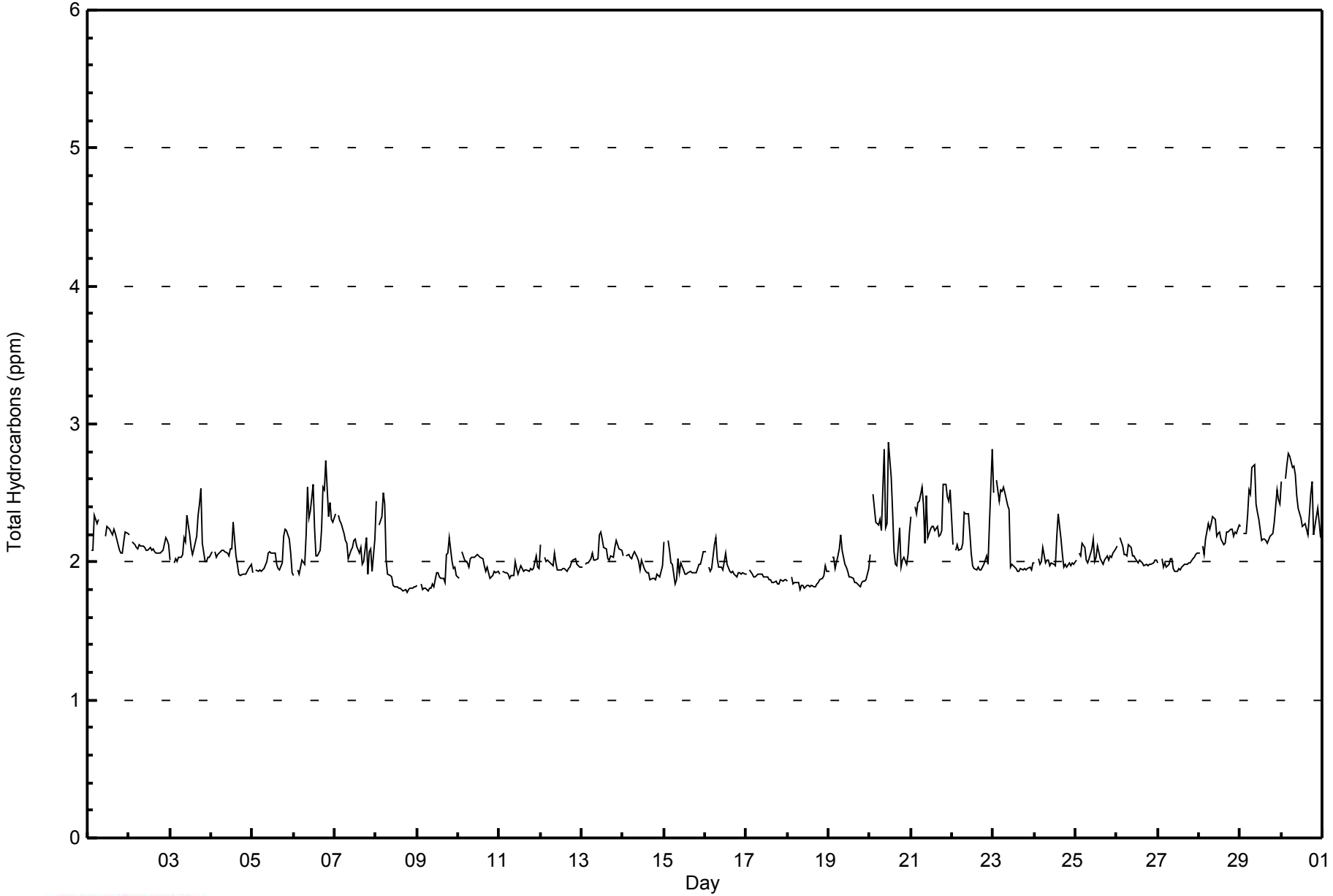
Z - zerospan C - Calibration

WBEA NETWORK

Hourly Averages

Total Hydrocarbons (THC) - ppm

Barge Landing - April 2014



AURORA
ATMOSPHERICS INC.

Concentration Ranges (ppm)	Number of Hours	%	Cumulative %
0 - 2.0	387	56.33	56.33
2.1 - 3.0	300	43.67	100.00
3.1 - 10.0	0	0.00	100.00
> 10.0	0	0.00	100.00

Total Number of Valid Hours: 687

Total Number of Hours: 720

WBEA NETWORK

Frequency Distribution

Total Hydrocarbons (THC) - ppm

Barge Landing - April 2014

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	21	30	55	34	18	30	53	33	18	10	5	27	6	9	13	21	383
2.1 - 3.0	10	70	34	12	5	9	29	29	36	13	12	9	2	2	6	16	294
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	100	89	46	23	39	82	62	54	23	17	36	8	11	19	37	677

Total Number of Valid Hours: 677

Total Number of Hours: 720

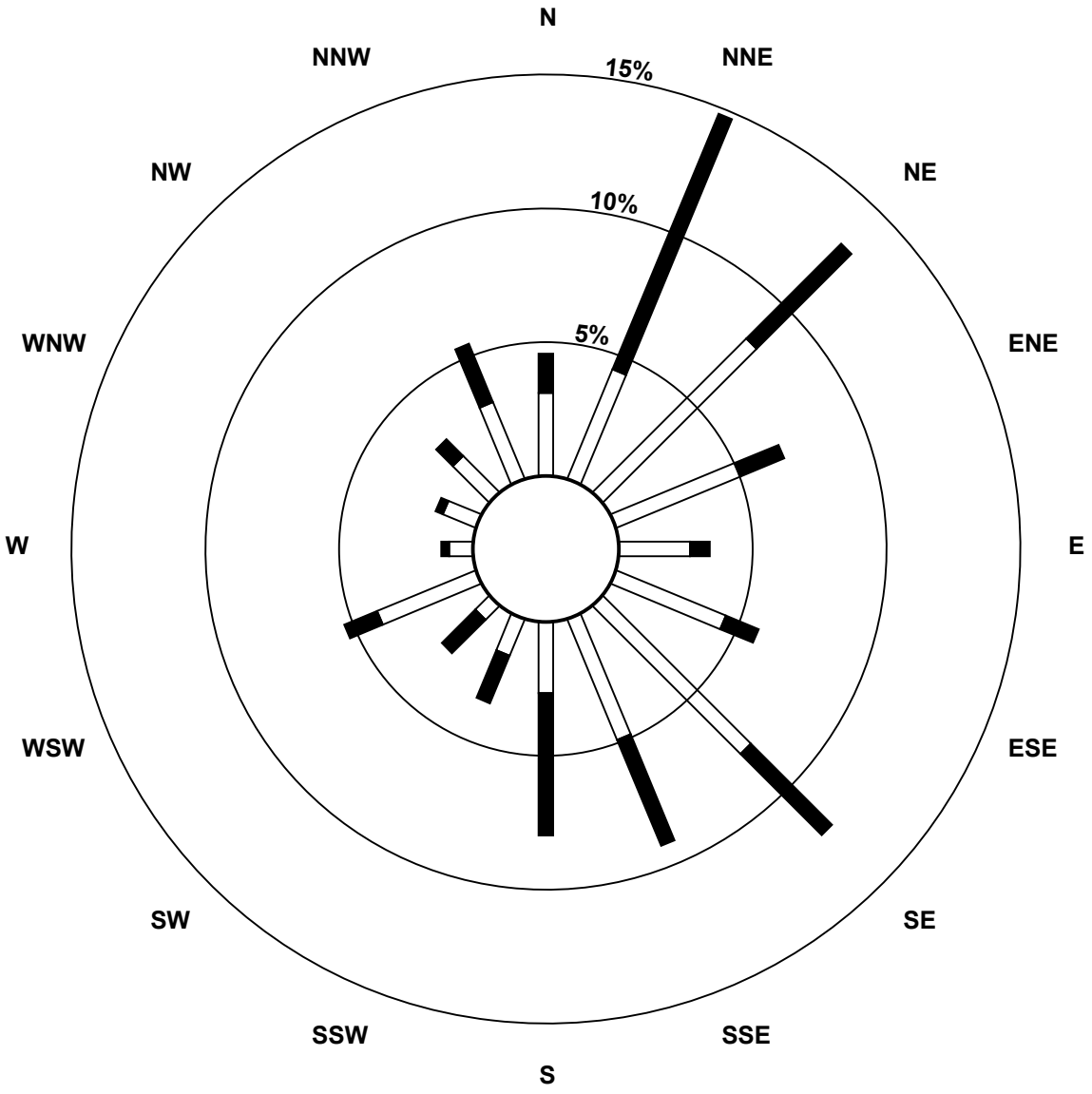
AURORA ATMOSPHERICS INC.

Wood Buffalo Environmental Association

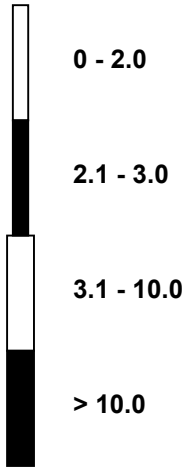
Wind Rose Apr 2014

Total Hydrocarbons (THC) - ppm

Barge Landing (AMS 9)



Classes (ppm)



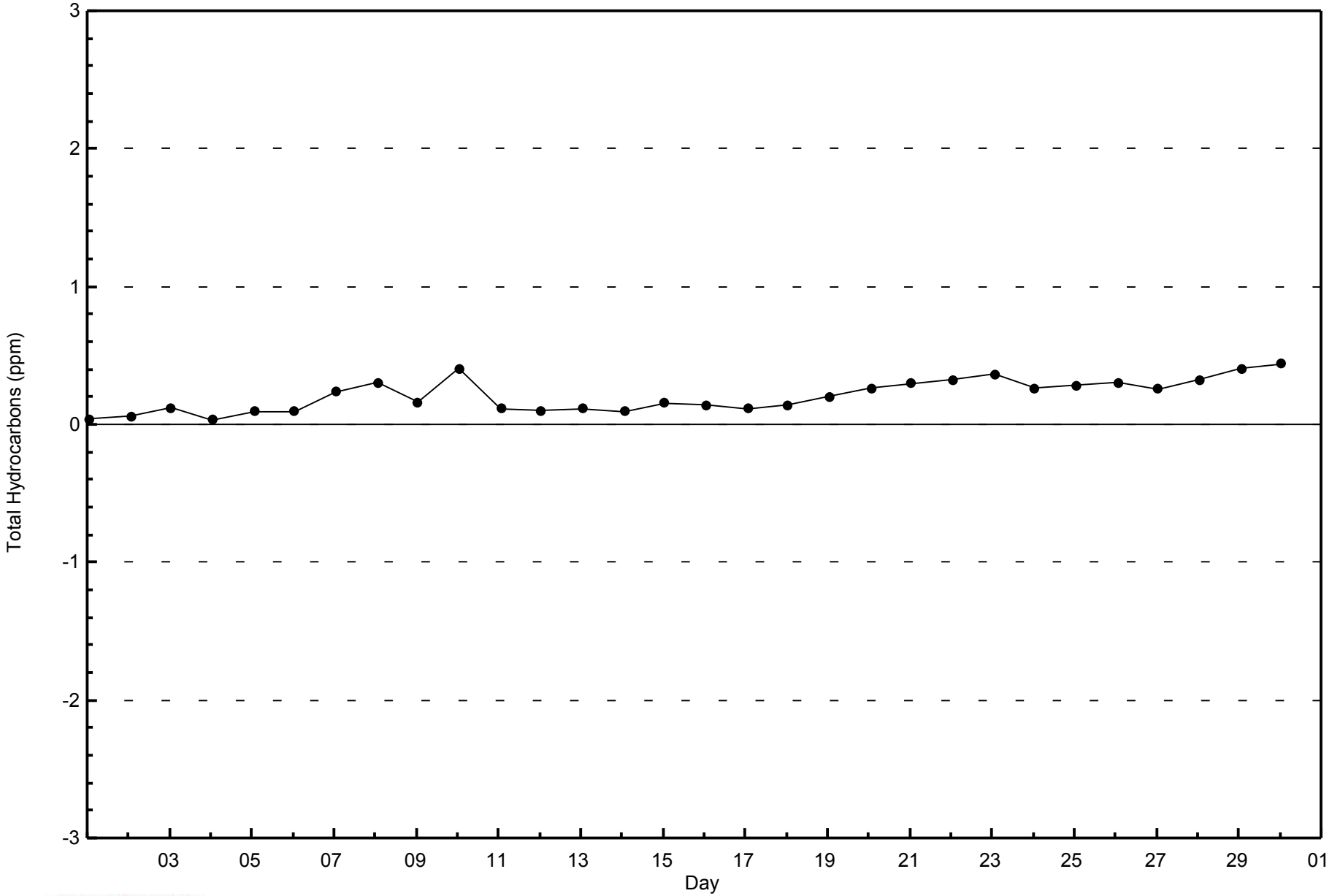
Total Number of Valid Hours: 677

WBEA NETWORK

Zero Responses

Total Hydrocarbons (THC) - ppm

Barge Landing - April 2014



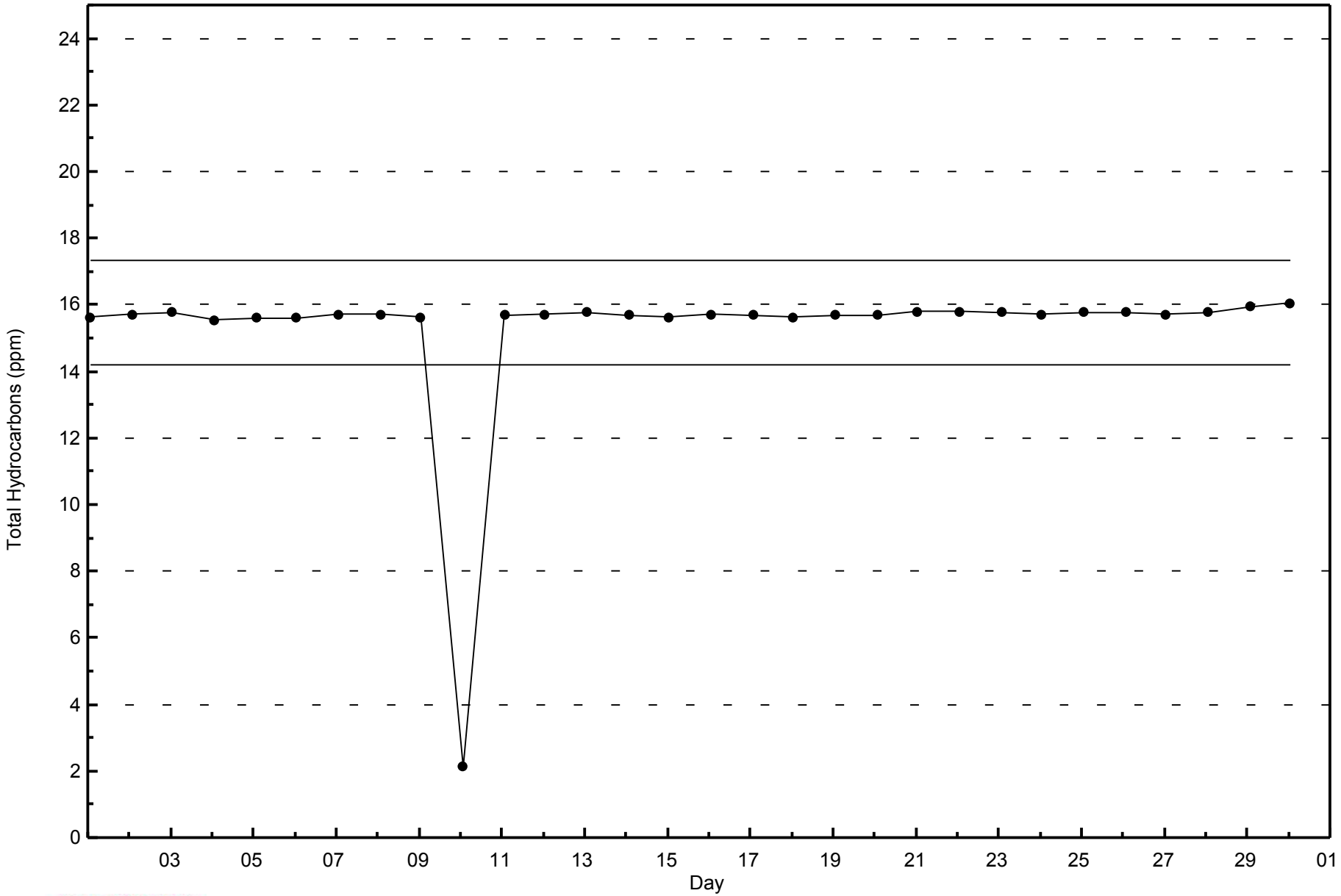
AURORA
ATMOSPHERICS INC.

WBEA NETWORK

Span Responses

Total Hydrocarbons (THC) - ppm

Barge Landing - April 2014



AURORA ATMOSPHERICS INC.

Maximum Value: 23.5 C on Apr 30 16:00

Maximum Daily Average: 14.8 C on Apr 30

Minimum Value: -19.7 C on Apr 3 06:00

Minimum Daily Average: -11.3 C on Apr 2

Maximum Diurnal Average: 8.0 C at hour 16

Minimum Diurnal Average: -2.9 C at hour 6

Monthly Average: 2.71 C

Percentiles: P_1 = -15.3 P_{10} = -7.5 Q_1 = -2.7 Median = 3.0 Q_3 = 7.7 P_{90} = 12.9 P_{99} = 21.1

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

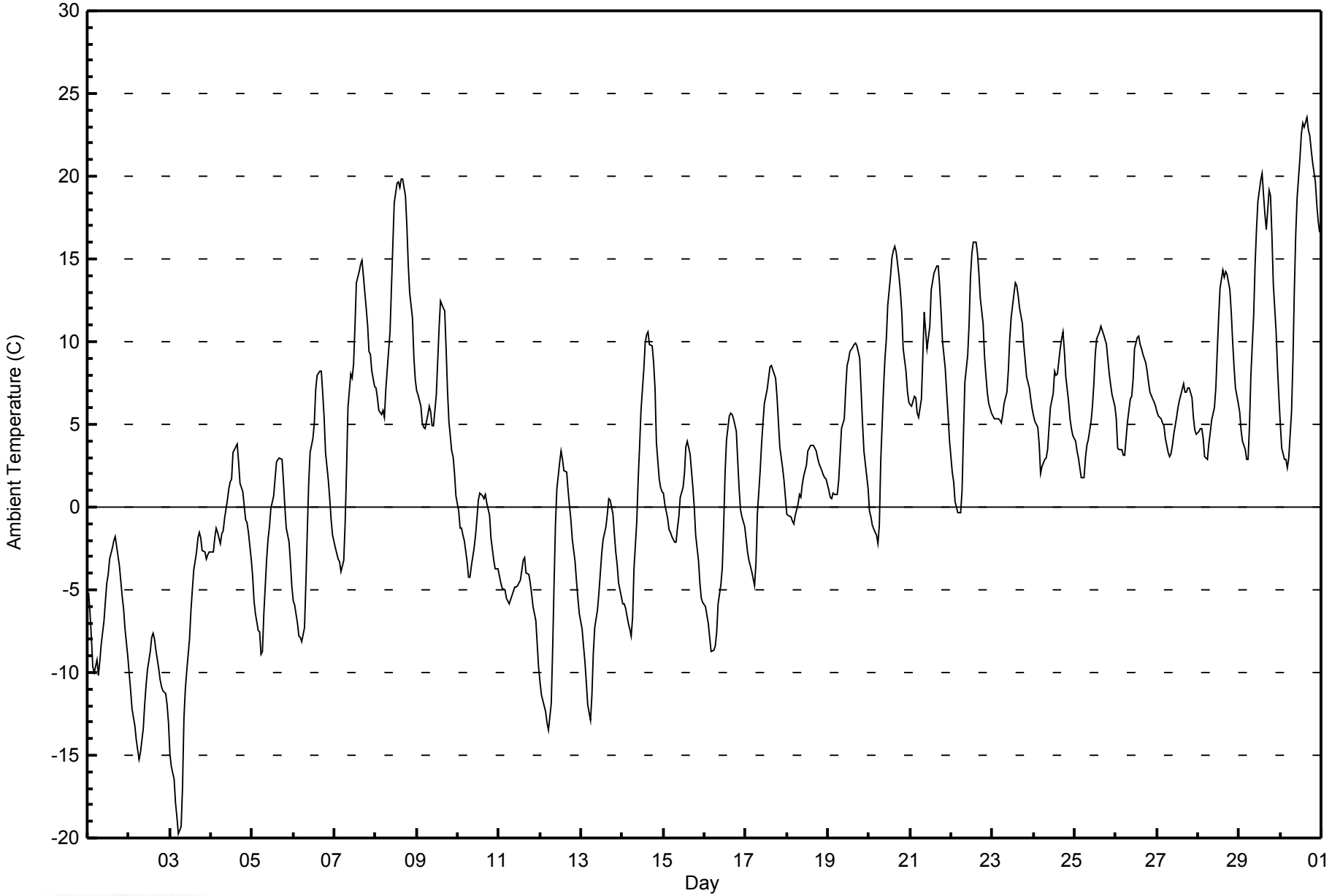
Day	Hourly Period Ending At (MST)																								Daily	Daily
	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24	Average	Maximum
1-Apr	-5.2	-6.4	-7.9	-9.7	-10.0	-9.2	-10.2	-9.4	-8.3	-6.8	-5.6	-4.6	-4.1	-3.2	-2.5	-2.1	-1.8	-2.4	-3.5	-4.5	-5.4	-6.2	-7.4	-9.1	-6.1	-1.8
2-Apr	-10.1	-11.1	-12.2	-13.3	-14.0	-14.7	-15.2	-14.8	-13.4	-11.9	-10.7	-9.8	-8.8	-7.9	-7.6	-7.9	-8.6	-9.8	-10.4	-10.8	-11.1	-11.3	-11.9	-13.1	-11.3	-7.6
3-Apr	-14.9	-15.7	-16.4	-17.9	-18.8	-19.7	-19.4	-17.0	-12.8	-11.0	-9.9	-7.9	-6.3	-5.0	-3.8	-2.8	-1.9	-1.5	-1.9	-2.6	-2.7	-3.1	-2.9	-2.7	-9.1	-1.5
4-Apr	-2.7	-2.7	-1.9	-1.3	-1.5	-2.2	-1.6	-1.5	-0.7	0.5	1.1	1.6	1.7	3.3	3.7	3.8	2.7	1.4	1.0	0.1	-0.8	-0.9	-1.5	-3.1	-0.1	3.8
5-Apr	-4.2	-5.7	-6.5	-7.5	-7.5	-8.9	-8.7	-6.4	-3.1	-1.9	-1.2	-0.1	0.7	1.7	2.7	2.9	2.9	2.8	1.5	0.0	-1.3	-2.1	-3.3	-4.8	-2.4	2.9
6-Apr	-5.7	-5.9	-7.0	-7.8	-7.9	-8.1	-7.3	-4.5	-1.4	1.4	3.3	4.2	5.1	7.1	7.9	8.2	8.2	6.9	5.5	3.3	1.6	0.5	-0.8	-1.7	0.2	8.2
7-Apr	-2.4	-2.8	-3.1	-3.3	-3.9	-3.2	-1.0	2.3	6.1	8.0	7.8	8.7	10.9	13.5	14.3	14.7	14.9	14.0	12.1	11.0	9.4	9.3	8.2	7.3	6.4	14.9
8-Apr	7.2	6.6	5.9	5.6	5.8	5.4	7.1	8.3	10.6	13.2	15.9	18.4	19.6	19.6	19.3	19.8	19.9	18.8	17.0	14.6	13.0	11.4	9.1	7.7	12.5	19.9
9-Apr	7.0	6.7	6.1	5.1	4.8	4.7	5.6	6.1	5.8	4.9	4.9	6.8	8.8	10.9	12.4	12.0	11.9	9.6	7.0	5.2	3.4	3.1	2.0	0.7	6.5	12.4
10-Apr	-0.2	-1.3	-1.3	-1.7	-2.0	-3.3	-4.3	-4.2	-3.5	-2.5	-1.7	-0.7	0.4	0.8	0.7	0.5	0.7	0.3	-0.5	-1.8	-2.5	-3.2	-3.8	-3.8	-1.6	0.8
11-Apr	-4.2	-4.6	-4.9	-5.0	-5.5	-5.7	-5.8	-5.6	-5.1	-4.8	-4.9	-4.7	-4.4	-3.8	-3.2	-3.1	-4.0	-4.1	-4.6	-5.2	-6.0	-6.8	-8.3	-9.8	-5.2	-3.1
12-Apr	-10.6	-11.3	-12.0	-12.4	-13.1	-13.5	-11.8	-8.6	-4.7	-1.0	1.1	2.7	3.4	2.9	2.2	2.1	1.0	0.1	-0.8	-2.0	-3.3	-4.5	-5.5	-6.4	-4.4	3.4
13-Apr	-7.3	-8.4	-9.3	-10.6	-11.9	-12.9	-11.4	-8.8	-7.3	-6.2	-5.2	-4.0	-2.8	-2.0	-1.2	-0.4	0.5	0.4	-0.4	-1.6	-2.7	-3.4	-4.6	-5.4	-5.3	0.5
14-Apr	-5.9	-5.9	-6.1	-7.0	-7.3	-7.8	-6.7	-3.7	-0.8	1.7	3.6	5.9	8.3	9.9	10.4	10.6	9.8	9.7	8.8	7.2	3.9	1.7	1.2	0.9	1.8	10.6
15-Apr	0.8	0.1	-0.7	-1.3	-1.5	-1.8	-2.1	-2.1	-1.3	-0.6	0.6	1.2	2.1	3.6	4.0	3.3	2.2	1.2	0.0	-1.7	-3.2	-4.6	-5.5	-5.7	-0.5	4.0
16-Apr	-6.0	-6.5	-7.1	-7.9	-8.7	-8.7	-8.4	-7.5	-5.8	-4.7	-3.6	-1.1	2.1	4.0	5.5	5.7	5.6	5.4	4.6	2.8	1.1	-0.1	-0.6	-1.2	-1.7	5.7
17-Apr	-2.0	-2.7	-3.2	-3.9	-4.3	-4.8	-3.4	-0.4	2.2	3.8	5.1	6.3	7.1	7.8	8.4	8.6	8.3	7.8	6.7	5.2	3.6	2.4	1.6	0.6	2.5	8.6
18-Apr	-0.4	-0.5	-0.6	-0.8	-1.0	-0.5	0.2	0.8	0.6	1.4	1.9	2.6	3.4	3.6	3.7	3.7	3.6	3.4	2.9	2.6	2.2	1.9	1.8	1.7	1.6	3.7
19-Apr	1.0	0.6	0.5	0.8	0.7	0.8	1.6	3.1	4.7	5.3	7.1	8.5	8.9	9.4	9.7	9.8	9.9	9.8	9.0	7.0	5.1	3.4	2.6	1.1	5.0	9.9
20-Apr	-0.2	-0.6	-1.1	-1.5	-1.7	-2.2	-1.1	2.8	7.2	9.0	10.2	12.2	14.0	15.1	15.5	15.7	15.5	14.0	13.0	11.8	9.6	8.2	7.0	6.4	7.4	15.7
21-Apr	6.2	6.1	6.7	6.6	5.7	5.4	6.6	9.0	11.7	10.7	9.6	11.0	13.1	13.7	14.2	14.6	14.6	13.4	11.9	10.1	8.4	7.0	5.6	4.1	9.4	14.6
22-Apr	2.1	1.5	0.3	0.0	-0.3	-0.3	1.0	4.4	7.5	9.1	11.0	13.9	15.4	16.0	16.0	15.4	14.2	12.6	11.1	9.2	8.0	7.0	6.3	5.7	7.8	16.0
23-Apr	5.5	5.4	5.3	5.4	5.3	5.1	5.6	6.3	7.0	8.2	10.2	11.5	12.9	13.6	13.4	12.8	12.0	11.1	9.9	8.9	7.9	7.2	6.5	5.9	8.4	13.6
24-Apr	5.5	5.2	4.8	3.9	2.0	2.4	2.8	3.0	3.5	4.7	6.0	6.9	8.2	7.9	8.1	9.5	10.1	10.6	9.4	7.9	6.4	5.3	4.8	4.3	6.0	10.6
25-Apr	3.9	3.4	3.0	2.4	1.7	1.7	2.9	3.7	4.1	5.1	6.1	7.5	9.2	10.1	10.6	10.9	10.7	10.5	9.9	8.9	8.1	7.3	6.8	6.1	6.4	10.9
26-Apr	5.3	3.5	3.5	3.4	3.2	3.1	4.1	5.2	6.6	6.7	7.7	9.6	10.3	10.4	9.8	9.5	9.3	8.8	8.2	7.6	7.0	6.5	6.3	6.1	6.7	10.4
27-Apr	5.8	5.5	5.3	5.1	4.9	4.2	3.3	3.0	3.2	3.8	4.4	5.4	6.1	6.4	6.8	7.4	7.0	6.9	7.2	7.2	6.6	5.4	4.7	4.4	5.4	7.4
28-Apr	4.6	4.8	4.8	4.1	3.0	2.9	3.8	4.5	5.2	6.0	7.2	9.4	11.4	13.2	14.3	13.9	14.2	14.1	13.2	11.8	10.0	8.5	7.2	6.3	8.3	14.3
29-Apr	5.7	4.6	4.0	3.5	2.9	2.9	5.0	7.9	11.6	14.7	16.8	18.5	19.7	20.2	18.9	17.7	16.8	19.1	18.8	16.5	13.5	10.6	8.4	6.6	11.9	20.2
30-Apr	5.0	3.6	2.9	2.9	2.4	3.0	5.7	8.9	13.1	16.5	18.7	21.1	22.6	23.3	23.0	23.5	22.8	22.4	21.6	20.8	19.6	18.3	17.3	16.6	14.8	23.5
	-0.5	-1.1	-1.6	-2.1	-2.6	-2.9	-2.1	-0.5	1.4	2.8	3.9	5.4	6.6	7.5	7.9	8.0	7.8	7.2	6.3	5.0	3.6	2.6	1.7	0.9	Diurnal Average	
	7.2	6.7	6.7	6.6	5.8	5.4	7.1	9.0	13.1	16.5	18.7	21.1	22.6	23.3	23.0	23.5	22.8	22.4	21.6	20.8	19.6	18.3	17.3	16.6	Diurnal Maximum	

WBEA NETWORK

Hourly Averages

Ambient Temperature (AT) - C

Barge Landing - April 2014



AURORA ATMOSPHERICS INC.

Concentration Ranges (C)	Number of Hours	%	Cumulative %
-50 - -20	0	0.00	0.00
-20 - 0	260	36.11	36.11
0 - 10	346	48.06	84.17
10 - 20	104	14.44	98.61
> 20	10	1.39	100.00

Total Number of Valid Hours: 720

Total Number of Hours: 720

Wood Buffalo Environmental Association

Summary of Hour Averages

Wind Speed (WS) - km/h

Barge Landing - April 2014

Maximum Speed: 24 km/h on Apr 8 14:00

Maximum Daily Speed Average: 11.3 km/h on Apr 15

Minimum Speed Value: 0 km/h on Apr 19 06:00

Minimum Daily Speed Average: 1.0 km/h on Apr 6

Maximum Diurnal Speed Average: 3.7 km/h at hour 18

Minimum Diurnal Speed Average: 0.7 km/h at hour 9

Monthly Average Velocity: 2.3 km/h 80.1 deg

Percentiles: $P_1 = 1$ $P_{10} = 3$ $Q_1 = 5$ Median = 7 $Q_3 = 10$ $P_{90} = 12$ $P_{99} = 20$

Hours in Service:	720
Hours of Data:	710
Hours of Missing Data:	10
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-Apr	S7	SW4	NW3	NNW2	NNE4	NNE6	N5	NNE8	NNE8	NNE8	NE8	NE8	NNE8	NNE8	NNE8	NE7	NE7	NNE9	NE8	NE9	NE8	NE7	NNE8	NNE8	NNE5.7	NE9
2-Apr	NNE8	NNE9	NNE11	NNE10	NNE10	NNE10	NNE9	NNE9	NNE10	NNE10	NNE11	NNE11	NNE11	NNE11	NNE11	NNE11	NNE11	NNE11	NNE11	NNE9	NNE9	NE8	NNE7	N6	NNE9.7	NNE11
3-Apr	NNW5	NNW5	NNW5	NNW5	NNW5	NNW4	NNW4	NNW4	NNW5	N6	NE6	N5	NNE4	NNE6	NE6	NNE6	NNE5	NNE5	NNE3	SE5	SE9	SE12	SSE12	SSE12	NE2.3	SSE12
4-Apr	SSE11	SE10	SE11	SSE13	SE13	SSE11	SSE13	SSE14	SSE11	SSE12	S12	S10	S7	WSW6	W7	WNW13	NW15	NW12	WNW12	WNW13	WNW12	NW11	NW10	WNW5	SSW3.8	NW15
5-Apr	WNW4	W4	WSW5	WSW5	W2	WNW1	W3	N2	N3	NE5	NE6	E6	NE6	ENE7	ENE9	ENE9	ENE7	NE7	NNE6	NNE7	N6	NNE6	N4	NNW4	NNE3.0	ENE9
6-Apr	NNW3	NNW2	NNW2	NNW3	N3	WSW1	SW3	S2	SSW4	SSW7	SW7	SSW7	S6	S6	SSW7	SSE7	SSE2	NNE7	NNE6	NNE4	NNE3	NNW3	NW1	ESE1	SW1.0	SSW7
7-Apr	WSW2	SSW3	SE2	SE4	SSE3	S4	SSE3	SW4	WSW5	NW3	NNE5	NNE5	ENE2	SSW6	SSW10	S10	S10	SSW7	SSW7	SSW6	S6	SSW8	S6	S7	SSW3.8	S10
8-Apr	S7	S4	S5	S4	S3	SE5	S7	S6	SSW8	SW13	WSW16	WSW19	WSW20	WSW24	WSW21	WSW20	WSW23	WSW24	W22	W16	WSW15	WNW9	WSW5	SSW4	WSW11.0	WSW24
9-Apr	WSW7	W9	WSW8	SSW7	SW8	WSW12	WSW13	W10	WNW19	NW12	NW13	NNW9	NNW10	NNW9	NW14	NNW17	NW17	N9	ENE7	NE6	SW5	WSW6	NNW4	NNW5	WNW6.8	WNW19
10-Apr	N5	N4	NNE5	NNE4	NE8	NE9	NE9	NE8	NE8	NE9	NE9	NE9	NE10	NE10	NE10	NNE9	NNE10	NNE9	NE10	NE9	NE9	NE9	ENE8	ENE7	NE7.9	NE10
11-Apr	E8	E7	ENE9	ENE9	NE8	NE8	NE9	NE8	NE10	NNE11	NNE13	NNE13	NNE13	NNE14	NNE15	NNE15	NNE15	N14	NNE14	N12	N9	N7	NNW4	NW3	NNE9.5	NNE15
12-Apr	NW3	W3	WSW4	WSW6	W3	SW2	SSW4	SSW6	S6	SW5	WSW4	WSW5	NW10	N8	N10	N9	NNE8	NNE8	NE8	NNE11	NNE10	N12	N12	N11	NNW3.6	N12
13-Apr	N9	N7	N6	NNW4	NW3	NW3	NNW4	NNW6	N6	NE7	NE8	ENE8	ENE7	ENE6	ENE8	ENE8	ESE5	ENE7	E4	SE5	E4	ESE4	ESE5	SE6	NE3.8	N9
14-Apr	SE7	SSE7	SE6	SE8	SE9	SE7	SE6	SSE9	S10	S10	SSE10	S10	S11	S11	S10	S9	SE8	SE8	SE9	E7	N11	NNW7	N8	N7	SSE5.4	S11
15-Apr	N9	NNE10	NNE9	NNE10	NNE10	NE11	NE11	NE10	NE9	NE10	NE10	NNE11	NNE11	NE12	NE13	NNE14	NNE15	NNE14	NNE15	NNE15	NNE14	NNE13	NNE11	NE10	NNE11.3	NNE15
16-Apr	NE10	NE10	NE10	NE10	NE8	NNE8	NNE8	NE8	NE8	ENE8	ENE5	NNW6	NNW5	S3	SSE12	SE12	SE11	SE12	SE12	ESE11	SE11	SE9	SE8	SSE8	E5.6	SE12
17-Apr	SSE6	SSE6	SSE6	SSE6	SSE7	SE5	SE5	SSE9	SSE10	SSE13	SE14	SE15	SE17	SE14	SSE15	SE14	SE14	SE15	SE13	SE12	ESE10	ESE9	ESE9	ESE7	SE10.1	SE17
18-Apr	ESE7	ESE7	E7	E8	E7	E5	E6	ESE8	ESE9	ESE10	ESE8	ESE9	SE9	ESE8	ESE9	SE9	SE8	SSE8	S7	S4	SSE1	AF	AF	ESE4	ESE6.7	ESE10
19-Apr	NW2	NNW3	NNE1	AF	AF	WSW0	AF	ESE3	SW4	WSW6	SSW4	SSE4	SSE5	ESE5	E7	E7	ESE9	SE12	SE13	ESE8	ESE7	ESE4	ENE4	ENE3	ESE3.7	SE13
20-Apr	NNE2	NNE1	AF	AF	AF	AF	AF	WSW3	W2	NNE3	NE6	NE6	ENE7	ENE6	ENE7	NE8	NE7	NE5	E4	E3	SE3	SSE5	SSE6	SSE5	ENE3.1	NE8
21-Apr	SE5	SSE6	SSE5	SE5	SE2	SSW4	SSE5	SSE4	WSW3	NNW9	N6	NE7	NE9	NE8	NE7	NE8	NE9	NNE9	NNE9	NNE8	NNE8	NE7	NNE6	N4	NE3.6	NNE9
22-Apr	NNW4	NNW5	NNW4	NNW4	NNW4	NNW3	NNW3	NNW4	NNW5	NNE7	NNE10	NNE10	ENE12	ENE12	ENE12	ENE13	ENE14	ENE14	ENE11	NE9	NE10	NE7	NNE5	NNE7	NE6.6	ENE14
23-Apr	NNE8	NNE8	NNE9	NNE9	NNE9	NNE9	NNE9	NNE10	NNE11	NE10	NE11	NE11	ENE11	E13	E14	ENE15	ENE16	ENE14	ENE12	ENE11	ENE11	ENE11	ENE11	ENE10	NE10.0	ENE16
24-Apr	ENE9	ENE8	NE9	NE8	NE7	NE7	NE9	NE8	NE8	NE9	NE9	NE9	ESE4	SW8	WSW6	WNW3	SE2	ESE8	E11	E11	E10	ESE11	ESE9	ESE8	ENE5.8	E11
25-Apr	ESE6	ENE5	E4	NE3	E2	ESE2	ESE3	WSW1	N5	NE5	NE5	NE5	N3	NE5	NE5	ENE4	E5	SE7	SSE6	SSE7	S5	SE7	SE7	SE5	E3.0	SE7
26-Apr	SE4	ESE5	ESE5	ESE4	ESE5	SE5	SSE6	S8	SSE11	S11	SSE12	SSE12	SE11	SSE10	SE9	SE11	SE12	SE12	SE12	SE11	SE9	SE10	SE11	SE9	SE8.5	SE12
27-Apr	SE10	SE8	SE8	SE7	ESE8	ESE10	ENE5	NE4	NE4	SE4	SSE7	SSE13	SE16	SE13	SE11	SE9	SSE9	SSE9	SSE10	SSE11	SSE10	SSE6	SE6	SSE5	SE7.9	SE16
28-Apr	SE5	SSE6	SSE4	S2	SW2	SSE2	SSE3	SW5	SW5	S5	S6	S4	WSW5	WSW2	WSW6	W3	E4	ENE4	ENE3	SE4	SE8	SE8	SE6	SE6	SSE3.0	SE8
29-Apr	SE5	SE5	SE6	SE7	SSE6	SSE7	SSE9	S8	SSW7	SSW5	S6	SW10	SW12	SW10	SW10	SW7	SSW6	WNW6	NW8	NNW3	NNE2	SE3	SE4	NW1	SSW4.1	SW12
30-Apr	ESE3	SSE3	SSE4	S4	SSE4	SSE5	S5	S6	S7	S7	S9	SSE11	S13	S13	S13	S11	S7	S4	S5	S6	SSW6	S5	SSW4	WSW6	S6.3	S13
	E1.8	E1.8	ENE2.0	E2.0	ENE2.2	E2.0	E1.7	E1.3	ENE0.7	ENE1.4	E2.5	E2.6	E2.3	E2.3	E2.4	ENE2.9	ENE3.1	ENE3.7	ENE3.6	ENE3.4	ENE2.7	E2.8	E2.5	E2.2	Diurnal Average	
	SSE11	NE10	NNE11	SSE13	SE13	WSW12	WSW13	SSE14	WNW19	SW13	WSW16	WSW19	WSW20	WSW24	WSW21	WSW20	WSW23	WSW24	W22	WSW16	WSW15	NNE13	SSE12	SSE12	Diurnal Maximum	

AF - Analyzer Failure

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

Wood Buffalo Environmental Association

Summary of Hour Standard Deviations

Wind Speed (WS) - km/h

Barge Landing - April 2014

Number of Exceedences (AAAQO): 1-hr: 0 24-hr: 0
Maximum Value: 8 km/h on Apr 8 14:00

Minimum Value: 0 km/h on Apr 19 02:00

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:	710
Hours of Missing Data:	10
Hours of Calibration:	0
Percent Operational Time:	98.6

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-Apr	3	2	2	1	1	2	1	2	2	2	2	3	2	2	2	2	2	2	2	3	3	3	3	3	3
2-Apr	2	3	3	3	3	2	3	2	3	3	3	3	3	3	3	3	3	3	3	3	2	3	2	1	3
3-Apr	1	1	1	1	1	1	1	2	2	2	2	2	2	2	2	1	1	1	1	1	3	4	4	4	4
4-Apr	4	3	4	5	4	4	5	5	4	4	4	4	3	2	3	6	6	4	5	5	5	4	4	1	6
5-Apr	1	1	1	2	2	2	1	1	1	1	2	2	2	2	3	3	3	2	2	2	2	1	1	1	3
6-Apr	1	1	0	1	2	1	1	1	2	2	2	2	2	2	3	2	2	2	2	1	1	1	1	2	3
7-Apr	1	1	2	1	1	1	1	1	1	1	1	1	2	3	3	4	4	2	3	2	2	2	2	2	4
8-Apr	2	1	1	1	1	2	2	2	3	3	5	6	7	8	7	6	7	8	8	5	4	4	2	2	8
9-Apr	3	3	2	2	2	4	6	6	8	5	5	3	3	4	5	7	6	6	3	3	1	2	3	1	8
10-Apr	1	1	2	1	2	3	3	2	2	3	3	3	3	3	3	3	2	3	3	3	3	3	3	3	3
11-Apr	3	2	3	3	3	3	3	3	3	3	4	4	4	4	4	5	5	4	4	4	3	2	1	1	5
12-Apr	1	0	1	1	1	1	1	2	2	2	2	2	4	3	3	3	3	4	3	4	3	4	4	3	4
13-Apr	3	2	1	1	1	1	1	2	2	2	3	3	2	3	3	3	3	3	2	1	1	1	1	1	3
14-Apr	1	2	1	2	2	2	2	3	3	3	3	4	4	4	3	3	3	3	3	2	4	3	3	3	4
15-Apr	3	3	2	2	3	4	3	3	3	3	3	3	3	4	4	4	4	4	4	4	4	4	3	3	4
16-Apr	3	4	3	3	3	2	2	3	3	3	2	2	3	5	5	5	4	4	3	3	3	2	2	2	5
17-Apr	1	2	1	1	1	1	2	4	3	5	5	5	6	5	5	5	5	5	4	3	2	3	2	2	6
18-Apr	2	2	2	2	2	2	2	3	3	3	2	3	3	3	3	3	3	3	3	2	1	AF	AF	4	4
19-Apr	1	0	1	AF	AF	1	AF	1	2	2	2	3	3	2	3	2	3	3	3	2	2	1	1	1	3
20-Apr	1	1	AF	AF	AF	AF	AF	1	1	2	2	2	2	2	3	3	3	1	1	1	1	1	1	2	3
21-Apr	1	1	1	1	1	2	2	1	2	3	2	3	3	3	2	2	2	3	2	2	2	2	2	2	3
22-Apr	1	1	1	1	1	1	1	1	1	2	3	3	4	4	4	4	5	4	4	3	3	2	1	2	5
23-Apr	2	2	2	2	2	2	2	2	3	3	4	4	4	4	5	5	5	5	4	3	4	3	3	3	5
24-Apr	3	2	3	3	2	3	3	3	3	3	3	3	2	2	3	1	3	3	4	4	3	3	3	2	4
25-Apr	2	1	1	1	1	1	1	1	1	1	2	2	2	2	2	2	2	3	2	2	2	1	1	2	3
26-Apr	1	1	1	1	1	2	2	3	3	4	4	4	3	4	3	3	4	4	4	3	3	3	3	2	4
27-Apr	3	2	2	2	2	4	2	1	1	2	4	5	5	4	4	3	3	3	3	3	3	2	1	1	5
28-Apr	1	2	1	2	1	2	1	2	1	2	2	2	2	2	2	2	1	2	1	1	2	2	1	2	2
29-Apr	1	2	1	1	2	2	3	2	2	2	3	4	4	4	4	4	2	3	3	1	1	2	1	1	4
30-Apr	1	1	2	1	1	1	2	2	2	2	2	4	5	5	5	4	3	1	1	2	2	1	1	2	5
	4	4	4	5	4	4	6	6	8	5	5	6	7	8	7	7	7	8	8	5	5	4	4	4	
	Diurnal Maximum																								

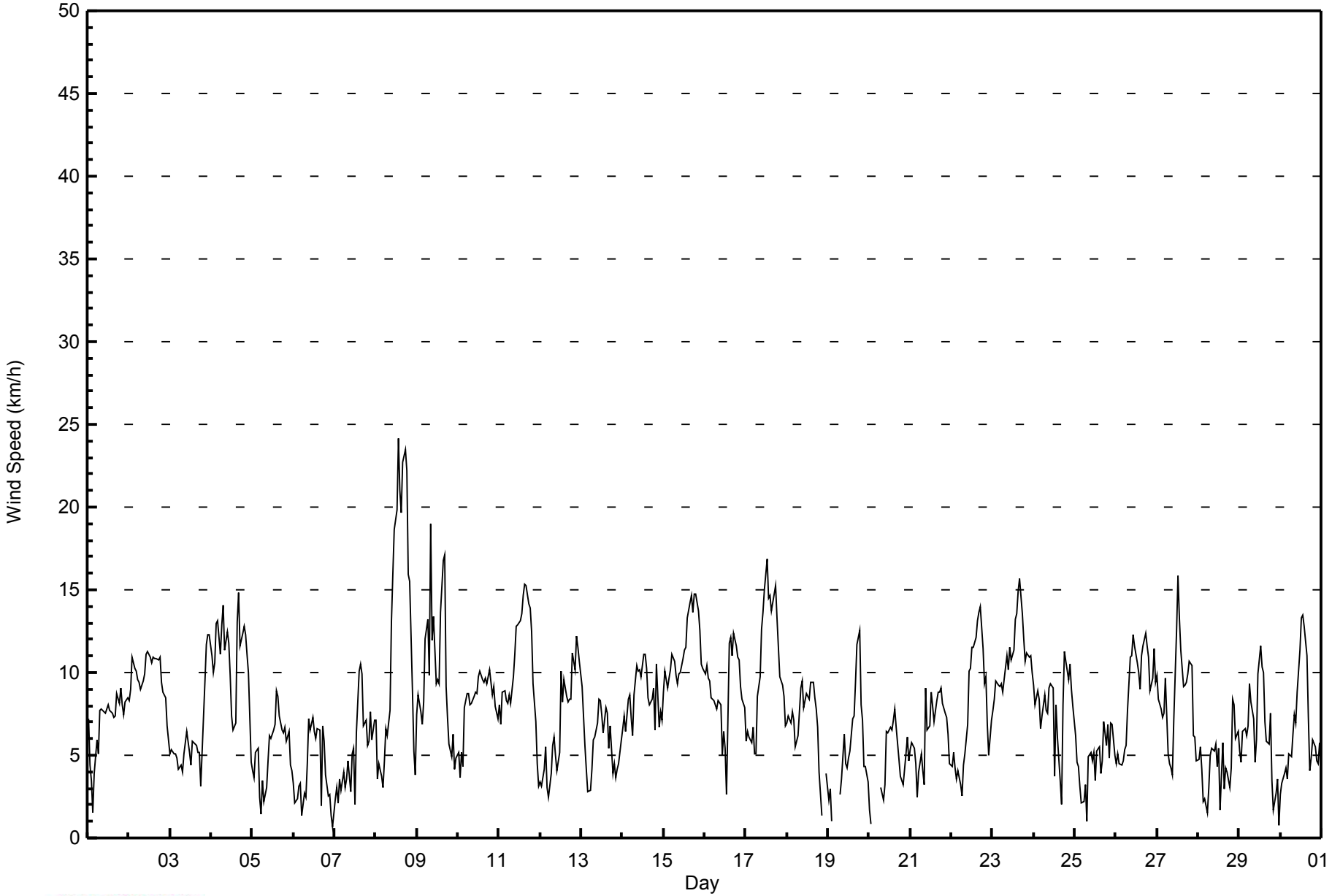
AF - Analyzer Failure

WBEA NETWORK

Hourly Averages

Wind Speed (WS) - km/h

Barge Landing - April 2014



AURORA
ATMOSPHERICS INC.

Wind Speed Ranges (km/h)	Number of Hours	%	Cumulative %
0 - 5	216	30.42	30.42
6 - 11	398	56.06	86.48
12 - 19	89	12.54	99.01
20 - 28	7	0.99	100.00
29 - 38	0	0.00	100.00
> 38	0	0.00	100.00

Total Number of Valid Hours: 710

Total Number of Hours: 720

WBEA NETWORK

Frequency Distribution

Wind Speed (WS) - km/h

Barge Landing - April 2014

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	17	10	9	9	16	21	20	17	9	9	15	7	4	9	33	216
6 - 11	19	74	78	30	13	25	43	35	34	15	7	9	3	2	4	7	398
12 - 19	3	16	2	9	2	0	21	12	4	0	2	6	0	5	6	1	89
20 - 28	0	0	0	0	0	0	0	0	0	0	0	6	1	0	0	0	7
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	33	107	90	48	24	41	85	67	55	24	18	36	11	11	19	41	710

Total Number of Valid Hours: 710

Total Number of Hours: 720

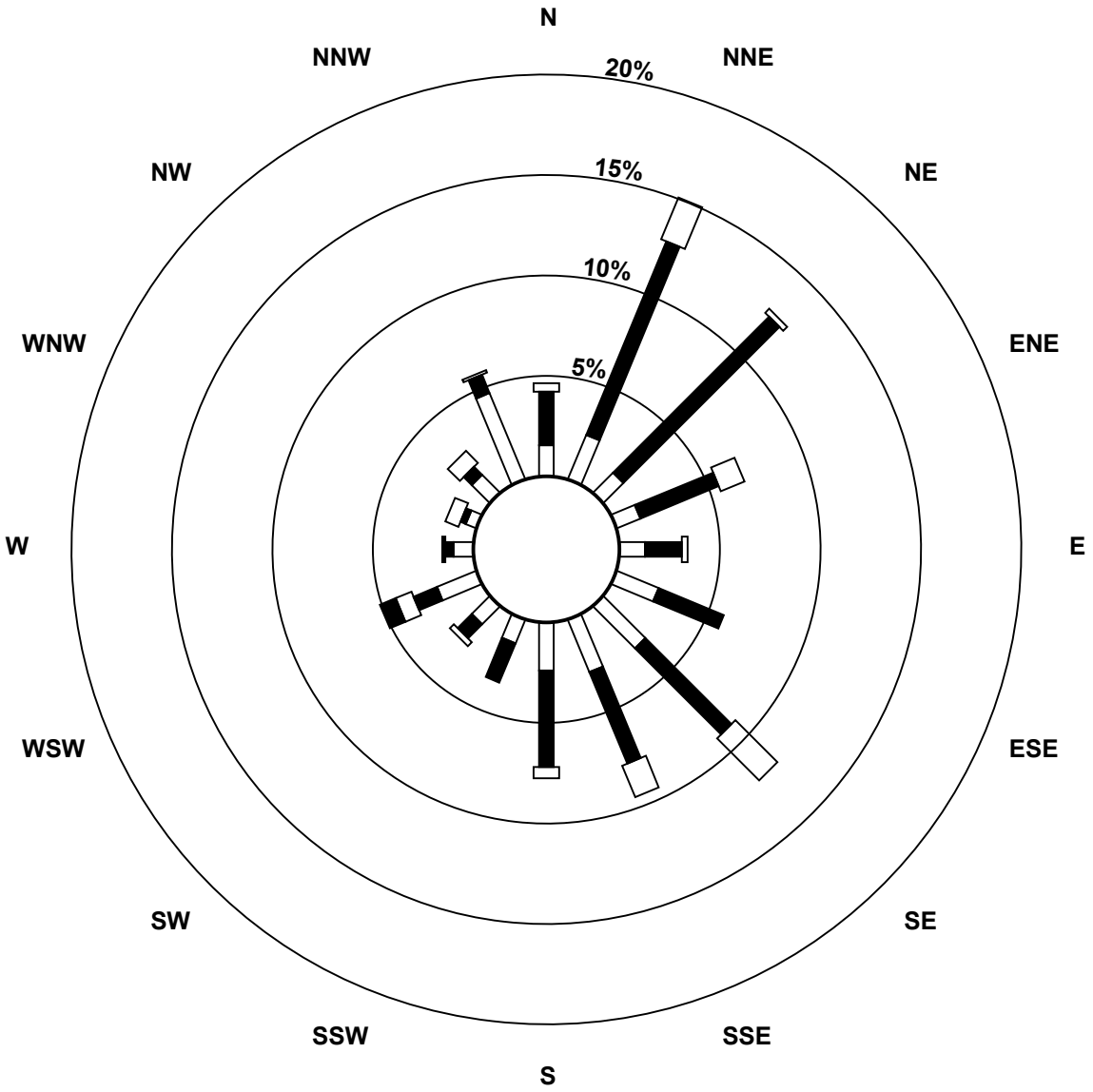
AURORA ATMOSPHERICS INC.

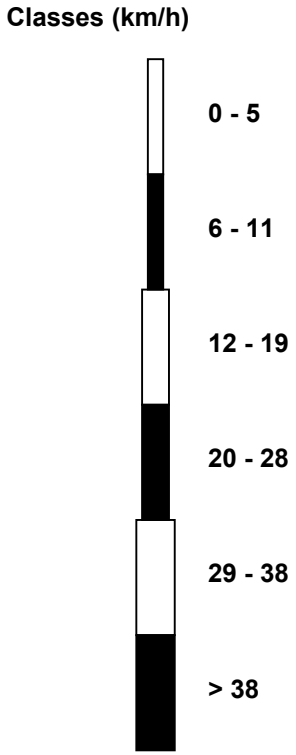
Wood Buffalo Environmental Association

Wind Rose Apr 2014

Wind Speed (WS) - km/h

Barge Landing (AMS 9)





Total Number of Valid Hours: 710

Wood Buffalo Environmental Association

Summary of Hour Averages

Wind Direction (WD) - deg

Barge Landing - April 2014

Direction of Maximum Speed: 248 deg on Apr 8 14:00
Direction of Maximum Daily Speed Average: 27.2 deg on Apr 15

Direction of Minimum Speed: 249 deg on Apr 19 06:00

Direction of Minimum Daily Speed Average: 1.0 deg on Apr 6

Monthly Average Direction: 199.5 deg

Hours in Service:	720
Hours of Data:	710
Hours of Missing Data:	10
Percent Operational Time:	98.6

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-Apr	191	214	321	330	23	30	3	28	16	19	43	52	32	32	28	36	36	31	43	48	45	50	33	27	32.8
2-Apr	17	26	19	26	28	20	27	29	29	27	26	26	28	26	26	26	29	23	24	28	30	38	19	359	25.3
3-Apr	338	334	327	339	331	340	345	335	339	356	35	6	25	30	40	22	17	23	32	129	136	143	152	148	35.4
4-Apr	147	143	145	152	145	151	153	158	154	161	170	170	177	241	265	286	304	309	298	301	302	306	314	294	204.4
5-Apr	285	261	256	245	261	288	268	352	5	40	48	84	48	57	72	68	57	52	31	23	3	15	353	338	27.1
6-Apr	338	339	336	332	352	239	229	191	211	205	218	208	172	179	195	168	166	17	19	31	17	343	325	111	216.4
7-Apr	248	199	142	140	155	174	162	228	244	313	20	27	63	196	195	184	190	197	210	213	177	204	189	184	192.3
8-Apr	174	178	175	189	169	137	191	190	199	221	241	252	255	248	257	249	238	242	259	259	249	285	250	201	239.6
9-Apr	245	261	248	212	233	240	256	279	291	312	318	332	334	337	323	329	321	360	57	56	214	239	338	337	299.6
10-Apr	350	4	30	29	35	41	37	35	41	42	47	42	43	44	36	28	25	31	47	55	53	56	64	67	40.5
11-Apr	85	81	75	67	53	43	40	40	44	33	30	28	26	27	24	21	13	11	12	6	6	357	334	326	29.0
12-Apr	304	273	247	251	273	236	203	196	188	229	243	250	318	351	1	352	25	24	48	28	19	8	3	6	346.6
13-Apr	359	353	358	345	318	322	335	334	6	44	56	58	68	69	68	63	102	71	86	146	100	113	117	139	49.3
14-Apr	139	154	145	139	137	142	146	162	171	183	164	178	178	182	172	172	146	143	128	79	358	348	3	358	151.8
15-Apr	8	21	25	15	32	39	43	44	39	40	38	26	19	38	34	27	27	25	19	15	13	19	25	35	27.2
16-Apr	38	43	41	44	41	22	30	44	48	57	67	343	327	181	150	128	125	124	130	117	124	136	146	151	87.3
17-Apr	156	154	151	155	153	142	140	151	159	165	145	129	143	136	150	133	136	129	129	129	119	115	118	107	138.5
18-Apr	103	104	93	96	88	89	84	109	113	118	115	116	129	108	115	127	140	147	176	170	162	AF	AF	116	116.5
19-Apr	305	335	31	AF	AF	249	AF	108	215	237	198	160	153	104	89	82	115	124	130	122	120	109	78	64	121.3
20-Apr	33	17	AF	AF	AF	AF	AF	239	260	25	55	44	62	60	57	51	53	51	94	88	143	161	151	150	73.3
21-Apr	143	148	159	136	134	194	166	158	251	332	350	37	40	47	50	35	37	30	24	19	30	35	23	3	42.6
22-Apr	337	347	336	343	341	347	348	329	330	12	19	33	57	61	62	65	68	71	70	51	40	43	23	16	38.2
23-Apr	12	19	27	22	20	18	22	27	30	37	56	46	71	87	83	76	76	76	72	72	69	70	69	68	55.1
24-Apr	65	57	48	52	40	36	47	50	45	48	50	55	102	218	250	285	131	103	80	89	98	104	104	108	70.9
25-Apr	106	78	79	52	92	108	120	247	353	42	52	50	5	40	46	72	95	144	163	153	174	140	140	133	97.7
26-Apr	129	115	117	105	121	125	151	171	166	174	167	151	128	162	130	129	142	145	130	130	137	138	143	142	142.5
27-Apr	138	127	124	128	119	119	75	55	51	127	152	147	142	142	140	144	151	151	148	150	148	148	145	150	136.7
28-Apr	137	147	157	169	223	161	147	222	220	186	191	191	238	253	255	273	89	72	75	143	140	142	143	138	167.0
29-Apr	137	142	145	146	163	163	164	174	209	203	174	218	225	229	235	215	202	294	319	329	28	130	133	318	195.9
30-Apr	107	151	151	181	152	156	188	186	185	172	172	162	186	177	174	172	184	175	182	189	213	179	209	247	178.6
	84.6	81.0	78.7	86.1	76.7	82.1	87.2	100.3	77.6	73.1	80.1	81.0	85.9	96.9	87.2	71.6	77.7	73.7	73.3	73.0	74.5	78.9	81.2	83.4	
	Diurnal Average																								

AF - Analyzer Failure
All monthly, daily, and diurnal averages have been calculated using vector methods

Number of Exceedences (AAAQO): 1-hr: 0 24-hr: 0
Maximum Value: 96 deg on Apr 24 17:00

Minimum Value: 10 deg on Apr 12 04:00

Percentiles: P_1 = 12 P_{10} = 16 Q_1 = 18 Median = 22 Q_3 = 28 P_{90} = 41 P_{99} = 83

Hours in Service:	720
Hours of Data:	710
Hours of Missing Data:	10
Hours of Calibration:	0
Percent Operational Time:	98.6

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-Apr	22	45	29	72	24	17	21	17	21	27	25	26	22	22	24	26	22	18	20	19	18	19	23	19	72
2-Apr	19	20	18	20	17	17	18	17	18	18	19	21	18	21	21	21	19	18	18	17	17	17	21	20	21
3-Apr	16	14	15	10	13	13	15	24	24	33	32	35	49	32	32	27	26	21	29	20	14	17	21	20	49
4-Apr	18	18	20	22	18	20	20	22	22	26	25	27	24	26	28	29	24	22	26	24	26	23	20	24	29
5-Apr	31	23	16	27	95	81	46	47	45	39	27	36	30	27	20	21	22	23	17	21	24	17	18	15	95
6-Apr	16	19	10	13	43	79	22	43	41	33	38	31	38	42	41	34	85	19	21	20	37	24	31	75	85
7-Apr	54	38	74	29	41	33	38	22	23	53	21	20	83	47	34	28	30	36	42	33	22	21	22	20	83
8-Apr	22	30	24	31	29	35	27	21	25	20	19	23	23	20	24	21	19	17	23	21	17	33	34	45	45
9-Apr	34	23	24	23	15	15	26	28	27	25	21	22	24	30	30	28	23	45	27	41	22	39	65	19	65
10-Apr	17	17	16	19	17	19	20	23	24	25	26	24	23	24	21	18	20	21	19	21	20	20	21	22	26
11-Apr	23	22	20	21	20	21	20	20	21	18	17	17	19	18	18	20	21	21	21	21	21	21	13	16	23
12-Apr	12	19	12	10	14	55	24	26	36	49	69	60	32	41	32	32	27	26	20	18	22	22	23	22	69
13-Apr	22	22	20	17	20	11	16	23	41	34	29	28	35	39	27	29	50	29	42	20	17	15	12	12	50
14-Apr	13	16	18	12	12	12	22	28	27	29	30	34	32	33	31	31	20	18	17	29	22	35	27	24	35
15-Apr	21	16	16	20	22	18	18	19	19	20	22	19	22	20	20	19	18	17	19	19	20	19	18	19	22
16-Apr	18	18	18	21	18	19	19	24	25	25	49	43	52	96	35	25	31	21	17	14	13	14	19	18	96
17-Apr	17	15	16	12	13	18	25	25	29	28	27	23	24	24	25	23	22	18	15	13	12	14	13	16	29
18-Apr	17	15	18	16	17	26	22	20	19	19	20	22	30	23	21	22	26	26	28	25	22	AF	AF	47	47
19-Apr	42	14	26	AF	AF	84	AF	43	53	34	61	82	63	53	26	22	20	16	14	13	12	19	14	13	84
20-Apr	60	59	AF	AF	AF	AF	AF	36	56	61	30	32	31	37	32	24	24	22	21	11	33	13	17	34	61
21-Apr	17	12	17	22	39	26	29	38	66	21	27	21	24	23	24	21	20	17	16	20	17	15	18	28	66
22-Apr	15	17	22	30	15	32	46	26	31	32	20	24	24	22	20	21	20	19	19	20	19	19	22	16	46
23-Apr	18	16	16	16	15	16	16	16	17	19	19	21	25	24	22	22	20	22	21	20	19	18	18	19	25
24-Apr	20	19	19	21	18	24	19	19	19	21	21	22	67	21	41	48	96	22	20	22	19	18	16	17	96
25-Apr	19	19	23	18	31	25	34	79	30	30	38	40	64	62	33	62	31	32	27	23	33	13	14	15	79
26-Apr	17	14	11	17	19	14	23	25	27	26	27	34	29	31	33	18	19	19	15	14	16	16	16	17	34
27-Apr	15	14	13	15	15	17	21	23	25	36	31	21	18	18	18	21	21	20	20	19	16	17	13	19	36
28-Apr	18	15	19	18	22	63	28	25	22	39	38	66	44	95	37	66	33	27	23	15	13	16	17	20	95
29-Apr	16	53	15	20	21	20	22	23	27	54	52	35	25	29	26	39	31	47	19	17	21	29	20	70	70
30-Apr	14	25	22	24	24	22	31	32	25	32	25	26	30	26	25	28	23	28	25	19	23	21	23	20	32
	60	59	74	72	95	84	46	79	66	61	69	82	83	96	41	66	96	47	42	41	37	39	65	75	
	Diurnal Maximum																								

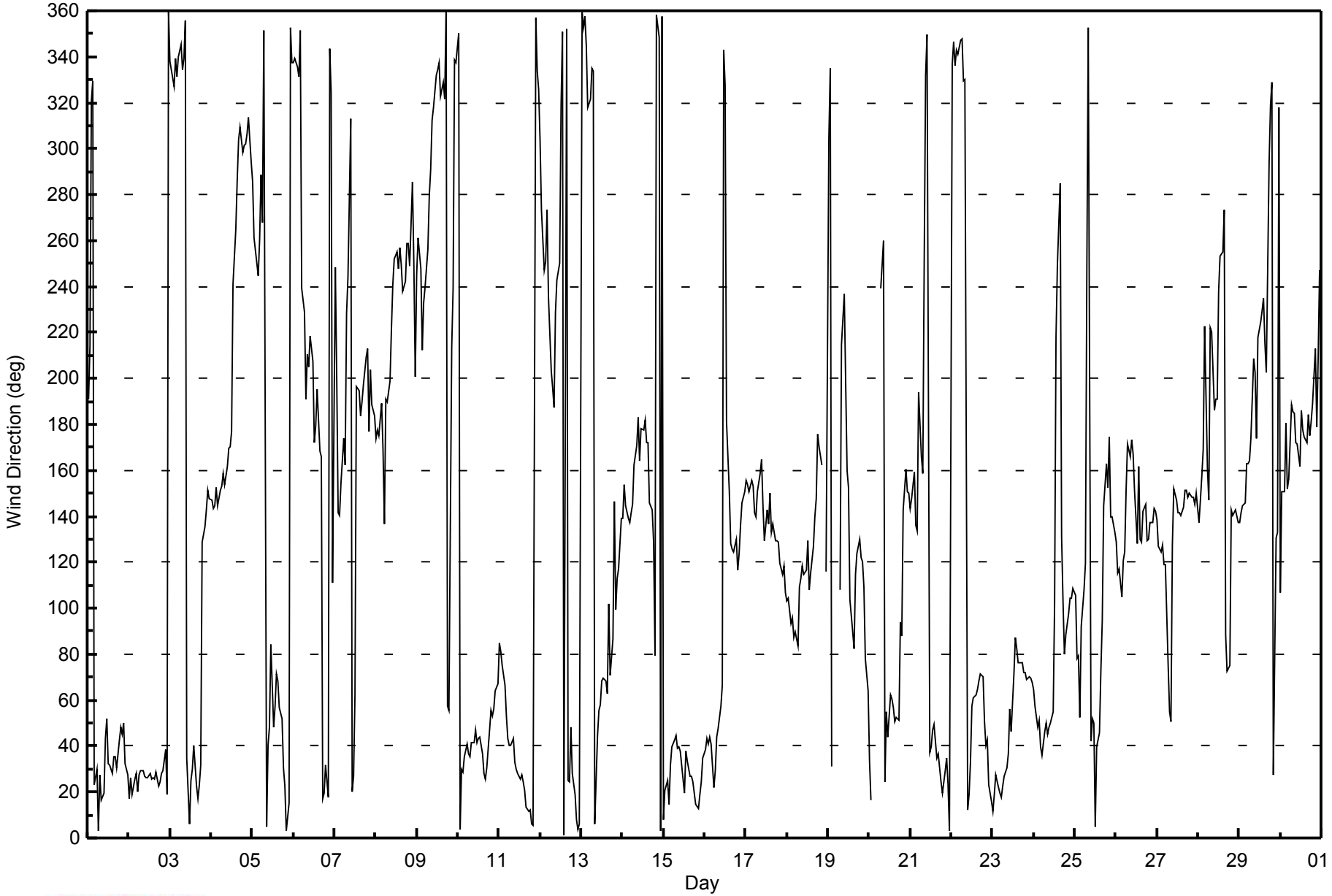
AF - Analyzer Failure

WBEA NETWORK

Hourly Averages

Wind Direction (WD) - deg

Barge Landing - April 2014



AURORA ATMOSPHERICS INC.

Wood Buffalo Environmental Association

TRS Calibration Report

Station Information

Calibration Date	April 1, 2014	Previous Calibration	March 4, 2014
Station Name	Barge Landing	Station Number	AMS 9
Reason:	Routine		
Start Time (MST)	9:00	End Time (MST)	11:10
Barometric Pressure	NA mmHg	Station temp.	23 Deg C
Calibrator Make/Model	Sabio 4010	Serial number	11071107
Cal Gas Concentration	5.64 ppm H2S	Cal Gas Expiry Date	3/11/2009
Gas Cert Reference	SA6920	SO2 gas conc.	59.0 ppm SO2
DACS make/model	Campbell Scientific CR3000	DACS serial No.	2638
DACS voltage range		DACS channel #	

Analyzer Information

	Before	*After*		*Before*	*After*
Analyzer Range (ppb)	100	100	PMT voltage	-536	-536
Analyzer Range (input)	5000	5000	Lamp voltage	854	854
Calculated slope	1.000258	1.013251	Chamber temp.	45	45
Calculated intercept	0.197982	-0.198410	Pressure	575.1	575.1
Analyzer Background	18.9	18.9	Flow	0.331	0.331
Analyzer Coefficient	1.192	1.192	Intensity	39500	39500
			Converter temp.	850	850

Analyzer make/model	Thermo 45C	Analyzer serial #	328702540
Converter make/model	CDN-101	Converter serial #	376

Calibration Data

Set Point	Total flow rate (cc/min)	Source gas flow rate (cc/min)	Calculated concentration (ppb) (Cc)	Indicated concentration (ppb) (Ic)	Correction factor (Cc/Ic)
as found zero	5000	0.0	0.0	0.4	NA
as found span	5000	70.9	80.0	79.2	1.010
SO2 scrubber check	6000	12.2	120.0	0.4	NA
calibrator zero	5000	0.0	0.0	0.4	NA
high point	5000	70.9	80.0	79.2	1.010
second point	5000	35.5	40.0	39.6	1.010
third point	5000	17.7	20.0	19.7	1.013
calibrator zero	5000	0.0	0.0	0.3	NA
as left zero	5000	0.0	0.0	0.3	NA
as left span	5000	70.9	80.0	78.9	1.014
				Average Correction Factor	1.011

Corrected As found	78.8	Previous response	79.8	% change	1.2%

Notes:

Changed filter No adjustments or maintenance done, scrubber checked after third point

Calibration Performed By: Melissa Lemay

Wood Buffalo Environmental Association

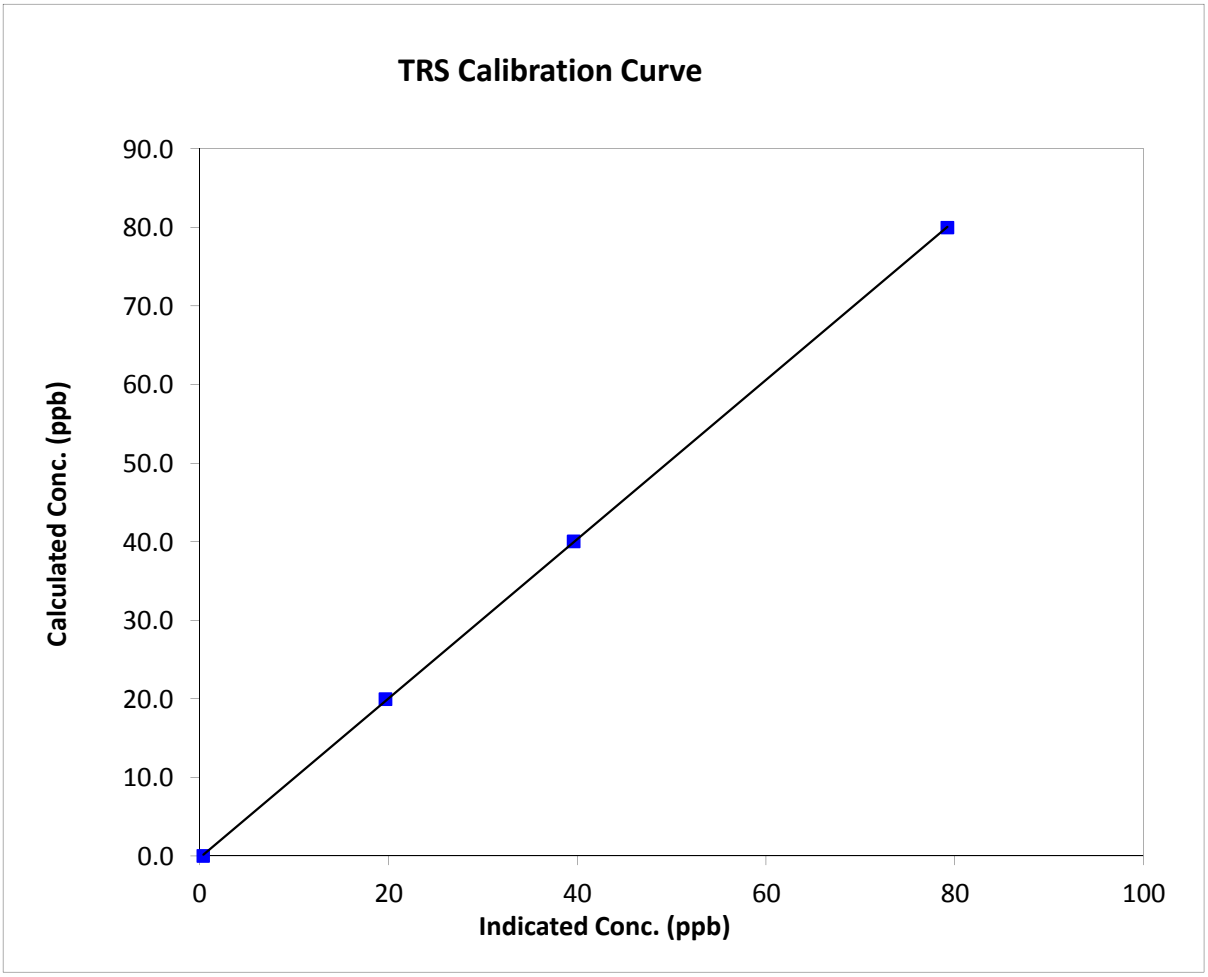
TRS Calibration Summary

Station Information

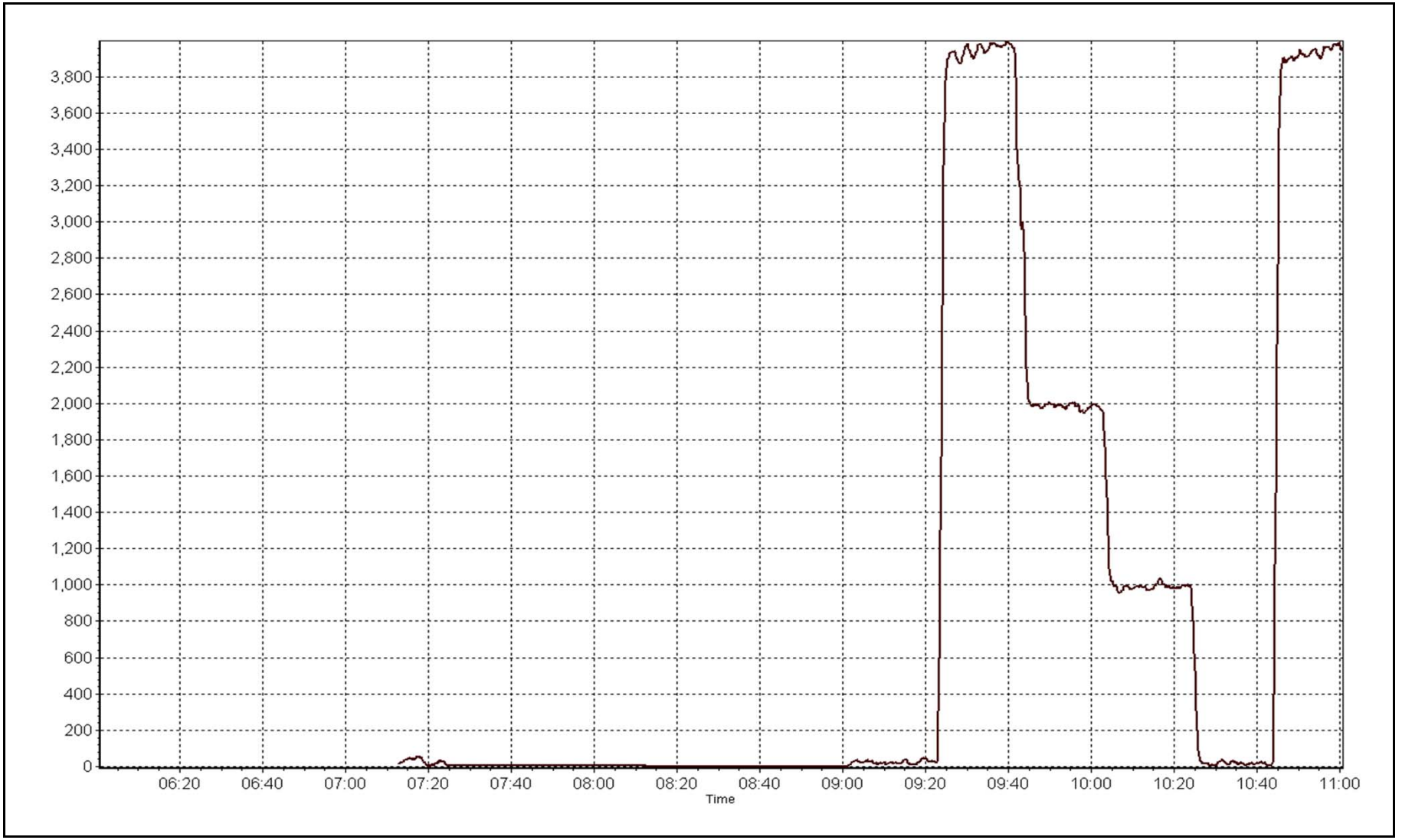
Calibration Date	April 1, 2014	Previous Calibration	March 4, 2014
Station Name	Barge Landing	Station Number	AMS 9
Start Time (MST)	9:00	End Time (MST)	11:10
Analyzer make	Thermo 45C	Analyzer serial #	328702540

Calibration Data

Calculated concentration (ppb) (Cc)	Indicated concentration (ppb) (Ic)	Correction factor (Cc/Ic)	Statistical Evaluation	
0.0	0.4	N/A	Correlation Coefficient	0.999973
80.0	79.2	1.0096		
40.0	39.6	1.0104	Slope	1.013251
20.0	19.7	1.0135		
			Intercept	-0.198410



TRS Calibration Plot Date: April 1, 2014



Wood Buffalo Environmental Association

THC Calibration Report

Station Information

Calibration Date	Tuesday, April 01, 2014	Previous Calibration	Tuesday, March 04, 2014
Station Name	Barge Landing	Station Number	AMS 9
Reason:	Routine		
Start Time (MST)	7:00	End Time (MST)	9:02
Barometric Pressure	730 mmHg	Station temp.	21 Deg C
Calibrator Make/Model	Sabio 4010	Serial Number	11071107
Gas Cert Reference	139843	Cal Gas Expiry Date	11/24/2012
CH4 Cal Gas Conc.	494 ppm	CH4 Equiv Conc.	1049.5 ppm
C3H8 Cal Gas Conc.	202 ppm		
DACS make/model	Campbell Scientific CR3000	DACS serial No.	2638
DACS voltage range		DACS channel #	5

Analyzer Information

	Before	*After*		*Before*	*After*
Analyzer Range (ppm)	25	25	Sample Pressure	9.1	9.1
Analyzer Range (mv)	5000	5000	Air or Bypass press	34.7	34.7
Calculated slope	1.000307	1.011081	Fuel Pressure	24.1	24.1
Calculated intercept	0.033658	-0.035222	BKG	5.97	5.97
			COEF	4.493	4.493

Analyzer make	Thermo 51i-LT	Analyzer serial #	1327059296

Calibration Data

Set Point	Total flow rate (cc/min)	Source gas flow rate (cc/min)	Calculated concentration THC (ppm) (Cc)	Indicated concentration (ppb) (Ic)	Correction factor (Cc/Ic)
as found zero	6000	0.0	0.00	0.06	N/A
as found span	6000	89.8	15.71	15.57	1.009
calibrator zero	6000	0.0	0.00	0.06	N/A
high point	6000	89.8	15.71	15.57	1.009
second point	6000	48.0	8.40	8.36	1.004
third point	6000	18.0	3.15	3.11	1.013
calibrator zero	6000	0.0	0.00	0.03	N/A
as left zero	6000	0.0	0.00	0.03	N/A
as left span	6000	89.8	15.71	15.78	0.995
				Average Correction Factor	1.009

Corrected As found	15.51	Previous response	15.67	% change	1.0%

Notes:

Filter Changed, No Maintenance or Adjustments Made

Calibration Performed By: Melissa Lemay

Wood Buffalo Environmental Association

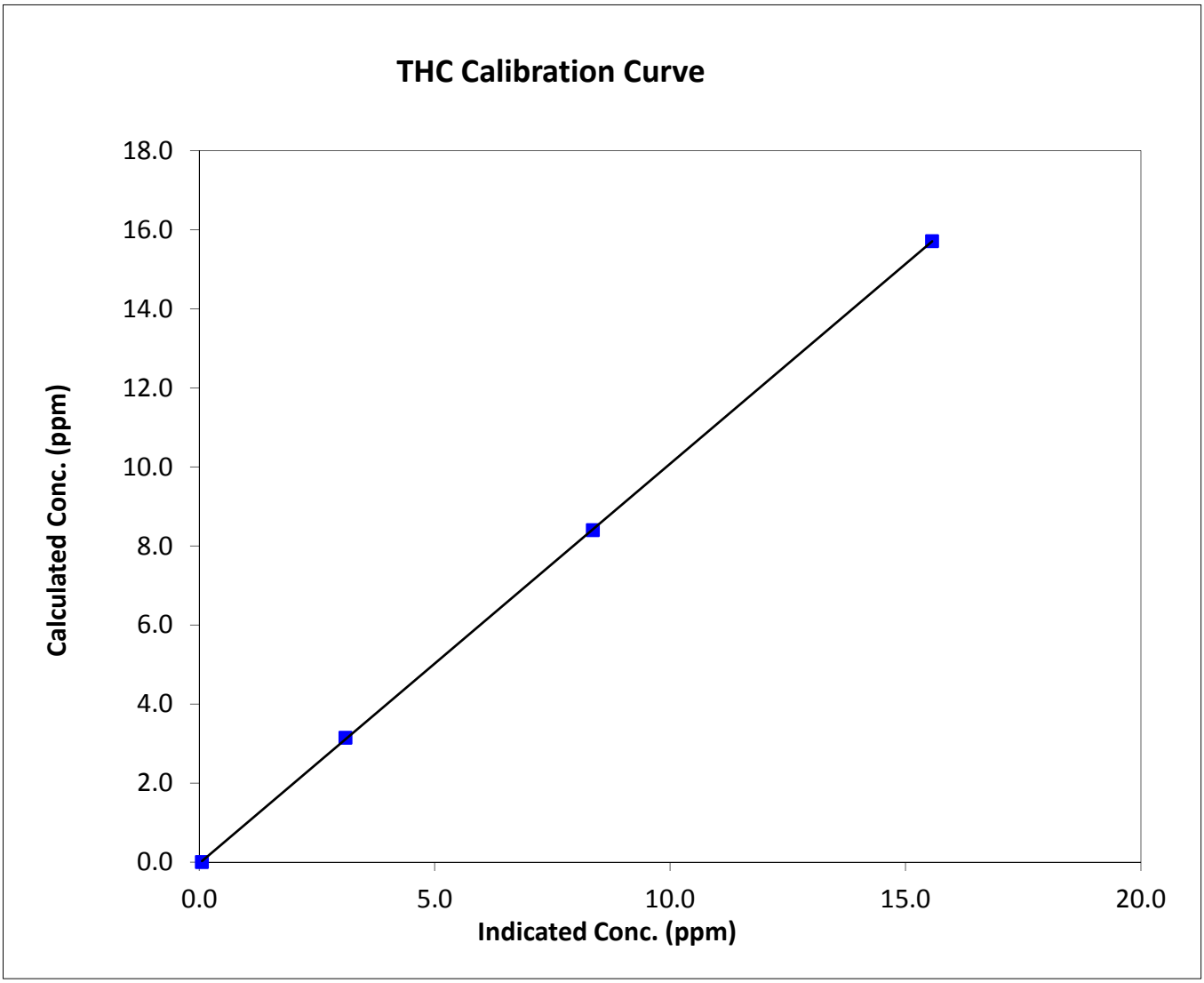
THC Calibration Summary

Station Information

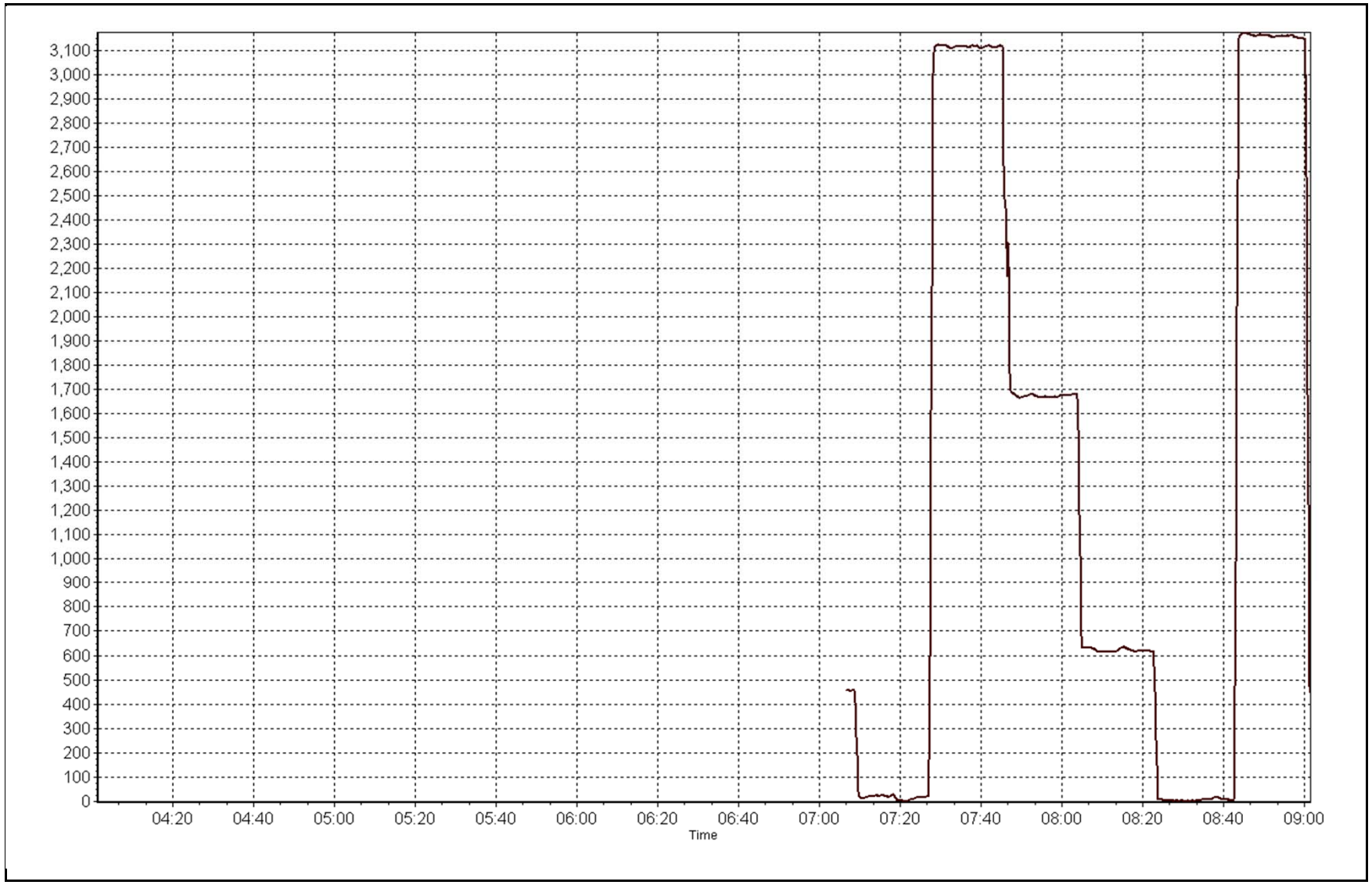
Calibration Date	April 1, 2014	Previous Calibration	March 4, 2014
Station Name	Barge Landing	Station Number	AMS 9
Start Time (MST)	7:00	End Time (MST)	9:02
Analyzer make	Thermo 51i-LT	Analyzer serial #	1327059296

Calibration Data

Calculated concentration (ppm) (Cc)	Indicated concentration (ppm) (Ic)	Correction factor (Cc/Ic)	Statistical Evaluation	
0.00	0.06	N/A	Correlation Coefficient	0.999980
15.71	15.57	1.0091		
8.40	8.36	1.0040	Slope	1.011081
3.15	3.11	1.0133		
			Intercept	-0.035222



THC Calibration Plot Date: April 1, 2014



WOOD BUFFALO ENVIRONMENTAL ASSOCIATION

CONTINUOUS AMBIENT AIR QUALITY
MONITORING PROGRAM
MONTHLY REPORT

AMS 11
LOWER CAMP
APRIL 2014

Operations and Data Collection by:
Wood Buffalo Environmental Association
Fort McMurray, Alberta

QA/QC, Data Validation and Reporting by:
Aurora Atmospherics Inc.
Calgary, Alberta

May 30, 2014

WOOD BUFFALO ENVIRONMENTAL ASSOCIATION - LOWER CAMP (AMS 11)
APRIL 2014

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	687	33	33	100.00	57	0	10	0
H2S (ppb) Average	686	34	34	100.00	3	0	1	0
THC (ppm) Average	684	33	36	99.58	4	-	2.8	-
Temperature (C) Average	720	0	0	100.00	22.8	-	13.4	-
Wind Speed 10 m (km/h) Average	720	0	0	100.00	34	-	-	-
Wind Direction 10 m (deg) Average	720	0	0	100.00	-	-	-	-

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

WOOD BUFFALO ENVIRONMENTAL ASSOCIATION - LOWER CAMP (AMS 11)
APRIL 2014

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	1.6	5	-	0	0	0	0	1	3	57
H2S (ppb) Average	686	0.4	0	-	0	0	0	0	0	1	3
THC (ppm) Average	684	2.2	0.3	-	1.9	2	2	2.1	2.3	2.5	4
Temperature 2 m (C) Average	720	1.71	7.4	-	-18.9	-7.8	-3	2.2	5.9	11	22.8
Wind Speed 10 m (km/h) Average	720	11.7	7	-	0	3	6	11	16	21	34
Wind Direction 10 m (deg) Average	720	-	-	-	-	-	-	-	-	-	-

WOOD BUFFALO ENVIRONMENTAL ASSOCIATION - LOWER CAMP (AMS 11)
APRIL 2014

OPERATIONAL NOTES

Parameter	Period Start	Period End	Duration (Hours)	Notes
THC	01 Apr 2014 15:00	01 Apr 2014 17:00	3	Maintenance - Stn operator at site

Wood Buffalo Environmental Association

Summary of Hour Averages

Sulphur Dioxide (SO_2) - ppb

Lower Camp - April 2014

Number of Exceedences (AAAQO): 1-hr: 0 24-hr: 0
Maximum Value: 57 ppb on Apr 28 13:00 Maximum Daily Average: 9.8 ppb on Apr 28

Minimum Value: 0 ppb on Apr 11 03:00 Minimum Daily Average: 0.0 ppb on Apr 11
Maximum Diurnal Average: 5.4 ppb at hour 15 Minimum Diurnal Average: 0.3 ppb at hour 8
Monthly Average: 1.6 ppb Percentiles: $P_1 = 0$ $P_{10} = 0$ $Q_1 = 0$ Median = 0 $Q_3 = 1$ $P_{90} = 3$ $P_{99} = 20$

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-Apr	1	Z	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	0	1	0.7	1
2-Apr	0	Z	1	1	1	1	0	1	1	1	1	1	C	C	C	1	1	1	1	1	1	1	0	1	0.6	1
3-Apr	1	Z	0	0	0	1	0	1	1	1	2	3	28	6	1	1	1	1	1	1	1	3	5	1	2.5	28
4-Apr	2	Z	4	3	2	2	1	1	1	1	7	2	1	1	1	3	1	1	1	0	0	0	0	0	1.5	7
5-Apr	0	Z	5	2	1	1	1	1	0	1	1	2	1	3	11	16	9	7	1	1	1	1	0	0	2.8	16
6-Apr	0	Z	0	0	0	0	0	1	1	0	1	1	1	2	12	5	6	7	7	1	1	0	0	0	2.1	12
7-Apr	0	Z	0	0	0	0	0	0	0	1	13	27	19	7	3	1	1	2	4	3	2	3	3	1	4.0	27
8-Apr	0	Z	0	0	0	0	0	1	2	3	2	2	1	1	1	2	2	2	3	2	2	3	2	2	1.5	3
9-Apr	2	Z	3	2	1	2	2	0	2	0	0	0	0	0	0	0	0	0	0	0	0	3	4	1	1.1	4
10-Apr	0	Z	0	0	0	0	0	0	0	0	0	2	1	0	0	0	0	0	0	0	0	0	0	0	0.3	2
11-Apr	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
12-Apr	0	Z	0	0	0	0	0	0	1	1	15	13	14	10	1	0	0	0	0	0	0	0	0	0	2.4	15
13-Apr	0	Z	0	0	0	0	0	0	0	0	0	0	0	0	5	10	14	9	2	2	3	6	10	8	3.0	14
14-Apr	0	Z	0	0	0	0	0	0	2	14	11	3	2	6	11	5	1	0	0	0	0	1	0	0	2.5	14
15-Apr	0	Z	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0.2	0
16-Apr	0	Z	0	0	0	0	0	0	0	0	1	2	5	8	9	2	0	0	0	0	0	0	0	0	1.2	9
17-Apr	0	Z	0	0	0	0	0	0	0	5	21	0	1	0	0	2	0	0	0	0	0	0	0	0	1.4	21
18-Apr	0	Z	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1	2	4	2	1	0.5	4
19-Apr	0	Z	0	0	0	0	2	0	0	0	0	0	0	3	7	2	0	0	0	0	0	0	0	0	0.9	7
20-Apr	0	Z	0	0	0	0	0	0	1	4	4	2	1	0	0	0	0	0	0	0	0	0	0	0	0.6	4
21-Apr	0	Z	1	0	0	0	0	0	0	4	1	1	0	0	1	0	0	0	0	0	0	0	0	0	0.4	4
22-Apr	0	Z	0	0	0	0	0	0	3	3	0	1	0	0	0	0	0	0	0	0	0	0	0	0	0.3	3
23-Apr	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
24-Apr	0	Z	0	0	0	0	0	0	0	0	3	4	6	9	14	5	0	0	0	0	0	0	0	0	1.9	14
25-Apr	0	Z	0	0	0	0	0	1	1	0	0	0	0	0	22	14	3	2	0	2	0	0	0	1	2.1	22
26-Apr	1	Z	0	0	0	0	0	0	0	1	2	2	0	2	0	0	0	0	0	0	0	0	0	1	0.4	2
27-Apr	0	Z	0	0	0	0	0	0	0	0	0	0	0	0	1	17	1	7	2	1	1	0	0	0	1.5	17
28-Apr	0	Z	0	0	0	0	0	0	0	0	2	11	57	40	53	40	10	3	2	1	1	0	0	0	9.8	57
29-Apr	0	Z	0	0	1	1	0	0	0	1	3	2	0	0	1	1	2	1	0	0	1	0	0	0	0.6	3
30-Apr	0	Z	1	1	0	0	0	0	0	0	0	0	1	1	1	3	2	1	3	6	1	2	1	3	1.1	6
	0.4	--	0.6	0.4	0.3	0.3	0.3	0.3	0.5	1.4	3.0	2.7	4.9	3.5	5.4	4.5	1.9	1.5	1.0	0.8	0.6	1.0	1.0	0.7	Diurnal Average	
	2	--	5	3	2	2	2	1	3	14	21	27	57	40	53	40	14	9	7	6	3	6	10	8	Diurnal Maximum	

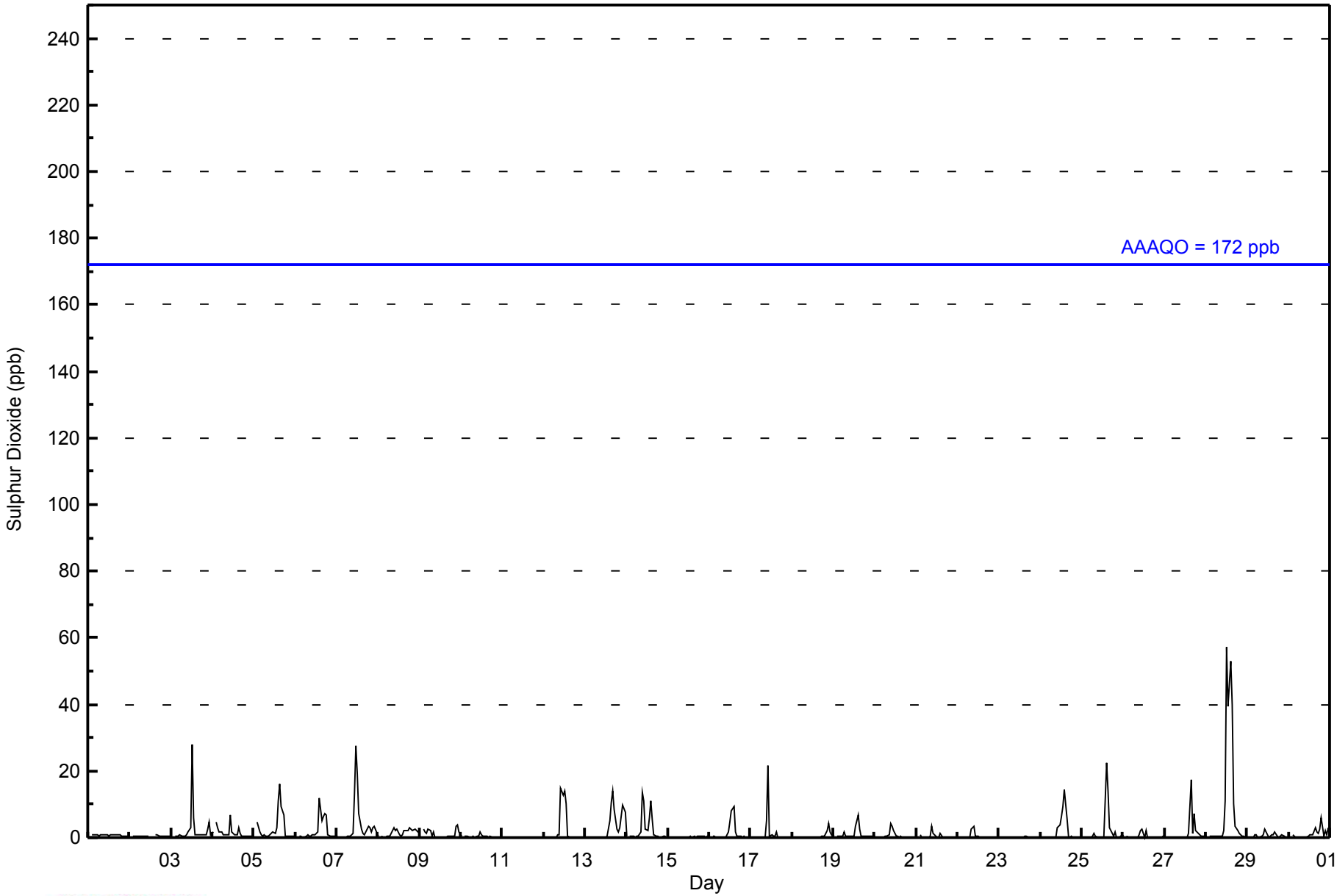
Z - zerospan C - Calibration
Alberta Ambient Air Quality Objectives (AAAQO): 1-hr 172 ppb 24-hr 48 ppb

WBEA NETWORK

Hourly Averages

Sulphur Dioxide (SO_2) - ppb

Lower Camp - April 2014



AURORA ATMOSPHERICS INC.

Concentration Ranges (ppb)	Number of Hours	%	Cumulative %
0 - 10	663	96.51	96.51
11 - 20	16	2.33	98.84
21 - 60	8	1.16	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

WBEA NETWORK

Frequency Distribution

Sulphur Dioxide (SO_2) - ppb

Lower Camp - April 2014

Concentration	**Wind Direction**																
Ranges (ppb)	N	NNE	NE	ENE	E	ESE	SE	SSE	S	SSW	SW	WSW	W	WNW	NW	NNW	**Totals**
0 - 10	79	39	19	18	46	77	175	21	7	10	4	23	25	29	39	52	663
11 - 20	2	0	0	0	1	1	8	1	0	0	1	1	1	0	0	0	16
21 - 60	0	0	0	1	0	0	6	0	0	0	0	0	0	1	0	0	8
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	81	39	19	19	47	78	189	22	7	10	5	24	26	30	39	52	687

Total Number of Valid Hours: 687

Total Number of Hours: 720

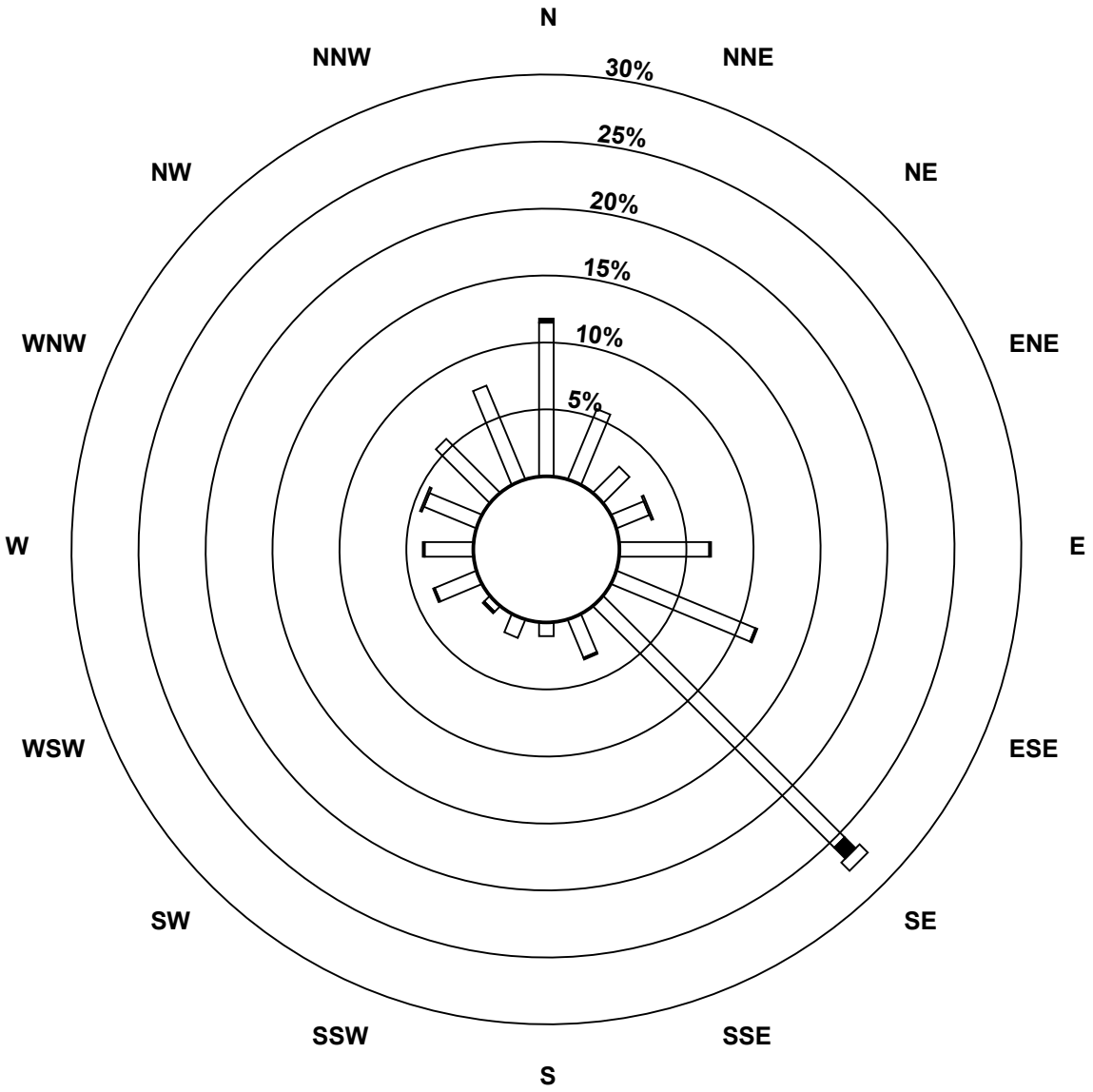
AURORA
ATMOSPHERICS INC.

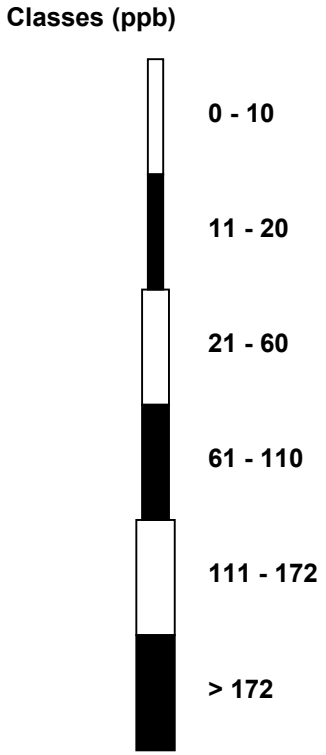
Wood Buffalo Environmental Association

Wind Rose Apr 2014

Sulphur Dioxide (SO_2) - ppb

Lower Camp (AMS 11)





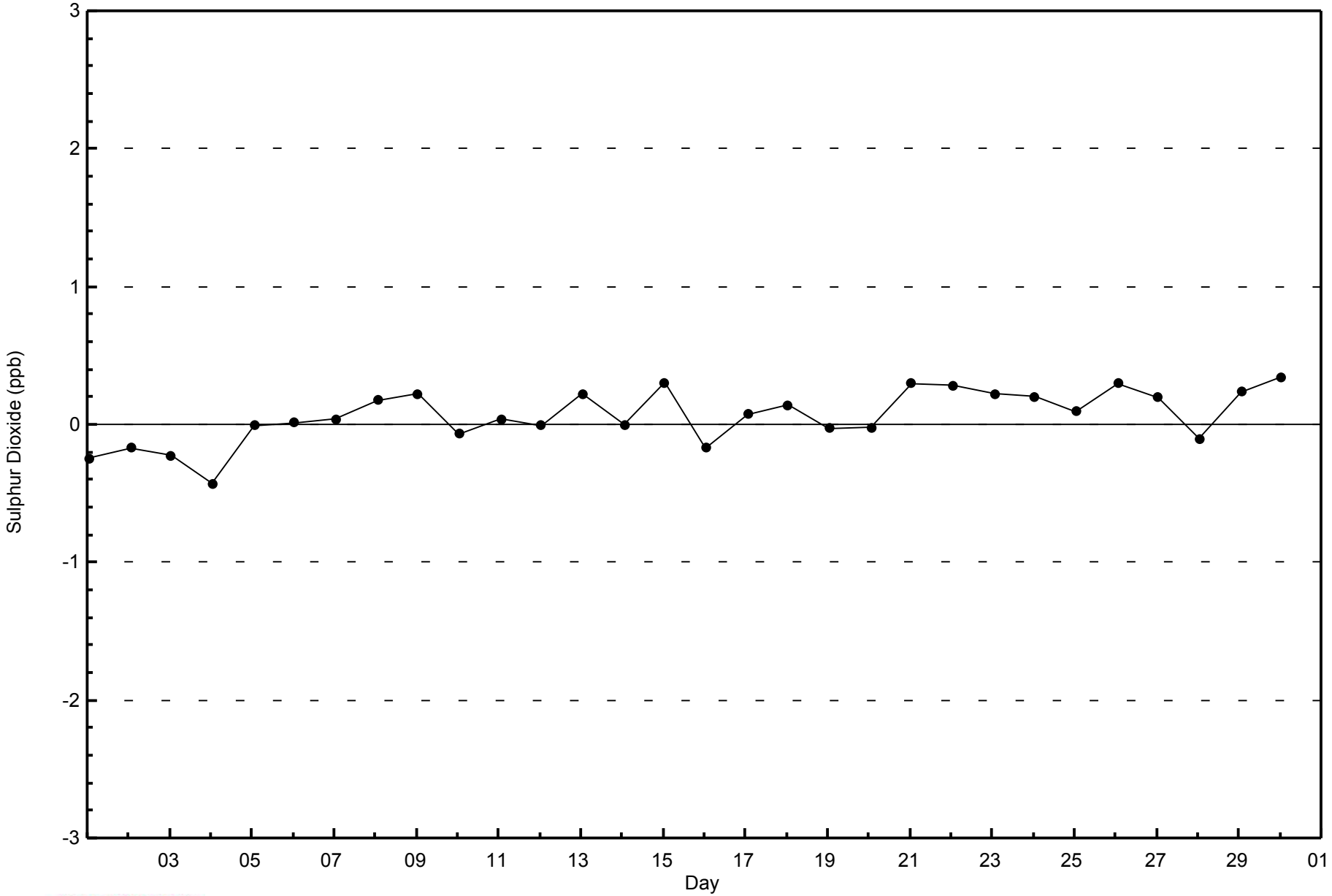
Total Number of Valid Hours: 687

WBEA NETWORK

Zero Responses

Sulphur Dioxide (SO_2) - ppb

Lower Camp - April 2014



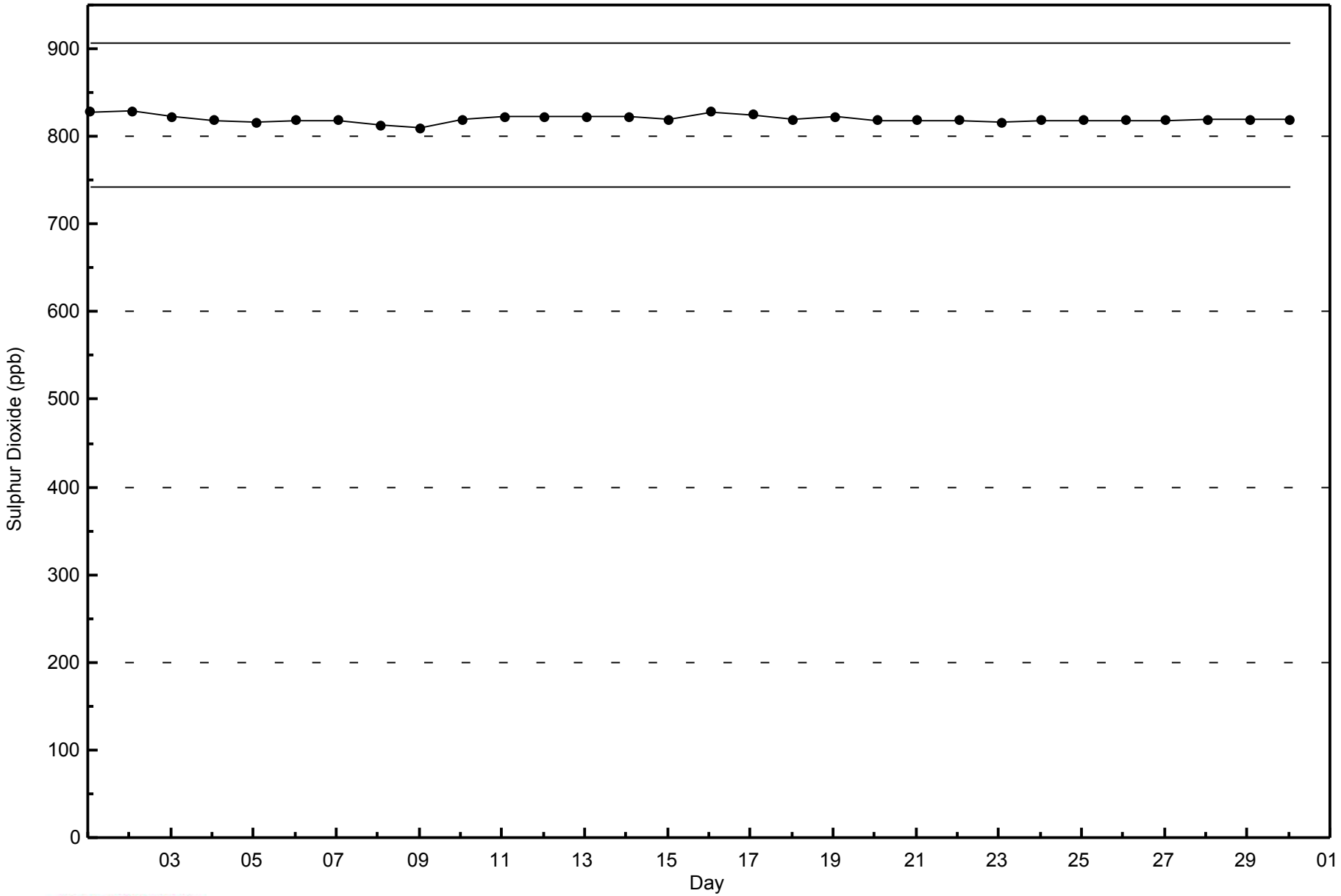
AURORA ATMOSPHERICS INC.

WBEA NETWORK

Span Responses

Sulphur Dioxide (SO_2) - ppb

Lower Camp - April 2014



AURORA ATMOSPHERICS INC.

Wood Buffalo Environmental Association

Summary of Hour Averages

Hydrogen Sulphide (H_2S) - ppb

Lower Camp - April 2014

Number of Exceedences (AAAQO): 1-hr: 0 24-hr: 0
Maximum Value: 3 ppb on Apr 7 19:00 Maximum Daily Average: 1.2 ppb on Apr 7

Minimum Value: 0 ppb on Apr 25 01:00 Minimum Daily Average: 0.1 ppb on Apr 11
Maximum Diurnal Average: 0.5 ppb at hour 24 Minimum Diurnal Average: 0.3 ppb at hour 17
Monthly Average: 0.4 ppb Percentiles: $P_1 = 0$ $P_{10} = 0$ $Q_1 = 0$ Median = 0 $Q_3 = 0$ $P_{90} = 1$ $P_{99} = 2$

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-Apr	1	2	Z	1	1	1	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0.4	2
2-Apr	0	0	Z	0	0	0	0	0	0	0	0	0	0	0	C	C	C	C	0	0	0	0	0	0	0.2	0
3-Apr	0	0	Z	0	0	0	0	0	0	0	0	0	1	0	0	0	0	0	0	0	0	0	0	0	0.3	1
4-Apr	0	0	Z	0	0	0	0	0	0	0	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0.3	1
5-Apr	0	1	Z	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0.4	1
6-Apr	0	0	Z	1	0	1	1	0	0	1	0	1	1	1	1	1	1	1	2	1	0	0	0	1	0.6	2
7-Apr	1	1	Z	1	1	1	1	1	2	1	1	2	1	0	1	1	0	1	3	1	2	2	2	2	1.2	3
8-Apr	1	1	Z	1	1	1	1	1	2	1	1	1	1	1	0	1	1	1	1	1	1	1	1	1	0.8	2
9-Apr	1	1	Z	1	0	1	0	0	1	0	0	0	0	0	0	0	0	0	0	0	0	1	1	1	0.5	1
10-Apr	1	0	Z	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0.2	1
11-Apr	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	0
12-Apr	0	0	Z	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0.3	0
13-Apr	0	0	Z	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1	1	1	0.3	1
14-Apr	0	0	Z	0	0	0	0	0	0	1	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0.3	1
15-Apr	0	0	Z	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0.2	0
16-Apr	0	0	Z	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0.2	0
17-Apr	0	0	Z	0	0	0	0	0	0	0	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0.2	1
18-Apr	0	0	Z	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1	1	0.2	1
19-Apr	1	0	Z	1	1	1	2	2	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1	0.5	2
20-Apr	1	1	Z	0	1	1	1	1	1	1	1	1	0	0	0	0	0	0	0	0	0	0	1	1	0.6	1
21-Apr	0	0	Z	1	1	0	0	0	1	1	1	1	0	0	0	0	0	0	0	0	0	0	0	1	0.4	1
22-Apr	0	1	Z	1	1	1	1	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0.4	1
23-Apr	1	0	Z	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0.2	1
24-Apr	0	0	Z	0	0	0	0	0	0	0	0	1	1	1	0	0	0	0	0	0	0	0	0	0	0.3	1
25-Apr	0	0	Z	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0.2	0
26-Apr	0	0	Z	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1	0.3	1
27-Apr	0	0	Z	0	0	0	0	0	0	0	1	1	0	0	0	1	0	1	0	0	0	0	0	0	0.3	1
28-Apr	0	0	Z	0	0	1	0	0	0	0	0	0	1	1	1	1	0	0	0	0	0	0	0	0	0.4	1
29-Apr	0	0	Z	0	1	0	0	1	0	1	1	0	0	0	0	0	0	0	0	1	2	1	1	1	0.6	2
30-Apr	1	1	Z	2	1	1	1	1	1	1	0	0	1	1	1	1	1	1	1	1	2	1	1	1	0.8	2
	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	0.3	0.3	0.4	0.3	0.4	0.4	0.4	0.5	Diurnal Average	
	1	2	--	2	1	1	2	2	2	1	1	2	1	1	1	1	1	1	3	1	2	2	2	2	Diurnal Maximum	

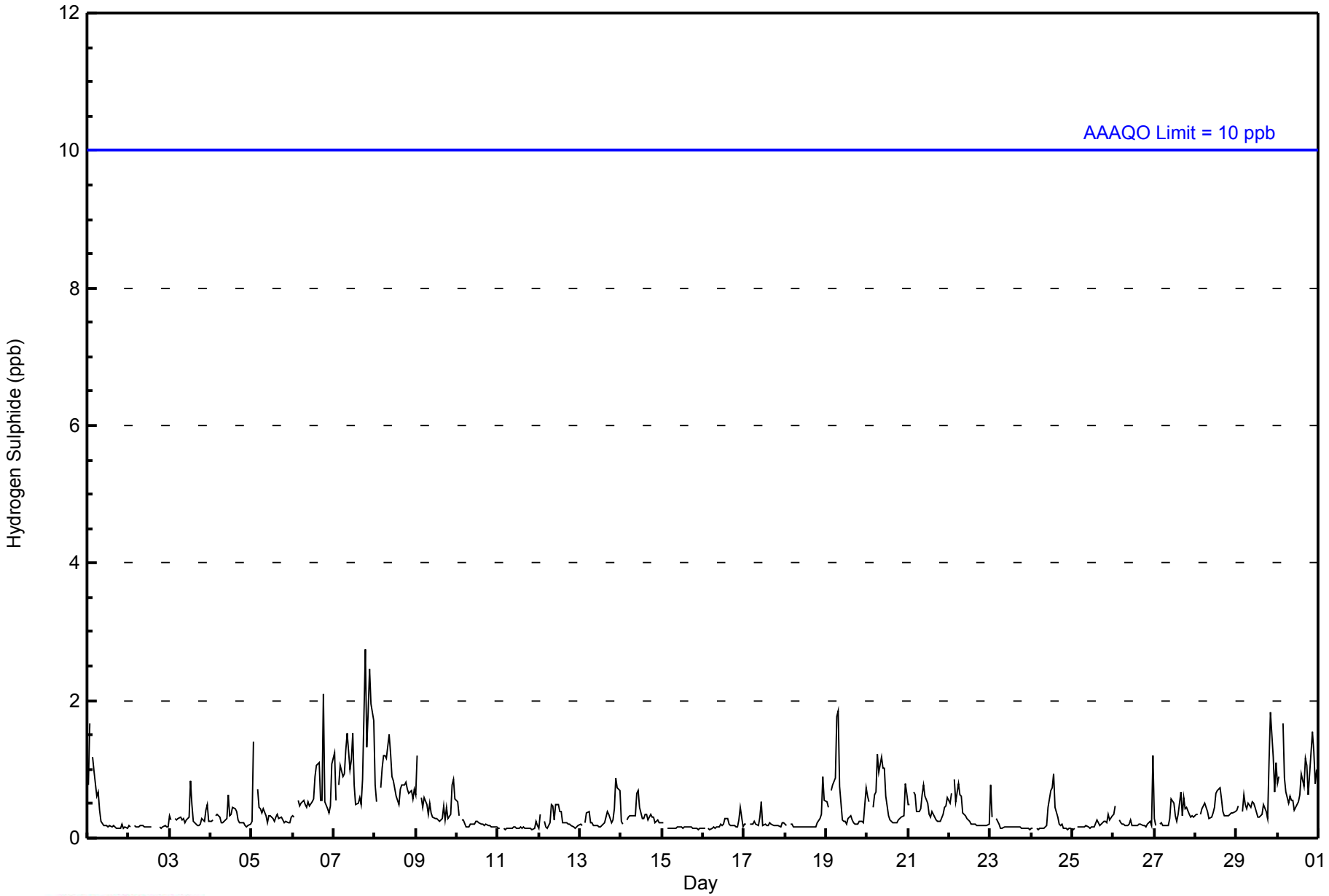
Z - zerospan C - Calibration
Alberta Ambient Air Quality Objectives (AAAQO): 1-hr 10 ppb 24-hr 3 ppb

WBEA NETWORK

Hourly Averages

Hydrogen Sulphide (H_2S) - ppb

Lower Camp - April 2014



AURORA ATMOSPHERICS INC.

Concentration Ranges (ppb)	Number of Hours	%	Cumulative %
0 - 2	685	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: 686

Total Number of Hours: 720

WBEA NETWORK

Frequency Distribution

Hydrogen Sulphide (H_2S) - ppb

Lower Camp - April 2014

Concentration Ranges (ppb)	Wind Direction																
	N	NNE	NE	ENE	E	ESE	SE	SSE	S	SSW	SW	WSW	W	WNW	NW	NNW	**Totals**
0 - 2	80	39	19	20	43	84	186	22	8	10	4	23	26	32	36	53	685
3 - 4	0	0	0	0	0	0	0	0	0	0	1	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	80	39	19	20	43	84	186	22	8	10	5	23	26	32	36	53	686

Total Number of Valid Hours: 686

Total Number of Hours: 720

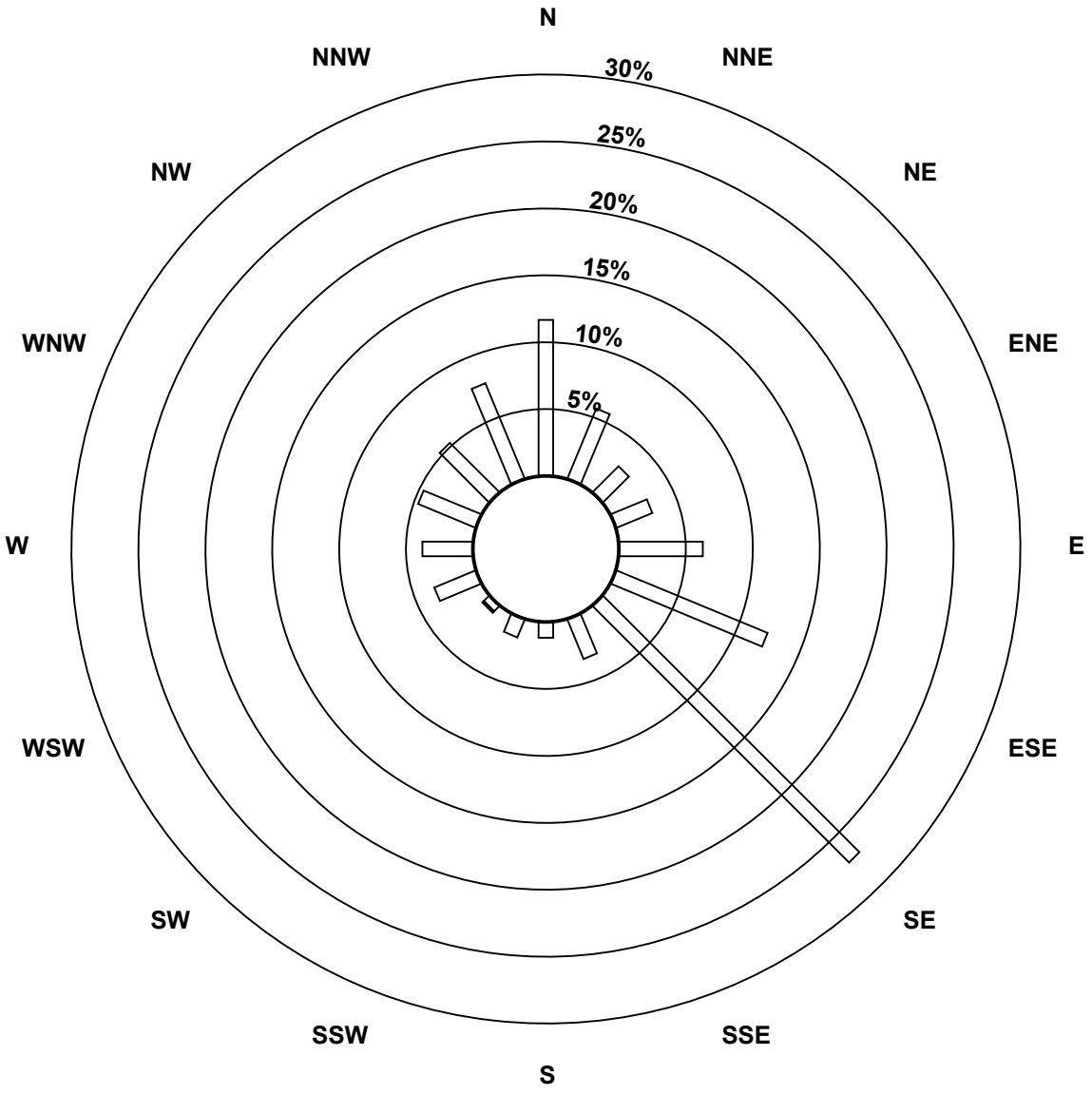
AURORA ATMOSPHERICS INC.

Wood Buffalo Environmental Association

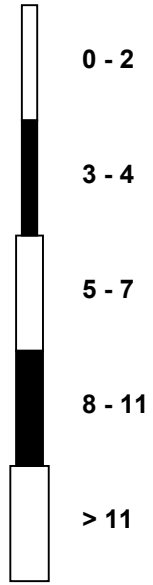
Wind Rose Apr 2014

Hydrogen Sulphide (H_2S) - ppb

Lower Camp (AMS 11)



Classes (ppb)



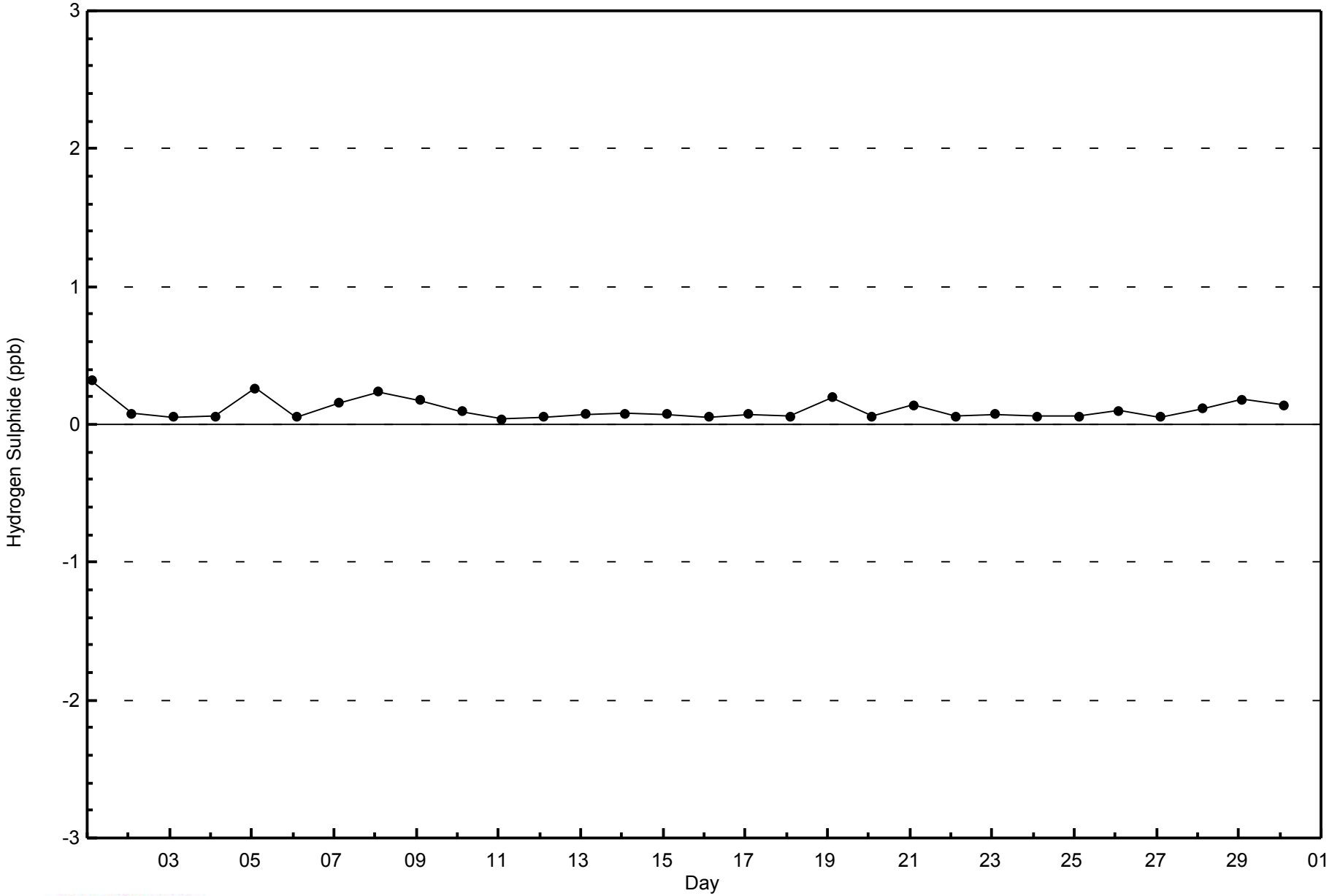
Total Number of Valid Hours: 686

WBEA NETWORK

Zero Responses

Hydrogen Sulphide (H_2S) - ppb

Lower Camp - April 2014



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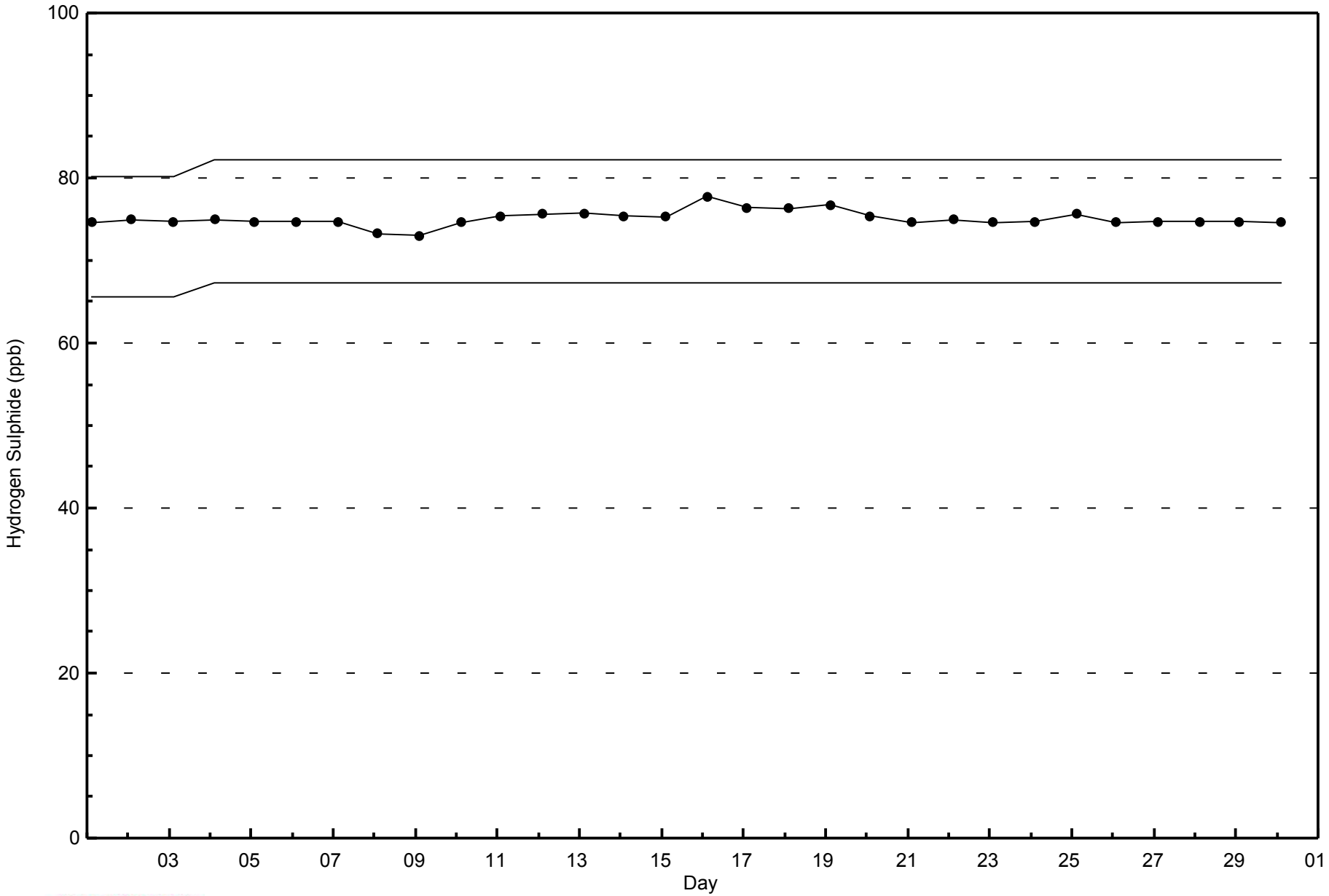
WBEA NETWORK

Span Responses

Hydrogen Sulphide (H_2S) - ppb

Lower Camp - April 2014



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Wood Buffalo Environmental Association

Summary of Hour Averages

Total Hydrocarbons (THC) - ppm

Lower Camp - April 2014

Maximum Value: 4.0 ppm on Apr 30 21:00

Maximum Daily Average: 2.8 ppm on Apr 7

Minimum Value: 1.9 ppm on Apr 27 08:00

Minimum Daily Average: 2.0 ppm on Apr 11

Maximum Diurnal Average: 2.3 ppm at hour 21

Minimum Diurnal Average: 2.1 ppm at hour 13

Monthly Average: 2.20 ppm

Percentiles: P_1 = 1.9 P_{10} = 2.0 Q_1 = 2.0 Median = 2.1 Q_3 = 2.3 P_{90} = 2.5 P_{99} = 3.3

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-Apr	2.3	Z	2.2	2.4	2.3	2.4	2.3	2.1	2.1	2.0	2.0	2.0	2.0	2.0	AF	AF	AF	2.1	2.0	2.1	2.0	2.1	2.1	2.0	2.1	2.4
2-Apr	2.0	Z	2.1	2.1	2.1	2.0	2.0	2.0	2.1	2.1	2.0	2.0	C	C	C	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.1
3-Apr	2.1	Z	2.1	2.2	2.1	2.2	2.1	2.2	2.2	2.1	2.1	2.1	2.3	2.3	2.2	2.1	2.1	2.2	2.2	2.4	2.2	2.2	2.2	2.2	2.2	2.4
4-Apr	2.1	Z	2.2	2.2	2.2	2.2	2.2	2.2	2.2	2.2	2.2	2.2	2.2	2.3	2.7	2.5	2.3	2.2	2.2	2.3	2.0	2.0	2.1	2.4	2.2	2.7
5-Apr	2.5	Z	2.3	2.3	2.2	2.3	2.4	2.4	2.3	2.1	2.2	2.2	2.1	2.2	2.2	2.2	2.2	2.2	2.2	2.2	2.2	2.2	2.2	2.1	2.2	2.5
6-Apr	2.1	Z	2.1	2.1	2.2	2.1	2.1	2.2	2.6	2.8	2.5	2.4	2.3	2.3	2.8	2.6	2.8	2.6	3.4	2.3	2.3	2.2	2.2	2.4	2.4	3.4
7-Apr	2.5	Z	2.7	3.3	3.3	3.1	3.2	3.5	3.9	2.9	2.7	2.7	2.4	2.3	2.4	2.4	2.4	2.5	3.3	2.3	3.4	3.3	2.3	2.6	2.8	3.9
8-Apr	2.5	Z	2.6	2.7	2.7	2.7	3.5	2.9	2.4	2.1	2.1	2.2	2.3	2.5	2.4	2.4	2.3	2.3	2.3	2.4	2.3	2.2	2.4	2.5	2.5	3.5
9-Apr	2.2	Z	2.5	2.4	2.1	2.0	2.0	2.1	2.1	2.1	1.9	1.9	2.0	2.0	2.0	2.2	2.3	2.4	2.2	2.1	2.1	2.2	2.2	2.3	2.2	2.5
10-Apr	2.2	Z	2.1	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	2.0	2.0	2.0	2.0	2.0	2.0	2.0	1.9	2.0	2.2
11-Apr	2.0	Z	2.0	2.0	1.9	2.0	2.0	2.0	1.9	2.0	2.0	1.9	1.9	2.0	1.9	1.9	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0
12-Apr	2.0	Z	2.1	2.1	2.1	2.1	2.2	2.5	2.3	2.1	2.2	2.2	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	2.5
13-Apr	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	2.2	2.1	2.1	2.1	2.2	2.1	2.2	2.1	2.1	2.1	2.2
14-Apr	2.1	Z	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	2.2	2.5	2.7	2.7	2.3	2.1	2.1	2.0	2.2	2.7
15-Apr	2.0	Z	2.0	2.0	1.9	1.9	1.9	1.9	1.9	1.9	2.0	2.0	2.0	2.1	2.0	2.1	2.1	2.1	2.1	2.1	2.1	2.0	2.1	1.9	2.0	2.1
16-Apr	2.0	Z	2.0	1.9	1.9	1.9	1.9	1.9	2.0	2.0	2.2	2.1	2.1	2.1	2.1	2.1	2.1	2.1	2.1	2.0	2.1	2.1	2.1	2.1	2.0	2.2
17-Apr	2.2	Z	2.0	2.1	2.1	2.1	2.2	2.1	2.1	2.1	2.1	2.0	2.1	2.1	2.1	2.1	2.1	2.1	2.2	2.2	2.2	2.1	2.4	2.2	2.1	2.4
18-Apr	2.2	Z	2.0	2.2	2.1	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.1	2.1	2.1	2.1	2.2	2.2	2.4	2.4	2.4	2.1	2.4
19-Apr	2.4	Z	2.4	2.3	2.3	2.3	2.3	2.2	2.3	2.1	2.1	2.1	2.0	2.1	2.2	2.2	2.2	2.2	2.1	2.3	2.3	2.3	2.2	2.4	2.2	2.4
20-Apr	2.3	Z	2.1	2.2	2.1	2.1	2.2	2.1	2.9	2.6	3.1	2.6	2.3	2.2	2.2	2.2	2.2	2.2	2.2	2.2	2.3	2.4	2.8	2.9	2.4	3.1
21-Apr	2.7	Z	2.6	2.5	2.4	2.4	2.4	2.2	2.3	2.4	2.6	2.6	2.3	2.2	2.4	2.2	2.2	2.2	2.2	2.2	2.3	2.3	2.2	2.2	2.3	2.7
22-Apr	2.2	Z	2.2	2.2	2.2	2.2	2.2	2.2	2.2	2.1	2.2	2.2	2.1	2.1	2.1	2.1	2.2	2.1	2.1	2.1	2.1	2.1	2.0	2.1	2.1	2.2
23-Apr	2.1	Z	2.0	2.0	2.0	2.0	1.9	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.1	2.0	2.1	2.1	2.0	2.0	2.0	2.0	2.0	2.1
24-Apr	2.1	Z	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.1	2.2	2.3	2.4	2.1	2.1	2.1	2.1	2.0	2.1	2.0	2.0	2.0	2.0	2.1	2.1	2.4
25-Apr	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	2.1	2.1	2.1	2.1	2.2	2.1	2.2	2.3	2.2	2.2	2.1	2.3
26-Apr	2.2	Z	2.1	2.2	2.2	2.1	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.1	2.0	2.1	2.1	2.1	2.2	2.2	2.0	2.0	2.1	2.2
27-Apr	2.2	Z	2.2	2.1	2.0	1.9	1.9	1.9	1.9	1.9	1.9	1.9	1.9	1.9	2.0	2.1	2.0	2.0	2.1	2.1	2.1	2.1	2.1	2.1	2.0	2.2
28-Apr	2.2	Z	2.2	2.2	2.2	2.1	2.1	2.1	2.1	2.1	2.1	2.1	2.1	2.2	2.3	2.3	2.3	2.4	2.5	2.6	2.4	2.4	2.5	2.7	2.3	2.7
29-Apr	2.7	Z	2.6	2.3	2.1	2.1	2.0	2.5	2.5	2.7	2.5	2.2	2.2	2.2	2.2	2.3	2.4	2.3	2.3	2.6	2.8	2.5	2.5	2.7	2.4	2.8
30-Apr	2.5	Z	2.9	2.9	2.4	2.3	2.5	2.3	2.6	2.7	2.3	2.1	2.1	2.2	2.3	2.3	2.6	2.3	2.1	2.2	4.0	2.6	2.2	2.5	2.5	4.0
	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	2.2	2.2	2.2	2.2	2.2	2.2	2.3	2.2	2.2	2.2	Diurnal Average	
	2.7	--	2.9	3.3	3.3	3.1	3.5	3.5	3.9	2.9	3.1	2.7	2.4	2.5	2.8	2.6	2.8	2.6	3.4	2.7	4.0	3.3	2.8	2.9	Diurnal Maximum	

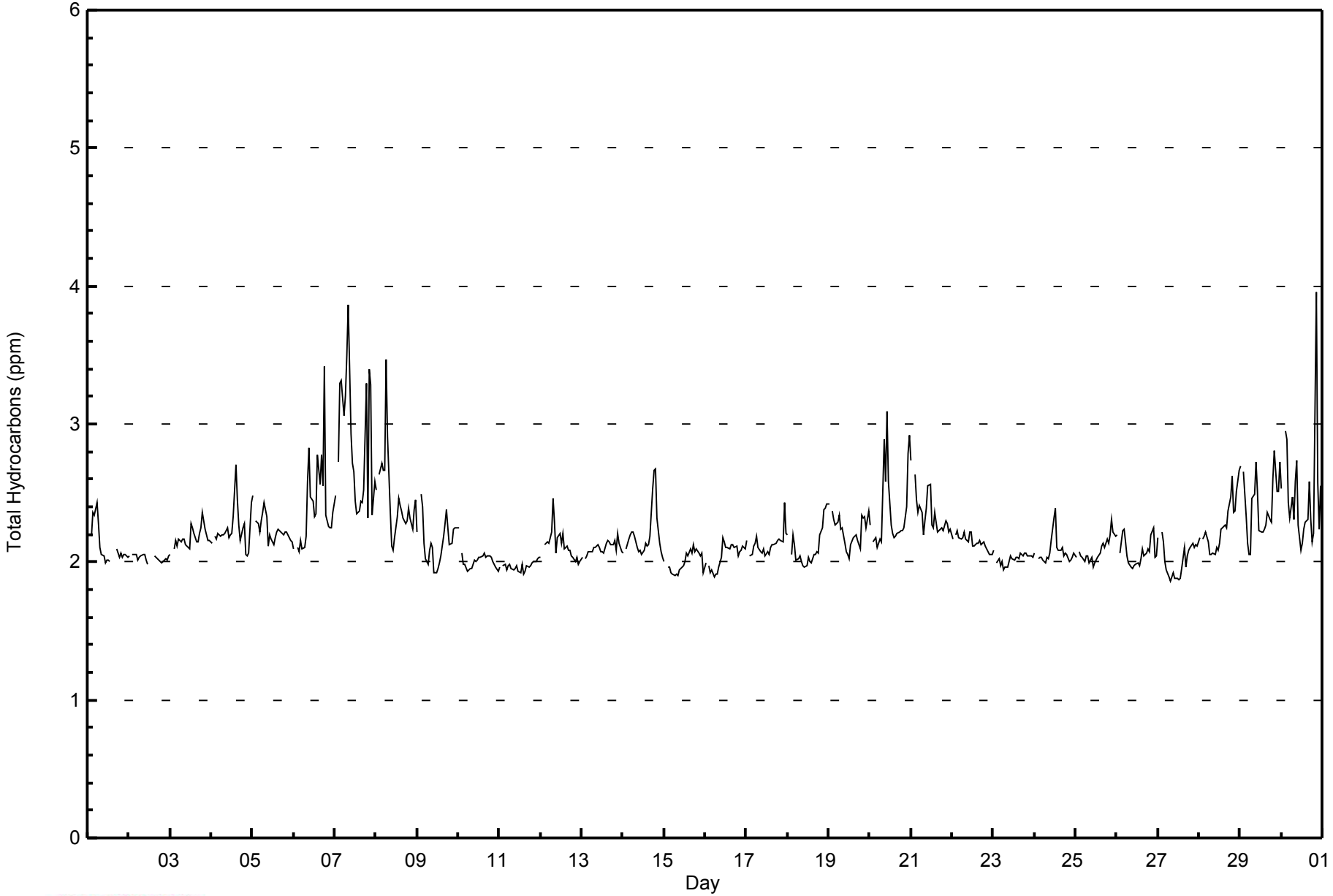
Z - zerospan C - Calibration AF - Analyzer Failure

WBEA NETWORK

Hourly Averages

Total Hydrocarbons (THC) - ppm

Lower Camp - April 2014



AURORA ATMOSPHERICS INC.

Concentration Ranges (ppm)	Number of Hours	%	Cumulative %
0 - 2.0	195	28.51	28.51
2.1 - 3.0	476	69.59	98.10
3.1 - 10.0	13	1.90	100.00
> 10.0	0	0.00	100.00

Total Number of Valid Hours: 684

Total Number of Hours: 720

WBEA NETWORK

Frequency Distribution

Total Hydrocarbons (THC) - ppm

Lower Camp - April 2014

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	43	25	9	10	33	18	32	2	0	0	0	2	0	0	8	13	195
2.1 - 3.0	37	13	10	7	14	59	154	20	5	9	4	21	26	29	31	37	476
3.1 - 10.0	0	1	0	2	0	1	3	0	2	1	1	1	0	1	0	0	13
> 10.0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Totals	80	39	19	19	47	78	189	22	7	10	5	24	26	30	39	50	684

Total Number of Valid Hours: 684

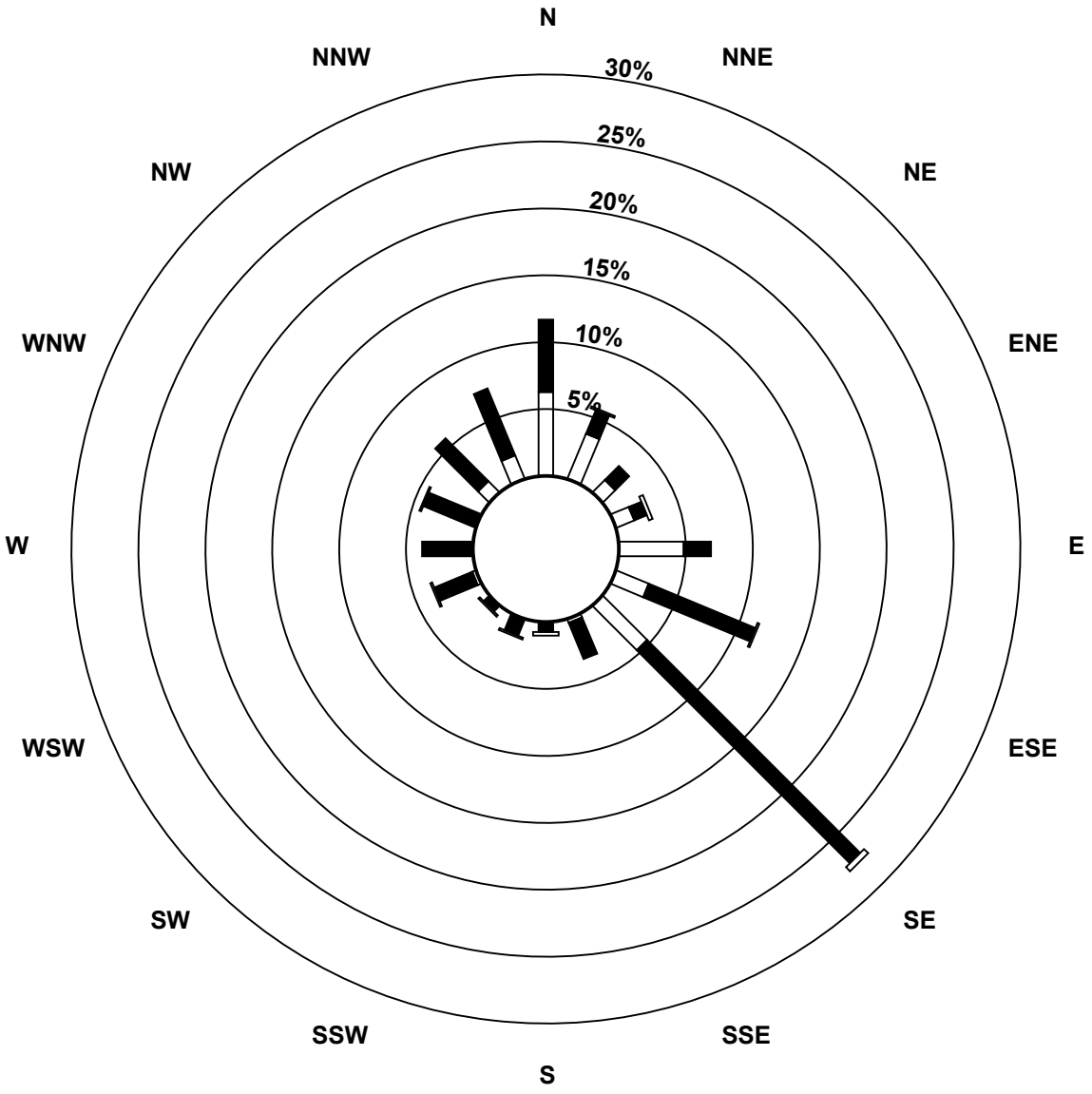
Total Number of Hours: 720

Wood Buffalo Environmental Association

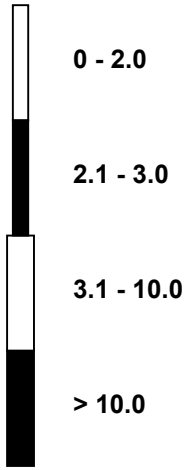
Wind Rose Apr 2014

Total Hydrocarbons (THC) - ppm

Lower Camp (AMS 11)



Classes (ppm)



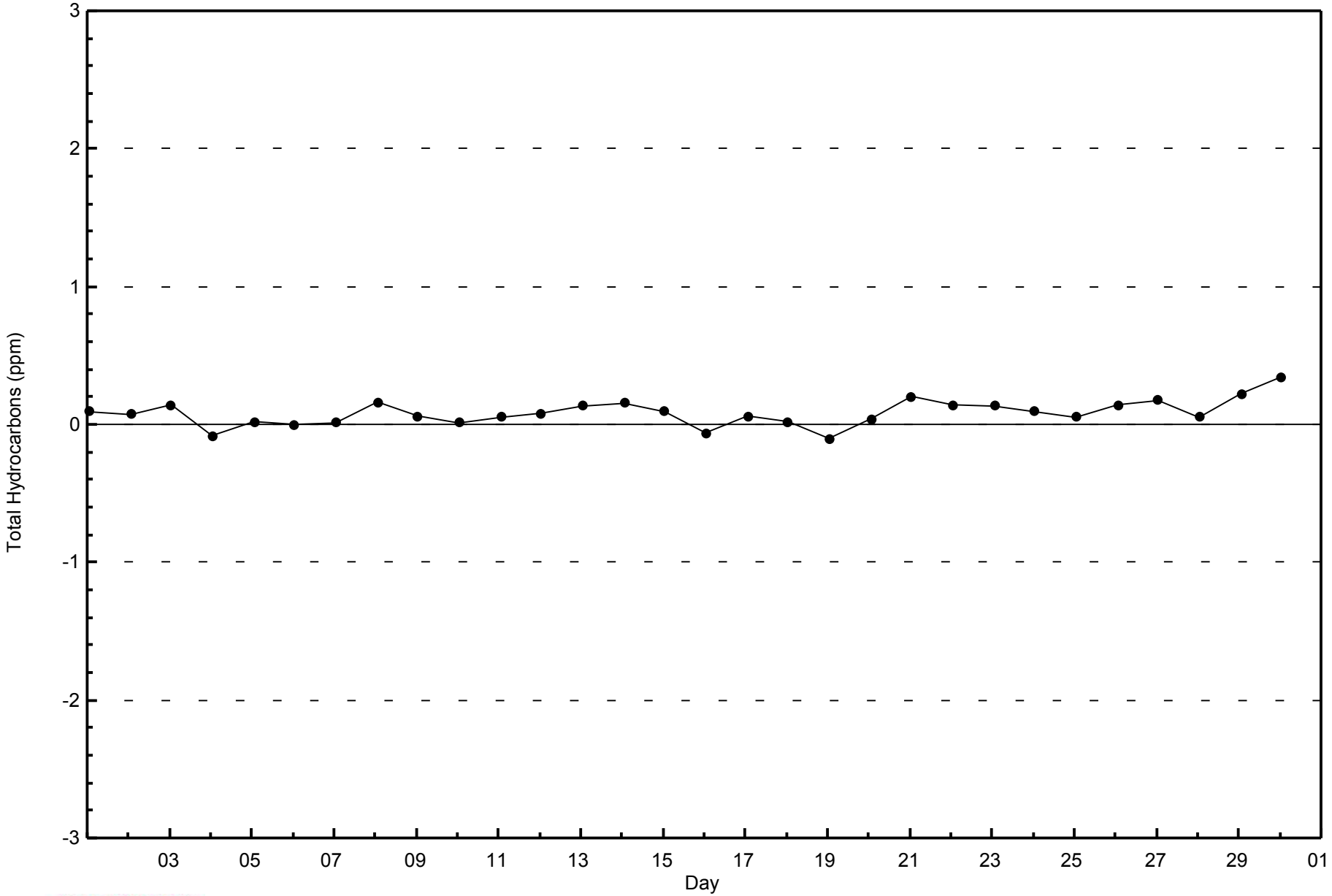
Total Number of Valid Hours: 684

WBEA NETWORK

Zero Responses

Total Hydrocarbons (THC) - ppm

Lower Camp - April 2014



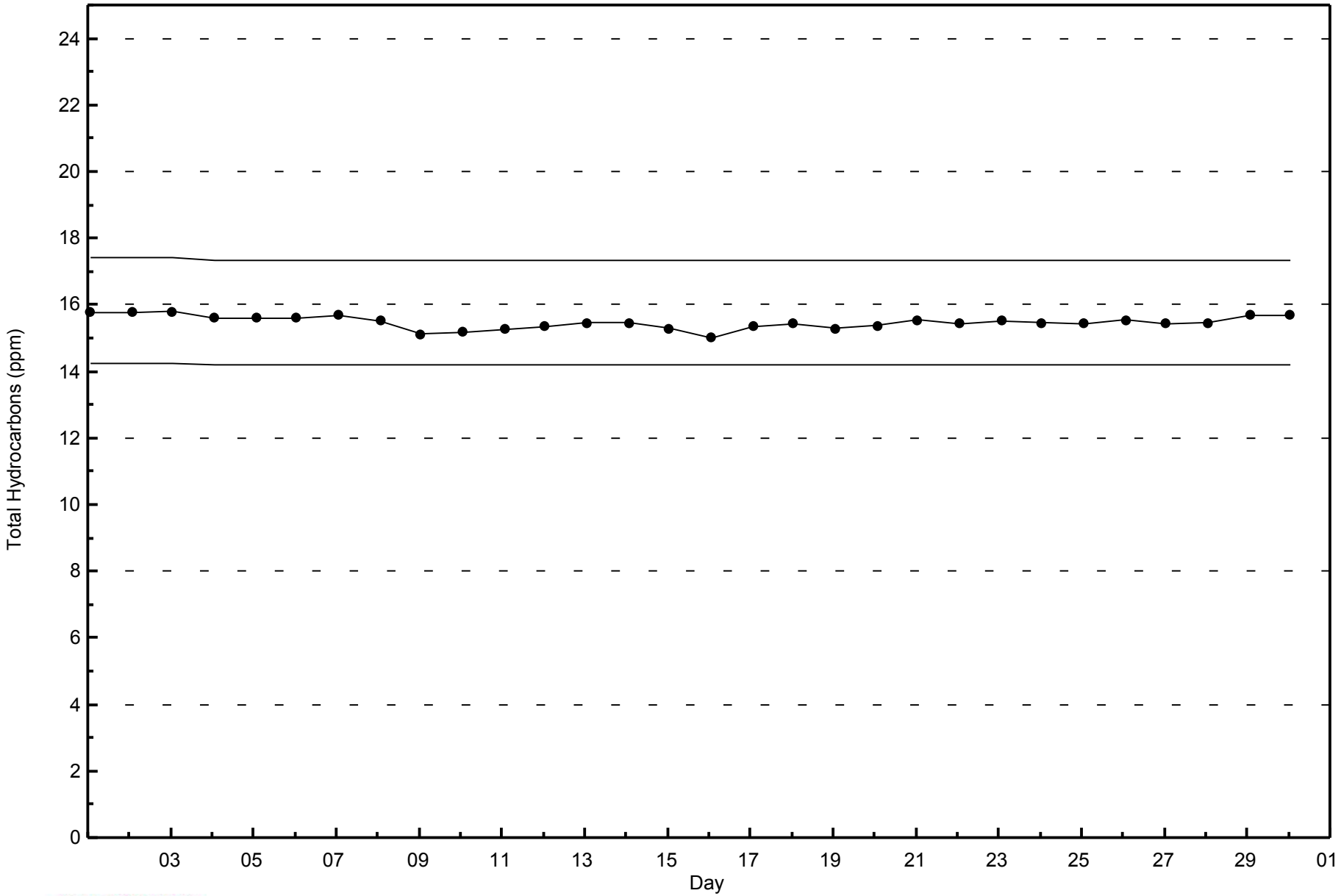
AURORA
ATMOSPHERICS INC.

WBEA NETWORK

Span Responses

Total Hydrocarbons (THC) - ppm

Lower Camp - April 2014



AURORA ATMOSPHERICS INC.

Maximum Value: 22.8 C on Apr 30 16:00

Maximum Daily Average: 13.4 C on Apr 30

Minimum Value: -18.9 C on Apr 3 07:00

Minimum Daily Average: -11.3 C on Apr 2

Maximum Diurnal Average: 6.8 C at hour 16

Minimum Diurnal Average: -3.4 C at hour 6

Monthly Average: 1.71 C

Percentiles: P_1 = -15.4 P_{10} = -7.8 Q_1 = -3.0 Median = 2.2 Q_3 = 5.9 P_{90} = 11.0 P_{99} = 21.4

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

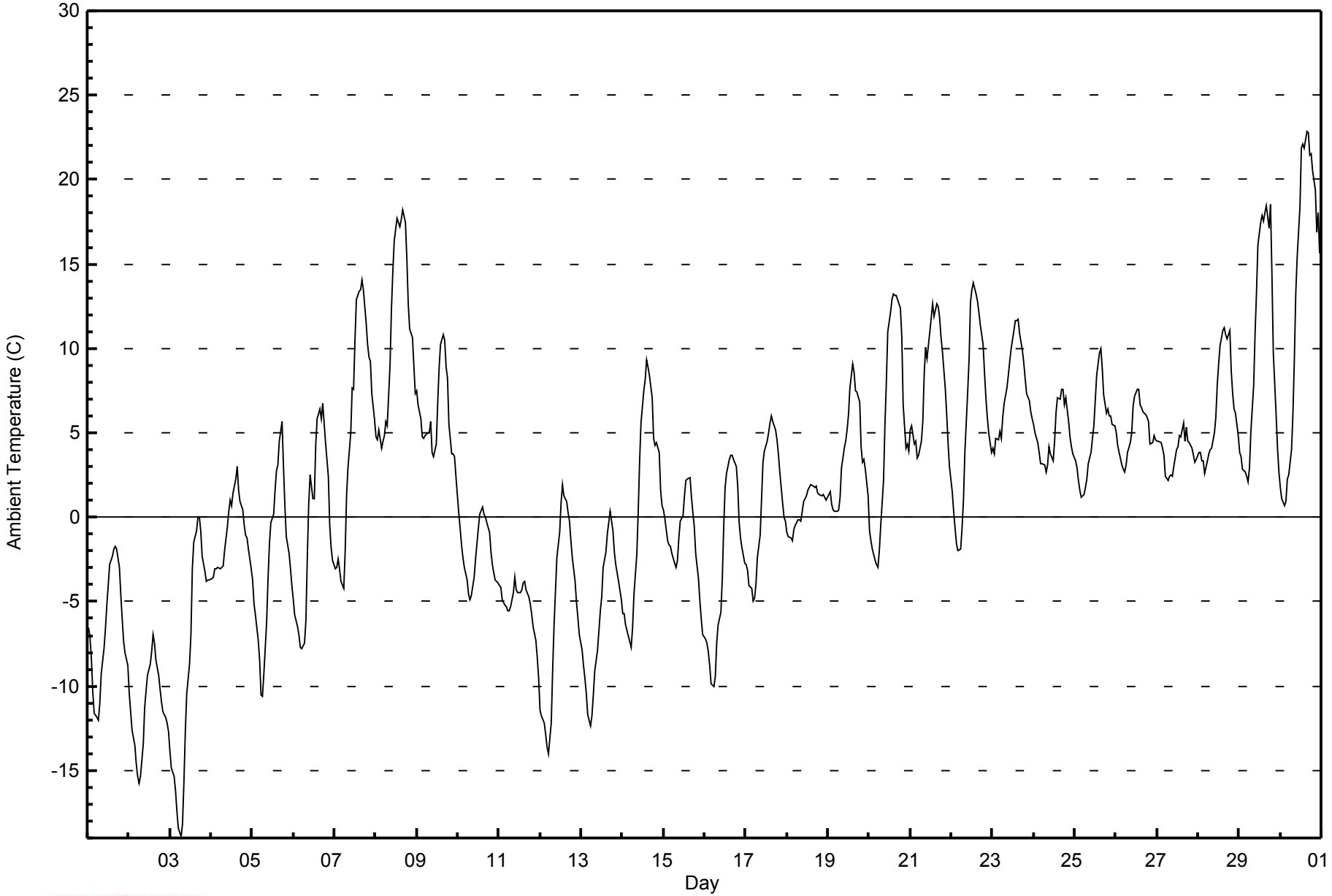
Day	Hourly Period Ending At (MST)																								Daily	Daily
	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24	Average	Maximum
1-Apr	-6.5	-7.1	-8.4	-10.3	-11.6	-11.9	-12.0	-11.0	-9.3	-7.8	-6.6	-5.2	-4.1	-2.8	-2.3	-1.9	-1.8	-1.9	-3.0	-4.7	-6.0	-7.3	-8.0	-8.8	-6.7	-1.8
2-Apr	-10.5	-11.5	-12.6	-13.5	-14.6	-15.4	-15.8	-15.4	-13.4	-11.2	-10.3	-9.4	-8.7	-7.9	-6.9	-7.5	-8.4	-9.3	-10.2	-10.9	-11.5	-11.9	-12.2	-12.7	-11.3	-6.9
3-Apr	-13.9	-14.9	-15.3	-16.1	-17.4	-18.4	-18.9	-18.2	-15.7	-12.7	-10.4	-8.7	-6.9	-3.1	-1.5	-0.8	0.0	0.0	-0.8	-2.3	-3.2	-3.8	-3.7	-3.7	-8.8	0.0
4-Apr	-3.6	-3.5	-3.0	-3.1	-2.9	-3.1	-3.0	-2.9	-2.0	-0.5	0.3	1.0	0.7	1.4	2.2	3.0	1.6	0.9	0.4	-0.5	-1.0	-1.2	-1.9	-3.0	-1.0	3.0
5-Apr	-3.7	-5.1	-5.8	-7.3	-8.5	-10.5	-10.6	-9.3	-6.2	-3.6	-1.5	-0.3	0.2	1.6	2.8	3.1	4.5	5.7	3.0	0.7	-1.1	-2.1	-3.1	-4.0	-2.6	5.7
6-Apr	-4.9	-5.8	-6.4	-7.0	-7.7	-7.8	-7.5	-6.1	-2.4	0.7	2.5	1.1	1.1	4.3	5.8	6.4	5.9	6.8	5.5	4.4	2.5	-0.5	-1.8	-2.6	-0.6	6.8
7-Apr	-3.1	-2.9	-2.5	-3.1	-3.8	-4.2	-2.0	1.3	2.9	5.0	7.6	7.6	10.5	12.9	13.4	13.5	14.1	13.5	11.5	10.3	9.5	9.2	7.3	5.8	5.6	14.1
8-Apr	4.7	4.6	5.2	4.1	4.5	4.8	5.7	5.4	9.0	12.3	14.6	16.4	17.7	17.5	17.2	17.6	18.2	17.5	15.3	12.6	11.1	10.7	9.0	7.4	11.0	18.2
9-Apr	7.5	6.7	5.8	4.8	4.7	4.8	5.0	5.0	5.7	3.8	3.6	4.4	6.8	8.8	10.3	10.8	10.5	8.9	8.2	5.5	3.8	3.8	3.6	2.4	6.0	10.8
10-Apr	0.3	-0.6	-1.7	-2.4	-3.0	-3.7	-4.5	-4.8	-4.7	-3.5	-2.5	-1.6	-0.7	0.2	0.6	0.2	0.0	-0.3	-0.9	-2.0	-2.8	-3.3	-3.7	-3.9	-2.1	0.6
11-Apr	-4.0	-4.2	-4.9	-5.2	-5.3	-5.5	-5.5	-5.3	-4.4	-3.6	-4.3	-4.4	-4.4	-4.3	-3.9	-3.8	-4.3	-4.7	-5.1	-5.7	-6.4	-7.3	-8.3	-9.5	-5.2	-3.6
12-Apr	-11.5	-11.8	-12.2	-12.8	-13.6	-14.0	-12.2	-9.0	-6.4	-4.4	-2.4	-0.9	0.9	1.9	1.3	0.9	0.3	-0.2	-1.4	-2.4	-3.8	-5.0	-6.0	-7.0	-5.5	1.9
13-Apr	-7.9	-8.8	-9.6	-10.5	-11.7	-12.3	-11.8	-10.5	-9.2	-7.9	-6.7	-5.5	-4.7	-2.9	-2.0	-0.9	-0.3	0.4	-0.8	-2.1	-2.8	-3.3	-3.8	-4.9	-5.9	0.4
14-Apr	-5.7	-5.7	-6.4	-7.0	-7.4	-7.7	-6.6	-4.5	-2.3	0.3	3.2	5.6	7.5	8.1	9.4	8.9	8.4	7.1	4.7	4.3	4.4	3.9	1.6	0.7	1.0	9.4
15-Apr	0.4	0.0	-1.4	-1.6	-1.7	-2.1	-2.7	-3.0	-2.5	-1.2	-0.2	0.1	1.2	2.1	2.3	2.3	1.2	0.3	-0.5	-2.1	-3.7	-5.0	-6.1	-6.9	-1.3	2.3
16-Apr	-7.2	-7.4	-8.0	-8.8	-9.9	-10.1	-9.5	-7.5	-6.3	-5.6	-3.6	-0.6	1.8	2.6	3.4	3.7	3.6	3.4	3.0	1.8	-0.3	-1.2	-1.8	-2.8	-2.8	3.7
17-Apr	-2.8	-3.2	-4.1	-4.2	-5.0	-4.8	-4.0	-2.4	-1.0	1.1	3.3	3.9	4.5	5.0	5.6	6.0	5.6	5.1	4.5	3.7	2.7	0.9	0.0	-0.2	0.8	6.0
18-Apr	-0.9	-1.1	-1.3	-1.4	-0.7	-0.5	-0.2	-0.2	-0.2	0.3	0.9	1.3	1.6	1.8	1.9	1.8	1.7	1.8	1.5	1.3	1.2	1.4	1.2	1.0	0.6	1.9
19-Apr	1.4	1.5	0.8	0.5	0.3	0.3	0.4	1.2	2.9	4.1	4.5	5.2	6.1	7.7	9.0	8.6	7.5	7.4	6.9	4.1	3.2	3.4	2.8	1.2	3.8	9.0
20-Apr	-0.8	-1.4	-1.9	-2.5	-2.8	-3.0	-2.0	-0.5	2.1	5.5	8.0	11.0	12.1	12.9	13.2	13.1	13.1	12.6	12.4	10.7	6.7	4.1	4.4	4.0	5.5	13.2
21-Apr	5.2	5.5	4.4	4.5	3.5	3.7	4.5	5.7	8.5	10.0	9.4	11.0	11.8	12.7	11.9	12.7	12.5	11.8	10.6	9.8	7.7	6.1	4.4	3.0	8.0	12.7
22-Apr	1.5	0.3	-0.7	-1.5	-2.0	-1.9	-0.6	1.0	3.9	7.4	9.3	12.7	13.5	13.9	13.3	12.8	12.2	11.4	10.2	8.6	7.1	5.9	5.0	3.8	6.1	13.9
23-Apr	4.1	3.8	4.7	4.6	5.1	4.7	5.9	6.8	7.6	8.4	9.2	10.0	11.1	11.7	11.6	11.7	10.9	9.9	9.2	8.3	7.4	6.9	6.3	5.8	7.7	11.7
24-Apr	5.5	5.0	4.4	3.8	3.2	3.1	3.1	2.7	3.1	4.2	3.8	3.3	4.5	6.2	7.1	7.0	7.6	7.6	6.7	7.1	5.7	4.8	4.1	3.8	4.9	7.6
25-Apr	3.3	2.9	2.2	1.6	1.2	1.3	1.7	2.2	3.1	3.9	4.6	5.4	6.9	8.4	9.7	10.0	8.9	7.3	6.2	6.4	6.0	6.0	5.5	5.4	5.0	10.0
26-Apr	5.0	4.3	3.8	3.1	2.8	2.7	3.1	3.8	4.4	5.0	6.6	7.2	7.6	7.6	6.6	6.5	6.2	6.1	5.9	5.7	4.3	4.4	4.9	4.6	5.1	7.6
27-Apr	4.5	4.5	4.4	4.1	3.6	2.5	2.2	2.4	2.5	2.4	3.0	4.0	4.2	4.8	4.7	5.6	4.5	5.4	4.5	4.4	4.1	3.6	3.3	3.5	3.9	5.6
28-Apr	3.9	3.8	3.3	3.4	2.6	3.3	3.8	4.0	4.1	5.0	5.9	7.9	9.0	10.1	11.1	11.2	10.8	10.6	11.0	8.7	7.3	6.4	6.2	4.8	6.6	11.2
29-Apr	3.8	3.6	2.9	2.7	2.4	2.1	2.9	5.1	7.8	10.9	13.3	16.1	17.5	17.9	17.6	18.0	18.5	17.2	18.6	14.5	9.8	6.1	4.1	2.6	9.8	18.6
30-Apr	1.7	1.1	0.7	0.9	2.2	2.6	4.0	6.2	9.3	13.2	15.4	18.4	21.8	22.1	21.8	22.8	22.8	21.5	21.6	20.6	19.3	16.8	18.1	15.6	13.4	22.8
	-1.1	-1.6	-2.1	-2.7	-3.1	-3.4	-2.9	-1.9	-0.3	1.4	2.7	3.9	5.0	6.1	6.6	6.8	6.5	6.1	5.3	4.0	2.7	1.7	1.0	0.2	Diurnal Average	
	7.5	6.7	5.8	4.8	5.1	4.8	5.9	6.8	9.3	13.2	15.4	18.4	21.8	22.1	21.8	22.8	22.8	21.5	21.6	20.6	19.3	16.8	18.1	15.6	Diurnal Maximum	

WBEA NETWORK

Hourly Averages

Ambient Temperature (AT) - C

Lower Camp - April 2014



AURORA
ATMOSPHERICS INC.

Concentration Ranges (C)	Number of Hours	%	Cumulative %
-50 - -20	0	0.00	0.00
-20 - 0	278	38.61	38.61
0 - 10	355	49.31	87.92
10 - 20	79	10.97	98.89
> 20	8	1.11	100.00

Total Number of Valid Hours: 720

Total Number of Hours: 720

Wood Buffalo Environmental Association

Summary of Hour Averages

Wind Speed (WS) - km/h

Lower Camp - April 2014

Maximum Speed: 34 km/h on Apr 4 03:00

Maximum Daily Speed Average: 17.7 km/h on Apr 17

Minimum Speed Value: 0 km/h on Apr 1 04:00

Minimum Daily Speed Average: 0.3 km/h on Apr 6

Maximum Diurnal Speed Average: 5.9 km/h at hour 8

Minimum Diurnal Speed Average: 2.6 km/h at hour 11

Monthly Average Velocity: 3.9 km/h 97.4 deg

Percentiles: P_1 = 1 P_{10} = 3 Q_1 = 6 Median = 11 Q_3 = 16 P_{90} = 21 P_{99} = 30

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-Apr	SE7	SE9	SE3	NNW0	NW3	WNW4	NW4	NNW5	NNW8	N14	N11	NNW10	NNW9	NNW8	NNW9	NNW9	N8	N10	NNE14	N9	NW8	NE5	N5	N10	N5.7	N14
2-Apr	NNW7	NNW7	N11	N10	N11	N10	N10	NNW9	NNW11	NNW14	NNW16	N18	N16	N19	N19	N18	N20	N19	N16	N16	N13	N11	N12	N11	N13.4	N20
3-Apr	NW8	NNW8	NNW8	NNW7	NNW6	NW7	NNW7	NNW8	NNW7	NNW7	WNW4	W7	WNW6	SE8	SE9	ESE16	ESE16	ESE21	ESE19	SE20	SE25	SE26	SE30	SE28	ESE5.9	SE30
4-Apr	SE32	SE30	SE34	SE34	SE27	SE29	SE32	SE28	SE25	SE23	SE15	SE14	SE9	NE2	NW9	WNW20	WNW28	NW22	NW24	WNW26	NW19	NW19	NW18	WNW15	SE5.6	SE34
5-Apr	WNW15	W7	WSW12	W3	N3	E1	NW2	N2	N2	NW4	WSW3	WSW4	N6	NNE5	N4	N6	NNW4	W4	NNW10	NNW8	NNW7	NNW7	NW6	NNW5	NW4.0	WNW15
6-Apr	NNW5	NNW4	NW4	NW5	WNW4	WNW4	NW4	NNE2	SE5	SE8	SSE5	W6	NE2	SSW1	SE6	SE9	SE12	S1	WNW6	NNW7	NW5	NW2	NW1	NE1	NW0.3	SE12
7-Apr	E1	ESE3	SE5	NNE2	ENE1	ENE2	ESE6	SE8	SE10	SE8	SE8	ENE3	SE12	SE9	ESE6	WNW5	WSW9	SW5	SW11	SSW8	S6	SSW10	SW3	SE7	SSE3.8	SE12
8-Apr	SE13	SE9	SE12	SE11	SE5	SE7	SE11	SE12	SSW7	SW16	WSW18	WSW14	W22	W27	W28	WSW25	WSW24	WSW28	WSW27	WSW26	WSW20	W19	W17	W11	WSW12.2	W28
9-Apr	W20	WNW15	WNW11	W12	W18	WSW18	WSW22	W21	WNW32	WNW28	NW19	NNW8	NNW13	NW17	NW19	NW29	WNW29	WNW20	WNW15	N12	SSW2	WSW10	WSW18	WNW11	WNW15.5	WNW32
10-Apr	NNW7	NNW8	NNW6	NW5	NNW6	N11	NNE14	N15	NNE17	NNE12	N12	N13	N13	NNE13	NNE14	NNE16	N16	NNE16	NNE16	NNE15	N11	NNE8	NE9	ENE9	N11.2	NNE17
11-Apr	ENE11	ENE10	NE10	ENE10	E13	E13	E11	E11	ENE12	NNE9	N20	NNE21	NNE24	N23	NNE25	N27	NNE25	N22	N22	N20	N18	N9	NNW6	NW2	NNE13.0	NNE27
12-Apr	NE1	N2	NNW1	NNE2	NE2	ENE2	ESE4	SE9	SE4	WSW10	W8	WSW6	SW6	W4	N15	N17	N17	N15	NNE16	NNE15	NNE16	N16	N16	N12	N5.7	N17
13-Apr	N11	N12	N10	NNW5	NW3	NNW4	N5	N8	N10	N11	N13	N10	NNE8	ENE5	NE5	E3	E3	SE15	SE12	SSE4	SE8	SE15	SE14	SE13	NE3.5	SE15
14-Apr	SE18	ESE20	SE17	SE15	SE15	SE14	ESE16	SE12	SE14	SE13	SSE13	SSE14	SSE13	SE15	SE14	SSE10	SSE10	SE10	ESE15	ESE11	ESE7	NNE8	N15	NNW11	SE10.7	ESE20
15-Apr	NNW9	ENE9	ENE4	N9	NNE9	NE10	ENE9	NE10	NNE8	NNE2	ENE5	NNE13	NE17	NE16	NE18	NNE21	NNE28	N26	NNE24	N21	N19	N18	N15	N11	NNE12.9	NNE28
16-Apr	NNE9	NE9	N4	N9	N12	N12	N12	ENE7	E11	ESE12	SSW2	SE8	SE15	SE20	ESE18	SE21	SE22	ESE22	ESE23	ESE20	SE18	SE16	SE19	SE17	ESE10.4	ESE23
17-Apr	ESE18	ESE14	E9	E9	ESE14	ESE15	ESE15	SE18	ESE20	ESE20	SE23	SE25	SE24	ESE24	SE22	SE22	SE25	SE24	SE24	ESE20	ESE14	SE14	SE12	ESE4	ESE17.7	SE25
18-Apr	ESE10	ESE9	E10	ESE7	ESE12	ESE15	E13	E12	ESE16	SE17	SE18	ESE17	SE20	SE18	SE16	SE16	SE17	SE12	SE6	ESE4	ENE3	SSW2	NNW1	E1	ESE10.9	SE20
19-Apr	SSE7	S2	NW4	WNW4	W3	WNW1	NNW3	NW2	SE4	ESE9	SE10	SE14	SE15	SE11	ESE9	ESE12	SE20	SE20	ESE20	SE18	ESE16	ESE15	ESE13	WNW2	SE8.2	ESE20
20-Apr	WNW5	WNW5	W4	WNW4	WNW4	N1	NNW3	NNW3	NNW3	W8	WSW9	NW8	NNW11	NNW12	N12	NE11	NNE7	ENE7	ENE5	SE3	SE2	SE3	ESE3	ESE4	NNW2.7	NNW12
21-Apr	SE6	SE8	SE10	SE13	SE11	SE9	SE9	SE13	SE9	NW4	N11	N12	N13	NW6	NW9	N10	N11	NNE14	NNE16	N11	NW9	NW7	NNW6	NNW5	NNE3.4	NNE16
22-Apr	NW4	WNW4	NW3	NW2	NW3	WNW4	WNW3	NNW4	NNW4	WNW6	NNW9	W9	ESE9	ESE16	ESE20	ESE22	ESE19	ESE17	E15	NE12	NNE6	ENE3	ENE3	N2	E3.6	ESE22
23-Apr	WNW4	N7	NNE7	N5	NE6	ENE8	E12	E11	E11	E16	E19	E18	E22	E23	E24	E22	E21	E20	E15	E17	E16	E17	E17	E17	E13.7	E24
24-Apr	E16	E14	E14	ESE16	E12	E9	ESE12	ESE14	ESE8	E1	WSW10	WSW10	SSW5	SE14	SE19	SE15	ESE19	ESE20	ESE15	E16	E20	E17	E18	ESE17	ESE11.7	ESE20
25-Apr	ESE13	ESE10	E6	E4	ESE5	SE6	SE14	SE14	SE9	SE9	ESE9	SE9	SE6	SE5	SE8	SE10	SE10	SE13	SE12	SE8	SE8	SSE6	SSE6	SSE5	SE8.3	SE14
26-Apr	SSE7	SSE7	SSE5	SE2	SSE3	SE6	SE11	SE13	SE16	SE14	SSE13	SE21	SE18	SE18	SE21	SE21	SE23	ESE22	ESE22	ESE21	SE18	ESE16	ESE20	ESE19	SE14.7	SE23
27-Apr	ESE14	ESE17	ESE19	ESE19	ESE17	ESE10	NE3	E8	ESE12	SE18	SE23	SE28	SE27	SE21	SE20	SE19	SE17	SE16	SE18	SE15	SE14	SE9	SE12	SE9	SE15.7	SE28
28-Apr	SE9	SE11	SE12	SE6	SE5	SSE6	SSE5	SE7	SE9	SE9	SE7	ESE6	SE8	SE11	SE13	SE10	SE11	SE11	SE5	SE11	SE11	SE12	SE11	SE17	SE9.3	SE17
29-Apr	SE14	ESE3	SE6	ESE8	SE11	SE12	SE15	SE16	SE12	SE14	SE12	W7	W13	W12	WSW15	WNW6	W5	NNW5	NE2	W2	SE2	SE2	ESE3	SE1	SSE3.8	SE16
30-Apr	ESE2	NNE1	E1	SE2	SE10	SE14	SE14	SE16	SE17	SE15	SE18	SE13	S12	S12	SSE12	S10	S10	SSE8	WSW15	SSW7	S7	SSW4	SW10	W11	SSE7.8	SE18
	ESE3.7	E3.9	ESE3.5	E3.4	ESE3.6	ESE4.1	ESE4.8	ESE5.9	ESE5.2	ESE3.6	ESE2.6	E2.7	E4.0	ESE4.7	E4.5	E4.2	E4.3	E5.1	ENE4.3	ENE4.2	E3.4	E2.9	E2.9	E2.8	Diurnal Average	
	SE32	SE30	SE34	SE34	SE27	SE29	SE32	SE28	WNW32	WNW28	SE23	SE28	SE27	W27	W28	NW29	WNW29	WSW28	WSW27	WNW26	SE25	SE26	SE30	SE28	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 Apr 9 19:00

Minimum Value: 0 km/h on Apr 20 08:00

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

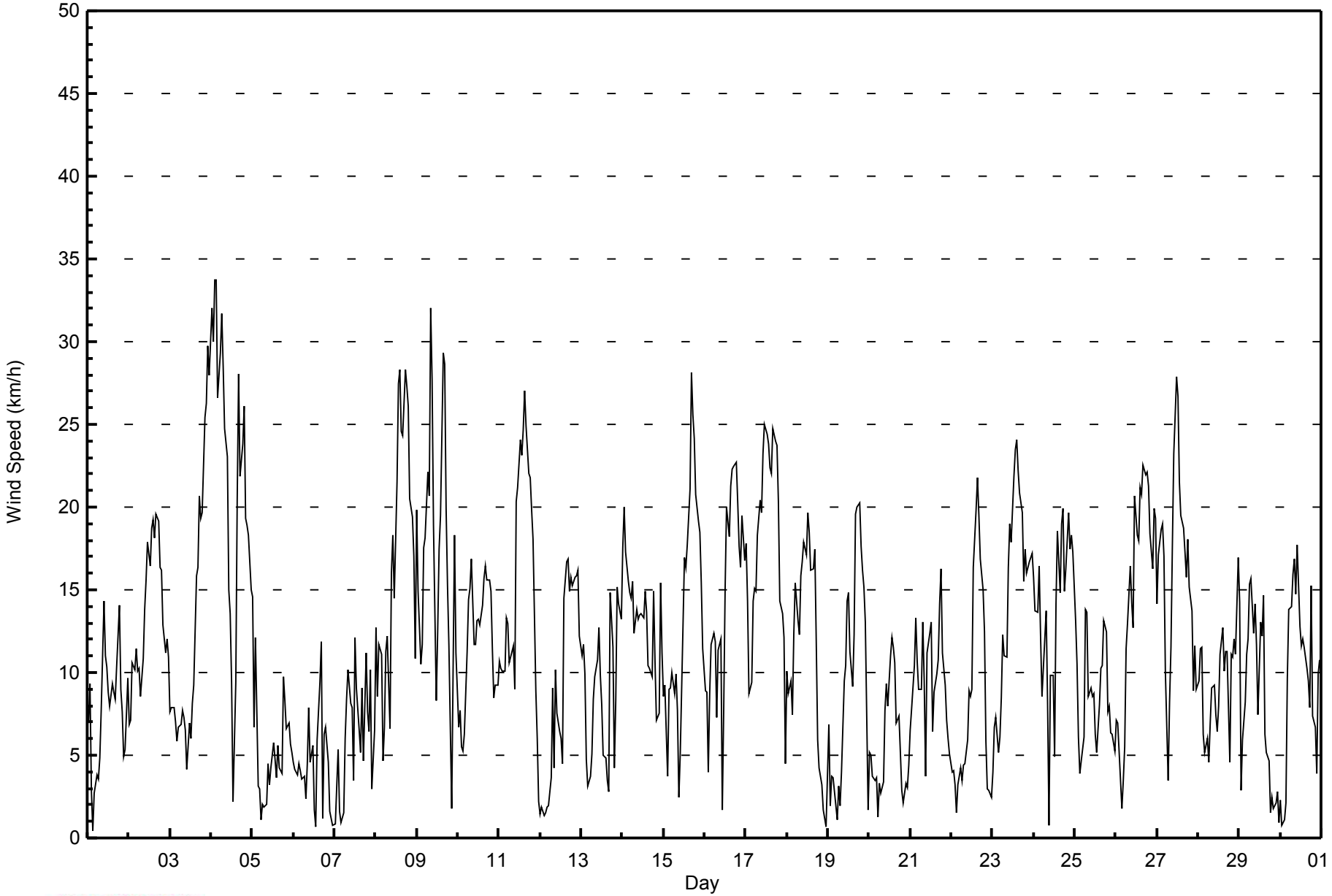
Day	Hourly Period Ending At (MST)																								Daily
	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24	Maximum
1-Apr	2	2	3	2	2	1	1	1	3	3	3	3	3	3	3	3	3	2	2	3	2	2	2	3	3
2-Apr	1	2	2	3	3	2	2	2	2	3	3	4	4	4	4	4	3	4	3	4	3	2	2	2	4
3-Apr	1	2	2	2	1	1	2	2	2	2	2	2	2	3	3	4	3	3	4	5	4	5	5	5	5
4-Apr	5	4	5	5	4	4	5	4	4	4	6	3	3	2	3	6	6	5	7	6	4	4	4	3	7
5-Apr	3	3	4	3	1	1	1	1	1	1	2	2	2	1	2	1	1	2	2	2	2	1	1	1	4
6-Apr	1	1	1	1	1	1	1	1	2	2	2	3	1	1	2	3	2	2	2	2	1	1	1	1	3
7-Apr	1	1	2	1	2	1	3	1	1	1	1	1	3	2	2	2	3	2	5	2	2	4	3	4	5
8-Apr	2	2	2	2	3	4	2	2	4	4	4	3	6	6	7	5	7	8	6	6	5	4	3	4	8
9-Apr	4	4	4	2	4	4	5	4	9	10	4	2	5	5	6	6	6	4	10	6	2	6	2	6	10
10-Apr	2	2	2	1	4	2	4	3	4	4	3	4	4	4	4	3	3	4	3	4	2	2	2	2	4
11-Apr	2	2	2	2	3	3	2	3	2	4	3	4	4	4	5	5	5	5	4	4	4	2	1	1	5
12-Apr	1	1	1	1	1	1	2	1	2	2	2	2	2	4	5	5	4	4	3	4	5	3	3	3	5
13-Apr	2	3	2	1	1	1	1	2	2	3	4	4	3	2	2	2	4	2	3	1	4	3	3	3	4
14-Apr	4	3	3	3	3	3	2	3	3	4	4	4	4	4	4	3	3	3	2	2	3	3	3	3	4
15-Apr	2	4	2	2	2	2	2	2	2	1	4	3	4	5	5	7	5	5	5	4	3	4	3	2	7
16-Apr	3	2	2	2	2	1	2	3	4	4	2	3	5	5	5	5	5	3	3	3	4	4	4	3	5
17-Apr	2	3	2	2	3	2	1	2	3	4	5	4	4	4	4	4	4	4	4	4	2	3	4	3	5
18-Apr	3	3	2	2	4	3	2	3	4	3	3	3	3	3	3	3	3	3	3	1	2	2	2	2	4
19-Apr	2	2	1	1	1	1	1	1	2	3	3	2	2	3	3	3	2	3	3	2	2	2	5	3	5
20-Apr	2	1	1	1	1	1	1	0	1	2	2	3	3	3	4	5	3	2	1	1	2	2	2	2	5
21-Apr	1	2	4	2	2	3	3	2	2	3	5	3	3	2	3	4	3	3	3	3	2	2	2	2	5
22-Apr	1	1	1	1	1	1	1	1	1	2	2	3	5	5	4	4	4	4	5	3	2	2	1	1	5
23-Apr	2	2	2	2	3	2	3	3	3	5	5	4	6	5	5	5	6	5	4	4	4	4	3	4	6
24-Apr	4	3	4	5	3	3	3	3	2	3	3	3	5	3	4	3	4	5	3	4	3	3	3	3	5
25-Apr	3	2	2	1	2	3	3	4	2	2	3	2	2	5	3	3	3	3	3	3	3	2	2	3	5
26-Apr	3	2	2	1	1	2	3	2	3	4	4	4	4	3	2	2	2	2	3	3	2	2	3	4	4
27-Apr	3	2	3	3	3	4	1	2	4	3	3	4	3	3	4	4	3	4	3	3	3	2	3	3	4
28-Apr	2	2	2	2	1	2	1	3	1	2	2	1	1	1	2	1	2	2	2	4	3	3	3	2	4
29-Apr	4	2	3	6	4	3	2	1	1	1	2	4	3	3	9	4	2	3	1	2	1	1	1	1	9
30-Apr	1	1	1	2	2	2	2	2	2	1	1	4	4	4	4	4	4	2	5	2	2	2	3	3	5
	5	4	5	6	4	4	5	4	9	10	6	4	6	6	9	7	7	8	10	6	5	6	5	6	
	Diurnal Maximum																								

WBEA NETWORK

Hourly Averages

Wind Speed (WS) - km/h

Lower Camp - April 2014



AURORA
ATMOSPHERICS INC.

Wind Speed Ranges (km/h)	Number of Hours	%	Cumulative %
0 - 5	151	20.97	20.97
6 - 11	235	32.64	53.61
12 - 19	234	32.50	86.11
20 - 28	90	12.50	98.61
29 - 38	10	1.39	100.00
> 38	0	0.00	100.00

Total Number of Valid Hours: 720

Total Number of Hours: 720

WBEA NETWORK

Frequency Distribution

Wind Speed (WS) - km/h

Lower Camp - April 2014

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	6	9	11	8	10	16	7	2	6	2	2	7	16	20	18	151
6 - 11	31	10	7	9	11	16	62	12	4	4	3	7	9	6	10	34	235
12 - 19	37	16	4	1	22	40	80	4	2	0	0	8	6	4	6	4	234
20 - 28	8	8	0	0	7	19	29	0	0	0	0	7	5	5	2	0	90
29 - 38	0	0	0	0	0	0	7	0	0	0	0	0	0	2	1	0	10
> 38	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Totals	87	40	20	21	48	85	194	23	8	10	5	24	27	33	39	56	720

Total Number of Valid Hours: 720

Total Number of Hours: 720

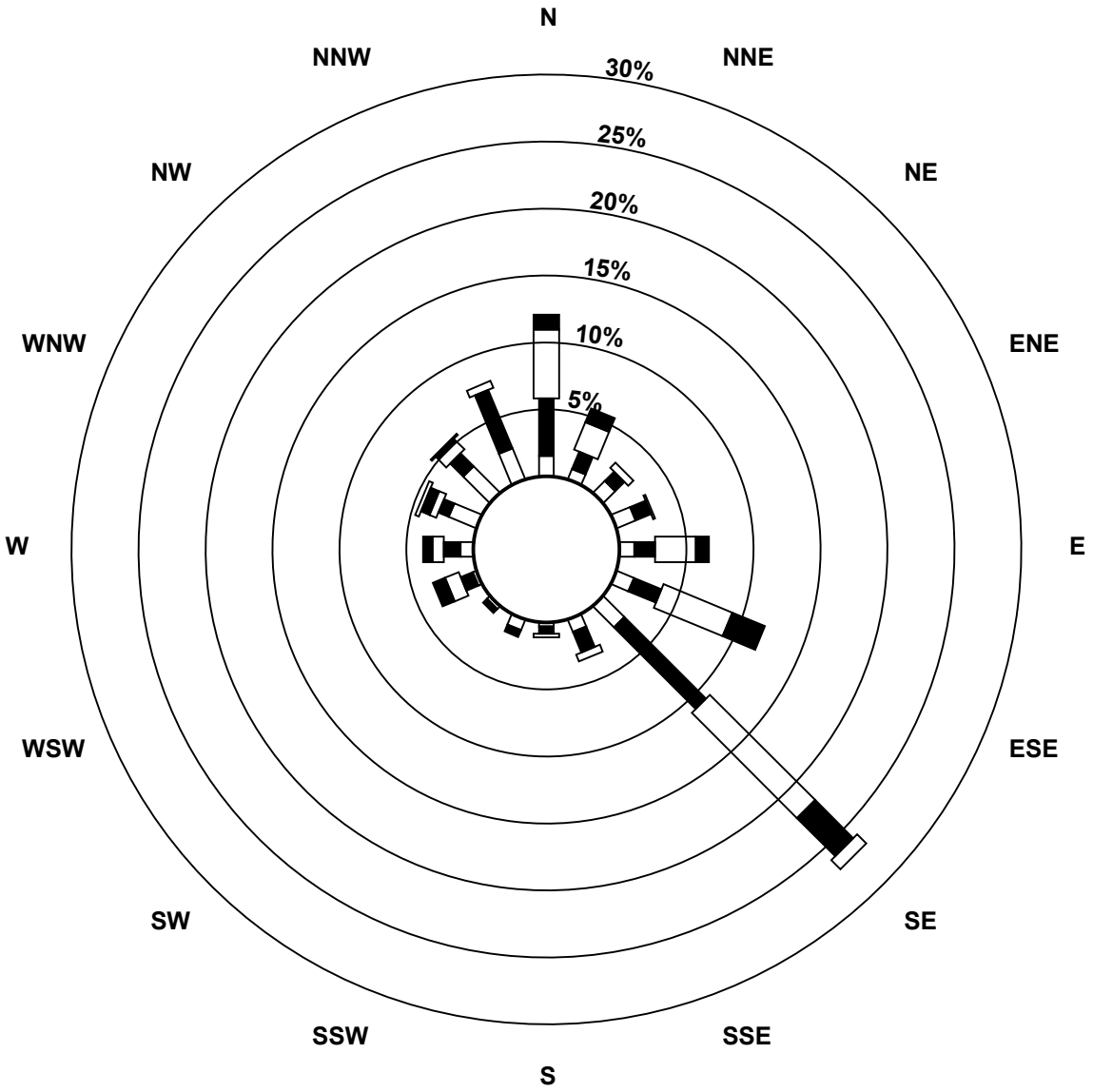
AURORA ATMOSPHERICS INC.

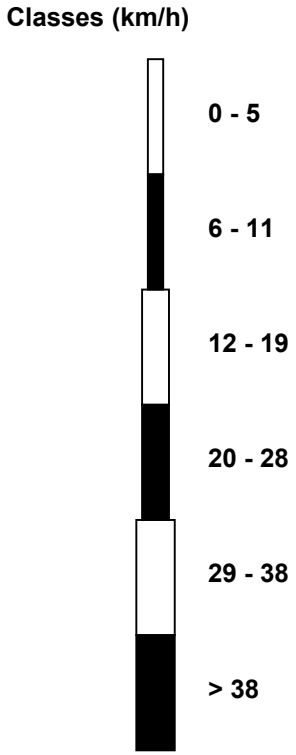
Wood Buffalo Environmental Association

Wind Rose Apr 2014

Wind Speed (WS) - km/h

Lower Camp (AMS 11)





Total Number of Valid Hours: 720

Direction of Maximum Speed: 135 deg on Apr 4 03:00
Direction of Maximum Daily Speed Average: 120.8 deg on Apr 17

Direction of Minimum Speed: 346 deg on Apr 1 04:00

Direction of Minimum Daily Speed Average: 0.3 deg on Apr 6

Monthly Average Direction: 343.4 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-Apr	134	141	132	346	312	286	304	334	347	355	354	334	343	338	333	333	353	8	16	355	322	45	354	9	352.9
2-Apr	340	345	350	352	356	356	358	341	343	348	348	4	2	2	6	356	3	0	360	6	356	352	4	7	357.1
3-Apr	323	329	337	339	330	314	335	348	347	347	283	267	294	132	129	120	116	117	120	128	134	134	132	131	117.3
4-Apr	132	132	135	132	134	130	131	129	126	127	141	135	132	50	307	297	303	308	304	302	308	307	308	294	142.5
5-Apr	286	270	249	259	8	98	326	351	357	306	249	253	1	20	10	6	327	276	344	337	335	337	312	340	316.1
6-Apr	341	335	326	321	287	290	321	13	132	137	154	260	38	212	140	127	133	181	300	343	307	311	319	37	319.6
7-Apr	92	110	134	23	64	78	119	134	134	131	129	65	134	136	117	282	258	216	231	209	190	209	231	138	159.2
8-Apr	136	134	135	132	130	136	139	130	209	236	253	256	263	263	262	257	248	248	255	257	258	262	265	268	242.6
9-Apr	264	287	282	259	261	257	254	266	296	301	316	348	337	308	320	304	298	299	303	353	203	255	246	283	289.6
10-Apr	333	336	332	316	332	4	13	9	20	17	11	2	10	26	18	15	10	16	14	17	5	18	43	57	11.2
11-Apr	65	66	46	59	96	99	94	94	76	28	0	14	14	11	15	11	13	3	2	3	0	350	328	324	24.0
12-Apr	46	351	341	22	51	60	112	130	146	256	267	254	235	264	351	349	352	356	19	24	27	8	6	2	359.1
13-Apr	10	6	359	339	324	332	4	359	359	355	349	352	19	58	42	84	101	133	127	156	144	136	138	132	50.3
14-Apr	124	123	131	126	127	128	122	127	129	141	154	153	149	141	141	152	148	144	123	119	106	19	356	345	128.2
15-Apr	332	60	76	3	33	55	68	42	21	31	59	29	37	48	34	20	14	10	21	4	3	3	0	360	21.4
16-Apr	14	38	2	8	7	10	360	75	92	108	202	140	126	128	123	126	128	123	121	115	124	134	125	129	108.4
17-Apr	121	107	81	97	110	118	117	125	121	118	132	125	126	123	124	126	125	127	124	118	109	127	127	122	120.8
18-Apr	119	102	88	103	107	102	101	101	117	129	125	120	124	126	129	124	128	134	143	103	64	198	338	92	117.6
19-Apr	151	173	310	298	281	293	333	324	125	123	131	129	127	125	123	109	130	126	121	127	121	114	116	295	124.4
20-Apr	284	283	279	292	286	354	340	344	344	262	258	311	337	342	352	44	30	68	70	134	136	127	116	108	341.8
21-Apr	126	142	133	133	131	134	134	131	132	309	353	351	350	316	319	353	9	12	13	1	310	320	345	328	27.7
22-Apr	325	299	319	309	306	292	301	342	336	300	338	268	123	120	116	118	112	106	97	56	24	59	76	358	87.0
23-Apr	301	352	27	2	50	72	88	92	96	99	99	96	100	97	94	92	94	80	96	93	90	97	99	97	89.6
24-Apr	101	92	88	104	97	84	106	113	112	85	256	258	200	131	133	131	117	120	115	89	100	100	101	106	110.9
25-Apr	113	114	99	88	112	136	136	132	133	132	103	138	146	140	136	134	131	127	129	132	130	152	147	149	129.0
26-Apr	160	148	158	145	168	139	136	138	132	138	147	125	126	129	128	126	126	123	123	122	125	122	122	120	129.2
27-Apr	119	118	118	119	118	106	55	99	114	124	129	131	129	126	135	137	136	143	136	140	141	141	137	127	127.6
28-Apr	137	139	134	136	132	151	152	134	126	135	128	123	128	130	131	128	135	131	143	138	145	143	146	138	135.9
29-Apr	134	104	126	123	135	134	131	130	135	134	130	278	270	260	249	291	275	345	40	265	125	131	114	130	154.9
30-Apr	123	21	100	124	135	136	138	136	129	138	134	145	172	175	159	176	187	158	246	205	190	206	217	268	162.0
	114.0	99.2	102.0	98.4	102.9	105.3	107.1	108.5	103.2	114.3	109.2	98.5	95.4	104.0	92.5	81.3	86.7	89.1	78.4	70.2	87.0	100.2	100.2	92.6	
	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: 101 deg on Apr 18 23:00

Minimum Value: 4 deg on Apr 14 19:00

Percentiles: P_1 = 5 P_{10} = 9 Q_1 = 12 Median = 17 Q_3 = 26 P_{90} = 51 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

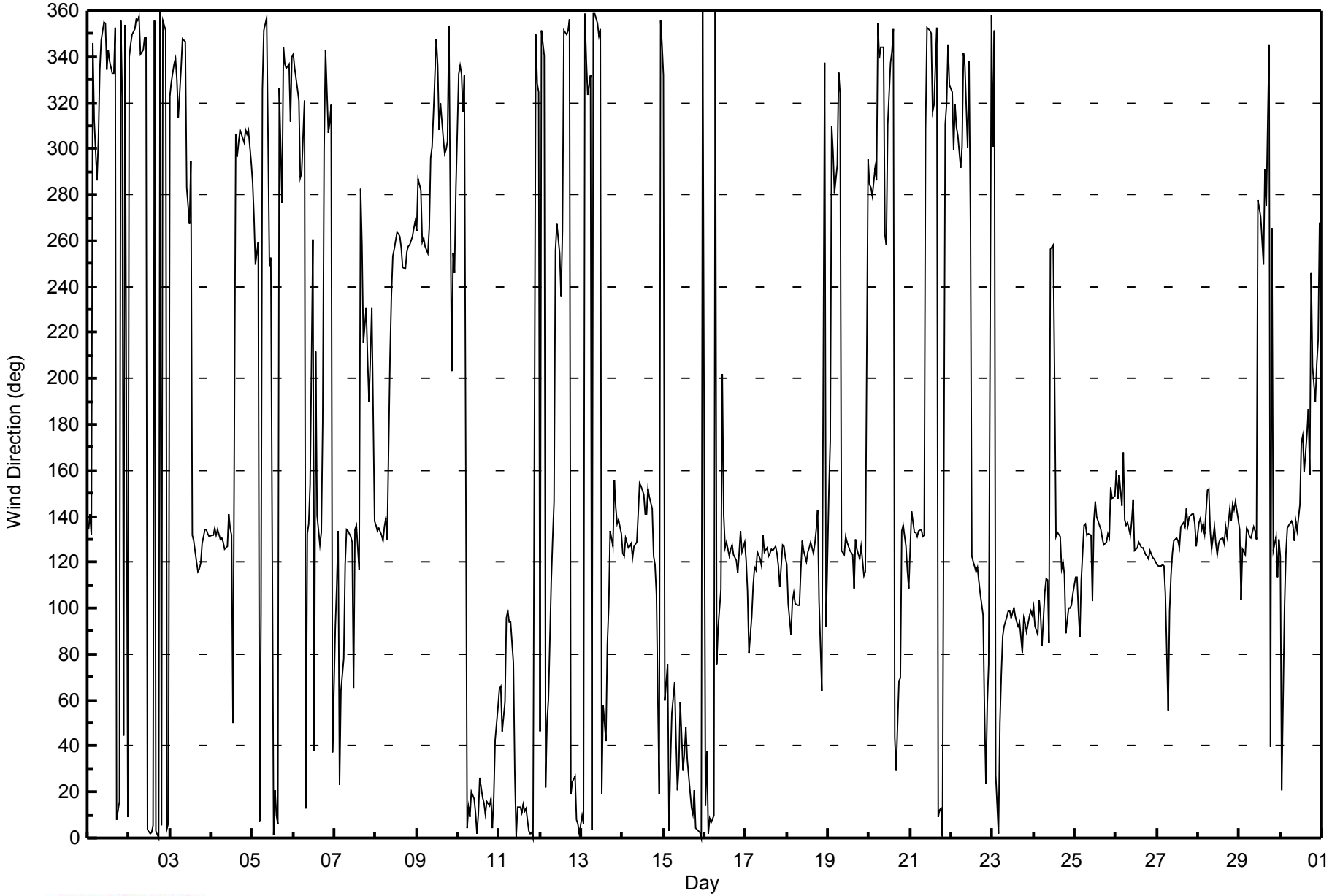
Day	Hourly Period Ending At (MST)																								Daily
	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24	Maximum
1-Apr	17	9	91	95	43	14	20	22	23	16	23	26	31	38	26	27	26	25	14	24	21	48	32	20	95
2-Apr	18	19	17	19	18	18	16	19	19	18	19	18	20	18	21	20	17	16	15	16	16	16	14	15	21
3-Apr	11	12	20	19	17	10	20	22	25	26	55	26	41	28	23	15	13	10	10	9	9	9	9	8	55
4-Apr	7	8	8	7	8	8	7	7	8	10	17	12	21	81	19	14	12	12	11	11	10	11	12	10	81
5-Apr	9	44	18	91	59	91	54	31	61	26	65	58	31	30	45	25	43	36	18	16	19	17	19	17	91
6-Apr	20	22	20	18	19	29	28	43	22	9	50	31	61	90	28	14	8	79	36	24	25	59	57	71	90
7-Apr	86	27	33	68	81	67	26	7	5	9	7	48	9	8	34	60	16	36	26	23	24	27	90	30	90
8-Apr	9	15	9	8	71	40	10	9	59	16	14	14	14	12	13	12	14	13	12	11	12	12	16	23	71
9-Apr	13	12	21	13	12	11	13	12	13	12	14	16	23	16	18	14	12	12	27	39	89	58	9	40	89
10-Apr	16	15	22	23	32	15	17	16	16	25	31	24	21	28	24	18	17	15	14	14	13	24	14	18	32
11-Apr	13	13	13	18	15	13	21	22	16	50	15	15	13	13	14	15	14	16	17	15	14	17	16	57	57
12-Apr	26	36	43	30	22	35	22	11	56	19	26	35	50	83	23	22	24	20	16	14	12	13	14	14	83
13-Apr	12	11	14	18	16	25	15	15	18	19	24	37	18	43	42	56	75	7	13	20	21	12	13	15	75
14-Apr	10	9	9	9	10	11	10	12	15	20	27	25	25	18	19	23	22	17	4	9	23	50	16	18	50
15-Apr	18	39	61	12	19	11	18	14	20	61	56	20	20	29	24	29	15	15	17	16	14	15	13	15	61
16-Apr	20	22	47	18	9	10	12	51	26	24	87	58	21	10	15	11	9	9	9	9	10	9	9	8	87
17-Apr	7	13	12	15	10	7	8	9	9	12	12	11	11	11	10	12	10	8	7	8	9	10	20	57	57
18-Apr	19	18	15	15	15	10	13	20	15	8	10	12	9	9	11	9	9	14	25	32	76	71	101	94	101
19-Apr	26	85	38	37	41	88	33	39	54	16	9	10	9	15	20	26	5	9	10	7	8	9	22	91	91
20-Apr	22	21	17	18	22	63	21	27	44	22	16	41	22	25	29	35	41	22	16	39	39	66	66	41	66
21-Apr	12	18	27	12	9	16	11	6	17	66	27	18	18	41	38	24	19	16	11	18	17	18	18	48	66
22-Apr	27	25	32	52	33	16	36	22	31	36	25	30	75	25	14	13	18	13	23	14	22	71	56	65	75
23-Apr	41	21	32	63	48	19	12	18	25	17	13	14	15	14	15	15	16	16	17	17	14	13	13	14	63
24-Apr	12	16	15	14	14	20	17	15	17	93	17	16	67	13	11	10	13	15	15	15	11	12	10	11	93
25-Apr	12	11	23	49	48	22	9	10	10	15	24	13	41	89	19	11	13	9	13	22	28	25	23	26	89
26-Apr	27	22	26	47	34	31	13	10	9	15	25	9	10	8	5	7	7	6	6	7	7	7	9	10	47
27-Apr	10	8	8	7	10	21	37	14	15	8	6	6	6	8	10	14	10	14	9	11	11	14	14	18	37
28-Apr	16	12	6	19	22	22	23	29	6	8	28	16	9	5	10	8	6	10	23	12	14	12	15	9	29
29-Apr	14	77	34	38	16	11	7	5	5	5	9	68	16	19	29	60	54	47	86	54	74	75	30	66	86
30-Apr	36	81	91	74	9	8	7	6	7	5	5	23	30	27	27	37	28	18	18	22	21	65	23	20	91
	86	85	91	95	81	91	54	51	61	93	87	68	75	90	45	60	75	79	86	54	89	75	101	94	
	Diurnal Maximum																								

WBEA NETWORK

Hourly Averages

Wind Direction (WD) - deg

Lower Camp - April 2014



AURORA ATMOSPHERICS INC.

Wood Buffalo Environmental Association

SO_2 Calibration Report

Station Information

Calibration Date	April 2, 2014	Previous Calibration	March 4, 2014
Station Name	Lower Camp	Station Number	AMS 11
Reason:	Routine		
Start Time (MST)	11:55	End Time (MST)	14:50
Barometric Pressure	760 mmHg	Station temp.	21 Deg C
Calibrator Make/Model	Sabio 4010	Serial Number	11051107
Cal Gas Concentration	51.3 ppm	Cal Gas Expiry Date	5/29/2014
Gas Cert Reference	LL107920		
DACS make/model	Campbell Scientific CR3000	DACS serial No.	2634
DACS voltage range	0-5v	DACS channel #	SE1

Analyzer Information

	Before	*After*		*Before*	*After*
Analyzer Range (ppb)	1000	1000	PMT voltage	-558	-558
Analyzer Range (mv)	5000	5000	Lamp voltage	877	877
Calculated slope	0.996574	0.998996	Chamber temp.	45.1	45.1
Calculated intercept	0.966081	1.393682	Pressure (mmHg)	715.2	715.2
Analyzer Background	21.1	20.8	Flow (lpm)	0.498	0.498
Analyzer Coefficient	1.001	0.988	Intensity	34xxx	34xxx

Analyzer make	TEI 43C	Analyzer serial #	518112184

Calibration Data

Set Point	Total flow rate (cc/min)	Source gas flow rate (cc/min)	Calculated concentration (ppb) (Cc)	Indicated concentration (ppb) (Ic)	Correction factor (Cc/Ic)
as found zero	5000	0.0	0.0	-0.2	NA
as found span	5001	80.9	829.9	836.0	0.993
calibrator zero	5000	0.0	0.0	-0.2	NA
high point	5001	80.9	829.9	830.2	1.000
second point	5000	40.9	419.6	417.2	1.006
third point	5002	20.4	209.2	207.4	1.009
calibrator zero	5000	0.0	0.0	0.3	NA
as left zero	5000	0.0	0.0	0.3	NA
as left span	5000	80.9	830.0	830.0	1.000
				Average Correction Factor	1.005

Corrected As found	836.2	Previous response	831.8	% change	-0.5%

Notes:

Span adjusted slightly.

Calibration Performed By: Zack Eastman

Wood Buffalo Environmental Association

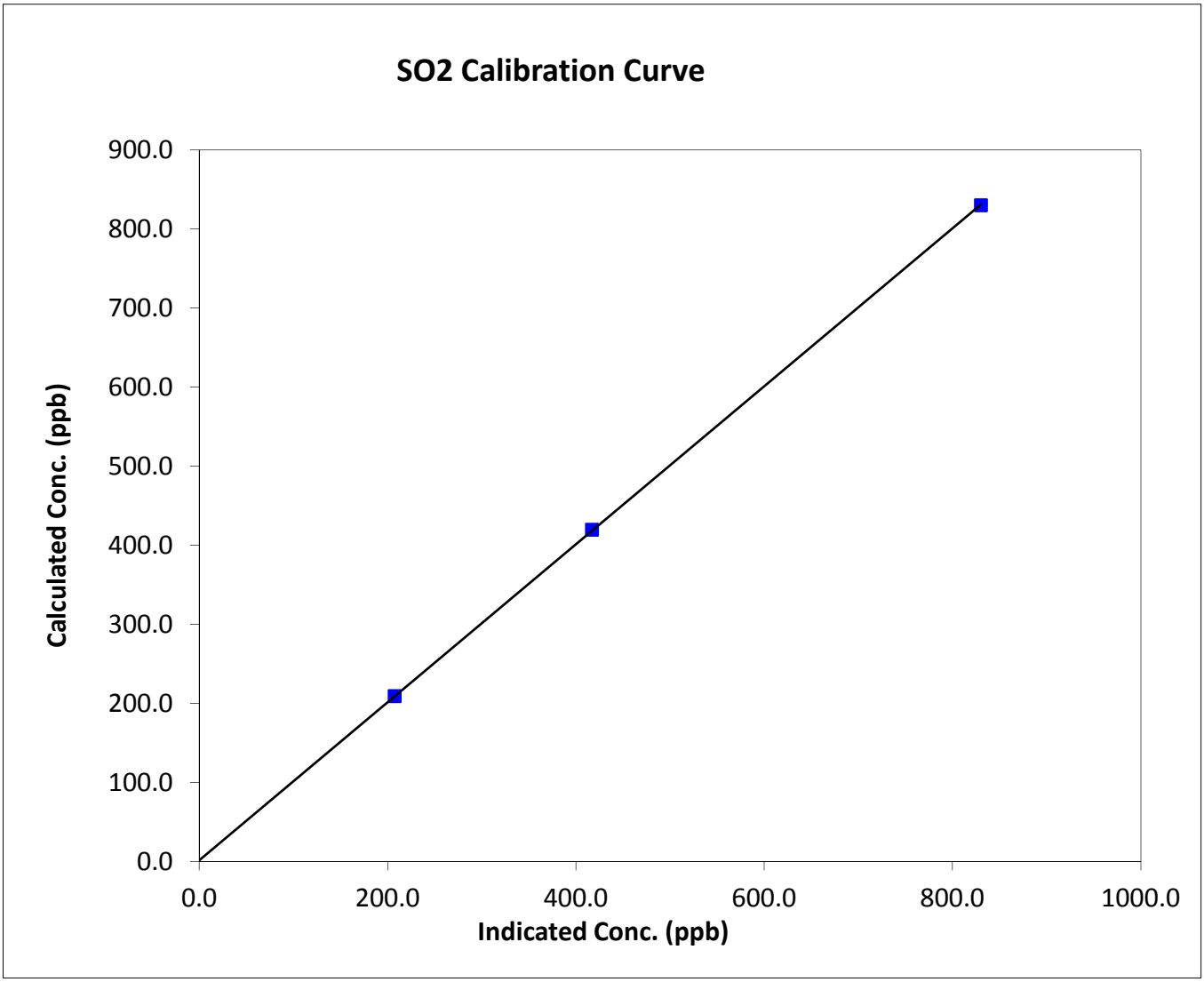
SO_2 Calibration Summary

Station Information

Calibration Date	April 2, 2014	Previous Calibration	March 4, 2014
Station Name	Lower Camp	Station Number	AMS 11
Start Time (MST)	11:55	End Time (MST)	14:50
Analyzer make	TEI 43C	Analyzer serial #	518112184

Calibration Data

Calculated concentration (ppb) (Cc)	Indicated concentration (ppb) (Ic)	Correction factor (Cc/Ic)	Statistical Evaluation	
0.0	-0.2	N/A	Correlation Coefficient	0.999987
829.9	830.2	0.9996		
419.6	417.2	1.0058	Slope	0.998996
209.2	207.4	1.0088		
			Intercept	1.393682



SO2 Calibration Plot Date: April 2, 2014

a

Wood Buffalo Environmental Association

H2S Calibration Report

Station Information

Calibration Date	April 2, 2014	Previous Calibration	March 5, 2014
Station Name	Lower Camp	Station Number	AMS 11
Reason:	Routine		
Start Time (MST)	14:45	End Time (MST)	17:00
Barometric Pressure	760 mmHg	Station temp.	21 Deg C
Calibrator Make/Model	Sabio 4010	Serial number	11051107
Cal Gas Concentration	10.3 ppm H2S	Cal Gas Expiry Date	5/30/2013
Gas Cert Reference	LL20284	SO2 gas conc.	51.3 ppm SO2
DACS make/model	Campbell Scientific CR3000	DACS serial No.	2634
DACS voltage range	0-5v	DACS channel #	SE2

Analyzer Information

	Before	*After*		*Before*	*After*
Analyzer Range (ppb)	100	100	PMT voltage (v)	-680	-680
Analyzer Range (mv)	5000	5000	Lamp voltage (v)	997	997
Calculated slope	0.999377	1.007473	Chamber temp. (deg C)	45	45
Calculated intercept	-0.228084	-0.165603	Pressure (mmHg)	647.8	647.8
Analyzer Background	1.52	1.52	Flow(LPM)	0.417	0.417
Analyzer Coefficient	0.885	0.885	Intensity(%)	89	89
			Converter temp.(deg C)	370	370

Analyzer make/model	Thermo 43i	Analyzer serial #	1008841400
Converter make/model	TEI 340	Converter serial #	328702539

Calibration Data

Set Point	Total flow rate (cc/min)	Source gas flow rate (cc/min)	Calculated concentration (ppb) (Cc)	Indicated concentration (ppb) (Ic)	Correction factor (Cc/Ic)
as found zero	5000	0.0	0.0	0.1	NA
as found span	5000	36.4	75.0	74.5	1.006
SO2 scrubber check	5000	10.0	102.6	0.8	NA
calibrator zero	5001	0.0	0.0	0.1	NA
high point	5001	36.4	75.0	74.5	1.006
second point	5003	19.4	39.9	39.9	1.002
third point	5002	9.7	20.0	20.1	0.994
calibrator zero	5000	0.0	0.0	0.1	NA
as left zero	5000	0.0	0.0	0.1	NA
as left span	4999	36.4	75.0	74.7	1.005
				Average Correction Factor	1.001

Corrected As found	74.5	Previous response	75.3	% change	1.1%

Notes:

No adjustments made. SOX scrubber tested prior to as found point.

Calibration Performed By: Zack Eastman

Wood Buffalo Environmental Association

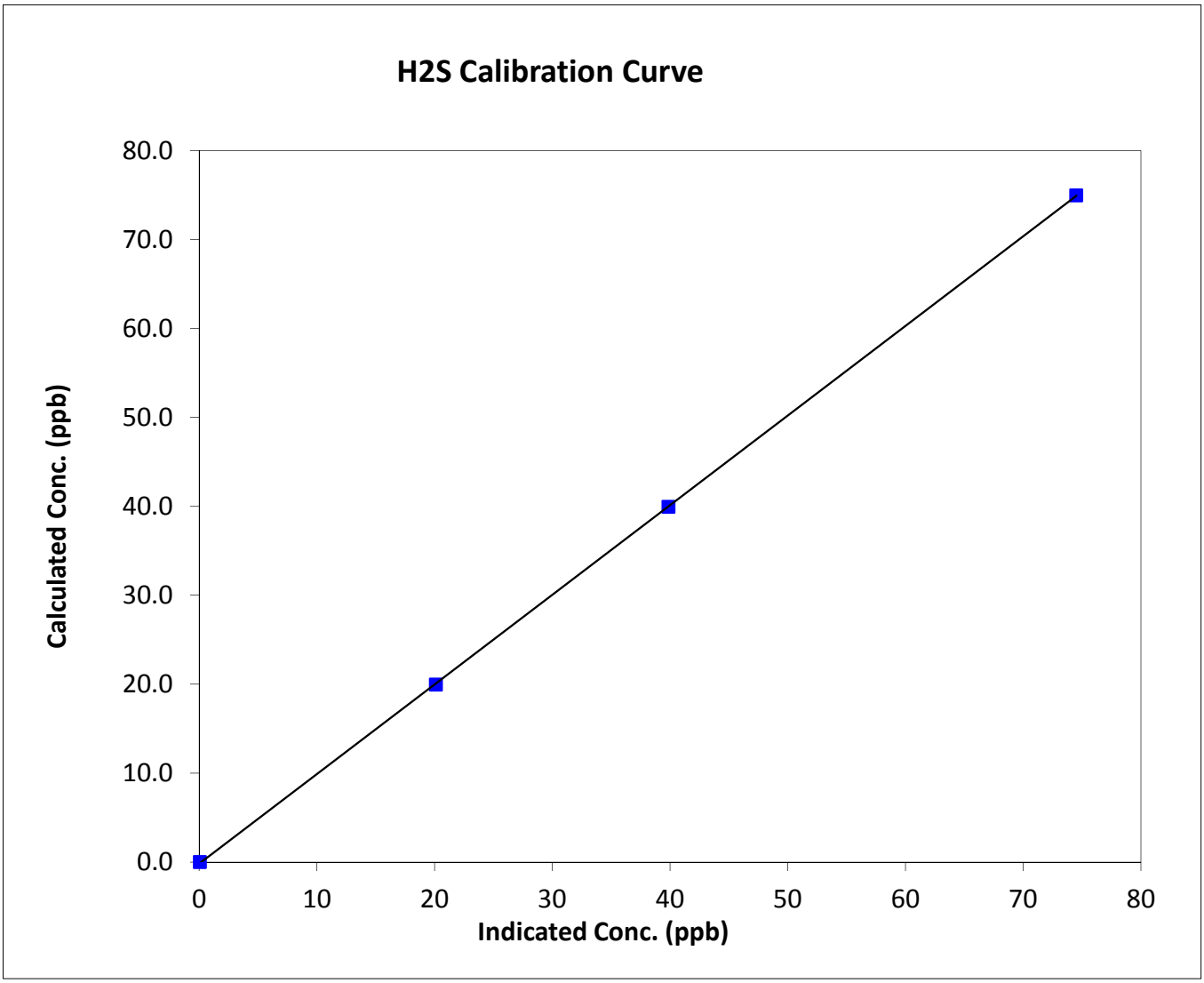
H2S Calibration Summary

Station Information

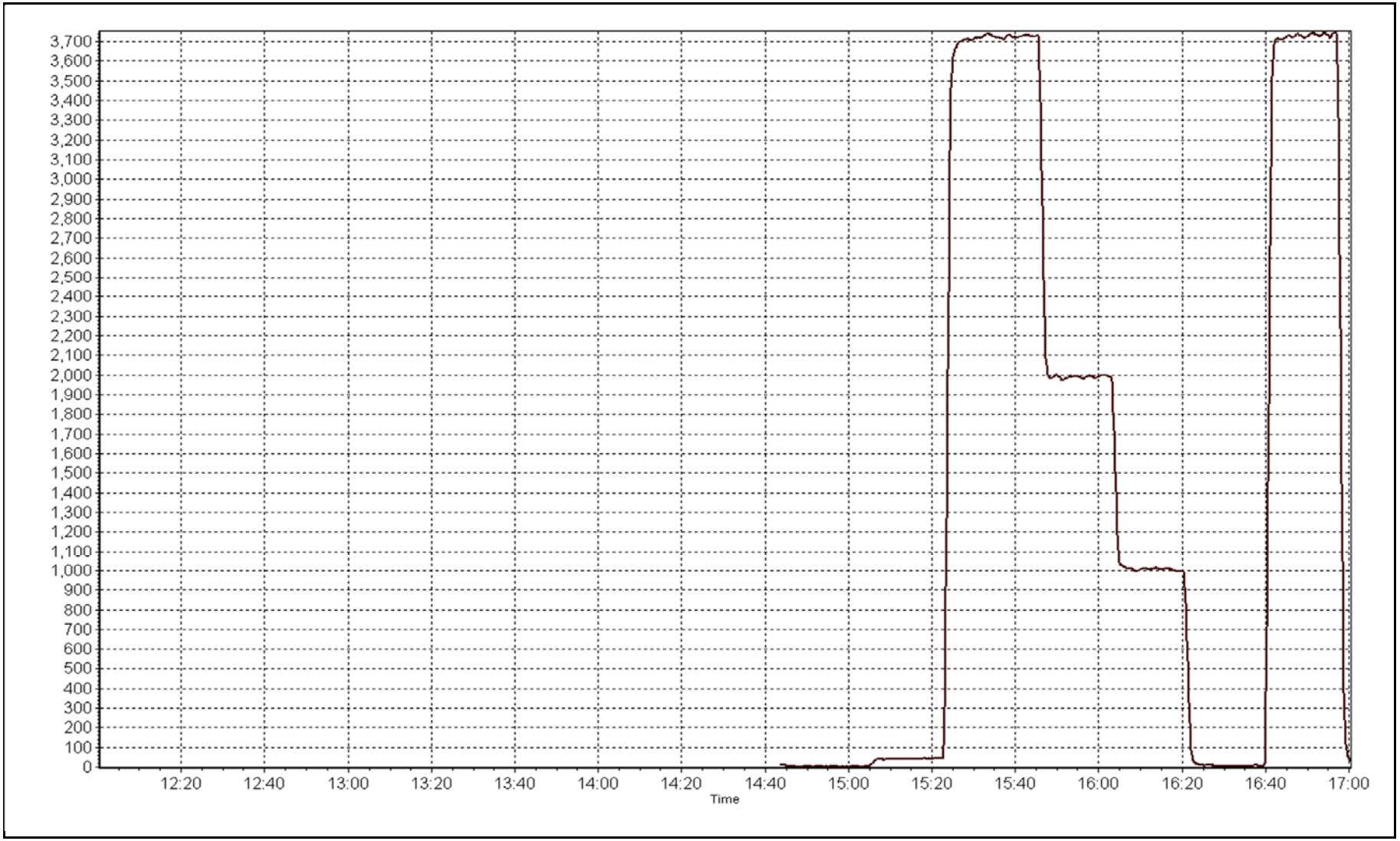
Calibration Date	April 2, 2014	Previous Calibration	March 5, 2014
Station Name	Lower Camp	Station Number	AMS 11
Start Time (MST)	14:45	End Time (MST)	17:00
Analyzer make	Thermo 43i	Analyzer serial #	1008841400

Calibration Data

Calculated concentration (ppb) (Cc)	Indicated concentration (ppb) (Ic)	Correction factor (Cc/Ic)	Statistical Evaluation	
0.0	0.1	N/A	Correlation Coefficient	0.999990
75.0	74.5	1.0060		
39.9	39.9	1.0020	Slope	1.007473
20.0	20.1	0.9937		
			Intercept	-0.165603



H2S Calibration Plot Date: Wednesday, April 02, 2014



Wood Buffalo Environmental Association

THC Calibration Report

Station Information

Calibration Date	Wednesday, April 02, 2014	Previous Calibration	Tuesday, February 04, 2014
Station Name	Lower Camp	Station Number	AMS 11
Reason:	Routine		
Start Time (MST)	11:55	End Time (MST)	14:50
Barometric Pressure	760 mmHg	Station temp.	21 Deg C
Calibrator Make/Model	Sabio 4010	Serial Number	11051107
Gas Cert Reference	CC 302056	Cal Gas Expiry Date	
CH4 Cal Gas Conc.	510 ppm	CH4 Equiv Conc.	1073.8 ppm
C3H8 Cal Gas Conc.	205 ppm		
DACS make/model	Campbell Scientific CR3000	DACS serial No.	2634
DACS voltage range	0-5v	DACS channel #	SE3

Analyzer Information

	Before	*After*		*Before*	*After*
Analyzer Range (ppm)	25	25	Sample Pressure	8.1	8.1
Analyzer Range (mv)	5000	5000	Air or Bypass press	37.8	37.8
Calculated slope	0.996756	0.994537	Fuel Pressure	25.2	25.2
Calculated intercept	-0.009572	0.002474			

Analyzer make	51i-LT	Analyzer serial #	1218153580

Calibration Data

Set Point	Total flow rate (cc/min)	Source gas flow rate (cc/min)	Calculated concentration THC (ppm) (Cc)	Indicated concentration (ppb) (Ic)	Correction factor (Cc/Ic)
as found zero	5000	0.0	0.00	0.02	N/A
as found span	5001	80.9	17.37	17.58	0.988
calibrator zero	5000	0.0	0.00	0.02	N/A
high point	5001	80.9	17.37	17.49	0.993
second point	5000	40.9	8.78	8.78	1.000
third point	5002	20.4	4.38	4.41	0.993
calibrator zero	5000	0.0	0.00	0.10	N/A
as left zero	5000	0.0	0.00	0.10	N/A
as left span	5000	80.9	17.37	17.43	0.997
				Average Correction Factor	0.996

Corrected As found	17.57	Previous response	17.44	% change	-0.7%

Notes:

Slight span adjustment performed.

Calibration Performed By: Zack Eastman

Wood Buffalo Environmental Association

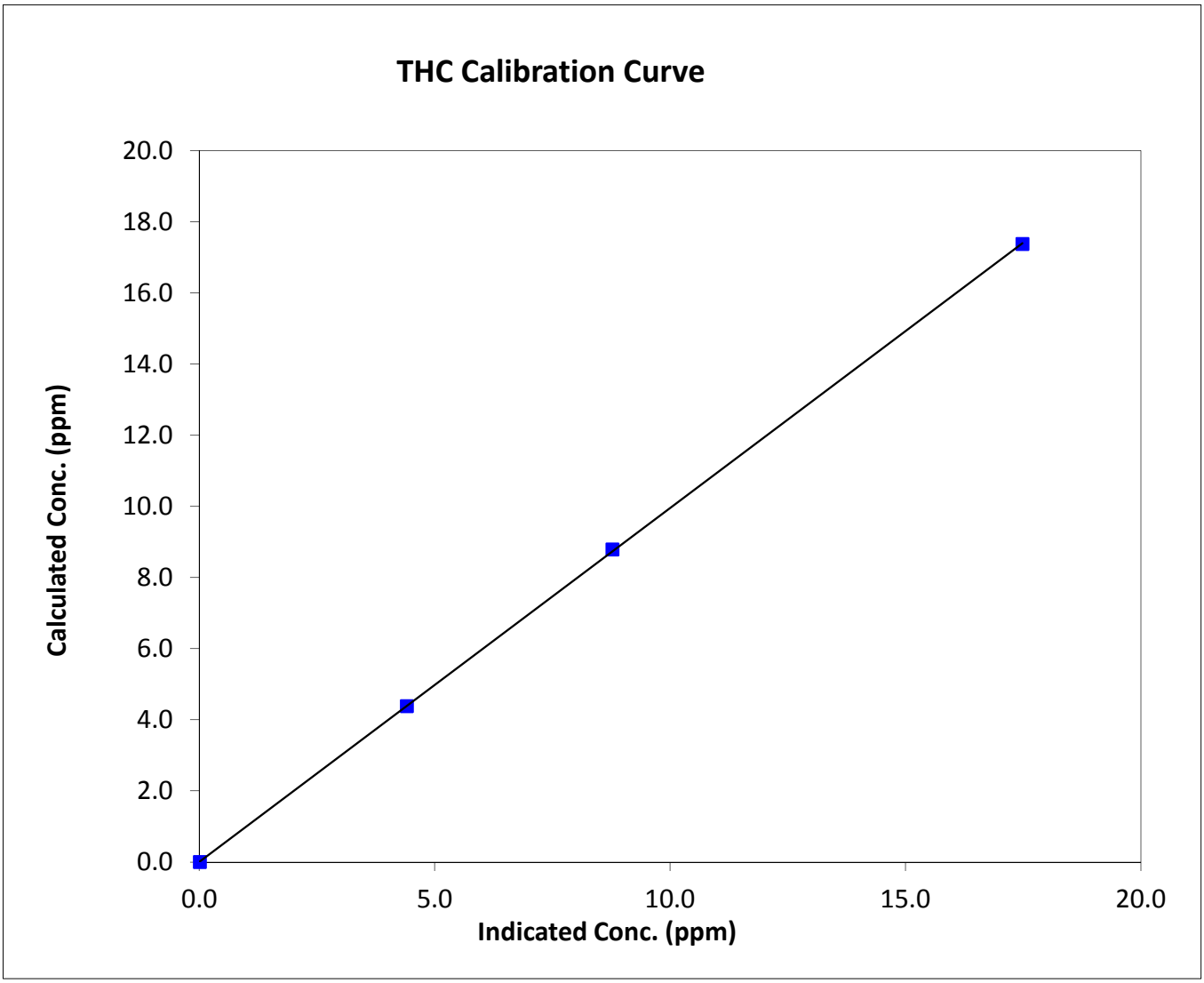
THC Calibration Summary

Station Information

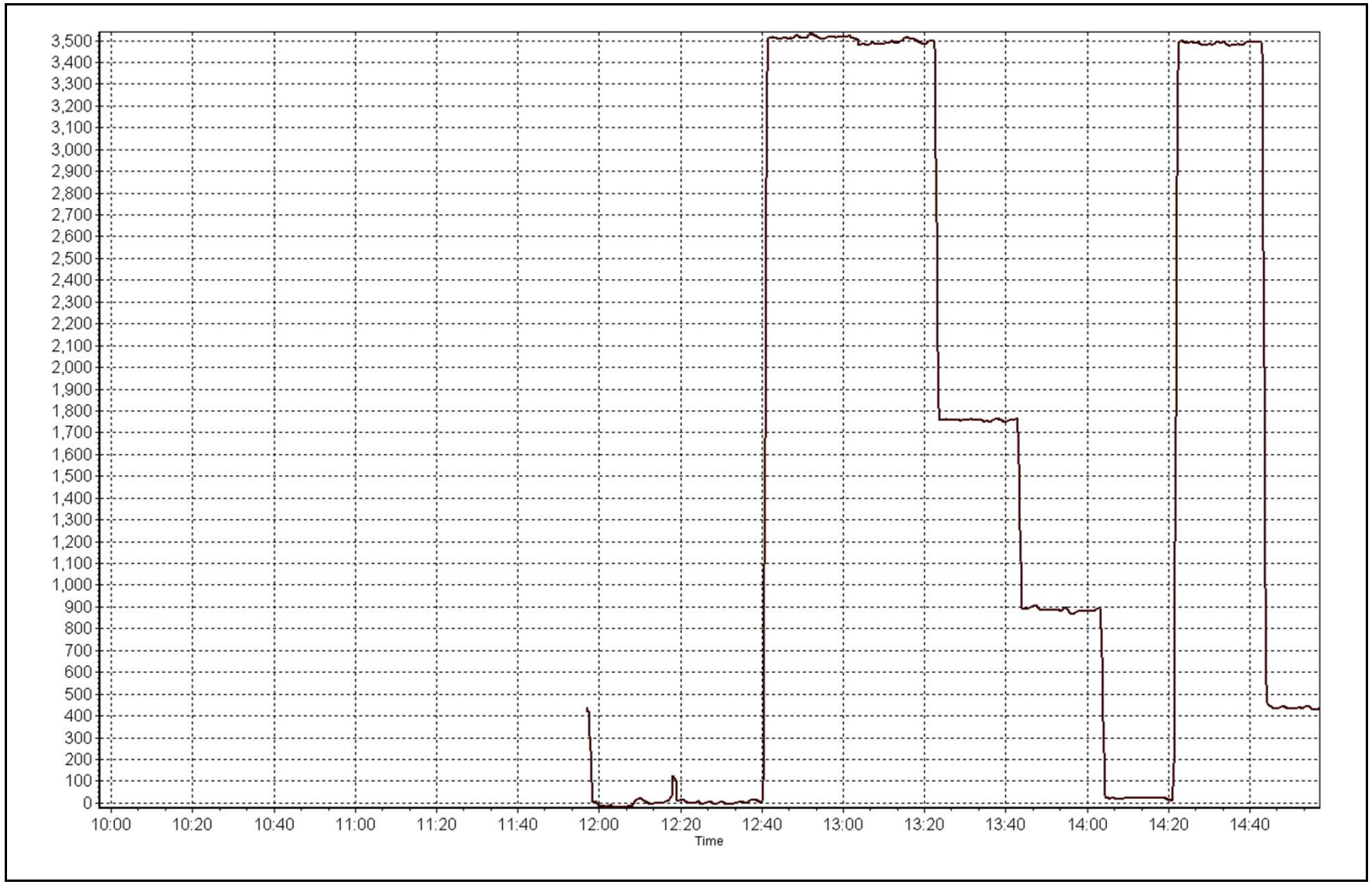
Calibration Date	April 2, 2014	Previous Calibration	February 4, 2014
Station Name	Lower Camp	Station Number	AMS 11
Start Time (MST)	11:55	End Time (MST)	14:50
Analyzer make	51i-LT	Analyzer serial #	1218153580

Calibration Data

Calculated concentration (ppm) (Cc)	Indicated concentration (ppm) (Ic)	Correction factor (Cc/Ic)	Statistical Evaluation	
0.00	0.02	N/A	Correlation Coefficient	0.999980
17.37	17.49	0.9934		
8.78	8.78	1.0004	Slope	0.994537
4.38	4.41	0.9930		
			Intercept	0.002474



THC Calibration Plot Date: April 2, 2014



WOOD BUFFALO ENVIRONMENTAL ASSOCIATION

CONTINUOUS AMBIENT AIR QUALITY
MONITORING PROGRAM
MONTHLY REPORT

AMS 12
MILLENNIUM MINE
APRIL 2014

Operations and Data Collection by:
Wood Buffalo Environmental Association
Fort McMurray, Alberta

QA/QC, Data Validation and Reporting by:
Aurora Atmospherics Inc.
Calgary, Alberta

May 30, 2014

WOOD BUFFALO ENVIRONMENTAL ASSOCIATION - MILLENNIUM MINE (AMS 12)
APRIL 2014

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	100.00	81	0	21	0
TRS(ppb) Average	685	34	35	99.86	2	0	1	0
THC(ppm) Average	680	40	40	100.00	6	-	2.6	-
NO2(ppb) Average	684	35	36	99.86	44	0	20	-
NO(ppb) Average	684	35	36	99.86	187	-	23	-
NOX(ppb) Average	684	35	36	99.86	224	-	36	-
PM2.5(ug/m3) Average	719	0	1	99.86	40.2	-	19.5	0
Temperature 2 m (C) Average	720	0	0	100.00	21.7	-	14.2	-
Wind Speed 10 m (km/h) Average	719	0	1	99.86	27	-	-	-
Wind Direction 10 m (deg) Average	719	0	1	99.86	-	-	-	-

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

WOOD BUFFALO ENVIRONMENTAL ASSOCIATION - MILLENNIUM MINE (AMS 12)
APRIL 2014

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	2	8	-	0	0	0	0	0	1	81
TRS(ppb) Average	685	0.4	0	-	0	0	0	0	0	1	2
THC(ppm) Average	680	2.24	0.3	-	2	2.1	2.1	2.2	2.3	2.4	6
NO2(ppb) Average	684	9.4	8	-	1	2	3	7	13	20	44
NO(ppb) Average	684	3.8	14	-	0	0	0	0	2	7	187
NOX(ppb) Average	684	13.2	20	-	1	2	3	8	15	27	224
PM2.5(ug/m3) Average	719	6.29	5.4	-	0.4	2.3	3.4	4.6	7.4	11.3	40.2
Temperature 2 m (C) Average	720	1.5	7.4	-	-18.4	-8.2	-3.6	1.8	5.9	11.1	21.7
Wind Speed 10 m (km/h) Average	719	9.8	5	-	0	5	6	9	13	16	27
Wind Direction 10 m (deg) Average	719	-	-	-	-	-	-	-	-	-	-

WOOD BUFFALO ENVIRONMENTAL ASSOCIATION -MILLENNIUM MINE (AMS 12)
APRIL 2014

OPERATIONAL NOTES

Parameter	Period Start	Period End	Duration (Hours)	Notes
TRS	28 Apr 2014 12:00	28 Apr 2014 12:00	1	Maintenance - Stn operator at site
NO2, NO, NOX	28 Apr 2014 12:00	28 Apr 2014 12:00	1	Maintenance - Stn operator at site
PM2.5	24 Apr 2014 11:00	24 Apr 2014 11:00	1	Flow and zero reference checks, sample head cleaning
Wind Speed, Wind Direction	29 Apr 2014 21:00	29 Apr 2014 21:00	1	Flatline in sensor output signal

Wood Buffalo Environmental Association

Summary of Hour Averages

Sulphur Dioxide (SO_2) - ppb

Millennium - April 2014

Number of Exceedences (AAAQO): 1-hr: 0 24-hr: 0
Maximum Value: 81 ppb on Apr 5 13:00 Maximum Daily Average: 20.9 ppb on Apr 5

Minimum Value: 0 ppb on Apr 2 04:00 Minimum Daily Average: 0.0 ppb on Apr 17
Maximum Diurnal Average: 7.1 ppb at hour 15 Minimum Diurnal Average: 0.1 ppb at hour 6
Monthly Average: 2.0 ppb Percentiles: $P_1 = 0$ $P_{10} = 0$ $Q_1 = 0$ Median = 0 $Q_3 = 0$ $P_{90} = 1$ $P_{99} = 47$

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-Apr	0	Z	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0.2	0
2-Apr	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
3-Apr	0	Z	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0.1	0
4-Apr	0	Z	0	0	0	0	0	0	0	0	0	0	0	0	2	1	8	10	12	14	23	22	8	13	4.9	23
5-Apr	6	Z	1	1	0	0	0	1	1	1	17	50	81	66	80	70	29	45	25	2	1	1	1	1	20.9	81
6-Apr	0	Z	0	0	0	0	0	0	0	1	0	0	0	27	45	14	6	6	6	2	1	1	1	1	4.9	45
7-Apr	1	Z	0	0	0	0	0	0	0	9	48	74	27	3	1	0	0	0	0	1	1	1	1	1	7.3	74
8-Apr	0	Z	0	0	0	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0.2	1
9-Apr	0	Z	0	0	0	0	0	0	0	15	9	1	1	10	9	9	19	19	5	1	0	0	1	4	4.5	19
10-Apr	3	Z	0	0	0	0	0	0	0	0	1	3	1	1	0	0	0	0	0	0	0	0	0	0	0.5	3
11-Apr	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
12-Apr	0	Z	0	0	0	0	0	0	0	0	3	27	7	10	7	0	0	0	0	0	0	0	0	0	2.4	27
13-Apr	0	Z	0	0	0	0	0	0	0	0	0	0	1	31	34	35	16	7	4	3	2	1	0	0	5.9	35
14-Apr	0	Z	0	0	0	0	0	0	0	0	0	1	1	1	1	0	0	0	0	0	0	0	0	0	0.3	1
15-Apr	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
16-Apr	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
17-Apr	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
18-Apr	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
19-Apr	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
20-Apr	0	Z	0	0	0	0	0	0	0	10	22	7	1	0	0	0	0	0	0	0	0	0	0	0	1.9	22
21-Apr	0	Z	0	0	0	0	0	0	0	0	8	1	1	2	1	0	0	0	0	0	0	0	0	0	0.6	8
22-Apr	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
23-Apr	0	Z	0	0	0	0	0	0	0	0	0	0	0	0	0	1	1	0	0	0	0	0	0	0	0.2	1
24-Apr	0	Z	1	0	0	0	C	C	C	C	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0.2	1
25-Apr	0	Z	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0.2	0
26-Apr	0	Z	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0.2	0
27-Apr	0	Z	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0.2	0
28-Apr	0	Z	0	0	0	0	0	0	0	0	0	0	6	18	31	14	6	2	1	1	0	0	0	0	3.5	31
29-Apr	0	Z	0	0	0	0	0	0	1	1	0	0	0	0	0	0	0	2	1	0	0	0	1	1	0.4	2
30-Apr	1	Z	1	0	0	0	0	0	0	0	0	0	0	0	0	1	0	0	0	0	0	0	0	0	0.2	1
	0.5	--	0.2	0.1	0.1	0.1	0.1	0.2	0.2	1.3	3.7	5.5	4.3	5.7	7.1	5.0	2.9	3.2	1.9	0.8	1.0	1.0	0.5	0.7	Diurnal Average	
	6	--	1	1	0	1	0	1	1	15	48	74	81	66	80	70	29	45	25	14	23	22	8	13	Diurnal Maximum	

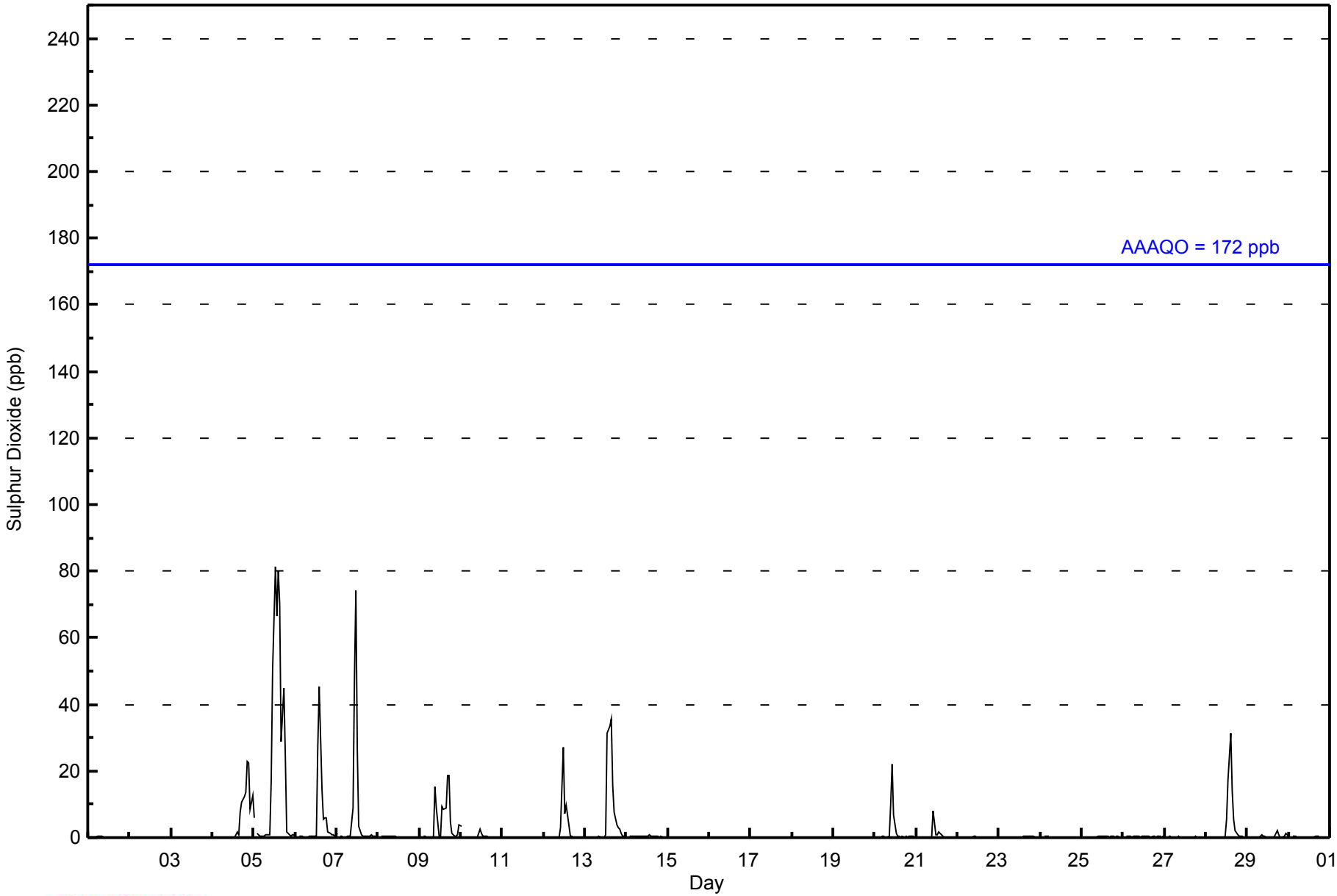
Z - zerospan C - Calibration
Alberta Ambient Air Quality Objectives (AAAQO): 1-hr 172 ppb 24-hr 48 ppb

WBEA NETWORK

Hourly Averages

Sulphur Dioxide (SO_2) - ppb

Millennium - April 2014



AURORA ATMOSPHERICS INC.

Concentration Ranges (ppb)	Number of Hours	%	Cumulative %
0 - 10	654	95.34	95.34
11 - 20	11	1.60	96.94
21 - 60	16	2.33	99.27
61 - 110	5	0.73	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

WBEA NETWORK

Frequency Distribution

Sulphur Dioxide (SO_2) - ppb

Millennium - April 2014

Concentration Ranges (ppb)	Wind Direction																
	N	NNE	NE	ENE	E	ESE	SE	SSE	S	SSW	SW	WSW	W	WNW	NW	NNW	**Totals**
0 - 10	106	40	22	24	52	90	143	52	27	11	9	23	11	10	16	17	653
11 - 20	0	1	0	0	1	0	3	0	0	0	0	0	0	5	1	0	11
21 - 60	4	2	2	0	1	0	0	1	2	0	0	0	0	0	3	1	16
61 - 110	3	0	0	1	0	0	1	0	0	0	0	0	0	0	0	0	5
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	113	43	24	25	54	90	147	53	29	11	9	23	11	15	20	18	685

Total Number of Valid Hours: 685

Total Number of Hours: 720

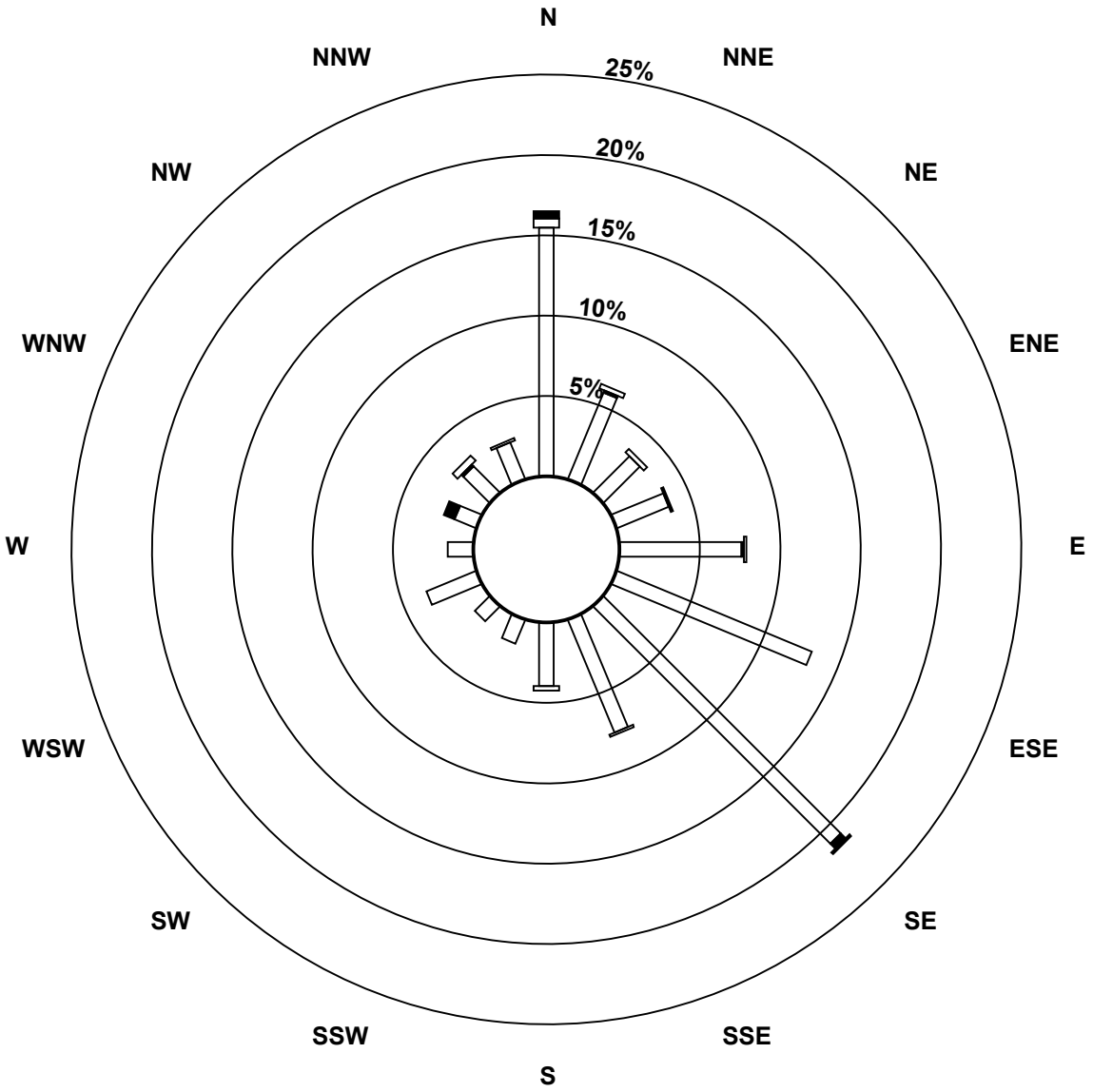
AURORA ATMOSPHERICS INC.

Wood Buffalo Environmental Association

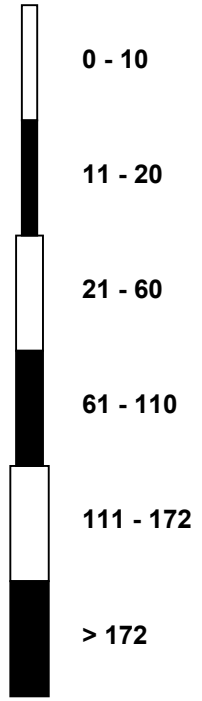
Wind Rose Apr 2014

Sulphur Dioxide (SO_2) - ppb

Millennium (AMS 12)



Classes (ppb)



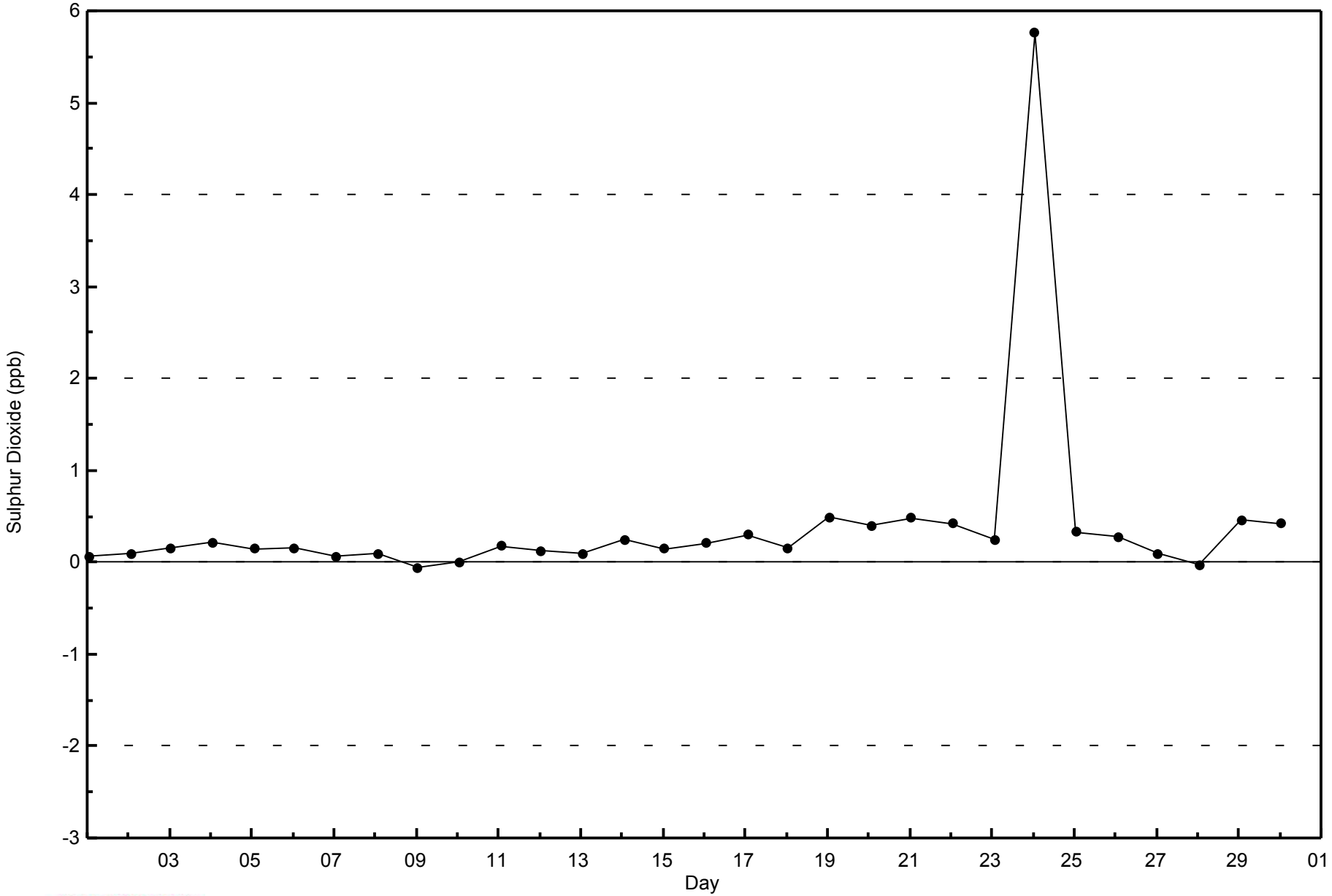
Total Number of Valid Hours: 685

WBEA NETWORK

Zero Responses

Sulphur Dioxide (SO_2) - ppb

Millennium - April 2014



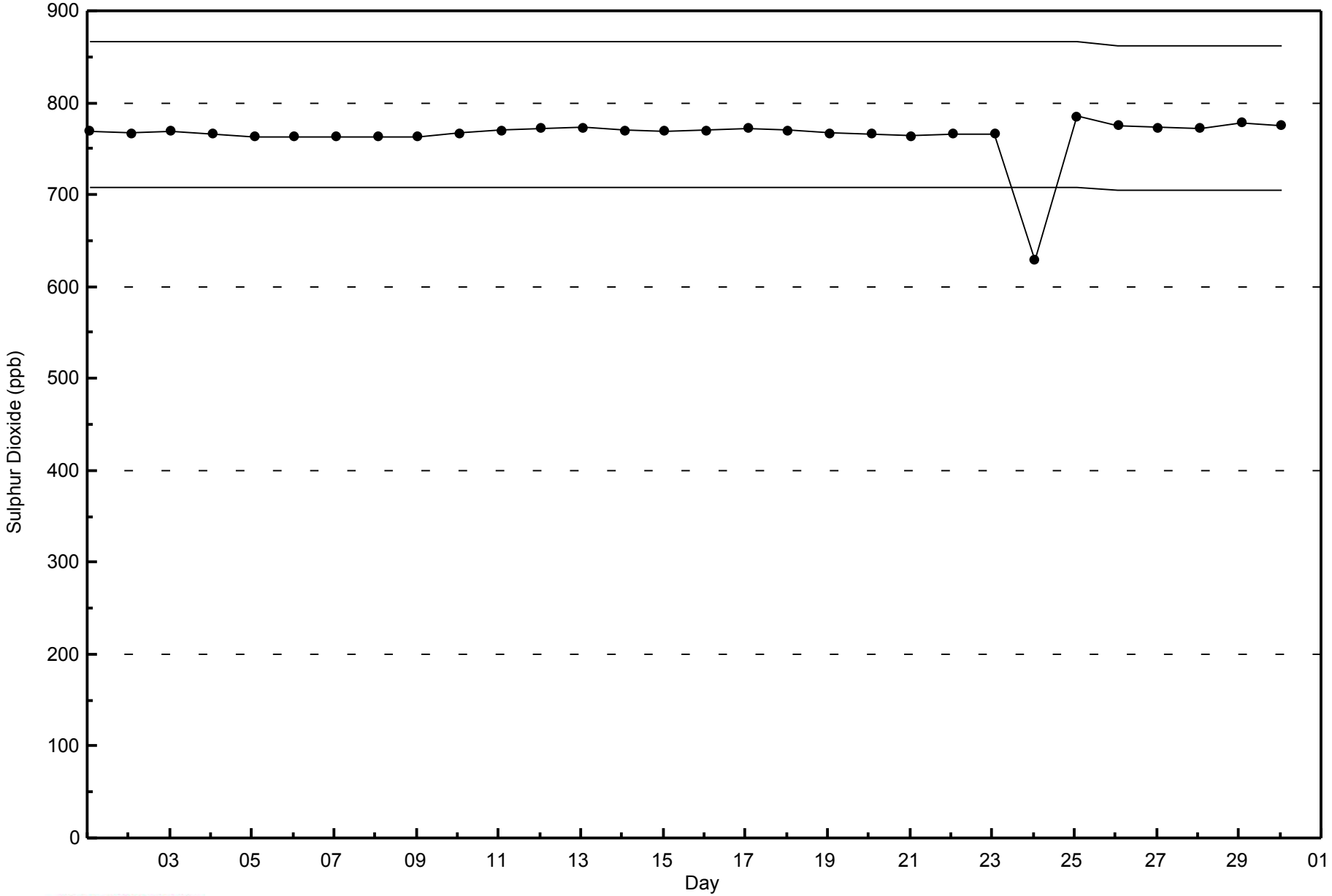
AURORA ATMOSPHERICS INC.

WBEA NETWORK

Span Responses

Sulphur Dioxide (SO_2) - ppb

Millennium - April 2014



AURORA ATMOSPHERICS INC.

Wood Buffalo Environmental Association

Summary of Hour Averages

Total Reduced Sulphur (TRS) - ppb

Millennium - April 2014

Number of Exceedences (AAAQO): 1-hr: 0 24-hr: 0
Maximum Value: 2 ppb on Apr 29 23:00 Maximum Daily Average: 0.6 ppb on Apr 5

Minimum Value: 0 ppb on Apr 27 09:00
Maximum Diurnal Average: 0.5 ppb at hour 4
Monthly Average: 0.4 ppb

Minimum Daily Average: 0.2 ppb on Apr 2
Minimum Diurnal Average: 0.3 ppb at hour 20
Percentiles: $P_1 = 0$ $P_{10} = 0$ $Q_1 = 0$ Median = 0 $Q_3 = 0$ $P_{90} = 1$ $P_{99} = 1$

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-Apr	0	0	Z	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0.2	0
2-Apr	0	0	Z	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0.2	0
3-Apr	0	0	Z	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0.3	0
4-Apr	0	0	Z	0	0	0	0	0	0	0	0	0	0	0	1	1	1	1	1	1	1	0	0	1	0.5	1
5-Apr	1	1	Z	0	0	0	0	1	1	0	1	1	1	1	1	1	1	1	1	0	0	0	0	0	0.6	1
6-Apr	0	0	Z	0	0	0	0	0	0	0	0	0	0	1	0	0	0	0	1	0	0	0	0	0	0.4	1
7-Apr	1	1	Z	1	0	1	1	1	0	1	1	1	0	0	0	0	0	0	0	0	0	0	0	0	0.4	1
8-Apr	0	0	Z	0	0	1	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0.4	1
9-Apr	0	1	Z	0	0	0	0	0	0	1	1	0	0	0	0	0	1	1	1	1	0	0	0	0	0.4	1
10-Apr	1	0	Z	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0.2	1
11-Apr	0	0	Z	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0.3	0
12-Apr	0	0	Z	1	0	0	1	1	0	0	0	1	0	0	0	0	0	0	0	0	0	0	0	0	0.4	1
13-Apr	0	0	Z	0	0	0	0	0	0	0	0	0	0	1	1	1	0	0	0	0	0	0	0	0	0.4	1
14-Apr	0	0	Z	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1	0	0	0	0	0	0	0.4	1
15-Apr	0	0	Z	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0.3	1
16-Apr	0	0	Z	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0.3	0
17-Apr	0	0	Z	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0.2	0
18-Apr	0	0	Z	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0.2	0
19-Apr	0	0	Z	0	1	1	1	1	0	0	0	0	0	0	0	0	0	0	0	0	1	0	0	0	0.4	1
20-Apr	0	0	Z	1	1	1	0	1	1	1	1	1	1	0	0	0	0	0	0	0	1	1	1	0	0.6	1
21-Apr	1	0	Z	1	1	1	0	0	0	1	1	1	1	1	1	1	0	1	0	0	0	0	0	0	0.5	1
22-Apr	0	0	Z	1	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0.4	1
23-Apr	0	0	Z	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0.3	0
24-Apr	0	0	Z	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0.3	0
25-Apr	0	0	Z	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0.2	0
26-Apr	0	0	Z	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0.2	0
27-Apr	0	0	Z	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0.2	0
28-Apr	0	0	Z	0	0	0	0	0	0	0	0	M	1	1	1	1	0	0	0	0	0	0	0	0	0.4	1
29-Apr	0	0	Z	1	0	0	0	C	C	C	C	0	0	0	0	0	0	1	0	0	0	1	2	2	0.5	2
30-Apr	1	1	Z	1	1	1	1	1	1	1	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0.5	1
	0.4	0.4	--	0.5	0.4	0.4	0.3	0.4	0.3	0.4	0.4	0.4	0.3	0.3	0.4	0.4	0.3	0.4	0.4	0.3	0.3	0.4	0.4	0.4	Diurnal Average	
	1	1	--	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	2	2	Diurnal Maximum	

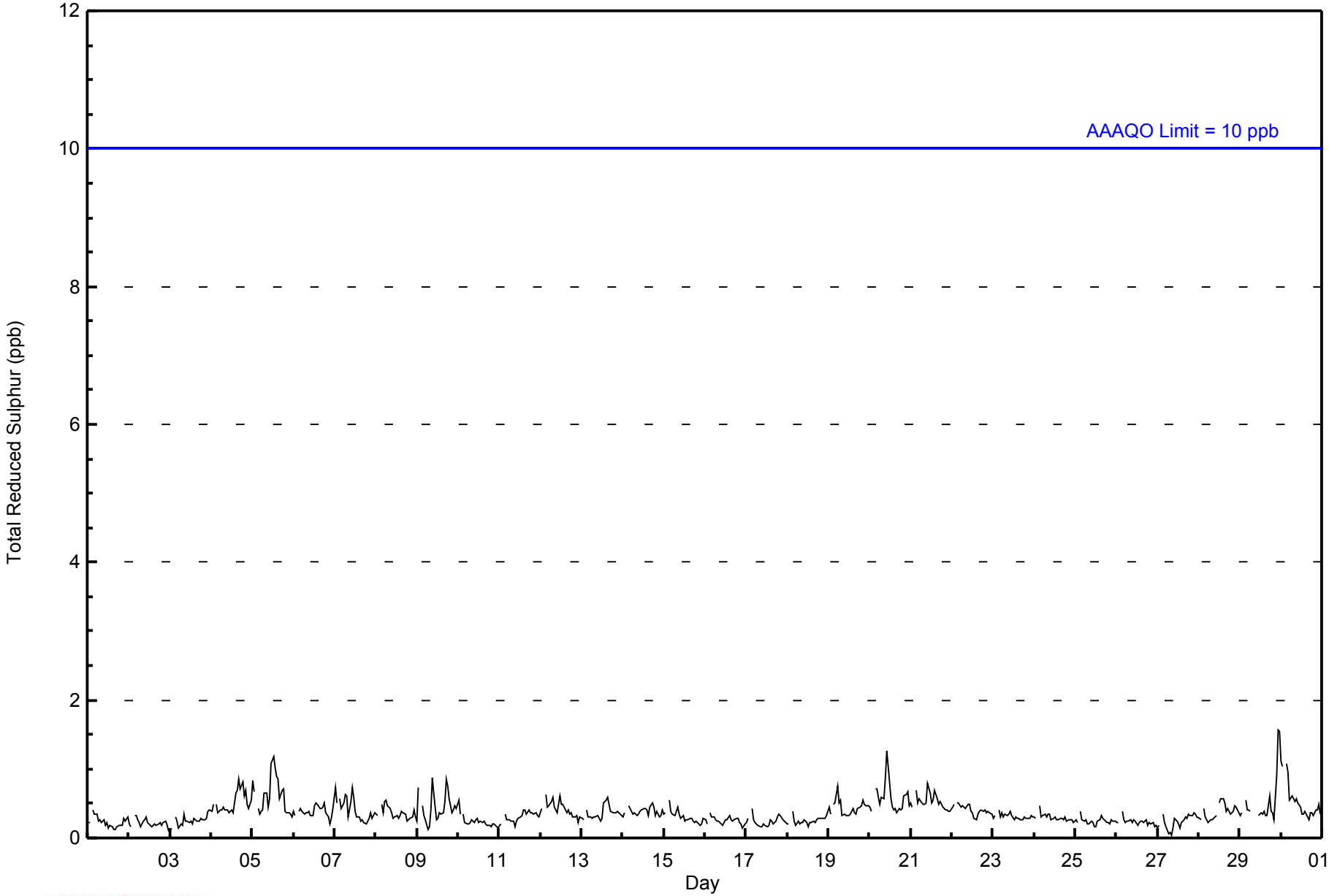
Z - zerospan C - Calibration M - Maintenance
Alberta Ambient Air Quality Objectives (AAAQO): 1-hr 10 ppb 24-hr 3 ppb

WBEA NETWORK

Hourly Averages

Total Reduced Sulphur (TRS) - ppb

Millennium - April 2014



AURORA ATMOSPHERICS INC.

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

WBEA NETWORK

Frequency Distribution

Total Reduced Sulphur (TRS) - ppb

Millennium - April 2014

Concentration Ranges (ppb)	Wind Direction																
	N	NNE	NE	ENE	E	ESE	SE	SSE	S	SSW	SW	WSW	W	WNW	NW	NNW	**Totals**
0 - 2	113	43	24	24	56	92	145	53	29	9	9	22	10	16	21	18	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	113	43	24	24	56	92	145	53	29	9	9	22	10	16	21	18	684

Total Number of Valid Hours: 684

Total Number of Hours: 720

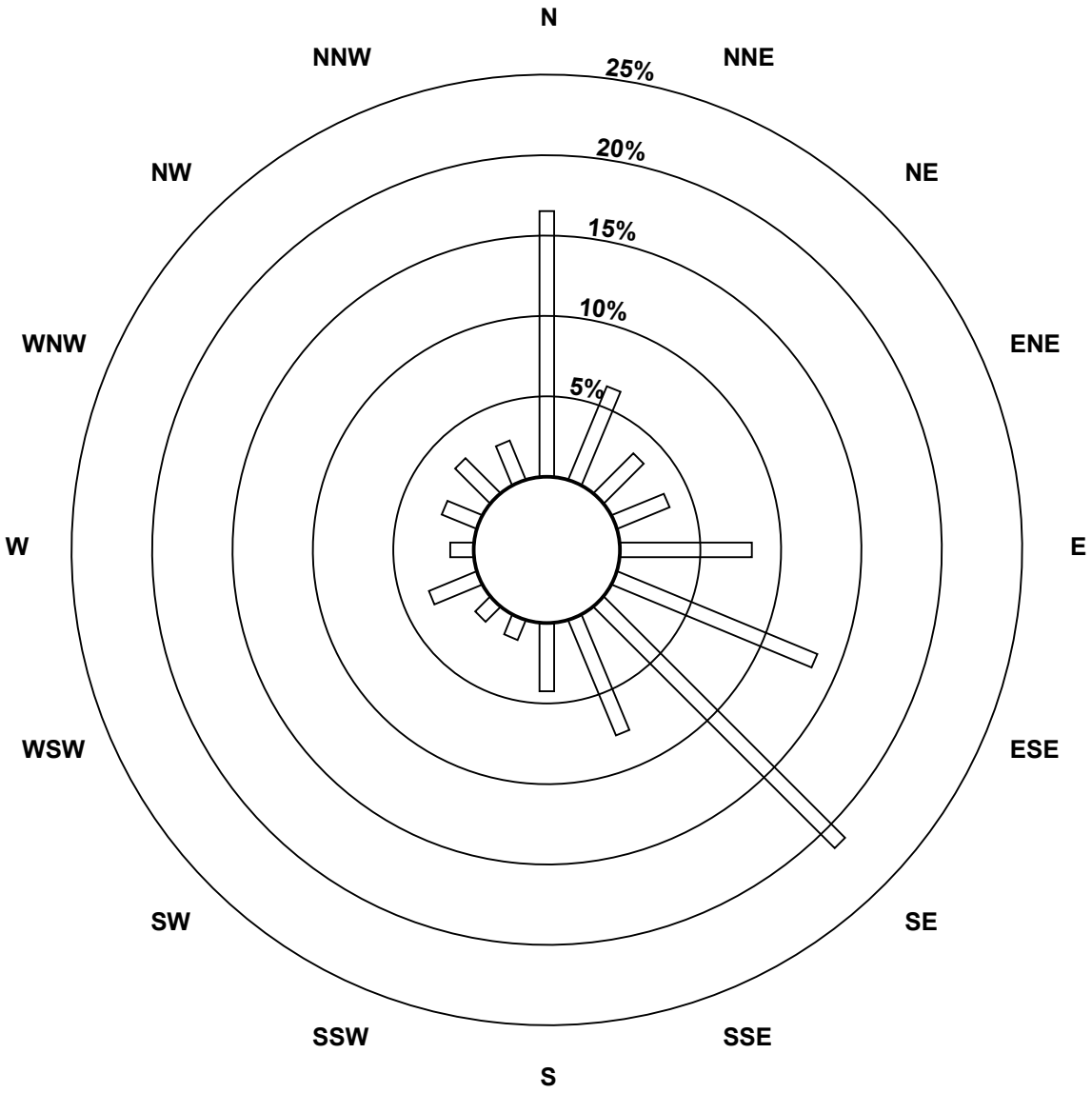
AURORA
ATMOSPHERICS INC.

Wood Buffalo Environmental Association

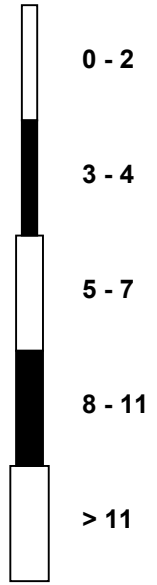
Wind Rose Apr 2014

Total Reduced Sulphur (TRS) - ppb

Millennium (AMS 12)



Classes (ppb)



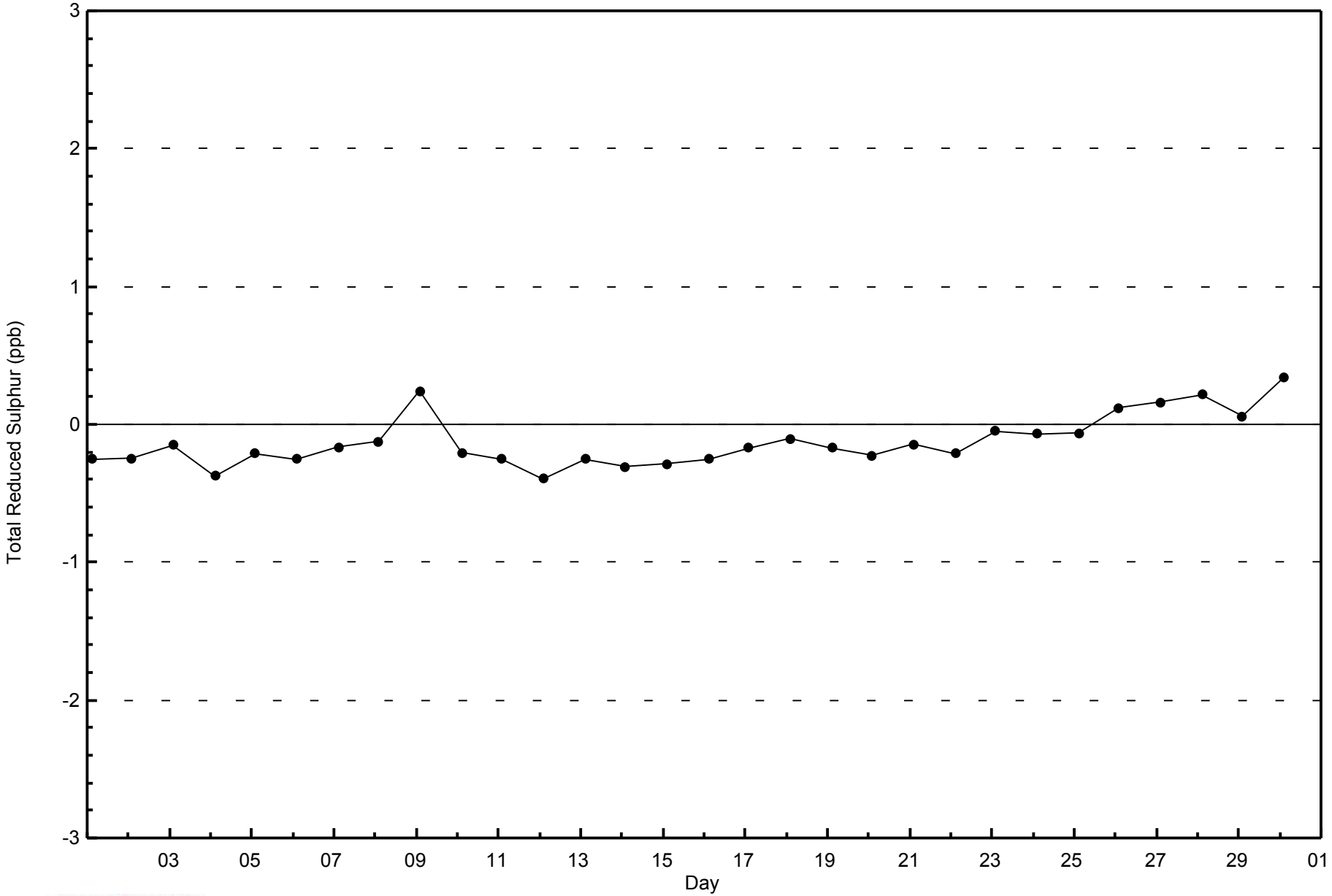
Total Number of Valid Hours: 684

WBEA NETWORK

Zero Responses

Total Reduced Sulphur (TRS) - ppb

Millennium - April 2014



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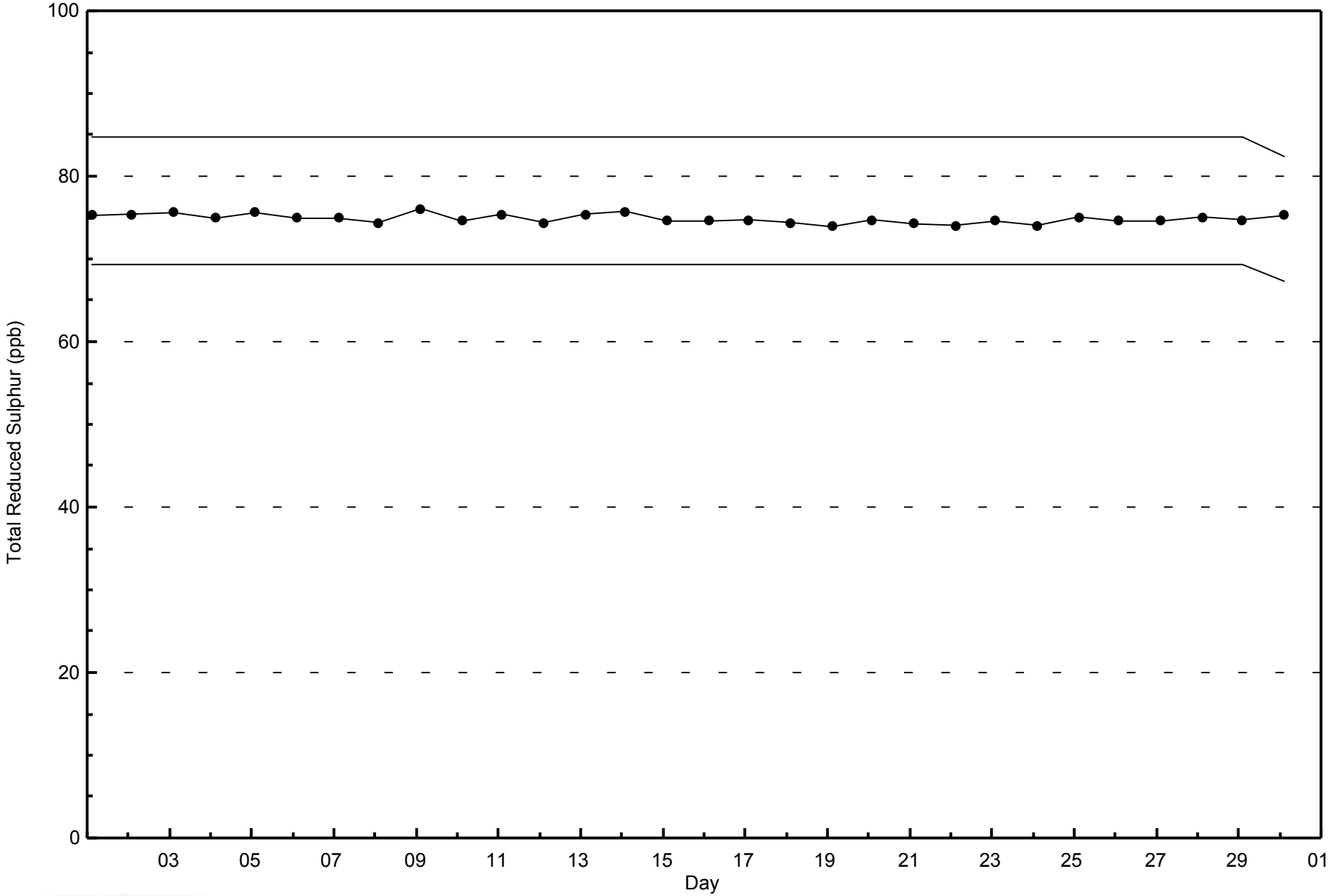
WBEA NETWORK

Span Responses

Total Reduced Sulphur (TRS) - ppb

Millennium - April 2014



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Wood Buffalo Environmental Association

Summary of Hour Averages

Total Hydrocarbons (THC) - ppm

Millennium - April 2014

Maximum Value: 6.0 ppm on Apr 30 00:00

Maximum Daily Average: 2.6 ppm on Apr 30

Minimum Value: 2.0 ppm on Apr 8 11:00

Minimum Daily Average: 2.1 ppm on Apr 23

Maximum Diurnal Average: 2.4 ppm at hour 1

Minimum Diurnal Average: 2.1 ppm at hour 14

Monthly Average: 2.24 ppm

Percentiles: P_1 = 2.0 P_{10} = 2.1 Q_1 = 2.1 Median = 2.2 Q_3 = 2.3 P_{90} = 2.4 P_{99} = 3.6

Hours in Service:	720
Hours of Data:	680
Hours of Missing Data:	40
Hours of Calibration:	40
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-Apr	2.3	Z	2.2	2.2	2.3	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	2.3	2.2	2.3	2.2	2.3
2-Apr	2.2	Z	2.2	2.1	2.1	2.1	2.1	2.1	2.1	2.1	2.1	2.1	2.1	2.1	2.1	2.1	2.1	2.1	2.1	2.1	2.1	2.1	2.1	2.1	2.1	2.2
3-Apr	2.1	Z	2.3	2.2	2.2	2.2	2.2	2.2	2.4	2.2	2.3	2.3	2.3	2.2	2.2	2.1	2.1	2.2	2.2	2.2	2.1	2.2	2.2	2.1	2.2	2.4
4-Apr	2.2	Z	2.2	2.2	2.2	2.2	2.2	2.3	2.2	2.2	2.2	2.2	2.2	2.3	2.6	2.7	2.5	2.3	2.3	2.2	2.3	2.2	2.3	2.4	2.3	2.7
5-Apr	2.5	Z	2.2	2.1	2.1	2.2	2.2	2.6	2.4	2.2	2.3	2.4	2.3	2.2	2.2	2.2	2.2	2.1	2.2	2.2	2.3	2.4	2.3	2.3	2.3	2.6
6-Apr	2.2	Z	2.3	2.3	2.3	2.2	2.2	2.3	2.2	2.2	2.2	2.2	2.6	2.2	2.3	2.4	2.4	2.5	2.7	2.2	2.2	2.2	2.3	2.5	2.3	2.7
7-Apr	5.1	Z	3.1	2.9	2.6	2.9	4.0	3.7	2.2	2.2	2.3	2.2	2.3	2.3	2.2	2.1	2.1	2.2	2.3	2.3	2.3	2.2	2.2	2.6	2.6	5.1
8-Apr	2.5	Z	2.3	2.6	2.4	3.3	3.4	2.4	2.3	2.1	2.0	2.0	2.0	2.0	2.0	2.1	2.0	2.0	2.0	2.0	2.0	2.0	2.1	2.1	2.2	3.4
9-Apr	2.0	Z	2.5	2.0	2.0	2.0	2.0	2.0	2.1	2.2	2.1	2.0	2.0	2.1	2.1	2.1	2.1	2.3	2.3	2.2	2.1	2.7	2.2	2.1	2.1	2.7
10-Apr	2.3	Z	2.1	2.1	2.1	2.1	2.1	2.1	2.1	2.1	2.1	2.1	2.1	2.1	2.1	2.1	2.1	2.1	2.1	2.1	2.1	2.1	2.1	2.1	2.1	2.3
11-Apr	2.2	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	2.0	2.0	2.1	2.1	2.1	2.1	2.1	2.1	2.1	2.1	2.2
12-Apr	2.2	Z	2.7	2.2	2.2	2.2	2.5	2.8	2.4	2.3	2.3	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	2.2	2.8
13-Apr	2.1	Z	2.2	2.1	2.2	2.2	2.2	2.2	2.2	2.2	2.2	2.2	2.2	2.2	2.2	2.2	2.2	2.2	2.1	2.2	2.4	2.3	2.3	2.2	2.2	2.4
14-Apr	2.2	Z	2.2	2.2	2.2	2.2	2.2	2.2	2.2	2.2	2.2	2.2	2.2	2.2	2.2	2.2	2.3	2.3	2.3	2.4	2.6	2.2	2.2	2.2	2.2	2.6
15-Apr	2.1	Z	2.1	2.2	2.1	2.1	2.1	2.1	2.1	2.2	2.2	2.1	2.1	2.1	2.1	2.1	2.1	2.1	2.1	2.1	2.1	2.1	2.1	2.1	2.1	2.2
16-Apr	2.2	Z	2.2	2.1	2.2	2.2	2.2	2.2	2.2	2.2	2.2	2.1	2.1	2.1	2.1	2.1	2.1	2.1	2.2	2.2	2.1	2.1	2.1	2.1	2.2	2.2
17-Apr	2.1	Z	2.3	2.2	2.1	2.1	2.2	2.1	2.1	2.1	2.1	2.1	2.1	2.1	2.1	2.1	2.2	2.2	2.2	2.2	2.3	2.2	2.3	2.5	2.2	2.5
18-Apr	2.3	Z	2.5	2.4	2.4	2.2	2.2	2.2	2.1	2.1	2.1	2.1	2.1	2.1	2.1	2.1	2.1	2.1	2.2	2.2	2.3	2.4	2.5	2.3	2.2	2.5
19-Apr	2.5	Z	2.5	2.5	3.0	2.9	2.7	2.4	2.1	2.1	2.1	2.1	2.1	2.1	2.1	2.2	2.2	2.2	2.2	2.3	2.3	2.2	2.2	2.3	2.3	3.0
20-Apr	2.2	Z	2.4	2.4	2.5	2.6	2.9	2.4	2.6	2.5	2.6	2.6	2.2	2.1	2.1	2.1	2.1	2.2	2.2	2.3	3.2	2.9	3.0	2.5	2.5	3.2
21-Apr	2.4	Z	2.8	2.6	2.7	2.6	2.4	2.3	2.2	2.3	2.4	2.4	2.2	2.2	2.3	2.2	2.2	2.2	2.2	2.2	2.2	2.2	2.2	2.1	2.3	2.8
22-Apr	2.2	Z	2.3	2.2	2.3	2.3	2.3	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	2.2	2.2	2.1	2.2	2.3
23-Apr	2.1	Z	2.1	2.1	2.1	2.1	2.1	2.2	2.1	2.2	2.1	2.1	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.1	2.1	2.1	2.1	2.1	2.1	2.2
24-Apr	2.1	Z	2.1	2.1	2.1	2.1	C	C	C	C	2.2	2.2	2.2	2.2	2.2	2.2	2.2	2.1	2.2	2.1	2.2	2.1	2.2	2.2	2.2	2.2
25-Apr	2.2	Z	2.2	2.2	2.3	2.3	2.1	2.1	2.1	2.1	2.0	2.1	2.1	2.1	2.1	2.2	2.1	2.1	2.2	2.2	2.2	2.3	2.2	2.3	2.2	2.3
26-Apr	2.3	Z	2.2	2.2	2.2	2.2	2.2	2.1	2.1	2.1	2.1	2.1	2.1	2.1	2.2	2.2	2.2	2.2	2.2	2.2	2.2	2.2	2.2	2.2	2.2	2.3
27-Apr	2.2	Z	2.3	2.3	2.2	2.3	2.3	2.2	2.2	2.1	2.1	2.1	2.1	2.1	2.1	2.1	2.1	2.1	2.1	2.2	2.2	2.2	2.2	2.3	2.2	2.3
28-Apr	2.2	Z	2.2	2.2	2.3	2.3	2.2	2.2	2.1	2.2	2.2	2.2	2.2	2.4	2.2	2.2	2.2	2.2	2.2	2.2	2.3	2.3	2.3	2.3	2.2	2.4
29-Apr	2.2	Z	2.7	2.4	2.3	2.3	C	C	C	C	C	C	2.2	2.1	2.1	2.1	2.1	2.2	2.1	2.1	2.1	2.8	4.3	6.0	--	6.0
30-Apr	5.1	Z	4.4	3.3	3.2	2.5	2.5	2.3	2.2	2.3	2.2	2.2	2.1	2.1	2.2	2.1	2.1	2.2	2.3	2.2	2.6	2.2	3.3	2.9	2.6	5.1
	2.4	--	2.4	2.3	2.3	2.3	2.4	2.3	2.2	2.2	2.2	2.2	2.2	2.1	2.2	2.2	2.2	2.2	2.2	2.2	2.2	2.3	2.3	2.4	Diurnal Average	
	5.1	--	4.4	3.3	3.2	3.3	4.0	3.7	2.6	2.5	2.6	2.6	2.6	2.4	2.6	2.7	2.5	2.5	2.7	2.4	3.2	2.9	4.3	6.0	Diurnal Maximum	

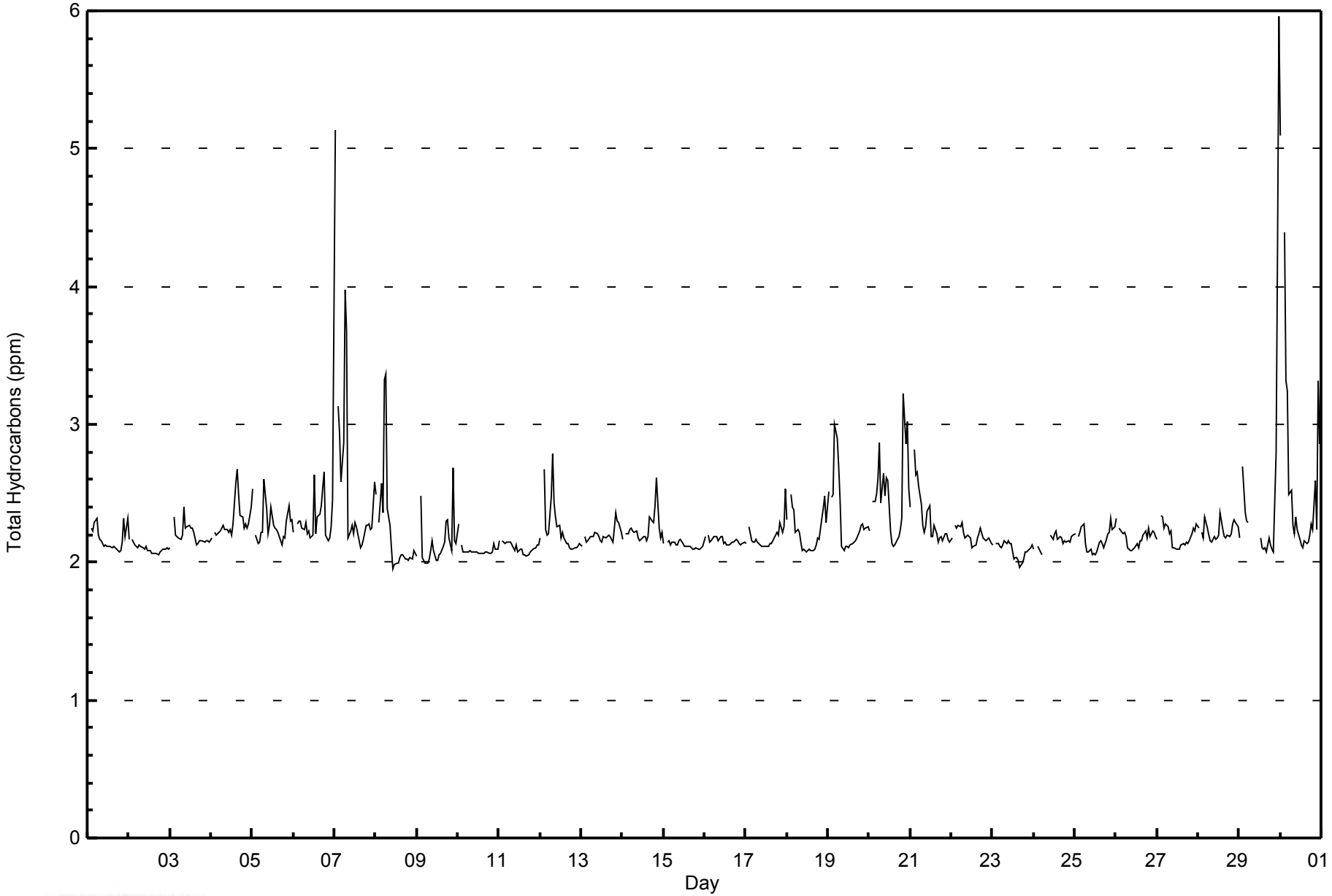
Z - zerospan C - Calibration

WBEA NETWORK

Hourly Averages

Total Hydrocarbons (THC) - ppm

Millennium - April 2014



AURORA ATMOSPHERICS INC.

Concentration Ranges (ppm)	Number of Hours	%	Cumulative %
0 - 2.0	29	4.26	4.26
2.1 - 3.0	637	93.68	97.94
3.1 - 10.0	14	2.06	100.00
> 10.0	0	0.00	100.00

Total Number of Valid Hours: 680

Total Number of Hours: 720

WBEA NETWORK

Frequency Distribution

Total Hydrocarbons (THC) - ppm

Millennium - April 2014

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	0	0	2	4	2	0	0	0	0	1	10	6	0	0	2	29
2.1 - 3.0	111	43	23	23	50	84	144	46	28	7	8	13	5	15	20	16	636
3.1 - 10.0	0	0	0	0	0	4	2	3	1	4	0	0	0	0	0	0	14
> 10.0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Totals	113	43	23	25	54	90	146	49	29	11	9	23	11	15	20	18	679

Total Number of Valid Hours: 679

Total Number of Hours: 720

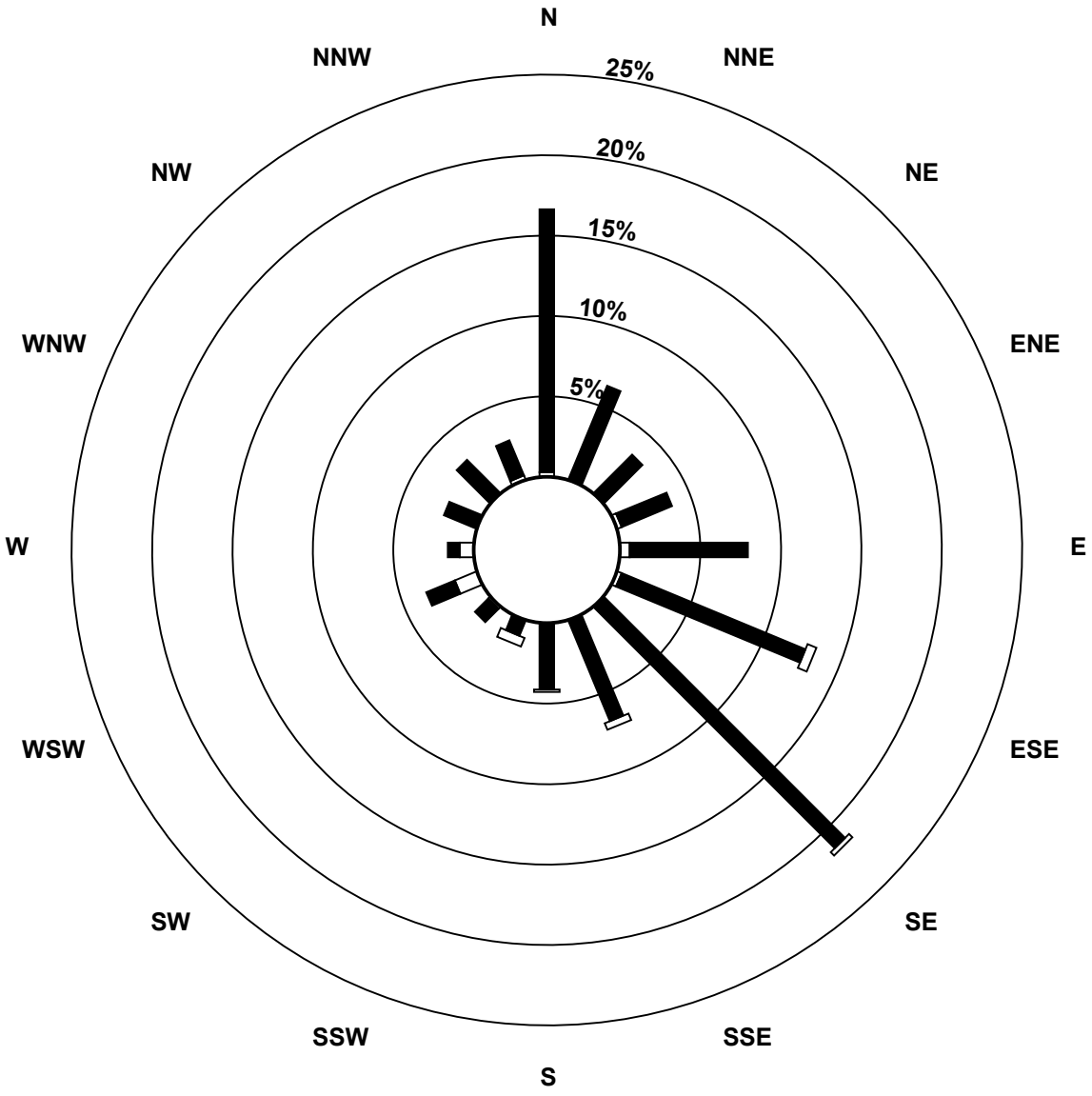
AURORA ATMOSPHERICS INC.

