



Lakeland Industry & Community Association

AUGUST 2019

Monthly Ambient Air Quality Monitoring Report

LICA-201908

Operation and Maintenance:

Maxxam Analytics

Data Validation and Report:

Lakeland Industry & Community Association

September 10, 2019

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September 10, 2019

Alberta Environment and Parks (AEP)

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Emailed to: Air.Reporting@gov.ab.ca

RE: LICA – August 2019 Monthly Ambient Air Quality Monitoring Report

Enclosed is the August 2019 Monthly Ambient Air Quality Monitoring Report for the continuous ambient air quality monitoring stations of the Lakeland Industry & Community Association (LICA) regional air quality monitoring network.

The representative of the Person Responsible for this monitoring program is

LICA Airshed

Michael Bisaga, Monitoring Programs Manager

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This report has been reviewed by Michael Bisaga of the LICA Airshed.

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LIST OF ACRONYMS

AAAQOs	Alberta Ambient Air Quality Objectives
AEP	Alberta Environment and Parks
AMD	Air Monitoring Directive
AT	Ambient Temperature
BP	Barometric Pressure
CH ₄	Methane
EPEA	Environmental Protection and Enhancement Act
H ₂ S	Hydrogen Sulphide
kph	kilometers per hour
LICA	Lakeland Industry & Community Association
mb	millibar
mm	millimeter
NMHC	Non-Methane Hydrocarbons
NO	Nitric Oxide
NO ₂	Nitrogen Dioxide
NO _x	Oxide of Nitrogen
ppb	parts per billion
ppm	parts per million
RH	Relative Humidity
SO ₂	Sulphur Dioxide
ST	Station Temperature
STDWD	Standard Deviation Wind Direction
THC	Total Hydrocarbons
TRS	Total Reduced Sulphur
VWD	Vector Wind Direction
VWS	Vector Wind Speed
WD	Wind Direction
WS	Wind Speed
°C	Degrees Celsius

NETWORK STATION SUMMARY

Listing of Continuous Monitoring Stations and Integrated Sampling Stations

Station Name		Cold Lake South	Maskwa	St. Lina	Bonnyville East
Station ID		1174	1248	1250	1608
Coordinates		54.41402, -110.23316	54.604935, -110.452637	54.215961, -111.503304	54.252747, -110.690611
Continuous Monitoring Parameter	SO2	√	√	√	√
	TRS	√			
	H2S		√	√	√
	THC	√	√	√	√
	CH4	√	√	√	√
	NMHC	√	√	√	√
	NOX	√	√	√	√
	NO	√	√	√	√
	NO2	√	√	√	√
	O3	√		√	√
	PM2.5	√		√	√
	TPX	√	√	√	
	RH	√	√	√	
	BP		√	√	
	PRECIPTATION		√	√	
	WS	√	√	√	√
	WD	√	√	√	√
STDWD	√	√	√	√	
Integrated Sampling	VOCs	√			√
	PAHs	√			√
	Partisol	√			
	Passive	√			
	NMHC Canister				√

List of Contractors who performed the air monitoring activities

Sampling Program	Monitoring Activities Conducted By	Sample Analysis Conducted By	Data/Report Prepared By	Electronic Submission Conducted By
Continuous Monitoring Station	Maxxam Analytics	Maxxam Analytics	LICA / Maxxam Analytics	LICA
Intermittent (VOCs/PAHs)	Maxxam Analytics	InnoTech Alberta Inc	InnoTech Alberta Inc	LICA
Partisol	Maxxam Analytics	InnoTech Alberta Inc	InnoTech Alberta Inc	LICA
Passive	Maxxam Analytics	Maxxam Analytics	Maxxam Analytics	LICA
NMHC Canister	Maxxam Analytics	InnoTech Alberta Inc	InnoTech Alberta Inc	Not Applicable

Monitoring Notes during the Month of August 2019

Cold Lake South

- Measured parameters were below Alberta Ambient Air Quality Objectives (AAAQOs) where applicable.
- All data collected this month were compliant with the requirements outlined in the AMD 2016.
- All parameters met the 90% operational uptime requirement.
- Datalogger updates were applied on August 26 during hour 16. One hour of data was invalidated due to this event.
- **TRS:** The analyzer showed a high span drift on August 2. An additional span check was initiated on August 3 at hour 7 to verify the analyzer’s functionality. The check results passed the span check requirements. One hour of downtime was recorded as a result.

Maskwa

- Measured parameters were below Alberta Ambient Air Quality Objectives (AAAQOs) where applicable.
- All data collected this month were compliant with the requirements outlined in the AMD 2016.
- All parameters met the 90% operational uptime requirement.
- Datalogger updates were applied on August 26 during hour 19. One hour of data was invalidated due to this event.

St. Lina Station

- Measured parameters were below Alberta Ambient Air Quality Objectives (AAAQOs) where applicable.

- All data collected this month were compliant with the requirements outlined in the AMD 2016.
- All parameters met the 90% operational uptime requirement.
- Datalogger updates were applied on August 26 during hour 17. One hour of data was invalidated due to this event.
- **H2S:** A repeat multi-point calibration was performed on August 15 in order to retrieve and update the reference span value for the daily automatic zero/span check to use. Four hours of downtime were recorded due to this event.

Bonnyville East Station

- All data collected this month were compliant with the requirements outlined in the AMD 2016.
- All parameters met the 90% operational uptime requirement.
- Measured parameters were below Alberta Ambient Air Quality Objectives (AAAQOs) where applicable, with exceptions of H2S. Forty-three 1-hr and Six 24-hr exceedances were recorded this month. Nearby sewage lagoons are a known source of odours and hydrogen sulphide in the area.

Date	Time	Avg. Period	Reading (ppb)	AEP Reference #
08-Aug	3:00	1-hr	23	357235
08-Aug	-	24-hr	4	357235
10-Aug	22:00	1-hr	16	357357
11-Aug	0:00	1-hr	43	357358
11-Aug	5:00	1-hr	12	357358
11-Aug	22:00	1-hr	37	357358
11-Aug	-	24-hr	7	357358
12-Aug	2:00	1-hr	17	357392
20-Aug	2:00	1-hr	16	357714
21-Aug	4:00	1-hr	18	357766
21-Aug	9:00	1-hr	12	357766
21-Aug	10:00	1-hr	15	357766
21-Aug	11:00	1-hr	12	357766
21-Aug	12:00	1-hr	13	357766
21-Aug	13:00	1-hr	18	357766
21-Aug	14:00	1-hr	18	357766
21-Aug	15:00	1-hr	19	357766
21-Aug	16:00	1-hr	19	357766
21-Aug	17:00	1-hr	20	357766
21-Aug	20:00	1-hr	18	357766
21-Aug	21:00	1-hr	27	357766
21-Aug	22:00	1-hr	26	357766
21-Aug	23:00	1-hr	24	357766
21-Aug	-	24-hr	13	357766
22-Aug	0:00	1-hr	16	357913

22-Aug	4:00	1-hr	17	357913
23-Aug	4:00	1-hr	27	357915
23-Aug	12:00	1-hr	11	357915
23-Aug	16:00	1-hr	13	357915
23-Aug	17:00	1-hr	12	357915
23-Aug	18:00	1-hr	12	357915
23-Aug	19:00	1-hr	24	357915
23-Aug	20:00	1-hr	29	357915
23-Aug	-	24-hr	8	357915
27-Aug	21:00	1-hr	31	358137
29-Aug	19:00	1-hr	22	358258
29-Aug	22:00	1-hr	20	358258
30-Aug	2:00	1-hr	26	358295
30-Aug	3:00	1-hr	10	358295
30-Aug	4:00	1-hr	11	358295
30-Aug	5:00	1-hr	29	358295
30-Aug	6:00	1-hr	14	358295
30-Aug	7:00	1-hr	10	358295
30-Aug	-	24-hr	5	358295
31-Aug	3:00	1-hr	46	358296
31-Aug	4:00	1-hr	28	358296
31-Aug	5:00	1-hr	21	358296
31-Aug	6:00	1-hr	16	358296
31-Aug	-	24-hr	6	358296

- Datalogger updates were applied on August 26 during hour 14. One hour of data was invalidated due to this event. Hourly instantaneous maximum values recorded on August 26 between hour 10 and 12 were also invalidated due to datalogger update preparations.
- **H2S:** The analyzer failed the 20 minute stabilizing period requirements during the as found high point check on August 7. It was determined that the calibration gas required more time to reach its certified concentration after it was left un-used for a couple weeks. The calibration was continued so the calibration gas could be warmed up. A successful multi-point calibration was performed on August 8. Five hours of downtime were recorded due to the activities performed on August 7.
- **THC/CH4/NMHC:** The analyzer flamed out due to zero air supply failure on August 19 during hour 12. The issue was fixed, and the channels were back online on August 20 during hour 11. Twenty-four hours of downtime were recorded due to this event.
- **NOx/NO/NO2:** The analyzer failed the scheduled daily span check on August 29 at hour 0. A repeat zero span check was initiated on the same day at hour 6. The check results passed the calibration requirements. The cause of the zero-span check failure could not be determined. One hour of downtime was recorded due to the additional check as a result.

Integrated Sampling

All the integrated sampling analytical results are included in the August 2019 Integrated Sampling Report.

- **VOCs Sampling System:**
 - The VOC sampler is programmed to collect a 24-hour sample of air every sixth day as per the North American Pollution Surveillance schedule (NAPS).
 - Five samples were collected this month: on August 12, 7, 13, 19, 25 and 27.
- **PAHs Sampling System:**
 - The PAH sampler is programmed to collect a 24-hour sample of air every sixth day as per the North American Pollution Surveillance schedule (NAPS).
 - Five samples were collected this month: on August 12, 7, 13, 19, 25 and 27.
- **Partisol Sampling System:**
 - The Partisol sampler is programmed to collect a 24-hour sample of air every sixth day as per the North American Pollution Surveillance schedule (NAPS).
 - Five samples were collected this month: on August 12, 7, 13, 19, 25 and 27.
- **Passive Sampling System:**
 - The passive sample filters were installed at the stations between July 30 and July 31, and were removed between August 29 and August 30.
 - A total of 9 duplicate samples were collected: 2 for H₂S, 3 for SO₂, 2 for NO₂ and 2 for O₃.
- **NMHC Canister System:**
 - The canister sampling program collects a 1-hour sample of air when the continuously non-methane hydrocarbon (NMHC) concentration reaches a specified trigger point. The current trigger point is 0.3 ppm and is based on real-time monitoring data that are averaged over a 5-minute period.
 - One canister event was recorded on August 30 at 03:00, at concentration of 0.37 ppm.

Revisions to Alberta's Ambient Air Quality Data Warehouse

No revisions to historical data previously submitted to the Alberta's Ambient Air Quality Data Warehouse were made this month.

Deviations from Authorized Monitoring Methods

At the Maskwa station, nearby trees exceed the height allowed under section 2.3 of the wind speed and wind direction siting criteria in Chapter 3 of the AMD. This non-conformance was documented in the updated station site documents. Further actions are being considered including siting the wind sensor so that it meets AMD Chapter 3 siting requirements, or obtaining written authorization from "The Director" to deviate from AMD Siting requirements.

At the Cold Lake South station, the height of the existing wind sensor tower is shorter than the AMD requirements listed in section 2.3 of the wind speed and wind direction siting criteria in Chapter 3 of the AMD. This non-conformance was documented in the updated station site documents. Further actions are being considered including siting the wind sensor so that it meets AMD Chapter 3 siting requirements, or obtaining written authorization from "The Director" to deviate from AMD Siting requirements.

Disclaimer

Data verification/validation were performed on the 1-minute, 5-minute and 1-hour data. Hourly data that are included in this report are calculated based on the post-validation 1-minute data set.

Hourly instantaneous maximum data included in this report have not gone through data validation/verification steps and are considered raw data. The intention of including this data set in the report is for reference purposes and should not be used in published documents.

Equipment calibration / maintenance records were provided by Maxxam Analytics.

Certification

This report was prepared and submitted by Lily Lin in accordance with Chapter 9 of the Air Monitoring Directive (AMD 2016).



Lily Lin, Data & Reporting Specialist, LICA Airshed

This report was reviewed by Mike Bisaga in accordance with Chapter 9 of the Air Monitoring Directive (AMD 2016).

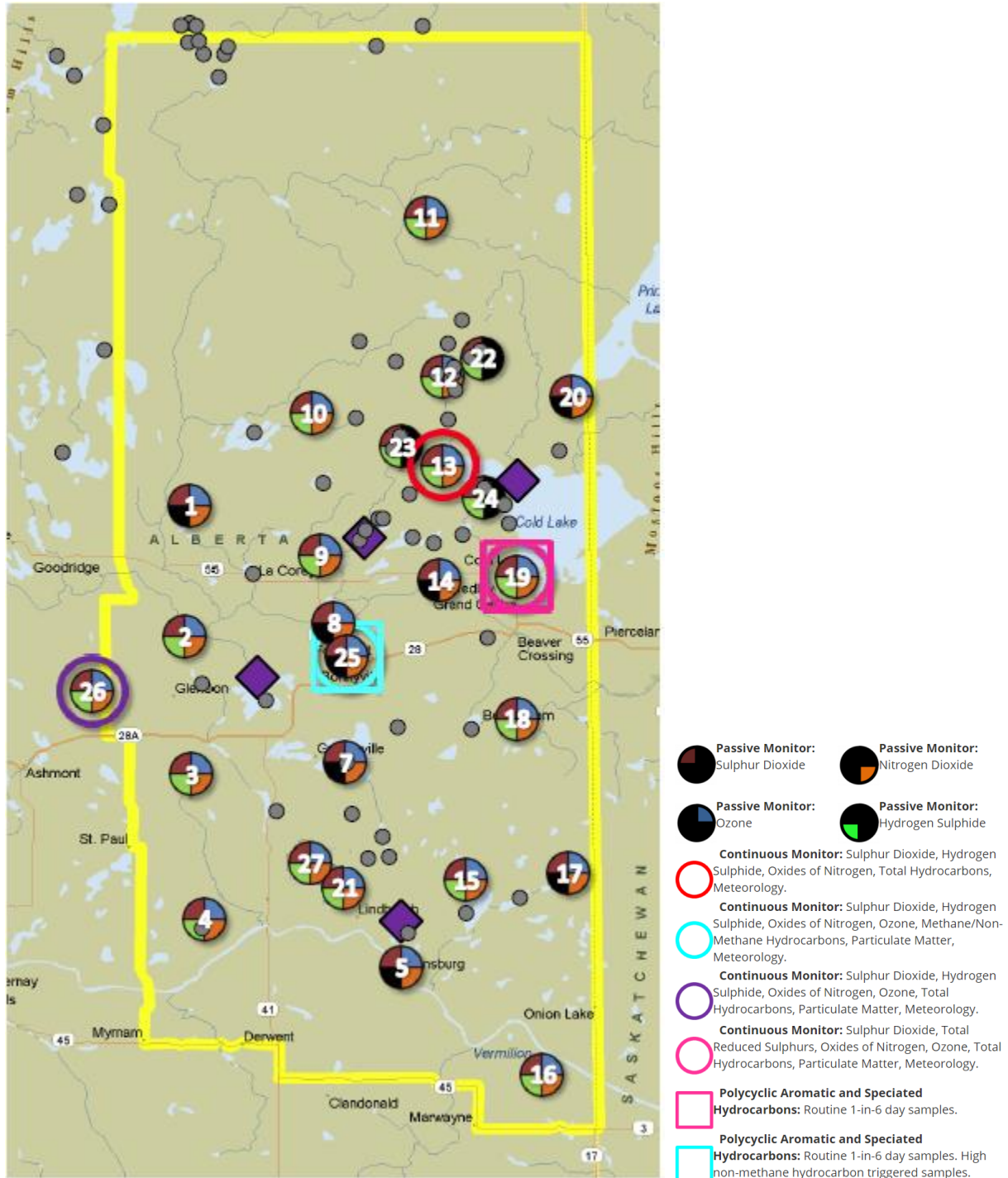
I certify that I have reviewed and verified this report and that the information is complete, accurate and representative of the monitoring results, reporting timeframe and the specified analysis, summarization and reporting requirements. I also certify that at the time of this report's submission, all air data have been electronically uploaded to Alberta's Ambient Air Quality Data Warehouse as required by the AMD, with the exception of electronic submission for the results of intermittent samples, Partisol samples and passive samples. Electronic submission for the intermittent sample, Partisol sample and passive sample results will be performed during the preparation of the August 2019 integrated sampling report. Uploading of VOC data from the canister sampling program was not required at the time of completing this report.



Michael Bisaga, Monitoring Programs Manager, LICA Airshed

September 10, 2019

Map of LICA Continuous Monitoring Network



CONTINUOUS NETWORK EQUIPMENT AND MONITORING RESULTS SUMMARY

Cold Lake South Station

Equipment Operation Summary

Parameter	Make / Model	Serial Number	Calibration Date
Sulphur Dioxide (SO2)	Thermo / 43i-TLE	1180026018	August 13, 2019
<ul style="list-style-type: none"> No issues were identified this month. 			
Total Reduced Sulphur (TRS)	Thermo / 450i	812728560	August 13, 2019
<ul style="list-style-type: none"> The analyzer showed a high span drift on August 2. An additional span check was initiated on August 3 at hour 7 to verify the analyzer’s functionality. The check results passed the span check requirements. One hour of downtime was recorded as a result. 			
Oxide of Nitrogen / Nitric Oxide/ Nitrogen Dioxide (NOx/NO/NO2)	Thermo / 42i	1505664393	August 13, 2019
<ul style="list-style-type: none"> No issues were identified this month. 			
Ozone (O3)	Thermo / 49i	700419951	August 14, 2019
<ul style="list-style-type: none"> No issues were identified this month. 			
Total Hydrocarbons / Methane/ Non-methane Hydrocarbons (THC/CH4/NMHC)	Thermo / 55i	11800300034	August 14, 2019
<ul style="list-style-type: none"> No issues were identified this month. 			
Particulate Matter 2.5 (PM2.5)	Thermo / Sharp 5030	CM-2209	August 23, 2019
<ul style="list-style-type: none"> No issues were identified this month. 			

Parameter	Make / Model	Serial Number	Calibration Date
Relative Humidity (RH)	Rotronic / Hydroclip-S3	PFD919-121406 / Part 50.5PS	January 26, 2018
<ul style="list-style-type: none"> No issues were identified this month. 			
Ambient Temperature (AT)	Rotronic / Hydroclip-S3	PFD919-121406 / Part 50.5PS	January 26, 2018
<ul style="list-style-type: none"> No issues were identified this month. 			
Station Temperature (ST)	Maxxam-supplied	n/a	n/a
<ul style="list-style-type: none"> No issues were identified this month. 			
Wind Speed (WS) / Wind Direction (WD)/ Stand Deviation Wind Direction (STDWD)	Met One / 50.5H	F1644	September 11, 2017
<ul style="list-style-type: none"> No issues were identified this month. 			
AQM Station	National Trailer	2N9MF63843	n/a
<ul style="list-style-type: none"> No issues were identified this month. Datalogger updates were applied on August 26 during hour 16. One hour of data was invalidated due to this event. 			

Monitored Data Summary for August 2019

Parameter	Objectives/Guidelines			Exceedances			Monthly Avg.	Min. 1-hr	Max. 1-hr	Date/Time	VWS (km/hr)	VWD (sector)	Max. 24-hr	Date	Operational Uptime (%)	Valid Data (%)
	1-hr	24-hr	30-day	1-hr	24-hr	30-day										
SO2 (ppb)	172	48	11	0	0	0	0.1	0	2	August 18 at hour 7	5.2	NW	0.3	August 18	99.9	94.9
TRS (ppb)	10	3	-	-	-	-	0.1	0.00	2.00	August 2 at hour 3	0.5	SSW	0.52	August 5	99.7	94.7
Nox (ppb)	-	-	-	-	-	-	1.9	0	16	August 6 at hour 19	4.6	NNW	3.2	August 20	99.9	94.6
NO (ppb)	-	-	-	-	-	-	0.3	0	9	August 6 at hour 19	4.6	NNW	1.2	August 20	99.9	94.6
NO2 (ppb)	159	-	-	0	-	-	1.5	0	8	August 6 at hour 19	4.6	NNW	2.1	August 15	99.9	94.6
O3 (ppb)	82	-	-	0	-	-	18.2	0	41	August 14 at hour 17	10.4	WSW	26.9	August 1	99.9	94.7
THC (ppm)	-	-	-	-	-	-	2.20	1.93	3.39	August 7 at hour 5	1.4	SW	2.48	August 7	99.9	94.9
CH4 (ppm)	-	-	-	-	-	-	2.19	1.93	3.39	August 7 at hour 5	1.4	SW	2.47	August 7	99.9	94.9
NMHC (ppm)	-	-	-	-	-	-	0.00	0.00	0.29	August 6 at hour 19	4.6	NNW	0.03	August 2	99.9	94.9
PM2.5 (µg/m3)	80	30	-	0	0	-	3.1	0.0	23.0	August 6 at hour 19	4.6	NNW	5.7	August 2	99.9	99.7
RH (%)	-	-	-	-	-	-	75.2	39	100	August 5 at hour 22	5.1	WNW	88.6	August 13	99.9	99.9
Ext. Temp. (°C)	-	-	-	-	-	-	14.3	1.4	28.6	August 2 at hour 15	8.6	SE	22.5	August 2	99.9	99.9
Stn. Temp. (°C)	-	-	-	-	-	-	20.7	19.7	24.4	August 1 at hour 7	5.4	SE	21.6	August 9	99.9	99.9
WSV (km/hr)	-	-	-	-	-	-	2.5	0.0	24.6	August 16 at hour 17	24.6	NW	15.5	August 16	99.9	99.9
WDV (sector)	-	-	-	-	-	-	272 (W)	-	-	-	-	-	-	-	99.9	99.9

1- Date/ Time given is the first minimum and maximum value that was recorded

Alberta Ambient Air Quality Objectives (AAAQOs) Exceedances

The measured ambient air quality was within the AAAQOs for all monitored parameters.

Maskwa Station

Equipment Operation Summary

Parameter	Make / Model	Serial Number	Calibration Date
Sulphur Dioxide (SO2)	Thermo / 43i-TLE	1180930031	August 19, 2019
<ul style="list-style-type: none"> No issues were identified this month. 			
Hydrogen Sulphide (H2S)	Thermo / 450i	CM17360005	August 19, 2019
<ul style="list-style-type: none"> No issues were identified this month. 			
Oxide of Nitrogen / Nitric Oxide/ Nitrogen Dioxide (NOx/NO/NO2)	Thermo / 42i	1180930029	August 19, 2019
<ul style="list-style-type: none"> No issues were identified this month. 			
Total Hydrocarbons / Methane/ Non-methane Hydrocarbons (THC/CH4/NMHC)	Thermo / 55i	1180930026	August 20, 2019
<ul style="list-style-type: none"> No issues were identified this month. 			
Relative Humidity (RH)	Met One / 083D-1-35	F4090	February 15, 2019
<ul style="list-style-type: none"> No issues were identified this month. 			
Ambient Temperature (AT)	Met One / 083D-1-35	F4090	February 15, 2019
<ul style="list-style-type: none"> No issues were identified this month. 			
Barometric Pressure (BP)	Met One / Part 090D	F4997	February 15, 2019
<ul style="list-style-type: none"> No issues were identified this month. 			

Parameter	Make / Model	Serial Number	Calibration Date
Station Temperature (ST)	Maxxam-supplied	n/a	n/a
<ul style="list-style-type: none"> No issues were identified this month. 			
Precipitation (PRECIP)	Met One / Part 387-Heated Rain Gauge	F4481	August 20, 2019
<ul style="list-style-type: none"> No issues were identified this month. 			
Wind Speed (WS) / Wind Direction (WD)/ Stand Deviation Wind Direction (STDWD)	RM Young / 05305VK	161465	September 17, 2018
<ul style="list-style-type: none"> No issues were identified this month. 			
AQM Station	National Trailer	n/a	n/a
<ul style="list-style-type: none"> No issues were identified this month. Datalogger updates were applied on August 26 during hour 19. One hour of data was invalidated due to this event. 			

Monitored Data Summary for August 2019

Parameter	Objectives/Guidelines			Exceedances			Monthly Avg.	Min. 1-hr	Max. 1-hr	Date/Time	VWS (km/hr)	VWD (sector)	Max. 24-hr	Date	Operational Uptime (%)	Valid Data (%)
	1-hr	24-hr	30-day	1-hr	24-hr	30-day										
SO2 (ppb)	172	48	11	0	0	0	1.0	0	16	August 17 at hour 3	8.3	NW	5.0	August 17	99.9	94.9
H2S (ppb)	10	3	-	0	0	-	0.1	0	7	August 11 at hour 3	0.6	NE	0.9	August 21	99.9	94.7
Nox (ppb)	-	-	-	-	-	-	3.9	0	40	August 20 at hour 6	0.9	E	11.8	August 17	99.9	94.7
NO (ppb)	-	-	-	-	-	-	1.1	0	31	August 20 at hour 6	0.9	E	5.3	August 17	99.9	94.7
NO2 (ppb)	159	-	-	0	-	-	2.7	0	16	August 2 at hour 21	5.5	WNW	7.4	August 26	99.9	94.7
THC (ppm)	-	-	-	-	-	-	2.14	1.97	3.16	August 30 at hour 6	0.4	NE	2.35	August 30	99.9	94.7
CH4 (ppm)	-	-	-	-	-	-	2.14	1.97	3.09	August 30 at hour 6	0.4	NE	2.34	August 30	99.9	94.7
NMHC (ppm)	-	-	-	-	-	-	0.00	0.00	0.12	August 30 at hour 4	0.4	SW	0.02	August 30	99.9	94.7
RH (%)	-	-	-	-	-	-	83.5	34	100	August 1 at hour 2	1.2	E	99.3	August 13	99.9	99.9
BP (millibar)	-	-	-	-	-	-	938	926	947	August 20 at hour 9	1.3	SW	945	August 20	99.9	99.9
Ext. Temp. (°C)	-	-	-	-	-	-	13.7	1.7	27.9	August 2 at hour 15	4.8	SE	21.2	August 2	99.9	99.9
Stn. Temp. (°C)	-	-	-	-	-	-	21.6	19.5	22.9	August 20 at hour 12	1.8	SW	22.0	August 19	99.9	99.9
Precipitation (mm)*	-	-	-	-	-	-	43.0	0.0	5.8	August 25 at hour 15	2.9	NNW	8.4	August 25	99.9	99.9
WSV (km/hr)	-	-	-	-	-	-	1.3	0.0	10.5	August 16 at hour 16	10.5	NW	7.8	August 16	99.9	99.9
WDV (sector)	-	-	-	-	-	-	258 (WSW)	-	-	-	-	-	-	-	99.9	99.9

1- Date/ Time given is the first minimum and maximum value that was recorded

* Data represents the total (sum) for the indicated time frame

Alberta Ambient Air Quality Objectives (AAAOs) Exceedances

The measured ambient air quality was within the AAAOs for all monitored parameters.

St. Lina Station

Equipment Operation Summary

Parameter	Make / Model	Serial Number	Calibration Date
Sulphur Dioxide (SO2)	Thermo / 43i-TLE	1180930030	August 2, 2019
<ul style="list-style-type: none"> No issues were identified this month. 			
Hydrogen Sulphide (H2S)	Thermo / 450i	CM18010058	August 15, 2019
<ul style="list-style-type: none"> The monthly calibration was performed on August 2. A repeat multi-point calibration was performed on August 15 in order to retrieve and update the reference span value for the daily automatic zero/span check to use. Four hours of downtime were recorded due to this event. 			
Oxide of Nitrogen / Nitric Oxide/ Nitrogen Dioxide (NOx/NO/NO2)	Thermo / 42i	1180930029	August 2, 2019
<ul style="list-style-type: none"> No issues were identified this month. 			
Ozone (O3)	Thermo / 49i	1002240371	August 15, 2019
<ul style="list-style-type: none"> No issues were identified this month. 			
Total Hydrocarbons / Methane/ Non-methane Hydrocarbons (THC/CH4/NMHC)	Thermo / 55i	1180930025	August 15, 2019
<ul style="list-style-type: none"> No issues were identified this month. 			
Particulate Matter 2.5 (PM2.5)	Thermo / Sharp 5030i	CM17091001	August 9, 2019
<ul style="list-style-type: none"> No issues were identified this month. 			

Parameter	Make / Model	Serial Number	Calibration Date
Relative Humidity (RH)	Vaisala Oyj. Finland / HMP155	R2640785	June 28, 2019
<ul style="list-style-type: none"> No issues were identified this month. 			
Ambient Temperature (AT)	Vaisala Oyj. Finland / HMP155	R2640785	June 28, 2019
<ul style="list-style-type: none"> No issues were identified this month. 			
Barometric Pressure (BP)	Met One / Part 090D	F4998	February 21, 2019
<ul style="list-style-type: none"> No issues were identified this month. 			
Station Temperature (ST)	Maxxam-supplied	n/a	n/a
<ul style="list-style-type: none"> No issues were identified this month. 			
Precipitation (PRECIP)	Met One / Part 387-Heated Rain Gauge	n/a	August 15, 2019
<ul style="list-style-type: none"> No issues were identified this month. 			
Wind Speed (WS) / Wind Direction (WD)/ Stand Deviation Wind Direction (STDWD)	RM Young / 05305VK	65521	May 17, 2019
<ul style="list-style-type: none"> No issues were identified this month. 			
AQM Station	National Trailer	n/a	n/a
<ul style="list-style-type: none"> No issues were identified this month. Datalogger updates were applied on August 26 during hour 17. One hour of data was invalidated due to this event. 			

Monitored Data Summary for August 2019

Parameter	Objectives/Guidelines			Exceedances			Monthly Avg.	Min. 1-hr	Max. 1-hr	Date/Time	VWS (km/hr)	VWD (sector)	Max. 24-hr	Date	Operational Uptime (%)	Valid Data (%)
	1-hr	24-hr	30-day	1-hr	24-hr	30-day										
SO2 (ppb)	172	48	11	0	0	0	0.0	0	3	August 14 at hour 10	13	SW	0.3	August 21	99.9	94.7
H2S (ppb)	10	3	-	0	0	-	0.2	0	3	August 4 at hour 3	10.9	WSW	0.7	August 4	99.3	94.1
Nox (ppb)	-	-	-	-	-	-	0.9	0	7	August 5 at hour 7	5.8	SW	2.3	August 5	99.9	94.5
NO (ppb)	-	-	-	-	-	-	0.1	0	3	August 5 at hour 7	5.8	SW	0.5	August 5	99.9	94.5
NO2 (ppb)	159	-	-	0	-	-	0.8	0	5	August 2 at hour 5	6.9	NE	1.7	August 5	99.9	94.5
O3 (ppb)	82	-	-	0	-	-	23.4	7	43	August 2 at hour 21	10	N	31.5	August 21	99.9	94.9
THC (ppm)	-	-	-	-	-	-	2.06	1.94	2.58	August 2 at hour 6	6	ENE	2.25	August 8	99.9	95.0
CH4 (ppm)	-	-	-	-	-	-	2.06	1.94	2.58	August 2 at hour 6	6	ENE	2.25	August 8	99.9	95.0
NMHC (ppm)	-	-	-	-	-	-	0.00	0.00	0.01	August 2 at hour 13	9.4	SE	0.00	August 2	99.9	95.0
PM2.5 (µg/m3)	80	30	-	0	0	-	3.9	0.0	13.0	August 2 at hour 21	10	N	8.3	August 2	99.9	99.6
RH (%)	-	-	-	-	-	-	75.0	38	100	August 24 at hour 5	6.2	WNW	88.2	August 13	99.9	99.9
BP (millibar)	-	-	-	-	-	-	919	909	926	August 20 at hour 8	6.2	S	924	August 20	99.9	99.9
Ext. Temp. (°C)	-	-	-	-	-	-	14.3	4.7	26.4	August 2 at hour 16	8.7	S	21.0	August 2	99.9	99.9
Stn. Temp. (°C)	-	-	-	-	-	-	22.7	20.5	23.5	August 10 at hour 22	9.4	ESE	23.3	August 11	99.9	99.9
Precipitation (mm)*	-	-	-	-	-	-	31.1	0.0	4.4	August 13 at hour 11	6.2	SW	15.1	August 13	99.9	99.9
WSV (km/hr)	-	-	-	-	-	-	3.9	0.3	24.2	August 16 at hour 14	24.2	NW	19.0	August 16	99.9	99.9
WDV (sector)	-	-	-	-	-	-	277 (W)	-	-	-	-	-	-	-	99.9	99.9

1- Date/ Time given is the first minimum and maximum value that was recorded

* Data represents the total (sum) for the indicated time frame

Alberta Ambient Air Quality Objectives (AAAQOs) Exceedances

The measured ambient air quality was within the AAAQOs for all monitored parameters.

Bonnyville - East Station

Equipment Operation Summary

Parameter	Make / Model	Serial Number	Calibration Date
Sulphur Dioxide (SO2)	Thermo / 43i-TLE	1180320046	August 07, 2019
<ul style="list-style-type: none"> No issues were identified this month. 			
Hydrogen Sulphide (H2S)	Thermo / 450i	CM17360002	August 08, 2019
<ul style="list-style-type: none"> The analyzer failed the 20 minute stabilizing period requirements during the as found high point check on August 7. It was determined that the calibration gas required more time to reach its certified concentration after it was left un-used for a couple weeks. The calibration was continued so the calibration gas could be warmed up. A successful multi-point calibration was performed on August 8. Five hours of downtime were recorded due to the activities performed on August 7. 			
Oxide of Nitrogen / Nitric Oxide/ Nitrogen Dioxide (NOx/NO/NO2)	Thermo / 42i	1180930027	August 07, 2019
<ul style="list-style-type: none"> The analyzer failed the scheduled daily span check on August 29 at hour 0. A repeat zero span check was initiated on the same day at hour 6. The check results passed the calibration requirements. As the analyzer passed the second zero/span check, no data was discarded. The cause of the zero-span check failure could not be determined. One hour of downtime was recorded due to the additional check as a result. 			
Ozone (O3)	Thermo / 49i	1002240372	August 08, 2019
<ul style="list-style-type: none"> No issues were identified this month. 			
Total Hydrocarbons / Methane/ Non-methane Hydrocarbons (THC/CH4/NMHC)	Thermo / 55i	1180320044	August 08, 2019
<ul style="list-style-type: none"> The analyzer flamed out due to zero air supply failure on August 19 during hour 12. The issue was fixed, and the channels were back online on August 20 during hour 11. Twenty-four hours of downtime were recorded due to this event. One canister event was recorded on August 30 at 03:00, at concentration of 0.37 ppm. The sample was processed for analysis by InnoTech and the results will be provided in the August 2019 Integrated Sampling Report. 			

Parameter	Make / Model	Serial Number	Calibration Date
Particulate Matter 2.5 (PM2.5)	Thermo / Sharp 5030i	CM17071016	August 28, 2019
<ul style="list-style-type: none"> No issues were identified this month. 			
Station Temperature (ST)	Maxxam-supplied	n/a	n/a
<ul style="list-style-type: none"> No issues were identified this month. 			
Wind Speed (WS) / Wind Direction (WD)/ Stand Deviation Wind Direction (STDWD)	RM Young / 05305VK	56778	October 24, 2018
<ul style="list-style-type: none"> No issues were identified this month. 			
AQM Station	ITB Trailer	5CU098	n/a
<ul style="list-style-type: none"> No issues were identified this month. Datalogger updates were applied on August 26 during hour 14. One hour of data was invalidated due to this event. Hourly instantaneous maximum values recorded on August 26 between hour 10 and 12 were also invalidated due to datalogger update preparations. 			

Monitored Data Summary for August 2019

Parameter	Objectives/Guidelines			Exceedances			Monthly Avg.	Min. 1-hr	Max. 1-hr	Date/Time	VWS (km/hr)	VWD (sector)	Max. 24-hr	Date	Operational Uptime (%)	Valid Data (%)
	1-hr	24-hr	30-day	1-hr	24-hr	30-day										
SO2 (ppb)	172	48	11	0	0	0	0.1	0	2	August 8 at hour 9	7.7	SSE	0.5	August 8	99.9	94.7
H2S (ppb)	10	3	-	43	6	-	2.3	0	46	August 31 at hour 3	3.5	SE	12.5	August 21	99.2	94.1
Nox (ppb)	-	-	-	-	-	-	2.2	0	45	August 30 at hour 4	0.5	WNW	7.1	August 30	99.7	94.5
NO (ppb)	-	-	-	-	-	-	0.5	0	32	August 30 at hour 4	0.5	WNW	3.7	August 30	99.7	94.5
NO2 (ppb)	159	-	-	0	-	-	1.6	0	13	August 30 at hour 4	0.5	WNW	3.3	August 30	99.7	94.5
O3 (ppb)	82	-	-	0	-	-	21.8	1	41	August 14 at hour 16	18	WSW	30.4	August 21	99.9	94.7
THC (ppm)	-	-	-	-	-	-	2.11	1.87	3.68	August 30 at hour 6	1.8	NE	2.51	August 8	96.6	91.6
CH4 (ppm)	-	-	-	-	-	-	2.11	1.87	3.57	August 8 at hour 3	2.6	SE	2.51	August 8	96.6	91.6
NMHC (ppm)	-	-	-	-	-	-	0.00	0.00	0.31	August 30 at hour 6	1.8	NE	0.03	August 30	96.6	91.6
PM2.5 (µg/m3)	80	30	-	0	0	-	4.5	0.0	23.0	August 11 at hour 22	3.6	ESE	8.1	August 15	99.9	99.6
Stn. Temp. (°C)	-	-	-	-	-	-	22.5	18.6	24.6	August 31 at hour 4	0.6	E	23.2	August 26	99.9	99.9
WSV (km/hr)	-	-	-	-	-	-	5.2	0.1	39.4	August 16 at hour 14	39.4	NW	29.0	August 16	99.9	99.9
WDV (sector)	-	-	-	-	-	-	277 (W)	-	-	-	-	-	-	-	99.9	99.9

1- Date/ Time given is the first minimum and maximum value that was recorded

Alberta Ambient Air Quality Objectives (AAQOs) Exceedances

The following exceedances of AAQOs were observed at the Bonnyville - East Site.

Date	Time (MST)	Parameter	Average Period	AAQOs	Concentration	Wind speed	Wind Direction	Reference #
August 8	3	H2S	1-Hour	10 ppb	23 ppb	2.6 km/hr	148° (SE)	357235
August 8	-	H2S	24-Hour	3 ppb	4 ppb	7.7 km/hr	140 (SE)	357235
August 10	22	H2S	1-Hour	10 ppb	16 ppb	7.7 km/hr	275° (W)	357357
August 11	0	H2S	1-Hour	10 ppb	43 ppb	3.7 km/hr	123° (ESE)	357358
August 11	5	H2S	1-Hour	10 ppb	12 ppb	8.8 km/hr	140° (SE)	357358
August 11	22	H2S	1-Hour	10 ppb	37 ppb	3.6 km/hr	107° (ESE)	357358
August 11	-	H2S	24-Hour	3 ppb	7 ppb	8.8 km/hr	134 (SE)	357358
August 12	2	H2S	1-Hour	10 ppb	17 ppb	0.9 km/hr	74° (ENE)	357392
August 20	2	H2S	1-Hour	10 ppb	16 ppb	3.6 km/hr	215° (SSW)	357714
August 21	4	H2S	1-Hour	10 ppb	18 ppb	12.1 km/hr	146° (SE)	357766
August 21	9	H2S	1-Hour	10 ppb	12 ppb	24.9 km/hr	142° (SE)	357766
August 21	10	H2S	1-Hour	10 ppb	15 ppb	25.7 km/hr	145° (SE)	357766
August 21	11	H2S	1-Hour	10 ppb	12 ppb	29.4 km/hr	140° (SE)	357766
August 21	12	H2S	1-Hour	10 ppb	13 ppb	33.1 km/hr	142° (SE)	357766
August 21	13	H2S	1-Hour	10 ppb	18 ppb	35.2 km/hr	151° (SSE)	357766
August 21	14	H2S	1-Hour	10 ppb	18 ppb	36.4 km/hr	148° (SE)	357766
August 21	15	H2S	1-Hour	10 ppb	19 ppb	35.1 km/hr	149° (SSE)	357766
August 21	16	H2S	1-Hour	10 ppb	19 ppb	31.3 km/hr	148° (SE)	357766
August 21	17	H2S	1-Hour	10 ppb	20 ppb	29.4 km/hr	142° (SE)	357766
August 21	20	H2S	1-Hour	10 ppb	18 ppb	28.5 km/hr	142° (SE)	357766
August 21	21	H2S	1-Hour	10 ppb	27 ppb	32.1 km/hr	146° (SE)	357766
August 21	22	H2S	1-Hour	10 ppb	26 ppb	35.3 km/hr	151° (SSE)	357766
August 21	23	H2S	1-Hour	10 ppb	24 ppb	24.9 km/hr	140° (SE)	357766
August 21	-	H2S	24-Hour	3 ppb	13 ppb	24.4 km/hr	141 (SE)	357766
August 22	0	H2S	1-Hour	10 ppb	16 ppb	33.6 km/hr	155° (SSE)	357913
August 22	4	H2S	1-Hour	10 ppb	17 ppb	6.8 km/hr	159° (SSE)	357913
August 23	4	H2S	1-Hour	10 ppb	27 ppb	1.5 km/hr	122° (ESE)	357915
August 23	12	H2S	1-Hour	10 ppb	11 ppb	16.0 km/hr	140° (SE)	357915
August 23	16	H2S	1-Hour	10 ppb	13 ppb	12.1 km/hr	146° (SE)	357915
August 23	17	H2S	1-Hour	10 ppb	12 ppb	12.6 km/hr	139° (SE)	357915
August 23	18	H2S	1-Hour	10 ppb	12 ppb	15.8 km/hr	139° (SE)	357915
August 23	19	H2S	1-Hour	10 ppb	24 ppb	13.0 km/hr	151° (SSE)	357915
August 23	20	H2S	1-Hour	10 ppb	29 ppb	11.3 km/hr	146° (SE)	357915
August 23	-	H2S	24-Hour	3 ppb	8 ppb	10.0 km/hr	142 (SE)	357915
August 27	21	H2S	1-Hour	10 ppb	31 ppb	9.0 km/hr	146° (SE)	358137
August 29	19	H2S	1-Hour	10 ppb	22 ppb	2.9 km/hr	160° (SSE)	358258

August 29	22	H2S	1-Hour	10 ppb	20 ppb	1.2 km/hr	262° (W)	358258
August 30	2	H2S	1-Hour	10 ppb	26 ppb	1.3 km/hr	105° (ESE)	358295
August 30	3	H2S	1-Hour	10 ppb	10 ppb	0.4 km/hr	55° (NE)	358295
August 30	4	H2S	1-Hour	10 ppb	11 ppb	0.5 km/hr	286° (WNW)	358295
August 30	5	H2S	1-Hour	10 ppb	29 ppb	1.1 km/hr	84° (E)	358295
August 30	6	H2S	1-Hour	10 ppb	14 ppb	1.8 km/hr	45° (NE)	358295
August 30	7	H2S	1-Hour	10 ppb	10 ppb	2.0 km/hr	41° (NE)	358295
August 30	-	H2S	24-Hour	3 ppb	5 ppb	5.6 km/hr	209 (SSW)	358295
August 31	3	H2S	1-Hour	10 ppb	46 ppb	3.5 km/hr	142° (SE)	358296
August 31	4	H2S	1-Hour	10 ppb	28 ppb	0.6 km/hr	93° (E)	358296
August 31	5	H2S	1-Hour	10 ppb	21 ppb	1.1 km/hr	142° (SE)	358296
August 31	6	H2S	1-Hour	10 ppb	16 ppb	1.0 km/hr	171° (S)	358296
August 31	-	H2S	24-Hour	3 ppb	6 ppb	4.8 km/hr	261 (W)	358296

TABLES, CHARTS, WIND ROSES AND EQUIPMENT CALIBRATION RECORDS

COLD LAKE SOUTH STATION



LAKELAND INDUSTRY & COMMUNITY ASSOCIATION

Cold Lake South Station - August 2019

Summary of Hourly Averages

SULPHUR DIOXIDE (SO₂) in ppb

Alberta Ambient Air Quality Objectives (AAAQO): 1-Hour 172 ppb, 24-Hour 48 ppb, 30-Day 11 ppb

Number of 1-Hour Exceedences: 0 Number of 24-Hour Exceedences: 0 30-Day Exceedence: 0

Maximum Hourly Value:	2 ppb on August 18 at hour 7	Hours in Service:	744
Maximum Daily Value:	0.3 ppb on August 18	Hours of Data:	706
Minimum Hourly Value:	0 ppb on August 1 at hour 1	Hours of Missing Data:	1
Minimum Daily Value:	0.0 ppb on August 1	Hours of Calibration:	37
Monthly Average:	0.1 ppb	Operational Uptime:	99.9

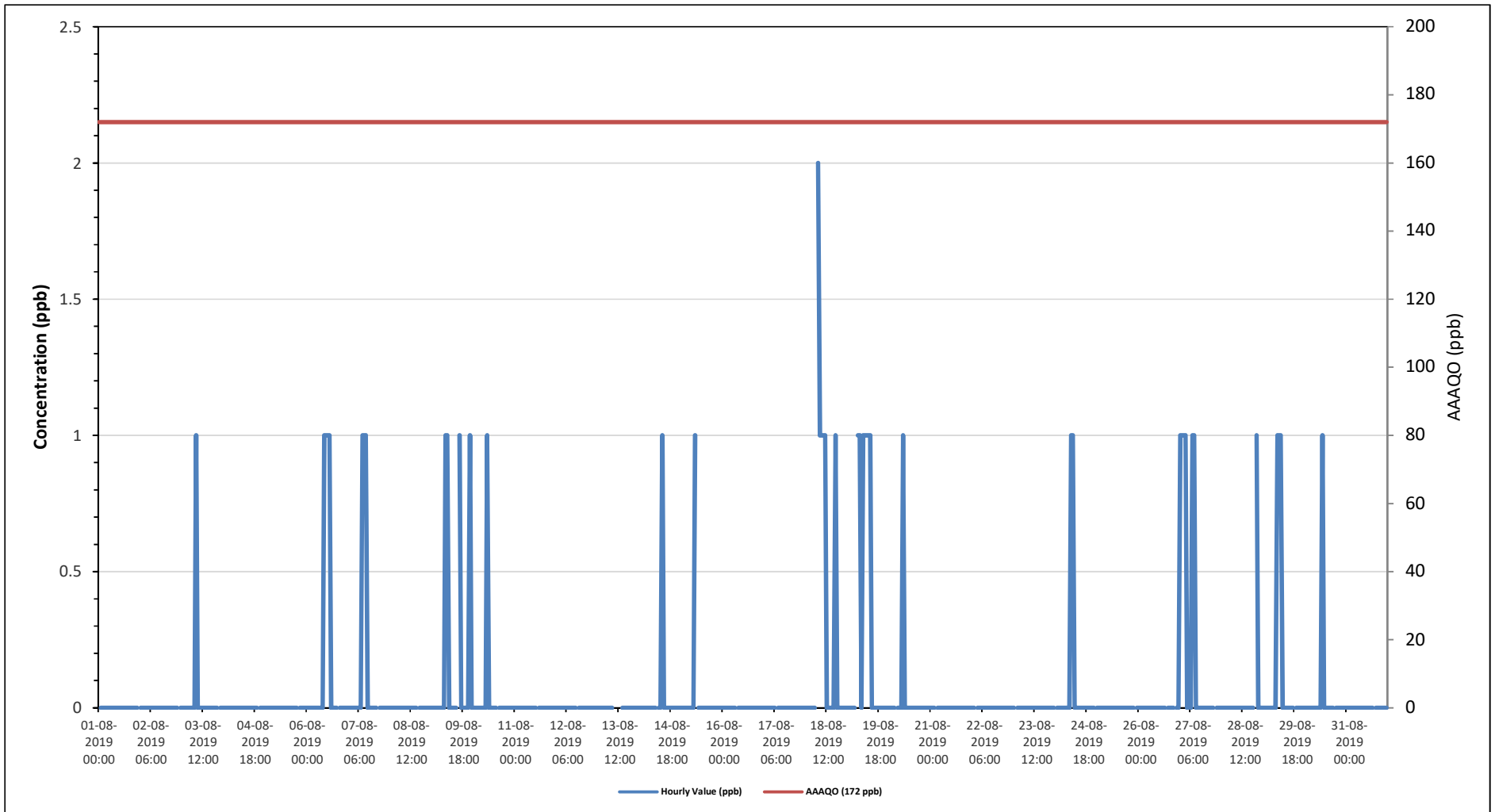
Day	Hourly Period Starting at (MST)																							Daily Minimum	Daily Maximum	Daily Average		
	0	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22				23	
Aug 1	S	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	S	0	0	0.0	
Aug 2	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	S	0	0	0.0	
Aug 3	0	0	0	0	0	0	0	0	1	0	0	0	0	0	0	0	0	0	0	0	0	0	S	0	0	1	0.0	
Aug 4	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	S	0	0	0	0	0.0	
Aug 5	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	S	0	0	0	0	0	0	0.0	
Aug 6	0	0	0	0	0	0	0	0	0	0	1	1	1	1	0	0	0	0	S	0	0	0	0	0	0	0	1	0.2
Aug 7	0	0	0	0	0	0	0	0	1	1	1	1	0	0	0	0	0	S	0	0	0	0	0	0	0	0	1	0.1
Aug 8	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	S	0	0	0	0	0	0	0	0	0	0.0
Aug 9	0	0	0	0	0	0	0	0	1	1	0	0	0	0	0	0	S	1	0	0	0	0	0	1	0	1	0.2	
Aug 10	0	0	0	0	0	0	0	0	1	0	0	0	0	0	S	0	0	0	0	0	0	0	0	0	0	0	1	0.0
Aug 11	0	0	0	0	0	0	0	0	0	0	0	0	0	S	0	0	0	0	0	0	0	0	0	0	0	0	0	0.0
Aug 12	0	0	0	0	0	0	0	0	0	0	0	0	S	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0.0
Aug 13	0	0	0	0	0	0	0	0	0	0	C	C	C	C	0	0	0	0	0	0	0	0	0	0	0	0	0	0.0
Aug 14	0	0	0	0	0	0	0	0	0	0	0	S	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1	0.0
Aug 15	0	0	0	0	0	0	0	0	1	S	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1	0.0
Aug 16	0	0	0	0	0	0	0	0	0	S	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0.0
Aug 17	0	0	0	0	0	0	0	0	0	S	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0.0
Aug 18	0	0	0	0	0	0	S	2	1	1	1	1	0	0	0	0	0	0	1	0	0	0	0	0	0	0	2	0.3
Aug 19	0	0	0	0	0	S	1	1	0	1	1	1	1	1	0	0	0	0	0	0	0	0	0	0	0	0	1	0.3
Aug 20	0	0	0	0	0	S	0	0	0	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1	0.0
Aug 21	0	0	0	0	S	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0.0
Aug 22	0	0	S	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0.0
Aug 23	0	S	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0.0
Aug 24	S	0	0	0	0	0	0	0	0	0	1	1	0	0	0	0	0	0	0	0	0	0	0	0	0	S	1	0.1
Aug 25	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	S	0	0	0.0
Aug 26	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	Y	0	0	0	0	0	S	0	0	0	0.0
Aug 27	1	1	1	1	0	0	0	1	1	0	0	0	0	0	0	0	0	0	0	0	0	0	S	0	0	0	1	0.3
Aug 28	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	S	1	0	0	0	1	0.0
Aug 29	0	0	0	0	0	0	0	0	1	1	1	0	0	0	0	0	0	0	0	S	0	0	0	0	0	0	1	0.1
Aug 30	0	0	0	0	0	0	0	0	0	0	1	0	0	0	0	0	0	0	0	S	0	0	0	0	0	0	1	0.0
Aug 31	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	S	0	0	0	0	0	0	0	0	0	0	0.0
Diurnal Maximum	1	1	1	1	0	0	1	2	1	1	1	1	1	0	0	1	1	0	0	1	0	1	0	1	0	0	0	0
Daiurnal Average	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.1	0.3	0.2	0.2	0.1	0.1	0.1	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0

C	Calibration	S	Daily Zero/Span	Q	Quality Assurance	C1	Repeat Calibration	S1	Repeat Daily Zero/Span
G	Out for Repair	K	Collection Error	N	Not in Service	O	Operator Error	P	Power Failure
R	Recovery	X	Machine Malfunction	Y	Maintenance	T	Exceeds Temperature Limits	N	Not in Service

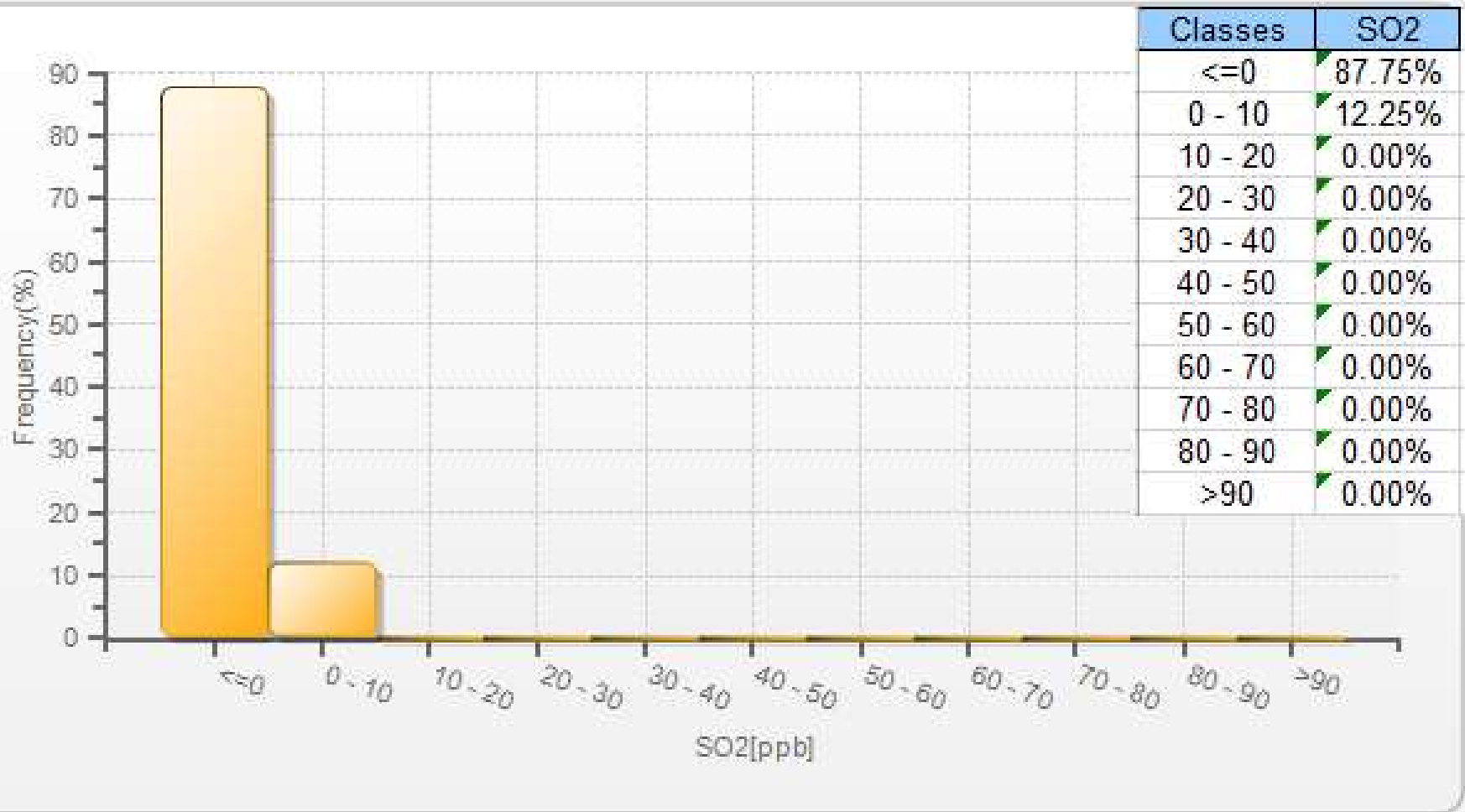
Daily Average is shown "-" if minimum data completeness criteria of 75% or 18 hours per day is not met.

Monthly Average is shown "-" if minimum data completeness criteria of 75% of days per month is not met.

Timeseries Chart of Hourly Average for SO2 - Cold Lake South Station

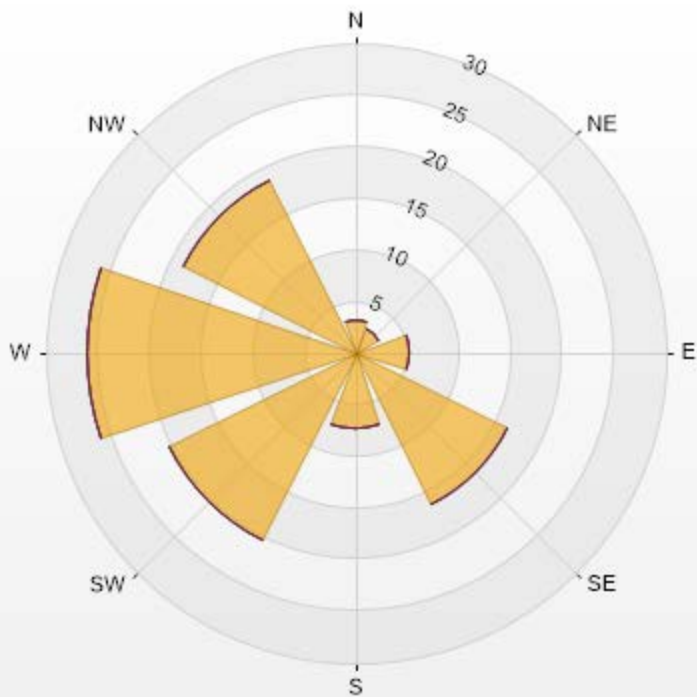


SO2[ppb] Histogram: Cold Lake South Monthly: 08-2019 1 Hr.



Wind: Cold Lake South Poll.: Cold Lake South-SO2[ppb] Monthly: 08-2019 Type: PollutionRose Direction: Blowing From (Wind Frequency) Based On 1 Hr.
 Calm: 0.00% Valid Data: 94.35% Calm Avg: 0.00 [ppb]

Direction	0-10	10-50	50-100	100-172	>172.0	Total
N	3.28	0	0	0	0	3.28
NE	2.56	0	0	0	0	2.56
E	5.27	0	0	0	0	5.27
SE	16.52	0	0	0	0	16.52
S	7.41	0	0	0	0	7.41
SW	20.23	0	0	0	0	20.23
W	26.07	0	0	0	0	26.07
NW	18.66	0	0	0	0	18.66
Summary	100	0	0	0	0	100



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% Icon Classes (ppb)

100

0-10

0

50-100

0

100-172

0

>172.0

0



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Cold Lake South Station - August 2019

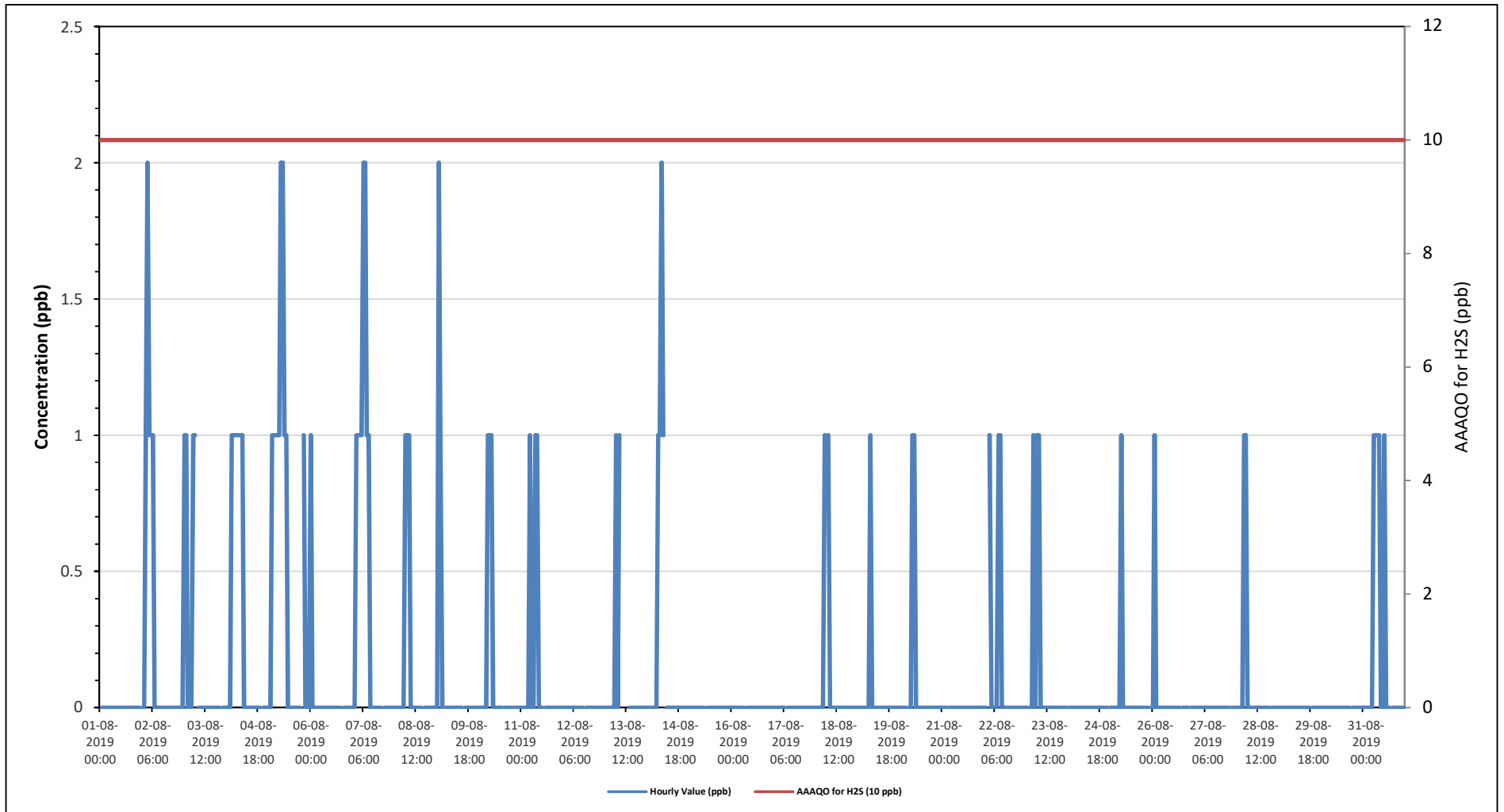
Summary of Hourly Averages

TOTAL REDUCED SULPHUR (TRS) in ppb

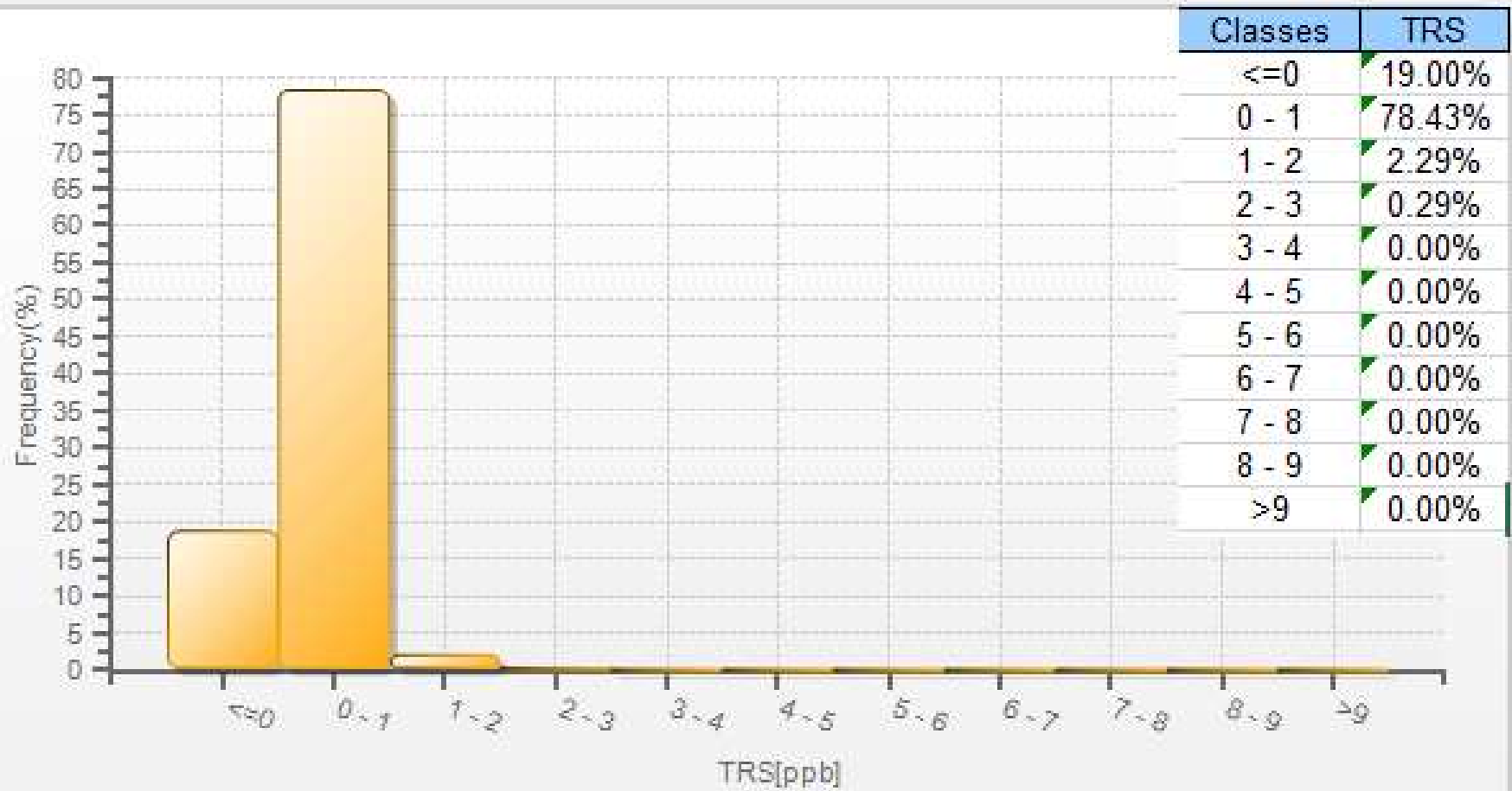
Alberta Ambient Air Quality Objectives (AAAQO) for H2S: 1-Hour 10 ppb, 24-Hour 3 ppb																												
Number of 1-Hour Exceedences: 0						Number of 24-Hour Exceedences: 0																						
Maximum Hourly Value: 2 ppb on August 2 at hour 3						Hours in Service: 744																						
Maximum Daily Value: 1 ppb on August 5						Hours of Data: 705																						
Minimum Hourly Value: 0 ppb on August 1 at hour 1						Hours of Missing Data: 2																						
Minimum Daily Value: 0 ppb on August 1						Hours of Calibration: 37																						
Monthly Average: 0.11 ppb						Operational Uptime: 99.7																						
Day	Hourly Period Starting at (MST)																							Daily Minimum	Daily Maximum	Daily Average		
	0	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22				23	
Aug 1	S	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	S	0	0	0	0.00
Aug 2	0	0	1	2	1	1	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	S	0	0	2	0.26
Aug 3	1	1	0	0	1	1	1	S1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	S	0	0	1	0.18	
Aug 4	0	0	0	1	1	1	1	1	1	1	0	0	0	0	0	0	0	0	0	0	S	0	0	0	0	1	0.30	
Aug 5	0	0	1	1	1	1	1	2	2	1	1	0	0	0	0	0	0	0	0	S	1	0	0	0	0	2	0.52	
Aug 6	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	S	S	0	0	0	0	0	1	0.04	
Aug 7	0	0	1	1	1	1	2	2	1	1	0	0	0	0	0	0	0	0	S	0	0	0	0	0	0	2	0.43	
Aug 8	0	0	0	0	0	0	1	1	1	0	0	0	0	0	0	0	0	S	0	0	0	0	0	0	0	1	0.13	
Aug 9	0	2	1	0	0	0	0	0	0	0	0	0	0	0	0	0	S	S	0	0	0	0	0	0	0	2	0.13	
Aug 10	0	0	0	0	0	1	1	1	0	0	0	0	0	0	S	S	0	0	0	0	0	0	0	0	0	1	0.13	
Aug 11	0	0	0	0	0	1	0	0	1	1	0	0	0	S	0	0	0	0	0	0	0	0	0	0	0	1	0.13	
Aug 12	0	0	0	0	0	0	0	0	0	0	0	0	S	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0.00
Aug 13	0	0	0	0	0	0	1	0	1	C	C	C	C	C	0	0	0	0	0	0	0	0	0	0	0	1	0.11	
Aug 14	0	0	0	0	0	0	1	1	2	1	S	0	0	0	0	0	0	0	0	0	0	0	0	0	0	2	0.22	
Aug 15	0	0	0	0	0	0	0	0	0	S	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0.00
Aug 16	0	0	0	0	0	0	0	0	S	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0.00
Aug 17	0	0	0	0	0	0	0	S	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0.00
Aug 18	0	0	0	0	0	1	S	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1	0.09	
Aug 19	0	0	0	0	0	S	0	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1	0.04	
Aug 20	0	0	0	0	S	0	0	1	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1	0.09	
Aug 21	0	0	0	S	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0.00
Aug 22	0	0	S	1	0	0	0	0	1	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1	0.13	
Aug 23	0	S	0	0	1	0	1	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1	0.13	
Aug 24	S	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0.00
Aug 25	0	0	0	0	0	0	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	S	0	1	0.04	
Aug 26	0	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	Y	0	0	0	0	0	S	0	0	1	0.05	
Aug 27	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	S	0	0	0	0	0	0	0.00
Aug 28	0	0	0	0	1	1	0	0	0	0	0	0	0	0	0	0	0	0	0	S	S	0	0	0	0	1	0.09	
Aug 29	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	S	0	0	0	0	0	0	0	0.00
Aug 30	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	S	0	0	0	0	0	0	0	0	0.00
Aug 31	0	0	0	0	0	0	1	1	1	1	0	0	1	0	0	0	S	0	0	0	0	0	0	0	0	1	0.22	
Diurnal Maximum	1.00	2.00	1.00	2.00	1.00	1.00	2.00	2.00	2.00	1.00	1.00	0.00	1.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Daiurnal Average	0.07	0.13	0.13	0.20	0.20	0.30	0.43	0.45	0.40	0.24	0.03	0.00	0.03	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.03	0.00	0.00
C	Calibration				S	Daily Zero/Span				Q	Quality Assurance				C1	Repeat Calibration				S1	Repeat Daily Zero/Span							
G	Out for Repair				K	Collection Error				N	Not in Service				O	Operator Error				P	Power Failure							
R	Recovery				X	Machine Malfunction				Y	Maintenance				T	Exceeds Temperature Limits				N	Not in Service							

Daily Average is shown "-" if minimum data completeness criteria of 75% or 18 hours per day is not met.
 Monthly Average is shown "-" if minimum data completeness criteria of 75% of days per month is not met.

Timeseries Chart of Hourly Average for TRS - Cold Lake South Station

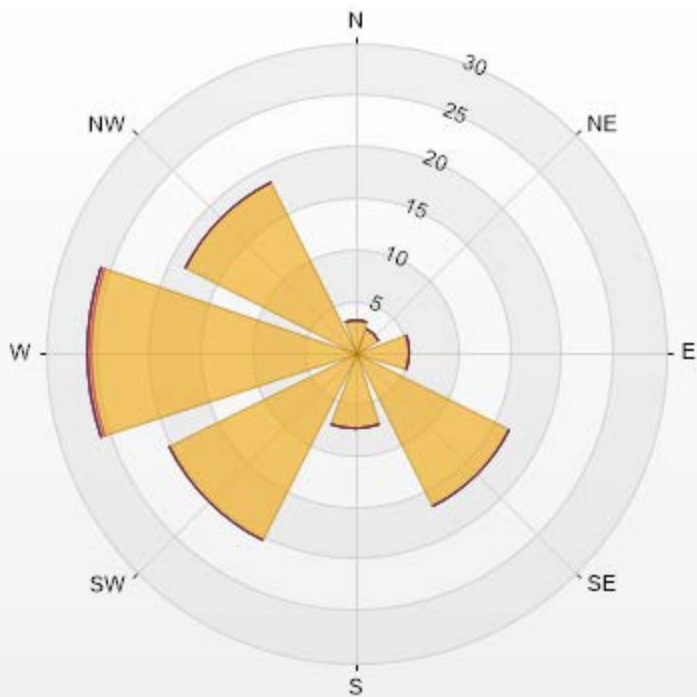


TRS[ppb] Histogram: Cold Lake South Monthly: 08-2019 1 Hr.



Wind: Cold Lake South Poll.: Cold Lake South-TRS[ppb] Monthly: 08-2019 Type: PollutionRose Direction: Blowing From (Wind Frequency) Based On 1 Hr.
 Calm: 0.00% Valid Data: 94.09% Calm Avg: 0.00 [ppb]

Direction	0-2	2-5	5-10	10-50	>50.0	Total
N	3.29	0	0	0	0	3.29
NE	2.57	0	0	0	0	2.57
E	5.29	0	0	0	0	5.29
SE	16.57	0	0	0	0	16.57
S	7.43	0	0	0	0	7.43
SW	20.29	0	0	0	0	20.29
W	25.57	0.43	0	0	0	26
NW	18.57	0	0	0	0	18.57
Summary	100	0.43	0	0	0	100



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% Icon Classes (ppb)	100	0-2	0-5	5-10	0	10-50	0	>50.0



LAKELAND INDUSTRY & COMMUNITY ASSOCIATION

Cold Lake South Station - August 2019

Summary of Hourly Averages

OXIDES OF NITROGEN (NOx) in ppb

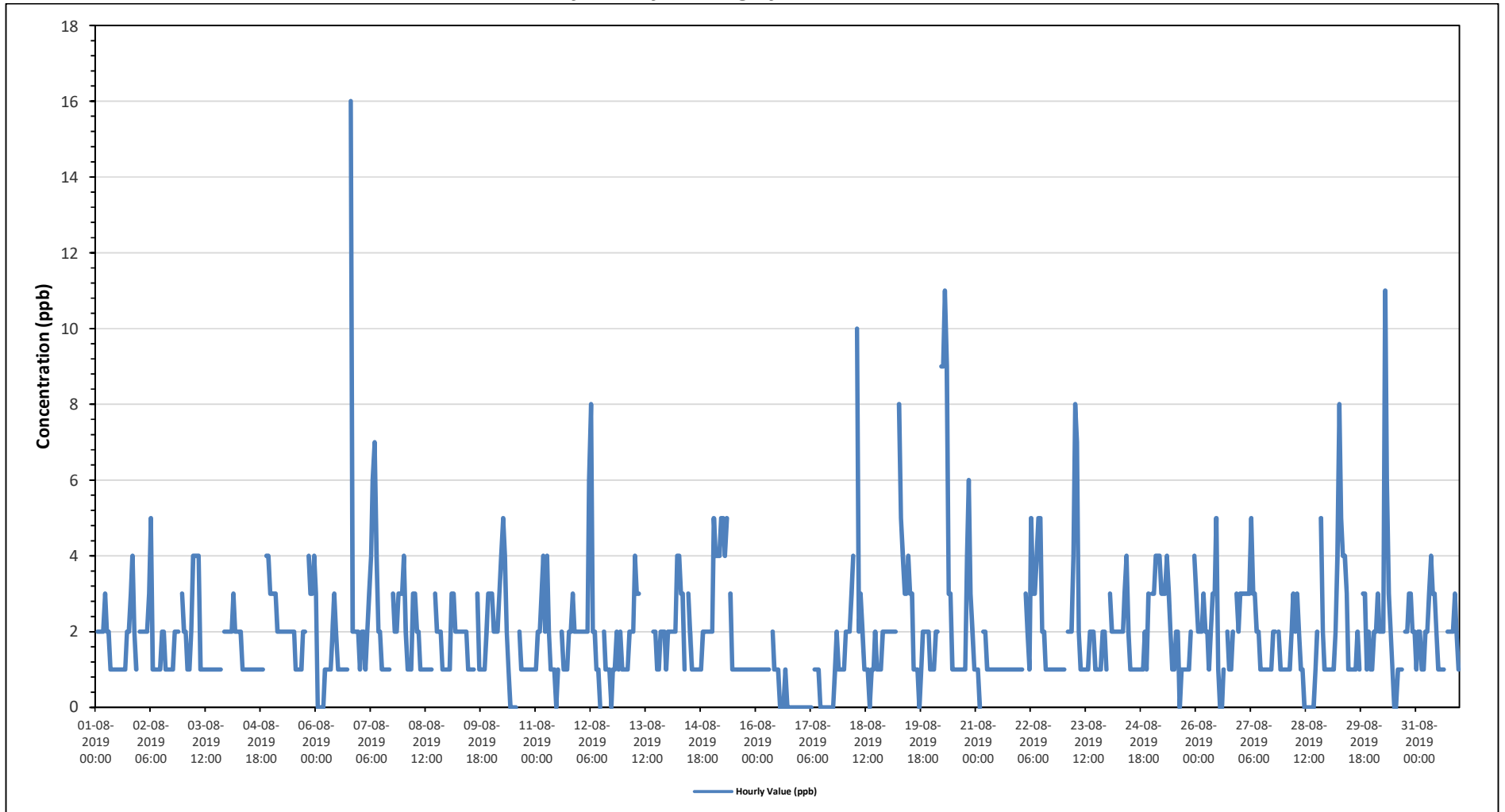
Maximum Hourly Value:	16 ppb on August 6 at hour 19	Hours in Service:	744
Maximum Daily Value:	3.2 ppb on August 20	Hours of Data:	704
Minimum Hourly Value:	0 ppb on August 6 at hour 1	Hours of Missing Data:	1
Minimum Daily Value:	0.4 ppb on August 17	Hours of Calibration:	39
Monthly Average:	1.9 ppb	Operational Uptime:	99.9

Day	Hourly Period Starting at (MST)																							Daily Minimum	Daily Maximum	Daily Average		
	0	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22				23	
Aug 1	S	2	2	2	2	3	2	2	1	1	1	1	1	1	1	1	2	2	3	4	2	1	S	1	4	1.7		
Aug 2	2	2	2	2	2	3	5	1	1	1	1	1	2	2	1	1	1	1	1	2	2	2	S	3	1	5	1.8	
Aug 3	2	2	1	1	2	4	4	4	4	1	1	1	1	1	1	1	1	1	1	1	1	S	2	2	1	4	1.7	
Aug 4	2	2	2	3	2	2	2	2	1	1	1	1	1	1	1	1	1	1	1	1	S	4	4	3	1	4	1.7	
Aug 5	3	3	3	2	2	2	2	2	2	2	2	2	2	2	1	1	2	2	S	4	3	3	4	1	4	2.2		
Aug 6	3	0	0	0	0	1	1	1	1	2	3	2	1	1	1	1	1	2	S	16	2	2	2	2	0	16	1.9	
Aug 7	1	2	2	1	2	3	4	6	7	4	2	2	1	1	1	1	S	3	2	2	3	3	3	1	7	2.5		
Aug 8	4	2	1	1	1	3	3	2	2	1	1	1	1	1	1	S	3	2	2	2	2	1	1	1	4	1.7		
Aug 9	1	1	3	3	2	2	2	2	2	2	1	1	1	1	S	3	1	1	1	1	1	2	3	3	1	3	1.8	
Aug 10	3	2	2	2	3	4	5	4	2	1	0	0	0	S	2	1	1	1	1	1	1	1	1	1	0	5	1.7	
Aug 11	1	2	2	3	4	2	4	2	1	1	1	0	1	S	2	1	1	1	2	2	3	2	2	2	0	4	1.8	
Aug 12	2	2	2	2	2	6	8	2	2	1	1	0	S	2	1	1	1	0	1	1	2	1	2	1	0	8	1.9	
Aug 13	1	1	1	2	2	2	4	3	3	C	C	C	C	C	C	2	2	1	1	2	2	2	2	1	1	4	-	
Aug 14	2	2	2	2	2	4	4	3	3	1	S	3	2	1	1	1	1	1	1	2	2	2	2	2	1	4	2.0	
Aug 15	2	5	4	4	4	5	5	4	5	S	3	1	1	1	1	1	1	1	1	1	1	1	1	1	1	5	2.3	
Aug 16	1	1	1	1	1	1	1	1	S	2	1	1	1	0	0	0	0	0	0	0	0	0	0	0	0	2	0.6	
Aug 17	0	0	0	0	0	0	0	S	1	1	1	0	0	0	0	0	0	0	0	0	1	2	1	1	1	0	2	0.4
Aug 18	1	2	2	2	3	4	S	10	2	3	2	1	1	1	0	1	1	2	1	1	1	2	2	2	0	10	2.0	
Aug 19	2	2	2	2	2	S	8	5	4	3	3	4	3	3	1	1	1	0	1	2	2	2	2	1	0	8	2.4	
Aug 20	1	1	2	2	S	9	9	11	9	3	3	1	1	1	1	1	1	1	1	4	6	3	2	1	11	3.2		
Aug 21	1	1	0	S	2	2	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	0	2	1.0	
Aug 22	1	1	S	3	2	1	5	3	3	4	5	5	2	2	1	1	1	1	1	1	1	1	1	1	1	5	2.0	
Aug 23	1	S	2	2	2	4	8	7	2	1	1	1	1	1	2	2	2	1	1	1	1	2	2	1	1	8	2.1	
Aug 24	S	3	2	2	2	2	2	2	3	4	2	1	1	1	1	1	1	1	1	1	2	1	3	S	1	4	1.8	
Aug 25	3	3	4	4	4	3	3	3	4	3	2	1	1	2	2	0	1	1	1	1	1	2	2	S	4	0	4	2.3
Aug 26	3	2	2	2	3	2	2	1	2	3	3	5	1	0	0	1	Y	2	1	1	2	S	3	2	0	5	2.0	
Aug 27	3	3	3	3	3	3	5	3	3	2	2	1	1	1	1	1	1	1	2	2	S	2	1	1	1	5	2.1	
Aug 28	1	1	1	1	2	3	2	3	2	1	1	0	0	0	0	0	0	0	1	2	S	5	2	1	1	0	5	1.3
Aug 29	1	1	1	1	2	4	8	5	4	4	3	1	1	1	1	1	2	1	S	3	3	1	2	1	1	8	2.3	
Aug 30	1	2	2	3	2	2	2	11	6	3	2	1	0	0	1	1	1	S	2	2	3	3	2	2	0	11	2.3	
Aug 31	1	2	2	1	1	2	2	3	4	3	3	2	1	1	1	S	2	2	2	2	2	3	2	1	1	4	1.9	
Diurnal Maximum	4	5	4	4	4	9	9	11	9	4	5	5	3	3	2	2	3	3	3	16	6	4	4	4	4			
Diurnal Average	1.7	1.8	1.8	2.0	2.1	2.9	3.8	3.6	2.9	2.0	1.9	1.4	1.1	1.0	0.9	0.9	1.1	1.1	1.3	2.0	2.1	1.9	1.9	1.7				

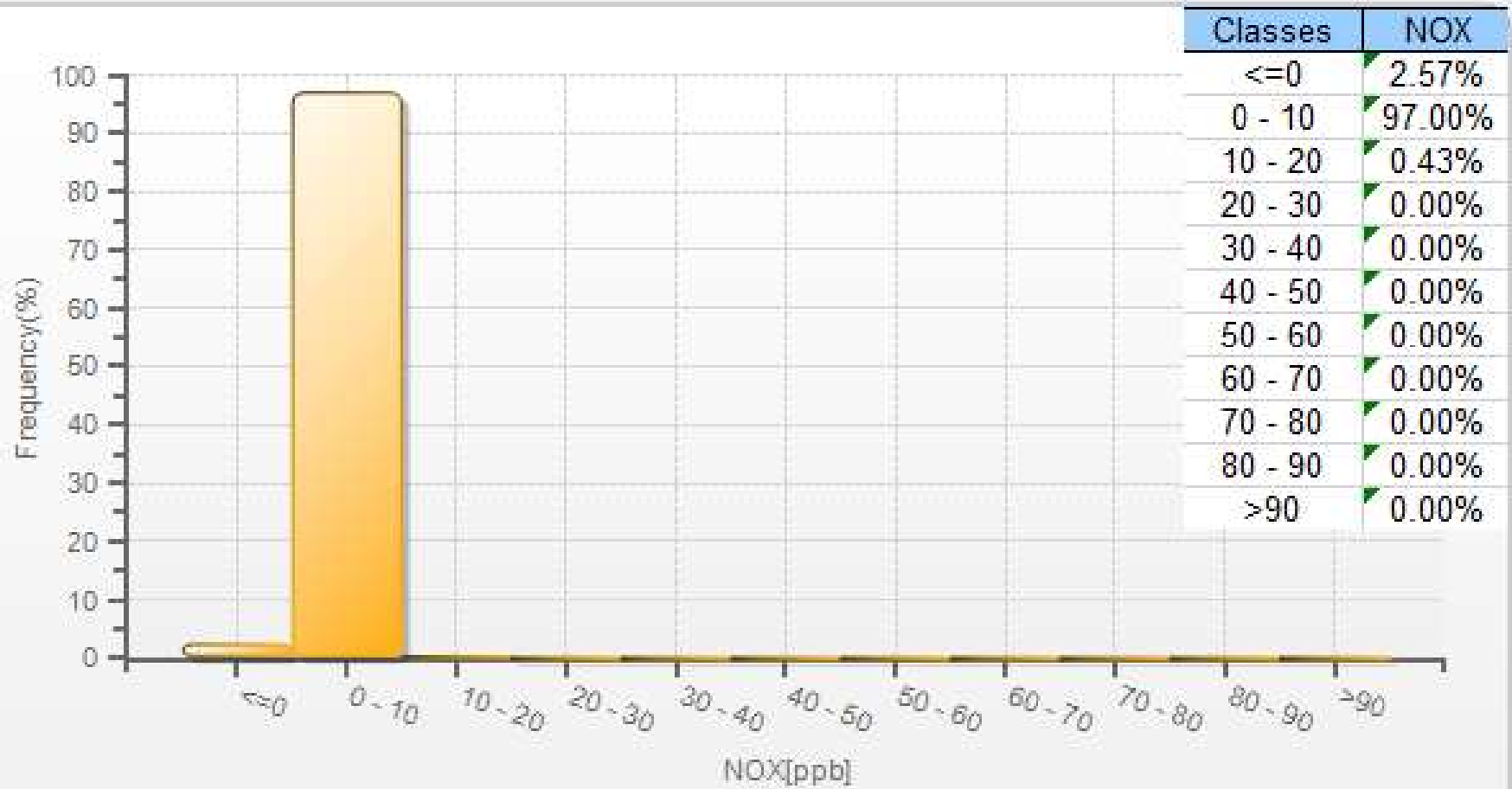
C	Calibration	S	Daily Zero/Span	Q	Quality Assurance	C1	Repeat Calibration	S1	Repeat Daily Zero/Span
G	Out for Repair	K	Collection Error	N	Not in Service	O	Operator Error	P	Power Failure
R	Recovery	X	Machine Malfunction	Y	Maintenance	T	Exceeds Temperature Limits	N	Not in Service

Daily Average is shown "-" if minimum data completeness criteria of 75% or 18 hours per day is not met.
 Monthly Average is shown "-" if minimum data completeness criteria of 75% of days per month is not met.