Wood Buffalo Environmental Association

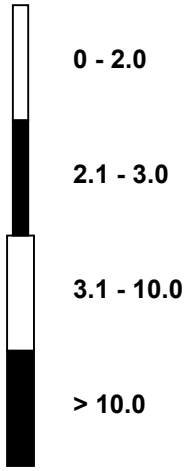
Wind Rose Apr 2014

Total Hydrocarbons (THC) - ppm

Millennium (AMS 12)



Classes (ppm)



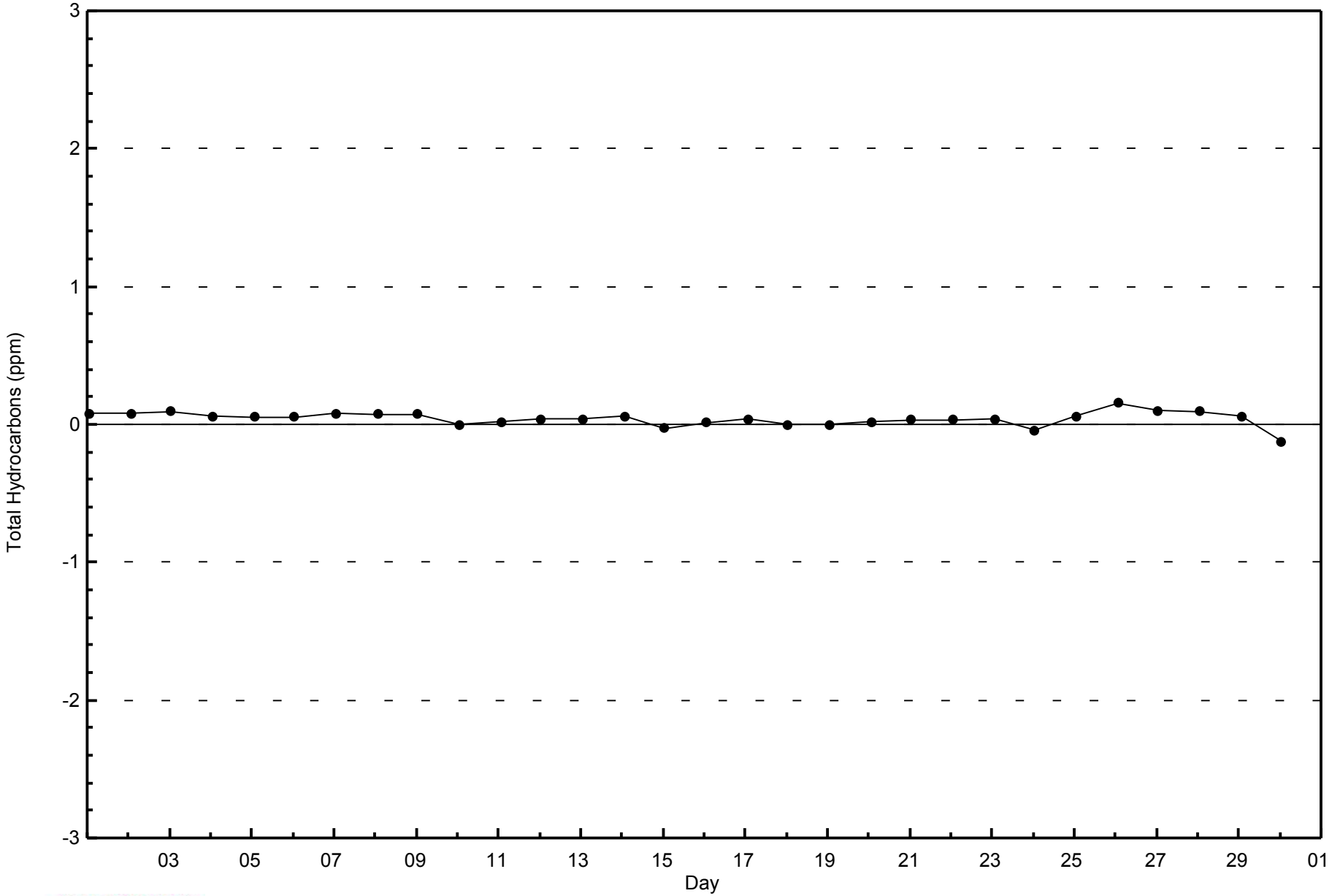
Total Number of Valid Hours: 679

WBEA NETWORK

Zero Responses

Total Hydrocarbons (THC) - ppm

Millennium - April 2014



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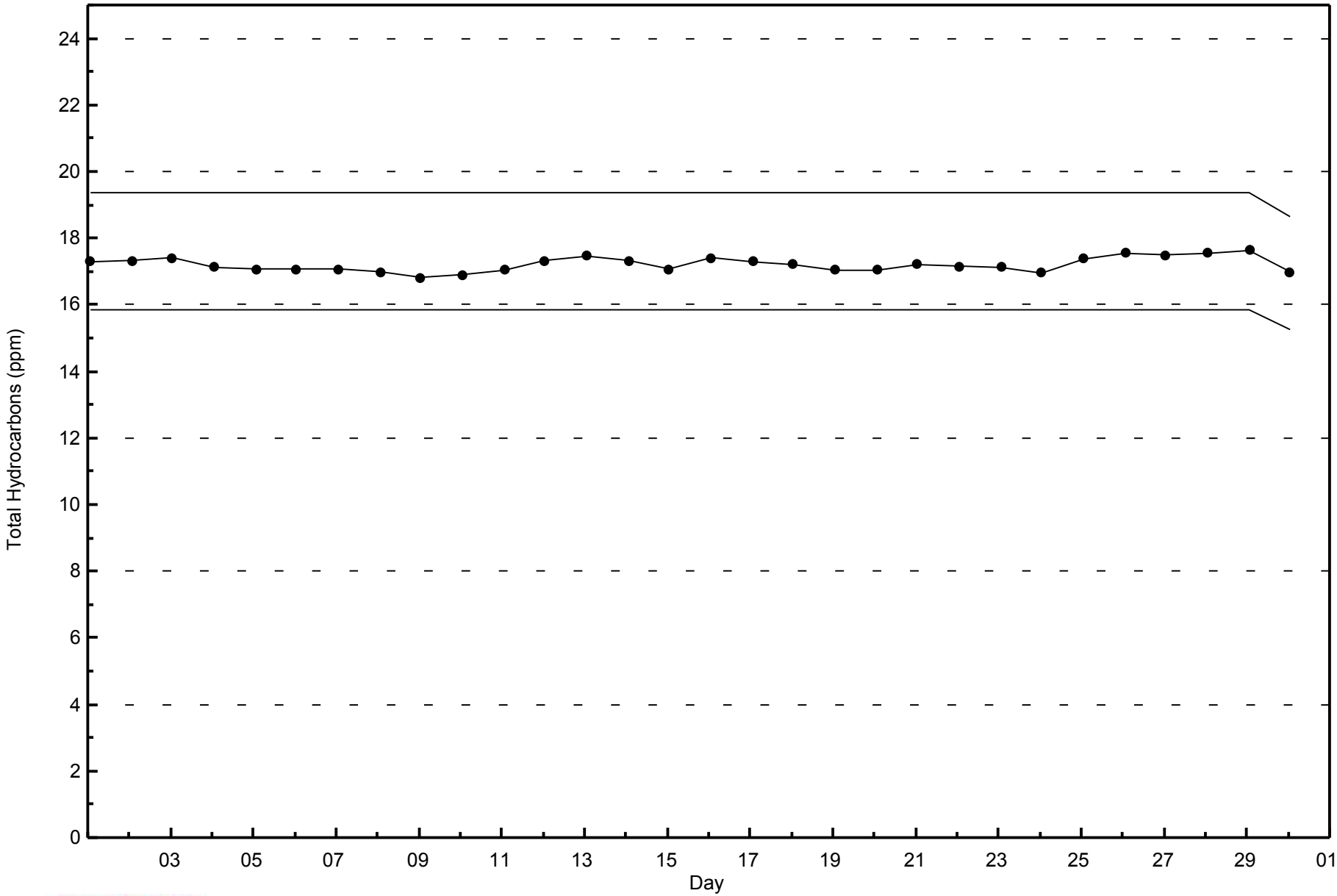
WBEA NETWORK

Span Responses

Total Hydrocarbons (THC) - ppm

Millennium - April 2014



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Wood Buffalo Environmental Association

Summary of Hour Averages

Nitric Oxide (NO) - ppb

Millennium - April 2014

Maximum Value: 187 ppb on Apr 29 23:00

Maximum Daily Average: 23.0 ppb on Apr 29

Minimum Value: 0 ppb on Apr 1 20:00

Minimum Daily Average: 0.1 ppb on Apr 24

Maximum Diurnal Average: 9.6 ppb at hour 1

Minimum Diurnal Average: 0.3 ppb at hour 20

Monthly Average: 3.8 ppb

Percentiles: $P_1 = 0$ $P_{10} = 0$ $Q_1 = 0$ Median = 0 $Q_3 = 2$ $P_{90} = 7$ $P_{99} = 53$

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-Apr	0	Z	0	0	0	0	1	2	3	1	1	1	0	0	0	0	0	0	0	0	0	1	1	2	0.7	3
2-Apr	1	Z	0	0	0	0	1	2	2	2	2	1	1	1	1	1	0	0	0	0	0	0	0	0	0.7	2
3-Apr	0	Z	3	1	5	2	16	12	20	6	9	10	8	4	3	1	1	1	1	0	0	0	0	0	4.5	20
4-Apr	1	Z	0	0	0	0	0	1	2	2	2	3	1	2	2	1	1	1	0	0	0	0	0	0	0.8	3
5-Apr	0	Z	0	0	0	0	2	4	8	4	6	13	14	8	9	6	5	2	2	2	1	0	0	0	3.8	14
6-Apr	0	Z	0	0	0	1	1	3	7	9	3	2	7	7	7	4	9	9	15	0	0	0	3	28	5.1	28
7-Apr	131	Z	15	4	0	1	24	46	3	6	12	10	7	3	1	0	0	0	0	0	0	0	0	10	11.9	131
8-Apr	3	Z	0	8	3	47	38	5	4	2	0	0	0	0	0	0	0	0	0	0	0	0	0	0	4.8	47
9-Apr	0	Z	0	0	0	0	0	0	0	1	0	0	1	1	0	1	2	1	1	0	0	4	0	0	0.5	4
10-Apr	0	Z	0	0	0	0	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0.1	1
11-Apr	0	Z	0	0	0	0	0	0	0	0	0	0	1	1	1	0	0	0	0	0	0	0	0	0	0.2	1
12-Apr	0	Z	4	0	0	0	5	14	6	4	4	7	1	2	1	1	0	0	0	0	0	0	0	0	2.1	14
13-Apr	0	Z	0	0	0	0	1	1	3	2	1	1	1	4	4	5	2	2	1	3	1	1	0	0	1.5	5
14-Apr	1	Z	1	1	1	2	4	3	5	4	2	4	4	3	1	1	6	3	3	0	0	0	0	0	2.1	6
15-Apr	0	Z	0	0	0	0	0	1	1	1	1	1	1	0	1	0	0	0	0	0	0	0	0	0	0.3	1
16-Apr	0	Z	0	0	0	0	1	0	0	1	1	1	0	0	0	0	0	0	0	0	0	0	0	0	0.3	1
17-Apr	0	Z	0	0	0	0	2	1	1	1	0	1	1	1	0	1	1	1	1	0	1	1	1	3	0.8	3
18-Apr	1	Z	1	1	0	0	1	1	2	1	1	1	1	1	1	1	1	1	1	0	8	4	5	17	2.1	17
19-Apr	29	Z	0	1	6	20	38	10	3	1	2	1	1	1	1	1	1	0	0	0	0	0	0	0	5.2	38
20-Apr	7	Z	15	39	75	48	28	30	29	15	15	9	2	1	0	0	0	0	0	0	16	31	38	4	17.6	75
21-Apr	3	Z	9	17	7	12	7	4	6	4	5	4	2	1	1	0	0	0	0	0	0	0	0	0	3.5	17
22-Apr	0	Z	0	1	3	1	3	4	2	5	3	3	1	0	0	1	0	1	0	0	0	0	0	0	1.3	5
23-Apr	0	Z	0	0	0	0	0	C	C	C	C	C	0	0	1	1	0	0	0	0	0	0	0	0	0.2	1
24-Apr	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
25-Apr	0	Z	0	0	0	0	0	0	1	1	0	1	1	0	0	0	0	0	1	0	1	2	2	4	0.6	4
26-Apr	6	Z	1	1	0	2	1	1	1	0	0	1	0	0	0	0	0	0	0	0	0	0	0	1	0.7	6
27-Apr	0	Z	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1	1	0	0	0	0	0	0	0.3	1
28-Apr	1	Z	3	2	3	12	1	1	2	2	1	M	7	6	4	2	1	1	1	1	1	0	0	1	2.3	12
29-Apr	1	Z	27	17	8	7	12	8	6	6	5	2	0	0	0	0	0	0	0	0	0	59	187	185	23.0	187
30-Apr	102	Z	90	51	54	10	16	7	4	8	2	1	1	1	2	2	1	4	5	0	2	0	9	1	16.3	102
	9.6	--	5.7	4.8	5.6	5.6	6.9	5.6	4.2	3.1	2.7	2.8	2.1	1.6	1.4	1.1	1.1	0.9	1.1	0.3	1.1	3.5	8.2	8.6	Diurnal Average	
	131	--	90	51	75	48	38	46	29	15	15	13	14	8	9	6	9	9	15	3	16	59	187	185	Diurnal Maximum	

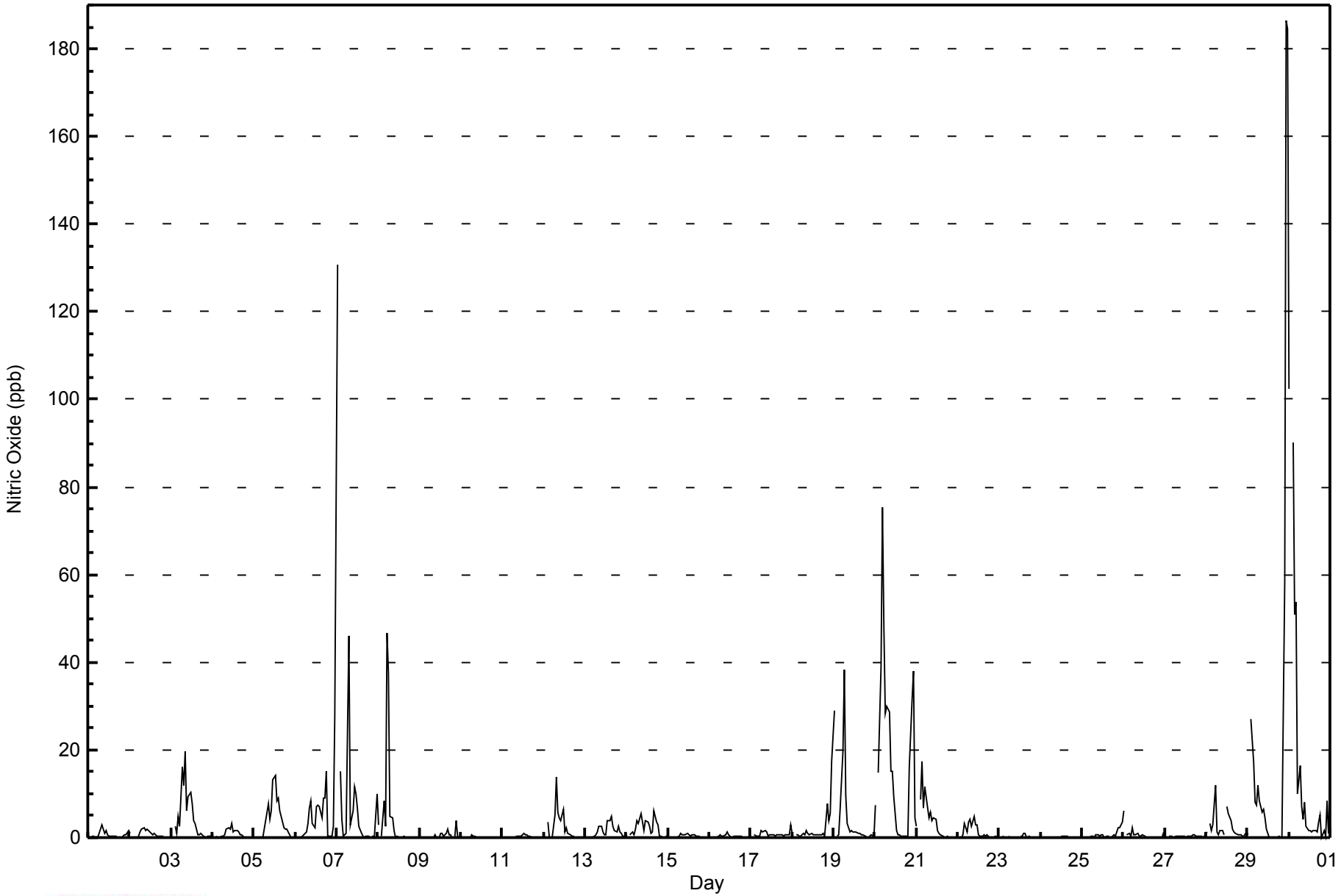
Z - zerospan C - Calibration M - Maintenance

WBEA NETWORK

Hourly Averages

Nitric Oxide (NO) - ppb

Millennium - April 2014



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Concentration Ranges (ppb)	Number of Hours	%	Cumulative %
0 - 20	660	96.49	96.49
21 - 40	12	1.75	98.25
11 - 80	7	1.02	99.27
81 - 159	3	0.44	99.71
> 159	2	0.29	100.00

Total Number of Valid Hours: 684

Total Number of Hours: 720

WBEA NETWORK

Frequency Distribution

Nitric Oxide (NO) - ppb

Millennium - April 2014

Concentration Ranges (ppb)	Wind Direction																
	N	NNE	NE	ENE	E	ESE	SE	SSE	S	SSW	SW	WSW	W	WNW	NW	NNW	**Totals**
0 - 20	113	43	24	24	53	83	140	47	27	9	9	23	11	15	20	18	659
21 - 40	0	0	0	1	1	0	6	2	1	1	0	0	0	0	0	0	12
11 - 80	0	0	0	0	0	4	0	2	0	1	0	0	0	0	0	0	7
81 - 159	0	0	0	0	0	0	1	1	1	0	0	0	0	0	0	0	3
> 159	0	0	0	0	0	2	0	0	0	0	0	0	0	0	0	0	2
Totals	113	43	24	25	54	89	147	52	29	11	9	23	11	15	20	18	683

Total Number of Valid Hours: 683

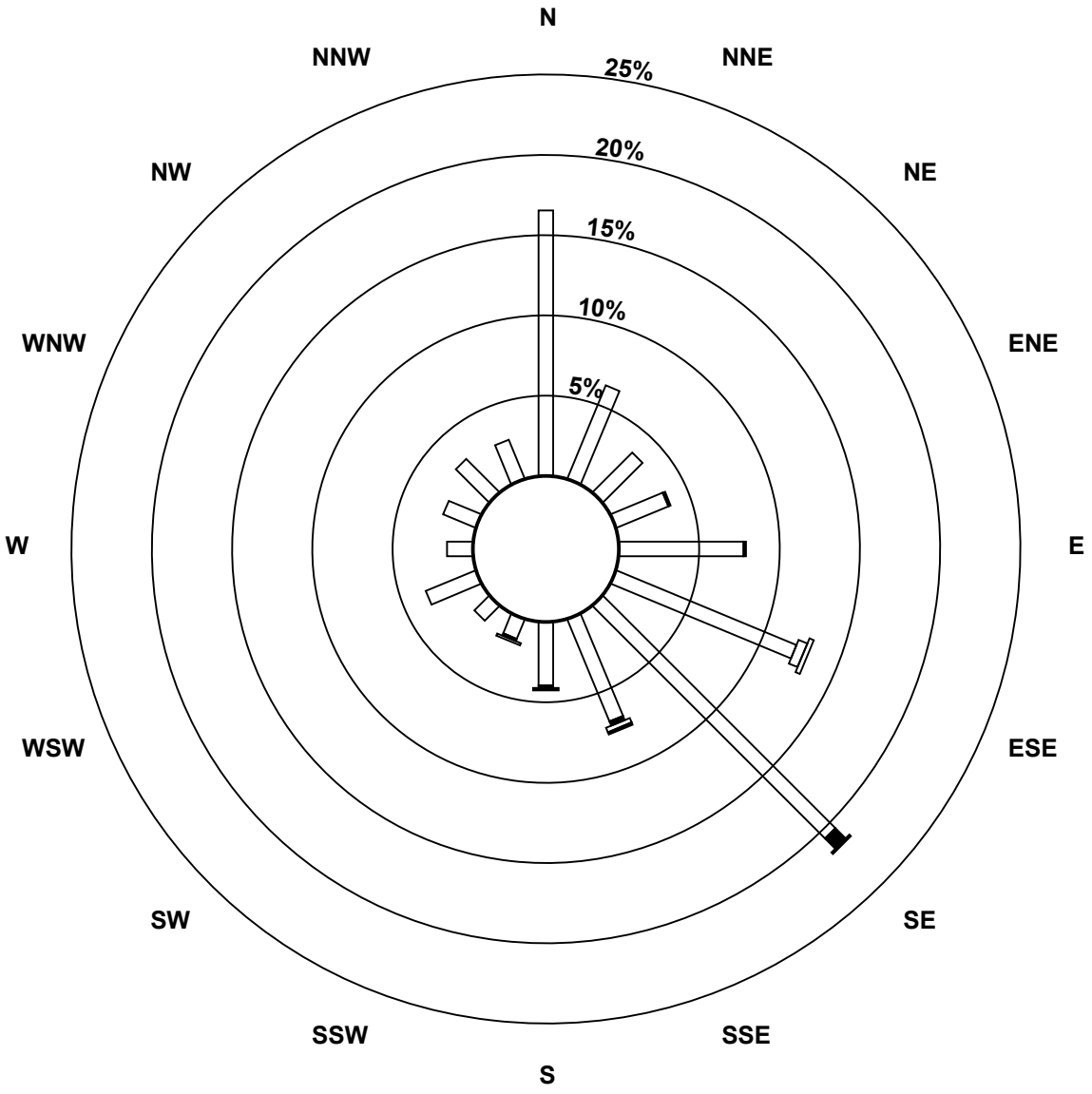
Total Number of Hours: 720

Wood Buffalo Environmental Association

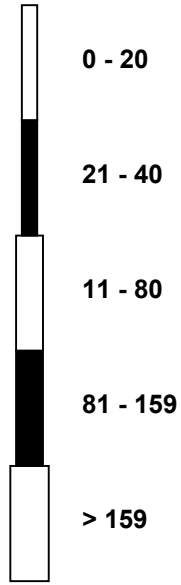
Wind Rose Apr 2014

Nitric Oxide (NO) - ppb

Millennium (AMS 12)



Classes (ppb)



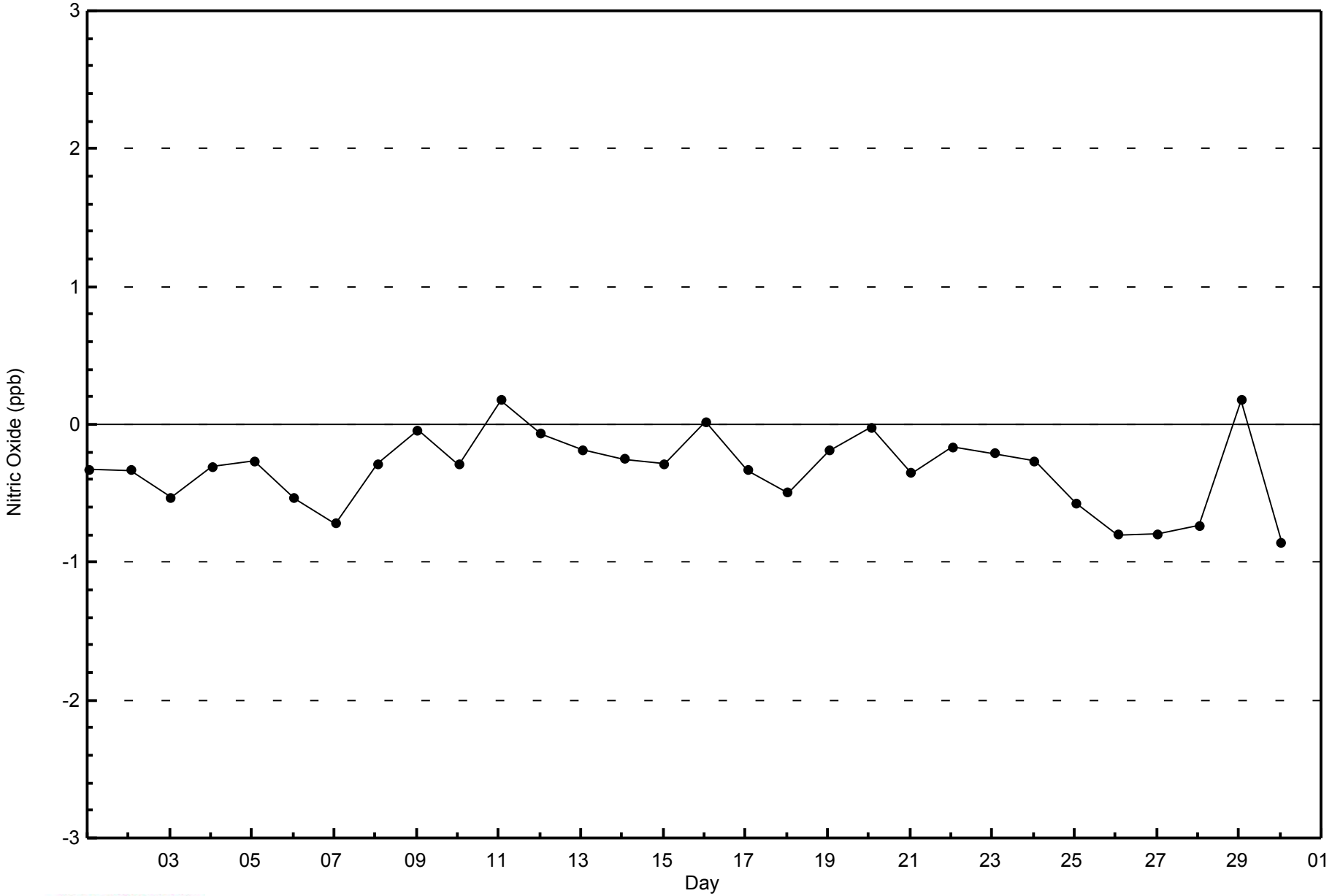
Total Number of Valid Hours: 683

WBEA NETWORK

Zero Responses

Nitric Oxide (NO) - ppb

Millennium - April 2014



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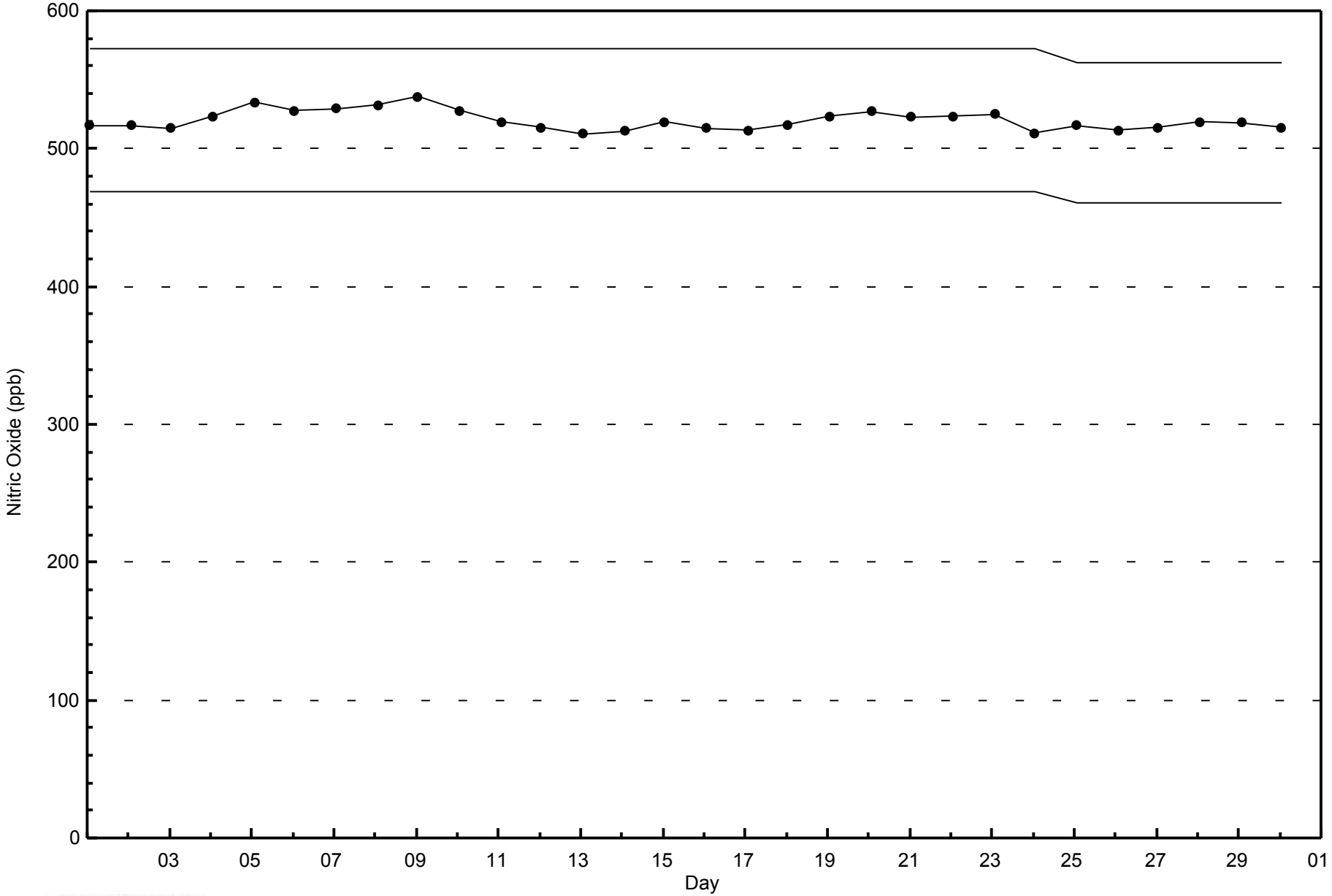
WBEA NETWORK

Span Responses

Nitric Oxide (NO) - ppb

Millennium - April 2014



AURORA ATMOSPHERICS INC.

Wood Buffalo Environmental Association

Summary of Hour Averages

Nitrogen Dioxide (NO_2) - ppb

Millennium - April 2014

Number of Exceedences (AAAQO): 1-hr: 0 24-hr: 0
Maximum Value: 44 ppb on Apr 20 23:00 Maximum Daily Average: 19.5 ppb on Apr 6

Minimum Value: 1 ppb on Apr 24 20:00 Minimum Daily Average: 3.1 ppb on Apr 10
Maximum Diurnal Average: 15.8 ppb at hour 1 Minimum Diurnal Average: 4.1 ppb at hour 14
Monthly Average: 9.4 ppb Percentiles: P_1 = 1 P_{10} = 2 Q_1 = 3 Median = 7 Q_3 = 13 P_{90} = 20 P_{99} = 38

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-Apr	15	Z	10	19	11	14	11	9	7	2	3	1	1	1	1	1	1	1	2	4	14	23	25	26	8.8	26
2-Apr	18	Z	7	7	6	9	10	6	4	3	4	2	1	1	1	1	1	2	3	2	2	3	2	3	4.2	18
3-Apr	5	Z	15	16	21	15	17	12	12	5	7	9	8	6	7	2	3	6	9	9	8	11	9	12	9.7	21
4-Apr	12	Z	13	12	11	13	11	8	11	11	11	11	7	8	11	11	9	11	9	9	6	7	4	3	9.6	13
5-Apr	18	Z	6	4	6	12	13	14	14	8	9	18	19	13	15	15	14	13	18	19	23	12	12	15	13.4	23
6-Apr	12	Z	14	20	17	21	19	18	19	16	10	10	21	15	20	15	25	31	39	13	11	15	31	39	19.5	39
7-Apr	43	Z	32	19	14	19	26	30	8	12	19	17	14	7	3	1	1	4	9	5	16	17	10	33	15.6	43
8-Apr	28	Z	20	32	20	32	34	20	15	6	1	1	1	1	1	1	1	1	1	2	2	1	2	3	9.9	34
9-Apr	2	Z	8	4	2	3	2	2	5	8	4	2	3	3	2	3	8	8	7	8	15	29	10	6	6.2	29
10-Apr	15	Z	2	3	3	2	3	2	1	1	1	1	1	1	1	1	2	2	2	3	8	11	4	2	3.1	15
11-Apr	6	Z	5	6	4	5	5	5	4	2	2	2	4	3	3	2	2	1	2	2	2	5	6	9	3.7	9
12-Apr	19	Z	31	12	5	7	18	22	12	8	7	11	3	6	4	3	3	2	2	5	6	3	2	3	8.4	31
13-Apr	2	Z	5	3	5	11	6	4	6	5	3	2	2	7	8	10	8	9	13	17	18	15	10	9	7.6	18
14-Apr	17	Z	16	22	18	23	20	11	13	10	5	10	10	9	5	10	27	27	29	16	19	13	8	14	15.1	29
15-Apr	8	Z	5	14	9	6	5	5	3	3	2	2	2	1	2	2	2	2	3	2	2	2	4	5	4.0	14
16-Apr	11	Z	5	5	5	14	8	3	2	3	3	2	2	1	2	2	2	4	4	5	8	8	7	10	5.0	14
17-Apr	11	Z	17	12	8	11	11	6	4	3	2	2	2	2	2	2	2	4	7	8	19	15	16	32	8.5	32
18-Apr	17	Z	21	18	12	8	9	6	8	6	3	4	3	3	3	4	4	8	15	12	24	25	28	33	11.8	33
19-Apr	32	Z	18	16	19	22	25	17	10	4	5	3	4	4	4	4	3	3	5	5	8	16	15	15	11.1	32
20-Apr	25	Z	24	26	27	25	21	21	20	15	18	15	5	3	2	1	1	2	8	8	37	42	44	34	18.4	44
21-Apr	32	Z	36	39	33	31	26	15	14	9	11	10	5	4	6	3	1	1	3	4	9	9	11	8	13.9	39
22-Apr	11	Z	9	20	24	13	12	10	6	10	6	7	2	1	2	3	3	5	3	3	4	7	5	8	7.5	24
23-Apr	10	Z	7	6	6	8	6	C	C	C	C	C	3	2	7	7	5	7	6	3	7	6	6	6	6.0	10
24-Apr	6	Z	11	5	6	8	6	2	4	4	3	3	3	3	4	6	2	2	2	1	1	1	2	3	3.7	11
25-Apr	4	Z	6	8	7	9	5	2	3	4	2	3	2	1	3	3	2	2	10	9	18	22	21	20	7.1	22
26-Apr	27	Z	15	18	10	18	8	5	4	2	2	3	2	2	2	3	3	4	5	5	11	12	10	14	8.0	27
27-Apr	11	Z	9	9	7	8	9	5	4	5	4	4	3	4	3	3	6	6	5	4	10	10	7	11	6.3	11
28-Apr	13	Z	15	12	13	14	8	5	7	6	4	M	9	9	9	7	7	6	7	8	11	12	8	15	9.2	15
29-Apr	13	Z	18	16	12	11	10	9	8	9	8	5	2	1	1	1	1	3	4	5	3	31	38	37	10.6	38
30-Apr	32	Z	30	28	26	21	24	15	10	13	6	5	4	6	8	8	7	19	16	6	20	8	30	22	15.8	32
	15.8	--	14.2	14.5	12.2	13.7	12.9	9.8	8.2	6.5	5.7	5.8	4.9	4.1	4.6	4.5	5.1	6.4	8.2	6.7	11.2	13.0	12.9	15.0	Diurnal Average	
	43	--	36	39	33	32	34	30	20	16	19	18	21	15	20	15	27	31	39	19	37	42	44	39	Diurnal Maximum	

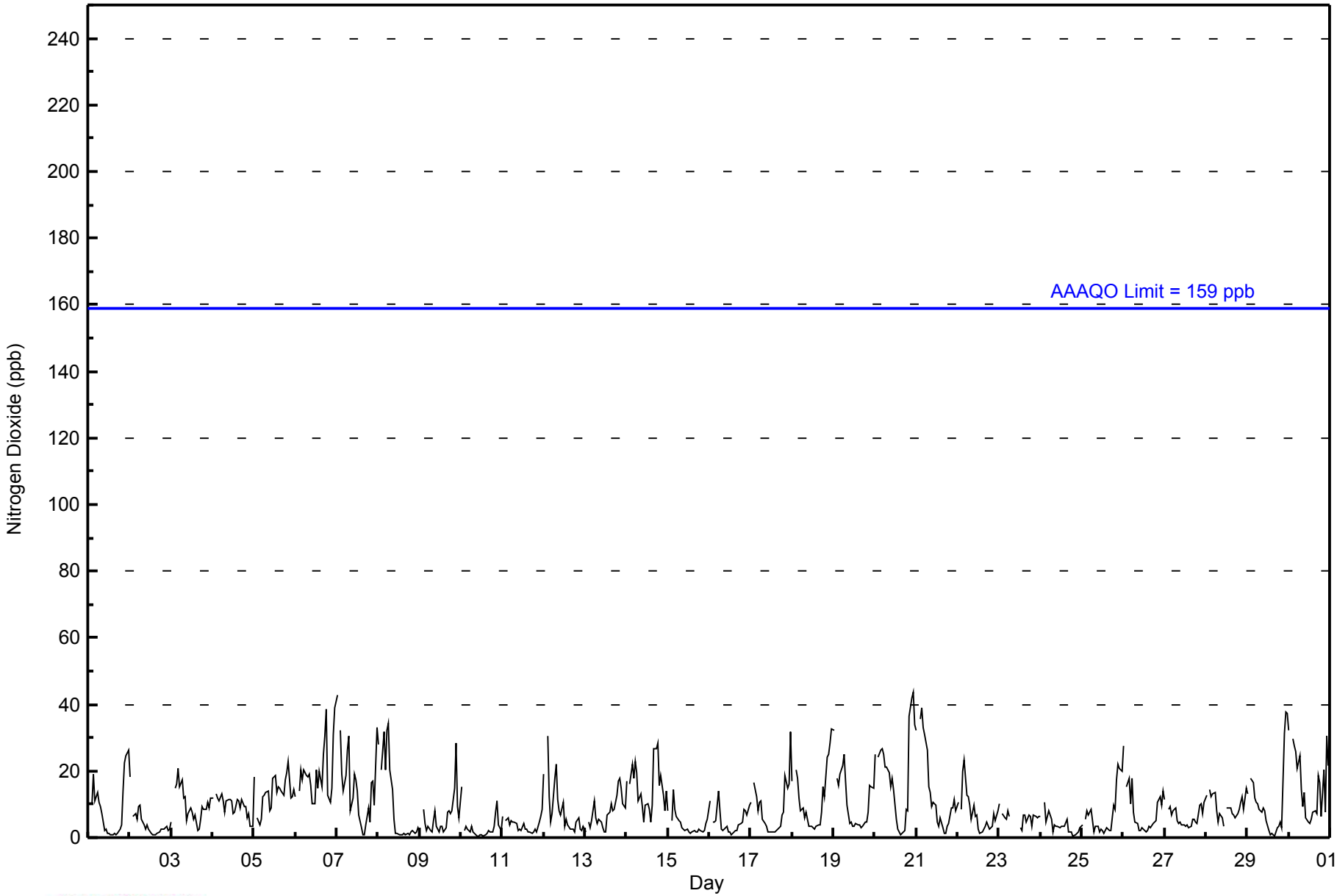
Z - zerospan C - Calibration M - Maintenance
Alberta Ambient Air Quality Objectives (AAAQO): 1-hr 159 ppb

WBEA NETWORK

Hourly Averages

Nitrogen Dioxide (NO_2) - ppb

Millennium - April 2014



AURORA ATMOSPHERICS INC.

Concentration Ranges (ppb)	Number of Hours	%	Cumulative %
0 - 20	614	89.77	89.77
21 - 40	67	9.80	99.56
11 - 80	3	0.44	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

WBEA NETWORK

Frequency Distribution

Nitrogen Dioxide (NO_2) - ppb

Millennium - April 2014

Concentration Ranges (ppb)	Wind Direction																
	N	NNE	NE	ENE	E	ESE	SE	SSE	S	SSW	SW	WSW	W	WNW	NW	NNW	**Totals**
0 - 20	111	42	21	23	51	77	123	41	25	6	9	23	10	15	19	17	613
21 - 40	2	1	3	2	3	12	22	11	3	5	0	0	1	0	1	1	67
11 - 80	0	0	0	0	0	0	2	0	1	0	0	0	0	0	0	0	3
81 - 159	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
> 159	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Totals	113	43	24	25	54	89	147	52	29	11	9	23	11	15	20	18	683

Total Number of Valid Hours: 683

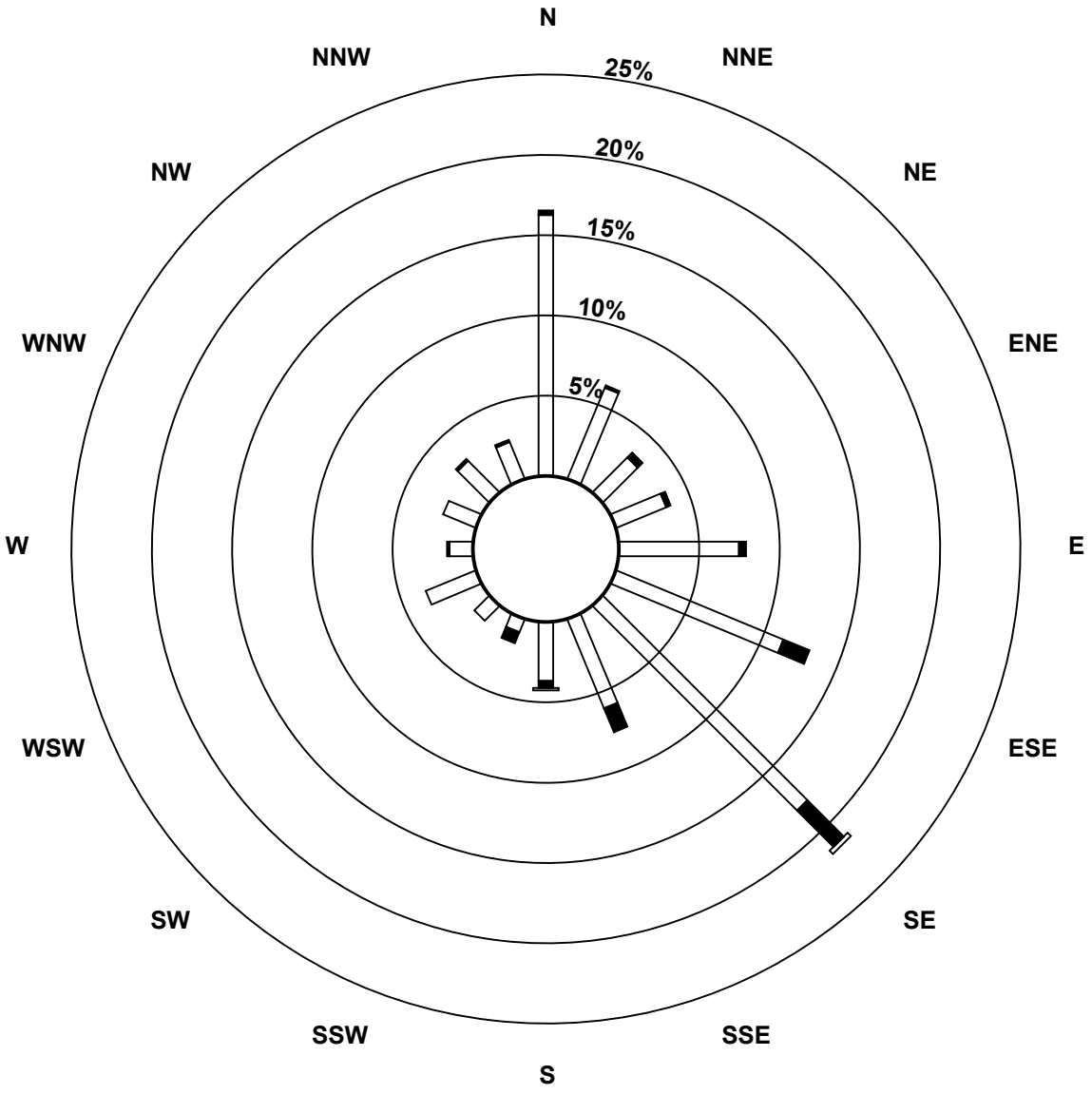
Total Number of Hours: 720

Wood Buffalo Environmental Association

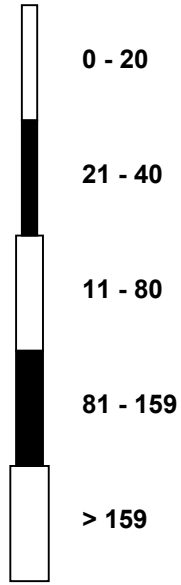
Wind Rose Apr 2014

Nitrogen Dioxide (NO_2) - ppb

Millennium (AMS 12)



Classes (ppb)



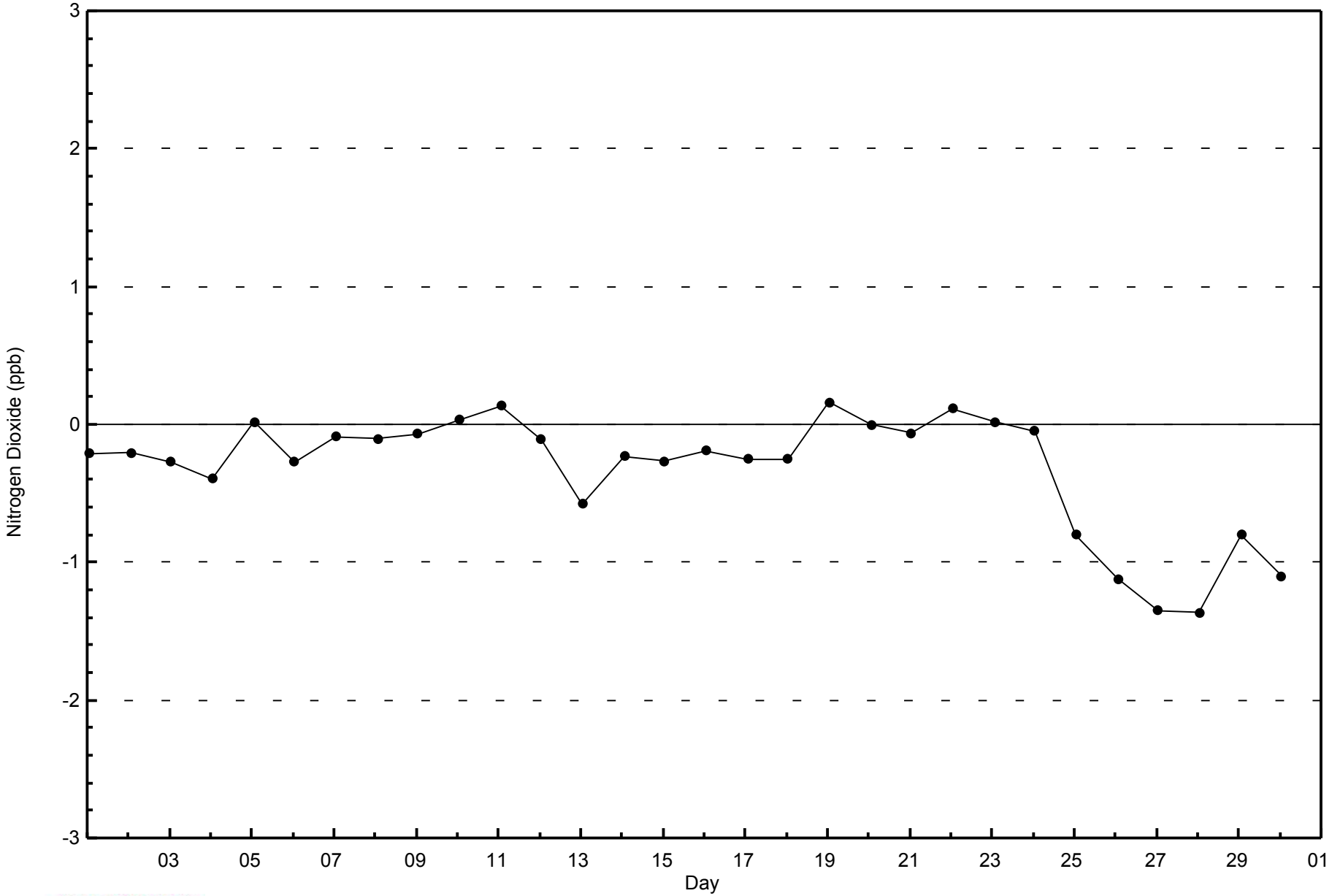
Total Number of Valid Hours: 683

WBEA NETWORK

Zero Responses

Nitrogen Dioxide (NO_2) - ppb

Millennium - April 2014



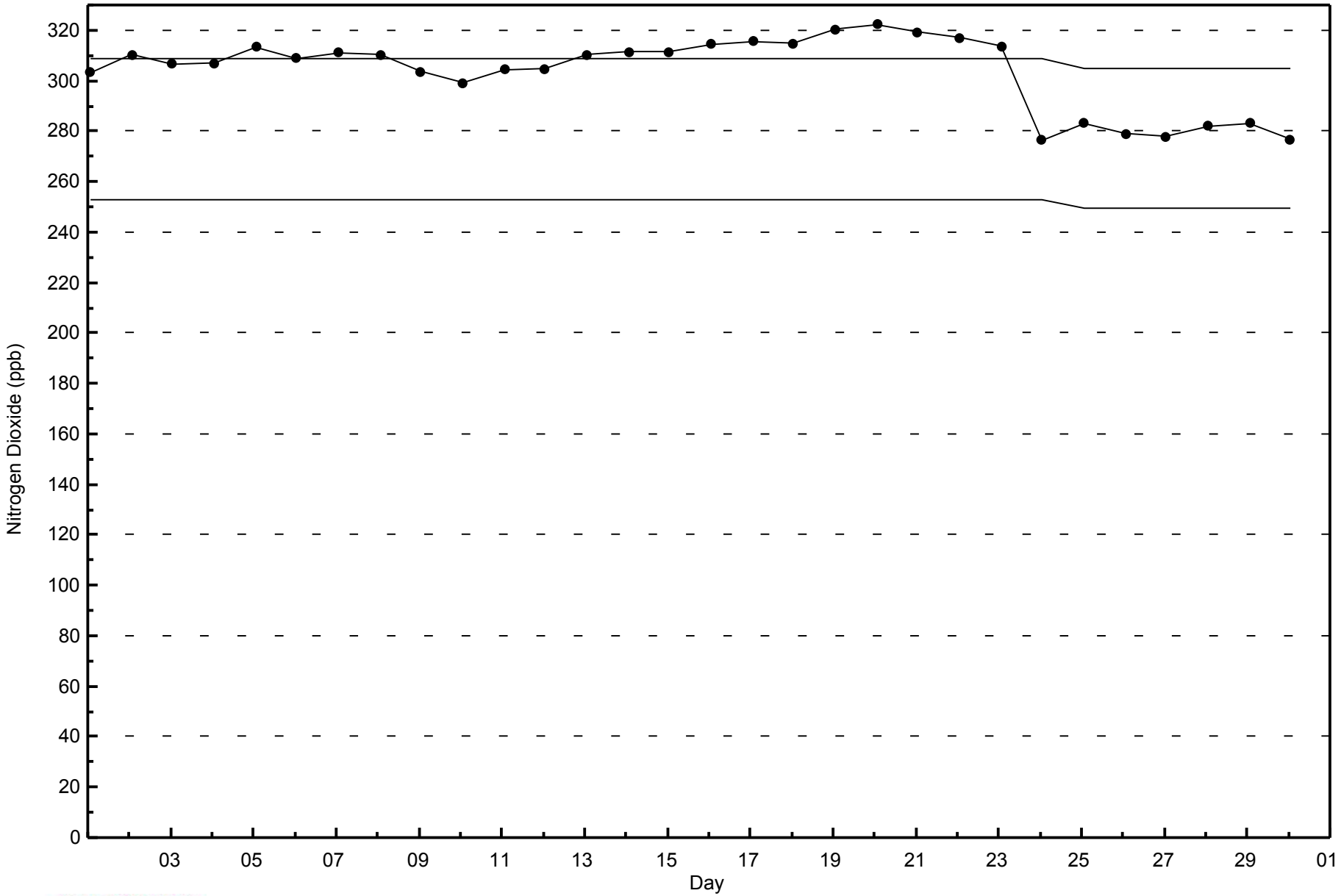
AURORA ATMOSPHERICS INC.

WBEA NETWORK

Span Responses

Nitrogen Dioxide (NO_2) - ppb

Millennium - April 2014



AURORA ATMOSPHERICS INC.

Wood Buffalo Environmental Association

Summary of Hour Averages

Nitrogen Oxides (NO_X) - ppb

Millennium - April 2014

Maximum Value: 224 ppb on Apr 29 23:00

Maximum Daily Average: 36.0 ppb on Apr 20

Minimum Value: 1 ppb on Apr 29 17:00

Minimum Daily Average: 3.2 ppb on Apr 10

Maximum Diurnal Average: 25.5 ppb at hour 1

Minimum Diurnal Average: 5.5 ppb at hour 16

Monthly Average: 13.2 ppb

Percentiles: $P_1 = 1$ $P_{10} = 2$ $Q_1 = 3$ Median = 8 $Q_3 = 15$ $P_{90} = 27$ $P_{99} = 86$

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-Apr	15	Z	10	20	11	14	12	11	10	3	4	2	2	1	1	1	1	1	3	4	14	23	25	28	9.4	28
2-Apr	19	Z	7	7	6	10	11	8	6	4	6	4	2	2	2	2	2	2	3	3	3	3	2	3	4.9	19
3-Apr	5	Z	17	17	26	18	33	24	32	11	17	19	15	9	10	3	3	7	10	9	9	11	9	12	14.2	33
4-Apr	13	Z	14	12	11	13	11	8	13	14	13	14	9	9	13	13	10	12	9	9	6	7	4	3	10.5	14
5-Apr	18	Z	6	4	6	12	15	18	21	12	15	31	33	22	24	21	19	15	19	21	24	12	12	15	17.2	33
6-Apr	12	Z	14	21	18	21	20	22	26	24	13	12	28	22	27	20	34	40	54	13	11	15	34	67	24.6	67
7-Apr	173	Z	47	23	14	20	50	76	11	18	31	27	21	9	4	1	1	4	9	5	16	17	10	43	27.5	173
8-Apr	31	Z	21	40	23	79	72	25	19	7	1	1	1	1	1	2	1	1	1	1	2	1	2	3	14.7	79
9-Apr	2	Z	8	4	2	3	2	2	5	9	3	2	4	4	2	4	10	8	8	8	15	33	10	6	6.7	33
10-Apr	15	Z	2	3	3	2	4	2	1	1	1	1	1	1	1	1	2	2	2	3	8	11	4	2	3.2	15
11-Apr	6	Z	5	6	4	5	4	5	5	2	3	2	5	3	3	2	2	1	2	2	2	5	6	9	3.9	9
12-Apr	19	Z	34	12	5	7	23	36	17	13	11	17	5	8	5	3	3	3	2	5	6	3	2	3	10.5	36
13-Apr	2	Z	5	3	5	11	7	6	8	7	4	3	2	11	12	15	11	10	14	19	19	16	10	9	9.1	19
14-Apr	18	Z	17	24	18	25	24	14	19	13	6	14	14	11	6	11	33	30	31	16	19	13	8	14	17.2	33
15-Apr	8	Z	5	15	9	6	6	6	3	3	3	3	2	2	2	2	2	2	3	2	2	2	4	5	4.3	15
16-Apr	11	Z	5	5	5	14	9	3	3	4	4	2	2	1	2	3	3	4	5	5	8	8	7	10	5.3	14
17-Apr	11	Z	17	13	9	11	13	7	6	4	2	2	2	2	2	3	3	4	7	8	19	15	16	35	9.2	35
18-Apr	18	Z	21	19	12	8	10	7	9	7	4	4	4	3	4	5	5	8	16	12	32	29	34	50	13.9	50
19-Apr	61	Z	18	17	26	41	64	27	13	6	6	5	5	5	5	5	3	4	5	5	8	16	16	15	16.3	64
20-Apr	32	Z	39	65	102	73	50	51	48	31	33	24	7	3	2	1	1	2	9	8	53	74	82	39	36.0	102
21-Apr	35	Z	44	56	40	43	33	20	19	13	15	14	6	4	6	3	1	2	4	4	9	9	11	8	17.4	56
22-Apr	11	Z	9	20	27	14	16	14	8	15	9	10	3	2	2	3	4	5	3	3	4	7	5	8	8.7	27
23-Apr	10	Z	7	6	6	8	7	C	C	C	C	C	3	2	8	8	5	7	7	3	7	6	6	6	6.2	10
24-Apr	6	Z	11	5	6	8	6	2	4	3	3	3	4	4	4	6	2	2	2	1	1	1	1	3	3.8	11
25-Apr	4	Z	6	8	7	9	5	2	4	4	2	3	3	1	3	3	2	2	10	9	19	24	23	24	7.7	24
26-Apr	34	Z	16	19	11	20	8	5	5	2	3	4	2	2	2	4	3	4	5	5	10	12	10	15	8.7	34
27-Apr	11	Z	9	9	7	8	9	5	5	5	4	4	3	4	3	3	6	6	5	4	10	10	7	11	6.6	11
28-Apr	14	Z	18	14	16	25	9	5	9	8	4	M	16	14	13	9	8	7	8	9	11	13	9	16	11.5	25
29-Apr	14	Z	45	33	20	18	22	17	13	15	13	7	2	1	1	1	1	3	4	5	3	90	224	222	33.6	224
30-Apr	134	Z	120	78	80	31	41	22	14	21	8	6	6	7	9	10	8	22	22	6	22	8	39	23	32.0	134
	25.5	--	19.9	19.3	17.7	19.3	19.8	15.4	12.3	9.6	8.4	8.6	7.1	5.7	6.0	5.5	6.2	7.4	9.3	6.9	12.3	16.5	21.1	23.5	Diurnal Average	
	173	--	120	78	102	79	72	76	48	31	33	31	33	22	27	21	34	40	54	21	53	90	224	222	Diurnal Maximum	

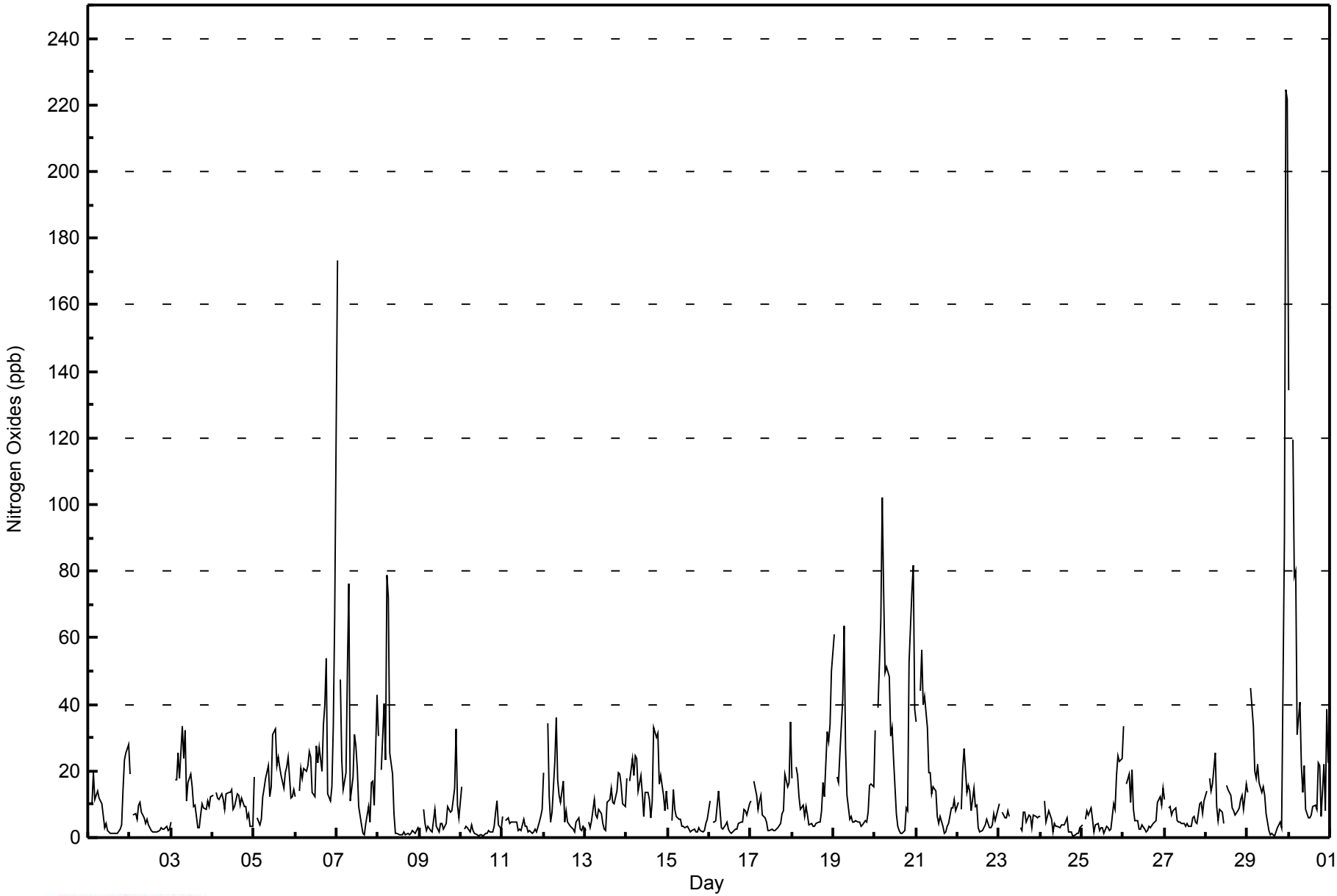
Z - zerospan C - Calibration M - Maintenance

WBEA NETWORK

Hourly Averages

Nitrogen Oxides (NO_X) - ppb

Millennium - April 2014



AURORA ATMOSPHERICS INC.

Concentration Ranges (ppb)	Number of Hours	%	Cumulative %
0 - 20	573	83.77	83.77
21 - 40	77	11.26	95.03
11 - 80	26	3.80	98.83
81 - 159	5	0.73	99.56
> 159	3	0.44	100.00

Total Number of Valid Hours: 684

Total Number of Hours: 720

WBEA NETWORK

Frequency Distribution

Nitrogen Oxides (NO_X) - ppb

Millennium - April 2014

Concentration Ranges (ppb)	Wind Direction																
	N	NNE	NE	ENE	E	ESE	SE	SSE	S	SSW	SW	WSW	W	WNW	NW	NNW	**Totals**
0 - 20	105	42	19	22	50	77	114	31	22	4	8	22	10	15	16	15	572
21 - 40	8	1	5	2	3	5	21	14	5	4	1	1	1	0	3	3	77
11 - 80	0	0	0	1	1	3	10	6	1	3	0	0	0	0	1	0	26
81 - 159	0	0	0	0	0	2	2	1	0	0	0	0	0	0	0	0	5
> 159	0	0	0	0	0	2	0	0	1	0	0	0	0	0	0	0	3
Totals	113	43	24	25	54	89	147	52	29	11	9	23	11	15	20	18	683

Total Number of Valid Hours: 683

Total Number of Hours: 720

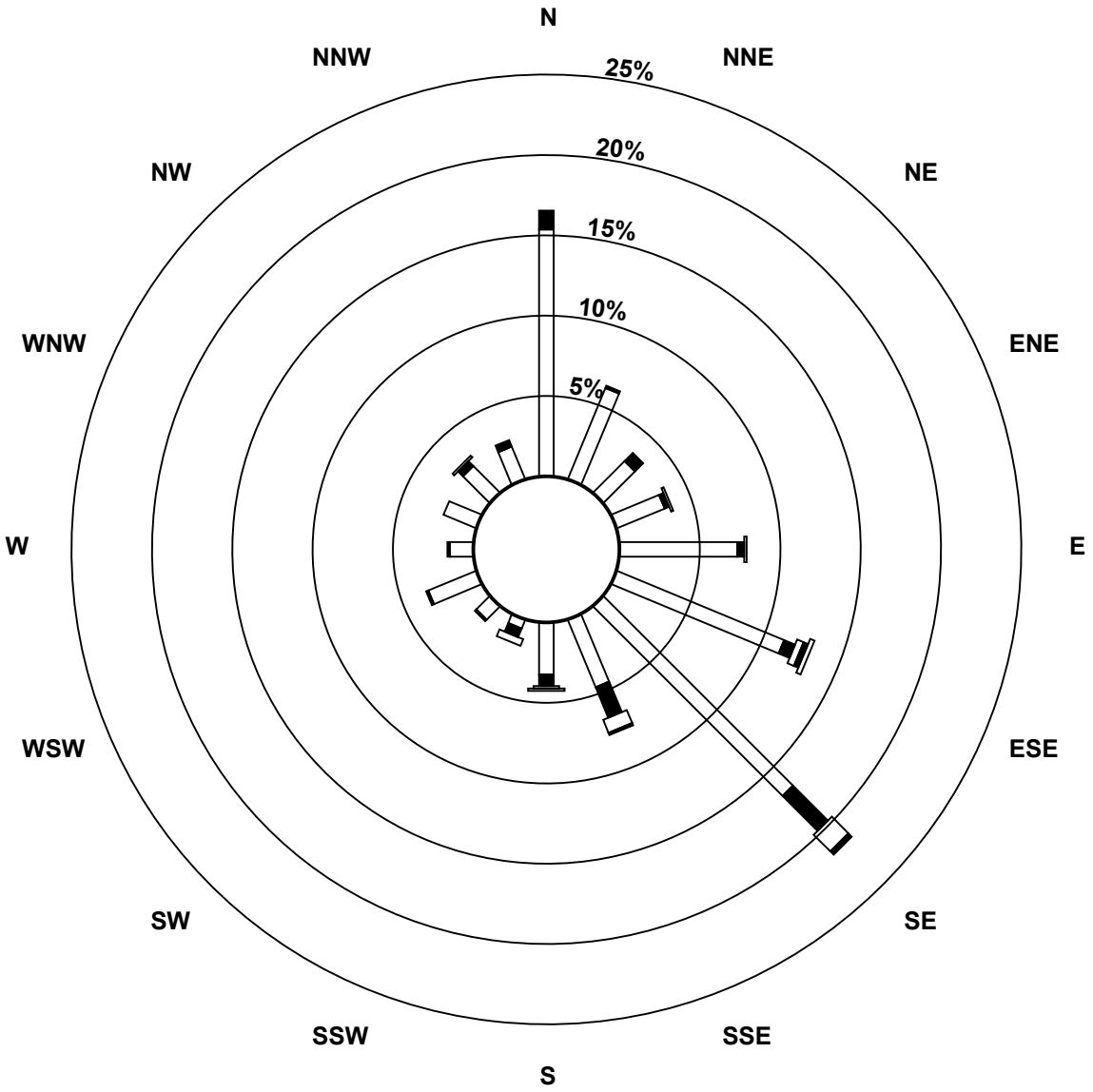
AURORA ATMOSPHERICS INC.

Wood Buffalo Environmental Association

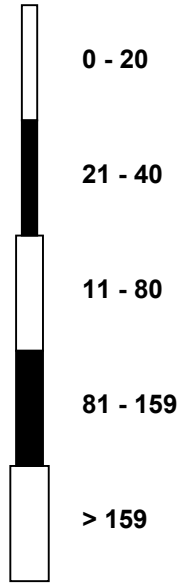
Wind Rose Apr 2014

Nitrogen Oxides (NO_X) - ppb

Millennium (AMS 12)



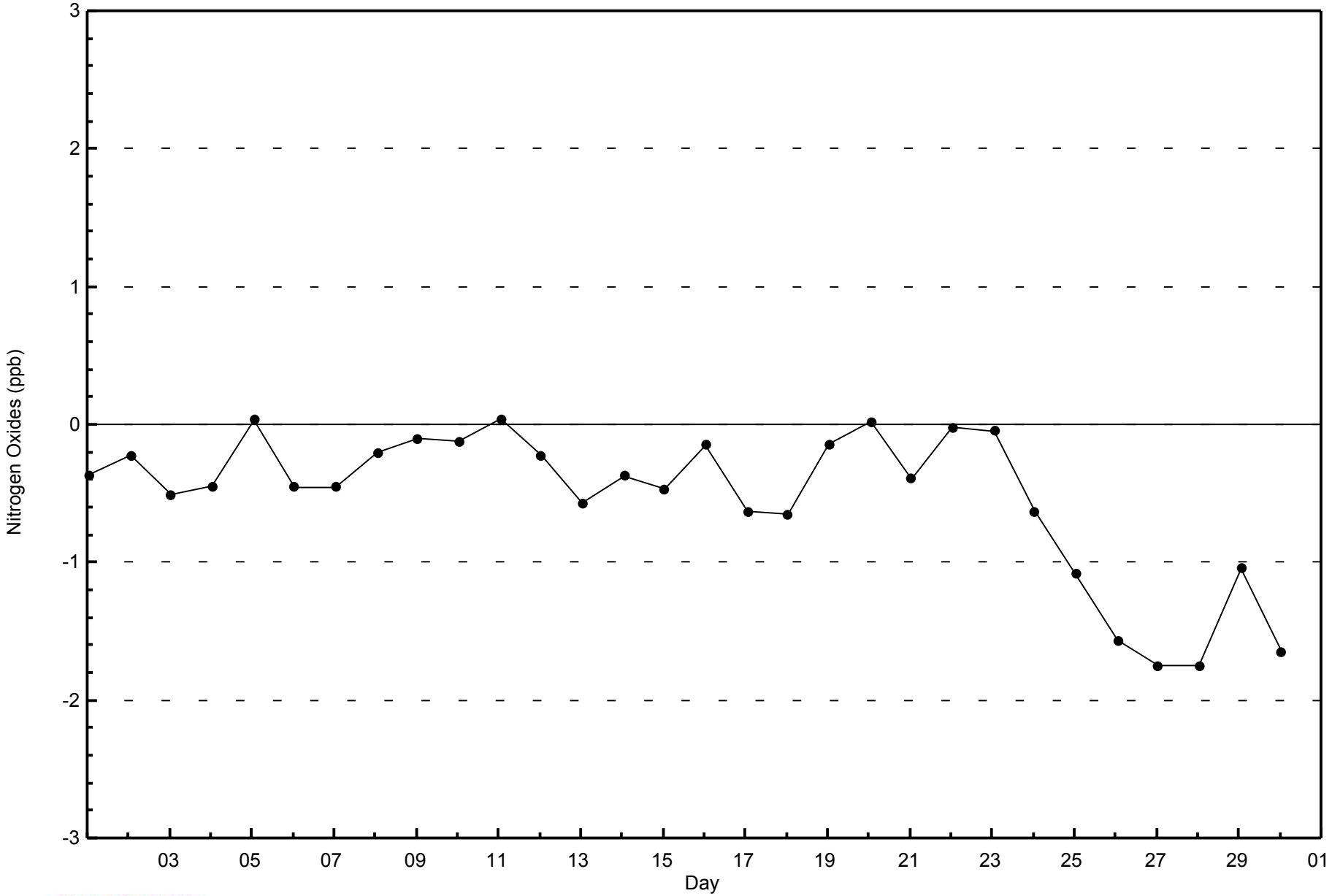
Classes (ppb)



Total Number of Valid Hours: 683

Wood Buffalo Environmental Association
Zero Responses

Nitrogen Oxides (NO_X) - ppb
Millennium - April 2014



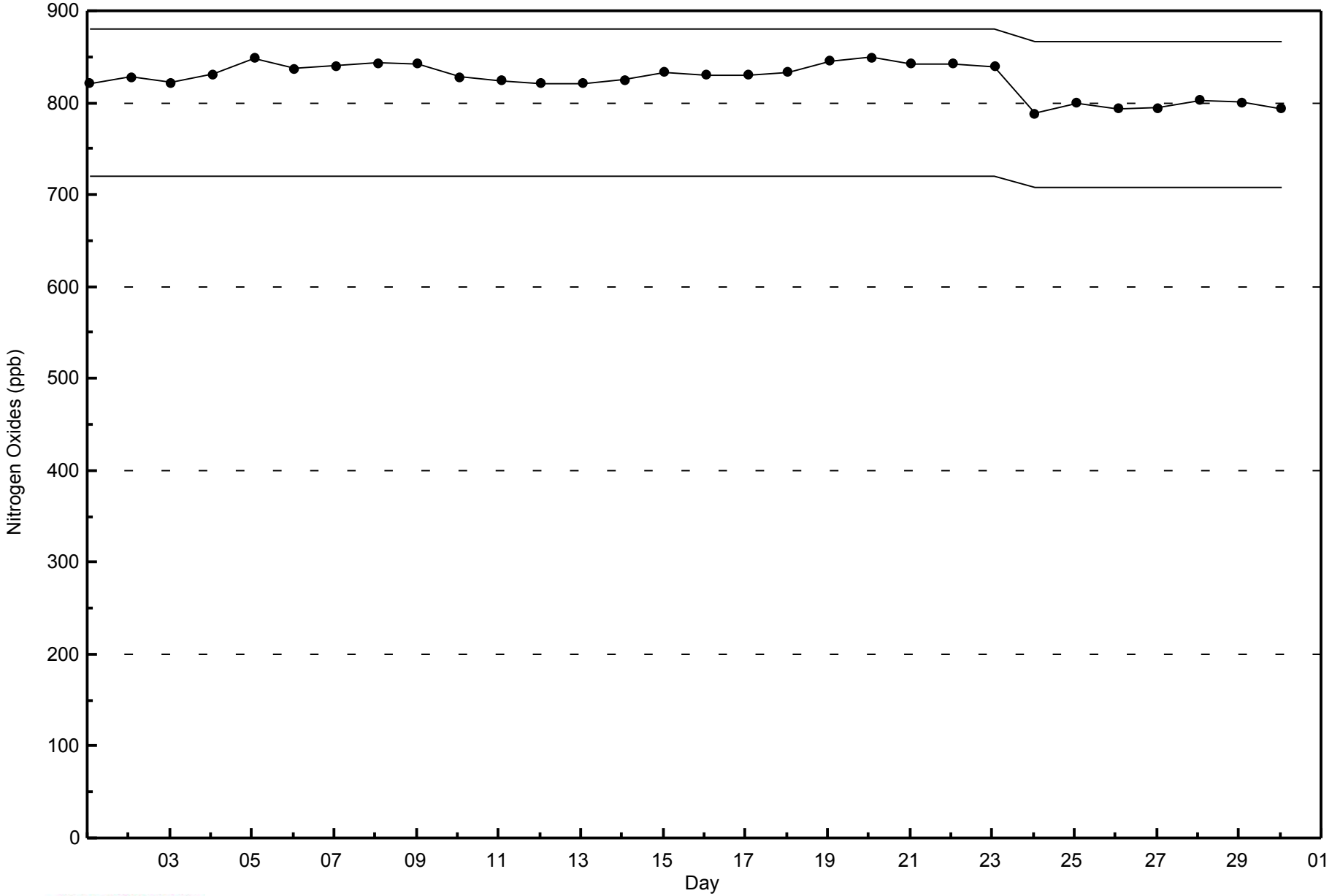
AURORA
ATMOSPHERICS INC.

WBEA NETWORK

Span Responses

Nitrogen Oxides (NO_X) - ppb

Millennium - April 2014



AURORA ATMOSPHERICS INC.

Wood Buffalo Environmental Association

Summary of Hour Averages

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

Millennium - April 2014

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

Maximum Value: 40.2 $\mu g/m^3$ on Apr 29 22:00

Maximum Daily Average: 19.5 $\mu g/m^3$ on Apr 14

Minimum Value: 0.4 $\mu g/m^3$ on Apr 7 16:00

Minimum Daily Average: 1.5 $\mu g/m^3$ on Apr 27

Maximum Diurnal Average: 8.1 $\mu g/m^3$ at hour 23

Minimum Diurnal Average: 4.8 $\mu g/m^3$ at hour 12

Monthly Average: 6.29 $\mu g/m^3$

Percentiles: $P_1 = 0.7$ $P_{10} = 2.3$ $Q_1 = 3.4$ Median = 4.6 $Q_3 = 7.4$ $P_{90} = 11.3$ $P_{99} = 30.5$

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-Apr	10.4	12.9	10.2	11.4	7.4	7.7	8.9	8.4	5.9	4.7	5.0	4.0	4.2	3.2	3.4	3.6	3.2	3.5	5.7	5.8	9.3	16.3	17.5	17.1	7.9	17.5
2-Apr	7.8	5.6	5.6	5.0	3.8	4.3	6.8	7.6	3.7	3.7	4.1	5.5	4.5	4.4	5.7	3.9	3.9	3.5	2.7	2.4	2.2	2.4	2.3	6.5	4.5	7.8
3-Apr	2.2	7.0	7.3	4.8	4.0	3.8	5.6	5.4	6.8	3.3	3.4	3.6	3.7	2.9	2.8	1.9	2.1	3.7	5.5	5.9	8.5	9.8	9.6	8.5	5.1	9.8
4-Apr	6.3	6.6	10.8	6.7	9.9	9.0	8.8	8.5	9.0	7.1	7.0	7.1	6.6	7.4	13.1	12.0	31.4	10.4	8.5	6.3	5.6	6.6	4.2	7.6	9.0	31.4
5-Apr	17.4	9.0	4.1	3.7	3.6	4.6	4.6	8.9	29.7	16.9	14.0	21.5	23.6	11.0	8.9	7.6	6.2	6.3	6.0	4.7	9.2	4.1	4.5	4.3	9.8	29.7
6-Apr	4.4	4.3	5.4	8.6	8.2	10.8	29.4	8.5	16.4	18.5	21.1	5.9	7.3	11.4	14.6	9.0	7.4	7.6	9.3	5.1	5.0	5.6	6.3	8.8	9.9	29.4
7-Apr	17.0	14.4	11.4	6.2	6.6	6.1	7.1	8.5	2.4	3.2	11.4	9.0	4.6	1.7	1.1	0.4	0.4	0.8	4.9	4.6	6.8	5.8	4.1	3.8	5.9	17.0
8-Apr	2.1	2.0	2.0	3.4	2.8	6.7	4.9	2.8	5.7	7.2	1.7	1.9	2.0	1.9	2.3	2.7	18.1	0.6	1.0	1.9	2.2	1.7	2.0	2.3	3.4	18.1
9-Apr	1.2	1.5	1.4	0.9	0.7	0.9	1.1	1.3	2.8	5.9	1.3	0.8	2.3	10.7	2.0	4.7	10.1	9.1	4.8	2.3	2.1	5.9	4.0	3.4	3.4	10.7
10-Apr	4.4	2.5	1.5	1.9	2.4	3.1	3.6	3.6	3.3	3.0	3.0	2.9	2.7	2.9	2.7	2.8	3.5	3.8	4.0	3.9	5.1	9.9	3.7	3.4	3.5	9.9
11-Apr	4.0	3.5	3.4	4.0	3.4	3.2	3.2	3.4	3.2	2.6	2.4	2.6	3.4	4.2	4.8	4.1	8.4	5.0	4.4	4.8	5.0	4.4	4.9	5.0	4.1	8.4
12-Apr	4.9	9.0	10.6	6.8	4.9	5.2	7.2	8.0	8.0	15.6	4.4	9.5	3.5	4.7	6.9	3.4	9.2	3.3	8.2	3.1	3.2	3.6	4.8	4.5	6.4	15.6
13-Apr	3.9	4.4	4.2	4.0	4.7	5.2	4.9	5.4	9.7	10.0	3.5	2.8	2.6	5.7	5.9	8.7	8.1	9.1	10.9	19.4	9.2	7.9	6.1	6.2	6.8	19.4
14-Apr	11.9	9.4	11.8	14.0	10.3	14.9	14.3	13.9	23.7	28.8	22.9	7.4	23.9	27.2	23.2	31.7	39.7	25.1	38.5	17.7	12.5	19.1	15.2	12.2	19.5	39.7
15-Apr	7.9	6.5	5.1	5.1	4.4	4.4	4.0	4.1	5.0	4.0	7.0	3.6	3.2	3.0	3.0	3.0	3.5	3.9	4.0	4.3	4.4	4.0	3.7	4.2	4.4	7.9
16-Apr	5.6	5.3	5.2	5.3	4.3	5.5	5.5	4.5	4.1	3.6	3.3	3.9	3.1	2.6	3.7	7.9	14.0	6.4	7.6	8.8	13.3	9.0	7.6	8.6	6.2	14.0
17-Apr	8.5	12.5	14.8	11.2	11.4	11.2	15.0	8.5	11.4	8.9	13.3	7.1	4.7	4.1	4.1	4.7	4.7	5.1	8.2	7.9	11.4	9.0	7.8	13.8	9.1	15.0
18-Apr	8.8	7.6	8.8	8.7	6.6	6.1	6.1	5.3	4.6	4.1	3.9	3.9	3.6	3.0	3.8	4.2	4.7	4.7	5.2	5.7	6.6	4.7	4.3	4.3	5.4	8.8
19-Apr	4.2	4.1	5.0	5.6	6.4	7.7	8.2	7.5	4.1	3.0	2.4	2.5	2.2	2.5	2.9	2.7	3.5	3.7	3.9	4.6	5.1	5.3	4.6	4.7	4.4	8.2
20-Apr	5.8	5.4	6.4	6.3	8.1	6.5	5.9	5.0	5.1	5.6	7.8	7.4	3.4	2.5	2.5	2.2	1.9	3.0	4.0	9.1	15.9	18.4	19.3	14.5	7.2	19.3
21-Apr	8.1	6.8	8.6	7.7	5.7	7.9	6.2	5.4	5.6	5.4	13.5	3.9	3.6	3.6	6.5	4.6	2.8	3.2	3.7	3.8	5.2	5.0	5.3	5.3	5.7	13.5
22-Apr	6.2	7.4	7.4	8.2	8.1	7.4	7.7	6.8	5.0	5.0	4.1	3.4	2.3	1.7	3.0	3.3	3.8	4.4	6.0	5.8	5.8	5.2	4.6	5.4	5.3	8.2
23-Apr	5.5	4.3	4.9	4.4	4.0	4.5	4.3	4.0	4.9	3.4	3.7	4.0	6.7	5.9	6.1	6.4	5.2	5.7	4.7	4.5	4.6	4.4	4.3	4.0	4.8	6.7
24-Apr	4.1	4.1	4.6	4.0	4.3	4.9	4.8	3.9	4.1	3.7	M	3.9	3.7	3.5	3.5	3.9	3.0	3.2	3.8	3.2	3.5	3.6	3.9	4.4	3.9	4.9
25-Apr	4.2	4.2	4.4	4.8	3.9	4.3	4.0	3.2	4.1	3.7	3.3	3.6	3.2	2.5	2.3	2.1	2.9	3.8	6.0	5.4	6.6	6.1	7.3	8.8	4.4	8.8
26-Apr	9.5	5.0	3.7	3.7	3.8	4.1	3.1	3.2	2.8	2.4	1.9	2.4	1.8	2.4	3.9	4.7	3.6	3.7	3.6	4.0	4.5	4.0	3.1	3.8	3.7	9.5
27-Apr	3.0	2.1	2.3	2.9	3.3	3.3	2.9	1.7	1.1	0.8	0.7	0.7	0.7	0.7	0.7	0.7	0.8	1.0	1.0	0.9	0.9	1.1	1.2	1.3	1.5	3.3
28-Apr	1.4	1.4	2.0	2.4	3.5	3.9	2.7	2.6	3.0	2.5	2.3	4.3	5.7	4.7	3.9	3.6	4.6	5.0	4.6	4.6	3.9	3.3	2.6	3.5	3.4	5.7
29-Apr	3.0	3.4	4.6	4.3	3.0	2.8	3.1	3.0	3.8	4.0	3.3	2.1	1.7	1.3	2.1	1.7	2.7	4.8	8.8	13.8	4.0	40.2	39.1	33.6	8.1	40.2
30-Apr	16.0	13.7	14.7	13.4	15.2	6.2	5.9	5.1	5.1	8.7	4.2	3.5	4.1	5.5	8.0	10.9	7.4	19.9	21.2	17.0	23.1	7.6	35.5	15.4	12.0	35.5
	6.7	6.2	6.4	6.0	5.6	5.9	6.7	5.6	6.8	6.6	6.2	4.8	5.0	5.0	5.2	5.4	7.4	5.8	7.0	6.4	6.8	7.8	8.1	7.6	Diurnal Average	
	17.4	14.4	14.8	14.0	15.2	14.9	29.4	13.9	29.7	28.8	22.9	21.5	23.9	27.2	23.2	31.7	39.7	25.1	38.5	19.4	23.1	40.2	39.1	33.6	Diurnal Maximum	

M - Maintenance

Alberta Ambient Air Quality Objectives (AAAQO): 24-hr 30 $\mu g/m^3$

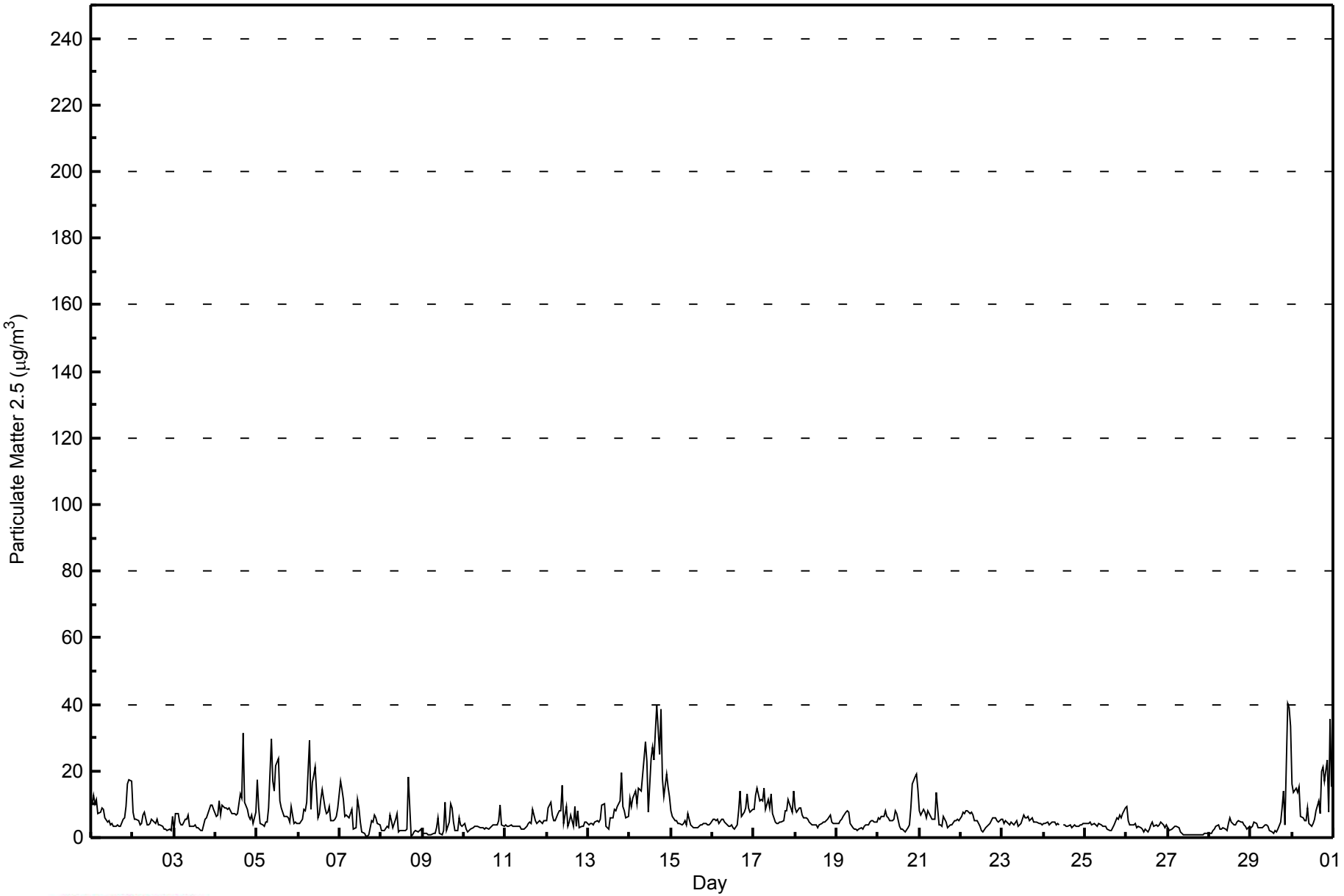
AURORA ATMOSPHERICS INC.

WBEA NETWORK

Hourly Averages

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

Millennium - April 2014



AURORA ATMOSPHERICS INC.

WBEA NETWORK

Cumulative Frequency Distribution

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

Millennium - April 2014

Concentration Ranges ($\mu g/m^3$)	Number of Hours	%	Cumulative %
1 - 5	423	58.83	58.83
6 - 15	236	32.82	91.66
16 - 25	29	4.03	95.69
26 - 80	12	1.67	97.36
> 81.0	0	0.00	97.36

Total Number of Valid Hours: 719

Total Number of Hours: 720

AURORA
ATMOSPHERICS INC.

WBEA NETWORK

Frequency Distribution

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

Millennium - April 2014

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**
1 - 5	84	31	14	19	48	55	81	26	12	1	3	14	9	6	9	10	422
6 - 15	30	12	9	6	10	34	57	22	13	6	4	3	3	9	11	7	236
16 - 25	3	0	2	1	1	3	5	6	3	3	0	1	0	0	1	0	29
26 - 80	1	0	0	0	0	4	0	4	1	1	0	0	0	1	0	0	12
> 81.0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Totals	118	43	25	26	59	96	143	58	29	11	7	18	12	16	21	17	699

Total Number of Valid Hours: 718

Total Number of Hours: 720

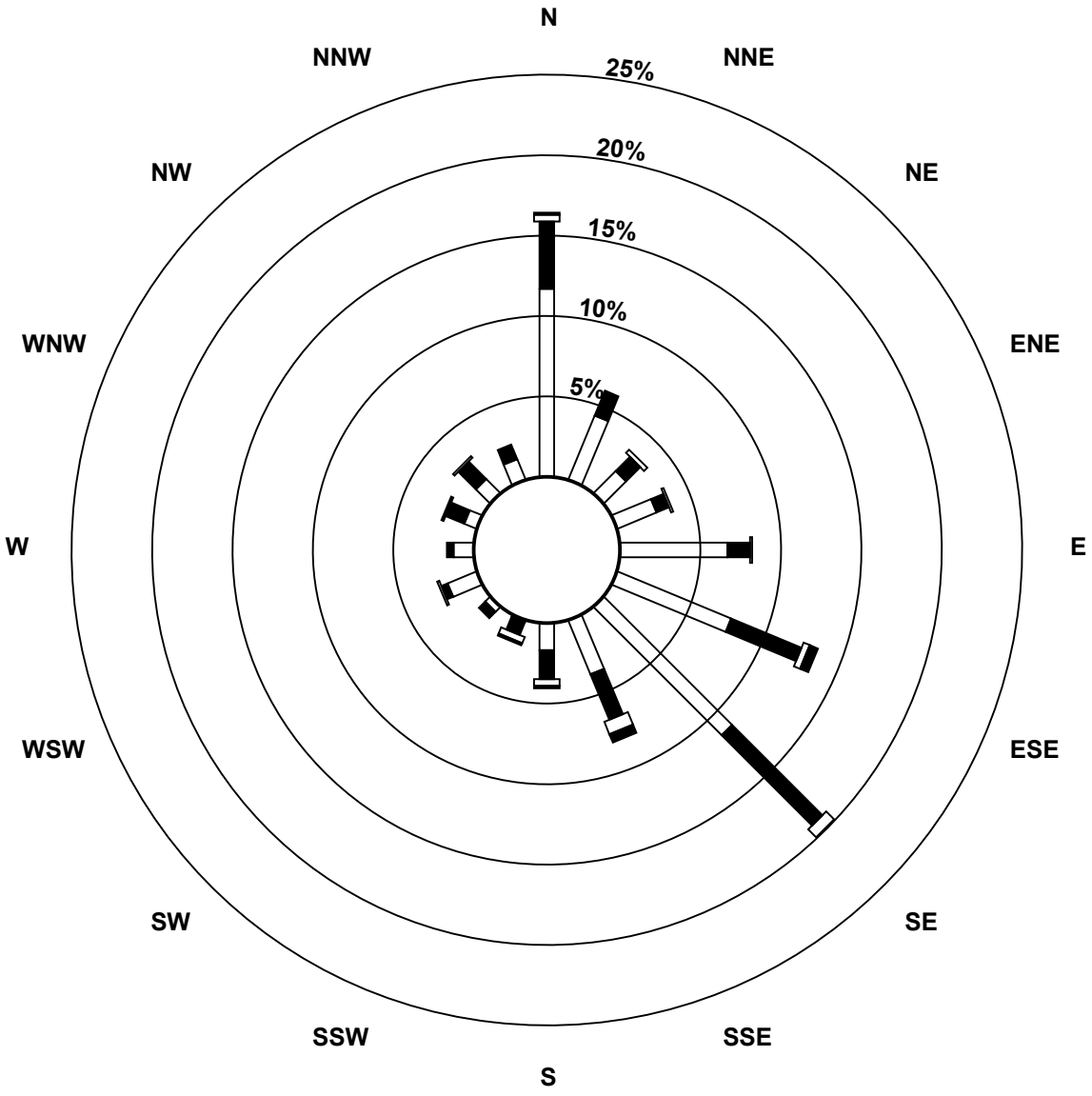
AURORA ATMOSPHERICS INC.

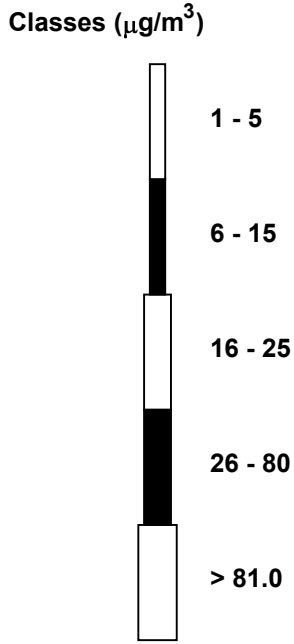
Wood Buffalo Environmental Association

Wind Rose Apr 2014

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

Millennium (AMS 12)





Total Number of Valid Hours: 718

Maximum Value: 21.7 C on Apr 30 16:00

Maximum Daily Average: 14.2 C on Apr 30

Minimum Value: -18.4 C on Apr 3 07:00

Minimum Daily Average: -11.9 C on Apr 2

Maximum Diurnal Average: 6.4 C at hour 16

Minimum Diurnal Average: -3.3 C at hour 6

Monthly Average: 1.50 C

Percentiles: P_1 = -15.9 P_{10} = -8.2 Q_1 = -3.6 Median = 1.8 Q_3 = 5.9 P_{90} = 11.1 P_{99} = 19.5

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

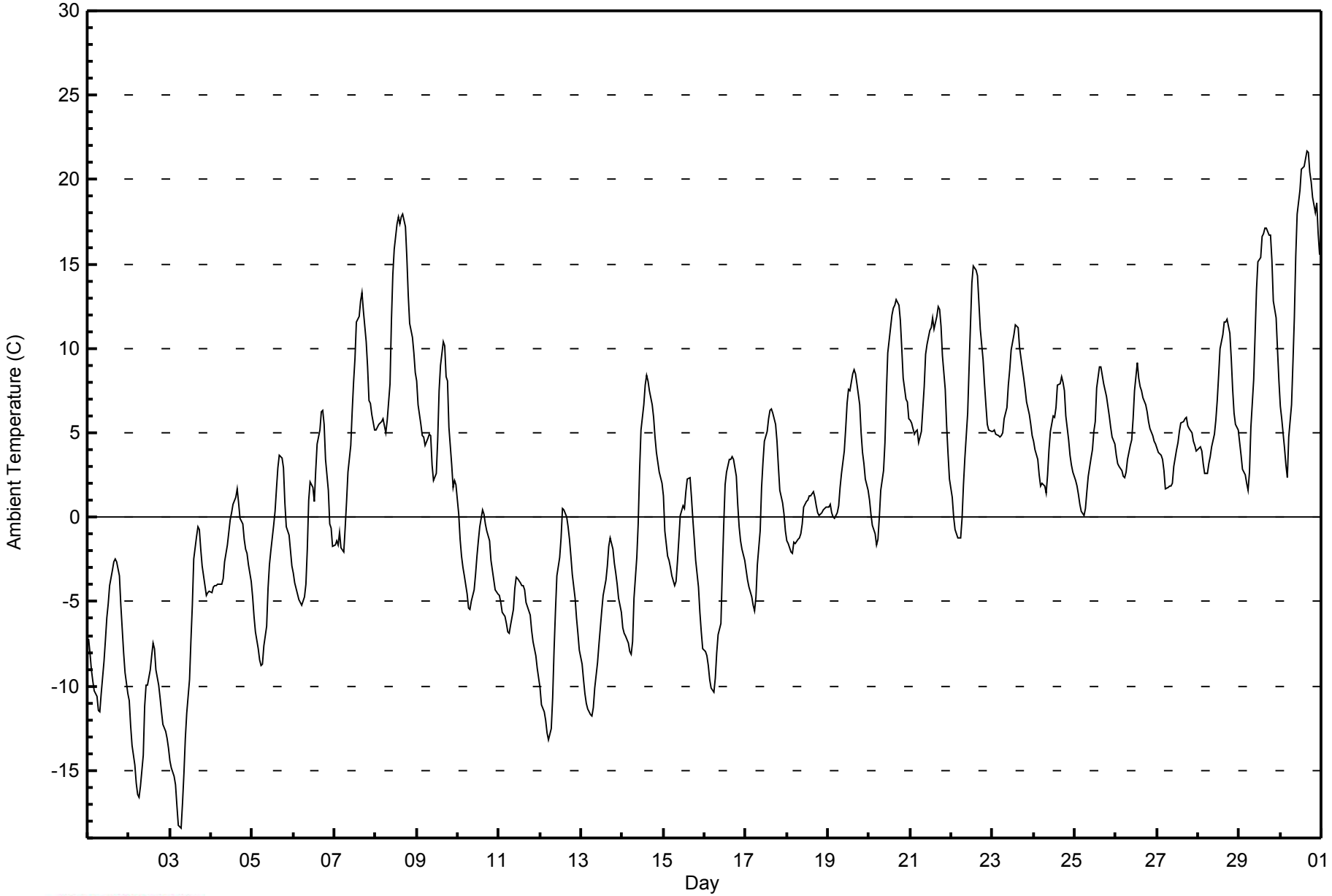
Day	Hourly Period Ending At (MST)																								Daily	Daily
	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24	Average	Maximum
1-Apr	-7.2	-8.1	-9.0	-9.7	-10.3	-10.6	-11.5	-11.6	-10.5	-8.6	-7.3	-6.0	-5.1	-4.0	-3.1	-2.7	-2.5	-2.6	-3.5	-5.2	-6.6	-8.0	-9.2	-10.5	-7.2	-2.5
2-Apr	-10.8	-12.4	-13.5	-14.7	-15.7	-16.4	-16.6	-16.0	-14.1	-11.2	-9.9	-10.0	-9.1	-8.2	-7.5	-7.8	-9.0	-9.9	-10.7	-11.5	-12.3	-12.7	-13.1	-13.7	-11.9	-7.5
3-Apr	-14.4	-14.8	-15.3	-15.8	-17.1	-18.3	-18.4	-17.0	-15.2	-13.1	-11.6	-9.6	-7.3	-5.3	-2.5	-1.2	-0.6	-0.8	-1.9	-2.9	-4.1	-4.7	-4.5	-4.3	-9.2	-0.6
4-Apr	-4.4	-4.1	-4.0	-4.1	-3.9	-4.0	-4.0	-3.7	-2.6	-1.7	-0.9	-0.2	0.3	0.8	1.2	1.7	0.9	-0.1	-0.4	-1.3	-1.9	-2.1	-2.8	-3.8	-1.9	1.7
5-Apr	-4.7	-5.9	-6.8	-7.8	-8.5	-8.8	-8.7	-7.6	-6.5	-4.2	-2.8	-2.0	-0.4	0.3	1.7	2.9	3.7	3.5	2.9	0.9	-0.6	-1.1	-2.0	-2.9	-2.7	3.7
6-Apr	-3.3	-3.8	-4.6	-4.8	-5.1	-5.3	-4.7	-3.9	-1.9	1.0	2.1	1.8	0.9	2.8	4.3	5.2	6.2	6.3	5.5	3.4	1.6	-0.4	-0.6	-1.8	0.0	6.3
7-Apr	-1.7	-1.4	-1.6	-0.9	-1.8	-2.0	-0.6	1.0	2.7	4.2	6.3	8.0	9.4	11.5	11.9	12.8	13.3	12.2	10.4	8.9	6.9	6.8	6.1	5.1	5.3	13.3
8-Apr	5.2	5.3	5.5	5.6	5.8	5.4	5.0	5.7	7.9	11.6	14.4	15.9	17.4	17.8	17.4	17.8	17.9	17.2	15.4	13.1	11.5	10.7	9.7	8.6	11.2	17.9
9-Apr	8.1	6.6	5.5	4.8	4.7	4.3	4.7	4.9	4.9	3.1	2.1	2.6	4.6	7.5	9.0	10.4	10.1	8.3	8.1	5.4	3.1	1.7	2.2	1.9	5.4	10.4
10-Apr	0.2	-1.3	-2.3	-3.0	-3.5	-4.6	-5.4	-5.5	-5.0	-4.3	-3.4	-2.3	-1.4	-0.6	0.4	0.2	-0.4	-0.8	-1.4	-2.5	-3.2	-3.7	-4.3	-4.6	-2.6	0.4
11-Apr	-4.6	-5.0	-5.6	-5.9	-6.3	-6.8	-6.9	-6.4	-5.5	-4.2	-3.5	-3.7	-3.9	-4.1	-4.1	-4.3	-5.1	-5.5	-5.8	-6.7	-7.4	-8.2	-8.9	-9.5	-5.7	-3.5
12-Apr	-10.1	-11.1	-11.5	-12.0	-12.7	-13.2	-12.6	-10.7	-7.8	-5.6	-3.4	-2.4	-1.3	0.5	0.5	0.0	-0.6	-1.3	-2.3	-3.4	-4.8	-5.9	-6.8	-7.8	-6.1	0.5
13-Apr	-8.7	-9.6	-10.4	-11.0	-11.4	-11.7	-11.7	-11.2	-10.1	-8.6	-7.6	-6.5	-5.6	-4.6	-3.7	-2.9	-1.7	-1.3	-1.9	-2.8	-3.3	-4.0	-4.8	-5.6	-6.7	-1.3
14-Apr	-6.5	-6.9	-7.1	-7.5	-8.0	-8.1	-7.3	-4.8	-2.4	-0.4	2.8	5.2	6.7	7.8	8.4	8.0	7.5	6.6	5.9	4.8	3.8	2.7	2.3	2.0	0.6	8.4
15-Apr	1.3	-0.8	-2.3	-2.6	-2.9	-3.5	-4.1	-3.8	-2.7	-1.3	0.1	0.7	0.5	1.5	2.3	2.3	1.2	-0.1	-1.3	-2.5	-4.1	-5.7	-6.8	-7.8	-1.8	2.3
16-Apr	-7.9	-8.2	-8.8	-9.6	-10.1	-10.3	-9.5	-8.0	-7.0	-6.3	-3.2	-0.5	1.9	2.6	3.5	3.4	3.6	3.4	2.4	0.7	-0.5	-1.4	-1.9	-2.5	-3.1	3.6
17-Apr	-3.1	-3.7	-4.2	-4.7	-5.2	-5.6	-4.8	-2.8	-0.8	1.7	3.2	4.5	5.1	5.9	6.3	6.4	6.2	5.5	4.5	3.0	1.6	0.9	0.2	-0.8	0.8	6.4
18-Apr	-1.4	-1.6	-2.1	-2.2	-1.5	-1.5	-1.3	-1.2	-0.9	-0.4	0.6	1.0	1.0	1.2	1.2	1.5	1.2	0.7	0.2	0.1	0.2	0.5	0.6	0.6	-0.1	1.5
19-Apr	0.6	0.7	0.3	0.1	-0.1	0.3	0.7	1.7	2.6	3.9	5.3	6.8	7.6	7.5	8.5	8.8	8.5	7.9	6.7	5.0	3.8	3.2	2.3	1.6	3.9	8.8
20-Apr	1.0	0.2	-0.5	-1.0	-1.6	-1.3	0.0	1.6	2.8	4.4	7.3	9.7	11.2	12.0	12.4	12.6	12.9	12.6	11.7	10.0	8.2	7.0	6.8	5.8	6.1	12.9
21-Apr	5.8	5.6	4.9	5.1	5.2	4.4	5.1	6.4	7.7	9.6	10.3	11.0	11.2	11.8	11.1	11.9	12.4	12.3	11.3	9.6	7.6	5.4	3.8	2.2	8.0	12.4
22-Apr	1.2	0.0	-0.8	-1.0	-1.2	-1.3	0.0	1.9	3.5	6.2	8.8	11.4	13.9	14.9	14.6	14.3	12.7	11.1	9.3	7.9	6.7	5.5	5.2	5.1	6.2	14.9
23-Apr	5.1	5.1	5.0	4.8	4.8	4.8	5.0	5.9	6.5	7.8	8.8	9.9	10.8	11.4	11.3	11.2	10.0	8.9	8.2	7.6	6.8	6.1	5.5	4.8	7.3	11.4
24-Apr	4.5	4.0	3.4	2.5	1.9	2.0	1.8	1.5	2.5	4.0	5.0	6.0	5.9	6.5	7.8	7.9	8.3	8.0	7.5	6.0	4.6	3.6	3.1	2.7	4.6	8.3
25-Apr	2.2	1.8	1.4	0.8	0.4	0.1	0.5	1.5	2.4	3.5	4.0	5.1	5.6	7.7	8.9	8.9	8.4	7.9	7.1	6.6	6.0	5.3	4.8	4.3	4.4	8.9
26-Apr	3.7	3.2	3.0	2.8	2.4	2.3	2.7	3.5	4.2	4.6	5.8	7.5	9.2	8.3	7.7	7.5	7.1	6.7	6.3	5.7	5.2	4.8	4.5	4.3	5.1	9.2
27-Apr	4.1	3.9	3.7	3.4	2.7	1.7	1.7	1.8	1.9	2.0	3.0	4.0	4.4	5.1	5.6	5.6	5.8	6.0	5.4	5.3	5.0	4.5	4.3	3.9	3.9	6.0
28-Apr	4.0	4.2	3.9	3.2	2.6	2.6	3.1	3.6	4.2	5.0	5.8	6.9	8.4	10.0	10.8	11.5	11.6	11.7	10.9	9.4	7.6	6.2	5.5	5.2	6.6	11.7
29-Apr	4.4	3.7	2.9	2.5	2.0	1.6	2.6	5.3	8.2	10.8	13.5	15.2	15.4	16.6	16.8	17.1	17.2	16.7	16.7	15.2	12.8	11.8	9.9	8.1	10.3	17.2
30-Apr	6.6	5.8	4.1	3.1	2.3	4.7	6.7	9.2	11.9	15.5	18.0	19.3	20.6	20.7	20.8	21.7	21.6	20.4	19.8	18.9	18.0	18.6	16.8	15.5	14.2	21.7
	-1.0	-1.6	-2.2	-2.6	-3.1	-3.3	-2.9	-2.0	-0.6	1.0	2.4	3.6	4.6	5.5	6.1	6.4	6.3	5.7	4.9	3.6	2.4	1.6	0.9	0.2	Diurnal Average	
	8.1	6.6	5.5	5.6	5.8	5.4	6.7	9.2	11.9	15.5	18.0	19.3	20.6	20.7	20.8	21.7	21.6	20.4	19.8	18.9	18.0	18.6	16.8	15.5	Diurnal Maximum	

WBEA NETWORK

Hourly Averages

Ambient Temperature (AT) - C

Millennium - April 2014



AURORA
ATMOSPHERICS INC.

Concentration Ranges (C)	Number of Hours	%	Cumulative %
-50 - -20	0	0.00	0.00
-20 - 0	290	40.28	40.28
0 - 10	347	48.19	88.47
10 - 20	77	10.69	99.17
> 20	6	0.83	100.00

Total Number of Valid Hours: 720

Total Number of Hours: 720

Wood Buffalo Environmental Association

Summary of Hour Averages

Wind Speed (WS) - km/h

Millennium - April 2014

Maximum Speed: 27 km/h on Apr 11 17:00

Maximum Daily Speed Average: 14.2 km/h on Apr 2

Minimum Speed Value: 0 km/h on Apr 18 20:00

Minimum Daily Speed Average: 2.0 km/h on Apr 29

Maximum Diurnal Speed Average: 5.2 km/h at hour 21

Minimum Diurnal Speed Average: 2.2 km/h at hour 11

Monthly Average Velocity: 3.6 km/h 86.0 deg

Percentiles: P_1 = 2 P_{10} = 5 Q_1 = 6 Median = 9 Q_3 = 13 P_{90} = 16 P_{99} = 22

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-Apr	S7	SSE5	SE4	S1	WSW3	N7	NNE13	NNE11	N9	N12	N11	N10	N10	N10	N10	N9	N9	N9	NNE14	NNE16	NE13	ENE4	NE5	NE6	NNE6.9	NNE16
2-Apr	NNE8	N12	N14	N15	N15	N12	N12	N10	N9	N10	NNW10	N17	N18	N18	N20	N19	N19	N19	N17	N15	N15	N14	N13	N14	N14.2	N20
3-Apr	N11	N8	N9	N11	N11	N12	N10	NNW6	NW5	NNW6	N6	N6	N5	NE5	E7	ESE10	SE11	ESE12	ESE14	ESE15	SE18	SE18	SE18	SE21	E5.1	SE21
4-Apr	SE20	SE20	SE19	SE20	SE17	SE18	SE17	SE18	SE18	SE16	SE11	SE9	SSE6	SSW6	WNW7	W11	WNW18	WNW15	WNW15	WNW17	NW14	NW12	NW14	NW11	SSE3.6	SE20
5-Apr	NW8	W6	WSW6	WSW7	W6	WSW6	WNW4	NNW2	N4	N2	NNE3	N8	N7	N7	N5	ENE3	NE5	NNE5	NNE6	NE8	NE5	E5	ESE4	SSE3	N2.5	NW8
6-Apr	SSE5	SE7	SE7	SE9	SE7	SE6	SSE6	S5	SSE5	SE6	S4	WNW3	NNE3	NE4	SSE3	SE5	E5	ESE2	NW4	NNE9	N6	NW2	NNW3	ENE2	ESE2.4	NNE9
7-Apr	S5	SSE5	SSW6	WSW6	NNE1	WSW4	SSW4	SSW3	S5	S5	S4	SE5	E6	SE6	N3	WSW7	WSW8	SW6	SW7	S4	SSE5	S5	SE4	SE7	S3.4	WSW8
8-Apr	SE9	SE8	SE7	SE6	S5	ESE5	SE7	SE6	SSE5	SSW10	WSW14	W13	W18	WSW22	W22	WSW17	WSW20	SW18	WSW17	W18	WSW15	WSW15	W13	WSW10	WSW9.3	WSW22
9-Apr	W14	WNW14	W8	WSW9	WSW12	WSW12	WSW15	W17	WNW19	WNW20	NW16	NNW9	NNW5	NW10	NW11	NW17	WNW20	WNW16	NW13	N14	NW1	S3	WSW6	WNW7	WNW10.4	WNW20
10-Apr	N8	N12	N8	N6	N7	NNE12	NNE15	N17	N15	N14	N14	N13	N14	N13	N14	NNE15	NNE15	N15	N15	NNE16	NNE13	NE10	ENE11	ENE7	NNE12.1	N17
11-Apr	E7	E8	E7	E8	E9	E9	E8	E8	ENE8	ENE9	E8	ENE9	NE14	NNE20	NNE21	N25	N27	N25	N22	N21	N22	N15	N13	N8	NNE11.1	N27
12-Apr	N4	NW3	W3	SW5	SW6	SW5	SW7	S6	S5	S6	WSW5	NNW7	NNW7	WNW8	NNW8	N14	N15	N16	NNE19	NNE15	NNE20	N19	N18	N16	N5.9	NNE20
13-Apr	N16	N11	N9	N10	N9	N8	N12	N11	N8	N10	N10	N10	N7	N5	N7	N7	E4	SE6	ESE7	SE9	SE11	SE10	SE9	SE11	NNE4.9	N16
14-Apr	ESE12	SE13	SE14	SE13	SE12	SE11	SE11	SE11	SSE9	S8	SSE9	SSE10	SSE11	SSE9	SSE9	SSE8	SSE7	ESE10	ESE9	ESE9	ESE10	E9	NNE12	NE14	SE8.7	NE14
15-Apr	ENE10	ENE12	NE8	NE9	NE12	ENE10	ENE10	ENE10	ENE7	E6	E7	NE8	NNE14	NNE18	NE17	NE16	NNE23	NNE26	NNE26	NNE23	NNE26	NNE23	NNE17	NNE15	NNE13.7	NNE26
16-Apr	NE13	NE13	ENE10	NE8	NE6	NNE7	NE6	E7	ESE9	ESE8	ESE6	SE10	SE13	SE13	SE13	SE14	SE14	ESE15	ESE15	ESE14	ESE15	ESE14	ESE14	ESE13	ESE9.5	ESE15
17-Apr	ESE12	ESE10	ESE10	ESE10	ESE9	ESE9	ESE11	SE13	SE12	SE14	SE15	SE15	ESE15	SE16	SE14	ESE15	SE17	SE18	SE17	ESE13	ESE10	ESE11	SE10	ESE8	ESE12.6	SE18
18-Apr	ESE11	ESE11	ESE9	E9	ESE9	ESE12	ESE13	ESE10	ESE11	ESE11	ESE12	ESE13	ESE12	ESE12	ESE11	SE11	SE12	SSE6	S4	W0	SE3	SE6	SE5	SE4	ESE8.9	ESE13
19-Apr	SE7	SSE5	SSW2	SW2	SSE2	SE3	S3	SSE3	S5	SSE6	SE8	SE9	ESE9	SE7	ESE6	SE9	ESE11	ESE13	ESE13	ESE13	ESE14	SE13	SE11	SE8	SE7.1	ESE14
20-Apr	SSE6	SE4	E3	E4	ESE5	ESE5	SE5	SSE3	SSE1	NNW5	NW6	NW6	N7	N12	NNE12	NNE12	NNE8	NE8	ENE4	E4	ESE6	SE5	SE5	SE6	ENE2.8	NNE12
21-Apr	SE7	SE6	SE2	SE8	SE5	SSE5	SE4	SSE5	SE4	N4	NNW9	N11	N11	NNW7	NW6	N10	N8	NNE12	NNE15	NNE15	NNE13	N7	N5	N4	NNE4.4	NNE15
22-Apr	N6	N6	N6	N8	N7	N6	N5	NNW4	NNW6	NW7	NW8	NNW6	ENE10	E11	ENE12	E11	E12	E11	ENE11	NE9	ENE8	ENE7	E7	E9	NE5.4	ENE12
23-Apr	E6	E7	ENE11	E11	E12	ENE11	E10	E9	E9	ESE9	ESE13	ESE14	ESE16	ESE16	E14	E14	ENE15	E15	E13	E14	E12	E11	E11	E11	E11.6	ESE16
24-Apr	ESE10	E10	E9	E10	E9	E9	E9	E10	ESE8	ESE7	SE10	SE13	ESE14	ESE13	SE13	SE12	ESE13	ESE13	E8	E11	E9	E9	E9	ESE10	ESE9.9	ESE14
25-Apr	ESE10	ESE11	ESE8	ESE8	ESE11	ESE12	ESE12	ESE11	SE9	E6	ENE10	E6	NNE6	E6	ESE5	SSE6	SE8	SE11	SE6	SE7	SE8	SE6	SSE6	SSE5	ESE7.3	ESE12
26-Apr	SSE5	SSE6	SE7	ESE8	SE9	SE11	SE10	SSE8	SSE8	SSE9	S11	SSE10	SE12	SE10	SE14	SE15	ESE14	SE14	SE13	SE12	SE12	SE12	SE12	SE17	SE10.5	SE17
27-Apr	SE13	SE12	ESE14	ESE15	ESE12	E8	ESE9	ESE12	ESE12	SE14	SE14	SE17	SE17	SE15	SE12	SE14	SE14	SE12	SSE10	SE11	SE10	SE11	SE9	SE9	SE12.2	SE17
28-Apr	SE10	SE11	SE9	SE9	SE7	SE7	SE6	SSE5	SSE5	SSE6	S6	SSE4	SSE5	SE6	S4	SE5	SE4	SE5	SE7	SE11	SE10	SE9	SE9	ESE11	SE6.9	SE11
29-Apr	SE10	ESE7	SE7	SE8	SE8	SSE6	SSE6	SSE6	SSE5	S5	SE5	NE5	N5	WNW8	NW9	WSW6	NNW5	NNW5	N4	N1	AF	ESE3	ESE5	ESE4	SE2.0	SE10
30-Apr	SE5	SSE4	SSE3	SSE3	SSE4	SE6	SSE6	SSE7	SSE6	SSE7	S9	S12	S12	S13	S11	S11	S12	SSE7	SSW5	SSW4	SSW7	SW6	SSW7	SSW6	S6.8	S13
	ESE4.3	ESE4.4	ESE4.2	E4.2	E3.9	E3.9	E4.1	ESE3.7	ESE3.2	ESE2.4	ESE2.2	E3.0	ENE3.9	ENE3.1	ENE3.3	ENE3.2	ENE3.7	ENE4.1	ENE4.3	ENE5.0	ENE5.2	E4.2	E3.8	E4.3	Diurnal Average	
	SE20	SE20	SE19	SE20	SE17	SE18	SE17	SE18	WNW19	WNW20	NW16	N17	W18	WSW22	W22	N25	N27	NNE26	NNE26	NNE23	NNE26	NNE23	SE18	SE21	Diurnal Maximum	

AF - Analyzer Failure

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 Apr 8 15:00

Minimum Value: 1 km/h on Apr 1 03:00

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

Hours in Service:	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-Apr	2	2	1	1	1	3	2	2	3	3	3	3	3	3	2	2	2	2	3	3	3	2	2	2	3
2-Apr	2	3	3	3	3	3	2	2	2	2	4	4	4	4	4	4	4	4	4	3	3	3	2	2	4
3-Apr	3	2	3	2	2	2	2	2	1	1	1	2	2	2	3	3	3	4	4	4	5	5	6	6	6
4-Apr	6	6	5	5	5	5	5	5	5	4	4	3	2	2	3	4	7	6	6	6	5	4	5	4	7
5-Apr	2	2	2	2	1	1	1	1	1	1	2	2	2	2	1	2	2	1	1	1	2	2	2	2	2
6-Apr	1	2	2	2	2	2	2	1	2	2	1	2	2	2	1	2	2	2	3	2	2	2	1	2	3
7-Apr	2	1	1	2	2	1	1	1	1	1	2	2	2	2	2	4	3	2	4	2	1	1	1	2	4
8-Apr	2	2	2	2	1	1	1	2	1	3	5	4	7	7	8	6	7	7	6	6	5	5	5	4	8
9-Apr	5	5	4	3	4	4	5	6	7	8	6	4	2	4	4	7	7	6	6	6	3	2	2	3	8
10-Apr	3	3	4	3	4	3	3	3	3	3	3	3	3	3	3	3	3	3	3	3	3	2	3	3	4
11-Apr	2	3	2	3	3	3	3	2	3	3	3	3	5	4	5	5	5	5	5	4	5	4	3	4	5
12-Apr	2	1	1	1	1	2	1	1	2	2	3	2	3	3	3	5	4	4	4	4	4	5	5	5	5
13-Apr	4	3	2	2	2	2	2	2	2	3	3	3	3	3	2	2	2	2	2	3	3	3	3	3	4
14-Apr	3	3	3	3	3	3	3	3	3	2	3	3	3	3	3	2	2	3	2	3	3	3	3	3	3
15-Apr	3	4	3	2	2	3	3	3	3	2	3	4	5	4	4	4	6	5	5	5	5	4	4	3	6
16-Apr	3	4	3	3	3	2	2	3	3	3	3	4	5	5	5	5	5	4	4	4	4	4	4	4	5
17-Apr	3	3	3	3	3	3	3	4	3	5	5	5	5	5	5	5	5	5	5	4	2	3	3	2	5
18-Apr	3	3	3	3	3	4	4	4	3	3	4	4	3	4	3	4	4	2	1	1	2	1	1	1	4
19-Apr	2	3	1	1	1	2	1	1	1	2	3	3	3	3	2	4	4	4	4	4	4	3	3	2	4
20-Apr	2	1	1	1	1	2	2	1	2	1	2	2	2	4	3	3	3	4	1	1	1	1	2	2	4
21-Apr	1	2	2	1	2	2	2	1	2	2	2	3	3	3	2	3	3	3	3	2	2	2	3	2	3
22-Apr	1	2	2	2	2	2	2	1	2	2	2	2	4	4	4	4	4	4	4	3	3	3	3	3	4
23-Apr	2	3	4	4	4	4	3	3	3	4	6	5	6	6	5	5	5	5	6	6	5	4	4	4	6
24-Apr	4	4	3	4	4	3	3	4	3	4	4	5	4	4	5	4	5	5	3	4	3	3	3	4	5
25-Apr	3	3	3	3	4	3	4	3	3	2	3	3	2	2	3	2	3	3	3	3	3	2	2	1	4
26-Apr	2	2	2	2	3	3	3	2	2	3	3	3	4	4	4	5	4	4	4	3	3	3	4	4	5
27-Apr	4	4	4	4	3	3	3	4	4	4	5	6	5	4	4	4	5	4	3	4	3	3	2	2	6
28-Apr	2	3	2	2	2	2	2	2	1	2	2	1	2	2	2	2	2	2	2	3	3	2	3	3	3
29-Apr	3	3	2	2	3	2	2	2	2	2	2	2	2	3	5	4	3	2	2	2	AF	1	1	1	5
30-Apr	1	1	2	2	1	1	2	2	2	2	3	3	3	4	4	4	4	2	2	3	2	3	1	1	4
	6	6	5	5	5	5	5	6	7	8	6	6	7	7	8	7	7	7	6	6	5	5	6	6	
	Diurnal Maximum																								

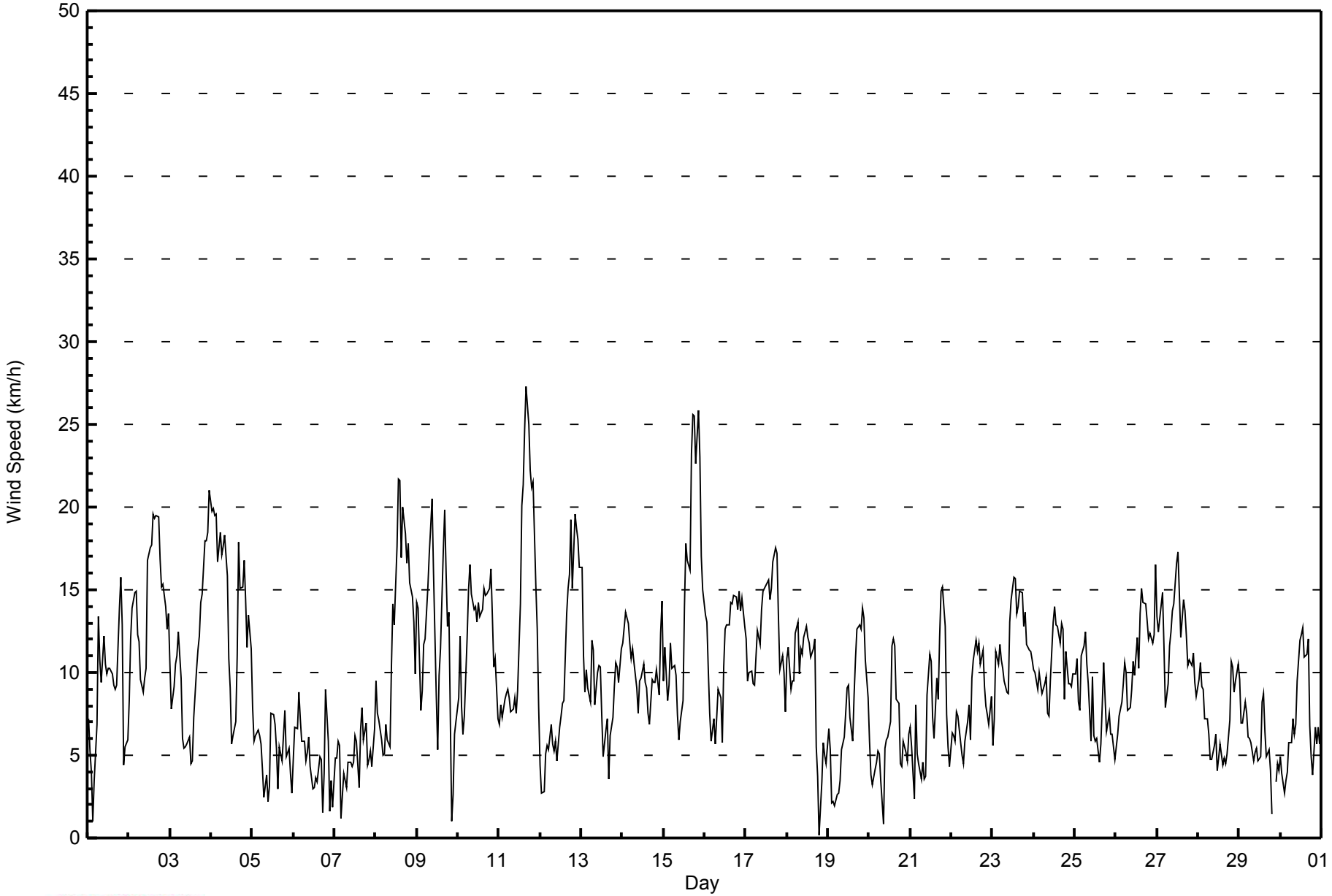
AF - Analyzer Failure

WBEA NETWORK

Hourly Averages

Wind Speed (WS) - km/h

Millennium - April 2014



AURORA
ATMOSPHERICS INC.

Wind Speed Ranges (km/h)	Number of Hours	%	Cumulative %
0 - 5	134	18.64	18.64
6 - 11	348	48.40	67.04
12 - 19	212	29.49	96.52
20 - 28	25	3.48	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

WBEA NETWORK

Frequency Distribution

Wind Speed (WS) - km/h

Millennium - April 2014

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	14	4	6	4	6	9	21	27	16	5	3	3	2	2	5	7	134
6 - 11	54	8	11	19	45	45	76	31	9	6	5	10	3	5	10	11	348
12 - 19	43	22	8	3	8	42	54	0	4	0	1	8	6	7	6	0	212
20 - 28	7	9	0	0	0	0	4	0	0	0	0	2	1	2	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	118	43	25	26	59	96	155	58	29	11	9	23	12	16	21	18	719

Total Number of Valid Hours: 719

Total Number of Hours: 720

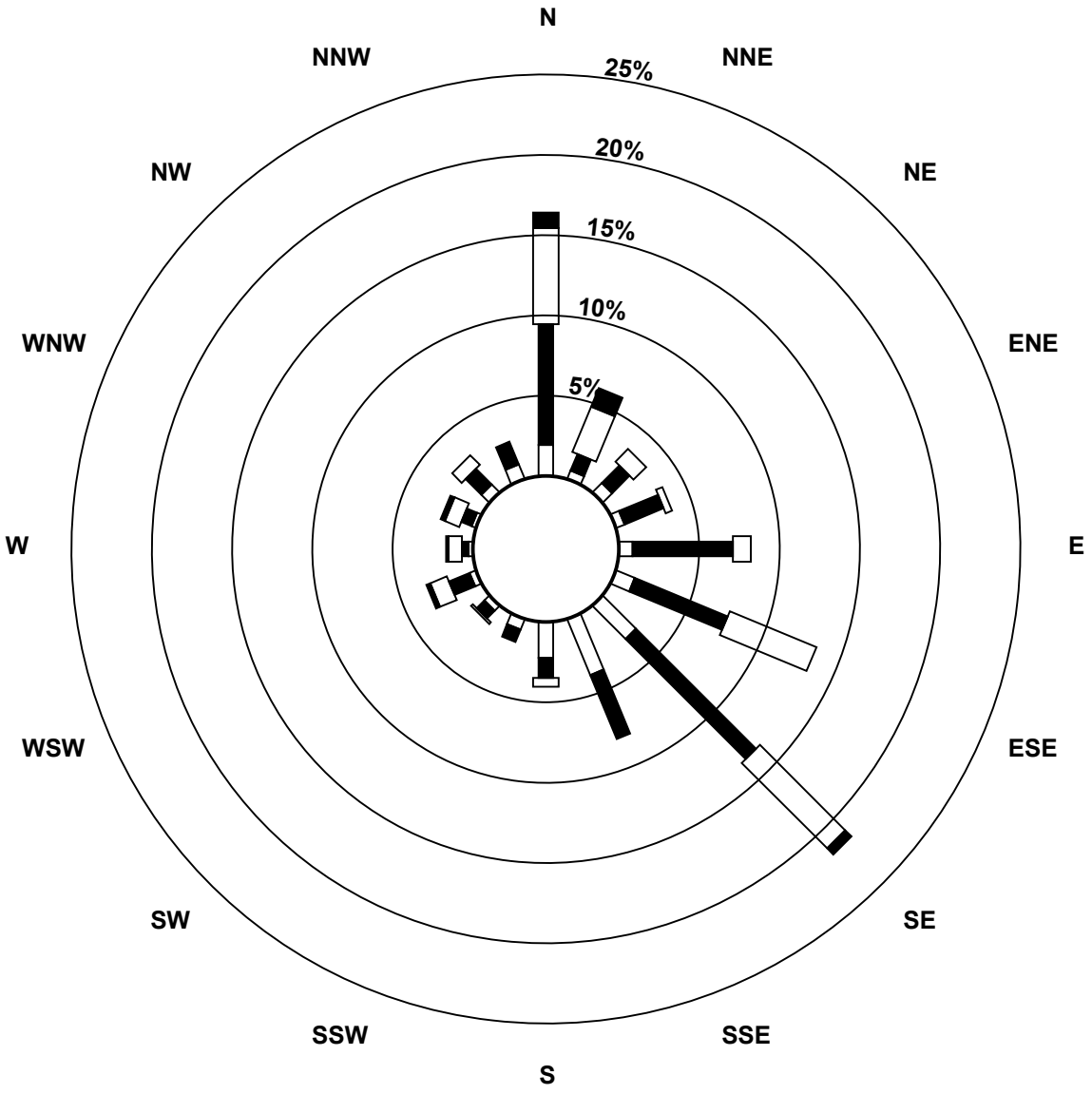
AURORA
ATMOSPHERICS INC.

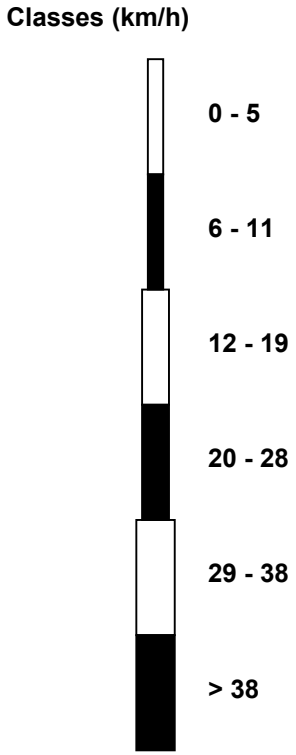
Wood Buffalo Environmental Association

Wind Rose Apr 2014

Wind Speed (WS) - km/h

Millennium (AMS 12)





Total Number of Valid Hours: 719

Wood Buffalo Environmental Association

Summary of Hour Averages

Wind Direction (WD) - deg

Millennium - April 2014

Direction of Maximum Speed: 11 deg on Apr 11 17:00
Direction of Maximum Daily Speed Average: 3.4 deg on Apr 2

Direction of Minimum Speed: 273 deg on Apr 18 20:00

Direction of Minimum Daily Speed Average: 2.0 deg on Apr 29

Monthly Average Direction: 128.4 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-Apr	175	168	139	181	250	356	22	15	2	2	3	356	359	2	7	356	1	3	12	15	38	59	51	40	13.0
2-Apr	15	6	8	10	10	9	10	2	353	352	340	357	2	359	5	358	1	6	6	3	4	6	5	10	3.4
3-Apr	7	356	358	5	7	6	3	346	320	331	5	2	1	41	98	115	125	121	121	122	126	131	135	130	78.9
4-Apr	133	132	130	132	127	127	134	135	132	132	141	140	157	212	285	281	294	298	298	300	310	309	311	308	156.9
5-Apr	305	280	252	257	265	242	287	343	9	8	25	2	9	7	6	60	43	22	31	53	43	83	110	151	356.1
6-Apr	160	127	134	130	138	146	151	169	154	140	177	287	23	49	157	136	99	103	316	13	0	323	336	67	123.4
7-Apr	182	167	204	254	33	242	211	192	173	181	170	130	91	138	9	239	243	225	216	189	160	181	145	137	187.0
8-Apr	138	144	142	141	172	119	132	143	164	212	246	262	260	257	259	257	240	231	249	262	255	254	269	257	238.1
9-Apr	267	291	270	255	253	244	252	267	291	301	317	340	339	318	324	307	303	302	305	349	324	173	240	284	292.0
10-Apr	351	3	7	7	1	13	13	9	6	3	3	5	6	1	10	13	15	5	9	21	29	40	58	65	12.9
11-Apr	91	100	100	83	94	99	94	86	78	77	99	70	44	31	21	11	11	10	4	2	5	1	3	359	32.5
12-Apr	358	320	271	226	219	220	214	186	174	191	239	328	344	292	342	355	356	5	15	22	22	11	3	3	352.8
13-Apr	8	360	354	358	3	356	6	8	0	353	355	357	355	354	3	0	92	130	120	136	138	140	137	133	24.8
14-Apr	123	130	127	128	126	126	127	131	147	180	158	153	149	157	163	161	147	123	122	116	107	84	31	51	127.1
15-Apr	59	76	56	36	48	65	59	57	71	84	88	52	24	30	43	47	18	15	16	15	13	13	17	24	33.4
16-Apr	39	53	74	56	36	25	56	96	108	108	118	134	142	137	137	132	127	120	122	117	118	119	122	122	108.6
17-Apr	119	116	115	117	114	114	118	129	129	136	139	129	121	124	124	119	124	127	124	123	119	123	128	115	123.5
18-Apr	122	121	102	97	102	117	116	107	115	120	115	119	118	123	121	128	137	159	179	273	126	139	136	139	120.7
19-Apr	127	149	204	227	164	145	186	155	173	154	137	125	121	136	107	128	115	118	116	121	121	129	133	142	131.0
20-Apr	153	138	87	94	108	108	124	165	154	342	309	307	353	9	12	14	33	42	67	88	122	141	140	136	57.6
21-Apr	138	136	134	125	139	164	142	147	145	6	346	355	6	335	313	7	4	13	19	25	30	11	8	355	23.9
22-Apr	352	356	2	360	4	353	355	348	345	312	315	336	77	84	78	94	98	101	68	52	59	73	90	79	46.8
23-Apr	79	85	78	100	87	77	85	89	81	105	111	110	104	103	87	83	78	81	92	98	94	92	95	98	91.9
24-Apr	108	97	87	99	86	80	88	99	104	112	125	124	121	118	137	129	115	119	94	89	89	89	97	105	106.4
25-Apr	115	121	117	111	115	121	120	121	127	100	64	91	18	89	105	149	138	125	145	143	137	141	148	150	118.9
26-Apr	168	165	131	123	129	130	135	155	158	165	173	153	129	137	124	128	119	125	128	125	134	135	138	128	136.0
27-Apr	129	128	122	118	119	100	110	115	118	133	138	139	137	137	145	139	135	143	149	145	142	133	130	135	131.5
28-Apr	133	128	132	130	138	136	141	155	159	155	176	150	167	129	185	136	142	136	126	124	132	136	136	122	138.3
29-Apr	124	120	133	134	146	155	147	158	166	169	130	52	349	287	310	238	338	339	4	359	AF	119	120	114	134.4
30-Apr	129	149	152	161	162	145	155	152	150	151	174	173	176	175	171	172	180	165	202	208	194	215	193	198	171.9
	104.0	103.0	101.7	101.0	98.5	97.4	98.0	105.0	109.2	112.1	111.0	82.4	72.5	73.3	60.2	69.6	63.8	65.7	56.3	57.6	72.0	87.6	88.8	94.1	
	Diurnal Average																								

AF - Analyzer Failure
All monthly, daily, and diurnal averages have been calculated using vector methods

Number of Exceedences (AAAQO): 1-hr: 0 24-hr: 0
Maximum Value: 90 deg on Apr 9 21:00

Minimum Value: 9 deg on Apr 3 05:00

Percentiles: P_1 = 11 P_{10} = 14 Q_1 = 17 Median = 21 Q_3 = 30 P_{90} = 42 P_{99} = 86

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-Apr	16	15	17	87	29	33	14	12	14	18	21	25	21	17	18	22	19	18	13	13	15	43	17	17	87
2-Apr	15	15	11	12	13	13	12	14	22	21	29	18	17	18	17	20	21	16	17	16	15	14	15	11	29
3-Apr	14	16	18	13	9	10	15	24	28	28	26	35	77	53	37	23	21	19	17	16	17	16	17	16	77
4-Apr	16	16	16	16	16	16	16	16	16	16	18	17	21	26	36	27	30	30	32	29	30	31	30	29	36
5-Apr	27	24	21	21	20	22	26	58	33	90	90	26	39	14	18	60	42	24	13	11	33	36	50	49	90
6-Apr	21	14	18	15	16	17	20	19	30	34	45	62	53	53	53	32	32	73	35	13	43	57	45	57	73
7-Apr	40	21	14	33	89	22	36	24	24	28	42	47	37	43	88	73	37	31	30	33	16	25	30	12	89
8-Apr	16	13	12	14	23	22	13	17	15	24	31	30	33	28	29	30	27	28	30	27	27	28	27	29	33
9-Apr	29	25	29	27	28	27	29	28	29	28	31	34	36	35	34	31	30	31	36	45	90	64	28	43	90
10-Apr	28	17	27	20	41	14	15	12	13	16	15	18	14	15	18	14	14	14	14	13	14	18	15	21	41
11-Apr	27	28	30	26	27	27	34	28	28	26	30	23	21	13	15	13	14	15	18	17	17	17	16	25	34
12-Apr	20	37	35	11	15	15	15	21	26	36	68	46	39	50	46	26	21	19	12	14	14	16	18	18	68
13-Apr	16	18	19	18	16	19	13	14	25	28	25	25	39	60	34	27	64	28	20	19	16	16	16	15	64
14-Apr	14	16	14	15	15	16	16	17	23	23	21	22	22	23	22	20	18	16	15	19	23	25	18	11	25
15-Apr	20	23	19	14	11	19	20	17	22	35	37	50	21	16	18	18	19	15	14	15	14	13	14	13	50
16-Apr	15	18	23	27	42	28	49	32	32	32	52	26	26	24	27	22	21	19	18	18	17	17	17	16	52
17-Apr	17	18	18	18	20	20	20	19	20	21	22	22	23	22	24	21	18	18	18	16	16	16	16	18	24
18-Apr	15	18	24	26	27	19	20	27	20	20	22	21	20	24	21	21	18	26	17	83	33	13	15	14	83
19-Apr	13	52	36	21	44	59	38	33	23	32	28	26	29	37	46	31	28	21	19	17	16	15	15	14	59
20-Apr	17	27	23	18	18	21	24	33	86	34	47	42	36	18	21	20	25	19	12	23	13	31	23	13	86
21-Apr	10	31	75	14	48	23	43	34	46	65	25	23	14	39	36	20	17	13	13	12	13	28	56	51	75
22-Apr	13	14	11	12	16	15	17	24	38	28	22	36	44	29	27	30	30	30	19	25	25	24	44	24	44
23-Apr	43	33	24	29	26	20	23	27	38	39	31	30	32	31	29	28	25	27	37	32	31	31	30	31	43
24-Apr	28	30	28	29	26	24	29	29	33	34	25	23	22	21	22	20	24	22	29	29	31	26	29	25	34
25-Apr	21	17	21	20	21	17	18	20	20	36	21	45	39	46	57	36	23	18	24	19	21	17	17	20	57
26-Apr	16	18	16	16	17	17	20	21	21	19	20	31	24	23	19	18	20	17	17	17	17	16	17	16	31
27-Apr	16	18	18	18	18	28	24	21	21	19	18	18	17	17	18	17	18	19	19	17	17	17	16	14	28
28-Apr	16	15	15	14	16	15	19	25	28	29	28	54	44	37	56	41	31	25	17	16	14	15	17	16	56
29-Apr	17	29	22	15	20	16	18	21	39	38	43	58	61	37	41	56	59	38	27	36	AF	20	10	11	61
30-Apr	13	14	62	51	13	18	20	17	23	27	24	19	20	19	21	23	19	17	30	58	17	29	14	16	62
	43	52	75	87	89	59	49	58	86	90	90	62	77	60	88	73	64	73	37	83	90	64	56	57	
	Diurnal Maximum																								

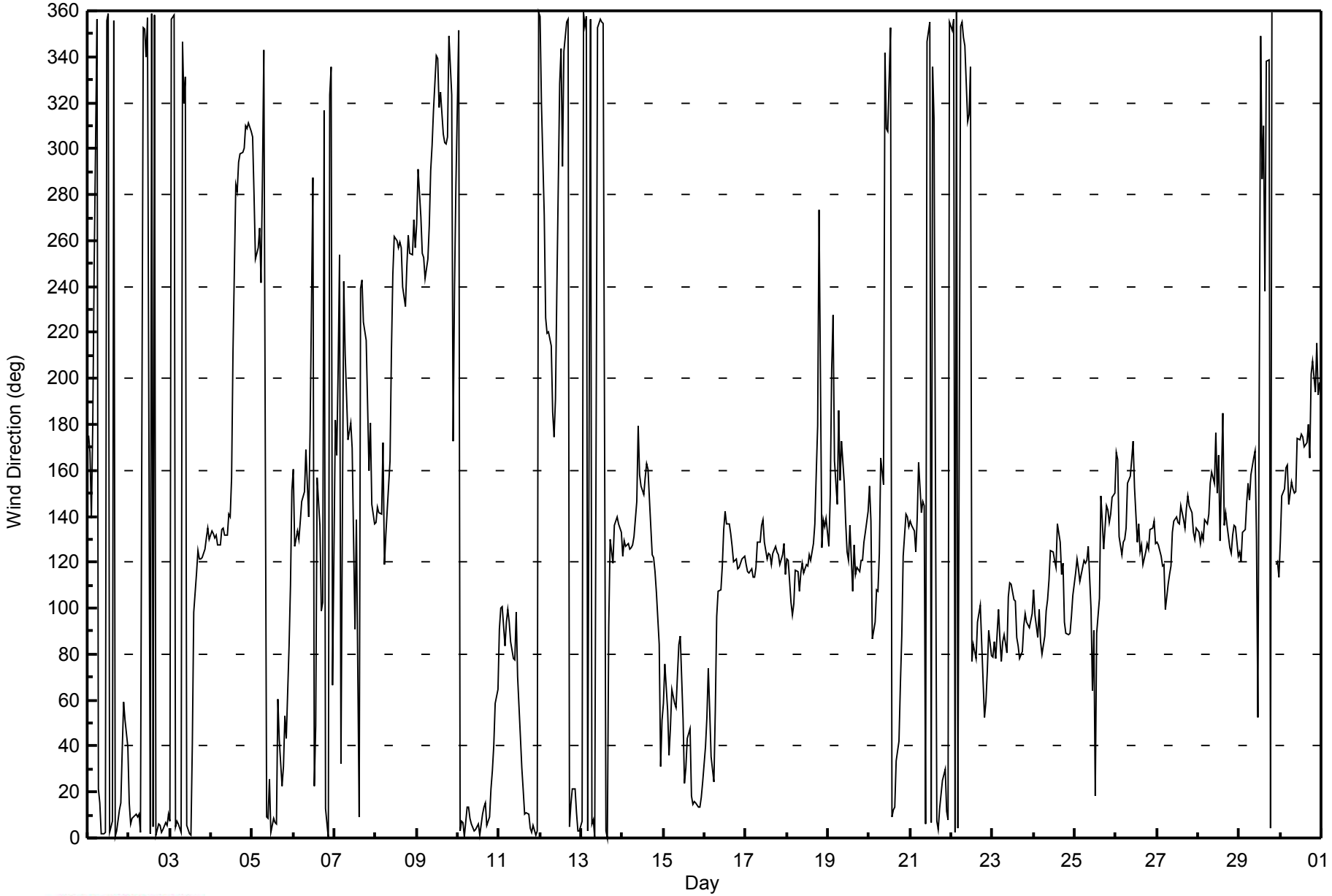
AF - Analyzer Failure

WBEA NETWORK

Hourly Averages

Wind Direction (WD) - deg

Millennium - April 2014



AURORA ATMOSPHERICS INC.

Wood Buffalo Environmental Association

SO_2 Calibration Report

Station Information

Calibration Date	April 24, 2014	Previous Calibration	March 19, 2014
Station Name	Millenium Mine	Station Number	AMS 12
Reason:	Routine		
Start Time (MST)	6:30	End Time (MST)	9:51
Barometric Pressure	724 mmHg	Station temp.	22 Deg C
Calibrator Make/Model	Sabio 4010	Serial Number	11091107
Cal Gas Concentration	51.1 ppm	Cal Gas Expiry Date	5/29/2014
Gas Cert Reference	LL107924		
DACS make/model	Campbell Scientific CR3000	DACS serial No.	2374
DACS voltage range	0-5 volts	DACS channel #	1

Analyzer Information

	Before	*After*		*Before*	*After*
Analyzer Range (ppb)	1000	1000	PMT voltage	-665	-665
Analyzer Range (mv)	5000	5000	Lamp voltage	803	803
Calculated slope	1.005158	1.001268	Chamber temp.	45.2	45.2
Calculated intercept	-0.848974	-0.293841	Pressure (mmHg)	709.1	700.0
Analyzer Background	8.6	8.6	Flow (lpm)	0.291	0.440
Analyzer Coefficient	1.190	1.190	Intensity	90	90

Analyzer make	43i Thermo	Analyzer serial #	1118148499

Calibration Data

Set Point	Total flow rate (cc/min)	Source gas flow rate (cc/min)	Calculated concentration (ppb) (Cc)	Indicated concentration (ppb) (Ic)	Correction factor (Cc/Ic)
as found zero	6000	0.0	0.0	0.8	NA
as found span	6000	94.1	801.4	802.8	0.998
calibrator zero	6000	0.0	0.0	0.1	NA
high point	6000	94.1	801.4	801.0	1.001
second point	6000	47.1	401.1	399.8	1.003
third point	6000	23.5	200.1	201.2	0.995
calibrator zero	6000	0.0	0.0	0.4	NA
as left zero	6000	0.0	0.0	0.4	NA
as left span	6000	94.1	801.4	796.6	1.006
				Average Correction Factor	1.000

Corrected As found	802.0	Previous response	798.2	% change	-0.5%

Notes:

Exhuast line to pump was near the heater and melted partial, Attached and moved new line away from heater; flow and pressure back up to where it was last month

Calibration Performed By: Melissa Lemay

Wood Buffalo Environmental Association

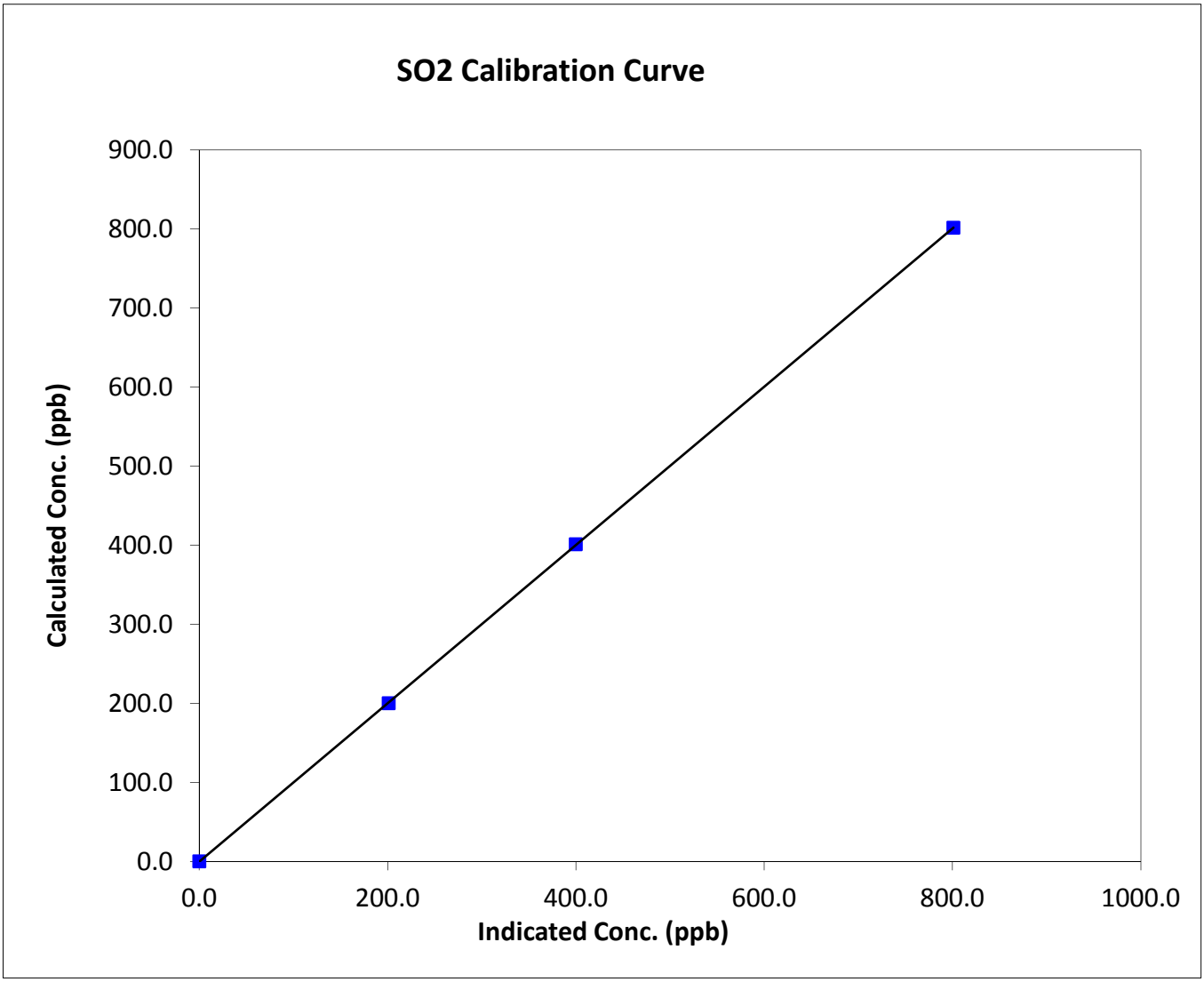
SO_2 Calibration Summary

Station Information

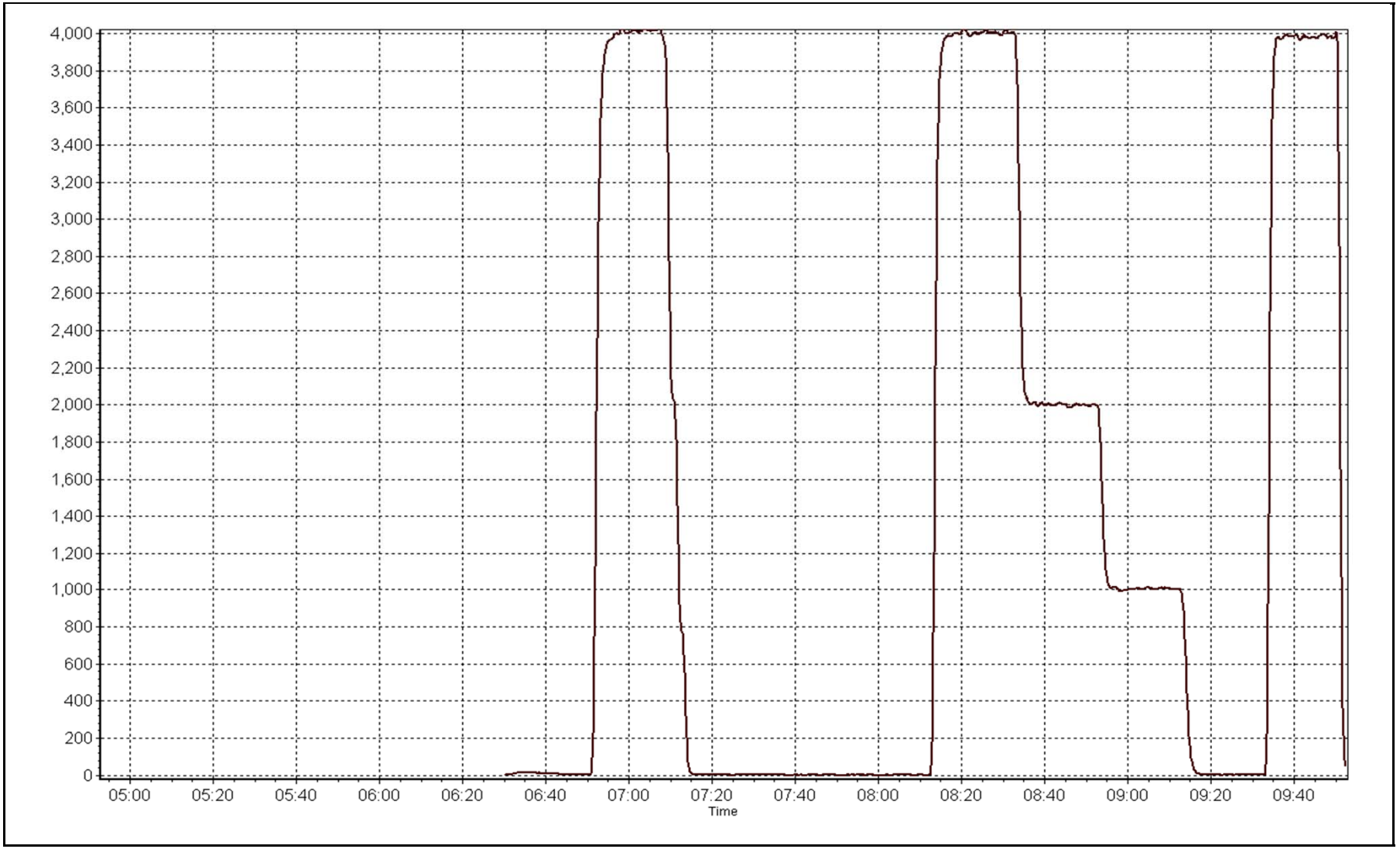
Calibration Date	April 24, 2014	Previous Calibration	March 19, 2014
Station Name	Millenium Mine	Station Number	AMS 12
Start Time (MST)	6:30	End Time (MST)	9:51
Analyzer make	43i Thermo	Analyzer serial #	1118148499

Calibration Data

Calculated concentration (ppb) (Cc)	Indicated concentration (ppb) (Ic)	Correction factor (Cc/Ic)	Statistical Evaluation	
0.0	0.1	N/A	Correlation Coefficient	0.999993
801.4	801.0	1.0005		
401.1	399.8	1.0033	Slope	1.001268
200.1	201.2	0.9947		
			Intercept	-0.293841



SO2 Calibration Plot Date: April 24, 2014



Wood Buffalo Environmental Association

TRS Calibration Report

Station Information

Calibration Date	April 29, 2014	Previous Calibration	March 19, 2014
Station Name	Millenium Mine	Station Number	Ams 12
Reason:	Routine		
Start Time (MST)	7:30	End Time (MST)	10:02
Barometric Pressure	727 mmHg	Station temp.	22 Deg C
Calibrator Make/Model	Sabio 4010	Serial number	11091107
Cal Gas Concentration	10.4 ppm H2S	Cal Gas Expiry Date	5/29/2014
Gas Cert Reference	LL84557	SO2 gas conc.	51.1 ppm SO2
DACS make/model	Campbell Scientific CR3000	DACS serial No.	2374
DACS voltage range	0-5 volts	DACS channel #	2

Analyzer Information

	Before	*After*		*Before*	*After*
Analyzer Range (ppb)	100	100	PMT voltage	-597	-597
Analyzer Range (input)	5000	5000	Lamp voltage	891	891
Calculated slope	1.000897	0.994330	Chamber temp.	44	44
Calculated intercept	0.323638	-0.262527	Pressure	708.0	708.0
Analyzer Background	17.3	16.6	Flow	0.493	0.493
Analyzer Coefficient	0.632	0.641	Intensity	46500	46500
			Converter temp.	817	817

Analyzer make/model	TEI 43C	Analyzer serial #	0509110887
Converter make/model	CDN-101	Converter serial #	375

Calibration Data

Set Point	Total flow rate (cc/min)	Source gas flow rate (cc/min)	Calculated concentration (ppb) (Cc)	Indicated concentration (ppb) (Ic)	Correction factor (Cc/Ic)
as found zero	5000	0.0	0.0	0.1	NA
as found span	5000	38.5	80.1	77.7	1.030
SO2 scrubber check	6000	23.5	200.1	1.9	NA
calibrator zero	5000	0.0	0.0	0.1	NA
high point	5000	38.5	80.1	80.7	0.992
second point	5000	19.2	39.9	40.5	0.986
third point	5000	9.6	20.0	20.6	0.971
calibrator zero	6000	0.0	0.0	0.3	NA
as left zero	6000	0.0	0.0	0.3	NA
as left span	5000	38.5	80.1	79.9	1.003
				Average Correction Factor	0.983

Corrected As found	77.7	Previous response	79.7	% change	2.6%

Notes:

Filter changed, NO maintenance, span adjusted, scrubber checked after third point

Calibration Performed By: Melissa Lemay

Wood Buffalo Environmental Association

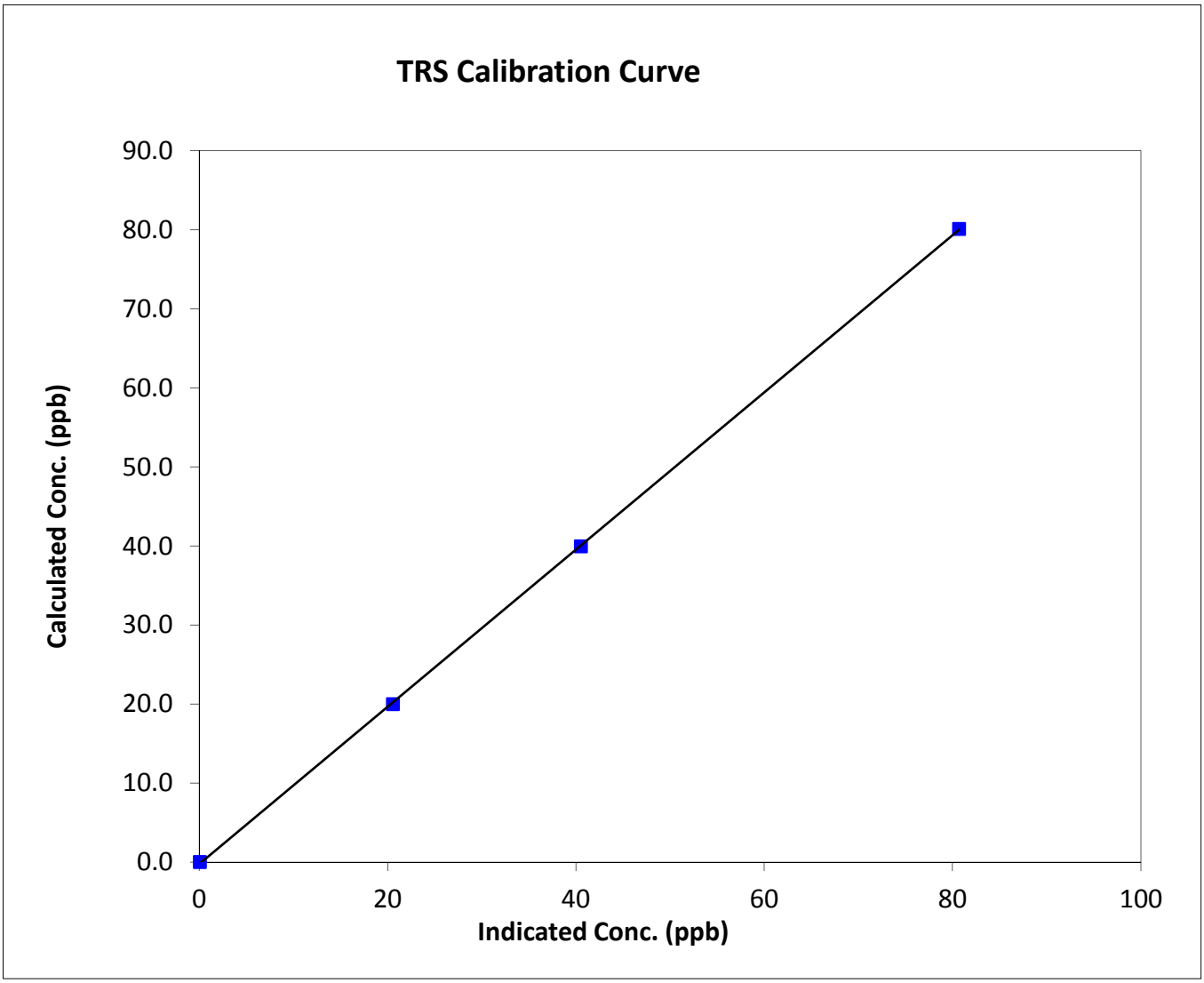
TRS Calibration Summary

Station Information

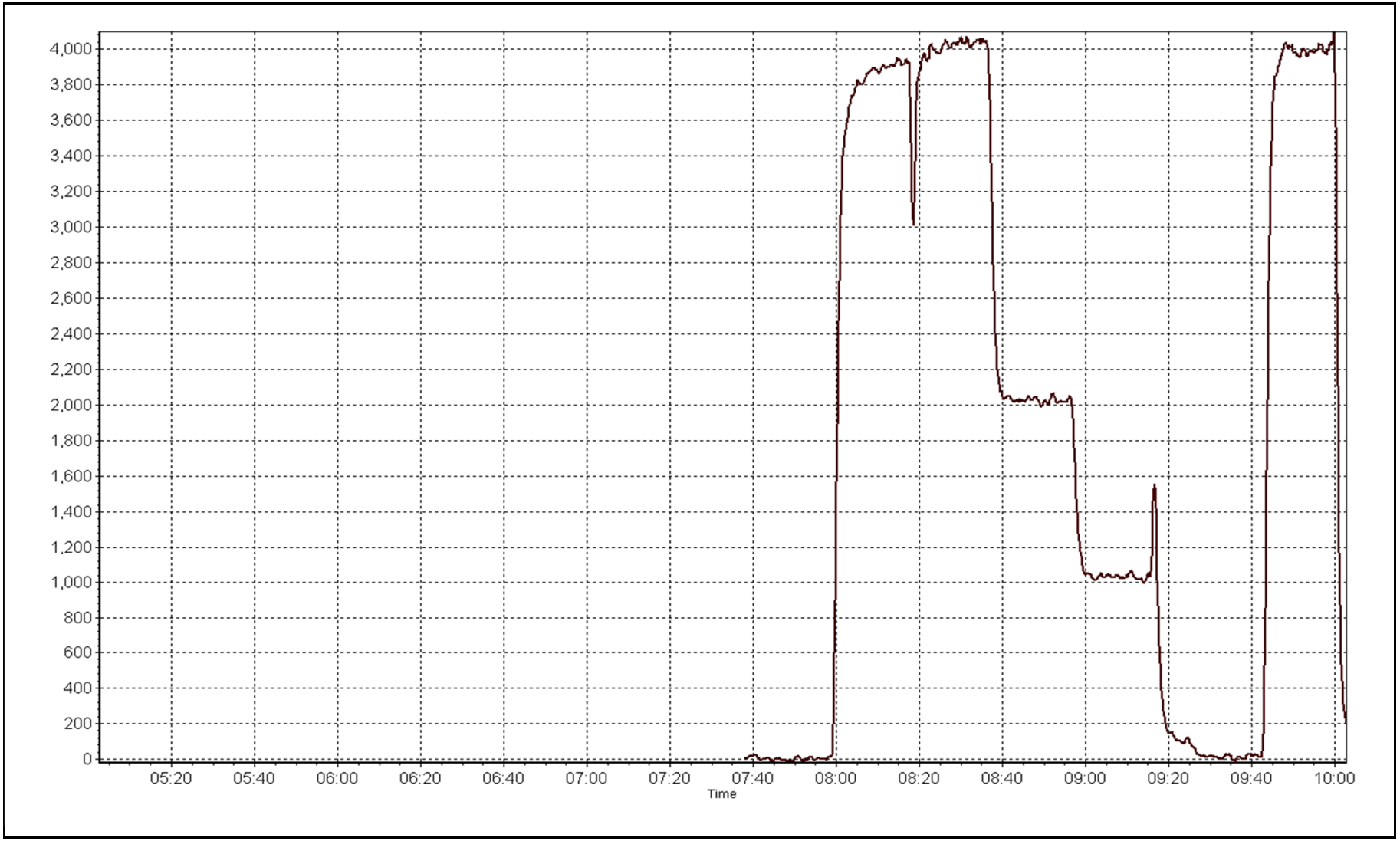
Calibration Date	April 29, 2014	Previous Calibration	March 19, 2014
Station Name	Millenium Mine	Station Number	Ams 12
Start Time (MST)	7:30	End Time (MST)	10:02
Analyzer make	TEI 43C	Analyzer serial #	0509110887

Calibration Data

Calculated concentration (ppb) (Cc)	Indicated concentration (ppb) (Ic)	Correction factor (Cc/Ic)	Statistical Evaluation	
0.0	0.1	N/A	Correlation Coefficient	0.999970
80.1	80.7	0.9923		
39.9	40.5	0.9856	Slope	0.994330
20.0	20.6	0.9712		
			Intercept	-0.262527



TRS Calibration Plot Date: April 29, 2014



Wood Buffalo Environmental Association

THC Calibration Report

Station Information

Calibration Date	Thursday, April 24, 2014	Previous Calibration	Wednesday, March 19, 2014
Station Name	Millennium	Station Number	AMS 12
Reason:	Routine		
Start Time (MST)	6:30	End Time (MST)	9:51
Barometric Pressure	na mmHg	Station temp.	22 Deg C
Calibrator Make/Model	Sabio 4010	Serial Number	11091107
Gas Cert Reference	LL107924	Cal Gas Expiry Date	5/29/2014
CH4 Cal Gas Conc.	510.0 ppm	CH4 Equiv Conc.	1079.3 ppm
C3H8 Cal Gas Conc.	207.0 ppm		
DACS make/model	Campbell Scientific CR3000	DACS serial No.	2374
DACS voltage range	0 - 5 volts	DACS channel #	3

Analyzer Information

	Before	*After*		*Before*	*After*
Analyzer Range (ppm)	25	25	Sample Pressure	Low	Low
Analyzer Range (mv)	5000	5000	Air or Bypass press	34.1	34.1
Calculated slope	1.011411	1.000793	Fuel Pressure	19.0	19.0
Calculated intercept	0.004766	-0.101099		3.05	3.00
				1.82	1.84

Analyzer make	Thermo 51i-LT	Analyzer serial #	1317958926

Calibration Data

Set Point	Total flow rate (cc/min)	Source gas flow rate (cc/min)	Calculated concentration THC (ppm) (Cc)	Indicated concentration (ppb) (Ic)	Correction factor (Cc/Ic)
as found zero	6000	0.0	0.00	-0.17	N/A
as found span	6000	94.1	16.93	16.64	1.018
calibrator zero	6000	0.0	0.00	0.04	N/A
high point	6000	94.1	16.93	16.99	0.996
second point	6000	47.0	8.45	8.56	0.988
third point	6000	23.5	4.23	4.40	0.962
calibrator zero	6000	0.0	0.00	0.06	N/A
as left zero	6000	0.0	0.00	0.06	N/A
as left span	6000	94.1	16.93	17.36	0.975
				Average Correction Factor	0.982

Corrected As found	16.81	Previous response	16.73	% change	-0.4%

Notes:

Filter changed, hydrogen changed out, zero and span adjusted; Fuel and air pressures back to factory settings, sample indicates low but no number given

Calibration Performed By: Melissa Lemay

Wood Buffalo Environmental Association

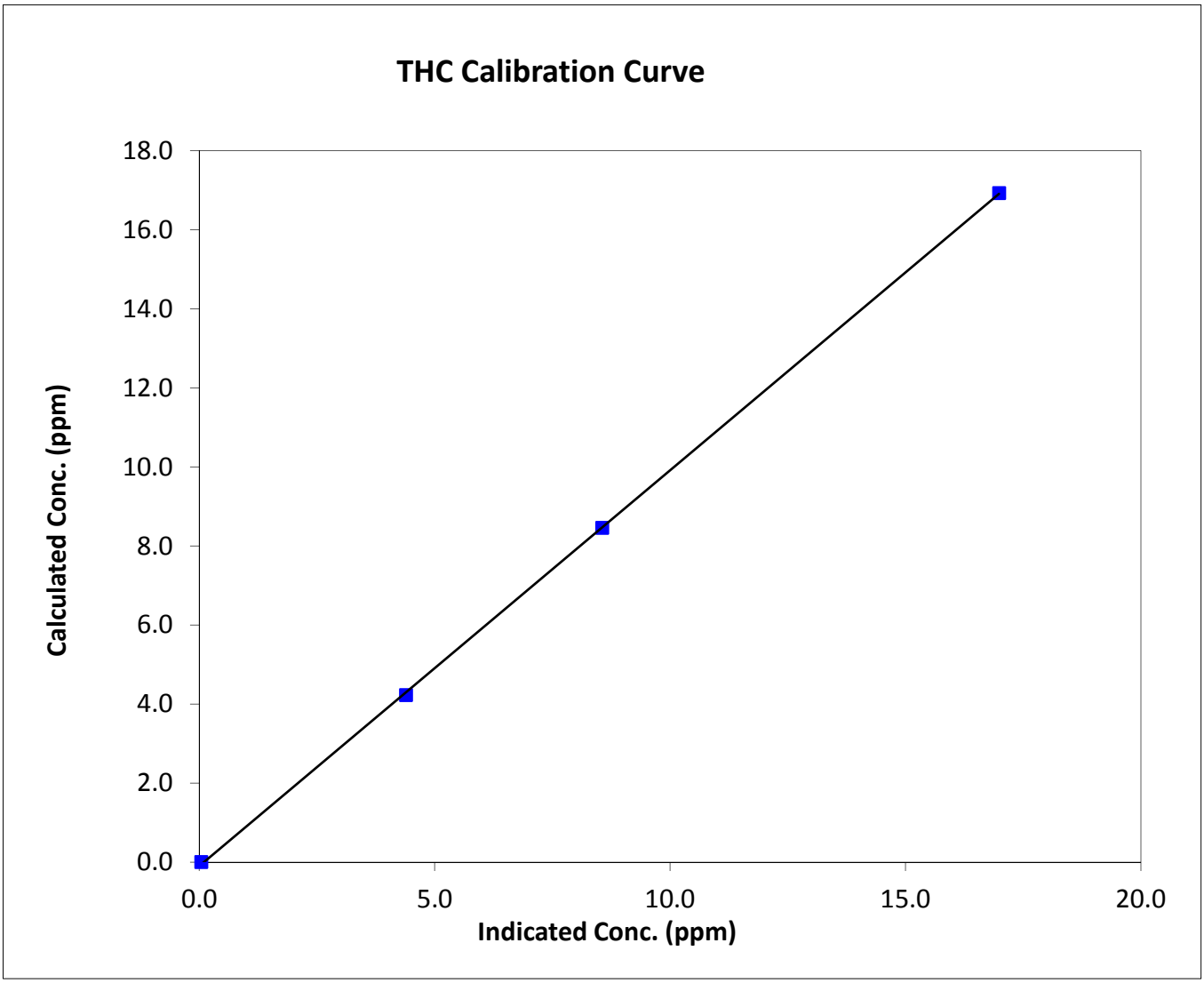
THC Calibration Summary

Station Information

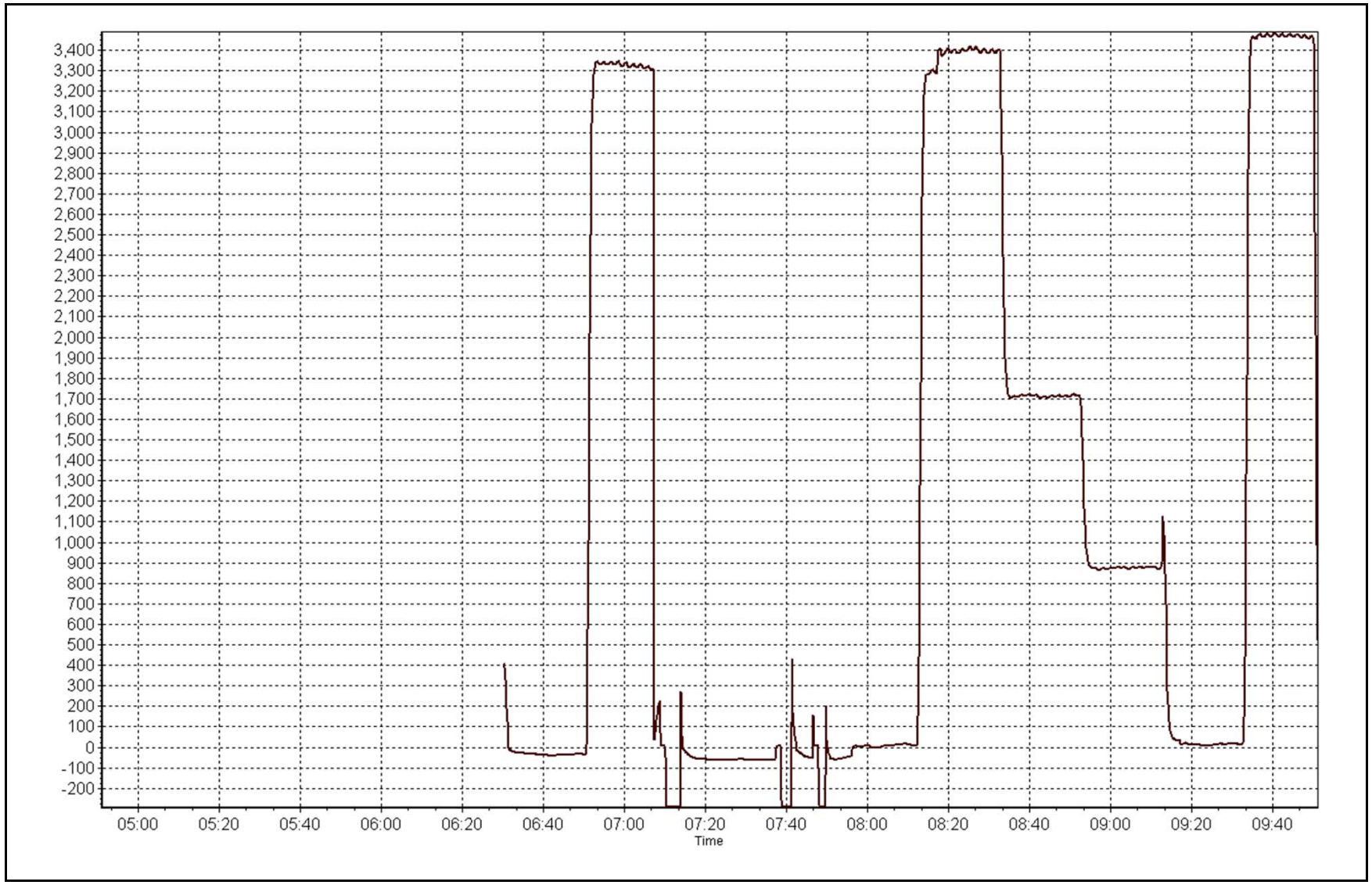
Calibration Date	April 24, 2014	Previous Calibration	March 19, 2014
Station Name	Millennium	Station Number	AMS 12
Start Time (MST)	6:30	End Time (MST)	9:51
Analyzer make	Thermo 51i-LT	Analyzer serial #	1317958926

Calibration Data

Calculated concentration (ppm) (Cc)	Indicated concentration (ppm) (Ic)	Correction factor (Cc/Ic)	Statistical Evaluation	
0.00	0.04	N/A	Correlation Coefficient	0.999942
16.93	16.99	0.9962		
8.45	8.56	0.9876	Slope	1.000793
4.23	4.40	0.9618		
			Intercept	-0.101099



THC Calibration Plot Date: April 24, 2014



Wood Buffalo Environmental Association

THC Calibration Report

Station Information

Calibration Date	Tuesday, April 29, 2014	Previous Calibration	Thursday, April 24, 2014
Station Name	Millennium	Station Number	AMS 12
Reason:	Removal		
Start Time (MST)	6:15	End Time (MST)	7:30
Barometric Pressure	na mmHg	Station temp.	22 Deg C
Calibrator Make/Model	Sabio 4010	Serial Number	11091107
Gas Cert Reference	LL107924	Cal Gas Expiry Date	5/29/2014
CH4 Cal Gas Conc.	510.0 ppm	CH4 Equiv Conc.	1079.3 ppm
C3H8 Cal Gas Conc.	207.0 ppm		
DACS make/model	Campbell Scientific CR3000	DACS serial No.	2374
DACS voltage range	0 - 5 volts	DACS channel #	3

Analyzer Information

	Before	*After*		*Before*	*After*
Analyzer Range (ppm)	25	25	Sample Pressure	Low	
Analyzer Range (mv)	5000	5000	Air or Bypass press	34.3	
Calculated slope	1.000793	0.984597	Fuel Pressure	19.3	
Calculated intercept	-0.101099	-0.047140		3.00	
				1.84	

Analyzer make	Thermo 51i-LT	Analyzer serial #	1317958926

Calibration Data

Set Point	Total flow rate (cc/min)	Source gas flow rate (cc/min)	Calculated concentration THC (ppm) (Cc)	Indicated concentration (ppb) (Ic)	Correction factor (Cc/Ic)
as found zero	6000	0.0	0.00	0.03	N/A
as found span	6000	94.1	16.93	17.24	0.982
calibrator zero	6000	0.0	0.00	0.03	N/A
high point	6000	94.1	16.93	17.24	0.982
second point	6000	47.0	8.45	8.63	0.980
third point	6000	23.5	4.23	4.37	0.968
calibrator zero					
as left zero					
as left span					
				Average Correction Factor	0.977

Corrected As found	17.20	Previous response	17.01	% change	-1.1%

Notes:

Calibration Performed By: Melissa Lemay

Wood Buffalo Environmental Association

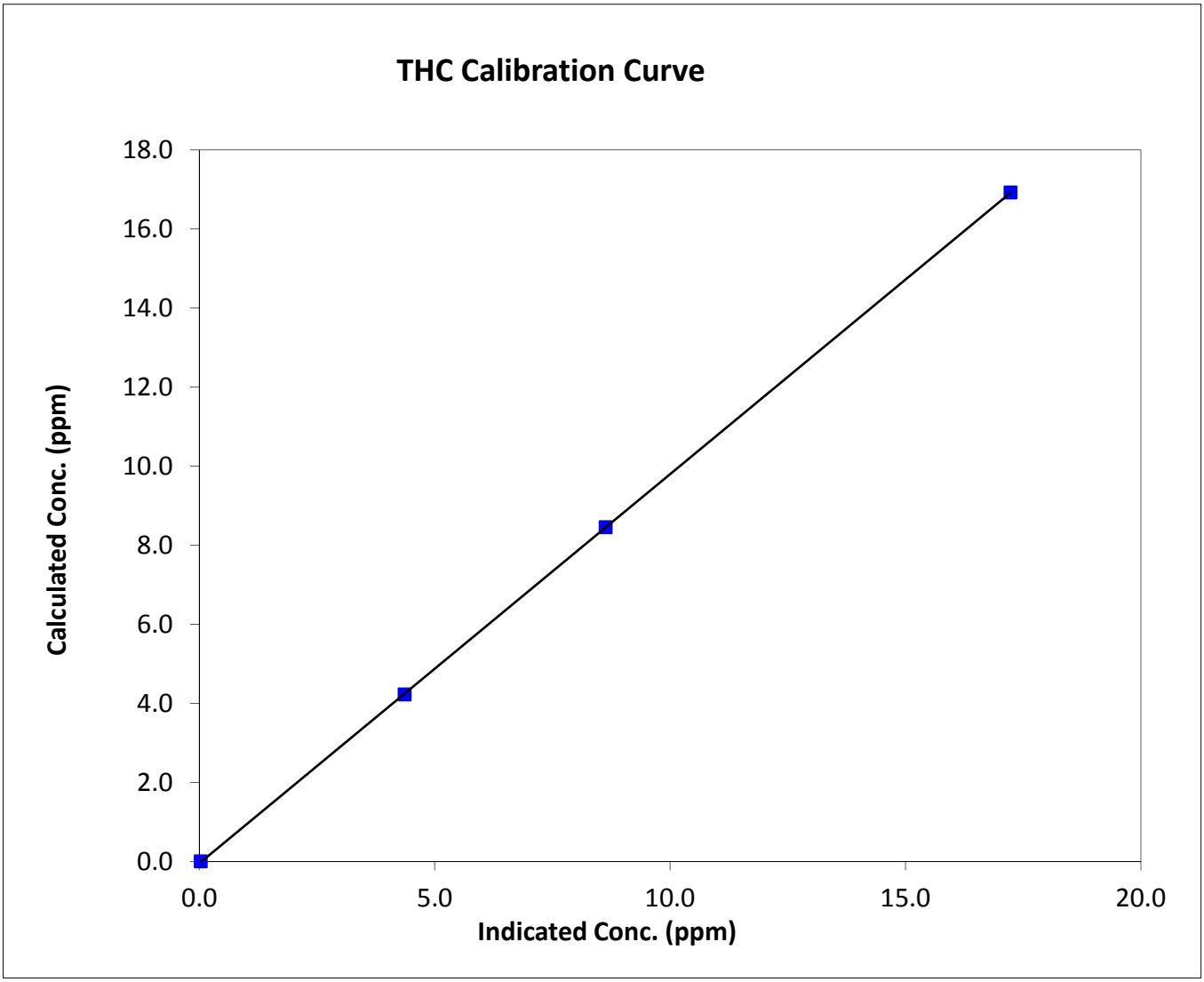
THC Calibration Summary

Station Information

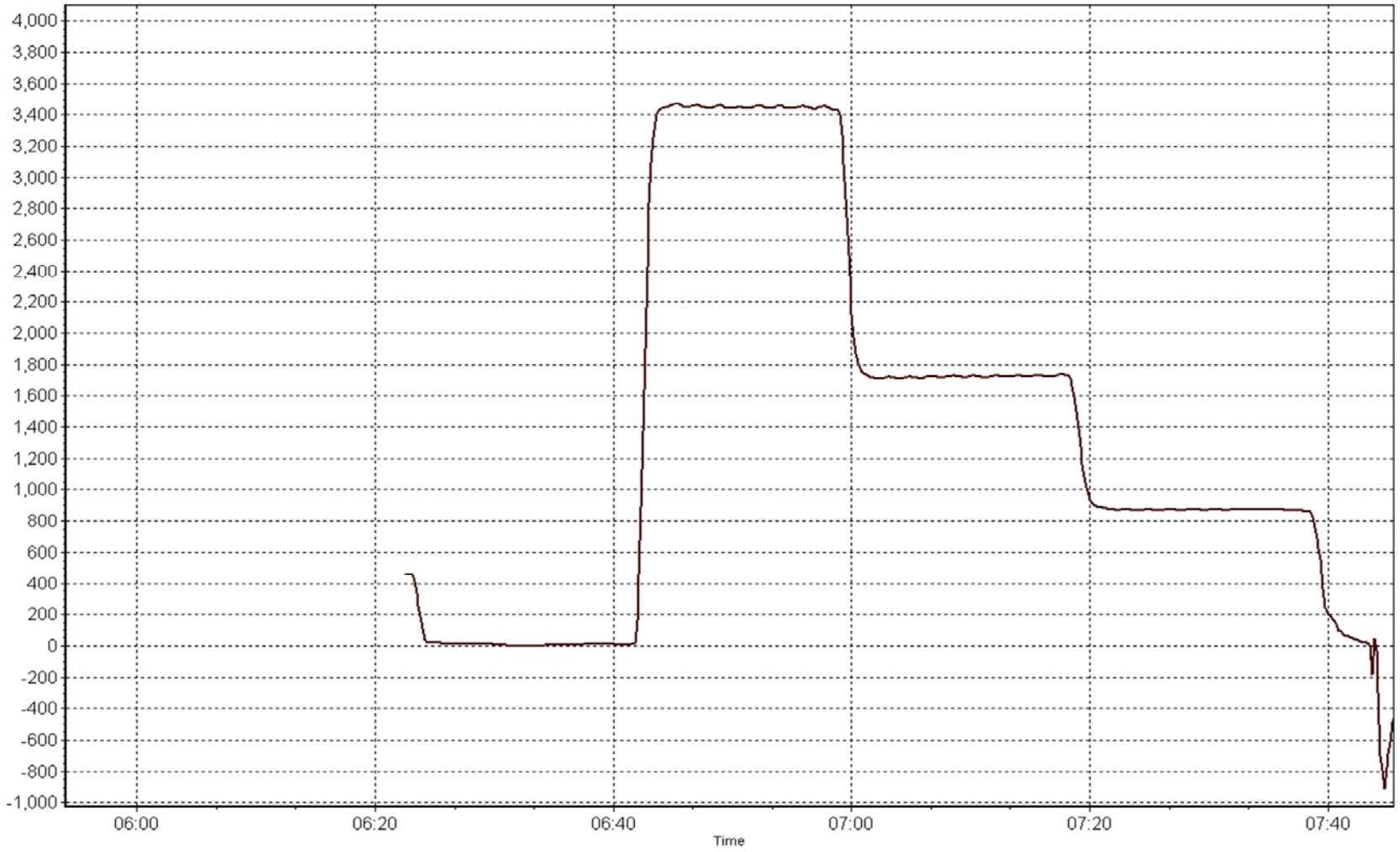
Calibration Date	April 29, 2014	Previous Calibration	April 24, 2014
Station Name	Millennium	Station Number	AMS 12
Start Time (MST)	6:15	End Time (MST)	7:30
Analyzer make	Thermo 51i-LT	Analyzer serial #	1317958926

Calibration Data

Calculated concentration (ppm) (Cc)	Indicated concentration (ppm) (Ic)	Correction factor (Cc/Ic)	Statistical Evaluation	
0.00	0.03	N/A	Correlation Coefficient	0.999995
16.93	17.24	0.9821		
8.45	8.63	0.9796	Slope	0.984597
4.23	4.37	0.9684		
			Intercept	-0.047140



THC Calibration Plot Date: April 29, 2014



Wood Buffalo Environmental Association

THC Calibration Report

Station Information

Calibration Date	Tuesday, April 29, 2014	Previous Calibration	
Station Name	Millennium	Station Number	AMS 12
Reason:	Install		
Start Time (MST)	10:00	End Time (MST)	11:50
Barometric Pressure	na mmHg	Station temp.	22 Deg C
Calibrator Make/Model	Sabio 4010	Serial Number	11091107
Gas Cert Reference	LL107924	Cal Gas Expiry Date	5/29/2014
CH4 Cal Gas Conc.	510.0 ppm	CH4 Equiv Conc.	1079.3 ppm
C3H8 Cal Gas Conc.	207.0 ppm		
DACS make/model	Campbell Scientific CR3000	DACS serial No.	2374
DACS voltage range	0 - 5 volts	DACS channel #	3

Analyzer Information

	Before	*After*		*Before*	*After*
Analyzer Range (ppm)	25	25	Sample Pressure	8.5	8.5
Analyzer Range (mv)	5000	5000	Air or Bypass press	34.4	34.4
Calculated slope	1.000793	1.000758	Fuel Pressure	24.0	24.0
Calculated intercept	-0.101099	-0.004628		5.92	5.92
				4.09	4.09

Analyzer make	Thermo 51i-LT	Analyzer serial #	1410661326

Calibration Data

Set Point	Total flow rate (cc/min)	Source gas flow rate (cc/min)	Calculated concentration THC (ppm) (Cc)	Indicated concentration (ppb) (Ic)	Correction factor (Cc/Ic)
as found zero					
as found span					
calibrator zero	6000	0.0	0.00	-0.02	N/A
high point	6000	94.1	16.93	16.91	1.001
second point	6000	47.0	8.45	8.47	0.999
third point	6000	23.5	4.23	4.26	0.993
calibrator zero	6000	0.0	0.00	0.03	N/A
as left zero	6000	0.0	0.00	0.03	N/A
as left span	6000	94.1	16.93	16.98	0.997
				Average Correction Factor	0.998

Corrected As found	NA	Previous response	NA	% change	NA

Notes:

Calibration Performed By: Melissa Lemay

Wood Buffalo Environmental Association

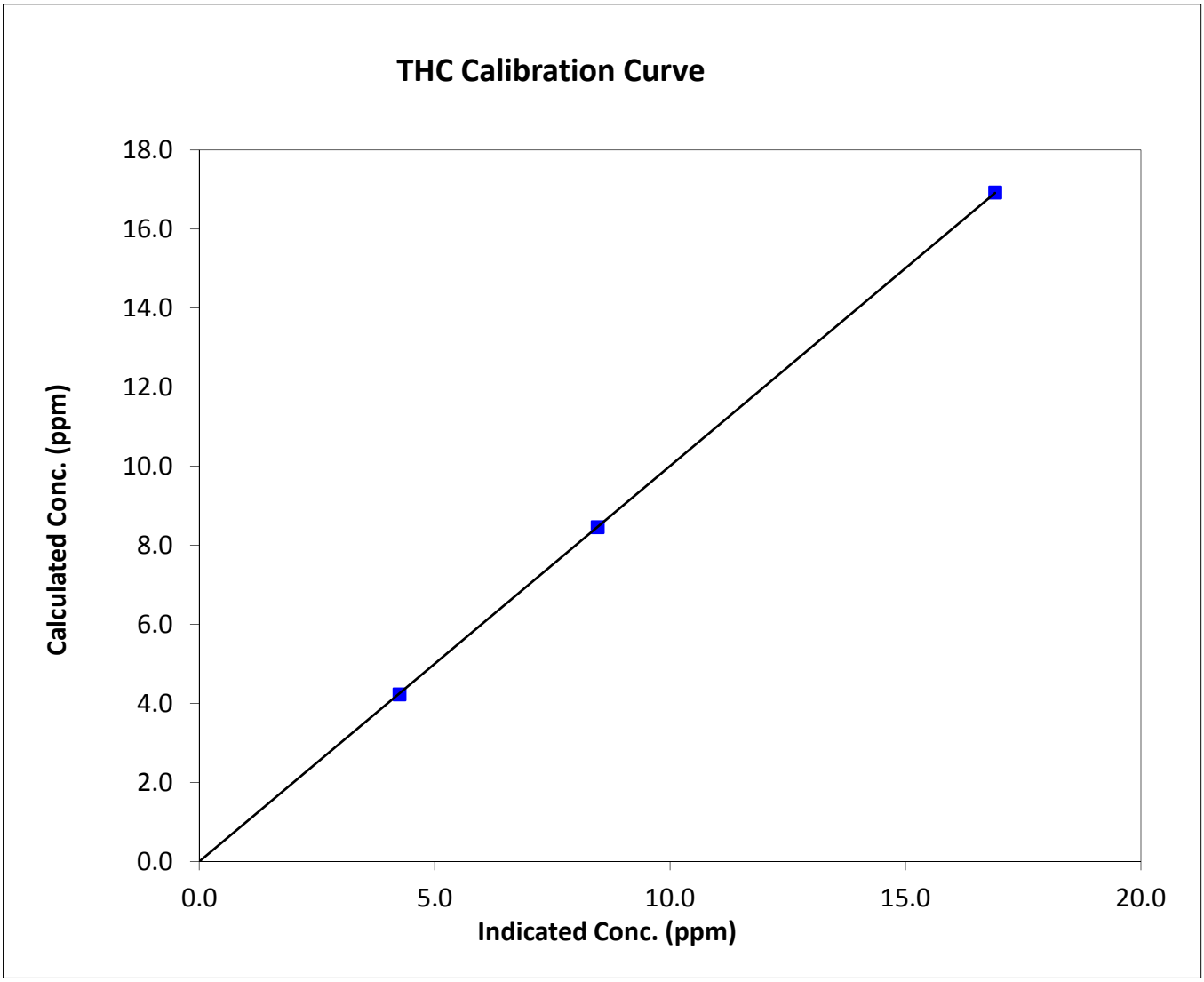
THC Calibration Summary

Station Information

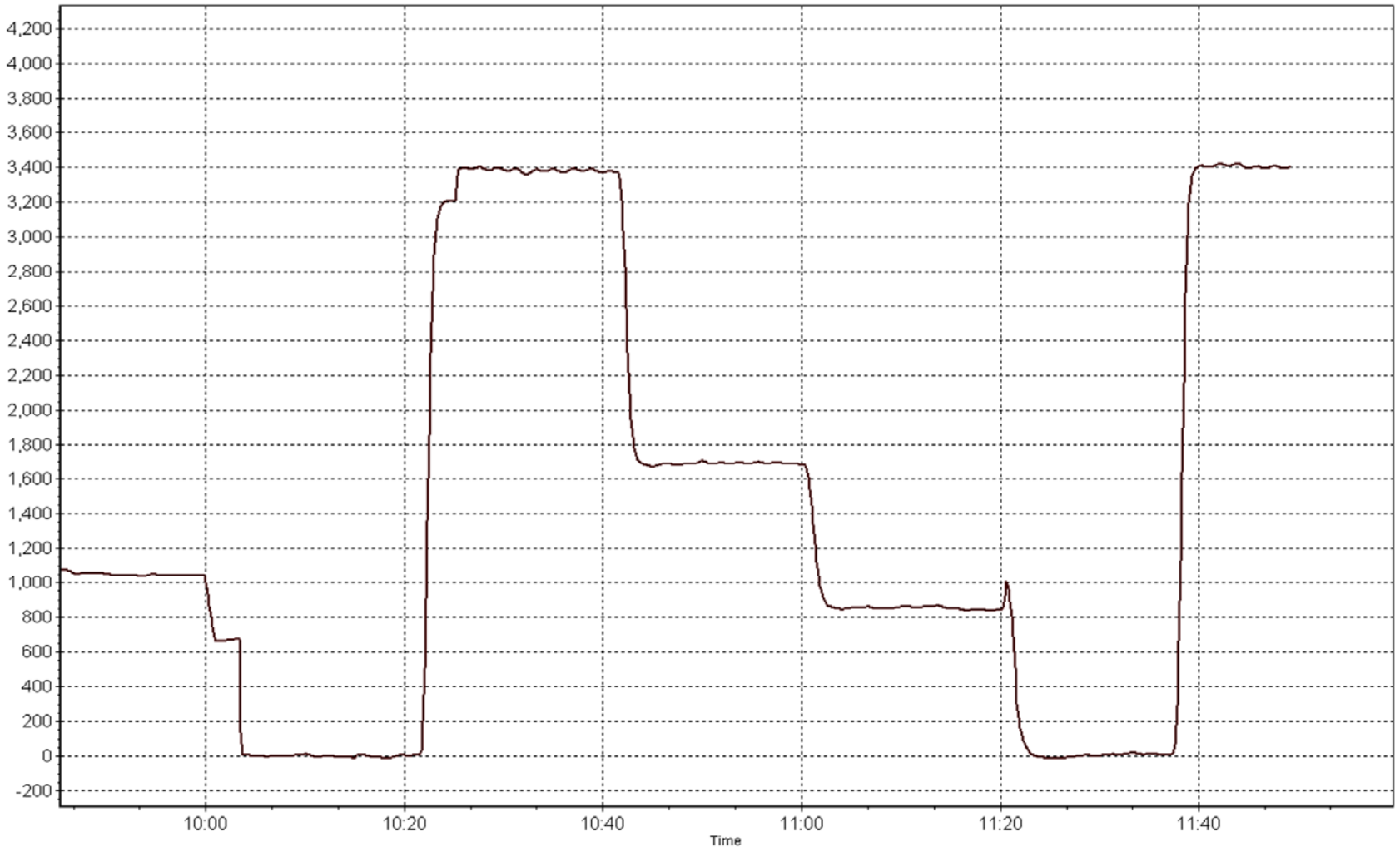
Calibration Date	April 29, 2014	Previous Calibration	
Station Name	Millennium	Station Number	AMS 12
Start Time (MST)	10:00	End Time (MST)	11:50
Analyzer make	Thermo 51i-LT	Analyzer serial #	1410661326

Calibration Data

Calculated concentration (ppm) (Cc)	Indicated concentration (ppm) (Ic)	Correction factor (Cc/Ic)	Statistical Evaluation	
0.00	-0.02	N/A	Correlation Coefficient	0.999989
16.93	16.91	1.0013		
8.45	8.47	0.9987	Slope	1.000758
4.23	4.26	0.9934		
			Intercept	-0.004628



THC Calibration Plot Date: April 29, 2014



Wood Buffalo Environmental Association

NO_X-NO-NO_2 Calibration Report

Station Information

Calibration Date	April 23, 2014		Previous Calibration	March 18, 2014	
Station Name	Millenium Mine		Station Number	AMS 12	
Reason:	Routine				
Start Time (MST)	7:05		End Time (MST)	11:45	
Barometric Pressure	724	mmHg	Station Temperature	22.0	Deg C
Calibrator	Sabio 4010		Serial Number	11091107	
NO Cal Gas Conc	51	ppm	Cal Gas Expiry Date	May 29, 2014	
NOx Cal Gas Conc	51	ppm	Cal Gas Serial #	LL107924	

DACS Information

DACS make & model: Campbell Scientific CR3000 — DACS serial No.:

Parameter		NOx	NO	NO2
MV conversion	Analyzer Range (ppb)	1000	1000	1000
	Analyzer Range (mv)	5000	5000	5000
Before	Data Slope	0.993243	0.995550	1.019618
	Data Offset	0.681029	0.570111	-1.228751
After	Data Slope	1.000128	0.999333	1.011162
	Data Offset	0.873091	-0.137917	0.320915
Channel #		7	6	5
Voltage Range		0 - 5V	0 - 5V	0 - 5V

Analyzer Information

Analyzer make/model: API T200 — Analyzer serial #: 723

Test Point	before		after	
Concentration range	0-1000	ppb	0-1000	ppb
NO coefficient	1.077	ppb	1.088	ppb
NOX coefficient	0.920	ppb	1.080	ppb
NO2 coefficient		ppb		ppb
NO bkgrnd	-0.7		0.0	
NOX bkgrnd	0.2		2.7	
Nt coefficient				
Chamber Temp	50.0	Deg C	50.0	Deg C
Moly Temp	315.5	Deg C	314.2	Deg C
PMT Temp	6.8	Deg C	6.8	Deg C
O3 flow	87.0	ccm	87.0	ccm
R Cell Press	2.7	mmHg	2.8	mmHg
Sample Flow	See Notes	ccm	See Notes	ccm

Notes:

Flow for Nox between 489-265cc/min , Filter changed, Zero and Span adjusted; Moly converter was changed; flow after change was between 499-492 cc/min.

Wood Buffalo Environmental Association

NO_X-NO-NO_2 Calibration Report

Station Information

Calibration Date: April 23, 2014 Station Number: AMS 12

Calibration Data

Set Point	Total flow rate (ccm)	Source gas flow rate (ccm)	Calculated NOx conc (ppb)	Calculated NO conc (ppb)	Calculated NO2 conc (ppb)	Indicated NOx conc (ppb)	Indicated NO conc (ppb)	Indicated NO2 conc (ppb)	NOx Correction factor	NO Correction factor
as found zero	6000	0.0	0.0	0.0	0.0	0.2	0.2	0.2	N/A	N/A
as found span	6000	94.1	799.9	799.9	0.0	846.6	804.0	42.9	0.9448	0.9948
calibrator zero	6000	0.0	0.0	0.0	0.0	-0.7	-0.5	-0.5	N/A	N/A
high point	6000	94.1	799.9	799.9	0.0	799.0	799.8	-0.9	1.0011	1.0001
second point	6000	47.1	400.4	400.4	0.0	399.4	401.6	-1.6	1.0024	0.9969
third point	6000	23.5	199.8	199.8	0.0	198.4	201.2	-2.0	1.0068	0.9928
calibrator zero	6000	0.0	0.0	0.0	0.0	-0.7	-0.6	0.0	N/A	N/A
as left zero	6000	0.0	0.0	0.0	0.0	-0.7	-0.6	0.0	N/A	N/A
as left span	6000	94.1	799.9	512.0	287.9	785.0	504.6	280.0	1.0189	1.0147
								Average Correction Factor	1.0034	0.9966

Corrcted As found NO_X= 846.4 NO= 803.8 Percent Change NO_X= -4.9% NO= -0.1%

Previous Response NO_X= 804.6 NO= 802.9

GPT Calibration Data

Dilution Flow 6000 ccm Source Gas Flow 94.10 ccm

O3 Setpoint (ppb)	Indicated NO high point (ppb)	Indicated NO drop conc (ppb)	Calculated NO2 conc (ppb)	Indicated NOx conc (ppb)	Indicated NO conc (ppb)	Indicated NO2 conc (ppb)	NOx Correction factor	NO Correction factor	NO2 Correction factor	Converter Efficiency
Cal zero			0.0			-0.5			N/A	
1st NO2 (300)	N/A	512.0	289.0	798.0	512.0	285.4	0.9868	1.0000	1.0126	98.8%
2nd NO2 (200)	N/A	607.8	193.2	798.4	607.8	190.8	0.9863	1.0000	1.0126	98.8%
3rd NO2 (100)	N/A	705.0	96.0	799.8	705.0	94.8	0.9846	1.0000	1.0127	98.8%
4th NO2 (0)	801.0	N/A	-1.4	799.6	801.0	-1.4	0.9849	1.0000	N/A	N/A
					Average Correction Factor		0.9857	1.0000	1.0126	98.8%

Calibration Performed By: Melissa Lemay

Wood Buffalo Environmental Association

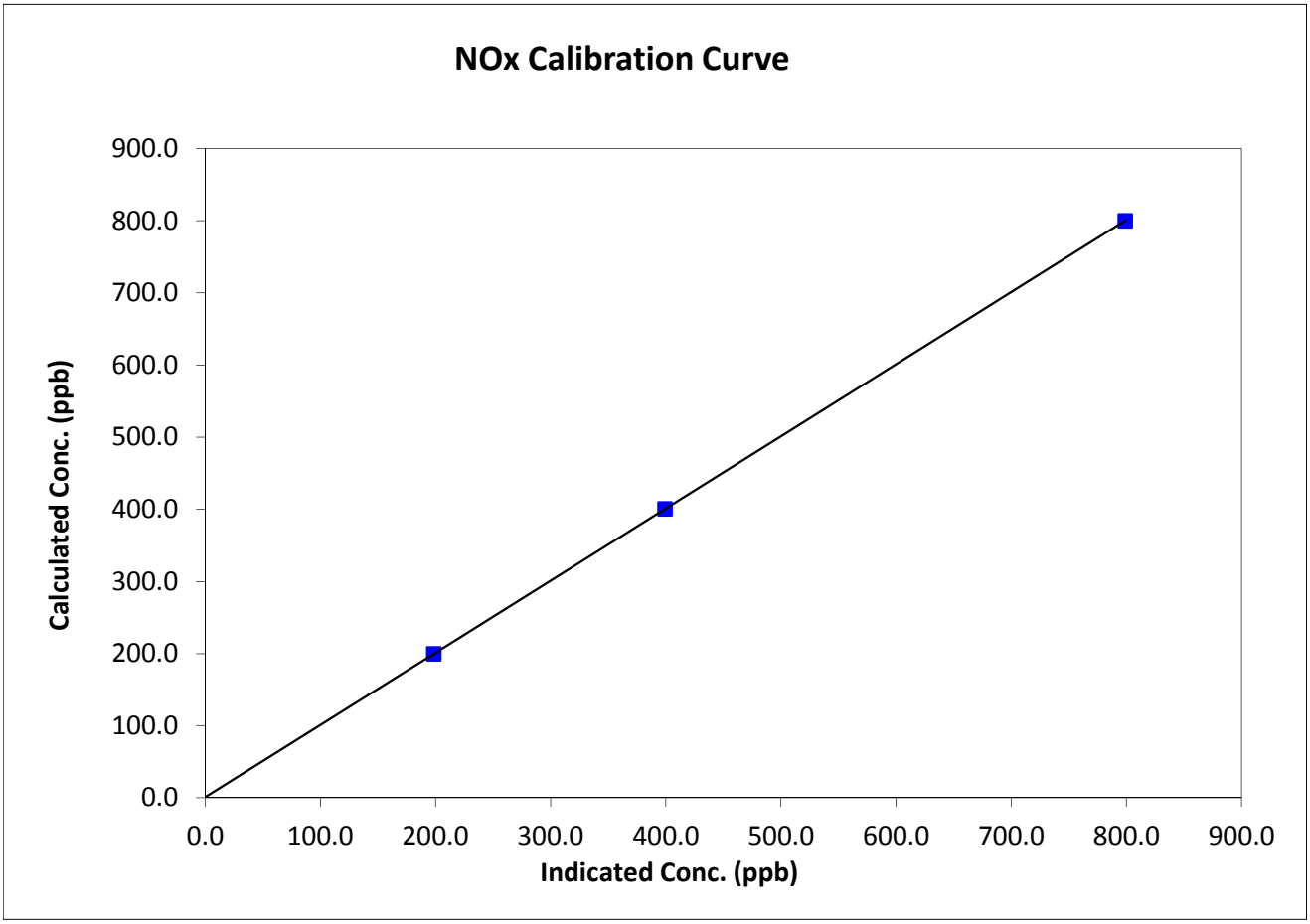
NO_X Calibration Summary

Station Information

Calibration Date	April 23, 2014	Previous Calibration	March 18, 2014
Station Name	Millenium Mine	Station Number	AMS 12
Start Time (MST)	7:05	End Time (MST)	11:45
Analyzer make	API T200	Analyzer serial #	723

Calibration Information

Calculated conc (ppb) (Cc)	Indicated concentration (ppb) (Ic)	Correction factor (Cc/Ic)	Statistical Evaluation	
0.0	-0.7	N/A	Correlation Coefficient	0.999999
799.9	799.0	1.0011		
400.4	399.4	1.0024	Slope	1.000128
199.8	198.4	1.0068		
0.0	-0.7	0.0000	Intercept	0.873091



Wood Buffalo Environmental Association

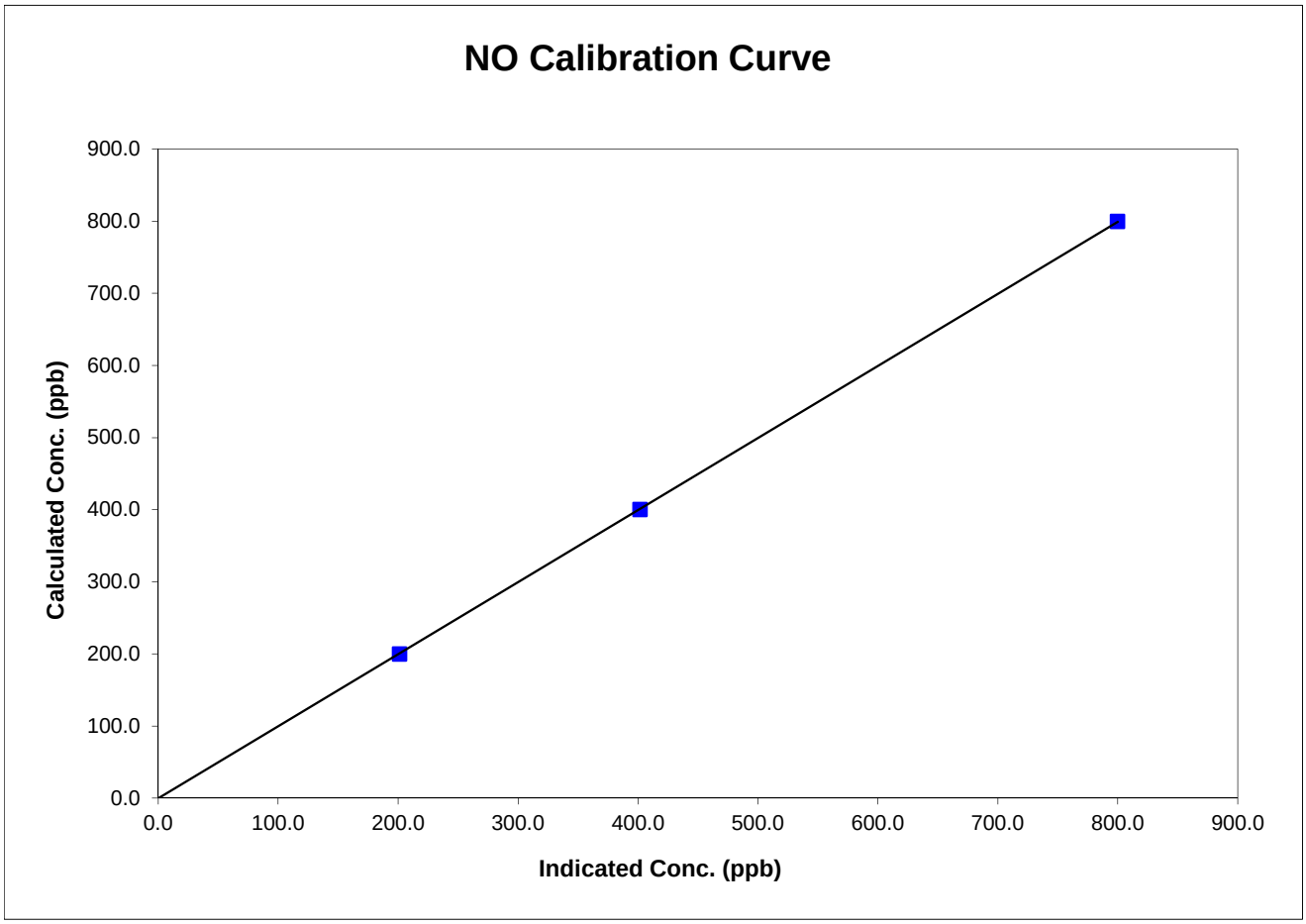
NO Calibration Summary

Station Information

Calibration Date	April 23, 2014	Previous Calibration	March 18, 2014
Station Name	Millenium Mine	Station Number	AMS 12
Start Time (MST)	7:05	End Time (MST)	11:45
Analyzer make	API T200	Analyzer serial #	723

Calibration Information

Calculated conc (ppb) (Cc)	Indicated concentration (ppb) (Ic)	Correction factor (Cc/Ic)	Statistical Evaluation	
0.0	-0.5	N/A	Correlation Coefficient	0.999992
799.9	799.8	1.0001		
400.4	401.6	0.9969	Slope	0.999333
199.8	201.2	0.9928		
0.0	-0.6	0.0000	Intercept	-0.137917



Wood Buffalo Environmental Association

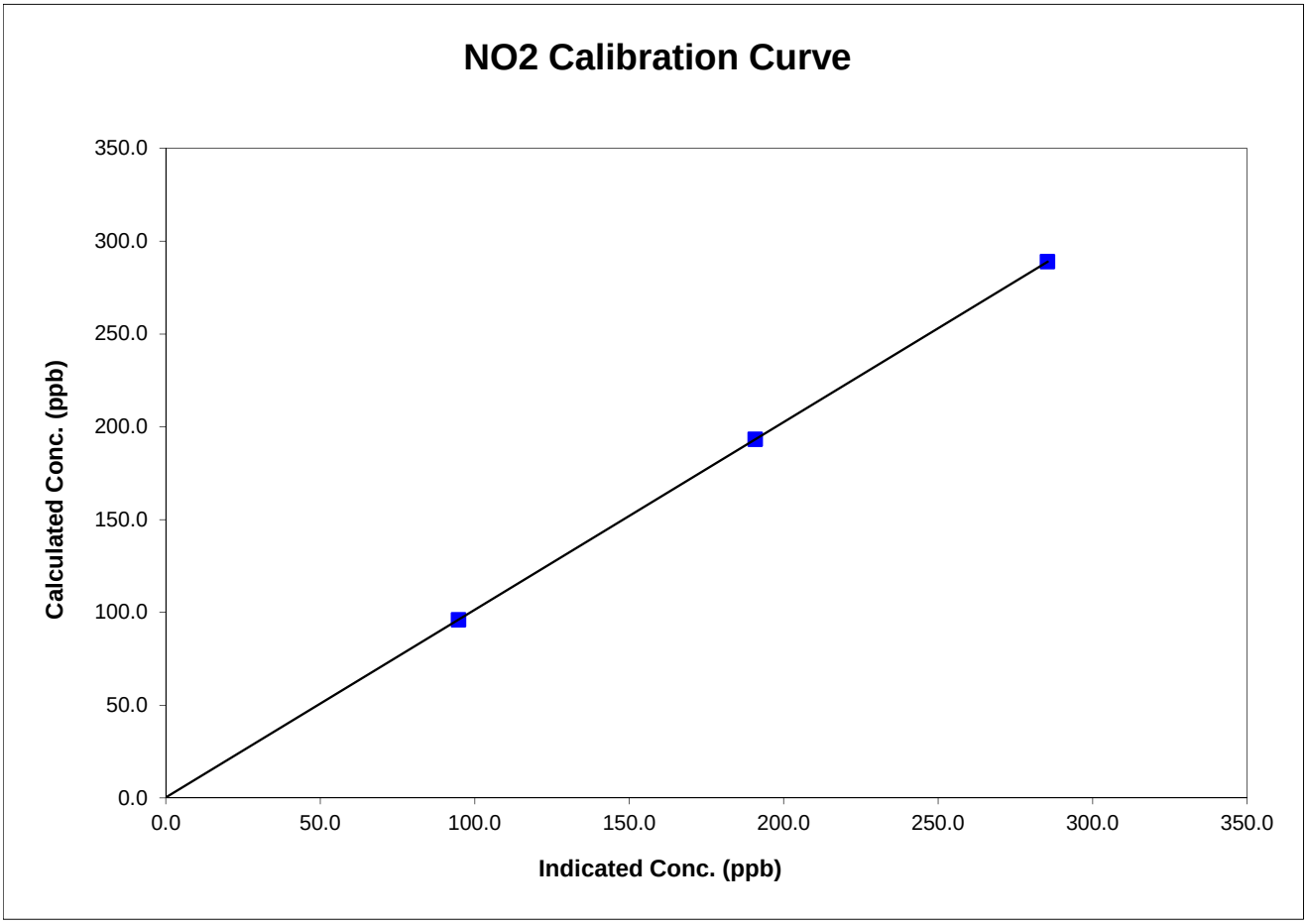
NO_2 Calibration Summary

Station Information

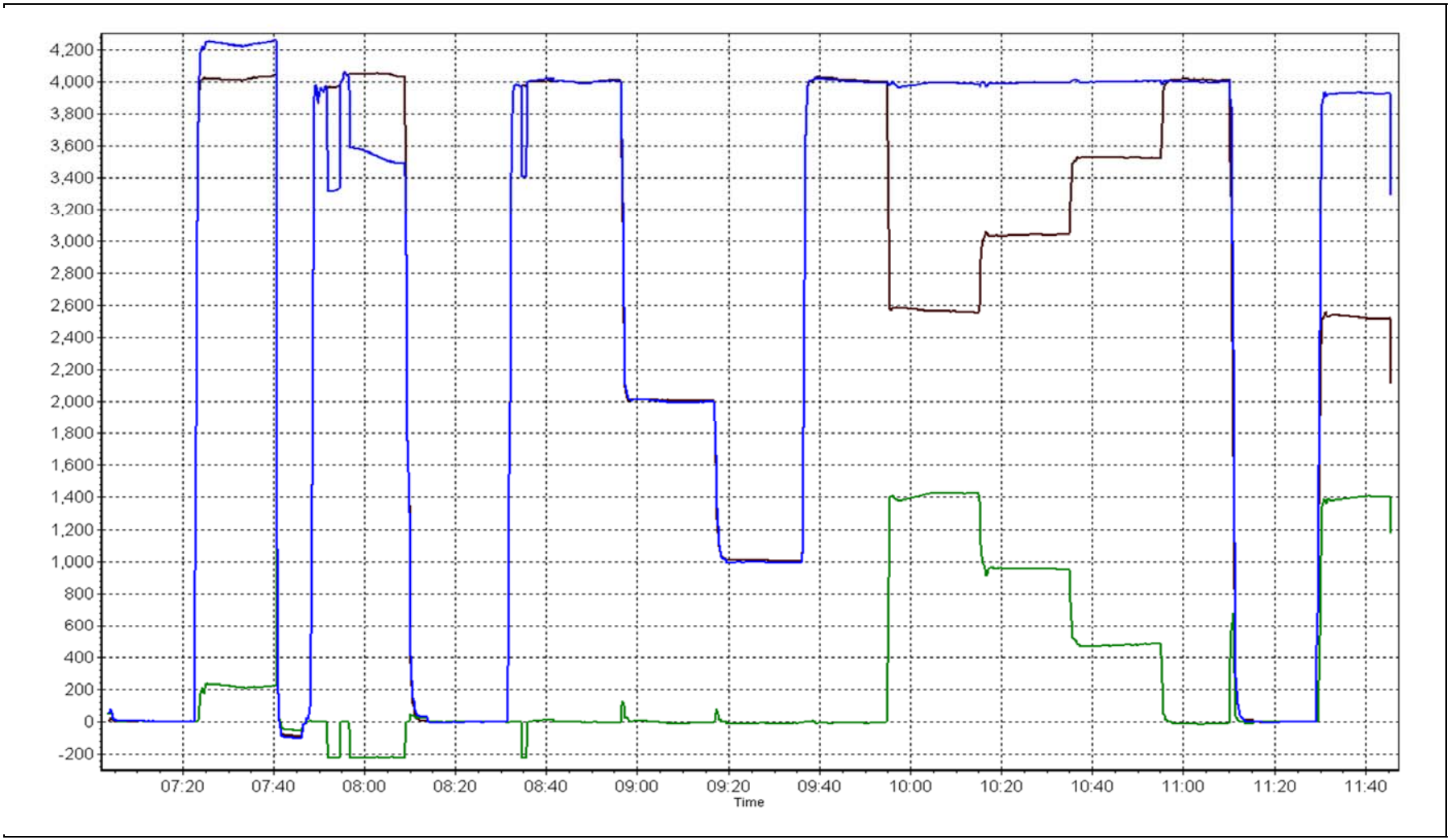
Calibration Date	April 23, 2014	Previous Calibration	March 18, 2014
Station Number	Millenium Mine	Station Number	AMS 12
Start Time (MST)	7:05	End Time (MST)	11:45
Analyzer make	API T200	Analyzer serial #	723

Calibration Information

Calculated conc (ppb) (Cc)	Indicated concentration (ppb) (Ic)	Correction factor (Cc/Ic)	Statistical Evaluation	
0.0	-0.5	N/A	Correlation Coefficient	0.999999
289.0	285.4	1.0126		
193.2	190.8	1.0126	Slope	1.011162
96.0	94.8	1.0127		
			Intercept	0.320915



NOx, NO & NO_2 Calibration Plot Date: April 23, 2014



WOOD BUFFALO ENVIRONMENTAL ASSOCIATION

CONTINUOUS AMBIENT AIR QUALITY
MONITORING PROGRAM
MONTHLY REPORT

AMS 13
FORT MCKAY SOUTH
APRIL 2014

Operations and Data Collection by:
Wood Buffalo Environmental Association
Fort McMurray, Alberta

QA/QC, Data Validation and Reporting by:
Aurora Atmospherics Inc.
Calgary, Alberta

May 30, 2014

WOOD BUFFALO ENVIRONMENTAL ASSOCIATION - FORT McKAY SOUTH (AMS 13)
APRIL 2014

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	36	36	100.00	77	0	14	0
TRS(ppb) Average	687	33	33	100.00	3	0	1	0
THC(ppm) Average	685	35	35	100.00	4.1	-	2.4	-
O3(ppb) Average	686	34	34	100.00	53	0	40	-
NO2(ppb) Average	685	35	35	100.00	41	0	14	-
NO(ppb) Average	685	35	35	100.00	44	-	6	-
NOX(ppb) Average	685	35	35	100.00	67	-	20	-
PM2.5(ug/m3) Average	719	0	1	99.86	26.7	0	9.1	0
Temperature 2 m (C) Average	720	0	0	100.00	22.3	-	12.0	-
Relative Humidity (%) Average	720	0	0	100.00	100	-	-	-
Wind Speed 10 m (km/h) Average	719	0	1	99.86	20	-	-	-
Wind Direction 10 m (deg) Average	719	0	1	99.86	-	-	-	-

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

WOOD BUFFALO ENVIRONMENTAL ASSOCIATION - FORT McKAY SOUTH (AMS 13)
APRIL 2014

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	2.1	6	-	0	0	0	0	1	4	77
TRS(ppb) Average	687	0.2	0	-	0	0	0	0	0	0	3
THC(ppm) Average	685	2.11	0.2	-	1.8	1.9	2	2.1	2.2	2.3	4.1
O3(ppb) Average	686	28.8	13	-	0	9	19	32	39	44	53
NO2(ppb) Average	685	5.8	6	-	0	0	2	4	8	14	41
NO(ppb) Average	685	1.4	4	-	0	0	0	0	1	4	44
NOX(ppb) Average	685	7.3	9	-	0	0	2	5	10	17	67
PM2.5(ug/m3) Average	719	5.03	3	-	0.4	2	3.1	4.3	6.3	8.9	26.7
Temperature 2 m (C) Average	720	0.7	8.1	-	-23.7	-9.6	-4.6	0.7	5.8	11.1	22.3
Relative Humidity (%) Average	720	60.7	20	-	17	33	45	60	77	89	100
Wind Speed 10 m (km/h) Average	719	6.6	4	-	0	2	3	6	9	11	20
Wind Direction 10 m (deg) Average	719	-	-	-	-	-	-	-	-	-	-

WOOD BUFFALO ENVIRONMENTAL ASSOCIATION -FORT McKAY SOUTH (AMS 13)
APRIL 2014

OPERATIONAL NOTES

Parameter	Period Start	Period End	Duration (Hours)	Notes
PM2.5	25 Apr 2014 12:00	25 Apr 2014 12:00	1	Flow and zero reference checks, sample head cleaning
Wind Speed, Wind Direction	19 Apr 2014 05:00	19 Apr 2014 05:00	1	Flatline in sensor output signal

Wood Buffalo Environmental Association

Summary of Hour Averages

Sulphur Dioxide (SO_2) - ppb

Fort McKay South - April 2014

Number of Exceedences (AAAQO): 1-hr: 0 24-hr: 0
Maximum Value: 77 ppb on Apr 28 18:00 Maximum Daily Average: 14.0 ppb on Apr 28

Minimum Value: 0 ppb on Apr 11 23:00 Minimum Daily Average: 0.3 ppb on Apr 9
Maximum Diurnal Average: 4.4 ppb at hour 10 Minimum Diurnal Average: 0.6 ppb at hour 24
Monthly Average: 2.1 ppb Percentiles: $P_1 = 0$ $P_{10} = 0$ $Q_1 = 0$ Median = 0 $Q_3 = 1$ $P_{90} = 4$ $P_{99} = 35$

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-Apr	0	Z	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0.4	0
2-Apr	0	Z	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0.3	0
3-Apr	0	Z	0	0	0	0	0	0	1	0	0	0	0	0	0	0	0	0	0	0	0	0	2	2	0.5	2
4-Apr	15	Z	10	32	18	18	16	26	18	10	2	2	1	2	1	1	1	0	0	0	0	0	0	0	7.6	32
5-Apr	0	Z	0	0	0	0	0	0	0	1	1	1	1	1	1	0	0	0	0	0	0	0	0	0	0.5	1
6-Apr	0	Z	0	0	0	0	0	1	1	3	4	1	1	1	1	1	3	2	1	1	0	0	0	0	1.1	4
7-Apr	0	Z	0	0	0	0	0	1	1	1	1	1	6	28	18	2	0	0	1	1	1	1	1	1	2.9	28
8-Apr	0	Z	1	1	1	1	1	1	1	1	1	1	0	0	0	0	0	0	0	0	0	0	0	0	0.5	1
9-Apr	0	Z	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0.3	0
10-Apr	0	Z	0	0	0	0	0	0	0	0	1	2	1	1	0	0	0	0	0	0	0	0	0	0	0.4	2
11-Apr	0	Z	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0.4	0
12-Apr	0	Z	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0.3	0
13-Apr	0	Z	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1	11	38	13	3	1	1	1	3.1	38
14-Apr	1	Z	7	8	2	1	2	8	16	13	15	19	17	10	7	5	4	1	1	1	2	1	1	1	6.2	19
15-Apr	0	Z	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0.4	0
16-Apr	0	Z	0	0	0	0	0	0	0	0	0	0	0	9	11	7	3	1	0	0	0	0	0	0	1.6	11
17-Apr	0	Z	0	0	0	0	0	6	40	39	8	3	5	7	5	1	0	0	0	0	0	0	0	0	5.1	40
18-Apr	0	Z	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1	1	2	3	1	1	1	0.7	3
19-Apr	0	Z	0	0	0	0	1	1	3	3	4	7	16	22	13	8	4	2	1	1	1	0	0	0	3.9	22
20-Apr	0	Z	0	0	0	0	1	1	1	2	3	2	1	1	1	1	1	1	1	0	0	0	0	0	0.8	3
21-Apr	1	1	Z	1	1	1	1	1	2	1	1	1	1	1	1	1	1	1	1	1	0	0	0	0	0.8	2
22-Apr	0	Z	0	0	0	0	0	1	1	0	1	1	1	0	0	0	0	0	0	0	0	0	0	0	0.4	1
23-Apr	0	Z	0	0	0	0	0	0	0	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	0.7	1
24-Apr	1	Z	1	0	1	1	1	1	1	C	C	C	C	C	C	5	6	1	1	0	0	0	0	0	--	6
25-Apr	0	Z	0	0	0	0	0	2	3	0	0	0	0	1	0	0	3	15	2	1	1	1	1	1	1.5	15
26-Apr	0	Z	0	0	0	0	0	2	4	11	2	8	15	8	9	2	1	0	1	0	0	1	6	3	3.2	15
27-Apr	1	Z	1	1	1	0	0	0	0	0	0	1	2	2	2	1	1	2	2	2	1	1	1	0	1.0	2
28-Apr	0	Z	0	0	0	0	1	2	6	13	11	30	35	26	10	19	43	77	29	8	4	2	2	1	14.0	77
29-Apr	1	Z	1	0	0	0	1	1	2	2	2	1	0	0	0	0	0	1	0	0	0	0	0	0	0.7	2
30-Apr	0	Z	0	0	0	0	0	1	8	22	35	7	7	2	2	3	1	1	1	1	2	1	1	1	4.2	35
	0.9	0.7	1.0	1.7	1.0	1.0	1.0	1.9	3.7	4.4	3.3	3.1	3.9	4.3	3.0	2.0	2.6	4.1	2.8	1.3	0.8	0.6	0.7	0.6	Diurnal Average	
	15	1	10	32	18	18	16	26	40	39	35	30	35	28	18	19	43	77	38	13	4	2	6	3	Diurnal Maximum	

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

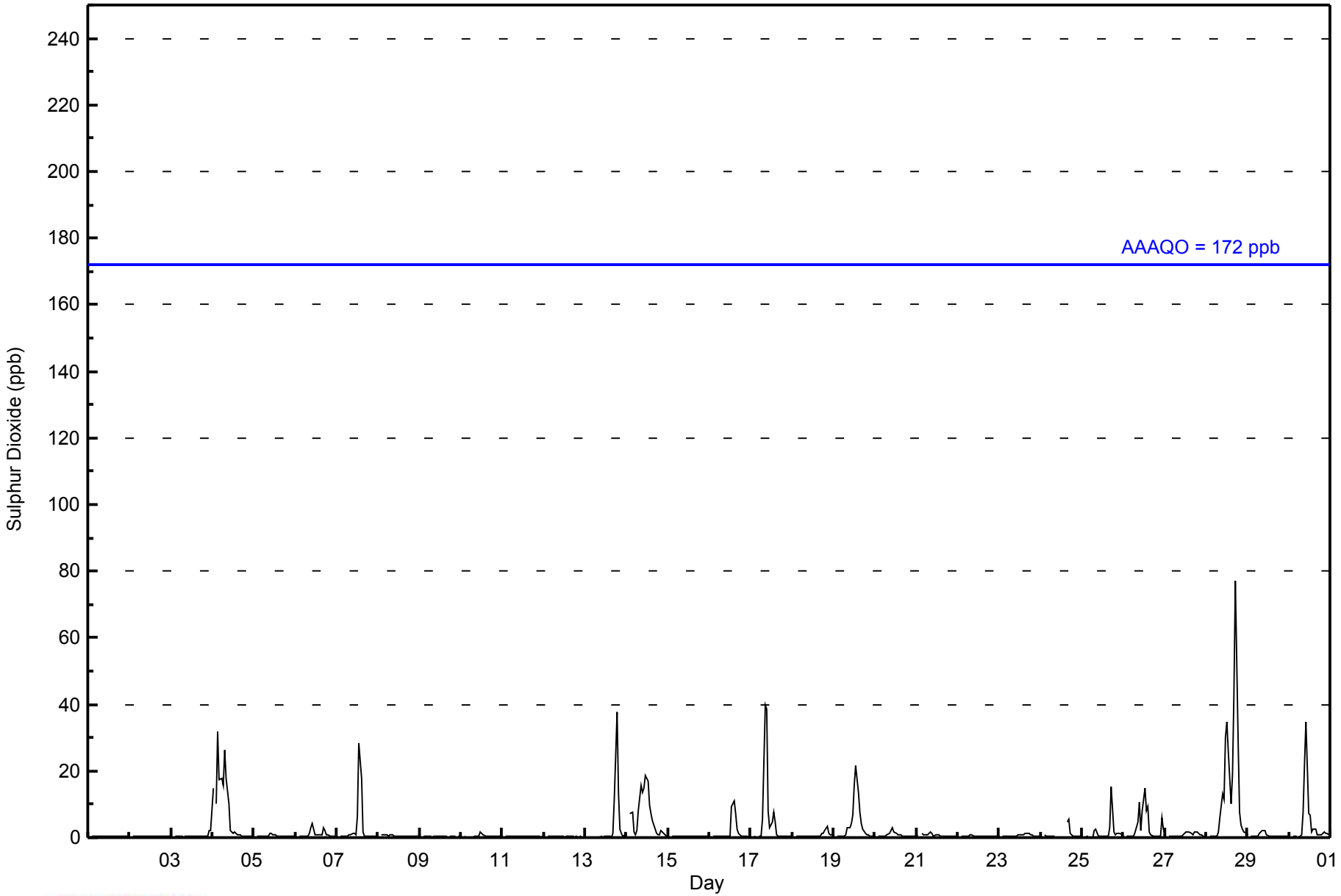
AURORA ATMOSPHERICS INC.

WBEA NETWORK

Hourly Averages

Sulphur Dioxide (SO_2) - ppb

Fort McKay South - April 2014



AURORA ATMOSPHERICS INC.

Concentration Ranges (ppb)	Number of Hours	%	Cumulative %
0 - 10	647	94.59	94.59
11 - 20	22	3.22	97.81
21 - 60	14	2.05	99.85
61 - 110	1	0.15	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

Sulphur Dioxide (SO_2) - ppb
Fort McKay South - April 2014

Concentration Ranges (ppb)	Wind Direction																
	N	NNE	NE	ENE	E	ESE	SE	SSE	S	SSW	SW	WSW	W	WNW	NW	NNW	**Totals**
0 - 10	136	87	28	13	23	32	68	52	34	42	34	28	16	17	22	14	646
11 - 20	0	0	0	1	1	1	7	8	4	0	0	0	0	0	0	0	22
21 - 60	0	0	0	0	3	3	6	2	0	0	0	0	0	0	0	0	14
61 - 110	0	0	0	0	0	0	1	0	0	0	0	0	0	0	0	0	1
111 - 172	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
> 172	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Totals	136	87	28	14	27	36	82	62	38	42	34	28	16	17	22	14	683

Total Number of Valid Hours: 683

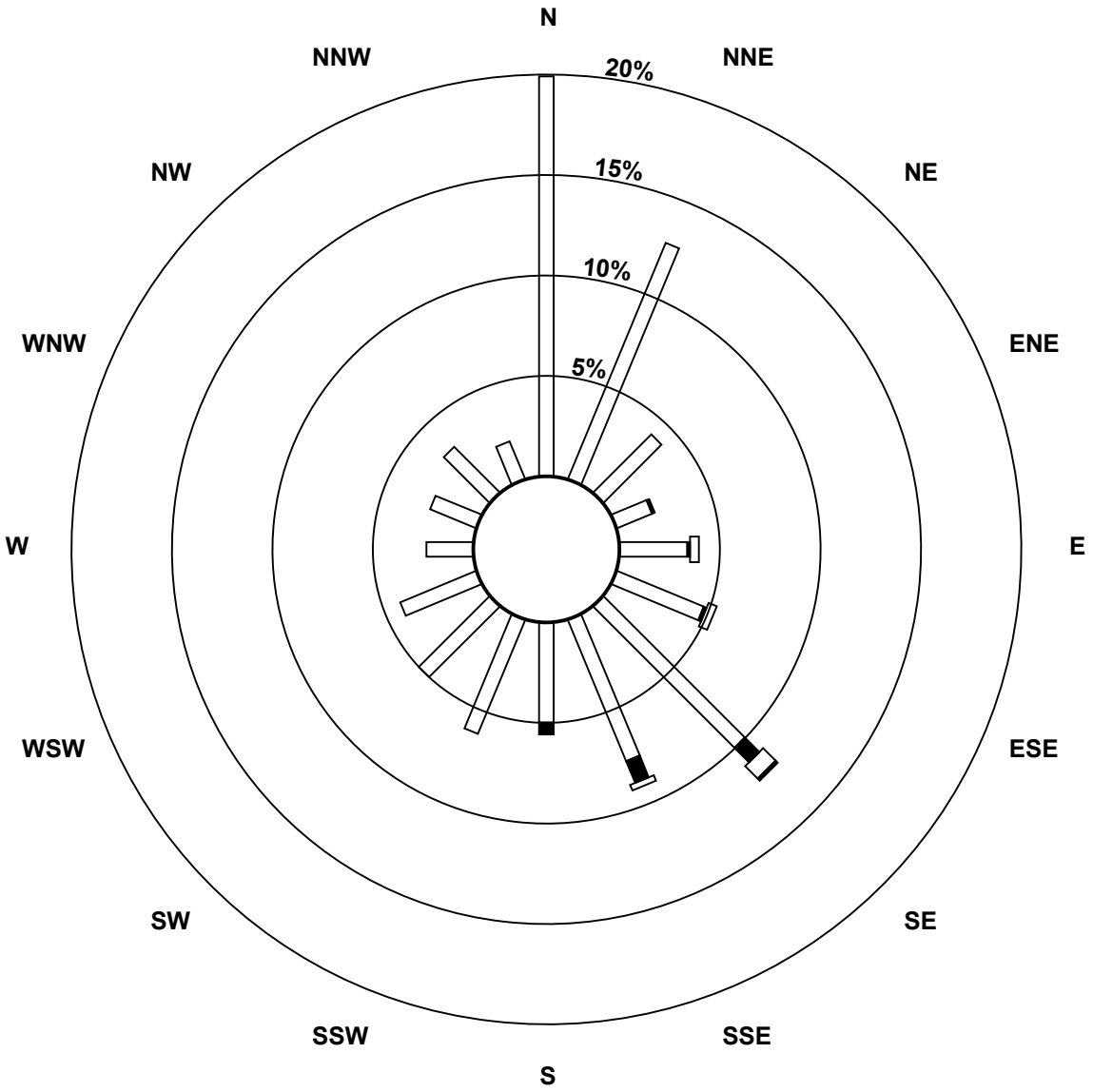
Total Number of Hours: 720

Wood Buffalo Environmental Association

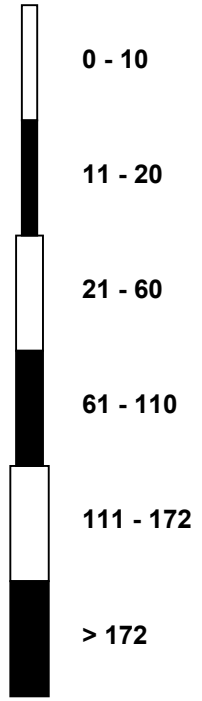
Wind Rose Apr 2014

Sulphur Dioxide (SO_2) - ppb

Fort McKay South (AMS 13)



Classes (ppb)



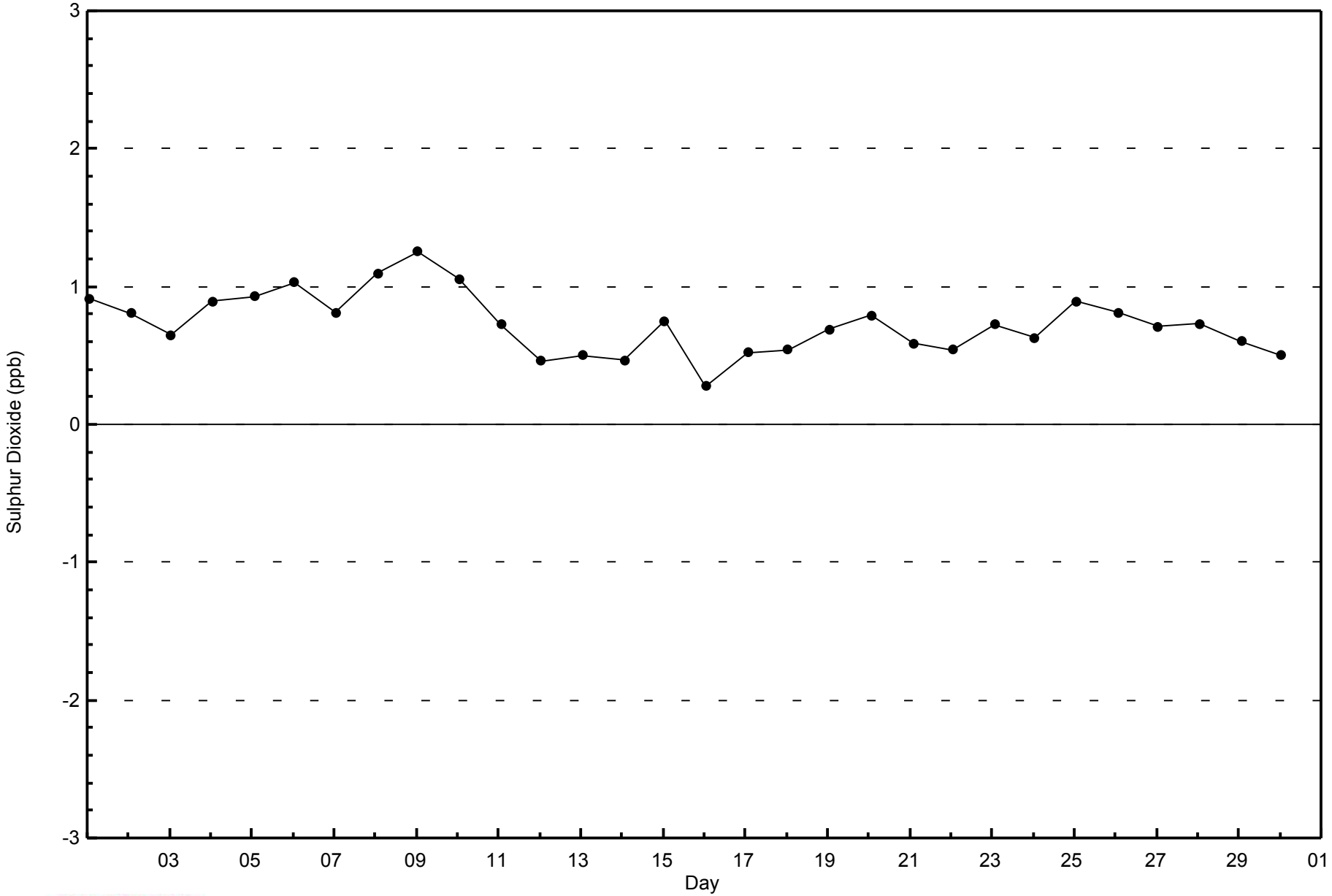
Total Number of Valid Hours: 683

WBEA NETWORK

Zero Responses

Sulphur Dioxide (SO_2) - ppb

Fort McKay South - April 2014



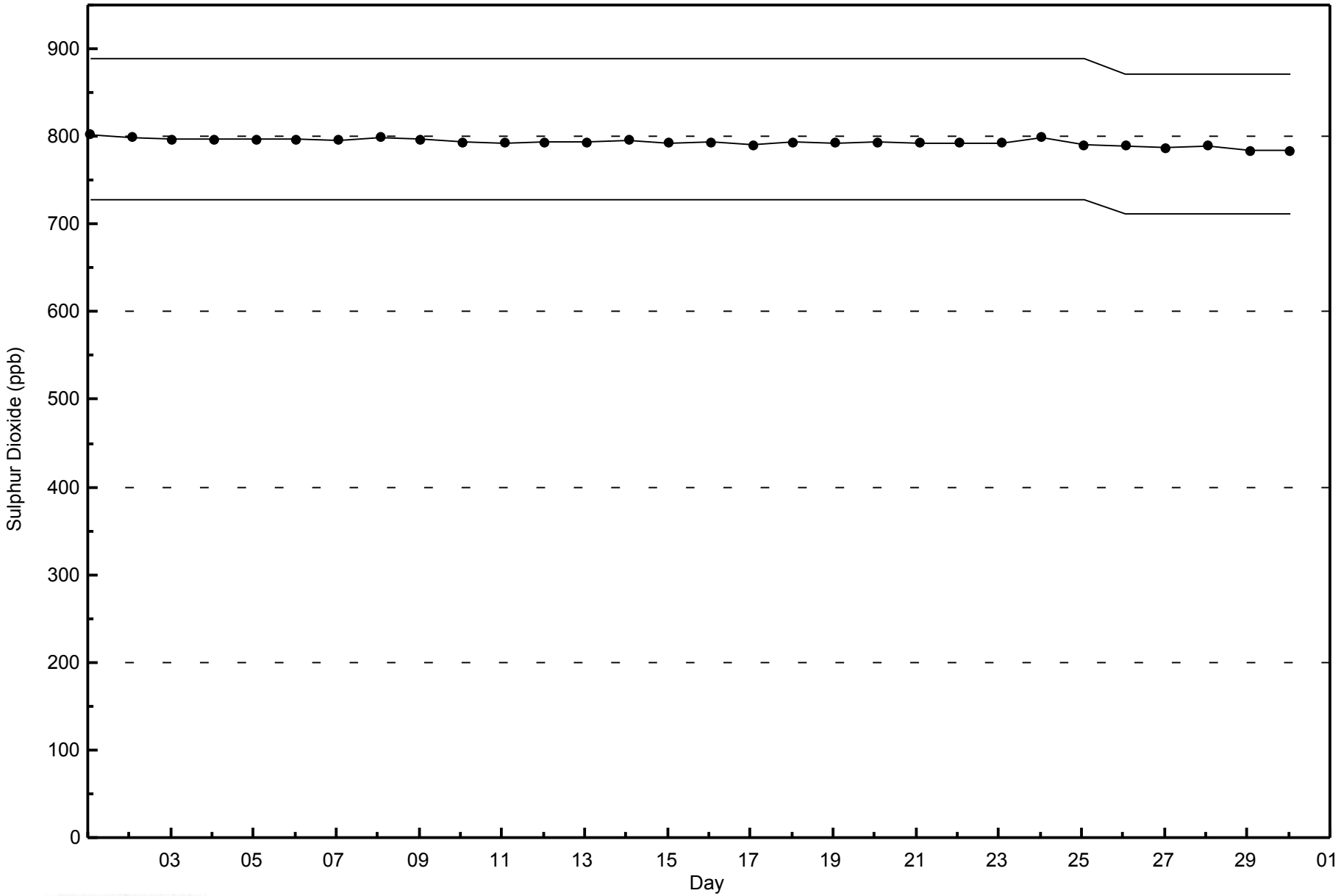
AURORA
ATMOSPHERICS INC.

WBEA NETWORK

Span Responses

Sulphur Dioxide (SO_2) - ppb

Fort McKay South - April 2014



AURORA ATMOSPHERICS INC.

Wood Buffalo Environmental Association

Summary of Hour Averages

Total Reduced Sulphur (TRS) - ppb

Fort McKay South - April 2014

Number of Exceedences (AAAQO): 1-hr: 0 24-hr: 0
Maximum Value: 3 ppb on Apr 30 10:00 Maximum Daily Average: 0.5 ppb on Apr 30

Minimum Value: 0 ppb on Apr 25 16:00 Minimum Daily Average: 0.1 ppb on Apr 25
Maximum Diurnal Average: 0.4 ppb at hour 3 Minimum Diurnal Average: 0.2 ppb at hour 23
Monthly Average: 0.2 ppb Percentiles: $P_1 = 0$ $P_{10} = 0$ $Q_1 = 0$ Median = 0 $Q_3 = 0$ $P_{90} = 0$ $P_{99} = 1$

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-Apr	0	0	Z	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0.2	0
2-Apr	0	0	Z	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0.2	0
3-Apr	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	0
4-Apr	0	0	Z	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0.2	0
5-Apr	0	0	Z	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0.2	0
6-Apr	0	0	Z	0	0	0	0	0	0	1	1	0	0	0	0	0	1	1	0	0	0	0	0	0	0.3	1
7-Apr	0	0	Z	0	0	0	0	1	1	0	0	0	0	1	0	0	0	0	0	0	0	0	0	0	0.2	1
8-Apr	0	0	Z	1	1	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0.3	1
9-Apr	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	0
10-Apr	0	0	Z	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0.2	0
11-Apr	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	0
12-Apr	0	0	Z	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0.2	0
13-Apr	0	0	Z	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1	0	0	0	0	0	0.2	1
14-Apr	0	0	Z	1	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0.3	1
15-Apr	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	0
16-Apr	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	0
17-Apr	0	0	Z	0	0	0	0	0	1	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0.2	1
18-Apr	0	0	Z	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0.2	0
19-Apr	0	0	Z	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0.2	0
20-Apr	0	0	Z	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0.2	0
21-Apr	1	1	0	Z	0	0	1	1	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0.3	1
22-Apr	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	0
23-Apr	0	0	Z	0	0	0	0	0	0	C	C	C	0	0	0	0	0	0	0	0	0	0	0	0	0.2	0
24-Apr	0	0	Z	0	0	0	0	0	0	0	0	0	0	1	1	0	0	0	0	0	0	0	0	0	0.2	1
25-Apr	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	0
26-Apr	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	0
27-Apr	0	0	Z	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0.2	0
28-Apr	0	0	Z	0	0	0	0	0	0	1	1	1	1	0	0	0	1	1	0	0	0	0	0	0	0.3	1
29-Apr	0	0	Z	0	0	0	0	1	0	1	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0.2	1
30-Apr	0	0	Z	0	0	0	0	1	2	3	2	0	0	0	0	0	0	0	0	0	0	0	0	0	0.5	3
	0.2	0.2	0.4	0.2	0.2	0.2	0.2	0.3	0.3	0.3	0.3	0.2	0.2	0.2	0.2	0.2	0.2	0.2	0.2	0.2	0.2	0.2	0.2	0.2	Diurnal Average	
	1	1	0	1	1	1	1	1	2	3	2	1	1	1	1	0	1	1	1	0	0	0	0	0	Diurnal Maximum	

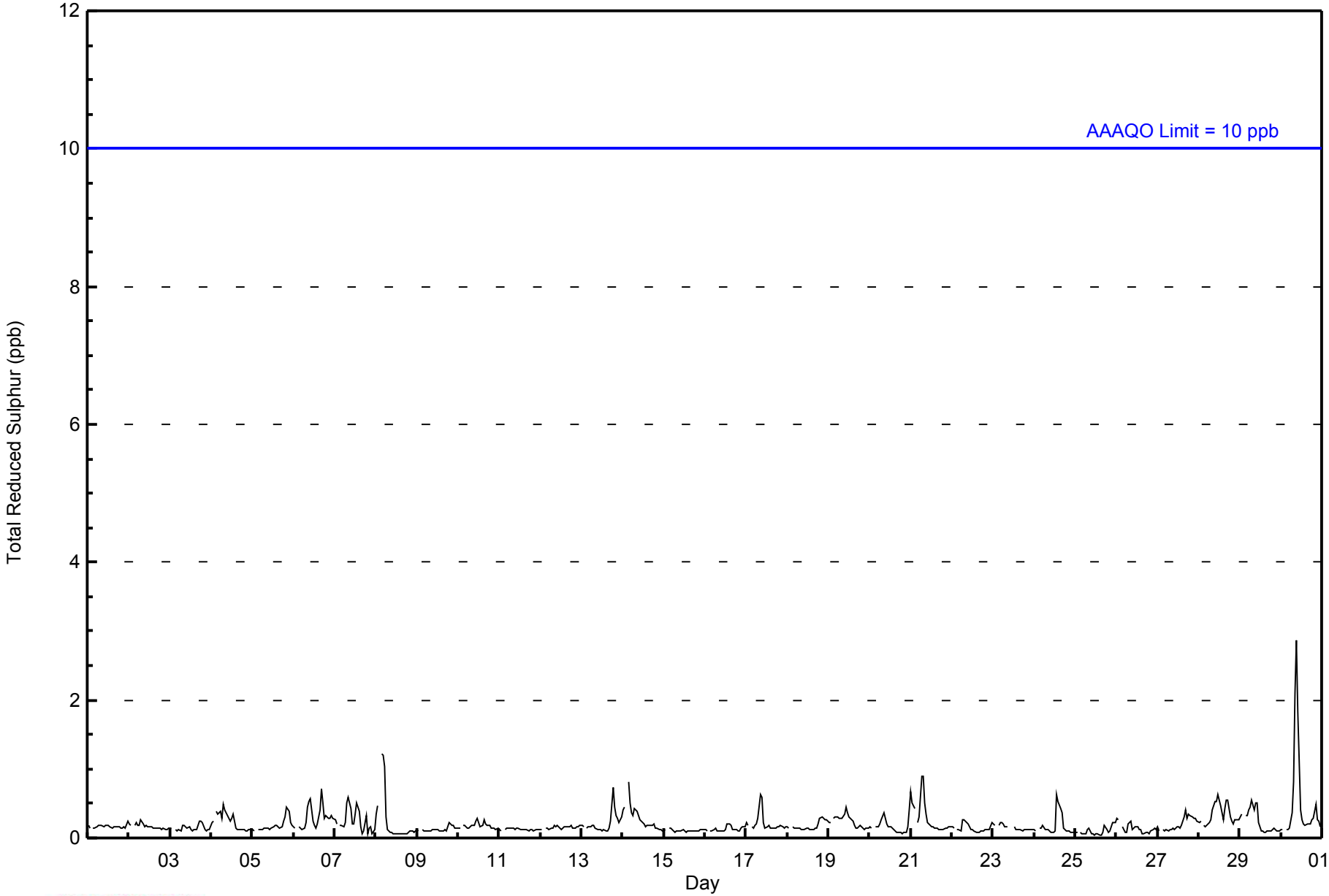
Z - zerospan C - Calibration
Alberta Ambient Air Quality Objectives (AAAQO): 1-hr 10 ppb 24-hr 3 ppb

WBEA NETWORK

Hourly Averages

Total Reduced Sulphur (TRS) - ppb

Fort McKay South - April 2014



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Concentration Ranges (ppb)	Number of Hours	%	Cumulative %
0 - 2	686	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: 687

Total Number of Hours: 720

WBEA NETWORK

Frequency Distribution

Total Reduced Sulphur (TRS) - ppb

Fort McKay South - April 2014

Concentration Ranges (ppb)	Wind Direction																
	N	NNE	NE	ENE	E	ESE	SE	SSE	S	SSW	SW	WSW	W	WNW	NW	NNW	**Totals**
0 - 2	137	85	28	14	28	34	85	61	39	39	37	28	17	16	21	16	685
3 - 4	0	0	0	0	0	1	0	0	0	0	0	0	0	0	0	0	1
5 - 7	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
8 - 11	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
> 11	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Totals	137	85	28	14	28	35	85	61	39	39	37	28	17	16	21	16	686

Total Number of Valid Hours: 686

Total Number of Hours: 720

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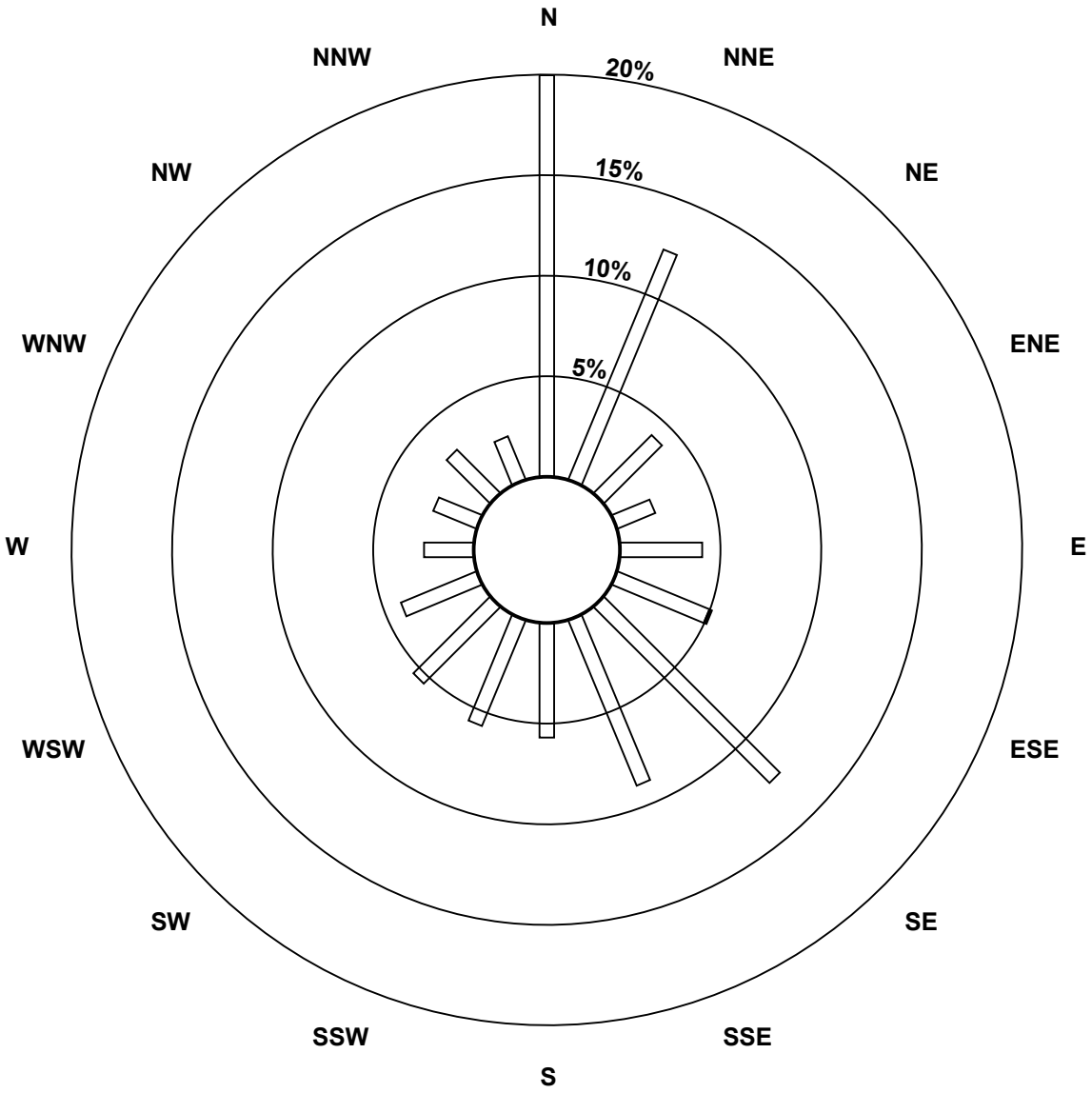
Wood Buffalo Environmental Association

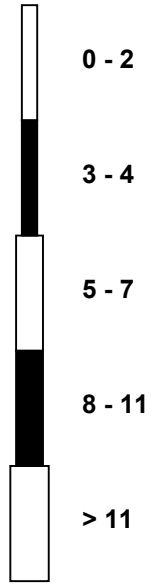
Wind Rose Apr 2014

Total Reduced Sulphur (TRS) - ppb

Fort McKay South (AMS 13)



Classes (ppb)



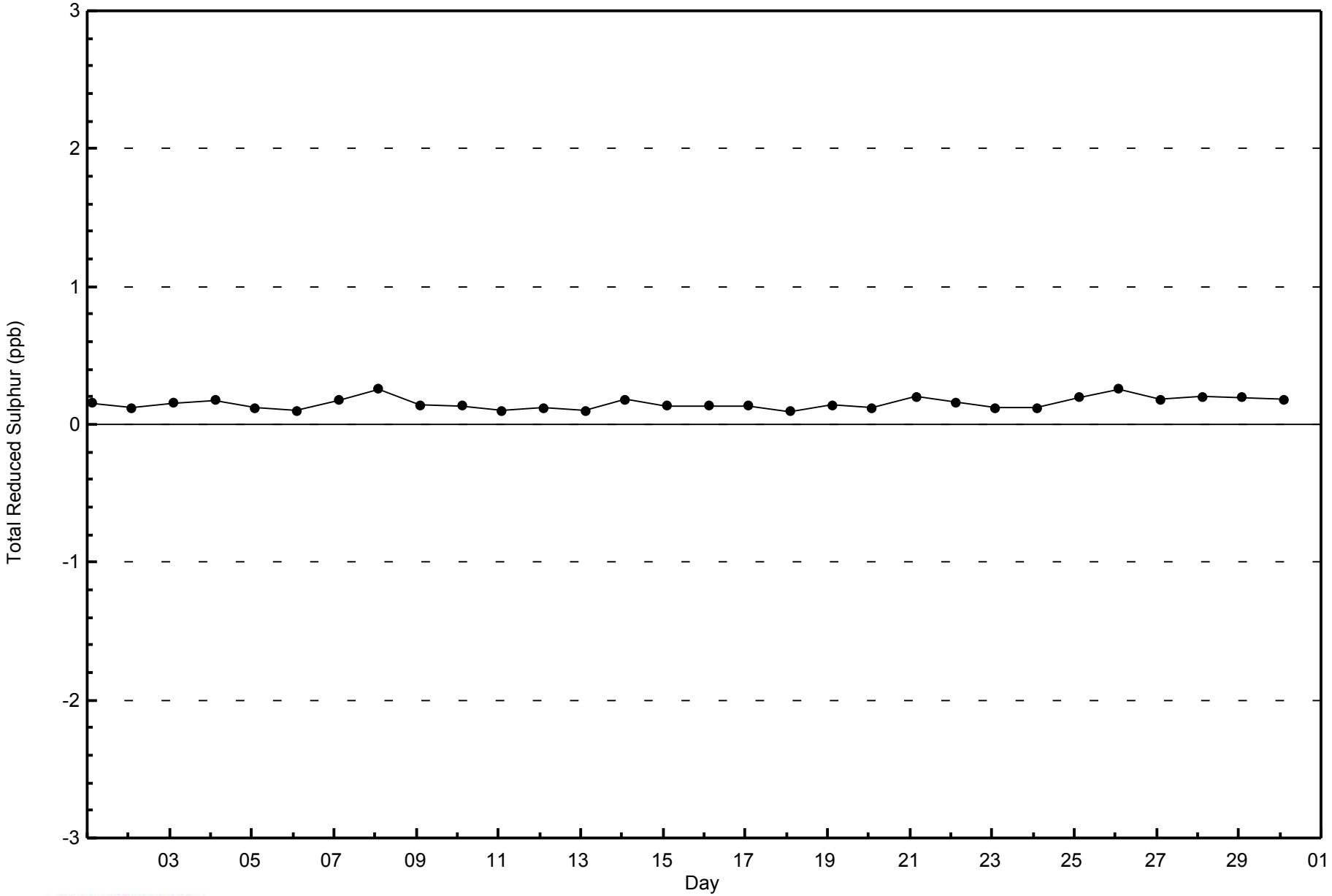
Total Number of Valid Hours: 686

WBEA NETWORK

Zero Responses

Total Reduced Sulphur (TRS) - ppb

Fort McKay South - April 2014



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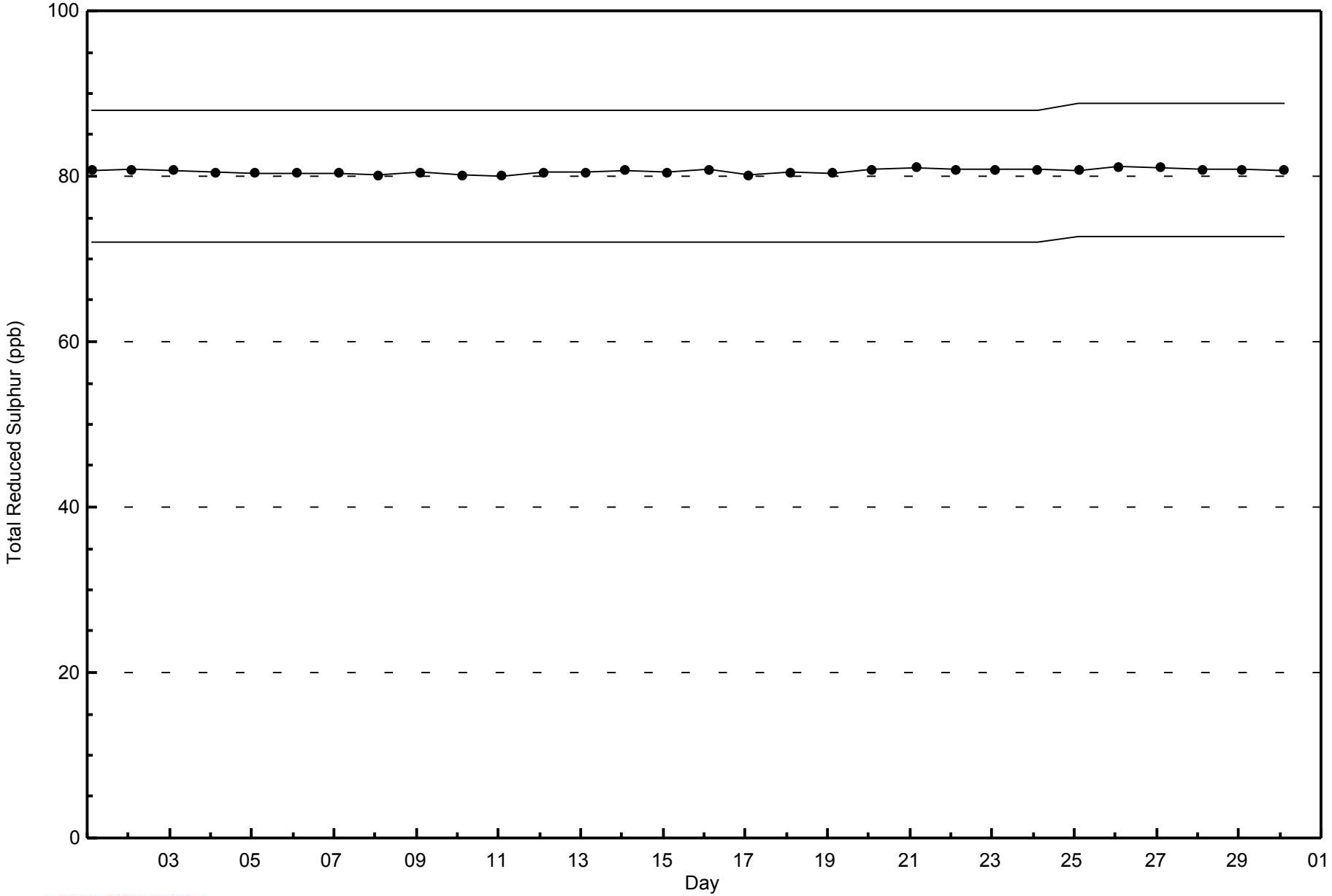
WBEA NETWORK

Span Responses

Total Reduced Sulphur (TRS) - ppb

Fort McKay South - April 2014



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Summary of Hour Averages

Total Hydrocarbons (THC) - ppm

Fort McKay South - April 2014

Maximum Value: 4.1 ppm on Apr 8 06:00

Maximum Daily Average: 2.4 ppm on Apr 21

Minimum Value: 1.8 ppm on Apr 8 17:00

Minimum Daily Average: 2.0 ppm on Apr 18

Maximum Diurnal Average: 3.0 ppm at hour 2

Minimum Diurnal Average: 2.0 ppm at hour 17

Monthly Average: 2.11 ppm

Percentiles: P_1 = 1.9 P_{10} = 1.9 Q_1 = 2.0 Median = 2.1 Q_3 = 2.2 P_{90} = 2.3 P_{99} = 3.0

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-Apr	2.1	Z	2.1	2.0	2.0	2.1	2.1	2.2	2.2	2.2	2.1	2.1	2.2	2.1	2.2	2.1	2.1	2.1	2.1	2.0	2.0	2.0	2.0	2.1	2.1	2.2
2-Apr	2.1	Z	2.1	2.1	2.1	2.1	2.1	2.2	2.2	2.1	2.1	2.1	2.1	2.1	2.1	2.1	2.1	2.1	2.1	2.1	2.1	2.1	2.1	2.1	2.1	2.2
3-Apr	2.1	Z	2.1	2.1	2.1	2.2	2.2	2.2	2.4	2.3	2.3	2.3	2.2	2.2	2.2	2.2	2.2	2.3	2.4	2.3	2.1	2.1	2.1	2.1	2.2	2.4
4-Apr	2.1	Z	2.2	2.1	2.1	2.2	2.2	2.2	2.1	2.1	2.2	2.2	2.3	2.4	2.1	2.1	2.0	2.0	2.1	2.1	2.1	2.0	2.1	2.1	2.1	2.4
5-Apr	2.1	Z	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	2.0	2.0	2.0	2.1	2.2	2.3	2.2	2.2	2.2	2.1	2.3
6-Apr	2.1	Z	2.0	2.0	1.9	1.9	2.0	2.2	2.7	2.6	2.9	2.4	2.2	2.1	2.2	2.3	2.4	2.5	2.3	2.4	2.3	2.4	2.4	2.4	2.3	2.9
7-Apr	2.3	Z	2.3	2.3	2.3	2.2	2.3	2.6	2.6	2.8	2.3	2.4	2.4	2.2	2.3	2.1	2.0	2.2	2.4	2.0	2.3	2.2	2.2	2.5	2.3	2.8
8-Apr	2.4	Z	2.8	3.9	4.1	4.1	2.4	2.1	2.1	2.1	2.0	1.9	1.9	1.9	1.8	1.9	1.8	1.8	1.9	1.9	1.9	1.9	1.9	2.1	2.3	4.1
9-Apr	2.0	Z	2.0	2.0	2.0	2.0	2.0	2.0	2.0	1.9	2.0	1.9	2.0	1.9	1.9	1.9	1.9	1.9	2.0	2.2	2.2	2.2	2.1	2.1	2.0	2.2
10-Apr	2.1	Z	2.1	2.1	2.1	2.1	2.0	2.1	2.1	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	2.1	2.2
11-Apr	1.9	Z	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	2.0	2.0	2.1	2.0	2.1
12-Apr	2.0	Z	2.0	2.0	2.0	2.0	2.0	2.1	2.2	2.1	2.2	2.0	2.0	2.0	2.1	2.0	2.0	2.0	2.0	2.1	2.1	2.0	2.0	2.0	2.0	2.2
13-Apr	1.9	Z	2.0	2.0	2.0	2.0	2.0	2.0	2.1	2.1	2.2	2.2	2.2	2.1	2.1	2.1	2.1	2.1	2.1	2.2	2.1	2.1	2.1	2.2	2.1	2.2
14-Apr	2.2	Z	2.1	2.1	2.0	2.0	2.1	2.2	2.2	2.2	2.2	2.1	2.1	2.1	2.1	2.0	1.9	2.0	2.0	2.0	2.0	1.9	2.0	2.0	2.1	2.2
15-Apr	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	2.1	2.1	2.1	2.1	2.1	2.0	2.1
16-Apr	2.1	Z	2.0	2.0	2.0	2.0	2.1	2.0	2.1	2.1	2.0	2.1	2.1	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.1	2.1	2.1	2.0	2.1
17-Apr	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	1.9	1.9	1.9	1.9	1.9	2.0	2.1	2.0	2.0	2.0	2.0	2.1
18-Apr	2.0	Z	2.0	2.0	1.9	1.9	1.9	2.0	2.0	2.0	2.0	1.9	2.0	2.0	1.9	1.9	1.9	1.9	2.0	2.0	2.0	2.1	2.0	2.1	2.0	2.1
19-Apr	2.1	Z	2.2	2.2	2.2	2.2	2.1	2.2	2.1	2.2	2.4	2.1	2.0	1.9	1.9	1.9	1.9	1.9	1.9	1.9	1.9	1.9	2.0	2.0	2.0	2.4
20-Apr	2.0	Z	2.1	2.2	2.3	2.3	2.4	2.5	2.7	2.3	2.1	2.2	2.2	2.2	2.1	2.0	1.9	2.0	2.0	2.0	2.0	2.1	2.3	2.6	2.2	2.7
21-Apr	3.0	3.0	Z	3.1	2.8	2.6	3.0	2.7	2.6	2.5	2.3	2.1	2.3	2.2	2.2	2.1	2.1	2.1	2.1	2.2	2.3	2.2	2.4	2.3	2.4	3.1
22-Apr	2.3	Z	2.2	2.2	2.1	2.1	2.2	2.5	2.4	2.3	2.2	2.1	2.0	1.9	1.9	1.9	1.9	1.9	1.9	2.0	2.0	2.0	2.1	2.4	2.1	2.5
23-Apr	2.3	Z	2.5	2.3	2.3	2.3	2.3	2.3	2.2	2.1	2.0	1.9	2.0	2.0	1.9	1.9	1.9	1.9	2.0	1.9	2.0	2.0	2.0	2.0	2.1	2.5
24-Apr	2.0	Z	2.0	2.0	2.0	2.1	2.0	2.0	2.0	C	C	C	C	C	2.2	2.2	2.1	2.0	1.9	2.0	1.9	1.9	2.0	2.0	2.0	2.2
25-Apr	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	2.0	1.9	1.9	2.0	2.1	2.0	2.0	2.0	2.1	2.2	2.2	2.0	2.2
26-Apr	2.3	Z	2.3	2.2	2.2	2.2	2.1	2.2	2.1	2.0	2.0	2.0	2.0	2.0	2.0	1.9	1.9	1.9	2.0	2.0	1.9	2.0	2.0	2.1	2.0	2.3
27-Apr	2.1	Z	2.1	2.0	2.0	2.0	1.9	2.0	2.0	2.0	2.0	2.0	1.9	1.9	1.9	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.1	2.1	2.0	2.1
28-Apr	2.1	Z	2.2	2.2	2.2	2.2	2.3	2.2	2.3	2.5	2.6	2.2	2.1	2.0	2.0	2.0	2.0	2.0	2.0	2.1	2.0	2.1	2.1	2.2	2.2	2.6
29-Apr	2.2	Z	2.3	2.3	2.4	2.3	2.5	3.0	2.3	2.4	2.4	2.1	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	3.0
30-Apr	2.1	Z	2.3	2.2	2.2	2.3	2.5	2.6	2.4	2.3	2.3	2.1	2.3	2.2	2.2	2.1	2.1	2.2	2.1	2.1	2.5	2.3	2.3	2.0	2.2	2.6
	2.1	3.0	2.2	2.2	2.2	2.2	2.2	2.2	2.2	2.2	2.2	2.1	2.1	2.1	2.0	2.0	2.0	2.0	2.0	2.1	2.1	2.1	2.1	2.1	Diurnal Average	
	3.0	3.0	2.8	3.9	4.1	4.1	3.0	3.0	2.7	2.8	2.9	2.4	2.4	2.4	2.3	2.3	2.4	2.5	2.4	2.4	2.5	2.4	2.4	2.6	Diurnal Maximum	

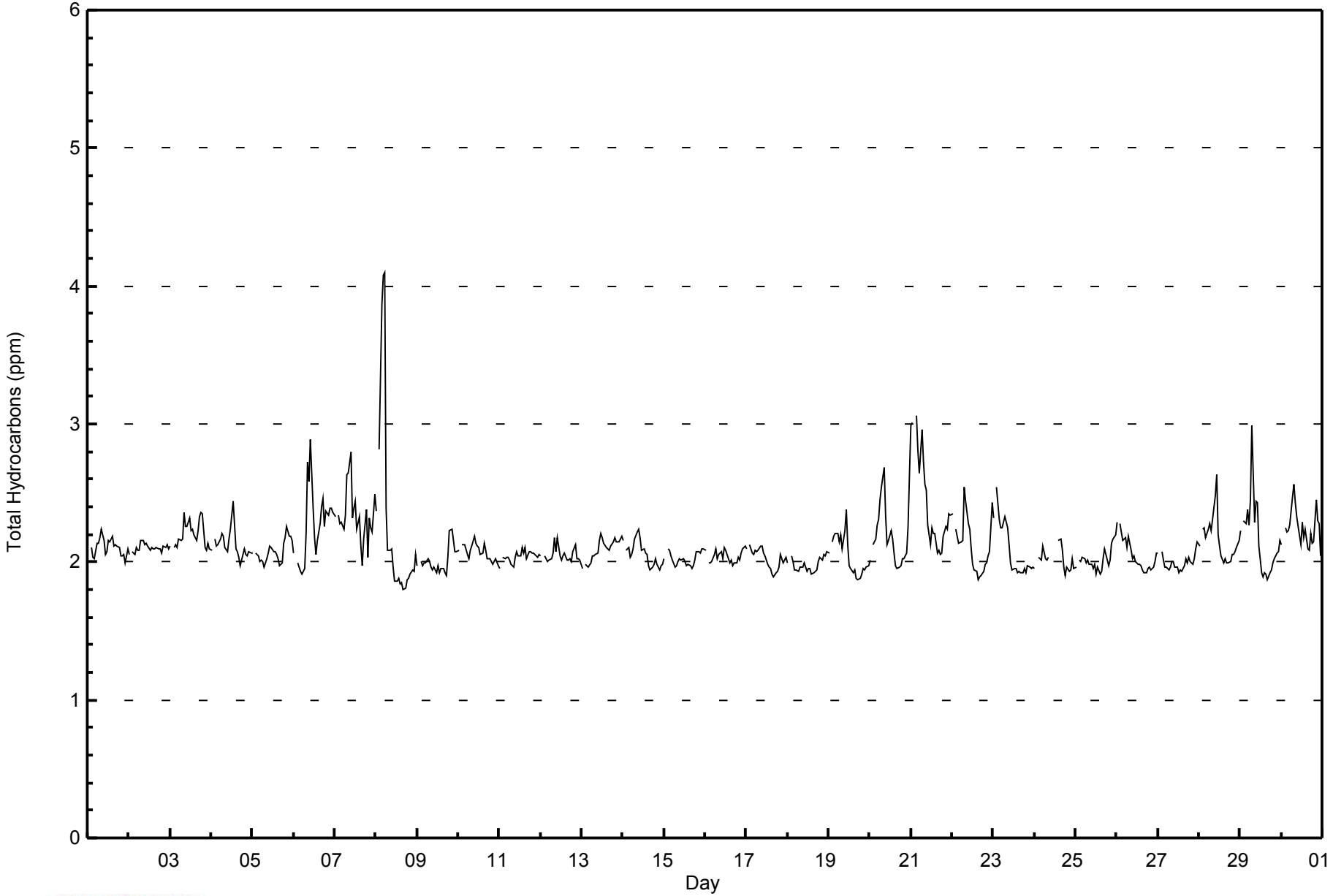
Z - zerospan C - Calibration

WBEA NETWORK

Hourly Averages

Total Hydrocarbons (THC) - ppm

Fort McKay South - April 2014



AURORA ATMOSPHERICS INC.

Concentration Ranges (ppm)	Number of Hours	%	Cumulative %
0 - 2.0	301	43.94	43.94
2.1 - 3.0	380	55.47	99.42
3.1 - 10.0	4	0.58	100.00
> 10.0	0	0.00	100.00

Total Number of Valid Hours: 685

Total Number of Hours: 720

WBEA NETWORK

Frequency Distribution

Total Hydrocarbons (THC) - ppm

Fort McKay South - April 2014

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	37	47	21	13	15	20	53	13	6	6	16	16	10	10	11	7	301
2.1 - 3.0	98	40	7	1	12	16	29	49	32	33	18	13	6	7	11	7	379
3.1 - 10.0	1	0	0	0	0	0	0	0	0	3	0	0	0	0	0	0	4
> 10.0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Totals	136	87	28	14	27	36	82	62	38	42	34	29	16	17	22	14	684

Total Number of Valid Hours: 684

Total Number of Hours: 720

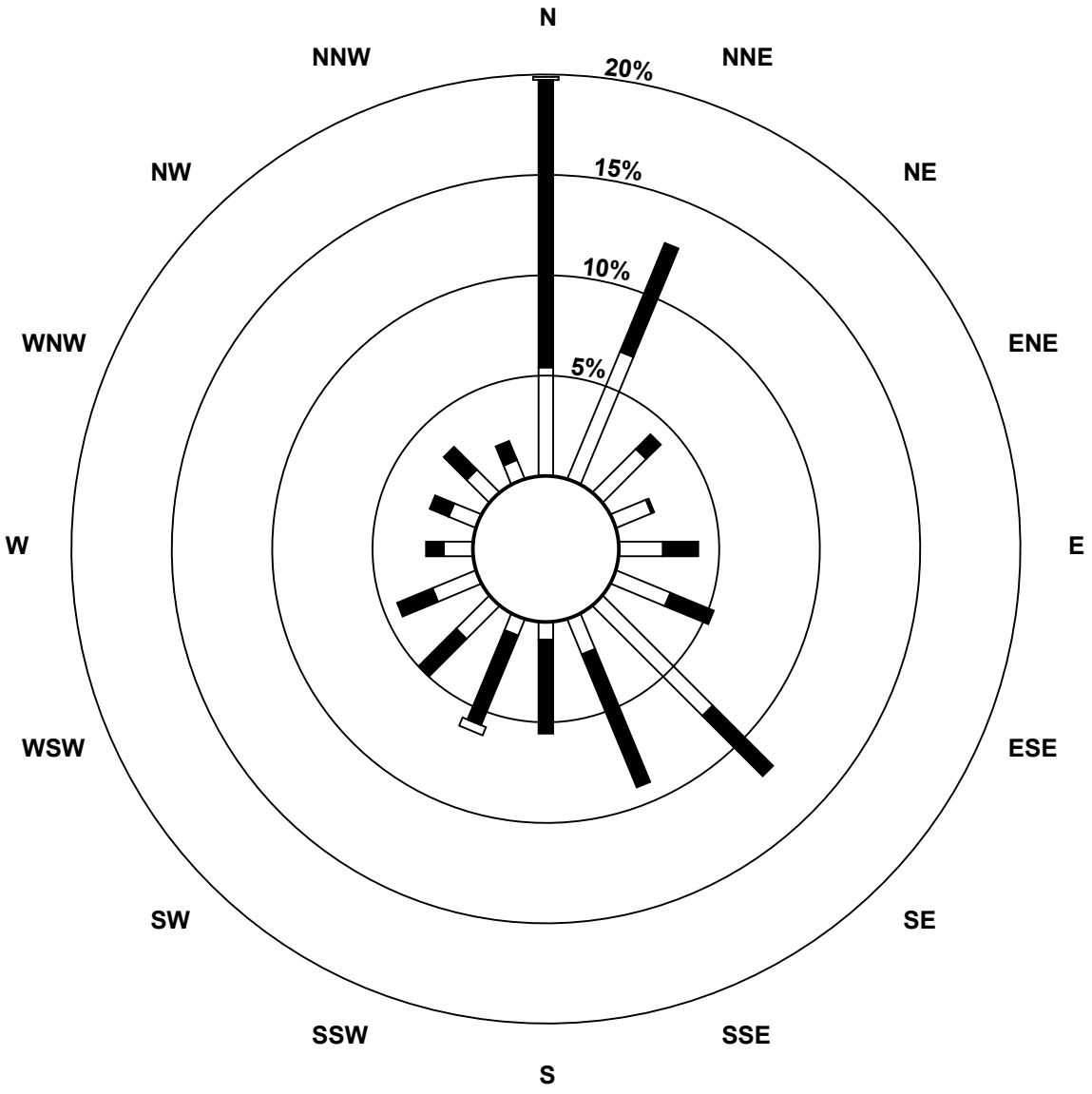
AURORA ATMOSPHERICS INC.

Wood Buffalo Environmental Association

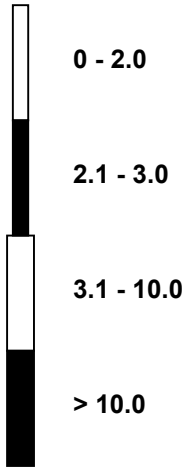
Wind Rose Apr 2014

Total Hydrocarbons (THC) - ppm

Fort McKay South (AMS 13)



Classes (ppm)



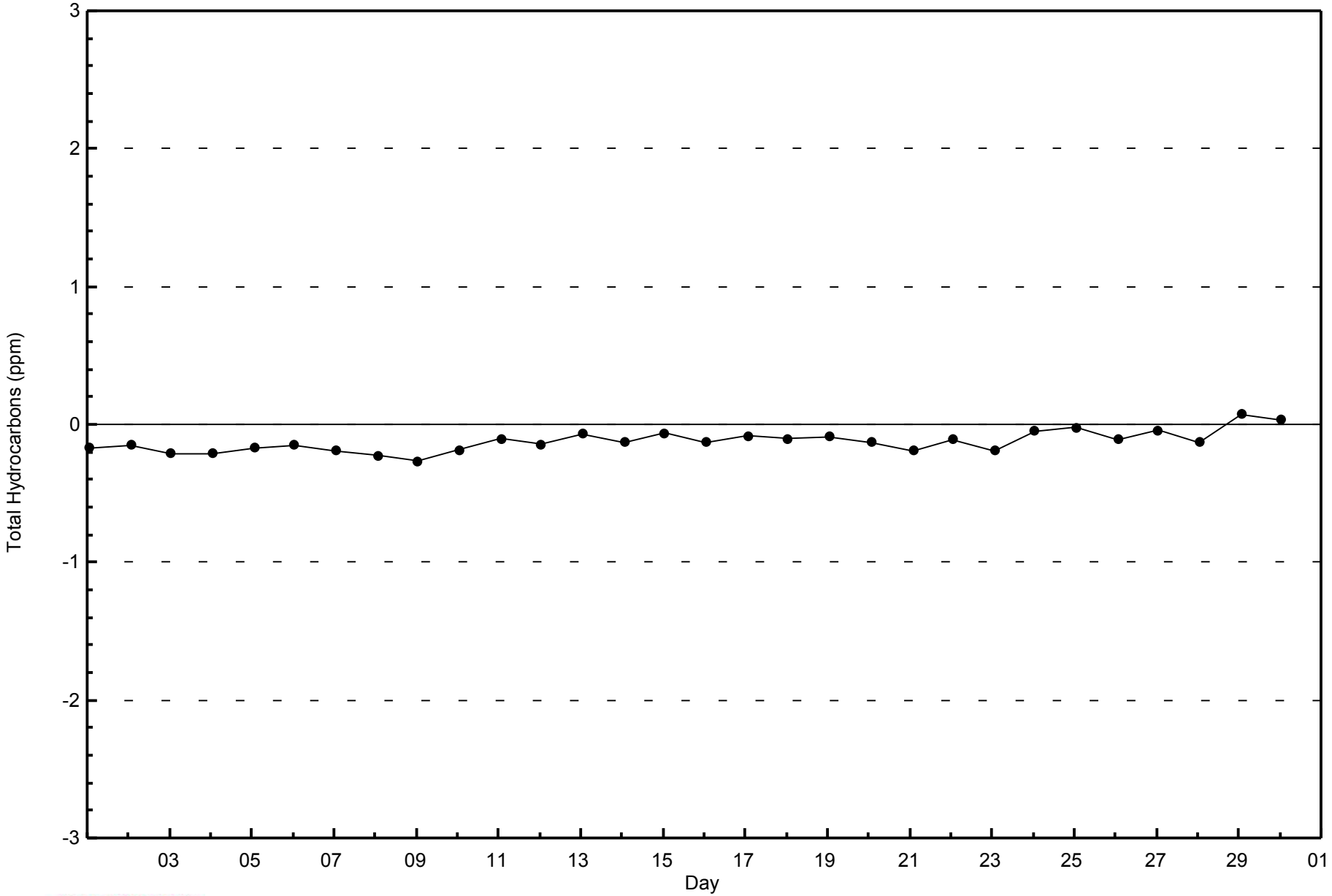
Total Number of Valid Hours: 684

WBEA NETWORK

Zero Responses

Total Hydrocarbons (THC) - ppm

Fort McKay South - April 2014



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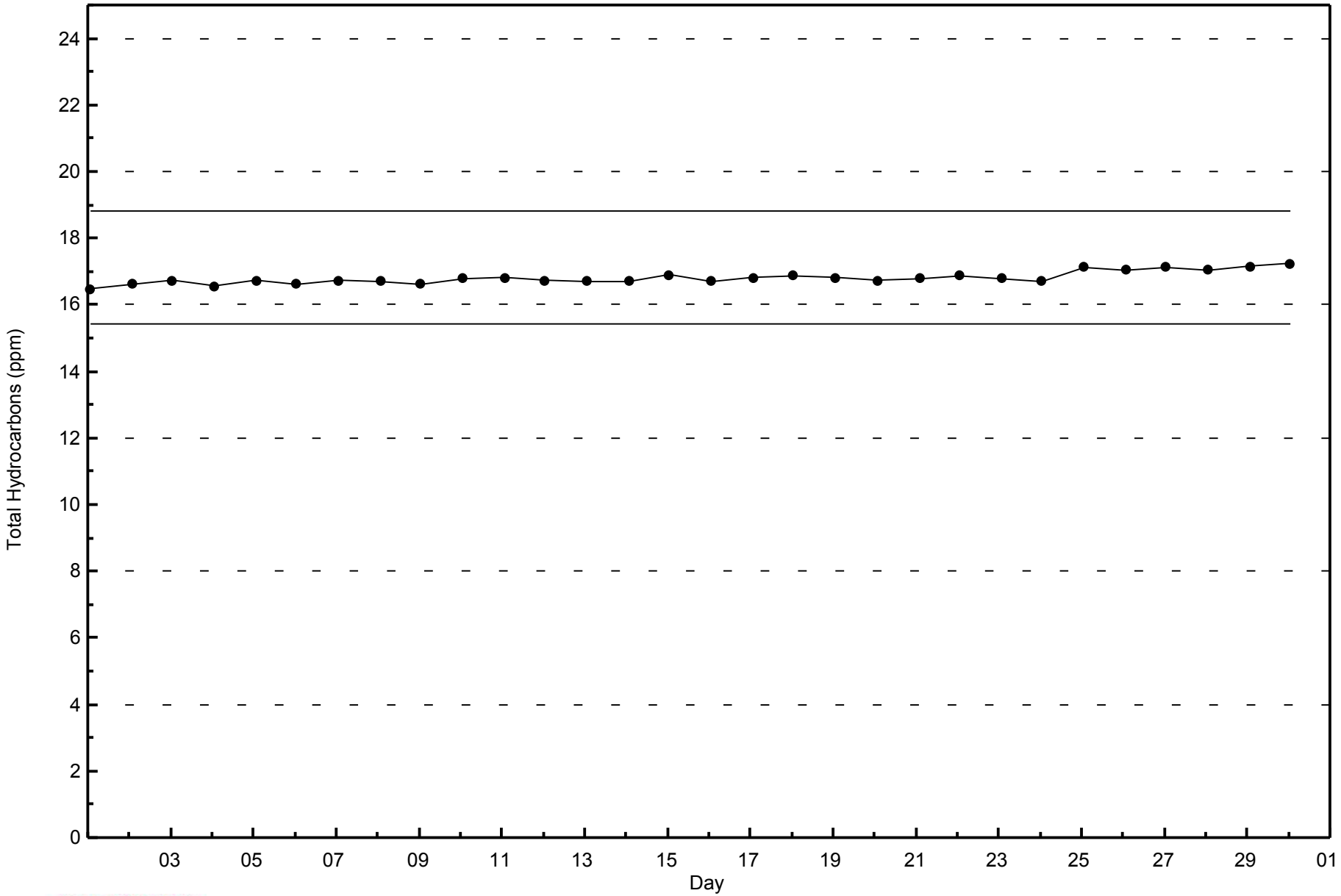
ATMOSPHERICS INC.

WBEA NETWORK

Span Responses

Total Hydrocarbons (THC) - ppm

Fort McKay South - April 2014



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Summary of Hour Averages

Ozone (O_3) - ppb

Fort McKay South - April 2014

Number of Exceedences (AAAQO): 1-hr: 0 24-hr: 0
Maximum Value: 53 ppb on Apr 8 20:00 Maximum Daily Average: 40.1 ppb on Apr 16

Minimum Value: 0 ppb on Apr 29 04:00 Minimum Daily Average: 11.6 ppb on Apr 28
Maximum Diurnal Average: 39.9 ppb at hour 16 Minimum Diurnal Average: 0.9 ppb at hour 3
Monthly Average: 28.8 ppb Percentiles: P_1 = 1 P_{10} = 9 Q_1 = 19 Median = 32 Q_3 = 39 P_{90} = 44 P_{99} = 49

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-Apr	21	28	Z	22	19	16	13	19	24	28	29	30	33	35	36	36	35	35	34	36	34	32	33	25	28.4	36
2-Apr	30	29	Z	22	18	19	16	16	16	18	23	24	23	25	26	26	22	20	21	16	16	19	18	14	20.8	30
3-Apr	12	11	Z	15	12	11	10	12	11	17	20	24	27	28	29	28	24	21	15	10	30	32	34	32	20.2	34
4-Apr	31	30	Z	30	33	33	33	34	35	36	39	36	34	33	39	44	40	39	40	43	45	44	43	40	37.1	45
5-Apr	39	31	Z	34	38	35	35	34	37	40	41	40	41	39	39	39	40	40	35	22	20	21	22	20	34.1	41
6-Apr	20	22	Z	20	16	14	13	17	8	25	35	19	25	33	35	34	42	35	29	22	13	10	7	4	21.7	42
7-Apr	3	2	Z	2	1	2	3	5	15	24	37	43	43	37	41	45	44	41	38	30	3	16	11	4	21.3	45
8-Apr	16	14	Z	3	2	1	15	23	17	21	33	38	39	39	42	42	45	48	53	53	52	49	45	42	31.7	53
9-Apr	44	46	Z	34	44	45	46	45	44	43	42	41	42	44	46	46	46	45	35	20	13	13	28	23	38.1	46
10-Apr	16	18	Z	8	9	25	25	25	25	27	30	32	36	38	39	37	38	37	39	41	40	37	35	38	30.2	41
11-Apr	39	39	Z	36	30	26	29	32	35	33	34	36	36	39	42	41	40	40	40	41	43	37	30	25	35.8	43
12-Apr	19	24	Z	24	24	20	23	28	25	39	36	38	40	40	38	39	39	39	34	32	35	35	33	36	32.3	40
13-Apr	37	39	Z	27	22	18	26	33	33	34	34	34	35	36	37	39	40	34	28	19	15	13	14	33	29.6	40
14-Apr	32	24	Z	18	11	9	10	22	31	33	35	35	36	42	46	47	45	44	40	37	34	37	38	36	32.3	47
15-Apr	33	30	Z	30	32	39	39	38	38	39	43	42	42	45	44	44	45	46	43	42	42	44	41	38	40.0	46
16-Apr	38	42	Z	42	41	37	30	39	41	43	44	44	42	42	43	43	43	43	43	42	38	37	36	28	40.1	44
17-Apr	21	17	Z	23	20	14	17	26	32	36	43	45	46	46	47	47	47	47	46	43	32	34	29	23	33.9	47
18-Apr	23	17	Z	21	19	28	39	43	44	44	43	42	41	42	43	42	39	38	39	36	25	18	11	18	32.9	44
19-Apr	9	6	Z	3	2	2	7	15	18	26	31	32	33	36	40	39	37	37	37	35	32	20	11	6	22.4	40
20-Apr	4	3	Z	1	0	1	2	5	9	24	32	36	39	44	46	48	49	48	44	33	28	23	17	8	23.6	49
21-Apr	1	1	1	Z	1	1	6	16	28	23	29	37	38	41	40	44	42	43	39	32	27	28	23	15	24.1	44
22-Apr	8	7	Z	7	5	5	13	11	20	27	34	43	47	49	50	49	49	47	46	45	42	41	37	16	30.4	50
23-Apr	18	18	Z	19	21	21	20	26	32	34	37	40	47	48	47	47	46	46	45	44	43	43	42	42	35.9	48
24-Apr	42	41	Z	35	32	27	28	29	29	33	36	36	34	19	21	28	34	41	43	41	41	40	38	39	34.1	43
25-Apr	38	34	Z	16	12	10	29	35	35	C	C	C	C	40	41	41	39	34	36	35	28	25	22	23	30.2	41
26-Apr	21	17	Z	12	9	6	15	23	28	28	31	32	34	37	37	37	37	38	36	37	36	31	28	27	27.6	38
27-Apr	23	23	Z	23	29	30	25	22	19	20	23	24	24	23	22	22	21	19	19	19	17	10	4	1	20.0	30
28-Apr	2	2	Z	0	0	0	1	4	5	10	13	14	17	22	32	28	24	23	21	11	11	13	6	7	11.6	32
29-Apr	5	1	Z	0	0	2	9	15	12	21	34	40	43	44	44	44	40	39	43	30	16	15	11	10	22.5	44
30-Apr	6	4	Z	3	3	1	4	10	20	24	24	39	48	50	51	52	46	32	24	21	2	3	15	30	22.1	52
	21.6	20.7	0.9	18.2	16.9	16.5	19.4	23.4	25.5	29.3	33.3	35.0	36.7	37.9	39.4	39.9	39.2	37.9	36.2	32.3	28.4	27.4	25.4	23.4	Diurnal Average	
	44	46	1	42	44	45	46	45	44	44	44	45	48	50	51	52	49	48	53	53	52	49	45	42	Diurnal Maximum	

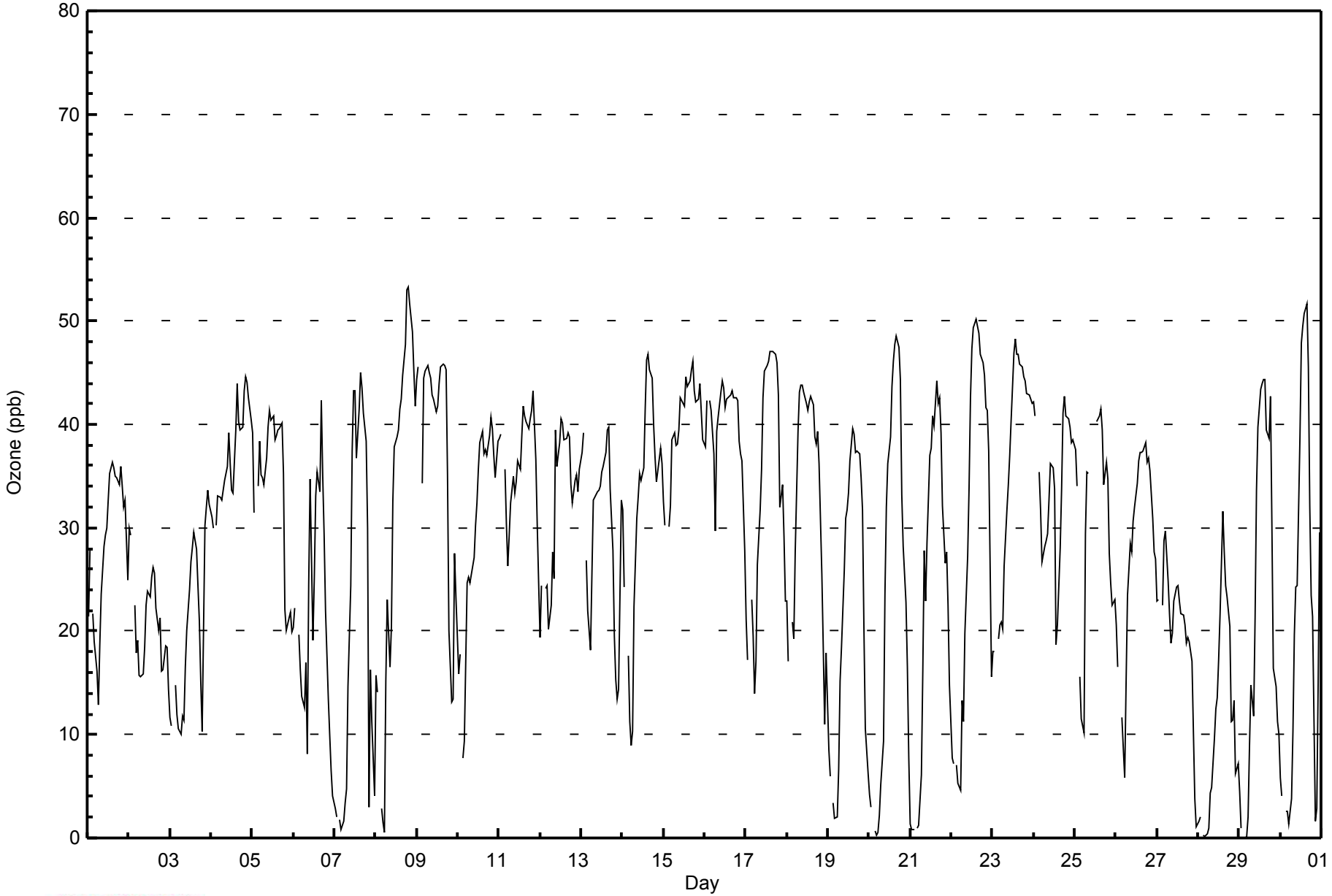
Z - zerospan C - Calibration
Alberta Ambient Air Quality Objectives (AAAQO): 1-hr 82 ppb

WBEA NETWORK

Hourly Averages

Ozone (O_3) - ppb

Fort McKay South - April 2014



AURORA ATMOSPHERICS INC.

Concentration Ranges (ppb)	Number of Hours	%	Cumulative %
0 - 20	188	27.41	27.41
21 - 50	493	71.87	99.27
51 - 82	5	0.73	100.00
> 83	0	0.00	100.00

Total Number of Valid Hours: 686

Total Number of Hours: 720

WBEA NETWORK

Frequency Distribution

Ozone (O_3) - ppb

Fort McKay South - April 2014

Concentration Ranges (ppb)	Wind Direction																
	N	NNE	NE	ENE	E	ESE	SE	SSE	S	SSW	SW	WSW	W	WNW	NW	NNW	**Totals**
0 - 20	28	9	0	1	4	9	11	21	18	27	21	9	6	3	10	10	187
21 - 50	110	77	27	13	23	25	74	40	19	12	15	17	11	13	11	6	493
51 - 82	0	0	0	0	0	0	0	0	2	0	1	2	0	0	0	0	5
> 83	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Totals	138	86	27	14	27	34	85	61	39	39	37	28	17	16	21	16	685

Total Number of Valid Hours: 685

Total Number of Hours: 720

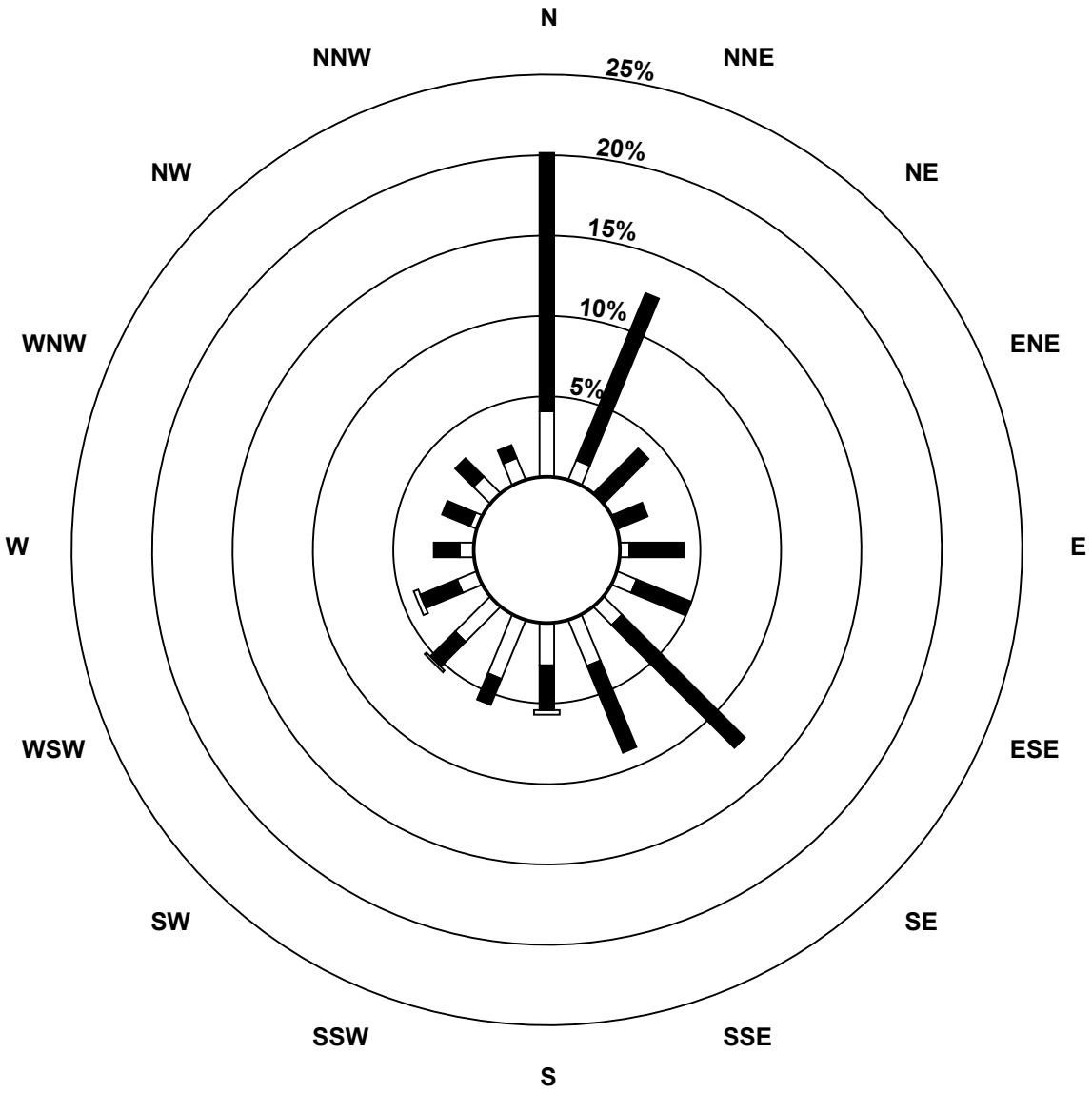
AURORA ATMOSPHERICS INC.

Wood Buffalo Environmental Association

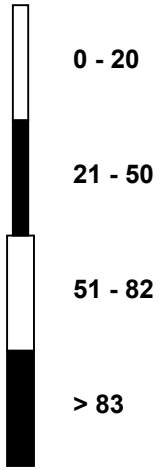
Wind Rose Apr 2014

Ozone (O_3) - ppb

Fort McKay South (AMS 13)



Classes (ppb)



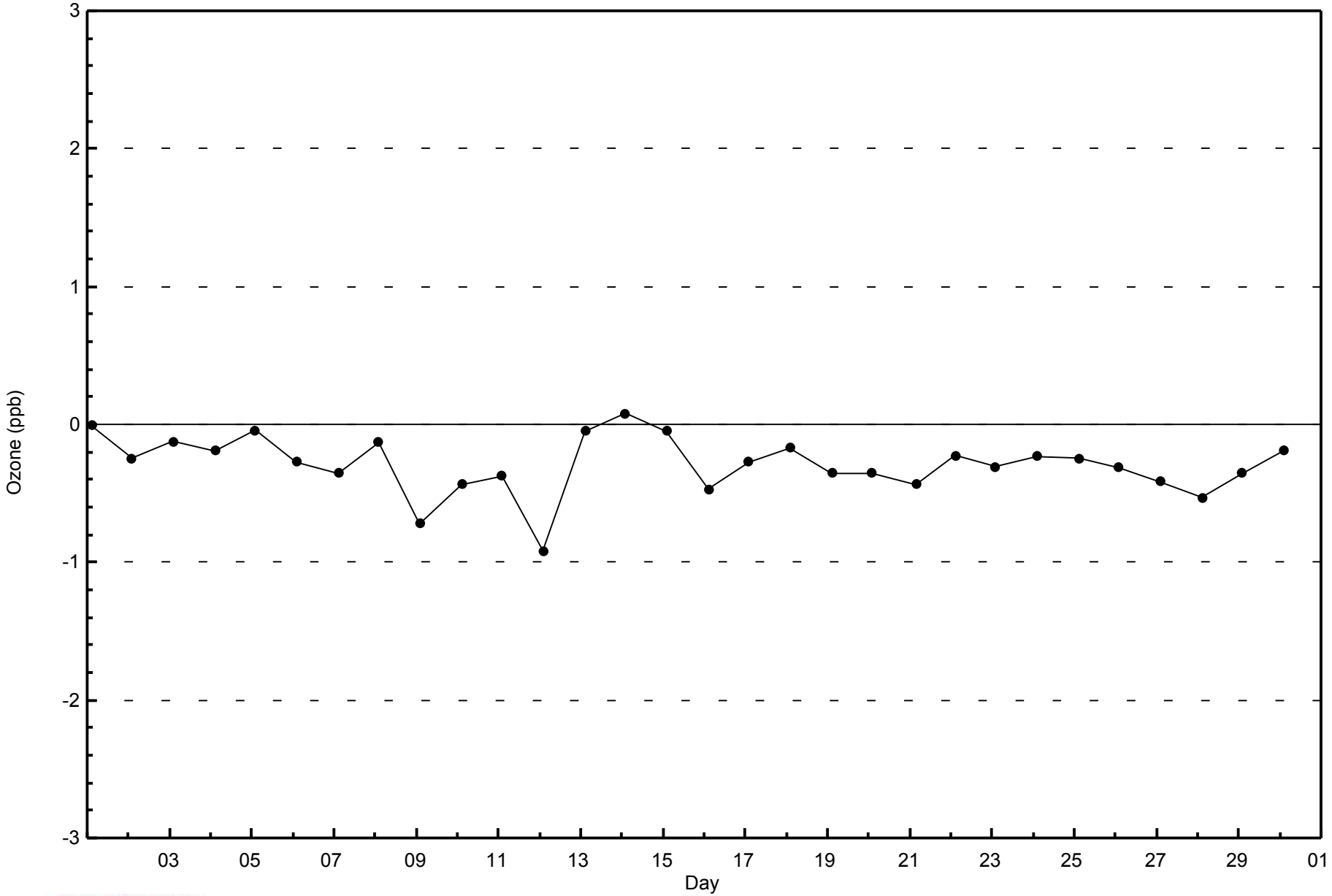
Total Number of Valid Hours: 685

WBEA NETWORK

Zero Responses

Ozone (O_3) - ppb

Fort McKay South - April 2014



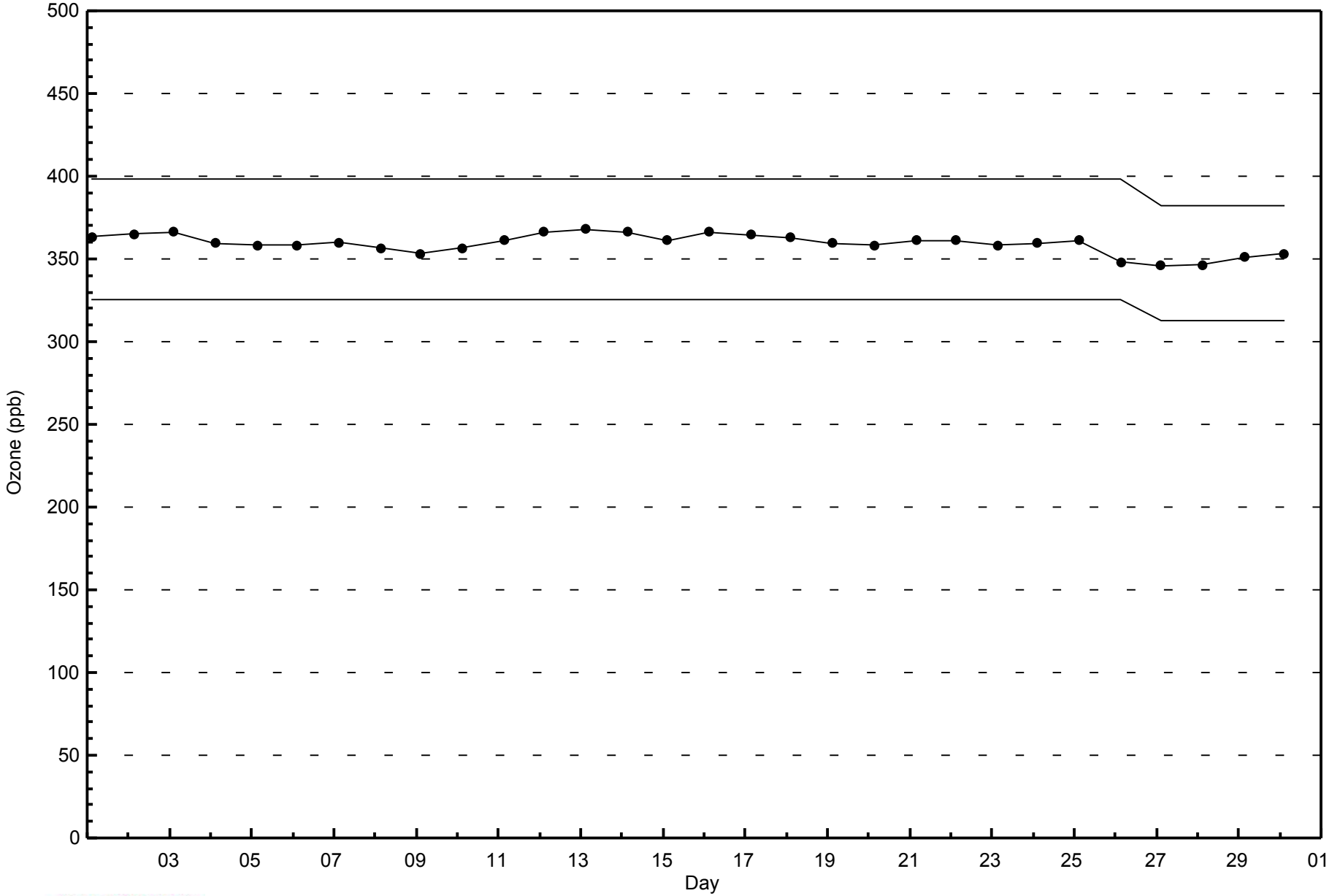
AURORA
ATMOSPHERICS INC.

WBEA NETWORK

Span Responses

Ozone (O_3) - ppb

Fort McKay South - April 2014



AURORA ATMOSPHERICS INC.

Wood Buffalo Environmental Association

Summary of Hour Averages

Nitric Oxide (NO) - ppb

Fort McKay South - April 2014

Maximum Value: 44 ppb on Apr 21 04:00

Maximum Daily Average: 6.2 ppb on Apr 21

Minimum Value: 0 ppb on Apr 1 05:00

Minimum Daily Average: 0.0 ppb on Apr 18

Maximum Diurnal Average: 16.0 ppb at hour 2

Minimum Diurnal Average: 0.0 ppb at hour 3

Monthly Average: 1.4 ppb

Percentiles: $P_1 = 0$ $P_{10} = 0$ $Q_1 = 0$ Median = 0 $Q_3 = 1$ $P_{90} = 4$ $P_{99} = 20$

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-Apr	0	Z	0	0	0	0	1	3	6	4	4	4	3	2	2	1	1	1	0	0	0	0	0	0	1.4	6
2-Apr	0	Z	0	0	0	0	1	4	7	5	4	3	3	2	2	2	2	1	0	0	0	0	0	0	1.5	7
3-Apr	0	Z	0	0	0	0	1	6	15	10	9	8	5	4	3	3	5	5	3	0	0	0	0	0	3.3	15
4-Apr	0	Z	0	0	0	0	0	1	1	1	0	1	1	1	0	0	0	0	0	0	0	0	0	0	0.3	1
5-Apr	0	Z	0	0	0	0	0	0	0	1	1	1	1	3	2	1	1	1	0	0	0	0	0	0	0.5	3
6-Apr	0	Z	0	0	0	0	0	6	37	8	3	12	7	5	3	3	1	1	1	0	0	0	0	0	3.9	37
7-Apr	0	Z	0	0	1	1	5	20	17	9	3	1	2	5	2	0	0	0	0	2	9	10	7	10	4.6	20
8-Apr	0	Z	0	0	0	1	2	1	6	7	2	0	0	0	0	0	0	0	0	0	0	0	0	0	0.8	7
9-Apr	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
10-Apr	0	Z	0	0	0	0	0	2	3	4	3	3	2	2	1	1	1	1	0	0	0	0	0	0	1.0	4
11-Apr	0	Z	0	0	0	0	0	0	0	1	1	1	1	1	1	0	0	0	0	0	0	0	0	0	0.3	1
12-Apr	0	Z	0	0	0	0	0	2	7	0	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0.5	7
13-Apr	0	Z	0	0	0	0	0	0	0	0	1	1	1	1	1	0	0	2	1	0	0	0	0	0	0.3	2
14-Apr	0	Z	0	0	0	1	4	5	4	4	3	4	3	2	1	0	0	0	0	0	0	0	0	0	1.3	5
15-Apr	0	Z	0	0	0	0	0	0	1	1	1	1	1	0	0	0	0	0	0	0	0	0	0	0	0.2	1
16-Apr	0	Z	0	0	0	0	1	1	1	0	0	0	1	1	1	0	0	0	0	0	0	0	0	0	0.3	1
17-Apr	0	Z	0	0	0	0	2	4	4	3	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0.7	4
18-Apr	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
19-Apr	0	Z	0	0	0	1	3	2	2	1	2	2	1	1	1	1	0	0	0	0	0	0	0	0	0.7	3
20-Apr	0	Z	0	0	2	6	16	21	21	6	2	3	3	2	1	0	0	0	0	0	0	0	0	0	3.6	21
21-Apr	4	16	Z	44	26	11	8	7	5	6	3	2	4	2	1	1	1	1	0	0	0	0	0	0	6.2	44
22-Apr	0	Z	0	0	0	0	4	20	13	7	4	2	0	0	0	0	0	0	0	0	0	0	0	0	2.2	20
23-Apr	0	Z	0	0	0	0	2	2	2	2	1	1	0	0	0	0	0	0	0	0	0	0	0	0	0.4	2
24-Apr	0	Z	0	0	0	0	0	0	0	C	C	C	C	C	5	2	1	0	0	0	0	0	0	0	0.5	5
25-Apr	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
26-Apr	0	Z	0	0	0	1	1	1	0	1	0	1	1	0	0	0	0	0	0	0	0	0	0	0	0.3	1
27-Apr	0	Z	0	0	0	0	0	0	1	0	0	1	0	0	0	0	0	0	0	0	0	0	0	0	0.1	1
28-Apr	0	Z	0	0	0	2	12	9	12	5	4	7	6	4	1	1	2	2	0	0	0	0	0	0	2.9	12
29-Apr	0	Z	0	1	2	2	3	3	14	4	2	1	0	0	0	0	0	0	0	0	0	0	0	0	1.4	14
30-Apr	0	Z	0	0	0	1	7	14	7	7	6	1	0	0	0	0	0	1	2	2	21	7	17	0	4.0	21
	0.2	16.0	0.0	1.5	1.1	0.9	2.4	4.5	6.2	3.3	2.1	2.1	1.7	1.3	0.9	0.6	0.5	0.5	0.3	0.2	1.0	0.6	0.8	0.3	Diurnal Average	
	4	16	0	44	26	11	16	21	37	10	9	12	7	5	5	3	5	5	3	2	21	10	17	10	Diurnal Maximum	

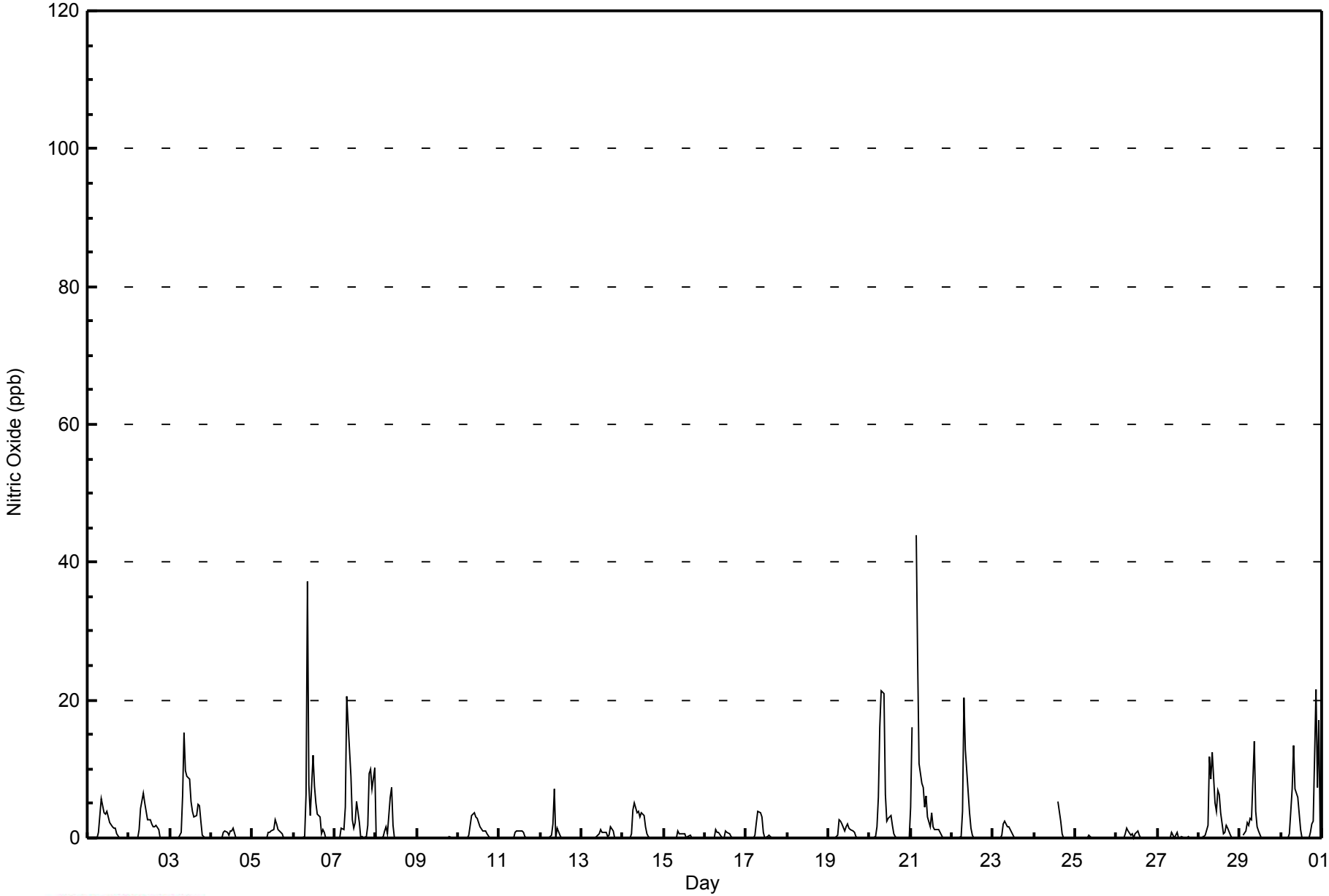
Z - zerospan C - Calibration

WBEA NETWORK

Hourly Averages

Nitric Oxide (NO) - ppb

Fort McKay South - April 2014



AURORA ATMOSPHERICS INC.

Concentration Ranges (ppb)	Number of Hours	%	Cumulative %
0 - 20	679	99.12	99.12
21 - 40	5	0.73	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

WBEA NETWORK

Frequency Distribution

Nitric Oxide (NO) - ppb

Fort McKay South - April 2014

Concentration Ranges (ppb)	Wind Direction																
	N	NNE	NE	ENE	E	ESE	SE	SSE	S	SSW	SW	WSW	W	WNW	NW	NNW	**Totals**
0 - 20	136	87	28	13	26	35	82	62	38	40	34	28	16	17	22	14	678
21 - 40	0	0	0	1	1	1	0	0	0	1	0	1	0	0	0	0	5
11 - 80	0	0	0	0	0	0	0	0	0	1	0	0	0	0	0	0	1
81 - 159	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
> 159	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Totals	136	87	28	14	27	36	82	62	38	42	34	29	16	17	22	14	684

Total Number of Valid Hours: 684

Total Number of Hours: 720

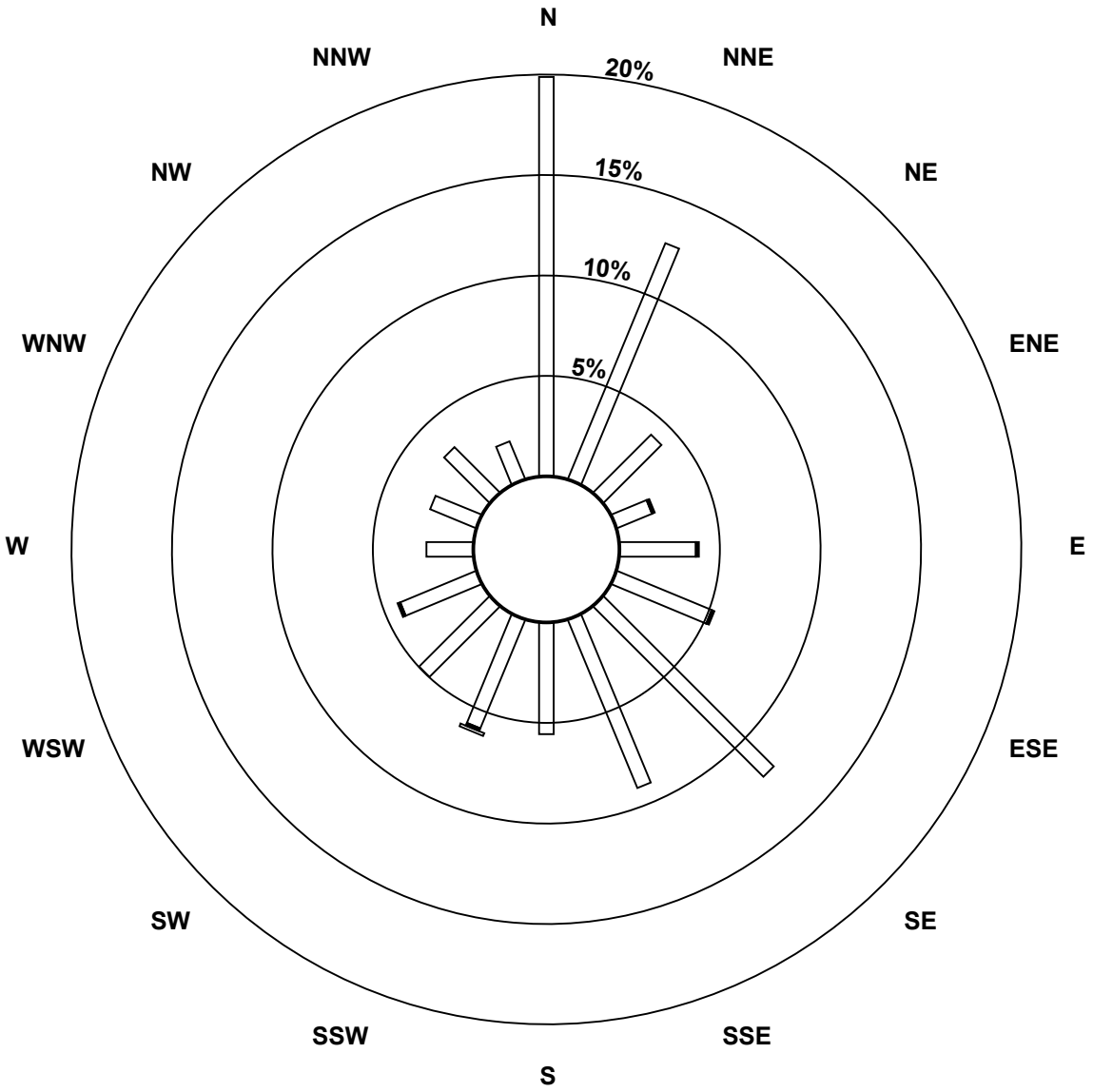
AURORA ATMOSPHERICS INC.