Timeseries Chart of Hourly Average for NOx - Cold Lake South Station

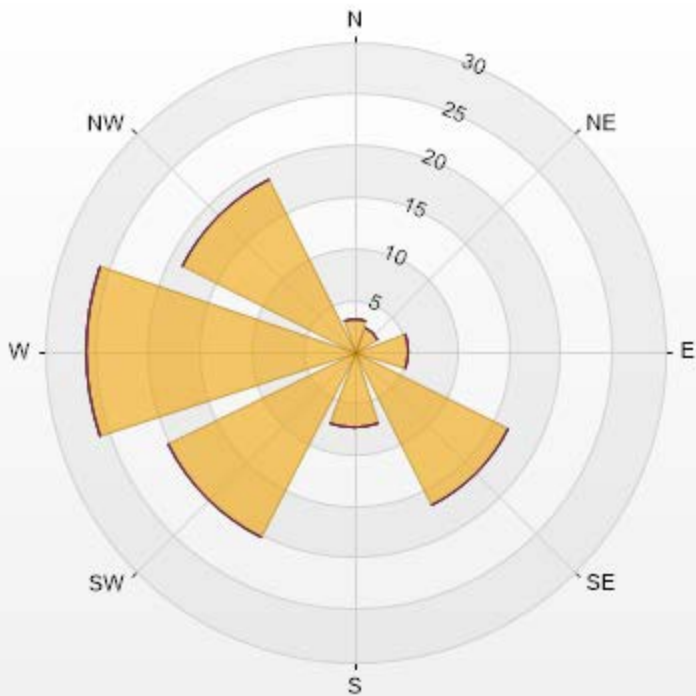


NOX[ppb] Histogram: Cold Lake South Monthly: 08-2019 1 Hr.



Wind: Cold Lake South Poll.: Cold Lake South-NOX[ppb] Monthly: 08-2019 Type: PollutionRose Direction: Blowing From (Wind Frequency) Based On 1 Hr.
 Calm: 0.00% Valid Data: 94.09% Calm Avg: 0.00 [ppb]

Direction	0-30	30-50	50-82	82-159	>159.0	Total
N	3.29	0	0	0	0	3.29
NE	2.57	0	0	0	0	2.57
E	5.29	0	0	0	0	5.29
SE	16.57	0	0	0	0	16.57
S	7.43	0	0	0	0	7.43
SW	20.14	0	0	0	0	20.14
W	26	0	0	0	0	26
NW	18.71	0	0	0	0	18.71
Summary	100	0	0	0	0	100



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% Icon Classes (ppb)	100	0-30	0	30-50	50-82	0	82-159	0	>159.0



LAKELAND INDUSTRY & COMMUNITY ASSOCIATION

Cold Lake South Station - August 2019

Summary of Hourly Averages

NITRIC OXIDE (NO) in ppb

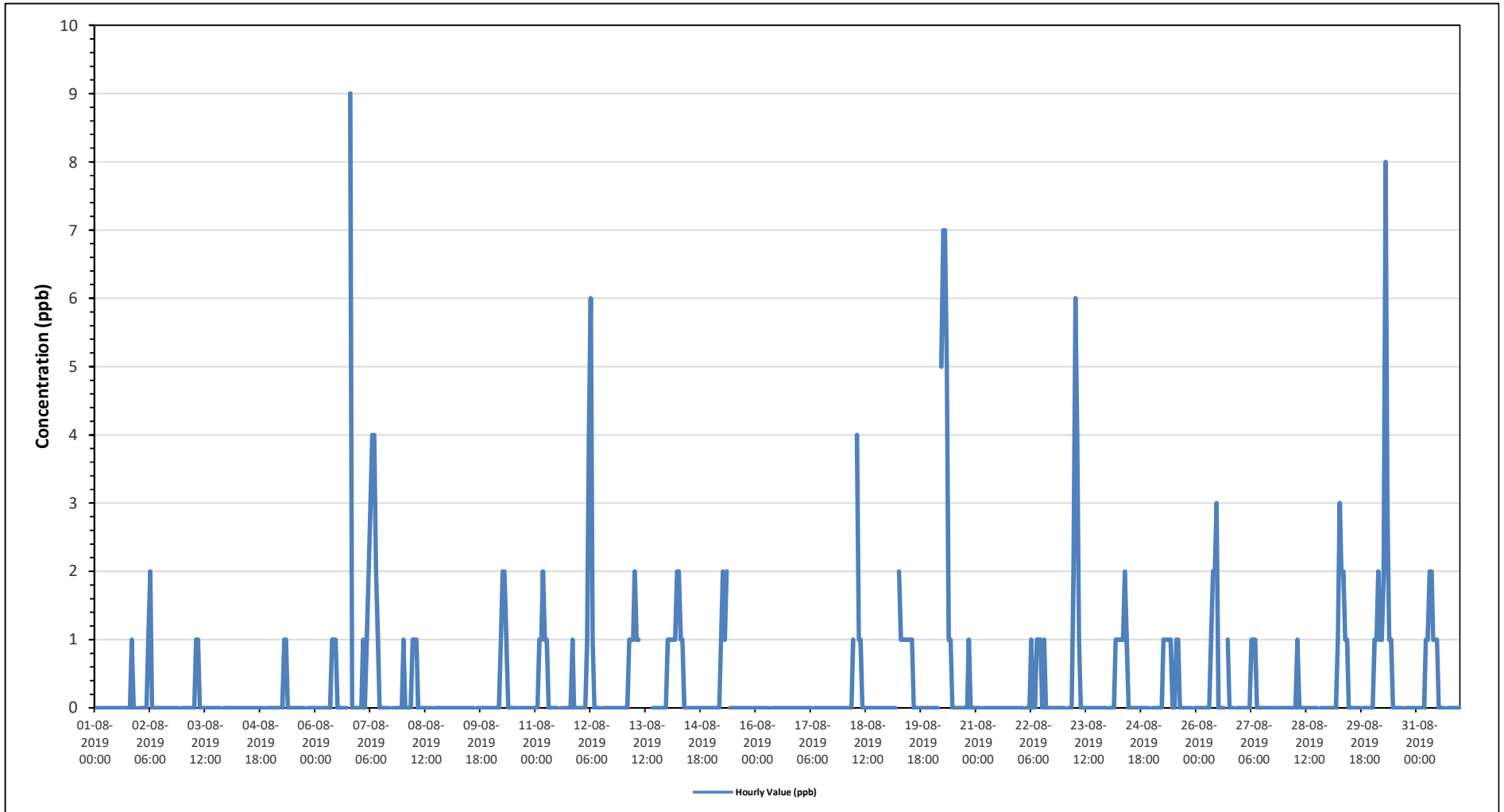
Maximum Hourly Value:	9 ppb on August 6 at hour 19	Hours in Service:	744
Maximum Daily Value:	1.2 ppb on August 20	Hours of Data:	704
Minimum Hourly Value:	0 ppb on August 1 at hour 1	Hours of Missing Data:	1
Minimum Daily Value:	0.0 ppb on August 4	Hours of Calibration:	39
Monthly Average:	0.3 ppb	Operational Uptime:	99.9

Day	Hourly Period Starting at (MST)																							Daily Minimum	Daily Maximum	Daily Average		
	0	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22				23	
Aug 1	S	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1	0	0	S	0	1	0.0	
Aug 2	0	0	0	0	0	1	2	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	S	S	0	0	2	0.1
Aug 3	0	0	0	0	0	0	0	1	1	0	0	0	0	0	0	0	0	0	0	0	0	0	S	S	0	0	1	0.1
Aug 4	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	S	S	0	0	0	0	0.0
Aug 5	0	0	0	0	0	0	0	1	1	0	0	0	0	0	0	0	0	0	0	0	S	S	0	0	0	0	1	0.1
Aug 6	0	0	0	0	0	0	0	0	0	1	1	0	0	0	0	0	0	0	0	S	S	9	0	0	0	0	9	0.5
Aug 7	0	0	1	0	1	2	3	4	4	2	1	0	0	0	0	0	0	S	S	0	0	0	0	0	0	0	4	0.8
Aug 8	1	0	0	0	0	1	1	1	0	0	0	0	0	0	0	0	S	S	0	0	0	0	0	0	0	0	1	0.2
Aug 9	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	S	S	0	0	0	0	0	0	0	0	0	0	0.0
Aug 10	0	0	0	0	0	1	2	2	1	0	0	0	0	0	S	S	0	0	0	0	0	0	0	0	0	0	2	0.3
Aug 11	0	0	1	1	2	1	1	0	0	0	0	0	0	S	S	0	0	0	0	0	0	1	0	0	0	0	2	0.3
Aug 12	0	0	0	0	1	4	6	1	0	0	0	0	S	S	0	0	0	0	0	0	0	0	0	0	0	0	6	0.5
Aug 13	0	0	0	1	1	1	2	1	1	C	C	C	C	C	C	C	0	0	0	0	0	0	0	0	0	0	2	-
Aug 14	1	1	1	1	1	2	2	1	1	0	S	S	0	0	0	0	0	0	0	0	0	0	0	0	0	0	2	0.5
Aug 15	0	0	0	0	0	1	2	1	2	S	S	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	2	0.3
Aug 16	0	0	0	0	0	0	0	0	S	S	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0.0
Aug 17	0	0	0	0	0	0	0	S	S	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0.0
Aug 18	0	0	0	0	0	1	S	4	1	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	4	0.3
Aug 19	0	0	0	0	0	S	2	1	1	1	1	1	1	1	0	0	0	0	0	0	0	0	0	0	0	0	2	0.4
Aug 20	0	0	0	0	0	S	5	7	7	5	1	1	0	0	0	0	0	0	0	0	0	1	0	0	0	0	7	1.2
Aug 21	0	0	0	0	S	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0.0
Aug 22	0	0	S	0	0	0	1	0	0	1	1	1	0	1	0	0	0	0	0	0	0	0	0	0	0	0	1	0.2
Aug 23	0	S	0	0	0	2	6	4	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	6	0.6
Aug 24	S	0	0	0	1	1	1	1	1	2	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	2	0.4
Aug 25	0	0	0	0	0	0	1	1	1	1	1	1	0	0	1	1	0	0	0	0	0	0	0	S	S	0	1	0.3
Aug 26	0	0	0	0	0	0	0	0	1	2	2	3	0	0	0	0	0	0	0	0	0	0	S	S	0	0	3	0.4
Aug 27	0	0	0	0	0	0	1	1	1	0	0	0	0	0	0	0	0	0	0	0	0	S	S	0	0	1	0.1	
Aug 28	0	0	0	0	0	0	0	1	0	0	0	0	0	0	0	0	0	0	0	0	0	S	S	0	0	0	1	0.0
Aug 29	0	0	0	0	0	1	3	2	2	1	1	0	0	0	0	0	0	0	0	0	S	S	0	0	0	0	3	0.4
Aug 30	0	1	1	2	1	1	2	8	3	1	1	0	0	0	0	0	0	0	0	0	S	S	0	0	0	0	8	0.9
Aug 31	0	0	0	0	0	1	2	2	1	1	0	0	0	0	S	S	0	0	0	0	0	0	0	0	0	0	2	0.4
Diurnal Maximum	1	1	1	2	2	5	7	8	5	2	2	3	1	1	1	0	0	0	0	0	9	1	0	0	0	0		
Diurnal Average	0.1	0.1	0.1	0.2	0.3	0.9	1.5	1.5	1.0	0.5	0.4	0.2	0.0	0.1	0.0	0.0	0.0	0.0	0.0	0.0	0.3	0.1	0.0	0.0	0.0			

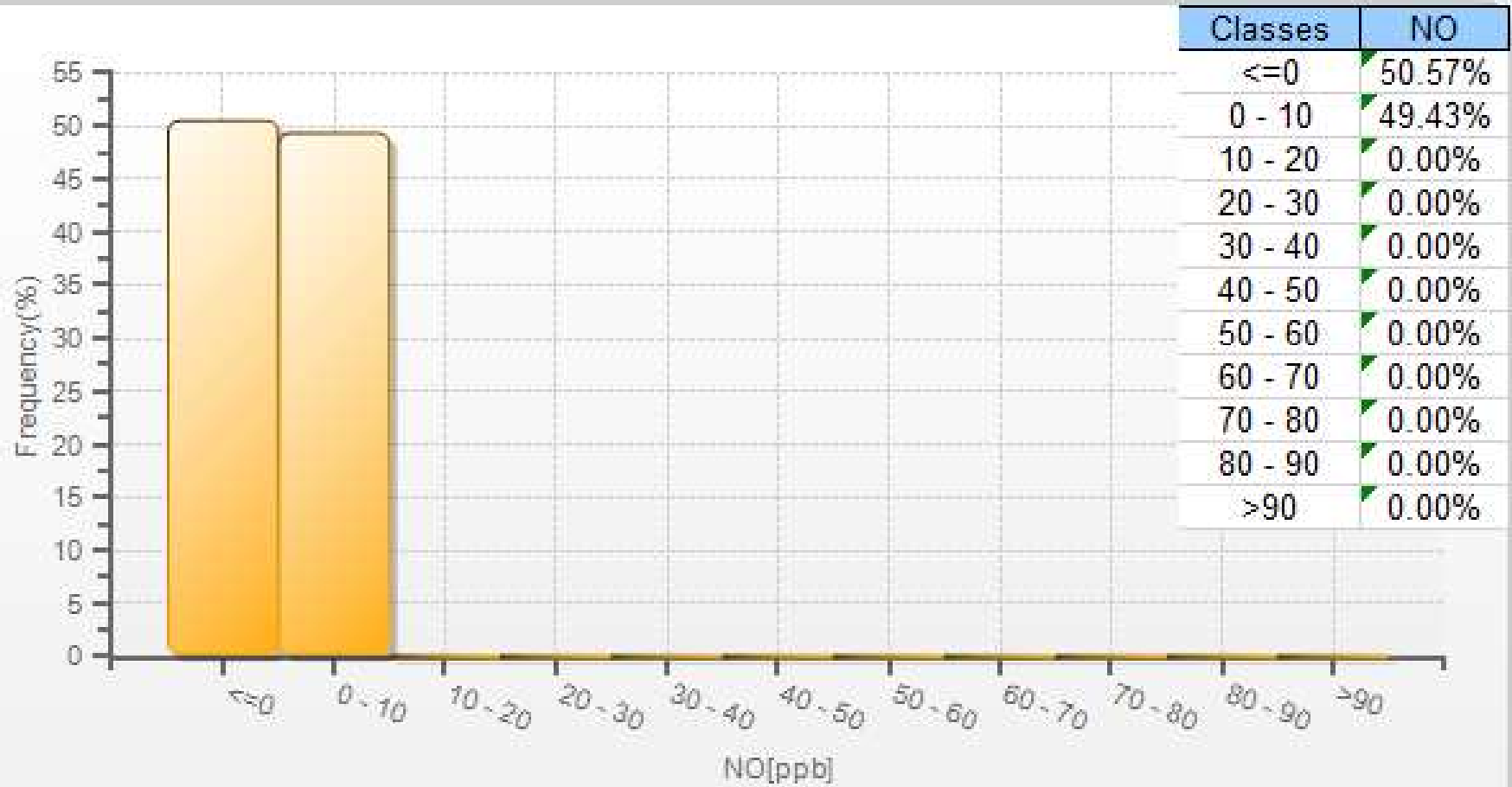
C	Calibration	S	Daily Zero/Span	Q	Quality Assurance	C1	Repeat Calibration	S1	Repeat Daily Zero/Span
G	Out for Repair	K	Collection Error	N	Not in Service	O	Operator Error	P	Power Failure
R	Recovery	X	Machine Malfunction	Y	Maintenance	T	Exceeds Temperature Limits	N	Not in Service

Daily Average is shown "-" if minimum data completeness criteria of 75% or 18 hours per day is not met.
 Monthly Average is shown "-" if minimum data completeness criteria of 75% of days per month is not met.

Timeseries Chart of Hourly Average for NO - Cold Lake South Station

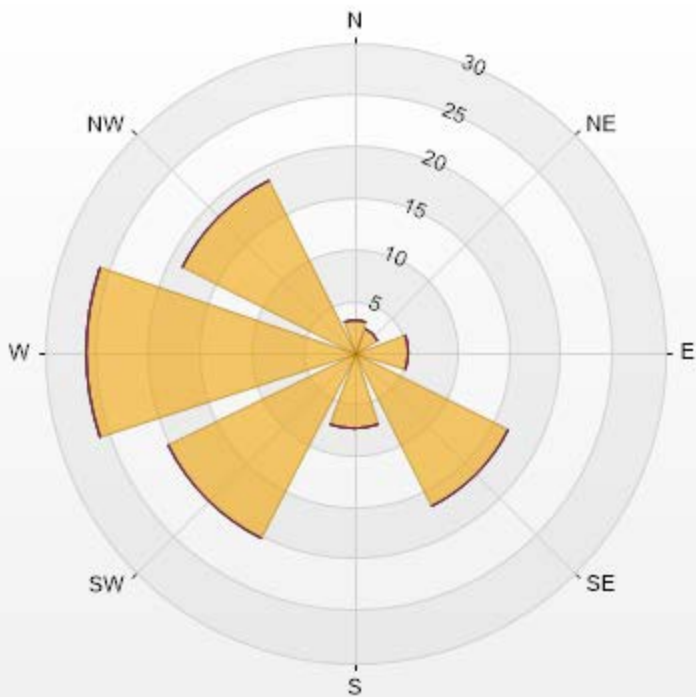


NO[ppb] Histogram: Cold Lake South Monthly: 08-2019 1 Hr.



Wind: Cold Lake South Poll.: Cold Lake South-NO[ppb] Monthly: 08-2019 Type: PollutionRose Direction: Blowing From (Wind Frequency) Based On 1 Hr.
 Calm: 0.00% Valid Data: 94.09% Calm Avg: 0.00 [ppb]

Direction	0-30	30-50	50-82	82-159	>159.0	Total
N	3.29	0	0	0	0	3.29
NE	2.57	0	0	0	0	2.57
E	5.29	0	0	0	0	5.29
SE	16.57	0	0	0	0	16.57
S	7.43	0	0	0	0	7.43
SW	20.14	0	0	0	0	20.14
W	26	0	0	0	0	26
NW	18.71	0	0	0	0	18.71
Summary	100	0	0	0	0	100



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% Icon Classes (ppb)	100	0-30	0	31-50	50-82	0	82-159	0	>159.0



LAKELAND INDUSTRY & COMMUNITY ASSOCIATION

Cold Lake South Station - August 2019

Summary of Hourly Averages

NITROGEN DIOXIDE (NO₂) in ppb

Alberta Ambient Air Quality Objectives (AAAQO): 1-Hour 159 ppb

Number of 1-Hour Exceedences: 0

Maximum Hourly Value: 8 ppb on August 6 at hour 19

Hours in Service: 744

Maximum Daily Value: 2.1 ppb on August 15

Hours of Data: 704

Minimum Hourly Value: 0 ppb on August 2 at hour 15

Hours of Missing Data: 1

Minimum Daily Value: 0.4 ppb on August 17

Hours of Calibration: 39

Monthly Average: 1.5 ppb

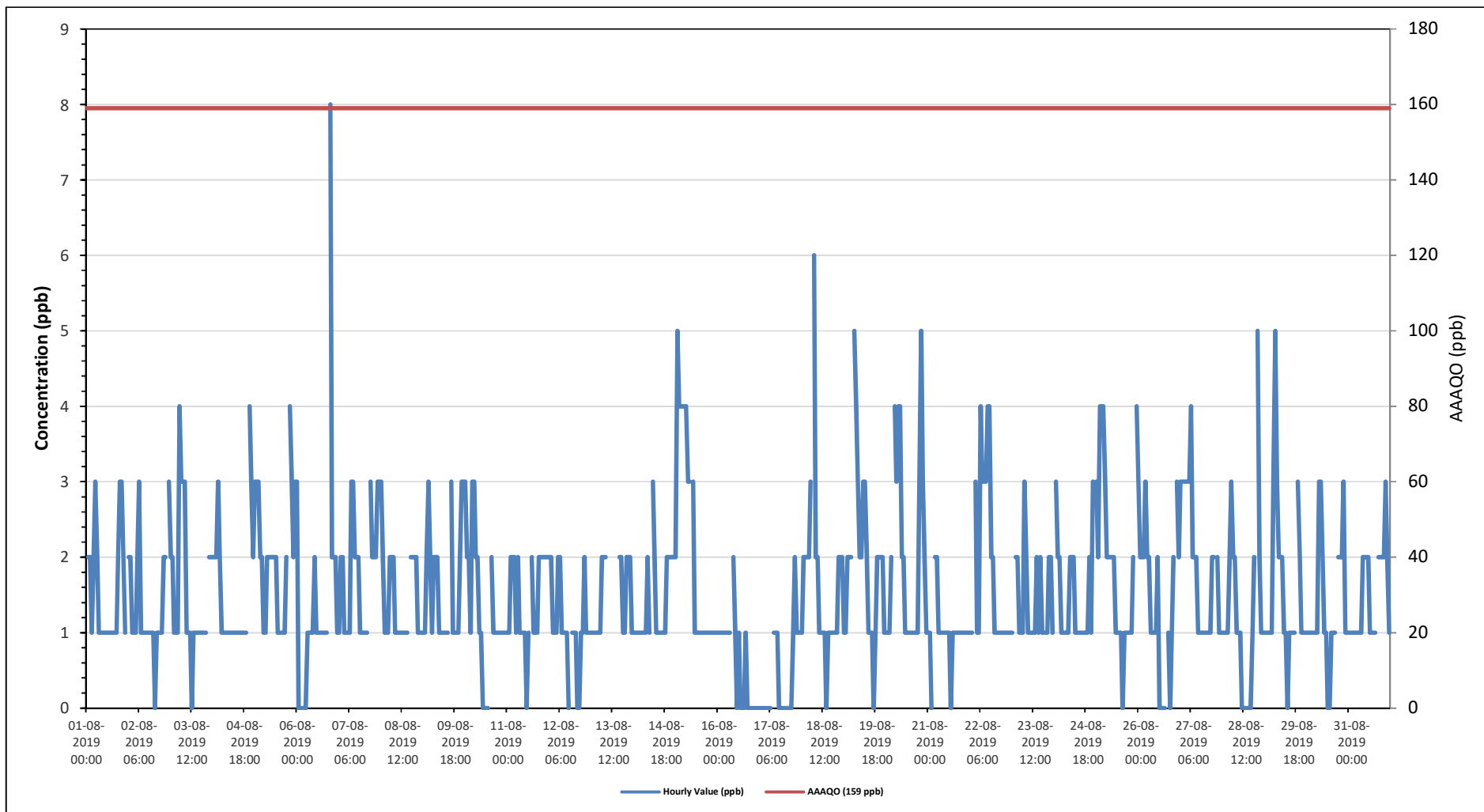
Operational Uptime: 99.9

Day	Hourly Period Starting at (MST)																							Daily Minimum	Daily Maximum	Daily Average	
	0	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22				23
Aug 1	S	2	2	1	2	3	2	1	1	1	1	1	1	1	1	1	1	1	2	3	3	2	1	S	1	3	1.5
Aug 2	2	2	1	1	1	2	3	1	1	1	1	1	1	1	0	1	1	1	1	1	2	2	S	3	0	3	1.3
Aug 3	2	2	1	1	1	4	3	3	3	1	1	0	1	1	1	1	1	1	1	1	1	S	2	2	0	4	1.5
Aug 4	2	2	2	3	2	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	S	4	3	2	1	4	1.5
Aug 5	3	3	3	2	2	1	1	2	2	2	2	2	2	1	1	1	1	1	1	S	4	3	2	3	1	4	2.0
Aug 6	3	0	0	0	0	0	1	1	1	2	1	1	1	1	1	1	1	1	S	8	2	2	2	1	0	8	1.3
Aug 7	1	2	2	1	1	1	1	3	3	2	2	2	2	1	1	1	1	1	S	3	2	2	3	3	1	3	1.8
Aug 8	3	2	1	1	1	2	2	2	1	1	1	1	1	1	1	1	S	2	2	2	2	2	1	1	1	3	1.4
Aug 9	1	1	2	3	2	1	2	2	2	1	1	1	1	1	S	3	1	1	1	1	1	2	3	3	1	3	1.6
Aug 10	3	2	2	1	3	3	2	2	1	1	0	0	0	S	2	1	1	1	1	1	1	1	1	1	0	3	1.3
Aug 11	1	1	2	2	2	1	2	1	1	1	1	0	1	S	2	1	1	1	2	2	2	2	2	2	0	2	1.4
Aug 12	2	2	1	1	1	2	2	1	1	1	1	0	S	1	1	1	0	0	1	1	2	1	1	1	0	2	1.1
Aug 13	1	1	1	1	1	1	2	2	2	C	C	C	C	C	C	C	2	2	1	1	2	2	2	1	1	-	-
Aug 14	1	1	1	1	1	1	1	1	2	1	1	1	1	1	1	1	1	1	1	1	2	2	2	2	1	3	1.4
Aug 15	2	5	4	4	4	4	4	3	3	S	3	1	1	1	1	1	1	1	1	1	1	1	1	1	1	5	2.1
Aug 16	1	1	1	1	1	1	1	1	S	2	1	0	1	0	0	0	1	0	0	0	0	0	0	0	0	2	0.6
Aug 17	0	0	0	0	0	0	0	S	1	1	1	0	0	0	0	0	0	0	0	1	2	1	1	1	0	2	0.4
Aug 18	1	2	2	2	2	3	S	6	2	2	1	1	1	0	1	1	1	1	1	1	1	2	2	2	0	6	1.7
Aug 19	1	1	2	2	2	S	5	4	3	2	2	3	3	2	1	1	1	0	1	2	2	2	2	1	0	5	2.0
Aug 20	1	1	1	2	S	4	3	4	4	2	2	1	1	1	1	1	1	1	1	3	5	3	2	1	1	5	2.0
Aug 21	1	1	0	S	2	2	1	1	1	1	1	0	1	1	1	1	1	1	1	1	1	1	1	1	0	2	1.0
Aug 22	1	1	S	3	1	1	4	3	3	3	4	4	2	2	1	1	1	1	1	1	1	1	1	1	1	4	1.8
Aug 23	1	S	2	2	1	1	1	3	2	1	1	1	1	1	2	1	2	1	1	1	1	2	2	1	1	3	1.4
Aug 24	S	3	2	2	1	1	1	1	1	2	2	2	1	1	1	1	1	1	1	1	2	1	3	S	1	3	1.5
Aug 25	3	2	4	4	4	3	2	2	2	2	1	1	1	1	0	1	1	1	1	1	1	2	S	4	0	4	2.0
Aug 26	3	2	2	2	3	2	2	1	1	1	2	0	0	0	0	0	Y	1	0	1	2	S	3	2	0	3	1.4
Aug 27	3	3	3	3	3	3	4	2	2	2	1	1	1	1	1	1	1	1	1	2	2	S	2	1	1	4	1.9
Aug 28	1	1	1	1	2	3	2	2	1	1	0	0	0	0	0	0	0	1	2	S	5	2	1	1	0	5	1.2
Aug 29	1	1	1	1	1	3	5	3	2	2	1	1	0	1	1	1	1	1	1	S	3	2	1	1	0	5	1.6
Aug 30	1	1	1	1	1	1	1	3	3	2	1	1	0	0	1	1	1	S	2	2	2	3	1	1	0	3	1.3
Aug 31	1	1	1	1	1	1	1	1	2	2	2	2	1	1	1	1	S	2	2	2	2	3	2	1	1	3	1.5
Diurnal Maximum	3	5	4	4	4	4	5	6	4	3	4	4	3	2	2	2	3	2	3	8	5	4	3	4			
Diurnal Average	1.6	1.6	1.6	1.7	1.6	1.9	2.1	2.1	1.8	1.5	1.4	1.2	1.0	0.8	0.9	0.8	1.0	1.0	1.2	1.7	1.9	1.8	1.7	1.6			

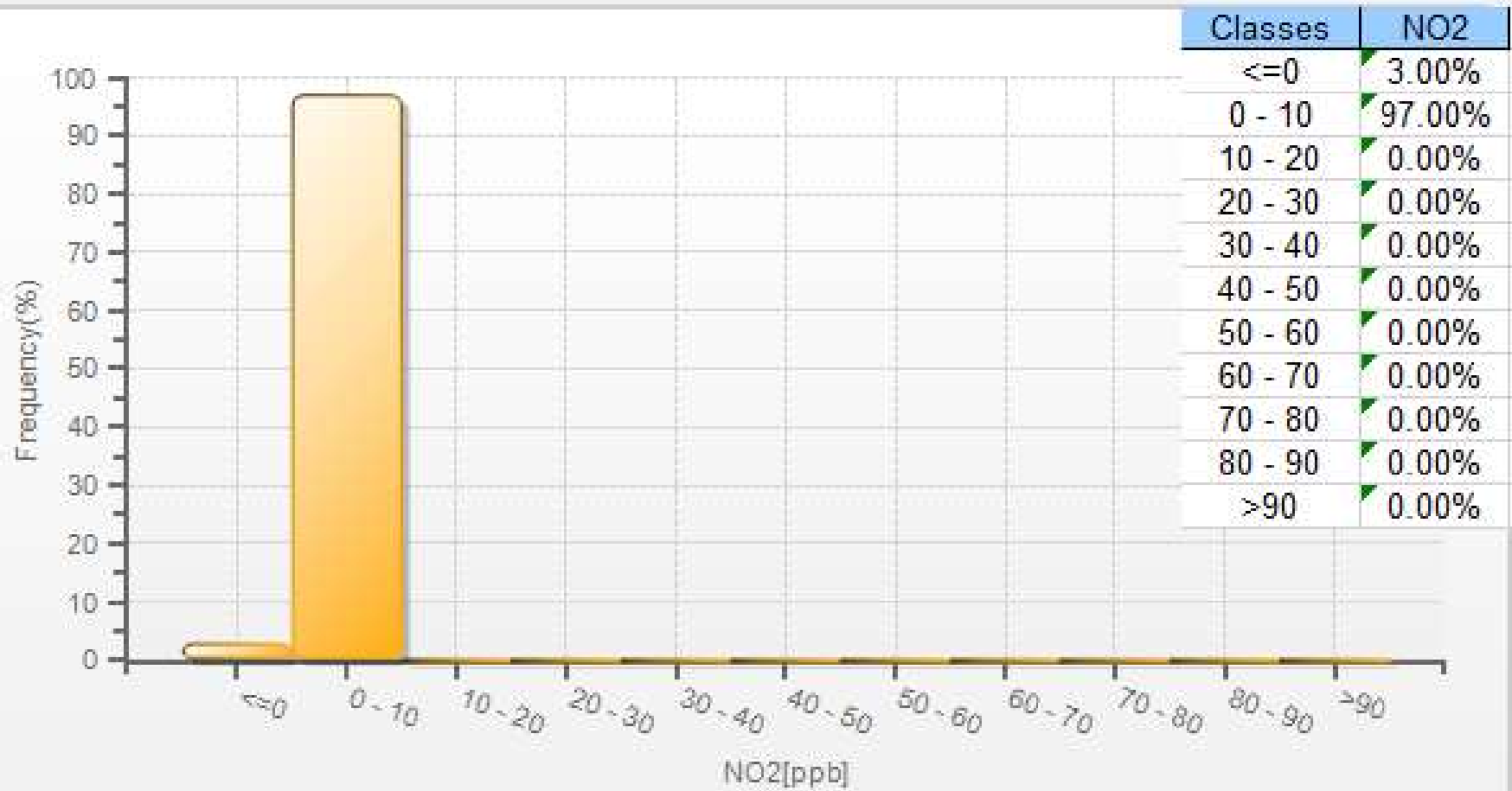
C	Calibration	S	Daily Zero/Span	Q	Quality Assurance	C1	Repeat Calibration	S1	Repeat Daily Zero/Span
G	Out for Repair	K	Collection Error	N	Not in Service	O	Operator Error	P	Power Failure
R	Recovery	X	Machine Malfunction	Y	Maintenance	T	Exceeds Temperature Limits	N	Not in Service

Daily Average is shown "-" if minimum data completeness criteria of 75% or 18 hours per day is not met.
 Monthly Average is shown "-" if minimum data completeness criteria of 75% of days per month is not met.

Timeseries Chart of Hourly Average for NO2 - Cold Lake South Station

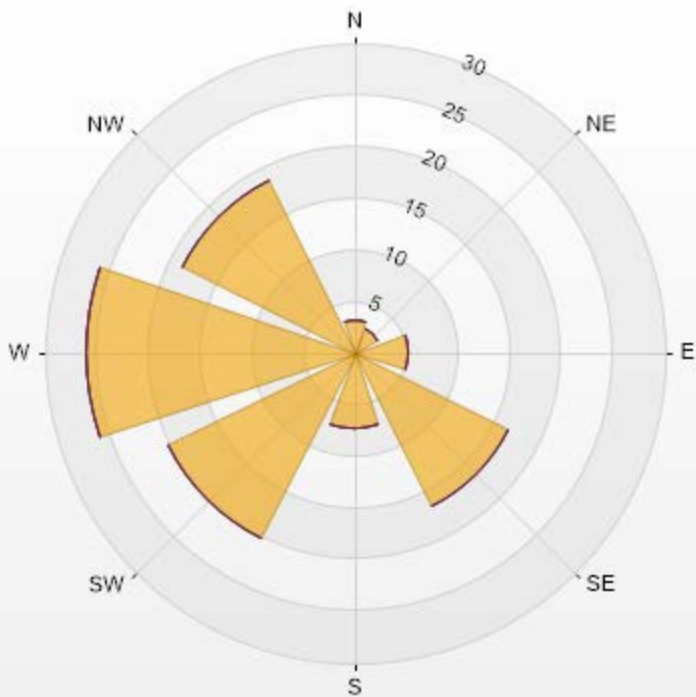


NO2[ppb] Histogram: Cold Lake South Monthly: 08-2019 1 Hr.



Wind: Cold Lake South Poll.: Cold Lake South-NO2[ppb] Monthly: 08-2019 Type: PollutionRose Direction: Blowing From (Wind Frequency) Based On 1 Hr.
 Calm: 0.00% Valid Data: 94.09% Calm Avg: 0.00 [ppb]

Direction	0-30	30-50	50-82	82-159	>159.0	Total
N	3.29	0	0	0	0	3.29
NE	2.57	0	0	0	0	2.57
E	5.29	0	0	0	0	5.29
SE	16.57	0	0	0	0	16.57
S	7.43	0	0	0	0	7.43
SW	20.14	0	0	0	0	20.14
W	26	0	0	0	0	26
NW	18.71	0	0	0	0	18.71
Summary	100	0	0	0	0	100



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% Icon Classes (ppb)	100	0-30	0	30-50	50-82	0	82-159	0	>159.0



LAKELAND INDUSTRY & COMMUNITY ASSOCIATION

Cold Lake South Station - August 2019

Summary of Hourly Averages

OZONE (O₃) in ppb

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

Number of 1-Hour Exceedences: 0

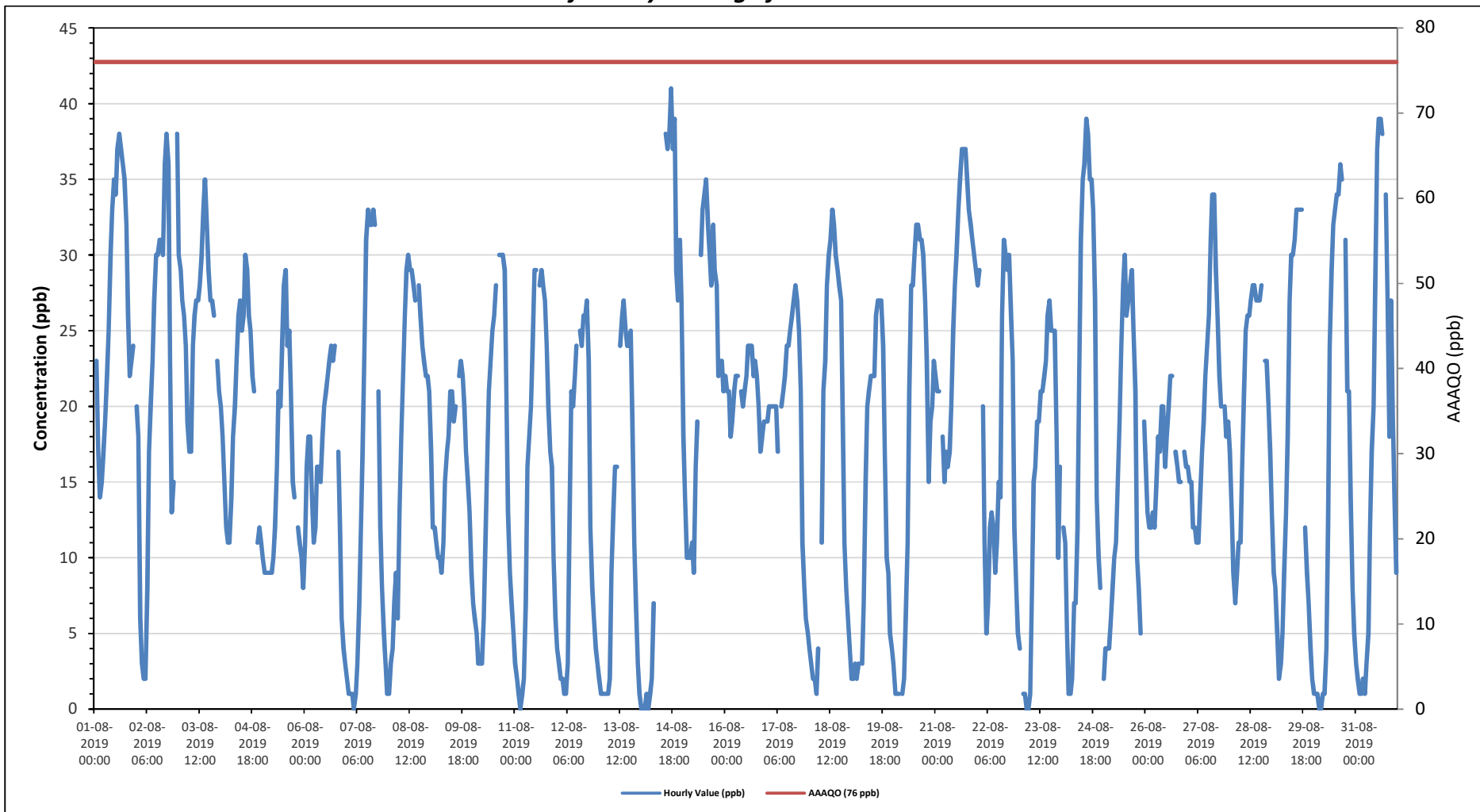
Maximum Hourly Value:	40.9 ppb on August 14 at hour 17	Hours in Service:	744
Maximum Daily Value:	26.9 ppb on August 1	Hours of Data:	705
Minimum Hourly Value:	0.3 ppb on August 23 at hour 4	Hours of Missing Data:	1
Minimum Daily Value:	12.1 ppb on August 13	Hours of Calibration:	38
Monthly Average:	18.2 ppb	Operational Uptime:	99.9

Day	Hourly Period Starting at (MST)																							Daily Minimum	Daily Maximum	Daily Average		
	0	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22				23	
Aug 1	S	22.9	16.8	14	15	16.7	19.1	22.3	25.2	29.6	32.7	34.8	34	36.9	37.5	37.2	36.4	34.6	31.5	26.2	22.1	22.7	23.5	S	14.0	37.5	26.9	
Aug 2	19.9	17.6	6.3	3.4	1.5	2.1	8.3	17.2	19.9	23.3	27.4	29.9	29.7	31.4	30.8	30	35.9	38	35.8	22.9	13.3	14.8	S	38.4	1.5	38.4	21.6	
Aug 3	29.7	29.1	27.5	26.3	23.7	19.4	17.5	17.4	24.4	25.6	27	27.4	28.2	30	32.8	34.6	31.5	29	27.4	25.6	S	22.9	20.7	17.4	34.6	26.3		
Aug 4	19.6	18.1	15	11.9	11.2	11.3	14	17.8	19.9	23.2	26.4	26.5	25.4	26.1	30.1	29.1	26.4	25.1	22.5	20.8	S	11.1	12	10.7	10.7	30.1	19.7	
Aug 5	10.1	9.2	9.1	9.5	9.2	9.1	10.1	12.3	15.9	21	19.8	23.5	27.8	29.1	24.4	25.1	21	15.4	14.3	S	11.5	11.3	10.2	7.6	7.6	29.1	15.5	
Aug 6	11.3	16.1	18.1	18.1	14.4	11.4	12.1	16.2	16.3	15.5	17.9	19.7	21.2	22.2	23.5	23.5	23.5	23.6	S	16.9	12.2	6.2	4.1	3.3	3.3	23.6	16.0	
Aug 7	1.7	1.4	0.8	0.7	0.4	0.6	3	7.5	11.8	17.3	23.6	30.6	33.3	32.4	31.9	33.1	32.5	S	21.1	12.2	8.4	4.7	2.7	1.3	0.4	33.3	13.6	
Aug 8	0.8	2.7	4.3	7.2	9.5	5.8	12.6	18.4	21.8	26.4	29.2	29.7	28.8	28.6	28.4	26.9	S	27.7	25.5	24.2	23.3	21.7	22.3	21.3	0.8	29.7	19.4	
Aug 9	17.4	11.6	12.1	10.9	10.5	9.8	8.5	10.6	15.5	17	18.3	21.1	21.2	19.4	20.1	S	22.3	22.5	21.8	19.6	16.5	14.9	13.2	8.9	8.5	22.5	15.8	
Aug 10	7.3	5.9	4.6	3.2	2.6	3	6	11.2	16.1	20.6	22.9	25.4	26.7	27.7	S	28.3	29.8	29.6	29.8	28.6	21	12.6	8.9	6.8	4.9	2.6	29.8	15.4
Aug 11	3.2	1.8	1	0.5	0.6	1.5	6.9	16.4	18.2	20.2	24.3	28.8	28.7	S	28.3	29.1	28.4	27	23.9	20.2	17.2	16	10	5.6	0.5	29.1	15.6	
Aug 12	3.7	2.7	2.2	1.5	0.9	0.8	2.7	11.7	21.4	19.8	21.9	24.1	S	24.5	24.1	25.6	26.1	27.3	23	12.5	8.1	5.5	3.9	2.9	0.8	27.3	12.9	
Aug 13	1.8	1.3	0.9	0.8	0.6	1.2	2.3	8.8	13.3	15.9	16.2	S	23.6	26	27.2	24.6	24.2	23.8	25.2	18.9	11.1	7	2.6	1	0.6	27.2	12.1	
Aug 14	0.5	0.5	0.5	0.6	0.4	0.9	2	7.3	C	C	C	C	C	C	C	38.2	37.3	37.8	40.9	37	39.1	28.7	26.9	31.2	26.6	0.4	40.9	19.8
Aug 15	18	13.8	10.1	9.9	10.1	10.6	8.8	16.5	18.6	S	30.2	32.9	33.8	35.3	32	30	27.5	31.9	29	28.1	21.7	23.4	22.5	21.3	8.8	35.3	22.4	
Aug 16	21.7	20.5	20.9	18.4	18.9	20.9	22.3	22.3	S	20.9	19.8	20.6	22	23.6	24.3	23.7	22.2	22.8	22.3	19.8	17.5	17.8	18.8	18.9	17.5	24.3	20.9	
Aug 17	19.4	19.6	19.8	19.6	20.4	19.6	16.9	S	20.1	21.2	21.9	23.8	24.4	25.2	26.2	26.5	27.6	27.1	25.3	20.9	11.4	8	5.9	4.8	4.8	27.6	19.8	
Aug 18	4.1	3.4	2.1	1.5	1	3.9	S	11	20.9	22.9	27.6	29.8	30.6	32.7	32	30	28.8	27.8	27.5	19.3	10.7	7.7	5.9	3.8	1.0	32.7	16.7	
Aug 19	2.5	2.3	2.8	2.4	2.7	S	3.1	6.6	15.3	19.7	21.2	22.1	21.9	22.4	26.3	26.8	27.4	27	24	16.6	10.4	9.1	4.8	4	2.3	27.4	14.0	
Aug 20	2.9	1.6	1.1	1.1	S	0.6	1.7	5.9	10.8	20.6	27.9	28.4	30.1	31.8	32.4	31.2	31	29.9	26.7	22.6	15.3	19.1	19.8	22.7	0.6	32.4	18.1	
Aug 21	22.3	21.4	21.4	S	17.7	15.2	16.6	15.8	17.2	19.8	25.1	28.2	29.8	33	34.9	36.6	36.9	37.1	34.6	32.6	32.3	31.3	29.8	28.8	15.2	37.1	26.9	
Aug 22	28.4	29	S	20.3	11.5	4.7	7.4	12.2	12.7	11.8	8.8	10.6	15.5	14.2	26.1	30.9	30.4	29.2	30	26.2	23.3	11.9	7.8	4.7	4.7	30.9	17.7	
Aug 23	4.1	S	1.5	1.3	0.6	0.3	1	7.9	14.9	16.4	18.5	19.4	20.5	20.7	22	23.3	26.3	26.7	24.8	25	24.6	18.2	10.1	16.5	0.3	26.7	15.0	
Aug 24	S	12.3	10.8	5.1	1.4	0.6	2.3	6.7	6.7	12.3	22.4	31	35.4	36.5	38.5	38.3	34.6	35	33.4	27.2	13.8	9.8	7.9	S	0.6	38.5	19.2	
Aug 25	1.8	3.8	4.3	3.9	5.8	7.8	10.1	11.3	15.4	19.3	24.2	28.2	30	25.6	26.8	28.4	29.3	25	20.9	9.9	7.8	5.4	S	19	1.8	30.0	15.8	
Aug 26	16.3	13.3	12.4	12	13	12.4	14.7	18	17.1	19.5	19.8	16.5	18.3	20.4	22.1	21.7	Y	17.5	16.1	14.6	14.8	S	16.7	16.3	12.0	22.1	16.5	
Aug 27	15.6	15.1	14.8	12.1	11.7	11.3	11.4	14	16.6	18.7	22.1	24.1	26.3	30.7	33.7	34	29.2	26.4	22	19.7	S	20.3	18.4	18.8	11.3	34.0	20.3	
Aug 28	17.2	12.9	8.7	6.6	8.5	10.7	11.4	15.6	21.3	25.1	26	26.4	27.1	28.2	27.8	27.2	26.7	27.3	28.3	S	23.1	23.1	20.3	17.3	6.6	28.3	20.3	
Aug 29	12.7	8.8	7.8	4.6	1.6	3.3	4.6	9.6	13.1	18.4	26.6	30	30	30.9	32.6	33.4	32.7	32.7	S	12.5	8.8	7.2	4.4	2.3	1.6	33.4	16.0	
Aug 30	1.4	1	0.7	0.4	0.4	0.5	1.2	3.5	12.5	23.7	28.9	32.3	33.5	34.1	34.5	35.8	35.5	S	31	21.1	20.8	14.1	8	5.2	0.4	35.8	16.5	
Aug 31	3.3	1.9	1.3	1.4	1.8	1.2	2.7	5.3	11.8	17.3	20.1	27.6	37	38.6	39	38.5	S	34.1	27.3	17.6	27.2	19.2	13.6	8.9	1.2	39.0	17.2	
Diurnal Maximum	30	29	28	26	24	21	22	22	25	30	33	35	37	39	39	39	38	41	37	39	32	31	31	38				
Daiurnal Average	11.0	10.7	8.7	7.6	7.6	7.2	8.7	12.6	16.7	20.1	23.3	26.0	27.4	28.2	29.6	30.1	29.3	28.4	26.2	21.2	17.0	14.4	13.1	12.6				

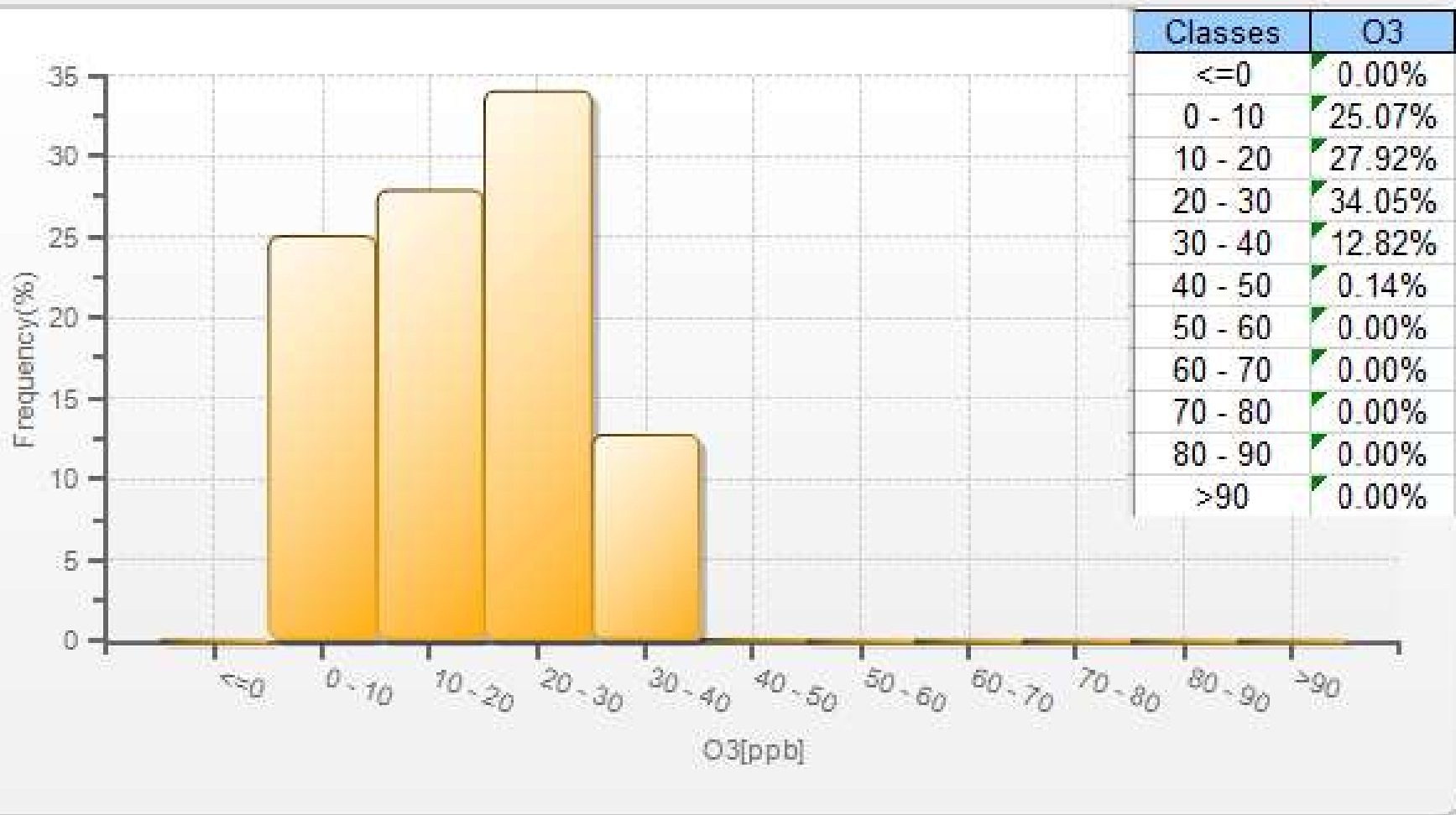
C	Calibration	S	Daily Zero/Span	Q	Quality Assurance	C1	Repeat Calibration	S1	Repeat Daily Zero/Span
G	Out for Repair	K	Collection Error	N	Not in Service	O	Operator Error	P	Power Failure
R	Recovery	X	Machine Malfunction	Y	Maintenance	T	Exceeds Temperature Limits	N	Not in Service

Daily Average is shown "-" if minimum data completeness criteria of 75% or 18 hours per day is not met.
 Monthly Average is shown "-" if minimum data completeness criteria of 75% of days per month is not met.

Timeseries Chart of Hourly Average for O3 - Cold Lake South Station

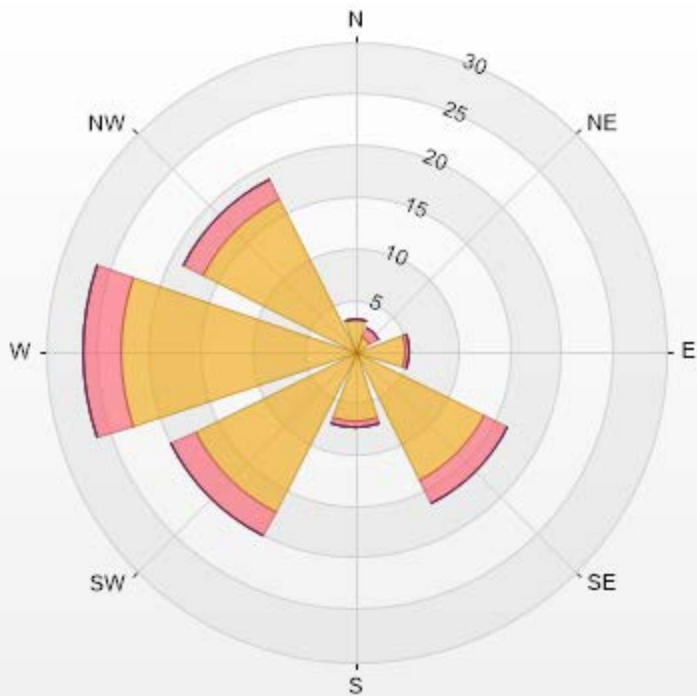


O3[ppb] Histogram: Cold Lake South Monthly: 08-2019 1 Hr.



Wind: Cold Lake South Poll.: Cold Lake South-O3[ppb] Monthly: 08-2019 Type: PollutionRose Direction: Blowing From (Wind Frequency) Based On 1 Hr.
 Calm: 0.00% Valid Data: 94.35% Calm Avg: 0.00 [ppb]

Direction	0-30	30-50	50-82	82-159	>159.0	Total
N	3.13	0.14	0	0	0	3.27
NE	1.57	1	0	0	0	2.57
E	4.84	0.43	0	0	0	5.27
SE	13.96	2.56	0	0	0	16.52
S	6.84	0.57	0	0	0	7.41
SW	17.38	2.56	0	0	0	19.94
W	22.79	3.56	0	0	0	26.35
NW	16.52	2.14	0	0	0	18.66
Summary	87.03	12.96	0	0	0	100



LICA-201908-Revision 1

% Icon Classes (ppb)	87	13	0	0
0-30	87	13	0	0
30-50				
50-82				
82-159				
>159.0				



LAKELAND INDUSTRY & COMMUNITY ASSOCIATION

Cold Lake South Station - August 2019

Summary of Hourly Averages

TOTAL HYDROCARBONS (THC) in ppm

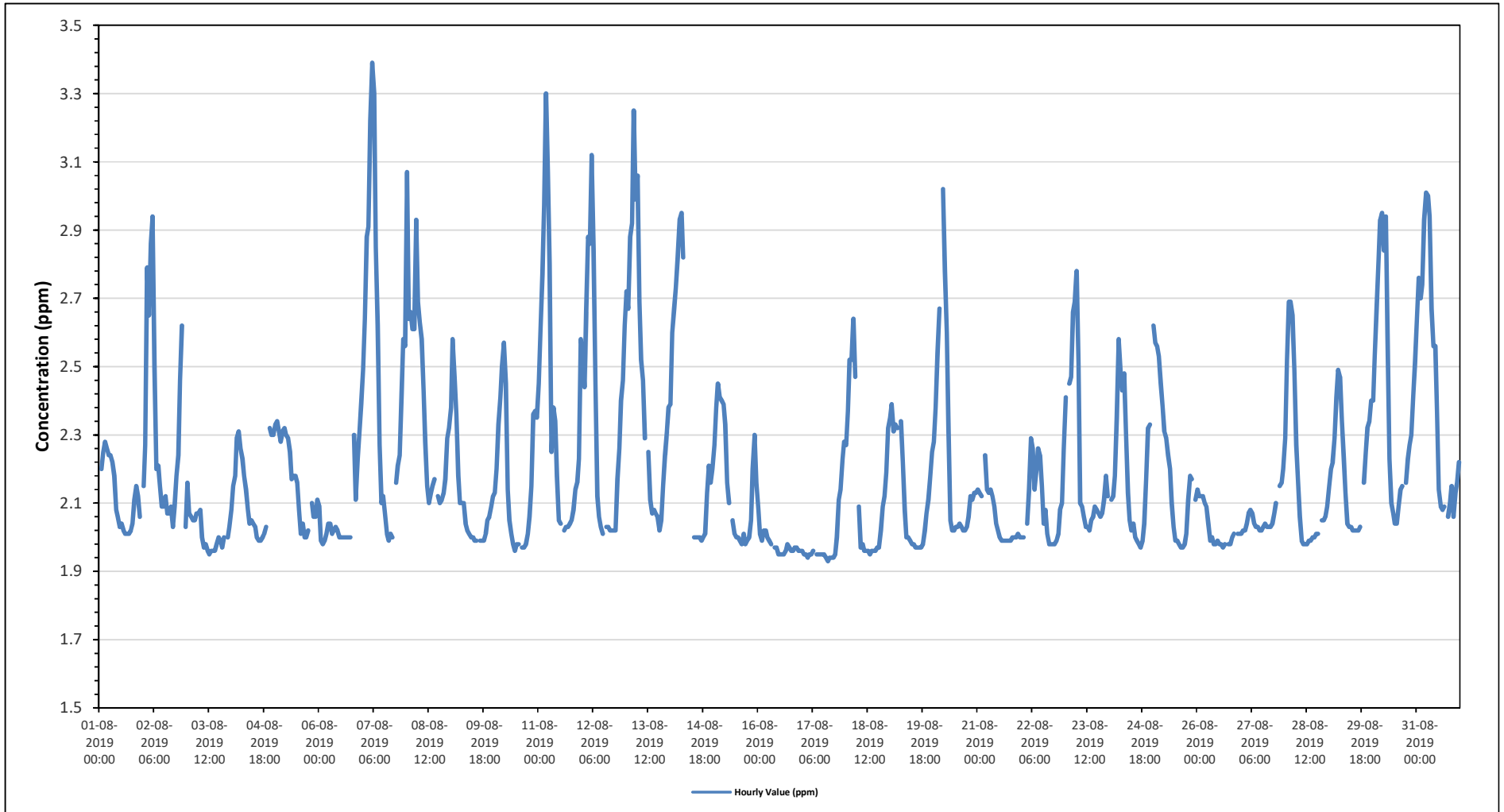
Maximum Hourly Value:	3.39 ppm on August 7 at hour 5	Hours in Service:	744
Maximum Daily Value:	2.48 ppm on August 7	Hours of Data:	706
Minimum Hourly Value:	1.93 ppm on August 17 at hour 14	Hours of Missing Data:	1
Minimum Daily Value:	1.98 ppm on August 16	Hours of Calibration:	37
Monthly Average:	2.20 ppm	Operational Uptime:	99.9

Day	Hourly Period Starting at (MST)																							Daily Minimum	Daily Maximum	Daily Average		
	0	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22				23	
Aug 1	S	2.20	2.25	2.28	2.26	2.24	2.24	2.22	2.18	2.08	2.06	2.03	2.04	2.02	2.01	2.01	2.01	2.02	2.04	2.11	2.15	2.12	2.06	S	2.01	2.28	2.12	
Aug 2	2.15	2.27	2.79	2.65	2.86	2.94	2.50	2.20	2.21	2.15	2.09	2.09	2.12	2.07	2.07	2.09	2.03	2.09	2.18	2.24	2.46	2.62	S	2.03	2.03	2.94	2.30	
Aug 3	2.16	2.07	2.06	2.05	2.05	2.07	2.07	2.08	2.00	1.97	1.98	1.96	1.95	1.96	1.96	1.98	2.00	1.99	1.97	2.00	S	2.00	2.03	2.03	1.95	2.16	2.01	
Aug 4	2.08	2.15	2.18	2.29	2.31	2.26	2.23	2.18	2.14	2.08	2.04	2.05	2.04	2.03	2.00	1.99	1.99	2.00	2.01	2.03	S	2.32	2.30	2.30	1.99	2.32	2.13	
Aug 5	2.33	2.34	2.31	2.28	2.31	2.32	2.30	2.29	2.25	2.17	2.18	2.18	2.16	2.08	2.01	2.04	2.00	2.00	2.02	S	2.10	2.06	2.06	2.11	2.00	2.34	2.17	
Aug 6	2.09	1.99	1.98	1.99	2.01	2.04	2.04	2.01	2.02	2.03	2.02	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.02	S	2.11	2.23	2.31	2.39	1.98	2.39	2.07	
Aug 7	2.49	2.64	2.88	2.91	3.22	3.39	3.30	2.85	2.62	2.27	2.10	2.12	2.07	2.01	1.99	2.01	2.00	S	2.16	2.21	2.24	2.42	2.58	2.56	1.99	3.39	2.48	
Aug 8	3.07	2.64	2.66	2.61	2.61	2.93	2.69	2.63	2.58	2.43	2.28	2.15	2.10	2.13	2.15	2.17	S	2.12	2.10	2.11	2.13	2.17	2.29	2.32	2.10	3.07	2.39	
Aug 9	2.38	2.58	2.47	2.36	2.18	2.10	2.10	2.10	2.04	2.02	2.01	2.00	2.00	1.99	1.99	S	1.99	1.99	1.99	2.01	2.05	2.06	2.09	2.12	1.99	2.58	2.11	
Aug 10	2.13	2.20	2.33	2.41	2.50	2.57	2.45	2.14	2.05	2.01	1.98	1.96	1.98	1.98	S	1.97	1.97	1.98	2.01	2.06	2.15	2.36	2.37	2.35	1.96	2.57	2.17	
Aug 11	2.45	2.61	2.77	2.97	3.30	3.07	2.80	2.25	2.38	2.34	2.18	2.05	2.04	S	2.02	2.03	2.03	2.04	2.05	2.08	2.14	2.16	2.23	2.58	2.02	3.30	2.37	
Aug 12	2.54	2.44	2.66	2.88	2.86	3.12	2.84	2.45	2.12	2.06	2.03	2.01	S	2.03	2.03	2.02	2.02	2.02	2.02	2.17	2.26	2.40	2.46	2.62	2.01	3.12	2.35	
Aug 13	2.72	2.67	2.88	2.92	3.25	2.99	3.06	2.69	2.52	2.46	2.29	S	2.25	2.11	2.07	2.08	2.07	2.06	2.02	2.05	2.15	2.24	2.31	2.38	2.02	3.25	2.45	
Aug 14	2.39	2.60	2.67	2.73	2.82	2.93	2.95	2.82	C	C	C	C	C	C	2.00	2.00	2.00	2.00	1.99	2.00	2.01	2.13	2.21	2.16	2.20	1.99	2.95	2.35
Aug 15	2.27	2.38	2.45	2.41	2.40	2.39	2.33	2.16	2.10	S	2.05	2.01	2.00	2.00	1.99	1.98	2.01	1.98	1.99	2.00	2.05	2.20	2.30	2.16	1.98	2.45	2.16	
Aug 16	2.08	2.01	1.99	2.02	2.02	2.00	1.99	1.98	S	1.97	1.97	1.95	1.95	1.95	1.95	1.95	1.96	1.98	1.97	1.96	1.97	1.97	1.96	1.96	1.95	2.08	1.98	
Aug 17	1.96	1.95	1.95	1.94	1.95	1.95	1.96	S	1.95	1.95	1.95	1.95	1.95	1.95	1.94	1.93	1.94	1.94	1.94	1.95	2.00	2.11	2.14	2.23	1.93	2.28	1.99	
Aug 18	2.27	2.37	2.52	2.52	2.64	2.47	S	2.09	1.97	1.98	1.96	1.96	1.96	1.95	1.96	1.96	1.96	1.97	1.97	2.02	2.09	2.12	2.19	2.32	1.95	2.64	2.14	
Aug 19	2.35	2.39	2.31	2.33	2.32	S	2.34	2.22	2.08	2.00	2.00	1.99	1.98	1.98	1.97	1.97	1.97	1.98	2.02	2.07	2.11	2.18	2.25	1.97	2.39	2.12		
Aug 20	2.28	2.38	2.54	2.67	S	3.02	2.78	2.60	2.32	2.05	2.02	2.02	2.03	2.03	2.04	2.03	2.02	2.02	2.03	2.06	2.12	2.11	2.13	2.13	2.02	3.02	2.24	
Aug 21	2.14	2.13	2.12	S	2.24	2.14	2.13	2.14	2.12	2.09	2.04	2.02	2.00	1.99	1.99	1.99	1.99	1.99	1.99	2.00	2.00	2.00	2.01	2.00	1.99	2.24	2.05	
Aug 22	2.00	2.00	S	2.04	2.14	2.29	2.26	2.14	2.20	2.26	2.24	2.15	2.04	2.08	2.01	1.98	1.98	1.98	1.98	1.99	2.01	2.08	2.10	2.26	1.98	2.29	2.10	
Aug 23	2.41	S	2.45	2.47	2.66	2.69	2.78	2.51	2.10	2.09	2.06	2.03	2.03	2.02	2.05	2.06	2.09	2.08	2.07	2.06	2.07	2.11	2.18	2.12	2.02	2.78	2.23	
Aug 24	S	2.11	2.12	2.18	2.35	2.58	2.48	2.43	2.48	2.30	2.13	2.05	2.02	2.04	2.00	1.99	1.98	1.97	1.99	2.04	2.17	2.32	2.33	S	1.97	2.58	2.18	
Aug 25	2.62	2.57	2.56	2.53	2.45	2.38	2.31	2.29	2.24	2.20	2.10	2.03	1.99	1.99	1.98	1.97	1.97	1.98	2.01	2.11	2.18	2.17	S	2.11	1.97	2.62	2.21	
Aug 26	2.14	2.12	2.12	2.12	2.10	2.09	2.04	1.99	2.00	1.98	1.98	1.98	1.98	1.97	1.98	1.98	1.98	1.98	2.00	2.01	S	2.01	2.01	2.01	1.97	2.14	2.03	
Aug 27	2.01	2.02	2.02	2.04	2.07	2.08	2.07	2.04	2.03	2.03	2.02	2.02	2.03	2.04	2.03	2.03	2.03	2.04	2.07	2.10	S	2.15	2.16	2.20	2.01	2.20	2.06	
Aug 28	2.29	2.52	2.69	2.69	2.65	2.49	2.27	2.17	2.06	1.99	1.98	1.98	1.98	1.99	2.00	2.00	2.01	2.01	2.01	S	2.05	2.05	2.06	2.09	1.98	2.69	2.17	
Aug 29	2.15	2.20	2.22	2.29	2.41	2.49	2.47	2.34	2.23	2.13	2.04	2.03	2.03	2.02	2.02	2.02	2.03	2.03	S	2.25	2.32	2.34	2.40	2.02	2.49	2.20		
Aug 30	2.40	2.53	2.67	2.81	2.93	2.95	2.84	2.94	2.59	2.23	2.10	2.07	2.04	2.04	2.09	2.14	2.15	S	2.16	2.23	2.27	2.30	2.42	2.51	2.04	2.95	2.41	
Aug 31	2.64	2.76	2.70	2.74	2.93	3.01	3.00	2.94	2.67	2.56	2.56	2.37	2.14	2.09	2.08	2.09	S	2.06	2.10	2.15	2.06	2.13	2.16	2.22	2.06	3.01	2.44	
Diurnal Maximum	3.07	2.76	2.88	2.97	3.30	3.39	3.30	2.94	2.67	2.56	2.56	2.37	2.25	2.13	2.15	2.17	2.15	2.12	2.18	2.30	2.46	2.62	2.58	2.62				
Diurnal Average	2.31	2.33	2.41	2.44	2.49	2.53	2.45	2.33	2.22	2.13	2.08	2.04	2.03	2.02	2.01	2.02	2.01	2.01	2.03	2.08	2.12	2.19	2.21	2.24				

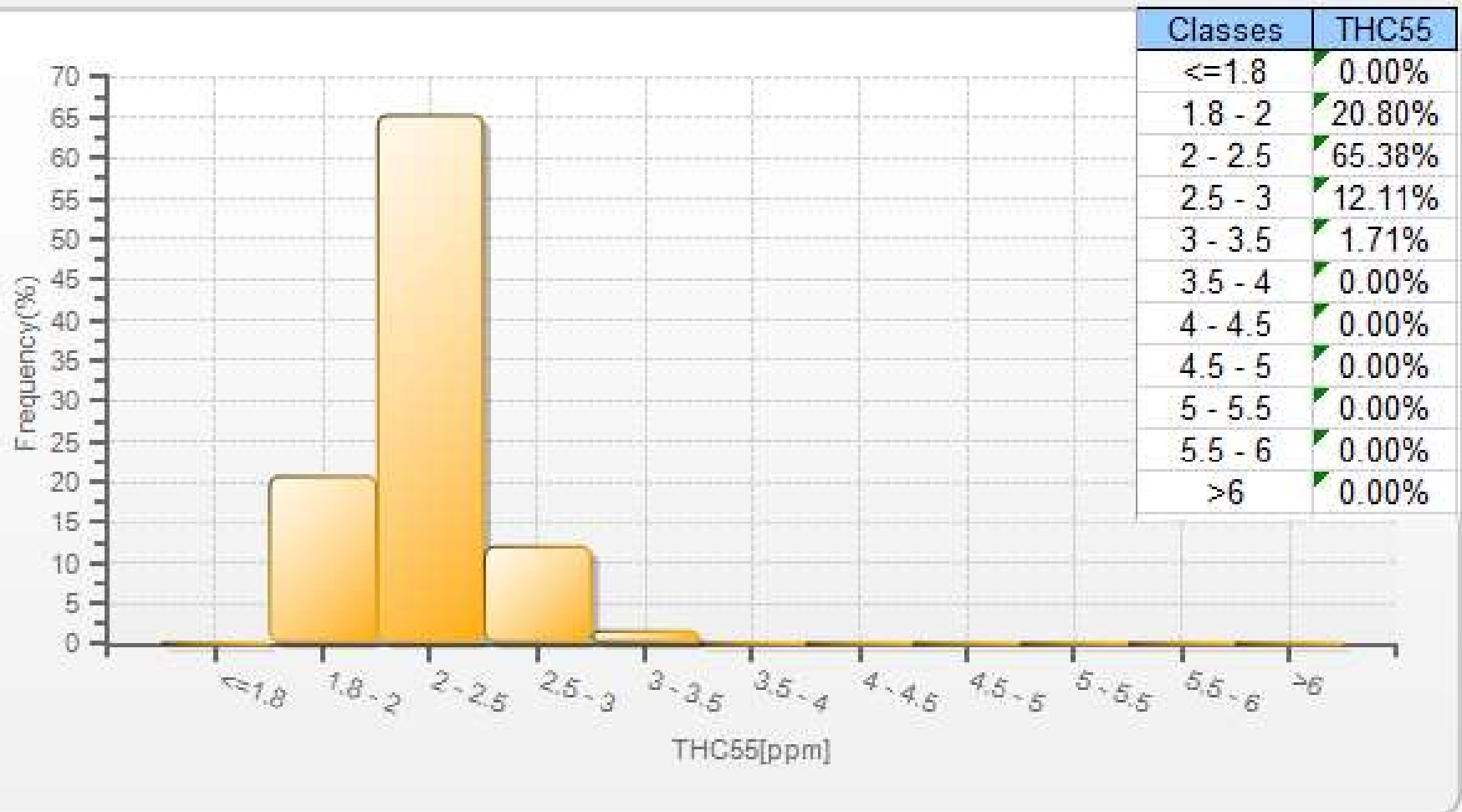
C	Calibration	S	Daily Zero/Span	Q	Quality Assurance	C1	Repeat Calibration	S1	Repeat Daily Zero/Span
G	Out for Repair	K	Collection Error	N	Not in Service	O	Operator Error	P	Power Failure
R	Recovery	X	Machine Malfunction	Y	Maintenance	T	Exceeds Temperature Limits	N	Not in Service

Daily Average is shown "-" if minimum data completeness criteria of 75% or 18 hours per day is not met.
 Monthly Average is shown "-" if minimum data completeness criteria of 75% of days per month is not met.

Timeseries Chart of Hourly Average for THC - Cold Lake South Station

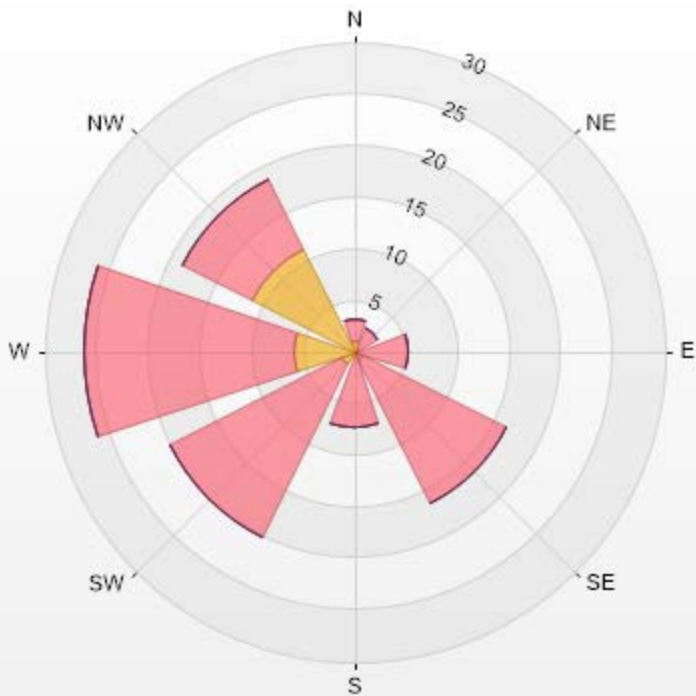


THC55[ppm] Histogram: Cold Lake South Monthly: 08-2019 1 Hr.



Wind: Cold Lake South Poll.: Cold Lake South-THC55[ppm] Monthly: 08-2019 Type: PollutionRose Direction: Blowing From (Wind Frequency) Based On 1 Hr.
 Calm: 0.00% Valid Data: 94.35% Calm Avg: 0.00 [ppm]

Direction	0-2	2-5	5-10	10-40	>40.0	Total
N	1.14	2.14	0	0	0	3.28
NE	0	2.56	0	0	0	2.56
E	0	5.27	0	0	0	5.27
SE	1	15.53	0	0	0	16.53
S	0	7.41	0	0	0	7.41
SW	1.42	18.66	0	0	0	20.08
W	5.98	20.23	0	0	0	26.21
NW	11.11	7.55	0	0	0	18.66
Summary	20.65	79.35	0	0	0	100



LICA-201908-Revision 1

% Icon Classes (ppm)	21	75	0	0	0
0-2	21	75	0	0	0
2-5	0	0	0	0	0
5-10	0	0	0	0	0
10-40	0	0	0	0	0
>40.0	0	0	0	0	0



LAKELAND INDUSTRY & COMMUNITY ASSOCIATION

Cold Lake South Station - August 2019

Summary of Hourly Averages

METHANE (CH4) in ppm

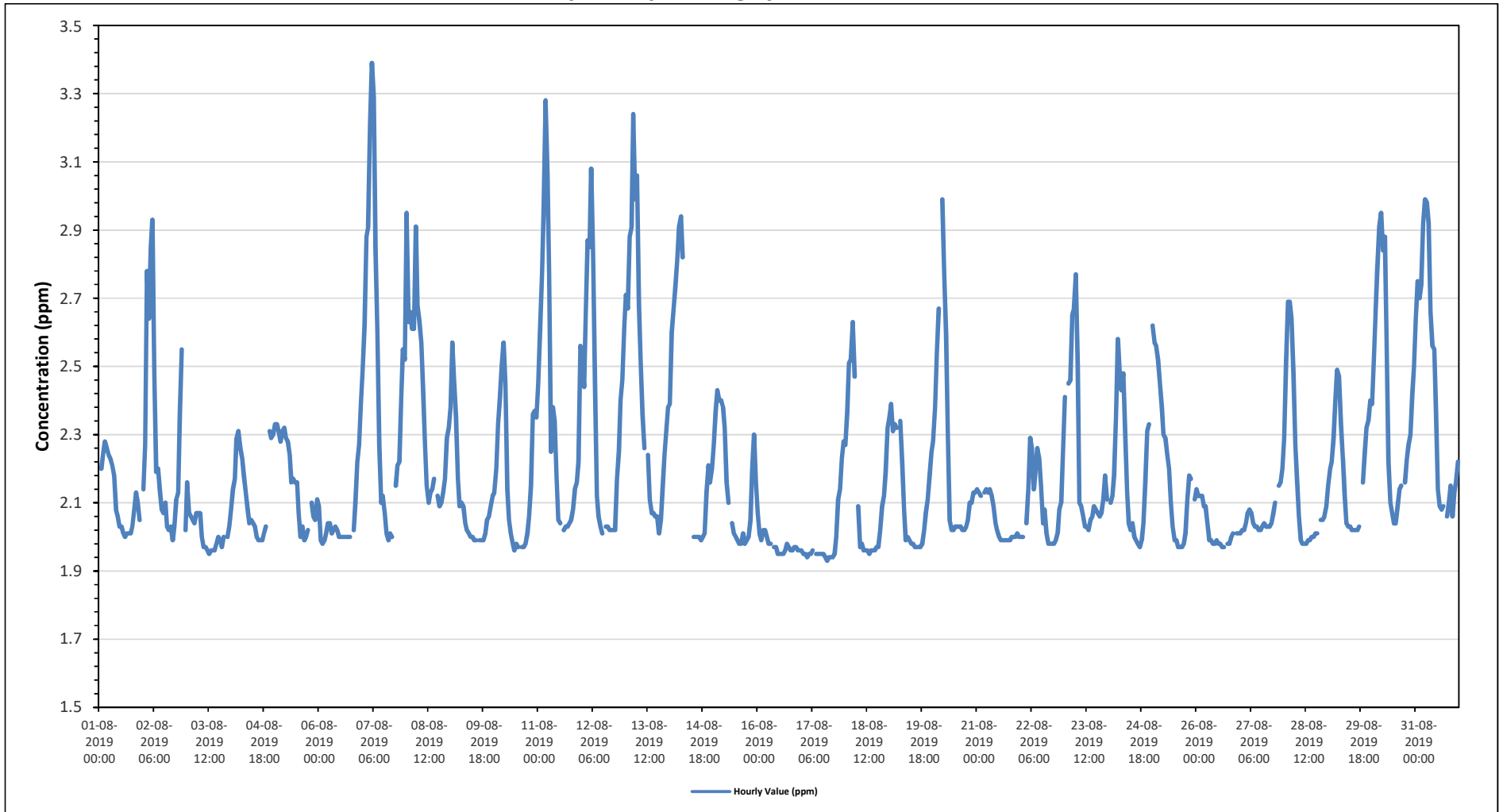
Maximum Hourly Value:	3.39 ppm on August 7 at hour 5	Hours in Service:	744
Maximum Daily Value:	2.47 ppm on August 7	Hours of Data:	706
Minimum Hourly Value:	1.93 ppm on August 17 at hour 14	Hours of Missing Data:	1
Minimum Daily Value:	1.98 ppm on August 16	Hours of Calibration:	37
Monthly Average:	2.19 ppm	Operational Uptime:	99.9

Day	Hourly Period Starting at (MST)																							Daily Minimum	Daily Maximum	Daily Average	
	0	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22				23
Aug 1	S	2.20	2.24	2.28	2.26	2.24	2.23	2.21	2.18	2.08	2.06	2.03	2.03	2.01	2.00	2.01	2.01	2.01	2.03	2.08	2.13	2.10	2.05	S	2.00	2.28	2.11
Aug 2	2.14	2.27	2.78	2.64	2.85	2.93	2.48	2.19	2.20	2.14	2.08	2.07	2.10	2.03	2.02	2.03	1.99	2.03	2.11	2.13	2.36	2.55	S	2.02	1.99	2.93	2.27
Aug 3	2.16	2.07	2.06	2.05	2.04	2.07	2.07	2.07	2.00	2.14	1.97	1.97	1.96	1.95	1.96	1.96	1.98	2.00	1.99	1.97	2.00	S	2.00	2.03	1.95	2.16	2.01
Aug 4	2.08	2.14	2.17	2.29	2.31	2.26	2.23	2.18	2.13	2.08	2.04	2.05	2.04	2.03	2.00	1.99	1.99	1.99	2.01	2.03	S	2.31	2.29	2.30	1.99	2.31	2.13
Aug 5	2.33	2.33	2.31	2.28	2.31	2.32	2.29	2.28	2.24	2.16	2.17	2.16	2.16	2.07	2.00	2.03	1.99	2.00	2.02	S	2.10	2.06	2.05	2.11	1.99	2.33	2.16
Aug 6	2.09	1.99	1.98	1.99	2.01	2.04	2.04	2.01	2.02	2.03	2.02	2.00	2.00	2.00	2.00	2.00	2.00	2.00	S	2.02	2.10	2.22	2.27	2.39	1.98	2.39	2.05
Aug 7	2.49	2.62	2.88	2.91	3.21	3.39	3.29	2.85	2.60	2.27	2.10	2.12	2.07	2.01	1.99	2.01	2.00	S	2.15	2.21	2.22	2.41	2.55	2.52	1.99	3.39	2.47
Aug 8	2.95	2.63	2.66	2.61	2.61	2.91	2.68	2.63	2.57	2.42	2.28	2.15	2.10	2.13	2.14	2.17	S	2.12	2.09	2.10	2.13	2.17	2.29	2.32	2.09	2.95	2.39
Aug 9	2.38	2.57	2.46	2.35	2.17	2.09	2.10	2.09	2.04	2.02	2.01	2.00	2.00	1.99	1.99	S	1.99	1.99	1.99	2.01	2.05	2.06	2.09	2.12	1.99	2.57	2.11
Aug 10	2.13	2.20	2.33	2.41	2.50	2.57	2.45	2.14	2.05	2.01	1.98	1.96	1.98	1.97	S	1.97	1.97	1.98	2.01	2.06	2.15	2.36	2.37	2.35	1.96	2.57	2.17
Aug 11	2.45	2.61	2.77	2.96	3.28	3.06	2.77	2.25	2.38	2.34	2.18	2.05	2.04	S	2.02	2.03	2.03	2.04	2.05	2.08	2.14	2.16	2.22	2.56	2.02	3.28	2.37
Aug 12	2.53	2.44	2.65	2.87	2.85	3.08	2.83	2.45	2.12	2.06	2.03	2.01	S	2.03	2.03	2.02	2.02	2.02	2.02	2.17	2.25	2.40	2.46	2.62	2.01	3.08	2.35
Aug 13	2.71	2.67	2.88	2.91	3.24	2.99	3.06	2.68	2.52	2.36	2.26	S	2.24	2.11	2.07	2.07	2.06	2.06	2.01	2.05	2.14	2.24	2.31	2.38	2.01	3.24	2.44
Aug 14	2.39	2.60	2.67	2.73	2.81	2.91	2.94	2.82	C	C	C	C	C	2.00	2.00	2.00	2.00	1.99	2.00	2.01	2.13	2.21	2.16	2.20	1.99	2.94	2.35
Aug 15	2.27	2.37	2.43	2.40	2.40	2.38	2.32	2.16	2.10	S	2.04	2.01	2.00	1.99	1.98	1.98	2.01	1.98	1.99	2.00	2.05	2.20	2.30	2.16	1.98	2.43	2.15
Aug 16	2.07	2.01	1.99	2.02	2.02	2.00	1.98	1.98	S	1.97	1.97	1.95	1.95	1.95	1.95	1.95	1.96	1.98	1.97	1.96	1.97	1.97	1.96	1.96	1.95	2.07	1.98
Aug 17	1.96	1.95	1.95	1.94	1.95	1.95	1.96	S	1.95	1.95	1.95	1.95	1.95	1.95	1.94	1.93	1.94	1.94	1.94	1.95	2.00	2.11	2.14	2.23	1.93	2.28	1.99
Aug 18	2.27	2.37	2.51	2.52	2.63	2.47	S	2.09	1.97	1.98	1.96	1.96	1.96	1.95	1.96	1.96	1.96	1.96	1.97	1.97	2.02	2.09	2.12	2.19	1.95	2.63	2.14
Aug 19	2.35	2.39	2.31	2.33	2.32	S	2.34	2.22	2.08	1.99	2.00	1.99	1.98	1.98	1.97	1.97	1.97	1.97	1.98	2.02	2.07	2.11	2.18	2.25	1.97	2.39	2.12
Aug 20	2.28	2.38	2.54	2.67	S	2.99	2.77	2.59	2.31	2.05	2.02	2.02	2.03	2.03	2.03	2.03	2.02	2.02	2.03	2.05	2.10	2.10	2.13	2.13	2.02	2.99	2.23
Aug 21	2.14	2.13	2.12	S	2.13	2.14	2.13	2.14	2.12	2.09	2.04	2.02	2.00	1.99	1.99	1.99	1.99	1.99	1.99	2.00	2.00	2.00	2.01	2.00	1.99	2.14	2.05
Aug 22	2.00	2.00	S	2.04	2.14	2.29	2.26	2.14	2.20	2.26	2.23	2.15	2.04	2.08	2.01	1.98	1.98	1.98	1.98	1.99	2.01	2.08	2.10	2.26	1.98	2.29	2.10
Aug 23	2.41	S	2.45	2.46	2.65	2.67	2.77	2.50	2.10	2.09	2.06	2.03	2.03	2.02	2.05	2.06	2.09	2.08	2.07	2.06	2.07	2.11	2.18	2.11	2.02	2.77	2.22
Aug 24	S	2.10	2.12	2.18	2.35	2.58	2.48	2.43	2.48	2.30	2.13	2.04	2.02	2.04	2.00	1.99	1.98	1.97	1.99	2.04	2.16	2.31	2.33	S	1.97	2.58	2.18
Aug 25	2.62	2.57	2.56	2.52	2.45	2.38	2.30	2.29	2.24	2.20	2.10	2.03	1.99	1.99	1.97	1.97	1.97	1.98	2.01	2.11	2.18	2.17	S	2.11	1.97	2.62	2.20
Aug 26	2.14	2.12	2.12	2.12	2.09	2.09	2.04	1.99	1.99	1.98	1.98	1.98	1.98	1.98	1.97	1.97	Y	1.98	1.98	2.00	2.01	S	2.01	2.01	1.97	2.14	2.02
Aug 27	2.01	2.02	2.02	2.04	2.07	2.08	2.07	2.04	2.03	2.03	2.02	2.02	2.03	2.04	2.03	2.03	2.03	2.04	2.07	2.10	S	2.15	2.16	2.20	2.01	2.20	2.06
Aug 28	2.29	2.51	2.69	2.69	2.64	2.48	2.27	2.17	2.06	1.99	1.98	1.98	1.98	1.99	2.00	2.00	2.01	2.01	S	2.05	2.05	2.05	2.06	2.09	1.98	2.69	2.17
Aug 29	2.15	2.20	2.22	2.29	2.41	2.49	2.47	2.33	2.23	2.13	2.04	2.03	2.03	2.02	2.02	2.02	2.02	2.03	S	2.16	2.25	2.32	2.34	2.40	2.02	2.49	2.20
Aug 30	2.39	2.52	2.66	2.80	2.91	2.95	2.84	2.88	2.58	2.22	2.10	2.07	2.04	2.04	2.09	2.14	2.15	S	2.16	2.23	2.27	2.30	2.42	2.50	2.04	2.95	2.40
Aug 31	2.64	2.75	2.70	2.74	2.92	2.99	2.98	2.92	2.66	2.56	2.55	2.37	2.14	2.09	2.08	2.09	S	2.06	2.10	2.15	2.06	2.13	2.16	2.22	2.06	2.99	2.44
Diurnal Maximum	2.95	2.75	2.88	2.96	3.28	3.39	3.29	2.92	2.66	2.56	2.55	2.37	2.24	2.13	2.14	2.17	2.15	2.12	2.16	2.23	2.36	2.55	2.55	2.62			
Diurnal Average	2.30	2.32	2.41	2.43	2.48	2.53	2.45	2.32	2.21	2.13	2.08	2.04	2.03	2.02	2.01	2.01	2.00	2.01	2.02	2.06	2.12	2.19	2.20	2.24			

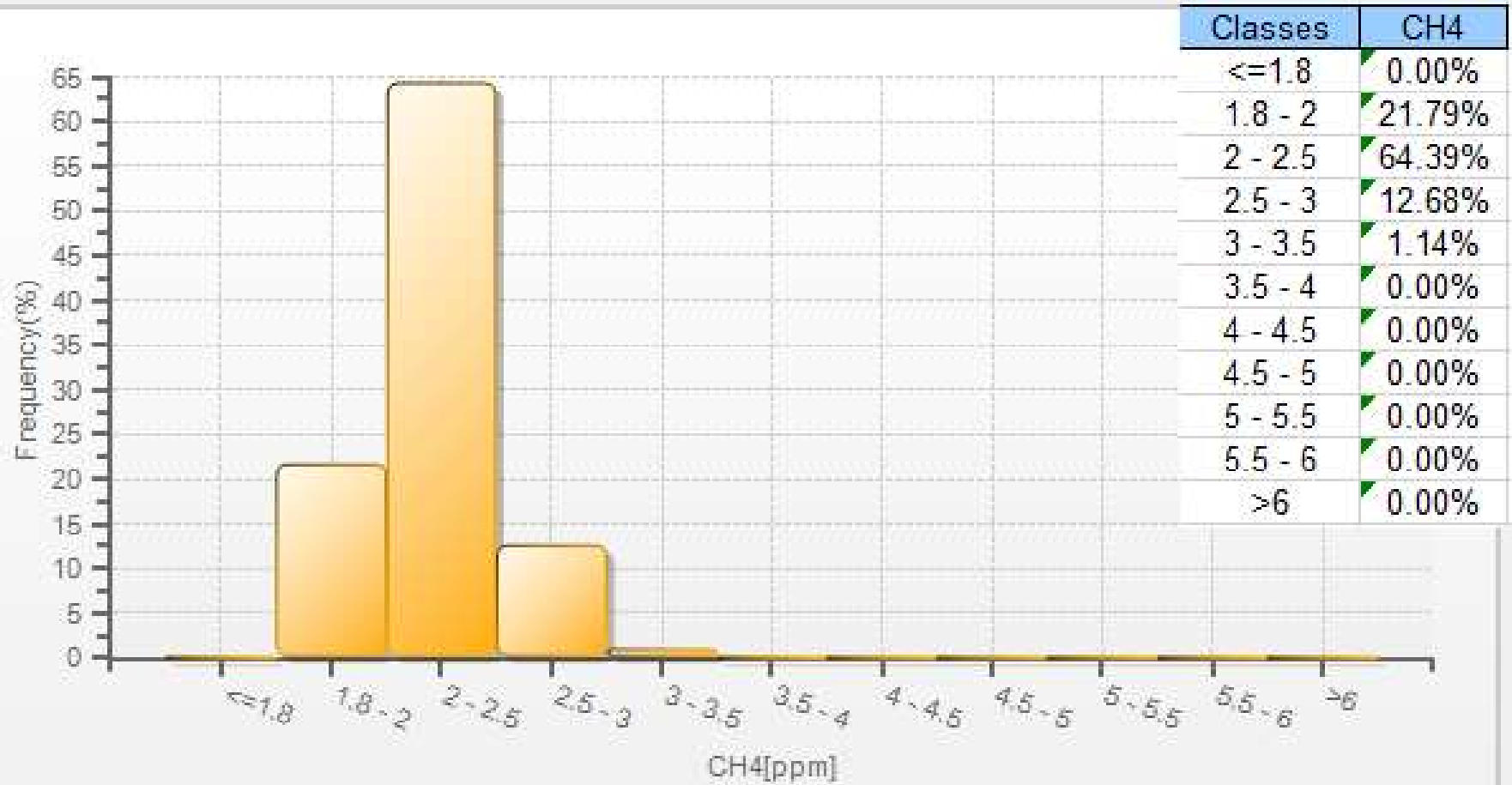
C	Calibration	S	Daily Zero/Span	Q	Quality Assurance	C1	Repeat Calibration	S1	Repeat Daily Zero/Span
G	Out for Repair	K	Collection Error	N	Not in Service	O	Operator Error	P	Power Failure
R	Recovery	X	Machine Malfunction	Y	Maintenance	T	Exceeds Temperature Limits	N	Not in Service

Daily Average is shown "-" if minimum data completeness criteria of 75% or 18 hours per day is not met.
 Monthly Average is shown "-" if minimum data completeness criteria of 75% of days per month is not met.

Timeseries Chart of Hourly Average for CH4 - Cold Lake South Station

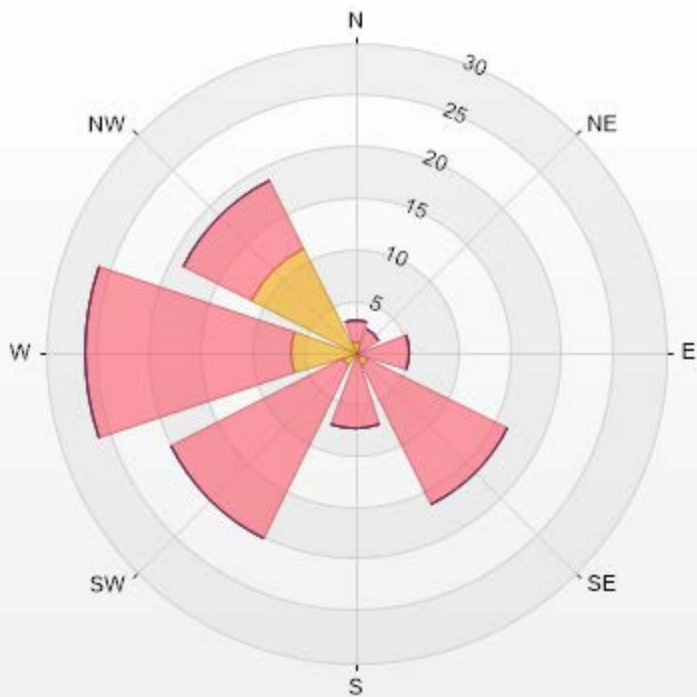


CH4[ppm] Histogram: Cold Lake South Monthly: 08-2019 1 Hr.



Wind: Cold Lake South Poll.: Cold Lake South-CH4[ppm] Monthly: 08-2019 Type: PollutionRose Direction: Blowing From (Wind Frequency) Based On 1 Hr.
 Calm: 0.00% Valid Data: 94.35% Calm Avg: 0.00 [ppm]

Direction	0-2	2-5	5-10	10-20	>20.0	Total
N	1.14	2.14	0	0	0	3.28
NE	0	2.56	0	0	0	2.56
E	0	5.27	0	0	0	5.27
SE	1.28	15.24	0	0	0	16.52
S	0	7.41	0	0	0	7.41
SW	1.42	18.66	0	0	0	20.08
W	6.27	19.94	0	0	0	26.21
NW	11.25	7.41	0	0	0	18.66
Summary	21.36	78.63	0	0	0	100



LICA-201908-Revision 1

% Icon Classes (ppm)	21	75	0	0	0
0-2	21	75	0	0	0
2-5					
5-10					
10-20					
>20.0					



LAKELAND INDUSTRY & COMMUNITY ASSOCIATION

Cold Lake South Station - August 2019

Summary of Hourly Averages

NON-METHANE HYDROCARBONS (NMHC) in ppm

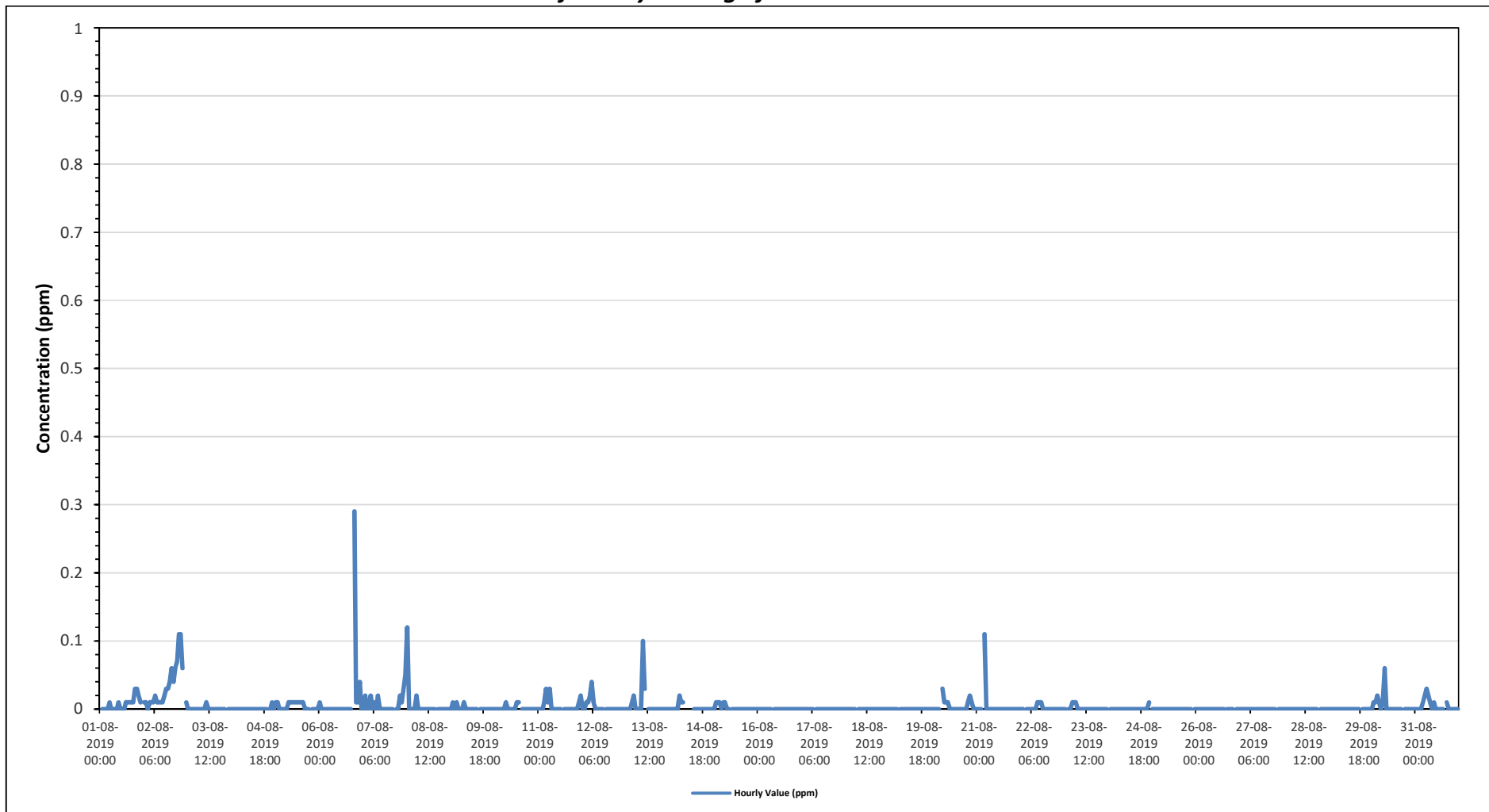
Maximum Hourly Value:	0.29 ppm on August 6 at hour 19	Hours in Service:	744
Maximum Daily Value:	0.03 ppm on August 2	Hours of Data:	706
Minimum Hourly Value:	0.00 ppm on August 1 at hour 1	Hours of Missing Data:	1
Minimum Daily Value:	0.00 ppm on August 16	Hours of Calibration:	37
Monthly Average:	0.00 ppm	Operational Uptime:	99.9

Day	Hourly Period Starting at (MST)																							Daily	Daily	Daily	
	0	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	Minimum	Maximum	Average
Aug 1	S	0.00	0.00	0.00	0.01	0.01	0.00	0.00	0.01	0.01	0.00	0.00	0.01	0.01	0.01	0.01	0.01	0.01	0.01	0.03	0.03	0.02	0.01	S	0.00	0.03	0.01
Aug 2	0.01	0.01	0.00	0.01	0.01	0.01	0.02	0.01	0.01	0.01	0.01	0.02	0.03	0.03	0.04	0.06	0.04	0.06	0.07	0.11	0.11	0.06	S	0.01	0.00	0.11	0.03
Aug 3	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.01	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	S	0.00	0.00	0.00	0.01	0.00
Aug 4	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	S	0.00	0.01	0.00	0.00	0.01	0.00
Aug 5	0.01	0.01	0.00	0.00	0.00	0.00	0.00	0.01	0.01	0.01	0.01	0.01	0.01	0.01	0.01	0.01	0.00	0.00	S	0.00	0.00	0.00	0.00	0.00	0.01	0.01	0.00
Aug 6	0.01	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	S	0.29	0.01	0.01	0.04	0.00	0.00	0.29	0.01	0.00
Aug 7	0.00	0.02	0.00	0.00	0.02	0.00	0.01	0.00	0.02	0.00	0.00	0.00	0.00	0.00	0.00	0.00	S	0.00	0.00	0.02	0.01	0.03	0.05	0.00	0.05	0.01	
Aug 8	0.12	0.00	0.00	0.00	0.00	0.02	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	S	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.12	0.01
Aug 9	0.00	0.01	0.00	0.01	0.00	0.00	0.01	0.00	0.00	0.00	0.00	0.00	0.00	0.00	S	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.01	0.00
Aug 10	0.00	0.00	0.00	0.00	0.00	0.00	0.01	0.00	0.00	0.00	0.00	0.00	0.01	0.01	S	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.01	0.00
Aug 11	0.00	0.00	0.00	0.01	0.03	0.01	0.03	0.00	0.00	0.00	0.00	0.00	0.00	S	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.01	0.02	0.00	0.03	0.03	0.00
Aug 12	0.00	0.00	0.01	0.01	0.02	0.04	0.01	0.00	0.00	0.00	0.00	S	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.04	0.00
Aug 13	0.00	0.00	0.00	0.01	0.02	0.00	0.00	0.00	0.00	0.10	0.03	S	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.10	0.01
Aug 14	0.00	0.00	0.00	0.00	0.00	0.02	0.01	0.01	C	C	C	C	C	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.02	0.00
Aug 15	0.00	0.01	0.01	0.01	0.00	0.01	0.01	0.00	0.00	S	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.01	0.00
Aug 16	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	S	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Aug 17	0.00	0.00	0.00	0.00	0.00	0.00	0.00	S	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Aug 18	0.00	0.00	0.00	0.00	0.00	0.00	S	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Aug 19	0.00	0.00	0.00	0.00	0.00	S	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Aug 20	0.00	0.00	0.00	0.00	S	0.03	0.01	0.01	0.01	0.01	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.01	0.02	0.01	0.00	0.00	0.00	0.03	0.03	0.00
Aug 21	0.00	0.00	0.00	S	0.11	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.11	0.00
Aug 22	0.00	0.00	S	0.00	0.00	0.00	0.00	0.00	0.01	0.01	0.01	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.01	0.01	0.00
Aug 23	0.00	S	0.00	0.00	0.01	0.01	0.01	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.01	0.01	0.00
Aug 24	S	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.01	S	0.00	0.01	0.00	
Aug 25	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	S	0.00	0.00	0.00	0.01	0.00
Aug 26	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	S	0.00	0.00	0.00	0.00	0.00	0.00
Aug 27	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	S	0.00	0.00	0.00	0.00	0.00	0.00
Aug 28	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	S	S	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Aug 29	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	S	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Aug 30	0.00	0.01	0.01	0.02	0.01	0.00	0.01	0.06	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	S	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.06	0.01	0.00
Aug 31	0.00	0.00	0.00	0.00	0.01	0.02	0.03	0.02	0.01	0.00	0.01	0.00	0.00	0.00	0.00	S	0.01	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.03	0.00
Diurnal Maximum	0.12	0.02	0.01	0.02	0.11	0.04	0.03	0.06	0.02	0.10	0.03	0.02	0.03	0.03	0.04	0.06	0.04	0.06	0.07	0.29	0.11	0.06	0.04	0.05	0.00	0.11	0.03
Diurnal Average	0.01	0.00	0.00	0.00	0.01	0.01	0.01	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.02	0.01	0.00	0.00	0.00	0.00	0.00	0.01	0.00

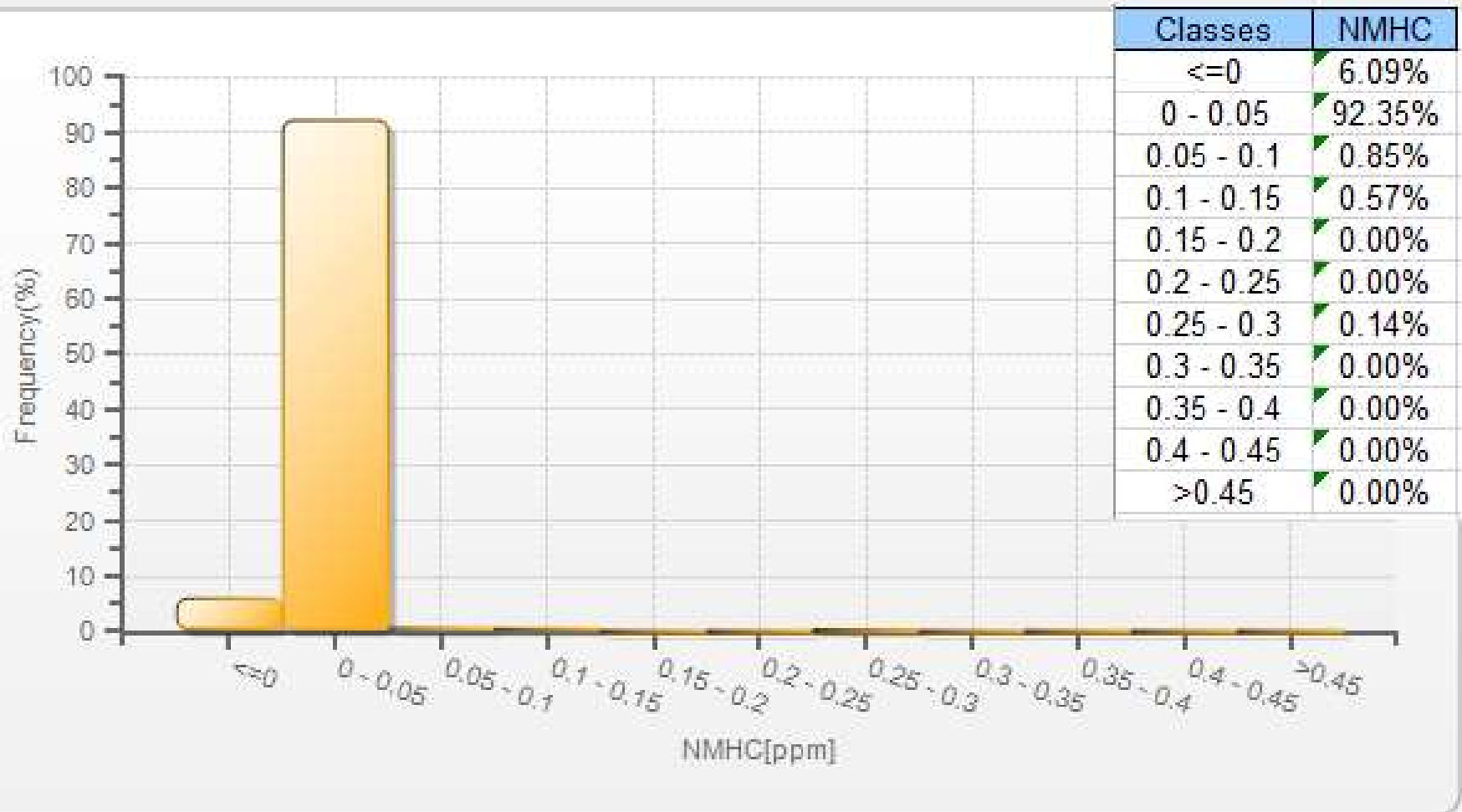
C	Calibration	S	Daily Zero/Span	Q	Quality Assurance	C1	Repeat Calibration	S1	Repeat Daily Zero/Span
G	Out for Repair	K	Collection Error	N	Not in Service	O	Operator Error	P	Power Failure
R	Recovery	X	Machine Malfunction	Y	Maintenance	T	Exceeds Temperature Limits	N	Not in Service

Daily Average is shown "-" if minimum data completeness criteria of 75% or 18 hours per day is not met.
 Monthly Average is shown "-" if minimum data completeness criteria of 75% of days per month is not met.

Timeseries Chart of Hourly Average for NMHC - Cold Lake South Station

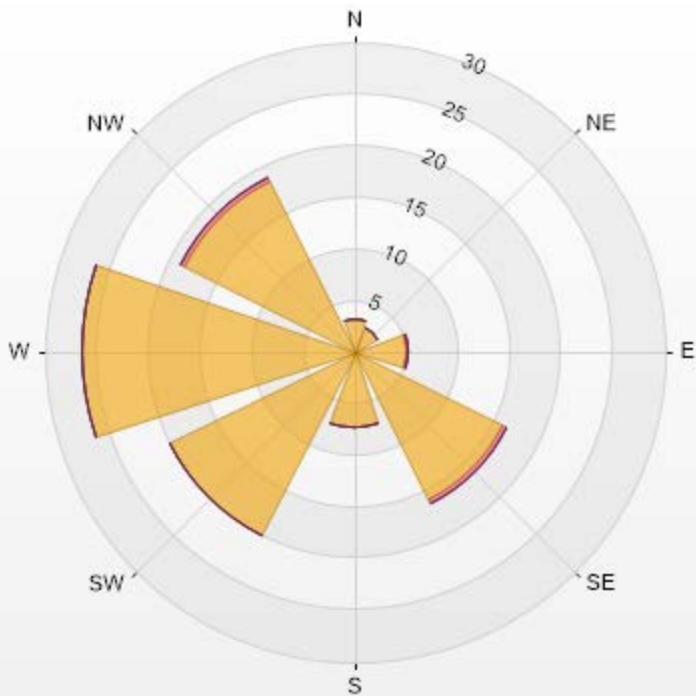


NMHC[ppm] Histogram: Cold Lake South Monthly: 08-2019 1 Hr.



Wind: Cold Lake South Poll.: Cold Lake South-NMHC[ppm] Monthly: 08-2019 Type: PollutionRose Direction: Blowing From (Wind Frequency) Based On 1 Hr.
 Calm: 0.00% Valid Data: 94.89% Calm Avg: 0.00 [ppm]

Direction	0-0.1	0.1-0.3	0.3-0.9	0.9-1.2	>1.2	Total
N	3.26	0	0	0	0	3.26
NE	2.55	0	0	0	0	2.55
E	5.1	0.14	0	0	0	5.24
SE	16.15	0.28	0	0	0	16.43
S	7.37	0	0	0	0	7.37
SW	19.97	0	0	0	0	19.97
W	26.35	0	0	0	0	26.35
NW	18.56	0.28	0	0	0	18.84
Summary	99.31	0.7	0	0	0	100



LICA-201908-Revision 1

% Icon Classes (ppm)	99	0-0.1	1	0.1-0.3	0	0.3-0.9	0	0.9-1.2	0	>1.2



LAKELAND INDUSTRY & COMMUNITY ASSOCIATION

Cold Lake South Station - August 2019

Summary of Hourly Averages

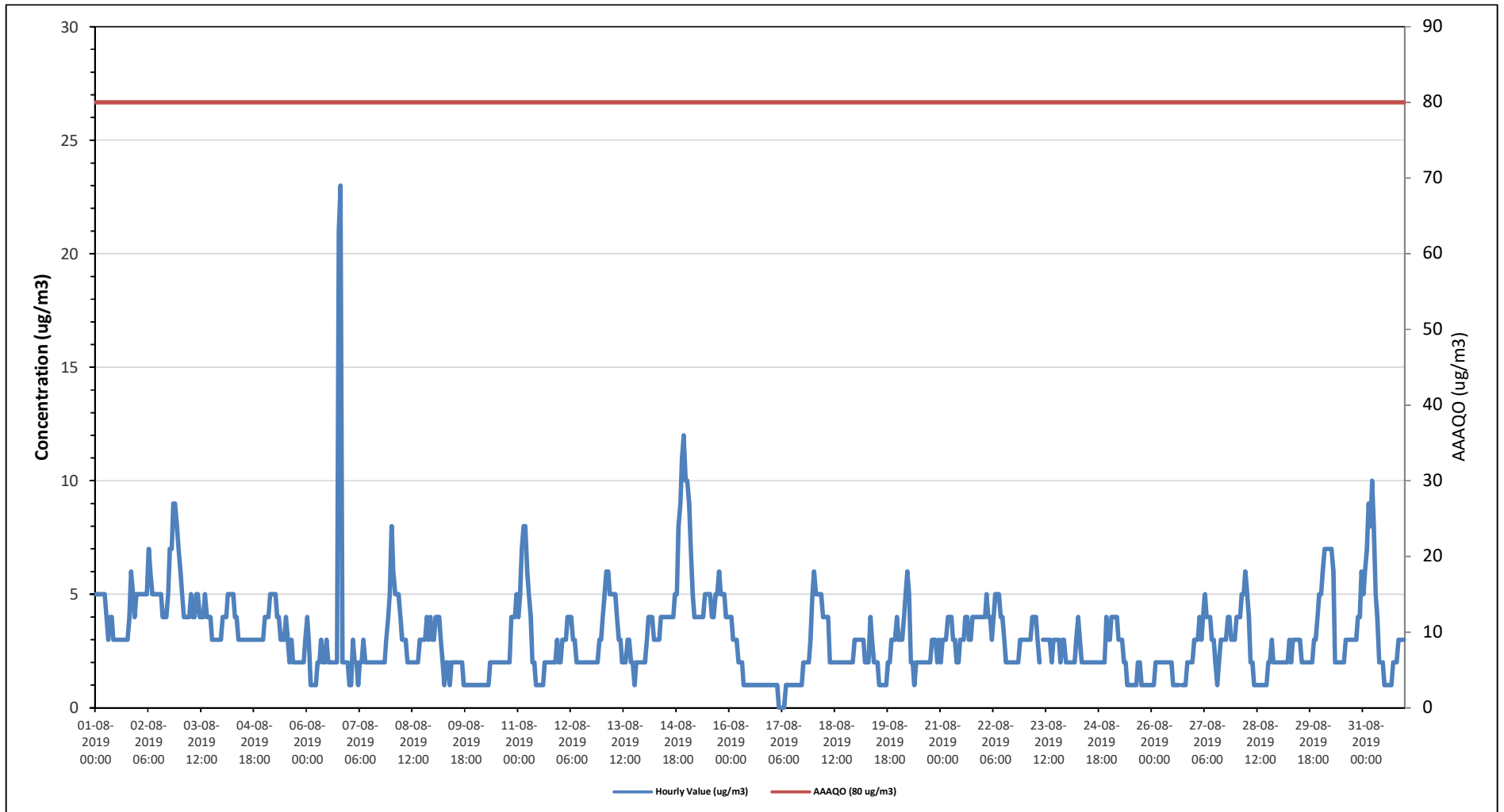
PARTICULATE MATTER 2.5 (PM_{2.5}) in µg/m³

Alberta Ambient Air Quality Objectives (AAAQO): 1-Hour 80 µg/m ³ , 24-Hour 29 µg/m ³																												
Number of 1-Hour Exceedences: 0					Number of 24-Hour Exceedences: 0																							
Maximum Hourly Value: 23 µg/m ³ on August 6 at hour 19					Hours in Service: 744																							
Maximum Daily Value: 6 µg/m ³ on August 2					Hours of Data: 742																							
Minimum Hourly Value: 0 µg/m ³ on August 17 at hour 4					Hours of Missing Data: 1																							
Minimum Daily Value: 1 µg/m ³ on August 17					Hours of Calibration: 1																							
Monthly Average: 3.1 µg/m ³					Operational Uptime: 99.9																							
Day	Hourly Period Starting at (MST)																							Daily Minimum	Daily Maximum	Daily Average		
	0	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22				23	
Aug 1	5	5	5	5	5	5	4	3	4	4	3	3	3	3	3	3	3	3	3	4	6	5	4	5	3	6	4.0	
Aug 2	5	5	5	5	5	5	7	6	5	5	5	5	5	5	4	4	4	5	7	7	9	9	8	7	4	9	5.7	
Aug 3	6	5	4	4	4	4	5	4	4	4	5	5	4	4	5	4	4	4	3	3	3	3	3	3	3	6	4.0	
Aug 4	4	4	4	5	5	5	5	4	4	3	3	3	3	3	3	3	3	3	3	3	3	3	3	3	3	5	3.5	
Aug 5	4	4	4	5	5	5	5	4	4	3	3	3	4	3	2	3	2	2	2	2	2	2	2	3	2	5	3.3	
Aug 6	4	3	1	1	1	1	2	2	3	2	2	3	2	2	2	2	2	2	21	23	2	2	2	2	1	23	3.7	
Aug 7	1	1	3	2	2	1	2	2	3	2	2	2	2	2	2	2	2	2	2	2	2	2	3	4	5	1	5	2.2
Aug 8	8	6	5	5	5	4	3	3	3	2	2	2	2	2	2	2	3	3	3	3	4	3	4	3	2	8	3.4	
Aug 9	3	4	4	4	3	2	1	2	2	1	2	2	2	2	2	2	2	1	1	1	1	1	1	1	1	4	2.0	
Aug 10	1	1	1	1	1	1	1	1	2	2	2	2	2	2	2	2	2	2	2	2	4	4	4	5	1	5	2.0	
Aug 11	4	5	7	8	8	6	5	4	2	2	1	1	1	1	1	2	2	2	2	2	2	2	3	2	1	8	3.1	
Aug 12	2	3	3	3	4	4	4	3	3	2	2	2	2	2	2	2	2	2	2	2	2	2	3	3	2	4	2.5	
Aug 13	4	5	6	6	5	5	5	4	3	3	2	2	2	2	3	3	2	2	1	2	2	2	2	2	1	6	3.3	
Aug 14	2	3	4	4	4	3	3	3	3	4	4	4	4	4	4	4	4	5	5	8	9	11	12	10	2	12	5.0	
Aug 15	10	9	7	5	4	4	4	4	4	4	5	5	5	5	4	4	5	5	6	5	5	5	4	4	4	10	5.1	
Aug 16	4	4	3	3	3	2	2	2	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	4	1.6	
Aug 17	1	1	1	1	0	0	0	0	1	1	1	1	1	1	1	1	1	1	2	2	2	2	3	5	0	5	1.3	
Aug 18	6	5	5	5	5	4	4	4	4	2	2	2	2	2	2	2	2	2	2	2	2	2	3	2	2	6	3.0	
Aug 19	3	3	3	3	3	2	2	2	4	3	2	2	2	1	1	1	1	1	2	2	3	3	3	4	1	4	2.3	
Aug 20	3	3	3	4	5	6	5	2	2	1	2	2	2	2	2	2	2	2	2	3	3	3	2	3	1	6	2.8	
Aug 21	2	3	3	3	4	4	4	3	3	2	2	3	3	3	4	4	3	3	4	4	4	4	4	4	2	4	3.3	
Aug 22	4	4	5	4	4	3	4	5	5	5	4	4	3	2	2	2	2	2	2	2	2	3	3	3	2	5	3.3	
Aug 23	3	3	3	3	4	4	4	3	2	C	3	3	3	3	3	2	3	3	3	3	2	3	3	2	2	4	3.0	
Aug 24	2	2	2	2	2	3	4	3	2	2	2	2	2	2	2	2	2	2	2	2	2	2	4	3	2	4	2.3	
Aug 25	3	4	4	4	4	3	3	3	2	2	1	1	1	1	1	1	2	2	1	1	1	1	1	1	1	4	2.0	
Aug 26	1	1	2	2	2	2	2	2	2	2	2	1	1	1	1	1	1	1	1	2	2	2	2	2	1	2	1.6	
Aug 27	3	3	3	4	3	4	5	4	4	4	3	3	2	1	2	3	3	3	3	4	4	3	3	3	1	5	3.2	
Aug 28	4	4	4	5	5	6	5	4	2	2	1	1	1	1	1	1	1	1	2	2	3	2	2	2	1	6	2.6	
Aug 29	2	2	2	2	2	2	3	2	3	3	3	3	3	2	2	2	2	2	2	2	3	3	4	5	2	5	2.5	
Aug 30	5	6	7	7	7	7	7	6	2	2	2	2	2	2	3	3	3	3	3	3	3	4	4	6	2	7	4.1	
Aug 31	5	6	7	9	8	10	8	5	4	2	2	2	1	1	1	1	2	2	2	2	3	3	3	3	1	10	3.8	
Diurnal Maximum	10	9	7	9	8	10	8	6	5	5	5	5	5	5	5	4	5	5	21	23	9	11	12	10				
Diurnal Average	3.7	3.8	3.9	4.0	3.9	3.8	3.8	3.2	3.0	2.6	2.5	2.5	2.4	2.2	2.3	2.3	2.4	2.4	3.1	3.4	3.1	3.2	3.3	3.5				
C	Calibration				S	Daily Zero/Span				Q	Quality Assurance				C1	Repeat Calibration				S1	Repeat Daily Zero/Span							
G	Out for Repair				K	Collection Error				N	Not in Service				O	Operator Error				P	Power Failure							
R	Recovery				X	Machine Malfunction				Y	Maintenance				T	Exceeds Temperature Limits				N	Not in Service							

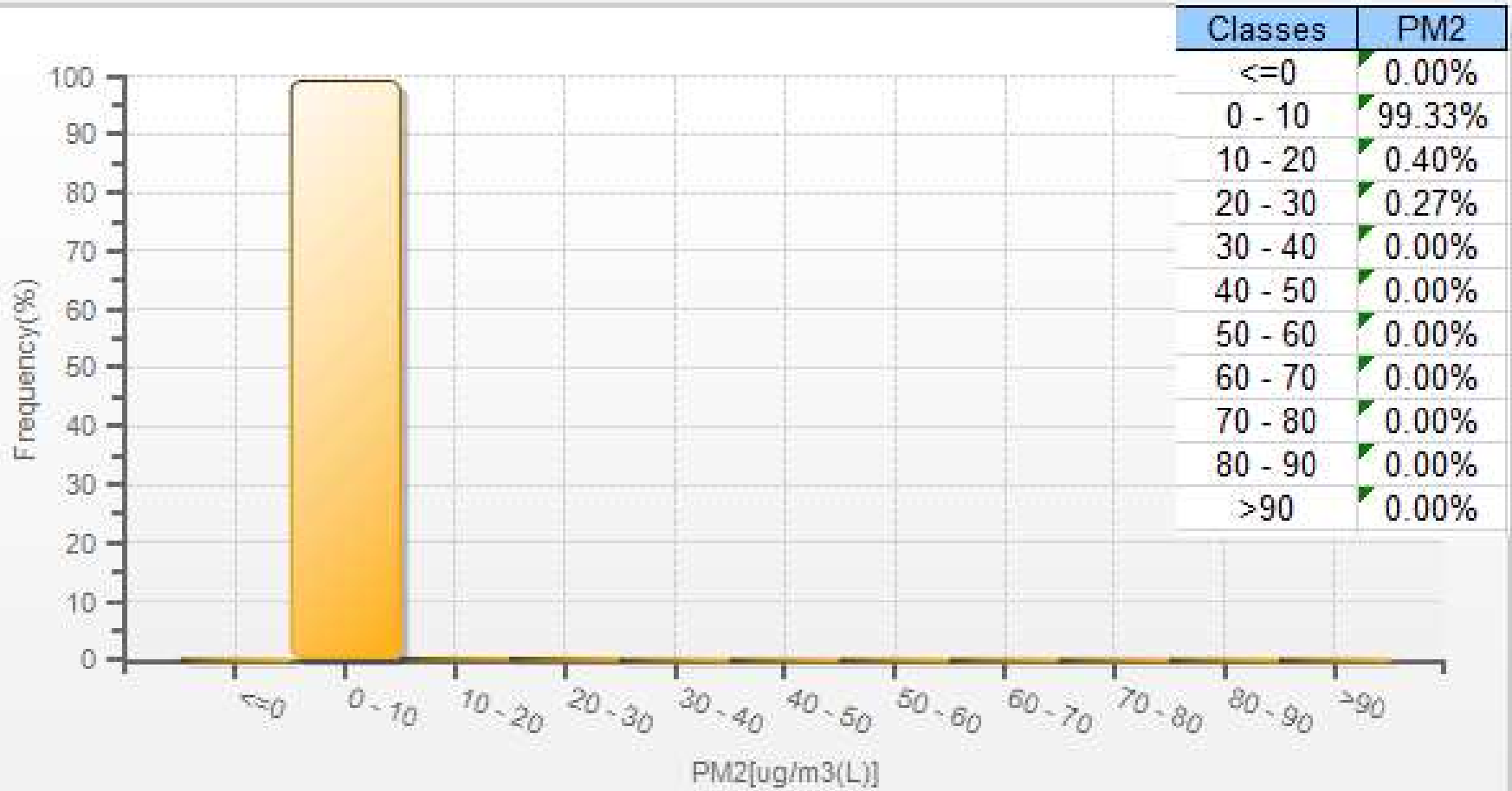
Daily Average is shown "-" if minimum data completeness criteria of 75% or 18 hours per day is not met.

Monthly Average is shown "-" if minimum data completeness criteria of 75% of days per month is not met.

Timeseries Chart of Hourly Average for PM2.5 - Cold Lake South Station

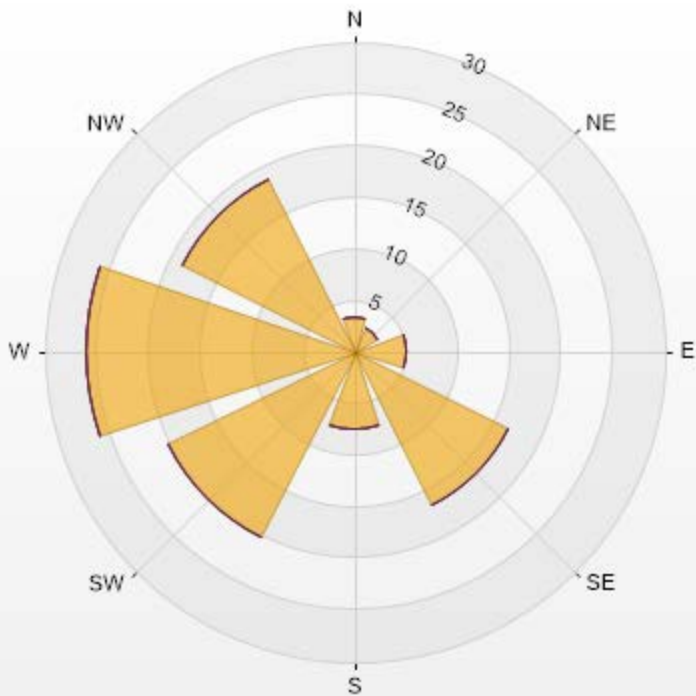


PM2[ug/m3(L)] Histogram: Cold Lake South Monthly: 08-2019 1 Hr.



Wind: Cold Lake South Poll.: Cold Lake South-PM2[ug/m3(L)] Monthly: 08-2019 Type: PollutionRose Direction: Blowing From (Wind Frequency) Based On 1 Hr.
 Calm: 0.00% Valid Data: 99.73% Calm Avg: 0.00 [ug/m3(L)]

Direction	0-50	50-80	80-120	120-240	>240.0	Total
N	3.37	0	0	0	0	3.37
NE	2.56	0	0	0	0	2.56
E	5.12	0	0	0	0	5.12
SE	16.58	0	0	0	0	16.58
S	7.55	0	0	0	0	7.55
SW	20.22	0	0	0	0	20.22
W	26.01	0	0	0	0	26.01
NW	18.6	0	0	0	0	18.6
Summary	100	0	0	0	0	100



LICA-201908-Revision 1



LAKELAND INDUSTRY & COMMUNITY ASSOCIATION

Cold Lake South Station - August 2019

Summary of Hourly Averages

RELATIVE HUMIDITY (RH) in %

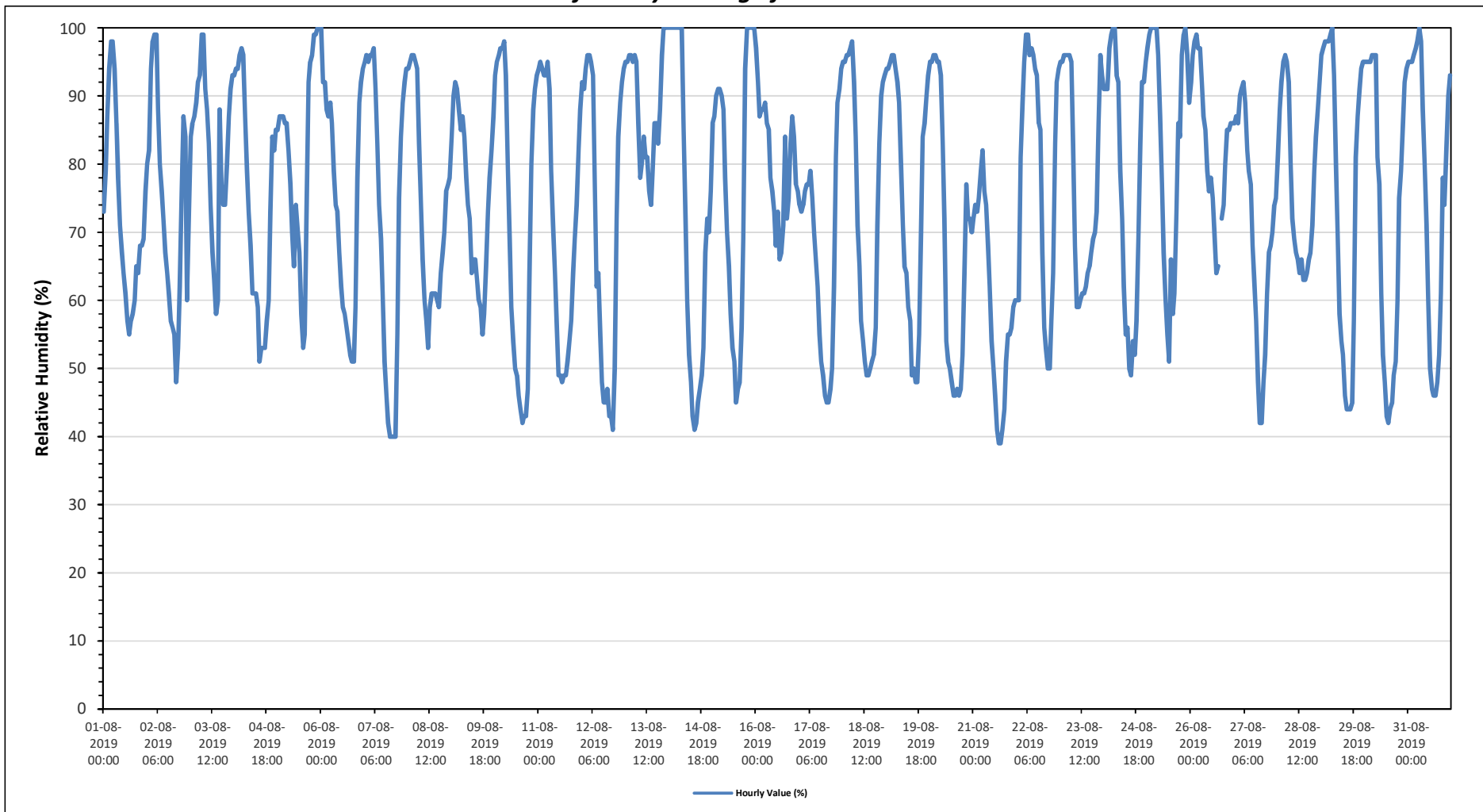
Maximum Hourly Value:	100 %	on August 5 at hour 22	Hours in Service:	744
Maximum Daily Value:	88.6 %	on August 13	Hours of Data:	743
Minimum Hourly Value:	39 %	on August 21 at hour 14	Hours of Missing Data:	1
Minimum Daily Value:	59.4 %	on August 21	Hours of Calibration:	0
Monthly Average:	75.2 %		Operational Uptime:	99.9

Day	Hourly Period Starting at (MST)																							Daily Minimum	Daily Maximum	Daily Average	
	0	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22				23
Aug 1	73	79	87	94	98	98	94	86	78	71	67	64	61	57	55	57	58	60	65	64	68	68	69	76	55	98	73
Aug 2	80	82	94	98	99	99	88	80	76	72	67	64	61	57	56	55	48	53	62	76	87	84	60	73	48	99	74
Aug 3	84	86	87	89	92	93	99	99	91	88	83	74	67	63	58	60	88	77	74	74	80	87	91	93	58	99	82
Aug 4	93	94	94	96	97	96	87	79	73	68	61	61	61	59	51	53	53	53	57	60	73	84	82	85	51	97	74
Aug 5	85	87	87	87	86	86	82	77	70	65	74	70	67	58	53	55	74	92	95	96	99	99	100	100	53	100	81
Aug 6	100	92	92	88	87	89	86	79	74	73	67	62	59	58	56	54	52	51	51	59	78	89	92	94	51	100	74
Aug 7	95	96	95	96	96	97	91	83	74	69	61	51	46	42	40	40	40	40	55	75	84	89	92	94	40	97	73
Aug 8	94	95	96	96	95	94	83	74	66	60	57	53	59	61	61	61	60	59	64	67	70	76	77	78	53	96	73
Aug 9	84	90	92	91	88	85	87	84	78	74	72	64	66	66	63	60	59	55	58	65	73	78	82	87	55	92	75
Aug 10	93	95	96	97	97	98	93	80	69	59	54	50	49	46	44	42	43	43	47	64	80	88	91	93	42	98	71
Aug 11	94	95	94	93	93	95	91	79	71	64	57	49	49	48	49	49	51	54	57	64	69	74	82	88	48	95	71
Aug 12	92	91	94	96	96	95	93	77	62	64	55	48	45	45	47	43	43	41	50	72	84	89	92	94	41	96	71
Aug 13	95	95	96	96	95	96	95	86	78	80	84	81	81	76	74	79	86	86	83	88	96	100	100	100	74	100	89
Aug 14	100	100	100	100	100	100	100	100	85	72	60	52	48	43	41	42	45	47	49	53	67	72	70	76	41	100	72
Aug 15	86	87	90	91	91	90	88	78	70	65	58	53	51	45	47	48	56	69	94	100	100	100	100	100	45	100	77
Aug 16	97	92	87	88	88	89	86	85	78	76	73	68	73	66	67	71	84	72	75	83	87	84	77	76	66	97	80
Aug 17	74	73	74	76	77	77	79	75	70	66	62	55	51	49	46	45	45	47	50	62	81	89	91	94	45	94	67
Aug 18	95	95	96	96	97	98	92	84	71	65	57	54	51	49	49	50	51	52	56	71	83	90	92	93	49	98	74
Aug 19	94	94	95	96	96	94	92	89	80	71	65	64	59	57	49	50	48	48	55	70	84	86	90	93	48	96	76
Aug 20	95	95	96	96	95	95	93	83	72	54	51	50	48	46	46	47	46	47	52	64	77	72	72	70	46	96	69
Aug 21	72	74	73	75	79	82	76	74	68	62	54	50	46	41	39	39	41	44	51	55	55	56	59	60	39	82	59
Aug 22	60	60	81	89	95	99	99	96	97	96	94	93	86	85	67	56	53	50	50	57	64	83	92	94	50	99	79
Aug 23	95	95	96	96	96	96	95	83	68	59	59	60	61	61	62	64	65	67	69	70	73	86	96	93	59	96	78
Aug 24	91	91	91	97	99	100	100	93	92	79	72	62	55	56	50	49	54	52	57	69	83	92	92	95	49	100	78
Aug 25	97	99	100	100	100	100	96	87	77	67	60	55	51	66	58	61	73	86	84	96	99	100	96	89	51	100	83
Aug 26	92	96	98	99	97	97	92	87	85	79	76	78	75	70	64	65	Y	72	74	80	85	85	86	86	64	99	83
Aug 27	86	87	86	90	91	92	89	82	79	77	68	63	57	48	42	42	48	52	61	67	68	70	74	75	42	92	71
Aug 28	81	88	92	95	96	95	92	80	72	69	67	66	64	66	63	63	64	66	67	71	79	84	88	92	63	96	78
Aug 29	96	97	98	98	98	99	100	93	80	70	58	54	52	46	44	44	44	45	57	81	87	91	94	95	44	100	76
Aug 30	95	95	95	95	96	96	96	81	77	61	52	48	43	42	44	45	49	51	60	75	79	86	92	94	42	96	73
Aug 31	95	95	95	96	97	98	100	98	88	80	71	60	50	47	46	46	48	52	61	78	74	82	90	93	46	100	77
Diurnal Maximum	100	100	100	100	100	100	100	100	97	96	94	93	86	85	74	79	88	92	95	100	100	100	100	100			
Diurnal Average	89.1	90.0	91.8	93.2	93.8	94.1	91.4	84.2	76.4	70.2	65.0	60.5	57.8	55.5	52.6	52.7	55.6	57.5	62.6	71.8	79.5	84.3	85.8	87.8			

C	Calibration	S	Daily Zero/Span	Q	Quality Assurance	C1	Repeat Calibration	S1	Repeat Daily Zero/Span
G	Out for Repair	K	Collection Error	N	Not in Service	O	Operator Error	P	Power Failure
R	Recovery	X	Machine Malfunction	Y	Maintenance	T	Exceeds Temperature Limits	N	Not in Service

Daily Average is shown "-" if minimum data completeness criteria of 75% or 18 hours per day is not met.
 Monthly Average is shown "-" if minimum data completeness criteria of 75% of days per month is not met.

Timeseries Chart of Hourly Average for RH - Cold Lake South Station





LAKELAND INDUSTRY & COMMUNITY ASSOCIATION

Cold Lake South Station - August 2019

Summary of Hourly Averages

AMBIENT TEMPERATURE (AT) in Degree Celsius

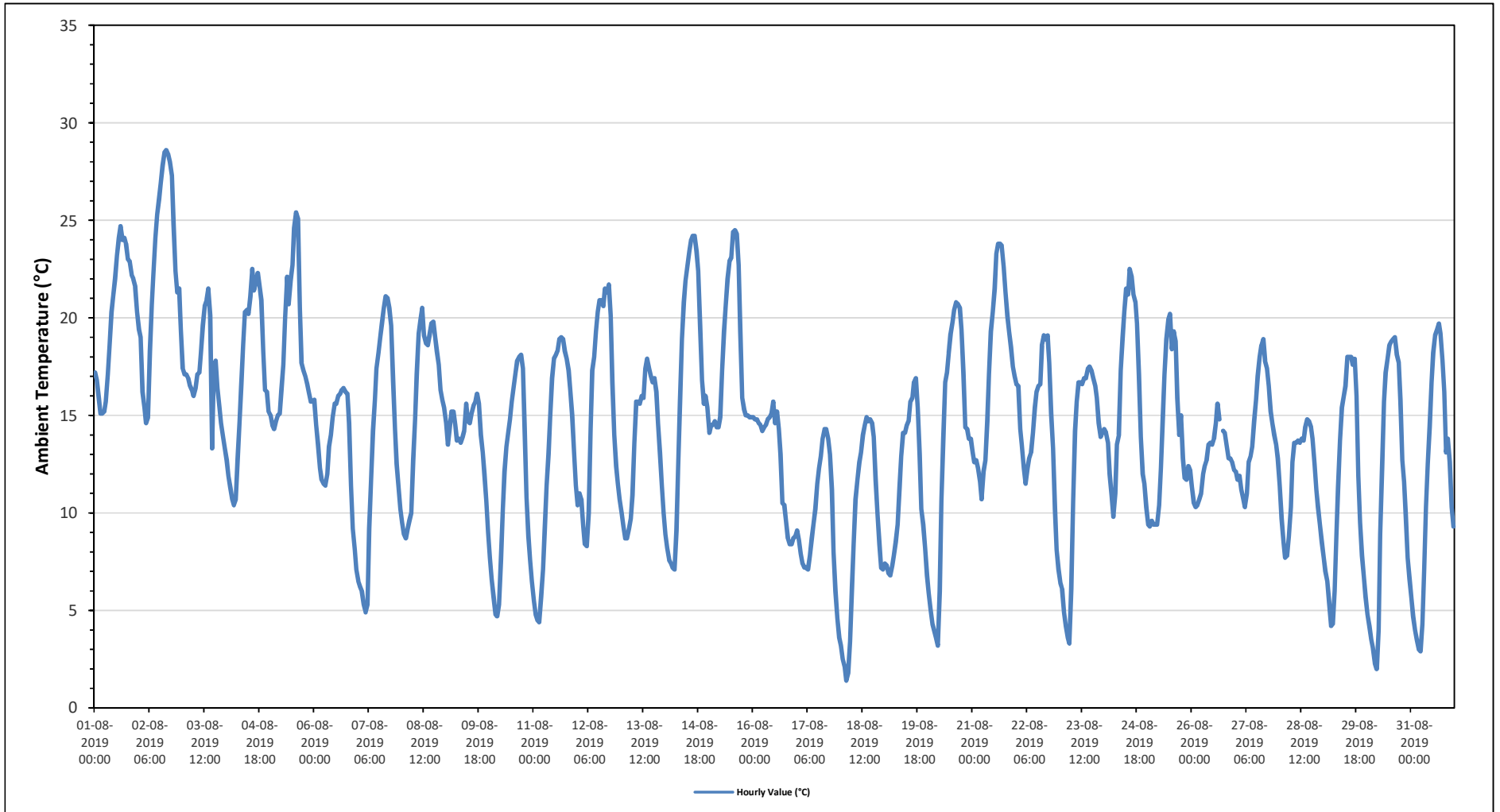
Maximum Hourly Value:	28.6 °C	on August 2 at hour 15	Hours in Service:	744
Maximum Daily Value:	22.5 °C	on August 2	Hours of Data:	743
Minimum Hourly Value:	1.4 °C	on August 18 at hour 3	Hours of Missing Data:	1
Minimum Daily Value:	9.3 °C	on August 18	Hours of Calibration:	0
Monthly Average:	14.3 °C		Operational Uptime:	99.9

Day	Hourly Period Starting at (MST)																							Daily Minimum	Daily Maximum	Daily Average	
	0	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22				23
Aug 1	17.2	16.8	15.9	15.1	15.1	15.2	15.7	17.1	18.6	20.3	21.1	22.0	23.2	24.1	24.7	24.0	24.1	23.8	23.0	22.9	22.2	22.0	21.6	20.3	15.1	24.7	20.3
Aug 2	19.4	19.0	16.2	15.4	14.6	14.9	18.3	20.7	22.2	24.1	25.3	26.1	26.9	27.8	28.5	28.6	28.4	28.0	27.3	24.8	22.4	21.3	21.5	19.4	14.6	28.6	22.5
Aug 3	17.4	17.1	17.1	16.9	16.5	16.3	16.0	16.4	17.1	17.2	18.2	19.6	20.6	20.9	21.5	20.1	13.3	17.4	17.8	16.4	15.4	14.6	13.9	13.3	13.3	21.5	17.1
Aug 4	12.7	11.9	11.3	10.7	10.4	10.7	12.8	14.7	16.5	18.6	20.3	20.4	20.2	21.1	22.5	21.4	21.8	22.3	21.6	20.9	18.3	16.3	16.2	15.2	10.4	22.5	17.0
Aug 5	15.0	14.5	14.3	14.7	15.0	15.1	16.3	17.6	20.0	22.1	20.7	21.9	22.7	24.6	25.4	25.1	20.5	17.7	17.3	17.0	16.6	16.2	15.7	15.7	14.3	25.4	18.4
Aug 6	15.8	14.5	13.5	12.3	11.7	11.5	11.4	12.0	13.4	14.0	14.9	15.6	15.6	16.0	16.1	16.3	16.4	16.2	16.1	14.6	11.4	9.2	8.1	7.1	7.1	16.4	13.5
Aug 7	6.5	6.2	6.0	5.3	4.9	5.3	9.2	11.7	14.2	15.8	17.4	18.2	19.0	19.7	20.5	21.1	21.0	20.5	19.6	16.8	14.3	12.5	11.3	10.2	4.9	21.1	13.6
Aug 8	9.5	8.9	8.7	9.2	9.6	10.0	12.7	14.8	17.1	19.2	19.9	20.5	19.1	18.7	18.6	19.1	19.7	19.8	19.0	18.3	17.6	16.3	15.8	15.4	8.7	20.5	15.7
Aug 9	14.6	13.5	14.3	15.2	15.2	14.5	13.7	13.8	13.6	13.9	14.2	15.6	14.7	14.6	15.1	15.5	15.7	16.1	15.6	14.0	13.1	12.0	10.6	9.0	9.0	16.1	14.1
Aug 10	7.7	6.6	5.7	4.8	4.7	5.3	7.6	10.2	12.1	13.4	14.1	14.8	15.7	16.5	17.2	17.8	18.0	18.1	17.4	14.4	10.8	8.8	7.6	6.5	4.7	18.1	11.5
Aug 11	5.5	4.8	4.5	4.4	5.7	7.1	9.1	11.4	13.0	14.9	16.9	17.9	18.1	18.3	18.9	19.0	18.9	18.3	17.9	17.3	16.3	15.0	13.1	11.4	4.4	19.0	13.2
Aug 12	10.4	11.0	10.7	9.3	8.4	8.3	10.0	14.3	17.3	18.0	19.3	20.3	20.9	20.9	20.6	21.5	21.3	21.7	20.1	16.7	14.0	12.4	11.5	10.7	8.3	21.7	15.4
Aug 13	10.0	9.3	8.7	8.7	9.2	9.7	10.9	13.6	15.7	15.7	15.6	16.0	15.9	17.4	17.9	17.4	17.0	16.7	16.9	16.2	14.6	13.1	11.4	10.0	8.7	17.9	13.7
Aug 14	8.9	8.2	7.6	7.4	7.2	7.1	9.1	12.3	15.7	18.9	20.8	21.9	22.6	23.4	24.0	24.2	24.2	23.4	22.4	19.6	16.8	15.6	16.0	15.4	7.1	24.2	16.4
Aug 15	14.1	14.5	14.5	14.7	14.4	14.4	14.9	17.3	19.3	20.6	22.0	22.9	23.1	24.4	24.5	24.3	22.7	19.3	15.9	15.3	15.0	15.0	14.9	14.9	14.1	24.5	18.0
Aug 16	14.9	14.8	14.8	14.6	14.5	14.2	14.4	14.5	14.8	14.9	15.1	15.7	14.6	15.2	14.3	13.0	10.5	10.4	9.6	8.7	8.4	8.4	8.7	8.8	8.4	15.7	12.8
Aug 17	9.1	8.6	7.9	7.4	7.2	7.2	7.1	7.8	8.7	9.4	10.2	11.5	12.3	12.9	13.8	14.3	14.3	13.8	13.0	11.2	8.0	6.0	4.6	3.6	3.6	14.3	9.6
Aug 18	3.2	2.5	2.1	1.4	1.8	3.4	6.2	8.4	10.7	11.7	12.6	13.1	14.0	14.5	14.9	14.7	14.8	14.6	13.9	11.7	9.9	8.4	7.2	7.1	1.4	14.9	9.3
Aug 19	7.4	7.3	6.9	6.8	7.3	7.8	8.5	9.4	11.3	12.9	14.1	14.1	14.5	14.7	15.7	15.9	16.7	16.9	15.4	13.0	10.2	9.4	8.2	6.8	6.8	16.9	11.3
Aug 20	5.9	5.1	4.3	4.0	3.6	3.2	6.0	10.6	13.8	16.7	17.2	18.2	19.2	19.8	20.4	20.8	20.7	20.5	19.4	17.2	14.4	14.3	13.8	13.8	3.2	20.8	13.5
Aug 21	13.1	12.6	12.7	12.3	11.6	10.7	12.1	12.7	14.7	17.1	19.3	20.3	21.5	23.3	23.8	23.8	23.7	22.6	21.3	20.1	19.3	18.5	17.5	17.0	10.7	23.8	17.6
Aug 22	16.6	16.5	14.3	13.5	12.3	11.5	12.3	12.8	13.1	14.1	15.4	16.2	16.5	16.6	18.6	19.1	18.9	19.1	17.7	15.1	13.3	10.2	8.1	7.1	7.1	19.1	14.5
Aug 23	6.4	6.1	4.9	4.2	3.6	3.3	6.1	10.6	14.2	15.7	16.7	16.7	16.6	16.9	16.9	17.4	17.5	17.3	16.9	16.5	15.9	14.6	13.9	14.1	3.3	17.5	12.6
Aug 24	14.3	14.1	13.6	12.0	10.9	9.8	11.0	13.5	14.0	17.3	19.0	20.3	21.5	21.2	22.5	22.1	21.2	20.8	19.7	17.1	13.9	12.0	11.5	10.3	9.8	22.5	16.0
Aug 25	9.4	9.3	9.6	9.4	9.4	9.4	10.4	12.3	14.9	17.1	18.9	19.9	20.2	18.4	19.3	18.8	15.9	14.0	15.0	12.8	11.8	11.7	12.4	12.2	9.3	20.2	13.9
Aug 26	11.3	10.5	10.3	10.4	10.7	11.0	12.0	12.4	12.7	13.5	13.6	13.5	13.8	14.6	15.6	14.8	Y	14.2	14.1	13.4	12.8	12.8	12.6	12.2	10.3	15.6	12.7
Aug 27	12.1	11.7	11.9	11.2	10.7	10.3	11.0	12.6	12.9	13.4	14.7	15.8	17.0	18.0	18.6	18.9	17.8	17.4	16.5	15.2	14.6	14.0	13.5	12.8	10.3	18.9	14.3
Aug 28	11.4	9.7	8.5	7.7	7.8	8.8	10.3	12.6	13.6	13.7	13.6	13.8	13.7	14.4	14.8	14.7	14.4	13.8	12.5	11.2	10.3	9.4	8.5	7.7	14.8	11.8	
Aug 29	7.7	7.0	6.5	5.4	4.2	4.3	6.0	8.9	11.3	13.7	15.4	16.0	16.5	18.0	18.0	17.6	17.9	16.0	11.9	9.5	7.8	6.7	5.7	4.2	18.0	11.3	
Aug 30	4.8	4.2	3.5	3.1	2.3	2.0	4.0	8.9	12.3	15.7	17.2	17.9	18.6	18.8	18.9	19.0	18.1	17.7	15.8	12.7	11.6	9.9	7.7	6.6	2.0	19.0	11.3
Aug 31	5.6	4.7	4.0	3.5	3.0	2.9	4.3	7.1	10.3	12.5	14.4	16.7	18.2	19.1	19.4	19.7	19.2	17.8	16.2	13.1	13.8	12.6	10.3	9.3	2.9	19.7	11.6
Diurnal Maximum	19.4	19.0	17.1	16.9	16.5	16.3	18.3	20.7	22.2	24.1	25.3	26.1	26.9	27.8	28.5	28.6	28.4	28.0	27.3	24.8	22.4	22.0	21.6	20.3			
Diurnal Average	10.9	10.4	9.8	9.4	9.1	9.2	10.6	12.7	14.5	16.0	17.0	17.8	18.3	18.8	19.4	19.4	18.8	18.3	17.5	15.7	14.1	12.9	12.1	11.3			

C	Calibration	S	Daily Zero/Span	Q	Quality Assurance	C1	Repeat Calibration	S1	Repeat Daily Zero/Span
G	Out for Repair	K	Collection Error	N	Not in Service	O	Operator Error	P	Power Failure
R	Recovery	X	Machine Malfunction	Y	Maintenance	T	Exceeds Temperature Limits	N	Not in Service

Daily Average is shown "-" if minimum data completeness criteria of 75% or 18 hours per day is not met.
 Monthly Average is shown "-" if minimum data completeness criteria of 75% of days per month is not met.

Timeseries Chart of Hourly Average for AT - Cold Lake South Station





LAKELAND INDUSTRY & COMMUNITY ASSOCIATION

Cold Lake South Station - August 2019

Summary of Hourly Averages

STATION TEMPERATURE (ST) in Degree Celsius

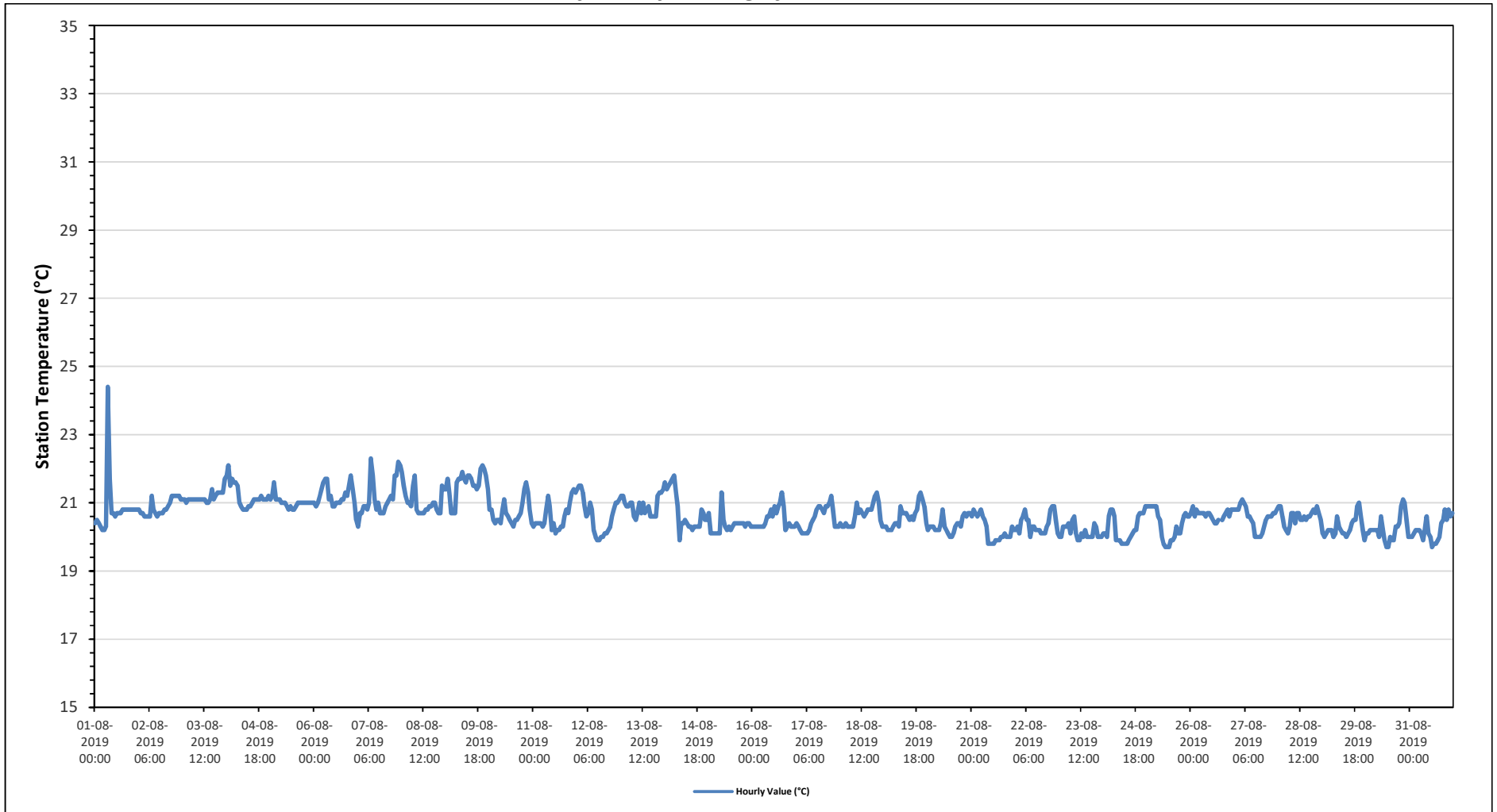
Maximum Hourly Value:	24.4 °C	on August 1 at hour 7	Hours in Service:	744
Maximum Daily Value:	21.6 °C	on August 9	Hours of Data:	743
Minimum Hourly Value:	19.7 °C	on August 25 at hour 10	Hours of Missing Data:	1
Minimum Daily Value:	20.1 °C	on August 23	Hours of Calibration:	0
Monthly Average:	20.7 °C		Operational Uptime:	99.9

Day	Hourly Period Starting at (MST)																							Daily Minimum	Daily Maximum	Daily Average	
	0	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22				23
Aug 1	20.4	20.5	20.4	20.3	20.2	20.2	20.3	24.4	21.7	20.7	20.7	20.6	20.7	20.7	20.7	20.8	20.8	20.8	20.8	20.8	20.8	20.8	20.8	20.2	24.4	20.8	
Aug 2	20.8	20.7	20.7	20.6	20.6	20.6	20.6	21.2	20.8	20.7	20.6	20.7	20.7	20.7	20.8	20.8	20.9	21.0	21.2	21.2	21.2	21.2	21.1	20.6	21.2	20.9	
Aug 3	21.1	21.1	21.0	21.1	21.1	21.1	21.1	21.1	21.1	21.1	21.1	21.1	21.1	21.0	21.0	21.1	21.4	21.1	21.2	21.3	21.3	21.3	21.7	21.0	21.7	21.2	
Aug 4	21.8	22.1	21.5	21.7	21.6	21.6	21.5	21.0	20.9	20.8	20.8	20.8	20.9	20.9	21.0	21.1	21.1	21.1	21.1	21.2	21.1	21.1	21.2	20.8	22.1	21.2	
Aug 5	21.1	21.2	21.6	21.1	21.1	21.1	21.0	21.0	20.9	20.8	20.9	20.8	20.8	20.9	21.0	21.0	21.0	21.0	21.0	21.0	21.0	21.0	21.0	20.8	21.6	21.0	
Aug 6	21.0	20.9	21.0	21.2	21.4	21.6	21.7	21.7	21.1	21.2	20.9	21.0	21.0	21.0	21.1	21.1	21.3	21.2	21.5	21.8	21.4	21.0	20.5	20.5	21.8	21.2	
Aug 7	20.3	20.7	20.7	20.9	20.9	20.8	21.0	22.3	21.8	21.1	20.8	21.0	20.7	20.7	20.7	20.9	21.0	21.1	21.2	21.1	21.8	21.8	22.2	20.3	22.3	21.2	
Aug 8	21.9	21.5	21.2	21.0	21.0	20.9	21.5	21.8	20.8	20.7	20.7	20.7	20.7	20.8	20.8	20.9	20.9	21.0	21.0	20.8	20.7	20.7	21.5	21.4	20.7	21.0	
Aug 9	21.4	21.7	21.3	20.7	20.7	20.7	21.6	21.7	21.9	21.7	21.6	21.8	21.8	21.7	21.5	21.5	21.4	21.5	22.0	22.1	22.0	21.8	21.4	20.7	22.1	21.6	
Aug 10	20.8	20.8	20.5	20.4	20.5	20.5	20.4	20.8	21.1	20.7	20.6	20.5	20.4	20.3	20.5	20.5	20.6	20.7	21.0	21.4	21.6	21.3	20.8	20.4	20.3	21.6	20.7
Aug 11	20.3	20.4	20.4	20.4	20.4	20.3	20.4	20.8	21.2	20.9	20.2	20.4	20.1	20.2	20.2	20.3	20.3	20.6	20.8	20.7	21.0	21.3	21.4	21.3	20.1	21.4	20.6
Aug 12	21.4	21.5	21.5	21.3	20.9	20.6	20.7	21.0	20.8	20.2	20.0	19.9	19.9	20.0	20.0	20.1	20.1	20.2	20.3	20.6	20.8	21.0	21.0	19.9	21.5	20.6	
Aug 13	21.2	21.2	21.0	20.9	20.9	21.0	21.0	20.6	20.5	20.7	21.0	20.7	21.0	20.7	20.8	20.9	20.6	20.6	20.6	21.2	21.3	21.3	21.4	20.5	21.4	20.9	
Aug 14	21.6	21.4	21.5	21.6	21.7	21.8	21.3	20.9	19.9	20.4	20.4	20.5	20.4	20.3	20.3	20.2	20.3	20.3	20.3	20.3	20.8	20.7	20.5	19.9	21.8	20.7	
Aug 15	20.7	20.1	20.1	20.1	20.1	20.1	20.1	21.3	20.5	20.3	20.2	20.3	20.2	20.3	20.4	20.4	20.4	20.4	20.4	20.4	20.4	20.3	20.4	20.3	20.1	21.3	20.3
Aug 16	20.3	20.3	20.3	20.3	20.3	20.3	20.3	20.4	20.6	20.6	20.8	20.6	20.9	20.7	20.9	21.0	21.3	20.9	20.2	20.3	20.4	20.3	20.3	20.2	21.3	20.5	
Aug 17	20.4	20.3	20.2	20.1	20.1	20.1	20.1	20.2	20.4	20.5	20.6	20.8	20.9	20.9	20.8	20.7	20.9	20.9	21.0	21.2	20.8	20.3	20.3	20.3	20.1	21.2	20.5
Aug 18	20.4	20.3	20.3	20.4	20.3	20.3	20.3	20.3	20.6	21.0	20.7	20.8	20.7	20.6	20.7	20.8	20.8	20.8	21.0	21.2	21.3	21.0	20.5	20.3	20.3	21.3	20.6
Aug 19	20.3	20.3	20.2	20.2	20.2	20.3	20.4	20.4	20.3	20.9	20.7	20.7	20.6	20.5	20.6	20.5	20.7	20.8	21.2	21.3	21.1	20.9	20.4	20.2	21.3	20.6	
Aug 20	20.2	20.3	20.3	20.3	20.2	20.2	20.2	20.4	20.8	20.3	20.2	20.1	20.0	20.0	20.1	20.3	20.4	20.4	20.3	20.6	20.7	20.6	20.7	20.0	20.8	20.3	
Aug 21	20.6	20.8	20.7	20.6	20.7	20.8	20.6	20.5	20.3	19.8	19.8	19.8	19.8	19.9	19.9	19.9	20.0	20.1	20.0	20.0	20.0	20.3	20.2	19.8	20.8	20.2	
Aug 22	20.2	20.3	20.1	20.5	20.6	20.8	20.5	20.5	20.0	20.3	20.3	20.2	20.2	20.2	20.1	20.1	20.1	20.3	20.4	20.8	20.9	20.9	20.5	20.1	20.0	20.9	20.4
Aug 23	20.0	20.0	20.3	20.3	20.3	20.4	20.1	20.5	20.6	20.1	19.9	19.9	20.1	20.0	20.2	20.0	20.0	20.0	20.4	20.3	20.0	20.0	19.9	20.6	20.1	20.1	
Aug 24	20.1	20.1	20.0	20.6	20.8	20.8	20.6	19.9	19.9	19.9	19.8	19.8	19.8	19.8	19.9	20.0	20.1	20.2	20.2	20.6	20.7	20.7	20.9	19.8	20.9	20.2	
Aug 25	20.9	20.9	20.9	20.9	20.9	20.9	20.9	20.6	20.5	20.0	19.8	19.7	19.7	19.7	19.9	19.9	20.0	20.3	20.1	20.1	20.4	20.6	20.7	20.6	19.7	20.9	20.4
Aug 26	20.7	20.9	20.6	20.8	20.7	20.7	20.7	20.7	20.6	20.7	20.7	20.6	20.5	20.4	20.4	20.5	Y	20.5	20.6	20.7	20.8	20.6	20.8	20.8	20.4	20.9	20.7
Aug 27	20.8	20.8	20.8	21.0	21.1	21.0	20.9	20.6	20.6	20.5	20.4	20.0	20.0	20.0	20.0	20.1	20.3	20.5	20.6	20.6	20.6	20.7	20.8	20.0	21.1	20.6	
Aug 28	20.9	20.9	20.6	20.3	20.2	20.1	20.3	20.7	20.7	20.4	20.7	20.7	20.5	20.5	20.6	20.5	20.6	20.6	20.7	20.8	20.7	20.9	20.7	20.5	20.1	20.9	20.6
Aug 29	20.1	20.0	20.1	20.2	20.2	20.2	20.0	20.1	20.6	20.3	20.2	20.1	20.1	20.0	20.1	20.2	20.4	20.5	20.5	20.9	21.0	20.6	20.2	19.9	19.9	21.0	20.3
Aug 30	20.1	20.1	20.2	20.2	20.2	20.2	20.2	20.0	20.6	20.2	19.9	19.7	19.7	20.0	19.9	19.9	20.3	20.3	20.4	20.9	21.1	21.0	20.5	20.0	19.7	21.1	20.2
Aug 31	20.0	20.0	20.1	20.2	20.2	20.2	20.1	19.9	20.2	20.6	20.1	20.0	19.7	19.8	19.8	19.9	20.0	20.4	20.5	20.8	20.5	20.8	20.6	20.7	19.7	20.8	20.2
Diurnal Maximum	21.9	22.1	21.6	21.7	21.7	21.8	21.7	24.4	21.8	21.9	21.7	21.6	21.8	21.8	21.7	21.5	21.5	21.4	21.5	22.0	22.1	22.0	22.2	22.1			
Diurnal Average	20.7	20.7	20.6	20.7	20.6	20.7	20.6	20.9	20.7	20.6	20.5	20.5	20.4	20.4	20.5	20.5	20.6	20.6	20.7	20.8	20.9	20.9	20.8	20.7			

C	Calibration	S	Daily Zero/Span	Q	Quality Assurance	C1	Repeat Calibration	S1	Repeat Daily Zero/Span
G	Out for Repair	K	Collection Error	N	Not in Service	O	Operator Error	P	Power Failure
R	Recovery	X	Machine Malfunction	Y	Maintenance	T	Exceeds Temperature Limits	N	Not in Service

Daily Average is shown "-" if minimum data completeness criteria of 75% or 18 hours per day is not met.
 Monthly Average is shown "-" if minimum data completeness criteria of 75% of days per month is not met.