Wood Buffalo Environmental Association

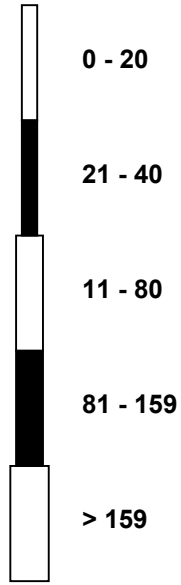
Wind Rose Apr 2014

Nitric Oxide (NO) - ppb

Fort McKay South (AMS 13)



Classes (ppb)



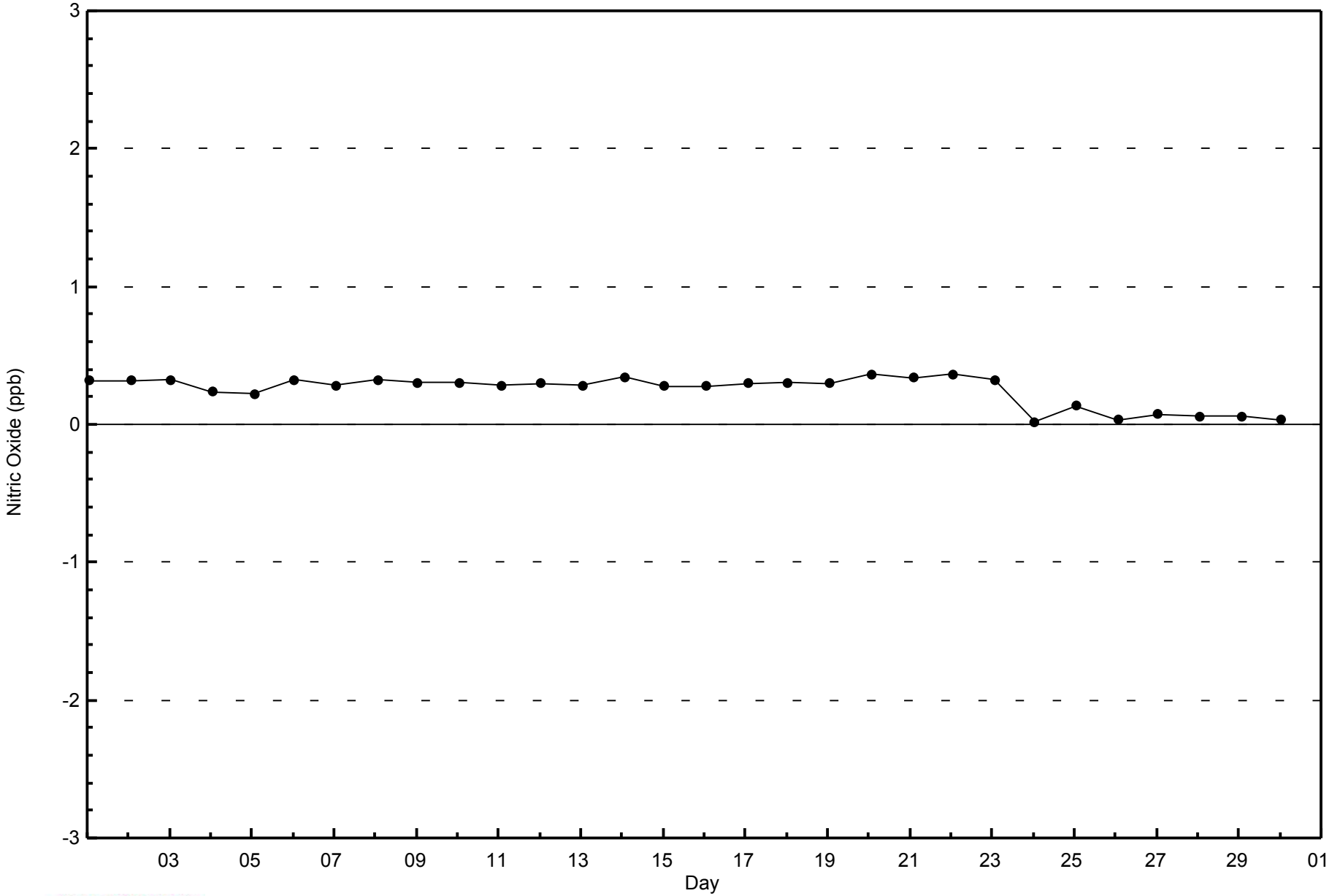
Total Number of Valid Hours: 684

WBEA NETWORK

Zero Responses

Nitric Oxide (NO) - ppb

Fort McKay South - April 2014



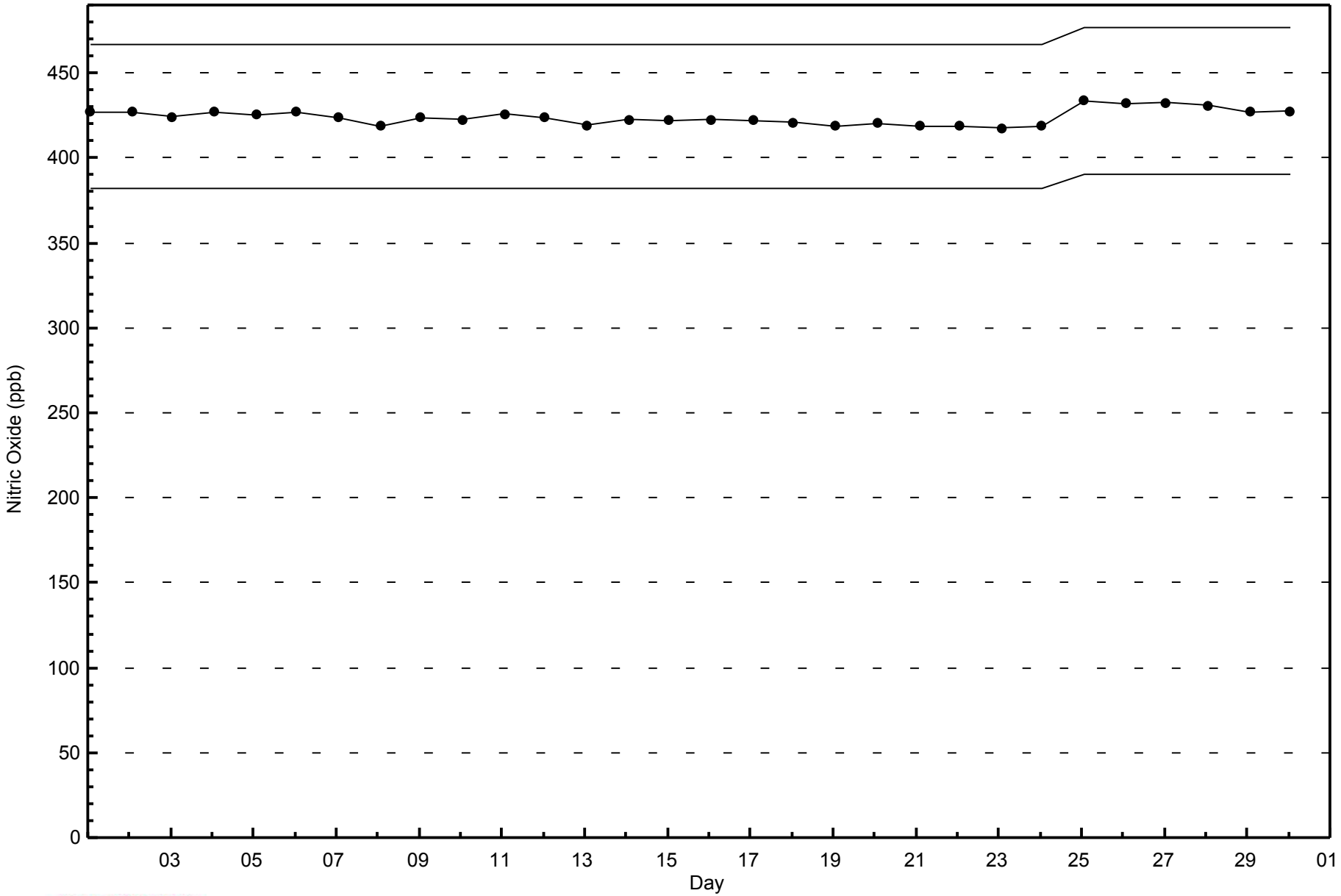
AURORA
ATMOSPHERICS INC.

WBEA NETWORK

Span Responses

Nitric Oxide (NO) - ppb

Fort McKay South - April 2014



AURORA ATMOSPHERICS INC.

Number of Exceedences (AAAQO): 1-hr: 0 24-hr: 0
Maximum Value: 41 ppb on Apr 7 21:00 Maximum Daily Average: 13.6 ppb on Apr 21

Minimum Value: 0 ppb on Apr 5 05:00
Maximum Diurnal Average: 24.9 ppb at hour 2
Monthly Average: 5.8 ppb

Minimum Daily Average: 2.0 ppb on Apr 9
Minimum Diurnal Average: 3.4 ppb at hour 16
Percentiles: $P_1 = 0$ $P_{10} = 0$ $Q_1 = 2$ Median = 4 $Q_3 = 8$ $P_{90} = 14$ $P_{99} = 25$

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-Apr	17	Z	5	2	2	7	10	11	13	8	7	7	6	5	4	4	5	5	4	2	2	3	4	13	6.3	17
2-Apr	8	Z	9	11	12	10	11	10	10	8	5	4	5	5	4	4	6	6	7	10	10	7	8	10	7.8	12
3-Apr	9	Z	5	3	4	4	4	8	12	8	9	9	7	6	5	6	11	16	22	21	8	8	7	8	8.6	22
4-Apr	9	Z	10	13	11	11	12	11	11	9	5	5	6	7	2	1	1	1	1	1	1	1	1	0	5.6	13
5-Apr	0	Z	1	1	0	0	1	2	2	2	2	3	4	6	6	5	5	5	7	17	18	17	14	11	5.5	18
6-Apr	6	Z	2	2	3	4	4	14	30	17	11	22	16	13	12	14	6	12	16	16	13	13	12	11	11.7	30
7-Apr	10	Z	8	7	9	8	9	17	19	16	7	5	8	14	8	2	3	3	5	15	41	29	31	36	13.5	41
8-Apr	19	Z	7	5	4	6	9	5	17	15	5	0	0	0	0	0	0	0	0	0	0	0	0	1	4.0	19
9-Apr	0	Z	0	0	0	0	0	0	0	0	0	0	1	0	0	0	0	0	4	15	11	10	2	2	2.0	15
10-Apr	2	Z	4	6	8	5	5	7	7	7	6	6	5	4	5	6	5	5	2	1	2	3	6	3	4.7	8
11-Apr	2	Z	1	3	7	8	5	3	3	5	6	5	6	4	3	3	2	1	1	1	1	2	2	2	3.1	8
12-Apr	4	Z	1	0	0	0	3	6	11	0	3	1	0	1	2	1	1	2	2	3	3	2	1	1	2.0	11
13-Apr	1	Z	1	0	0	1	1	2	2	2	2	3	3	3	2	2	3	9	14	14	11	9	8	2	4.0	14
14-Apr	2	Z	12	16	17	18	17	16	12	11	9	11	10	7	5	5	6	6	9	7	6	4	3	4	9.2	18
15-Apr	7	Z	9	8	7	4	2	3	4	4	2	3	2	2	2	2	2	2	2	1	2	2	5	7	3.6	9
16-Apr	7	Z	2	2	2	6	12	5	3	2	1	1	4	3	3	3	2	2	2	1	1	3	4	11	3.4	12
17-Apr	14	Z	10	7	8	12	12	14	11	9	3	2	2	3	2	2	2	1	2	3	3	2	1	1	5.5	14
18-Apr	1	Z	1	1	1	3	2	1	1	1	1	2	3	2	1	2	5	4	3	3	5	4	3	7	2.4	7
19-Apr	5	Z	4	4	3	3	10	9	8	5	6	7	6	6	5	4	3	3	3	2	1	1	1	1	4.2	10
20-Apr	1	Z	2	3	4	4	8	12	15	10	6	8	10	7	4	3	2	2	1	1	1	1	3	10	5.1	15
21-Apr	23	25	Z	20	21	18	17	20	14	18	12	7	10	8	8	5	7	5	7	13	16	12	15	14	13.6	25
22-Apr	11	Z	5	3	3	3	11	26	20	14	9	5	3	1	1	0	1	1	1	2	3	3	5	25	6.7	26
23-Apr	22	Z	26	21	18	17	19	16	11	9	6	5	1	1	1	0	0	0	1	0	0	0	0	0	7.5	26
24-Apr	1	Z	6	6	5	8	7	8	7	C	C	C	C	C	21	14	10	2	1	0	0	1	0	0	5.3	21
25-Apr	0	Z	0	1	1	1	3	4	4	3	1	1	1	1	1	0	2	6	3	2	2	3	7	4	2.2	7
26-Apr	2	Z	2	2	6	8	10	8	3	4	1	2	3	3	3	2	3	3	3	2	3	6	8	7	4.1	10
27-Apr	9	Z	8	6	1	0	1	3	6	4	3	3	3	3	4	3	3	5	4	4	4	6	3	2	3.8	9
28-Apr	3	Z	4	2	1	1	2	8	12	9	8	9	9	7	3	5	8	10	9	7	6	7	8	8	6.4	12
29-Apr	6	Z	4	3	3	4	6	7	14	8	6	4	0	0	0	0	0	1	0	0	0	0	0	0	2.9	14
30-Apr	1	Z	0	0	0	2	8	17	14	16	18	6	3	1	2	3	7	18	19	15	31	25	21	2	9.9	31
	6.7	24.9	5.0	5.3	5.3	5.8	7.4	9.1	9.8	7.7	5.5	5.0	4.5	4.1	3.8	3.4	3.6	4.5	5.1	5.9	6.7	6.1	6.1	6.8	Diurnal Average	
	23	25	26	21	21	18	19	26	30	18	18	22	16	14	21	14	11	18	22	21	41	29	31	36	Diurnal Maximum	

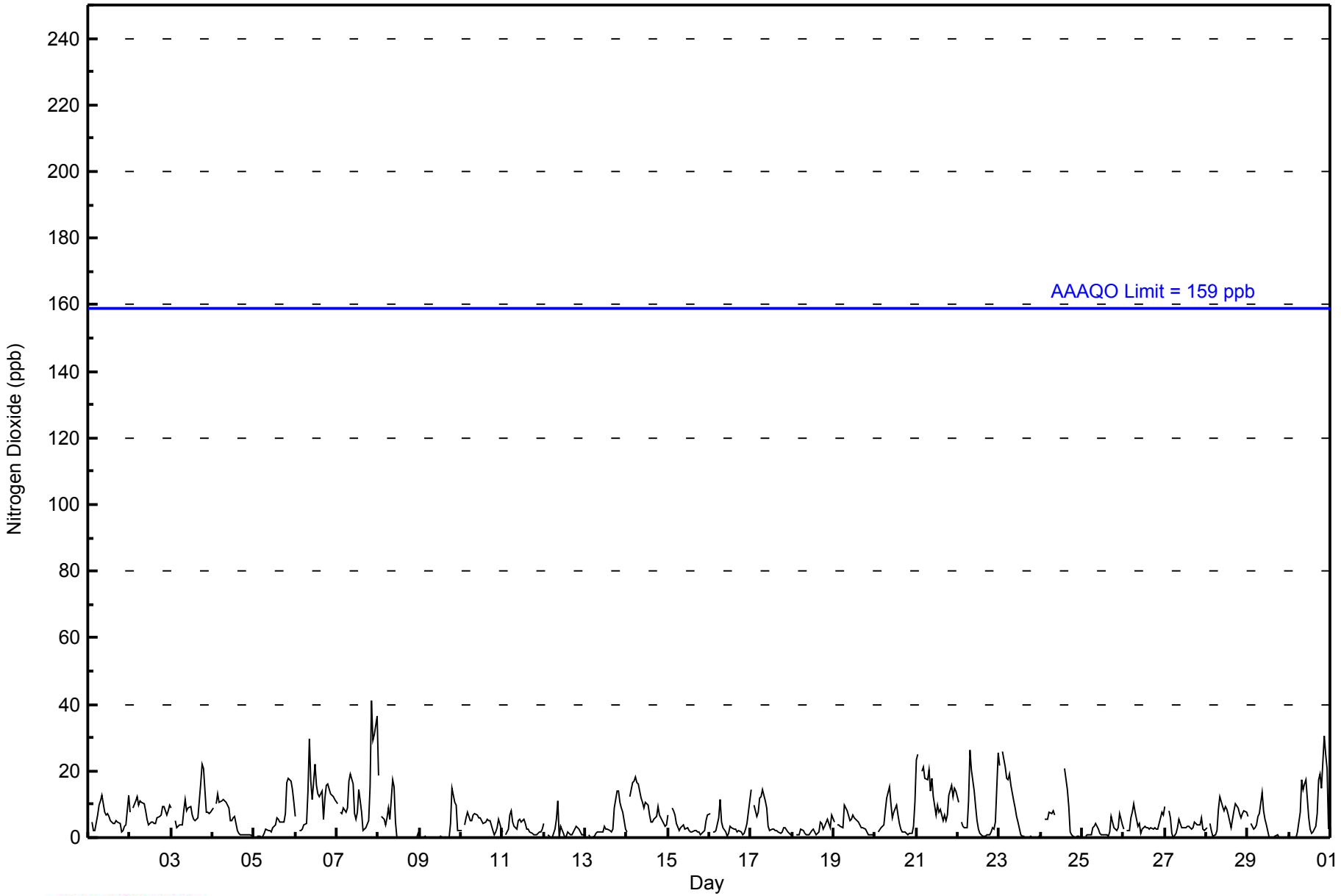
Z - zerospan C - Calibration
Alberta Ambient Air Quality Objectives (AAAQO): 1-hr 159 ppb

WBEA NETWORK

Hourly Averages

Nitrogen Dioxide (NO_2) - ppb

Fort McKay South - April 2014



AURORA ATMOSPHERICS INC.

Concentration Ranges (ppb)	Number of Hours	%	Cumulative %
0 - 20	665	97.08	97.08
21 - 40	19	2.77	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

WBEA NETWORK

Frequency Distribution

Nitrogen Dioxide (NO_2) - ppb

Fort McKay South - April 2014

Concentration Ranges (ppb)	Wind Direction																
	N	NNE	NE	ENE	E	ESE	SE	SSE	S	SSW	SW	WSW	W	WNW	NW	NNW	**Totals**
0 - 20	131	86	28	14	27	34	82	62	37	34	33	27	16	17	22	14	664
21 - 40	5	1	0	0	0	2	0	0	1	7	1	2	0	0	0	0	19
11 - 80	0	0	0	0	0	0	0	0	0	1	0	0	0	0	0	0	1
81 - 159	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
> 159	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Totals	136	87	28	14	27	36	82	62	38	42	34	29	16	17	22	14	684

Total Number of Valid Hours: 684

Total Number of Hours: 720

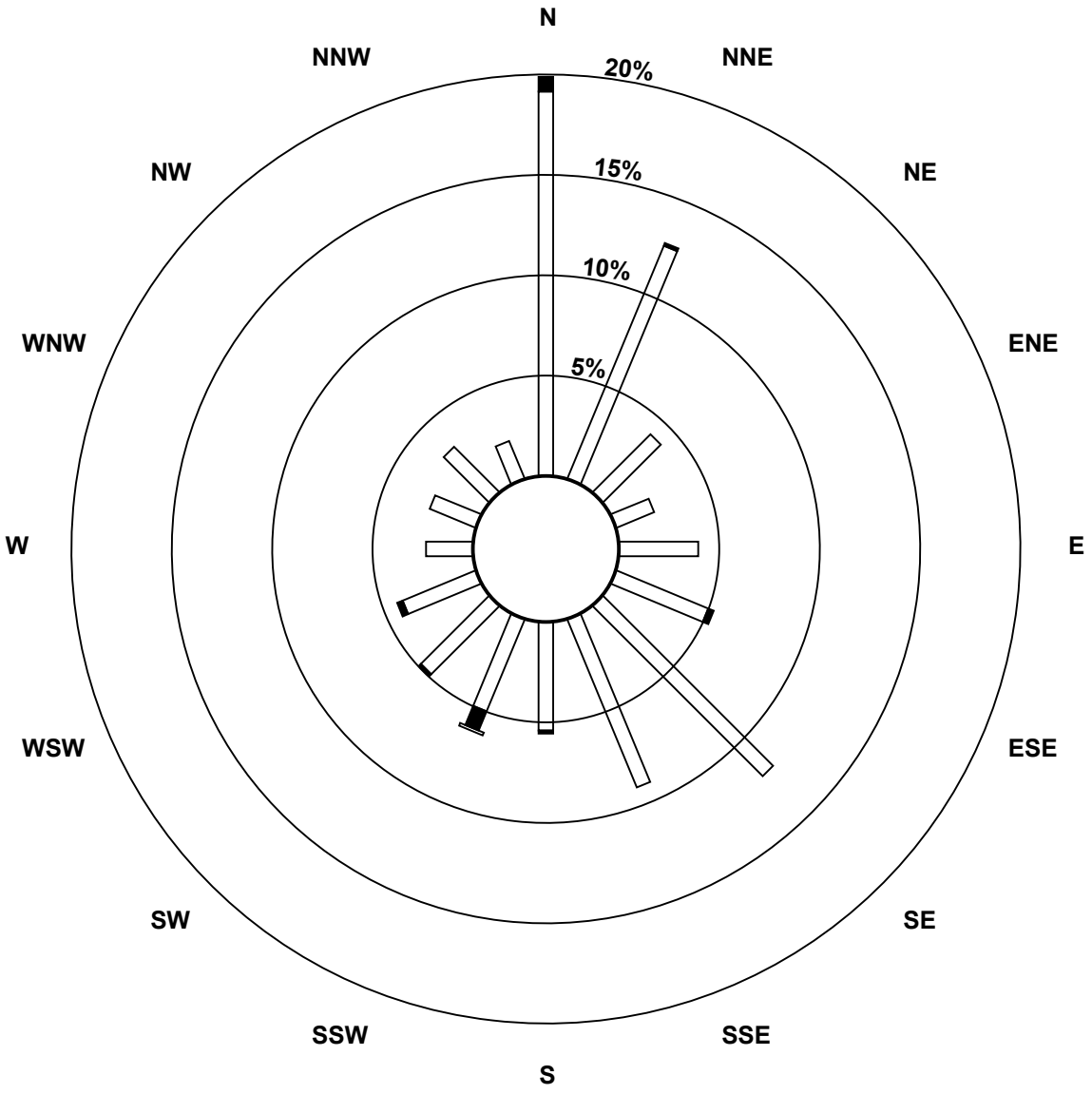
AURORA
ATMOSPHERICS INC.

Wood Buffalo Environmental Association

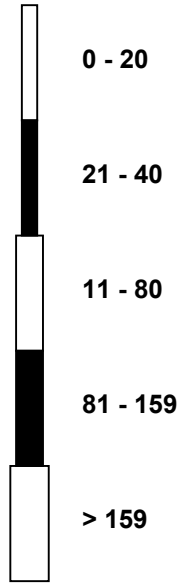
Wind Rose Apr 2014

Nitrogen Dioxide (NO_2) - ppb

Fort McKay South (AMS 13)



Classes (ppb)



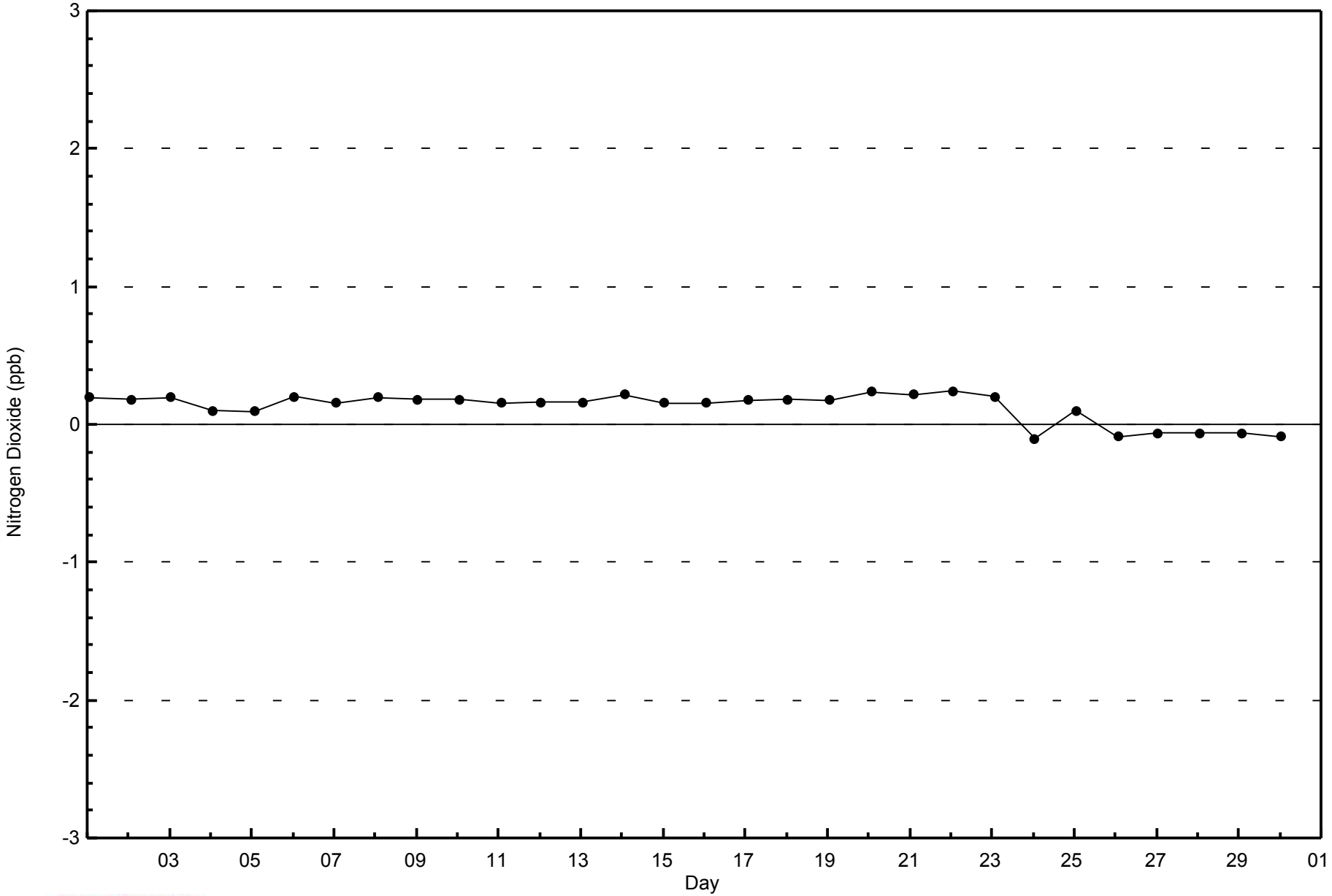
Total Number of Valid Hours: 684

WBEA NETWORK

Zero Responses

Nitrogen Dioxide (NO_2) - ppb

Fort McKay South - April 2014



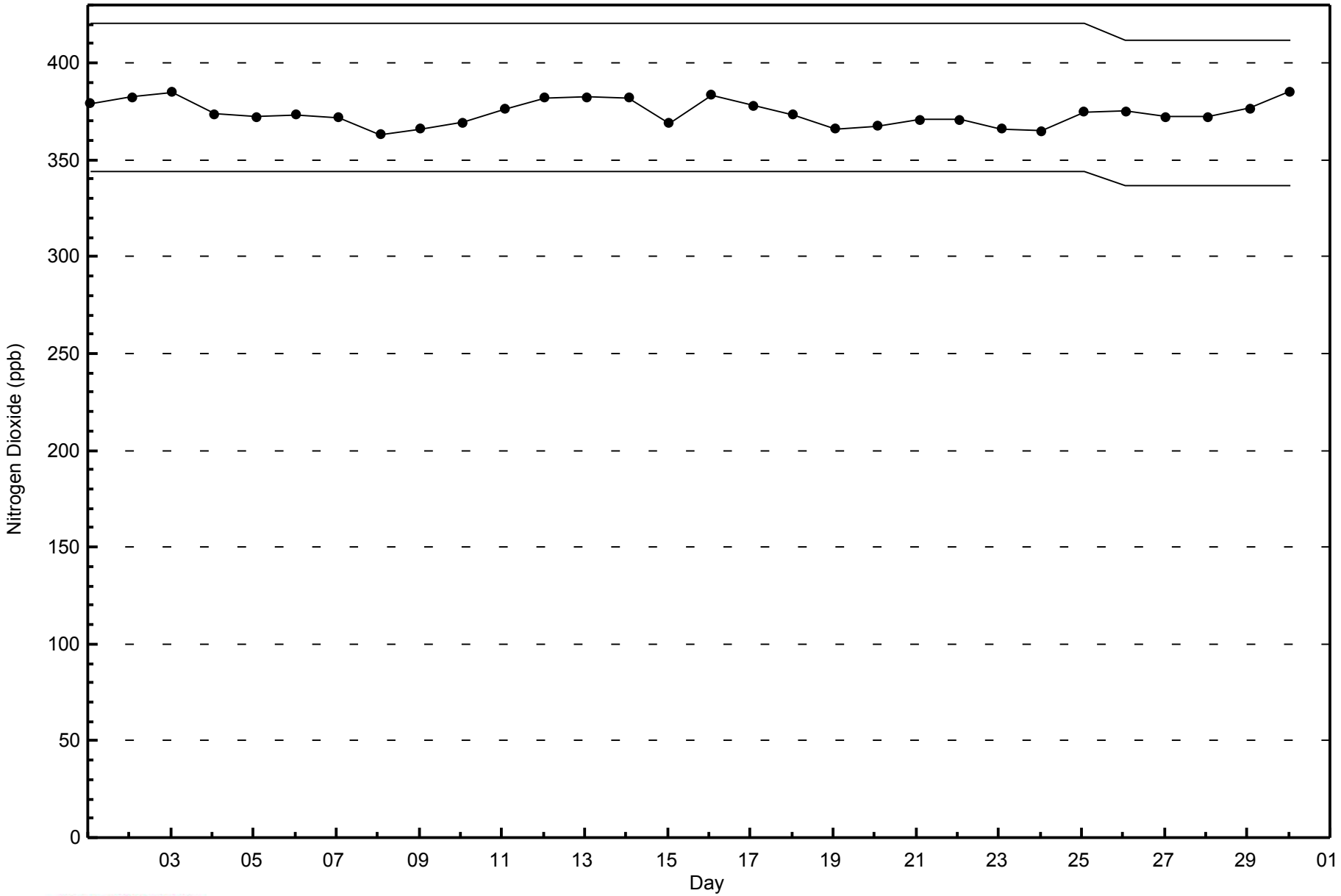
AURORA ATMOSPHERICS INC.

WBEA NETWORK

Span Responses

Nitrogen Dioxide (NO_2) - ppb

Fort McKay South - April 2014



AURORA ATMOSPHERICS INC.

Wood Buffalo Environmental Association

Summary of Hour Averages

Nitrogen Oxides (NO_X) - ppb

Fort McKay South - April 2014

Maximum Value: 67 ppb on Apr 6 09:00

Maximum Daily Average: 19.8 ppb on Apr 21

Minimum Value: 0 ppb on Apr 8 19:00

Minimum Daily Average: 2.0 ppb on Apr 9

Maximum Diurnal Average: 40.9 ppb at hour 2

Minimum Diurnal Average: 4.0 ppb at hour 16

Monthly Average: 7.3 ppb

Percentiles: $P_1 = 0$ $P_{10} = 0$ $Q_1 = 2$ Median = 5 $Q_3 = 10$ $P_{90} = 17$ $P_{99} = 46$

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-Apr	17	Z	5	2	2	7	11	14	19	11	10	11	9	7	6	6	6	5	4	2	2	3	4	12	7.7	19
2-Apr	8	Z	9	11	12	10	12	15	17	13	9	7	7	7	6	6	8	8	7	10	10	7	8	10	9.3	17
3-Apr	9	Z	5	3	4	4	5	14	27	18	18	18	12	9	8	9	16	21	24	21	8	8	7	8	12.0	27
4-Apr	9	Z	10	13	11	11	12	12	12	10	5	6	7	8	2	1	1	1	1	1	1	1	1	0	5.9	13
5-Apr	0	Z	1	1	0	0	1	3	2	3	2	4	5	9	8	6	6	5	7	17	18	17	14	11	6.0	18
6-Apr	6	Z	2	2	3	4	5	20	67	25	15	34	23	18	16	17	6	13	16	16	13	13	12	11	15.5	67
7-Apr	10	Z	8	7	10	9	13	37	36	25	10	7	10	19	10	2	3	3	5	17	51	39	38	47	18.1	51
8-Apr	19	Z	6	5	4	7	10	6	23	23	6	0	0	0	0	0	0	0	0	0	0	0	0	1	4.8	23
9-Apr	0	Z	0	0	0	0	0	0	0	0	0	0	1	0	0	0	0	0	4	15	11	10	2	2	2.0	15
10-Apr	2	Z	4	6	8	5	5	8	10	10	9	9	7	6	5	7	6	6	2	1	2	3	6	2	5.7	10
11-Apr	2	Z	1	3	7	8	5	3	3	6	7	6	7	5	4	3	2	1	1	1	1	2	2	2	3.4	8
12-Apr	4	Z	1	0	0	0	3	8	18	0	5	2	0	1	2	1	1	2	2	3	3	2	1	1	2.5	18
13-Apr	1	Z	1	0	0	1	1	2	2	2	2	4	3	4	3	2	3	10	15	14	11	9	8	2	4.3	15
14-Apr	2	Z	12	16	17	19	20	21	15	14	12	14	13	8	5	5	6	6	9	7	6	4	3	4	10.5	21
15-Apr	7	Z	9	8	7	4	2	3	5	4	3	4	3	1	2	3	2	2	2	1	2	2	5	7	3.7	9
16-Apr	7	Z	2	2	2	6	13	5	4	2	1	1	5	4	3	3	2	2	1	1	1	3	4	11	3.6	13
17-Apr	14	Z	10	6	7	12	15	18	15	12	4	2	3	3	3	2	2	1	2	3	3	2	1	1	6.1	18
18-Apr	1	Z	1	1	1	3	2	1	1	1	1	2	3	2	1	2	4	4	3	3	5	4	3	7	2.4	7
19-Apr	5	Z	4	4	3	4	12	11	10	6	7	9	7	7	5	5	3	3	2	1	1	1	1	1	4.9	12
20-Apr	1	Z	2	3	5	10	24	33	36	16	9	10	13	8	5	3	2	2	1	1	1	1	3	10	8.7	36
21-Apr	28	41	Z	64	47	29	25	28	18	24	15	8	13	9	9	6	8	6	7	13	15	12	15	14	19.8	64
22-Apr	11	Z	5	3	3	3	15	46	33	21	13	6	3	1	0	0	1	1	1	2	3	3	5	25	8.9	46
23-Apr	22	Z	26	21	18	18	21	18	13	10	8	5	1	1	1	0	0	0	1	0	0	0	0	0	7.9	26
24-Apr	1	Z	6	6	5	8	7	8	7	C	C	C	C	C	26	17	10	2	1	1	0	1	0	0	5.8	26
25-Apr	0	Z	0	1	1	1	3	4	5	3	1	1	1	1	1	0	2	6	3	2	2	3	7	4	2.2	7
26-Apr	2	Z	2	2	6	9	12	9	4	5	1	3	4	3	3	2	3	3	3	2	2	6	8	7	4.4	12
27-Apr	9	Z	8	6	1	0	1	3	7	5	3	4	3	3	4	3	3	5	5	4	4	6	3	2	3.9	9
28-Apr	3	Z	5	2	1	3	14	17	25	15	12	16	15	10	3	6	10	12	9	7	6	7	8	8	9.3	25
29-Apr	6	Z	5	4	5	6	9	10	28	12	7	5	0	0	0	0	0	1	0	0	0	0	0	0	4.3	28
30-Apr	1	Z	0	0	0	2	15	31	22	23	23	7	3	1	2	3	7	18	21	17	52	32	38	2	14.0	52
	6.9	40.9	5.1	6.8	6.3	6.7	9.8	13.6	16.0	10.9	7.6	7.1	6.2	5.4	4.8	4.0	4.1	4.9	5.4	6.1	7.8	6.6	6.9	7.1	Diurnal Average	
	28	41	26	64	47	29	25	46	67	25	23	34	23	19	26	17	16	21	24	21	52	39	38	47	Diurnal Maximum	

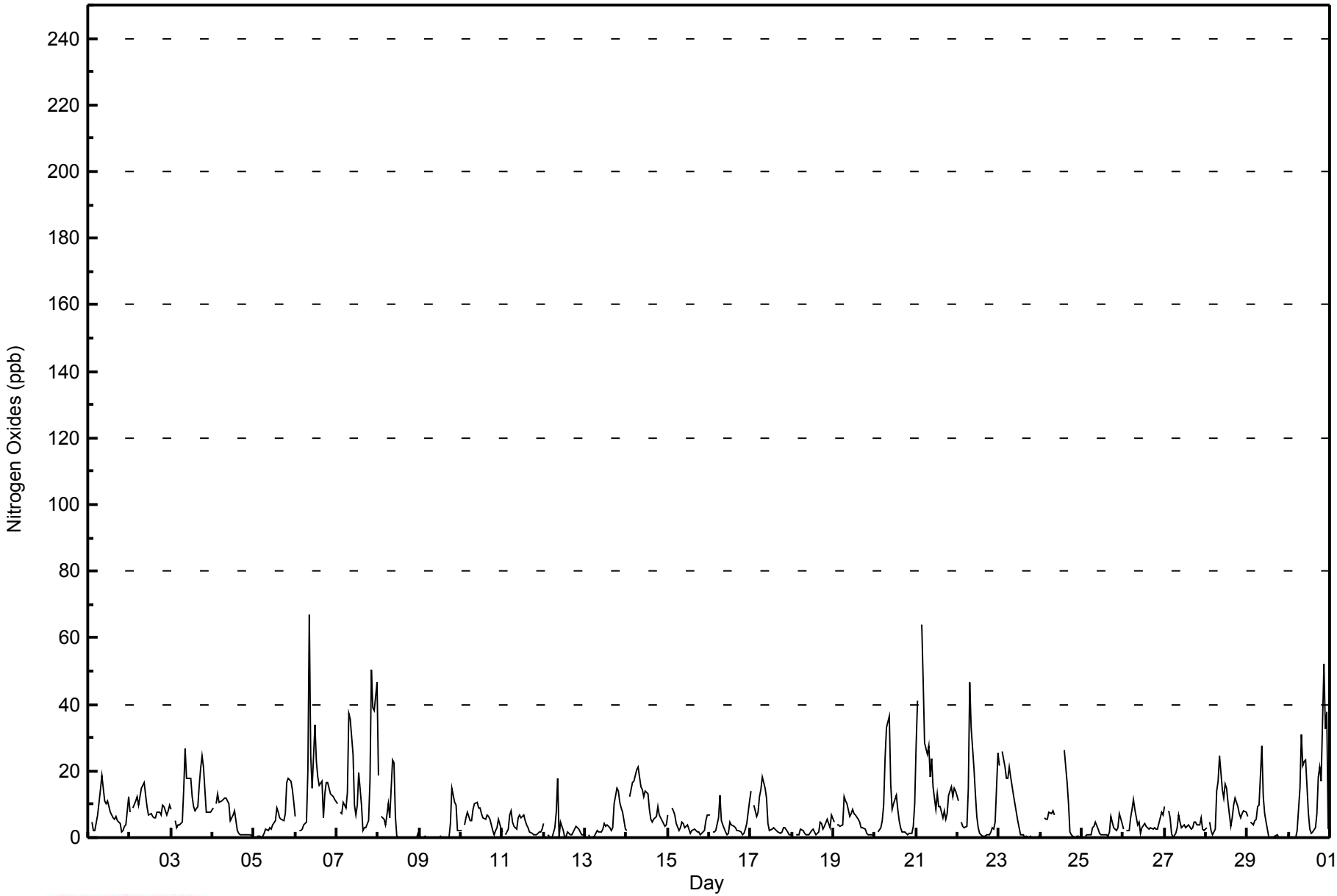
Z - zerospan C - Calibration

WBEA NETWORK

Hourly Averages

Nitrogen Oxides (NO_X) - ppb

Fort McKay South - April 2014



AURORA ATMOSPHERICS INC.

Nitrogen Oxides (NO_X) - ppb
Fort McKay South - April 2014

Concentration Ranges (ppb)	Number of Hours	%	Cumulative %
0 - 20	637	92.99	92.99
21 - 40	40	5.84	98.83
11 - 80	8	1.17	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

WBEA NETWORK

Frequency Distribution

Nitrogen Oxides (NO_X) - ppb

Fort McKay South - April 2014

Concentration Ranges (ppb)	Wind Direction																
	N	NNE	NE	ENE	E	ESE	SE	SSE	S	SSW	SW	WSW	W	WNW	NW	NNW	**Totals**
0 - 20	127	84	28	13	23	30	78	61	36	27	33	27	16	17	22	14	636
21 - 40	9	2	0	1	4	5	4	1	1	11	1	1	0	0	0	0	40
11 - 80	0	1	0	0	0	1	0	0	1	4	0	1	0	0	0	0	8
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	136	87	28	14	27	36	82	62	38	42	34	29	16	17	22	14	684

Total Number of Valid Hours: 684

Total Number of Hours: 720

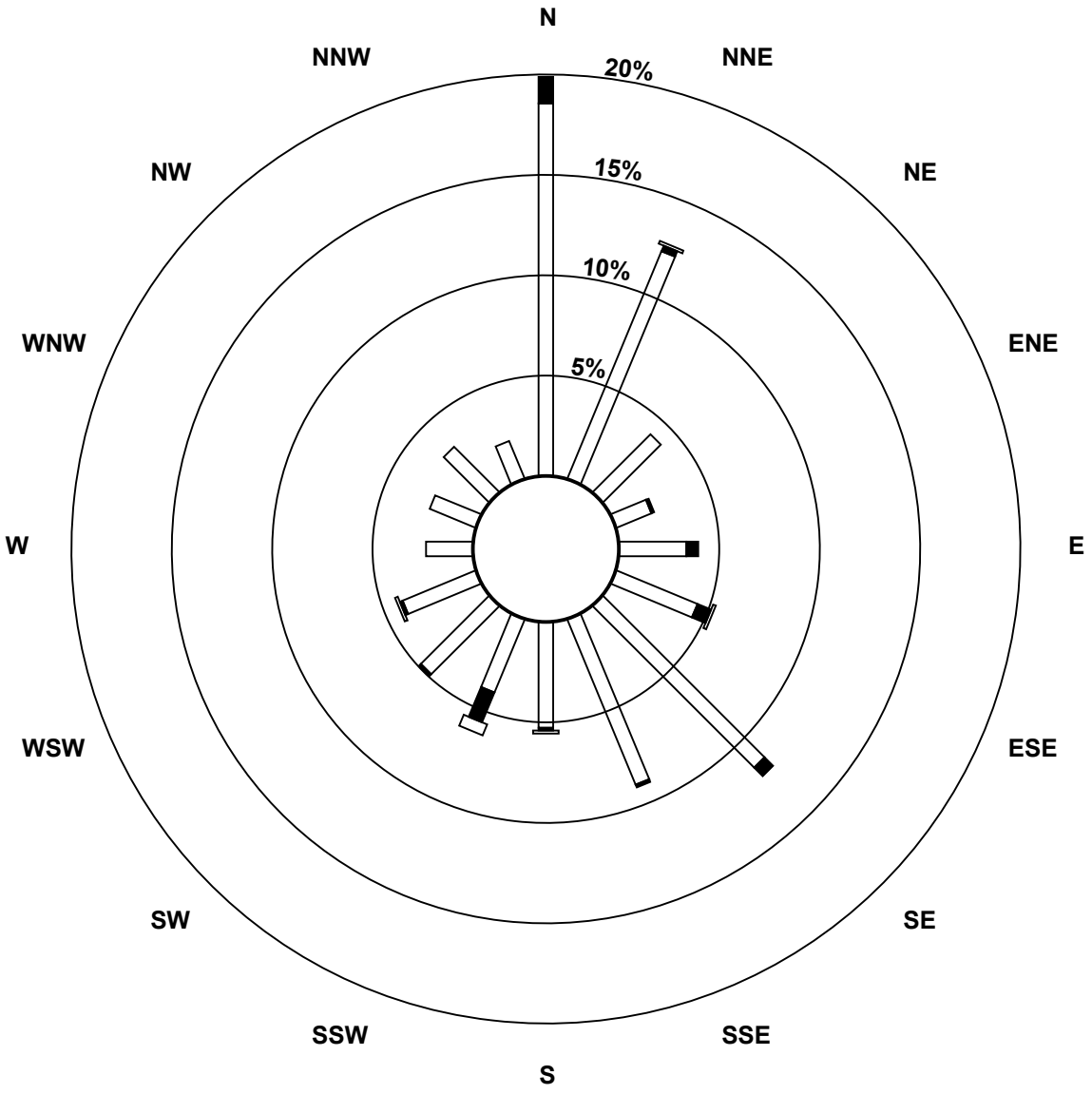
AURORA ATMOSPHERICS INC.

Wood Buffalo Environmental Association

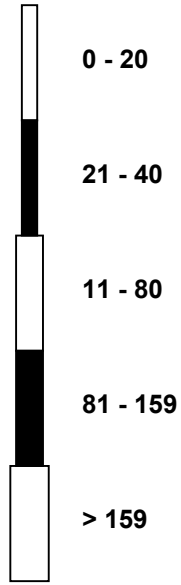
Wind Rose Apr 2014

Nitrogen Oxides (NO_X) - ppb

Fort McKay South (AMS 13)



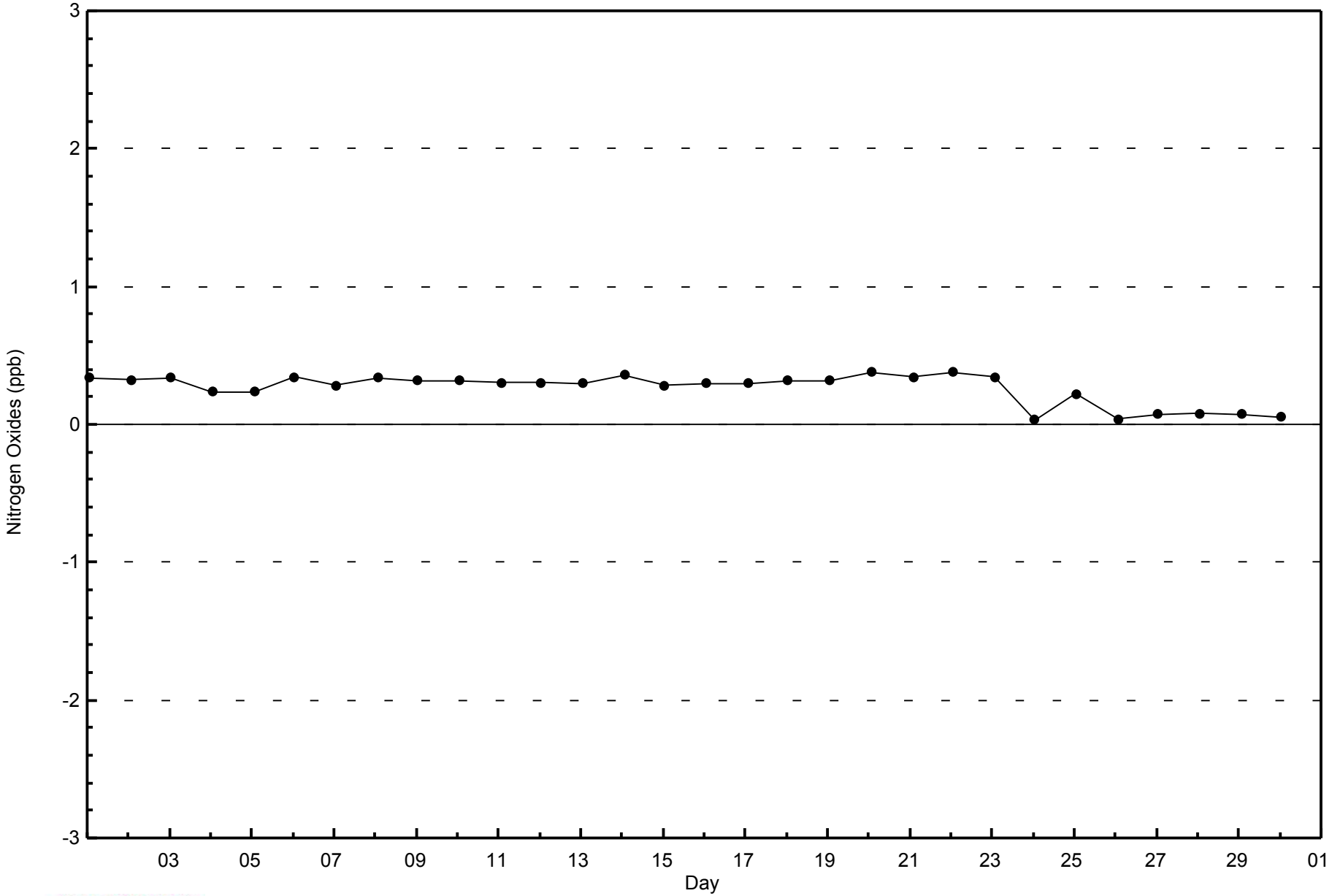
Classes (ppb)



Total Number of Valid Hours: 684

Wood Buffalo Environmental Association
Zero Responses

Nitrogen Oxides (NO_X) - ppb
Fort McKay South - April 2014



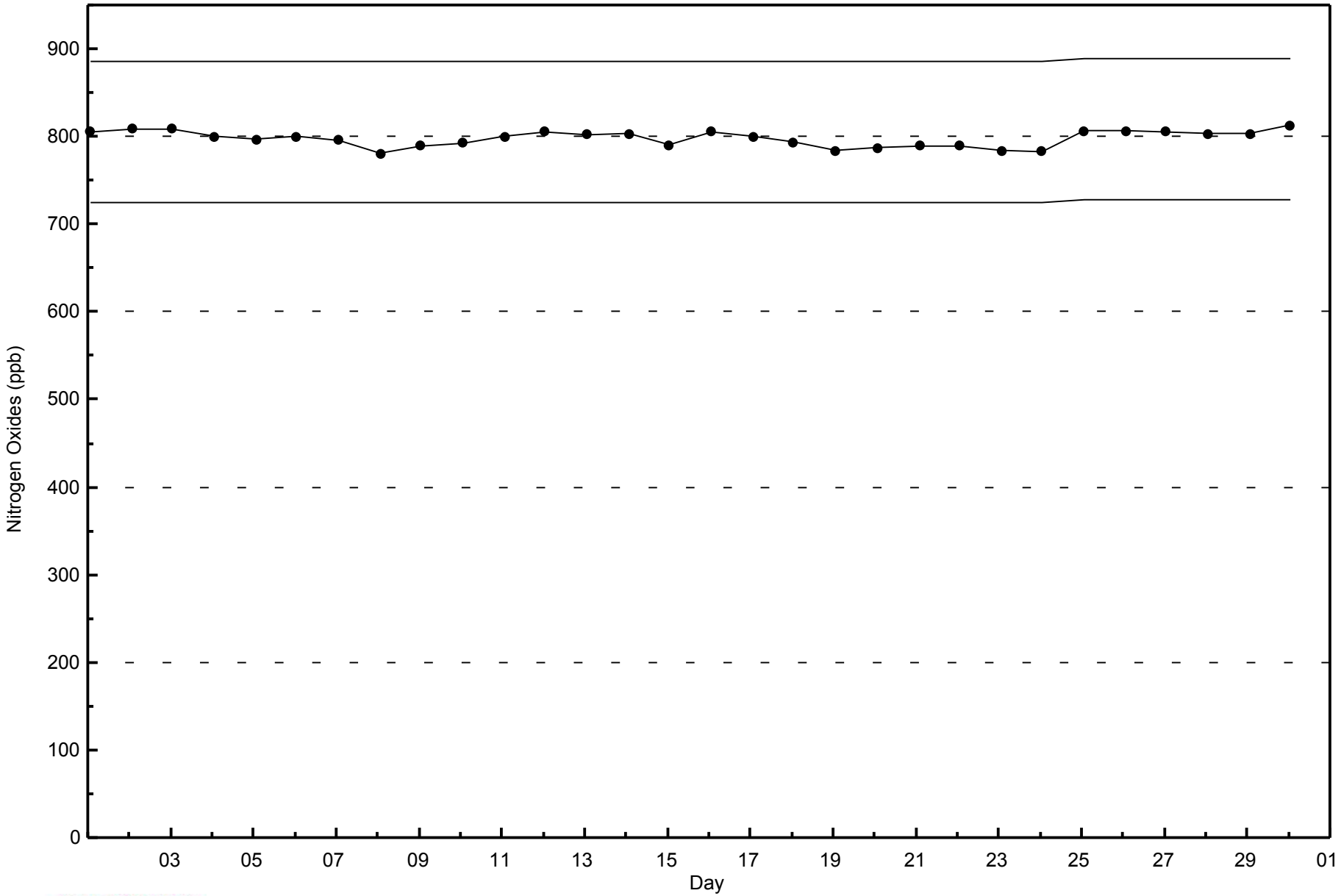
AURORA
ATMOSPHERICS INC.

WBEA NETWORK

Span Responses

Nitrogen Oxides (NO_X) - ppb

Fort McKay South - April 2014



AURORA ATMOSPHERICS INC.

Wood Buffalo Environmental Association

Summary of Hour Averages

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

Fort McKay South - April 2014

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

Maximum Value: 26.7 $\mu g/m^3$ on Apr 30 11:00

Maximum Daily Average: 9.1 $\mu g/m^3$ on Apr 21

Minimum Value: 0.4 $\mu g/m^3$ on Apr 8 15:00

Minimum Daily Average: 1.8 $\mu g/m^3$ on Apr 27

Maximum Diurnal Average: 6.5 $\mu g/m^3$ at hour 8

Minimum Diurnal Average: 3.3 $\mu g/m^3$ at hour 16

Monthly Average: 5.03 $\mu g/m^3$

Percentiles: $P_1 = 0.6$ $P_{10} = 2.0$ $Q_1 = 3.1$ Median = 4.3 $Q_3 = 6.3$ $P_{90} = 8.9$ $P_{99} = 15.0$

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-Apr	9.8	6.6	5.2	4.5	5.1	9.5	11.4	15.8	13.8	7.5	7.5	8.7	7.5	6.3	4.7	4.5	4.7	3.5	2.7	3.1	3.6	4.3	5.0	11.9	7.0	15.8
2-Apr	7.5	8.0	7.4	9.8	13.6	8.9	8.8	10.2	9.6	8.5	6.9	5.3	5.5	6.8	6.9	5.9	5.8	5.2	5.3	4.5	3.6	2.9	2.8	4.3	6.8	13.6
3-Apr	4.5	4.9	4.6	3.1	3.2	3.1	5.7	8.8	9.2	6.6	6.7	6.0	3.4	2.3	2.4	3.1	6.0	9.1	11.3	10.6	5.2	5.5	6.3	6.3	5.7	11.3
4-Apr	5.7	5.8	7.2	8.8	7.7	9.3	10.0	10.3	10.4	9.5	9.7	9.8	9.9	11.9	9.9	4.6	3.1	4.3	4.2	3.9	3.7	3.8	3.7	3.7	7.1	11.9
5-Apr	4.2	4.4	4.4	4.1	3.9	4.3	4.6	4.3	2.7	1.8	1.2	1.4	1.6	2.4	3.1	3.2	3.4	3.8	5.1	10.3	11.6	9.3	7.1	4.3	4.4	11.6
6-Apr	3.8	3.6	3.4	3.2	3.3	4.0	3.3	3.8	7.8	5.3	5.3	8.1	6.1	4.1	4.0	5.7	12.8	9.6	5.8	7.2	7.4	8.0	8.1	6.8	5.9	12.8
7-Apr	6.0	6.4	6.2	6.2	6.9	6.0	6.6	8.4	6.4	3.4	1.3	1.5	7.9	14.2	4.3	0.7	0.8	0.7	1.8	5.1	9.6	6.5	4.6	4.5	5.3	14.2
8-Apr	4.5	3.8	4.2	5.1	5.3	6.3	4.9	3.9	4.0	3.3	1.7	0.9	0.7	0.5	0.4	0.6	0.6	0.5	0.7	0.8	1.2	1.4	1.7	2.3	2.5	6.3
9-Apr	3.2	3.0	3.2	3.3	2.8	2.2	2.1	1.9	2.0	2.2	2.3	2.1	1.7	1.3	0.7	0.6	0.5	1.1	2.6	7.0	7.1	7.4	4.3	4.0	2.9	7.4
10-Apr	3.9	4.3	4.2	4.5	5.9	5.7	5.3	5.4	4.8	3.5	3.4	3.7	3.4	3.0	3.9	5.1	5.5	4.7	3.4	3.2	3.2	3.5	4.0	3.5	4.2	5.9
11-Apr	3.4	3.4	3.5	3.7	3.7	3.7	3.4	3.4	3.1	3.4	3.7	3.2	3.2	3.1	2.4	2.4	2.8	2.7	2.8	2.7	2.7	3.2	3.5	4.2	3.2	4.2
12-Apr	4.3	4.2	3.7	3.7	3.4	3.1	3.4	2.9	2.7	1.6	1.8	1.3	1.1	1.2	1.6	1.9	2.5	2.9	3.1	4.2	4.3	4.1	3.7	3.1	2.9	4.3
13-Apr	2.9	3.1	3.1	3.7	3.7	4.1	4.8	2.8	2.3	2.3	2.3	2.6	2.5	2.2	2.0	1.9	2.8	8.1	7.1	9.0	9.5	9.2	8.9	8.3	4.6	9.5
14-Apr	7.6	7.9	7.2	8.6	9.3	8.9	10.8	11.6	15.1	13.0	8.4	10.6	11.0	5.8	4.5	4.2	5.0	5.2	6.9	5.8	6.1	6.8	6.0	5.3	8.0	15.1
15-Apr	5.0	5.3	5.3	4.8	4.8	4.6	4.2	3.9	3.7	3.7	3.5	3.0	2.5	2.0	1.6	2.5	3.2	3.3	3.7	4.1	4.1	4.4	5.3	7.8	4.0	7.8
16-Apr	8.8	7.1	6.3	6.1	5.5	6.5	9.0	5.6	4.1	3.2	2.2	1.6	2.2	2.2	3.1	3.7	3.3	3.3	3.5	3.2	3.6	3.8	5.0	6.5	4.6	9.0
17-Apr	8.0	9.2	7.6	6.8	7.3	8.2	8.1	8.2	6.6	5.6	4.6	4.5	4.3	4.2	4.8	5.1	4.3	4.2	4.1	4.9	5.4	5.4	5.4	5.3	5.9	9.2
18-Apr	5.4	5.4	5.7	5.7	5.2	5.5	5.0	4.2	3.6	3.2	2.8	3.1	3.3	2.8	2.8	3.2	3.7	4.2	4.0	4.3	4.7	5.1	4.5	6.4	4.3	6.4
19-Apr	5.8	6.1	6.6	6.7	6.1	6.1	9.2	10.7	7.5	7.3	8.2	7.1	4.3	4.0	4.0	4.1	3.8	3.8	3.6	4.3	5.3	5.0	4.6	4.8	5.8	10.7
20-Apr	5.0	5.6	5.4	5.4	5.7	6.1	7.2	7.4	5.9	3.9	3.2	3.0	2.9	2.9	3.1	2.8	2.5	2.7	3.1	3.3	3.9	4.7	5.4	8.0	4.5	8.0
21-Apr	13.0	15.2	16.3	14.2	10.5	8.7	10.7	9.3	7.2	7.5	9.8	8.6	7.3	6.4	6.9	6.9	6.6	5.7	6.8	7.5	7.2	7.6	8.5	9.5	9.1	16.3
22-Apr	10.1	9.4	8.3	7.7	7.4	8.0	10.4	10.3	7.2	6.2	5.2	3.8	2.6	2.0	1.5	1.6	1.7	2.2	3.1	3.9	4.8	4.7	5.8	7.2	5.6	10.4
23-Apr	7.8	8.1	8.2	8.0	7.9	8.0	7.8	6.6	5.4	5.3	4.4	4.7	3.0	2.4	2.4	2.6	2.6	3.1	3.7	3.6	3.8	3.8	4.0	4.5	5.1	8.2
24-Apr	5.0	4.8	5.0	5.4	7.1	8.1	6.7	6.2	5.5	5.1	4.4	3.9	3.7	6.8	8.1	6.2	5.2	3.7	3.4	3.3	3.4	3.4	3.4	3.9	5.1	8.1
25-Apr	4.4	4.4	4.3	4.4	4.2	4.3	4.1	3.3	2.8	2.5	2.7	M	1.1	1.1	0.9	0.7	2.7	6.1	3.1	3.6	3.7	4.8	4.9	4.0	3.4	6.1
26-Apr	3.8	3.9	3.8	3.7	3.9	4.3	4.7	4.6	3.9	3.1	2.4	2.0	1.6	1.7	3.4	5.1	6.0	4.3	4.5	4.5	4.4	4.9	4.6	3.3	3.8	6.0
27-Apr	2.6	1.8	1.8	1.9	2.0	2.7	2.8	3.0	2.8	2.2	1.0	1.0	0.9	1.0	1.1	0.9	0.9	1.3	1.8	2.0	2.0	2.3	2.4	2.1	1.8	3.0
28-Apr	2.0	2.4	2.2	2.6	2.8	4.0	5.0	5.7	11.0	22.4	22.5	14.7	12.9	8.2	3.1	5.2	5.1	6.3	5.2	5.4	5.3	4.3	4.2	4.6	7.0	22.5
29-Apr	4.5	4.2	4.1	3.9	4.8	4.4	4.8	5.2	4.5	4.6	3.7	1.2	0.5	0.5	0.7	0.7	1.0	1.1	0.7	1.2	2.7	3.3	3.7	4.2	2.9	5.2
30-Apr	5.1	5.6	4.5	3.9	3.9	4.0	5.9	6.2	5.0	10.8	26.7	4.5	2.2	2.2	2.8	3.7	5.4	13.0	12.6	5.8	15.6	10.6	10.2	3.9	7.3	26.7
	5.6	5.6	5.4	5.4	5.6	5.8	6.4	6.5	6.0	5.6	5.6	4.5	4.0	3.8	3.4	3.3	3.8	4.3	4.3	4.7	5.3	5.1	5.1	5.3	Diurnal Average	
	13.0	15.2	16.3	14.2	13.6	9.5	11.4	15.8	15.1	22.4	26.7	14.7	12.9	14.2	9.9	6.9	12.8	13.0	12.6	10.6	15.6	10.6	10.2	11.9	Diurnal Maximum	

M - Maintenance

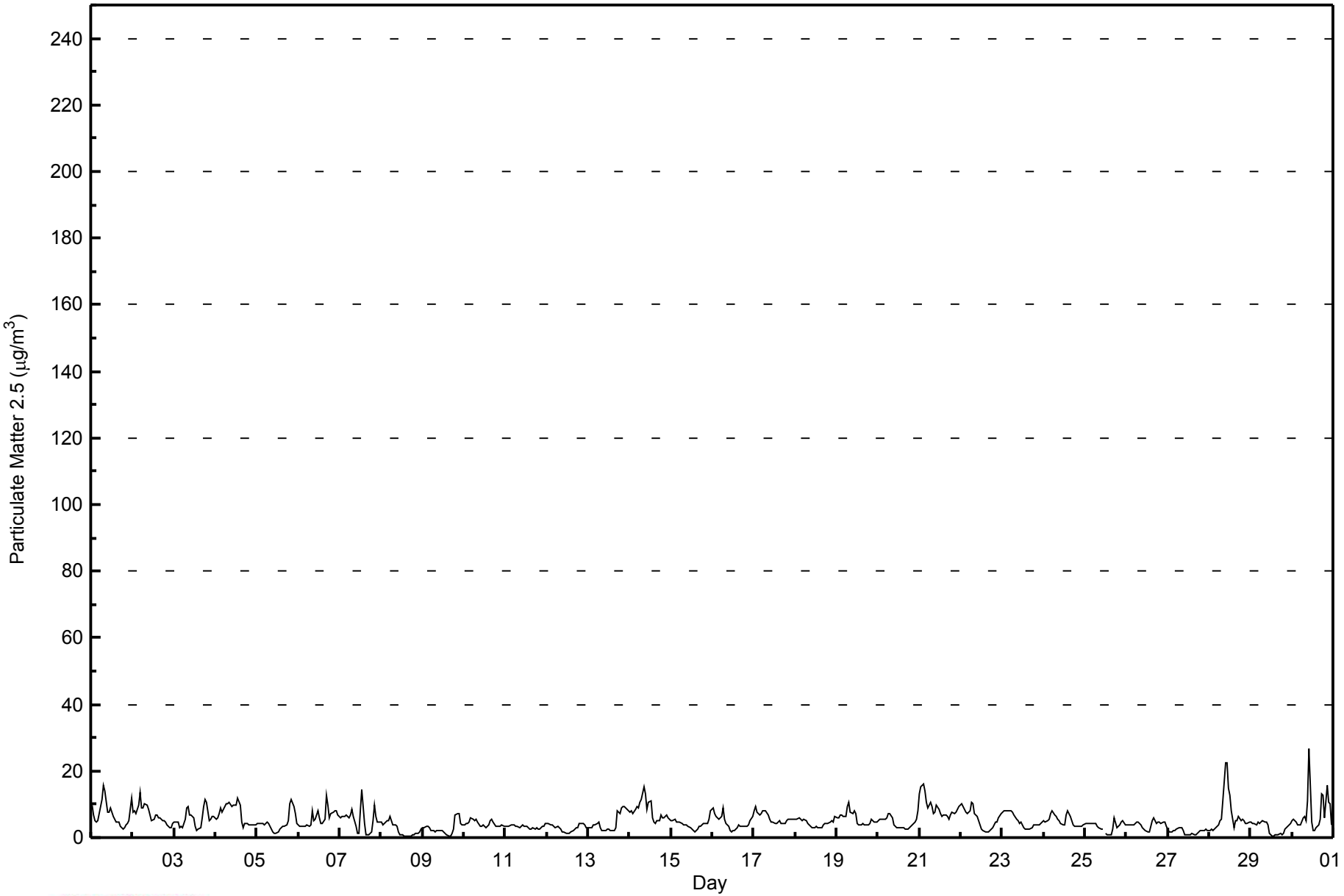
Alberta Ambient Air Quality Objectives (AAAQO): 24-hr 30 $\mu g/m^3$

WBEA NETWORK

Hourly Averages

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

Fort McKay South - April 2014



AURORA ATMOSPHERICS INC.

WBEA NETWORK

Cumulative Frequency Distribution

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

Fort McKay South - April 2014

Concentration Ranges ($\mu g/m^3$)	Number of Hours	%	Cumulative %
1 - 5	460	63.98	63.98
6 - 15	226	31.43	95.41
16 - 25	5	0.70	96.11
26 - 80	1	0.14	96.24
> 81.0	0	0.00	96.24

Total Number of Valid Hours: 719

Total Number of Hours: 720

WBEA NETWORK

Frequency Distribution

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

Fort McKay South - April 2014

Concentration	**Wind Direction**																
Ranges ($\mu g/m^3$)	N	NNE	NE	ENE	E	ESE	SE	SSE	S	SSW	SW	WSW	W	WNW	NW	NNW	**Totals**
1 - 5	70	73	28	12	18	28	60	31	23	24	23	15	13	14	16	12	460
6 - 15	73	16	1	2	7	8	21	32	14	18	9	10	3	1	6	4	225
16 - 25	1	0	0	0	0	0	0	0	2	2	0	0	0	0	0	0	5
26 - 80	0	0	0	0	0	0	1	0	0	0	0	0	0	0	0	0	1
> 81.0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Totals	144	89	29	14	25	36	82	63	39	44	32	25	16	15	22	16	691

Total Number of Valid Hours: 718

Total Number of Hours: 720

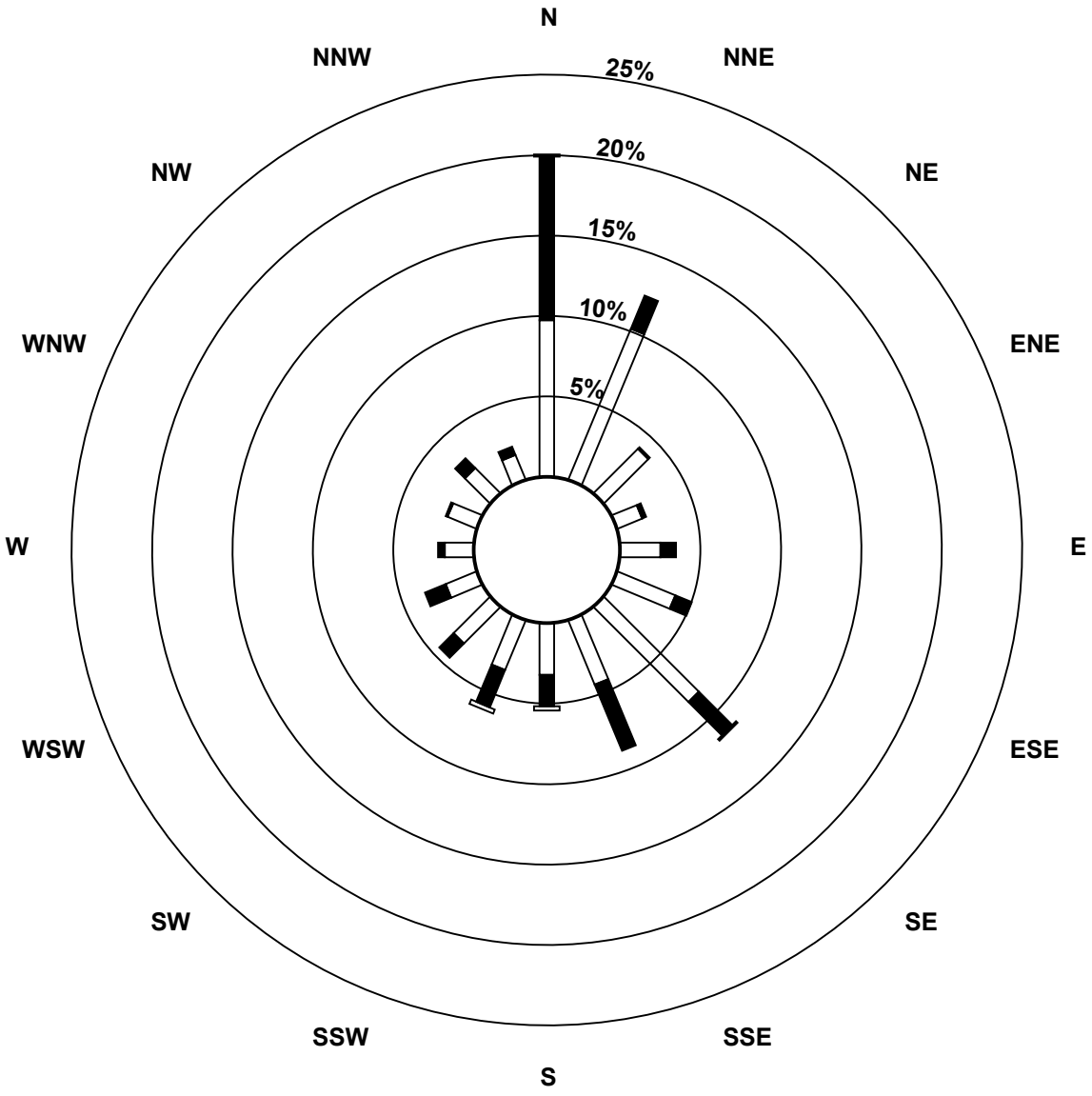
AURORA
ATMOSPHERICS INC.

Wood Buffalo Environmental Association

Wind Rose Apr 2014

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

Fort McKay South (AMS 13)



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

1 - 5

6 - 15

16 - 25

26 - 80

> 81.0

Total Number of Valid Hours: 718

Maximum Value: 22.3 C on Apr 30 16:00

Maximum Daily Average: 12.0 C on Apr 30

Minimum Value: -23.7 C on Apr 3 07:00

Minimum Daily Average: -12.5 C on Apr 2

Maximum Diurnal Average: 6.9 C at hour 16

Minimum Diurnal Average: -5.9 C at hour 6

Monthly Average: 0.70 C

Percentiles: P_1 = -17.7 P_{10} = -9.6 Q_1 = -4.6 Median = 0.7 Q_3 = 5.8 P_{90} = 11.1 P_{99} = 19.6

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

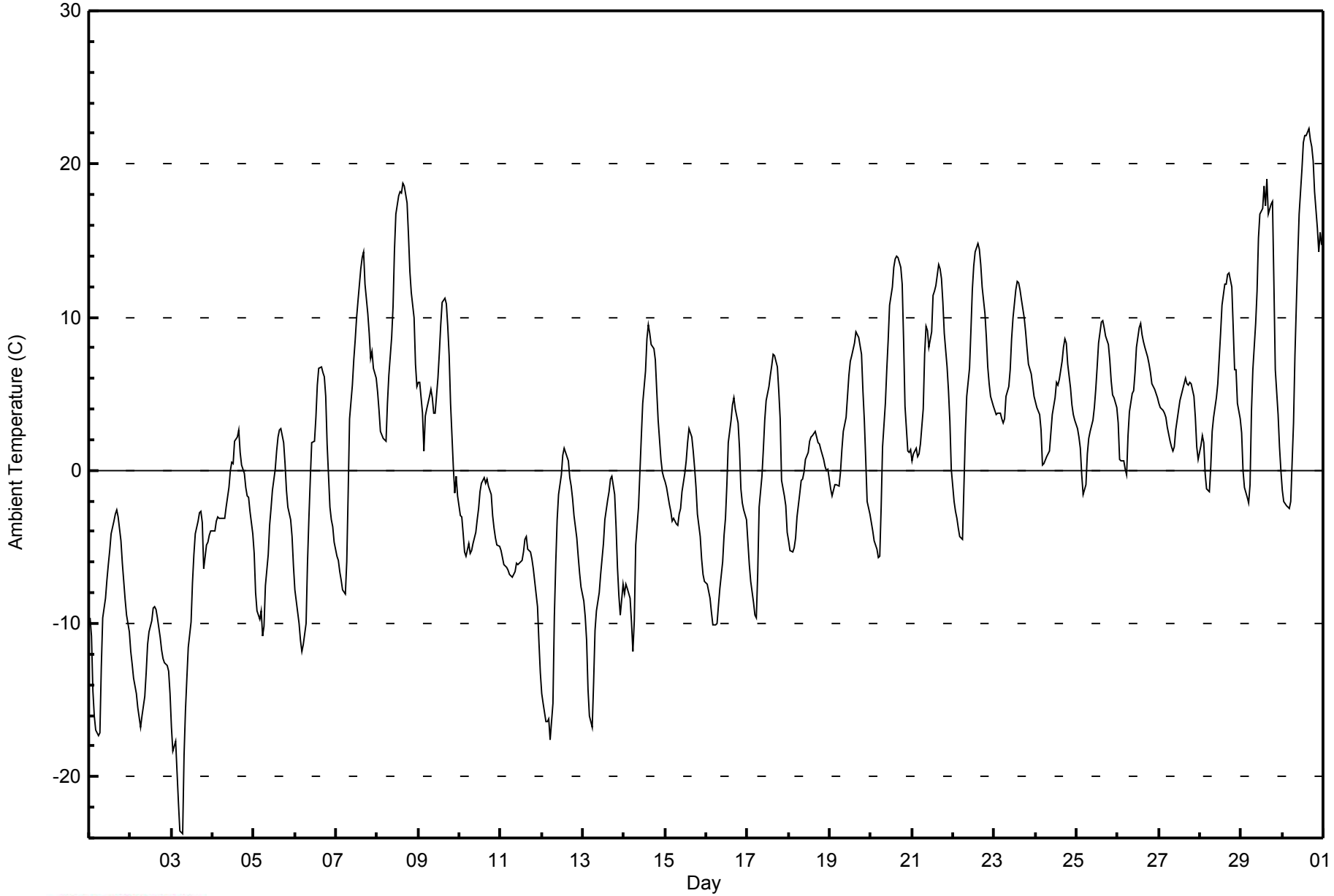
Day	Hourly Period Ending At (MST)																								Daily	Daily
	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24	Average	Maximum
1-Apr	-9.7	-10.8	-14.4	-16.1	-17.0	-17.3	-17.1	-12.9	-9.6	-8.3	-7.2	-6.2	-5.2	-4.1	-3.3	-2.9	-2.6	-3.1	-4.6	-6.1	-7.2	-8.5	-9.5	-10.6	-8.9	-2.6
2-Apr	-11.8	-12.7	-13.5	-14.5	-15.5	-16.1	-16.7	-16.0	-14.7	-13.2	-11.4	-10.6	-9.8	-9.0	-8.9	-9.1	-9.6	-10.9	-11.7	-12.3	-12.6	-12.7	-13.1	-14.6	-12.5	-8.9
3-Apr	-16.8	-18.3	-17.7	-19.7	-21.8	-23.5	-23.7	-18.6	-15.6	-13.5	-11.6	-9.9	-7.3	-5.5	-4.2	-3.3	-2.8	-2.7	-3.4	-6.5	-4.9	-4.7	-4.2	-4.0	-11.0	-2.7
4-Apr	-3.9	-3.9	-3.3	-3.0	-3.1	-3.2	-3.1	-3.1	-2.4	-1.1	0.0	0.6	0.5	1.9	2.2	2.6	1.2	0.4	-0.2	-1.1	-1.7	-1.8	-2.6	-4.1	-1.4	2.6
5-Apr	-5.4	-8.0	-9.2	-9.8	-9.1	-10.8	-10.2	-7.6	-5.5	-3.6	-2.5	-1.3	0.0	1.2	2.2	2.6	2.7	1.9	0.5	-1.3	-2.4	-3.2	-4.3	-6.3	-3.7	2.7
6-Apr	-7.8	-8.6	-10.0	-11.1	-11.9	-11.4	-10.0	-6.0	-3.2	-0.6	1.8	1.9	3.4	5.6	6.7	6.8	6.3	6.1	4.8	1.7	-2.4	-3.2	-3.7	-4.7	-2.1	6.8
7-Apr	-5.6	-5.9	-6.6	-7.2	-7.8	-8.1	-5.9	-1.5	3.3	5.5	7.2	8.5	9.9	11.0	13.1	13.9	14.2	12.2	10.2	8.9	7.3	7.8	6.6	6.0	4.1	14.2
8-Apr	5.1	4.0	2.5	2.1	2.0	1.9	4.4	6.2	8.7	10.7	14.3	16.7	17.9	18.2	18.1	18.8	18.6	17.5	15.4	12.9	11.6	9.9	6.9	5.4	10.4	18.8
9-Apr	5.8	5.7	3.8	1.3	3.6	4.0	4.8	5.3	4.7	3.8	3.8	6.0	7.7	9.5	11.0	11.3	10.9	9.4	7.5	4.4	0.2	-1.5	-0.4	-1.7	5.0	11.3
10-Apr	-3.0	-3.0	-4.1	-5.4	-5.6	-4.8	-5.4	-5.2	-4.8	-4.1	-3.2	-2.5	-1.4	-0.8	-0.4	-0.8	-0.5	-1.0	-1.6	-2.9	-3.7	-4.4	-4.9	-5.0	-3.3	-0.4
11-Apr	-5.3	-5.7	-6.1	-6.3	-6.6	-6.8	-6.9	-7.0	-6.6	-6.1	-6.1	-6.1	-5.9	-5.3	-4.5	-4.3	-5.2	-5.3	-5.8	-6.4	-7.3	-8.9	-11.2	-13.2	-6.6	-4.3
12-Apr	-14.5	-15.2	-16.4	-16.4	-16.2	-17.6	-15.3	-9.5	-6.1	-3.2	-1.6	-0.3	1.0	1.4	1.1	0.6	-0.5	-1.0	-1.9	-2.9	-4.4	-5.6	-6.7	-7.6	-6.6	1.4
13-Apr	-8.5	-9.5	-11.1	-14.3	-16.0	-16.8	-13.9	-10.5	-9.2	-8.0	-6.8	-5.8	-4.8	-3.2	-1.9	-1.4	-0.6	-0.4	-1.5	-3.6	-6.3	-8.2	-9.5	-7.5	-7.5	-0.4
14-Apr	-8.0	-7.4	-7.7	-8.3	-9.9	-11.8	-9.8	-4.9	-2.4	-0.1	2.2	4.4	6.5	8.6	9.5	8.9	8.2	7.9	7.2	5.2	3.3	0.8	-0.1	-0.5	0.1	9.5
15-Apr	-0.7	-1.1	-2.3	-2.7	-3.3	-3.1	-3.5	-3.6	-2.9	-2.5	-1.4	-0.2	0.7	1.8	2.7	2.2	1.3	0.2	-1.1	-2.8	-4.3	-5.8	-6.8	-7.2	-1.9	2.7
16-Apr	-7.5	-7.9	-8.4	-9.2	-10.1	-10.1	-10.0	-8.8	-7.7	-6.0	-4.3	-3.2	-1.0	1.8	3.3	4.3	4.7	4.0	3.1	1.4	-1.2	-2.2	-2.6	-3.2	-3.4	4.7
17-Apr	-4.7	-6.1	-7.3	-8.6	-9.5	-9.6	-6.7	-2.4	-0.4	1.3	3.3	4.6	5.5	6.2	6.9	7.5	7.5	6.8	5.2	3.4	-0.7	-1.7	-2.3	-4.0	-0.2	7.5
18-Apr	-4.6	-5.2	-5.3	-5.0	-4.4	-3.1	-1.5	-0.6	-0.6	-0.1	0.7	1.2	1.9	2.2	2.3	2.5	2.2	1.8	1.7	1.3	0.7	0.3	0.0	0.1	-0.5	2.5
19-Apr	-1.2	-1.7	-1.3	-0.9	-1.0	-1.0	-0.1	1.3	2.5	3.5	4.8	6.2	7.1	7.5	8.3	9.0	8.9	8.7	7.6	5.2	3.2	0.7	-2.1	-2.9	3.0	9.0
20-Apr	-3.4	-4.0	-4.6	-5.1	-5.7	-5.6	-2.4	1.5	4.3	6.5	8.5	10.8	12.0	13.3	13.8	14.0	13.9	13.3	12.2	8.5	4.2	1.2	1.1	1.4	4.6	14.0
21-Apr	0.6	1.0	1.5	0.9	1.1	1.7	4.0	7.6	9.4	9.1	8.1	9.1	11.4	11.7	12.0	13.5	13.2	12.6	11.0	8.9	6.8	5.2	3.2	0.0	6.8	13.5
22-Apr	-2.0	-2.7	-3.1	-3.8	-4.3	-4.5	-1.2	2.4	4.9	6.7	9.2	11.8	13.4	14.2	14.8	14.4	13.5	12.0	10.2	8.6	6.7	5.6	4.8	4.2	5.7	14.8
23-Apr	3.9	3.6	3.8	3.7	3.3	3.1	3.4	4.8	5.5	6.6	8.6	10.0	11.8	12.4	12.2	11.8	11.1	9.9	9.1	8.0	7.0	6.3	5.6	4.9	7.1	12.4
24-Apr	4.5	4.1	3.6	2.6	0.4	0.4	0.9	1.1	1.3	2.5	3.7	4.7	5.7	5.5	5.9	7.1	8.0	8.6	8.3	6.9	5.4	4.3	3.6	3.2	4.3	8.6
25-Apr	2.8	2.1	1.4	-0.3	-1.5	-0.9	1.1	2.0	2.5	3.3	4.1	5.3	6.7	8.3	9.7	9.8	9.3	8.8	8.2	7.3	5.8	4.9	4.7	4.1	4.6	9.8
26-Apr	3.1	0.7	0.6	0.6	0.0	-0.3	2.3	3.9	5.1	5.2	6.4	8.0	9.3	9.6	8.9	8.4	8.1	7.4	6.9	6.4	5.7	5.3	5.0	4.8	5.1	9.6
27-Apr	4.4	4.1	3.9	3.7	3.5	2.8	1.9	1.6	1.2	1.5	2.7	4.0	4.6	4.9	5.3	6.0	5.7	5.6	5.7	5.6	4.9	3.5	1.5	0.7	3.7	6.0
28-Apr	1.6	2.3	1.8	-0.2	-1.2	-1.4	0.2	2.5	3.5	4.7	5.7	7.3	8.9	10.8	12.2	12.1	12.8	12.9	11.9	9.3	6.6	6.6	4.4	3.4	5.8	12.9
29-Apr	2.4	0.0	-1.2	-1.7	-2.1	-0.9	3.8	6.6	9.6	11.7	15.1	16.7	17.1	18.5	17.3	19.0	16.7	17.3	17.5	12.3	6.6	3.6	1.5	-0.1	8.6	19.0
30-Apr	-1.3	-2.0	-2.3	-2.4	-2.5	-2.0	3.1	7.5	10.8	13.9	16.7	19.7	21.4	21.9	21.9	22.3	21.6	21.1	20.2	18.2	15.8	14.2	15.5	14.7	12.0	22.3
	-3.0	-3.7	-4.4	-5.2	-5.7	-5.9	-4.5	-2.1	-0.5	0.9	2.4	3.7	5.0	6.0	6.6	6.9	6.6	6.1	5.1	3.3	1.4	0.3	-0.6	-1.5	Diurnal Average	
	5.8	5.7	3.9	3.7	3.6	4.0	4.8	7.6	10.8	13.9	16.7	19.7	21.4	21.9	21.9	22.3	21.6	21.1	20.2	18.2	15.8	14.2	15.5	14.7	Diurnal Maximum	

WBEA NETWORK

Hourly Averages

Ambient Temperature (AT) - C

Fort McKay South - April 2014



AURORA
ATMOSPHERICS INC.

Concentration Ranges (C)	Number of Hours	%	Cumulative %
-50 - -20	3	0.42	0.42
-20 - 0	331	45.97	46.39
0 - 10	304	42.22	88.61
10 - 20	75	10.42	99.03
> 20	7	0.97	100.00

Total Number of Valid Hours: 720

Total Number of Hours: 720

Maximum Value: 100 % on Apr 28 07:00
Maximum Daily Average: 88.6 % on Apr 27

Minimum Value: 17 % on Apr 30 14:00
Minimum Daily Average: 44.4 % on Apr 14
Maximum Diurnal Average: 82.3 % at hour 6
Minimum Diurnal Average: 41.7 % at hour 16
Monthly Average: 60.7 %
Percentiles: P_1 = 21 P_{10} = 33 Q_1 = 45 Median = 60 Q_3 = 77 P_{90} = 89 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

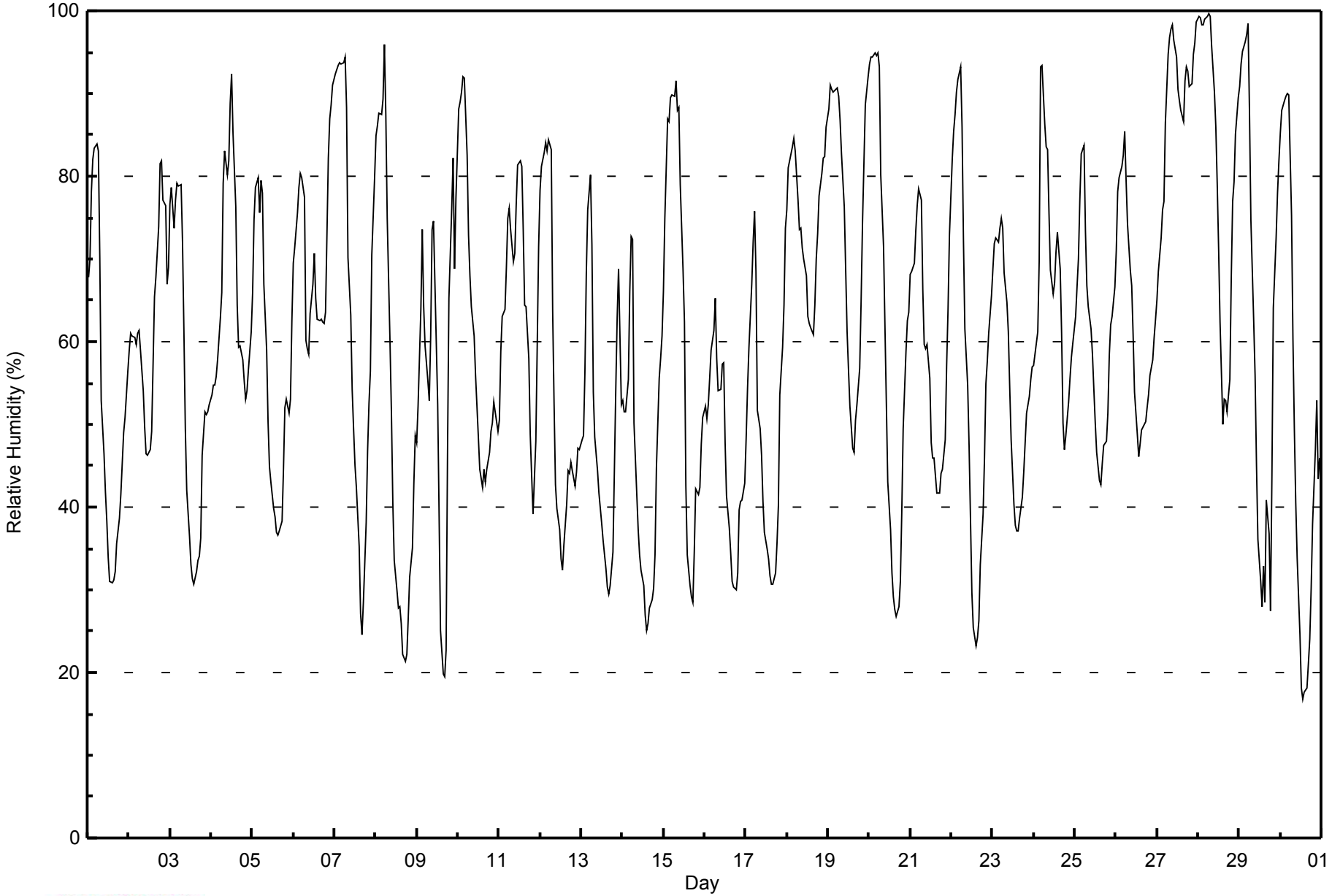
Day	Hourly Period Ending At (MST)																								Daily	Daily
	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24	Average	Maximum
1-Apr	68	70	78	82	83	84	83	70	53	46	42	38	34	31	31	31	32	36	39	42	45	49	51	56	53.1	84
2-Apr	59	61	61	60	60	61	61	59	54	50	46	46	47	49	57	65	68	74	82	82	77	76	67	69	62.2	82
3-Apr	77	79	74	77	79	79	79	72	61	49	42	36	33	31	31	32	34	34	36	46	52	51	51	52	53.7	79
4-Apr	54	55	55	56	58	63	66	79	83	80	82	89	92	85	76	64	59	59	58	55	53	54	57	61	66.4	92
5-Apr	66	75	79	80	76	79	78	67	59	50	45	43	40	39	37	37	37	38	45	52	53	51	53	62	55.9	80
6-Apr	69	71	76	79	80	80	77	60	59	59	63	67	71	65	63	63	63	62	62	64	82	87	89	91	70.9	91
7-Apr	92	93	93	94	94	94	94	88	70	63	54	49	45	42	35	27	25	28	38	47	52	56	70	80	63.6	94
8-Apr	85	86	88	87	89	96	88	75	60	51	40	34	30	28	28	26	22	21	22	27	32	35	43	49	51.7	96
9-Apr	48	52	64	74	64	59	55	53	61	74	75	60	52	39	25	20	20	23	46	65	76	82	69	77	55.5	82
10-Apr	88	89	90	92	92	83	73	68	64	61	56	52	48	45	42	45	43	45	47	49	50	53	52	49	61.4	92
11-Apr	51	59	63	64	69	75	76	74	70	71	77	81	82	81	73	64	64	58	49	44	39	48	60	72	65.1	82
12-Apr	78	81	83	84	83	84	83	64	52	43	40	37	34	32	35	40	44	44	45	44	43	44	47	47	54.8	84
13-Apr	48	49	56	68	76	80	72	54	48	44	42	40	38	36	33	30	30	31	35	44	54	63	69	52	49.6	80
14-Apr	53	52	51	55	66	73	72	50	42	37	34	32	30	27	25	26	28	29	30	34	45	56	58	61	44.4	73
15-Apr	66	75	87	87	89	90	90	91	88	88	79	69	62	42	34	30	29	28	35	42	42	42	48	51	61.9	91
16-Apr	52	51	52	56	59	61	65	58	54	54	57	57	48	41	37	34	31	30	30	32	40	41	41	43	46.9	65
17-Apr	48	54	59	67	72	76	68	52	49	46	41	37	35	34	32	31	31	32	36	40	54	59	64	74	49.6	76
18-Apr	76	81	83	84	85	83	77	74	74	71	70	68	63	62	62	61	64	70	73	78	80	82	82	86	74.5	86
19-Apr	88	91	91	90	90	91	90	87	83	76	69	61	57	52	47	47	50	52	57	65	74	82	89	92	73.8	92
20-Apr	94	94	94	95	95	95	93	80	71	62	53	43	37	32	29	28	27	28	31	39	49	59	63	64	60.6	95
21-Apr	68	69	70	73	76	78	77	66	60	59	60	56	48	46	46	42	42	42	44	45	48	57	64	73	58.6	78
22-Apr	82	85	87	90	92	93	86	72	62	55	48	39	30	25	23	24	26	33	39	46	55	58	61	66	57.3	93
23-Apr	69	72	72	72	74	75	74	68	65	61	54	48	40	38	37	37	39	41	44	48	51	53	55	57	56.1	75
24-Apr	57	58	61	70	93	93	86	84	83	76	69	66	67	71	73	69	61	50	47	49	53	56	58	60	67.1	93
25-Apr	63	67	70	77	83	84	73	67	64	62	59	54	50	47	43	43	45	48	48	51	58	62	63	67	60.3	84
26-Apr	71	78	80	81	83	85	79	74	69	67	61	54	49	46	48	49	50	50	52	54	56	58	60	63	63.2	85
27-Apr	65	68	73	76	77	86	95	97	98	98	96	94	91	89	88	87	91	93	93	91	91	95	96	99	88.6	99
28-Apr	99	99	98	98	99	99	100	99	96	90	86	79	71	62	50	53	53	52	55	68	77	79	85	89	80.8	100
29-Apr	91	94	95	96	97	98	88	75	63	56	45	36	31	28	33	28	41	37	27	44	64	73	78	82	62.5	98
30-Apr	85	88	89	90	90	90	75	60	50	41	34	25	18	17	18	18	21	24	30	38	47	53	43	46	49.5	90
	70.3	73.2	75.7	78.5	80.8	82.3	79.2	71.3	65.4	61.4	57.2	53.0	49.1	45.5	43.1	41.7	42.3	43.1	45.8	50.8	56.4	60.5	62.9	66.3	Diurnal Average	
	99	99	98	98	99	99	100	99	98	98	96	94	92	89	88	87	91	93	93	91	91	95	96	99	Diurnal Maximum	

WBEA NETWORK

Hourly Averages

Relative Humidity (RH) - %

Fort McKay South - April 2014



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ATMOSPHERICS INC.

Wood Buffalo Environmental Association

Summary of Hour Averages

Wind Speed (WS) - km/h

Fort McKay South - April 2014

Maximum Speed: 20 km/h on Apr 8 18:00

Maximum Daily Speed Average: 11.9 km/h on Apr 15

Minimum Speed Value: 0 km/h on Apr 25 06:00

Minimum Daily Speed Average: 1.4 km/h on Apr 6

Maximum Diurnal Speed Average: 3.0 km/h at hour 10

Minimum Diurnal Speed Average: 0.5 km/h at hour 24

Monthly Average Velocity: 1.7 km/h 34.3 deg

Percentiles: P_1 = 1 P_{10} = 2 Q_1 = 3 Median = 6 Q_3 = 9 P_{90} = 11 P_{99} = 17

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-Apr	S6	S1	WNW2	W1	NNW3	NNW3	N2	N5	N9	N10	N9	NNE9	N9	N9	N9	N8	N8	NNE9	NNE8	NNE6	NNE7	NNE6	N8	N9	N5.7	N10
2-Apr	N7	N8	N10	N11	N10	N8	N8	N9	N10	N13	N14	N14	N13	N13	N14	N13	N13	N12	N11	N11	N9	NNE8	NNE8	N5	N10.5	N14
3-Apr	NW4	NW4	NW4	NW5	NW4	WNW2	NW1	NNE5	NNE8	NNE9	N7	NNE6	ESE3	SSE3	NNE4	NNE7	NNE7	N6	N4	ESE3	SE6	SE7	SE10	SSE10	NNE2.3	SE10
4-Apr	SSE10	SE9	SSE10	SSE9	SSE9	SSE11	SSE10	SSE10	SSE8	SSE8	SSE9	SSE7	SSE6	WSW4	W7	W11	W14	WNW11	WNW12	WNW11	WNW9	NW10	NW6	W5	SSW3.7	W14
5-Apr	WSW5	WSW5	SW3	WSW8	WSW7	W3	NW2	ENE3	NE4	NNE3	NE6	NNE6	NE6	NNE9	NNE8	NNE8	NNE8	NNE9	N7	N8	N7	N7	N4	NNW3	N3.6	NNE9
6-Apr	NNW3	NNW2	WSW1	WSW2	SW1	SSW2	S2	ESE2	ESE4	SE6	S6	SSW6	SSW6	SSW6	S7	SSE6	E3	N5	N6	N4	W2	WSW3	SW3	SSW1	S1.4	S7
7-Apr	SW2	S2	SSW1	SW1	S3	SSW2	S2	SE2	E4	E5	ESE4	ESE6	SE6	ESE8	S8	S11	SSW9	S6	SSW8	SSW6	SSW6	SSW9	SSW6	SSW7	S4.1	S11
8-Apr	SSE4	SSW3	S2	SSW2	N1	SSW1	SSW5	SSW8	SSW9	SSW10	SW11	WSW13	WSW17	WSW18	WSW16	SW16	SW20	SW20	WSW16	WSW11	SW12	W6	SW6	SSW6	SW9.1	SW20
9-Apr	WSW7	WSW7	SSW5	SSW6	SW7	SW9	WSW11	W9	WNW17	WNW12	NW11	NW9	NW11	NW12	NW15	WNW17	WNW16	WNW10	N6	N6	SW3	SW6	W4	NNW4	WNW7.2	WNW17
10-Apr	NNW4	NNW4	N3	NNW2	N4	NNE6	NNE9	N9	NNE10	NNE10	NNE10	NNE11	NNE11	NNE11	NNE11	N10	N11	N11	NNE10	NNE9	NNE8	NNE8	NNE6	NE6	NNE8.0	NNE11
11-Apr	NE6	NE6	NNE7	NE8	NNE8	NNE9	NNE10	NNE11	NNE11	NNE13	N15	N15	N16	N14	N18	N17	N16	N14	N13	N13	N10	NNW6	WNW4	WNW3	N10.3	N18
12-Apr	SW2	SW1	SSW2	SW2	WNW1	S1	SSE2	S5	SSW5	SW5	E3	N1	NW7	NNW10	N12	N11	N9	N10	NNE7	NNE11	N11	N12	N11	N11	N4.1	N12
13-Apr	N10	N9	NNW5	W2	W3	W2	NW4	N6	NNE7	NNE8	NE9	NE6	NE7	E4	ESE6	E6	E6	SE6	SE5	SE2	WSW1	WSW2	SSW2	SSE6	NE2.3	N10
14-Apr	S5	SSE5	SSE4	SSE5	SE3	SSE3	SSE2	SE6	SSE9	SSE8	SE8	SE9	SSE9	SSE9	SSE9	SE6	SE6	SE6	SE5	ENE3	N10	N11	N11	N9	SE3.4	N11
15-Apr	N9	N10	N10	N10	N9	NNE12	NNE11	NNE9	NNE11	NNE11	NNE12	NNE11	N13	NNE12	N14	N16	N16	N16	N16	N16	N14	N13	N11	N9	N11.9	N16
16-Apr	NNE10	N9	N8	NNE8	NNE8	NNE8	N9	NNE9	N9	NE6	ESE6	N9	N4	SE8	SE10	SE9	SE9	SE8	ESE8	ESE6	SE5	SE4	SE5	SSE5	ENE3.8	SE10
17-Apr	SSE3	SE3	SSE3	S3	SSW2	S1	SSE3	SE6	SE9	SE9	SE11	SE10	SE11	SE11	SE11	SE10	SE10	SE10	SE9	SE6	SE3	SE4	SE2	WSW1	SE6.2	SE11
18-Apr	SE2	NNE2	N3	NNW1	NNW3	NNE3	NE5	E6	ESE7	E7	ESE6	ESE6	SE7	ESE7	ESE7	SE6	SE7	SE6	SE5	SE3	S2	ESE1	SSE0	SSE2	ESE3.3	E7
19-Apr	W2	W1	WSW1	WSW1	AF	WSW1	N2	ESE2	SSE3	S2	E4	SE5	ESE7	E5	ENE5	E6	E9	ESE8	SE7	ESE5	ESE4	ESE2	WNW2	NW2	ESE2.6	E9
20-Apr	WSW2	SW2	WSW1	WSW1	SW2	NW1	E1	ENE2	E3	NNE5	NNE7	NNE8	NNE9	NNE8	NNE8	NNE7	NE6	NE5	ENE4	S2	SW3	SW3	SSW2	S2	NNE2.2	NNE9
21-Apr	SW2	S1	SSW2	SSW1	WSW1	SSW2	SSE3	ESE4	ESE5	N8	N9	N8	N9	NNE8	NE4	NNE8	N10	N10	N10	N8	N7	N7	N5	NNW3	N4.2	N10
22-Apr	NW4	NNW4	NW3	NW2	NW2	N1	N5	NNE6	NNE7	N9	N11	N13	NNE14	NE12	NE11	NE11	NE10	ENE10	NE10	NNE9	N9	N7	N6	N8	NNE6.9	NNE14
23-Apr	N8	N8	N9	N9	N9	N11	N10	N10	NNE11	N11	NNE9	NNE9	ENE9	E11	ENE11	ENE13	ENE12	NE12	NE9	NE9	NE7	NE6	NE6	NNE6	NNE8.3	ENE13
24-Apr	NNE6	NNE5	NNE8	NNE7	N7	N7	N8	N6	N6	N7	N9	N4	SSE5	SSW5	WSW5	WNW3	NNE1	ESE5	ENE8	ENE9	ENE7	E6	E5	E6	NNE3.7	ENE9
25-Apr	E3	E3	NE3	NNE3	WNW1	W0	SE3	SE3	ENE3	NE2	NNE4	E3	ESE4	NE3	E2	E4	S4	S4	SSE6	SSE4	SSE3	SE3	SE4	SSE3	ESE2.0	SSE6
26-Apr	SSE2	S2	SSE2	SE2	SE2	SSE2	SE2	SSE6	SE8	SE8	SSE10	SE10	SE10	SSE9	SSE8	SE9	SE8	SE8	SE7	SE6	SE5	SE6	SE7	SE7	SE6.1	SSE10
27-Apr	SE5	SE5	ESE4	ESE4	ESE4	ESE6	NNE3	NNE4	N4	N2	SE4	SE8	SE10	SE8	SE7	SSE7	SSE6	SE6	SE6	SE6	SSE6	S5	SSE2	S3	SE4.1	SE10
28-Apr	S2	SSE3	S2	SW1	SSW3	W1	SSW3	SSW4	SSW5	S6	S6	SE5	E6	E6	ESE3	E5	ESE5	SE5	SE3	SSE1	SSE4	SSE5	SSE2	SSE4	SSE2.8	E6
29-Apr	SSE1	SW1	SSW2	SSW2	S4	S4	SSE6	S6	S4	E7	SSE7	SSW8	SW9	SW8	W4	SW3	NNE1	NW1	NNW5	W2	SW3	SW3	SW3	SW2	SSW2.6	SW9
30-Apr	SW2	SW2	SSW2	SW2	SW3	SW2	SSE2	ESE3	ESE6	ESE6	SE6	SSE9	SSE12	S12	S11	S11	S7	S4	SSW5	S5	SSW5	SSW5	SSW7	WSW6	S4.8	S12
	N0.5	N1.0	N1.0	NNW0.8	NNW1.1	N1.0	NNE1.3	NE1.9	NE2.3	NE3.0	NE3.0	NE2.7	ENE2.4	ENE2.2	NE2.1	NE2.3	NE2.3	NE2.3	NE2.5	NNE2.5	NNE1.7	N1.3	N1.0	N0.5	Diurnal Average	
	SSE10	N10	SSE10	N11	N10	NNE12	WSW11	NNE11	WNW17	N13	N15	N15	WSW17	WSW18	N18	N17	SW20	SW20	WSW16	N16	N14	N13	N11	N11	Diurnal Maximum	

AF - Analyzer Failure

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 Apr 8 14:00

Minimum Value: 0 km/h on Apr 17 05:00

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:	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-Apr	1	2	1	1	1	1	1	2	2	3	3	3	3	3	3	3	2	3	3	2	2	2	3	3	3
2-Apr	2	3	3	3	3	3	2	3	3	4	4	4	4	4	4	4	4	4	3	4	3	3	2	1	4
3-Apr	1	1	1	1	1	1	1	1	2	2	2	2	2	2	2	2	2	2	2	2	2	3	4	4	4
4-Apr	4	3	4	4	4	4	4	4	3	3	3	3	2	2	3	5	6	5	5	5	4	5	3	1	6
5-Apr	2	1	2	4	2	2	2	1	1	2	2	2	3	3	2	2	3	3	2	2	2	2	1	1	4
6-Apr	1	1	1	1	1	1	1	1	1	2	3	2	2	3	3	2	2	2	2	2	1	1	1	1	3
7-Apr	1	1	1	1	1	1	1	1	1	1	2	3	2	3	3	3	3	2	3	1	2	2	2	2	3
8-Apr	1	1	1	1	1	1	2	4	3	3	5	5	7	8	6	6	7	7	6	4	4	3	2	2	8
9-Apr	3	3	1	2	3	3	4	4	7	5	5	4	4	5	6	7	6	4	3	5	2	1	2	2	7
10-Apr	1	1	2	1	3	2	3	3	3	3	3	4	4	3	4	3	3	3	3	3	3	2	2	2	4
11-Apr	2	2	3	3	3	2	3	3	3	4	5	5	5	4	6	6	5	5	5	4	4	2	1	1	6
12-Apr	1	1	1	1	1	1	1	2	2	2	2	4	3	4	4	4	4	4	2	5	4	4	4	4	5
13-Apr	4	3	2	0	1	1	1	2	3	2	3	3	3	3	2	2	2	2	2	1	1	1	2	2	4
14-Apr	2	2	1	2	1	1	1	2	3	3	3	3	3	3	3	2	2	2	2	1	4	3	3	3	4
15-Apr	3	3	3	3	3	3	3	3	3	3	4	4	4	4	5	5	5	5	5	5	5	4	3	4	5
16-Apr	3	3	2	3	2	2	3	3	3	3	3	3	3	3	4	4	3	3	3	2	2	2	2	2	4
17-Apr	1	1	1	1	0	1	2	3	3	3	4	4	4	5	4	4	4	4	3	2	1	2	2	1	5
18-Apr	1	1	1	1	1	1	2	2	3	3	2	3	2	2	2	2	2	2	2	2	1	1	1	2	3
19-Apr	1	1	1	1	AF	1	1	1	1	2	2	2	2	2	2	2	3	3	3	2	1	1	1	1	3
20-Apr	1	1	1	0	1	1	1	1	1	2	2	3	3	3	3	3	3	2	2	1	1	1	1	1	3
21-Apr	1	1	1	1	1	1	1	1	2	3	3	2	3	3	3	3	3	3	3	2	2	2	2	1	3
22-Apr	1	1	1	1	1	2	1	2	2	2	3	4	4	4	4	4	4	4	3	3	2	2	2	2	4
23-Apr	2	2	3	3	3	3	3	3	4	3	3	3	3	4	5	5	5	5	3	3	2	2	2	2	5
24-Apr	2	2	3	2	2	2	2	2	2	2	3	3	3	3	2	1	1	2	4	4	3	2	2	2	4
25-Apr	2	1	1	1	1	1	1	1	1	2	2	2	2	2	2	2	1	1	2	2	2	1	1	1	2
26-Apr	1	1	1	1	1	1	1	2	3	3	4	4	4	3	3	3	3	3	3	2	2	2	2	3	4
27-Apr	2	2	1	2	2	3	1	1	1	1	2	4	3	3	2	3	2	2	2	2	2	1	1	1	4
28-Apr	1	1	1	1	1	1	1	2	2	2	2	2	2	2	2	2	2	2	1	1	2	2	1	1	2
29-Apr	1	1	1	1	1	1	2	2	2	2	3	4	4	4	6	3	3	2	3	1	1	1	1	1	6
30-Apr	1	1	1	1	1	1	1	1	2	2	2	4	4	4	4	4	2	1	1	1	1	1	1	2	4
	4	3	4	4	4	4	4	4	7	5	5	5	7	8	6	7	7	7	6	5	5	5	4	4	
	Diurnal Maximum																								

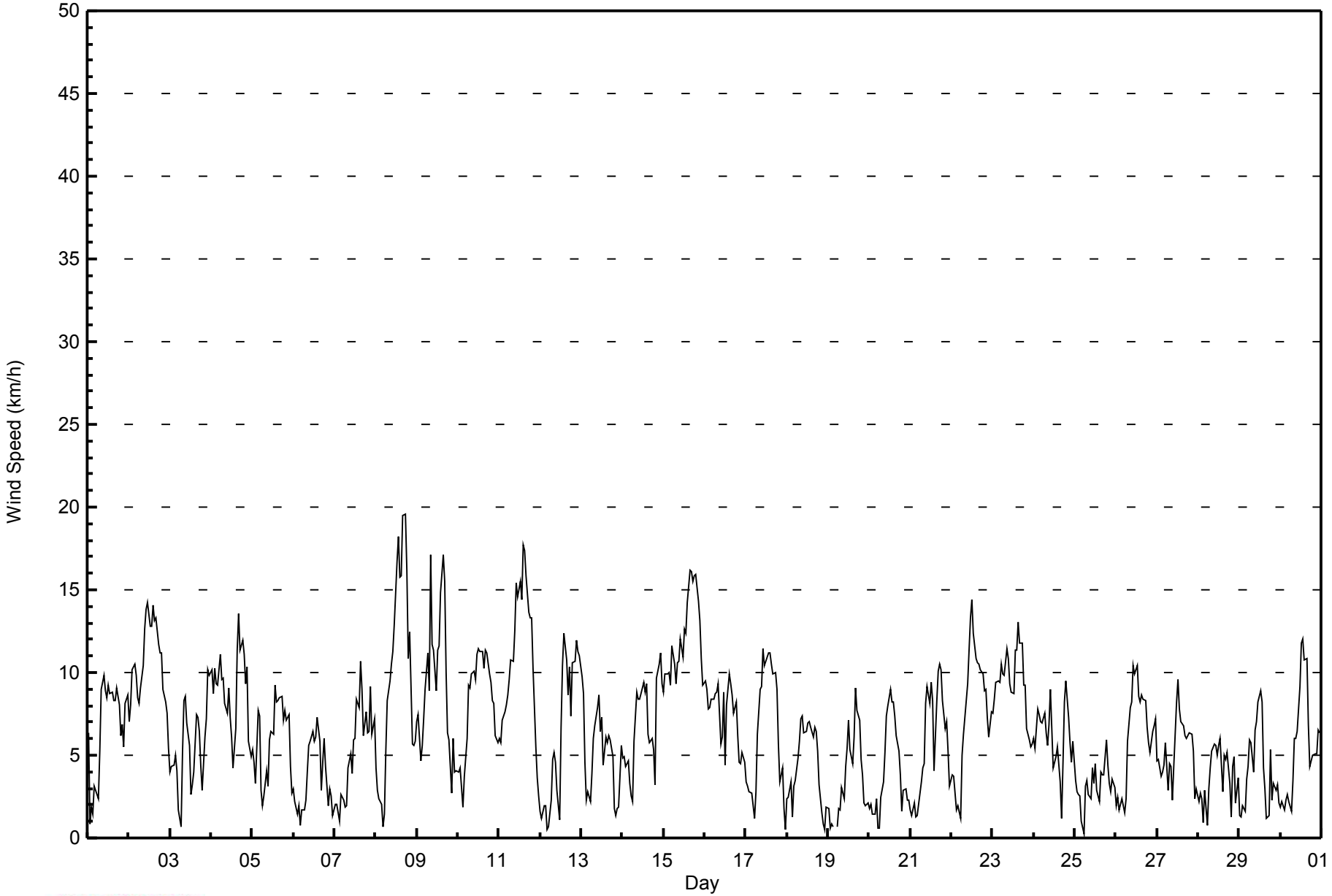
AF - Analyzer Failure

WBEA NETWORK

Hourly Averages

Wind Speed (WS) - km/h

Fort McKay South - April 2014



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Wind Speed Ranges (km/h)	Number of Hours	%	Cumulative %
0 - 5	296	41.17	41.17
6 - 11	364	50.63	91.79
12 - 19	57	7.93	99.72
20 - 28	2	0.28	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

WBEA NETWORK

Frequency Distribution

Wind Speed (WS) - km/h

Fort McKay South - April 2014

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	13	7	6	16	20	29	33	28	28	27	17	14	8	15	15	296
6 - 11	93	71	20	6	12	16	56	31	12	17	7	9	2	4	6	2	364
12 - 19	31	5	2	2	0	0	0	1	1	0	2	5	1	5	2	0	57
20 - 28	0	0	0	0	0	0	0	0	0	0	2	0	0	0	0	0	2
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	144	89	29	14	28	36	85	65	41	45	38	31	17	17	23	17	719

Total Number of Valid Hours: 719

Total Number of Hours: 720

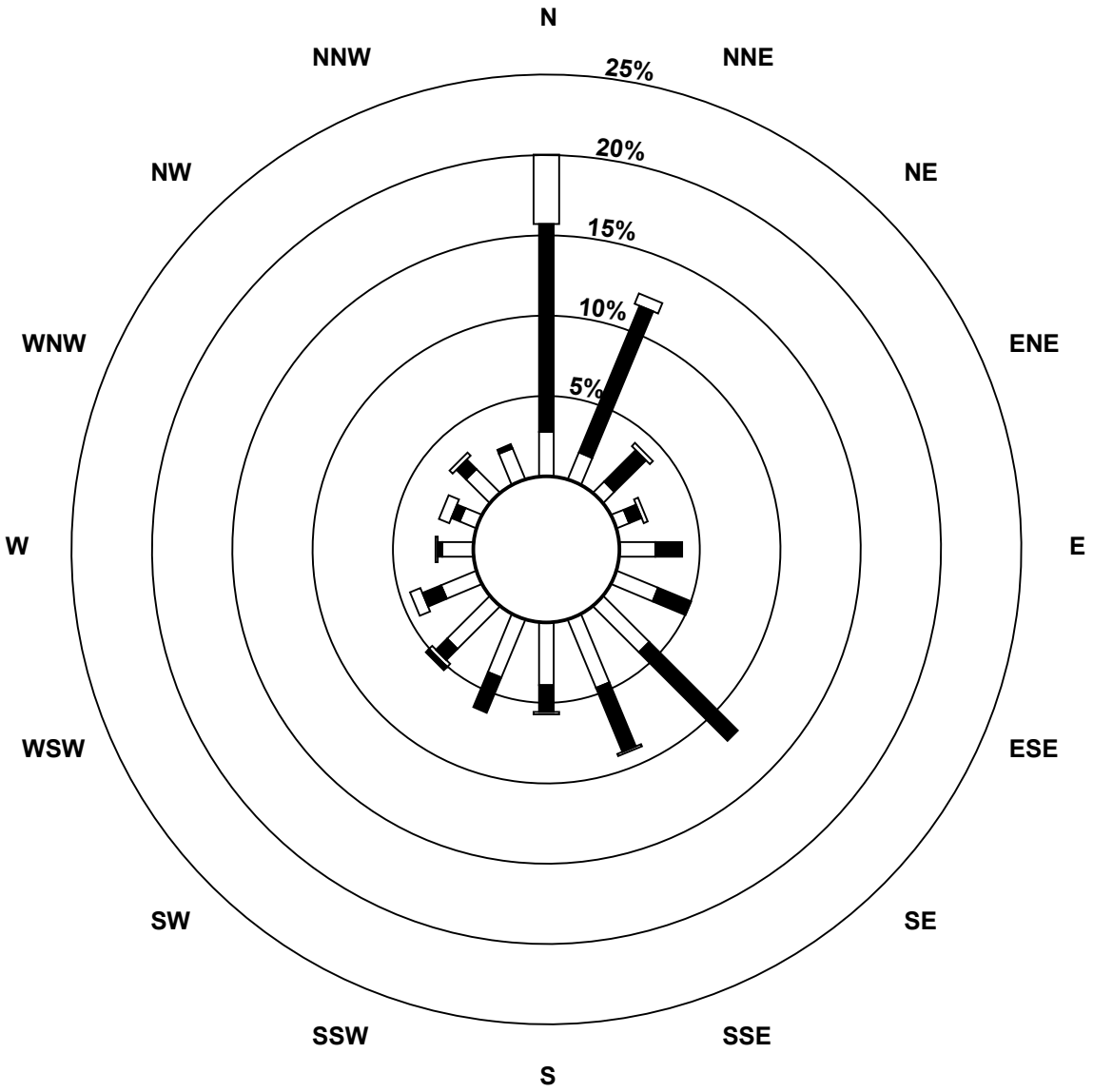
AURORA
ATMOSPHERICS INC.

Wood Buffalo Environmental Association

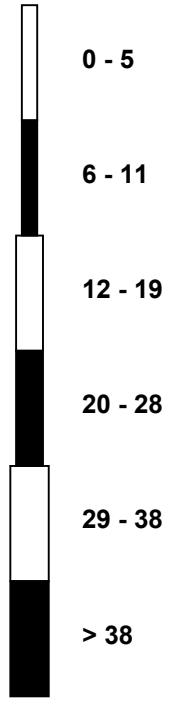
Wind Rose Apr 2014

Wind Speed (WS) - km/h

Fort McKay South (AMS 13)



Classes (km/h)



Total Number of Valid Hours: 719

Direction of Maximum Speed: 227 deg on Apr 8 18:00
Direction of Maximum Daily Speed Average: 7.9 deg on Apr 15

Direction of Minimum Speed: 278 deg on Apr 25 06:00

Direction of Minimum Daily Speed Average: 1.4 deg on Apr 6

Monthly Average Direction: 230.4 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-Apr	182	190	286	264	338	338	5	4	5	353	358	24	5	7	355	357	1	12	15	22	15	15	8	6	4.1
2-Apr	358	1	2	6	5	2	358	7	357	356	2	357	5	5	357	358	3	8	2	9	5	18	13	351	2.6
3-Apr	321	325	323	324	325	287	323	15	17	13	3	16	119	164	23	15	15	359	355	121	131	140	143	148	25.7
4-Apr	152	145	149	153	154	152	149	150	147	151	161	156	158	240	259	280	276	286	286	289	303	304	306	263	206.5
5-Apr	253	242	222	243	254	271	304	66	41	24	47	25	44	23	33	21	20	19	6	1	358	3	353	336	2.7
6-Apr	329	329	245	247	222	195	183	118	116	128	190	205	198	193	182	148	101	358	1	356	273	241	228	208	189.6
7-Apr	216	186	206	227	191	195	174	143	96	99	112	112	129	106	171	173	201	178	208	203	198	210	201	195	173.3
8-Apr	159	192	180	193	5	203	203	199	201	203	223	238	242	247	250	236	222	227	244	239	234	259	233	203	228.6
9-Apr	245	256	212	194	224	221	239	267	284	296	306	314	324	313	313	289	297	298	351	9	215	223	275	328	284.7
10-Apr	331	342	5	329	360	27	20	9	23	27	23	17	20	16	12	10	1	6	16	27	24	26	30	49	16.1
11-Apr	48	53	30	34	30	20	12	15	14	14	10	6	7	5	5	4	0	359	359	354	354	339	302	284	7.9
12-Apr	236	226	197	223	285	177	163	189	205	233	93	9	317	338	357	350	2	5	29	15	9	2	355	358	354.1
13-Apr	358	352	342	274	281	273	305	3	17	33	34	36	44	85	120	88	93	130	143	140	258	239	200	168	39.5
14-Apr	172	159	158	153	125	159	156	134	160	147	137	142	149	159	162	141	128	136	132	59	357	358	356	352	132.6
15-Apr	352	356	360	355	1	15	21	24	15	14	24	20	3	28	10	9	9	7	3	359	1	0	359	7	7.9
16-Apr	12	7	6	12	17	16	0	19	7	45	106	360	8	130	125	126	135	132	120	121	134	141	143	150	62.8
17-Apr	149	145	166	186	194	171	151	133	130	129	139	137	142	136	141	143	139	139	135	135	139	138	146	248	140.4
18-Apr	133	17	357	336	329	12	50	99	102	101	105	120	135	119	111	127	140	136	146	144	170	113	165	152	111.4
19-Apr	277	259	248	250	AF	244	4	109	158	175	99	126	118	90	70	89	97	120	138	122	118	115	300	304	112.8
20-Apr	250	235	239	256	215	305	89	63	81	18	28	14	21	18	29	29	39	49	69	190	224	218	194	182	29.2
21-Apr	222	191	206	206	241	202	168	123	110	5	1	11	7	20	39	15	5	11	4	3	1	2	2	348	10.8
22-Apr	323	333	319	306	319	4	8	14	13	0	354	356	21	35	46	54	56	61	44	33	11	7	1	2	19.2
23-Apr	0	3	4	8	2	4	4	7	13	2	12	33	72	81	72	71	62	55	48	46	38	37	36	23	31.7
24-Apr	31	29	26	18	2	359	5	3	354	358	5	1	154	213	244	295	31	116	68	78	74	87	90	100	33.6
25-Apr	91	83	38	16	298	278	126	131	58	42	24	82	113	50	82	89	172	172	162	161	166	145	146	150	113.7
26-Apr	167	170	153	129	132	151	140	147	141	127	147	140	140	154	152	138	143	138	133	131	137	141	143	141	141.8
27-Apr	146	129	112	120	102	112	28	13	357	353	133	139	137	135	134	153	155	143	140	140	151	175	159	189	133.5
28-Apr	171	160	175	227	206	280	193	204	209	180	185	136	81	95	103	86	105	145	143	147	158	148	165	163	151.4
29-Apr	160	234	193	198	189	177	158	172	174	96	156	192	225	232	274	217	14	321	331	270	225	230	226	234	202.2
30-Apr	224	220	208	216	219	229	162	116	118	120	127	152	160	173	169	173	176	190	195	191	193	195	211	243	174.9
	350.4	359.1	6.5	346.5	342.8	10.5	23.4	51.9	43.1	38.3	47.0	46.8	59.8	60.3	44.0	42.0	38.4	43.4	35.0	30.0	13.5	8.7	0.7	9.1	
	Diurnal Average																								

AF - Analyzer Failure
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 Apr 29 17:00

Minimum Value: 10 deg on Apr 29 21:00

Percentiles: P_1 = 14 P_{10} = 21 Q_1 = 25 Median = 31 Q_3 = 39 P_{90} = 60 P_{99} = 96

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-Apr	16	84	56	72	26	29	23	19	25	28	32	36	32	37	31	30	28	27	27	23	23	23	22	20	84
2-Apr	21	21	24	24	24	23	21	24	25	25	28	25	29	27	25	26	26	24	24	24	24	23	23	20	29
3-Apr	18	15	19	14	13	18	70	18	22	28	37	59	77	92	86	36	29	24	26	45	30	31	33	32	92
4-Apr	30	30	33	30	30	28	29	29	28	34	27	29	30	56	32	37	36	36	37	35	39	39	40	23	56
5-Apr	18	13	46	20	20	66	71	36	35	74	42	39	52	28	32	32	28	26	22	21	21	21	26	21	74
6-Apr	16	19	31	28	82	37	55	32	36	35	43	35	39	42	35	36	61	32	22	28	38	13	30	66	82
7-Apr	54	51	76	80	30	32	34	39	36	38	60	51	52	34	39	28	32	24	28	16	17	19	18	20	80
8-Apr	23	28	19	29	73	87	31	23	21	22	33	30	32	28	32	26	25	24	28	25	23	40	24	20	87
9-Apr	32	25	33	25	25	23	31	33	37	39	38	44	37	42	37	39	39	38	44	72	24	14	51	26	72
10-Apr	19	17	23	26	34	25	28	30	30	31	36	31	34	28	29	28	26	24	30	30	25	26	30	37	37
11-Apr	35	38	30	31	30	24	24	25	26	26	26	25	26	26	25	25	26	25	26	26	23	23	25	45	45
12-Apr	38	68	32	62	96	63	33	33	45	69	80	102	64	39	35	38	42	29	32	28	25	25	26	27	102
13-Apr	25	26	27	16	14	22	38	34	43	37	38	50	45	71	52	53	44	40	31	28	32	26	56	22	71
14-Apr	22	26	23	26	25	19	33	36	29	36	35	38	34	40	36	41	32	30	32	43	22	24	23	23	43
15-Apr	25	23	24	25	26	25	24	27	24	26	27	30	29	33	29	28	26	26	24	26	25	25	22	26	33
16-Apr	26	24	23	24	22	22	24	30	30	54	48	36	73	45	42	40	36	33	33	31	28	27	29	27	73
17-Apr	22	21	16	16	21	72	45	34	31	37	35	39	34	35	33	35	33	33	32	28	28	28	93	85	93
18-Apr	36	33	28	87	18	32	30	38	36	35	36	43	36	38	37	42	29	30	34	30	35	84	82	67	87
19-Apr	24	78	62	45	AF	63	35	67	53	73	66	55	40	53	61	46	33	36	31	30	30	70	53	41	78
20-Apr	53	11	38	45	25	80	75	33	44	50	31	37	34	44	37	38	48	36	34	43	11	24	34	20	80
21-Apr	63	60	44	76	53	35	24	27	53	40	27	28	32	35	43	35	28	25	23	21	20	21	21	36	76
22-Apr	18	17	43	60	31	79	19	23	28	29	28	29	29	34	37	39	38	39	32	31	21	22	19	20	79
23-Apr	21	22	21	22	21	23	23	23	25	26	29	34	39	34	40	36	35	35	32	32	33	32	28	27	40
24-Apr	29	28	26	26	21	21	22	24	23	23	25	88	80	44	45	48	89	41	35	36	39	45	42	35	89
25-Apr	39	36	31	25	73	96	38	44	67	85	58	71	61	86	98	70	34	32	27	26	36	27	29	27	98
26-Apr	40	26	36	24	24	62	36	30	36	33	31	39	38	40	33	32	32	29	32	32	32	27	29	29	62
27-Apr	28	33	39	43	40	36	36	20	25	71	40	33	31	33	29	30	29	31	31	29	27	20	27	18	71
28-Apr	45	24	19	52	27	58	26	30	31	31	32	45	45	48	87	36	44	30	27	33	23	26	59	28	87
29-Apr	71	69	43	61	28	16	23	30	58	34	41	49	46	52	98	89	103	100	37	42	10	51	25	46	103
30-Apr	65	44	54	24	21	14	42	39	28	35	32	36	30	28	26	28	21	25	19	13	14	15	15	20	65
	71	84	76	87	96	96	75	67	67	85	80	102	80	92	98	89	103	100	44	72	39	84	93	85	
	Diurnal Maximum																								

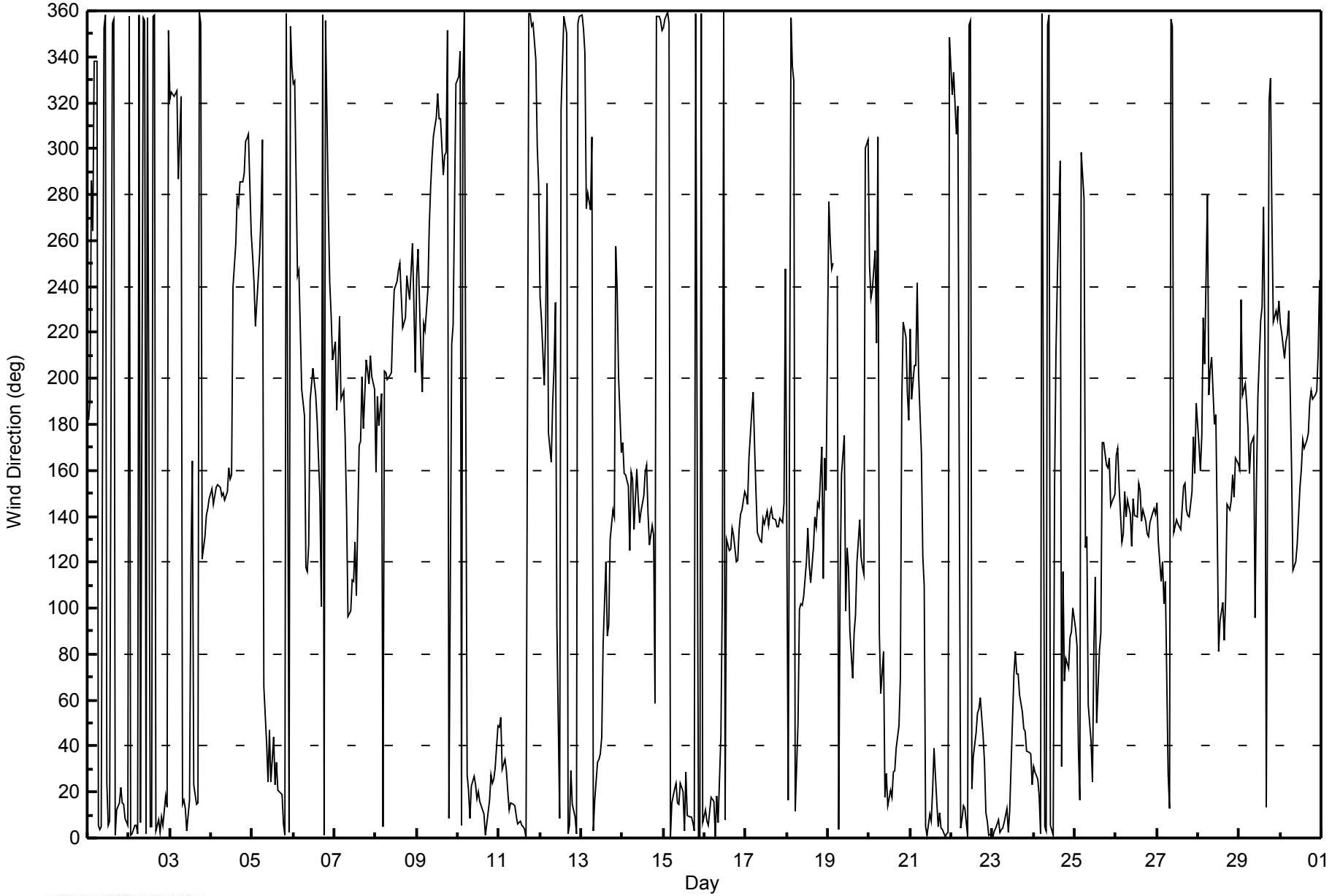
AF - Analyzer Failure

WBEA NETWORK

Hourly Averages

Wind Direction (WD) - deg

Fort McKay South - April 2014



AURORA ATMOSPHERICS INC.

Wood Buffalo Environmental Association

SO_2 Calibration Report

Station Information

Calibration Date	April 24, 2014	Previous Calibration	March 24, 2014
Station Name	Fort McKay South	Station Number	AMS 13
Reason:	Routine		
Start Time (MST)	9:20	End Time (MST)	13:35
Barometric Pressure	735 mmHg	Station temp.	24 Deg C
Calibrator Make/Model	Sabio 4010	Serial Number	1377
Cal Gas Concentration	51.1 ppm	Cal Gas Expiry Date	5/29/2014
Gas Cert Reference	LL107918		
DACS make/model	Campbell Scientific CR3000	DACS serial No.	3492
DACS voltage range	0-5v	DACS channel #	

Analyzer Information

	Before	*After*		*Before*	*After*
Analyzer Range (ppb)	1000	1000	PMT voltage	25	52
Analyzer Range (mv)	5000	5000	Lamp voltage	2443	2443
Calculated slope	0.996778	0.998401	Chamber temp.	50.0	50.0
Calculated intercept	1.055967	0.866261	Pressure ("Hg)	26.0	26.1
Analyzer Background	23.7	23.7	Flow (lpm)	665.000	671.000
Analyzer Coefficient	1.619	1.604	Intensity	85	85

Analyzer make	API T100	Analyzer serial #	599

Calibration Data

Set Point	Total flow rate (cc/min)	Source gas flow rate (cc/min)	Calculated concentration (ppb) (Cc)	Indicated concentration (ppb) (Ic)	Correction factor (Cc/Ic)
as found zero	5000	0.0	0.0	0.5	NA
as found span	5000	78.9	806.4	811.4	0.994
calibrator zero	5000	0.0	0.0	0.5	NA
high point	5000	78.9	806.4	807.7	0.998
second point	5000	39.4	402.7	401.1	1.004
third point	5000	19.7	201.3	199.9	1.007
calibrator zero					
as left zero	5000	0.0	0.0	0.4	NA
as left span	5000	78.9	806.4	800.8	1.007
				Average Correction Factor	1.003

Corrected As found	810.9	Previous response	807.9	% change	-0.4%

Notes:

Small adjustment to span. As found zero used as Calibrator zero. Filter changed after third point.

Calibration Performed By: Ryan Power

Wood Buffalo Environmental Association

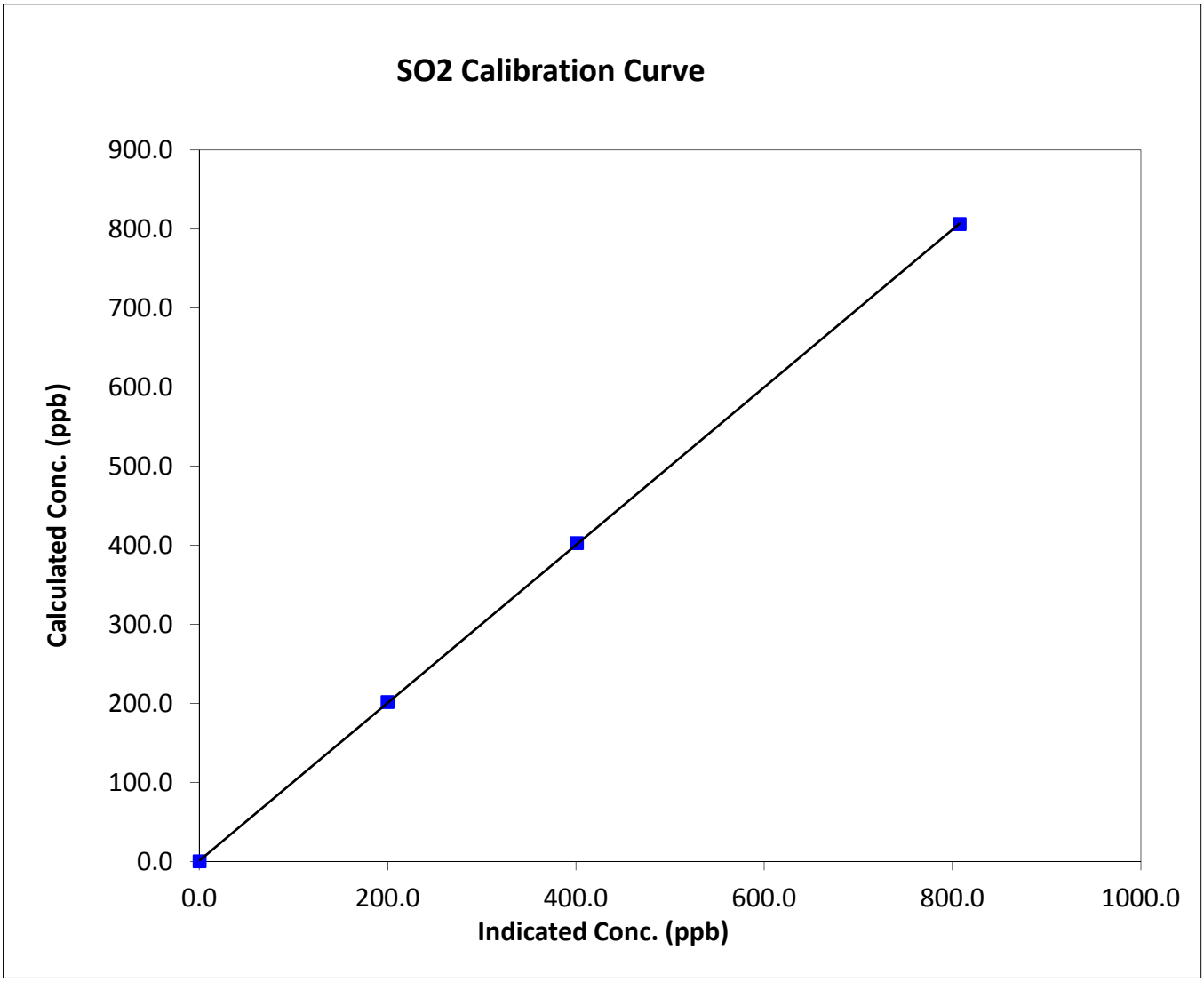
SO_2 Calibration Summary

Station Information

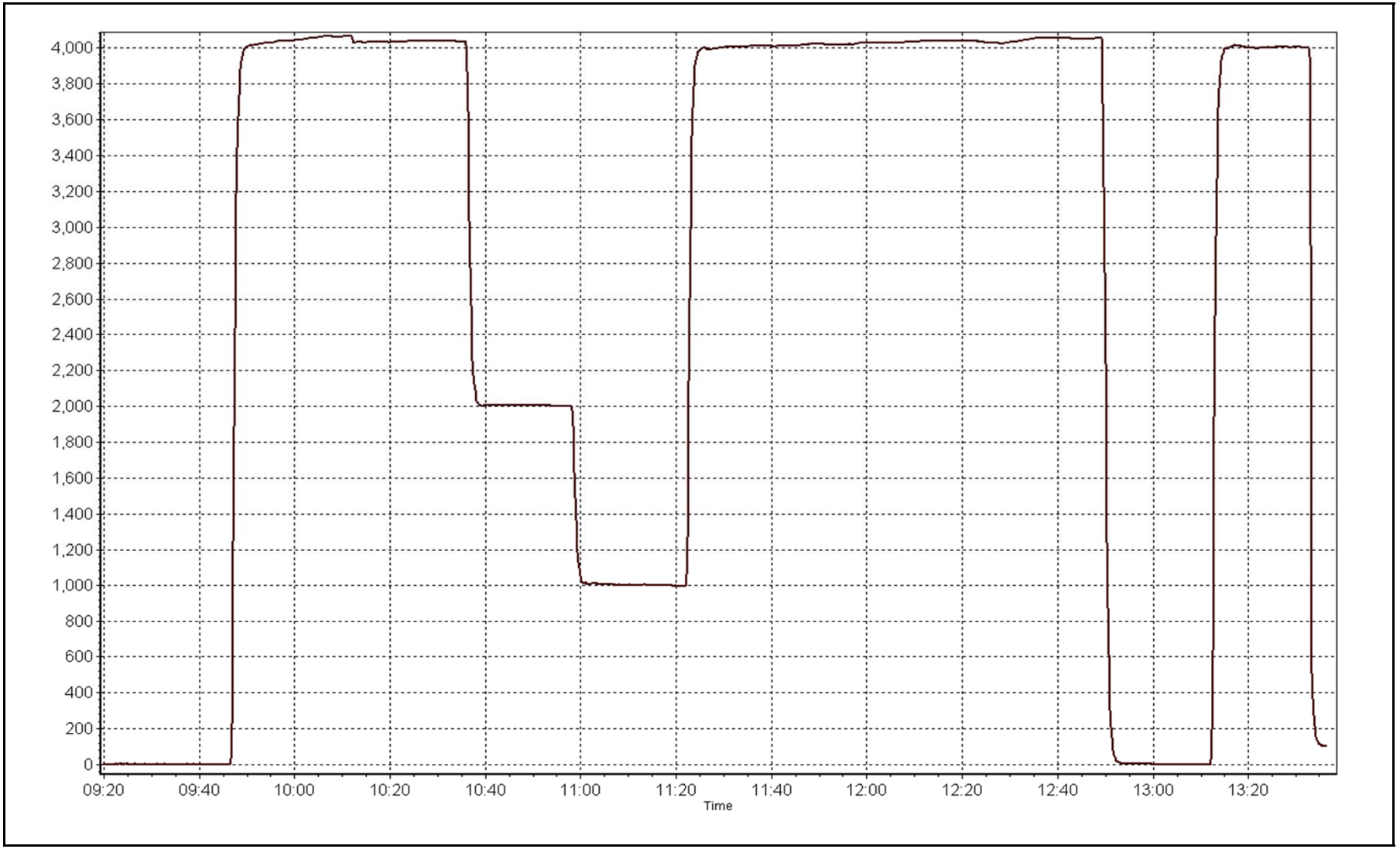
Calibration Date	April 24, 2014	Previous Calibration	March 24, 2014
Station Name	Fort McKay South	Station Number	AMS 13
Start Time (MST)	9:20	End Time (MST)	13:35
Analyzer make	API T100	Analyzer serial #	599

Calibration Data

Calculated concentration (ppb) (Cc)	Indicated concentration (ppb) (Ic)	Correction factor (Cc/Ic)	Statistical Evaluation	
0.0	0.5	N/A	Correlation Coefficient	0.999985
806.4	807.7	0.9983		
402.7	401.1	1.0040	Slope	0.998401
201.3	199.9	1.0073		
			Intercept	0.866261



SO2 Calibration Plot Date: April 24, 2014



z

TRS Calibration Report

Station Information

Calibration Date	April 23, 2014	Previous Calibration	March 27, 2014
Station Name	Fort McKay South	Station Number	AMS 13
Reason:	Routine		
Start Time (MST)	8:50	End Time (MST)	11:32
Barometric Pressure	732 mmHg	Station temp.	22 Deg C
Calibrator Make/Model	Sabio 4010	Serial number	11041107
Cal Gas Concentration	10.4 ppm H2S	Cal Gas Expiry Date	5/30/2013
Gas Cert Reference	LL82750	SO2 gas conc.	51.1 ppm SO2
DACS make/model	Campbell Scientific CR3000	DACS serial No.	2581
DACS voltage range	0-5v	DACS channel #	

Analyzer Information

	Before	*After*		*Before*	*After*
Analyzer Range (ppb)	100	100	PMT voltage	-727	-727
Analyzer Range (input)	5000	5000	Lamp voltage	1014	1014
Calculated slope	0.995393	0.989346	Chamber temp.	45	45
Calculated intercept	-0.109735	-0.158590	Pressure	682.3	682.9
Analyzer Background	1.83	1.84	Flow	0.431	0.431
Analyzer Coefficient	1.046	1.046	Intensity	90	89
			Converter temp.	800	800

Analyzer make/model	TEI 43i-TLE	Analyzer serial #	1218153359
Converter make/model	CDN-101	Converter serial #	456

Calibration Data

Set Point	Total flow rate (cc/min)	Source gas flow rate (cc/min)	Calculated concentration (ppb) (Cc)	Indicated concentration (ppb) (Ic)	Correction factor (Cc/Ic)
as found zero	5000	0.0	0.0	0.1	NA
as found span	5000	38.5	80.1	81.0	0.988
SO2 scrubber check	5000	39.4	402.7	0.5	NA
calibrator zero	5000	0.0	0.0	0.1	NA
high point	5000	38.5	80.1	81.0	0.988
second point	5000	19.2	39.9	40.7	0.981
third point	5000	9.6	20.0	20.3	0.986
calibrator zero					
as left zero	5000	0.0	0.0	0.2	NA
as left span	4000	30.8	80.1	81.6	0.981
				Average Correction Factor	0.985

Corrected As found	80.9	Previous response	80.6	% change	-0.4%

Notes:

No adjustments required. As Founds used as Calibrator Zero and Span. Filter changed after third point.

Calibration Performed By: Ryan Power

Wood Buffalo Environmental Association

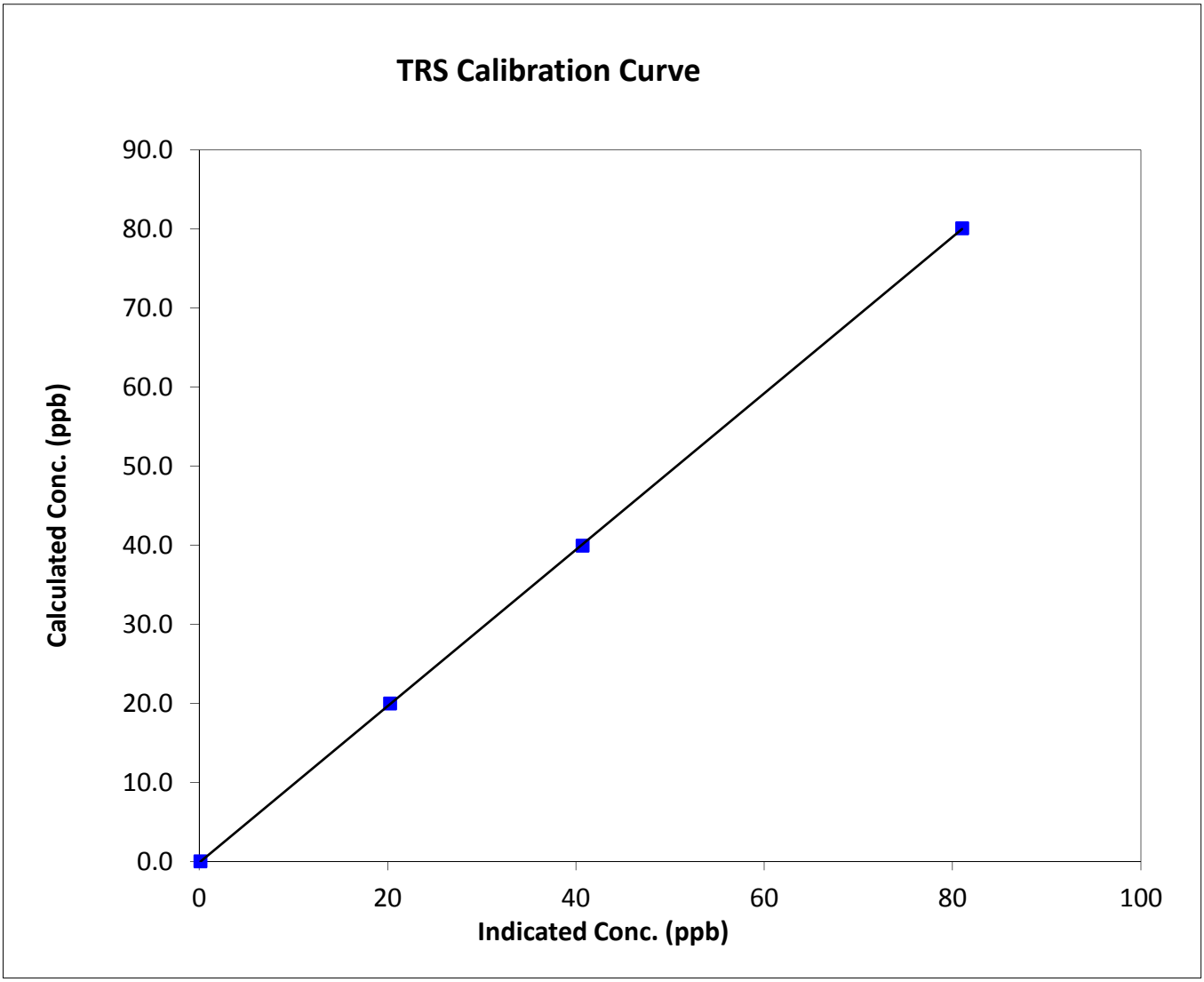
TRS Calibration Summary

Station Information

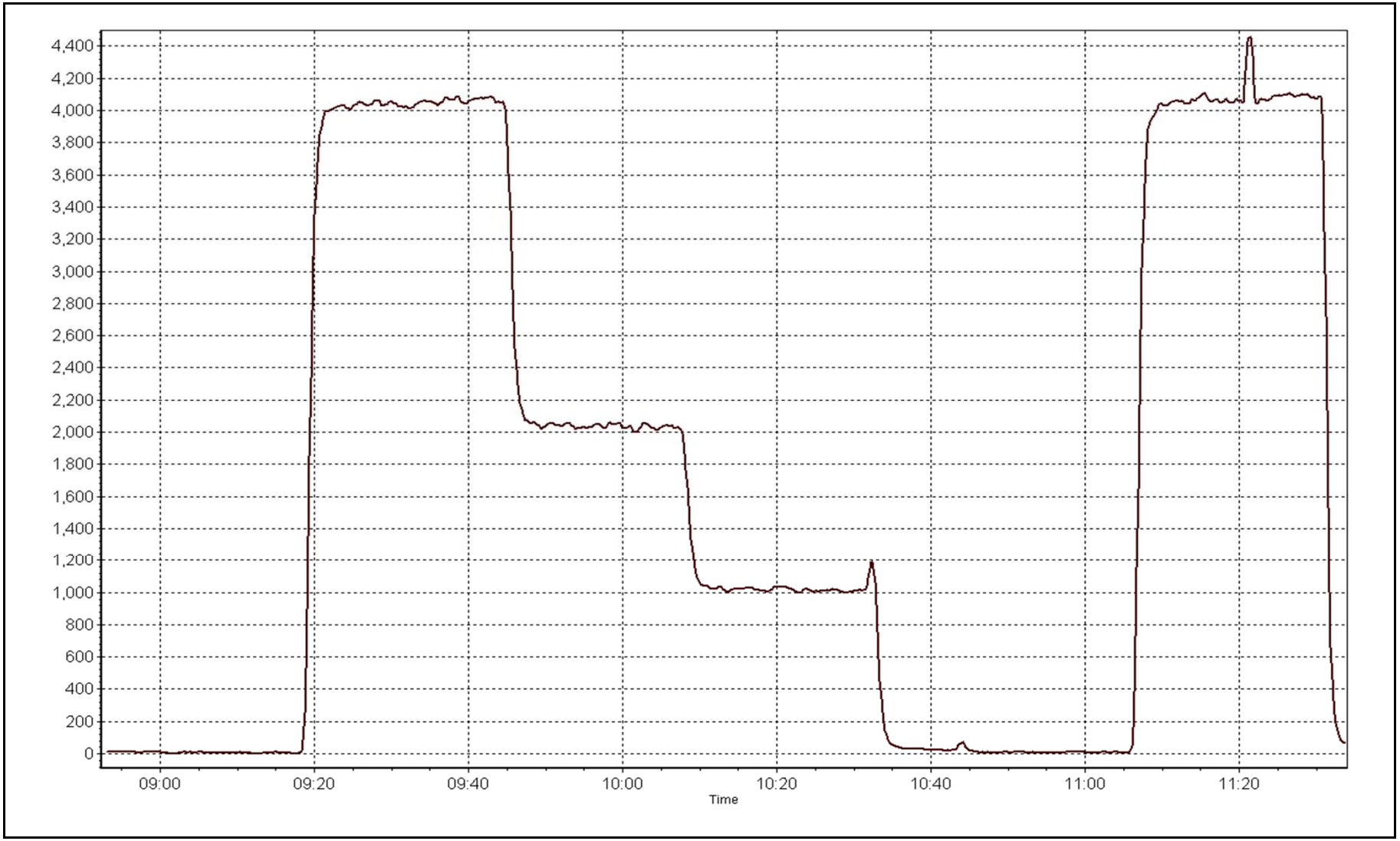
Calibration Date	April 23, 2014	Previous Calibration	March 27, 2014
Station Name	Fort McKay South	Station Number	AMS 13
Start Time (MST)	8:50	End Time (MST)	11:32
Analyzer make	TEI 43i-TLE	Analyzer serial #	1218153359

Calibration Data

Calculated concentration (ppb) (Cc)	Indicated concentration (ppb) (Ic)	Correction factor (Cc/Ic)	Statistical Evaluation	
0.0	0.1	N/A	Correlation Coefficient	0.999986
80.1	81.0	0.9883		
39.9	40.7	0.9808	Slope	0.989346
20.0	20.3	0.9857		
			Intercept	-0.158590



TRS Calibration Plot Date: April 23, 2014



Wood Buffalo Environmental Association

THC Calibration Report

Station Information

Calibration Date	Thursday, April 24, 2014	Previous Calibration	Monday, March 24, 2014
Station Name	Fort McKay South	Station Number	AMS 13
Reason:	Routine		
Start Time (MST)	9:20	End Time (MST)	13:35
Barometric Pressure	735 mmHg	Station temp.	24 Deg C
Calibrator Make/Model	Sabio 4010	Serial Number	11041107
Gas Cert Reference	LL107918	Cal Gas Expiry Date	5/29/2014
CH4 Cal Gas Conc.	515 ppm	CH4 Equiv Conc.	1076.0 ppm
C3H8 Cal Gas Conc.	204 ppm		
DACS make/model	Campbell Scientific CR3000	DACS serial No.	3492
DACS voltage range	0-5v	DACS channel #	

Analyzer Information

	Before	*After*		*Before*	*After*
Analyzer Range (ppm)	25	25	Sample Pressure	8.0	8.0
Analyzer Range (mv)	5000	5000	Air or Bypass press	42.4	42.4
Calculated slope	1.004746	0.993058	Fuel Pressure	22.6	22.6
Calculated intercept	-0.044706	0.086546			
BKG	2.7	2.8			
COEF	4.731	4.834			

Analyzer make	Thermo Model 51iLT	Analyzer serial #	1236656114

Calibration Data

Set Point	Total flow rate (cc/min)	Source gas flow rate (cc/min)	Calculated concentration THC (ppm) (Cc)	Indicated concentration (ppb) (Ic)	Correction factor (Cc/Ic)
as found zero	5000	0.0	0.00	-0.03	N/A
as found span	5000	78.9	16.98	16.59	1.024
calibrator zero	5000	0.0	0.00	-0.03	N/A
high point	5000	78.9	16.98	17.05	0.996
second point	5000	39.4	8.48	8.39	1.010
third point	5000	19.7	4.24	4.14	1.024
calibrator zero					
as left zero	5000	0.0	0.00	-0.21	N/A
as left span	5000	78.9	16.98	16.98	1.000
				Average Correction Factor	1.010

Corrected As found	16.61	Previous response	16.94	% change	2.0%

Notes:

Adjustment to span. Seems to be drifting more than usual. Will monitor. Filter changed after third point

Calibration Performed By: Ryan Power

Wood Buffalo Environmental Association

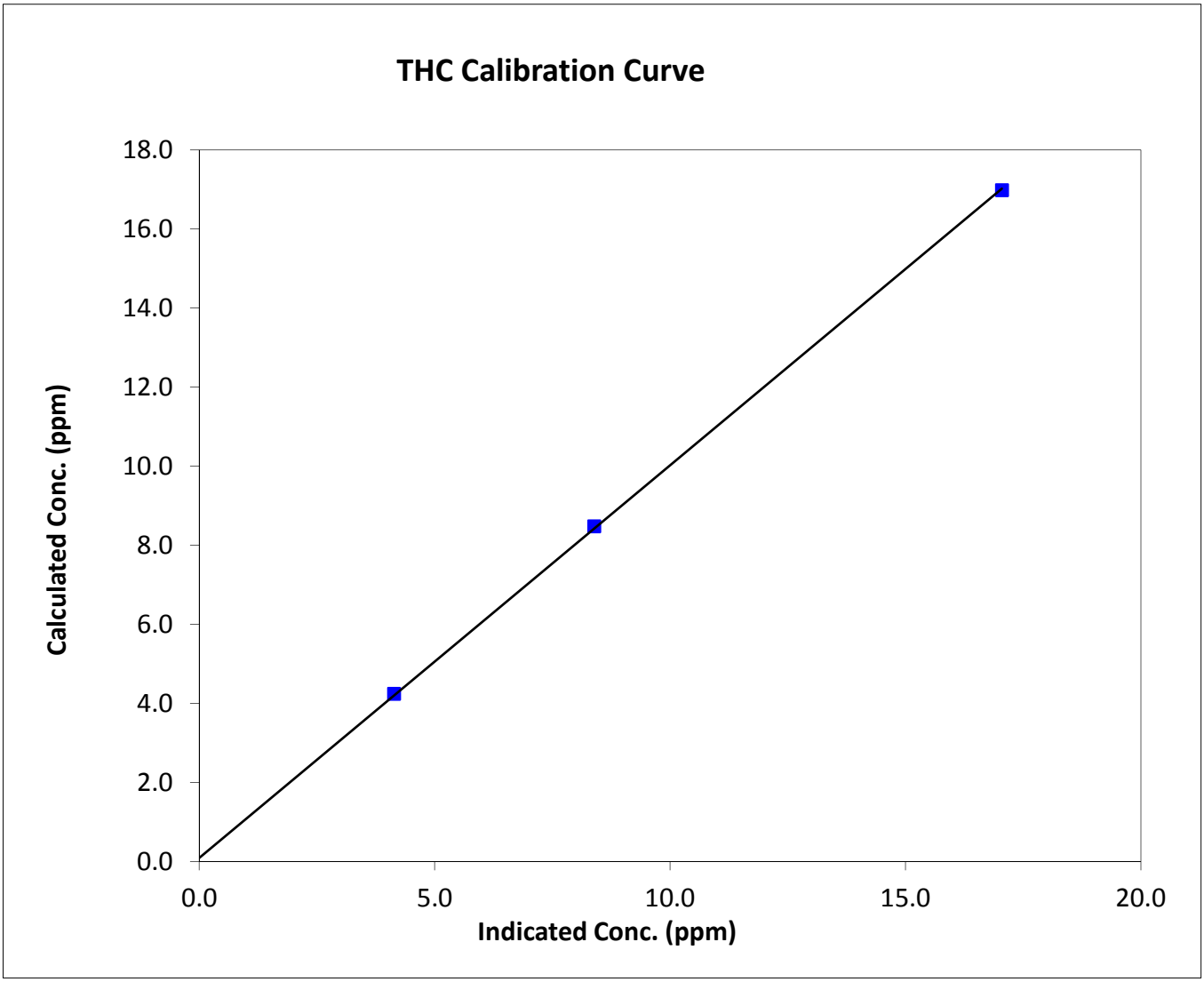
THC Calibration Summary

Station Information

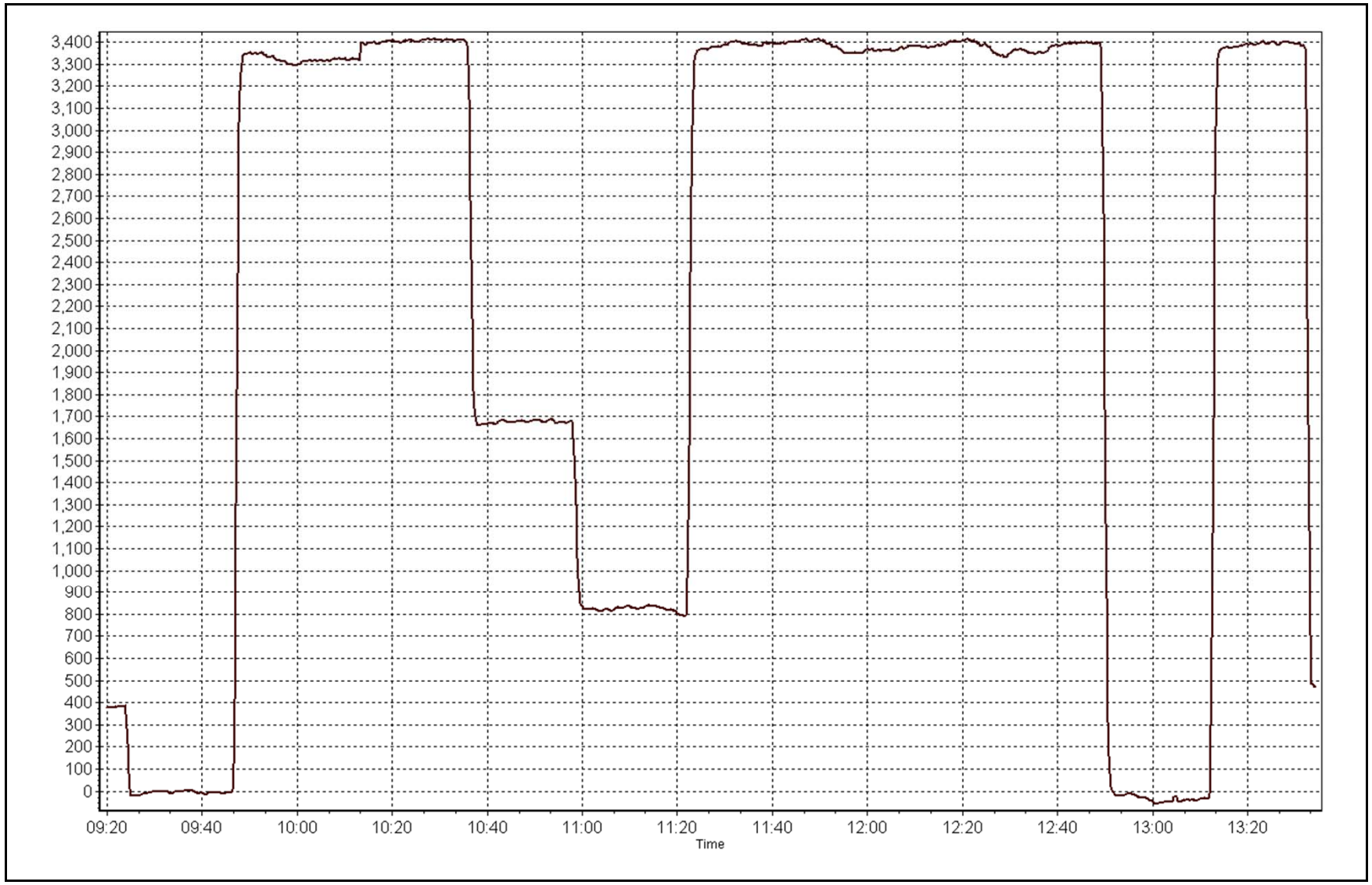
Calibration Date	April 24, 2014	Previous Calibration	March 24, 2014
Station Name	Fort McKay South	Station Number	AMS 13
Start Time (MST)	9:20	End Time (MST)	13:35
Analyzer make	Thermo Model 51iLT	Analyzer serial #	1236656114

Calibration Data

Calculated concentration (ppm) (Cc)	Indicated concentration (ppm) (Ic)	Correction factor (Cc/Ic)	Statistical Evaluation	
0.00	-0.03	N/A	Correlation Coefficient	0.999933
16.98	17.05	0.9958		
8.48	8.39	1.0104	Slope	0.993058
4.24	4.14	1.0241		
			Intercept	0.086546



THC Calibration Plot Date: April 24, 2014



Wood Buffalo Environmental Association

O_3 Calibration Report

Station Information

Calibration Date	April 25, 2014	Previous Calibration	March 25, 2014
Station Name	Fort McKay South	Station Number	AMS 13
Reason:	Routine		
Start Time (MST)	9:35	End Time (MST)	12:15
Barometric Pressure	737 mmHg	Station temp.	23 Deg C
Calibrator Make/Model	Sabio 4010	Serial Number	11041107
NO2 calibration used	Thursday, April 24, 2014	Transfer Standard	??
DACS make/model	Campbell Scientific CR3000	DACS serial No.	2681
DACS voltage range	0-5v	DACS channel #	

Analyzer Information

	Before	*After*		*Before*	*After*
Analyzer Range (ppb)	500	500	Bench temp.	31.6	31.0
Analyzer Range (input)	5000	500	Lamp temp.	58.0	58.0
Calculated slope	1.002695	0.999575	Pressure ("Hg)	26.4	26.5
Calculated intercept	0.290287	-0.120489	Flow cell A	696	701
Analyzer Background	-1.1	-1.1			
Analyzer Coefficient	1.035	1.003			

Analyzer make	API T400	Analyzer serial #	825

Calibration Data

Set Point	Dilution air flow rate (cc/min)	Calibrator Lamp Intensity (mA)	Calculated concentration (ppb) (Cc)	Indicated concentration (ppb) (Ic)	Correction factor (Cc/Ic)
as found zero	5000	0.00	0.0	0.0	N/A
as found span	5000	0.903	352.4	362.8	0.971
calibrator zero	5000	0.00	0.0	0.0	N/A
high point	5000	0.903	352.4	352.4	1.000
second point	5000	0.585	208.3	209.0	0.997
third point	5000	0.358	109.7	109.8	0.999
calibrator zero					
as left zero	5000	0.00	0.0	0.0	N/A
as left span	5000	0.903	352.4	348.6	1.011
				Average Correction Factor	0.999

Corrected As found	362.9	Previous response	351.2	% change	-3.2%

Notes:

Small adjustment to span. As found Zero used as Calibrator Zero. Filter changed after third point.

Calibration Performed By: Ryan Power

Wood Buffalo Environmental Association

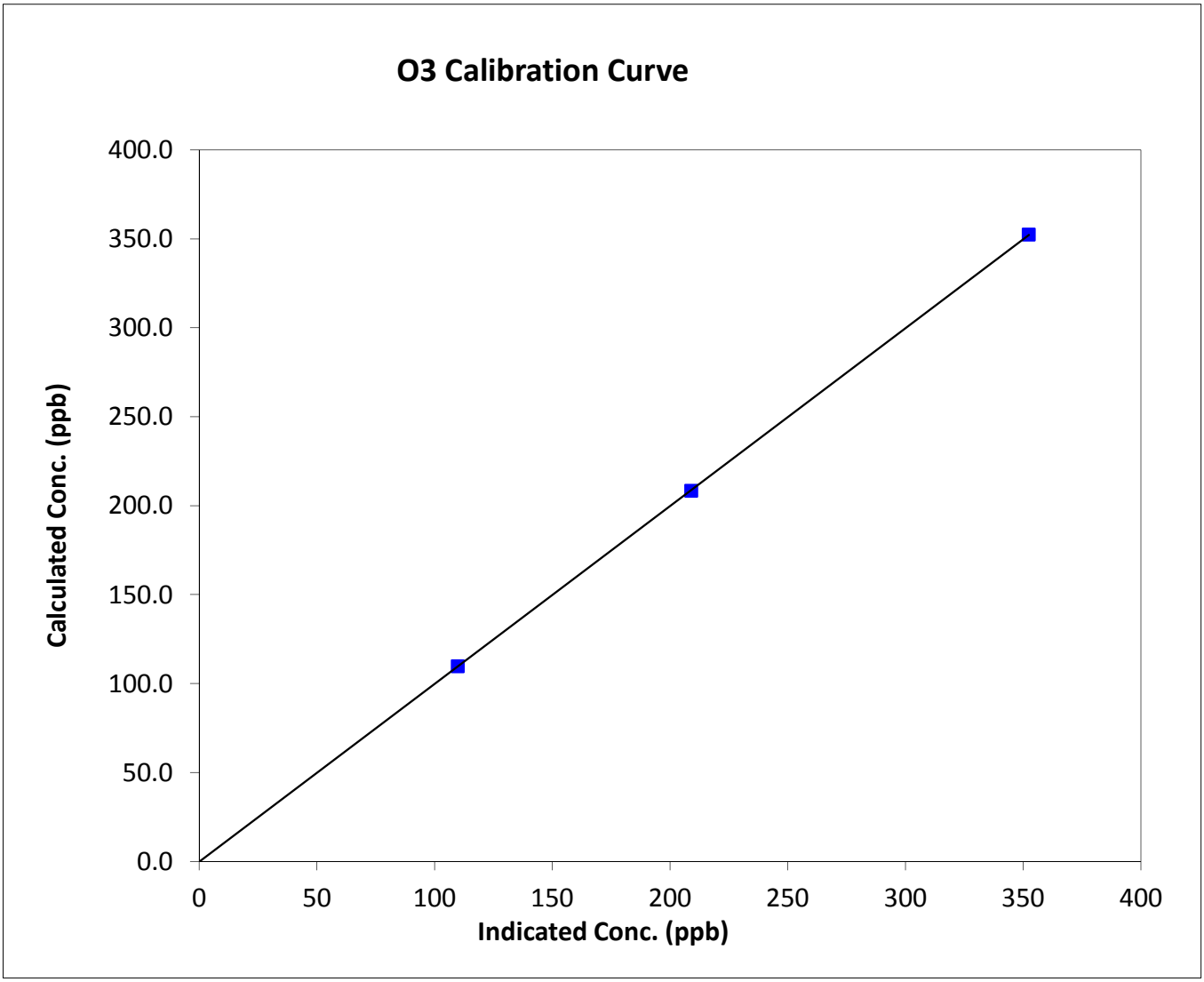
O_3 Calibration Summary

Station Information

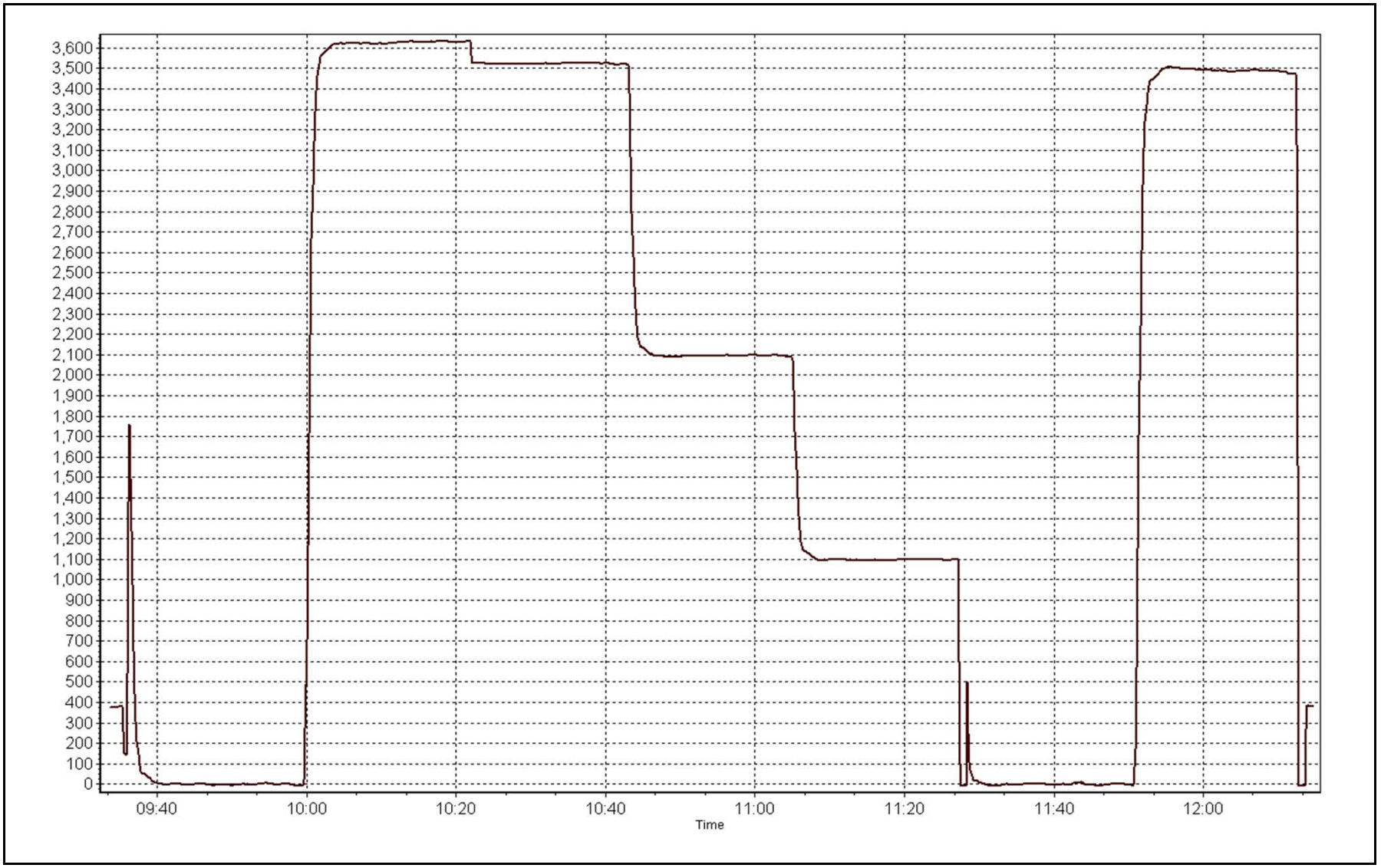
Calibration Date	Friday, April 25, 2014	Previous Calibration	March 25, 2014
Station Name	Fort McKay South	Station Number	AMS 13
Start Time (MST)	9:35	End Time (MST)	12:15
Analyzer make	API T400	Analyzer serial #	825

Calibration Data

Calculated concentration (ppb) (Cc)	Indicated concentration (ppb) (Ic)	Correction factor (Cc/Ic)	Statistical Evaluation	
0.0	0.0	N/A	Correlation Coefficient	0.999995
352.4	352.4	1.0000		
208.3	209.0	0.9967	Slope	0.999575
109.7	109.8	0.9991		
			Intercept	-0.120489



O3 Calibration Plot Date: April 25, 2014



Wood Buffalo Environmental Association

NO_X-NO-NO_2 Calibration Report

Station Information

Calibration Date	April 24, 2014	Previous Calibration	March 24, 2014
Station Name	Fort McKay South	Station Number	AMS 13
Reason:	Routine		
Start Time (MST)	9:50	End Time (MST)	13:35
Barometric Pressure	735 mmHg	Station Temperature	24.0 Deg C
Calibrator	Sabio 4010	Serial Number	11041107
NO Cal Gas Conc	50.7 ppm	Cal Gas Expiry Date	May 29, 2014
NOx Cal Gas Conc	50.8 ppm	Cal Gas Serial #	LL107918

DACS Information

DACS make & model	Campbell Scientific CR3000	DACS serial No.	3492

Parameter		NOx	NO	NO2
MV conversion	Analyzer Range (ppb)	1000	1000	1000
	Analyzer Range (mv)	5000	5000	5000
Before	Data Slope	0.998424	0.998407	0.990682
	Data Offset	2.216128	2.051906	-0.799773
After	Data Slope	1.002419	1.000609	0.991391
	Data Offset	1.939296	1.664425	0.050006
Channel #		3	2	1
Voltage Range		0 - 5V	0 - 5V	0 - 5V

Analyzer Information

Analyzer make/model	Thermo 42C	Analyzer serial #	2185

Test Point	before		after	
Concentration range	0-1000	ppb	0-1000	ppb
NO coefficient	0.820	ppb	0.850	ppb
NOX coefficient	1.002	ppb	0.999	ppb
NO2 coefficient	0.997	ppb	1.000	ppb
NO bkgrnd	4.1		4.3	
NOX bkgrnd	4.2		4.4	
Nt coefficient	N/A		N/A	
Chamber Temp	49.9	Deg C	49.5	Deg C
Moly Temp	325.0	Deg C	325.0	Deg C
PMT Temp	-3.7	Deg C	-3.6	Deg C
O3 flow	ok	ccm	ok	ccm
R Cell Press	197.9	mmHg	197.6	mmHg
Sample Flow	0.816	ccm	0.817	ccm

Notes:

Span adjusted. Filter changed after third point. As found zero used as calibrator zero

Wood Buffalo Environmental Association

NO_X-NO-NO_2 Calibration Report

Station Information

Calibration Date: April 24, 2014 Station Number: AMS 13

Calibration Data

Set Point	Total flow rate (ccm)	Source gas flow rate (ccm)	Calculated NOx conc (ppb)	Calculated NO conc (ppb)	Calculated NO2 conc (ppb)	Indicated NOx conc (ppb)	Indicated NO conc (ppb)	Indicated NO2 conc (ppb)	NOx Correction factor	NO Correction factor
as found zero	5000	0.0	0.0	0.0	0.0	0.1	0.0	-0.1	N/A	N/A
as found span	5000	78.9	801.6	800.0	1.6	774.8	772.0	3.1	1.0346	1.0363
calibrator zero	5000	0.0	0.0	0.0	0.0	0.1	0.0	-0.1	N/A	N/A
high point	5000	78.9	801.6	800.0	1.6	798.9	798.9	0.4	1.0034	1.0015
second point	5000	39.4	400.3	399.5	0.8	395.9	396.3	0.0	1.0111	1.0081
third point	5000	19.7	200.2	199.8	0.4	196.1	196.6	-0.4	1.0207	1.0161
calibrator zero										
as left zero	5000	0.0	0.0	0.0	0.0	0.2	0.2	0.0	N/A	N/A
as left span	5000	78.9	801.6	442.3	359.3	795.4	448.0	348.0	1.0078	0.9873
								Average Correction Factor	1.0117	1.0086

Corrcted As found NO_X= 774.7 NO= 772.0 Percent Change NO_X= 3.3% NO= 3.5%

Previous Response NO_X= 800.7 NO= 799.3

GPT Calibration Data

Dilution Flow 5000 ccm Source Gas Flow 78.90 ccm

O3 Setpoint (ppb)	Indicated NO high point (ppb)	Indicated NO drop conc (ppb)	Calculated NO2 conc (ppb)	Indicated NOx conc (ppb)	Indicated NO conc (ppb)	Indicated NO2 conc (ppb)	NOx Correction factor	NO Correction factor	NO2 Correction factor	Converter Efficiency
Cal zero			0.0			-0.1			N/A	
1st NO2 (350)	N/A	442.3	352.4	797.3	442.3	355.2	0.9899	1.0000	0.9920	100.8%
2nd NO2 (200)	N/A	586.4	208.3	796.4	586.4	210.5	0.9909	1.0000	0.9899	101.0%
3rd NO2 (100)	N/A	685.0	109.7	794.9	685.0	110.5	0.9928	1.0000	0.9932	100.7%
4th NO2 (0)	794.7	N/A	-0.9	793.8	794.7	-0.5	0.9942	1.0000	N/A	N/A
					Average Correction Factor		0.9919	1.0000	0.9917	100.8%

Calibration Performed By: Ryan Power

Wood Buffalo Environmental Association

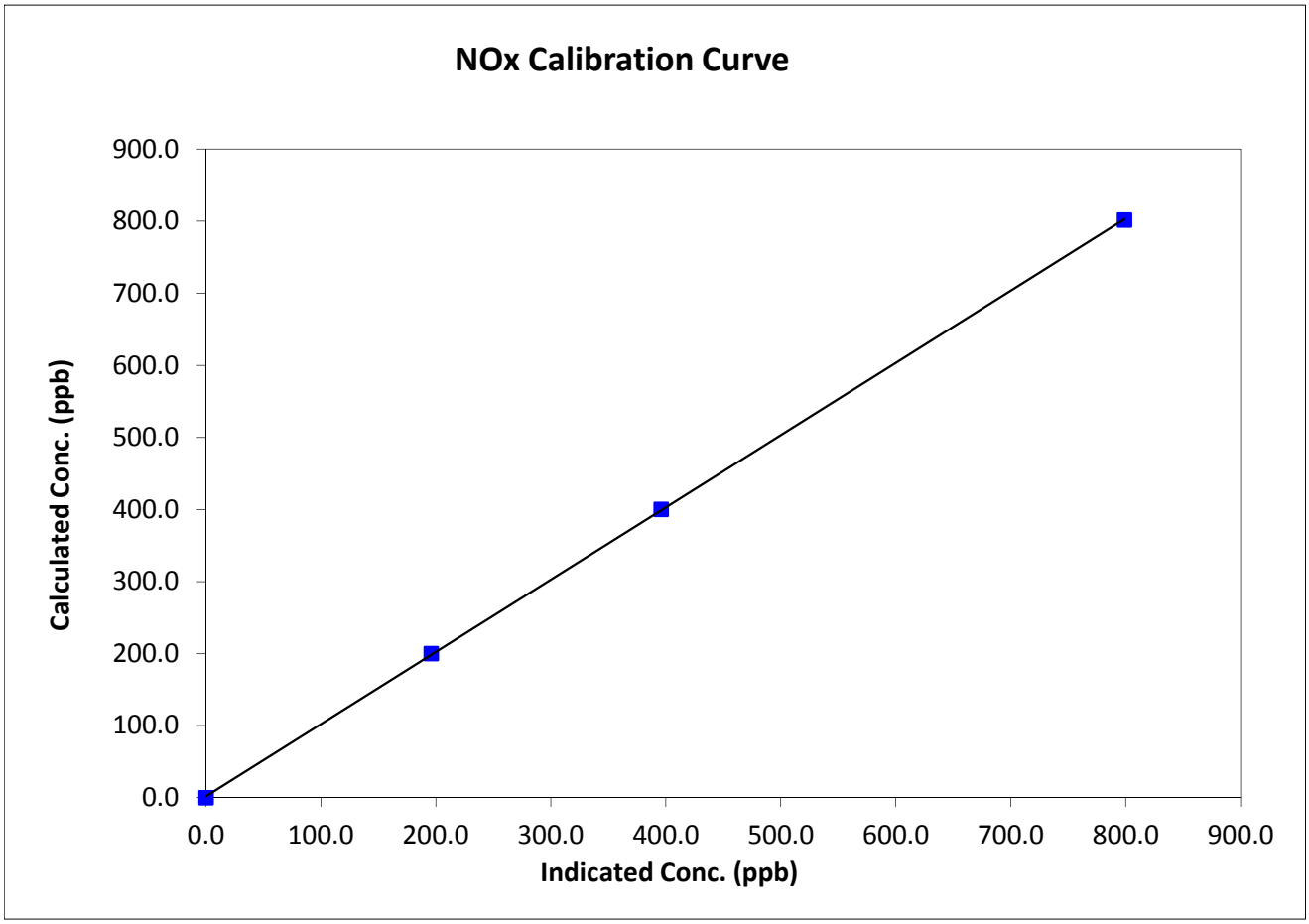
NO_X Calibration Summary

Station Information

Calibration Date	April 24, 2014	Previous Calibration	March 24, 2014
Station Name	Fort McKay South	Station Number	AMS 13
Start Time (MST)	9:50	End Time (MST)	13:35
Analyzer make	Thermo 42C	Analyzer serial #	2185

Calibration Information

Calculated conc (ppb) (Cc)	Indicated concentration (ppb) (Ic)	Correction factor (Cc/Ic)	Statistical Evaluation	
0.0	0.1	N/A	Correlation Coefficient	0.999971
801.6	798.9	1.0034		
400.3	395.9	1.0111	Slope	1.002419
200.2	196.1	1.0207		
			Intercept	1.939296



Wood Buffalo Environmental Association

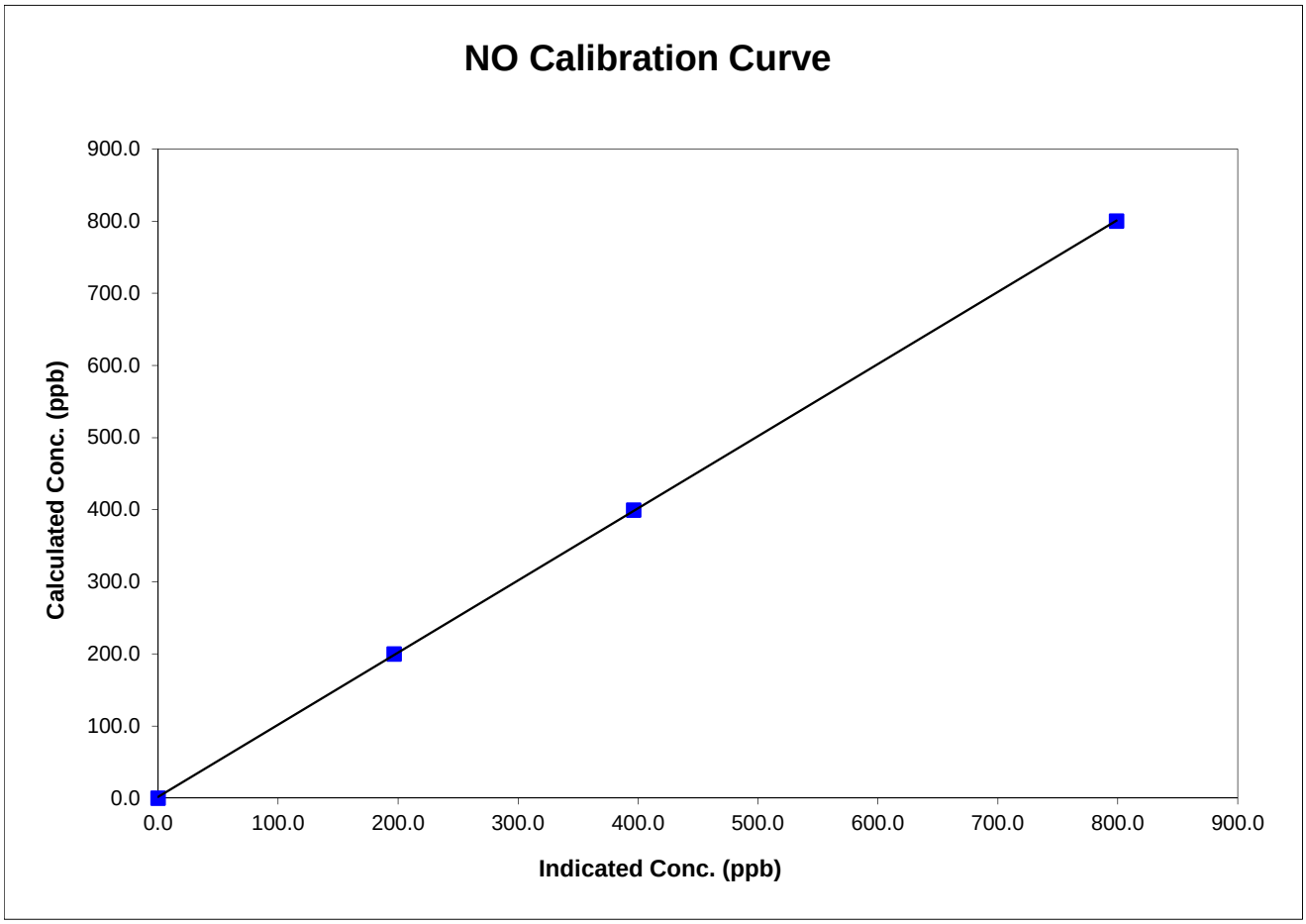
NO Calibration Summary

Station Information

Calibration Date	April 24, 2014	Previous Calibration	March 24, 2014
Station Name	Fort McKay South	Station Number	AMS 13
Start Time (MST)	9:50	End Time (MST)	13:35
Analyzer make	Thermo 42C	Analyzer serial #	2185

Calibration Information

Calculated conc (ppb) (Cc)	Indicated concentration (ppb) (Ic)	Correction factor (Cc/Ic)	Statistical Evaluation	
0.0	0.0	N/A	Correlation Coefficient	0.999979
800.0	798.9	1.0015		
399.5	396.3	1.0081	Slope	1.000609
199.8	196.6	1.0161		
			Intercept	1.664425



Wood Buffalo Environmental Association

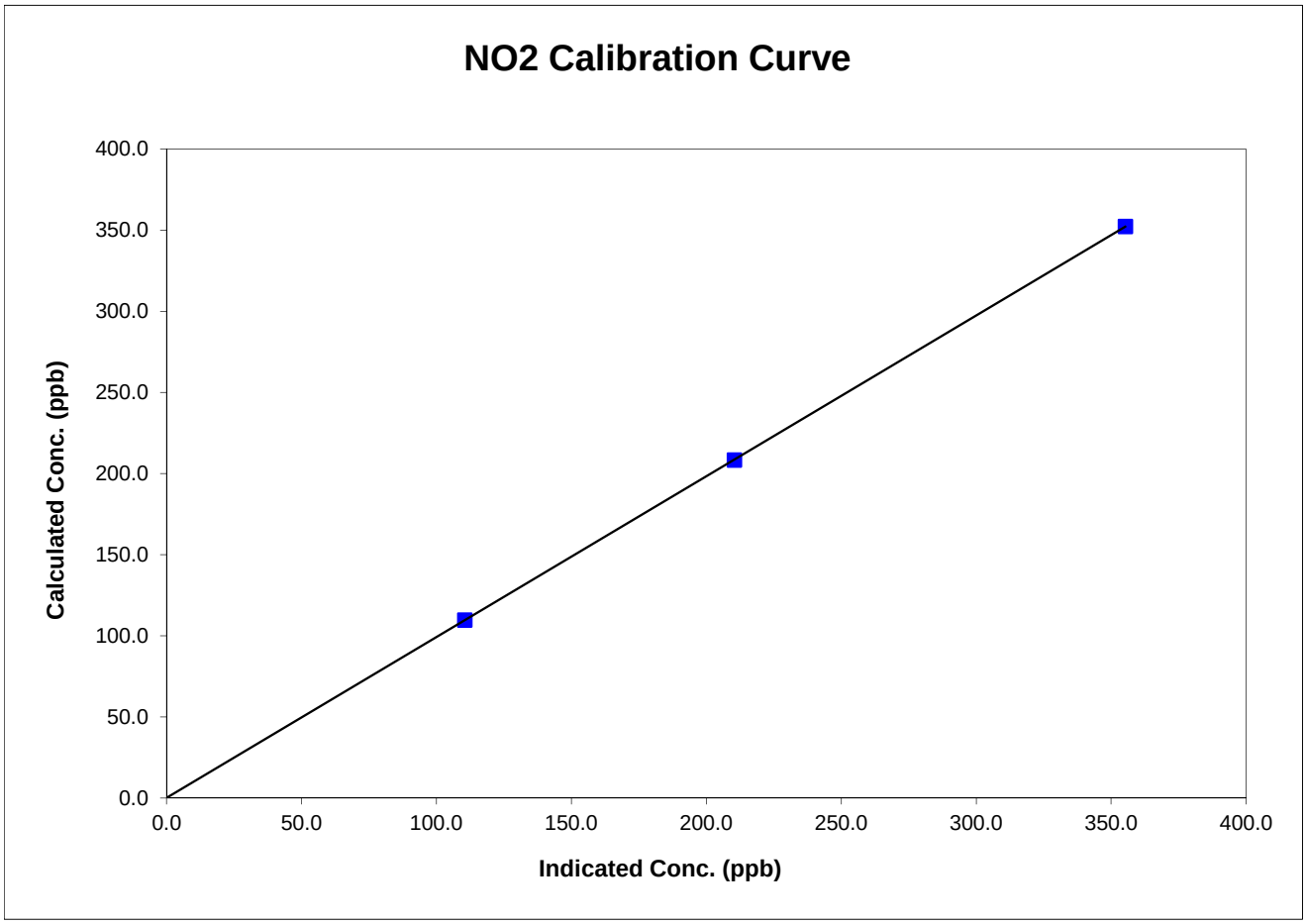
NO_2 Calibration Summary

Station Information

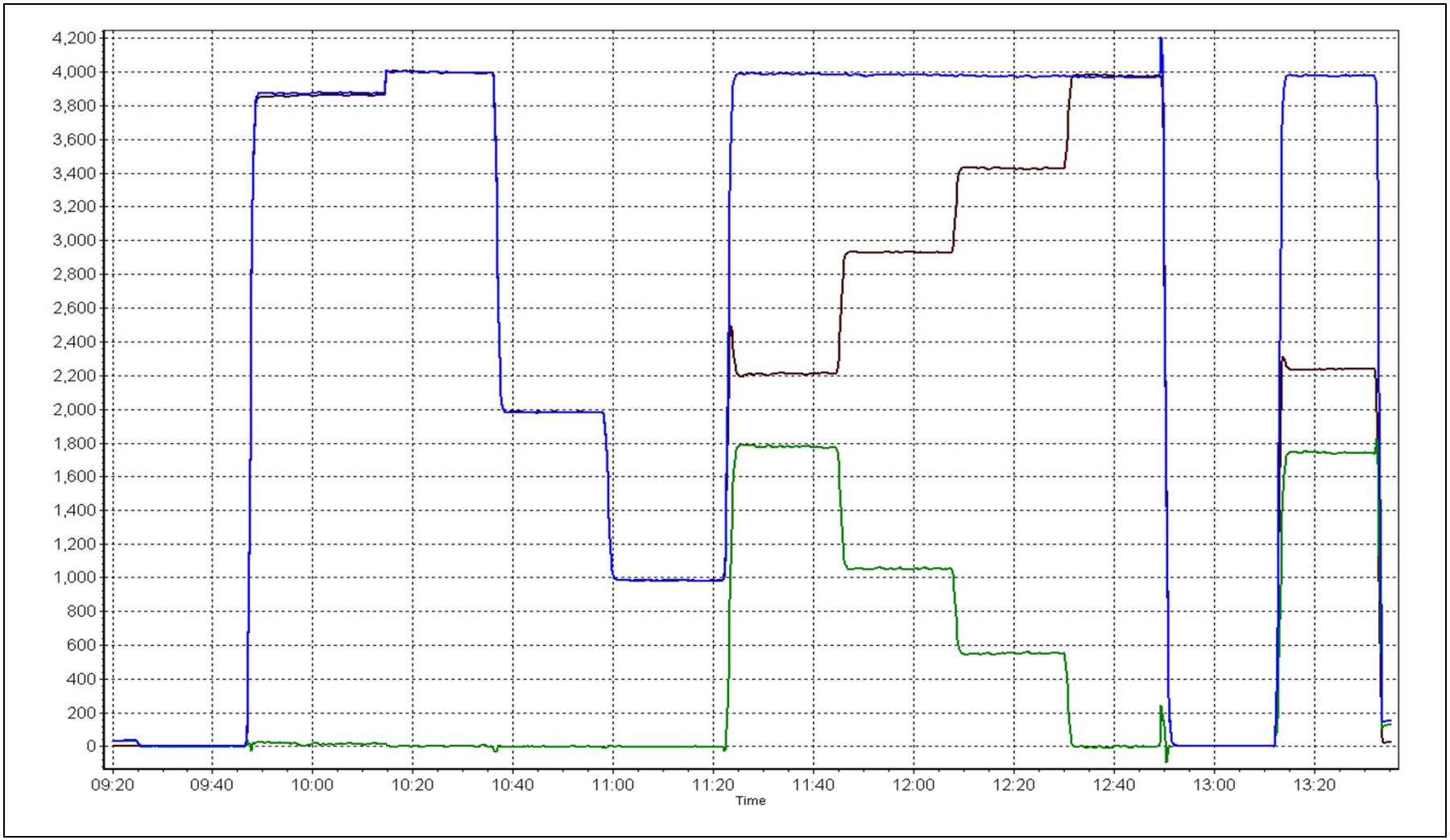
Calibration Date	April 24, 2014	Previous Calibration	March 24, 2014
Station Number	Fort McKay South	Station Number	AMS 13
Start Time (MST)	9:50	End Time (MST)	13:35
Analyzer make	Thermo 42C	Analyzer serial #	2185

Calibration Information

Calculated conc (ppb) (Cc)	Indicated concentration (ppb) (Ic)	Correction factor (Cc/Ic)	Statistical Evaluation	
0.0	-0.1	N/A	Correlation Coefficient	0.999997
352.4	355.2	0.9920		
208.3	210.5	0.9899	Slope	0.991391
109.7	110.5	0.9932		
			Intercept	0.050006



NOx, NO & NO_2 Calibration Plot Date: April 24, 2014



WOOD BUFFALO ENVIRONMENTAL ASSOCIATION

CONTINUOUS AMBIENT AIR QUALITY
MONITORING PROGRAM
MONTHLY REPORT

AMS 14
ANZAC
APRIL 2014

Operations and Data Collection by:
Wood Buffalo Environmental Association
Fort McMurray, Alberta

QA/QC, Data Validation and Reporting by:
Aurora Atmospherics Inc.
Calgary, Alberta

May 30, 2014

WOOD BUFFALO ENVIRONMENTAL ASSOCIATION - ANZAC (AMS 14)
APRIL 2014

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	685	35	35	100.00	16	0	3	0
TRS(ppb) Average	687	33	33	100.00	1	0	0	0
THC(ppm) Average	684	36	36	100.00	2.2	-	1.9	-
NMHC(ppm) Average	684	36	36	100.00	0.049	-	0.018	-
CH4(ppm) Average	684	36	36	100.00	2.1	-	1.9	-
NO2(ppb) Average	685	35	35	100.00	10	0	4	-
NO(ppb) Average	685	35	35	100.00	12	-	2	-
NOX(ppb) Average	685	35	35	100.00	20	-	4	-
O3(ppb) Average	686	34	34	100.00	55	0	45	-
PM2.5(ug/m3) Average	718	0	2	99.72	48.7	-	11.8	0
Temperature 2 m (C) Average	720	0	0	100.00	19.9	-	12.1	-
Relative Humidity (%) Average	720	0	0	100.00	99	-	-	-
Surface Wetness (% of range) Average	720	0	0	100.00	66	-	-	-
Wind Speed 10 m (km/h) Average	711	0	9	98.75	23	-	-	-
Wind Direction 10 m (deg) Average	711	0	9	98.75	-	-	-	-
Precipitation (mm) Total	720	0	0	100.00	3	-	-	-

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

WOOD BUFFALO ENVIRONMENTAL ASSOCIATION - ANZAC (AMS 14)
APRIL 2014

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	0.4	2	-	0	0	0	0	0	1	16
TRS(ppb) Average	687	0.2	0	-	0	0	0	0	0	0	1
THC(ppm) Average	684	1.84	0	-	1.8	1.8	1.8	1.8	1.9	1.9	2.2
NMHC (ppm) Average	684	0.003	0.007	-	0	0	0	0	0	0	0.049
CH4(ppm) Average	684	1.84	0	-	1.8	1.8	1.8	1.8	1.8	1.9	2.1
NO2(ppb) Average	685	1.9	1	-	1	1	1	1	2	4	10
NO(ppb) Average	685	0.3	1	-	0	0	0	0	0	1	12
NOX(ppb) Average	685	2.1	2	-	1	1	1	1	3	5	20
O3(ppb) Average	686	37.4	9	-	3	25	33	40	44	46	55
PM2.5(ug/m3) Average	718	4.39	4.2	-	0.1	1.7	2.5	3.6	5.1	7.2	48.7
Temperature 2 m (C) Average	720	0.71	7.1	-	-18.5	-8.8	-3.5	0.8	4.6	9.7	19.9
Relative Humidity (%) Average	720	63	22	-	18	33	44	63	83	92	99
Surface Wetness (% of range) Average	720	2.9	9	-	0	0	0	0	0	8	66
Wind Speed 20 m (km/h) Average	711	9.7	4	-	1	5	7	9	12	15	23
Wind Direction 20 m (deg) Average	711	-	-	-	-	-	-	-	-	-	-
Precipitation (mm) Total	720	-	-	36.58	0	0	0	0	0	0	3

WOOD BUFFALO ENVIRONMENTAL ASSOCIATION - ANZAC (AMS 14)
APRIL 2014

OPERATIONAL NOTES

Parameter	Period Start	Period End	Duration (Hours)	Notes
PM2.5	30 Apr 2014 09:00	30 Apr 2014 10:00	2	Flow and zero reference checks, sample head cleaning
Wind Speed, Wind Direction	25 Apr 2014 01:00	25 Apr 2014 08:00	8	Flatline in sensor output signal
Wind Speed, Wind Direction	29 Apr 2014 21:00	29 Apr 2014 21:00	1	Flatline in sensor output signal

Wood Buffalo Environmental Association

Summary of Hour Averages

Sulphur Dioxide (SO_2) - ppb

Anzac - April 2014

Number of Exceedences (AAAQO): 1-hr: 0 24-hr: 0
Maximum Value: 16 ppb on Apr 28 18:00 Maximum Daily Average: 3.3 ppb on Apr 13

Minimum Value: 0 ppb on Apr 1 01:00 Minimum Daily Average: 0.0 ppb on Apr 15
Maximum Diurnal Average: 1.0 ppb at hour 11 Minimum Diurnal Average: 0.0 ppb at hour 5
Monthly Average: 0.4 ppb Percentiles: $P_1 = 0$ $P_{10} = 0$ $Q_1 = 0$ Median = 0 $Q_3 = 0$ $P_{90} = 1$ $P_{99} = 8$

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-Apr	0	0	Z	0	0	0	0	0	1	1	12	8	0	0	0	0	0	0	0	0	0	0	0	0	1.0	12
2-Apr	0	0	0	Z	0	0	0	0	0	0	0	2	1	0	0	0	0	0	0	0	0	0	0	0	0.2	2
3-Apr	0	0	0	0	Z	0	0	0	0	0	0	1	3	2	2	1	1	1	0	0	0	3	1	0	0.6	3
4-Apr	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
5-Apr	0	0	0	0	0	0	Z	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1	1	1	0.1	1
6-Apr	Z	0	0	0	0	0	0	0	0	0	0	0	2	0	0	0	0	0	0	0	0	0	0	0	0.1	2
7-Apr	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
8-Apr	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
9-Apr	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
10-Apr	0	0	0	0	Z	1	0	0	1	0	0	0	0	0	0	1	1	1	0	0	0	0	0	0	0.2	1
11-Apr	0	0	0	1	0	Z	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0.0	1
12-Apr	0	0	0	0	0	0	Z	0	0	0	0	0	0	0	0	0	0	1	2	0	0	0	0	0	0.2	2
13-Apr	Z	0	0	0	0	0	0	0	9	5	10	8	9	5	6	6	5	4	3	2	1	0	0	1	3.3	10
14-Apr	2	Z	1	1	0	1	1	0	0	0	1	1	1	1	0	0	0	0	0	1	0	1	1	1	0.5	2
15-Apr	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
16-Apr	0	0	0	Z	0	0	0	0	0	0	0	1	1	1	0	0	0	0	0	0	0	0	1	1	0.2	1
17-Apr	0	0	1	1	Z	2	0	C	C	C	C	C	1	0	0	1	1	0	0	0	0	0	0	1	0.4	2
18-Apr	3	0	0	0	0	Z	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0.2	3
19-Apr	0	0	0	0	0	0	Z	0	0	0	0	0	0	0	1	2	1	0	0	0	0	1	2	0	0.3	2
20-Apr	Z	0	0	0	0	0	0	0	0	3	4	3	3	3	8	8	5	2	0	0	0	0	0	0	1.7	8
21-Apr	0	Z	0	0	0	0	0	0	0	0	0	0	0	0	0	2	3	1	1	0	0	0	0	0	0.3	3
22-Apr	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
23-Apr	0	0	0	Z	0	0	0	0	0	0	0	0	0	0	0	0	0	1	0	0	0	0	0	0	0.1	1
24-Apr	0	0	0	0	Z	0	0	0	0	0	0	0	0	0	0	0	0	1	0	0	0	0	0	0	0.0	1
25-Apr	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
26-Apr	0	0	0	0	0	0	Z	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	5	1	0.4	5
27-Apr	Z	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
28-Apr	0	Z	0	0	0	2	3	4	9	9	3	1	0	0	0	0	12	16	3	1	0	0	0	0	2.8	16
29-Apr	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
30-Apr	0	0	0	Z	0	0	0	0	0	0	0	0	0	0	0	1	1	0	0	0	0	0	0	0	0.1	1
	0.2	0.1	0.1	0.1	0.0	0.2	0.2	0.2	0.7	0.7	1.0	0.9	0.7	0.4	0.6	0.8	1.0	0.9	0.3	0.2	0.1	0.2	0.4	0.2	Diurnal Average	
	3	1	1	1	0	2	3	4	9	9	12	8	9	5	8	8	12	16	3	2	1	3	5	1	Diurnal Maximum	

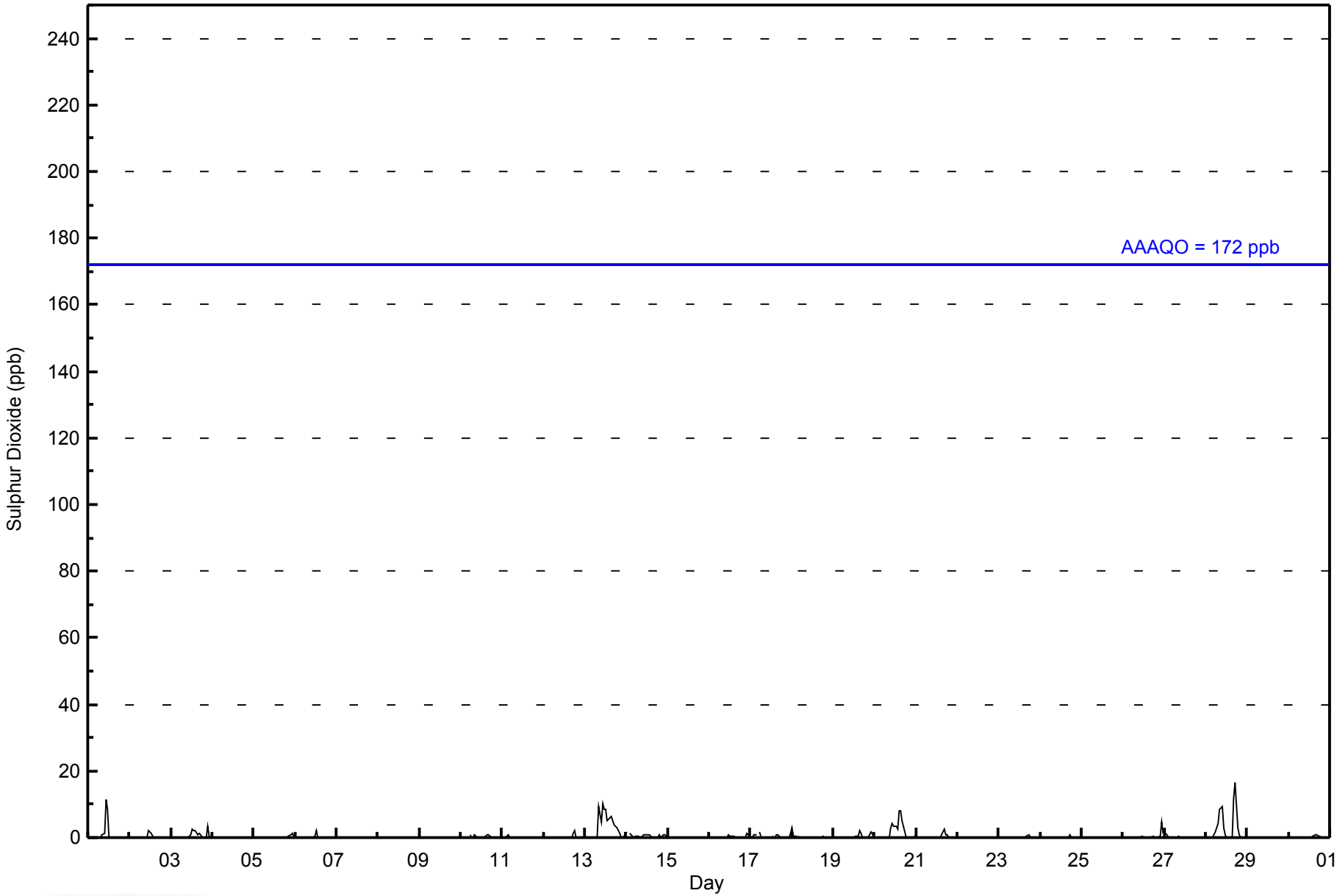
Z - zerospan C - Calibration
Alberta Ambient Air Quality Objectives (AAAQO): 1-hr 172 ppb 24-hr 48 ppb

WBEA NETWORK

Hourly Averages

Sulphur Dioxide (SO_2) - ppb

Anzac - April 2014



AURORA ATMOSPHERICS INC.

Concentration Ranges (ppb)	Number of Hours	%	Cumulative %
0 - 10	682	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: 685

Total Number of Hours: 720

WBEA NETWORK

Frequency Distribution

Sulphur Dioxide (SO_2) - ppb

Anzac - April 2014

Concentration	**Wind Direction**																
Ranges (ppb)	N	NNE	NE	ENE	E	ESE	SE	SSE	S	SSW	SW	WSW	W	WNW	NW	NNW	**Totals**
0 - 10	26	18	22	29	80	91	97	66	12	23	18	17	45	61	30	39	674
11 - 20	0	0	0	0	0	1	1	0	0	0	1	0	0	0	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	26	18	22	29	80	92	98	66	12	23	19	17	45	61	30	39	677

Total Number of Valid Hours: 677

Total Number of Hours: 720

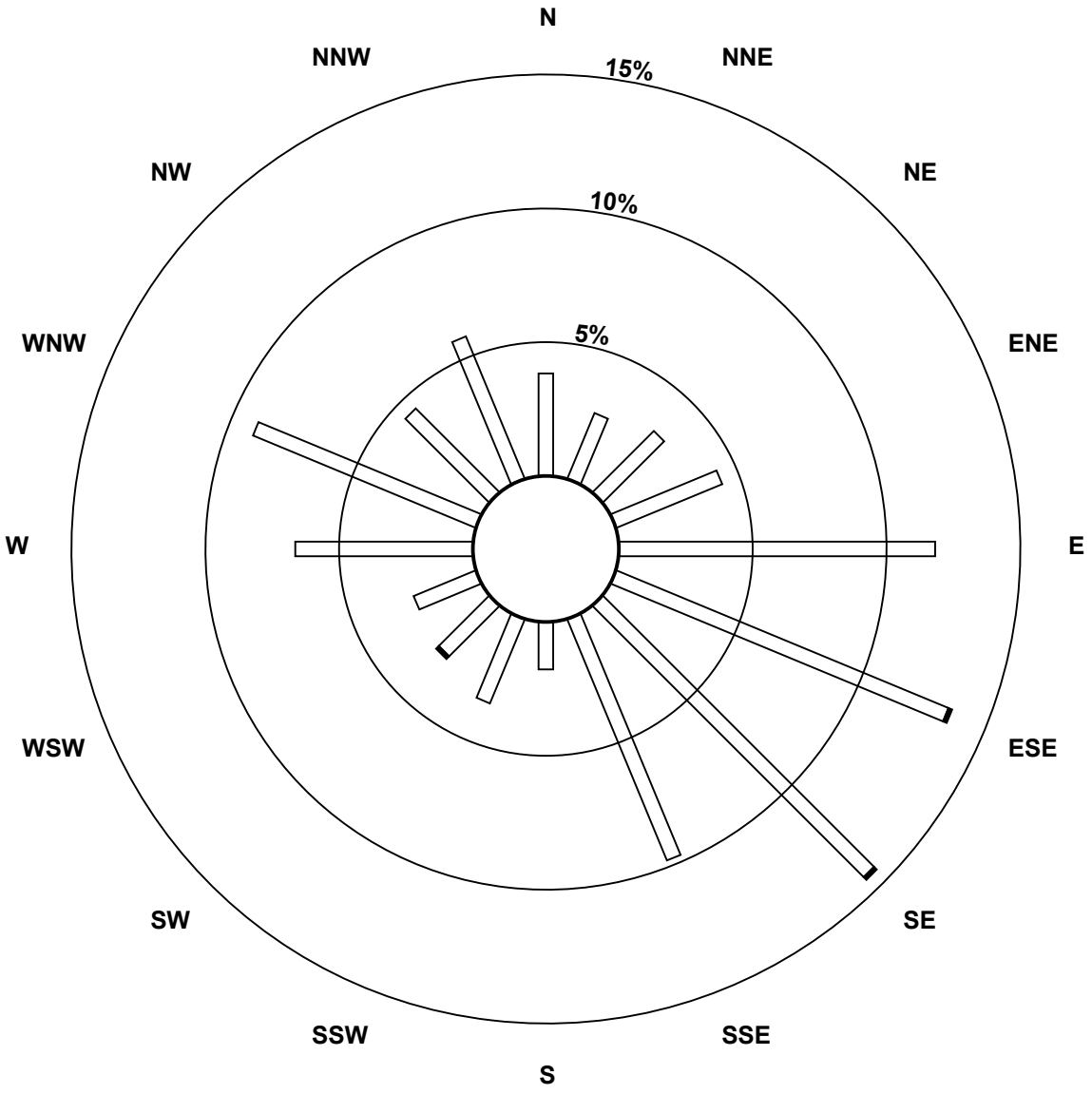
AURORA
ATMOSPHERICS INC.

Wood Buffalo Environmental Association

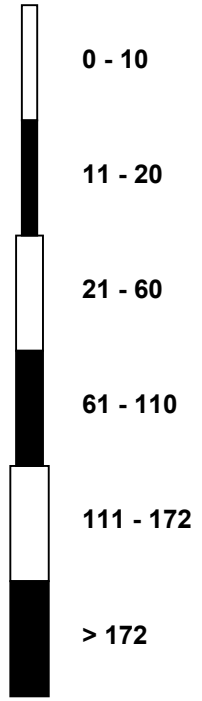
Wind Rose Apr 2014

Sulphur Dioxide (SO_2) - ppb

Anzac (AMS 14)



Classes (ppb)



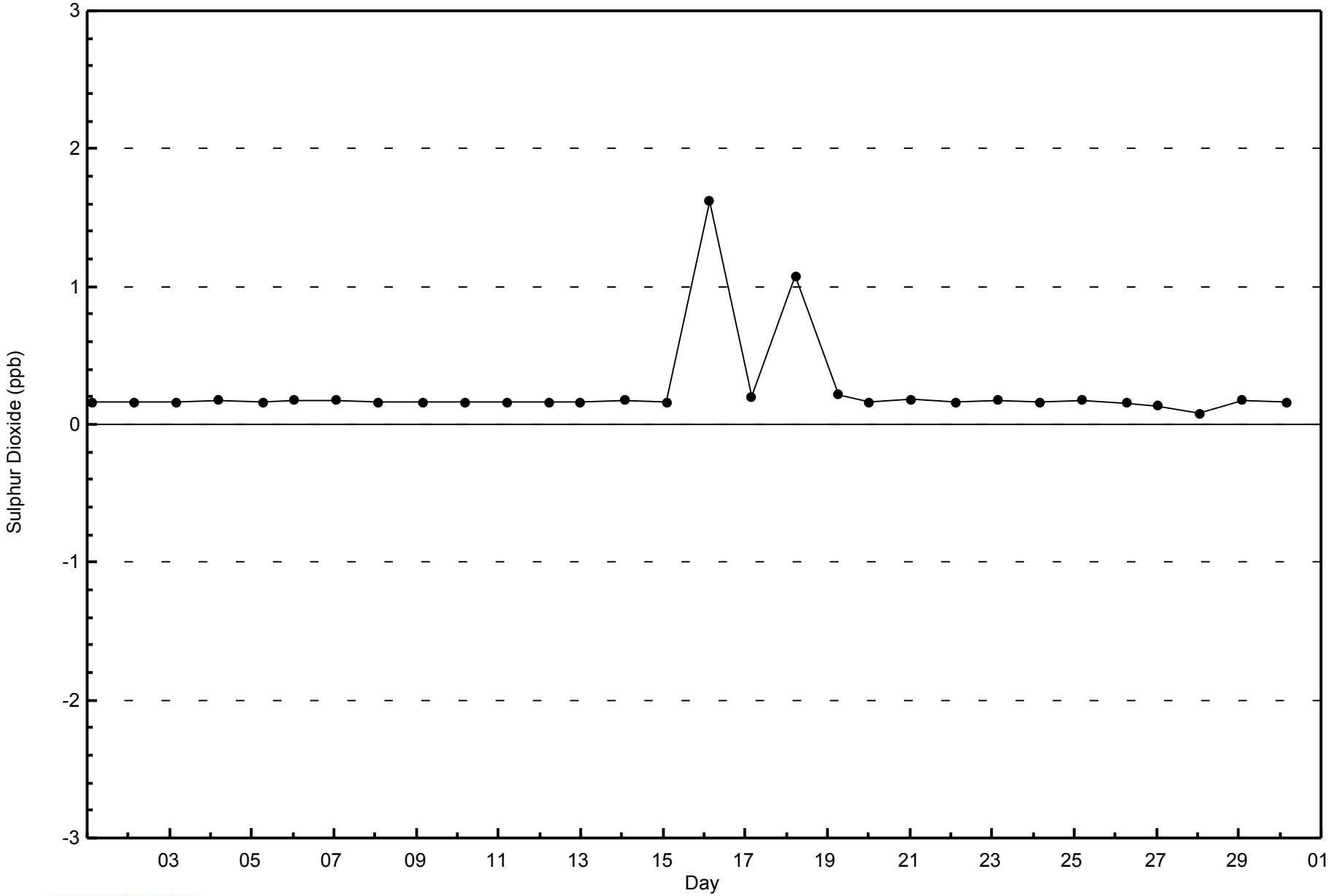
Total Number of Valid Hours: 677

WBEA NETWORK

Zero Responses

Sulphur Dioxide (SO_2) - ppb

Anzac - April 2014



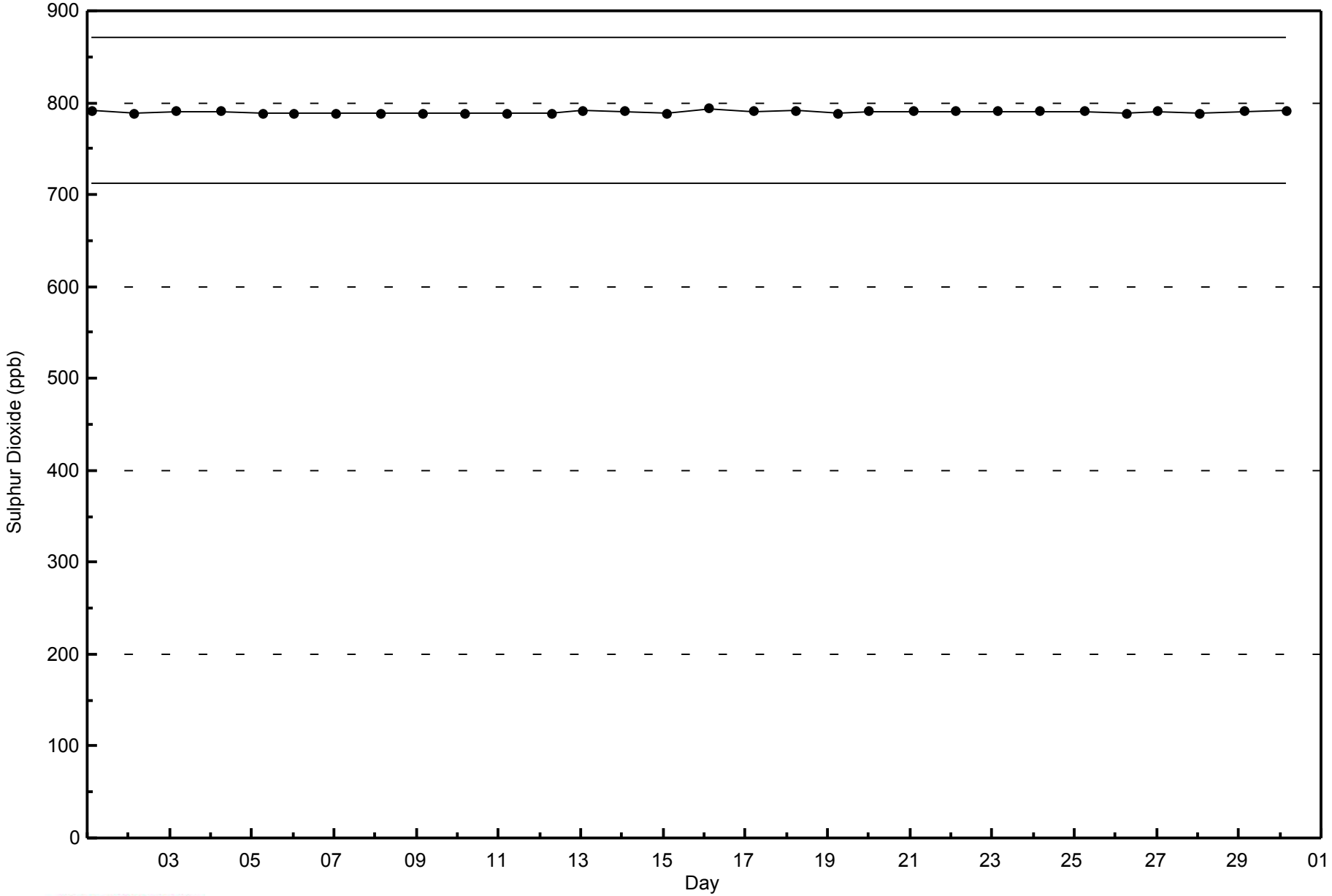
AURORA ATMOSPHERICS INC.

WBEA NETWORK

Span Responses

Sulphur Dioxide (SO_2) - ppb

Anzac - April 2014



AURORA ATMOSPHERICS INC.

Number of Exceedences (AAAQO): 1-hr: 0 24-hr: 0
Maximum Value: 1 ppb on Apr 3 22:00 Maximum Daily Average: 0.3 ppb on Apr 28

Minimum Value: 0 ppb on Apr 26 11:00 Minimum Daily Average: 0.2 ppb on Apr 26
Maximum Diurnal Average: 0.3 ppb at hour 4 Minimum Diurnal Average: 0.2 ppb at hour 14
Monthly Average: 0.2 ppb Percentiles: $P_1 = 0$ $P_{10} = 0$ $Q_1 = 0$ Median = 0 $Q_3 = 0$ $P_{90} = 0$ $P_{99} = 1$

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-Apr	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-Apr	0	0	0	0	Z	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0.2	0
3-Apr	0	0	0	0	0	Z	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1	1	0	0.3	1
4-Apr	0	0	0	0	0	0	Z	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0.2	0
5-Apr	0	0	0	0	0	0	0	Z	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0.2	0
6-Apr	0	Z	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0.2	0
7-Apr	0	0	Z	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0.2	0
8-Apr	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
9-Apr	0	0	0	0	Z	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0.2	0
10-Apr	0	0	0	0	0	Z	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0.2	0
11-Apr	0	0	0	0	0	0	Z	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0.2	0
12-Apr	0	0	0	0	0	0	0	Z	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0.2	0
13-Apr	0	Z	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0.2	0
14-Apr	0	0	Z	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0.2	0
15-Apr	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
16-Apr	0	0	0	0	Z	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0.2	0
17-Apr	0	0	1	1	1	Z	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0.3	1
18-Apr	0	0	0	0	0	0	Z	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0.2	0
19-Apr	0	0	0	0	0	0	0	Z	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0.3	0
20-Apr	0	Z	1	1	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0.3	1
21-Apr	0	0	Z	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0.2	0
22-Apr	0	0	0	Z	0	0	0	0	0	0	0	C	C	C	0	0	0	0	0	0	0	0	0	0	0.2	0
23-Apr	0	0	0	1	Z	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0.2	1
24-Apr	0	0	0	0	0	Z	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0.2	0
25-Apr	0	0	0	0	0	0	Z	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0.2	0
26-Apr	0	0	0	0	0	0	0	Z	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0.2	0
27-Apr	0	Z	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0.2	0
28-Apr	0	0	Z	0	0	0	0	0	1	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0.3	1
29-Apr	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
30-Apr	0	0	0	0	Z	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0.2	0
	0.2	0.2	0.2	0.3	0.3	0.2	0.3	0.2	0.2	0.2	0.2	0.2	0.2	0.2	0.2	0.2	0.2	0.2	0.2	0.2	0.2	0.2	0.2	0.2	Diurnal Average	
	0	0	1	1	1	0	1	0	1	1	0	0	0	0	0	0	0	0	0	0	0	1	1	0	Diurnal Maximum	

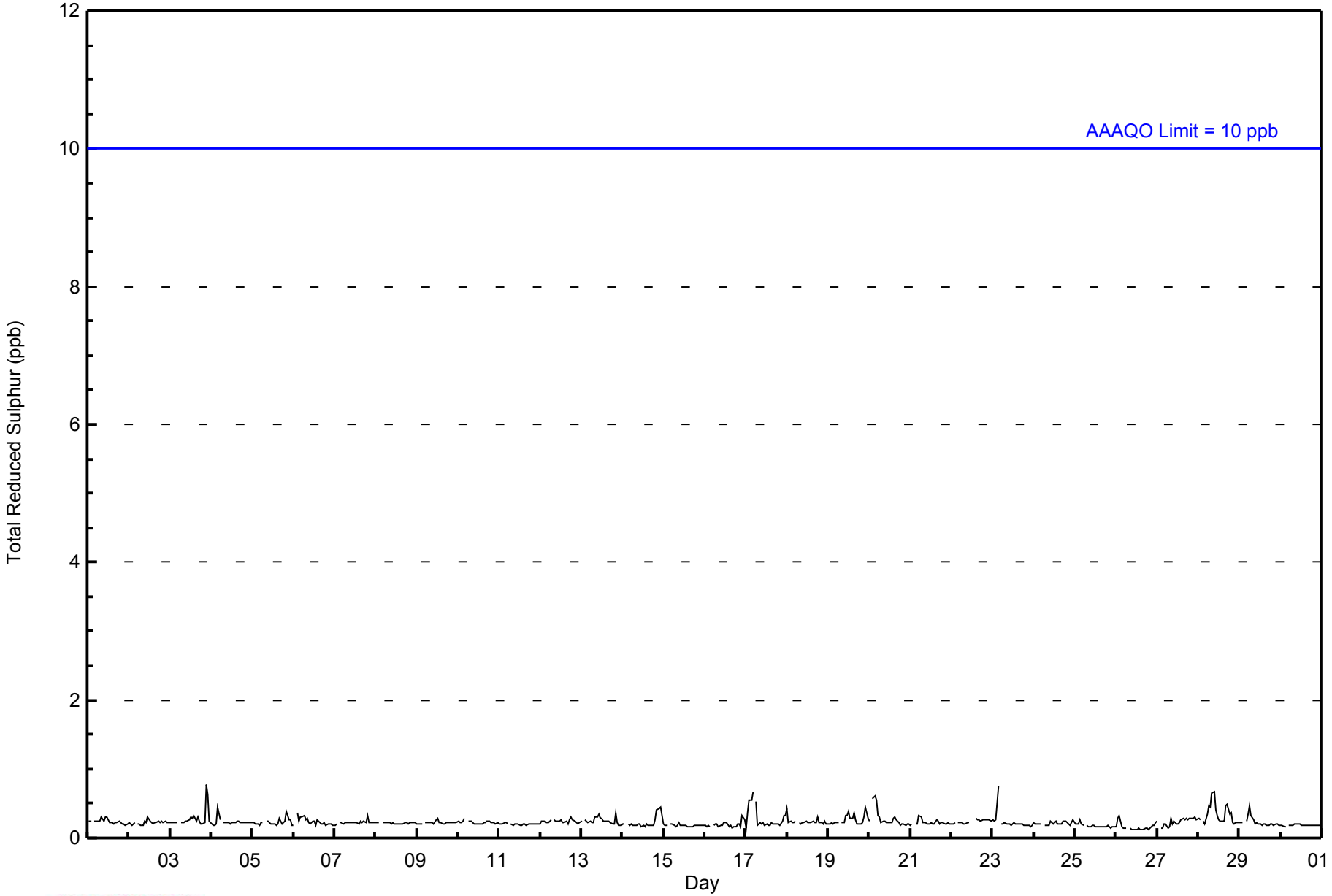
Z - zerospan C - Calibration
Alberta Ambient Air Quality Objectives (AAAQO): 1-hr 10 ppb 24-hr 3 ppb

WBEA NETWORK

Hourly Averages

Total Reduced Sulphur (TRS) - ppb

Anzac - April 2014



AURORA ATMOSPHERICS INC.

Concentration Ranges (ppb)	Number of Hours	%	Cumulative %
0 - 2	687	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: 687

Total Number of Hours: 720

WBEA NETWORK

Frequency Distribution

Total Reduced Sulphur (TRS) - ppb

Anzac - April 2014

Concentration Ranges (ppb)	Wind Direction																
	N	NNE	NE	ENE	E	ESE	SE	SSE	S	SSW	SW	WSW	W	WNW	NW	NNW	**Totals**
0 - 2	27	17	22	27	82	89	103	65	13	23	21	17	44	60	30	39	679
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	27	17	22	27	82	89	103	65	13	23	21	17	44	60	30	39	679

Total Number of Valid Hours: 679

Total Number of Hours: 720

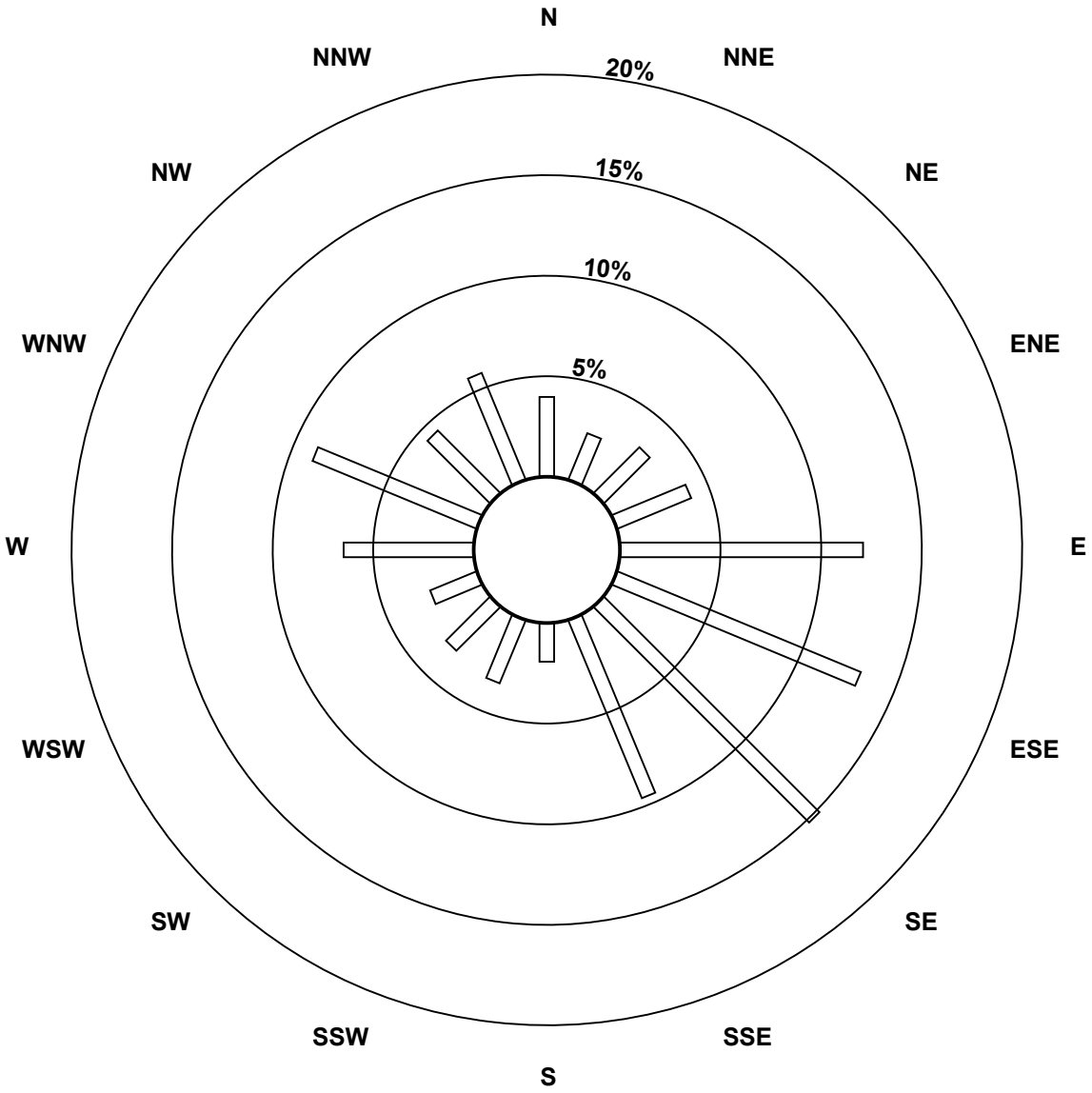
AURORA ATMOSPHERICS INC.

Wood Buffalo Environmental Association

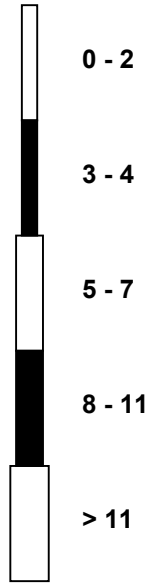
Wind Rose Apr 2014

Total Reduced Sulphur (TRS) - ppb

Anzac (AMS 14)



Classes (ppb)



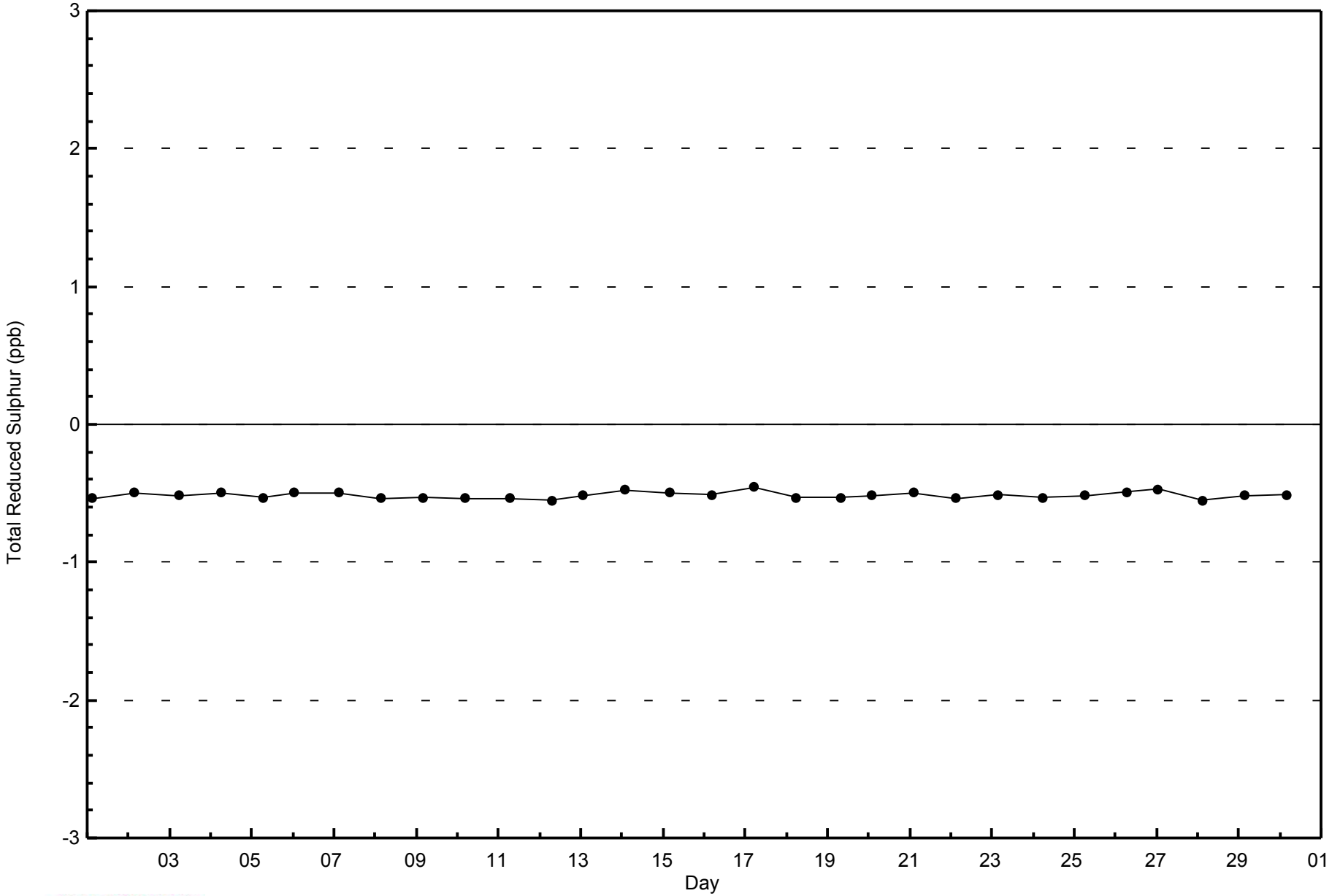
Total Number of Valid Hours: 679

WBEA NETWORK

Zero Responses

Total Reduced Sulphur (TRS) - ppb

Anzac - April 2014



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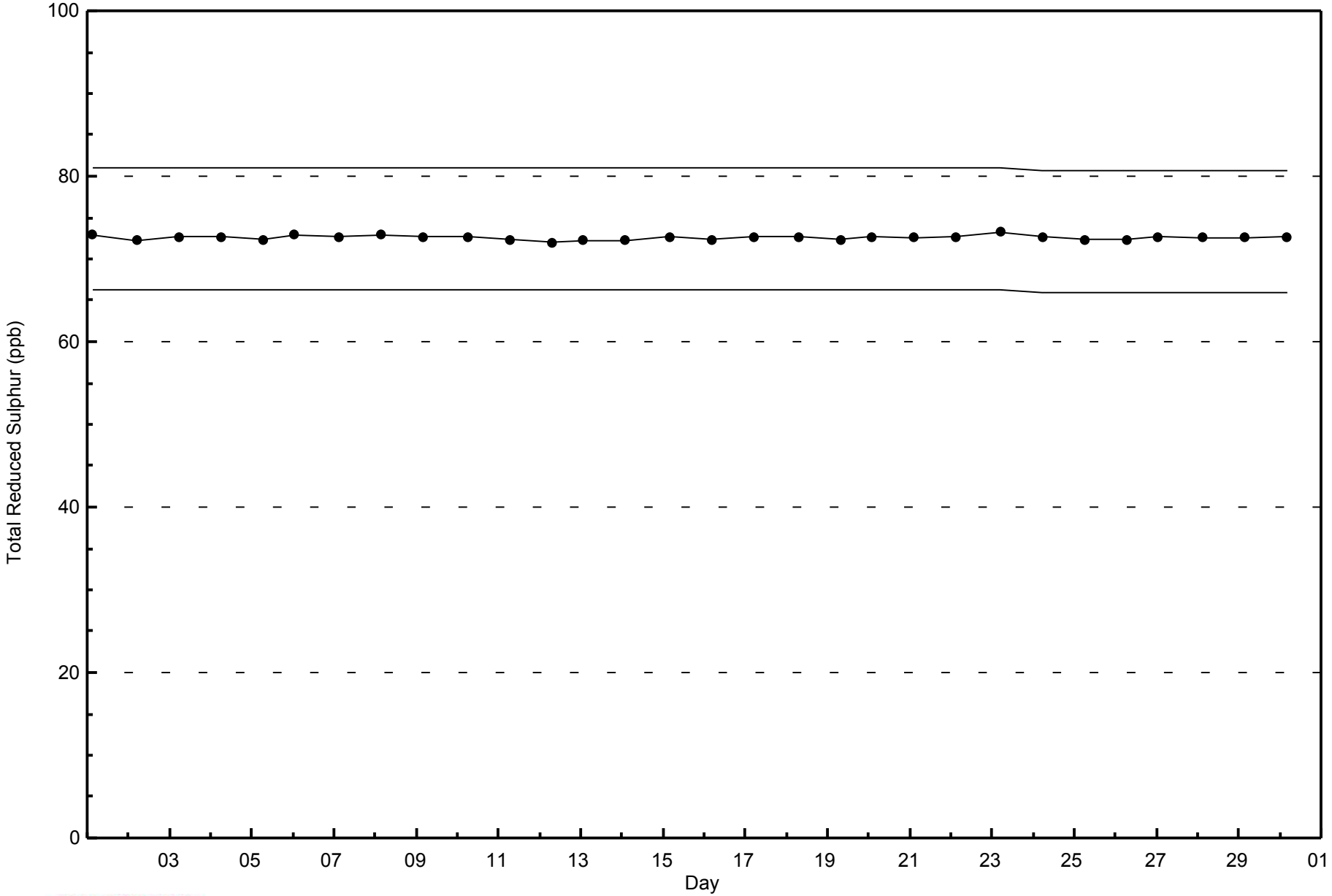
ATMOSPHERICS INC.

WBEA NETWORK

Span Responses

Total Reduced Sulphur (TRS) - ppb

Anzac - April 2014



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ATMOSPHERICS INC.

Wood Buffalo Environmental Association

Summary of Hour Averages

Total Hydrocarbons (THC) - ppm

Anzac - April 2014

Maximum Value: 2.2 ppm on Apr 30 05:00

Maximum Daily Average: 1.9 ppm on Apr 14

Minimum Value: 1.8 ppm on Apr 8 14:00

Minimum Daily Average: 1.8 ppm on Apr 23

Maximum Diurnal Average: 1.9 ppm at hour 6

Minimum Diurnal Average: 1.8 ppm at hour 19

Monthly Average: 1.84 ppm

Percentiles: P_1 = 1.8 P_{10} = 1.8 Q_1 = 1.8 Median = 1.8 Q_3 = 1.9 P_{90} = 1.9 P_{99} = 2.0

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-Apr	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	1.8	1.8	1.8	1.8	1.8	1.8	1.8	1.9	1.9
2-Apr	1.8	1.8	1.8	Z	1.8	1.9	1.9	1.8	1.9	1.8	1.8	1.9	1.9	1.9	1.9	1.9	1.9	1.9	1.9	1.9	1.9	1.9	1.8	1.8	1.9	1.9
3-Apr	1.8	1.8	1.8	1.8	Z	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	1.8	1.8	1.9	1.8	1.9	1.8	1.9
4-Apr	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	1.8	1.8	1.8	1.8	1.8	1.8	1.9	1.9
5-Apr	1.9	1.9	1.9	1.9	1.9	1.9	Z	1.9	1.8	1.8	1.8	1.8	1.8	1.8	1.8	1.8	1.9	1.8	1.8	1.8	1.8	1.8	1.8	1.8	1.8	1.9
6-Apr	Z	1.9	1.9	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	1.8	1.9	1.9	1.9
7-Apr	1.8	Z	1.9	1.8	1.8	1.8	1.8	1.8	1.8	1.8	1.8	1.8	1.8	1.8	1.8	1.8	1.8	1.8	1.8	1.8	1.9	1.8	1.8	1.8	1.8	1.9
8-Apr	1.8	1.8	Z	1.8	1.8	1.8	1.8	1.8	1.8	1.8	1.8	1.8	1.8	1.8	1.8	1.8	1.8	1.8	1.8	1.8	1.8	1.8	1.8	1.8	1.8	1.8
9-Apr	1.8	1.8	1.8	Z	1.8	1.8	1.8	1.8	1.8	1.8	1.8	1.8	1.8	1.8	1.8	1.8	1.8	1.8	1.8	1.8	1.8	1.8	1.8	1.8	1.8	1.8
10-Apr	1.8	1.8	1.8	1.8	Z	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	1.8	1.8	1.8	1.8	1.8	1.8	1.8	1.9
11-Apr	1.8	1.8	1.8	1.8	1.8	Z	1.8	1.8	1.8	1.8	1.8	1.8	1.8	1.8	1.8	1.8	1.8	1.8	1.8	1.8	1.8	1.8	1.8	1.8	1.8	1.8
12-Apr	1.8	1.9	1.9	1.9	1.9	1.9	Z	1.9	1.9	1.8	1.8	1.8	1.8	1.8	1.8	1.8	1.8	1.9	1.9	1.8	1.9	1.8	1.8	1.8	1.9	1.9
13-Apr	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	1.8	1.9	1.9	1.9	1.9	1.9	1.9	1.9	1.9
14-Apr	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	2.0	2.0	1.9	1.9	2.0
15-Apr	1.9	1.9	Z	1.8	1.8	1.8	1.8	C	C	C	C	C	C	1.8	1.8	1.8	1.8	1.8	1.8	1.8	1.8	1.8	1.8	1.8	--	1.9
16-Apr	1.8	1.8	1.8	Z	1.8	1.8	1.8	1.8	1.8	1.8	1.8	1.8	1.8	1.8	1.8	1.8	1.8	1.8	1.8	1.8	1.8	1.8	1.8	1.8	1.8	1.8
17-Apr	1.8	1.8	1.8	1.9	Z	1.9	1.8	1.8	1.8	1.8	1.8	1.8	1.8	1.8	1.8	1.8	1.8	1.8	1.8	1.8	1.8	1.8	1.8	1.8	1.8	1.9
18-Apr	1.8	1.8	1.8	1.8	1.8	Z	1.8	1.8	1.8	1.8	1.8	1.8	1.8	1.8	1.8	1.8	1.8	1.8	1.8	1.8	1.8	1.9	1.8	1.8	1.8	1.9
19-Apr	1.8	1.8	1.8	1.8	1.8	1.8	Z	1.8	1.8	1.8	1.8	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	1.9
20-Apr	Z	1.8	1.8	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	1.8	1.8	1.8	1.8	1.8	1.9
21-Apr	1.9	Z	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	1.8	1.8	1.8	1.8	1.8	1.8	1.9
22-Apr	1.8	1.8	Z	1.8	1.8	1.8	1.8	1.8	1.8	1.8	1.8	1.8	1.8	1.8	1.8	1.8	1.8	1.8	1.8	1.8	1.8	1.8	1.8	1.8	1.8	1.8
23-Apr	1.8	1.8	1.8	Z	1.8	1.8	1.8	1.8	1.8	1.8	1.8	1.8	1.8	1.8	1.8	1.8	1.8	1.8	1.8	1.8	1.8	1.8	1.8	1.8	1.8	1.8
24-Apr	1.8	1.8	1.8	1.8	Z	1.8	1.8	1.8	1.8	1.8	1.8	1.8	1.8	1.8	1.8	1.8	1.8	1.8	1.8	1.8	1.8	1.8	1.8	1.8	1.8	1.8
25-Apr	1.8	1.8	1.8	1.8	1.8	Z	1.8	1.8	1.8	1.8	1.8	1.8	1.8	1.8	1.8	1.8	1.8	1.8	1.8	1.8	1.8	1.8	1.8	1.8	1.8	1.8
26-Apr	1.8	1.9	1.9	1.8	1.8	1.8	Z	1.8	1.8	1.8	1.8	1.8	1.8	1.8	1.8	1.8	1.8	1.8	1.8	1.8	1.8	1.8	1.8	1.8	1.8	1.9
27-Apr	Z	1.8	1.8	1.8	1.8	1.8	1.8	1.8	1.8	1.8	1.8	1.8	1.8	1.8	1.8	1.8	1.8	1.8	1.8	1.8	1.8	1.8	1.8	1.8	1.8	1.8
28-Apr	1.8	Z	1.8	1.8	1.8	1.9	1.9	1.9	1.9	1.8	1.8	1.8	1.8	1.8	1.8	1.8	1.8	1.9	1.9	1.9	1.9	1.9	1.9	1.9	1.9	1.9
29-Apr	1.9	1.9	Z	1.9	1.9	1.9	2.0	1.9	1.8	1.8	1.8	1.8	1.8	1.8	1.8	1.8	1.8	1.8	1.8	1.8	1.8	1.9	1.9	1.9	1.8	2.0
30-Apr	1.9	2.0	2.1	Z	2.2	2.1	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	1.8	1.8	1.9	1.9	1.9	2.2
	1.8	1.8	1.9	1.8	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	1.8	1.8	1.8	1.8	1.8	1.8	Diurnal Average	
	1.9	2.0	2.1	1.9	2.2	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	2.0	2.0	1.9	Diurnal Maximum	

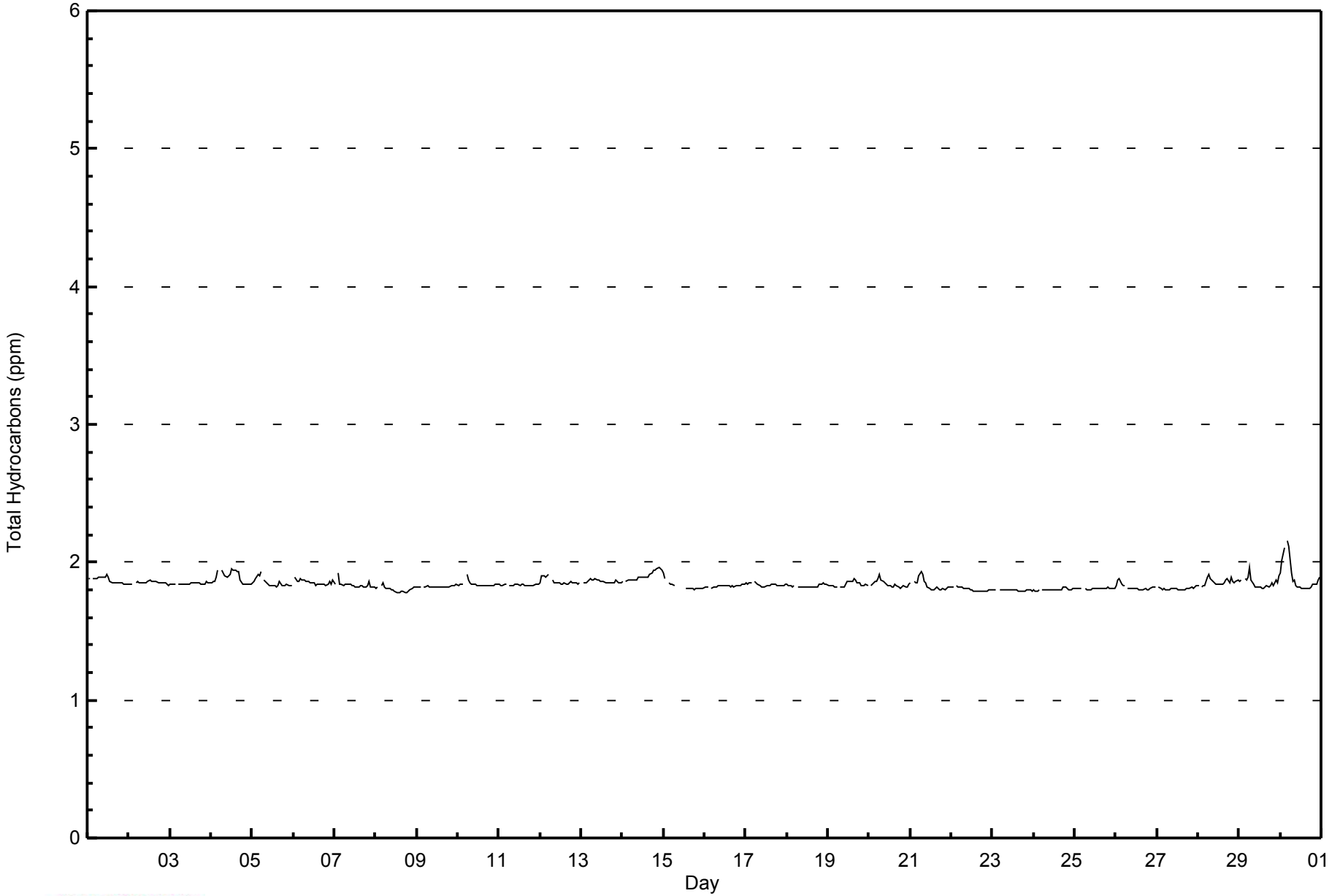
Z - zerospan C - Calibration

WBEA NETWORK

Hourly Averages

Total Hydrocarbons (THC) - ppm

Anzac - April 2014



AURORA
ATMOSPHERICS INC.

Concentration Ranges (ppm)	Number of Hours	%	Cumulative %
0 - 2.0	681	99.56	99.56
2.1 - 3.0	3	0.44	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

WBEA NETWORK

Frequency Distribution

Total Hydrocarbons (THC) - ppm

Anzac - April 2014

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	18	22	25	78	92	103	66	12	22	17	17	45	61	30	39	673
2.1 - 3.0	0	0	0	0	0	0	0	0	0	1	2	0	0	0	0	0	3
3.1 - 10.0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
> 10.0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Totals	26	18	22	25	78	92	103	66	12	23	19	17	45	61	30	39	676

Total Number of Valid Hours: 676

Total Number of Hours: 720

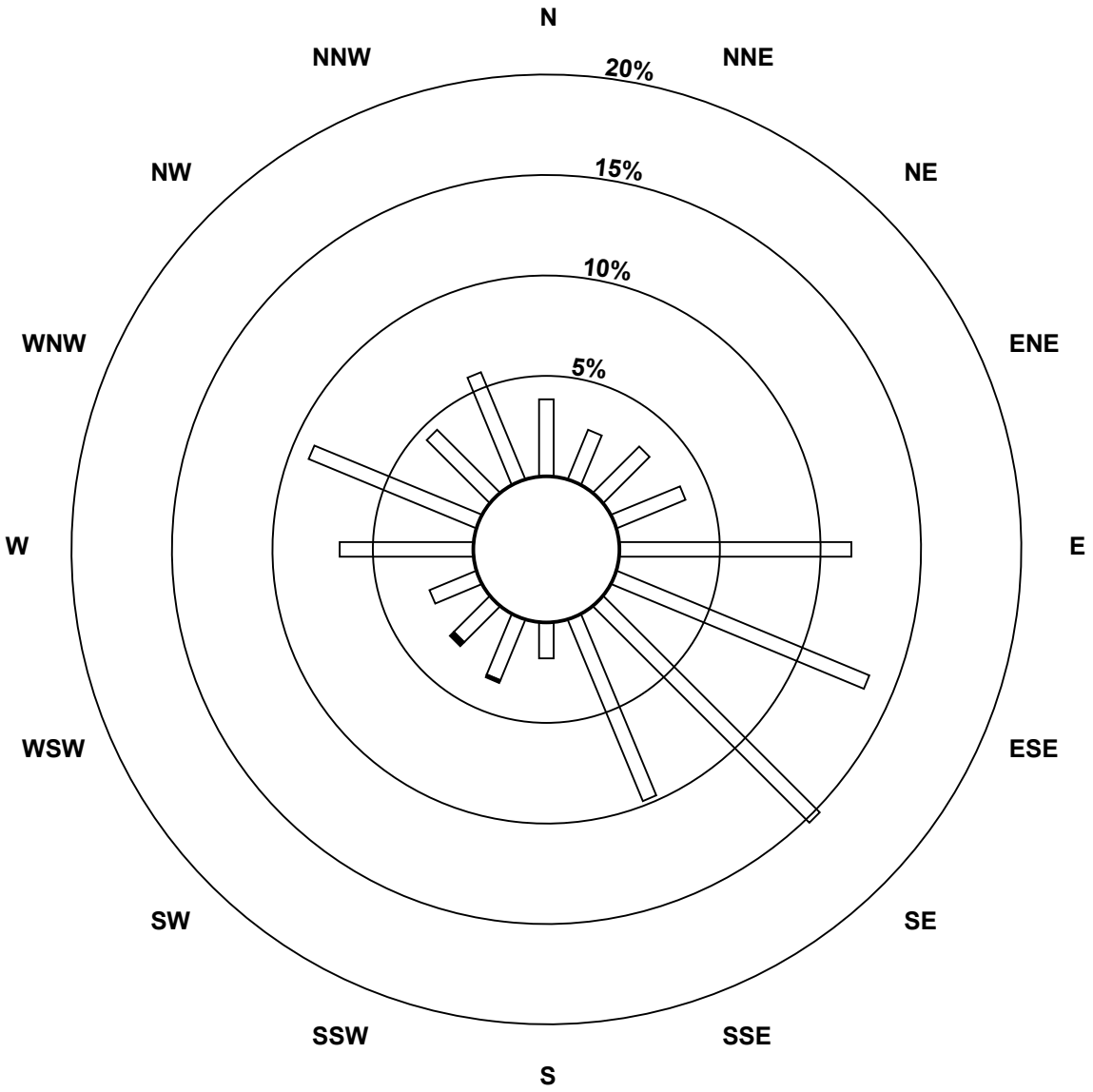
AURORA ATMOSPHERICS INC.

Wood Buffalo Environmental Association

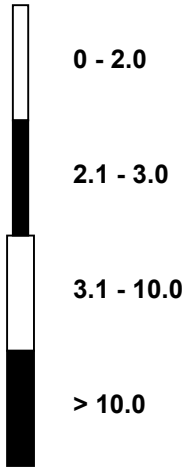
Wind Rose Apr 2014

Total Hydrocarbons (THC) - ppm

Anzac (AMS 14)



Classes (ppm)



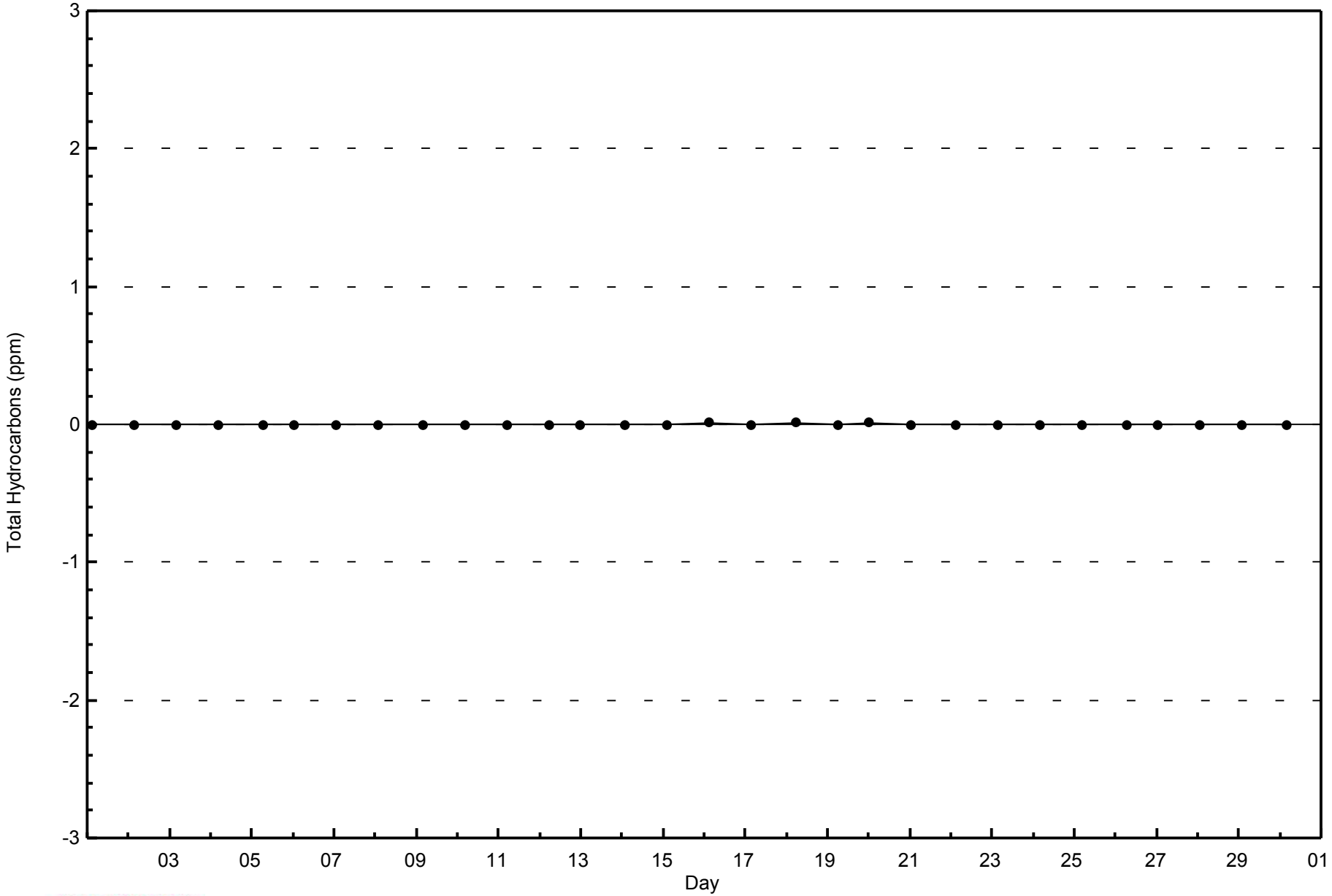
Total Number of Valid Hours: 676

WBEA NETWORK

Zero Responses

Total Hydrocarbons (THC) - ppm

Anzac - April 2014



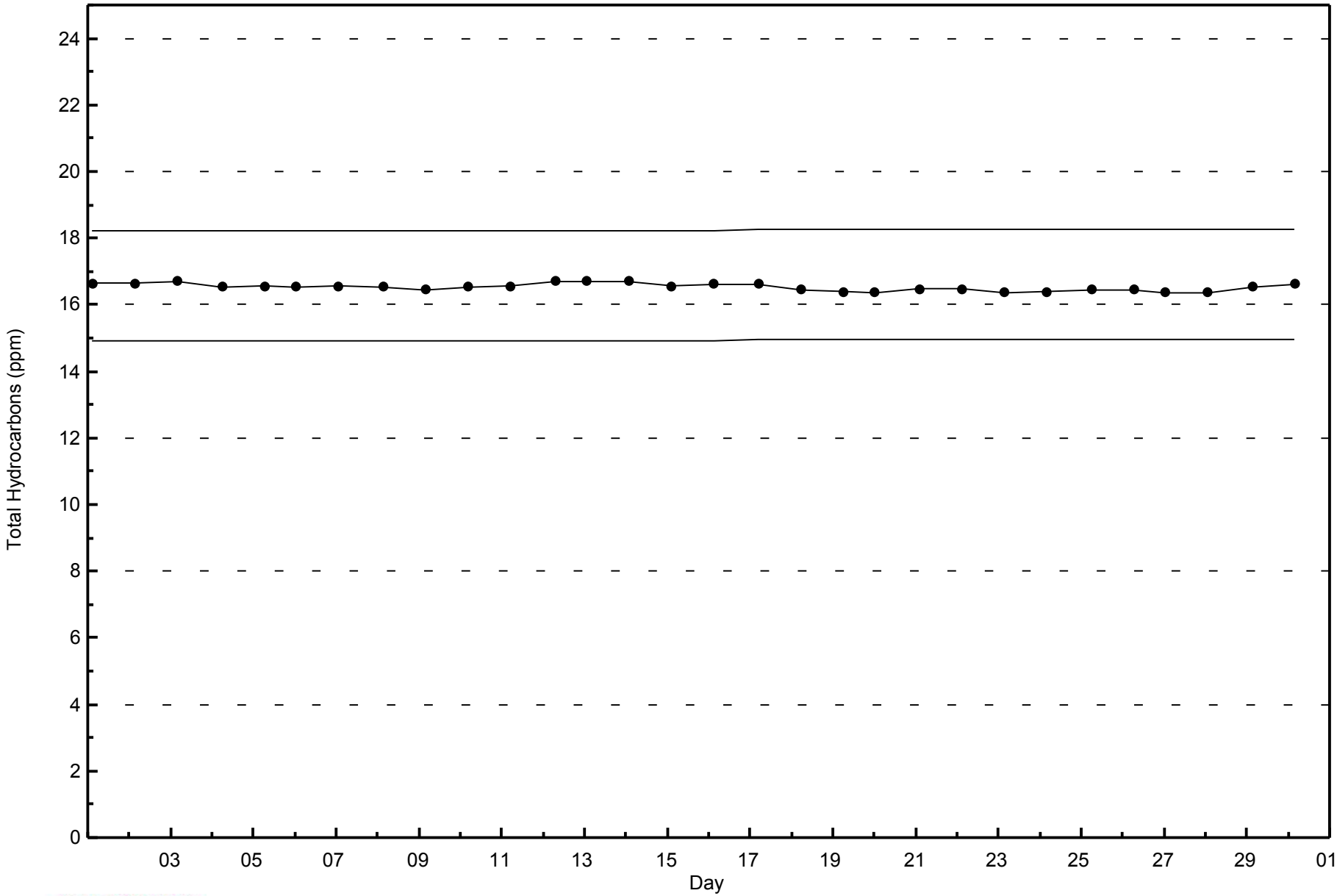
AURORA
ATMOSPHERICS INC.

WBEA NETWORK

Span Responses

Total Hydrocarbons (THC) - ppm

Anzac - April 2014



AURORA ATMOSPHERICS INC.

Wood Buffalo Environmental Association

Summary of Hour Averages

Non Methane Hydrocarbons (NMHC) - ppm

Anzac - April 2014

Maximum Value: 0.049 ppm on Apr 21 07:00

Maximum Daily Average: 0.018 ppm on Apr 19

Minimum Value: 0.000 ppm on Apr 1 01:00

Minimum Daily Average: 0.000 ppm on Apr 2

Maximum Diurnal Average: 0.006 ppm at hour 7

Minimum Diurnal Average: 0.001 ppm at hour 21

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:	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-Apr	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
2-Apr	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
3-Apr	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
4-Apr	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
5-Apr	0.000	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	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.007
6-Apr	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-Apr	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-Apr	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	0.002	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.002
9-Apr	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-Apr	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-Apr	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-Apr	0.000	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
13-Apr	Z	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	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.005
14-Apr	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
15-Apr	0.000	0.000	Z	0.000	0.000	0.000	0.000	C	C	C	C	C	C	0.002	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	--	0.002
16-Apr	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	0.001	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.001	0.000	0.000	0.001
17-Apr	0.000	0.001	0.000	0.002	Z	0.003	0.001	0.000	0.001	0.001	0.001	0.000	0.001	0.001	0.000	0.000	0.000	0.002	0.000	0.000	0.000	0.000	0.000	0.001	0.001	0.003
18-Apr	0.000	0.000	0.001	0.000	0.001	Z	0.001	0.000	0.000	0.001	0.001	0.000	0.000	0.000	0.001	0.002	0.000	0.001	0.004	0.002	0.002	0.006	0.008	0.007	0.002	0.008
19-Apr	0.008	0.007	0.008	0.007	0.004	0.005	Z	0.010	0.005	0.005	0.021	0.039	0.044	0.034	0.030	0.045	0.034	0.028	0.023	0.013	0.009	0.012	0.014	0.007	0.018	0.045
20-Apr	Z	0.012	0.004	0.010	0.014	0.007	0.013	0.005	0.018	0.016	0.009	0.006	0.000	0.000	0.000	0.002	0.001	0.000	0.000	0.001	0.000	0.000	0.001	0.003	0.005	0.018
21-Apr	0.007	Z	0.016	0.030	0.021	0.045	0.049	0.045	0.013	0.018	0.010	0.005	0.001	0.000	0.002	0.006	0.004	0.002	0.001	0.004	0.001	0.003	0.001	0.002	0.013	0.049
22-Apr	0.000	0.002	Z	0.003	0.001	0.000	0.000	0.000	0.001	0.001	0.003	0.000	0.001	0.000	0.000	0.001	0.000	0.001	0.000	0.001	0.000	0.000	0.000	0.000	0.001	0.003
23-Apr	0.000	0.001	0.002	Z	0.002	0.000	0.001	0.000	0.000	0.000	0.000	0.000	0.002	0.002	0.000	0.000	0.000	0.000	0.001	0.000	0.000	0.000	0.000	0.000	0.000	0.002
24-Apr	0.000	0.000	0.000	0.000	Z	0.001	0.000	0.000	0.000	0.000	0.000	0.000	0.001	0.001	0.001	0.002	0.002	0.006	0.005	0.005	0.003	0.000	0.001	0.000	0.001	0.006
25-Apr	0.001	0.000	0.000	0.000	0.001	Z	0.002	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	0.001	0.000	0.000	0.000	0.000	0.002
26-Apr	0.001	0.002	0.002	0.001	0.001	0.000	Z	0.001	0.000	0.000	0.000	0.000	0.001	0.000	0.000	0.001	0.000	0.000	0.001	0.000	0.000	0.000	0.000	0.000	0.001	0.002
27-Apr	Z	0.002	0.000	0.000	0.001	0.000	0.001	0.000	0.001	0.001	0.001	0.004	0.002	0.003	0.004	0.004	0.003	0.004	0.007	0.004	0.010	0.004	0.005	0.007	0.003	0.010
28-Apr	0.007	Z	0.008	0.005	0.005	0.044	0.044	0.031	0.029	0.009	0.008	0.008	0.001	0.004	0.007	0.012	0.018	0.029	0.010	0.027	0.006	0.005	0.007	0.011	0.015	0.044
29-Apr	0.007	0.006	Z	0.005	0.007	0.016	0.046	0.010	0.003	0.000	0.002	0.012	0.013	0.001	0.001	0.000	0.004	0.000	0.000	0.014	0.007	0.042	0.024	0.026	0.011	0.046
30-Apr	0.021	0.018	0.023	Z	0.016	0.029	0.004	0.007	0.020	0.009	0.004	0.004	0.000	0.000	0.000	0.001	0.000	0.002	0.000	0.001	0.001	0.016	0.026	0.015	0.009	0.029
	0.002	0.002	0.003	0.003	0.003	0.006	0.006	0.004	0.003	0.002	0.002	0.003	0.002	0.002	0.002	0.002	0.003	0.002	0.002	0.002	0.001	0.003	0.003	0.003	Diurnal Average	
	0.021	0.018	0.023	0.030	0.021	0.045	0.049	0.045	0.029	0.018	0.021	0.039	0.044	0.034	0.030	0.045	0.034	0.029	0.023	0.027	0.010	0.042	0.026	0.026	Diurnal Maximum	

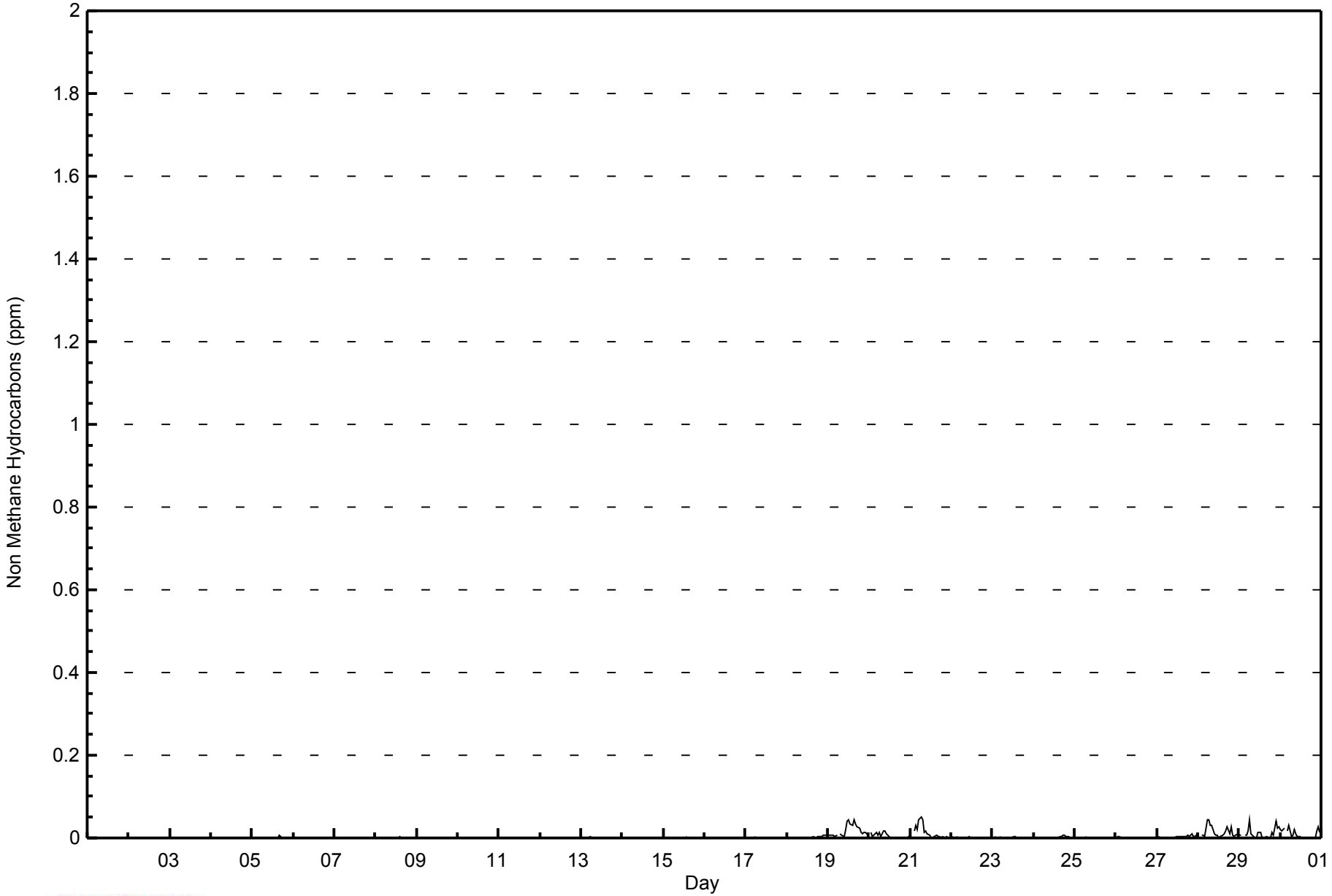
Z - zerospan C - Calibration

WBEA NETWORK

Hourly Averages

Non Methane Hydrocarbons (NMHC) - ppm

Anzac - April 2014



AURORA
ATMOSPHERICS INC.

Concentration Ranges (ppm)	Number of Hours	%	Cumulative %
0 - 0.005	595	86.99	86.99
0.006 - 0.05	89	13.01	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

Non Methane Hydrocarbons (NMHC) - ppm

Anzac - April 2014

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	25	18	21	24	75	78	87	47	8	15	12	14	42	54	29	39	588
0.006 - 0.05	1	0	1	1	3	14	16	19	4	8	7	3	3	7	1	0	88
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	26	18	22	25	78	92	103	66	12	23	19	17	45	61	30	39	676

Total Number of Valid Hours: 676

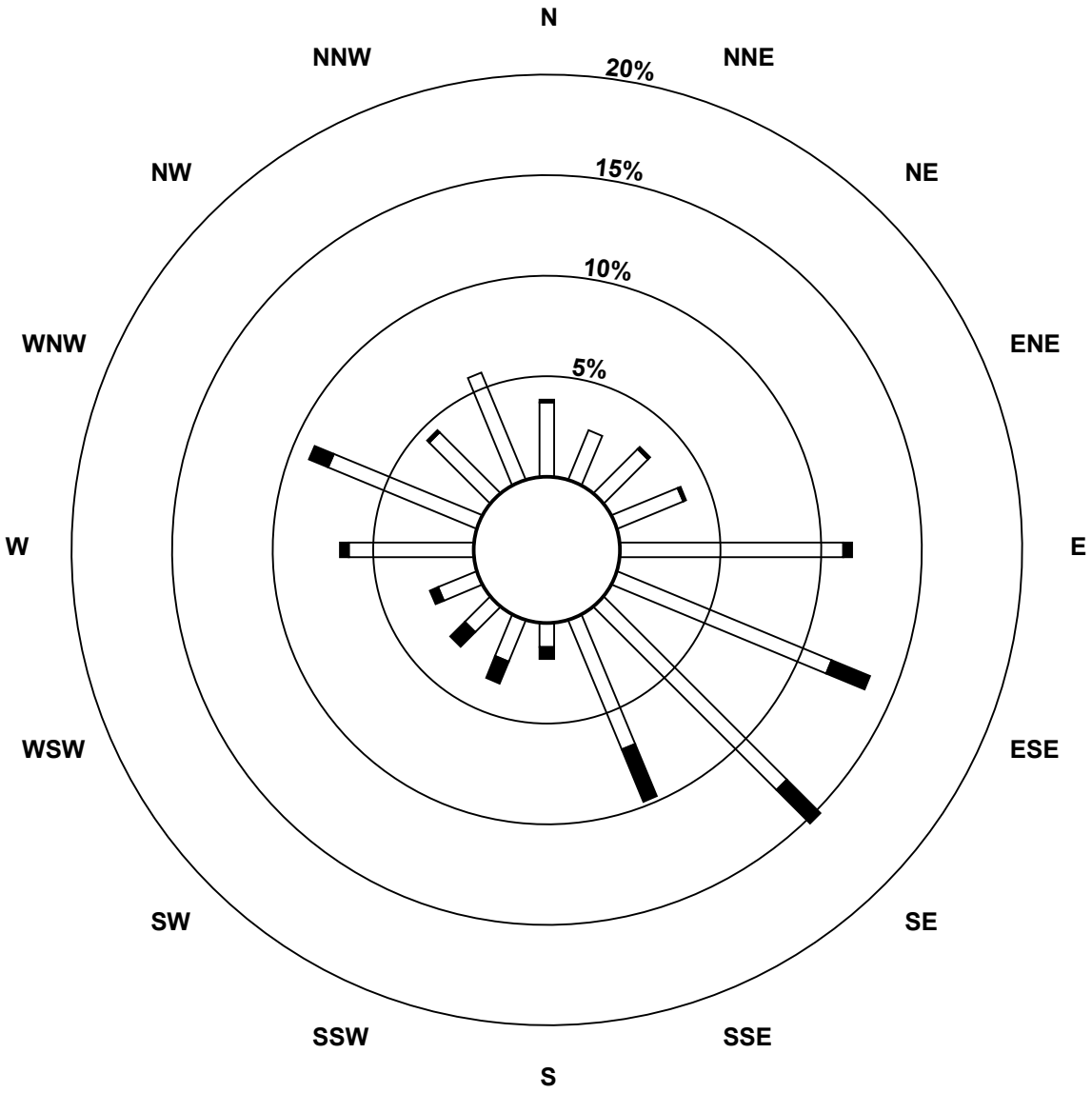
Total Number of Hours: 720

Wood Buffalo Environmental Association

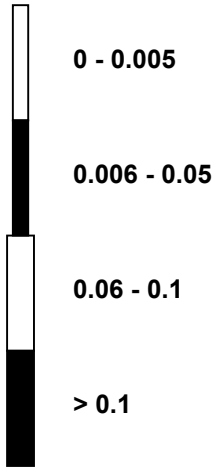
Wind Rose Apr 2014

Non Methane Hydrocarbons (NMHC) - ppm

Anzac (AMS 14)



Classes (ppm)



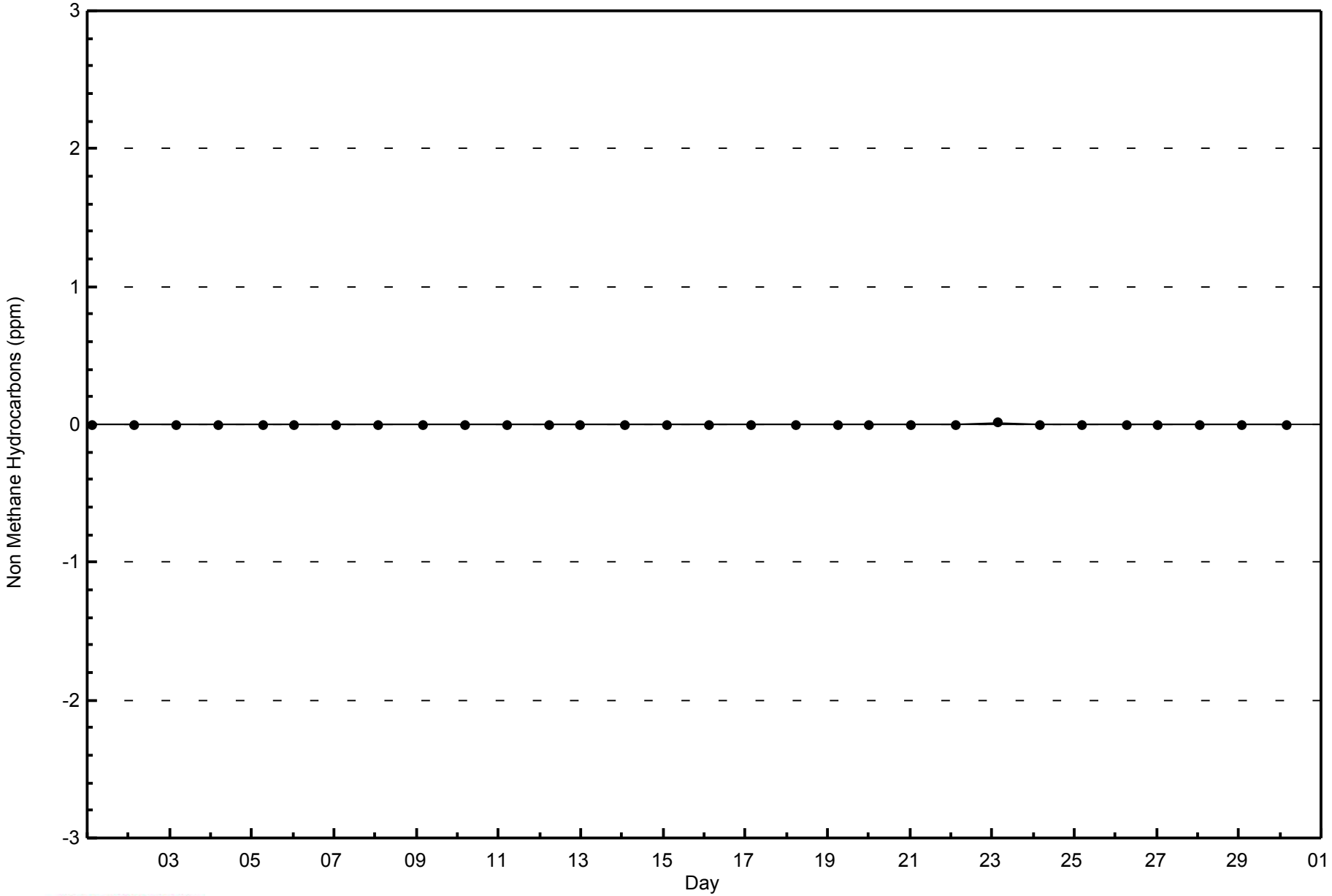
Total Number of Valid Hours: 676

WBEA NETWORK

Zero Responses

Non Methane Hydrocarbons (NMHC) - ppm

Anzac - April 2014



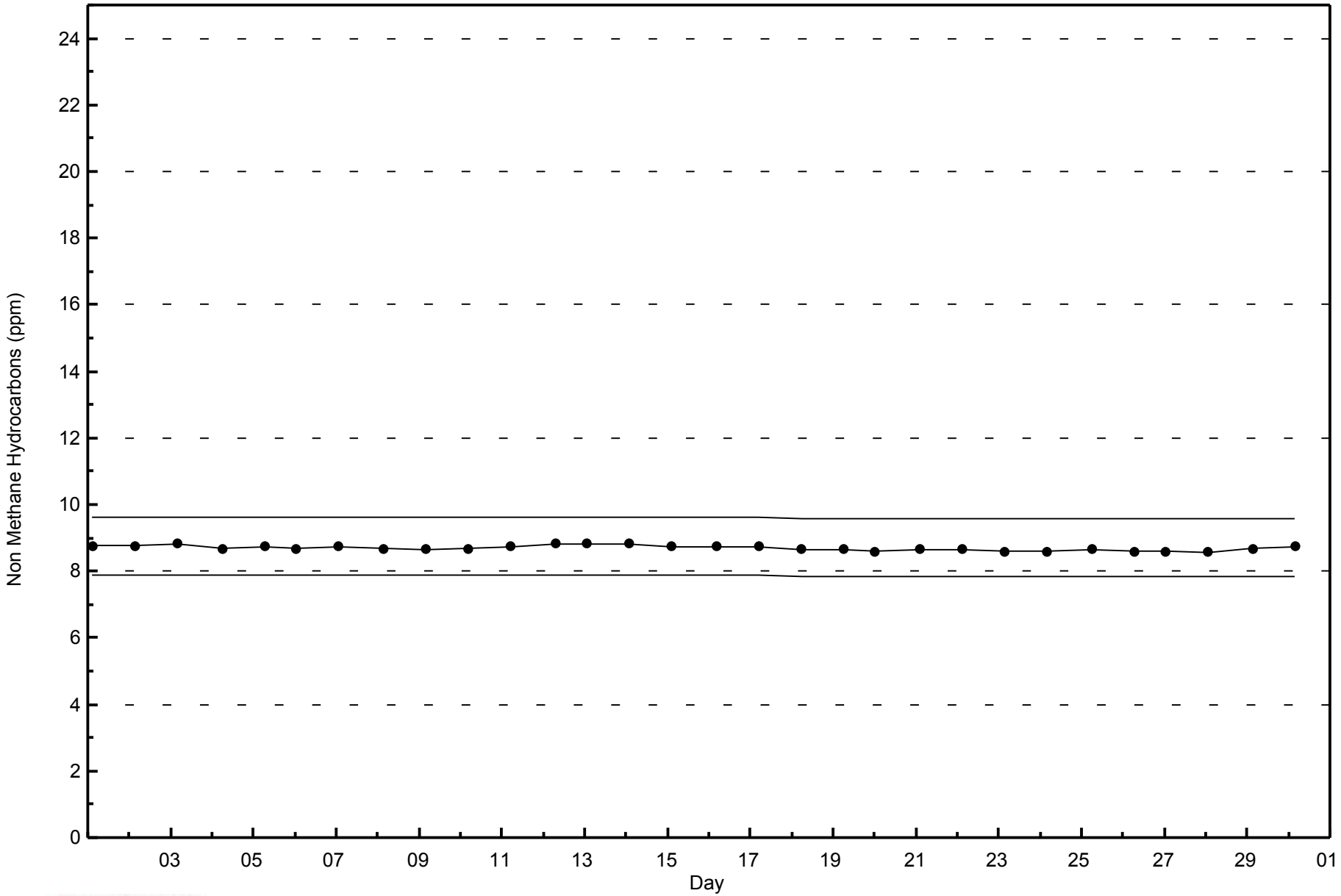
AURORA
ATMOSPHERICS INC.

WBEA NETWORK

Span Responses

Non Methane Hydrocarbons (NMHC) - ppm

Anzac - April 2014



AURORA ATMOSPHERICS INC.

Wood Buffalo Environmental Association

Summary of Hour Averages

Methane (CH_4) - ppm

Anzac - April 2014

Number of Exceedences (AAAQO): 1-hr: 0 24-hr: 0
Maximum Value: 2.1 ppm on Apr 30 05:00 Maximum Daily Average: 1.9 ppm on Apr 14

Minimum Value: 1.8 ppm on Apr 8 14:00 Minimum Daily Average: 1.8 ppm on Apr 23
Maximum Diurnal Average: 1.9 ppm at hour 6 Minimum Diurnal Average: 1.8 ppm at hour 19
Monthly Average: 1.84 ppm Percentiles: P_1 = 1.8 P_{10} = 1.8 Q_1 = 1.8 Median = 1.8 Q_3 = 1.8 P_{90} = 1.9 P_{99} = 1.9

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-Apr	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	1.8	1.8	1.8	1.8	1.8	1.8	1.8	1.9	1.9
2-Apr	1.8	1.8	1.8	Z	1.8	1.9	1.9	1.8	1.9	1.8	1.8	1.9	1.9	1.9	1.9	1.9	1.9	1.9	1.9	1.9	1.9	1.9	1.8	1.8	1.9	1.9
3-Apr	1.8	1.8	1.8	1.8	Z	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	1.8	1.8	1.9	1.8	1.9	1.8	1.9
4-Apr	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	1.8	1.8	1.8	1.8	1.8	1.8	1.9	1.9
5-Apr	1.9	1.9	1.9	1.9	1.9	1.9	Z	1.9	1.8	1.8	1.8	1.8	1.8	1.8	1.8	1.8	1.9	1.8	1.8	1.8	1.8	1.8	1.8	1.8	1.8	1.9
6-Apr	Z	1.9	1.9	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	1.8	1.9	1.9	1.9
7-Apr	1.8	Z	1.9	1.8	1.8	1.8	1.8	1.8	1.8	1.8	1.8	1.8	1.8	1.8	1.8	1.8	1.8	1.8	1.8	1.8	1.9	1.8	1.8	1.8	1.8	1.9
8-Apr	1.8	1.8	Z	1.8	1.8	1.8	1.8	1.8	1.8	1.8	1.8	1.8	1.8	1.8	1.8	1.8	1.8	1.8	1.8	1.8	1.8	1.8	1.8	1.8	1.8	1.8
9-Apr	1.8	1.8	1.8	Z	1.8	1.8	1.8	1.8	1.8	1.8	1.8	1.8	1.8	1.8	1.8	1.8	1.8	1.8	1.8	1.8	1.8	1.8	1.8	1.8	1.8	1.8
10-Apr	1.8	1.8	1.8	1.8	Z	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	1.8	1.8	1.8	1.8	1.8	1.8	1.8	1.9
11-Apr	1.8	1.8	1.8	1.8	1.8	Z	1.8	1.8	1.8	1.8	1.8	1.8	1.8	1.8	1.8	1.8	1.8	1.8	1.8	1.8	1.8	1.8	1.8	1.8	1.8	1.8
12-Apr	1.8	1.9	1.9	1.9	1.9	1.9	Z	1.9	1.9	1.8	1.8	1.8	1.8	1.8	1.8	1.8	1.8	1.9	1.9	1.8	1.9	1.8	1.8	1.8	1.9	1.9
13-Apr	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	1.8	1.9	1.9	1.9	1.9	1.9	1.9	1.9	1.9
14-Apr	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	2.0	2.0	1.9	1.9	2.0
15-Apr	1.9	1.9	Z	1.8	1.8	1.8	1.8	C	C	C	C	C	C	1.8	1.8	1.8	1.8	1.8	1.8	1.8	1.8	1.8	1.8	1.8	--	1.9
16-Apr	1.8	1.8	1.8	Z	1.8	1.8	1.8	1.8	1.8	1.8	1.8	1.8	1.8	1.8	1.8	1.8	1.8	1.8	1.8	1.8	1.8	1.8	1.8	1.8	1.8	1.8
17-Apr	1.8	1.8	1.8	1.8	Z	1.9	1.8	1.8	1.8	1.8	1.8	1.8	1.8	1.8	1.8	1.8	1.8	1.8	1.8	1.8	1.8	1.8	1.8	1.8	1.8	1.9
18-Apr	1.8	1.8	1.8	1.8	1.8	Z	1.8	1.8	1.8	1.8	1.8	1.8	1.8	1.8	1.8	1.8	1.8	1.8	1.8	1.8	1.8	1.9	1.8	1.8	1.8	1.9
19-Apr	1.8	1.8	1.8	1.8	1.8	1.8	Z	1.8	1.8	1.8	1.8	1.8	1.8	1.8	1.8	1.8	1.8	1.8	1.8	1.8	1.8	1.8	1.8	1.8	1.8	1.8
20-Apr	Z	1.8	1.8	1.8	1.8	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	1.8	1.8	1.8	1.8	1.8	1.8	1.9
21-Apr	1.8	Z	1.8	1.8	1.8	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	1.8	1.8	1.8	1.8	1.8	1.8	1.9
22-Apr	1.8	1.8	Z	1.8	1.8	1.8	1.8	1.8	1.8	1.8	1.8	1.8	1.8	1.8	1.8	1.8	1.8	1.8	1.8	1.8	1.8	1.8	1.8	1.8	1.8	1.8
23-Apr	1.8	1.8	1.8	Z	1.8	1.8	1.8	1.8	1.8	1.8	1.8	1.8	1.8	1.8	1.8	1.8	1.8	1.8	1.8	1.8	1.8	1.8	1.8	1.8	1.8	1.8
24-Apr	1.8	1.8	1.8	1.8	Z	1.8	1.8	1.8	1.8	1.8	1.8	1.8	1.8	1.8	1.8	1.8	1.8	1.8	1.8	1.8	1.8	1.8	1.8	1.8	1.8	1.8
25-Apr	1.8	1.8	1.8	1.8	1.8	Z	1.8	1.8	1.8	1.8	1.8	1.8	1.8	1.8	1.8	1.8	1.8	1.8	1.8	1.8	1.8	1.8	1.8	1.8	1.8	1.8
26-Apr	1.8	1.9	1.9	1.8	1.8	1.8	Z	1.8	1.8	1.8	1.8	1.8	1.8	1.8	1.8	1.8	1.8	1.8	1.8	1.8	1.8	1.8	1.8	1.8	1.8	1.9
27-Apr	Z	1.8	1.8	1.8	1.8	1.8	1.8	1.8	1.8	1.8	1.8	1.8	1.8	1.8	1.8	1.8	1.8	1.8	1.8	1.8	1.8	1.8	1.8	1.8	1.8	1.8
28-Apr	1.8	Z	1.8	1.8	1.8	1.8	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	1.9	1.9	1.8	1.9
29-Apr	1.9	1.9	Z	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	1.8	1.8	1.8	1.8	1.8	1.9	1.8	1.9
30-Apr	1.9	2.0	2.1	Z	2.1	2.1	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	1.8	1.8	1.8	1.9	1.9	2.1
	1.8	1.8	1.9	1.8	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	1.8	1.8	1.8	1.8	1.8	1.8	Diurnal Average	
	1.9	2.0	2.1	1.9	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	2.0	2.0	1.9	Diurnal Maximum	

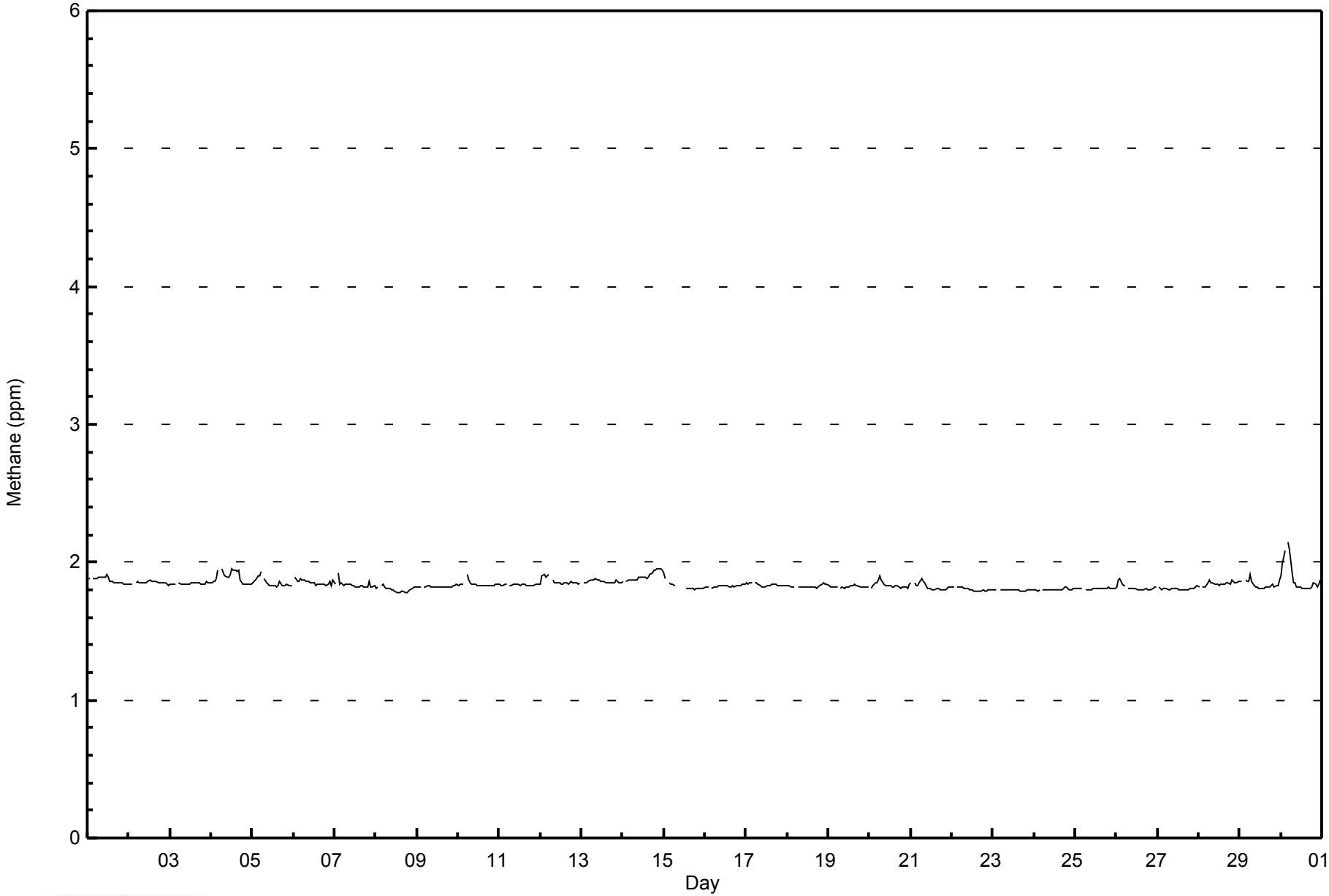
Z - zerospan C - Calibration

WBEA NETWORK

Hourly Averages

Methane (CH_4) - ppm

Anzac - April 2014



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Concentration Ranges (ppm)	Number of Hours	%	Cumulative %
0 - 2.0	681	99.56	99.56
2.1 - 3.0	3	0.44	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

WBEA NETWORK

Frequency Distribution

Methane (CH_4) - ppm

Anzac - April 2014

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	18	22	25	78	92	103	66	12	22	17	17	45	61	30	39	673
2.1 - 3.0	0	0	0	0	0	0	0	0	0	1	2	0	0	0	0	0	3
3.1 - 10.0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
> 10.0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Totals	26	18	22	25	78	92	103	66	12	23	19	17	45	61	30	39	676

Total Number of Valid Hours: 676

Total Number of Hours: 720

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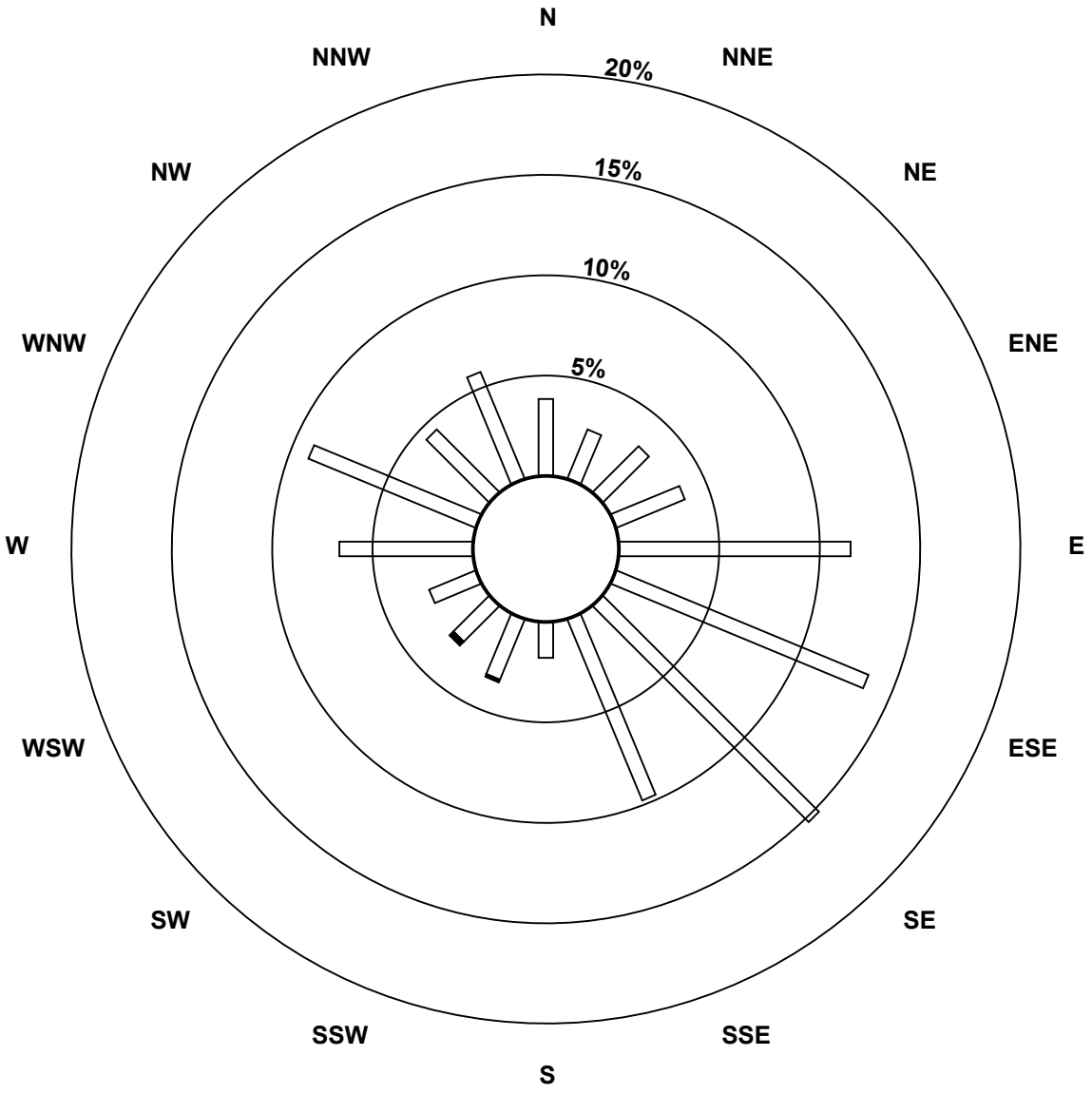
ATMOSPHERICS INC.

Wood Buffalo Environmental Association

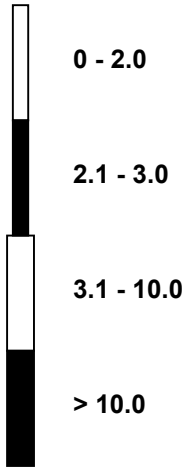
Wind Rose Apr 2014

Methane (CH_4) - ppm

Anzac (AMS 14)



Classes (ppm)



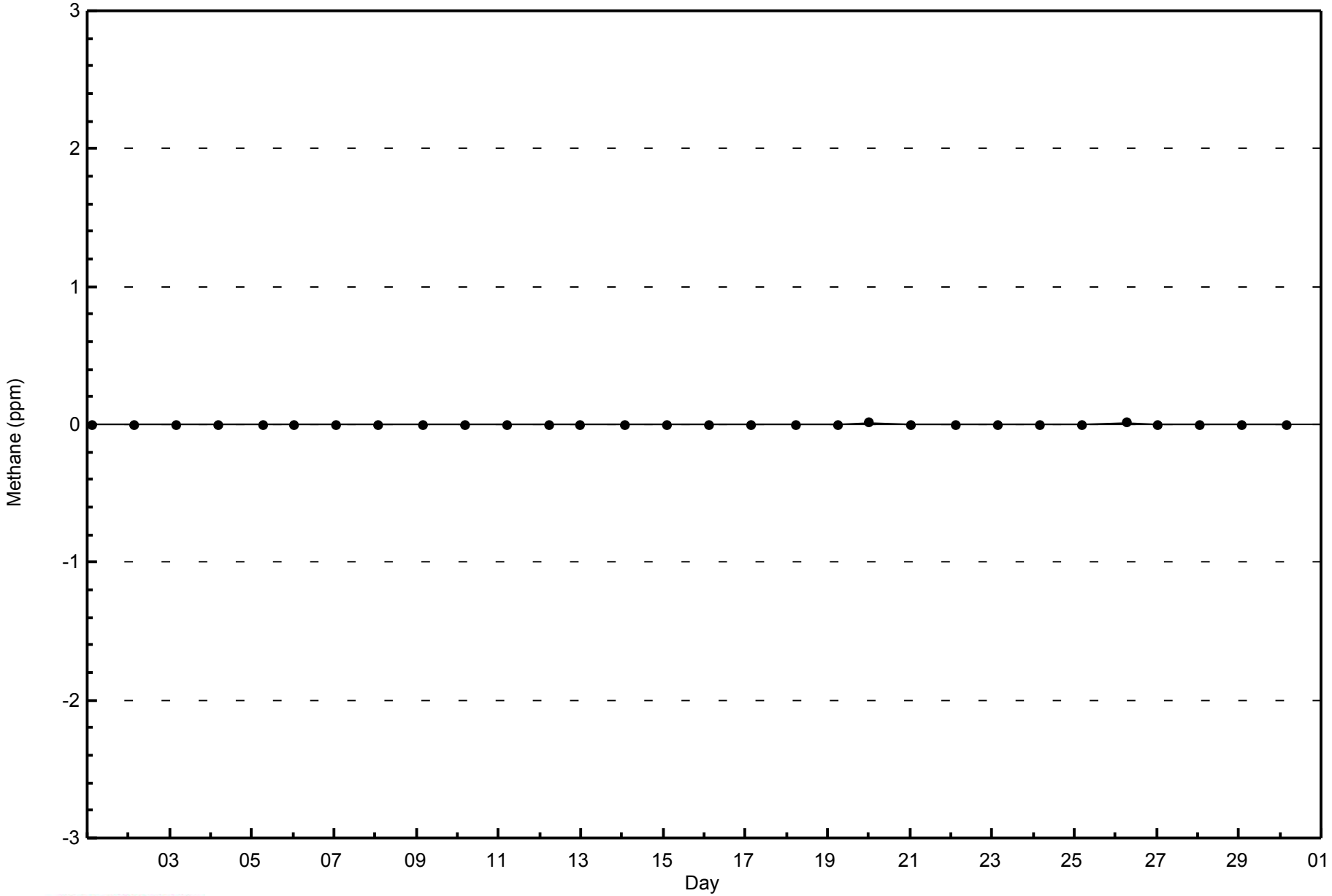
Total Number of Valid Hours: 676

WBEA NETWORK

Zero Responses

Methane (CH_4) - ppm

Anzac - April 2014



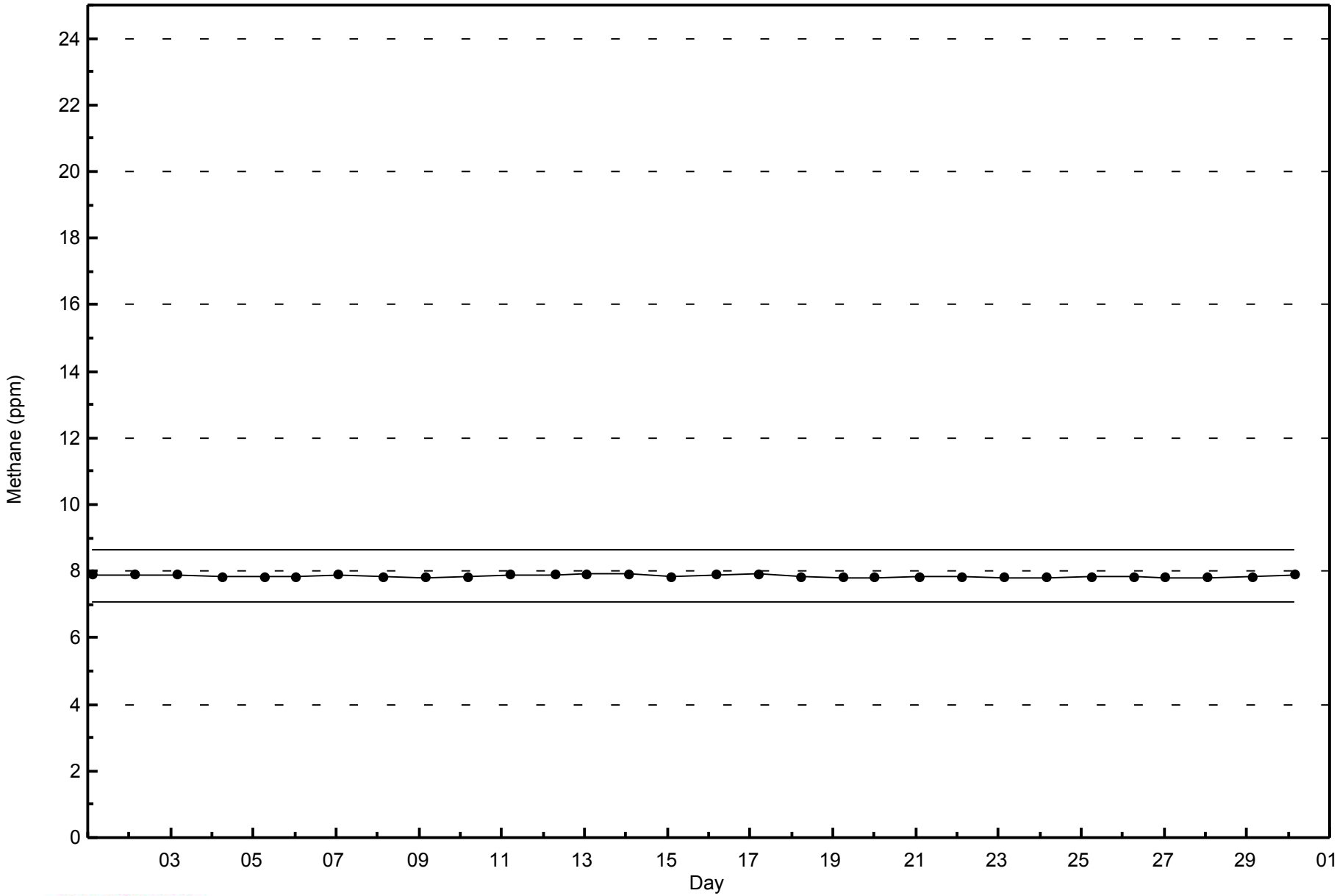
AURORA
ATMOSPHERICS INC.

WBEA NETWORK

Span Responses

Methane (CH_4) - ppm

Anzac - April 2014



AURORA ATMOSPHERICS INC.