Timeseries Chart of Hourly Average for ST - Cold Lake South Station





LAKELAND INDUSTRY & COMMUNITY ASSOCIATION

Cold Lake South Station - August 2019

Summary of Hourly Averages

VECTOR WIND SPEED (VWS) in km/hr

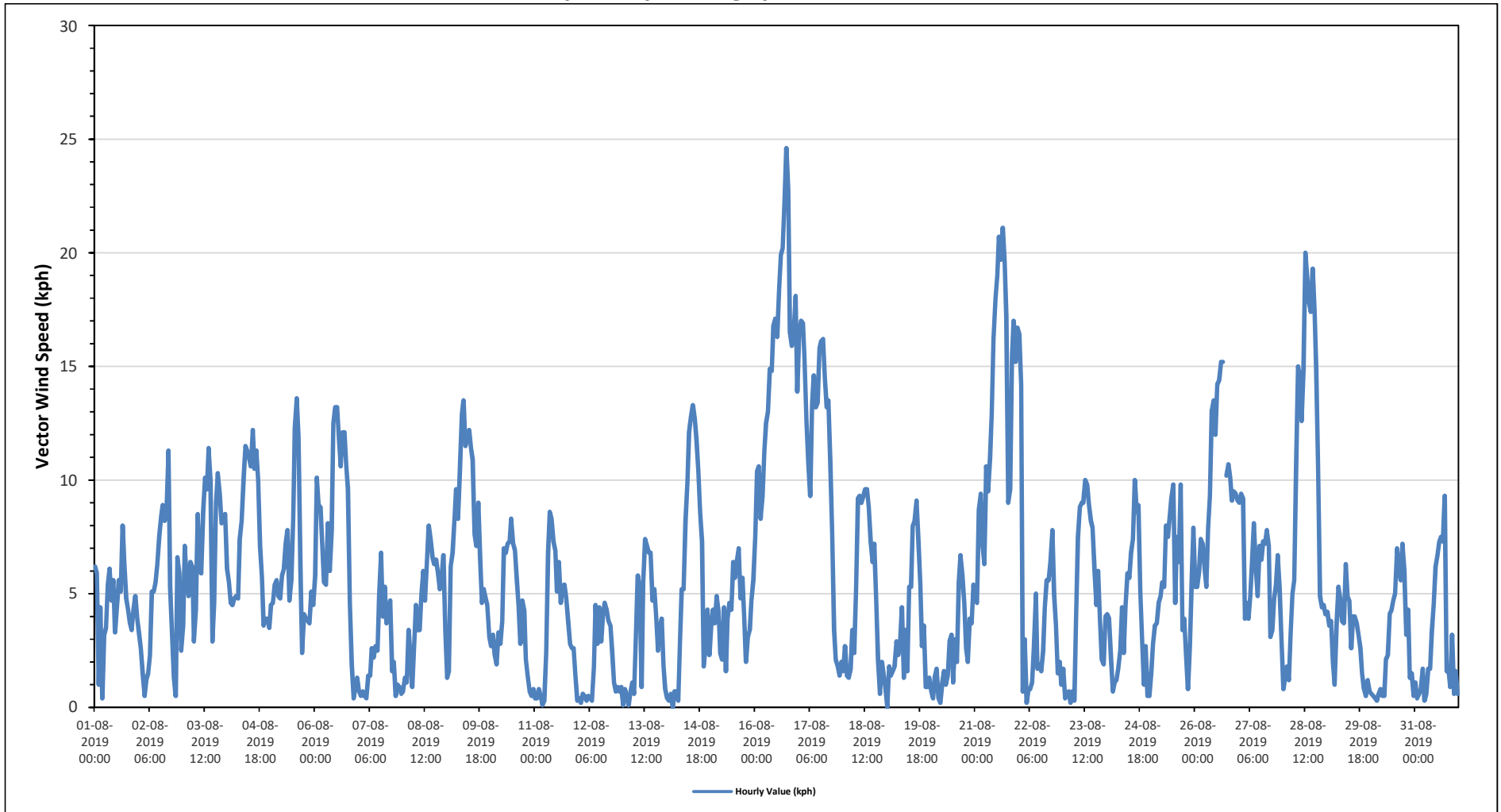
Maximum Hourly Value:	24.6 kph	on August 16 at hour 17	Hours in Service:	744
Maximum Daily Value:	15.5 kph	on August 16	Hours of Data:	743
Minimum Hourly Value:	0.0 kph	on August 14 at hour 3	Hours of Missing Data:	1
Minimum Daily Value:	2.0 kph	on August 12	Hours of Calibration:	0
Monthly Average:	2.5 kph		Operational Uptime:	99.9

Day	Hourly Period Starting at (MST)																							Daily Minimum	Daily Maximum	Daily Average	
	0	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22				23
Aug 1	6.2	5.9	1	4.4	0.4	3.2	3.5	5.4	6.1	4.7	5.6	3.3	4.4	5.6	5.1	8	6.4	4.8	4.3	3.7	3.4	4.3	4.9	3.9	0.4	8.0	4.5
Aug 2	3.3	2.6	1.5	0.5	1.2	1.5	2.3	5.1	5.1	5.5	6.3	7.5	8.4	8.9	8.2	8.6	11.3	5.3	3.2	1.3	0.5	6.6	5.9	2.5	0.5	11.3	4.7
Aug 3	3.6	7.1	5.6	4.9	6.4	6.2	2.9	4.3	8.5	6	5.9	8.6	10.1	9.6	11.4	9.9	2.9	4.6	9	10.3	9.4	8.1	8.2	8.5	2.9	11.4	7.2
Aug 4	6.1	5.5	4.6	4.5	4.8	4.9	4.8	7.4	8.2	10	11.5	11.3	11	10.6	12.2	10.5	11.3	10	7.1	5.7	3.6	3.9	3.9	3.5	3.5	12.2	7.4
Aug 5	4.5	4.6	5.4	5.6	4.9	4.8	5.8	6.1	7.2	7.8	4.7	5.6	8.3	12.3	13.6	11.9	6.1	2.4	4.1	3.9	3.8	3.7	5.1	4.5	2.4	13.6	6.1
Aug 6	5.8	10.1	8.9	8.8	7	5.5	5.4	8.1	6	7.8	12.5	13.2	13.2	11.8	10.6	12.1	12.1	10.6	9.6	4.6	1.9	0.4	0.8	1.3	0.4	13.2	7.8
Aug 7	0.7	0.5	0.7	0.5	0.4	1.4	1.4	2.6	2.2	2.7	2.5	4.9	6.8	4	5.3	3.7	4.2	4.7	1.6	2	0.5	1	0.9	0.6	0.4	6.8	2.3
Aug 8	0.7	1.3	1.1	3.4	2.3	0.9	2.7	4.5	3.4	3.4	5	6	4.7	6.3	8	7.4	6.6	6.3	6.5	5.9	5.2	5.7	6.7	3.3	0.7	8.0	4.5
Aug 9	1.3	1.6	6.2	6.8	8.3	9.6	8.3	10.5	12.9	13.5	11.5	11.8	12.2	11.4	10.9	7.6	7.1	9	6.7	4.6	5.2	4.8	4.5	3.1	1.3	13.5	7.9
Aug 10	2.7	3.2	2.3	1.9	3.3	2.8	3.8	7	6.8	7.2	7.3	8.3	7.2	6.9	5.6	4.5	2.8	4.7	4.3	2.1	1.4	0.7	0.5	0.8	0.5	8.3	4.1
Aug 11	0.4	0.4	0.8	0.5	0.1	0.3	2.4	6.8	8.6	8.3	7.3	6.9	5.1	6.4	4.6	5.3	5.4	4.8	3.8	2.8	2.6	2.6	1.4	0.3	0.1	8.6	3.7
Aug 12	0.4	0.2	0.6	0.5	0.3	0.5	0.4	0.3	1.8	4.5	2.8	4.4	2.9	4.1	4.6	4.3	3.8	3.6	2.5	1.1	0.7	0.9	0.7	0.9	0.2	4.6	2.0
Aug 13	0.1	0.8	0.5	0.1	0.7	1.1	0.6	3.1	5.8	5.3	0.9	5.5	7.4	7.1	6.8	6.8	4.7	5.2	4	2.5	3.5	3.9	1.8	0.8	0.1	7.4	3.3
Aug 14	0.4	0.3	0.6	0	0.7	0.7	0.3	3	5.2	5.2	8.2	9.9	12.1	12.8	13.3	12.7	11.8	10.4	8.6	7.3	1.8	2.7	4.3	2.3	0.0	13.3	5.6
Aug 15	3.6	4.3	3.7	4.9	4.2	2.4	2.1	4.4	1.6	3.9	4.6	4.3	6.4	5.7	6.4	7	4.8	5.7	4.1	2	3.1	3.4	4.7	5.6	1.6	7.0	4.3
Aug 16	7.5	10.4	10.6	8.3	9.3	11.3	12.5	13	14.9	14.8	16.8	17.1	16.3	18.4	19.9	20.2	22.2	24.6	22.8	16.5	15.9	16.4	18.1	13.9	7.5	24.6	15.5
Aug 17	16.4	17	16.9	15.3	12.5	10.7	9.3	13.4	14.6	13.2	13.4	15.8	16.1	16.2	14.5	13.2	13.5	10.8	7.6	3.4	2.1	1.8	1.4	2	1.4	17.0	11.3
Aug 18	1.6	2.7	1.4	1.3	1.7	3.4	2.4	5.2	9.2	9.3	9	9.3	9.6	9.6	8.8	7.3	6.4	7.2	4.8	2.1	0.6	2	1.5	0.9	0.6	9.6	4.9
Aug 19	0	1.8	1.4	1.6	1.8	2.9	2.3	2.8	4.4	1.3	3.4	1.6	5.3	5.3	8	8.2	9.1	7.3	5.4	2.7	3.6	0.9	0.9	1.3	0.0	9.1	3.5
Aug 20	0.7	0.4	1.4	1.7	0.4	0.2	1.1	1.6	1	1.4	2.9	3.2	1.1	3	2	5.5	6.7	5.8	4.6	2.6	2	3.9	3.7	5.4	0.2	6.7	2.6
Aug 21	4.8	4.6	8.7	9.4	7.2	6.3	10.6	9.5	11	12.9	16.2	18	19	20.7	19.7	21.1	19.6	17.2	9	9.6	15.5	17	15.2	16.7	4.6	21.1	13.3
Aug 22	16.4	14.2	0.7	3	0.2	0.8	0.8	1.1	2.7	5	1.7	1.9	1.6	2.5	4.4	5.6	5.6	6.4	7.8	5	3.6	1.5	2	1	0.2	16.4	4.0
Aug 23	1.7	0.4	0.6	0.7	0.2	0.7	0.3	3.9	7.5	8.8	9	9	10	9.8	8.9	8.2	7.9	6.1	4.5	6	3.9	2.1	1.9	4	0.2	10.0	4.8
Aug 24	4.1	3.9	2.2	0.7	1.1	1.2	1.7	2.5	4.4	2.4	4.5	5.9	5.7	6.8	7.4	10	8.6	8.9	5.1	3	1	2.7	0.5	0.5	0.5	10.0	4.0
Aug 25	1.6	2.8	3.6	3.7	4.6	4.9	5.5	5.3	8	7.5	8.3	9.2	9.8	4.6	7.5	6.4	9.8	3.4	3.9	2.3	0.8	2.6	5.6	7.9	0.8	9.8	5.4
Aug 26	5.3	5.3	6	7.4	7.2	6.1	5.3	7.9	9.3	13.1	13.5	12	14.2	14.4	15.2	15.2	Y	10.2	10.7	10.1	9.1	9.5	9.4	9.1	5.3	15.2	9.8
Aug 27	9	9.4	9.2	3.9	4.6	3.9	4.9	6.5	8.1	6.2	4.9	7.1	6.5	7.3	7.2	7.8	7.1	3.1	3.4	4.8	5.4	6.7	5.2	2.9	2.9	9.4	6.0
Aug 28	0.8	1.3	1.8	1.2	3.3	5	5.6	10.6	15	14.5	12.6	14.9	20	18.8	17.8	17.4	19.3	17.5	14.9	10.5	4.9	4.4	4.5	4.1	0.8	20.0	10.0
Aug 29	4.2	3.6	3.8	2	1	3.6	5.3	4.8	3.8	3.7	6.3	4.9	4.7	2.6	4	4	3.7	3.2	2.6	1.5	0.8	0.5	1.2	0.7	0.5	6.3	3.2
Aug 30	0.6	0.5	0.4	0.3	0.6	0.8	0.5	0.5	2.1	2.3	4.1	4.3	4.7	5	7	6.1	5.6	7.2	6	3.2	4.3	1.3	1.5	0.5	0.3	7.2	2.9
Aug 31	1.1	0.4	0.6	0.8	1.7	0.3	0.6	1.7	1.7	3.3	4.5	6.2	6.7	7.3	7.5	7.3	9.3	1.6	1.8	0.9	3.2	0.6	1.6	0.6	0.3	9.3	3.0
Diurnal Maximum	16	17	17	15	13	11	13	13	15	15	17	18	20	21	20	21	22	25	23	17	16	17	18	17			
Diurnal Average	3.7	4.1	3.6	3.5	3.3	3.5	3.7	5.4	6.7	7.0	7.3	8.1	8.8	8.9	9.2	9.2	8.5	7.5	6.3	4.6	4.0	4.1	4.1	3.7			

C	Calibration	S	Daily Zero/Span	Q	Quality Assurance	C1	Repeat Calibration	S1	Repeat Daily Zero/Span
G	Out for Repair	K	Collection Error	N	Not in Service	O	Operator Error	P	Power Failure
R	Recovery	X	Machine Malfunction	Y	Maintenance	T	Exceeds Temperature Limits	N	Not in Service

Daily Average is shown "-" if minimum data completeness criteria of 75% or 18 hours per day is not met.
 Monthly Average is shown "-" if minimum data completeness criteria of 75% of days per month is not met.

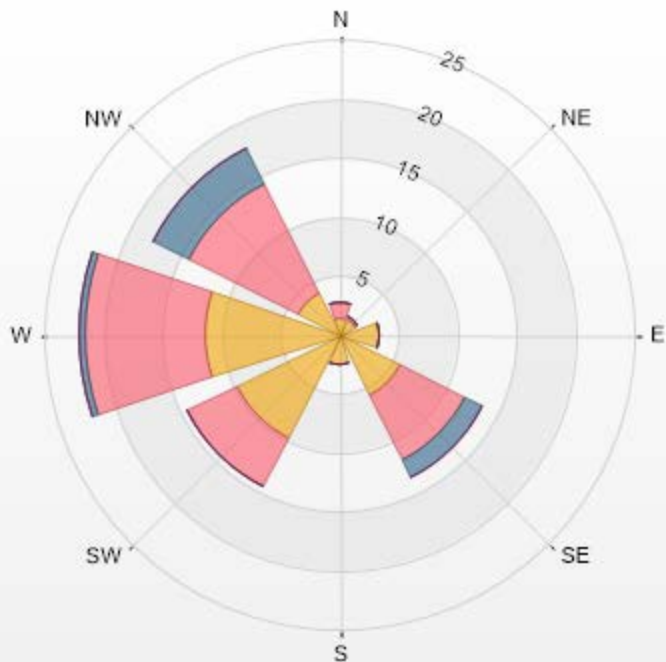
Timeseries Chart of Hourly Average for VWS - Cold Lake South Station



Wind: Cold Lake South Poll.: Cold Lake South-WDS[kph] Monthly: 08-2019 Type: PollutionRose Direction: Blowing From (Wind Frequency) Based On 1 Hr.
 Calm: 21.80% Valid Data: 99.87% Calm Avg: 0.90 [kph]

Direction	0-6	6-15	15-29	29-39	>39.0	Total
N	1.48	1.35	0	0	0	2.83
NE	1.48	0.27	0	0	0	1.75
E	3.36	0	0	0	0	3.36
SE	5.79	6.06	1.75	0	0	13.6
S	2.56	0	0	0	0	2.56
SW	9.83	4.58	0	0	0	14.41
W	11.44	10.09	0.54	0	0	22.07
NW	4.04	10.23	3.36	0	0	17.63
Summary	39.98	32.58	5.65	0	0	78.21

Cold Lake South Poll.: Cold Lake South-WDS[kph] 01-08-2019 00:00 - 31-08-2019 23:00 Calm: 21.80% Calm
 Poll Avg: 0.90[kph]



LICA-201908-Revision 1

% Icon Classes (kph)	40	0-6	33	9-15	0	15-29	0	29-39	0	>39.0
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LAKELAND INDUSTRY & COMMUNITY ASSOCIATION

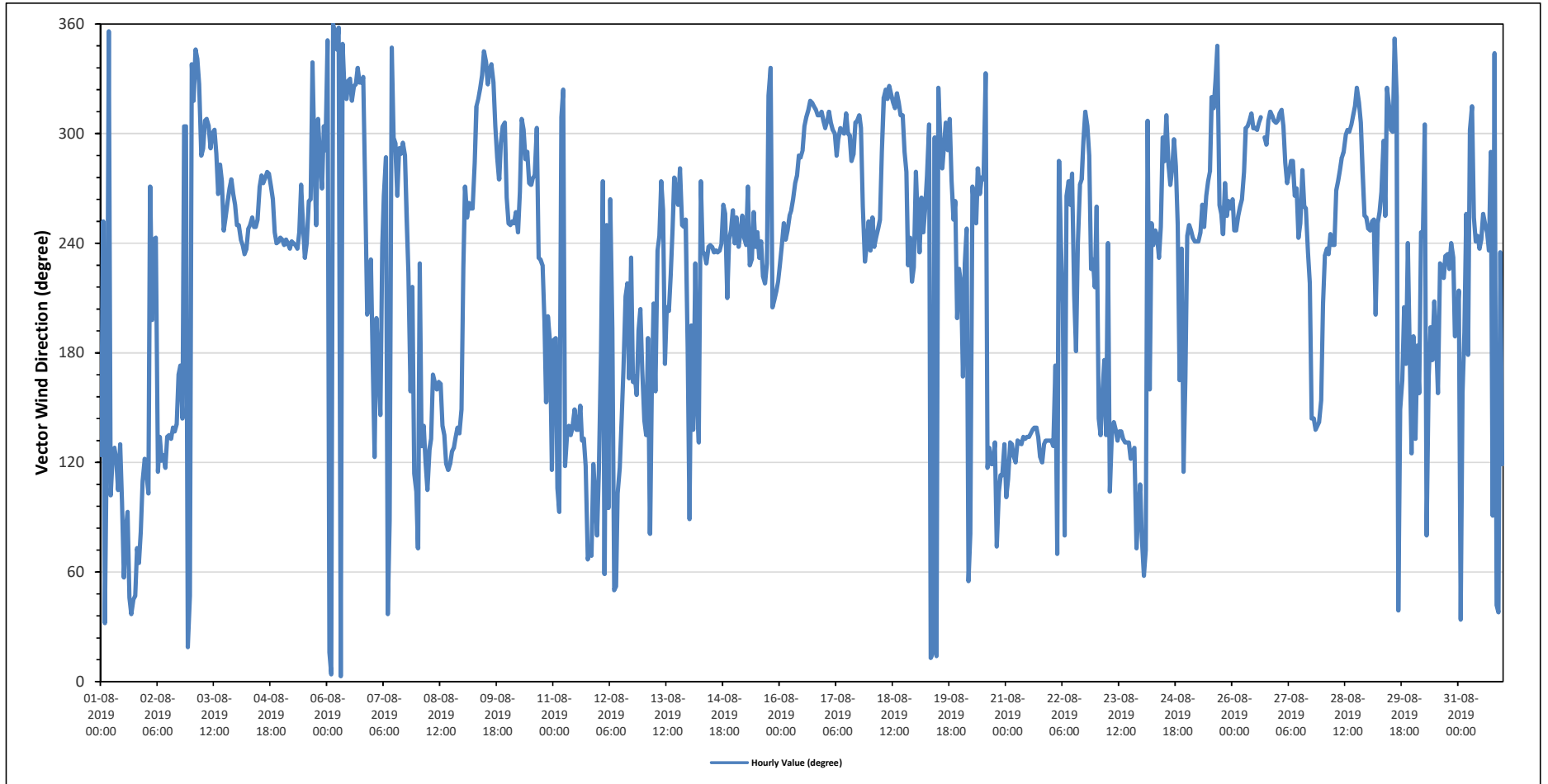
Cold Lake South Station - August 2019

Summary of Hourly Averages

WIND DIRECTION (VWD) in sector

Monthly Average:		272 (W) degree														Hours in Service:		744									
																Hours of Data:		743									
																Hours of Missing Data:		1									
																Hours of Calibration:		0									
																Operational Uptime:		99.9									
Day	Hourly Period Starting at (MST)																							Daily Average			
	0	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	Degree	Quadrant	
Aug 1	ESE	WSW	NNE	SE	N	E	ESE	SE	ESE	ESE	SE	E	ENE	E	E	NE	NE	NE	NE	ENE	ENE	E	ESE	ESE	92	E	
Aug 2	ESE	ESE	W	SSW	WSW	WSW	ESE	SE	ESE	ESE	ESE	SE	SE	SE	SE	SE	SSE	S	SE	WNW	WNW	NNE	NE	133	SE		
Aug 3	NNW	NW	NNW	NNW	NW	WNW	WNW	NW	NW	WNW	WNW	WNW	WNW	WNW	W	W	W	WSW	WSW	W	W	W	W	W	288	WNW	
Aug 4	WSW	WSW	WSW	WSW	SW	SW	WSW	WSW	WSW	WSW	WSW	WSW	W	W	W	W	W	W	W	WSW	WSW	WSW	WSW	259	WSW		
Aug 5	WSW	WSW	WSW	WSW	SW	WSW	WSW	WSW	SW	WSW	W	WSW	SW	WSW	W	W	NNW	WNW	WSW	NW	WNW	W	WNW	WNW	257	WSW	
Aug 6	N	NNE	N	N	N	NNW	N	N	NNW	NW	NW	NNW	NNW	NW	NW	NW	NNW	NNW	NNW	W	SSW	SSW	SW	337	NNW		
Aug 7	S	ESE	SSW	S	SE	SW	W	WNW	NE	E	NNW	WNW	WNW	W	WNW	WNW	WNW	WNW	WSW	SW	SSE	SW	ESE	ESE	285	WNW	
Aug 8	ENE	SW	SE	SE	ESE	ESE	SE	SE	SSE	SSE	SSE	SSE	SE	SE	ESE	ESE	ESE	SE	SE	SE	SE	SE	SSE	137	SE		
Aug 9	SW	W	WSW	W	WSW	WSW	WNW	NW	NW	NNW	NNW	NNW	NW	NNW	NNW	NNW	WNW	WNW	WNW	W	WNW	WNW	NW	W	309	NW	
Aug 10	WSW	WSW	WSW	WSW	WSW	WSW	W	NW	WNW	WNW	WNW	W	W	W	W	WNW	SW	SW	SW	SSW	SSE	SSW	S	ESE	270	W	
Aug 11	S	S	ESE	E	NW	NW	ESE	SE	SE	SE	SE	SSE	SE	SE	SSE	SE	ESE	ENE	ENE	ENE	ESE	E	E	129	SE		
Aug 12	ESE	S	W	ENE	WSW	E	W	S	NE	NE	ESE	ESE	SE	S	SSW	SW	SSE	SW	SSE	SSE	S	SSW	S	163	SSE		
Aug 13	SE	SE	S	E	SSE	SSW	SSE	SW	WSW	W	WSW	S	SSW	SSW	SW	WSW	W	W	W	W	WSW	WSW	WSW	S	235	SW	
Aug 14	E	SSW	SE	SW	SSE	SE	W	SW	SW	SW	SW	WSW	SW	SW	SW	SW	WSW	W	WSW	SSW	WSW	WSW	WSW	239	WSW		
Aug 15	WSW	WSW	SW	WSW	WSW	WSW	WSW	W	SW	SW	WSW	SW	WSW	SW	WSW	SW	SW	NW	NNW	SSW	SSW	SSW	SW	239	WSW		
Aug 16	SW	SW	WSW	WSW	WSW	WSW	WSW	W	W	W	WNW	WNW	WNW	WNW	NW	NW	NW	NW	NW	NW	NW	NW	NW	NW	293	WNW	
Aug 17	WNW	NW	NW	NW	WNW	WNW	WNW	WNW	WNW	WNW	WNW	NW	WNW	WNW	WNW	WNW	NW	NW	WNW	WSW	SW	WSW	WSW	300	WNW		
Aug 18	SW	WSW	SW	WSW	WSW	WSW	WNW	NW	NW	NW	NW	NW	NW	NW	NW	NW	NW	WNW	W	SW	WSW	SW	SW	307	NW		
Aug 19	W	WSW	SW	W	WSW	WSW	W	WNW	NNE	NNE	WNW	NNE	NW	WNW	W	WNW	NW	WNW	NW	W	WSW	W	SSW	SW	293	WNW	
Aug 20	SW	SSE	SW	WSW	NE	E	W	WSW	WSW	W	W	W	NNW	ESE	SE	ESE	ESE	SE	ENE	ESE	ESE	ESE	SE	134	SE		
Aug 21	E	ESE	SE	SE	ESE	ESE	SE	SE	SE	SE	SE	SE	SE	SE	SE	SE	SE	ESE	ESE	ESE	SE	SE	SE	132	SE		
Aug 22	SE	SE	S	ENE	WNW	WSW	SSW	E	W	W	W	W	SSW	S	WSW	W	W	WNW	NW	WNW	WNW	SW	SW	SW	234	SW	
Aug 23	WSW	SE	SE	SSE	S	SE	WSW	ESE	SE	SE	SE	SE	SE	SE	SE	SE	SE	ESE	SE	ESE	SE	ENE	E	ESE	131	SE	
Aug 24	ENE	ENE	ENE	NW	SSE	WSW	WSW	WSW	WSW	SW	WSW	WNW	WNW	NW	W	W	WNW	W	WSW	SSE	SW	ESE	SSE	278	W		
Aug 25	WSW	WSW	WSW	WSW	WSW	WSW	WSW	WSW	W	WSW	W	W	NW	NW	NNW	NNW	W	WSW	WSW	W	WSW	W	WSW	271	W		
Aug 26	W	WSW	WSW	WSW	WSW	W	W	WNW	WNW	NW	NW	WNW	WNW	NW	NW	#N/A	WNW	WNW	NW	NW	NW	NW	NW	297	WNW		
Aug 27	NW	NW	NW	WNW	WNW	W	W	WNW	WNW	W	W	WSW	WSW	W	WSW	WSW	SW	SE	SE	SE	SE	SE	SSE	263	W		
Aug 28	SSW	SW	SW	SW	WSW	WSW	WSW	W	W	W	WNW	WNW	WNW	WNW	WNW	WNW	NW	NW	NW	NW	NW	W	WSW	WSW	293	WNW	
Aug 29	WSW	WSW	WSW	WSW	SSW	WSW	WSW	W	WNW	WSW	NW	NW	WNW	WNW	N	NW	NE	SSE	SSW	S	WSW	S	SE	277	W		
Aug 30	S	SE	S	SSE	WSW	WSW	WNW	E	SSE	SSW	S	SSW	S	SSE	SW	SW	SW	SW	SW	SW	SW	SW	S	S	213	SSW	
Aug 31	SSW	NE	SSE	S	WSW	S	WNW	NW	WSW	WSW	WSW	SW	WSW	WSW	WSW	SW	WNW	E	NNW	NE	NE	SW	ESE	247	WSW		
C	Calibration				S	Daily Zero/Span				Q	Quality Assurance				C1	Repeat Calibration				S1	Repeat Daily Zero/Span						
G	Out for Repair				K	Collection Error				N	Not in Service				O	Operator Error				P	Power Failure						
R	Recovery				X	Machine Malfunction				Y	Maintenance				T	Exceeds Temperature Limits				N	Not in Service						
Daily Average is shown "-" if minimum data completeness criteria of 75% or 18 hours per day is not met.																											
Monthly Average is shown "-" if minimum data completeness criteria of 75% of days per month is not met.																											

Timeseries Chart of Hourly Average for VWD - Cold Lake South Station





LAKELAND INDUSTRY & COMMUNITY ASSOCIATION

Cold Lake South Station - August 2019

Summary of Hour Standard Deviations

STANDARD DEVIATION WIND DIRECTION (STDWD) in Degree

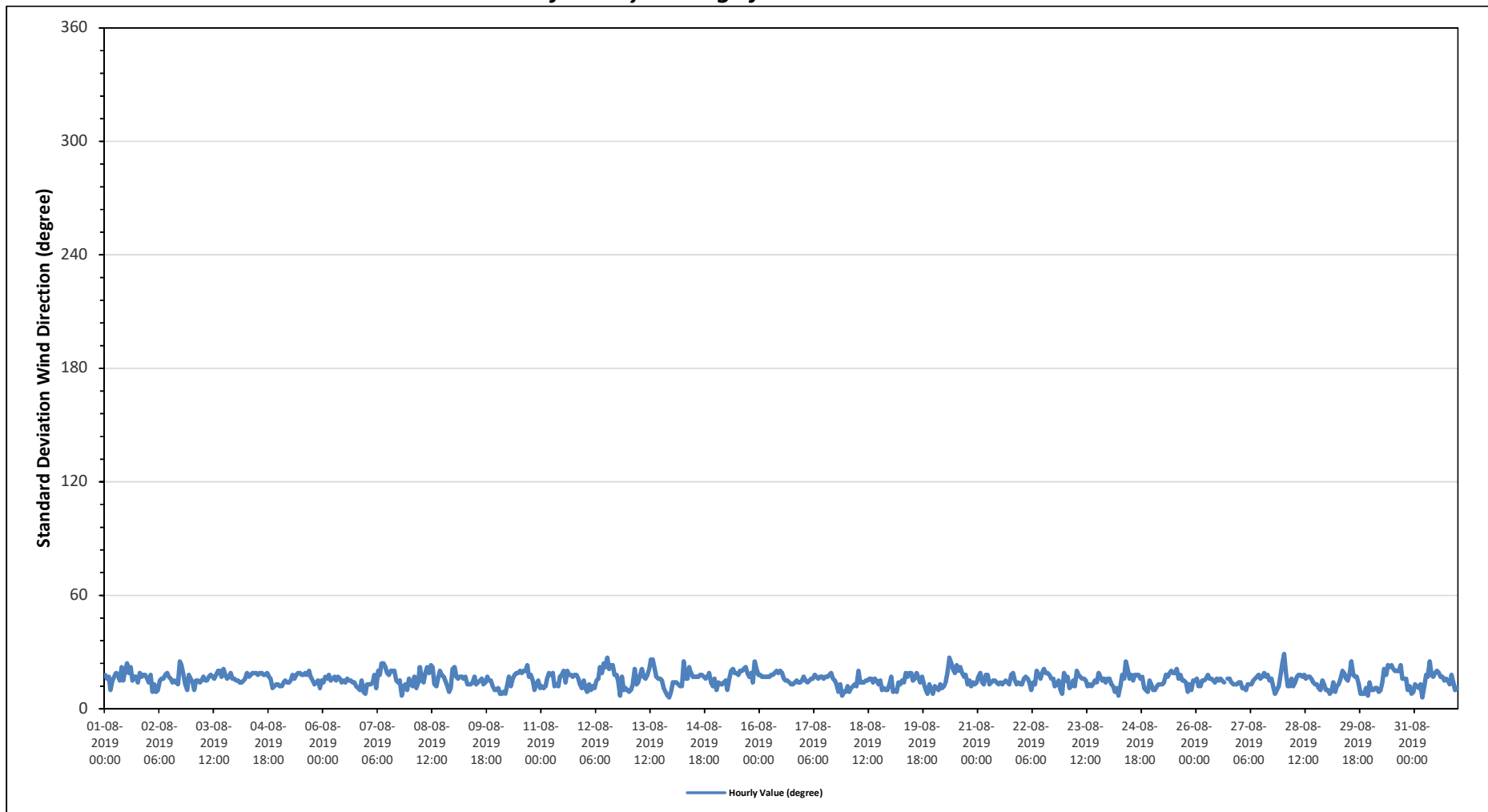
Maximum Hourly Value:	29 degree on August 28 at hour 0	Hours in Service:	744
Minimum Hourly Value:	6 degree on August 13 at hour 4	Hours of Data:	743
		Hours of Missing Data:	1
		Hours of Calibration:	0
		Operational Uptime:	99.9

Day	Hourly Period Starting at (MST)																							Daily	Daily	
	0	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	Minimum	Maximum
Aug 1	18	16	17	10	15	17	19	18	15	22	15	20	24	19	22	15	17	17	14	19	17	18	18	16	10	24
Aug 2	14	18	9	13	9	10	15	16	16	18	19	17	16	14	15	14	13	25	23	18	13	10	18	16	9	25
Aug 3	14	10	15	15	14	15	17	15	15	17	18	17	16	18	20	20	17	21	18	16	17	19	16	16	10	21
Aug 4	15	15	14	14	15	16	19	17	18	19	19	19	18	19	19	18	18	19	17	16	11	12	13	13	11	19
Aug 5	12	12	14	15	14	14	15	18	16	18	19	19	18	18	19	18	20	17	15	13	14	15	11	15	11	20
Aug 6	14	17	16	18	15	16	17	15	17	16	14	15	14	16	15	15	14	14	12	11	10	15	9	8	8	18
Aug 7	13	13	13	14	18	11	20	18	24	24	22	19	18	20	20	20	15	14	15	7	12	13	10	16	7	24
Aug 8	13	12	17	11	14	22	15	14	19	22	19	23	22	13	12	16	20	18	17	15	12	9	11	21	9	23
Aug 9	22	17	16	17	17	16	17	13	13	13	14	17	13	14	15	16	13	14	17	15	15	12	10	10	10	22
Aug 10	11	8	8	9	8	13	17	12	16	18	19	19	20	19	20	20	23	17	18	15	10	13	15	11	8	23
Aug 11	12	11	12	16	19	18	19	12	13	12	17	18	20	14	20	18	18	17	18	18	16	13	11	15	11	20
Aug 12	11	9	13	10	12	11	15	16	22	19	24	22	27	21	23	23	18	18	15	7	17	10	11	10	7	27
Aug 13	9	10	13	21	13	14	18	21	17	16	18	21	26	26	21	17	16	16	15	11	9	7	6	9	6	26
Aug 14	14	14	14	13	12	12	25	16	16	22	19	17	17	17	17	18	18	17	16	17	19	14	12	16	12	25
Aug 15	10	14	13	13	14	15	10	16	20	21	19	19	18	20	20	21	22	19	17	19	14	25	21	18	10	25
Aug 16	18	17	17	17	17	17	18	18	19	20	19	20	19	16	15	15	14	13	13	14	15	14	14	15	13	20
Aug 17	17	15	14	15	16	16	18	17	16	17	17	16	17	17	18	19	16	15	13	9	13	7	9	9	7	19
Aug 18	12	9	11	12	13	12	20	14	14	14	15	15	16	16	14	16	15	13	15	10	11	10	10	13	9	20
Aug 19	17	9	10	9	14	13	15	14	19	17	19	19	15	16	19	16	14	17	13	10	8	13	10	8	8	19
Aug 20	12	11	10	13	11	12	14	19	27	24	21	19	23	20	22	19	17	18	13	15	12	14	13	14	10	27
Aug 21	17	19	14	13	18	18	13	14	15	15	14	13	14	13	14	15	14	13	18	19	15	13	14	13	13	19
Aug 22	13	16	17	16	14	10	14	13	20	18	16	19	21	19	19	18	16	16	12	13	15	10	8	19	8	21
Aug 23	15	17	11	12	15	12	20	18	17	16	16	15	12	13	12	13	15	14	19	17	15	16	14	16	11	20
Aug 24	16	13	12	9	11	7	12	18	16	25	21	16	18	15	18	18	18	16	17	11	10	9	15	13	7	25
Aug 25	10	10	12	13	13	13	14	18	17	19	20	19	19	21	16	18	15	15	14	9	13	10	15	15	9	21
Aug 26	16	12	12	15	15	16	18	16	16	15	14	16	15	16	15	14	Y	16	16	14	13	13	13	14	12	18
Aug 27	14	11	11	10	13	13	13	15	16	17	18	16	17	19	17	18	15	16	12	8	10	12	17	24	8	24
Aug 28	29	19	12	12	16	12	14	17	18	18	17	18	16	17	17	16	14	13	13	11	10	15	13	10	10	29
Aug 29	10	8	9	14	9	12	13	16	20	19	16	15	19	25	18	17	17	13	8	8	8	11	7	14	7	25
Aug 30	10	10	11	11	9	10	14	21	18	23	22	23	21	20	20	20	23	16	16	16	10	12	8	9	8	23
Aug 31	13	12	11	13	6	12	18	17	25	18	17	19	20	19	17	17	15	16	15	13	18	14	10	11	6	25
Diurnal Minimum	9	8	8	9	6	7	10	12	13	12	14	13	12	13	12	13	13	13	8	7	8	7	6	8		
Diurnal Maximum	29	19	17	21	19	22	25	21	27	25	24	23	27	26	23	23	23	25	23	19	19	25	21	24		

C	Calibration	S	Daily Zero/Span	Q	Quality Assurance	O	Repeat Calibration	S1	Repeat Daily Zero/Span
G	Out for Repair	K	Collection Error	N	Not in Service	C1	Operator Error	P	Power Failure
R	Recovery	X	Machine Malfunction	Y	Maintenance	T	Exceeds Temperature Limits	N	Not in Service

Daily Average is shown "-" if minimum data completeness criteria of 75% or 18 hours per day is not met.
 Monthly Average is shown "-" if minimum data completeness criteria of 75% of days per month is not met.

Timeseries Chart of Hourly Average for STDWD - Cold Lake South Station



MASKWA STATION



LAKELAND INDUSTRY & COMMUNITY ASSOCIATION

Maskwa Site - August 2019

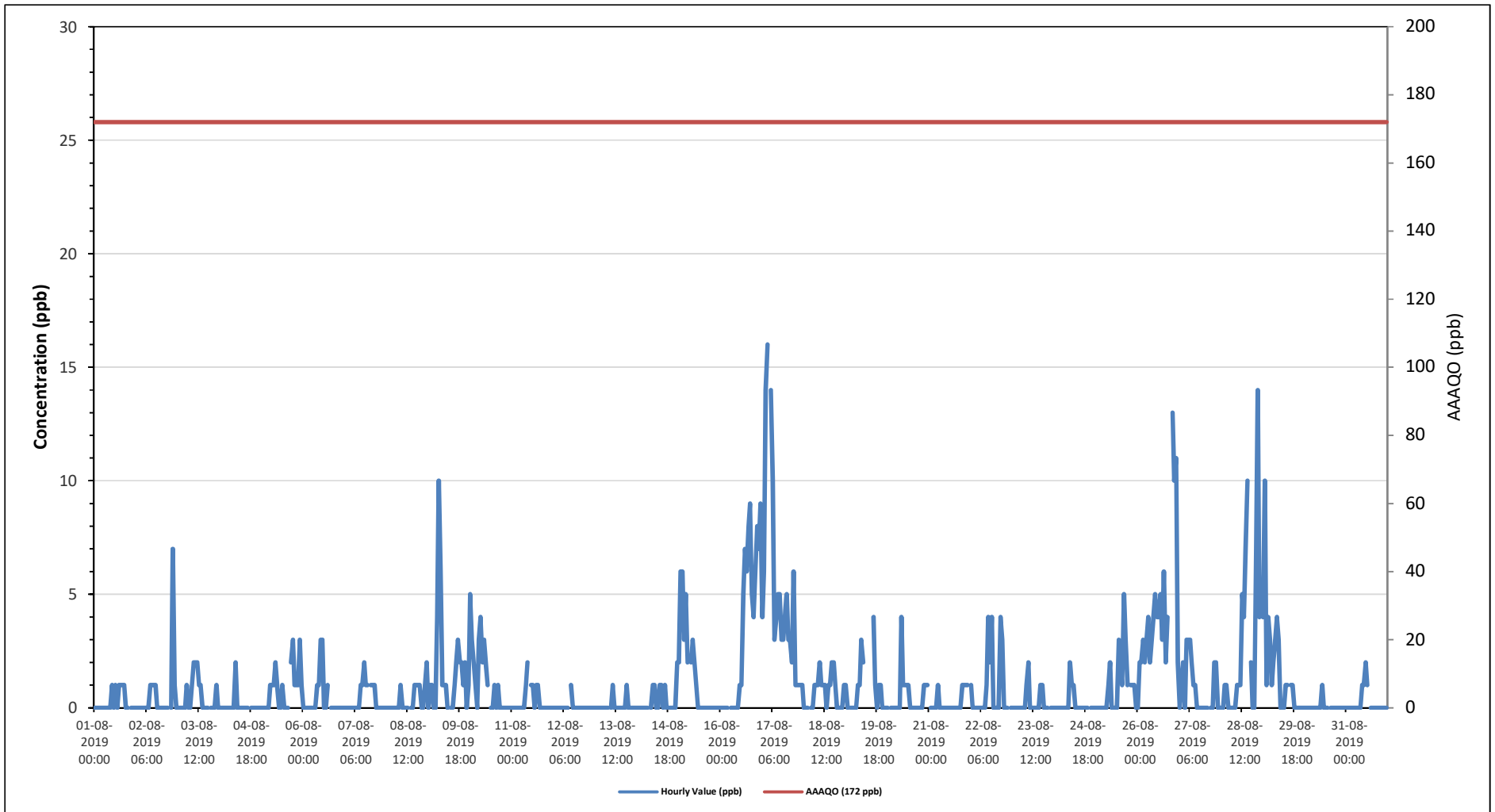
Summary of Hourly Averages

SULPHUR DIOXIDE (SO₂) in ppb

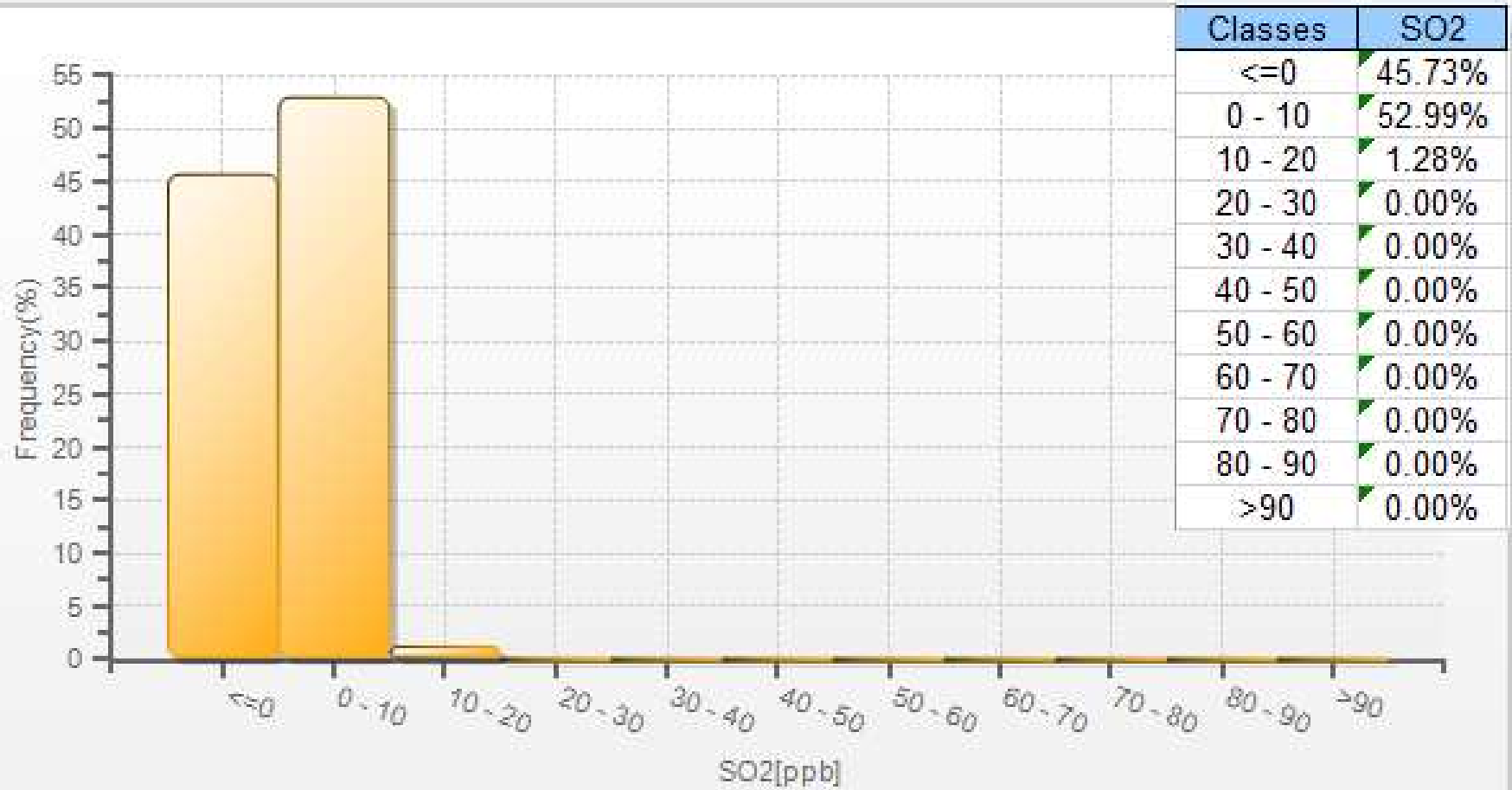
Alberta Ambient Air Quality Objectives (AAAQO): 1-Hour 172 ppb, 24-Hour 48 ppb, 30-Day 11 ppb																													
Number of 1-Hour Exceedences:							0							Number of 24-Hour Exceedences:							0			30-Day Exceedence:			0		
Maximum Hourly Value:							16 ppb on August 17 at hour 3							Hours in Service:							744								
Maximum Daily Value:							5.0 ppb on August 17							Hours of Data:							706								
Minimum Hourly Value:							0 ppb on August 1 at hour 0							Hours of Missing Data:							1								
Minimum Daily Value:							0.0 ppb on August 12							Hours of Calibration:							37								
Monthly Average:							1.0 ppb							Operational Uptime:							99.9								
Day	Hourly Period Starting at (MST)																							Daily Minimum	Daily Maximum	Daily Average			
	0	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22				23		
Aug 1	0	0	0	0	0	0	0	0	0	0	1	0	1	0	1	1	1	1	0	0	S	0	0	0	0				
Aug 2	0	0	0	0	0	0	0	0	1	1	1	1	0	0	0	0	0	0	0	S	0	7	1	0	0				
Aug 3	0	0	0	0	0	1	0	0	1	2	2	2	1	1	0	0	0	0	S	0	0	0	1	0	0				
Aug 4	0	0	0	0	0	0	0	0	0	2	0	0	0	0	0	0	0	S	0	0	0	0	0	0	0				
Aug 5	0	0	0	0	0	1	1	1	2	1	0	0	1	0	0	S	2	3	1	1	1	1	3	1	0				
Aug 6	0	0	0	0	0	0	0	0	1	1	3	3	0	0	1	S	0	0	0	0	0	0	0	0	0				
Aug 7	0	0	0	0	0	0	0	0	0	1	1	2	1	1	S	1	1	1	0	0	0	0	0	0	0				
Aug 8	0	0	0	0	0	0	0	0	1	0	0	0	0	S	0	0	1	1	1	1	0	0	1	2	0				
Aug 9	0	1	1	0	0	4	10	6	1	1	1	0	S	0	0	1	2	3	2	2	1	2	0	1	0				
Aug 10	5	3	2	1	0	3	4	2	3	2	1	S	0	0	1	0	1	0	0	0	0	0	0	0	0				
Aug 11	0	0	0	0	0	0	0	0	1	2	S	1	1	0	1	1	0	0	0	0	0	0	0	0	0				
Aug 12	0	0	0	0	0	0	0	0	0	S	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0				
Aug 13	0	0	0	0	0	0	0	0	0	S	0	1	0	0	0	0	0	0	0	0	0	0	0	0	0				
Aug 14	0	0	0	0	0	0	0	S	0	1	1	0	0	0	1	1	0	0	0	0	0	0	0	2	0				
Aug 15	2	6	6	3	5	2	S	2	3	2	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0				
Aug 16	0	0	0	0	0	S	0	0	0	0	0	0	1	1	5	7	6	8	9	5	4	6	8	7	9				
Aug 17	4	6	14	16	S	14	10	3	4	5	5	3	3	4	5	3	3	2	6	1	1	1	1	1	1				
Aug 18	0	0	0	S	0	0	1	1	1	2	1	1	1	0	1	1	2	2	1	0	0	0	0	1	0				
Aug 19	1	0	S	0	0	0	0	1	1	3	2	C	C	C	C	C	4	1	0	1	1	0	0	0	0				
Aug 20	0	S	0	0	0	0	0	0	4	1	1	1	0	0	0	0	0	0	0	0	0	1	1	1	0				
Aug 21	S	0	0	0	0	1	0	0	0	0	0	0	0	0	0	0	0	0	0	1	1	1	1	1	0				
Aug 22	1	0	0	0	0	0	0	0	0	1	4	2	4	0	0	0	0	4	3	0	0	0	S	0	0				
Aug 23	0	0	0	0	0	0	0	0	1	2	0	0	0	0	0	0	1	1	0	0	0	S	0	0	0				
Aug 24	0	0	0	0	0	0	0	0	0	2	1	1	0	0	0	0	0	0	0	0	S	0	0	0	0				
Aug 25	0	0	0	0	0	0	0	1	2	0	0	0	0	3	2	1	5	3	1	S	1	1	1	0	0				
Aug 26	0	2	2	3	2	3	4	2	3	4	5	4	4	5	3	6	2	4	S	Y	13	10	11	2	0				
Aug 27	0	1	2	0	3	3	3	2	1	1	0	0	0	0	0	0	S	0	0	0	2	2	0	0	0				
Aug 28	0	0	1	1	0	0	0	0	0	1	1	1	5	4	7	10	S	2	0	0	7	14	4	5	0				
Aug 29	4	10	1	4	3	1	2	3	4	3	0	0	0	1	1	S	1	1	0	0	0	0	0	0	0				
Aug 30	0	0	0	0	0	0	0	0	0	0	1	0	0	0	S	0	0	0	0	0	0	0	0	0	0				
Aug 31	0	0	0	0	0	0	0	0	0	1	1	2	1	S	0	0	0	0	0	0	0	0	0	0	0				
Diurnal Maximum	5	10	14	16	5	14	10	6	4	5	5	4	5	7	10	8	9	6	4	13	14	11	9	9					
Daiurnal Average	0.6	1.0	1.0	0.9	0.4	1.1	1.2	0.8	1.2	1.4	1.2	0.9	0.9	1.1	1.1	1.1	1.3	0.8	0.4	1.2	1.6	1.1	0.8	0.8					
C	Calibration				S	Daily Zero/Span				Q	Quality Assurance				C1	Repeat Calibration				S1	Repeat Daily Zero/Span								
G	Out for Repair				K	Collection Error				N	Not in Service				O	Operator Error				P	Power Failure								
R	Recovery				X	Machine Malfunction				Y	Maintenance				T	Exceeds Temperature Limits				N	Not in Service								

Daily Average is shown "-" if minimum data completeness criteria of 75% or 18 hours per day is not met.
 Monthly Average is shown "-" if minimum data completeness criteria of 75% of days per month is not met.

Timeseries Chart of Hourly Average for SO2 - Maskwa Site

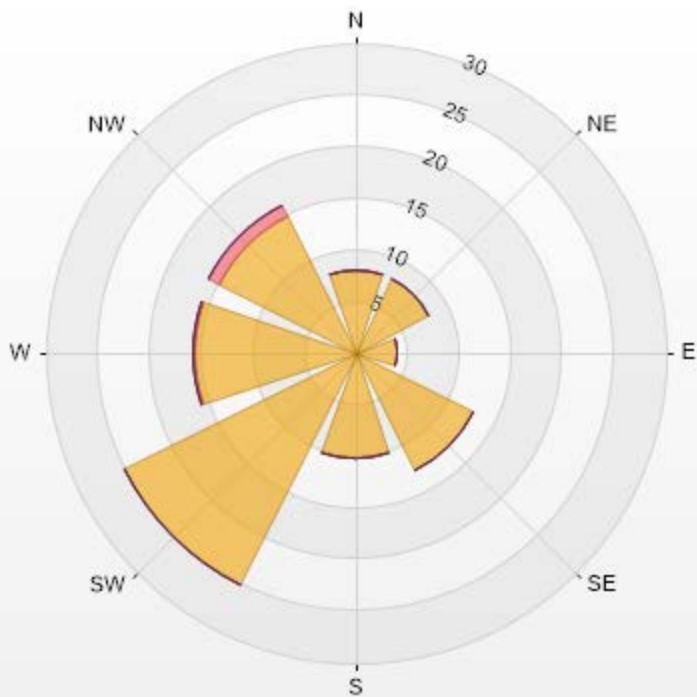


SO2[ppb] Histogram: Maskwa Monthly: 08-2019 1 Hr.



Wind: Maskwa Poll.: Maskwa-SO2[ppb] Monthly: 08-2019 Type: PollutionRose Direction: Blowing From (Wind Frequency) Based On 1 Hr.
 Calm: 0.00% Valid Data: 94.35% Calm Avg: 0.00 [ppb]

Direction	0-10	10-50	50-100	100-172	>172.0	Total
N	8.12	0	0	0	0	8.12
NE	7.98	0	0	0	0	7.98
E	4.13	0	0	0	0	4.13
SE	12.68	0	0	0	0	12.68
S	10.26	0	0	0	0	10.26
SW	25.07	0	0	0	0	25.07
W	15.67	0.14	0	0	0	15.81
NW	14.81	1.14	0	0	0	15.95
Summary	98.72	1.28	0	0	0	100



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% Icon Classes (ppb)	99	0-10	1	49-50	50-100	0	100-172	0	>172.0
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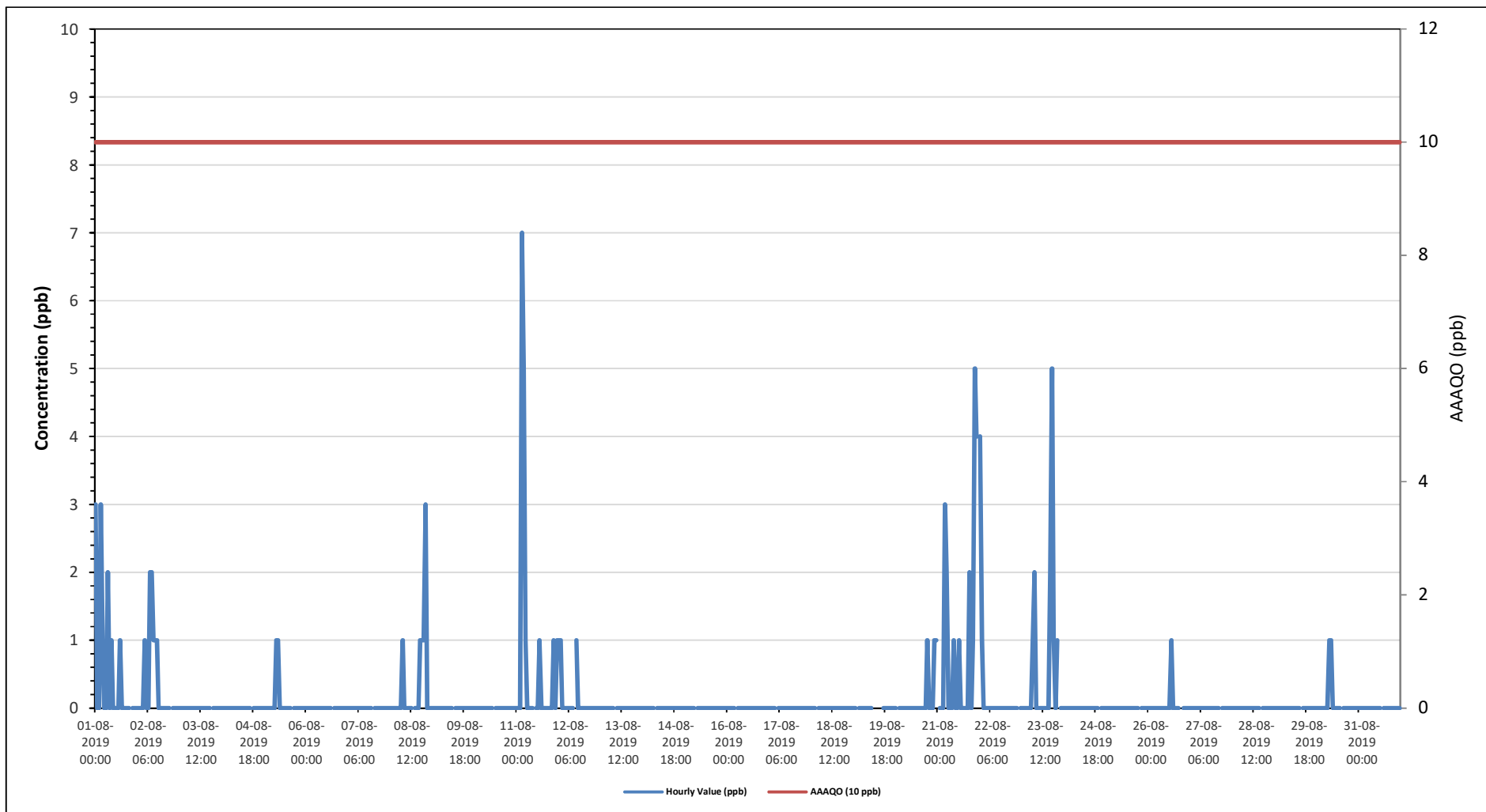
Maskwa Site - August 2019

Summary of Hourly Averages

HYDROGEN SULPHIDE (H₂S) in ppb

Alberta Ambient Air Quality Objectives (AAAQO): 1-Hour 10 ppb, 24-Hour 3 ppb																																
Number of 1-Hour Exceedences: 0									Number of 24-Hour Exceedences: 0																							
Maximum Hourly Value: 7 ppb on August 11 at hour 3													Hours in Service: 744																			
Maximum Daily Value: 0.9 ppb on August 21													Hours of Data: 705																			
Minimum Hourly Value: 0 ppb on August 1 at hour 1													Hours of Missing Data: 1																			
Minimum Daily Value: 0.0 ppb on August 3													Hours of Calibration: 38																			
Monthly Average: 0.1 ppb													Operational Uptime: 99.9																			
Day	Hourly Period Starting at (MST)																							Daily	Daily	Daily						
	0	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	Minimum	Maximum	Average					
Aug 1	3	0	0	3	1	0	0	2	0	1	0	0	0	0	1	0	0	0	0	0	S	0	0	0	0	0	0	0	0	0	3	0.5
Aug 2	0	0	0	0	1	0	0	2	2	1	1	1	0	0	0	0	0	0	0	S	0	0	0	0	0	0	0	0	0	2	0.3	
Aug 3	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	S	0	0	0	0	0	0	0	0	0	0	0	0.0	
Aug 4	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	S	0	0	0	0	0	0	0	0	0	0	0	0	0.0	
Aug 5	0	0	0	0	0	0	0	1	1	0	0	0	0	0	0	0	S	0	0	0	0	0	0	0	0	0	0	0	1	0.1		
Aug 6	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	S	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0.0	
Aug 7	0	0	0	0	0	0	0	0	0	0	0	0	0	0	S	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0.0	
Aug 8	0	0	0	0	0	0	0	1	0	0	0	0	0	S	0	0	0	1	1	1	3	0	0	0	0	0	0	0	3	0.3		
Aug 9	0	0	0	0	0	0	0	0	0	0	0	0	S	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0.0	
Aug 10	0	0	0	0	0	0	0	0	0	0	S	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0.0	
Aug 11	0	0	0	7	5	1	0	0	0	0	S	0	0	1	0	0	0	0	0	0	0	0	1	0	1	0	1	0	7	0.7		
Aug 12	1	1	0	0	0	0	0	0	0	S	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1	0.1		
Aug 13	0	0	0	0	0	0	0	0	S	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0.0	
Aug 14	0	0	0	0	0	0	0	S	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0.0	
Aug 15	0	0	0	0	0	0	S	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0.0	
Aug 16	0	0	0	0	0	S	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0.0	
Aug 17	0	0	0	0	S	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0.0	
Aug 18	0	0	0	S	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0.0	
Aug 19	0	0	S	0	0	0	0	0	0	0	C	C	C	C	C	C	0	0	0	0	0	0	0	0	0	0	0	0	0	0	-	
Aug 20	0	S	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1	0	0	0	1	1	0	1	1	0	1	0	1	0.1	
Aug 21	S	0	0	0	3	2	0	0	1	0	0	1	0	0	0	0	0	2	0	1	5	4	S	0	5	S	0	5	0.9			
Aug 22	4	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	S	0	4	S	0	4	0.2			
Aug 23	0	0	0	0	0	0	1	2	0	0	0	0	0	0	0	0	2	5	1	0	1	S	0	0	5	S	0	0	5	0.5		
Aug 24	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	S	0	0	0	0	0	0	0	0	0	0.0	
Aug 25	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	S	0	0	0	0	0	0	0	0	0	0	0.0	
Aug 26	0	0	0	0	0	0	0	0	0	0	0	0	0	1	0	0	0	0	S	Y	0	0	0	0	0	0	0	0	1	0.0		
Aug 27	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	S	0	0	0	0	0	0	0	0	0	0	0	0	0	0.0	
Aug 28	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	S	0	0	0	0	0	0	0	0	0	0	0	0	0	0.0	
Aug 29	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	S	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0.0	
Aug 30	0	0	0	0	0	0	0	1	1	0	0	0	0	0	S	0	0	0	0	0	0	0	0	0	0	0	0	0	1	0.1		
Aug 31	0	0	0	0	0	0	0	0	0	0	0	0	S	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0.0	
Diurnal Maximum	4	1	0	7	5	2	1	2	2	1	1	1	1	1	0	2	5	2	1	3	5	4	1									
Diurnal Average	0.3	0.1	0.0	0.3	0.3	0.1	0.0	0.3	0.1	0.1	0.1	0.0	0.0	0.1	0.0	0.0	0.1	0.2	0.2	0.0	0.2	0.2	0.1									
C	Calibration				S	Daily Zero/Span				Q	Quality Assurance				C1	Repeat Calibration				S1	Repeat Daily Zero/Span											
G	Out for Repair				K	Collection Error				N	Not in Service				O	Operator Error				P	Power Failure											
R	Recovery				X	Machine Malfunction				Y	Maintenance				T	Exceeds Temperature Limits				N	Not in Service											
Daily Average is shown "-" if minimum data completeness criteria of 75% or 18 hours per day is not met.																																
Monthly Average is shown "-" if minimum data completeness criteria of 75% of days per month is not met.																																

Timeseries Chart of Hourly Average for H2S - Maskwa Site

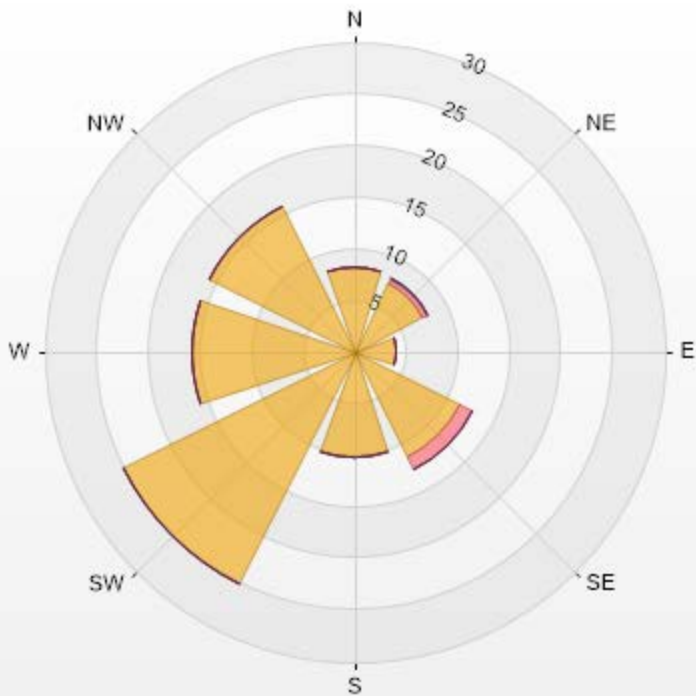


H2S[ppb] Histogram: Maskwa Monthly: 08-2019 1 Hr.



Wind: Maskwa Poll.: Maskwa-H2S[ppb] Monthly: 08-2019 Type: PollutionRose Direction: Blowing From (Wind Frequency) Based On 1 Hr.
 Calm: 0.00% Valid Data: 94.22% Calm Avg: 0.00 [ppb]

Direction	0-2	2-5	5-10	10-50	>50.0	Total
N	8.13	0	0	0	0	8.13
NE	7.42	0.43	0.14	0	0	7.99
E	4.14	0	0	0	0	4.14
SE	11.41	1.28	0	0	0	12.69
S	10.27	0	0	0	0	10.27
SW	25.11	0	0	0	0	25.11
W	15.83	0	0	0	0	15.83
NW	15.83	0	0	0	0	15.83
Summary	98.14	1.71	0.14	0	0	100



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% Icon	Classes (ppb)	98	0-2	2	5-10	0	10-50	0	>50.0



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Maskwa Site - August 2019
Summary of Hourly Averages

OXIDES OF NITROGEN (NOx) in ppb

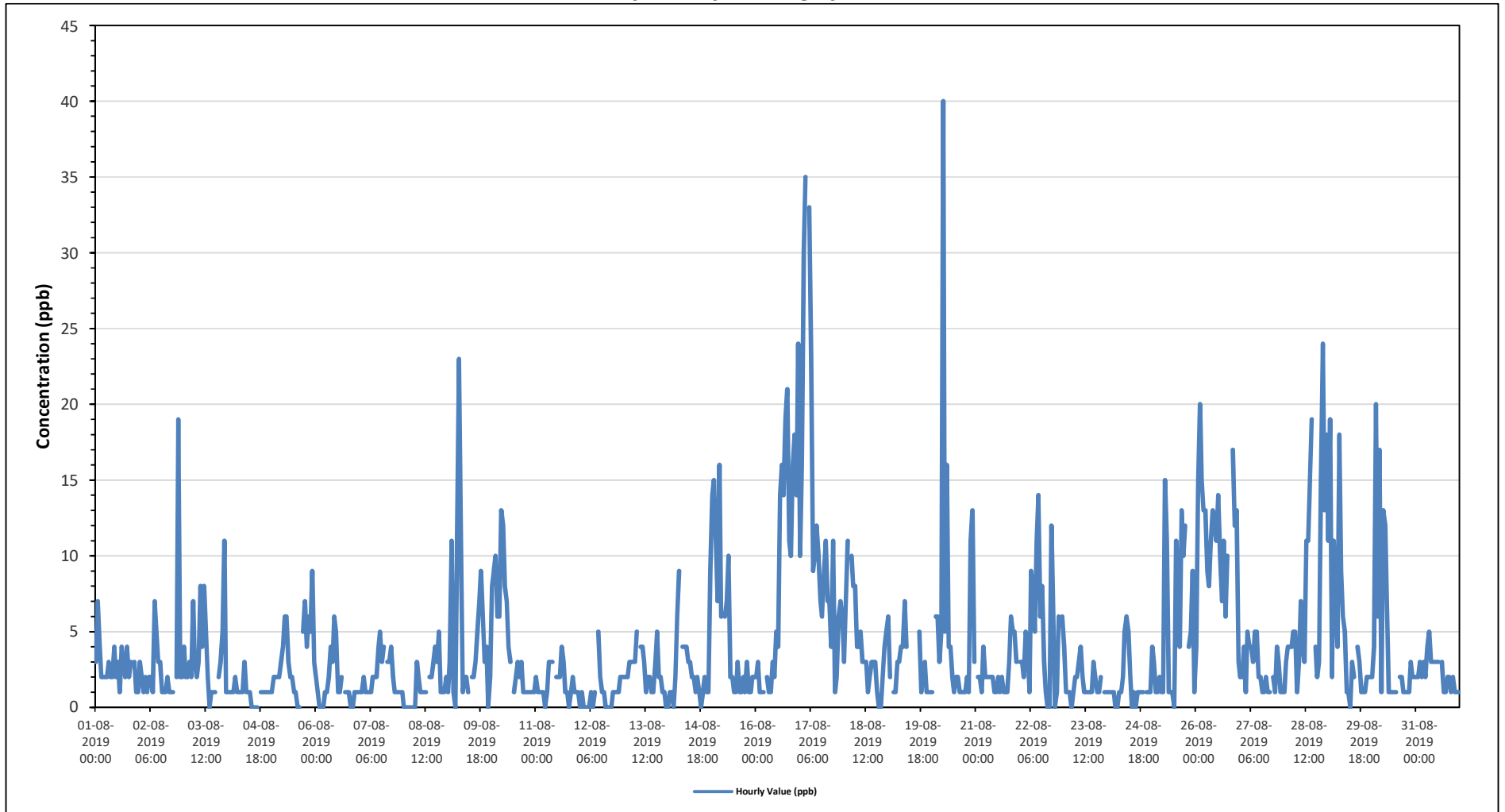
Maximum Hourly Value:	40 ppb on August 20 at hour 6	Hours in Service:	744
Maximum Daily Value:	11.8 ppb on August 17	Hours of Data:	705
Minimum Hourly Value:	0 ppb on August 3 at hour 14	Hours of Missing Data:	1
Minimum Daily Value:	0.9 ppb on August 12	Hours of Calibration:	38
Monthly Average:	3.9 ppb	Operational Uptime:	99.9

Day	Hourly Period Starting at (MST)																							Daily Minimum	Daily Maximum	Daily Average		
	0	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22				23	
Aug 1	3	7	4	2	2	2	2	3	2	2	4	2	3	1	4	3	2	4	2	3	S	3	1	1	1	7	2.7	
Aug 2	3	2	1	2	1	2	2	1	7	5	3	3	1	1	2	1	1	1	1	S	2	19	2	2	1	19	2.8	
Aug 3	4	2	2	3	2	7	3	2	3	8	4	8	5	2	0	2	1	1	S	2	3	5	11	1	0	11	3.5	
Aug 4	1	1	1	1	2	1	1	1	1	3	1	1	1	0	0	0	0	S	1	1	1	1	1	1	1	0	3	1.0
Aug 5	1	2	2	2	2	3	4	6	6	3	2	2	1	1	0	S	5	7	4	6	5	9	3	0	9	3.3		
Aug 6	2	1	0	0	1	1	2	4	3	6	5	1	1	2	S	1	1	1	0	0	1	1	1	1	0	6	1.5	
Aug 7	1	1	2	1	1	1	1	2	2	2	4	5	3	4	S	3	3	4	2	1	1	1	1	1	1	5	2.0	
Aug 8	0	0	0	0	0	0	0	3	2	1	1	1	1	S	2	2	3	4	3	5	1	1	1	2	0	5	1.4	
Aug 9	1	3	11	1	0	11	23	11	1	2	2	1	S	2	2	3	5	7	9	6	3	4	0	2	0	23	4.8	
Aug 10	8	9	10	6	6	13	12	8	7	4	3	S	1	2	3	2	3	1	1	1	1	1	1	1	1	13	4.5	
Aug 11	2	1	1	1	1	0	1	3	3	3	S	2	2	2	4	3	1	1	0	1	2	1	1	1	0	4	1.6	
Aug 12	0	1	0	0	0	0	1	0	1	S	5	2	1	1	0	0	0	0	1	1	1	1	2	2	0	5	0.9	
Aug 13	2	2	2	3	3	3	5	S	4	4	3	1	2	2	1	1	3	5	2	2	1	1	0	0	5	2.4		
Aug 14	0	1	1	0	2	6	9	S	4	4	4	3	3	2	2	1	2	1	0	1	2	1	1	9	0	9	2.6	
Aug 15	14	15	11	7	16	6	S	6	7	10	2	2	1	1	3	1	1	2	1	3	1	1	2	2	1	16	5.0	
Aug 16	2	3	1	1	S	2	1	1	3	2	5	4	14	16	14	19	21	11	10	16	18	14	24	1	24	8.8		
Aug 17	10	16	30	35	S	33	23	9	10	12	10	7	6	9	11	7	7	4	11	1	2	6	7	6	1	35	11.8	
Aug 18	3	7	11	S	10	8	8	4	4	5	3	3	3	1	2	3	3	3	1	0	0	2	4	5	0	11	4.0	
Aug 19	6	2	S	1	1	3	3	4	4	7	4	C	C	C	C	C	C	5	1	2	3	1	1	1	1	7	-	
Aug 20	1	S	6	6	3	5	40	5	16	4	4	2	1	2	2	1	1	1	1	2	1	11	13	3	1	40	5.7	
Aug 21	S	2	2	1	4	2	2	2	2	2	1	1	2	1	2	1	1	1	3	6	5	5	3	S	1	6	2.3	
Aug 22	3	3	2	5	4	1	9	8	5	11	14	6	8	3	1	0	0	12	6	0	1	6	S	6	0	14	5.0	
Aug 23	4	1	1	1	0	1	2	2	3	4	2	1	1	1	1	3	2	1	1	1	2	S	1	1	0	4	1.6	
Aug 24	1	1	1	1	0	0	1	1	2	5	6	5	2	0	1	0	1	1	1	1	S	1	1	1	0	6	1.5	
Aug 25	4	3	1	1	2	1	1	15	11	1	1	1	0	11	9	4	13	10	12	S	4	5	9	1	0	15	5.2	
Aug 26	4	15	20	15	13	13	9	8	11	13	12	11	14	10	7	11	6	10	S	Y	17	12	13	3	3	20	11.2	
Aug 27	2	2	4	1	5	4	4	3	5	5	2	2	1	1	2	1	1	S	2	1	4	3	1	1	1	5	2.5	
Aug 28	1	3	4	4	4	5	5	1	3	7	4	3	11	11	15	19	S	4	2	3	15	24	13	18	1	24	7.8	
Aug 29	11	19	2	11	7	4	18	9	6	5	1	1	0	3	2	S	4	3	1	1	1	2	2	2	0	19	5.0	
Aug 30	2	4	20	6	17	1	13	12	7	1	1	1	1	1	S	2	2	1	1	1	1	3	2	2	1	20	4.4	
Aug 31	2	2	3	2	3	2	4	5	3	3	3	S	3	3	1	1	2	2	1	2	1	1	1	1	5	2.3		
Diurnal Maximum	14	19	30	35	17	33	40	15	16	13	14	11	14	14	16	19	19	21	12	10	17	24	14	24				
Diurnal Average	3.3	4.4	5.2	4.0	3.7	4.6	6.9	4.7	4.8	4.7	3.8	3.2	2.8	3.2	3.5	3.1	3.1	4.0	3.1	2.2	3.4	4.9	4.0	3.5				

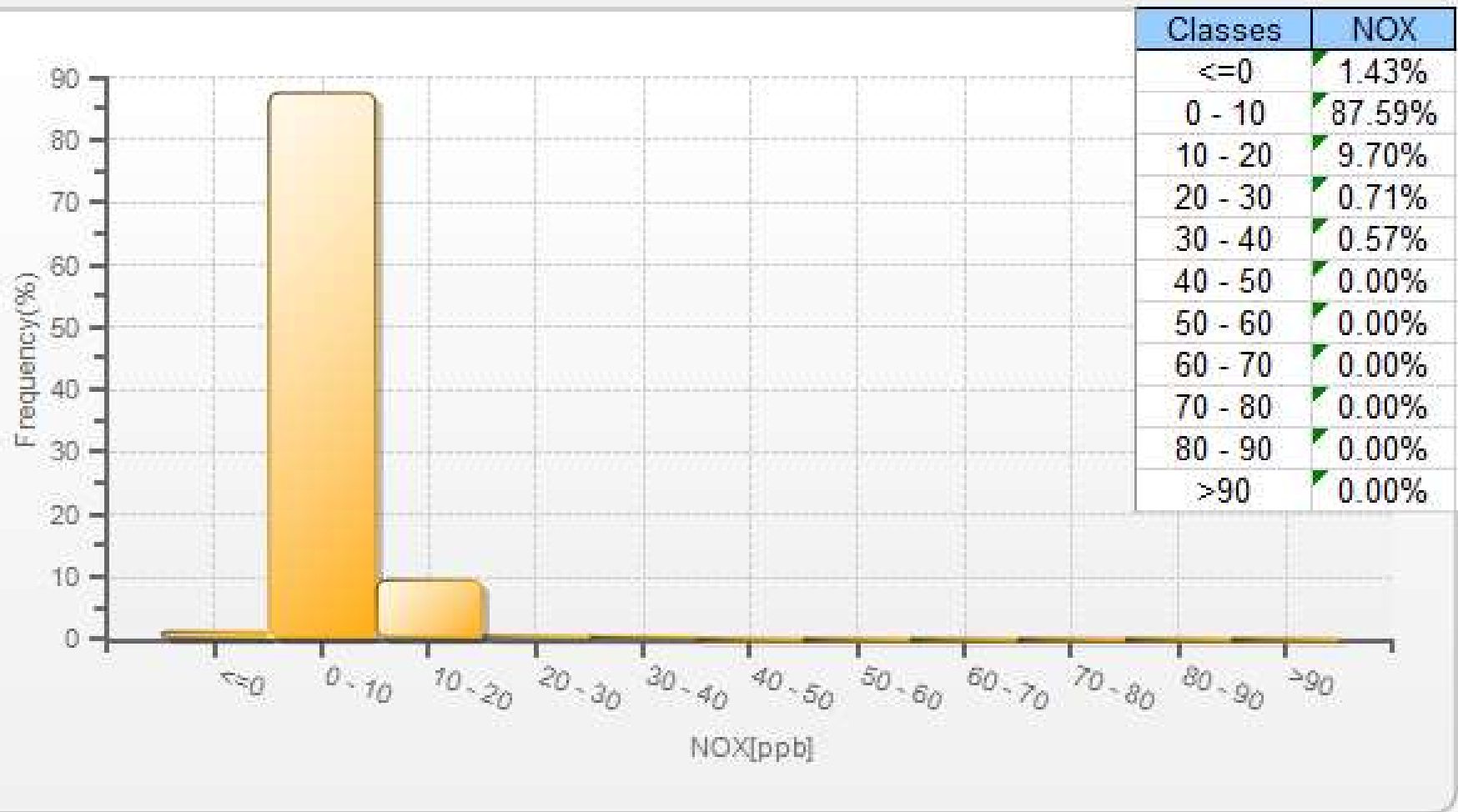
C	Calibration	S	Daily Zero/Span	Q	Quality Assurance	C1	Repeat Calibration	S1	Repeat Daily Zero/Span
G	Out for Repair	K	Collection Error	N	Not in Service	O	Operator Error	P	Power Failure
R	Recovery	X	Machine Malfunction	Y	Maintenance	T	Exceeds Temperature Limits	N	Not in Service

Daily Average is shown "-" if minimum data completeness criteria of 75% or 18 hours per day is not met.
Monthly Average is shown "-" if minimum data completeness criteria of 75% of days per month is not met.

Timeseries Chart of Hourly Average for NOx - Maskwa Site

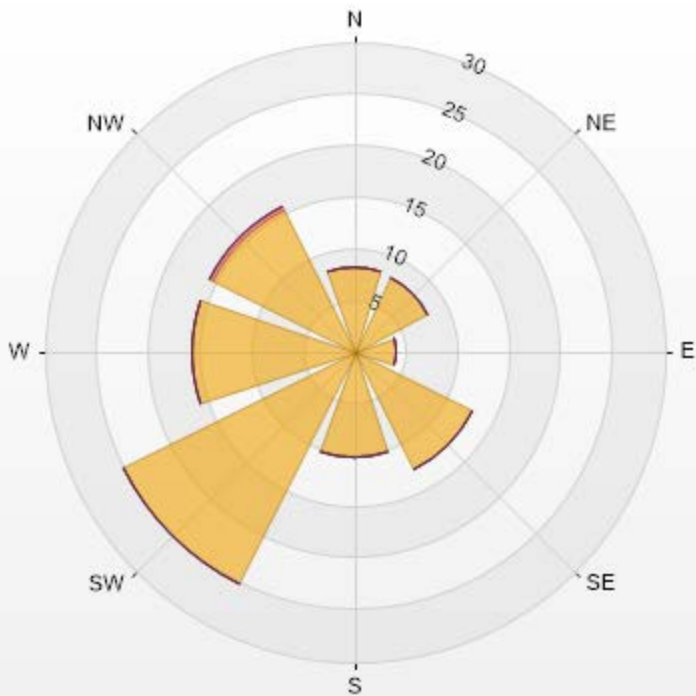


NOX[ppb] Histogram: Maskwa Monthly: 08-2019 1 Hr.



Wind: Maskwa Poll.: Maskwa-NOX[ppb] Monthly: 08-2019 Type: PollutionRose Direction: Blowing From (Wind Frequency) Based On 1 Hr.
 Calm: 0.00% Valid Data: 94.22% Calm Avg: 0.00 [ppb]

Direction	0-30	30-50	50-82	82-159	>159.0	Total
N	8.13	0	0	0	0	8.13
NE	7.99	0	0	0	0	7.99
E	3.99	0.14	0	0	0	4.13
SE	12.7	0	0	0	0	12.7
S	10.27	0	0	0	0	10.27
SW	25.11	0	0	0	0	25.11
W	15.83	0	0	0	0	15.83
NW	15.41	0.43	0	0	0	15.84
Summary	99.43	0.57	0	0	0	100



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% Icon	Classes (ppb)	99	0-30	1	31-50	50-82	0	82-159	0	>159.0



LAKELAND INDUSTRY & COMMUNITY ASSOCIATION

Maskwa Site - August 2019 Summary of Hourly Averages

NITRIC OXIDE (NO) in ppb

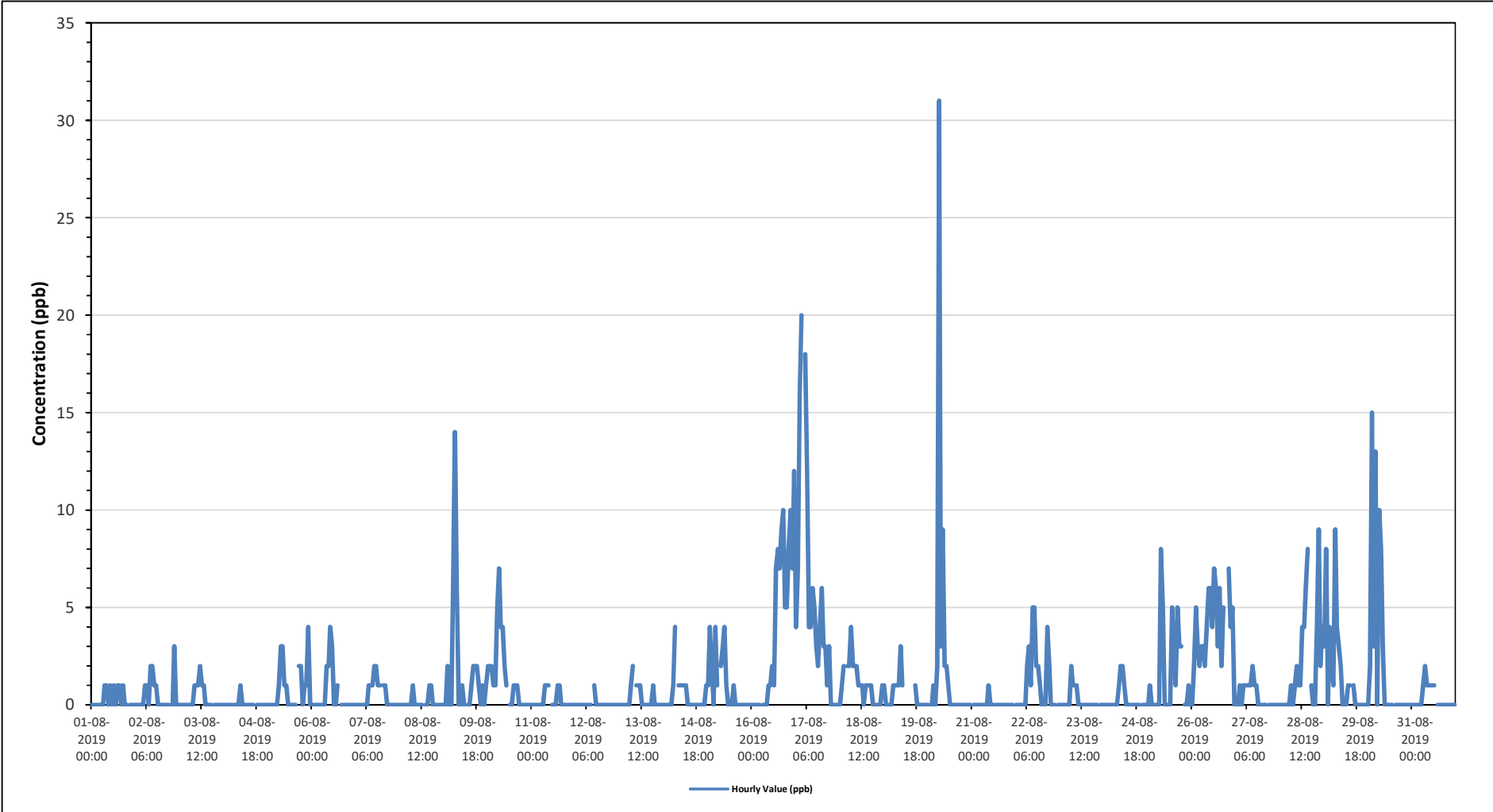
Maximum Hourly Value:	31 ppb on August 20 at hour 6	Hours in Service:	744
Maximum Daily Value:	5.3 ppb on August 17	Hours of Data:	705
Minimum Hourly Value:	0 ppb on August 1 at hour 0	Hours of Missing Data:	1
Minimum Daily Value:	0.0 ppb on August 4	Hours of Calibration:	38
Monthly Average:	1.1 ppb	Operational Uptime:	99.9

Day	Hourly Period Starting at (MST)																							Daily Minimum	Daily Maximum	Daily Average	
	0	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22				23
Aug 1	0	0	0	0	0	0	0	1	1	0	1	0	1	0	1	1	0	1	0	0	S	0	0	0	0	1	0.3
Aug 2	0	0	0	0	0	1	1	0	2	2	1	1	0	0	0	0	0	0	0	S	0	3	0	0	0	3	0.5
Aug 3	0	0	0	0	0	0	0	0	1	1	1	2	1	1	0	0	0	0	S	0	0	0	0	0	0	2	0.3
Aug 4	0	0	0	0	0	0	0	0	0	1	0	0	0	0	0	0	0	S	0	0	0	0	0	0	0	1	0.0
Aug 5	0	0	0	0	0	0	1	3	3	1	1	0	0	0	0	0	S	2	2	0	1	1	4	0	0	4	0.8
Aug 6	0	0	0	0	0	0	0	0	2	2	4	3	0	0	1	S	0	0	0	0	0	0	0	0	0	4	0.5
Aug 7	0	0	0	0	0	0	0	1	1	1	2	2	1	1	S	1	1	0	0	0	0	0	0	0	0	2	0.5
Aug 8	0	0	0	0	0	0	0	1	0	0	0	0	0	S	0	0	1	1	0	0	0	0	0	0	0	1	0.1
Aug 9	0	0	2	0	0	6	14	6	0	0	1	0	S	0	0	1	2	2	2	1	0	1	0	1	0	14	1.7
Aug 10	2	2	2	1	1	5	7	4	4	2	1	S	0	0	1	1	1	0	0	0	0	0	0	0	0	7	1.5
Aug 11	0	0	0	0	0	0	0	1	1	1	S	0	0	0	1	1	0	0	0	0	0	0	0	0	0	1	0.2
Aug 12	0	0	0	0	0	0	0	0	0	S	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1	0.0
Aug 13	0	0	0	0	0	0	1	2	S	1	1	1	0	0	0	0	0	0	1	0	0	0	0	0	0	2	0.3
Aug 14	0	0	0	0	0	1	4	S	1	1	1	1	1	0	0	0	0	0	0	0	0	0	0	1	0	4	0.5
Aug 15	1	4	2	0	4	1	S	2	3	4	1	0	0	0	1	0	0	0	0	0	0	0	0	0	0	4	1.0
Aug 16	0	0	0	0	0	S	0	0	0	1	1	2	1	7	8	7	9	10	5	5	8	10	7	12	0	12	4.0
Aug 17	4	7	16	20	S	18	12	4	4	6	5	3	2	4	6	3	3	1	3	0	0	0	0	0	0	20	5.3
Aug 18	0	1	2	S	2	2	4	2	2	2	1	1	1	0	1	1	1	1	0	0	0	0	0	1	0	4	1.1
Aug 19	1	0	S	0	0	1	1	1	1	3	1	C	C	C	C	C	C	1	0	0	0	0	0	0	0	3	-
Aug 20	0	S	0	1	0	2	31	3	9	2	2	1	0	0	0	0	0	0	0	0	0	0	0	0	0	31	2.2
Aug 21	S	0	0	0	0	0	0	0	0	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1	0.0
Aug 22	0	0	0	0	0	0	2	3	1	5	5	2	2	1	0	0	0	4	2	0	0	0	0	S	0	5	1.2
Aug 23	0	0	0	0	0	0	2	1	1	1	0	0	0	0	0	0	0	0	0	0	0	S	0	0	0	2	0.2
Aug 24	0	0	0	0	0	0	0	0	1	2	2	1	0	0	0	0	0	0	0	0	S	0	0	0	0	2	0.3
Aug 25	0	1	0	0	0	0	0	8	5	0	0	0	0	5	3	1	5	3	3	S	0	0	1	0	0	8	1.5
Aug 26	0	2	5	3	2	3	3	2	4	6	6	4	7	6	3	6	2	5	S	Y	7	4	5	0	0	7	3.9
Aug 27	0	0	1	0	1	1	1	1	1	2	1	1	0	0	0	0	0	S	0	0	0	0	0	0	0	2	0.4
Aug 28	0	0	0	0	0	1	0	1	2	1	1	4	4	6	8	S	1	0	0	0	4	9	2	4	0	9	2.1
Aug 29	3	8	0	4	2	1	9	4	3	2	0	0	0	1	1	S	1	0	0	0	0	0	0	0	0	9	1.7
Aug 30	0	2	15	3	13	0	10	8	3	0	0	0	0	0	S	0	0	0	0	0	0	0	0	0	0	15	2.3
Aug 31	0	0	0	0	0	0	1	2	1	1	1	1	1	S	0	0	0	0	0	0	0	0	0	0	0	2	0.3
Diurnal Maximum	4	8	16	20	13	18	31	8	9	6	6	4	7	7	8	8	9	10	5	5	8	10	7	12			
Diurnal Average	0.4	0.9	1.5	1.1	0.8	1.4	3.5	2.0	1.9	1.8	1.4	0.9	0.8	1.1	1.2	1.1	0.9	1.1	0.6	0.2	0.7	0.9	0.6	0.6			

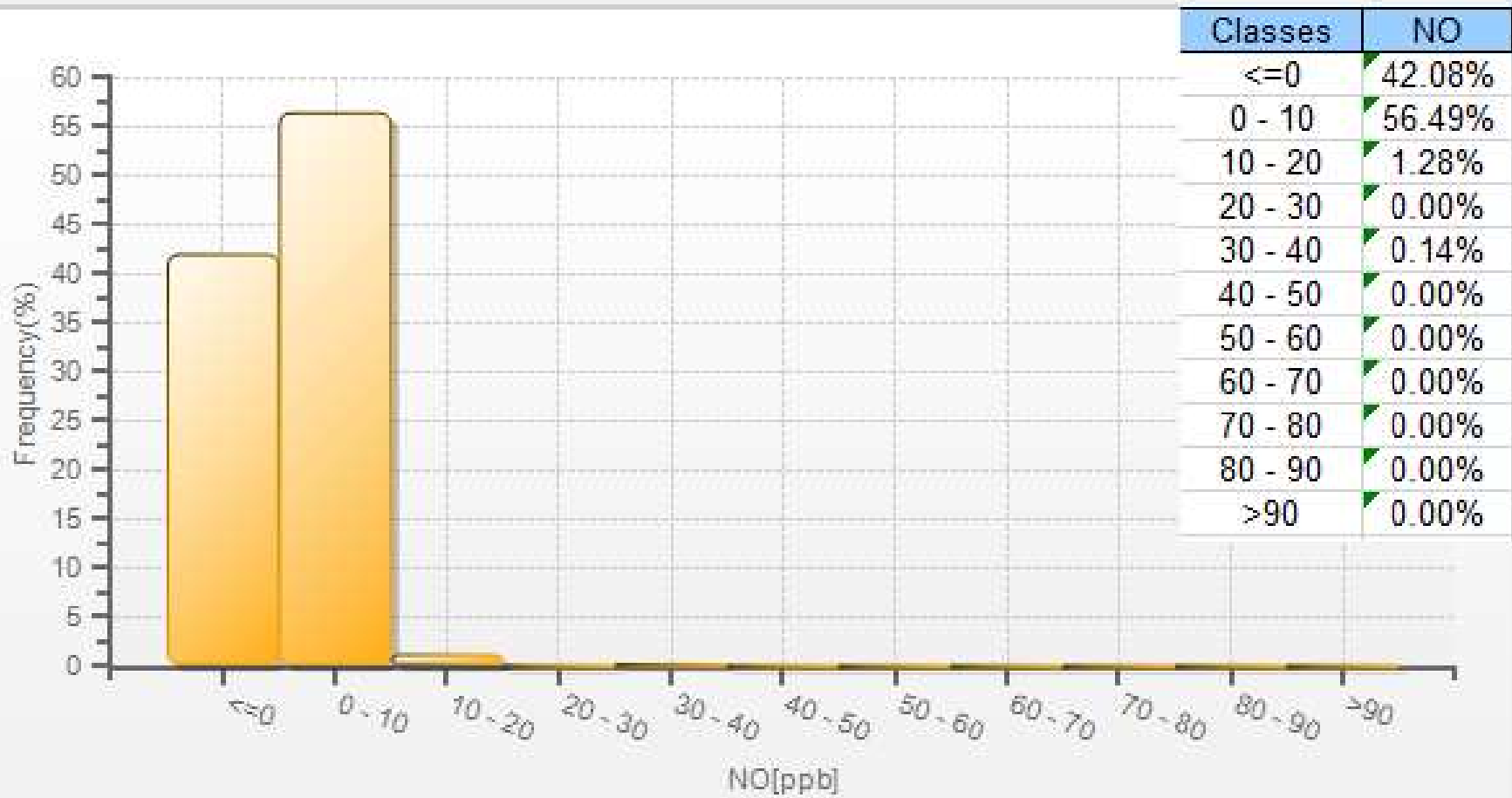
C	Calibration	S	Daily Zero/Span	Q	Quality Assurance	C1	Repeat Calibration	S1	Repeat Daily Zero/Span
G	Out for Repair	K	Collection Error	N	Not in Service	O	Operator Error	P	Power Failure
R	Recovery	X	Machine Malfunction	Y	Maintenance	T	Exceeds Temperature Limits	N	Not in Service

Daily Average is shown "-" if minimum data completeness criteria of 75% or 18 hours per day is not met.
 Monthly Average is shown "-" if minimum data completeness criteria of 75% of days per month is not met.

Timeseries Chart of Hourly Average for NO - Maskwa Site

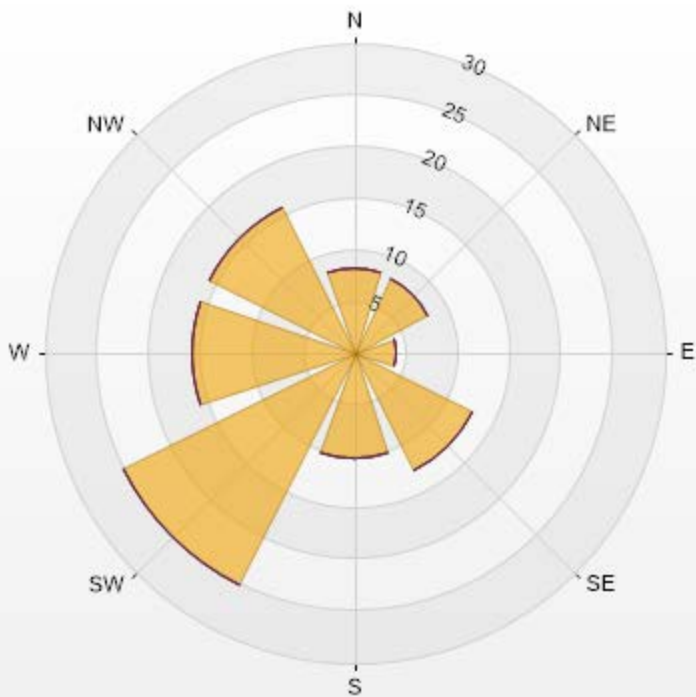


NO[ppb] Histogram: Maskwa Monthly: 08-2019 1 Hr.



Wind: Maskwa Poll.: Maskwa-NO[ppb] Monthly: 08-2019 Type: PollutionRose Direction: Blowing From (Wind Frequency) Based On 1 Hr.
 Calm: 0.00% Valid Data: 94.22% Calm Avg: 0.00 [ppb]

Direction	0-30	30-50	50-82	82-159	>159.0	Total
N	8.13	0	0	0	0	8.13
NE	7.99	0	0	0	0	7.99
E	3.99	0.14	0	0	0	4.13
SE	12.7	0	0	0	0	12.7
S	10.27	0	0	0	0	10.27
SW	25.11	0	0	0	0	25.11
W	15.83	0	0	0	0	15.83
NW	15.83	0	0	0	0	15.83
Summary	100	0.14	0	0	0	100



LICA-201908-Revision 1



LAKELAND INDUSTRY & COMMUNITY ASSOCIATION

Maskwa Site - August 2019

Summary of Hourly Averages

NITROGEN DIOXIDE (NO₂) in ppb

Alberta Ambient Air Quality Objectives (AAAQO): 1-Hour 159 ppb

Number of 1-Hour Exceedences: 0

Maximum Hourly Value: 16 ppb on August 2 at hour 21

Hours in Service: 744

Maximum Daily Value: 7.4 ppb on August 26

Hours of Data: 705

Minimum Hourly Value: 0 ppb on August 3 at hour 14

Hours of Missing Data: 1

Minimum Daily Value: 0.5 ppb on August 12

Hours of Calibration: 38

Monthly Average: 2.7 ppb

Operational Uptime: 99.9

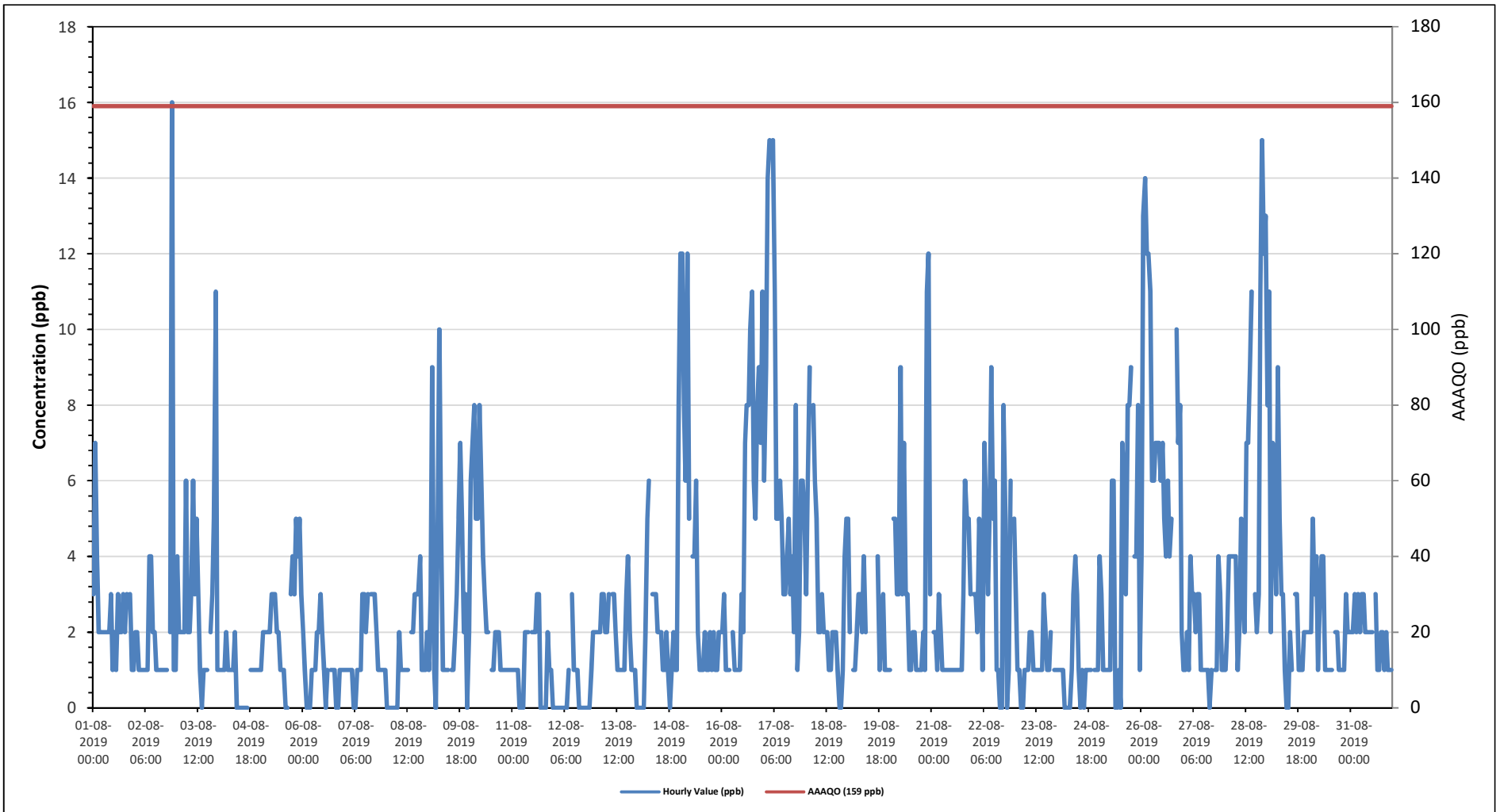
Day	Hourly Period Starting at (MST)																							Daily Minimum	Daily Maximum	Daily Average		
	0	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22				23	
Aug 1	3	7	4	2	2	2	2	2	2	2	3	1	2	1	3	2	2	3	2	3	S	3	1	1	1	7	2.4	
Aug 2	2	2	1	1	1	1	1	1	4	4	2	2	1	1	1	1	1	1	1	S	2	16	1	1	1	16	2.1	
Aug 3	4	2	2	2	2	6	2	2	3	6	3	5	3	1	0	1	1	1	S	2	3	5	11	1	0	11	3.0	
Aug 4	1	1	1	1	2	1	1	1	1	2	0	0	0	0	0	0	0	S	1	1	1	1	1	1	1	0	2	0.8
Aug 5	1	2	2	2	2	2	3	3	3	2	2	1	1	1	0	0	S	3	4	3	5	4	5	3	0	5	2.3	
Aug 6	2	1	0	0	0	1	1	1	2	2	3	2	1	0	1	S	1	1	1	0	0	1	1	1	0	3	1.0	
Aug 7	1	1	1	1	1	0	0	1	1	1	3	3	2	3	S	3	3	3	2	1	1	1	1	1	0	3	1.5	
Aug 8	0	0	0	0	0	0	0	2	1	1	1	1	1	S	2	2	3	3	3	4	1	1	1	2	0	4	1.3	
Aug 9	1	3	9	1	0	5	10	5	1	1	1	S	1	1	2	3	5	7	5	2	3	0	2	0	10	3.0		
Aug 10	6	7	8	5	5	8	6	4	3	2	2	S	1	2	2	2	1	1	1	1	1	1	1	1	1	8	3.1	
Aug 11	1	1	1	1	0	0	0	2	2	2	S	2	2	2	3	3	0	0	0	0	2	1	1	0	0	3	1.1	
Aug 12	0	0	0	0	0	0	0	0	1	S	3	1	1	1	0	0	0	0	0	0	0	1	2	2	0	3	0.5	
Aug 13	2	2	2	3	3	2	2	3	S	3	3	2	1	1	1	1	3	4	2	1	1	1	0	0	4	1.9		
Aug 14	0	0	0	0	2	5	6	S	3	3	3	2	2	2	1	1	2	1	0	1	2	1	1	8	0	8	2.0	
Aug 15	12	12	8	6	12	5	S	4	4	6	2	1	1	1	2	1	1	2	1	2	1	1	2	2	1	12	3.9	
Aug 16	2	3	1	1	1	S	2	1	1	1	1	3	2	7	8	8	10	11	6	5	8	9	7	11	1	11	4.7	
Aug 17	6	9	14	15	S	15	11	5	5	6	5	3	3	4	5	3	4	2	8	1	2	6	6	5	1	15	6.2	
Aug 18	3	6	9	S	8	6	5	2	2	3	2	2	2	1	1	2	2	2	1	0	0	1	4	5	0	9	3.0	
Aug 19	5	2	S	1	1	2	3	3	2	4	2	C	C	C	C	C	C	4	1	2	3	1	1	1	1	5	-	
Aug 20	1	S	5	5	3	3	9	3	7	3	3	1	1	2	2	1	1	1	1	2	1	11	12	3	1	12	3.5	
Aug 21	S	2	2	1	3	2	1	1	1	1	1	1	1	1	1	1	1	1	3	6	5	5	3	S	1	6	2.0	
Aug 22	3	3	2	5	4	1	7	5	3	5	9	5	6	1	1	0	0	8	5	0	1	6	S	5	0	9	3.7	
Aug 23	3	1	1	0	0	1	1	1	2	2	1	1	1	1	1	1	3	2	1	1	2	S	1	1	0	3	1.3	
Aug 24	1	1	1	1	0	0	0	0	1	3	4	3	1	0	1	0	1	1	1	1	S	1	1	1	0	4	1.0	
Aug 25	4	3	1	1	1	1	1	6	6	0	0	1	0	7	6	3	8	8	9	S	4	4	8	1	0	9	3.6	
Aug 26	4	13	14	12	12	11	6	6	7	7	7	6	7	5	4	6	4	5	S	Y	10	7	8	2	2	14	7.4	
Aug 27	1	1	2	1	4	3	3	2	3	3	1	1	1	1	1	0	1	S	1	1	4	3	1	1	0	4	1.7	
Aug 28	1	2	4	4	4	4	4	1	2	5	3	2	7	9	11	S	3	2	3	11	15	12	13	1	15	5.6		
Aug 29	8	11	2	7	5	3	9	5	3	3	1	0	0	2	1	S	3	3	1	1	1	2	2	2	0	11	3.3	
Aug 30	2	2	5	3	4	1	3	4	4	1	1	1	1	1	S	2	2	1	1	1	1	3	2	2	1	5	2.1	
Aug 31	2	2	3	2	3	2	3	3	2	2	2	2	2	S	3	1	1	2	2	1	2	1	1	1	1	3	2.0	
Diurnal Maximum	12	13	14	15	12	15	11	6	7	7	9	6	7	7	9	11	10	11	9	6	11	16	12	13				
Diurnal Average	2.7	3.4	3.5	2.8	2.8	3.1	3.4	2.6	2.7	2.9	2.5	1.9	1.9	2.0	2.2	2.1	2.2	2.8	2.4	1.8	2.7	3.9	3.3	2.7				

C	Calibration	S	Daily Zero/Span	Q	Quality Assurance	C1	Repeat Calibration	S1	Repeat Daily Zero/Span
G	Out for Repair	K	Collection Error	N	Not in Service	O	Operator Error	P	Power Failure
R	Recovery	X	Machine Malfunction	Y	Maintenance	T	Exceeds Temperature Limits	N	Not in Service

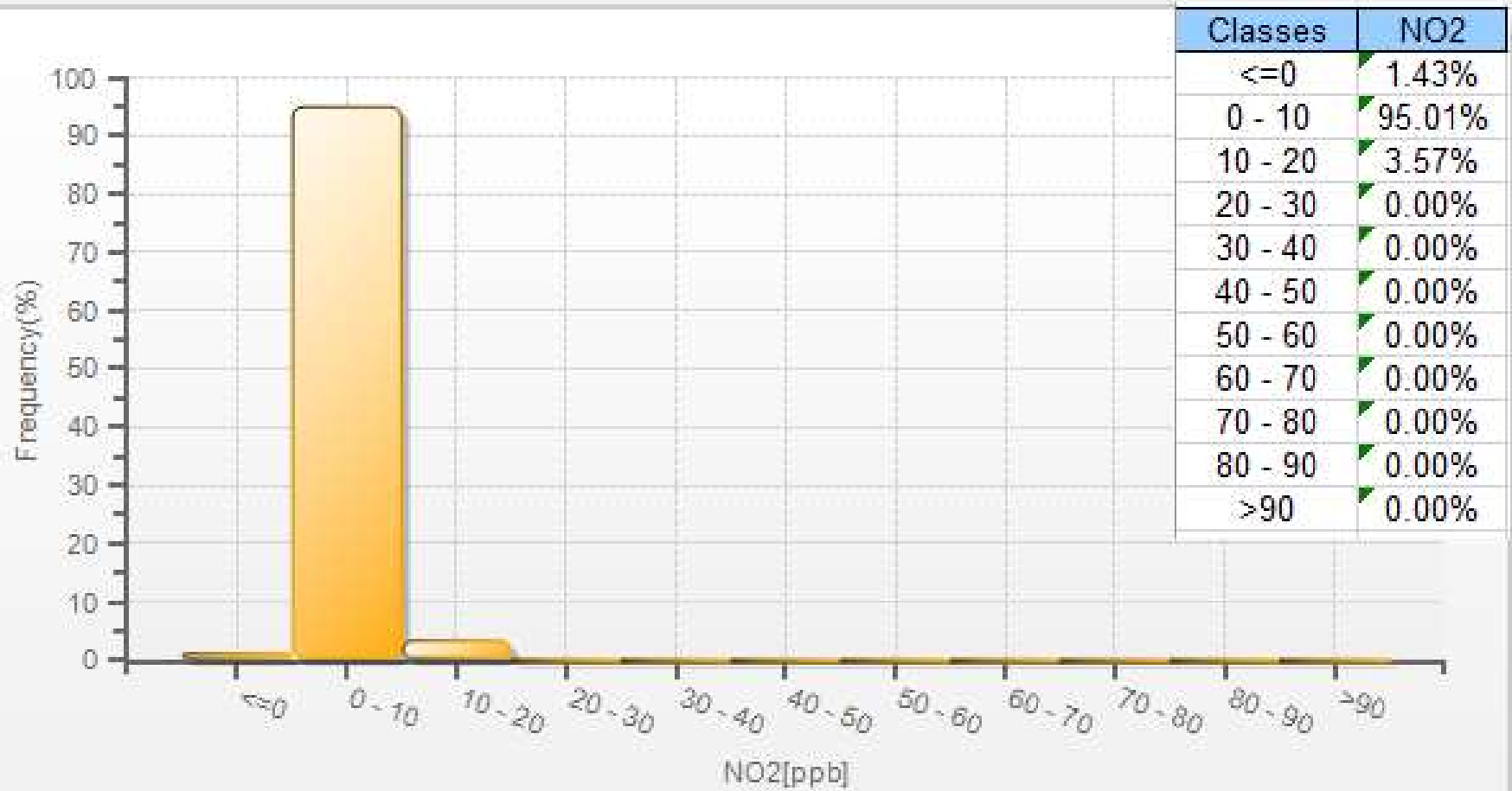
Daily Average is shown "-" if minimum data completeness criteria of 75% or 18 hours per day is not met.

Monthly Average is shown "-" if minimum data completeness criteria of 75% of days per month is not met.

Timeseries Chart of Hourly Average for NO2 - Maskwa Site

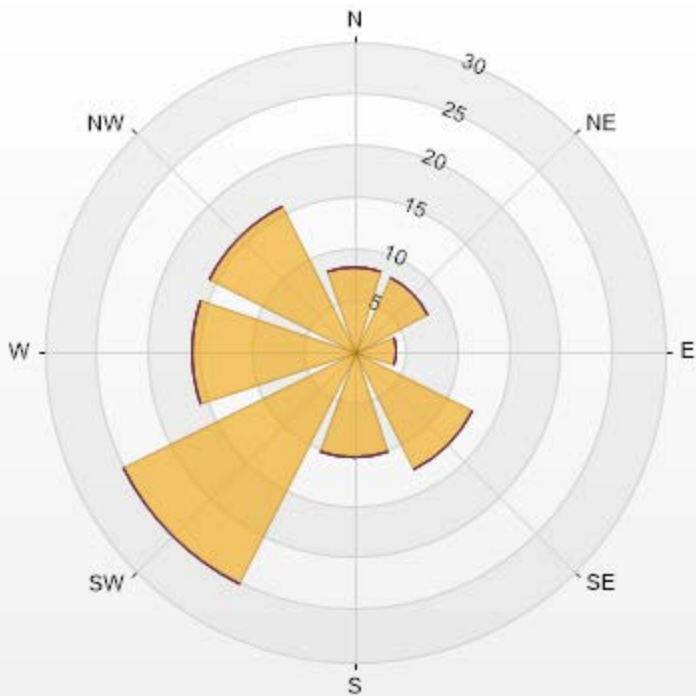


NO2[ppb] Histogram: Maskwa Monthly: 08-2019 1 Hr.



Wind: Maskwa Poll.: Maskwa-NO2[ppb] Monthly: 08-2019 Type: PollutionRose Direction: Blowing From (Wind Frequency) Based On 1 Hr.
 Calm: 0.00% Valid Data: 94.22% Calm Avg: 0.00 [ppb]

Direction	0-30	30-50	50-82	82-159	>159.0	Total
N	8.13	0	0	0	0	8.13
NE	7.99	0	0	0	0	7.99
E	4.14	0	0	0	0	4.14
SE	12.7	0	0	0	0	12.7
S	10.27	0	0	0	0	10.27
SW	25.11	0	0	0	0	25.11
W	15.83	0	0	0	0	15.83
NW	15.83	0	0	0	0	15.83
Summary	100	0	0	0	0	100



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% Icon Classes (ppb)	100	0-30	0	Page 119 of 367	50-82	0	82-159	0	>159.0



LAKELAND INDUSTRY & COMMUNITY ASSOCIATION

Maskwa Site - August 2019
Summary of Hourly Averages

TOTAL HYDROCARBONS (THC) in ppm

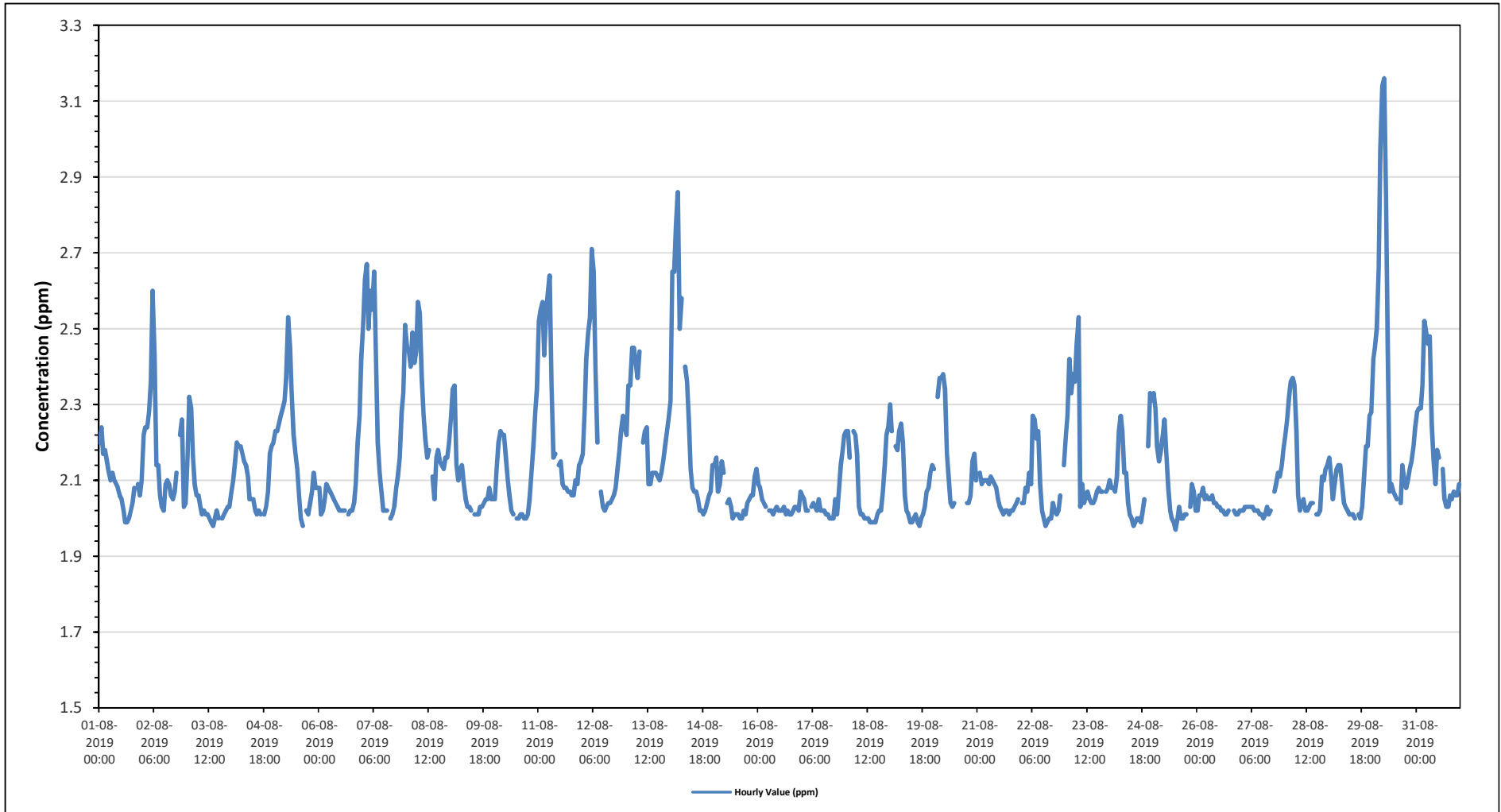
Maximum Hourly Value:	3.16 ppm on August 30 at hour 6	Hours in Service:	744
Maximum Daily Value:	2.35 ppm on August 30	Hours of Data:	705
Minimum Hourly Value:	1.97 ppm on August 25 at hour 12	Hours of Missing Data:	1
Minimum Daily Value:	2.03 ppm on August 16	Hours of Calibration:	38
Monthly Average:	2.14 ppm	Operational Uptime:	99.9

Day	Hourly Period Starting at (MST)																							Daily Minimum	Daily Maximum	Daily Average	
	0	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22				23
Aug 1	2.20	2.24	2.17	2.18	2.15	2.12	2.10	2.12	2.10	2.09	2.08	2.06	2.05	2.02	1.99	1.99	2.00	2.02	2.04	2.08	S	2.09	2.06	2.10	1.99	2.24	2.09
Aug 2	2.22	2.24	2.24	2.28	2.36	2.60	2.43	2.14	2.14	2.06	2.03	2.02	2.09	2.10	2.09	2.06	2.05	2.07	2.12	S	2.22	2.26	2.03	2.04	2.02	2.60	2.17
Aug 3	2.15	2.32	2.29	2.16	2.09	2.06	2.06	2.03	2.01	2.02	2.01	2.01	2.00	1.99	1.98	2.00	2.02	2.00	S	2.00	2.01	2.02	2.03	2.03	1.98	2.32	2.06
Aug 4	2.07	2.10	2.15	2.20	2.19	2.19	2.17	2.15	2.14	2.11	2.05	2.05	2.05	2.02	2.01	2.02	2.01	S	2.01	2.03	2.07	2.17	2.19	2.20	2.01	2.20	2.10
Aug 5	2.23	2.23	2.25	2.27	2.29	2.31	2.37	2.53	2.45	2.33	2.22	2.17	2.13	2.06	2.00	1.98	S	2.02	2.01	2.04	2.07	2.12	2.08	2.08	1.98	2.53	2.18
Aug 6	2.08	2.01	2.02	2.05	2.09	2.08	2.07	2.06	2.05	2.04	2.03	2.02	2.02	2.02	2.00	1.98	S	2.01	2.02	2.02	2.04	2.09	2.20	2.27	2.42	2.08	
Aug 7	2.51	2.63	2.67	2.50	2.60	2.55	2.65	2.44	2.20	2.12	2.07	2.02	2.02	2.02	S	2.00	2.01	2.03	2.08	2.11	2.16	2.28	2.33	2.51	2.00	2.67	2.28
Aug 8	2.45	2.44	2.40	2.49	2.41	2.44	2.57	2.54	2.37	2.27	2.21	2.16	2.18	S	2.11	2.05	2.16	2.18	2.15	2.14	2.13	2.16	2.16	2.20	2.05	2.57	2.28
Aug 9	2.27	2.34	2.35	2.14	2.10	2.13	2.14	2.09	2.05	2.03	2.02	2.02	S	2.01	2.01	2.01	2.03	2.03	2.04	2.05	2.05	2.08	2.05	2.05	2.01	2.35	2.09
Aug 10	2.05	2.13	2.20	2.23	2.22	2.22	2.16	2.10	2.06	2.02	2.01	S	2.00	2.00	2.01	2.01	2.00	2.00	2.01	2.05	2.12	2.19	2.28	2.34	2.00	2.34	2.10
Aug 11	2.52	2.55	2.57	2.43	2.54	2.60	2.64	2.35	2.16	2.17	S	2.14	2.15	2.09	2.08	2.08	2.07	2.07	2.06	2.06	2.10	2.09	2.14	2.15	2.06	2.64	2.25
Aug 12	2.17	2.28	2.42	2.49	2.53	2.71	2.65	2.39	2.20	S	2.07	2.03	2.02	2.03	2.04	2.04	2.05	2.06	2.08	2.13	2.18	2.23	2.27	2.24	2.02	2.71	2.23
Aug 13	2.22	2.35	2.35	2.45	2.45	2.41	2.37	2.44	S	2.20	2.23	2.24	2.09	2.09	2.12	2.12	2.12	2.11	2.10	2.12	2.15	2.19	2.23	2.26	2.09	2.45	2.24
Aug 14	2.31	2.65	2.65	2.77	2.86	2.50	2.58	S	2.40	2.36	2.25	2.13	2.08	2.07	2.07	2.05	2.02	2.02	2.01	2.02	2.04	2.06	2.07	2.14	2.01	2.86	2.27
Aug 15	2.14	2.16	2.07	2.09	2.15	2.12	S	2.04	2.05	2.03	2.00	2.01	2.01	2.01	2.00	2.00	2.02	2.01	2.04	2.05	2.06	2.06	2.11	2.13	2.00	2.16	2.06
Aug 16	2.09	2.08	2.05	2.04	2.03	S	2.02	2.02	2.01	2.02	2.03	2.02	2.02	2.02	2.03	2.01	2.02	2.01	2.01	2.02	2.03	2.03	2.02	2.07	2.01	2.09	2.03
Aug 17	2.06	2.05	2.02	2.02	S	2.03	2.04	2.03	2.02	2.05	2.02	2.02	2.02	2.01	2.01	2.00	2.00	2.00	2.05	2.01	2.07	2.14	2.18	2.22	2.00	2.22	2.05
Aug 18	2.23	2.23	2.16	S	2.23	2.22	2.17	2.03	2.01	2.01	2.00	2.00	2.00	1.99	1.99	1.99	1.99	2.01	2.02	2.02	2.07	2.14	2.22	2.24	1.99	2.24	2.09
Aug 19	2.30	2.23	S	2.19	2.18	2.23	2.25	2.20	2.06	2.02	2.01	1.99	1.99	2.00	2.01	1.99	1.98	2.00	2.01	2.03	2.07	2.08	2.12	2.14	1.98	2.30	2.09
Aug 20	2.13	S	2.32	2.37	2.37	2.38	2.34	2.17	2.11	2.04	2.03	2.04	C	C	C	C	C	C	2.04	2.04	2.06	2.15	2.17	2.10	2.03	2.38	-
Aug 21	S	2.12	2.09	2.10	2.10	2.10	2.09	2.11	2.10	2.09	2.08	2.05	2.03	2.02	2.01	2.02	2.02	2.01	2.02	2.02	2.03	2.04	2.05	S	2.01	2.12	2.06
Aug 22	2.04	2.04	2.08	2.07	2.12	2.09	2.27	2.26	2.21	2.23	2.09	2.02	2.00	1.98	1.99	2.00	2.00	2.04	2.02	2.01	2.02	2.06	S	2.14	1.98	2.27	2.08
Aug 23	2.22	2.27	2.42	2.33	2.38	2.36	2.46	2.53	2.03	2.09	2.04	2.06	2.07	2.05	2.04	2.04	2.05	2.07	2.08	2.07	2.07	S	2.07	2.08	2.03	2.53	2.17
Aug 24	2.10	2.08	2.08	2.07	2.11	2.23	2.27	2.23	2.12	2.12	2.04	2.01	2.00	1.98	1.99	2.00	1.99	2.00	1.99	2.02	2.05	S	2.19	2.33	1.98	2.33	2.10
Aug 25	2.33	2.29	2.19	2.15	2.18	2.22	2.26	2.17	2.08	2.02	2.00	1.99	1.97	2.00	2.03	2.00	2.00	2.01	2.01	S	2.03	2.09	2.07	2.02	1.97	2.33	2.09
Aug 26	2.02	2.06	2.06	2.08	2.05	2.06	2.05	2.05	2.06	2.04	2.04	2.03	2.03	2.02	2.02	2.01	2.01	2.02	S	2.02	2.01	2.01	2.02	2.02	2.01	2.08	2.04
Aug 27	2.02	2.02	2.03	2.03	2.03	2.03	2.02	2.02	2.02	2.02	2.01	2.01	2.00	2.01	2.03	2.01	2.02	S	2.07	2.09	2.12	2.11	2.14	2.18	2.00	2.18	2.05
Aug 28	2.22	2.26	2.32	2.36	2.37	2.35	2.23	2.06	2.02	2.04	2.05	2.02	2.02	2.03	2.04	2.04	S	2.01	2.01	2.02	2.11	2.10	2.13	2.14	2.01	2.37	2.13
Aug 29	2.16	2.11	2.05	2.09	2.13	2.14	2.14	2.09	2.04	2.03	2.02	2.01	2.01	2.01	2.00	S	2.01	2.00	2.03	2.11	2.19	2.19	2.27	2.28	2.00	2.28	2.09
Aug 30	2.42	2.45	2.50	2.66	2.97	3.14	3.16	2.84	2.46	2.07	2.09	2.07	2.06	2.05	S	2.04	2.14	2.10	2.08	2.10	2.13	2.15	2.19	2.24	2.04	3.16	2.35
Aug 31	2.28	2.29	2.29	2.35	2.52	2.49	2.46	2.48	2.25	2.15	2.09	2.18	2.16	S	2.13	2.05	2.03	2.03	2.06	2.05	2.07	2.06	2.06	2.09	2.03	2.52	2.20
Diurnal Maximum	2.52	2.65	2.67	2.77	2.97	3.14	3.16	2.84	2.46	2.36	2.25	2.24	2.18	2.10	2.13	2.12	2.16	2.18	2.15	2.14	2.22	2.28	2.33	2.51			
Diurnal Average	2.21	2.24	2.25	2.25	2.29	2.30	2.31	2.22	2.13	2.10	2.06	2.05	2.04	2.03	2.03	2.02	2.03	2.03	2.04	2.06	2.09	2.12	2.14	2.17			

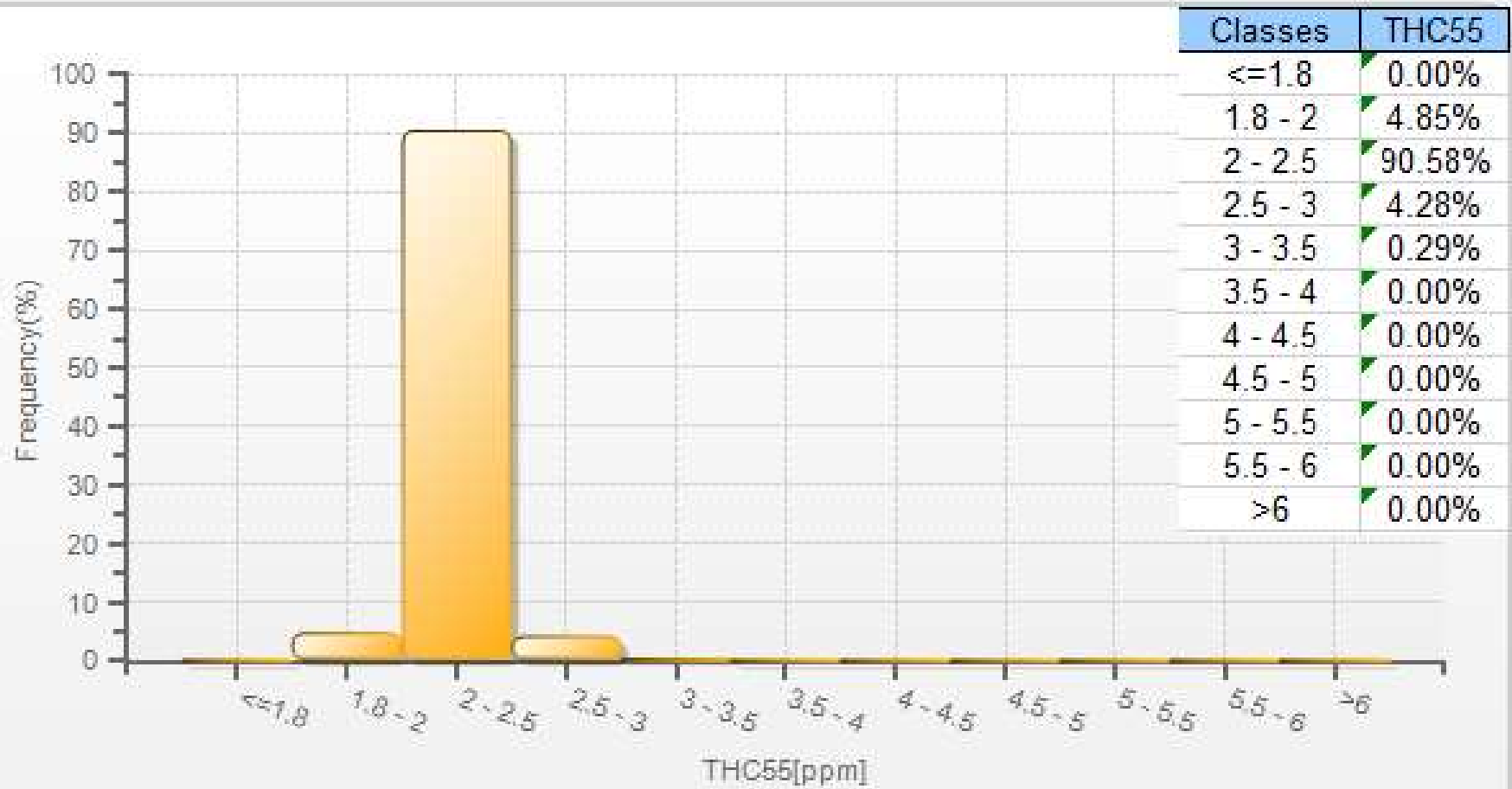
C	Calibration	S	Daily Zero/Span	Q	Quality Assurance	C1	Repeat Calibration	S1	Repeat Daily Zero/Span
G	Out for Repair	K	Collection Error	N	Not in Service	O	Operator Error	P	Power Failure
R	Recovery	X	Machine Malfunction	Y	Maintenance	T	Exceeds Temperature Limits	N	Not in Service

Daily Average is shown "-" if minimum data completeness criteria of 75% or 18 hours per day is not met.
Monthly Average is shown "-" if minimum data completeness criteria of 75% of days per month is not met.

Timeseries Chart of Hourly Average for THC - Maskwa Site

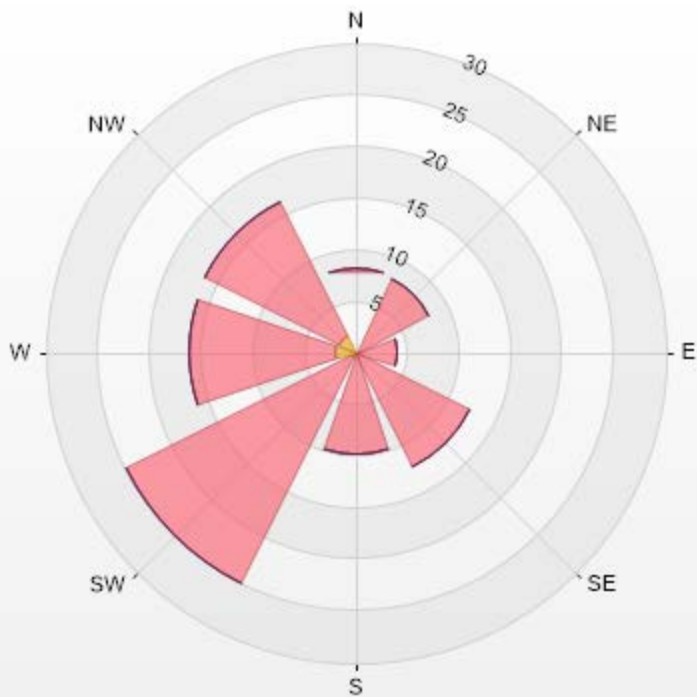


THC55[ppm] Histogram: Maskwa Monthly: 08-2019 1 Hr.



Wind: Maskwa Poll.: Maskwa-THC55[ppm] Monthly: 08-2019 Type: PollutionRose Direction: Blowing From (Wind Frequency) Based On 1 Hr.
 Calm: 0.00% Valid Data: 94.22% Calm Avg: 0.00 [ppm]

Direction	0-2	2-5	5-10	10-40	>40.0	Total
N	0.14	8.13	0	0	0	8.27
NE	0	7.99	0	0	0	7.99
E	0	4.14	0	0	0	4.14
SE	0.29	12.13	0	0	0	12.42
S	0	9.84	0	0	0	9.84
SW	0.57	24.39	0	0	0	24.96
W	2	14.12	0	0	0	16.12
NW	1.85	14.41	0	0	0	16.26
Summary	4.85	95.15	0	0	0	100



LICA-201908-Revision 1



LAKELAND INDUSTRY & COMMUNITY ASSOCIATION

Maskwa Site - August 2019 Summary of Hourly Averages

METHANE (CH4) in ppm

Maximum Hourly Value:	3.09 ppm on August 30 at hour 6	Hours in Service:	744
Maximum Daily Value:	2.34 ppm on August 30	Hours of Data:	705
Minimum Hourly Value:	1.97 ppm on August 25 at hour 12	Hours of Missing Data:	1
Minimum Daily Value:	2.03 ppm on August 16	Hours of Calibration:	38
Monthly Average:	2.14 ppm	Operational Uptime:	99.9

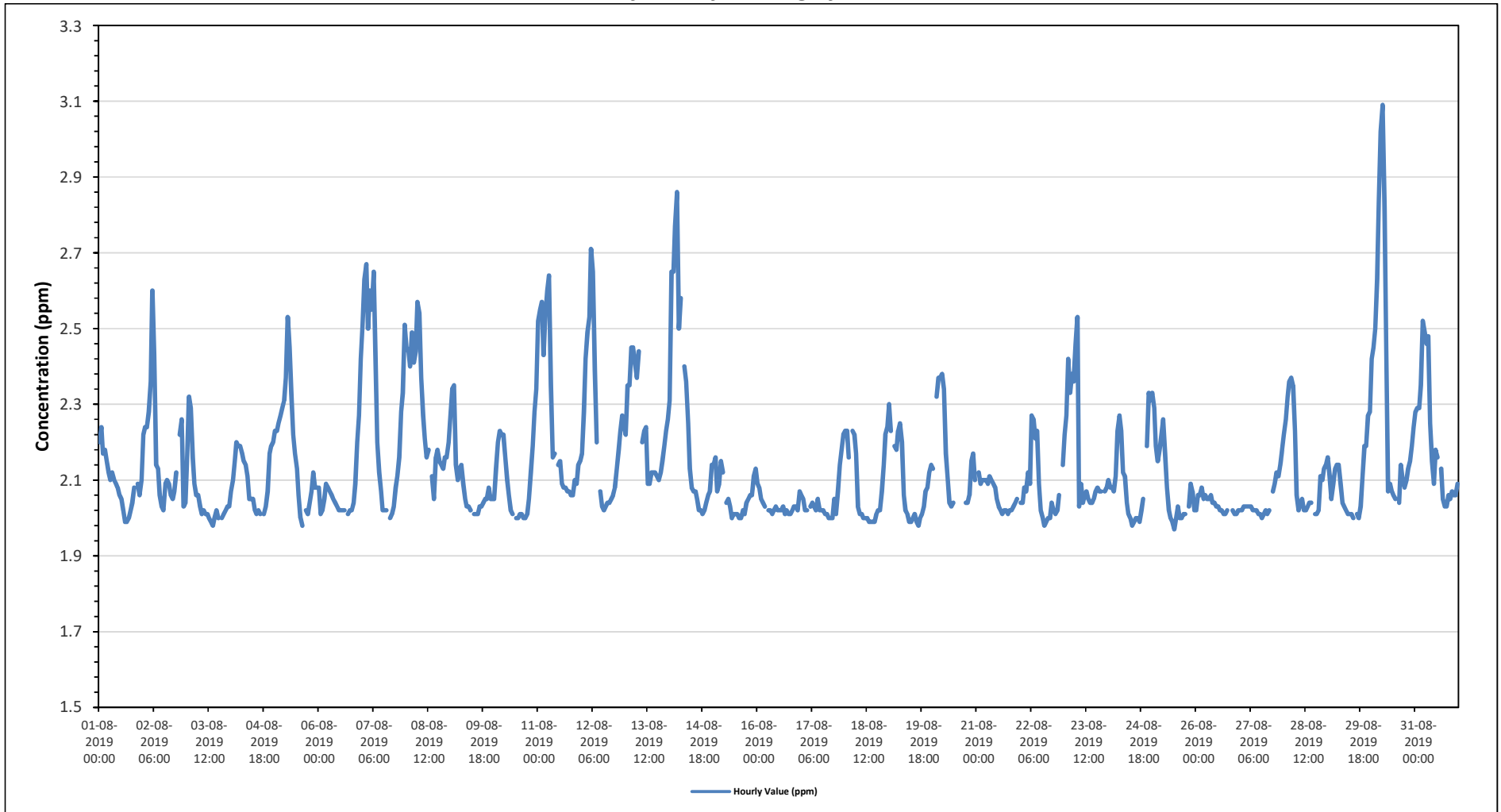
Day	Hourly Period Starting at (MST)																							Daily	Daily	Daily		
	0	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	Minimum	Maximum	Average	
Aug 1	2.20	2.24	2.17	2.18	2.15	2.12	2.10	2.12	2.10	2.09	2.08	2.06	2.05	2.02	1.99	1.99	2.00	2.02	2.04	2.08	S	2.09	2.06	2.10	1.99	2.24	2.09	
Aug 2	2.22	2.24	2.24	2.28	2.36	2.60	2.43	2.14	2.13	2.06	2.03	2.02	2.09	2.10	2.09	2.06	2.05	2.07	2.12	S	2.22	2.26	2.03	2.04	2.02	2.60	2.17	
Aug 3	2.15	2.32	2.29	2.16	2.09	2.06	2.06	2.03	2.01	2.02	2.01	2.01	2.00	1.99	1.98	2.00	2.02	2.00	S	2.00	2.01	2.02	2.03	2.03	1.98	2.32	2.06	
Aug 4	2.07	2.10	2.15	2.20	2.19	2.19	2.17	2.15	2.14	2.11	2.05	2.05	2.05	2.02	2.01	2.02	2.01	S	2.01	2.03	2.07	2.17	2.19	2.20	2.01	2.20	2.10	
Aug 5	2.23	2.23	2.25	2.27	2.29	2.31	2.37	2.53	2.45	2.33	2.22	2.17	2.13	2.06	2.00	1.98	S	2.02	2.01	2.04	2.07	2.12	2.08	2.08	1.98	2.53	2.18	
Aug 6	2.08	2.01	2.02	2.05	2.09	2.08	2.07	2.06	2.05	2.04	2.03	2.02	2.02	2.02	2.00	1.98	S	2.01	2.02	2.02	2.04	2.09	2.20	2.27	2.42	2.08	2.08	
Aug 7	2.51	2.63	2.67	2.50	2.60	2.55	2.65	2.44	2.20	2.12	2.07	2.02	2.02	2.02	S	2.00	2.01	2.03	2.08	2.11	2.16	2.28	2.33	2.51	2.00	2.67	2.28	
Aug 8	2.45	2.44	2.40	2.49	2.41	2.44	2.57	2.54	2.37	2.27	2.21	2.16	2.18	S	2.11	2.05	2.16	2.18	2.15	2.14	2.13	2.16	2.16	2.20	2.05	2.57	2.28	
Aug 9	2.27	2.34	2.35	2.14	2.10	2.13	2.14	2.09	2.05	2.03	2.02	2.02	S	2.01	2.01	2.01	2.03	2.03	2.04	2.05	2.05	2.08	2.05	2.05	2.01	2.35	2.09	
Aug 10	2.05	2.13	2.20	2.23	2.22	2.22	2.16	2.10	2.06	2.02	2.01	S	2.00	2.00	2.01	2.01	2.00	2.00	2.01	2.05	2.12	2.19	2.28	2.34	2.00	2.34	2.10	
Aug 11	2.52	2.55	2.57	2.43	2.54	2.60	2.64	2.35	2.16	2.17	S	2.14	2.15	2.09	2.08	2.08	2.07	2.07	2.06	2.06	2.10	2.09	2.14	2.15	2.06	2.64	2.25	
Aug 12	2.17	2.28	2.42	2.49	2.53	2.71	2.65	2.39	2.20	S	2.07	2.03	2.02	2.03	2.04	2.04	2.05	2.06	2.08	2.13	2.18	2.23	2.27	2.24	2.02	2.71	2.23	
Aug 13	2.22	2.35	2.35	2.45	2.45	2.41	2.37	2.44	S	2.20	2.23	2.24	2.09	2.09	2.12	2.12	2.12	2.11	2.10	2.12	2.15	2.19	2.23	2.26	2.09	2.45	2.24	
Aug 14	2.31	2.65	2.65	2.77	2.86	2.50	2.58	S	2.40	2.36	2.25	2.13	2.08	2.07	2.07	2.05	2.02	2.02	2.01	2.02	2.04	2.06	2.07	2.14	2.01	2.86	2.27	
Aug 15	2.14	2.16	2.07	2.09	2.15	2.12	S	2.04	2.05	2.03	2.00	2.01	2.01	2.01	2.00	2.00	2.02	2.01	2.04	2.05	2.06	2.06	2.11	2.13	2.00	2.16	2.06	
Aug 16	2.09	2.08	2.05	2.04	2.03	S	2.02	2.02	2.01	2.02	2.02	2.02	2.02	2.02	2.03	2.01	2.02	2.01	2.01	2.02	2.03	2.03	2.02	2.07	2.01	2.09	2.03	
Aug 17	2.06	2.05	2.02	2.02	S	2.03	2.04	2.03	2.02	2.05	2.02	2.02	2.02	2.01	2.01	2.00	2.00	2.00	2.05	2.01	2.07	2.14	2.18	2.22	2.00	2.22	2.05	
Aug 18	2.23	2.23	2.16	S	2.23	2.22	2.17	2.03	2.01	2.01	2.00	2.00	2.00	1.99	1.99	1.99	1.99	2.01	2.02	2.02	2.07	2.14	2.22	2.24	1.99	2.24	2.09	
Aug 19	2.30	2.23	S	2.19	2.18	2.23	2.25	2.20	2.06	2.02	2.01	1.99	1.99	2.00	2.01	1.99	1.98	2.00	2.01	2.03	2.07	2.08	2.12	2.14	1.98	2.30	2.09	
Aug 20	2.13	S	2.32	2.37	2.37	2.38	2.34	2.17	2.11	2.04	2.03	2.04	C	C	C	C	C	C	2.04	2.04	2.06	2.15	2.17	2.10	2.03	2.38	-	
Aug 21	S	2.12	2.09	2.10	2.10	2.10	2.09	2.11	2.10	2.09	2.08	2.05	2.03	2.02	2.01	2.02	2.02	2.01	2.02	2.02	2.03	2.04	2.05	S	2.01	2.12	2.06	
Aug 22	2.04	2.04	2.08	2.07	2.12	2.09	2.27	2.26	2.21	2.23	2.09	2.02	2.00	1.98	1.99	2.00	2.00	2.04	2.02	2.01	2.02	2.06	S	2.14	1.98	2.27	2.08	
Aug 23	2.22	2.27	2.42	2.33	2.38	2.36	2.46	2.53	2.03	2.09	2.04	2.06	2.07	2.05	2.04	2.04	2.05	2.07	2.08	2.07	2.07	S	2.07	2.08	2.03	2.53	2.17	
Aug 24	2.10	2.08	2.08	2.07	2.11	2.23	2.27	2.23	2.12	2.11	2.04	2.01	2.00	1.98	1.99	2.00	1.99	2.00	2.05	2.02	2.05	S	2.19	2.33	2.31	1.98	2.33	2.10
Aug 25	2.33	2.29	2.19	2.15	2.18	2.22	2.26	2.17	2.08	2.02	2.00	1.99	1.97	2.00	2.03	2.00	2.00	2.01	2.01	S	2.03	2.09	2.07	2.02	1.97	2.33	2.09	
Aug 26	2.02	2.06	2.06	2.08	2.05	2.06	2.05	2.05	2.06	2.04	2.04	2.03	2.03	2.02	2.02	2.01	2.01	2.02	S	2.02	2.01	2.01	2.01	2.02	2.01	2.08	2.04	
Aug 27	2.02	2.02	2.03	2.03	2.03	2.03	2.03	2.02	2.02	2.02	2.01	2.01	2.00	2.01	2.02	2.01	2.02	S	2.07	2.09	2.12	2.11	2.14	2.18	2.00	2.18	2.05	
Aug 28	2.22	2.26	2.32	2.36	2.37	2.35	2.23	2.06	2.02	2.04	2.05	2.02	2.02	2.03	2.04	2.04	S	2.01	2.01	2.02	2.11	2.10	2.13	2.14	2.01	2.37	2.13	
Aug 29	2.16	2.11	2.05	2.09	2.13	2.14	2.14	2.09	2.04	2.03	2.02	2.01	2.01	2.01	2.00	S	2.01	2.00	2.03	2.11	2.19	2.19	2.27	2.28	2.00	2.28	2.09	
Aug 30	2.42	2.45	2.50	2.63	2.84	3.02	3.09	2.82	2.46	2.07	2.09	2.07	2.06	2.05	S	2.04	2.14	2.10	2.08	2.10	2.13	2.15	2.19	2.24	2.04	3.09	2.34	
Aug 31	2.28	2.29	2.29	2.35	2.52	2.49	2.46	2.48	2.25	2.15	2.09	2.18	2.16	S	2.13	2.05	2.03	2.03	2.06	2.05	2.07	2.06	2.06	2.09	2.03	2.52	2.20	
Diurnal Maximum	2.52	2.65	2.67	2.77	2.86	3.02	3.09	2.82	2.46	2.36	2.25	2.24	2.18	2.10	2.13	2.12	2.16	2.18	2.15	2.14	2.22	2.28	2.33	2.51				
Diurnal Average	2.21	2.24	2.25	2.25	2.29	2.30	2.30	2.22	2.13	2.10	2.06	2.05	2.04	2.03	2.03	2.02	2.03	2.03	2.04	2.06	2.09	2.12	2.14	2.17				

C	Calibration	S	Daily Zero/Span	Q	Quality Assurance	C1	Repeat Calibration	S1	Repeat Daily Zero/Span
G	Out for Repair	K	Collection Error	N	Not in Service	O	Operator Error	P	Power Failure
R	Recovery	X	Machine Malfunction	Y	Maintenance	T	Exceeds Temperature Limits	N	Not in Service

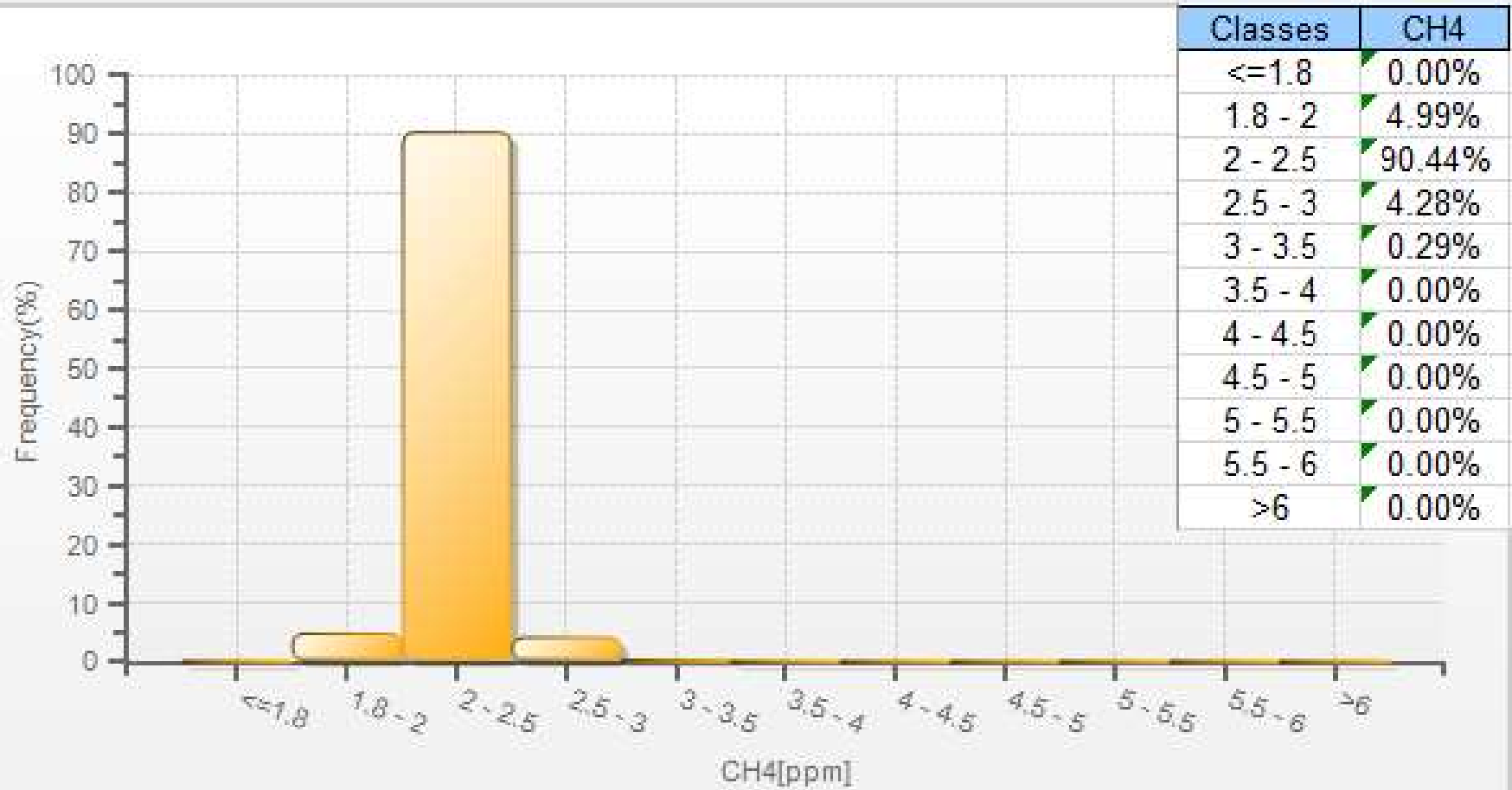
Daily Average is shown "-" if minimum data completeness criteria of 75% or 18 hours per day is not met.

Monthly Average is shown "-" if minimum data completeness criteria of 75% of days per month is not met.

Timeseries Chart of Hourly Average for CH4 - Maskwa Site

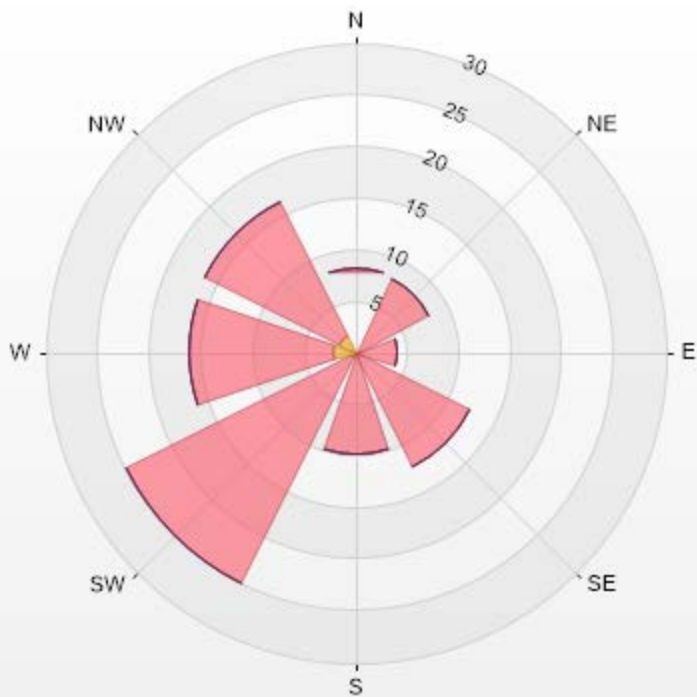


CH4[ppm] Histogram: Maskwa Monthly: 08-2019 1 Hr.



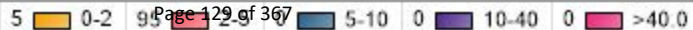
Wind: Maskwa Poll.: Maskwa-CH4[ppm] Monthly: 08-2019 Type: PollutionRose Direction: Blowing From (Wind Frequency) Based On 1 Hr.
 Calm: 0.00% Valid Data: 94.22% Calm Avg: 0.00 [ppm]

Direction	0-2	2-5	5-10	10-40	>40.0	Total
N	0.14	8.13	0	0	0	8.27
NE	0	7.99	0	0	0	7.99
E	0	4.14	0	0	0	4.14
SE	0.29	12.13	0	0	0	12.42
S	0	9.84	0	0	0	9.84
SW	0.57	24.39	0	0	0	24.96
W	2.14	13.98	0	0	0	16.12
NW	1.85	14.41	0	0	0	16.26
Summary	4.99	95.01	0	0	0	100



LICA-201908-Revision 1

% Icon Classes (ppm)





LAKELAND INDUSTRY & COMMUNITY ASSOCIATION

Maskwa Site - August 2019
Summary of Hourly Averages

NON-METHANE HYDROCARBONS (NMHC) in ppm

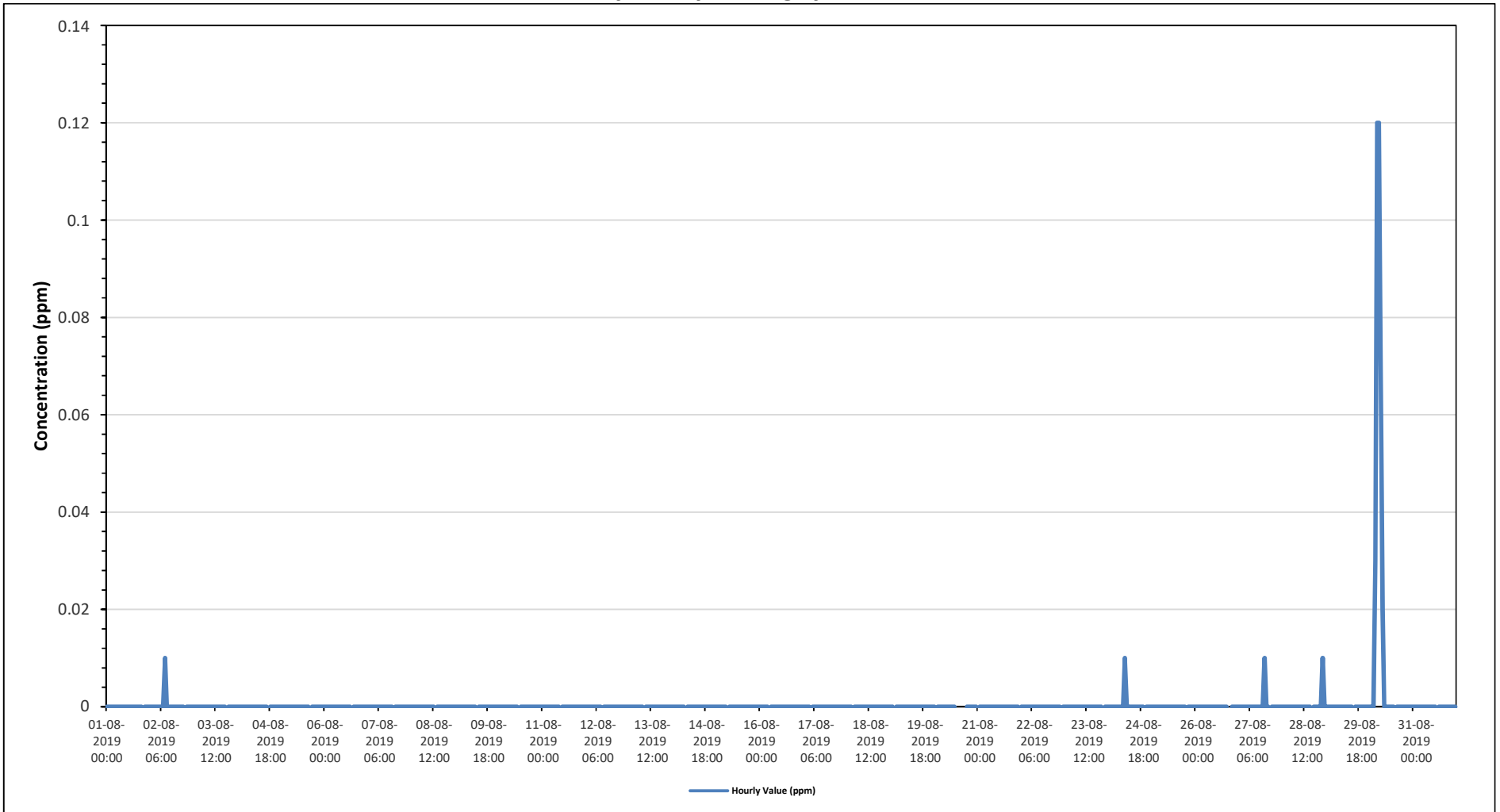
Maximum Hourly Value:	0.12 ppm on August 30 at hour 4	Hours in Service:	744
Maximum Daily Value:	0.02 ppm on August 30	Hours of Data:	705
Minimum Hourly Value:	0.00 ppm on August 1 at hour 0	Hours of Missing Data:	1
Minimum Daily Value:	0.00 ppm on August 1	Hours of Calibration:	38
Monthly Average:	0.00 ppm	Operational Uptime:	99.9

Day	Hourly Period Starting at (MST)																							Daily Minimum	Daily Maximum	Daily Average			
	0	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22				23		
Aug 1	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	S	0.00	0.00	0.00	0.00	0.00	0.00	0.00	
Aug 2	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.01	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	S	0.00	0.00	0.00	0.00	0.00	0.00	0.00	
Aug 3	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	S	0.00	0.00	0.00	0.00	0.00	0.00	0.00	
Aug 4	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	S	0.00	0.00	0.00	0.00	0.00	0.00	0.00	
Aug 5	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	S	0.00	0.00	0.00	0.00	0.00	0.00	0.00	
Aug 6	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	S	0.00	0.00	0.00	0.00	0.00	0.00	0.00	
Aug 7	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	S	0.00	0.00	0.00	0.00	0.00	0.00	0.00	
Aug 8	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	S	0.00	0.00	0.00	0.00	0.00	0.00	0.00	
Aug 9	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	S	0.00	0.00	0.00	0.00	0.00	0.00	0.00	
Aug 10	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	S	0.00	0.00	0.00	0.00	0.00	0.00	0.00	
Aug 11	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	S	0.00	0.00	0.00	0.00	0.00	0.00	0.00	
Aug 12	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	S	0.00	0.00	0.00	0.00	0.00	0.00	0.00	
Aug 13	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	S	0.00	0.00	0.00	0.00	0.00	0.00	0.00	
Aug 14	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	S	0.00	0.00	0.00	0.00	0.00	0.00	0.00	
Aug 15	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	S	0.00	0.00	0.00	0.00	0.00	0.00	0.00	
Aug 16	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	S	0.00	0.00	0.00	0.00	0.00	0.00	0.00	
Aug 17	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	S	0.00	0.00	0.00	0.00	0.00	0.00	0.00	
Aug 18	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	S	0.00	0.00	0.00	0.00	0.00	0.00	0.00	
Aug 19	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	S	0.00	0.00	0.00	0.00	0.00	0.00	0.00	
Aug 20	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	S	0.00	0.00	0.00	0.00	0.00	0.00	0.00	
Aug 21	S	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	
Aug 22	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	
Aug 23	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	
Aug 24	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.01	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	S	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Aug 25	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	S	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Aug 26	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	S	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Aug 27	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	S	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Aug 28	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	S	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Aug 29	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	S	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Aug 30	0.00	0.00	0.00	0.03	0.12	0.12	0.07	0.02	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	S	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Aug 31	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	S	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Diurnal Maximum	0.00	0.00	0.00	0.03	0.12	0.12	0.07	0.02	0.01	0.01	0.00	0.00	0.00	0.00	0.01	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.01	0.00	0.00	
Diurnal Average	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00

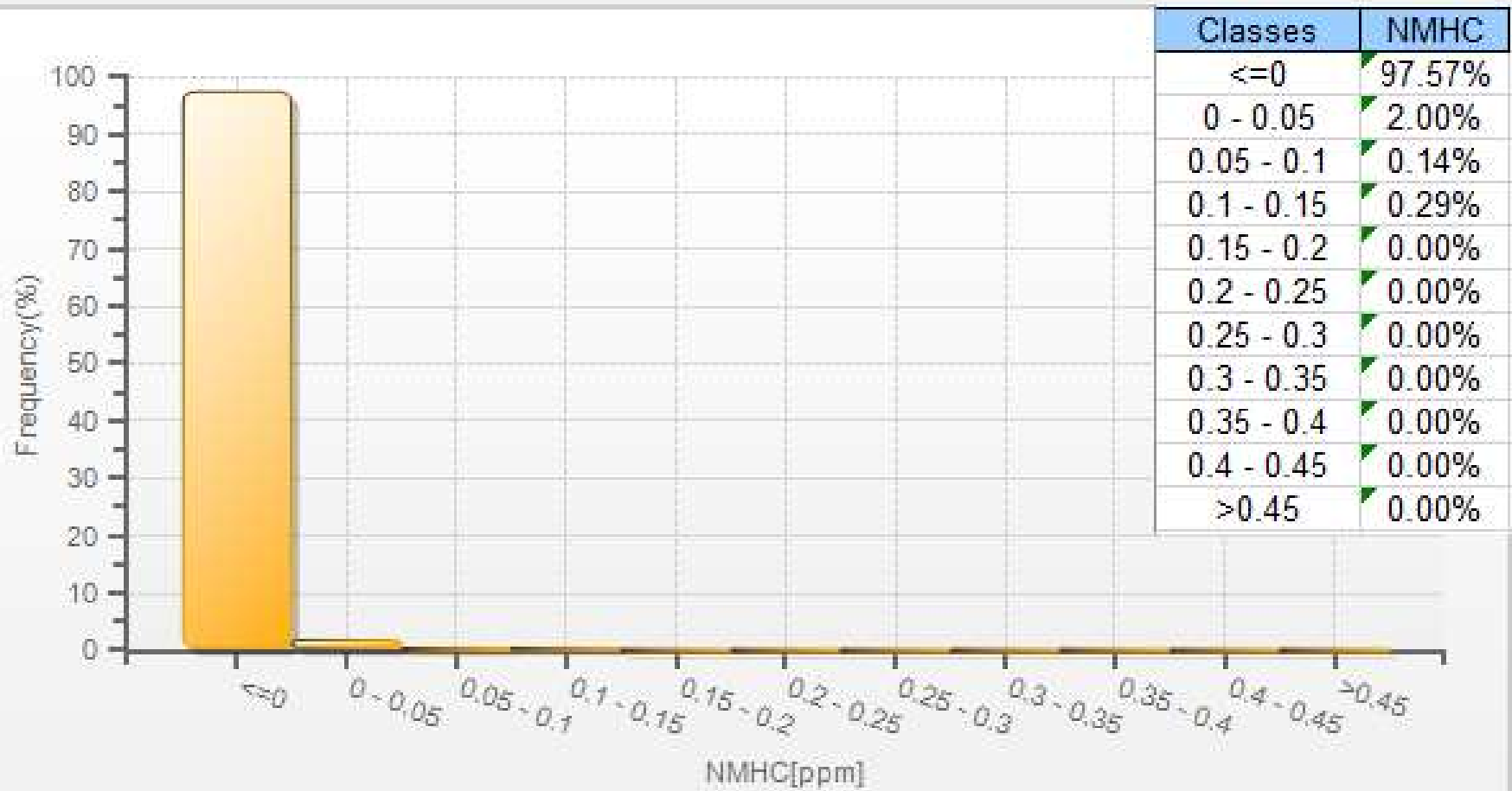
C	Calibration	S	Daily Zero/Span	Q	Quality Assurance	C1	Repeat Calibration	S1	Repeat Daily Zero/Span
G	Out for Repair	K	Collection Error	N	Not in Service	O	Operator Error	P	Power Failure
R	Recovery	X	Machine Malfunction	Y	Maintenance	T	Exceeds Temperature Limits	N	Not in Service

Daily Average is shown "-" if minimum data completeness criteria of 75% or 18 hours per day is not met.
Monthly Average is shown "-" if minimum data completeness criteria of 75% of days per month is not met.

Timeseries Chart of Hourly Average for NMHC - Maskwa Site

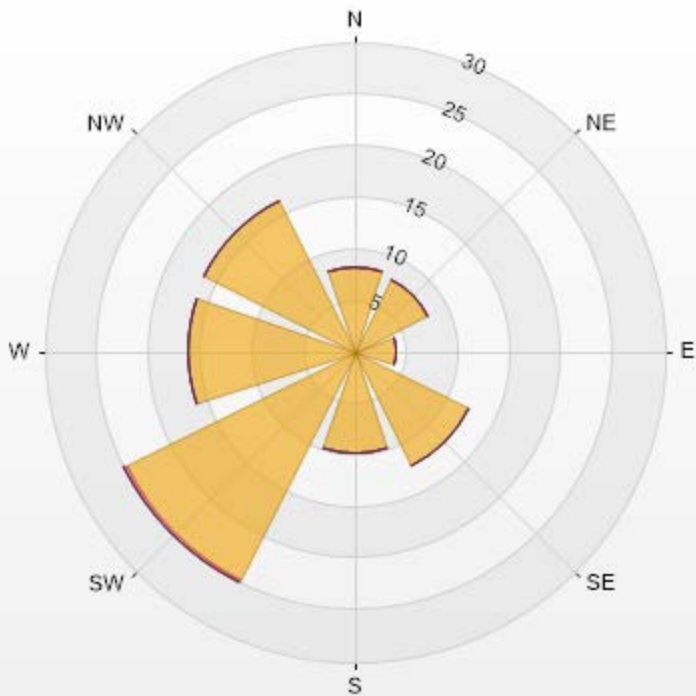


NMHC[ppm] Histogram: Maskwa Monthly: 08-2019 1 Hr.



Wind: Maskwa Poll.: Maskwa-NMHC[ppm] Monthly: 08-2019 Type: PollutionRose Direction: Blowing From (Wind Frequency) Based On 1 Hr.
 Calm: 0.00% Valid Data: 94.09% Calm Avg: 0.00 [ppm]

Direction	0-0.1	0.1-0.3	0.3-0.9	0.9-2	>2.0	Total
N	8.29	0	0	0	0	8.29
NE	7.86	0	0	0	0	7.86
E	4.14	0	0	0	0	4.14
SE	12.43	0	0	0	0	12.43
S	9.86	0	0	0	0	9.86
SW	24.71	0.29	0	0	0	25
W	16.14	0	0	0	0	16.14
NW	16.29	0	0	0	0	16.29
Summary	100	0.29	0	0	0	100



LICA-201908-Revision 1

% Icon Classes (ppm)	100	0-0.1	0-1.0	0-1.0	0.3-0.9	0	0.9-2	0	>2.0



LAKELAND INDUSTRY & COMMUNITY ASSOCIATION

Maskwa Site - August 2019 Summary of Hourly Averages

RELATIVE HUMIDITY (RH) in %

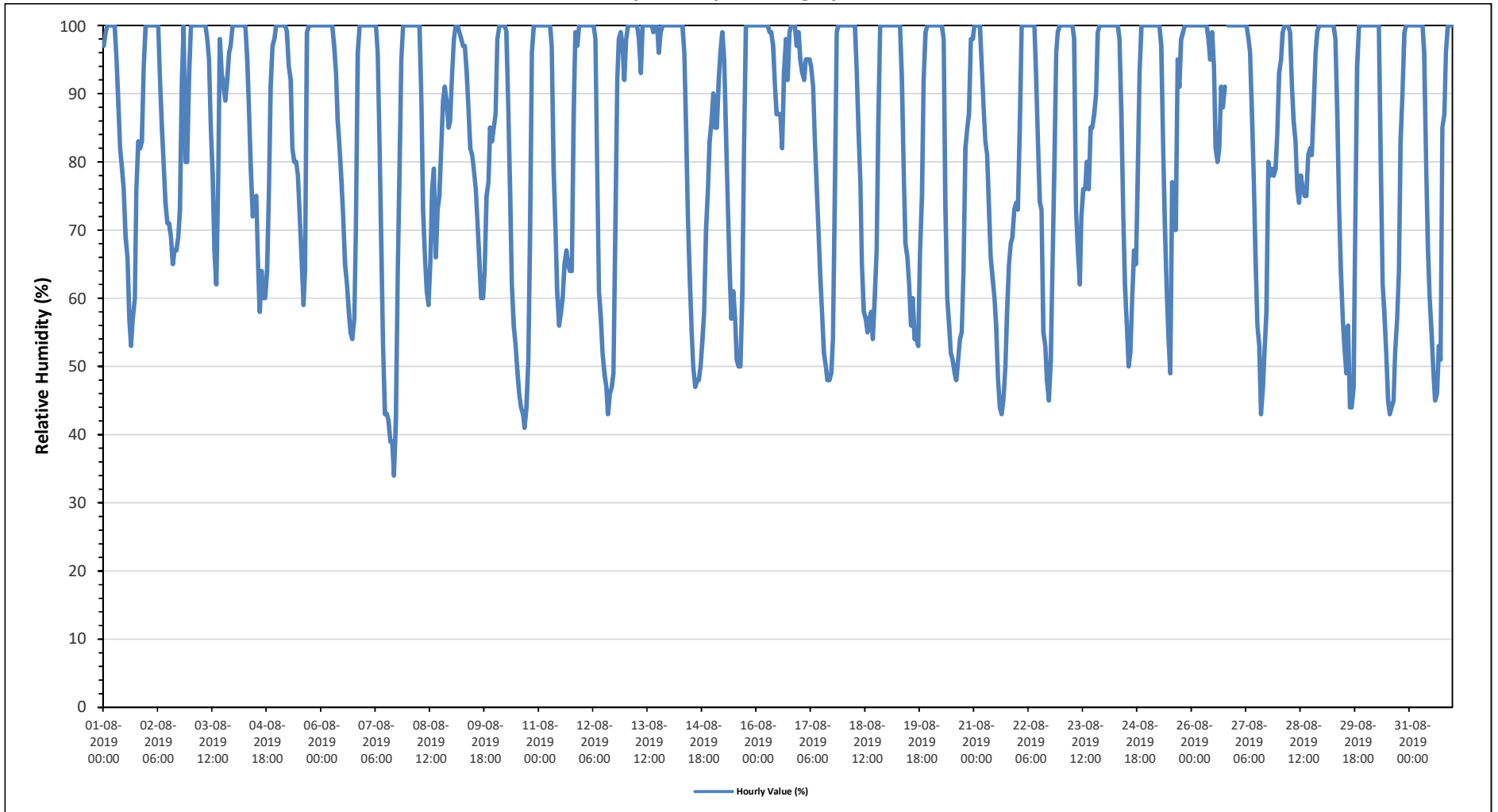
Maximum Hourly Value:	100 %	on August 1 at hour 2	Hours in Service:	744
Maximum Daily Value:	99.3 %	on August 13	Hours of Data:	743
Minimum Hourly Value:	34 %	on August 7 at hour 16	Hours of Missing Data:	1
Minimum Daily Value:	70.9 %	on August 21	Hours of Calibration:	0
Monthly Average:	83.5 %		Operational Uptime:	99.9

Day	Hourly Period Starting at (MST)																							Daily Minimum	Daily Maximum	Daily Average					
	0	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22				23				
Aug 1	97	99	100	100	100	100	100	95	89	82	79	76	69	66	57	53	57	60	76	83	82	83	94	100	53	100	83				
Aug 2	100	100	100	100	100	100	100	92	85	80	74	71	71	69	65	67	67	69	73	92	100	80	80	93	65	100	85				
Aug 3	100	100	100	100	100	100	100	100	100	100	100	100	100	100	80	82	82	80	80	78	72	66	59	64	99	100	100	100	59	100	90
Aug 4	100	100	100	100	100	100	100	95	88	79	72	74	75	65	58	64	60	60	64	76	91	97	98	100	58	100	84				
Aug 5	100	100	100	100	100	100	99	94	92	82	80	80	78	72	66	59	64	99	100	100	100	100	100	100	59	100	90				
Aug 6	100	100	100	100	100	100	100	97	93	86	82	77	72	65	62	58	55	54	57	70	96	100	100	100	54	100	84				
Aug 7	100	100	100	100	100	100	100	96	83	67	53	43	43	42	39	39	34	42	64	78	95	100	100	100	34	100	76				
Aug 8	100	100	100	100	100	100	100	89	73	66	61	59	65	76	79	66	73	75	82	89	91	89	85	86	59	100	84				
Aug 9	93	98	100	100	99	98	97	97	93	88	82	81	79	76	71	66	60	60	64	75	77	85	83	85	60	100	84				
Aug 10	87	98	100	100	100	100	99	88	75	62	56	53	49	46	44	43	41	44	51	69	96	100	100	100	41	100	75				
Aug 11	100	100	100	100	100	100	100	97	79	70	61	56	58	60	65	67	65	64	64	87	99	97	100	100	56	100	83				
Aug 12	100	100	100	100	100	100	100	98	79	61	57	52	49	47	43	46	47	49	70	92	98	99	97	92	43	100	78				
Aug 13	98	100	100	100	100	100	100	98	93	100	100	100	100	100	100	99	100	100	96	99	100	100	100	100	93	100	99				
Aug 14	100	100	100	100	100	100	100	100	100	96	84	72	63	55	50	47	48	48	50	54	58	70	76	83	86	47	100	77			
Aug 15	90	85	85	92	96	99	95	85	74	64	57	61	57	51	50	50	61	82	100	100	100	100	100	100	50	100	81				
Aug 16	100	100	100	100	100	100	100	99	99	97	91	87	87	82	93	98	92	99	100	100	100	97	99	82	100	96					
Aug 17	95	93	92	95	95	95	94	91	83	77	70	63	58	52	50	48	48	49	54	75	99	100	100	100	48	100	78				
Aug 18	100	100	100	100	100	100	100	94	85	77	65	58	57	55	57	58	54	60	67	85	100	100	100	100	54	100	82				
Aug 19	100	100	100	100	100	100	100	100	92	78	68	66	62	56	60	54	54	53	67	75	92	99	100	100	53	100	82				
Aug 20	100	100	100	100	100	100	100	98	74	60	56	52	51	49	48	51	54	55	64	82	85	87	98	98	48	100	78				
Aug 21	100	100	100	100	94	88	83	81	73	66	63	60	56	48	44	43	45	50	58	65	68	69	73	74	43	100	71				
Aug 22	73	85	100	100	100	100	100	100	100	100	93	83	74	73	55	53	48	45	51	64	79	96	99	100	45	100	82				
Aug 23	100	100	100	100	100	100	100	98	73	67	62	72	76	76	80	76	85	85	87	90	99	100	100	100	62	100	89				
Aug 24	100	100	100	100	100	100	100	100	100	100	98	87	72	62	56	50	52	60	67	65	77	93	100	100	100	50	100	85			
Aug 25	100	100	100	100	100	100	100	97	82	71	61	54	49	77	74	70	95	91	98	99	100	100	100	100	49	100	88				
Aug 26	100	100	100	100	100	100	100	100	100	98	95	99	94	82	80	82	91	88	91	Y	100	100	100	100	80	100	96				
Aug 27	100	100	100	100	100	100	100	98	96	87	77	66	56	53	43	47	53	58	80	78	79	78	79	84	43	100	80				
Aug 28	93	95	99	100	100	100	99	91	86	83	76	74	78	76	75	75	81	82	81	88	96	99	100	100	74	100	89				
Aug 29	100	100	100	100	100	100	100	98	87	74	64	57	53	49	56	44	44	47	70	94	100	100	100	100	44	100	81				
Aug 30	100	100	100	100	100	100	100	100	80	62	58	52	45	43	44	45	52	57	64	83	90	99	100	100	43	100	78				
Aug 31	100	100	100	100	100	100	100	100	96	80	67	60	55	49	45	46	53	51	85	87	96	100	100	100	45	100	82				
Diurnal Maximum	100	100	100	100	100	100	100	100	100	100	100	100	100	100	100	99	100	100	100	100	100	100	100	100	100	100	100	100			
Diurnal Average	97.6	98.5	99.2	99.6	99.5	99.3	98.7	95.6	86.6	78.4	71.6	67.5	64.5	62.0	59.5	59.7	64.1	65.5	74.2	83.8	92.6	94.5	95.6	96.7							

C	Calibration	S	Daily Zero/Span	Q	Quality Assurance	C1	Repeat Calibration	S1	Repeat Daily Zero/Span
G	Out for Repair	K	Collection Error	N	Not in Service	O	Operator Error	P	Power Failure
R	Recovery	X	Machine Malfunction	Y	Maintenance	T	Exceeds Temperature Limits	N	Not in Service

Daily Average is shown "-" if minimum data completeness criteria of 75% or 18 hours per day is not met.
 Monthly Average is shown "-" if minimum data completeness criteria of 75% of days per month is not met.