Wood Buffalo Environmental Association

Summary of Hour Averages

Nitric Oxide (NO) - ppb

Anzac - April 2014

Maximum Value: 12 ppb on Apr 7 18:00

Maximum Daily Average: 1.6 ppb on Apr 7

Minimum Value: 0 ppb on Apr 1 05:00

Minimum Daily Average: 0.0 ppb on Apr 15

Maximum Diurnal Average: 0.6 ppb at hour 19

Minimum Diurnal Average: 0.0 ppb at hour 24

Monthly Average: 0.3 ppb

Percentiles: $P_1 = 0$ $P_{10} = 0$ $Q_1 = 0$ Median = 0 $Q_3 = 0$ $P_{90} = 1$ $P_{99} = 5$

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-Apr	0	0	Z	0	0	0	0	0	2	0	1	2	1	0	0	0	0	0	0	0	2	0	0	0	0.4	2
2-Apr	0	0	0	Z	0	0	5	0	0	0	0	2	1	0	0	0	1	1	0	0	0	0	0	0	0.5	5
3-Apr	1	0	0	0	Z	0	0	0	0	0	0	1	2	1	2	0	1	0	0	3	0	0	0	0	0.5	3
4-Apr	0	1	0	0	0	Z	0	0	0	0	0	0	0	0	0	0	1	0	0	0	0	0	0	0	0.1	1
5-Apr	0	1	1	0	0	1	Z	1	0	0	0	0	1	1	1	1	5	0	0	0	0	0	1	0	0.6	5
6-Apr	Z	0	0	0	0	0	0	0	2	1	1	2	1	6	0	1	0	0	0	0	0	0	0	0	0.6	6
7-Apr	0	Z	0	0	0	0	0	0	0	0	0	2	2	0	2	6	3	12	10	0	0	0	0	0	1.6	12
8-Apr	0	0	Z	1	1	0	0	0	0	0	0	0	0	0	1	0	0	1	6	0	0	0	0	0	0.4	6
9-Apr	0	0	0	Z	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0.1	0
10-Apr	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
11-Apr	0	0	0	0	0	Z	0	0	0	0	0	0	0	0	0	0	1	0	0	0	0	0	0	0	0.1	1
12-Apr	0	0	0	0	0	0	Z	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0.1	0
13-Apr	Z	0	0	0	0	0	0	1	2	2	2	1	1	1	1	1	0	0	0	0	0	0	0	0	0.6	2
14-Apr	0	Z	0	0	0	0	2	0	0	0	0	0	0	0	0	1	0	0	0	0	0	0	0	0	0.2	2
15-Apr	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
16-Apr	0	0	0	Z	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	2	0	0.1	2
17-Apr	0	0	0	3	Z	0	0	C	C	C	C	C	0	0	0	0	0	0	0	0	0	0	0	0	0.2	3
18-Apr	0	0	0	0	0	Z	0	0	0	0	0	0	0	0	0	0	0	0	0	0	2	0	0	0	0.1	2
19-Apr	0	0	0	0	0	0	Z	0	0	0	0	0	0	0	0	1	0	0	0	0	0	0	0	0	0.1	1
20-Apr	Z	0	0	0	1	4	2	1	1	0	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0.5	4
21-Apr	0	Z	0	0	0	0	0	4	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0.2	4
22-Apr	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
23-Apr	0	0	0	Z	0	2	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1	0	0	0	0.2	2
24-Apr	0	0	0	0	Z	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1	0	0	0.1	1
25-Apr	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
26-Apr	0	0	0	1	1	0	Z	0	0	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0.2	1
27-Apr	Z	0	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0.1	1
28-Apr	0	Z	0	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	3	0	0	0	0	0.2	3
29-Apr	0	0	Z	0	0	0	2	3	4	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0.4	4
30-Apr	1	2	0	Z	0	5	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0.4	5
	0.1	0.1	0.1	0.3	0.2	0.5	0.5	0.3	0.4	0.2	0.2	0.4	0.3	0.3	0.3	0.4	0.4	0.5	0.6	0.2	0.2	0.1	0.1	0.0	Diurnal Average	
	1	2	1	3	1	5	5	4	4	2	2	2	2	6	2	6	5	12	10	3	2	1	2	0	Diurnal Maximum	

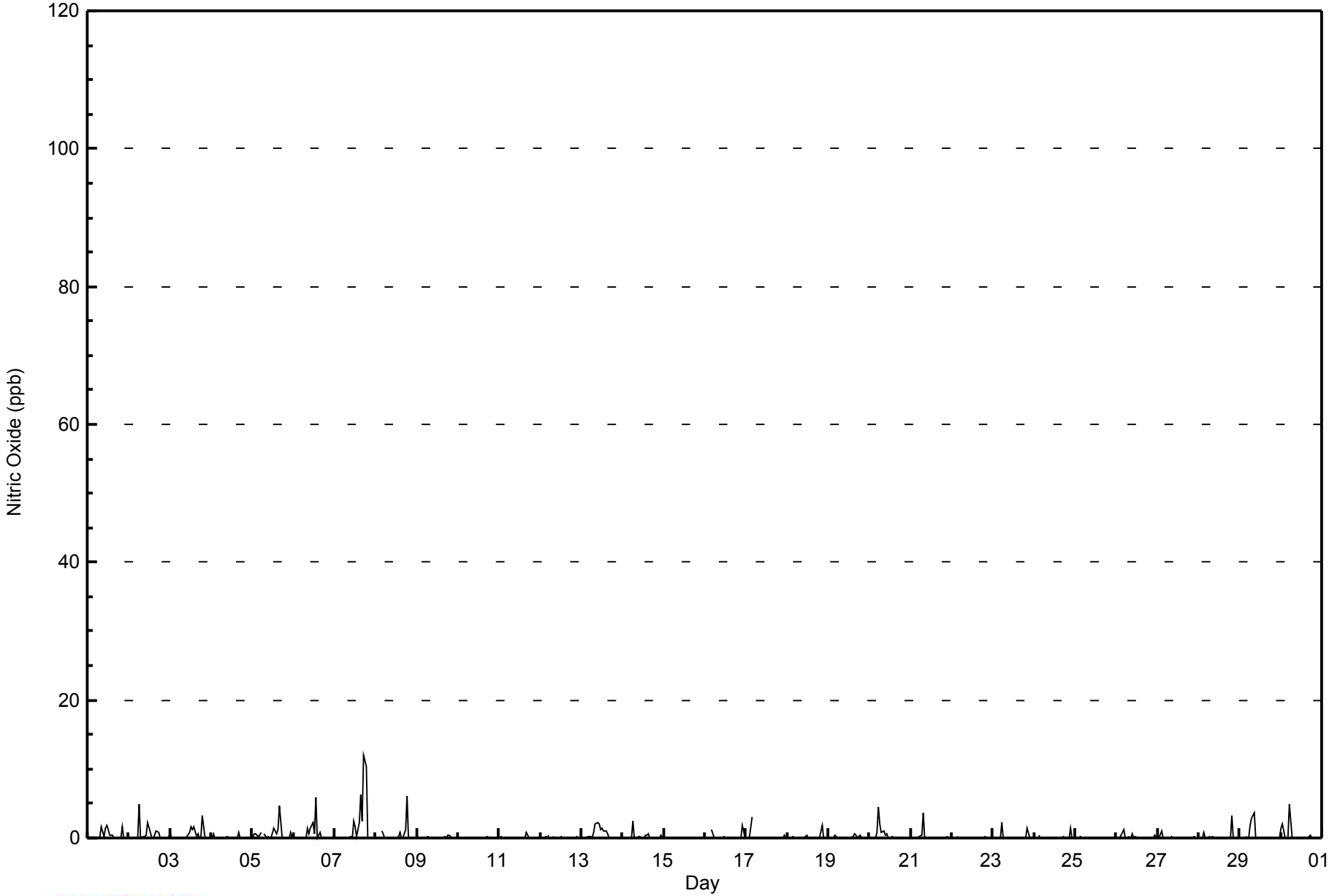
Z - zerospan C - Calibration

WBEA NETWORK

Hourly Averages

Nitric Oxide (NO) - ppb

Anzac - April 2014



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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

WBEA NETWORK

Frequency Distribution

Nitric Oxide (NO) - ppb

Anzac - April 2014

Concentration Ranges (ppb)	N	NNE	NE	ENE	E	ESE	SE	SSE	S	SSW	SW	WSW	W	WNW	NW	NNW	**Totals**
0 - 20	26	18	22	29	80	92	98	66	12	23	19	17	45	61	30	39	677
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	26	18	22	29	80	92	98	66	12	23	19	17	45	61	30	39	677

Wind Direction (column group heading)

Total Number of Valid Hours: 677

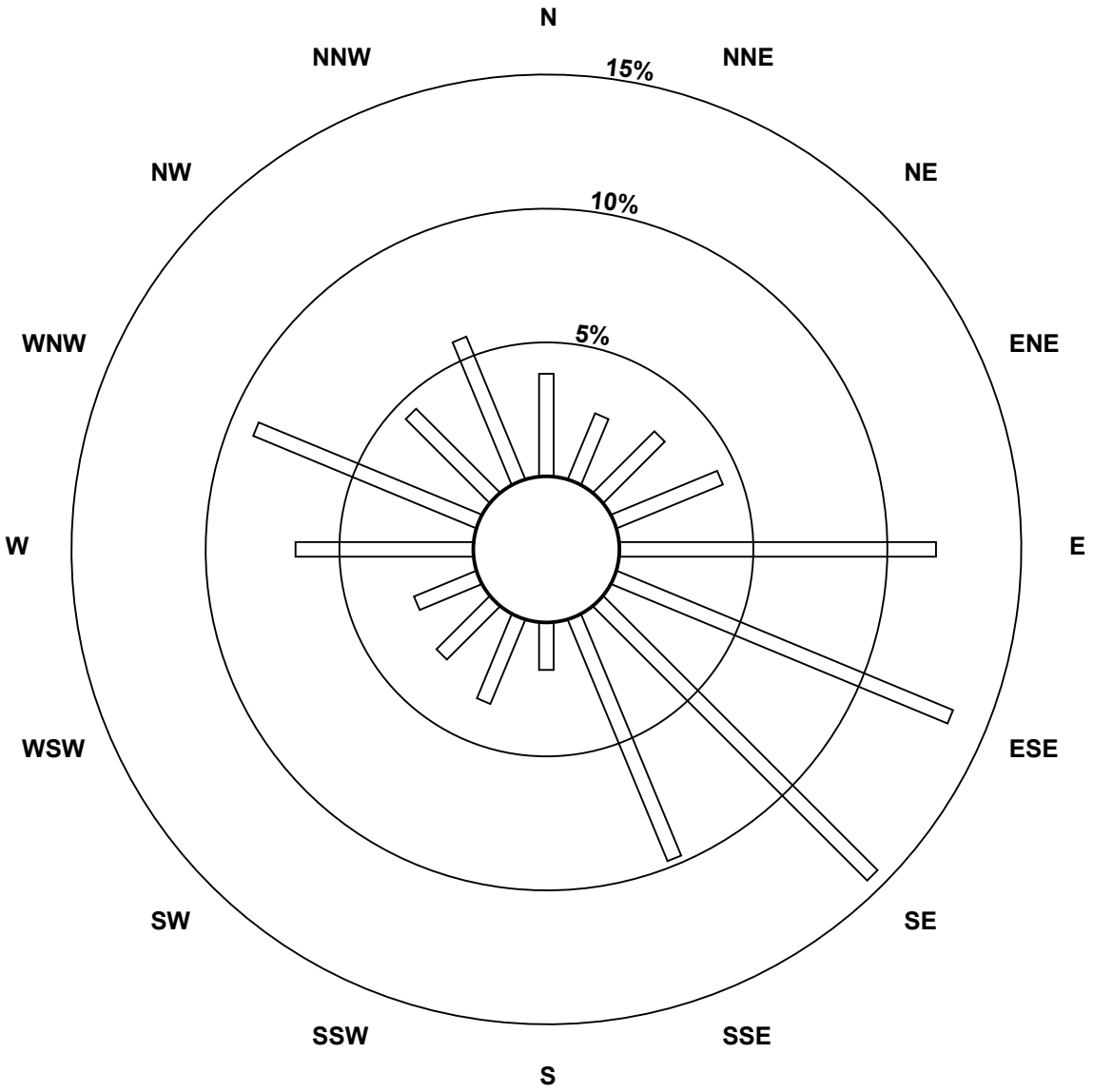
Total Number of Hours: 720

Wood Buffalo Environmental Association

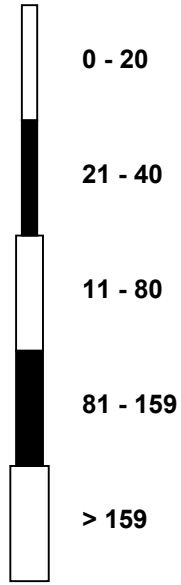
Wind Rose Apr 2014

Nitric Oxide (NO) - ppb

Anzac (AMS 14)



Classes (ppb)



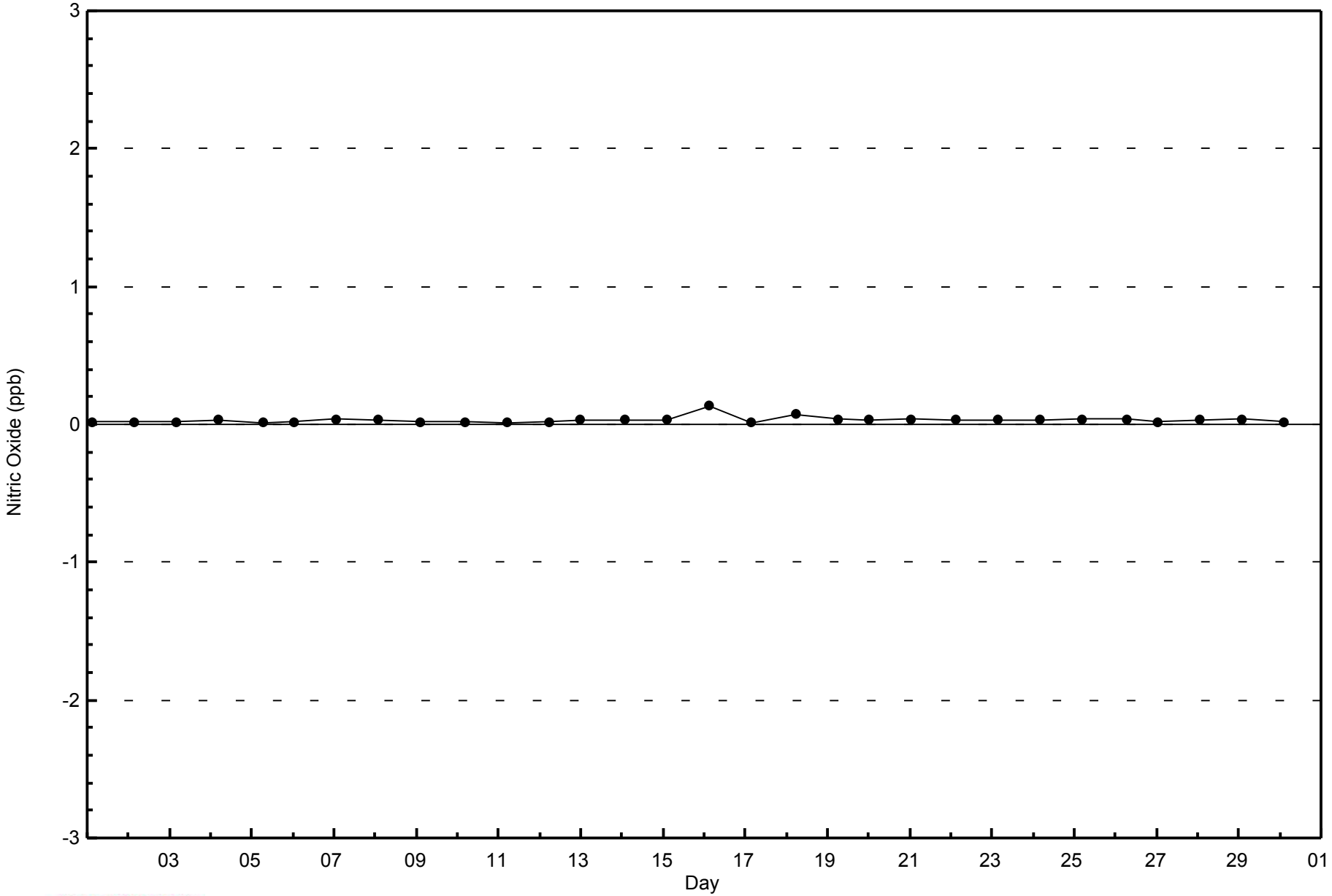
Total Number of Valid Hours: 677

WBEA NETWORK

Zero Responses

Nitric Oxide (NO) - ppb

Anzac - April 2014



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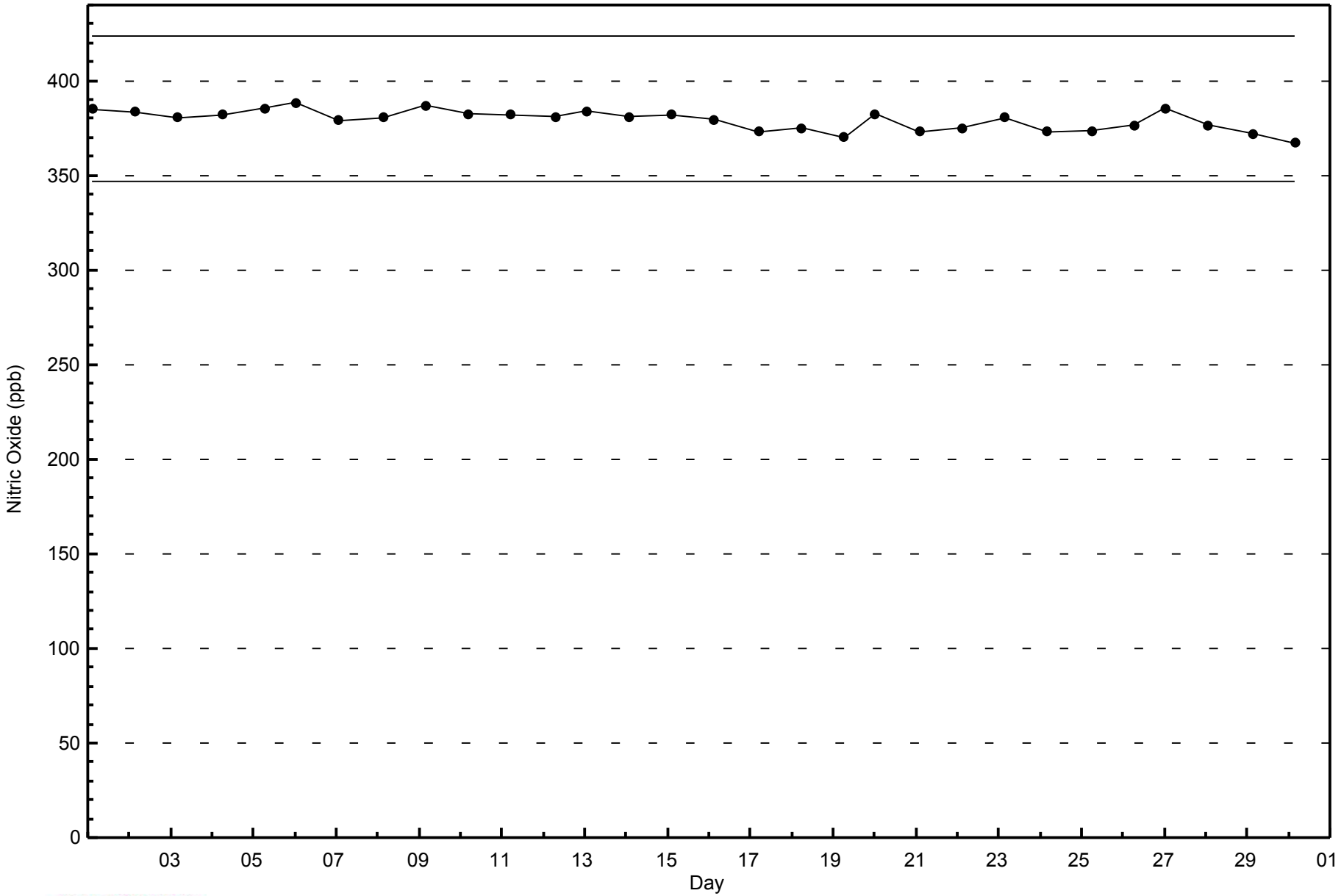
WBEA NETWORK

Span Responses

Nitric Oxide (NO) - ppb

Anzac - April 2014



AURORA ATMOSPHERICS INC.

Wood Buffalo Environmental Association

Summary of Hour Averages

Nitrogen Dioxide (NO_2) - ppb

Anzac - April 2014

Number of Exceedences (AAAQO): 1-hr: 0 24-hr: 0
Maximum Value: 10 ppb on Apr 30 02:00 Maximum Daily Average: 3.5 ppb on Apr 13

Minimum Value: 1 ppb on Apr 1 22:00 Minimum Daily Average: 0.9 ppb on Apr 15
Maximum Diurnal Average: 2.6 ppb at hour 6 Minimum Diurnal Average: 1.4 ppb at hour 24
Monthly Average: 1.9 ppb Percentiles: $P_1 = 1$ $P_{10} = 1$ $Q_1 = 1$ Median = 1 $Q_3 = 2$ $P_{90} = 4$ $P_{99} = 7$

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-Apr	2	2	Z	3	3	2	2	4	5	3	4	5	4	3	3	3	3	2	2	2	3	1	1	1	2.7	5
2-Apr	1	1	2	Z	1	1	2	1	1	2	2	5	3	2	1	3	4	5	6	6	6	5	2	1	2.7	6
3-Apr	2	1	1	1	Z	1	1	1	1	1	1	2	3	3	4	2	2	2	1	1	1	5	2	1	1.6	5
4-Apr	1	2	1	1	2	Z	2	2	2	3	3	3	3	3	3	3	4	2	1	1	1	2	1	1	2.0	4
5-Apr	2	3	5	5	4	7	Z	4	2	2	1	1	2	3	1	2	6	1	1	2	2	2	3	1	2.6	7
6-Apr	Z	4	1	1	2	2	3	2	4	3	3	4	3	6	3	3	2	2	2	1	1	4	2	1	2.5	6
7-Apr	1	Z	2	1	2	1	2	2	2	2	2	4	3	1	3	6	4	8	9	1	1	1	1	1	2.5	9
8-Apr	1	2	Z	4	5	2	2	2	2	2	1	1	1	1	2	1	1	2	5	2	1	1	1	1	1.8	5
9-Apr	1	1	1	Z	1	1	1	2	1	1	1	1	1	1	1	1	2	1	2	3	1	1	1	1	1.1	3
10-Apr	1	2	2	1	Z	8	5	2	2	2	2	2	1	1	1	1	1	2	1	1	1	1	1	1	1.8	8
11-Apr	1	1	1	2	1	Z	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	0.9	2
12-Apr	2	4	6	5	5	6	Z	3	2	2	2	1	1	1	1	1	1	2	4	2	2	3	1	1	2.5	6
13-Apr	Z	1	1	1	9	7	4	5	6	5	5	4	4	3	3	3	3	3	3	3	3	2	1	3	3.5	9
14-Apr	3	Z	3	3	2	3	6	3	3	3	3	3	3	3	3	3	2	2	2	2	2	3	3	2	2.7	6
15-Apr	1	1	Z	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	2	1	0.9	2
16-Apr	1	1	1	Z	2	1	1	1	1	1	1	2	2	2	1	1	1	1	1	1	1	1	6	2	1.3	6
17-Apr	1	1	3	6	Z	5	3	C	C	C	C	C	2	1	1	2	2	1	1	1	1	1	2	3	2.0	6
18-Apr	5	1	2	2	2	Z	1	1	1	1	1	1	1	1	1	2	1	1	2	1	3	1	1	1	1.4	5
19-Apr	1	1	2	2	5	2	Z	2	2	2	3	2	3	2	2	4	3	1	1	1	2	3	4	1	2.2	5
20-Apr	Z	1	2	2	2	3	3	4	4	3	3	3	3	3	4	4	4	2	1	1	1	3	6	4	2.8	6
21-Apr	3	Z	2	1	1	3	5	7	2	2	1	1	1	1	1	3	3	2	2	1	1	2	1	1	2.0	7
22-Apr	1	1	Z	3	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1.0	3
23-Apr	1	1	1	Z	1	2	1	1	1	1	1	1	1	1	1	1	1	1	1	1	2	1	1	1	1.0	2
24-Apr	1	1	1	1	Z	1	1	1	1	1	1	1	1	1	1	1	1	3	1	1	1	2	1	1	1.1	3
25-Apr	1	1	1	1	1	Z	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	3	1.0	3
26-Apr	1	1	1	2	2	1	Z	1	1	2	1	2	1	1	1	1	1	1	1	1	1	1	3	3	1.3	3
27-Apr	Z	3	2	1	1	1	1	1	3	1	1	1	1	1	1	1	1	1	1	1	1	2	1	1	1.2	3
28-Apr	1	Z	1	2	1	2	3	3	4	3	2	1	1	1	1	1	2	2	1	3	1	1	2	1	1.7	4
29-Apr	2	2	Z	1	1	2	3	3	3	2	1	1	1	1	1	1	1	1	2	2	1	1	1	1	1.5	3
30-Apr	3	10	7	Z	4	5	2	3	3	2	1	1	1	1	1	1	3	3	2	2	2	1	1	1	2.6	10
	1.5	1.9	1.9	2.1	2.4	2.6	2.2	2.2	2.1	1.8	1.7	1.9	1.8	1.7	1.7	1.9	2.0	1.9	1.9	1.5	1.4	1.8	1.8	1.4	Diurnal Average	
	5	10	7	6	9	8	6	7	6	5	5	5	4	6	4	6	6	8	9	6	6	5	6	4	Diurnal Maximum	

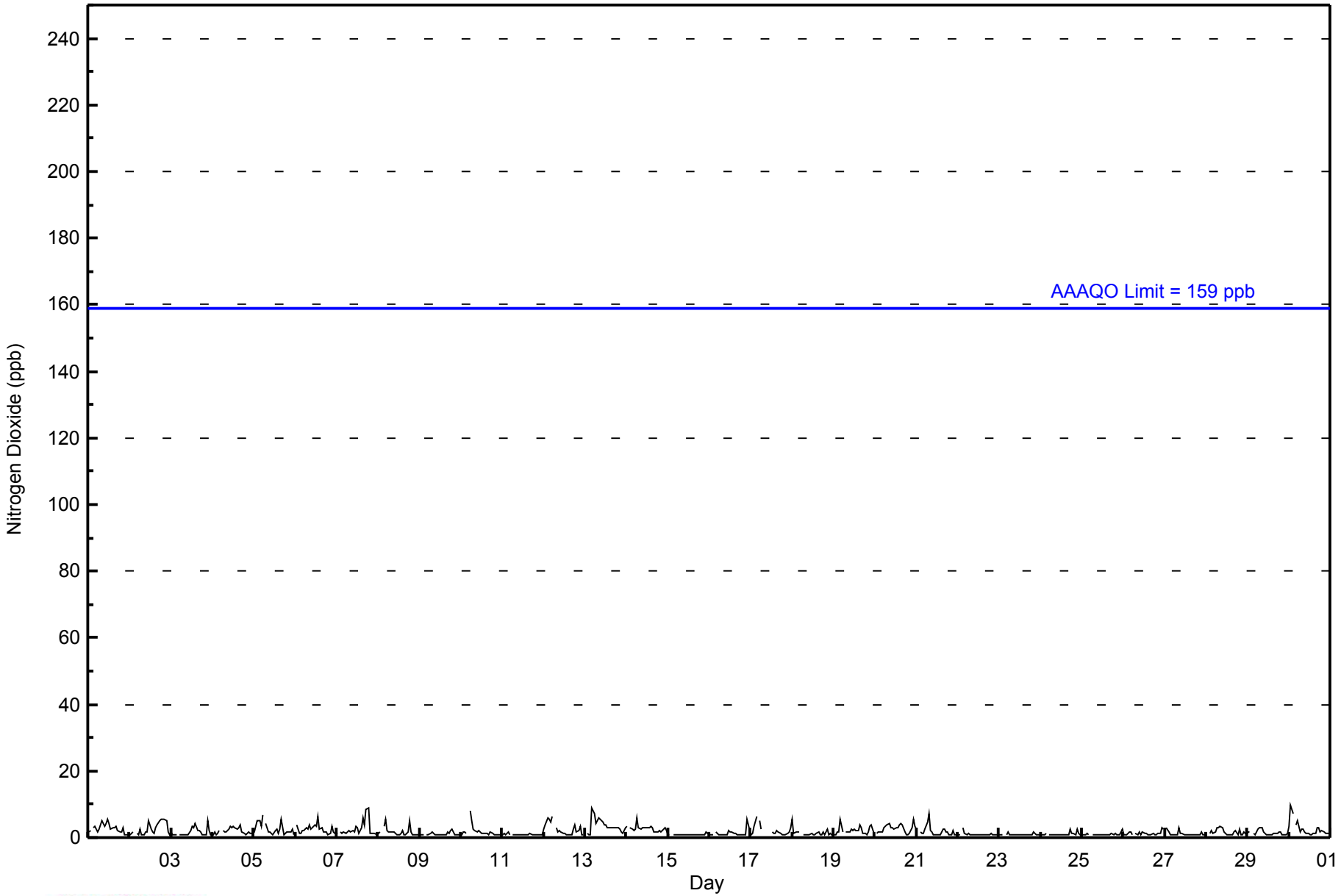
Z - zerospan C - Calibration
Alberta Ambient Air Quality Objectives (AAAQO): 1-hr 159 ppb

WBEA NETWORK

Hourly Averages

Nitrogen Dioxide (NO_2) - ppb

Anzac - April 2014



AURORA ATMOSPHERICS INC.

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

WBEA NETWORK

Frequency Distribution

Nitrogen Dioxide (NO_2) - ppb

Anzac - April 2014

Concentration Ranges (ppb)	Wind Direction																
	N	NNE	NE	ENE	E	ESE	SE	SSE	S	SSW	SW	WSW	W	WNW	NW	NNW	**Totals**
0 - 20	26	18	22	29	80	92	98	66	12	23	19	17	45	61	30	39	677
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	26	18	22	29	80	92	98	66	12	23	19	17	45	61	30	39	677

Total Number of Valid Hours: 677

Total Number of Hours: 720

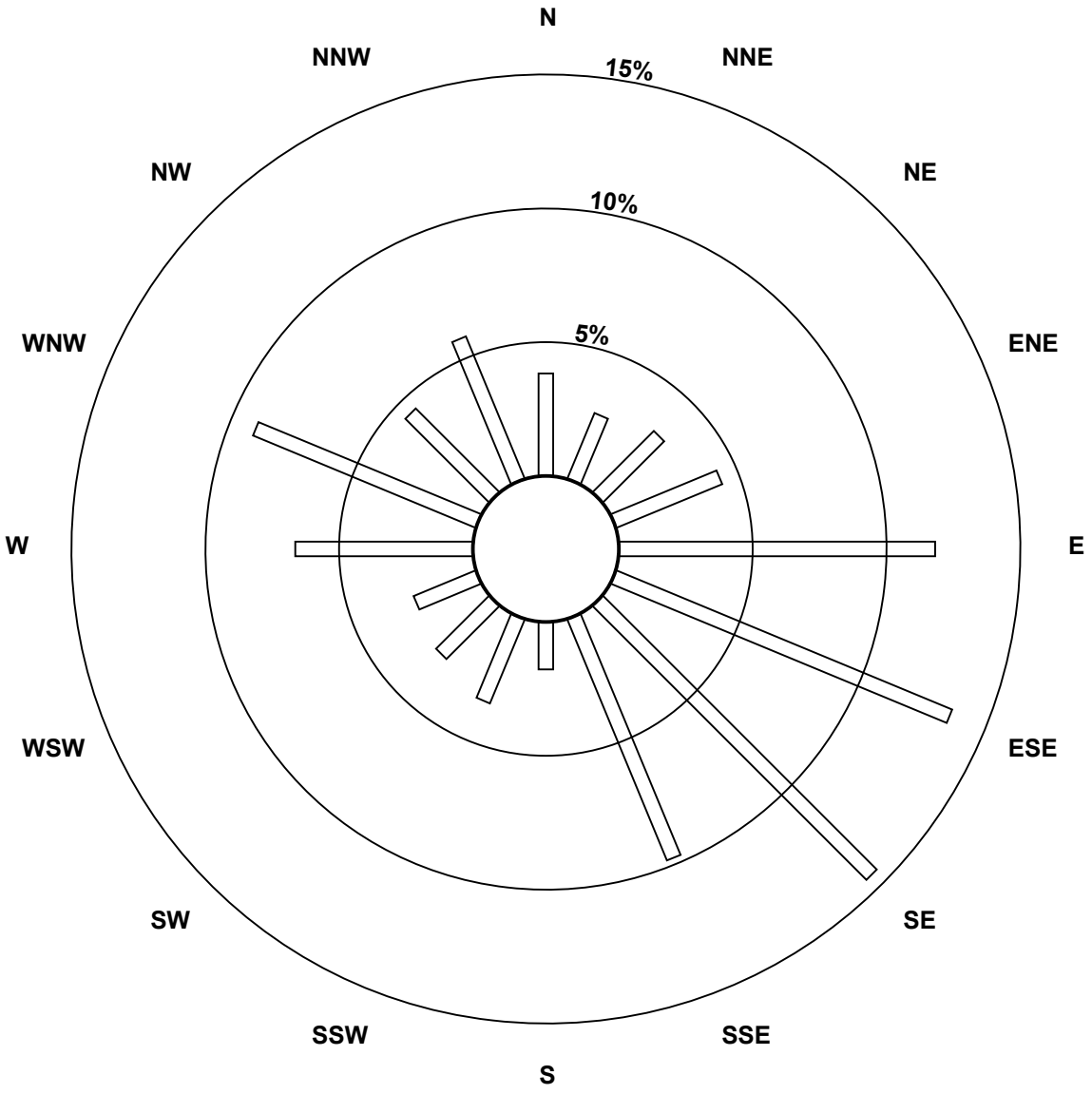
AURORA ATMOSPHERICS INC.

Wood Buffalo Environmental Association

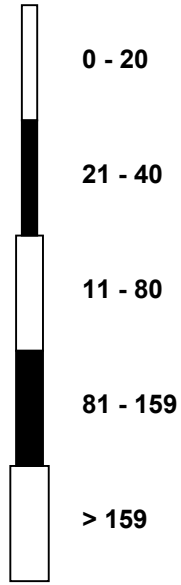
Wind Rose Apr 2014

Nitrogen Dioxide (NO_2) - ppb

Anzac (AMS 14)



Classes (ppb)



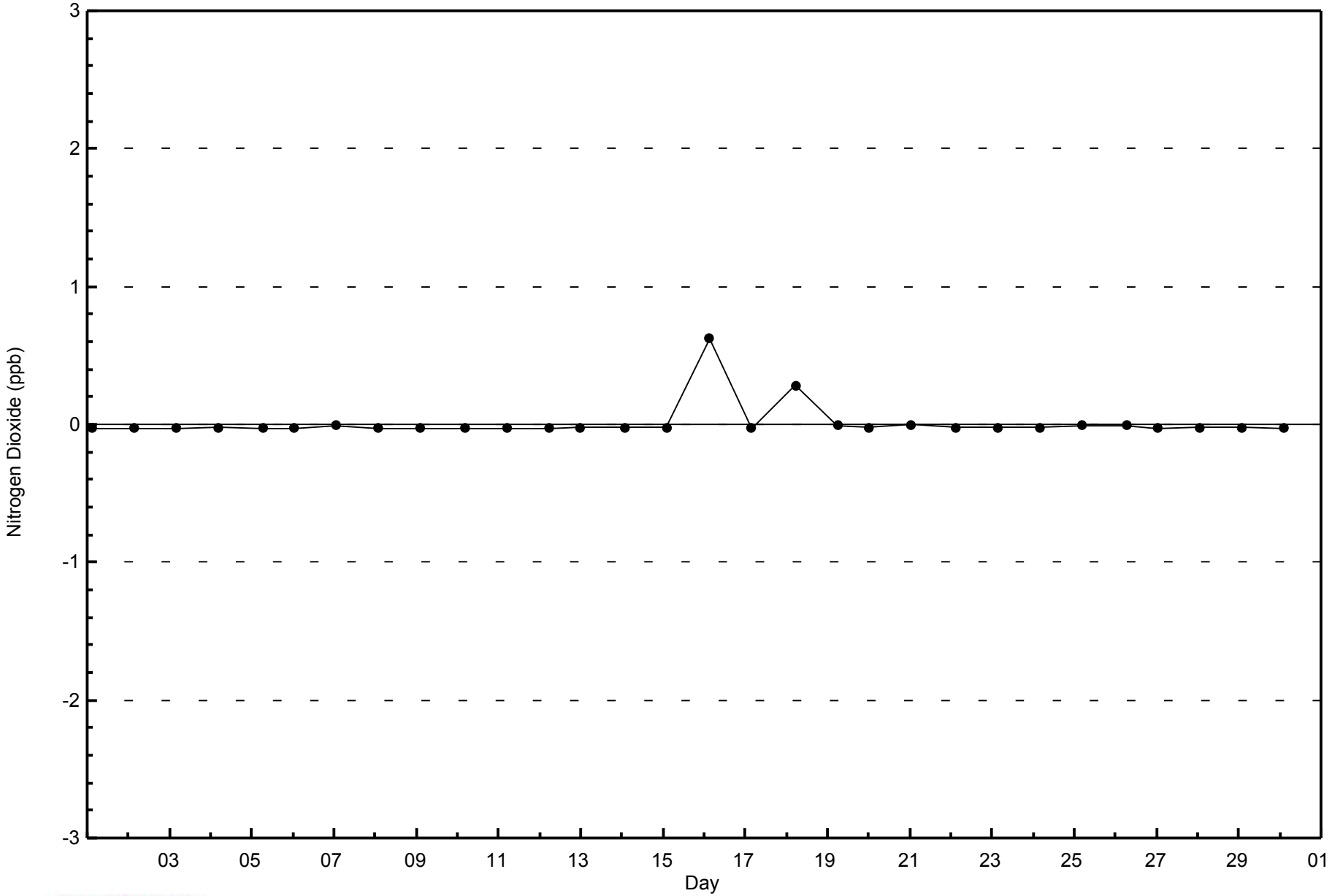
Total Number of Valid Hours: 677

WBEA NETWORK

Zero Responses

Nitrogen Dioxide (NO_2) - ppb

Anzac - April 2014



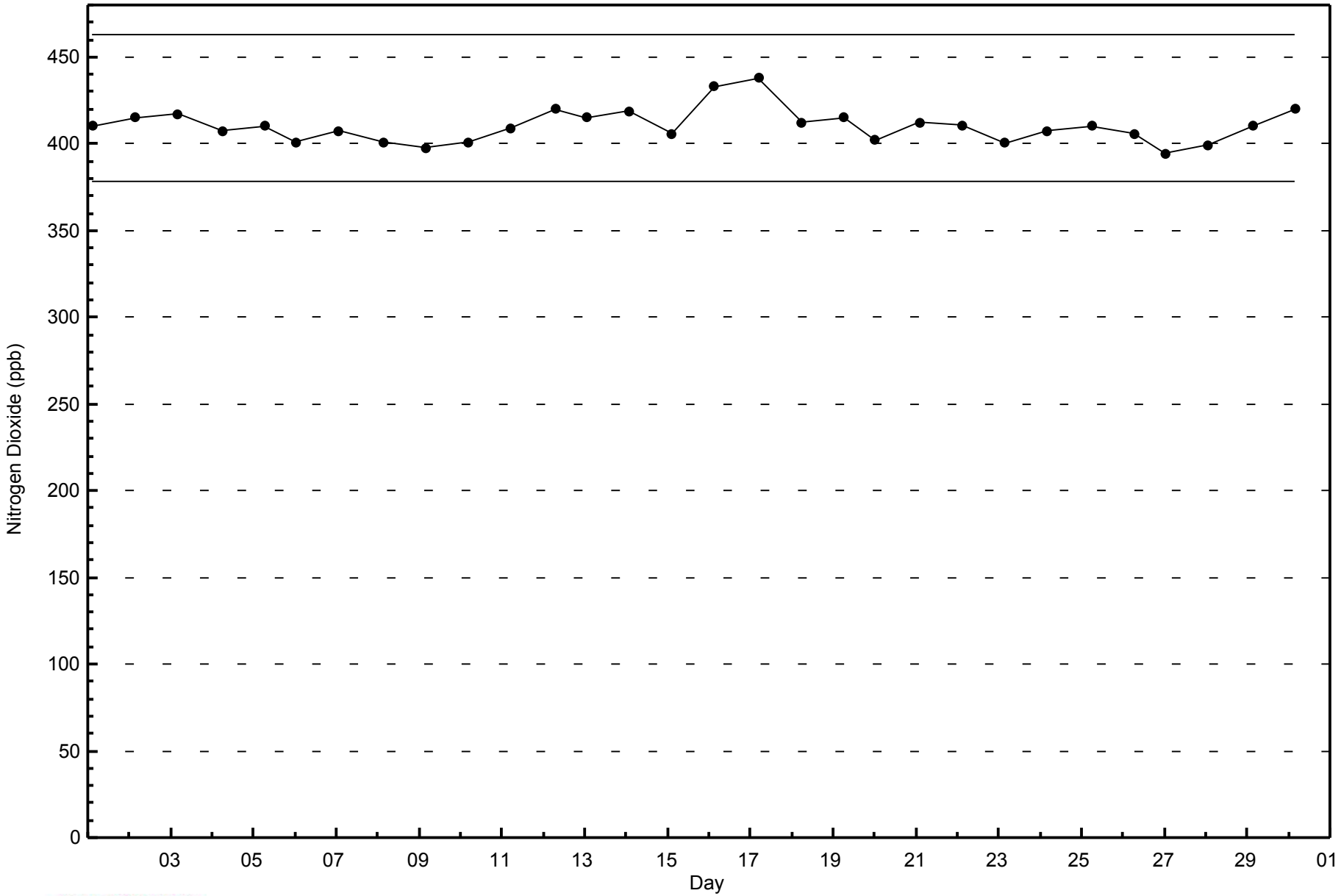
AURORA ATMOSPHERICS INC.

WBEA NETWORK

Span Responses

Nitrogen Dioxide (NO_2) - ppb

Anzac - April 2014



AURORA ATMOSPHERICS INC.

Wood Buffalo Environmental Association

Summary of Hour Averages

Nitrogen Oxides (NO_X) - ppb

Anzac - April 2014

Maximum Value: 20 ppb on Apr 7 18:00

Maximum Daily Average: 4.2 ppb on Apr 7

Minimum Value: 1 ppb on Apr 4 03:00

Minimum Daily Average: 0.9 ppb on Apr 15

Maximum Diurnal Average: 3.2 ppb at hour 6

Minimum Diurnal Average: 1.4 ppb at hour 24

Monthly Average: 2.1 ppb

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

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-Apr	2	2	Z	3	3	2	2	4	7	3	5	7	5	3	3	3	3	2	2	2	5	1	1	1	3.1	7
2-Apr	1	1	2	Z	1	1	7	1	1	2	2	7	4	2	1	3	5	6	6	6	6	5	2	1	3.1	7
3-Apr	3	1	1	1	Z	1	1	1	1	1	1	3	5	4	6	3	3	2	1	4	1	5	2	1	2.1	6
4-Apr	1	2	1	1	2	Z	2	2	2	3	3	3	3	3	3	3	5	2	1	1	1	2	1	1	2.0	5
5-Apr	2	4	6	5	4	7	Z	5	2	2	1	1	3	3	2	4	10	1	1	2	2	2	3	1	3.2	10
6-Apr	Z	4	1	1	2	2	3	2	5	3	4	6	4	12	3	4	2	2	2	1	1	4	2	1	3.1	12
7-Apr	1	Z	2	1	1	1	2	2	2	2	2	6	4	1	5	12	6	20	19	1	1	1	1	1	4.2	20
8-Apr	1	2	Z	5	6	2	2	2	2	2	1	1	1	1	3	1	1	3	11	2	1	1	1	1	2.2	11
9-Apr	1	1	1	Z	1	1	1	2	1	1	1	1	1	1	1	1	2	1	3	3	1	1	1	1	1.1	3
10-Apr	1	2	1	1	Z	8	5	2	2	2	2	2	1	1	1	1	1	2	1	1	1	1	1	1	1.8	8
11-Apr	1	1	1	2	1	Z	1	1	1	1	1	1	1	1	1	1	2	1	1	1	1	1	1	1	0.9	2
12-Apr	2	4	6	6	5	7	Z	3	2	2	2	1	1	1	1	1	1	2	4	2	2	3	1	1	2.5	7
13-Apr	Z	1	1	1	9	7	4	6	8	7	7	5	5	4	4	4	3	3	3	3	3	2	1	3	4.1	9
14-Apr	3	Z	3	3	2	3	8	3	3	3	3	3	3	3	4	3	2	2	2	2	2	2	3	2	2.9	8
15-Apr	1	1	Z	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	2	1	0.9	2
16-Apr	1	1	1	Z	3	1	1	1	1	1	1	2	2	2	1	1	1	1	1	1	1	1	8	2	1.5	8
17-Apr	1	1	3	9	Z	5	3	C	C	C	C	C	2	1	1	2	2	1	1	1	1	1	2	3	2.2	9
18-Apr	5	1	2	2	2	Z	1	1	1	1	1	2	1	1	1	2	1	1	2	1	4	1	1	1	1.5	5
19-Apr	1	1	1	1	6	2	Z	2	2	2	3	2	2	2	2	5	3	1	2	1	2	3	4	1	2.3	6
20-Apr	Z	1	2	2	3	7	5	5	5	3	4	3	3	3	4	4	4	2	1	1	1	3	6	4	3.3	7
21-Apr	3	Z	2	1	1	3	5	11	2	2	1	1	1	1	1	3	3	2	2	1	1	2	1	1	2.2	11
22-Apr	1	1	Z	3	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1.0	3
23-Apr	1	1	1	Z	1	4	1	1	1	1	1	1	1	1	1	1	1	1	1	1	3	1	1	1	1.1	4
24-Apr	1	1	1	2	Z	1	1	1	1	1	1	1	1	1	1	1	1	3	1	1	1	4	1	1	1.2	4
25-Apr	1	1	1	2	1	Z	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	3	1.1	3
26-Apr	1	1	1	3	3	1	Z	2	1	3	1	2	1	1	1	1	1	1	1	1	1	1	3	3	1.5	3
27-Apr	Z	3	3	1	1	1	1	1	3	1	1	1	1	1	1	1	1	1	1	1	1	2	1	1	1.2	3
28-Apr	1	Z	1	3	1	2	3	3	4	3	2	1	1	1	1	1	2	2	1	6	1	1	1	1	1.9	6
29-Apr	1	2	Z	2	1	2	4	6	7	2	1	1	1	1	1	1	1	1	2	1	1	1	1	1	1.8	7
30-Apr	5	12	7	Z	4	10	2	3	3	2	1	1	1	1	1	1	3	3	2	2	2	1	1	1	3.0	12
	1.6	2.0	2.0	2.4	2.6	3.2	2.6	2.5	2.4	1.9	1.9	2.3	2.1	2.0	1.9	2.3	2.4	2.4	2.5	1.7	1.6	1.8	1.9	1.4	Diurnal Average	
	5	12	7	9	9	10	8	11	8	7	7	7	5	12	6	12	10	20	19	6	6	5	8	4	Diurnal Maximum	

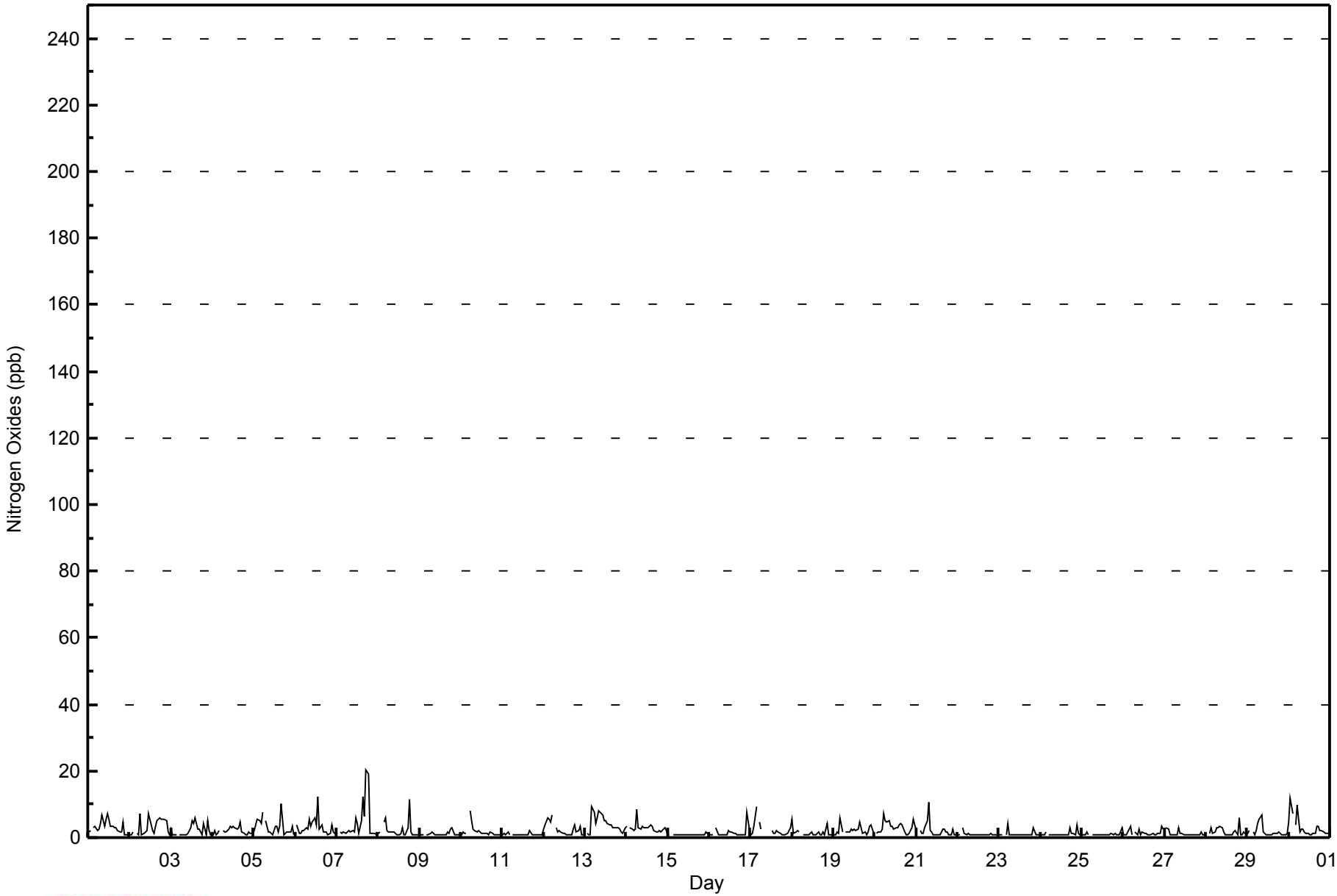
Z - zerospan C - Calibration

WBEA NETWORK

Hourly Averages

Nitrogen Oxides (NO_X) - ppb

Anzac - April 2014



AURORA ATMOSPHERICS INC.

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

Concentration Ranges (ppb)	Wind Direction																
	N	NNE	NE	ENE	E	ESE	SE	SSE	S	SSW	SW	WSW	W	WNW	NW	NNW	**Totals**
0 - 20	26	18	22	29	80	92	98	66	12	23	19	17	45	61	30	39	677
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	26	18	22	29	80	92	98	66	12	23	19	17	45	61	30	39	677

Total Number of Valid Hours: 677

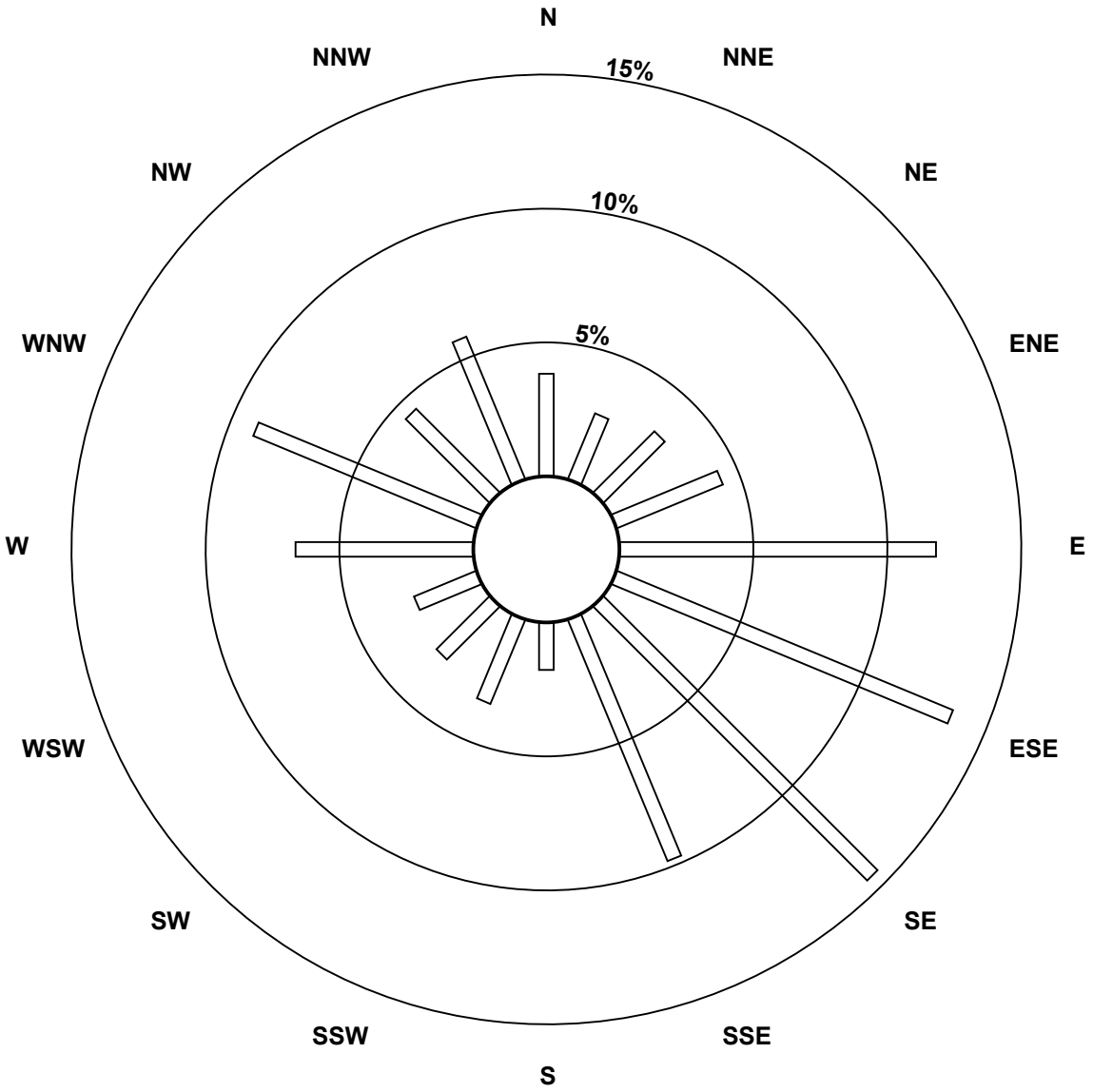
Total Number of Hours: 720

Wood Buffalo Environmental Association

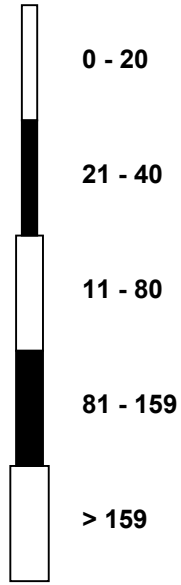
Wind Rose Apr 2014

Nitrogen Oxides (NO_X) - ppb

Anzac (AMS 14)



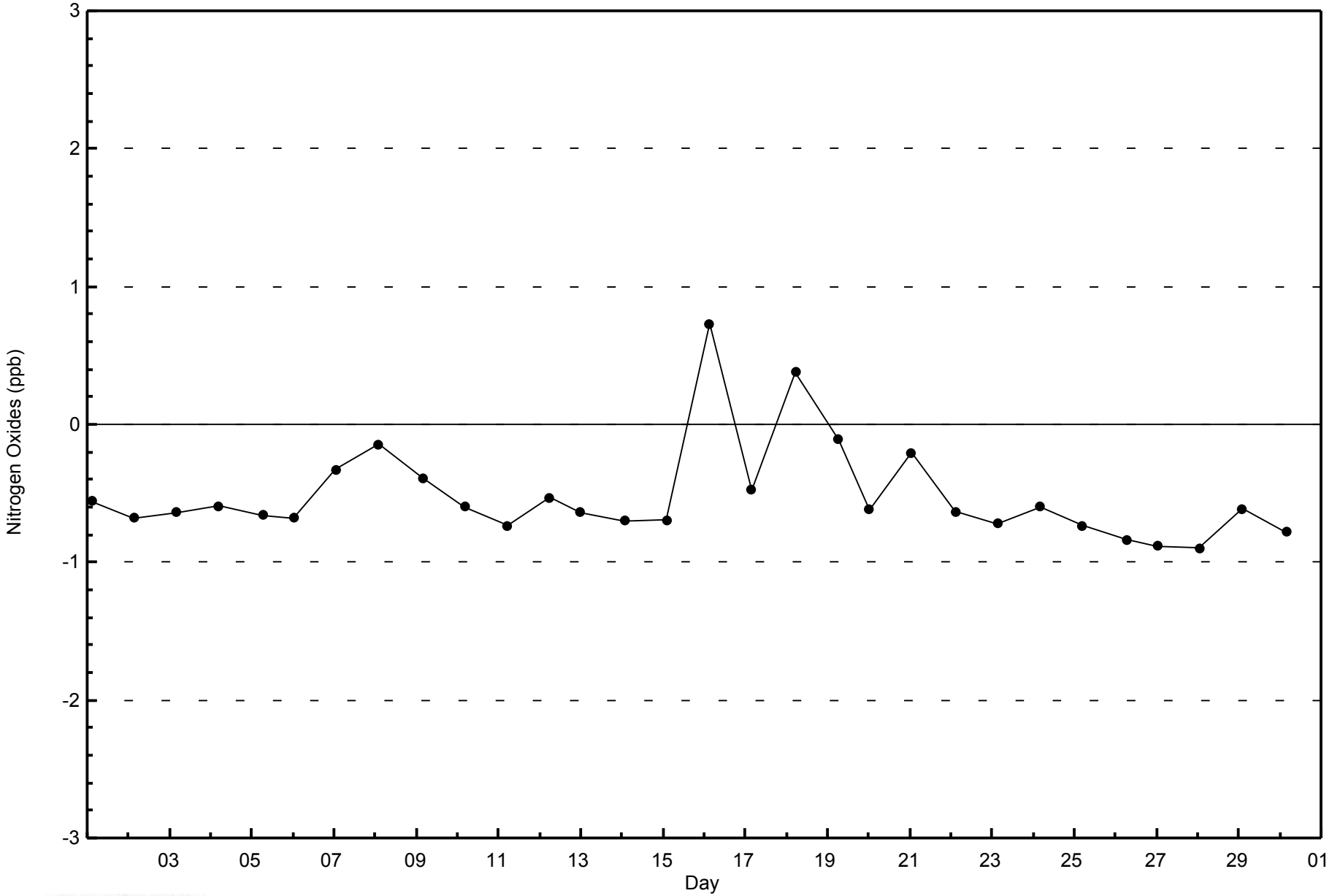
Classes (ppb)



Total Number of Valid Hours: 677

Wood Buffalo Environmental Association
Zero Responses

Nitrogen Oxides (NO_X) - ppb
Anzac - April 2014



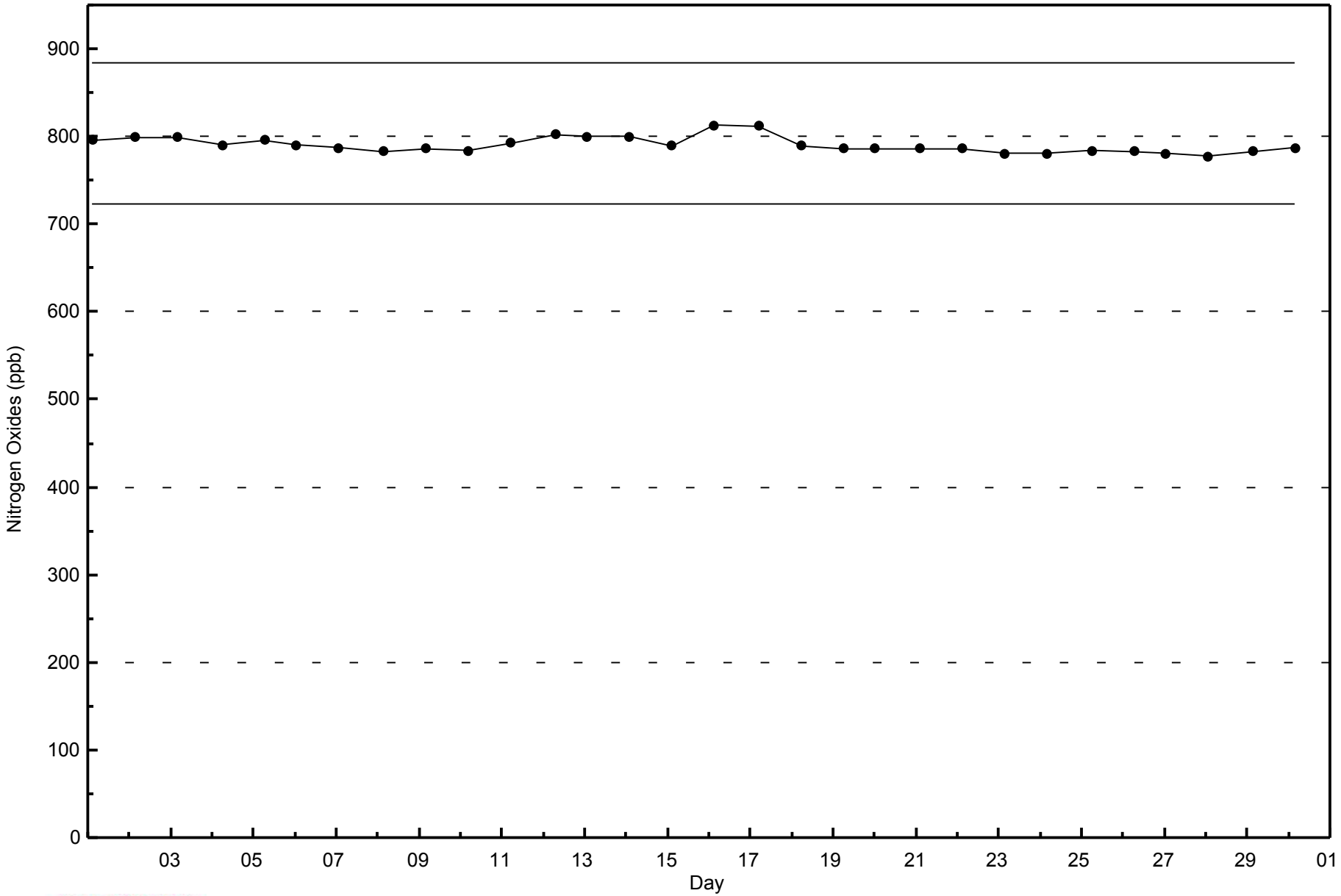
AURORA
ATMOSPHERICS INC.

WBEA NETWORK

Span Responses

Nitrogen Oxides (NO_X) - ppb

Anzac - April 2014



AURORA ATMOSPHERICS INC.

Wood Buffalo Environmental Association

Summary of Hour Averages

Ozone (O_3) - ppb

Anzac - April 2014

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

Maximum Value: 55 ppb on Apr 30 18:00

Maximum Daily Average: 44.8 ppb on Apr 23

Minimum Value: 3 ppb on Apr 29 06:00

Minimum Daily Average: 21.0 ppb on Apr 28

Maximum Diurnal Average: 42.6 ppb at hour 16

Minimum Diurnal Average: 28.1 ppb at hour 6

Monthly Average: 37.4 ppb

Percentiles: $P_1 = 4$ $P_{10} = 25$ $Q_1 = 33$ Median = 40 $Q_3 = 44$ $P_{90} = 46$ $P_{99} = 51$

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-Apr	40	40	Z	37	35	29	26	31	37	38	38	38	40	41	40	41	41	43	42	35	35	38	39	36	37.5	43
2-Apr	38	36	30	Z	29	30	34	35	36	37	38	36	40	40	41	36	30	27	25	23	22	23	31	33	32.7	41
3-Apr	31	30	27	26	Z	21	22	22	24	30	33	34	35	36	38	39	39	40	39	39	39	35	38	40	32.9	40
4-Apr	41	42	44	44	44	Z	45	45	43	41	39	37	36	37	39	43	43	42	40	40	39	38	39	39	40.8	45
5-Apr	40	38	35	29	21	22	Z	33	41	43	45	45	46	46	47	47	47	48	44	40	40	42	41	43	40.1	48
6-Apr	Z	41	44	41	43	43	42	41	41	41	41	41	42	43	44	44	45	45	45	43	30	36	40	36	41.5	45
7-Apr	30	Z	35	42	42	43	41	39	40	41	44	43	45	45	44	43	44	40	43	47	45	45	41	39	41.7	47
8-Apr	39	39	Z	37	32	39	39	39	38	38	39	41	42	42	42	43	42	41	41	44	49	52	51	49	41.5	52
9-Apr	48	48	47	Z	46	46	45	44	44	44	41	38	37	43	44	44	46	45	44	43	43	42	43	42	43.8	48
10-Apr	41	40	41	40	Z	21	24	31	33	34	36	39	41	41	43	44	45	43	43	41	42	42	41	42	38.5	45
11-Apr	42	43	41	39	39	Z	40	40	40	39	39	39	39	38	39	39	42	40	39	42	41	38	37	36	39.6	43
12-Apr	33	28	24	20	20	19	Z	36	38	39	40	41	40	39	39	41	41	39	36	36	35	33	37	36	34.4	41
13-Apr	Z	32	31	27	18	19	24	32	32	34	35	38	38	41	42	44	44	44	43	39	38	41	40	39	35.4	44
14-Apr	38	Z	39	35	32	38	38	43	44	43	43	45	46	48	51	50	49	49	48	47	46	45	44	44	43.7	51
15-Apr	44	43	Z	43	43	43	42	42	43	43	44	45	46	45	45	45	45	46	47	47	45	45	43	42	44.2	47
16-Apr	41	40	41	Z	43	44	45	44	44	43	43	42	43	44	44	44	44	44	44	44	43	43	37	40	42.9	45
17-Apr	41	40	36	33	Z	36	39	40	42	45	46	47	47	47	47	47	47	48	47	46	46	45	44	42	43.4	48
18-Apr	41	44	44	44	43	Z	42	43	43	42	42	41	41	41	40	40	40	38	37	36	33	33	31	29	39.5	44
19-Apr	26	24	24	24	19	19	Z	23	26	29	28	30	31	34	35	34	35	36	36	35	33	31	29	30	29.2	36
20-Apr	Z	27	22	16	7	5	5	18	24	29	31	40	44	48	48	48	48	48	47	43	35	34	32	36	31.9	48
21-Apr	37	Z	34	32	28	23	13	18	39	43	45	44	45	44	45	46	47	48	47	39	32	33	31	41	37.2	48
22-Apr	43	42	Z	30	29	35	37	41	C	C	C	C	49	50	49	49	49	49	48	47	46	45	45	44	43.5	50
23-Apr	44	44	44	Z	44	43	44	44	44	44	45	45	48	49	50	49	46	46	45	44	43	43	43	43	44.8	50
24-Apr	41	40	40	40	Z	39	39	39	39	38	39	38	38	39	38	38	40	39	38	35	33	32	32	33	37.6	41
25-Apr	34	33	33	36	36	Z	36	36	38	39	38	39	40	40	40	40	40	40	40	38	37	35	36	35	37.4	40
26-Apr	36	34	31	29	26	25	Z	26	29	29	30	32	37	40	40	40	39	38	38	38	36	35	32	30	33.5	40
27-Apr	Z	28	29	29	28	28	29	28	25	28	28	28	29	29	29	29	28	27	26	24	22	20	19	18	26.5	29
28-Apr	16	Z	16	9	4	10	13	15	16	18	21	24	27	29	29	31	30	28	27	25	26	24	23	22	21.0	31
29-Apr	20	16	Z	7	5	3	3	31	37	41	42	44	45	46	46	46	45	44	44	35	26	20	18	13	29.4	46
30-Apr	10	4	4	Z	8	8	18	33	36	45	47	48	50	50	54	55	54	55	54	49	45	35	33	35	36.1	55
	35.9	35.2	33.5	31.6	29.4	28.1	31.7	34.5	36.4	37.8	38.6	39.5	40.8	41.8	42.5	42.6	42.5	42.0	41.2	39.5	37.5	36.8	36.4	36.2	Diurnal Average	
	48	48	47	44	46	46	45	45	44	45	47	48	50	50	54	55	54	55	54	49	49	52	51	49	Diurnal Maximum	

Z - zerospan C - Calibration

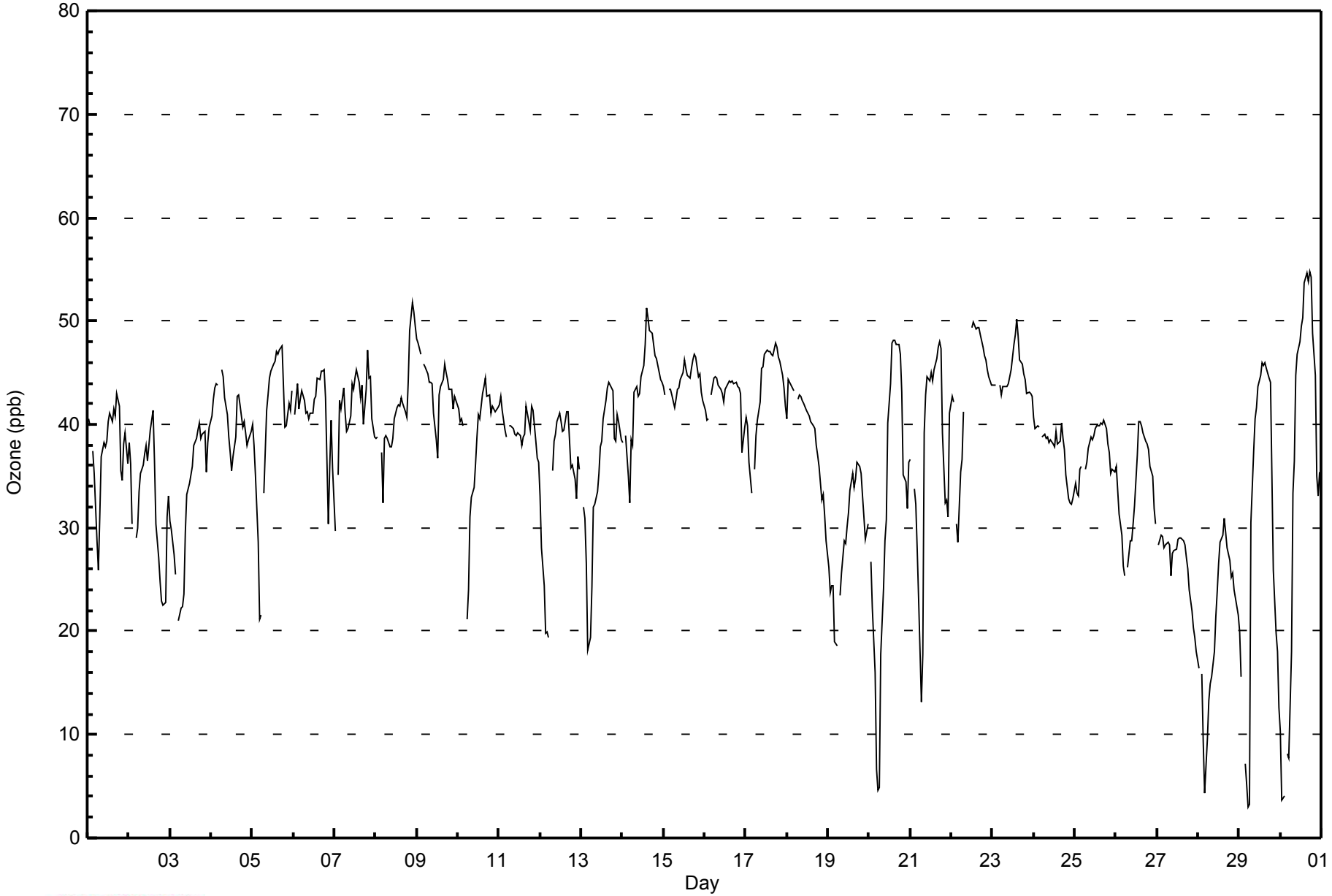
Alberta Ambient Air Quality Objectives (AAAQO): 1-hr 82 ppb

WBEA NETWORK

Hourly Averages

Ozone (O_3) - ppb

Anzac - April 2014



AURORA ATMOSPHERICS INC.

Concentration Ranges (ppb)	Number of Hours	%	Cumulative %
0 - 20	41	5.98	5.98
21 - 50	637	92.86	98.83
51 - 82	8	1.17	100.00
> 83	0	0.00	100.00

Total Number of Valid Hours: 686

Total Number of Hours: 720

WBEA NETWORK

Frequency Distribution

Ozone (O_3) - ppb

Anzac - April 2014

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	0	0	0	1	3	8	8	2	5	5	2	4	1	1	1	41
21 - 50	26	18	22	29	76	88	95	58	10	12	14	15	39	60	29	38	629
51 - 82	0	0	0	0	0	0	0	0	0	6	0	0	2	0	0	0	8
> 83	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Totals	26	18	22	29	77	91	103	66	12	23	19	17	45	61	30	39	678

Total Number of Valid Hours: 678

Total Number of Hours: 720

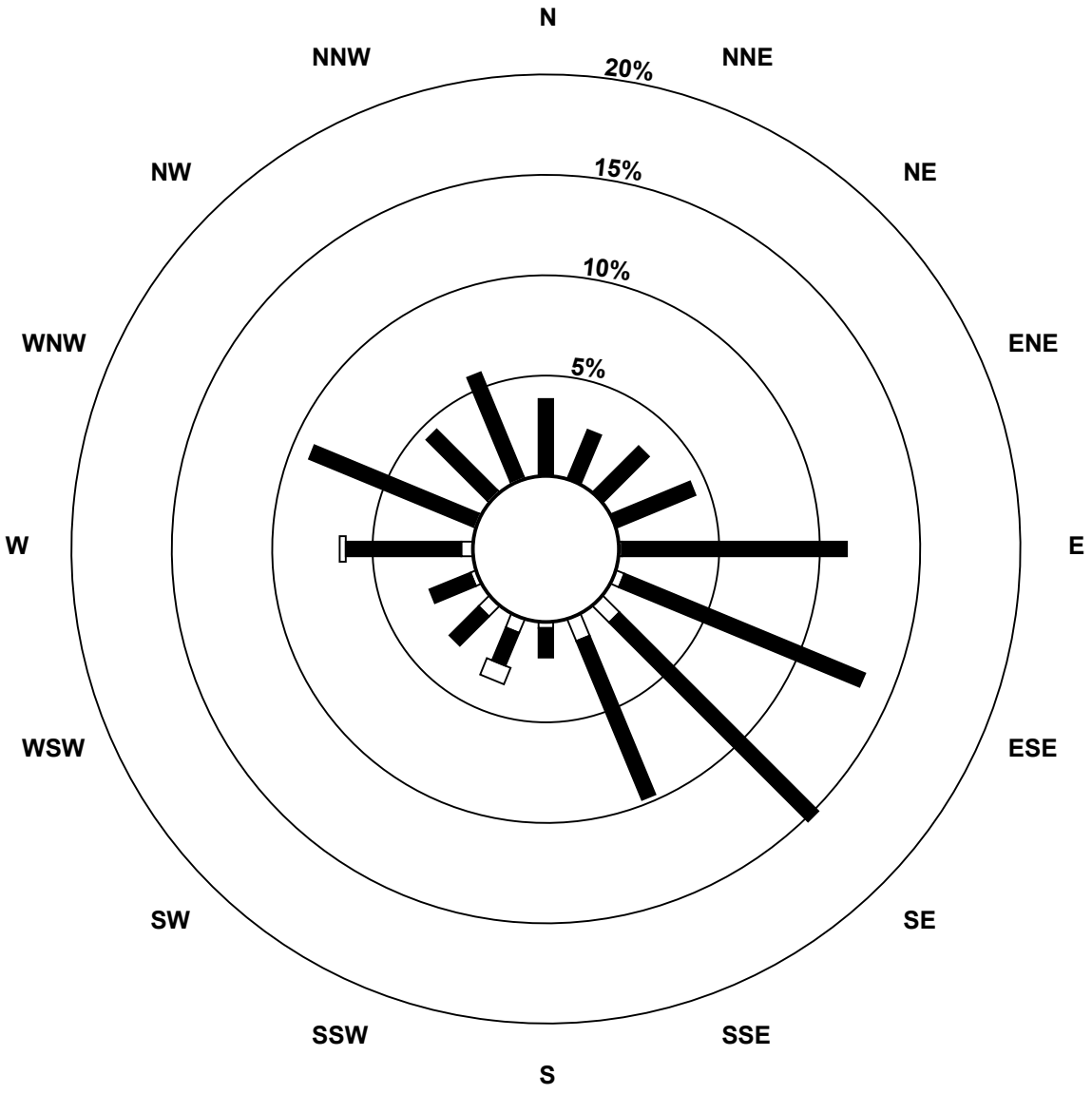
AURORA ATMOSPHERICS INC.

Wood Buffalo Environmental Association

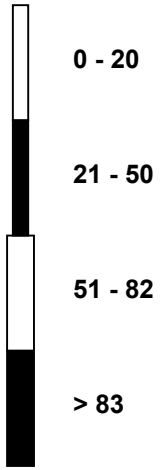
Wind Rose Apr 2014

Ozone (O_3) - ppb

Anzac (AMS 14)



Classes (ppb)



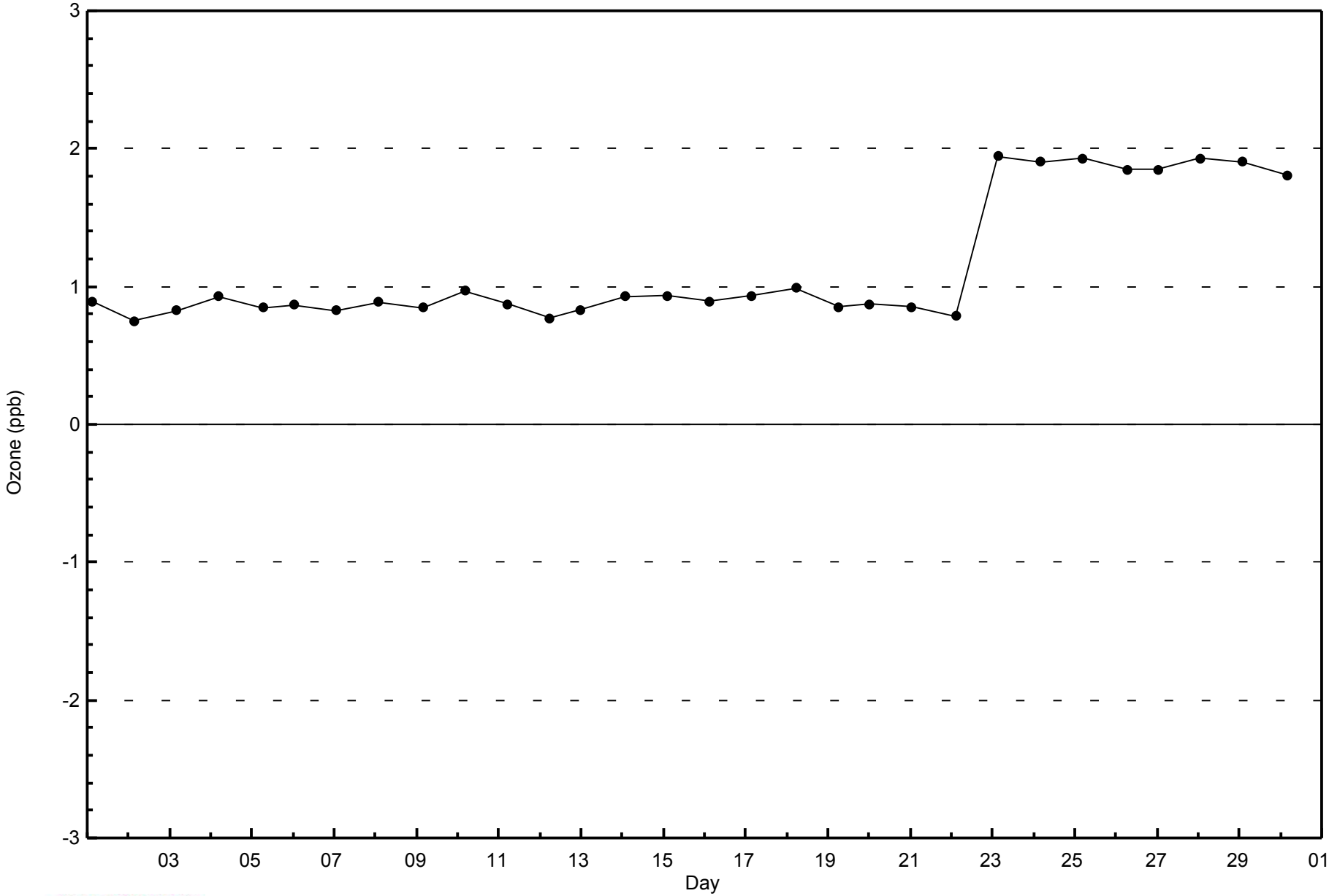
Total Number of Valid Hours: 678

WBEA NETWORK

Zero Responses

Ozone (O_3) - ppb

Anzac - April 2014



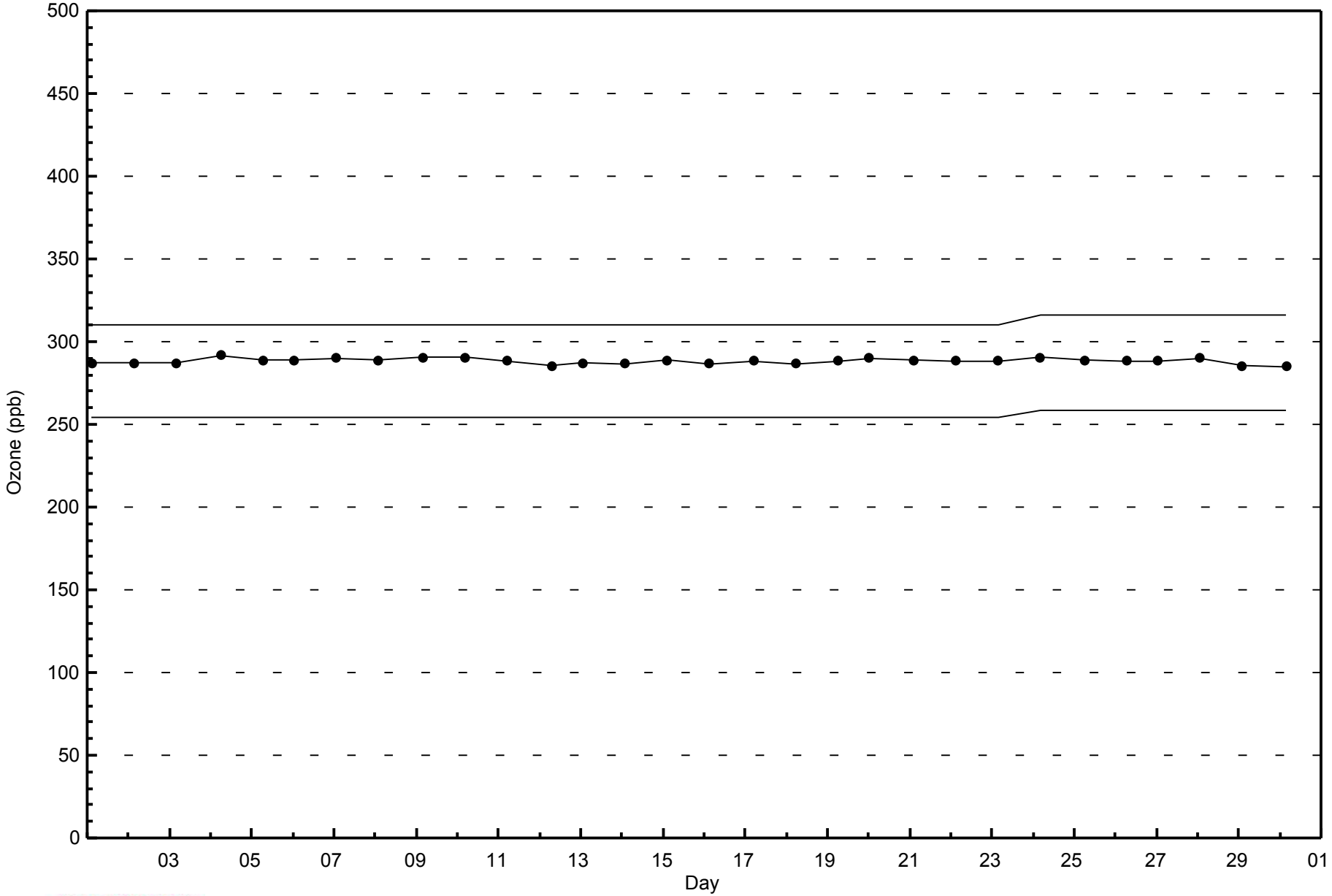
AURORA
ATMOSPHERICS INC.

WBEA NETWORK

Span Responses

Ozone (O_3) - ppb

Anzac - April 2014



AURORA ATMOSPHERICS INC.

Wood Buffalo Environmental Association

Summary of Hour Averages

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

Anzac - April 2014

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

Maximum Value: 48.7 $\mu g/m^3$ on Apr 6 05:00

Maximum Daily Average: 11.8 $\mu g/m^3$ on Apr 6

Minimum Value: 0.1 $\mu g/m^3$ on Apr 7 14:00

Minimum Daily Average: 1.2 $\mu g/m^3$ on Apr 7

Maximum Diurnal Average: 7.0 $\mu g/m^3$ at hour 5

Minimum Diurnal Average: 2.5 $\mu g/m^3$ at hour 14

Monthly Average: 4.39 $\mu g/m^3$

Percentiles: $P_1 = 0.7$ $P_{10} = 1.7$ $Q_1 = 2.5$ Median = 3.6 $Q_3 = 5.1$ $P_{90} = 7.2$ $P_{99} = 23.5$

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	Daily
	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24	Average	Maximum
1-Apr	6.8	8.7	10.0	9.6	9.1	7.5	8.3	10.4	5.4	4.5	5.6	4.8	2.7	1.8	2.3	2.9	4.1	3.3	3.7	4.2	4.7	2.4	2.0	1.9	5.3	10.4
2-Apr	2.6	3.7	3.5	4.2	3.8	3.7	4.2	3.0	2.0	1.7	1.7	2.5	2.8	2.4	2.5	5.1	6.4	9.9	11.2	9.9	6.3	4.0	2.9	2.5	4.3	11.2
3-Apr	2.9	2.8	2.7	2.6	2.7	2.5	2.8	2.7	1.8	1.8	1.7	1.9	2.1	2.2	2.8	2.8	3.2	3.3	2.3	3.2	3.5	4.0	3.9	3.6	2.7	4.0
4-Apr	5.0	7.5	7.3	8.5	11.8	14.5	13.3	11.4	9.3	7.4	7.2	7.8	7.8	7.4	9.8	10.7	8.5	4.4	3.1	3.1	3.5	3.7	3.4	3.5	7.5	14.5
5-Apr	3.7	4.2	4.4	4.5	4.4	6.0	5.1	3.6	1.8	1.4	1.4	1.5	1.6	2.0	2.0	4.4	40.7	6.7	11.1	2.8	3.0	2.8	3.0	2.5	5.2	40.7
6-Apr	3.5	19.0	34.7	24.9	48.7	46.1	29.7	17.7	19.3	7.5	6.6	3.2	2.2	1.5	1.7	1.6	1.6	1.6	1.5	1.5	2.8	2.5	1.7	1.8	11.8	48.7
7-Apr	1.9	1.7	1.8	1.4	1.3	1.1	1.2	1.1	1.0	0.9	0.7	0.8	0.4	0.1	0.1	0.3	0.3	0.9	1.5	2.2	2.1	2.2	1.8	1.8	1.2	2.2
8-Apr	3.7	4.9	4.7	4.4	3.8	3.4	2.8	2.5	2.4	2.0	1.7	1.7	1.5	1.3	1.4	1.2	0.9	1.0	1.5	1.9	1.3	1.3	1.3	1.2	2.2	4.9
9-Apr	1.3	1.2	2.0	2.1	1.8	1.9	1.9	2.0	1.8	2.1	2.6	3.1	3.3	2.6	1.5	0.8	0.5	0.2	1.2	1.8	2.1	2.6	4.0	3.9	2.0	4.0
10-Apr	3.2	3.3	3.5	3.6	4.4	5.8	3.9	2.6	2.6	2.9	3.6	3.8	3.7	3.6	3.5	3.5	2.7	3.0	3.2	3.6	3.9	3.9	4.2	3.8	3.6	5.8
11-Apr	3.8	4.1	4.3	4.3	4.1	4.2	3.9	3.6	3.2	3.0	3.2	3.8	4.0	3.6	3.1	3.1	2.8	3.0	3.1	3.4	3.6	3.2	3.4	3.4	3.6	4.3
12-Apr	5.4	8.7	9.6	7.5	6.3	6.1	6.3	3.6	2.3	2.2	2.1	2.0	2.3	1.9	2.1	2.3	2.6	4.4	5.0	4.6	4.7	4.2	4.0	4.0	4.3	9.6
13-Apr	3.6	3.1	3.3	3.6	7.5	6.0	5.0	3.5	3.7	3.4	3.4	3.3	3.4	2.7	2.8	2.8	3.0	3.4	4.8	6.4	7.3	4.6	4.1	4.8	4.1	7.5
14-Apr	6.0	7.0	6.6	6.3	6.0	5.9	5.0	3.8	2.6	2.6	2.8	3.0	2.7	3.2	4.3	3.2	3.8	4.3	4.4	5.2	5.5	5.8	6.1	5.6	4.7	7.0
15-Apr	6.2	6.9	7.9	8.5	7.9	7.2	6.1	5.3	5.5	5.1	4.2	3.1	2.4	2.6	2.7	2.5	2.5	2.7	3.3	4.0	4.2	4.3	4.3	4.1	4.7	8.5
16-Apr	4.4	4.6	4.7	4.7	4.8	4.5	4.5	4.4	4.1	3.3	2.9	3.2	3.0	3.0	3.0	2.9	2.9	2.5	3.1	4.4	4.7	4.6	6.8	6.1	4.0	6.8
17-Apr	5.6	7.2	8.1	8.3	9.0	9.6	8.6	5.4	4.6	4.3	4.4	3.8	3.1	3.1	3.1	3.5	4.0	4.5	6.3	7.1	8.0	8.1	7.7	8.1	6.1	9.6
18-Apr	9.5	8.3	8.2	7.1	6.3	6.1	5.9	5.5	4.8	4.2	3.4	3.1	2.9	2.8	3.0	3.2	3.2	3.8	4.4	3.8	3.4	2.9	2.6	2.5	4.6	9.5
19-Apr	4.7	6.5	6.9	7.2	7.5	6.8	7.8	6.7	3.6	2.6	2.9	2.5	2.4	2.2	2.0	2.2	1.9	1.9	2.8	3.8	4.4	4.8	5.1	4.9	4.3	7.8
20-Apr	5.5	6.4	6.3	5.8	5.6	5.5	5.3	5.0	4.5	3.1	3.1	2.3	1.9	1.6	1.5	2.3	3.0	2.7	2.1	2.6	5.8	6.9	7.0	7.4	4.3	7.4
21-Apr	6.6	5.9	6.1	6.5	6.3	6.7	7.2	5.8	2.3	1.5	0.8	0.7	0.7	0.8	0.9	1.8	1.7	1.7	3.1	3.8	4.9	6.6	6.7	7.9	4.0	7.9
22-Apr	7.2	6.8	6.4	7.4	7.0	6.8	5.4	3.5	2.8	2.6	2.1	1.8	1.5	1.4	1.3	1.8	1.8	2.1	3.0	3.6	4.6	5.4	5.6	5.8	4.1	7.4
23-Apr	6.8	7.4	6.7	5.9	5.9	6.1	5.2	4.5	4.4	4.0	3.6	3.2	3.1	2.9	3.1	3.1	2.6	2.5	3.0	3.7	4.2	4.3	4.3	4.8	4.4	7.4
24-Apr	5.6	6.4	6.5	6.1	5.8	5.6	5.3	5.1	4.7	4.8	4.4	4.0	3.8	4.4	4.5	4.3	4.5	4.5	4.6	4.8	4.6	4.3	4.0	3.4	4.8	6.5
25-Apr	3.8	3.9	4.0	4.3	3.8	3.7	3.9	3.8	3.8	4.4	3.9	2.6	2.3	2.2	2.2	2.4	2.1	2.2	2.5	2.7	2.8	2.8	2.7	2.7	3.1	4.4
26-Apr	3.2	3.9	4.1	3.6	3.9	3.7	3.3	3.0	2.6	2.4	2.2	2.3	2.5	2.7	3.2	3.4	3.0	2.7	2.8	2.6	2.8	2.4	2.3	2.4	3.0	4.1
27-Apr	2.4	3.0	3.1	3.5	4.0	3.6	2.5	1.9	2.3	1.7	1.8	1.9	1.9	1.9	1.8	1.8	1.8	1.8	1.9	1.9	1.9	1.9	1.8	1.9	2.2	4.0
28-Apr	2.0	2.9	3.4	4.1	3.7	4.8	6.2	4.4	5.5	4.6	3.5	2.5	1.7	1.4	1.3	1.5	1.6	2.0	2.6	2.9	3.2	3.6	4.8	4.4	3.3	6.2
29-Apr	3.9	5.5	5.7	4.6	4.0	4.7	4.2	3.7	4.6	1.7	1.3	1.1	1.3	1.2	1.1	1.6	1.4	1.8	5.4	11.1	5.7	26.0	32.0	13.8	6.1	32.0
30-Apr	15.8	12.8	12.3	9.8	8.4	4.6	2.7	2.6	M	M	2.6	3.5	2.8	3.1	4.3	5.2	5.0	5.1	5.2	5.0	6.5	5.9	5.5	5.1	6.1	15.8
	4.9	5.9	6.6	6.2	7.0	6.8	5.9	4.7	4.1	3.2	3.1	2.8	2.6	2.5	2.6	2.9	4.1	3.1	3.8	4.1	4.2	4.7	5.0	4.3	Diurnal Average	
	15.8	19.0	34.7	24.9	48.7	46.1	29.7	17.7	19.3	7.5	7.2	7.8	7.8	7.4	9.8	10.7	40.7	9.9	11.2	11.1	8.0	26.0	32.0	13.8	Diurnal Maximum	

M - Maintenance

Alberta Ambient Air Quality Objectives (AAAQO): 24-hr 30 $\mu g/m^3$

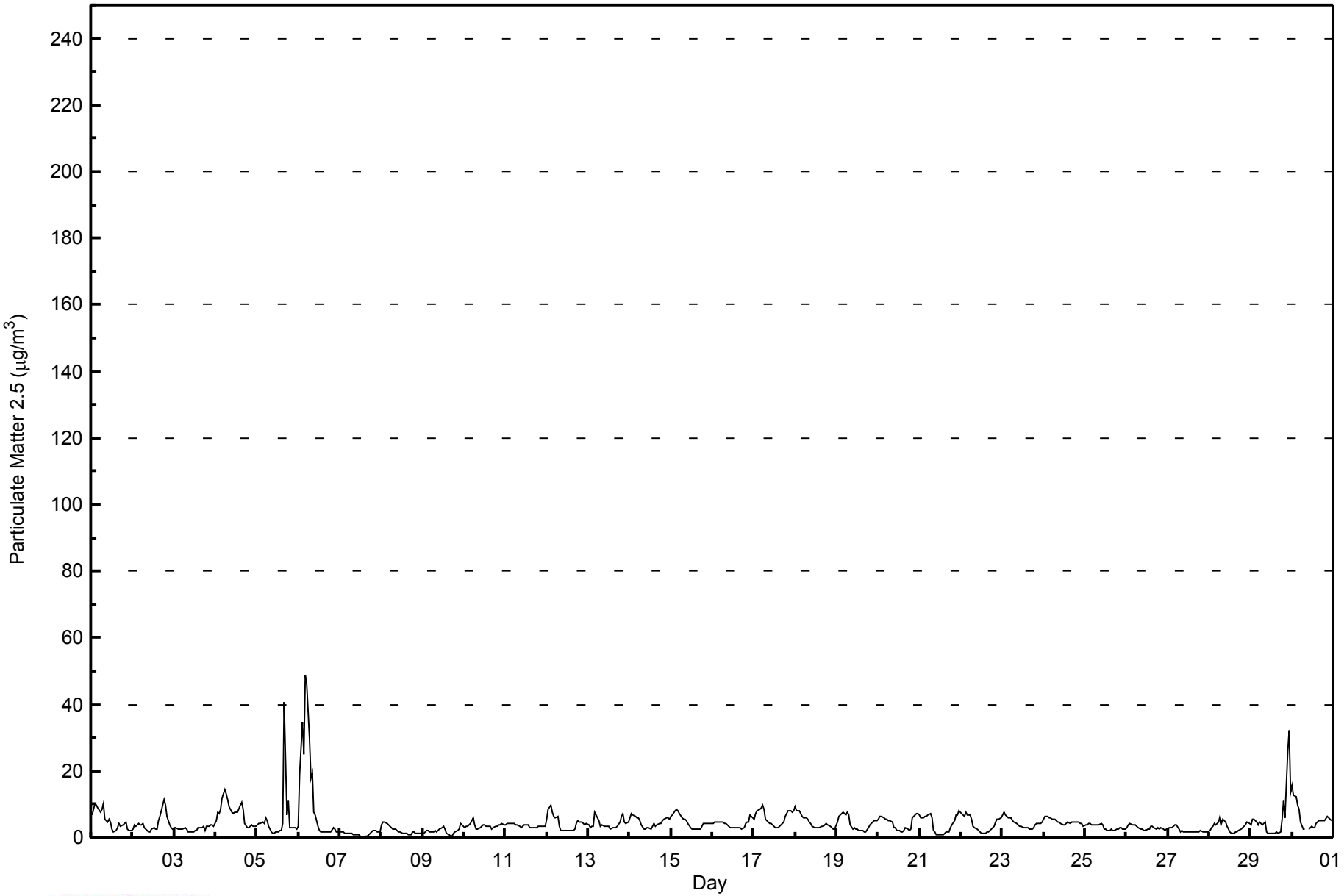
AURORA ATMOSPHERICS INC.

WBEA NETWORK

Hourly Averages

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

Anzac - April 2014



AURORA ATMOSPHERICS INC.

Concentration Ranges ($\mu g/m^3$)	Number of Hours	%	Cumulative %
1 - 5	542	75.49	75.49
6 - 15	144	20.06	95.54
16 - 25	5	0.70	96.24
26 - 80	7	0.97	97.21
> 81.0	0	0.00	97.21

Total Number of Valid Hours: 718

Total Number of Hours: 720

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

Anzac - April 2014

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**
1 - 5	28	17	21	25	63	82	77	38	7	13	12	10	37	49	19	36	534
6 - 15	0	1	1	5	24	11	30	26	3	7	11	4	4	6	8	2	143
16 - 25	0	0	0	0	0	0	1	3	0	1	0	0	0	0	0	0	5
26 - 80	0	0	0	0	0	0	0	3	2	1	1	0	0	0	0	0	7
> 81.0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Totals	28	18	22	30	87	93	108	70	12	22	24	14	41	55	27	38	689

Total Number of Valid Hours: 709

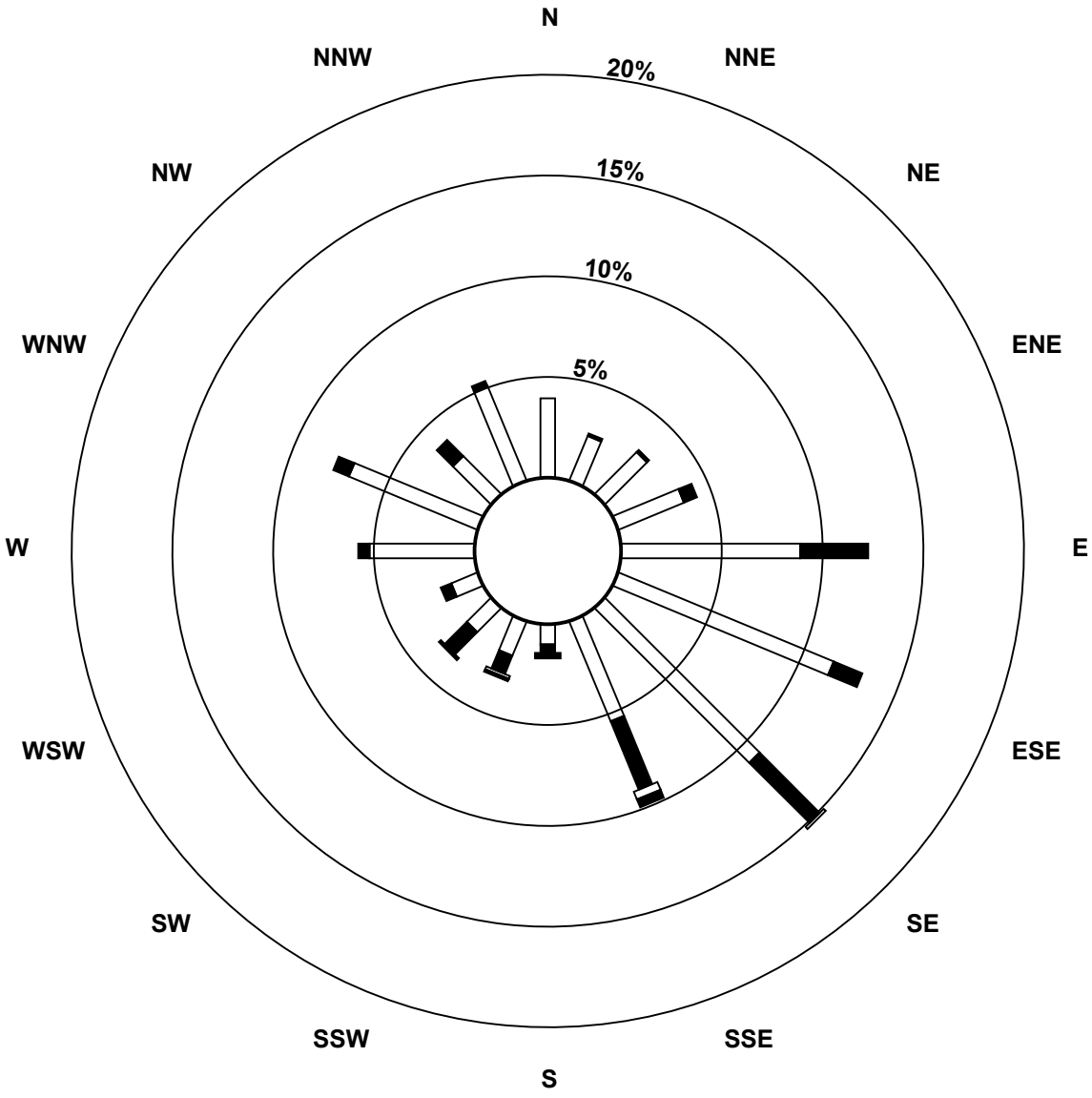
Total Number of Hours: 720

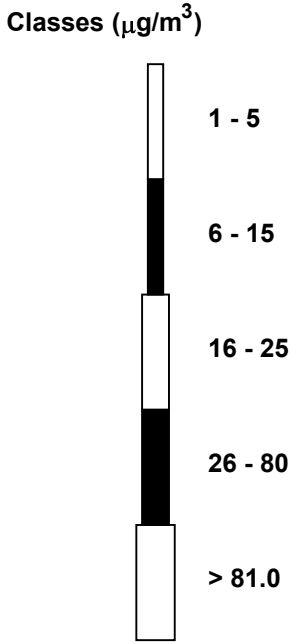
Wood Buffalo Environmental Association

Wind Rose Apr 2014

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

Anzac (AMS 14)





Total Number of Valid Hours: 709

Maximum Value: 19.9 C on Apr 30 16:00

Maximum Daily Average: 12.1 C on Apr 30

Minimum Value: -18.5 C on Apr 12 06:00

Minimum Daily Average: -9.5 C on Apr 2

Maximum Diurnal Average: 5.5 C at hour 16

Minimum Diurnal Average: -4.5 C at hour 6

Monthly Average: 0.71 C

Percentiles: P_1 = -16.6 P_{10} = -8.8 Q_1 = -3.5 Median = 0.8 Q_3 = 4.6 P_{90} = 9.7 P_{99} = 18.8

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

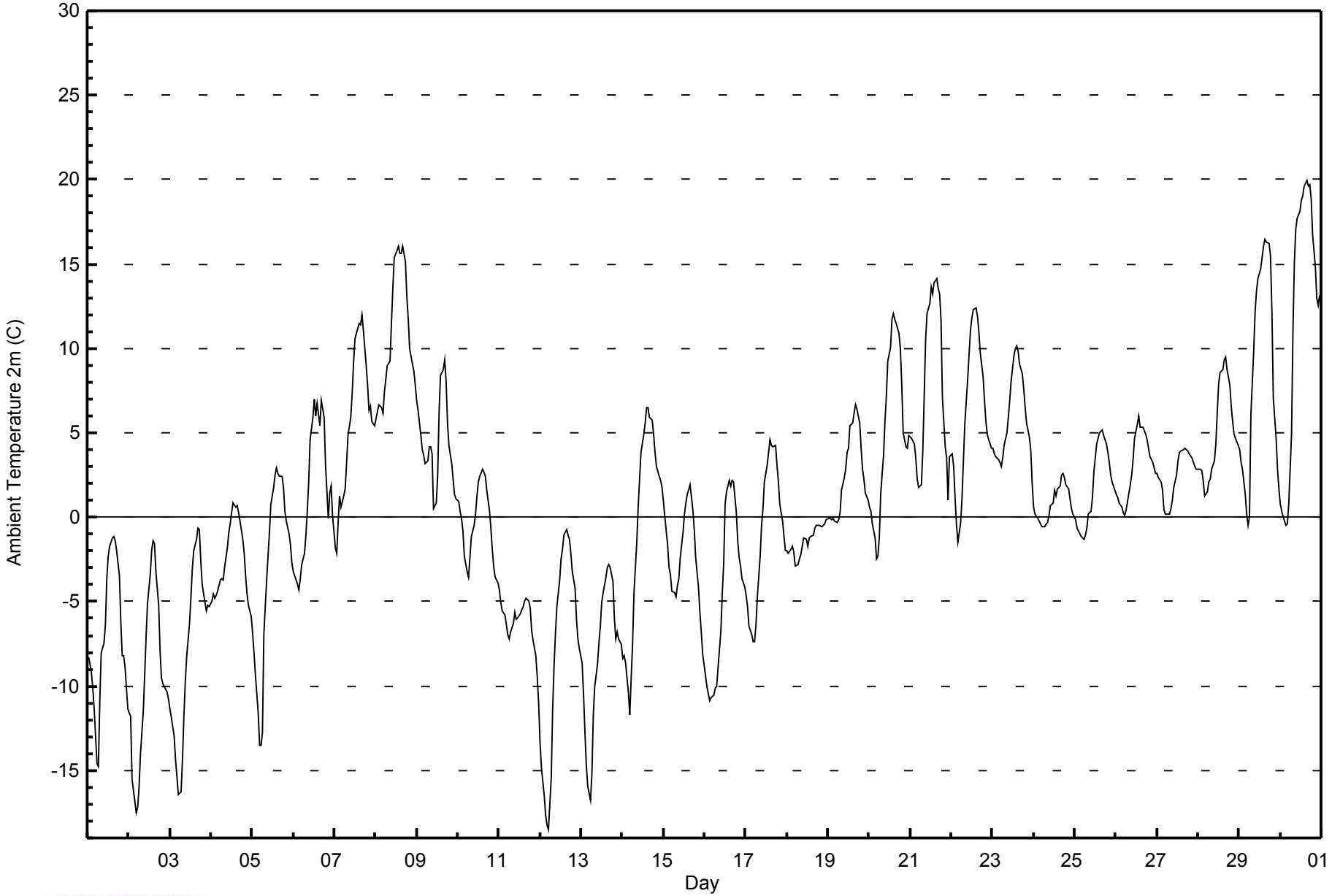
Day	Hourly Period Ending At (MST)																								Daily	Daily
	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24	Average	Maximum
1-Apr	-8.3	-8.7	-9.2	-10.1	-11.4	-14.6	-14.7	-10.9	-8.0	-7.5	-6.3	-3.6	-2.3	-1.7	-1.2	-1.2	-1.4	-2.0	-3.4	-6.2	-8.2	-8.2	-8.8	-11.4	-7.1	-1.2
2-Apr	-11.6	-11.7	-15.5	-16.8	-17.5	-17.2	-16.0	-14.0	-11.5	-9.4	-7.1	-5.2	-3.4	-2.0	-1.4	-1.6	-3.2	-5.2	-7.9	-9.5	-9.9	-10.2	-10.4	-10.8	-9.5	-1.4
3-Apr	-11.4	-11.9	-12.9	-14.3	-15.3	-16.4	-16.3	-14.3	-11.8	-9.7	-8.2	-6.3	-4.7	-3.1	-2.0	-1.3	-0.6	-0.7	-2.6	-3.9	-5.1	-5.5	-5.2	-5.3	-7.9	-0.6
4-Apr	-5.0	-4.5	-4.8	-4.7	-4.4	-3.8	-3.6	-3.7	-3.0	-1.8	-0.9	-0.4	0.2	0.9	0.6	0.7	0.3	-0.3	-1.3	-2.1	-3.5	-4.6	-5.2	-5.9	-2.5	0.9
5-Apr	-6.9	-8.1	-9.3	-11.6	-13.5	-13.5	-12.7	-6.9	-3.7	-2.3	-0.9	0.8	1.7	2.5	2.9	2.6	2.4	2.4	1.8	0.4	-0.2	-1.0	-1.7	-2.7	-3.2	2.9
6-Apr	-3.2	-3.5	-3.9	-4.3	-3.6	-2.8	-2.1	-1.1	0.4	2.1	4.6	5.9	7.0	6.0	6.7	5.4	6.9	6.4	5.9	3.1	0.0	1.4	1.8	0.1	1.6	7.0
7-Apr	-1.8	-2.1	-0.3	1.3	0.6	1.2	1.7	3.2	4.8	5.9	7.3	9.2	10.6	10.9	11.4	11.4	12.0	11.0	9.0	7.8	6.3	6.6	5.6	5.4	5.8	12.0
8-Apr	5.8	6.3	6.7	6.5	6.1	7.4	8.2	8.9	9.2	11.4	13.6	15.4	15.8	16.0	15.7	15.6	16.1	15.2	13.1	11.8	10.0	9.1	8.7	7.8	10.8	16.1
9-Apr	6.9	6.4	4.8	4.0	3.6	3.2	3.4	4.2	4.2	3.8	0.5	0.9	2.5	6.3	8.4	8.8	9.4	8.1	5.6	4.2	3.2	2.2	1.4	1.1	4.5	9.4
10-Apr	0.9	0.4	-0.1	-0.8	-2.3	-3.3	-3.6	-2.4	-1.2	-0.5	0.2	1.3	2.1	2.5	2.8	2.6	2.5	1.6	0.4	-0.7	-2.0	-3.0	-3.6	-3.9	-0.4	2.8
11-Apr	-4.3	-5.1	-5.5	-5.8	-6.4	-7.0	-7.2	-6.8	-6.3	-5.6	-6.0	-6.0	-5.7	-5.5	-5.3	-5.0	-4.8	-5.0	-5.4	-6.7	-7.3	-8.2	-9.5	-11.0	-6.3	-4.3
12-Apr	-13.3	-14.8	-16.5	-17.7	-18.2	-18.5	-15.4	-11.4	-8.8	-6.9	-5.3	-3.7	-2.5	-1.9	-1.0	-0.8	-1.0	-1.3	-2.2	-3.3	-4.2	-6.0	-7.2	-7.8	-7.9	-0.8
13-Apr	-8.7	-10.5	-12.7	-14.7	-16.0	-16.8	-15.2	-11.7	-10.1	-8.7	-7.4	-6.5	-5.1	-4.5	-3.6	-3.0	-2.8	-3.0	-3.8	-5.9	-7.2	-6.8	-7.2	-7.5	-8.3	-2.8
14-Apr	-8.4	-8.2	-8.6	-10.3	-11.7	-9.6	-7.5	-4.5	-1.5	0.6	2.3	3.8	4.9	5.6	6.5	6.5	5.9	5.7	4.9	3.8	3.0	2.4	2.1	1.8	-0.4	6.5
15-Apr	0.9	0.0	-1.6	-3.0	-3.4	-4.3	-4.5	-4.7	-4.0	-3.6	-2.4	-0.9	0.2	0.8	1.4	1.9	1.1	0.5	-0.8	-2.4	-4.1	-5.6	-6.8	-8.1	-2.2	1.9
16-Apr	-9.4	-10.0	-10.4	-10.8	-10.7	-10.5	-10.1	-10.1	-8.9	-6.7	-4.4	-2.8	0.8	1.5	2.2	1.8	2.2	2.1	0.3	-1.4	-2.4	-2.9	-3.7	-4.1	-4.5	2.2
17-Apr	-4.6	-5.3	-6.4	-7.0	-7.4	-7.4	-6.4	-4.7	-2.3	-0.5	0.5	2.1	3.1	3.9	4.6	4.2	4.2	4.3	3.1	2.1	0.8	-0.3	-1.2	-2.0	-0.9	4.6
18-Apr	-2.0	-2.1	-1.9	-1.8	-2.0	-2.9	-2.8	-2.4	-2.2	-1.7	-1.3	-1.3	-1.7	-1.3	-1.1	-1.1	-0.7	-0.5	-0.5	-0.5	-0.6	-0.4	-0.4	-0.2	-1.4	-0.2
19-Apr	-0.1	-0.1	-0.1	-0.1	-0.2	-0.3	-0.1	0.3	1.6	2.3	2.8	3.9	4.1	5.4	5.6	6.1	6.7	6.4	5.5	4.1	2.9	2.3	1.5	1.0	2.6	6.7
20-Apr	0.6	0.4	-0.4	-1.3	-2.5	-2.3	-1.2	1.4	3.7	5.7	7.1	9.2	10.1	11.7	12.1	11.8	11.5	10.9	10.0	7.8	5.0	4.2	4.1	4.8	5.2	12.1
21-Apr	4.8	4.7	4.3	3.5	2.3	1.8	1.9	3.9	7.2	10.5	12.0	12.7	13.7	13.2	13.9	14.2	13.5	13.2	11.7	7.1	4.1	3.5	1.0	3.5	7.6	14.2
22-Apr	3.7	3.0	1.2	-0.4	-1.5	-0.3	1.2	3.4	5.6	8.1	9.7	11.1	11.8	12.3	12.4	11.9	11.0	9.7	8.3	6.9	5.7	4.9	4.5	4.1	6.2	12.4
23-Apr	4.0	3.7	3.6	3.4	3.3	3.0	3.5	4.3	5.0	5.9	6.9	8.1	9.6	10.0	10.2	9.8	9.1	8.5	7.6	6.5	5.6	4.8	4.0	2.0	5.9	10.2
24-Apr	0.6	0.2	0.0	-0.2	-0.4	-0.6	-0.6	-0.4	-0.3	0.1	0.7	0.8	1.6	1.2	1.6	1.8	2.5	2.6	2.3	2.0	1.7	1.1	0.6	0.2	0.8	2.6
25-Apr	-0.1	-0.6	-0.8	-1.0	-1.1	-1.3	-1.1	-0.6	0.2	0.4	1.1	2.7	3.5	4.3	5.0	5.1	5.2	4.9	4.3	3.8	3.2	2.5	2.1	1.6	1.8	5.2
26-Apr	1.4	1.2	0.9	0.6	0.3	0.1	0.4	0.9	1.9	2.5	3.4	4.7	5.5	6.0	5.4	5.4	5.3	4.9	4.6	4.1	3.6	3.3	2.9	2.6	3.0	6.0
27-Apr	2.6	2.4	2.1	1.6	0.5	0.2	0.2	0.2	0.5	1.0	1.8	2.5	3.4	3.8	3.9	4.0	4.1	4.0	3.9	3.8	3.5	3.3	3.0	2.9	2.5	4.1
28-Apr	2.8	2.9	2.8	2.2	1.3	1.5	2.1	2.3	2.8	3.3	4.3	6.1	7.9	8.5	8.7	9.3	9.4	8.8	7.8	6.6	5.7	4.9	4.6	4.2	5.0	9.4
29-Apr	4.0	3.2	2.8	1.3	0.2	-0.5	0.0	6.1	9.8	12.1	13.4	14.2	14.7	15.4	16.0	16.4	16.3	16.2	15.5	12.3	7.1	4.6	2.9	1.6	8.6	16.4
30-Apr	0.8	0.3	-0.3	-0.5	-0.4	0.8	4.9	11.0	15.1	17.0	17.7	18.1	18.8	19.0	19.6	19.9	19.6	19.7	18.8	16.8	14.8	13.0	12.6	13.1	12.1	19.9
	-2.0	-2.4	-3.1	-3.8	-4.4	-4.5	-3.8	-2.0	-0.4	0.9	2.0	3.2	4.3	4.9	5.4	5.5	5.4	5.0	3.9	2.4	1.1	0.4	-0.2	-0.8	Diurnal Average	
	6.9	6.4	6.7	6.5	6.1	7.4	8.2	11.0	15.1	17.0	17.7	18.1	18.8	19.0	19.6	19.9	19.6	19.7	18.8	16.8	14.8	13.0	12.6	13.1	Diurnal Maximum	

WBEA NETWORK

Hourly Averages

Ambient Temperature 2m (AT 2m) - C

Anzac - April 2014



AURORA
ATMOSPHERICS INC.

Concentration Ranges (C)	Number of Hours	%	Cumulative %
-50 - -20	0	0.00	0.00
-20 - 0	317	44.03	44.03
0 - 10	333	46.25	90.28
10 - 20	70	9.72	100.00
> 20	0	0.00	100.00

Total Number of Valid Hours: 720

Total Number of Hours: 720

Maximum Value: 66 % on Apr 27 06:00

Maximum Daily Average: 29.6 % on Apr 24

Minimum Value: 0 % on Apr 1 01:00

Minimum Daily Average: 0.0 % on Apr 1

Maximum Diurnal Average: 5.8 % at hour 8

Minimum Diurnal Average: 0.7 % at hour 22

Monthly Average: 2.9 %

Percentiles: $P_1 = 0$ $P_{10} = 0$ $Q_1 = 0$ Median = 0 $Q_3 = 0$ $P_{90} = 8$ $P_{99} = 49$

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

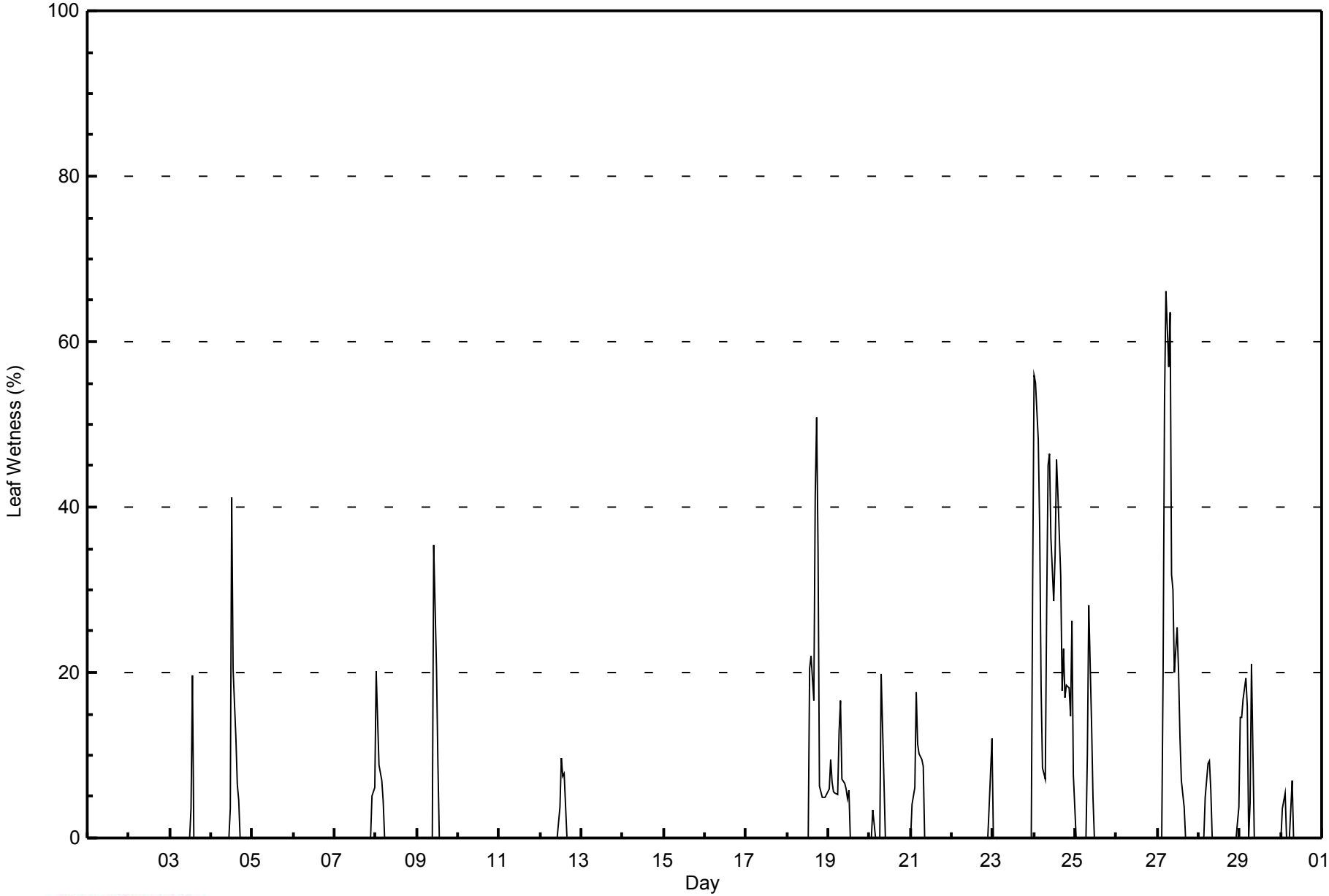
Day	Hourly Period Ending At (MST)																								Daily	Daily
	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24	Average	Maximum
1-Apr	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0.0	0
2-Apr	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0.0	0
3-Apr	0	0	0	0	0	0	0	0	0	0	0	0	4	20	0	0	0	0	0	0	0	0	0	0	1.0	20
4-Apr	0	0	0	0	0	0	0	0	0	0	0	4	41	20	12	6	5	0	0	0	0	0	0	0	3.7	41
5-Apr	0	0	0	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-Apr	0	0	0	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-Apr	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	5	6	0.5	6
8-Apr	20	14	9	7	4	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	2.3	20
9-Apr	0	0	0	0	0	0	0	0	0	0	35	20	9	0	0	0	0	0	0	0	0	0	0	0	2.7	35
10-Apr	0	0	0	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-Apr	0	0	0	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-Apr	0	0	0	0	0	0	0	0	0	0	0	4	10	7	8	0	0	0	0	0	0	0	0	0	1.2	10
13-Apr	0	0	0	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-Apr	0	0	0	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-Apr	0	0	0	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-Apr	0	0	0	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-Apr	0	0	0	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-Apr	0	0	0	0	0	0	0	0	0	0	0	0	0	20	22	17	42	51	35	6	5	5	5	5	8.9	51
19-Apr	6	9	7	6	5	5	13	17	7	7	6	5	6	0	0	0	0	0	0	0	0	0	0	0	4.1	17
20-Apr	0	0	3	0	0	0	0	20	7	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1.2	20
21-Apr	0	4	6	18	11	10	10	9	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	2.8	18
22-Apr	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	4	12	0.7	12
23-Apr	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	31	1.3	31
24-Apr	56	55	48	37	18	8	7	28	45	46	36	29	34	46	41	32	18	23	17	19	18	15	26	8	29.6	56
25-Apr	0	0	0	0	0	0	0	10	28	14	5	0	0	0	0	0	0	0	0	0	0	0	0	0	2.4	28
26-Apr	0	0	0	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-Apr	0	0	0	21	53	66	57	63	32	30	20	25	20	12	7	4	0	0	0	0	0	0	0	0	17.1	66
28-Apr	0	0	0	0	5	9	9	6	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	4	1.4	9
29-Apr	15	15	17	19	16	0	4	21	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	4.4	21
30-Apr	0	4	5	0	0	0	7	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0.7	7
	3.2	3.4	3.2	3.6	3.8	3.3	3.6	5.8	4.0	3.2	3.4	2.9	4.1	4.2	3.0	1.9	2.1	2.5	1.7	0.8	0.8	0.7	1.3	2.2	Diurnal Average	
	56	55	48	37	53	66	57	63	45	46	36	29	41	46	41	32	42	51	35	19	18	15	26	31	Diurnal Maximum	

WBEA NETWORK

Hourly Averages

Leaf Wetness (SW) - %

Anzac - April 2014



AURORA
ATMOSPHERICS INC.

Concentration Ranges (%)	Number of Hours	%	Cumulative %
0 - 0.3	605	84.03	84.03
0.4 - 0.5	0	0.00	84.03
0.6 - 0.7	0	0.00	84.03
0.8 - 1.4	0	0.00	84.03
1.5 - 10	52	7.22	91.25
> 10	63	8.75	100.00

Total Number of Valid Hours: 720

Total Number of Hours: 720

Wood Buffalo Environmental Association

Summary of Hour Averages

Relative Humidity (RH) - %

Anzac - April 2014

Maximum Value: 99 % on Apr 28 07:00

Maximum Daily Average: 93.7 % on Apr 24

Minimum Value: 18 % on Apr 30 15:00

Minimum Daily Average: 39.3 % on Apr 14

Maximum Diurnal Average: 81.6 % at hour 6

Minimum Diurnal Average: 47.1 % at hour 17

Monthly Average: 63.0 %

Percentiles: P_1 = 21 P_{10} = 33 Q_1 = 44 Median = 63 Q_3 = 83 P_{90} = 92 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

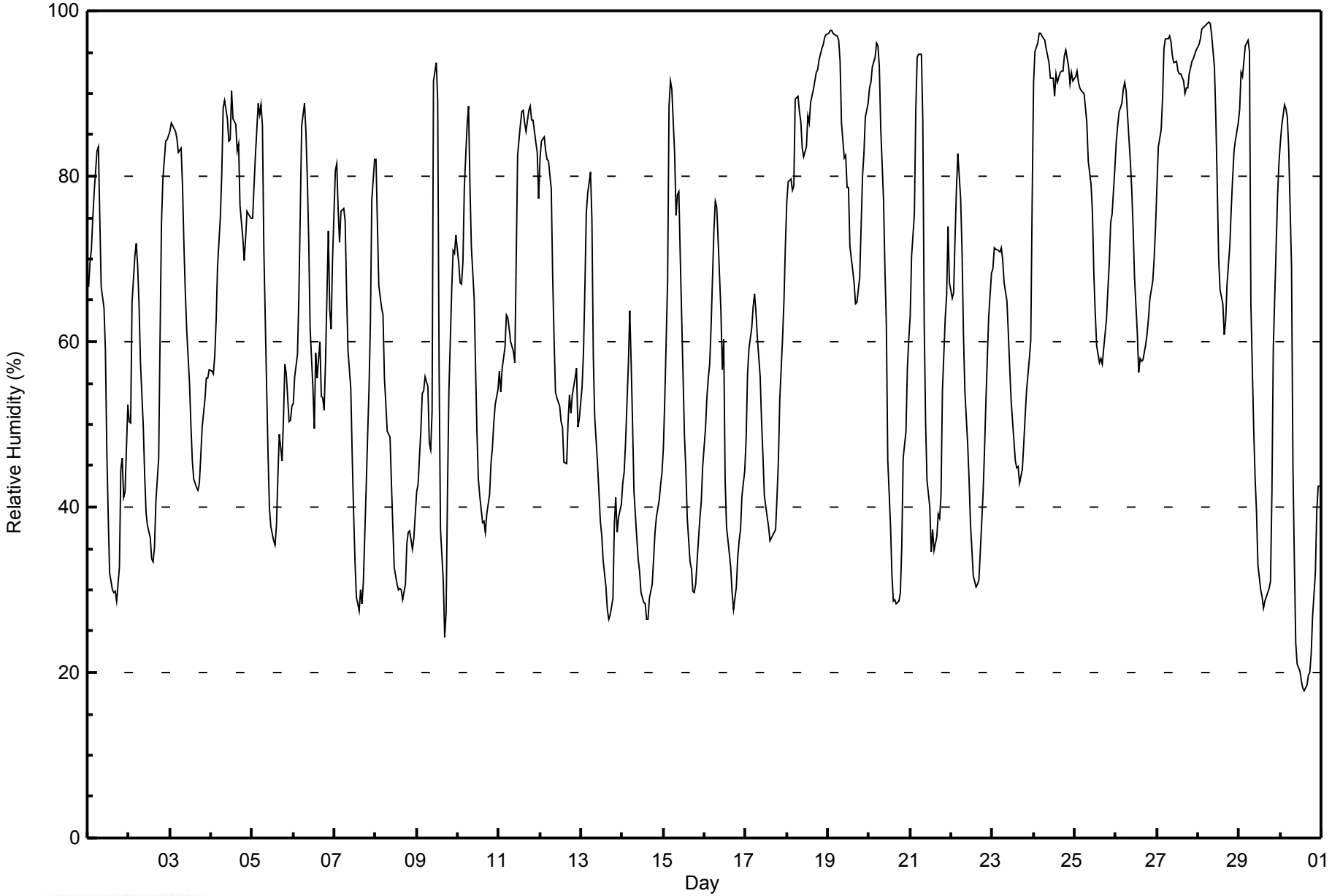
Day	Hourly Period Ending At (MST)																								Daily	Daily
	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24	Average	Maximum
1-Apr	67	69	71	75	78	83	84	75	67	64	59	47	39	32	30	30	30	29	33	45	46	41	42	52	53.6	84
2-Apr	50	50	65	70	72	69	64	57	50	44	39	38	36	34	33	35	41	46	61	74	80	84	84	85	56.8	85
3-Apr	85	86	86	86	85	83	83	79	72	66	61	55	50	46	43	42	42	43	46	50	53	56	56	57	62.9	86
4-Apr	57	56	58	63	69	75	80	88	89	87	84	84	90	87	86	83	84	76	73	70	73	76	75	75	76.6	90
5-Apr	75	79	83	89	87	89	86	71	54	46	40	38	36	35	38	44	49	46	51	57	56	50	50	52	58.4	89
6-Apr	53	56	59	66	76	86	89	85	80	72	62	54	50	59	56	60	53	53	52	58	73	64	62	70	64.4	89
7-Apr	81	82	76	72	76	76	75	66	59	54	46	39	34	29	27	30	28	31	42	48	54	62	77	82	56.2	82
8-Apr	82	74	67	64	63	56	52	49	48	43	38	33	31	30	30	30	29	31	36	37	37	35	36	39	44.6	82
9-Apr	42	43	49	54	54	56	55	48	47	52	92	94	89	57	37	31	24	27	42	54	66	71	71	73	55.3	94
10-Apr	69	67	67	70	79	86	88	79	71	65	57	49	43	41	38	38	37	39	41	45	47	50	52	54	57.3	88
11-Apr	56	54	57	59	63	63	62	60	59	57	70	83	86	88	88	86	85	88	89	87	87	84	83	77	73.8	89
12-Apr	82	84	85	83	82	82	78	68	60	54	53	52	50	50	45	45	50	54	51	54	56	57	50	51	61.5	85
13-Apr	55	59	67	76	78	81	75	58	51	45	42	38	37	34	30	28	26	27	29	38	41	37	39	40	47.1	81
14-Apr	43	44	48	57	64	57	50	42	36	34	32	30	29	28	26	26	29	31	34	37	39	41	43	44	39.3	64
15-Apr	47	53	67	89	91	90	83	75	78	78	70	56	49	45	39	33	33	30	30	31	36	39	41	45	55.3	91
16-Apr	50	53	56	57	62	73	77	76	72	64	57	60	43	38	34	33	30	28	30	34	36	37	41	44	49.4	77
17-Apr	48	56	59	62	64	66	64	60	56	50	46	41	39	38	36	36	37	37	41	46	53	61	65	72	51.4	72
18-Apr	77	79	80	78	79	89	90	88	87	83	82	84	87	87	89	90	92	93	93	94	95	96	97	97	87.7	97
19-Apr	97	98	98	97	97	97	96	94	86	82	83	79	79	72	69	67	65	65	68	74	80	83	87	89	83.3	98
20-Apr	91	91	93	94	96	96	93	86	77	69	62	46	38	32	29	29	28	29	30	35	46	49	57	60	60.6	96
21-Apr	63	70	75	88	94	95	95	87	62	50	43	40	35	37	35	37	39	39	42	54	63	66	74	67	60.4	95
22-Apr	65	66	72	78	83	77	71	61	54	48	43	38	35	32	30	31	31	35	42	47	53	58	63	68	53.4	83
23-Apr	69	71	71	71	71	71	70	67	65	61	57	53	48	46	45	45	43	45	48	51	54	58	60	77	59.0	77
24-Apr	91	95	96	97	97	97	96	95	95	94	92	92	90	92	91	93	93	93	95	95	93	91	92	91	93.7	97
25-Apr	92	93	91	91	90	90	88	86	82	79	76	68	63	59	57	58	57	59	63	66	70	74	76	81	75.5	93
26-Apr	84	86	88	89	91	91	90	88	82	79	74	68	61	56	58	58	58	60	61	63	65	67	70	74	73.3	91
27-Apr	79	84	86	89	95	97	97	97	96	95	94	94	93	92	92	91	90	91	91	92	94	94	95	95	92.2	97
28-Apr	96	97	98	98	98	99	99	99	97	93	87	79	70	66	65	61	62	67	72	76	80	83	84	86	83.8	99
29-Apr	88	93	92	96	96	96	95	65	49	44	40	33	30	29	28	29	29	30	31	42	59	71	77	82	59.3	96
30-Apr	84	86	89	88	87	83	69	45	34	24	21	20	19	18	18	19	20	20	22	27	32	40	43	43	43.7	89
	70.6	72.5	74.9	78.2	80.6	81.6	79.8	73.2	67.2	62.5	60.0	56.1	52.6	49.6	47.5	47.2	47.1	47.9	51.2	56.0	60.6	62.5	64.7	67.5	Diurnal Average	
	97	98	98	98	98	99	99	99	97	95	94	94	93	92	92	93	93	93	95	95	95	96	97	97	Diurnal Maximum	

WBEA NETWORK

Hourly Averages

Relative Humidity (RH) - %

Anzac - April 2014



AURORA
ATMOSPHERICS INC.

Concentration Ranges (%)	Number of Hours	%	Cumulative %
0 - 20	5	0.69	0.69
20 - 40	134	18.61	19.31
40 - 60	195	27.08	46.39
60 - 80	181	25.14	71.53
80 - 100	205	28.47	100.00

Total Number of Valid Hours: 720

Total Number of Hours: 720

Wood Buffalo Environmental Association

Summary of Hour Averages

Wind Speed (WS) - km/h

Anzac - April 2014

Maximum Speed: 23 km/h on Apr 8 18:00

Maximum Daily Speed Average: 17.2 km/h on Apr 23

Minimum Speed Value: 1 km/h on Apr 20 06:00

Minimum Daily Speed Average: 1.5 km/h on Apr 20

Maximum Diurnal Speed Average: 3.8 km/h at hour 2

Minimum Diurnal Speed Average: 1.4 km/h at hour 14

Monthly Average Velocity: 2.6 km/h 115.1 deg

Percentiles: $P_1 = 2$ $P_{10} = 5$ $Q_1 = 7$ Median = 9 $Q_3 = 12$ $P_{90} = 15$ $P_{99} = 21$

Hours in Service:	720
Hours of Data:	711
Hours of Missing Data:	9
Percent Operational Time:	98.8

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-Apr	WSW10	WSW9	SW10	SW9	SW7	NNE3	WSW4	NW3	WNW8	WSW8	SW9	WNW5	WNW7	N8	NNW8	NNW9	N9	N8	NNW6	N4	NE6	ENE8	E7	E6	WNW2.7	WSW10
2-Apr	ESE7	ESE7	E5	E5	ENE7	ENE7	NE9	ENE9	ENE7	E9	ESE10	SE7	NE6	NNE7	N7	N10	NNW12	NW13	NW12	NW8	NW7	NNW7	N7	N6	NNE4.6	NW13
3-Apr	N6	N6	N4	N4	N3	NNE4	NE5	ENE4	NNE2	E6	E8	ESE9	ESE9	ESE9	SE11	SE13	SE13	SE12	ESE13	ESE14	ESE13	SE12	SE14	SE14	ESE6.6	ESE14
4-Apr	SSE16	SSE17	SSE17	SE13	SE12	SE14	SE14	SE11	SE10	SE10	SSE11	SSE7	SSW6	W12	WNW15	WNW14	WNW14	WNW19	NW20	NW16	NW10	NW9	NW11	NW11	SW3.1	NW20
5-Apr	WNW8	W7	W6	WSW4	WSW4	SW5	SW5	WNW5	WNW7	WNW7	WNW7	WNW7	WNW6	WNW7	WNW6	WSW5	S6	ENE4	SE4	SE5	ESE5	E6	E7	E8	W2.2	WNW8
6-Apr	ESE8	SE8	SSE8	SSE8	SSE11	S9	SSE9	SSE9	SSE8	SSE8	SSE7	ESE5	NNE3	WSW8	N5	N9	NNW9	NW9	NW8	NW6	NW5	W6	W6	W5	S1.6	SSE11
7-Apr	WSW4	SW5	W8	W8	WNW8	WNW8	WNW9	WNW8	WNW9	WSW8	W6	W5	WNW7	WNW10	WNW10	W9	W6	WSW10	SW13	SW11	SW8	SW11	SW10	SSW9	W7.3	SW13
8-Apr	SSW15	SSW11	SW9	SW10	SW7	W10	WNW10	W11	WNW11	W13	W13	W16	W19	W20	W19	W19	W19	WSW23	WSW22	WSW19	W18	W17	W18	W16	W14.0	WSW23
9-Apr	W15	W16	WNW12	W13	W17	WNW14	W13	W17	W20	WNW21	NW14	NNW9	NNW9	NW17	NNW15	NW13	NW18	NW15	W16	W12	W15	NW9	W9	WNW10	WNW13.2	WNW21
10-Apr	WNW12	WNW10	WNW9	NW9	NW6	NW4	N7	N8	NNW10	NNW9	NNW8	NNW9	NNW10	NNW9	NNW9	NNW10	N9	N9	NNE8	NNE6	NE8	NE8	ENE8	E9	N6.5	WNW12
11-Apr	ESE10	ESE12	ESE12	ESE11	E12	E12	ESE13	ESE12	ESE15	ESE12	E14	E13	ENE13	ENE13	NE12	NE13	NE13	NNE10	NNE12	NNE12	N9	N12	NNW10	NNW9	ENE8.5	ESE15
12-Apr	NW5	WNW4	WNW4	W6	W5	W5	WNW7	WNW7	WNW9	WNW8	WNW8	WNW9	W12	WNW10	W9	WNW10	NW11	NW9	NNW10	NNW9	N6	N9	N10	N11	NW7.0	W12
13-Apr	N9	N6	N5	NNW5	NNW4	NW4	NNW7	NNW10	NNW12	NNW11	NNW11	NNW13	NW11	NNW10	NNW9	NNW9	NNW5	ENE6	E5	SE6	SE7	SSE10	SSE10	SSE9	NNW4.2	NNW13
14-Apr	SSE10	SSE11	SSE10	SSE8	SE7	SSE11	SSE11	SSE11	SSE12	SE12	SE13	SE14	SSE14	S12	SSW11	S10	SSE10	SE8	SE10	SE11	SE12	SE11	SE12	SE11	SSE10.4	SE14
15-Apr	E10	ENE12	E14	E12	E14	E14	E15	E14	E13	ENE15	ENE13	ENE14	ENE14	ENE12	NE11	NE11	NE11	NE11	NNE12	NNE10	NNE11	NE9	NE7	NE6	ENE10.9	E15
16-Apr	NE6	NE6	NE6	ENE7	E9	E10	E12	ESE13	ESE15	ESE13	ESE17	SE16	SE18	SE16	SE16	SE14	SE13	ESE14	E14	E10	E10	ESE10	ESE8	SE8	ESE10.5	SE18
17-Apr	SSE8	SE8	ESE7	SE8	SE9	SE10	SE12	SE12	SE14	SE19	SE18	SE18	SE17	SE16	ESE16	SE16	SE15	SSE16	SSE13	SE13	SE12	SE11	SE11	SE11	SE12.8	SE19
18-Apr	SE13	ESE12	ESE11	ESE12	ESE11	E10	ESE11	ESE12	E11	ESE11	ESE11	ESE12	E12	E11	ESE11	ESE8	ESE9	ESE8	SE8	SE6	SE6	SE7	ESE6	SE4	ESE9.4	SE13
19-Apr	SSE4	SSE4	SSE5	SSE5	SSE5	SE4	SSE5	SSE6	SSE5	SE6	SE9	ESE9	ESE8	SE9	SE10	ESE11	ESE12	ESE14	ESE11	ESE10	ESE10	ESE11	SE9	SE11	SE7.8	ESE14
20-Apr	SE9	SE7	SSE7	SSE5	SE2	SSW1	W2	WNW3	WNW4	WNW4	W6	W7	WNW8	NW9	NNW12	NNW11	N10	N7	NE6	NNE2	SSW2	SSW3	SSE4	S6	WNW1.5	NNW12
21-Apr	SSW8	SSE6	SSE6	NE4	SE7	S6	SW3	WSW1	WSW5	WNW8	WNW9	WNW8	WNW9	NNW9	NW6	N11	NNE11	NNE8	NNE7	ENE5	NE7	ENE7	ENE7	E8	N1.7	NNE11
22-Apr	E9	E8	E6	ESE5	ESE6	ESE6	ESE7	ESE8	ESE12	E12	E14	E15	ENE15	ENE15	E16	E16	ENE17	ENE18	ENE17	E15	E16	E12	E12	E12	E11.8	ENE18
23-Apr	E12	ENE14	E13	E13	E13	E14	E16	E18	ESE18	ESE17	E16	E15	E19	ESE20	E23	E21	E22	E22	E22	E21	E18	E16	E17	E16	E17.2	E23
24-Apr	E11	E10	E12	E13	E12	E12	E12	E12	E13	E10	E12	ESE9	E11	E10	SE8	ESE6	ESE9	SE8	SSE7	ESE8	ESE7	ESE8	E7	E6	E9.3	E13
25-Apr	AF	AF	AF	AF	AF	AF	AF	AF	ESE8	E9	ESE7	ESE8	ESE9	ESE10	ESE9	SE9	ESE10	SE9	SE8	SE7	SSE8	SSE5	SSE7	SE7	---	ESE10
26-Apr	SE7	SE6	SE6	SE7	SE8	SE7	SE7	SSE9	SSE11	S10	SSE10	ESE13	ESE12	ESE11	ESE13	ESE13	SE10	SE11	ESE9	ESE8	SE8	SE9	SE7	SE8	SE8.9	ESE13
27-Apr	SE10	SE10	ESE10	ESE9	E8	E10	ESE10	ESE10	SE10	SE13	SE15	SE15	SE16	SE13	SSE13	SSE12	SSE13	SSE12	SSE12	SSE10	SSE9	SE8	SE7	SE7	SE10.6	SE16
28-Apr	SSE6	SSE7	SSE6	SSE3	SE4	ESE5	SSE5	SE3	E5	ESE3	E1	ENE3	ENE5	ENE6	E6	ESE2	ESE8	SE8	SE9	SE9	SSE9	SSE9	SSE9	SSE7	SE4.9	SSE9
29-Apr	SSE7	S6	S5	ESE4	SE4	SSE4	WSW4	WNW8	WNW8	W9	WNW8	WNW9	WNW9	WNW8	WNW9	W10	WNW8	WNW9	WNW7	NW3	AF	SSW3	SW3	SW3	W4.1	W10
30-Apr	SSW3	SSW3	SW3	SW4	SW4	SSW4	S4	S4	S6	SSW12	SSW13	SW12	SSW12	SSW13	SSW14	SSW13	SSW13	SSW13	SSW9	S6	S6	SSW5	SW6	SW7	SSW7.8	SSW14
	SE3.3	SE3.8	SE3.4	SE3.1	ESE3.3	ESE3.3	ESE3.3	ESE2.8	ESE2.6	ESE2.6	SE3.3	ESE3.2	ESE2.5	ENE1.4	ENE1.5	NE1.5	ENE2.1	E2.0	E2.0	ESE2.5	ESE3.1	ESE3.0	ESE3.2	ESE3.2	Diurnal Average	
	SSE16	SSE17	SSE17	W13	W17	WNW14	E16	E18	W20	WNW21	SE18	SE18	W19	ESE20	E23	E21	E22	WSW23	E22	E21	E18	W17	W18	W16	Diurnal Maximum	

AF - Analyzer Failure

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

Wood Buffalo Environmental Association

Summary of Hour Standard Deviations

Wind Speed (WS) - km/h

Anzac - April 2014

Number of Exceedences (AAAQO): 1-hr: 0 24-hr: 0
Maximum Value: 9 km/h on Apr 8 14:00

Minimum Value: 0 km/h on Apr 30 01:00

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

Hours in Service:	720
Hours of Data:	711
Hours of Missing Data:	9
Hours of Calibration:	0
Percent Operational Time:	98.8

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-Apr	3	2	2	2	3	1	2	2	3	2	2	2	3	3	3	3	3	2	2	1	2	2	2	2	3
2-Apr	2	2	1	1	1	1	2	3	3	2	3	3	3	3	3	4	4	4	4	2	2	2	2	2	4
3-Apr	2	2	1	1	1	2	1	2	2	3	2	3	4	4	4	4	4	4	4	4	4	3	4	4	4
4-Apr	4	4	4	4	3	4	4	3	2	3	3	2	2	5	6	5	6	7	7	6	3	3	4	4	7
5-Apr	3	2	1	1	1	1	1	2	2	3	2	3	2	2	2	2	1	2	1	1	1	2	2	3	3
6-Apr	2	2	2	2	3	3	2	2	2	3	2	3	2	3	3	3	3	3	2	2	2	2	2	1	3
7-Apr	1	1	3	3	3	3	3	3	3	3	2	2	3	3	4	4	2	4	3	3	2	4	3	5	5
8-Apr	4	3	3	3	3	4	4	4	4	5	5	7	8	9	8	8	8	9	7	7	7	6	7	6	9
9-Apr	5	5	4	5	6	5	5	6	7	9	6	3	4	7	6	6	6	6	7	4	8	4	3	4	9
10-Apr	4	4	3	3	2	1	2	2	3	3	3	3	3	3	3	3	3	3	3	2	2	2	2	3	4
11-Apr	3	4	4	4	3	4	4	4	4	4	4	4	4	5	4	4	4	4	4	4	3	3	3	3	5
12-Apr	2	1	1	1	1	1	2	2	3	3	3	3	5	4	4	4	4	3	3	3	2	4	3	3	5
13-Apr	3	2	2	1	1	1	2	3	4	3	4	4	4	4	4	3	2	2	1	1	1	2	2	2	4
14-Apr	2	2	2	2	2	2	3	2	3	3	4	4	4	4	3	3	3	2	3	3	3	3	3	3	4
15-Apr	3	4	4	4	5	5	4	4	4	4	4	4	5	4	5	4	4	4	4	3	3	3	2	2	5
16-Apr	2	2	2	2	3	3	4	4	5	5	5	5	6	6	6	5	5	5	5	3	3	3	2	2	6
17-Apr	2	2	1	2	2	2	3	3	4	6	5	6	6	6	6	5	6	5	5	4	4	3	3	3	6
18-Apr	5	4	3	4	4	3	4	4	4	4	4	4	4	3	3	2	3	3	2	2	1	2	2	1	5
19-Apr	1	1	1	1	1	1	1	1	2	2	2	3	3	3	3	3	3	4	3	3	3	3	3	2	4
20-Apr	2	2	2	2	1	2	1	1	1	2	2	3	3	4	5	4	3	2	2	1	2	1	2	1	5
21-Apr	3	1	1	2	2	1	1	1	1	2	3	3	3	3	3	4	4	3	2	1	2	2	1	2	4
22-Apr	2	2	2	1	2	1	3	3	4	4	4	5	5	5	5	6	6	5	5	5	5	4	4	4	6
23-Apr	4	4	4	4	4	5	5	7	6	6	6	5	7	8	8	8	7	7	8	7	6	6	6	6	8
24-Apr	4	3	4	5	4	4	4	4	4	4	4	3	4	4	3	3	3	3	2	2	3	2	2	3	5
25-Apr	AF	AF	AF	AF	AF	AF	AF	AF	3	3	2	3	3	3	3	3	3	3	2	2	3	2	2	2	3
26-Apr	2	2	2	2	2	2	2	3	3	3	3	4	3	4	4	4	3	3	3	3	2	3	3	3	4
27-Apr	4	4	3	3	2	3	3	3	3	4	4	4	5	4	4	3	3	3	3	3	2	2	2	2	5
28-Apr	2	2	2	1	1	1	1	2	2	1	1	2	2	2	2	2	2	2	2	2	2	2	2	2	2
29-Apr	3	2	1	1	1	1	1	3	3	3	3	3	3	3	3	3	4	3	3	1	AF	1	0	1	4
30-Apr	0	1	0	1	1	1	1	1	2	4	5	4	4	4	5	4	5	4	3	2	2	1	2	2	5
	5	5	4	5	6	5	5	7	7	9	6	7	8	9	8	8	8	9	8	7	8	6	7	6	
	Diurnal Maximum																								

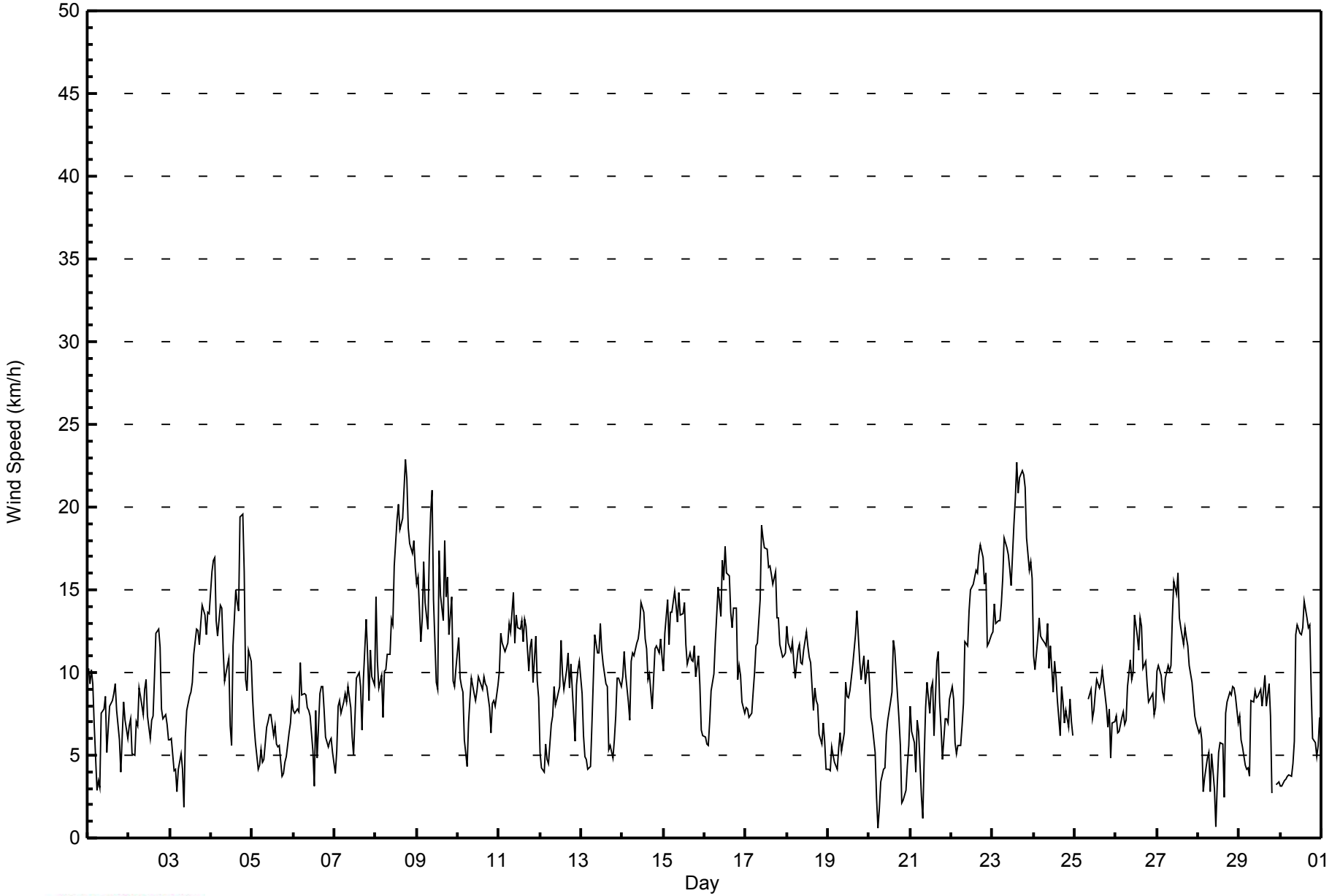
AF - Analyzer Failure

WBEA NETWORK

Hourly Averages

Wind Speed (WS) - km/h

Anzac - April 2014



AURORA
ATMOSPHERICS INC.

Wind Speed Ranges (km/h)	Number of Hours	%	Cumulative %
0 - 5	100	14.06	14.06
6 - 11	397	55.84	69.90
12 - 19	201	28.27	98.17
20 - 28	13	1.83	100.00
29 - 38	0	0.00	100.00
> 38	0	0.00	100.00

Total Number of Valid Hours: 711

Total Number of Hours: 720

WBEA NETWORK

Frequency Distribution

Wind Speed (WS) - km/h

Anzac - April 2014

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	5	2	5	5	7	7	14	3	8	9	8	5	7	6	3	100
6 - 11	21	10	17	11	30	57	62	44	9	6	13	6	17	47	16	31	397
12 - 19	1	3	3	14	46	28	39	12	1	9	2	1	22	7	8	5	201
20 - 28	0	0	0	0	6	1	0	0	0	0	0	2	2	1	1	0	13
29 - 38	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
> 38	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Totals	28	18	22	30	87	93	108	70	13	23	24	17	46	62	31	39	711

Total Number of Valid Hours: 711

Total Number of Hours: 720

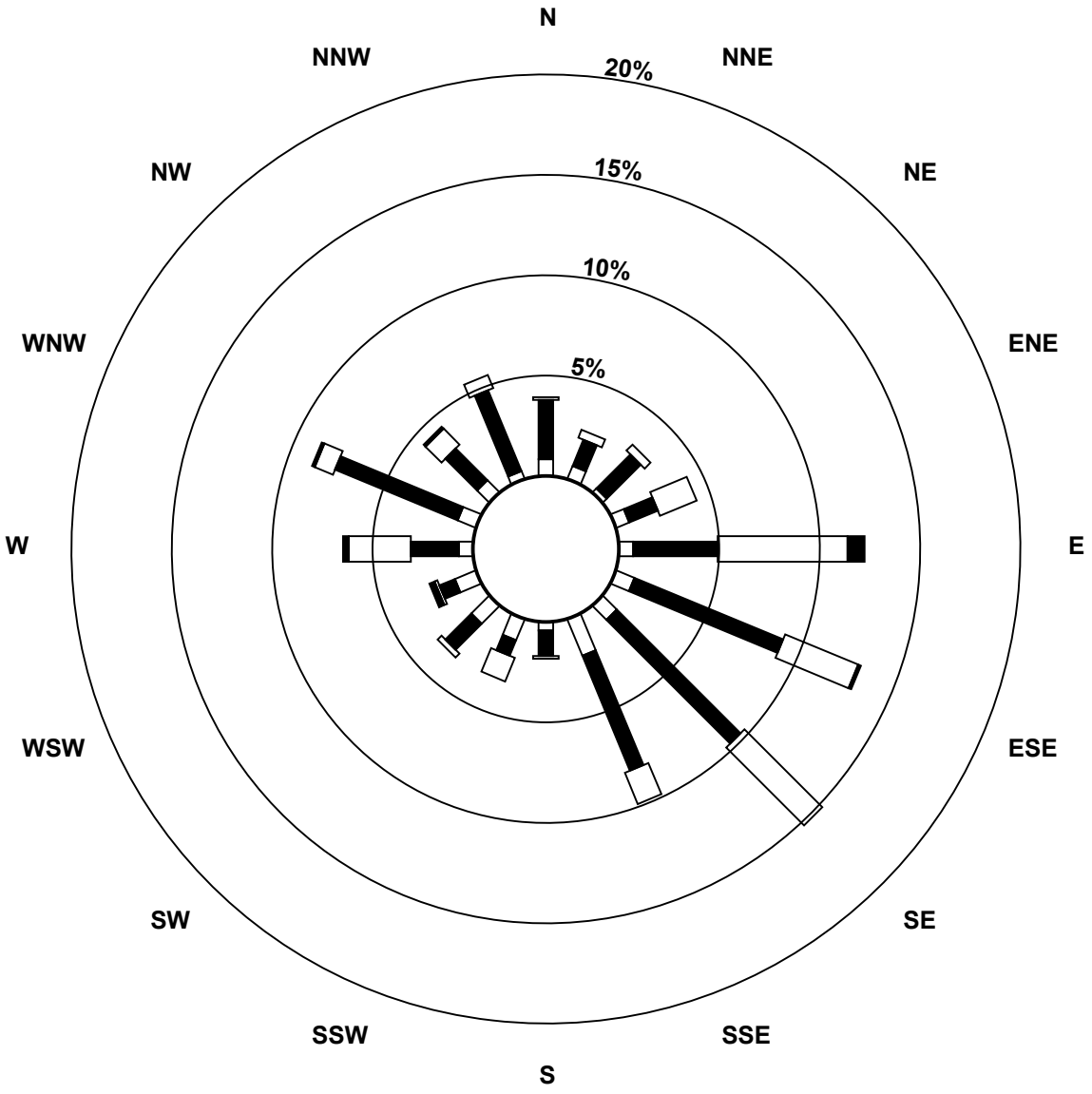
AURORA ATMOSPHERICS INC.

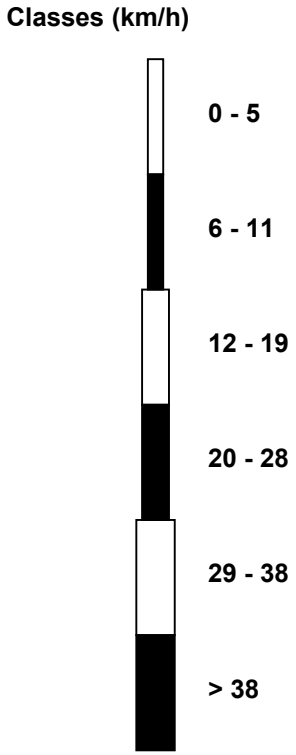
Wood Buffalo Environmental Association

Wind Rose Apr 2014

Wind Speed (WS) - km/h

Anzac (AMS 14)





Total Number of Valid Hours: 711

Wood Buffalo Environmental Association

Summary of Hour Averages

Wind Direction (WD) - deg

Anzac - April 2014

Direction of Maximum Speed: 254 deg on Apr 8 18:00
Direction of Maximum Daily Speed Average: 93.6 deg on Apr 23

Direction of Minimum Speed: 213 deg on Apr 20 06:00

Direction of Minimum Daily Speed Average: 1.5 deg on Apr 20

Monthly Average Direction: 264.2 deg

Hours in Service:	720
Hours of Data:	711
Hours of Missing Data:	9
Percent Operational Time:	98.8

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-Apr	242	240	227	217	219	31	239	306	303	253	233	283	299	354	337	342	355	360	346	354	41	71	82	84	301.9
2-Apr	111	120	96	87	61	59	54	69	76	81	103	132	44	33	5	349	339	326	321	315	325	336	4	9	31.5
3-Apr	9	7	5	354	351	15	42	62	25	90	96	120	118	107	146	128	135	128	107	111	119	128	132	134	109.2
4-Apr	152	148	152	139	134	142	145	143	140	138	162	154	205	274	297	293	291	300	304	305	306	305	304	309	219.3
5-Apr	301	274	273	244	241	234	233	301	291	282	283	294	299	288	301	249	186	65	140	125	104	89	98	101	269.1
6-Apr	120	133	147	148	163	172	164	166	166	147	158	120	25	249	356	7	341	326	310	323	304	277	271	271	182.8
7-Apr	241	220	270	280	284	284	298	293	292	257	271	274	294	295	287	278	264	257	232	223	217	227	220	209	260.5
8-Apr	212	194	215	222	228	281	284	267	283	281	280	279	276	277	278	280	271	254	239	251	274	272	259	269	262.6
9-Apr	270	269	289	279	280	283	269	267	278	302	314	336	339	319	331	324	306	304	279	273	276	309	281	291	292.9
10-Apr	291	284	297	310	318	320	354	352	341	348	345	338	343	339	348	343	3	11	13	19	53	52	77	92	349.1
11-Apr	107	116	111	113	89	99	112	114	107	104	98	93	67	58	49	39	35	20	14	12	3	349	347	343	68.8
12-Apr	326	298	282	270	275	275	288	292	292	292	295	283	272	288	278	297	315	319	342	338	353	11	359	354	308.0
13-Apr	356	357	359	344	335	314	334	338	339	340	334	342	325	327	331	341	339	65	90	131	137	152	159	157	347.4
14-Apr	151	153	153	149	146	149	157	156	149	140	130	145	158	175	194	186	151	141	141	143	137	129	135	125	149.3
15-Apr	82	76	80	92	85	89	81	81	88	74	69	76	73	58	55	36	38	42	25	28	27	35	38	37	64.2
16-Apr	41	52	49	58	82	91	97	103	118	102	112	124	136	134	141	137	134	106	93	92	100	119	121	143	110.7
17-Apr	148	129	119	126	125	125	132	144	135	139	145	137	132	144	119	143	139	152	147	143	145	137	134	129	137.1
18-Apr	129	113	116	114	112	89	103	106	101	110	113	112	98	98	115	111	114	120	133	141	135	128	121	146	113.4
19-Apr	152	149	150	160	153	131	153	155	154	140	126	117	110	124	140	120	110	112	106	111	120	123	128	139	127.9
20-Apr	133	141	148	161	124	213	261	292	289	296	259	262	284	304	332	332	349	359	35	20	198	211	166	178	293.1
21-Apr	204	161	166	50	135	169	223	241	248	293	286	293	293	336	321	357	21	27	33	64	56	61	68	82	7.4
22-Apr	79	91	94	108	111	109	114	107	106	90	96	84	70	75	79	81	78	74	78	82	83	94	96	84	86.4
23-Apr	86	78	90	97	95	97	100	99	106	102	95	88	96	102	99	88	82	85	96	94	95	91	87	96	93.6
24-Apr	93	86	84	84	87	83	89	94	93	91	96	103	99	100	124	120	107	130	148	121	109	123	99	89	99.3
25-Apr	AF	AF	AF	AF	AF	AF	AF	AF	115	92	112	116	117	102	122	126	122	130	125	136	150	149	158	140	--
26-Apr	129	133	135	137	135	136	143	153	159	172	161	110	122	122	104	107	136	138	122	117	125	128	131	129	131.2
27-Apr	131	125	108	118	95	97	111	112	125	138	137	138	141	142	147	151	154	151	153	150	149	139	131	142	134.3
28-Apr	155	161	165	151	124	123	151	129	79	110	85	68	66	72	91	112	115	124	124	138	150	160	150	150	129.8
29-Apr	165	184	174	106	125	162	240	290	294	281	293	294	298	294	289	273	286	290	301	311	AF	203	217	215	270.1
30-Apr	208	207	216	217	217	197	189	183	191	210	204	217	205	210	211	203	205	199	196	190	190	206	221	229	205.7
	140.7	136.9	134.8	129.4	121.1	117.1	121.5	120.3	121.1	121.4	127.3	115.0	102.6	77.7	78.2	53.0	70.0	81.2	95.5	107.3	109.2	112.1	122.2	123.5	
	Diurnal Average																								

AF - Analyzer Failure
All monthly, daily, and diurnal averages have been calculated using vector methods

Wood Buffalo Environmental Association

Summary of Hour Standard Deviations

Wind Direction (WD) - deg

Anzac - April 2014

Number of Exceedences (AAAQO): 1-hr: 0 24-hr: 0
Maximum Value: 99 deg on Apr 20 06:00

Minimum Value: 8 deg on Apr 1 20:00

Percentiles: P_1 = 11 P_{10} = 17 Q_1 = 20 Median = 23 Q_3 = 28 P_{90} = 35 P_{99} = 77

Hours in Service:	720
Hours of Data:	711
Hours of Missing Data:	9
Hours of Calibration:	0
Percent Operational Time:	98.8

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-Apr	20	21	13	11	47	36	37	37	27	30	18	56	48	37	37	33	24	23	12	8	25	15	20	23	56
2-Apr	22	16	18	21	12	10	15	20	30	21	31	44	49	41	36	27	20	16	18	18	17	15	18	21	49
3-Apr	19	19	17	19	19	21	19	30	80	38	31	34	38	40	33	24	25	28	21	19	18	19	20	19	80
4-Apr	17	18	18	22	20	20	20	20	21	21	19	24	30	33	27	28	30	25	23	22	20	20	21	21	33
5-Apr	21	22	18	17	14	11	15	26	33	42	31	49	36	34	43	38	27	52	16	21	22	22	23	24	52
6-Apr	19	21	19	19	17	20	18	22	23	33	33	56	80	40	66	22	24	16	20	13	18	26	25	17	80
7-Apr	24	10	27	23	23	24	22	28	26	37	38	57	39	26	32	36	42	32	19	13	14	18	14	29	57
8-Apr	18	23	25	21	26	29	34	30	32	33	31	32	32	31	30	31	29	30	22	27	33	30	26	30	34
9-Apr	29	27	29	28	26	29	29	30	29	30	23	27	26	21	27	27	23	24	32	28	31	25	25	25	32
10-Apr	24	27	25	22	23	32	15	19	23	24	32	30	27	31	27	25	23	21	18	18	18	19	23	25	32
11-Apr	24	21	21	23	23	24	23	22	23	26	22	25	21	22	24	23	23	22	20	19	18	15	15	14	26
12-Apr	22	21	23	13	18	18	23	26	26	29	35	37	35	34	39	30	28	23	18	16	15	17	17	17	39
13-Apr	18	15	15	10	16	21	14	19	21	24	27	25	32	36	40	38	44	60	26	13	14	18	17	15	60
14-Apr	14	14	15	14	17	14	15	16	20	23	24	27	29	33	27	33	23	20	20	18	21	19	17	25	33
15-Apr	20	18	21	23	22	23	21	22	24	22	25	27	31	33	37	28	28	27	20	19	20	22	21	17	37
16-Apr	17	21	17	16	25	22	25	23	20	28	24	26	28	27	30	27	31	25	23	23	25	21	15	19	31
17-Apr	19	18	14	16	14	14	19	21	24	24	24	30	29	34	30	27	30	26	24	23	21	20	20	21	34
18-Apr	24	23	22	23	25	23	23	24	26	26	26	24	23	24	21	23	22	22	21	20	20	18	16	19	26
19-Apr	20	20	20	20	20	19	17	19	33	29	22	27	26	25	25	24	26	21	23	21	20	19	20	18	33
20-Apr	19	20	18	23	51	99	37	26	33	58	30	38	35	38	23	22	18	20	26	63	69	30	21	16	99
21-Apr	21	21	22	78	28	23	47	78	36	30	32	34	30	24	48	25	23	22	19	11	12	14	13	20	78
22-Apr	17	22	21	28	23	28	23	29	24	27	27	27	28	27	28	25	23	19	20	21	23	25	26	23	29
23-Apr	23	22	26	24	25	25	24	23	24	25	25	28	28	26	26	26	23	24	24	24	25	25	24	25	28
24-Apr	26	25	23	23	24	24	25	25	23	26	24	26	26	25	22	27	24	23	23	21	25	18	24	24	27
25-Apr	AF	AF	AF	AF	AF	AF	AF	AF	30	27	34	40	31	32	35	26	25	23	20	22	27	22	19	23	40
26-Apr	18	18	19	20	19	23	24	23	23	27	27	29	30	35	27	25	30	21	19	21	19	24	24	24	35
27-Apr	24	23	24	20	24	25	21	20	19	20	21	20	20	21	18	20	20	19	19	19	19	21	21	22	25
28-Apr	20	21	21	37	23	30	24	46	39	57	95	77	48	39	38	80	24	20	19	18	16	14	17	23	95
29-Apr	25	17	29	36	19	15	38	28	33	38	30	32	27	32	33	31	34	27	26	39	AF	11	10	10	39
30-Apr	9	18	11	23	26	16	16	21	28	30	30	30	30	28	24	28	24	25	22	18	22	20	26	23	30
	29	27	29	78	51	99	47	78	80	58	95	77	80	41	66	80	44	60	32	63	69	30	26	30	
	Diurnal Maximum																								

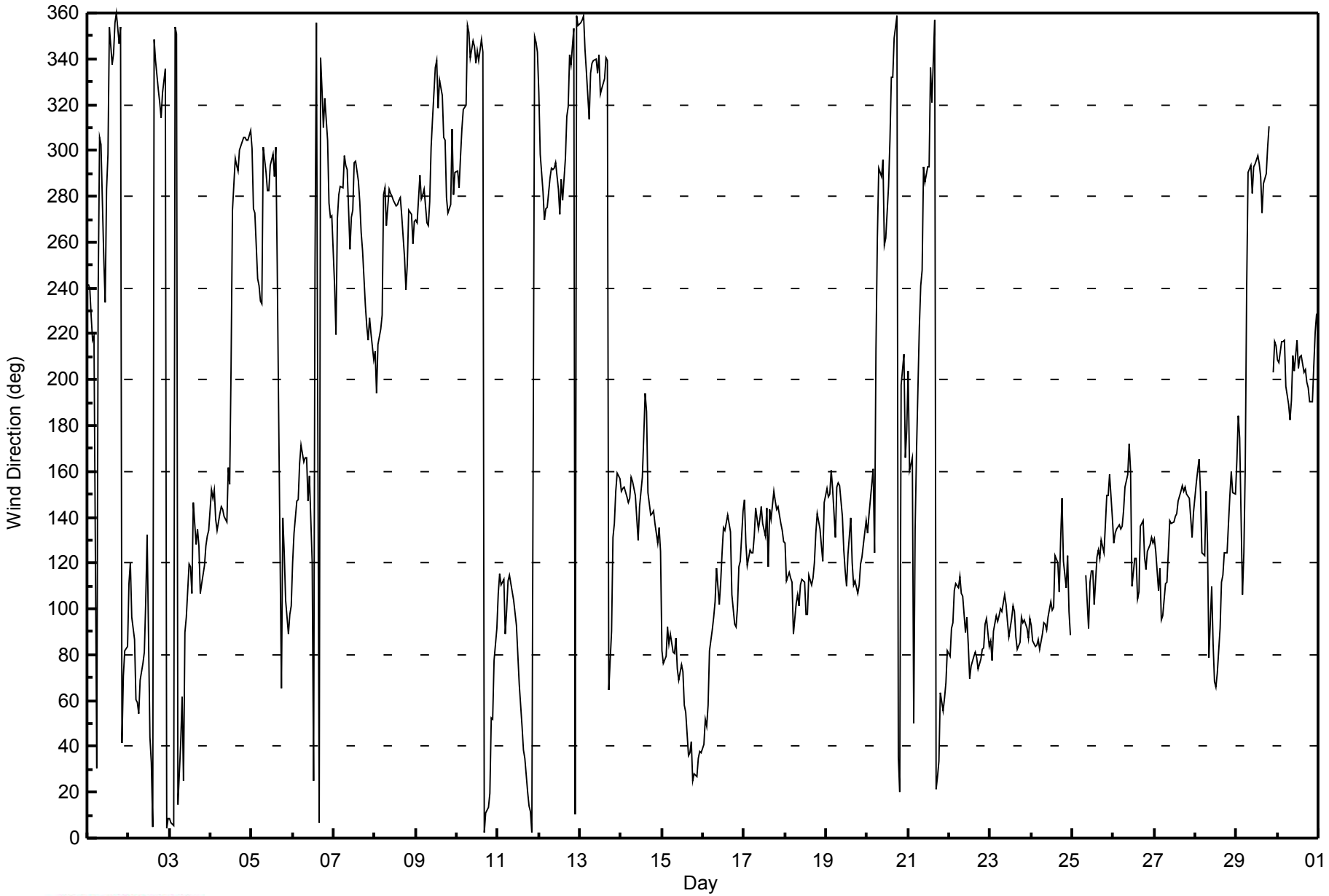
AF - Analyzer Failure

WBEA NETWORK

Hourly Averages

Wind Direction (WD) - deg

Anzac - April 2014



AURORA ATMOSPHERICS INC.

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Summary of Hour Averages

Precipitation (PC) - mm

Anzac - April 2014

Maximum Value: 3.0 mm on Apr 24 13:00

Maximum Daily Total: 11.9 mm on Apr 24

Minimum Value: 0.0 mm on Apr 1 01:00

Minimum Daily Total: 0.0 mm on Apr 1

Maximum Diurnal Total: 7.9 mm at hour 13

Minimum Diurnal Total: 0.0 mm at hour 3

Monthly Total: 36.58 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} = 1.1

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-Apr	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	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-Apr	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	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-Apr	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.3	0.5	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.8	0.5
4-Apr	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	0.3	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	1.3	1.0
5-Apr	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	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-Apr	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	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-Apr	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	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-Apr	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	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-Apr	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	1.5	1.5	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
10-Apr	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	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-Apr	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	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-Apr	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	0.8	0.8	0.8	0.5	0.0	0.0	0.0	0.0	0.0	0.0	0.0	4.3	1.3
13-Apr	0.0	0.0	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	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.5	0.3
14-Apr	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	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.8	0.8
15-Apr	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.5	1.0	0.5	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	2.0	1.0
16-Apr	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	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-Apr	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	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-Apr	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	0.5	0.3	0.5	0.5	0.5	0.3	0.0	0.3	0.0	0.0	0.3	3.6	0.5
19-Apr	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	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.8	0.5
20-Apr	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	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-Apr	0.0	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	0.0	0.0	1.3	1.3
22-Apr	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	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-Apr	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	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-Apr	0.3	0.3	0.0	0.3	0.0	0.3	0.0	0.5	0.3	0.3	0.5	2.3	3.0	1.3	1.3	0.5	0.5	0.3	0.3	0.0	0.0	0.0	0.0	0.0	11.9	3.0
25-Apr	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	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-Apr	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	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-Apr	0.0	0.0	0.0	0.3	0.5	0.0	0.0	0.5	1.3	2.0	1.5	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	6.1	2.0
28-Apr	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	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-Apr	0.3	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.3	0.3
30-Apr	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	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	0.0	1.8	0.5	0.3	0.0	1.0	1.5	2.3	3.6	5.1	7.9	3.6	2.3	2.0	1.5	0.8	0.5	0.0	0.3	0.0	0.0	0.3	Diurnal Average	
	0.5	0.3	0.0	1.3	0.5	0.3	0.0	0.5	1.3	2.0	1.5	2.3	3.0	1.3	1.3	0.8	0.5	0.5	0.3	0.0	0.3	0.0	0.0	0.3	Diurnal Maximum	

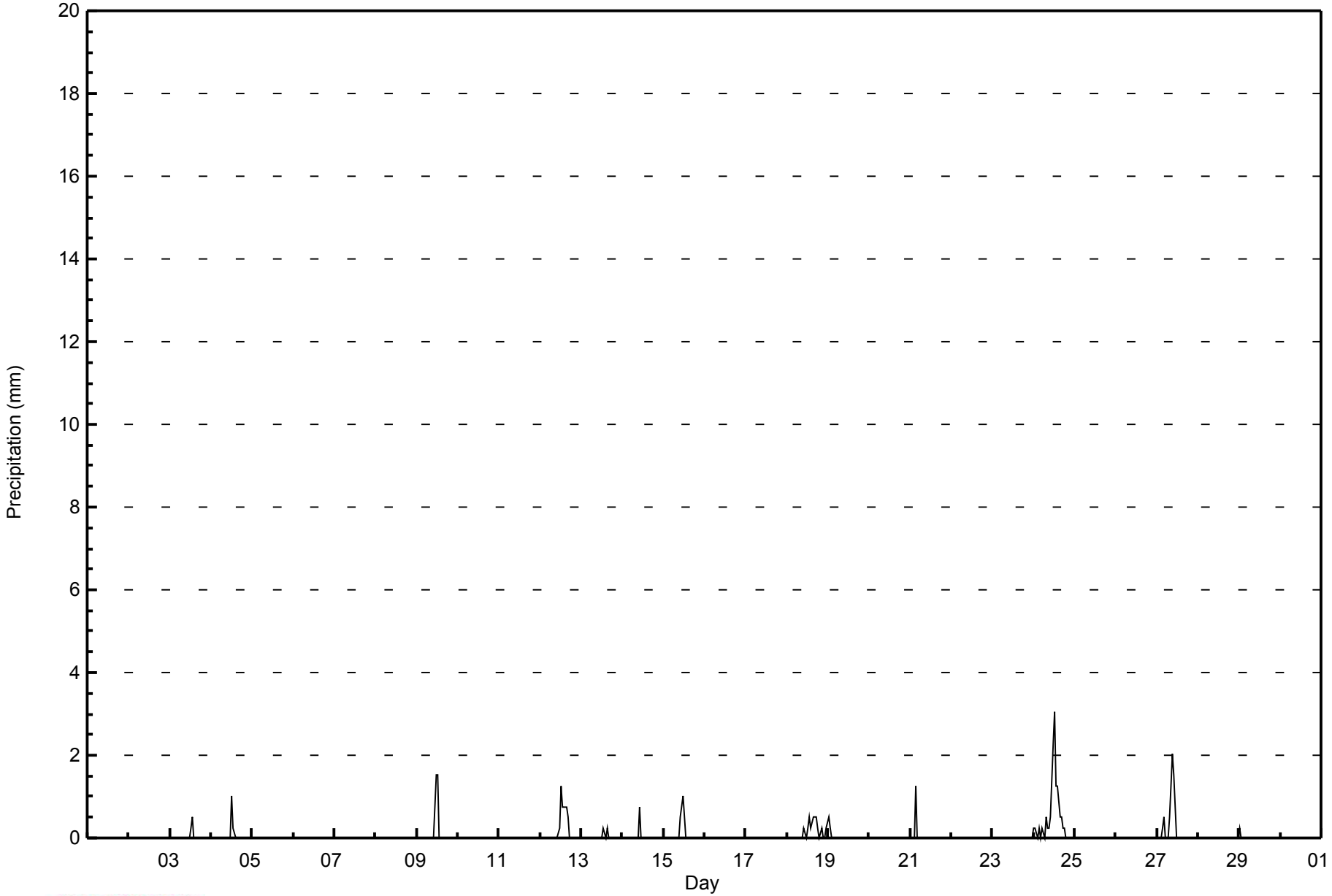
AURORA ATMOSPHERICS INC.

Wood Buffalo Environmental Association

Hourly Averages

Precipitation (PC) - mm

Anzac - April 2014



AURORA ATMOSPHERICS INC.

Wood Buffalo Environmental Association

SO_2 Calibration Report

Station Information

Calibration Date	April 17, 2014	Previous Calibration	March 7, 2014
Station Name	Anzac	Station Number	AMS 14

Reason: Routine

Start Time (MST)	7:40	End Time (MST)	11:35
Barometric Pressure	782 mmHg	Station temp.	22 Deg C
Calibrator Make/Model	Sabio 4010	Serial Number	8400311
Cal Gas Concentration	51 ppm	Cal Gas Expiry Date	5/29/2014
Gas Cert Reference	LL107928		
DACS make/model	Campbell Scientific CR3000	DACS serial No.	2372
DACS voltage range	NA	DACS channel #	NA

Analyzer Information

	Before	*After*		*Before*	*After*
Analyzer Range (ppb)	1000	1000	PMT voltage	-596	-596
Analyzer Range (mv)	5000	5000	Lamp voltage	811	811
Calculated slope	0.989647	0.991108	Chamber temp.	44.1	44.1
Calculated intercept	0.601833	0.789768	Pressure (mmHg)	690.0	690.0
Analyzer Background	12.9	12.9	Flow (lpm)	0.393	0.393
Analyzer Coefficient	0.945	0.945	Intensity	30000	30000

Analyzer make	TEI 43C	Analyzer serial #	613516095

Calibration Data

Set Point	Total flow rate (cc/min)	Source gas flow rate (cc/min)	Calculated concentration (ppb) (Cc)	Indicated concentration (ppb) (Ic)	Correction factor (Cc/Ic)
as found zero	5000	0.0	0.0	0.2	NA
as found span	5000	78.3	798.7	806.0	0.991
calibrator zero	5000	0.0	0.0	0.2	NA
high point	5000	78.3	798.7	806.0	0.991
second point	5000	39.1	398.8	399.6	0.998
third point	5000	19.6	199.9	201.0	0.995
calibrator zero	5000	0.0	0.0	0.2	NA
as left zero	5000	0.0	0.0	0.2	NA
as left span	5000	78.3	798.7	804.4	0.993
				Average Correction Factor	0.995

Corrected As found	805.9	Previous response	806.4	% change	0.1%

Notes:

Filter changed, No Maintenance or adjustments made

Calibration Performed By: Melissa Lemay

Wood Buffalo Environmental Association

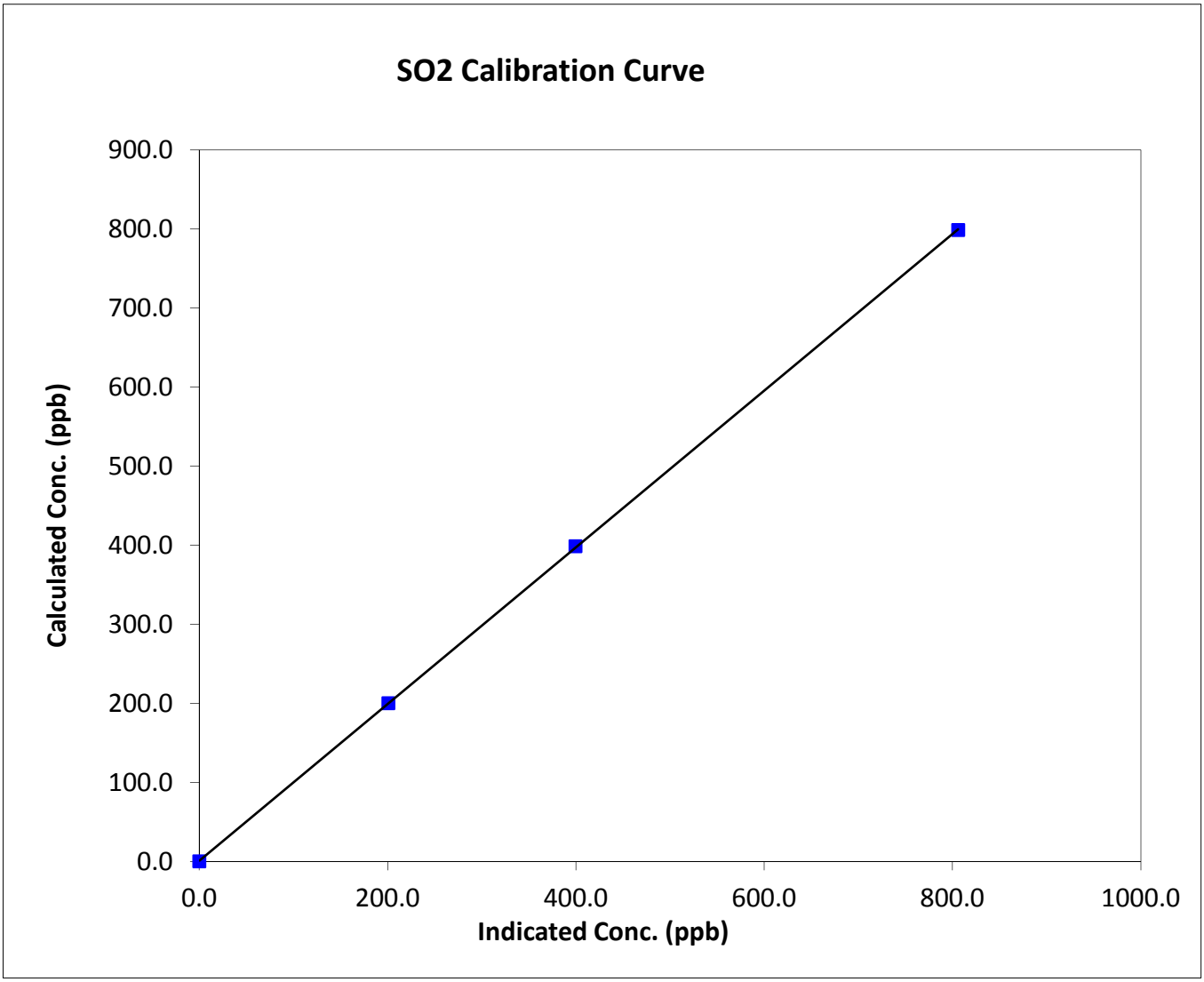
SO_2 Calibration Summary

Station Information

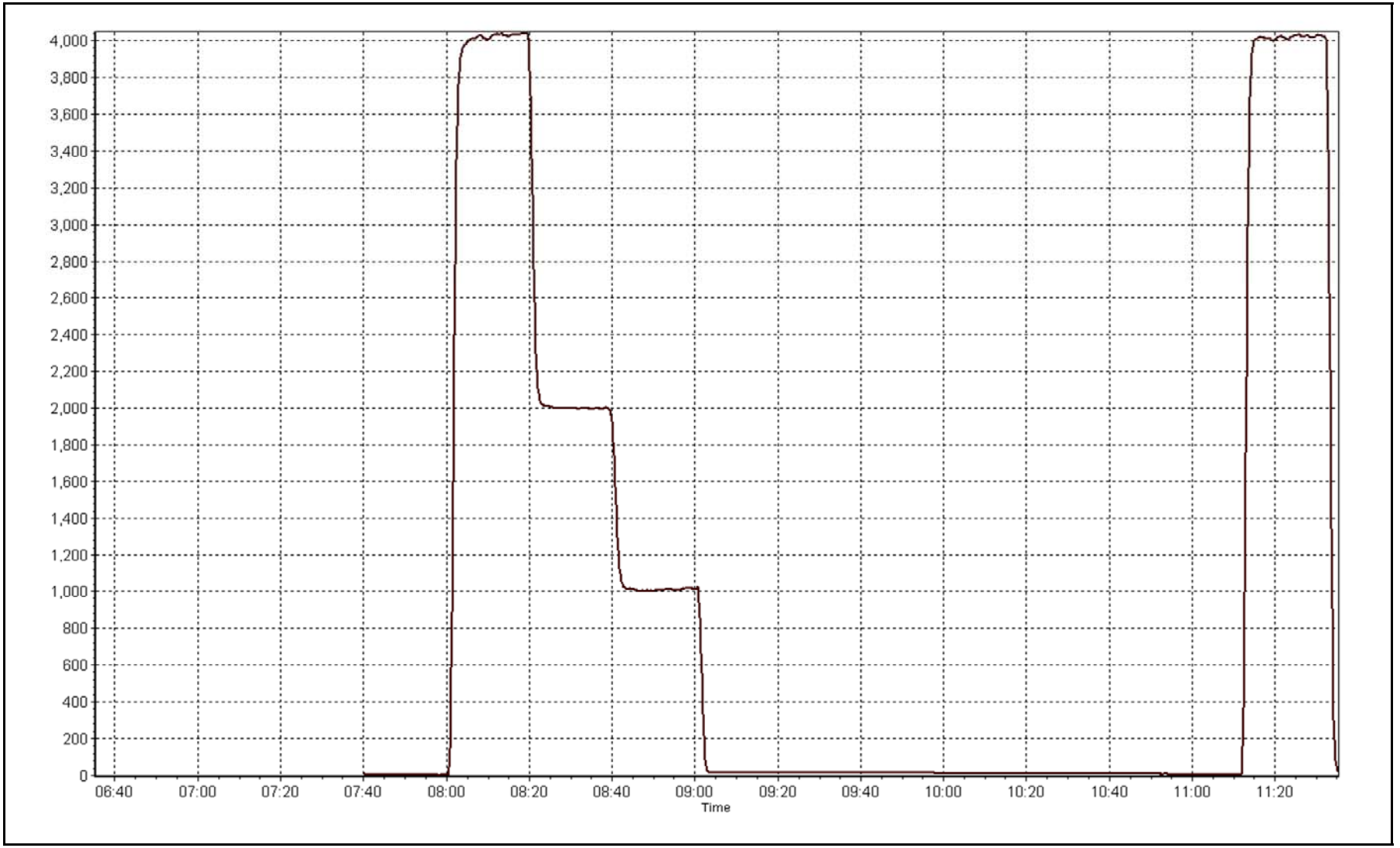
Calibration Date	April 17, 2014	Previous Calibration	March 7, 2014
Station Name	Anzac	Station Number	AMS 14
Start Time (MST)	7:40	End Time (MST)	11:35
Analyzer make	TEI 43C	Analyzer serial #	613516095

Calibration Data

Calculated concentration (ppb) (Cc)	Indicated concentration (ppb) (Ic)	Correction factor (Cc/Ic)	Statistical Evaluation	
0.0	0.2	N/A	Correlation Coefficient	0.999984
798.7	806.0	0.9909		
398.8	399.6	0.9980	Slope	0.991108
199.9	201.0	0.9946		
			Intercept	0.789768



SO2 Calibration Plot Date: April 17, 2014



Wood Buffalo Environmental Association

TRS Calibration Report

Station Information

Calibration Date	April 22, 2014	Previous Calibration	March 10, 2014
Station Name	Anzac	Station Number	AMS 14
Reason:	Routine		
Start Time (MST)	11:33	End Time (MST)	13:25
Barometric Pressure	732 mmHg	Station temp.	22 Deg C
Calibrator Make/Model	Sabio 4010	Serial number	8400311
Cal Gas Concentration	9.6 ppm H2S	Cal Gas Expiry Date	2/22/2016
Gas Cert Reference	LL82745	SO2 gas conc.	51.0 ppm SO2
DACS make/model	Campbell Scientific CR3000	DACS serial No.	2372
DACS voltage range	0-5 volts	DACS channel #	2

Analyzer Information

	Before	*After*		*Before*	*After*
Analyzer Range (ppb)	100	100	PMT voltage	-730	-730
Analyzer Range (input)	5000	5000	Lamp voltage	976	976
Calculated slope	1.003617	1.016720	Chamber temp.	45	45
Calculated intercept	0.110801	0.049908	Pressure	654.1	654.1
Analyzer Background	2.03	2.03	Flow	0.394	0.394
Analyzer Coefficient	1.120	1.12	Intensity	91	91
			Converter temp.	800	800

Analyzer make/model	43i-TL	Analyzer serial #	1300156232
Converter make/model	CDN-101	Converter serial #	510

Calibration Data

Set Point	Total flow rate (cc/min)	Source gas flow rate (cc/min)	Calculated concentration (ppb) (Cc)	Indicated concentration (ppb) (Ic)	Correction factor (Cc/Ic)
as found zero	5000	0.0	0.0	-0.5	NA
as found span	5000	39.1	75.1	73.4	1.023
SO2 scrubber check	5000	78.3	798.7	0.6	NA
calibrator zero	5000	0.0	0.0	-0.5	NA
high point	5000	39.1	75.1	73.4	1.023
second point	5000	20.8	39.9	39.8	1.004
third point	5000	10.4	20.0	19.9	1.004
calibrator zero	5000	0.0	0.0	-0.5	NA
as left zero	5000	0.0	0.0	-0.5	NA
as left span	5000	39.1	75.1	73.4	1.023
				Average Correction Factor	1.010

Corrected As found	73.9	Previous response	74.7	% change	1.0%

Notes:

No adjustments made, no maintenance done, scrubber checked after third period

Calibration Performed By: Melissa Lemay

Wood Buffalo Environmental Association

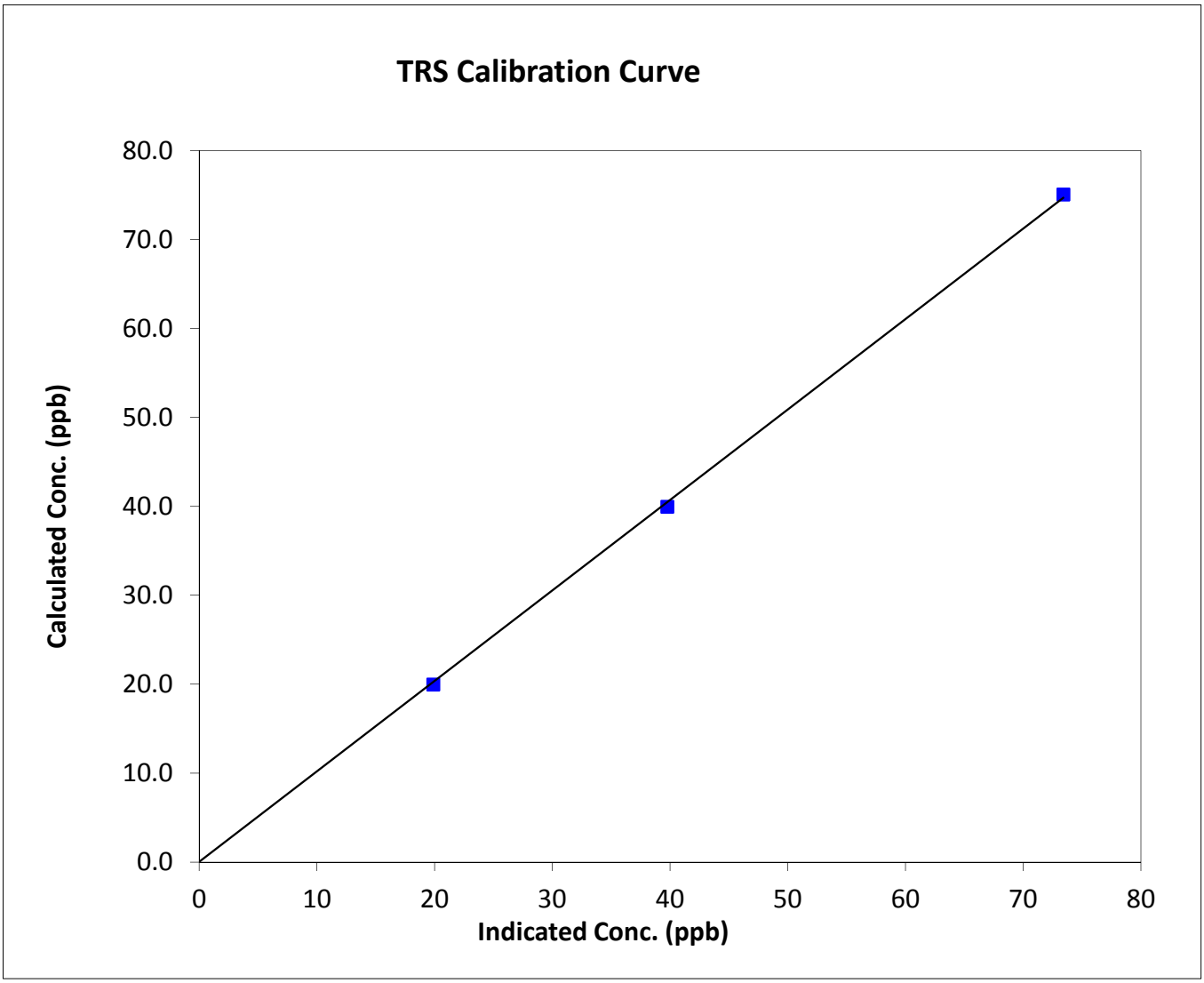
TRS Calibration Summary

Station Information

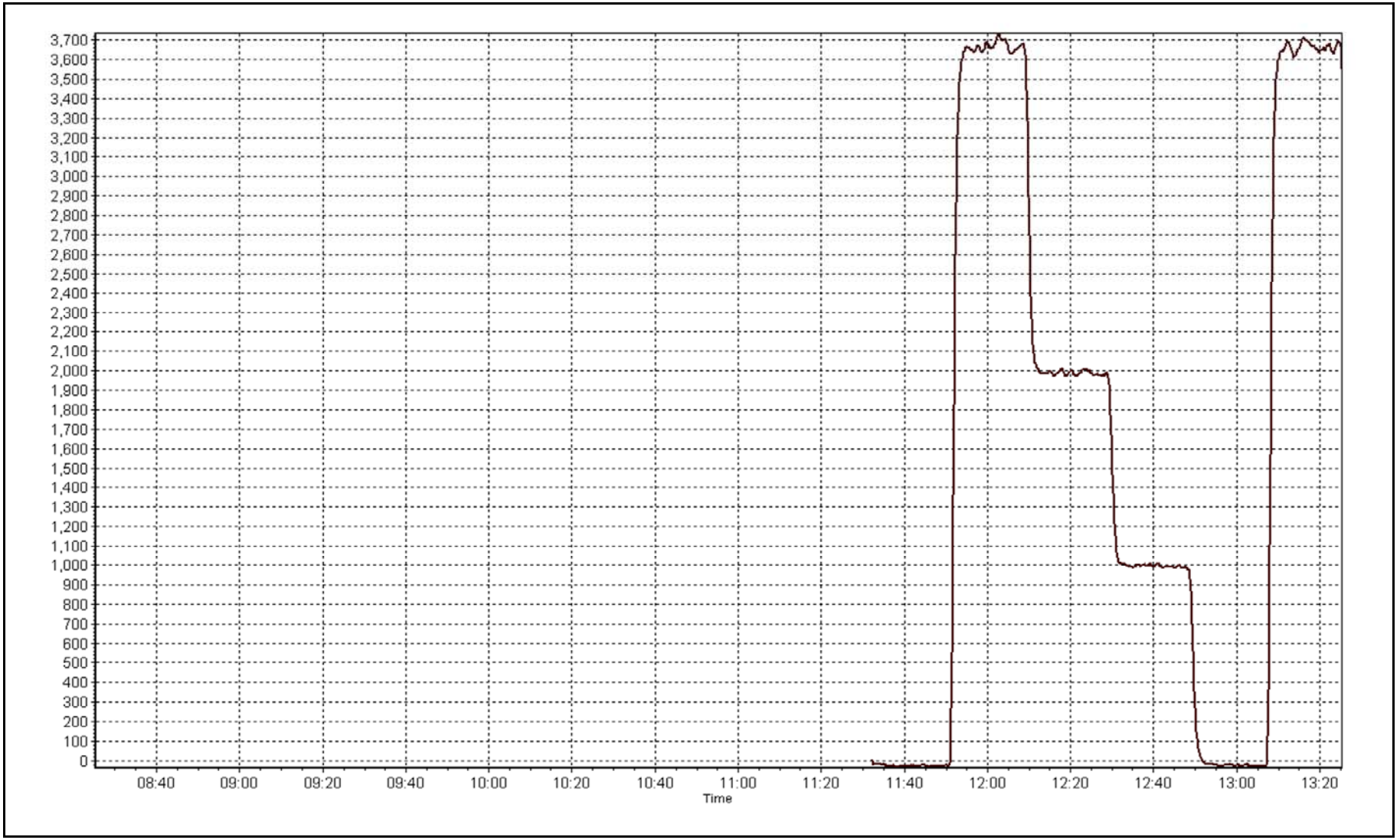
Calibration Date	April 22, 2014	Previous Calibration	March 10, 2014
Station Name	Anzac	Station Number	AMS 14
Start Time (MST)	11:33	End Time (MST)	13:25
Analyzer make	43i-TL	Analyzer serial #	1300156232

Calibration Data

Calculated concentration (ppb) (Cc)	Indicated concentration (ppb) (Ic)	Correction factor (Cc/Ic)	Statistical Evaluation	
0.0	-0.5	N/A	Correlation Coefficient	0.999763
75.1	73.4	1.0225		
39.9	39.8	1.0044	Slope	1.016720
20.0	19.9	1.0044		
			Intercept	0.049908



TRS Calibration Plot Date: April 22, 2014



Wood Buffalo Environmental Association

THC / NMHC Calibration Report

Station Information

Calibration Date	Tuesday, April 15, 2014	Prev Calibration	Friday, March 07, 2014
Station Name	Anzac	Station Number	AMS 14
Reason:	Removal		
Start Time (MST)	7:40	End Time (MST)	9:05
Barometric Pressure	782 mmHg	Station temp.	21 Deg C
Calibrator Model	Sabio 4010	Serial Number	8400311
Gas Cert Reference	LL107928	Cal Gas Expiry Date	Thursday, May 29, 2014
CH4 Cal Gas Conc.	505.0 ppm	CH4 Equiv Conc.	1066.0 ppm
C3H8 Cal Gas Conc.	204.0 ppm		
DACS make/model	Campbell Scientific CR3000	DACS serial No.	2372

Analyzer Information

	Before	*After*		*Before*	*After*
THC Range (ppm)	50	50	Internal Temp	32.7	NA
THC Range (input)	50	50	Flame Temp	373.6	NA
NMHC Range (ppm)	50	50	Carrier Pressure	34.5	NA
NMHC Range (input)	50	50	Fuel Pressure	42.3	NA
THC Calc slope	0.998482	1.001435	Air Pressure	32.4	NA
THC Calc intercept	0.008188	0.004142			
NMHC Calc slope	0.997997	1.001374			
NMHC Calc intercept	-0.001933	0.000076			

Analyzer make	TEC 55i	Analyzer serial #	**1331259521**

THC Calibration Data

Set Point	Dilution air flow rate (cc/min)	Source gas flow rate (cc/min)	Calculated concentration THC (ppm) (Cc)	Indicated concentration (ppb) (Ic)	Correction factor (Cc/Ic)
as found zero	5000	0.0	0.00	0.00	N/A
as found span	5000	78.3	16.69	16.68	1.001
calibrator zero	5000	0.0	0.00	0.00	N/A
high point	5000	78.3	16.69	16.68	1.001
second point	5000	39.1	8.34	8.28	1.007
third point	5000	19.6	4.18	4.19	0.997
calibrator zero					
as left zero					
as left span					
				Average Correction Factor	1.002

Corrected As found	16.68	Previous response	16.71	% change	0.2%

Notes:

Removed for original NHMC can be put back in

Calibration Performed By: Melissa Lemay

Wood Buffalo Environmental Association

THC / NMHC Calibration Report

NMHC Calibration Data

Set Point	Dilution air flow rate (cc/min)	Source gas flow rate (cc/min)	Calculated concentration NMHC (ppm) (Cc)	Indicated concentration (ppb) (Ic)	Correction factor (Cc/Ic)
as found zero	5000	0	0.00	0.00	N/A
as found span	5000	78.3	8.79	8.78	1.001
calibrator zero	5000	0.0	0.00	0.00	N/A
high point	5000	78.3	8.79	8.78	1.001
second point	5000	39.1	4.39	4.36	1.006
third point	5000	19.6	2.20	2.21	0.995
calibrator zero					
as left zero					
as left span					
				Average Correction Factor	1.001

Corrected As found	8.78	Previous response	8.80	% change	0.3%

CH4 Calibration Data

Set Point	Dilution air flow rate (cc/min)	Source gas flow rate (cc/min)	Calculated concentration NMHC (ppm) (Cc)	Indicated concentration (ppb) (Ic)	Correction factor (Cc/Ic)
as found zero	5000	0	0.00	0.00	N/A
as found span	5000	78.3	7.91	7.90	1.001
calibrator zero	5000	0.0	0.00	0.00	N/A
high point	5000	78.3	7.91	7.90	1.001
second point	5000	39.1	3.95	3.91	1.010
third point	5000	19.6	1.98	1.97	1.005
calibrator zero					
as left zero					
as left span					
				Average Correction Factor	

Corrected As found	7.90	Previous response	7.91	% change	0.1%

Wood Buffalo Environmental Association

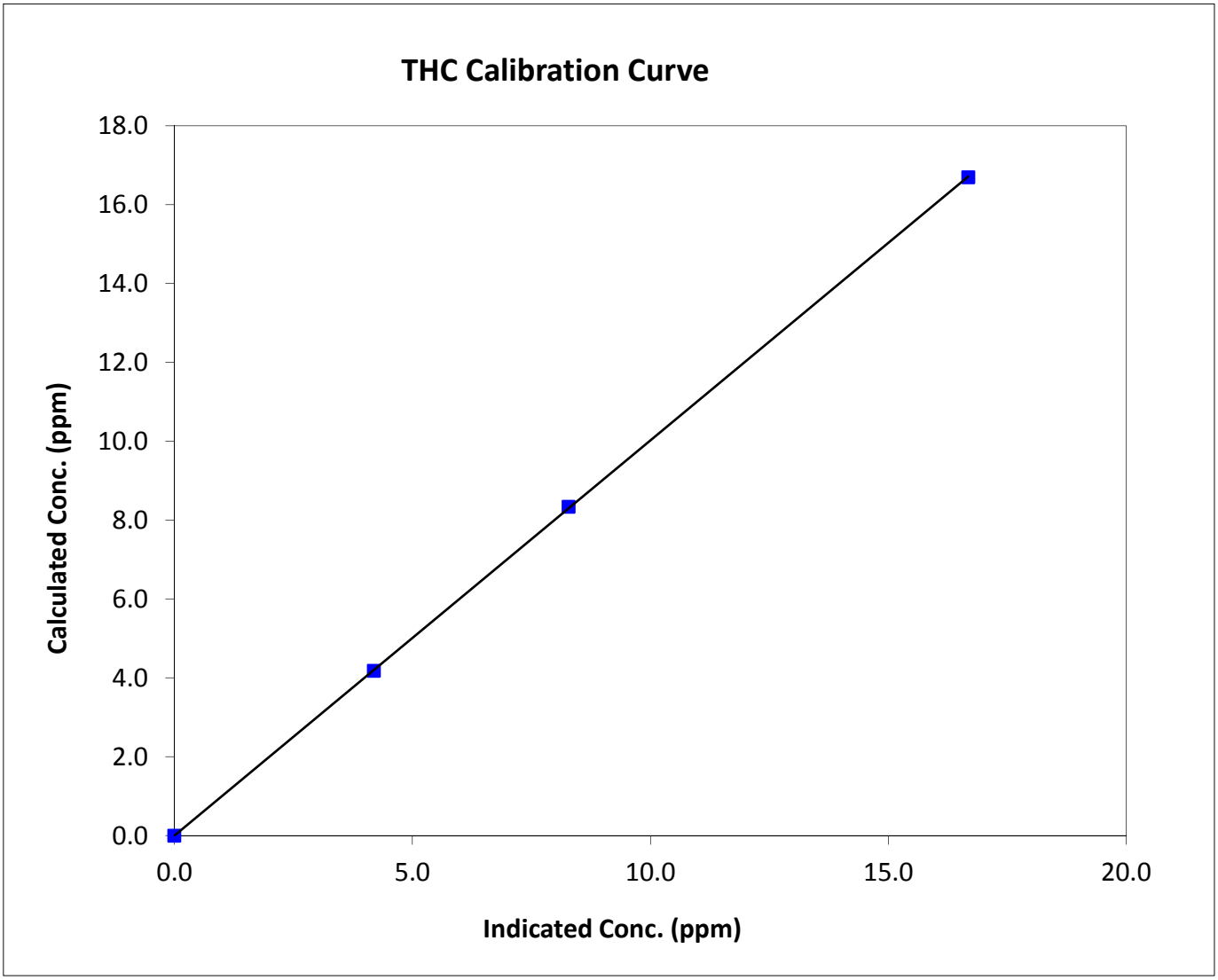
THC Calibration Summary

Station Information

Calibration Date	April 15, 2014	Previous Calibration	March 7, 2014
Station Name	Anzac	Station Number	AMS 14
Start Time (MST)	7:40	End Time (MST)	9:05
Analyzer make	TEC 55i	Analyzer serial #	1331259521

Calibration Data

Calculated concentration (ppm) (Cc)	Indicated concentration (ppm) (Ic)	Correction factor (Cc/Ic)	Statistical Evaluation	
0.00	0.00	N/A	Correlation Coefficient	0.999985
16.69	16.68	1.0008		
8.34	8.28	1.0068	Slope	1.001435
4.18	4.19	0.9973		
			Intercept	0.004142



Wood Buffalo Environmental Association

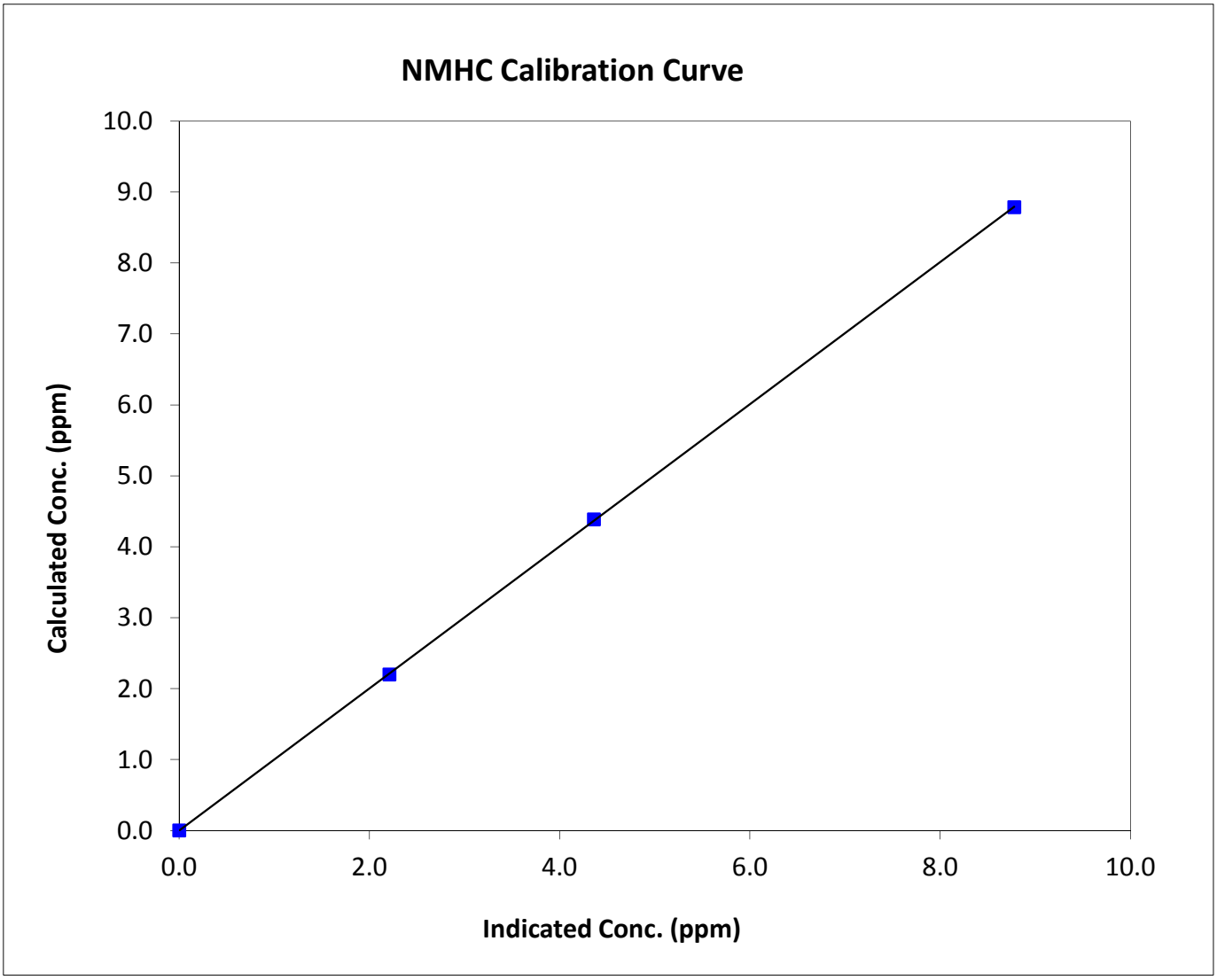
NMHC Calibration Summary

Station Information

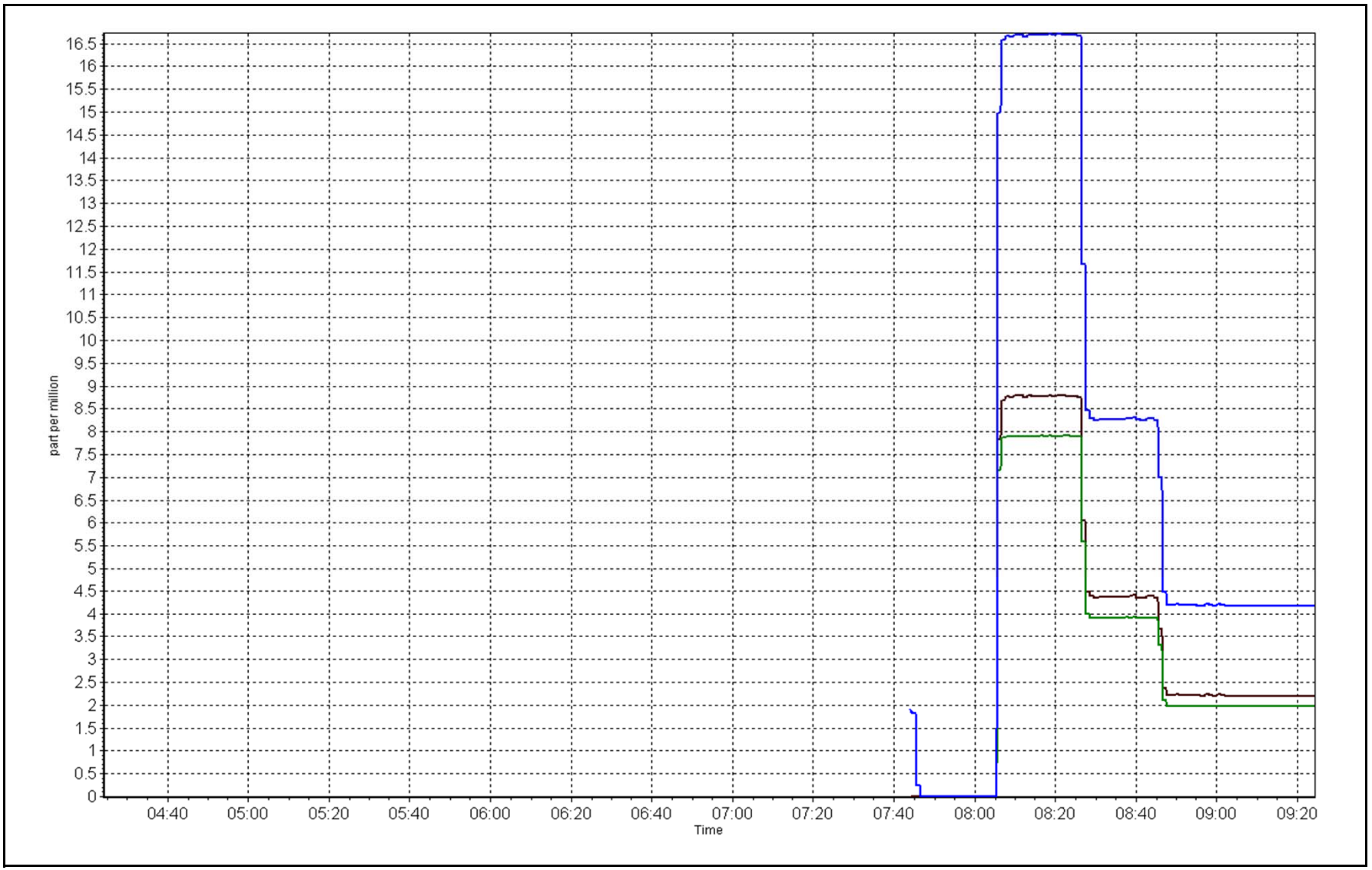
Calibration Date	April 15, 2014	Previous Calibration	March 7, 2014
Station Name	Anzac	Station Number	AMS 14
Start Time (MST)	7:40	End Time (MST)	9:05
Analyzer make	TEC 55i	Analyzer serial #	1331259521

Calibration Data

Calculated concentration (ppm) (Cc)	Indicated concentration (ppm) (Ic)	Correction factor (Cc/Ic)	Statistical Evaluation	
0.00	0.00	N/A	Correlation Coefficient	0.999984
8.79	8.78	1.0006		
4.39	4.36	1.0062	Slope	1.001374
2.20	2.21	0.9951		
			Intercept	0.000076



THC/NMHC Calibration Plot Date: April 15, 2014



Wood Buffalo Environmental Association

THC / NMHC Calibration Report

Station Information

Calibration Date	Tuesday, April 15, 2014	Prev Calibration	NA
Station Name	Anzac	Station Number	AMS 14
Reason:	Install		
Start Time (MST)	9:55	End Time (MST)	12:06
Barometric Pressure	782 mmHg	Station temp.	21 Deg C
Calibrator Model	Sabio 4010	Serial Number	8400311
Gas Cert Reference	LL107928	Cal Gas Expiry Date	Thursday, May 29, 2014
CH4 Cal Gas Conc.	505.0 ppm	CH4 Equiv Conc.	1066.0 ppm
C3H8 Cal Gas Conc.	204.0 ppm		
DACS make/model	Campbell Scientific CR3000	DACS serial No.	2372

Analyzer Information

	Before	*After*		*Before*	*After*
THC Range (ppm)	50	50	Internal Temp	NA	31.1
THC Range (input)	50	50	Flame Temp	NA	405.0
NMHC Range (ppm)	50	50	Carrier Pressure	NA	31.8
NMHC Range (input)	50	50	Fuel Pressure	NA	41.4
THC Calc slope	NA	0.999708	Air Pressure	NA	32.5
THC Calc intercept	NA	0.024224			
NMHC Calc slope	NA	1.001253			
NMHC Calc intercept	NA	-0.001962			

Analyzer make	TEC 55i	Analyzer serial #	**1218153355**

THC Calibration Data

Set Point	Dilution air flow rate (cc/min)	Source gas flow rate (cc/min)	Calculated concentration THC (ppm) (Cc)	Indicated concentration (ppb) (Ic)	Correction factor (Cc/Ic)
as found zero					
as found span					
calibrator zero	5000	0.0	0.00	0.00	N/A
high point	5000	78.3	16.69	16.70	1.000
second point	5000	39.1	8.34	8.26	1.009
third point	5000	19.6	4.18	4.16	1.005
calibrator zero	5000	0.0	0.00	0.00	N/A
as left zero	5000	0.0	0.00	0.00	N/A
as left span	5000	78.3	16.69	16.68	1.001
				Average Correction Factor	1.004

Corrected As found	NA	Previous response	NA	% change	NA

Notes:

Installation calibration.

Calibration Performed By: Melissa Lemay

Wood Buffalo Environmental Association

THC / NMHC Calibration Report

NMHC Calibration Data

Set Point	Dilution air flow rate (cc/min)	Source gas flow rate (cc/min)	Calculated concentration NMHC (ppm) (Cc)	Indicated concentration (ppb) (Ic)	Correction factor (Cc/Ic)
as found zero					
as found span					
calibrator zero	5000	0.0	0.00	0.00	N/A
high point	5000	78.3	8.79	8.78	1.001
second point	5000	39.1	4.39	4.37	1.004
third point	5000	19.6	2.20	2.21	0.995
calibrator zero	5000	0.0	0.00	0.00	N/A
as left zero	5000	0.0	0.00	0.00	N/A
as left span	5000	78.3	8.79	8.76	1.003
				Average Correction Factor	1.000

Corrected As found	NA	Previous response	NA	% change	NA

CH4 Calibration Data

Set Point	Dilution air flow rate (cc/min)	Source gas flow rate (cc/min)	Calculated concentration NMHC (ppm) (Cc)	Indicated concentration (ppb) (Ic)	Correction factor (Cc/Ic)
as found zero					
as found span					
calibrator zero	5000	0.0	0.00	0.00	N/A
high point	5000	78.3	7.91	7.92	0.999
second point	5000	39.1	3.95	3.89	1.015
third point	5000	19.6	1.98	1.95	1.015
calibrator zero	5000	0.0	0.00	0.00	N/A
as left zero	5000	0.0	0.00	0.00	N/A
as left span	5000	78.3	7.91	7.92	0.999
				Average Correction Factor	

Corrected As found	NA	Previous response	NA	% change	NA

Wood Buffalo Environmental Association

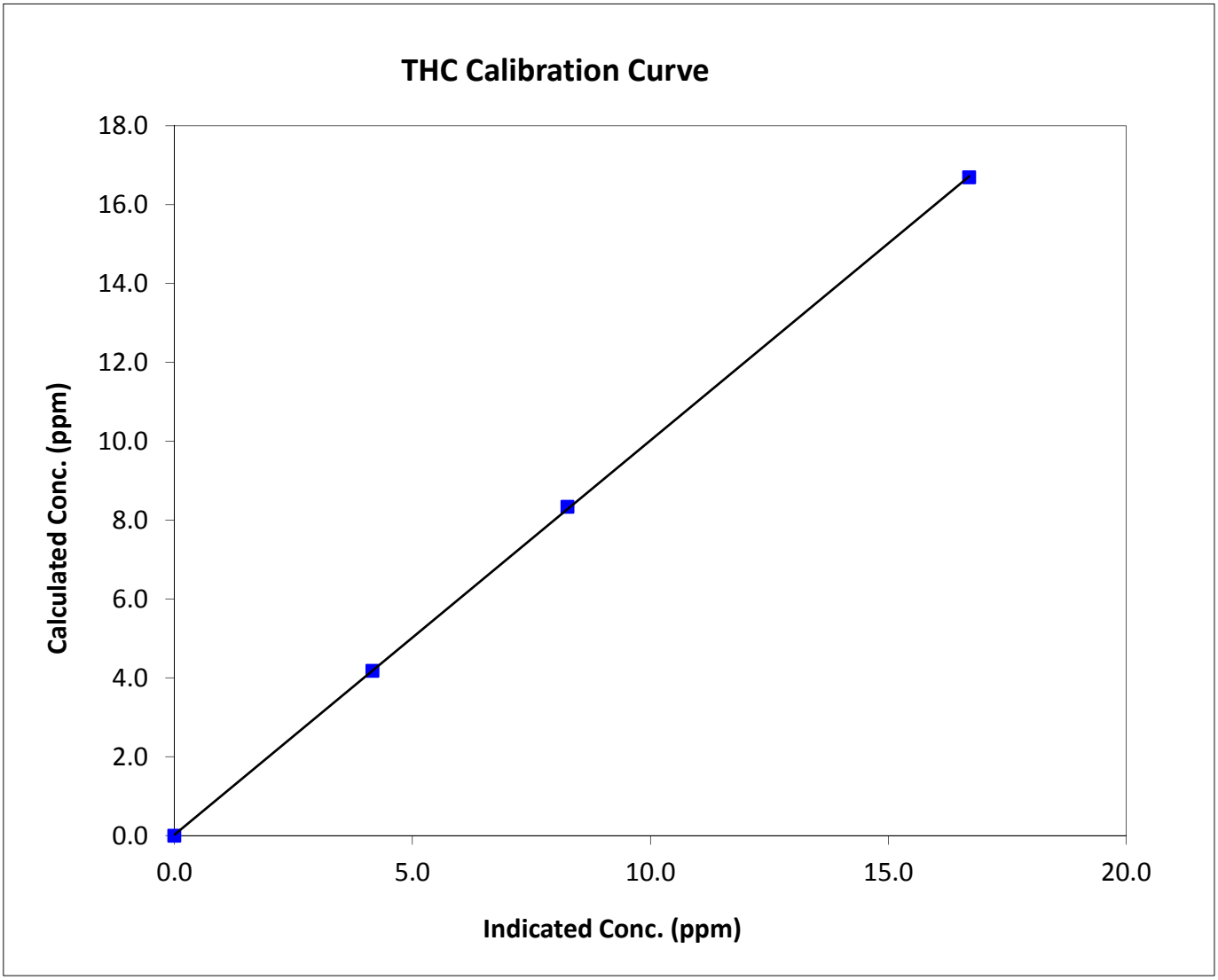
THC Calibration Summary

Station Information

Calibration Date	April 15, 2014	Previous Calibration	NA
Station Name	Anzac	Station Number	AMS 14
Start Time (MST)	9:55	End Time (MST)	12:06
Analyzer make	TEC 55i	Analyzer serial #	1218153355

Calibration Data

Calculated concentration (ppm) (Cc)	Indicated concentration (ppm) (Ic)	Correction factor (Cc/Ic)	Statistical Evaluation	
0.00	0.00	N/A	Correlation Coefficient	0.999972
16.69	16.70	0.9996		
8.34	8.26	1.0092	Slope	0.999708
4.18	4.16	1.0045		
			Intercept	0.024224



Wood Buffalo Environmental Association

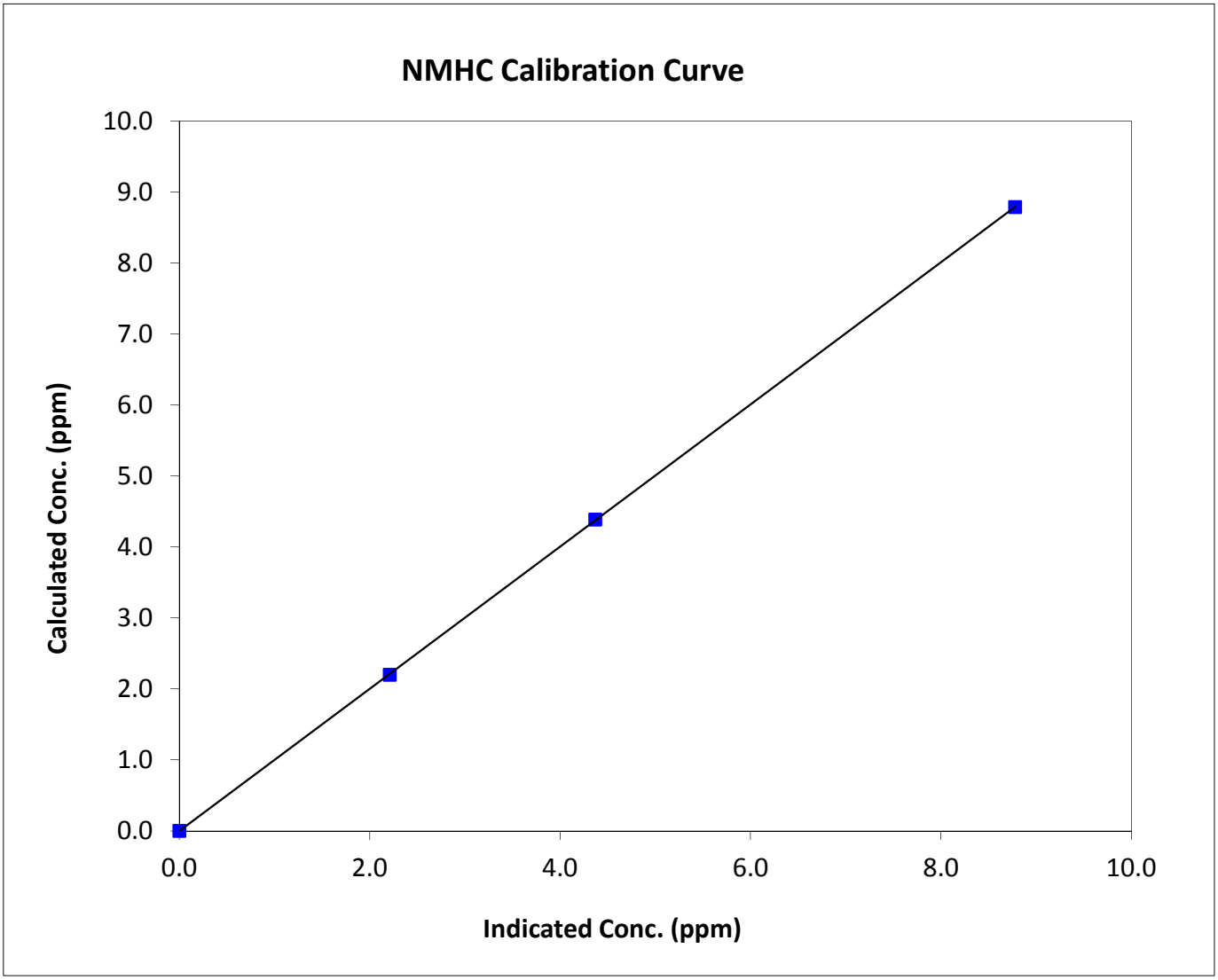
NMHC Calibration Summary

Station Information

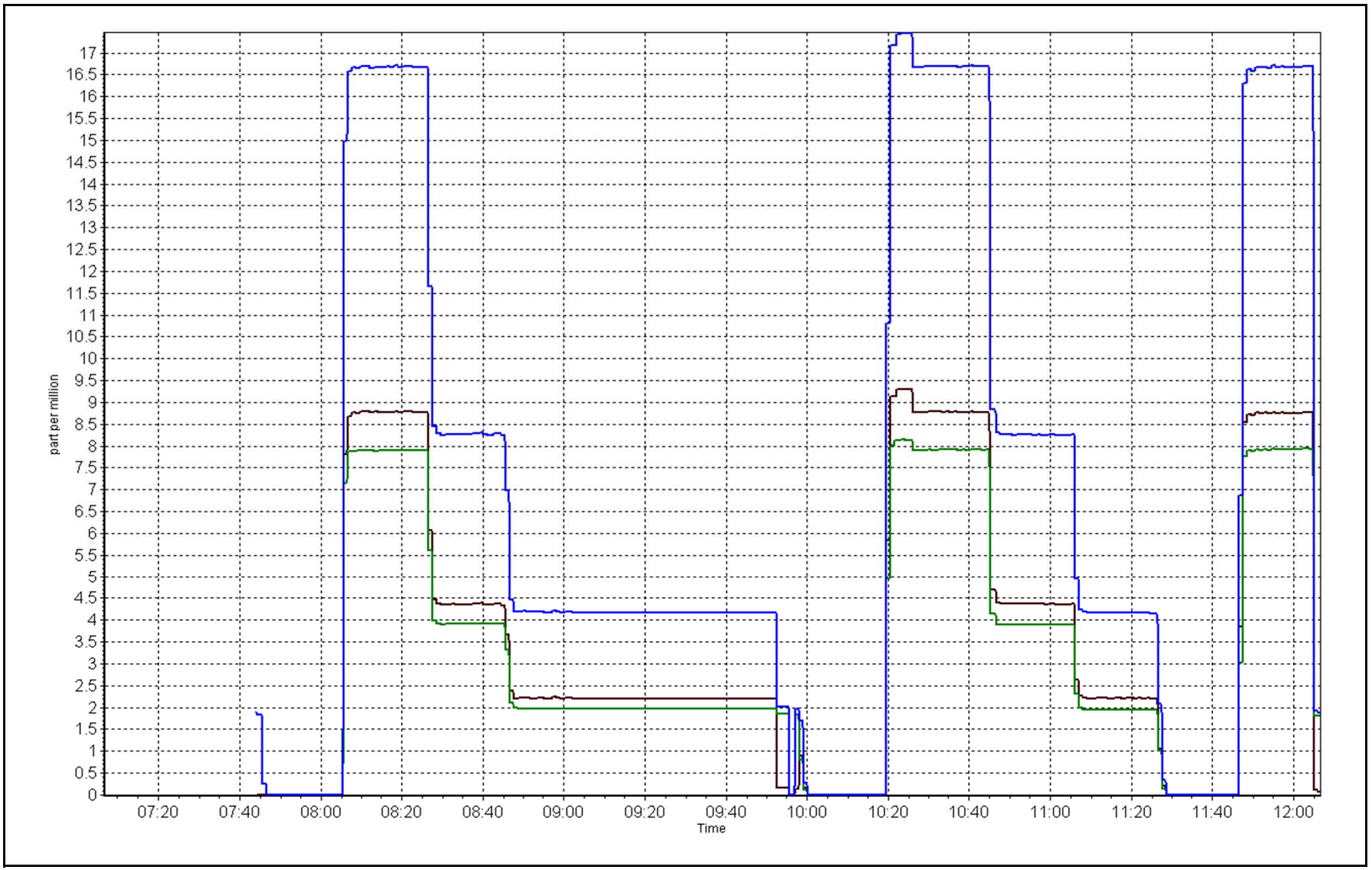
Calibration Date	April 15, 2014	Previous Calibration	NA
Station Name	Anzac	Station Number	AMS 14
Start Time (MST)	9:55	End Time (MST)	12:06
Analyzer make	TEC 55i	Analyzer serial #	1218153355

Calibration Data

Calculated concentration (ppm) (Cc)	Indicated concentration (ppm) (Ic)	Correction factor (Cc/Ic)	Statistical Evaluation	
0.00	0.00	N/A	Correlation Coefficient	0.999992
8.79	8.78	1.0006		
4.39	4.37	1.0039	Slope	1.001253
2.20	2.21	0.9951		
			Intercept	-0.001962



THC/NMHC Calibration Plot Date: April 15, 2014



Wood Buffalo Environmental Association

O_3 Calibration Report

Station Information

Calibration Date	April 22, 2014	Previous Calibration	March 10, 2014
Station Name	Anzac	Station Number	AMS 14
Reason:	Routine		
Start Time (MST)	8:40	End Time (MST)	11:30
Barometric Pressure	732 mmHg	Station temp.	23 Deg C
Calibrator Make/Model	Sabio 4010	Serial Number	8400311
NO2 calibration used	Thursday, April 17, 2014	Transfer Standard	
DACS make/model	Campbell Scientific CR3000	DACS serial No.	2372
DACS voltage range	5000	DACS channel #	7 & 8

Analyzer Information

	Before	*After*		*Before*	*After*
Analyzer Range (ppb)	500	500	Bench temp.	27.5	27.5
Analyzer Range (input)	5000	5000	Lamp temp.	55.7	55.7
Calculated slope	1.000458	0.987536	Pressure	678.4	678.4
Calculated intercept	0.500942	0.176599	Flow cell A	0.858	0.858
Analyzer Background	-0.5	-1.7	Flow cell B	0.745	0.745
Analyzer Coefficient	1.031	1.031	Cell A Intensity	65073	65073
			Cell B Intensity	59840	59840

Analyzer make	49C	Analyzer serial #	509110892

Calibration Data

Set Point	Dilution air flow rate (cc/min)	Calibrator Lamp Intensity (mA)	Calculated concentration (ppb) (Cc)	Indicated concentration (ppb) (Ic)	Correction factor (Cc/Ic)
as found zero	5000	0.00	0.0	-3.0	N/A
as found span	5000	N/A	394.4	394.9	0.999
calibrator zero	5000	0.00	0.0	0.1	N/A
high point	5000	N/A	394.4	399.4	0.987
second point	5000	N/A	270.4	273.5	0.989
third point	5000	N/A	141.4	142.7	0.991
calibrator zero	N/A	N/A	0.0	1.5	N/A
as left zero	N/A	N/A	0.0	1.5	N/A
as left span	N/A	N/A	N/A	293.5	
				Average Correction Factor	0.989

Corrected As found	397.9	Previous response	393.7	% change	-1.0%

Notes:

zero adjusted, No Maintance Done, Filter changed out

Calibration Performed By: Melissa Lemay

Wood Buffalo Environmental Association

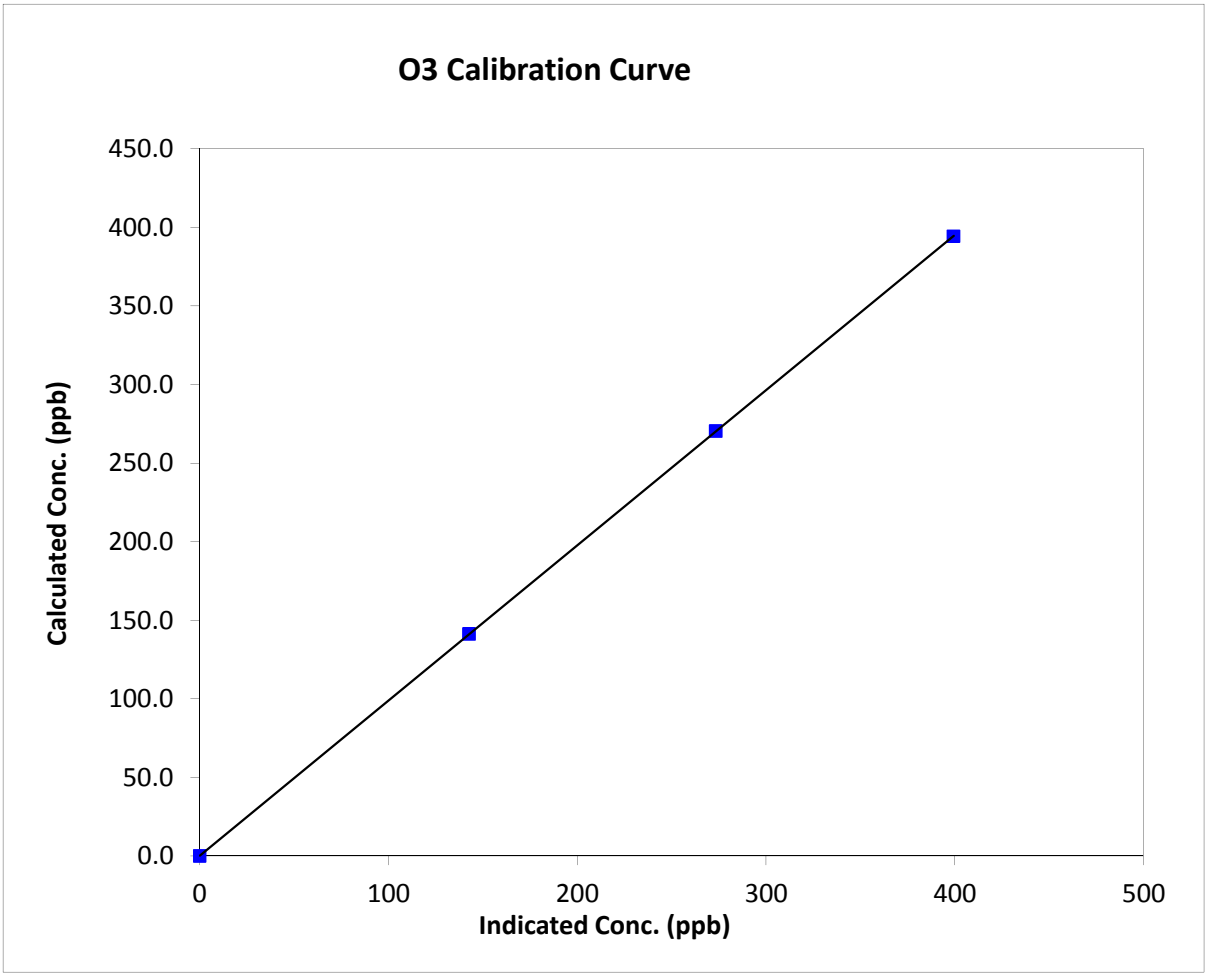
O_3 Calibration Summary

Station Information

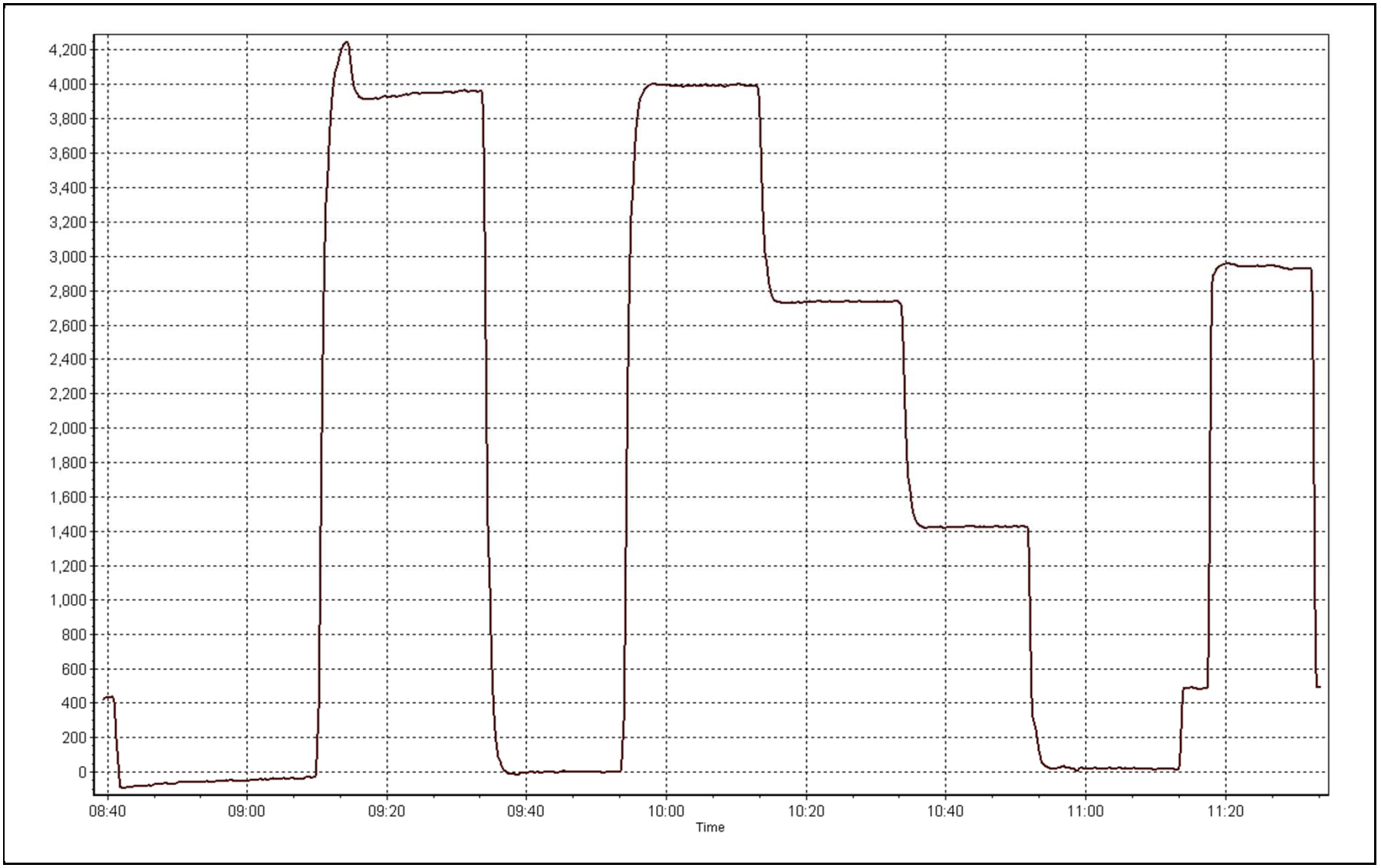
Calibration Date	Tuesday, April 22, 2014	Previous Calibration	March 10, 2014
Station Name	Anzac	Station Number	AMS 14
Start Time (MST)	8:40	End Time (MST)	11:30
Analyzer make	49C	Analyzer serial #	509110892

Calibration Data

Calculated concentration (ppb) (Cc)	Indicated concentration (ppb) (Ic)	Correction factor (Cc/Ic)	Statistical Evaluation	
0.0	0.1	N/A	Correlation Coefficient	0.999998
394.4	399.4	0.9875		
270.4	273.5	0.9887	Slope	0.987536
141.4	142.7	0.9909		
			Intercept	0.176599



O3 Calibration Plot Date: April 22, 2014



Wood Buffalo Environmental Association

NO_X-NO-NO_2 Calibration Report

Station Information

Calibration Date	April 17, 2014		Previous Calibration	March 7, 2014	
Station Name	Anzac		Station Number	AMS 14	
Reason:	Routine				
Start Time (MST)	7:40		End Time (MST)	11:34	
Barometric Pressure	782	mmHg	Station Temperature	22.0	Deg C
Calibrator	Sabio 4010		Serial Number	8400311	
NO Cal Gas Conc	51.1	ppm	Cal Gas Expiry Date	May 29, 2014	
NOx Cal Gas Conc	51.2	ppm	Cal Gas Serial #	LL107928	

DACS Information

DACS make & model: Campbell Scientific CR3000 DACS serial No.:

Parameter		NOx	NO	NO2
MV conversion	Analyzer Range (ppb)	1000	1000	1000
	Analyzer Range (mv)	5000	5000	5000
Before	Data Slope	1.001293	0.998631	1.006930
	Data Offset	0.420513	0.552667	0.866495
After	Data Slope	1.007162	1.009082	0.999293
	Data Offset	1.362656	1.091787	-0.149390
Channel #		6	5	4
Voltage Range		0 - 5V	0 - 5V	0 - 5V

Analyzer Information

Analyzer make/model: 42C Analyzer serial #: 509110890

Test Point	before		after	
Concentration range	0-1000	ppb	0-1000	ppb
NO coefficient	0.973	ppb	0.973	ppb
NOX coefficient	1.001	ppb	1.001	ppb
NO2 coefficient	1.002	ppb	1.002	ppb
NO bkgrnd	1.4		1.4	
NOX bkgrnd	1.7		1.7	
Nt coefficient	NA		NA	
Chamber Temp	49.3	Deg C	49.3	Deg C
Moly Temp	318.0	Deg C	318.0	Deg C
PMT Temp	-2.3	Deg C	-2.3	Deg C
O3 flow	OK	ccm	OK	ccm
R Cell Press	203.9	mmHg	203.9	mmHg
Sample Flow	0.547	ccm	0.547	ccm

Notes:

Filter Changed out, No Maintenance or adjustments made

Wood Buffalo Environmental Association

NO_X-NO-NO_2 Calibration Report

Station Information

Calibration Date: April 17, 2014 Station Number: AMS 14

Calibration Data

Set Point	Total flow rate (ccm)	Source gas flow rate (ccm)	Calculated NOx conc (ppb)	Calculated NO conc (ppb)	Calculated NO2 conc (ppb)	Indicated NOx conc (ppb)	Indicated NO conc (ppb)	Indicated NO2 conc (ppb)	NOx Correction factor	NO Correction factor
as found zero	5000	0.0	0.0	0.0	0.0	-0.3	0.0	0.0	N/A	N/A
as found span	5000	78.3	801.8	800.2	1.6	795.8	793.0	1.8	1.0075	1.0091
calibrator zero	5000	0.0	0.0	0.0	0.0	-0.3	0.0	0.0	N/A	N/A
high point	5000	78.3	801.8	800.2	1.6	795.8	793.0	1.8	1.0075	1.0091
second point	5000	39.1	400.4	399.6	0.8	394.0	392.8	0.7	1.0162	1.0173
third point	5000	19.6	200.7	200.3	0.4	198.0	197.4	0.3	1.0137	1.0148
calibrator zero	5000	0.0	0.0	0.0	0.0	0.1	0.0	0.0	N/A	N/A
as left zero	5000	0.0	0.0	0.0	0.0	0.1	0.0	0.0	N/A	N/A
as left span	5000	78.3	801.8	398.4	403.4	799.2	412.2	386.2	1.0032	0.9665
								Average Correction Factor	1.0125	1.0137

Corrcted As found NO_X= 796.1 NO= 793.0 Percent Change NO_X= 0.5% NO= 1.0%

Previous Response NO_X= 800.3 NO= 800.8

GPT Calibration Data

Dilution Flow 5000 ccm Source Gas Flow 78.30 ccm

O3 Setpoint (ppb)	Indicated NO high point (ppb)	Indicated NO drop conc (ppb)	Calculated NO2 conc (ppb)	Indicated NOx conc (ppb)	Indicated NO conc (ppb)	Indicated NO2 conc (ppb)	NOx Correction factor	NO Correction factor	NO2 Correction factor	Converter Efficiency
Cal zero			0.0			0.0			N/A	
1st NO2 (300)	N/A	398.4	394.4	794.2	398.4	395.0	0.9940	1.0000	0.9985	100.2%
2nd NO2 (200)	N/A	522.4	270.4	793.6	522.4	270.2	0.9947	1.0000	1.0007	99.9%
3rd NO2 (100)	N/A	651.4	141.4	794.8	651.4	142.2	0.9932	1.0000	0.9944	100.6%
4th NO2 (0)	792.8	N/A	3.0	795.8	792.8	1.9	0.9920	1.0000	N/A	N/A
					Average Correction Factor		0.9935	1.0000	0.9979	100.2%

Calibration Performed By: Melissa Lemay

Wood Buffalo Environmental Association

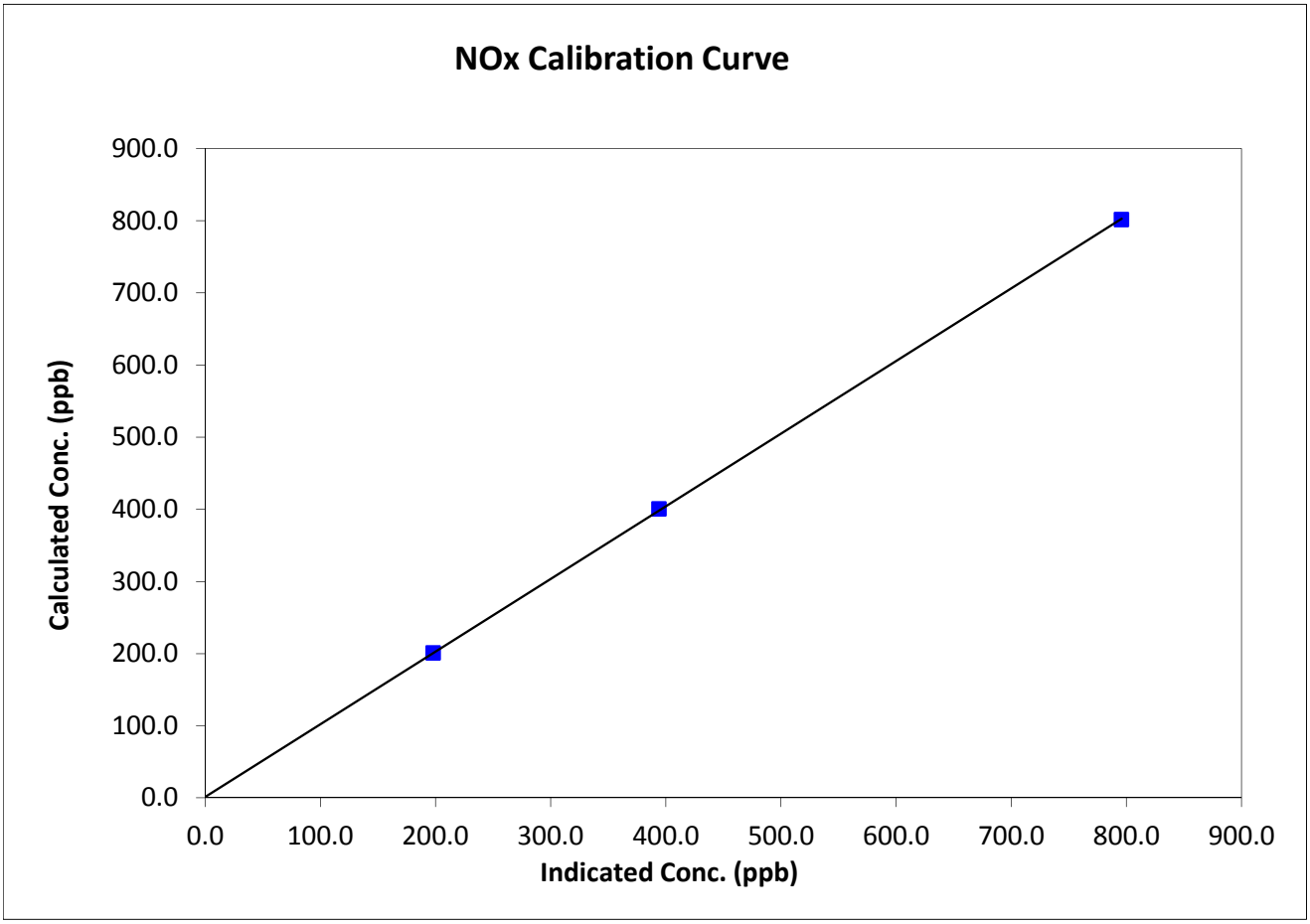
NO_X Calibration Summary

Station Information

Calibration Date	April 17, 2014	Previous Calibration	March 7, 2014
Station Name	Anzac	Station Number	AMS 14
Start Time (MST)	7:40	End Time (MST)	11:34
Analyzer make	42C	Analyzer serial #	509110890

Calibration Information

Calculated conc (ppb) (Cc)	Indicated concentration (ppb) (Ic)	Correction factor (Cc/Ic)	Statistical Evaluation	
0.0	-0.3	N/A	Correlation Coefficient	0.999980
801.8	795.8	1.0075		
400.4	394.0	1.0162	Slope	1.007162
200.7	198.0	1.0137		
			Intercept	1.362656



Wood Buffalo Environmental Association

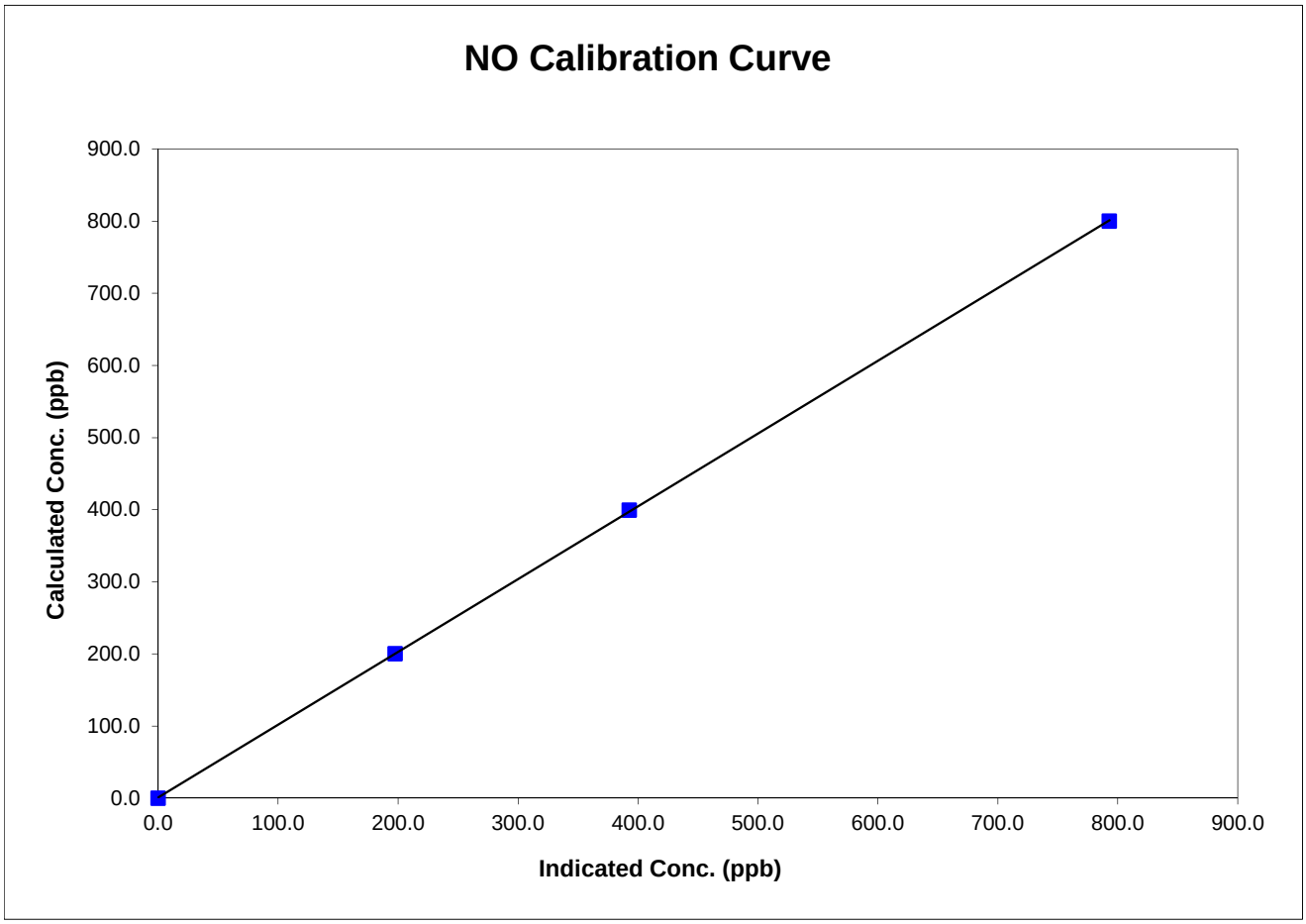
NO Calibration Summary

Station Information

Calibration Date	April 17, 2014	Previous Calibration	March 7, 2014
Station Name	Anzac	Station Number	AMS 14
Start Time (MST)	7:40	End Time (MST)	11:34
Analyzer make	42C	Analyzer serial #	509110890

Calibration Information

Calculated conc (ppb) (Cc)	Indicated concentration (ppb) (Ic)	Correction factor (Cc/Ic)	Statistical Evaluation	
0.0	0.0	N/A	Correlation Coefficient	0.999980
800.2	793.0	1.0091		
399.6	392.8	1.0173	Slope	1.009082
200.3	197.4	1.0148		
			Intercept	1.091787



Wood Buffalo Environmental Association

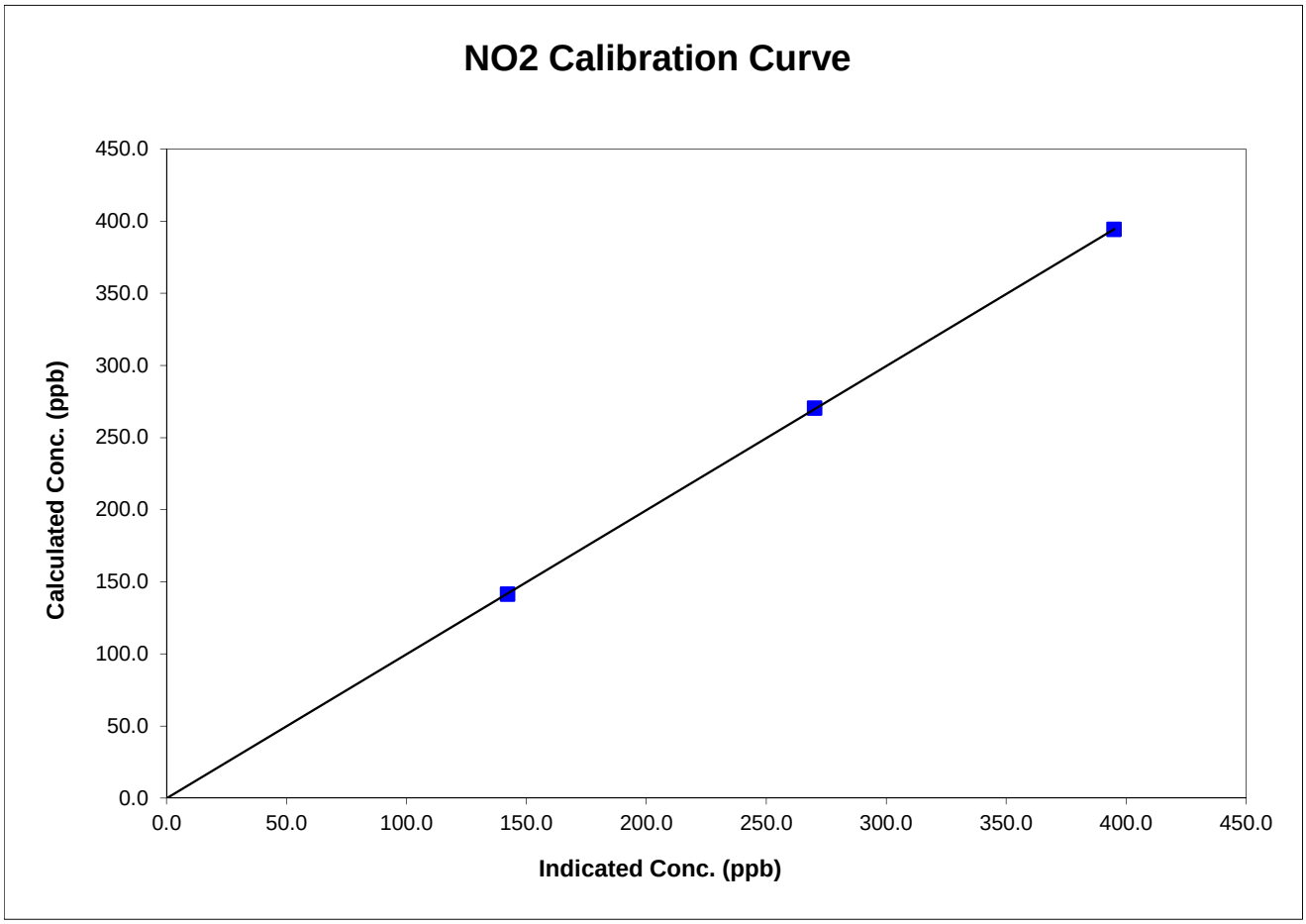
NO_2 Calibration Summary

Station Information

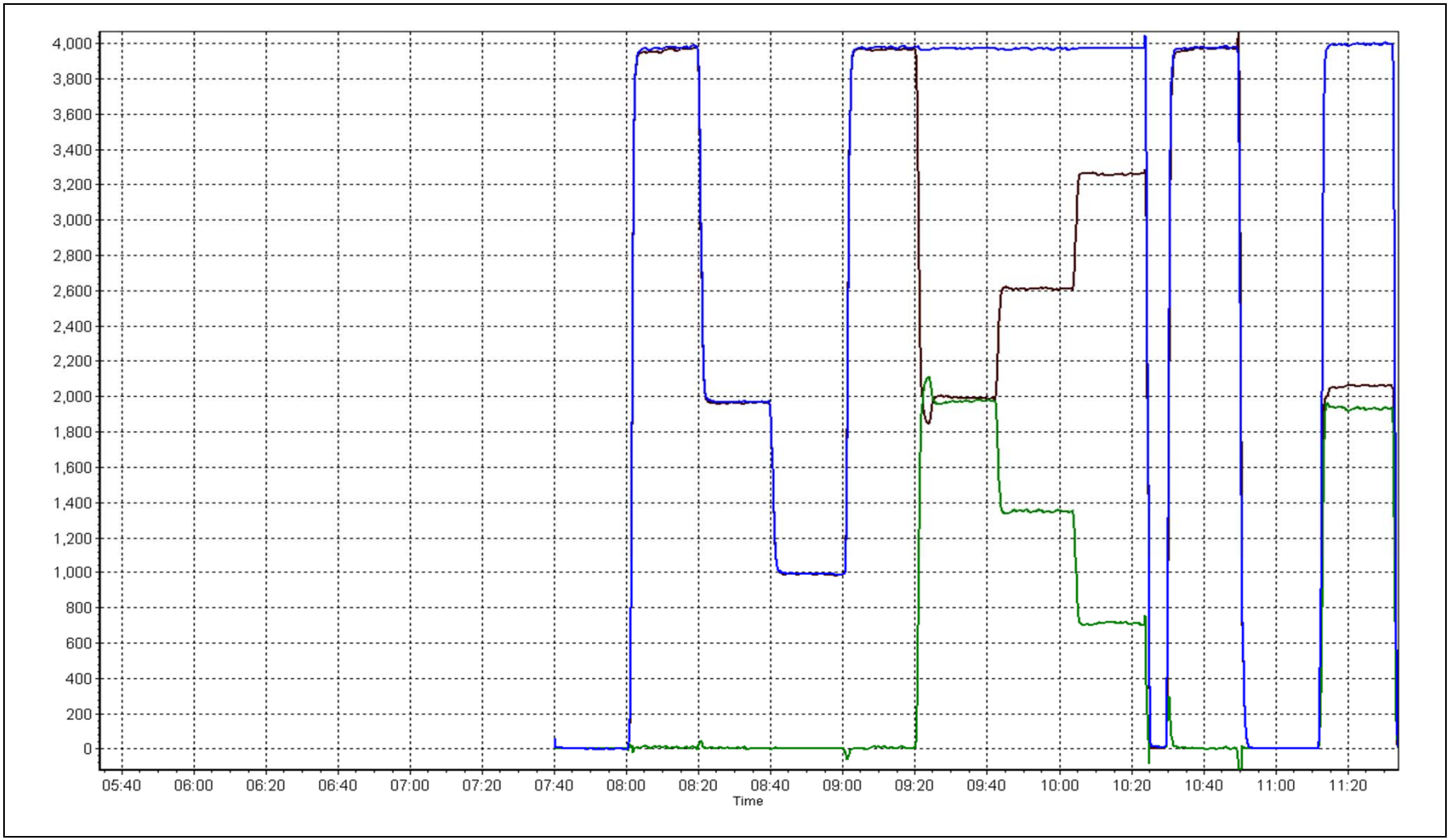
Calibration Date	April 17, 2014	Previous Calibration	March 7, 2014
Station Number	Anzac	Station Number	AMS 14
Start Time (MST)	7:40	End Time (MST)	11:34
Analyzer make	42C	Analyzer serial #	509110890

Calibration Information

Calculated conc (ppb) (Cc)	Indicated concentration (ppb) (Ic)	Correction factor (Cc/Ic)	Statistical Evaluation	
0.0	0.0	N/A	Correlation Coefficient	0.999992
394.4	395.0	0.9985		
270.4	270.2	1.0007	Slope	0.999293
141.4	142.2	0.9944		
			Intercept	-0.149390



NOx, NO & NO_2 Calibration Plot Date: April 17, 2014



WOOD BUFFALO ENVIRONMENTAL ASSOCIATION

CONTINUOUS AMBIENT AIR QUALITY
MONITORING PROGRAM
MONTHLY REPORT

AMS 15
CNRL HORIZON
APRIL 2014

Operations and Data Collection by:
Wood Buffalo Environmental Association
Fort McMurray, Alberta

QA/QC, Data Validation and Reporting by:
Aurora Atmospherics Inc.
Calgary, Alberta

May 30, 2014

WOOD BUFFALO ENVIRONMENTAL ASSOCIATION - CNRL HORIZON (AMS 15)
APRIL 2014

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	677	35	43	98.89	30	0	7	0
TRS (ppb) Average	679	33	41	98.89	1	0	0	0
THC (ppm) Average	669	41	51	98.61	4.8	-	2.7	-
NO2 (ppb) Average	677	35	43	98.89	36	0	13	-
NO (ppb) Average	677	35	43	98.89	80	-	13	-
NOX (ppb) Average	677	35	43	98.89	110	-	26	-
PM2.5 (ug/m3) Average	716	0	4	99.44	31	-	8.8	0
Temperature 2 m (C) Average	717	0	3	99.58	22.1	-	13.2	-
Wind Speed 10 m (km/h) Average	720	0	0	100.00	27	-	-	-
Wind Direction 10 m (deg) Average	720	0	0	100.00	-	-	-	-
Precipitation (mm) Total	667	0	53	92.64	2.8	-	-	-
Relative Humidity (%) Average	718	0	2	99.72	99	-	-	-
Global Solar Radiation (W/m2) Average	720	0	0	100.00	569	-	-	-

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

WOOD BUFFALO ENVIRONMENTAL ASSOCIATION - CNRL HORIZON (AMS 15)
APRIL 2014

MONTHLY SUMMARY FOR AIR QUALITY/ METEOROLOGICAL MONITORING MEASUREMENTS

					Percentile						
Parameter	Number	Mean	StnDev	Total	Min	P10	Q1	Median	Q3	P90	Max
SO2 (ppb) Average	677	1.1	3	-	0	0	0	0	1	2	30
TRS (ppb) Average	679	0.1	0	-	0	0	0	0	0	0	1
THC (ppm) Average	669	2.32	0.3	-	1.9	2.1	2.2	2.3	2.4	2.5	4.8
NO2 (ppb) Average	677	4.6	5	-	0	0	1	3	7	11	36
NO (ppb) Average	677	1.5	6	-	0	0	0	0	1	3	80
NOX (ppb) Average	677	6.1	10	-	0	1	1	3	7	13	110
PM2.5 (ug/m3) Average	716	6.04	3	-	0.8	3.7	4.5	5.5	6.8	9.2	31
Temperature 2 m (C) Average	717	0.98	7.9	-	-21.4	-10	-4.5	1.2	6.1	11.1	22.1
Wind Speed 10 m (km/h) Average	720	9.8	5	-	1	4	6	9	13	17	27
Wind Direction 10 m (deg) Average	720	-	-	-	-	-	-	-	-	-	-
Precipitation (mm) Total	667	-	-	13.86	0	0	0	0	0	0	2.8
Relative Humidity (%) Average	718	59.3	19	-	16	34	44	59	73	87	99
Global Solar Radiation (W/m2) Average	720	132.9	167	-	0	0	0	46	240	429	569

WOOD BUFFALO ENVIRONMENTAL ASSOCIATION - CNRL HORIZON (AMS 15)
APRIL 2014

OPERATIONAL NOTES

Parameter	Period Start	Period End	Duration (Hours)	Notes
AIR QUALITY ANALYZERS	11 Apr 2014 21:00	11 Apr 2014 23:00	3	Station power failure
SO2	16 Apr 2014 08:00	16 Apr 2014 12:00	5	Maintenance - Stn operator at site resolving grounding issue
TRS	16 Apr 2014 08:00	16 Apr 2014 12:00	5	Maintenance - Stn operator at site resolving grounding issue
THC	12 Apr 2014 00:00	12 Apr 2014 01:00	2	Stabilization period after power failure and FID flame out
THC	16 Apr 2014 08:00	16 Apr 2014 12:00	5	Maintenance - Stn operator at site resolving grounding issue
NO2, NO, NOX	16 Apr 2014 08:00	16 Apr 2014 12:00	5	Maintenance - Stn operator at site resolving grounding issue
PM2.5	14 Apr 2014 13:00	14 Apr 2014 13:00	1	Flow and zero reference checks, sample head cleaning
Temperature 2m	16 Apr 2014 08:00	16 Apr 2014 10:00	3	Maintenance - Stn operator at site resolving grounding issue
Precipitation Collector	11 Apr 2014 21:00	11 Apr 2014 23:00	3	Maintenance - Stn operator at site resolving grounding issue
Precipitation Collector	14 Apr 2014 11:00	16 Apr 2014 12:00	50	Sensor data flagged due to electrical interference
Relative Humidity	16 Apr 2014 09:00	16 Apr 2014 10:00	2	Maintenance - Stn operator at site resolving grounding issue

Wood Buffalo Environmental Association

Summary of Hour Averages

Sulphur Dioxide (SO_2) - ppb

CNRL Horizon - April 2014

Number of Exceedences (AAAQO): 1-hr: 0 24-hr: 0
Maximum Value: 30 ppb on Apr 4 08:00 Maximum Daily Average: 7.1 ppb on Apr 4

Minimum Value: 0 ppb on Apr 9 21:00 Minimum Daily Average: 0.1 ppb on Apr 22
Maximum Diurnal Average: 2.5 ppb at hour 9 Minimum Diurnal Average: 0.3 ppb at hour 3
Monthly Average: 1.1 ppb Percentiles: $P_1 = 0$ $P_{10} = 0$ $Q_1 = 0$ Median = 0 $Q_3 = 1$ $P_{90} = 2$ $P_{99} = 18$

Hours in Service:	720
Hours of Data:	677
Hours of Missing Data:	43
Hours of Calibration:	35
Percent Operational Time:	98.9

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-Apr	0	Z	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0.2	0
2-Apr	0	Z	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0.2	0
3-Apr	0	Z	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0.2	0
4-Apr	2	Z	2	14	25	13	16	30	26	14	9	5	1	1	1	0	0	0	0	0	0	0	0	0	7.1	30
5-Apr	0	Z	0	0	0	0	0	0	1	1	1	1	0	0	0	0	0	0	0	0	0	0	0	0	0.4	1
6-Apr	0	Z	0	0	0	0	0	1	1	1	0	0	0	0	0	0	1	1	1	1	0	0	0	0	0.4	1
7-Apr	0	Z	0	0	0	0	0	0	0	0	0	0	0	0	3	3	0	0	0	0	0	0	0	0	0.5	3
8-Apr	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
9-Apr	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
10-Apr	0	Z	0	0	0	0	0	0	0	0	1	2	1	1	0	0	0	0	0	0	0	0	0	0	0.2	2
11-Apr	0	Z	0	0	0	0	0	0	C	C	C	C	C	0	0	0	0	0	0	0	PF	PF	PF	0	--	0
12-Apr	0	Z	0	0	0	0	0	0	0	0	0	0	0	1	0	0	0	0	0	0	0	0	0	0	0.1	1
13-Apr	0	Z	1	2	0	0	0	0	3	2	1	1	1	1	1	0	0	0	0	0	0	0	0	0	0.7	3
14-Apr	1	Z	1	5	6	2	2	6	8	4	2	8	9	4	2	1	1	5	4	3	2	0	0	0	3.3	9
15-Apr	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
16-Apr	0	Z	0	0	0	0	0	M	M	M	M	M	0	0	1	2	1	0	0	0	0	0	0	0	0.4	2
17-Apr	0	Z	0	0	0	0	0	6	21	21	2	0	0	0	0	0	0	0	0	0	0	0	0	0	2.3	21
18-Apr	0	Z	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	5	2	2	2	3	1	0.7	5
19-Apr	1	Z	0	0	0	0	0	1	1	2	7	14	18	19	10	7	4	3	3	1	1	1	0	0	4.0	19
20-Apr	0	Z	0	0	0	0	1	1	3	3	2	1	1	1	1	1	1	1	0	0	1	0	0	0	0.8	3
21-Apr	0	Z	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0.2	0
22-Apr	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
23-Apr	0	Z	0	0	0	0	0	0	0	0	0	0	0	0	1	1	1	0	0	0	0	0	0	0	0.3	1
24-Apr	0	Z	0	0	0	0	0	0	0	0	0	0	0	0	2	4	0	0	0	0	2	2	0	0	0.6	4
25-Apr	0	Z	0	0	0	0	0	0	1	1	0	0	1	1	0	0	0	0	5	4	2	1	1	2	0.9	5
26-Apr	1	Z	1	1	1	0	0	2	3	18	7	4	5	1	4	2	0	0	0	0	0	0	1	6	2.6	18
27-Apr	1	Z	0	0	0	0	0	0	0	0	0	0	2	3	2	3	5	4	5	5	3	2	2	1	1.7	5
28-Apr	1	Z	0	0	0	0	0	0	0	0	0	3	6	4	3	3	4	6	5	3	2	1	2	2	2.0	6
29-Apr	1	Z	0	0	0	0	0	1	2	2	1	1	0	0	0	0	0	0	0	0	0	0	0	0	0.5	2
30-Apr	1	Z	0	0	0	0	0	0	0	0	1	8	0	1	1	1	1	1	1	0	0	0	0	0	0.7	8
	0.3	--	0.3	0.9	1.2	0.6	0.8	1.7	2.5	2.5	1.4	1.8	1.6	1.3	1.1	1.1	0.7	0.8	1.1	0.8	0.6	0.5	0.5	0.5	Diurnal Average	
	2	--	2	14	25	13	16	30	26	21	9	14	18	19	10	7	5	6	5	5	3	2	3	6	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

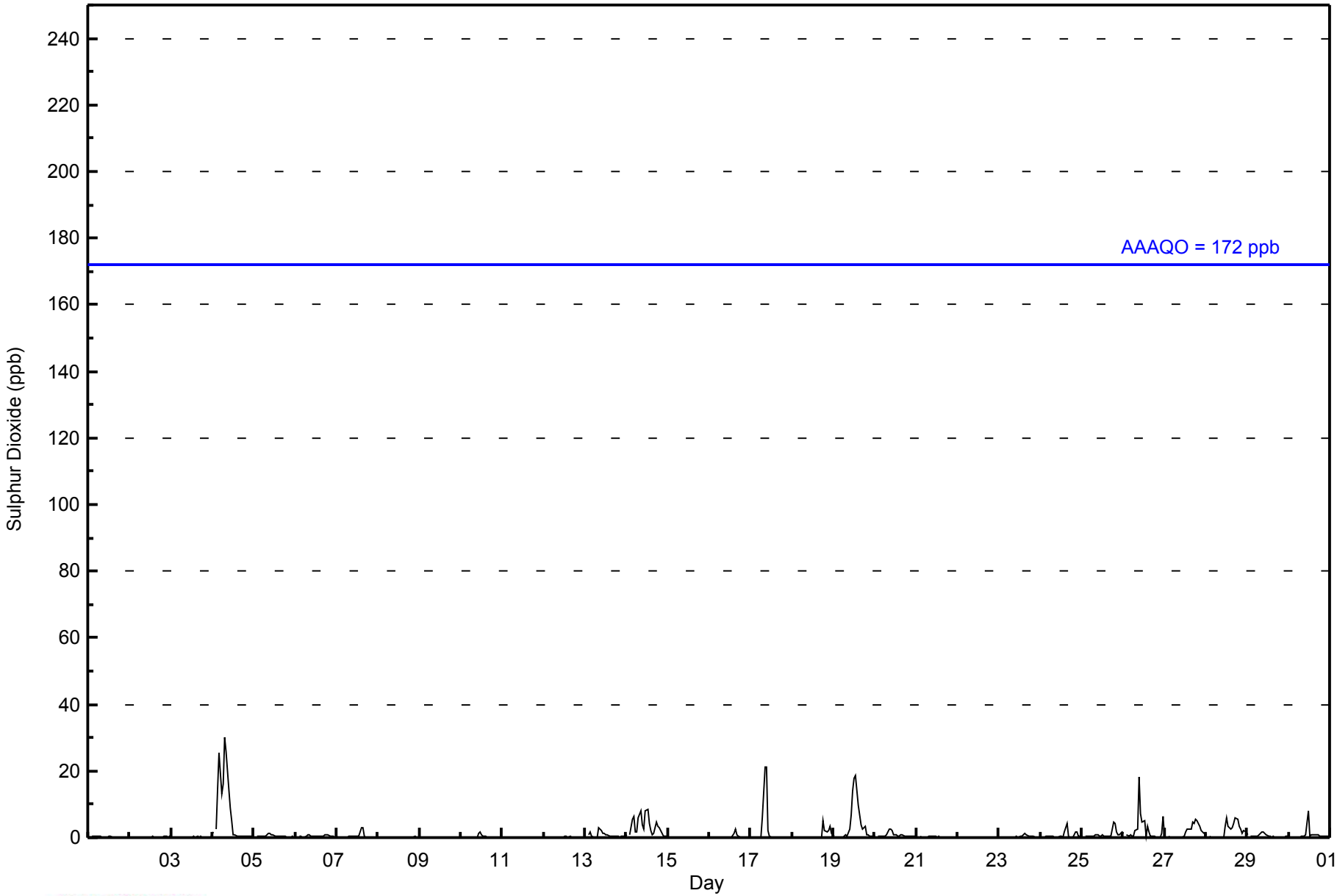
AURORA ATMOSPHERICS INC.

WBEA NETWORK

Hourly Averages

Sulphur Dioxide (SO_2) - ppb

CNRL Horizon - April 2014



AURORA ATMOSPHERICS INC.

Concentration Ranges (ppb)	Number of Hours	%	Cumulative %
0 - 10	664	98.08	98.08
11 - 20	8	1.18	99.26
21 - 60	5	0.74	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: 677

Total Number of Hours: 720

WBEA NETWORK

Frequency Distribution

Sulphur Dioxide (SO_2) - ppb

CNRL Horizon - April 2014

Concentration	**Wind Direction**																
Ranges (ppb)	N	NNE	NE	ENE	E	ESE	SE	SSE	S	SSW	SW	WSW	W	WNW	NW	NNW	**Totals**
0 - 10	47	126	86	42	34	41	42	63	50	36	19	23	12	23	12	8	664
11 - 20	0	0	0	0	1	1	0	5	1	0	0	0	0	0	0	0	8
21 - 60	0	0	0	0	0	0	1	4	0	0	0	0	0	0	0	0	5
61 - 110	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
111 - 172	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
> 172	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Totals	47	126	86	42	35	42	43	72	51	36	19	23	12	23	12	8	677

Total Number of Valid Hours: 677

Total Number of Hours: 720

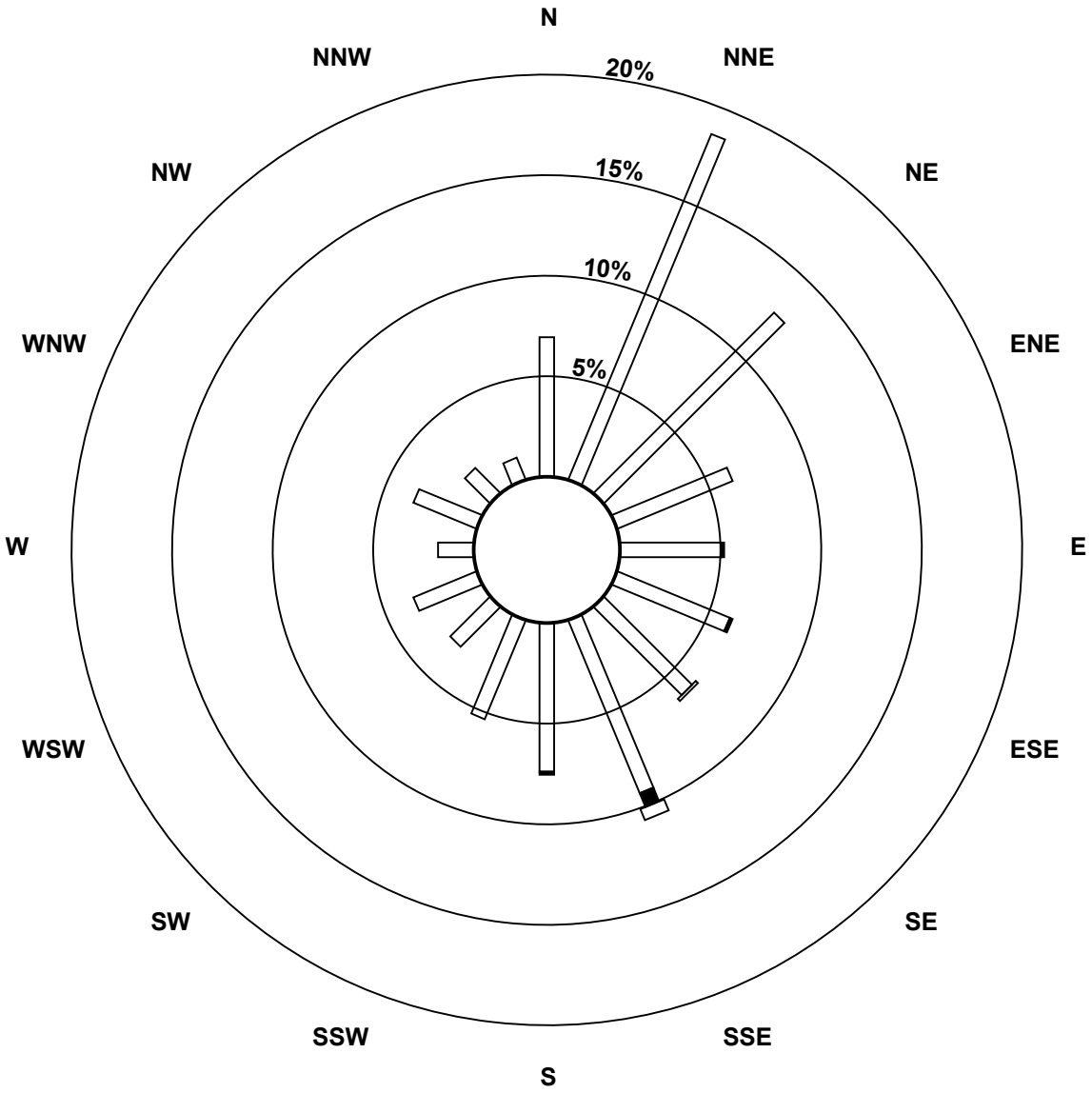
AURORA
ATMOSPHERICS INC.

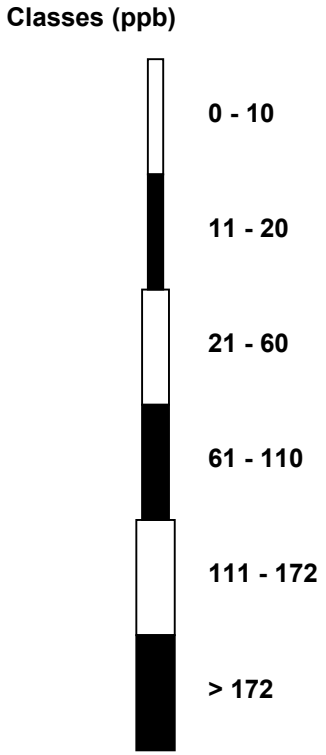
Wood Buffalo Environmental Association

Wind Rose Apr 2014

Sulphur Dioxide (SO_2) - ppb

CNRL Horizon (AMS 15)





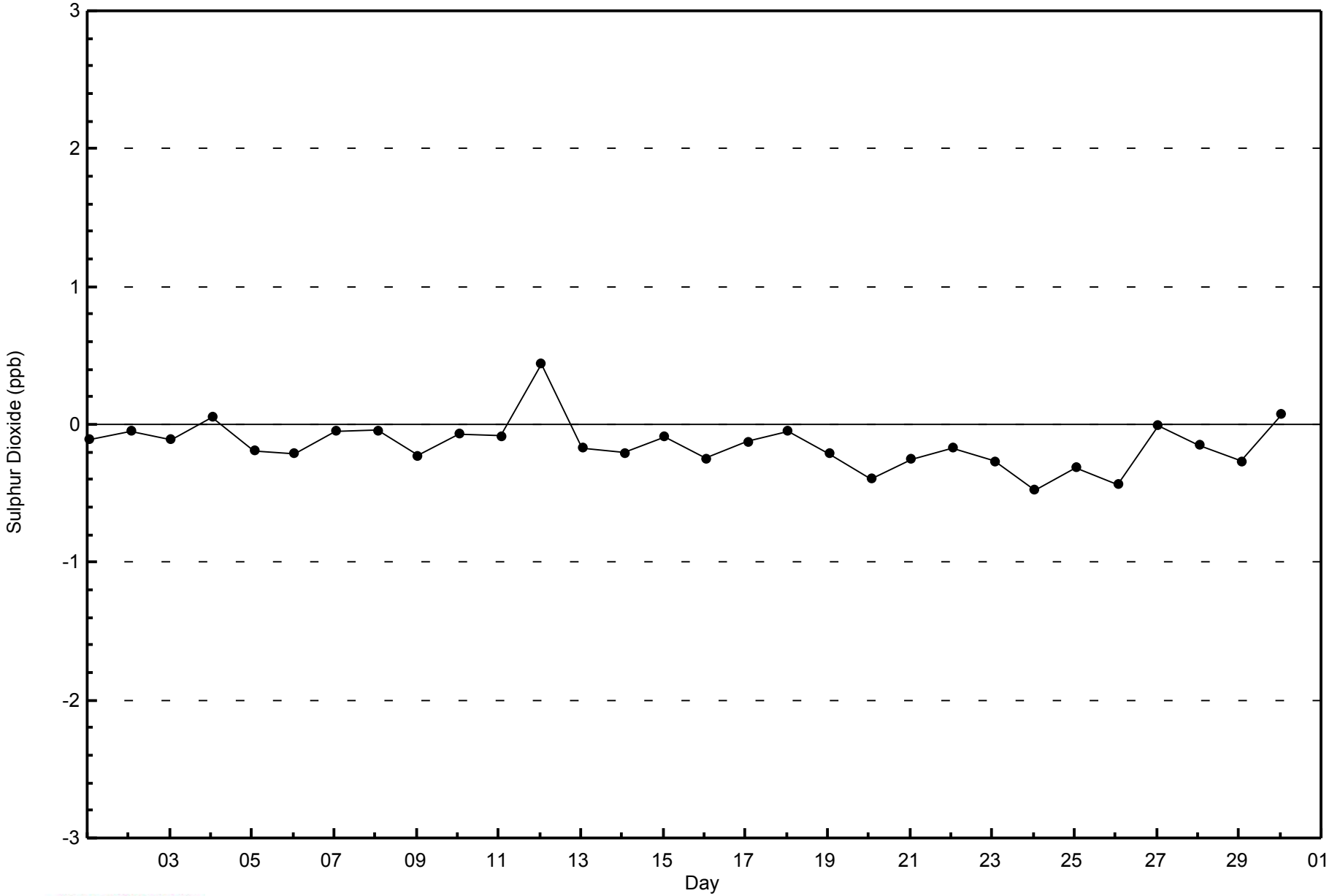
Total Number of Valid Hours: 677

WBEA NETWORK

Zero Responses

Sulphur Dioxide (SO_2) - ppb

CNRL Horizon - April 2014



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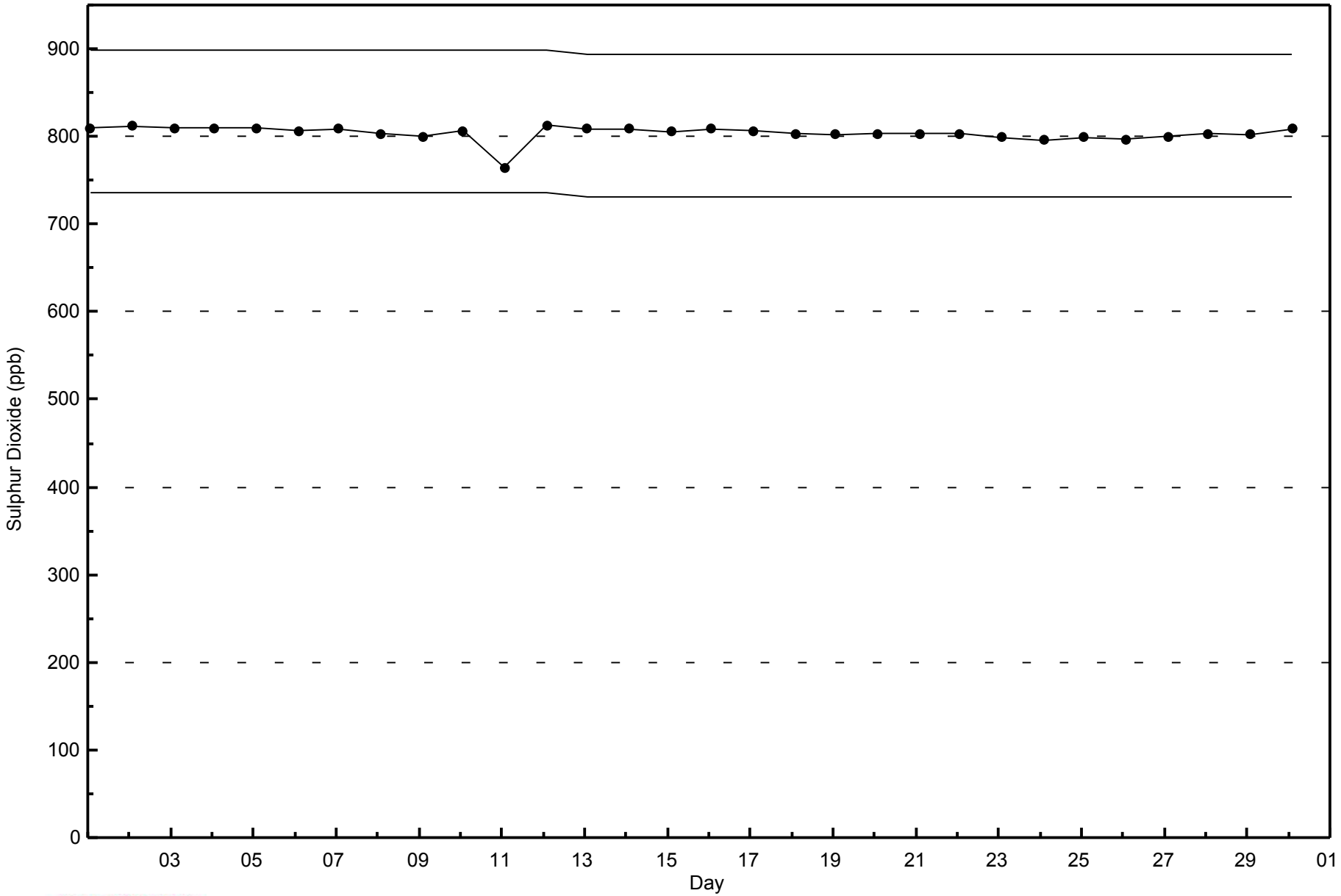
WBEA NETWORK

Span Responses

Sulphur Dioxide (SO_2) - ppb

CNRL Horizon - April 2014



AURORA ATMOSPHERICS INC.

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

Maximum Value: 1 ppb on Apr 30 12:00 Maximum Daily Average: 0.2 ppb on Apr 29

Minimum Value: 0 ppb on Apr 10 01:00 Minimum Daily Average: 0.0 ppb on Apr 18

Maximum Diurnal Average: 0.2 ppb at hour 24 Minimum Diurnal Average: 0.1 ppb at hour 14

Monthly Average: 0.1 ppb Percentiles: $P_1 = 0$ $P_{10} = 0$ $Q_1 = 0$ Median = 0 $Q_3 = 0$ $P_{90} = 0$ $P_{99} = 0$

Hours in Service:	720
Hours of Data:	679
Hours of Missing Data:	41
Hours of Calibration:	33
Percent Operational Time:	98.9

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-Apr	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	0
2-Apr	0	0	Z	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0.2	0
3-Apr	0	0	Z	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0.2	0
4-Apr	0	0	Z	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0.2	0
5-Apr	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	0
6-Apr	0	0	Z	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0.2	0
7-Apr	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	0
8-Apr	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	0
9-Apr	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	0
10-Apr	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
11-Apr	0	0	Z	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	PF	PF	PF	0	0.1	0
12-Apr	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	0
13-Apr	0	0	Z	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1	0.1	1
14-Apr	0	0	Z	0	1	0	0	0	0	0	C	C	C	0	0	0	0	0	0	0	0	0	0	0	0.2	1
15-Apr	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	0
16-Apr	0	0	Z	0	0	0	0	M	M	M	M	M	0	0	0	0	0	0	0	0	0	0	0	0	0.0	0
17-Apr	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	0
18-Apr	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
19-Apr	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	0
20-Apr	0	0	Z	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0.2	0
21-Apr	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	0
22-Apr	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	0
23-Apr	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
24-Apr	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	0
25-Apr	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	0
26-Apr	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	0
27-Apr	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	0
28-Apr	0	0	Z	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0.2	0
29-Apr	0	0	Z	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0.2	0
30-Apr	0	0	Z	0	0	0	0	0	0	0	0	1	0	0	0	0	0	0	0	0	0	0	0	0	0.2	1
	0.1	0.1	--	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.2	Diurnal Average	
	0	0	--	0	1	0	0	0	0	0	0	1	0	0	0	0	0	0	0	0	0	0	0	1	Diurnal Maximum	

Z - zerospan C - Calibration M - Maintenance PF - Power Failure

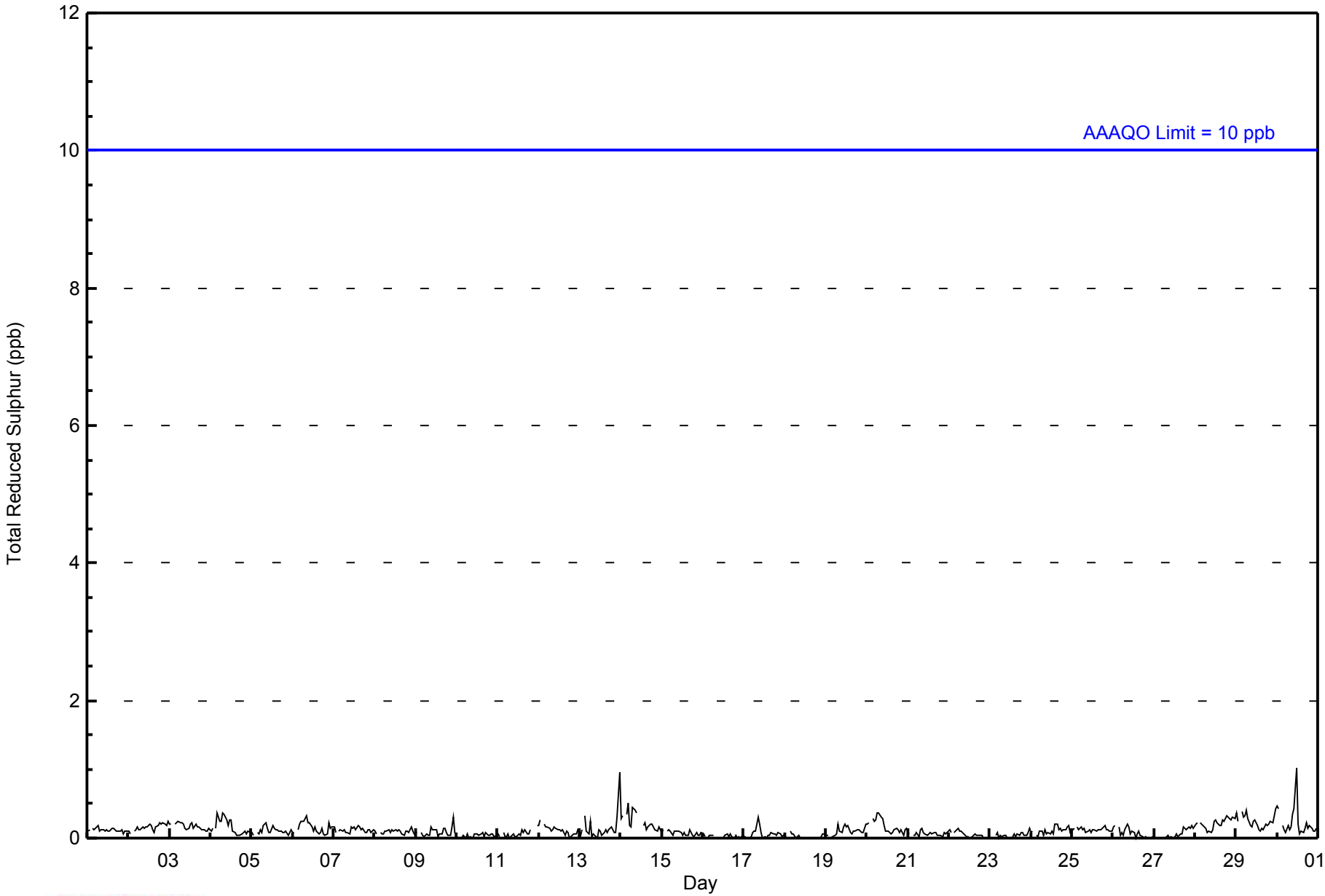
Alberta Ambient Air Quality Objectives (AAAQO): 1-hr 10 ppb 24-hr 3 ppb

WBEA NETWORK

Hourly Averages

Total Reduced Sulphur (TRS) - ppb

CNRL Horizon - April 2014



AURORA ATMOSPHERICS INC.

Concentration Ranges (ppb)	Number of Hours	%	Cumulative %
0 - 2	679	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: 679

Total Number of Hours: 720

WBEA NETWORK

Frequency Distribution

Total Reduced Sulphur (TRS) - ppb

CNRL Horizon - April 2014

Concentration Ranges (ppb)	Wind Direction																
	N	NNE	NE	ENE	E	ESE	SE	SSE	S	SSW	SW	WSW	W	WNW	NW	NNW	**Totals**
0 - 2	46	131	85	42	35	42	44	73	48	35	21	21	14	22	12	8	679
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	46	131	85	42	35	42	44	73	48	35	21	21	14	22	12	8	679

Total Number of Valid Hours: 679

Total Number of Hours: 720

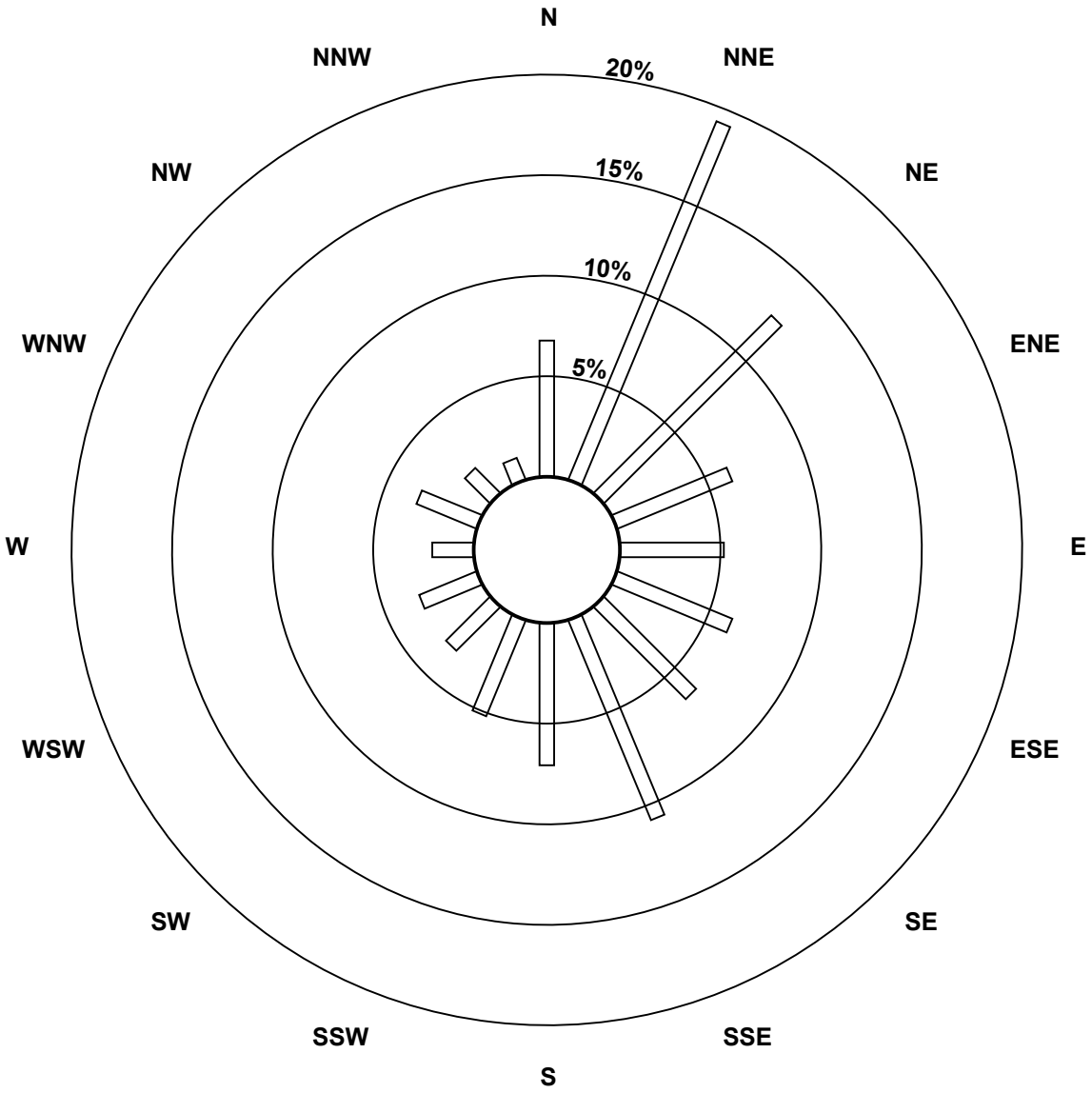
AURORA
ATMOSPHERICS INC.

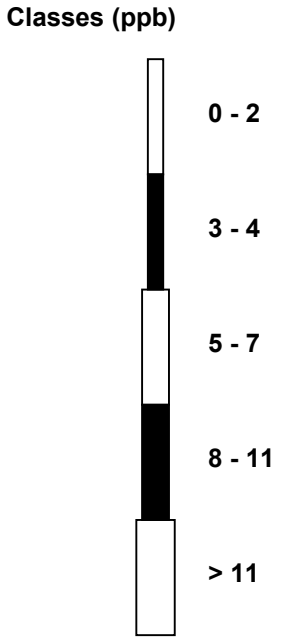
Wood Buffalo Environmental Association

Wind Rose Apr 2014

Total Reduced Sulphur (TRS) - ppb

CNRL Horizon (AMS 15)





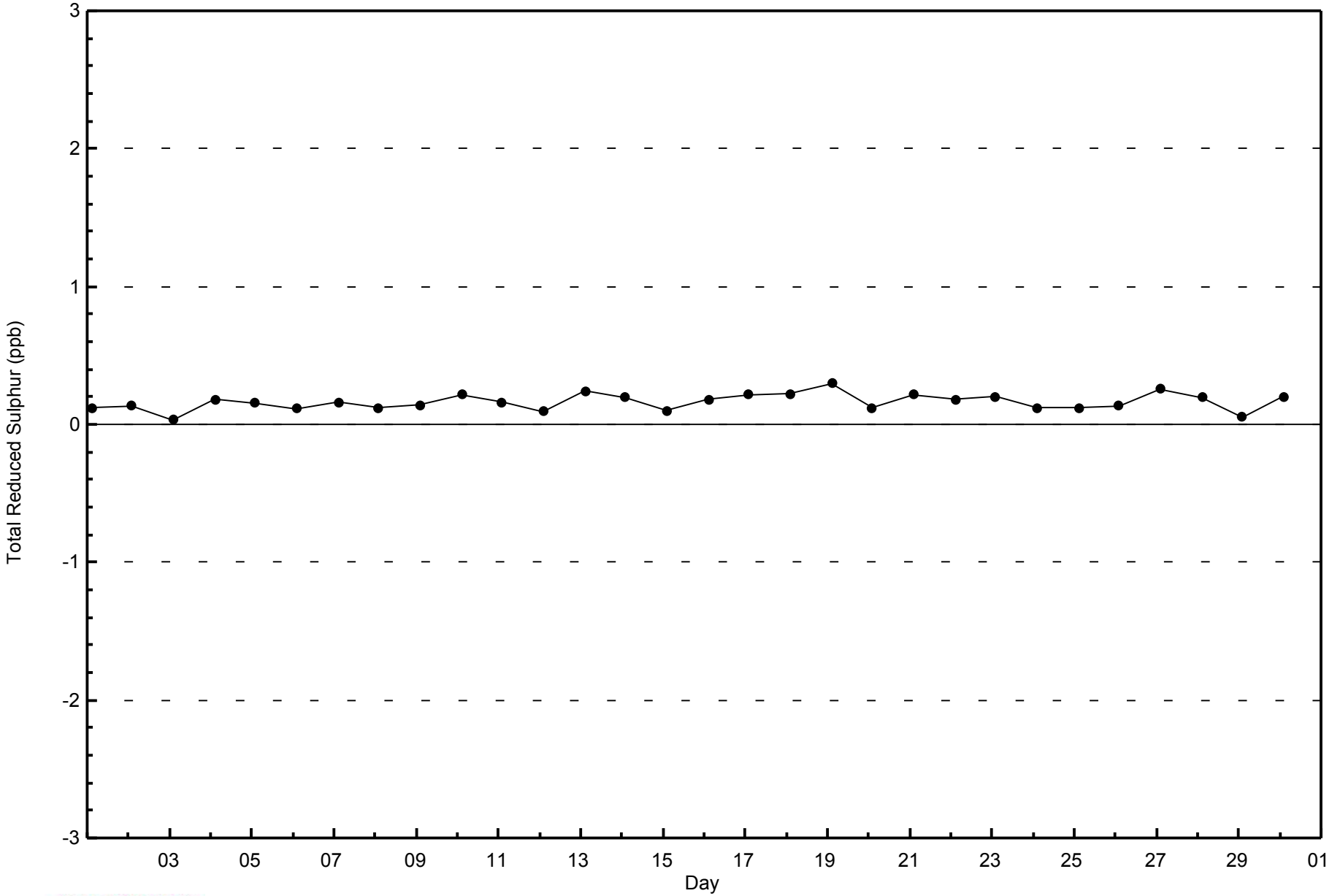
Total Number of Valid Hours: 679

WBEA NETWORK

Zero Responses

Total Reduced Sulphur (TRS) - ppb

CNRL Horizon - April 2014



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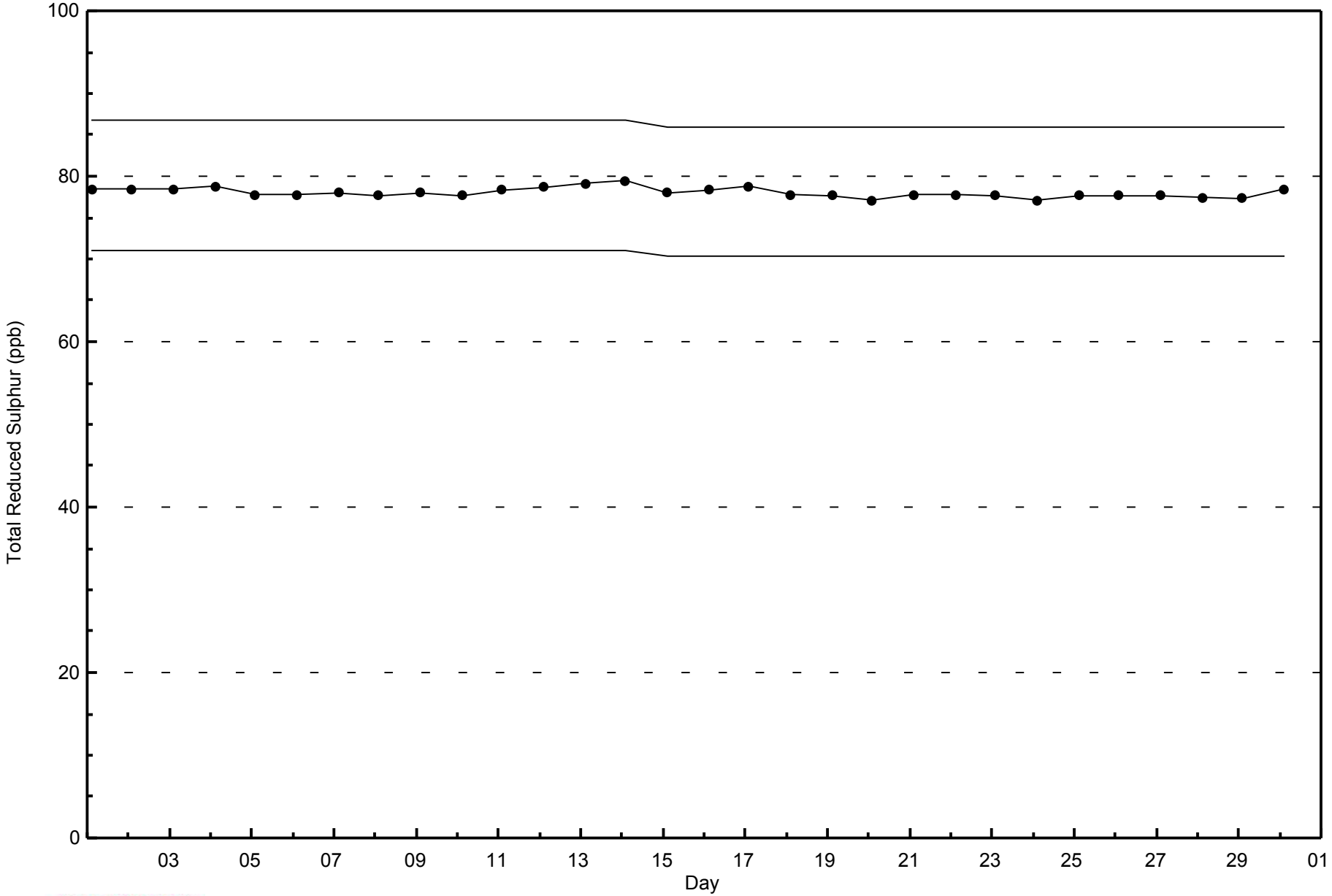
WBEA NETWORK

Span Responses

Total Reduced Sulphur (TRS) - ppb

CNRL Horizon - April 2014



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Summary of Hour Averages

Total Hydrocarbons (THC) - ppm

CNRL Horizon - April 2014

Maximum Value: 4.8 ppm on Apr 30 01:00

Maximum Daily Average: 2.7 ppm on Apr 20

Minimum Value: 1.9 ppm on Apr 27 14:00

Minimum Daily Average: 1.9 ppm on Apr 27

Maximum Diurnal Average: 2.4 ppm at hour 8

Minimum Diurnal Average: 2.2 ppm at hour 14

Monthly Average: 2.32 ppm

Percentiles: P_1 = 1.9 P_{10} = 2.1 Q_1 = 2.2 Median = 2.3 Q_3 = 2.4 P_{90} = 2.5 P_{99} = 3.7

Hours in Service:	720
Hours of Data:	669
Hours of Missing Data:	51
Hours of Calibration:	41
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-Apr	2.3	Z	2.9	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	2.3	2.3	2.3	2.9
2-Apr	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
3-Apr	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	2.4	2.4	2.3	2.3	2.4	2.4	2.3	2.3	2.3	2.3	2.3	2.3	2.4
4-Apr	2.3	Z	2.3	2.3	2.3	2.3	2.4	2.4	2.4	2.4	2.5	2.5	2.4	2.4	2.4	2.5	2.5	2.5	2.4	2.4	2.5	2.5	2.4	2.3	2.4	2.5
5-Apr	2.4	Z	2.3	2.3	2.3	2.7	2.4	3.7	3.3	2.4	2.3	2.4	2.6	2.5	2.5	2.4	2.3	2.3	2.3	2.3	2.3	2.3	2.3	2.3	2.5	3.7
6-Apr	2.3	Z	2.3	2.3	2.3	2.4	2.7	3.1	3.0	2.5	2.4	2.4	2.3	2.2	2.2	2.2	2.5	2.3	2.3	2.3	2.3	2.3	2.3	2.3	2.4	3.1
7-Apr	2.8	Z	2.7	2.7	2.6	2.5	2.4	2.5	2.5	2.4	2.4	2.4	2.4	2.4	2.3	2.3	2.3	2.2	2.3	2.2	2.2	2.2	2.2	2.2	2.4	2.8
8-Apr	2.2	Z	2.2	2.2	2.2	2.2	2.2	2.2	2.2	2.1	2.1	2.1	2.1	2.1	2.1	2.1	2.1	2.1	2.2	2.2	2.3	2.9	2.1	2.2	2.2	2.9
9-Apr	2.2	Z	2.2	2.2	2.2	2.2	2.2	2.2	2.3	2.6	2.7	2.4	2.3	2.3	2.3	2.4	2.4	2.4	2.2	2.2	2.3	3.5	2.9	2.3	2.4	3.5
10-Apr	2.3	Z	2.2	2.2	2.3	2.2	2.3	2.3	2.3	2.3	2.3	2.3	2.3	2.3	2.3	2.3	2.3	2.3	2.3	2.3	2.3	2.3	2.4	2.3	2.3	2.4
11-Apr	2.4	Z	2.3	2.3	2.3	2.3	2.3	2.3	C	C	C	C	C	2.2	2.2	2.2	2.2	2.2	2.2	2.2	PF	PF	PF	PF	--	2.4
12-Apr	PF	Z	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	2.3	2.3	2.3	2.3	2.3	2.5
13-Apr	2.3	Z	2.3	2.3	2.4	2.4	2.4	2.3	2.4	2.4	2.3	2.3	2.3	2.3	2.4	2.4	2.4	2.4	2.5	2.5	2.4	2.4	2.4	2.4	2.4	2.5
14-Apr	2.5	Z	2.4	2.4	2.4	2.4	2.5	2.7	2.7	2.5	2.5	2.5	2.4	2.4	2.3	2.2	2.3	2.3	2.3	2.4	2.3	2.3	2.3	2.3	2.4	2.7
15-Apr	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
16-Apr	2.3	Z	2.3	2.3	2.3	2.3	2.3	M	M	M	M	M	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-Apr	2.3	Z	2.3	2.3	2.3	2.4	2.4	2.3	2.3	2.3	2.3	2.3	2.3	2.3	2.2	2.2	2.2	2.3	2.3	2.3	2.3	2.3	2.3	2.3	2.3	2.4
18-Apr	2.3	Z	2.3	2.4	2.5	2.5	2.3	2.3	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	2.4	2.4	2.3	2.3	2.5
19-Apr	2.4	Z	2.4	2.4	2.4	2.4	2.4	2.4	2.4	2.5	2.4	2.3	2.3	2.3	2.3	2.3	2.3	2.2	2.2	2.3	2.3	2.3	2.4	2.6	2.4	2.6
20-Apr	2.5	Z	2.8	2.6	3.0	3.8	4.0	4.4	3.3	3.0	2.4	2.3	2.2	2.2	2.2	2.2	2.3	2.3	2.3	2.5	2.5	2.5	2.5	2.5	2.7	4.4
21-Apr	2.5	Z	2.4	2.3	2.3	2.3	2.3	2.4	2.5	2.3	2.2	2.2	2.2	2.2	2.2	2.2	2.2	2.3	2.3	2.3	2.3	2.3	2.3	2.3	2.3	2.5
22-Apr	2.3	Z	2.3	2.3	2.3	2.4	2.3	2.3	2.3	2.3	2.2	2.2	2.2	2.2	2.2	2.2	2.2	2.2	2.3	2.3	2.3	2.3	2.3	2.3	2.3	2.4
23-Apr	2.3	Z	2.2	2.2	2.2	2.2	2.2	2.2	2.2	2.2	2.2	2.2	2.2	2.2	2.2	2.2	2.2	2.2	2.2	2.2	2.2	2.3	2.2	2.2	2.2	2.3
24-Apr	2.2	Z	2.2	2.2	2.2	2.2	2.2	2.2	2.3	2.3	2.2	2.2	2.2	2.2	2.3	2.3	2.3	2.2	2.3	2.4	2.3	2.3	2.4	2.3	2.3	2.4
25-Apr	2.4	Z	2.3	2.3	2.3	2.4	2.4	2.5	2.3	2.3	2.4	2.3	2.3	2.2	2.2	2.2	2.1	2.1	2.1	2.1	2.1	2.2	2.2	2.2	2.3	2.5
26-Apr	2.2	Z	2.2	2.1	2.2	2.1	2.1	2.2	2.1	2.1	2.0	2.0	2.0	1.9	2.0	1.9	1.9	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.2
27-Apr	2.0	Z	1.9	2.0	1.9	1.9	2.0	1.9	1.9	1.9	1.9	1.9	1.9	1.9	1.9	1.9	1.9	1.9	1.9	1.9	1.9	1.9	1.9	2.0	1.9	2.0
28-Apr	2.0	Z	2.0	2.0	2.1	2.1	2.1	2.0	2.0	2.0	2.0	2.1	2.1	2.0	1.9	1.9	1.9	2.1	2.2	2.2	2.1	2.0	2.1	2.1	2.0	2.2
29-Apr	2.1	Z	2.1	2.2	2.3	2.3	2.2	2.1	2.1	C	C	C	C	C	C	2.4	2.4	2.5	2.5	2.5	3.7	4.1	3.6	4.2	--	4.2
30-Apr	4.8	Z	2.8	2.5	2.5	2.4	2.6	2.6	2.4	2.5	2.7	2.5	2.3	2.3	2.3	2.3	2.2	2.2	2.2	2.2	2.2	2.2	2.5	2.7	2.5	4.8
	2.4	--	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	2.3	2.3	2.3	2.3	2.3	2.4	2.3	2.4	Diurnal Average	
	4.8	--	2.9	2.7	3.0	3.8	4.0	4.4	3.3	3.0	2.7	2.5	2.6	2.5	2.5	2.5	2.5	2.5	2.5	2.5	3.7	4.1	3.6	4.2	Diurnal Maximum	

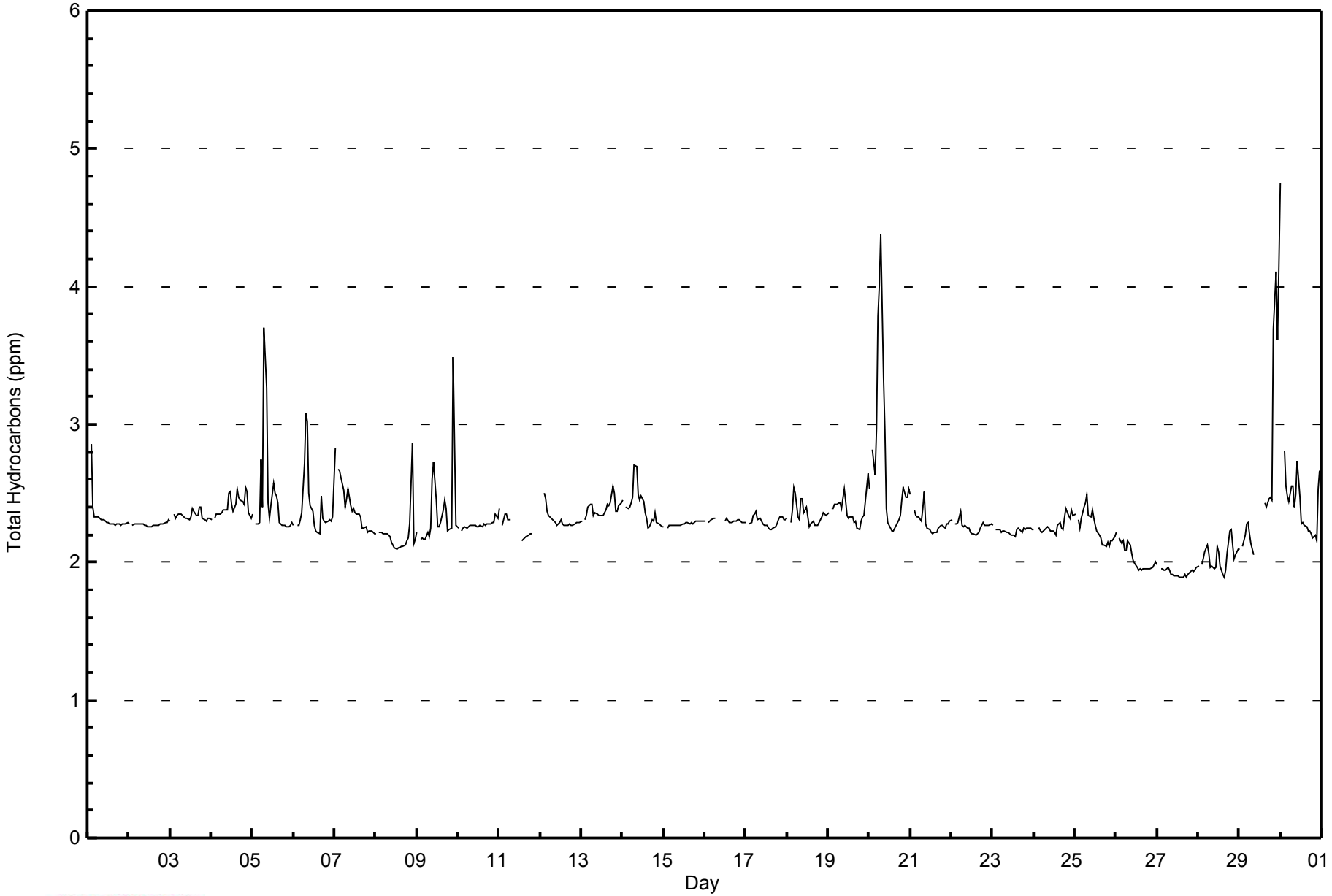
Z - zerospan C - Calibration M - Maintenance PF - Power Failure

WBEA NETWORK

Hourly Averages

Total Hydrocarbons (THC) - ppm

CNRL Horizon - April 2014



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Concentration Ranges (ppm)	Number of Hours	%	Cumulative %
0 - 2.0	49	7.32	7.32
2.1 - 3.0	607	90.73	98.06
3.1 - 10.0	13	1.94	100.00
> 10.0	0	0.00	100.00

Total Number of Valid Hours: 669

Total Number of Hours: 720

WBEA NETWORK

Frequency Distribution

Total Hydrocarbons (THC) - ppm

CNRL Horizon - April 2014

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	1	2	1	1	4	4	12	17	6	0	1	0	0	0	0	0	49
2.1 - 3.0	45	124	84	41	30	37	29	52	44	35	18	20	10	19	12	7	607
3.1 - 10.0	1	0	1	0	0	0	1	3	1	1	0	3	0	2	0	0	13
> 10.0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Totals	47	126	86	42	34	41	42	72	51	36	19	23	10	21	12	7	669

Total Number of Valid Hours: 669

Total Number of Hours: 720

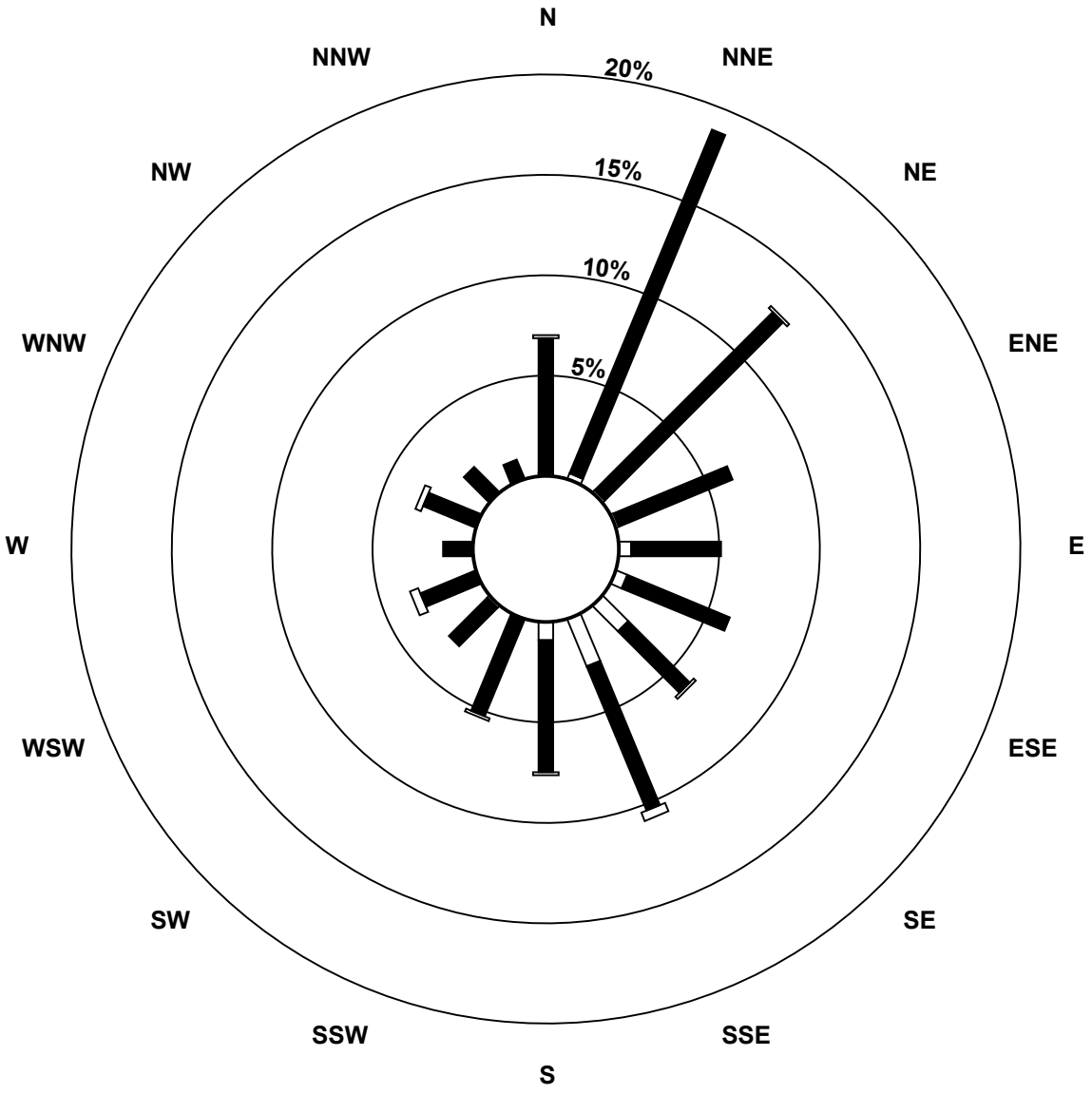
AURORA ATMOSPHERICS INC.