Timeseries Chart of Hourly Average for RH - Maskwa Site





LAKELAND INDUSTRY & COMMUNITY ASSOCIATION

Maskwa Site - August 2019 Summary of Hourly Averages

BAROMETRIC PRESSURE (BP) in millibar

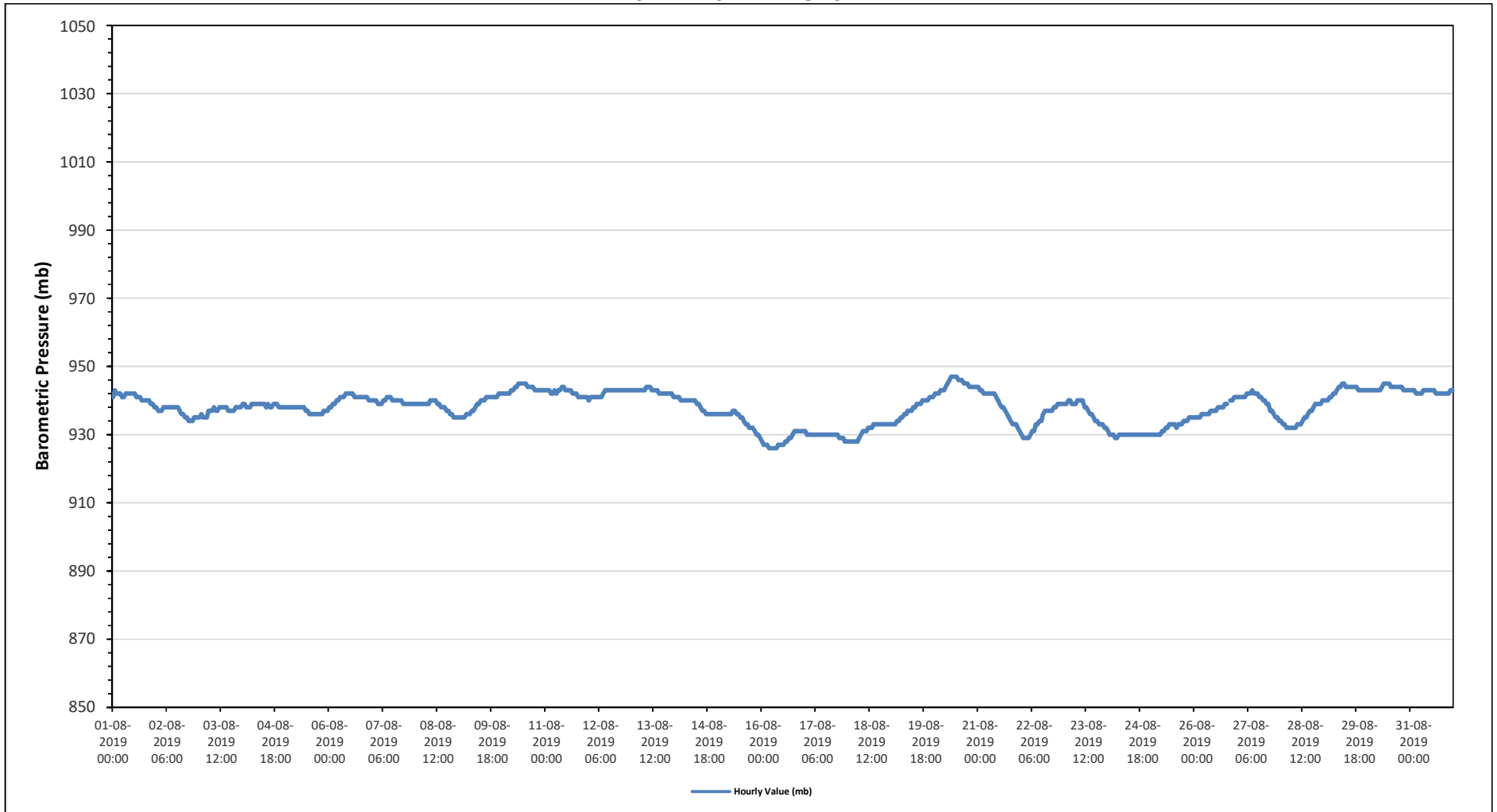
Maximum Hourly Value:	947 mb on August 20 at hour 9	Hours in Service:	744
Maximum Daily Value:	945 mb on August 20	Hours of Data:	743
Minimum Hourly Value:	926 mb on August 16 at hour 4	Hours of Missing Data:	1
Minimum Daily Value:	928 mb on August 16	Hours of Calibration:	0
Monthly Average:	938 mb	Operational Uptime:	99.9

Day	Hourly Period Starting at (MST)																							Daily Minimum	Daily Maximum	Daily Average
	0	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22			
Aug 1	941	943	942	942	942	941	941	942	942	942	942	942	942	941	941	941	940	940	940	940	939	939	938	938	943	941
Aug 2	938	937	937	937	938	938	938	938	938	938	938	938	937	938	938	936	936	935	935	934	934	935	935	935	934	938
Aug 3	935	936	935	935	935	937	937	937	938	938	937	937	938	938	938	938	937	937	937	937	938	938	938	938	935	937
Aug 4	939	939	938	938	938	939	939	939	939	939	939	939	939	938	939	938	938	939	939	939	939	938	938	938	938	939
Aug 5	938	938	938	938	938	938	938	938	938	938	938	937	937	936	936	936	936	936	936	936	936	937	937	937	936	937
Aug 6	938	938	939	939	940	941	941	942	942	942	942	942	942	941	941	941	941	941	941	941	941	940	940	940	938	941
Aug 7	940	940	940	939	939	939	940	940	941	941	941	940	940	940	940	940	940	939	939	939	939	939	939	939	939	940
Aug 8	939	939	939	939	939	939	939	939	940	940	940	940	939	939	938	938	938	937	937	936	936	935	935	935	935	940
Aug 9	935	935	935	935	936	936	936	937	937	938	939	939	940	940	940	941	941	941	941	941	941	941	942	942	942	943
Aug 10	942	942	942	942	942	943	943	944	944	945	945	945	945	944	944	944	944	943	943	943	943	943	943	943	942	945
Aug 11	943	943	943	942	942	943	942	943	943	944	944	943	943	943	943	942	942	942	941	941	941	941	941	941	941	944
Aug 12	940	941	941	941	941	941	941	941	942	943	943	943	943	943	943	943	943	943	943	943	943	943	943	943	940	942
Aug 13	943	943	943	943	943	943	943	943	944	944	944	943	943	943	942	942	942	942	942	942	942	942	941	941	941	943
Aug 14	941	941	941	940	940	940	940	940	940	940	940	939	939	938	937	937	936	936	936	936	936	936	936	936	936	941
Aug 15	936	936	936	936	936	936	936	936	937	937	937	936	936	935	935	934	933	933	932	932	932	931	930	930	929	937
Aug 16	928	927	927	927	926	926	926	926	926	927	927	927	927	928	928	929	929	930	931	931	931	931	931	931	926	928
Aug 17	931	930	930	930	930	930	930	930	930	930	930	930	930	930	930	930	930	930	929	929	929	928	928	928	931	930
Aug 18	928	928	928	928	928	928	929	930	931	931	931	931	932	932	932	933	933	933	933	933	933	933	933	933	928	931
Aug 19	933	933	933	934	934	935	935	936	936	937	937	937	938	938	939	939	939	940	940	940	941	941	941	941	933	937
Aug 20	942	942	942	943	943	943	944	945	946	947	947	947	947	946	946	946	945	945	945	944	944	944	944	944	942	945
Aug 21	944	943	943	942	942	942	942	942	942	942	941	940	939	938	937	936	935	934	933	933	933	932	931	931	931	939
Aug 22	930	929	929	929	929	930	931	931	933	933	933	934	934	936	937	937	937	937	937	938	938	939	939	939	929	934
Aug 23	939	939	940	940	939	939	939	940	940	940	940	938	938	937	936	936	935	934	934	933	933	933	932	932	932	937
Aug 24	931	930	930	930	929	929	930	930	930	930	930	930	930	930	930	930	930	930	930	930	930	930	930	929	931	930
Aug 25	930	930	930	930	930	930	931	931	932	932	933	933	933	933	932	933	933	933	934	934	934	935	935	935	930	932
Aug 26	935	935	935	935	936	936	936	936	936	936	937	937	937	937	938	938	938	938	939	939	Y	940	940	941	941	937
Aug 27	941	941	941	941	941	942	942	942	943	942	942	942	941	941	940	939	939	937	937	937	936	935	935	934	934	940
Aug 28	934	933	933	932	932	932	932	932	932	933	933	933	934	935	936	937	937	938	939	939	939	939	940	940	932	940
Aug 29	940	940	940	941	941	942	942	943	944	944	945	945	944	944	944	944	944	944	943	943	943	943	943	943	940	943
Aug 30	943	943	943	943	943	943	943	943	944	945	945	945	945	944	944	944	944	944	944	944	943	943	943	943	943	945
Aug 31	943	943	943	942	942	942	942	943	943	943	943	943	943	943	942	942	942	942	942	942	942	942	943	942	943	943
Diurnal Maximum	944	943	943	943	943	943	944	945	946	947	947	947	946	946	946	945	945	945	944	944	944	944	944	944	944	944
Diurnal Average	937	937	937	937	937	937	938	938	938	939	939	939	938	938	938	938	938	938	938	938	938	938	938	938	938	938

C	Calibration	S	Daily Zero/Span	Q	Quality Assurance	C1	Repeat Calibration	S1	Repeat Daily Zero/Span
G	Out for Repair	K	Collection Error	N	Not in Service	O	Operator Error	P	Power Failure
R	Recovery	X	Machine Malfunction	Y	Maintenance	T	Exceeds Temperature Limits	N	Not in Service

Daily Average is shown "-" if minimum data completeness criteria of 75% or 18 hours per day is not met.
 Monthly Average is shown "-" if minimum data completeness criteria of 75% of days per month is not met.

Timeseries Chart of Hourly Average for BP - Maskwa Site





LAKELAND INDUSTRY & COMMUNITY ASSOCIATION

Maskwa Site - August 2019 Summary of Hourly Averages

AMBIENT TEMPERATURE (AT) in Degree Celsius

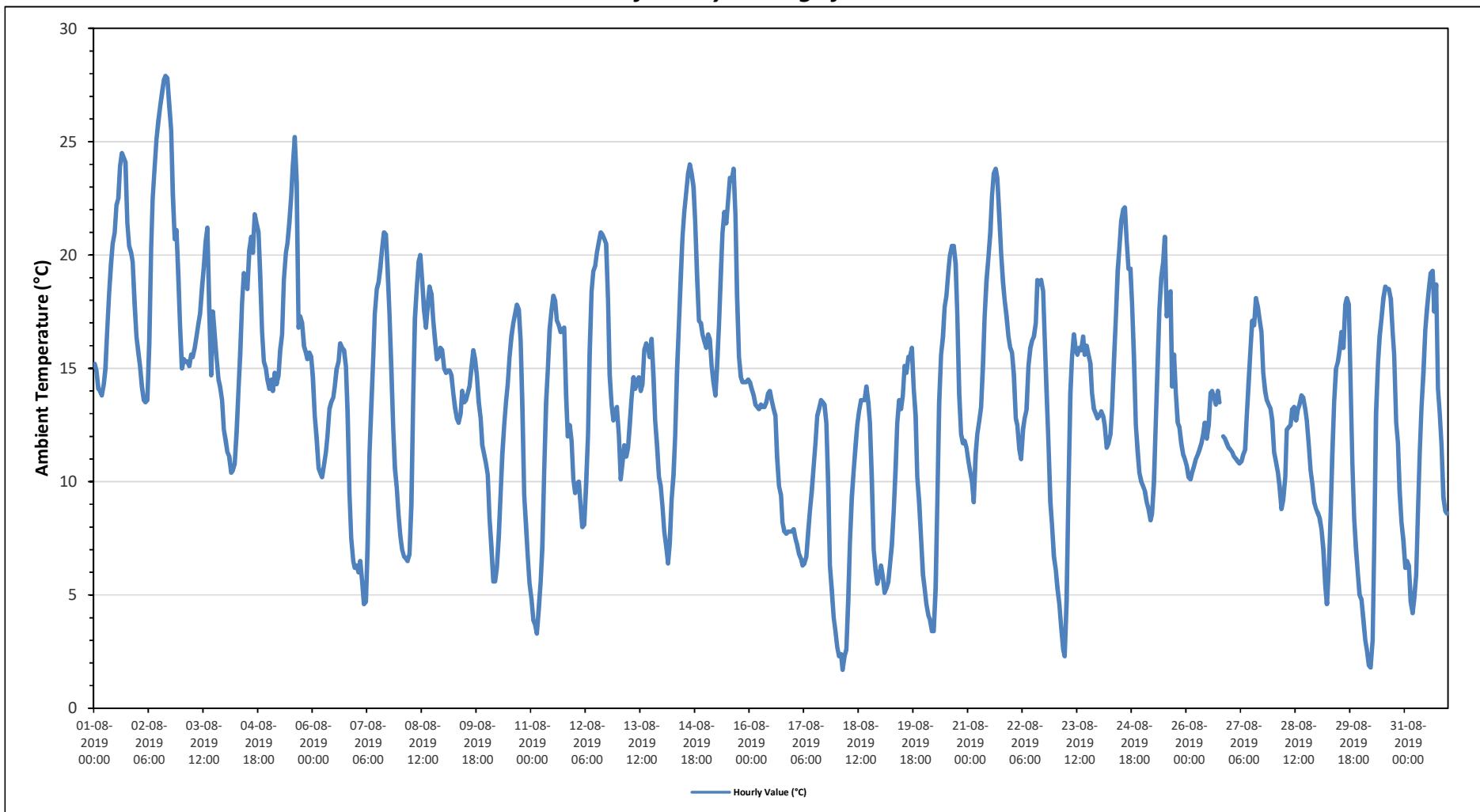
Maximum Hourly Value:	27.9 °C	on August 2 at hour 15	Hours in Service:	744
Maximum Daily Value:	21.2 °C	on August 2	Hours of Data:	743
Minimum Hourly Value:	1.7 °C	on August 18 at hour 3	Hours of Missing Data:	1
Minimum Daily Value:	8.3 °C	on August 18	Hours of Calibration:	0
Monthly Average:	13.7 °C		Operational Uptime:	99.9

Day	Hourly Period Starting at (MST)																							Daily Minimum	Daily Maximum	Daily Average	
	0	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22				23
Aug 1	15.2	14.9	14.1	14.0	13.8	14.3	15.0	16.8	18.3	19.6	20.5	21.0	22.2	22.5	23.9	24.5	24.3	24.1	21.4	20.4	20.1	19.7	17.9	16.4	13.8	24.5	19.0
Aug 2	15.7	15.1	14.2	13.6	13.5	13.6	16.1	20.3	22.5	23.9	25.1	25.9	26.5	27.1	27.7	27.9	27.8	26.6	25.5	22.7	20.7	21.1	19.0	16.9	13.5	27.9	21.2
Aug 3	15.0	15.4	15.3	15.3	15.1	15.6	15.5	15.9	16.4	17.0	17.4	18.5	19.5	20.6	21.2	17.6	14.7	17.5	16.5	15.5	14.5	14.2	13.6	12.3	12.3	21.2	16.3
Aug 4	11.8	11.3	11.1	10.4	10.5	10.8	12.2	14.1	15.6	17.9	19.2	18.8	18.5	20.2	20.8	20.1	21.8	21.4	21.0	19.1	16.6	15.3	15.0	14.5	10.4	21.8	16.2
Aug 5	14.1	14.5	14.0	14.8	14.3	14.7	15.8	16.5	18.9	20.1	20.5	21.4	22.6	23.9	25.2	23.2	16.8	17.3	17.0	16.0	15.7	15.4	15.7	15.5	14.0	25.2	17.7
Aug 6	14.6	12.9	11.9	10.6	10.4	10.2	10.7	11.3	12.0	13.2	13.5	13.7	14.2	15.0	15.3	16.1	15.9	15.8	15.1	13.1	9.5	7.5	6.5	6.2	6.2	16.1	12.3
Aug 7	6.3	6.0	6.5	5.6	4.6	4.7	7.1	11.2	13.4	15.5	17.4	18.5	18.8	19.4	20.3	21.0	20.9	19.4	17.4	14.9	12.3	10.6	9.7	8.5	4.6	21.0	12.9
Aug 8	7.6	7.0	6.7	6.6	6.5	6.8	9.0	13.9	17.2	18.6	19.7	20.0	18.9	17.6	16.8	17.7	18.6	18.3	17.1	16.3	15.4	15.5	15.9	15.8	6.5	20.0	14.3
Aug 9	15.0	14.8	14.9	14.9	14.7	13.9	13.3	12.8	12.6	13.0	14.0	13.5	13.6	13.9	14.2	15.0	15.8	15.4	14.7	13.5	12.8	11.6	11.2	10.8	10.8	15.8	13.7
Aug 10	10.3	8.4	7.1	5.6	5.6	6.2	7.6	9.5	11.2	12.5	13.5	14.3	15.5	16.4	17.0	17.4	17.8	17.6	16.2	13.4	9.4	8.0	6.7	5.5	5.5	17.8	11.4
Aug 11	4.8	3.9	3.7	3.3	4.4	5.6	7.1	10.5	13.5	14.9	16.7	17.6	18.2	18.0	17.1	16.9	16.6	16.7	16.8	13.8	12.0	12.5	11.8	10.1	3.3	18.2	11.9
Aug 12	9.5	9.9	10.0	8.9	8.0	8.1	9.9	12.1	15.7	18.4	19.3	19.5	20.1	20.6	21.0	20.9	20.7	20.5	18.0	14.7	13.4	12.7	13.0	13.3	8.0	21.0	14.9
Aug 13	12.0	10.1	10.8	11.6	11.1	11.5	12.5	13.7	14.6	14.1	14.4	14.6	14.0	14.3	15.8	16.1	15.9	15.5	16.3	14.6	12.7	11.6	10.2	9.8	9.8	16.3	13.2
Aug 14	8.9	7.8	7.1	6.4	7.3	9.2	10.3	12.0	14.9	17.0	19.1	20.8	21.9	22.8	23.6	24.0	23.6	23.0	21.5	19.1	17.1	17.0	16.5	16.2	6.4	24.0	16.1
Aug 15	15.9	16.5	16.3	15.1	14.4	13.8	15.1	16.9	19.2	21.0	21.9	21.4	22.4	23.4	23.3	23.8	21.8	18.2	15.5	14.6	14.4	14.4	14.4	14.5	13.8	23.8	17.8
Aug 16	14.4	14.1	13.8	13.4	13.3	13.2	13.4	13.3	13.3	13.5	13.9	14.0	13.6	13.2	12.9	11.1	9.8	9.4	8.2	7.8	7.7	7.8	7.8	7.8	7.7	14.4	11.7
Aug 17	7.9	7.5	7.2	6.8	6.6	6.3	6.4	6.7	7.8	8.7	9.6	10.7	11.7	12.9	13.2	13.6	13.5	13.4	12.6	9.8	6.3	5.2	4.0	3.4	3.4	13.6	8.8
Aug 18	2.7	2.3	2.4	1.7	2.3	2.6	4.8	7.3	9.3	10.5	11.6	12.5	13.1	13.6	13.6	13.6	14.2	13.5	12.6	10.1	7.0	6.1	5.5	5.8	1.7	14.2	8.3
Aug 19	6.3	5.8	5.1	5.3	5.6	6.3	7.2	8.7	10.6	12.6	13.6	13.2	13.8	15.1	14.8	15.5	15.5	15.9	14.1	12.9	10.2	9.1	7.5	5.9	5.1	15.9	10.4
Aug 20	5.3	4.6	4.1	3.9	3.4	3.4	5.3	9.0	13.5	15.6	16.4	17.7	18.2	19.3	20.0	20.4	20.4	19.6	17.4	13.9	12.1	11.7	11.8	11.5	3.4	20.4	12.4
Aug 21	10.9	10.5	10.0	9.1	11.2	12.1	12.7	13.3	15.2	17.3	18.9	19.9	21.0	22.6	23.6	23.8	23.4	21.8	20.1	18.8	18.0	17.3	16.4	15.9	9.1	23.8	16.8
Aug 22	15.7	14.7	12.8	12.5	11.4	11.0	12.3	12.8	13.2	15.1	15.9	16.2	16.4	17.0	18.9	18.7	18.9	18.4	16.4	14.0	11.7	9.1	8.1	6.7	6.7	18.9	14.1
Aug 23	6.1	5.3	4.6	3.6	2.6	2.3	4.7	9.6	13.9	15.5	16.5	15.8	15.6	15.9	15.8	16.4	15.6	16.0	15.6	15.2	13.9	13.2	13.0	12.8	2.3	16.5	11.6
Aug 24	12.9	13.1	12.9	12.5	11.5	11.7	12.1	13.2	15.3	17.2	19.3	20.3	21.5	22.0	22.1	20.6	19.4	19.4	17.9	15.5	12.5	11.3	10.4	10.0	10.0	22.1	15.6
Aug 25	9.8	9.6	9.1	8.8	8.3	8.6	10.0	12.7	15.3	17.6	19.0	19.7	20.8	17.3	18.0	18.4	14.2	15.6	13.9	12.6	12.4	11.7	11.2	11.0	8.3	20.8	13.6
Aug 26	10.7	10.2	10.1	10.4	10.7	11.0	11.2	11.4	11.7	12.1	12.6	11.9	12.5	13.9	14.0	13.7	13.4	14.0	13.5	Y	12.0	11.9	11.7	11.5	10.1	14.0	12.0
Aug 27	11.4	11.3	11.1	11.0	10.9	10.8	10.9	11.2	11.4	12.9	14.4	15.9	17.1	16.9	18.1	17.7	17.2	16.6	14.8	14.0	13.6	13.4	13.2	12.7	10.8	18.1	13.7
Aug 28	11.3	10.9	10.4	9.8	8.8	9.2	10.2	12.3	12.4	12.5	13.2	13.3	12.7	13.2	13.4	13.8	13.7	13.2	12.7	11.6	10.5	9.9	9.1	8.8	8.8	13.8	11.5
Aug 29	8.6	8.4	7.9	7.0	5.4	4.6	6.2	8.5	11.1	13.5	15.0	15.3	15.8	16.6	15.9	17.8	18.1	17.8	14.3	10.8	8.4	7.0	5.9	5.0	4.6	18.1	11.0
Aug 30	4.8	3.9	3.0	2.6	1.9	1.8	3.0	7.0	13.0	15.2	16.4	17.2	18.1	18.6	18.5	18.5	18.1	16.6	15.6	12.6	11.7	9.6	8.2	7.4	1.8	18.6	11.0
Aug 31	6.2	6.5	6.3	4.7	4.2	4.9	5.9	8.7	11.3	13.3	14.8	16.7	17.6	18.5	19.2	19.3	17.5	18.7	14.1	13.0	11.6	9.3	8.7	8.6	4.2	19.3	11.7
Diurnal Maximum	15.9	16.5	16.3	15.3	15.1	15.6	16.1	20.3	22.5	23.9	25.1	25.9	26.5	27.1	27.7	27.9	27.8	26.6	25.5	22.7	20.7	21.1	19.0	16.9			
Diurnal Average	10.4	9.9	9.5	9.0	8.8	9.0	10.1	12.0	14.0	15.5	16.6	17.1	17.6	18.1	18.6	18.6	17.9	17.7	16.3	14.5	12.8	12.0	11.3	10.7			

C	Calibration	S	Daily Zero/Span	Q	Quality Assurance	C1	Repeat Calibration	S1	Repeat Daily Zero/Span
G	Out for Repair	K	Collection Error	N	Not in Service	O	Operator Error	P	Power Failure
R	Recovery	X	Machine Malfunction	Y	Maintenance	T	Exceeds Temperature Limits	N	Not in Service

Daily Average is shown "-" if minimum data completeness criteria of 75% or 18 hours per day is not met.
 Monthly Average is shown "-" if minimum data completeness criteria of 75% of days per month is not met.

Timeseries Chart of Hourly Average for AT - Maskwa Site





LAKELAND INDUSTRY & COMMUNITY ASSOCIATION

Maskwa Site - August 2019
Summary of Hourly Averages

STATION TEMPERATURE (ST) in Degree Celsius

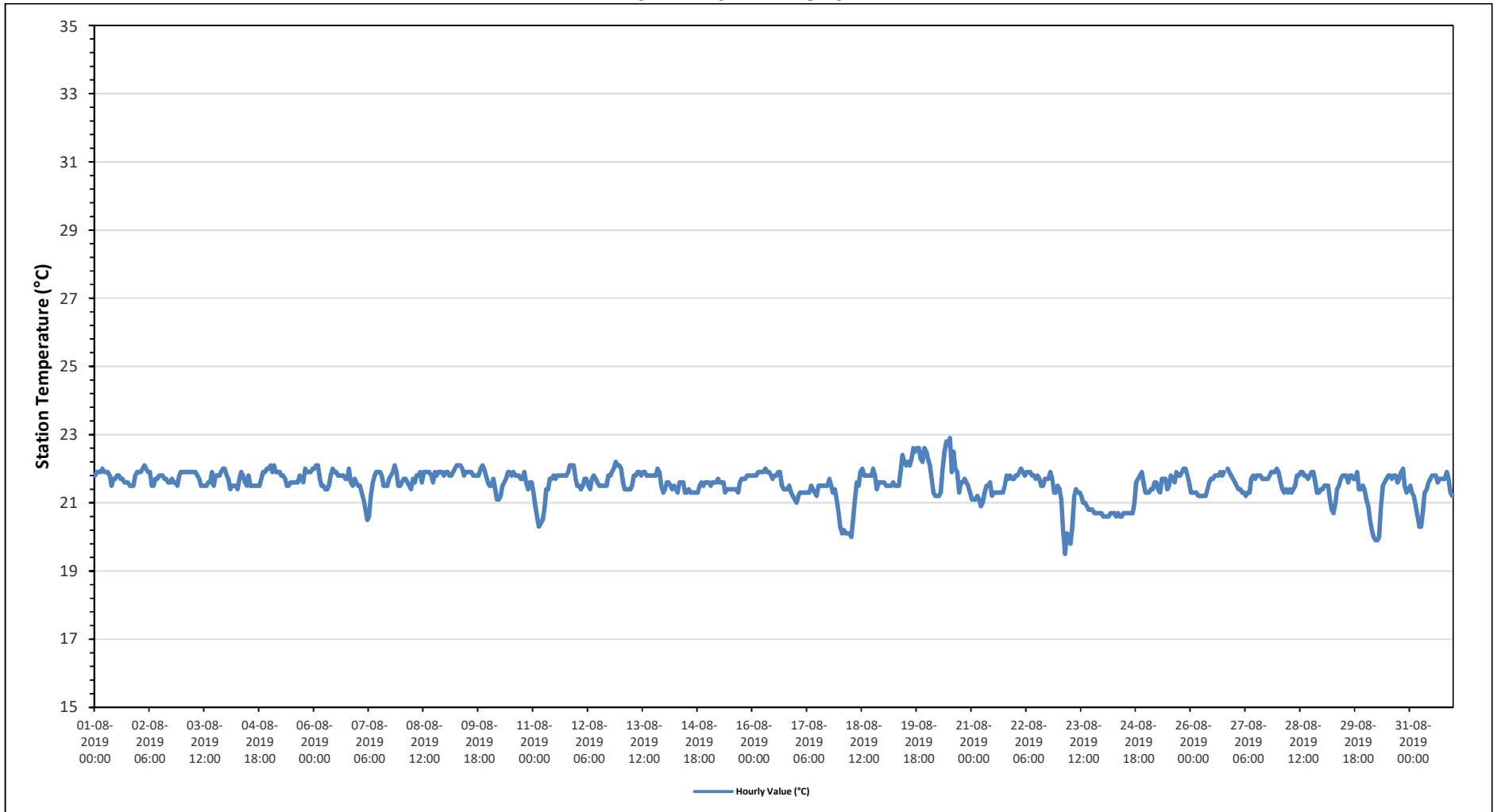
Maximum Hourly Value:	22.9 °C	on August 20 at hour 12	Hours in Service:	744
Maximum Daily Value:	22.0 °C	on August 19	Hours of Data:	743
Minimum Hourly Value:	19.5 °C	on August 23 at hour 3	Hours of Missing Data:	1
Minimum Daily Value:	20.7 °C	on August 23	Hours of Calibration:	0
Monthly Average:	21.6 °C		Operational Uptime:	99.9

Day	Hourly Period Starting at (MST)																							Daily Minimum	Daily Maximum	Daily Average	
	0	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22				23
Aug 1	21.8	21.9	21.9	21.9	22.0	21.9	21.9	21.9	21.8	21.5	21.7	21.7	21.8	21.8	21.7	21.7	21.6	21.6	21.6	21.7	21.6	21.5	21.8	21.9	21.5	22.0	21.7
Aug 2	21.9	21.9	22.0	22.1	22.0	21.9	21.9	21.9	21.5	21.5	21.7	21.8	21.8	21.8	21.7	21.7	21.6	21.6	21.6	21.7	21.6	21.5	21.8	21.9	22.0	22.0	21.8
Aug 3	21.9	21.9	21.9	21.9	21.9	21.9	21.9	21.9	21.8	21.7	21.5	21.5	21.5	21.5	21.6	21.6	21.9	21.5	21.8	21.8	21.8	21.9	22.0	22.0	22.0	22.0	21.8
Aug 4	21.8	21.7	21.4	21.5	21.5	21.5	21.4	21.7	21.9	21.8	21.6	21.5	21.8	21.5	21.5	21.5	21.5	21.5	21.5	21.7	21.9	21.9	22.0	22.0	22.0	22.0	21.7
Aug 5	22.1	21.9	22.1	21.9	21.9	21.9	21.8	21.8	21.7	21.5	21.5	21.6	21.6	21.6	21.6	21.6	21.8	21.7	21.6	22.0	21.9	21.9	21.9	22.0	22.0	22.0	21.8
Aug 6	22.0	22.1	22.1	21.7	21.5	21.5	21.4	21.4	21.5	21.8	22.0	21.9	21.9	21.8	21.8	21.8	21.8	21.7	21.7	22.0	21.6	21.5	21.7	21.6	21.6	21.6	21.7
Aug 7	21.5	21.5	21.3	21.1	20.8	20.5	20.6	21.2	21.6	21.8	21.9	21.9	21.9	21.8	21.5	21.5	21.5	21.7	21.8	21.9	22.1	21.9	21.5	21.5	21.5	21.5	21.5
Aug 8	21.6	21.7	21.7	21.6	21.5	21.4	21.7	21.6	21.8	21.8	21.9	21.6	21.9	21.9	21.9	21.9	21.8	21.6	21.9	21.8	21.9	21.9	21.9	21.8	21.8	21.8	21.8
Aug 9	21.9	21.9	21.8	21.8	21.9	22.0	22.1	22.1	22.1	22.0	21.8	21.9	21.9	21.9	21.9	21.8	21.8	21.8	21.8	21.8	22.0	22.1	22.0	21.8	21.6	21.6	21.9
Aug 10	21.5	21.5	21.7	21.4	21.1	21.1	21.2	21.5	21.6	21.7	21.9	21.9	21.8	21.9	21.8	21.8	21.8	21.7	21.7	21.9	21.6	21.4	21.6	21.6	21.6	21.6	21.6
Aug 11	21.3	20.9	20.6	20.3	20.4	20.5	20.8	21.4	21.4	21.7	21.7	21.8	21.7	21.8	21.8	21.8	21.8	21.8	21.8	21.8	21.9	22.1	22.1	22.1	21.7	21.5	21.5
Aug 12	21.5	21.5	21.4	21.5	21.7	21.7	21.5	21.4	21.7	21.8	21.7	21.6	21.5	21.5	21.5	21.5	21.5	21.8	21.8	21.8	21.9	22.0	22.2	22.1	22.1	21.7	21.7
Aug 13	22.0	21.6	21.4	21.4	21.4	21.4	21.5	21.8	21.8	21.9	21.9	21.8	21.9	21.9	21.8	21.8	21.8	21.8	21.8	21.8	21.8	22.0	21.9	21.5	21.3	21.3	21.7
Aug 14	21.4	21.6	21.6	21.5	21.4	21.5	21.4	21.3	21.6	21.6	21.6	21.6	21.3	21.3	21.4	21.3	21.3	21.3	21.3	21.3	21.5	21.6	21.5	21.6	21.6	21.6	21.5
Aug 15	21.6	21.5	21.6	21.6	21.6	21.7	21.6	21.6	21.6	21.3	21.4	21.4	21.4	21.4	21.4	21.4	21.3	21.6	21.7	21.7	21.7	21.8	21.8	21.8	21.8	21.8	21.6
Aug 16	21.8	21.8	21.8	21.9	21.9	21.9	21.9	22.0	21.9	21.9	21.8	21.7	21.8	21.8	21.9	21.9	21.5	21.4	21.4	21.4	21.5	21.3	21.2	21.1	21.1	21.1	21.7
Aug 17	21.0	21.2	21.3	21.3	21.3	21.3	21.3	21.3	21.5	21.4	21.3	21.2	21.5	21.5	21.5	21.5	21.5	21.5	21.7	21.5	21.3	21.4	21.1	20.7	20.7	20.7	21.3
Aug 18	20.3	20.1	20.2	20.1	20.1	20.1	20.0	20.5	21.1	21.6	21.5	21.9	22.0	21.8	21.8	21.8	21.8	21.8	21.8	22.0	21.8	21.4	21.6	21.6	21.6	21.2	21.2
Aug 19	21.6	21.5	21.5	21.5	21.5	21.6	21.5	21.5	21.5	21.5	21.9	22.4	22.2	22.1	22.2	22.1	22.3	22.6	22.5	22.6	22.6	22.3	22.2	22.6	22.5	22.5	22.0
Aug 20	22.3	22.1	21.7	21.3	21.2	21.2	21.2	21.3	22.0	22.5	22.8	22.7	22.9	22.9	22.5	22.0	21.9	21.3	21.6	21.6	21.7	21.6	21.5	21.3	21.2	21.2	21.8
Aug 21	21.1	21.1	21.1	21.2	21.1	20.9	21.0	21.3	21.5	21.5	21.6	21.2	21.3	21.3	21.3	21.3	21.3	21.3	21.5	21.8	21.7	21.8	21.7	21.7	21.7	21.7	21.4
Aug 22	21.8	21.8	21.9	22.0	21.9	21.8	21.9	21.9	21.9	21.8	21.8	21.7	21.8	21.7	21.5	21.5	21.7	21.7	21.7	21.7	21.9	21.7	21.3	21.3	21.5	21.5	21.7
Aug 23	21.4	21.1	20.2	19.5	20.1	20.0	19.8	20.3	21.2	21.4	21.3	21.3	21.2	21.0	21.0	20.9	20.8	20.8	20.8	20.7	20.7	20.7	20.7	20.7	20.7	20.7	20.7
Aug 24	20.6	20.6	20.6	20.6	20.6	20.7	20.7	20.7	20.6	20.7	20.6	20.6	20.7	20.7	20.7	20.7	20.7	20.7	21.0	21.6	21.7	21.8	21.9	21.6	21.3	21.3	20.9
Aug 25	21.3	21.3	21.4	21.4	21.6	21.6	21.4	21.3	21.7	21.7	21.7	21.7	21.4	21.5	21.8	21.7	21.6	21.9	21.8	21.8	21.9	22.0	22.0	21.8	21.6	21.6	21.6
Aug 26	21.3	21.3	21.3	21.3	21.2	21.2	21.2	21.2	21.2	21.4	21.6	21.7	21.7	21.8	21.8	21.8	21.9	21.8	21.9	21.8	21.9	22.0	21.9	21.8	21.7	21.7	21.6
Aug 27	21.6	21.5	21.4	21.4	21.3	21.3	21.2	21.3	21.3	21.7	21.8	21.7	21.8	21.8	21.8	21.7	21.7	21.7	21.7	21.8	21.9	21.9	21.9	22.0	22.0	22.0	21.6
Aug 28	21.9	21.6	21.4	21.3	21.4	21.3	21.4	21.3	21.4	21.5	21.8	21.8	21.9	21.9	21.8	21.8	21.7	21.8	21.9	21.9	21.9	21.6	21.3	21.3	21.4	21.4	21.6
Aug 29	21.4	21.5	21.5	21.5	21.1	20.8	20.7	21.0	21.4	21.5	21.7	21.8	21.8	21.8	21.8	21.6	21.8	21.8	21.7	21.7	21.9	21.4	21.4	21.5	21.4	21.4	21.5
Aug 30	21.1	20.9	20.5	20.2	20.0	19.9	19.9	20.0	20.9	21.5	21.6	21.7	21.8	21.8	21.7	21.8	21.8	21.6	21.7	21.9	22.0	21.5	21.3	21.4	21.4	21.4	21.2
Aug 31	21.5	21.3	21.2	20.9	20.6	20.3	20.3	20.8	21.3	21.4	21.6	21.7	21.8	21.8	21.8	21.6	21.7	21.7	21.7	21.7	21.9	21.7	21.3	21.2	21.2	21.2	21.4
Diurnal Maximum	22.3	22.1	22.1	22.1	22.0	22.0	22.1	22.1	22.1	22.5	22.8	22.7	22.9	22.2	22.5	22.3	22.6	22.5	22.6	22.6	22.6	22.3	22.2	22.6	22.5	22.5	22.5
Diurnal Average	21.5	21.5	21.4	21.3	21.3	21.2	21.2	21.3	21.5	21.6	21.7	21.7	21.7	21.7	21.7	21.6	21.6	21.6	21.7	21.8	21.8	21.7	21.7	21.6	21.6	21.6	21.6

C	Calibration	S	Daily Zero/Span	Q	Quality Assurance	C1	Repeat Calibration	S1	Repeat Daily Zero/Span
G	Out for Repair	K	Collection Error	N	Not in Service	O	Operator Error	P	Power Failure
R	Recovery	X	Machine Malfunction	Y	Maintenance	T	Exceeds Temperature Limits	N	Not in Service

Daily Average is shown "-" if minimum data completeness criteria of 75% or 18 hours per day is not met.
Monthly Average is shown "-" if minimum data completeness criteria of 75% of days per month is not met.

Timeseries Chart of Hourly Average for ST - Maskwa Site





LAKELAND INDUSTRY & COMMUNITY ASSOCIATION

Maskwa Site - August 2019
Summary of Hourly Averages

PRECIPITATION in mm

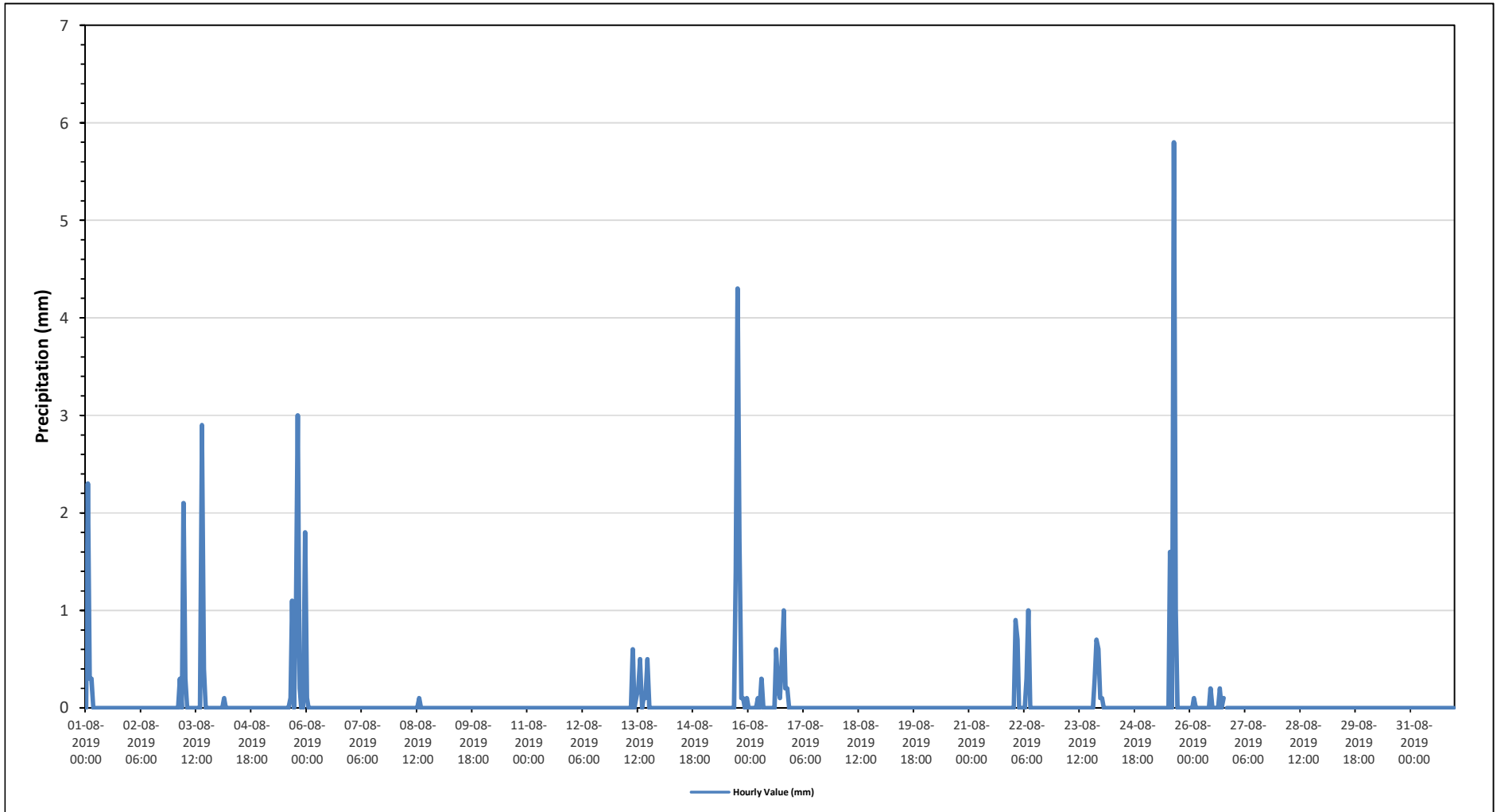
Maximum Hourly Value:	5.8 mm on August 25 at hour 15	Hours in Service:	744
Maximum Daily Value:	8.4 mm on August 25	Hours of Data:	743
Minimum Hourly Value:	0.0 mm on August 1 at hour 0	Hours of Missing Data:	1
Minimum Daily Value:	0.0 mm on August 2	Hours of Calibration:	0
Monthly Total:	43.0 mm	Operational Uptime:	99.9

Day	Hourly Period Starting at (MST)																							Daily Minimum	Daily Maximum	Daily Total			
	0	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22				23		
Aug 1	0.0	2.3	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	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	2.3	2.9
Aug 2	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Aug 3	0.0	0.0	0.0	0.3	0.0	2.1	0.3	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	2.9	0.4	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	2.9	6.0	
Aug 4	0.0	0.0	0.0	0.1	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.1	0.1	
Aug 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	0.1	1.1	0.0	0.9	3.0	0.2	0.0	0.0	1.8	0.0	3.0	7.1		
Aug 6	0.1	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.1	0.1	
Aug 7	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	
Aug 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	0.1	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.1	0.1	
Aug 9	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	
Aug 10	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	
Aug 11	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	
Aug 12	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	
Aug 13	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.6	0.0	0.1	0.2	0.5	0.0	0.1	0.1	0.5	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.6	2.1	
Aug 14	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	
Aug 15	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	1.4	4.3	1.7	0.1	0.1	0.0	0.1	0.0	4.3	7.7		
Aug 16	0.0	0.0	0.0	0.0	0.0	0.1	0.0	0.3	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.6	0.2	0.1	0.5	1.0	0.2	0.2	0.0	0.0	0.0	1.0	3.2		
Aug 17	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	
Aug 18	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	
Aug 19	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	
Aug 20	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	
Aug 21	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	
Aug 22	0.0	0.9	0.7	0.0	0.0	0.0	0.0	0.3	1.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	1.0	2.9		
Aug 23	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.3	0.7	0.6	0.1	0.0	0.7	1.7		
Aug 24	0.1	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.1	0.1		
Aug 25	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	1.6	0.0	5.8	1.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	5.8	8.4		
Aug 26	0.0	0.0	0.1	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.2	0.0	0.0	0.0	0.0	0.2	0.0	0.1	Y	0.0	0.0	0.0	0.0	0.0	0.2	0.6		
Aug 27	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	
Aug 28	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	
Aug 29	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	
Aug 30	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	
Aug 31	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	
Diurnal Maximum	0.1	2.3	0.7	0.3	0.0	2.1	0.3	0.3	1.0	0.6	0.0	0.2	0.2	1.6	0.0	5.8	1.1	1.4	4.3	3.0	0.3	0.7	0.6	1.8	0.0	0.0	0.0	1.8	
Diurnal Average	0.0	0.1	0.0	0.0	0.0	0.1	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.1	0.0	0.3	0.1	0.1	0.2	0.2	0.0	0.0	0.0	0.1	0.0	0.0	0.0	0.1	

C	Calibration	S	Daily Zero/Span	Q	Quality Assurance	C1	Repeat Calibration	S1	Repeat Daily Zero/Span
G	Out for Repair	K	Collection Error	N	Not in Service	O	Operator Error	P	Power Failure
R	Recovery	X	Machine Malfunction	Y	Maintenance	T	Exceeds Temperature Limits	N	Not in Service

Daily Average is shown "-" if minimum data completeness criteria of 75% or 18 hours per day is not met.
Monthly Average is shown "-" if minimum data completeness criteria of 75% of days per month is not met.

Timeseries Chart of Hourly Average for Precipitation - Maskwa Site





LAKELAND INDUSTRY & COMMUNITY ASSOCIATION

Maskwa Site - August 2019 Summary of Hourly Averages

VECTOR WIND SPEED (VWS) in km/hr

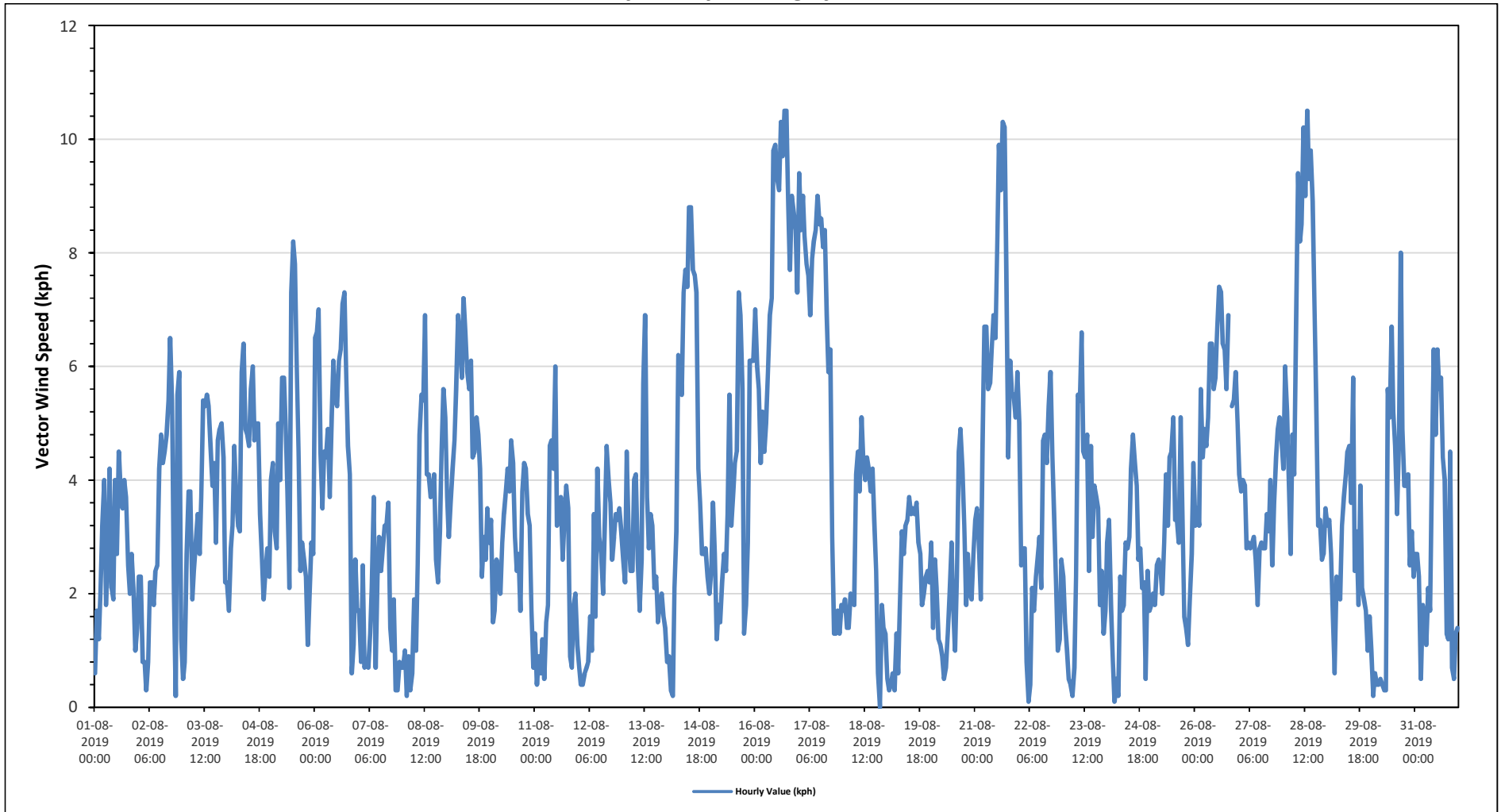
Maximum Hourly Value:	10.5 kph	on August 16 at hour 16	Hours in Service:	744
Maximum Daily Value:	7.8 kph	on August 16	Hours of Data:	743
Minimum Hourly Value:	0.0 kph	on August 18 at hour 20	Hours of Missing Data:	1
Minimum Daily Value:	1.7 kph	on August 7	Hours of Calibration:	0
Monthly Average:	1.3 kph		Operational Uptime:	99.9

Day	Hourly Period Starting at (MST)																							Daily	Daily	Daily	
	0	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	Minimum	Maximum	Average
Aug 1	0.6	1.7	1.2	2	3.2	4	1.8	2.6	4.2	2.1	1.9	4	2.7	4.5	3.8	3.5	4	3.7	2.5	2	2.7	2.1	1	1.4	0.6	4.5	2.6
Aug 2	2.3	2.3	0.8	0.8	0.3	0.8	2.2	2.2	1.8	2.4	2.5	4.2	4.8	4.3	4.5	4.8	5.4	6.5	5.4	2.1	0.2	5.5	5.9	1.2	0.2	6.5	3.1
Aug 3	0.5	0.8	2.7	3.8	3.8	1.9	2.4	2.9	3.4	2.7	3.7	5.4	5.3	5.5	5.3	4.6	3.9	4.3	2.9	4.7	4.9	5	4.4	2.2	0.5	5.5	3.6
Aug 4	2.2	1.7	2.8	3.2	4.6	3.7	3.2	3.1	5.9	6.4	4.9	4.8	4.6	5.6	6	4.7	5	5	3.4	2.6	1.9	2.4	2.8	2.3	1.7	6.4	3.9
Aug 5	4	4.3	3.1	2.8	5	4	5.8	5.8	5	3.8	2.1	7.3	8.2	7.8	6	4.5	2.4	2.9	2.6	2.3	1.1	1.9	2.9	2.7	1.1	8.2	4.1
Aug 6	6.5	6.6	7	4.5	3.5	4.5	4.4	4.9	3.7	5.1	6.1	5.4	5.3	6.1	6.3	7.1	7.3	5.8	4.6	4.1	0.6	1.1	2.6	1.7	0.6	7.3	4.8
Aug 7	1.7	0.8	2.5	0.7	0.8	0.7	1.3	2.1	3.7	0.7	2.3	3	2.4	2.8	3.2	3.2	3.6	1.4	1	1.9	0.3	0.3	0.8	0.7	0.3	3.7	1.7
Aug 8	0.7	1	0.2	0.9	0.3	0.6	1.9	1	2.5	4.8	5.5	5.4	6.9	4.1	4.1	3.7	3.8	4.1	2.6	2.2	3.1	4.5	5.6	5.1	0.2	6.9	3.1
Aug 9	3.7	3	3.6	4.2	4.7	5.6	6.9	6.5	5.8	7.2	6.6	5.9	5.6	6.1	4.4	4.5	5.1	4.8	4.2	2.3	3	2.6	3.5	2.9	2.3	7.2	4.7
Aug 10	3.3	1.5	1.7	2.6	2.2	2	2.9	3.4	3.8	4.2	3.8	4.7	4.3	3	2.4	2.7	1.7	3.8	4.3	4.2	3.4	3.2	1.7	0.7	0.7	4.7	3.0
Aug 11	1.3	0.4	0.9	0.6	1.2	0.5	1.5	1.8	4.6	4.7	4.2	6	3.2	3.4	3.7	2.6	3.3	3.9	3.5	0.9	0.7	1.8	2	1.1	0.4	6.0	2.4
Aug 12	0.7	0.4	0.4	0.6	0.7	0.8	1.6	1	3.4	1.6	4.2	3	2.7	2	3.2	4.6	4	3.6	2.6	3	3.4	3.3	3.5	3.1	0.4	4.6	2.4
Aug 13	2.6	2.2	4.5	3	2.4	2.4	4	4.1	2.6	1.7	2.6	5.7	6.9	3.7	2.8	3.4	3.2	2.1	2.3	1.5	1.8	2	1.6	1.4	1.4	6.9	2.9
Aug 14	0.8	0.9	0.3	0.2	2.1	3.1	6.2	6.1	5.5	7.3	7.7	7.4	8.8	8.8	7.7	7.6	7.3	4.2	3.6	2.7	2.7	2.8	2.3	2	0.2	8.8	4.5
Aug 15	2.4	3.6	2.7	1.2	1.8	1.5	2.2	2.7	2.4	3.4	5.5	3.2	3.8	4.3	4.5	7.3	6.9	5.6	1.3	1.8	2.9	6.1	6.1	6.1	1.2	7.3	3.7
Aug 16	7	6	5.6	4.3	5.2	4.5	5	5.9	6.9	7.2	9.8	9.9	9.3	9.1	10.3	9.7	10.5	10.5	8.8	7.7	9	8.7	8.4	7.3	4.3	10.5	7.8
Aug 17	9.4	8.4	9	8.3	7.8	7.6	6.9	7.9	8.2	8.4	9	8.5	8.6	8.1	8.4	6.9	5.9	6.3	3	1.3	1.3	1.7	1.3	1.8	1.3	9.4	6.4
Aug 18	1.7	1.9	1.4	1.4	2	1.9	1.8	4.1	4.5	3.8	5.1	4.3	4	4.4	4.2	3.8	4.2	3.3	2.4	0.6	0	1.8	1.4	1.3	0.0	5.1	2.7
Aug 19	0.5	0.3	0.4	0.6	0.3	1.3	0.6	1.9	3.1	2.7	3.2	3.3	3.7	3.4	3.5	3.4	3.6	2.9	2.7	1.8	2	2.3	2.4	2.2	0.3	3.7	2.2
Aug 20	2.9	1.4	2.6	2.1	1.2	1.1	0.9	0.5	0.7	1.3	2	2.9	1.8	1	2.3	4.5	4.9	4.2	3.2	1.8	2.7	2	1.9	2.7	0.5	4.9	2.2
Aug 21	3.3	3.5	2.9	1.9	4.5	6.7	6.7	5.6	5.7	6.3	6.9	6.5	8.2	9.9	9.1	10.3	10.2	7.7	4.4	6.1	5.5	5.5	5.1	5.9	1.9	10.3	6.2
Aug 22	5	2.5	2.8	2.8	0.8	0.1	0.4	2.1	1.7	2.3	2.6	3	2.1	4.7	4.8	4.3	5.3	5.9	4.4	3.4	2.2	1	1.2	2.6	0.1	5.9	2.8
Aug 23	2.3	1.5	1	0.5	0.4	0.2	0.7	2.3	5.5	5.4	6.6	4.5	4.4	4.8	2.4	4.6	3	3.9	3.7	3.5	1.8	2.4	1.3	1.7	0.2	6.6	2.9
Aug 24	2.9	3.3	1.8	0.8	0.1	0.5	0.2	2.3	1.7	1.8	2.9	2.8	3	4.2	4.8	4.3	3.9	2.6	2.8	2.1	2.2	0.5	2.4	1.7	0.1	4.8	2.3
Aug 25	1.8	2	1.8	2.5	2.6	2.4	2	2.9	4.1	3.2	4.4	4.5	5.1	3.3	3.3	2.9	5.1	3.4	1.6	1.4	1.1	1.9	2.7	4.3	1.1	5.1	2.9
Aug 26	3.2	3.5	3.2	5.6	4.4	4.9	4.6	5.1	6.4	6.4	5.6	5.8	6.7	7.4	7.3	6.4	6.3	5.6	6.9	Y	5.3	5.4	5.9	5	3.2	7.4	5.5
Aug 27	4.1	3.8	4	3.9	2.8	2.9	2.8	2.9	3	2.6	1.8	2.8	2.9	2.8	2.8	3.4	3.1	4	2.5	3.6	4.4	4.9	5.1	4.7	1.8	5.1	3.4
Aug 28	4.2	6	5.2	3.9	2.7	4.8	4.1	6.8	9.4	8.2	8.5	10.2	9	10.5	9.3	9.8	8.9	7	5.4	3.2	3.3	2.6	2.7	3.5	2.6	10.5	6.2
Aug 29	3.2	3.3	2.7	1.6	0.6	2.3	2.2	1.9	3.2	3.7	4.1	4.5	4.6	3.6	5.8	2.4	3.1	1.8	3.9	2.1	1.9	1.7	1	1.6	0.6	5.8	2.8
Aug 30	1	0.2	0.6	0.4	0.4	0.5	0.4	0.3	0.3	5.6	5.1	6.7	5.2	4.6	3.4	4.6	8	4.9	3.9	3.9	4.1	2.5	3.1	2.3	0.2	8.0	3.0
Aug 31	2.7	2.7	2.3	0.5	1.8	1.6	1.1	2.1	1.7	4	6.3	4.8	6.3	5.6	5.8	4.4	4	1.3	1.2	4.5	0.7	0.5	1.3	1.4	0.5	6.3	2.9
Diurnal Maximum	9	8	9	8	8	8	7	8	9	8	10	10	9	11	10	10	11	11	9	8	9	9	8	7			
Diurnal Average	2.9	2.6	2.6	2.3	2.4	2.6	2.9	3.4	4.0	4.2	4.8	5.2	5.2	5.1	5.0	5.0	5.1	4.4	3.5	2.8	2.6	2.9	3.0	2.7			

C	Calibration	S	Daily Zero/Span	Q	Quality Assurance	C1	Repeat Calibration	S1	Repeat Daily Zero/Span
G	Out for Repair	K	Collection Error	N	Not in Service	O	Operator Error	P	Power Failure
R	Recovery	X	Machine Malfunction	Y	Maintenance	T	Exceeds Temperature Limits	N	Not in Service

Daily Average is shown "-" if minimum data completeness criteria of 75% or 18 hours per day is not met.
 Monthly Average is shown "-" if minimum data completeness criteria of 75% of days per month is not met.

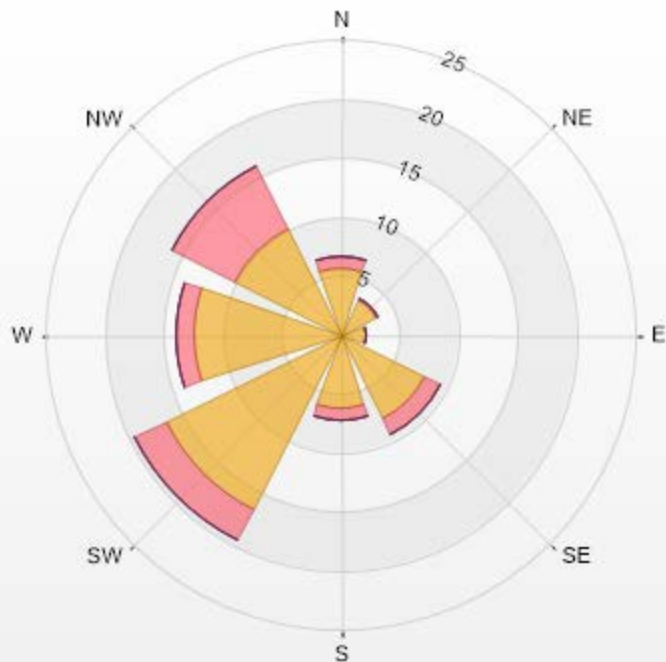
Timeseries Chart of Hourly Average for VWS - Maskwa Site



Wind: Maskwa Poll.: Maskwa-WDS[kph] Monthly: 08-2019 Type: PollutionRose Direction: Blowing From (Wind Frequency) Based On 1 Hr.
 Calm: 21.27% Valid Data: 99.87% Calm Avg: 1.01 [kph]

Direction	0-6	6-15	15-29	29-39	>39.0	Total
N	5.65	1.08	0	0	0	6.73
NE	3.36	0.13	0	0	0	3.49
E	2.15	0	0	0	0	2.15
SE	7.94	1.62	0	0	0	9.56
S	6.33	0.94	0	0	0	7.27
SW	16.55	2.96	0	0	0	19.51
W	12.38	1.62	0	0	0	14
NW	10.09	5.92	0	0	0	16.01
Summary	64.45	14.27	0	0	0	78.72

Maskwa Poll.: Maskwa-WDS[kph] 01-08-2019 00:00 - 31-08-2019 23:00 Calm: 21.27% Calm Poll Avg: 1.01 [kph]



LICA-201908-Revision 1

% Icon Classes (kph) 64 0-6 14 6-10 0 15-29 0 29-39 0 >39.0



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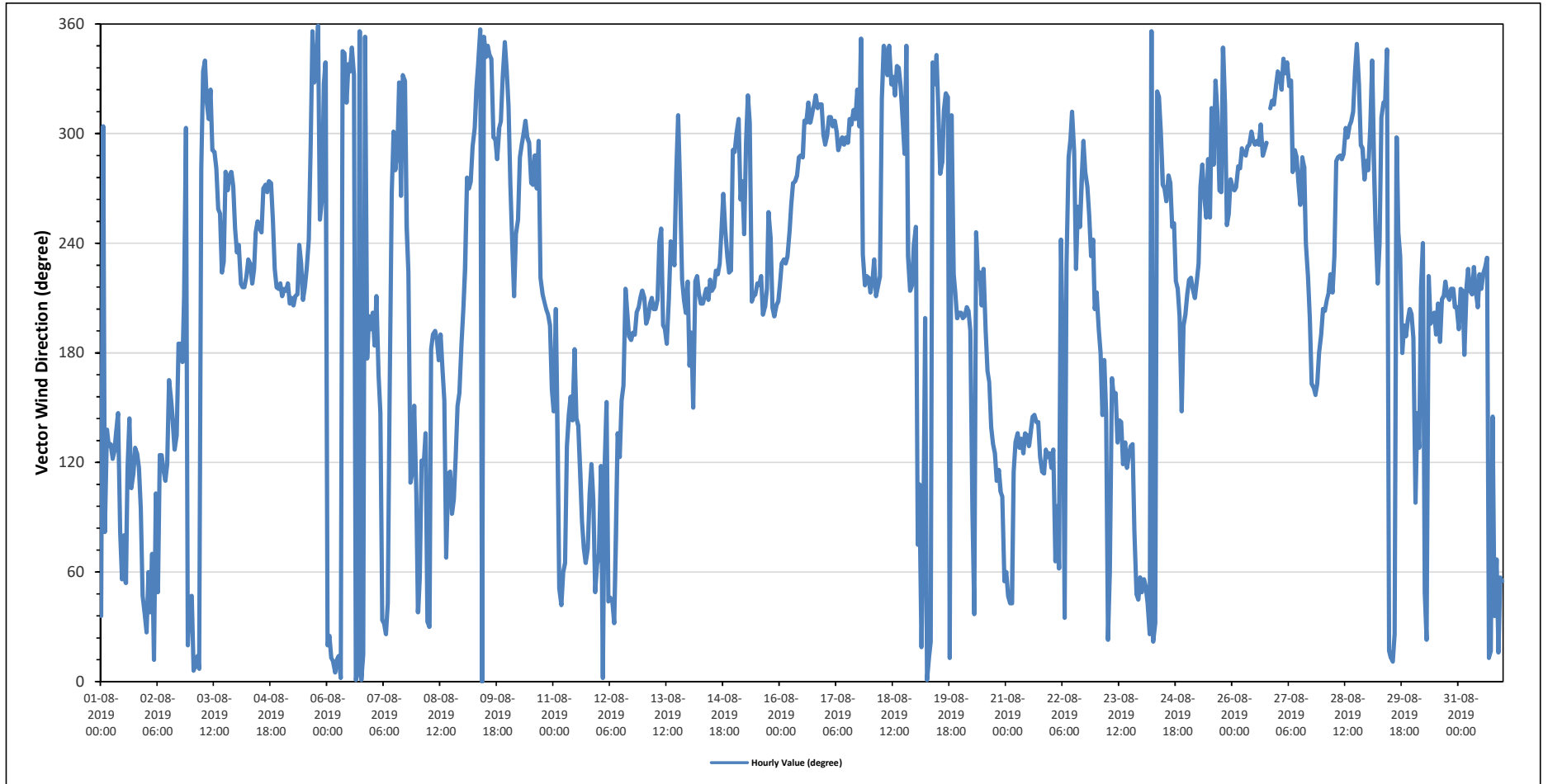
Maskwa Site - August 2019

Summary of Hourly Averages

WIND DIRECTION (VWD) in sector

Monthly Average:		258 (WSW) degree														Hours in Service:		744									
																Hours of Data:		743									
																Hours of Missing Data:		1									
																Hours of Calibration:		0									
																Operational Uptime:		99.9									
Day	Hourly Period Starting at (MST)																							Daily Average			
	0	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	Degree	Quadrant	
Aug 1	NE	WNW	E	SE	SE	SE	ESE	SE	SE	SE	E	NE	E	NE	ESE	SE	ESE	ESE	SE	SE	ESE	E	NE	NE	108	ESE	
Aug 2	NNE	ENE	NE	ENE	NNE	ESE	NE	ESE	ESE	ESE	ESE	ESE	SSE	SSE	SE	SE	SE	S	S	S	SSW	WNW	NNE	NE	129	SE	
Aug 3	NE	N	N	NNE	N	W	NNW	NNW	NW	NW	NW	WNW	WNW	W	WSW	WSW	SW	SW	W	W	W	W	WSW	WNW	289	WNW	
Aug 4	SW	WSW	SW	SW	SW	SW	SW	SW	SW	SW	WSW	WSW	WSW	WSW	W	W	W	W	W	WSW	SW	SW	SSW	SW	241	WSW	
Aug 5	SSW	SSW	SSW	SW	SSW	SSW	SSW	SSW	SSW	SSW	SW	SSW	SW	SW	WSW	WNW	N	NNW	NNW	N	WSW	W	NW	NNW	233	SW	
Aug 6	NNE	NNE	NNE	NNE	N	NNE	NNE	N	NNW	NNW	NW	NNW	NNW	NNW	NNW	N	N	N	N	N	SSW	S	SSW	S	357	N	
Aug 7	SSW	S	SSW	SSE	SE	NE	NNE	NNE	NE	SSE	W	WNW	W	WNW	NNW	W	NNW	NNW	WSW	SW	ESE	ESE	SSE	ESE	294	WNW	
Aug 8	NE	ENE	ESE	ESE	SE	NNE	NNE	S	S	S	S	S	S	SSE	ENE	ESE	ESE	E	E	ESE	SSE	SSE	S	153	SSE		
Aug 9	SSW	SW	W	W	W	WNW	WNW	NW	NNW	N	N	N	NNW	NNW	NNW	NNW	WNW	WNW	WNW	NW	NNW	N	NNW	NW	319	NW	
Aug 10	NW	W	WSW	SSW	WSW	WSW	WNW	WNW	WNW	NW	WNW	WNW	W	W	WNW	W	WNW	SW	SSW	SSW	SSW	SSW	SSW	SSE	261	W	
Aug 11	SE	SSW	SE	NE	NE	ENE	ENE	SE	SE	SSE	SE	SE	SE	ESE	E	ENE	ENE	ENE	ESE	E	NE	ENE	ENE	118	ESE		
Aug 12	ENE	ESE	N	ESE	SSE	NE	NE	NNE	E	SE	ESE	SSE	SSE	SSW	SSW	S	S	S	S	SSW	SSW	SSW	SSW	175	S		
Aug 13	SSW	SSW	SSW	SSW	SSW	SSW	SSW	SSW	SSW	WSW	WSW	SSW	S	S	SSW	WSW	SW	SW	W	NW	W	SW	SSW	SSW	214	SSW	
Aug 14	S	S	SSE	SW	SW	SSW	SSW	SSW	SSW	SSW	SSW	SSW	SSW	SSW	SSW	SSW	SSW	SSW	SSW	SSW	SSW	SSW	SSW	SSW	221	SSW	
Aug 15	WNW	WNW	NW	W	W	WSW	WNW	NW	NW	SSW	SSW	SW	SW	SW	SW	SSW	SSW	SSW	SSW	SSW	SSW	SSW	SSW	SSW	226	SSW	
Aug 16	SW	SW	SW	SW	SW	WSW	W	W	W	W	WNW	WNW	WNW	NW	NW	NW	NW	NW	NW	NW	NW	NW	NW	NW	290	WNW	
Aug 17	WNW	WNW	NW	NW	WNW	NW	WNW	WNW	WNW	WNW	WNW	WNW	WNW	WNW	NW	WNW	NW	NW	NW	NW	NW	N	SW	SW	300	WNW	
Aug 18	SSW	SW	SW	SSW	SW	SW	NW	NNW	NNW	NNW	NNW	NW	NNW	NW	NNW	NNW	NW	NNW	NNW	SW	SSW	SSW	SSW	SSW	313	NW	
Aug 19	WSW	ENE	ESE	NNE	ENE	SSW	N	NNE	NNE	NNW	NW	NNW	NW	W	WNW	NW	NW	NW	NNE	NW	SW	SSW	SSW	SSW	311	NW	
Aug 20	SSW	SSW	SSW	SSW	SSW	S	E	NE	WSW	SW	SW	SSW	SW	S	SSE	SSE	SE	SE	SE	ESE	ESE	ESE	E	NE	159	SSE	
Aug 21	ENE	NE	NE	NE	ESE	SE	SE	SE	SE	SE	SE	SE	SE	SE	SE	SE	SE	SE	ESE	ESE	ESE	ESE	ESE	ESE	127	SE	
Aug 22	ESE	SE	ENE	E	ENE	WSW	S	NE	SW	WNW	WNW	NW	WNW	SW	WSW	WSW	W	WNW	W	W	WSW	SW	WSW	SSW	263	W	
Aug 23	SSW	S	S	SE	S	SE	NNE	ENE	SSE	SSE	SSE	SE	SE	SE	ESE	SE	ESE	ESE	SE	SE	E	NE	NE	ENE	135	SE	
Aug 24	NE	NE	NE	NE	NNE	N	NNE	NNE	NW	NW	WNW	W	W	W	W	W	WSW	WSW	SW	SSW	SSW	SE	SSW	SSW	270	W	
Aug 25	SSW	SW	SW	SSW	SSW	SW	SW	W	W	W	WSW	WNW	WSW	NW	W	NNW	NW	W	W	NNW	NW	WSW	WSW	W	268	W	
Aug 26	W	W	W	W	W	WNW	WNW	WNW	WNW	WNW	WNW	WNW	WNW	WNW	WNW	WNW	WNW	WNW	WNW	WNW	WNW	WNW	WNW	WNW	295	WNW	
Aug 27	NNW	NNW	NW	NNW	NNW	NNW	NW	NNW	W	WNW	WNW	W	W	WNW	W	WSW	SW	SSW	SSE	SSE	S	S	S	262	W		
Aug 28	SSW	SSW	SSW	SSW	SW	SSW	SW	WNW	WNW	WNW	WNW	WNW	WNW	WNW	WNW	NW	NW	NNW	NNW	NW	WNW	WNW	W	WNW	286	WNW	
Aug 29	W	WNW	NNW	WNW	WSW	SW	WSW	NW	NW	NW	NNW	NNE	NNE	NNE	NNE	WNW	WSW	SW	S	SSW	S	SSW	SSW	SSW	307	NW	
Aug 30	S	E	SE	SE	SW	WSW	NE	NNE	SW	SSW	SSW	SSW	S	SSW	S	SSW	SSW	SSW	SSW	SSW	SSW	SSW	SSW	SSW	204	SSW	
Aug 31	S	SSW	SSW	S	SSW	SW	SSW	SSW	SSW	SW	SSW	SSW	SW	SW	SW	SW	NNE	NNE	SE	NE	ENE	NNE	ENE	NE	217	SW	
C	Calibration				S	Daily Zero/Span				Q	Quality Assurance				C1	Repeat Calibration				S1	Repeat Daily Zero/Span						
G	Out for Repair				K	Collection Error				N	Not in Service				O	Operator Error				P	Power Failure						
R	Recovery				X	Machine Malfunction				Y	Maintenance				T	Exceeds Temperature Limits				N	Not in Service						
Daily Average is shown "-" if minimum data completeness criteria of 75% or 18 hours per day is not met.																											
Monthly Average is shown "-" if minimum data completeness criteria of 75% of days per month is not met.																											

Timeseries Chart of Hourly Average for VWD - Maskwa Site





LAKELAND INDUSTRY & COMMUNITY ASSOCIATION

Maskwa Site - August 2019

Summary of Hour Standard Deviations

STANDARD DEVIATION WIND DIRECTION (STDWD) in Degree

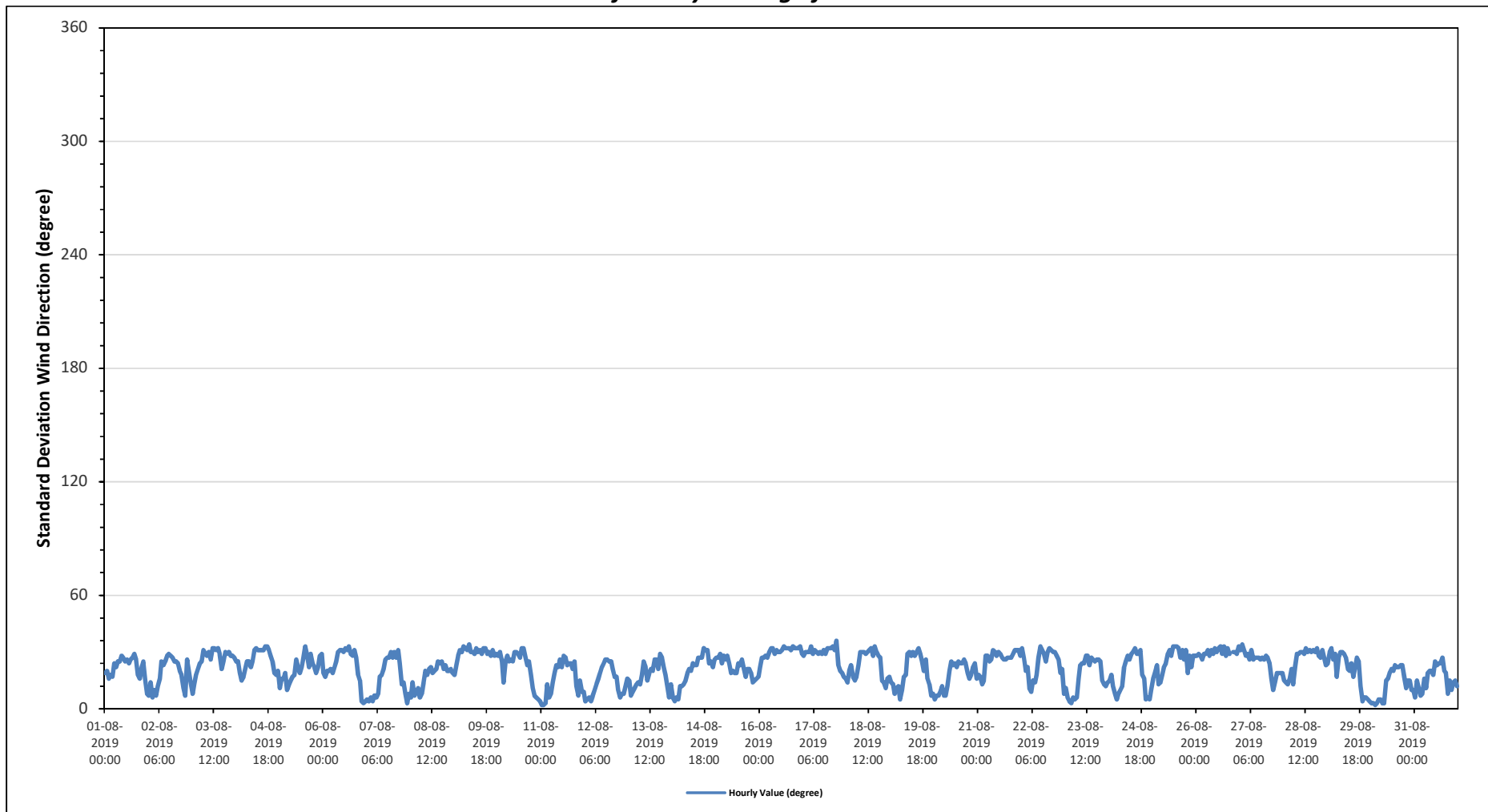
Maximum Hourly Value:	36 degree on August 17 at hour 18	Hours in Service:	744
Minimum Hourly Value:	2 degree on August 11 at hour	Hours of Data:	743
		Hours of Missing Data:	1
		Hours of Calibration:	0
		Operational Uptime:	99.9

Day	Hourly Period Starting at (MST)																							Daily	Daily	
	0	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	Minimum	Maximum
Aug 1	19	20	16	18	17	24	22	25	25	28	27	25	26	24	26	27	29	26	18	16	22	25	15	8	8	29
Aug 2	7	14	6	10	7	12	16	25	23	25	28	29	28	27	25	25	24	20	18	11	7	26	20	14	6	29
Aug 3	8	13	18	21	24	25	31	29	28	30	26	32	32	31	32	29	21	25	30	29	30	28	28	27	8	32
Aug 4	25	25	19	15	17	21	25	25	22	25	31	32	31	31	31	31	33	33	31	28	25	19	18	20	15	33
Aug 5	11	16	16	19	10	13	15	17	18	26	22	19	22	27	33	28	22	29	24	22	19	22	28	29	10	33
Aug 6	19	17	20	20	21	19	22	25	30	31	31	30	32	31	33	29	28	31	27	18	15	4	3	4	3	33
Aug 7	5	4	6	4	7	6	8	17	18	21	26	27	27	30	27	30	27	31	24	13	14	8	3	8	3	31
Aug 8	6	14	7	9	11	6	8	14	20	18	21	22	19	20	21	25	24	25	21	23	20	20	21	19	6	25
Aug 9	18	23	28	31	30	33	32	31	34	30	30	29	32	30	31	29	32	32	29	30	28	31	28	29	18	34
Aug 10	28	30	25	14	25	28	25	26	25	30	30	29	27	32	32	27	23	25	18	11	7	6	5	4	4	32
Aug 11	2	2	3	13	6	8	14	19	23	22	26	22	28	27	23	24	24	21	25	12	7	15	9	9	2	28
Aug 12	4	5	6	4	7	10	13	16	19	22	24	26	26	25	25	21	17	17	10	6	8	8	12	16	4	26
Aug 13	15	7	9	11	13	14	13	18	25	22	15	19	21	20	26	26	21	29	27	22	18	12	6	13	6	29
Aug 14	6	4	6	5	12	12	13	15	19	21	20	24	23	23	27	27	32	31	31	24	25	22	26	4	32	
Aug 15	27	27	29	24	28	26	28	24	19	20	19	19	24	23	26	21	17	21	21	19	14	15	16	17	14	29
Aug 16	22	27	27	28	27	30	32	32	29	31	30	30	31	33	32	32	32	31	33	32	32	32	33	29	22	33
Aug 17	28	30	30	30	33	29	31	30	29	30	29	31	29	32	32	32	33	31	36	23	20	19	17	16	16	36
Aug 18	14	20	23	17	15	17	23	30	30	30	29	30	31	32	28	33	30	28	27	15	14	11	16	17	11	33
Aug 19	14	13	8	11	12	5	10	17	18	29	30	28	30	28	30	32	29	25	20	26	16	13	7	8	5	32
Aug 20	5	7	7	9	12	7	7	12	20	25	23	24	22	25	24	24	26	24	19	16	18	22	24	16	5	26
Aug 21	18	17	13	15	28	28	25	26	31	30	28	30	29	27	26	26	27	27	29	31	31	31	28	13	31	31
Aug 22	32	27	20	22	11	9	15	14	18	27	33	31	29	25	30	32	31	30	30	28	26	19	21	8	8	33
Aug 23	11	6	4	3	6	5	6	16	23	24	24	28	28	23	27	26	25	26	26	25	15	13	12	14	3	28
Aug 24	15	18	12	8	5	8	10	12	22	25	28	26	29	30	32	29	29	31	18	16	5	6	5	10	5	32
Aug 25	16	19	23	13	14	18	22	24	29	31	28	33	33	33	32	27	31	26	31	19	28	22	28	28	13	33
Aug 26	28	29	28	26	29	29	31	28	31	29	32	30	32	33	29	33	28	32	29	Y	30	30	29	33	26	33
Aug 27	31	34	31	28	29	26	31	26	27	27	27	26	27	26	28	27	24	16	10	14	19	19	19	19	10	34
Aug 28	15	14	13	16	21	13	22	29	29	30	30	29	32	30	31	30	31	30	32	28	27	31	27	23	13	32
Aug 29	24	30	32	26	29	17	27	30	30	29	27	21	20	24	17	22	27	25	12	4	6	6	5	4	4	32
Aug 30	3	3	2	3	5	5	3	3	15	16	19	21	20	23	22	22	23	23	17	11	15	15	10	10	2	23
Aug 31	6	15	11	7	8	16	11	19	20	20	18	25	23	24	24	27	20	19	8	15	10	14	15	12	6	27
Diurnal Minimum	2	2	2	3	5	5	3	3	15	16	15	19	19	20	17	21	17	16	8	4	5	4	3	4		
Diurnal Maximum	32	34	32	31	33	33	32	32	34	31	33	33	33	33	33	33	33	33	36	32	32	32	33	33		

C	Calibration	S	Daily Zero/Span	Q	Quality Assurance	C1	Repeat Calibration	S1	Repeat Daily Zero/Span
G	Out for Repair	K	Collection Error	N	Not in Service	O	Operator Error	P	Power Failure
R	Recovery	X	Machine Malfunction	Y	Maintenance	T	Exceeds Temperature Limits	N	Not in Service

Daily Average is shown "-" if minimum data completeness criteria of 75% or 18 hours per day is not met.
 Monthly Average is shown "-" if minimum data completeness criteria of 75% of days per month is not met.

Timeseries Chart of Hourly Average for STDWD - Maskwa Site



ST. LINA STATION



LAKELAND INDUSTRY & COMMUNITY ASSOCIATION

St. Lina Site - August 2019

Summary of Hourly Averages

SULPHUR DIOXIDE (SO₂) in ppb

Alberta Ambient Air Quality Objectives (AAAQO): 1-Hour 172 ppb, 24-Hour 48 ppb, 30-Day 11 ppb

Number of 1-Hour Exceedences: 0 Number of 24-Hour Exceedences: 0 30-Day Exceedence: 0

Maximum Hourly Value: 3 ppb on August 14 at hour 10 Hours in Service: 744
 Maximum Daily Value: 0.3 ppb on August 21 Hours of Data: 705
 Minimum Hourly Value: 0 ppb on August 1 at hour 0 Hours of Missing Data: 1
 Minimum Daily Value: 0.0 ppb on August 1 Hours of Calibration: 38
 Monthly Average: 0.0 ppb Operational Uptime: 99.9

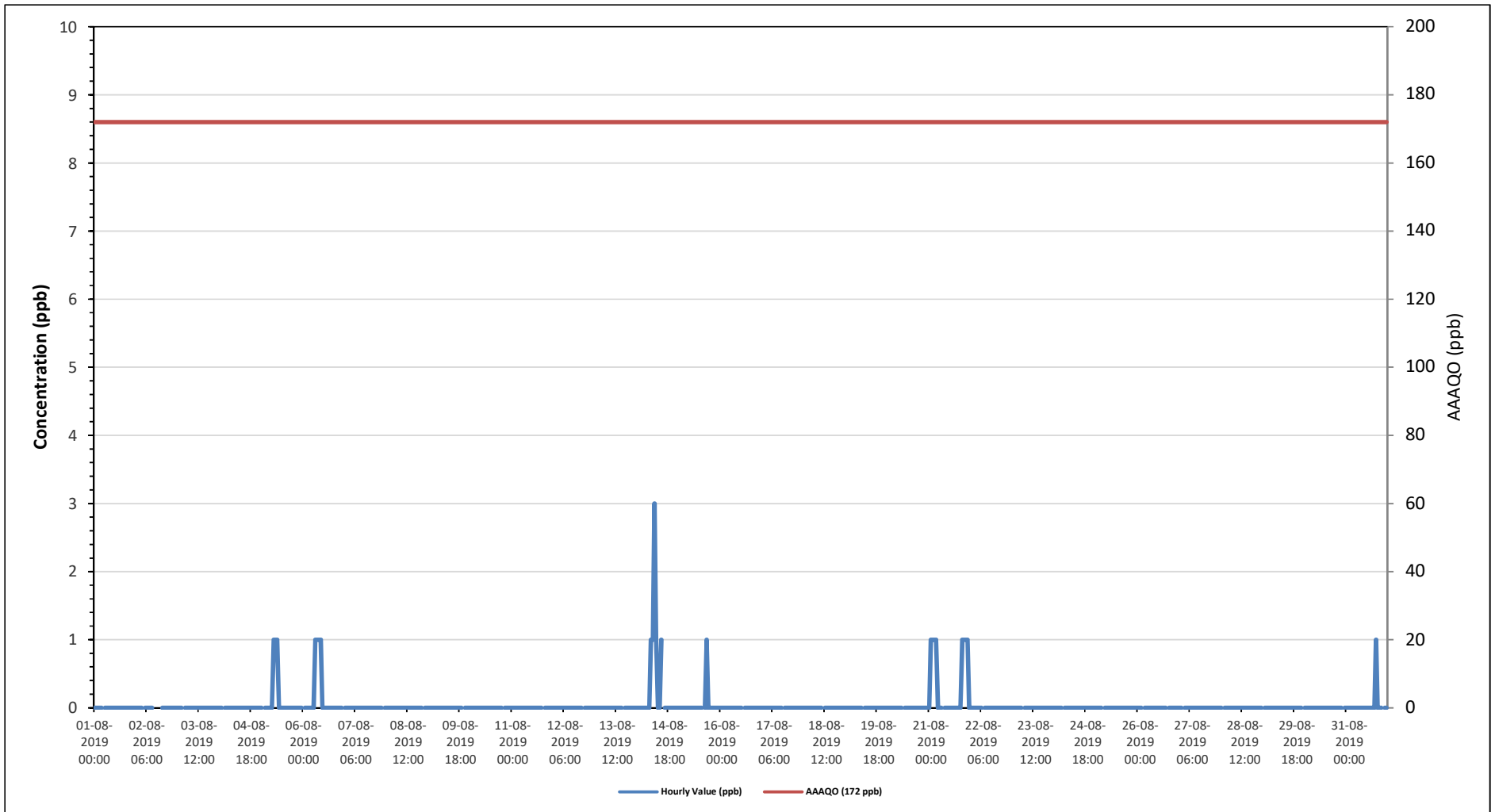
Day	Hourly Period Starting at (MST)																							Daily Minimum	Daily Maximum	Daily Average												
	0	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22				23											
Aug 1	0	0	0	0	0	S	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Aug 2	0	0	0	0	S	0	0	0	0	0	C	C	C	C	C	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	
Aug 3	0	0	0	S	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	
Aug 4	0	0	S	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	
Aug 5	0	S	0	0	0	0	0	1	1	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1	0.1
Aug 6	S	0	0	0	0	0	0	1	1	1	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1	0.2		
Aug 7	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	S	0	0	0	0		
Aug 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	S	0	0	0	0	0	0	0	0	0	0	0	
Aug 9	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	S	0	0	0	0	0	0	0	0	0	0	0	0	
Aug 10	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	S	0	0	0	0	0	0	0	0	0	0	0	0	0	
Aug 11	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	S	0	0	0	0	0	0	0	0	0	0	0	0	0	0	
Aug 12	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	S	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	
Aug 13	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	S	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Aug 14	0	0	0	0	0	0	0	0	1	1	3	1	0	0	1	S	S	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	3	0.3	
Aug 15	0	0	0	0	0	0	0	0	0	0	0	0	0	0	S	0	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1	0.0		
Aug 16	0	0	0	0	0	0	0	0	0	0	0	0	0	0	S	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	
Aug 17	0	0	0	0	0	0	0	0	0	0	0	0	0	0	S	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	
Aug 18	0	0	0	0	0	0	0	0	0	0	0	0	0	0	S	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	
Aug 19	0	0	0	0	0	0	0	0	0	0	0	0	0	0	S	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	
Aug 20	0	0	0	0	0	0	0	0	0	0	S	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	
Aug 21	0	1	1	1	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1	0.3		
Aug 22	0	0	0	0	0	0	0	0	0	S	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	
Aug 23	0	0	0	0	0	0	0	0	0	S	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	
Aug 24	0	0	0	0	0	S	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	
Aug 25	0	0	0	0	S	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	
Aug 26	0	0	0	S	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	
Aug 27	0	0	S	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	
Aug 28	0	S	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	
Aug 29	S	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	S	0		
Aug 30	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	S	0		
Aug 31	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	S	0	0	
Diurnal Maximum	0	1	1	1	1	0	0	1	1	1	3	1	0	0	1	0	1	0	1	0	1	0	1	1	0	1	1	1	0	0	0	0	0	0	0	0		
Daiurnal Average	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.1	0.1	0.1	0.1	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0		

Diurnal Maximum: 0 1 1 1 1 0 0 1 1 1 3 1 0 0 1 0 1 0 1 0 1 0 1 1 0 1 1 0 1 1 0 0 0 0 0 0 0 0 0 0
 Daiurnal Average: 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.1 0.1 0.1 0.1 0.0

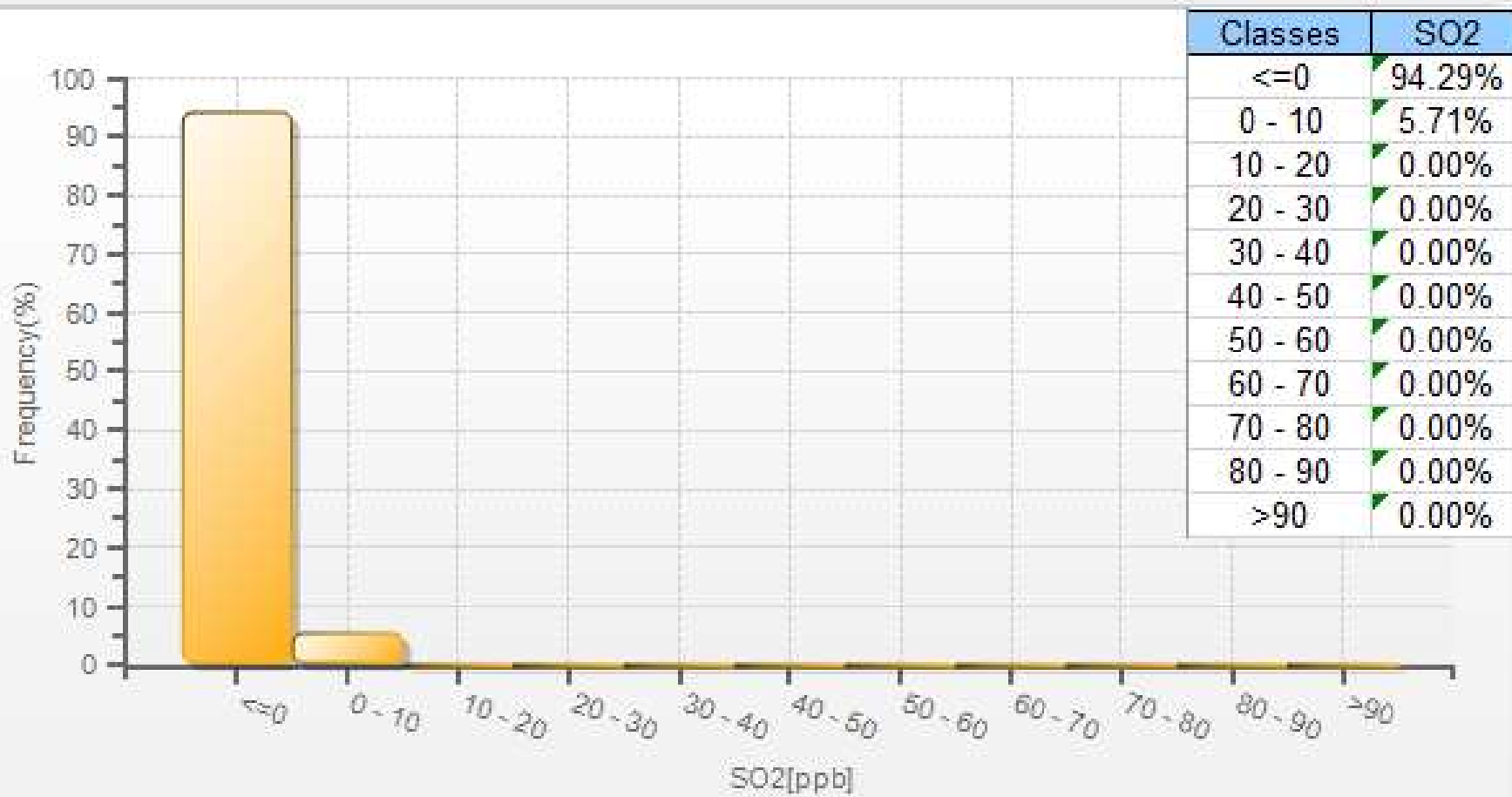
- C Calibration S Daily Zero/Span Q Quality Assurance C1 Repeat Calibration S1 Repeat Daily Zero/Span
- G Out for Repair K Collection Error N Not in Service O Operator Error P Power Failure
- R Recovery X Machine Malfunction Y Maintenance T Exceeds Temperature Limits N Not in Service

Daily Average is shown "-" if minimum data completeness criteria of 75% or 18 hours per day is not met.
 Monthly Average is shown "-" if minimum data completeness criteria of 75% of days per month is not met.

Timeseries Chart of Hourly Average for SO₂ - St. Lina Site

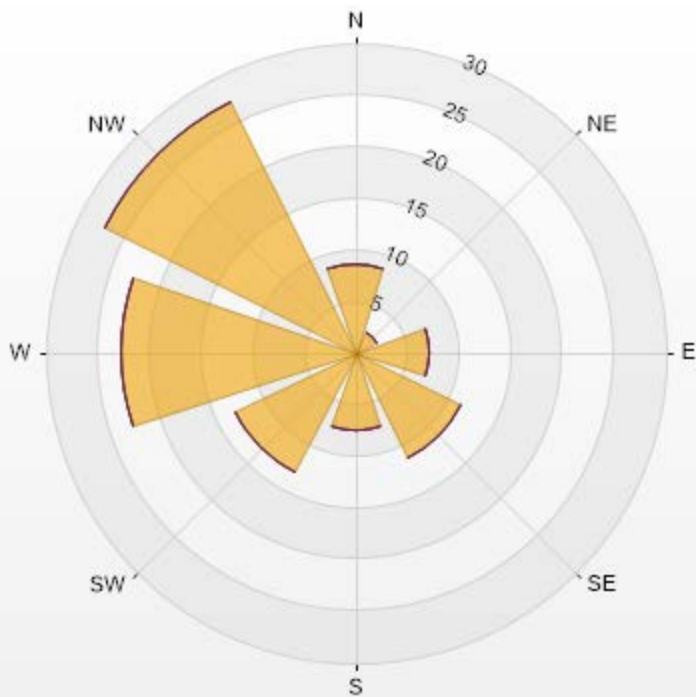


SO2[ppb] Histogram: St. Lina Monthly: 08-2019 1 Hr.



Wind: St. Lina Poll.: St. Lina-SO2[ppb] Monthly: 08-2019 Type: PollutionRose Direction: Blowing From (Wind Frequency) Based On 1 Hr.
 Calm: 0.00% Valid Data: 93.68% Calm Avg: 0.00 [ppb]

Direction	0-10	10-50	50-100	100-172	>172.0	Total
N	8.61	0	0	0	0	8.61
NE	2.3	0	0	0	0	2.3
E	7.17	0	0	0	0	7.17
SE	11.48	0	0	0	0	11.48
S	7.46	0	0	0	0	7.46
SW	13.06	0	0	0	0	13.06
W	22.67	0	0	0	0	22.67
NW	27.26	0	0	0	0	27.26
Summary	100	0	0	0	0	100





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St. Lina Site - August 2019

Summary of Hourly Averages

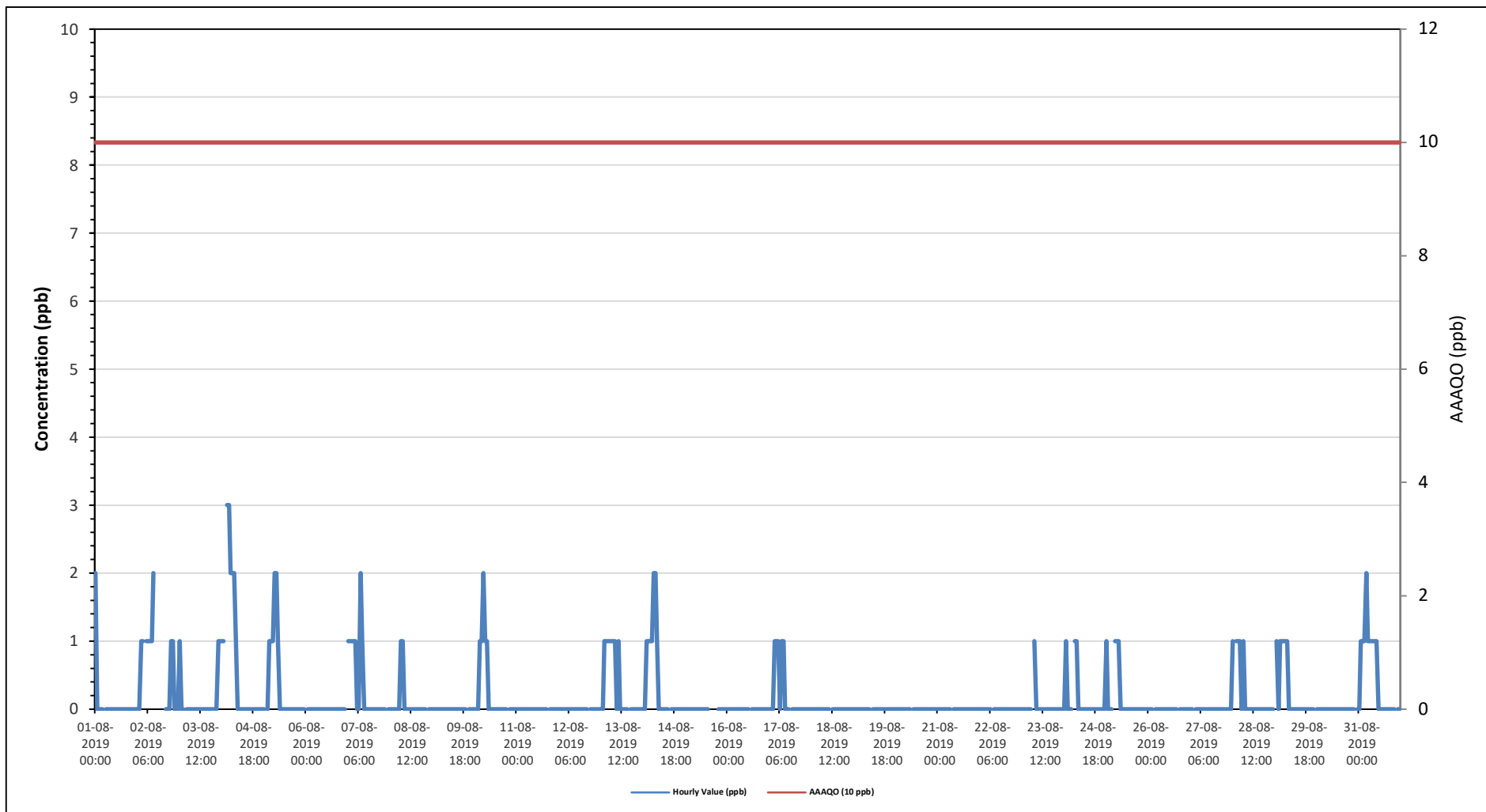
HYDROGEN SULPHIDE (H₂S) in ppb

Alberta Ambient Air Quality Objectives (AAAQO): 1-Hour 10 ppb, 24-Hour 3 ppb																													
Number of 1-Hour Exceedences: 0					Number of 24-Hour Exceedences: 0																								
Maximum Hourly Value: 3 ppb on August 4 at hour 3					Hours in Service: 744																								
Maximum Daily Value: 0.7 ppb on August 4					Hours of Data: 700																								
Minimum Hourly Value: 0 ppb on August 1 at hour 1					Hours of Missing Data: 5																								
Minimum Daily Value: 0.0 ppb on August 6					Hours of Calibration: 39																								
Monthly Average: 0.2 ppb					Operational Uptime: 99.3																								
Day	Hourly Period Starting at (MST)																							Daily	Daily	Daily			
	0	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	Minimum	Maximum	Average		
Aug 1	2	0	0	0	0	S	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	2	0.1
Aug 2	0	0	1	1	S	1	1	1	1	2	C	C	C	C	C	C	0	0	0	1	1	0	0	1	0	0	2	-	
Aug 3	1	0	0	S	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1	1	0	1	0	1	0.1
Aug 4	1	1	S	3	3	2	2	2	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	3	0.7	
Aug 5	0	S	0	1	1	1	2	2	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	2	0.3	
Aug 6	S	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0.0
Aug 7	1	1	1	1	1	0	0	2	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	S	0	0	2	0.3	
Aug 8	0	0	0	0	0	0	1	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	S	0	0	0	1	0.1	
Aug 9	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	S	0	0	0	0	0	0	0	0.0
Aug 10	0	0	0	1	1	2	1	1	0	0	0	0	0	0	0	0	0	0	0	0	S	0	0	0	0	0	2	0.3	
Aug 11	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	S	0	0	0	0	0	0	0	0.0
Aug 12	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0.0
Aug 13	0	0	1	1	1	1	1	1	1	0	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1	0.3	
Aug 14	0	0	1	1	1	1	2	2	1	0	0	0	0	0	0	S	0	0	0	0	0	0	0	0	0	0	2	0.4	
Aug 15	0	0	0	0	0	0	0	0	0	0	0	0	0	0	S	C1	C1	C1	C1	0	0	0	0	0	0	0	0	0	0.0
Aug 16	0	0	0	0	0	0	0	0	0	0	0	0	0	S	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0.0
Aug 17	0	0	0	1	1	1	0	1	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1	0.2	
Aug 18	0	0	0	0	0	0	0	0	0	0	S	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0.0
Aug 19	0	0	0	0	0	0	0	0	0	0	S	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0.0
Aug 20	0	0	0	0	0	0	0	0	0	S	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0.0
Aug 21	0	0	0	0	0	0	0	0	S	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0.0
Aug 22	0	0	0	0	0	0	0	S	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0.0
Aug 23	0	0	0	0	0	0	S	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1	0.0	
Aug 24	0	1	0	0	0	S	1	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1	0.1	
Aug 25	1	0	0	0	S	1	1	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1	0.2	
Aug 26	0	0	0	S	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0.0
Aug 27	0	0	S	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0.0
Aug 28	1	S	1	1	1	1	0	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1	0.2	
Aug 29	S	1	0	1	1	1	1	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	S	0	1	0.3
Aug 30	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	S	0	0	0	0.0
Aug 31	0	1	1	1	2	1	1	1	1	1	1	0	0	0	0	0	0	0	0	0	0	0	S	0	0	0	2	0.5	
Diurnal Maximum	2	1	1	3	3	2	2	2	1	2	1	0	0	0	0	0	0	0	0	1	1	0	0	0	0	0	0	0	0.0
Diurnal Average	0.2	0.2	0.2	0.4	0.4	0.4	0.5	0.6	0.3	0.1	0.1	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
C	Calibration				S	Daily Zero/Span				Q	Quality Assurance				C1	Repeat Calibration				S1	Repeat Daily Zero/Span								
G	Out for Repair				K	Collection Error				N	Not in Service				O	Operator Error				P	Power Failure								
R	Recovery				X	Machine Malfunction				Y	Maintenance				T	Exceeds Temperature Limits				N	Not in Service								

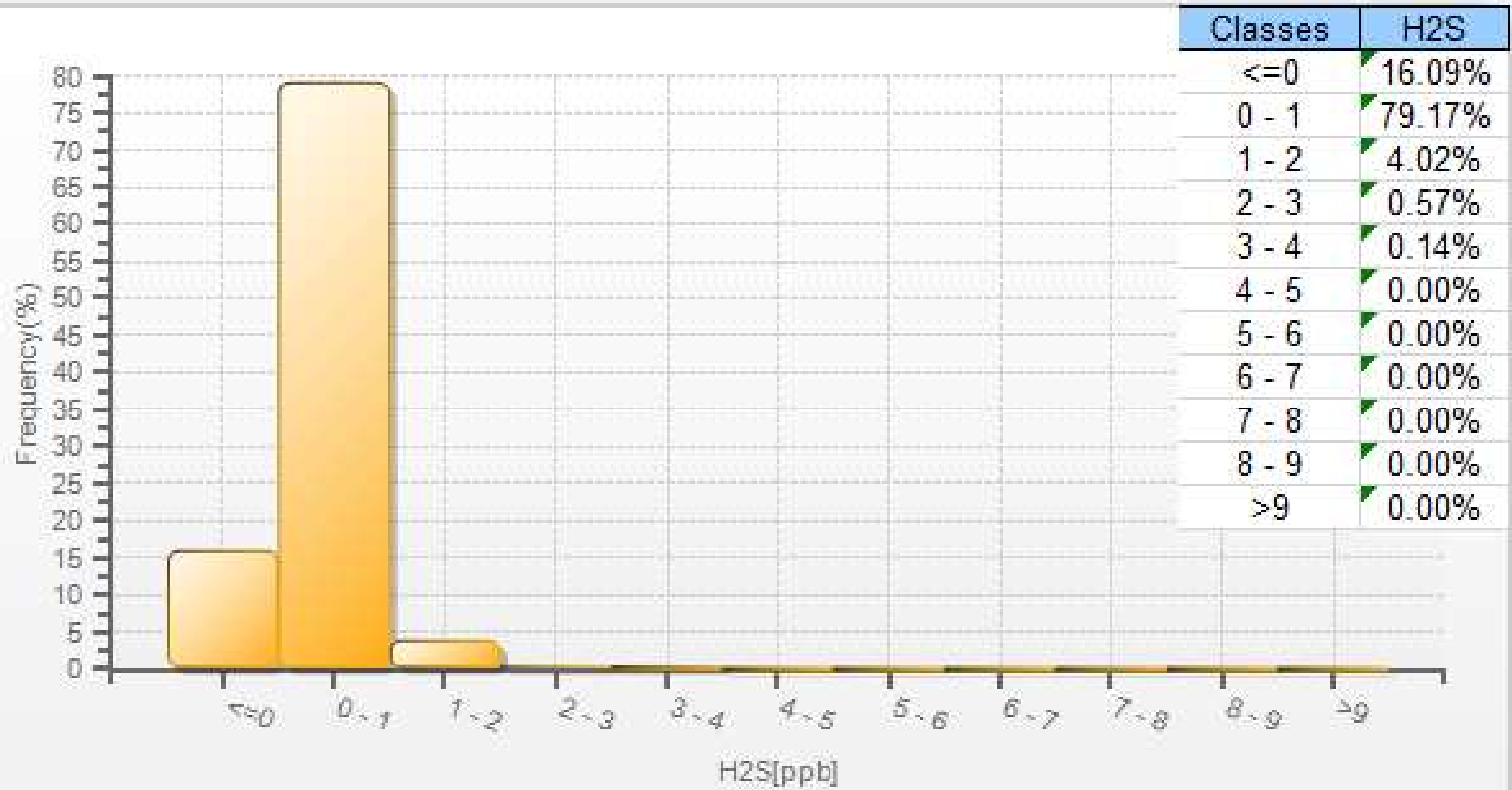
Daily Average is shown "-" if minimum data completeness criteria of 75% or 18 hours per day is not met.

Monthly Average is shown "-" if minimum data completeness criteria of 75% of days per month is not met.

Timeseries Chart of Hourly Average for H2S - St. Lina Site

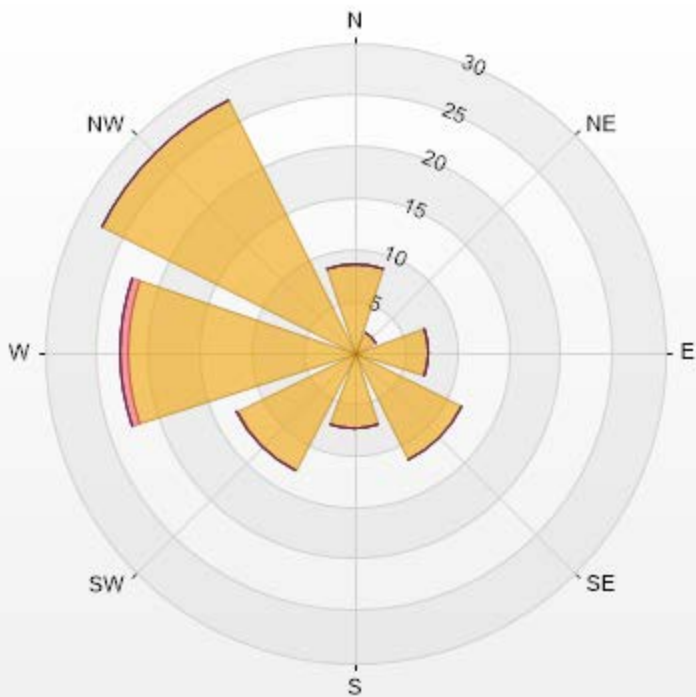


H2S[ppb] Histogram: St. Lina Monthly: 08-2019 1 Hr.



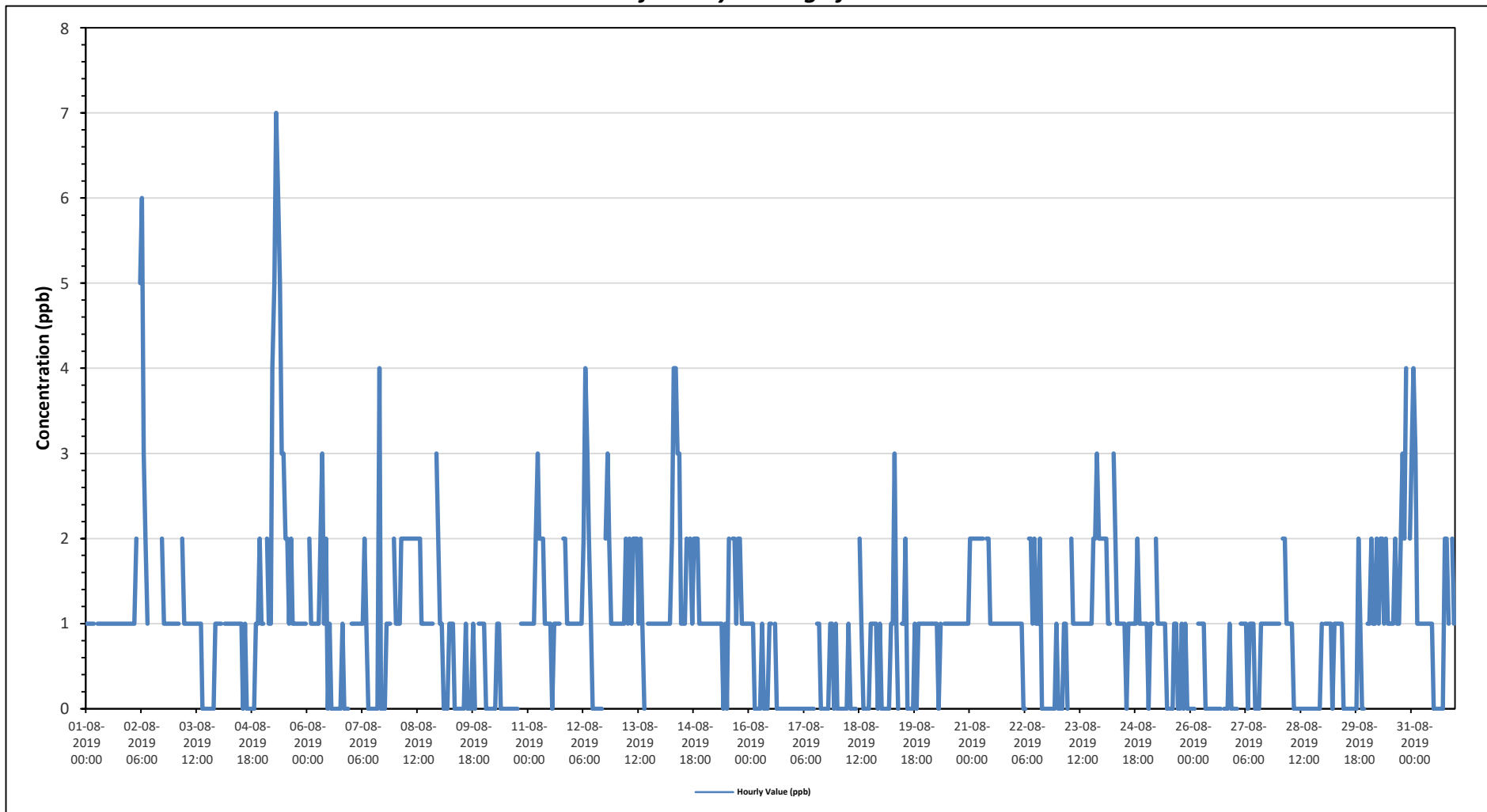
Wind: St. Lina Poll.: St. Lina-H2S[ppb] Monthly: 08-2019 Type: PollutionRose Direction: Blowing From (Wind Frequency) Based On 1 Hr.
 Calm: 0.00% Valid Data: 93.15% Calm Avg: 0.00 [ppb]

Direction	0-2	2-5	5-10	10-50	>50.0	Total
N	8.66	0	0	0	0	8.66
NE	2.31	0	0	0	0	2.31
E	7.22	0	0	0	0	7.22
SE	11.54	0	0	0	0	11.54
S	7.36	0	0	0	0	7.36
SW	12.7	0.14	0	0	0	12.84
W	21.93	0.72	0	0	0	22.65
NW	27.42	0	0	0	0	27.42
Summary	99.14	0.86	0	0	0	100

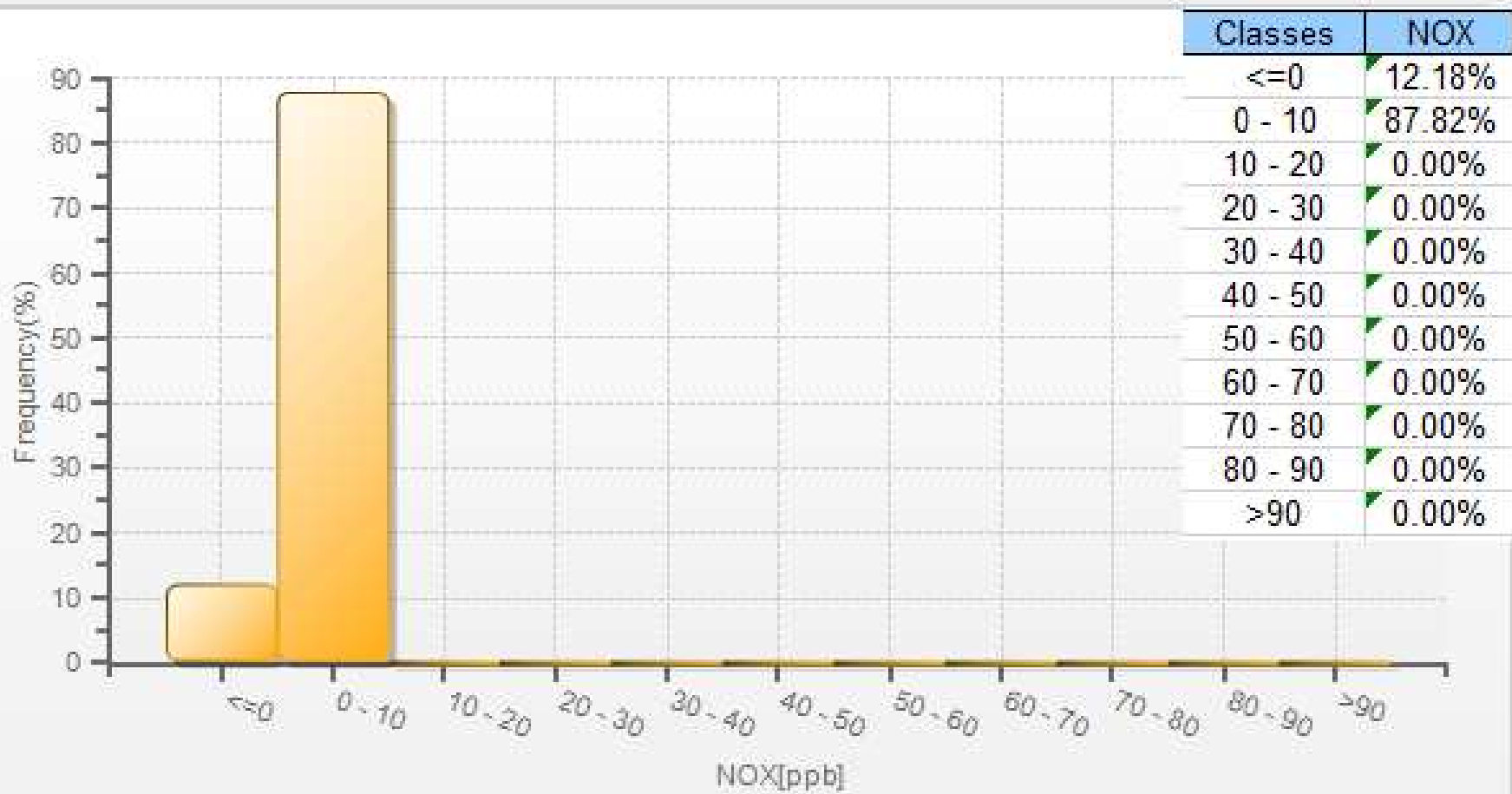


LICA-201908-Revision 1

Timeseries Chart of Hourly Average for NOx - St. Lina Site

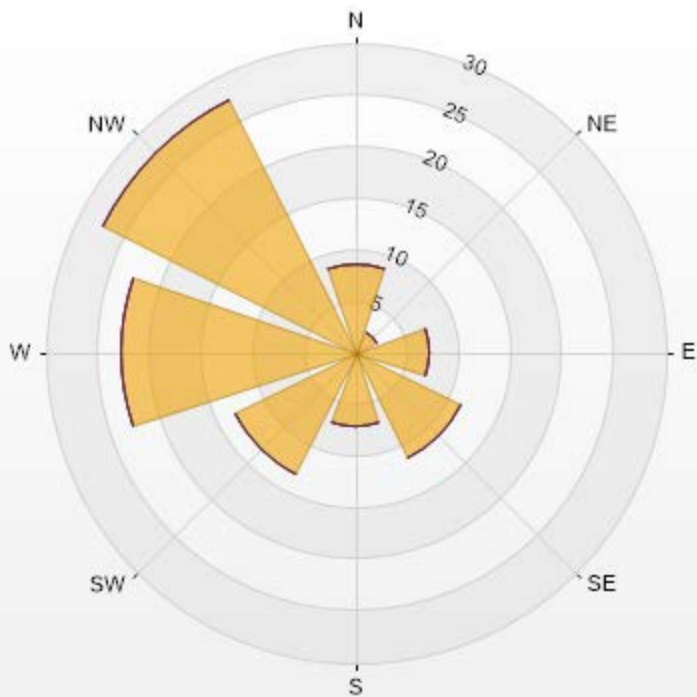


NOX[ppb] Histogram: St. Lina Monthly: 08-2019 1 Hr.



Wind: St. Lina Poll.: St. Lina-NOX[ppb] Monthly: 08-2019 Type: PollutionRose Direction: Blowing From (Wind Frequency) Based On 1 Hr.
 Calm: 0.00% Valid Data: 93.41% Calm Avg: 0.00 [ppb]

Direction	0-30	30-50	50-82	82-159	>159.0	Total
N	8.63	0	0	0	0	8.63
NE	2.3	0	0	0	0	2.3
E	7.19	0	0	0	0	7.19
SE	11.51	0	0	0	0	11.51
S	7.19	0	0	0	0	7.19
SW	13.09	0	0	0	0	13.09
W	22.73	0	0	0	0	22.73
NW	27.34	0	0	0	0	27.34
Summary	100	0	0	0	0	100



LICA-201908-Revision 1



LAKELAND INDUSTRY & COMMUNITY ASSOCIATION

St. Lina Site - August 2019
Summary of Hourly Averages

NITRIC OXIDE (NO) in ppb

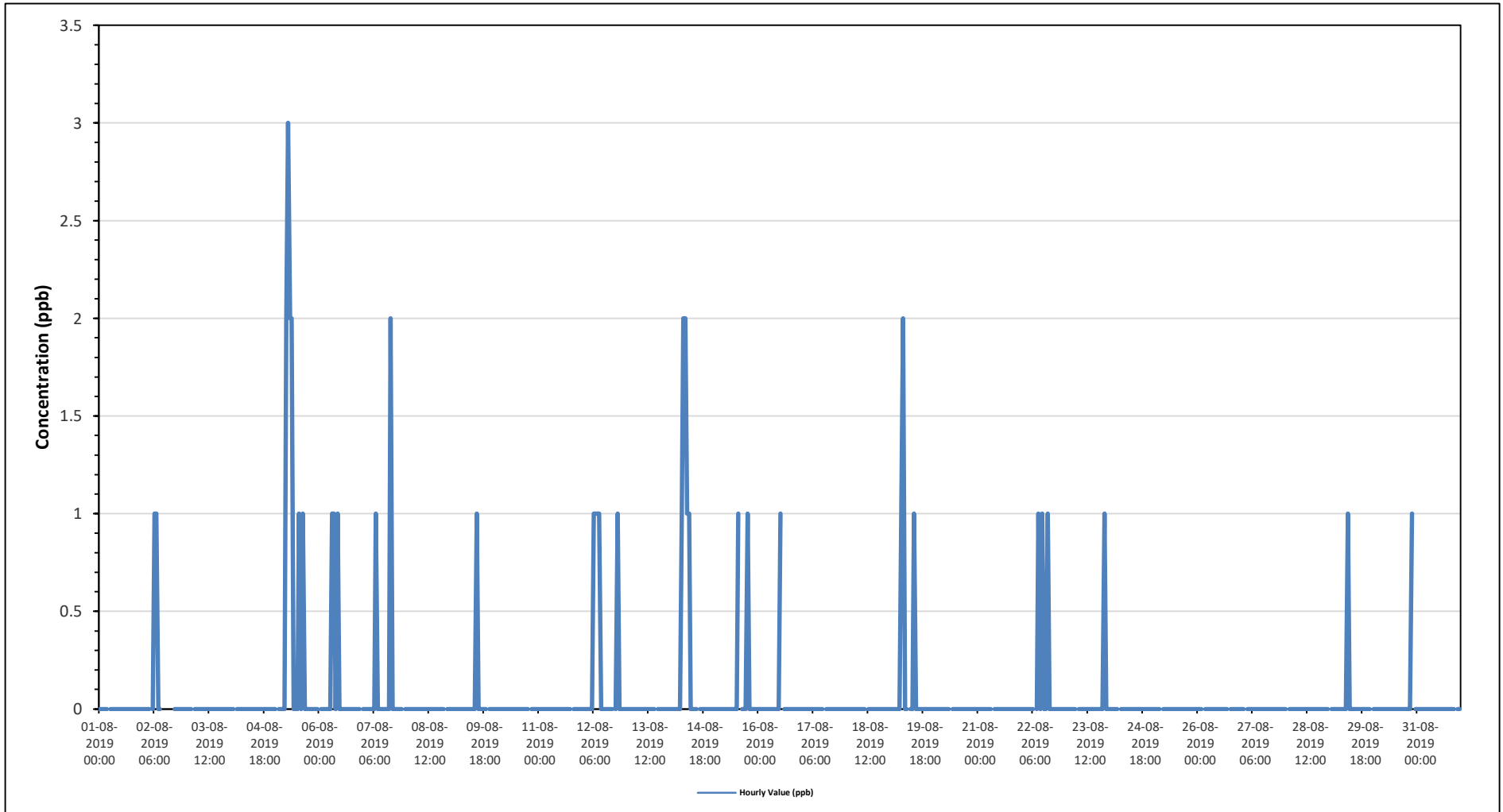
Maximum Hourly Value:	3 ppb on August 5 at hour 7	Hours in Service:	744
Maximum Daily Value:	0.5 ppb on August 5	Hours of Data:	703
Minimum Hourly Value:	0 ppb on August 1 at hour 0	Hours of Missing Data:	1
Minimum Daily Value:	0.0 ppb on August 1	Hours of Calibration:	40
Monthly Average:	0.1 ppb	Operational Uptime:	99.9

Day	Hourly Period Starting at (MST)																							Daily Minimum	Daily Maximum	Daily Average	
	0	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22				23
Aug 1	0	0	0	0	0	S	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Aug 2	0	0	0	0	S	0	1	1	0	0	C	C	C	C	C	C	C	0	0	0	0	0	0	0	0	0	0
Aug 3	0	0	0	S	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Aug 4	0	0	S	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Aug 5	0	S	0	0	0	0	2	3	2	2	0	0	0	1	0	1	0	0	0	0	0	0	0	0	0	0	0
Aug 6	S	0	0	0	0	0	0	1	1	0	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	S	0
Aug 7	0	0	0	0	0	0	0	1	0	0	0	0	0	0	0	2	0	0	0	0	0	0	0	S	0	0	0
Aug 8	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	S	0	0	0	0
Aug 9	0	0	0	0	0	0	0	0	0	0	0	0	0	1	0	0	0	0	0	0	0	S	0	0	0	0	0
Aug 10	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	S	0	0	0	0	0	0
Aug 11	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	S	0	0	0	0	0	0	0
Aug 12	0	0	0	0	0	0	1	1	1	1	0	0	0	0	0	0	0	S	0	1	0	0	0	0	0	0	0
Aug 13	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	S	0	0	0	0	0	0	0	0	0	0
Aug 14	0	0	0	0	0	0	1	2	2	1	1	0	0	0	0	S	0	0	0	0	0	0	0	0	0	0	0
Aug 15	0	0	0	0	0	0	0	0	0	0	0	0	0	1	S	0	0	0	1	0	0	0	0	0	0	0	0
Aug 16	0	0	0	0	0	0	0	0	0	0	0	0	1	S	0	0	0	0	0	0	0	0	0	0	0	0	0
Aug 17	0	0	0	0	0	0	0	0	0	0	0	0	S	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Aug 18	0	0	0	0	0	0	0	0	0	0	0	0	S	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Aug 19	0	0	0	0	0	0	1	2	0	0	S	0	0	1	0	0	0	0	0	0	0	0	0	0	0	0	0
Aug 20	0	0	0	0	0	0	0	0	0	0	S	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Aug 21	0	0	0	0	0	0	0	0	S	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Aug 22	0	0	0	0	0	0	S	0	1	0	1	0	0	0	1	0	0	0	0	0	0	0	0	0	0	0	0
Aug 23	0	0	0	0	0	S	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1	0	0	0	0	0
Aug 24	0	0	0	0	S	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Aug 25	0	0	0	0	S	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Aug 26	0	0	0	S	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Aug 27	0	0	S	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Aug 28	0	S	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Aug 29	S	0	0	0	0	0	0	0	0	0	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	S	0
Aug 30	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1	S	0	0	0	0
Aug 31	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	S	0	0	0	0
Diurnal Maximum	0	0	0	0	0	0	2	3	2	2	1	1	1	1	1	2	0	0	1	1	0	1	0	0	0	0	0
Diurnal Average	0.0	0.0	0.0	0.0	0.0	0.0	0.2	0.4	0.2	0.2	0.1	0.0	0.0	0.1	0.1	0.1	0.0	0.0	0.0	0.0	0.0	0.1	0.0	0.0	0.0	0.0	0.0

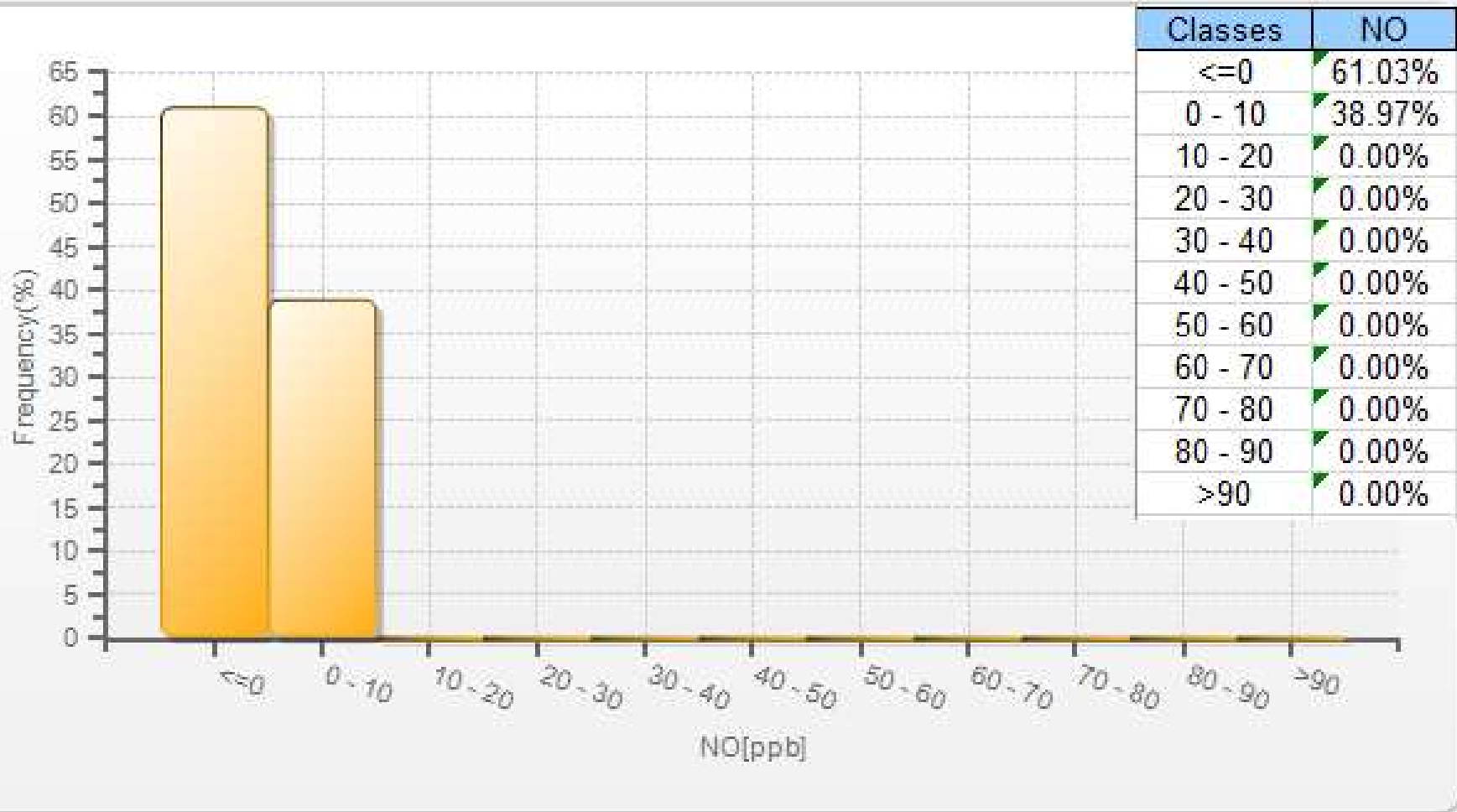
C	Calibration	S	Daily Zero/Span	Q	Quality Assurance	C1	Repeat Calibration	S1	Repeat Daily Zero/Span
G	Out for Repair	K	Collection Error	N	Not in Service	O	Operator Error	P	Power Failure
R	Recovery	X	Machine Malfunction	Y	Maintenance	T	Exceeds Temperature Limits	N	Not in Service

Daily Average is shown "-" if minimum data completeness criteria of 75% or 18 hours per day is not met.
 Monthly Average is shown "-" if minimum data completeness criteria of 75% of days per month is not met.

Timeseries Chart of Hourly Average for NO - St. Lina Site

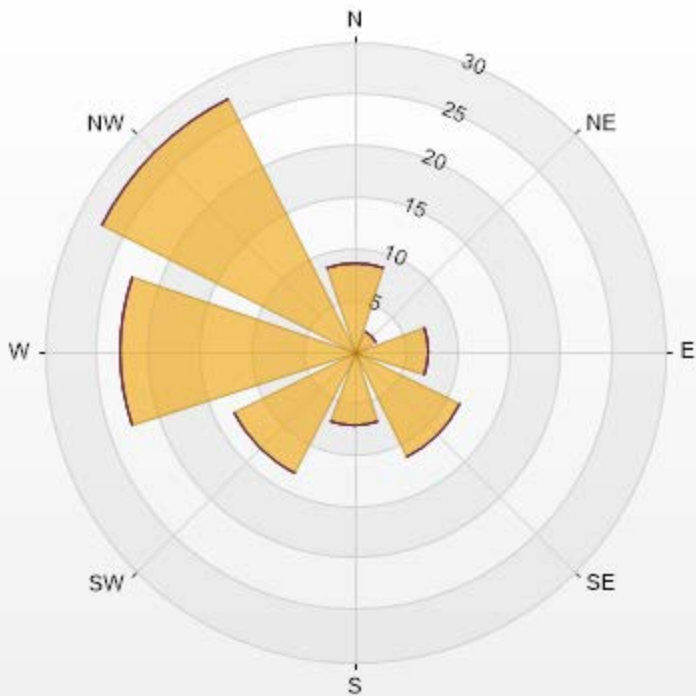


NO[ppb] Histogram: St. Lina Monthly: 08-2019 1 Hr.



Wind: St. Lina Poll.: St. Lina-NO[ppb] Monthly: 08-2019 Type: PollutionRose Direction: Blowing From (Wind Frequency) Based On 1 Hr.
 Calm: 0.00% Valid Data: 93.41% Calm Avg: 0.00 [ppb]

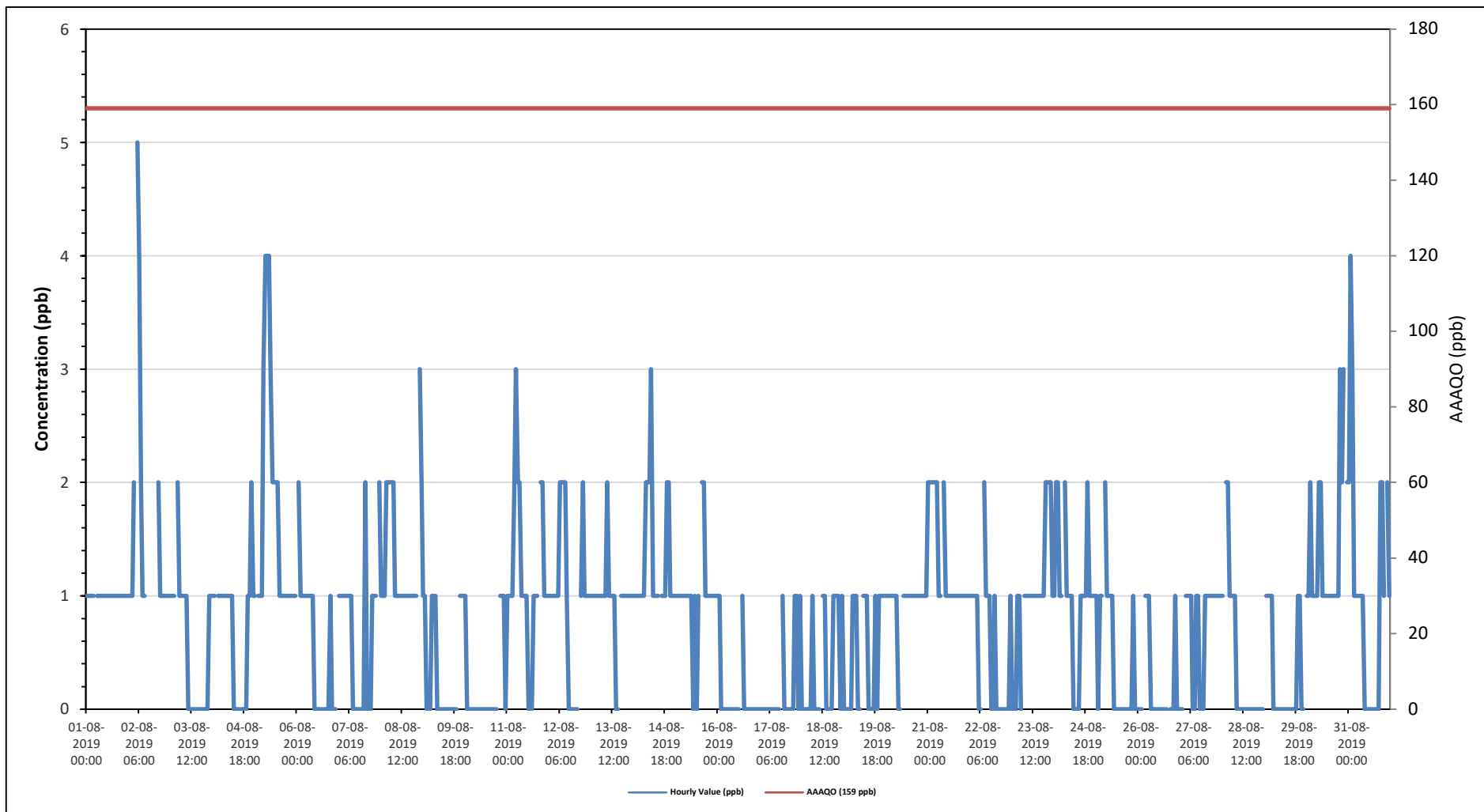
Direction	0-30	30-50	50-82	82-159	>159.0	Total
N	8.63	0	0	0	0	8.63
NE	2.3	0	0	0	0	2.3
E	7.19	0	0	0	0	7.19
SE	11.51	0	0	0	0	11.51
S	7.19	0	0	0	0	7.19
SW	13.09	0	0	0	0	13.09
W	22.73	0	0	0	0	22.73
NW	27.34	0	0	0	0	27.34
Summary	100	0	0	0	0	100



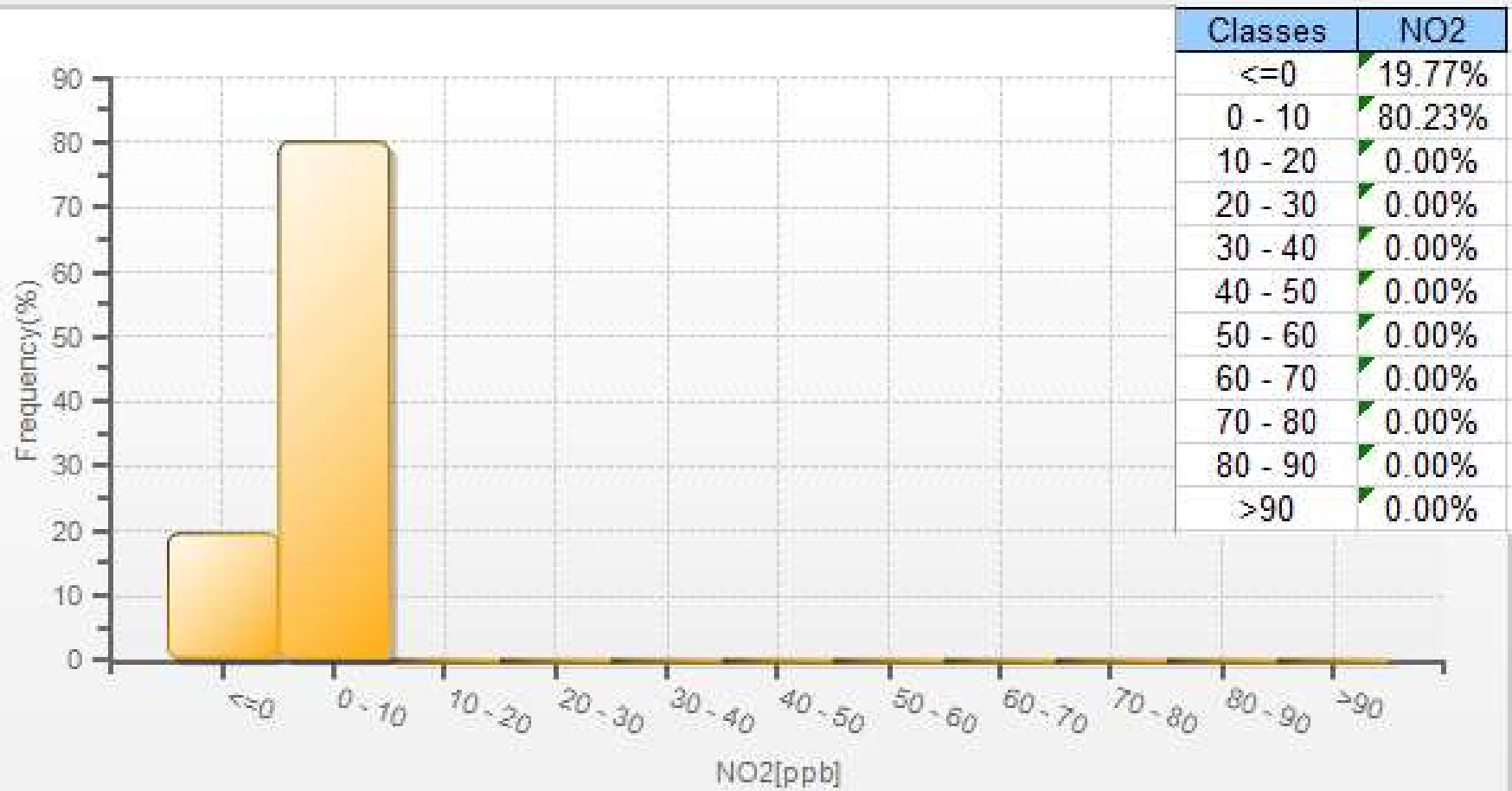
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% Icon Classes (ppb)	100	0-30	0	Page 173 of 367	50-82	0	82-159	0	>159.0

Timeseries Chart of Hourly Average for NO2 - St. Lina Site

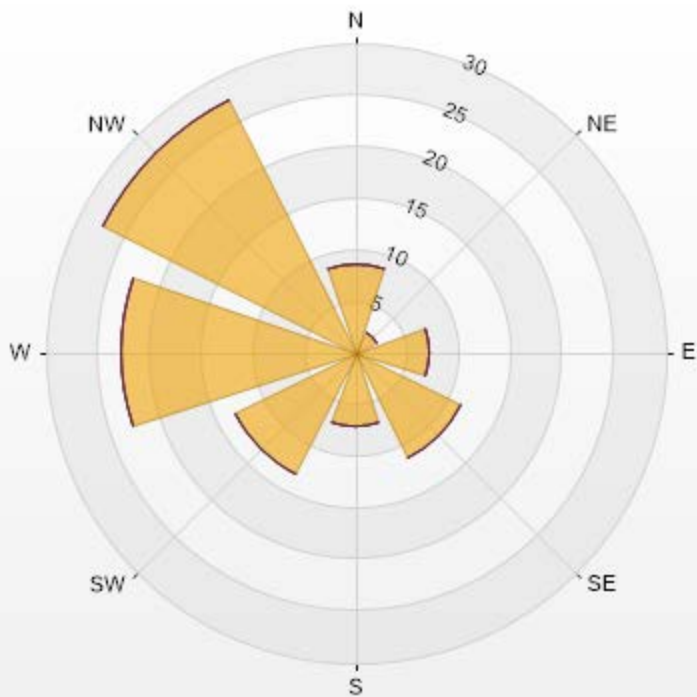


NO2[ppb] Histogram: St. Lina Monthly: 08-2019 1 Hr.



Wind: St. Lina Poll.: St. Lina-NO2[ppb] Monthly: 08-2019 Type: PollutionRose Direction: Blowing From (Wind Frequency) Based On 1 Hr.
 Calm: 0.00% Valid Data: 93.41% Calm Avg: 0.00 [ppb]

Direction	0-30	30-50	50-82	82-159	>159.0	Total
N	8.63	0	0	0	0	8.63
NE	2.3	0	0	0	0	2.3
E	7.19	0	0	0	0	7.19
SE	11.51	0	0	0	0	11.51
S	7.19	0	0	0	0	7.19
SW	13.09	0	0	0	0	13.09
W	22.73	0	0	0	0	22.73
NW	27.34	0	0	0	0	27.34
Summary	100	0	0	0	0	100



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LAKELAND INDUSTRY & COMMUNITY ASSOCIATION

St. Lina Site - August 2019 Summary of Hourly Averages OZONE (O₃) in ppb

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

Number of 1-Hour Exceedences: 0

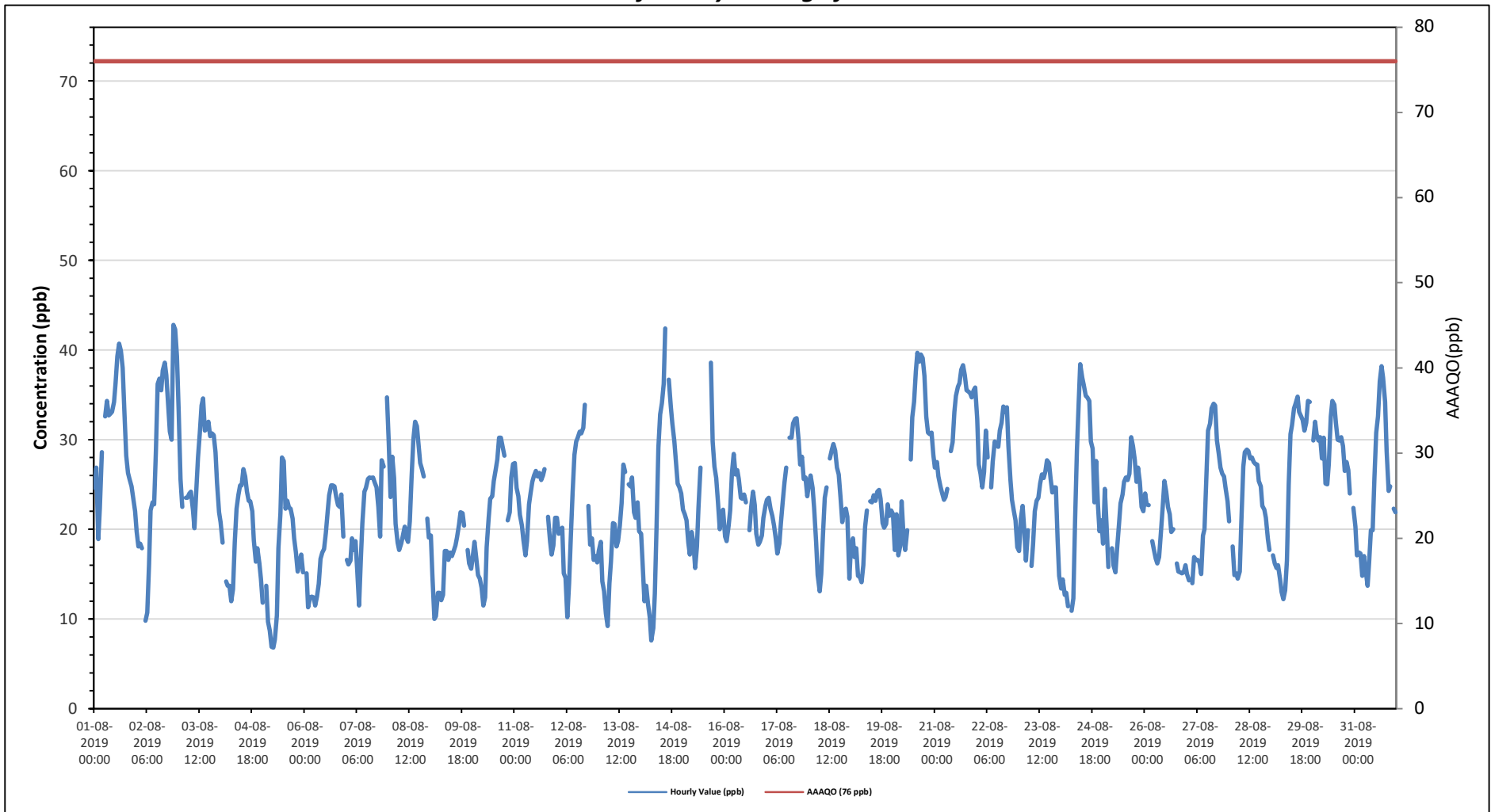
Maximum Hourly Value:	42.8 ppb on August 2 at hour 21	Hours in Service:	744
Maximum Daily Value:	31.5 ppb on August 21	Hours of Data:	706
Minimum Hourly Value:	6.8 ppb on August 5 at hour 6	Hours of Missing Data:	1
Minimum Daily Value:	16.5 ppb on August 9	Hours of Calibration:	37
Monthly Average:	23.4 ppb	Operational Uptime:	99.9

Day	Hourly Period Starting at (MST)																							Daily Minimum	Daily Maximum	Daily Average		
	0	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22				23	
Aug 1	24.6	26.9	18.9	22.4	28.6	S	32.6	34.3	32.7	32.9	33.1	34.2	36.3	39.3	40.7	39.9	38	33	28.2	26.3	25.6	24.8	23.6	22	18.9	40.7	30.4	
Aug 2	19.8	18.1	18.4	17.9	S	9.8	10.7	16.1	22.1	23	22.8	28.7	36.2	36.8	35.5	37.7	38.6	37.2	33.6	30.9	30	42.8	42.3	39.3	9.8	42.8	28.2	
Aug 3	33	25.6	22.5	S	23.5	23.5	24	24.2	22.2	20.1	24.2	28	30.7	33.8	34.6	31	31.2	32	30.4	30.7	30.5	28.6	25.2	21.9	20.1	34.6	27.5	
Aug 4	20.8	18.5	S	14.2	13.7	13.7	12	13.3	18.6	22.3	23.8	24.9	24.9	26.7	25.9	24.2	23.2	23.1	22	18.8	16.4	17.9	16.2	14.5	12.0	26.7	19.5	
Aug 5	11.8	S	13.7	9.7	8.7	6.9	6.8	7.7	10.4	17.9	21.8	28	27.6	22.3	23.2	22.4	22.3	21.2	19	17.4	15.3	16.4	17.2	15.2	6.8	28.0	16.6	
Aug 6	S	15.1	11.3	12.4	12.5	12.4	11.5	12.5	13.9	16.7	17.4	17.8	19.6	21.9	23.8	24.9	24.9	24.8	23.6	22.7	22.5	23.9	19.2	S	11.3	24.9	18.4	
Aug 7	16.6	16.1	16.5	19	17.7	18.7	15.3	11.5	16.7	20.7	24.2	24.6	25.6	25.8	25.7	25.8	25.2	24.7	22.5	19.2	27.7	27	S	34.7	11.5	34.7	21.8	
Aug 8	29.7	23.6	28.1	25.7	20.6	18.5	17.7	18.4	19.2	20.3	19.1	18.6	20.9	25.8	30	32	31.5	29.3	27.4	26.7	25.9	S	21.2	19.1	17.7	32.0	23.9	
Aug 9	19.3	14.9	10	10.3	12.9	12.9	12.1	12.7	17.6	17.6	16.6	17.4	17	17.5	18.2	19.1	20.5	21.9	21.8	20.4	S	17.7	16.2	15.6	10.0	21.9	16.5	
Aug 10	16.9	18.6	16.8	14.9	14.5	13.5	11.5	12.4	18	21.3	23.4	23.7	25.4	26.7	27.8	30.2	30.2	29.2	28.2	S	21	21.9	25.8	27.3	11.5	30.2	21.7	
Aug 11	27.4	24.6	23.7	21.6	20.4	18.8	17.1	18.7	22.8	24	25.3	26	26.5	25.9	26.3	25.5	26	26.7	S	21.4	18.7	17.2	18.2	21.3	17.1	27.4	22.8	
Aug 12	21.3	19.5	19.7	20.2	15.1	14.6	10.2	14	19.3	24.2	28.3	29.8	30.2	30.9	30.7	31.3	33.9	S	22.6	18.3	19	16.6	17	16.3	10.2	33.9	21.9	
Aug 13	17.6	18.6	14.2	13.1	10.6	9.2	14	16.4	20.7	20.6	18.1	18.7	20.4	22.9	27.2	26.4	S	25	24.8	25.8	21.9	21.3	23	19.8	9.2	27.2	19.6	
Aug 14	19.5	16.1	12	13.7	11.7	10.2	7.6	9	12.8	20.5	29.1	32.8	34.1	36.2	42.4	S	36.7	33.7	31.8	29.8	27.6	25.1	24.7	24	7.6	42.4	23.5	
Aug 15	22.2	21.7	21	18.5	17.2	19.7	18.5	15.7	18.1	22.4	26.9	C	C	C	C	C	C	38.6	29.8	27	25.7	23	20	21.7	22.2	15.7	38.6	22.6
Aug 16	19.2	18.7	20.4	22.1	26.3	28.4	26.1	26.6	25.6	23.5	23.4	23.9	23	S	19.9	22.5	24.2	22.7	19.5	18.3	18.6	19.3	21.3	22.6	18.3	28.4	22.4	
Aug 17	23.3	23.5	22.3	21.5	20.4	18.9	17.3	18.4	20.7	23	25.2	26.9	S	30.2	30.2	31.8	32.3	32.4	29.9	27.2	28.1	25.6	25.8	23.7	17.3	32.4	25.2	
Aug 18	25.2	26	24.6	22.4	18.5	14.9	13.1	15	19.5	23.5	24.7	S	27.9	28.9	29.5	28.8	26.9	26.1	23.6	20.8	22	22.3	21.4	14.5	13.1	29.5	22.6	
Aug 19	18.1	19	16.9	17.9	14.8	14.7	14.1	16	20.3	22.1	S	23.1	23	23.8	23.2	24.2	24.4	23.4	20.7	20.2	20.6	22.8	21.5	22.1	14.1	24.4	20.3	
Aug 20	21.7	17.7	21.7	17.1	18.1	23.1	18.9	17.7	19.9	S	27.8	32.5	34.2	37.6	39.7	38.7	39.5	39.1	37.1	32.6	30.8	30.6	30.8	28.3	17.1	39.7	28.5	
Aug 21	26.9	27.5	25.9	24.8	24.1	23.3	23.6	24.5	S	28.7	29.7	33.1	34.9	35.9	36.3	37.8	38.3	37.2	35.5	35.4	35.2	34.7	35.5	35.8	23.3	38.3	31.5	
Aug 22	32.3	27.2	26.2	24.7	26.4	31	28	S	24.7	27.5	29.8	29.4	29.2	31	31.9	33.7	33.1	33.6	29.3	25.5	23.3	22.1	21	18	18.0	33.7	27.8	
Aug 23	17.6	21.2	22.6	19.7	16.5	19.9	S	15.9	18.3	22	23.2	23.5	25.1	26.1	25.7	26.5	27.7	27.4	25.7	24.1	24.7	24.7	18.8	14.8	14.8	27.7	22.2	
Aug 24	13.4	14.4	12.7	12.9	11.4	S	10.9	12.3	21.2	28.8	34.1	38.4	36.9	36.1	34.9	34.7	34.3	29.8	29	23	27.6	22.7	19.8	21	10.9	38.4	24.4	
Aug 25	18.4	24.5	20.4	15.8	S	17.9	16	15.2	17.7	20.6	22.9	23.9	25.3	25.8	25.5	26.2	30.3	29.3	27.8	25.3	26.9	25.3	22.5	22	15.2	30.3	22.8	
Aug 26	24	22.8	22.7	S	18.7	17.8	16.7	16.2	16.9	19.6	22.4	25.4	24.2	22.5	21.7	19.7	20	Y	16.2	15.3	15.2	15.1	15.2	16	15.1	25.4	19.3	
Aug 27	15	14.3	S	14	16.9	16.6	16.6	16.3	15	19.3	20	26.3	31	31.8	33.5	34	33.8	29.9	28.5	26.9	26.2	25.9	24.6	23.1	14.0	34.0	23.5	
Aug 28	20.9	S	18.1	14.9	15.1	14.5	15.3	20.6	27	28.6	28.9	27.9	28	27.5	27.3	27.2	25.4	24.8	22.6	22.2	21.3	18.9	17.7	14.5	28.9	22.8		
Aug 29	S	17.1	16.2	15.7	16	14.4	13	12.2	13.2	16.5	25	30.6	31.6	33.5	34	34.8	33.1	32.6	32.2	31	31.9	34.3	34.2	S	12.2	34.8	25.1	
Aug 30	29.9	32	30.6	29.9	30.3	27.9	30.2	25.1	25	27.3	32.6	34.3	33.9	31.9	30	29.9	30.3	29.3	26.5	27.5	26.6	24	S	22.4	22.4	34.3	29.0	
Aug 31	20.3	17.1	17.4	17.3	14.8	17	15.5	13.7	16.3	19.9	19.9	25.8	30.8	32.6	36.5	38.2	36.9	34.2	28.8	24.3	24.8	S	22.3	21.9	13.7	38.2	23.8	
Diurnal Maximum	33	32	31	30	30	31	33	34	33	33	34	38	37	39	42	40	40	39	37	35	35	43	42	39				
Daiurnal Average	21.6	20.7	19.5	18.1	17.8	17.3	16.6	16.8	19.5	22.5	24.8	26.9	28.1	29.2	29.7	29.6	30.4	29.1	26.6	24.5	24.3	23.9	22.9	22.0				

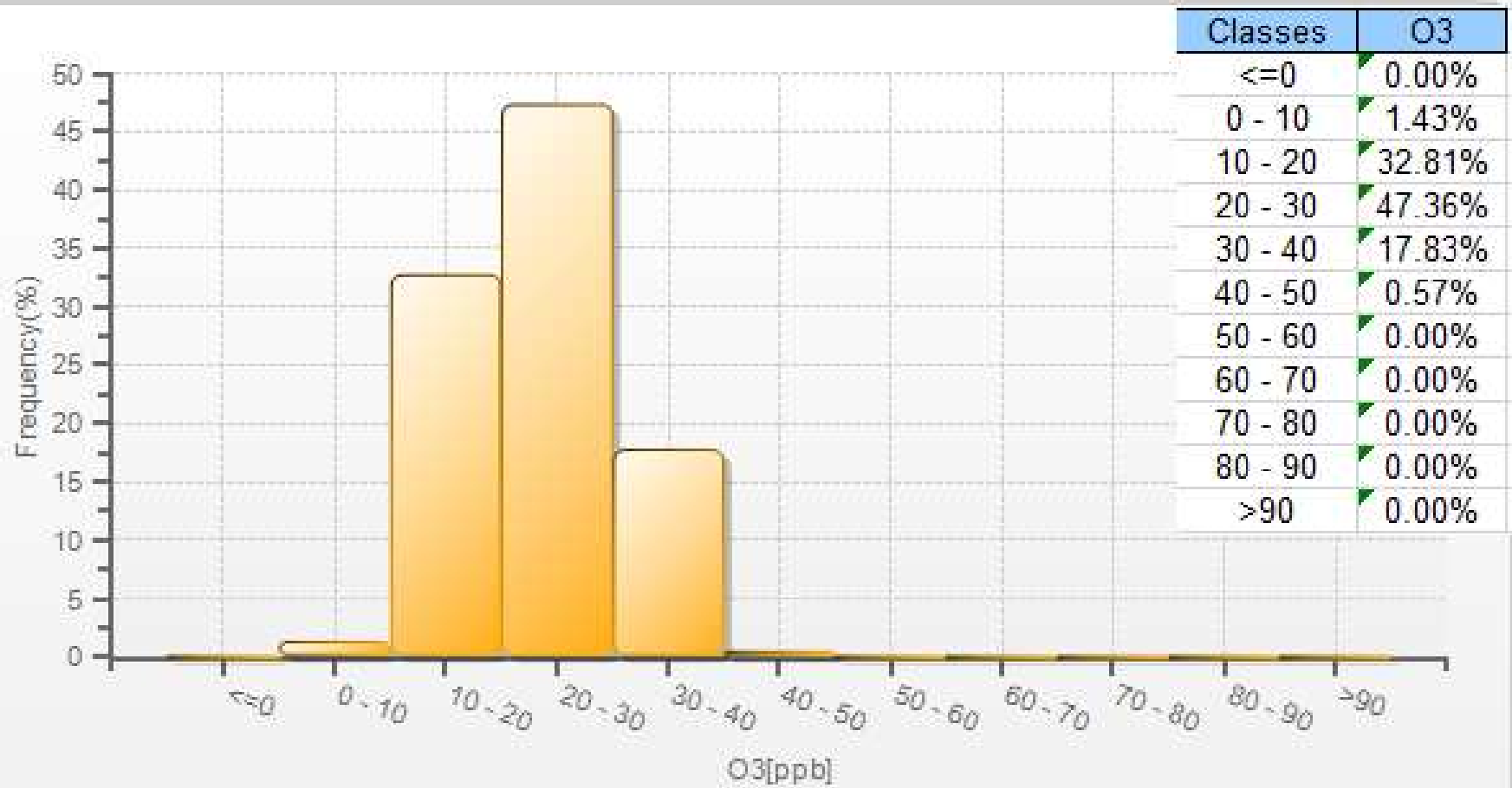
C	Calibration	S	Daily Zero/Span	Q	Quality Assurance	C1	Repeat Calibration	S1	Repeat Daily Zero/Span
G	Out for Repair	K	Collection Error	N	Not in Service	O	Operator Error	P	Power Failure
R	Recovery	X	Machine Malfunction	Y	Maintenance	T	Exceeds Temperature Limits	N	Not in Service

Daily Average is shown "-" if minimum data completeness criteria of 75% or 18 hours per day is not met.
Monthly Average is shown "-" if minimum data completeness criteria of 75% of days per month is not met.

Timeseries Chart of Hourly Average for O3 - St. Lina Site

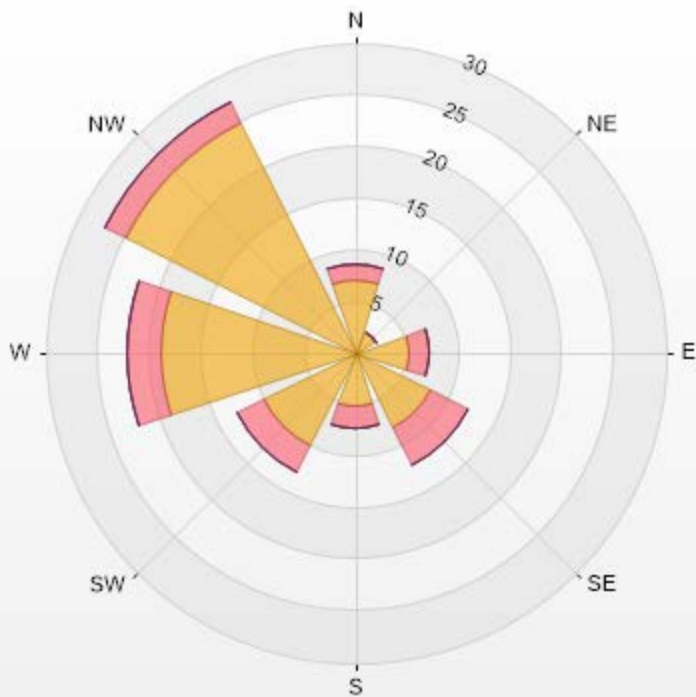


O3[ppb] Histogram: St. Lina Monthly: 08-2019 1 Hr.