Wood Buffalo Environmental Association

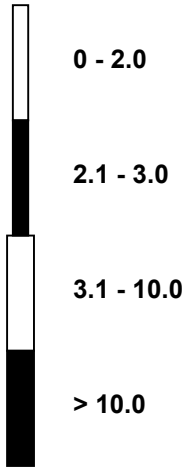
Wind Rose Apr 2014

Total Hydrocarbons (THC) - ppm

CNRL Horizon (AMS 15)



Classes (ppm)



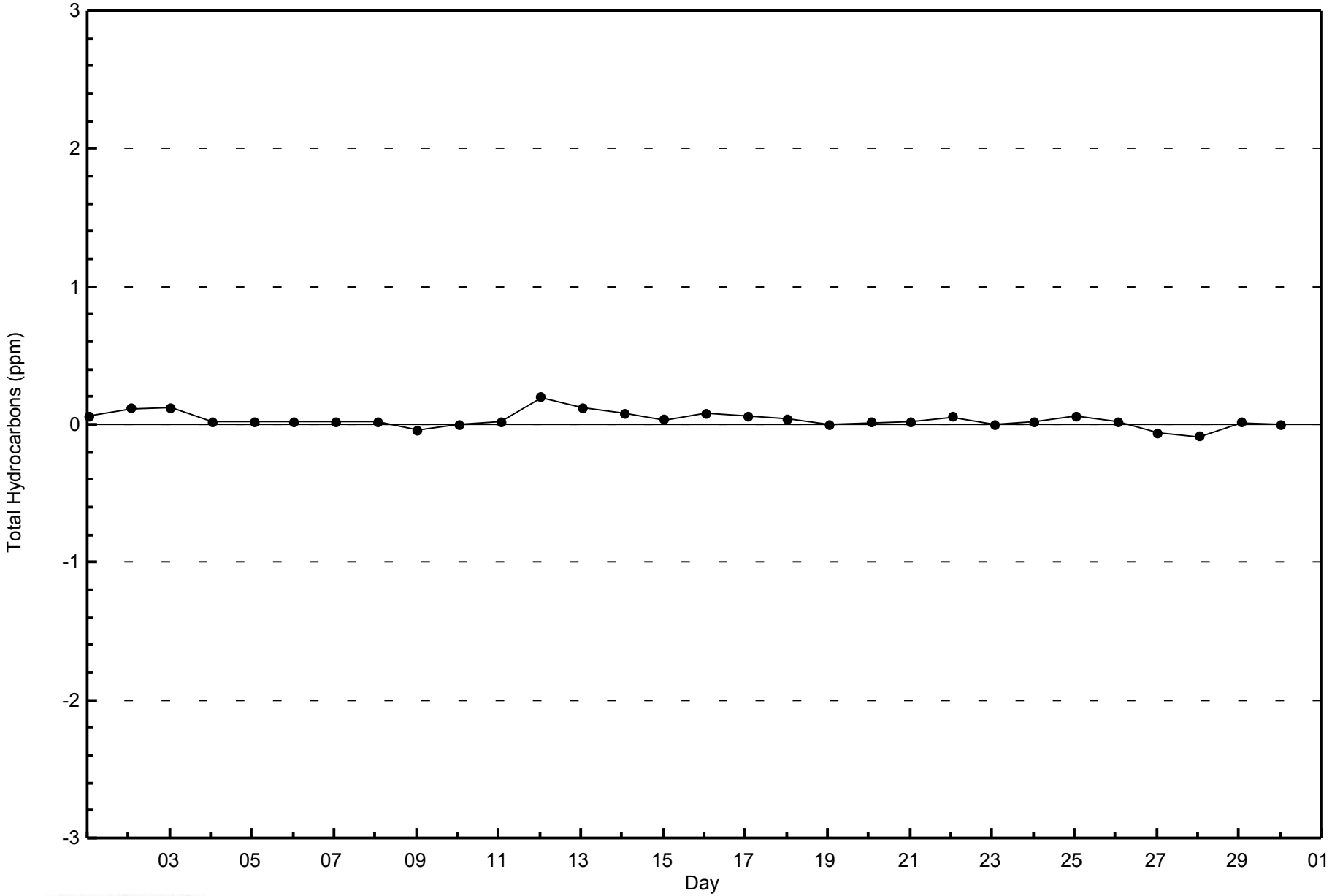
Total Number of Valid Hours: 669

WBEA NETWORK

Zero Responses

Total Hydrocarbons (THC) - ppm

CNRL Horizon - April 2014



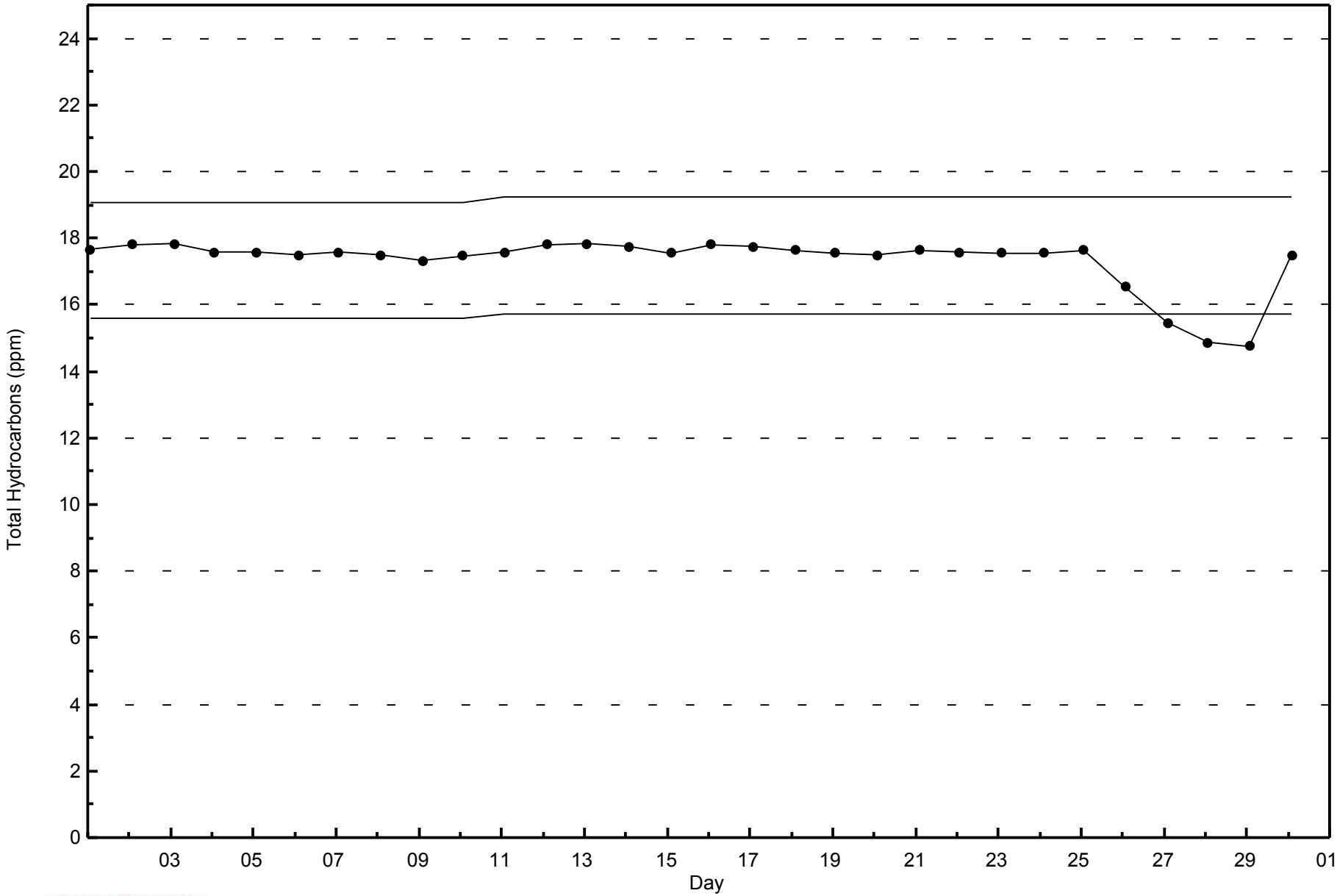
AURORA ATMOSPHERICS INC.

WBEA NETWORK

Span Responses

Total Hydrocarbons (THC) - ppm

CNRL Horizon - April 2014



AURORA ATMOSPHERICS INC.

Wood Buffalo Environmental Association

Summary of Hour Averages

Nitric Oxide (NO) - ppb

CNRL Horizon - April 2014

Maximum Value: 80 ppb on Apr 20 08:00

Maximum Daily Average: 13.2 ppb on Apr 20

Minimum Value: 0 ppb on Apr 5 23:00

Minimum Daily Average: 0.1 ppb on Apr 2

Maximum Diurnal Average: 5.3 ppb at hour 8

Minimum Diurnal Average: 0.1 ppb at hour 21

Monthly Average: 1.5 ppb

Percentiles: $P_1 = 0$ $P_{10} = 0$ $Q_1 = 0$ Median = 0 $Q_3 = 1$ $P_{90} = 3$ $P_{99} = 18$

Hours in Service:	720
Hours of Data:	677
Hours of Missing Data:	43
Hours of Calibration:	35
Percent Operational Time:	98.9

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-Apr	0	Z	2	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0.2	2
2-Apr	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
3-Apr	0	Z	0	0	0	0	0	0	0	0	0	1	3	4	4	3	2	3	1	0	0	0	0	0	1.0	4
4-Apr	0	Z	0	0	0	0	0	1	1	1	2	1	2	0	0	1	1	1	0	0	0	0	0	0	0.5	2
5-Apr	0	Z	0	0	0	3	1	22	10	2	2	4	9	6	5	3	1	0	0	0	0	0	0	0	3.0	22
6-Apr	0	Z	0	0	0	0	13	14	13	4	2	1	1	0	0	0	4	1	0	0	0	0	0	0	2.4	14
7-Apr	15	Z	0	0	0	0	1	2	3	2	3	4	3	2	1	1	0	0	0	0	0	0	0	0	1.7	15
8-Apr	0	Z	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1	0	0	0.2	1
9-Apr	0	Z	0	0	0	0	0	0	0	1	1	1	0	0	1	1	1	1	0	0	0	13	1	0	0.9	13
10-Apr	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
11-Apr	0	Z	0	0	0	0	0	0	C	C	C	C	C	0	0	0	0	0	0	0	PF	PF	PF	0	--	0
12-Apr	4	Z	0	1	0	0	1	0	0	0	0	0	1	0	0	0	0	0	0	0	0	0	0	0	0.4	4
13-Apr	0	Z	0	0	0	0	1	1	2	1	1	1	1	1	2	3	2	2	2	0	0	0	0	0	0.9	3
14-Apr	0	Z	0	0	0	1	4	5	5	4	3	3	3	2	1	0	0	1	0	0	0	0	0	0	1.4	5
15-Apr	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
16-Apr	0	Z	0	0	0	0	0	M	M	M	M	M	1	1	1	0	0	0	0	0	0	0	0	0	0.3	1
17-Apr	0	Z	0	0	0	0	1	1	3	3	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0.6	3
18-Apr	0	Z	0	0	0	1	1	1	2	3	2	2	1	0	1	1	0	0	0	0	0	0	0	0	0.7	3
19-Apr	0	Z	0	0	0	1	3	2	1	1	2	3	2	3	3	2	2	1	0	0	0	0	1	6	1.5	6
20-Apr	1	Z	7	6	17	60	71	80	35	20	4	1	1	0	0	1	0	0	0	0	0	0	0	0	13.2	80
21-Apr	0	Z	0	0	0	0	0	2	3	0	0	0	0	0	0	1	1	0	0	0	0	0	0	0	0.4	3
22-Apr	0	Z	0	0	0	1	0	0	0	0	1	0	0	0	0	1	1	1	0	0	0	0	0	0	0.3	1
23-Apr	0	Z	0	0	0	0	0	0	0	0	0	0	0	0	1	1	1	0	0	0	0	0	0	0	0.2	1
24-Apr	0	Z	0	0	2	1	2	0	0	1	1	1	1	0	1	2	1	0	0	0	0	0	0	0	0.6	2
25-Apr	0	Z	0	0	0	0	4	7	2	1	4	3	2	2	1	1	1	1	0	0	0	0	0	0	1.3	7
26-Apr	0	Z	0	0	0	0	1	1	2	2	1	1	1	0	0	0	0	0	0	0	0	0	0	0	0.5	2
27-Apr	0	Z	0	0	0	0	0	1	1	0	1	1	0	0	1	0	1	1	1	0	0	0	0	0	0.4	1
28-Apr	0	Z	0	0	0	4	3	0	1	0	1	7	4	2	1	1	2	3	2	1	0	0	0	0	1.4	7
29-Apr	0	Z	0	0	1	10	14	3	1	1	1	1	1	0	0	1	0	1	0	0	0	2	21	43	4.5	43
30-Apr	71	Z	3	0	0	0	10	9	2	8	2	2	0	0	0	0	0	0	0	0	0	0	0	0	4.7	71
	3.1	--	0.5	0.3	0.8	2.7	4.3	5.3	3.2	2.1	1.2	1.5	1.3	1.0	0.9	0.8	0.7	0.6	0.4	0.2	0.1	0.6	0.9	1.7	Diurnal Average	
	71	--	7	6	17	60	71	80	35	20	4	7	9	6	5	3	4	3	2	1	0	13	21	43	Diurnal Maximum	

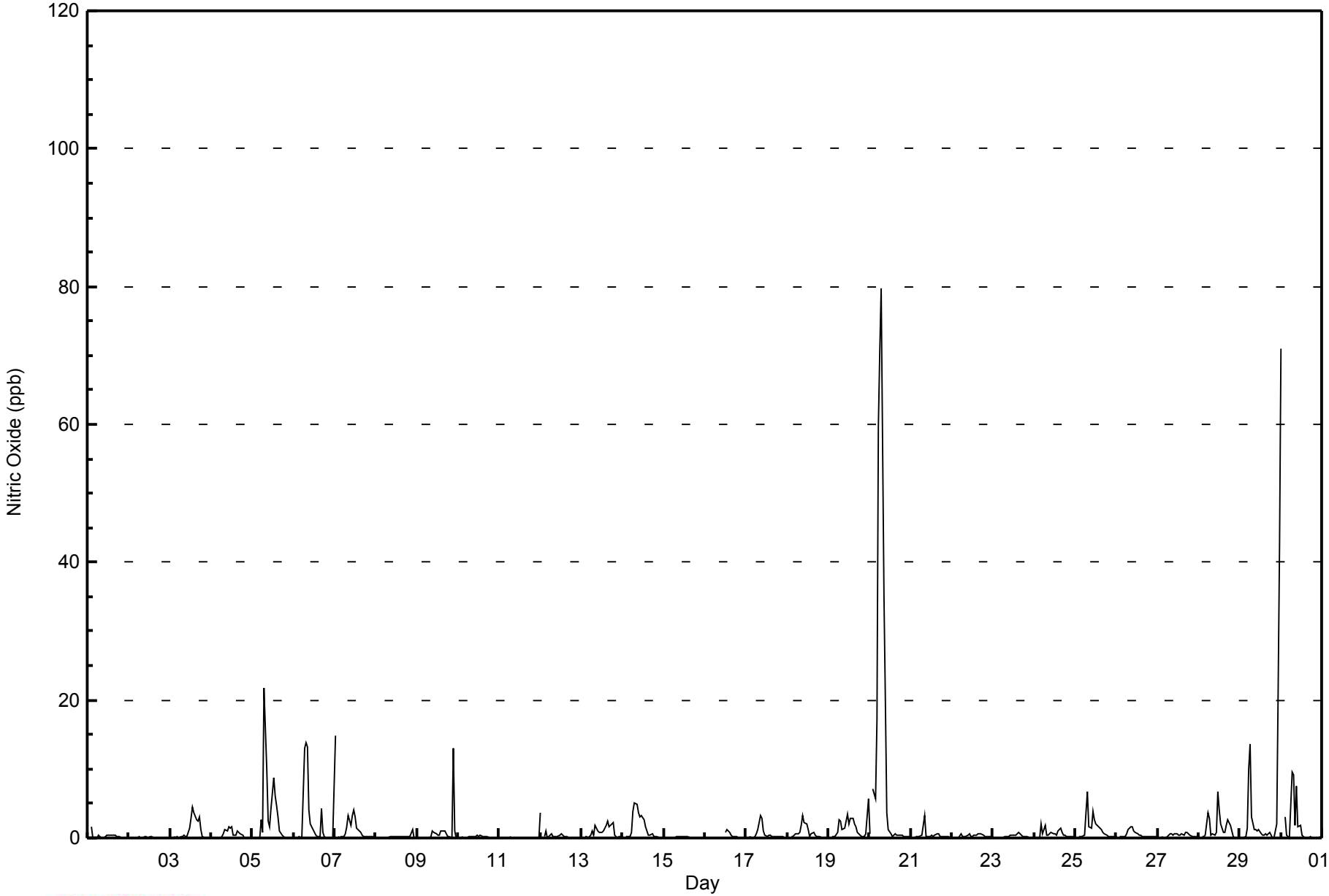
Z - zerospan C - Calibration M - Maintenance PF - Power Failure

WBEA NETWORK

Hourly Averages

Nitric Oxide (NO) - ppb

CNRL Horizon - April 2014



AURORA ATMOSPHERICS INC.

Concentration Ranges (ppb)	Number of Hours	%	Cumulative %
0 - 20	669	98.82	98.82
21 - 40	3	0.44	99.26
11 - 80	5	0.74	100.00
81 - 159	0	0.00	100.00
> 159	0	0.00	100.00

Total Number of Valid Hours: 677

Total Number of Hours: 720

Concentration	Wind Direction																
Ranges (ppb)	N	NNE	NE	ENE	E	ESE	SE	SSE	S	SSW	SW	WSW	W	WNW	NW	NNW	**Totals**
0 - 20	46	126	85	42	35	42	42	70	51	36	19	21	12	22	12	8	669
21 - 40	1	0	1	0	0	0	0	0	0	0	0	0	0	1	0	0	3
11 - 80	0	0	0	0	0	0	1	2	0	0	0	2	0	0	0	0	5
81 - 159	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
> 159	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Totals	47	126	86	42	35	42	43	72	51	36	19	23	12	23	12	8	677

Total Number of Valid Hours: 677

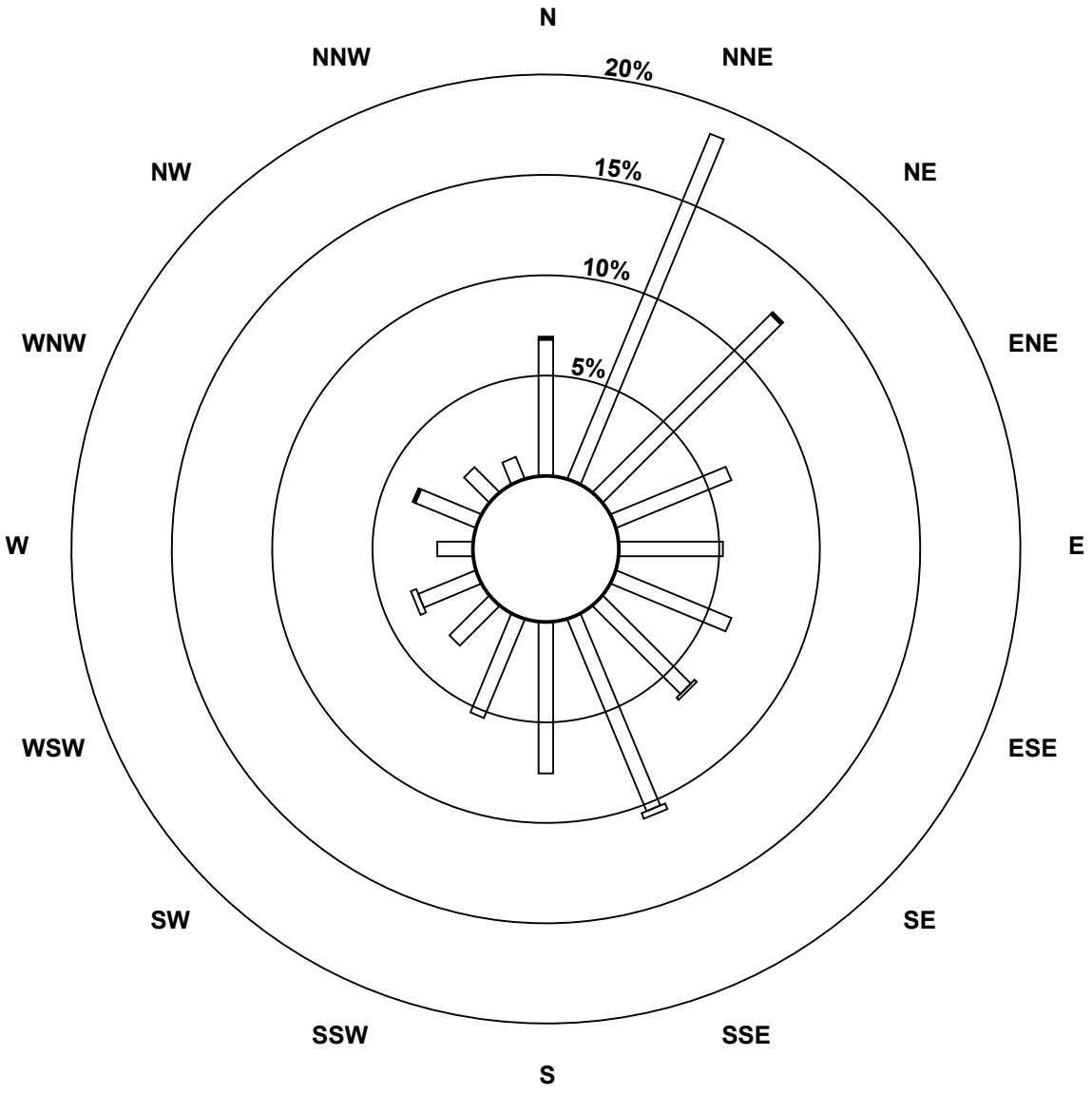
Total Number of Hours: 720

Wood Buffalo Environmental Association

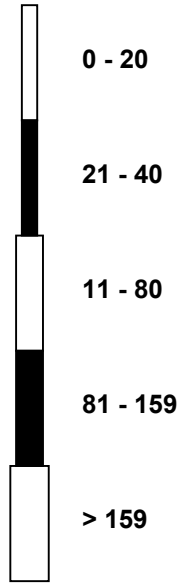
Wind Rose Apr 2014

Nitric Oxide (NO) - ppb

CNRL Horizon (AMS 15)



Classes (ppb)



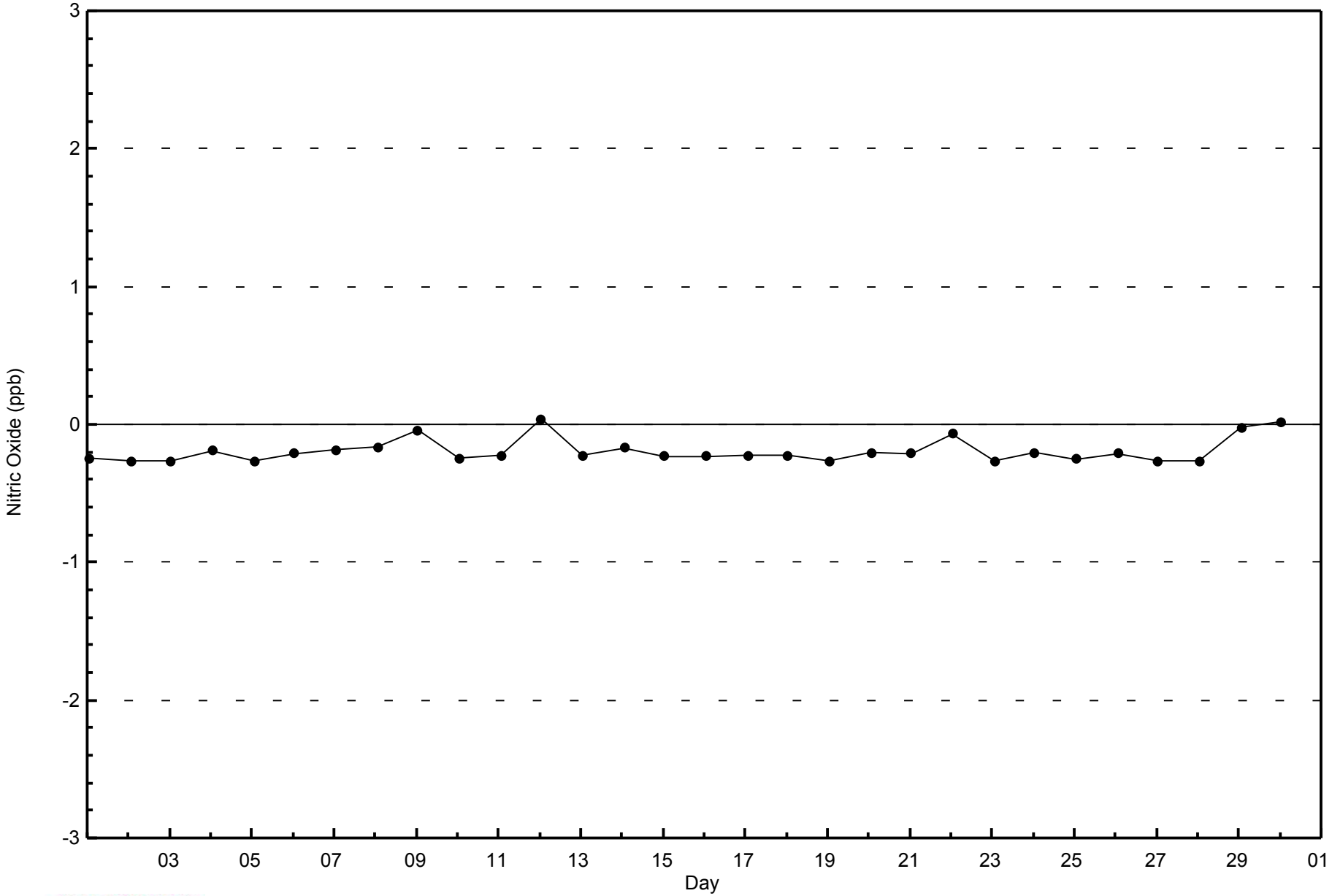
Total Number of Valid Hours: 677

WBEA NETWORK

Zero Responses

Nitric Oxide (NO) - ppb

CNRL Horizon - April 2014



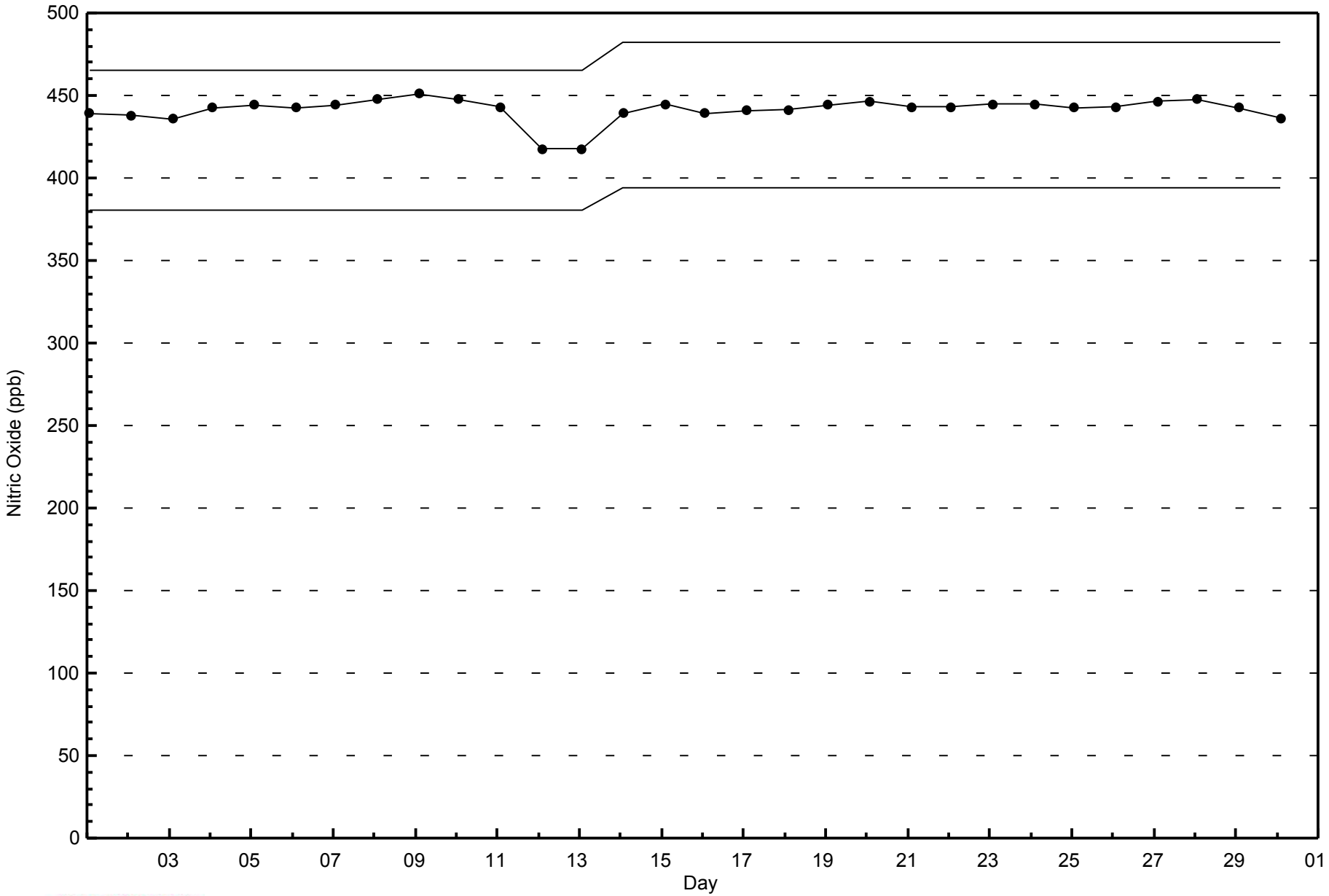
AURORA
ATMOSPHERICS INC.

WBEA NETWORK

Span Responses

Nitric Oxide (NO) - ppb

CNRL Horizon - April 2014



AURORA ATMOSPHERICS INC.

Wood Buffalo Environmental Association

Summary of Hour Averages

Nitrogen Dioxide (NO_2) - ppb

CNRL Horizon - April 2014

Number of Exceedences (AAAQO): 1-hr: 0 24-hr: 0
Maximum Value: 36 ppb on Apr 29 23:00 Maximum Daily Average: 12.7 ppb on Apr 20

Minimum Value: 0 ppb on Apr 11 18:00 Minimum Daily Average: 0.6 ppb on Apr 2
Maximum Diurnal Average: 6.9 ppb at hour 1 Minimum Diurnal Average: 2.5 ppb at hour 14
Monthly Average: 4.6 ppb Percentiles: $P_1 = 0$ $P_{10} = 0$ $Q_1 = 1$ Median = 3 $Q_3 = 7$ $P_{90} = 11$ $P_{99} = 26$

Hours in Service:	720
Hours of Data:	677
Hours of Missing Data:	43
Hours of Calibration:	35
Percent Operational Time:	98.9

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-Apr	2	Z	19	5	2	2	5	1	0	0	0	1	1	1	1	1	1	1	1	1	1	1	0	0	2.0	19
2-Apr	1	Z	1	0	0	1	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	2	2	3	0.6	3
3-Apr	4	Z	7	4	9	4	1	0	0	0	1	2	4	6	6	5	6	11	12	9	8	3	5	5	4.9	12
4-Apr	6	Z	7	9	10	8	9	11	10	9	8	6	7	3	4	7	5	6	7	7	9	6	3	4	6.9	11
5-Apr	5	Z	2	1	0	10	6	26	17	5	3	7	12	10	9	7	4	2	2	1	3	2	3	2	6.0	26
6-Apr	3	Z	6	11	8	9	20	22	20	9	6	5	3	2	1	1	14	5	3	2	3	9	8	9	7.8	22
7-Apr	27	Z	14	12	12	7	6	5	8	5	7	9	7	4	4	3	1	1	2	0	3	2	3	2	6.2	27
8-Apr	1	Z	8	7	2	2	1	1	1	1	0	0	0	0	0	0	0	0	1	0	2	17	1	1	2.0	17
9-Apr	3	Z	1	0	0	1	2	1	3	12	7	3	2	1	2	3	4	3	2	1	3	26	10	3	4.0	26
10-Apr	1	Z	0	2	3	1	1	0	0	0	0	1	1	1	1	1	1	1	0	1	2	1	4	5	1.1	5
11-Apr	9	Z	2	4	4	2	2	1	C	C	C	C	C	0	0	0	0	0	0	0	PF	PF	PF	10	--	10
12-Apr	25	Z	14	11	6	6	4	1	1	0	0	1	1	1	0	1	0	0	0	0	1	2	1	1	3.4	25
13-Apr	2	Z	1	3	6	7	7	1	4	2	1	1	1	2	4	6	4	8	16	13	7	7	11	9	5.3	16
14-Apr	5	Z	5	10	13	18	18	14	12	9	8	8	8	6	5	2	3	5	4	6	3	1	1	1	7.0	18
15-Apr	1	Z	1	1	1	1	1	2	1	1	1	1	1	0	1	0	0	0	1	1	1	1	0	1	0.7	2
16-Apr	1	Z	2	0	0	1	1	M	M	M	M	M	2	3	2	1	1	1	1	1	2	1	1	1	1.2	3
17-Apr	2	Z	2	1	1	2	4	4	9	7	3	1	1	1	1	1	1	1	1	1	1	2	1	1	2.0	9
18-Apr	3	Z	2	13	21	16	8	6	10	14	11	11	7	1	3	4	2	2	4	3	2	3	4	4	6.6	21
19-Apr	3	Z	9	9	8	8	11	8	5	6	7	7	9	10	7	6	6	3	2	1	1	2	13	29	7.5	29
20-Apr	27	Z	30	23	17	15	18	30	25	20	8	4	2	1	1	1	1	2	3	11	19	15	12	8	12.7	30
21-Apr	10	Z	6	3	4	5	5	6	8	1	1	1	1	1	2	1	1	1	1	1	1	1	2	8	3.1	10
22-Apr	5	Z	3	3	5	12	3	1	1	2	2	1	1	1	1	1	1	2	2	1	1	0	0	1	2.2	12
23-Apr	0	Z	0	0	0	0	0	0	0	1	2	2	1	1	3	4	4	2	2	2	3	3	4	4	1.7	4
24-Apr	2	Z	4	2	8	4	9	4	3	3	3	2	2	2	6	8	5	3	4	6	6	7	10	10	4.9	10
25-Apr	11	Z	11	2	4	7	11	17	7	4	10	7	6	6	5	5	4	5	3	3	2	5	6	7	6.3	17
26-Apr	5	Z	13	7	10	5	4	7	5	5	3	2	2	2	2	1	1	2	1	1	0	1	4	5	3.7	13
27-Apr	5	Z	0	0	1	1	6	5	4	2	2	2	2	2	2	3	4	4	4	5	4	5	6	7	3.2	7
28-Apr	6	Z	7	6	6	7	5	1	1	1	1	7	6	4	3	3	6	12	16	15	13	6	8	8	6.4	16
29-Apr	8	Z	11	10	10	13	12	4	3	3	3	3	2	1	2	2	2	5	2	3	16	30	36	31	9.1	36
30-Apr	26	Z	13	8	6	2	8	12	4	14	8	7	1	1	1	1	2	2	1	2	2	2	2	4	5.6	26
	6.9	--	6.6	5.6	6.0	5.8	6.2	6.7	5.7	4.8	3.7	3.6	3.2	2.5	2.6	2.6	2.7	2.9	3.3	3.2	4.0	5.6	5.6	6.1	Diurnal Average	
	27	--	30	23	21	18	20	30	25	20	11	11	12	10	9	8	14	12	16	15	19	30	36	31	Diurnal Maximum	

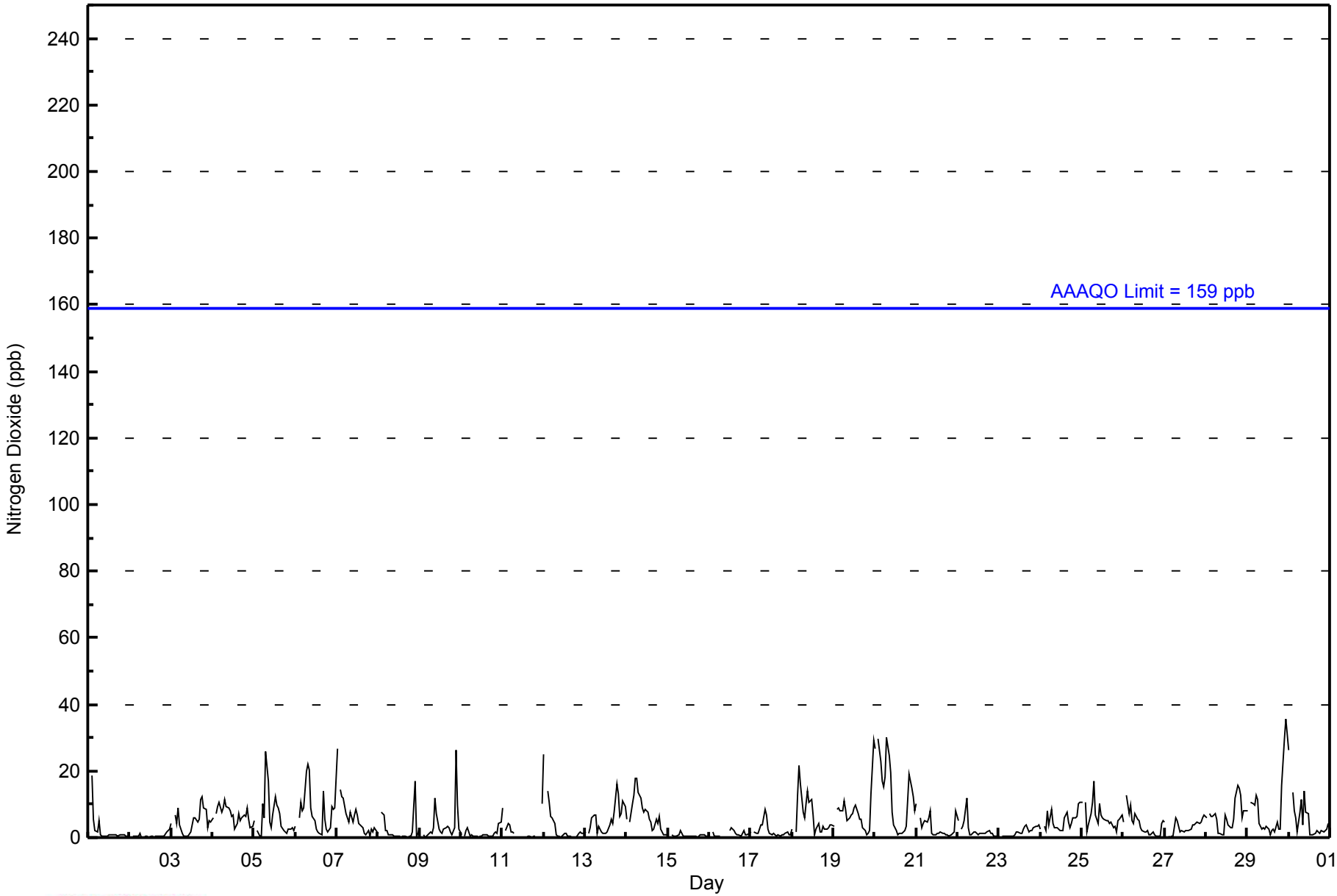
Z - zerospan C - Calibration M - Maintenance PF - Power Failure
Alberta Ambient Air Quality Objectives (AAAQO): 1-hr 159 ppb

WBEA NETWORK

Hourly Averages

Nitrogen Dioxide (NO_2) - ppb

CNRL Horizon - April 2014



AURORA ATMOSPHERICS INC.

Concentration Ranges (ppb)	Number of Hours	%	Cumulative %
0 - 20	661	97.64	97.64
21 - 40	16	2.36	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: 677

Total Number of Hours: 720

Nitrogen Dioxide (NO_2) - ppb

CNRL Horizon - April 2014

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	125	85	42	35	42	43	71	50	34	19	20	11	21	11	8	661
21 - 40	3	1	1	0	0	0	0	1	1	2	0	3	1	2	1	0	16
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	47	126	86	42	35	42	43	72	51	36	19	23	12	23	12	8	677

Total Number of Valid Hours: 677

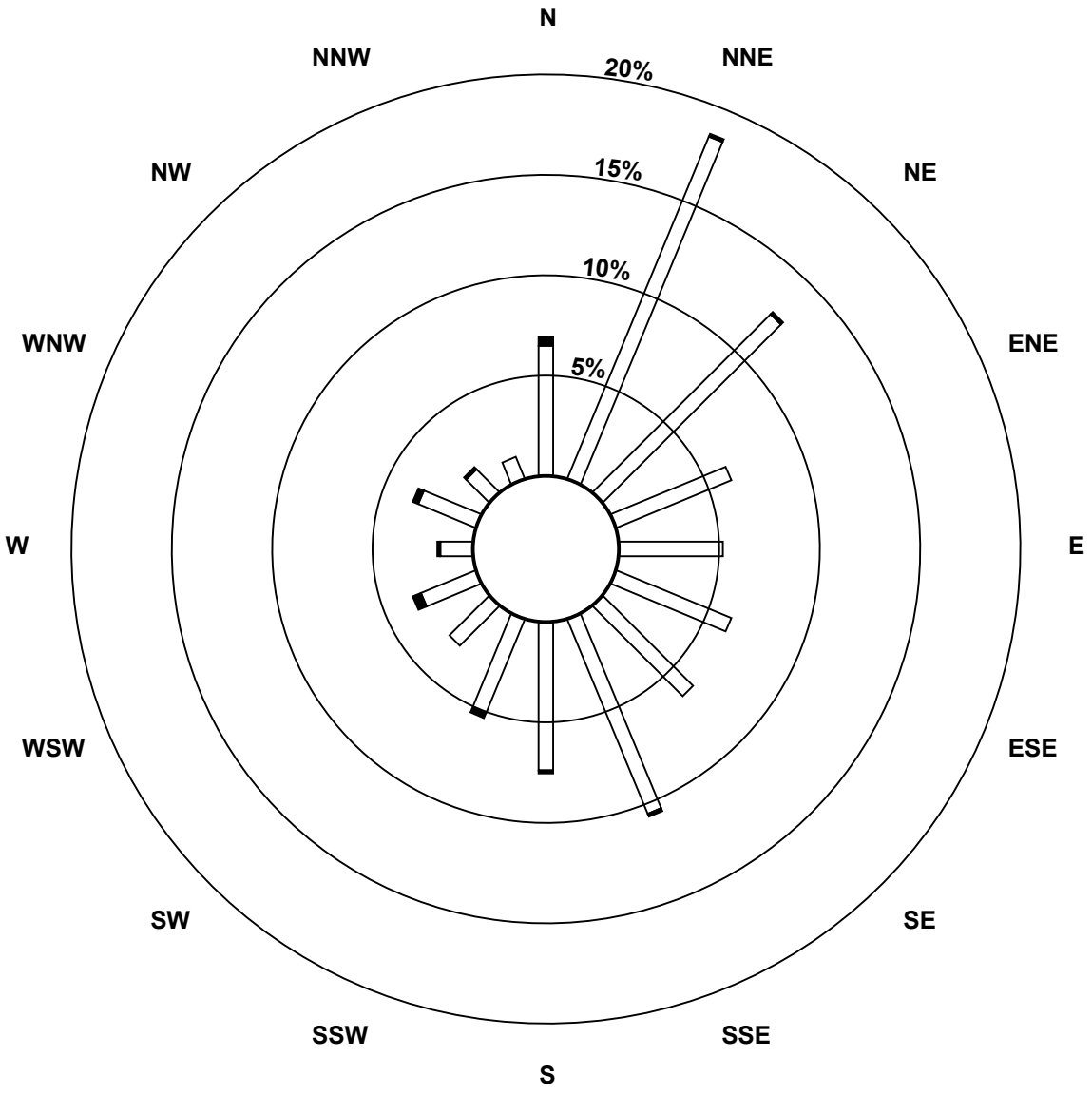
Total Number of Hours: 720

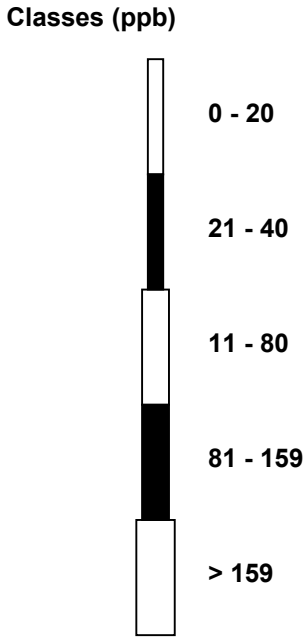
Wood Buffalo Environmental Association

Wind Rose Apr 2014

Nitrogen Dioxide (NO_2) - ppb

CNRL Horizon (AMS 15)





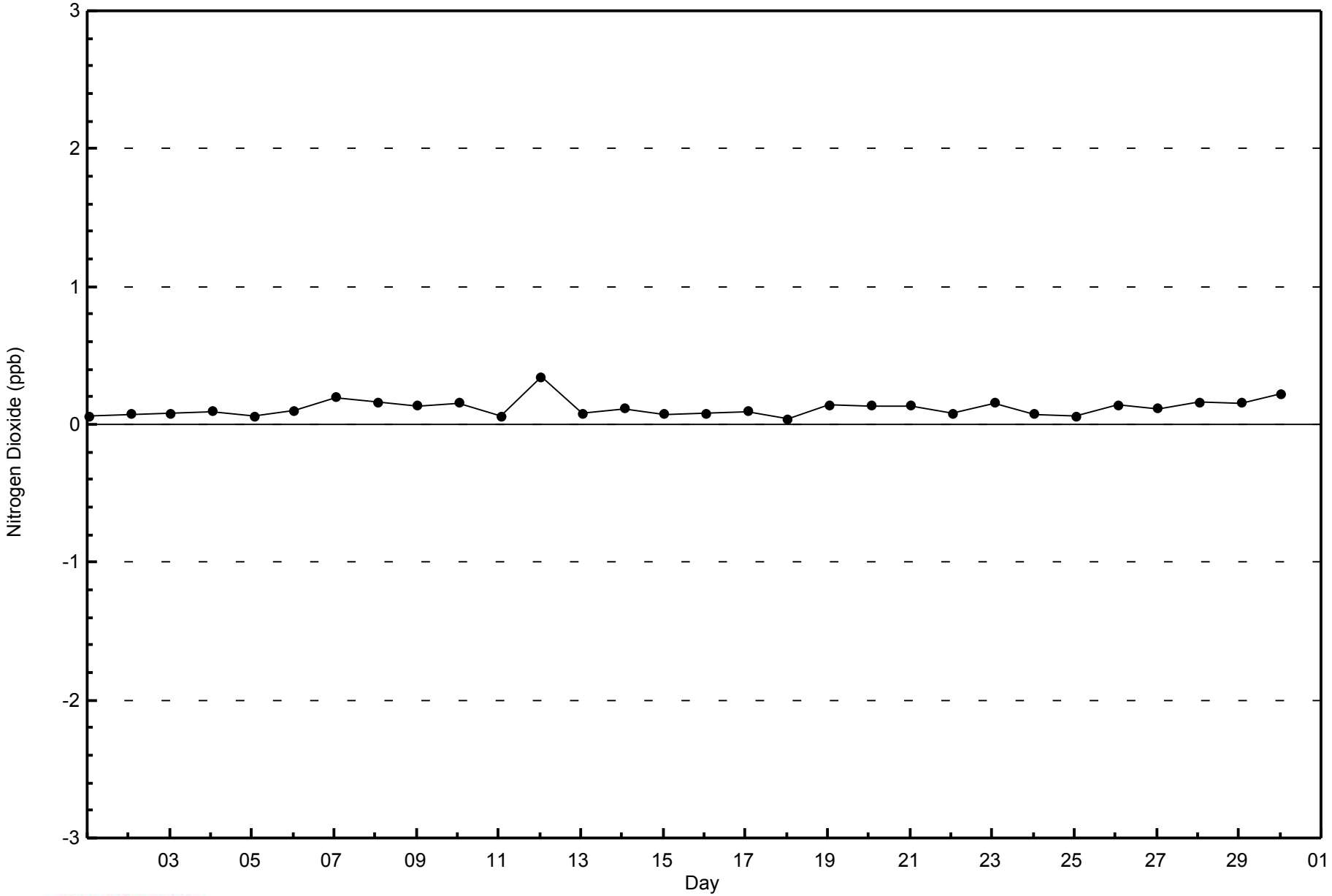
Total Number of Valid Hours: 677

WBEA NETWORK

Zero Responses

Nitrogen Dioxide (NO_2) - ppb

CNRL Horizon - April 2014



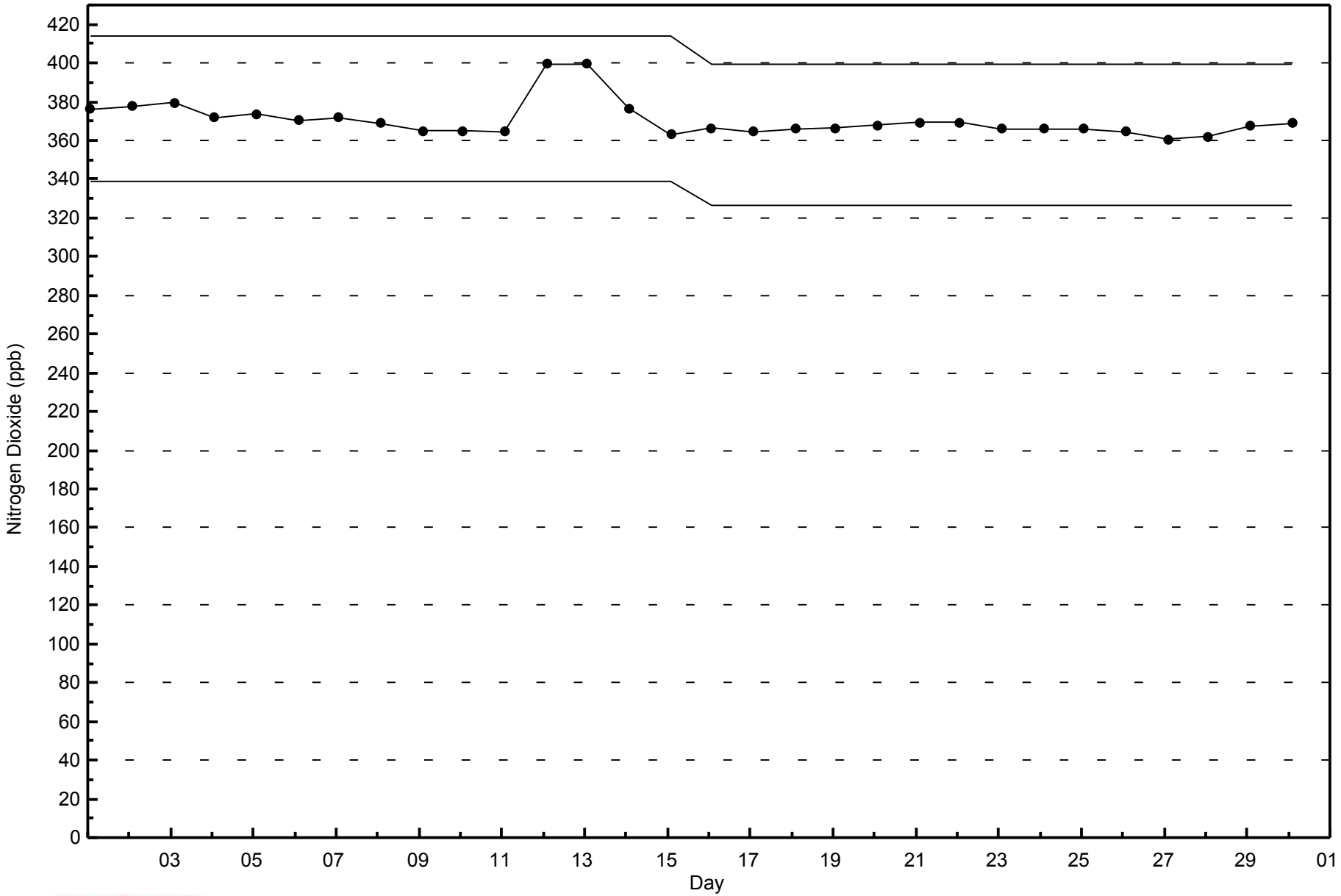
AURORA
ATMOSPHERICS INC.

WBEA NETWORK

Span Responses

Nitrogen Dioxide (NO_2) - ppb

CNRL Horizon - April 2014



AURORA ATMOSPHERICS INC.

Wood Buffalo Environmental Association

Summary of Hour Averages

Nitrogen Oxides (NO_X) - ppb

CNRL Horizon - April 2014

Maximum Value: 110 ppb on Apr 20 08:00

Maximum Daily Average: 26.0 ppb on Apr 20

Minimum Value: 0 ppb on Apr 11 18:00

Minimum Daily Average: 0.7 ppb on Apr 2

Maximum Diurnal Average: 11.9 ppb at hour 8

Minimum Diurnal Average: 3.4 ppb at hour 16

Monthly Average: 6.1 ppb

Percentiles: $P_1 = 0$ $P_{10} = 1$ $Q_1 = 1$ Median = 3 $Q_3 = 7$ $P_{90} = 13$ $P_{99} = 56$

Hours in Service:	720
Hours of Data:	677
Hours of Missing Data:	43
Hours of Calibration:	35
Percent Operational Time:	98.9

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-Apr	2	Z	20	5	2	2	6	1	0	0	1	1	1	1	1	1	1	1	1	1	1	1	0	0	2.2	20
2-Apr	1	Z	1	0	0	1	1	0	0	0	0	0	0	0	0	0	0	0	1	0	0	2	2	3	0.7	3
3-Apr	4	Z	7	4	9	4	1	1	1	1	1	3	7	10	9	7	8	14	14	9	8	3	5	5	5.9	14
4-Apr	6	Z	7	9	10	8	9	12	11	10	10	8	8	3	5	8	6	6	7	7	9	6	3	4	7.4	12
5-Apr	5	Z	2	1	0	13	7	48	27	7	5	11	21	16	14	10	5	3	2	1	3	2	3	2	9.0	48
6-Apr	3	Z	6	11	8	9	33	36	34	13	8	6	3	2	1	1	18	6	3	2	3	9	8	9	10.2	36
7-Apr	42	Z	15	12	12	8	6	6	11	6	10	13	10	6	5	4	2	1	2	0	3	2	3	2	7.8	42
8-Apr	1	Z	8	7	2	2	1	1	1	1	1	0	0	0	0	0	0	0	1	0	2	18	1	2	2.2	18
9-Apr	3	Z	1	0	0	1	2	1	3	13	8	3	2	2	3	4	5	4	2	1	3	39	11	3	5.0	39
10-Apr	1	Z	0	2	3	1	1	1	1	1	0	1	1	1	1	1	1	1	1	1	1	1	4	4	1.3	4
11-Apr	9	Z	2	4	4	1	2	1	C	C	C	C	C	0	0	0	0	0	0	0	PF	PF	PF	10	--	10
12-Apr	29	Z	14	12	6	6	5	1	1	0	0	1	2	2	1	1	0	0	0	0	1	2	1	2	3.8	29
13-Apr	2	Z	1	3	6	7	8	2	5	3	2	2	2	3	6	8	6	10	19	13	7	7	11	9	6.2	19
14-Apr	6	Z	5	10	13	19	22	19	17	12	11	12	10	7	6	2	3	6	5	6	3	1	1	1	8.4	22
15-Apr	1	Z	1	1	1	1	1	2	1	1	1	1	1	1	1	0	1	0	1	1	1	1	0	0	0.7	2
16-Apr	1	Z	2	1	0	1	1	M	M	M	M	M	3	4	3	2	1	1	1	2	2	1	1	1	1.4	4
17-Apr	2	Z	2	1	2	3	4	5	12	10	4	2	1	1	1	1	1	1	1	1	1	2	1	1	2.6	12
18-Apr	3	Z	2	13	22	17	8	7	12	17	13	13	8	1	3	5	2	2	4	3	3	3	4	4	7.3	22
19-Apr	3	Z	9	9	8	9	14	11	6	7	9	11	11	13	10	8	7	4	3	1	2	2	14	35	9.0	35
20-Apr	27	Z	36	29	34	75	89	110	60	39	11	5	3	1	2	2	2	3	4	12	19	15	13	8	26.0	110
21-Apr	10	Z	6	3	4	5	5	8	12	2	1	1	2	1	2	2	2	1	1	1	1	1	2	8	3.5	12
22-Apr	5	Z	3	3	5	12	3	1	1	2	2	1	1	2	2	2	2	2	2	2	1	1	1	1	2.4	12
23-Apr	1	Z	1	1	1	1	1	1	1	1	2	2	2	2	3	4	5	2	2	2	3	3	4	4	2.0	5
24-Apr	2	Z	4	2	10	5	10	5	3	4	3	3	3	3	7	9	6	3	5	6	6	7	10	10	5.5	10
25-Apr	11	Z	11	2	4	8	14	24	8	6	14	10	8	7	7	6	5	5	3	4	2	5	6	7	7.6	24
26-Apr	5	Z	13	7	10	5	5	8	7	7	4	3	2	2	2	1	1	2	1	1	1	1	4	5	4.2	13
27-Apr	5	Z	0	0	1	1	7	6	4	2	3	2	3	3	3	3	4	5	5	5	4	5	6	7	3.6	7
28-Apr	6	Z	7	7	7	11	8	2	2	1	2	13	10	6	4	4	7	14	17	16	13	6	8	8	7.8	17
29-Apr	8	Z	11	10	11	22	25	7	4	4	3	4	3	1	2	3	2	5	3	3	16	32	57	73	13.5	73
30-Apr	97	Z	16	8	6	2	17	21	6	22	9	9	1	1	1	2	2	2	1	2	2	2	2	4	10.3	97
	10.0	--	7.0	5.9	6.7	8.6	10.5	11.9	8.9	6.9	4.9	5.1	4.5	3.5	3.5	3.4	3.5	3.5	3.7	3.4	4.1	6.2	6.4	7.8	Diurnal Average	
	97	--	36	29	34	75	89	110	60	39	14	13	21	16	14	10	18	14	19	16	19	39	57	73	Diurnal Maximum	

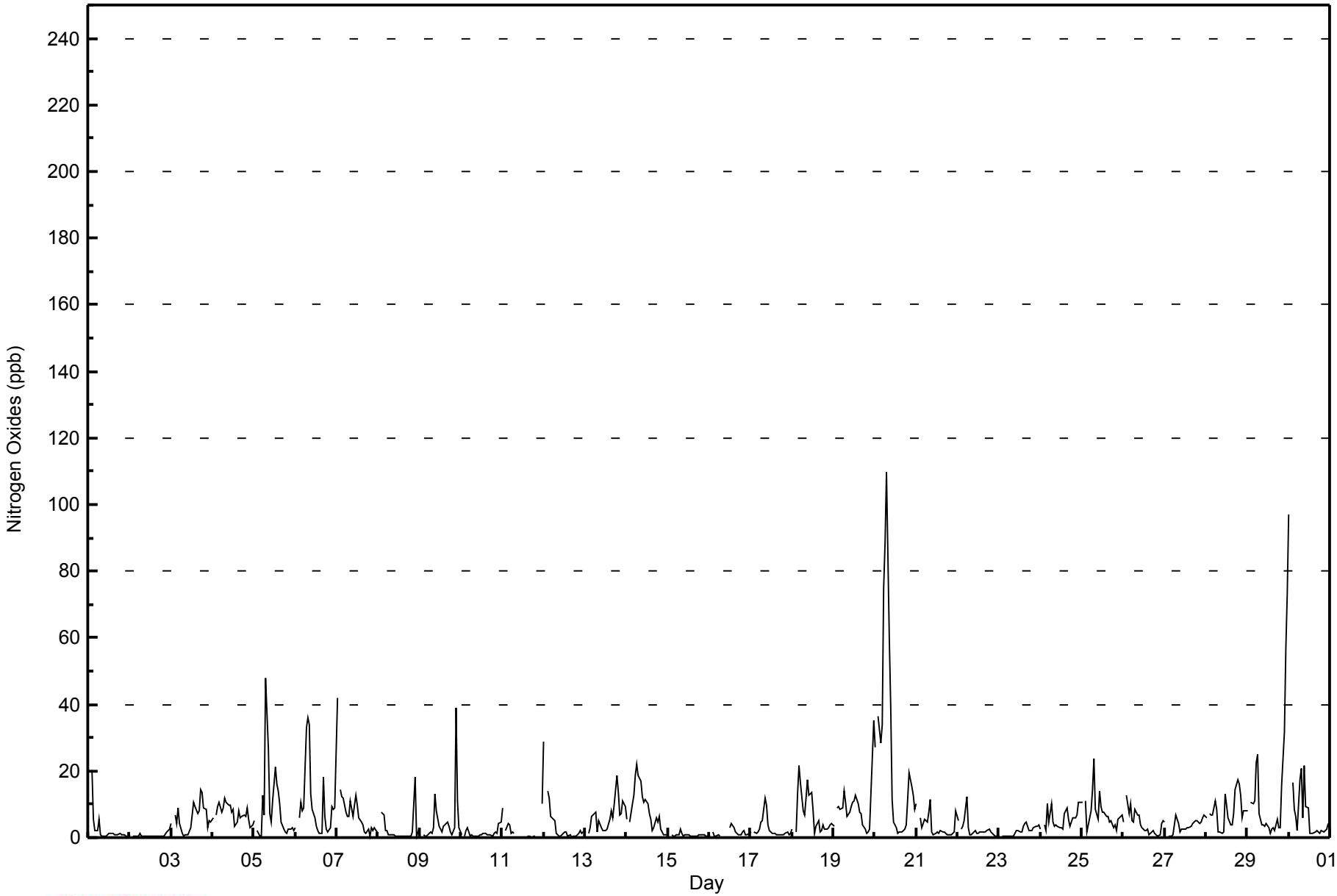
Z - zerospan C - Calibration M - Maintenance PF - Power Failure

WBEA NETWORK

Hourly Averages

Nitrogen Oxides (NO_X) - ppb

CNRL Horizon - April 2014



AURORA ATMOSPHERICS INC.

Concentration Ranges (ppb)	Number of Hours	%	Cumulative %
0 - 20	647	95.57	95.57
21 - 40	21	3.10	98.67
11 - 80	6	0.89	99.56
81 - 159	3	0.44	100.00
> 159	0	0.00	100.00

Total Number of Valid Hours: 677

Total Number of Hours: 720

WBEA NETWORK

Frequency Distribution

Nitrogen Oxides (NO_X) - ppb

CNRL Horizon - April 2014

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	125	84	41	35	42	42	69	44	33	19	19	11	21	11	7	647
21 - 40	2	1	1	1	0	0	0	1	7	3	0	1	1	1	1	1	21
11 - 80	1	0	1	0	0	0	1	0	0	0	0	2	0	1	0	0	6
81 - 159	0	0	0	0	0	0	0	2	0	0	0	1	0	0	0	0	3
> 159	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Totals	47	126	86	42	35	42	43	72	51	36	19	23	12	23	12	8	677

Total Number of Valid Hours: 677

Total Number of Hours: 720

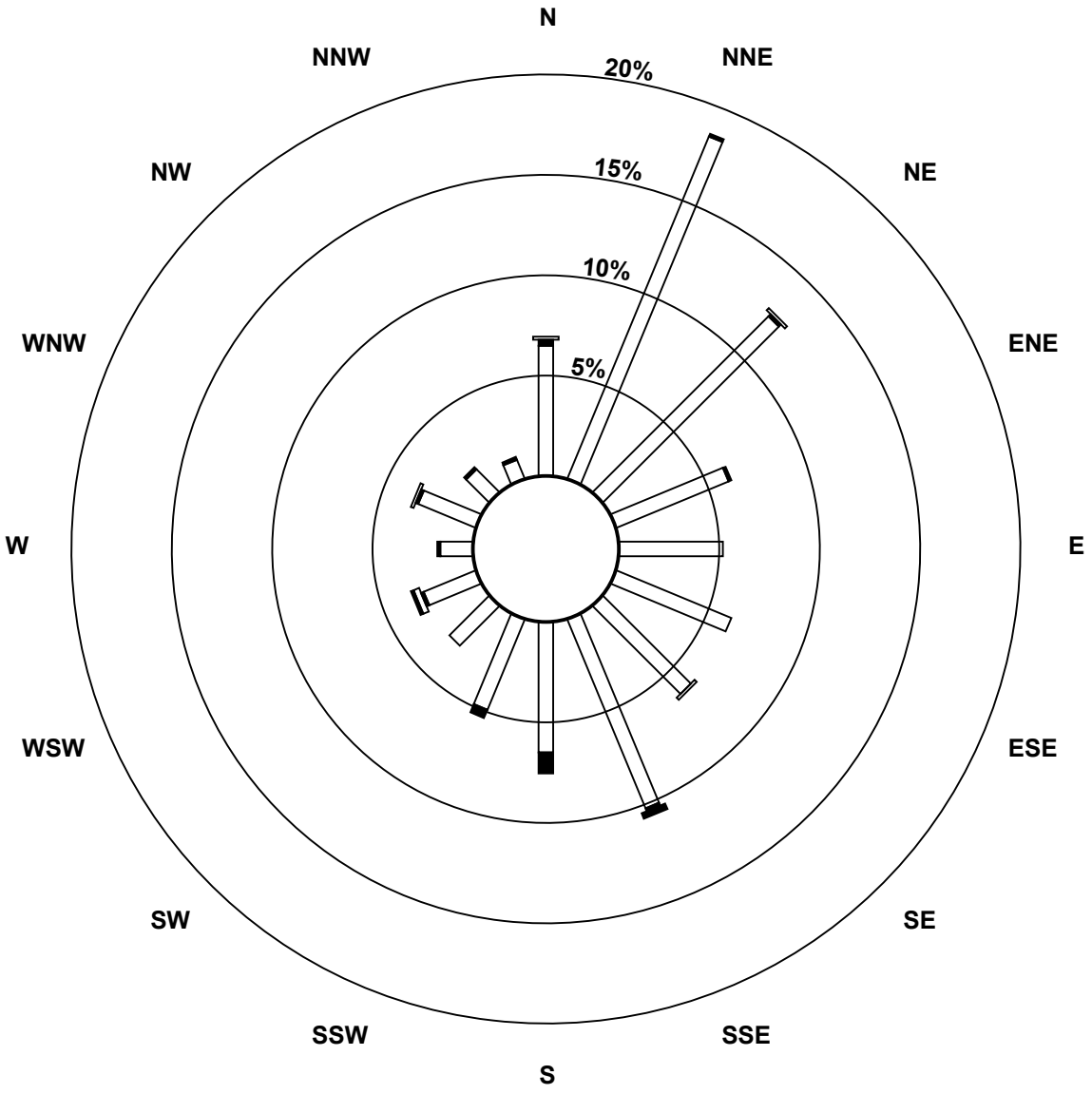
AURORA ATMOSPHERICS INC.

Wood Buffalo Environmental Association

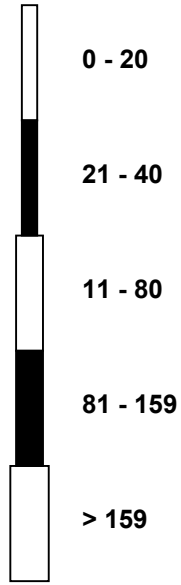
Wind Rose Apr 2014

Nitrogen Oxides (NO_X) - ppb

CNRL Horizon (AMS 15)



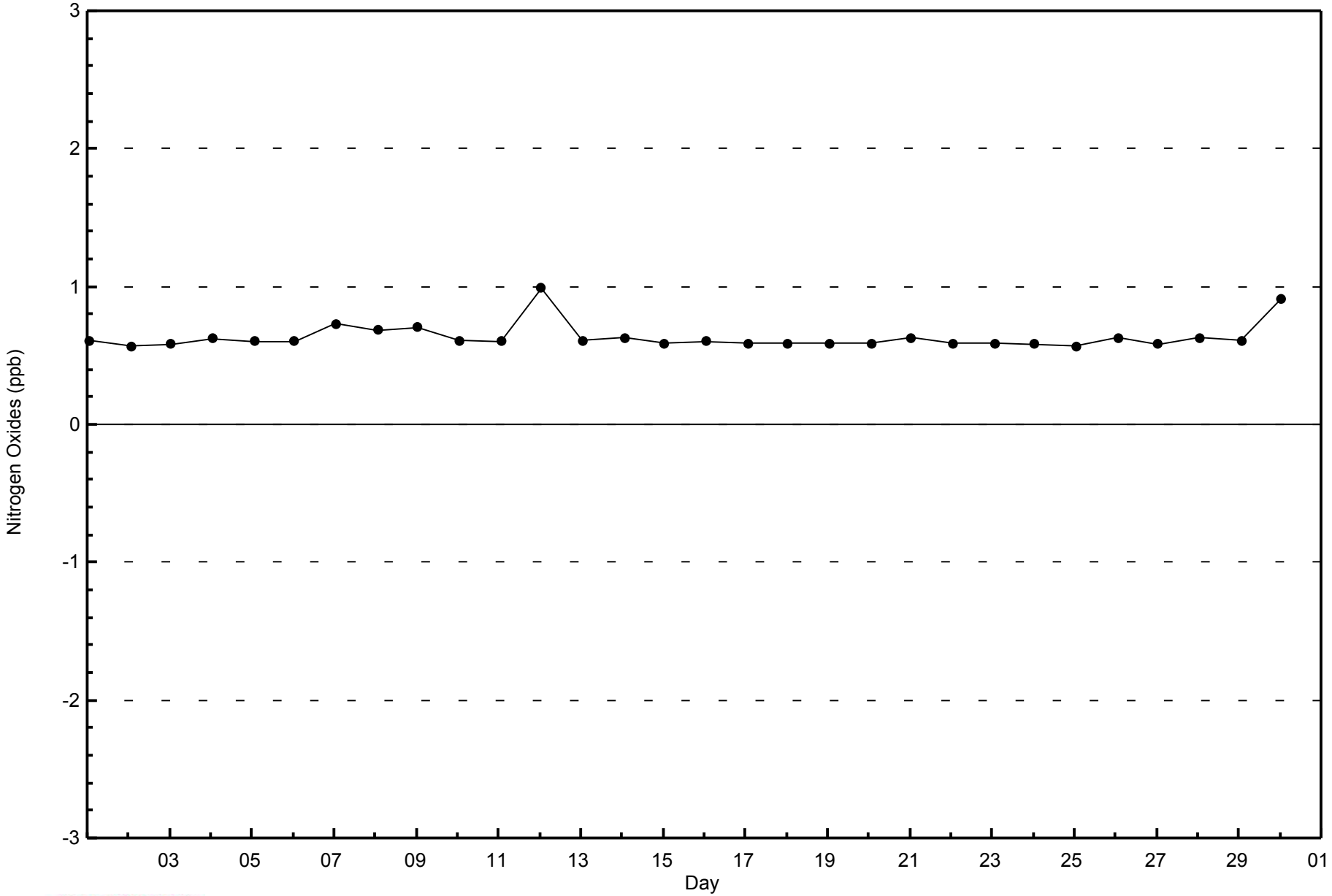
Classes (ppb)



Total Number of Valid Hours: 677

Wood Buffalo Environmental Association
Zero Responses

Nitrogen Oxides (NO_X) - ppb
CNRL Horizon - April 2014



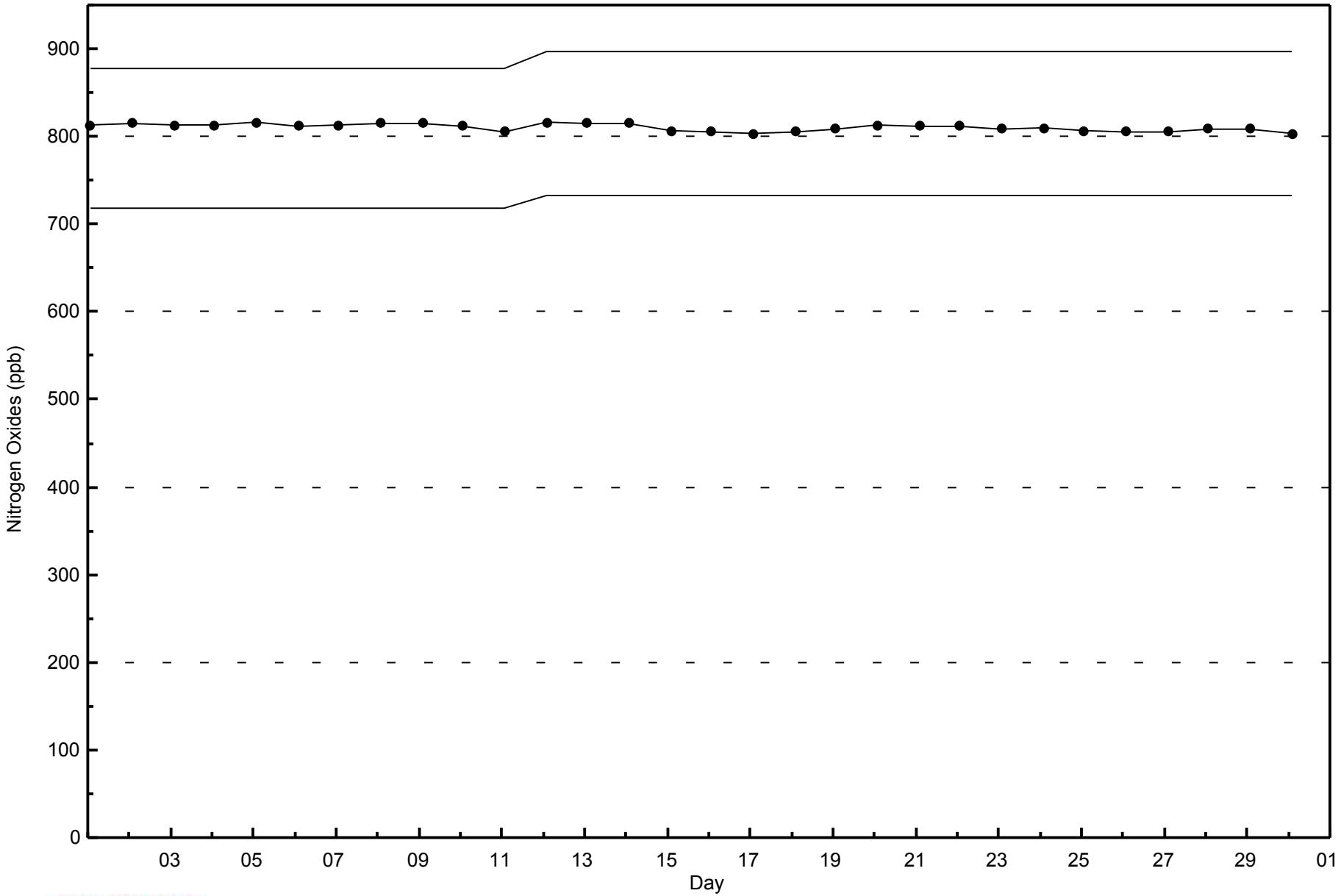
AURORA
ATMOSPHERICS INC.

WBEA NETWORK

Span Responses

Nitrogen Oxides (NO_X) - ppb

CNRL Horizon - April 2014



AURORA ATMOSPHERICS INC.

Wood Buffalo Environmental Association

Summary of Hour Averages

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

CNRL Horizon - April 2014

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

Maximum Value: 31.0 $\mu g/m^3$ on Apr 16 22:00

Maximum Daily Average: 8.8 $\mu g/m^3$ on Apr 14

Minimum Value: 0.8 $\mu g/m^3$ on Apr 20 17:00

Minimum Daily Average: 4.0 $\mu g/m^3$ on Apr 2

Maximum Diurnal Average: 7.4 $\mu g/m^3$ at hour 6

Minimum Diurnal Average: 4.6 $\mu g/m^3$ at hour 18

Monthly Average: 6.04 $\mu g/m^3$

Percentiles: P_1 = 1.3 P_{10} = 3.7 Q_1 = 4.5 Median = 5.5 Q_3 = 6.8 P_{90} = 9.2 P_{99} = 20.2

Hours in Service:	720
Hours of Data:	716
Hours of Missing Data:	4
Hours of Calibration:	0
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-Apr	6.3	6.3	8.8	7.1	6.1	5.9	6.1	4.7	3.9	3.3	3.2	5.2	6.0	6.4	5.6	5.3	6.1	5.0	5.2	5.2	5.2	5.0	4.1	4.1	5.4	8.8
2-Apr	4.5	4.2	4.2	4.2	3.7	3.6	3.7	3.6	3.6	3.7	3.5	3.6	3.3	4.5	4.5	3.6	3.4	3.9	3.8	3.8	3.8	4.1	6.0	6.1	4.0	6.1
3-Apr	6.2	7.5	10.4	8.0	9.9	5.3	4.5	4.7	4.4	3.3	3.2	5.8	5.7	6.8	7.0	6.7	6.9	7.9	7.8	8.0	8.4	5.7	6.7	6.8	6.6	10.4
4-Apr	6.1	6.4	6.5	7.7	8.9	9.1	10.1	11.3	11.3	11.2	15.6	12.8	10.4	9.5	9.8	6.9	6.2	6.8	6.6	6.3	6.1	5.6	5.1	5.1	8.4	15.6
5-Apr	5.6	5.3	5.5	5.3	5.3	6.1	6.2	7.1	6.5	4.3	4.1	4.5	5.5	8.4	7.8	5.5	4.7	4.8	5.0	5.4	5.4	5.2	5.2	5.7	5.6	8.4
6-Apr	6.6	6.9	10.3	9.4	6.4	12.5	21.3	9.1	8.3	6.1	5.1	5.1	4.6	3.7	3.2	3.1	5.7	4.9	5.1	5.5	6.4	7.7	7.1	7.3	7.2	21.3
7-Apr	10.0	8.5	8.2	9.9	10.0	8.2	6.3	5.0	3.9	2.9	2.8	3.1	2.6	2.0	3.3	2.0	1.2	1.7	2.1	4.3	5.1	4.8	4.7	4.9	4.9	10.0
8-Apr	5.1	5.4	6.0	6.2	6.2	6.2	6.1	6.0	5.9	5.7	5.1	4.4	3.6	2.6	1.3	1.2	3.4	3.0	2.0	2.5	3.5	5.3	4.9	5.2	4.4	6.2
9-Apr	5.9	6.9	6.3	6.5	7.0	7.1	7.0	6.9	6.9	7.0	7.0	7.0	6.8	6.5	6.2	6.5	6.5	5.8	4.1	4.6	4.8	5.4	4.7	4.6	6.2	7.1
10-Apr	4.5	4.5	4.4	4.6	4.7	4.7	4.8	4.7	4.7	4.7	4.6	4.6	4.6	4.5	4.7	4.6	4.4	3.9	4.0	4.7	4.9	4.3	4.3	4.2	4.5	4.9
11-Apr	4.9	5.2	4.7	5.3	5.4	5.0	4.7	4.1	4.0	3.9	3.8	3.9	3.9	4.2	3.9	4.0	4.0	3.9	4.1	4.1	PF	PF	PF	6.7	4.5	6.7
12-Apr	6.7	6.3	5.5	5.2	5.1	5.5	5.0	4.8	4.6	4.4	4.3	4.3	4.3	4.3	4.3	4.2	4.2	4.0	4.1	4.2	4.8	4.3	4.4	4.3	4.7	6.7
13-Apr	5.2	5.7	6.3	6.4	6.7	7.2	6.7	5.3	6.2	5.1	4.9	5.1	5.0	5.5	6.4	7.5	7.4	8.5	9.2	9.5	8.8	8.0	12.2	12.6	7.1	12.6
14-Apr	9.9	9.1	9.6	10.1	9.6	13.3	12.8	13.8	14.9	11.7	10.8	13.2	M	6.3	5.7	4.2	4.9	6.6	5.3	7.6	6.5	6.0	5.8	5.4	8.8	14.9
15-Apr	5.2	5.0	5.2	5.1	5.0	5.0	5.1	5.3	5.1	4.6	4.5	4.4	4.2	3.8	3.9	4.0	4.4	4.1	4.7	5.5	6.4	5.1	4.9	4.9	4.8	6.4
16-Apr	5.8	6.2	6.0	5.7	5.7	5.7	5.5	5.2	5.6	4.9	5.3	5.3	5.2	5.7	5.7	5.4	5.8	5.8	5.8	6.2	18.6	31.0	17.8	11.3	8.0	31.0
17-Apr	7.7	6.7	6.9	7.2	8.4	7.3	7.7	6.3	7.9	7.8	7.4	6.7	6.0	5.9	5.5	4.8	4.2	3.9	4.1	4.9	6.9	8.1	7.4	6.8	6.5	8.4
18-Apr	7.3	7.6	7.8	8.7	9.4	8.7	7.0	6.7	6.8	7.1	6.4	6.5	6.1	5.0	4.9	5.1	4.6	4.3	5.0	5.5	6.5	6.1	6.2	6.5	6.5	9.4
19-Apr	7.3	9.3	9.7	9.7	10.5	10.9	10.8	8.1	6.7	8.7	10.0	11.1	10.6	9.8	7.0	6.0	5.4	4.4	3.5	3.5	5.5	6.7	9.2	11.1	8.1	11.1
20-Apr	11.3	11.2	10.8	10.3	12.0	25.3	25.1	15.0	10.9	8.6	5.6	4.7	3.7	2.3	1.3	0.8	0.8	1.3	2.6	4.7	9.0	8.9	9.3	9.3	8.5	25.3
21-Apr	8.9	7.6	6.6	6.0	5.9	6.0	5.3	5.2	6.0	5.7	5.5	5.5	5.1	4.7	5.6	4.8	3.4	1.7	1.0	2.4	5.0	5.7	5.9	6.5	5.2	8.9
22-Apr	7.1	6.7	6.9	6.4	6.3	6.7	5.6	5.0	5.0	4.5	4.3	4.1	3.7	3.6	3.3	3.3	3.8	4.6	4.7	6.1	6.7	7.0	6.8	6.6	5.4	7.1
23-Apr	5.8	4.9	4.7	4.6	4.6	4.5	4.5	4.5	4.5	4.5	4.8	5.1	4.1	4.3	4.8	5.4	6.0	6.5	7.3	6.8	6.6	6.0	6.0	5.5	5.3	7.3
24-Apr	5.4	5.8	5.6	5.8	6.0	5.9	5.6	5.6	5.7	5.4	5.5	5.3	5.1	4.8	5.7	6.2	5.3	5.5	5.9	6.5	8.0	7.9	6.7	6.8	5.9	8.0
25-Apr	7.2	7.8	7.4	6.6	6.9	6.6	6.2	6.4	5.1	4.7	5.7	6.0	6.3	6.0	5.7	5.7	5.6	5.4	5.9	6.7	6.3	7.7	6.9	6.6	6.3	7.8
26-Apr	6.8	7.0	6.8	5.9	5.7	5.0	4.6	6.6	6.5	4.6	5.1	4.9	4.1	4.2	4.6	5.0	5.6	5.7	5.1	5.1	4.9	5.2	5.6	4.9	5.4	7.0
27-Apr	4.2	3.9	3.9	3.9	4.1	4.4	4.6	4.7	4.5	4.1	4.1	3.9	3.9	3.8	3.7	3.7	3.8	3.9	3.8	3.9	4.0	4.1	4.1	4.2	4.1	4.7
28-Apr	4.3	4.3	4.4	4.4	5.0	4.6	4.2	3.8	3.8	3.8	3.7	7.6	10.8	9.0	6.4	5.3	4.2	3.6	5.1	6.1	7.8	7.3	7.0	7.2	5.6	10.8
29-Apr	9.1	9.5	9.3	9.6	9.1	8.1	7.0	6.1	5.5	4.5	3.0	2.1	1.2	1.6	2.8	3.0	2.2	3.4	2.0	3.2	5.9	11.3	23.9	25.1	7.0	25.1
30-Apr	22.9	13.8	10.0	8.5	7.9	6.8	6.3	6.0	5.0	4.7	5.1	10.2	2.6	3.6	5.0	4.9	4.3	3.2	5.1	3.3	2.8	3.5	2.7	3.0	6.3	22.9
	7.1	6.8	7.0	6.8	6.9	7.4	7.3	6.4	6.1	5.5	5.5	5.9	5.1	5.1	5.0	4.6	4.6	4.6	4.7	5.2	6.4	7.0	7.1	7.0	Diurnal Average	
	22.9	13.8	10.8	10.3	12.0	25.3	25.1	15.0	14.9	11.7	15.6	13.2	10.8	9.8	9.8	7.5	7.4	8.5	9.2	9.5	18.6	31.0	23.9	25.1	Diurnal Maximum	

M - Maintenance PF - Power Failure

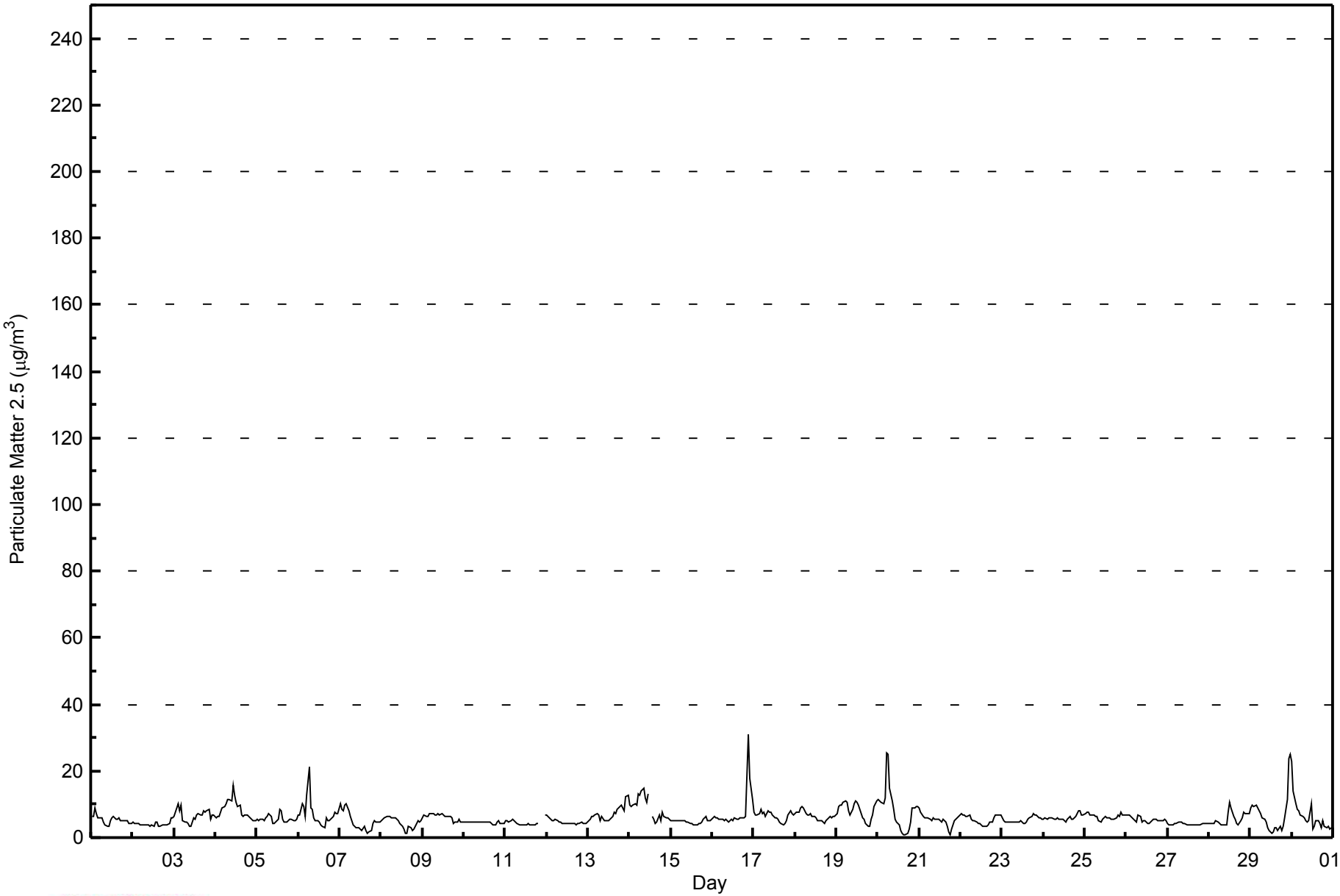
Alberta Ambient Air Quality Objectives (AAAQO): 24-hr 30 $\mu g/m^3$

WBEA NETWORK

Hourly Averages

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

CNRL Horizon - April 2014



AURORA ATMOSPHERICS INC.

Concentration Ranges ($\mu g/m^3$)	Number of Hours	%	Cumulative %
1 - 5	361	50.42	50.42
6 - 15	343	47.91	98.32
16 - 25	9	1.26	99.58
26 - 80	1	0.14	99.72
> 81.0	0	0.00	99.72

Total Number of Valid Hours: 716

Total Number of Hours: 720

Concentration Ranges ($\mu g/m^3$)	N	NNE	NE	ENE	E	ESE	SE	SSE	S	SSW	SW	WSW	W	WNW	NW	NNW	**Totals**
1 - 5	19	99	56	24	15	22	20	24	26	17	7	14	5	8	4	1	361
6 - 15	32	37	35	20	19	21	22	51	24	20	14	8	10	14	9	7	343
16 - 25	0	0	0	0	0	1	2	1	1	1	0	2	0	1	0	0	9
26 - 80	0	0	0	0	0	0	1	0	0	0	0	0	0	0	0	0	1
> 81.0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Totals	51	136	91	44	34	44	45	76	51	38	21	24	15	23	13	8	714

Wind Direction

Total Number of Valid Hours: 716

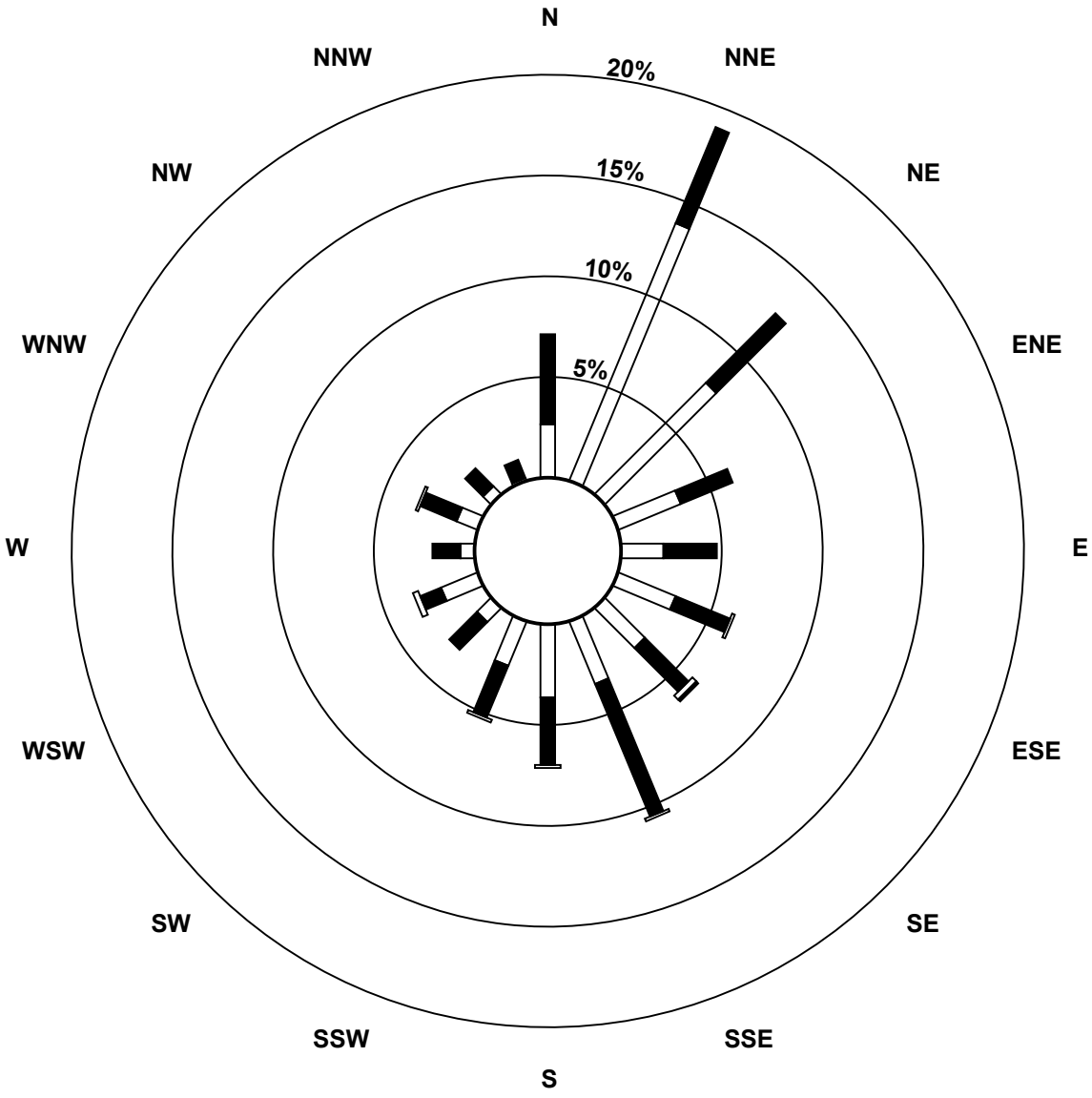
Total Number of Hours: 720

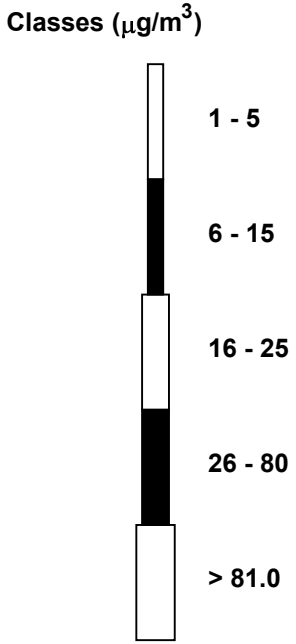
Wood Buffalo Environmental Association

Wind Rose Apr 2014

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

CNRL Horizon (AMS 15)





Total Number of Valid Hours: 716

Maximum Value: 22.1 C on Apr 30 14:00

Maximum Daily Average: 13.2 C on Apr 30

Minimum Value: -21.4 C on Apr 3 06:00

Minimum Daily Average: -13.4 C on Apr 2

Maximum Diurnal Average: 6.5 C at hour 16

Minimum Diurnal Average: -4.8 C at hour 6

Monthly Average: 0.98 C

Percentiles: P_1 = -17.3 P_{10} = -10.0 Q_1 = -4.5 Median = 1.2 Q_3 = 6.1 P_{90} = 11.1 P_{99} = 20.5

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-Apr	-8.7	-9.2	-9.8	-10.0	-11.0	-11.9	-12.2	-11.0	-9.9	-8.6	-7.6	-6.4	-5.5	-4.6	-4.1	-3.7	-3.5	-4.1	-5.2	-6.8	-8.0	-9.0	-10.4	-11.6	-8.0	-3.5
2-Apr	-12.4	-13.3	-14.4	-15.4	-16.5	-17.2	-17.3	-16.3	-15.1	-14.0	-13.1	-11.8	-11.0	-10.7	-10.3	-10.0	-10.9	-11.5	-11.6	-12.4	-12.9	-13.5	-14.6	-15.5	-13.4	-10.0
3-Apr	-16.3	-16.9	-17.5	-18.6	-20.5	-21.4	-20.6	-18.2	-15.8	-13.8	-11.8	-10.2	-8.6	-6.9	-5.6	-4.1	-3.2	-3.0	-3.2	-4.5	-5.8	-5.0	-4.9	-4.7	-10.9	-3.0
4-Apr	-4.4	-4.4	-5.0	-4.3	-3.3	-3.5	-3.5	-3.2	-2.8	-1.9	-0.9	0.0	0.6	1.7	2.4	1.9	0.1	-0.3	-0.7	-1.6	-2.2	-2.5	-3.1	-4.3	-1.9	2.4
5-Apr	-5.3	-6.1	-7.5	-8.1	-9.0	-9.9	-10.3	-7.5	-5.4	-3.6	-3.2	-2.2	-1.6	-0.7	0.2	0.7	1.0	0.7	-0.4	-2.3	-3.6	-4.7	-5.4	-5.9	-4.2	1.0
6-Apr	-6.5	-7.3	-8.7	-9.7	-11.1	-9.8	-8.0	-5.1	-2.8	-0.1	1.2	2.5	4.1	6.1	6.1	6.8	6.3	5.5	4.2	1.8	-1.3	-2.3	-3.4	-4.5	-1.5	6.8
7-Apr	-4.9	-4.3	-5.2	-5.7	-5.7	-5.8	-3.0	0.4	2.8	5.0	5.7	6.8	8.2	10.0	11.8	12.7	13.5	12.7	10.5	9.5	8.1	7.9	6.6	5.6	4.3	13.5
8-Apr	4.7	3.1	3.3	3.7	4.3	4.6	5.7	6.3	8.2	11.9	14.4	16.6	17.4	18.0	18.0	18.4	18.5	17.2	15.3	13.0	11.0	9.1	8.6	6.2	10.7	18.5
9-Apr	5.3	6.1	5.6	4.9	3.1	2.5	4.1	4.6	3.8	3.6	3.5	5.7	7.2	9.3	10.4	10.6	10.4	8.7	5.4	2.9	1.3	2.5	0.3	-0.9	5.0	10.6
10-Apr	-1.8	-2.6	-3.9	-4.1	-4.6	-5.4	-5.7	-5.7	-5.1	-4.1	-3.0	-2.0	-1.2	-0.7	-0.7	-0.6	-0.5	-0.9	-2.3	-3.6	-4.3	-4.9	-5.4	-5.4	-3.3	-0.5
11-Apr	-6.5	-6.4	-6.5	-7.2	-7.5	-7.9	-8.0	-7.7	-7.5	-7.1	-7.0	-6.9	-6.5	-5.6	-4.7	-5.0	-5.5	-5.5	-6.1	-6.8	-8.0	-8.9	-10.4	-11.7	-7.1	-4.7
12-Apr	-13.2	-13.1	-14.5	-12.7	-14.9	-15.2	-12.0	-8.6	-6.6	-3.6	-1.2	-0.1	0.8	0.9	0.3	-0.1	-0.7	-1.5	-2.2	-3.8	-5.0	-6.3	-7.3	-8.1	-6.2	0.9
13-Apr	-9.0	-9.8	-10.6	-11.2	-13.7	-14.6	-11.3	-10.1	-8.9	-7.7	-6.8	-5.5	-4.6	-3.4	-2.8	-2.4	-1.8	-1.6	-2.2	-3.6	-4.8	-6.2	-6.9	-8.7	-7.0	-1.6
14-Apr	-8.7	-9.2	-9.7	-9.0	-9.0	-9.6	-7.7	-5.4	-3.1	-0.3	1.4	3.7	5.7	7.5	8.6	9.3	8.8	8.6	7.6	4.9	1.3	0.0	-0.9	-1.6	-0.3	9.3
15-Apr	-2.2	-3.1	-3.7	-3.7	-3.8	-3.7	-3.5	-3.6	-3.3	-2.9	-2.3	-1.3	0.6	1.7	1.9	1.4	0.6	-0.2	-1.7	-3.5	-5.2	-6.5	-7.4	-7.8	-2.6	1.9
16-Apr	-8.5	-9.0	-9.6	-10.1	-10.9	-11.2	-10.6	UO	UO	UO	-5.6	-3.4	-0.7	1.5	2.4	3.6	3.1	3.5	3.0	1.6	0.0	-1.1	-2.0	-2.6	-3.2	3.6
17-Apr	-3.3	-5.2	-6.5	-7.5	-8.5	-8.0	-4.6	-2.3	-0.1	1.5	3.0	4.2	5.3	6.1	6.4	6.8	6.9	6.4	5.5	3.8	2.2	1.2	0.7	-0.1	0.6	6.9
18-Apr	-0.9	-1.3	-2.0	-2.4	-2.3	-2.0	-2.0	-1.5	-1.2	-0.9	-0.2	0.2	1.0	1.7	2.2	2.2	2.6	2.2	1.9	1.4	1.2	0.9	0.4	-1.0	0.0	2.6
19-Apr	-1.6	-1.1	-1.9	-1.8	-1.3	-1.2	0.5	1.8	3.0	3.5	4.5	6.4	6.2	6.7	7.7	8.7	8.9	8.6	7.9	6.1	4.1	1.8	0.1	-0.2	3.2	8.9
20-Apr	-1.3	-2.0	-2.3	-4.0	-5.2	-4.9	-1.0	3.4	5.2	7.3	9.7	11.4	12.7	13.3	13.6	13.8	13.5	12.8	12.1	10.6	7.6	6.0	4.4	2.4	5.8	13.8
21-Apr	1.7	2.8	4.1	4.1	3.2	3.9	5.0	6.1	6.3	7.4	8.2	9.9	11.1	12.1	12.5	12.9	12.9	12.4	10.9	8.7	6.5	5.2	2.9	1.8	7.2	12.9
22-Apr	1.0	0.7	-0.4	-0.6	-1.3	-1.1	0.8	3.1	5.1	7.2	9.2	11.1	12.5	13.5	13.9	13.9	12.8	11.4	9.8	7.9	6.7	5.0	4.1	3.6	6.3	13.9
23-Apr	3.4	3.3	3.0	3.0	2.8	2.6	2.9	3.6	4.5	6.2	8.1	9.6	11.0	11.7	11.7	11.5	11.1	9.9	8.4	7.3	6.4	5.8	5.2	4.7	6.6	11.7
24-Apr	4.1	3.7	3.2	2.7	0.9	0.7	1.4	1.4	1.7	2.8	4.1	5.6	7.1	8.5	7.7	8.5	9.8	9.4	8.3	6.6	5.4	4.4	3.7	3.0	4.8	9.8
25-Apr	2.7	2.2	1.6	0.5	-0.2	-0.6	0.1	1.7	2.6	3.7	4.6	5.9	7.0	8.2	9.0	9.4	9.3	9.4	8.8	7.8	6.8	6.0	5.7	5.4	4.9	9.4
26-Apr	4.7	2.6	2.5	2.7	2.3	2.6	3.2	3.7	5.0	5.6	6.2	7.4	8.2	8.2	8.5	8.1	7.8	7.6	6.9	6.4	5.8	5.3	5.0	4.9	5.5	8.5
27-Apr	4.7	4.1	3.9	3.8	3.4	2.9	2.1	1.0	0.7	0.5	1.1	3.2	4.2	4.6	5.2	5.7	5.8	6.2	5.8	5.7	5.2	4.7	4.0	3.2	3.8	6.2
28-Apr	2.8	2.6	2.2	0.9	-0.1	0.4	2.3	3.2	3.5	4.6	6.0	7.7	9.4	10.7	11.5	11.9	12.6	12.5	12.0	10.4	8.2	7.9	6.5	4.8	6.4	12.6
29-Apr	3.5	2.8	1.2	0.9	-0.2	1.1	3.7	6.7	9.7	12.6	14.7	16.0	16.3	17.6	18.4	18.5	18.7	18.5	18.2	16.3	11.2	7.7	5.2	2.9	10.1	18.7
30-Apr	1.4	0.1	-0.2	0.2	0.0	1.2	4.3	7.5	11.5	14.6	17.2	19.3	21.1	22.1	21.9	22.1	21.7	21.6	20.7	19.7	18.4	17.6	16.6	15.4	13.2	22.1
	-2.5	-3.0	-3.6	-4.0	-4.7	-4.8	-3.5	-1.8	-0.5	1.0	2.0	3.4	4.6	5.6	6.1	6.5	6.4	5.9	4.9	3.5	1.9	0.9	-0.1	-1.0	Diurnal Average	
	5.3	6.1	5.6	4.9	4.3	4.6	5.7	7.5	11.5	14.6	17.2	19.3	21.1	22.1	21.9	22.1	21.7	21.6	20.7	19.7	18.4	17.6	16.6	15.4	Diurnal Maximum	

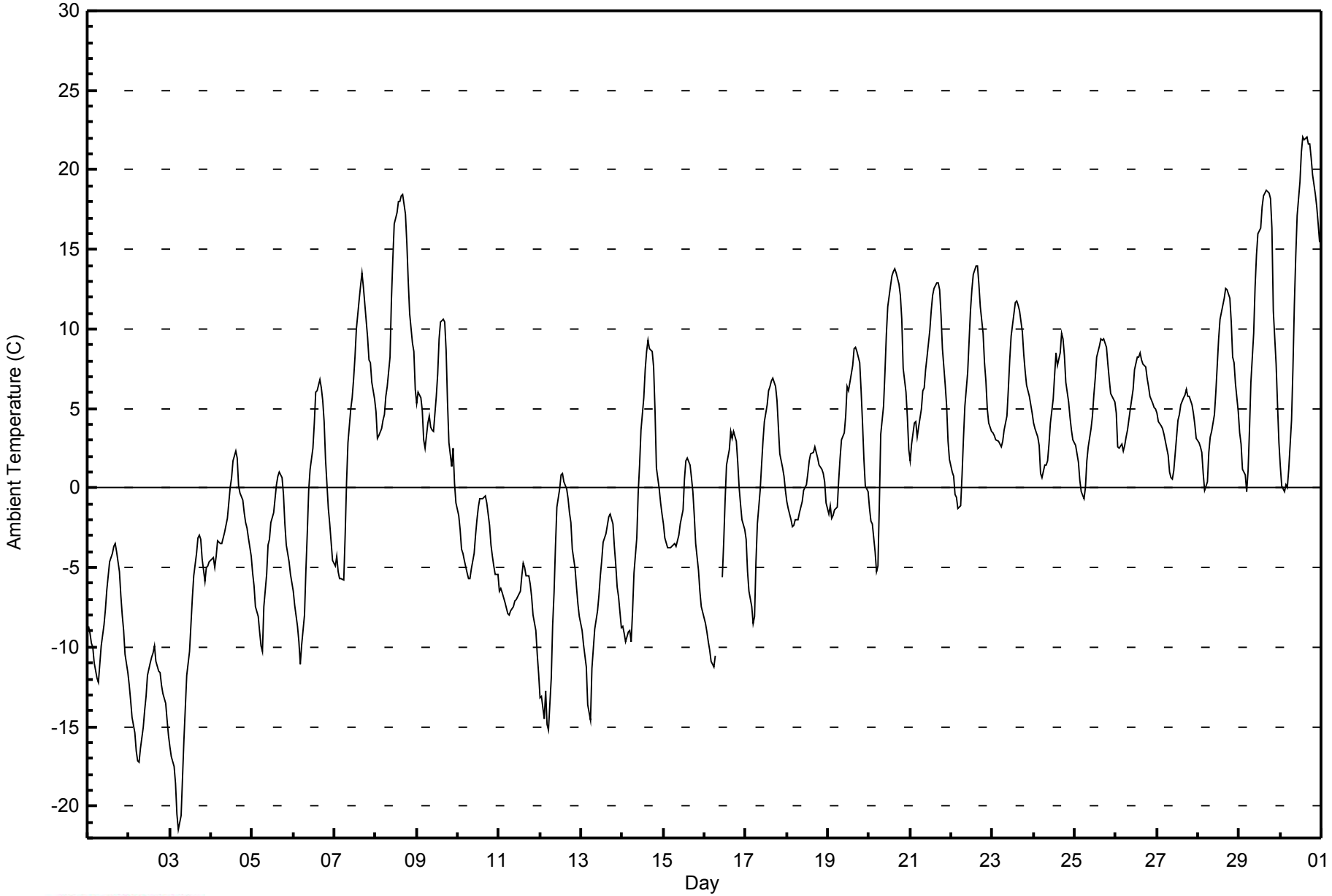
UO - Unstable Operation

WBEA NETWORK

Hourly Averages

Ambient Temperature (AT) - C

CNRL Horizon - April 2014



AURORA ATMOSPHERICS INC.

Concentration Ranges (C)	Number of Hours	%	Cumulative %
-50 - -20	3	0.42	0.42
-20 - 0	313	43.65	44.07
0 - 10	317	44.21	88.28
10 - 20	77	10.74	99.02
> 20	7	0.98	100.00

Total Number of Valid Hours: 717

Total Number of Hours: 720

Maximum Value: 2.8 mm on Apr 30 13:00

Maximum Daily Total: 7.1 mm on Apr 27

Minimum Value: 0.0 mm on Apr 1 01:00

Minimum Daily Total: 0.0 mm on Apr 1

Maximum Diurnal Total: 3.4 mm at hour 13

Minimum Diurnal Total: 0.0 mm at hour 1

Monthly Total: 13.86 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} = 0.7

Hours in Service:	720
Hours of Data:	667
Hours of Missing Data:	53
Hours of Calibration:	0
Percent Operational Time:	92.6

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-Apr	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	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-Apr	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	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-Apr	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	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-Apr	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	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.4	0.2
5-Apr	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	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-Apr	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	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-Apr	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	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-Apr	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	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-Apr	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	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-Apr	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	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-Apr	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	PF	PF	PF	0.0	0.0	0.0
12-Apr	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	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-Apr	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	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-Apr	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	AF	AF	AF	AF	AF	AF	AF	AF	AF	AF	AF	AF	AF	AF	--	0.0
15-Apr	AF	AF	AF	AF	AF	AF	AF	AF	AF	AF	AF	AF	AF	AF	AF	AF	AF	AF	AF	AF	AF	AF	AF	AF	--	--
16-Apr	AF	AF	AF	AF	AF	AF	AF	AF	AF	AF	AF	AF	0.0	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-Apr	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	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-Apr	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	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-Apr	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	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-Apr	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	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-Apr	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	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-Apr	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	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-Apr	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	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-Apr	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	0.0	0.0	0.0	0.0	0.0	0.0	0.3	0.3
25-Apr	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	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-Apr	0.0	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	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.5	0.5
27-Apr	0.0	0.0	0.0	0.0	0.0	0.5	1.3	1.5	1.0	1.8	0.5	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	7.1	1.8
28-Apr	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	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-Apr	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	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-Apr	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.8	2.8	0.0	2.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	5.6	2.8
	0.0	0.0	0.0	0.0	0.0	0.8	1.3	1.5	1.0	1.8	0.7	1.4	3.4	0.0	2.0	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	0.5	1.3	1.5	1.0	1.8	0.5	0.8	2.8	0.0	2.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	Diurnal Maximum	

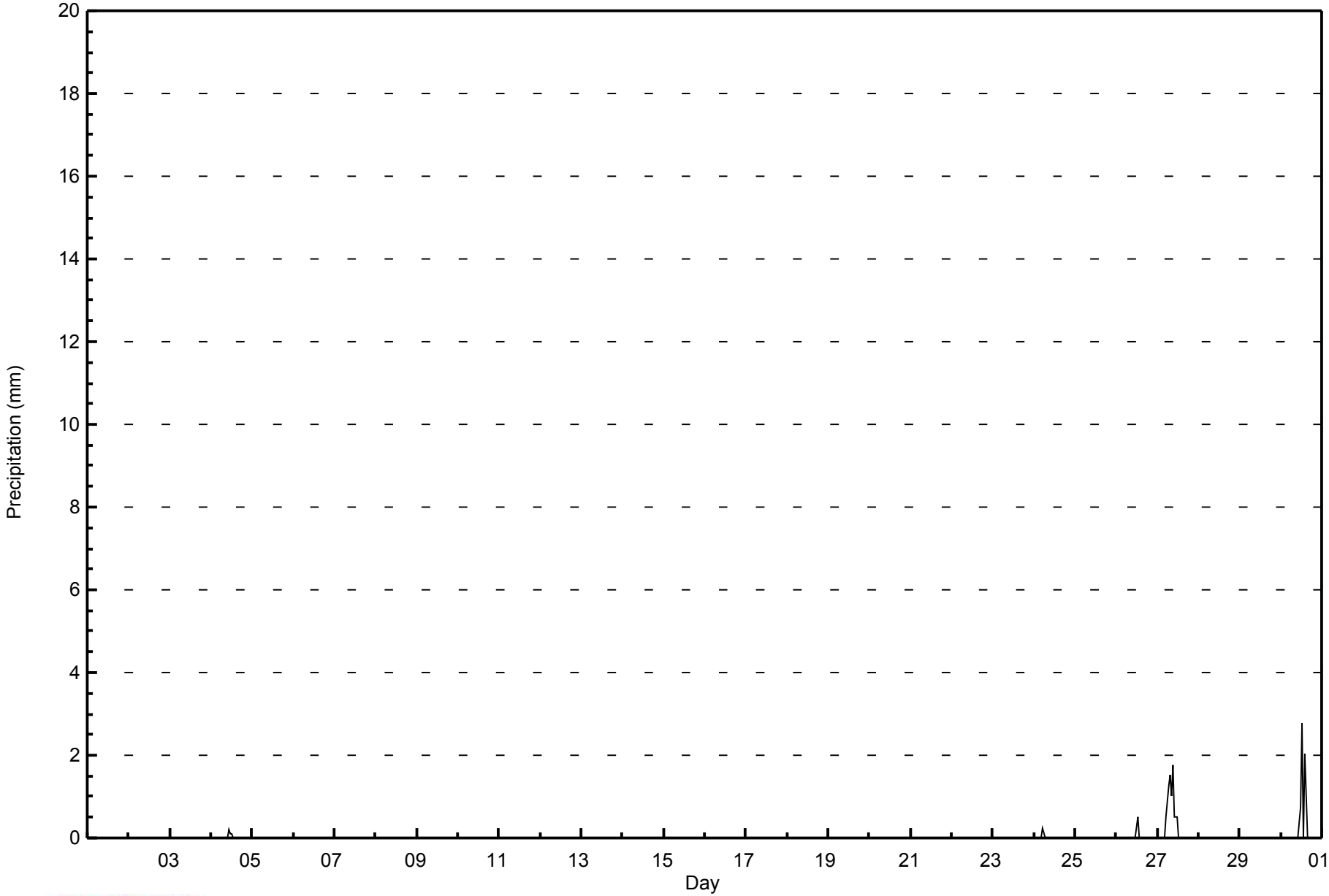
AF - Analyzer Failure PF - Power Failure

Wood Buffalo Environmental Association

Hourly Averages

Precipitation (PC) - mm

CNRL Horizon - April 2014



AURORA ATMOSPHERICS INC.

Wood Buffalo Environmental Association

Summary of Hour Averages

Relative Humidity (RH) - %

CNRL Horizon - April 2014

Maximum Value: 99 % on Apr 28 07:00

Maximum Daily Average: 87.7 % on Apr 27

Minimum Value: 16 % on Apr 30 14:00

Minimum Daily Average: 45.0 % on Apr 17

Maximum Diurnal Average: 78.7 % at hour 6

Minimum Diurnal Average: 41.7 % at hour 17

Monthly Average: 59.3 %

Percentiles: P_1 = 23 P_{10} = 34 Q_1 = 44 Median = 59 Q_3 = 73 P_{90} = 87 P_{99} = 98

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	Daily
	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24	Average	Maximum
1-Apr	63	65	66	59	57	60	61	55	50	46	42	37	36	36	36	37	38	39	41	45	47	49	55	58	49.1	66
2-Apr	60	60	59	62	62	61	59	55	51	50	51	53	55	62	67	64	66	72	68	68	63	64	63	61	60.7	72
3-Apr	62	63	62	64	72	73	70	61	53	44	35	32	33	33	33	34	34	34	36	38	44	49	52	53	48.4	73
4-Apr	54	56	59	60	62	66	70	76	83	83	86	88	88	78	69	64	65	64	63	56	57	59	60	64	67.9	88
5-Apr	66	68	72	71	72	75	75	65	59	50	50	49	50	47	45	44	43	43	45	51	53	54	55	56	56.5	75
6-Apr	57	59	66	71	77	78	75	60	56	62	62	60	66	60	60	56	61	57	51	59	72	79	86	90	65.8	90
7-Apr	93	90	92	93	92	92	87	77	68	60	58	54	50	44	38	33	27	29	37	46	51	56	68	79	62.9	93
8-Apr	87	93	94	93	90	86	78	73	62	48	40	35	32	29	29	27	22	20	23	28	34	53	55	60	53.8	94
9-Apr	62	62	63	60	66	67	60	63	73	75	77	65	56	42	30	24	23	33	64	74	77	55	79	90	60.0	90
10-Apr	89	87	89	88	86	78	73	69	65	60	54	51	48	45	44	43	43	45	49	53	55	54	52	51	61.3	89
11-Apr	67	64	64	74	82	85	81	78	78	78	79	76	77	71	61	58	59	46	43	40	46	52	58	60	65.8	85
12-Apr	69	72	80	70	77	80	68	56	50	44	39	36	35	35	39	39	39	44	43	42	44	46	49	47	51.9	80
13-Apr	48	48	51	54	64	70	58	51	48	44	42	40	38	36	36	36	34	34	37	43	48	56	62	69	47.8	70
14-Apr	62	71	72	62	64	63	57	51	45	39	36	34	32	30	28	26	26	27	29	40	52	55	59	70	47.1	72
15-Apr	74	79	80	72	78	82	86	88	88	85	84	78	62	44	35	32	29	35	39	43	40	44	49	52	61.6	88
16-Apr	56	62	68	71	72	73	70	61	M	M	58	50	42	39	39	35	34	31	31	32	34	35	36	37	48.5	73
17-Apr	40	48	55	62	69	71	60	50	47	45	41	37	33	32	32	30	30	32	35	39	44	46	48	53	45.0	71
18-Apr	56	61	69	75	78	78	76	74	78	82	78	78	72	64	62	62	61	64	68	73	77	80	84	89	72.6	89
19-Apr	92	94	96	97	96	95	90	84	77	74	68	61	60	57	55	48	48	51	55	62	71	82	91	93	74.8	97
20-Apr	96	97	98	95	94	93	90	78	71	59	47	38	34	31	30	30	30	32	33	37	44	48	52	60	59.1	98
21-Apr	61	61	63	69	75	76	73	68	59	55	52	48	46	44	43	43	42	39	35	37	48	56	64	70	55.2	76
22-Apr	73	75	79	81	84	83	76	67	59	52	47	41	31	28	26	27	31	37	43	51	54	64	67	70	56.1	84
23-Apr	71	72	73	73	74	74	73	71	67	61	54	47	42	40	38	38	39	44	48	51	54	55	55	55	57.0	74
24-Apr	57	59	61	63	82	84	73	72	72	66	62	57	53	49	57	55	44	43	45	49	52	56	58	60	59.6	84
25-Apr	62	65	68	76	82	84	79	68	64	60	57	53	50	46	44	44	44	44	46	49	52	56	57	59	58.7	84
26-Apr	62	71	72	73	75	75	74	74	69	63	61	55	51	50	47	49	50	50	52	53	55	56	58	61	60.7	75
27-Apr	63	67	71	75	77	84	94	96	98	98	99	96	92	90	88	87	89	89	91	90	90	91	93	96	87.7	99
28-Apr	97	98	98	98	99	99	99	99	95	91	84	77	69	62	56	53	50	52	54	61	68	72	80	87	79.2	99
29-Apr	92	95	97	98	99	99	91	75	62	52	47	41	35	30	28	29	28	26	25	29	41	51	64	74	58.6	99
30-Apr	83	89	90	84	83	76	65	54	42	35	30	26	18	16	18	19	22	23	27	31	34	35	38	41	45.0	90
	69.2	71.7	74.3	74.8	78.0	78.7	74.7	69.0	65.1	60.7	57.3	53.1	49.5	45.7	43.8	42.2	41.7	42.7	45.2	49.1	53.3	56.9	61.5	65.5	Diurnal Average	
	97	98	98	98	99	99	99	99	98	98	99	96	92	90	88	87	89	89	91	90	90	91	93	96	Diurnal Maximum	

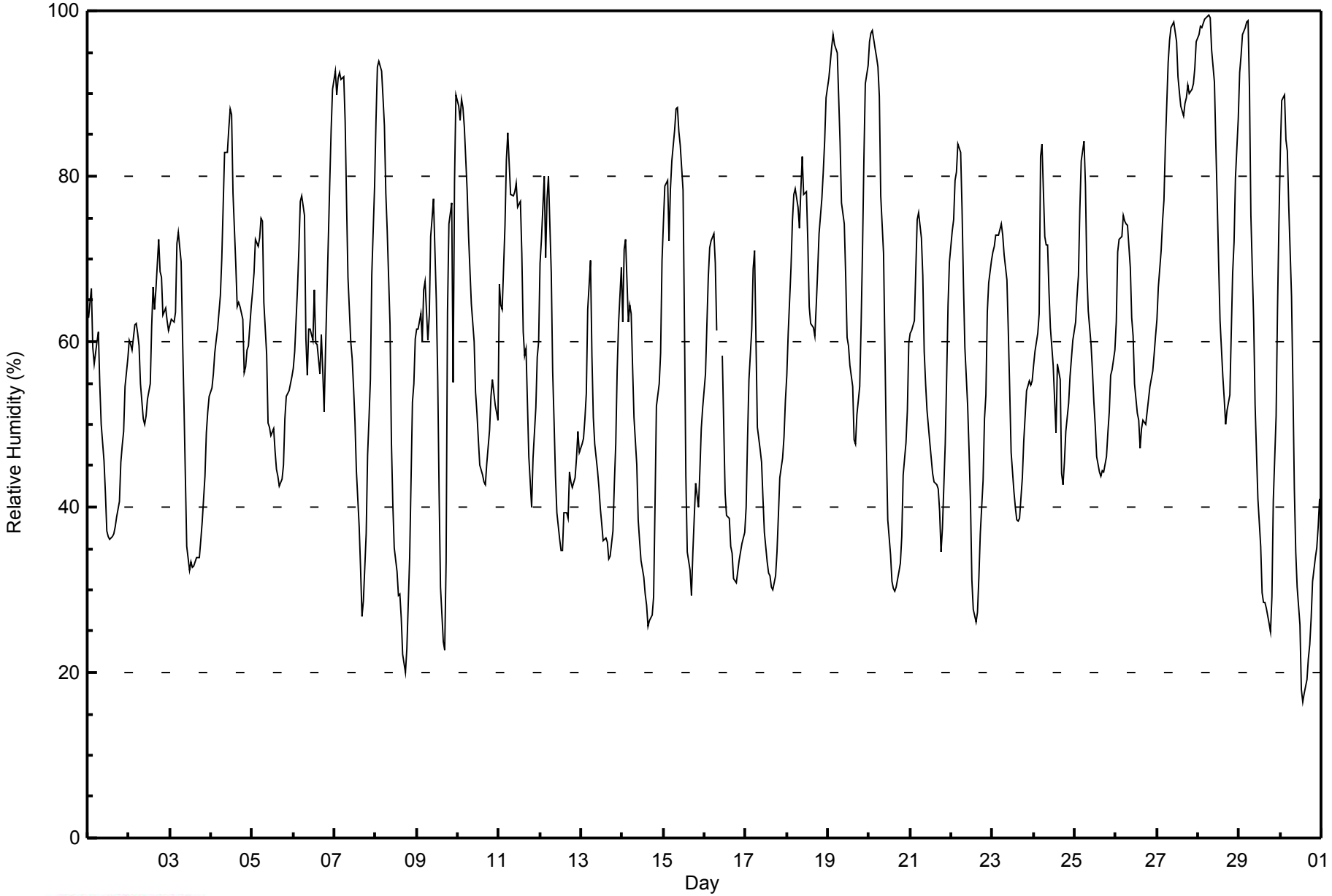
M - Maintenance

WBEA NETWORK

Hourly Averages

Relative Humidity (RH) - %

CNRL Horizon - April 2014



AURORA
ATMOSPHERICS INC.

Concentration Ranges (%)	Number of Hours	%	Cumulative %
0 - 20	4	0.56	0.56
20 - 40	128	17.83	18.38
40 - 60	241	33.57	51.95
60 - 80	238	33.15	85.10
80 - 100	107	14.90	100.00

Total Number of Valid Hours: 718

Total Number of Hours: 720

Maximum Value: 569 W/m2 on Apr 15 13:00

Maximum Daily Average: 193.6 W/m2 on Apr 17

Minimum Value: 0 W/m2 on Apr 2 02:00

Minimum Daily Average: 40.0 W/m2 on Apr 27

Maximum Diurnal Average: 401.7 W/m2 at hour 12

Minimum Diurnal Average: 0.0 W/m2 at hour 3

Monthly Average: 132.9 W/m2

Percentiles: $P_1 = 0$ $P_{10} = 0$ $Q_1 = 0$ Median = 46 $Q_3 = 240$ $P_{90} = 429$ $P_{99} = 545$

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

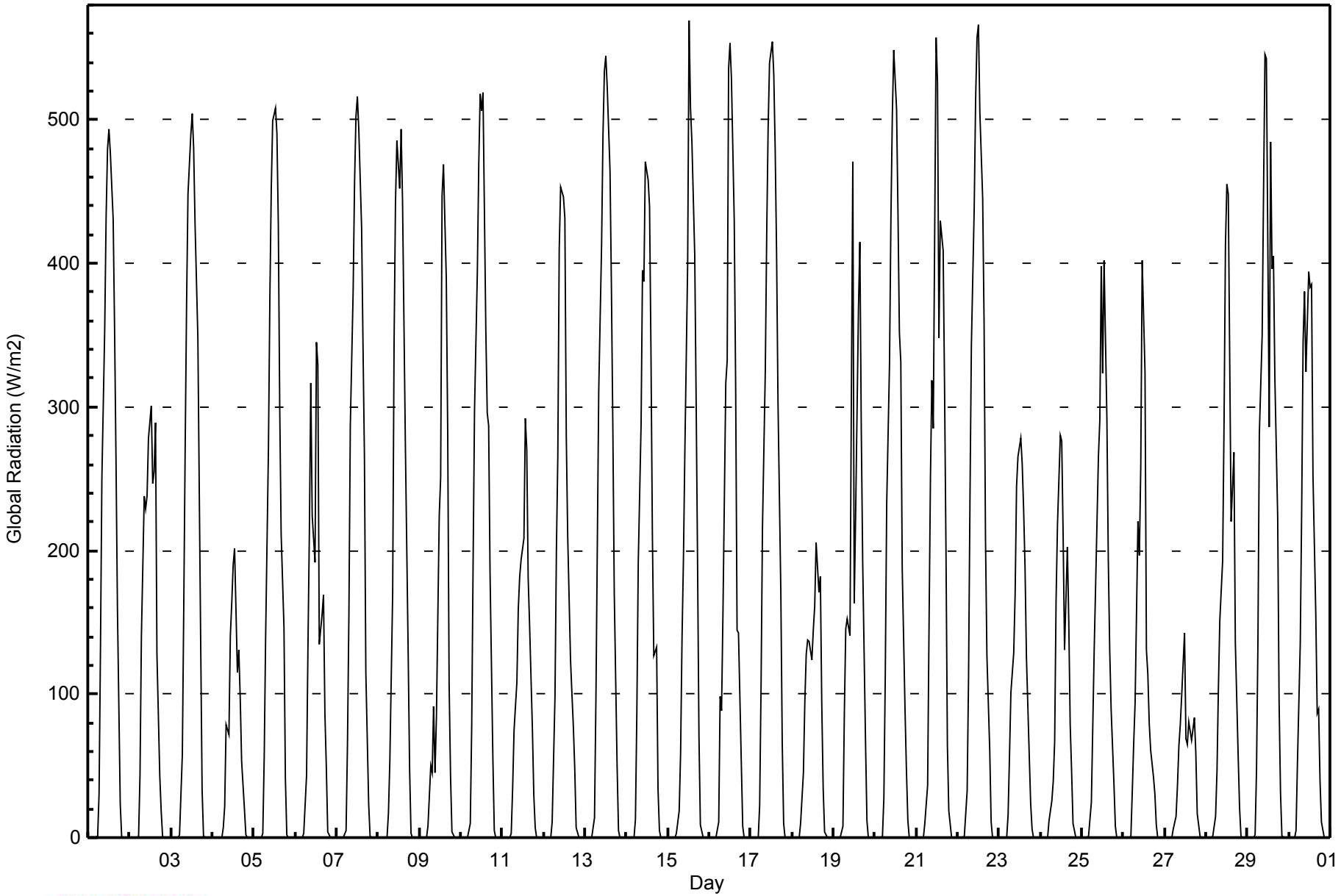
Day	Hourly Period Ending At (MST)																								Daily	Daily
	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24	Average	Maximum
1-Apr	0	0	0	0	0	1	30	132	251	354	433	480	494	476	431	354	264	162	23	1	0	0	0	0	161.9	494
2-Apr	0	0	0	0	0	1	43	141	238	229	238	278	301	247	255	289	128	44	19	1	0	0	0	0	102.1	301
3-Apr	0	0	0	0	0	2	58	160	271	372	448	490	505	480	427	348	241	136	34	1	0	0	0	0	165.6	505
4-Apr	0	0	0	0	0	0	7	22	79	72	141	163	190	202	115	131	97	53	19	2	0	0	0	0	53.9	202
5-Apr	0	0	0	0	0	3	56	140	271	375	453	499	508	490	427	298	211	146	42	2	0	0	0	0	163.4	508
6-Apr	0	0	0	0	0	3	43	134	214	317	224	191	345	330	135	155	169	87	49	4	0	0	0	0	100.0	345
7-Apr	0	0	0	0	0	5	66	155	287	381	456	502	516	493	425	342	266	115	24	1	0	0	0	0	168.1	516
8-Apr	0	0	0	0	0	0	17	53	170	344	442	486	452	493	444	359	275	128	48	3	0	0	0	0	154.7	493
9-Apr	0	0	0	0	0	8	50	45	92	45	83	224	251	447	469	389	282	107	44	4	0	0	0	0	105.8	469
10-Apr	0	0	0	0	0	9	78	193	298	395	469	518	507	519	354	296	287	184	55	5	0	0	0	0	173.6	519
11-Apr	0	0	0	0	0	3	34	75	108	160	182	194	209	292	270	181	148	75	30	7	0	0	0	0	82.0	292
12-Apr	0	0	0	0	0	11	98	200	265	410	454	447	431	280	210	124	101	78	48	6	0	0	0	0	131.8	454
13-Apr	0	0	0	0	0	14	96	205	312	412	489	534	545	523	464	382	284	170	50	5	0	0	0	0	186.8	545
14-Apr	0	0	0	0	0	13	88	192	288	396	387	471	458	439	338	211	127	133	33	5	0	0	0	0	149.1	471
15-Apr	0	0	0	0	0	3	18	59	139	193	269	400	569	508	484	406	305	192	71	8	0	0	0	0	151.1	569
16-Apr	0	0	0	0	0	11	98	88	156	316	332	535	553	529	430	315	145	143	52	8	0	0	0	0	154.6	553
17-Apr	0	0	0	0	0	22	106	216	326	421	494	540	555	531	480	406	302	171	66	10	0	0	0	0	193.6	555
18-Apr	0	0	0	0	0	10	46	95	127	138	137	124	145	162	205	171	182	93	34	4	0	0	0	0	69.7	205
19-Apr	0	0	0	0	0	8	87	145	152	140	310	471	163	225	369	414	284	192	67	12	0	0	0	0	126.7	471
20-Apr	0	0	0	0	1	27	113	232	330	431	504	548	507	435	352	331	187	88	46	12	0	0	0	0	172.8	548
21-Apr	0	0	0	0	0	10	36	148	251	319	285	558	526	348	430	409	313	201	64	19	0	0	0	0	163.2	558
22-Apr	0	0	0	0	1	33	113	236	343	438	514	558	566	505	445	358	209	127	61	11	0	0	0	0	188.2	566
23-Apr	0	0	0	0	0	16	57	101	129	170	245	265	278	260	229	189	126	57	23	6	0	0	0	0	89.7	278
24-Apr	0	0	0	0	0	12	25	40	67	165	219	280	277	210	131	202	150	79	46	10	0	0	0	0	79.7	280
25-Apr	0	0	0	0	1	25	77	131	175	266	291	398	323	402	292	193	131	89	38	8	0	0	0	0	118.4	402
26-Apr	0	0	0	0	1	33	66	94	220	197	259	402	325	131	114	79	61	42	31	9	0	0	0	0	86.0	402
27-Apr	0	0	0	0	0	6	15	37	64	79	99	143	69	65	81	67	75	83	59	17	1	0	0	0	40.0	143
28-Apr	0	0	0	0	1	15	46	104	152	192	289	412	455	448	220	244	269	136	57	21	1	0	0	0	127.6	455
29-Apr	0	0	0	0	2	47	136	282	350	452	545	542	286	484	397	405	320	224	94	31	1	0	0	0	191.5	545
30-Apr	0	0	0	0	5	53	135	229	345	380	325	394	383	385	252	156	86	89	39	11	0	0	0	0	136.1	394
	0.0	0.0	0.0	0.0	0.5	13.4	64.7	136.1	215.6	285.2	333.9	401.7	389.7	378.1	322.4	273.5	200.8	120.8	45.5	8.1	0.2	0.0	0.0	0.0	Diurnal Average	
	0	0	0	0	5	53	136	282	350	452	545	558	569	531	484	414	320	224	94	31	1	0	0	0	Diurnal Maximum	

WBEA NETWORK

Hourly Averages

Global Radiation (GR) - W/m2

CNRL Horizon - April 2014



AURORA
ATMOSPHERICS INC.

Wood Buffalo Environmental Association

Summary of Hour Averages

Wind Speed (WS) - km/h

CNRL Horizon - April 2014

Maximum Speed: 27 km/h on Apr 9 16:00

Maximum Daily Speed Average: 17.7 km/h on Apr 15

Minimum Speed Value: 1 km/h on Apr 5 08:00

Minimum Daily Speed Average: 0.3 km/h on Apr 6

Maximum Diurnal Speed Average: 5.3 km/h at hour 18

Minimum Diurnal Speed Average: 1.5 km/h at hour 6

Monthly Average Velocity: 3.3 km/h 53.2 deg

Percentiles: P_1 = 1 P_{10} = 4 Q_1 = 6 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-Apr	SSW8	WSW5	N5	NE8	NE6	NNE7	N8	NNE9	NNE12	NNE11	NNE11	NE8	NE7	NE8	ENE9	ENE10	ENE11	NE12	NE11	NE9	NNE8	NNE9	NNE12	NNE13	NE7.7	NNE13
2-Apr	NNE15	NNE15	NNE14	NNE15	NNE13	NNE13	NNE14	NNE15	NNE15	NNE13	NNE15	NNE16	NNE17	NNE16	NNE17	NNE18	NNE16	NE14	NE13	NNE14	NNE10	N9	N9	N9	NNE13.7	NNE18
3-Apr	N8	N7	N8	N6	NNE5	NNE5	NNE5	NNE8	NNE8	NNE7	NE7	ENE6	NE5	N3	NE4	NE5	E7	ENE6	NNE5	NNE6	E4	SE9	SSE7	SSE8	NE4.4	SE9
4-Apr	SSE8	SSE8	NE1	S8	SSE9	SSE11	SSE11	SSE17	SSE14	SSE12	S8	S8	SW6	SW8	W9	WNW20	WNW24	WNW22	WNW19	W15	WNW13	NW13	NW16	NW10	WSW5.4	WNW24
5-Apr	W8	W9	W9	WSW10	WSW11	W8	SW4	NE1	SSE4	N2	ENE6	ENE8	ENE10	ENE10	ENE10	ENE11	ENE10	NE12	NE11	NNE10	NNE10	N8	N8	N8	NNE3.3	NE12
6-Apr	N6	N6	N5	NNW5	N2	SSW3	SSW4	S4	S8	S9	S8	SSW7	S9	SSW12	SE5	E3	NNE10	NNE10	NNE9	NNE4	NNE3	N3	WNW2	WSW2	SSE0.3	SSW12
7-Apr	WSW4	SW5	SSE5	SSE6	SSE7	SE5	ESE3	S5	S6	ESE4	ENE6	ENE6	E8	ESE8	SSE11	SSE12	S9	SSW10	SSW9	SW8	SSW8	SSW10	SSW6	S9	S5.1	SSE12
8-Apr	S5	SSW4	SSW7	SSW8	SW7	SSW8	SW9	SW9	SW10	SW14	SW15	SW18	WSW19	WSW20	WSW18	SW20	SW24	WSW25	WSW19	WSW16	WSW11	WNW12	WSW9	SSW7	SW12.3	WSW25
9-Apr	SW6	W11	WSW11	SW9	S8	SW12	WSW10	W21	W20	WNW21	NW20	NW17	NW17	NW18	WNW23	WNW27	WNW25	NW15	NNE9	ESE3	SW8	WNW7	N6	N6	WNW10.8	WNW27
10-Apr	NNE7	NNE5	NNE5	N6	NNE7	NE10	NE11	NE10	NE9	NE10	NNE11	NE11	NE12	NE13	NE12	NE13	NE14	NE12	NE14	NE11	NE9	ENE9	ENE11	NE8	NE9.9	NE14
11-Apr	ENE9	NE9	NE12	NE13	NE11	NNE11	NE14	NNE15	NNE15	NNE18	NNE21	NNE23	NNE23	NNE24	NNE25	NNE23	NNE20	NNE19	N19	N17	NNE9	N7	WNW6	WNW6	NNE14.5	NNE25
12-Apr	W5	W6	WSW6	W7	WSW4	SW7	SSW5	SSW6	S8	S8	S6	WNW13	NW10	N12	NNE13	NNE12	NNE15	NE15	NNE16	NNE17	N16	N14	N12	N12	N4.7	NNE17
13-Apr	N14	N15	N12	N8	WNW5	NW5	NNW4	NNE7	NNW4	NNE4	ENE7	NNE5	E5	E5	ENE9	ESE10	E9	E9	ENE8	ENE5	NE6	NNE5	N5	S1	NNE4.9	N15
14-Apr	SSE5	SSE4	SSE4	SSE7	SSE5	SSE6	S6	S9	SSE10	S11	S10	S10	S12	S11	SSE9	SSW9	SSE8	SE10	ESE6	NNE14	NNE15	NNE18	NNE18	NNE18	SE3.4	NNE18
15-Apr	NNE17	NNE18	NNE18	NNE18	NNE16	NNE14	NNE14	NE14	NNE14	NNE16	NNE17	NNE20	N20	N22	NNE23	NNE24	NNE22	NNE21	NNE21	NNE19	NNE18	NNE18	NNE11	NNE12	NNE17.7	NNE24
16-Apr	NNE12	NNE12	NNE12	NNE13	NNE13	NNE14	NNE14	NE12	ENE11	ENE10	ENE10	NE8	ENE7	SE8	ESE9	SSE12	ESE11	ESE10	ESE10	ESE11	ESE10	SE8	SE6	SE7	ENE7.0	NNE14
17-Apr	SE6	SSE4	SSE5	SSE6	NNE1	ENE2	N2	SE6	SSE8	SE10	SE14	SE15	SE16	SE16	SE14	ESE15	SE14	SE15	SE14	ESE10	ESE8	ESE9	SE10	ESE8	SE9.1	SE16
18-Apr	ESE9	ESE7	ESE6	NE4	NNE7	NE6	NE7	NE9	ENE11	ENE10	E8	ENE9	E7	ESE8	E10	E9	ESE9	SE9	SSE9	SSE6	SSE5	SE4	ESE4	WNW3	E5.8	ENE11
19-Apr	W3	SW5	WNW2	N1	SSE2	SSW2	SSE2	SE4	SSW3	S5	SSE7	SSE6	ESE7	E9	E8	ESE9	ESE10	ESE12	ESE11	ESE9	ESE7	E4	N4	N6	ESE3.8	ESE12
20-Apr	N4	NW4	NW4	SSW1	WSW3	SE1	SSE3	SSE1	N4	NNW6	E5	ENE7	NE10	NE10	ENE8	E9	ENE9	E7	E5	SE4	SSE5	SSW8	SSW5	SSW1	ENE2.4	NE10
21-Apr	SSW6	S7	SSW7	SSW7	S6	SSW8	S8	N4	NNE12	NNE11	NNE11	NE10	NE9	NE8	NE10	NE12	NE14	NE15	NNE13	NNE12	NNE8	NE9	NNE6	N8	NE4.9	NE15
22-Apr	N8	N7	N4	NNE7	N6	N7	NNE9	NNE11	NNE10	NNE11	NNE14	NE16	NE16	ENE15	ENE16	ENE17	NE19	NE17	NE15	NE16	NNE15	NNE13	NNE11	NNE12	NE11.4	NE19
23-Apr	NNE14	NNE14	NNE15	NNE16	NNE16	NNE18	NNE18	NNE18	NNE18	NE18	NE20	NE21	NE20	ENE21	ENE22	ENE22	E20	NE19	NE17	NE16	NE14	NE13	NE13	NE13	NE16.3	ENE22
24-Apr	NE13	NE13	NE15	NE14	NE11	NNE9	NE13	NE13	NE13	NE16	NE16	NE16	NE14	ENE15	S6	SSE4	ESE11	ENE13	ENE15	ENE14	E12	E10	E10	E10	ENE10.8	NE16
25-Apr	E6	NE5	NE5	NNW3	NNW5	NNW4	NNE5	NE3	SE1	ESE2	ENE7	NE5	NE5	E6	ESE6	E7	E9	ESE8	SSE9	SSE9	SSE7	SSE5	SSE7	SSE7	E3.4	SSE9
26-Apr	SSE5	SE5	SE6	SE6	SE5	SE6	SSE8	SSE10	SSE11	SSE14	SSE15	SE16	SE13	SE10	SE12	SE13	SE13	SSE12	SE11	SE12	SE12	SE8	SSE10	SSE11	SE10.0	SE16
27-Apr	SE10	SE9	ESE9	ESE7	E6	ESE9	E7	NE7	NNE7	NNE6	N5	SE8	SSE14	SSE12	SSE10	SSE10	SSE11	SSE13	SSE14	SSE14	SSE11	SSE9	SSE6	S3	SE7.1	SSE14
28-Apr	S2	ESE3	S2	SW1	WSW4	SSW4	S4	S5	S5	S6	SSE6	SE7	ESE5	ENE7	ESE5	E8	E9	E7	E5	ESE4	SSE6	SSE9	SSE8	ESE3	SE3.9	SSE9
29-Apr	N2	SSE4	WSW3	SSE3	S7	S10	S12	S8	S8	SE6	ESE6	E8	NNW5	W10	WNW8	WNW13	WNW13	WNW12	NW8	WNW5	WSW1	SSW3	WNW5	WSW3	WSW2.6	WNW13
30-Apr	WSW3	SSW3	SSW5	SSW7	SSW6	S6	S6	S7	SSE9	S9	SSE10	SSE13	S17	S19	S17	S12	SSW8	S6	S7	SSW8	SSW8	SSW8	WSW6	W6	S7.8	S19
	NE2.4	NNE2.2	NNE2.6	NNE2.2	NNE1.8	NE1.5	NE2.4	ENE2.8	ENE2.5	NE3.2	ENE4.7	ENE4.7	ENE4.8	ENE4.2	ENE4.4	ENE4.2	ENE5.0	ENE5.3	ENE5.1	NE4.5	NE3.3	NE2.8	NNE2.4	NNE2.6	Diurnal Average	
	NNE17	NNE18	NNE18	NNE18	NNE16	NNE18	NNE18	W21	W20	WNW21	NNE21	NNE23	NNE23	NNE24	NNE25	WNW27	WNW25	WSW25	NNE21	NNE19	NNE18	NNE18	NNE18	NNE18	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 Apr 9 18:00

Minimum Value: 0 km/h on Apr 19 00:00

Percentiles: P_1 = 1 P_{10} = 1 Q_1 = 2 Median = 3 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

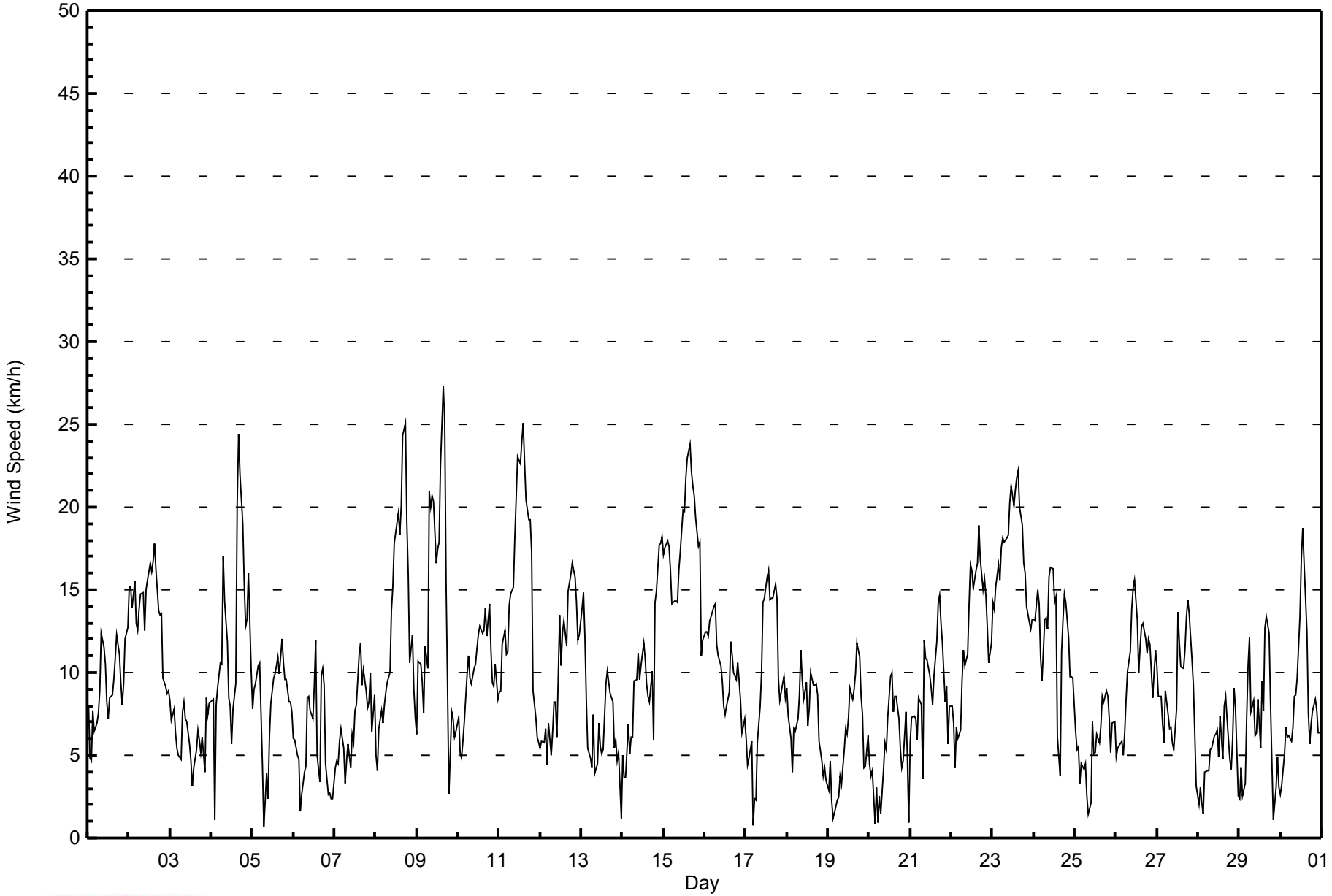
Day	Hourly Period Ending At (MST)																								Daily
	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24	Maximum
1-Apr	2	2	2	1	1	1	1	2	3	3	3	3	3	3	3	3	3	3	2	2	1	3	3	3	3
2-Apr	4	4	3	4	3	3	3	4	4	3	4	4	4	4	4	4	4	3	3	4	2	2	2	2	4
3-Apr	1	1	1	2	1	1	1	3	2	2	2	2	2	2	3	2	2	2	1	1	2	3	3	2	3
4-Apr	2	2	1	5	4	3	3	4	4	3	2	2	2	2	5	7	6	6	6	6	4	4	5	4	7
5-Apr	2	2	2	2	2	3	1	1	1	2	2	3	2	2	2	2	2	2	3	2	2	2	2	1	3
6-Apr	1	1	1	0	1	1	1	1	2	2	2	2	2	4	1	1	3	3	2	2	1	1	1	2	4
7-Apr	2	2	2	1	1	2	1	1	2	2	2	2	3	2	3	3	3	3	3	2	2	2	1	2	3
8-Apr	3	2	1	2	2	2	3	3	3	5	4	6	7	7	6	7	8	9	6	5	3	4	3	2	9
9-Apr	2	3	3	3	2	3	5	7	6	6	5	6	5	7	6	8	6	9	5	3	2	2	2	2	9
10-Apr	2	1	1	1	1	3	3	3	3	3	3	3	4	4	3	4	4	3	3	2	2	2	3	2	4
11-Apr	3	2	3	3	3	3	3	3	4	4	5	5	6	6	6	6	6	5	5	5	3	1	1	1	6
12-Apr	1	1	1	2	2	1	2	2	2	2	3	4	4	5	4	4	4	4	5	5	5	4	3	3	5
13-Apr	4	4	3	2	1	1	2	2	2	2	3	3	3	3	4	3	3	2	3	1	1	1	1	2	4
14-Apr	1	1	1	1	1	1	1	2	2	3	3	3	3	4	3	3	2	3	2	6	4	5	5	4	6
15-Apr	4	4	5	4	4	3	4	3	4	4	4	5	5	5	6	6	6	5	5	5	5	5	3	3	6
16-Apr	3	3	3	3	3	4	4	3	3	3	3	3	3	3	4	4	3	3	3	3	3	2	1	2	4
17-Apr	1	1	1	1	1	1	1	3	3	4	5	5	5	4	4	4	4	4	4	2	2	2	2	2	5
18-Apr	2	2	2	1	1	1	2	2	3	2	3	2	2	2	2	3	2	2	2	2	1	1	1	0	3
19-Apr	1	1	1	1	1	1	1	1	2	2	2	3	2	2	3	3	4	3	3	2	2	1	1	1	4
20-Apr	1	1	2	1	1	1	1	1	1	2	2	3	3	3	4	2	3	2	1	1	1	1	2	2	4
21-Apr	1	1	1	1	1	2	2	3	3	3	3	3	3	3	3	3	3	3	3	3	2	2	2	1	3
22-Apr	2	1	3	1	1	1	3	3	3	3	4	4	4	4	5	4	5	4	4	3	3	3	3	3	5
23-Apr	3	3	3	4	4	5	4	5	4	5	5	5	5	6	6	6	5	5	4	4	3	3	3	3	6
24-Apr	3	3	4	3	3	2	3	3	3	4	4	3	4	4	3	2	4	4	4	4	3	3	2	2	4
25-Apr	2	1	1	1	1	1	1	1	2	2	3	2	3	3	3	3	3	2	2	2	1	1	1	2	3
26-Apr	1	1	1	1	1	2	2	2	3	4	4	4	4	3	3	4	3	3	3	3	3	2	3	3	4
27-Apr	2	2	2	2	1	3	2	2	2	1	1	5	3	3	3	3	3	4	4	4	3	2	2	1	5
28-Apr	1	1	2	1	1	1	1	1	2	2	2	2	2	2	2	2	3	2	1	1	2	2	2	2	3
29-Apr	1	2	2	1	2	2	3	2	3	2	3	4	2	4	3	4	4	3	2	1	2	2	2	1	4
30-Apr	1	1	1	1	1	1	1	2	2	2	3	4	4	5	4	5	3	1	2	2	1	1	2	1	5
	4	4	5	5	4	5	5	7	6	6	5	6	7	7	6	8	8	9	6	6	5	5	5	4	
	Diurnal Maximum																								

WBEA NETWORK

Hourly Averages

Wind Speed (WS) - km/h

CNRL Horizon - April 2014



AURORA
ATMOSPHERICS INC.

Wind Speed Ranges (km/h)	Number of Hours	%	Cumulative %
0 - 5	144	20.00	20.00
6 - 11	345	47.92	67.92
12 - 19	195	27.08	95.00
20 - 28	36	5.00	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

WBEA NETWORK

Frequency Distribution

Wind Speed (WS) - km/h

CNRL Horizon - April 2014

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	13	10	3	8	10	9	19	11	13	4	10	2	6	3	7	144
6 - 11	24	39	33	32	25	31	22	43	35	24	11	8	10	4	3	1	345
12 - 19	10	72	45	7	1	3	14	14	6	1	4	4	1	7	6	0	195
20 - 28	2	13	3	3	1	0	0	0	0	0	2	2	2	7	1	0	36
29 - 38	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
> 38	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Totals	52	137	91	45	35	44	45	76	52	38	21	24	15	24	13	8	720

Total Number of Valid Hours: 720

Total Number of Hours: 720

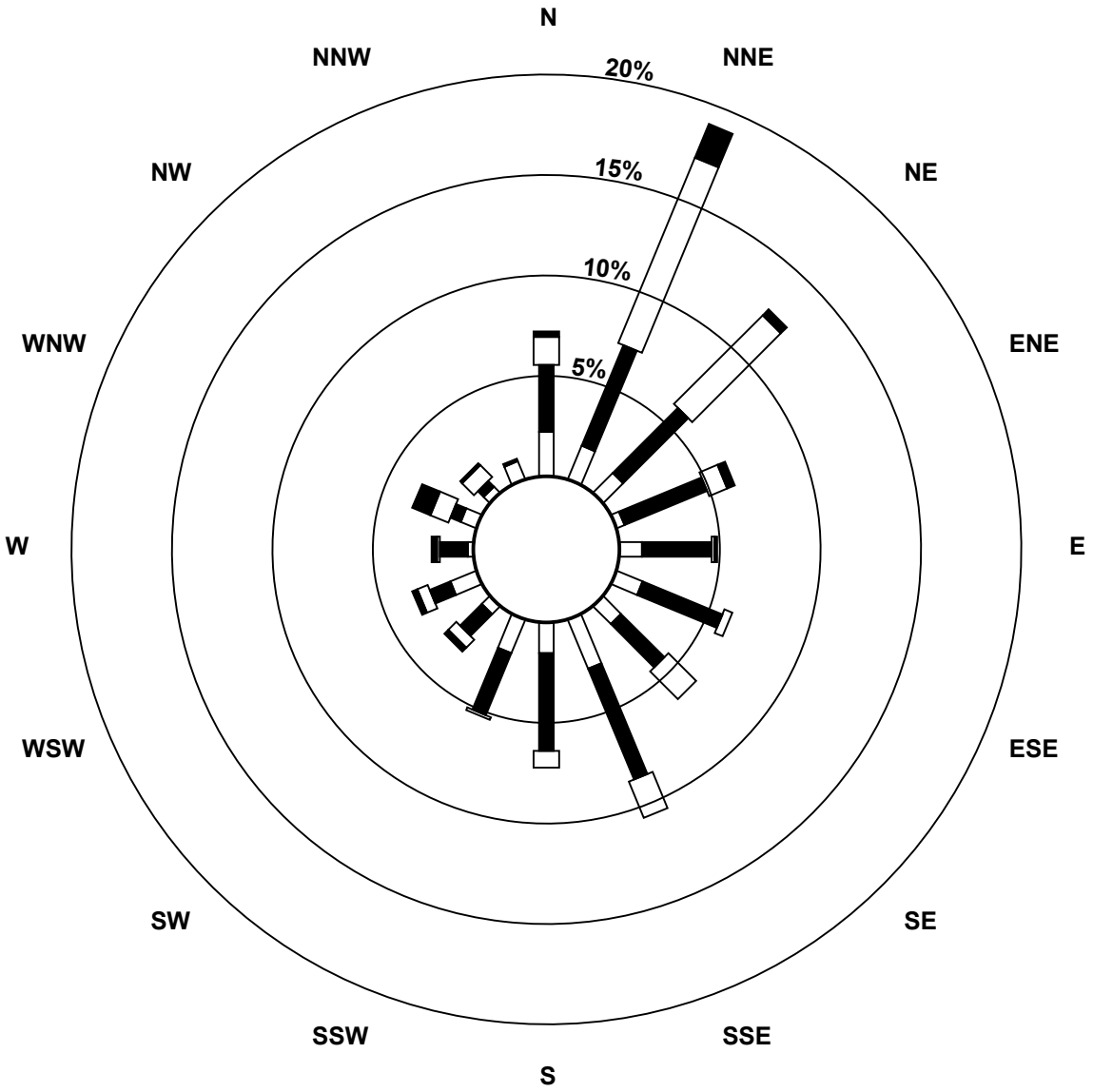
AURORA ATMOSPHERICS INC.

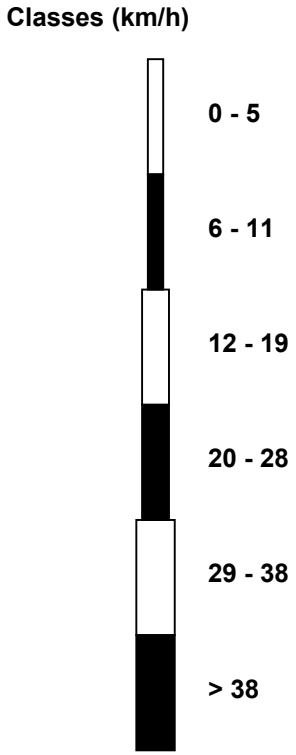
Wood Buffalo Environmental Association

Wind Rose Apr 2014

Wind Speed (WS) - km/h

CNRL Horizon (AMS 15)





Total Number of Valid Hours: 720

Direction of Maximum Speed: 297 deg on Apr 9 16:00
Direction of Maximum Daily Speed Average: 17.2 deg on Apr 15

Direction of Minimum Speed: 37 deg on Apr 5 08:00
Direction of Minimum Daily Speed Average: 0.3 deg on Apr 6

Monthly Average Direction: 191.7 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-Apr	193	239	355	47	48	17	9	23	15	29	32	42	54	48	58	57	57	55	52	36	26	25	25	23	36.2
2-Apr	15	21	19	19	21	20	18	20	16	17	24	26	17	12	19	19	21	38	39	25	22	11	4	6	20.1
3-Apr	6	359	356	9	27	31	16	26	18	20	40	60	38	10	49	56	82	70	28	30	96	137	147	151	42.5
4-Apr	151	160	39	169	159	160	156	157	156	162	169	183	216	227	266	290	297	295	284	278	298	306	309	304	245.7
5-Apr	266	270	265	257	254	278	219	37	147	11	66	73	70	71	66	71	67	40	37	17	13	9	356	354	19.4
6-Apr	2	11	358	347	349	211	201	187	179	182	180	196	183	192	142	88	29	14	12	17	12	353	301	243	147.4
7-Apr	253	223	158	162	168	145	117	171	185	110	66	75	94	106	159	163	185	192	212	224	211	204	205	190	172.3
8-Apr	188	192	199	202	222	198	233	229	215	218	219	235	252	253	237	235	229	237	258	246	251	283	250	201	234.5
9-Apr	227	266	249	228	184	216	255	273	279	297	308	316	319	311	299	297	302	316	31	117	222	290	349	3	290.6
10-Apr	26	25	26	9	27	37	38	40	47	36	32	53	42	49	54	49	40	54	53	40	48	58	57	51	43.4
11-Apr	61	47	41	40	38	27	35	33	33	26	20	13	18	19	19	18	13	21	6	9	12	357	295	285	20.7
12-Apr	268	274	244	263	238	216	196	195	173	172	181	292	320	351	12	23	29	36	33	25	9	8	6	9	357.0
13-Apr	6	355	357	355	294	304	346	21	344	19	57	17	89	97	78	111	95	79	68	70	48	18	353	183	33.0
14-Apr	168	160	157	161	151	162	173	170	164	186	187	171	175	184	167	198	164	137	112	20	17	16	16	17	139.4
15-Apr	15	14	13	18	20	20	29	40	21	20	22	12	11	7	14	13	17	20	15	16	14	15	26	22	17.2
16-Apr	18	16	17	21	19	13	22	53	67	64	75	37	59	133	118	159	113	120	115	115	111	127	131	139	69.4
17-Apr	143	155	159	162	26	59	4	131	160	140	136	137	136	135	133	123	136	129	124	123	118	119	129	116	132.0
18-Apr	111	112	106	50	25	48	34	49	71	76	94	74	82	108	98	85	120	128	154	157	157	142	116	291	93.5
19-Apr	263	235	284	350	150	207	167	140	198	189	157	166	110	97	99	111	107	113	122	123	119	81	5	10	122.2
20-Apr	5	319	323	204	254	137	167	156	351	347	81	57	53	53	77	85	61	88	92	127	167	196	210	201	71.8
21-Apr	195	190	207	205	190	192	187	359	14	14	27	35	56	37	54	53	40	34	20	21	27	37	12	2	36.5
22-Apr	359	1	10	18	358	358	16	15	19	23	28	35	53	57	57	60	55	55	53	43	28	24	20	17	34.6
23-Apr	16	21	20	19	17	19	23	22	22	34	41	46	51	63	71	74	79	55	52	50	47	51	55	51	43.0
24-Apr	43	39	37	43	42	20	35	43	34	40	40	43	53	61	188	160	108	78	74	77	88	88	93	93	57.7
25-Apr	91	52	41	341	342	337	24	34	144	106	62	51	55	85	109	82	81	108	152	161	160	168	150	158	96.6
26-Apr	157	133	135	134	124	131	150	164	167	160	147	145	129	127	133	127	130	158	134	130	135	135	152	150	141.7
27-Apr	143	126	122	119	101	103	80	38	15	18	6	145	150	153	152	151	148	151	152	152	153	159	164	170	135.4
28-Apr	174	119	172	230	253	201	173	170	183	170	150	132	105	61	109	98	83	97	84	106	153	157	166	119	134.9
29-Apr	6	162	246	156	183	180	180	173	178	134	115	81	328	281	282	303	289	297	304	301	258	206	287	250	243.2
30-Apr	248	207	207	202	194	186	180	172	167	170	162	154	170	188	177	191	207	175	185	195	198	206	249	269	187.1
	33.9	21.2	16.6	31.0	32.8	48.0	49.2	56.8	58.1	56.1	62.7	57.8	61.5	64.2	73.4	65.5	59.5	62.9	58.0	52.4	55.5	43.2	30.1	33.1	
	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: 95 deg on Apr 25 09:00

Minimum Value: 7 deg on Apr 13 23:00

Percentiles: P_1 = 8 P_{10} = 13 Q_1 = 16 Median = 19 Q_3 = 26 P_{90} = 42 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

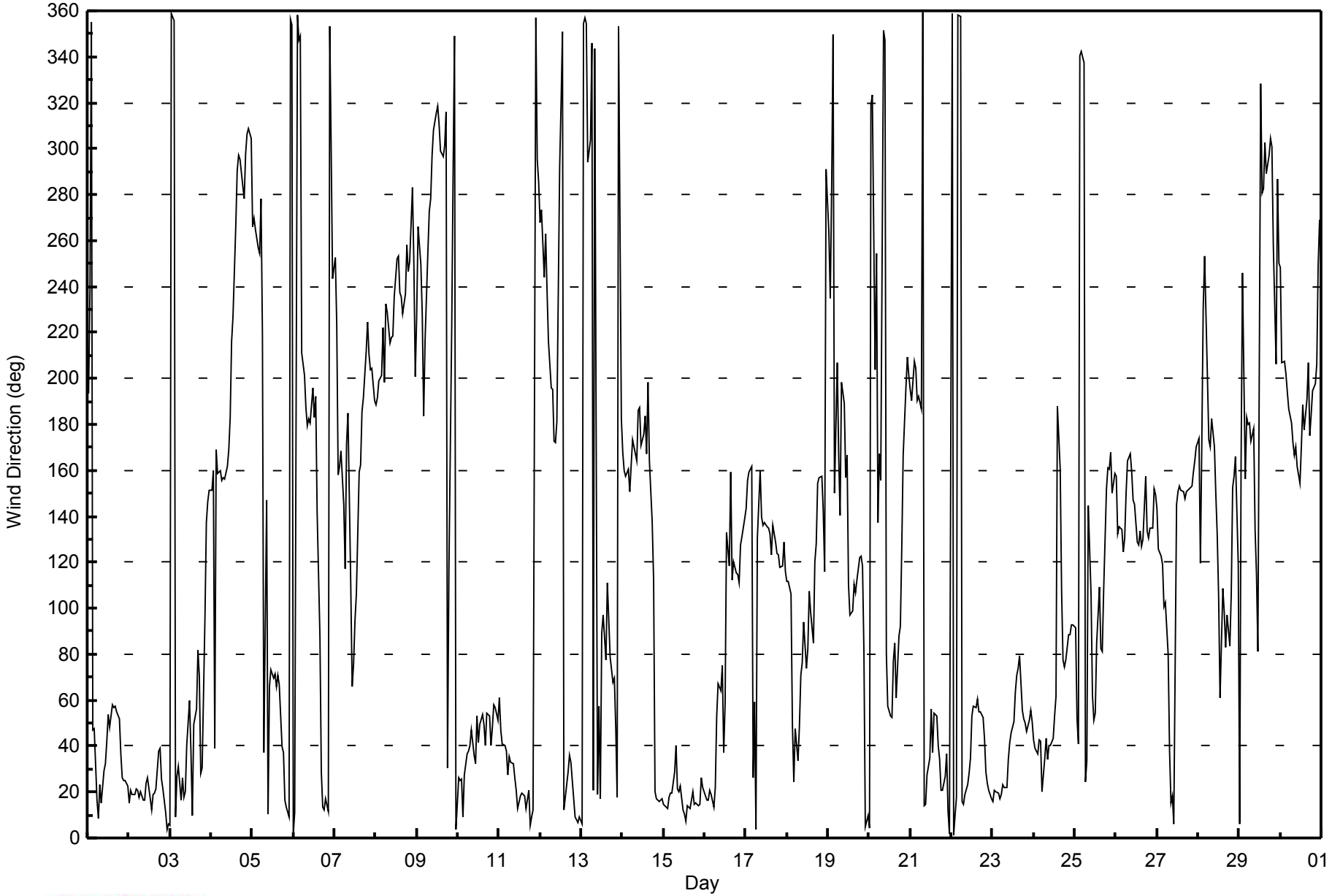
Day	Hourly Period Ending At (MST)																								Daily
	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24	Maximum
1-Apr	15	44	48	16	12	10	14	17	18	21	22	34	43	36	31	27	24	17	15	14	13	13	16	16	48
2-Apr	16	17	17	15	17	16	16	16	19	19	21	19	21	20	18	19	19	16	16	16	17	16	15	15	21
3-Apr	13	13	12	15	11	10	19	19	20	31	36	51	65	88	73	59	39	22	19	11	48	18	18	18	88
4-Apr	17	15	78	58	18	18	16	16	17	17	18	20	36	25	31	19	15	16	18	18	18	15	16	25	78
5-Apr	15	14	14	16	15	25	38	89	50	95	41	28	25	25	19	21	21	15	13	15	16	16	16	13	95
6-Apr	12	9	8	11	82	31	12	22	15	20	19	24	19	19	26	51	20	16	15	27	28	31	29	41	82
7-Apr	23	53	30	16	22	25	33	15	24	57	32	48	32	31	25	20	29	17	24	19	17	17	15	13	57
8-Apr	16	21	10	14	17	23	24	21	24	24	22	23	24	24	26	22	22	21	21	19	25	26	20	22	26
9-Apr	40	19	22	21	20	16	41	20	20	16	16	19	21	21	20	18	17	41	35	65	24	33	19	22	65
10-Apr	18	15	13	12	15	15	18	23	24	23	30	27	24	25	24	25	22	24	16	15	18	15	16	18	30
11-Apr	18	16	15	15	17	17	16	17	18	17	19	18	18	18	19	20	21	19	20	19	15	14	17	14	21
12-Apr	15	14	15	29	42	8	21	24	19	25	51	31	37	30	23	26	19	16	17	17	19	17	18	18	51
13-Apr	19	18	16	21	10	11	34	26	63	66	48	64	72	66	40	33	34	24	15	10	13	18	7	92	92
14-Apr	12	25	13	9	12	9	13	17	20	25	30	30	25	26	30	34	27	18	39	17	18	18	18	17	39
15-Apr	17	18	17	18	17	17	18	17	18	18	18	20	19	21	22	20	22	19	20	18	17	17	19	17	22
16-Apr	16	16	16	16	16	17	17	37	31	32	34	46	52	57	40	37	22	25	21	17	17	17	18	16	57
17-Apr	15	17	11	10	79	43	44	35	35	32	31	27	24	24	28	26	23	21	19	15	14	15	16	18	79
18-Apr	14	15	17	44	16	16	18	19	19	21	24	18	41	31	27	27	30	24	19	15	15	14	36	9	44
19-Apr	22	10	28	30	33	36	26	39	63	39	38	54	32	28	49	41	30	25	19	16	13	23	23	8	63
20-Apr	14	15	17	71	36	89	50	65	38	36	56	46	37	27	42	32	26	22	16	25	28	10	45	84	89
21-Apr	21	8	17	17	12	11	14	83	19	21	21	29	33	39	23	23	18	20	18	15	16	13	19	11	83
22-Apr	14	15	12	16	12	13	15	17	21	23	21	21	22	22	23	20	18	16	16	13	17	15	16	17	23
23-Apr	18	16	16	17	17	17	17	16	17	17	15	15	18	17	18	18	17	17	15	14	13	13	14	14	18
24-Apr	13	14	14	14	16	19	14	15	17	16	16	17	20	18	56	60	24	21	18	17	19	18	18	16	60
25-Apr	21	13	15	23	9	12	18	65	95	88	40	60	67	59	56	45	26	26	22	14	11	17	15	18	95
26-Apr	17	13	11	15	10	16	20	18	20	22	21	24	24	27	23	20	20	18	22	19	18	18	17	16	27
27-Apr	17	17	17	18	23	20	23	19	17	16	17	50	17	17	20	18	19	19	16	16	17	15	13	23	50
28-Apr	42	27	59	70	21	16	16	22	37	32	39	42	57	38	54	29	29	25	18	22	9	17	13	56	70
29-Apr	48	71	55	46	11	11	13	20	21	41	51	61	53	33	49	29	24	20	18	13	64	49	21	42	71
30-Apr	30	26	22	11	10	9	15	17	22	24	25	23	19	20	21	28	20	19	22	13	14	15	30	20	30
	48	71	78	71	82	89	50	89	95	95	56	64	72	88	73	60	39	41	39	65	64	49	45	92	
	Diurnal Maximum																								

WBEA NETWORK

Hourly Averages

Wind Direction (WD) - deg

CNRL Horizon - April 2014



AURORA ATMOSPHERICS INC.

Wood Buffalo Environmental Association

SO_2 Calibration Report

Station Information

Calibration Date	April 11, 2014	Previous Calibration	March 11, 2014
Station Name	CNRL	Station Number	15
Reason:	Routine		
Start Time (MST)	8:10	End Time (MST)	12:20
Barometric Pressure	736 mmHg	Station temp.	20 Deg C
Calibrator Make/Model	Sabio 4010	Serial Number	10880507
Cal Gas Concentration	50.3 ppm	Cal Gas Expiry Date	11/6/2014
Gas Cert Reference	LL107945		
DACS make/model	Campbell Scientific CR3000	DACS serial No.	1850
DACS voltage range	0-5000mV	DACS channel #	Diff 1

Analyzer Information

	Before	*After*		*Before*	*After*
Analyzer Range (ppb)	1000	1000	PMT voltage	-648	-648
Analyzer Range (mv)	5000	5000	Lamp voltage	773	773
Calculated slope	0.998974	1.006850	Chamber temp.	45.2	45.2
Calculated intercept	-0.200953	0.021069	Pressure (mmHg)	708.4	708.4
Analyzer Background	12.4	12.4	Flow (lpm)	0.429	0.429
Analyzer Coefficient	0.984	0.984	Intensity	86	86

Analyzer make	43i	Analyzer serial #	10710321322

Calibration Data

Set Point	Total flow rate (cc/min)	Source gas flow rate (cc/min)	Calculated concentration (ppb) (Cc)	Indicated concentration (ppb) (Ic)	Correction factor (Cc/Ic)
as found zero	5000	0.0	0.0	-0.1	NA
as found span	5000	82.3	827.9	816.8	1.014
calibrator zero	5000	0.0	0.0	-0.1	NA
high point	5000	82.3	827.9	822.0	1.007
second point	5000	41.2	414.5	412.4	1.005
third point	5000	20.6	207.2	205.4	1.009
calibrator zero	5000	0.0	0.0	0.3	NA
as left zero	5000	0.0	0.0	0.3	NA
as left span	5000	82.3	827.9	817.4	1.013
				Average Correction Factor	1.007

Corrected As found	816.9	Previous response	829.0	% change	1.5%

Notes:

NO Maintenance or adjustments made, filter changed

Calibration Performed By: Melissa Lemay

Wood Buffalo Environmental Association

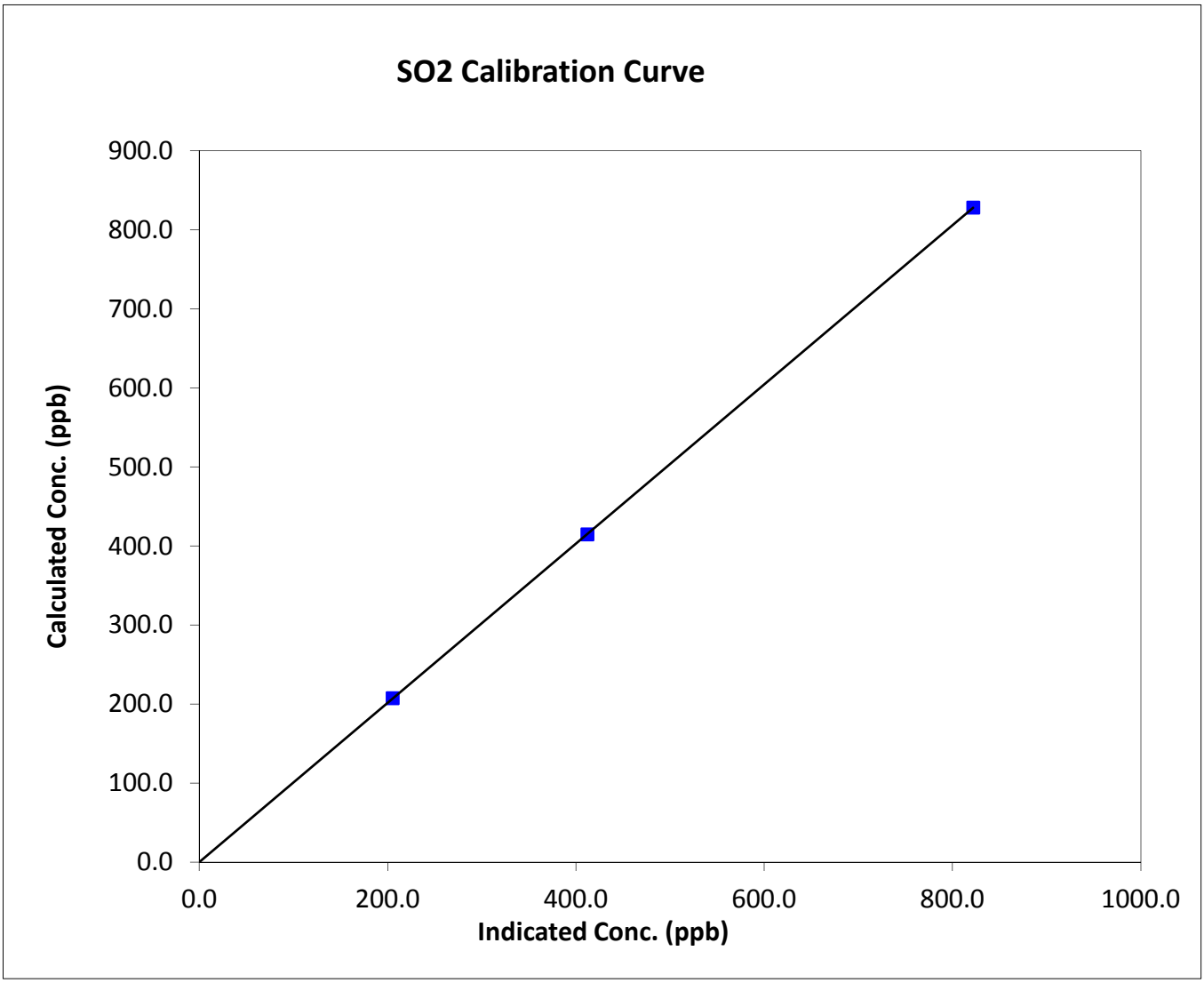
SO_2 Calibration Summary

Station Information

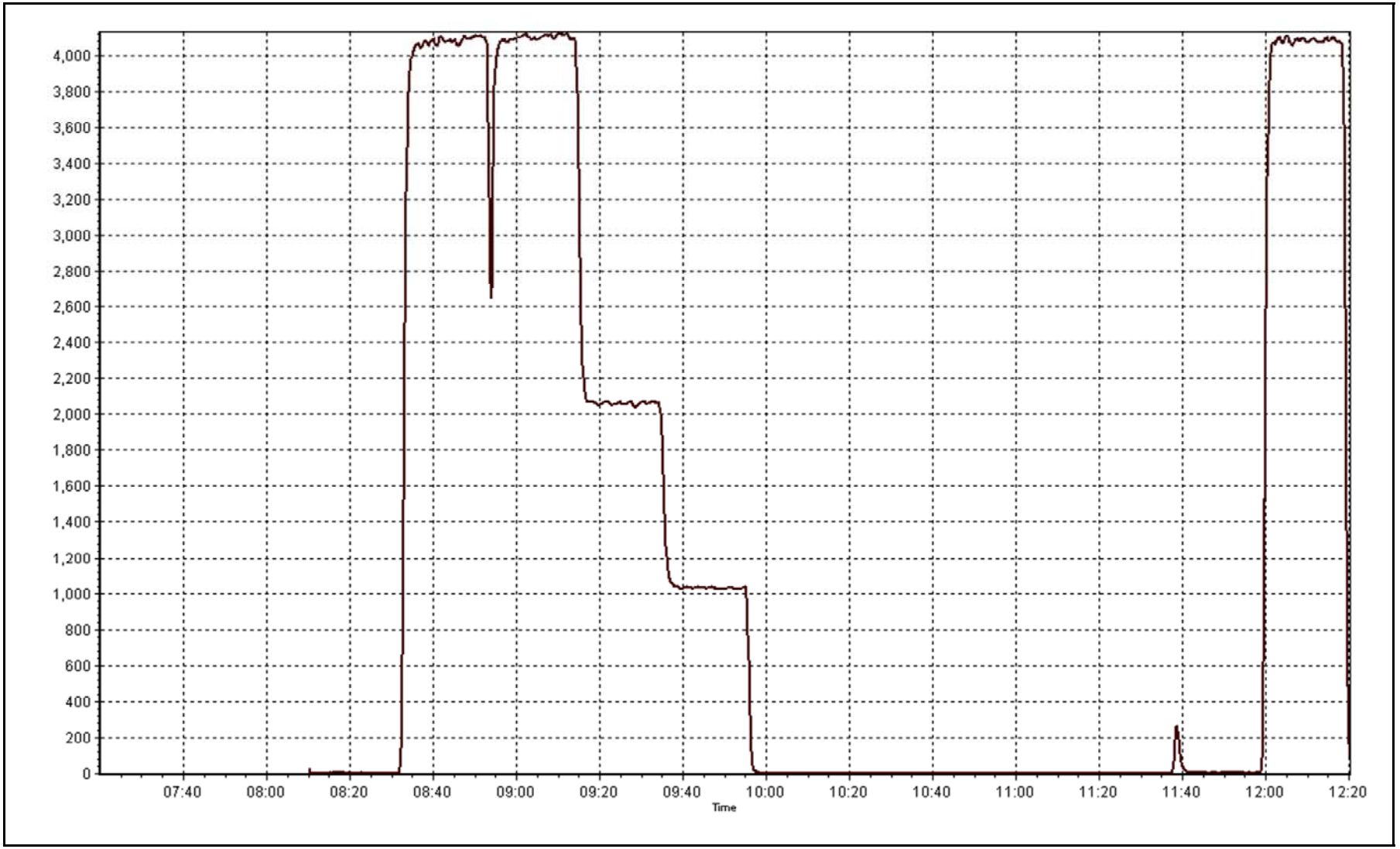
Calibration Date	April 11, 2014	Previous Calibration	March 11, 2014
Station Name	CNRL	Station Number	15
Start Time (MST)	8:10	End Time (MST)	12:20
Analyzer make	43i	Analyzer serial #	10710321322

Calibration Data

Calculated concentration (ppb) (Cc)	Indicated concentration (ppb) (Ic)	Correction factor (Cc/Ic)	Statistical Evaluation	
0.0	-0.1	N/A	Correlation Coefficient	0.999998
827.9	822.0	1.0072		
414.5	412.4	1.0050	Slope	1.006850
207.2	205.4	1.0089		
			Intercept	0.021069



SO2 Calibration Plot Date: April 11, 2014



Wood Buffalo Environmental Association

TRS Calibration Report

Station Information

Calibration Date	April 14, 2014	Previous Calibration	March 11, 2014
Station Name	CNRL Horizon	Station Number	15
Reason:	Routine		
Start Time (MST)	9:57	End Time (MST)	12:05
Barometric Pressure	736 mmHg	Station temp.	20 Deg C
Calibrator Make/Model	Sabio 4010	Serial number	LL155297
Cal Gas Concentration	10.4 ppm H2S	Cal Gas Expiry Date	5-30-2013
Gas Cert Reference	cc257967	SO2 gas conc.	50.3 ppm SO2
DACS make/model	Campbell Scientific CR3000	DACS serial No.	1850
DACS voltage range	0-5000mV	DACS channel #	DIFF 2

Analyzer Information

	Before	*After*		*Before*	*After*
Analyzer Range (ppb)	100	100	PMT voltage	-672	-672
Analyzer Range (input)	5000	5000	Lamp voltage	771	778
Calculated slope	1.005947	1.008261	Chamber temp.	45	45
Calculated intercept	-0.257402	-0.378823	Pressure	687.0	681.0
Analyzer Background	8.8	8.8	Flow	0.417	0.412
Analyzer Coefficient	0.909	0.909	Intensity	89	90
			Converter temp.	809	809

Analyzer make/model	TEI 43I	Analyzer serial #	0710321323
Converter make/model	NOVA model CDN101	Converter serial #	363

Calibration Data

Set Point	Total flow rate (cc/min)	Source gas flow rate (cc/min)	Calculated concentration (ppb) (Cc)	Indicated concentration (ppb) (Ic)	Correction factor (Cc/Ic)
as found zero	5000	0.0	0.0	0.1	NA
as found span	5000	38.5	80.1	79.6	1.006
SO2 scrubber check	5000	20.6	207.2	0.5	NA
calibrator zero	5000	0.0	0.0	0.1	NA
high point	5000	38.5	80.1	79.6	1.006
second point	5000	19.2	39.9	40.3	0.991
third point	5000	9.6	20.0	20.3	0.984
calibrator zero	5000	0.0	0.0	0.1	NA
as left zero	5000	0.0	0.0	0.1	NA
as left span	5000	38.5	80.1	79.8	1.004
				Average Correction Factor	0.994

Corrected As found	79.5	Previous response	79.9	% change	0.5%

Notes:

NO adjustments made, scrubber checked after third point

Calibration Performed By: Melissa Lemay

Wood Buffalo Environmental Association

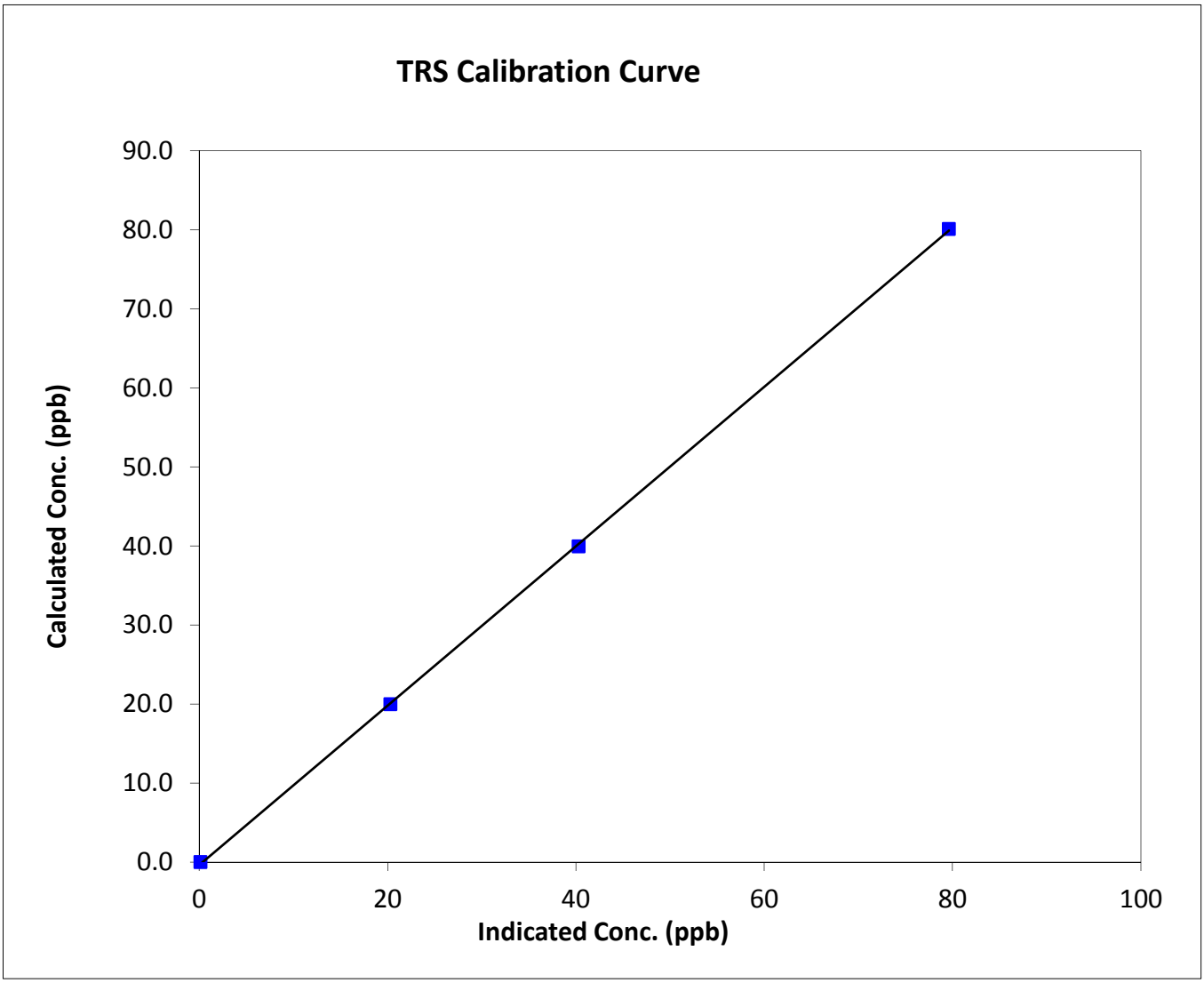
TRS Calibration Summary

Station Information

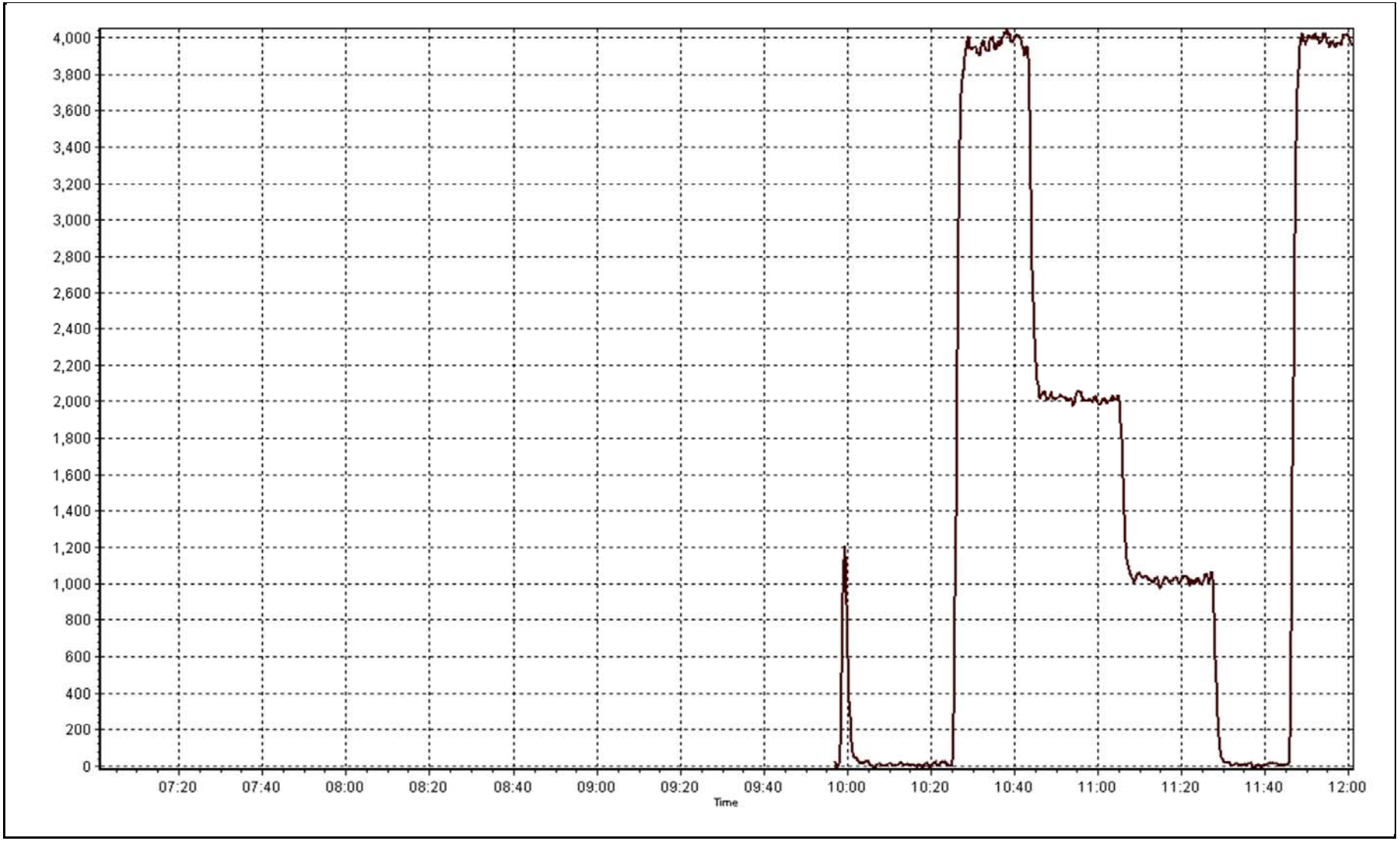
Calibration Date	April 14, 2014	Previous Calibration	March 11, 2014
Station Name	CNRL Horizon	Station Number	15
Start Time (MST)	9:57	End Time (MST)	12:05
Analyzer make	TEI 43I	Analyzer serial #	0710321323

Calibration Data

Calculated concentration (ppb) (Cc)	Indicated concentration (ppb) (Ic)	Correction factor (Cc/Ic)	Statistical Evaluation	
0.0	0.1	N/A	Correlation Coefficient	0.999945
80.1	79.6	1.0058		
39.9	40.3	0.9915	Slope	1.008261
20.0	20.3	0.9836		
			Intercept	-0.378823



TRS Calibration Plot Date: April 14, 2014



Wood Buffalo Environmental Association

THC Calibration Report

Station Information

Calibration Date	April 11, 2014	Previous Calibration	March 12, 2014
Station Name	CNRL Horizon	Station Number	AMS 15
Reason:	Routine		
Start Time (MST)	8:10	End Time (MST)	12:20
Barometric Pressure	737 mmHg	Station temp.	- Deg C
Calibrator Make/Model	Sabio 4010	Serial Number	10880507
Gas Cert Reference	LL107945	Cal Gas Expiry Date	11/6/2014
CH4 Cal Gas Conc.	490.0 ppm	CH4 Equiv Conc.	1062.0 ppm
C3H8 Cal Gas Conc.	208 ppm		
DACS make/model	Campbell Scientific CR3000	DACS serial No.	2582
DACS voltage range	0-5000mV	DACS channel #	SE 3

Analyzer Information

	Before	*After*		*Before*	*After*
Analyzer Range (ppm)	25	25	Sample Pressure	6.0	6.0
Analyzer Range (mv)	5000	5000	Air or Bypass press	20.0	20.0
Calculated slope	0.998365	1.000773	Fuel Pressure	18.0	18.0
Calculated intercept	0.046667	0.003303			

Analyzer make	TEI 51C-LT	Analyzer serial #	76232382

Calibration Data

Set Point	Total flow rate (cc/min)	Source gas flow rate (cc/min)	Calculated concentration THC (ppm) (Cc)	Indicated concentration (ppb) (Ic)	Correction factor (Cc/Ic)
as found zero	5000	0.0	0.00	0.02	N/A
as found span	5000	82.3	17.48	17.59	0.994
calibrator zero	5000	0.0	0.00	0.02	N/A
high point	5000	82.3	17.48	17.48	1.000
second point	5000	41.2	8.75	8.71	1.005
third point	5000	20.6	4.38	4.37	1.002
calibrator zero	5000	0.0	0.00	-0.01	N/A
as left zero	5000	0.0	0.00	-0.01	N/A
as left span	5000	82.3	17.48	17.55	0.996
				Average Correction Factor	1.002

Corrected As found	17.58	Previous response	17.46	% change	-0.6%

Notes:

Filter changed,No adjustments made

Calibration Performed By: Melissa Lemay

Wood Buffalo Environmental Association

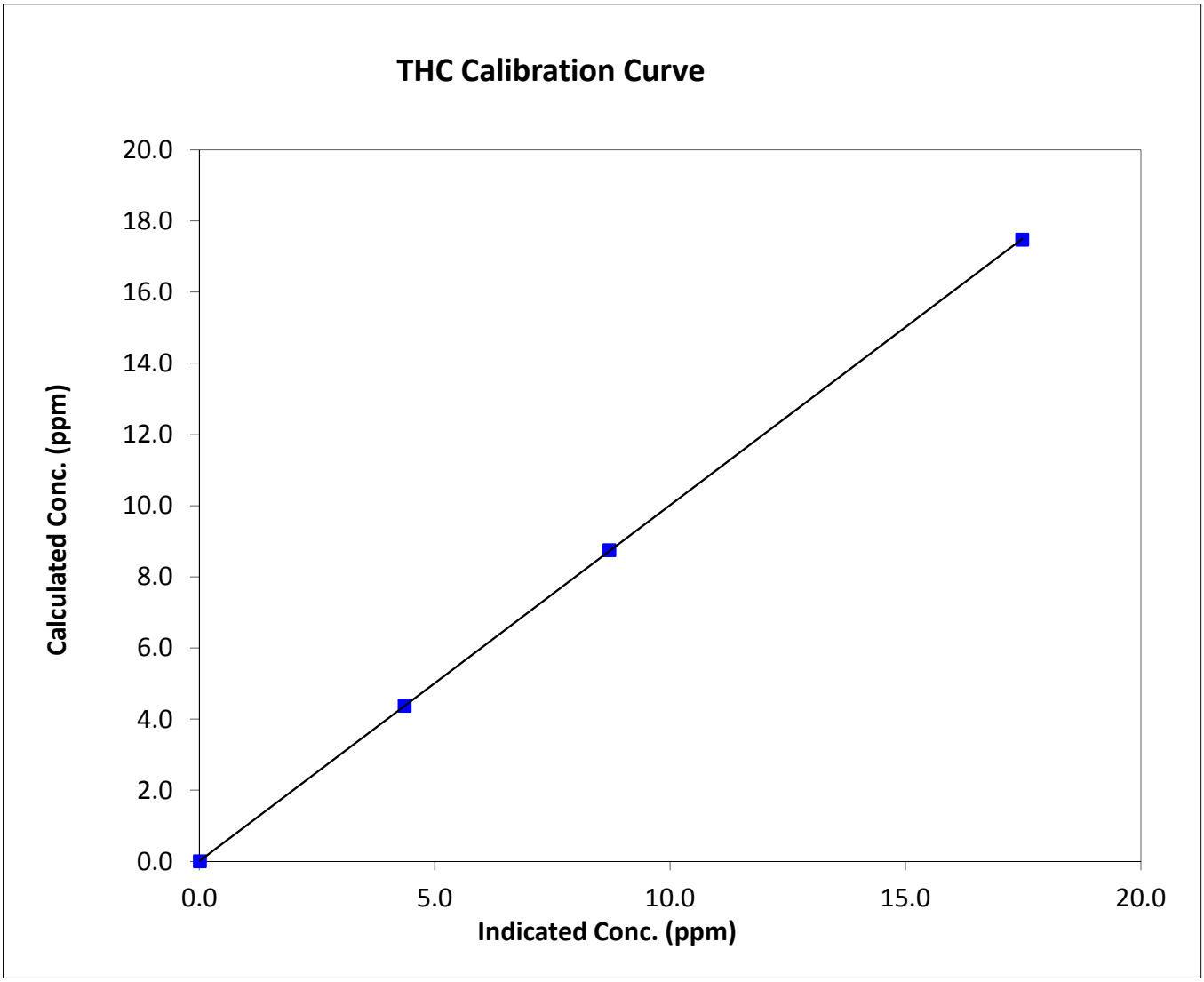
THC Calibration Summary

Station Information

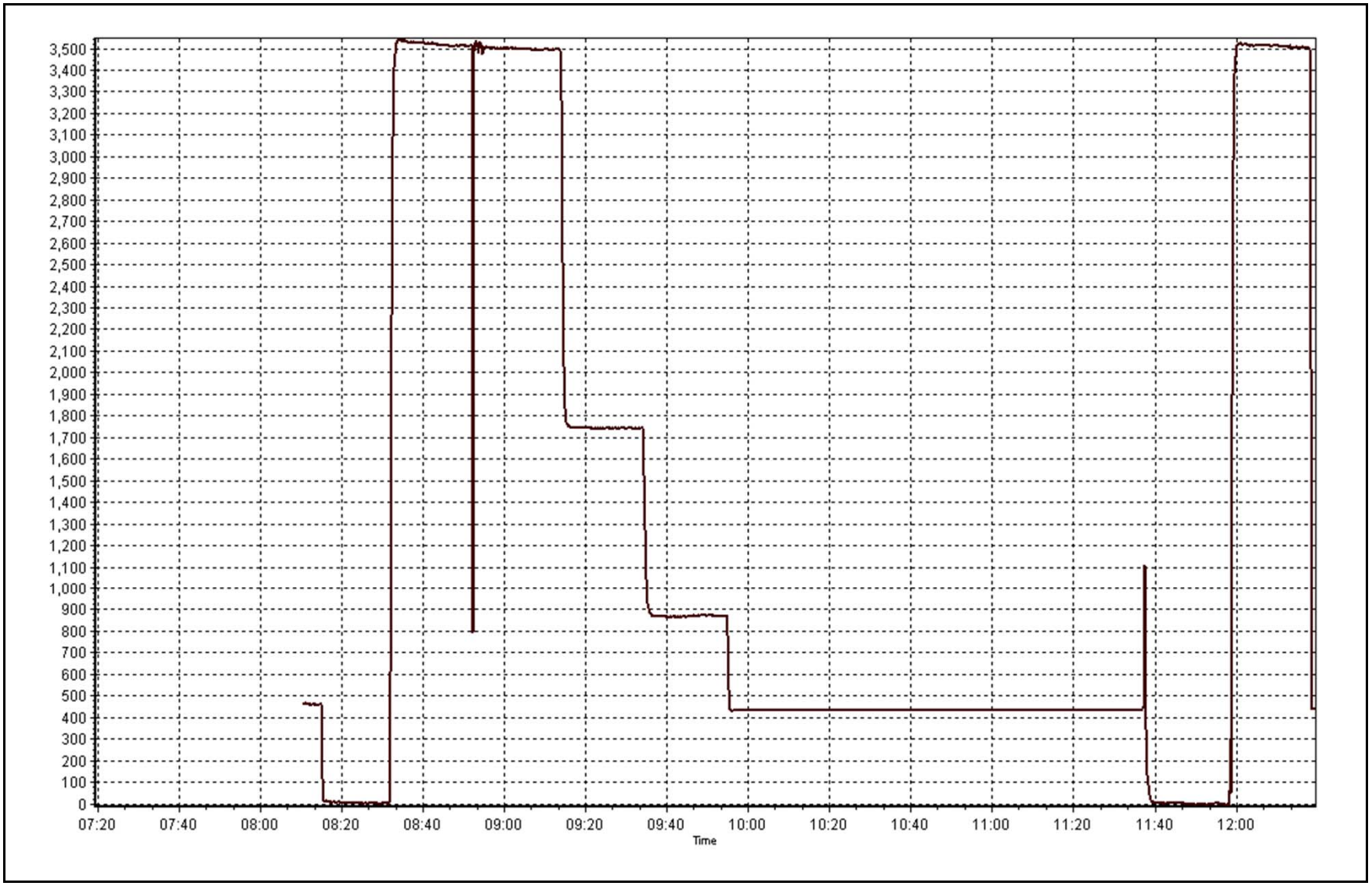
Calibration Date	April 11, 2014	Previous Calibration	March 12, 2014
Station Name	CNRL Horizon	Station Number	AMS 15
Start Time (MST)	8:10	End Time (MST)	12:20
Analyzer make	TEI 51C-LT	Analyzer serial #	76232382

Calibration Data

Calculated concentration (ppm) (Cc)	Indicated concentration (ppm) (Ic)	Correction factor (Cc/Ic)	Statistical Evaluation	
0.00	0.02	N/A	Correlation Coefficient	0.999991
17.48	17.48	1.0000		
8.75	8.71	1.0047	Slope	1.000773
4.38	4.37	1.0024		
			Intercept	0.003303



THC Calibration Plot Date: April 11, 2014



Wood Buffalo Environmental Association

THC Calibration Report

Station Information

Calibration Date	April 29, 2014	Previous Calibration	April 11, 2014
Station Name	CNRL Horizon	Station Number	AMS 15
Reason:	Other: Pump repair		
Start Time (MST)	9:05	End Time (MST)	14:28
Barometric Pressure	741 mmHg	Station temp.	22 Deg C
Calibrator Make/Model	Sabio 4010	Serial Number	10880507
Gas Cert Reference	LL107945	Cal Gas Expiry Date	11/6/2014
CH4 Cal Gas Conc.	490.0 ppm	CH4 Equiv Conc.	1062.0 ppm
C3H8 Cal Gas Conc.	208 ppm		
DACS make/model	Campbell Scientific CR3000	DACS serial No.	2582
DACS voltage range	0-5000mV	DACS channel #	SE 3

Analyzer Information

	Before	*After*		*Before*	*After*
Analyzer Range (ppm)	25	25	Sample Pressure	5.5	6.0
Analyzer Range (mv)	5000	5000	Air or Bypass press	20.0	20.0
Calculated slope	1.000773	1.007409	Fuel Pressure	18.0	18.0
Calculated intercept	0.003303	-0.005225			

Analyzer make	TEI 51C-LT	Analyzer serial #	76232382

Calibration Data

Set Point	Total flow rate (cc/min)	Source gas flow rate (cc/min)	Calculated concentration THC (ppm) (Cc)	Indicated concentration (ppb) (Ic)	Correction factor (Cc/Ic)
as found zero	5000	0.0	0.00	-0.03	N/A
as found span	5000	82.3	17.48	14.52	1.204
calibrator zero	5000	0.0	0.00	0.03	N/A
high point	5000	82.3	17.48	17.36	1.007
second point	5000	41.2	8.75	8.71	1.005
third point	5000	20.6	4.38	4.31	1.015
calibrator zero	5000	0.0	0.00		N/A
as left zero	5000	0.0	0.00	-0.02	N/A
as left span	5000	82.3	17.48	17.35	1.008
				Average Correction Factor	1.009

Corrected As found	14.55	Previous response	17.46	% change	20.0%

Notes:

20% change in As Found due to failing internal pump. Last night span down about the same, New pump seems ok

Calibration Performed By: Ryan Power

Wood Buffalo Environmental Association

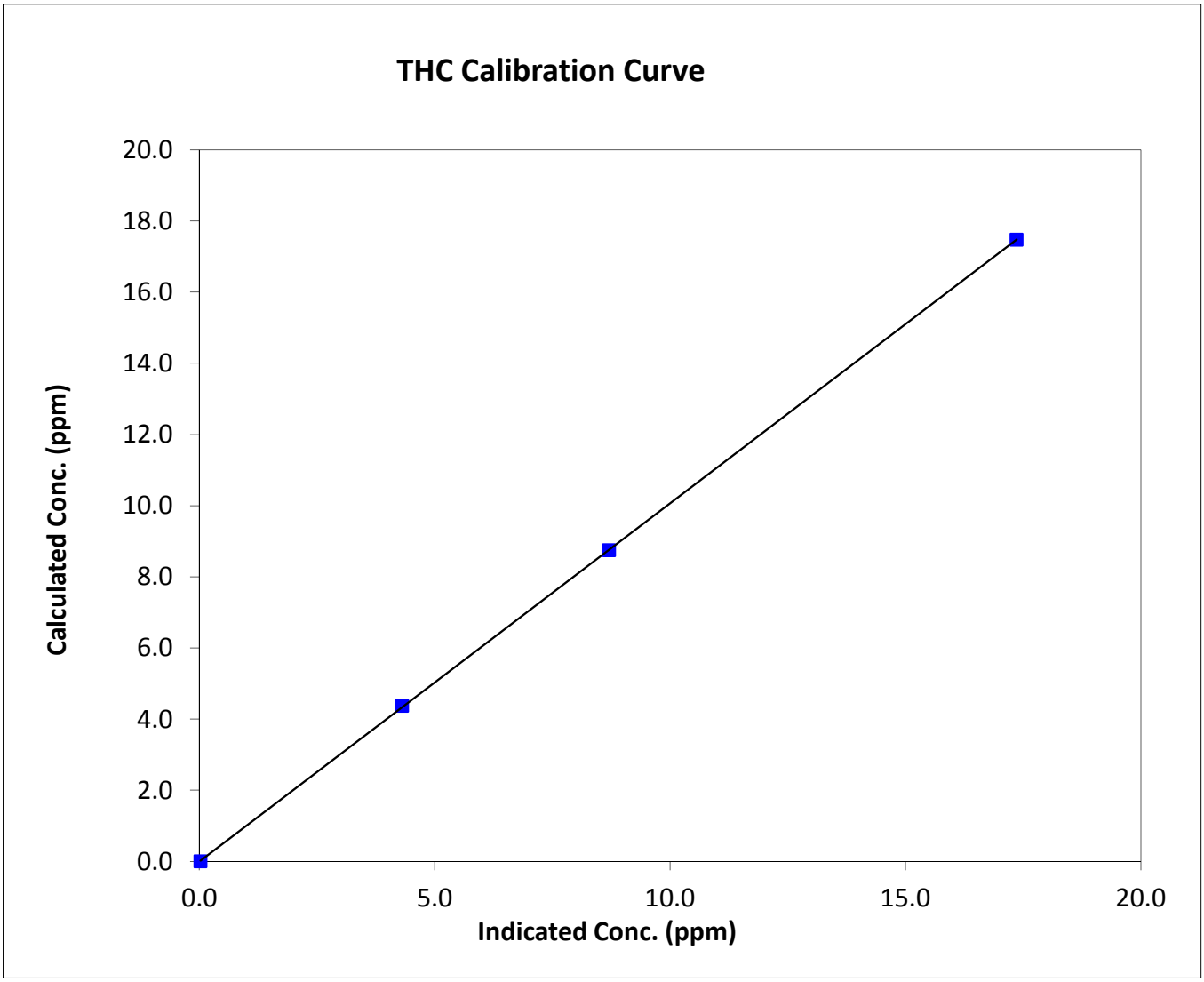
THC Calibration Summary

Station Information

Calibration Date	April 29, 2014	Previous Calibration	April 11, 2014
Station Name	CNRL Horizon	Station Number	AMS 15
Start Time (MST)	9:05	End Time (MST)	14:28
Analyzer make	TEI 51C-LT	Analyzer serial #	76232382

Calibration Data

Calculated concentration (ppm) (Cc)	Indicated concentration (ppm) (Ic)	Correction factor (Cc/Ic)	Statistical Evaluation	
0.00	0.03	N/A	Correlation Coefficient	0.999987
17.48	17.36	1.0069		
8.75	8.71	1.0053	Slope	1.007409
4.38	4.31	1.0152		
			Intercept	-0.005225



THC Calibration Plot Date: April 29, 2014

Wood Buffalo Environmental Association

NO_X-NO-NO_2 Calibration Report

Station Information

Calibration Date	April 11, 2014	Previous Calibration	March 12, 2014
Station Name	CNRL Horizon	Station Number	AMS 15
Reason:	Routine		
Start Time (MST)	8:10	End Time (MST)	12:20
Barometric Pressure	mmHg	Station Temperature	22.0 Deg C
Calibrator	Sabio 4010	Serial Number	10880507
NO Cal Gas Conc	48.6 ppm	Cal Gas Expiry Date	November 6, 2014
NOx Cal Gas Conc	48.6 ppm	Cal Gas Serial #	LL107945

DACS Information

DACS make & model	Campbell Scientific CR3000	DACS serial No.	2632

Parameter		NOx	NO	NO2
MV conversion	Analyzer Range (ppb)	1000	1000	1000
	Analyzer Range (mv)	5000	5000	5000
Before	Data Slope	1.003626	1.001242	0.995692
	Data Offset	-1.406707	-0.577750	0.035293
After	Data Slope	0.986921	0.984101	1.004268
	Data Offset	-0.193898	-0.275526	0.509968
Channel #		Diff 3	Diff 4	Diff 5
Voltage Range		0-5000mv	0-5000mv	0-5000mv

Analyzer Information

Analyzer make/model	42i	Analyzer serial #	710321429

Test Point	before		after	
Concentration range	1000	ppb	1000	ppb
NO coefficient	0.843	ppb	0.843	ppb
NOX coefficient	0.998	ppb	0.998	ppb
NO2 coefficient	1.000	ppb	1.000	ppb
NO bkgrnd	10.3		10.3	
NOX bkgrnd	10.6		10.6	
Nt coefficient				
Chamber Temp	49.9	Deg C	49.9	Deg C
Moly Temp	326.3	Deg C	326.3	Deg C
PMT Temp	-3.0	Deg C	-3.0	Deg C
O3 flow	ok	ccm	ok	ccm
R Cell Press	173.7	mmHg	173.7	mmHg
Sample Flow	0.700	ccm	0.700	ccm

Notes:

Filter changed, No adjustments made

Wood Buffalo Environmental Association

NO_X-NO-NO_2 Calibration Report

Station Information

Calibration Date: April 11, 2014 Station Number: AMS 15

Calibration Data

Set Point	Total flow rate (ccm)	Source gas flow rate (ccm)	Calculated NOx conc (ppb)	Calculated NO conc (ppb)	Calculated NO2 conc (ppb)	Indicated NOx conc (ppb)	Indicated NO conc (ppb)	Indicated NO2 conc (ppb)	NOx Correction factor	NO Correction factor
as found zero	5000	0.0	0.0	0.0	0.0	0.0	-0.2	0.0	N/A	N/A
as found span	5000	82.3	800.0	800.0	0.0	816.0	818.8	-0.5	0.9803	0.9770
calibrator zero	5000	0.0	0.0	0.0	0.0	0.0	-0.2	0.0	N/A	N/A
high point	5000	82.3	800.0	800.0	0.0	810.0	812.6	-1.6	0.9876	0.9844
second point	5000	41.2	400.5	400.5	0.0	408.0	408.4	-0.1	0.9815	0.9806
third point	5000	20.6	200.2	200.2	0.0	202.0	203.6	0.1	0.9912	0.9835
calibrator zero	5000	0.0	0.0	0.0	0.0	0.8	-0.1	-0.2	N/A	N/A
as left zero	5000	0.0	0.0	0.0	0.0	0.8	-0.1	-0.2	N/A	N/A
as left span	5000	82.3	800.0	432.8	367.2	812.0	441.0	373.2	0.9852	0.9814
								Average Correction Factor	0.9868	0.9828

Corrcted As found NO_X= 816.0 NO= 819.0 Percent Change NO_X= -2.1% NO= -2.4%

Previous Response NO_X= 798.5 NO= 799.5

GPT Calibration Data

Dilution Flow 5000 ccm Source Gas Flow 82.30 ccm

O3 Setpoint (ppb)	Indicated NO high point (ppb)	Indicated NO drop conc (ppb)	Calculated NO2 conc (ppb)	Indicated NOx conc (ppb)	Indicated NO conc (ppb)	Indicated NO2 conc (ppb)	NOx Correction factor	NO Correction factor	NO2 Correction factor	Converter Efficiency
Cal zero			0.0			0.0			N/A	
1st NO2 (300)	N/A	432.8	376.2	806.0	432.8	374.6	0.9764	1.0000	1.0043	99.6%
2nd NO2 (200)	N/A	576.8	232.2	806.0	576.8	230.0	0.9764	1.0000	1.0096	99.1%
3rd NO2 (100)	N/A	718.8	90.2	806.0	718.8	89.0	0.9764	1.0000	1.0135	98.7%
4th NO2 (0)	809.0	N/A	-3.0	806.0	809.0	-0.6	0.9764	1.0000	N/A	N/A
					Average Correction Factor		0.9764	1.0000	1.0091	99.1%

Calibration Performed By: Melissa Lemay

Wood Buffalo Environmental Association

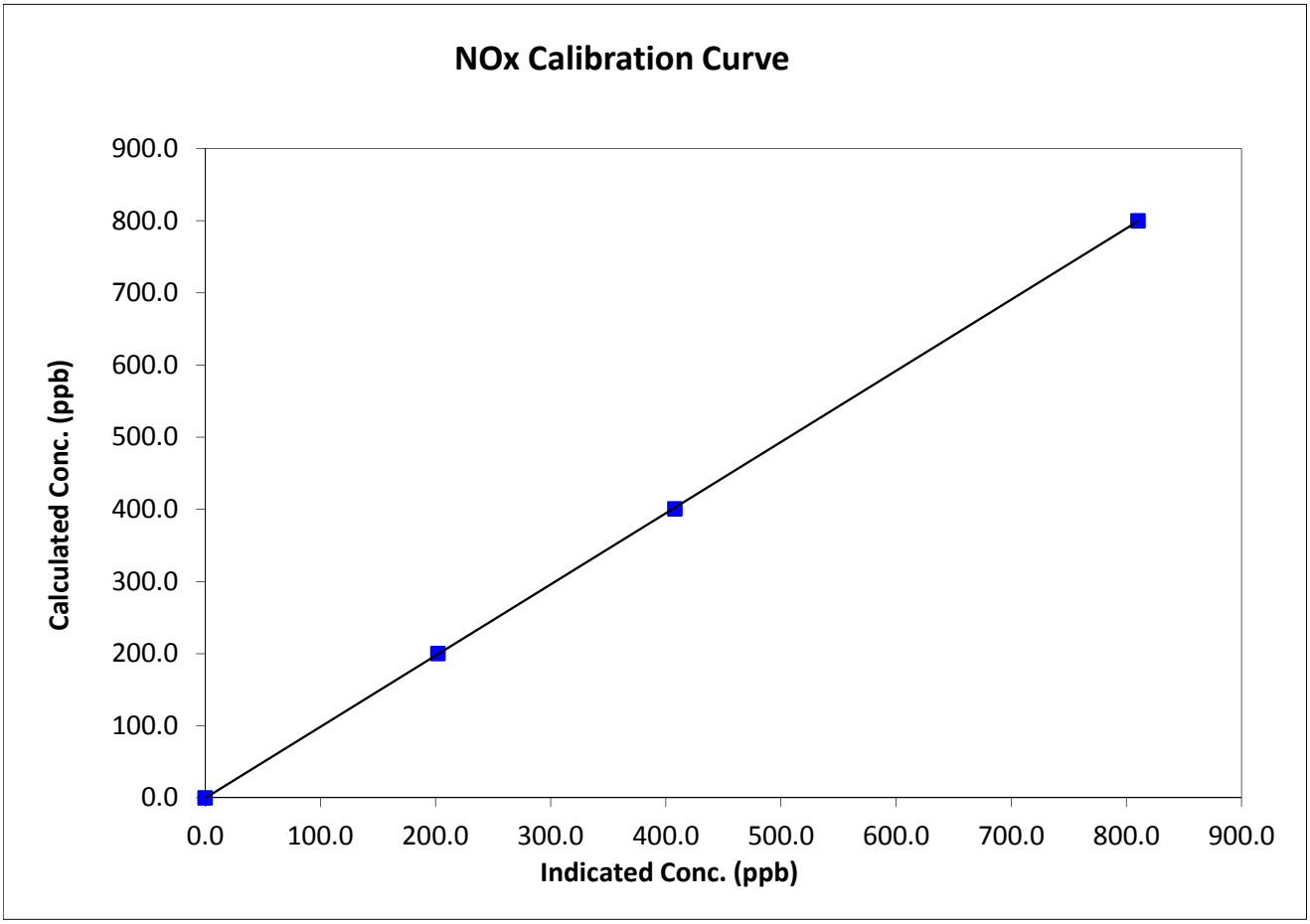
NO_X Calibration Summary

Station Information

Calibration Date	April 11, 2014	Previous Calibration	March 12, 2014
Station Name	CNRL Horizon	Station Number	AMS 15
Start Time (MST)	8:10	End Time (MST)	12:20
Analyzer make	42i	Analyzer serial #	710321429

Calibration Information

Calculated conc (ppb) (Cc)	Indicated concentration (ppb) (Ic)	Correction factor (Cc/Ic)	Statistical Evaluation	
0.0	0.0	N/A	Correlation Coefficient	0.999984
800.0	810.0	0.9876		
400.5	408.0	0.9815	Slope	0.986921
200.2	202.0	0.9912		
			Intercept	-0.193898



Wood Buffalo Environmental Association

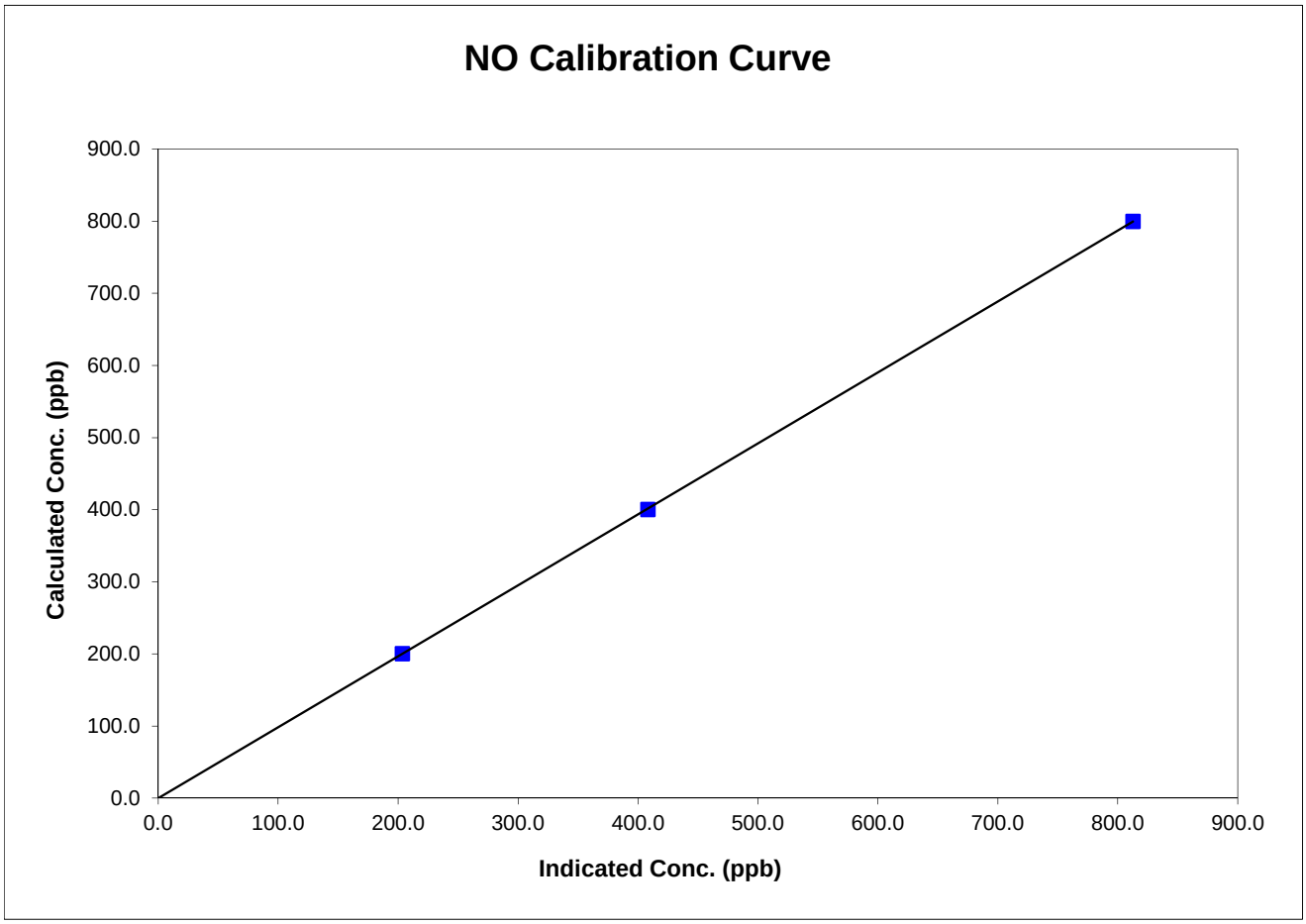
NO Calibration Summary

Station Information

Calibration Date	April 11, 2014	Previous Calibration	March 12, 2014
Station Name	CNRL Horizon	Station Number	AMS 15
Start Time (MST)	8:10	End Time (MST)	12:20
Analyzer make	42i	Analyzer serial #	710321429

Calibration Information

Calculated conc (ppb) (Cc)	Indicated concentration (ppb) (Ic)	Correction factor (Cc/Ic)	Statistical Evaluation	
0.0	-0.2	N/A	Correlation Coefficient	0.999995
800.0	812.6	0.9844		
400.5	408.4	0.9806	Slope	0.984101
200.2	203.6	0.9835		
			Intercept	-0.275526



Wood Buffalo Environmental Association

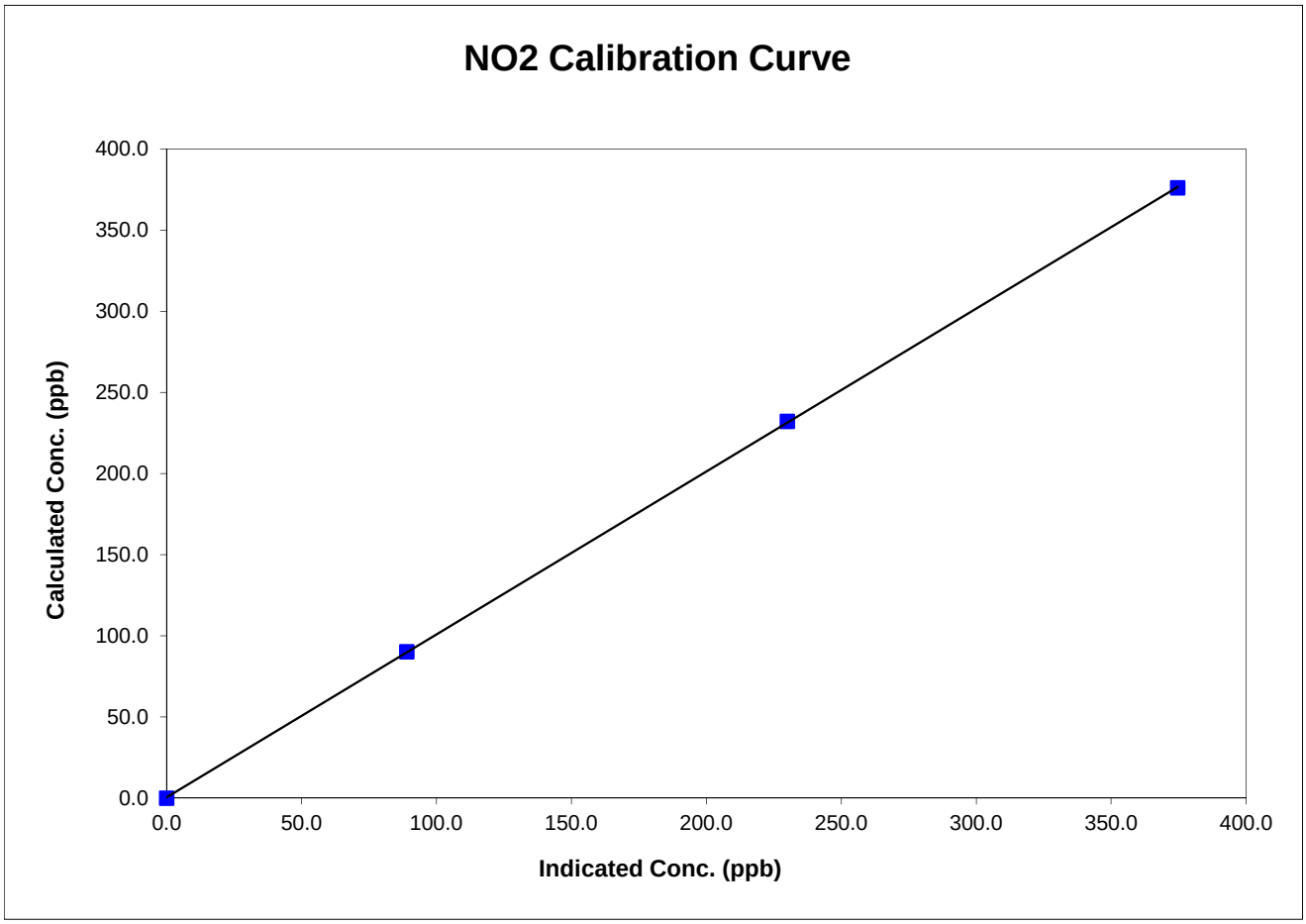
NO_2 Calibration Summary

Station Information

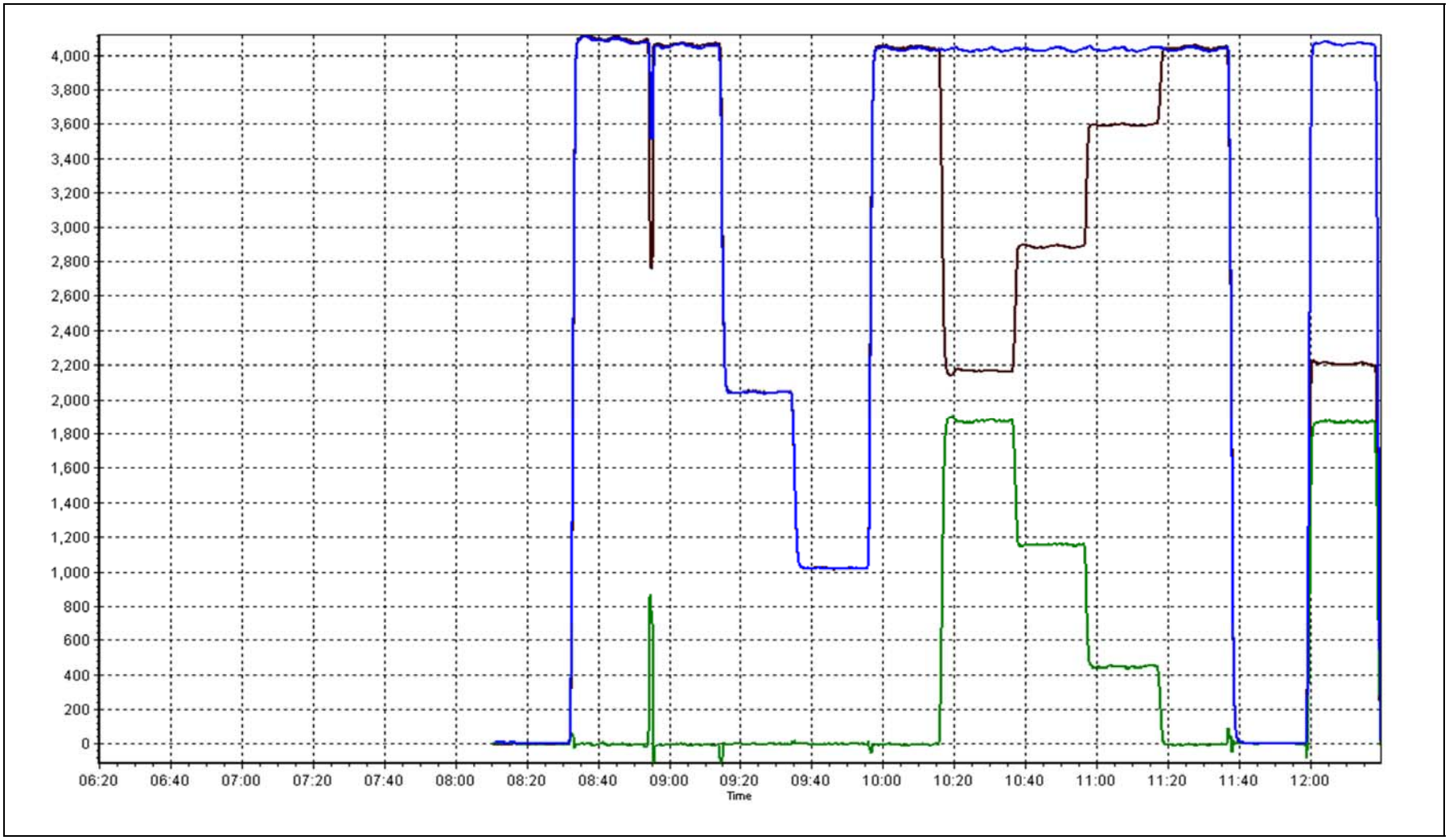
Calibration Date	April 11, 2014	Previous Calibration	March 12, 2014
Station Number	CNRL Horizon	Station Number	AMS 15
Start Time (MST)	8:10	End Time (MST)	12:20
Analyzer make	42i	Analyzer serial #	710321429

Calibration Information

Calculated conc (ppb) (Cc)	Indicated concentration (ppb) (Ic)	Correction factor (Cc/Ic)	Statistical Evaluation	
0.0	0.0	N/A	Correlation Coefficient	0.999986
376.2	374.6	1.0043		
232.2	230.0	1.0096	Slope	1.004268
90.2	89.0	1.0135		
			Intercept	0.509968



NOx, NO & NO_2 Calibration Plot Date: April 11, 2014



WOOD BUFFALO ENVIRONMENTAL ASSOCIATION

CONTINUOUS AMBIENT AIR QUALITY
MONITORING PROGRAM
MONTHLY REPORT

AMS 16
SHELL MUSKEG RIVER
APRIL 2014

Operations and Data Collection by:
Wood Buffalo Environmental Association
Fort McMurray, Alberta

QA/QC, Data Validation and Reporting by:
Aurora Atmospherics Inc.
Calgary, Alberta

May 30, 2014

WOOD BUFFALO ENVIRONMENTAL ASSOCIATION - SHELL MUSKEG RIVER (AMS 16)
APRIL 2014

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	36	36	100.00	74	0	10	0
THC (ppm) Average	684	36	36	100.00	4.6	-	2.6	-
NO2 (ppb) Average	685	35	35	100.00	40	0	19	-
NO (ppb) Average	685	35	35	100.00	72	-	14	-
NOX (ppb) Average	685	35	35	100.00	112	-	30	-
PM2.5 (ug/m3) Average	719	0	1	99.86	38.1	-	9.6	0
Temperature 2 m (C) Average	720	0	0	100.00	22	-	12.9	-
Relative Humidity (%) Average	720	0	0	100.00	99	-	-	-
Barometric Pressure (inHg) Average	720	0	0	100.00	29.5	-	-	-
Wind Speed 10 m (km/h) Average	719	0	1	99.86	35	-	-	-
Wind Direction 10 m (deg) Average	719	0	1	99.86	-	-	-	-

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

WOOD BUFFALO ENVIRONMENTAL ASSOCIATION - SHELL MUSKEG RIVER (AMS 16)
APRIL 2014

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	1.4	6	-	0	0	0	0	0	1	74
THC (ppm) Average	684	2.3	0.3	-	1.9	2.1	2.1	2.2	2.4	2.7	4.6
NO2 (ppb) Average	685	8.7	8	-	0	1	2	7	12	21	40
NO (ppb) Average	685	4.7	8	-	0	0	0	1	6	15	72
NOX (ppb) Average	685	13.4	15	-	0	1	2	8	20	35	112
PM2.5 (ug/m3) Average	719	5.41	3.9	-	0.8	2	2.9	4.5	6.8	9.7	38.1
Temperature 2 m (C) Average	720	0.97	7.6	-	-20.5	-9.4	-4.3	1.4	5.8	10.7	22
Relative Humidity (%) Average	720	60.3	18	-	17	36	48	59	74	87	99
Barometric Pressure (inHg) Average	720	28.9	0.2	-	28.3	28.6	28.7	28.9	29.1	29.2	29.5
Wind Speed 10 m (km/h) Average	719	12.5	6	-	1	5	7	12	17	21	35
Wind Direction 10 m (deg) Average	719	-	-	-	-	-	-	-	-	-	-

WOOD BUFFALO ENVIRONMENTAL ASSOCIATION - SHELL MUSKEG RIVER (AMS 16)
APRIL 2014

OPERATIONAL NOTES

Parameter	Period Start	Period End	Duration (Hours)	Notes
PM2.5	24 Apr 2014 13:00	24 Apr 2014 13:00	1	Flow and zero reference checks, sample head cleaning
Wind Speed, Wind Direction	20 Apr 2014 07:00	20 Apr 2014 07:00	1	Flatline in sensor output signal

Wood Buffalo Environmental Association

Summary of Hour Averages

Sulphur Dioxide (SO_2) - ppb

Shell Muskeg River - April 2014

Number of Exceedences (AAAQO): 1-hr: 0 24-hr: 0
Maximum Value: 74 ppb on Apr 30 09:00 Maximum Daily Average: 9.8 ppb on Apr 30

Minimum Value: 0 ppb on Apr 3 05:00 Minimum Daily Average: 0.0 ppb on Apr 27
Maximum Diurnal Average: 5.1 ppb at hour 11 Minimum Diurnal Average: 0.1 ppb at hour 6
Monthly Average: 1.4 ppb Percentiles: $P_1 = 0$ $P_{10} = 0$ $Q_1 = 0$ Median = 0 $Q_3 = 0$ $P_{90} = 1$ $P_{99} = 43$

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-Apr	Z	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	1
2-Apr	Z	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0.3	0
3-Apr	Z	0	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0.2	1
4-Apr	Z	0	0	0	0	0	0	0	0	0	2	7	9	5	1	1	0	0	0	0	0	0	0	0	1.2	9
5-Apr	Z	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0.1	0
6-Apr	Z	0	0	0	0	0	0	0	10	18	12	4	1	1	0	0	0	1	1	1	0	0	0	0	2.2	18
7-Apr	Z	0	0	0	0	0	0	0	0	1	1	0	1	2	12	4	0	0	1	0	0	0	0	0	1.0	12
8-Apr	Z	1	1	1	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0.2	1
9-Apr	Z	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0.1	0
10-Apr	Z	0	0	0	0	0	0	0	0	0	2	1	1	1	1	1	1	0	0	0	0	0	0	0	0.4	2
11-Apr	Z	0	0	0	0	0	0	0	0	0	0	0	1	1	1	1	1	0	0	0	0	0	0	0	0.3	1
12-Apr	Z	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1	0	0	0	0.2	1
13-Apr	Z	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1	0	0.2	1
14-Apr	Z	0	0	0	0	0	0	5	22	37	43	46	7	9	16	7	12	7	1	1	2	1	1	0	9.5	46
15-Apr	Z	1	0	0	0	0	0	0	0	0	0	1	0	1	1	1	1	1	1	1	1	1	1	0	0.5	1
16-Apr	Z	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0.1	0
17-Apr	Z	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0.1	0
18-Apr	Z	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0.1	0
19-Apr	Z	0	1	0	0	0	0	0	3	11	37	26	8	6	4	2	1	3	2	1	0	0	0	0	4.6	37
20-Apr	Z	0	0	0	0	0	0	0	0	2	2	2	1	1	1	0	0	0	0	0	0	0	0	0	0.5	2
21-Apr	Z	0	1	1	1	1	1	1	1	1	1	0	0	0	0	0	1	1	1	1	0	0	0	0	0.6	1
22-Apr	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	1
23-Apr	Z	0	0	0	0	0	0	0	0	0	0	0	0	0	1	1	1	0	0	0	0	0	0	0	0.3	1
24-Apr	Z	0	0	0	0	0	0	0	C	C	C	C	C	C	2	1	0	0	0	2	0	0	0	0	--	2
25-Apr	Z	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0.1	0
26-Apr	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
27-Apr	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
28-Apr	Z	0	0	0	0	0	0	2	5	12	16	48	44	33	11	9	7	4	2	2	1	1	1	0	8.6	48
29-Apr	Z	0	0	0	0	0	2	7	3	2	1	1	0	0	0	0	0	0	0	0	0	0	0	0	0.7	7
30-Apr	Z	0	0	0	0	0	1	44	74	46	30	10	2	1	3	3	4	2	1	1	1	1	1	1	9.8	74
	--	0.2	0.2	0.2	0.1	0.1	0.2	2.0	4.2	4.6	5.1	5.1	2.7	2.1	1.8	1.1	1.0	0.7	0.4	0.4	0.3	0.2	0.2	0.2	Diurnal Average	
	--	1	1	1	1	1	2	44	74	46	43	48	44	33	16	9	12	7	2	2	2	1	1	1	Diurnal Maximum	

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

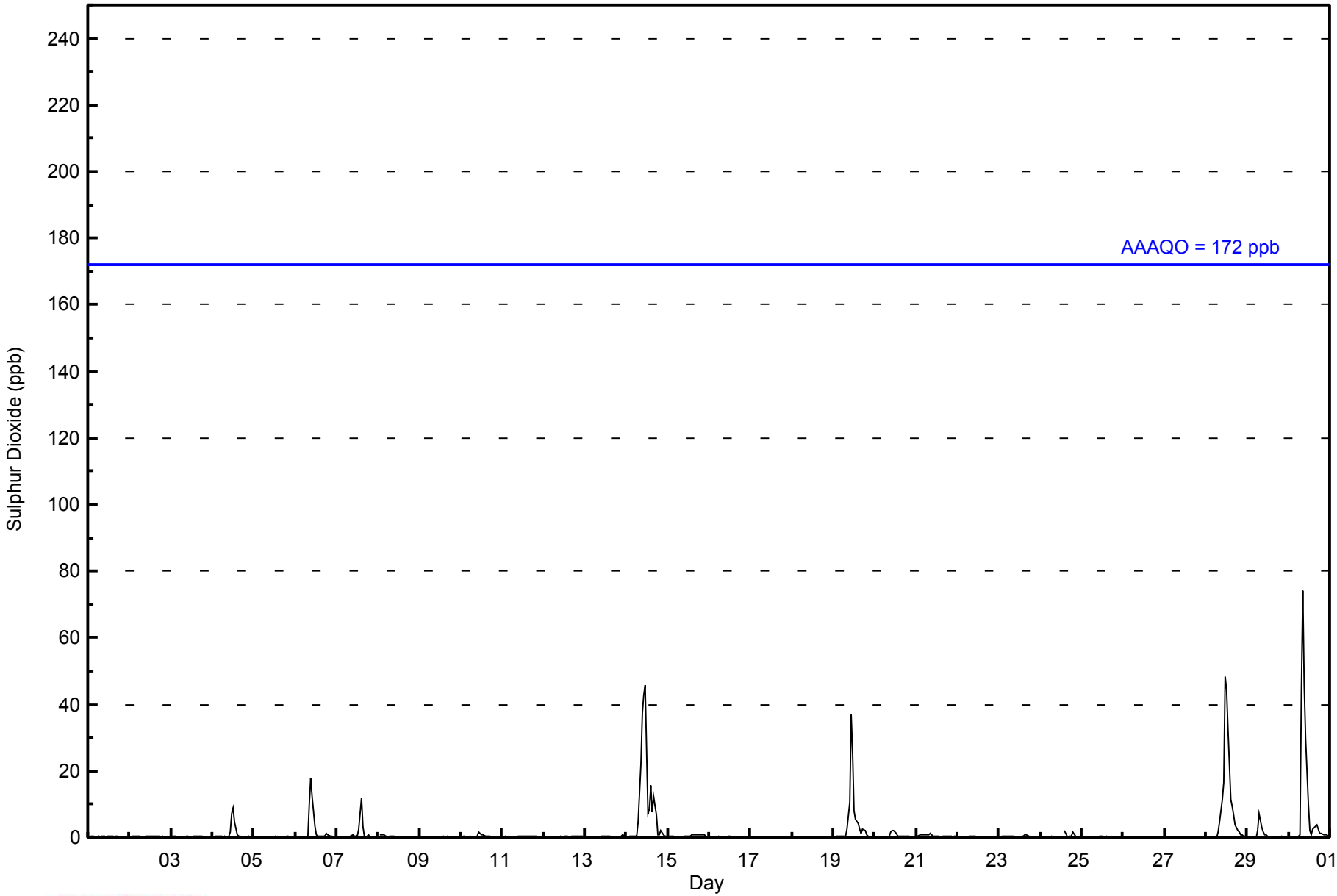
AURORA ATMOSPHERICS INC.

WBEA NETWORK

Hourly Averages

Sulphur Dioxide (SO_2) - ppb

Shell Muskeg River - April 2014



AURORA ATMOSPHERICS INC.

Concentration Ranges (ppb)	Number of Hours	%	Cumulative %
0 - 10	662	96.78	96.78
11 - 20	9	1.32	98.10
21 - 60	12	1.75	99.85
61 - 110	1	0.15	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

WBEA NETWORK

Frequency Distribution

Sulphur Dioxide (SO_2) - ppb

Shell Muskeg River - April 2014

Concentration	**Wind Direction**																
Ranges (ppb)	N	NNE	NE	ENE	E	ESE	SE	SSE	S	SSW	SW	WSW	W	WNW	NW	NNW	**Totals**
0 - 10	17	49	135	43	45	36	49	78	71	49	26	17	8	14	12	12	661
11 - 20	0	0	0	0	0	0	0	0	4	4	1	0	0	0	0	0	9
21 - 60	0	0	0	0	0	0	1	0	5	5	1	0	0	0	0	0	12
61 - 110	0	0	0	0	0	0	0	0	0	1	0	0	0	0	0	0	1
111 - 172	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
> 172	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Totals	17	49	135	43	45	36	50	78	80	59	28	17	8	14	12	12	683

Total Number of Valid Hours: 683

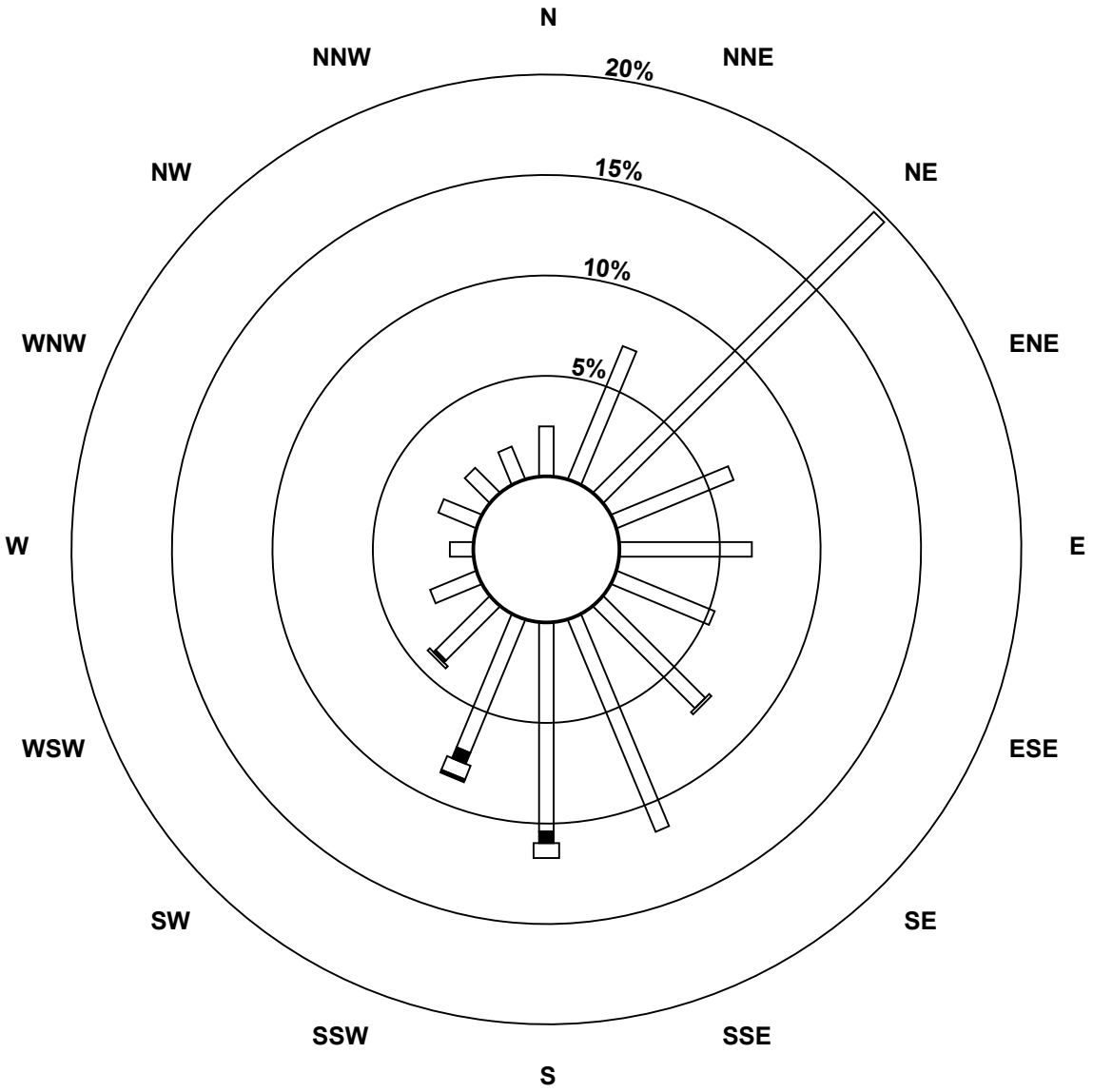
Total Number of Hours: 720

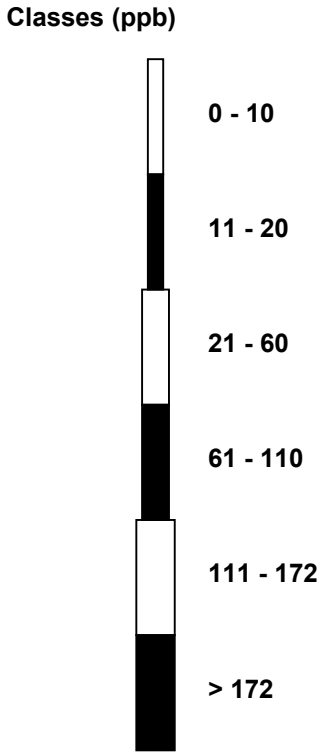
Wood Buffalo Environmental Association

Wind Rose Apr 2014

Sulphur Dioxide (SO_2) - ppb

Shell Muskeg River (AMS 16)





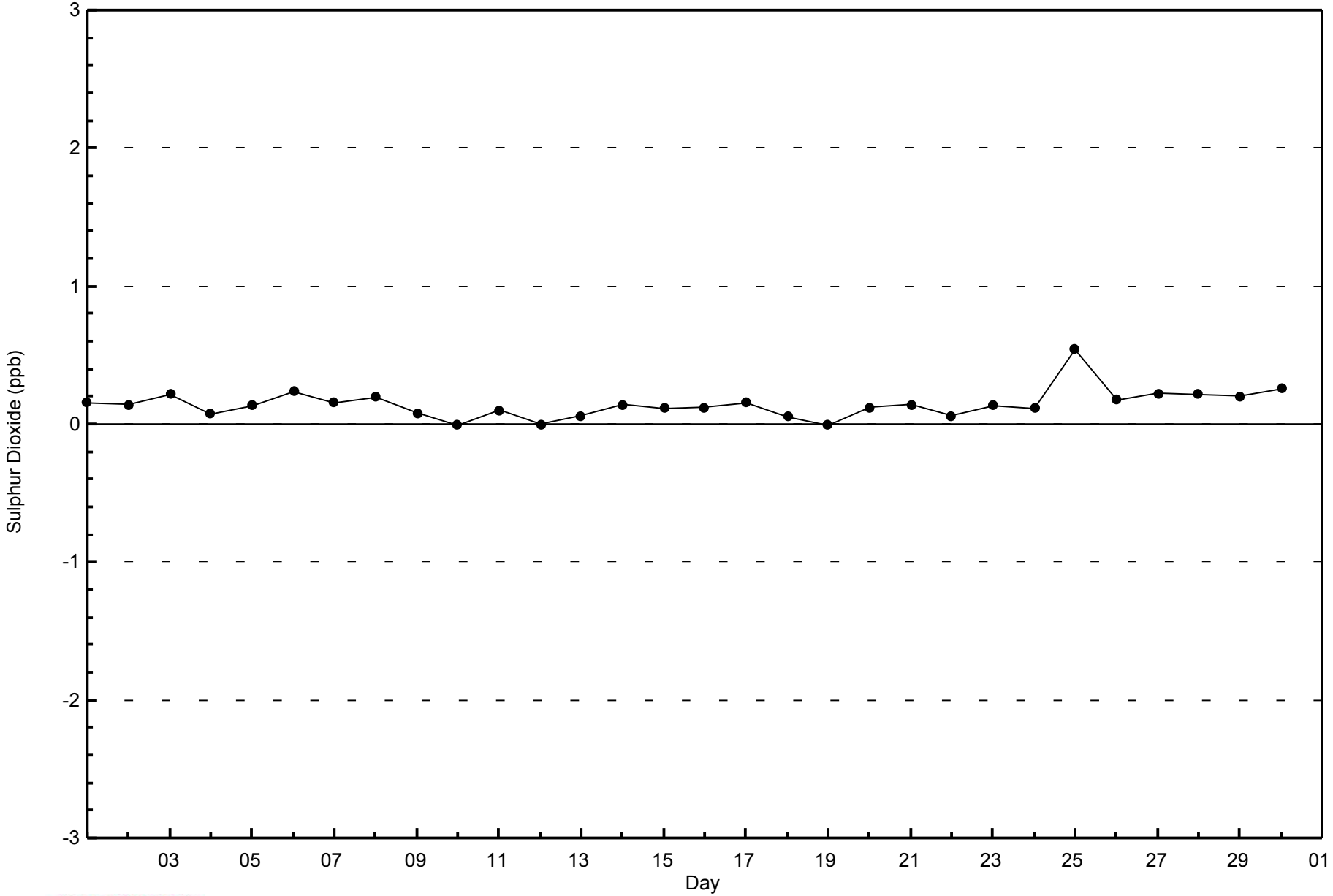
Total Number of Valid Hours: 683

WBEA NETWORK

Zero Responses

Sulphur Dioxide (SO_2) - ppb

Shell Muskeg River - April 2014



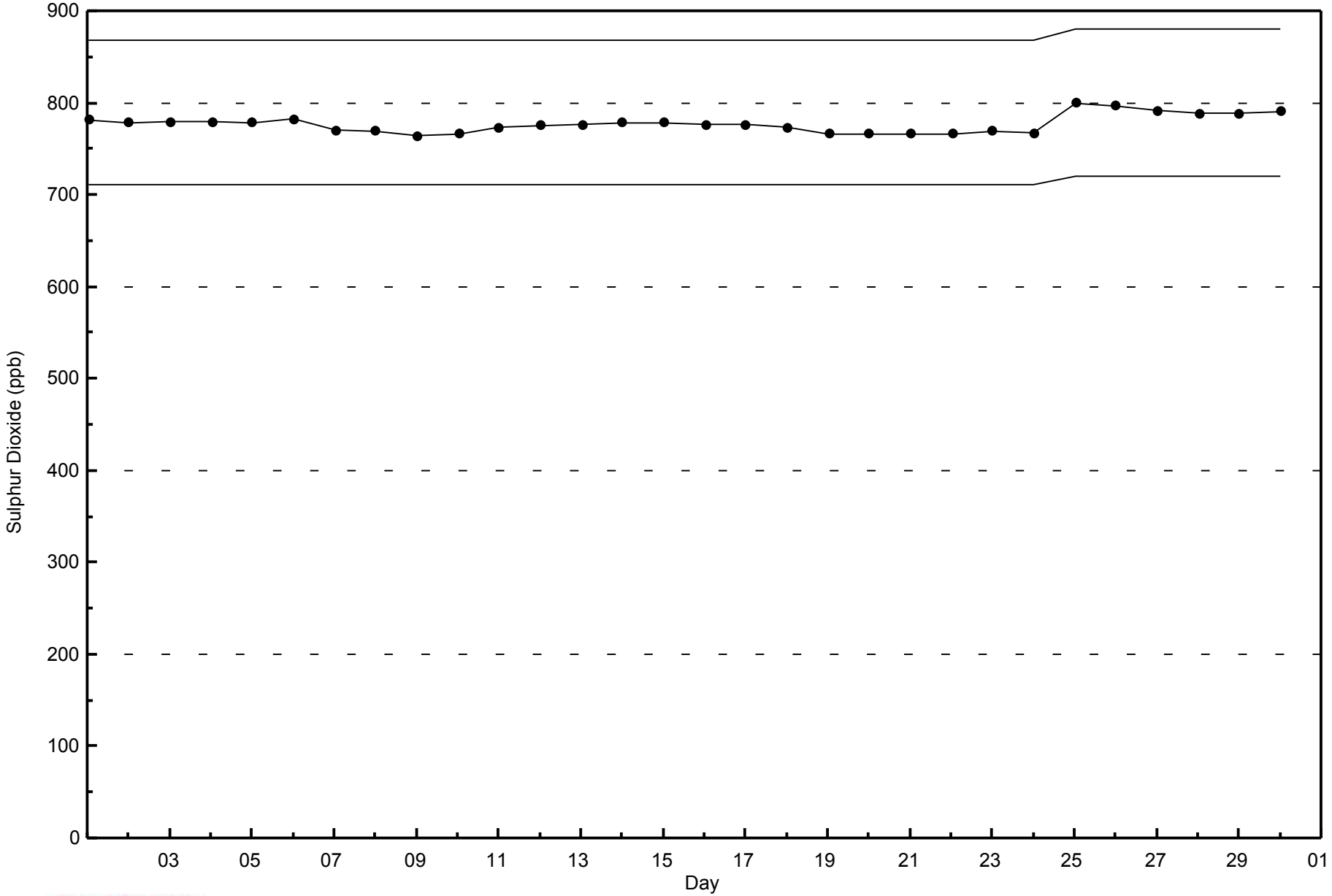
AURORA
ATMOSPHERICS INC.

WBEA NETWORK

Span Responses

Sulphur Dioxide (SO_2) - ppb

Shell Muskeg River - April 2014



AURORA ATMOSPHERICS INC.

Maximum Value: 4.6 ppm on Apr 20 11:00

Maximum Daily Average: 2.6 ppm on Apr 20

Minimum Value: 1.9 ppm on Apr 18 08:00

Minimum Daily Average: 2.0 ppm on Apr 27

Maximum Diurnal Average: 2.4 ppm at hour 24

Minimum Diurnal Average: 2.2 ppm at hour 19

Monthly Average: 2.30 ppm

Percentiles: P_1 = 1.9 P_{10} = 2.1 Q_1 = 2.1 Median = 2.2 Q_3 = 2.4 P_{90} = 2.7 P_{99} = 3.2

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-Apr	Z	2.4	2.3	2.7	2.4	2.3	2.4	2.4	2.4	2.3	2.2	2.2	2.2	2.3	2.2	2.2	2.2	2.2	2.2	2.1	2.3	2.3	2.4	2.1	2.3	2.7
2-Apr	Z	2.2	2.3	2.2	2.1	2.1	2.2	2.1	2.2	2.3	2.2	2.4	2.2	2.4	2.4	2.4	2.2	2.2	2.2	2.2	2.2	2.2	2.2	2.2	2.2	2.4
3-Apr	Z	2.9	2.8	2.4	2.4	2.3	2.4	2.5	2.5	2.7	2.4	2.5	2.7	2.9	2.9	2.9	2.8	2.7	2.5	2.2	2.1	2.1	2.1	2.1	2.5	2.9
4-Apr	Z	2.1	2.1	2.1	2.1	2.1	2.2	2.2	2.2	2.2	2.2	2.2	2.2	2.5	2.4	2.3	2.2	2.2	2.2	2.1	2.2	2.2	2.3	2.3	2.2	2.5
5-Apr	Z	2.3	2.4	2.5	2.3	2.3	2.3	2.4	2.9	2.5	2.7	2.5	2.5	2.5	2.4	2.5	2.4	2.5	2.3	2.2	2.3	2.3	2.4	2.3	2.4	2.9
6-Apr	Z	2.2	2.2	2.2	2.5	2.5	2.6	2.5	2.4	2.3	2.5	2.9	2.6	2.5	2.3	2.4	2.6	2.8	2.4	2.4	2.5	2.5	2.8	2.8	2.5	2.9
7-Apr	Z	2.6	2.4	2.4	2.5	2.3	2.2	2.2	2.2	2.2	2.9	2.5	2.4	2.2	2.2	2.2	2.2	2.2	2.2	2.3	2.2	2.8	2.2	2.4	2.3	2.9
8-Apr	Z	2.5	2.5	2.4	2.6	2.7	2.4	2.3	2.2	2.1	2.2	2.3	2.2	2.3	2.4	2.4	2.4	2.5	2.3	2.2	2.2	2.4	2.6	2.5	2.4	2.7
9-Apr	Z	2.3	2.4	2.3	2.3	2.4	2.2	2.2	2.1	2.2	2.2	2.3	2.3	2.4	2.4	2.4	2.4	2.3	2.2	2.4	2.3	2.7	2.9	3.0	2.4	3.0
10-Apr	Z	2.4	2.2	2.2	2.1	2.1	2.1	2.1	2.1	2.1	2.1	2.1	2.1	2.1	2.2	2.2	2.2	2.1	2.1	2.2	2.2	2.1	2.2	2.2	2.1	2.4
11-Apr	Z	2.2	2.2	2.2	2.2	2.2	2.1	2.2	2.2	2.1	2.1	2.1	2.1	2.1	2.1	2.3	2.3	2.5	2.5	2.5	2.6	2.7	2.6	2.7	2.3	2.7
12-Apr	Z	2.4	2.3	2.3	2.3	2.3	2.2	2.2	2.2	2.3	2.3	2.2	2.4	2.4	2.4	2.5	2.4	2.2	2.1	2.3	2.5	2.7	2.8	2.7	2.4	2.8
13-Apr	Z	2.6	2.6	2.7	2.6	2.6	2.7	2.6	2.6	2.5	2.3	2.3	2.3	2.4	2.4	2.4	2.3	2.3	2.3	2.3	2.3	2.3	2.3	2.2	2.4	2.7
14-Apr	Z	2.2	2.2	2.2	2.2	2.2	2.2	2.2	2.3	2.3	2.3	2.3	2.4	2.5	2.4	2.4	2.4	2.4	2.3	2.5	3.1	3.1	2.9	3.1	2.4	3.1
15-Apr	Z	2.4	2.3	2.8	2.2	2.2	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	2.6	2.3	2.2	2.2	2.3	2.8
16-Apr	Z	2.2	2.2	2.2	2.2	2.2	2.2	2.2	2.2	2.2	2.1	2.5	2.5	2.3	2.3	2.3	2.3	2.3	2.4	2.3	2.3	2.3	2.3	2.2	2.3	2.5
17-Apr	Z	2.2	2.1	2.1	2.1	2.1	2.1	2.1	2.0	2.1	2.1	2.2	2.2	2.1	2.1	2.1	2.1	2.2	2.1	2.1	2.2	2.2	2.2	2.2	2.1	2.2
18-Apr	Z	2.1	2.1	2.0	2.0	1.9	1.9	1.9	2.0	1.9	1.9	1.9	1.9	2.0	2.0	2.0	2.1	2.1	2.1	2.1	2.1	2.1	2.1	2.5	2.0	2.5
19-Apr	Z	2.4	2.4	2.6	2.7	2.8	3.0	2.5	2.3	2.2	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	2.3	2.3	3.0
20-Apr	Z	2.9	2.6	2.8	2.7	2.7	2.9	2.1	2.6	4.1	4.6	3.2	2.7	2.2	2.1	2.1	2.1	2.1	2.0	2.2	2.3	2.4	2.3	2.3	2.6	4.6
21-Apr	Z	2.6	2.5	2.5	2.7	2.6	2.5	2.3	2.8	3.0	2.5	2.2	2.0	2.0	2.1	2.1	2.1	2.1	2.3	2.4	2.2	2.4	2.2	2.3	2.4	3.0
22-Apr	Z	3.0	2.9	3.2	3.1	2.7	2.7	3.0	2.7	2.4	2.4	2.0	2.1	2.1	2.1	2.1	2.1	2.1	2.0	2.2	2.2	2.2	2.2	2.3	2.4	3.2
23-Apr	Z	2.2	2.2	2.1	2.1	2.2	2.0	2.0	2.0	2.0	1.9	2.0	2.0	2.0	2.2	2.1	2.1	2.1	2.1	2.1	2.1	2.1	2.2	2.1	2.1	2.2
24-Apr	Z	2.2	2.2	2.2	2.1	2.1	2.1	2.1	C	C	C	C	C	C	2.5	2.1	2.1	2.1	2.1	2.1	2.1	2.1	2.2	2.2	--	2.5
25-Apr	Z	2.2	2.2	2.2	2.2	2.2	2.2	2.1	2.3	2.2	2.1	2.2	2.5	2.1	2.1	2.1	2.0	2.0	2.0	2.1	2.1	2.1	2.1	2.1	2.1	2.5
26-Apr	Z	2.2	2.2	2.2	2.2	2.1	2.1	2.1	2.1	2.1	2.1	2.1	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.1	2.1	2.2
27-Apr	Z	2.1	2.1	2.0	2.1	2.0	2.1	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.1	2.0	2.1
28-Apr	Z	2.1	2.1	2.1	2.1	2.1	2.1	2.2	2.2	2.2	2.1	2.1	2.1	2.2	2.2	2.3	2.3	2.1	2.1	2.1	2.1	2.0	2.0	2.1	2.1	2.3
29-Apr	Z	2.1	2.2	2.1	2.1	2.2	2.3	2.4	2.5	2.6	2.3	2.4	2.4	2.5	2.5	2.5	2.6	2.6	2.7	3.1	3.4	3.2	3.0	3.3	2.6	3.4
30-Apr	Z	3.1	3.1	2.6	2.6	2.7	2.9	2.6	2.4	2.3	2.3	2.4	2.4	2.5	2.5	2.5	2.5	2.5	2.5	2.6	2.7	2.7	2.8	2.6	2.6	3.1
	--	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	2.3	2.3	2.3	2.2	2.3	2.3	2.4	2.4	2.4	Diurnal Average	
	--	3.1	3.1	3.2	3.1	2.8	3.0	3.0	2.9	4.1	4.6	3.2	2.7	2.9	2.9	2.9	2.8	2.8	2.7	3.1	3.4	3.2	3.0	3.3	Diurnal Maximum	

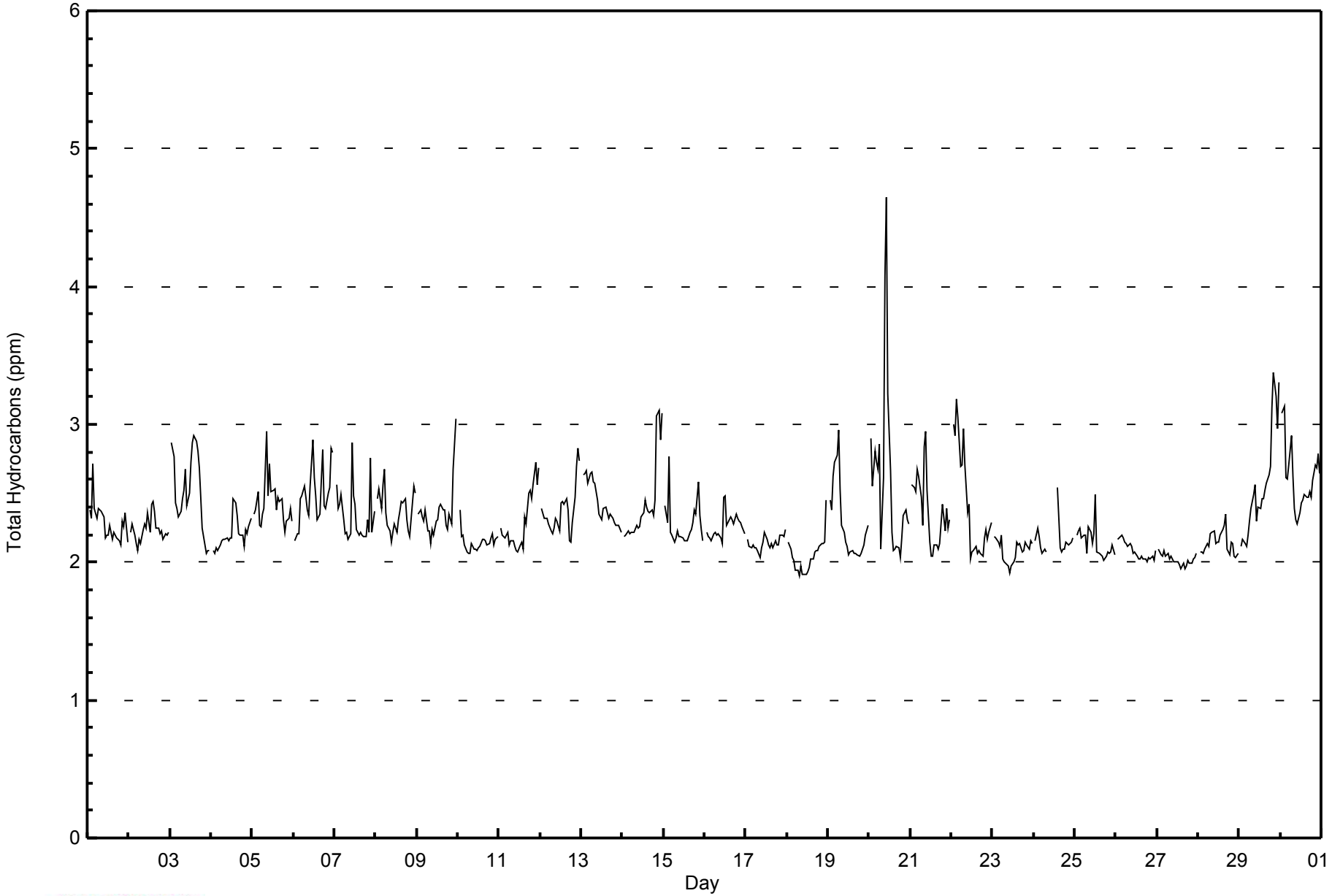
Z - zerospan C - Calibration

WBEA NETWORK

Hourly Averages

Total Hydrocarbons (THC) - ppm

Shell Muskeg River - April 2014



AURORA ATMOSPHERICS INC.

Concentration Ranges (ppm)	Number of Hours	%	Cumulative %
0 - 2.0	62	9.06	9.06
2.1 - 3.0	608	88.89	97.95
3.1 - 10.0	14	2.05	100.00
> 10.0	0	0.00	100.00

Total Number of Valid Hours: 684

Total Number of Hours: 720

WBEA NETWORK

Frequency Distribution

Total Hydrocarbons (THC) - ppm

Shell Muskeg River - April 2014

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	7	7	4	6	14	21	3	0	0	0	0	0	0	0	62
2.1 - 3.0	16	46	128	35	41	30	35	57	75	57	28	17	8	14	10	10	607
3.1 - 10.0	1	3	0	1	0	0	1	0	2	2	0	0	0	0	2	2	14
> 10.0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Totals	17	49	135	43	45	36	50	78	80	59	28	17	8	14	12	12	683

Total Number of Valid Hours: 683

Total Number of Hours: 720

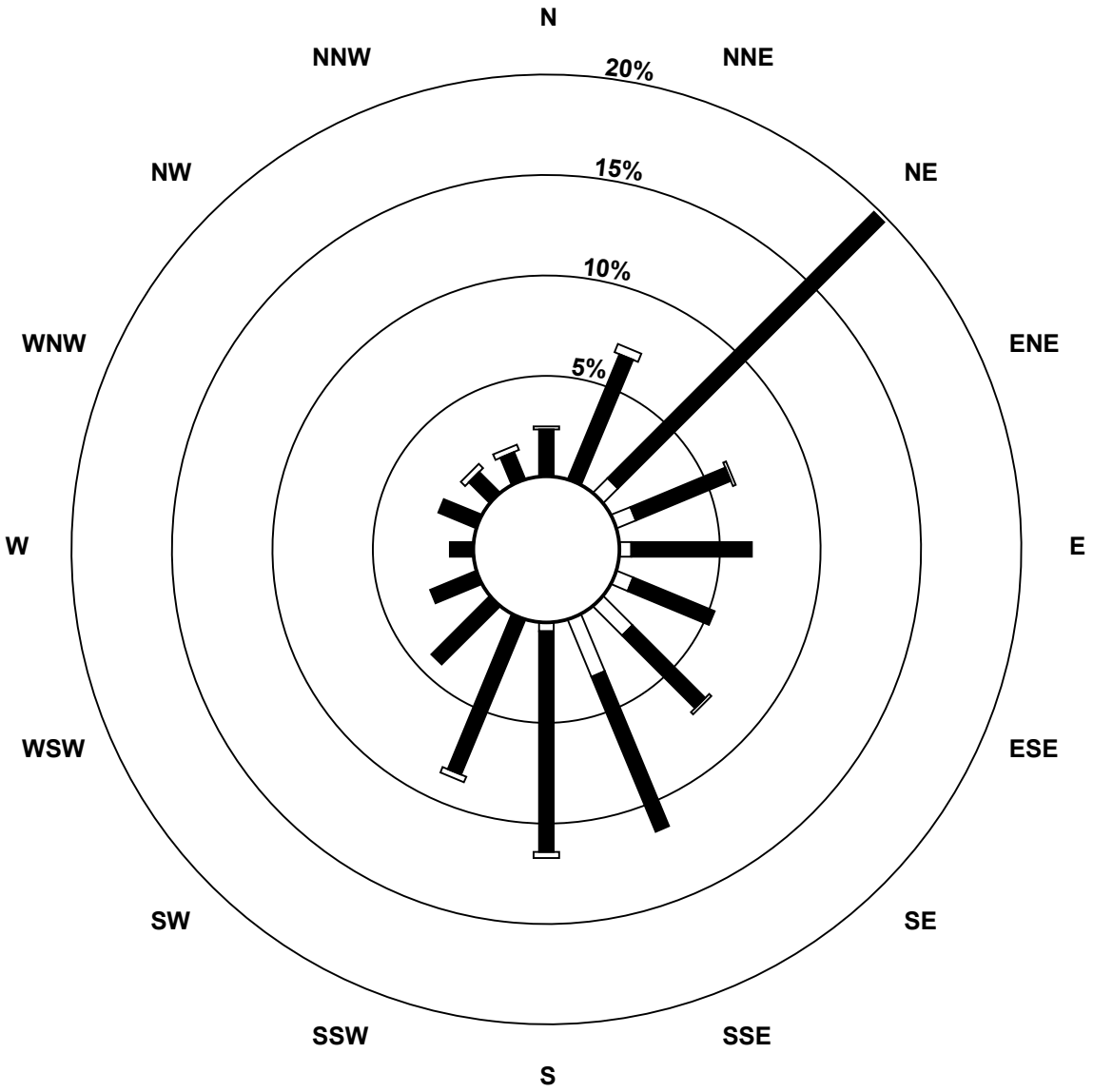
AURORA ATMOSPHERICS INC.

Wood Buffalo Environmental Association

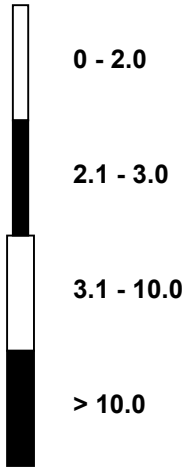
Wind Rose Apr 2014

Total Hydrocarbons (THC) - ppm

Shell Muskeg River (AMS 16)



Classes (ppm)



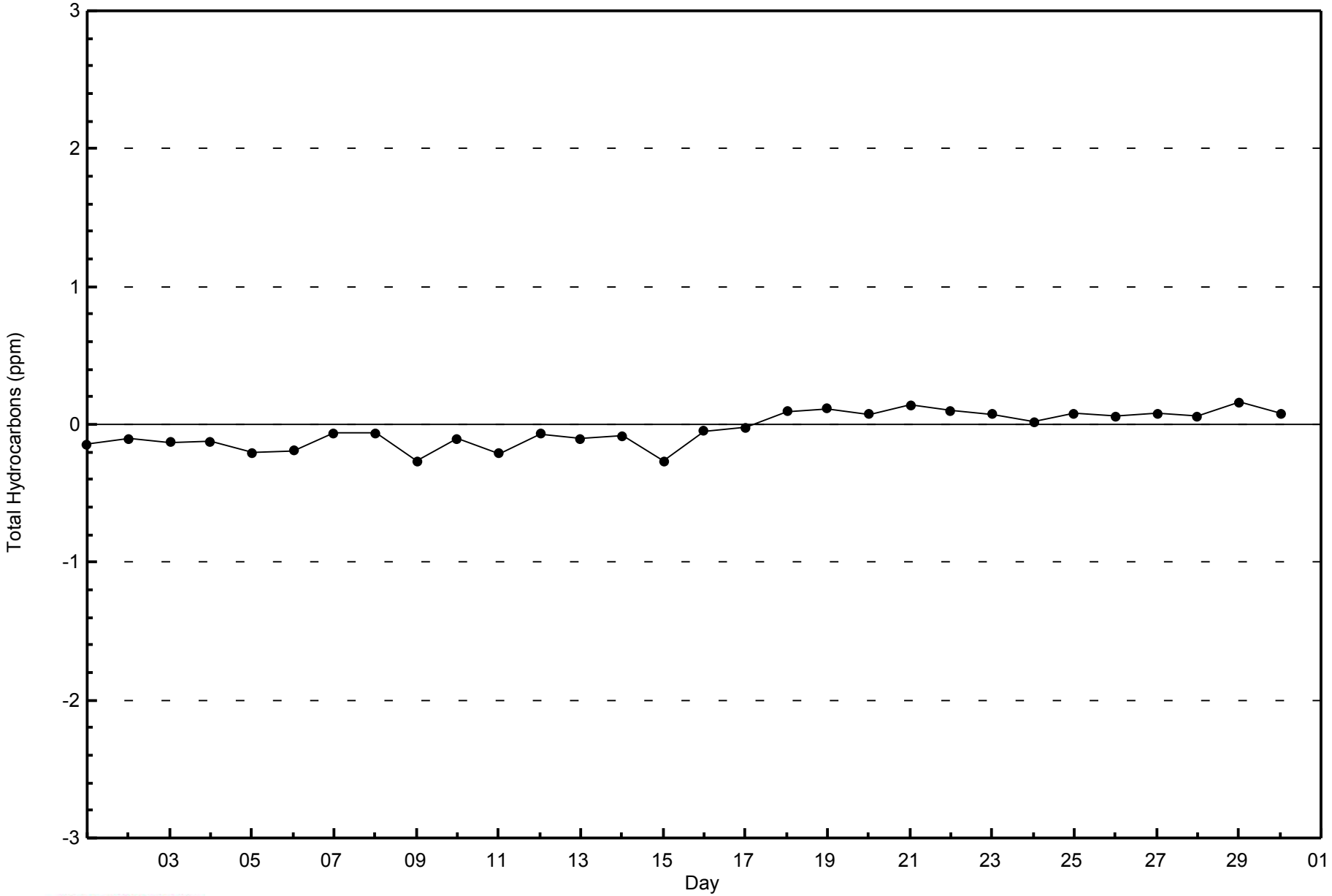
Total Number of Valid Hours: 683

WBEA NETWORK

Zero Responses

Total Hydrocarbons (THC) - ppm

Shell Muskeg River - April 2014



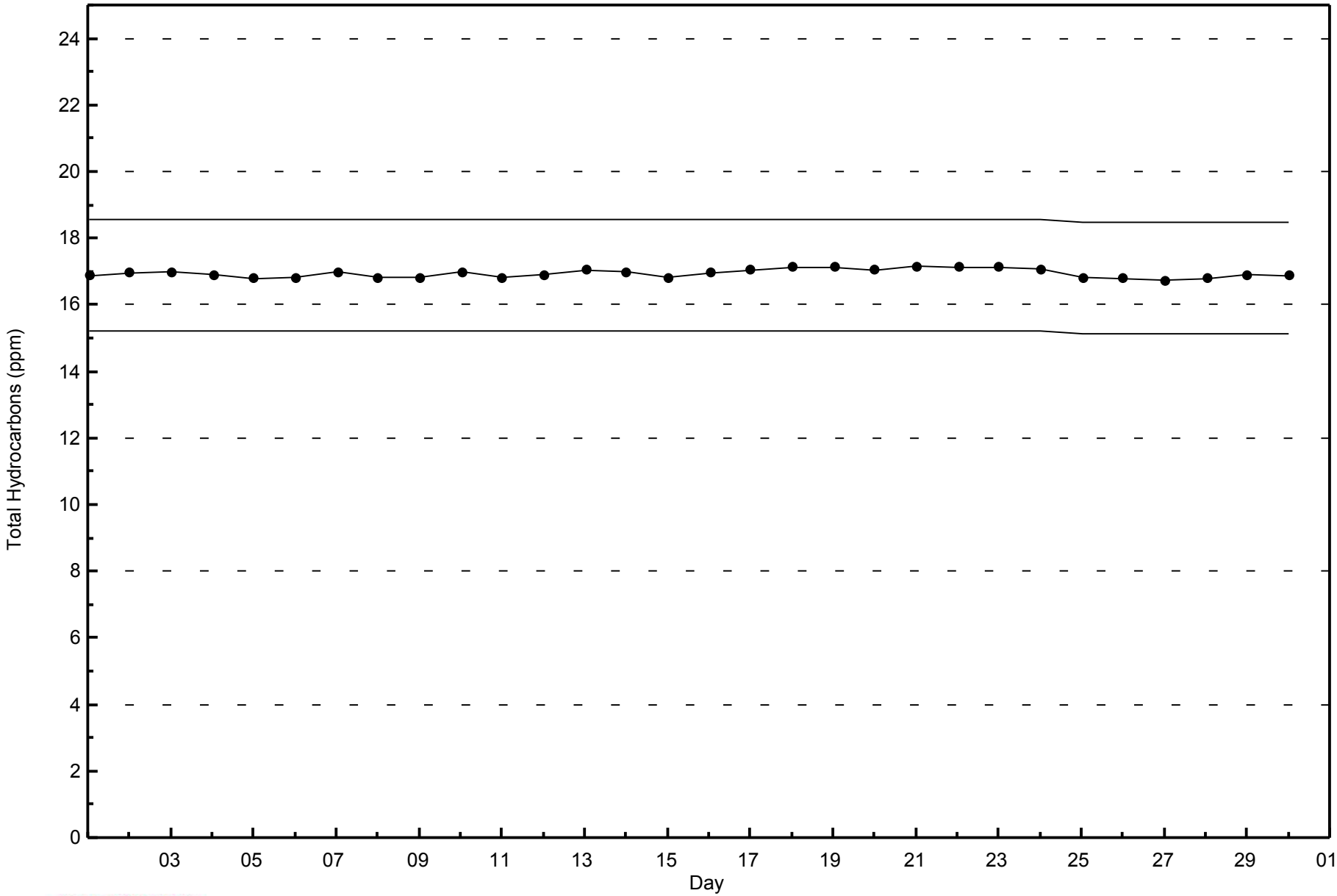
AURORA
ATMOSPHERICS INC.

WBEA NETWORK

Span Responses

Total Hydrocarbons (THC) - ppm

Shell Muskeg River - April 2014



AURORA ATMOSPHERICS INC.

Maximum Value: 72 ppb on Apr 20 11:00

Maximum Daily Average: 14.0 ppb on Apr 15

Minimum Value: 0 ppb on Apr 1 02:00

Minimum Daily Average: 0.0 ppb on Apr 17

Maximum Diurnal Average: 7.9 ppb at hour 11

Minimum Diurnal Average: 2.4 ppb at hour 22

Monthly Average: 4.7 ppb

Percentiles: $P_1 = 0$ $P_{10} = 0$ $Q_1 = 0$ Median = 1 $Q_3 = 6$ $P_{90} = 15$ $P_{99} = 32$

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-Apr	Z	0	0	8	1	2	9	2	15	7	5	7	15	14	11	6	6	7	1	1	0	0	6	14	5.9	15
2-Apr	Z	14	13	19	13	8	12	4	4	20	19	19	18	14	17	17	16	14	16	14	7	3	7	9	13.0	20
3-Apr	Z	31	28	6	1	0	1	9	12	23	21	11	19	31	23	23	18	14	2	0	0	0	0	0	11.8	31
4-Apr	Z	0	0	0	0	0	0	0	0	0	0	1	2	2	1	1	3	2	2	0	0	1	1	3	0.9	3
5-Apr	Z	0	0	0	0	0	1	6	21	5	7	7	9	6	1	2	1	1	2	11	13	4	1	2	4.3	21
6-Apr	Z	0	0	0	0	0	6	17	8	7	5	2	5	4	1	1	3	7	7	1	1	0	2	4	3.6	17
7-Apr	Z	1	0	2	1	1	2	3	4	3	10	5	5	1	2	0	0	0	0	0	0	0	0	1	1.7	10
8-Apr	Z	0	0	0	0	0	1	1	2	2	1	0	0	0	0	1	0	0	0	0	0	3	0	0	0.6	3
9-Apr	Z	0	0	0	0	0	0	2	1	2	2	2	4	5	8	3	7	2	2	8	0	0	12	13	3.1	13
10-Apr	Z	11	12	2	5	11	7	0	2	4	3	1	2	14	11	15	15	7	0	0	0	0	0	0	5.4	15
11-Apr	Z	0	0	0	0	0	0	1	5	15	18	13	26	27	20	24	25	10	10	7	6	5	7	22	10.5	27
12-Apr	Z	2	0	0	0	0	2	2	3	5	1	0	8	5	9	4	6	8	9	17	25	14	15	13	6.5	25
13-Apr	Z	4	5	8	7	11	11	10	10	17	13	10	6	13	5	2	1	1	1	0	0	0	0	1	6.0	17
14-Apr	Z	0	0	0	0	0	0	1	2	4	4	3	1	1	1	1	0	0	0	0	12	8	12	3	2.3	12
15-Apr	Z	17	5	7	1	2	0	1	2	2	9	16	13	15	21	25	32	26	29	32	25	25	13	1	14.0	32
16-Apr	Z	0	0	0	0	7	3	2	2	1	2	7	10	0	0	0	0	0	0	0	0	0	0	0	1.5	10
17-Apr	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
18-Apr	Z	0	0	0	0	0	1	1	2	1	0	0	0	0	0	0	0	0	0	0	0	0	0	1	0.3	2
19-Apr	Z	3	6	4	9	9	26	17	5	3	4	4	1	0	0	0	0	0	0	0	0	0	0	1	4.1	26
20-Apr	Z	0	0	1	2	12	27	6	8	42	72	35	16	2	2	1	4	2	0	0	0	0	0	1	10.1	72
21-Apr	Z	4	0	0	5	7	9	2	17	17	8	3	6	2	2	12	17	13	13	14	5	2	7	7	7.4	17
22-Apr	Z	9	7	14	28	12	12	22	26	15	18	2	0	0	0	0	0	0	0	0	1	0	2	1	7.4	28
23-Apr	Z	3	9	13	5	12	4	7	5	5	0	0	0	0	0	0	0	0	0	0	0	0	0	0	2.8	13
24-Apr	Z	0	0	0	0	0	0	0	0	C	C	C	C	C	2	0	0	0	0	0	0	0	0	0	0.2	2
25-Apr	Z	0	0	0	0	0	0	0	2	2	2	2	5	1	0	0	0	0	0	0	0	0	0	0	0.6	5
26-Apr	Z	0	0	0	0	0	0	0	1	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0.2	1
27-Apr	Z	0	0	0	0	0	0	0	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1	0.2	1
28-Apr	Z	0	0	0	2	4	1	3	3	3	5	6	6	5	4	5	4	1	1	0	0	0	0	0	2.3	6
29-Apr	Z	0	0	0	0	3	14	8	5	3	1	1	0	0	0	0	0	0	0	16	33	4	4	12	4.5	33
30-Apr	Z	2	3	1	20	34	57	29	16	6	2	1	0	0	0	0	0	0	0	0	0	1	8	4	8.0	57
	--	3.5	3.0	2.9	3.4	4.5	6.9	5.2	6.1	7.3	7.9	5.4	6.2	5.7	4.8	4.8	5.3	3.9	3.2	4.1	4.3	2.4	3.3	3.9	Diurnal Average	
	--	31	28	19	28	34	57	29	26	42	72	35	26	31	23	25	32	26	29	32	33	25	15	22	Diurnal Maximum	

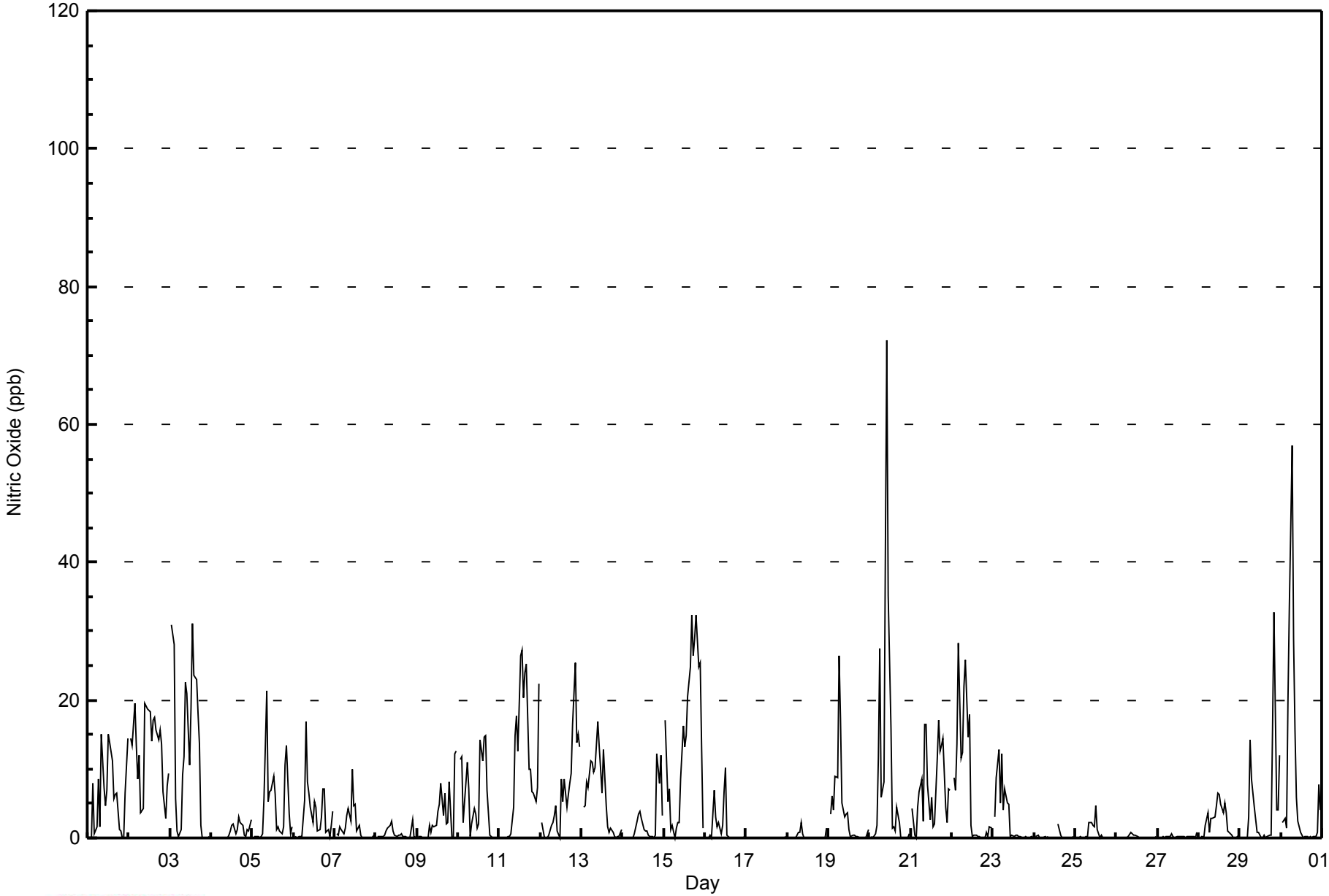
Z - zerospan C - Calibration

WBEA NETWORK

Hourly Averages

Nitric Oxide (NO) - ppb

Shell Muskeg River - April 2014



AURORA ATMOSPHERICS INC.

Concentration Ranges (ppb)	Number of Hours	%	Cumulative %
0 - 20	651	95.04	95.04
21 - 40	31	4.53	99.56
11 - 80	3	0.44	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

WBEA NETWORK

Frequency Distribution

Nitric Oxide (NO) - ppb

Shell Muskeg River - April 2014

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	36	130	42	45	35	49	78	79	56	28	17	8	13	9	9	651
21 - 40	0	13	5	2	0	1	1	0	1	2	0	0	0	1	3	1	30
11 - 80	0	0	0	0	0	0	0	0	0	1	0	0	0	0	0	2	3
81 - 159	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
> 159	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Totals	17	49	135	44	45	36	50	78	80	59	28	17	8	14	12	12	684

Total Number of Valid Hours: 684

Total Number of Hours: 720

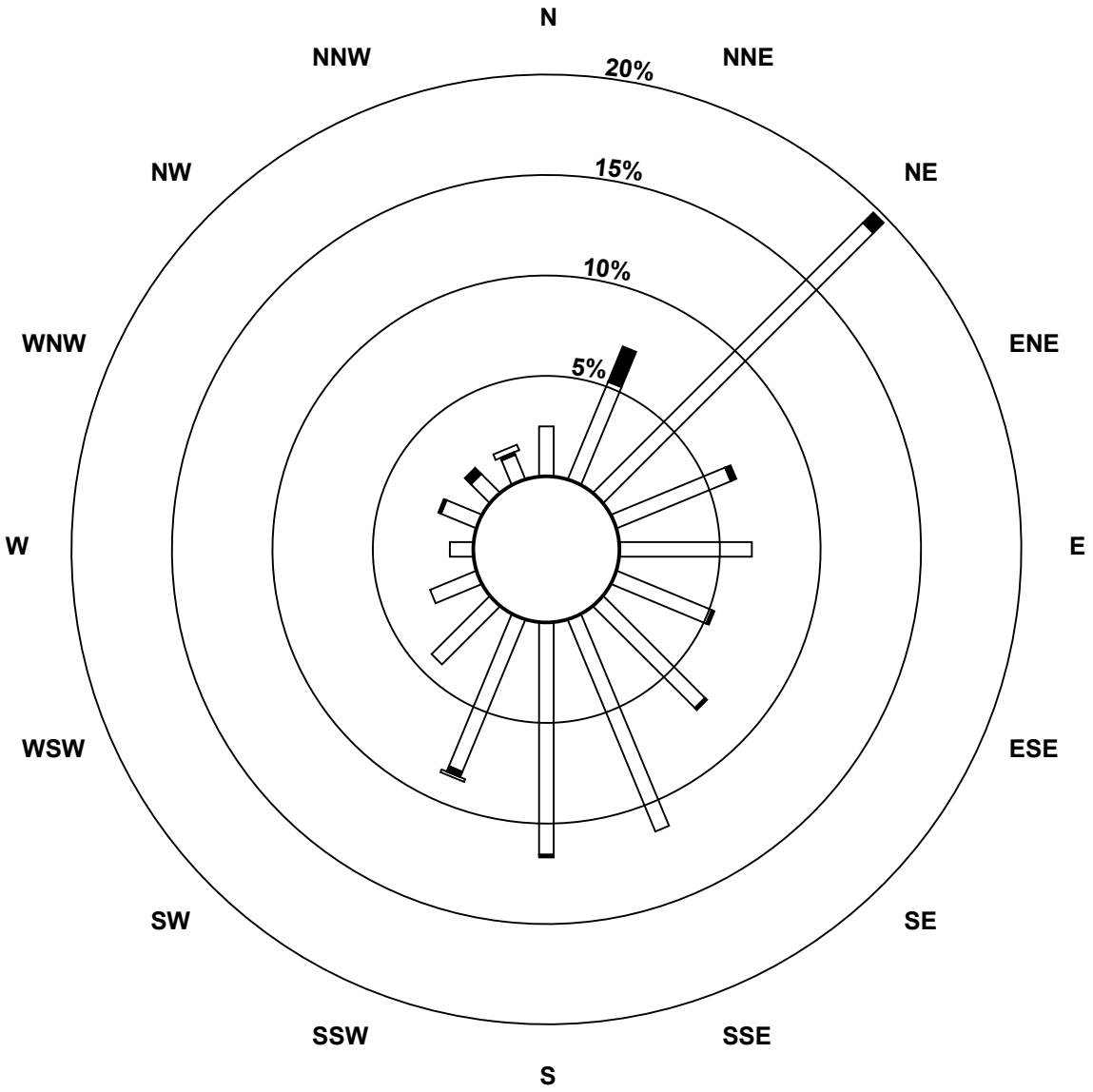
AURORA ATMOSPHERICS INC.

Wood Buffalo Environmental Association

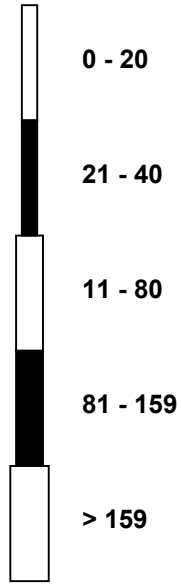
Wind Rose Apr 2014

Nitric Oxide (NO) - ppb

Shell Muskeg River (AMS 16)



Classes (ppb)



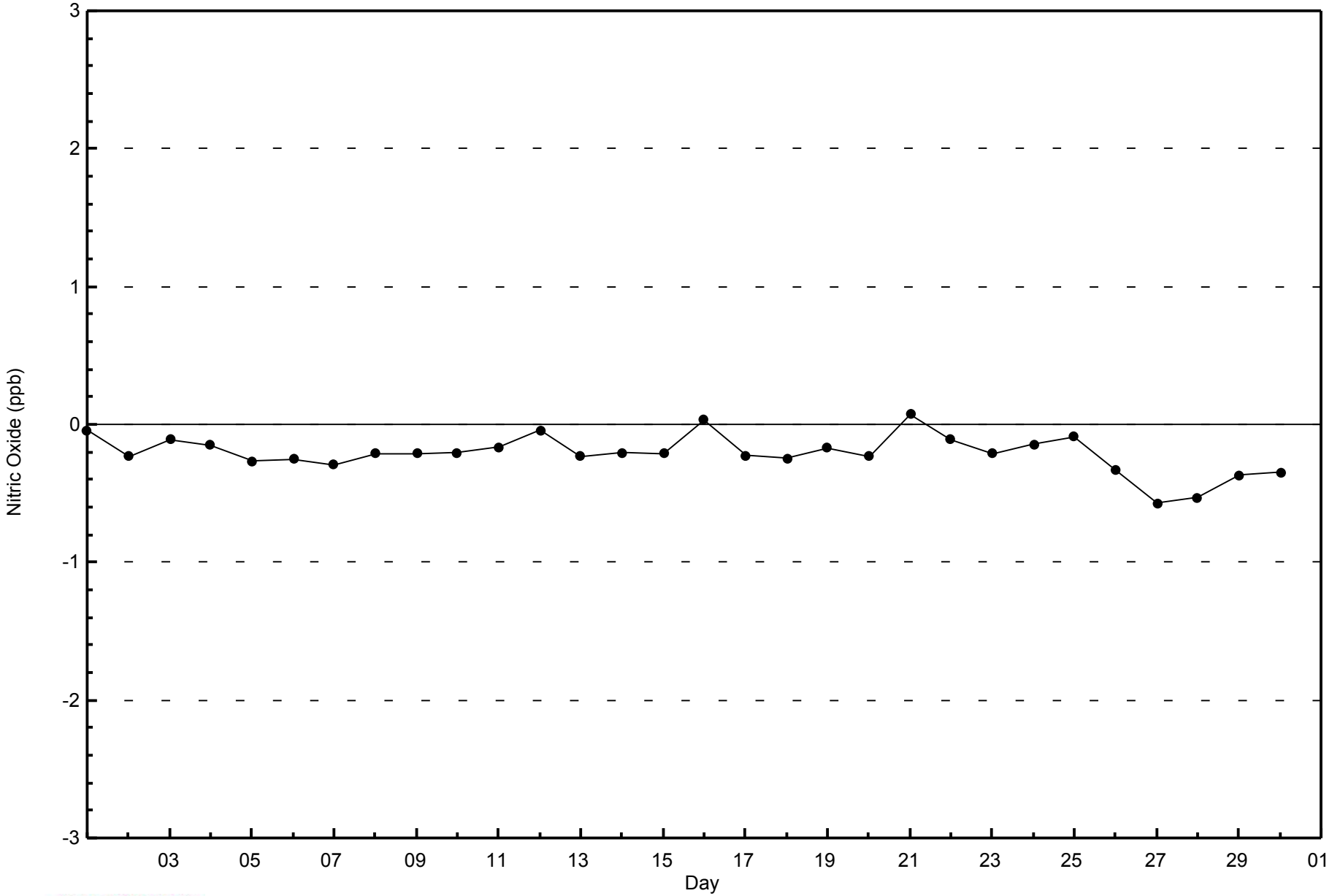
Total Number of Valid Hours: 684

WBEA NETWORK

Zero Responses

Nitric Oxide (NO) - ppb

Shell Muskeg River - April 2014



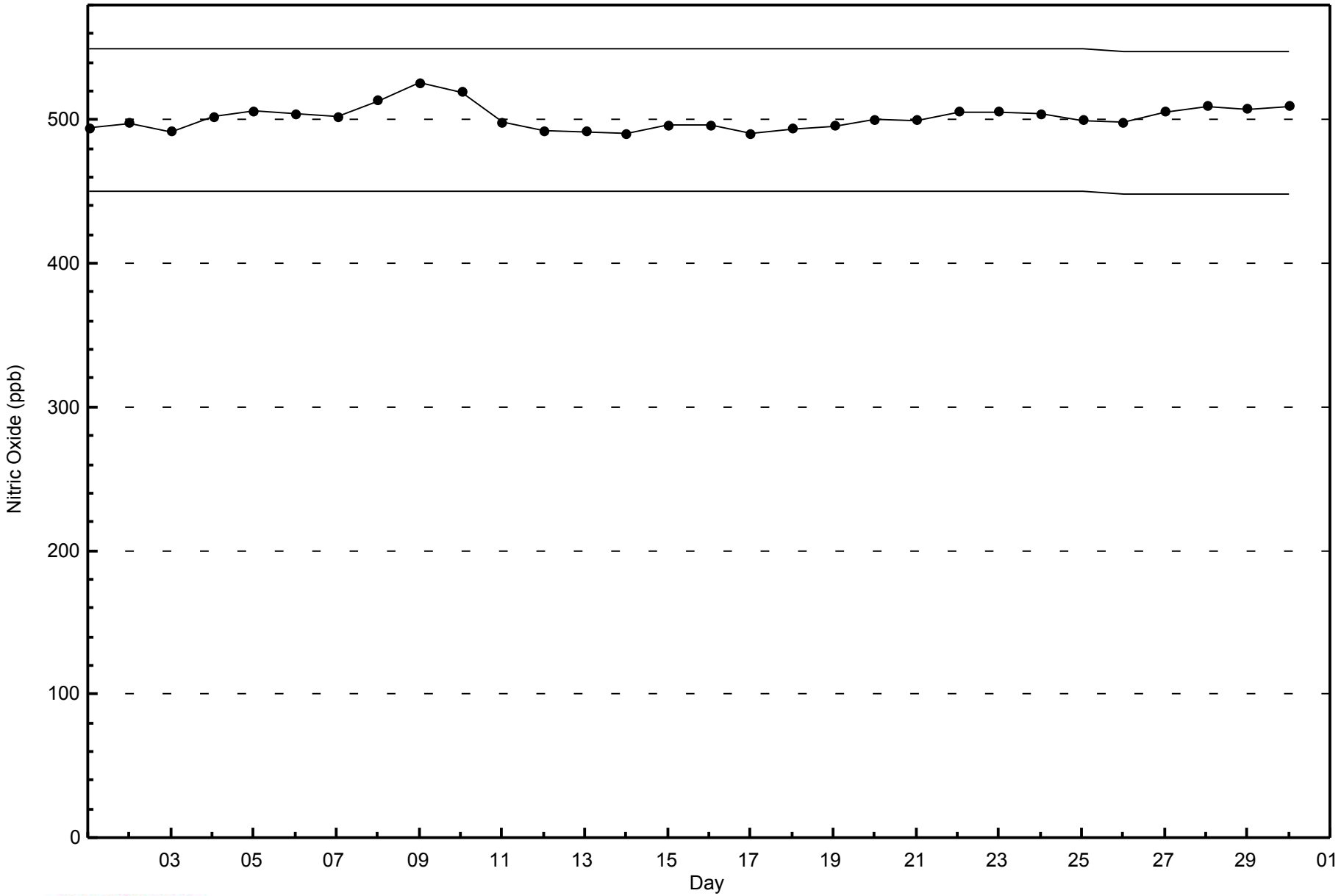
AURORA ATMOSPHERICS INC.

WBEA NETWORK

Span Responses

Nitric Oxide (NO) - ppb

Shell Muskeg River - April 2014



AURORA ATMOSPHERICS INC.

Wood Buffalo Environmental Association

Summary of Hour Averages

Nitrogen Dioxide (NO_2) - ppb

Shell Muskeg River - April 2014

Number of Exceedences (AAAQO): 1-hr: 0 24-hr: 0
Maximum Value: 40 ppb on Apr 20 11:00 Maximum Daily Average: 19.1 ppb on Apr 21

Minimum Value: 0 ppb on Apr 25 18:00 Minimum Daily Average: 0.9 ppb on Apr 17
Maximum Diurnal Average: 12.0 ppb at hour 24 Minimum Diurnal Average: 6.2 ppb at hour 19
Monthly Average: 8.7 ppb Percentiles: $P_1 = 0$ $P_{10} = 1$ $Q_1 = 2$ Median = 7 $Q_3 = 12$ $P_{90} = 21$ $P_{99} = 33$

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-Apr	Z	8	8	21	7	5	14	6	15	7	4	6	12	13	10	6	8	8	3	4	5	7	12	21	9.2	21
2-Apr	Z	18	14	17	10	7	11	4	3	11	11	11	11	11	11	13	12	12	12	10	7	6	7	12	10.4	18
3-Apr	Z	25	22	13	17	7	6	12	9	12	12	10	16	23	21	23	23	23	12	3	1	1	0	4	12.7	25
4-Apr	Z	1	1	1	1	1	1	1	2	2	4	6	9	7	5	6	7	7	9	4	8	11	13	21	5.5	21
5-Apr	Z	11	10	12	4	7	5	11	25	10	12	10	11	8	3	4	4	3	6	14	17	8	6	12	9.2	25
6-Apr	Z	8	7	8	7	11	16	25	17	14	13	11	16	11	6	7	10	19	14	6	11	8	16	14	12.0	25
7-Apr	Z	11	16	22	23	17	12	11	10	6	15	11	11	4	6	3	1	2	3	4	4	11	11	13	9.8	23
8-Apr	Z	7	9	11	15	20	17	12	7	6	3	1	1	1	2	2	1	1	1	1	1	21	9	11	7.0	21
9-Apr	Z	5	8	3	5	5	2	9	4	10	9	7	10	11	11	5	9	4	4	12	4	9	18	24	8.2	24
10-Apr	Z	15	15	5	8	9	7	1	2	4	3	2	2	12	11	14	15	7	2	4	4	3	1	4	6.6	15
11-Apr	Z	8	6	3	2	3	3	3	7	15	16	13	21	23	19	23	22	15	19	16	18	19	27	35	14.5	35
12-Apr	Z	22	11	8	7	9	10	7	7	8	3	1	10	10	12	11	10	8	10	17	25	22	21	22	11.7	25
13-Apr	Z	14	18	31	29	31	26	15	14	15	12	10	7	11	8	4	3	6	8	5	6	12	8	6	13.0	31
14-Apr	Z	0	1	1	1	1	1	3	8	10	10	8	4	4	5	4	5	5	3	4	32	19	22	15	7.2	32
15-Apr	Z	24	11	17	4	5	2	6	6	4	10	15	12	13	19	21	28	26	29	31	28	29	21	7	16.0	31
16-Apr	Z	3	2	3	3	10	7	5	5	3	4	11	15	2	1	1	1	1	1	1	1	1	1	3	3.6	15
17-Apr	Z	0	1	1	1	1	1	1	1	1	1	1	1	1	0	1	1	1	1	1	1	1	0	5	0.9	5
18-Apr	Z	2	2	4	2	2	10	9	11	5	1	1	1	1	1	1	0	1	1	2	2	3	2	5	2.8	11
19-Apr	Z	19	24	24	25	20	24	20	10	10	11	9	5	3	3	2	2	2	2	1	1	2	4	12	10.2	25
20-Apr	Z	9	6	11	14	15	10	8	12	28	40	31	22	6	4	3	8	5	2	10	16	16	10	18	13.2	40
21-Apr	Z	38	32	23	26	33	29	12	19	23	19	5	8	4	5	15	19	15	21	29	13	11	16	24	19.1	38
22-Apr	Z	32	28	34	32	23	21	26	24	16	19	3	1	2	2	2	3	2	1	2	4	3	5	8	12.7	34
23-Apr	Z	7	16	19	12	19	8	12	9	9	2	2	1	2	3	3	3	1	1	3	5	7	8	7	6.8	19
24-Apr	Z	5	4	1	4	1	3	1	1	C	C	C	C	C	13	5	3	3	4	7	4	2	1	5	3.6	13
25-Apr	Z	2	10	15	11	7	4	1	9	8	5	5	12	4	1	3	2	0	1	1	1	0	2	4	4.6	15
26-Apr	Z	2	1	4	1	1	1	2	3	2	2	1	1	0	0	0	1	1	1	1	1	0	0	3	1.2	4
27-Apr	Z	1	1	1	0	0	3	2	4	1	1	1	1	0	1	1	1	0	1	1	1	1	1	3	1.0	4
28-Apr	Z	1	2	1	3	7	4	7	6	7	9	8	8	8	7	11	12	7	8	9	5	1	1	3	5.8	12
29-Apr	Z	2	1	1	1	5	11	10	8	8	4	4	1	1	2	1	1	3	4	35	37	32	27	22	9.4	37
30-Apr	Z	16	15	12	20	22	26	24	21	14	9	4	2	1	2	2	3	3	3	8	16	26	35	21	13.1	35
	--	10.6	10.1	10.8	9.8	10.1	9.8	8.8	9.3	9.2	8.9	7.2	7.9	6.7	6.4	6.4	7.2	6.3	6.2	8.2	9.2	9.6	10.2	12.0	Diurnal Average	
	--	38	32	34	32	33	29	26	25	28	40	31	22	23	21	23	28	26	29	35	37	32	35	35	Diurnal Maximum	

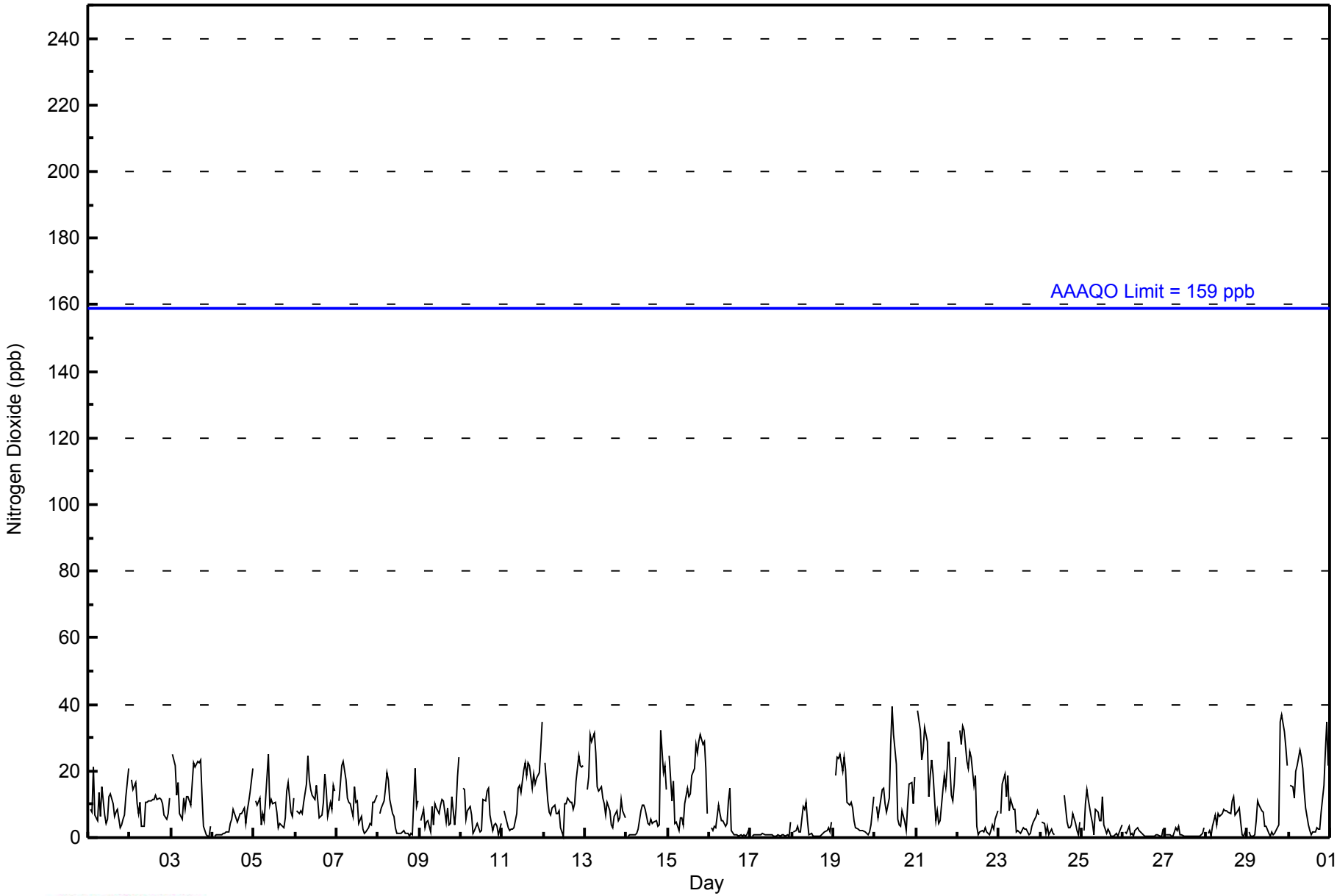
Z - zerospan C - Calibration
Alberta Ambient Air Quality Objectives (AAAQO): 1-hr 159 ppb

WBEA NETWORK

Hourly Averages

Nitrogen Dioxide (NO_2) - ppb

Shell Muskeg River - April 2014



AURORA ATMOSPHERICS INC.

Concentration Ranges (ppb)	Number of Hours	%	Cumulative %
0 - 20	605	88.32	88.32
21 - 40	80	11.68	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

WBEA NETWORK

Frequency Distribution

Nitrogen Dioxide (NO_2) - ppb

Shell Muskeg River - April 2014

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	27	125	43	45	34	49	77	71	49	27	16	7	11	7	5	604
21 - 40	6	22	10	1	0	2	1	1	9	10	1	1	1	3	5	7	80
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	49	135	44	45	36	50	78	80	59	28	17	8	14	12	12	684

Total Number of Valid Hours: 684

Total Number of Hours: 720

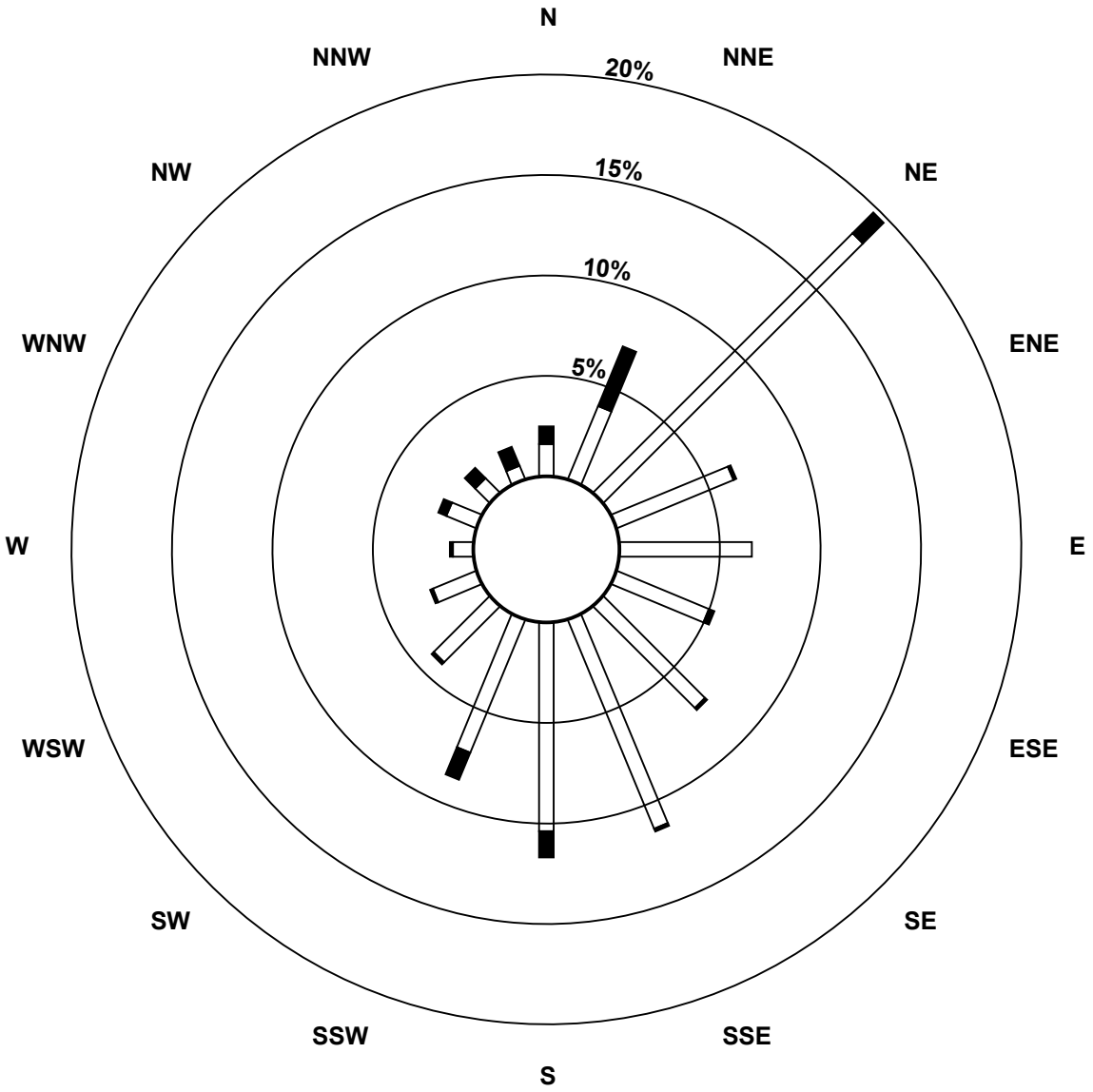
AURORA ATMOSPHERICS INC.

Wood Buffalo Environmental Association

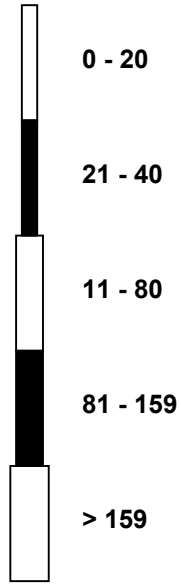
Wind Rose Apr 2014

Nitrogen Dioxide (NO_2) - ppb

Shell Muskeg River (AMS 16)



Classes (ppb)



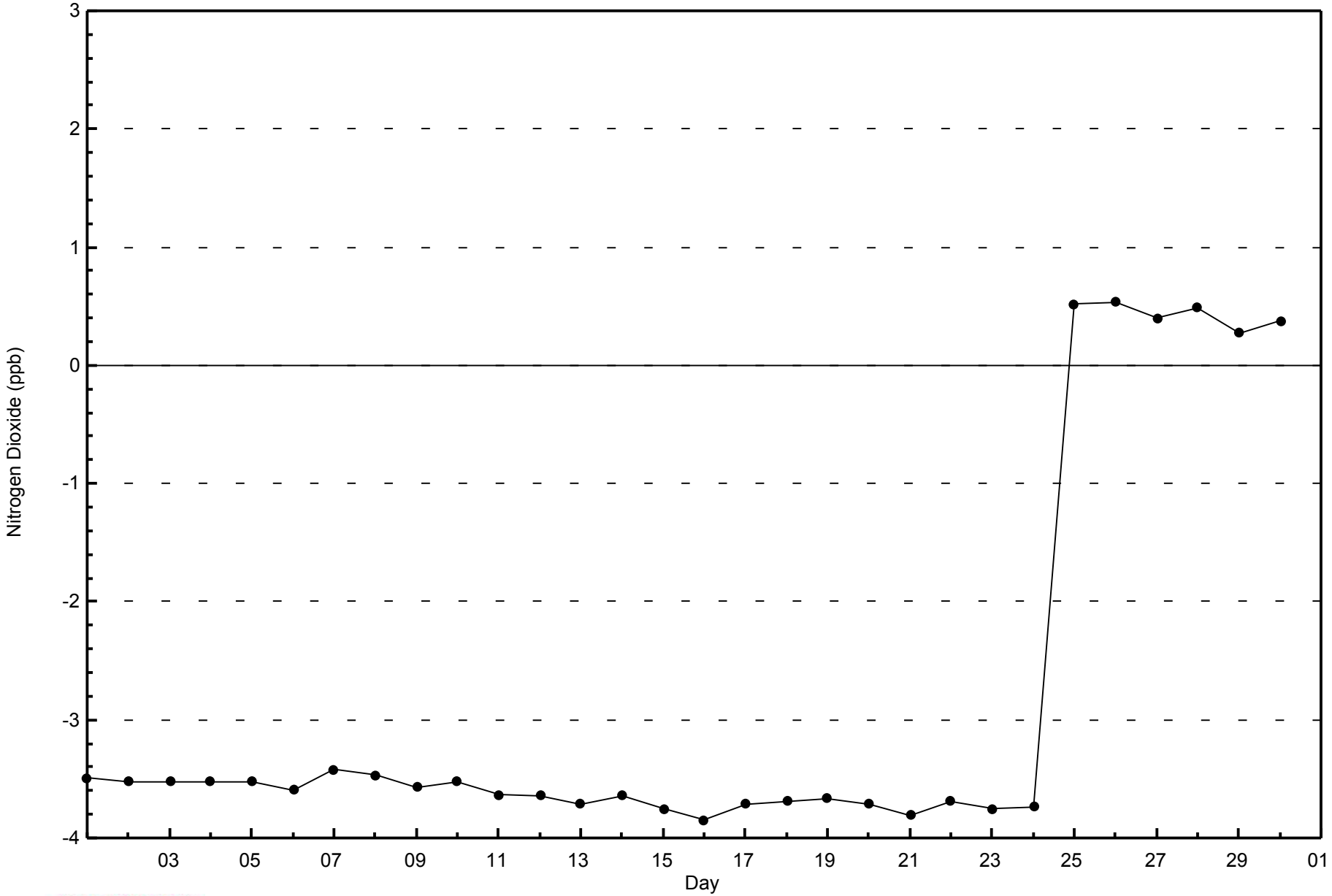
Total Number of Valid Hours: 684

WBEA NETWORK

Zero Responses

Nitrogen Dioxide (NO_2) - ppb

Shell Muskeg River - April 2014



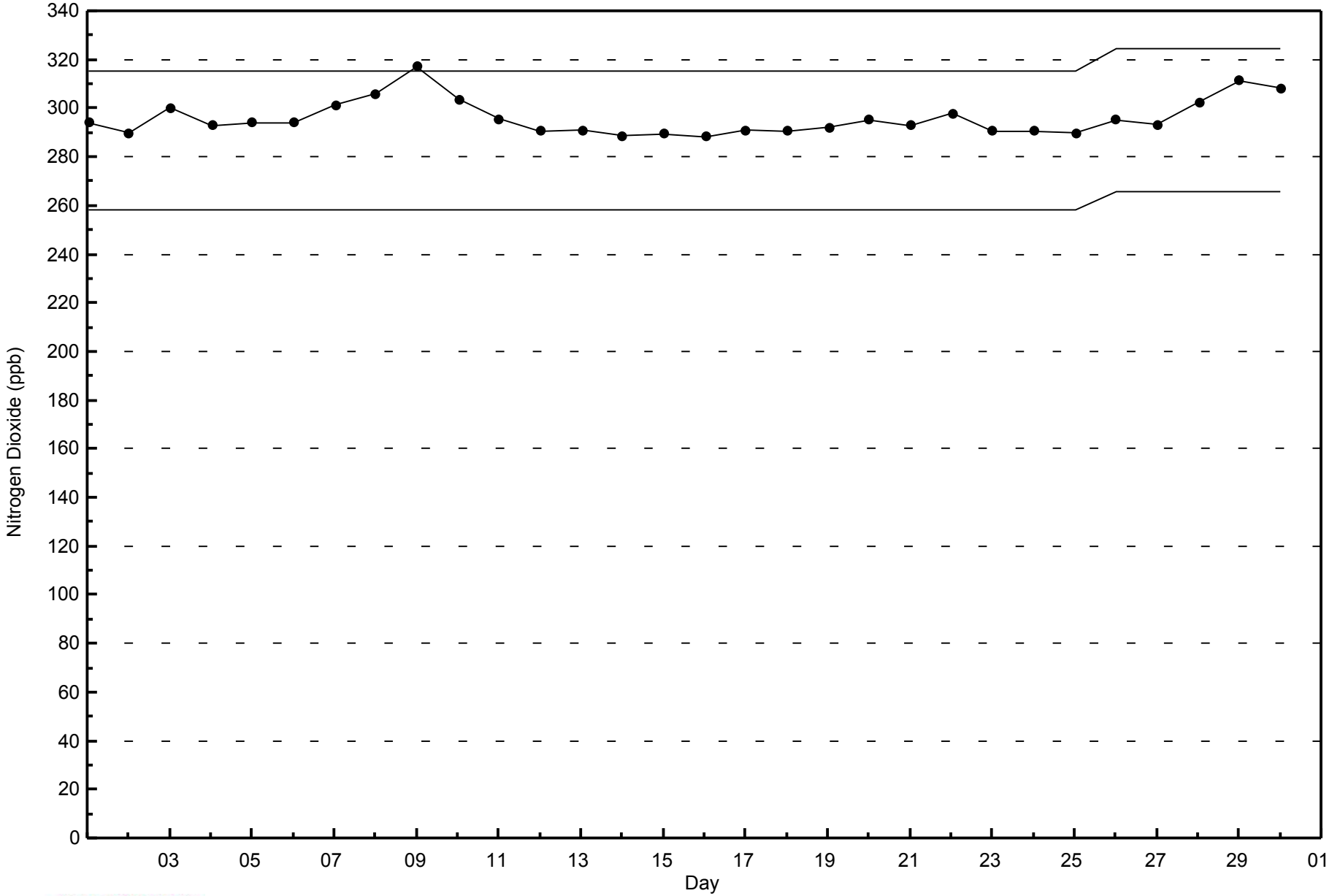
AURORA ATMOSPHERICS INC.

WBEA NETWORK

Span Responses

Nitrogen Dioxide (NO_2) - ppb

Shell Muskeg River - April 2014



AURORA ATMOSPHERICS INC.

Wood Buffalo Environmental Association

Summary of Hour Averages

Nitrogen Oxides (NO_X) - ppb

Shell Muskeg River - April 2014

Maximum Value: 112 ppb on Apr 20 11:00

Maximum Daily Average: 30.0 ppb on Apr 15

Minimum Value: 0 ppb on Apr 25 18:00

Minimum Daily Average: 0.9 ppb on Apr 17

Maximum Diurnal Average: 16.9 ppb at hour 11

Minimum Diurnal Average: 9.4 ppb at hour 19

Monthly Average: 13.4 ppb

Percentiles: $P_1 = 0$ $P_{10} = 1$ $Q_1 = 2$ Median = 8 $Q_3 = 20$ $P_{90} = 35$ $P_{99} = 59$

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-Apr	Z	8	7	29	7	6	22	8	30	14	9	13	27	27	21	12	14	15	4	5	6	7	19	35	15.1	35
2-Apr	Z	32	28	36	24	16	23	7	7	30	30	30	29	25	29	30	27	26	27	24	13	9	15	21	23.4	36
3-Apr	Z	56	50	18	18	7	7	21	20	35	33	20	35	54	45	46	41	37	14	3	1	1	0	4	24.5	56
4-Apr	Z	1	1	1	1	1	1	1	1	2	4	7	10	9	5	7	10	9	10	5	8	12	14	23	6.3	23
5-Apr	Z	11	10	12	4	7	6	17	46	15	18	17	20	14	4	6	5	4	8	25	30	11	7	13	13.5	46
6-Apr	Z	8	7	8	7	11	21	41	25	21	17	14	21	15	7	8	13	26	21	7	12	9	17	18	15.5	41
7-Apr	Z	12	16	23	24	18	13	14	15	9	25	15	16	5	8	3	1	1	3	4	4	11	11	13	11.5	25
8-Apr	Z	7	9	11	15	20	18	13	9	9	4	2	1	1	2	3	1	1	1	1	1	23	9	11	7.6	23
9-Apr	Z	5	9	3	5	5	2	11	4	12	10	9	14	16	19	8	16	6	6	20	4	9	30	37	11.3	37
10-Apr	Z	26	26	8	14	20	14	1	4	9	7	3	4	26	22	29	30	14	3	4	4	3	1	4	12.0	30
11-Apr	Z	8	6	3	2	3	3	4	12	29	33	26	47	50	39	47	47	25	29	23	24	25	34	57	25.0	57
12-Apr	Z	25	11	8	7	9	12	9	11	13	4	0	18	16	20	15	17	16	19	34	50	35	36	35	18.2	50
13-Apr	Z	19	23	39	36	43	36	25	24	32	25	20	13	23	13	5	4	8	9	5	6	12	8	7	19.0	43
14-Apr	Z	0	1	1	1	1	1	3	10	13	14	11	5	5	7	5	5	5	3	4	45	27	34	18	9.5	45
15-Apr	Z	42	16	24	6	6	2	7	8	6	19	31	25	28	39	45	60	52	58	63	53	55	34	8	30.0	63
16-Apr	Z	3	2	4	3	17	10	7	7	4	6	18	25	3	1	1	1	1	1	1	1	1	1	3	5.1	25
17-Apr	Z	0	1	1	1	1	1	1	1	1	1	1	1	1	0	1	1	1	1	1	1	1	0	5	0.9	5
18-Apr	Z	2	2	4	2	2	10	9	13	6	1	1	1	1	1	1	0	1	1	2	2	3	2	6	3.1	13
19-Apr	Z	22	30	28	34	29	51	38	15	13	14	13	6	3	3	3	2	2	2	1	1	2	4	13	14.3	51
20-Apr	Z	10	6	12	16	26	38	13	20	70	112	66	38	7	5	5	12	7	2	10	16	16	10	19	23.3	112
21-Apr	Z	43	33	23	31	40	38	15	35	40	27	7	14	6	7	26	36	28	34	43	17	13	23	31	26.5	43
22-Apr	Z	41	35	47	60	35	33	48	50	30	36	5	1	2	2	2	3	2	1	2	5	3	7	9	20.0	60
23-Apr	Z	10	25	32	17	31	12	19	14	13	2	3	1	3	4	3	3	1	1	3	5	7	8	7	9.7	32
24-Apr	Z	5	4	1	4	1	3	1	1	C	C	C	C	C	15	5	3	3	4	7	4	2	1	5	3.8	15
25-Apr	Z	2	10	15	11	7	4	1	11	10	7	6	17	5	1	3	2	0	0	1	1	0	2	4	5.2	17
26-Apr	Z	2	1	3	1	1	1	2	4	3	2	2	1	0	0	0	1	1	1	1	1	0	0	3	1.4	4
27-Apr	Z	1	1	1	0	0	3	2	4	1	1	1	1	0	1	1	0	1	1	1	1	1	1	4	1.2	4
28-Apr	Z	1	3	1	5	10	5	10	9	10	13	15	14	12	11	16	16	8	9	9	5	1	1	3	8.1	16
29-Apr	Z	2	1	0	1	8	25	18	13	10	4	4	1	1	2	1	1	3	4	50	70	36	31	34	14.0	70
30-Apr	Z	18	18	13	40	55	83	53	37	20	11	5	2	1	2	2	3	3	3	8	16	27	42	25	21.2	83
	--	14.1	13.0	13.6	13.2	14.6	16.6	14.1	15.4	16.5	16.9	12.6	14.2	12.4	11.2	11.2	12.5	10.2	9.4	12.2	13.5	12.0	13.5	15.9	Diurnal Average	
	--	56	50	47	60	55	83	53	50	70	112	66	47	54	45	47	60	52	58	63	70	55	42	57	Diurnal Maximum	

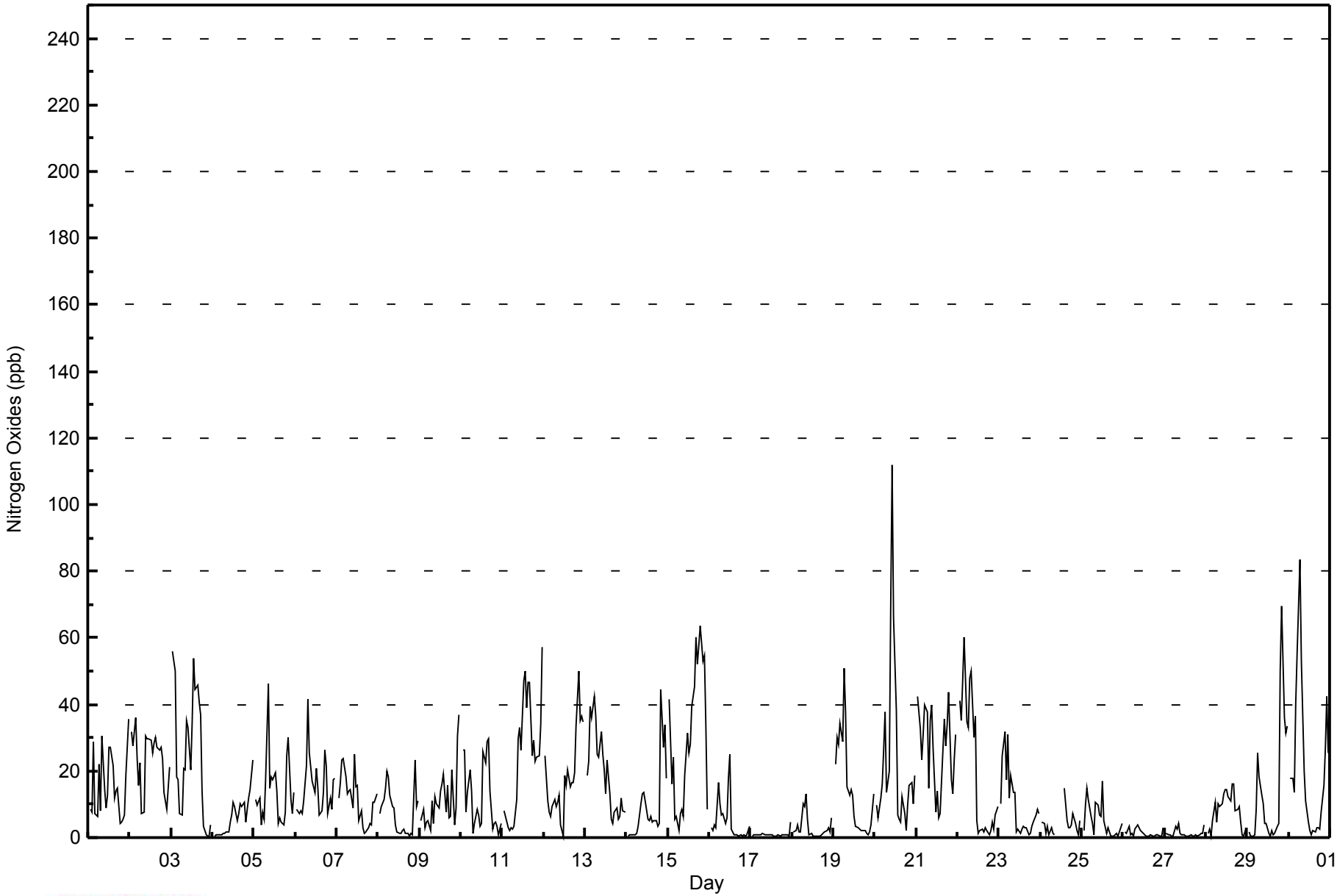
Z - zerospan C - Calibration

WBEA NETWORK

Hourly Averages

Nitrogen Oxides (NO_X) - ppb

Shell Muskeg River - April 2014



AURORA ATMOSPHERICS INC.

Concentration Ranges (ppb)	Number of Hours	%	Cumulative %
0 - 20	522	76.20	76.20
21 - 40	122	17.81	94.01
11 - 80	39	5.69	99.71
81 - 159	2	0.29	100.00
> 159	0	0.00	100.00

Total Number of Valid Hours: 685

Total Number of Hours: 720

WBEA NETWORK

Frequency Distribution

Nitrogen Oxides (NO_X) - ppb

Shell Muskeg River - April 2014

Concentration Ranges (ppb)	Wind Direction																
	N	NNE	NE	ENE	E	ESE	SE	SSE	S	SSW	SW	WSW	W	WNW	NW	NNW	**Totals**
0 - 20	4	4	90	41	44	32	48	75	70	44	27	16	6	11	5	5	522
21 - 40	11	29	41	2	1	3	1	3	7	12	0	1	2	2	3	3	121
11 - 80	2	16	4	1	0	1	1	0	3	2	1	0	0	1	4	3	39
81 - 159	0	0	0	0	0	0	0	0	0	1	0	0	0	0	0	1	2
> 159	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Totals	17	49	135	44	45	36	50	78	80	59	28	17	8	14	12	12	684

Total Number of Valid Hours: 684

Total Number of Hours: 720

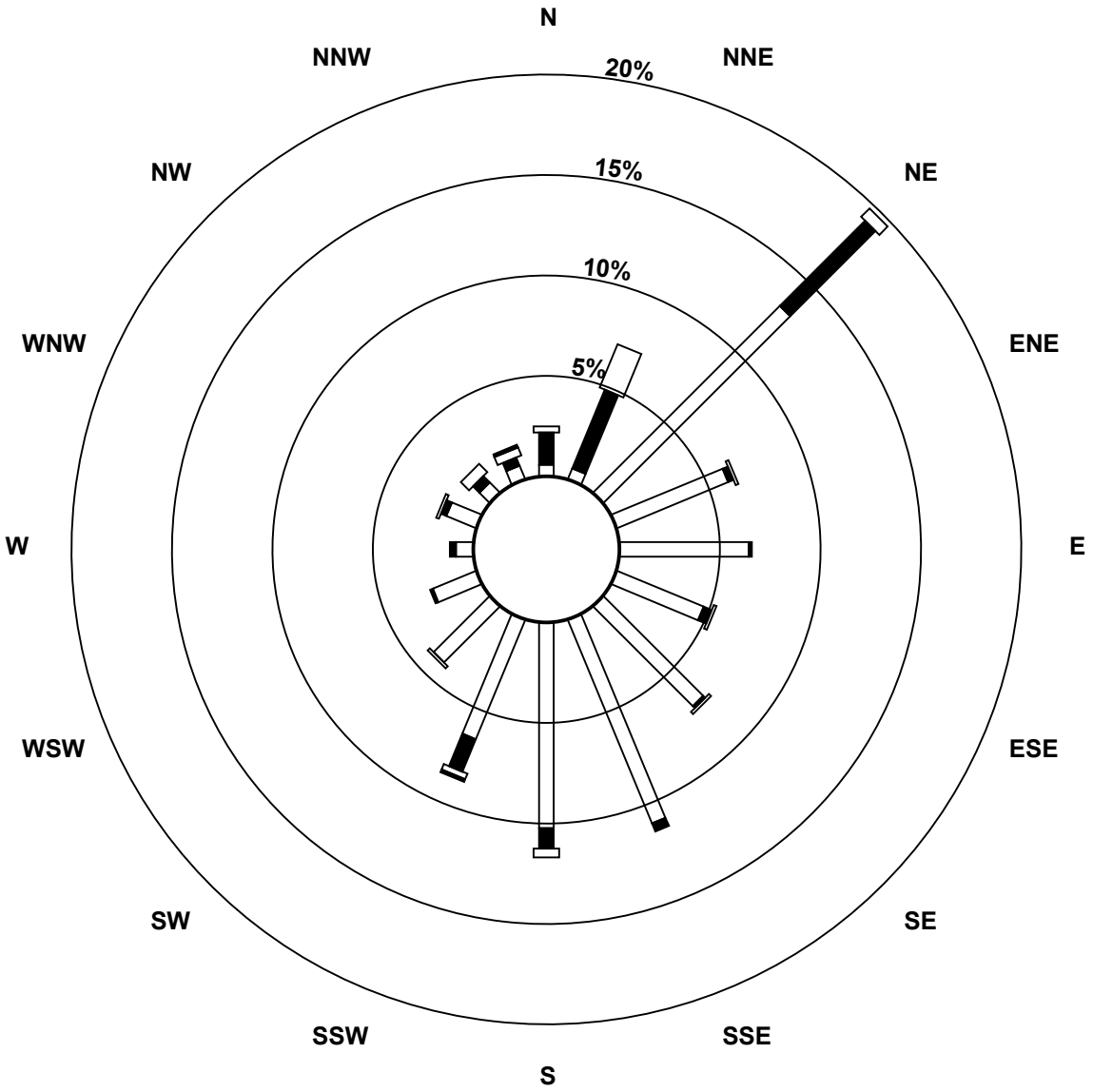
AURORA ATMOSPHERICS INC.

Wood Buffalo Environmental Association

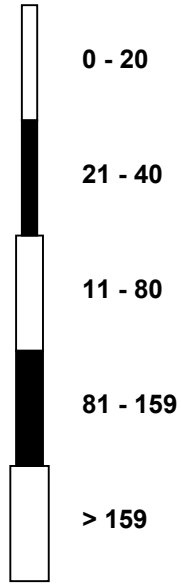
Wind Rose Apr 2014

Nitrogen Oxides (NO_X) - ppb

Shell Muskeg River (AMS 16)



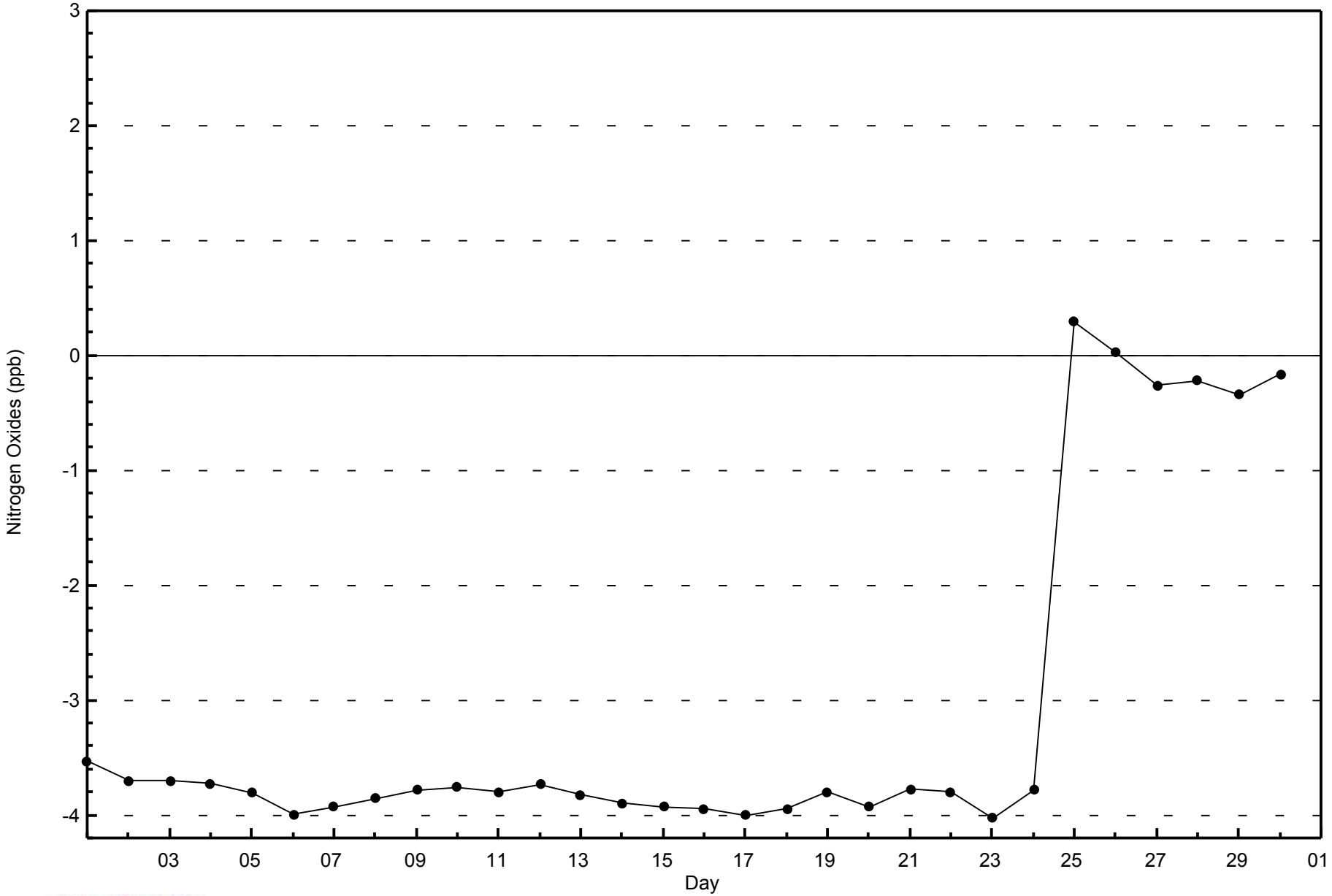
Classes (ppb)



Total Number of Valid Hours: 684

Wood Buffalo Environmental Association
Zero Responses

Nitrogen Oxides (NO_X) - ppb
Shell Muskeg River - April 2014



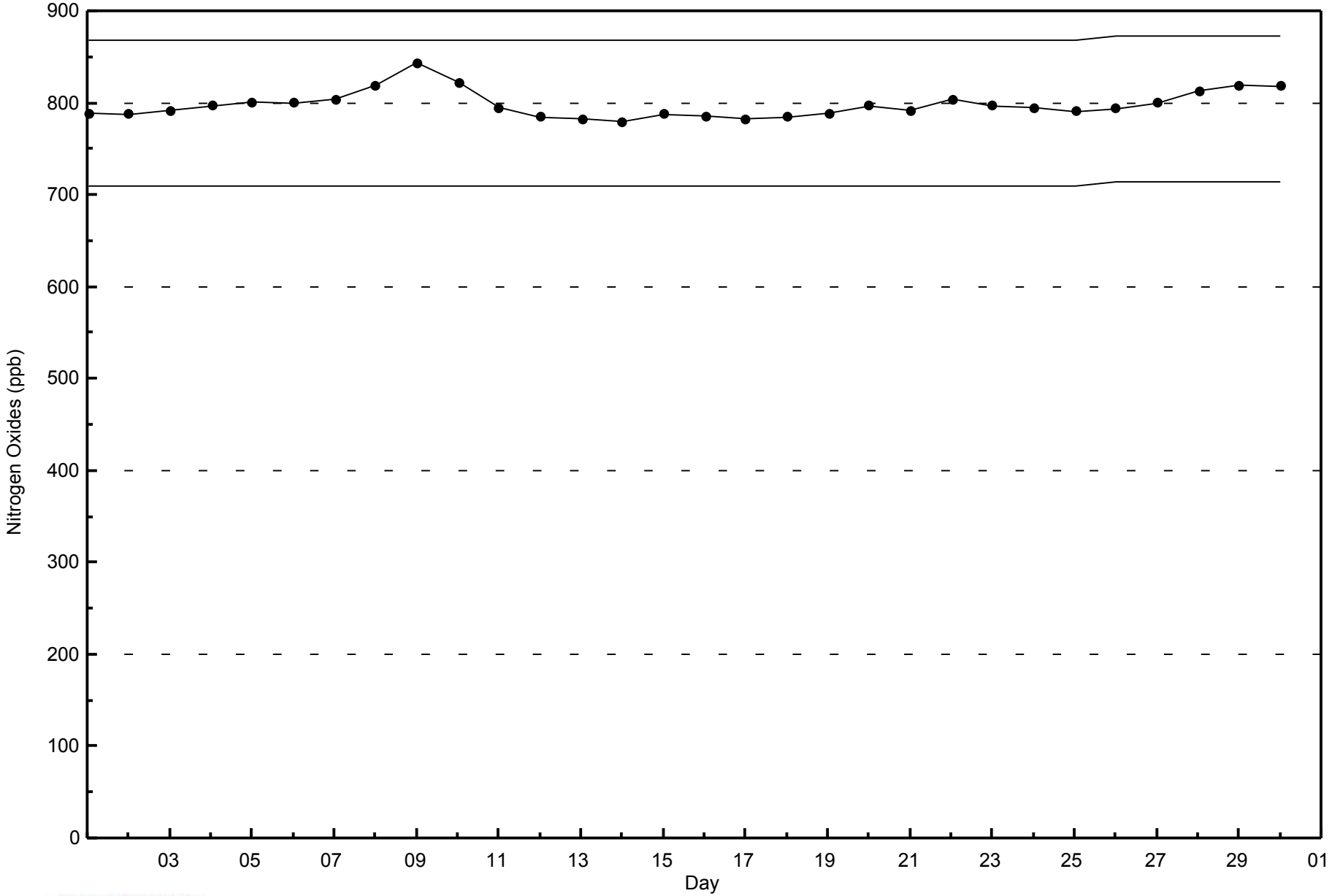
AURORA
ATMOSPHERICS INC.

WBEA NETWORK

Span Responses

Nitrogen Oxides (NO_X) - ppb

Shell Muskeg River - April 2014



AURORA ATMOSPHERICS INC.

Wood Buffalo Environmental Association

Summary of Hour Averages

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

Shell Muskeg River - April 2014

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

Maximum Value: 38.1 $\mu g/m^3$ on Apr 29 21:00

Maximum Daily Average: 9.6 $\mu g/m^3$ on Apr 30

Minimum Value: 0.8 $\mu g/m^3$ on Apr 7 10:00

Minimum Daily Average: 1.5 $\mu g/m^3$ on Apr 27

Maximum Diurnal Average: 7.6 $\mu g/m^3$ at hour 21

Minimum Diurnal Average: 4.0 $\mu g/m^3$ at hour 12

Monthly Average: 5.41 $\mu g/m^3$

Percentiles: P_1 = 1.1 P_{10} = 2.0 Q_1 = 2.9 Median = 4.5 Q_3 = 6.8 P_{90} = 9.7 P_{99} = 17.1

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-Apr	8.9	11.2	10.3	16.9	8.5	5.1	10.0	8.2	9.0	5.6	4.2	3.7	4.6	2.5	2.1	1.9	2.2	3.1	2.8	12.8	16.7	5.3	5.8	4.9	6.9	16.9
2-Apr	5.1	5.7	4.4	5.9	6.3	3.6	6.4	3.5	3.2	3.8	3.5	4.5	3.9	5.1	7.5	5.4	3.9	6.1	12.7	8.9	6.9	3.0	2.5	5.0	5.3	12.7
3-Apr	3.9	7.7	7.4	5.3	3.0	2.2	2.8	5.7	6.7	8.6	3.9	6.4	8.1	10.8	15.2	13.7	16.5	15.5	11.8	5.0	3.1	3.0	3.1	2.9	7.2	16.5
4-Apr	3.0	11.1	4.1	8.9	4.1	5.3	4.8	4.2	3.0	1.9	3.3	3.2	2.1	3.0	4.7	7.5	6.4	6.1	7.0	6.5	6.9	7.7	9.5	12.9	5.7	12.9
5-Apr	11.0	7.4	7.7	8.4	6.2	9.3	11.3	9.1	11.6	6.1	4.2	4.2	3.6	3.0	2.7	3.5	4.2	4.0	4.1	4.2	4.3	4.1	4.0	4.7	6.0	11.6
6-Apr	4.6	4.5	4.6	4.7	6.1	16.1	21.5	13.5	8.1	6.8	5.0	2.3	2.7	3.1	0.9	1.1	2.3	2.5	3.1	4.2	6.0	6.2	7.7	7.3	6.0	21.5
7-Apr	6.3	5.6	7.6	9.7	11.6	6.7	1.7	1.1	1.1	0.8	2.8	3.3	3.5	2.3	4.1	2.9	2.9	3.2	5.3	5.7	2.1	2.4	2.1	1.8	4.0	11.6
8-Apr	2.0	2.2	2.0	2.7	2.8	2.0	2.5	3.8	2.4	2.0	3.3	2.4	2.2	4.1	6.6	6.5	13.8	9.5	6.7	5.5	5.7	20.5	5.0	1.4	4.9	20.5
9-Apr	1.3	2.6	2.9	1.5	2.6	3.1	2.9	2.2	1.3	1.2	1.2	1.3	1.9	2.6	2.6	1.6	1.7	2.1	3.7	3.0	2.1	5.0	10.1	4.4	2.7	10.1
10-Apr	1.6	2.0	3.8	5.7	7.3	8.2	8.3	7.7	6.6	5.8	6.0	6.2	5.2	4.5	4.2	3.5	3.0	2.6	3.1	3.7	4.5	3.8	3.3	3.4	4.8	8.3
11-Apr	4.6	4.2	3.9	3.6	3.7	3.7	3.6	3.3	3.7	3.2	2.1	2.1	2.2	2.2	1.9	3.1	5.6	7.0	9.7	8.9	7.6	10.7	15.3	26.4	5.9	26.4
12-Apr	31.2	18.4	5.9	4.7	6.6	10.4	14.1	12.4	6.0	7.2	3.2	3.2	5.5	5.6	4.4	9.6	5.1	3.9	4.5	5.8	6.5	10.6	10.0	7.4	8.4	31.2
13-Apr	6.2	7.8	8.8	13.7	12.4	10.8	13.9	7.9	8.4	5.0	4.0	4.1	4.0	4.3	5.2	4.0	7.6	6.6	8.0	12.5	14.8	13.5	12.7	7.2	8.5	14.8
14-Apr	3.3	2.8	3.0	3.3	3.5	3.6	3.9	3.7	4.1	3.8	3.8	4.0	4.0	4.2	5.0	6.0	6.9	7.9	6.1	5.9	13.3	5.5	5.0	5.4	4.9	13.3
15-Apr	3.7	1.4	1.4	2.3	3.8	4.5	3.8	3.7	1.8	2.5	1.8	4.4	3.9	5.5	6.4	6.1	12.9	8.5	6.8	7.1	7.8	6.9	7.0	6.9	5.0	12.9
16-Apr	7.0	5.0	4.8	4.8	5.3	6.4	7.1	5.2	4.6	4.0	9.7	7.9	6.7	3.2	2.2	2.3	2.8	2.6	2.8	3.9	5.3	4.9	4.3	4.0	4.9	9.7
17-Apr	4.0	4.2	4.5	4.5	4.6	5.3	4.4	3.8	2.5	2.2	2.3	2.3	2.2	2.1	1.9	1.9	2.1	2.6	3.6	4.5	5.3	6.6	6.0	7.5	3.8	7.5
18-Apr	9.0	4.6	3.2	3.0	2.2	1.9	3.1	3.7	2.1	1.9	1.9	2.3	3.4	4.0	3.9	3.3	2.7	3.6	2.3	1.4	2.0	2.0	2.0	3.1	3.0	9.0
19-Apr	2.8	4.0	6.8	7.7	5.6	6.4	5.9	3.4	4.7	4.5	6.0	4.2	3.7	4.5	3.5	8.6	5.4	4.6	3.5	3.9	5.6	2.7	3.7	3.9	4.8	8.6
20-Apr	4.7	8.1	8.5	10.3	9.3	7.3	4.0	1.8	2.8	4.0	7.6	7.1	6.2	5.0	5.0	5.1	5.3	6.0	9.4	13.1	14.4	14.5	9.2	9.1	7.4	14.5
21-Apr	11.0	10.5	6.2	3.0	3.7	4.5	3.3	1.6	2.5	5.2	7.5	8.3	7.3	3.9	5.2	5.2	5.1	5.2	6.3	9.0	8.6	7.0	6.9	7.0	6.0	11.0
22-Apr	6.7	7.2	8.6	9.9	9.1	9.6	10.0	5.4	3.3	4.3	5.0	3.3	3.5	3.7	3.8	4.3	5.9	5.5	4.1	1.9	1.7	3.3	5.2	3.2	5.3	10.0
23-Apr	2.0	2.2	4.5	2.8	2.6	3.9	2.8	4.1	3.2	2.2	2.5	4.1	4.9	6.0	5.2	7.4	8.0	6.9	4.1	4.7	7.0	5.7	5.6	6.3	4.5	8.0
24-Apr	7.3	5.4	3.6	3.5	4.0	1.9	3.1	4.6	3.5	2.3	2.5	4.0	M	3.7	4.2	2.2	2.4	5.0	7.3	8.7	8.9	8.0	5.3	5.6	4.7	8.9
25-Apr	4.1	4.1	5.9	8.7	7.9	6.2	5.5	2.5	4.4	5.4	3.9	4.8	6.2	2.9	3.0	3.1	2.6	2.2	2.5	2.8	1.4	2.0	2.6	1.5	4.0	8.7
26-Apr	2.0	3.3	1.8	1.7	2.1	2.4	3.1	1.6	1.6	2.1	2.0	1.7	1.7	3.6	6.4	5.9	5.0	5.7	6.5	5.7	5.4	5.4	2.9	3.2	3.5	6.5
27-Apr	2.6	1.5	1.3	1.3	2.0	2.9	1.8	1.7	1.6	1.1	1.1	1.1	1.1	1.1	1.1	1.1	1.0	1.1	1.2	1.2	2.1	1.9	1.7	1.8	1.5	2.9
28-Apr	2.2	1.8	1.9	2.0	3.4	4.6	3.7	7.2	12.5	15.8	6.3	4.5	4.2	5.4	5.3	6.3	7.1	4.5	4.5	4.9	3.2	1.9	2.0	3.2	4.9	15.8
29-Apr	2.6	1.6	2.5	3.5	2.8	2.9	2.6	3.1	3.3	3.3	2.2	4.6	4.4	4.8	7.5	5.7	7.7	8.1	9.6	35.8	38.1	16.0	12.9	12.0	8.2	38.1
30-Apr	8.2	10.3	8.3	5.4	8.3	6.9	8.6	9.4	9.4	18.1	15.4	6.0	7.1	5.8	7.7	6.5	12.2	15.9	10.7	10.0	10.0	7.2	11.2	11.8	9.6	18.1
	5.8	5.6	5.0	5.6	5.4	5.6	6.0	5.0	4.6	4.7	4.3	4.0	4.1	4.1	4.7	4.8	5.7	5.6	5.8	7.0	7.6	6.6	6.2	6.2	Diurnal Average	
	31.2	18.4	10.3	16.9	12.4	16.1	21.5	13.5	12.5	18.1	15.4	8.3	8.1	10.8	15.2	13.7	16.5	15.9	12.7	35.8	38.1	20.5	15.3	26.4	Diurnal Maximum	

M - Maintenance

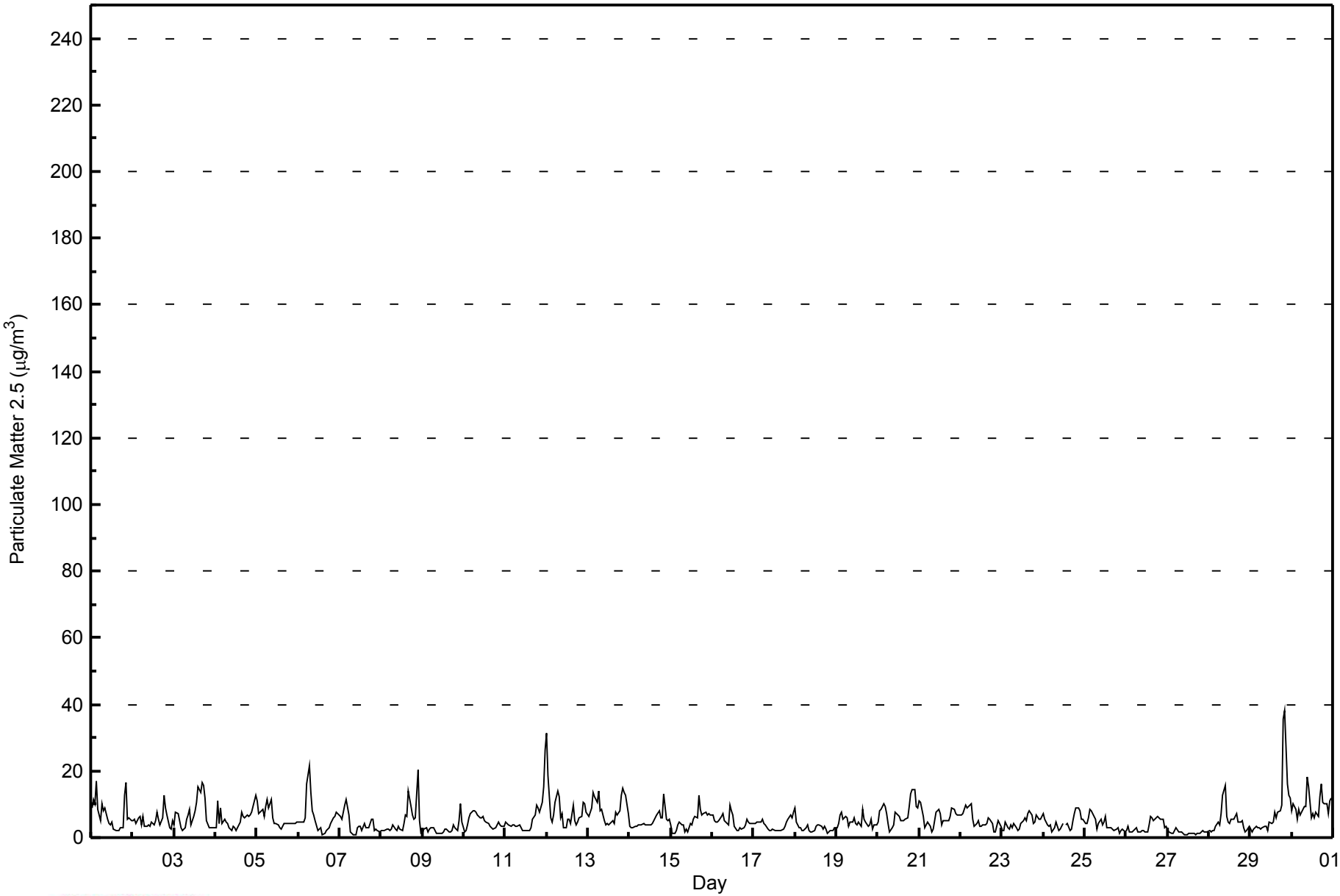
Alberta Ambient Air Quality Objectives (AAAQO): 24-hr 30 $\mu g/m^3$

WBEA NETWORK

Hourly Averages

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

Shell Muskeg River - April 2014



AURORA ATMOSPHERICS INC.

Concentration Ranges ($\mu g/m^3$)	Number of Hours	%	Cumulative %
1 - 5	451	62.73	62.73
6 - 15	250	34.77	97.50
16 - 25	12	1.67	99.17
26 - 80	4	0.56	99.72
> 81.0	0	0.00	99.72

Total Number of Valid Hours: 719

Total Number of Hours: 720

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

Shell Muskeg River - April 2014

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**
1 - 5	2	28	98	35	28	24	36	72	57	29	20	8	4	2	4	3	450
6 - 15	14	25	39	13	19	15	12	12	25	28	10	9	4	11	5	9	250
16 - 25	1	0	3	0	0	0	1	1	1	3	0	0	0	2	0	0	12
26 - 80	0	0	0	0	0	0	0	0	0	0	0	1	0	0	3	0	4
> 81.0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Totals	17	53	140	48	47	39	49	85	83	60	30	18	8	15	12	12	716

Total Number of Valid Hours: 718

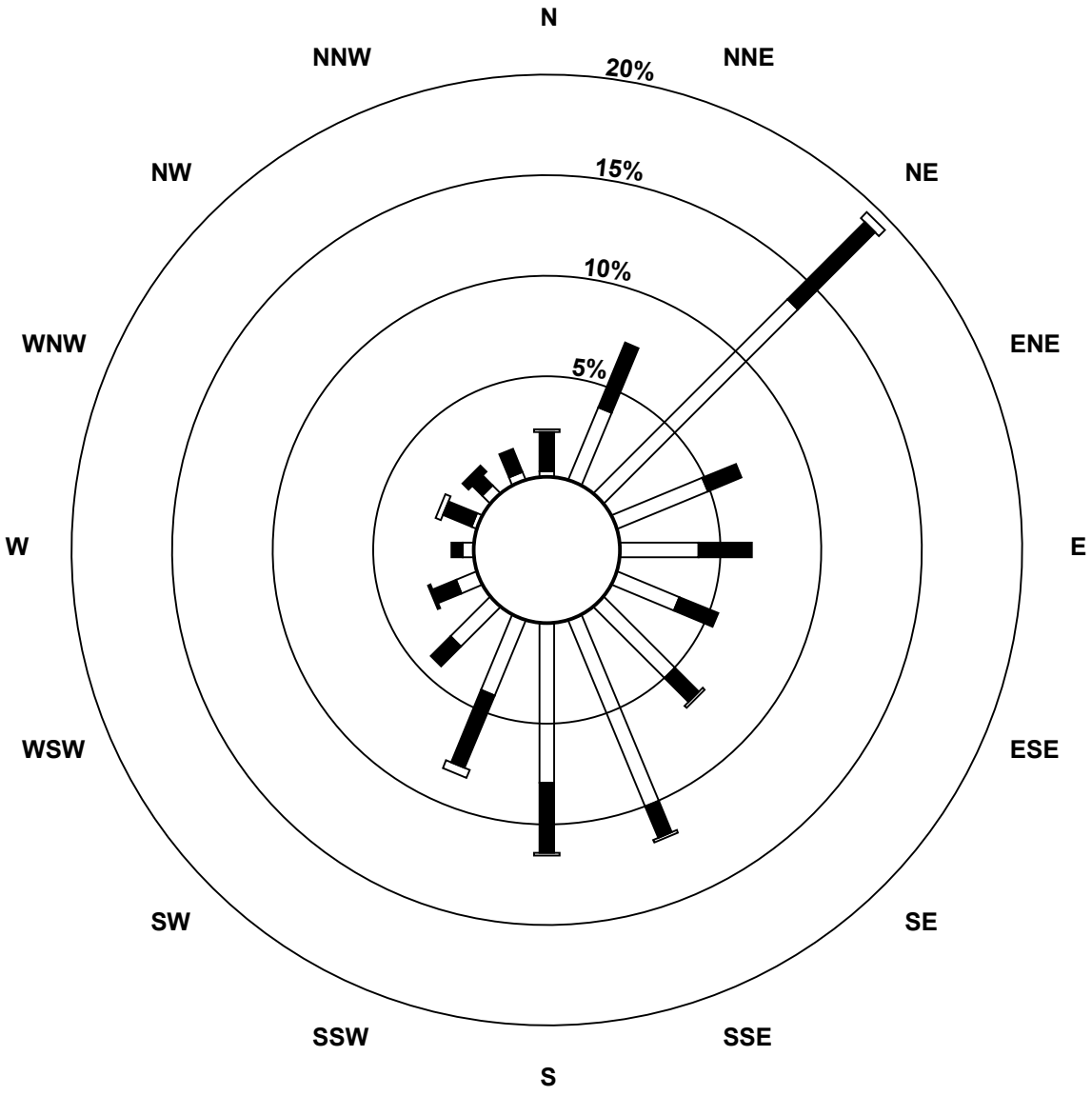
Total Number of Hours: 720

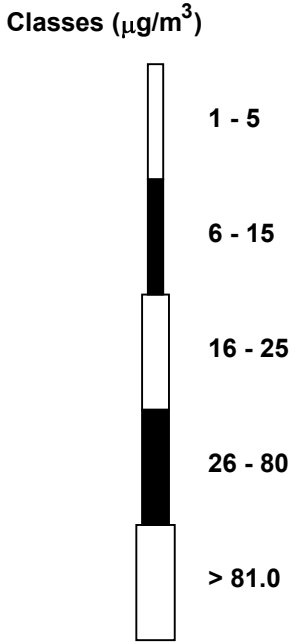
Wood Buffalo Environmental Association

Wind Rose Apr 2014

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

Shell Muskeg River (AMS 16)





Total Number of Valid Hours: 718

Maximum Value: 99 % on Apr 28 07:00

Maximum Daily Average: 87.0 % on Apr 27

Minimum Value: 17 % on Apr 30 15:00

Minimum Daily Average: 42.8 % on Apr 17

Maximum Diurnal Average: 77.6 % at hour 6

Minimum Diurnal Average: 44.5 % at hour 17

Monthly Average: 60.3 %

Percentiles: P_1 = 24 P_{10} = 36 Q_1 = 48 Median = 59 Q_3 = 74 P_{90} = 87 P_{99} = 97

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

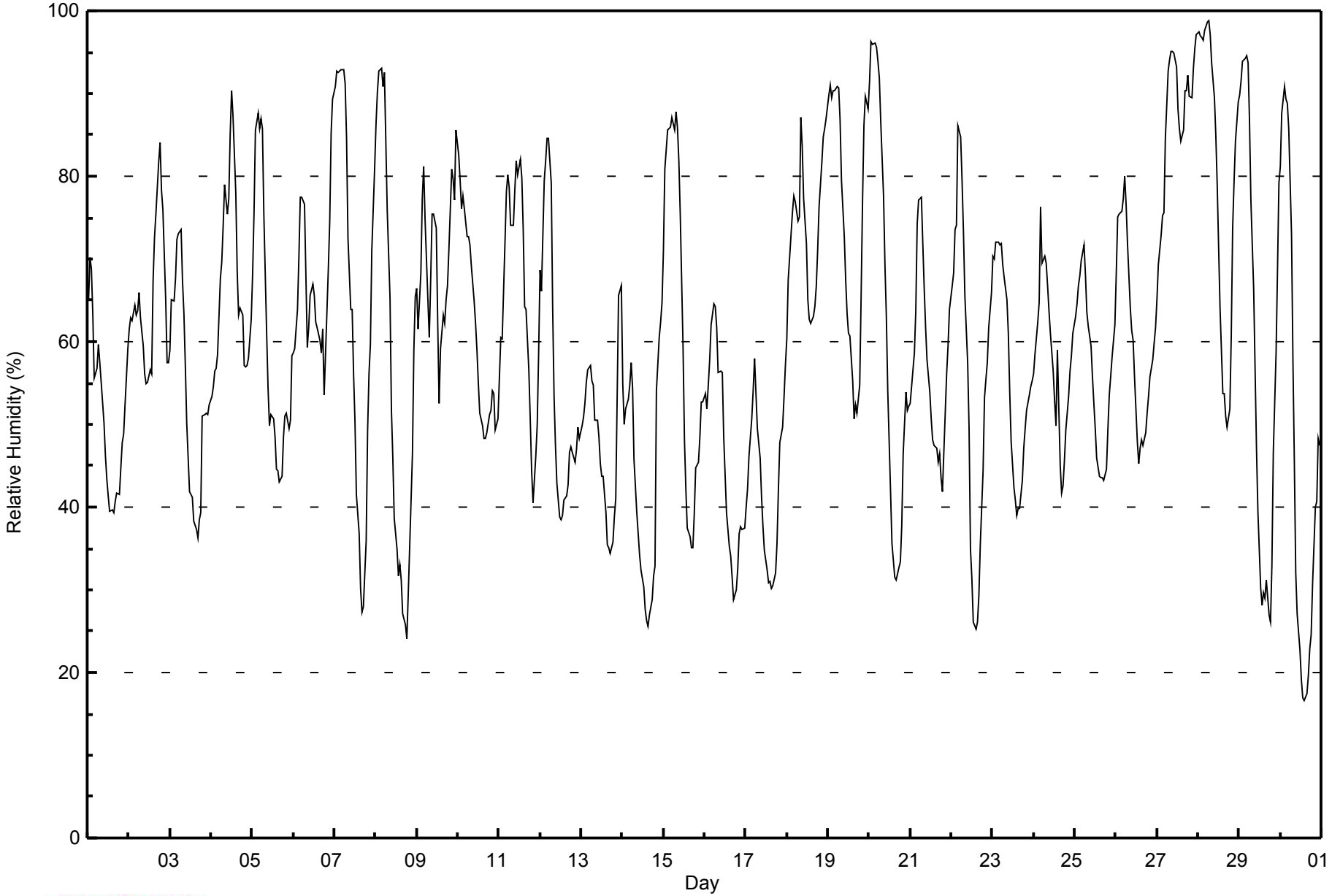
Day	Hourly Period Ending At (MST)																								Daily	Daily
	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24	Average	Maximum
1-Apr	65	70	69	63	56	57	60	58	55	50	46	43	41	39	40	39	41	42	41	45	48	49	52	59	51.2	70
2-Apr	62	63	63	64	63	64	66	63	59	56	55	55	57	56	67	73	75	82	84	78	76	65	57	57	65.0	84
3-Apr	59	65	65	68	72	73	73	67	63	57	50	42	42	41	38	37	36	38	39	51	51	51	51	52	53.5	73
4-Apr	53	55	56	57	59	68	70	74	79	75	77	85	90	87	78	68	63	64	63	57	57	57	58	63	67.3	90
5-Apr	68	76	86	88	86	87	86	75	61	54	50	51	51	48	45	44	43	44	48	51	51	49	51	58	60.5	88
6-Apr	59	59	64	70	77	77	77	68	59	62	66	67	66	62	62	60	59	62	54	59	69	75	85	89	66.9	89
7-Apr	91	93	93	93	93	93	91	85	73	64	64	56	50	41	37	30	27	28	36	49	56	60	71	81	64.7	93
8-Apr	86	90	93	93	91	92	84	76	65	52	46	39	35	32	33	31	27	26	24	30	35	46	59	65	56.3	93
9-Apr	66	62	68	77	81	75	65	61	67	75	75	74	62	52	59	63	62	65	67	71	81	80	77	86	69.7	86
10-Apr	82	80	76	78	76	73	73	72	69	65	62	59	55	51	50	48	48	49	51	52	54	54	49	51	61.5	82
11-Apr	56	61	60	72	78	80	79	74	74	78	82	80	82	80	74	64	64	57	51	44	41	46	50	59	66.0	82
12-Apr	69	66	79	82	85	85	79	64	53	48	43	39	38	39	41	41	43	47	47	47	45	47	50	48	55.2	85
13-Apr	50	51	53	55	57	57	55	55	50	51	48	45	44	44	39	35	35	34	36	39	41	53	66	67	48.3	67
14-Apr	55	50	52	53	55	58	54	46	39	37	34	32	30	28	26	26	27	29	32	33	54	60	62	65	43.2	65
15-Apr	71	81	86	86	86	87	86	88	86	82	75	59	48	42	37	37	35	35	39	45	45	48	53	53	62.1	88
16-Apr	54	52	55	58	62	65	64	62	56	56	56	48	44	39	35	34	32	29	30	32	37	38	37	37	46.4	65
17-Apr	40	42	46	51	54	58	54	49	46	41	38	35	32	31	31	30	31	32	36	42	48	50	53	57	42.8	58
18-Apr	60	68	73	76	78	77	75	75	87	84	77	72	65	63	62	63	64	67	71	76	82	85	86	87	73.8	87
19-Apr	90	91	90	90	90	91	91	87	80	73	67	63	61	61	55	51	52	51	55	65	77	86	90	88	74.8	91
20-Apr	91	96	96	96	96	94	92	87	78	69	63	54	42	36	33	31	31	33	33	38	46	54	52	52	62.2	96
21-Apr	53	55	59	64	74	77	77	72	66	62	58	54	51	48	48	47	45	46	44	42	51	56	60	64	57.1	77
22-Apr	67	68	74	74	86	85	79	73	66	58	49	35	31	26	25	26	29	35	44	53	55	57	62	66	55.2	86
23-Apr	70	70	72	72	72	72	69	68	65	61	54	48	42	41	39	40	40	43	47	50	52	54	55	55	56.2	72
24-Apr	56	58	62	65	76	70	70	70	67	64	61	56	53	50	59	45	42	42	46	49	53	56	58	61	57.9	76
25-Apr	63	65	67	68	70	72	68	64	62	59	56	53	50	46	44	44	44	43	45	49	54	56	58	62	56.6	72
26-Apr	68	75	75	76	77	80	77	72	64	61	60	56	48	45	47	48	47	49	51	53	56	58	60	62	61.1	80
27-Apr	65	69	73	75	76	85	93	94	95	95	95	93	88	86	84	86	90	90	92	90	90	93	95	97	87.0	97
28-Apr	98	97	97	97	98	99	99	97	94	89	85	79	71	64	54	54	51	50	52	61	74	79	84	89	79.6	99
29-Apr	90	92	94	94	95	94	87	77	66	57	47	39	30	28	30	29	31	27	26	33	47	59	69	79	59.1	95
30-Apr	81	88	91	89	89	86	73	58	45	32	27	23	19	17	17	17	20	23	25	31	40	41	48	48	46.9	91
	67.9	70.2	72.8	74.8	76.8	77.6	75.5	70.9	66.4	62.2	58.9	54.5	50.6	47.5	46.3	44.8	44.5	45.4	46.9	50.5	55.5	58.7	62.0	65.2	Diurnal Average	
	98	97	97	97	98	99	99	97	95	95	95	93	90	87	84	86	90	90	92	90	90	93	95	97	Diurnal Maximum	

WBEA NETWORK

Hourly Averages

Relative Humidity (RH) - %

Shell Muskeg River - April 2014



AURORA
ATMOSPHERICS INC.

Concentration Ranges (%)	Number of Hours	%	Cumulative %
0 - 20	5	0.69	0.69
20 - 40	102	14.17	14.86
40 - 60	267	37.08	51.94
60 - 80	226	31.39	83.33
80 - 100	120	16.67	100.00

Total Number of Valid Hours: 720

Total Number of Hours: 720

Maximum Value: 22.0 C on Apr 30 16:00

Maximum Daily Average: 12.9 C on Apr 30

Minimum Value: -20.5 C on Apr 3 06:00

Minimum Daily Average: -12.8 C on Apr 2

Maximum Diurnal Average: 6.1 C at hour 16

Minimum Diurnal Average: -4.4 C at hour 6

Monthly Average: 0.97 C

Percentiles: P_1 = -15.9 P_{10} = -9.4 Q_1 = -4.3 Median = 1.4 Q_3 = 5.8 P_{90} = 10.7 P_{99} = 19.3

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

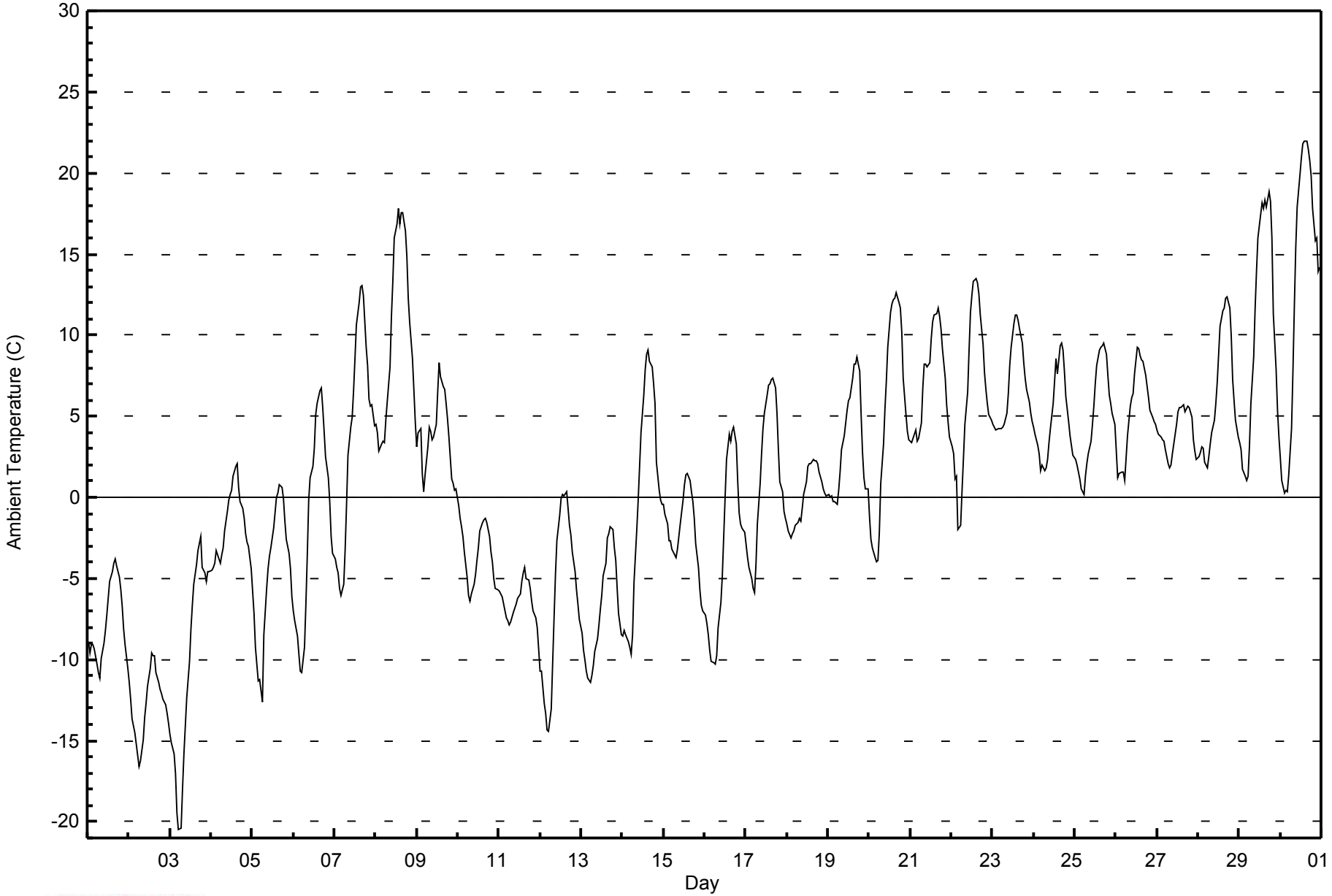
Day	Hourly Period Ending At (MST)																								Daily	Daily
	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24	Average	Maximum
1-Apr	-8.9	-9.6	-9.1	-9.0	-9.4	-10.3	-10.8	-11.2	-9.9	-9.0	-8.2	-7.3	-6.2	-5.2	-4.6	-4.1	-3.8	-4.3	-4.9	-5.7	-6.7	-8.1	-9.1	-10.5	-7.7	-3.8
2-Apr	-11.4	-12.5	-13.6	-14.5	-15.2	-15.9	-16.6	-16.3	-14.9	-13.6	-12.7	-11.6	-10.5	-9.6	-9.8	-9.7	-10.8	-11.4	-11.8	-12.1	-12.5	-12.8	-13.3	-13.9	-12.8	-9.6
3-Apr	-14.6	-15.1	-15.8	-17.0	-19.4	-20.5	-20.4	-18.0	-15.8	-14.1	-12.4	-10.1	-8.1	-6.7	-5.3	-4.2	-3.3	-2.8	-2.4	-4.3	-4.7	-5.2	-4.6	-4.5	-10.4	-2.4
4-Apr	-4.5	-4.3	-4.1	-3.3	-3.6	-4.1	-3.6	-3.1	-2.1	-0.8	-0.2	0.2	0.4	1.3	1.9	2.1	0.6	-0.3	-0.7	-1.3	-2.2	-2.8	-3.0	-4.4	-1.7	2.1
5-Apr	-5.8	-7.2	-9.2	-11.3	-11.2	-11.9	-12.6	-8.4	-5.6	-4.4	-3.6	-3.1	-1.9	-0.9	0.0	0.3	0.8	0.6	-0.1	-1.5	-2.6	-3.5	-4.4	-6.1	-4.7	0.8
6-Apr	-7.0	-7.6	-8.6	-9.7	-10.7	-10.8	-9.2	-6.6	-3.5	-0.2	1.2	1.9	3.0	5.1	5.8	6.6	6.8	5.5	4.1	2.5	1.2	-0.2	-2.4	-3.4	-1.5	6.8
7-Apr	-3.8	-4.3	-4.6	-5.6	-6.0	-5.3	-3.2	-0.4	2.6	4.3	5.0	6.6	8.5	10.6	12.0	13.0	13.0	12.4	9.2	8.1	6.1	5.7	5.7	4.4	3.9	13.0
8-Apr	4.5	4.0	2.8	3.3	3.4	3.4	4.7	5.9	8.0	11.1	13.3	16.0	16.9	17.8	16.9	17.6	17.5	16.4	14.9	12.3	10.8	8.5	6.7	4.7	10.1	17.8
9-Apr	3.1	4.0	4.3	1.5	0.3	1.4	3.2	4.4	4.1	3.6	3.7	4.5	6.5	8.3	7.4	6.8	6.7	5.8	4.8	3.7	1.1	0.8	0.5	0.5	3.8	8.3
10-Apr	-0.5	-1.3	-1.8	-2.4	-3.4	-4.9	-6.0	-6.4	-5.9	-5.4	-4.8	-3.9	-3.1	-2.1	-1.5	-1.4	-1.3	-1.5	-2.4	-3.4	-4.0	-5.0	-5.6	-5.7	-3.5	-0.5
11-Apr	-5.8	-6.0	-6.2	-7.0	-7.4	-7.6	-7.9	-7.7	-7.1	-6.8	-6.5	-6.3	-5.9	-5.2	-4.7	-4.4	-5.0	-5.1	-5.7	-6.4	-7.0	-7.5	-8.0	-9.3	-6.5	-4.4
12-Apr	-10.7	-10.7	-12.7	-13.3	-14.3	-14.5	-13.0	-10.2	-7.5	-4.7	-2.7	-1.1	-0.1	0.2	0.0	0.3	-0.7	-1.7	-2.4	-3.4	-4.6	-5.7	-6.6	-7.5	-6.1	0.3
13-Apr	-8.4	-9.4	-10.0	-10.7	-11.2	-11.4	-11.0	-10.3	-9.5	-8.7	-7.9	-6.9	-6.0	-4.8	-4.1	-2.5	-2.2	-1.8	-2.0	-3.1	-3.9	-5.6	-7.2	-8.5	-7.0	-1.8
14-Apr	-8.5	-8.2	-8.5	-8.9	-9.2	-9.7	-8.5	-5.3	-2.0	-0.2	1.9	4.0	6.3	7.9	8.8	9.0	8.4	8.1	7.0	5.8	2.1	0.5	-0.1	-0.4	0.0	9.0
15-Apr	-0.4	-1.0	-1.7	-2.6	-2.7	-3.2	-3.5	-3.7	-3.2	-2.4	-1.6	-0.1	0.8	1.4	1.5	1.1	0.4	-0.2	-1.3	-2.8	-4.3	-5.7	-6.6	-7.0	-2.1	1.5
16-Apr	-7.2	-7.8	-8.5	-9.4	-10.1	-10.2	-10.3	-9.7	-8.0	-6.5	-4.9	-2.4	0.0	2.3	3.9	3.5	4.1	4.3	3.3	1.0	-0.9	-1.7	-1.9	-2.2	-3.3	4.3
17-Apr	-2.9	-3.7	-4.3	-5.0	-5.6	-5.9	-4.1	-1.6	0.8	2.7	4.2	5.2	6.3	6.9	7.0	7.3	7.4	6.8	5.2	3.0	1.0	0.3	-0.8	-1.3	1.2	7.4
18-Apr	-1.6	-2.1	-2.5	-2.3	-2.1	-1.7	-1.5	-1.3	-1.4	-0.7	0.2	1.0	1.9	2.0	2.0	2.3	2.3	2.3	2.1	1.6	1.0	0.5	0.3	0.1	0.1	2.3
19-Apr	0.2	0.0	0.1	-0.2	-0.2	-0.4	0.4	1.5	3.0	3.8	4.6	5.4	5.9	6.2	7.4	8.2	8.2	8.6	7.8	5.1	2.8	1.2	0.5	0.5	3.4	8.6
20-Apr	-1.2	-2.6	-3.1	-3.7	-3.9	-3.8	-2.2	0.9	3.3	5.5	7.2	9.3	11.4	11.9	12.2	12.3	12.6	12.0	11.7	10.2	7.4	5.1	4.1	3.5	5.0	12.6
21-Apr	3.4	3.3	3.9	4.1	3.5	3.6	4.6	6.8	8.2	8.2	8.1	8.3	9.7	10.8	11.2	11.4	11.7	11.1	10.4	9.1	7.4	5.7	4.6	3.7	7.2	11.7
22-Apr	3.1	2.7	1.1	1.3	-2.0	-1.8	0.4	2.4	4.5	6.5	9.1	11.4	12.5	13.3	13.5	13.2	12.5	11.2	9.4	7.7	6.6	5.8	5.1	4.8	6.4	13.5
23-Apr	4.5	4.3	4.2	4.3	4.2	4.3	4.3	4.5	5.2	6.4	8.2	9.3	10.7	11.3	11.3	10.9	10.4	9.5	8.3	7.4	6.7	5.9	5.2	4.7	6.9	11.3
24-Apr	4.4	3.9	3.2	2.7	1.6	2.0	1.7	1.8	2.4	3.4	4.2	5.8	7.1	8.6	7.6	9.3	9.5	9.1	7.8	6.2	4.7	3.8	3.2	2.6	4.9	9.5
25-Apr	2.3	2.0	1.5	1.1	0.5	0.1	1.3	2.1	2.7	3.5	4.5	5.6	7.0	8.1	9.1	9.3	9.3	9.5	8.8	7.5	6.4	5.8	5.2	4.5	4.9	9.5
26-Apr	2.8	1.2	1.5	1.6	1.5	1.1	2.4	3.8	5.6	6.1	6.4	7.6	9.3	9.1	8.7	8.4	8.4	7.5	6.8	6.1	5.4	4.9	4.7	4.5	5.2	9.3
27-Apr	4.2	3.9	3.7	3.6	3.5	2.9	2.1	1.8	2.0	2.7	3.3	4.5	5.3	5.5	5.5	5.7	5.3	5.4	5.6	5.5	4.9	3.5	2.9	2.3	4.0	5.7
28-Apr	2.5	2.8	3.1	3.0	2.2	1.8	2.5	3.3	4.0	4.7	5.8	7.1	8.8	10.5	11.5	11.6	12.3	12.4	11.7	9.9	7.3	5.9	4.8	3.7	6.4	12.4
29-Apr	3.4	2.9	1.8	1.3	1.0	1.3	3.2	5.8	8.6	11.6	14.0	16.0	17.5	18.1	17.8	18.3	17.9	18.8	18.3	16.0	11.3	7.9	5.3	3.7	10.1	18.8
30-Apr	2.4	1.1	0.3	0.4	0.4	1.4	4.2	7.8	11.7	15.4	17.9	19.9	20.9	21.8	21.9	22.0	21.4	20.7	19.8	17.9	15.8	16.0	13.9	14.2	12.9	22.0
	-2.1	-2.6	-3.1	-3.6	-4.2	-4.4	-3.6	-2.3	-0.7	0.7	1.9	3.2	4.5	5.5	5.8	6.1	6.0	5.6	4.8	3.4	1.9	0.8	0.0	-0.7	Diurnal Average	
	4.5	4.3	4.3	4.3	4.2	4.3	4.7	7.8	11.7	15.4	17.9	19.9	20.9	21.8	21.9	22.0	21.4	20.7	19.8	17.9	15.8	16.0	13.9	14.2	Diurnal Maximum	

WBEA NETWORK

Hourly Averages

Ambient Temperature (AT) - C

Shell Muskeg River - April 2014



AURORA ATMOSPHERICS INC.

Concentration Ranges (C)	Number of Hours	%	Cumulative %
-50 - -20	2	0.28	0.28
-20 - 0	304	42.22	42.50
0 - 10	337	46.81	89.31
10 - 20	71	9.86	99.17
> 20	6	0.83	100.00

Total Number of Valid Hours: 720

Total Number of Hours: 720

Maximum Value: 29.5 inHg on Apr 13 13:00

Maximum Daily Average: 29.4 inHg on Apr 13

Minimum Value: 28.3 inHg on Apr 8 18:00

Minimum Daily Average: 28.4 inHg on Apr 8

Maximum Diurnal Average: 28.9 inHg at hour 8

Minimum Diurnal Average: 28.9 inHg at hour 17

Monthly Average: 28.90 inHg

Percentiles: P_1 = 28.3 P_{10} = 28.6 Q_1 = 28.7 Median = 28.9 Q_3 = 29.1 P_{90} = 29.2 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

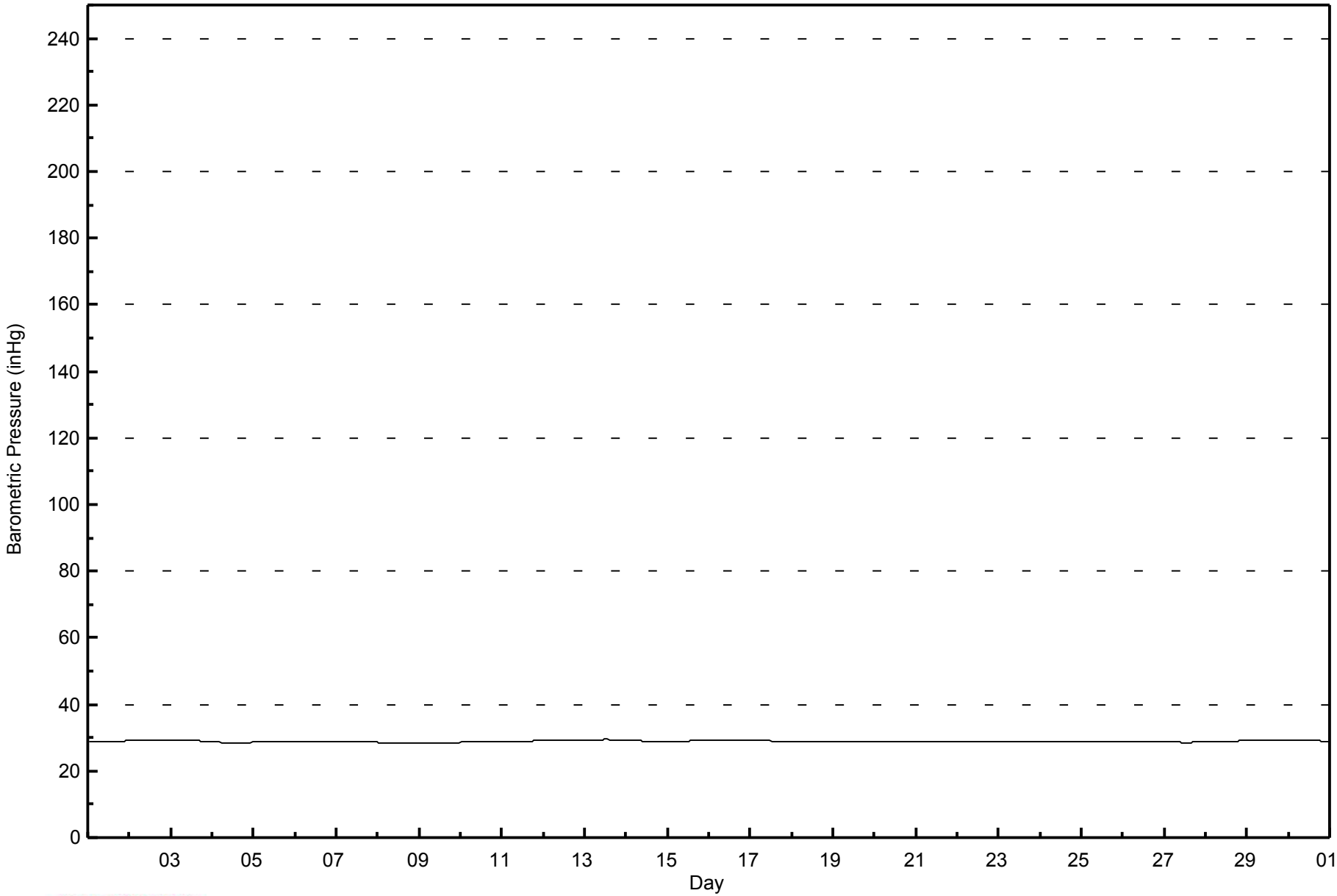
Day	Hourly Period Ending At (MST)																								Daily	Daily
	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24	Average	Maximum
1-Apr	28.9	28.9	28.9	29.0	29.0	29.0	29.0	29.0	29.0	29.0	29.0	29.0	29.0	29.0	29.0	29.0	29.0	29.0	29.0	29.0	29.0	29.0	29.0	29.1	29.0	29.1
2-Apr	29.1	29.1	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	29.2	29.2	29.2	29.2	29.2	29.1	29.2
3-Apr	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	29.1	29.1	29.1	29.1	29.0	29.0	28.9	28.9	28.9	28.8	28.8	29.1	29.2
4-Apr	28.8	28.7	28.7	28.6	28.6	28.6	28.6	28.5	28.5	28.5	28.4	28.4	28.4	28.4	28.4	28.4	28.4	28.5	28.5	28.5	28.6	28.6	28.6	28.6	28.5	28.8
5-Apr	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	28.7	28.7	28.7	28.7	28.7	28.7	28.7
6-Apr	28.7	28.7	28.7	28.7	28.7	28.6	28.6	28.6	28.7	28.6	28.6	28.6	28.6	28.6	28.6	28.7	28.7	28.7	28.7	28.7	28.7	28.8	28.8	28.8	28.7	28.8
7-Apr	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	28.6	28.8	28.8
8-Apr	28.6	28.6	28.5	28.5	28.5	28.5	28.5	28.5	28.4	28.4	28.4	28.4	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
9-Apr	28.3	28.3	28.3	28.3	28.3	28.3	28.3	28.3	28.3	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	28.4	28.6
10-Apr	28.6	28.6	28.6	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	28.9	28.9	28.9	28.9	28.9	28.8	28.9
11-Apr	28.9	28.9	28.9	28.9	28.9	28.9	28.9	28.9	28.9	28.9	28.9	28.9	28.9	28.9	28.9	29.0	29.0	29.0	29.0	29.1	29.1	29.1	29.1	29.2	29.0	29.2
12-Apr	29.2	29.2	29.2	29.2	29.2	29.2	29.2	29.2	29.2	29.2	29.2	29.2	29.2	29.2	29.2	29.2	29.2	29.2	29.2	29.2	29.2	29.2	29.3	29.3	29.2	29.3
13-Apr	29.3	29.3	29.4	29.4	29.4	29.4	29.4	29.4	29.4	29.4	29.4	29.4	29.5	29.5	29.4	29.4	29.4	29.3	29.3	29.3	29.3	29.3	29.3	29.2	29.4	29.5
14-Apr	29.2	29.2	29.2	29.2	29.2	29.1	29.1	29.1	29.1	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	29.0	29.2
15-Apr	28.8	28.8	28.8	28.8	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	29.1	29.2	29.2	29.2	29.2	29.0	29.2
16-Apr	29.2	29.2	29.2	29.3	29.3	29.3	29.3	29.3	29.3	29.3	29.3	29.3	29.2	29.2	29.2	29.2	29.2	29.2	29.2	29.2	29.2	29.1	29.1	29.1	29.2	29.3
17-Apr	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	29.0	29.1
18-Apr	29.0	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	28.9	29.0
19-Apr	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	28.7	28.7	28.7	28.7	28.8
20-Apr	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	28.9	28.9	28.9	28.9	28.9	28.9	28.9	28.9	28.9	28.8	28.9
21-Apr	28.9	28.9	28.9	28.9	28.9	28.9	28.9	28.9	28.9	28.9	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	28.9	29.0
22-Apr	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	28.8	28.9	29.0
23-Apr	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	28.7	28.7	28.8	28.8	28.8	28.8	28.8	28.8
24-Apr	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	28.9	28.9	28.9	28.9	28.8	28.9
25-Apr	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	28.9	28.9	28.9	28.9	28.9	28.9	28.9	28.9	28.9	28.9	29.0
26-Apr	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	28.9	28.9
27-Apr	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	28.6	28.6	28.6	28.7	28.7	28.7	28.7	28.7	28.8
28-Apr	28.7	28.7	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	29.0	29.0	29.0	29.1	29.1	29.1	29.1	28.9	29.1
29-Apr	29.1	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	29.4	29.4	29.3	29.4
30-Apr	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	29.1	29.1	29.1	29.0	29.0	29.0	29.0	29.0	28.9	29.2	29.4
	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	
	29.4	29.4	29.4	29.4	29.4	29.4	29.4	29.4	29.4	29.4	29.4	29.4	29.5	29.5	29.4	29.4	29.4	29.3	29.3	29.3	29.3	29.3	29.4	29.4	Diurnal Maximum	

WBEA NETWORK

Hourly Averages

Barometric Pressure (BP) - inHg

Shell Muskeg River - April 2014



AURORA
ATMOSPHERICS INC.

Wood Buffalo Environmental Association

Summary of Hour Averages

Wind Speed (WS) - km/h

Shell Muskeg River - April 2014

Maximum Speed: 35 km/h on Apr 8 17:00

Maximum Daily Speed Average: 22.7 km/h on Apr 15

Minimum Speed Value: 1 km/h on Apr 25 09:00

Minimum Daily Speed Average: 2.3 km/h on Apr 6

Maximum Diurnal Speed Average: 6.7 km/h at hour 19

Minimum Diurnal Speed Average: 2.9 km/h at hour 9

Monthly Average Velocity: 4.5 km/h 77.6 deg

Percentiles: $P_1 = 2$ $P_{10} = 5$ $Q_1 = 7$ Median = 12 $Q_3 = 17$ $P_{90} = 21$ $P_{99} = 29$

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-Apr	SSW9	SSE6	WSW4	NE10	ENE13	NE15	NE15	ENE12	NE15	NE16	NE17	NE16	NE14	NE13	NE14	NE13	NE14	NE17	NE18	NE20	NE17	ENE14	NE19	NNE23	NE12.9	NNE23
2-Apr	NNE24	NNE22	NNE23	NNE24	NE23	NE23	NE20	NE19	NE18	NNE19	NNE21	NNE21	NE22	NNE20	NNE22	NNE21	NNE23	NNE23	NNE22	NE21	NE20	NE19	NE18	NE18	NE20.8	NNE24
3-Apr	NE14	NNE10	NNE13	NE12	E4	ESE4	SE3	ESE4	NE7	NE9	ENE8	NNW5	NW7	NW6	WNW7	NNW5	N6	NE6	E4	SE9	SSE12	SSE10	SSE13	SSE14	ENE3.3	NE14
4-Apr	SSE11	SSE12	SSE13	SSE17	SSE15	SSE12	SSE12	SSE15	SSE13	S17	S18	S13	SSW9	SW12	WSW12	WNW19	WNW29	WNW27	WNW23	WNW25	WNW18	NW21	NW15	NW11	WSW7.1	WNW29
5-Apr	WNW10	W3	SSE5	SSW8	SSW5	SSW3	SW7	WSW5	ESE2	NE1	NNE5	ENE8	ENE11	ENE11	ESE13	E14	E14	E16	E17	E19	ENE19	ENE19	ENE13	E5	E6.2	ENE19
6-Apr	E6	ENE7	ENE6	E4	SE4	SE3	SSE3	S5	SSW7	SSW9	SW9	SW13	SSW9	S11	SSW7	SSW7	N4	NNE17	NE17	ENE13	ENE9	ENE7	ESE4	S2	ESE2.3	NNE17
7-Apr	SSW3	SSW6	S4	S7	SSW7	SW11	SSW4	SSE5	SW5	SE3	NE5	E2	WSW2	S6	S10	SSW13	S14	S10	SSW10	SW11	SSW8	SSW10	SSW8	S8	SSW6.3	S14
8-Apr	S6	S5	SSW7	SSW5	S6	S8	SSW10	SW13	SW18	SW22	SW23	WSW27	WSW29	WSW29	WSW33	WSW28	SW35	WSW31	W30	WSW24	WSW25	WNW12	W12	S6	WSW17.0	SW35
9-Apr	SW11	W16	W15	SW11	SW12	SW18	WSW17	WNW23	WNW33	NW19	NW20	NW15	NW14	NNW13	NE16	NE16	NE16	NE16	NE14	NE8	SSW7	WSW11	NW10	NNE14	WNW7.2	WNW33
10-Apr	NNE14	NE16	NE15	NE13	NE20	NE23	NE22	NE19	NE19	NE19	NE17	NE18	NE22	NE18	NE17	NNE20	NNE20	NE18	NE20	NE20	NE19	ENE16	ENE15	E10	NE17.6	NE23
11-Apr	E11	ESE9	ENE12	ENE16	ENE16	NE18	NE22	NE23	NE22	NE24	NE26	NE27	NNE28	NNE29	NNE29	NNE26	NNE27	NNE22	N21	N23	NNE17	N13	N11	NW5	NE18.3	NNE29
12-Apr	SW2	WNW7	S5	SSW4	SW5	SSW6	SSW6	S7	SSW8	SW10	SW6	SW6	NNW4	N8	NNE14	NNW14	NNE16	NE20	NE21	NE22	NNE22	N19	N19	N18	NNE5.2	NE22
13-Apr	NNE18	N17	N15	NNW12	NNW13	NNW12	NNW10	N11	N10	NNE10	NE10	NE9	NE10	NE11	E6	SSE6	E9	E9	E10	E8	E8	SE5	SSE6	SSE8	NNE6.6	NNE18
14-Apr	SSE11	S12	S10	S8	S7	S7	S8	S9	S14	S14	S12	S13	SSW15	S15	S15	S10	S10	SSE9	SE9	E9	N18	NNE22	NNE18	NNE22	SSE5.6	NNE22
15-Apr	NNE21	NE18	NE19	NNE22	NE24	NE24	NE22	NE20	NE21	NE21	NE20	NE22	NE22	NE23	NE25	NE25	NNE27	NNE25	NNE30	NNE30	NNE23	NNE27	NE19	NE21	NE22.7	NNE30
16-Apr	NE21	NE20	NE17	NE19	NE21	NE19	NE19	NE15	ENE12	E10	ESE7	N8	ESE4	S12	SSE13	SSE12	SSE11	SE11	SE14	SE14	SE12	SE14	SE14	SSE15	E9.3	NE21
17-Apr	SSE11	SSW6	S7	S7	S6	SSE7	SSE9	SSE10	S10	SSE13	SSE17	SE16	SSE17	SSE17	SE14	SE15	SE15	SE17	SE14	SE12	SE10	ESE11	SE8	ESE8	SSE11.2	SSE17
18-Apr	ESE10	SE10	ESE8	ESE10	ESE12	ESE10	E8	E10	E8	ESE7	ESE9	SE10	SE12	SE10	SE10	SE10	SSE10	SSE10	S8	SSE5	SSE5	S3	S3	SE6	SE7.8	SE12
19-Apr	SW5	W6	W2	S2	SSW2	SE4	S2	SSE4	S5	S6	S6	SE6	ESE8	ESE8	ESE9	ESE9	ESE13	SE12	SE12	SE9	SE7	SSE4	E5	ENE8	SE4.9	ESE13
20-Apr	ENE6	E4	E6	ESE5	S3	SSW2	AF	SW4	SW5	NNW3	NNW4	ENE11	NNE8	NE11	NE13	NE13	NE15	ENE12	E7	SE5	SSE5	SSW6	S8	SSW6	ENE3.6	NE15
21-Apr	S7	S7	S7	S6	SSW5	SSW8	S7	S6	N2	NNE12	NNE10	NE16	NE16	NE16	NE14	NE17	NE18	NE18	NNE20	NNE19	NE17	NE19	NE18	NE17	NE8.4	NNE20
22-Apr	NE14	NNE12	NE11	NNE13	SE2	ESE2	NE11	NE12	NE11	NE16	NNE19	ENE16	ENE16	E16	E17	ENE18	E18	E17	ENE20	NE20	NE21	NE15	NE16	NE15	ENE13.5	NE21
23-Apr	NE16	NE19	NE18	NE18	NE17	NE20	NE21	NE21	NE25	NE21	ENE20	NE21	ENE20	ENE21	E21	E23	E24	ENE23	ENE20	E17	E17	ENE17	ENE16	ENE17	ENE18.9	NE25
24-Apr	ENE17	ENE17	NE19	NE17	ENE14	ENE15	NE17	NE16	ENE17	ENE18	NE22	ENE21	ENE18	ESE9	WSW8	ESE12	ESE12	E15	E16	E15	ESE14	ESE14	ESE11	ESE9	ENE13.2	NE22
25-Apr	ESE6	E6	E6	ENE7	E6	E7	SSE4	SSE2	E1	E4	ESE5	NNW1	W4	ESE5	ESE8	E8	ESE8	SSE9	SSE11	SSE7	SSE7	SSE8	SSE8	SSE7	SE5.0	SSE11
26-Apr	SSE7	SE8	SSE5	SE6	SSE6	S5	S7	S10	SSE11	S12	S15	S12	SE14	SE13	SE14	SE14	SSE12	SSE15	SE13	SE11	SSE8	SSE10	SSE12	SSE12	SSE10.0	SSE15
27-Apr	SSE12	SE10	SE8	SSE9	SE11	SE11	ENE11	ENE12	ENE8	SE8	SSE11	SSE15	SSE19	SSE16	SSE15	SSE13	SSE13	SSE12	SSE11	SSE14	SSE11	SSE9	SSE9	SSE8	SSE10.3	SSE19
28-Apr	S5	SSE9	S8	S6	SSW5	S6	S5	SSW6	SSW8	SSW7	SSW7	SW8	SSW5	SSW6	SSW1	ESE2	SSE4	ESE6	ESE5	SE6	SSE8	S8	S8	SSE6	S5.3	SSE9
29-Apr	S6	SSW4	S8	S8	SSW9	S10	S11	S10	SSW8	SSW6	SSW6	SSW9	SW15	SW11	WSW11	SW13	SW11	WNW13	WNW13	NW7	NW3	S4	SSE5	SSW5	SW6.6	SW15
30-Apr	SSE4	S5	SSW6	SSW6	SSW5	SSW6	SSW5	SSW6	SSW7	SSW8	SSW10	S16	S16	S18	S17	S16	S10	SSW6	S9	S8	SW11	SSW8	SW10	WSW12	SSW8.8	S18
	ENE4.2	ENE3.6	ENE3.9	E4.2	E4.3	E4.1	ENE4.2	E3.9	ENE2.9	ENE3.7	ENE3.8	ENE4.1	E4.1	E4.1	E4.6	E5.1	ENE5.7	ENE6.5	ENE6.7	ENE6.4	ENE5.2	ENE4.9	ENE4.4	ENE4.6	Diurnal Average	
	NNE24	NNE22	NNE23	NNE24	NE24	NE24	NE22	WNW23	WNW33	NE24	NE26	WSW27	WSW29	NNE29	WSW33	WSW28	SW35	WSW31	NNE30	NNE30	WSW25	NNE27	NE19	NNE23	Diurnal Maximum	

AF - Analyzer Failure

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 Apr 9 08:00

Minimum Value: 0 km/h on Apr 18 22:00

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:	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-Apr	2	2	2	6	2	2	2	2	3	3	3	3	3	2	3	3	4	3	3	3	3	2	4	4	6
2-Apr	4	4	4	4	4	4	4	3	2	4	4	4	4	5	5	5	4	4	4	5	3	3	3	3	5
3-Apr	3	2	3	2	3	2	1	2	2	3	2	2	2	2	2	2	2	2	2	3	4	4	4	4	4
4-Apr	3	4	4	5	4	3	4	5	3	5	5	4	2	3	3	7	6	6	6	7	4	5	6	3	7
5-Apr	1	3	1	2	2	1	1	1	1	2	2	3	2	3	3	3	3	3	3	3	3	3	3	2	3
6-Apr	1	2	1	2	2	1	1	1	2	3	2	3	2	3	3	3	4	4	3	3	1	1	1	1	4
7-Apr	3	2	2	2	2	2	2	1	2	2	2	2	2	2	3	4	4	3	4	5	2	2	3	2	5
8-Apr	3	2	2	1	1	3	2	3	3	5	4	6	6	7	6	7	7	8	8	4	4	4	2	2	8
9-Apr	3	3	2	2	3	2	4	9	7	6	6	6	6	5	4	3	3	3	6	6	2	2	3	4	9
10-Apr	4	3	4	3	4	4	4	3	3	4	3	3	3	3	4	4	4	4	4	3	4	3	3	3	4
11-Apr	3	3	3	4	3	3	3	3	3	4	4	5	5	6	6	7	7	6	5	6	5	4	4	3	7
12-Apr	2	2	1	1	1	1	1	2	2	3	2	3	4	5	4	6	7	4	4	5	6	6	5	5	7
13-Apr	5	5	5	3	3	3	3	4	3	3	4	3	3	3	3	3	3	2	2	2	2	1	2	1	5
14-Apr	2	3	2	2	1	1	2	3	4	4	4	3	5	5	4	3	3	2	3	3	5	5	4	4	5
15-Apr	3	3	4	3	3	3	3	3	3	4	4	4	4	4	5	5	6	5	7	7	6	6	4	4	7
16-Apr	3	4	3	3	3	3	3	3	4	4	3	4	3	5	5	4	5	4	4	4	3	4	4	4	5
17-Apr	4	2	2	2	2	2	3	4	4	6	6	6	6	5	5	5	6	5	5	3	2	3	2	2	6
18-Apr	2	2	2	2	3	3	2	3	2	2	3	4	4	4	3	3	3	4	2	1	1	0	1	2	4
19-Apr	1	1	2	1	1	1	1	1	2	2	2	2	3	3	3	3	4	3	3	3	3	1	1	1	4
20-Apr	1	2	1	1	1	1	AF	1	2	2	2	2	3	3	3	2	3	2	2	1	1	2	2	1	3
21-Apr	1	1	1	1	1	2	2	1	3	4	3	3	2	3	3	2	4	3	4	4	3	3	3	2	4
22-Apr	2	2	2	3	2	2	4	3	2	3	3	4	4	4	5	5	5	5	3	3	3	3	2	2	5
23-Apr	2	2	2	3	3	3	3	3	4	4	4	3	5	5	6	6	7	6	5	4	5	3	3	3	7
24-Apr	3	3	3	3	3	3	2	2	3	3	4	4	4	6	4	5	4	5	4	4	4	4	3	3	6
25-Apr	2	1	1	1	1	1	1	2	2	2	3	2	3	3	3	3	3	3	4	2	2	2	2	2	4
26-Apr	1	2	1	1	2	1	3	3	4	4	4	4	5	5	4	4	4	5	4	4	3	3	3	3	5
27-Apr	4	3	2	3	3	4	3	2	2	3	4	5	6	5	4	4	4	4	4	4	3	2	2	2	6
28-Apr	2	2	2	1	1	1	1	2	2	2	2	2	2	3	2	2	2	2	1	1	2	2	2	2	3
29-Apr	2	2	2	2	2	2	3	3	2	2	3	4	4	4	6	3	4	3	3	1	3	1	1	2	6
30-Apr	1	1	1	1	1	1	1	2	2	2	3	5	5	5	5	5	4	1	2	1	4	3	2	2	5
	5	5	5	6	4	4	4	9	7	6	6	6	6	7	6	7	7	8	8	7	6	6	6	5	
	Diurnal Maximum																								

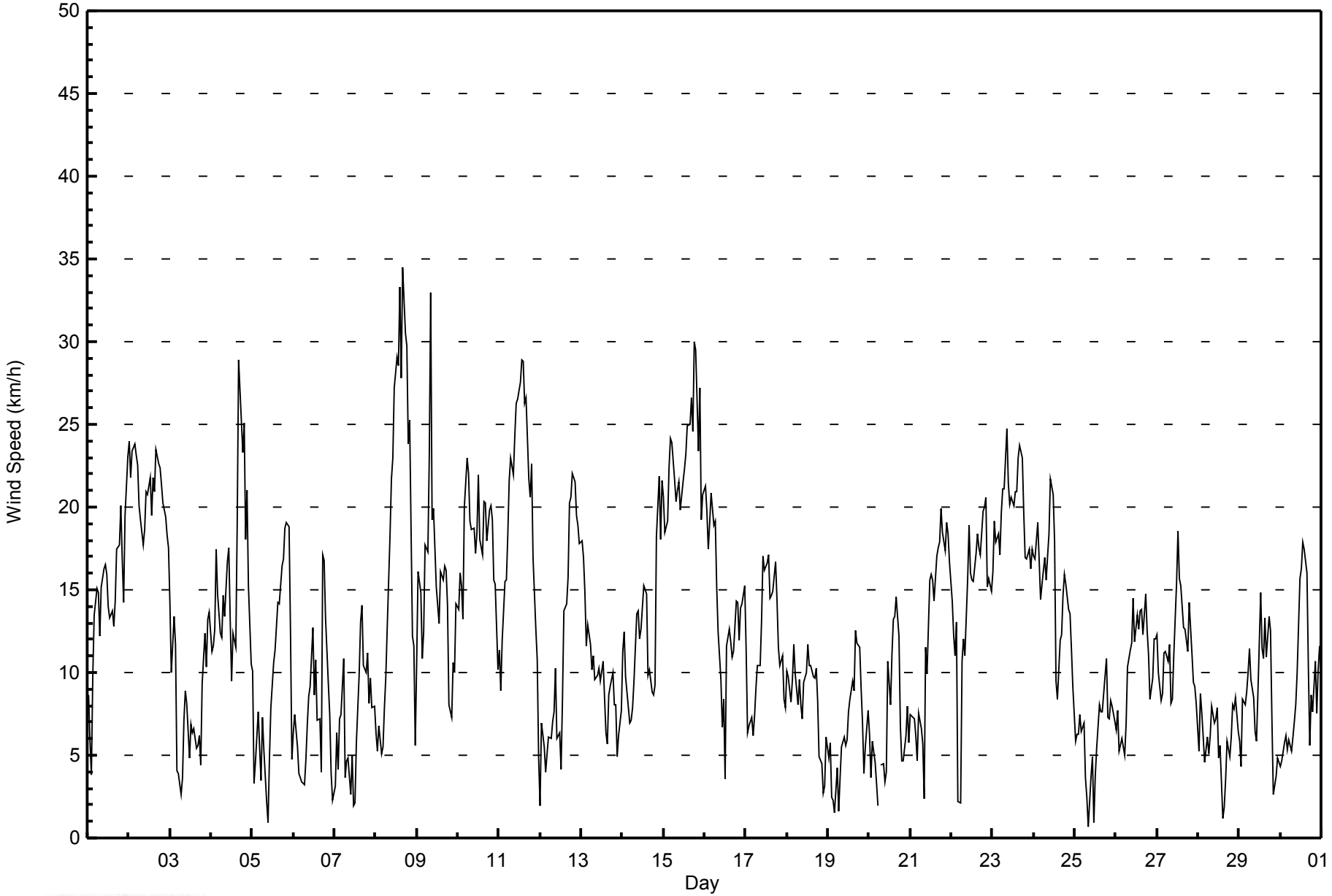
AF - Analyzer Failure

WBEA NETWORK

Hourly Averages

Wind Speed (WS) - km/h

Shell Muskeg River - April 2014



AURORA ATMOSPHERICS INC.

Wind Speed Ranges (km/h)	Number of Hours	%	Cumulative %
0 - 5	99	13.77	13.77
6 - 11	258	35.88	49.65
12 - 19	250	34.77	84.42
20 - 28	100	13.91	98.33
29 - 38	12	1.67	100.00
> 38	0	0.00	100.00

Total Number of Valid Hours: 719

Total Number of Hours: 720

WBEA NETWORK

Frequency Distribution

Wind Speed (WS) - km/h

Shell Muskeg River - April 2014

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	1	2	0	9	11	8	14	16	16	5	4	3	0	2	6	99
6 - 11	6	4	13	14	21	21	22	40	47	43	14	3	1	3	5	1	258
12 - 19	7	15	78	28	14	7	20	31	20	2	8	3	3	5	4	5	250
20 - 28	2	29	47	7	3	0	0	0	0	0	2	4	0	5	1	0	100
29 - 38	0	4	0	0	0	0	0	0	0	0	1	4	1	2	0	0	12
> 38	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Totals	17	53	140	49	47	39	50	85	83	61	30	18	8	15	12	12	719

Total Number of Valid Hours: 719

Total Number of Hours: 720

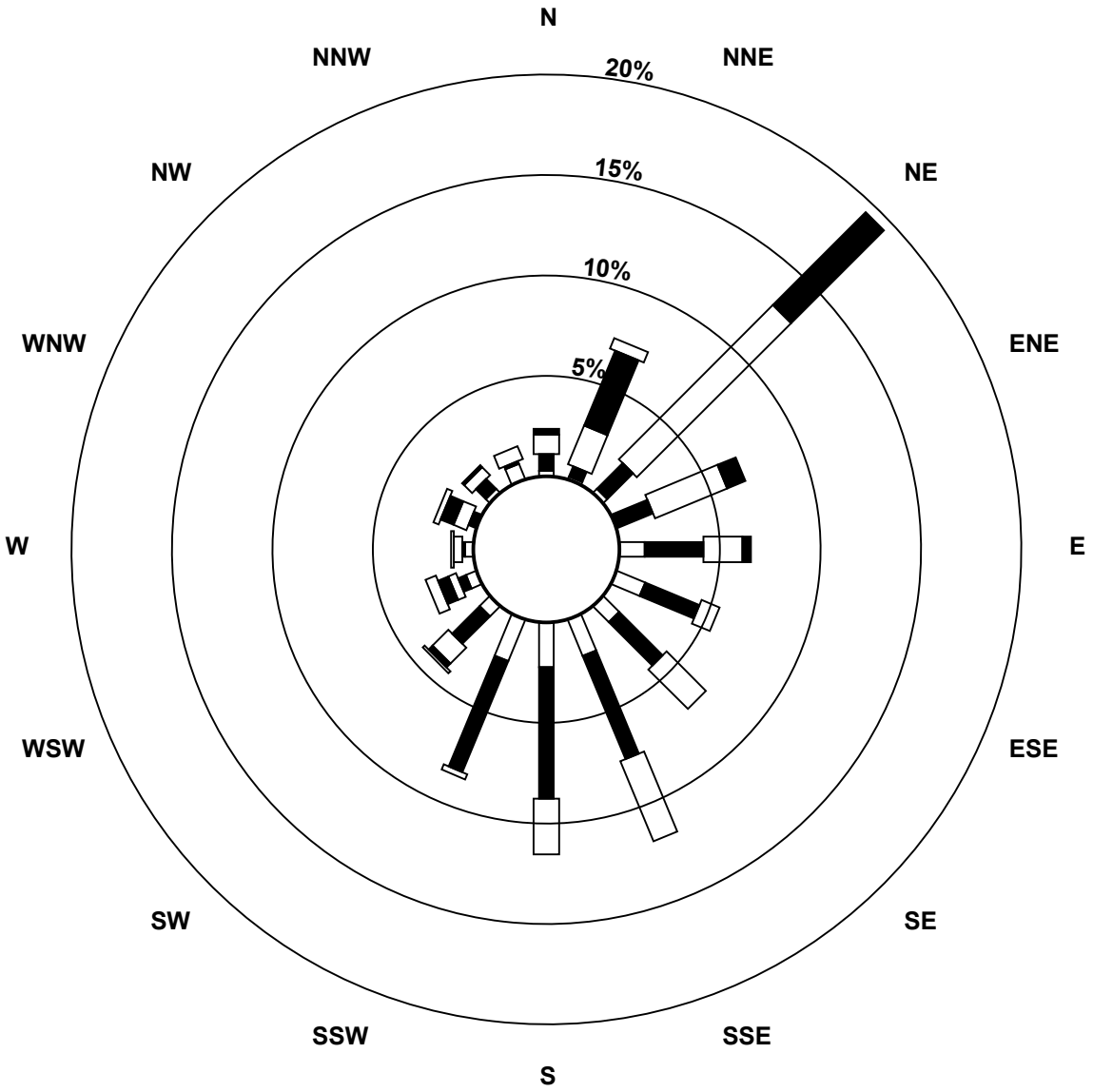
AURORA
ATMOSPHERICS INC.

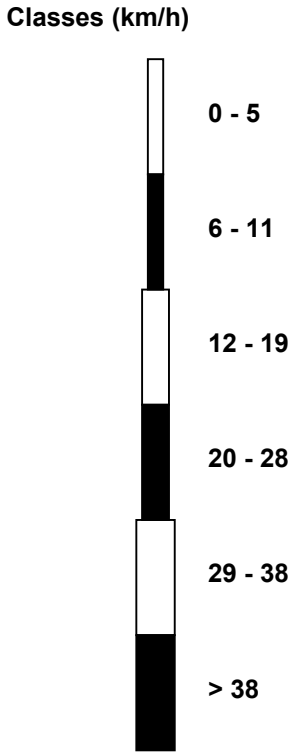
Wood Buffalo Environmental Association

Wind Rose Apr 2014

Wind Speed (WS) - km/h

Shell Muskeg River (AMS 16)





Total Number of Valid Hours: 719

Wood Buffalo Environmental Association

Summary of Hour Averages

Wind Direction (WD) - deg

Shell Muskeg River - April 2014

Direction of Maximum Speed: 234 deg on Apr 8 17:00
Direction of Maximum Daily Speed Average: 38.0 deg on Apr 15

Direction of Minimum Speed: 89 deg on Apr 25 09:00

Direction of Minimum Daily Speed Average: 2.3 deg on Apr 6

Monthly Average Direction: 176.3 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-Apr	202	159	237	43	59	56	44	67	38	47	54	52	43	41	44	54	52	47	54	51	53	59	37	30	49.9
2-Apr	28	29	31	31	43	45	37	54	54	33	30	29	35	23	28	30	32	31	31	35	45	50	46	44	36.0
3-Apr	49	32	27	52	81	112	144	113	50	37	60	330	322	319	300	344	355	45	86	143	147	158	166	168	69.4
4-Apr	167	160	155	168	157	164	161	159	162	171	179	184	192	231	255	286	301	303	298	290	282	304	324	318	237.6
5-Apr	292	278	155	210	207	213	217	240	121	55	25	62	68	71	103	86	92	90	91	80	77	72	57	92	86.3
6-Apr	84	68	76	97	131	136	165	190	193	196	234	232	212	183	198	193	1	31	45	58	59	64	120	183	119.3
7-Apr	209	202	174	181	201	218	198	162	217	136	44	82	257	190	181	205	188	191	198	230	193	204	201	182	195.8
8-Apr	177	183	198	198	177	175	208	220	221	222	232	248	254	254	248	243	234	241	260	256	249	291	262	187	239.3
9-Apr	232	264	261	215	222	231	252	286	285	307	315	318	319	334	38	50	49	51	51	55	208	245	305	20	303.1
10-Apr	21	38	39	55	45	44	48	56	53	50	52	53	51	44	36	33	33	47	55	53	54	71	71	87	48.8
11-Apr	84	105	77	63	63	48	50	48	48	44	39	43	33	30	33	24	27	12	9	5	15	11	5	307	35.6
12-Apr	236	288	191	208	221	197	192	185	199	229	215	228	338	6	23	346	32	43	44	37	23	8	8	10	14.6
13-Apr	14	3	357	340	343	341	341	5	349	30	50	43	40	55	85	153	85	93	79	83	82	133	160	161	32.3
14-Apr	167	176	175	176	180	186	181	175	185	188	189	190	194	191	179	190	175	160	141	99	1	16	26	31	165.6
15-Apr	28	35	46	30	48	47	51	48	49	51	43	40	44	41	39	36	33	30	27	27	24	27	37	48	38.0
16-Apr	49	53	52	48	51	48	46	53	60	97	102	11	103	189	166	161	158	141	131	125	130	136	141	147	90.9
17-Apr	160	192	181	176	178	156	148	163	169	156	158	146	152	152	137	136	142	140	140	136	131	123	131	113	148.4
18-Apr	110	126	122	117	114	110	88	92	98	123	120	127	140	128	126	141	158	166	176	167	154	178	171	144	129.2
19-Apr	222	267	263	175	208	128	172	165	188	174	176	133	108	121	118	122	118	133	131	133	143	153	95	59	136.8
20-Apr	66	99	82	121	174	205	AF	223	231	334	338	60	13	50	52	51	55	59	97	133	154	195	187	192	76.2
21-Apr	183	181	188	185	197	203	190	170	357	14	17	50	51	53	56	46	41	46	32	33	46	48	45	44	50.4
22-Apr	35	33	43	33	135	105	49	43	42	39	30	70	78	84	86	76	90	85	64	50	46	52	44	43	57.1
23-Apr	38	45	41	41	42	36	45	43	45	45	59	55	72	76	82	79	85	72	74	79	79	75	71	70	60.6
24-Apr	69	59	44	53	64	64	46	53	60	57	52	59	68	120	244	106	102	88	86	92	107	111	116	120	73.5
25-Apr	119	97	90	78	97	90	152	160	89	80	113	338	265	112	117	93	112	151	149	149	148	158	158	159	125.0
26-Apr	152	141	159	146	156	171	174	171	163	182	181	174	138	134	137	136	147	148	145	143	152	160	159	157	154.4
27-Apr	147	143	146	150	132	126	76	65	66	145	162	160	156	155	155	149	156	160	157	161	162	168	165	168	146.7
28-Apr	169	163	169	187	209	179	172	199	205	193	206	222	212	213	204	104	153	121	117	138	162	171	179	168	178.4
29-Apr	169	198	184	186	194	191	184	190	198	211	203	210	220	227	244	223	225	300	294	306	321	177	151	198	216.4
30-Apr	165	170	194	196	203	195	210	210	213	197	197	180	181	185	185	170	185	198	186	189	217	201	217	258	194.2
	78.1	76.0	77.6	82.1	89.7	89.4	76.6	84.0	76.4	77.0	74.4	77.2	80.2	91.6	90.5	82.4	78.1	70.2	68.6	66.9	71.3	70.1	73.5	76.0	
	Diurnal Average																								

AF - Analyzer Failure
All monthly, daily, and diurnal averages have been calculated using vector methods

Number of Exceedences (AAAQO): 1-hr: 0 24-hr: 0
Maximum Value: 116 deg on Apr 25 12:00

Minimum Value: 5 deg on Apr 6 06:00

Percentiles: P_1 = 8 P_{10} = 11 Q_1 = 13 Median = 16 Q_3 = 22 P_{90} = 38 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-Apr	18	29	38	56	12	11	15	12	17	18	11	14	18	19	20	15	19	14	11	9	10	11	15	11	56
2-Apr	10	11	10	13	11	12	14	9	10	13	14	17	15	19	17	16	12	11	12	14	12	10	13	13	19
3-Apr	13	16	12	12	62	47	42	44	38	36	26	65	42	51	45	57	56	36	49	13	15	16	17	17	65
4-Apr	15	15	17	15	15	15	14	14	14	15	14	16	16	15	13	20	13	13	14	12	11	13	23	20	23
5-Apr	13	84	37	10	11	12	18	12	62	107	63	31	19	15	25	17	17	12	18	16	15	17	10	28	107
6-Apr	18	12	23	32	14	5	27	14	16	22	25	16	21	16	22	22	73	15	13	11	10	13	34	13	73
7-Apr	46	11	18	16	11	8	30	23	20	64	62	89	94	38	26	21	17	17	24	26	11	15	16	13	94
8-Apr	18	21	12	17	26	17	17	11	10	11	11	10	12	14	9	10	11	10	11	9	8	30	9	26	30
9-Apr	23	12	21	10	13	7	17	14	11	20	18	23	29	32	29	13	17	13	20	57	16	20	39	18	57
10-Apr	23	14	24	16	13	13	13	11	11	13	12	10	9	16	18	12	14	16	13	12	12	11	11	22	24
11-Apr	18	21	20	14	14	10	9	8	10	11	13	12	13	12	13	16	17	21	20	19	21	23	27	51	51
12-Apr	41	22	14	13	11	12	13	19	21	16	37	48	95	54	35	35	37	20	14	15	19	21	21	22	95
13-Apr	20	21	21	17	16	17	27	37	33	39	29	44	38	26	50	51	41	23	15	28	15	28	11	11	51
14-Apr	12	12	12	14	13	12	14	16	17	19	21	20	21	22	20	21	19	14	18	26	20	18	15	8	26
15-Apr	9	14	14	9	9	9	9	8	8	11	14	15	17	16	14	16	15	16	12	13	16	12	14	11	17
16-Apr	10	11	11	12	9	11	9	14	27	33	52	57	78	35	33	28	24	22	18	15	15	15	16	15	78
17-Apr	19	19	19	17	21	16	13	18	21	22	19	23	23	22	28	23	20	18	16	13	13	13	13	16	28
18-Apr	18	14	14	13	14	23	21	20	25	30	23	27	21	26	21	22	22	18	14	14	14	8	11	16	30
19-Apr	41	21	57	69	59	28	67	18	27	30	32	35	35	21	26	28	21	19	19	15	23	19	27	8	69
20-Apr	17	43	19	22	11	47	AF	17	26	75	77	11	46	33	15	11	11	13	21	31	25	13	13	11	77
21-Apr	10	11	10	16	17	15	15	13	89	31	34	11	11	10	11	13	12	12	11	12	10	8	9	9	89
22-Apr	13	14	13	14	49	55	37	12	21	14	13	23	23	24	24	18	22	19	11	10	11	13	7	8	55
23-Apr	13	8	11	12	12	13	8	9	8	10	13	12	16	17	18	16	18	14	14	16	15	13	11	10	18
24-Apr	10	16	8	13	16	11	9	13	13	14	12	15	17	56	37	27	23	19	17	18	17	16	17	19	56
25-Apr	21	19	16	13	14	16	27	71	109	77	58	116	71	68	42	42	31	18	16	13	14	12	16	15	116
26-Apr	12	13	13	14	26	13	20	17	21	19	20	25	24	22	18	21	18	17	16	16	17	15	14	15	26
27-Apr	15	15	17	18	17	17	15	13	34	24	18	16	16	16	15	16	16	15	16	15	15	13	12	10	34
28-Apr	13	11	12	13	14	14	13	18	19	21	23	20	40	49	89	89	59	26	27	12	13	11	11	12	89
29-Apr	15	16	14	17	16	15	15	18	22	37	42	39	24	31	41	18	26	21	14	13	78	11	19	18	78
30-Apr	13	14	9	17	15	12	13	15	25	22	20	18	19	20	18	16	20	13	14	12	18	14	11	18	25
	46	84	57	69	62	55	67	71	109	107	77	116	95	68	89	89	73	36	49	57	78	30	39	51	
	Diurnal Maximum																								

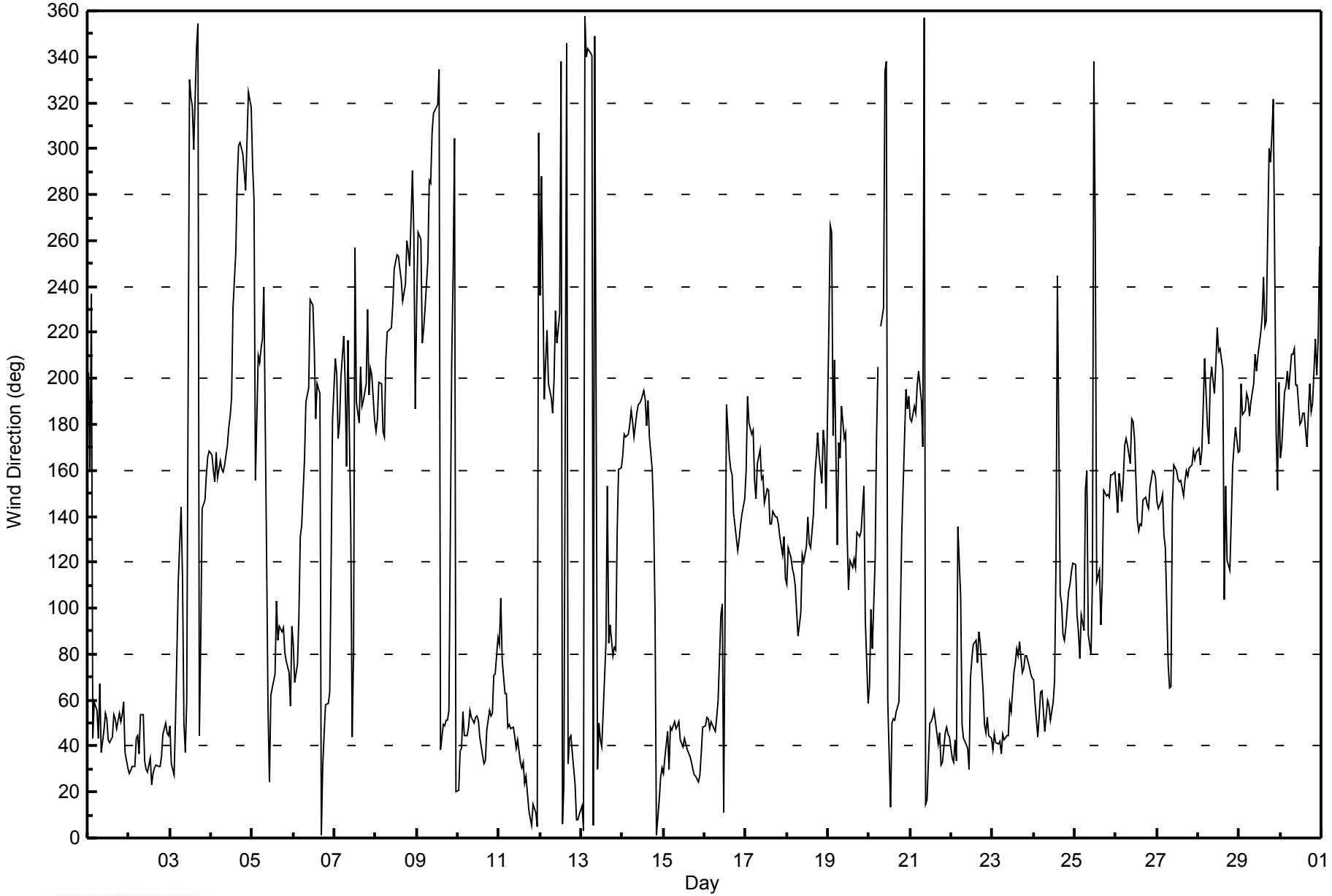
AF - Analyzer Failure

WBEA NETWORK

Hourly Averages

Wind Direction (WD) - deg

Shell Muskeg River - April 2014



AURORA ATMOSPHERICS INC.

Wood Buffalo Environmental Association

SO_2 Calibration Report

Station Information

Calibration Date	April 24, 2014	Previous Calibration	March 25, 2014
Station Name	Shell Muskeg River	Station Number	AMS 16

Reason: Routine

Start Time (MST)	8:50	End Time (MST)	13:35
Barometric Pressure	732 mmHg	Station temp.	21 Deg C
Calibrator Make/Model	Sabio 4010	Serial Number	11081107
Cal Gas Concentration	50.8 ppm	Cal Gas Expiry Date	5/29/2014
Gas Cert Reference	LL107937		
DACS make/model	Campbell Scientific CR3000	DACS serial No.	3492
DACS voltage range	0-5 v	DACS channel #	1

Analyzer Information

	Before	*After*		*Before*	*After*
Analyzer Range (ppb)	1000	1000	PMT voltage	-710	-710
Analyzer Range (mv)	5000	5000	Lamp voltage	826	818
Calculated slope	1.004298	0.996709	Chamber temp.	45.3	45.0
Calculated intercept	3.150158	2.575290	Pressure (mmHg)	712.9	719.5
Analyzer Background	6.0	6.0	Flow (lpm)	0.428	0.436
Analyzer Coefficient	1.230	1.250	Intensity	88	89

Analyzer make	Thermo 43i	Analyzer serial #	1118148498

Calibration Data

Set Point	Total flow rate (cc/min)	Source gas flow rate (cc/min)	Calculated concentration (ppb) (Cc)	Indicated concentration (ppb) (Ic)	Correction factor (Cc/Ic)
as found zero	5000	0.0	0.0	0.1	NA
as found span	5000	78.7	799.6	791.6	1.010
calibrator zero	5000	0.0	0.0	0.4	NA
high point	5000	78.7	799.6	801.9	0.997
second point	5000	39.4	400.3	395.0	1.013
third point	5000	19.7	200.2	197.0	1.016
calibrator zero	5000	0.0	0.0	0.4	NA
as left zero	5000	0.0	0.0	0.8	NA
as left span	5000	78.1	793.5	811.2	0.978
				Average Correction Factor	1.009

Corrected As found	791.5	Previous response	793.0	% change	0.2%

Notes:

adjusted span.

Calibration Performed By: Michael Martineau

Wood Buffalo Environmental Association

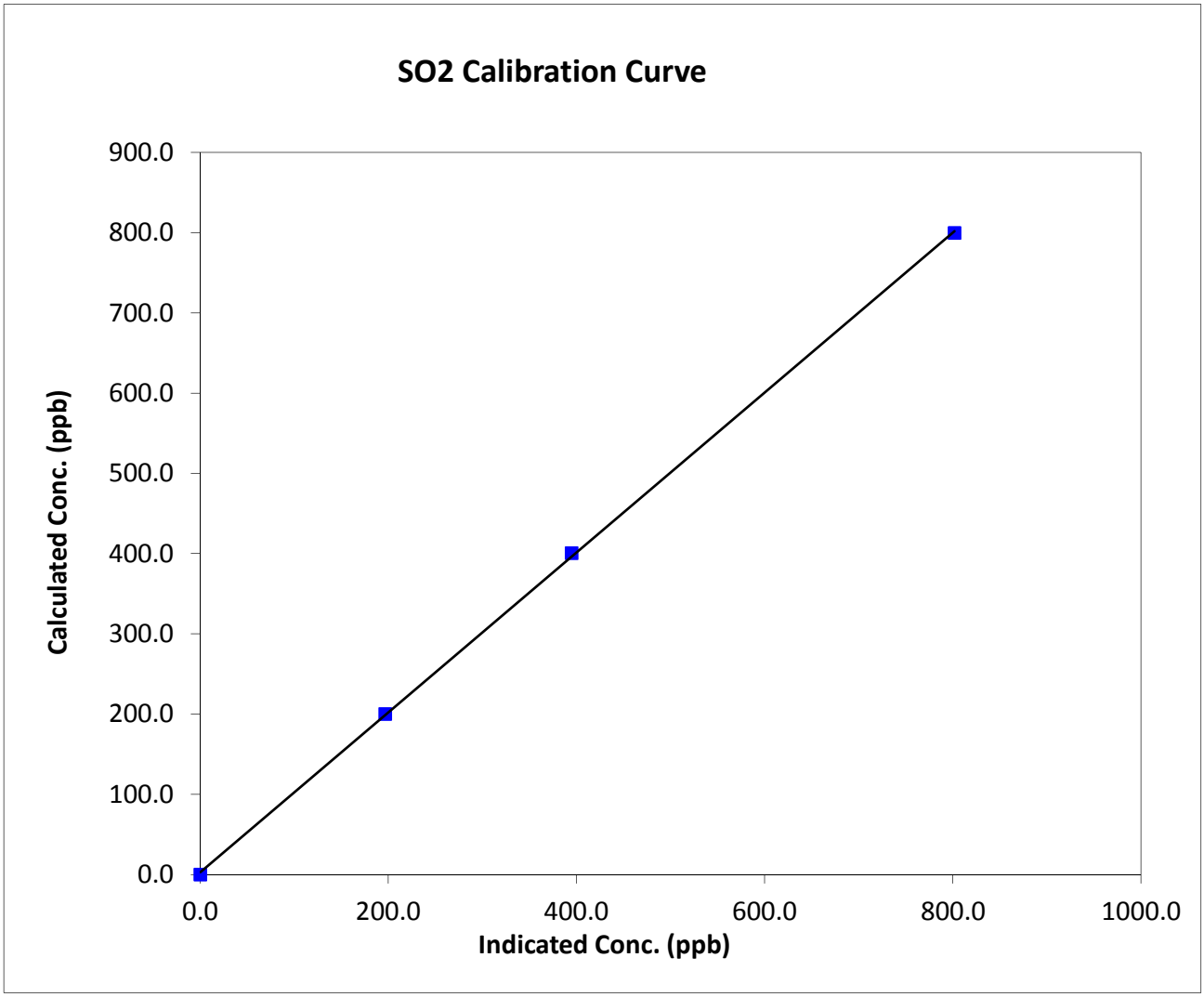
SO_2 Calibration Summary

Station Information

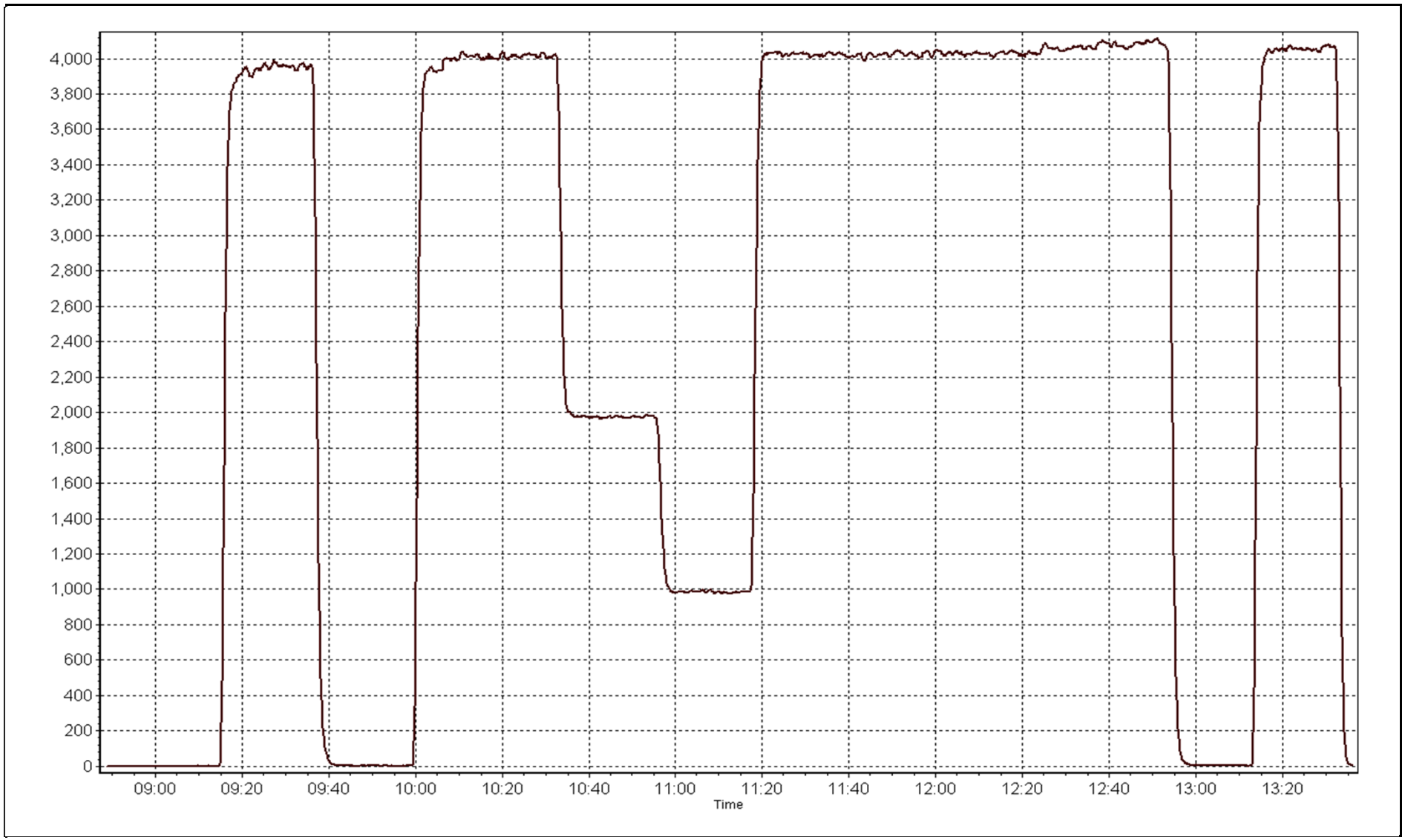
Calibration Date	April 24, 2014	Previous Calibration	March 25, 2014
Station Name	Shell Muskeg River	Station Number	AMS 16
Start Time (MST)	8:50	End Time (MST)	13:35
Analyzer make	Thermo 43i	Analyzer serial #	1118148498

Calibration Data

Calculated concentration (ppb) (Cc)	Indicated concentration (ppb) (Ic)	Correction factor (Cc/Ic)	Statistical Evaluation	
0.0	0.4	N/A	Correlation Coefficient	0.999909
799.6	801.9	0.9971		
400.3	395.0	1.0134	Slope	0.996709
200.2	197.0	1.0160		
			Intercept	2.575290



SO2 Calibration Plot Date: April 24, 2014



Wood Buffalo Environmental Association

THC Calibration Report

Station Information

Calibration Date	Thursday, April 24, 2014	Previous Calibration	Tuesday, March 25, 2014
Station Name	Shell Muskeg River	Station Number	AMS 16
Reason:	Routine		
Start Time (MST)	8:50	End Time (MST)	13:35
Barometric Pressure	732 mmHg	Station temp.	21 Deg C
Calibrator Make/Model	Sabio 4010	Serial Number	11081107
Gas Cert Reference	LL107937	Cal Gas Expiry Date	5/29/2014
CH4 Cal Gas Conc.	515 ppm	CH4 Equiv Conc.	1078.8 ppm
C3H8 Cal Gas Conc.	205 ppm		
DACS make/model	Campbell Scientific CR3000	DACS serial No.	3492
DACS voltage range	0-5 VDC	DACS channel #	DIFF 4

Analyzer Information

	Before	*After*		*Before*	*After*
Analyzer Range (ppm)	25	25	Sample Pressure	8.2	8.2
Analyzer Range (mv)	5000	5000	Air or Bypass press	34.8	34.8
Calculated slope	0.991528	1.011608	Fuel Pressure	24.2	24.2
Calculated intercept	0.052175	0.023900			

Analyzer make	Thermo 51i-LT	Analyzer serial #	1218153485

Calibration Data

Set Point	Total flow rate (cc/min)	Source gas flow rate (cc/min)	Calculated concentration THC (ppm) (Cc)	Indicated concentration (ppb) (Ic)	Correction factor (Cc/Ic)
as found zero	5000	0.0	0.00	-0.15	N/A
as found span	5000	78.7	16.98	17.16	0.990
calibrator zero	5000	0.0	0.00	0.05	N/A
high point	5000	78.7	16.98	16.81	1.010
second point	5000	39.4	8.50	8.30	1.024
third point	5000	19.7	4.25	4.14	1.027
calibrator zero	5000	0.0	0.00	0.05	N/A
as left zero	5000	0.0	0.00	-0.04	N/A
as left span	5000	78.7	16.98	16.75	1.014
				Average Correction Factor	1.021

Corrected As found	17.31	Previous response	17.07	% change	-1.4%

Notes:

adjusted zero and span

Calibration Performed By: Michael Martineau

Wood Buffalo Environmental Association

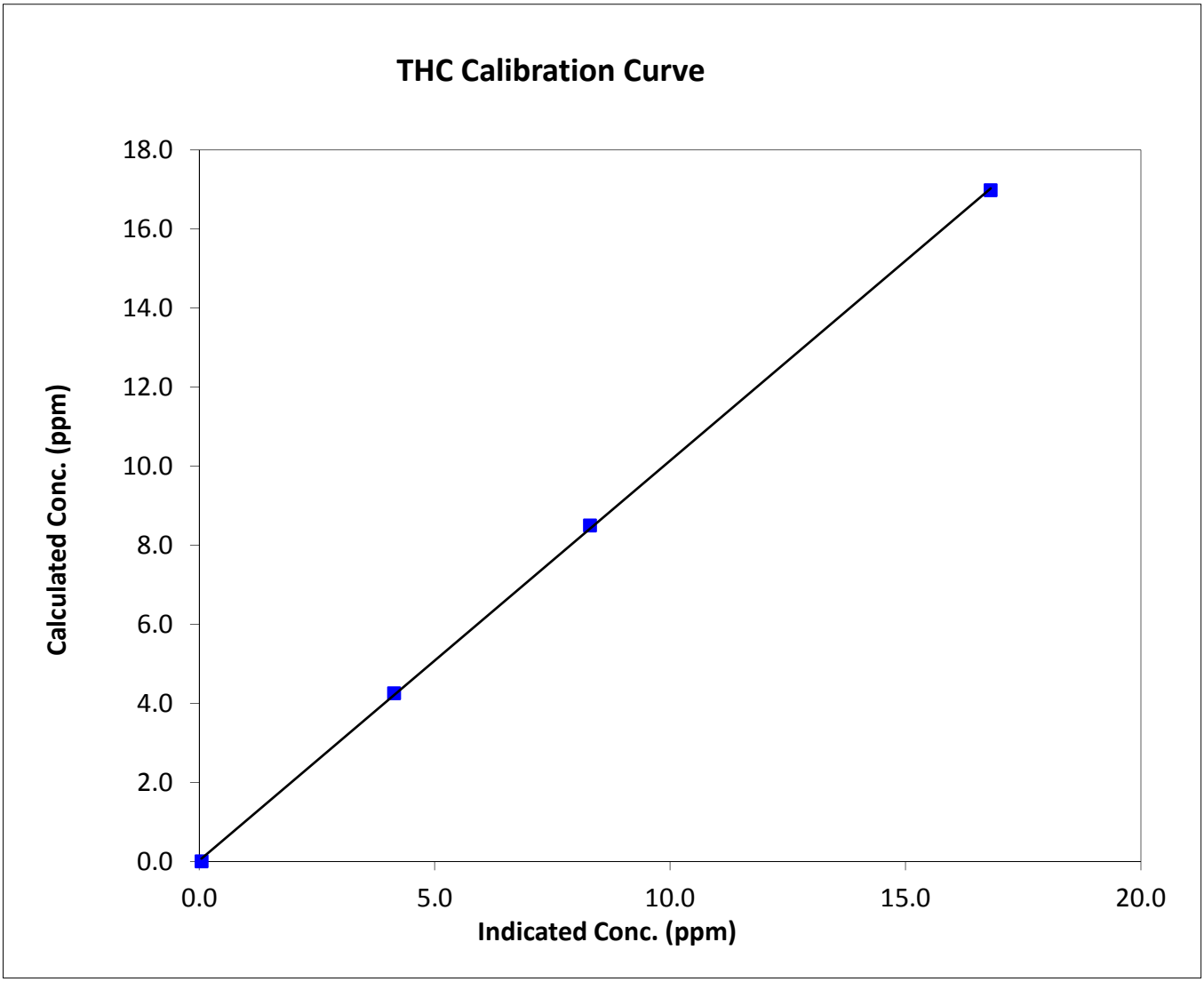
THC Calibration Summary

Station Information

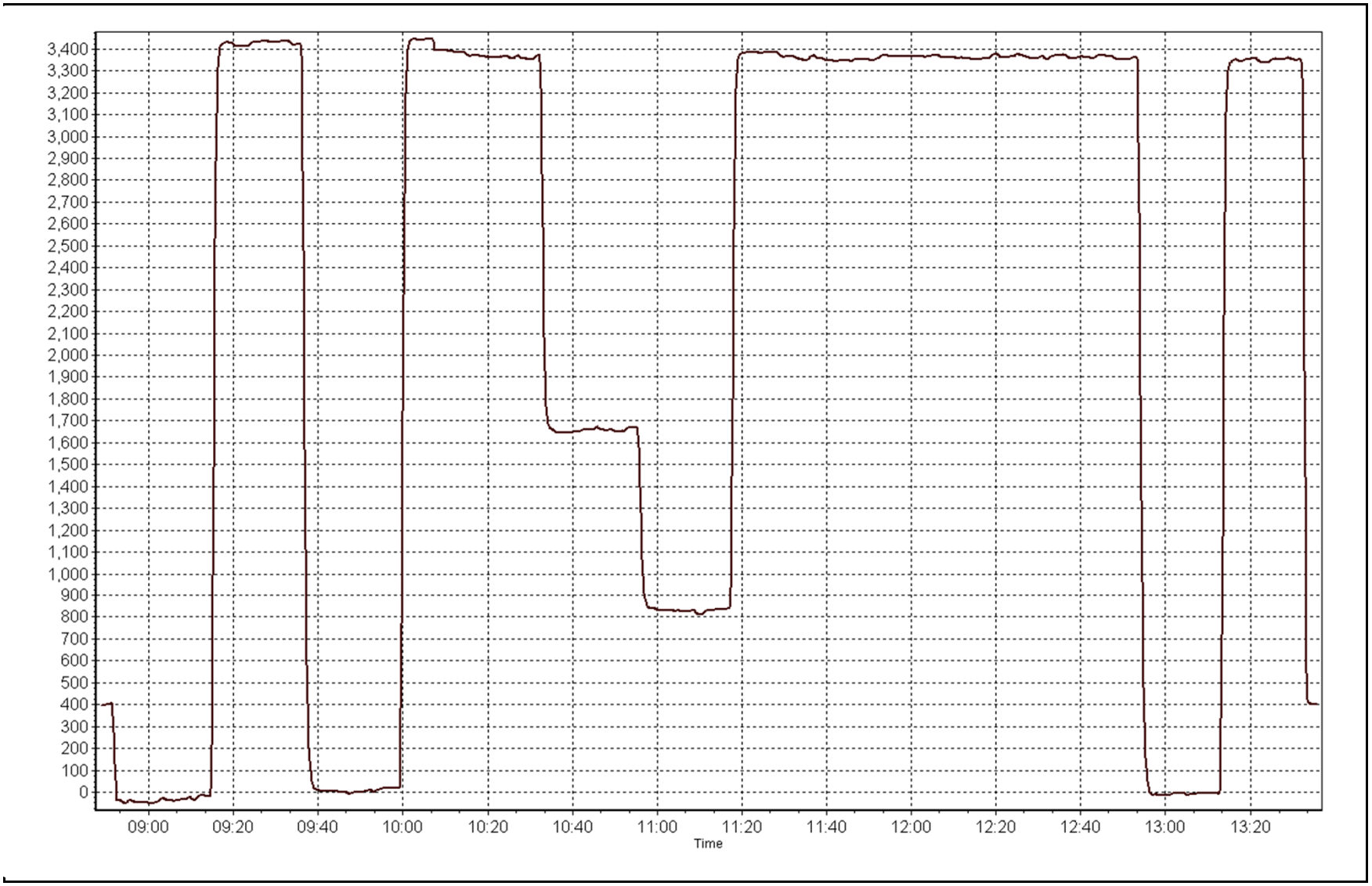
Calibration Date	April 24, 2014	Previous Calibration	March 25, 2014
Station Name	Shell Muskeg River	Station Number	AMS 16
Start Time (MST)	8:50	End Time (MST)	13:35
Analyzer make	Thermo 51i-LT	Analyzer serial #	1218153485

Calibration Data

Calculated concentration (ppm) (Cc)	Indicated concentration (ppm) (Ic)	Correction factor (Cc/Ic)	Statistical Evaluation	
0.00	0.05	N/A	Correlation Coefficient	0.999900
16.98	16.81	1.0101		
8.50	8.30	1.0242	Slope	1.011608
4.25	4.14	1.0273		
			Intercept	0.023900



THC Calibration Plot Date: April 24, 2014



Wood Buffalo Environmental Association

NO_X-NO-NO_2 Calibration Report

Station Information

Calibration Date	April 24, 2014	Previous Calibration	March 25, 2014
Station Name	Shell Muskeg River	Station Number	AMS 16
Reason:	Routine		
Start Time (MST)	8:50	End Time (MST)	13:35
Barometric Pressure	732 mmHg	Station Temperature	21.0 Deg C
Calibrator	SABIO 4010	Serial Number	11081107
NO Cal Gas Conc	51.2 ppm	Cal Gas Expiry Date	May 29, 2014
NOx Cal Gas Conc	51.3 ppm	Cal Gas Serial #	LL107937

DACS Information

DACS make & model	Campbell Scientific CR3000	DACS serial No.	8346

Parameter		NOx	NO	NO2
MV conversion	Analyzer Range (ppb)	1000	1000	1000
	Analyzer Range (mv)	5000	5000	5000
Before	Data Slope	1.001223	0.998046	1.028812
	Data Offset	2.892545	2.183780	1.094118
After	Data Slope	1.001702	1.002158	0.999016
	Data Offset	2.047798	2.718084	-1.833841
Channel #		3	2	1
Voltage Range		0 - 5V	0 - 5V	0 - 5V

Analyzer Information

Analyzer make/model	API T200	Analyzer serial #	724

Test Point	before		after	
Concentration range	0-1000	ppb	0-1000	ppb
NO coefficient	1.214	ppb	1.231	ppb
NOX coefficient	1.208	ppb	1.230	ppb
NO2 coefficient	n/a	ppb	n/a	ppb
NO bkgrnd	0.3		0.7	
NOX bkgrnd	6.9		0.8	
Nt coefficient	n/a		n/a	
Chamber Temp	50.0	Deg C	50.0	Deg C
Moly Temp	316.0	Deg C	315.8	Deg C
PMT Temp	7.0	Deg C	7.0	Deg C
O3 flow	86.0	ccm	86.0	ccm
R Cell Press	3.5	mmHg	3.5	mmHg
Sample Flow	490	ccm	487	ccm

Notes:

adjusted zero and span.

NO_X-NO-NO_2 Calibration Report

Station Information

Calibration Date: April 24, 2014 Station Number: AMS 16

Calibration Data

Set Point	Total flow rate (ccm)	Source gas flow rate (ccm)	Calculated NOx conc (ppb)	Calculated NO conc (ppb)	Calculated NO2 conc (ppb)	Indicated NOx conc (ppb)	Indicated NO conc (ppb)	Indicated NO2 conc (ppb)	NOx Correction factor	NO Correction factor
as found zero	5000	0.0	0.0	0.0	0.0	-4.1	-0.3	-3.7	N/A	N/A
as found span	5000	78.7	807.5	805.9	1.6	793.4	794.8	-1.1	1.0177	1.0140
calibrator zero	5000	0.0	0.0	0.0	0.0	-0.2	-0.2	-0.1	N/A	N/A
high point	5000	78.7	807.5	805.9	1.6	806.4	804.8	2.1	1.0013	1.0014
second point	5000	39.4	404.2	403.5	0.8	398.0	394.6	2.4	1.0157	1.0224
third point	5000	19.7	202.1	201.7	0.4	197.2	195.4	0.9	1.0250	1.0324
calibrator zero	5000	0.0	0.0	0.0	0.0	-0.2	-0.2	-0.1	N/A	N/A
as left zero	5000	0.0	0.0	0.0	0.0	0.6	0.5	0.3	N/A	N/A
as left span	5000	78.1	801.3	503.8	297.5	795.4	500.6	294.6	1.0074	1.0064
								Average Correction Factor	1.0140	1.0187

Corrcted As found NO_X= 797.5 NO= 795.1 Percent Change NO_X= 0.8% NO= 1.3%

Previous Response NO_X= 803.6 NO= 805.3

GPT Calibration Data

Dilution Flow 5000 ccm Source Gas Flow 78.70 ccm

O3 Setpoint (ppb)	Indicated NO high point (ppb)	Indicated NO drop conc (ppb)	Calculated NO2 conc (ppb)	Indicated NOx conc (ppb)	Indicated NO conc (ppb)	Indicated NO2 conc (ppb)	NOx Correction factor	NO Correction factor	NO2 Correction factor	Converter Efficiency
Cal zero			0.0			-0.1			N/A	
1st NO2 (300)	N/A	503.8	299.6	804.8	503.8	300.4	0.9878	1.0000	0.9973	100.3%
2nd NO2 (200)	N/A	602.8	200.6	806.4	602.8	203.2	0.9858	1.0000	0.9872	101.3%
3rd NO2 (100)	N/A	701.2	102.2	807.6	701.2	106.8	0.9843	1.0000	0.9569	104.5%
4th NO2 (0)	803.4	N/A	3.4	806.8	803.4	3.8	0.9853	1.0000	N/A	N/A
					Average Correction Factor		0.9858	1.0000	0.9805	102.0%

Calibration Performed By: Michael Martineau

Wood Buffalo Environmental Association

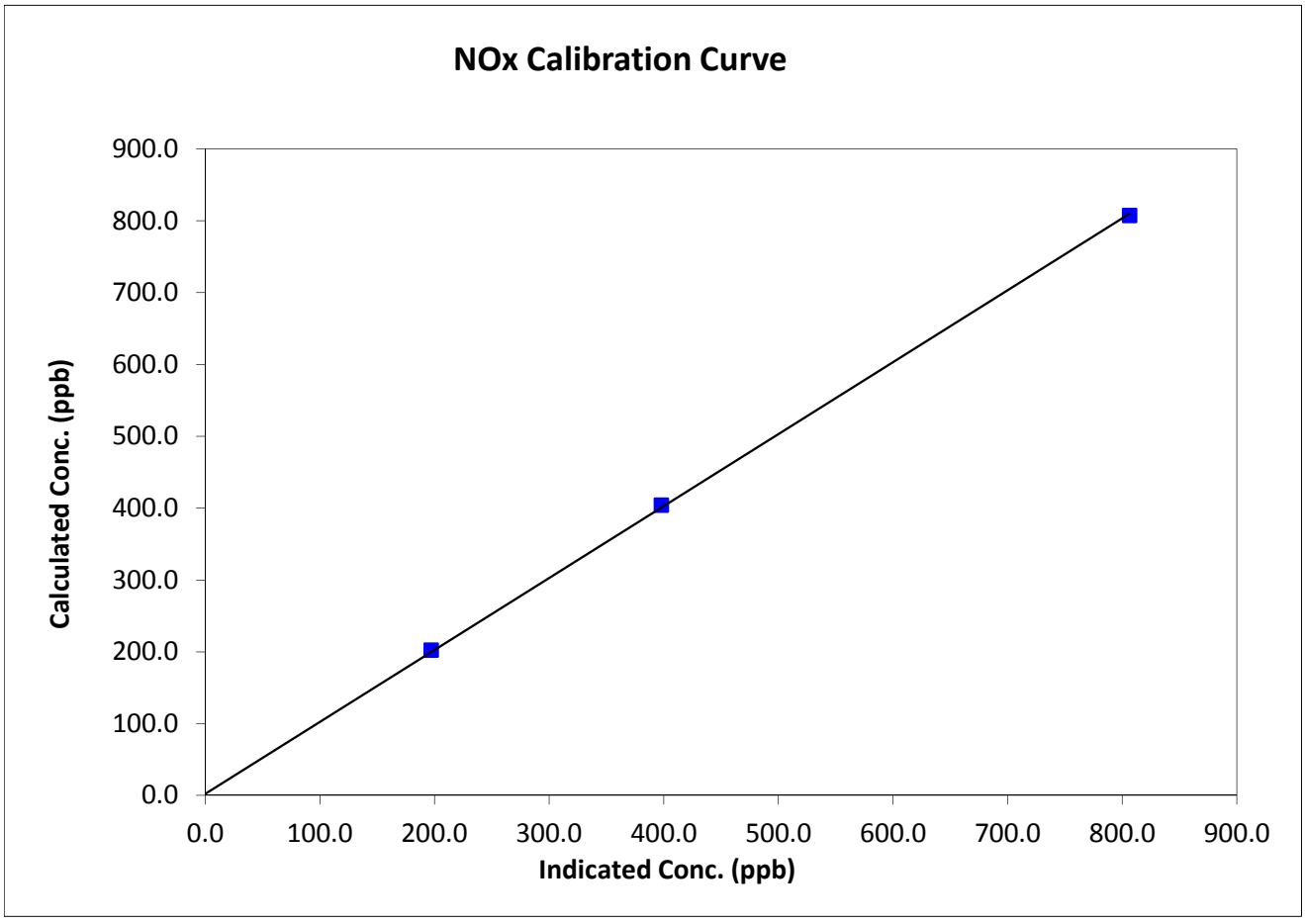
NO_X Calibration Summary

Station Information

Calibration Date	April 24, 2014	Previous Calibration	March 25, 2014
Station Name	Shell Muskeg River	Station Number	AMS 16
Start Time (MST)	8:50	End Time (MST)	13:35
Analyzer make	API T200	Analyzer serial #	724

Calibration Information

Calculated conc (ppb) (Cc)	Indicated concentration (ppb) (Ic)	Correction factor (Cc/Ic)	Statistical Evaluation	
0.0	-0.2	N/A	Correlation Coefficient	0.999932
807.5	806.4	1.0013		
404.2	398.0	1.0157	Slope	1.001702
202.1	197.2	1.0250		
0.0	-0.2	0.0000	Intercept	2.047798



Wood Buffalo Environmental Association

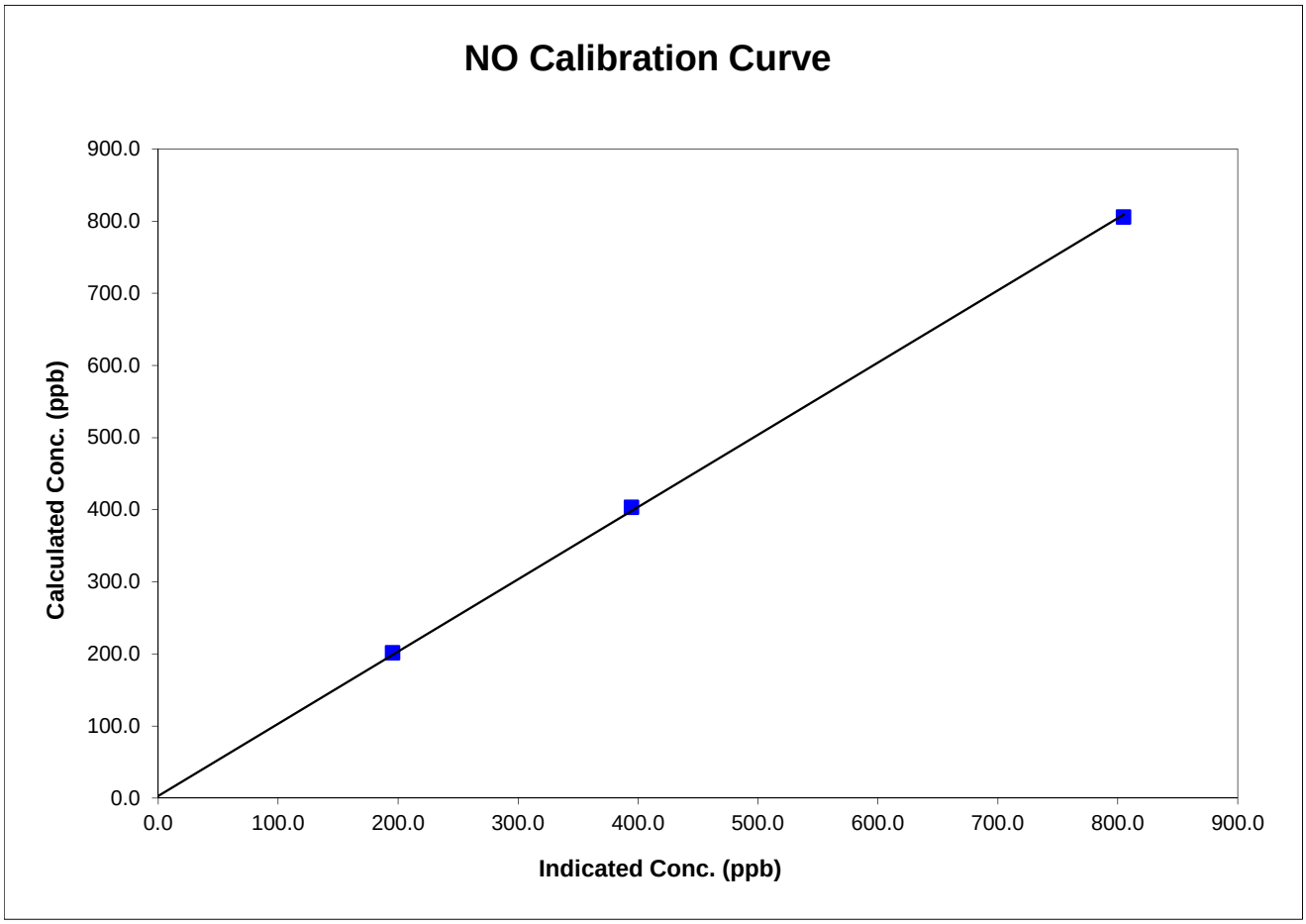
NO Calibration Summary

Station Information

Calibration Date	April 24, 2014	Previous Calibration	March 25, 2014
Station Name	Shell Muskeg River	Station Number	AMS 16
Start Time (MST)	8:50	End Time (MST)	13:35
Analyzer make	API T200	Analyzer serial #	724

Calibration Information

Calculated conc (ppb) (Cc)	Indicated concentration (ppb) (Ic)	Correction factor (Cc/Ic)	Statistical Evaluation	
0.0	-0.2	N/A	Correlation Coefficient	0.999863
805.9	804.8	1.0014		
403.5	394.6	1.0224	Slope	1.002158
201.7	195.4	1.0324		
0.0	-0.2	0.0000	Intercept	2.718084



Wood Buffalo Environmental Association

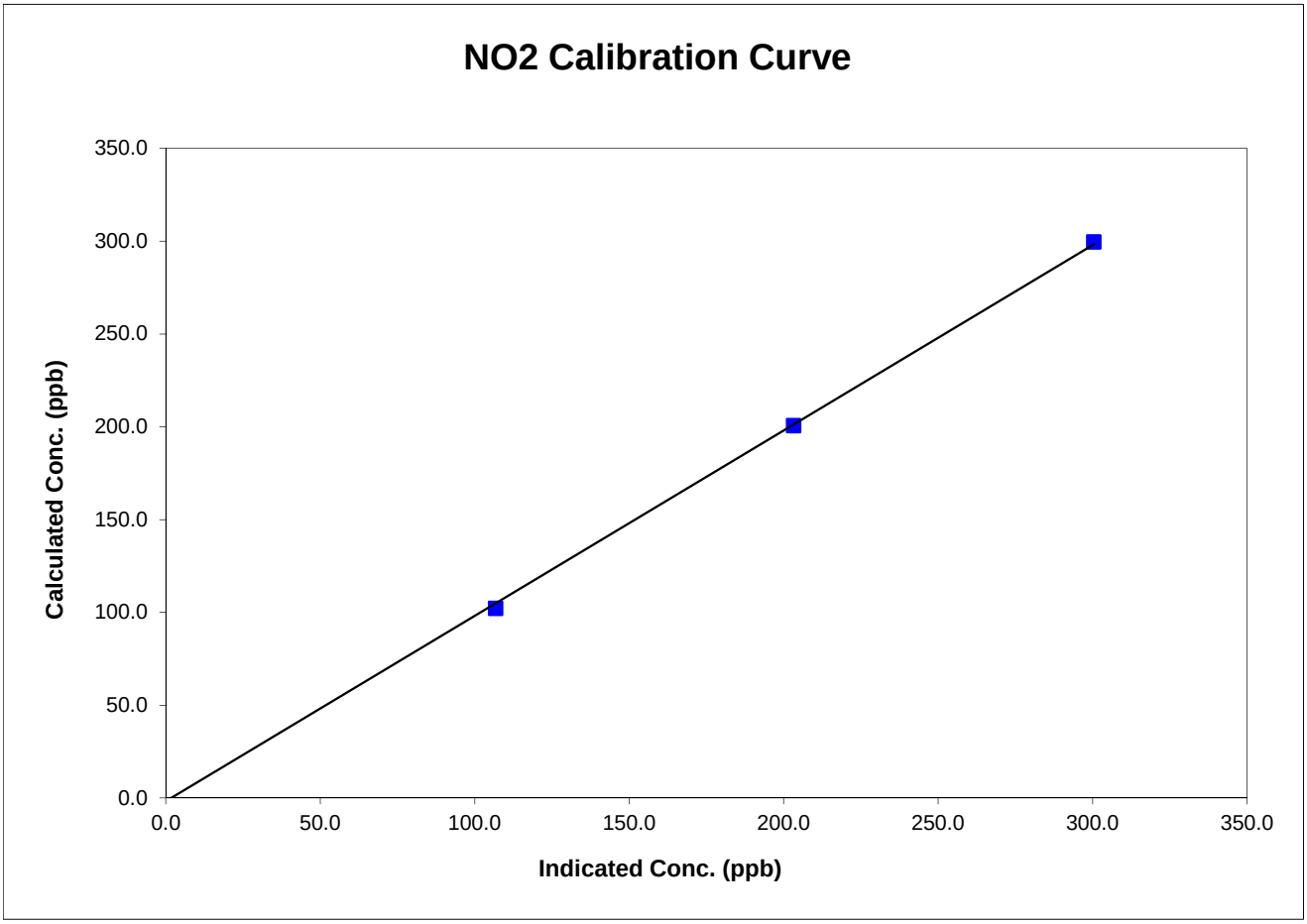
NO_2 Calibration Summary

Station Information

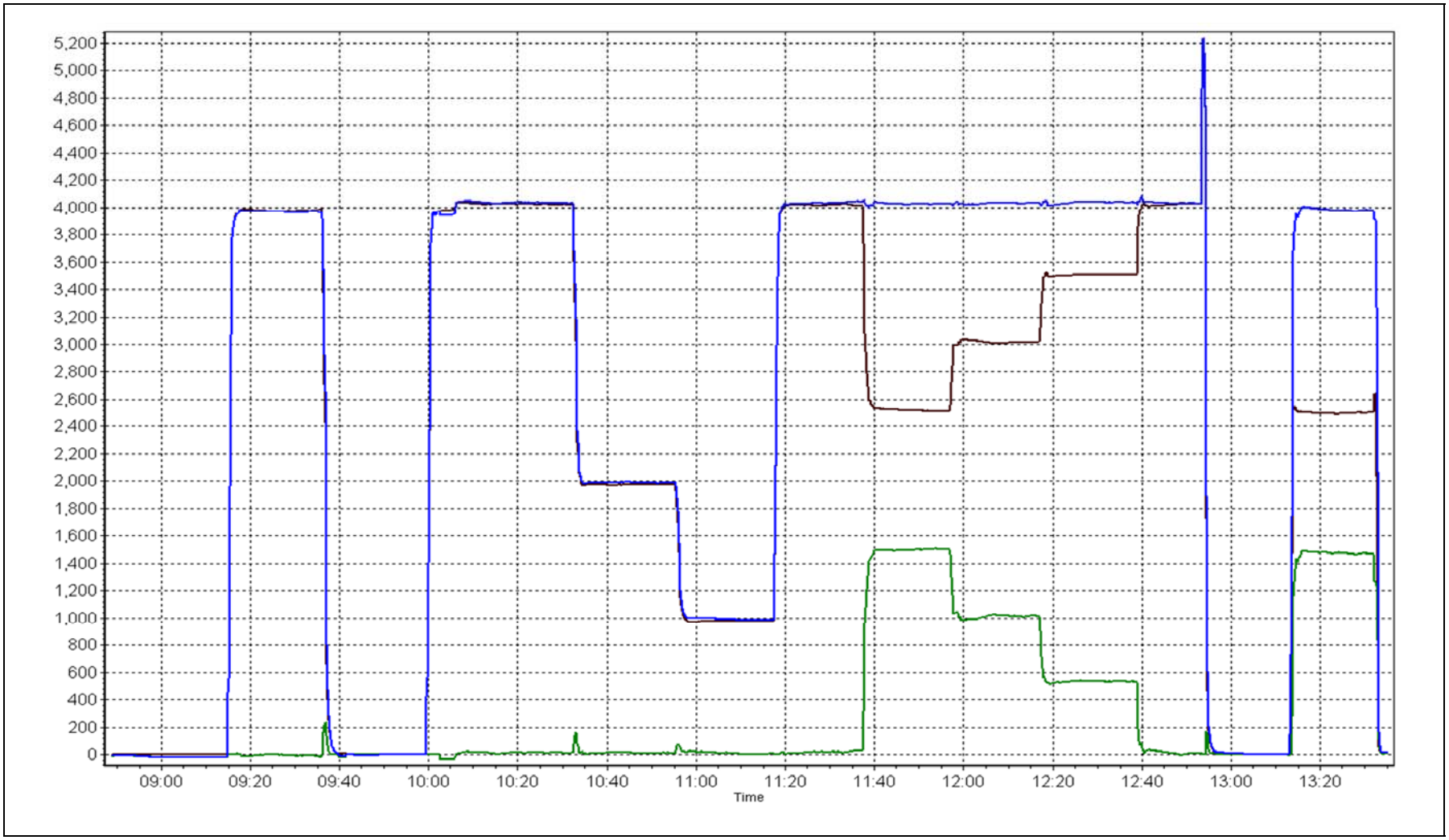
Calibration Date	April 24, 2014	Previous Calibration	March 25, 2014
Station Number	Shell Muskeg River	Station Number	AMS 16
Start Time (MST)	8:50	End Time (MST)	13:35
Analyzer make	API T200	Analyzer serial #	724

Calibration Information

Calculated conc (ppb) (Cc)	Indicated concentration (ppb) (Ic)	Correction factor (Cc/Ic)	Statistical Evaluation	
0.0	-0.1	N/A	Correlation Coefficient	0.999743
299.6	300.4	0.9973		
200.6	203.2	0.9872	Slope	0.999016
102.2	106.8	0.9569		
			Intercept	-1.833841



NOx, NO & NO_2 Calibration Plot Date: April 24, 2014



WOOD BUFFALO ENVIRONMENTAL ASSOCIATION

CONTINUOUS AMBIENT AIR QUALITY
MONITORING PROGRAM
MONTHLY REPORT

AMS 17
WAPASU
APRIL 2014

Operations and Data Collection by:
Wood Buffalo Environmental Association
Fort McMurray, Alberta

QA/QC, Data Validation and Reporting by:
Aurora Atmospherics Inc.
Calgary, Alberta

May 30, 2014

WOOD BUFFALO ENVIRONMENTAL ASSOCIATION - WAPASU (AMS 17)
APRIL 2014

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	678	35	42	99.03	24	0	4	0
H2S (ppb) Average	677	34	43	98.75	1	0	0	0
THC (ppm) Average	678	35	42	99.03	2.4	-	2.2	-
O3 (ppb) Average	680	33	40	99.03	53	0	46	-
NO2 (ppb) Average	665	46	55	98.75	20	0	6	-
NO (ppb) Average	665	46	55	98.75	15	-	2	-
NOX (ppb) Average	665	46	55	98.75	35	-	7	-
PM2.5 (ug/m3) Average	691	0	29	95.97	13.8	-	4.5	0
Temperature 2 m (C) Average	720	0	0	100.00	20	-	13.8	-
Relative Humidity (%) Average	720	0	0	100.00	98	-	-	-
Wind Speed 10 m (km/h) Average	717	0	3	99.58	24	-	-	-
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 - WAPASU (AMS 17)
APRIL 2014

MONTHLY SUMMARY FOR AIR QUALITY/ METEOROLOGICAL MONITORING MEASUREMENTS

					Percentile						
Parameter	Number	Mean	StnDev	Total	Min	P10	Q1	Median	Q3	P90	Max
SO2 (ppb) Average	678	0.8	2	-	0	0	0	0	1	1	24
H2S (ppb) Average	677	0.2	0	-	0	0	0	0	0	0	1
THC (ppm) Average	678	2.09	0.1	-	1.9	2	2.1	2.1	2.1	2.2	2.4
O3 (ppb) Average	680	37.9	8	-	8	25	34	40	44	46	53
NO2 (ppb) Average	665	1.4	2	-	0	0	0	1	2	4	20
NO (ppb) Average	665	0.6	1	-	0	0	0	0	1	1	15
NOX (ppb) Average	665	2	3	-	0	0	1	1	2	5	35
PM2.5 (ug/m3) Average	691	3.15	1.6	-	0	1.5	2.1	2.9	4	5	13.8
Temperature 2 m (C) Average	720	-0.44	7.9	-	-22.2	-10.6	-5.2	0.4	4.4	9	20
Relative Humidity (%) Average	720	60.4	20	-	18	33	44	60	77	88	98
Wind Speed 10 m (km/h) Average	717	10.2	5	-	0	4	7	10	13	17	24
Wind Direction 10 m (deg) Average	717	-	-	-	-	-	-	-	-	-	-

WOOD BUFFALO ENVIRONMENTAL ASSOCIATION - WAPASU (AMS 17)
APRIL 2014

OPERATIONAL NOTES

Parameter	Period Start	Period End	Duration (Hours)	Notes
AIR QUALITY ANALYZERS	04 Apr 2014 08:00	04 Apr 2014 10:00	3	Power interruption due to site construction
AIR QUALITY ANALYZERS	04 Apr 2014 14:00	04 Apr 2014 17:00	4	Power interruption due to site construction
H2S	04 Apr 2014 11:00	04 Apr 2014 11:00	1	Stabilization period after power interruption
H2S	04 Apr 2014 18:00	04 Apr 2014 18:00	1	Stabilization period after power interruption
NO2, NO, NOX	04 Apr 2014 11:00	04 Apr 2014 11:00	1	Stabilization period after power interruption
NO2, NO, NOX	04 Apr 2014 18:00	04 Apr 2014 18:00	1	Stabilization period after power interruption
PM2.5	09 Apr 2014 12:00	09 Apr 2014 14:00	3	Flow and zero reference checks, sample head cleaning
PM2.5	10 Apr 2014 11:00	10 Apr 2014 11:00	1	Maintenance - Stn operator at site
PM2.5	27 Apr 2014 09:00	27 Apr 2014 13:00	5	Intermittent unstable operation - excessive baseline drift
PM2.5	27 Apr 2014 15:00	27 Apr 2014 23:00	9	Intermittent unstable operation - excessive baseline drift
PM2.5	28 Apr 2014 02:00	28 Apr 2014 03:00	2	Intermittent unstable operation - excessive baseline drift
PM2.5	28 Apr 2014 06:00	28 Apr 2014 07:00	2	Intermittent unstable operation - excessive baseline drift
Wind Speed, Wind Direction	05 Apr 2014 02:00	05 Apr 2014 02:00	1	Flatline in sensor output signal
Wind Speed, Wind Direction	10 Apr 2014 10:00	10 Apr 2014 10:00	1	Maintenance removed sensors for de-icing
Wind Speed, Wind Direction	20 Apr 2014 19:00	20 Apr 2014 19:00	1	Flatline in sensor output signal

Wood Buffalo Environmental Association

Summary of Hour Averages

Sulphur Dioxide (SO_2) - ppb

Wapasu - April 2014

Number of Exceedences (AAAQO): 1-hr: 0 24-hr: 0
Maximum Value: 24 ppb on Apr 6 14:00 Maximum Daily Average: 3.8 ppb on Apr 7

Minimum Value: 0 ppb on Apr 10 18:00 Minimum Daily Average: 0.1 ppb on Apr 27
Maximum Diurnal Average: 1.7 ppb at hour 9 Minimum Diurnal Average: 0.4 ppb at hour 21
Monthly Average: 0.8 ppb Percentiles: $P_1 = 0$ $P_{10} = 0$ $Q_1 = 0$ Median = 0 $Q_3 = 1$ $P_{90} = 1$ $P_{99} = 9$

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-Apr	0	Z	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0.3	0
2-Apr	0	Z	0	0	0	0	0	C	C	C	C	C	0	0	0	0	0	0	0	0	0	0	0	0	0.2	0
3-Apr	0	Z	0	0	0	0	0	1	3	3	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0.6	3
4-Apr	0	Z	0	0	0	0	0	PF	PF	PF	0	0	0	PF	PF	PF	PF	0	0	0	0	0	0	0	--	0
5-Apr	0	Z	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0.3	0
6-Apr	0	Z	0	0	0	0	0	0	0	0	0	0	3	24	4	2	1	1	2	2	1	1	1	1	2.0	24
7-Apr	2	Z	8	9	4	1	1	1	1	1	1	1	1	1	9	12	5	7	5	6	3	2	2	6	3.8	12
8-Apr	4	Z	1	2	5	4	5	8	15	8	5	1	1	1	1	1	1	1	1	1	1	1	1	1	2.8	15
9-Apr	1	Z	1	1	1	1	1	1	1	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0.5	1
10-Apr	0	Z	0	0	0	0	0	0	0	1	1	1	1	0	0	0	0	0	0	0	0	0	0	0	0.3	1
11-Apr	0	Z	1	0	1	0	1	1	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0.3	1
12-Apr	0	Z	0	0	0	0	0	0	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0.4	1
13-Apr	0	Z	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0.3	0
14-Apr	0	Z	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	0	2	2	1	0.8	2
15-Apr	1	Z	1	0	0	0	0	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0.2	1
16-Apr	0	Z	0	0	0	1	2	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0.4	2
17-Apr	0	Z	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0.3	0
18-Apr	0	Z	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0.2	0
19-Apr	0	Z	0	0	0	0	0	0	0	0	0	0	0	0	1	0	1	1	0	0	0	0	0	0	0.3	1
20-Apr	0	Z	0	0	0	0	1	12	11	5	4	3	1	1	1	1	1	1	1	0	0	0	0	0	2.0	12
21-Apr	0	Z	2	2	0	0	1	0	0	3	5	2	1	0	0	0	0	0	0	0	0	0	0	0	0.8	5
22-Apr	0	Z	0	1	3	0	0	1	0	1	0	0	0	0	0	0	0	0	0	0	0	0	1	1	0.4	3
23-Apr	0	Z	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	0	0	0	0	1	1	0	0.7	1
24-Apr	1	Z	1	1	1	1	1	1	1	1	1	1	1	1	1	0	0	0	0	0	1	7	1	0	0.9	7
25-Apr	1	Z	6	5	8	1	0	0	0	1	0	0	0	0	0	1	0	0	0	0	0	0	0	0	1.3	8
26-Apr	0	Z	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0.2	0
27-Apr	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
28-Apr	0	Z	0	0	0	0	0	1	4	5	3	1	1	0	0	0	0	0	0	0	0	0	0	0	0.8	5
29-Apr	0	Z	1	1	1	0	0	1	2	3	2	1	1	2	1	0	0	0	0	0	0	0	0	0	0.8	3
30-Apr	0	Z	0	0	0	1	0	1	0	0	0	0	0	0	0	0	1	1	1	1	0	1	3	3	0.7	3
	0.5	--	1.0	0.9	1.0	0.6	0.6	1.3	1.7	1.3	1.0	0.6	0.6	1.3	0.8	0.8	0.5	0.6	0.5	0.5	0.4	0.7	0.5	0.6	Diurnal Average	
	4	--	8	9	8	4	5	12	15	8	5	3	3	24	9	12	5	7	5	6	3	7	3	6	Diurnal Maximum	

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

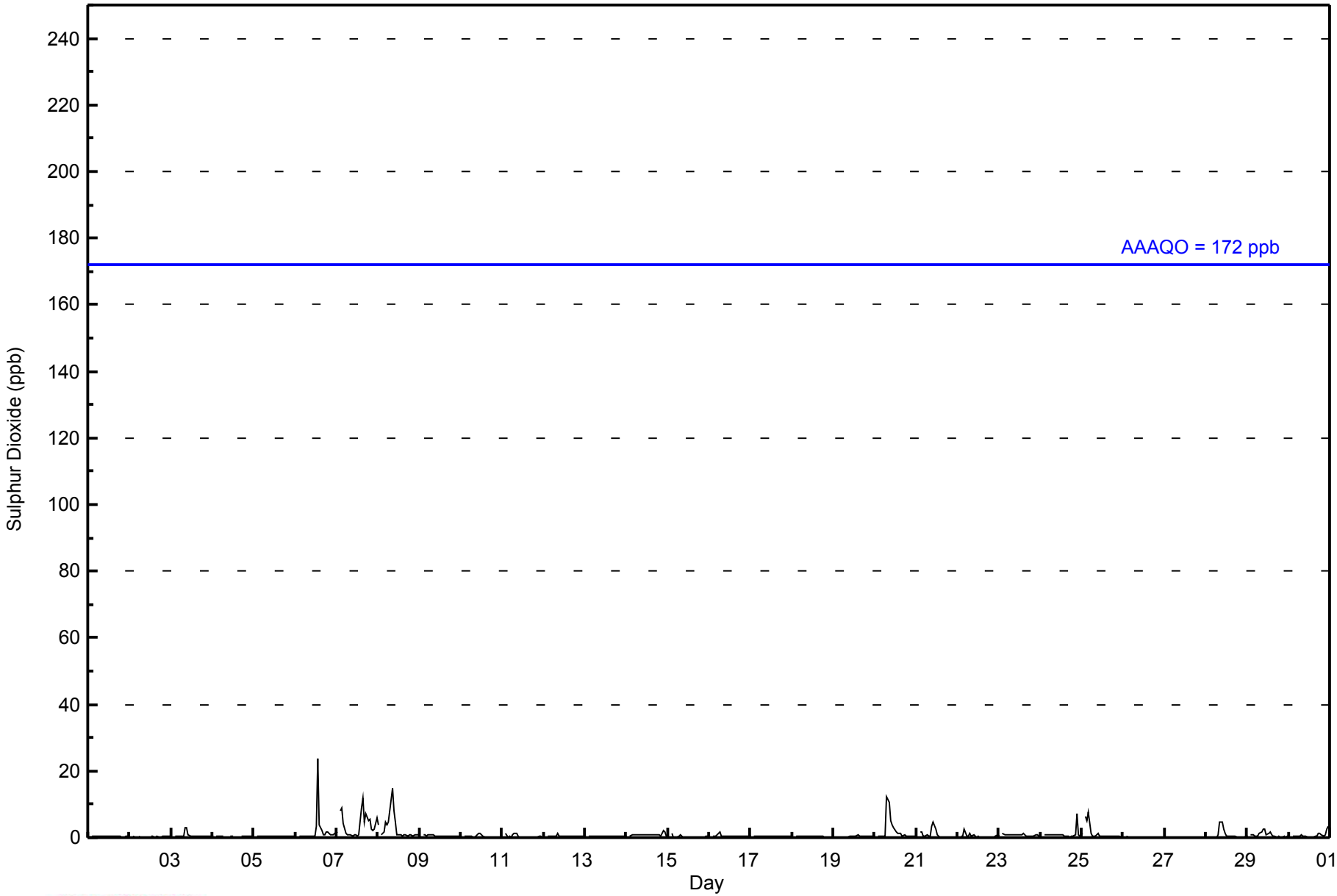
AURORA ATMOSPHERICS INC.

WBEA NETWORK

Hourly Averages

Sulphur Dioxide (SO_2) - ppb

Wapasu - April 2014



AURORA ATMOSPHERICS INC.

Concentration Ranges (ppb)	Number of Hours	%	Cumulative %
0 - 10	673	99.26	99.26
11 - 20	4	0.59	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: 678

Total Number of Hours: 720

WBEA NETWORK

Frequency Distribution

Sulphur Dioxide (SO_2) - ppb

Wapasu - April 2014

Concentration	Wind Direction																
Ranges (ppb)	N	NNE	NE	ENE	E	ESE	SE	SSE	S	SSW	SW	WSW	W	WNW	NW	NNW	**Totals**
0 - 10	39	33	34	22	56	91	122	96	56	15	15	23	16	9	16	28	671
11 - 20	0	0	0	0	0	0	0	0	0	0	2	0	0	1	0	1	4
21 - 60	0	0	0	0	0	0	0	0	0	0	0	1	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	39	33	34	22	56	91	122	96	56	15	17	24	16	10	16	29	676

Total Number of Valid Hours: 676

Total Number of Hours: 720

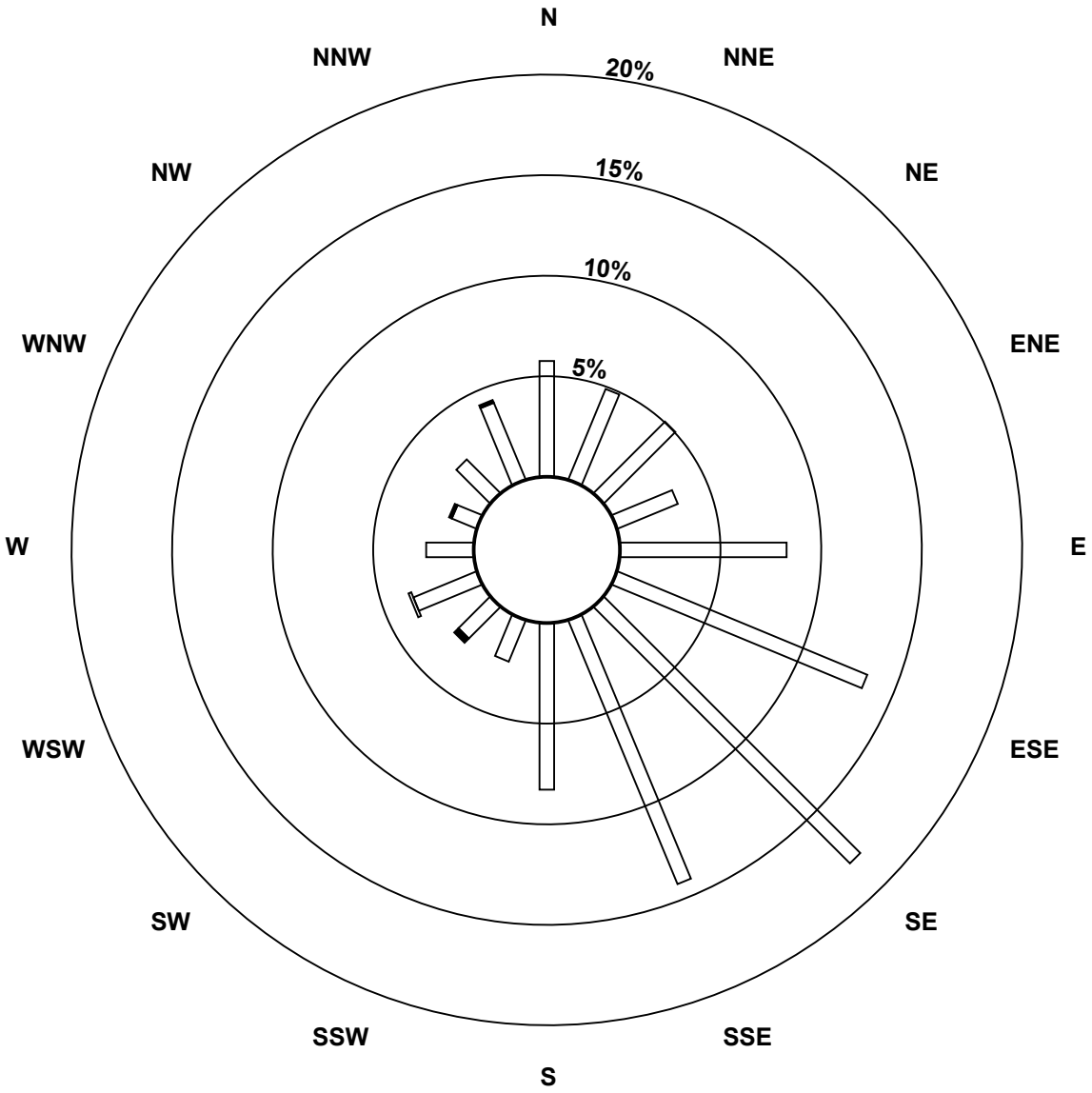
AURORA ATMOSPHERICS INC.

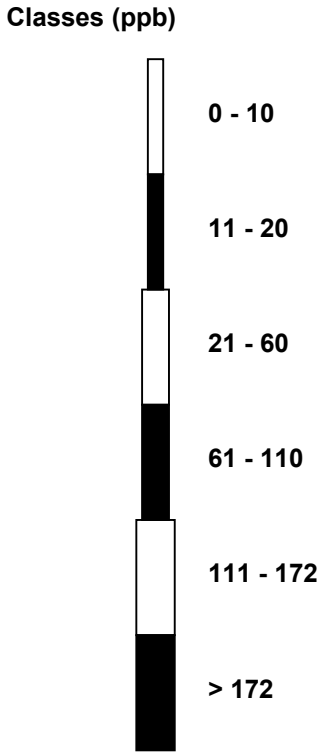
Wood Buffalo Environmental Association

Wind Rose Apr 2014

Sulphur Dioxide (SO_2) - ppb

Wapasu (AMS 17)





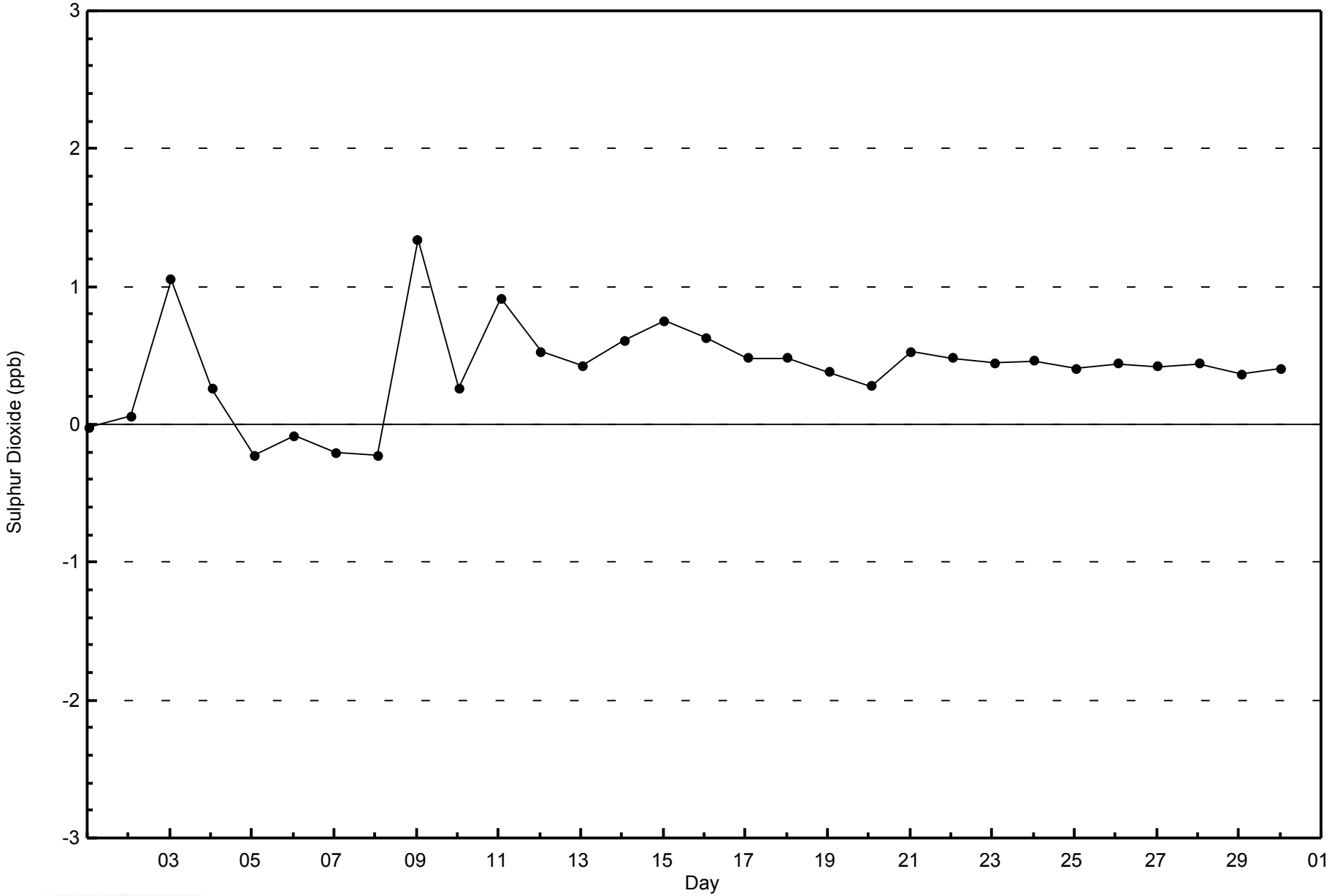
Total Number of Valid Hours: 676

WBEA NETWORK

Zero Responses

Sulphur Dioxide (SO_2) - ppb

Wapasu - April 2014



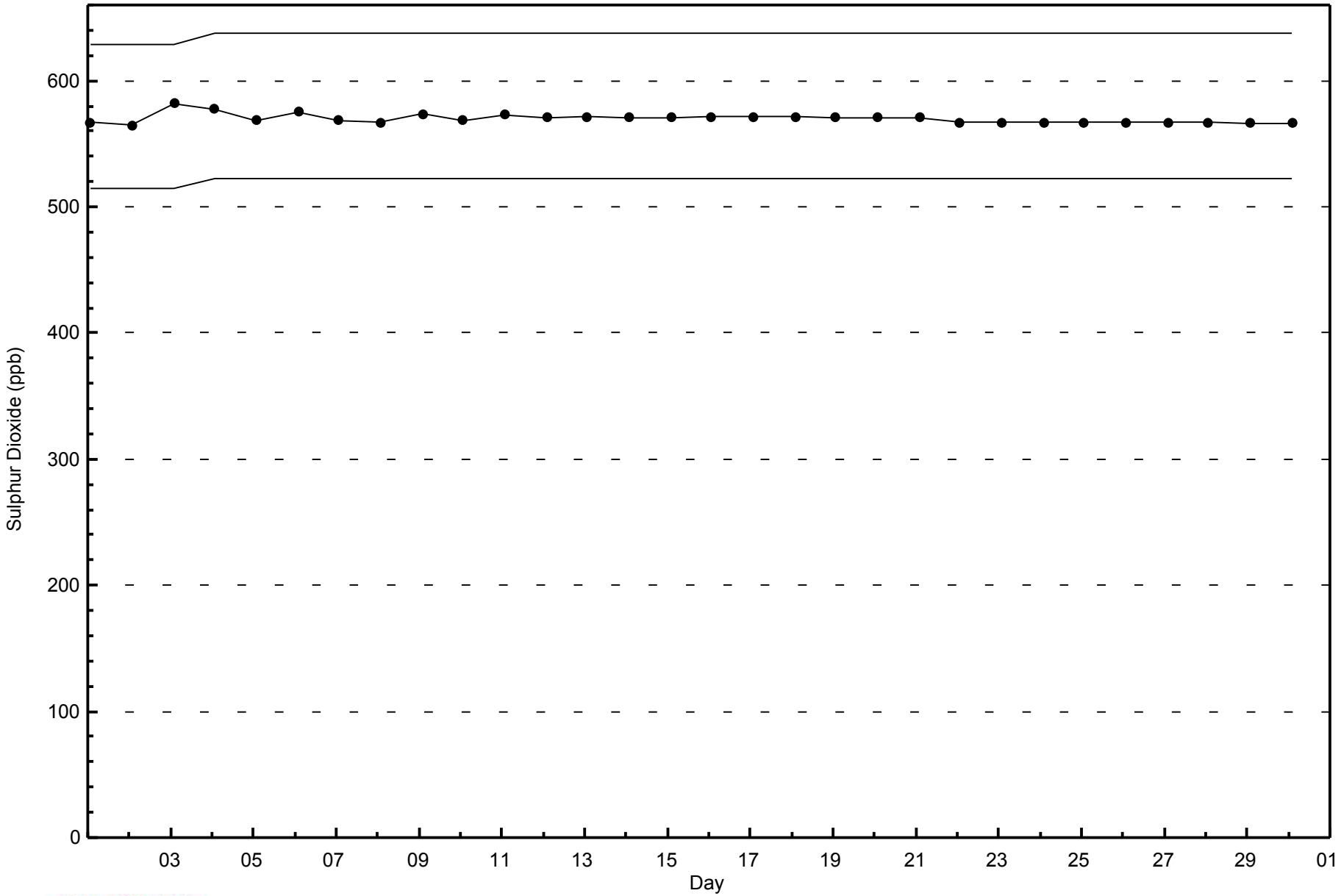
AURORA ATMOSPHERICS INC.

WBEA NETWORK

Span Responses

Sulphur Dioxide (SO_2) - ppb

Wapasu - April 2014



AURORA ATMOSPHERICS INC.

Wood Buffalo Environmental Association

Summary of Hour Averages

Hydrogen Sulphide (H_2S) - ppb

Wapasu - April 2014

Number of Exceedences (AAAQO): 1-hr: 0 24-hr: 0
Maximum Value: 1 ppb on Apr 3 09:00 Maximum Daily Average: 0.4 ppb on Apr 3

Minimum Value: 0 ppb on Apr 6 20:00 Minimum Daily Average: 0.1 ppb on Apr 16
Maximum Diurnal Average: 0.3 ppb at hour 4 Minimum Diurnal Average: 0.1 ppb at hour 20
Monthly Average: 0.2 ppb Percentiles: $P_1 = 0$ $P_{10} = 0$ $Q_1 = 0$ Median = 0 $Q_3 = 0$ $P_{90} = 0$ $P_{99} = 0$

Hours in Service:	720
Hours of Data:	677
Hours of Missing Data:	43
Hours of Calibration:	34
Percent Operational Time:	98.8

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-Apr	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	0
2-Apr	0	0	Z	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0.2	0
3-Apr	0	0	Z	1	0	0	0	1	1	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0.4	1
4-Apr	0	0	Z	1	0	0	0	PF	PF	PF	UO	0	0	PF	PF	PF	PF	UO	0	0	0	0	0	0	--	1
5-Apr	0	0	Z	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0.2	0
6-Apr	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	0
7-Apr	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	0
8-Apr	0	0	Z	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0.2	0
9-Apr	0	0	Z	0	0	0	0	0	C	C	C	C	0	0	0	0	0	0	0	0	0	0	0	0	0.2	0
10-Apr	0	0	Z	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0.2	0
11-Apr	0	0	Z	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0.2	0
12-Apr	0	0	Z	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0.2	0
13-Apr	0	0	Z	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0.2	0
14-Apr	0	0	Z	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0.2	0
15-Apr	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	0
16-Apr	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	0
17-Apr	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	0
18-Apr	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	0
19-Apr	0	0	Z	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0.2	0
20-Apr	0	0	Z	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0.2	0
21-Apr	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	0
22-Apr	0	0	Z	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0.2	0
23-Apr	0	0	Z	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0.2	0
24-Apr	0	0	Z	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1	0	0	0.2	1
25-Apr	0	0	Z	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0.2	0
26-Apr	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	0
27-Apr	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	0
28-Apr	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	0
29-Apr	0	0	Z	0	0	0	0	0	0	0	0	0	0	1	0	0	0	0	0	0	0	0	0	0	0.2	1
30-Apr	0	0	Z	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0.2	0
	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	0.1	0.1	0.1	0.1	0.1	0.1	0.2	0.2	0.2	Diurnal Average	
	0	0	--	1	0	0	0	1	1	1	0	0	0	1	0	0	0	0	0	0	0	1	0	0	Diurnal Maximum	

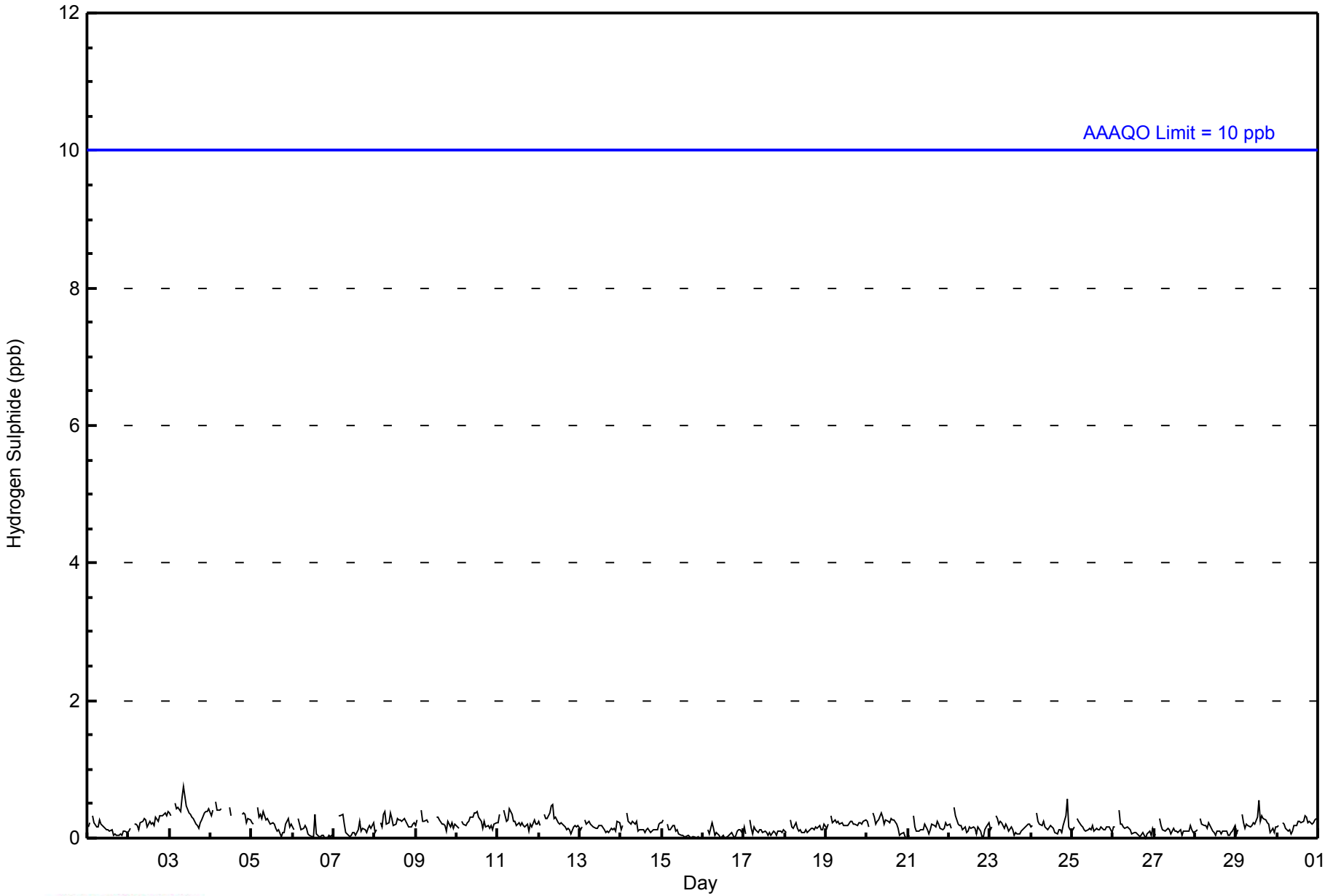
Z - zerospan C - Calibration UO - Unstable Operation PF - Power Failure
Alberta Ambient Air Quality Objectives (AAAQO): 1-hr 10 ppb 24-hr 3 ppb

WBEA NETWORK

Hourly Averages

Hydrogen Sulphide (H_2S) - ppb

Wapasu - April 2014



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Concentration Ranges (ppb)	Number of Hours	%	Cumulative %
0 - 2	677	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: 677

Total Number of Hours: 720

WBEA NETWORK

Frequency Distribution

Hydrogen Sulphide (H_2S) - ppb

Wapasu - April 2014

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	35	35	25	54	91	123	95	55	15	17	25	14	9	13	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	39	35	35	25	54	91	123	95	55	15	17	25	14	9	13	29	674

Total Number of Valid Hours: 674

Total Number of Hours: 720

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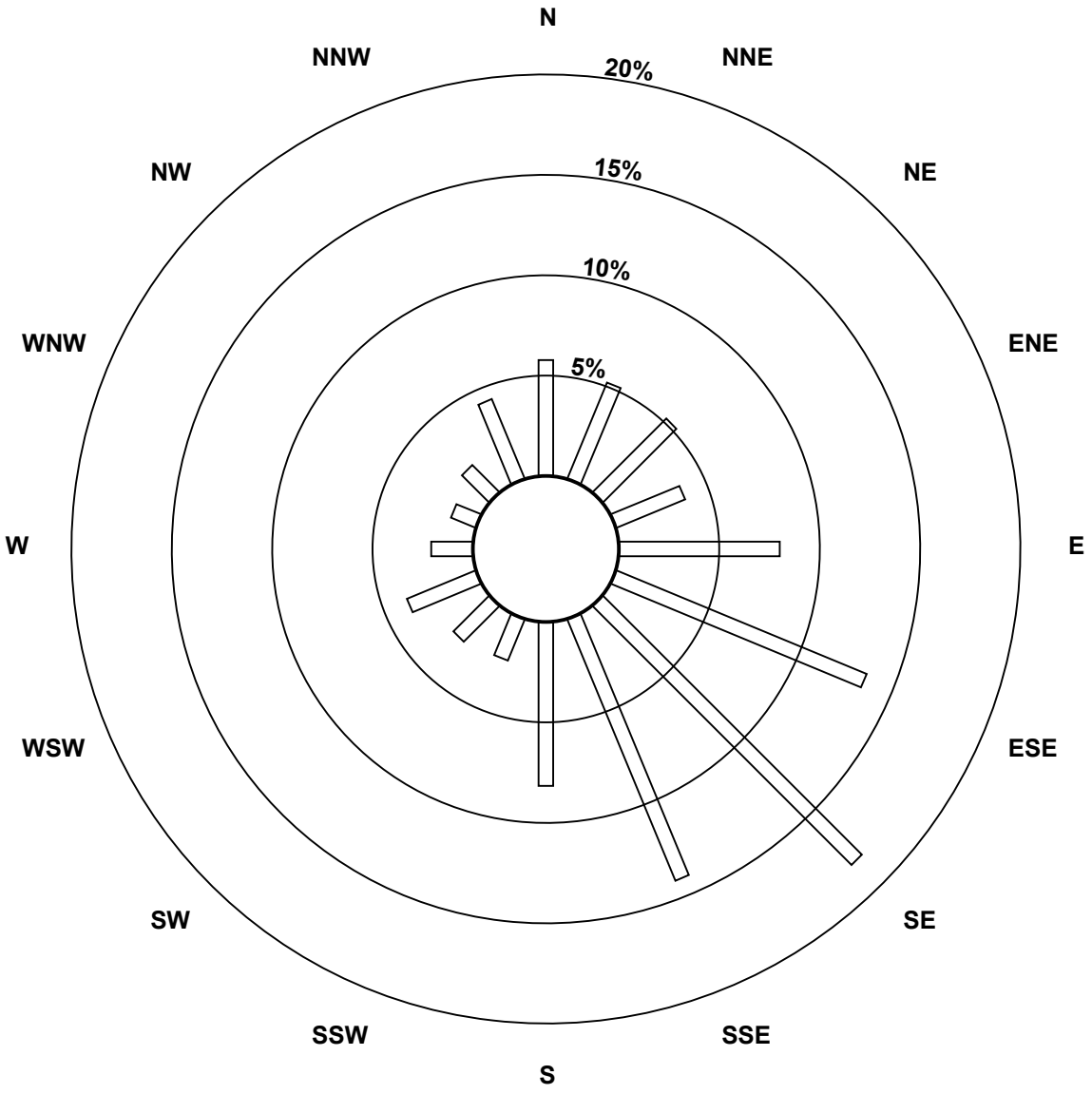
Wood Buffalo Environmental Association

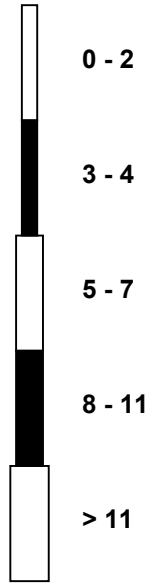
Wind Rose Apr 2014

Hydrogen Sulphide (H_2S) - ppb

Wapasu (AMS 17)



Classes (ppb)



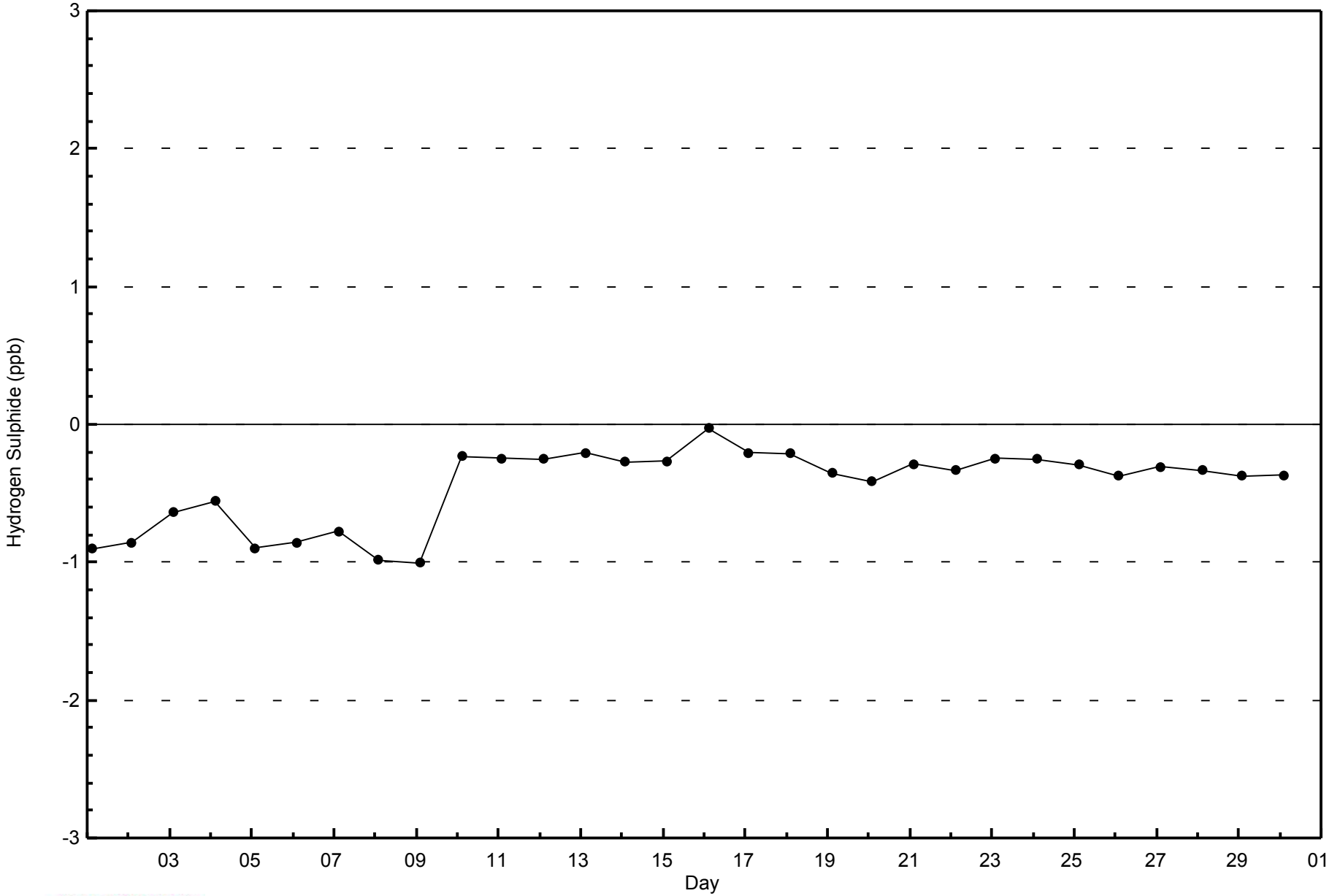
Total Number of Valid Hours: 674

WBEA NETWORK

Zero Responses

Hydrogen Sulphide (H_2S) - ppb

Wapasu - April 2014



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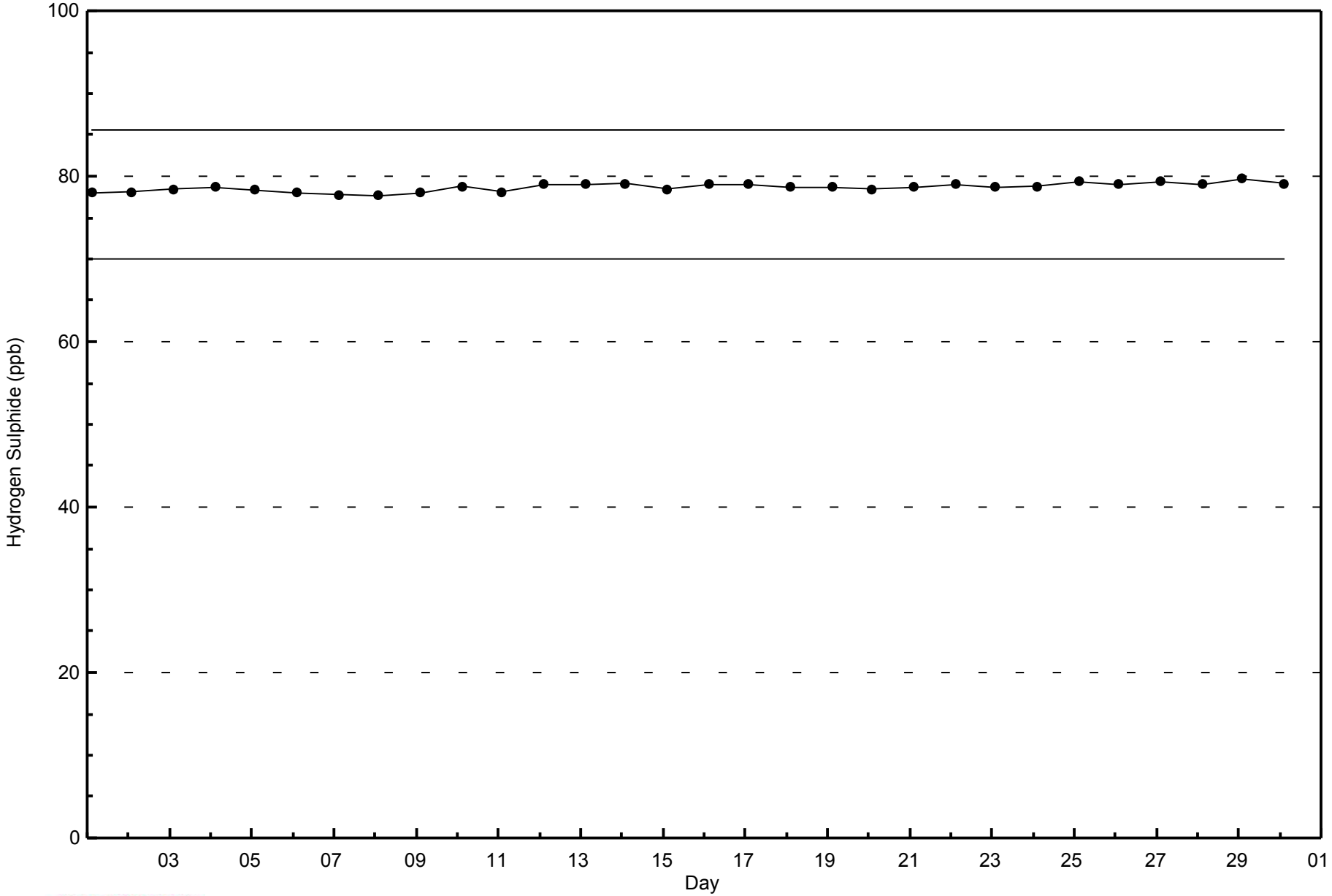
WBEA NETWORK

Span Responses

Hydrogen Sulphide (H_2S) - ppb

Wapasu - April 2014



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Summary of Hour Averages

Total Hydrocarbons (THC) - ppm

Wapasu - April 2014

Maximum Value: 2.4 ppm on Apr 7 06:00

Maximum Daily Average: 2.2 ppm on Apr 7

Minimum Value: 1.9 ppm on Apr 1 17:00

Minimum Daily Average: 1.9 ppm on Apr 1

Maximum Diurnal Average: 2.1 ppm at hour 3

Minimum Diurnal Average: 2.1 ppm at hour 20

Monthly Average: 2.09 ppm

Percentiles: P_1 = 1.9 P_{10} = 2.0 Q_1 = 2.1 Median = 2.1 Q_3 = 2.1 P_{90} = 2.2 P_{99} = 2.3

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-Apr	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	1.9	1.9	1.9	1.9	1.9	1.9	1.9	2.0	1.9	2.0
2-Apr	1.9	Z	2.0	2.0	2.0	2.0	2.0	C	C	C	C	C	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
3-Apr	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	2.0	2.0	2.0	2.1	2.1	2.1	2.1	2.1	2.1	2.1
4-Apr	2.1	Z	2.2	2.2	2.1	2.2	2.2	PF	PF	PF	2.2	2.2	2.1	PF	PF	PF	PF	2.3	2.2	2.2	2.2	2.2	2.1	2.1	--	2.3
5-Apr	2.2	Z	2.2	2.2	2.2	2.2	2.2	2.2	2.1	2.1	2.1	2.1	2.1	2.1	2.1	2.1	2.0	2.0	2.0	2.1	2.1	2.1	2.1	2.1	2.1	2.2
6-Apr	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	2.1	2.1	2.1	2.1	2.2	2.2	2.1	2.2
7-Apr	2.2	Z	2.2	2.3	2.3	2.4	2.3	2.2	2.1	2.1	2.1	2.1	2.1	2.1	2.2	2.1	2.2	2.1	2.1	2.1	2.1	2.2	2.1	2.1	2.2	2.4
8-Apr	2.1	Z	2.1	2.1	2.1	2.2	2.2	2.1	2.2	2.2	2.2	2.2	2.2	2.2	2.2	2.2	2.2	2.2	2.1	2.1	2.0	2.1	2.1	2.2	2.2	2.2
9-Apr	2.1	Z	2.3	2.1	2.1	2.1	2.2	2.1	2.1	2.1	2.1	2.1	2.1	2.1	2.1	2.0	2.1	2.0	2.0	2.1	2.1	2.2	2.1	2.1	2.1	2.3
10-Apr	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	2.0	2.0	2.1	2.1	2.1	2.1	2.1	2.1	2.1	2.1
11-Apr	2.1	Z	2.1	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	2.1	2.1	2.1	2.1	2.1	2.1	2.1	2.1	2.1	2.1
12-Apr	2.1	Z	2.2	2.1	2.1	2.1	2.2	2.3	2.2	2.1	2.1	2.1	2.1	2.1	2.1	2.0	2.1	2.1	2.1	2.1	2.1	2.1	2.1	2.1	2.1	2.3
13-Apr	2.1	Z	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	2.0	2.0	2.0	2.0	2.0	2.1	2.1	2.1	2.1	2.1	2.2
14-Apr	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	2.1	2.0	2.1	2.1	2.1	2.1	2.1	2.1	2.1	2.1	2.1	2.1	2.1
15-Apr	2.1	Z	2.1	2.1	2.1	2.1	2.1	2.1	2.1	2.1	2.1	2.1	2.1	2.1	2.1	2.1	2.1	2.1	2.1	2.1	2.1	2.1	2.1	2.1	2.1	2.1
16-Apr	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	2.0	2.1	2.0	2.0	2.0	2.1	2.1	2.1	2.1	2.1	2.1
17-Apr	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	2.0	2.1	2.1	2.1	2.1	2.1	2.1
18-Apr	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	2.0	2.1	2.1	2.0	2.0	2.0	2.0	2.0	2.1	2.1
19-Apr	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	2.1	2.1	2.0	2.1	2.0	2.1	2.1	2.1	2.1	2.1	2.1	2.1	2.1
20-Apr	2.1	Z	2.1	2.1	2.1	2.1	2.1	2.1	2.1	2.2	2.1	2.2	2.2	2.2	2.2	2.2	2.2	2.2	2.2	2.1	2.1	2.1	2.1	2.1	2.2	2.2
21-Apr	2.1	Z	2.1	2.1	2.1	2.1	2.1	2.1	2.1	2.1	2.3	2.3	2.2	2.2	2.2	2.2	2.2	2.2	2.2	2.1	2.1	2.1	2.1	2.1	2.1	2.3
22-Apr	2.1	Z	2.1	2.1	2.1	2.1	2.1	2.1	2.1	2.1	2.1	2.1	2.1	2.1	2.1	2.1	2.1	2.1	2.1	2.1	2.1	2.1	2.1	2.1	2.1	2.1
23-Apr	2.1	Z	2.1	2.1	2.1	2.1	2.1	2.1	2.1	2.0	2.1	2.1	2.0	2.0	2.0	2.1	2.0	2.0	2.1	2.0	2.1	2.1	2.1	2.1	2.1	2.1
24-Apr	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	2.0	2.0	2.0	2.1	2.0	2.0	2.0	2.1
25-Apr	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	2.0	2.0	2.1	2.1	2.1	2.1	2.0	2.1
26-Apr	2.1	Z	2.1	2.1	2.1	2.1	2.1	2.1	2.1	2.1	2.1	2.1	2.1	2.1	2.1	2.1	2.1	2.1	2.1	2.1	2.1	2.1	2.1	2.1	2.1	2.1
27-Apr	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	2.0	2.0	2.0	2.1	2.1	2.1	2.0	2.1	2.1
28-Apr	2.0	Z	2.1	2.1	2.1	2.0	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
29-Apr	2.1	Z	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	2.3	2.3	2.2	2.2	2.1	2.1	2.1	2.1	2.2	2.3
30-Apr	2.1	Z	2.1	2.1	2.0	2.1	2.1	2.0	2.1	2.1	2.2	2.2	2.2	2.3	2.2	2.2	2.3	2.3	2.2	2.2	2.2	2.1	2.2	2.2	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	2.1	2.1	2.1	2.1	2.1	2.1	2.1	2.1	Diurnal Average	
	2.2	--	2.3	2.3	2.3	2.4	2.3	2.3	2.2	2.2	2.3	2.3	2.2	2.3	2.2	2.2	2.3	2.3	2.2	2.2	2.2	2.2	2.2	2.2	Diurnal Maximum	

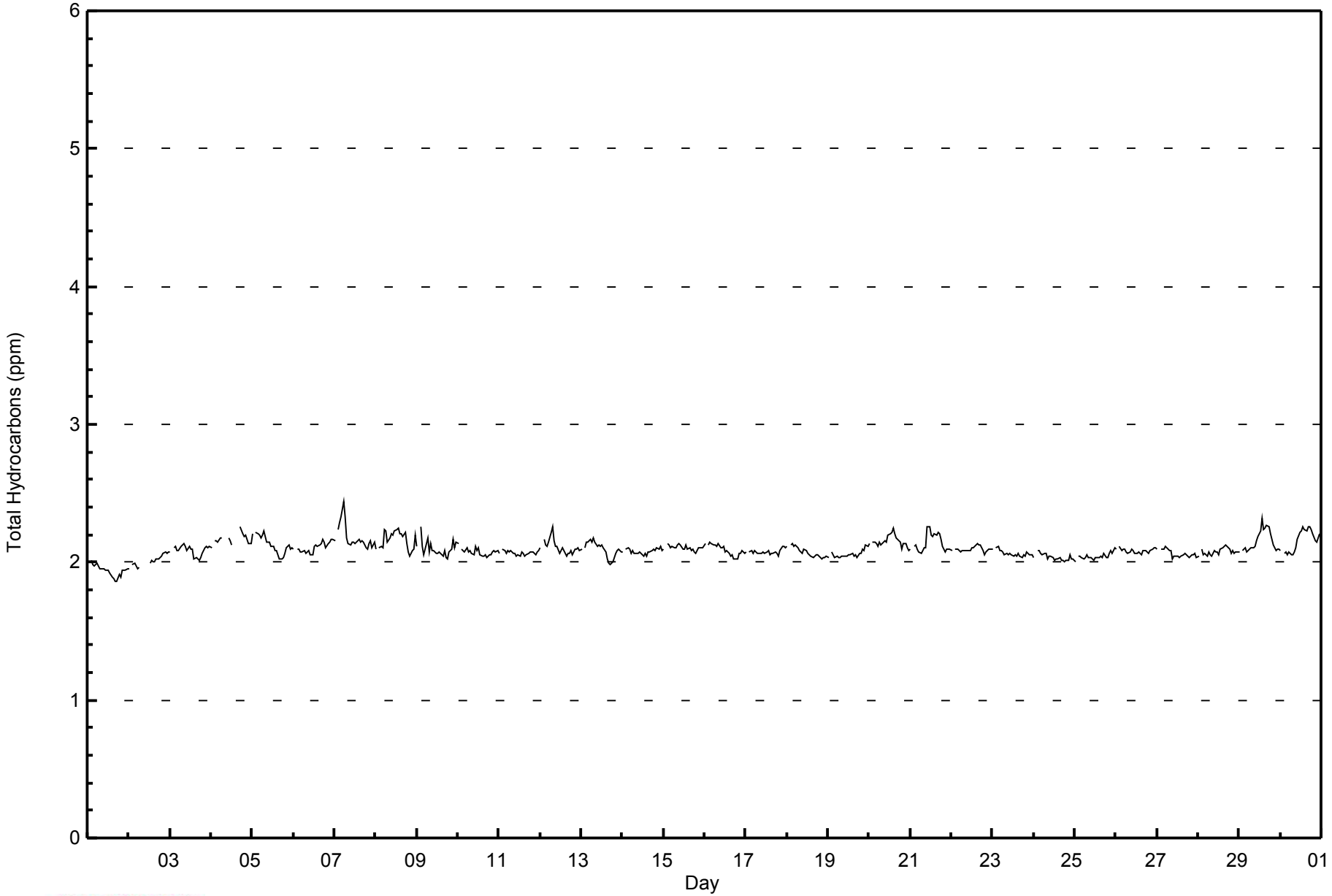
Z - zerospan C - Calibration PF - Power Failure

WBEA NETWORK

Hourly Averages

Total Hydrocarbons (THC) - ppm

Wapasu - April 2014



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Concentration Ranges (ppm)	Number of Hours	%	Cumulative %
0 - 2.0	145	21.39	21.39
2.1 - 3.0	533	78.61	100.00
3.1 - 10.0	0	0.00	100.00
> 10.0	0	0.00	100.00

Total Number of Valid Hours: 678

Total Number of Hours: 720

WBEA NETWORK

Frequency Distribution

Total Hydrocarbons (THC) - ppm

Wapasu - April 2014

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	10	16	15	7	11	24	23	23	11	1	0	1	0	0	1	2	145
2.1 - 3.0	29	17	19	15	45	67	99	73	45	14	17	23	16	10	15	27	531
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	39	33	34	22	56	91	122	96	56	15	17	24	16	10	16	29	676

Total Number of Valid Hours: 676

Total Number of Hours: 720

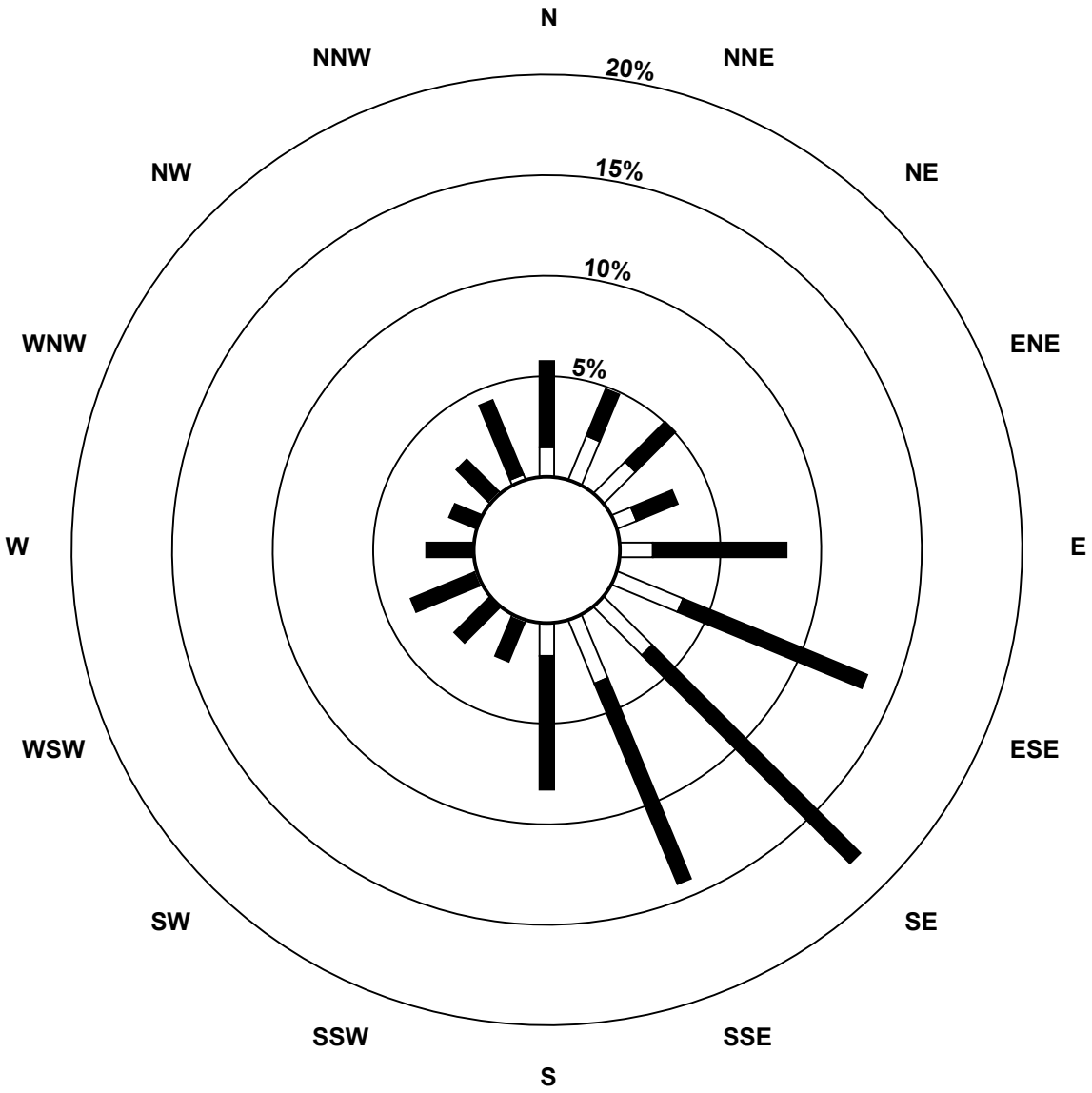
AURORA ATMOSPHERICS INC.

Wood Buffalo Environmental Association

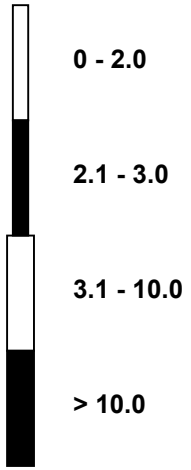
Wind Rose Apr 2014

Total Hydrocarbons (THC) - ppm

Wapasu (AMS 17)



Classes (ppm)



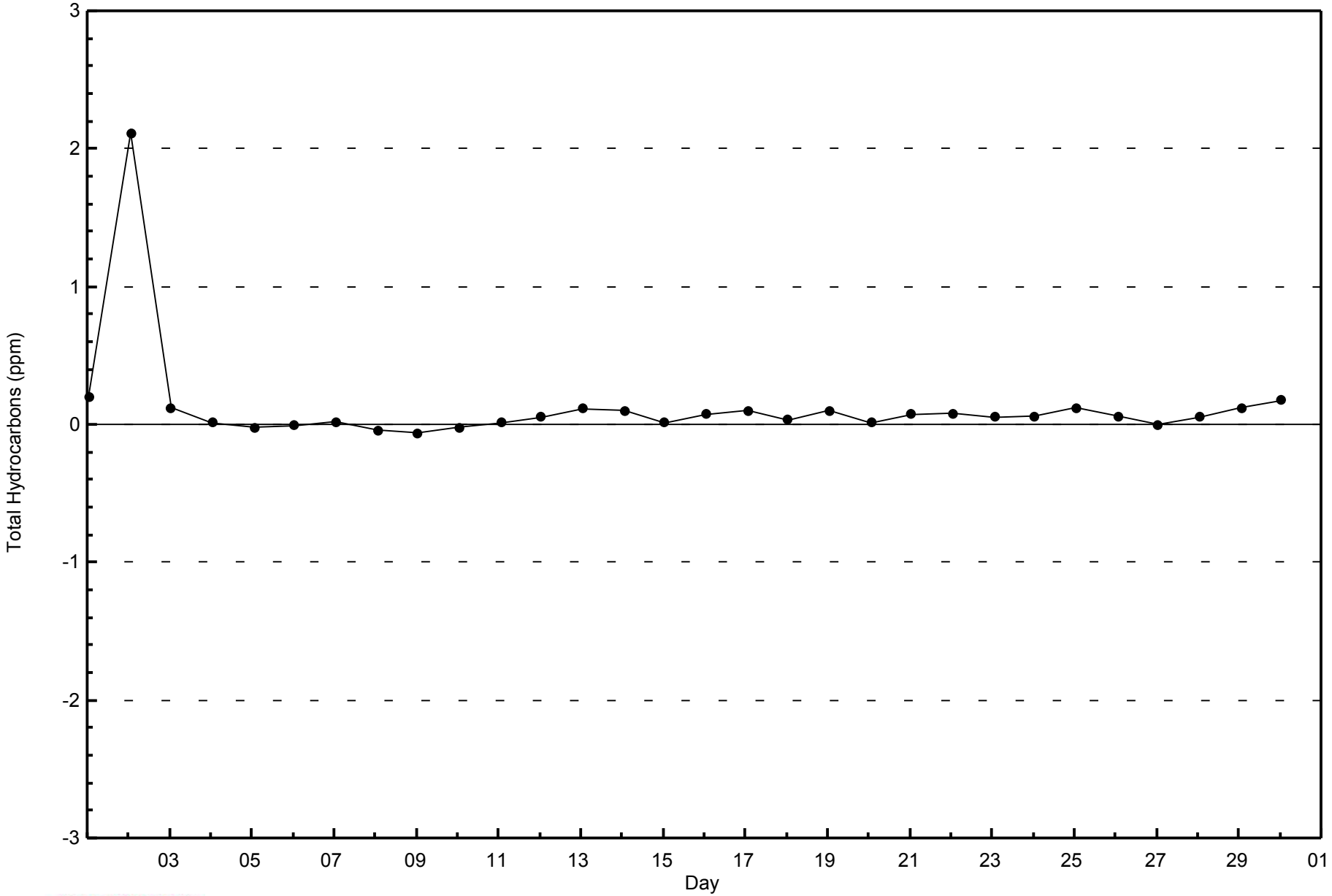
Total Number of Valid Hours: 676

WBEA NETWORK

Zero Responses

Total Hydrocarbons (THC) - ppm

Wapasu - April 2014



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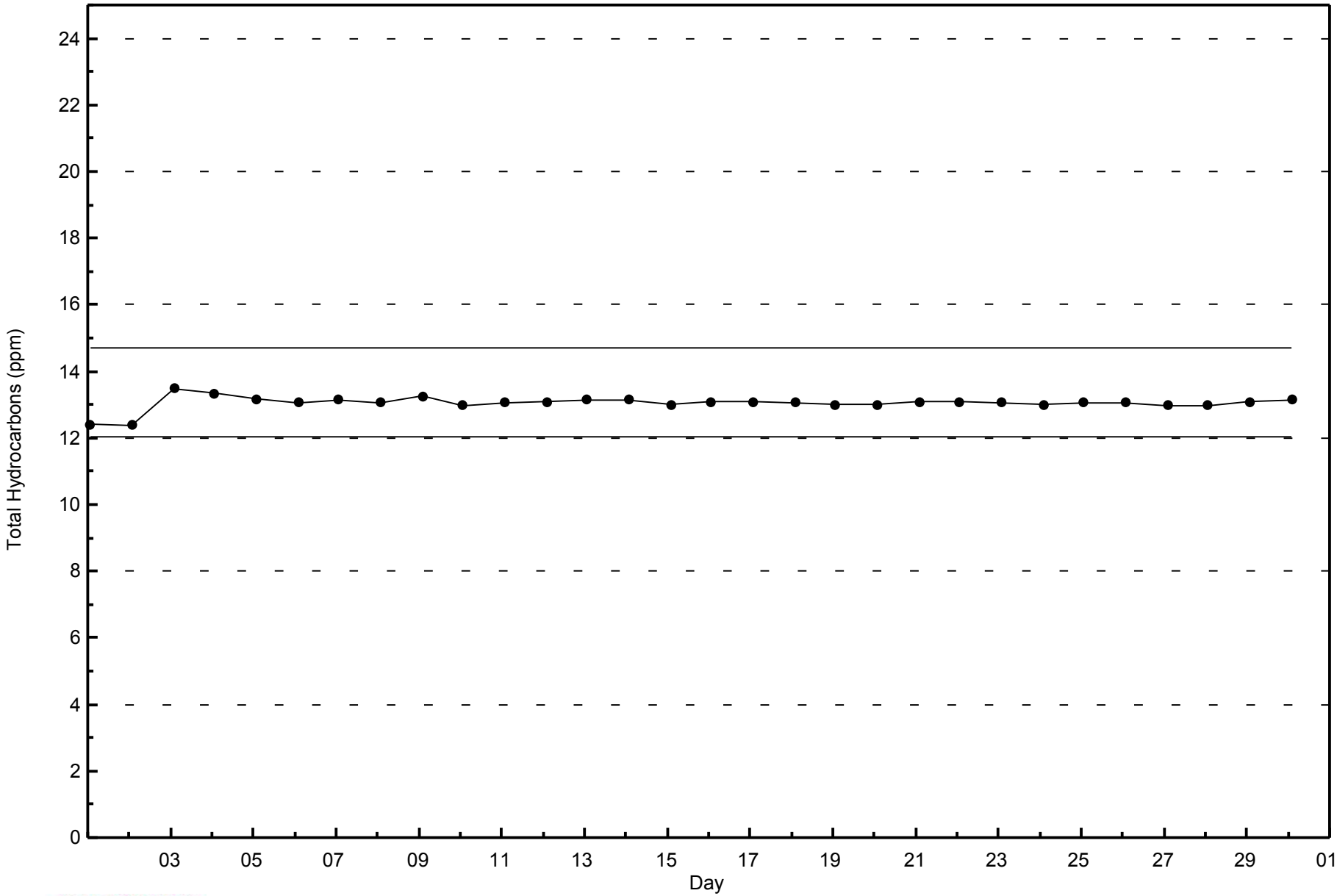
WBEA NETWORK

Span Responses

Total Hydrocarbons (THC) - ppm

Wapasu - April 2014



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Wood Buffalo Environmental Association

Summary of Hour Averages

Ozone (O_3) - ppb

Wapasu - April 2014

Number of Exceedences (AAAQO): 1-hr: 0 24-hr: 0
Maximum Value: 53 ppb on Apr 30 17:00 Maximum Daily Average: 46.1 ppb on Apr 17

Minimum Value: 8 ppb on Apr 9 23:00 Minimum Daily Average: 25.6 ppb on Apr 28
Maximum Diurnal Average: 43.0 ppb at hour 17 Minimum Diurnal Average: 32.0 ppb at hour 6
Monthly Average: 37.9 ppb Percentiles: P_1 = 15 P_{10} = 25 Q_1 = 34 Median = 40 Q_3 = 44 P_{90} = 46 P_{99} = 50

Hours in Service:	720
Hours of Data:	680
Hours of Missing Data:	40
Hours of Calibration:	33
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-Apr	40	39	39	Z	28	27	34	36	35	36	36	36	37	40	40	39	39	39	38	37	35	34	38	38	36.5	40
2-Apr	37	37	36	Z	33	32	31	31	32	35	34	32	31	30	31	30	28	26	26	25	25	25	24	24	30.3	37
3-Apr	23	22	22	Z	19	19	20	19	21	29	38	42	42	40	43	45	43	43	42	42	43	41	42	43	34.0	45
4-Apr	43	44	45	Z	44	44	45	PF	PF	PF	C	C	C	PF	PF	PF	PF	38	37	39	39	38	37	36	--	45
5-Apr	32	25	19	Z	24	27	18	22	36	37	41	41	41	43	44	45	44	42	41	40	40	41	42	42	36.0	45
6-Apr	41	40	45	Z	46	46	46	43	43	44	43	44	38	40	46	48	47	44	43	45	37	32	33	36	42.2	48
7-Apr	39	35	32	Z	18	11	16	34	41	44	44	44	45	45	44	43	44	43	38	36	34	38	39	33	36.6	45
8-Apr	39	40	38	Z	33	20	19	26	27	32	36	37	38	38	40	41	42	44	46	53	51	47	43	35	37.6	53
9-Apr	41	41	34	Z	44	40	38	42	40	40	36	35	35	35	36	36	37	36	34	36	24	13	8	14	33.6	44
10-Apr	25	30	34	Z	32	31	32	33	33	34	35	37	38	39	41	43	45	44	44	41	41	41	40	39	37.2	45
11-Apr	38	36	34	Z	32	36	36	32	33	37	40	41	42	42	40	43	43	42	39	39	40	43	43	36	38.5	43
12-Apr	28	24	21	Z	19	17	15	19	36	39	38	39	39	37	39	39	39	38	35	36	36	34	33	35	31.8	39
13-Apr	36	36	32	Z	21	19	23	31	30	32	33	36	37	38	38	39	40	40	40	39	38	38	40	39	34.6	40
14-Apr	39	39	40	Z	40	40	42	42	43	44	45	46	46	47	48	48	48	49	48	48	46	46	43	41	44.1	49
15-Apr	41	43	43	Z	44	41	38	40	42	44	44	45	45	46	47	47	49	48	46	45	43	45	46	45	44.3	49
16-Apr	45	46	45	Z	40	39	42	44	44	44	44	44	45	45	44	45	45	45	45	45	45	45	44	44	44.1	46
17-Apr	43	43	43	Z	43	43	43	43	45	46	47	47	48	48	49	49	49	49	48	48	48	47	47	46	46.1	49
18-Apr	45	46	46	Z	44	44	45	45	45	45	44	44	44	44	45	45	44	43	42	40	38	35	32	28	42.3	46
19-Apr	23	27	29	Z	25	25	27	29	30	31	31	33	33	36	37	37	38	39	38	36	34	33	33	33	32.0	39
20-Apr	32	31	28	Z	12	15	16	22	27	29	33	40	45	47	49	49	49	48	47	38	28	32	37	41	34.7	49
21-Apr	43	43	41	Z	44	42	37	35	37	43	34	40	45	48	48	47	48	47	45	45	44	42	41	41	42.6	48
22-Apr	41	42	38	Z	37	41	42	44	46	46	45	48	48	47	47	47	47	47	46	46	47	42	41	41	44.2	48
23-Apr	38	43	44	Z	43	40	40	42	43	40	43	45	44	43	44	45	46	45	44	43	40	42	41	39	42.4	46
24-Apr	39	40	39	Z	37	37	38	38	42	42	41	42	43	44	45	44	44	43	42	42	40	38	41	41	40.9	45
25-Apr	41	41	40	Z	39	39	40	40	41	40	41	42	43	44	45	44	45	43	44	42	40	37	38	37	41.1	45
26-Apr	35	35	36	Z	30	31	32	35	38	39	40	41	43	45	43	43	44	44	43	41	38	39	38	36	38.7	45
27-Apr	34	33	34	Z	35	33	32	32	32	32	32	33	32	32	31	30	29	28	28	28	27	26	25	25	30.5	35
28-Apr	25	25	23	Z	19	20	22	22	22	22	22	24	27	28	32	34	35	34	27	26	25	25	25	26	25.6	35
29-Apr	24	22	21	Z	19	19	14	16	23	32	38	43	45	49	47	47	46	46	44	42	29	19	19	19	31.5	49
30-Apr	30	33	35	Z	39	39	40	43	43	44	45	47	48	48	50	52	53	52	50	49	40	33	29	27	42.0	53
	36.0	36.0	35.1	--	32.8	32.0	32.1	33.9	36.2	37.9	38.7	40.3	41.0	41.7	42.4	42.8	43.0	42.2	41.1	40.4	37.8	36.4	36.0	35.3	Diurnal Average	
	45	46	46	--	46	46	46	45	46	46	47	48	48	49	50	52	53	52	50	53	51	47	47	46	Diurnal Maximum	

Z - zerospan C - Calibration PF - Power Failure
Alberta Ambient Air Quality Objectives (AAAQO): 1-hr 82 ppb

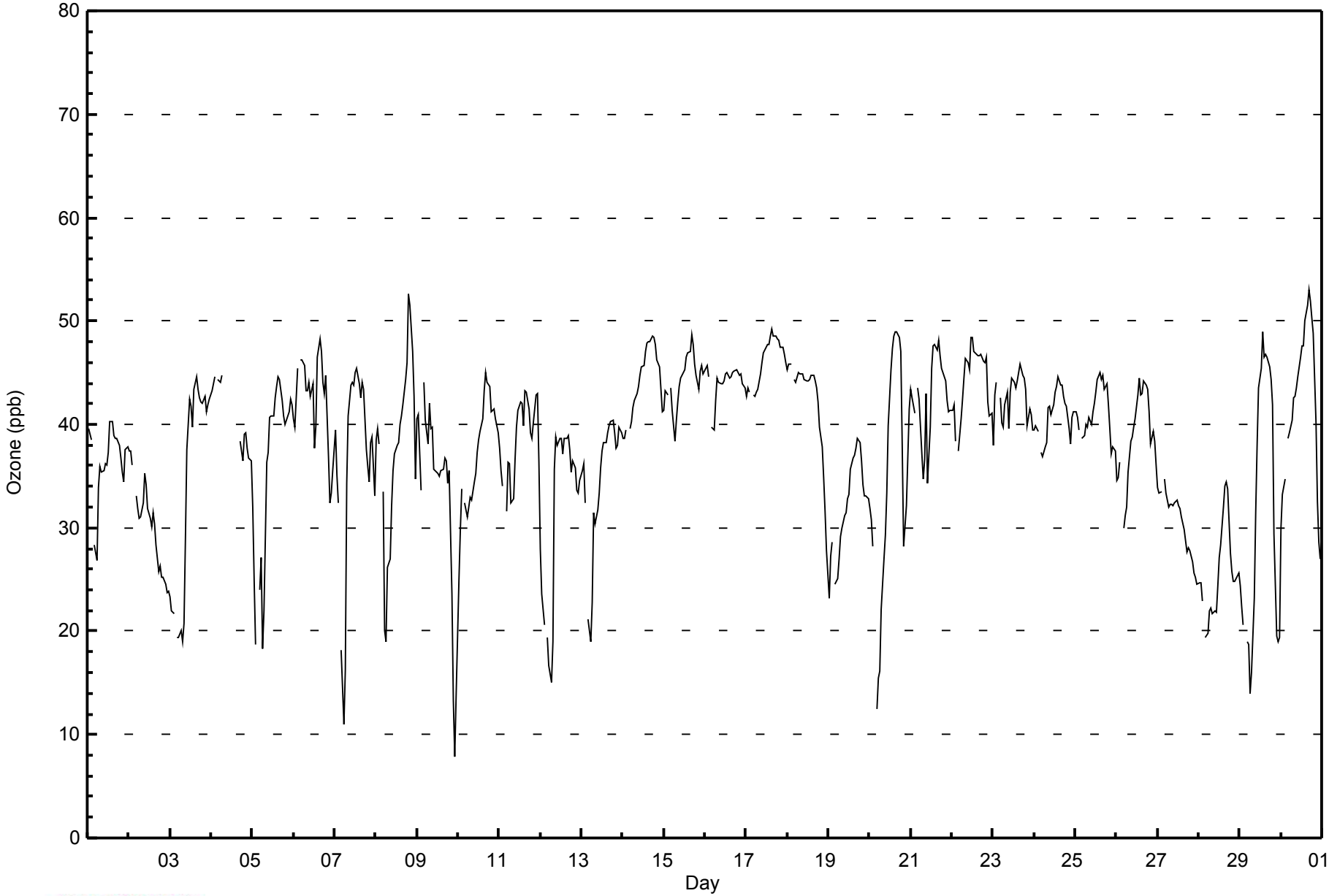
AURORA ATMOSPHERICS INC.

WBEA NETWORK

Hourly Averages

Ozone (O_3) - ppb

Wapasu - April 2014



AURORA
ATMOSPHERICS INC.

Concentration Ranges (ppb)	Number of Hours	%	Cumulative %
0 - 20	31	4.56	4.56
21 - 50	644	94.71	99.26
51 - 82	5	0.74	100.00
> 83	0	0.00	100.00

Total Number of Valid Hours: 680

Total Number of Hours: 720

WBEA NETWORK

Frequency Distribution

Ozone (O_3) - ppb

Wapasu - April 2014

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	0	0	1	3	2	8	8	5	3	1	0	0	0	0	0	31
21 - 50	40	35	35	23	51	89	116	84	49	10	16	23	15	10	16	29	641
51 - 82	0	0	0	0	0	0	0	0	1	2	0	1	1	0	0	0	5
> 83	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Totals	40	35	35	24	54	91	124	92	55	15	17	24	16	10	16	29	677

Total Number of Valid Hours: 677

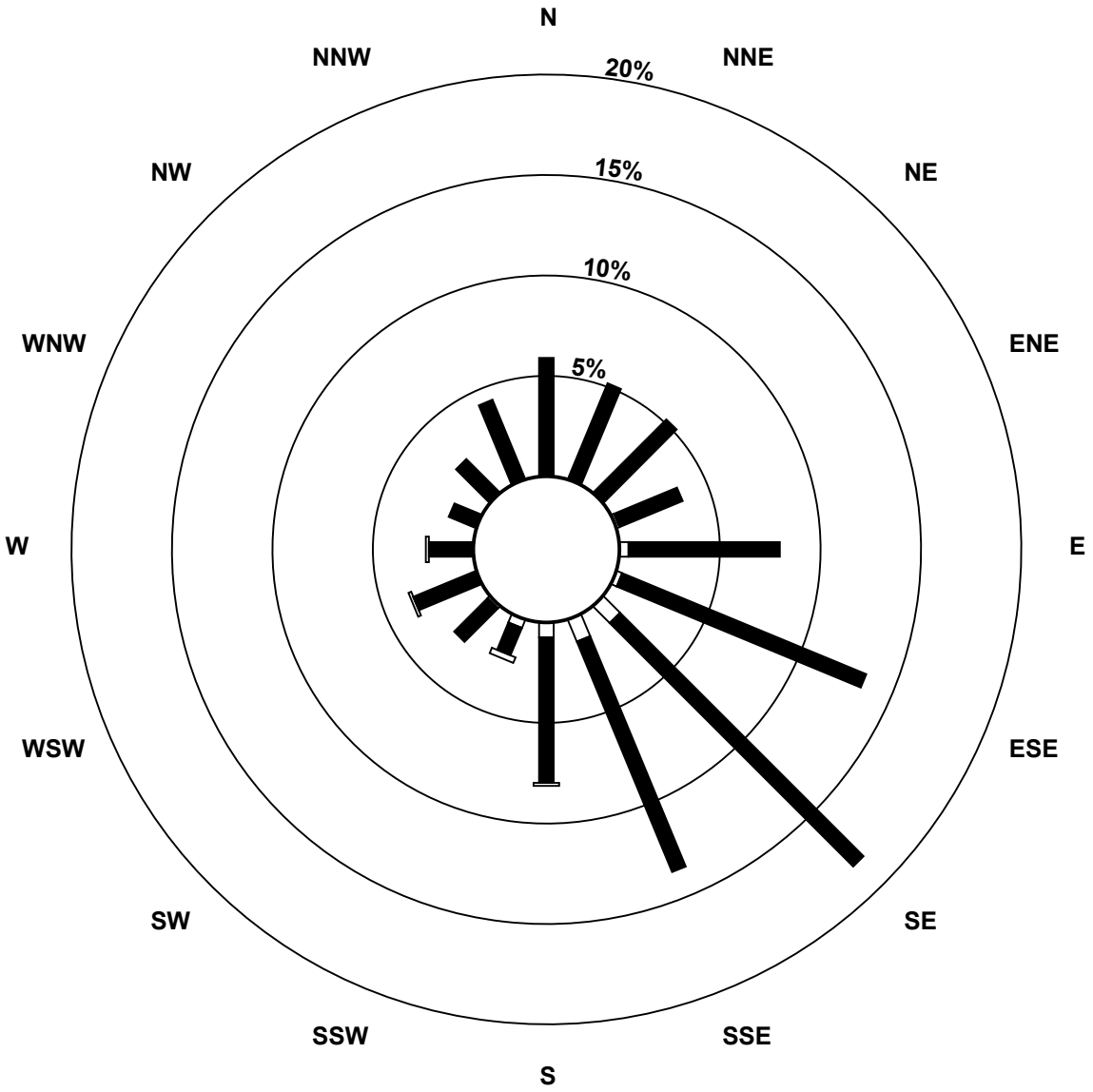
Total Number of Hours: 720

Wood Buffalo Environmental Association

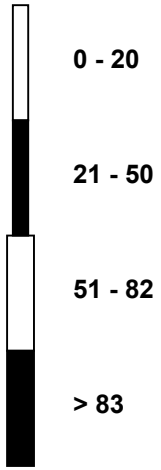
Wind Rose Apr 2014

Ozone (O_3) - ppb

Wapasu (AMS 17)



Classes (ppb)



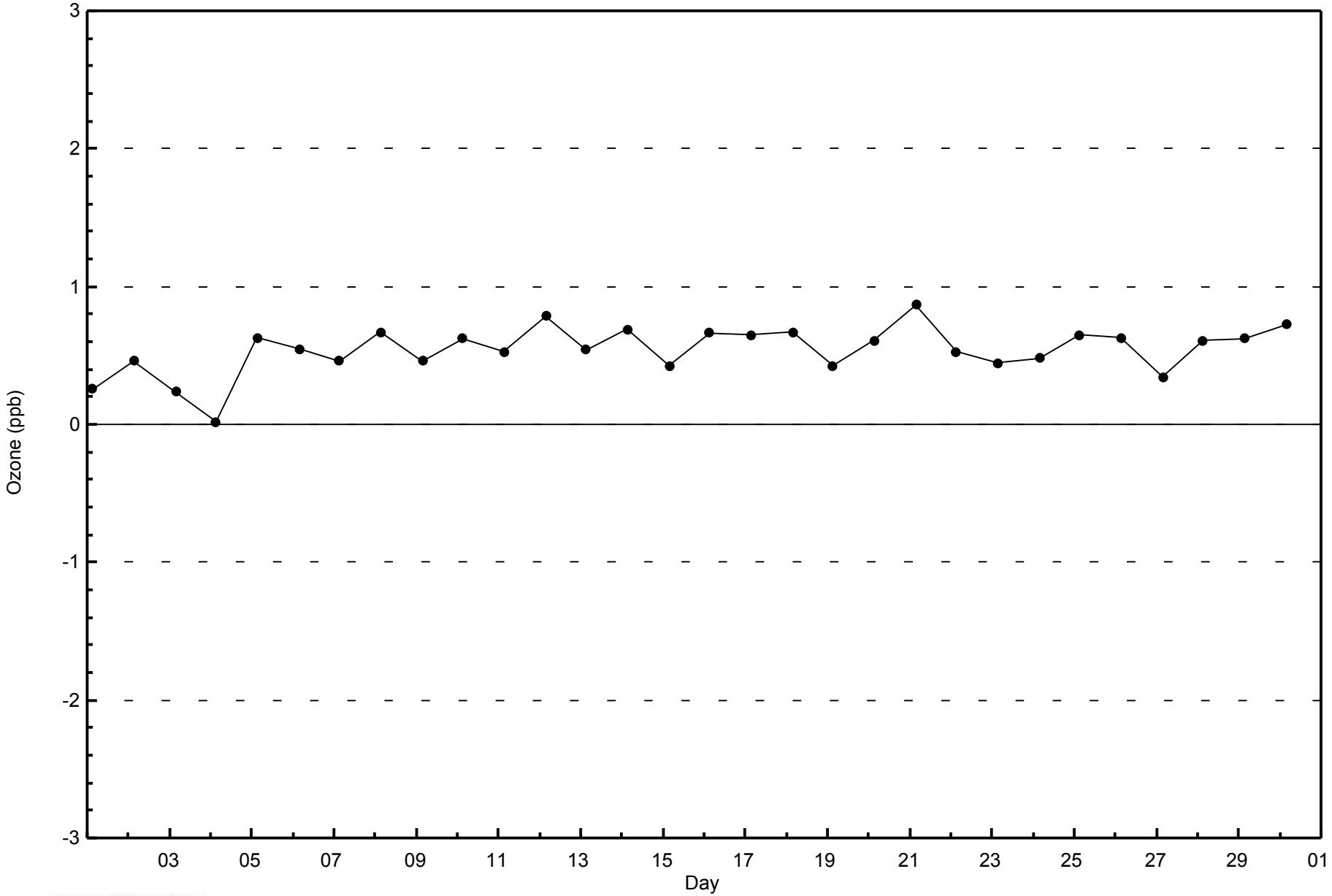
Total Number of Valid Hours: 677

WBEA NETWORK

Zero Responses

Ozone (O_3) - ppb

Wapasu - April 2014



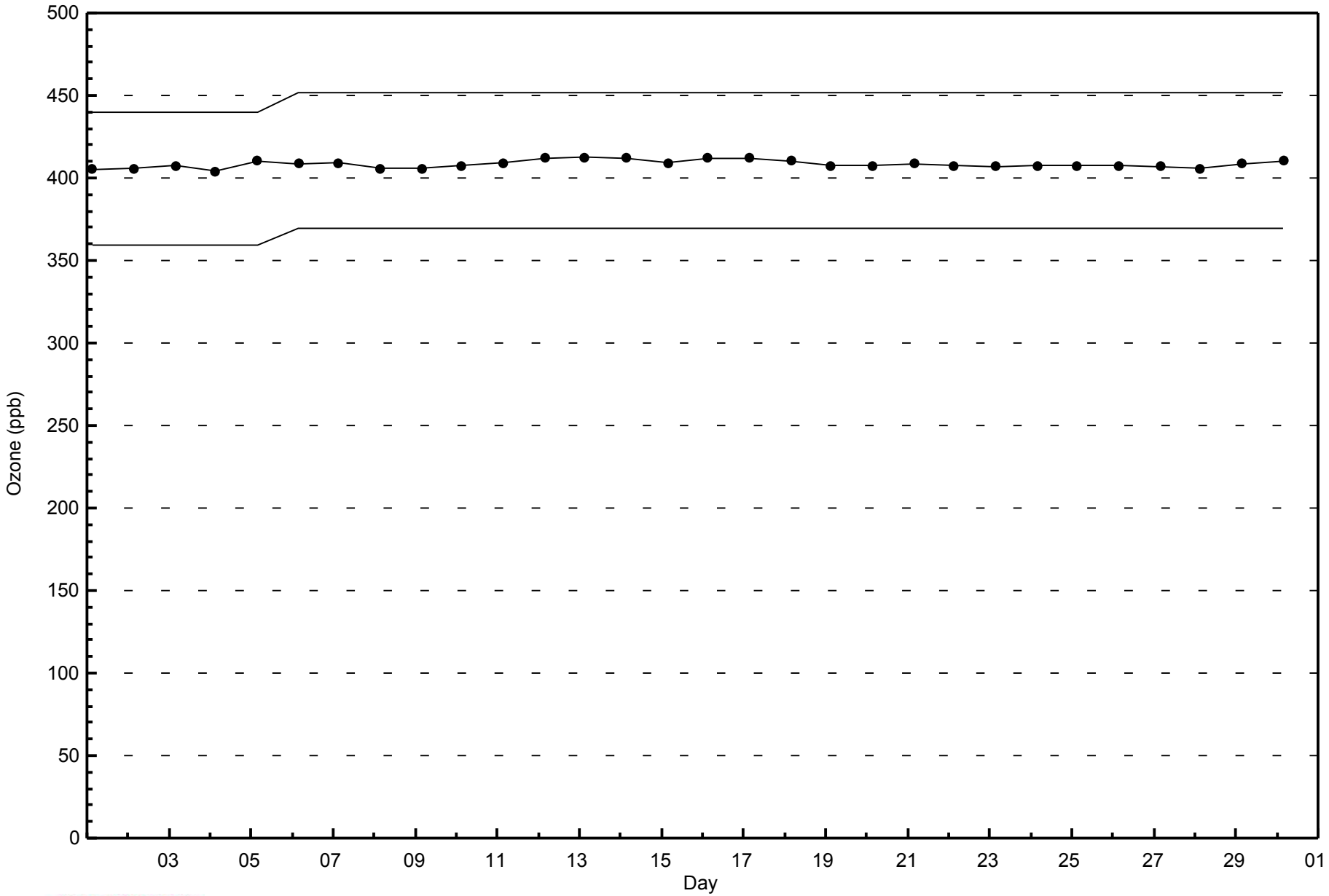
AURORA
ATMOSPHERICS INC.

WBEA NETWORK

Span Responses

Ozone (O_3) - ppb

Wapasu - April 2014



AURORA ATMOSPHERICS INC.

Wood Buffalo Environmental Association

Summary of Hour Averages

Nitric Oxide (NO) - ppb

Wapasu - April 2014

Maximum Value: 15 ppb on Apr 12 08:00

Maximum Daily Average: 1.5 ppb on Apr 12

Minimum Value: 0 ppb on Apr 26 01:00

Minimum Daily Average: 0.3 ppb on Apr 10

Maximum Diurnal Average: 1.7 ppb at hour 8

Minimum Diurnal Average: 0.4 ppb at hour 24

Monthly Average: 0.6 ppb

Percentiles: $P_1 = 0$ $P_{10} = 0$ $Q_1 = 0$ Median = 0 $Q_3 = 1$ $P_{90} = 1$ $P_{99} = 4$

Hours in Service:	720
Hours of Data:	665
Hours of Missing Data:	55
Hours of Calibration:	46
Percent Operational Time:	98.8

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-Apr	1	Z	0	1	1	1	1	1	1	1	0	1	1	1	1	1	1	1	0	0	1	1	1	1	0.6	1
2-Apr	1	Z	1	0	1	1	1	C	C	C	C	C	0	1	1	1	1	1	1	1	0	0	1	1	0.6	1
3-Apr	1	Z	0	1	1	1	0	3	8	7	1	1	1	1	1	0	0	0	0	0	0	0	0	0	1.2	8
4-Apr	0	Z	0	0	0	0	0	PF	PF	PF	UO	0	1	PF	PF	PF	PF	UO	0	0	0	0	0	0	--	1
5-Apr	0	Z	0	0	0	0	1	6	1	2	1	1	1	1	1	1	1	1	1	1	1	0	1	0	1.0	6
6-Apr	1	Z	1	1	1	1	1	1	1	1	2	1	2	3	1	1	1	1	1	1	0	0	0	0	0.9	3
7-Apr	0	Z	0	1	1	1	5	2	1	1	1	1	1	1	1	2	1	1	1	0	0	0	0	0	0.9	5
8-Apr	0	Z	0	0	0	0	1	1	C	C	C	C	C	C	0	0	0	0	0	0	0	0	0	0	--	1
9-Apr	0	Z	0	0	0	0	1	0	1	0	0	0	0	0	1	1	1	1	0	0	0	0	0	0	0.4	1
10-Apr	0	Z	0	0	0	0	0	0	0	C	C	C	C	C	0	0	0	0	0	0	0	0	0	0	0.3	0
11-Apr	0	Z	0	0	0	0	0	1	1	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0.3	1
12-Apr	0	Z	0	0	0	0	6	15	3	1	1	1	1	2	1	0	1	0	0	0	0	0	0	0	1.5	15
13-Apr	0	Z	0	0	0	0	1	1	1	1	1	1	1	1	1	1	1	1	1	0	1	1	1	1	0.7	1
14-Apr	1	Z	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	0.8	1
15-Apr	1	Z	1	1	0	1	1	1	1	1	1	0	0	1	0	0	1	0	0	0	0	0	0	0	0.5	1
16-Apr	0	Z	0	0	0	0	1	1	1	0	0	0	0	0	0	1	1	1	1	1	1	1	1	1	0.5	1
17-Apr	1	Z	0	1	1	1	1	1	1	0	1	1	0	1	0	1	1	1	1	1	1	1	1	1	0.6	1
18-Apr	1	Z	1	0	0	1	1	1	1	1	1	1	1	0	0	0	0	0	0	0	0	0	0	0	0.5	1
19-Apr	0	Z	0	0	0	0	0	1	0	0	1	1	0	0	1	1	1	1	0	0	0	0	0	0	0.4	1
20-Apr	0	Z	0	0	0	1	1	4	3	2	2	2	1	1	1	0	1	1	0	0	1	0	0	0	1.0	4
21-Apr	0	Z	0	1	0	0	1	2	2	1	4	1	1	1	1	0	0	0	0	0	0	0	0	0	0.7	4
22-Apr	0	Z	0	0	0	0	0	0	0	1	1	0	0	1	1	0	0	0	0	0	0	0	0	0	0.3	1
23-Apr	0	Z	0	0	0	0	1	1	0	1	1	1	1	1	1	1	0	0	0	0	0	0	0	0	0.5	1
24-Apr	0	Z	0	0	0	0	1	1	1	1	1	1	1	1	1	1	0	0	0	0	0	1	0	0	0.6	1
25-Apr	0	Z	0	0	0	0	0	1	0	1	1	0	0	1	0	0	0	0	0	0	0	0	0	0	0.4	1
26-Apr	0	Z	0	0	0	0	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0.3	1
27-Apr	0	Z	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0.3	0
28-Apr	0	Z	0	0	0	0	0	0	1	1	1	2	1	1	1	0	0	0	0	0	0	0	0	0	0.5	2
29-Apr	0	Z	0	0	0	0	2	3	2	1	1	1	1	1	1	0	1	0	0	1	1	1	1	0	0.8	3
30-Apr	0	Z	0	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	0.7	1
	0.4	--	0.4	0.4	0.4	0.4	0.9	1.7	1.3	1.0	1.0	0.7	0.7	0.8	0.6	0.5	0.5	0.5	0.4	0.4	0.4	0.4	0.4	0.4	Diurnal Average	
	1	--	1	1	1	1	6	15	8	7	4	2	2	3	1	2	1	1	1	1	1	1	1	1	Diurnal Maximum	

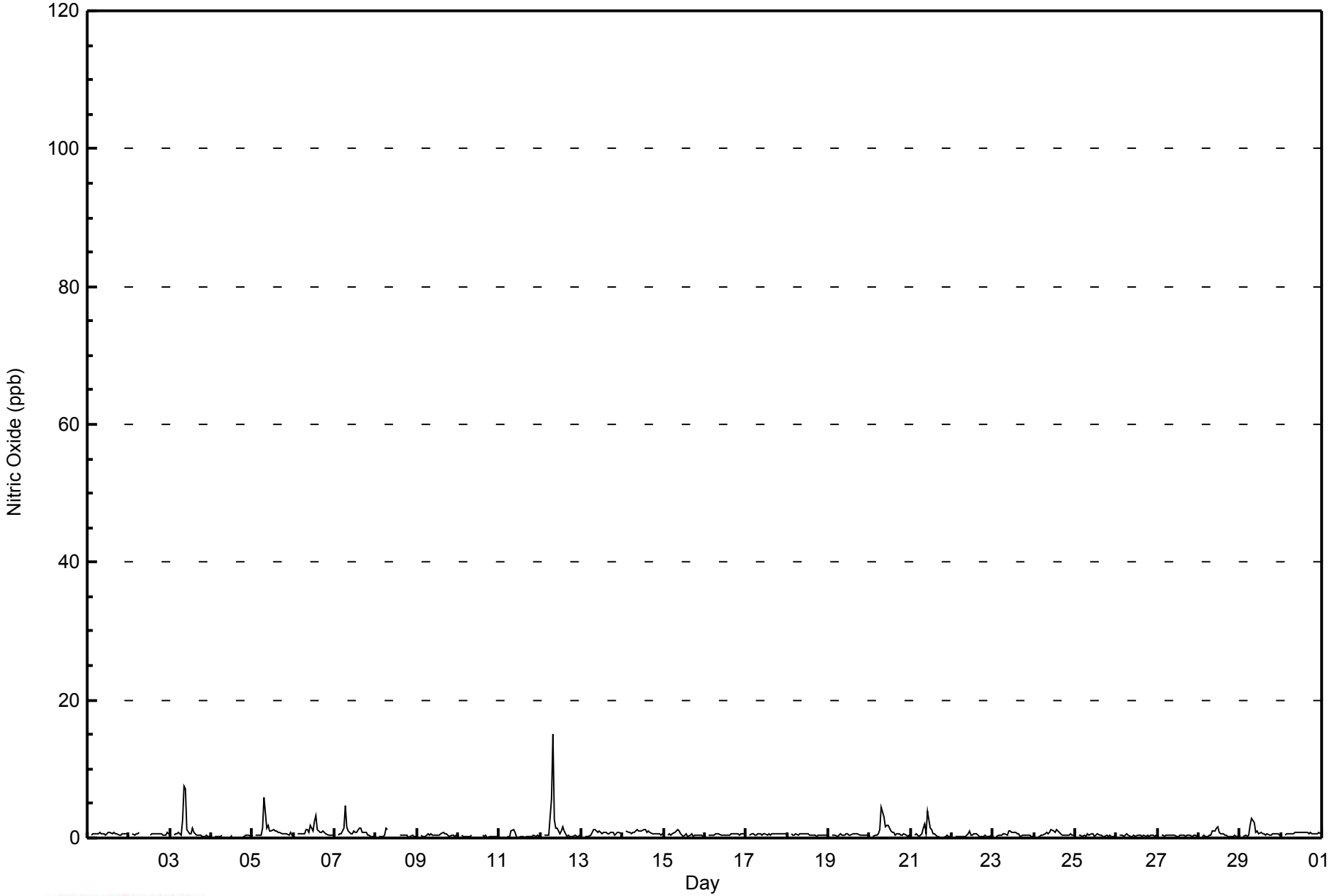
Z - zerospan C - Calibration UO - Unstable Operation PF - Power Failure

WBEA NETWORK

Hourly Averages

Nitric Oxide (NO) - ppb

Wapasu - April 2014



AURORA
ATMOSPHERICS INC.

Concentration Ranges (ppb)	Number of Hours	%	Cumulative %
0 - 20	665	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: 665

Total Number of Hours: 720

WBEA NETWORK

Frequency Distribution

Nitric Oxide (NO) - ppb

Wapasu - April 2014

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	33	34	22	56	91	122	95	56	15	16	21	14	9	16	29	664
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	33	34	22	56	91	122	95	56	15	16	21	14	9	16	29	664

Total Number of Valid Hours: 664

Total Number of Hours: 720

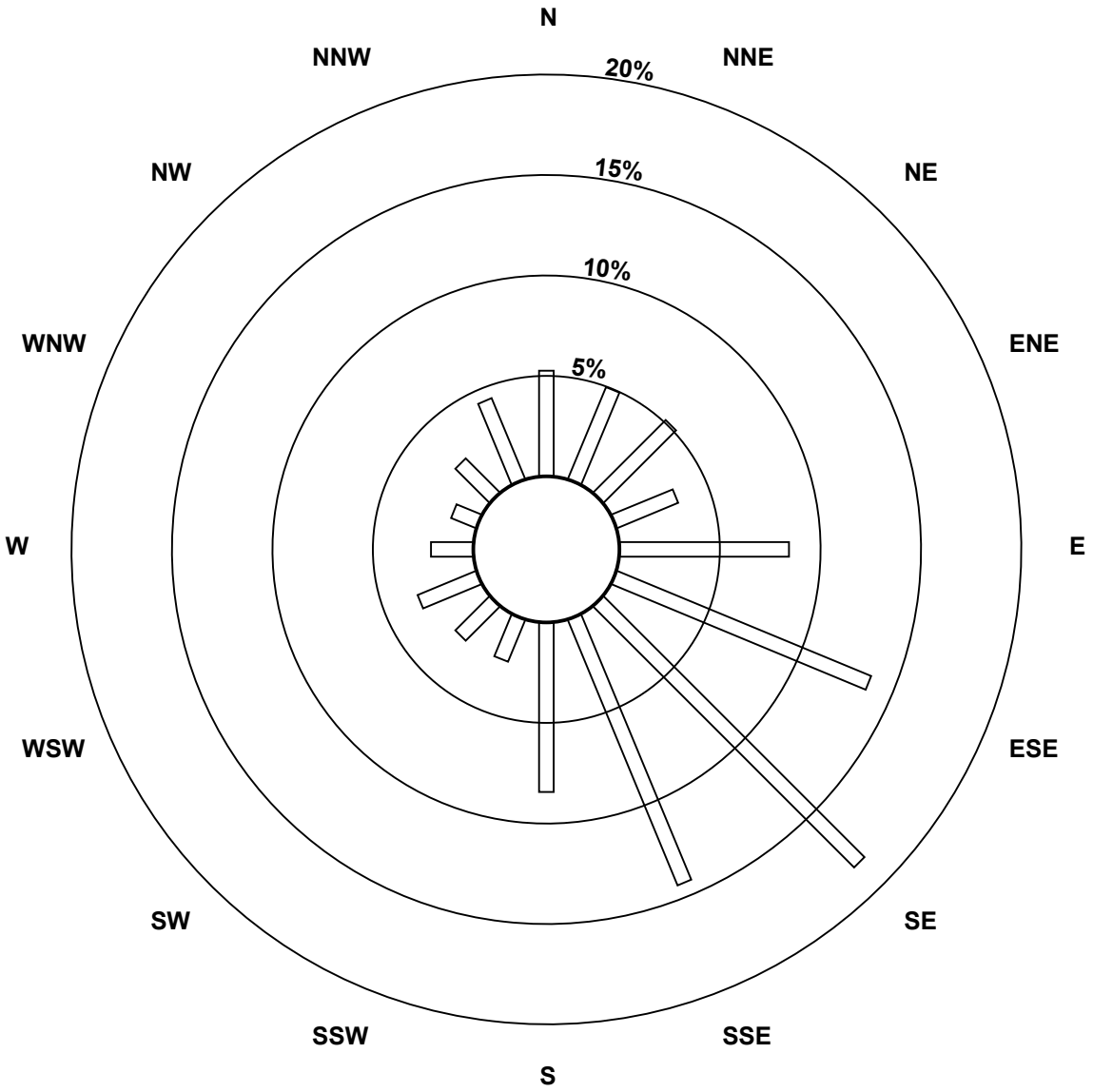
AURORA ATMOSPHERICS INC.

Wood Buffalo Environmental Association

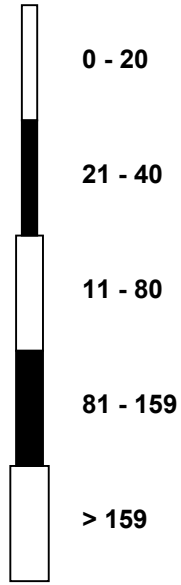
Wind Rose Apr 2014

Nitric Oxide (NO) - ppb

Wapasu (AMS 17)



Classes (ppb)



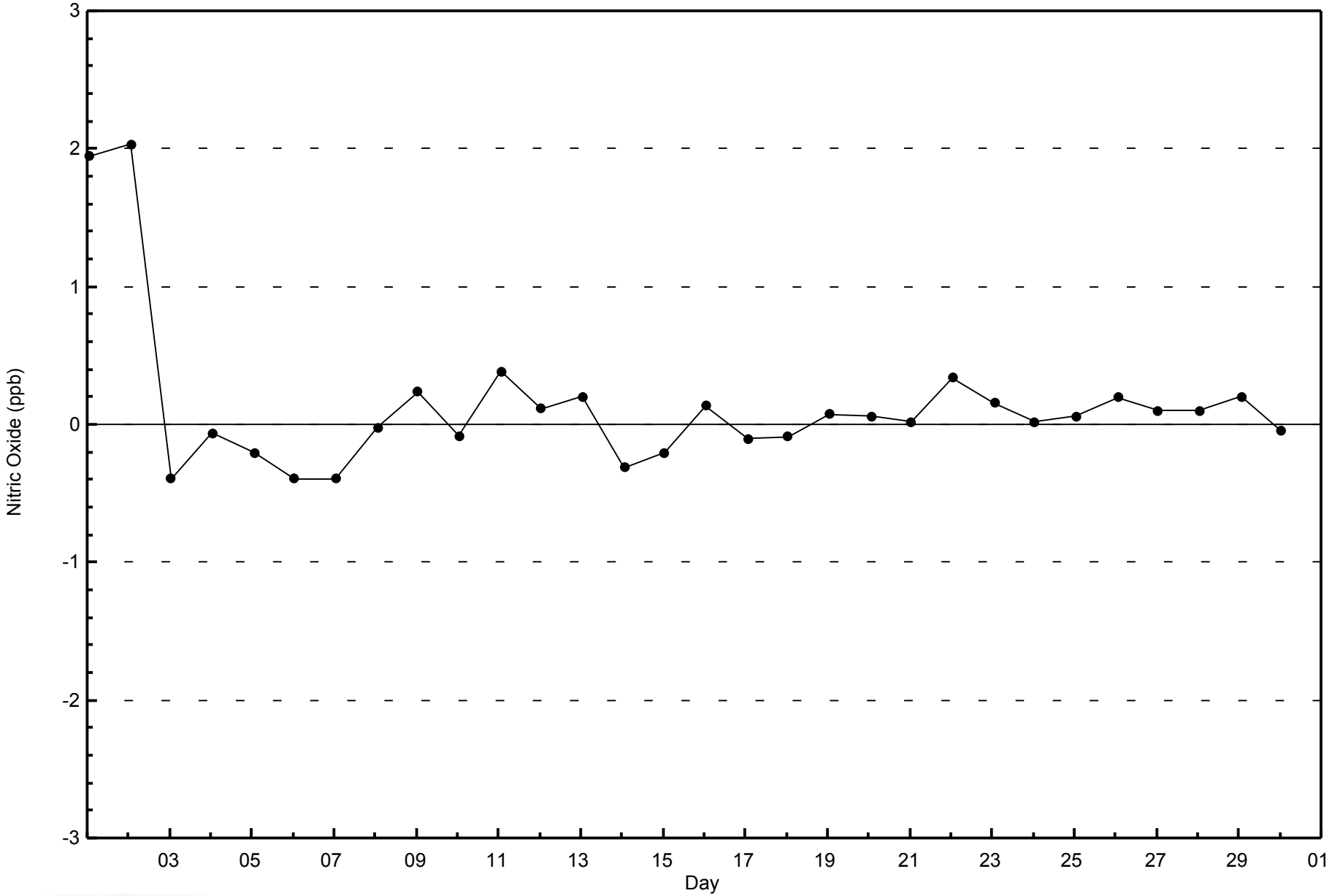
Total Number of Valid Hours: 664

WBEA NETWORK

Zero Responses

Nitric Oxide (NO) - ppb

Wapasu - April 2014



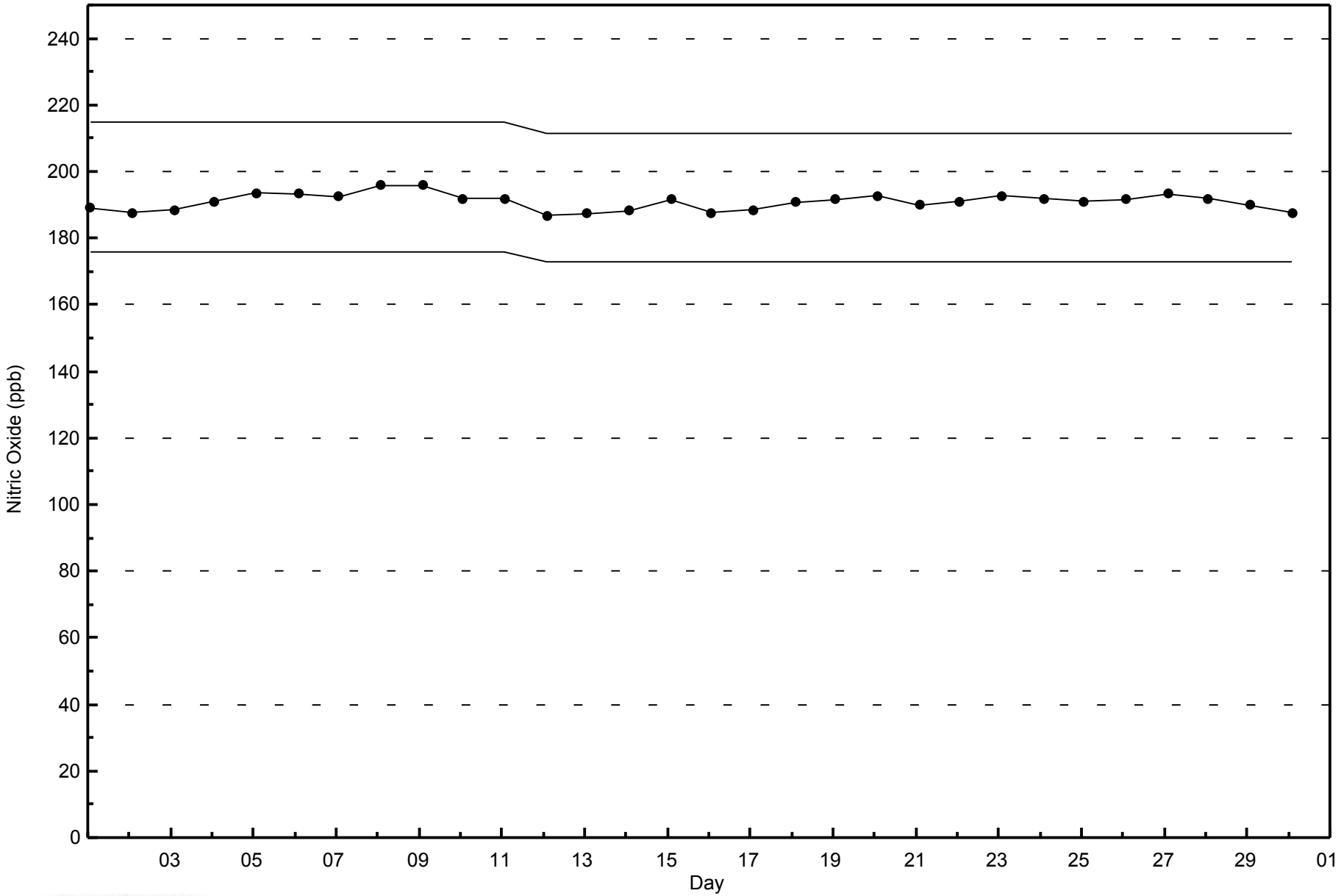
AURORA ATMOSPHERICS INC.

WBEA NETWORK

Span Responses

Nitric Oxide (NO) - ppb

Wapasu - April 2014



AURORA ATMOSPHERICS INC.

Wood Buffalo Environmental Association

Summary of Hour Averages

Nitrogen Dioxide (NO_2) - ppb

Wapasu - April 2014

Number of Exceedences (AAAQO): 1-hr: 0 24-hr: 0
Maximum Value: 20 ppb on Apr 7 06:00 Maximum Daily Average: 6.3 ppb on Apr 7

Minimum Value: 0 ppb on Apr 1 15:00 Minimum Daily Average: 0.0 ppb on Apr 27
Maximum Diurnal Average: 3.2 ppb at hour 8 Minimum Diurnal Average: 0.4 ppb at hour 17
Monthly Average: 1.4 ppb Percentiles: $P_1 = 0$ $P_{10} = 0$ $Q_1 = 0$ Median = 1 $Q_3 = 2$ $P_{90} = 4$ $P_{99} = 13$

Hours in Service:	720
Hours of Data:	665
Hours of Missing Data:	55
Hours of Calibration:	46
Percent Operational Time:	98.8

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-Apr	1	Z	1	4	3	2	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0.6	4
2-Apr	0	Z	0	0	0	0	1	C	C	C	C	C	0	0	0	0	0	0	0	0	0	0	0	0	0.1	1
3-Apr	0	Z	0	0	0	0	0	2	7	8	1	0	0	2	1	0	0	0	0	1	0	1	0	0	1.0	8
4-Apr	0	Z	0	0	0	1	1	PF	PF	PF	UO	1	1	PF	PF	PF	PF	UO	1	0	1	1	1	1	--	1
5-Apr	2	Z	1	2	6	5	4	11	2	2	1	1	1	1	1	0	1	1	0	0	0	1	0	0	1.9	11
6-Apr	2	Z	0	0	0	0	0	2	1	1	2	1	6	7	3	1	2	4	4	1	1	1	2	5	2.0	7
7-Apr	2	Z	6	11	15	20	19	5	2	1	1	1	1	1	3	4	2	3	8	7	11	5	7	11	6.3	20
8-Apr	3	Z	1	1	3	15	14	6	C	C	C	C	C	C	0	0	0	1	1	1	0	2	3	9	--	15
9-Apr	5	Z	9	6	1	4	6	2	4	2	0	0	0	0	0	1	0	1	0	0	0	0	1	4	2.0	9
10-Apr	5	Z	1	1	1	1	0	0	1	C	C	C	C	C	0	0	0	0	0	0	0	0	0	0	0.5	5
11-Apr	1	Z	3	3	4	1	2	6	6	3	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1.3	6
12-Apr	0	Z	0	1	2	2	14	20	5	3	2	1	2	3	2	0	1	0	0	1	1	0	1	2	2.6	20
13-Apr	2	Z	2	0	0	0	1	2	1	0	0	0	0	0	0	0	0	1	1	1	1	2	1	0	0.8	2
14-Apr	0	Z	0	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	3	4	1.0	4
15-Apr	5	Z	3	2	0	1	4	4	3	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1.0	5
16-Apr	0	Z	0	1	4	5	2	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0.6	5
17-Apr	1	Z	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0.2	1
18-Apr	1	Z	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1	0	1	0.2	1
19-Apr	5	Z	1	2	3	1	2	1	1	1	1	1	0	0	1	1	1	1	1	1	1	1	0	0	1.0	5
20-Apr	0	Z	1	1	1	1	2	7	5	2	3	4	2	1	1	0	0	0	0	0	0	1	2	1	1.6	7
21-Apr	0	Z	3	1	1	0	3	10	7	1	7	5	2	1	1	0	0	0	0	0	0	0	0	0	1.8	10
22-Apr	0	Z	4	7	5	2	1	1	0	1	3	1	1	1	1	0	0	0	0	0	0	4	5	4	1.7	7
23-Apr	7	Z	2	3	3	4	5	3	1	5	2	2	2	3	2	1	0	0	0	1	5	4	4	6	2.7	7
24-Apr	5	Z	4	4	5	5	5	4	1	2	3	3	3	3	2	1	0	0	0	0	1	2	0	0	2.3	5
25-Apr	0	Z	1	1	1	0	0	0	0	1	1	0	1	1	0	0	0	0	0	0	0	1	0	0	0.3	1
26-Apr	0	Z	0	0	1	1	2	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0.2	2
27-Apr	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
28-Apr	0	Z	0	0	0	0	0	0	2	2	3	2	1	1	1	0	1	1	1	0	0	0	0	0	0.6	3
29-Apr	0	Z	0	0	0	1	3	4	3	1	1	1	1	2	1	1	1	1	1	0	0	0	1	3	1.1	4
30-Apr	1	Z	2	1	1	1	0	0	1	1	1	1	1	2	1	1	1	3	4	2	4	10	10	12	2.7	12
	1.6	--	1.5	1.8	2.0	2.4	3.1	3.2	2.0	1.5	1.3	0.9	0.9	1.1	0.7	0.5	0.4	0.6	0.8	0.6	0.9	1.2	1.4	2.1	Diurnal Average	
	7	--	9	11	15	20	19	20	7	8	7	5	6	7	3	4	2	4	8	7	11	10	10	12	Diurnal Maximum	

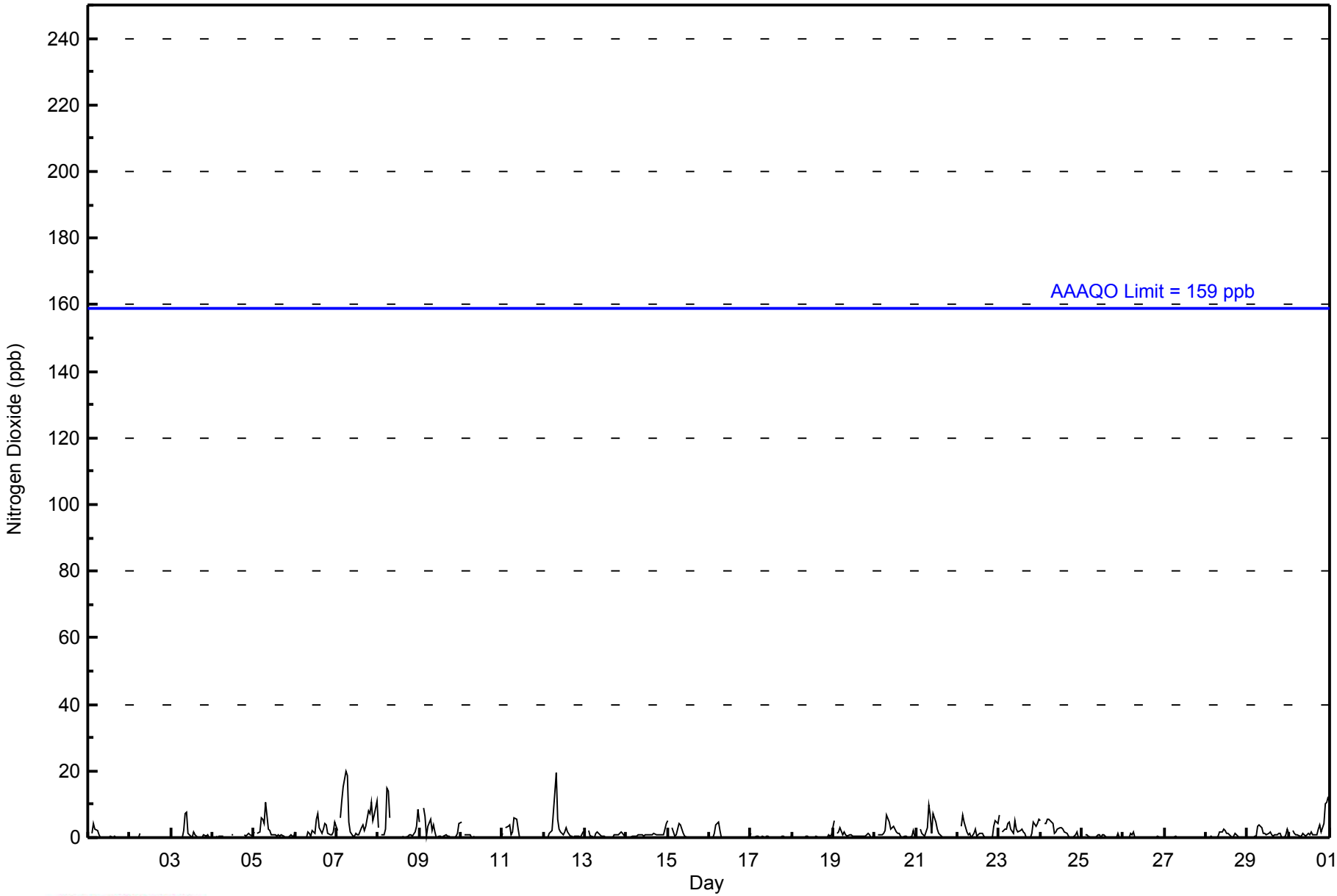
Z - zerospan C - Calibration UO - Unstable Operation PF - Power Failure
Alberta Ambient Air Quality Objectives (AAAQO): 1-hr 159 ppb

WBEA NETWORK

Hourly Averages

Nitrogen Dioxide (NO_2) - ppb

Wapasu - April 2014



AURORA
ATMOSPHERICS INC.

Concentration Ranges (ppb)	Number of Hours	%	Cumulative %
0 - 20	665	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: 665

Total Number of Hours: 720

WBEA NETWORK

Frequency Distribution

Nitrogen Dioxide (NO_2) - ppb

Wapasu - April 2014

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	33	34	22	56	91	122	95	56	15	16	21	14	9	16	29	664
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	33	34	22	56	91	122	95	56	15	16	21	14	9	16	29	664

Total Number of Valid Hours: 664

Total Number of Hours: 720

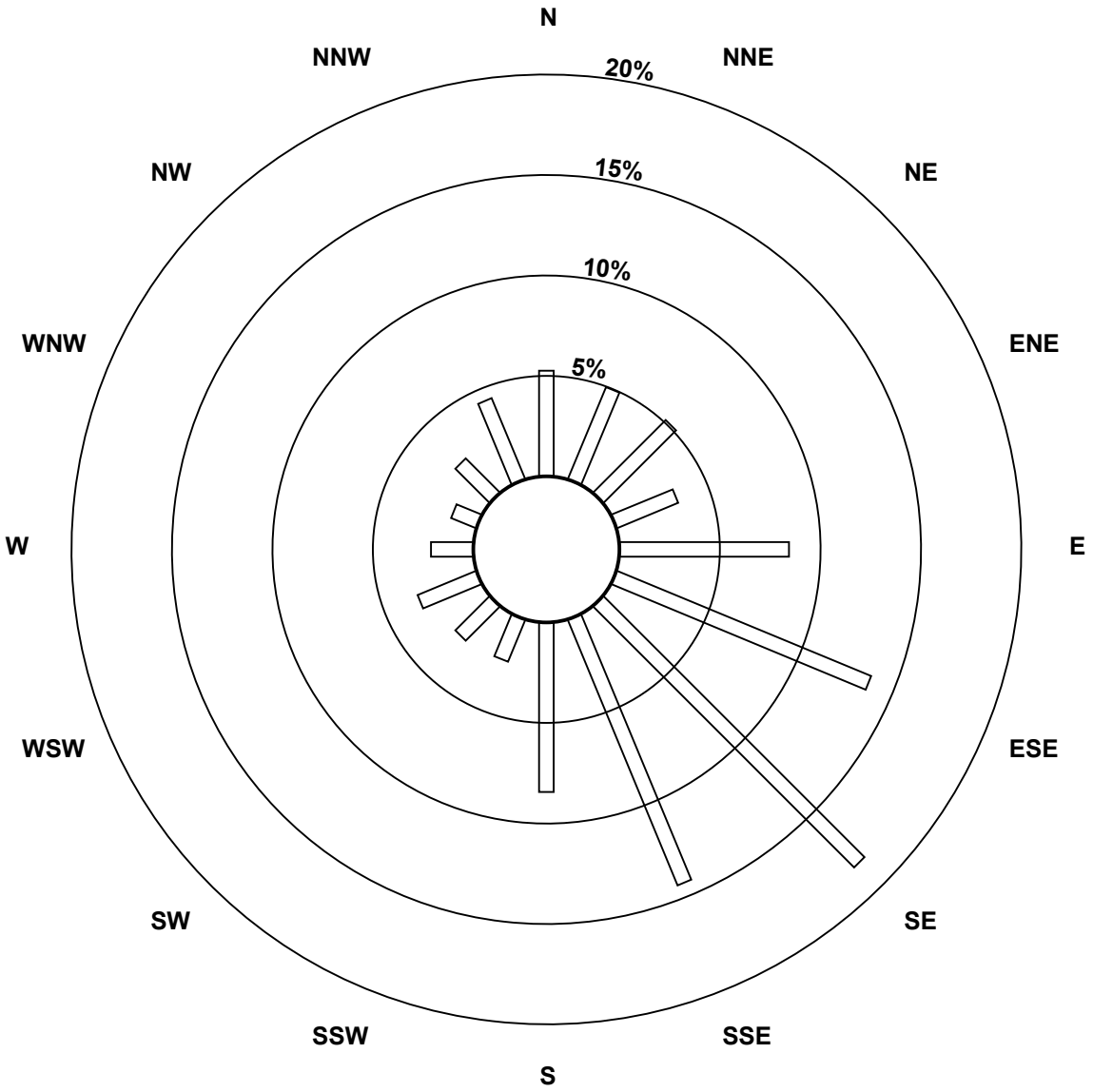
AURORA ATMOSPHERICS INC.

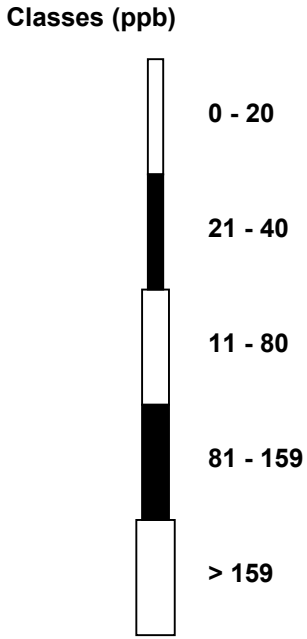
Wood Buffalo Environmental Association

Wind Rose Apr 2014

Nitrogen Dioxide (NO_2) - ppb

Wapasu (AMS 17)





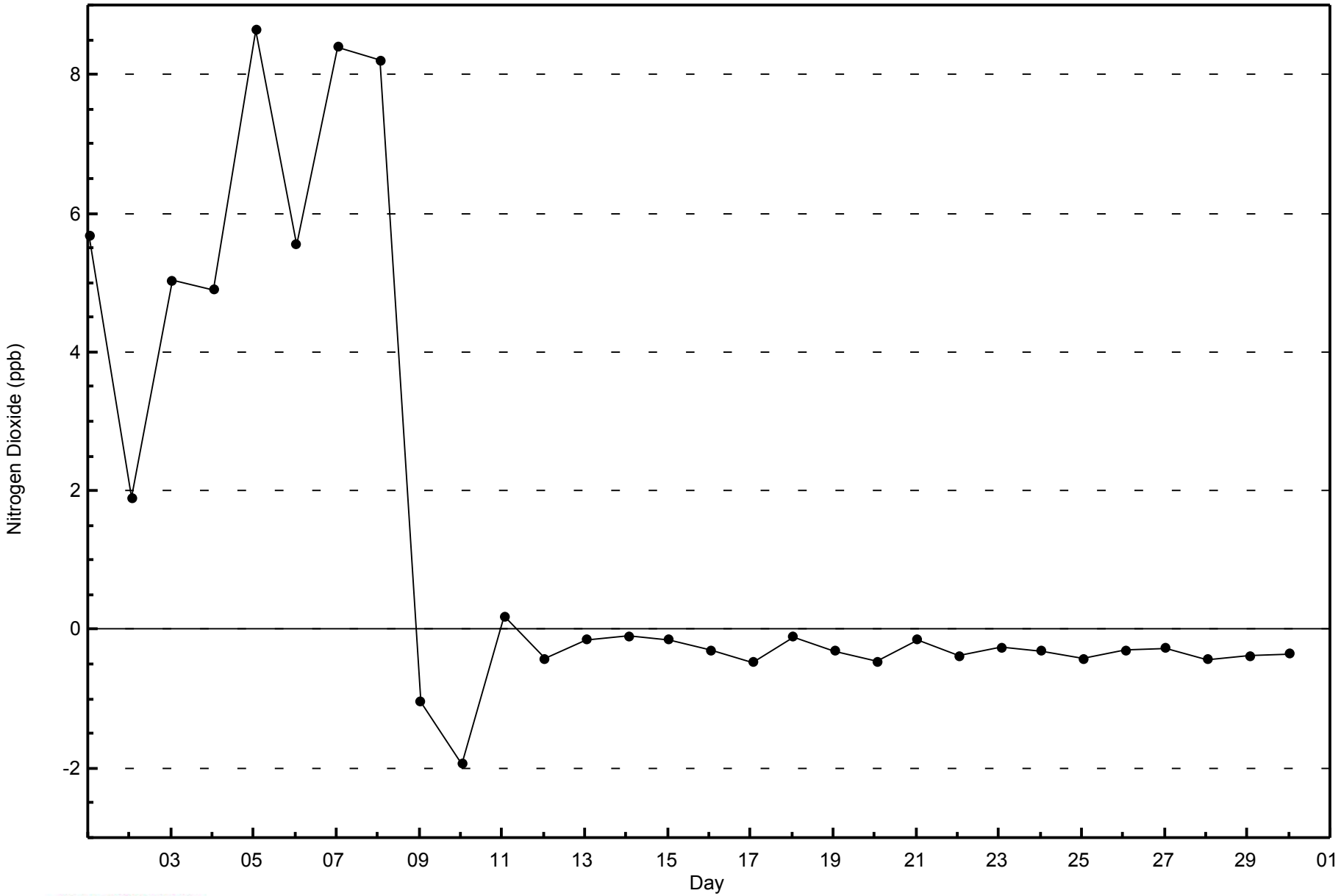
Total Number of Valid Hours: 664

WBEA NETWORK

Zero Responses

Nitrogen Dioxide (NO_2) - ppb

Wapasu - April 2014



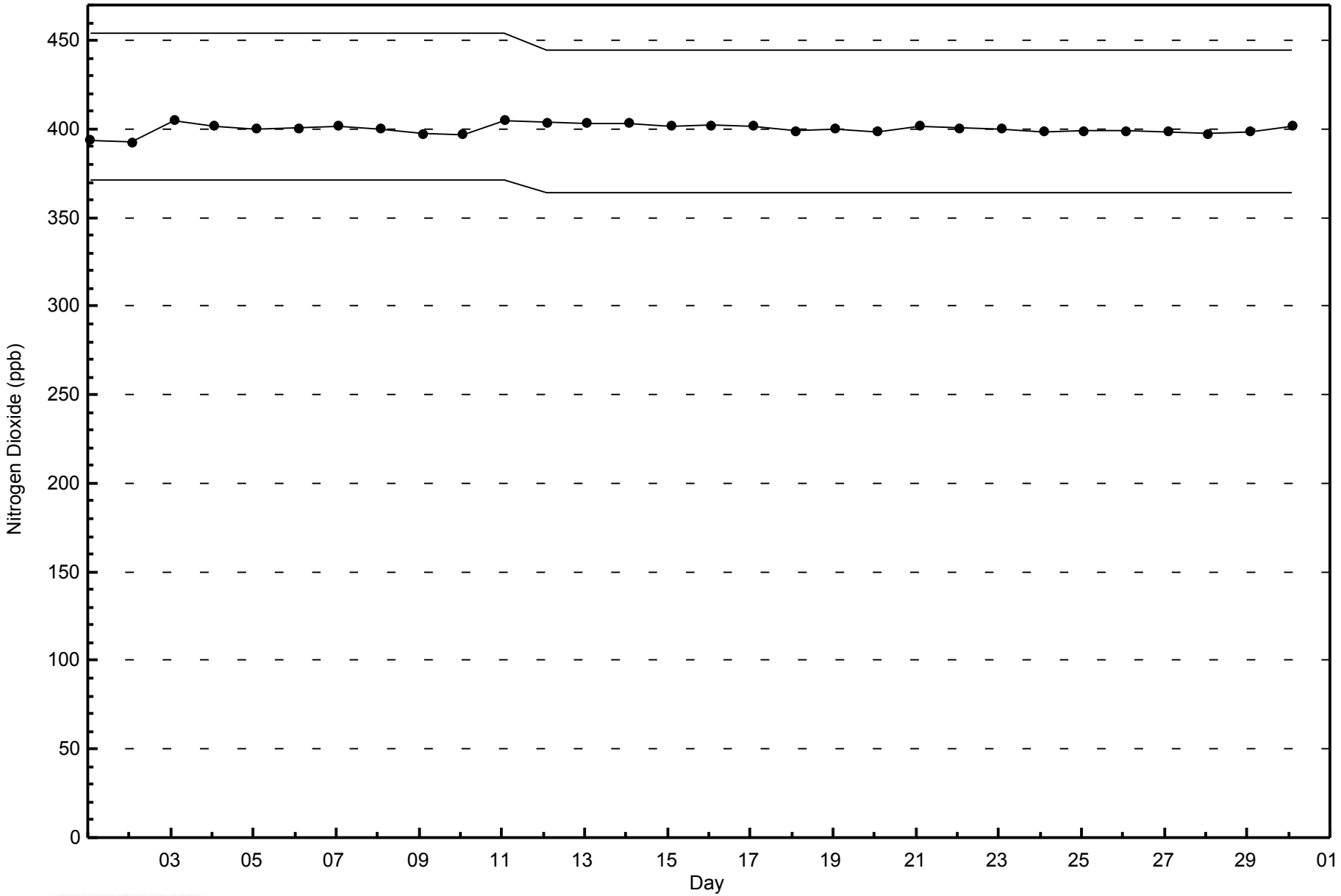
AURORA ATMOSPHERICS INC.

WBEA NETWORK

Span Responses

Nitrogen Dioxide (NO_2) - ppb

Wapasu - April 2014



AURORA ATMOSPHERICS INC.

Wood Buffalo Environmental Association

Summary of Hour Averages

Nitrogen Oxides (NO_X) - ppb

Wapasu - April 2014

Maximum Value: 35 ppb on Apr 12 08:00

Maximum Daily Average: 7.2 ppb on Apr 7

Minimum Value: 0 ppb on Apr 26 01:00

Minimum Daily Average: 0.4 ppb on Apr 27

Maximum Diurnal Average: 4.9 ppb at hour 8

Minimum Diurnal Average: 0.9 ppb at hour 17

Monthly Average: 2.0 ppb

Percentiles: $P_1 = 0$ $P_{10} = 0$ $Q_1 = 1$ Median = 1 $Q_3 = 2$ $P_{90} = 5$ $P_{99} = 15$

Hours in Service:	720
Hours of Data:	665
Hours of Missing Data:	55
Hours of Calibration:	46
Percent Operational Time:	98.8

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-Apr	2	Z	2	5	3	3	2	1	1	1	1	1	1	1	1	1	1	1	0	0	1	1	1	1	1.2	5
2-Apr	1	Z	1	0	1	1	2	C	C	C	C	C	0	1	1	1	1	1	1	1	0	0	1	1	0.7	2
3-Apr	1	Z	0	1	1	1	0	5	15	15	2	1	1	3	2	0	0	0	1	1	1	1	1	0	2.3	15
4-Apr	1	Z	1	0	1	1	1	PF	PF	PF	UO	1	1	PF	PF	PF	PF	UO	1	1	1	1	1	1	--	1
5-Apr	2	Z	2	2	6	6	6	17	4	4	2	2	2	2	2	1	2	1	1	1	1	1	1	1	2.9	17
6-Apr	2	Z	1	1	1	1	1	3	2	1	4	2	8	11	4	2	3	5	5	2	1	1	2	5	2.9	11
7-Apr	2	Z	6	12	16	21	23	6	3	1	1	2	2	2	5	5	3	4	9	8	11	5	7	11	7.2	23
8-Apr	3	Z	1	1	3	15	15	7	C	C	C	C	C	C	1	1	1	1	1	1	0	2	4	9	--	15
9-Apr	5	Z	9	6	1	4	6	2	4	2	0	1	1	0	1	1	1	1	0	0	1	1	2	5	2.4	9
10-Apr	5	Z	2	1	1	1	0	0	1	C	C	C	C	C	1	0	0	0	0	0	0	0	0	0	0.8	5
11-Apr	2	Z	3	3	4	1	2	7	7	3	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1.6	7
12-Apr	1	Z	0	1	2	3	19	35	8	4	3	1	2	5	3	1	1	1	1	1	1	0	1	2	4.1	35
13-Apr	2	Z	2	1	0	0	2	3	2	1	1	1	1	1	1	1	1	2	2	1	2	3	2	1	1.4	3
14-Apr	1	Z	1	1	1	1	1	2	2	2	2	2	2	2	2	2	2	2	1	2	1	2	3	5	1.8	5
15-Apr	6	Z	3	2	1	1	5	5	4	2	1	0	0	1	0	0	1	0	0	0	0	0	0	0	1.5	6
16-Apr	0	Z	0	2	4	5	3	1	1	1	1	0	1	1	0	1	1	1	1	1	1	1	1	1	1.1	5
17-Apr	2	Z	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	0.8	2
18-Apr	1	Z	1	1	0	1	1	1	1	1	1	1	1	0	1	0	1	0	1	1	1	1	1	1	0.7	1
19-Apr	5	Z	2	2	3	1	2	1	1	1	1	1	1	1	1	1	1	1	1	1	2	1	0	1	1.4	5
20-Apr	1	Z	1	1	1	2	4	11	8	4	5	5	3	2	2	1	1	1	1	1	1	1	3	1	2.6	11
21-Apr	0	Z	3	2	1	1	4	11	9	2	11	6	4	2	1	0	0	0	0	0	0	0	0	0	2.5	11
22-Apr	0	Z	4	7	5	2	1	2	0	2	4	1	1	2	2	1	0	0	0	0	0	4	5	5	2.0	7
23-Apr	7	Z	2	3	3	5	5	3	2	6	3	2	3	4	2	2	0	0	0	1	5	4	4	6	3.2	7
24-Apr	5	Z	5	5	6	6	5	5	2	3	4	4	4	4	3	2	1	0	0	1	1	2	1	0	2.9	6
25-Apr	0	Z	1	1	1	0	0	1	1	2	1	0	1	1	1	1	0	0	0	0	0	1	0	0	0.7	2
26-Apr	0	Z	0	0	2	1	2	0	0	0	0	0	0	0	0	0	0	0	0	0	1	0	0	0	0.5	2
27-Apr	0	Z	1	0	0	0	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0.4	1
28-Apr	0	Z	0	1	0	0	0	1	3	3	4	4	2	2	1	1	1	1	1	0	0	0	0	0	1.2	4
29-Apr	0	Z	0	1	1	1	5	7	5	2	2	1	2	2	1	1	1	1	2	2	1	1	1	3	1.9	7
30-Apr	2	Z	3	2	2	1	1	1	2	1	1	2	2	3	1	2	2	3	5	2	5	11	11	13	3.4	13
	2.0	--	1.9	2.2	2.4	2.8	4.0	4.9	3.3	2.5	2.3	1.6	1.6	1.9	1.4	1.0	0.9	1.0	1.2	1.0	1.3	1.6	1.8	2.4	Diurnal Average	
	7	--	9	12	16	21	23	35	15	15	11	6	8	11	5	5	3	5	9	8	11	11	11	13	Diurnal Maximum	

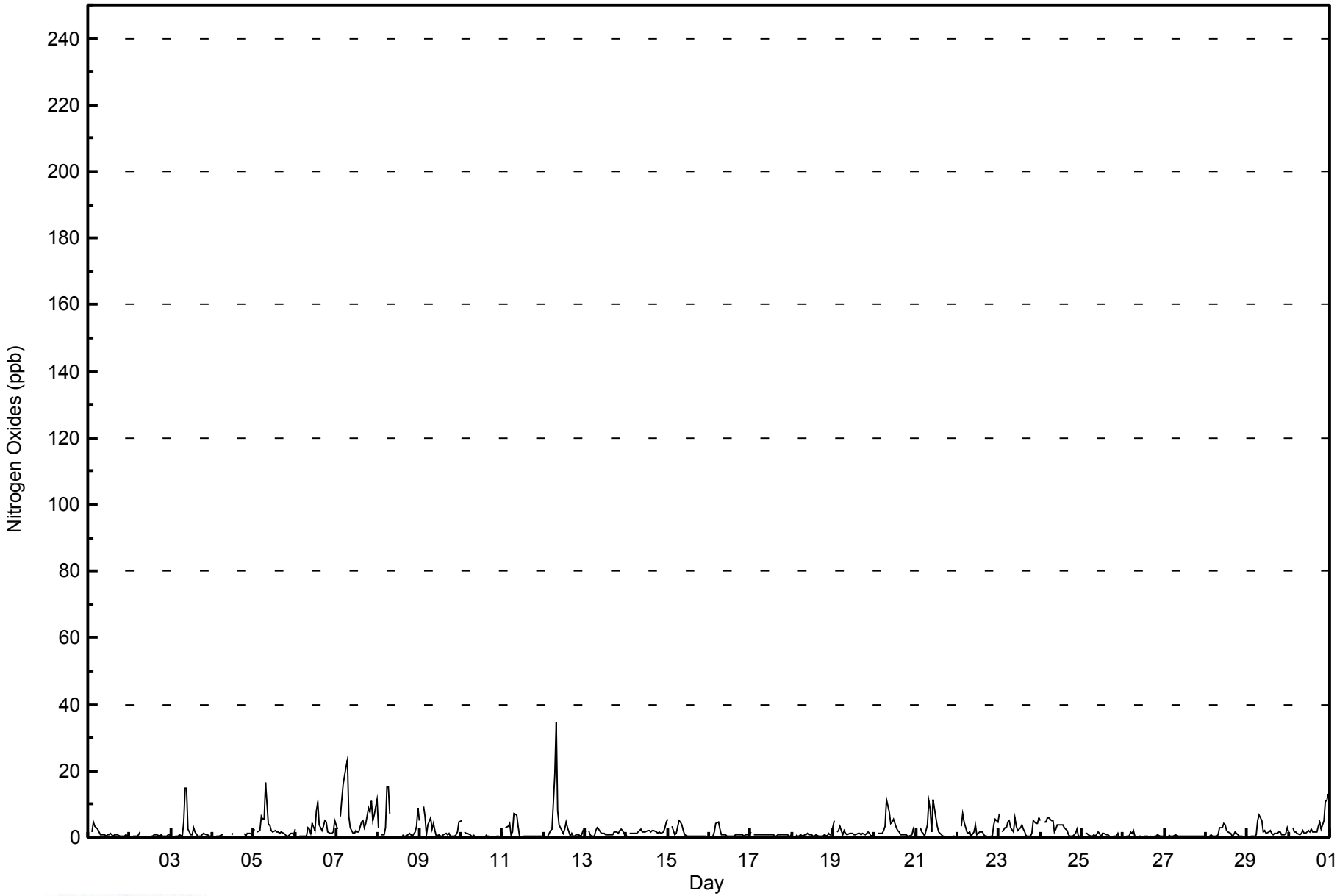
Z - zerospan C - Calibration UO - Unstable Operation PF - Power Failure

WBEA NETWORK

Hourly Averages

Nitrogen Oxides (NO_X) - ppb

Wapasu - April 2014



AURORA ATMOSPHERICS INC.

Concentration Ranges (ppb)	Number of Hours	%	Cumulative %
0 - 20	662	99.55	99.55
21 - 40	3	0.45	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: 665

Total Number of Hours: 720

WBEA NETWORK

Frequency Distribution

Nitrogen Oxides (NO_X) - ppb

Wapasu - April 2014

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	33	34	22	56	91	122	94	56	13	16	21	14	9	16	29	661
21 - 40	0	0	0	0	0	0	0	1	0	2	0	0	0	0	0	0	3
11 - 80	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
81 - 159	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
> 159	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Totals	35	33	34	22	56	91	122	95	56	15	16	21	14	9	16	29	664

Total Number of Valid Hours: 664

Total Number of Hours: 720

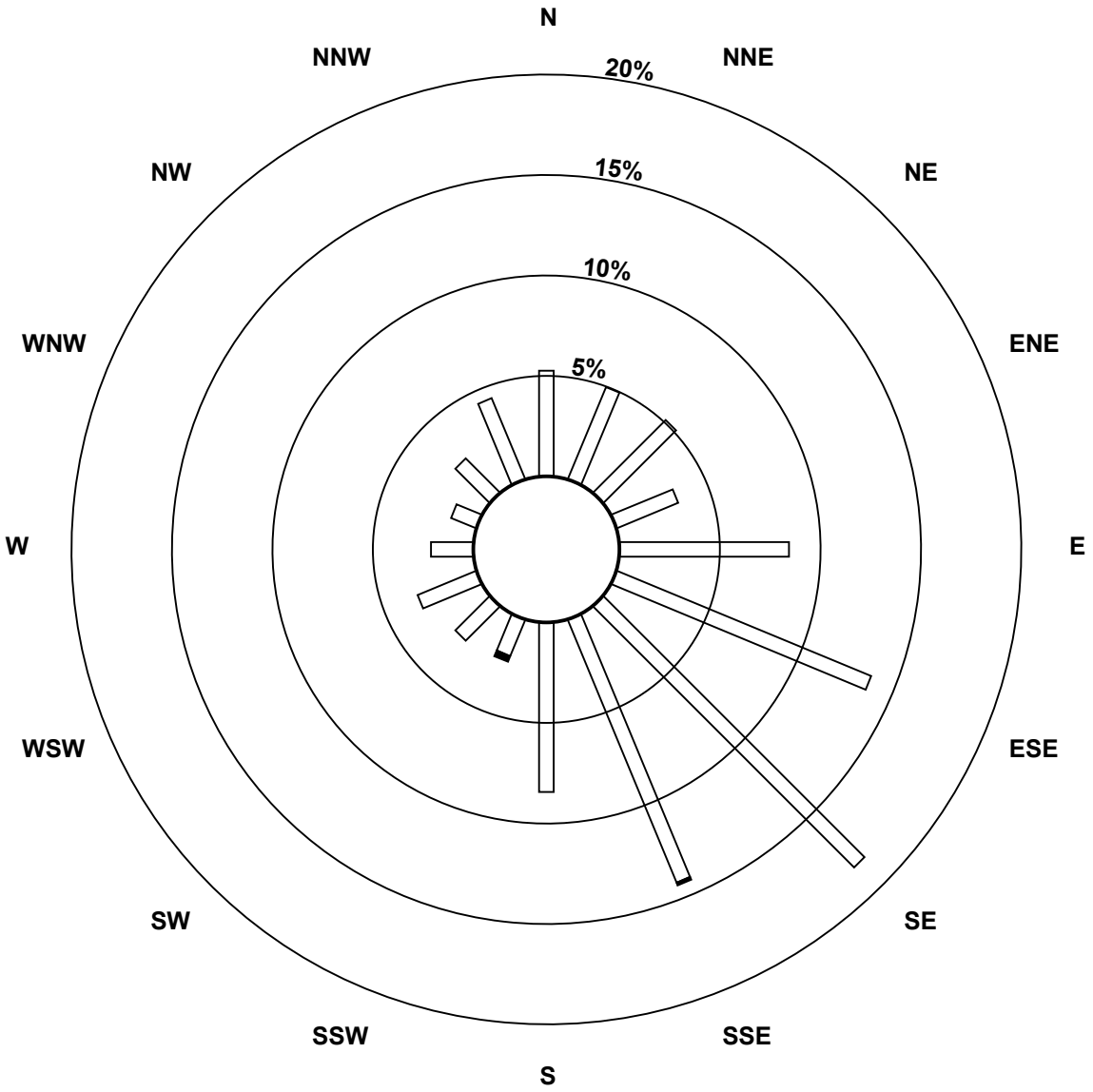
AURORA ATMOSPHERICS INC.

Wood Buffalo Environmental Association

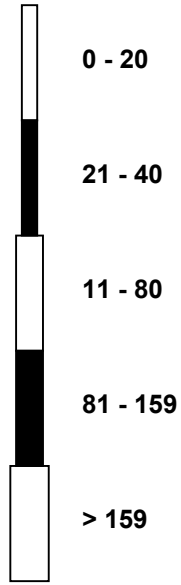
Wind Rose Apr 2014

Nitrogen Oxides (NO_X) - ppb

Wapasu (AMS 17)



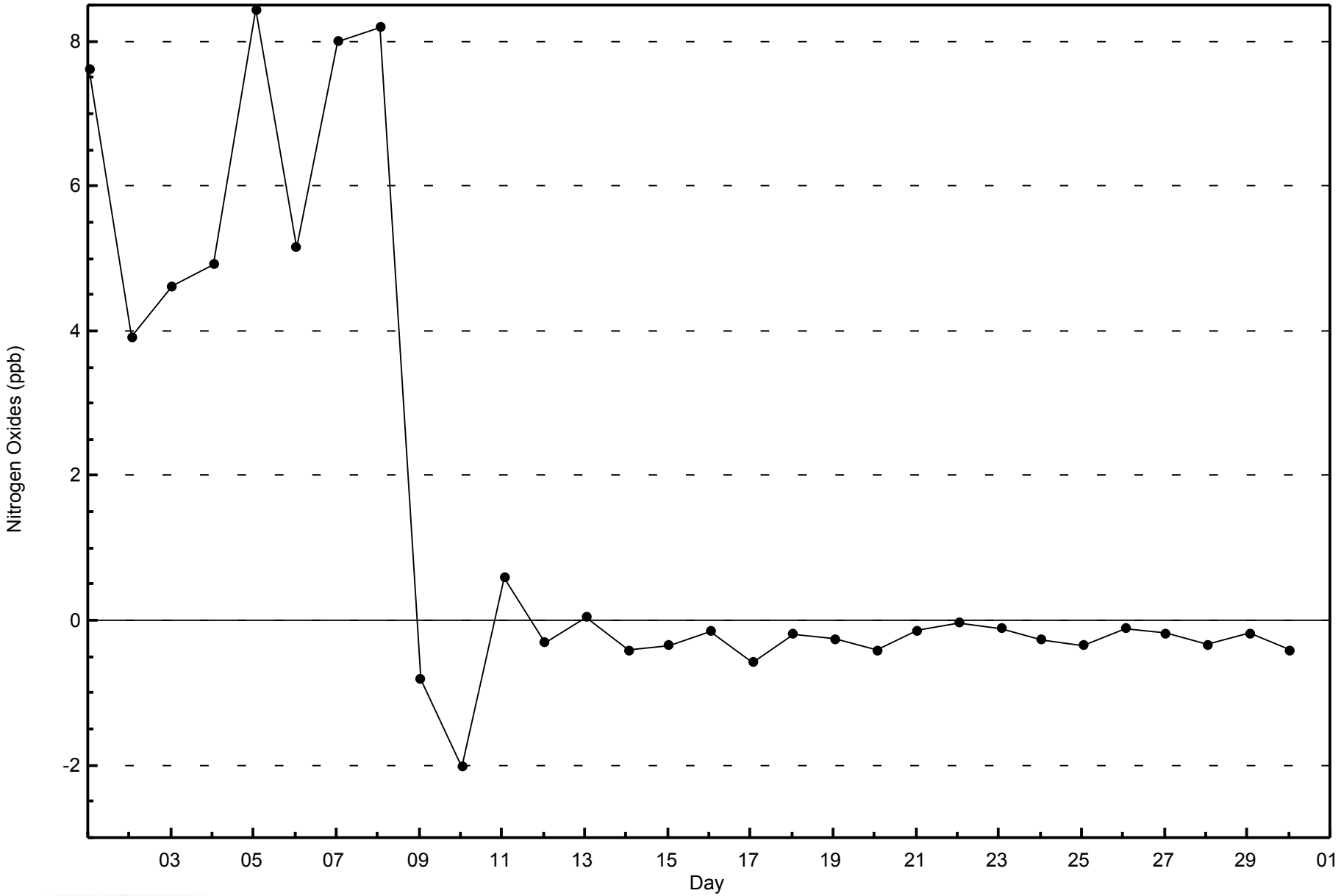
Classes (ppb)



Total Number of Valid Hours: 664

Wood Buffalo Environmental Association
Zero Responses

Nitrogen Oxides (NO_X) - ppb
Wapasu - April 2014



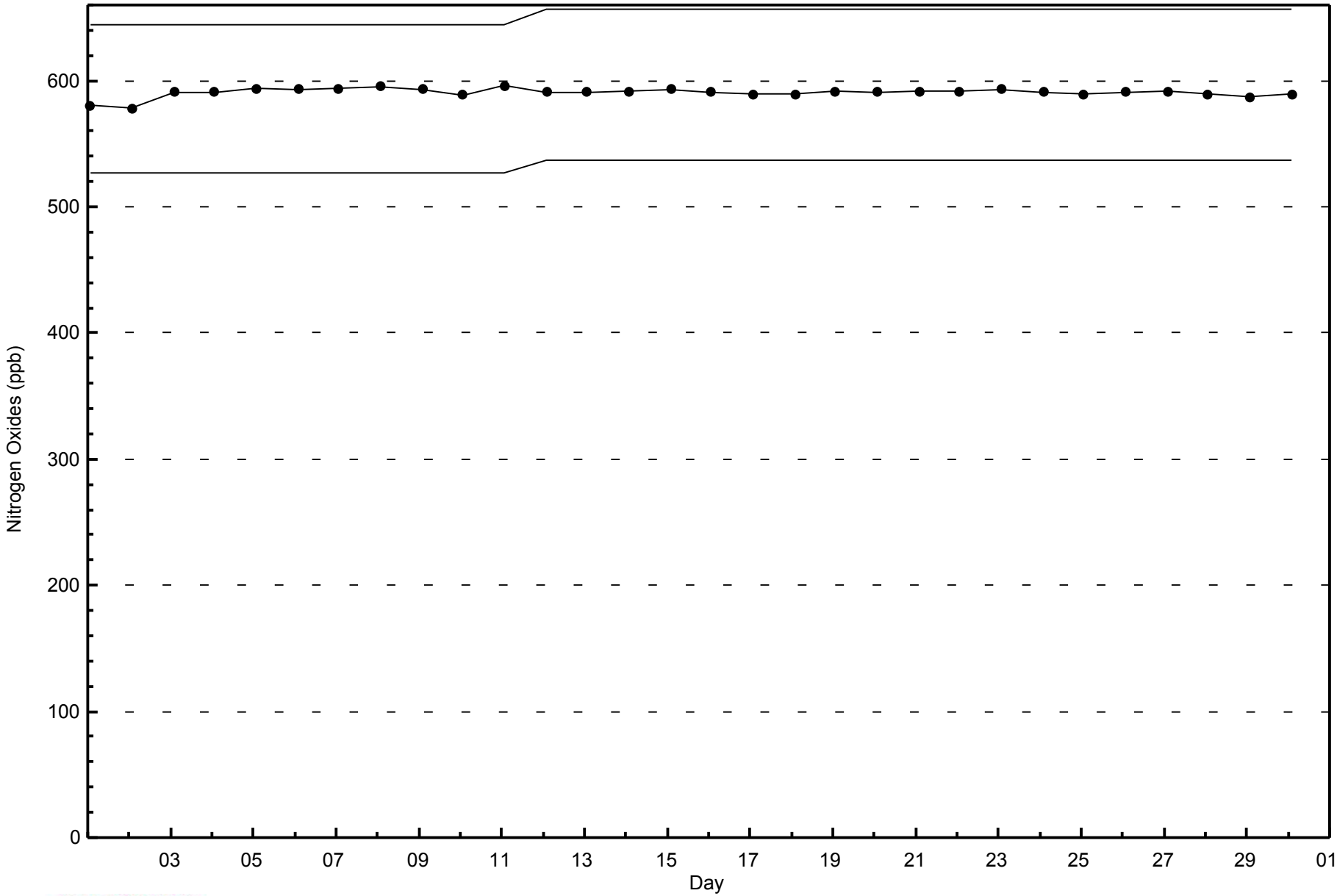
AURORA
ATMOSPHERICS INC.

WBEA NETWORK

Span Responses

Nitrogen Oxides (NO_X) - ppb

Wapasu - April 2014



AURORA ATMOSPHERICS INC.

Wood Buffalo Environmental Association

Summary of Hour Averages

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

Wapasu - April 2014

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

Maximum Value: 13.8 $\mu g/m^3$ on Apr 12 08:00

Maximum Daily Average: 4.5 $\mu g/m^3$ on Apr 23

Minimum Value: 0.0 $\mu g/m^3$ on Apr 28 00:00

Minimum Daily Average: 1.5 $\mu g/m^3$ on Apr 9

Maximum Diurnal Average: 4.1 $\mu g/m^3$ at hour 7

Minimum Diurnal Average: 2.6 $\mu g/m^3$ at hour 17

Monthly Average: 3.15 $\mu g/m^3$

Percentiles: P_1 = 0.3 P_{10} = 1.5 Q_1 = 2.1 Median = 2.9 Q_3 = 4.0 P_{90} = 5.0 P_{99} = 9.1

Hours in Service:	720
Hours of Data:	691
Hours of Missing Data:	29
Hours of Calibration:	0
Percent Operational Time:	96.0

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-Apr	4.2	4.5	4.7	5.0	4.8	5.0	4.3	3.2	2.3	1.8	1.6	1.6	1.7	1.7	1.3	1.7	1.8	1.6	1.8	2.3	2.7	2.7	2.5	2.2	2.8	5.0
2-Apr	2.0	1.9	2.0	2.2	1.8	1.8	2.0	3.8	2.1	1.8	1.8	1.8	1.8	1.7	1.8	2.2	2.3	3.6	3.9	4.2	3.4	3.0	2.7	2.5	2.4	4.2
3-Apr	2.5	2.6	2.7	2.6	2.3	2.2	2.1	2.6	2.4	2.1	1.9	1.7	1.8	2.3	2.1	1.9	2.0	2.2	2.2	2.4	2.4	2.5	2.5	2.6	2.3	2.7
4-Apr	2.9	4.1	5.8	6.8	7.8	9.1	10.9	PF	PF	PF	7.8	8.3	8.0	PF	PF	PF	PF	5.1	5.1	5.4	5.0	4.4	4.2	4.1	--	10.9
5-Apr	4.2	4.1	4.0	4.4	5.2	5.3	4.4	5.6	4.1	3.7	3.3	3.3	3.4	3.5	3.8	3.9	4.1	3.9	3.6	3.6	3.7	4.0	3.8	3.9	4.0	5.6
6-Apr	3.9	4.0	4.0	4.2	4.3	4.4	4.2	4.5	4.7	4.8	4.6	4.1	4.4	4.8	3.6	3.0	2.7	3.1	3.6	3.5	3.9	4.3	4.2	4.3	4.1	4.8
7-Apr	5.1	7.7	8.6	9.0	10.0	9.3	5.8	2.6	1.8	1.7	1.5	1.3	1.2	1.1	1.6	1.5	1.4	1.4	2.1	3.7	4.0	3.3	3.2	3.7	3.9	10.0
8-Apr	2.8	2.1	2.2	2.4	2.7	5.8	7.8	3.6	3.7	2.8	2.7	1.2	1.5	1.4	1.5	1.3	1.2	1.5	1.5	2.7	1.9	1.8	2.0	2.3	2.5	7.8
9-Apr	2.2	2.4	3.2	2.6	2.0	2.2	2.4	1.7	2.0	1.6	1.5	M	M	M	0.8	1.2	1.2	1.2	1.0	0.5	0.5	0.5	0.5	1.2	1.5	3.2
10-Apr	1.3	0.3	0.9	1.2	1.6	2.0	1.9	1.8	1.6	1.8	M	2.4	2.6	2.4	2.2	2.0	1.8	1.6	1.9	2.2	2.2	2.3	2.4	2.3	1.8	2.6
11-Apr	2.1	2.6	3.1	3.0	3.3	2.9	2.5	2.5	2.1	1.7	1.6	1.6	1.8	1.7	1.9	1.9	2.5	2.3	2.2	2.3	2.4	2.4	2.5	2.5	2.3	3.3
12-Apr	2.6	2.2	4.2	2.2	2.0	2.9	7.6	13.8	3.3	1.6	1.7	1.9	2.4	4.1	3.1	2.1	1.8	1.4	1.7	2.4	2.6	2.8	2.7	3.6	3.2	13.8
13-Apr	3.9	3.0	4.4	3.0	2.7	2.6	5.9	7.2	2.3	2.5	3.2	3.0	2.6	2.1	1.9	2.1	2.7	2.9	3.2	3.3	3.1	2.6	2.3	2.2	3.1	7.2
14-Apr	1.9	1.8	2.3	2.9	3.0	2.8	3.0	2.6	4.1	6.4	5.7	5.7	5.9	5.4	4.8	3.8	3.8	4.2	4.2	4.4	3.8	2.9	3.0	3.0	3.8	6.4
15-Apr	4.4	5.7	5.7	5.3	4.5	4.3	4.7	4.9	3.4	3.4	2.9	3.7	3.5	3.2	3.0	2.8	2.9	3.1	2.6	2.5	2.4	2.2	2.7	2.7	3.6	5.7
16-Apr	2.7	2.7	3.3	3.2	3.5	4.0	3.7	2.6	2.0	2.1	2.4	2.9	4.1	3.4	3.3	3.0	2.8	2.6	2.3	3.0	3.1	3.1	3.0	3.1	3.0	4.1
17-Apr	3.0	3.7	3.8	4.1	4.5	4.8	4.7	4.5	4.4	5.4	5.4	4.2	4.1	3.7	3.8	3.5	3.4	3.6	3.8	3.0	3.2	3.0	3.2	3.3	3.9	5.4
18-Apr	4.3	5.1	4.9	4.9	5.1	5.0	5.2	4.1	3.5	3.8	3.7	4.1	3.9	4.0	4.1	4.2	3.1	2.2	2.3	2.7	2.0	1.3	1.1	1.0	3.6	5.2
19-Apr	1.9	4.0	5.6	5.1	4.1	4.8	4.5	3.6	3.6	3.5	3.9	3.8	3.8	3.6	3.1	3.0	3.6	3.3	3.3	3.0	3.0	2.6	2.1	2.2	3.6	5.6
20-Apr	2.5	3.0	3.0	3.1	3.1	3.4	2.9	4.3	4.1	3.3	3.9	4.0	3.0	2.7	2.2	1.8	1.7	2.2	2.5	2.6	3.0	2.1	1.9	1.3	2.8	4.3
21-Apr	1.3	2.0	2.8	4.0	3.7	3.9	4.3	4.1	3.8	2.9	5.8	6.6	4.8	3.3	3.5	3.3	2.9	3.3	4.1	4.0	4.6	4.8	4.4	4.6	3.9	6.6
22-Apr	5.0	5.5	5.8	6.2	5.7	5.4	4.0	3.8	3.1	2.6	2.4	1.8	1.5	1.4	1.6	1.6	1.9	2.6	3.4	4.2	4.1	3.5	3.6	4.1	3.5	6.2
23-Apr	4.8	5.4	5.6	5.0	5.0	4.5	4.0	5.0	5.2	4.7	4.6	4.3	4.1	4.2	4.1	4.3	4.3	4.5	4.8	4.8	5.1	3.6	2.7	2.7	4.5	5.6
24-Apr	2.9	3.4	3.9	4.1	4.1	4.2	4.4	4.1	3.2	3.3	3.8	3.6	3.8	3.6	3.3	3.1	3.0	3.1	3.1	3.5	3.4	3.5	2.3	2.0	3.5	4.4
25-Apr	2.0	2.3	2.6	3.0	2.9	2.8	2.4	2.7	3.2	3.4	3.0	2.9	3.1	2.6	2.6	2.5	2.0	2.0	2.7	2.9	2.1	1.3	1.0	0.8	2.4	3.4
26-Apr	0.8	0.9	1.0	1.1	1.2	1.7	1.7	1.3	1.6	1.7	1.8	2.8	3.3	3.6	5.2	5.6	3.7	2.9	2.8	4.4	4.6	2.4	1.2	0.7	2.4	5.6
27-Apr	0.4	0.4	0.7	1.0	1.5	1.8	1.2	0.5	UO	UO	UO	UO	UO	0.4	UO	UO	UO	UO	UO	UO	UO	UO	UO	0.0	--	1.8
28-Apr	0.1	UO	UO	0.3	0.2	UO	UO	0.4	2.4	3.7	4.0	3.7	2.6	2.0	1.5	1.4	1.4	1.7	2.0	2.5	1.9	0.5	0.2	0.2	1.6	4.0
29-Apr	0.1	0.3	0.8	1.1	1.1	1.0	1.0	2.4	3.1	2.8	2.3	1.3	3.3	4.1	2.6	2.1	2.2	2.2	3.0	2.2	2.4	2.9	2.5	2.1	2.0	4.1
30-Apr	2.3	2.9	2.7	2.6	3.4	4.1	4.4	3.0	2.1	1.9	1.3	1.8	2.3	3.4	4.3	3.8	4.0	4.8	5.7	6.3	7.4	7.7	10.0	9.9	4.2	10.0
	2.7	3.1	3.6	3.5	3.6	3.9	4.1	3.7	3.0	3.0	3.2	3.2	3.2	2.9	2.8	2.7	2.6	2.8	3.0	3.3	3.2	2.9	2.8	2.7	Diurnal Average	
	5.1	7.7	8.6	9.0	10.0	9.3	10.9	13.8	5.2	6.4	7.8	8.3	8.0	5.4	5.2	5.6	4.3	5.1	5.7	6.3	7.4	7.7	10.0	9.9	Diurnal Maximum	

M - Maintenance UO - Unstable Operation PF - Power Failure

Alberta Ambient Air Quality Objectives (AAAQO): 24-hr 30 $\mu g/m^3$

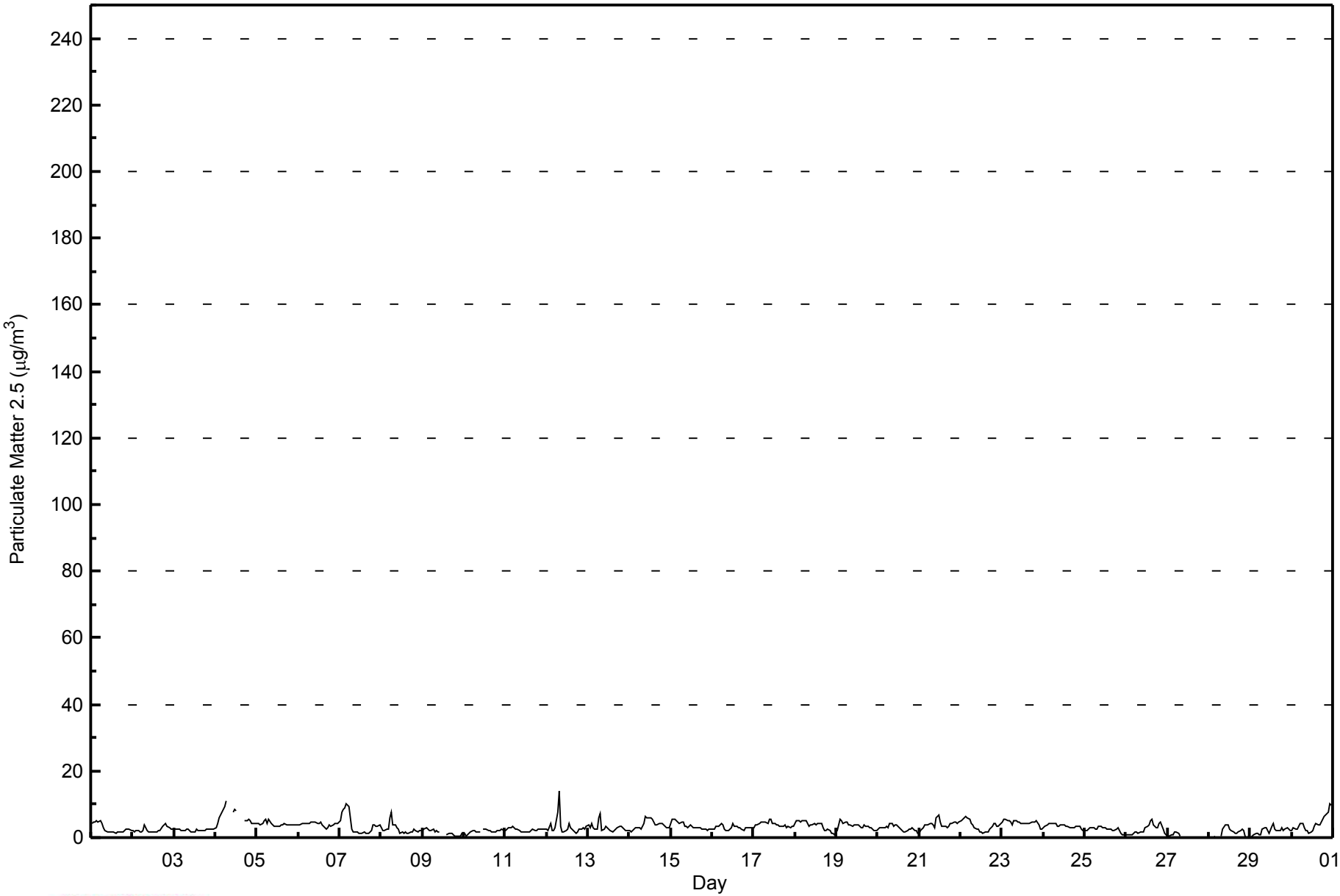
AURORA ATMOSPHERICS INC.

WBEA NETWORK

Hourly Averages

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

Wapasu - April 2014



AURORA
ATMOSPHERICS INC.

Concentration Ranges ($\mu g/m^3$)	Number of Hours	%	Cumulative %
1 - 5	619	89.58	89.58
6 - 15	42	6.08	95.66
16 - 25	0	0.00	95.66
26 - 80	0	0.00	95.66
> 81.0	0	0.00	95.66

Total Number of Valid Hours: 691

Total Number of Hours: 720

WBEA NETWORK

Frequency Distribution

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

Wapasu - April 2014

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**
1 - 5	37	33	36	25	57	88	114	65	45	10	16	24	16	10	14	26	616
6 - 15	1	1	0	0	1	6	1	11	12	5	1	1	0	0	0	2	42
16 - 25	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
26 - 80	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
> 81.0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Totals	38	34	36	25	58	94	115	76	57	15	17	25	16	10	14	28	658

Total Number of Valid Hours: 688

Total Number of Hours: 720

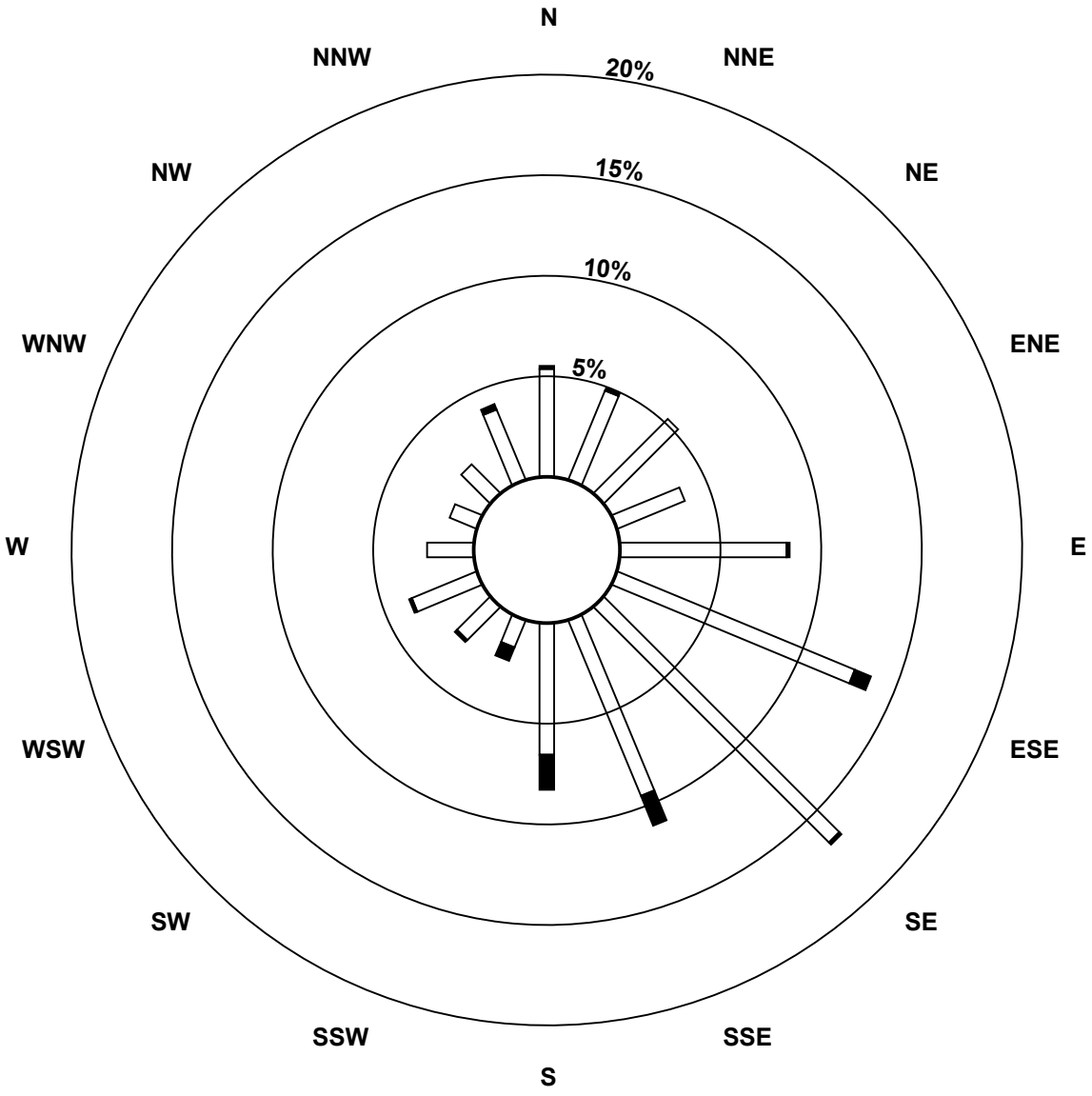
AURORA ATMOSPHERICS INC.

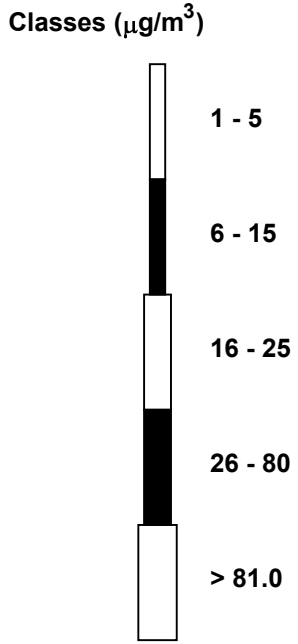
Wood Buffalo Environmental Association

Wind Rose Apr 2014

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

Wapasu (AMS 17)





Total Number of Valid Hours: 688

Maximum Value: 20.0 C on Apr 30 17:00

Maximum Daily Average: 13.8 C on Apr 30

Minimum Value: -22.2 C on Apr 3 06:00

Minimum Daily Average: -14.0 C on Apr 2

Maximum Diurnal Average: 4.4 C at hour 16

Minimum Diurnal Average: -5.7 C at hour 6

Monthly Average: -0.44 C

Percentiles: P_1 = -20.9 P_{10} = -10.6 Q_1 = -5.2 Median = 0.4 Q_3 = 4.4 P_{90} = 9.0 P_{99} = 18.4

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

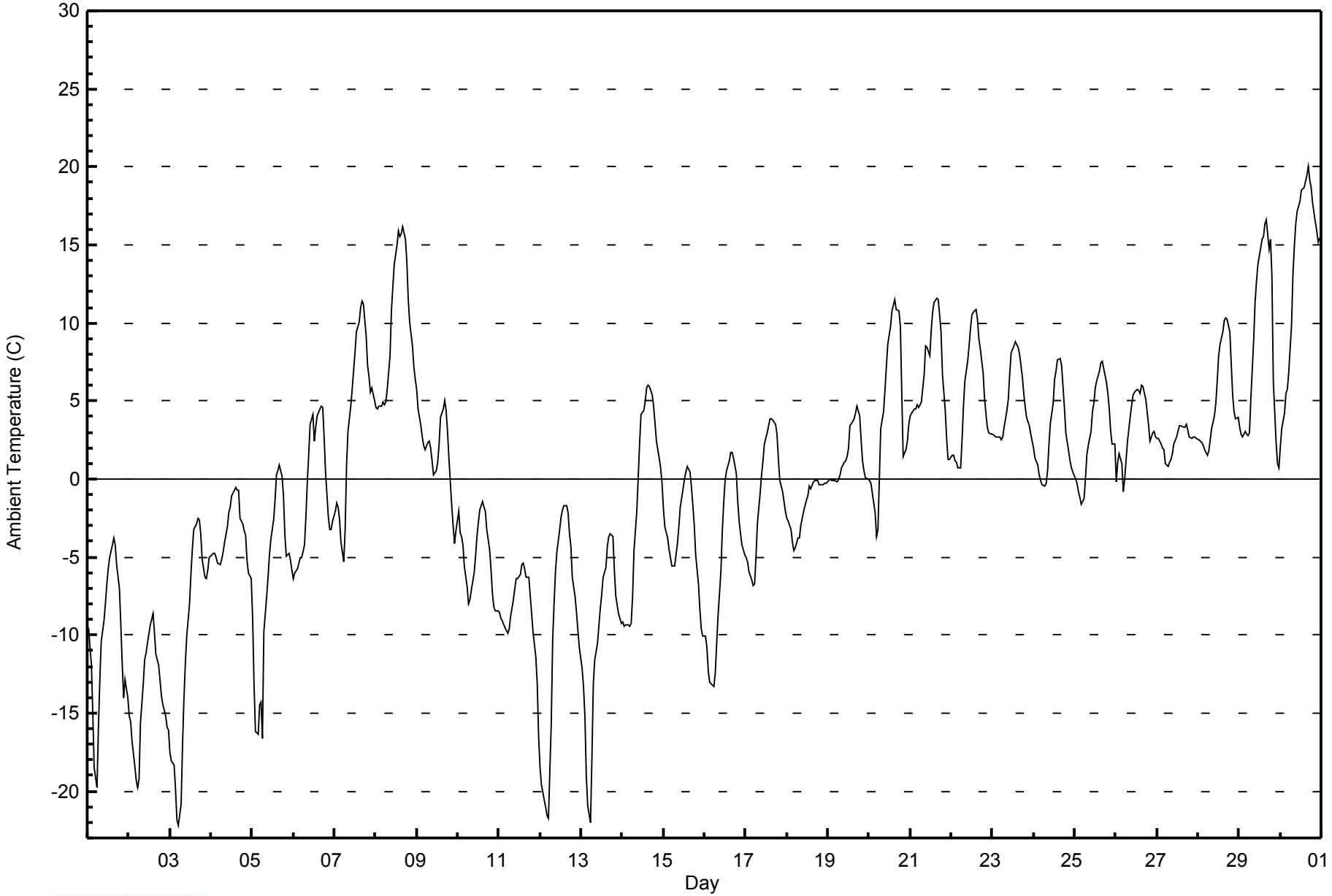
Day	Hourly Period Ending At (MST)																								Daily	Daily
	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24	Average	Maximum
1-Apr	-9.6	-10.8	-11.9	-15.0	-18.5	-19.8	-16.0	-12.9	-10.4	-9.1	-8.0	-6.8	-5.7	-5.0	-4.2	-3.8	-4.2	-5.5	-7.0	-9.3	-11.8	-14.0	-12.8	-14.0	-10.3	-3.8
2-Apr	-15.2	-15.6	-16.8	-18.4	-19.3	-19.7	-19.2	-15.7	-13.1	-11.6	-11.2	-10.5	-9.3	-9.0	-8.7	-9.9	-11.2	-11.9	-13.0	-13.9	-14.4	-15.2	-15.9	-16.1	-14.0	-8.7
3-Apr	-17.5	-18.0	-18.3	-19.9	-21.9	-22.2	-20.9	-17.1	-14.1	-11.8	-10.1	-8.0	-6.1	-4.5	-3.2	-2.9	-2.5	-2.6	-3.5	-5.2	-6.3	-6.3	-5.8	-5.1	-10.6	-2.5
4-Apr	-4.8	-4.8	-4.7	-5.0	-5.4	-5.4	-5.1	-4.7	-4.1	-3.1	-2.1	-1.8	-1.1	-0.9	-0.6	-0.7	-0.7	-2.6	-2.9	-3.3	-3.6	-5.2	-6.0	-6.3	-3.5	-0.6
5-Apr	-8.9	-13.1	-16.1	-16.4	-14.5	-14.3	-16.6	-9.8	-7.5	-6.3	-4.9	-3.8	-2.6	-1.3	0.3	0.5	0.9	0.2	-1.1	-3.6	-5.0	-4.8	-5.2	-5.8	-6.7	0.9
6-Apr	-6.4	-6.0	-5.7	-5.4	-5.1	-5.0	-4.2	-2.4	-0.2	1.6	3.5	4.2	2.4	3.3	4.1	4.5	4.7	4.5	2.6	0.4	-2.4	-3.3	-3.3	-2.7	-0.7	4.7
7-Apr	-2.1	-1.5	-1.8	-2.6	-4.0	-5.3	-3.2	0.9	3.0	4.6	5.8	6.9	8.1	9.4	10.1	10.9	11.4	11.2	9.1	7.3	6.5	5.6	5.9	5.0	4.2	11.4
8-Apr	4.5	4.5	4.7	4.7	4.9	4.8	4.9	5.8	7.9	10.8	12.3	13.7	15.0	15.9	15.5	15.7	16.1	15.3	13.9	11.5	10.0	8.5	7.1	6.4	9.8	16.1
9-Apr	5.7	4.5	3.4	2.6	2.1	1.9	2.4	2.4	2.0	1.2	0.2	0.5	1.1	2.2	3.9	4.4	5.0	4.4	3.1	1.3	-1.7	-3.0	-4.1	-3.3	1.8	5.7
10-Apr	-2.1	-3.4	-3.7	-4.2	-5.6	-7.0	-8.0	-7.7	-7.1	-6.1	-5.0	-3.7	-2.8	-2.0	-1.5	-1.8	-2.1	-3.3	-4.5	-5.7	-7.3	-8.1	-8.4	-8.4	-5.0	-1.5
11-Apr	-8.5	-8.9	-9.1	-9.5	-9.7	-9.9	-9.6	-8.8	-7.7	-7.0	-6.4	-6.4	-6.1	-5.5	-5.4	-5.8	-6.3	-6.3	-7.5	-8.6	-9.8	-11.4	-13.1	-16.6	-8.5	-5.4
12-Apr	-18.5	-19.6	-20.6	-21.0	-21.6	-21.7	-15.7	-10.3	-8.0	-5.9	-4.6	-3.3	-2.5	-1.9	-1.7	-1.7	-2.2	-3.5	-4.3	-6.3	-7.6	-8.6	-9.7	-10.8	-9.6	-1.7
13-Apr	-12.1	-13.3	-15.2	-19.0	-21.0	-22.0	-17.9	-13.1	-11.6	-10.5	-9.3	-8.3	-7.4	-6.3	-5.7	-4.3	-3.7	-3.5	-3.7	-5.8	-7.4	-8.1	-8.6	-9.3	-10.3	-3.5
14-Apr	-9.2	-9.4	-9.4	-9.4	-9.5	-9.2	-7.6	-4.6	-2.0	0.0	2.2	4.1	4.4	4.9	5.8	6.1	5.9	5.4	4.6	3.6	2.4	1.4	0.7	-0.3	-0.8	6.1
15-Apr	-1.9	-3.1	-3.8	-4.5	-5.0	-5.6	-5.5	-4.9	-4.2	-3.1	-1.8	-0.7	0.0	0.4	0.8	0.5	-0.5	-1.7	-3.0	-4.9	-6.7	-8.4	-9.6	-10.1	-3.6	0.8
16-Apr	-10.1	-10.8	-12.3	-13.0	-13.2	-13.3	-12.4	-10.5	-8.7	-5.9	-3.4	-1.6	-0.1	0.5	1.2	1.7	1.7	1.3	0.3	-1.4	-2.7	-3.5	-4.2	-4.9	-5.2	1.7
17-Apr	-5.0	-5.3	-5.9	-6.5	-6.8	-6.8	-5.1	-2.8	-0.9	0.2	1.2	2.2	3.0	3.4	3.8	3.9	3.8	3.5	2.8	1.3	-0.1	-0.8	-1.4	-2.0	-0.8	3.9
18-Apr	-2.5	-2.7	-3.2	-4.0	-4.6	-4.4	-3.8	-3.8	-3.0	-2.5	-2.1	-1.4	-1.1	-0.4	-0.6	-0.2	-0.1	-0.1	-0.1	-0.4	-0.4	-0.4	-0.3	-0.3	-1.8	-0.1
19-Apr	-0.1	0.0	-0.1	-0.1	-0.1	-0.2	0.0	0.3	0.7	1.0	1.2	1.4	1.9	3.4	3.6	3.9	4.2	4.7	4.1	2.5	1.1	0.6	0.1	0.0	1.4	4.7
20-Apr	0.0	-0.3	-0.9	-2.1	-3.7	-3.3	0.0	3.2	4.3	5.7	7.2	8.7	9.8	10.8	11.2	11.5	10.9	10.7	9.7	5.4	1.4	1.9	2.4	3.5	4.5	11.5
21-Apr	4.1	4.2	4.5	4.5	4.7	4.6	5.0	5.8	6.7	8.5	8.4	7.9	9.5	10.7	11.4	11.6	11.5	10.5	9.5	6.8	4.4	2.6	1.3	1.3	6.7	11.6
22-Apr	1.5	1.6	1.2	1.1	0.7	0.7	2.5	4.6	6.3	7.6	8.5	9.6	10.5	10.7	10.8	10.3	9.0	8.4	6.9	5.2	4.2	3.4	3.0	2.9	5.5	10.8
23-Apr	2.9	2.8	2.7	2.7	2.7	2.5	2.7	3.3	4.4	5.1	6.7	8.1	8.6	8.8	8.6	8.4	8.0	6.6	5.5	4.7	4.0	3.4	2.8	2.5	4.9	8.8
24-Apr	2.0	1.4	0.9	0.3	0.0	-0.4	-0.4	-0.2	0.5	2.3	3.6	4.8	6.3	7.0	7.7	7.7	7.3	5.9	4.6	3.0	1.8	1.2	0.7	0.4	2.8	7.7
25-Apr	0.0	-0.3	-0.8	-1.2	-1.6	-1.3	0.0	1.5	2.1	3.1	4.3	4.8	5.9	6.3	6.9	7.5	7.5	7.1	6.2	5.5	4.5	3.1	2.2	2.3	3.1	7.5
26-Apr	-0.2	1.1	1.6	1.0	-0.8	0.0	1.2	2.4	4.0	4.8	5.4	5.6	5.8	5.7	5.4	6.0	5.9	5.1	4.3	3.5	2.4	3.0	3.1	2.7	3.3	6.0
27-Apr	2.6	2.6	2.3	2.0	1.8	1.0	0.8	1.1	1.2	1.6	2.2	2.6	3.1	3.4	3.4	3.3	3.4	3.5	3.1	2.7	2.6	2.7	2.7	2.6	2.4	3.5
28-Apr	2.5	2.4	2.3	2.2	1.9	1.5	1.8	2.5	3.3	4.0	4.8	6.3	7.9	8.6	9.4	10.1	10.3	10.2	9.4	7.4	5.4	4.3	3.9	3.9	5.3	10.3
29-Apr	3.3	2.9	2.7	3.0	2.9	2.8	2.9	5.2	8.9	11.3	12.7	13.7	14.8	15.4	15.5	16.4	16.6	14.7	15.4	13.0	6.3	2.3	1.0	0.7	8.5	16.6
30-Apr	2.1	3.3	4.2	5.4	5.8	6.8	9.9	13.1	14.9	16.4	17.2	17.8	18.5	18.6	18.7	19.5	20.0	19.1	18.7	17.7	16.5	15.9	15.2	15.5	13.8	20.0
	-3.5	-3.9	-4.3	-4.9	-5.5	-5.7	-4.6	-2.6	-1.1	0.2	1.3	2.2	3.1	3.8	4.2	4.4	4.4	3.7	2.8	1.1	-0.5	-1.4	-1.9	-2.2	Diurnal Average	
	5.7	4.5	4.7	5.4	5.8	6.8	9.9	13.1	14.9	16.4	17.2	17.8	18.5	18.6	18.7	19.5	20.0	19.1	18.7	17.7	16.5	15.9	15.2	15.5	Diurnal Maximum	

WBEA NETWORK

Hourly Averages

Ambient Temperature (AT) - C

Wapasu - April 2014



AURORA ATMOSPHERICS INC.

Concentration Ranges (C)	Number of Hours	%	Cumulative %
-50 - -20	9	1.25	1.25
-20 - 0	337	46.81	48.06
0 - 10	313	43.47	91.53
10 - 20	60	8.33	99.86
> 20	1	0.14	100.00

Total Number of Valid Hours: 720

Total Number of Hours: 720

Maximum Value: 98 % on Apr 19 01:00

Maximum Daily Average: 88.8 % on Apr 27

Minimum Value: 18 % on Apr 30 16:00

Minimum Daily Average: 37.1 % on Apr 30

Maximum Diurnal Average: 77.8 % at hour 6

Minimum Diurnal Average: 45.5 % at hour 17

Monthly Average: 60.4 %

Percentiles: P_1 = 22 P_{10} = 33 Q_1 = 44 Median = 60 Q_3 = 77 P_{90} = 88 P_{99} = 97

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

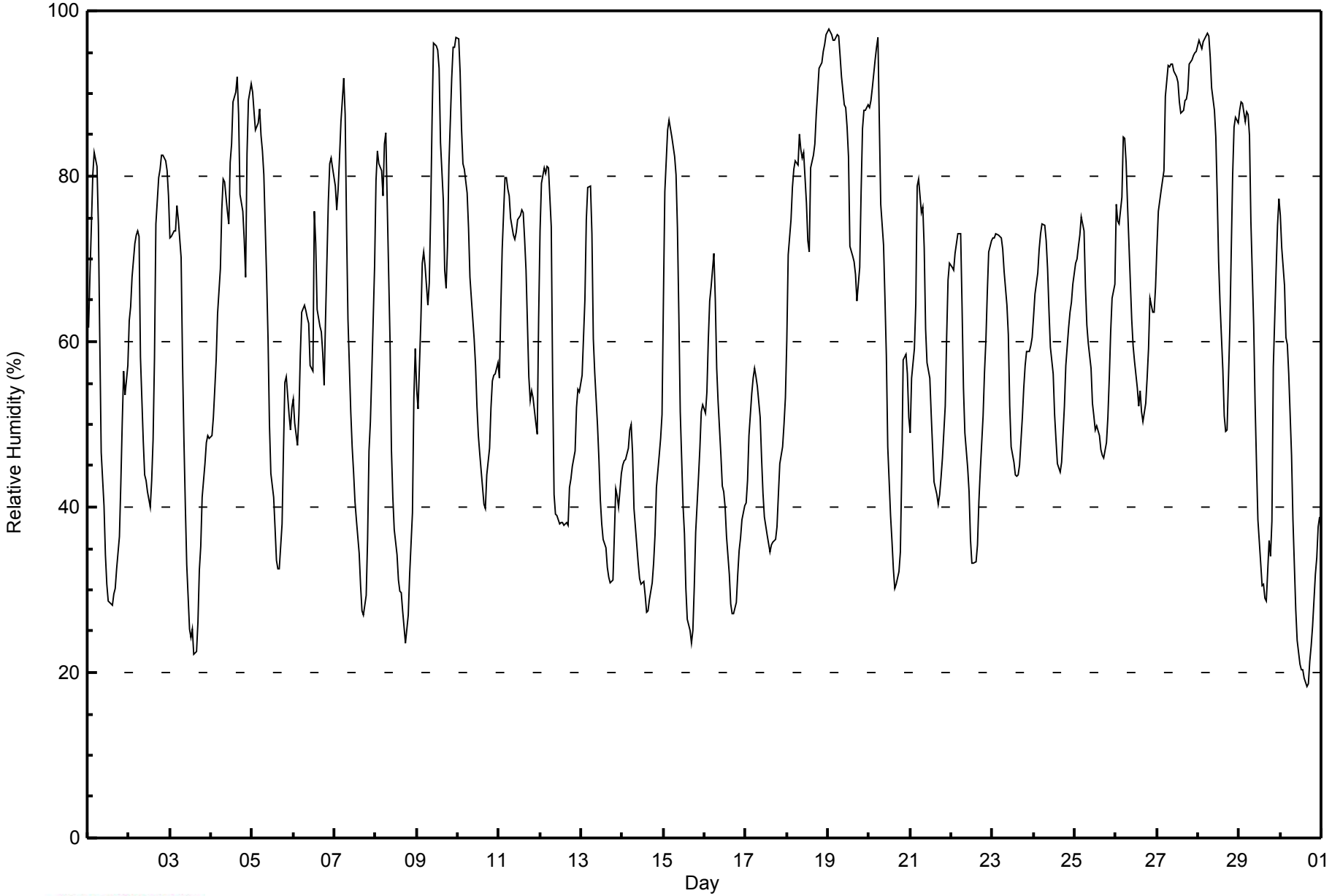
Day	Hourly Period Ending At (MST)																								Daily	Daily
	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24	Average	Maximum
1-Apr	62	68	74	80	83	81	74	60	47	40	34	31	29	29	28	29	30	33	37	43	50	56	54	57	50.3	83
2-Apr	62	64	68	72	73	73	73	58	48	44	43	42	40	43	48	58	74	80	81	83	83	82	81	78	64.6	83
3-Apr	73	73	73	73	76	75	70	58	48	40	33	25	24	25	22	23	26	32	35	41	45	48	49	48	47.4	76
4-Apr	49	51	54	58	63	69	76	80	79	76	74	82	84	89	90	92	87	78	76	72	68	83	89	91	75.4	92
5-Apr	90	88	86	86	88	85	83	80	68	60	50	44	41	38	34	33	33	38	47	55	56	51	49	52	59.8	90
6-Apr	53	50	48	51	58	64	64	64	63	62	57	56	76	72	64	62	61	59	55	63	77	82	82	81	63.5	82
7-Apr	79	76	78	82	87	92	87	74	63	52	47	44	41	38	34	30	27	27	29	36	47	50	56	69	56.1	92
8-Apr	79	83	81	81	78	84	85	77	60	47	41	37	34	31	30	30	28	24	25	27	32	39	53	59	51.9	85
9-Apr	54	52	63	69	71	69	64	67	76	87	96	96	95	93	84	77	69	66	72	81	92	96	96	97	78.4	97
10-Apr	97	93	86	81	81	78	74	68	65	60	57	52	49	47	42	40	40	44	47	52	55	56	56	58	61.6	97
11-Apr	56	64	71	80	80	79	78	75	73	72	73	75	75	76	76	72	69	56	53	54	53	50	49	63	67.5	80
12-Apr	73	79	81	80	81	81	74	55	42	39	39	38	38	38	38	38	38	42	43	45	47	52	54	54	53.8	81
13-Apr	56	60	65	75	79	79	73	60	56	50	46	41	38	36	35	33	32	31	31	37	42	41	40	44	49.1	79
14-Apr	45	46	46	47	49	50	47	40	35	33	31	31	31	29	27	28	29	31	33	37	42	46	48	51	38.9	51
15-Apr	65	78	86	87	86	85	82	80	74	63	51	40	37	30	26	25	23	25	30	37	44	47	52	52	54.4	87
16-Apr	51	54	60	65	67	71	65	57	53	46	43	42	40	36	32	28	27	27	28	32	35	36	38	40	44.7	71
17-Apr	40	43	49	54	56	57	56	55	51	46	42	39	37	36	35	35	36	36	38	42	45	47	50	53	44.8	57
18-Apr	60	71	75	79	81	82	81	85	83	82	83	77	72	71	81	83	84	87	90	93	94	95	96	97	82.6	97
19-Apr	98	97	97	97	96	97	97	95	92	89	88	86	82	72	70	70	68	65	69	78	86	88	88	89	85.5	98
20-Apr	88	89	91	94	96	97	86	77	72	65	58	47	39	36	33	30	31	32	35	45	58	59	56	51	61.0	97
21-Apr	49	56	59	65	79	80	76	76	71	62	58	56	51	47	43	41	40	42	44	46	52	61	68	70	57.9	80
22-Apr	69	69	71	72	73	73	64	54	49	45	42	36	33	33	33	35	41	44	51	56	60	66	71	72	54.7	73
23-Apr	72	73	73	73	73	73	71	68	64	61	52	47	46	44	44	44	45	51	54	57	59	59	59	60	59.3	73
24-Apr	63	66	68	71	73	74	74	72	69	64	59	56	51	48	45	44	45	49	52	57	62	64	65	67	60.8	74
25-Apr	70	70	72	73	75	73	67	62	60	57	52	51	49	50	49	47	46	46	48	51	56	61	65	67	59.0	75
26-Apr	77	75	74	77	85	85	82	77	67	63	60	58	54	52	54	51	50	53	56	59	65	63	64	67	65.3	85
27-Apr	72	76	78	79	81	90	93	93	94	94	93	92	91	89	88	88	89	89	90	93	94	95	95	95	88.8	95
28-Apr	96	96	95	96	97	97	97	94	91	88	85	78	70	65	57	51	49	49	62	71	80	86	87	86	80.1	97
29-Apr	88	89	89	87	88	87	85	75	62	53	45	39	33	30	31	29	29	36	34	38	57	69	74	77	59.3	89
30-Apr	75	71	67	61	60	56	46	38	33	28	24	21	20	20	19	18	19	21	23	26	32	34	38	39	37.1	75
	68.7	70.6	72.6	74.8	77.0	77.8	74.8	69.1	63.6	58.9	55.2	51.9	50.0	48.1	46.4	45.5	45.5	46.4	49.0	53.5	58.9	62.1	64.0	66.1	Diurnal Average	
	98	97	97	97	97	97	97	95	94	94	96	96	95	93	90	92	89	89	90	93	94	96	96	97	Diurnal Maximum	

WBEA NETWORK

Hourly Averages

Relative Humidity (RH) - %

Wapasu - April 2014



AURORA ATMOSPHERICS INC.

Concentration Ranges (%)	Number of Hours	%	Cumulative %
0 - 20	3	0.42	0.42
20 - 40	134	18.61	19.03
40 - 60	222	30.83	49.86
60 - 80	212	29.44	79.31
80 - 100	149	20.69	100.00

Total Number of Valid Hours: 720

Total Number of Hours: 720

Wood Buffalo Environmental Association

Summary of Hour Averages

Wind Speed (WS) - km/h

Wapasu - April 2014

Maximum Speed: 24 km/h on Apr 23 11:00

Maximum Daily Speed Average: 21.7 km/h on Apr 23

Minimum Speed Value: 0 km/h on Apr 13 04:00

Minimum Daily Speed Average: 1.6 km/h on Apr 13

Maximum Diurnal Speed Average: 8.1 km/h at hour 2

Minimum Diurnal Speed Average: 2.4 km/h at hour 15

Monthly Average Velocity: 5.2 km/h 123.8 deg

Percentiles: P_1 = 2 P_{10} = 4 Q_1 = 7 Median = 10 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-Apr	S8	S6	S5	SE2	E3	NNE4	NE6	NE8	NE9	N10	N10	N9	N9	N8	NNE8	N9	N8	NNE8	NE8	NE7	ENE4	ENE6	NE7	NE5	NNE4.7	N10
2-Apr	NE7	NE7	NE6	NE7	NE9	NE7	ENE7	ENE9	ENE11	NE9	NNE10	NNE11	NNE11	NNE11	NNE11	NNE11	NNE10	NNE10	NNE10	NNE8	NE8	NE9	NE7	NE7	NE8.6	NNE11
3-Apr	ENE6	ENE5	E7	E6	ENE4	E5	E5	SW1	ESE5	ESE6	ESE8	ESE8	SE7	WSW4	SSE6	SSE10	SSE11	SE13	SE14	SE15	SE19	SE23	SE22	SE22	SE8.6	SE23
4-Apr	SSE23	SSE23	SSE24	SSE24	SSE23	SSE21	SSE22	SSE20	SSE21	SSE19	SSE15	SSE13	S11	SSW8	W10	W8	WNW12	WNW15	WNW14	WNW16	WNW13	NNW11	NW8	NW8	S8.0	SSE24
5-Apr	N4	AF	SE5	SSE4	WSW5	W2	SE2	WSW1	NNW6	NW6	NNW8	N7	N4	NW3	N6	NW5	NNE4	NE5	ENE7	ENE6	E7	ESE10	SE9	SE9	NE1.7	ESE10
6-Apr	SE9	SE10	SE12	SE12	SSE12	SSE11	SSE10	S10	S9	S9	SW8	WSW10	SW10	WSW8	W8	W8	NW8	N8	NNE7	NE5	E3	SE4	SSE5	SSE5	S4.3	SE12
7-Apr	SSE6	S6	S5	S5	SSE4	SSE4	SSW4	W2	NW4	NNW5	NNW4	WNW3	WSW6	W7	WSW8	SW8	SW9	SW8	S4	S5	S5	SSE7	SSW7	S8	SSW3.8	SW9
8-Apr	S8	S9	S10	S8	S6	SSW8	S9	S9	SW12	WSW17	WSW18	WSW20	W20	W18	W23	WSW18	WSW18	WSW21	WSW19	W15	WSW13	W10	W9	WSW7	WSW11.6	WSW23
9-Apr	WSW9	WSW10	W9	WSW10	SW11	SW9	SW10	W14	W16	NW14	NW9	NW10	NW10	NNW8	N8	N7	NNW8	N8	NNE5	NNE5	ESE3	SSE3	S2	S5	WNW5.2	W16
10-Apr	S9	S8	S8	S8	S9	S10	S11	S11	S11	M	N10	N9	N9	N10	N10	NNE10	NE10	NNE10	NE8	NE7	NE7	ENE7	E9	E9	ENE2.9	S11
11-Apr	E7	E7	E8	E8	ESE9	E9	E10	E10	E11	ENE12	ENE12	NE14	NE14	NE13	NNE13	NNE13	NNE11	NNE12	N12	NNE10	N7	N5	NNE4	ENE3	NE8.2	NE14
12-Apr	E4	SE2	SE5	SSE6	SE5	SE6	SSE5	SSW5	WSW7	W8	WNW9	NW10	NW9	NNW9	NNW10	NNW12	N13	N10	N12	N10	N10	N11	N9	N8	NNW4.3	N13
13-Apr	N5	N5	N3	ENE0	ESE1	SE3	NNE2	N6	NNW9	N9	NNW9	NNW8	NNW8	NNW7	WNW4	NNW2	NW4	SSE3	ESE3	ESE6	SE9	SE11	SE13	SE14	NE1.6	SE14
14-Apr	SSE14	SSE14	SSE14	SSE13	SSE12	SSE13	SSE12	SSE12	S12	S12	S12	S12	S12	S12	S11	S10	SSE9	SSE10	SE10	ESE6	ESE8	E10	E12	E13	SSE10.2	SSE14
15-Apr	ESE14	ESE14	ESE11	E12	E12	E10	E11	E11	E13	E15	E14	ENE13	ENE15	ENE14	NE12	NNE14	NNE14	NNE13	NE12	NNE12	NNE10	NNE10	NE10	ENE9	ENE10.8	E15
16-Apr	E11	E12	E11	E13	ESE14	ESE13	ESE13	ESE12	ESE11	ESE11	SE13	SE18	SE19	SE18	SE14	SE13	SE13	SE14	SE13	SE11	SE12	SE13	SE15	SE15	ESE12.7	SE19
17-Apr	SE13	SE11	SE10	SE10	SE10	SE10	SSE12	SSE12	SSE15	SSE19	SSE18	SE17	SE17	SE17	SE16	SE17	SE18	SE18	SE15	SE13	SE11	SE13	SE13	SE12	SE13.8	SSE19
18-Apr	SE13	SE12	ESE10	ESE8	SE8	ESE8	ESE10	ESE11	ESE14	ESE13	SE13	SE13	SE14	SE13	SE12	SE12	SSE11	SSE9	SSE8	SSE5	SSE4	S3	S2	SSW2	SE9.1	SSE14
19-Apr	S3	SSE3	SSE4	SSE4	S3	S4	SSE4	S6	S5	SSE6	SSE8	SSE9	SSE10	SE10	SE9	SE12	SE12	SE12	SE11	SE10	SE11	SE11	ESE11	ESE11	SE7.5	SE12
20-Apr	SE11	SE12	SE7	SE2	E2	SE5	ESE3	WNW3	NNW6	NNW6	NNW8	NNW9	N10	N10	NNW9	N8	NNE6	N4	AF	ESE3	SE5	SE7	SE6	SSE7	NE1.8	SE12
21-Apr	SSE7	SSE7	S8	S7	SSE6	SSE8	S7	SW5	SW5	WSW6	NNW11	NNW8	NNW7	NNW8	NNW8	N8	NNE9	NNE9	NE8	NE8	NE8	NE8	ENE7	E9	NE1.7	NNW11
22-Apr	E12	ESE12	E10	ESE10	ESE11	ESE11	ESE11	ESE12	ESE13	ESE13	E14	ESE14	E14	E15	E16	E16	E17	E15	ENE11	ENE10	E17	ESE21	ESE22	ESE23	E13.9	ESE23
23-Apr	ESE21	ESE21	ESE22	ESE23	ESE21	ESE21	ESE21	ESE22	ESE20	ESE22	ESE24	ESE22	ESE23	ESE22	ESE23	E24	E23	E21	E24	E24	ESE22	ESE22	ESE19	ESE19	ESE21.7	ESE24
24-Apr	ESE18	ESE17	ESE17	ESE16	E17	ESE16	ESE16	ESE17	ESE16	ESE14	ESE15	E16	ESE15	ESE14	ESE14	E14	E13	E14	E15	E13	ESE10	ESE13	ESE15	ESE14	ESE14.9	ESE18
25-Apr	ESE14	ESE12	ESE11	SE12	SE12	SE12	SE12	SE7	SSE5	E4	ENE6	ENE8	ESE8	ESE9	ESE9	ESE9	SE10	SE11	SE10	ESE7	SE5	SE6	SE5	SSE5	ESE8.2	ESE14
26-Apr	SE4	SE6	SSE6	SE6	SE6	SE8	SE9	SE11	SE12	SSE11	SSE12	SSE14	SSE12	SE15	SE15	SE17	SE18	SE15	SE16	SE13	SE12	SE14	SE15	SE10	SE11.4	SE18
27-Apr	SE10	SE12	SE13	ESE11	ESE11	ESE10	ESE12	ESE14	SE14	SE17	SE21	SE19	SE19	SSE20	SSE17	SSE16	SSE15	SSE15	SSE15	SSE16	SSE15	SSE14	SSE13	SSE13	SE14.4	SE21
28-Apr	SSE13	SSE12	SSE9	SSE9	SSE8	SSE8	SE9	SE7	S6	S5	SW3	SSW4	SSW3	SW4	NE0	ENE3	NW2	NNW2	SSE5	SSE7	SSE10	SSE10	SSE10	SSE10	SSE5.8	SSE13
29-Apr	SSE10	SE8	SE8	SSE8	SSE8	SSE9	S8	S9	SW8	WNW7	WNW6	W10	SW9	WSW9	W9	WSW9	W11	NNW7	NW3	NE2	ESE3	ESE4	SE5	SE6	SSW3.5	W11
30-Apr	SE7	SSE6	SSE6	SSE7	SE6	SSE6	SSE8	SSE10	S10	S10	SSW11	SSW11	SSW11	SSW11	S11	SSW12	S12	SSW8	SSW8	S7	S6	SSW6	S5	SW8	S7.8	SSW12
	SE7.8	SE8.1	SE7.7	SE7.3	SE7.1	SE7.3	SE7.5	SE6.4	SE5.2	SE4.1	ESE3.2	ESE3.2	SE3.4	ESE2.7	ESE2.4	ESE3.1	E3.3	E3.8	E4.6	E4.5	ESE5.4	ESE6.4	ESE6.8	SE6.9	Diurnal Average	
	SSE23	SSE23	SSE24	SSE24	SSE23	ESE21	SSE22	ESE22	SSE21	ESE22	ESE24	ESE22	ESE23	ESE22	ESE23	E24	E23	E21	E24	E24	ESE22	SE23	SE22	ESE23	Diurnal Maximum	

M - Maintenance AF - Analyzer Failure

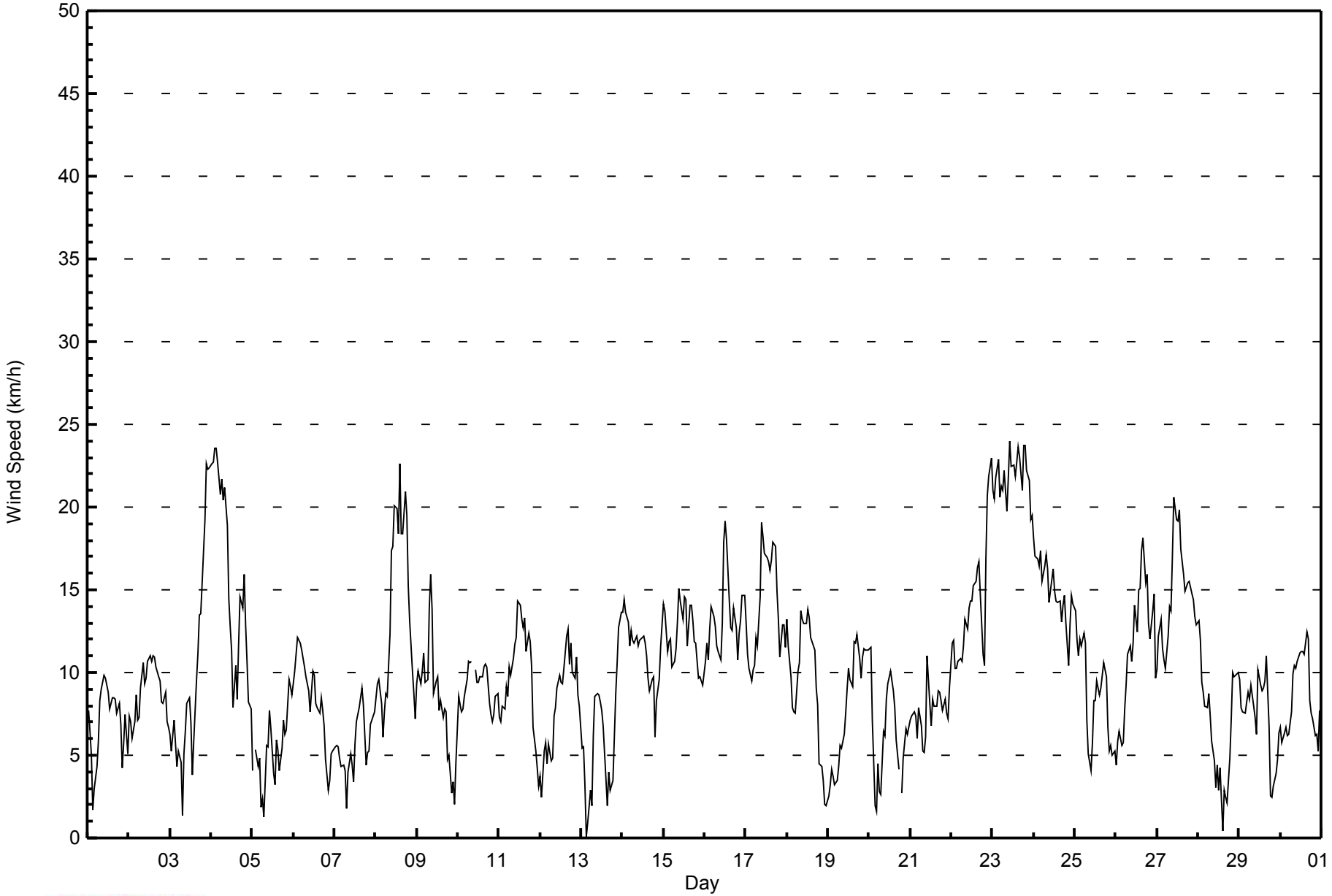
All monthly, daily, and diurnal averages have been calculated using vector methods

WBEA NETWORK

Hourly Averages

Wind Speed (WS) - km/h

Wapasu - April 2014



AURORA
ATMOSPHERICS INC.

Wind Speed Ranges (km/h)	Number of Hours	%	Cumulative %
0 - 5	115	16.04	16.04
6 - 11	354	49.37	65.41
12 - 19	205	28.59	94.00
20 - 28	43	6.00	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

WBEA NETWORK

Frequency Distribution

Wind Speed (WS) - km/h

Wapasu - April 2014

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	7	6	5	6	7	8	14	18	16	5	5	3	2	3	6	4	115
6 - 11	30	22	26	14	21	33	46	44	37	10	11	13	11	3	9	24	354
12 - 19	3	7	5	5	25	35	66	33	7	1	1	6	4	5	1	1	205
20 - 28	0	0	0	0	5	20	4	10	0	0	0	3	1	0	0	0	43
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	35	36	25	58	96	130	105	60	16	17	25	18	11	16	29	717

Total Number of Valid Hours: 717

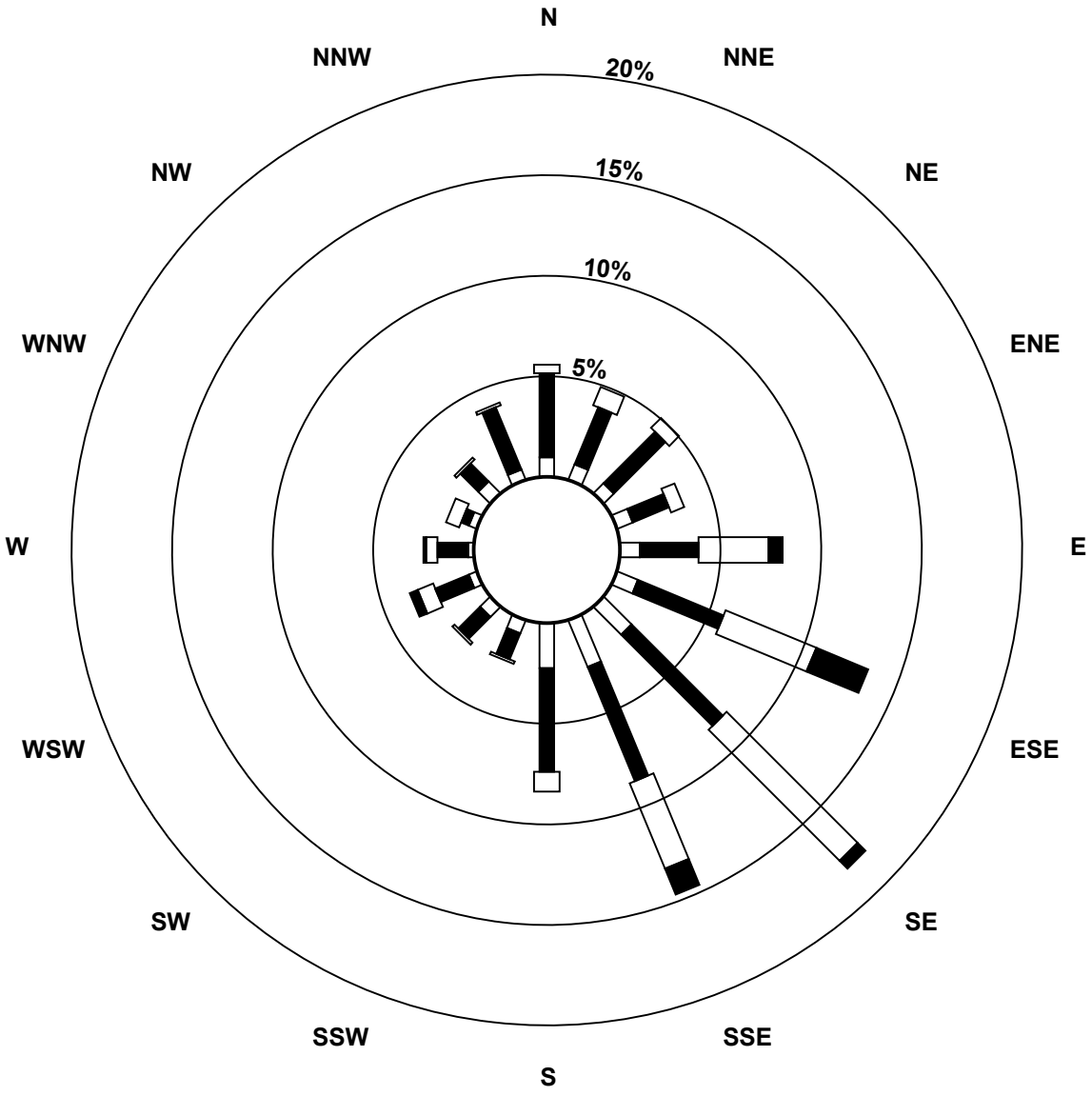
Total Number of Hours: 720

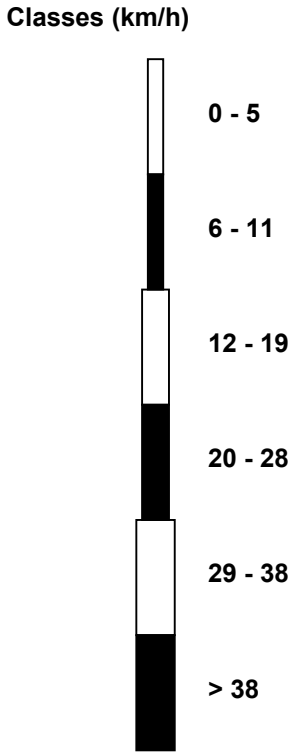
Wood Buffalo Environmental Association

Wind Rose Apr 2014

Wind Speed (WS) - km/h

Wapasu (AMS 17)





Total Number of Valid Hours: 717

Number of Exceedences (AAAQO): 1-hr: 0 24-hr: 0
Maximum Value: 7 km/h on Apr 23 15:00

Minimum Value: 0 km/h on Apr 12 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:	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-Apr	2	2	1	1	0	1	1	3	3	4	3	3	3	3	3	3	3	3	2	2	1	1	2	1	4
2-Apr	2	2	2	2	2	2	2	3	3	3	3	4	4	4	4	4	4	3	3	3	3	3	2	2	4
3-Apr	2	1	2	1	1	1	1	1	2	3	3	3	4	3	4	3	4	4	4	4	5	6	6	6	6
4-Apr	6	6	7	7	7	6	6	6	6	6	5	4	4	3	4	3	7	5	5	6	4	4	2	2	7
5-Apr	3	AF	1	1	2	2	1	2	2	2	3	3	3	3	2	2	2	2	2	2	1	3	2	2	3
6-Apr	2	2	3	3	3	3	3	3	3	3	3	4	4	3	2	3	2	3	3	2	1	1	1	1	4
7-Apr	1	1	2	1	1	1	1	2	2	2	2	3	3	4	4	3	4	3	1	2	1	2	2	2	4
8-Apr	2	3	3	2	2	3	3	3	5	5	5	6	6	7	7	6	6	7	6	5	4	4	3	2	7
9-Apr	3	3	3	3	3	3	4	6	5	4	3	3	3	3	3	3	2	3	2	3	1	2	1	2	6
10-Apr	3	3	3	3	3	4	4	4	3	M	3	4	3	4	3	3	4	4	3	3	2	2	3	3	4
11-Apr	2	2	3	2	3	3	4	3	4	4	4	4	5	5	5	5	4	4	5	4	3	2	1	1	5
12-Apr	0	1	1	1	1	1	1	2	2	3	3	4	4	4	4	4	4	4	4	4	3	4	3	3	4
13-Apr	2	2	1	0	1	1	2	2	4	4	4	3	3	3	3	2	2	2	2	1	2	2	3	3	4
14-Apr	3	3	4	3	4	4	3	4	4	4	4	4	4	4	4	4	3	3	3	2	3	4	3	4	4
15-Apr	4	4	4	4	4	3	4	4	4	5	4	4	5	5	5	5	5	5	5	4	4	3	3	3	5
16-Apr	3	3	3	4	4	4	4	4	4	4	5	6	6	6	5	4	4	4	4	3	3	3	4	4	6
17-Apr	3	2	2	2	2	2	3	3	4	6	6	5	5	5	5	5	5	5	4	4	3	3	3	3	6
18-Apr	3	4	3	3	2	2	3	3	4	4	4	4	4	4	4	3	4	3	3	2	1	1	1	1	4
19-Apr	1	1	1	1	1	1	2	2	2	2	2	2	3	3	3	3	3	3	3	2	3	3	3	3	3
20-Apr	3	3	3	2	2	1	1	2	2	2	3	3	4	4	4	3	3	2	AF	1	1	1	1	1	4
21-Apr	1	1	2	2	2	2	3	2	2	3	3	3	3	3	3	3	3	3	3	2	2	2	2	3	3
22-Apr	3	3	2	3	3	3	3	3	5	4	4	5	4	5	5	5	5	5	4	4	6	6	6	7	7
23-Apr	7	6	6	7	6	7	6	7	6	7	7	7	7	7	7	7	7	7	7	7	7	7	6	6	7
24-Apr	6	6	5	5	6	5	6	6	5	4	5	5	5	5	5	4	4	4	4	4	3	5	4	4	6
25-Apr	4	3	3	3	3	3	3	3	2	3	3	3	3	3	3	3	3	3	3	2	1	1	1	1	4
26-Apr	1	1	1	1	1	2	3	3	4	3	4	4	4	4	5	5	5	5	4	4	3	4	4	3	5
27-Apr	3	3	4	4	3	3	4	4	4	5	6	6	6	6	5	5	4	4	4	4	4	4	4	4	6
28-Apr	4	3	3	3	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2	3	3	3	4
29-Apr	2	2	2	2	2	3	3	3	3	3	4	4	4	4	4	5	4	5	1	1	1	1	1	1	5
30-Apr	0	1	1	1	1	1	2	3	3	4	4	5	5	4	4	5	5	4	4	3	2	2	1	3	5
	7	6	7	7	7	7	6	7	6	7	7	7	7	7	7	7	7	7	7	7	7	7	6	7	
	Diurnal Maximum																								

M - Maintenance AF - Analyzer Failure

Wood Buffalo Environmental Association

Summary of Hour Averages

Wind Direction (WD) - deg

Wapasu - April 2014

Direction of Maximum Speed: 109 deg on Apr 23 11:00
Direction of Maximum Daily Speed Average: 104.3 deg on Apr 23

Direction of Minimum Speed: 60 deg on Apr 13 04:00

Direction of Minimum Daily Speed Average: 1.6 deg on Apr 13

Monthly Average Direction: 153.8 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-Apr	180	176	175	139	80	28	50	53	36	4	357	360	353	357	14	356	5	28	48	53	77	75	50	51	31.2
2-Apr	45	46	34	40	50	51	59	66	58	50	33	23	21	25	29	25	30	29	26	30	37	43	48	46	38.2
3-Apr	64	76	82	85	67	86	91	214	112	102	116	120	126	258	161	164	147	145	136	135	133	136	140	145	129.2
4-Apr	148	148	148	149	151	147	150	151	153	153	160	162	172	208	267	268	285	285	287	287	290	334	321	321	174.9
5-Apr	357	AF	146	155	238	273	144	253	343	309	331	350	9	320	349	319	19	41	59	70	88	120	126	130	45.2
6-Apr	134	134	141	144	148	152	161	170	185	183	214	240	234	243	259	266	310	352	24	43	97	130	148	150	174.4
7-Apr	154	172	175	185	155	168	199	281	313	345	347	282	249	264	240	228	231	222	176	183	170	167	197	187	208.7
8-Apr	171	170	169	174	182	198	188	190	220	237	245	255	263	274	259	252	241	246	252	259	256	275	268	257	240.2
9-Apr	249	255	266	250	235	226	234	279	281	311	319	322	311	339	351	360	344	3	26	32	115	165	172	172	289.7
10-Apr	172	172	172	172	172	172	172	172	172	M	4	1	0	352	359	20	37	33	37	41	50	68	90	89	78.4
11-Apr	92	100	99	84	108	96	99	88	92	70	60	51	52	39	27	27	23	15	6	15	6	5	28	60	54.1
12-Apr	90	130	145	147	140	146	152	206	237	275	302	309	307	343	345	339	7	359	357	7	355	359	354	6	344.4
13-Apr	5	8	0	60	121	127	25	359	332	353	333	346	348	333	289	344	307	166	122	114	125	134	139	145	36.7
14-Apr	147	149	152	156	158	155	159	164	176	183	178	182	178	179	177	170	163	147	131	119	107	101	100	99	153.5
15-Apr	105	112	102	89	81	80	92	95	96	89	92	78	63	65	52	27	32	32	35	25	27	29	38	60	67.9
16-Apr	80	91	85	96	105	114	111	123	111	123	125	129	141	142	140	139	144	127	125	127	129	129	128	132	122.4
17-Apr	139	141	142	139	142	145	148	152	154	154	154	135	139	136	135	124	126	132	134	131	128	129	130	129	138.1
18-Apr	137	133	120	116	124	118	116	117	121	121	128	141	146	142	137	142	154	154	158	166	163	172	184	193	136.0
19-Apr	186	162	154	165	174	172	166	169	189	165	166	155	157	145	134	132	128	132	128	132	133	132	122	122	143.0
20-Apr	129	133	137	134	87	145	121	303	327	329	333	346	351	1	346	354	21	359	AF	107	141	136	144	153	47.3
21-Apr	154	159	175	175	160	150	188	214	224	255	333	340	332	340	335	2	16	33	34	35	46	53	68	92	40.6
22-Apr	98	104	101	109	112	115	114	111	109	111	97	103	99	93	98	97	97	86	78	74	93	106	109	108	101.2
23-Apr	109	115	111	108	112	108	108	110	107	104	109	110	104	103	102	97	92	86	93	99	104	105	104	104	104.3
24-Apr	103	103	103	106	100	105	106	109	113	105	102	101	103	110	104	97	86	89	98	98	102	113	116	118	104.0
25-Apr	120	120	120	125	125	131	134	141	167	94	64	76	114	114	117	103	124	131	134	122	124	138	143	155	122.5
26-Apr	146	145	147	133	125	130	138	142	144	158	163	157	147	132	126	130	127	131	135	133	140	144	145	144	139.4
27-Apr	143	139	133	123	119	116	115	120	124	130	137	142	145	149	150	151	151	148	148	151	150	150	148	151	140.1
28-Apr	150	152	157	153	148	151	143	141	176	177	228	199	203	223	39	68	308	340	163	150	148	156	153	158	157.4
29-Apr	149	144	143	147	154	161	183	182	233	291	286	271	228	253	272	238	275	334	321	41	119	121	134	139	207.1
30-Apr	140	149	149	147	145	147	155	159	182	188	204	210	204	200	188	193	185	208	203	183	176	195	181	235	184.0
	128.6	132.4	132.3	131.6	131.0	132.4	134.4	136.9	142.1	131.8	119.6	120.2	128.3	118.9	110.7	105.2	98.4	93.5	100.0	99.8	112.8	116.4	120.3	125.1	
	Diurnal Average																								

M - Maintenance AF - Analyzer Failure

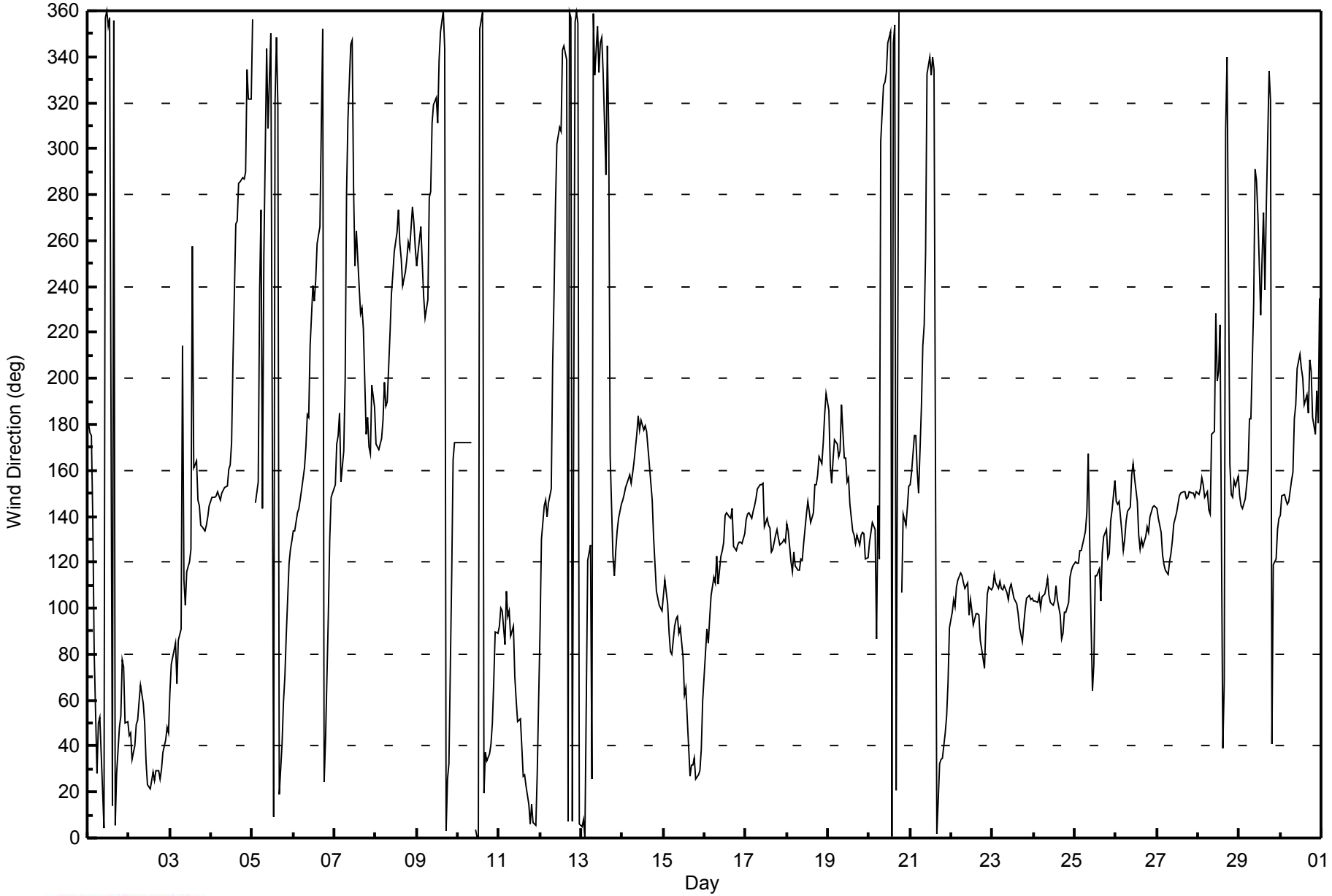
All monthly, daily, and diurnal averages have been calculated using vector methods

WBEA NETWORK

Hourly Averages

Wind Direction (WD) - deg

Wapasu - April 2014



AURORA ATMOSPHERICS INC.

Wood Buffalo Environmental Association

Summary of Hour Standard Deviations

Wind Direction (WD) - deg

Wapasu - April 2014

Number of Exceedences (AAAQO): 1-hr: 0 24-hr: 0
Maximum Value: 110 deg on Apr 13 16:00

Minimum Value: 0 deg on Apr 10 04:00

Percentiles: P_1 = 0 P_{10} = 17 Q_1 = 21 Median = 25 Q_3 = 34 P_{90} = 42 P_{99} = 75

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-Apr	27	22	23	60	17	21	21	22	36	39	34	38	37	45	44	41	35	38	23	20	26	21	25	20	60
2-Apr	20	30	30	25	25	19	18	24	28	38	37	36	37	38	34	31	34	34	34	34	31	29	24	27	38
3-Apr	21	18	20	14	25	14	15	65	34	41	33	34	63	76	74	32	28	21	20	18	18	18	19	20	76
4-Apr	20	20	20	21	21	21	21	21	21	24	28	27	30	39	28	25	25	25	25	26	26	29	20	22	39
5-Apr	29	AF	10	18	38	55	34	64	43	45	39	47	83	91	54	59	60	30	21	20	23	19	18	16	91
6-Apr	14	15	17	17	18	20	25	29	36	35	41	33	28	33	28	29	28	35	31	26	13	16	11	12	41
7-Apr	14	25	22	28	23	13	32	56	52	50	72	83	50	56	50	41	34	39	26	34	20	22	31	30	83
8-Apr	26	27	26	26	35	31	31	35	35	25	23	25	25	27	24	24	24	23	22	23	22	27	25	24	35
9-Apr	22	22	25	21	25	30	28	28	26	24	20	22	22	34	37	38	33	36	32	61	42	19	48	0	61
10-Apr	0	0	0	0	0	0	0	0	0	M	37	39	40	41	42	40	34	33	31	29	22	24	22	23	42
11-Apr	23	26	26	24	28	25	23	24	25	27	25	26	28	33	36	34	40	37	35	36	37	28	21	15	40
12-Apr	7	27	10	4	6	4	10	34	28	41	36	39	46	44	35	34	35	38	36	37	31	34	36	42	46
13-Apr	30	29	26	52	57	14	65	38	32	46	47	50	51	59	85	110	72	58	31	13	16	16	17	18	110
14-Apr	17	18	21	21	28	22	24	26	32	35	34	36	38	34	34	35	28	21	25	31	20	27	22	21	38
15-Apr	24	21	28	24	24	26	28	27	26	24	25	30	29	30	45	38	37	34	32	33	35	33	29	24	45
16-Apr	23	21	21	23	21	20	23	25	29	27	27	25	24	26	26	31	26	24	21	17	16	17	17	17	31
17-Apr	17	16	15	13	16	17	19	24	25	25	27	24	26	23	27	24	23	22	19	19	18	19	17	18	27
18-Apr	19	22	21	19	18	20	22	21	22	21	21	23	23	24	22	23	25	25	25	29	25	26	24	24	29
19-Apr	32	22	22	24	31	29	31	31	33	27	28	26	23	32	26	22	23	21	20	16	16	17	17	18	33
20-Apr	17	16	26	46	62	11	24	62	35	37	33	37	37	41	46	49	39	39	AF	23	16	19	11	16	62
21-Apr	17	17	24	27	29	20	33	34	46	47	26	35	51	39	44	43	41	33	29	31	23	21	20	22	51
22-Apr	20	18	18	19	18	18	21	23	28	27	26	28	28	27	26	24	23	23	24	24	24	21	22	21	28
23-Apr	22	21	22	21	22	22	22	22	22	23	23	24	23	24	24	23	23	23	22	22	23	23	23	23	24
24-Apr	24	24	23	22	24	23	23	23	23	25	26	25	25	25	25	26	25	24	22	21	22	22	21	20	26
25-Apr	19	19	18	17	16	17	19	36	49	65	58	36	40	29	36	32	29	22	23	18	14	13	12	17	65
26-Apr	8	12	17	14	10	16	20	21	26	30	32	27	31	21	23	23	23	24	20	17	17	19	18	19	32
27-Apr	22	20	19	19	21	22	22	20	22	18	18	21	22	22	22	22	21	21	20	20	19	21	22	21	22
28-Apr	21	21	23	21	19	22	21	22	34	41	66	67	75	72	110	70	78	76	25	17	18	23	21	24	110
29-Apr	20	18	16	22	21	26	29	31	36	38	67	41	42	46	37	48	37	52	59	37	15	10	16	6	67
30-Apr	5	6	7	8	11	14	20	24	31	40	41	42	42	36	35	35	34	39	39	29	24	29	22	30	42
	32	30	30	60	62	55	65	65	52	65	72	83	83	91	110	110	78	76	59	61	42	34	48	42	
	Diurnal Maximum																								

M - Maintenance AF - Analyzer Failure

AURORA ATMOSPHERICS INC.

Wood Buffalo Environmental Association

SO_2 Calibration Report

Station Information

Calibration Date	April 2, 2014	Previous Calibration	March 5, 2014
Station Name	Wapasu	Station Number	AMS 17
Reason:	Routine		
Start Time (MST)	8:00	End Time (MST)	11:33
Barometric Pressure	716 mmHg	Station temp.	23 Deg C
Calibrator Make/Model	API T700	Serial Number	493
Cal Gas Concentration	47.8 ppm	Cal Gas Expiry Date	12-Dec-16
Gas Cert Reference	SA130010A		
DACS make/model	Campbell Scientific CR3000	DACS serial No.	6894
DACS voltage range	NA	DACS channel #	TCP/IP

Analyzer Information

	Before	*After*		*Before*	*After*
Analyzer Range (ppb)	1000	1000	PMT voltage	-702	-702
Analyzer Range (mv)	1000	1000	Lamp voltage	913	913
Calculated slope	0.998742	0.990737	Chamber temp.	45.2	45.2
Calculated intercept	0.504794	0.621539	Pressure (mmHg)	695.2	695.2
Analyzer Background	8.3	8.3	Flow (lpm)	0.454	0.454
Analyzer Coefficient	0.794	0.794	Intensity	80	80

Analyzer make	Thermo 43i	Analyzer serial #	1218153459

Calibration Data

Set Point	Total flow rate (cc/min)	Source gas flow rate (cc/min)	Calculated concentration (ppb) (Cc)	Indicated concentration (ppb) (Ic)	Correction factor (Cc/Ic)
as found zero	5000	0.0	0.0	0.2	NA
as found span	5000	60.4	577.4	574.0	1.006
calibrator zero	5000	0.0	0.0	0.2	NA
high point	5000	60.4	577.4	583.0	0.990
second point	5000	30.2	288.7	289.2	0.998
third point	5000	15.1	144.4	145.0	0.996
calibrator zero	6000	0.0	0.0	0.3	NA
as left zero	6000	0.0	0.0	0.3	NA
as left span	5000	60.4	577.4	584.0	0.989
				Average Correction Factor	0.995

Corrected As found	573.8	Previous response	577.6	% change	0.7%

Notes:

No Maintance Done, Filter changed out, No adjustments,

Calibration Performed By: Melissa Lemay

Wood Buffalo Environmental Association

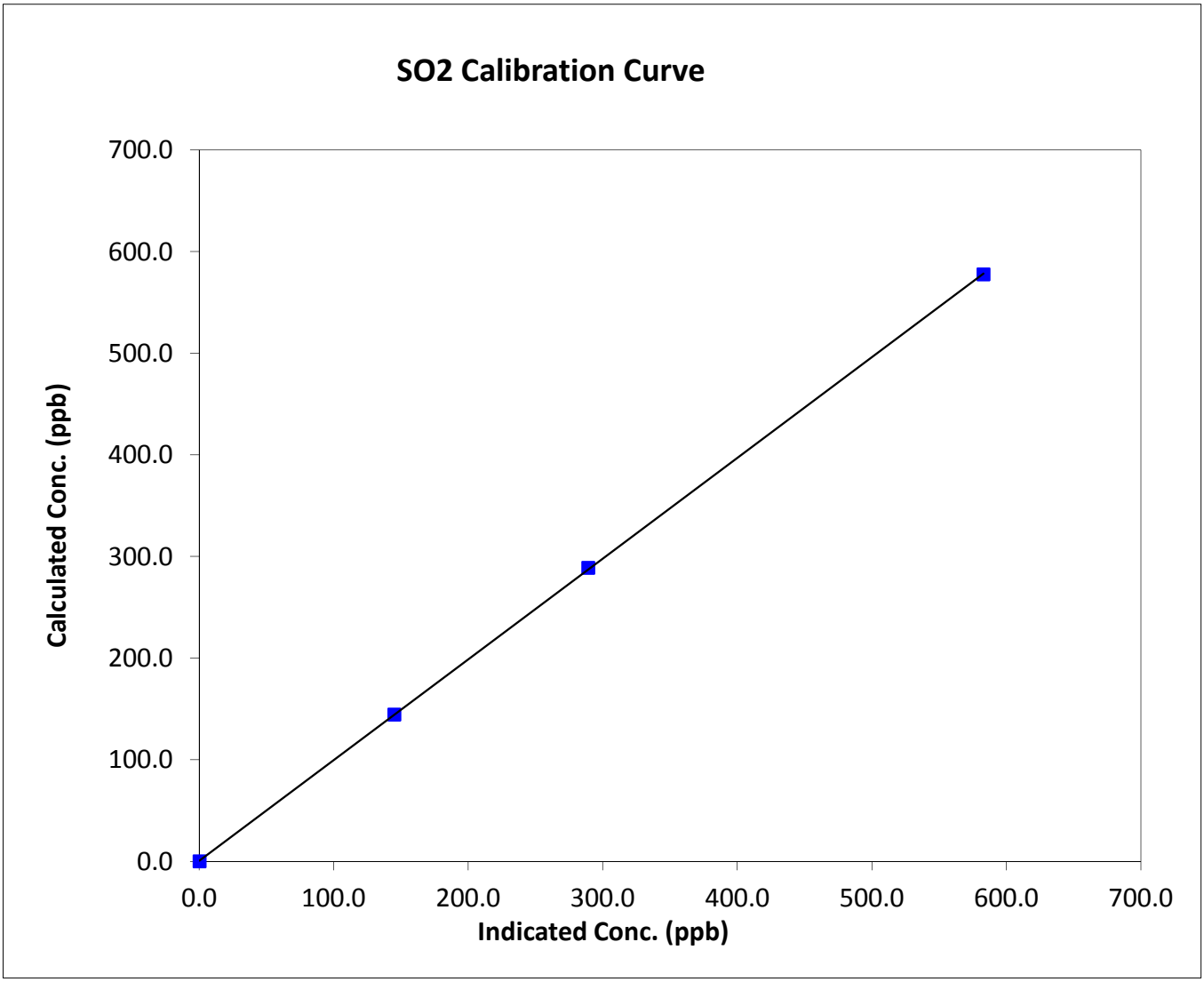
SO_2 Calibration Summary

Station Information

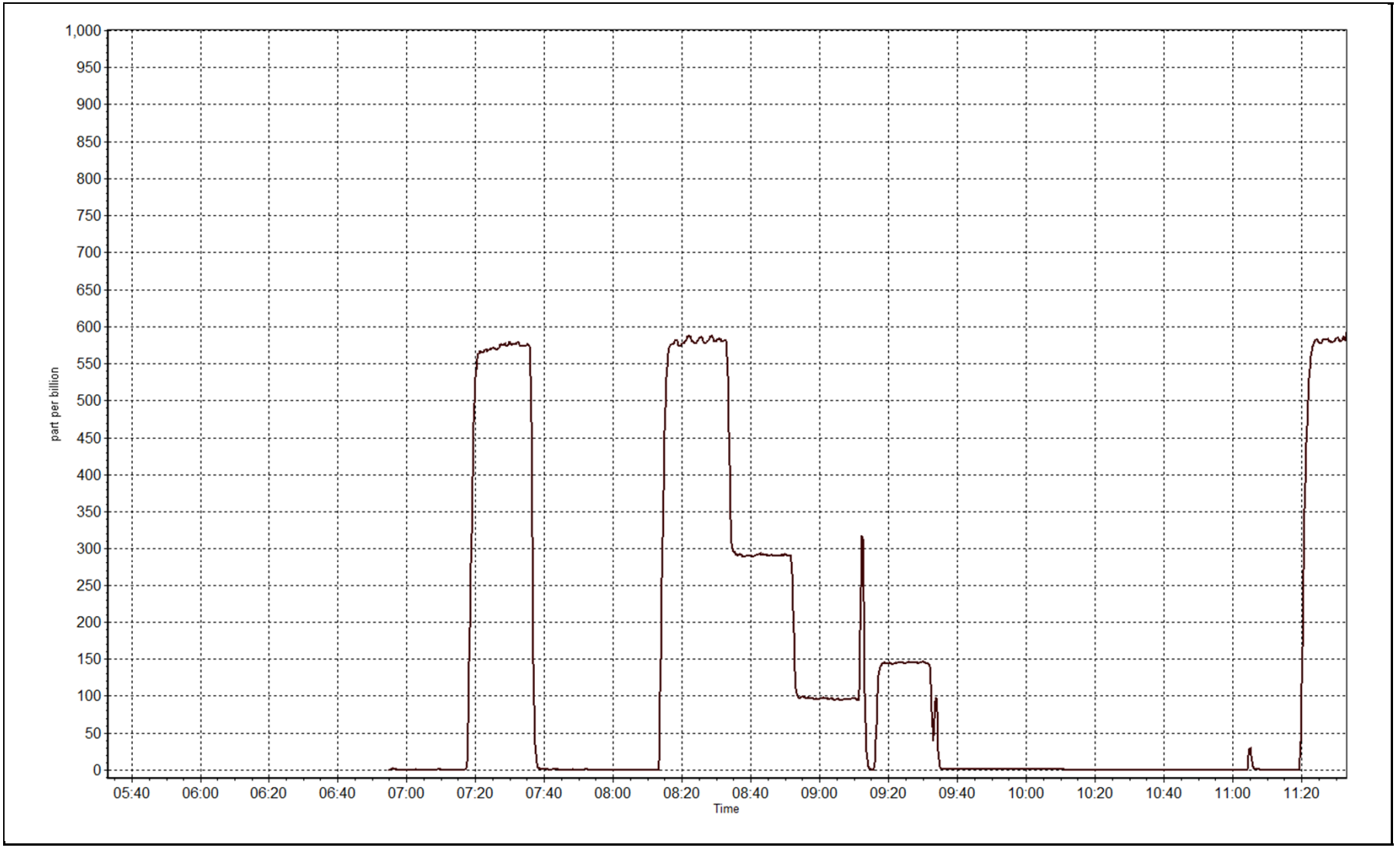
Calibration Date	April 2, 2014	Previous Calibration	March 5, 2014
Station Name	Wapasu	Station Number	AMS 17
Start Time (MST)	8:00	End Time (MST)	11:33
Analyzer make	Thermo 43i	Analyzer serial #	1218153459

Calibration Data

Calculated concentration (ppb) (Cc)	Indicated concentration (ppb) (Ic)	Correction factor (Cc/Ic)	Statistical Evaluation	
0.0	0.2	N/A	Correlation Coefficient	0.999979
577.4	583.0	0.9904		
288.7	289.2	0.9983	Slope	0.990737
144.4	145.0	0.9956		
			Intercept	0.621539



SO2 Calibration Plot Date: April 2, 2014



Wood Buffalo Environmental Association

H2S Calibration Report

Station Information

Calibration Date	April 9, 2014	Previous Calibration	March 6, 2014
Station Name	Wapasu	Station Number	AMS 17
Reason:	Routine		
Start Time (MST)	8:10	End Time (MST)	11:05
Barometric Pressure	mmHg	Station temp.	27 Deg C
Calibrator Make/Model	API T700	Serial number	997
Cal Gas Concentration	10.2 ppm H2S	Cal Gas Expiry Date	30-May-13
Gas Cert Reference	SA5558	SO2 gas conc.	47.8 ppm SO2
DACS make/model	Campbell Scientific CR3000	DACS serial No.	6894
DACS voltage range	NA	DACS channel #	TCP/IP

Analyzer Information

	Before	*After*		*Before*	*After*
Analyzer Range (ppb)	100	100	PMT voltage	-651	-651
Analyzer Range (mv)	100	100	Lamp voltage	819	819
Calculated slope	1.000218	1.001148	Chamber temp.	45	45
Calculated intercept	-0.102139	-0.182335	Pressure	566.3	566.3
Analyzer Background	13.1	12.6	Flow	0.807	0.807
Analyzer Coefficient	0.856	0.856	Intensity	91	91
			Converter temp.	338	338

Analyzer make/model	450i	Analyzer serial #	1218153583
Converter make/model		Converter serial #	

Calibration Data

Set Point	Total flow rate (cc/min)	Source gas flow rate (cc/min)	Calculated concentration (ppb) (Cc)	Indicated concentration (ppb) (Ic)	Correction factor (Cc/Ic)
as found zero	5000	0.0	0.0	-1.0	NA
as found span	5000	39.3	80.2	78.5	1.022
SO2 scrubber check	5000	20.1	192.2	1.7	NA
calibrator zero	5000	0.0	0.0	0.1	NA
high point	5000	39.3	80.2	80.2	1.000
second point	5000	19.5	39.8	40.2	0.990
third point	6000	11.8	20.1	20.1	0.998
calibrator zero	5000	0.0	0.0	0.3	NA
as left zero	5000	0.0	0.0	0.3	NA
as left span	5000	39.2	80.0	80.8	0.990
				Average Correction Factor	0.996

Corrected As found	79.4	Previous response	80.3	% change	1.0%

Notes:

Scrubber checked after calibrated zero, zero adjusted, No Mainenance Done

Calibration Performed By: Melissa Lemay

Wood Buffalo Environmental Association

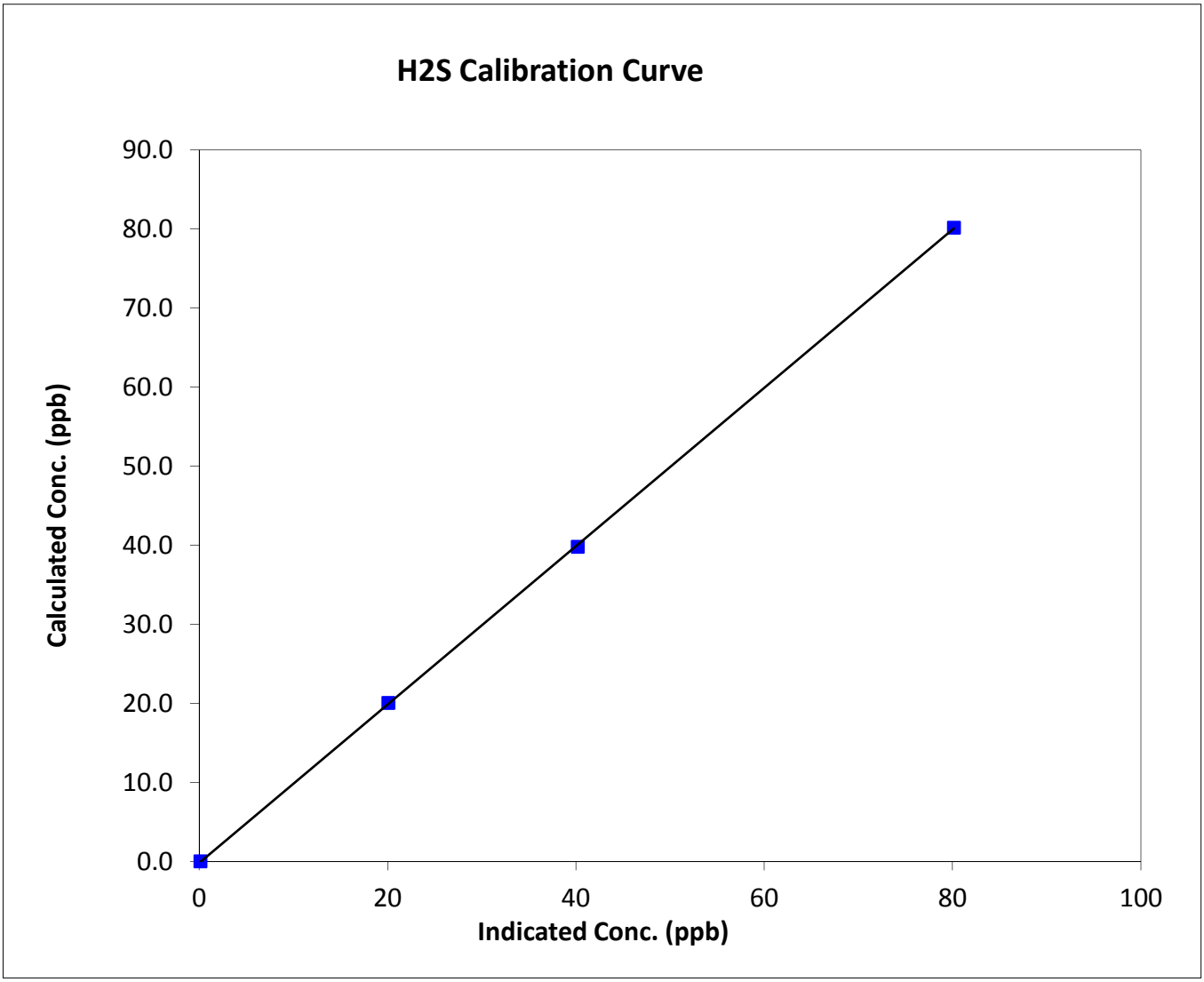
H2S Calibration Summary

Station Information

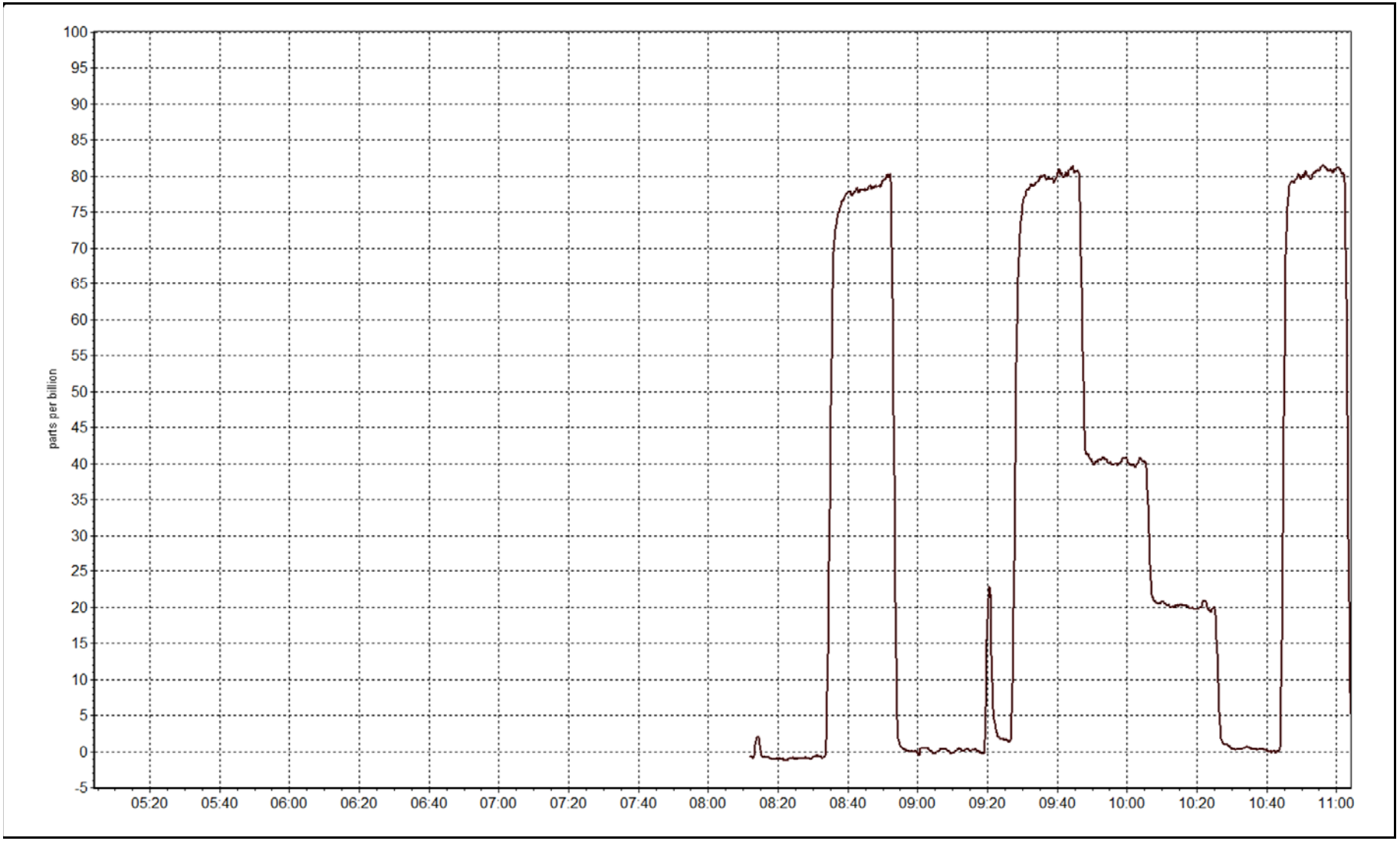
Calibration Date	April 9, 2014	Previous Calibration	March 6, 2014
Station Name	Wapasu	Station Number	AMS 17
Start Time (MST)	8:10	End Time (MST)	11:05
Analyzer make	450i	Analyzer serial #	1218153583

Calibration Data

Calculated concentration (ppb) (Cc)	Indicated concentration (ppb) (Ic)	Correction factor (Cc/Ic)	Statistical Evaluation	
0.0	0.1	N/A	Correlation Coefficient	0.999969
80.2	80.2	1.0003		
39.8	40.2	0.9896	Slope	1.001148
20.1	20.1	0.9980		
			Intercept	-0.182335



H2S Calibration Plot Date: Wednesday, April 09, 2014



Wood Buffalo Environmental Association

THC Calibration Report

Station Information

Calibration Date	Wednesday, April 02, 2014	Previous Calibration	Wednesday, March 05, 2014
Station Name	Wapasu	Station Number	AMS 17
Reason:	Routine		
Start Time (MST)	7:00	End Time (MST)	11:33
Barometric Pressure	716 mmHg	Station temp.	23 Deg C
Calibrator Make/Model	API T700	Serial Number	493
Gas Cert Reference	SA130010A	Cal Gas Expiry Date	12-Dec-16
CH4 Cal Gas Conc.	512 ppm	CH4 Equiv Conc.	1092.3 ppm
C3H8 Cal Gas Conc.	211 ppm		
DACS make/model	Campbell Scientific CR3000	DACS serial No.	6894
DACS voltage range	NA	DACS channel #	NA

Analyzer Information

	Before	*After*		*Before*	*After*
Analyzer Range (ppm)	100	100	Sample Pressure	8.5	8.5
Analyzer Range (mv)	100	100	Air or Bypass press	40.0	40.0
Calculated slope	1.001406	0.998415	Fuel Pressure	24.8	24.8
Calculated intercept	-0.045173	-0.035740		2.1	2.3
				4.523	4.849

Analyzer make	Thermo 51i-LT	Analyzer serial #	1218153352

Calibration Data

Set Point	Total flow rate (cc/min)	Source gas flow rate (cc/min)	Calculated concentration THC (ppm) (Cc)	Indicated concentration (ppb) (Ic)	Correction factor (Cc/Ic)
as found zero	5000	0.0	0.00	0.16	N/A
as found span	5000	60.4	13.19	12.30	1.073
calibrator zero	5000	0.0	0.00	0.00	N/A
high point	5000	60.4	13.19	13.23	0.997
second point	5000	30.2	6.60	6.67	0.989
third point	5000	15.1	3.30	3.37	0.979
calibrator zero	6000	0.0	0.00	0.09	N/A
as left zero	6000	0.0	0.00	0.09	N/A
as left span	5000	60.4	13.19	13.39	0.985
				Average Correction Factor	0.988

Corrected As found	12.14	Previous response	13.22	% change	8.9%

Notes:

Filter changed out, Diagonstics look good, Air Pressure changed up 2 psi from last month, zero and span adjusted,

Calibration Performed By: Melissa Lemay

Wood Buffalo Environmental Association

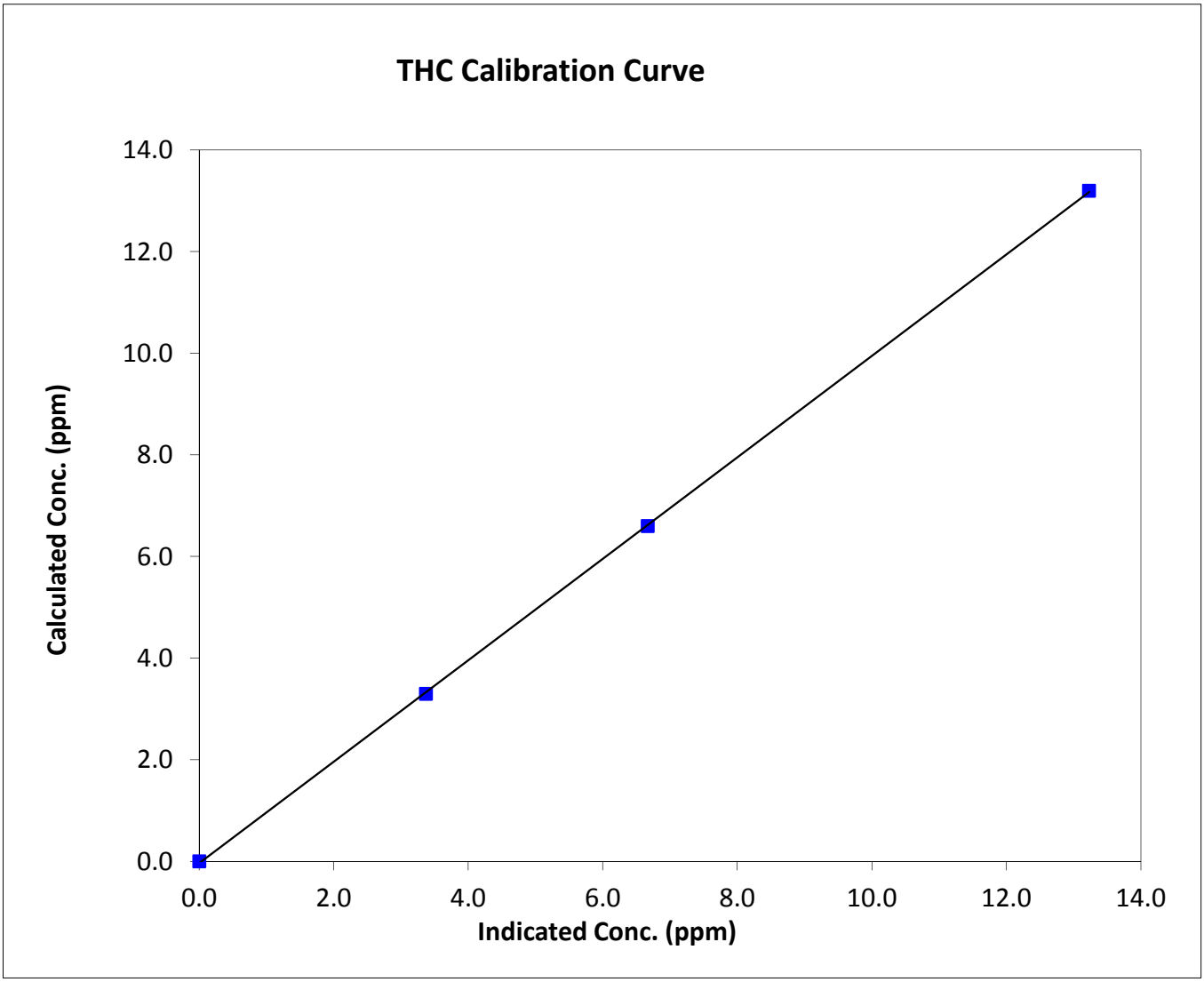
THC Calibration Summary

Station Information

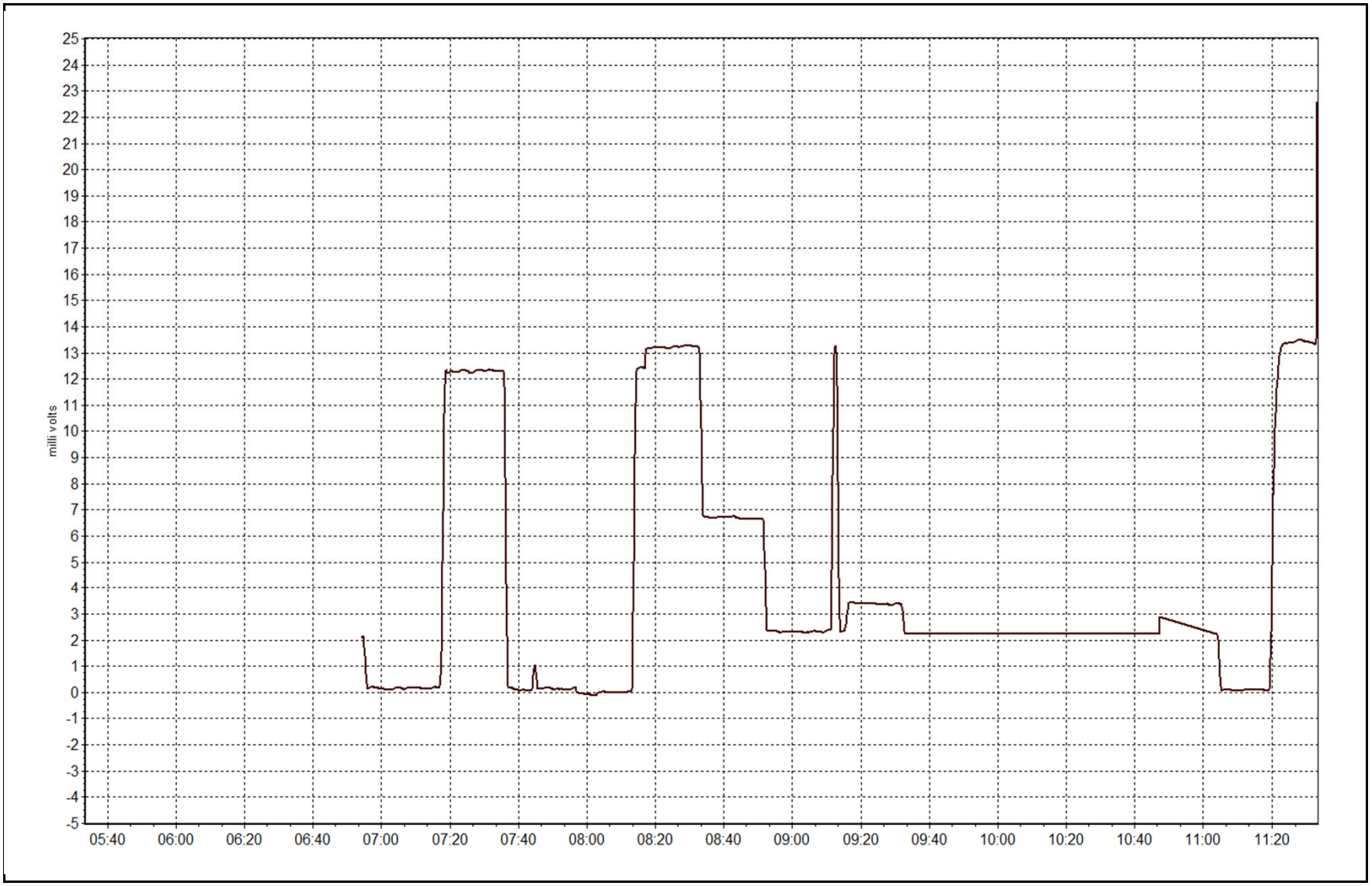
Calibration Date	April 2, 2014	Previous Calibration	March 5, 2014
Station Name	Wapasu	Station Number	AMS 17
Start Time (MST)	7:00	End Time (MST)	11:33
Analyzer make	Thermo 51i-LT	Analyzer serial #	1218153352

Calibration Data

Calculated concentration (ppm) (Cc)	Indicated concentration (ppm) (Ic)	Correction factor (Cc/Ic)	Statistical Evaluation	
0.00	0.00	N/A	Correlation Coefficient	0.999965
13.19	13.23	0.9973		
6.60	6.67	0.9891	Slope	0.998415
3.30	3.37	0.9788		
			Intercept	-0.035740



THC Calibration Plot Date: April 2, 2014



Wood Buffalo Environmental Association

O_3 Calibration Report

Station Information

Calibration Date	April 4, 2014	Previous Calibration	March 6, 2014
Station Name	Wapasu	Station Number	AMS 17
Reason:	Routine		
Start Time (MST)	10:05	End Time (MST)	12:20
Barometric Pressure	23 mmHg	Station temp.	23 Deg C
Calibrator Make/Model	T700	Serial Number	997
NO2 calibration used	Thursday, February 06, 2014	Transfer Standard	23
DACS make/model	N/A	DACS serial No.	N/A
DACS voltage range	N/A	DACS channel #	N/A

Analyzer Information

	Before	*After*		*Before*	*After*
Analyzer Range (ppb)	500	500	Box temp.	24.7	24.7
Analyzer Range (input)	500	500	Photo Lamp Temp.	58.0	58.0
Calculated slope	1.003810	1.003606	Pressure	25.4	25.4
Calculated intercept	1.895916	1.133036	Flow	666	666
Analyzer Background	1.417	1.436			
Analyzer Coefficient	0.998	1.012			

Analyzer make	T400	Analyzer serial #	824

Calibration Data

Set Point	Dilution air flow rate (cc/min)	Calibrator Lamp Intensity (mV)	Calculated concentration (ppb) (Cc)	Indicated concentration (ppb) (Ic)	Correction factor (Cc/Ic)
as found zero	5000	0.00	0.0	0.6	N/A
as found span	5000	933.10	408.5	397.0	1.029
calibrator zero	5000	0.00	0.0	0.6	N/A
high point	5000	713.5	408.5	407.5	1.002
second point	5000	495.5	277.5	274.0	1.013
third point	5000	260.7	144.6	141.0	1.026
calibrator zero	5000	0.00	0.0	0.7	N/A
as left zero	5000	0.00	0.0	0.7	N/A
as left span	5000	714.70	408.5	410.0	0.996
				Average Correction Factor	1.014

Corrected As found	396.4	Previous response	405.1	% change	2.2%

Notes:

No Maintenance Done, Span adjusted, Filter changed out

Calibration Performed By: Melissa Lemay

Wood Buffalo Environmental Association

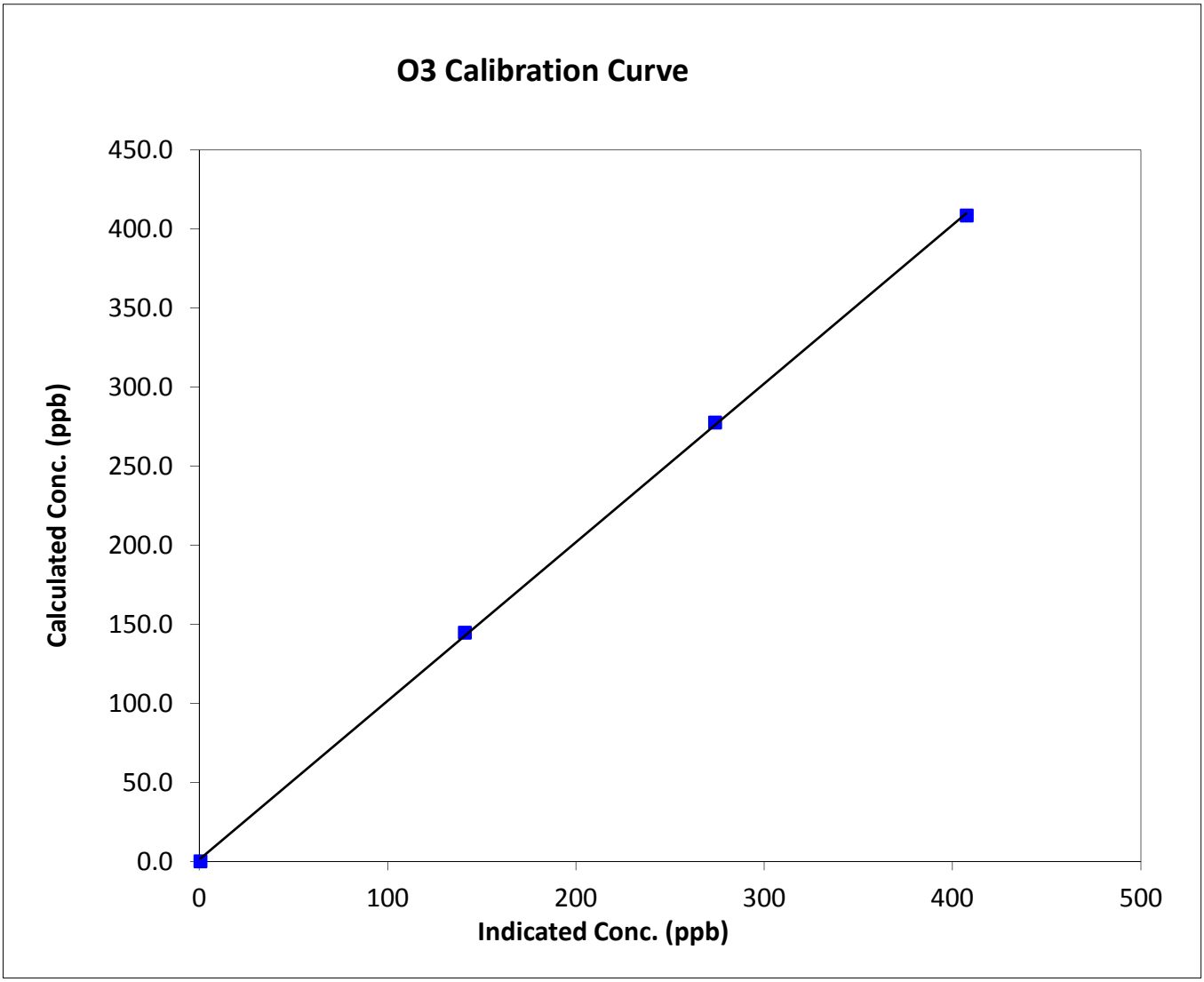
O_3 Calibration Summary

Station Information

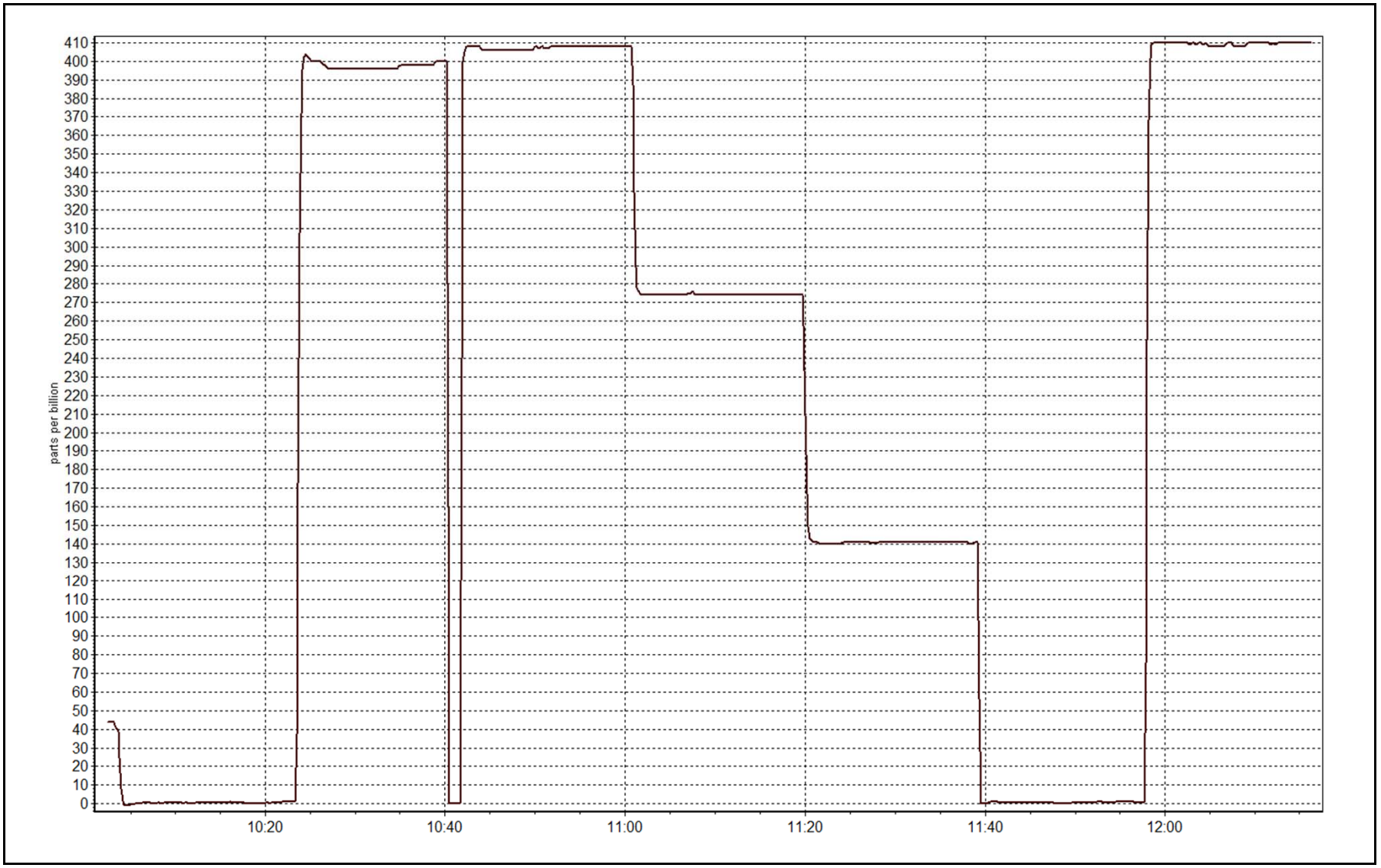
Calibration Date	Friday, April 04, 2014	Previous Calibration	March 6, 2014
Station Name	Wapasu	Station Number	AMS 17
Start Time (MST)	10:05	End Time (MST)	12:20
Analyzer make	T400	Analyzer serial #	824

Calibration Data

Calculated concentration (ppb) (Cc)	Indicated concentration (ppb) (Ic)	Correction factor (Cc/Ic)	Statistical Evaluation	
0.0	0.6	N/A	Correlation Coefficient	0.999877
408.5	407.5	1.0025		
277.5	274.0	1.0128	Slope	1.003606
144.6	141.0	1.0255		
			Intercept	1.133036



O3 Calibration Plot Date: April 4, 2014



Wood Buffalo Environmental Association

NO_X-NO-NO_2 Calibration Report

Station Information

Calibration Date	April 2, 2014	Previous Calibration	March 29, 2014
Station Name	Wapasu	Station Number	AMS 17
Reason:	Routine		
Start Time (MST)	7:00	End Time (MST)	11:35
Barometric Pressure	mmHg	Station Temperature	21.0 Deg C
Calibrator	API T700	Serial Number	997
NO Cal Gas Conc	49.7 ppm	Cal Gas Expiry Date	December 12, 2016
NOx Cal Gas Conc	49.7 ppm	Cal Gas Serial #	SA130010A

DACS Information

DACS make & model: Campbell Scientific CR3000 — DACS serial No.: 6894

Parameter		NOx	NO	NO2
MV conversion	Analyzer Range (ppb)	1000	1000	1000
	Analyzer Range (mv)	1000	1000	1000
Before	Data Slope	1.004056	0.998502	1.019700
	Data Offset	0.201523	-0.240720	0.570120
After	Data Slope	0.996588	1.002176	1.005280
	Data Offset	1.356460	0.358036	-0.686744
Channel #				
Voltage Range				

Analyzer Information

Analyzer make/model: API T200 — Analyzer serial #: 833

Test Point	before		after	
Concentration range	1000	ppb	1000	ppb
NO coefficient	0.905	ppb	0.928	ppb
NOX coefficient	0.907	ppb	0.925	ppb
NO2 coefficient	1.000	ppb	1.000	ppb
NO bkgrnd	-4.8		0.0	
NOX bkgrnd	3.7		1.4	
Nt coefficient				
Chamber Temp	50.0	Deg C	50.0	Deg C
Moly Temp	317.6	Deg C	317.6	Deg C
PMT Temp	7.0	Deg C	7.0	Deg C
O3 flow	72.0	ccm	72.0	ccm
R Cell Press	4.9	mmHg	4.9	mmHg
Sample Flow	450.000	ccm	450.000	ccm

Notes:

Filter changed out,. Adjusted zero and span.

Wood Buffalo Environmental Association

NO_X-NO-NO_2 Calibration Report

Station Information

Calibration Date: April 2, 2014 Station Number: AMS 17

Calibration Data

Set Point	Total flow rate (ccm)	Source gas flow rate (ccm)	Calculated NOx conc (ppb)	Calculated NO conc (ppb)	Calculated NO2 conc (ppb)	Indicated NOx conc (ppb)	Indicated NO conc (ppb)	Indicated NO2 conc (ppb)	NOx Correction factor	NO Correction factor
as found zero	5000	0.0	0.0	0.0	0.0	1.9	-0.9	1.0	N/A	N/A
as found span	5000	60.4	600.4	600.4	0.0	584.0	584.0	10.3	1.0280	1.0280
calibrator zero	5000	0.0	0.0	0.0	0.0	0.0	0.0	0.0	N/A	N/A
high point	5000	60.4	600.4	600.4	0.0	602.0	598.0	-1.8	0.9973	1.0040
second point	5000	30.2	300.2	300.2	0.0	299.6	301.8	-1.3	1.0021	0.9948
third point	5000	15.1	150.1	150.1	0.0	146.0	147.0	0.2	1.0280	1.0210
calibrator zero	6000	0.0	0.0	0.0	0.0	-0.1	-0.2	0.0	N/A	N/A
as left zero	6000	0.0	0.0	0.0	0.0	-0.1	-0.2	0.0	N/A	N/A
as left span	5000	60.4	600.4	193.0	407.4	596.0	191.4	406.8	1.0073	1.0084
								Average Correction Factor	1.0091	1.0066

Corrcted As found NO_X= 582.1 NO= 584.9 Percent Change NO_X= 2.7% NO= 2.8%

Previous Response NO_X= 597.7 NO= 601.5

GPT Calibration Data

Dilution Flow 5000 ccm Source Gas Flow 60.40 ccm

O3 Setpoint (ppb)	Indicated NO high point (ppb)	Indicated NO drop conc (ppb)	Calculated NO2 conc (ppb)	Indicated NOx conc (ppb)	Indicated NO conc (ppb)	Indicated NO2 conc (ppb)	NOx Correction factor	NO Correction factor	NO2 Correction factor	Converter Efficiency
Cal zero			0.0			0.0			N/A	
1st NO2 (300)	N/A	193.0	408.5	598.0	193.0	407.0	0.9920	1.0000	1.0037	99.6%
2nd NO2 (200)	N/A	324.0	277.5	598.0	324.0	276.0	0.9920	1.0000	1.0054	99.5%
3rd NO2 (100)	N/A	456.9	144.6	596.0	456.9	146.0	0.9953	1.0000	0.9904	101.0%
4th NO2 (0)	601.5	N/A	-5.5	596.0	601.5	-1.7	0.9953	1.0000	N/A	N/A
					Average Correction Factor		0.9937	1.0000	0.9998	100.0%

Calibration Performed By: Melissa Lemay

Wood Buffalo Environmental Association

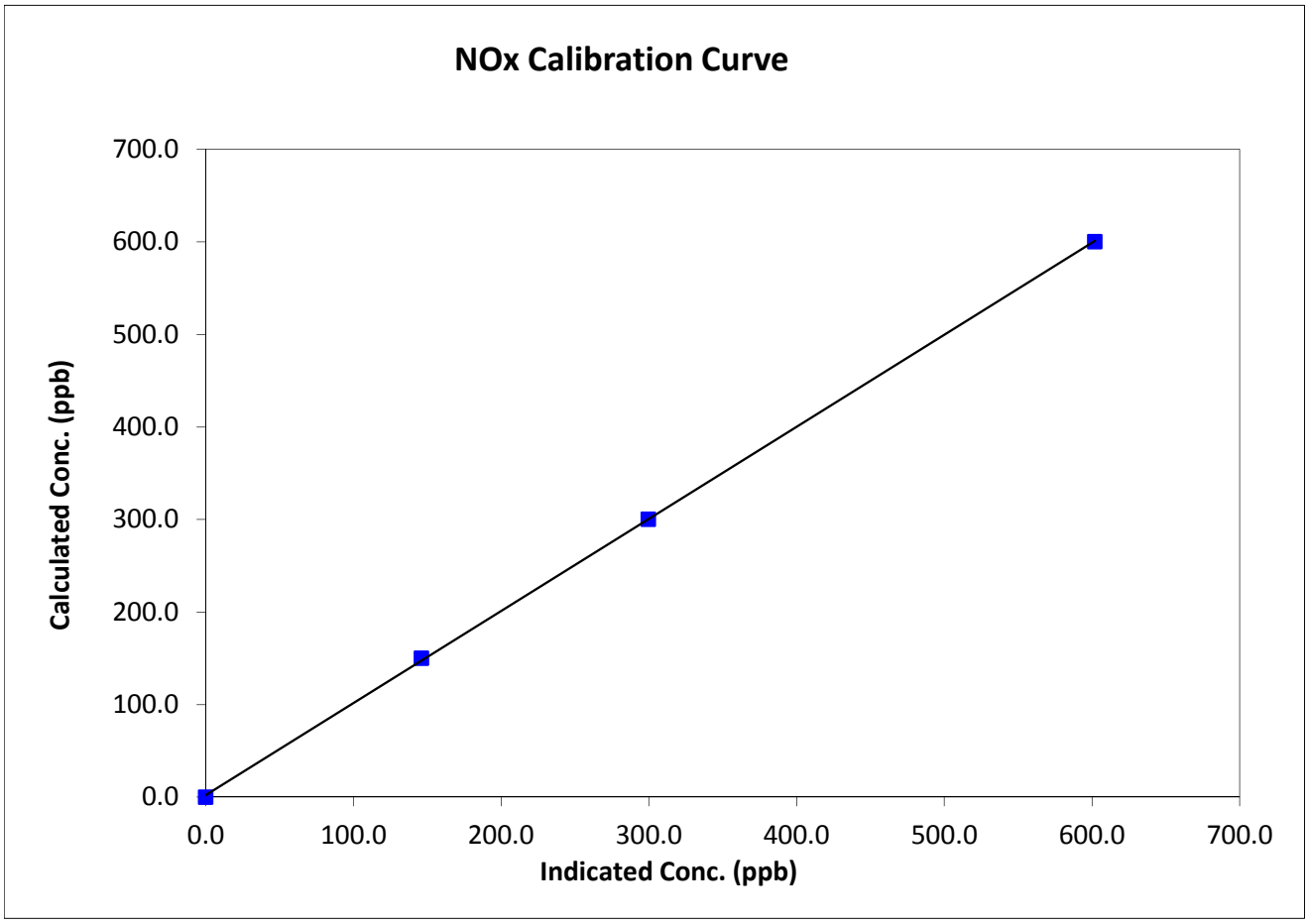
NO_X Calibration Summary

Station Information

Calibration Date	April 2, 2014	Previous Calibration	March 29, 2014
Station Name	Wapasu	Station Number	AMS 17
Start Time (MST)	7:00	End Time (MST)	11:35
Analyzer make	API T200	Analyzer serial #	833

Calibration Information

Calculated conc (ppb) (Cc)	Indicated concentration (ppb) (Ic)	Correction factor (Cc/Ic)	Statistical Evaluation	
0.0	0.0	N/A	Correlation Coefficient	0.999941
600.4	602.0	0.9973		
300.2	299.6	1.0021	Slope	0.996588
150.1	146.0	1.0280		
0.0	-0.1	0.0000	Intercept	1.356460



Wood Buffalo Environmental Association

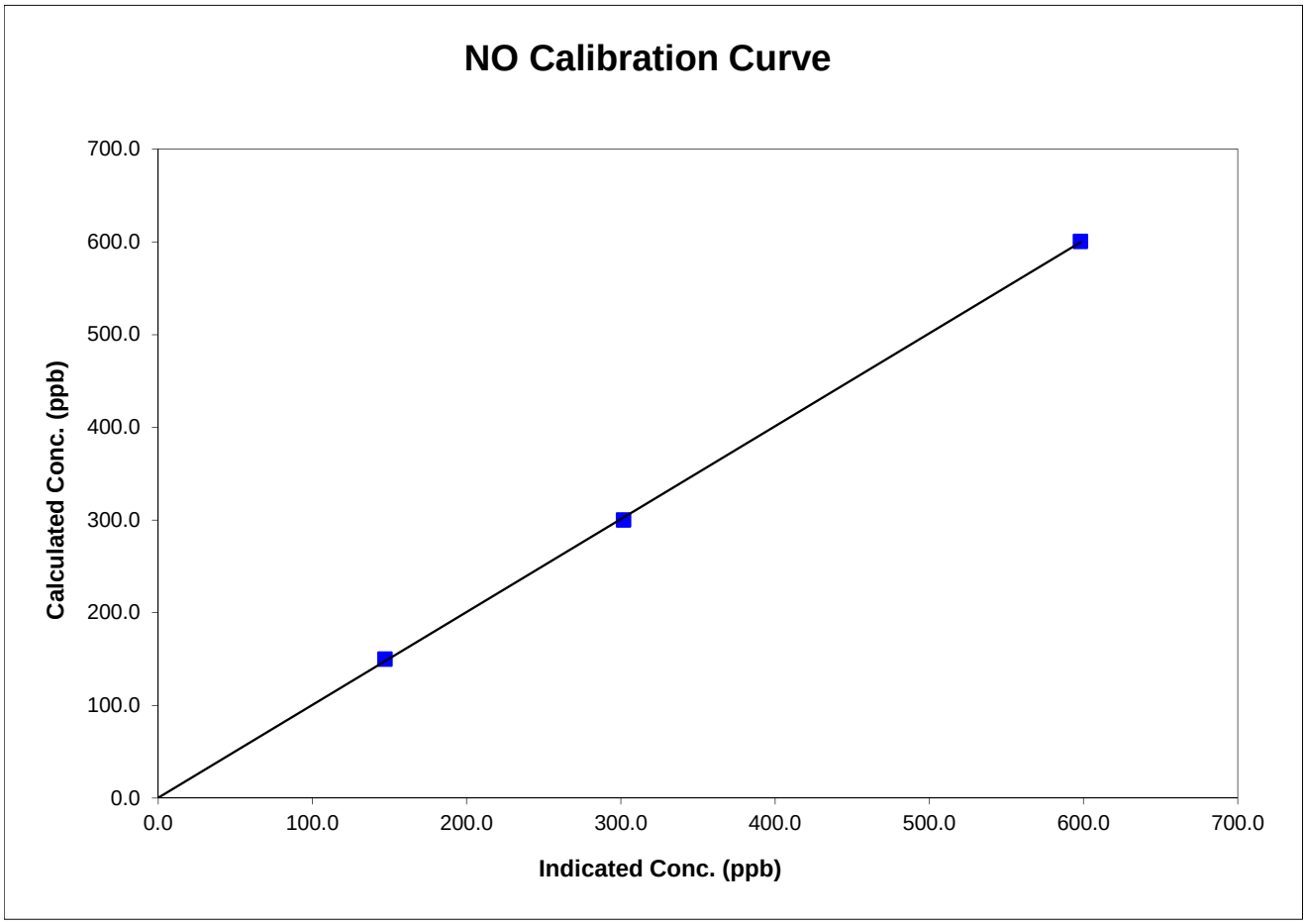
NO Calibration Summary

Station Information

Calibration Date	April 2, 2014	Previous Calibration	March 29, 2014
Station Name	Wapasu	Station Number	AMS 17
Start Time (MST)	7:00	End Time (MST)	11:35
Analyzer make	API T200	Analyzer serial #	833

Calibration Information

Calculated conc (ppb) (Cc)	Indicated concentration (ppb) (Ic)	Correction factor (Cc/Ic)	Statistical Evaluation	
0.0	0.0	N/A	Correlation Coefficient	0.999947
600.4	598.0	1.0040		
300.2	301.8	0.9948	Slope	1.002176
150.1	147.0	1.0210		
0.0	-0.2	N/A	Intercept	0.358036



Wood Buffalo Environmental Association

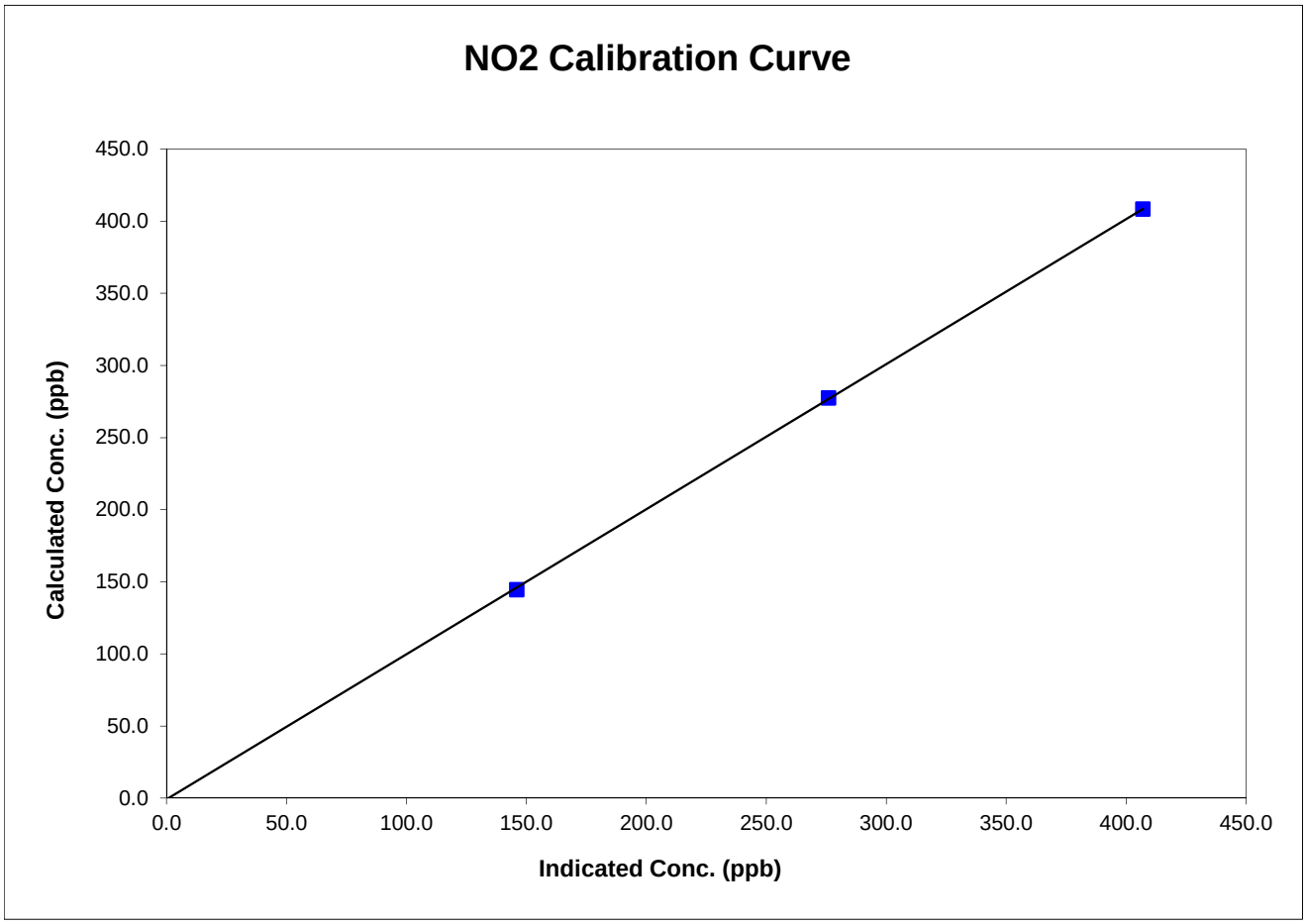
NO_2 Calibration Summary

Station Information

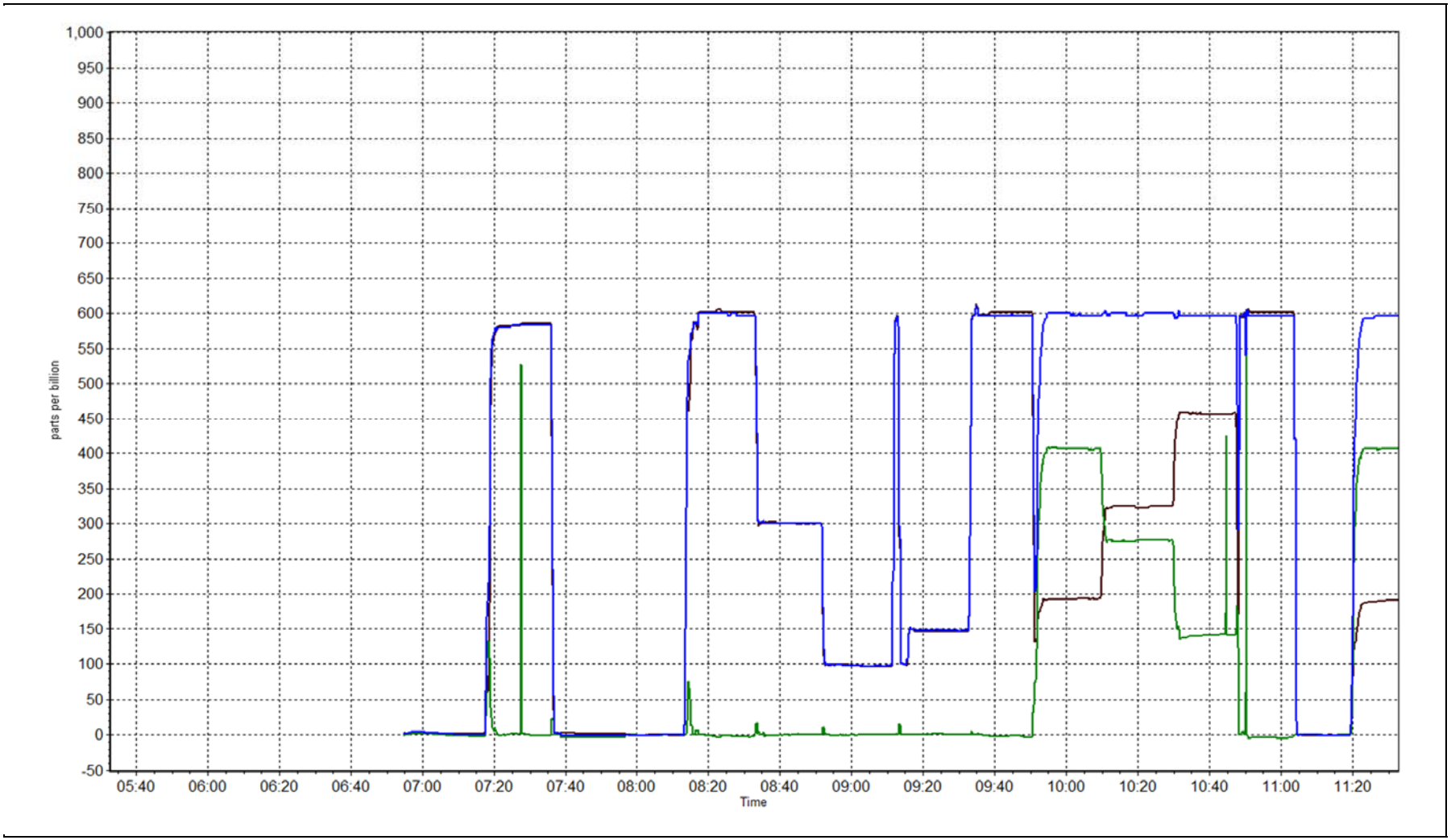
Calibration Date	April 2, 2014	Previous Calibration	March 29, 2014
Station Number	Wapasu	Station Number	AMS 17
Start Time (MST)	7:00	End Time (MST)	11:35
Analyzer make	API T200	Analyzer serial #	833

Calibration Information

Calculated conc (ppb) (Cc)	Indicated concentration (ppb) (Ic)	Correction factor (Cc/Ic)	Statistical Evaluation	
0.0	0.0	N/A	Correlation Coefficient	0.999965
408.5	407.0	1.0037		
277.5	276.0	1.0054	Slope	1.005280
144.6	146.0	0.9904		
			Intercept	-0.686744



NOx, NO & NO_2 Calibration Plot Date: April 2, 2014



Wood Buffalo Environmental Association

NO_X-NO-NO_2 Calibration Report

Station Information

Calibration Date	April 8, 2014		Previous Calibration	April 2, 2014	
Station Name	Wapasu		Station Number	AMS 17	
Reason:	Repair				
Start Time (MST)	8:40		End Time (MST)	13:00	
Barometric Pressure		mmHg	Station Temperature	21.0	Deg C
Calibrator	API T700		Serial Number	997	
NO Cal Gas Conc	49.7	ppm	Cal Gas Expiry Date	December 12, 2016	
NOx Cal Gas Conc	49.7	ppm	Cal Gas Serial #	SA130010A	

DACS Information

DACS make & model	Campbell Scientific CR3000	DACS serial No.	6894

Parameter		NOx	NO	NO2
MV conversion	Analyzer Range (ppb)	1000	1000	1000
	Analyzer Range (mv)	1000	1000	1000
Before	Data Slope	0.996588	1.002176	1.005280
	Data Offset	1.356460	0.358036	-0.686744
After	Data Slope	1.001942	1.000962	1.004900
	Data Offset	1.030221	0.614285	0.030147
Channel #				
Voltage Range				

Analyzer Information

Analyzer make/model	API T200	Analyzer serial #	833

Test Point	before		after	
Concentration range	1000	ppb	1000	ppb
NO coefficient	0.928	ppb	0.928	ppb
NOX coefficient	0.925	ppb	0.924	ppb
NO2 coefficient	1.000	ppb	1.000	ppb
NO bkgrnd	0.0		-0.2	
NOX bkgrnd	1.4		5.8	
Nt coefficient				
Chamber Temp	50.0	Deg C	50.0	Deg C
Moly Temp	315.5	Deg C	315.7	Deg C
PMT Temp	7.0	Deg C	7.0	Deg C
O3 flow	70.0	ccm	71.0	ccm
R Cell Press	4.6	mmHg	4.6	mmHg
Sample Flow	437.000	ccm	437.000	ccm

Notes:

Molyconverter changed out, spiking caused average to go up on NO2, Spiking not observed on analyzer just rtmc

Wood Buffalo Environmental Association

NO_X-NO-NO_2 Calibration Report

Station Information

Calibration Date: April 8, 2014 Station Number: AMS 17

Calibration Data

Set Point	Total flow rate (ccm)	Source gas flow rate (ccm)	Calculated NOx conc (ppb)	Calculated NO conc (ppb)	Calculated NO2 conc (ppb)	Indicated NOx conc (ppb)	Indicated NO conc (ppb)	Indicated NO2 conc (ppb)	NOx Correction factor	NO Correction factor
as found zero	5000	0.0	0.0	0.0	0.0	6.8	0.2	6.6	N/A	N/A
as found span	5000	60.4	600.4	600.4	0.0	603.6	600.0	2.2	0.9947	1.0006
calibrator zero	5000	0.0	0.0	0.0	0.0	0.0	0.0	0.0	N/A	N/A
high point	5000	60.4	600.4	600.4	0.0	598.6	599.2	-0.3	1.0030	1.0020
second point	5000	30.2	300.2	300.2	0.0	299.1	300.4	3.8	1.0036	0.9993
third point	5000	15.1	150.1	150.1	0.0	146.0	147.0	-1.4	1.0280	1.0210
calibrator zero	6000	0.0	0.0	0.0	0.0	-0.2	-0.1	-0.2	N/A	N/A
as left zero	6000	0.0	0.0	0.0	0.0	-0.2	-0.1	-0.2	N/A	N/A
as left span	5000	60.4	600.4	198.0	402.4	596.0	196.0	400.0	1.0073	1.0102
								Average Correction Factor	1.0115	1.0074

Corrcted As found NO_X= 596.8 NO= 599.9 Percent Change NO_X= 0.7% NO= -0.2%

Previous Response NO_X= 601.1 NO= 598.7

GPT Calibration Data

Dilution Flow 5000 ccm Source Gas Flow 60.40 ccm

O3 Setpoint (ppb)	Indicated NO high point (ppb)	Indicated NO drop conc (ppb)	Calculated NO2 conc (ppb)	Indicated NOx conc (ppb)	Indicated NO conc (ppb)	Indicated NO2 conc (ppb)	NOx Correction factor	NO Correction factor	NO2 Correction factor	Converter Efficiency
Cal zero			0.0			0.0			N/A	
1st NO2 (300)	N/A	198.0	404.0	600.0	198.0	402.0	0.9887	1.0000	1.0050	99.5%
2nd NO2 (200)										
3rd NO2 (100)										
4th NO2 (0)	602.0	N/A	-1.0	601.0	602.0	9.0	0.9870	1.0000	N/A	N/A
					Average Correction Factor		0.9879	1.0000	1.0050	99.5%

Calibration Performed By: Melissa Lemay

Wood Buffalo Environmental Association

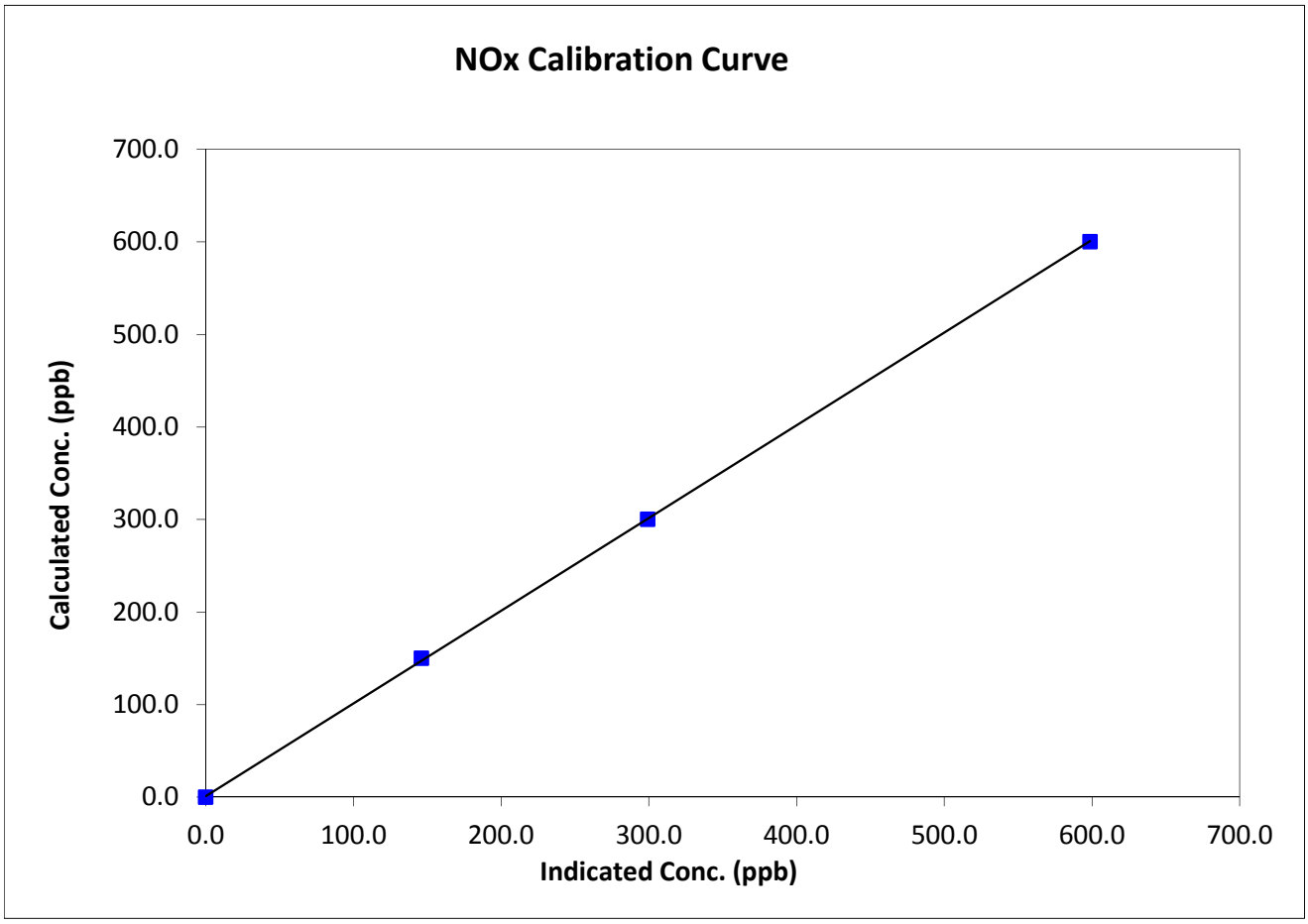
NO_X Calibration Summary

Station Information

Calibration Date	April 8, 2014	Previous Calibration	April 2, 2014
Station Name	Wapasu	Station Number	AMS 17
Start Time (MST)	8:40	End Time (MST)	13:00
Analyzer make	API T200	Analyzer serial #	833

Calibration Information

Calculated conc (ppb) (Cc)	Indicated concentration (ppb) (Ic)	Correction factor (Cc/Ic)	Statistical Evaluation	
0.0	0.0	N/A	Correlation Coefficient	0.999961
600.4	598.6	1.0030		
300.2	299.1	1.0036	Slope	1.001942
150.1	146.0	1.0280		
0.0	-0.2	0.0000	Intercept	1.030221



Wood Buffalo Environmental Association

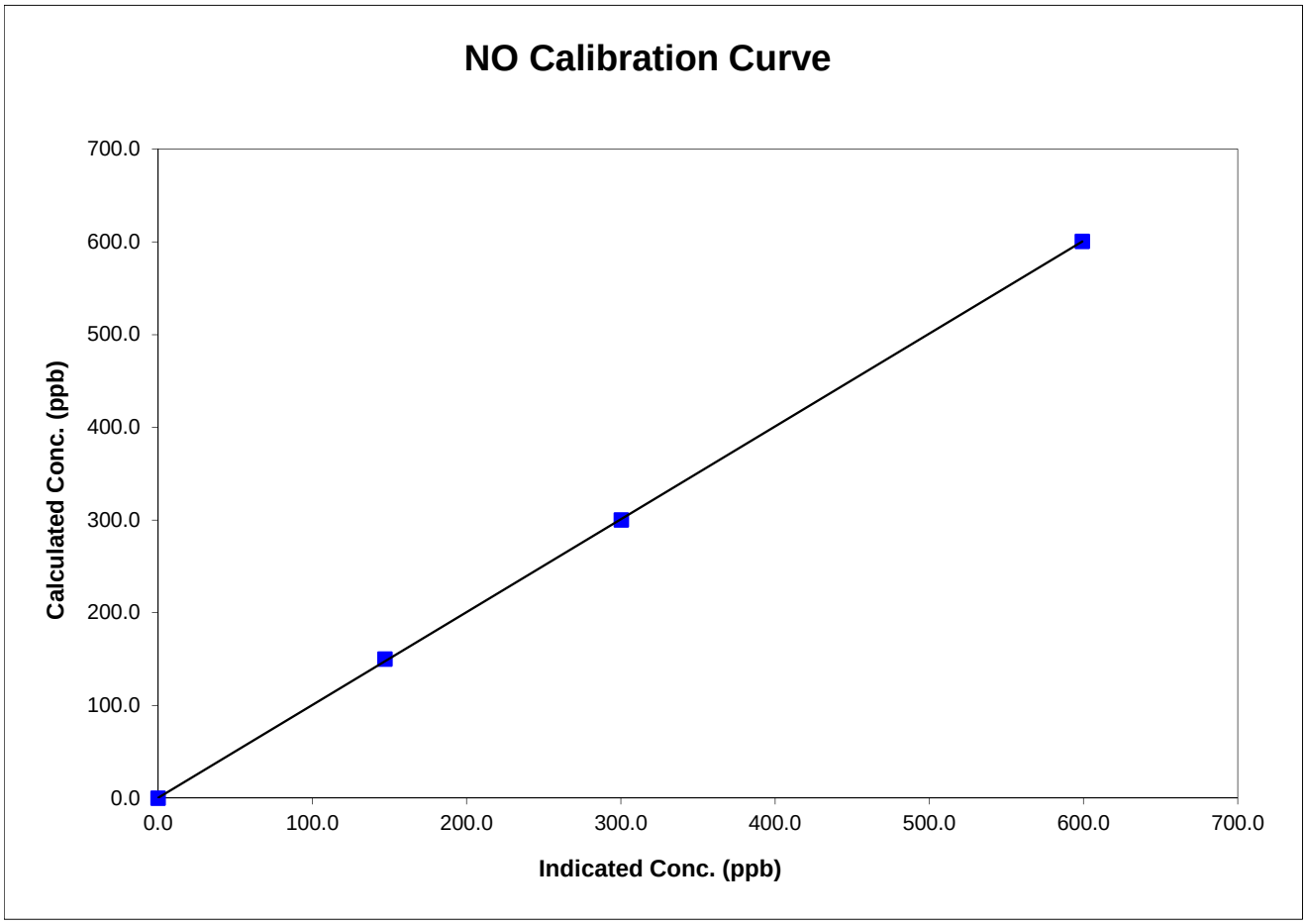
NO Calibration Summary

Station Information

Calibration Date	April 8, 2014	Previous Calibration	April 2, 2014
Station Name	Wapasu	Station Number	AMS 17
Start Time (MST)	8:40	End Time (MST)	13:00
Analyzer make	API T200	Analyzer serial #	833

Calibration Information

Calculated conc (ppb) (Cc)	Indicated concentration (ppb) (Ic)	Correction factor (Cc/Ic)	Statistical Evaluation	
0.0	0.0	N/A	Correlation Coefficient	0.999970
600.4	599.2	1.0020		
300.2	300.4	0.9993	Slope	1.000962
150.1	147.0	1.0210		
0.0	-0.1	0.0000	Intercept	0.614285



Wood Buffalo Environmental Association

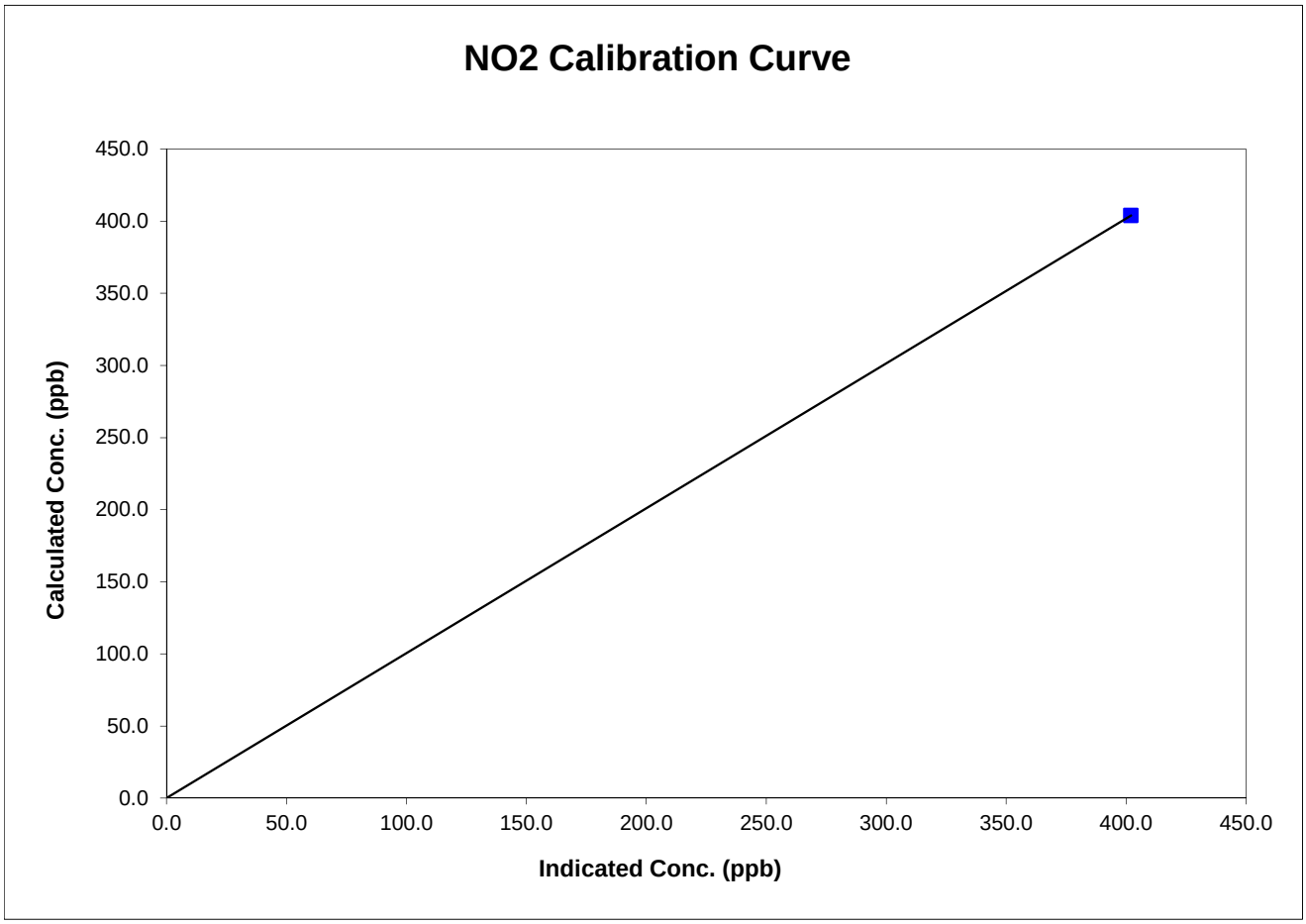
NO_2 Calibration Summary

Station Information

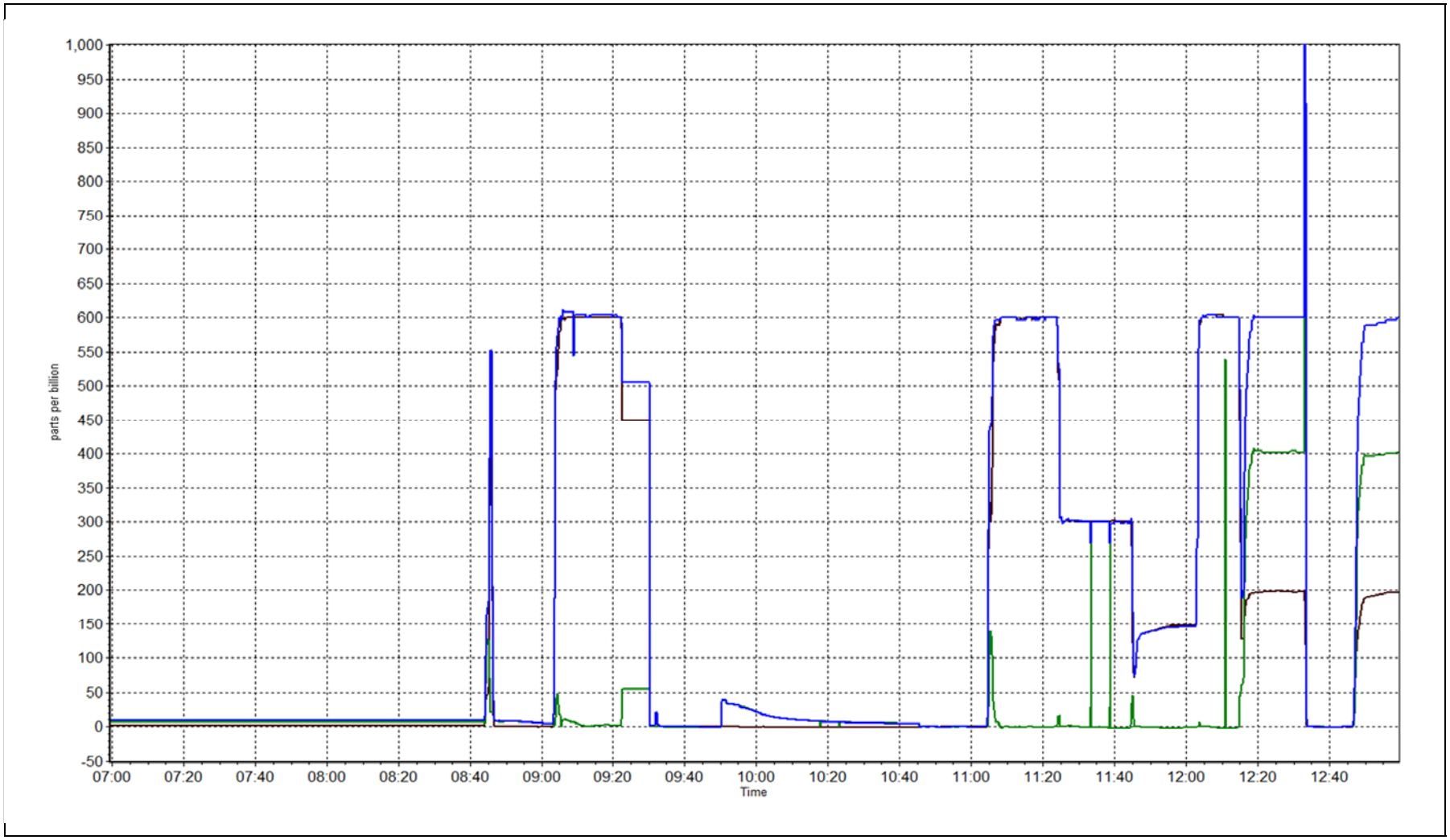
Calibration Date	April 8, 2014	Previous Calibration	April 2, 2014
Station Number	Wapasu	Station Number	AMS 17
Start Time (MST)	8:40	End Time (MST)	13:00
Analyzer make	API T200	Analyzer serial #	833

Calibration Information

Calculated conc (ppb) (Cc)	Indicated concentration (ppb) (Ic)	Correction factor (Cc/Ic)	Statistical Evaluation	
0.0	0.0	N/A	Correlation Coefficient	1.000000
404.0	402.0	1.0050		
			Slope	1.004900
			Intercept	0.030147



NOx, NO & NO_2 Calibration Plot Date: April 8, 2014



Wood Buffalo Environmental Association

NO_X-NO-NO_2 Calibration Report

Station Information

Calibration Date	April 10, 2014	Previous Calibration	April 8, 2014
Station Name	Wapasu	Station Number	AMS 17
Reason:	Routine		
Start Time (MST)	8:45	End Time (MST)	13:35
Barometric Pressure	mmHg	Station Temperature	21.0 Deg C
Calibrator	API T700	Serial Number	997
NO Cal Gas Conc	49.7 ppm	Cal Gas Expiry Date	December 12, 2016
NOx Cal Gas Conc	49.7 ppm	Cal Gas Serial #	SA130010A

DACS Information

DACS make & model	Campbell Scientific CR3000	DACS serial No.	6894

Parameter		NOx	NO	NO2
MV conversion	Analyzer Range (ppb)	1000	1000	1000
	Analyzer Range (mv)	1000	1000	1000
Before	Data Slope	1.001942	1.000962	1.004900
	Data Offset	1.030221	0.614285	0.030147
After	Data Slope	0.999095	0.998041	1.005342
	Data Offset	0.287661	0.433306	-0.048572
Channel #				
Voltage Range				

Analyzer Information

Analyzer make/model	API T200	Analyzer serial #	833

Test Point	before		after	
Concentration range	1000	ppb	1000	ppb
NO coefficient	0.928	ppb	0.928	ppb
NOX coefficient	0.924	ppb	0.932	ppb
NO2 coefficient	1.000	ppb	1.000	ppb
NO bkgrnd	-0.2		-0.5	
NOX bkgrnd	5.8		1.1	
Nt coefficient				
Chamber Temp	50.0	Deg C	50.0	Deg C
Moly Temp	316.9	Deg C	316.9	Deg C
PMT Temp	7.0	Deg C	7.0	Deg C
O3 flow	71.0	ccm	71.0	ccm
R Cell Press	4.6	mmHg	4.6	mmHg
Sample Flow	442.000	ccm	442.000	ccm

Notes:

Program was fixed on datalogger; completed full GPT calibration.

Wood Buffalo Environmental Association

NO_X-NO-NO_2 Calibration Report

Station Information

Calibration Date: April 10, 2014 Station Number: AMS 17

Calibration Data

Set Point	Total flow rate (ccm)	Source gas flow rate (ccm)	Calculated NOx conc (ppb)	Calculated NO conc (ppb)	Calculated NO2 conc (ppb)	Indicated NOx conc (ppb)	Indicated NO conc (ppb)	Indicated NO2 conc (ppb)	NOx Correction factor	NO Correction factor
as found zero	5000	0.0	0.0	0.0	0.0	-2.2	0.2	-2.0	N/A	N/A
as found span	5000	60.4	600.4	600.4	0.0	592.0	596.0	2.4	1.0141	1.0073
calibrator zero	5000	0.0	0.0	0.0	0.0	0.0	0.1	-0.1	N/A	N/A
high point	5000	60.4	600.4	600.4	0.0	601.0	601.3	-0.3	0.9990	0.9985
second point	5000	30.2	300.2	300.2	0.0	300.0	300.8	-0.4	1.0006	0.9980
third point	5000	15.1	150.1	150.1	0.0	148.8	148.3	0.5	1.0087	1.0121
calibrator zero	6000	0.0	0.0	0.0	0.0	0.4	0.1	0.3	N/A	N/A
as left zero	6000	0.0	0.0	0.0	0.0	0.4	0.1	0.3	N/A	N/A
as left span	5000	60.4	600.4	196.8	403.6	597.8	194.0	403.7	1.0043	1.0144
								Average Correction Factor	1.0028	1.0028

Corrcted As found NO_X= 594.2 NO= 595.8 Percent Change NO_X= 0.7% NO= 0.6%

Previous Response NO_X= 598.2 NO= 599.2

GPT Calibration Data

Dilution Flow 5000 ccm Source Gas Flow 60.40 ccm

O3 Setpoint (ppb)	Indicated NO high point (ppb)	Indicated NO drop conc (ppb)	Calculated NO2 conc (ppb)	Indicated NOx conc (ppb)	Indicated NO conc (ppb)	Indicated NO2 conc (ppb)	NOx Correction factor	NO Correction factor	NO2 Correction factor	Converter Efficiency
Cal zero			0.0			-0.1			N/A	
1st NO2 (300)	N/A	196.8	406.2	600.7	196.8	403.9	0.9875	1.0000	1.0057	99.4%
2nd NO2 (200)	N/A	327.7	275.3	601.7	327.7	274.1	0.9859	1.0000	1.0044	99.6%
3rd NO2 (100)	N/A	457.7	145.3	602.4	457.7	144.7	0.9847	1.0000	1.0041	99.6%
4th NO2 (0)	603.0	N/A	-1.6	601.4	603.0	1.2	0.9864	1.0000	N/A	N/A
					Average Correction Factor		0.9861	1.0000	1.0047	99.5%

Calibration Performed By: Melissa Lemay

Wood Buffalo Environmental Association

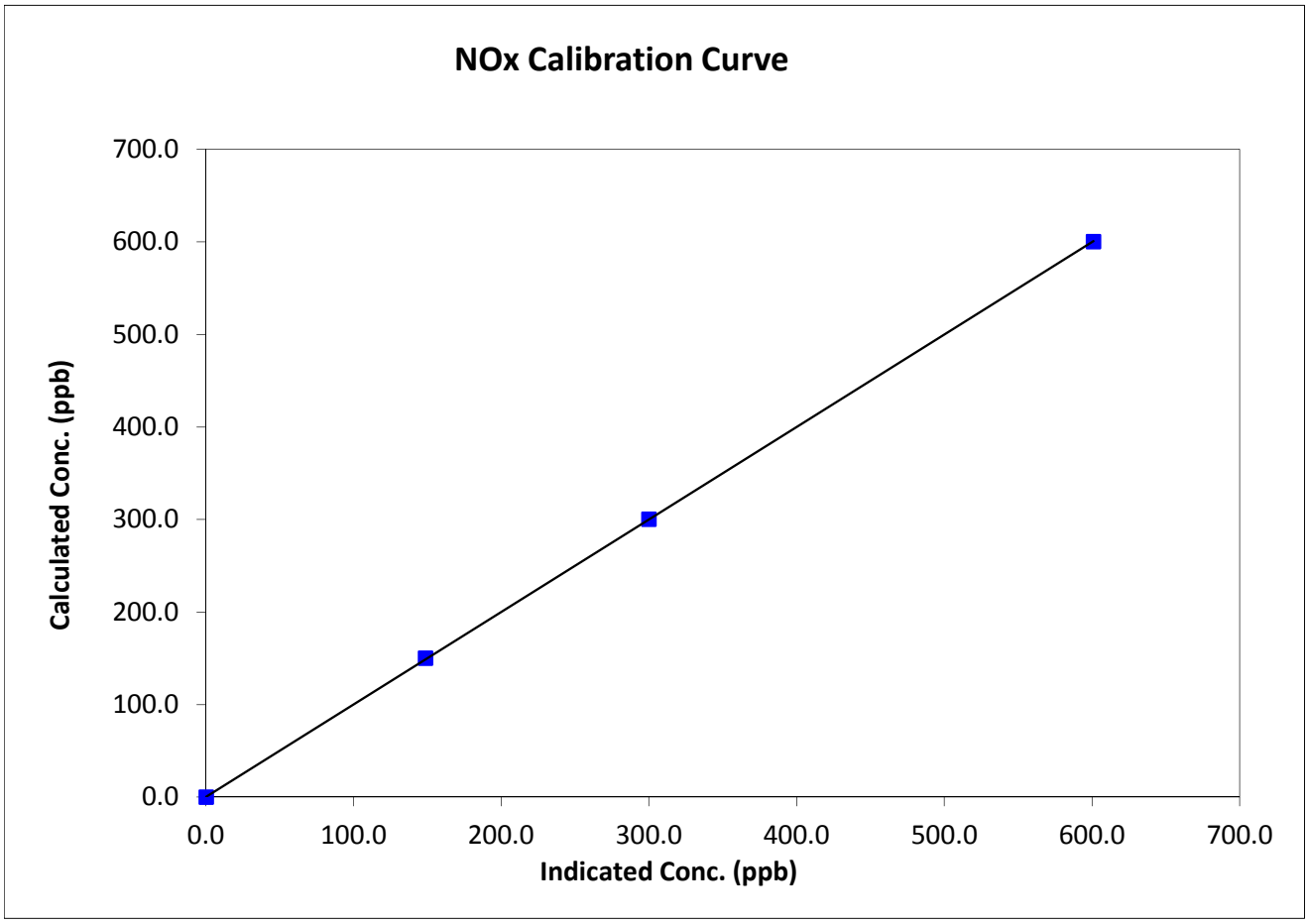
NO_X Calibration Summary

Station Information

Calibration Date	April 10, 2014	Previous Calibration	April 8, 2014
Station Name	Wapasu	Station Number	AMS 17
Start Time (MST)	8:45	End Time (MST)	13:35
Analyzer make	API T200	Analyzer serial #	833

Calibration Information

Calculated conc (ppb) (Cc)	Indicated concentration (ppb) (Ic)	Correction factor (Cc/Ic)	Statistical Evaluation	
0.0	0.0	N/A	Correlation Coefficient	0.999992
600.4	601.0	0.9990		
300.2	300.0	1.0006	Slope	0.999095
150.1	148.8	1.0087		
0.0	0.4	0.0000	Intercept	0.287661



Wood Buffalo Environmental Association

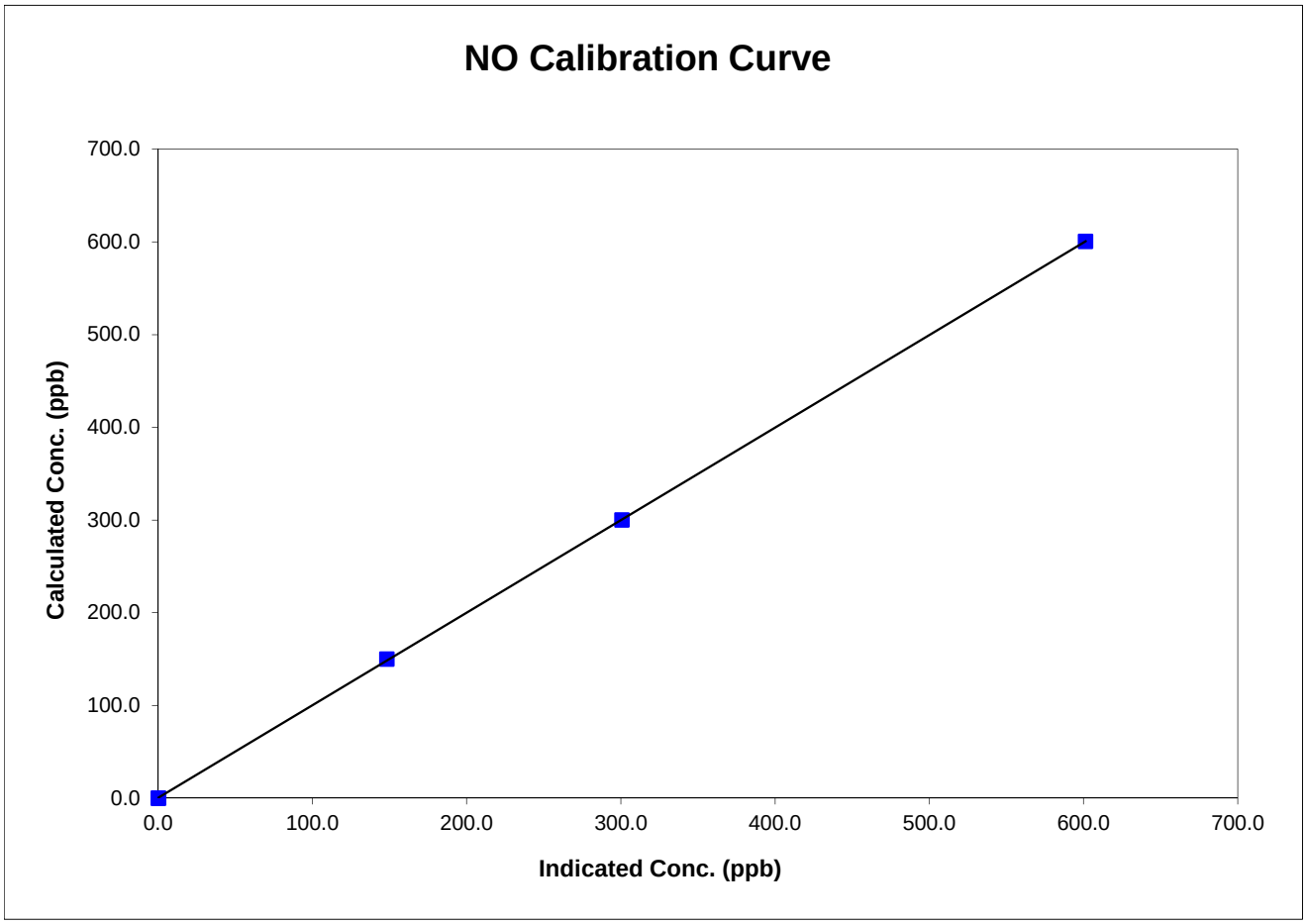
NO Calibration Summary

Station Information

Calibration Date	April 10, 2014	Previous Calibration	April 8, 2014
Station Name	Wapasu	Station Number	AMS 17
Start Time (MST)	8:45	End Time (MST)	13:35
Analyzer make	API T200	Analyzer serial #	833

Calibration Information

Calculated conc (ppb) (Cc)	Indicated concentration (ppb) (Ic)	Correction factor (Cc/Ic)	Statistical Evaluation	
0.0	0.1	N/A	Correlation Coefficient	0.999986
600.4	601.3	0.9985		
300.2	300.8	0.9980	Slope	0.998041
150.1	148.3	1.0121		
0.0	0.1	0.0000	Intercept	0.433306



Wood Buffalo Environmental Association

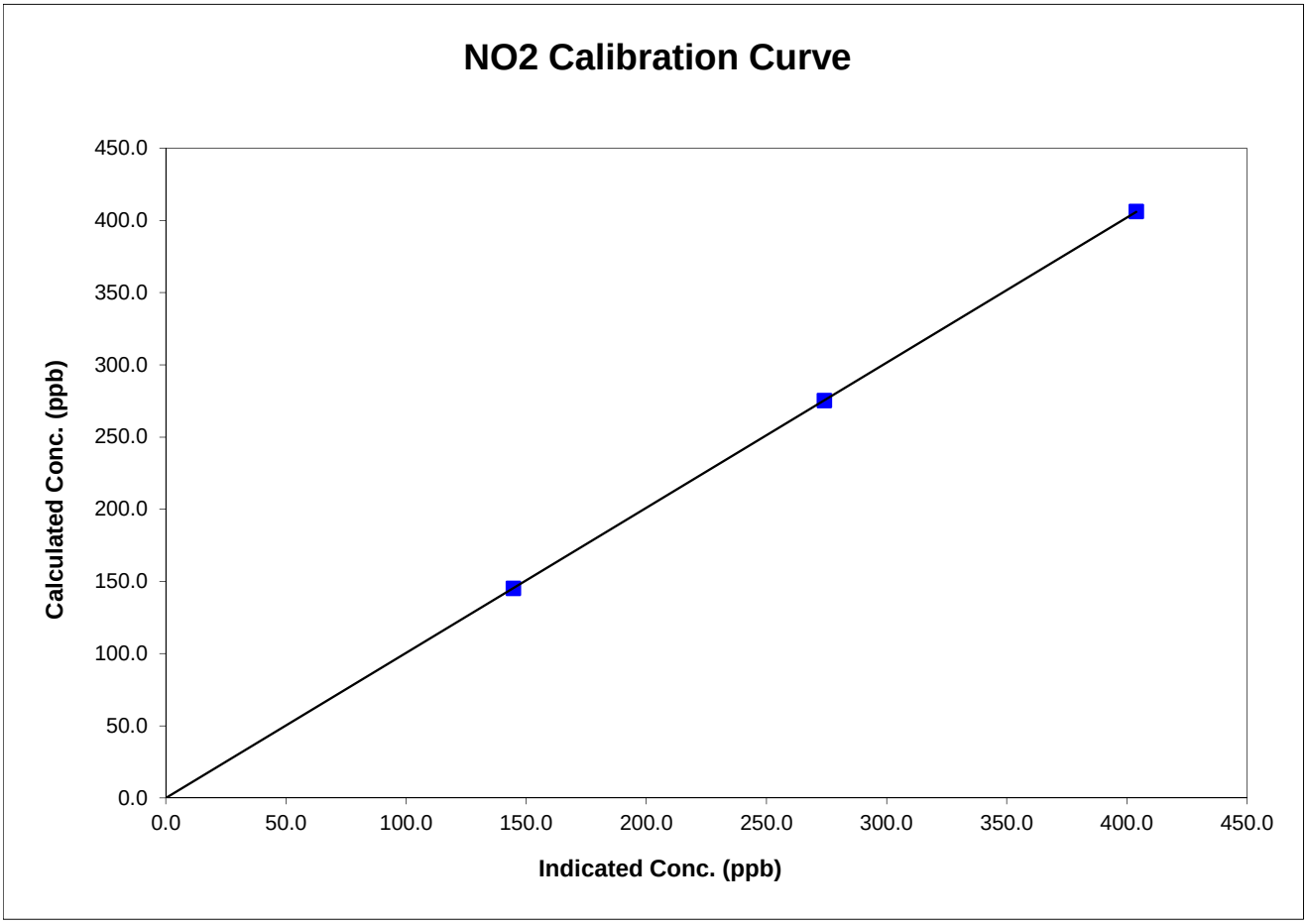
NO_2 Calibration Summary

Station Information

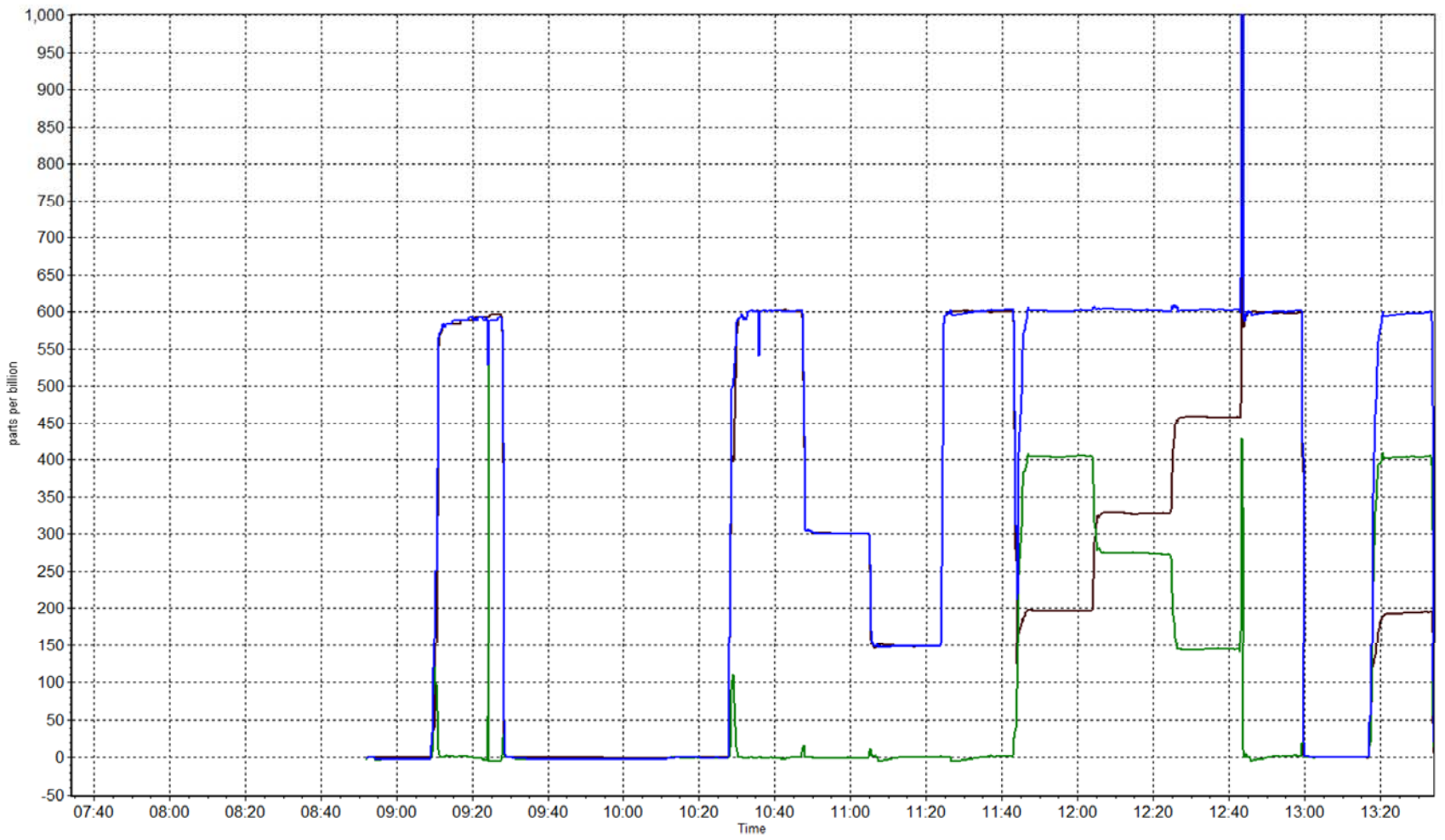
Calibration Date	April 10, 2014	Previous Calibration	April 8, 2014
Station Number	Wapasu	Station Number	AMS 17
Start Time (MST)	8:45	End Time (MST)	13:35
Analyzer make	API T200	Analyzer serial #	833

Calibration Information

Calculated conc (ppb) (Cc)	Indicated concentration (ppb) (Ic)	Correction factor (Cc/Ic)	Statistical Evaluation	
0.0	-0.1	N/A	Correlation Coefficient	0.999999
406.2	403.9	1.0057		
275.3	274.1	1.0044	Slope	1.005342
145.3	144.7	1.0041		
			Intercept	-0.048572



NOx, NO & NO_2 Calibration Plot Date: April 10, 2014



WOOD BUFFALO ENVIRONMENTAL ASSOCIATION

CONTINUOUS AMBIENT AIR QUALITY
MONITORING PROGRAM
MONTHLY REPORT

AMS 500
CENOVUS
CHRISTINA LAKE
APRIL 2014

Operations and Data Collection by:
Wood Buffalo Environmental Association
Fort McMurray, Alberta

QA/QC, Data Validation and Reporting by:
Aurora Atmospherics Inc.
Calgary, Alberta

May 27, 2014

WOOD BUFFALO ENVIRONMENTAL ASSOCIATION - CENOVUS CHRISTINA LAKE (AMS 500)
APRIL 2014

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	679	37	41	99.44	9	0	2	0
H2S (ppb) Average	680	35	40	99.31	1	0	0	0
NO2 (ppb) Average	681	37	39	99.72	32	0	10	-
NO (ppb) Average	681	37	39	99.72	30	-	7	-
NOX (ppb) Average	681	37	39	99.72	62	-	17	-
Temperature 2 m (C) Average	720	0	0	100.00	19.6	-	11.7	-
Relative Humidity (%) Average	720	0	0	100.00	99	-	-	-
Wind Speed 10 m (km/h) Average	705	0	15	97.92	37	-	-	-
Wind Direction 10 m (deg) Average	705	0	15	97.92	0	-	-	-

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

WOOD BUFFALO ENVIRONMENTAL ASSOCIATION - CENOVUS CHRISTINA LAKE (AMS 500)
APRIL 2014

MONTHLY SUMMARY FOR AIR QUALITY/ METEOROLOGICAL MONITORING MEASUREMENTS

					Percentile						
Parameter	Number	Mean	StnDev	Total	Min	P10	Q1	Median	Q3	P90	Max
SO2 (ppb) Average	679	0.5	1	-	0	0	0	0	0	1	9
H2S (ppb) Average	680	0.2	0	-	0	0	0	0	0	0	1
NO2 (ppb) Average	681	2.7	4	-	0	0	1	2	4	6	32
NO (ppb) Average	681	1.7	3	-	0	0	0	1	1	4	30
NOX (ppb) Average	681	4.4	6	-	0	1	1	2	5	10	62
Temperature 2 m (C) Average	720	1.46	6.5	-	-13.8	-7.4	-2	0.8	4.9	10.2	19.6
Relative Humidity (%) Average	720	64.8	22	-	18	34	47	65	85	93	99
Wind Speed 10 m (km/h) Average	705	11.5	6	-	2	4	7	11	15	19	37
Wind Direction 10 m (deg) Average	705	-	-	-	-	-	-	-	-	-	-

WOOD BUFFALO ENVIRONMENTAL ASSOCIATION - CENOVUS CHRISTINA LAKE (AMS 500)
APRIL 2014

OPERATIONAL NOTES

Parameter	Period Start	Period End	Duration (Hours)	Notes
SO2	10 Apr 2014 10:00	10 Apr 2014 11:00	2	Maintenance - cleaned glass manifold
SO2	22 Apr 2014 03:00	22 Apr 2014 03:00	1	Stabilization after daily span
SO2	28 Apr 2014 03:00	28 Apr 2014 03:00	1	Stabilization after daily span
H2S	01 Apr 2014 06:00	01 Apr 2014 06:00	1	Intermittent unstable operation - excessive baseline drift
H2S	05 Apr 2014 22:00	05 Apr 2014 22:00	1	Intermittent unstable operation - excessive baseline drift
H2S	06 Apr 2014 06:00	06 Apr 2014 06:00	1	Intermittent unstable operation - excessive baseline drift
H2S	19 Apr 2014 22:00	19 Apr 2014 23:00	2	Intermittent unstable operation - excessive baseline drift
NO2, NO, NOX	10 Apr 2014 10:00	10 Apr 2014 11:00	2	Maintenance - cleaned glass manifold
Wind Speed, Wind Direction	06 Apr 2014 00:00	06 Apr 2014 01:00	2	Flatline in sensor output signal
Wind Speed, Wind Direction	21 Apr 2014 23:00	22 Apr 2014 00:00	2	Flatline in sensor output signal
Wind Speed, Wind Direction	24 Apr 2014 23:00	25 Apr 2014 09:00	11	Flatline in sensor output signal

Wood Buffalo Environmental Association

Summary of Hour Averages

Sulphur Dioxide (SO_2) - ppb

Cenovus - Christina Lake - April 2014

Number of Exceedences (AAAQO): 1-hr: 0 24-hr: 0
Maximum Value: 9 ppb on Apr 12 10:00 Maximum Daily Average: 1.7 ppb on Apr 14

Minimum Value: 0 ppb on Apr 10 05:00
Maximum Diurnal Average: 0.8 ppb at hour 10
Monthly Average: 0.5 ppb

Minimum Daily Average: 0.2 ppb on Apr 18
Minimum Diurnal Average: 0.3 ppb at hour 22
Percentiles: $P_1 = 0$ $P_{10} = 0$ $Q_1 = 0$ Median = 0 $Q_3 = 0$ $P_{90} = 1$ $P_{99} = 3$

Hours in Service:	720
Hours of Data:	679
Hours of Missing Data:	41
Hours of Calibration:	37
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-Apr	0	Z	0	0	0	0	0	0	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	0.7	1
2-Apr	1	Z	0	0	0	0	0	0	0	0	0	0	1	0	0	0	0	0	0	1	1	0	1	1	0.4	1
3-Apr	0	Z	0	0	0	0	0	1	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0.3	1
4-Apr	0	Z	1	0	0	0	0	0	1	1	0	0	0	0	0	2	3	1	2	3	2	0	0	0	0.9	3
5-Apr	1	Z	1	0	0	0	0	0	0	0	0	0	0	0	0	0	1	0	0	0	0	0	0	0	0.4	1
6-Apr	0	Z	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0.3	0
7-Apr	0	Z	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0.3	0
8-Apr	0	Z	0	1	1	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0.3	1
9-Apr	0	Z	0	0	0	0	0	0	0	1	C	C	C	C	C	C	C	0	0	2	0	0	0	0	--	2
10-Apr	0	Z	0	0	0	0	0	0	1	M	M	2	1	1	0	0	1	1	1	1	0	0	0	0	0.5	2
11-Apr	0	Z	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0.3	0
12-Apr	0	Z	1	0	0	1	2	1	1	9	4	2	1	2	2	2	1	0	0	0	1	0	1	1	1.4	9
13-Apr	0	Z	0	0	0	0	1	0	0	1	3	2	2	2	2	1	1	1	0	0	0	0	0	0	0.8	3
14-Apr	1	Z	6	5	6	2	2	3	2	2	1	1	1	1	1	1	1	1	1	1	1	0	0	0	1.7	6
15-Apr	0	Z	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0.3	0
16-Apr	1	Z	1	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0.3	1
17-Apr	0	Z	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0.2	0
18-Apr	0	Z	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0.2	0
19-Apr	0	Z	0	0	0	0	0	0	0	0	0	0	0	0	0	1	0	0	0	0	0	0	0	0	0.3	1
20-Apr	1	Z	1	1	0	0	0	1	1	2	1	1	1	1	1	1	1	1	1	1	1	0	0	0	0.8	2
21-Apr	0	Z	0	0	0	0	0	0	0	0	0	0	0	0	0	1	1	0	0	0	0	0	0	0	0.4	1
22-Apr	0	Z	UO	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0.3	0
23-Apr	0	Z	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1	1	1	1	1	0.3	1
24-Apr	1	Z	0	0	0	0	0	0	1	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0.4	1
25-Apr	0	Z	0	0	1	0	0	1	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0.4	1
26-Apr	0	Z	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0.2	0
27-Apr	0	Z	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0.3	0
28-Apr	0	Z	UO	0	0	0	0	0	0	0	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0.4	1
29-Apr	1	Z	0	0	0	0	0	0	0	1	1	3	1	1	1	1	0	0	0	0	0	0	0	0	0.6	3
30-Apr	0	Z	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1	1	1	0	0	0	0	0.4	1
	0.4	--	0.6	0.5	0.5	0.4	0.4	0.4	0.5	0.8	0.7	0.6	0.5	0.5	0.5	0.6	0.5	0.4	0.4	0.5	0.4	0.3	0.3	0.3	Diurnal Average	
	1	--	6	5	6	2	2	3	2	9	4	3	2	2	2	2	3	1	2	3	2	1	1	1	Diurnal Maximum	

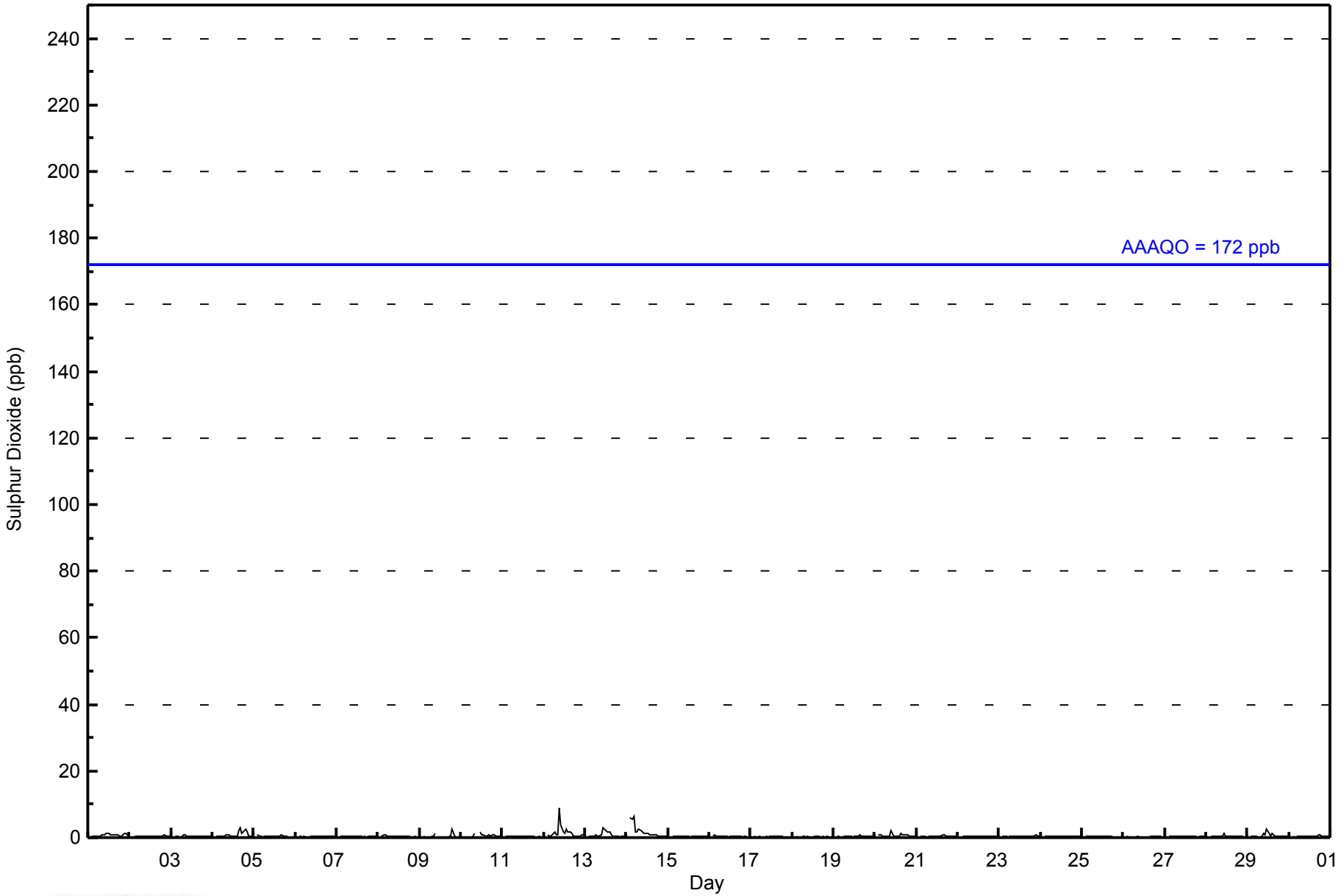
Z - zerospan C - Calibration M - Maintenance UO - Unstable Operation
Alberta Ambient Air Quality Objectives (AAAQO): 1-hr 172 ppb 24-hr 48 ppb

WBEA NETWORK

Hourly Averages

Sulphur Dioxide (SO_2) - ppb

Cenovus - Christina Lake - April 2014



AURORA ATMOSPHERICS INC.

Concentration Ranges (ppb)	Number of Hours	%	Cumulative %
0 - 10	679	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: 679

Total Number of Hours: 720

WBEA NETWORK

Frequency Distribution

Sulphur Dioxide (SO_2) - ppb

Cenovus - Christina Lake - April 2014

Concentration Ranges (ppb)	Wind Direction																
	N	NNE	NE	ENE	E	ESE	SE	SSE	S	SSW	SW	WSW	W	WNW	NW	NNW	**Totals**
0 - 10	26	51	83	66	68	45	38	43	29	48	49	18	34	17	18	32	665
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	26	51	83	66	68	45	38	43	29	48	49	18	34	17	18	32	665

Total Number of Valid Hours: 665

Total Number of Hours: 720

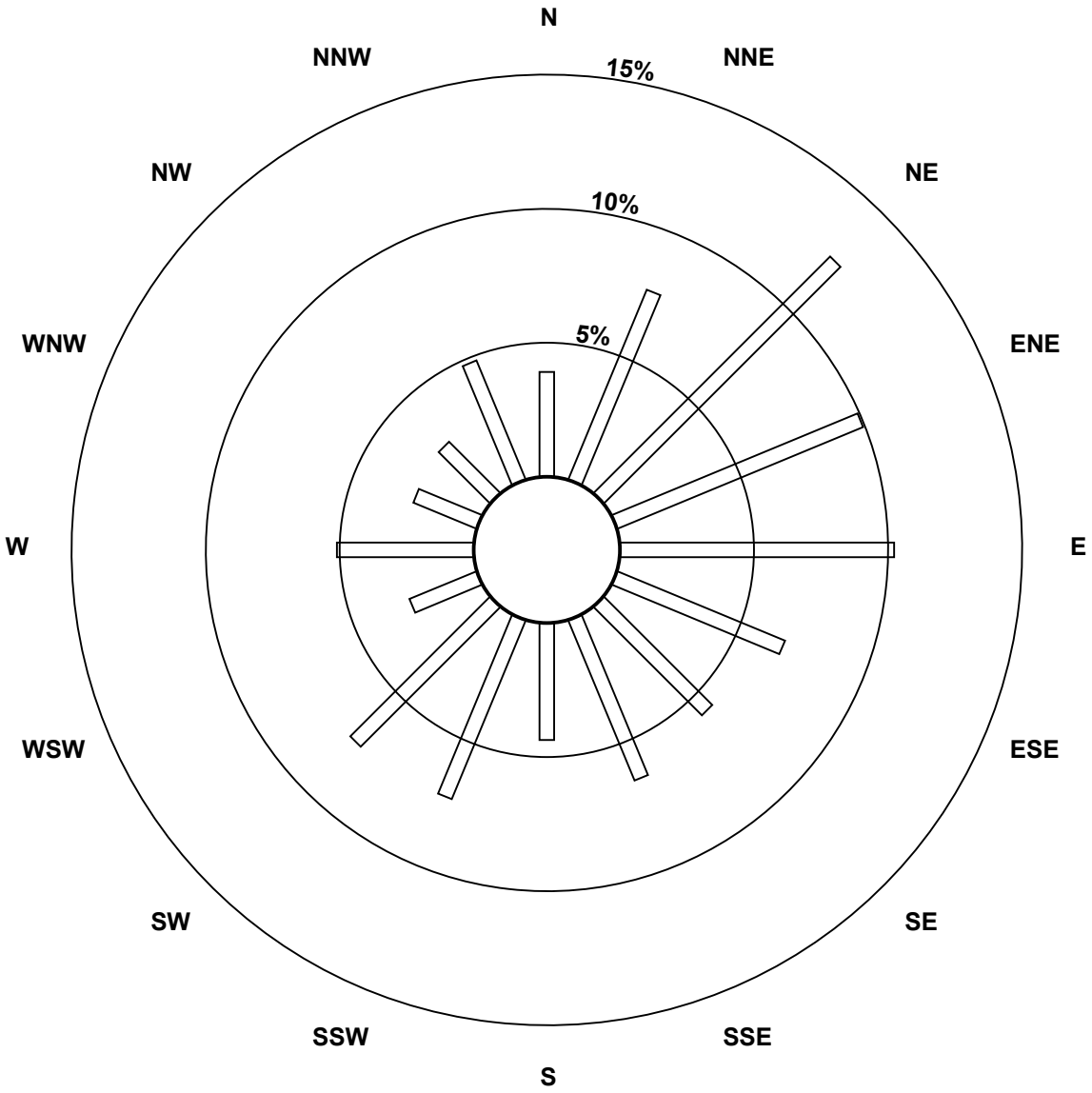
AURORA ATMOSPHERICS INC.

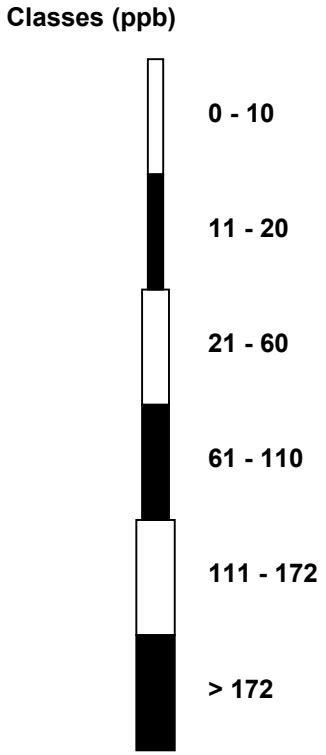
Wood Buffalo Environmental Association

Wind Rose Apr 2014

Sulphur Dioxide (SO_2) - ppb

Cenovus - Christina Lake (AMS500)





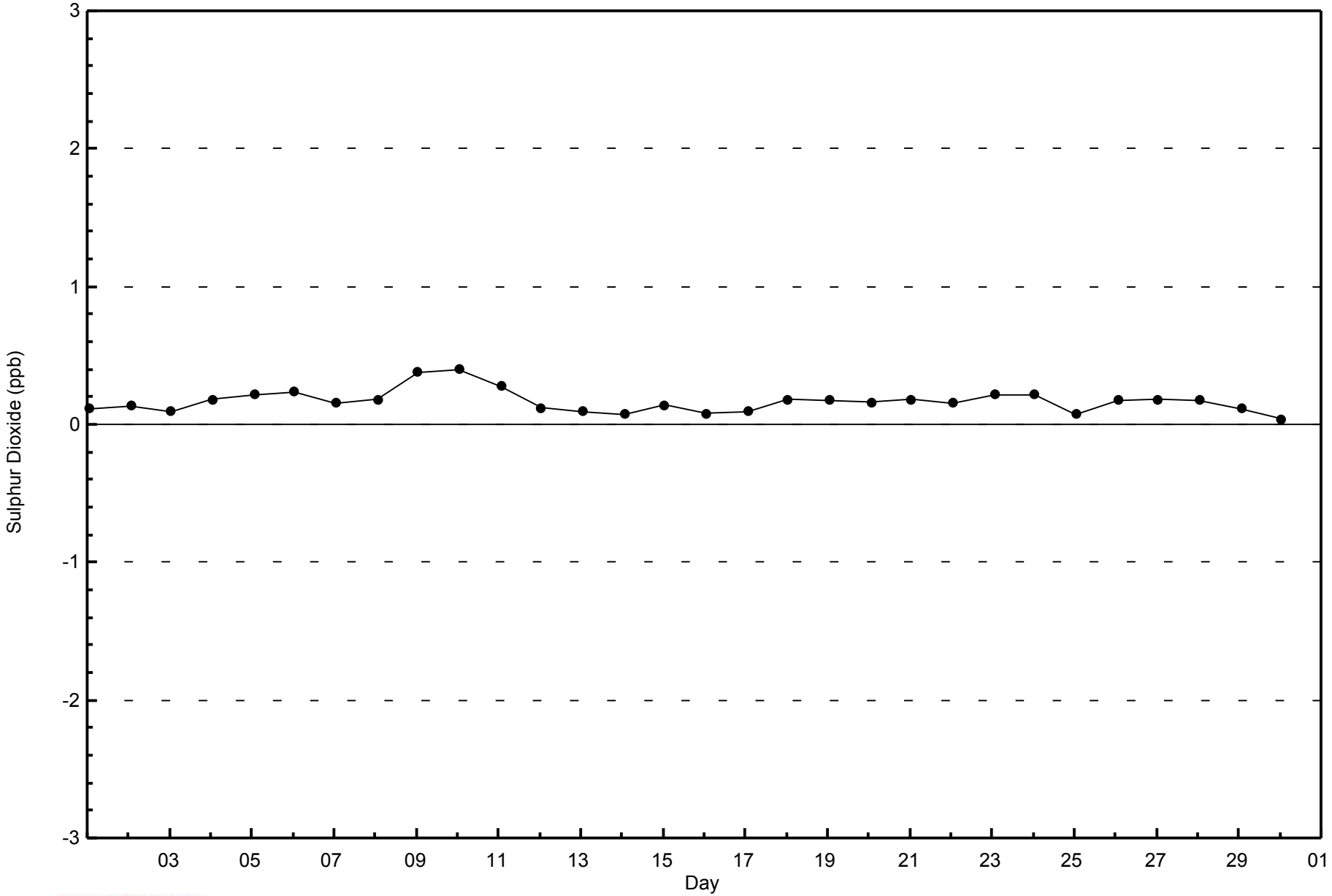
Total Number of Valid Hours: 665

WBEA NETWORK

Zero Responses

Sulphur Dioxide (SO_2) - ppb

Cenovus - Christina Lake - April 2014



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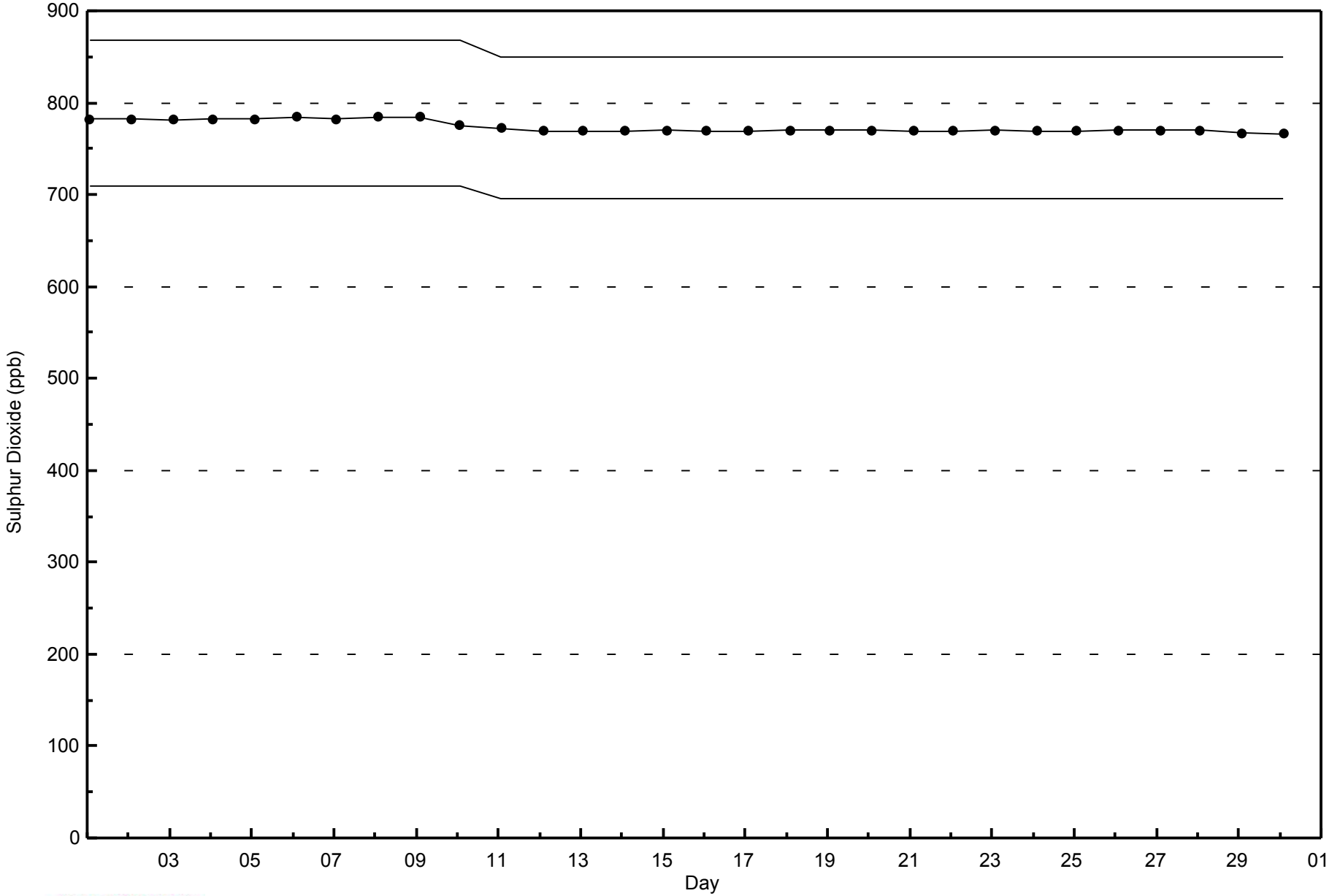
WBEA NETWORK

Span Responses

Sulphur Dioxide (SO_2) - ppb

Cenovus - Christina Lake - April 2014



AURORA ATMOSPHERICS INC.

Wood Buffalo Environmental Association

Summary of Hour Averages

Hydrogen Sulphide (H_2S) - ppb

Cenovus - Christina Lake - April 2014

Number of Exceedences (AAAQO): 1-hr: 0 24-hr: 0
Maximum Value: 1 ppb on Apr 1 23:00 Maximum Daily Average: 0.4 ppb on Apr 2

Minimum Value: 0 ppb on Apr 15 05:00 Minimum Daily Average: 0.1 ppb on Apr 15
Maximum Diurnal Average: 0.2 ppb at hour 8 Minimum Diurnal Average: 0.2 ppb at hour 18
Monthly Average: 0.2 ppb Percentiles: $P_1 = 0$ $P_{10} = 0$ $Q_1 = 0$ Median = 0 $Q_3 = 0$ $P_{90} = 0$ $P_{99} = 1$

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-Apr	0	0	Z	0	0	UO	0	0	0	0	1	0	0	0	0	0	0	0	0	0	0	1	1	1	0.4	1
2-Apr	1	0	Z	0	0	1	1	1	1	0	0	0	0	0	0	0	0	0	0	1	1	0	1	1	0.4	1
3-Apr	0	0	Z	0	0	0	0	1	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0.3	1
4-Apr	0	0	Z	0	0	0	0	0	0	0	0	0	0	0	0	1	1	0	1	1	0	0	0	0	0.4	1
5-Apr	0	0	Z	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	UO	0	0	0.2	0
6-Apr	0	0	Z	0	0	UO	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0.1	0
7-Apr	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	0
8-Apr	0	0	Z	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0.2	0
9-Apr	0	0	Z	0	0	0	0	0	0	0	0	0	1	1	0	0	0	0	0	0	0	0	0	0	0.3	1
10-Apr	0	0	Z	0	0	0	0	C	C	C	C	C	0	0	0	0	0	0	0	0	0	0	0	0	0.2	0
11-Apr	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	0
12-Apr	0	0	Z	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0.2	0
13-Apr	0	0	Z	0	0	1	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0.2	1
14-Apr	0	0	Z	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0.2	0
15-Apr	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	0
16-Apr	0	0	Z	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0.2	0
17-Apr	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	0
18-Apr	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	0
19-Apr	0	0	Z	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	UO	UO	0	0.1	0
20-Apr	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	0
21-Apr	0	0	Z	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0.2	0
22-Apr	0	0	Z	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0.2	0
23-Apr	0	0	Z	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0.2	0
24-Apr	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	0
25-Apr	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	0
26-Apr	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	0
27-Apr	0	0	Z	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0.2	0
28-Apr	0	0	Z	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0.2	0
29-Apr	0	0	Z	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0.2	0
30-Apr	0	0	Z	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0.2	0
	0.2	0.2	--	0.2	0.2	0.2	0.2	0.2	0.2	0.2	0.2	0.2	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	0	1	1	1	1	0	1	0	1	1	0	1	1	0	1	1	1	1	1	1	Diurnal Maximum	

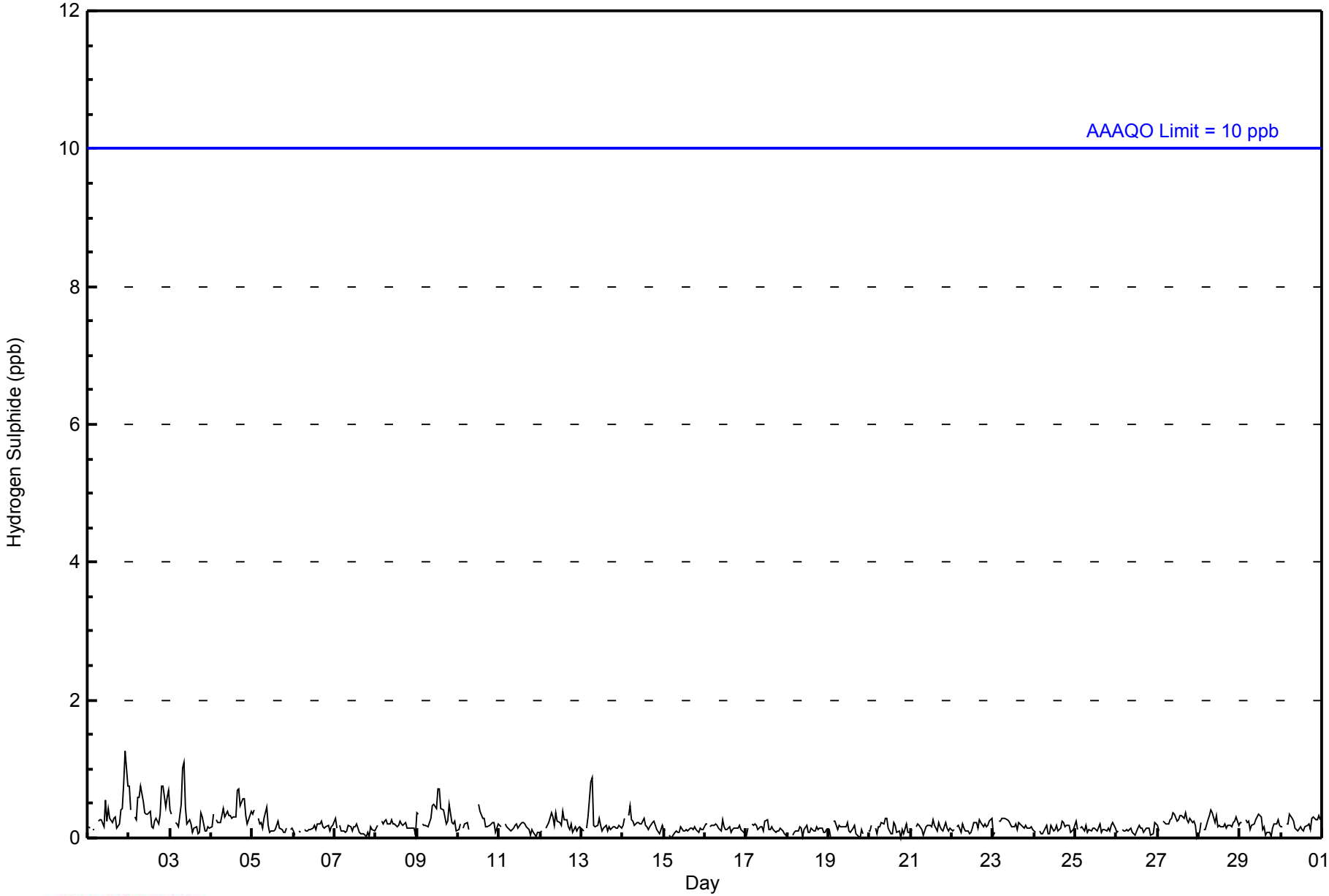
Z - zerospan C - Calibration UO - Unstable Operation
Alberta Ambient Air Quality Objectives (AAAQO): 1-hr 10 ppb 24-hr 3 ppb

WBEA NETWORK

Hourly Averages

Hydrogen Sulphide (H_2S) - ppb

Cenovus - Christina Lake - April 2014



AURORA ATMOSPHERICS INC.

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

WBEA NETWORK

Frequency Distribution

Hydrogen Sulphide (H_2S) - ppb

Cenovus - Christina Lake - April 2014

Concentration Ranges (ppb)	Wind Direction																
	N	NNE	NE	ENE	E	ESE	SE	SSE	S	SSW	SW	WSW	W	WNW	NW	NNW	**Totals**
0 - 2	27	51	81	65	66	46	39	42	29	48	47	23	35	16	20	31	666
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	27	51	81	65	66	46	39	42	29	48	47	23	35	16	20	31	666

Total Number of Valid Hours: 666

Total Number of Hours: 720

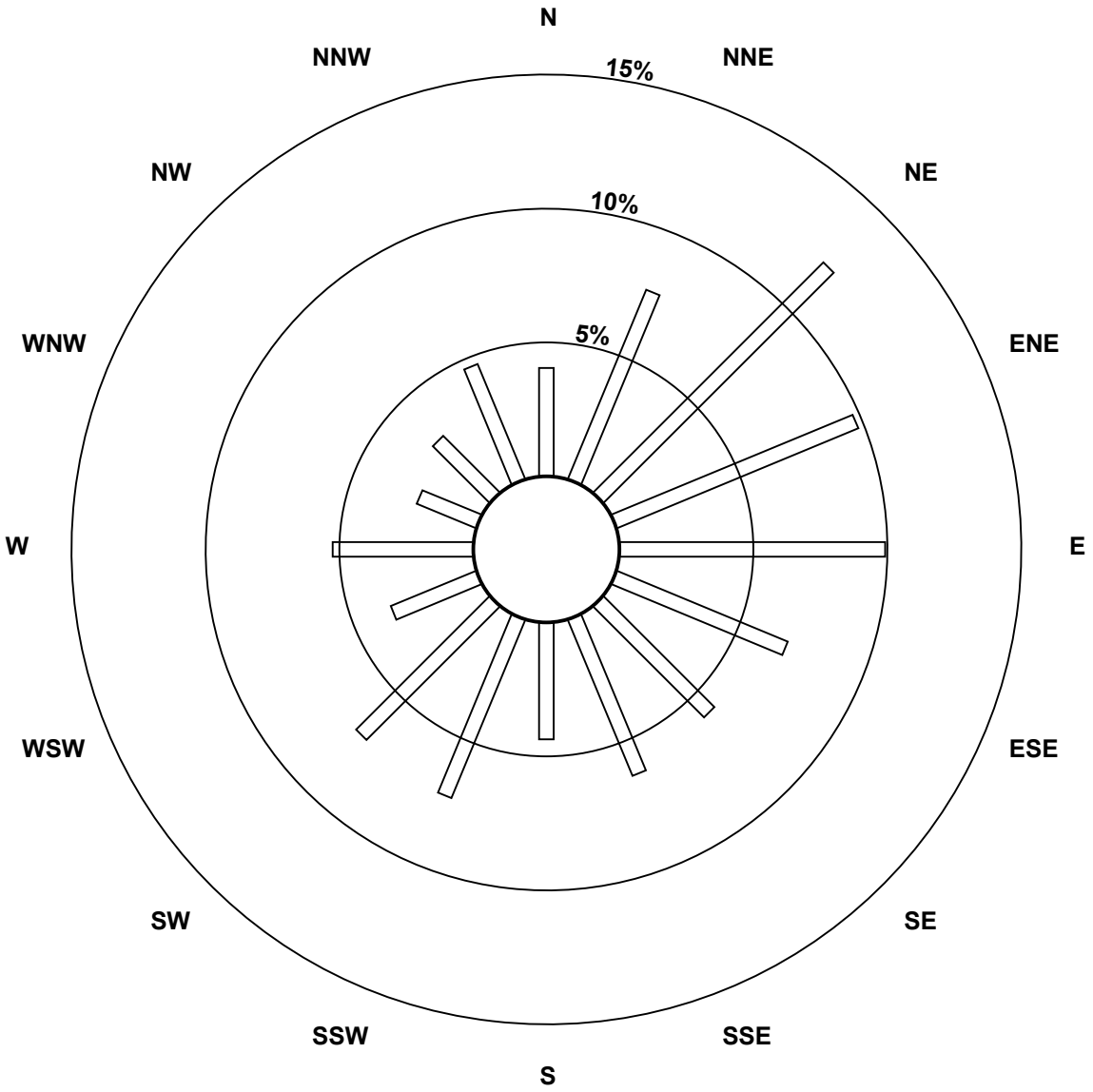
AURORA ATMOSPHERICS INC.

Wood Buffalo Environmental Association

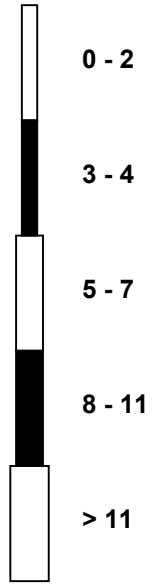
Wind Rose Apr 2014

Hydrogen Sulphide (H_2S) - ppb

Cenovus - Christina Lake (AMS500)



Classes (ppb)



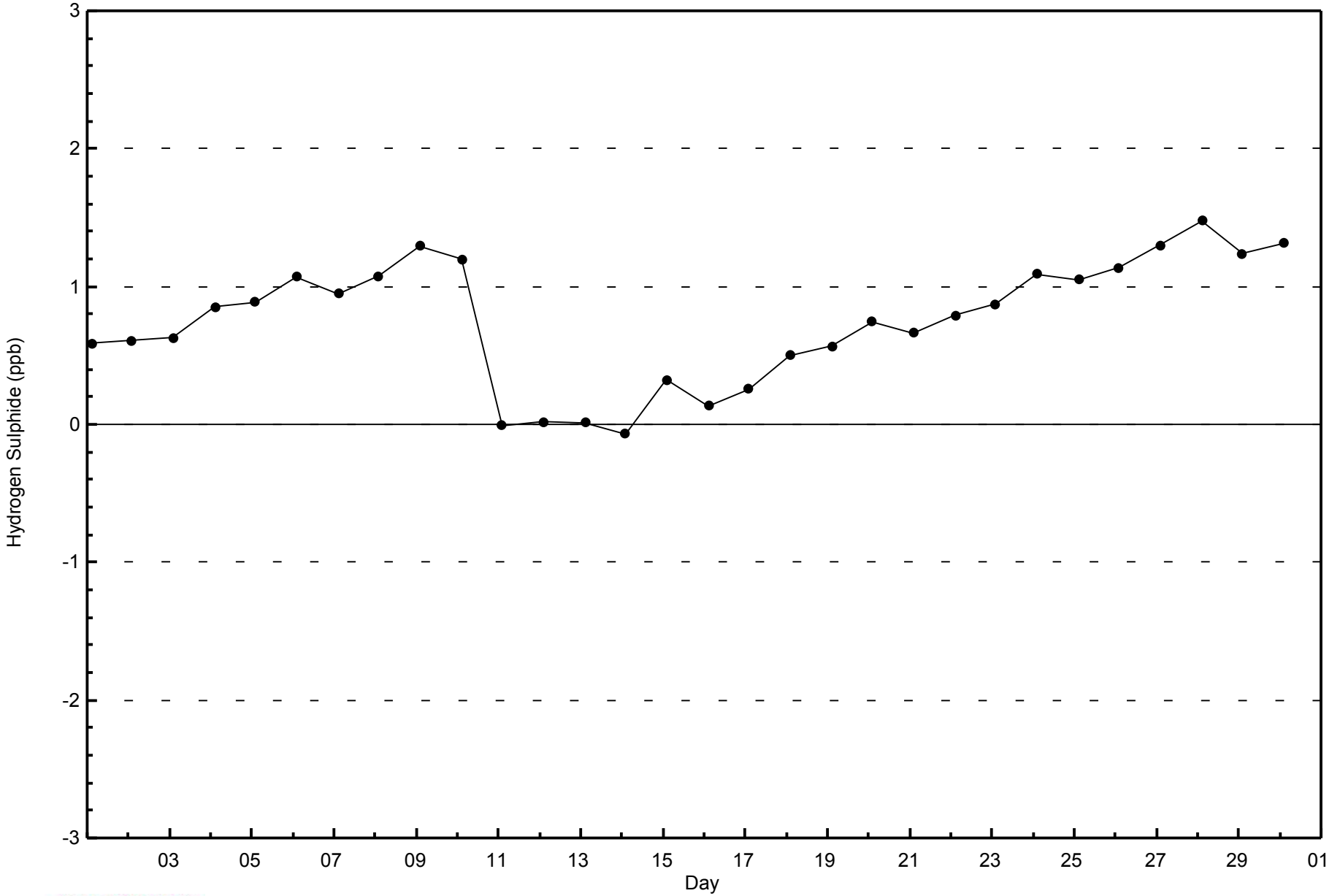
Total Number of Valid Hours: 666

WBEA NETWORK

Zero Responses

Hydrogen Sulphide (H_2S) - ppb

Cenovus - Christina Lake - April 2014



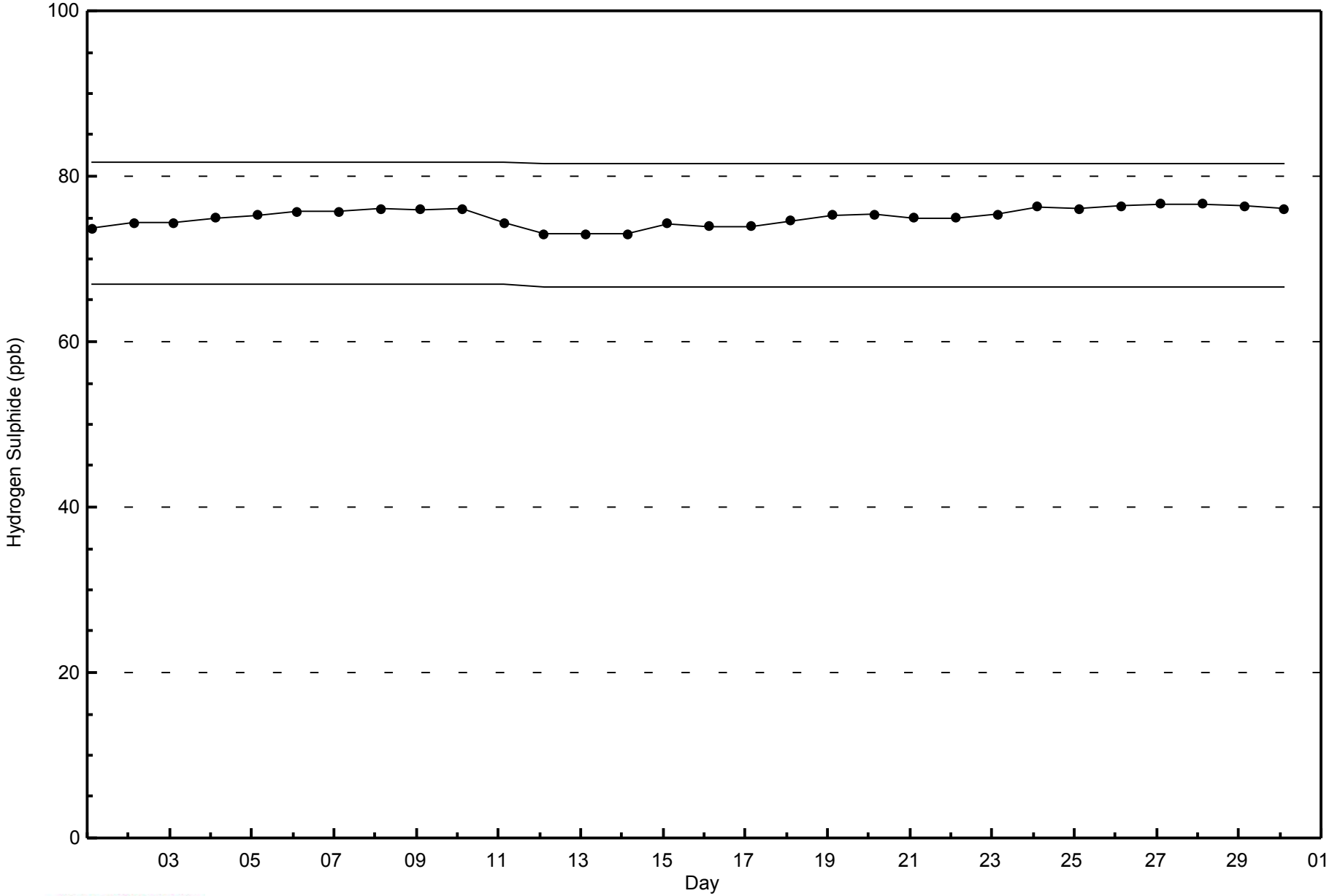
AURORA
ATMOSPHERICS INC.

WBEA NETWORK

Span Responses

Hydrogen Sulphide (H_2S) - ppb

Cenovus - Christina Lake - April 2014



AURORA ATMOSPHERICS INC.

Wood Buffalo Environmental Association

Summary of Hour Averages

Nitrogen Oxide (NO) - ppb

Cenovus - Christina Lake - April 2014

Maximum Value: 30 ppb on Apr 1 23:00

Maximum Daily Average: 7.1 ppb on Apr 2

Minimum Value: 0 ppb on Apr 21 01:00

Minimum Daily Average: 0.4 ppb on Apr 23

Maximum Diurnal Average: 3.3 ppb at hour 9

Minimum Diurnal Average: 0.8 ppb at hour 5

Monthly Average: 1.7 ppb

Percentiles: $P_1 = 0$ $P_{10} = 0$ $Q_1 = 0$ Median = 1 $Q_3 = 1$ $P_{90} = 4$ $P_{99} = 15$

Hours in Service:	720
Hours of Data:	681
Hours of Missing Data:	39
Hours of Calibration:	37
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-Apr	1	Z	1	1	1	1	2	2	3	2	9	4	7	5	3	4	4	1	2	5	7	15	30	15	5.4	30
2-Apr	11	Z	3	4	3	7	9	11	9	6	5	6	7	3	2	4	3	1	3	12	17	10	12	14	7.1	17
3-Apr	6	Z	2	4	4	1	12	25	29	13	5	5	5	3	4	5	1	1	8	6	2	2	2	3	6.5	29
4-Apr	4	Z	4	4	1	1	4	5	4	4	3	1	1	1	1	13	12	4	8	8	4	1	1	1	3.9	13
5-Apr	4	Z	2	2	1	1	1	3	7	3	2	1	1	4	5	5	3	1	1	1	1	1	1	1	2.2	7
6-Apr	1	Z	1	1	1	1	2	1	1	2	2	1	1	1	1	1	1	1	1	1	1	1	1	1	1.0	2
7-Apr	1	Z	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	0.8	1
8-Apr	1	Z	1	1	1	1	2	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1.0	2
9-Apr	1	Z	1	1	1	1	1	2	2	7	C	C	C	C	C	C	C	1	1	9	1	0	0	0	--	9
10-Apr	0	Z	0	0	0	0	0	1	8	M	M	4	7	3	2	3	1	1	1	0	0	0	0	0	1.6	8
11-Apr	0	Z	0	0	0	1	1	0	1	1	1	1	1	1	1	1	1	1	1	1	0	0	1	1	0.6	1
12-Apr	0	Z	1	1	1	2	5	5	4	6	4	4	4	8	5	4	2	1	0	0	1	0	0	0	2.6	8
13-Apr	1	Z	1	1	2	9	16	4	5	4	5	3	3	2	3	3	1	1	1	1	0	0	0	0	2.9	16
14-Apr	0	Z	1	0	1	1	2	2	2	2	2	1	2	1	1	2	1	0	0	0	0	0	0	0	1.0	2
15-Apr	0	Z	0	0	0	1	1	1	1	1	1	1	0	1	1	1	1	0	0	0	0	1	0	1	0.6	1
16-Apr	0	Z	0	1	0	1	1	1	1	1	3	1	2	1	2	1	1	1	0	0	0	0	0	0	0.8	3
17-Apr	0	Z	0	0	0	1	1	1	1	1	2	2	3	1	0	1	1	0	0	0	0	0	0	0	0.8	3
18-Apr	0	Z	0	0	0	0	0	0	1	0	1	1	0	1	0	1	1	1	0	0	0	0	0	0	0.5	1
19-Apr	0	Z	0	0	0	1	2	1	1	1	1	1	0	0	1	1	1	0	0	0	0	0	0	0	0.6	2
20-Apr	0	Z	0	0	0	0	0	1	2	3	2	1	0	0	1	2	1	1	0	0	0	0	0	0	0.8	3
21-Apr	0	Z	0	0	1	0	1	1	0	1	1	0	1	1	0	1	1	0	0	0	0	0	0	1	0.5	1
22-Apr	1	Z	0	0	0	1	2	1	1	0	1	0	0	1	1	0	0	0	0	0	0	0	0	0	0.5	2
23-Apr	0	Z	0	0	0	0	0	0	0	0	1	1	0	0	0	0	0	0	0	0	0	0	0	0	0.4	1
24-Apr	0	Z	0	0	0	1	1	1	1	1	1	1	1	1	1	1	1	1	0	0	0	0	0	0	0.5	1
25-Apr	0	Z	0	0	0	1	3	2	1	1	1	1	1	1	1	1	1	1	1	0	0	1	0	0	0.9	3
26-Apr	0	Z	0	0	0	1	1	1	1	0	0	0	0	1	0	1	1	1	1	0	0	0	1	1	0.5	1
27-Apr	0	Z	0	1	0	1	1	1	1	1	1	1	0	1	0	1	1	1	0	0	0	0	0	0	0.6	1
28-Apr	0	Z	0	0	0	0	1	5	6	1	3	1	1	1	0	1	1	1	1	0	0	0	0	1	1.2	6
29-Apr	0	Z	0	0	0	1	1	1	1	2	2	4	2	1	2	3	1	0	0	0	0	0	1	0	1.1	4
30-Apr	1	Z	1	1	1	6	9	6	3	1	1	0	1	0	0	1	0	0	0	0	0	0	0	0	1.5	9
	1.2	--	0.8	0.9	0.8	1.5	2.8	3.0	3.3	2.4	2.1	1.7	1.9	1.6	1.4	2.1	1.6	0.8	1.1	1.7	1.4	1.3	1.9	1.5	Diurnal Average	
	11	--	4	4	4	9	16	25	29	13	9	6	7	8	5	13	12	4	8	12	17	15	30	15	Diurnal Maximum	

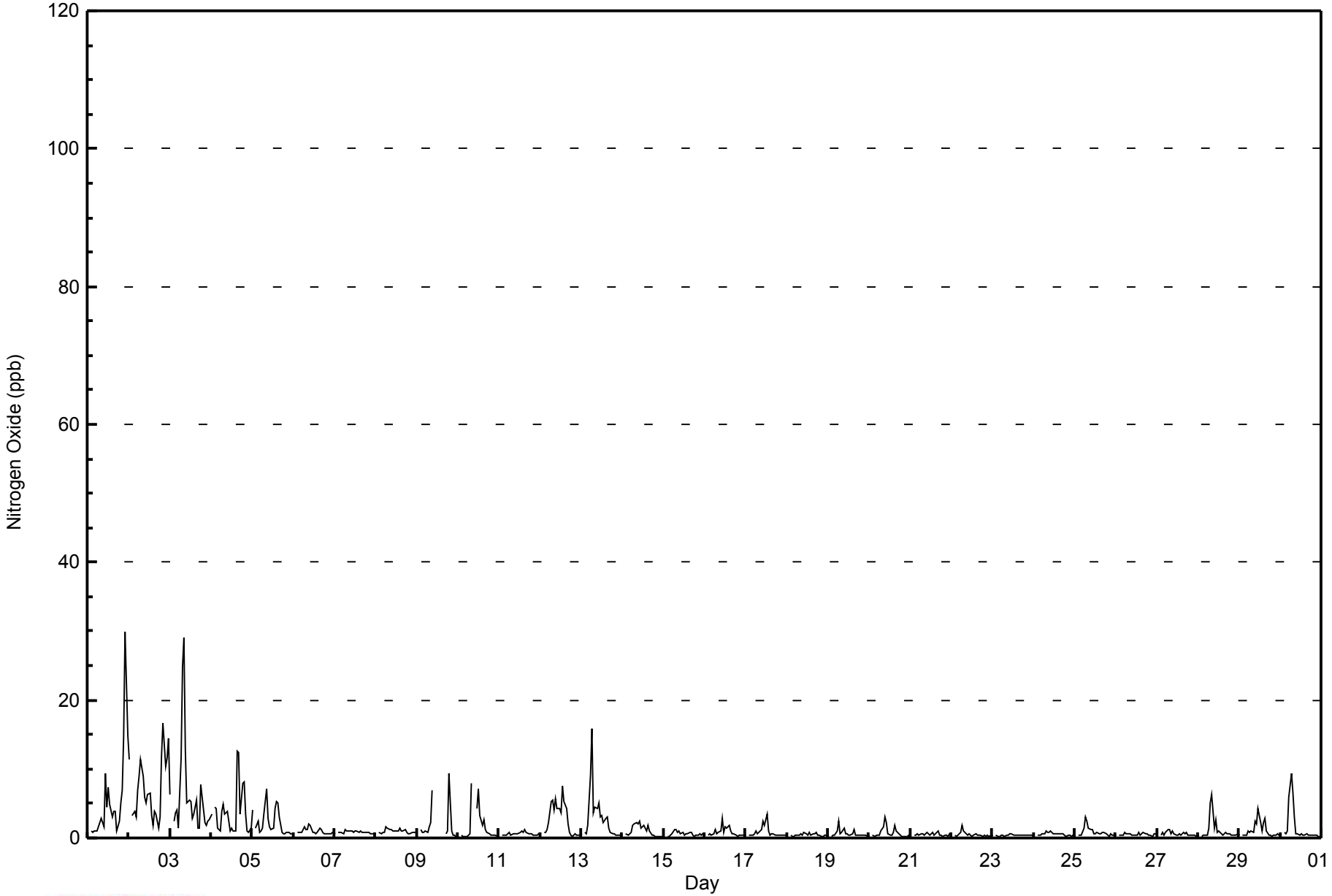
Z - zerospan C - Calibration M - Maintenance

WBEA NETWORK

Hourly Averages

Nitrogen Oxide (NO) - ppb

Cenovus - Christina Lake - April 2014



AURORA ATMOSPHERICS INC.

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

WBEA NETWORK

Frequency Distribution

Nitrogen Oxide (NO) - ppb

Cenovus - Christina Lake - April 2014

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	50	82	66	68	45	38	43	30	48	49	18	34	17	18	33	664
21 - 40	1	1	1	0	0	0	0	0	0	0	0	0	0	0	0	0	3
11 - 80	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
81 - 159	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
> 159	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Totals	26	51	83	66	68	45	38	43	30	48	49	18	34	17	18	33	667

Total Number of Valid Hours: 667

Total Number of Hours: 720

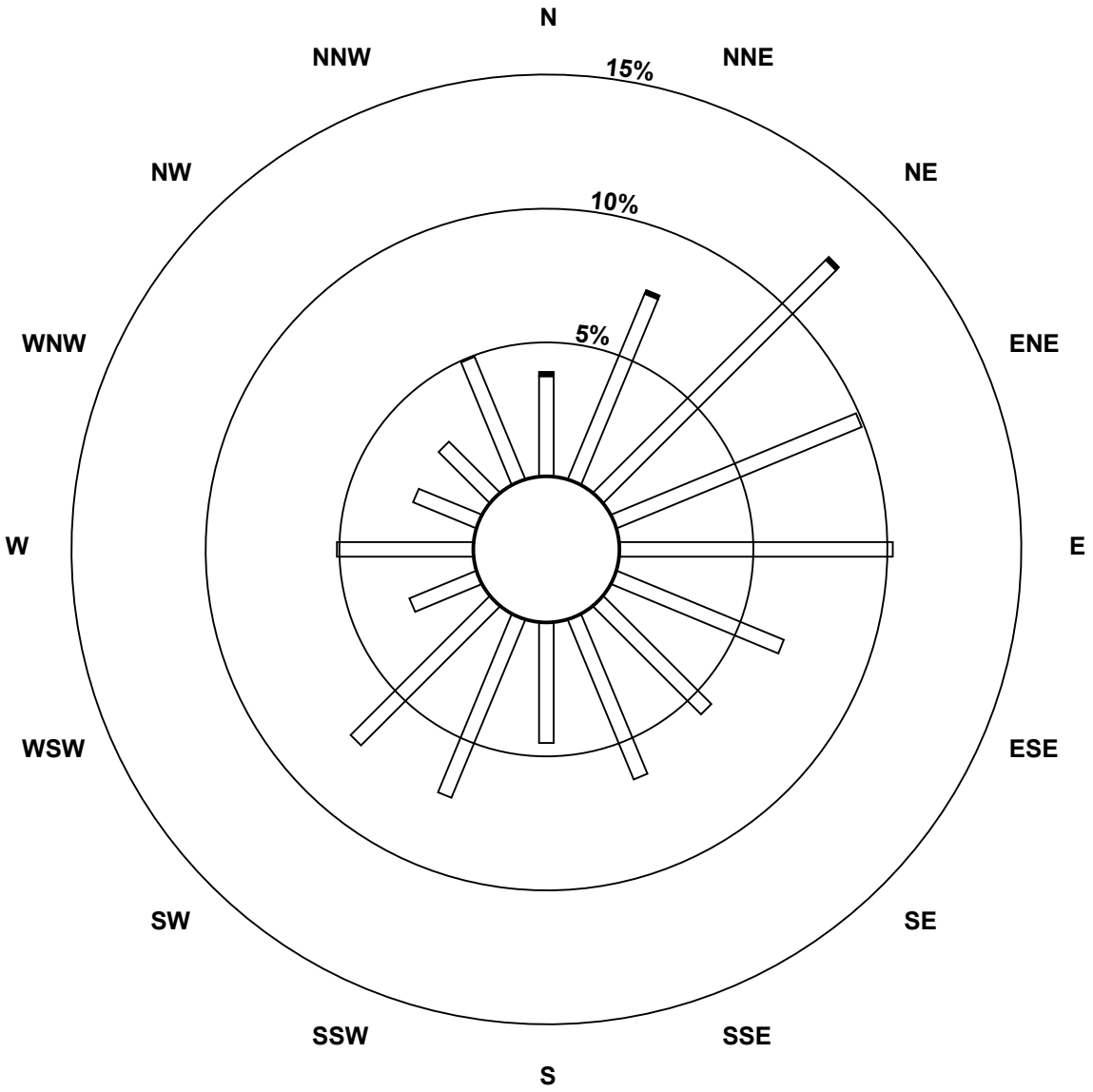
AURORA ATMOSPHERICS INC.

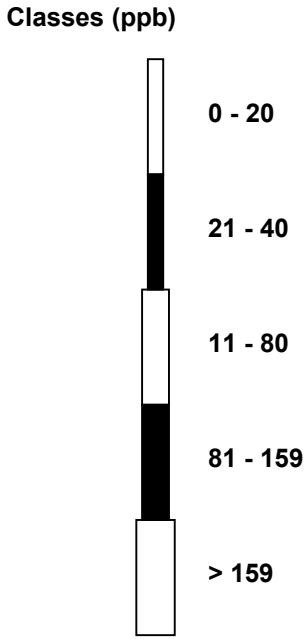
Wood Buffalo Environmental Association

Wind Rose Apr 2014

Nitrogen Oxide (NO) - ppb

Cenovus - Christina Lake (AMS500)





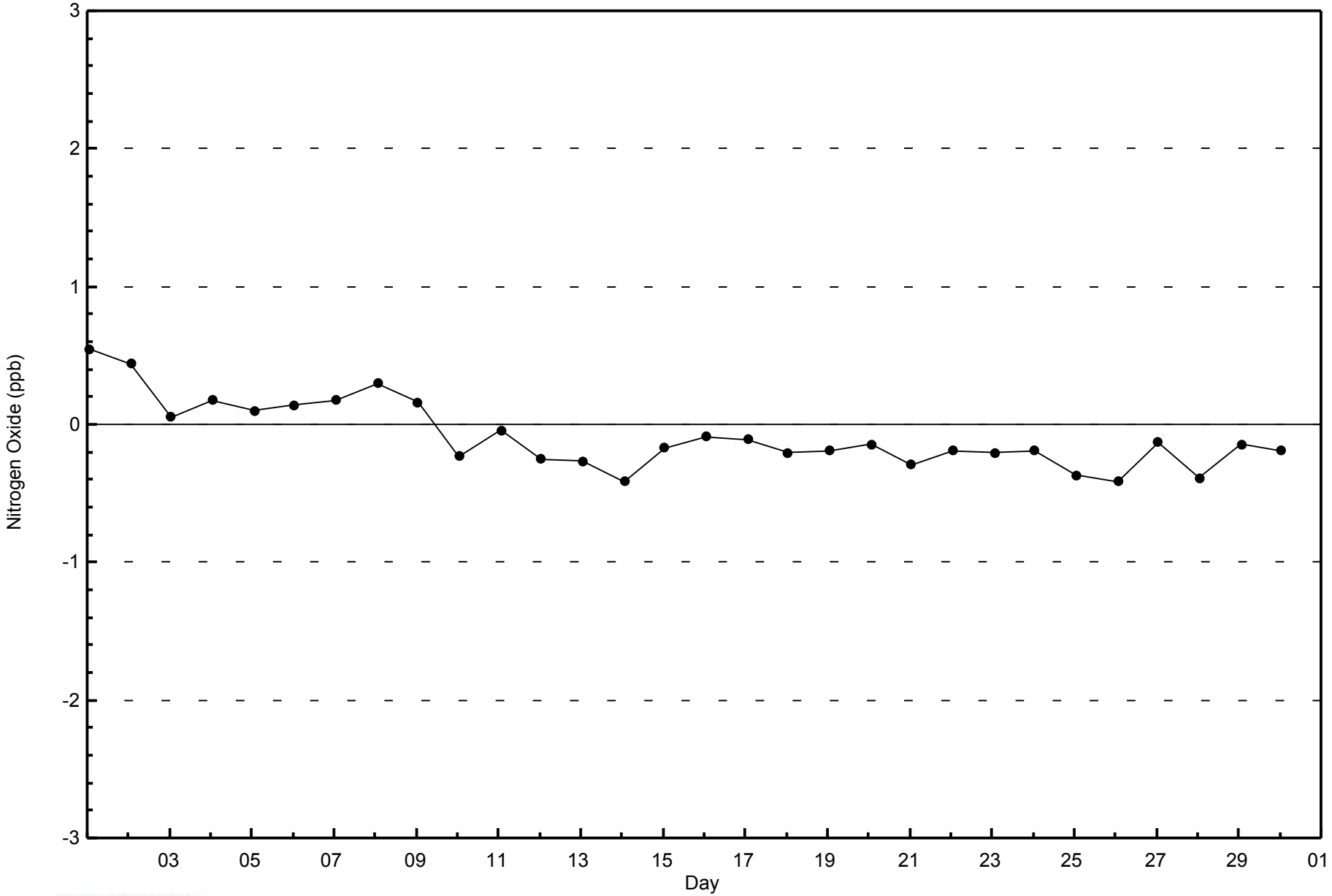
Total Number of Valid Hours: 667

WBEA NETWORK

Zero Responses

Nitrogen Oxide (NO) - ppb

Cenovus - Christina Lake - April 2014



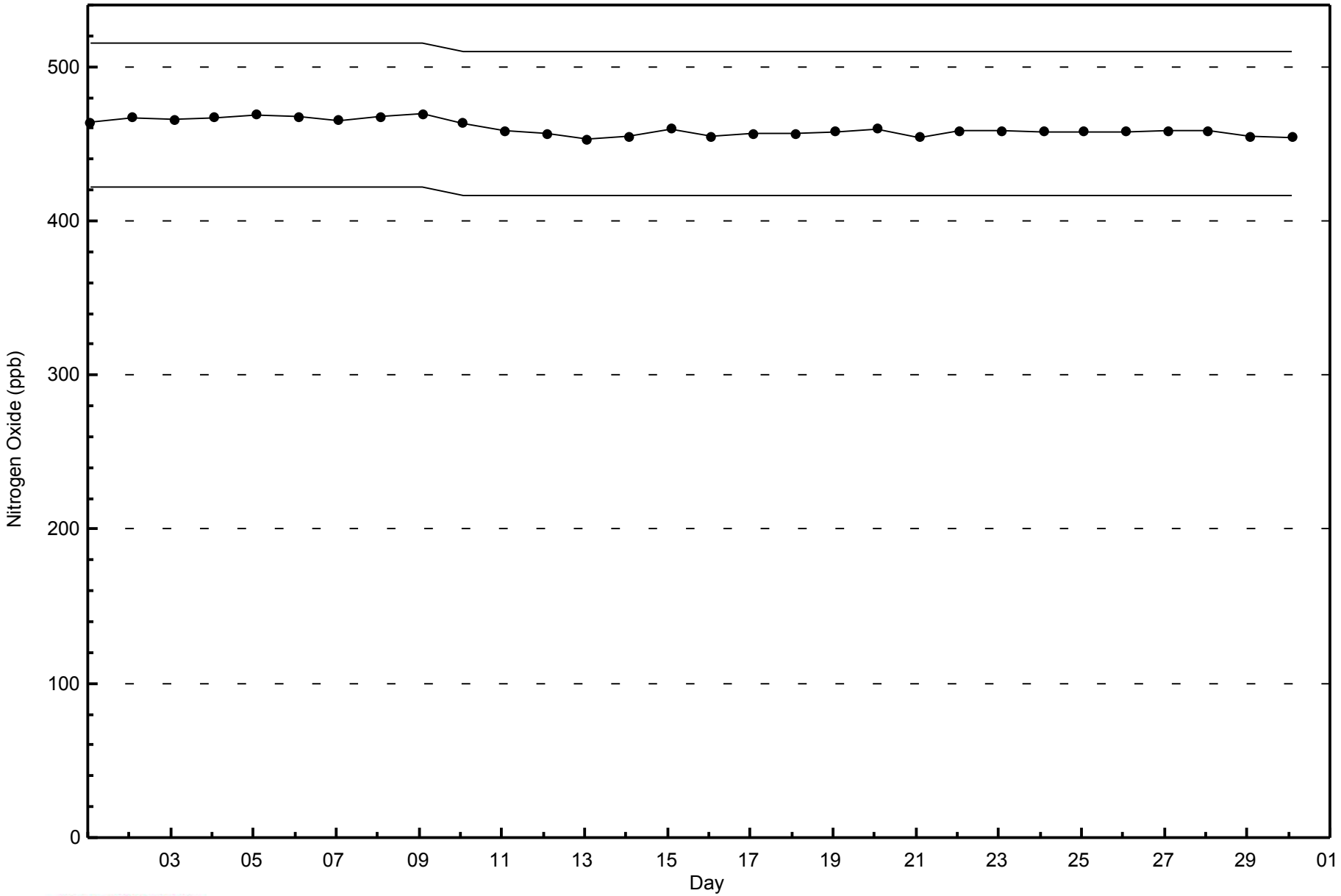
AURORA ATMOSPHERICS INC.

WBEA NETWORK

Span Responses

Nitrogen Oxide (NO) - ppb

Cenovus - Christina Lake - April 2014



AURORA ATMOSPHERICS INC.

Wood Buffalo Environmental Association

Summary of Hour Averages

Nitrogen Dioxide (NO_2) - ppb

Cenovus - Christina Lake - April 2014

Number of Exceedences (AAAQO): 1-hr: 0 24-hr: 0
Maximum Value: 32 ppb on Apr 1 23:00 Maximum Daily Average: 10.0 ppb on Apr 2

Minimum Value: 0 ppb on Apr 7 12:00 Minimum Daily Average: 0.6 ppb on Apr 23
Maximum Diurnal Average: 4.9 ppb at hour 7 Minimum Diurnal Average: 1.5 ppb at hour 18
Monthly Average: 2.7 ppb Percentiles: $P_1 = 0$ $P_{10} = 0$ $Q_1 = 1$ Median = 2 $Q_3 = 4$ $P_{90} = 6$ $P_{99} = 19$

Hours in Service:	720
Hours of Data:	681
Hours of Missing Data:	39
Hours of Calibration:	37
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-Apr	2	Z	1	1	1	4	5	6	6	2	10	6	7	5	3	4	5	2	6	14	13	20	32	19	7.6	32
2-Apr	18	Z	5	11	7	21	18	19	13	9	6	6	5	3	2	4	4	3	9	22	15	10	11	12	10.0	22
3-Apr	8	Z	4	4	5	4	14	13	12	5	3	3	4	2	3	4	1	1	12	12	4	2	3	4	5.6	14
4-Apr	5	Z	8	6	3	2	6	7	6	6	3	1	2	2	2	15	15	6	13	13	9	2	2	5	6.1	15
5-Apr	7	Z	5	8	4	5	5	8	13	5	2	1	3	5	6	8	6	1	1	1	2	3	2	1	4.3	13
6-Apr	1	Z	0	0	1	2	2	1	1	2	2	1	1	1	1	4	2	1	0	0	1	1	0	1	1.0	4
7-Apr	1	Z	6	1	1	1	4	1	0	0	0	0	0	0	0	0	0	0	0	1	0	0	0	0	0.7	6
8-Apr	0	Z	1	3	4	5	7	4	1	1	1	1	0	1	1	0	1	1	1	0	0	0	0	0	1.4	7
9-Apr	0	Z	1	0	1	1	1	2	3	8	C	C	C	C	C	C	C	1	3	14	4	1	3	1	--	14
10-Apr	0	Z	0	1	1	2	2	2	9	M	M	7	9	5	4	6	5	3	3	5	4	1	1	1	3.4	9
11-Apr	1	Z	0	0	0	1	1	1	1	0	0	0	1	1	1	1	1	1	1	1	1	1	1	2	0.8	2
12-Apr	1	Z	3	3	4	7	10	9	5	5	4	4	4	8	7	7	4	2	1	1	3	3	4	6	4.5	10
13-Apr	3	Z	2	3	8	26	23	6	5	4	5	3	3	2	3	3	2	2	2	4	4	2	1	2	5.1	26
14-Apr	2	Z	10	8	11	5	5	5	3	2	3	2	2	2	2	3	2	2	2	3	1	1	1	2	3.3	11
15-Apr	0	Z	1	1	1	1	1	2	2	2	1	1	1	1	1	1	1	1	1	2	1	2	2	2	1.1	2
16-Apr	2	Z	2	3	1	5	4	1	1	1	3	1	1	1	2	1	1	0	0	0	0	0	0	3	1.4	5
17-Apr	0	Z	2	4	3	2	3	2	2	1	2	2	3	1	1	1	1	0	1	1	3	3	4	3	2.0	4
18-Apr	3	Z	1	0	0	0	1	1	1	1	1	1	0	1	1	2	2	5	2	3	1	1	1	1	1.3	5
19-Apr	1	Z	1	1	2	3	3	1	1	1	1	1	1	1	1	3	2	1	1	1	3	4	3	4	1.7	4
20-Apr	4	Z	3	3	2	3	3	4	4	7	5	2	1	1	2	5	4	3	1	1	2	3	3	1	2.9	7
21-Apr	2	Z	2	2	2	4	2	2	1	1	2	0	1	2	1	2	2	0	0	0	6	2	3	6	1.9	6
22-Apr	4	Z	3	4	3	5	7	2	1	1	0	0	0	0	1	1	1	1	0	0	0	0	0	1	1.4	7
23-Apr	0	Z	1	1	1	1	1	0	0	1	0	0	1	1	1	1	1	1	1	1	2	0	1	1	0.6	2
24-Apr	1	Z	1	0	0	1	1	3	2	2	2	0	1	0	1	1	1	0	1	0	1	1	0	1	0.8	3
25-Apr	2	Z	3	2	1	5	6	4	2	1	1	1	1	1	0	0	1	2	1	0	0	4	1	2	1.7	6
26-Apr	2	Z	1	1	0	1	1	1	1	0	0	0	0	0	0	0	1	1	3	2	4	1	7	5	1.3	7
27-Apr	3	Z	1	5	2	1	2	4	1	1	0	0	0	0	1	1	1	1	0	1	1	0	1	0	1.1	5
28-Apr	0	Z	1	4	2	1	4	4	6	1	3	1	2	1	1	1	1	1	1	1	3	1	5	4	2.0	6
29-Apr	2	Z	2	2	2	7	3	3	1	4	3	6	4	1	3	6	2	0	0	0	2	2	3	2	2.6	7
30-Apr	2	Z	3	3	2	6	4	5	6	1	1	0	1	1	0	2	1	1	1	1	1	0	1	1	1.9	6
	2.5	--	2.4	2.7	2.5	4.4	4.9	4.0	3.6	2.5	2.2	1.7	2.0	1.7	1.6	2.9	2.4	1.5	2.2	3.6	3.0	2.5	3.2	3.1	Diurnal Average	
	18	--	10	11	11	26	23	19	13	9	10	7	9	8	7	15	15	6	13	22	15	20	32	19	Diurnal Maximum	

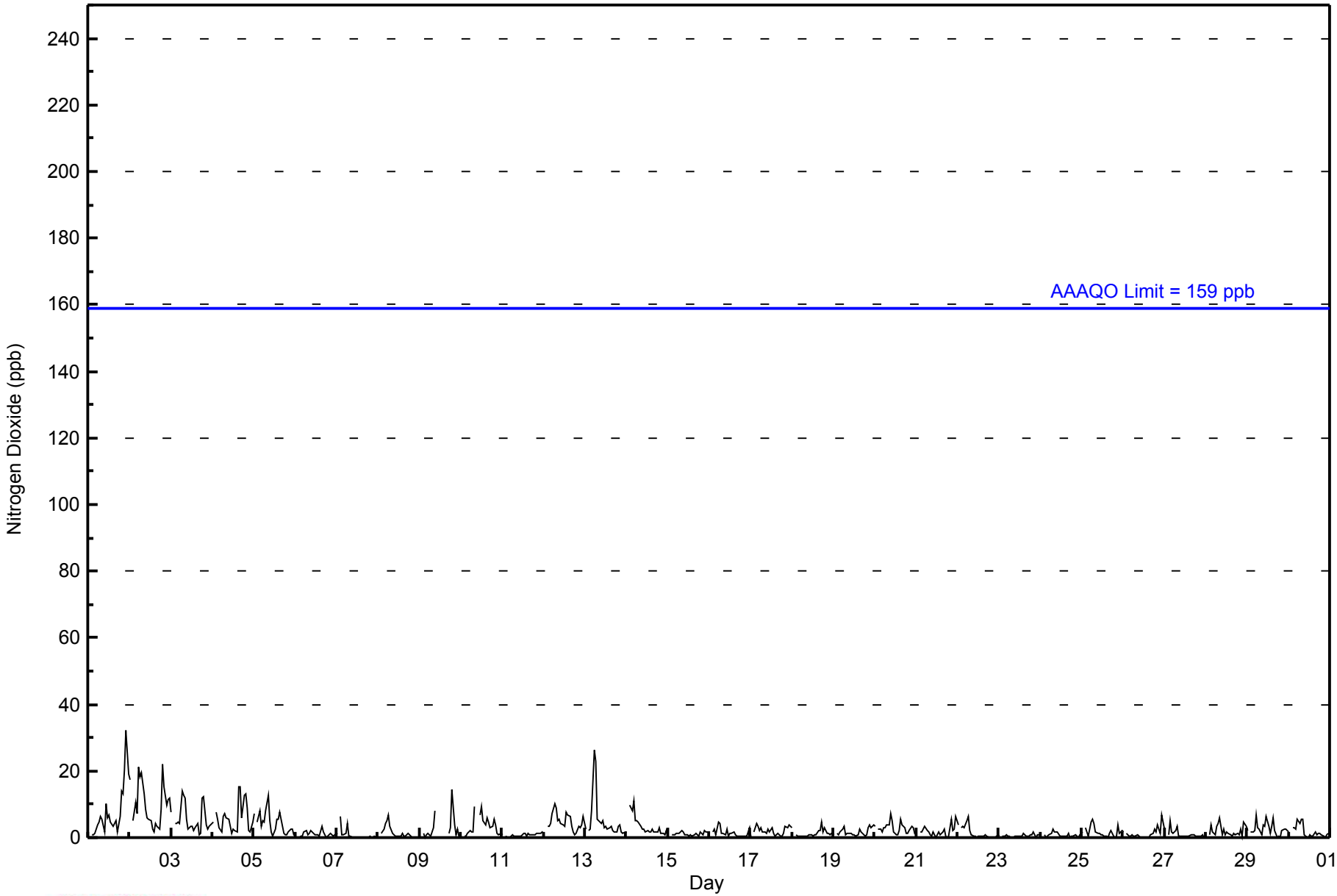
Z - zerospan C - Calibration M - Maintenance
Alberta Ambient Air Quality Objectives (AAAQO): 1-hr 159 ppb

WBEA NETWORK

Hourly Averages

Nitrogen Dioxide (NO_2) - ppb

Cenovus - Christina Lake - April 2014



AURORA ATMOSPHERICS INC.

Concentration Ranges (ppb)	Number of Hours	%	Cumulative %
0 - 20	676	99.27	99.27
21 - 40	5	0.73	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

WBEA NETWORK

Frequency Distribution

Nitrogen Dioxide (NO_2) - ppb

Cenovus - Christina Lake - April 2014

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	50	82	66	68	45	38	43	30	48	49	18	34	17	16	33	662
21 - 40	1	1	1	0	0	0	0	0	0	0	0	0	0	0	2	0	5
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	26	51	83	66	68	45	38	43	30	48	49	18	34	17	18	33	667

Total Number of Valid Hours: 667

Total Number of Hours: 720

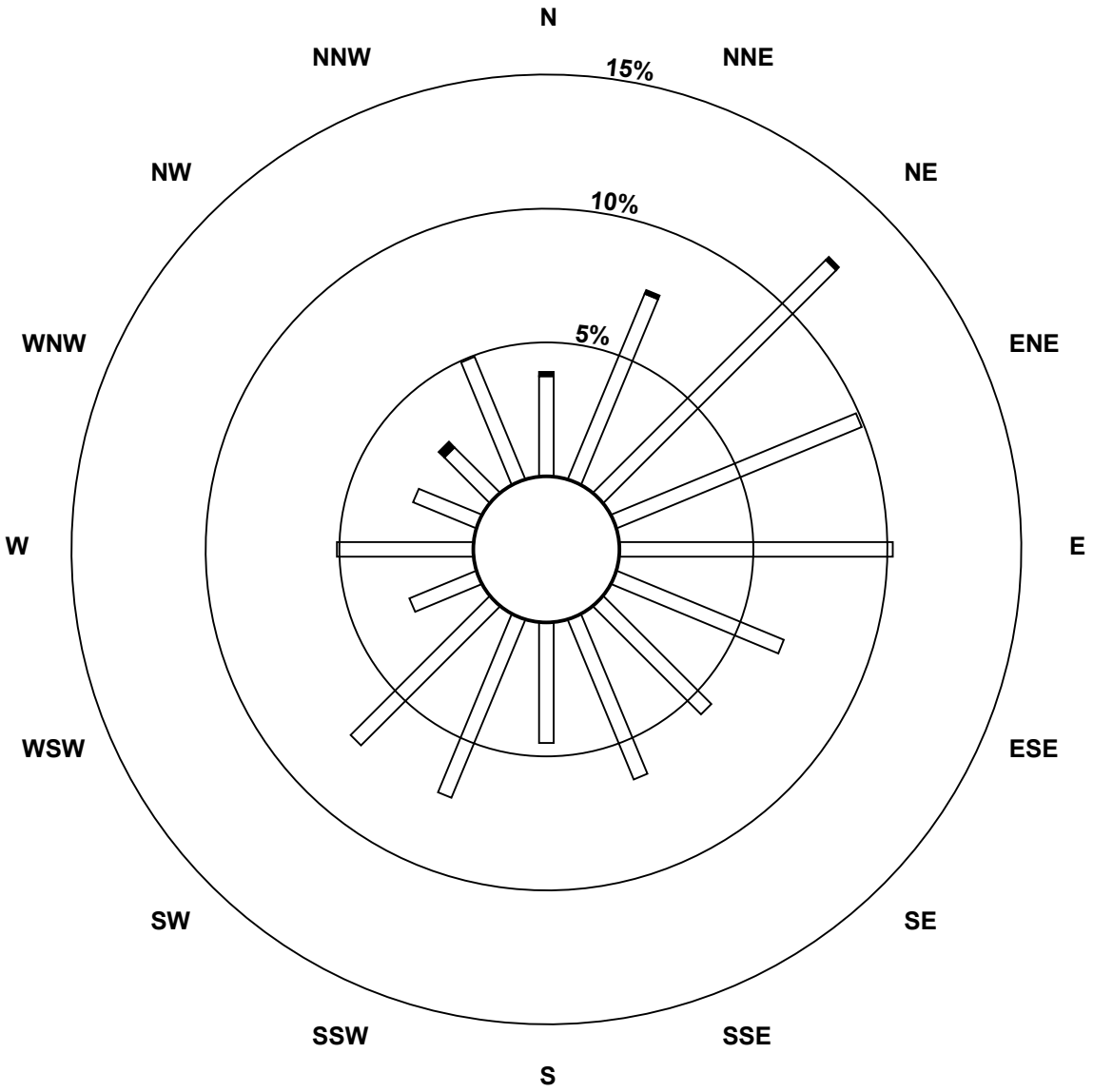
AURORA ATMOSPHERICS INC.

Wood Buffalo Environmental Association

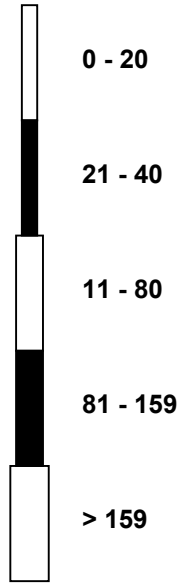
Wind Rose Apr 2014

Nitrogen Dioxide (NO_2) - ppb

Cenovus - Christina Lake (AMS500)



Classes (ppb)



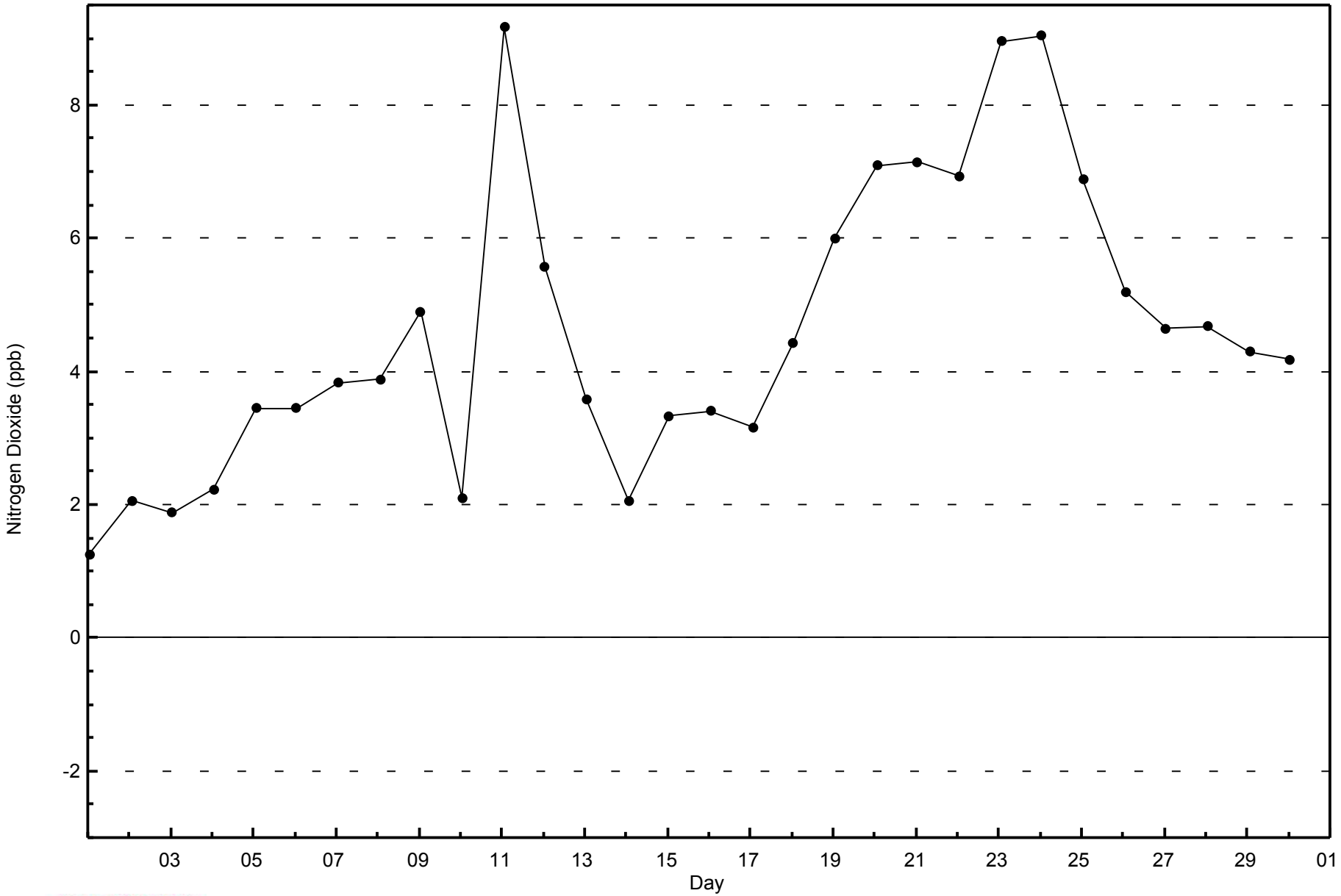
Total Number of Valid Hours: 667

WBEA NETWORK

Zero Responses

Nitrogen Dioxide (NO_2) - ppb

Cenovus - Christina Lake - April 2014



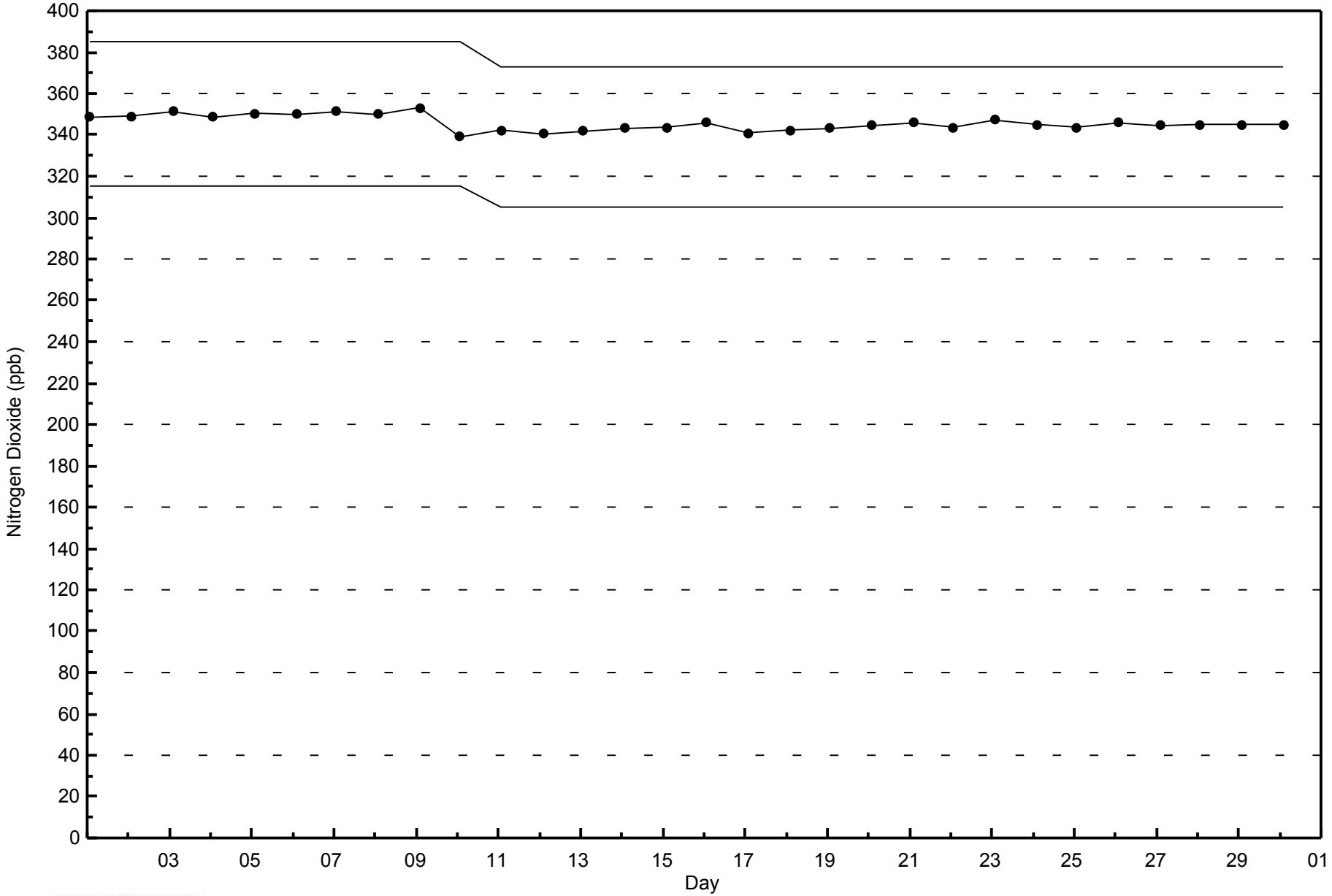
AURORA ATMOSPHERICS INC.

WBEA NETWORK

Span Responses

Nitrogen Dioxide (NO_2) - ppb

Cenovus - Christina Lake - April 2014



AURORA ATMOSPHERICS INC.

Wood Buffalo Environmental Association

Summary of Hour Averages

NOx (NO_X) - ppb

Cenovus - Christina Lake - April 2014

Maximum Value: 62 ppb on Apr 1 23:00

Maximum Daily Average: 17.1 ppb on Apr 2

Minimum Value: 0 ppb on Apr 24 23:00

Minimum Daily Average: 1.0 ppb on Apr 23

Maximum Diurnal Average: 7.7 ppb at hour 7

Minimum Diurnal Average: 2.3 ppb at hour 18

Monthly Average: 4.4 ppb

Percentiles: $P_1 = 0$ $P_{10} = 1$ $Q_1 = 1$ Median = 2 $Q_3 = 5$ $P_{90} = 10$ $P_{99} = 34$

Hours in Service:	720
Hours of Data:	681
Hours of Missing Data:	39
Hours of Calibration:	37
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-Apr	2	Z	2	2	2	5	6	9	8	3	19	11	14	10	6	8	9	3	9	19	20	35	62	34	13.0	62
2-Apr	29	Z	8	15	10	28	27	31	22	14	11	12	12	6	4	8	7	4	12	34	32	20	23	26	17.1	34
3-Apr	14	Z	7	8	9	6	26	37	41	18	8	9	9	5	7	10	2	3	19	18	6	4	6	7	12.1	41
4-Apr	8	Z	12	10	4	3	10	12	10	10	6	2	4	3	3	28	28	10	21	22	12	3	3	6	9.9	28
5-Apr	11	Z	6	11	4	6	6	12	20	8	3	2	4	10	11	13	9	2	1	1	2	3	3	2	6.5	20
6-Apr	1	Z	1	1	1	2	4	2	3	4	3	2	2	1	1	5	3	2	1	1	2	2	1	2	2.0	5
7-Apr	2	Z	7	2	1	2	5	2	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1.6	7
8-Apr	1	Z	2	3	5	6	8	5	2	2	2	1	1	2	3	1	2	2	2	1	1	1	1	1	2.4	8
9-Apr	1	Z	2	1	2	2	1	3	5	15	C	C	C	C	C	C	C	2	4	24	5	1	3	1	--	24
10-Apr	0	Z	1	1	2	2	2	2	17	M	M	11	16	8	6	8	6	4	4	6	5	2	1	1	5.0	17
11-Apr	1	Z	1	0	0	1	2	1	1	1	1	1	2	2	1	3	2	1	1	2	2	2	2	2	1.4	3
12-Apr	2	Z	4	4	5	9	15	14	9	11	8	8	7	15	12	11	6	2	1	1	4	3	4	7	7.2	15
13-Apr	3	Z	3	3	10	35	39	9	10	9	10	6	7	5	6	6	4	3	2	4	4	2	2	2	8.0	39
14-Apr	2	Z	10	9	12	6	7	7	6	4	5	3	4	3	3	4	3	2	2	3	2	2	1	2	4.4	12
15-Apr	1	Z	1	1	1	2	3	3	3	3	1	1	1	1	1	2	2	1	1	2	1	3	2	2	1.7	3
16-Apr	2	Z	2	3	1	5	5	2	2	2	5	1	3	2	3	2	1	1	1	1	1	1	1	3	2.2	5
17-Apr	0	Z	2	5	4	3	4	3	3	2	5	4	7	2	1	1	2	1	1	2	4	3	4	4	2.8	7
18-Apr	3	Z	1	1	1	1	1	1	1	1	2	1	1	2	1	3	3	5	2	3	1	1	1	2	1.7	5
19-Apr	1	Z	2	1	2	4	6	2	2	3	2	2	1	1	1	4	2	2	1	1	3	4	3	4	2.4	6
20-Apr	4	Z	3	3	2	3	4	5	6	10	7	2	1	1	3	7	5	4	2	2	2	4	3	2	3.7	10
21-Apr	2	Z	2	2	3	4	3	2	1	1	2	0	1	2	1	3	3	1	1	1	6	3	3	7	2.4	7
22-Apr	4	Z	3	4	4	6	8	3	2	1	1	1	0	1	1	1	1	1	0	0	0	0	0	1	1.9	8
23-Apr	1	Z	1	1	1	1	1	1	1	1	1	1	1	1	2	1	1	1	1	1	2	1	1	1	1.0	2
24-Apr	1	Z	1	1	1	1	2	3	2	2	2	1	1	1	1	1	2	1	1	1	1	1	0	1	1.3	3
25-Apr	2	Z	3	2	1	6	9	7	3	2	2	1	2	1	1	1	2	3	1	0	1	4	2	2	2.6	9
26-Apr	2	Z	2	1	1	2	1	1	1	1	1	0	0	1	1	1	2	2	3	2	4	1	7	5	1.8	7
27-Apr	3	Z	1	6	2	2	4	5	1	2	1	1	1	1	1	2	1	2	1	1	1	1	1	0	1.7	6
28-Apr	1	Z	1	4	2	1	5	9	12	2	5	2	3	2	1	1	2	1	2	1	3	1	5	4	3.1	12
29-Apr	2	Z	2	2	2	8	4	4	2	6	5	11	6	2	5	9	3	1	1	1	2	3	3	3	3.8	11
30-Apr	3	Z	4	4	3	12	14	12	9	2	1	1	1	1	1	3	2	2	2	1	1	1	1	2	3.4	14
	3.7	--	3.3	3.6	3.3	5.8	7.7	6.9	6.9	4.9	4.4	3.4	3.9	3.3	3.0	5.1	3.9	2.3	3.3	5.2	4.4	3.8	5.0	4.5	Diurnal Average	
	29	--	12	15	12	35	39	37	41	18	19	12	16	15	12	28	28	10	21	34	32	35	62	34	Diurnal Maximum	

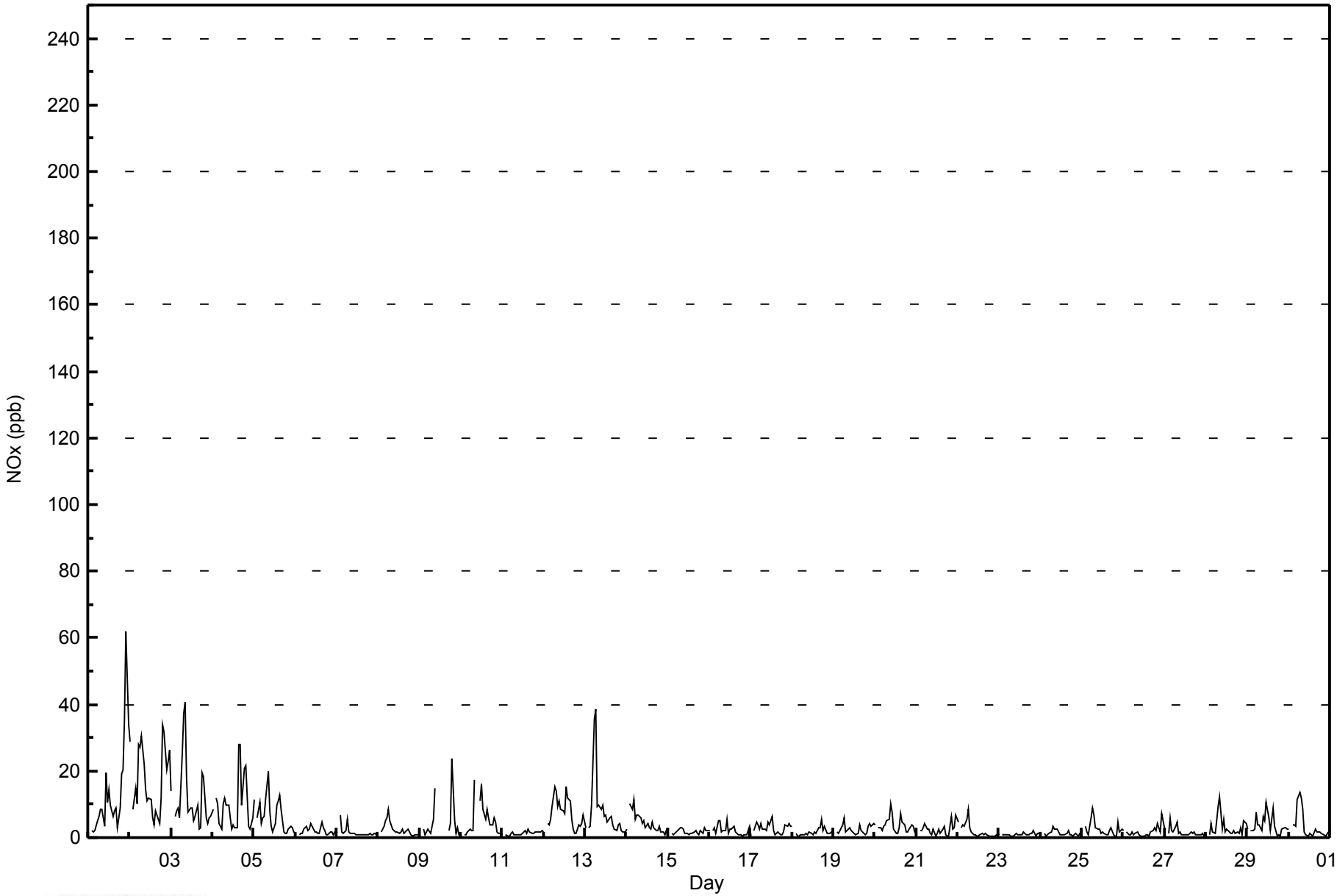
Z - zerospan C - Calibration M - Maintenance

WBEA NETWORK

Hourly Averages

NOx (NO_X) - ppb

Cenovus - Christina Lake - April 2014



AURORA ATMOSPHERICS INC.

Concentration Ranges (ppb)	Number of Hours	%	Cumulative %
0 - 20	659	96.77	96.77
21 - 40	20	2.94	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

NOx (NO_X) - ppb

Cenovus - Christina Lake - April 2014

Concentration Ranges (ppb)	Wind Direction																
	N	NNE	NE	ENE	E	ESE	SE	SSE	S	SSW	SW	WSW	W	WNW	NW	NNW	**Totals**
0 - 20	24	47	81	65	67	45	38	43	30	48	49	16	31	17	15	29	645
21 - 40	1	4	1	1	1	0	0	0	0	0	0	2	3	0	3	4	20
11 - 80	1	0	1	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	26	51	83	66	68	45	38	43	30	48	49	18	34	17	18	33	667

Total Number of Valid Hours: 667

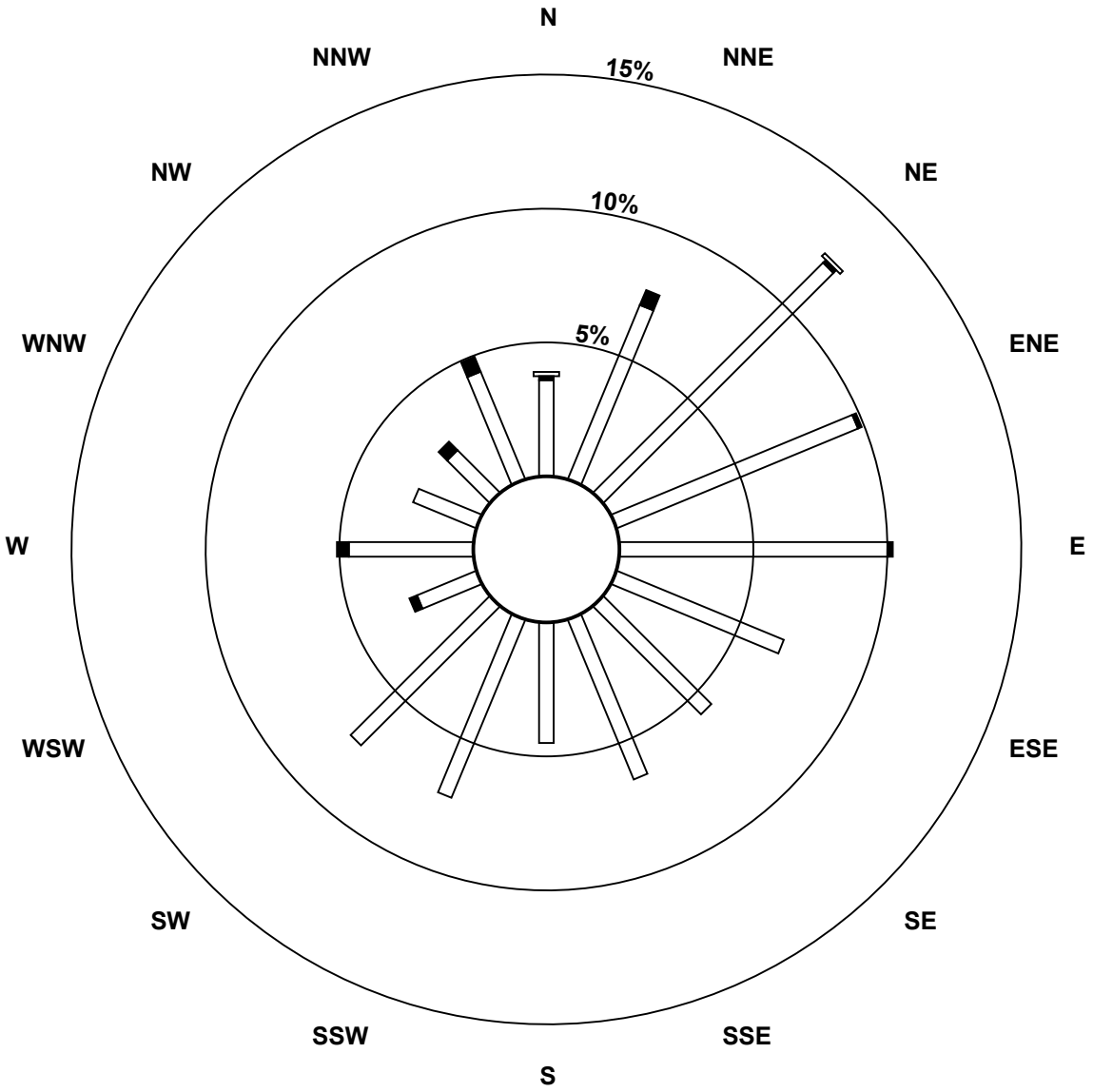
Total Number of Hours: 720

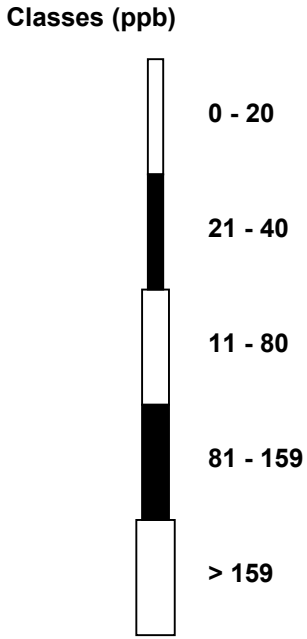
Wood Buffalo Environmental Association

Wind Rose Apr 2014

NOx (NO_X) - ppb

Cenovus - Christina Lake (AMS500)





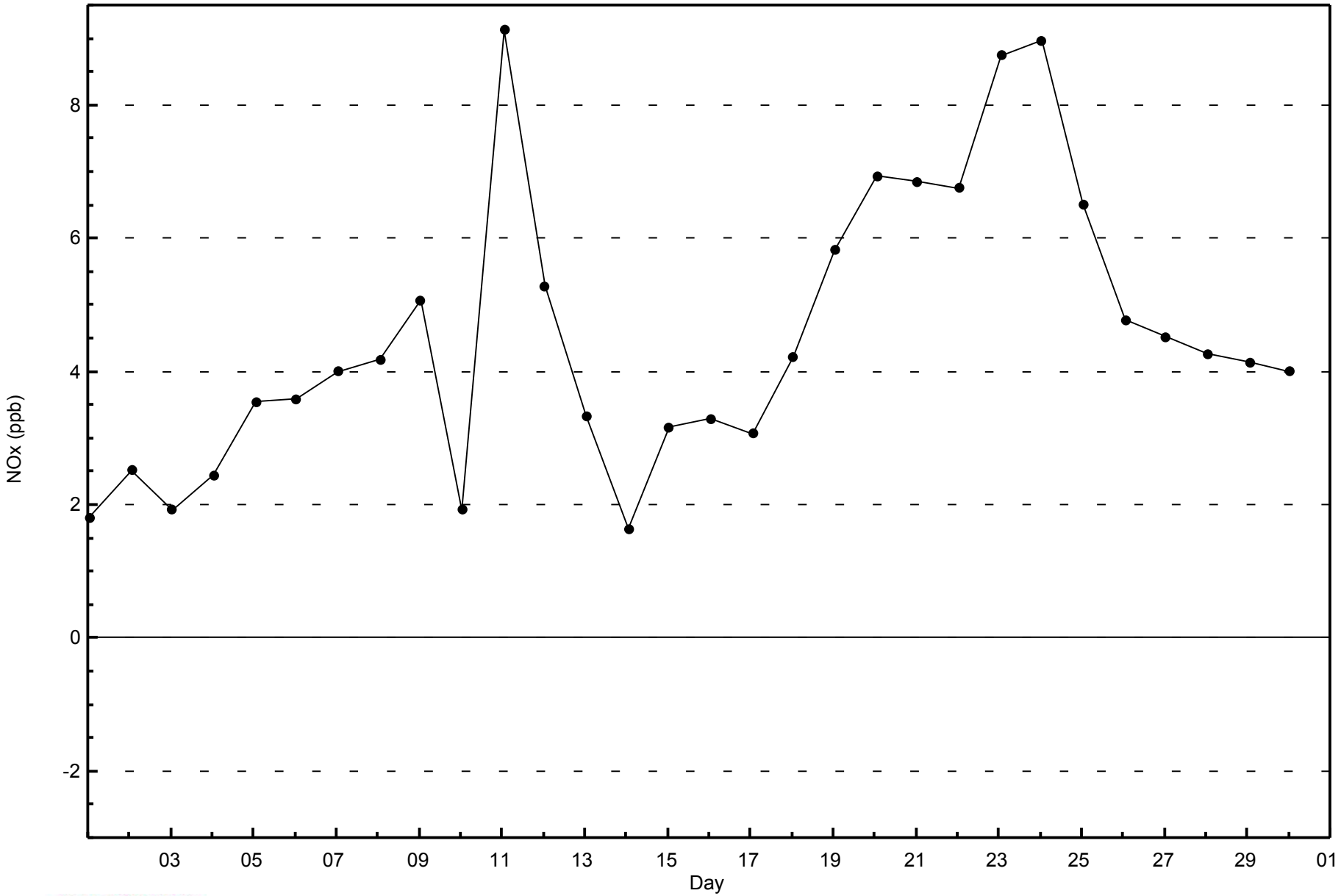
Total Number of Valid Hours: 667

Wood Buffalo Environmental Association

Zero Responses

NOx (NO_X) - ppb

Cenovus - Christina Lake - April 2014



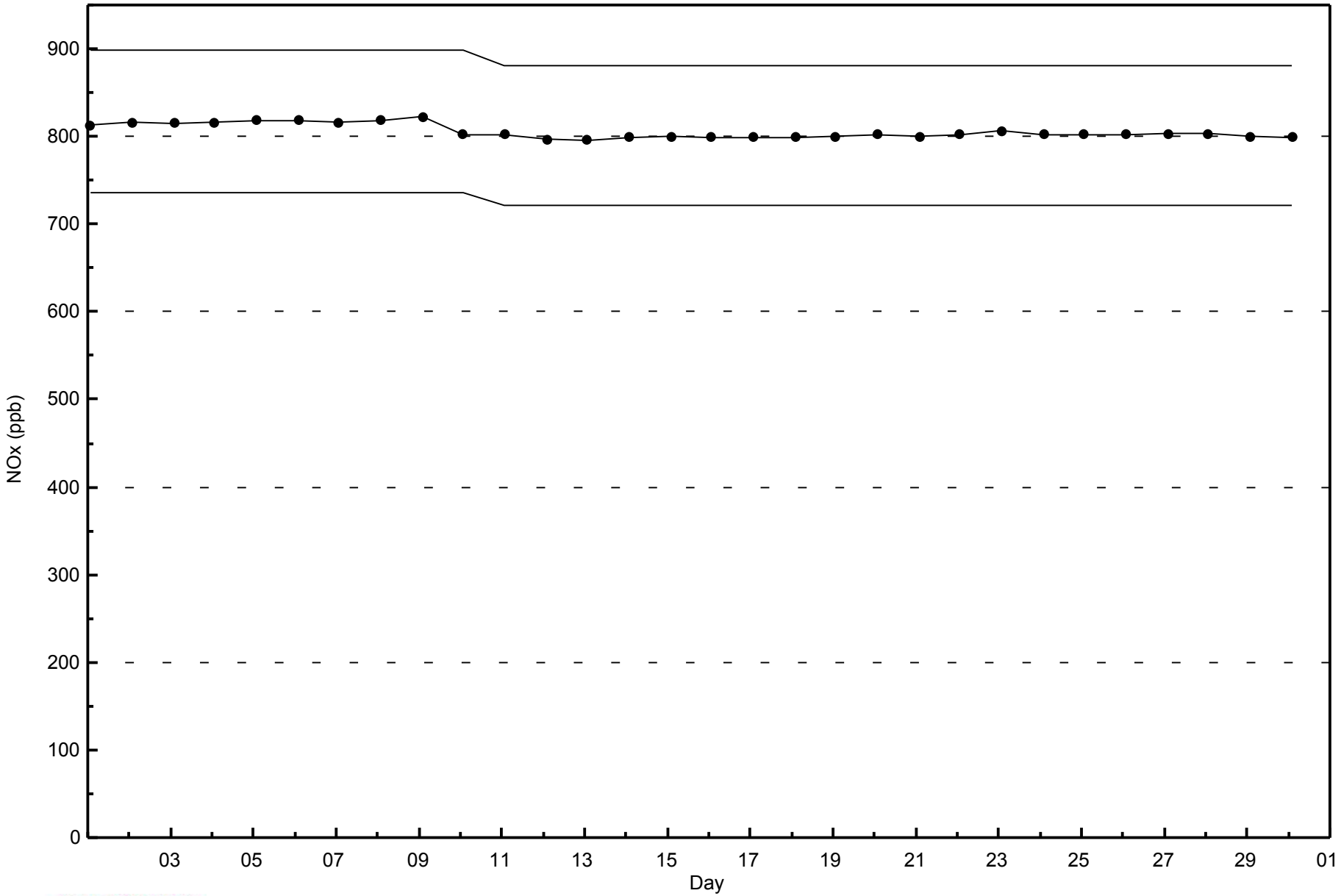
AURORA ATMOSPHERICS INC.

WBEA NETWORK

Span Responses

NOx (NO_X) - ppb

Cenovus - Christina Lake - April 2014



AURORA ATMOSPHERICS INC.

Maximum Value: 19.6 C on Apr 30 16:00

Maximum Daily Average: 11.7 C on Apr 30

Minimum Value: -13.8 C on Apr 12 06:00

Minimum Daily Average: -7.6 C on Apr 13

Maximum Diurnal Average: 5.7 C at hour 16

Minimum Diurnal Average: -3.1 C at hour 6

Monthly Average: 1.46 C

Percentiles: P_1 = -12.9 P_{10} = -7.4 Q_1 = -2.0 Median = 0.8 Q_3 = 4.9 P_{90} = 10.2 P_{99} = 18.0

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

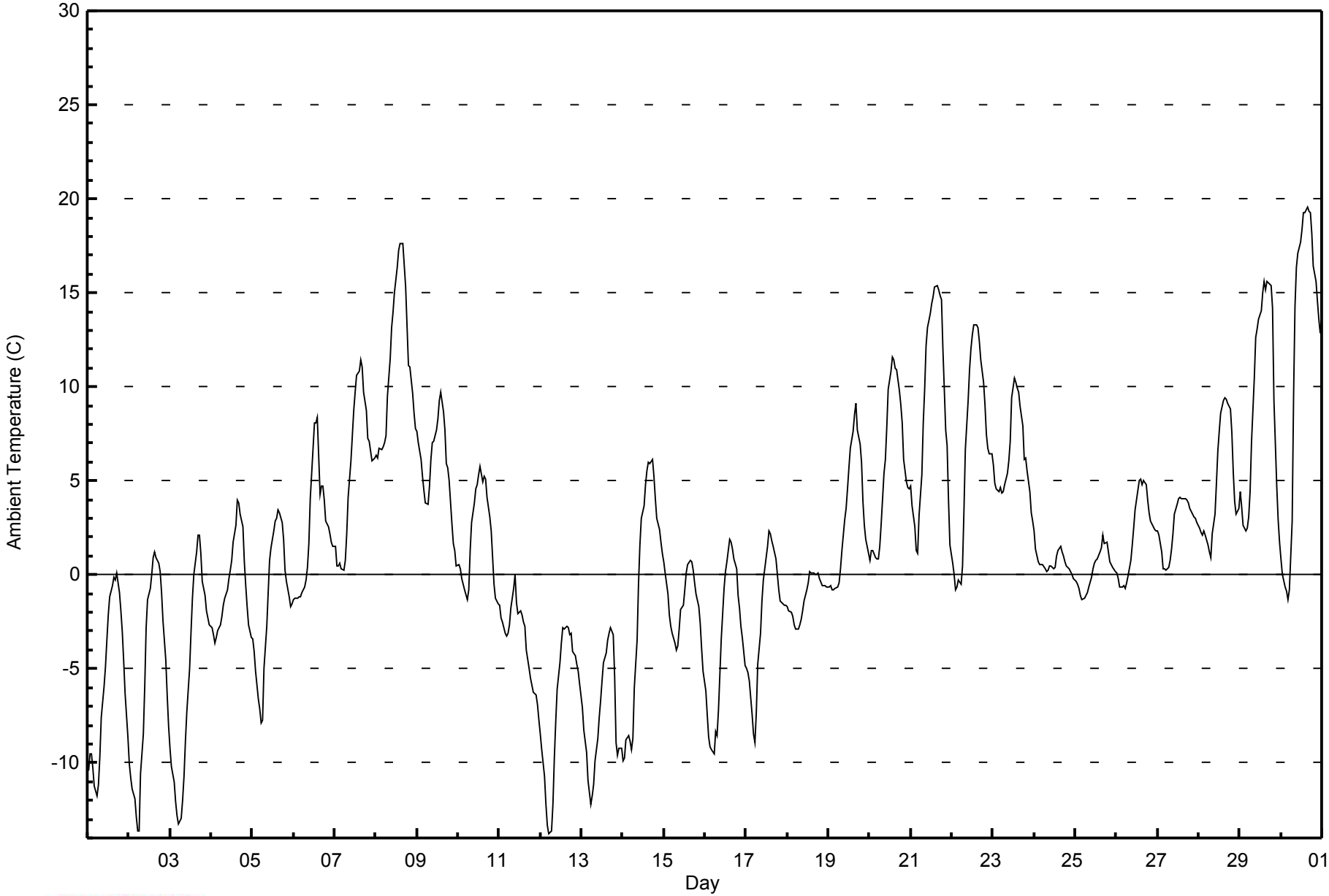
Day	Hourly Period Ending At (MST)																								Daily	Daily
	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24	Average	Maximum
1-Apr	-10.4	-9.5	-9.5	-10.3	-11.2	-11.8	-11.2	-9.7	-7.6	-6.0	-4.9	-3.5	-2.2	-1.2	-0.6	-0.2	-0.2	0.1	-0.9	-1.9	-3.0	-4.6	-6.3	-8.6	-5.6	0.1
2-Apr	-10.0	-10.8	-11.4	-11.9	-12.9	-13.6	-13.6	-10.6	-8.5	-6.0	-2.8	-1.3	-0.7	0.0	0.9	1.2	0.9	0.6	0.2	-0.9	-2.5	-4.5	-6.4	-8.1	-5.5	1.2
3-Apr	-9.3	-10.2	-11.0	-12.1	-12.8	-13.3	-12.9	-12.0	-10.7	-8.8	-7.3	-5.0	-3.0	-1.2	0.0	1.2	2.1	2.1	1.1	-0.3	-1.1	-1.9	-2.3	-2.6	-5.5	2.1
4-Apr	-2.8	-3.2	-3.6	-3.4	-3.0	-2.6	-2.2	-1.7	-1.2	-0.8	-0.2	0.2	0.8	1.7	2.6	4.0	3.8	3.2	2.5	0.7	-0.6	-1.7	-2.7	-3.3	-0.6	4.0
5-Apr	-3.4	-4.1	-5.1	-6.6	-7.1	-7.9	-7.7	-4.9	-2.7	-1.0	0.8	1.4	2.4	2.9	3.0	3.5	3.3	2.8	1.9	0.2	-0.3	-1.2	-1.7	-1.5	-1.4	3.5
6-Apr	-1.3	-1.3	-1.3	-1.2	-1.2	-1.0	-0.7	-0.3	0.4	1.6	4.1	6.7	8.1	8.0	8.4	4.3	4.7	4.7	3.9	2.8	2.5	2.2	1.7	1.5	2.4	8.4
7-Apr	1.5	0.5	0.5	0.6	0.3	0.2	0.8	2.2	4.1	6.1	7.4	8.8	9.7	10.6	10.8	11.4	11.1	9.7	8.7	7.2	7.1	6.6	6.1	6.2	5.8	11.4
8-Apr	6.4	6.2	6.8	6.7	6.8	7.0	7.4	9.5	11.5	13.2	13.9	15.0	16.3	17.3	17.6	17.6	17.6	15.3	13.2	11.1	11.1	9.6	8.6	7.8	11.4	17.6
9-Apr	7.6	7.0	6.1	5.2	4.5	3.8	3.7	4.7	6.1	7.1	7.1	7.7	8.3	9.3	9.7	8.7	7.7	5.9	5.7	5.0	2.7	1.7	1.3	0.4	5.7	9.7
10-Apr	0.5	0.3	-0.2	-0.5	-0.8	-1.3	-0.8	1.3	2.8	3.8	4.6	4.8	5.3	5.8	5.0	5.2	5.1	4.1	3.1	2.4	0.9	-0.5	-1.2	-1.5	2.0	5.8
11-Apr	-1.6	-2.3	-2.5	-3.1	-3.3	-3.1	-2.6	-1.7	-0.7	0.0	-1.5	-2.1	-1.9	-2.2	-2.5	-2.7	-4.0	-5.0	-5.5	-5.9	-6.3	-6.4	-6.9	-7.7	-3.4	0.0
12-Apr	-8.5	-9.3	-10.7	-12.2	-13.3	-13.8	-13.6	-12.2	-9.8	-7.8	-6.1	-4.7	-3.6	-2.8	-2.9	-2.7	-2.8	-3.2	-3.1	-4.1	-4.3	-4.7	-5.1	-5.8	-7.0	-2.7
13-Apr	-7.0	-8.2	-8.9	-9.5	-11.0	-12.2	-11.8	-11.1	-9.9	-8.7	-7.6	-6.7	-5.6	-4.7	-4.2	-3.5	-3.1	-2.8	-3.2	-5.4	-9.0	-9.6	-9.2	-9.2	-7.6	-2.8
14-Apr	-9.9	-9.8	-8.8	-8.6	-8.9	-9.3	-8.7	-6.0	-3.5	-0.5	1.6	3.0	3.7	4.8	5.6	6.0	5.9	6.2	5.3	4.1	3.0	2.4	1.7	1.2	-0.8	6.2
15-Apr	0.7	0.1	-1.0	-2.1	-2.7	-3.1	-3.6	-4.0	-3.8	-2.9	-1.9	-1.6	-0.8	0.1	0.6	0.8	0.7	0.2	-0.4	-1.0	-1.7	-2.6	-4.0	-5.1	-1.6	0.8
16-Apr	-6.2	-7.4	-8.7	-9.2	-9.3	-9.5	-8.4	-8.5	-7.2	-3.4	-2.1	-0.8	0.2	0.7	1.9	1.7	1.3	0.8	0.3	-1.1	-1.8	-2.7	-3.4	-4.9	-3.6	1.9
17-Apr	-5.0	-5.2	-5.7	-7.4	-8.5	-8.9	-7.3	-4.8	-3.1	-1.4	-0.3	0.3	1.5	2.3	2.2	1.8	1.5	0.8	0.0	-0.8	-1.4	-1.6	-1.7	-1.6	-2.3	2.3
18-Apr	-1.7	-1.9	-2.0	-2.2	-2.7	-2.9	-2.9	-2.6	-2.3	-1.9	-1.4	-0.8	-0.4	0.1	0.1	0.1	0.0	0.0	0.1	-0.2	-0.6	-0.6	-0.6	-0.7	-1.2	0.1
19-Apr	-0.7	-0.6	-0.8	-0.8	-0.7	-0.6	-0.4	0.3	1.3	3.0	3.6	4.6	5.7	6.7	7.6	8.5	9.1	7.7	7.0	6.0	3.9	2.6	1.9	1.2	3.2	9.1
20-Apr	0.8	1.3	1.3	0.9	0.8	0.8	1.5	2.7	5.4	6.1	7.9	9.8	10.8	11.6	11.5	11.0	10.9	9.8	9.0	8.1	6.1	5.0	4.7	4.6	5.9	11.6
21-Apr	4.7	3.7	2.6	1.3	1.1	3.2	5.3	8.0	9.9	12.2	13.1	13.9	14.4	14.8	15.3	15.4	15.2	14.9	14.6	12.0	7.7	6.9	4.0	1.6	9.0	15.4
22-Apr	0.6	0.0	-0.8	-0.6	-0.3	-0.5	0.5	3.4	6.7	9.3	10.9	12.0	12.8	13.3	13.3	13.1	12.4	11.4	10.2	9.1	7.5	6.8	6.5	6.5	6.8	13.3
23-Apr	5.8	4.9	4.6	4.4	4.6	4.4	4.4	4.8	5.4	6.0	7.1	9.4	10.5	10.2	10.0	9.7	8.9	7.9	6.2	6.2	5.6	4.4	3.3	2.8	6.3	10.5
24-Apr	2.3	1.4	0.7	0.5	0.5	0.6	0.3	0.2	0.3	0.5	0.4	0.3	0.4	1.0	1.3	1.5	1.2	1.0	0.7	0.4	0.3	0.2	0.0	-0.2	0.7	2.3
25-Apr	-0.3	-0.5	-0.7	-1.1	-1.3	-1.3	-1.1	-0.9	-0.6	-0.2	0.3	0.6	0.8	0.9	1.2	1.4	2.1	1.6	1.8	1.2	0.7	0.5	0.4	0.2	0.2	2.1
26-Apr	0.1	-0.2	-0.6	-0.6	-0.6	-0.7	-0.4	0.0	0.8	1.6	2.5	3.5	4.5	5.0	5.1	4.8	5.0	4.8	3.9	3.3	2.8	2.6	2.4	2.4	2.2	5.1
27-Apr	2.3	2.1	1.2	0.3	0.3	0.3	0.4	0.8	1.4	2.2	3.2	3.8	4.1	4.1	4.0	4.1	4.0	4.0	3.8	3.5	3.3	3.1	3.0	2.8	2.6	4.1
28-Apr	2.5	2.2	2.1	2.4	2.1	1.6	1.2	0.9	2.2	3.2	4.9	6.6	7.6	8.6	9.3	9.4	9.3	9.1	8.8	7.6	5.4	3.9	3.2	3.6	4.9	9.4
29-Apr	4.4	3.6	2.7	2.3	2.5	3.1	4.4	7.0	10.5	12.6	13.1	13.6	14.0	15.0	15.6	15.2	15.6	15.5	15.4	14.2	9.3	4.7	2.9	1.8	9.1	15.6
30-Apr	0.8	0.0	-0.7	-0.9	-1.3	-0.8	2.8	9.5	14.3	16.3	17.1	17.7	18.4	19.2	19.2	19.6	19.4	19.2	18.2	16.5	15.6	14.6	13.6	12.8	11.7	19.6
	-1.2	-1.7	-2.2	-2.7	-3.0	-3.1	-2.6	-1.2	0.4	1.9	2.9	3.9	4.7	5.4	5.7	5.7	5.6	5.1	4.4	3.3	2.1	1.2	0.5	-0.1	Diurnal Average	
	7.6	7.0	6.8	6.7	6.8	7.0	7.4	9.5	14.3	16.3	17.1	17.7	18.4	19.2	19.2	19.6	19.4	19.2	18.2	16.5	15.6	14.6	13.6	12.8	Diurnal Maximum	

WBEA NETWORK

Hourly Averages

Ambient Temperature (AT) - C

Cenovus - Christina Lake - April 2014



AURORA ATMOSPHERICS INC.

Concentration Ranges (C)	Number of Hours	%	Cumulative %
-50 - -20	0	0.00	0.00
-20 - 0	290	40.28	40.28
0 - 10	358	49.72	90.00
10 - 20	72	10.00	100.00
> 20	0	0.00	100.00

Total Number of Valid Hours: 720

Total Number of Hours: 720

Wood Buffalo Environmental Association

Summary of Hour Averages

Relative Humidity (RH) - %

Cenovus - Christina Lake - April 2014

Maximum Value: 99 % on Apr 28 08:00

Maximum Daily Average: 93.8 % on Apr 24

Minimum Value: 18 % on Apr 30 15:00

Minimum Daily Average: 41.6 % on Apr 30

Maximum Diurnal Average: 79.3 % at hour 5

Minimum Diurnal Average: 50.0 % at hour 15

Monthly Average: 64.8 %

Percentiles: P_1 = 21 P_{10} = 34 Q_1 = 47 Median = 65 Q_3 = 85 P_{90} = 93 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

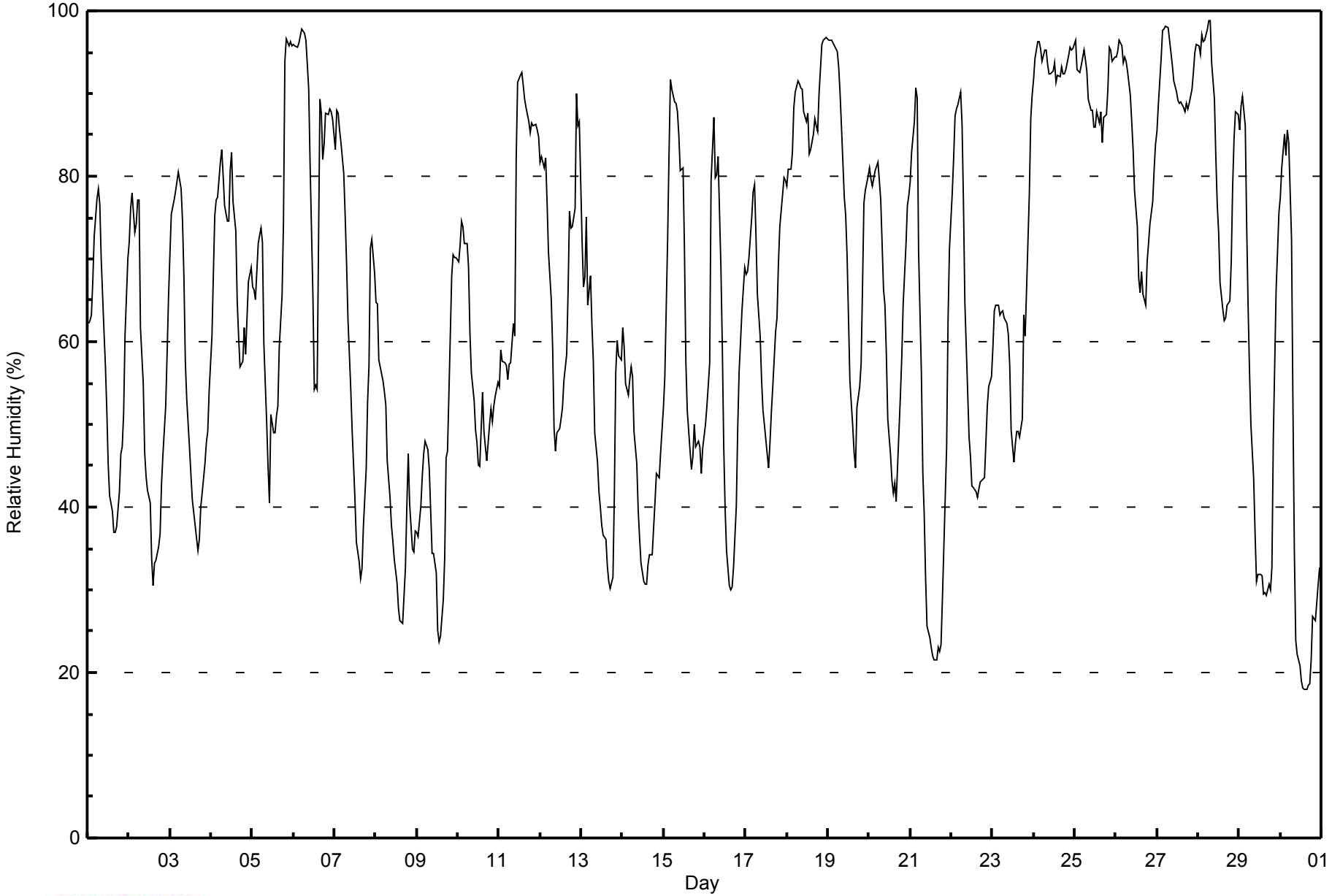
Day	Hourly Period Ending At (MST)																								Daily	Daily
	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24	Average	Maximum
1-Apr	62	62	63	67	73	77	78	77	70	61	57	52	45	41	40	37	37	38	42	46	47	51	61	70	56.5	78
2-Apr	72	76	78	73	74	77	77	62	55	47	44	42	40	34	31	33	34	35	37	43	46	52	58	65	53.6	78
3-Apr	71	75	77	78	79	81	79	75	68	58	53	47	44	41	39	36	35	36	40	42	45	48	49	54	56.2	81
4-Apr	61	68	75	77	78	82	83	80	76	75	75	81	83	77	73	65	61	57	58	62	59	63	67	69	70.9	83
5-Apr	67	66	65	72	73	74	72	60	50	45	41	51	49	49	51	52	59	66	74	94	97	96	96	96	67.3	97
6-Apr	96	96	96	96	97	98	97	96	94	90	81	66	54	55	54	89	88	82	84	88	88	88	88	87	85.3	98
7-Apr	83	88	88	86	84	80	75	70	63	54	49	45	41	36	33	31	33	38	45	53	57	71	72	68	60.1	88
8-Apr	65	65	58	56	55	54	52	46	41	38	36	34	31	28	26	26	26	33	40	46	40	35	35	37	41.8	65
9-Apr	37	36	40	44	46	48	47	45	40	34	34	32	25	24	24	29	34	46	47	54	68	71	70	70	43.5	71
10-Apr	70	72	75	74	72	72	69	61	56	53	49	48	45	45	54	49	47	46	50	52	50	52	53	55	57.0	75
11-Apr	54	59	58	58	57	55	57	57	62	61	82	91	92	93	91	89	88	87	85	86	86	86	86	85	75.3	93
12-Apr	82	82	81	82	77	71	65	59	49	47	49	49	51	52	55	59	66	76	74	74	76	90	86	87	68.3	90
13-Apr	72	67	68	75	64	68	62	58	49	45	42	40	38	37	36	33	31	30	32	41	56	60	58	58	50.8	75
14-Apr	62	59	55	54	55	57	56	49	45	40	36	33	31	31	31	33	34	34	37	41	44	43	47	49	44.0	62
15-Apr	52	56	72	83	92	91	89	89	88	85	81	81	71	58	52	47	45	46	50	47	48	47	44	47	65.0	92
16-Apr	50	52	55	57	79	87	80	80	82	69	60	47	40	35	30	30	30	33	40	50	56	60	64	69	55.7	87
17-Apr	68	68	70	75	78	79	73	66	61	55	52	50	46	45	48	51	55	61	63	69	74	78	80	79	64.4	80
18-Apr	79	81	81	83	88	90	92	91	91	90	88	87	88	83	83	85	87	86	85	90	96	96	97	97	88.0	97
19-Apr	96	96	96	96	96	95	93	90	86	77	75	70	63	55	50	47	45	52	55	57	67	77	78	80	74.7	96
20-Apr	81	80	79	81	81	82	80	77	66	64	59	51	46	43	42	43	41	49	53	58	65	72	76	78	64.4	82
21-Apr	79	83	87	91	89	71	56	44	39	31	26	24	23	22	21	22	23	23	23	29	41	47	63	71	47.0	91
22-Apr	78	82	87	88	89	90	86	77	65	54	49	46	42	42	42	41	42	43	43	44	48	52	55	56	60.1	90
23-Apr	59	64	64	64	63	64	64	63	62	61	57	49	45	48	49	49	48	51	63	61	66	78	87	90	61.3	90
24-Apr	92	94	96	96	96	94	95	95	94	92	92	93	94	91	92	92	93	92	92	93	95	96	95	95	93.8	96
25-Apr	96	93	93	92	93	95	94	93	89	88	88	86	86	88	86	88	84	87	88	91	96	95	94	94	90.7	96
26-Apr	94	95	96	96	94	94	94	93	90	87	83	78	74	68	66	68	66	64	70	72	74	77	81	84	81.6	96
27-Apr	85	89	94	98	98	98	98	96	95	93	92	90	89	89	89	88	88	89	88	89	91	93	95	96	92.0	98
28-Apr	96	95	97	96	96	98	99	99	94	89	82	77	73	67	64	63	63	64	65	70	79	85	88	88	82.7	99
29-Apr	86	88	90	86	74	64	57	50	43	37	31	32	32	32	30	30	29	31	30	33	48	66	71	76	51.9	90
30-Apr	78	81	85	83	86	84	72	52	35	24	22	21	19	18	18	18	19	19	22	27	26	28	31	33	41.6	86
	74.1	75.6	77.3	78.6	79.3	79.0	76.4	71.6	66.6	61.5	58.8	56.4	53.4	50.8	50.0	50.8	51.0	53.1	55.8	60.0	64.3	68.5	70.8	72.7	Diurnal Average	
	96	96	97	98	98	98	99	99	95	93	92	93	94	93	92	92	93	92	92	94	97	96	97	97	Diurnal Maximum	

WBEA NETWORK

Hourly Averages

Relative Humidity (RH) - %

Cenovus - Christina Lake - April 2014



AURORA ATMOSPHERICS INC.

Concentration Ranges (%)	Number of Hours	%	Cumulative %
0 - 20	6	0.83	0.83
20 - 40	98	13.61	14.44
40 - 60	205	28.47	42.92
60 - 80	184	25.56	68.47
80 - 100	227	31.53	100.00

Total Number of Valid Hours: 720

Total Number of Hours: 720

Wood Buffalo Environmental Association

Summary of Hour Averages

Wind Speed (WS) - km/h

Cenovus - Christina Lake - April 2014

Maximum Speed: 37 km/h on Apr 9 13:00

Maximum Daily Speed Average: 22.5 km/h on Apr 9

Minimum Speed Value: 2 km/h on Apr 22 02:00

Minimum Daily Speed Average: 1.0 km/h on Apr 1

Maximum Diurnal Speed Average: 2.9 km/h at hour 20

Minimum Diurnal Speed Average: 1.0 km/h at hour 14

Monthly Average Velocity: 2.0 km/h 82.8 deg

Percentiles: $P_1 = 2$ $P_{10} = 4$ $Q_1 = 7$ Median = 11 $Q_3 = 15$ $P_{90} = 19$ $P_{99} = 29$

Hours in Service:	720
Hours of Data:	705
Hours of Missing Data:	15
Percent Operational Time:	97.9

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-Apr	SSE7	SSE8	SSE10	SSE8	SSE6	SSE5	SSE5	S7	S9	SSW5	NW5	ESE2	NNE6	W2	NNE8	N5	NNW4	NNE6	ENE7	NNE6	N8	NNW6	N5	NNE4	ESE1.0	SSE10
2-Apr	ENE6	E8	ENE7	ENE4	ENE4	NE2	E2	NNE3	NW4	NNW3	N5	N5	NE10	NE8	ENE6	N7	NE5	NNE4	NE6	NNE6	NNW13	NNW11	NNW10	NNW11	NNE4.9	NNW13
3-Apr	NNW9	NNW9	NNW10	NNW9	NNW8	N5	N6	NNE9	NE11	NE11	NE10	NE8	NNE8	NE8	NE10	ENE9	E12	E13	ESE11	ESE10	ESE12	E12	ESE14	ESE16	ENE6.5	ESE16
4-Apr	ESE18	SE18	SE18	ESE16	ESE17	ESE15	ESE14	SE16	SSE19	SE20	SSE14	S14	S16	SSW17	SW17	W25	WSW26	WSW24	W22	W21	W14	WNW16	W11	W9	SSW8.3	WSW26
5-Apr	WNW18	W15	W7	S3	SSW9	S7	SSE8	SSE5	SE6	SE4	S6	SSW7	SW2	NNE5	NE8	ENE6	ESE8	E9	E5	NE4	NE6	NE5	NE3	AF	SE1.1	WNW18
6-Apr	AF	ENE3	ENE2	E4	ESE3	E3	SE5	SSE6	SSE7	SSE7	SSE9	S12	SSW15	SW15	SW15	WSW10	SW12	SW12	SW10	SW9	SSW9	SSW11	SW10	SW8	SSW6.8	SW15
7-Apr	S8	S8	S7	SSW11	SSW11	SSW9	SSW11	SW12	SW11	SW10	S9	SSW11	SSW14	SSW14	SSW15	SSW15	SSW14	SSW12	S8	SE7	S10	SSW9	SSE8	S11	SSW10.2	SSW15
8-Apr	SSE14	SSE14	S16	S17	S14	S16	SSW15	SSW16	SW19	SSW16	SSW16	SSW17	SSW20	SW23	SW22	SW18	SW19	SW22	SW10	S10	SSW17	SW17	SSW15	SW15	SSW15.6	SW23
9-Apr	SW20	WSW21	SW21	SW19	SW21	SW18	SW17	SW23	WSW27	WSW32	WSW32	WSW35	W37	W34	W28	WSW26	WSW22	SW24	WSW22	WSW25	WSW17	SW14	SW8	SSW10	WSW22.5	W37
10-Apr	SW11	SW10	SW9	SW10	SW12	SW10	SSW10	SW11	W15	W9	WSW9	W13	W9	W11	NNW12	NW11	NNW13	NNW15	NNW11	NNW7	N10	NE11	NNE9	NE7	WNW5.4	W15
11-Apr	NE8	NE9	ENE12	E10	E9	E9	ENE8	E11	E13	E14	E13	NE16	ENE15	NE16	NNE19	N22	N25	N23	NNW24	NNW20	NNW19	NNW18	NNW19	NNW17	NNE11.0	N25
12-Apr	NW18	NW12	WNW11	W11	W12	W13	W13	WNW9	WNW9	WSW11	W9	W13	W15	W17	W18	W14	WNW14	W9	SW10	SW9	WNW12	NW9	NW7	NW7	W10.5	NW18
13-Apr	N15	N12	NNW12	NW8	NNW9	NW6	NW8	WNW11	NW14	NW13	NW16	WNW15	WNW13	WSW11	WNW11	W12	WNW10	WNW8	WNW6	S2	ESE5	ESE6	ESE7	SE6	NW6.7	NW16
14-Apr	SE6	SE7	SE10	SE14	SE9	ESE8	E7	SSE16	SE13	SE15	SE19	SE17	SE17	SSE16	SSE14	SE17	SE14	SE9	ESE9	E9	E11	ESE11	E7	E9	SE11.2	SE19
15-Apr	E12	E12	E11	ENE12	ENE11	NE12	NE14	NE14	NE14	NE16	NE18	NNE18	NNE20	NNE18	NNE17	NNE16	NNE17	N16	NNE15	N13	N10	N11	N13	N15	NNE13.0	NNE20
16-Apr	N10	N12	N7	N8	NNE8	NNW6	NE8	ENE12	NE11	E18	ESE21	E22	E22	ESE19	ESE19	E19	E16	E17	E16	E12	ESE12	E9	E9	ENE9	E10.9	ESE22
17-Apr	E13	ESE12	ENE8	NE8	ENE7	ENE8	ENE8	E12	ENE16	E20	E18	E20	E19	ENE20	ENE21	ENE20	E19	E21	E19	E15	ENE14	ENE15	ENE14	ENE14	E14.9	E21
18-Apr	ENE15	ENE15	ENE12	ENE12	NE11	NE10	NE9	NE10	ENE13	ENE13	ENE14	ENE14	NNE11	ENE13	ENE13	ENE12	ENE11	ENE11	E8	ENE6	NNE3	N4	NE3	E2	ENE9.9	ENE15
19-Apr	SE3	ESE4	ESE2	SSE4	S5	SSE5	SE6	SE6	SE5	E5	SSW11	SSW11	SSW10	SSW6	S3	N3	SE3	E11	E9	E8	ENE7	E6	E6	ENE6	SE4.0	E11
20-Apr	E5	SE8	SSE8	SE5	SE5	SE5	SSE7	SSE8	ESE2	NNE5	SSW5	SSW8	SSW8	SSW10	WSW13	WNW15	WNW9	WSW13	SSW8	SE3	SSE7	S8	S7	SSE8	SSW4.4	WNW15
21-Apr	SSE7	SSE7	SSE5	E4	SE3	S5	S5	SW10	SSW11	SW13	SW16	SW15	SW15	WSW14	SW12	WSW9	NW9	W4	NNW7	NNE6	NE6	NE4	AF	AF	SW5.1	SW16
22-Apr	NNW3	NW2	NNW3	NW4	NNW6	NW5	NW7	NNE8	NE14	NNE19	NNE22	NNE23	NNE22	NE22	NE25	NE24	NE21	NE21	NNE21	NNE23	NNE19	NNE15	NNE16	NE17	NNE14.3	NE25
23-Apr	NNE12	NNE13	NE15	NE15	NE19	NE20	NE20	NE21	NE20	NE22	NE23	ENE26	ENE32	ENE28	NE28	NE30	NE26	ENE29	E25	ENE20	ENE19	ENE23	NE19	NE18	NE21.4	ENE32
24-Apr	NE17	NE16	NNE13	NNE13	NNE13	NE15	NE14	NE13	NE15	NE16	NE16	NE16	NE16	NE15	NE15	NE15	NE14	NE15	NE14	NE11	NE10	NE9	AF	AF	NE14.0	NE17
25-Apr	AF	AF	AF	AF	AF	AF	AF	AF	AF	NE10	NNE11	NNE12	NNE13	NNE13	NE12	NE10	ENE10	ENE8	NE9	NE7	NE4	ENE3	ENE4	ENE5	----	NNE13
26-Apr	ENE5	ENE4	NE5	E5	E6	ESE8	E7	E6	E7	ENE9	ESE9	E10	ESE11	E15	ENE17	E17	E14	E14	E15	E11	ENE10	ENE10	ENE10	ENE11	E9.5	ENE17
27-Apr	ENE11	ENE11	NE9	NNE7	NE8	NE8	ENE8	E10	E11	E12	ESE16	ESE18	ESE18	ESE16	ESE15	ESE12	ESE14	ESE13	ESE14	SE13	ESE11	SE12	ESE9	ESE11	E10.9	ESE18
28-Apr	ESE9	SE3	S5	W2	W3	W5	SW4	W3	N3	NNE5	NNW4	NNW7	NNW6	NNW5	N7	NNE10	N9	NNE8	NE6	ENE6	SE6	SE4	E4	ESE3	NNE2.1	NNE10
29-Apr	SSE5	SSE5	SSE5	SSE5	S5	SSW7	SW7	SW11	SW11	W12	WSW13	W15	WSW13	SW14	WSW15	W16	W13	NW12	WNW12	W4	SSE4	SSE3	SSE4	SSE3	WSW6.5	W16
30-Apr	SSE4	S3	SE2	SSE4	SE2	SE3	ESE2	SE3	SSE3	S9	SSW10	SSW10	S11	SSW10	S10	S11	SSW12	S11	SSE8	SE9	SSE11	SSE11	SSE9	SSE8	S6.8	SSW12
	E2.6	E2.5	ESE2.2	ESE1.9	ESE1.7	ESE1.7	ESE2.1	SE2.4	ESE1.9	E2.9	ESE2.5	ESE1.7	ESE1.7	ESE1.0	NE1.9	NNE2.5	NNE2.0	ENE2.3	ENE2.9	ENE2.9	ENE2.6	ENE2.6	ENE2.7	ENE2.9		Diurnal Average
	SW20	WSW21	SW21	SW19	SW21	NE20	NE20	WSW23	WSW27	WSW32	WSW32	WSW35	W37	W34	NE28	NE30	WSW26	ENE29	E25	WSW25	ENE19	ENE23	NE19	NE18		Diurnal Maximum

AF - Analyzer Failure

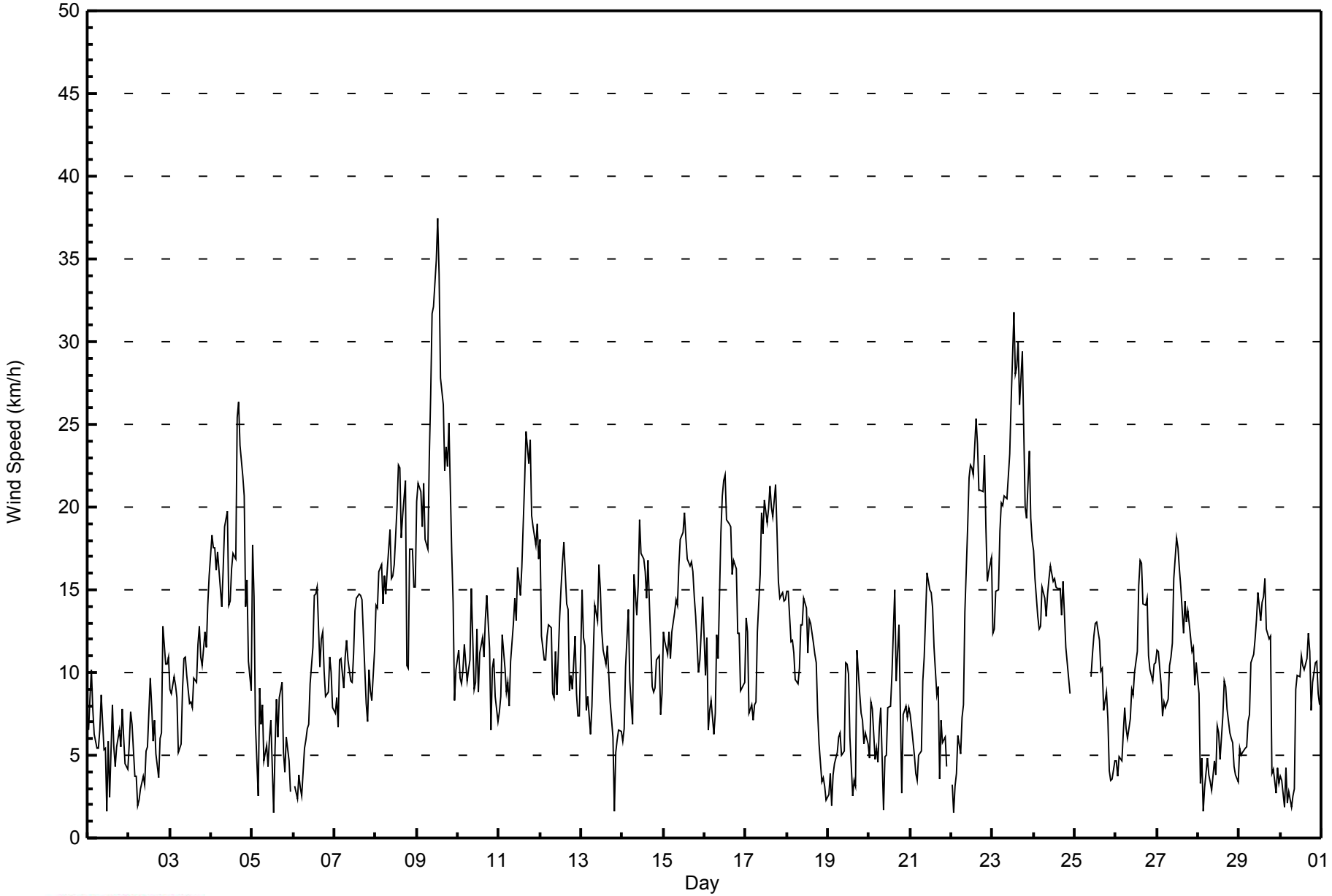
All monthly, daily, and diurnal averages have been calculated using vector methods

WBEA NETWORK

Hourly Averages

Wind Speed (WS) - km/h

Cenovus - Christina Lake - April 2014



AURORA
ATMOSPHERICS INC.

Wind Speed Ranges (km/h)	Number of Hours	%	Cumulative %
0 - 5	115	16.31	16.31
6 - 11	282	40.00	56.31
12 - 19	240	34.04	90.35
20 - 28	60	8.51	98.87
29 - 38	8	1.13	100.00
> 38	0	0.00	100.00

Total Number of Valid Hours: 705

Total Number of Hours: 720

WBEA NETWORK

Frequency Distribution

Wind Speed (WS) - km/h

Cenovus - Christina Lake - April 2014

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	8	9	9	10	9	15	17	9	2	2	0	7	0	5	6	115
6 - 11	11	17	33	29	28	15	13	23	16	29	19	5	9	9	9	17	282
12 - 19	7	20	31	22	27	21	13	7	7	16	22	7	17	8	6	9	240
20 - 28	3	7	11	8	5	2	1	0	0	1	7	9	4	0	0	2	60
29 - 38	0	0	1	2	0	0	0	0	0	0	0	3	2	0	0	0	8
> 38	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Totals	28	52	85	70	70	47	42	47	32	48	50	24	39	17	20	34	705

Total Number of Valid Hours: 705

Total Number of Hours: 720

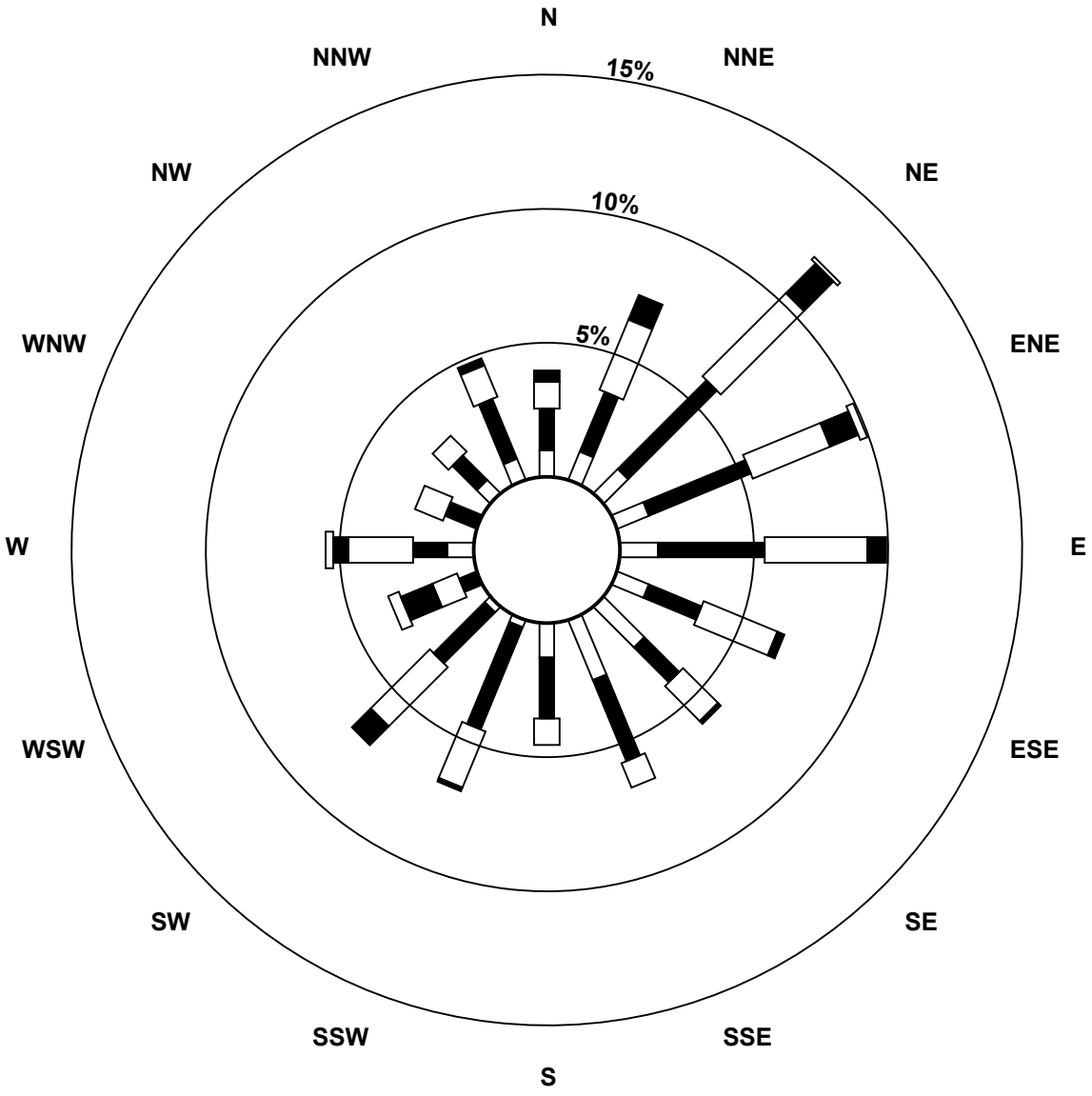
AURORA ATMOSPHERICS INC.

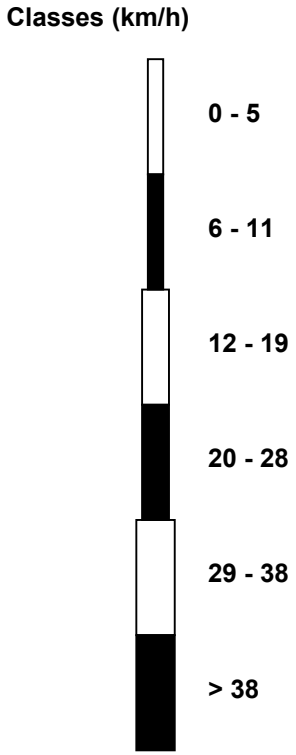
Wood Buffalo Environmental Association

Wind Rose Apr 2014

Wind Speed (WS) - km/h

Cenovus - Christina Lake (AMS500)





Total Number of Valid Hours: 705

Wood Buffalo Environmental Association

Summary of Hour Standard Deviations

Wind Speed (WS) - km/h

Cenovus - Christina Lake - April 2014

Number of Exceedences (AAAQO): 1-hr: 0 24-hr: 0
Maximum Value: 10 km/h on Apr 9 12:00

Minimum Value: 0 km/h on Apr 26 00:00

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

Hours in Service:	720
Hours of Data:	705
Hours of Missing Data:	15
Hours of Calibration:	0
Percent Operational Time:	97.9

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-Apr	1	2	2	2	1	1	1	2	3	3	2	2	3	5	3	3	3	2	1	1	1	2	1	1	5
2-Apr	1	1	1	1	1	1	0	1	1	2	2	3	3	4	3	3	2	3	1	2	5	3	2	2	5
3-Apr	1	2	2	1	1	1	2	2	2	3	2	3	3	3	3	4	3	3	2	2	2	3	3	3	4
4-Apr	4	4	5	3	3	3	3	4	4	4	4	4	5	5	5	7	7	6	6	5	3	3	4	3	7
5-Apr	3	6	4	2	1	2	1	1	1	2	3	4	3	4	3	2	2	2	2	1	1	2	1	AF	6
6-Apr	AF	1	1	1	1	0	3	2	2	2	2	4	5	4	5	7	4	3	3	2	2	2	2	2	7
7-Apr	2	1	2	3	2	2	3	3	3	3	3	3	4	5	5	4	5	4	3	1	3	2	2	2	5
8-Apr	3	3	4	4	3	4	4	4	5	5	5	5	6	7	6	5	6	7	3	3	7	5	4	4	7
9-Apr	6	6	6	5	5	5	5	6	7	9	9	10	9	8	7	9	7	8	6	6	5	4	4	3	10
10-Apr	3	3	2	2	3	2	2	3	4	3	3	4	4	4	3	3	3	3	4	2	3	3	2	2	4
11-Apr	2	2	2	3	2	2	2	3	3	3	3	3	3	4	3	4	5	5	4	4	4	4	5	5	5
12-Apr	4	3	2	2	2	2	2	2	2	4	4	4	5	5	5	5	3	4	2	2	5	2	3	2	5
13-Apr	5	2	3	2	2	1	2	2	3	4	5	4	5	4	5	5	4	4	2	2	2	1	1	1	5
14-Apr	1	2	3	3	2	3	2	5	3	4	4	4	5	4	4	4	3	3	1	1	2	2	2	2	5
15-Apr	3	2	2	3	2	3	3	3	3	3	3	3	4	3	4	4	3	4	4	4	2	3	2	2	4
16-Apr	4	2	2	1	2	1	3	3	2	5	5	6	6	5	5	5	4	4	4	3	3	1	2	1	6
17-Apr	2	3	3	1	1	1	2	3	3	5	5	5	5	6	5	5	4	4	4	4	3	3	3	4	6
18-Apr	4	3	3	2	2	2	2	2	3	3	3	3	2	3	3	3	3	3	2	2	1	1	1	0	4
19-Apr	0	1	1	1	1	1	1	1	1	2	3	3	3	4	2	2	2	2	1	2	2	2	2	2	4
20-Apr	1	3	5	2	1	1	2	5	2	2	2	3	3	3	4	4	4	4	3	2	1	1	1	1	5
21-Apr	1	1	3	1	1	1	1	3	3	4	5	5	6	6	4	4	3	2	2	1	3	2	AF	AF	6
22-Apr	1	1	1	1	2	1	2	2	3	4	4	4	5	5	6	5	5	4	5	5	5	3	4	4	6
23-Apr	2	2	3	3	4	4	4	4	4	5	6	8	8	7	7	7	7	9	7	8	6	6	4	5	9
24-Apr	4	3	2	2	3	3	3	3	4	4	3	3	4	4	4	3	3	4	3	3	2	4	AF	AF	4
25-Apr	AF	AF	AF	AF	AF	AF	AF	AF	AF	2	2	2	2	2	2	2	3	2	2	2	1	1	1	0	3
26-Apr	1	0	1	1	2	2	2	2	2	2	2	2	3	3	3	4	3	3	3	2	2	2	2	2	4
27-Apr	3	3	2	1	2	1	2	2	3	2	4	3	4	3	3	3	3	3	3	3	2	2	2	2	4
28-Apr	2	2	2	2	2	1	2	2	2	2	3	3	2	3	3	3	2	2	1	1	1	1	1	1	3
29-Apr	2	1	2	1	2	1	2	3	3	5	5	6	5	5	5	4	4	3	3	2	2	2	1	1	6
30-Apr	1	2	2	2	2	1	1	1	2	3	4	5	4	4	4	4	4	4	2	1	2	2	1	1	5
	6	6	6	5	5	5	5	6	7	9	9	10	9	8	7	9	7	9	7	8	7	6	5	5	
	Diurnal Maximum																								

AF - Analyzer Failure

Wood Buffalo Environmental Association

Summary of Hour Averages

Wind Direction (WD) - deg

Cenovus - Christina Lake - April 2014

Direction of Maximum Speed: 271 deg on Apr 9 13:00
Direction of Maximum Daily Speed Average: 245.5 deg on Apr 9

Direction of Minimum Speed: 321 deg on Apr 22 02:00
Direction of Minimum Daily Speed Average: 1.0 deg on Apr 1

Monthly Average Direction: 236.7 deg

Hours in Service:	720
Hours of Data:	705
Hours of Missing Data:	15
Percent Operational Time:	97.9

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-Apr	164	157	160	162	158	167	157	176	191	200	311	115	19	281	15	1	348	26	67	24	358	345	3	18	105.6
2-Apr	63	81	77	60	67	48	85	14	320	340	1	359	35	55	67	354	47	32	43	22	340	339	342	347	20.7
3-Apr	340	340	334	336	341	11	11	24	35	39	51	39	26	36	36	69	89	89	108	115	114	101	116	122	56.5
4-Apr	123	135	141	120	114	117	115	133	147	142	158	175	189	206	223	263	257	249	265	270	268	287	276	263	194.6
5-Apr	284	277	259	191	199	180	162	148	130	137	170	203	232	28	42	57	109	87	92	39	42	53	34	AF	143.5
6-Apr	AF	63	71	82	104	79	145	164	166	159	161	190	211	218	225	246	221	226	223	215	212	209	221	216	203.7
7-Apr	180	169	190	204	198	201	213	216	215	216	188	205	192	208	210	207	204	199	191	144	191	193	162	171	197.0
8-Apr	156	166	181	186	187	191	196	205	223	213	211	210	208	225	233	227	226	233	221	191	209	223	212	220	208.8
9-Apr	232	237	236	233	234	234	228	236	242	250	252	253	271	272	264	251	244	233	239	253	237	229	235	209	245.5
10-Apr	216	218	218	219	224	215	211	218	277	269	251	274	268	278	341	320	335	348	337	342	354	34	30	51	282.9
11-Apr	40	55	71	92	91	85	77	81	93	90	89	56	58	34	17	8	355	350	345	340	342	343	331	328	23.6
12-Apr	324	313	302	281	280	277	280	290	297	257	259	269	262	259	279	278	285	270	215	214	286	313	326	324	281.0
13-Apr	350	351	345	323	338	318	304	294	313	313	306	296	283	248	283	274	282	282	298	185	104	110	122	125	306.7
14-Apr	124	129	138	146	131	111	95	148	135	125	131	139	146	157	151	138	129	137	108	101	100	108	90	81	129.4
15-Apr	89	82	85	73	59	48	43	40	38	34	42	24	24	31	32	24	22	4	20	353	10	356	353	353	31.6
16-Apr	359	356	7	357	13	328	47	66	49	93	107	101	101	103	117	93	86	89	90	91	107	98	95	77	82.2
17-Apr	95	103	74	51	57	59	72	79	76	96	94	89	90	69	75	78	81	100	91	86	77	73	74	75	82.1
18-Apr	75	71	64	57	54	54	50	56	67	66	76	68	32	63	67	73	74	78	85	64	21	1	35	87	63.6
19-Apr	145	122	113	151	169	147	137	144	144	100	201	207	195	196	190	4	145	89	90	99	76	93	98	77	134.4
20-Apr	99	133	153	138	144	141	149	160	105	14	194	204	195	207	246	284	282	255	211	145	163	173	169	166	192.1
21-Apr	162	157	153	99	127	191	190	224	208	219	229	221	222	239	228	253	305	272	329	12	40	38	AF	AF	222.4
22-Apr	334	321	340	325	329	311	322	16	34	32	28	31	32	34	36	42	42	38	27	28	31	26	30	36	28.0
23-Apr	27	25	34	37	44	48	49	53	53	53	56	60	64	61	53	47	56	69	82	66	74	59	48	39	54.6
24-Apr	38	35	29	27	29	37	40	36	43	46	48	53	50	52	55	53	46	55	49	50	49	51	AF	AF	44.2
25-Apr	AF	AF	AF	AF	AF	AF	AF	AF	AF	45	26	26	29	33	47	53	67	69	38	46	56	78	77	70	--
26-Apr	76	70	56	92	101	117	100	90	82	68	106	93	113	92	77	97	89	87	80	83	72	70	73	73	86.2
27-Apr	73	72	56	31	39	53	70	79	85	95	106	113	115	115	111	114	122	114	123	127	122	125	103	107	100.5
28-Apr	113	143	185	266	280	272	219	262	2	13	334	345	348	343	3	19	4	14	51	71	128	146	89	106	23.9
29-Apr	151	153	148	167	181	200	217	216	224	265	247	263	237	232	250	278	278	310	292	280	166	154	165	153	239.5
30-Apr	160	170	141	161	144	124	123	131	159	182	209	196	188	192	172	191	199	187	161	141	152	154	160	165	173.7
	80.3	94.8	103.9	108.4	104.7	110.3	112.0	124.0	101.4	89.7	115.4	114.9	112.6	116.2	44.6	15.9	32.7	59.9	62.1	61.6	70.0	64.9	65.2	74.6	
	Diurnal Average																								

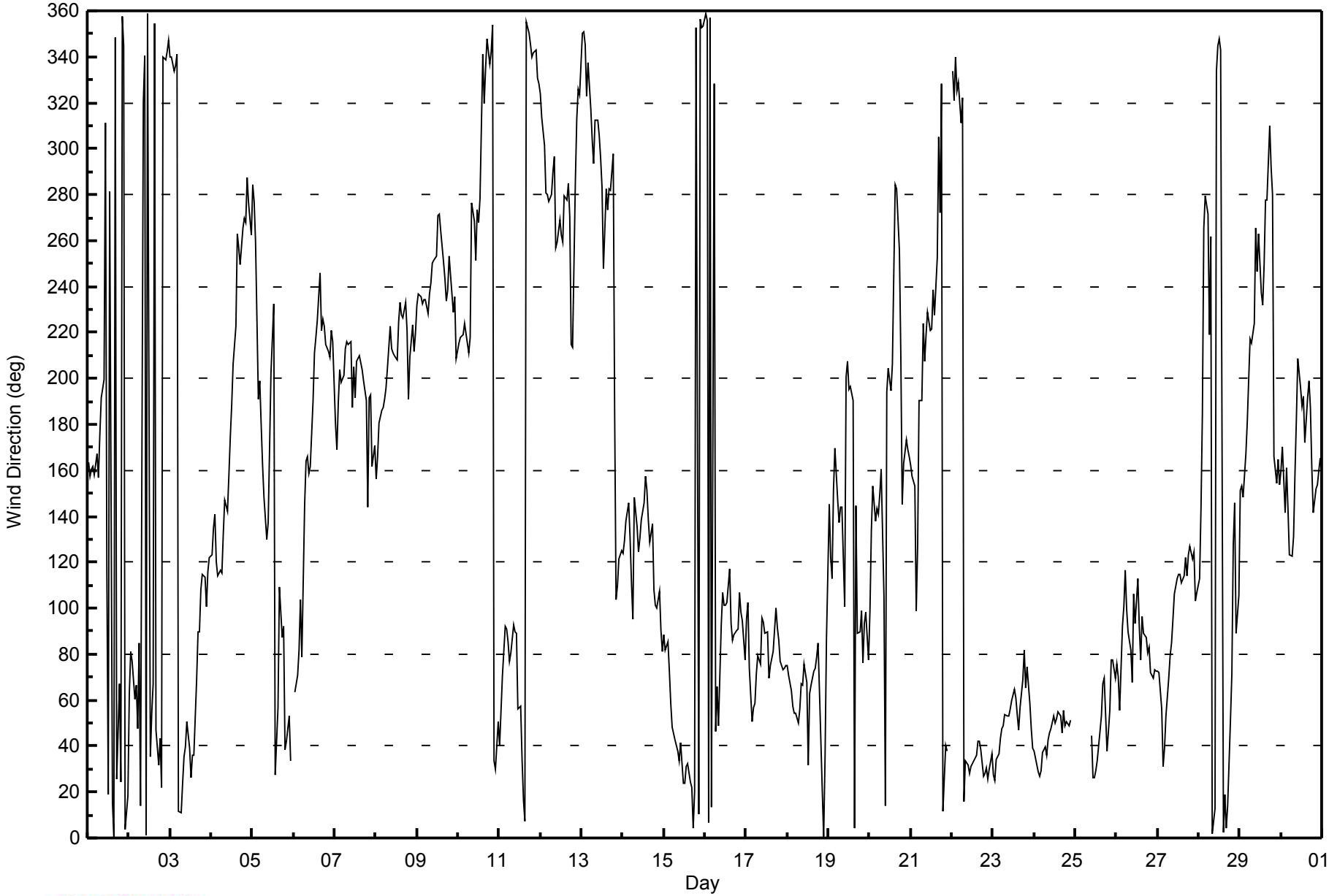
AF - Analyzer Failure
All monthly, daily, and diurnal averages have been calculated using vector methods

WBEA NETWORK

Hourly Averages

Wind Direction (WD) - deg

Cenovus - Christina Lake - April 2014



AURORA ATMOSPHERICS INC.

Wood Buffalo Environmental Association

Summary of Hour Standard Deviations

Wind Direction (WD) - deg

Cenovus - Christina Lake - April 2014

Number of Exceedences (AAAQO): 1-hr: 0 24-hr: 0
Maximum Value: 102 deg on Apr 5 13:00

Minimum Value: 5 deg on Apr 26 03:00

Percentiles: P_1 = 9 P_{10} = 11 Q_1 = 13 Median = 16 Q_3 = 24 P_{90} = 37 P_{99} = 86

Hours in Service:	720
Hours of Data:	705
Hours of Missing Data:	15
Hours of Calibration:	0
Percent Operational Time:	97.9

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-Apr	12	11	14	12	10	11	12	17	24	59	46	98	57	86	48	55	66	52	14	29	13	26	14	29	98
2-Apr	11	10	13	16	24	53	35	46	48	51	48	67	30	45	59	50	56	87	16	14	15	16	13	14	87
3-Apr	12	14	14	11	13	20	22	24	17	18	22	37	33	40	28	33	22	16	20	10	9	12	12	11	40
4-Apr	12	15	14	12	11	12	14	14	15	14	21	18	19	19	19	17	16	16	20	15	20	9	30	28	30
5-Apr	10	22	48	99	12	17	10	26	22	45	43	59	102	57	23	47	23	14	28	28	13	14	41	AF	102
6-Apr	AF	23	36	11	31	29	31	19	22	21	24	22	24	19	27	34	19	15	15	12	14	15	14	27	36
7-Apr	36	8	21	19	14	17	16	16	19	25	29	28	24	20	22	20	18	16	22	8	26	16	17	14	36
8-Apr	13	17	16	14	16	16	17	18	17	20	20	18	20	21	19	20	21	16	16	14	20	17	16	16	21
9-Apr	16	15	16	16	15	15	16	15	16	17	15	15	14	16	19	19	19	16	16	17	18	16	27	18	27
10-Apr	15	15	16	16	15	14	14	19	22	37	34	28	41	45	22	27	19	12	23	16	17	16	15	17	45
11-Apr	15	11	16	14	14	13	14	17	15	15	27	13	13	19	12	14	14	13	14	13	13	13	13	13	27
12-Apr	12	14	10	9	9	9	9	10	13	31	39	29	24	21	15	22	19	44	14	23	17	18	15	11	44
13-Apr	13	10	14	18	11	13	12	12	19	25	19	23	29	32	47	37	28	35	27	64	33	22	27	14	64
14-Apr	12	15	15	13	13	28	26	15	15	16	16	18	19	22	22	18	15	26	16	14	12	14	23	14	28
15-Apr	12	11	13	15	12	14	11	12	12	11	13	12	13	15	17	24	17	17	20	17	16	22	11	13	24
16-Apr	22	12	20	14	20	12	30	13	17	19	15	19	18	21	21	19	22	16	14	14	12	12	13	12	30
17-Apr	11	12	28	10	13	9	14	16	15	18	18	19	19	19	17	16	19	14	16	14	14	13	13	13	28
18-Apr	14	13	13	13	12	13	11	12	13	14	17	18	17	16	14	18	13	13	13	14	26	16	16	20	26
19-Apr	36	21	44	13	15	14	10	16	24	41	23	23	27	73	85	74	83	17	10	12	20	17	21	30	85
20-Apr	25	21	57	23	19	16	16	49	77	37	45	38	33	28	32	28	40	31	25	70	11	9	9	11	77
21-Apr	13	10	35	19	52	29	20	20	17	22	20	24	29	27	33	42	28	62	24	14	31	47	AF	AF	62
22-Apr	18	69	31	16	13	22	14	19	15	15	14	14	17	14	14	15	15	11	13	12	11	11	11	12	69
23-Apr	12	10	10	11	11	11	12	12	12	12	13	13	14	14	13	12	13	16	14	16	13	13	12	12	16
24-Apr	12	11	11	12	10	10	11	12	12	12	11	11	12	14	15	16	13	12	11	11	11	12	AF	AF	16
25-Apr	AF	AF	AF	AF	AF	AF	AF	AF	AF	13	15	14	16	13	14	15	26	19	13	12	10	13	16	8	26
26-Apr	9	14	5	24	20	14	20	23	20	23	24	22	21	20	19	15	17	15	14	13	11	12	11	12	24
27-Apr	13	12	13	12	10	12	13	13	13	13	14	12	13	13	14	13	13	13	12	11	10	9	12	11	14
28-Apr	15	50	26	94	44	30	44	56	51	35	83	38	30	47	28	21	21	21	15	17	21	22	28	34	94
29-Apr	23	13	29	12	36	14	19	16	22	29	28	31	23	26	33	24	34	13	18	44	31	43	25	14	44
30-Apr	24	24	86	21	47	22	47	37	67	34	31	43	29	34	35	22	19	19	14	7	11	12	12	13	86
	36	69	86	99	52	53	47	56	77	59	83	98	102	86	85	74	83	87	28	70	33	47	41	34	
	Diurnal Maximum																								

AF - Analyzer Failure

AURORA ATMOSPHERICS INC.

Wood Buffalo Environmental Association

SO_2 Calibration Report

Station Information

Calibration Date	April 9, 2014	Previous Calibration	March 11, 2014
Station Name	Cenovus - Christina Lake	Station Number	AMS 103
Reason:	Routine		
Start Time (MST)	10:45	End Time (MST)	16:10
Barometric Pressure	mmHg	Station temp.	22 Deg C
Calibrator Make/Model	API T700	Serial Number	451
Cal Gas Concentration	49.4 ppm	Cal Gas Expiry Date	10/6/2016
Gas Cert Reference	EY0000359		
DACS make/model	Campbell Scientific CR3000	DACS serial No.	8203
DACS voltage range	0-5v	DACS channel #	

Analyzer Information

	Before	*After*		*Before*	*After*
Analyzer Range (ppb)	1000	1000	PMT voltage	15	20
Analyzer Range (mv)	1000	5000	Lamp voltage	3235	3233
Calculated slope	0.997281	0.997765	Chamber temp.	50.0	50.0
Calculated intercept	-0.995992	-1.210639	Pressure (mmHg)	24.7	24.8
Analyzer Background	12.9	26.7	Flow (lpm)	0.622	0.623
Analyzer Coefficient	1.091	0.915	Intensity	80	80

Analyzer make	API T100	Analyzer serial #	720

Calibration Data

Set Point	Total flow rate (cc/min)	Source gas flow rate (cc/min)	Calculated concentration (ppb) (Cc)	Indicated concentration (ppb) (Ic)	Correction factor (Cc/Ic)
as found zero	6000	0.0	0.0	0.3	NA
as found span	6000	95.4	785.5	795.0	0.988
calibrator zero	6000	0.0	0.0	0.5	0.000
high point	6000	95.4	785.5	788.0	0.997
second point	6000	47.7	392.7	395.4	0.993
third point	6000	23.9	196.8	199.0	0.989
calibrator zero					
as left zero	5000	0.0	0.0	1.2	0.000
as left span	5000	79.5	785.5	784.0	1.002
				Average Correction Factor	0.993

Corrected As found	794.7	Previous response	788.6	% change	-0.8%

Notes:

Small adjustments.

Calibration Performed By: Ryan Power

Wood Buffalo Environmental Association

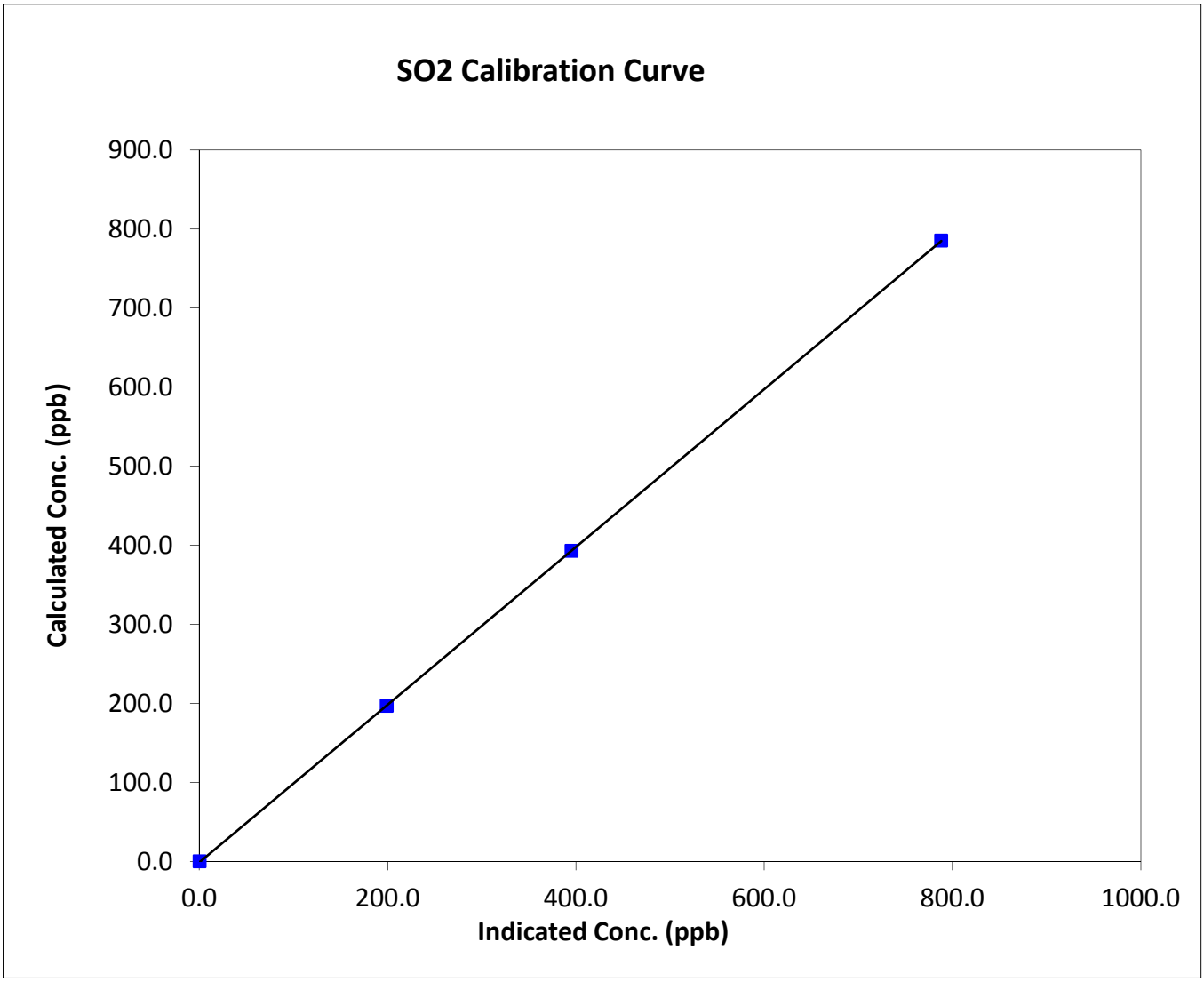
SO_2 Calibration Summary

Station Information

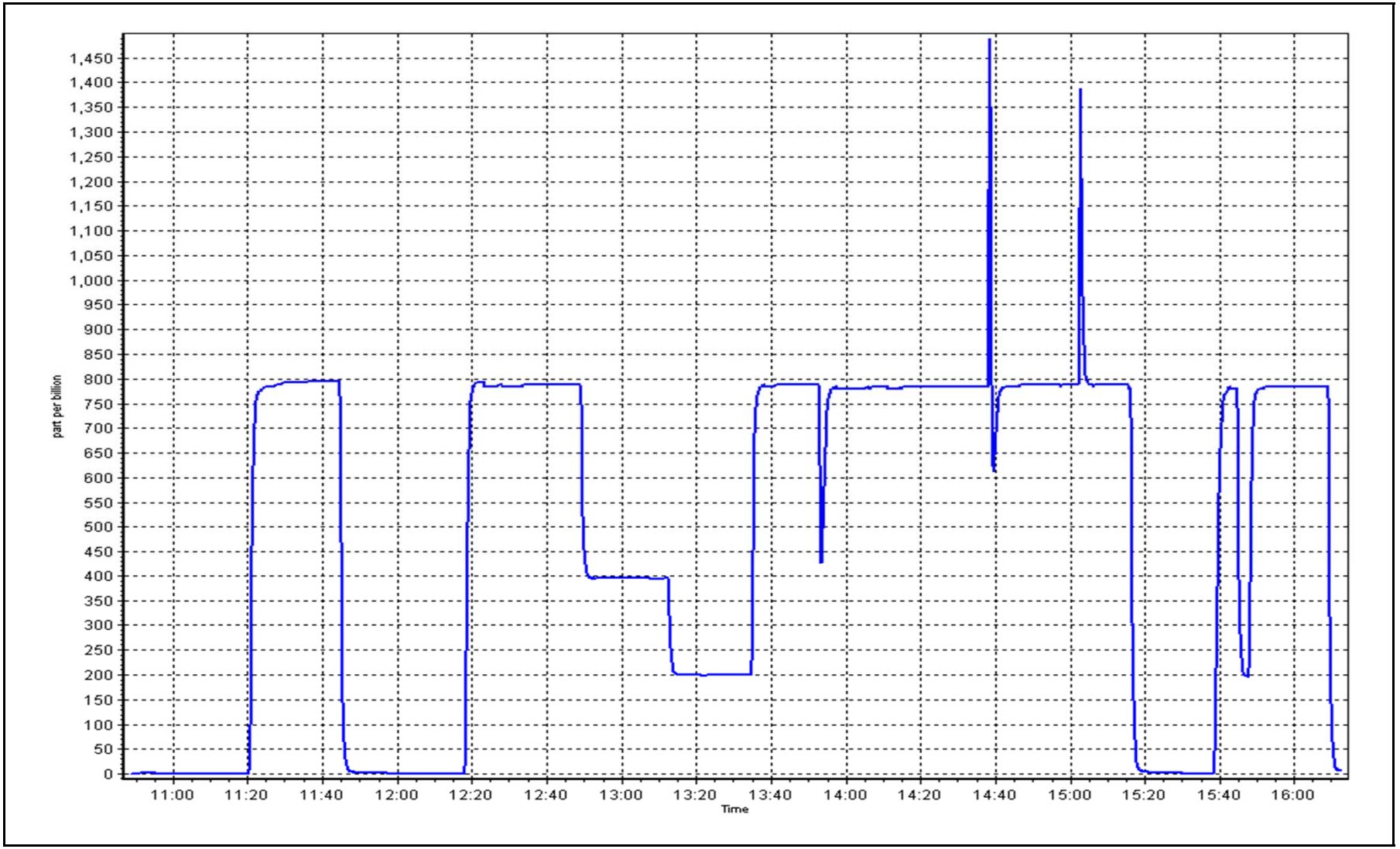
Calibration Date	April 9, 2014	Previous Calibration	March 11, 2014
Station Name	Cenovus - Christina Lake	Station Number	AMS 103
Start Time (MST)	10:45	End Time (MST)	16:10
Analyzer make	API T100	Analyzer serial #	720

Calibration Data

Calculated concentration (ppb) (Cc)	Indicated concentration (ppb) (Ic)	Correction factor (Cc/Ic)	Statistical Evaluation	
0.0	0.5	N/A	Correlation Coefficient	0.999996
785.5	788.0	0.9968		
392.7	395.4	0.9932	Slope	0.997765
196.8	199.0	0.9888		
			Intercept	-1.210639



SO2 Calibration Plot Date: April 9, 2014



Wood Buffalo Environmental Association

H2S Calibration Report

Station Information

Calibration Date	April 10, 2014	Previous Calibration	March 12, 2014
Station Name	Cenovus - Christina Lake	Station Number	AMS 103
Reason:	Routine		
Start Time (MST)	7:05	End Time (MST)	11:05
Barometric Pressure	NA mmHg	Station temp.	24 Deg C
Calibrator Make/Model	API T700	Serial number	451
Cal Gas Concentration	10.2 ppm H2S	Cal Gas Expiry Date	5/30/2016
Gas Cert Reference	LL23598	SO2 gas conc.	49.4 ppm SO2
DACS make/model	Campbell Scientific CR3000	DACS serial No.	8203
DACS voltage range		DACS channel #	

Analyzer Information

	Before	*After*		*Before*	*After*
Analyzer Range (ppb)	100	100	PMT voltage	23.1	27.0
Analyzer Range (mv)	100	100	Lamp voltage	2375	2378
Calculated slope	0.995621	0.992420	Chamber temp.	50	50
Calculated intercept	-0.151822	-0.163888	Pressure	17.9	17.8
Analyzer Background	20.3	22.9	Flow	408	409
Analyzer Coefficient	0.942	0.928	Intensity	59	61
			Converter temp.	314	316

Analyzer make/model	API T101	Analyzer serial #	157
Converter make/model	Internal	Converter serial #	NA

Calibration Data

Set Point	Total flow rate (cc/min)	Source gas flow rate (cc/min)	Calculated concentration (ppb) (Cc)	Indicated concentration (ppb) (Ic)	Correction factor (Cc/Ic)
as found zero	5000	0.0	0.0	1.2	NA
as found span	5000	36.8	75.1	76.9	0.977
SO2 scrubber check	5000	20.2	199.6	6.1	NA
calibrator zero	4997	0.0	0.0	0.0	NA
high point	5000	36.8	75.1	75.7	0.992
second point	5000	19.6	40.0	40.6	0.985
third point	5000	9.8	20.0	20.5	0.978
calibrator zero					
as left zero	5000	0.0	0.0	0.1	NA
as left span	5000	36.8	75.1	75.5	0.994
				Average Correction Factor	0.985

Corrected As found	75.7	Previous response	75.6	% change	-0.1%

Notes:

Small adjustments to zero and span. Scrubber check after calibrator zero. Long As Left because of accidental relay switch hit.

Calibration Performed By: Ryan Power

Wood Buffalo Environmental Association

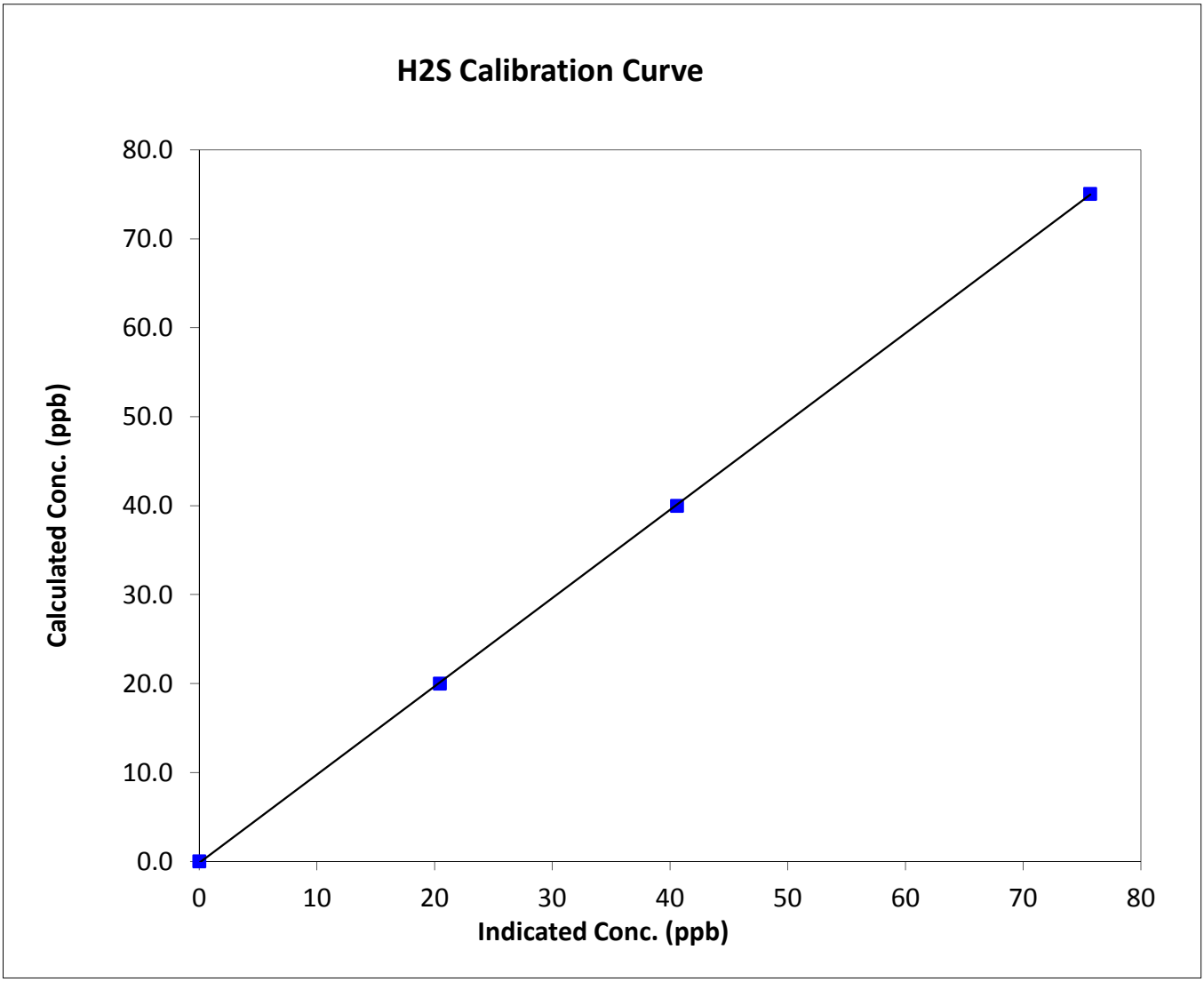
H2S Calibration Summary

Station Information

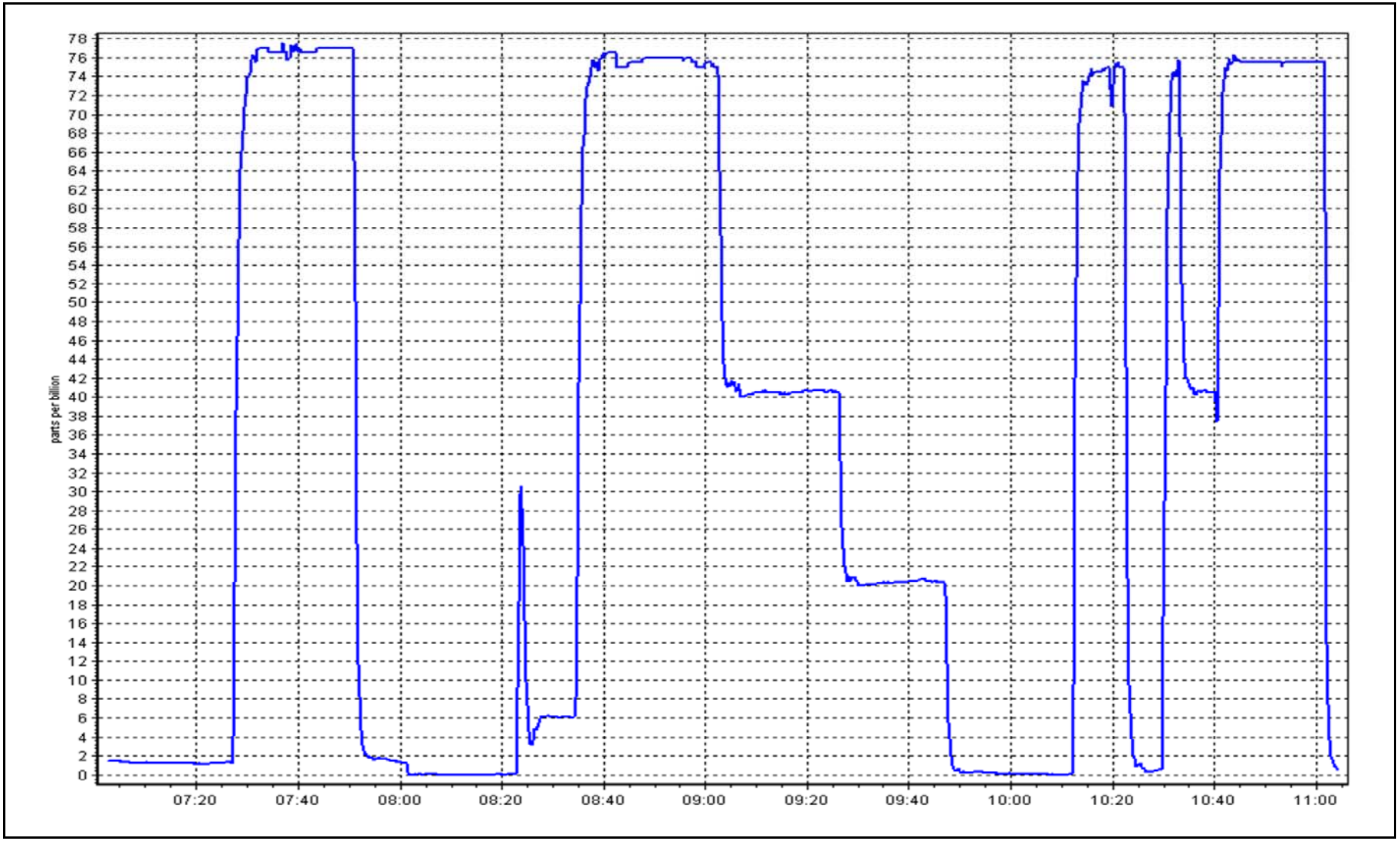
Calibration Date	April 10, 2014	Previous Calibration	March 12, 2014
Station Name	Cenovus - Christina Lake	Station Number	AMS 103
Start Time (MST)	7:05	End Time (MST)	11:05
Analyzer make	API T101	Analyzer serial #	157

Calibration Data

Calculated concentration (ppb) (Cc)	Indicated concentration (ppb) (Ic)	Correction factor (Cc/Ic)	Statistical Evaluation	
0.0	0.0	N/A	Correlation Coefficient	0.999975
75.1	75.7	0.9917		
40.0	40.6	0.9851	Slope	0.992420
20.0	20.5	0.9776		
			Intercept	-0.163888



H2S Calibration Plot Date: Thursday, April 10, 2014



Wood Buffalo Environmental Association

NO_X-NO-NO_2 Calibration Report

Station Information

Calibration Date	April 9, 2014	Previous Calibration	March 11, 2014
Station Name	Cenovus - Christina Lake	Station Number	AMS 103
Reason:	Routine		
Start Time (MST)	10:45	End Time (MST)	16:10
Barometric Pressure	N/A mmHg	Station Temperature	23.0 Deg C
Calibrator	API T700	Serial Number	451
NO Cal Gas Conc	50.3 ppm	Cal Gas Expiry Date	October 6, 2016
NOx Cal Gas Conc	50.6 ppm	Cal Gas Serial #	EY0000359

DACS Information

DACS make & model	Campbell Scientific CR3000	DACS serial No.	8203

Parameter		NOx	NO	NO2
MV conversion	Analyzer Range (ppb)	1000	1000	1000
	Analyzer Range (mv)	1000	1000	1000
Before	Data Slope	1.000068	1.000989	0.988735
	Data Offset	-0.684611	-1.092338	-1.276573
After	Data Slope	0.996209	1.000791	0.996131
	Data Offset	-0.215689	-0.699580	-0.927631
Channel #				
Voltage Range		0 - 5V	0 - 5V	0 - 5V

Analyzer Information

Analyzer make/model	Teledyne T200	Analyzer serial #	722

Test Point	before		after	
Concentration range	1000	ppb	1000	ppb
NO coefficient	1.002	ppb	0.985	ppb
NOX coefficient	1.006	ppb	0.984	ppb
NO2 coefficient		ppb		ppb
NO bkgrnd	-1.2		-0.3	
NOX bkgrnd	-0.1		0.7	
Nt coefficient				
Chamber Temp	50.0	Deg C	50.0	Deg C
Moly Temp	316.0	Deg C	315.0	Deg C
PMT Temp	6.8	Deg C	6.8	Deg C
O3 flow	83.0	ccm	83.0	ccm
R Cell Press	4.7	mmHg	4.7	mmHg
Sample Flow	437.000	ccm	439.000	ccm

Notes:

Zero and span with minor adjustments. Filter changed after As Founds

Wood Buffalo Environmental Association

NO_X-NO-NO_2 Calibration Report

Station Information

Calibration Date: April 9, 2014 Station Number: AMS 103

Calibration Data

Set Point	Total flow rate (ccm)	Source gas flow rate (ccm)	Calculated NOx conc (ppb)	Calculated NO conc (ppb)	Calculated NO2 conc (ppb)	Indicated NOx conc (ppb)	Indicated NO conc (ppb)	Indicated NO2 conc (ppb)	NOx Correction factor	NO Correction factor
as found zero	5000	0.0	0.0	0.0	0.0	2.7	0.2	2.5	N/A	N/A
as found span	5000	78.9	798.5	793.7	4.7	822.0	814.0	9.0	0.9714	0.9751
calibrator zero	5000	0.0	0.0	0.0	0.0	-0.2	-0.1	-0.1	N/A	N/A
high point	5000	78.9	798.5	793.7	4.7	804.0	802.6	1.8	0.9931	0.9890
second point	5000	39.4	398.7	396.4	2.4	403.6	402.6	1.6	0.9879	0.9845
third point	5000	19.7	199.4	198.2	1.2	202.6	201.1	1.4	0.9840	0.9855
calibrator zero										
as left zero	5000	0.0	0.0	0.0	0.0	-0.4	-0.1	-0.3	N/A	N/A
as left span	5000	78.9	798.5	479.8	318.7	806.9	460.6	348.0	0.9896	1.0417
								Average Correction Factor	0.9884	0.9863

Corrcted As found NO_X= 819.4 NO= 813.8 Percent Change NO_X= -2.5% NO= -2.4%

Previous Response NO_X= 799.1 NO= 794.0

GPT Calibration Data

Dilution Flow 5000 ccm Source Gas Flow 78.90 ccm

O3 Setpoint (ppb)	Indicated NO high point (ppb)	Indicated NO drop conc (ppb)	Calculated NO2 conc (ppb)	Indicated NOx conc (ppb)	Indicated NO conc (ppb)	Indicated NO2 conc (ppb)	NOx Correction factor	NO Correction factor	NO2 Correction factor	Converter Efficiency
Cal zero			0.0			-0.1			N/A	
1st NO2 (350)	N/A	479.8	322.8	804.0	479.8	324.3	0.9777	1.0000	0.9954	100.5%
2nd NO2 (200)	N/A	568.0	234.6	804.0	568.0	236.7	0.9777	1.0000	0.9912	100.9%
3rd NO2 (100)	N/A	689.3	113.3	805.5	689.3	116.1	0.9759	1.0000	0.9759	102.5%
4th NO2 (0)	802.6	N/A	4.4	807.0	802.6	4.0	0.9741	1.0000	N/A	N/A
					Average Correction Factor		0.9763	1.0000	0.9875	101.3%

Calibration Performed By: Ryan Power

Wood Buffalo Environmental Association

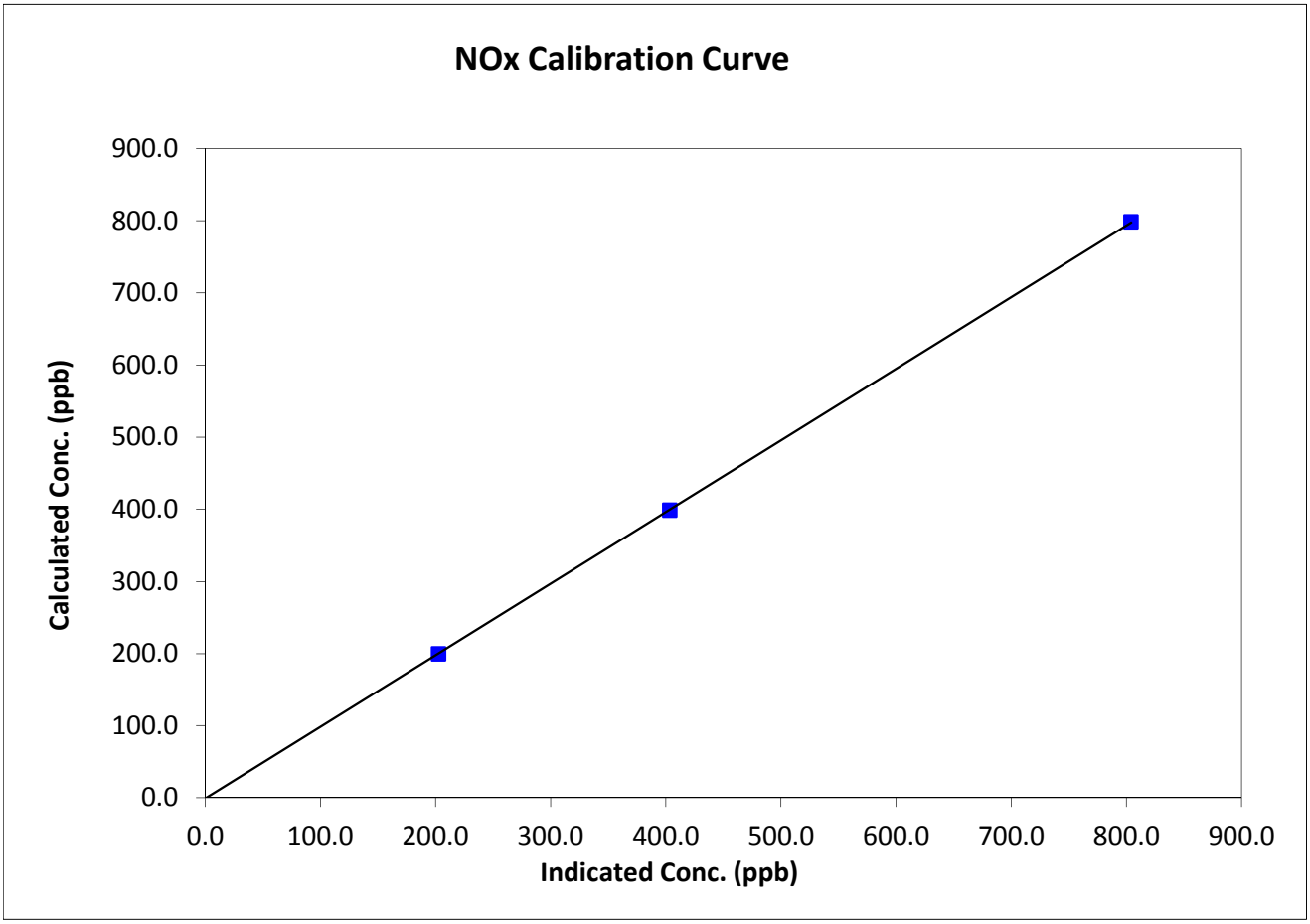
NO_X Calibration Summary

Station Information

Calibration Date	April 9, 2014	Previous Calibration	March 11, 2014
Station Name	Cenovus - Christina Lake	Station Number	AMS 103
Start Time (MST)	10:45	End Time (MST)	16:10
Analyzer make	Teledyne T200	Analyzer serial #	722

Calibration Information

Calculated conc (ppb) (Cc)	Indicated concentration (ppb) (Ic)	Correction factor (Cc/Ic)	Statistical Evaluation	
0.0	-0.2	N/A	Correlation Coefficient	0.999988
798.5	804.0	0.9931		
398.7	403.6	0.9879	Slope	0.993449
199.4	202.6	0.9840		
			Intercept	-1.063319



Wood Buffalo Environmental Association

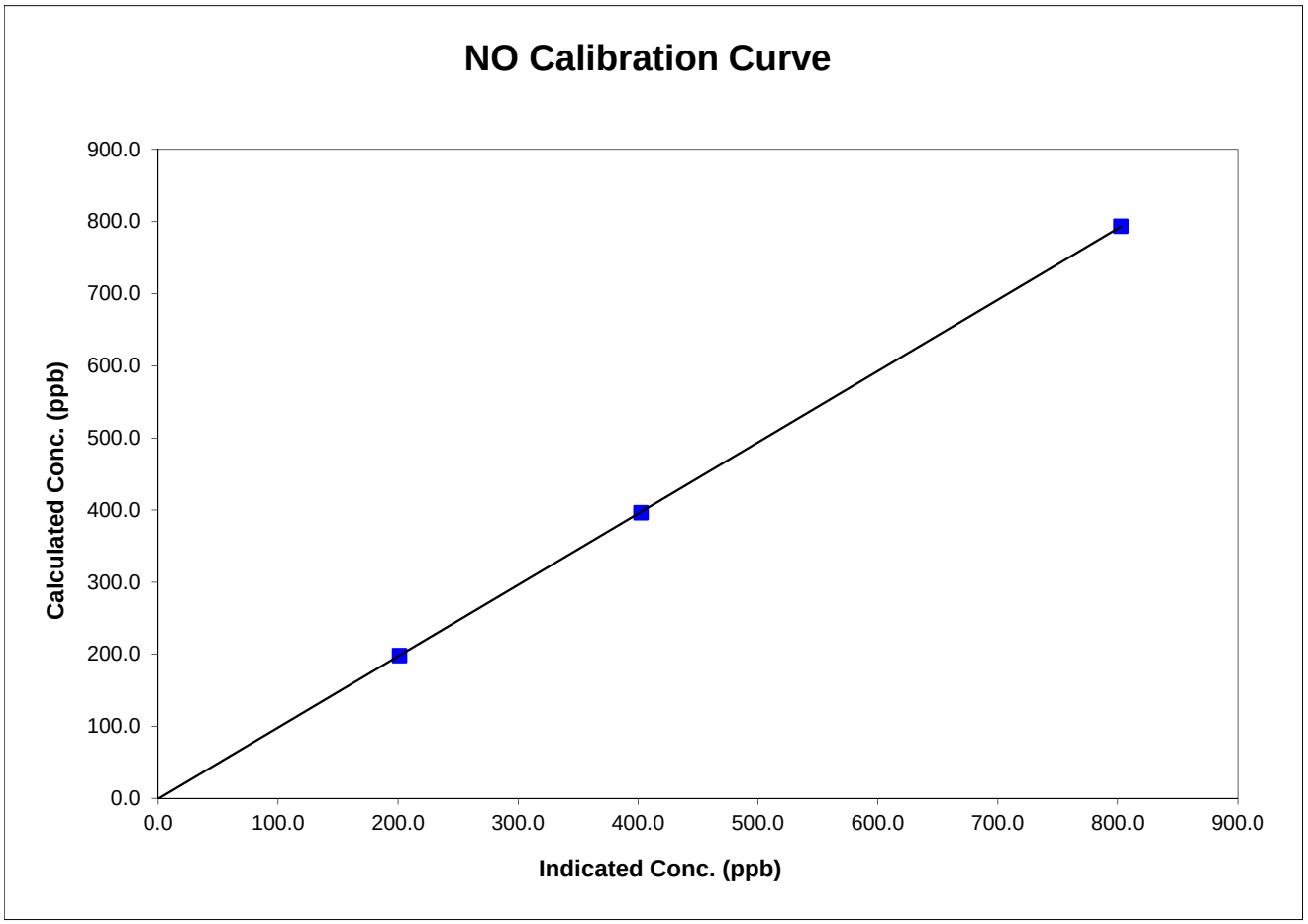
NO Calibration Summary

Station Information

Calibration Date	April 9, 2014	Previous Calibration	March 11, 2014
Station Name	Cenovus - Christina Lake	Station Number	AMS 103
Start Time (MST)	10:45	End Time (MST)	16:10
Analyzer make	Teledyne T200	Analyzer serial #	722

Calibration Information

Calculated conc (ppb) (Cc)	Indicated concentration (ppb) (Ic)	Correction factor (Cc/Ic)	Statistical Evaluation	
0.0	-0.1	N/A	Correlation Coefficient	0.999993
793.7	802.6	0.9890		
396.4	402.6	0.9845	Slope	0.988903
198.2	201.1	0.9855		
			Intercept	-0.581271



Wood Buffalo Environmental Association

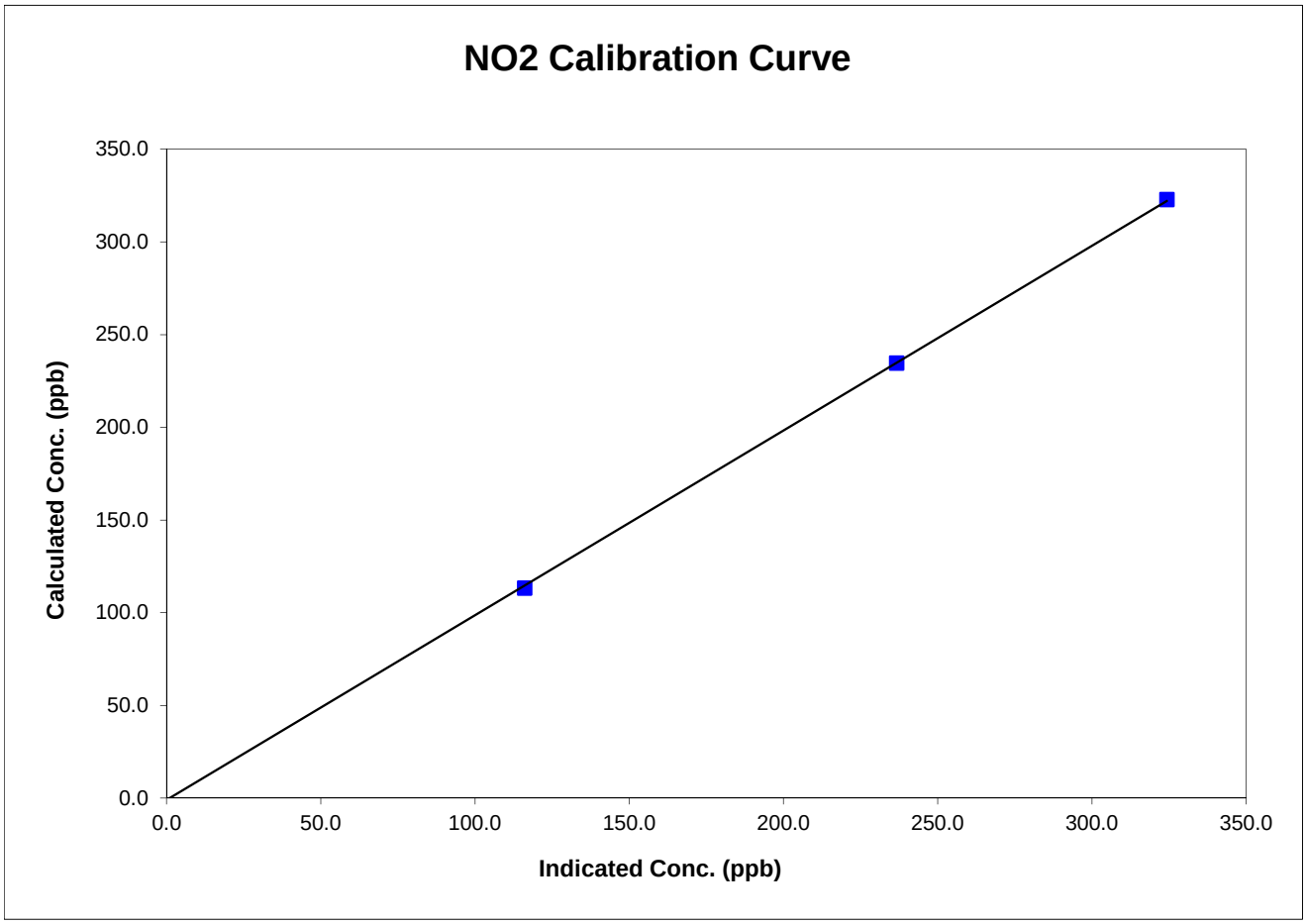
NO_2 Calibration Summary

Station Information

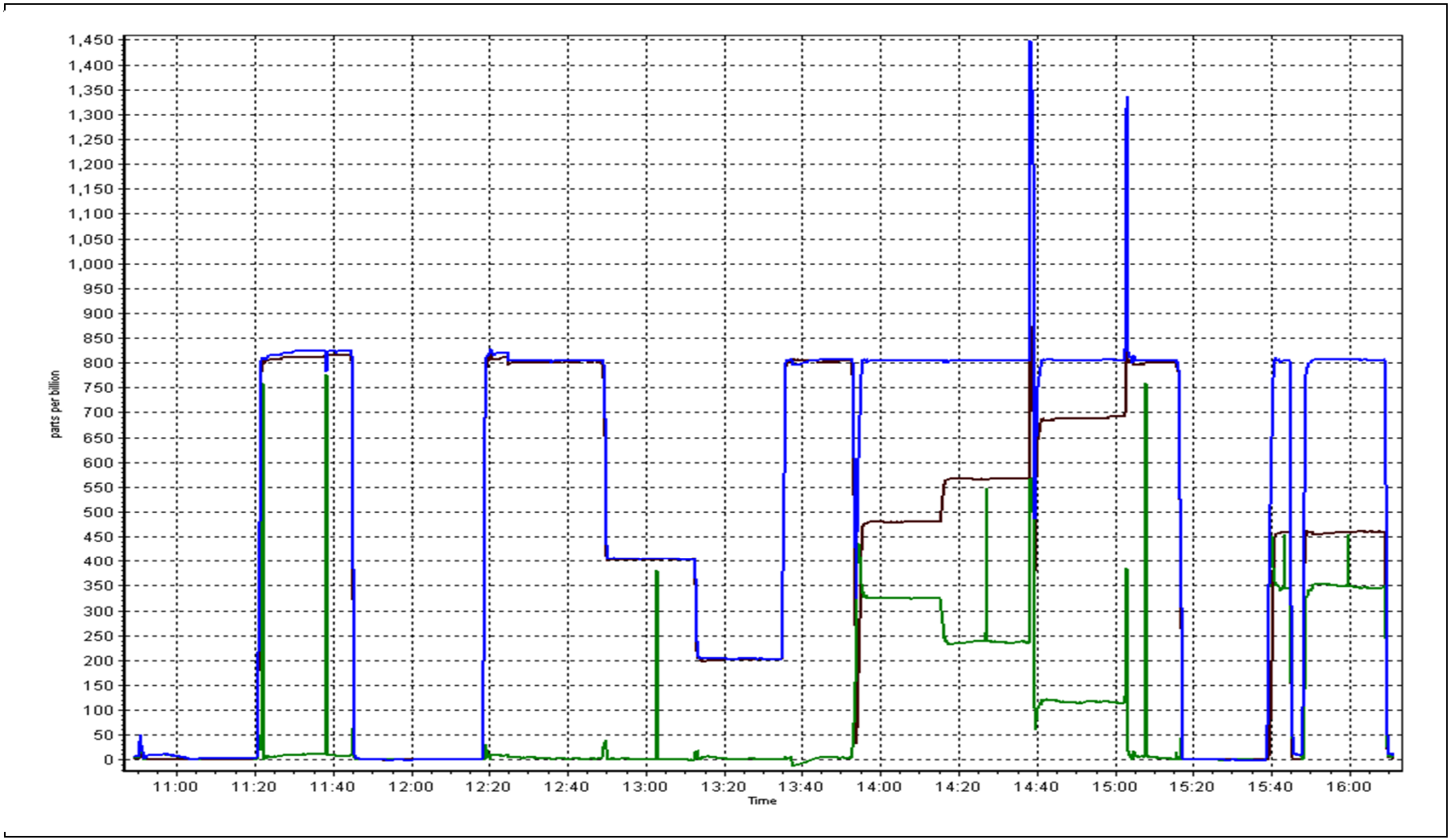
Calibration Date	April 9, 2014	Previous Calibration	March 11, 2014
Station Number	Cenovus - Christina Lake	Station Number	AMS 103
Start Time (MST)	10:45	End Time (MST)	16:10
Analyzer make	Teledyne T200	Analyzer serial #	722

Calibration Information

Calculated conc (ppb) (Cc)	Indicated concentration (ppb) (Ic)	Correction factor (Cc/Ic)	Statistical Evaluation	
0.0	-0.1	N/A	Correlation Coefficient	0.999941
322.8	324.3	0.9954		
234.6	236.7	0.9912	Slope	0.996131
113.3	116.1	0.9759		
			Intercept	-0.927631



NOx, NO & NO_2 Calibration Plot Date: April 9, 2014



WOOD BUFFALO ENVIRONMENTAL ASSOCIATION

INTEGRATED MONITORING PROGRAM
MONTHLY REPORT

DATA SUMMARY
MARCH AND APRIL 2014

Prepared
May 30, 2014

SAMPLE COLLECTION

Wood Buffalo Environmental Association
Fort McMurray, Alberta

LABORATORY ANALYSIS

passive:	Maxxam Analytics Ltd Edmonton, Alberta
VOC	Alberta Innovates - Technology Futures Vegreville, Alberta
particulate:	ALS Canada Ltd Burlington, Ontario
PAH:	Air Zone One Incorporated Mississauga, Ontario
precipitation:	Alberta Innovates - Technology Futures Vegreville, Alberta

DATA SUMMARY

Aurora Atmospherics Inc.
Calgary, Alberta

WOOD BUFFALO ENVIRONMENTAL ASSOCIATION **2014**

Polycyclic Aromatic Hydrocarbons (PAHs) **Indicated Sites and Dates**

	Results (ng/m3)					
	AMS 1 Fort McKay	**AMS 6 Patricia McInnes**	**AMS 7 Athabasca Valley**	**AMS 14 Anzac**	**Lab Blank**	**AMS 6 Repeat Patricia McInnes**
Compound Name	**06-Mar**	**06-Mar**	**06-Mar**	**06-Mar**	**06-Mar**	**06-Mar**
Naphthalene	16.5	33.3	32	13.9	0.002	30.1
Acenaphthylene	0.105	0.125	0.221	0.067	0.001	0.126
Acenaphthene	0.936	1.81	1.04	0.785	0.003	1.77
Fluorene	0.812	1.41	1.86	0.628	0.001	1.25
Phenanthrene	1.05	1.48	1.4	0.578	0.001	1.5
Anthracene	0.172	0.236	0.184	0.077	0.001	0.221
Acridine	0.121	0.115	0.173	0.043	0.001	0.101
Fluoranthene	0.1	0.215	0.168	0.085	0.001	0.244
Pyrene	0.104	0.192	0.214	0.084	0.001	0.212
Benzo(c)phenanthrene	0.01	0.022	0.014	0.007	0.001	0.026
Benz(a)anthracene	0.032	0.054	0.03	0.022	0.001	0.055
Chrysene	0.036	0.062	0.033	0.025	0.001	0.061
7,12-Dimethylbenz(a)anthracene	0.008	0.005	0.014	0.011	0.002	0.004
Benzo(b)fluoranthene	0.02	0.033	0.022	0.01	0.001	0.045
Benzo(k)fluoranthene	0.023	0.038	0.025	0.011	0.001	0.039
Benzo(a)pyrene	0.02	0.023	0.056	0.025	0.001	0.025
3-Methylcholanthrene	0.023	0.003	0.06	0.004	0.002	0.002
Indeno(123-cd)pyrene	0.024	0.027	0.024	0.014	0.002	0.026
Dibenz(a,h)anthracene	0.021	0.03	0.017	0.015	0.001	0.03
Benzo(ghi)perylene	0.031	0.034	0.036	0.018	0.001	0.03
Dibenzo(a,l)pyrene	0.076	0.087	0.08	0.069	0.003	0.086
Dibenzo(a,i)pyrene	0.021	0.043	0.055	0.035	0.003	0.04
Dibenzo(a,h)pyrene	0.034	0.018	0.045	0.011	0.003	0.017

WOOD BUFFALO ENVIRONMENTAL ASSOCIATION **2014**

Polycyclic Aromatic Hydrocarbons (PAHs) **Indicated Sites and Dates**

	Results (ng/m3)						
	AMS 1 Fort McKay	**AMS 6 Patricia McInnes**	**AMS 7 Athabasca Valley**	**AMS 14 Anzac**	**Lab Blank**	**Field Blank**	**AMS 7 Repeat Athabasca Valley**
Compound Name	**12-Mar**	**12-Mar**	**12-Mar**	**12-Mar**	**12-Mar**	**12-Mar**	**12-Mar**
Naphthalene	6.05	5	7.73	1.73	0.002	0.116	6.92
Acenaphthylene	0.077	0.023	0.206	0.014	0.001	0.002	0.217
Acenaphthene	1.08	0.214	0.916	0.948	0.003	0.002	0.967
Fluorene	0.828	0.264	1.11	0.541	0.001	0.02	1.19
Phenanthrene	1.55	0.458	0.984	0.598	0.001	0.032	1
Anthracene	0.229	0.079	0.151	0.438	0.001	0.011	0.142
Acridine	0.307	0.045	0.126	0.062	0.001	0.005	0.146
Fluoranthene	0.129	0.056	0.11	0.044	0.001	0.003	0.126
Pyrene	0.088	0.039	0.112	0.026	0.001	0.005	0.125
Benzo(c)phenanthrene	0.001	0.001	0.007	0.005	0.001	<0.001	0.007
Benz(a)anthracene	0.005	0.006	0.003	0.001	0.001	<0.001	0.004
Chrysene	0.005	0.007	0.004	0.002	0.001	<0.001	0.004
7,12-Dimethylbenz(a)anthracene	0.019	0.023	0.014	0.019	0.002	0.002	0.014
Benzo(b)fluoranthene	0.003	0.002	0.002	0.003	0.001	0.002	0.003
Benzo(k)fluoranthene	0.003	0.002	0.003	0.003	0.001	0.003	0.004
Benzo(a)pyrene	0.009	0.009	0.011	0.023	0.001	<0.001	0.013
3-Methylcholanthrene	0.006	0.037	0.05	0.028	0.002	<0.001	0.046
Indeno(123-cd)pyrene	0.007	0.003	0.011	0.009	0.002	<0.001	0.008
Dibenz(a,h)anthracene	0.011	0.007	0.009	0.007	0.001	<0.001	0.009
Benzo(ghi)perylene	0.016	0.008	0.011	0.007	0.001	0.003	0.012
Dibenzo(a,l)pyrene	0.002	0.041	0.078	0.08	0.003	0.08	0.084
Dibenzo(a,i)pyrene	0.048	0.036	0.051	0.068	0.003	<0.001	0.055
Dibenzo(a,h)pyrene	0.075	0.027	0.051	0.059	0.003	<0.001	0.053

WOOD BUFFALO ENVIRONMENTAL ASSOCIATION **2014**

Polycyclic Aromatic Hydrocarbons (PAHs) **Indicated Sites and Dates**

	Results (ng/m3)						
	AMS 1 Fort McKay	**AMS 6 Patricia McInnes**	**AMS 7 Athabasca Valley**	**AMS 14 Anzac**	**Lab Blank**	**Field Blank**	**AMS 14 Repeat Anzac**
Compound Name	**18-Mar**	**18-Mar**	**18-Mar**	**18-Mar**	**18-Mar**	**18-Mar**	**18-Mar**
Naphthalene	14.3	17.8	17.3	4.96	0.002	0.213	4.41
Acenaphthylene	0.134	0.51	0.778	0.07	0.001	0.016	0.082
Acenaphthene	1.33	0.784	1.14	4.45	0.003	0.031	4.13
Fluorene	0.944	0.988	1.87	1.82	0.001	0.038	1.56
Phenanthrene	1.42	1.43	1.57	1.39	0.001	0.021	1.17
Anthracene	0.122	0.12	1.22	0.11	0.001	0.013	0.125
Acridine	0.277	0.1	0.237	0.078	0.001	0.004	0.064
Fluoranthene	0.086	0.196	0.188	0.088	0.001	0.005	0.083
Pyrene	0.084	0.198	0.223	0.054	0.001	0.006	0.053
Benzo(c)phenanthrene	0.01	0.014	0.007	0.004	0.001	<0.001	0.002
Benz(a)anthracene	0.007	0.022	0.01	0.003	0.001	<0.001	0.004
Chrysene	0.008	0.024	0.011	0.003	0.001	<0.001	0.004
7,12-Dimethylbenz(a)anthracene	0.013	0.014	0.012	0.015	0.002	<0.001	0.012
Benzo(b)fluoranthene	0.001	0.022	0.01	0.006	0.001	<0.001	0.006
Benzo(k)fluoranthene	0.002	0.025	0.011	0.006	0.001	0.001	0.007
Benzo(a)pyrene	0.031	0.014	0.011	0.014	0.001	<0.001	0.014
3-Methylcholanthrene	0.008	0.016	0.081	0.071	0.002	0.01	0.069
Indeno(123-cd)pyrene	0.006	0.013	0.011	0.008	0.002	<0.001	0.008
Dibenz(a,h)anthracene	0.005	0.008	0.011	0.007	0.001	<0.001	0.007
Benzo(ghi)perylene	0.011	0.022	0.019	0.01	0.001	<0.001	0.008
Dibenzo(a,l)pyrene	0.087	0.067	0.065	0.084	0.003	0.002	0.09
Dibenzo(a,i)pyrene	0.051	0.061	0.066	0.032	0.003	<0.001	0.033
Dibenzo(a,h)pyrene	0.066	0.073	0.059	0.039	0.003	<0.001	0.033

WOOD BUFFALO ENVIRONMENTAL ASSOCIATION **2014**

Polycyclic Aromatic Hydrocarbons (PAHs) **Indicated Sites and Dates**

	Results (ng/m3)						
	AMS 1	**AMS 6**	**AMS 7**	**AMS 14**	**Lab Blank**	**Field Blank**	**AMS 14 Repeat**
	Fort McKay	**Patricia McInnes**	**Athabasca Valley**	**Anzac**			**Anzac**
Compound Name	**24-Mar**	**24-Mar**	**24-Mar**	**24-Mar**	**24-Mar**	**24-Mar**	**24-Mar**
Naphthalene	3.57	2.5	17.8	11.9	0.002	0.135	10.9
Acenaphthylene	0.064	0.007	0.172	0.035	0.001	0.001	0.033
Acenaphthene	0.376	0.169	1.28	1.85	0.003	0.002	1.55
Fluorene	0.251	0.112	1.99	0.459	0.001	0.003	0.424
Phenanthrene	0.341	0.121	1.3	0.252	0.001	0.048	0.229
Anthracene	0.029	0.014	0.079	0.013	0.001	0.005	0.015
Acridine	0.041	0.017	0.289	0.017	0.001	0.007	0.019
Fluoranthene	0.04	0.016	0.204	0.031	0.001	0.003	0.025
Pyrene	0.037	0.013	0.26	0.027	0.001	0.005	0.025
Benzo(c)phenanthrene	0.003	0.005	0.009	0.003	0.001	<0.001	0.004
Benz(a)anthracene	0.01	0.008	0.015	0.004	0.001	<0.001	0.005
Chrysene	0.011	0.009	0.017	0.004	0.001	<0.001	0.003
7,12-Dimethylbenz(a)anthracene	0.006	0.02	0.028	0.02	0.002	0.002	0.02
Benzo(b)fluoranthene	0.004	0.003	0.011	0.002	0.001	<0.001	0.003
Benzo(k)fluoranthene	0.005	0.004	0.012	0.002	0.001	<0.001	0.004
Benzo(a)pyrene	0.015	0.011	0.015	0.021	0.001	<0.001	0.019
3-Methylcholanthrene	0.012	0.089	0.081	0.01	0.002	0.005	0.013
Indeno(123-cd)pyrene	0.016	0.004	0.017	0.003	0.002	<0.001	0.002
Dibenz(a,h)anthracene	0.014	0.003	0.015	0.003	0.001	<0.001	0.002
Benzo(ghi)perylene	0.011	0.013	0.027	0.011	0.001	<0.001	0.015
Dibenzo(a,l)pyrene	0.06	0.09	0.087	0.018	0.003	0.003	0.049
Dibenzo(a,i)pyrene	0.049	0.056	0.077	0.052	0.003	0.003	0.06
Dibenzo(a,h)pyrene	0.03	0.045	0.058	0.021	0.003	<0.001	0.023

WOOD BUFFALO ENVIRONMENTAL ASSOCIATION **2014**

Polycyclic Aromatic Hydrocarbons (PAHs) **Indicated Sites and Dates**

	Results (ng/m3)						
	AMS 1 Fort McKay	**AMS 6 Patricia McInnes**	**AMS 7 Athabasca Valley**	**AMS 14 Anzac**	**Lab Blank**	**Field Blank**	**AMS 6 Repeat Patricia McInnes**
Compound Name	**30-Mar**	**30-Mar**	**30-Mar**	**30-Mar**	**30-Mar**	**30-Mar**	**30-Mar**
Naphthalene	6.16	10.7	18.2	4.23	0.002	0.319	10.1
Acenaphthylene	0.042	0.261	0.262	0.044	0.001	0.029	0.223
Acenaphthene	0.571	0.642	0.934	0.822	0.003	0.036	0.605
Fluorene	0.284	0.32	1.6	0.326	0.001	0.015	0.294
Phenanthrene	0.346	0.62	1.34	0.372	0.001	0.043	0.556
Anthracene	0.033	0.062	0.119	0.048	0.001	0.012	0.053
Acridine	0.049	0.051	0.267	0.011	0.001	0.008	0.056
Fluoranthene	0.067	0.136	0.179	0.097	0.001	0.003	0.13
Pyrene	0.067	0.148	0.289	0.063	0.001	0.004	0.122
Benzo(c)phenanthrene	0.009	0.007	0.013	0.003	0.001	<0.001	0.006
Benz(a)anthracene	0.03	0.045	0.046	0.006	0.001	<0.001	0.036
Chrysene	0.034	0.051	0.052	0.006	0.001	<0.001	0.041
7,12-Dimethylbenz(a)anthracene	0.018	0.021	0.02	0.01	0.002	<0.001	0.018
Benzo(b)fluoranthene	0.01	0.011	0.018	0.003	0.001	<0.001	0.012
Benzo(k)fluoranthene	0.012	0.012	0.02	0.003	0.001	<0.001	0.014
Benzo(a)pyrene	0.023	0.025	0.035	0.04	0.001	0.002	0.026
3-Methylcholanthrene	0.023	0.018	0.03	0.097	0.002	<0.001	0.017
Indeno(123-cd)pyrene	0.006	0.019	0.013	0.001	0.002	<0.001	0.017
Dibenz(a,h)anthracene	0.005	0.016	0.012	<0.001	0.001	<0.001	0.014
Benzo(ghi)perylene	0.017	0.029	0.013	0.016	0.001	<0.001	0.024
Dibenzo(a,l)pyrene	0.058	0.04	0.078	0.051	0.003	<0.001	0.033
Dibenzo(a,i)pyrene	0.033	0.02	0.054	0.025	0.003	<0.001	0.019
Dibenzo(a,h)pyrene	0.028	0.039	0.053	0.048	0.003	<0.001	0.036

WOOD BUFFALO ENVIRONMENTAL ASSOCIATION **2014**

Polycyclic Aromatic Hydrocarbons (PAHs) **Indicated Sites and Dates**

	Results (ng/m3)						
	AMS 1 Fort McKay	**AMS 6 Patricia McInnes**	**AMS 7 Athabasca Valley**	**AMS 14 Anzac**	**Lab Blank**	**Field Blank**	**AMS 7 Repeat Athabasca Valley**
Compound Name	**05-Apr**	**05-Apr**	**05-Apr**	**05-Apr**	**05-Apr**	**05-Apr**	**05-Apr**
Naphthalene	2.56	12	33.8	9.39	0.002	0.457	31.3
Acenaphthylene	0.07	0.015	0.335	0.03	0.001	0.003	0.311
Acenaphthene	0.498	0.39	1.82	1.32	0.003	0.141	1.85
Fluorene	0.167	0.368	1.89	0.922	0.001	0.033	1.77
Phenanthrene	0.477	0.541	1.78	1.25	0.001	0.077	1.8
Anthracene	0.046	0.056	0.23	0.177	0.001	0.007	0.224
Acridine	0.146	0.054	0.282	0.041	0.001	0.006	0.308
Fluoranthene	0.025	0.073	0.205	0.151	0.001	0.012	0.198
Pyrene	0.03	0.066	0.313	0.13	0.001	0.01	0.301
Benzo(c)phenanthrene	0.005	0.005	0.011	0.015	0.001	0.002	0.013
Benz(a)anthracene	0.014	0.009	0.024	0.035	0.001	0.002	0.024
Chrysene	0.016	0.011	0.028	0.041	0.001	0.004	0.027
7,12-Dimethylbenz(a)anthracene	0.022	0.02	0.022	0.023	0.002	<0.001	0.024
Benzo(b)fluoranthene	0.019	0.015	0.026	0.032	0.001	<0.001	0.023
Benzo(k)fluoranthene	0.021	0.017	0.028	0.037	0.001	0.003	0.026
Benzo(a)pyrene	0.028	0.021	0.03	0.02	0.001	0.004	0.028
3-Methylcholanthrene	0.032	0.019	0.02	0.051	0.002	0.012	0.027
Indeno(123-cd)pyrene	0.014	0.013	0.01	0.021	0.002	0.009	0.011
Dibenz(a,h)anthracene	0.012	0.011	0.009	0.018	0.001	0.008	0.01
Benzo(ghi)perylene	0.029	0.02	0.023	0.032	0.001	0.005	0.024
Dibenzo(a,l)pyrene	0.096	0.072	0.054	0.064	0.003	0.011	0.061
Dibenzo(a,i)pyrene	0.088	0.036	0.037	0.062	0.003	<0.001	0.035
Dibenzo(a,h)pyrene	0.072	0.013	0.041	0.059	0.003	<0.001	0.039

WOOD BUFFALO ENVIRONMENTAL ASSOCIATION **2014**

Polycyclic Aromatic Hydrocarbons (PAHs) **Indicated Sites and Dates**

	Results (ng/m3)						
	AMS 1 Fort McKay	**AMS 6 Patricia McInnes**	**AMS 7 Athabasca Valley**	**AMS 14 Anzac**	**Lab Blank**	**Field Blank**	**AMS 6 Repeat Patricia McInnes**
Compound Name	**11-Apr**	**11-Apr**	**11-Apr**	**11-Apr**	**11-Apr**	**11-Apr**	**11-Apr**
Naphthalene	7.36	28.7	52.8	7.98	0.006	0.948	29.6
Acenaphthylene	0.16	0.136	0.849	0.037	0.001	0.027	0.118
Acenaphthene	0.428	0.422	0.526	0.909	0.001	0.005	0.438
Fluorene	0.262	0.514	1.29	0.79	0.001	0.01	0.593
Phenanthrene	0.62	0.624	1.89	0.623	0.002	0.01	0.654
Anthracene	0.116	0.044	0.235	0.063	0.001	0.002	0.044
Acridine	0.224	0.085	0.205	0.037	0.001	0.012	0.085
Fluoranthene	0.041	0.086	0.244	0.037	0.001	0.009	0.092
Pyrene	0.066	0.084	0.289	0.03	0.001	0.008	0.087
Benzo(c)phenanthrene	0.008	0.005	0.039	0.004	0.001	<0.001	0.006
Benz(a)anthracene	0.035	0.017	0.025	0.004	0.001	<0.001	0.015
Chrysene	0.039	0.019	0.024	0.004	0.001	<0.001	0.016
7,12-Dimethylbenz(a)anthracene	0.058	0.018	0.306	0.023	0.001	0.007	0.018
Benzo(b)fluoranthene	0.038	0.015	0.188	0.015	0.001	<0.001	0.017
Benzo(k)fluoranthene	0.044	0.017	0.213	0.017	0.001	<0.001	0.019
Benzo(a)pyrene	0.027	0.014	0.058	0.003	0.001	<0.001	0.015
3-Methylcholanthrene	0.028	0.014	0.152	0.048	0.001	0.006	0.016
Indeno(123-cd)pyrene	0.057	0.087	0.301	0.025	0.001	<0.001	0.082
Dibenz(a,h)anthracene	0.071	0.091	0.167	0.053	0.001	0.005	0.086
Benzo(ghi)perylene	0.081	0.054	0.127	0.018	0.001	0.003	0.047
Dibenzo(a,l)pyrene	0.1	0.051	0.288	0.076	0.005	<0.001	0.053
Dibenzo(a,i)pyrene	0.027	0.041	0.051	0.063	0.003	<0.001	0.047
Dibenzo(a,h)pyrene	0.033	0.053	0.386	0.058	0.005	0.005	0.051

WOOD BUFFALO ENVIRONMENTAL ASSOCIATION **2014**

Polycyclic Aromatic Hydrocarbons (PAHs) **Indicated Sites and Dates**

	Results (ng/m3)						
	AMS 1 Fort McKay	**AMS 6 Patricia McInnes**	**AMS 7 Athabasca Valley**	**AMS 14 Anzac**	**Lab Blank**	**Field Blank**	**AMS 7 Repeat Athabasca Valley**
Compound Name	**17-Apr**	**17-Apr**	**17-Apr**	**17-Apr**	**17-Apr**	**17-Apr**	**17-Apr**
Naphthalene	28.9	37.6	26	7.8	0.006	0.246	27
Acenaphthylene	0.52	0.118	0.43	0.041	0.001	0.004	0.404
Acenaphthene	0.569	0.351	0.478	3.18	0.001	0.005	0.51
Fluorene	1.42	0.663	1.15	2.69	0.001	0.002	1.21
Phenanthrene	2.66	1.14	1.36	3.41	0.002	0.031	1.5
Anthracene	0.253	0.081	0.096	0.337	0.001	0.004	0.101
Acridine	0.283	0.065	0.13	0.057	0.001	0.008	0.145
Fluoranthene	0.324	0.252	0.226	0.214	0.001	0.008	0.277
Pyrene	0.301	0.264	0.228	0.09	0.001	0.009	0.282
Benzo(c)phenanthrene	0.044	0.015	0.01	0.008	0.001	<0.001	0.013
Benz(a)anthracene	0.099	0.041	0.043	0.003	0.001	0.001	0.04
Chrysene	0.113	0.047	0.048	0.003	0.001	<0.001	0.046
7,12-Dimethylbenz(a)anthracene	0.058	0.033	0.029	0.016	0.001	0.01	0.028
Benzo(b)fluoranthene	0.095	0.075	0.042	0.035	0.001	0.004	0.046
Benzo(k)fluoranthene	0.107	0.085	0.048	0.04	0.001	<0.001	0.053
Benzo(a)pyrene	0.061	0.058	0.016	0.017	0.001	<0.001	0.017
3-Methylcholanthrene	0.005	0.017	0.065	0.08	0.001	<0.001	0.069
Indeno(123-cd)pyrene	0.084	0.096	0.058	0.038	0.001	<0.001	0.06
Dibenz(a,h)anthracene	0.086	0.062	0.043	0.032	0.001	0.002	0.037
Benzo(ghi)perylene	0.126	0.077	0.067	0.016	0.001	0.001	0.068
Dibenzo(a,l)pyrene	0.045	0.028	0.043	0.07	0.005	<0.001	0.041
Dibenzo(a,i)pyrene	0.027	0.038	0.042	0.064	0.003	0.003	0.041
Dibenzo(a,h)pyrene	0.051	0.022	0.011	0.074	0.005	0.004	0.011

WOOD BUFFALO ENVIRONMENTAL ASSOCIATION **2014**

Polycyclic Aromatic Hydrocarbons (PAHs) **Indicated Sites and Dates**

	Results (ng/m3)						
	AMS 1	**AMS 6**	**AMS 7**	**AMS 14**	**Lab Blank**	**Field Blank**	**AMS 14 Repeat**
	Fort McKay	**Patricia McInnes**	**Athabasca Valley**	**Anzac**			**Anzac**
Compound Name	**23-Apr**	**23-Apr**	**23-Apr**	**23-Apr**	**23-Apr**	**23-Apr**	**23-Apr**
Naphthalene	7.78	20.2	7.49	6.26	0.006	0.262	7.02
Acenaphthylene	0.472	0.077	0.034	0.059	0.001	0.006	0.057
Acenaphthene	1.29	0.183	0.108	1.16	0.001	0.005	1.28
Fluorene	0.686	0.403	0.297	1.29	0.001	0.013	1.29
Phenanthrene	2.16	0.59	0.573	1.5	0.002	0.04	1.51
Anthracene	0.228	0.047	0.056	0.106	0.001	0.006	0.112
Acridine	0.773	0.083	0.052	0.06	0.001	0.002	0.069
Fluoranthene	0.113	0.141	0.064	0.099	0.001	0.007	0.106
Pyrene	0.099	0.134	0.065	0.041	0.001	0.005	0.044
Benzo(c)phenanthrene	0.009	0.04	0.009	0.007	0.001	<0.001	0.006
Benz(a)anthracene	0.046	0.027	0.011	0.002	0.001	<0.001	0.002
Chrysene	0.052	0.03	0.012	0.002	0.001	<0.001	0.003
7,12-Dimethylbenz(a)anthracene	0.048	0.018	0.032	0.017	0.001	0.013	0.018
Benzo(b)fluoranthene	0.036	0.039	0.02	0.012	0.001	0.015	0.012
Benzo(k)fluoranthene	0.041	0.044	0.022	0.013	0.001	0.008	0.014
Benzo(a)pyrene	0.039	0.028	0.006	0.018	0.001	<0.001	0.017
3-Methylcholanthrene	0.11	0.019	0.164	0.026	0.001	0.011	0.023
Indeno(123-cd)pyrene	0.048	0.051	0.047	0.053	0.001	<0.001	0.048
Dibenz(a,h)anthracene	0.042	0.03	0.014	0.012	0.001	0.006	0.012
Benzo(ghi)perylene	0.073	0.036	0.027	0.005	0.001	0.011	0.004
Dibenzo(a,l)pyrene	0.032	0.051	0.028	0.042	0.005	0.004	0.041
Dibenzo(a,i)pyrene	0.016	0.034	0.019	0.028	0.003	<0.001	0.027
Dibenzo(a,h)pyrene	0.028	0.062	0.053	0.017	0.005	0.003	0.017

WOOD BUFFALO ENVIRONMENTAL ASSOCIATION **2014**

Polycyclic Aromatic Hydrocarbons (PAHs) **Indicated Sites and Dates**

	Results (ng/m3)						
	AMS 1	**AMS 6**	**AMS 7**	**AMS 14**	**Lab Blank**	**Field Blank**	**AMS 14 Repeat**
	Fort McKay	**Patricia McInnes**	**Athabasca Valley**	**Anzac**			**Anzac**
Compound Name	**29-Apr**	**29-Apr**	**29-Apr**	**29-Apr**	**29-Apr**	**29-Apr**	**29-Apr**
Naphthalene	23.9	25.3	25.1	53.7	0.006	0.725	53.7
Acenaphthylene	0.498	0.368	0.149	0.316	0.001	0.004	0.303
Acenaphthene	0.994	0.317	0.795	20.2	0.001	0.005	21
Fluorene	1.35	1.17	2.2	16	0.001	0.01	16.7
Phenanthrene	2.26	1.32	2.53	15.3	0.002	0.016	15.7
Anthracene	0.162	0.134	0.15	0.794	0.001	0.006	0.779
Acridine	0.354	0.446	0.308	0.149	0.001	0.005	0.181
Fluoranthene	0.124	0.273	0.304	0.61	0.001	0.006	0.625
Pyrene	0.114	0.22	0.333	0.35	0.001	0.006	0.374
Benzo(c)phenanthrene	0.008	0.008	0.011	0.013	0.001	<0.001	0.013
Benz(a)anthracene	0.036	0.033	0.023	0.041	0.001	<0.001	0.037
Chrysene	0.04	0.038	0.027	0.046	0.001	<0.001	0.042
7,12-Dimethylbenz(a)anthracene	0.035	0.029	0.028	0.017	0.001	0.01	0.019
Benzo(b)fluoranthene	0.056	0.074	0.034	0.035	0.001	0.004	0.039
Benzo(k)fluoranthene	0.063	0.084	0.039	0.039	0.001	0.002	0.029
Benzo(a)pyrene	0.029	0.048	0.016	0.015	0.001	0.005	0.015
3-Methylcholanthrene	0.029	0.004	0.03	0.006	0.001	0.008	0.009
Indeno(123-cd)pyrene	0.069	0.049	0.047	0.043	0.001	0.002	0.045
Dibenz(a,h)anthracene	0.055	0.039	0.003	0.025	0.001	0.003	0.025
Benzo(ghi)perylene	0.069	0.113	0.046	0.03	0.001	0.01	0.033
Dibenzo(a,l)pyrene	0.081	0.049	0.051	0.031	0.005	0.005	0.035
Dibenzo(a,i)pyrene	0.039	0.023	0.042	0.024	0.003	0.003	0.023
Dibenzo(a,h)pyrene	0.038	0.046	0.026	0.026	0.005	<0.001	0.027

WOOD BUFFALO ENVIRONMENTAL ASSOCIATION **2014**

Particulate Matter - Metals **Indicated Sites and Dates**

Station #	AMS 1	AMS 7	MDL	Lab Blank	Travel Blank
Station Name	Fort McKay	Athabasca Valley			
Sample Date	6-Mar	6-Mar			6-Mar
PM Size(µm)	2.5	2.5			2.5
Total Air Volume (m3)	27.147	24			24
Units	µg/M3	µg/M3			µg/M3
Particulate Matter (µg)	54	179			8.5
Unit	(µg/m3)	(µg/m3)	(µg)	(µg)	(µg)
Aluminum	0.0550	0.0678	0.2	0.3147441	0.0299
Arsenic	<0.000184	<0.000208	0.005	<	<0.000208
Barium	0.000900	0.00254	0.005	0.0059185	0.000520
Beryllium	<0.000184	<0.000208	0.005	<	<0.000208
Boron	0.0164	0.0179	0.2	0.476232094	0.0170
Cadmium	<0.000184	<0.000208	0.005	<	<0.000208
Chromium	0.00350	0.00291	0.02	0.085604738	0.00290
Cobalt	0.000156	0.000253	0.002	0.006117	0.000229
Copper	0.0115	0.00451	0.01	0.143983306	0.000693
Lead	0.000866	0.00142	0.005	0.011561425	0.000305
Manganese	0.00305	0.00309	0.002	0.074606194	0.00192
Molybdenum	0.000938	0.000260	0.002	0.036159619	0.000118
Nickel	0.00109	0.000902	0.02	0.0376478	0.00179
Silver	<0.0000737	<0.0000833	0.002	<	0.000228
Strontium	0.000262	0.000466	0.005	<	<0.000208
Titanium	0.00108	0.00112	0.02	<	<0.000833
Uranium	<0.0000737	<0.0000833	0.002	<	<0.0000833
Vanadium (corr)	0.00109	0.00254	0.02	<	<0.000833
Zinc	0.00904	0.0199	0.02	0.150351825	0.0136
Iron	0.111	0.154	0.2	0.704320613	0.0466
Phosphorus	<0.184	<0.208	5	<	<0.208

Station #	AMS 1	AMS 12	AMS 13	AMS 15	AMS 16	Travel Blank
Station Name	Fort McKay	Millenium	Fort McKay South	CNRL Horizon	Shell Muskeg River	
Sample Date	6-Mar	6-Mar	6-Mar	6-Mar	6-Mar	6-Mar
PM Size(µm)	10	10	10	10	10	10
Total Air Volume (m3)	24	24	24	24	24	24
Units	µg/M3	µg/M3	µg/M3	µg/M3	µg/M3	µg/M3
Particulate Matter (µg)	233	936	116	219	268	-5
Unit	(µg/m3)	(µg/m3)	(µg/m3)	(µg/m3)	(µg/m3)	(µg)
Aluminum	0.152	0.742	0.143	0.194	0.216	0.0528
Arsenic	<0.000208	0.000398	<0.000208	<0.000208	<0.000208	<0.000208
Barium	0.00808	0.0157	0.00294	0.00371	0.00388	0.000405
Beryllium	<0.000208	<0.000208	<0.000208	<0.000208	<0.000208	<0.000208
Boron	0.0169	0.0205	0.0182	0.0178	0.0176	0.0200
Cadmium	<0.000208	<0.000208	<0.000208	<0.000208	<0.000208	<0.000208
Chromium	0.00378	0.00412	0.00395	0.00296	0.00325	0.00602
Cobalt	0.000239	0.00123	0.000337	0.000266	0.000339	0.000349
Copper	0.0324	0.00304	0.00525	0.00109	0.00203	<0.000417
Lead	0.00120	0.00186	0.00195	0.00105	0.000909	0.000226
Manganese	0.00819	0.0478	0.00638	0.00981	0.0122	0.00138
Molybdenum	0.000138	0.000401	<0.0000833	0.000145	<0.0000833	0.000998
Nickel	0.00131	0.00422	0.00140	0.000905	0.00561	0.00205
Silver	<0.0000833	<0.0000833	<0.0000833	<0.0000833	<0.0000833	<0.0000833
Strontium	0.00117	0.00646	0.000907	0.00127	0.00160	<0.000208
Titanium	0.00495	0.0215	0.00179	0.00379	0.00711	<0.000833
Uranium	<0.0000833	0.0000949	<0.0000833	<0.0000833	<0.0000833	<0.0000833
Vanadium (corr)	0.00189	0.00564	0.00157	0.00150	0.00153	<0.000833
Zinc	0.0184	0.0219	0.0181	0.0108	0.0127	0.00872
Iron	0.472	3.48	0.361	0.480	0.671	0.0790

WOOD BUFFALO ENVIRONMENTAL ASSOCIATION **2014**

Particulate Matter - Metals **Indicated Sites and Dates**

Station #	MDL	Lab Blank	Travel Blank
Station Name			
Sample Date			12-Mar
PM Size(µm)			2.5
Total Air Volume (m3)			24
Units			µg/M3
Particulate Matter (µg)			1
Unit	(µg)	(µg)	(µg)
Aluminum	0.2	0.3147441	0.0128
Arsenic	0.005	<	<0.000208
Barium	0.005	0.0059185	0.000298
Beryllium	0.005	<	<0.000208
Boron	0.2	0.476232094	0.0168
Cadmium	0.005	<	<0.000208
Chromium	0.02	0.085604738	0.00204
Cobalt	0.002	0.006117	0.000131
Copper	0.01	0.143983306	0.000574
Lead	0.005	0.011561425	0.000287
Manganese	0.002	0.074606194	0.00158
Molybdenum	0.002	0.036159619	0.000312
Nickel	0.02	0.0376478	<0.000833
Silver	0.002	<	<0.0000833
Strontium	0.005	<	<0.000208
Titanium	0.02	<	<0.000833
Uranium	0.002	<	<0.0000833
Vanadium (corr)	0.02	<	<0.000833
Zinc	0.02	0.150351825	0.00532
Iron	0.2	0.704320613	0.0238
Phosphorus	5	<	<0.208

Station #	AMS 12	AMS 13	AMS 15	AMS 16	Travel Blank
Station Name	Millenium	Fort McKay South	CNRL Horizon	Shell Muskeg River	
Sample Date	12-Mar	12-Mar	12-Mar	12-Mar	12-Mar
PM Size(µm)	10	10	10	10	10
Total Air Volume (m3)	24	24	24	24	24
Units	µg/M3	µg/M3	µg/M3	µg/M3	µg/M3
Particulate Matter (µg)	19	2	27	39	0.5
Unit	(µg/m3)	(µg/m3)	(µg/m3)	(µg/m3)	(µg)
Aluminum	0.0636	0.0541	0.0590	0.0583	0.0251
Arsenic	<0.000208	<0.000208	<0.000208	<0.000208	<0.000208
Barium	0.00131	0.000858	0.000832	0.00154	0.000428
Beryllium	<0.000208	<0.000208	<0.000208	<0.000208	<0.000208
Boron	0.0172	0.0177	0.0167	0.0173	0.0163
Cadmium	<0.000208	<0.000208	<0.000208	<0.000208	<0.000208
Chromium	0.00300	0.00292	0.00273	0.00317	0.00200
Cobalt	0.000190	0.000334	0.000185	0.000194	0.0000874
Copper	0.000859	0.00217	0.000898	0.00129	<0.000417
Lead	0.00124	0.000659	0.00124	0.000879	0.000793
Manganese	0.00315	0.00212	0.00304	0.00953	0.00157
Molybdenum	0.000106	0.0000838	0.000199	0.000344	0.000879
Nickel	0.00109	<0.000833	0.00110	0.00112	<0.000833
Silver	<0.0000833	<0.0000833	<0.0000833	<0.0000833	<0.0000833
Strontium	0.000453	0.000270	0.000313	0.000593	<0.000208
Titanium	0.00257	<0.000833	<0.000833	0.000920	<0.000833
Uranium	<0.0000833	<0.0000833	<0.0000833	<0.0000833	<0.0000833
Vanadium (corr)	<0.000833	<0.000833	<0.000833	<0.000833	<0.000833
Zinc	0.00766	0.0160	0.0179	0.00788	0.0149
Iron	0.161	0.0714	0.0888	0.150	0.0310

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WOOD BUFFALO ENVIRONMENTAL ASSOCIATION **2014**

Particulate Matter - Metals **Indicated Sites and Dates**

Station #	AMS 1	AMS 6	AMS 7	AMS 14	MDL	Lab Blank	Travel Blank
Station Name	Fort McKay	Patricia McInnes	Athabasca Valley	Anzac			
Sample Date	18-Mar	18-Mar	18-Mar	18-Mar			18-Mar
PM Size(µm)	2.5	2.5	2.5	2.5			2.5
Total Air Volume (m3)	25.3	24	24	24			24
Units	µg/M3	µg/M3	µg/M3	µg/M3			µg/M3
Particulate Matter (µg)	84	48	102	30			-22.25
Unit	(µg/m3)	(µg/m3)	(µg/m3)	(µg/m3)	(µg)	(µg)	(µg)
Aluminum	0.0280	0.0326	0.0311	0.0634	0.2	0.3147441	0.0212
Arsenic	0.000510	<0.000208	<0.000208	<0.000208	0.005	<	<0.000208
Barium	0.000899	0.00573	0.00283	0.000881	0.005	0.0059185	0.000533
Beryllium	<0.000198	<0.000208	<0.000208	<0.000208	0.005	<	<0.000208
Boron	0.0189	0.0164	0.0177	0.0173	0.2	0.476232094	0.0165
Cadmium	<0.000198	<0.000208	<0.000208	<0.000208	0.005	<	<0.000208
Chromium	0.00249	0.00248	0.00315	0.00259	0.02	0.085604738	0.00248
Cobalt	0.000124	0.000181	0.000317	0.000243	0.002	0.006117	0.000168
Copper	0.0106	0.00611	0.00747	0.0112	0.01	0.143983306	0.00109
Lead	0.000613	0.00113	0.000728	0.000910	0.005	0.011561425	0.000606
Manganese	0.00413	0.00544	0.00247	0.00349	0.002	0.074606194	0.00199
Molybdenum	0.00149	0.000161	0.000308	0.000213	0.002	0.036159619	0.000463
Nickel	0.00199	<0.000833	0.000885	<0.000833	0.02	0.0376478	<0.000833
Silver	<0.0000791	<0.0000833	<0.0000833	<0.0000833	0.002	<	<0.0000833
Strontium	0.000246	0.000298	0.000340	<0.000208	0.005	<	<0.000208
Titanium	<0.000791	<0.000833	0.00542	<0.000833	0.02	<	<0.000833
Uranium	<0.0000791	<0.0000833	<0.0000833	<0.0000833	0.002	<	<0.0000833
Vanadium (corr)	<0.000791	0.000954	0.00118	0.000988	0.02	<	<0.000833
Zinc	0.0105	0.0136	0.00968	0.0163	0.02	0.150351825	0.00919
Iron	0.0804	0.0804	0.104	0.0900	0.2	0.704320613	0.0446
Phosphorus	<0.198	<0.208	<0.208	<0.208	5	<	<0.208

Station #	AMS 1	AMS 6	AMS 7	AMS 14	AMS 12	AMS 13	AMS 15	AMS 16	Travel Blank
Station Name	Fort McKay	Patricia McInnes	Athabasca Valley	Anzac	Millenium	Fort McKay South	CNRL Horizon	Shell Muskeg River	
Sample Date	18-Mar	18-Mar	18-Mar	18-Mar	18-Mar	18-Mar	18-Mar	18-Mar	18-Mar
PM Size(µm)	10	10	10	10	10	10	10	10	10
Total Air Volume (m3)	24	24	24	24	24	24	24	24	24
Units	µg/M3	µg/M3	µg/M3	µg/M3	µg/M3	µg/M3	µg/M3	µg/M3	µg/M3
Particulate Matter (µg)	181	111	238	26	136	89	76	122	-17.83333333
Unit	(µg/m3)	(µg/m3)	(µg/m3)	(µg/m3)	(µg/m3)	(µg/m3)	(µg/m3)	(µg/m3)	(µg)
Aluminum	0.0998	0.0832	0.126	0.0888	0.0867	0.0527	0.0801	0.101	0.0339
Arsenic	0.000226	<0.000208	0.000228	0.000210	<0.000208	<0.000208	<0.000208	0.000213	0.000395
Barium	0.00330	0.00474	0.00878	0.00284	0.00243	0.00157	0.00132	0.00227	0.000955
Beryllium	<0.000208	<0.000208	<0.000208	<0.000208	<0.000208	<0.000208	<0.000208	<0.000208	<0.000208
Boron	0.0175	0.0168	0.0175	0.0173	0.0186	0.0180	0.0200	0.0172	0.0175
Cadmium	<0.000208	<0.000208	<0.000208	<0.000208	<0.000208	<0.000208	<0.000208	<0.000208	<0.000208
Chromium	0.00280	0.00302	0.00271	0.00247	0.00235	0.00222	0.00347	0.00286	0.00291
Cobalt	0.000308	0.000169	0.000208	0.000241	0.000215	0.000150	0.000204	0.000263	0.000219
Copper	0.0671	0.00838	0.0285	0.0614	0.00196	0.00509	0.00175	0.00283	0.000758
Lead	0.000838	0.00111	0.000919	0.00138	0.000804	0.000685	0.00107	0.00128	0.00228
Manganese	0.0119	0.00658	0.0104	0.00459	0.00559	0.00369	0.00444	0.00879	0.00145
Molybdenum	0.000102	0.000217	0.000462	0.000248	0.000196	0.000157	0.000530	0.000338	0.000885
Nickel	0.00106	0.00199	0.00300	0.00105	0.000941	0.00354	0.000877	0.00149	0.000898
Silver	<0.0000833	<0.0000833	<0.0000833	<0.0000833	<0.0000833	<0.0000833	<0.0000833	<0.0000833	<0.0000833
Strontium	0.00161	0.000722	0.00144	0.000481	0.000785	0.000611	0.000680	0.00106	<0.000208
Titanium	0.00401	0.00258	0.00553	0.00193	0.00190	<0.000833	0.00112	0.00282	<0.000833
Uranium	<0.0000833	<0.0000833	<0.0000833	<0.0000833	<0.0000833	<0.0000833	<0.0000833	<0.0000833	<0.0000833
Vanadium (corr)	<0.000833	0.00120	0.00125	0.00102	0.000990	<0.000833	0.000958	0.00102	<0.000833
Zinc	0.0114	0.0126	0.0207	0.0193	0.0144	0.00957	0.0233	0.0192	0.00836
Iron	0.573	0.262	0.497	0.329	0.243	0.129	0.223	0.348	0.0418

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WOOD BUFFALO ENVIRONMENTAL ASSOCIATION **2014**

Particulate Matter - Metals **Indicated Sites and Dates**

Station #	AMS 1	AMS 6	AMS 7	AMS 14	MDL	Lab Blank	Travel Blank
Station Name	Fort McKay	Patricia McInnes	Athabasca Valley	Anzac			
Sample Date	24-Mar	24-Mar	24-Mar	24-Mar			24-Mar
PM Size(µm)	2.5	2.5	2.5	2.5			2.5
Total Air Volume (m3)	24	24	24	24			24
Units	µg/M3	µg/M3	µg/M3	µg/M3			µg/M3
Particulate Matter (µg)	68	29	102	26			-29.33333333
Unit	(µg/m3)	(µg/m3)	(µg/m3)	(µg/m3)	(µg)	(µg)	(µg)
Aluminum	0.0580	0.0436	0.0499	0.0288	0.2	0.3147441	0.0244
Arsenic	0.000442	<0.000208	<0.000208	<0.000208	0.005	<	<0.000208
Barium	0.00158	0.00110	0.00179	0.000923	0.005	0.0059185	0.000445
Beryllium	<0.000208	<0.000208	<0.000208	<0.000208	0.005	<	<0.000208
Boron	0.0255	0.0231	0.0221	0.0215	0.2	0.476232094	0.0232
Cadmium	<0.000208	<0.000208	<0.000208	<0.000208	0.005	<	<0.000208
Chromium	0.00325	0.00341	0.00291	0.00226	0.02	0.085604738	0.00248
Cobalt	0.000315	0.000249	0.000225	0.000161	0.002	0.006117	0.000245
Copper	0.0120	0.00252	0.00376	0.00650	0.01	0.143983306	0.00400
Lead	0.000898	0.000754	0.00145	0.000906	0.005	0.011561425	0.000335
Manganese	0.00510	0.00506	0.00291	0.00207	0.002	0.074606194	0.00150
Molybdenum	0.000892	<0.0000833	0.000128	0.000150	0.002	0.036159619	0.000474
Nickel	<0.000833	0.00238	0.00194	<0.000833	0.02	0.0376478	<0.000833
Silver	<0.0000833	<0.0000833	<0.0000833	<0.0000833	0.002	<	<0.0000833
Strontium	0.000600	0.000568	0.000679	0.000353	0.005	<	<0.000208
Titanium	<0.000833	<0.000833	<0.000833	<0.000833	0.02	<	<0.000833
Uranium	<0.0000833	<0.0000833	<0.0000833	<0.0000833	0.002	<	<0.0000833
Vanadium (corr)	<0.000833	0.000845	<0.000833	<0.000833	0.02	<	<0.000833
Zinc	0.00913	0.0103	0.0253	0.0110	0.02	0.150351825	0.00922
Iron	0.399	0.0627	0.188	0.0475	0.2	0.704320613	0.0634
Phosphorus	<0.208	<0.208	<0.208	<0.208	5	<	<0.208

Station #	Travel Blank
Station Name	
Sample Date	24-Mar
PM Size(µm)	10
Total Air Volume (m3)	24
Units	µg/M3
Particulate Matter (µg)	-76
Unit	(µg)
Aluminum	0.0288
Arsenic	0.000327
Barium	0.000364
Beryllium	<0.000208
Boron	0.0229
Cadmium	<0.000208
Chromium	0.00239
Cobalt	0.000104
Copper	0.00142
Lead	0.00115
Manganese	0.00129
Molybdenum	0.000796
Nickel	<0.000833
Silver	<0.0000833
Strontium	<0.000208
Titanium	<0.000833
Uranium	<0.0000833
Vanadium (corr)	<0.000833
Zinc	0.00621
Iron	0.0391

WOOD BUFFALO ENVIRONMENTAL ASSOCIATION **2014**

Particulate Matter - Metals **Indicated Sites and Dates**

Station #	AMS 1	AMS 6	AMS 7	AMS 14	MDL	Lab Blank	Travel Blank
Station Name	Fort McKay	Patricia McInnes	Athabasca Valley	Anzac			
Sample Date	30-Mar	30-Mar	30-Mar	30-Mar			30-Mar
PM Size(µm)	2.5	2.5	2.5	2.5			2.5
Total Air Volume (m3)	24	24	24	24			24
Units	µg/M3	µg/M3	µg/M3	µg/M3			µg/M3
Particulate Matter (µg)	312	152	220	67			-25.5
Unit	(µg/m3)	(µg/m3)	(µg/m3)	(µg/m3)	(µg)	(µg)	(µg)
Aluminum	0.116	0.0758	0.102	0.0420	0.2	0.3147441	0.0202
Arsenic	0.000479	0.000314	0.000244	0.000402	0.005	<	<0.000208
Barium	0.00254	0.00164	0.00269	0.000873	0.005	0.0059185	0.000342
Beryllium	<0.000208	<0.000208	<0.000208	<0.000208	0.005	<	<0.000208
Boron	0.0258	0.0238	0.0232	0.0234	0.2	0.476232094	0.0256
Cadmium	<0.000208	<0.000208	<0.000208	<0.000208	0.005	<	<0.000208
Chromium	0.00292	0.00290	0.00320	0.00250	0.02	0.085604738	0.00280
Cobalt	0.000250	0.000263	0.00108	0.000257	0.002	0.006117	0.000781
Copper	0.0196	0.00883	0.00356	0.00830	0.01	0.143983306	<0.000417
Lead	0.0128	0.00199	0.00233	0.00191	0.005	0.011561425	0.000252
Manganese	0.00756	0.0140	0.00759	0.00189	0.002	0.074606194	0.00203
Molybdenum	0.000892	0.000499	0.00114	0.000206	0.002	0.036159619	0.000534
Nickel	0.00154	0.00382	0.00435	<0.000833	0.02	0.0376478	<0.000833
Silver	<0.0000833	<0.0000833	<0.0000833	<0.0000833	0.002	<	<0.0000833
Strontium	0.00124	0.000809	0.00126	0.000429	0.005	<	0.000245
Titanium	0.00315	0.00161	0.00279	<0.000833	0.02	<	<0.000833
Uranium	<0.0000833	<0.0000833	<0.0000833	<0.0000833	0.002	<	<0.0000833
Vanadium (corr)	0.00108	0.00305	0.00260	<0.000833	0.02	<	<0.000833
Zinc	0.247	0.0148	0.0127	0.0112	0.02	0.150351825	0.00882
Iron	0.483	0.217	0.282	0.0690	0.2	0.704320613	0.0272
Phosphorus	<0.208	<0.208	<0.208	<0.208	5	<	<0.208

Station #	Travel Blank
Station Name	
Sample Date	30-Mar
PM Size(µm)	10
Total Air Volume (m3)	24
Units	µg/M3
Particulate Matter (µg)	-42
Unit	(µg)
Aluminum	0.0279
Arsenic	<0.000208
Barium	0.000329
Beryllium	<0.000208
Boron	0.0273
Cadmium	<0.000208
Chromium	0.00296
Cobalt	0.000140
Copper	0.000723
Lead	<0.000208
Manganese	0.000881
Molybdenum	0.00137
Nickel	0.00152
Silver	<0.0000833
Strontium	<0.000208
Titanium	<0.000833
Uranium	<0.0000833
Vanadium (corr)	<0.000833
Zinc	0.00428
Iron	0.0251

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WOOD BUFFALO ENVIRONMENTAL ASSOCIATION **2014**

Particulate Matter - Metals **Indicated Sites and Dates**

Station #	AMS 1	AMS 6	AMS 7	AMS 14	MDL	Lab Blank	Travel Blank
Station Name	Fort McKay	Patricia McInnes	Athabasca Valley	Anzac			
Sample Date	5-Apr	5-Apr	5-Apr	5-Apr			5-Apr
PM Size(µm)	2.5	2.5	2.5	2.5			2.5
Total Air Volume (m3)	24	24	24	24			24
Units	µg/M3	µg/M3	µg/M3	µg/M3			µg/M3
Particulate Matter (µg)	130	93	211	102			-9
Unit	(µg/m3)	(µg/m3)	(µg/m3)	(µg/m3)	(µg)	(µg)	(µg)
Aluminum	0.0691	0.0704	0.0771	0.0434	0.2	0.45215327	0.0201
Arsenic	<0.000208	<0.000208	<0.000208	0.000668	0.005	0.005207344	<0.000208
Barium	0.00111	0.00182	0.00270	0.00121	0.005	0.027050672	0.000450
Beryllium	<0.000208	<0.000208	<0.000208	<0.000208	0.005	<	<0.000208
Boron	0.0158	0.0147	0.0192	0.0169	0.2	0.396936586	0.0168
Cadmium	<0.000208	<0.000208	<0.000208	<0.000208	0.005	<	<0.000208
Chromium	0.00210	0.00192	0.00235	0.00308	0.02	0.047771684	0.00715
Cobalt	0.000705	0.00151	0.000911	0.00138	0.002	0.030440262	0.000389
Copper	0.0134	0.0170	0.0131	0.0188	0.01	0.046382238	0.00362
Lead	0.00197	0.00138	0.00164	0.00147	0.005	0.017161328	0.000359
Manganese	0.00684	0.0144	0.00717	0.00423	0.002	0.136005305	0.00485
Molybdenum	<0.0000833	0.000227	0.000169	0.000628	0.002	0.024488164	<0.0000833
Nickel	0.00128	0.00327	0.00229	0.00139	0.02	0.026994816	0.00180
Silver	<0.0000833	<0.0000833	<0.0000833	<0.0000833	0.002	<	<0.0000833
Strontium	0.000550	0.000685	0.000721	0.000359	0.005	0.013759563	<0.000208
Titanium	0.00418	0.00196	0.00219	<0.000833	0.02	<	<0.000833
Uranium	<0.0000833	<0.0000833	<0.0000833	<0.0000833	0.002	0.002135977	<0.0000833
Vanadium (corr)	<0.000833	0.00253	0.00299	<0.000833	0.02	<	0.00167
Zinc	0.0140	0.0255	0.0283	0.0165	0.02	0.367595273	0.0254
Iron	0.285	0.648	0.266	0.130	0.2	3.516720363	0.157
Phosphorus	<0.208	<0.208	<0.208	<0.208	5	<	<0.208

Station #	AMS 6	AMS 7	AMS 14	AMS 12	AMS 13	AMS 16	Travel Blank
Station Name	Patricia McInnes	Athabasca Valley	Anzac	Millenium	Fort McKay South	Shell Muskeg River	
Sample Date	5-Apr	5-Apr	5-Apr	5-Apr	5-Apr	5-Apr	5-Apr
PM Size(µm)	10	10	10	10	10	10	10
Total Air Volume (m3)	24	23.9	24.003	24	24	24	24
Units	µg/M3	µg/M3	µg/M3	µg/M3	µg/M3	µg/M3	µg/M3
Particulate Matter (µg)	238	370	124	555	441	410	0
Unit	(µg/m3)	(µg/m3)	(µg/m3)	(µg/m3)	(µg/m3)	(µg/m3)	(µg)
Aluminum	0.155	0.246	0.0701	0.455	0.377	0.338	0.0334
Arsenic	<0.000208	<0.000209	<0.000208	0.000405	<0.000208	<0.000208	<0.000208
Barium	0.00544	0.00799	0.00237	0.00687	0.00553	0.00520	0.000555
Beryllium	<0.000208	<0.000209	<0.000208	<0.000208	<0.000208	<0.000208	<0.000208
Boron	0.0206	0.0165	0.0177	0.0205	0.0162	0.0166	0.0155
Cadmium	<0.000208	<0.000209	<0.000208	<0.000208	<0.000208	<0.000208	<0.000208
Chromium	0.00260	0.00236	0.00618	0.00273	0.00397	0.00319	0.00178
Cobalt	0.000759	0.000963	0.000584	0.00169	0.00167	0.00201	0.00116
Copper	0.0164	0.0372	0.0715	0.0115	0.00422	0.00230	0.00126
Lead	0.00214	0.00210	0.00165	0.00262	0.00209	0.00138	0.000652
Manganese	0.0112	0.0194	0.00533	0.0265	0.0251	0.0253	0.00562
Molybdenum	0.000620	0.000571	<0.0000833	0.00456	0.000344	0.000120	<0.0000833
Nickel	0.00246	0.00474	0.00185	0.0172	0.00223	0.00260	0.000864
Silver	<0.0000833	<0.0000837	<0.0000833	<0.0000833	<0.0000833	<0.0000833	<0.0000833
Strontium	0.00145	0.00242	0.000564	0.00412	0.00298	0.00282	0.000261
Titanium	0.00651	0.0101	0.00110	0.0386	0.0149	0.0117	<0.000833
Uranium	<0.0000833	<0.0000837	<0.0000833	<0.0000833	<0.0000833	<0.0000833	<0.0000833
Vanadium (corr)	0.00656	0.00736	0.000908	0.0808	0.00165	0.00182	<0.000833
Zinc	0.0199	0.0294	0.0128	0.0230	0.0324	0.0250	0.0141
Iron	0.462	0.918	0.346	1.30	1.25	1.38	0.112

WOOD BUFFALO ENVIRONMENTAL ASSOCIATION **2014**

Particulate Matter - Metals **Indicated Sites and Dates**

Station #	AMS 1	AMS 6	AMS 7	AMS 14	MDL	Lab Blank	Travel Blank
Station Name	Fort McKay	Patricia McInnes	Athabasca Valley	Anzac			
Sample Date	11-Apr	11-Apr	11-Apr	11-Apr			11-Apr
PM Size(µm)	2.5	2.5	2.5	2.5			2.5
Total Air Volume (m3)	26.016	24	24	24.005			24
Units	µg/M3	µg/M3	µg/M3	µg/M3			µg/M3
Particulate Matter (µg)	46	62	85	83			23
Unit	(µg/m3)	(µg/m3)	(µg/m3)	(µg/m3)	(µg)	(µg)	(µg)
Aluminum	0.0548	0.0679	0.0601	0.061437829	0.2	0.45215327	0.0137
Arsenic	0.000543	<0.000208	<0.000208	<0.000172	0.005	0.005207344	<0.000208
Barium	0.000766	0.00139	0.00642	0.000953063	0.005	0.027050672	0.000360
Beryllium	<0.000192	<0.000208	<0.000208	<0.000172	0.005	<	<0.000208
Boron	0.0176	0.0221	0.0199	0.019029707	0.2	0.396936586	0.0174
Cadmium	<0.000192	<0.000208	<0.000208	<0.000172	0.005	<	<0.000208
Chromium	0.00183	0.00294	0.00221	0.001800027	0.02	0.047771684	0.00199
Cobalt	0.000987	0.000547	0.000821	0.00080757	0.002	0.030440262	0.00135
Copper	0.0131	0.00353	0.00236	0.036396531	0.01	0.046382238	0.00233
Lead	0.00127	0.00155	0.00126	0.001238617	0.005	0.017161328	0.000325
Manganese	0.0109	0.00294	0.00690	0.010177266	0.002	0.136005305	0.00762
Molybdenum	0.00173	<0.0000833	<0.0000833	<0.0000690	0.002	0.024488164	0.000254
Nickel	0.000831	0.00178	0.000871	0.001061455	0.02	0.026994816	<0.000833
Silver	<0.0000769	<0.0000833	<0.0000833	<0.0000690	0.002	<	<0.0000833
Strontium	0.000460	0.000424	0.000731	0.000511171	0.005	0.013759563	<0.000208
Titanium	0.00492	0.00152	0.00113	0.001783144	0.02	<	<0.000833
Uranium	<0.0000769	<0.0000833	<0.0000833	<0.0000690	0.002	0.002135977	<0.0000833
Vanadium (corr)	<0.000769	0.00152	<0.000833	<0.000690	0.02	<	<0.000833
Zinc	0.00825	0.0624	0.0150	0.010466327	0.02	0.367595273	0.0116
Iron	0.101	0.129	0.208	0.117550233	0.2	3.516720363	0.0570
Phosphorus	<0.192	<0.208	<0.208	<0.172	5	<	<0.208

Station #	AMS 1	AMS 6	AMS 7	AMS 14	AMS 12	AMS 13	AMS 16	Travel Blank
Station Name	Fort McKay	Patricia McInnes	Athabasca Valley	Anzac	Millenium	Fort McKay South	Shell Muskeg River	
Sample Date	11-Apr	11-Apr	11-Apr	11-Apr	11-Apr	11-Apr	11-Apr	11-Apr
PM Size(µm)	10	10	10	10	10	10	10	10
Total Air Volume (m3)	24	24	24	24	24	24	24	24
Units	µg/M3	µg/M3	µg/M3	µg/M3	µg/M3	µg/M3	µg/M3	µg/M3
Particulate Matter (µg)	395	207	320	670	245	347	670	-19
Unit	(µg/m3)	(µg/m3)	(µg/m3)	(µg/m3)	(µg/m3)	(µg/m3)	(µg/m3)	(µg)
Aluminum	0.382	0.139	0.223	0.757	0.271	0.294	0.757	0.0343
Arsenic	0.000440	<0.000208	0.000390	0.000573	0.000304	0.000312	0.000573	<0.000208
Barium	0.00474	0.00302	0.00464	0.00898	0.00296	0.00412	0.00898	0.000307
Beryllium	<0.000208	<0.000208	<0.000208	<0.000208	<0.000208	<0.000208	<0.000208	<0.000208
Boron	0.0132	0.0179	0.0181	0.0196	0.0197	0.0179	0.0196	0.0154
Cadmium	<0.000208	<0.000208	<0.000208	<0.000208	<0.000208	<0.000208	<0.000208	<0.000208
Chromium	0.00176	0.00205	0.00224	0.00340	0.00266	0.00270	0.00340	0.00201
Cobalt	0.000862	0.000809	0.000956	0.00238	0.000941	0.00133	0.00238	0.000674
Copper	0.0351	0.00751	0.00452	0.00203	0.00129	0.00123	0.00203	0.000649
Lead	0.00162	0.00115	0.00175	0.00215	0.00222	0.00125	0.00215	0.000432
Manganese	0.0213	0.00924	0.0121	0.0529	0.0116	0.0210	0.0529	0.00810
Molybdenum	<0.0000833	<0.0000833	<0.0000833	<0.0000833	<0.0000833	<0.0000833	<0.0000833	0.00102
Nickel	0.00152	0.00146	0.00210	0.00225	0.00120	0.00148	0.00225	<0.000833
Silver	<0.0000833	<0.0000833	<0.0000833	<0.0000833	<0.0000833	<0.0000833	<0.0000833	<0.0000833
Strontium	0.00243	0.00109	0.00181	0.00470	0.00166	0.00201	0.00470	<0.000208
Titanium	0.0193	0.00568	0.00697	0.0269	0.00838	0.0599	0.0269	<0.000833
Uranium	<0.0000833	<0.0000833	<0.0000833	<0.0000833	<0.0000833	<0.0000833	<0.0000833	<0.0000833
Vanadium (corr)	0.00189	0.00255	0.00135	0.00345	0.00164	0.00177	0.00345	<0.000833
Zinc	0.00799	0.00817	0.0144	0.0135	0.0297	0.00831	0.0135	0.0263
Iron	1.04	0.436	0.545	2.37	0.561	0.749	2.37	0.113

WOOD BUFFALO ENVIRONMENTAL ASSOCIATION **2014**

Particulate Matter - Metals **Indicated Sites and Dates**

Station #	AMS 6	AMS 14	MDL	Lab Blank	Travel Blank
Station Name	Patricia McInnes	Anzac			
Sample Date	17-Apr	17-Apr			17-Apr
PM Size(µm)	2.5	2.5			2.5
Total Air Volume (m3)	24	24.1			24
Units	µg/M3	µg/M3			µg/M3
Particulate Matter (µg)	137	162			12
Unit	(µg/m3)	(µg/m3)	(µg)	(µg)	(µg)
Aluminum	0.215	0.121	0.2	0.45215327	0.0164
Arsenic	0.000268	0.000325	0.005	0.005207344	<0.000208
Barium	0.00126	0.00214	0.005	0.027050672	0.000283
Beryllium	<0.000208	<0.000207	0.005	<	<0.000208
Boron	0.0182	0.0174	0.2	0.396936586	0.0166
Cadmium	<0.000208	<0.000207	0.005	<	<0.000208
Chromium	0.00238	0.00181	0.02	0.047771684	0.00149
Cobalt	0.000637	0.00121	0.002	0.030440262	0.00174
Copper	0.00806	0.00372	0.01	0.046382238	0.000642
Lead	0.00175	0.00162	0.005	0.017161328	<0.000208
Manganese	0.00610	0.00868	0.002	0.136005305	0.0131
Molybdenum	0.000183	0.000215	0.002	0.024488164	0.000723
Nickel	0.00100	0.00127	0.02	0.026994816	<0.000833
Silver	0.000370	<0.0000830	0.002	<	<0.0000833
Strontium	0.000386	0.00100	0.005	0.013759563	<0.000208
Titanium	0.00136	0.00711	0.02	<	<0.000833
Uranium	<0.0000833	<0.0000830	0.002	0.002135977	<0.0000833
Vanadium (corr)	<0.000833	0.00133	0.02	<	<0.000833
Zinc	0.0122	0.00639	0.02	0.367595273	0.00871
Iron	0.190	0.446	0.2	3.516720363	0.0837
Phosphorus	<0.208	<0.207	5	<	<0.208

Station #	AMS 1	AMS 6	AMS 14	AMS 12	AMS 13	AMS 15	AMS 16	Travel Blank
Station Name	Fort McKay	Patricia McInnes	Anzac	Millenium	Fort McKay South	CNRL Horizon	Shell Muskeg River	
Sample Date	17-Apr	17-Apr	17-Apr	17-Apr	17-Apr	17-Apr	17-Apr	17-Apr
PM Size(µm)	10	10	10	10	10	10	10	10
Total Air Volume (m3)	24	24	24	24	24	24	24	24
Units	µg/M3	µg/M3	µg/M3	µg/M3	µg/M3	µg/M3	µg/M3	µg/M3
Particulate Matter (µg)	60	356	146	1058	673	358	218	14
Unit	(µg/m3)	(µg/m3)	(µg/m3)	(µg/m3)	(µg/m3)	(µg/m3)	(µg/m3)	(µg)
Aluminum	0.0549	0.257	0.0488	1.11	0.735	0.328	0.143	0.0184
Arsenic	0.000250	0.000368	0.000282	0.000882	0.000732	0.000458	0.000325	<0.000208
Barium	0.000886	0.00545	0.00110	0.0111	0.00825	0.00426	0.00210	0.000213
Beryllium	<0.000208	<0.000208	<0.000208	<0.000208	<0.000208	<0.000208	<0.000208	<0.000208
Boron	0.0195	0.0176	0.0159	0.0210	0.0192	0.0188	0.0174	0.0158
Cadmium	<0.000208	<0.000208	<0.000208	<0.000208	<0.000208	<0.000208	<0.000208	<0.000208
Chromium	0.00225	0.00179	0.00180	0.00400	0.00299	0.00248	0.00350	0.00115
Cobalt	0.000736	0.00111	0.00238	0.00258	0.00174	0.00116	0.00149	0.000549
Copper	0.00137	0.00886	0.00400	0.00270	0.00232	0.00157	0.00147	0.000502
Lead	0.000637	0.00206	0.00167	0.00285	0.00251	0.00286	0.00184	<0.000208
Manganese	0.00490	0.0150	0.00306	0.0344	0.0214	0.0167	0.0218	0.0121
Molybdenum	0.000714	0.000222	0.000244	0.000491	0.00144	0.000839	0.000462	0.00105
Nickel	0.000909	0.00101	0.00102	0.00349	0.00452	0.00236	0.00154	<0.000833
Silver	<0.0000833	<0.0000833	<0.0000833	<0.0000833	<0.0000833	<0.0000833	<0.0000833	<0.0000833
Strontium	0.000712	0.00183	0.000354	0.00828	0.00469	0.00219	0.00121	<0.000208
Titanium	0.00102	0.0109	0.00100	0.0375	0.0307	0.0166	0.00546	<0.000833
Uranium	<0.0000833	<0.0000833	<0.0000833	0.000128	<0.0000833	<0.0000833	<0.0000833	<0.0000833
Vanadium (corr)	0.00123	0.00100	<0.000833	0.00399	0.0175	0.00792	0.000859	<0.000833
Zinc	0.00790	0.0159	0.0101	0.0168	0.0146	0.0107	0.00868	0.00879
Iron	0.147	0.878	0.0971	1.99	1.25	0.801	0.484	0.0139

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WOOD BUFFALO ENVIRONMENTAL ASSOCIATION **2014**

Particulate Matter - Metals **Indicated Sites and Dates**

Station #	AMS 6		AMS 14	MDL	Lab Blank	Travel Blank
Station Name	Patricia McInnes		Anzac			
Sample Date	23-Apr		23-Apr			23-Apr
PM Size(µm)	2.5		2.5			2.5
Total Air Volume (m3)	24		24.001			24
Units	µg/M3		µg/M3			µg/M3
Particulate Matter (µg)	102		78			6
Unit	(µg/m3)		(µg/m3)	(µg)	(µg)	(µg)
Aluminum	0.0422		0.0235	0.2	0.45215327	0.0108
Arsenic	<0.000208		<0.000208	0.005	0.005207344	<0.000208
Barium	0.00113		0.000680	0.005	0.027050672	0.000241
Beryllium	<0.000208		<0.000208	0.005	<	<0.000208
Boron	0.0211		0.0208	0.2	0.396936586	0.0196
Cadmium	<0.000208		<0.000208	0.005	<	<0.000208
Chromium	0.00233		0.00202	0.02	0.047771684	0.00157
Cobalt	0.000625		0.000999	0.002	0.030440262	0.00108
Copper	0.00316		0.000940	0.01	0.046382238	0.000422
Lead	0.000941		0.00145	0.005	0.017161328	0.000222
Manganese	0.00286		0.00333	0.002	0.136005305	0.00256
Molybdenum	<0.0000833		0.000568	0.002	0.024488164	0.000405
Nickel	<0.000833		<0.000833	0.02	0.026994816	<0.000833
Silver	<0.0000833		<0.0000833	0.002	<	<0.0000833
Strontium	0.000351		0.000250	0.005	0.013759563	<0.000208
Titanium	0.00112		<0.000833	0.02	<	<0.000833
Uranium	<0.0000833		<0.0000833	0.002	0.002135977	<0.0000833
Vanadium (corr)	<0.000833		<0.000833	0.02	<	<0.000833
Zinc	0.00672		0.00451	0.02	0.367595273	0.00436
Iron	0.101		0.0501	0.2	3.516720363	0.144
Phosphorus	<0.208		<0.208	5	<	<0.208

Station #	AMS 6	AMS 7	AMS 14	AMS 12	AMS 13	AMS 15	AMS 16	Travel Blank
Station Name	Patricia McInnes	Athabasca Valley	Anzac	Millenium	Fort McKay South	CNRL Horizon	Shell Muskeg River	
Sample Date	23-Apr	23-Apr	23-Apr	23-Apr	23-Apr	23-Apr	23-Apr	23-Apr
PM Size(µm)	10	10	10	10	10	10	10	10
Total Air Volume (m3)	24	22.2	24	24	24	24	24	24
Units	µg/M3	µg/M3	µg/M3	µg/M3	µg/M3	µg/M3	µg/M3	µg/M3
Particulate Matter (µg)	386	444	107	997	504	444	663	3
Unit	(µg/m3)	(µg/m3)	(µg/m3)	(µg/m3)	(µg/m3)	(µg/m3)	(µg/m3)	(µg)
Aluminum	0.285	0.414	0.0843	0.888	0.405	0.329	0.505	0.0935
Arsenic	0.000295	0.000456	0.000231	0.000718	0.000385	0.000316	0.000424	<0.000208
Barium	0.00638	0.00864	0.00292	0.00994	0.00624	0.00450	0.00667	0.000258
Beryllium	<0.000208	<0.000225	<0.000208	<0.000208	<0.000208	<0.000208	<0.000208	<0.000208
Boron	0.0212	0.0246	0.0197	0.0238	0.0206	0.0193	0.0205	0.0195
Cadmium	<0.000208	<0.000225	<0.000208	<0.000208	<0.000208	<0.000208	<0.000208	<0.000208
Chromium	0.00240	0.00319	0.00192	0.00361	0.00253	0.00195	0.00260	0.00518
Cobalt	0.00140	0.000901	0.0111	0.00138	0.00200	0.000949	0.00246	0.000569
Copper	0.00998	0.00295	0.00661	0.00362	0.00387	0.000883	0.00247	0.000782
Lead	0.00133	0.00142	0.00194	0.00157	0.00168	0.00120	0.00124	<0.000208
Manganese	0.0172	0.0262	0.0197	0.0293	0.0271	0.0205	0.0407	0.0142
Molybdenum	0.000127	0.000342	0.000201	0.000521	0.000127	0.000284	0.000259	0.00111
Nickel	0.00158	0.00144	0.00159	0.00274	0.00233	0.00115	0.00205	0.00235
Silver	<0.0000833	<0.0000901	<0.0000833	<0.0000833	<0.0000833	<0.0000833	<0.0000833	<0.0000833
Strontium	0.00190	0.00265	0.00270	0.00660	0.00302	0.00190	0.00398	<0.000208
Titanium	0.0123	0.0182	0.00237	0.0425	0.0187	0.0121	0.0248	<0.000833
Uranium	<0.0000833	<0.0000901	<0.0000833	0.0000947	<0.0000833	<0.0000833	<0.0000833	<0.0000833
Vanadium (corr)	0.00137	0.00210	<0.000833	0.00398	0.00206	0.00166	0.00243	<0.000833
Zinc	0.0179	0.0209	0.0308	0.0234	0.0157	0.0162	0.0115	0.0143
Iron	1.09	1.61	0.203	1.92	1.43	1.03	2.09	0.0641

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WOOD BUFFALO ENVIRONMENTAL ASSOCIATION **2014**

Particulate Matter - Metals **Indicated Sites and Dates**

Station #	AMS 1	AMS 6	AMS 7	AMS 14	MDL	Lab Blank	Travel Blank
Station Name	Fort McKay	Patricia McInnes	Athabasca Valley	Anzac			
Sample Date	29-Apr	29-Apr	29-Apr	29-Apr			29-Apr
PM Size(µm)	2.5	2.5	2.5	2.5			2.5
Total Air Volume (m3)	24	24	24	24			24
Units	µg/M3	µg/M3	µg/M3	µg/M3			µg/M3
Particulate Matter (µg)	115	13	97	60			9
Unit	(µg/m3)	(µg/m3)	(µg/m3)	(µg/m3)	(µg)	(µg)	(µg)
Aluminum	0.0742	0.0733	0.122	0.0390	0.2	0.45215327	0.0245
Arsenic	0.000237	<0.000208	<0.000208	<0.000208	0.005	0.005207344	<0.000208
Barium	0.000922	0.000479	0.00361	0.000542	0.005	0.027050672	0.000326
Beryllium	<0.000208	<0.000208	<0.000208	<0.000208	0.005	<	<0.000208
Boron	0.0206	0.0168	0.0180	0.0175	0.2	0.396936586	0.0153
Cadmium	<0.000208	<0.000208	<0.000208	0.000319	0.005	<	<0.000208
Chromium	0.0252	0.00192	0.00198	0.00158	0.02	0.047771684	0.00124
Cobalt	0.000501	0.000474	0.000373	0.000323	0.002	0.030440262	0.000482
Copper	0.00150	<0.000417	<0.000417	0.0222	0.01	0.046382238	<0.000417
Lead	0.000857	0.000678	0.000613	0.000566	0.005	0.017161328	0.000293
Manganese	0.00564	0.0146	0.00712	0.00702	0.002	0.136005305	0.00225
Molybdenum	0.000683	<0.0000833	<0.0000833	<0.0000833	0.002	0.024488164	0.000264
Nickel	0.00238	0.00118	<0.000833	0.000916	0.02	0.026994816	<0.000833
Silver	<0.0000833	<0.0000833	<0.0000833	<0.0000833	0.002	<	<0.0000833
Strontium	0.000403	0.000460	0.000651	0.000269	0.005	0.013759563	<0.000208
Titanium	<0.000833	<0.000833	0.00290	<0.000833	0.02	<	<0.000833
Uranium	<0.0000833	<0.0000833	<0.0000833	<0.0000833	0.002	0.002135977	<0.0000833
Vanadium (corr)	<0.000833	<0.000833	<0.000833	<0.000833	0.02	<	<0.000833
Zinc	0.0461	0.0302	0.0155	0.0149	0.02	0.367595273	0.00702
Iron	0.434	0.374	0.440	0.354	0.2	3.516720363	0.0426
Phosphorus	<0.208	<0.208	<0.208	<0.208	5	<	<0.208

Station #	AMS 1	AMS 6	AMS 7	AMS 14	AMS 12	AMS 13	AMS 15	AMS 16	Travel Blank
Station Name	Fort McKay	Patricia McInnes	Athabasca Valley	Anzac	Millenium	Fort McKay South	CNRL Horizon	Shell Muskeg River	
Sample Date	29-Apr	29-Apr	29-Apr	29-Apr	29-Apr	29-Apr	29-Apr	29-Apr	29-Apr
PM Size(µm)	10	10	10	10	10	10	10	10	10
Total Air Volume (m3)	24	24	22.9	24	24	24	24	24	24
Units	µg/M3	µg/M3	µg/M3	µg/M3	µg/M3	µg/M3	µg/M3	µg/M3	µg/M3
Particulate Matter (µg)	275	242	659	259	1189	147	678	892	11
Unit	(µg/m3)	(µg/m3)	(µg/m3)	(µg/m3)	(µg/m3)	(µg/m3)	(µg/m3)	(µg/m3)	(µg)
Aluminum	0.212	0.203	0.584	0.161	0.946	0.0940	0.618	0.772	0.0145
Arsenic	0.000209	<0.000208	0.000418	<0.000208	0.000600	<0.000208	0.000502	0.000624	<0.000208
Barium	0.00391	0.00445	0.0162	0.00665	0.0115	0.00164	0.0101	0.0119	0.000238
Beryllium	<0.000208	<0.000208	<0.000218	<0.000208	<0.000208	<0.000208	<0.000208	<0.000208	<0.000208
Boron	0.0190	0.0180	0.0178	0.0171	0.0164	0.0190	0.0170	0.0186	0.0158
Cadmium	<0.000208	<0.000208	<0.000218	0.000443	<0.000208	<0.000208	<0.000208	<0.000208	<0.000208
Chromium	0.00208	0.00201	0.00373	0.00255	0.00278	0.00218	0.00214	0.00320	0.00116
Cobalt	0.000917	0.000354	0.000799	0.000464	0.00102	0.000285	0.000968	0.000952	0.000261
Copper	0.0432	<0.000417	0.00624	0.0227	<0.000417	0.00246	<0.000417	<0.000417	<0.000417
Lead	0.00125	0.000717	0.00121	0.000995	0.00134	0.000495	0.000999	0.00166	0.000242
Manganese	0.0142	0.0130	0.0402	0.0200	0.0393	0.00574	0.0238	0.0583	0.00475
Molybdenum	0.000207	<0.0000833	0.000246	0.000365	0.000346	0.000187	0.000320	0.000470	0.000217
Nickel	0.00148	<0.000833	0.00157	0.00175	0.00243	0.000859	0.00247	0.00299	<0.000833
Silver	<0.0000833	<0.0000833	<0.0000873	<0.0000833	<0.0000833	<0.0000833	<0.0000833	<0.0000833	<0.0000833
Strontium	0.00196	0.00262	0.00430	0.00142	0.00882	0.000880	0.00459	0.00699	<0.000208
Titanium	0.00545	0.00580	0.0184	0.00575	0.0223	0.00223	0.0143	0.0310	<0.000833
Uranium	<0.0000833	<0.0000833	<0.0000873	<0.0000833	<0.0000833	<0.0000833	<0.0000833	0.0000857	<0.0000833
Vanadium (corr)	0.00167	0.000851	0.00257	<0.000833	0.00423	0.00157	0.00364	0.00667	<0.000833
Zinc	0.0226	0.0228	0.0361	0.0317	0.0218	0.0125	0.0211	0.0351	0.00843
Iron	0.841	0.614	2.23	1.14	1.80	0.255	1.30	3.07	0.0924

WOOD BUFFALO ENVIRONMENTAL ASSOCIATION **2014**

Particulate Matter - Ions **Indicated Sites and Dates**

Station #	AMS 1	AMS 7	MDL	Lab Blank	Travel Blank
Station Name	Fort McKay	Athabasca Valley			
Sample Date	6-Mar	6-Mar			6-Mar
PM Size(µm)	2.5	2.5			2.5
Total Air Volume (m3)	27.147	24			24
	µg/M3	µg/M3			µg/M3
Particulate Matter (µg)	54	179			8.5
Unit	(µg/m3)	(µg/m3)	(µg)	(µg)	(µg)
Chloride	0.0313	0.100	0.4	<	0.0484
Nitrate	0.169	0.743	0.2	0.923856895	0.0668
Sulphate	1.33	2.47	1	<	0.121
Ammonium (as N)	0.434	0.677	0.5	<	<0.0208
Calcium	<0.0737	0.175	2	<	0.132
Magnesium	<0.0368	<0.0417	1	<	<0.0417
Potassium	0.0352	0.0487	0.2	<	0.0131

Station #	AMS 1	AMS 12	AMS 13	AMS 15	AMS 16	Travel Blank
Station Name	Fort McKay	Millenium	Fort McKay South	CNRL Horizon	Shell Muskeg River	
Sample Date	41704	41704	41704	41704	41704	41704
PM Size(µm)	10	10	10	10	10	10
Total Air Volume (m3)	24	24	24	24	24	24
	µg/M3	µg/M3	µg/M3	µg/M3	µg/M3	µg/M3
Particulate Matter (µg)	233	936	116	219	268	-5
Unit	(µg/m3)	(µg/m3)	(µg/m3)	(µg/m3)	(µg/m3)	(µg)
Chloride	0.300	0.0974	0.284	0.0911	0.0573	0.0336
Nitrate	0.343	0.509	0.263	0.344	0.370	0.0775
Sulphate	1.56	1.12	1.21	0.860	0.694	<0.0417
Ammonium (as N)	0.463	0.298	0.350	0.213	0.181	<0.0208
Calcium	<0.0833	0.410	0.290	0.0976	0.158	<0.0833
Magnesium	<0.0417	0.0734	<0.0417	<0.0417	<0.0417	<0.0417
Potassium	0.0449	0.0376	0.0233	0.0244	0.0223	<0.00833

WOOD BUFFALO ENVIRONMENTAL ASSOCIATION **2014**

Particulate Matter - Ions **Indicated Sites and Dates**

Station #	MDL	Lab Blank	Travel Blank
Station Name			
Sample Date			12-Mar
PM Size(µm)			2.5
Total Air Volume (m3)			24
			µg/M3
Particulate Matter (µg)			1
Unit	(µg)	(µg)	(µg)
Chloride	0.4	<	0.0182
Nitrate	0.2	0.923856895	0.0557
Sulphate	1	<	0.0667
Ammonium (as N)	0.5	<	<0.0208
Calcium	2	<	<0.0833
Magnesium	1	<	<0.0417
Potassium	0.2	<	<0.00833

Station #	AMS 12	AMS 13	AMS 15	AMS 16	Travel Blank
Station Name	Millenium	Fort McKay South	CNRL Horizon	Shell Muskeg River	
Sample Date	41710	41710	41710	41710	41710
PM Size(µm)	10	10	10	10	10
Total Air Volume (m3)	24	24	24	24	24
	µg/M3	µg/M3	µg/M3	µg/M3	µg/M3
Particulate Matter (µg)	19	2	27	39	0.5
Unit	(µg/m3)	(µg/m3)	(µg/m3)	(µg/m3)	(µg)
Chloride	0.0695	0.0493	0.0541	0.0521	0.0538
Nitrate	0.120	0.154	0.111	0.114	0.0660
Sulphate	0.251	0.269	0.284	0.251	0.0477
Ammonium (as N)	0.0614	0.0536	0.0548	0.0632	<0.0208
Calcium	<0.0833	<0.0833	<0.0833	<0.0833	<0.0833
Magnesium	<0.0417	<0.0417	<0.0417	<0.0417	<0.0417
Potassium	0.0144	0.0235	0.0138	0.0195	<0.00833

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Particulate Matter - Ions **Indicated Sites and Dates**

Station #	AMS 1	AMS 6	AMS 7	AMS 14	MDL	Lab Blank	Travel Blank
Station Name	Fort McKay	Patricia McInnes	Athabasca Valley	Anzac			
Sample Date	18-Mar	18-Mar	18-Mar	18-Mar			18-Mar
PM Size(µm)	2.5	2.5	2.5	2.5			2.5
Total Air Volume (m3)	25.3	24	24	24			24
	µg/M3	µg/M3	µg/M3	µg/M3			µg/M3
Particulate Matter (µg)	84	48	102	30			-22.25
Unit	(µg/m3)	(µg/m3)	(µg/m3)	(µg/m3)	(µg)	(µg)	(µg)
Chloride	0.0403	0.0195	0.0721	0.0306	0.4	<	0.0499
Nitrate	0.120	0.129	0.109	0.109	0.2	0.923856895	0.0581
Sulphate	0.577	0.518	0.538	0.578	1	<	<0.0417
Ammonium (as N)	0.157	0.159	0.140	0.156	0.5	<	<0.0208
Calcium	<0.0791	0.100	<0.0833	0.0933	2	<	0.0914
Magnesium	<0.0395	<0.0417	<0.0417	<0.0417	1	<	<0.0417
Potassium	0.0152	0.0138	0.0132	0.0131	0.2	<	<0.00833

Station #	AMS 1	AMS 6	AMS 7	AMS 14	AMS 12	AMS 13	AMS 15	AMS 16	Travel Blank
Station Name	Fort McKay	Patricia McInnes	Athabasca Valley	Anzac	Millenium	Fort McKay South	CNRL Horizon	Shell Muskeg River	
Sample Date	41716	41716	41716	41716	41716	41716	41716	41716	41716
PM Size(µm)	10	10	10	10	10	10	10	10	10
Total Air Volume (m3)	24	24	24	24	24	24	24	24	24
	µg/M3	µg/M3	µg/M3	µg/M3	µg/M3	µg/M3	µg/M3	µg/M3	µg/M3
Particulate Matter (µg)	181	111	238	26	136	89	76	122	-17.83333333
Unit	(µg/m3)	(µg/m3)	(µg/m3)	(µg/m3)	(µg/m3)	(µg/m3)	(µg/m3)	(µg/m3)	(µg)
Chloride	0.0782	0.196	1.04	0.0654	0.0738	0.100	0.118	0.0694	0.0421
Nitrate	0.186	0.177	0.192	0.149	0.111	0.123	0.141	0.190	0.0557
Sulphate	0.612	0.529	0.580	0.590	0.552	0.621	0.598	0.722	0.0468
Ammonium (as N)	0.165	0.139	0.161	0.152	0.133	0.153	0.156	0.177	<0.0208
Calcium	<0.0833	<0.0833	0.0982	<0.0833	0.112	0.113	<0.0833	0.133	<0.0833
Magnesium	<0.0417	<0.0417	0.0455	<0.0417	<0.0417	<0.0417	<0.0417	<0.0417	<0.0417
Potassium	0.0200	0.0191	0.0363	0.0125	0.0184	0.0144	0.0142	0.0201	<0.00833

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Particulate Matter - Ions **Indicated Sites and Dates**

Station #	AMS 1	AMS 6	AMS 7	AMS 14	MDL	Lab Blank	Travel Blank
Station Name	Fort McKay	Patricia McInnes	Athabasca Valley	Anzac			
Sample Date	24-Mar	24-Mar	24-Mar	24-Mar			24-Mar
PM Size(µm)	2.5	2.5	2.5	2.5			2.5
Total Air Volume (m3)	24	24	24	24			24
	µg/M3	µg/M3	µg/M3	µg/M3			µg/M3
Particulate Matter (µg)	68	29	102	26			-29.33333333
Unit	(µg/m3)	(µg/m3)	(µg/m3)	(µg/m3)	(µg)	(µg)	(µg)
Chloride	0.209	0.186	0.387	0.126	0.4	<	0.0435
Nitrate	0.176	0.157	0.165	0.182	0.2	0.923856895	0.0427
Sulphate	0.698	0.670	0.709	0.691	1	<	0.0422
Ammonium (as N)	0.161	0.170	0.167	0.158	0.5	<	<0.0208
Calcium	<0.0833	0.137	0.0963	0.164	2	<	0.270
Magnesium	<0.0417	<0.0417	<0.0417	<0.0417	1	<	<0.0417
Potassium	0.0157	0.0145	0.0188	0.0204	0.2	<	0.00991

Station #	Travel Blank
Station Name	
Sample Date	41722
PM Size(µm)	10
Total Air Volume (m3)	24
	µg/M3
Particulate Matter (µg)	-76
Unit	(µg)
Chloride	0.0270
Nitrate	0.0632
Sulphate	<0.0417
Ammonium (as N)	<0.0208
Calcium	0.139
Magnesium	<0.0417
Potassium	<0.00833

WOOD BUFFALO ENVIRONMENTAL ASSOCIATION **2014**

Particulate Matter - Ions **Indicated Sites and Dates**

Station #	AMS 1	AMS 6	AMS 7	AMS 14	MDL	Lab Blank	Travel Blank
Station Name	Fort McKay	Patricia McInnes	Athabasca Valley	Anzac			
Sample Date	30-Mar	30-Mar	30-Mar	30-Mar			30-Mar
PM Size(µm)	2.5	2.5	2.5	2.5			2.5
Total Air Volume (m3)	24	24	24	24			24
	µg/M3	µg/M3	µg/M3	µg/M3			µg/M3
Particulate Matter (µg)	312	152	220	67			-25.5
Unit	(µg/m3)	(µg/m3)	(µg/m3)	(µg/m3)	(µg)	(µg)	(µg)
Chloride	0.234	0.149	0.196	0.106	0.4	<	0.0347
Nitrate	0.239	0.341	0.268	0.242	0.2	0.923856895	0.0269
Sulphate	2.57	1.89	1.77	1.29	1	<	<0.0417
Ammonium (as N)	0.556	0.352	0.453	0.322	0.5	<	<0.0208
Calcium	0.0938	0.351	0.296	0.301	2	<	0.258
Magnesium	0.0539	<0.0417	<0.0417	<0.0417	1	<	<0.0417
Potassium	0.0197	0.0259	0.139	0.0154	0.2	<	<0.00833

Station #	Travel Blank
Station Name	
Sample Date	41728
PM Size(µm)	10
Total Air Volume (m3)	24
	µg/M3
Particulate Matter (µg)	-42
Unit	(µg)
Chloride	0.0168
Nitrate	0.0668
Sulphate	0.0659
Ammonium (as N)	<0.0208
Calcium	0.177
Magnesium	<0.0417
Potassium	<0.00833

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Particulate Matter - Ions **Indicated Sites and Dates**

Station #	AMS 1	AMS 6	AMS 7	AMS 14	MDL	Lab Blank	Travel Blank
Station Name	Fort McKay	Patricia McInnes	Athabasca Valley	Anzac			
Sample Date	5-Apr	5-Apr	5-Apr	5-Apr			5-Apr
PM Size(µm)	2.5	2.5	2.5	2.5			2.5
Total Air Volume (m3)	24	24	24	24			24
	µg/M3	µg/M3	µg/M3	µg/M3			µg/M3
Particulate Matter (µg)	130	93	211	102			-9
Unit	(µg/m3)	(µg/m3)	(µg/m3)	(µg/m3)	(µg)	(µg)	(µg)
Chloride	0.0395	0.0341	0.112	0.0280	0.4	0.72342775	0.0273
Nitrate	0.113	0.161	0.155	0.0783	0.2	1.535414117	0.0794
Sulphate	0.894	1.32	1.15	0.930	1	<	<0.0417
Ammonium (as N)	0.333	0.440	0.399	0.320	0.5	<	<0.0208
Calcium	<0.0833	0.201	0.109	0.124	2	<	0.0914
Magnesium	<0.0417	<0.0417	<0.0417	<0.0417	1	<	<0.0417
Potassium	0.0214	0.0221	0.0214	0.0401	0.2	0.994434625	<0.00833

Station #	AMS 6	AMS 7	AMS 14	AMS 12	AMS 13	AMS 16	Travel Blank
Station Name	Patricia McInnes	Athabasca Valley	Anzac	Millenium	Fort McKay South	Shell Muskeg River	
Sample Date	41734	41734	41734	41734	41734	41734	41734
PM Size(µm)	10	10	10	10	10	10	10
Total Air Volume (m3)	24	23.9	24.003	24	24	24	24
	µg/M3	µg/M3	µg/M3	µg/M3	µg/M3	µg/M3	µg/M3
Particulate Matter (µg)	238	370	124	555	441	410	0
Unit	(µg/m3)	(µg/m3)	(µg/m3)	(µg/m3)	(µg/m3)	(µg/m3)	(µg)
Chloride	0.473	0.918	0.0407	0.0371	0.140	0.0516	<0.0167
Nitrate	0.225	0.327	0.135	0.134	0.249	0.198	0.0624
Sulphate	1.27	1.70	1.03	2.08	0.930	0.921	<0.0417
Ammonium (as N)	0.437	0.543	0.365	0.654	0.315	0.311	<0.0208
Calcium	0.217	0.168	0.104	0.182	0.299	0.180	<0.0833
Magnesium	<0.0417	0.0560	<0.0417	<0.0417	<0.0417	<0.0417	<0.0417
Potassium	0.0289	0.0486	0.0195	0.0108	0.0197	0.0153	<0.00833

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Particulate Matter - Ions **Indicated Sites and Dates**

Station #	AMS 1	AMS 6	AMS 7	AMS 14	MDL	Lab Blank	Travel Blank
Station Name	Fort McKay	Patricia McInnes	Athabasca Valley	Anzac			
Sample Date	11-Apr	11-Apr	11-Apr	11-Apr			11-Apr
PM Size(µm)	2.5	2.5	2.5	2.5			2.5
Total Air Volume (m3)	26.016	24	24	24			24
	µg/M3	µg/M3	µg/M3	µg/M3			µg/M3
Particulate Matter (µg)	46	62	85	35			23
Unit	(µg/m3)	(µg/m3)	(µg/m3)	(µg/m3)	(µg)	(µg)	(µg)
Chloride	0.0324	0.0281	0.0834	0.019912042	0.4	0.72342775	0.0311
Nitrate	0.187	0.251	0.231	0.116983933	0.2	1.535414117	0.0510
Sulphate	0.804	0.846	0.764	0.797999625	1	<	<0.0417
Ammonium (as N)	0.218	0.265	0.210	0.260	0.5	<	<0.0208
Calcium	<0.0769	0.110	0.117	<0.0833	2	<	<0.0833
Magnesium	<0.0384	<0.0417	<0.0417	<0.0417	1	<	<0.0417
Potassium	0.0372	0.0989	0.0207	0.008929167	0.2	0.994434625	<0.00833

Station #	AMS 1	AMS 6	AMS 7	AMS 14	AMS 12	AMS 13	AMS 16	Travel Blank
Station Name	Fort McKay	Patricia McInnes	Athabasca Valley	Anzac	Millenium	Fort McKay South	Shell Muskeg River	
Sample Date	41740	41740	41740	41740	41740	41740	41740	41740
PM Size(µm)	10	10	10	10	10	10	10	10
Total Air Volume (m3)	24	24	24	24.005	24	24	24	24
	µg/M3	µg/M3	µg/M3	µg/M3	µg/M3	µg/M3	µg/M3	µg/M3
Particulate Matter (µg)	395	207	320	83	245	347	670	-19
Unit	(µg/m3)	(µg/m3)	(µg/m3)	(µg/m3)	(µg/m3)	(µg/m3)	(µg/m3)	(µg)
Chloride	0.0683	0.122	0.540	0.031162792	0.0432	0.119	0.0794	0.0290
Nitrate	0.366	0.268	0.355	0.130816492	0.162	0.181	0.242	0.108
Sulphate	1.27	0.927	0.893	0.83201975	0.909	0.794	0.965	<0.0417
Ammonium (as N)	0.336	0.263	0.232	0.28852157	0.263	0.279	0.134	<0.0208
Calcium	0.148	0.154	0.136	<0.0690	<0.0833	0.0982	0.294	<0.0833
Magnesium	0.0429	<0.0417	0.0491	<0.0345	<0.0417	<0.0417	<0.0417	<0.0417
Potassium	0.0481	0.0226	0.0379	0.014733125	0.0129	0.0340	0.0694	<0.00833

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Particulate Matter - Ions **Indicated Sites and Dates**

Station #	AMS 6	AMS 14	MDL	Lab Blank	Travel Blank
Station Name	Patricia McInnes	Anzac			
Sample Date	17-Apr	17-Apr			17-Apr
PM Size(µm)	2.5	2.5			2.5
Total Air Volume (m3)	24	24.1			24
	µg/M3	µg/M3			µg/M3
Particulate Matter (µg)	137	162			12
Unit	(µg/m3)	(µg/m3)	(µg)	(µg)	(µg)
Chloride	0.132	0.0239	0.4	0.72342775	<0.0167
Nitrate	0.230	0.210	0.2	1.535414117	0.0494
Sulphate	1.47	1.54	1	<	<0.0417
Ammonium (as N)	0.491	0.496	0.5	<	<0.0208
Calcium	<0.0833	0.284	2	<	<0.0833
Magnesium	<0.0417	<0.0415	1	<	<0.0417
Potassium	0.0320	0.0187	0.2	0.994434625	<0.00833

Station #	AMS 1	AMS 6	AMS 14	AMS 12	AMS 13	AMS 15	AMS 16	Travel Blank
Station Name	Fort McKay	Patricia McInnes	Anzac	Millenium	Fort McKay South	CNRL Horizon	Shell Muskeg River	
Sample Date	41746	41746	41746	41746	41746	41746	41746	41746
PM Size(µm)	10	10	10	10	10	10	10	10
Total Air Volume (m3)	24	24	24	24	24	24	24	24
	µg/M3	µg/M3	µg/M3	µg/M3	µg/M3	µg/M3	µg/M3	µg/M3
Particulate Matter (µg)	60	356	146	1058	673	358	218	14
Unit	(µg/m3)	(µg/m3)	(µg/m3)	(µg/m3)	(µg/m3)	(µg/m3)	(µg/m3)	(µg)
Chloride	0.0248	0.248	0.0322	0.0519	0.0414	0.0327	0.0262	0.0183
Nitrate	0.0897	0.288	0.149	0.258	0.238	0.235	0.209	0.156
Sulphate	0.198	1.43	1.55	1.47	1.52	1.48	1.29	0.0629
Ammonium (as N)	<0.0208	0.461	0.518	0.414	0.517	0.507	0.436	<0.0208
Calcium	<0.0833	<0.0833	0.146	1.27	0.461	0.175	0.169	<0.0833
Magnesium	<0.0417	<0.0417	<0.0417	0.0424	<0.0417	<0.0417	<0.0417	<0.0417
Potassium	0.0180	0.501	0.0379	0.0612	0.0471	0.0303	0.0360	0.0680

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Particulate Matter - Ions **Indicated Sites and Dates**

Station #	AMS 6	AMS 14	MDL	Lab Blank	Travel Blank
Station Name	Patricia McInnes	Anzac			
Sample Date	23-Apr	23-Apr			23-Apr
PM Size(µm)	2.5	2.5			2.5
Total Air Volume (m3)	24	24.001			24
	µg/M3	µg/M3			µg/M3
Particulate Matter (µg)	102	78			6
Unit	(µg/m3)	(µg/m3)	(µg)	(µg)	(µg)
Chloride	0.0196	<0.0167	0.4	0.72342775	<0.0167
Nitrate	0.113	0.0640	0.2	1.535414117	0.0403
Sulphate	1.08	0.931	1	<	<0.0417
Ammonium (as N)	0.343	0.316	0.5	<	<0.0208
Calcium	<0.0833	0.135	2	<	0.0923
Magnesium	<0.0417	<0.0417	1	<	<0.0417
Potassium	0.0346	0.0129	0.2	0.994434625	<0.00833

Station #	AMS 6	AMS 7	AMS 14	AMS 12	AMS 13	AMS 15	AMS 16	Travel Blank
Station Name	Patricia McInnes	Athabasca Valley	Anzac	Millenium	Fort McKay South	CNRL Horizon	Shell Muskeg River	
Sample Date	41752	41752	41752	41752	41752	41752	41752	41752
PM Size(µm)	10	10	10	10	10	10	10	10
Total Air Volume (m3)	24	22.2	24	24	24	24	24	24
	µg/M3	µg/M3	µg/M3	µg/M3	µg/M3	µg/M3	µg/M3	µg/M3
Particulate Matter (µg)	386	444	107	997	504	444	663	3
Unit	(µg/m3)	(µg/m3)	(µg/m3)	(µg/m3)	(µg/m3)	(µg/m3)	(µg/m3)	(µg)
Chloride	0.774	0.371	0.259	0.105	0.0377	0.0294	0.0436	<0.0167
Nitrate	0.142	0.185	0.230	0.145	0.199	0.140	0.128	0.0316
Sulphate	1.02	1.06	1.40	1.66	1.08	1.07	1.13	<0.0417
Ammonium (as N)	0.327	0.292	0.331	0.317	0.338	0.313	0.333	<0.0208
Calcium	0.0874	0.159	0.191	0.530	0.427	0.151	0.514	<0.0833
Magnesium	<0.0417	0.0478	<0.0417	0.0472	<0.0417	<0.0417	0.0421	<0.0417
Potassium	0.0346	0.0542	0.0301	0.0342	0.0498	0.0245	0.0165	<0.00833

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Particulate Matter - Ions **Indicated Sites and Dates**

Station #	AMS 1	AMS 6	AMS 7	AMS 14	MDL	Lab Blank	Travel Blank
Station Name	Fort McKay	Patricia McInnes	Athabasca Valley	Anzac			
Sample Date	29-Apr	29-Apr	29-Apr	29-Apr			29-Apr
PM Size(µm)	2.5	2.5	2.5	2.5			2.5
Total Air Volume (m3)	24	24	24	24			24
	µg/M3	µg/M3	µg/M3	µg/M3			µg/M3
Particulate Matter (µg)	115	13	97	60			9
Unit	(µg/m3)	(µg/m3)	(µg/m3)	(µg/m3)	(µg)	(µg)	(µg)
Chloride	<0.0167	0.0486	0.0353	0.0234	0.4	0.72342775	0.0201
Nitrate	0.117	0.115	0.0664	0.0585	0.2	1.535414117	0.0348
Sulphate	0.601	0.0897	0.260	0.349	1	<	<0.0417
Ammonium (as N)	0.194	<0.0208	0.0907	0.111	0.5	<	<0.0208
Calcium	<0.0833	<0.0833	<0.0833	0.125	2	<	0.162
Magnesium	<0.0417	<0.0417	<0.0417	<0.0417	1	<	<0.0417
Potassium	0.0224	0.00946	0.0108	0.0122	0.2	0.994434625	<0.00833

Station #	AMS 1	AMS 6	AMS 7	AMS 14	AMS 12	AMS 13	AMS 15	AMS 16	Travel Blank
Station Name	Fort McKay	Patricia McInnes	Athabasca Valley	Anzac	Millenium	Fort McKay South	CNRL Horizon	Shell Muskeg River	
Sample Date	41758	41758	41758	41758	41758	41758	41758	41758	41758
PM Size(µm)	10	10	10	10	10	10	10	10	10
Total Air Volume (m3)	24	24	22.9	24	24	24	24	24	24
	µg/M3	µg/M3	µg/M3	µg/M3	µg/M3	µg/M3	µg/M3	µg/M3	µg/M3
Particulate Matter (µg)	275	242	659	259	1189	147	678	892	11
Unit	(µg/m3)	(µg/m3)	(µg/m3)	(µg/m3)	(µg/m3)	(µg/m3)	(µg/m3)	(µg/m3)	(µg)
Chloride	0.0563	0.0888	0.267	0.0482	0.0903	0.0260	0.0620	0.110	0.0203
Nitrate	0.138	0.147	0.230	0.107	0.145	0.109	0.184	0.175	0.0506
Sulphate	0.637	0.355	0.566	0.423	1.09	0.617	0.847	0.811	<0.0417
Ammonium (as N)	0.201	0.0903	0.157	0.0932	0.187	0.216	0.238	0.203	<0.0208
Calcium	<0.0833	0.109	0.520	0.122	1.14	0.275	0.132	0.815	0.109
Magnesium	<0.0417	<0.0417	0.0903	<0.0417	0.0985	<0.0417	<0.0417	0.0767	<0.0417
Potassium	0.0489	0.0364	0.0684	0.0251	0.0421	0.0242	0.0289	0.0291	<0.00833

February - March 2014

WOOD BUFFALO ENVIRONMENTAL ASSOCIATION

Passive Monitoring Results

Continuous Air Monitoring Stations

Station	Start	End	Result Type	NO_2 (ppb)	O_3 (ppb)	SO_2 (ppb)
AMS 1 - Fort McKay	28-Jan-14	27-Mar-14	Sample	3.9	19.7	1.1
			Sample	3.9	19.5	1.1
			Sample	3.6	19.6	1.1
			Average	**3.8**	**19.6**	**1.1**
AMS 2 - Mildred Lake	28-Jan-14	27-Mar-14	Sample	9.4	20.6	1.9
			Sample	8.3	19.7	1.8
			Sample	8.4	19.5	2.2
			Average	**8.7**	**20.0**	**2.0**
AMS 6 - Patricia McInnes	30-Jan-14	26-Mar-14	Sample	4.3	25.2	1.5
			Sample	3.6	25.3	2
			Sample	3.2	25.4	1.6
			Average	**3.7**	**25.3**	**1.7**
AMS 8 - Fort Chipewyan	11-Feb-14	11-Mar-14	Sample	0.6	34.4	0.2
			Sample	0.5	32.4	0.2
			Sample	0.4	MISSING	0.3
			Average	**0.5**	**33.4**	**0.2**
AMS 14 - Anzac	30-Jan-14	26-Mar-14	Sample	1.3	27.0	0.8
			Sample	1.4	29.5	0.8
			Sample	1.4	26.5	0.8
			Average	**1.4**	**27.7**	**0.8**

April 2014

WOOD BUFFALO ENVIRONMENTAL ASSOCIATION
Passive Monitoring Results
Continuous Air Monitoring Stations

Station	Start	End	Result Type	NO_2 (ppb)	O_3 (ppb)	SO_2 (ppb)
AMS 1 - Fort McKay	27-Mar-14	28-Apr-14	Sample	2.7	26.4	1.3
			Sample	2.6	26.7	1.3
			Sample	2.7	23.7	1.3
			Average	**2.7**	**25.6**	**1.3**
AMS 2 - Mildred Lake	27-Mar-14	28-Apr-14	Sample	3.6	28.7	2.9
			Sample	3.4	27.6	2.7
			Sample	3.3	27.8	2.7
			Average	**3.4**	**28.0**	**2.8**
AMS 6 - Patricia McInnes	26-Mar-14	28-Apr-14	Sample	2	30.1	1.7
			Sample	2.1	30.4	1.5
			Sample	1.7	30.5	MISSING
			Average	**1.9**	**30.3**	**1.6**
AMS 8 - Fort Chipewyan	11-Mar-14		Sample			
			Sample			
			Sample			
			Average			
AMS 14 - Anzac	26-Mar-14	28-Apr-14	Sample	0.4	33.5	0.6
			Sample	0.4	29.3	0.5
			Sample	0.4	29.6	0.5
			Average	**0.4**	**30.8**	**0.5**

February - March 2014

WOOD BUFFALO ENVIRONMENTAL ASSOCIATION

Passive Monitoring Results

Remote Forestry and Lake Sites

Station	Start	End	Result Type	NO_2 (ppb)	O_3 (ppb)	SO_2 (ppb)
AH3	06-Feb-14	31-Mar-14	Sample	1.6	30.1	1.1
			Sample	1.4	31.3	1.1
			Average	**1.5**	**30.7**	**1.1**
AH7	06-Feb-14	02-Apr-14	Sample	2.0	29.4	3.0
			Sample	1.4	28.4	3.0
			Average	**1.7**	**28.9**	**3.0**
AH8-R	07-Feb-14	02-Apr-14	Sample	1.6	26.3	1.1
			Sample	1.5	30.2	1.0
			Average	**1.6**	**28.3**	**1.1**
BM7	08-Feb-14	01-Apr-14	**Sample**	**<0.1**	**31.3**	**0.3**
BM10	07-Feb-14	02-Apr-14	**Sample**	**<0.1**	**24.9**	**0.8**
BM11	08-Feb-14	01-Apr-14	**Sample**	**<0.1**	**30.3**	**0.7**
JP101 (JPL1)	06-Feb-14	02-Apr-14	Sample	0.9	30.1	1.6
			Sample	0.9	30.8	1.7
			Average	**0.9**	**30.4**	**1.7**
JP102 (JPH2)	06-Feb-14	02-Apr-14	Sample	3.8	25.9	2.9
			Sample	5.3	24.0	2.8
			Average	**4.6**	**25.0**	**2.9**
JP104 (JPH4)	28-Jan-14	27-Mar-14	Sample	5.6	23.9	2.2
			Sample	5.2	24.0	2.1
			Average	**5.4**	**23.9**	**2.2**
JP107 (JPL7)	08-Feb-14	01-Apr-14	Sample	0.5	30.6	0.7
			Sample	0.7	31.2	0.7
			Average	**0.6**	**30.9**	**0.7**
JP108 (JPL8)	06-Feb-14	31-Mar-14	Sample	0.3	29.1	0.4
			Sample	0.3	32.7	0.3
			Average	**0.3**	**30.9**	**0.4**
JP205 (205)	08-Feb-14	01-Apr-14	Sample	0.2	31.9	0.6
			Sample	0.1	32.7	0.7
			Average	**0.2**	**32.3**	**0.7**
JP210 (210)	05-Feb-14	31-Mar-14	Sample	0.5	31.3	0.6
			Sample	0.7	30.3	0.7
			Average	**0.6**	**30.8**	**0.7**
JP212	07-Feb-14	02-Apr-14	**Sample**	**2.0**	**20.2**	**1.4**
JP213 (213)	06-Feb-14	31-Mar-14	Sample	<0.1	33.36	0.5
			Sample	0.2	32.9	0.5
			Average	**0.2**	**33.1**	**0.5**
NE7	07-Feb-14	01-Apr-14	**Sample**	**0.1**	**27.2**	**1.0**
NE10	05-Feb-14	31-Mar-14	**Sample**	**<0.1**	**28.1**	**0.4**
NE11	07-Feb-14	01-Apr-14	**Sample**	**0.7**	**21.6**	**0.9**
R2	28-Jan-14	27-Mar-14	**Sample**	**2.8**	**21.2**	**1.5**
SM7	05-Feb-14	31-Mar-14	**Sample**	**<0.1**	**30.3**	**0.7**
SM8	05-Feb-14	31-Mar-14	**Sample**	**0.1**	**29.5**	**0.8**
WF4	07-Feb-14	02-Apr-14	**Sample**	**0.4**	**21.8**	**0.8**
JP316	05-Feb-14	31-Mar-14	Sample	0.3	33.3	0.7
			Sample	0.6	33.5	0.6
			Average	**0.5**	**33.4**	**0.7**
JP201	07-Feb-14	02-Apr-14	Sample	0.3	32.6	0.4
			Sample	0.3	31.7	0.6
			Average	**0.3**	**32.1**	**0.5**
JP311	06-Feb-14	02-Apr-14	Sample	1.3	31.0	2.7
			Sample	1.0	29.8	1.8
			Average	**1.2**	**30.4**	**2.3**

April 2014

WOOD BUFFALO ENVIRONMENTAL ASSOCIATION

Passive Monitoring Results

Remote Forestry and Lake Sites

Station	Start	End	Result Type	NO_2 (ppb)	O_3 (ppb)	SO_2 (ppb)
AH3	31-Mar-14	01-May-14	Sample	0.1	39.1	0.4
			Sample	0.3	37.1	0.4
			Average	**0.2**	**38.1**	**0.4**
AH7	02-Apr-14	01-May-14	Sample	0.6	36.6	1.4
			Sample	0.5	36.8	1.5
			Average	**0.6**	**36.7**	**1.5**
AH8-R	02-Apr-14	02-May-14	Sample	0.8	35.0	1.5
			Sample	0.8	33.7	1.4
			Average	**0.8**	**34.3**	**1.5**
BM7	01-Apr-14	01-May-14	**Sample**	**<0.1**	**36.0**	**0.5**
BM10	02-Apr-14	01-May-14	**Sample**	**0.4**	**27.5**	**0.7**
BM11	01-Apr-14	01-May-14	**Sample**	**0.1**	**35.4**	**0.7**
JP101 (JPL1)	02-Apr-14	01-May-14	Sample	<0.1	40.2	0.9
			Sample	0.2	41.4	0.8
			Average	**0.2**	**40.8**	**0.9**
JP102 (JPH2)	02-Apr-14	02-May-14	Sample	0.8	35.0	2.2
			Sample	1.2	34.3	2.1
			Average	**1.0**	**34.7**	**2.2**
JP104 (JPH4)	27-Mar-14	28-Apr-14	Sample	1.4	33.7	1.3
			Sample	1.5	31.0	1.3
			Average	**1.5**	**32.3**	**1.3**
JP107 (JPL7)	01-Apr-14	01-May-14	Sample	0.3	32.5	0.7
			Sample	0.2	35.3	0.6
			Average	**0.3**	**33.9**	**0.7**
JP108 (JPL8)	31-Mar-14	01-May-14	Sample	<0.1	33.7	0.2
			Sample	<0.1	40.0	0.2
			Average	**<0.1**	**36.9**	**0.2**
JP205 (205)	01-Apr-14	01-May-14	Sample	<0.1	37.6	0.3
			Sample	0.1	33.8	0.3
			Average	**0.1**	**35.7**	**0.3**
JP210 (210)	31-Mar-14	01-May-14	Sample	<0.1	36.6	0.2
			Sample	<0.1	35.8	0.2
			Average	**<0.1**	**36.2**	**0.2**
JP212	02-Apr-14	01-May-14	**Sample**	**2.2**	**26.3**	**1.2**
JP213 (213)	31-Mar-14	01-May-14	Sample	<0.1	39.06	0.3
			Sample	0.1	41.7	0.2
			Average	**0.1**	**40.4**	**0.3**
NE7	01-Apr-14	01-May-14	**Sample**	**0.1**	**34.3**	**0.5**
NE10	31-Mar-14	01-May-14	**Sample**	**<0.1**	**31.6**	**0.3**
NE11	01-Apr-14	01-May-14	**Sample**	**0.6**	**28.8**	**0.5**
R2	27-Mar-14	28-Apr-14	**Sample**	**2.0**	**25.9**	**0.9**
SM7	31-Mar-14	01-May-14	**Sample**	**<0.1**	**37.4**	**0.3**
SM8	31-Mar-14	01-May-14	**Sample**	**<0.1**	**37.3**	**0.3**
WF4	31-Mar-14	01-May-14	**Sample**	**0.9**	**25.9**	**1.3**
JP316	31-Mar-14	01-May-14	Sample	<0.1	40.9	0.3
			Sample	0.2	39.2	0.4
			Average	**0.2**	**40.1**	**0.4**
JP201	02-Apr-14	02-May-14	Sample	<0.1	MISSING	0.4
			Sample	<0.1	42.0	0.4
			Average	**<0.1**	**42.0**	**0.4**
JP311	02-Apr-14	01-May-14	Sample	0.1	39.8	1.1
			Sample	0.1	37.2	1.2
			Average	**0.1**	**38.5**	**1.2**

WOOD BUFFALO ENVIRONMENTAL ASSOCIATION **2014**

Volatile Organic Compounds (VOCs) **Indicated Sites and Dates**

VOC Canisters

#	Compound Name	MDL	Results (ppbv) AMS 9 Barge Landing 06-Mar	AMS 12 Millennium Mine 06-Mar	AMS 13 Fort McKay South 06-Mar	AMS 15 CNRL Horizon 06-Mar
1	Formaldehyde	2				
2	Isobutane	0.03	0.67	0.35	0.5	1.73
3	1-Butene	0.03	0.75	0.33		0.68
4	Acetaldehyde	0.2	3.14	4.68	4.51	5.41
5	Butane	0.03	2.11	0.95	0.88	1.03
6	Methanol	2	6.13	1.88	2.44	3.07
7	trans-2-Butene	0.03				
8	cis-2-Butene	0.03				
9	3-Methyl-1-butene	0.03				
10	Isopentane	0.03	0.78	0.92	0.64	3.17
11	1-Pentene	0.03				
12	Acetone	0.2	5.19	1.73	1.97	1.73
13	Pentane	0.03		0.77		
14	Isoprene	0.03				
15	trans-2-Pentene	0.03				
16	cis-2-Pentene	0.03				
17	2-Methyl-2-butene	0.03				
18	2,2-Dimethylbutane	0.03				
19	Cyclopentene	0.03				
20	4-Methyl-1-pentene	0.03				
21	2,3-Dimethylbutane	0.03				0.26
22	Cyclopentane	0.03				
23	2-Methylpentane	0.03		0.11		
24	3-Methylpentane	0.03				0.27
25	2-Methyl-1-pentene	0.03				
26	Hexane	0.03	0.2	0.09	0.12	
27	Methyl ethyl ketone	0.2				
28	cis-2-Hexene	0.03				
29	trans-2-Hexene	0.03				
30	2,4-Dimethylpentane	0.03				
31	Methylcyclopentane	0.03				0.27
32	Cyclohexane	0.03			0.21	0.6
33	Benzene	0.03	0.28	0.2	0.18	0.33
34	2-Methylhexane	0.03				
35	2,3-Dimethylpentane	0.03				
36	3-Methylhexane	0.03				0.25
37	2,2,4-Trimethylpentane	0.03				
38	Heptane	0.03	0.25	0.21	0.45	0.52
39	Methylcyclohexane	0.03			0.34	0.58
40	Methyl isobutyl ketone	0.2				
41	2,3,4-Trimethylpentane	0.03				
42	2-Methylheptane	0.03			0.38	0.52
43	Toluene	0.03	0.2	0.2	0.3	0.35
44	3-Methylheptane	0.03			0.12	0.15
45	Octane	0.03	0.27		0.81	1.23
46	Ethyl benzene	0.03	0.06	0.06		0.17
47	m,p-Xylene	0.03	0.04	0.14	0.1	0.24
48	Styrene	0.03				
49	Nonane	0.03				0.33
50	o-Xylene	0.03	0.06	0.04		0.11
51	Isopropylbenzene	0.03				
52	alpha Pinene	0.03	0.18			0.21
53	n-Propylbenzene	0.03				
54	1,3,5-Trimethylbenzene	0.03				
55	beta Pinene	0.03				
56	Decane	0.03				
57	1,2,4-Trimethylbenzene	0.03				
58	Undecane	0.03				
59	Dodecane	0.03		0.06		0.04
60	Naphthalene	0.03	0.06	0.05		0.04

WOOD BUFFALO ENVIRONMENTAL ASSOCIATION **2014**

Volatile Organic Compounds (VOCs) **Indicated Sites and Dates**

VOC Canisters Results (ppbv)

#	Compound Name	MDL	AMS 1 Fort McKay 06-Mar	AMS 6 Patricia McInnes 06-Mar	AMS 7 Athabasca Valley 06-Mar	AMS 14 Anzac 06-Mar
1	Formaldehyde	2				
2	Isobutane	0.03	2.26	0.58	0.52	0.49
3	1-Butene	0.03	2.2	0.52	0.9	0.59
4	Acetaldehyde	0.2	8.43	4.03	4.88	4.6
5	Butane	0.03	5.95	1.46	1.52	1.35
6	Methanol	2	32.1	6.28	22	2.77
7	trans-2-Butene	0.03	0.47			
8	cis-2-Butene	0.03	0.23			
9	3-Methyl-1-butene	0.03				
10	Isopentane	0.03	2.5	0.79	0.94	0.76
11	1-Pentene	0.03				
12	Acetone	0.2	7.58	1.85	7.55	2.65
13	Pentane	0.03	4.27		2.36	
14	Isoprene	0.03	0.11		0.08	
15	trans-2-Pentene	0.03	0.18			
16	cis-2-Pentene	0.03				
17	2-Methyl-2-butene	0.03	0.19			
18	2,2-Dimethylbutane	0.03				
19	Cyclopentene	0.03				
20	4-Methyl-1-pentene	0.03				
21	2,3-Dimethylbutane	0.03	0.19			
22	Cyclopentane	0.03	0.3			
23	2-Methylpentane	0.03	0.36	0.24		
24	3-Methylpentane	0.03	0.54	0.12		
25	2-Methyl-1-pentene	0.03				
26	Hexane	0.03	1.76	0.35	0.21	
27	Methyl ethyl ketone	0.2				
28	cis-2-Hexene	0.03				
29	trans-2-Hexene	0.03				
30	2,4-Dimethylpentane	0.03				
31	Methylcyclopentane	0.03	0.54	0.14	0.07	
32	Cyclohexane	0.03	0.36			
33	Benzene	0.03	0.3	0.32	0.19	0.29
34	2-Methylhexane	0.03				
35	2,3-Dimethylpentane	0.03				
36	3-Methylhexane	0.03	0.98			
37	2,2,4-Trimethylpentane	0.03				
38	Heptane	0.03	1.27	0.36	0.21	
39	Methylcyclohexane	0.03	1.22	0.22	0.15	
40	Methyl isobutyl ketone	0.2				
41	2,3,4-Trimethylpentane	0.03				
42	2-Methylheptane	0.03	0.45	0.26		
43	Toluene	0.03	2.87	0.36	0.32	0.16
44	3-Methylheptane	0.03	0.21	0.13		
45	Octane	0.03	0.85	0.42	0.33	
46	Ethyl benzene	0.03	1.38	0.14	0.1	
47	m,p-Xylene	0.03	3.97	0.18	0.21	0.04
48	Styrene	0.03				
49	Nonane	0.03	0.31	0.12		
50	o-Xylene	0.03	1.27	0.1	0.06	
51	Isopropylbenzene	0.03				
52	alpha Pinene	0.03	0.24		0.21	
53	n-Propylbenzene	0.03				
54	1,3,5-Trimethylbenzene	0.03	0.05			
55	beta Pinene	0.03				
56	Decane	0.03	0.34			
57	1,2,4-Trimethylbenzene	0.03	0.11			
58	Undecane	0.03	0.22			
59	Dodecane	0.03				
60	Naphthalene	0.03	0.11	0.08	0.07	

WOOD BUFFALO ENVIRONMENTAL ASSOCIATION **2014**

Volatile Organic Compounds (VOCs) **Indicated Sites and Dates**

VOC Canisters

Results (ppbv)

#	Compound Name	MDL	AMS 9 Barge Landing 12-Mar	AMS 12 Millennium Mine 12-Mar	AMS 13 Fort McKay South 12-Mar	AMS 15 CNRL Horizon 12-Mar
1	Formaldehyde	2				
2	Isobutane	0.03		0.23	0.1	0.6
3	1-Butene	0.03	0.52	0.43	0.35	0.52
4	Acetaldehyde	0.2	7.07	4.34	4.66	5.78
5	Butane	0.03	0.62	1.15	0.35	0.64
6	Methanol	2	9.21	3.81	4.47	2.49
7	trans-2-Butene	0.03				
8	cis-2-Butene	0.03				
9	3-Methyl-1-butene	0.03				
10	Isopentane	0.03		0.62		0.61
11	1-Pentene	0.03				
12	Acetone	0.2	6.22	1.91	1.78	3.03
13	Pentane	0.03		1.85		
14	Isoprene	0.03	0.12			
15	trans-2-Pentene	0.03				
16	cis-2-Pentene	0.03				
17	2-Methyl-2-butene	0.03				
18	2,2-Dimethylbutane	0.03				
19	Cyclopentene	0.03				
20	4-Methyl-1-pentene	0.03				
21	2,3-Dimethylbutane	0.03				
22	Cyclopentane	0.03				
23	2-Methylpentane	0.03		0.19	0.1	
24	3-Methylpentane	0.03			0.19	
25	2-Methyl-1-pentene	0.03				
26	Hexane	0.03		0.31	1.31	
27	Methyl ethyl ketone	0.2				
28	cis-2-Hexene	0.03				
29	trans-2-Hexene	0.03				
30	2,4-Dimethylpentane	0.03				
31	Methylcyclopentane	0.03			0.25	
32	Cyclohexane	0.03				0.13
33	Benzene	0.03	0.24	0.29	0.29	0.4
34	2-Methylhexane	0.03				
35	2,3-Dimethylpentane	0.03				
36	3-Methylhexane	0.03				
37	2,2,4-Trimethylpentane	0.03				
38	Heptane	0.03				
39	Methylcyclohexane	0.03				
40	Methyl isobutyl ketone	0.2				
41	2,3,4-Trimethylpentane	0.03				
42	2-Methylheptane	0.03				
43	Toluene	0.03	0.06		0.04	
44	3-Methylheptane	0.03				
45	Octane	0.03				
46	Ethyl benzene	0.03	0.07		0.11	
47	m,p-Xylene	0.03			0.06	
48	Styrene	0.03	0.16			
49	Nonane	0.03	0.08		0.21	
50	o-Xylene	0.03	0.06		0.11	
51	Isopropylbenzene	0.03				
52	alpha Pinene	0.03			0.17	0.17
53	n-Propylbenzene	0.03				
54	1,3,5-Trimethylbenzene	0.03				
55	beta Pinene	0.03				
56	Decane	0.03			0.03	
57	1,2,4-Trimethylbenzene	0.03	0.06			
58	Undecane	0.03	0.11		0.07	
59	Dodecane	0.03	0.21		0.03	
60	Naphthalene	0.03	0.56		0.4	0.32

WOOD BUFFALO ENVIRONMENTAL ASSOCIATION **2014**

Volatile Organic Compounds (VOCs) **Indicated Sites and Dates**

VOC Canisters Results (ppbv)

#	Compound Name	MDL	AMS 1 Fort McKay 12-Mar	AMS 6 Patricia McInnes 12-Mar	AMS 7 Athabasca Valley 12-Mar	AMS 14 Anzac 12-Mar
1	Formaldehyde	2				
2	Isobutane	0.03	0.16	0.13	0.2	0.3
3	1-Butene	0.03	0.61	0.55	0.76	0.67
4	Acetaldehyde	0.2	7.34	6.69	6.7	7.06
5	Butane	0.03	0.79	0.71	0.67	0.72
6	Methanol	2	4.84	6.82	46.4	4.01
7	trans-2-Butene	0.03				
8	cis-2-Butene	0.03				
9	3-Methyl-1-butene	0.03				
10	Isopentane	0.03	0.2		0.29	
11	1-Pentene	0.03				
12	Acetone	0.2	2.95	2.88	10.5	2.52
13	Pentane	0.03				
14	Isoprene	0.03			0.15	
15	trans-2-Pentene	0.03				
16	cis-2-Pentene	0.03				
17	2-Methyl-2-butene	0.03				
18	2,2-Dimethylbutane	0.03				
19	Cyclopentene	0.03				
20	4-Methyl-1-pentene	0.03				
21	2,3-Dimethylbutane	0.03				
22	Cyclopentane	0.03				
23	2-Methylpentane	0.03				
24	3-Methylpentane	0.03				
25	2-Methyl-1-pentene	0.03				
26	Hexane	0.03				
27	Methyl ethyl ketone	0.2				
28	cis-2-Hexene	0.03				
29	trans-2-Hexene	0.03				
30	2,4-Dimethylpentane	0.03				
31	Methylcyclopentane	0.03				
32	Cyclohexane	0.03				
33	Benzene	0.03	0.22	0.17	0.27	0.37
34	2-Methylhexane	0.03				
35	2,3-Dimethylpentane	0.03				
36	3-Methylhexane	0.03				
37	2,2,4-Trimethylpentane	0.03				
38	Heptane	0.03				
39	Methylcyclohexane	0.03				
40	Methyl isobutyl ketone	0.2				
41	2,3,4-Trimethylpentane	0.03				
42	2-Methylheptane	0.03				
43	Toluene	0.03	0.04	0.09	0.1	0.04
44	3-Methylheptane	0.03				
45	Octane	0.03				
46	Ethyl benzene	0.03			0.1	0.07
47	m,p-Xylene	0.03		0.07	0.17	
48	Styrene	0.03				
49	Nonane	0.03			0.16	
50	o-Xylene	0.03			0.08	0.07
51	Isopropylbenzene	0.03			0.05	
52	alpha Pinene	0.03				
53	n-Propylbenzene	0.03				
54	1,3,5-Trimethylbenzene	0.03			0.07	
55	beta Pinene	0.03				
56	Decane	0.03			0.2	
57	1,2,4-Trimethylbenzene	0.03			0.25	
58	Undecane	0.03			0.71	
59	Dodecane	0.03			0.28	
60	Naphthalene	0.03		0.06	1.99	0.38

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Volatile Organic Compounds (VOCs) **Indicated Sites and Dates**

VOC Canisters Results (ppbv)

#	Compound Name	MDL	AMS 12 Millennium Mine 18-Mar	AMS 13 Fort McKay South 18-Mar	AMS 15 CNRL Horizon 18-Mar
1	Formaldehyde	2			
2	Isobutane	0.03	0.23	0.22	0.42
3	1-Butene	0.03	0.33	0.58	0.57
4	Acetaldehyde	0.2	4.71	5.67	6.06
5	Butane	0.03	0.73	0.45	0.66
6	Methanol	2	3.3	4.42	3.2
7	trans-2-Butene	0.03			
8	cis-2-Butene	0.03			
9	3-Methyl-1-butene	0.03			
10	Isopentane	0.03	0.61	0.37	0.88
11	1-Pentene	0.03			
12	Acetone	0.2	2.35	1.71	2.57
13	Pentane	0.03			1.08
14	Isoprene	0.03			
15	trans-2-Pentene	0.03			
16	cis-2-Pentene	0.03			
17	2-Methyl-2-butene	0.03			
18	2,2-Dimethylbutane	0.03			
19	Cyclopentene	0.03			
20	4-Methyl-1-pentene	0.03			
21	2,3-Dimethylbutane	0.03			
22	Cyclopentane	0.03			
23	2-Methylpentane	0.03		0.14	
24	3-Methylpentane	0.03		0.05	
25	2-Methyl-1-pentene	0.03			
26	Hexane	0.03		0.19	
27	Methyl ethyl ketone	0.2			
28	cis-2-Hexene	0.03			
29	trans-2-Hexene	0.03			
30	2,4-Dimethylpentane	0.03			
31	Methylcyclopentane	0.03			
32	Cyclohexane	0.03			
33	Benzene	0.03	0.16	0.4	0.42
34	2-Methylhexane	0.03			
35	2,3-Dimethylpentane	0.03			
36	3-Methylhexane	0.03			
37	2,2,4-Trimethylpentane	0.03			
38	Heptane	0.03		0.25	
39	Methylcyclohexane	0.03		0.21	
40	Methyl isobutyl ketone	0.2			
41	2,3,4-Trimethylpentane	0.03			
42	2-Methylheptane	0.03		0.18	
43	Toluene	0.03	0.07	0.34	
44	3-Methylheptane	0.03			
45	Octane	0.03		0.46	
46	Ethyl benzene	0.03	0.07	0.18	
47	m,p-Xylene	0.03		0.2	
48	Styrene	0.03			
49	Nonane	0.03		0.3	
50	o-Xylene	0.03	0.06	0.16	
51	Isopropylbenzene	0.03			
52	alpha Pinene	0.03	0.17	0.19	0.22
53	n-Propylbenzene	0.03			
54	1,3,5-Trimethylbenzene	0.03			
55	beta Pinene	0.03			
56	Decane	0.03		0.09	
57	1,2,4-Trimethylbenzene	0.03		0.04	
58	Undecane	0.03			
59	Dodecane	0.03	0.05		
60	Naphthalene	0.03	0.35	0.34	

WOOD BUFFALO ENVIRONMENTAL ASSOCIATION **2014**

Volatile Organic Compounds (VOCs) **Indicated Sites and Dates**

VOC Canisters Results (ppbv)

#	Compound Name	MDL	AMS 1 Fort McKay 18-Mar	AMS 6 Patricia McInnes 18-Mar	AMS 7 Athabasca Valley 18-Mar	AMS 14 Anzac 18-Mar
1	Formaldehyde	2				
2	Isobutane	0.03	0.26	0.49	0.32	0.21
3	1-Butene	0.03	0.21	0.31	0.39	0.52
4	Acetaldehyde	0.2	5.25	5.97	7.52	6.83
5	Butane	0.03	0.72	1.68	1	0.85
6	Methanol	2	2.92	10.1	26.7	3.71
7	trans-2-Butene	0.03				
8	cis-2-Butene	0.03				
9	3-Methyl-1-butene	0.03				
10	Isopentane	0.03	1.2	0.55	0.43	0.22
11	1-Pentene	0.03				
12	Acetone	0.2	1.33	5.59	6.33	1.96
13	Pentane	0.03	2.25			
14	Isoprene	0.03				
15	trans-2-Pentene	0.03				
16	cis-2-Pentene	0.03				
17	2-Methyl-2-butene	0.03				
18	2,2-Dimethylbutane	0.03				
19	Cyclopentene	0.03				
20	4-Methyl-1-pentene	0.03				
21	2,3-Dimethylbutane	0.03				
22	Cyclopentane	0.03				
23	2-Methylpentane	0.03	0.57			
24	3-Methylpentane	0.03	0.25			
25	2-Methyl-1-pentene	0.03				
26	Hexane	0.03				
27	Methyl ethyl ketone	0.2				
28	cis-2-Hexene	0.03				
29	trans-2-Hexene	0.03				
30	2,4-Dimethylpentane	0.03				
31	Methylcyclopentane	0.03				
32	Cyclohexane	0.03				
33	Benzene	0.03	0.25	0.23	0.28	0.29
34	2-Methylhexane	0.03				
35	2,3-Dimethylpentane	0.03				
36	3-Methylhexane	0.03				
37	2,2,4-Trimethylpentane	0.03				
38	Heptane	0.03				
39	Methylcyclohexane	0.03				
40	Methyl isobutyl ketone	0.2				
41	2,3,4-Trimethylpentane	0.03				
42	2-Methylheptane	0.03				
43	Toluene	0.03	0.14	0.18	0.11	
44	3-Methylheptane	0.03				
45	Octane	0.03	0.17			
46	Ethyl benzene	0.03	0.08	0.07		0.04
47	m,p-Xylene	0.03	0.11			
48	Styrene	0.03				
49	Nonane	0.03	0.14			
50	o-Xylene	0.03	0.11	0.08		
51	Isopropylbenzene	0.03				
52	alpha Pinene	0.03	0.19		0.17	0.17
53	n-Propylbenzene	0.03				
54	1,3,5-Trimethylbenzene	0.03				
55	beta Pinene	0.03				
56	Decane	0.03				
57	1,2,4-Trimethylbenzene	0.03		0.03		
58	Undecane	0.03			0.07	
59	Dodecane	0.03			0.12	
60	Naphthalene	0.03	0.37		0.39	

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Volatile Organic Compounds (VOCs) **Indicated Sites and Dates**

VOC Canisters

#	Compound Name	MDL	Results (ppbv) AMS 9 Barge Landing 24-Mar	AMS 12 Millennium Mine 24-Mar	AMS 13 Fort McKay South 24-Mar	AMS 15 CNRL Horizon 24-Mar
1	Formaldehyde	2				
2	Isobutane	0.03	0.36	0.31	0.18	1.08
3	1-Butene	0.03	0.43	0.34	0.48	
4	Acetaldehyde	0.2	4.17	2.97	4.62	3.9
5	Butane	0.03	0.63	0.99	0.51	0.67
6	Methanol	2	4.44		3.55	1.58
7	trans-2-Butene	0.03				
8	cis-2-Butene	0.03				
9	3-Methyl-1-butene	0.03				
10	Isopentane	0.03	0.39	0.44		1.56
11	1-Pentene	0.03				
12	Acetone	0.2	3.72	1.53	1.66	1.99
13	Pentane	0.03				
14	Isoprene	0.03				
15	trans-2-Pentene	0.03				
16	cis-2-Pentene	0.03				
17	2-Methyl-2-butene	0.03				
18	2,2-Dimethylbutane	0.03		0.1		
19	Cyclopentene	0.03				
20	4-Methyl-1-pentene	0.03				
21	2,3-Dimethylbutane	0.03				
22	Cyclopentane	0.03				
23	2-Methylpentane	0.03				
24	3-Methylpentane	0.03				0.19
25	2-Methyl-1-pentene	0.03				
26	Hexane	0.03		0.21		
27	Methyl ethyl ketone	0.2				
28	cis-2-Hexene	0.03				
29	trans-2-Hexene	0.03				
30	2,4-Dimethylpentane	0.03				
31	Methylcyclopentane	0.03				
32	Cyclohexane	0.03				
33	Benzene	0.03	0.11	0.15	0.18	0.13
34	2-Methylhexane	0.03				
35	2,3-Dimethylpentane	0.03				
36	3-Methylhexane	0.03		0.23		
37	2,2,4-Trimethylpentane	0.03				
38	Heptane	0.03		0.32		
39	Methylcyclohexane	0.03		0.19		
40	Methyl isobutyl ketone	0.2				
41	2,3,4-Trimethylpentane	0.03				
42	2-Methylheptane	0.03		0.27		
43	Toluene	0.03		0.28	0.05	
44	3-Methylheptane	0.03				
45	Octane	0.03		0.82		
46	Ethyl benzene	0.03		0.17		
47	m,p-Xylene	0.03		0.38		
48	Styrene	0.03				
49	Nonane	0.03		0.25		
50	o-Xylene	0.03		0.16		
51	Isopropylbenzene	0.03				
52	alpha Pinene	0.03				
53	n-Propylbenzene	0.03				
54	1,3,5-Trimethylbenzene	0.03				
55	beta Pinene	0.03				
56	Decane	0.03				
57	1,2,4-Trimethylbenzene	0.03				
58	Undecane	0.03				
59	Dodecane	0.03				
60	Naphthalene	0.03				

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Volatile Organic Compounds (VOCs) **Indicated Sites and Dates**

VOC Canisters

Results (ppbv)

#	Compound Name	MDL	AMS 1 Fort McKay 24-Mar	AMS 6 Patricia McInnes 24-Mar	AMS 7 Athabasca Valley 24-Mar	AMS 14 Anzac 24-Mar
1	Formaldehyde	2				
2	Isobutane	0.03	0.32	0.16	0.26	0.3
3	1-Butene	0.03	0.39	0.35	0.51	
4	Acetaldehyde	0.2	2.92	3.27	4.29	3.29
5	Butane	0.03	0.53	0.36	0.62	1.11
6	Methanol	2	1.47	1.52	7.55	1.91
7	trans-2-Butene	0.03				
8	cis-2-Butene	0.03				
9	3-Methyl-1-butene	0.03				
10	Isopentane	0.03	0.26		0.26	0.28
11	1-Pentene	0.03				
12	Acetone	0.2	1.57	1.46	4.19	1.31
13	Pentane	0.03				
14	Isoprene	0.03				
15	trans-2-Pentene	0.03				
16	cis-2-Pentene	0.03				
17	2-Methyl-2-butene	0.03				
18	2,2-Dimethylbutane	0.03				
19	Cyclopentene	0.03				
20	4-Methyl-1-pentene	0.03				
21	2,3-Dimethylbutane	0.03				
22	Cyclopentane	0.03				
23	2-Methylpentane	0.03				
24	3-Methylpentane	0.03				
25	2-Methyl-1-pentene	0.03				
26	Hexane	0.03				
27	Methyl ethyl ketone	0.2				
28	cis-2-Hexene	0.03				
29	trans-2-Hexene	0.03				
30	2,4-Dimethylpentane	0.03				
31	Methylcyclopentane	0.03				
32	Cyclohexane	0.03				
33	Benzene	0.03	0.1	0.09	0.19	0.12
34	2-Methylhexane	0.03				
35	2,3-Dimethylpentane	0.03				
36	3-Methylhexane	0.03				
37	2,2,4-Trimethylpentane	0.03				
38	Heptane	0.03				
39	Methylcyclohexane	0.03				
40	Methyl isobutyl ketone	0.2				
41	2,3,4-Trimethylpentane	0.03				
42	2-Methylheptane	0.03				
43	Toluene	0.03	0.05		0.08	
44	3-Methylheptane	0.03				
45	Octane	0.03				
46	Ethyl benzene	0.03				
47	m,p-Xylene	0.03	0.24		0.24	
48	Styrene	0.03				
49	Nonane	0.03				
50	o-Xylene	0.03				
51	Isopropylbenzene	0.03				
52	alpha Pinene	0.03				
53	n-Propylbenzene	0.03				
54	1,3,5-Trimethylbenzene	0.03				
55	beta Pinene	0.03				
56	Decane	0.03				
57	1,2,4-Trimethylbenzene	0.03				
58	Undecane	0.03				
59	Dodecane	0.03				
60	Naphthalene	0.03				

WOOD BUFFALO ENVIRONMENTAL ASSOCIATION **2014**

Volatile Organic Compounds (VOCs) **Indicated Sites and Dates**

VOC Canisters

#	Compound Name	MDL	Results (ppbv) AMS 9 Barge Landing 30-Mar	AMS 12 Millennium Mine 30-Mar	AMS 13 Fort McKay South 30-Mar	AMS 15 CNRL Horizon 30-Mar
1	Formaldehyde	2				
2	Isobutane	0.03	0.27	0.26	0.29	0.49
3	1-Butene	0.03	0.54	0.42	0.54	0.4
4	Acetaldehyde	0.2	4.06	5.48	5.16	4.77
5	Butane	0.03	0.57	0.77	0.78	0.96
6	Methanol	2	3.47	1.86	2.92	1.48
7	trans-2-Butene	0.03				
8	cis-2-Butene	0.03				
9	3-Methyl-1-butene	0.03				
10	Isopentane	0.03	0.87	0.43	0.45	1.07
11	1-Pentene	0.03				
12	Acetone	0.2	3.15	3.12	1.93	2.05
13	Pentane	0.03				
14	Isoprene	0.03				
15	trans-2-Pentene	0.03				
16	cis-2-Pentene	0.03				
17	2-Methyl-2-butene	0.03				
18	2,2-Dimethylbutane	0.03				
19	Cyclopentene	0.03				
20	4-Methyl-1-pentene	0.03				
21	2,3-Dimethylbutane	0.03				
22	Cyclopentane	0.03				
23	2-Methylpentane	0.03	0.39			0.22
24	3-Methylpentane	0.03	0.17			0.11
25	2-Methyl-1-pentene	0.03				
26	Hexane	0.03	0.23			
27	Methyl ethyl ketone	0.2				
28	cis-2-Hexene	0.03				
29	trans-2-Hexene	0.03				
30	2,4-Dimethylpentane	0.03				
31	Methylcyclopentane	0.03				
32	Cyclohexane	0.03				
33	Benzene	0.03	0.26	0.06	0.16	0.14
34	2-Methylhexane	0.03				
35	2,3-Dimethylpentane	0.03				
36	3-Methylhexane	0.03				
37	2,2,4-Trimethylpentane	0.03				
38	Heptane	0.03				
39	Methylcyclohexane	0.03				
40	Methyl isobutyl ketone	0.2				
41	2,3,4-Trimethylpentane	0.03				
42	2-Methylheptane	0.03				
43	Toluene	0.03	0.08	0.08	0.16	0.08
44	3-Methylheptane	0.03				
45	Octane	0.03			0.34	0.27
46	Ethyl benzene	0.03				
47	m,p-Xylene	0.03	0.23			
48	Styrene	0.03				
49	Nonane	0.03				
50	o-Xylene	0.03				
51	Isopropylbenzene	0.03				
52	alpha Pinene	0.03				
53	n-Propylbenzene	0.03				
54	1,3,5-Trimethylbenzene	0.03				
55	beta Pinene	0.03				
56	Decane	0.03				
57	1,2,4-Trimethylbenzene	0.03				
58	Undecane	0.03				
59	Dodecane	0.03				
60	Naphthalene	0.03				

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Volatile Organic Compounds (VOCs) **Indicated Sites and Dates**

VOC Canisters Results (ppbv)

#	Compound Name	MDL	AMS 1 Fort McKay 30-Mar	AMS 6 Patricia McInnes 30-Mar	AMS 7 Athabasca Valley 30-Mar	AMS 14 Anzac 30-Mar
1	Formaldehyde	2				
2	Isobutane	0.03	0.26	0.26	0.32	0.19
3	1-Butene	0.03	0.39	0.3	0.88	0.2
4	Acetaldehyde	0.2	3.05	3.71	4.28	3.82
5	Butane	0.03	0.58	1.26	1.08	0.72
6	Methanol	2	1.22	2.05	9.38	1.46
7	trans-2-Butene	0.03				
8	cis-2-Butene	0.03				
9	3-Methyl-1-butene	0.03				
10	Isopentane	0.03	0.51	0.41	0.36	0.33
11	1-Pentene	0.03				
12	Acetone	0.2	2.1	1.56	1.5	1.17
13	Pentane	0.03	0.56			
14	Isoprene	0.03				
15	trans-2-Pentene	0.03				
16	cis-2-Pentene	0.03				
17	2-Methyl-2-butene	0.03				
18	2,2-Dimethylbutane	0.03				
19	Cyclopentene	0.03				
20	4-Methyl-1-pentene	0.03				
21	2,3-Dimethylbutane	0.03				
22	Cyclopentane	0.03				
23	2-Methylpentane	0.03	0.26			
24	3-Methylpentane	0.03	0.14			
25	2-Methyl-1-pentene	0.03				
26	Hexane	0.03	0.2			
27	Methyl ethyl ketone	0.2				
28	cis-2-Hexene	0.03				
29	trans-2-Hexene	0.03				
30	2,4-Dimethylpentane	0.03				
31	Methylcyclopentane	0.03				
32	Cyclohexane	0.03				
33	Benzene	0.03	0.19	0.15	0.16	0.1
34	2-Methylhexane	0.03				
35	2,3-Dimethylpentane	0.03				
36	3-Methylhexane	0.03				
37	2,2,4-Trimethylpentane	0.03				
38	Heptane	0.03	0.17			
39	Methylcyclohexane	0.03				
40	Methyl isobutyl ketone	0.2				
41	2,3,4-Trimethylpentane	0.03				
42	2-Methylheptane	0.03	0.17			
43	Toluene	0.03	0.17	0.08	0.08	0.03
44	3-Methylheptane	0.03				
45	Octane	0.03	0.39			
46	Ethyl benzene	0.03	0.14			
47	m,p-Xylene	0.03	0.29	0.25	0.21	
48	Styrene	0.03				
49	Nonane	0.03	0.12			
50	o-Xylene	0.03				
51	Isopropylbenzene	0.03				
52	alpha Pinene	0.03				
53	n-Propylbenzene	0.03				
54	1,3,5-Trimethylbenzene	0.03				
55	beta Pinene	0.03				
56	Decane	0.03				
57	1,2,4-Trimethylbenzene	0.03				
58	Undecane	0.03				
59	Dodecane	0.03				
60	Naphthalene	0.03				

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Volatile Organic Compounds (VOCs) **Indicated Sites and Dates**

VOC Canisters

Results (ppbv)

#	Compound Name	MDL	AMS 9 Barge Landing 05-Apr	AMS 12 Millennium Mine 05-Apr	AMS 13 Fort McKay South 05-Apr	AMS 15 CNRL Horizon 05-Apr
1	Formaldehyde	2				
2	Isobutane	0.03	0.53	0.48	0.41	1.29
3	1-Butene	0.03				
4	Acetaldehyde	0.2	4.9	5.3	4.28	4.28
5	Butane	0.03	0.77	1.83	1.31	1.49
6	Methanol	2	7.42	2.69	5.56	2.38
7	trans-2-Butene	0.03				
8	cis-2-Butene	0.03				
9	3-Methyl-1-butene	0.03				
10	Isopentane	0.03	2.38	1.12	1.7	2.41
11	1-Pentene	0.03				
12	Acetone	0.2	5.18	2.28	3.8	1.14
13	Pentane	0.03				
14	Isoprene	0.03				
15	trans-2-Pentene	0.03				
16	cis-2-Pentene	0.03				
17	2-Methyl-2-butene	0.03				
18	2,2-Dimethylbutane	0.03				
19	Cyclopentene	0.03				
20	4-Methyl-1-pentene	0.03				
21	2,3-Dimethylbutane	0.03				
22	Cyclopentane	0.03				
23	2-Methylpentane	0.03	0.94		0.58	
24	3-Methylpentane	0.03	0.51		0.23	0.21
25	2-Methyl-1-pentene	0.03				
26	Hexane	0.03	0.34			
27	Methyl ethyl ketone	0.2				
28	cis-2-Hexene	0.03				
29	trans-2-Hexene	0.03				
30	2,4-Dimethylpentane	0.03				
31	Methylcyclopentane	0.03				
32	Cyclohexane	0.03				
33	Benzene	0.03	0.31	0.14	0.12	0.18
34	2-Methylhexane	0.03				
35	2,3-Dimethylpentane	0.03				
36	3-Methylhexane	0.03				
37	2,2,4-Trimethylpentane	0.03				
38	Heptane	0.03		0.51		
39	Methylcyclohexane	0.03		0.18		
40	Methyl isobutyl ketone	0.2				
41	2,3,4-Trimethylpentane	0.03				
42	2-Methylheptane	0.03				
43	Toluene	0.03	0.12	0.29		0.13
44	3-Methylheptane	0.03				
45	Octane	0.03				
46	Ethyl benzene	0.03				
47	m,p-Xylene	0.03		0.37	0.35	
48	Styrene	0.03				
49	Nonane	0.03		0.2		
50	o-Xylene	0.03				
51	Isopropylbenzene	0.03				
52	alpha Pinene	0.03				
53	n-Propylbenzene	0.03				
54	1,3,5-Trimethylbenzene	0.03				
55	beta Pinene	0.03				
56	Decane	0.03				
57	1,2,4-Trimethylbenzene	0.03				
58	Undecane	0.03				
59	Dodecane	0.03	0.16	0.12	0.11	
60	Naphthalene	0.03				

WOOD BUFFALO ENVIRONMENTAL ASSOCIATION **2014**

Volatile Organic Compounds (VOCs) **Indicated Sites and Dates**

VOC Canisters Results (ppbv)

#	Compound Name	MDL	AMS 1 Fort McKay 05-Apr	AMS 6 Patricia McInnes 05-Apr	AMS 7 Athabasca Valley 05-Apr	AMS 14 Anzac 05-Apr
1	Formaldehyde	2				
2	Isobutane	0.03	0.4	1.37	0.47	0.48
3	1-Butene	0.03				
4	Acetaldehyde	0.2	2.65	5.62	6.72	5.52
5	Butane	0.03	0.66	3.97	1.39	1.76
6	Methanol	2	2	28.5	21.9	5.14
7	trans-2-Butene	0.03				
8	cis-2-Butene	0.03				
9	3-Methyl-1-butene	0.03				
10	Isopentane	0.03	1.48	2.04	0.62	
11	1-Pentene	0.03				
12	Acetone	0.2	1.37	7.7	9.03	6.48
13	Pentane	0.03	2.52			
14	Isoprene	0.03				
15	trans-2-Pentene	0.03				
16	cis-2-Pentene	0.03				
17	2-Methyl-2-butene	0.03				
18	2,2-Dimethylbutane	0.03				
19	Cyclopentene	0.03				
20	4-Methyl-1-pentene	0.03				
21	2,3-Dimethylbutane	0.03				
22	Cyclopentane	0.03				
23	2-Methylpentane	0.03	0.52	0.53		
24	3-Methylpentane	0.03	0.26	0.51		
25	2-Methyl-1-pentene	0.03				
26	Hexane	0.03		1.99		
27	Methyl ethyl ketone	0.2				
28	cis-2-Hexene	0.03				
29	trans-2-Hexene	0.03				
30	2,4-Dimethylpentane	0.03				
31	Methylcyclopentane	0.03		0.55		
32	Cyclohexane	0.03				
33	Benzene	0.03	0.09	0.31	0.25	0.15
34	2-Methylhexane	0.03				
35	2,3-Dimethylpentane	0.03				
36	3-Methylhexane	0.03		0.63		
37	2,2,4-Trimethylpentane	0.03				
38	Heptane	0.03		0.33		
39	Methylcyclohexane	0.03				
40	Methyl isobutyl ketone	0.2				
41	2,3,4-Trimethylpentane	0.03				
42	2-Methylheptane	0.03				
43	Toluene	0.03	0.11	0.97	0.31	
44	3-Methylheptane	0.03				
45	Octane	0.03				
46	Ethyl benzene	0.03				
47	m,p-Xylene	0.03		0.56		
48	Styrene	0.03				
49	Nonane	0.03		0.18		
50	o-Xylene	0.03		0.21		
51	Isopropylbenzene	0.03				
52	alpha Pinene	0.03		0.2		
53	n-Propylbenzene	0.03				
54	1,3,5-Trimethylbenzene	0.03				
55	beta Pinene	0.03				
56	Decane	0.03		0.2	0.12	
57	1,2,4-Trimethylbenzene	0.03		0.25		
58	Undecane	0.03		0.07	0.06	
59	Dodecane	0.03	0.13	0.16	0.12	
60	Naphthalene	0.03				

WOOD BUFFALO ENVIRONMENTAL ASSOCIATION **2014**

Volatile Organic Compounds (VOCs) **Indicated Sites and Dates**

VOC Canisters

Results (ppbv)

#	Compound Name	MDL	AMS 9 Barge Landing 11-Apr	AMS 12 Millennium Mine 11-Apr	AMS 13 Fort McKay South 11-Apr	AMS 15 CNRL Horizon 11-Apr
1	Formaldehyde	2				
2	Isobutane	0.03	0.09			
3	1-Butene	0.03				
4	Acetaldehyde	0.2	4.7	4.37	4.72	6.2
5	Butane	0.03			1.63	
6	Methanol	2	4.61	1.02	4.99	2.47
7	trans-2-Butene	0.03				
8	cis-2-Butene	0.03				
9	3-Methyl-1-butene	0.03				
10	Isopentane	0.03	0.73			1.75
11	1-Pentene	0.03				
12	Acetone	0.2	4.74	1.87	2.24	1.84
13	Pentane	0.03				
14	Isoprene	0.03				
15	trans-2-Pentene	0.03				
16	cis-2-Pentene	0.03				
17	2-Methyl-2-butene	0.03				
18	2,2-Dimethylbutane	0.03				
19	Cyclopentene	0.03				
20	4-Methyl-1-pentene	0.03				
21	2,3-Dimethylbutane	0.03				
22	Cyclopentane	0.03				
23	2-Methylpentane	0.03				
24	3-Methylpentane	0.03				
25	2-Methyl-1-pentene	0.03				
26	Hexane	0.03				
27	Methyl ethyl ketone	0.2				
28	cis-2-Hexene	0.03				
29	trans-2-Hexene	0.03				
30	2,4-Dimethylpentane	0.03				
31	Methylcyclopentane	0.03				
32	Cyclohexane	0.03				
33	Benzene	0.03	0.25	0.16	0.22	
34	2-Methylhexane	0.03				
35	2,3-Dimethylpentane	0.03				
36	3-Methylhexane	0.03				
37	2,2,4-Trimethylpentane	0.03				
38	Heptane	0.03				
39	Methylcyclohexane	0.03				
40	Methyl isobutyl ketone	0.2				
41	2,3,4-Trimethylpentane	0.03				
42	2-Methylheptane	0.03				
43	Toluene	0.03				
44	3-Methylheptane	0.03				
45	Octane	0.03				
46	Ethyl benzene	0.03				
47	m,p-Xylene	0.03				
48	Styrene	0.03				
49	Nonane	0.03				
50	o-Xylene	0.03				
51	Isopropylbenzene	0.03				
52	alpha Pinene	0.03				
53	n-Propylbenzene	0.03				
54	1,3,5-Trimethylbenzene	0.03				
55	beta Pinene	0.03				
56	Decane	0.03				
57	1,2,4-Trimethylbenzene	0.03				
58	Undecane	0.03				
59	Dodecane	0.03	0.2			
60	Naphthalene	0.03				

WOOD BUFFALO ENVIRONMENTAL ASSOCIATION **2014**

Volatile Organic Compounds (VOCs) **Indicated Sites and Dates**

VOC Canisters

Results (ppbv)

#	Compound Name	MDL	AMS 1 Fort McKay 11-Apr	AMS 6 Patricia McInnes 11-Apr	AMS 7 Athabasca Valley 11-Apr	AMS 14 Anzac 11-Apr
1	Formaldehyde	2				
2	Isobutane	0.03	0.26	0.22		
3	1-Butene	0.03				
4	Acetaldehyde	0.2	3.17	4.08	5.67	6.9
5	Butane	0.03	1.06	1.36	1.59	
6	Methanol	2	1.82	2.99	13.3	3.22
7	trans-2-Butene	0.03				
8	cis-2-Butene	0.03				
9	3-Methyl-1-butene	0.03				
10	Isopentane	0.03	1.55			
11	1-Pentene	0.03				
12	Acetone	0.2	1.57	1.34	6.78	3.78
13	Pentane	0.03	1.81			
14	Isoprene	0.03				
15	trans-2-Pentene	0.03				
16	cis-2-Pentene	0.03				
17	2-Methyl-2-butene	0.03				
18	2,2-Dimethylbutane	0.03				
19	Cyclopentene	0.03				
20	4-Methyl-1-pentene	0.03				
21	2,3-Dimethylbutane	0.03				
22	Cyclopentane	0.03				
23	2-Methylpentane	0.03	0.56			
24	3-Methylpentane	0.03	0.25			
25	2-Methyl-1-pentene	0.03				
26	Hexane	0.03	0.22			
27	Methyl ethyl ketone	0.2				
28	cis-2-Hexene	0.03				
29	trans-2-Hexene	0.03				
30	2,4-Dimethylpentane	0.03				
31	Methylcyclopentane	0.03				
32	Cyclohexane	0.03				
33	Benzene	0.03	0.19	0.18	0.23	0.2
34	2-Methylhexane	0.03				
35	2,3-Dimethylpentane	0.03				
36	3-Methylhexane	0.03				
37	2,2,4-Trimethylpentane	0.03				
38	Heptane	0.03				
39	Methylcyclohexane	0.03				
40	Methyl isobutyl ketone	0.2				
41	2,3,4-Trimethylpentane	0.03				
42	2-Methylheptane	0.03				
43	Toluene	0.03				
44	3-Methylheptane	0.03				
45	Octane	0.03				
46	Ethyl benzene	0.03				
47	m,p-Xylene	0.03				
48	Styrene	0.03				
49	Nonane	0.03				
50	o-Xylene	0.03				
51	Isopropylbenzene	0.03				
52	alpha Pinene	0.03				
53	n-Propylbenzene	0.03				
54	1,3,5-Trimethylbenzene	0.03				
55	beta Pinene	0.03				
56	Decane	0.03				
57	1,2,4-Trimethylbenzene	0.03				
58	Undecane	0.03				
59	Dodecane	0.03		0.16	0.19	
60	Naphthalene	0.03				

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Volatile Organic Compounds (VOCs) **Indicated Sites and Dates**

VOC Canisters

Results (ppbv)

#	Compound Name	MDL	AMS 9 Barge Landing 17-Apr	AMS 12 Millennium Mine 17-Apr	AMS 13 Fort McKay South 17-Apr	AMS 15 CNRL Horizon 17-Apr
1	Formaldehyde	2				
2	Isobutane	0.03		0.31	0.33	0.39
3	1-Butene	0.03				
4	Acetaldehyde	0.2	3.07	3.2	2.84	2.93
5	Butane	0.03	0.84	0.8	1.6	1.04
6	Methanol	2	4.22	2.06	3.96	2.18
7	trans-2-Butene	0.03				
8	cis-2-Butene	0.03				
9	3-Methyl-1-butene	0.03				
10	Isopentane	0.03			0.08	0.83
11	1-Pentene	0.03				
12	Acetone	0.2	2.87	2.35	3.21	2.27
13	Pentane	0.03				
14	Isoprene	0.03				
15	trans-2-Pentene	0.03				
16	cis-2-Pentene	0.03				
17	2-Methyl-2-butene	0.03				
18	2,2-Dimethylbutane	0.03				
19	Cyclopentene	0.03				
20	4-Methyl-1-pentene	0.03				
21	2,3-Dimethylbutane	0.03				
22	Cyclopentane	0.03				
23	2-Methylpentane	0.03				0.35
24	3-Methylpentane	0.03				
25	2-Methyl-1-pentene	0.03				
26	Hexane	0.03				
27	Methyl ethyl ketone	0.2				
28	cis-2-Hexene	0.03				
29	trans-2-Hexene	0.03				
30	2,4-Dimethylpentane	0.03				
31	Methylcyclopentane	0.03				
32	Cyclohexane	0.03				
33	Benzene	0.03	0.4	0.3	0.4	0.4
34	2-Methylhexane	0.03				
35	2,3-Dimethylpentane	0.03				
36	3-Methylhexane	0.03				
37	2,2,4-Trimethylpentane	0.03				
38	Heptane	0.03				
39	Methylcyclohexane	0.03				
40	Methyl isobutyl ketone	0.2				
41	2,3,4-Trimethylpentane	0.03				
42	2-Methylheptane	0.03				
43	Toluene	0.03	0.19			
44	3-Methylheptane	0.03				
45	Octane	0.03				
46	Ethyl benzene	0.03				
47	m,p-Xylene	0.03				
48	Styrene	0.03				
49	Nonane	0.03				
50	o-Xylene	0.03				
51	Isopropylbenzene	0.03				
52	alpha Pinene	0.03				
53	n-Propylbenzene	0.03				
54	1,3,5-Trimethylbenzene	0.03				
55	beta Pinene	0.03				
56	Decane	0.03				
57	1,2,4-Trimethylbenzene	0.03				
58	Undecane	0.03	0.16			
59	Dodecane	0.03	0.13			
60	Naphthalene	0.03				

WOOD BUFFALO ENVIRONMENTAL ASSOCIATION **2014**

Volatile Organic Compounds (VOCs) **Indicated Sites and Dates**

VOC Canisters

Results (ppbv)

#	Compound Name	MDL	AMS 1 Fort McKay 17-Apr	AMS 6 Patricia McInnes 17-Apr	AMS 7 Athabasca Valley 17-Apr	AMS 14 Anzac 17-Apr
1	Formaldehyde	2				
2	Isobutane	0.03			0.51	0.36
3	1-Butene	0.03				
4	Acetaldehyde	0.2	6.48	6.33	7.21	4.23
5	Butane	0.03	2.24	2.36	2.52	
6	Methanol	2	3.52	10.6	23.8	2.18
7	trans-2-Butene	0.03				
8	cis-2-Butene	0.03				
9	3-Methyl-1-butene	0.03				
10	Isopentane	0.03		0.87		
11	1-Pentene	0.03				
12	Acetone	0.2	0.57	2.19	8.39	2.79
13	Pentane	0.03				
14	Isoprene	0.03				
15	trans-2-Pentene	0.03				
16	cis-2-Pentene	0.03				
17	2-Methyl-2-butene	0.03				
18	2,2-Dimethylbutane	0.03				
19	Cyclopentene	0.03				
20	4-Methyl-1-pentene	0.03				
21	2,3-Dimethylbutane	0.03				
22	Cyclopentane	0.03				
23	2-Methylpentane	0.03				
24	3-Methylpentane	0.03				
25	2-Methyl-1-pentene	0.03				
26	Hexane	0.03		0.37		
27	Methyl ethyl ketone	0.2				
28	cis-2-Hexene	0.03				
29	trans-2-Hexene	0.03				
30	2,4-Dimethylpentane	0.03				
31	Methylcyclopentane	0.03		0.32		
32	Cyclohexane	0.03				
33	Benzene	0.03	0.24	0.19	0.2	0.44
34	2-Methylhexane	0.03				
35	2,3-Dimethylpentane	0.03				
36	3-Methylhexane	0.03				
37	2,2,4-Trimethylpentane	0.03				
38	Heptane	0.03				
39	Methylcyclohexane	0.03				
40	Methyl isobutyl ketone	0.2				
41	2,3,4-Trimethylpentane	0.03				
42	2-Methylheptane	0.03				
43	Toluene	0.03		0.16		0.21
44	3-Methylheptane	0.03				
45	Octane	0.03				
46	Ethyl benzene	0.03				
47	m,p-Xylene	0.03				
48	Styrene	0.03				
49	Nonane	0.03				
50	o-Xylene	0.03				
51	Isopropylbenzene	0.03				
52	alpha Pinene	0.03				
53	n-Propylbenzene	0.03				
54	1,3,5-Trimethylbenzene	0.03				
55	beta Pinene	0.03				
56	Decane	0.03				
57	1,2,4-Trimethylbenzene	0.03				
58	Undecane	0.03				
59	Dodecane	0.03				
60	Naphthalene	0.03				

WOOD BUFFALO ENVIRONMENTAL ASSOCIATION **2014**

Volatile Organic Compounds (VOCs) **Indicated Sites and Dates**

VOC Canisters

#	Compound Name	MDL	Results (ppbv) AMS 9 Barge Landing 23-Apr	AMS 12 Millennium Mine 23-Apr	AMS 13 Fort McKay South 23-Apr	AMS 15 CNRL Horizon 23-Apr
1	Formaldehyde	2				
2	Isobutane	0.03	0.78		0.52	
3	1-Butene	0.03				
4	Acetaldehyde	0.2	5.75	4.51	5.91	3.17
5	Butane	0.03	2.26			
6	Methanol	2	11.3	2.72	7.14	3.76
7	trans-2-Butene	0.03				
8	cis-2-Butene	0.03				
9	3-Methyl-1-butene	0.03				
10	Isopentane	0.03	10.9		4.13	0.69
11	1-Pentene	0.03				
12	Acetone	0.2	10.5	3.7	7.26	4.49
13	Pentane	0.03	12.5		3.56	
14	Isoprene	0.03				
15	trans-2-Pentene	0.03				
16	cis-2-Pentene	0.03				
17	2-Methyl-2-butene	0.03				
18	2,2-Dimethylbutane	0.03	0.77			
19	Cyclopentene	0.03				
20	4-Methyl-1-pentene	0.03				
21	2,3-Dimethylbutane	0.03	1.2			
22	Cyclopentane	0.03	1.25			
23	2-Methylpentane	0.03	4.23		1.15	
24	3-Methylpentane	0.03	1.8		0.61	
25	2-Methyl-1-pentene	0.03				
26	Hexane	0.03	1.11			
27	Methyl ethyl ketone	0.2				
28	cis-2-Hexene	0.03				
29	trans-2-Hexene	0.03				
30	2,4-Dimethylpentane	0.03				
31	Methylcyclopentane	0.03				
32	Cyclohexane	0.03				
33	Benzene	0.03	0.97	0.36	0.49	0.48
34	2-Methylhexane	0.03				
35	2,3-Dimethylpentane	0.03				
36	3-Methylhexane	0.03				
37	2,2,4-Trimethylpentane	0.03				
38	Heptane	0.03				
39	Methylcyclohexane	0.03				
40	Methyl isobutyl ketone	0.2				
41	2,3,4-Trimethylpentane	0.03				
42	2-Methylheptane	0.03				
43	Toluene	0.03				
44	3-Methylheptane	0.03				
45	Octane	0.03				
46	Ethyl benzene	0.03				
47	m,p-Xylene	0.03				
48	Styrene	0.03				
49	Nonane	0.03				
50	o-Xylene	0.03				
51	Isopropylbenzene	0.03				
52	alpha Pinene	0.03				
53	n-Propylbenzene	0.03				
54	1,3,5-Trimethylbenzene	0.03				
55	beta Pinene	0.03				
56	Decane	0.03				
57	1,2,4-Trimethylbenzene	0.03				
58	Undecane	0.03				
59	Dodecane	0.03	0.14			0.12
60	Naphthalene	0.03				

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Volatile Organic Compounds (VOCs) **Indicated Sites and Dates**

VOC Canisters Results (ppbv)

#	Compound Name	MDL	AMS 1 Fort McKay 23-Apr	AMS 6 Patricia McInnes 23-Apr	AMS 7 Athabasca Valley 23-Apr	AMS 14 Anzac 23-Apr
1	Formaldehyde	2				
2	Isobutane	0.03	0.42	0.37	0.29	
3	1-Butene	0.03	0.57		0.54	
4	Acetaldehyde	0.2	3.9	4.71	4.35	5.17
5	Butane	0.03	0.86	0.95	1.04	
6	Methanol	2	2.49	4.93	12.5	5.73
7	trans-2-Butene	0.03				
8	cis-2-Butene	0.03				
9	3-Methyl-1-butene	0.03				
10	Isopentane	0.03	1.91			
11	1-Pentene	0.03				
12	Acetone	0.2	3.54	5.55	7	6.72
13	Pentane	0.03	2.11			
14	Isoprene	0.03				
15	trans-2-Pentene	0.03				
16	cis-2-Pentene	0.03				
17	2-Methyl-2-butene	0.03				
18	2,2-Dimethylbutane	0.03				
19	Cyclopentene	0.03				
20	4-Methyl-1-pentene	0.03				
21	2,3-Dimethylbutane	0.03				
22	Cyclopentane	0.03				
23	2-Methylpentane	0.03				
24	3-Methylpentane	0.03				
25	2-Methyl-1-pentene	0.03				
26	Hexane	0.03				
27	Methyl ethyl ketone	0.2				
28	cis-2-Hexene	0.03				
29	trans-2-Hexene	0.03				
30	2,4-Dimethylpentane	0.03				
31	Methylcyclopentane	0.03				
32	Cyclohexane	0.03				
33	Benzene	0.03	0.42	0.37	0.28	0.36
34	2-Methylhexane	0.03				
35	2,3-Dimethylpentane	0.03				
36	3-Methylhexane	0.03				
37	2,2,4-Trimethylpentane	0.03				
38	Heptane	0.03				
39	Methylcyclohexane	0.03				
40	Methyl isobutyl ketone	0.2				
41	2,3,4-Trimethylpentane	0.03				
42	2-Methylheptane	0.03				
43	Toluene	0.03				0.2
44	3-Methylheptane	0.03				
45	Octane	0.03				
46	Ethyl benzene	0.03				
47	m,p-Xylene	0.03				
48	Styrene	0.03				
49	Nonane	0.03				
50	o-Xylene	0.03				
51	Isopropylbenzene	0.03				
52	alpha Pinene	0.03				
53	n-Propylbenzene	0.03				
54	1,3,5-Trimethylbenzene	0.03				
55	beta Pinene	0.03				
56	Decane	0.03				
57	1,2,4-Trimethylbenzene	0.03				
58	Undecane	0.03		0.17		
59	Dodecane	0.03		0.1	0.22	
60	Naphthalene	0.03				

WOOD BUFFALO ENVIRONMENTAL ASSOCIATION **2014**

Volatile Organic Compounds (VOCs) **Indicated Sites and Dates**

VOC Canisters

#	Compound Name	MDL	Results (ppbv) AMS 9 Barge Landing 29-Apr	AMS 12 Millennium Mine 29-Apr	AMS 13 Fort McKay South 29-Apr	AMS 15 CNRL Horizon 29-Apr
1	Formaldehyde	2				
2	Isobutane	0.03	0.64		0.14	5.03
3	1-Butene	0.03				
4	Acetaldehyde	0.2	4.96	2.91	3.22	2.81
5	Butane	0.03	1.97	0.57	1.19	2.01
6	Methanol	2	10.4	2.02	4.75	3.21
7	trans-2-Butene	0.03				
8	cis-2-Butene	0.03				
9	3-Methyl-1-butene	0.03				
10	Isopentane	0.03	0.84	0.09		9.15
11	1-Pentene	0.03				
12	Acetone	0.2	5.75	4.68	3.62	4.09
13	Pentane	0.03				
14	Isoprene	0.03				
15	trans-2-Pentene	0.03				
16	cis-2-Pentene	0.03				
17	2-Methyl-2-butene	0.03				
18	2,2-Dimethylbutane	0.03				0.1
19	Cyclopentene	0.03				
20	4-Methyl-1-pentene	0.03				
21	2,3-Dimethylbutane	0.03				0.57
22	Cyclopentane	0.03				
23	2-Methylpentane	0.03				
24	3-Methylpentane	0.03				0.61
25	2-Methyl-1-pentene	0.03				
26	Hexane	0.03	1.22			
27	Methyl ethyl ketone	0.2				
28	cis-2-Hexene	0.03				
29	trans-2-Hexene	0.03				
30	2,4-Dimethylpentane	0.03				
31	Methylcyclopentane	0.03	0.48			0.3
32	Cyclohexane	0.03				1.03
33	Benzene	0.03	0.37	0.18	0.29	0.28
34	2-Methylhexane	0.03				
35	2,3-Dimethylpentane	0.03				
36	3-Methylhexane	0.03				
37	2,2,4-Trimethylpentane	0.03				
38	Heptane	0.03	0.54		0.73	0.18
39	Methylcyclohexane	0.03	0.5		0.37	0.55
40	Methyl isobutyl ketone	0.2				
41	2,3,4-Trimethylpentane	0.03				
42	2-Methylheptane	0.03	0.47		0.23	
43	Toluene	0.03	0.58		0.37	0.1
44	3-Methylheptane	0.03				
45	Octane	0.03	1.01		1.09	
46	Ethyl benzene	0.03				
47	m,p-Xylene	0.03	0.61	0.1	0.24	0.14
48	Styrene	0.03				
49	Nonane	0.03				
50	o-Xylene	0.03				
51	Isopropylbenzene	0.03				
52	alpha Pinene	0.03	0.17		0.11	0.16
53	n-Propylbenzene	0.03				
54	1,3,5-Trimethylbenzene	0.03				
55	beta Pinene	0.03				
56	Decane	0.03				
57	1,2,4-Trimethylbenzene	0.03				
58	Undecane	0.03				
59	Dodecane	0.03	0.14			
60	Naphthalene	0.03				

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Volatile Organic Compounds (VOCs) **Indicated Sites and Dates**

VOC Canisters Results (ppbv)

#	Compound Name	MDL	AMS 1 Fort McKay 29-Apr	AMS 6 Patricia McInnes 29-Apr	AMS 7 Athabasca Valley 29-Apr	AMS 14 Anzac 29-Apr
1	Formaldehyde	2				
2	Isobutane	0.03	0.46	0.59		0.18
3	1-Butene	0.03				
4	Acetaldehyde	0.2	2.33	3.72	4.38	3.32
5	Butane	0.03	1.47	1.8	2.27	1.26
6	Methanol	2	2.88	7.32	17	3.78
7	trans-2-Butene	0.03				
8	cis-2-Butene	0.03				
9	3-Methyl-1-butene	0.03				
10	Isopentane	0.03	0.3	0.89		0.13
11	1-Pentene	0.03				
12	Acetone	0.2	3	5.28	7.9	3.04
13	Pentane	0.03				
14	Isoprene	0.03				
15	trans-2-Pentene	0.03				
16	cis-2-Pentene	0.03				
17	2-Methyl-2-butene	0.03				
18	2,2-Dimethylbutane	0.03				
19	Cyclopentene	0.03				
20	4-Methyl-1-pentene	0.03				
21	2,3-Dimethylbutane	0.03				
22	Cyclopentane	0.03				
23	2-Methylpentane	0.03				
24	3-Methylpentane	0.03				
25	2-Methyl-1-pentene	0.03				
26	Hexane	0.03				
27	Methyl ethyl ketone	0.2				
28	cis-2-Hexene	0.03				
29	trans-2-Hexene	0.03				
30	2,4-Dimethylpentane	0.03				
31	Methylcyclopentane	0.03				
32	Cyclohexane	0.03				
33	Benzene	0.03	0.36	0.41	0.46	0.38
34	2-Methylhexane	0.03				
35	2,3-Dimethylpentane	0.03				
36	3-Methylhexane	0.03	0.28			
37	2,2,4-Trimethylpentane	0.03				
38	Heptane	0.03	0.62			
39	Methylcyclohexane	0.03	0.51			
40	Methyl isobutyl ketone	0.2				
41	2,3,4-Trimethylpentane	0.03				
42	2-Methylheptane	0.03	0.45			
43	Toluene	0.03	0.54	0.24		
44	3-Methylheptane	0.03				
45	Octane	0.03	0.72			
46	Ethyl benzene	0.03	0.29			
47	m,p-Xylene	0.03				0.05
48	Styrene	0.03				
49	Nonane	0.03				
50	o-Xylene	0.03				
51	Isopropylbenzene	0.03				
52	alpha Pinene	0.03	0.2			0.04
53	n-Propylbenzene	0.03				
54	1,3,5-Trimethylbenzene	0.03				
55	beta Pinene	0.03				
56	Decane	0.03				
57	1,2,4-Trimethylbenzene	0.03				
58	Undecane	0.03				
59	Dodecane	0.03				
60	Naphthalene	0.03				

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Reduced Sulphur Compounds (RSCs) **Indicated Sites and Dates**

RSC Canisters

Results (ppbv)

#	Compound Name	MDL	**AMS 9 Barge Landing 06-Mar**	**AMS 12 Millennium Mine 06-Mar**	**AMS 13 Fort McKay South 06-Mar**	**AMS 15 CNRL Horizon 06-Mar**
1	Hydrogen sulphide	1				
2	Carbonyl sulphide	1	0.7	0.9	0.8	0.7
3	Methyl mercaptan	1				
4	Ethyl mercaptan	1				
5	Dimethyl sulphide	1				
6	Carbon disulphide	1				
7	Isopropyl mercaptan	1				
8	tert-Butyl mercaptan	1				
9	Propyl mercaptan	1				
10.1	Thiophene	1				
10.2	Isobutyl mercaptan	1				
10.3	sec-Butyl mercaptan	1				
11	Ethyl sulphide	1				
12	Butyl mercaptan	1				
13	tert-Pentyl mercaptan	1				
14	Dimethyl disulphide	1				
15	2-methyl Thiophene	1				
16	3-methyl Thiophene	1				
17	Pentyl mercaptan	1				
18	2-ethyl Thiophene	1				
19	Allyl sulphide	1				
20	2,5-dimethyl Thiophene	1				

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Reduced Sulphur Compounds (RSCs) **Indicated Sites and Dates**

RSC Canisters

Results (ppbv)

#	Compound Name	MDL	**AMS 1 Fort McKay 06-Mar**	**AMS 6 Patricia McInnes 06-Mar**	**AMS 7 Athabasca Valley 06-Mar**	**AMS 14 Anzac 06-Mar**
1	Hydrogen sulphide	1			0.7	
2	Carbonyl sulphide	1	0.9	0.6	0.8	0.6
3	Methyl mercaptan	1				
4	Ethyl mercaptan	1				
5	Dimethyl sulphide	1				
6	Carbon disulphide	1				
7	Isopropyl mercaptan	1				
8	tert-Butyl mercaptan	1				
9	Propyl mercaptan	1				
10.1	Thiophene	1				
10.2	Isobutyl mercaptan	1				
10.3	sec-Butyl mercaptan	1				
11	Ethyl sulphide	1				
12	Butyl mercaptan	1				
13	tert-Pentyl mercaptan	1				
14	Dimethyl disulphide	1				
15	2-methyl Thiophene	1				
16	3-methyl Thiophene	1				
17	Pentyl mercaptan	1				
18	2-ethyl Thiophene	1				
19	Allyl sulphide	1				
20	2,5-dimethyl Thiophene	1				

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Reduced Sulphur Compounds (RSCs) **Indicated Sites and Dates**

RSC Canisters

#	Compound Name	MDL	Results (ppbv) AMS 9 Barge Landing 12-Mar	AMS 12 Millennium Mine 12-Mar	AMS 13 Fort McKay South 12-Mar	AMS 15 CNRL Horizon 12-Mar
1	Hydrogen sulphide	1				
2	Carbonyl sulphide	1	0.8	0.5	0.6	0.5
3	Methyl mercaptan	1				
4	Ethyl mercaptan	1				
5	Dimethyl sulphide	1				
6	Carbon disulphide	1				
7	Isopropyl mercaptan	1				
8	tert-Butyl mercaptan	1				
9	Propyl mercaptan	1				
10.1	Thiophene	1				
10.2	Isobutyl mercaptan	1				
10.3	sec-Butyl mercaptan	1				
11	Ethyl sulphide	1				
12	Butyl mercaptan	1				
13	tert-Pentyl mercaptan	1				
14	Dimethyl disulphide	1				
15	2-methyl Thiophene	1				
16	3-methyl Thiophene	1				
17	Pentyl mercaptan	1				
18	2-ethyl Thiophene	1				
19	Allyl sulphide	1				
20	2,5-dimethyl Thiophene	1				

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Reduced Sulphur Compounds (RSCs) **Indicated Sites and Dates**

RSC Canisters

Results (ppbv)

#	Compound Name	MDL	**AMS 1 Fort McKay 12-Mar**	**AMS 6 Patricia McInnes 12-Mar**	**AMS 7 Athabasca Valley 12-Mar**	**AMS 14 Anzac 12-Mar**
1	Hydrogen sulphide	1				
2	Carbonyl sulphide	1	1	0.7	0.6	0.6
3	Methyl mercaptan	1				
4	Ethyl mercaptan	1				
5	Dimethyl sulphide	1				
6	Carbon disulphide	1				
7	Isopropyl mercaptan	1				
8	tert-Butyl mercaptan	1				
9	Propyl mercaptan	1				
10.1	Thiophene	1				
10.2	Isobutyl mercaptan	1				
10.3	sec-Butyl mercaptan	1				
11	Ethyl sulphide	1				
12	Butyl mercaptan	1				
13	tert-Pentyl mercaptan	1				
14	Dimethyl disulphide	1				
15	2-methyl Thiophene	1				
16	3-methyl Thiophene	1				
17	Pentyl mercaptan	1				
18	2-ethyl Thiophene	1				
19	Allyl sulphide	1				
20	2,5-dimethyl Thiophene	1				

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Reduced Sulphur Compounds (RSCs) **Indicated Sites and Dates**

RSC Canisters

Results (ppbv)

#	Compound Name	MDL	AMS 12 Millennium Mine 18-Mar	AMS 13 Fort McKay South 18-Mar	AMS 15 CNRL Horizon 18-Mar
1	Hydrogen sulphide	1			
2	Carbonyl sulphide	1	0.6	0.7	0.8
3	Methyl mercaptan	1			
4	Ethyl mercaptan	1			
5	Dimethyl sulphide	1			
6	Carbon disulphide	1			
7	Isopropyl mercaptan	1			
8	tert-Butyl mercaptan	1			
9	Propyl mercaptan	1			
10.1	Thiophene	1			
10.2	Isobutyl mercaptan	1			
10.3	sec-Butyl mercaptan	1			
11	Ethyl sulphide	1			
12	Butyl mercaptan	1			
13	tert-Pentyl mercaptan	1			
14	Dimethyl disulphide	1			
15	2-methyl Thiophene	1			
16	3-methyl Thiophene	1			
17	Pentyl mercaptan	1			
18	2-ethyl Thiophene	1			
19	Allyl sulphide	1			
20	2,5-dimethyl Thiophene	1			

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Reduced Sulphur Compounds (RSCs) **Indicated Sites and Dates**

RSC Canisters

Results (ppbv)

#	Compound Name	MDL	**AMS 1 Fort McKay 18-Mar**	**AMS 6 Patricia McInnes 18-Mar**	**AMS 7 Athabasca Valley 18-Mar**	**AMS 14 Anzac 18-Mar**
1	Hydrogen sulphide	1				
2	Carbonyl sulphide	1	0.7	0.6	0.8	0.6
3	Methyl mercaptan	1				
4	Ethyl mercaptan	1				
5	Dimethyl sulphide	1				
6	Carbon disulphide	1				
7	Isopropyl mercaptan	1				
8	tert-Butyl mercaptan	1				
9	Propyl mercaptan	1				
10.1	Thiophene	1				
10.2	Isobutyl mercaptan	1				
10.3	sec-Butyl mercaptan	1				
11	Ethyl sulphide	1				
12	Butyl mercaptan	1				
13	tert-Pentyl mercaptan	1				
14	Dimethyl disulphide	1				
15	2-methyl Thiophene	1				
16	3-methyl Thiophene	1				
17	Pentyl mercaptan	1				
18	2-ethyl Thiophene	1				
19	Allyl sulphide	1				
20	2,5-dimethyl Thiophene	1				

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Reduced Sulphur Compounds (RSCs) **Indicated Sites and Dates**

RSC Canisters

			Results (ppbv)			
			AMS 9	**AMS 12**	**AMS 13**	**AMS 15**
			Barge Landing	**Millennium Mine**	**Fort McKay South**	**CNRL Horizon**
#	Compound Name	MDL	**24-Mar**	**24-Mar**	**24-Mar**	**24-Mar**
1	Hydrogen sulphide	1				
2	Carbonyl sulphide	1	0.6	0.4	0.4	0.5
3	Methyl mercaptan	1				
4	Ethyl mercaptan	1				
5	Dimethyl sulphide	1				
6	Carbon disulphide	1				
7	Isopropyl mercaptan	1				
8	tert-Butyl mercaptan	1				
9	Propyl mercaptan	1				
10.1	Thiophene	1				
10.2	Isobutyl mercaptan	1				
10.3	sec-Butyl mercaptan	1				
11	Ethyl sulphide	1				
12	Butyl mercaptan	1				
13	tert-Pentyl mercaptan	1				
14	Dimethyl disulphide	1				
15	2-methyl Thiophene	1				
16	3-methyl Thiophene	1				
17	Pentyl mercaptan	1				
18	2-ethyl Thiophene	1				
19	Allyl sulphide	1				
20	2,5-dimethyl Thiophene	1				

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Reduced Sulphur Compounds (RSCs) **Indicated Sites and Dates**

RSC Canisters

Results (ppbv)

#	Compound Name	MDL	**AMS 1 Fort McKay 24-Mar**	**AMS 6 Patricia McInnes 24-Mar**	**AMS 7 Athabasca Valley 24-Mar**	**AMS 14 Anzac 24-Mar**
1	Hydrogen sulphide	1				
2	Carbonyl sulphide	1	0.7	0.4	0.4	
3	Methyl mercaptan	1				
4	Ethyl mercaptan	1				
5	Dimethyl sulphide	1				
6	Carbon disulphide	1				
7	Isopropyl mercaptan	1				
8	tert-Butyl mercaptan	1				
9	Propyl mercaptan	1				
10.1	Thiophene	1				
10.2	Isobutyl mercaptan	1				
10.3	sec-Butyl mercaptan	1				
11	Ethyl sulphide	1				
12	Butyl mercaptan	1				
13	tert-Pentyl mercaptan	1				
14	Dimethyl disulphide	1				
15	2-methyl Thiophene	1				
16	3-methyl Thiophene	1				
17	Pentyl mercaptan	1				
18	2-ethyl Thiophene	1				
19	Allyl sulphide	1				
20	2,5-dimethyl Thiophene	1				

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Reduced Sulphur Compounds (RSCs) **Indicated Sites and Dates**

RSC Canisters

#	Compound Name	MDL	Results (ppbv) AMS 9 Barge Landing 30-Mar	AMS 12 Millennium Mine 30-Mar	AMS 13 Fort McKay South 30-Mar	AMS 15 CNRL Horizon 30-Mar
1	Hydrogen sulphide	1				
2	Carbonyl sulphide	1	0.7		0.8	0.7
3	Methyl mercaptan	1				
4	Ethyl mercaptan	1				
5	Dimethyl sulphide	1				
6	Carbon disulphide	1				
7	Isopropyl mercaptan	1				
8	tert-Butyl mercaptan	1				
9	Propyl mercaptan	1				
10.1	Thiophene	1				
10.2	Isobutyl mercaptan	1				
10.3	sec-Butyl mercaptan	1				
11	Ethyl sulphide	1				
12	Butyl mercaptan	1				
13	tert-Pentyl mercaptan	1				
14	Dimethyl disulphide	1				
15	2-methyl Thiophene	1				
16	3-methyl Thiophene	1				
17	Pentyl mercaptan	1				
18	2-ethyl Thiophene	1				
19	Allyl sulphide	1				
20	2,5-dimethyl Thiophene	1				

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Reduced Sulphur Compounds (RSCs) **Indicated Sites and Dates**

RSC Canisters

Results (ppbv)

#	Compound Name	MDL	**AMS 1 Fort McKay 30-Mar**	**AMS 6 Patricia McInnes 30-Mar**	**AMS 7 Athabasca Valley 30-Mar**	**AMS 14 Anzac 30-Mar**
1	Hydrogen sulphide	1				
2	Carbonyl sulphide	1	0.8	0.7		0.8
3	Methyl mercaptan	1				
4	Ethyl mercaptan	1				
5	Dimethyl sulphide	1				
6	Carbon disulphide	1				
7	Isopropyl mercaptan	1				
8	tert-Butyl mercaptan	1				
9	Propyl mercaptan	1				
10.1	Thiophene	1				
10.2	Isobutyl mercaptan	1				
10.3	sec-Butyl mercaptan	1				
11	Ethyl sulphide	1				
12	Butyl mercaptan	1				
13	tert-Pentyl mercaptan	1				
14	Dimethyl disulphide	1				
15	2-methyl Thiophene	1				
16	3-methyl Thiophene	1				
17	Pentyl mercaptan	1				
18	2-ethyl Thiophene	1				
19	Allyl sulphide	1				
20	2,5-dimethyl Thiophene	1				

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Reduced Sulphur Compounds (RSCs) **Indicated Sites and Dates**

RSC Canisters

Results (ppbv)

#	Compound Name	MDL	**AMS 9 Barge Landing 05-Apr**	**AMS 12 Millennium Mine 05-Apr**	**AMS 13 Fort McKay South 05-Apr**	**AMS 15 CNRL Horizon 05-Apr**
1	Hydrogen sulphide	1				
2	Carbonyl sulphide	1	0.6	0.7	0.6	0.5
3	Methyl mercaptan	1				
4	Ethyl mercaptan	1				
5	Dimethyl sulphide	1				
6	Carbon disulphide	1				
7	Isopropyl mercaptan	1				
8	tert-Butyl mercaptan	1				
9	Propyl mercaptan	1				
10.1	Thiophene	1				
10.2	Isobutyl mercaptan	1				
10.3	sec-Butyl mercaptan	1				
11	Ethyl sulphide	1				
12	Butyl mercaptan	1				
13	tert-Pentyl mercaptan	1				
14	Dimethyl disulphide	1				
15	2-methyl Thiophene	1				
16	3-methyl Thiophene	1				
17	Pentyl mercaptan	1				
18	2-ethyl Thiophene	1				
19	Allyl sulphide	1				
20	2,5-dimethyl Thiophene	1				

WOOD BUFFALO ENVIRONMENTAL ASSOCIATION **2014**

Reduced Sulphur Compounds (RSCs) **Indicated Sites and Dates**

RSC Canisters

Results (ppbv)

#	Compound Name	MDL	**AMS 1 Fort McKay 05-Apr**	**AMS 6 Patricia McInnes 05-Apr**	**AMS 7 Athabasca Valley 05-Apr**	**AMS 14 Anzac 05-Apr**
1	Hydrogen sulphide	1				
2	Carbonyl sulphide	1	0.6	0.7	0.6	
3	Methyl mercaptan	1				
4	Ethyl mercaptan	1				
5	Dimethyl sulphide	1				
6	Carbon disulphide	1				
7	Isopropyl mercaptan	1				
8	tert-Butyl mercaptan	1				
9	Propyl mercaptan	1				
10.1	Thiophene	1				
10.2	Isobutyl mercaptan	1				
10.3	sec-Butyl mercaptan	1				
11	Ethyl sulphide	1				
12	Butyl mercaptan	1				
13	tert-Pentyl mercaptan	1				
14	Dimethyl disulphide	1				
15	2-methyl Thiophene	1				
16	3-methyl Thiophene	1				
17	Pentyl mercaptan	1				
18	2-ethyl Thiophene	1				
19	Allyl sulphide	1				
20	2,5-dimethyl Thiophene	1				

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Reduced Sulphur Compounds (RSCs) **Indicated Sites and Dates**

RSC Canisters

Results (ppbv)

#	Compound Name	MDL	**AMS 9 Barge Landing 11-Apr**	**AMS 12 Millennium Mine 11-Apr**	**AMS 13 Fort McKay South 11-Apr**	**AMS 15 CNRL Horizon 11-Apr**
1	Hydrogen sulphide	1				
2	Carbonyl sulphide	1		0.8		
3	Methyl mercaptan	1				
4	Ethyl mercaptan	1				
5	Dimethyl sulphide	1				
6	Carbon disulphide	1				
7	Isopropyl mercaptan	1				
8	tert-Butyl mercaptan	1				
9	Propyl mercaptan	1				
10.1	Thiophene	1				
10.2	Isobutyl mercaptan	1				
10.3	sec-Butyl mercaptan	1				
11	Ethyl sulphide	1				
12	Butyl mercaptan	1				
13	tert-Pentyl mercaptan	1				
14	Dimethyl disulphide	1				
15	2-methyl Thiophene	1				
16	3-methyl Thiophene	1				
17	Pentyl mercaptan	1				
18	2-ethyl Thiophene	1				
19	Allyl sulphide	1				
20	2,5-dimethyl Thiophene	1				

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Reduced Sulphur Compounds (RSCs) **Indicated Sites and Dates**

RSC Canisters

Results (ppbv)

#	Compound Name	MDL	**AMS 1 Fort McKay 11-Apr**	**AMS 6 Patricia McInnes 11-Apr**	**AMS 7 Athabasca Valley 11-Apr**	**AMS 14 Anzac 11-Apr**
1	Hydrogen sulphide	1				
2	Carbonyl sulphide	1	0.9			
3	Methyl mercaptan	1				
4	Ethyl mercaptan	1				
5	Dimethyl sulphide	1				
6	Carbon disulphide	1				
7	Isopropyl mercaptan	1				
8	tert-Butyl mercaptan	1				
9	Propyl mercaptan	1				
10.1	Thiophene	1				
10.2	Isobutyl mercaptan	1				
10.3	sec-Butyl mercaptan	1				
11	Ethyl sulphide	1				
12	Butyl mercaptan	1				
13	tert-Pentyl mercaptan	1				
14	Dimethyl disulphide	1				
15	2-methyl Thiophene	1				
16	3-methyl Thiophene	1				
17	Pentyl mercaptan	1				
18	2-ethyl Thiophene	1				
19	Allyl sulphide	1				
20	2,5-dimethyl Thiophene	1				

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Reduced Sulphur Compounds (RSCs) **Indicated Sites and Dates**

RSC Canisters

Results (ppbv)

#	Compound Name	MDL	**AMS 9 Barge Landing 17-Apr**	**AMS 12 Millennium Mine 17-Apr**	**AMS 13 Fort McKay South 17-Apr**	**AMS 15 CNRL Horizon 17-Apr**
1	Hydrogen sulphide	1				
2	Carbonyl sulphide	1		0.7	1	1
3	Methyl mercaptan	1				
4	Ethyl mercaptan	1				
5	Dimethyl sulphide	1				
6	Carbon disulphide	1				
7	Isopropyl mercaptan	1				
8	tert-Butyl mercaptan	1				
9	Propyl mercaptan	1				
10.1	Thiophene	1				
10.2	Isobutyl mercaptan	1				
10.3	sec-Butyl mercaptan	1				
11	Ethyl sulphide	1				
12	Butyl mercaptan	1				
13	tert-Pentyl mercaptan	1				
14	Dimethyl disulphide	1				
15	2-methyl Thiophene	1				
16	3-methyl Thiophene	1				
17	Pentyl mercaptan	1				
18	2-ethyl Thiophene	1				
19	Allyl sulphide	1				
20	2,5-dimethyl Thiophene	1				

WOOD BUFFALO ENVIRONMENTAL ASSOCIATION **2014**

Reduced Sulphur Compounds (RSCs) **Indicated Sites and Dates**

RSC Canisters

Results (ppbv)

#	Compound Name	MDL	**AMS 1 Fort McKay 17-Apr**	**AMS 6 Patricia McInnes 17-Apr**	**AMS 7 Athabasca Valley 17-Apr**	**AMS 14 Anzac 17-Apr**
1	Hydrogen sulphide	1				
2	Carbonyl sulphide	1	0.9		0.7	
3	Methyl mercaptan	1				
4	Ethyl mercaptan	1				
5	Dimethyl sulphide	1				
6	Carbon disulphide	1				
7	Isopropyl mercaptan	1				
8	tert-Butyl mercaptan	1				
9	Propyl mercaptan	1				
10.1	Thiophene	1				
10.2	Isobutyl mercaptan	1				
10.3	sec-Butyl mercaptan	1				
11	Ethyl sulphide	1				
12	Butyl mercaptan	1				
13	tert-Pentyl mercaptan	1				
14	Dimethyl disulphide	1				
15	2-methyl Thiophene	1				
16	3-methyl Thiophene	1				
17	Pentyl mercaptan	1				
18	2-ethyl Thiophene	1				
19	Allyl sulphide	1				
20	2,5-dimethyl Thiophene	1				

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Reduced Sulphur Compounds (RSCs) **Indicated Sites and Dates**

RSC Canisters

Results (ppbv)

#	Compound Name	MDL	**AMS 9 Barge Landing 23-Apr**	**AMS 12 Millennium Mine 23-Apr**	**AMS 13 Fort McKay South 23-Apr**	**AMS 15 CNRL Horizon 23-Apr**
1	Hydrogen sulphide	1				
2	Carbonyl sulphide	1	0.4	0.3	0.6	
3	Methyl mercaptan	1				
4	Ethyl mercaptan	1				
5	Dimethyl sulphide	1				
6	Carbon disulphide	1				
7	Isopropyl mercaptan	1				
8	tert-Butyl mercaptan	1				
9	Propyl mercaptan	1				
10.1	Thiophene	1				
10.2	Isobutyl mercaptan	1				
10.3	sec-Butyl mercaptan	1				
11	Ethyl sulphide	1				
12	Butyl mercaptan	1				
13	tert-Pentyl mercaptan	1				
14	Dimethyl disulphide	1				
15	2-methyl Thiophene	1				
16	3-methyl Thiophene	1				
17	Pentyl mercaptan	1				
18	2-ethyl Thiophene	1				
19	Allyl sulphide	1				
20	2,5-dimethyl Thiophene	1				

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Reduced Sulphur Compounds (RSCs) **Indicated Sites and Dates**

RSC Canisters

Results (ppbv)

#	Compound Name	MDL	**AMS 1 Fort McKay 23-Apr**	**AMS 6 Patricia McInnes 23-Apr**	**AMS 7 Athabasca Valley 23-Apr**	**AMS 14 Anzac 23-Apr**
1	Hydrogen sulphide	1				
2	Carbonyl sulphide	1		0.6		0.5
3	Methyl mercaptan	1				
4	Ethyl mercaptan	1				
5	Dimethyl sulphide	1				
6	Carbon disulphide	1				
7	Isopropyl mercaptan	1				
8	tert-Butyl mercaptan	1				
9	Propyl mercaptan	1				
10.1	Thiophene	1				
10.2	Isobutyl mercaptan	1				
10.3	sec-Butyl mercaptan	1				
11	Ethyl sulphide	1				
12	Butyl mercaptan	1				
13	tert-Pentyl mercaptan	1				
14	Dimethyl disulphide	1				
15	2-methyl Thiophene	1				
16	3-methyl Thiophene	1				
17	Pentyl mercaptan	1				
18	2-ethyl Thiophene	1				
19	Allyl sulphide	1				
20	2,5-dimethyl Thiophene	1				

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Reduced Sulphur Compounds (RSCs) **Indicated Sites and Dates**

RSC Canisters

Results (ppbv)

#	Compound Name	MDL	**AMS 9 Barge Landing 29-Apr**	**AMS 12 Millennium Mine 29-Apr**	**AMS 13 Fort McKay South 29-Apr**	**AMS 15 CNRL Horizon 29-Apr**
1	Hydrogen sulphide	1				
2	Carbonyl sulphide	1				
3	Methyl mercaptan	1				
4	Ethyl mercaptan	1				
5	Dimethyl sulphide	1				
6	Carbon disulphide	1				
7	Isopropyl mercaptan	1				
8	tert-Butyl mercaptan	1				
9	Propyl mercaptan	1				
10.1	Thiophene	1				
10.2	Isobutyl mercaptan	1				
10.3	sec-Butyl mercaptan	1				
11	Ethyl sulphide	1				
12	Butyl mercaptan	1				
13	tert-Pentyl mercaptan	1				
14	Dimethyl disulphide	1				
15	2-methyl Thiophene	1				
16	3-methyl Thiophene	1				
17	Pentyl mercaptan	1				
18	2-ethyl Thiophene	1				
19	Allyl sulphide	1				
20	2,5-dimethyl Thiophene	1				

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Reduced Sulphur Compounds (RSCs) **Indicated Sites and Dates**

RSC Canisters

Results (ppbv)

#	Compound Name	MDL	**AMS 1 Fort McKay 29-Apr**	**AMS 6 Patricia McInnes 29-Apr**	**AMS 7 Athabasca Valley 29-Apr**	**AMS 14 Anzac 29-Apr**
1	Hydrogen sulphide	1				
2	Carbonyl sulphide	1			0.4	
3	Methyl mercaptan	1				
4	Ethyl mercaptan	1				
5	Dimethyl sulphide	1				
6	Carbon disulphide	1				
7	Isopropyl mercaptan	1				
8	tert-Butyl mercaptan	1				
9	Propyl mercaptan	1				
10.1	Thiophene	1				
10.2	Isobutyl mercaptan	1				
10.3	sec-Butyl mercaptan	1				
11	Ethyl sulphide	1				
12	Butyl mercaptan	1				
13	tert-Pentyl mercaptan	1				
14	Dimethyl disulphide	1				
15	2-methyl Thiophene	1				
16	3-methyl Thiophene	1				
17	Pentyl mercaptan	1				
18	2-ethyl Thiophene	1				
19	Allyl sulphide	1				
20	2,5-dimethyl Thiophene	1				