Wind: St. Lina Poll.: St. Lina-O3[ppb] Monthly: 08-2019 Type: PollutionRose Direction: Blowing From (Wind Frequency) Based On 1 Hr.
 Calm: 0.00% Valid Data: 93.82% Calm Avg: 0.00 [ppb]

Direction	0-30	30-50	50-82	82-159	>159.0	Total
N	7.02	1.58	0	0	0	8.6
NE	2.15	0.14	0	0	0	2.29
E	5.16	2.01	0	0	0	7.17
SE	8.17	4.01	0	0	0	12.18
S	5.3	2.15	0	0	0	7.45
SW	10.03	2.87	0	0	0	12.9
W	18.91	3.3	0	0	0	22.21
NW	24.79	2.44	0	0	0	27.23
Summary	81.53	18.5	0	0	0	100



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% Icon Classes (ppb)	82	0-30	19	30-50	50-82	0	82-159	0	>159.0



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St. Lina Site - August 2019
Summary of Hourly Averages

TOTAL HYDROCARBONS (THC) in ppm

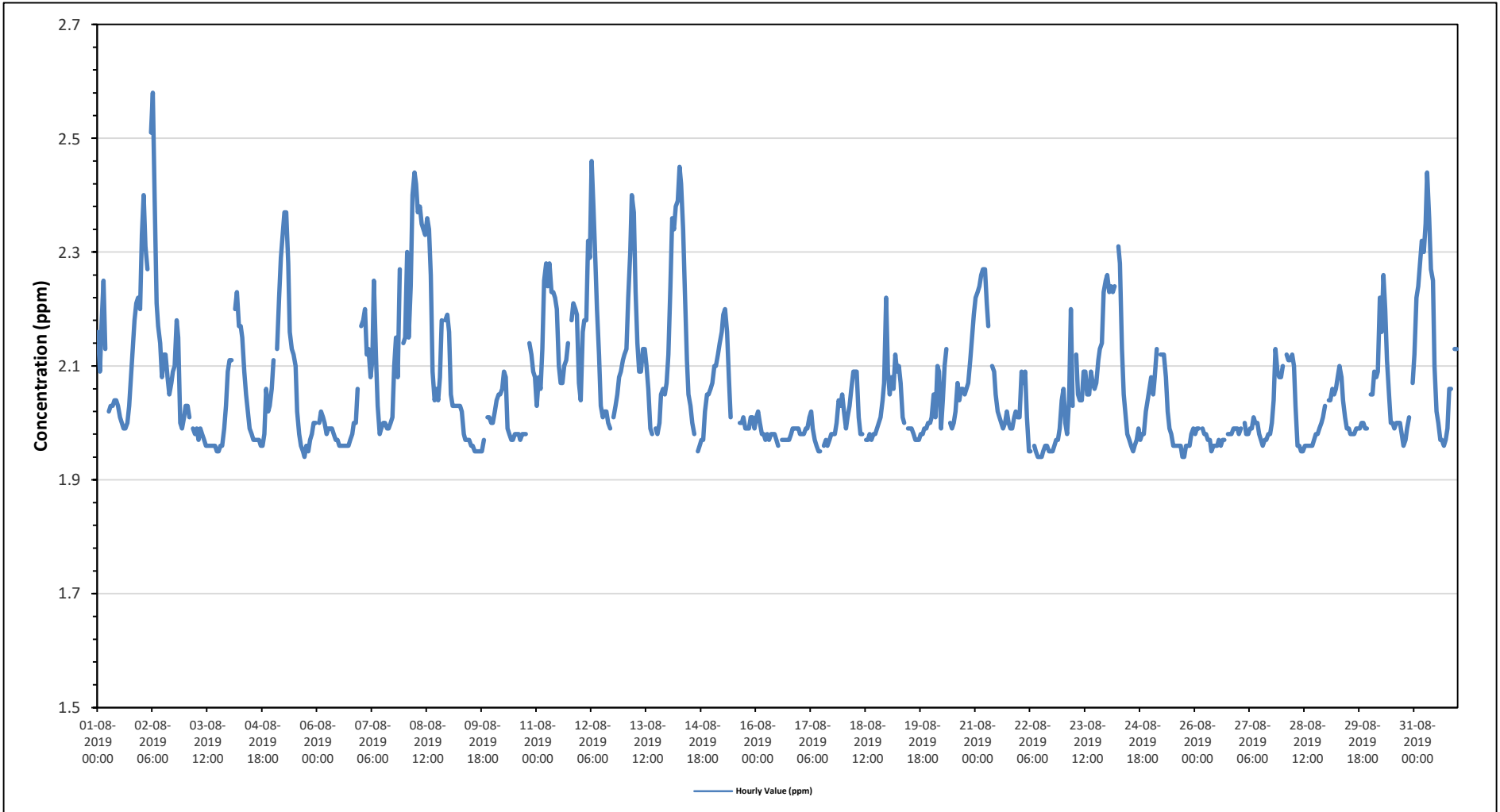
Maximum Hourly Value: 2.58 ppm on August 2 at hour 6	Hours in Service: 744
Maximum Daily Value: 2.25 ppm on August 8	Hours of Data: 707
Minimum Hourly Value: 1.94 ppm on August 5 at hour 17	Hours of Missing Data: 1
Minimum Daily Value: 1.98 ppm on August 26	Hours of Calibration: 36
Monthly Average: 2.06 ppm	Operational Uptime: 99.9

Day	Hourly Period Starting at (MST)																							Daily Minimum	Daily Maximum	Daily Average		
	0	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22				23	
Aug 1	2.16	2.09	2.17	2.25	2.13	S	2.02	2.03	2.03	2.04	2.04	2.03	2.01	2.00	1.99	1.99	2.00	2.03	2.08	2.13	2.18	2.21	2.22	2.20	1.99	2.25	2.09	
Aug 2	2.33	2.40	2.31	2.27	S	2.51	2.58	2.40	2.21	2.17	2.14	2.08	2.12	2.12	2.08	2.05	2.07	2.09	2.10	2.18	2.15	2.00	1.99	2.01	1.99	2.58	2.19	
Aug 3	2.03	2.03	2.01	S	1.99	1.98	1.99	1.97	1.99	1.98	1.97	1.96	1.96	1.96	1.96	1.96	1.96	1.95	1.95	1.96	1.96	1.99	2.03	2.09	1.95	2.09	1.98	
Aug 4	2.11	2.11	S	2.20	2.23	2.17	2.17	2.15	2.09	2.05	2.02	1.99	1.98	1.97	1.97	1.97	1.96	1.96	1.98	2.06	2.02	2.03	2.06	1.96	2.23	2.05		
Aug 5	2.11	S	2.13	2.22	2.29	2.33	2.37	2.37	2.28	2.16	2.13	2.12	2.10	2.02	1.98	1.96	1.95	1.94	1.96	1.95	1.97	1.98	2.00	2.00	1.94	2.37	2.10	
Aug 6	S	2.00	2.02	2.01	2.00	1.98	1.99	1.99	1.99	1.98	1.97	1.97	1.96	1.96	1.96	1.96	1.96	1.96	1.97	1.98	2.00	2.00	S	1.96	2.06	1.99		
Aug 7	2.17	2.18	2.20	2.12	2.13	2.08	2.11	2.25	2.12	2.03	1.98	1.99	2.00	2.00	1.99	1.99	2.00	2.01	2.10	2.15	2.08	2.27	S	2.14	1.98	2.27	2.09	
Aug 8	2.15	2.30	2.15	2.24	2.40	2.44	2.42	2.37	2.38	2.35	2.34	2.33	2.36	2.34	2.26	2.09	2.04	2.06	2.04	2.08	2.18	S	2.18	2.19	2.04	2.44	2.25	
Aug 9	2.16	2.05	2.03	2.03	2.03	2.03	2.03	2.02	1.98	1.97	1.97	1.97	1.96	1.95	1.95	1.95	1.95	1.95	1.95	1.97	S	S	2.01	2.01	2.00	1.95	2.16	2.00
Aug 10	2.00	2.02	2.04	2.05	2.05	2.06	2.09	2.08	1.99	1.98	1.97	1.97	1.98	1.98	1.98	1.97	1.98	1.98	1.98	1.98	S	2.14	2.12	2.09	2.08	1.97	2.14	2.03
Aug 11	2.03	2.08	2.06	2.13	2.25	2.28	2.24	2.28	2.23	2.23	2.22	2.20	2.10	2.07	2.07	2.10	2.11	2.14	S	2.18	2.21	2.20	2.19	2.07	2.03	2.28	2.16	
Aug 12	2.04	2.16	2.18	2.18	2.32	2.29	2.46	2.38	2.28	2.20	2.12	2.03	2.01	2.02	2.02	2.00	1.99	S	2.01	2.03	2.05	2.08	2.09	2.11	1.99	2.46	2.13	
Aug 13	2.12	2.13	2.22	2.30	2.40	2.37	2.23	2.14	2.09	2.09	2.13	2.13	2.10	2.06	1.99	1.98	S	S	1.99	1.98	2.00	2.05	2.06	2.05	2.07	1.98	2.40	2.12
Aug 14	2.12	2.24	2.36	2.34	2.38	2.39	2.45	2.42	2.34	2.23	2.11	2.05	2.03	2.00	1.98	S	S	1.95	1.96	1.97	1.97	2.02	2.05	2.05	2.06	1.95	2.45	2.15
Aug 15	2.07	2.10	2.10	2.12	2.14	2.16	2.19	2.20	2.16	2.08	2.01	S	S	S	S	2.00	2.00	2.01	1.99	1.99	1.99	2.01	2.01	1.99	1.99	2.20	2.07	
Aug 16	2.01	2.02	2.00	1.98	1.98	1.97	1.98	1.97	1.98	1.98	1.98	1.97	1.96	S	1.97	1.97	1.97	1.97	1.97	1.98	1.99	1.99	1.99	1.99	1.96	2.02	1.98	
Aug 17	1.98	1.98	1.98	1.99	1.99	2.01	2.02	1.99	1.97	1.96	1.95	1.95	S	1.96	1.97	1.96	1.97	1.98	1.98	1.98	2.00	2.04	2.03	2.05	1.95	2.05	1.99	
Aug 18	2.02	1.99	2.01	2.03	2.06	2.09	2.09	2.09	2.01	1.98	1.98	S	1.97	1.97	1.98	1.97	1.98	1.98	1.99	2.00	2.01	2.04	2.07	2.22	1.97	2.22	2.02	
Aug 19	2.09	2.05	2.08	2.06	2.12	2.09	2.10	2.07	2.01	2.00	S	1.99	1.99	1.99	1.98	1.97	1.97	1.97	1.98	1.98	1.99	1.99	2.00	2.00	1.97	2.12	2.02	
Aug 20	2.01	2.05	2.01	2.10	2.09	1.99	2.04	2.10	2.13	S	2.00	1.99	2.00	2.02	2.07	2.04	2.06	2.06	2.05	2.06	2.05	2.07	2.11	2.15	2.19	1.99	2.19	2.06
Aug 21	2.22	2.23	2.24	2.26	2.27	2.27	2.21	2.17	S	2.10	2.09	2.05	2.02	2.01	2.00	1.99	2.00	2.02	2.00	1.99	1.99	2.01	2.02	2.01	1.99	2.27	2.09	
Aug 22	2.01	2.09	2.07	2.09	2.01	1.95	1.95	S	1.96	1.95	1.94	1.94	1.94	1.95	1.96	1.96	1.95	1.95	1.95	1.96	1.97	1.97	1.99	2.04	1.94	2.09	1.98	
Aug 23	2.06	2.00	1.98	2.04	2.20	2.03	S	2.12	2.05	2.04	2.04	2.09	2.09	2.05	2.05	2.09	2.07	2.06	2.07	2.11	2.13	2.14	2.23	2.25	1.98	2.25	2.09	
Aug 24	2.26	2.23	2.24	2.23	2.24	S	2.31	2.28	2.13	2.05	2.01	1.98	1.97	1.96	1.95	1.96	1.97	1.99	1.97	1.98	1.98	2.02	2.04	2.06	1.95	2.31	2.08	
Aug 25	2.08	2.05	2.08	2.13	S	2.12	2.12	2.12	2.08	2.02	1.99	1.98	1.96	1.96	1.96	1.96	1.96	1.94	1.94	1.96	1.96	1.96	1.98	1.99	1.94	2.13	2.01	
Aug 26	1.98	1.99	1.99	S	1.99	1.98	1.98	1.97	1.97	1.95	1.96	1.96	1.96	1.97	1.96	1.97	1.97	Y	1.98	1.98	1.98	1.99	1.99	1.99	1.95	1.99	1.98	
Aug 27	1.98	1.99	S	2.00	1.98	1.98	1.99	1.99	2.01	2.00	2.00	1.98	1.97	1.96	1.97	1.97	1.98	1.98	2.00	2.04	2.13	2.09	2.08	2.08	1.96	2.13	2.01	
Aug 28	2.10	S	2.12	2.11	2.11	2.12	2.10	2.03	1.96	1.96	1.95	1.95	1.96	1.96	1.96	1.96	1.96	1.97	1.98	1.98	1.99	2.00	2.01	2.03	1.95	2.12	2.01	
Aug 29	S	2.04	2.04	2.06	2.05	2.06	2.08	2.10	2.08	2.04	2.01	1.99	1.99	1.98	1.98	1.99	1.99	1.99	2.00	2.00	1.99	1.99	S	1.98	2.10	2.02		
Aug 30	2.05	2.05	2.09	2.08	2.09	2.22	2.16	2.26	2.20	2.11	2.05	2.00	2.00	1.99	2.00	2.00	2.00	1.98	1.96	1.97	1.99	2.01	S	2.07	1.96	2.26	2.06	
Aug 31	2.12	2.22	2.24	2.28	2.32	2.30	2.35	2.44	2.36	2.27	2.25	2.10	2.02	2.00	1.97	1.97	1.96	1.97	1.99	2.06	2.06	S	2.13	2.13	1.96	2.44	2.15	
Diurnal Maximum	2.33	2.40	2.36	2.34	2.40	2.51	2.58	2.44	2.38	2.35	2.34	2.33	2.36	2.34	2.26	2.10	2.11	2.14	2.10	2.18	2.21	2.27	2.23	2.25				
Diurnal Average	2.09	2.10	2.11	2.13	2.15	2.15	2.16	2.16	2.10	2.07	2.04	2.03	2.02	2.01	2.00	1.99	1.99	1.99	1.99	2.02	2.04	2.05	2.06	2.07				

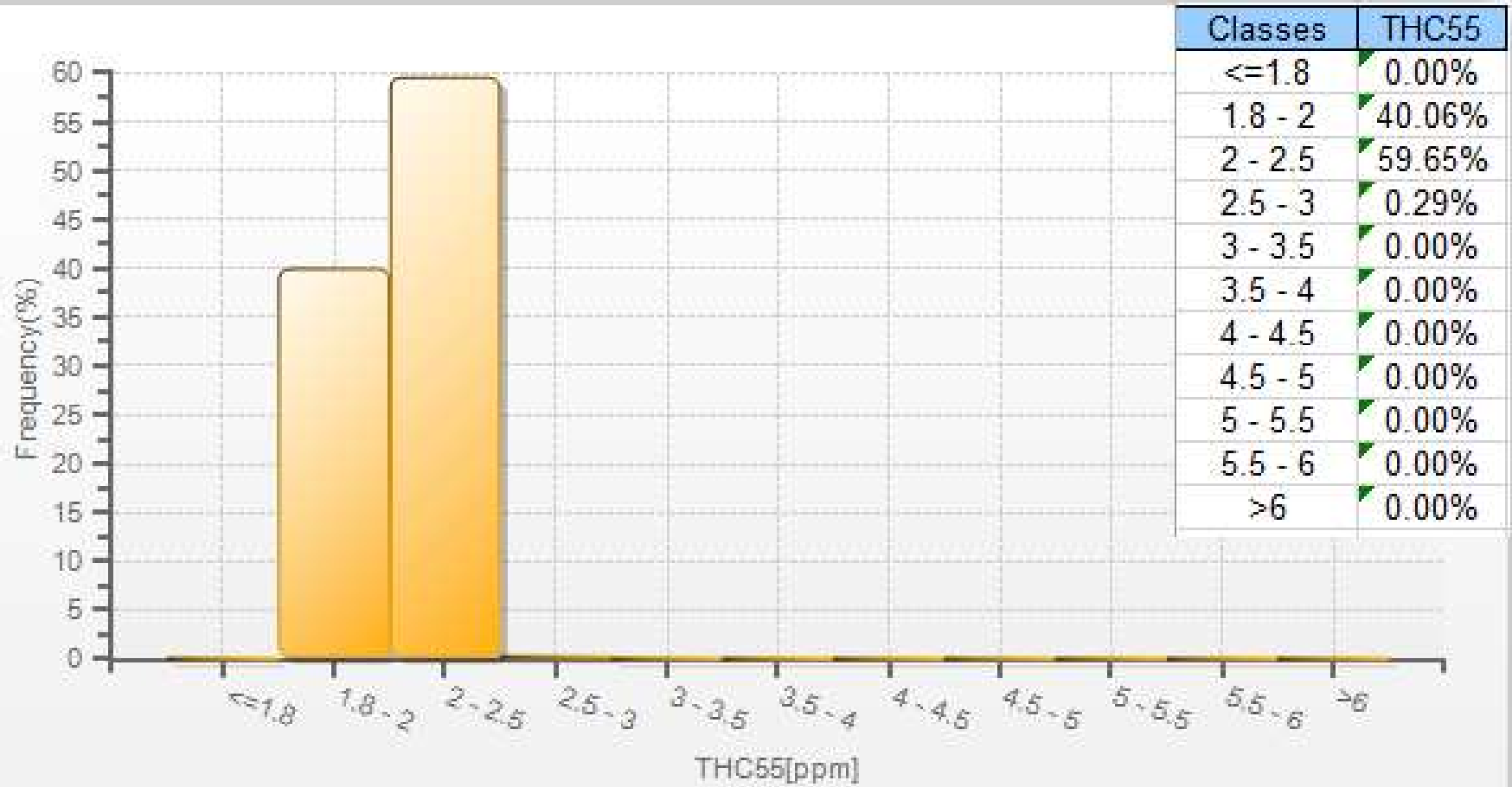
C	Calibration	S	Daily Zero/Span	Q	Quality Assurance	C1	Repeat Calibration	S1	Repeat Daily Zero/Span
G	Out for Repair	K	Collection Error	N	Not in Service	O	Operator Error	P	Power Failure
R	Recovery	X	Machine Malfunction	Y	Maintenance	T	Exceeds Temperature Limits	N	Not in Service

Daily Average is shown "-" if minimum data completeness criteria of 75% or 18 hours per day is not met.
 Monthly Average is shown "-" if minimum data completeness criteria of 75% of days per month is not met.

Timeseries Chart of Hourly Average for THC - St. Lina Site

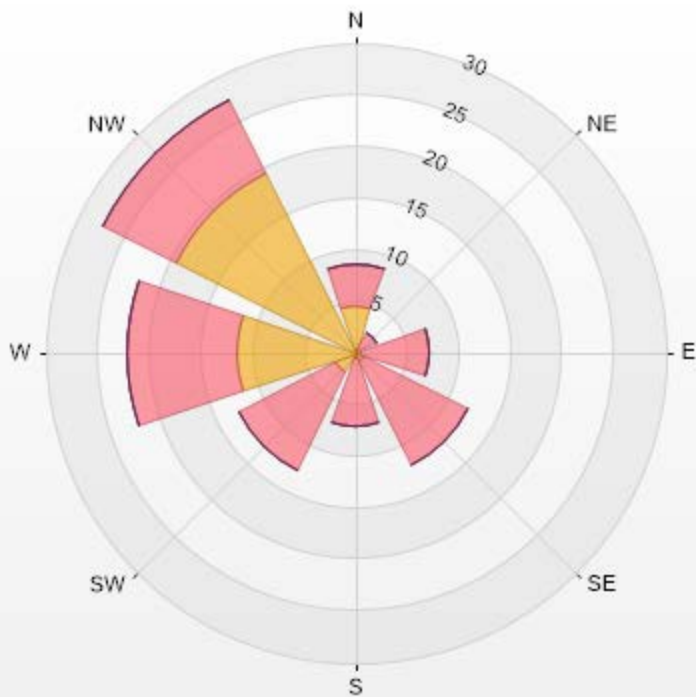


THC55[ppm] Histogram: St. Lina Monthly: 08-2019 1 Hr.



Wind: St. Lina Poll.: St. Lina-THC55[ppm] Monthly: 08-2019 Type: PollutionRose Direction: Blowing From (Wind Frequency) Based On 1 Hr.
 Calm: 0.00% Valid Data: 93.01% Calm Avg: 0.00 [ppm]

Direction	0-2	2-5	5-10	10-40	>40.0	Total
N	4.48	4.19	0	0	0	8.67
NE	0.29	2.02	0	0	0	2.31
E	0.58	6.65	0	0	0	7.23
SE	1.01	11.27	0	0	0	12.28
S	0.58	6.65	0	0	0	7.23
SW	2.17	10.55	0	0	0	12.72
W	11.56	10.69	0	0	0	22.25
NW	19.36	7.95	0	0	0	27.31
Summary	40.03	59.97	0	0	0	100



LICA-201908-Revision 1

% Icon Classes (ppm)	40	0-2	60	10-40	0	10-40	0	>40.0
	0-2	0-2	5-10	10-40	10-40	10-40	10-40	>40.0



LAKELAND INDUSTRY & COMMUNITY ASSOCIATION

St. Lina Site - August 2019 Summary of Hourly Averages

METHANE (CH4) in ppm

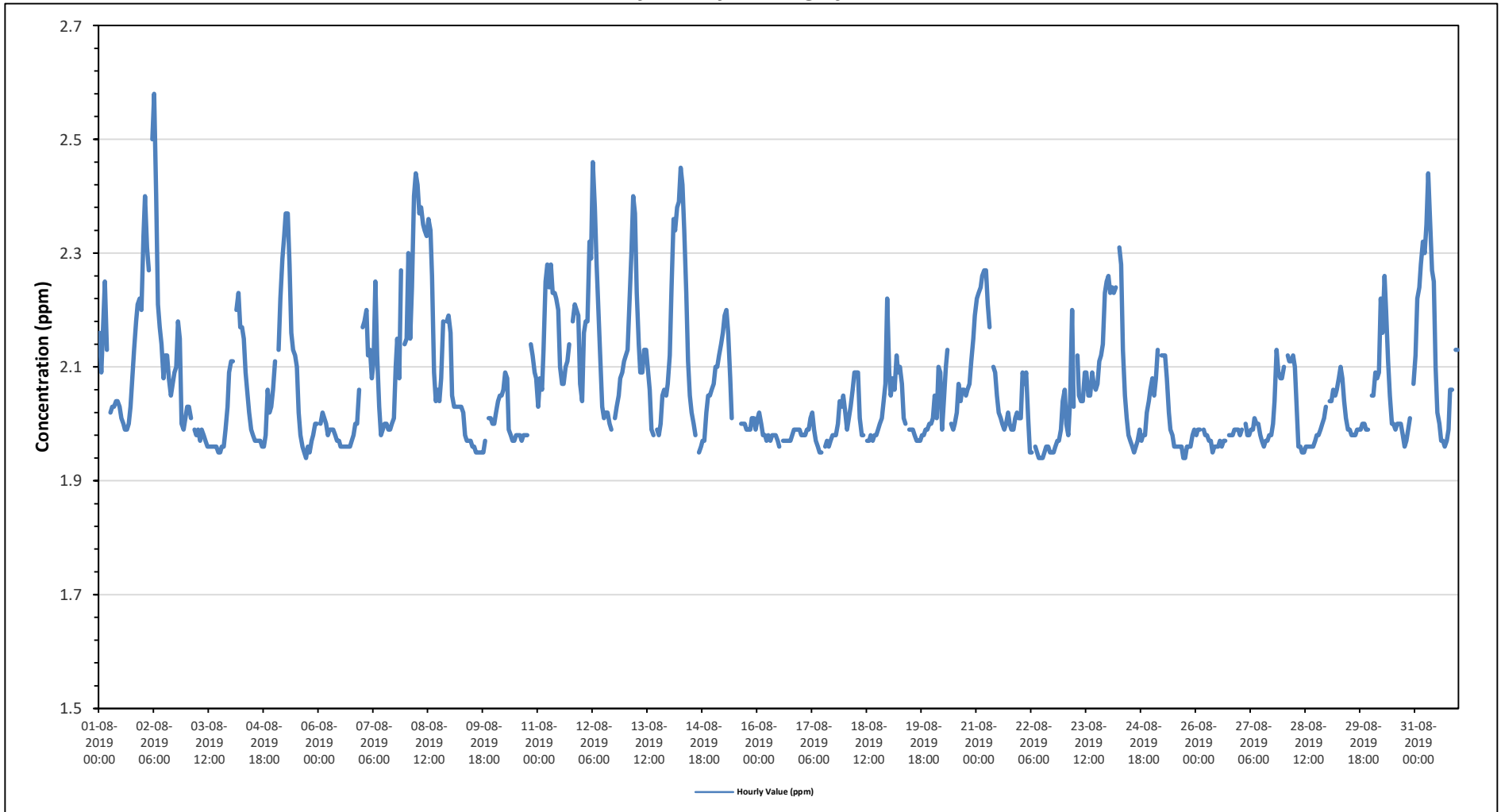
Maximum Hourly Value:	2.58 ppm on August 2 at hour 6	Hours in Service:	744
Maximum Daily Value:	2.25 ppm on August 8	Hours of Data:	707
Minimum Hourly Value:	1.94 ppm on August 5 at hour 17	Hours of Missing Data:	1
Minimum Daily Value:	1.98 ppm on August 26	Hours of Calibration:	36
Monthly Average:	2.06 ppm	Operational Uptime:	99.9

Day	Hourly Period Starting at (MST)																							Daily	Daily	Daily	
	0	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	Minimum	Maximum	Average
Aug 1	2.16	2.09	2.17	2.25	2.13	S	2.02	2.03	2.03	2.04	2.04	2.03	2.01	2.00	1.99	1.99	2.00	2.03	2.08	2.13	2.18	2.21	2.22	2.20	1.99	2.25	2.09
Aug 2	2.33	2.40	2.31	2.27	S	2.50	2.58	2.40	2.21	2.17	2.14	2.08	2.12	2.12	2.08	2.05	2.07	2.09	2.10	2.18	2.15	2.00	1.99	2.01	1.99	2.58	2.19
Aug 3	2.03	2.03	2.01	S	1.99	1.98	1.99	1.97	1.99	1.98	1.97	1.96	1.96	1.96	1.96	1.96	1.96	1.95	1.95	1.96	1.96	1.99	2.03	2.09	1.95	2.09	1.98
Aug 4	2.11	2.11	S	2.20	2.23	2.17	2.17	2.15	2.09	2.05	2.02	1.99	1.98	1.97	1.97	1.97	1.96	1.96	1.98	2.06	2.02	2.03	2.06	1.96	2.23	2.05	
Aug 5	2.11	S	2.13	2.22	2.29	2.33	2.37	2.37	2.28	2.16	2.13	2.12	2.10	2.02	1.98	1.96	1.95	1.94	1.96	1.95	1.97	1.98	2.00	2.00	1.94	2.37	2.10
Aug 6	S	2.00	2.02	2.01	2.00	1.98	1.99	1.99	1.99	1.98	1.97	1.97	1.96	1.96	1.96	1.96	1.96	1.96	1.97	1.98	2.00	2.00	S	1.96	2.06	1.99	
Aug 7	2.17	2.18	2.20	2.12	2.13	2.08	2.11	2.25	2.12	2.03	1.98	1.99	2.00	2.00	1.99	1.99	2.00	2.01	2.10	2.15	2.08	2.27	S	2.14	1.98	2.27	2.09
Aug 8	2.15	2.30	2.15	2.24	2.40	2.44	2.42	2.37	2.38	2.35	2.34	2.33	2.36	2.34	2.26	2.09	2.04	2.06	2.04	2.08	2.18	S	2.18	2.19	2.04	2.44	2.25
Aug 9	2.16	2.05	2.03	2.03	2.03	2.03	2.03	2.02	1.98	1.97	1.97	1.97	1.96	1.95	1.95	1.95	1.95	1.95	1.95	1.97	S	2.01	2.01	2.00	1.95	2.16	2.00
Aug 10	2.00	2.02	2.04	2.05	2.05	2.06	2.09	2.08	1.99	1.98	1.97	1.97	1.98	1.98	1.98	1.97	1.98	1.98	1.98	S	2.14	2.12	2.09	2.08	1.97	2.14	2.03
Aug 11	2.03	2.08	2.06	2.13	2.25	2.28	2.24	2.28	2.23	2.23	2.22	2.20	2.10	2.07	2.07	2.10	2.11	2.14	S	2.18	2.21	2.20	2.19	2.07	2.03	2.28	2.16
Aug 12	2.04	2.16	2.18	2.18	2.32	2.29	2.46	2.38	2.28	2.20	2.12	2.03	2.01	2.02	2.02	2.00	1.99	S	2.01	2.03	2.05	2.08	2.09	2.11	1.99	2.46	2.13
Aug 13	2.12	2.13	2.22	2.30	2.40	2.37	2.23	2.14	2.09	2.09	2.13	2.13	2.10	2.06	1.99	1.98	S	1.99	1.98	2.00	2.05	2.06	2.05	2.07	1.98	2.40	2.12
Aug 14	2.12	2.24	2.36	2.34	2.38	2.39	2.45	2.42	2.34	2.23	2.11	2.05	2.02	2.00	1.98	S	1.95	1.96	1.97	1.97	2.02	2.05	2.05	2.06	1.95	2.45	2.15
Aug 15	2.07	2.10	2.10	2.12	2.14	2.16	2.19	2.20	2.16	2.08	2.01	C	C	C	C	2.00	2.00	2.00	1.99	1.99	1.99	2.01	2.01	1.99	1.99	2.20	2.07
Aug 16	2.01	2.02	2.00	1.98	1.98	1.97	1.98	1.97	1.98	1.98	1.98	1.97	1.96	S	1.97	1.97	1.97	1.97	1.97	1.98	1.99	1.99	1.99	1.99	1.96	2.02	1.98
Aug 17	1.98	1.98	1.98	1.99	1.99	2.01	2.02	1.99	1.97	1.96	1.95	1.95	S	1.96	1.97	1.96	1.97	1.98	1.98	1.98	2.00	2.04	2.03	2.05	1.95	2.05	1.99
Aug 18	2.02	1.99	2.01	2.03	2.06	2.09	2.09	2.09	2.01	1.98	1.98	S	1.97	1.97	1.98	1.97	1.98	1.98	1.99	2.00	2.01	2.04	2.07	2.22	1.97	2.22	2.02
Aug 19	2.09	2.05	2.08	2.06	2.12	2.09	2.10	2.07	2.01	2.00	S	1.99	1.99	1.99	1.98	1.97	1.97	1.97	1.98	1.98	1.99	1.99	2.00	2.00	1.97	2.12	2.02
Aug 20	2.01	2.05	2.01	2.10	2.09	1.99	2.04	2.10	2.13	S	2.00	1.99	2.00	2.02	2.07	2.04	2.06	2.06	2.05	2.06	2.05	2.11	2.15	2.19	1.99	2.19	2.06
Aug 21	2.22	2.23	2.24	2.26	2.27	2.27	2.21	2.17	S	2.10	2.09	2.05	2.02	2.01	2.00	1.99	2.00	2.02	2.00	1.99	1.99	2.01	2.02	2.01	1.99	2.27	2.09
Aug 22	2.01	2.09	2.07	2.09	2.01	1.95	1.95	S	1.96	1.95	1.94	1.94	1.94	1.95	1.96	1.96	1.95	1.95	1.95	1.96	1.97	1.97	1.99	2.04	1.94	2.09	1.98
Aug 23	2.06	2.00	1.98	2.04	2.20	2.03	S	2.12	2.05	2.04	2.04	2.09	2.09	2.05	2.05	2.09	2.07	2.06	2.07	2.11	2.12	2.14	2.23	2.25	1.98	2.25	2.09
Aug 24	2.26	2.23	2.24	2.23	2.24	S	2.31	2.28	2.13	2.05	2.01	1.98	1.97	1.96	1.95	1.96	1.97	1.99	1.97	1.98	1.98	2.02	2.04	2.06	1.95	2.31	2.08
Aug 25	2.08	2.05	2.08	2.13	S	2.12	2.12	2.12	2.08	2.02	1.99	1.98	1.96	1.96	1.96	1.96	1.96	1.94	1.94	1.96	1.96	1.96	1.98	1.99	1.94	2.13	2.01
Aug 26	1.98	1.99	1.99	S	1.99	1.98	1.98	1.97	1.97	1.95	1.96	1.96	1.96	1.97	1.96	1.97	1.97	Y	1.98	1.98	1.98	1.99	1.99	1.99	1.95	1.99	1.98
Aug 27	1.98	1.99	S	2.00	1.98	1.98	1.99	1.99	2.01	2.00	2.00	1.98	1.97	1.96	1.97	1.97	1.98	1.98	2.00	2.04	2.13	2.09	2.08	2.08	1.96	2.13	2.01
Aug 28	2.10	S	2.12	2.11	2.11	2.12	2.10	2.03	1.96	1.96	1.95	1.95	1.96	1.96	1.96	1.96	1.96	1.97	1.98	1.98	1.99	2.00	2.01	2.03	1.95	2.12	2.01
Aug 29	S	2.04	2.04	2.06	2.05	2.06	2.08	2.10	2.08	2.04	2.01	1.99	1.99	1.98	1.98	1.99	1.99	1.99	2.00	2.00	1.99	1.99	S	1.98	1.98	2.10	2.02
Aug 30	2.05	2.05	2.09	2.08	2.09	2.22	2.16	2.26	2.20	2.11	2.05	2.00	2.00	1.99	2.00	2.00	2.00	1.98	1.96	1.97	1.99	2.01	S	2.07	1.96	2.26	2.06
Aug 31	2.12	2.22	2.24	2.28	2.32	2.30	2.35	2.44	2.36	2.27	2.25	2.10	2.02	2.00	1.97	1.97	1.96	1.97	1.99	2.06	2.06	S	2.13	2.13	1.96	2.44	2.15
Diurnal Maximum	2.33	2.40	2.36	2.34	2.40	2.50	2.58	2.44	2.38	2.35	2.34	2.33	2.36	2.34	2.26	2.10	2.11	2.14	2.10	2.18	2.21	2.27	2.23	2.25			
Diurnal Average	2.09	2.10	2.11	2.13	2.15	2.15	2.16	2.16	2.10	2.07	2.04	2.03	2.02	2.01	2.00	1.99	1.99	1.99	1.99	2.02	2.04	2.05	2.06	2.07			

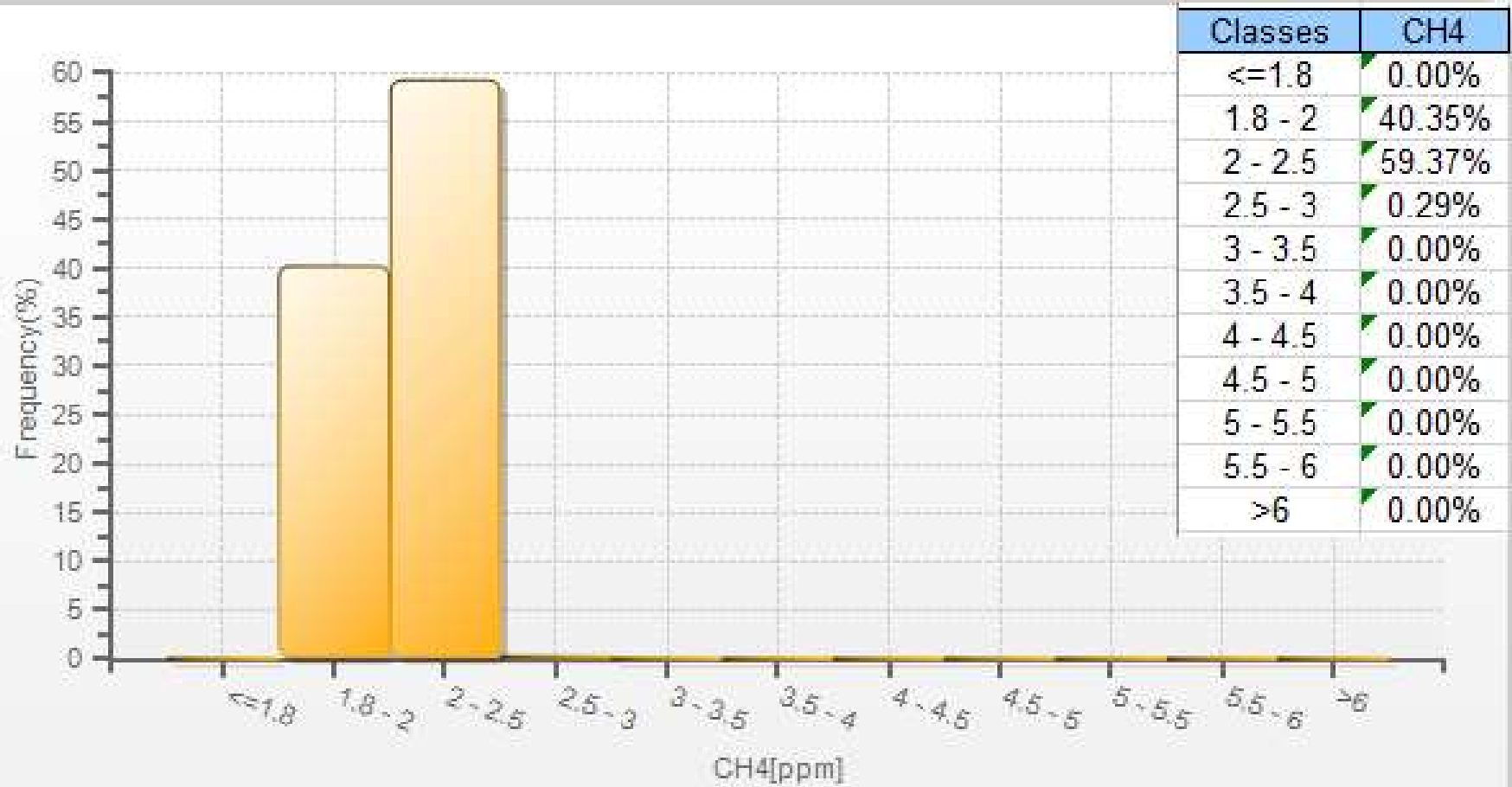
C	Calibration	S	Daily Zero/Span	Q	Quality Assurance	C1	Repeat Calibration	S1	Repeat Daily Zero/Span
G	Out for Repair	K	Collection Error	N	Not in Service	O	Operator Error	P	Power Failure
R	Recovery	X	Machine Malfunction	Y	Maintenance	T	Exceeds Temperature Limits	N	Not in Service

Daily Average is shown "-" if minimum data completeness criteria of 75% or 18 hours per day is not met.
 Monthly Average is shown "-" if minimum data completeness criteria of 75% of days per month is not met.

Timeseries Chart of Hourly Average for CH4 - St. Lina Site

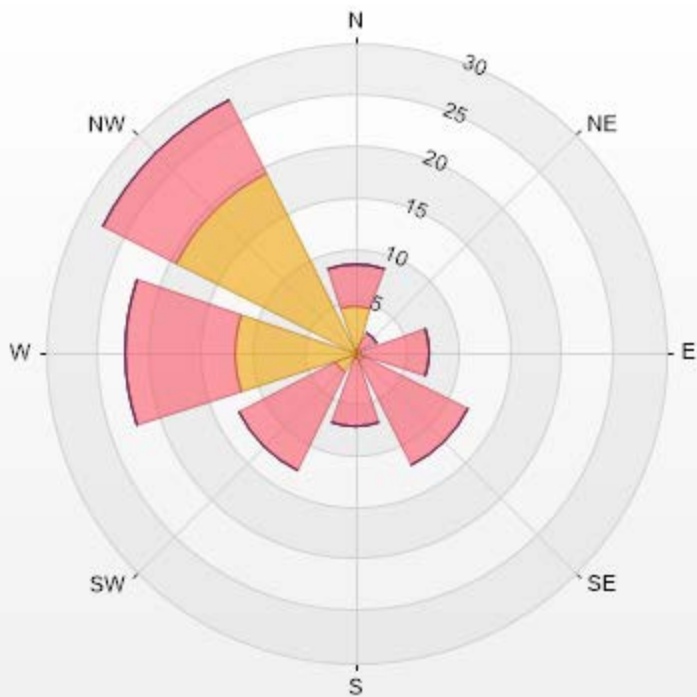


CH4[ppm] Histogram: St. Lina Monthly: 08-2019 1 Hr.



Wind: St. Lina Poll.: St. Lina-CH4[ppm] Monthly: 08-2019 Type: PollutionRose Direction: Blowing From (Wind Frequency) Based On 1 Hr.
 Calm: 0.00% Valid Data: 93.01% Calm Avg: 0.00 [ppm]

Direction	0-2	2-5	5-10	10-20	>20.0	Total
N	4.48	4.19	0	0	0	8.67
NE	0.29	2.02	0	0	0	2.31
E	0.58	6.65	0	0	0	7.23
SE	1.01	11.27	0	0	0	12.28
S	0.58	6.65	0	0	0	7.23
SW	2.17	10.55	0	0	0	12.72
W	11.71	10.55	0	0	0	22.26
NW	19.51	7.8	0	0	0	27.31
Summary	40.33	59.68	0	0	0	100



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% Icon Classes (ppm)	40	0-2	60	2-5	367	5-10	0	10-20	0	>20.0



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St. Lina Site - August 2019 Summary of Hourly Averages

NON-METHANE HYDROCARBONS (NMHC) in ppm

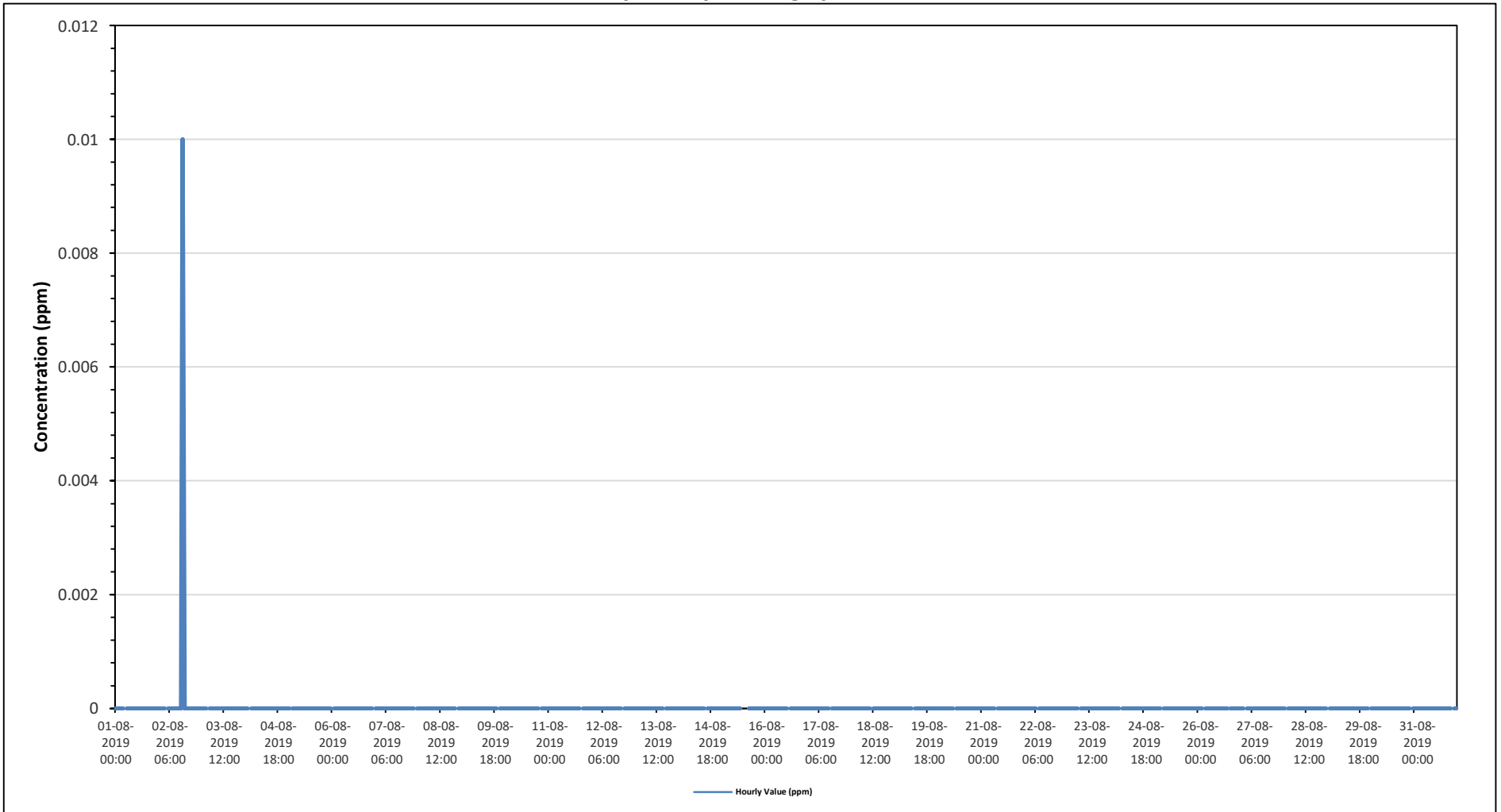
Maximum Hourly Value: 0.01 ppm on August 2 at hour 13	Hours in Service: 744
Maximum Daily Value: 0.00 ppm on August 2	Hours of Data: 707
Minimum Hourly Value: 0.00 ppm on August 1 at hour 0	Hours of Missing Data: 1
Minimum Daily Value: 0.00 ppm on August 1	Hours of Calibration: 36
Monthly Average: 0.00 ppm	Operational Uptime: 99.9

Day	Hourly Period Starting at (MST)																							Daily Minimum	Daily Maximum	Daily Average						
	0	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22				23					
Aug 1	0.00	0.00	0.00	0.00	0.00	S	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Aug 2	0.00	0.00	0.00	0.00	S	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.01	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	
Aug 3	0.00	0.00	0.00	S	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	
Aug 4	0.00	0.00	S	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	
Aug 5	0.00	S	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	
Aug 6	S	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	S	0.00	0.00	0.00	
Aug 7	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	S	0.00	0.00	0.00	0.00	
Aug 8	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	S	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Aug 9	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	S	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Aug 10	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	S	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Aug 11	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	S	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Aug 12	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	S	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Aug 13	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	S	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Aug 14	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	S	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Aug 15	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	C	C	C	C	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Aug 16	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	S	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Aug 17	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	S	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Aug 18	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	S	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Aug 19	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	S	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Aug 20	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	S	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Aug 21	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	S	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Aug 22	0.00	0.00	0.00	0.00	0.00	0.00	0.00	S	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Aug 23	0.00	0.00	0.00	0.00	0.00	0.00	S	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Aug 24	0.00	0.00	0.00	0.00	0.00	S	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Aug 25	0.00	0.00	0.00	0.00	S	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Aug 26	0.00	0.00	0.00	S	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Aug 27	0.00	0.00	S	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Aug 28	0.00	S	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Aug 29	S	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	S	0.00	0.00	0.00
Aug 30	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	S	0.00	0.00	0.00
Aug 31	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	S	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Diurnal Maximum	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.01	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Diurnal Average	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00

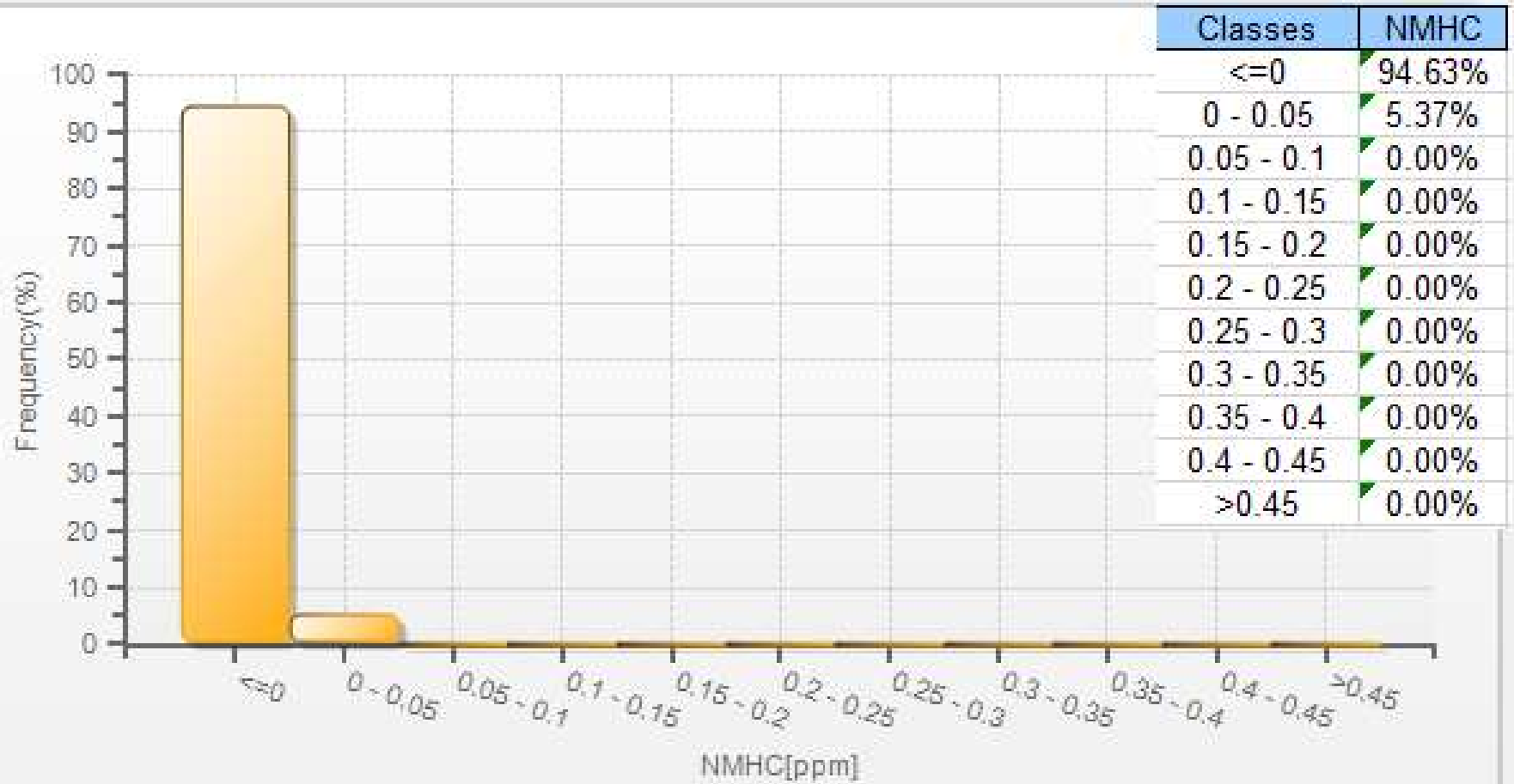
C	Calibration	S	Daily Zero/Span	Q	Quality Assurance	C1	Repeat Calibration	S1	Repeat Daily Zero/Span
G	Out for Repair	K	Collection Error	N	Not in Service	O	Operator Error	P	Power Failure
R	Recovery	X	Machine Malfunction	Y	Maintenance	T	Exceeds Temperature Limits	N	Not in Service

Daily Average is shown "-" if minimum data completeness criteria of 75% or 18 hours per day is not met.
 Monthly Average is shown "-" if minimum data completeness criteria of 75% of days per month is not met.

Timeseries Chart of Hourly Average for NMHC - St. Lina Site

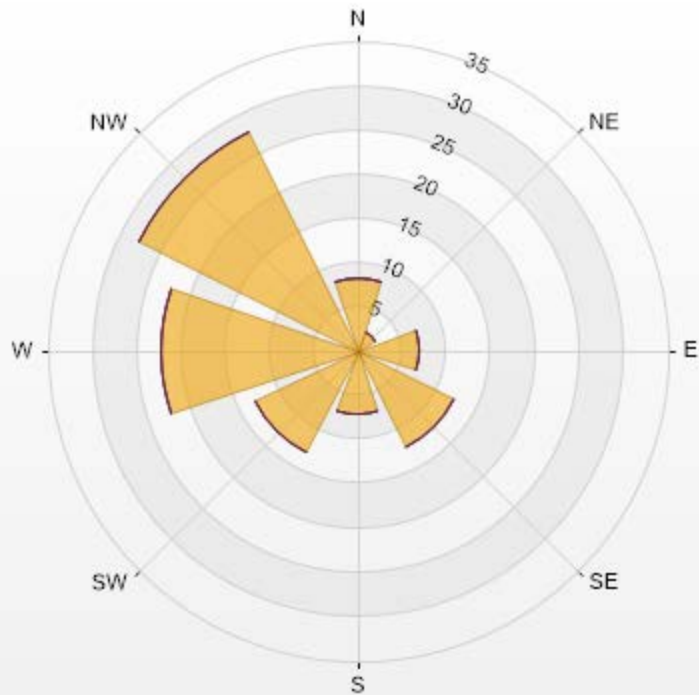


NMHC[ppm] Histogram: St. Lina Monthly: 08-2019 1 Hr.



Wind: St. Lina Poll.: St. Lina-NMHC[ppm] Monthly: 08-2019 Type: PollutionRose Direction: Blowing From (Wind Frequency) Based On 1 Hr.
 Calm: 0.00% Valid Data: 87.37% Calm Avg: 0.00 [ppm]

Direction	0-0.1	0.1-0.3	0.3-0.9	0.9-2	>2.0	Total
N	8.31	0	0	0	0	8.31
NE	2.31	0	0	0	0	2.31
E	7.08	0	0	0	0	7.08
SE	12.15	0	0	0	0	12.15
S	7.23	0	0	0	0	7.23
SW	12.92	0	0	0	0	12.92
W	22.31	0	0	0	0	22.31
NW	27.69	0	0	0	0	27.69
Summary	100	0	0	0	0	100



LICA-201908-Revision 1

% Icon Classes (ppm)	100	0-0.1	0	0.3-0.9	0	0.9-2	0	>2.0
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LAKELAND INDUSTRY & COMMUNITY ASSOCIATION

St. Lina Site - August 2019

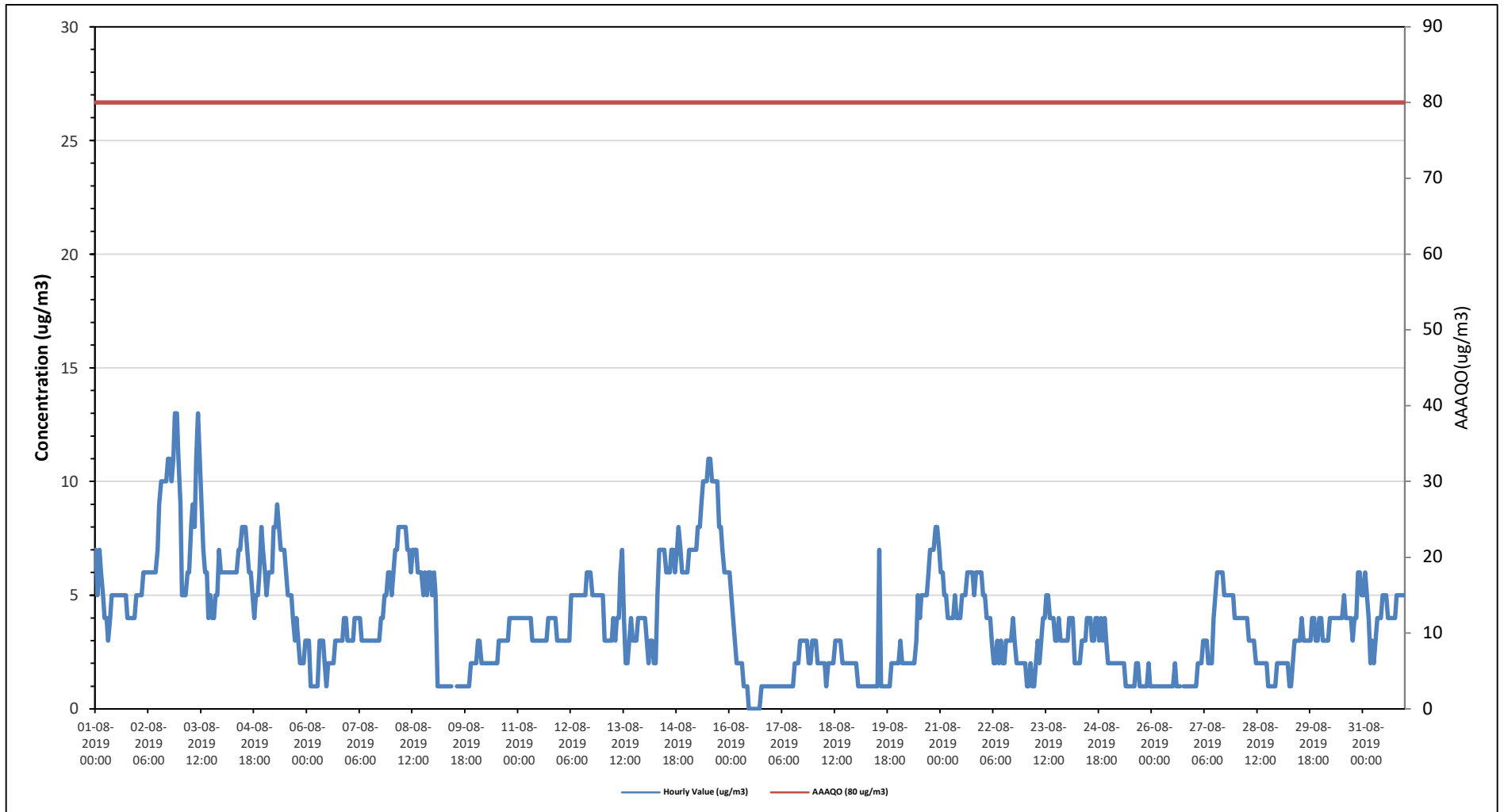
Summary of Hourly Averages

PARTICULATE MATTER 2.5 (PM_{2.5}) in µg/m³

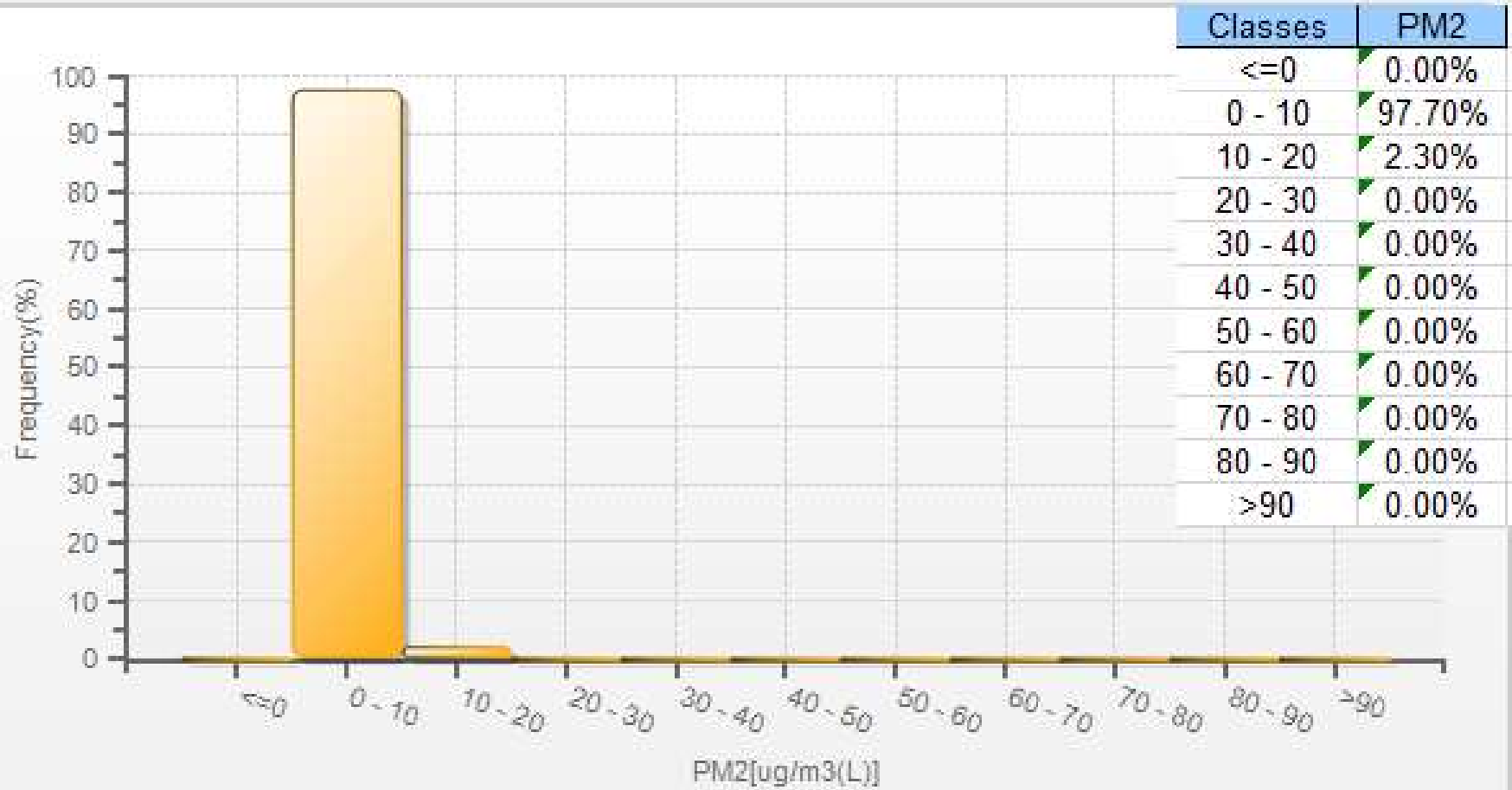
Alberta Ambient Air Quality Objectives (AAAQO): 1-Hour 80 µg/m ³ , 24-Hour 29 µg/m ³																													
Number of 1-Hour Exceedences: 0					Number of 24-Hour Exceedences: 0																								
Maximum Hourly Value: 13 µg/m ³ on August 2 at hour 21					Hours in Service: 744																								
Maximum Daily Value: 8 µg/m ³ on August 2					Hours of Data: 741																								
Minimum Hourly Value: 0 µg/m ³ on August 16 at hour 11					Hours of Missing Data: 1																								
Minimum Daily Value: 1 µg/m ³ on August 26					Hours of Calibration: 2																								
Monthly Average: 3.9 µg/m ³					Operational Uptime: 99.9																								
Day	Hourly Period Starting at (MST)																							Daily Minimum	Daily Maximum	Daily Average			
	0	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22				23		
Aug 1	7	5	7	6	5	4	4	3	4	5	5	5	5	5	5	5	5	5	4	4	4	4	5	3	7	4.8			
Aug 2	5	5	5	6	6	6	6	6	6	6	6	7	9	10	10	10	10	11	11	10	11	13	13	11	5	13	8.3		
Aug 3	9	5	5	5	6	6	8	9	8	11	13	11	9	7	6	6	4	5	4	4	5	5	7	6	4	13	6.8		
Aug 4	6	6	6	6	6	6	6	6	6	7	7	8	8	8	7	6	6	5	4	3	4	3	2	2	3	2	9	5.3	
Aug 5	6	5	6	6	6	8	8	9	8	7	7	7	6	5	5	4	3	4	3	2	2	2	2	3	2	9	5.3		
Aug 6	3	3	1	1	1	1	1	3	3	3	2	1	2	2	2	2	3	3	3	3	3	3	4	4	3	1	4	2.4	
Aug 7	3	3	3	4	4	4	4	3	3	3	3	3	3	3	3	3	3	3	3	4	4	5	6	6	3	3	6	3.7	
Aug 8	5	6	7	7	8	8	8	8	8	7	7	6	7	7	7	6	6	6	5	6	5	6	6	5	5	8	6.5	6.5	
Aug 9	6	5	1	1	1	1	1	1	1	1	1	C	C	1	1	1	1	1	1	1	1	2	2	2	1	6	1.5	1.5	
Aug 10	2	3	3	2	2	2	2	2	2	2	2	2	2	2	3	3	3	3	3	3	4	4	4	4	2	4	2.8	2.8	
Aug 11	4	4	4	4	4	4	4	4	3	3	3	3	3	3	3	3	3	4	4	4	4	4	4	3	3	3	4	3.5	3.5
Aug 12	3	3	3	3	3	3	5	5	5	5	5	5	5	5	5	6	6	6	5	5	5	5	5	5	3	6	4.6	4.6	
Aug 13	5	3	3	3	3	3	4	3	4	4	6	7	4	2	2	3	4	3	3	3	4	4	4	4	2	7	3.7	3.7	
Aug 14	4	3	2	3	3	2	2	5	7	7	7	7	6	6	6	7	7	6	7	8	7	6	6	6	2	8	5.4	5.4	
Aug 15	6	7	7	7	7	7	8	8	9	10	10	10	11	11	10	10	10	10	8	8	7	6	6	6	6	11	8.3	8.3	
Aug 16	6	5	4	3	2	2	2	2	1	1	1	0	0	0	0	0	0	0	1	1	1	1	1	1	0	6	1.5	1.5	
Aug 17	1	1	1	1	1	1	1	1	1	1	1	1	1	2	2	2	3	3	3	3	3	2	2	3	1	3	1.7	1.7	
Aug 18	3	3	2	2	2	2	2	1	2	2	2	2	3	3	3	3	2	2	2	2	2	2	2	2	1	3	2.2	2.2	
Aug 19	2	1	1	1	1	1	1	1	1	1	1	1	1	7	1	1	1	1	1	1	1	2	2	2	1	7	1.5	1.5	
Aug 20	2	3	2	2	2	2	2	2	2	2	3	5	4	5	5	5	5	6	7	7	7	7	8	8	7	8	4.3	4.3	
Aug 21	6	6	5	5	4	4	4	4	5	4	4	4	5	5	5	6	6	6	6	5	6	6	6	6	4	6	5.1	5.1	
Aug 22	5	5	4	4	4	3	2	2	3	2	3	2	2	3	3	3	3	4	3	2	2	2	2	2	2	5	2.9	2.9	
Aug 23	2	1	1	2	1	1	2	3	2	3	4	4	5	5	4	4	4	3	3	4	3	3	3	3	1	5	2.9	2.9	
Aug 24	3	4	4	4	2	2	2	2	3	3	3	4	4	4	3	3	4	4	3	4	3	4	3	2	2	4	3.2	3.2	
Aug 25	2	2	2	2	2	2	2	2	2	1	1	1	1	1	1	2	2	2	1	1	1	1	1	1	1	2	1.5	1.5	
Aug 26	1	1	1	1	1	1	1	1	1	1	1	1	1	2	1	1	1	1	1	1	1	1	1	1	1	2	1.0	1.0	
Aug 27	1	1	2	2	2	3	3	3	2	2	2	4	5	6	6	6	6	5	5	5	5	5	5	4	1	6	3.8	3.8	
Aug 28	4	4	4	4	4	4	4	3	3	3	3	2	2	2	2	2	2	2	1	1	1	1	1	2	1	4	2.5	2.5	
Aug 29	2	2	2	2	2	2	1	1	2	3	3	3	3	4	3	3	3	3	3	4	4	3	3	4	1	4	2.7	2.7	
Aug 30	4	3	3	3	3	4	4	4	4	4	4	4	4	5	4	4	4	4	3	4	4	6	6	5	3	6	4.0	4.0	
Aug 31	5	6	5	4	2	3	2	3	4	4	4	5	5	5	4	4	4	4	4	5	5	5	5	5	2	6	4.3	4.3	
Diurnal Maximum	9	7	7	7	8	8	8	9	9	11	13	11	11	11	10	10	10	11	11	10	11	13	13	11					
Daiurnal Average	4.0	3.7	3.4	3.4	3.2	3.3	3.4	3.5	3.7	3.8	4.0	4.2	4.2	4.4	3.9	4.0	4.0	4.1	3.8	3.9	3.9	4.1	4.3	4.1					
C	Calibration				S	Daily Zero/Span				Q	Quality Assurance				C1	Repeat Calibration				S1	Repeat Daily Zero/Span								
G	Out for Repair				K	Collection Error				N	Not in Service				O	Operator Error				P	Power Failure								
R	Recovery				X	Machine Malfunction				Y	Maintenance				T	Exceeds Temperature Limits				N	Not in Service								

Daily Average is shown "-" if minimum data completeness criteria of 75% or 18 hours per day is not met.
 Monthly Average is shown "-" if minimum data completeness criteria of 75% of days per month is not met.

Timeseries Chart of Hourly Average for PM2.5 - St. Lina Site

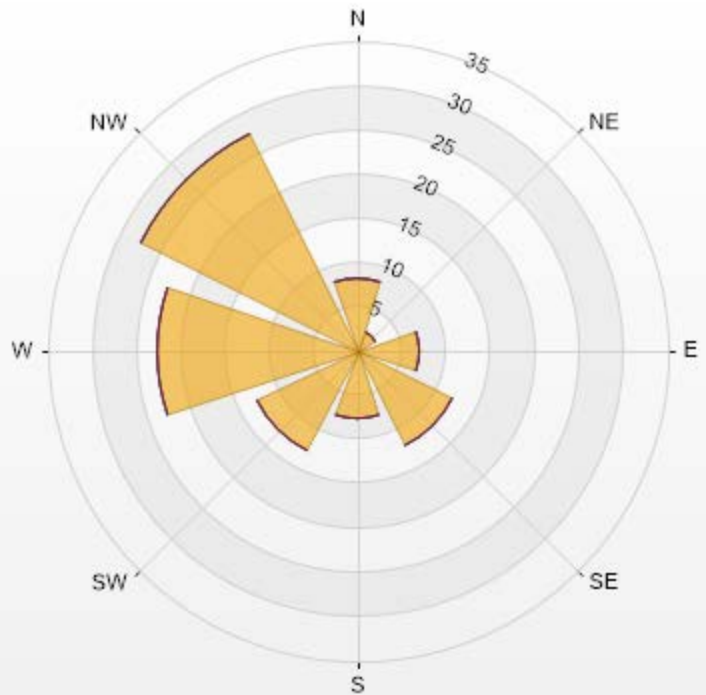


PM2[ug/m3(L)] Histogram: St. Lina Monthly: 08-2019 1 Hr.



Wind: St. Lina Poll.: St. Lina-PM2[ug/m3(L)] Monthly: 08-2019 Type: PollutionRose Direction: Blowing From (Wind Frequency) Based On 1 Hr.
 Calm: 0.00% Valid Data: 99.19% Calm Avg: 0.00 [ug/m3(L)]

Direction	0-50	50-80	80-120	120-240	>240.0	Total
N	8.13	0	0	0	0	8.13
NE	2.3	0	0	0	0	2.3
E	6.91	0	0	0	0	6.91
SE	11.92	0	0	0	0	11.92
S	7.72	0	0	0	0	7.72
SW	12.74	0	0	0	0	12.74
W	22.76	0	0	0	0	22.76
NW	27.51	0	0	0	0	27.51
Summary	100	0	0	0	0	100



LICA-201908-Revision 1

% Icon Classes (ug/m3(L))	100	0-50	0	50-100	80-120	0	120-240	0	>240.0
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LAKELAND INDUSTRY & COMMUNITY ASSOCIATION

St. Lina Site - August 2019

Summary of Hourly Averages

RELATIVE HUMIDITY (RH) in %

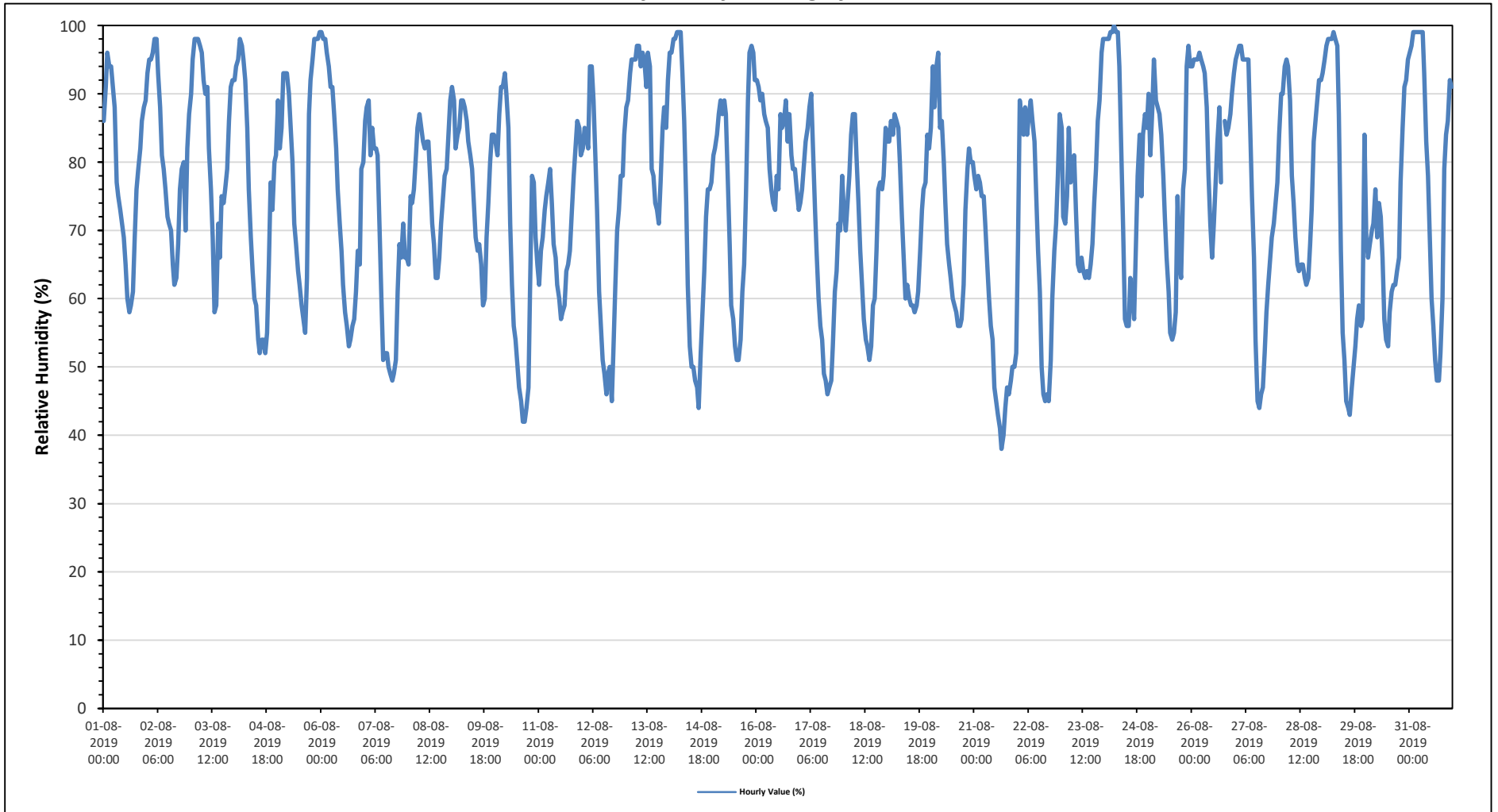
Maximum Hourly Value:	100 %	on August 24 at hour 5	Hours in Service:	744
Maximum Daily Value:	88.2 %	on August 13	Hours of Data:	743
Minimum Hourly Value:	38 %	on August 21 at hour 15	Hours of Missing Data:	1
Minimum Daily Value:	56.5 %	on August 21	Hours of Calibration:	0
Monthly Average:	75.0 %		Operational Uptime:	99.9

Day	Hourly Period Starting at (MST)																							Daily Minimum	Daily Maximum	Daily Average	
	0	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22				23
Aug 1	86	91	96	94	94	91	88	77	75	73	71	69	65	60	58	59	61	69	76	79	82	86	88	89	58	96	78
Aug 2	93	95	95	96	98	98	93	88	81	79	76	72	71	70	65	62	63	68	76	79	80	70	82	87	62	98	81
Aug 3	90	95	98	98	98	97	96	92	90	91	82	76	69	58	59	71	66	75	74	76	79	86	91	92	58	98	83
Aug 4	92	94	95	98	97	95	92	85	76	69	64	60	59	54	52	54	54	52	55	65	77	73	80	81	52	98	74
Aug 5	89	82	85	93	93	93	90	85	80	71	68	64	62	59	57	55	63	87	92	95	98	98	98	99	55	99	82
Aug 6	99	98	98	96	94	91	91	87	82	76	71	67	62	58	56	53	54	56	57	61	67	65	79	80	53	99	75
Aug 7	86	88	89	81	85	82	82	81	70	60	51	52	52	50	49	48	49	51	61	68	66	71	66	66	48	89	67
Aug 8	65	75	74	76	81	85	87	85	83	82	83	83	77	71	68	63	63	66	71	75	78	79	84	89	63	89	77
Aug 9	91	89	82	84	85	89	89	88	86	83	81	79	74	69	67	68	65	59	60	69	74	80	84	84	59	91	78
Aug 10	83	81	87	91	91	93	90	85	71	62	56	54	50	47	45	42	42	44	47	61	78	77	69	65	42	93	67
Aug 11	62	67	69	73	75	77	79	74	68	66	62	60	57	58	59	64	65	67	73	78	82	86	85	81	57	86	70
Aug 12	82	85	84	82	94	94	89	80	73	61	56	51	49	46	49	50	45	52	62	70	73	78	78	84	45	94	69
Aug 13	88	89	93	95	95	95	97	97	94	96	95	91	96	94	79	78	74	73	71	77	85	88	85	92	71	97	88
Aug 14	96	96	98	98	99	99	99	93	86	74	62	53	50	50	48	47	44	52	58	64	72	76	76	77	44	99	74
Aug 15	81	82	84	87	89	87	89	87	77	68	59	57	53	51	51	54	61	65	75	89	96	97	96	92	51	97	76
Aug 16	92	91	89	90	87	86	85	79	76	74	73	78	76	87	85	86	89	83	87	81	79	79	76	73	73	92	83
Aug 17	74	76	80	83	85	88	90	82	73	67	60	56	54	49	48	46	47	48	53	61	64	71	70	78	46	90	67
Aug 18	73	70	74	78	84	87	87	81	74	67	62	57	54	53	51	53	59	60	67	76	77	76	78	85	51	87	70
Aug 19	83	83	86	84	87	86	85	80	72	66	60	62	60	59	59	58	59	61	67	73	76	77	84	82	58	87	73
Aug 20	85	94	88	94	96	85	86	80	74	68	65	63	60	59	58	56	56	57	62	73	79	82	80	80	56	96	74
Aug 21	78	76	78	77	75	75	71	65	60	56	54	47	45	43	41	38	40	44	47	46	48	50	50	52	38	78	57
Aug 22	68	89	86	84	88	84	87	89	86	83	76	67	61	50	46	45	46	45	51	60	67	71	78	87	45	89	71
Aug 23	85	72	71	75	85	77	79	81	73	65	64	66	64	63	64	63	65	68	74	79	86	89	96	98	63	98	75
Aug 24	98	98	98	99	99	100	99	99	94	81	70	57	56	56	63	60	57	69	78	84	75	84	87	85	56	100	81
Aug 25	90	81	88	95	89	88	87	84	78	72	66	61	55	54	55	58	75	65	63	76	79	94	97	94	54	97	77
Aug 26	94	95	95	95	96	95	94	93	88	78	71	66	71	77	83	88	77	Y	86	84	85	87	90	93	66	96	86
Aug 27	95	96	97	97	95	95	95	95	85	75	66	54	45	44	46	47	52	58	62	66	69	71	74	77	44	97	73
Aug 28	84	90	90	94	95	94	89	78	74	69	65	64	65	65	63	62	63	68	73	83	86	89	92	92	62	95	79
Aug 29	93	95	97	98	98	98	99	98	97	87	67	55	51	45	44	43	47	50	53	57	59	56	57	84	43	99	72
Aug 30	69	66	68	70	71	76	69	74	72	66	57	54	53	58	61	62	62	64	66	77	85	91	92	95	53	95	70
Aug 31	96	97	99	99	99	99	99	99	93	83	78	69	60	56	51	48	48	52	60	79	84	86	92	91	48	99	80
Diurnal Maximum	99	98	99	99	99	100	99	99	97	96	95	91	96	94	85	88	89	87	92	95	98	98	98	99			
Diurnal Average	85.2	86.3	87.5	88.8	90.2	89.6	88.8	85.2	79.4	73.2	67.5	63.4	60.5	58.5	57.4	57.5	58.4	60.9	66.4	72.9	76.9	79.5	81.7	84.0			

C	Calibration	S	Daily Zero/Span	Q	Quality Assurance	C1	Repeat Calibration	S1	Repeat Daily Zero/Span
G	Out for Repair	K	Collection Error	N	Not in Service	O	Operator Error	P	Power Failure
R	Recovery	X	Machine Malfunction	Y	Maintenance	T	Exceeds Temperature Limits	N	Not in Service

Daily Average is shown "-" if minimum data completeness criteria of 75% or 18 hours per day is not met.
 Monthly Average is shown "-" if minimum data completeness criteria of 75% of days per month is not met.

Timeseries Chart of Hourly Average for RH - St. Lina Site





LAKELAND INDUSTRY & COMMUNITY ASSOCIATION

St. Lina Site - August 2019
Summary of Hourly Averages

BAROMETRIC PRESSURE (BP) in millibar

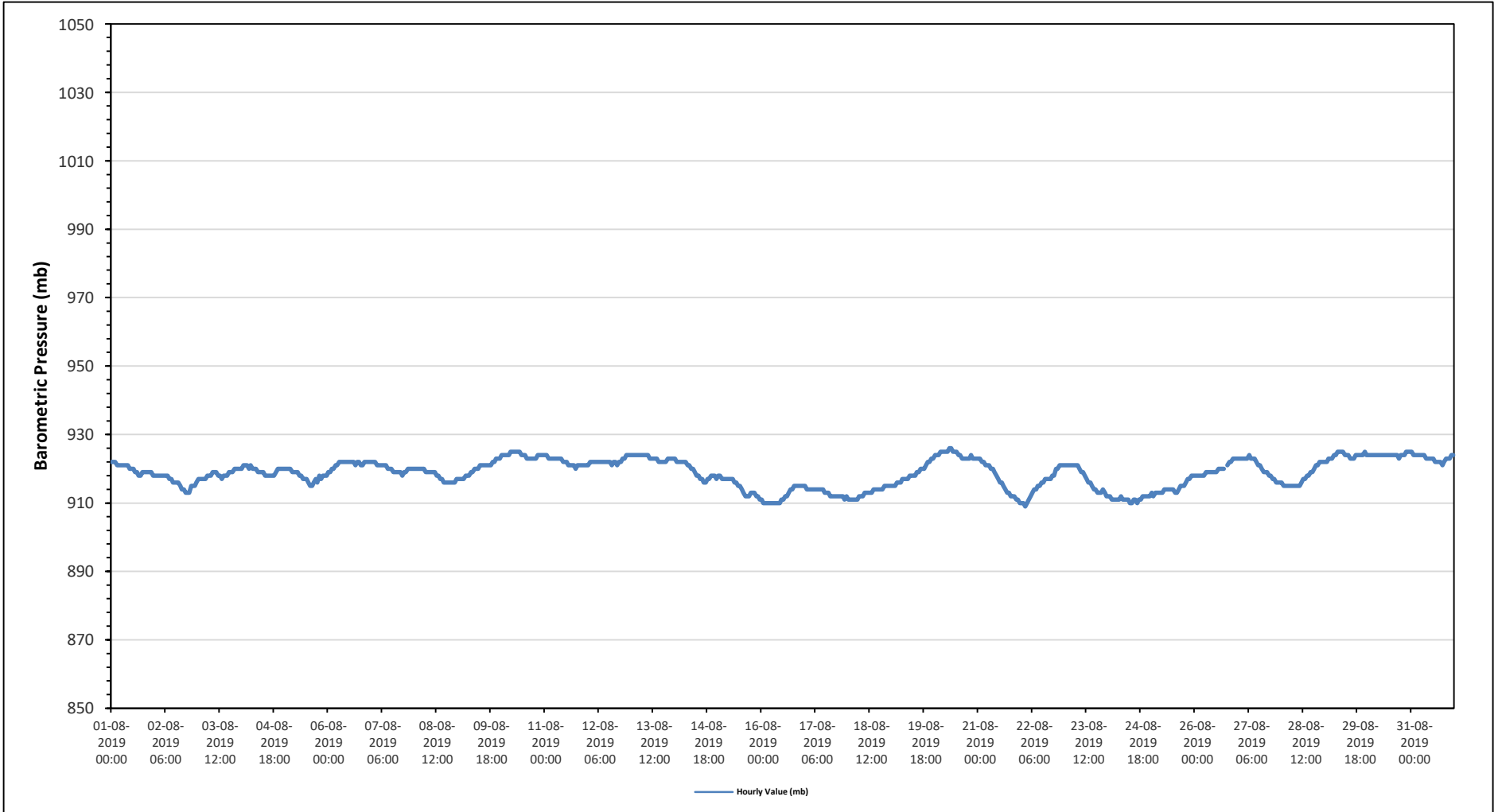
Maximum Hourly Value:	926 mb on August 20 at hour 8	Hours in Service:	744
Maximum Daily Value:	924 mb on August 20	Hours of Data:	743
Minimum Hourly Value:	909 mb on August 22 at hour 2	Hours of Missing Data:	1
Minimum Daily Value:	911 mb on August 24	Hours of Calibration:	0
Monthly Average:	919 mb	Operational Uptime:	99.9

Day	Hourly Period Starting at (MST)																							Daily	Daily	Daily		
	0	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	Minimum	Maximum	Average	
Aug 1	922	922	922	921	921	921	921	921	921	921	920	920	919	919	918	918	919	919	919	919	919	919	918	918	922	922	920	
Aug 2	918	918	918	918	918	918	918	918	917	917	916	916	916	915	914	914	913	913	913	913	915	915	915	915	916	913	918	916
Aug 3	917	917	917	917	917	918	918	918	919	919	919	918	918	917	918	918	918	919	919	919	920	920	920	920	920	917	920	918
Aug 4	920	921	921	921	920	921	920	920	920	919	919	919	919	918	918	918	918	918	918	919	920	920	920	920	918	921	919	
Aug 5	920	920	920	920	919	919	919	919	918	918	917	917	917	916	915	915	916	917	916	918	917	918	918	918	915	920	918	
Aug 6	919	919	920	920	921	921	922	922	922	922	922	922	922	922	921	922	922	922	921	921	922	922	922	922	919	922	921	
Aug 7	922	922	922	921	921	921	921	921	921	920	920	920	919	919	919	919	919	918	919	919	920	920	920	920	918	922	920	
Aug 8	920	920	920	920	920	920	919	919	919	919	919	919	918	918	917	917	916	916	916	916	916	916	916	916	916	916	918	
Aug 9	917	917	917	917	918	918	918	919	919	920	920	921	921	921	921	921	921	921	921	922	922	923	923	923	917	923	920	
Aug 10	924	924	924	924	924	925	925	925	925	925	925	924	924	924	923	923	923	923	923	923	924	924	924	924	923	925	924	
Aug 11	924	924	923	923	923	923	923	923	923	923	922	922	922	921	921	921	921	920	921	921	921	921	921	920	924	922	922	
Aug 12	921	922	922	922	922	922	922	922	922	922	922	922	922	922	922	922	922	922	922	923	923	924	924	924	921	924	922	
Aug 13	924	924	924	924	924	924	924	924	924	924	923	923	923	923	923	922	922	922	922	922	922	923	923	923	922	924	923	
Aug 14	923	922	922	922	922	922	922	921	921	920	920	919	918	918	917	917	916	916	917	917	918	918	918	917	916	923	919	
Aug 15	918	918	917	917	917	917	917	917	917	916	916	915	915	914	913	912	912	912	913	913	913	912	912	911	911	918	915	
Aug 16	911	910	910	910	910	910	910	910	910	910	910	911	911	912	912	913	914	914	915	915	915	915	915	915	910	915	912	
Aug 17	915	914	914	914	914	914	914	914	914	914	914	913	913	913	912	912	912	912	912	912	912	912	911	911	911	915	913	
Aug 18	911	911	911	911	911	911	912	912	912	913	913	913	913	913	914	914	914	914	914	914	915	915	915	915	911	915	913	
Aug 19	915	915	915	916	916	916	917	917	917	917	918	918	918	918	919	919	920	920	920	921	922	922	923	923	915	923	918	
Aug 20	924	924	924	925	925	925	925	926	926	925	925	925	924	924	923	923	923	923	923	923	924	923	923	923	923	926	924	
Aug 21	923	923	922	922	921	921	921	920	920	919	918	917	916	916	915	914	913	913	912	912	912	911	911	910	910	923	917	
Aug 22	910	910	909	910	911	912	913	914	914	915	915	916	916	917	917	917	918	918	920	920	921	921	921	909	921	916		
Aug 23	921	921	921	921	921	921	921	921	920	919	919	918	917	916	915	914	914	913	913	913	913	914	913	912	912	921	917	
Aug 24	912	912	911	911	911	911	911	912	911	911	911	910	910	911	911	910	911	911	911	912	912	912	912	912	910	912	911	
Aug 25	913	912	913	913	913	913	913	914	914	914	914	914	914	913	913	914	915	915	915	916	917	917	918	918	912	918	914	
Aug 26	918	918	918	918	918	918	919	919	919	919	919	919	919	920	920	920	920	Y	921	922	922	923	923	923	918	923	920	
Aug 27	923	923	923	923	923	923	924	923	923	923	922	921	920	919	919	919	918	918	917	917	916	916	916	916	916	924	920	
Aug 28	916	915	915	915	915	915	915	915	915	915	915	916	917	917	918	918	919	919	920	921	921	922	922	915	922	917		
Aug 29	922	922	923	923	923	924	924	925	925	925	925	924	924	924	923	923	924	924	924	924	924	924	925	922	925	924		
Aug 30	924	924	924	924	924	924	924	924	924	924	924	924	924	924	924	924	924	924	924	924	924	925	925	925	923	925	924	
Aug 31	925	924	924	924	924	924	924	924	923	923	923	923	922	922	922	921	922	922	923	923	923	924	924	921	925	923		
Diurnal Maximum	925	924	924	925	925	925	925	925	926	926	925	925	924	924	924	924	924	924	924	924	924	925	925	925	925	925	925	
Diurnal Average	919	919	919	919	919	919	919	919	919	919	919	919	919	918	918	918	918	918	918	918	919	919	919	919	919	919	919	

C	Calibration	S	Daily Zero/Span	Q	Quality Assurance	C1	Repeat Calibration	S1	Repeat Daily Zero/Span
G	Out for Repair	K	Collection Error	N	Not in Service	O	Operator Error	P	Power Failure
R	Recovery	X	Machine Malfunction	Y	Maintenance	T	Exceeds Temperature Limits	N	Not in Service

Daily Average is shown "-" if minimum data completeness criteria of 75% or 18 hours per day is not met.
 Monthly Average is shown "-" if minimum data completeness criteria of 75% of days per month is not met.

Timeseries Chart of Hourly Average for BP - St. Lina Site





LAKELAND INDUSTRY & COMMUNITY ASSOCIATION

St. Lina Site - August 2019
 Summary of Hourly Averages

AMBIENT TEMPERATURE (AT) in Degree Celsius

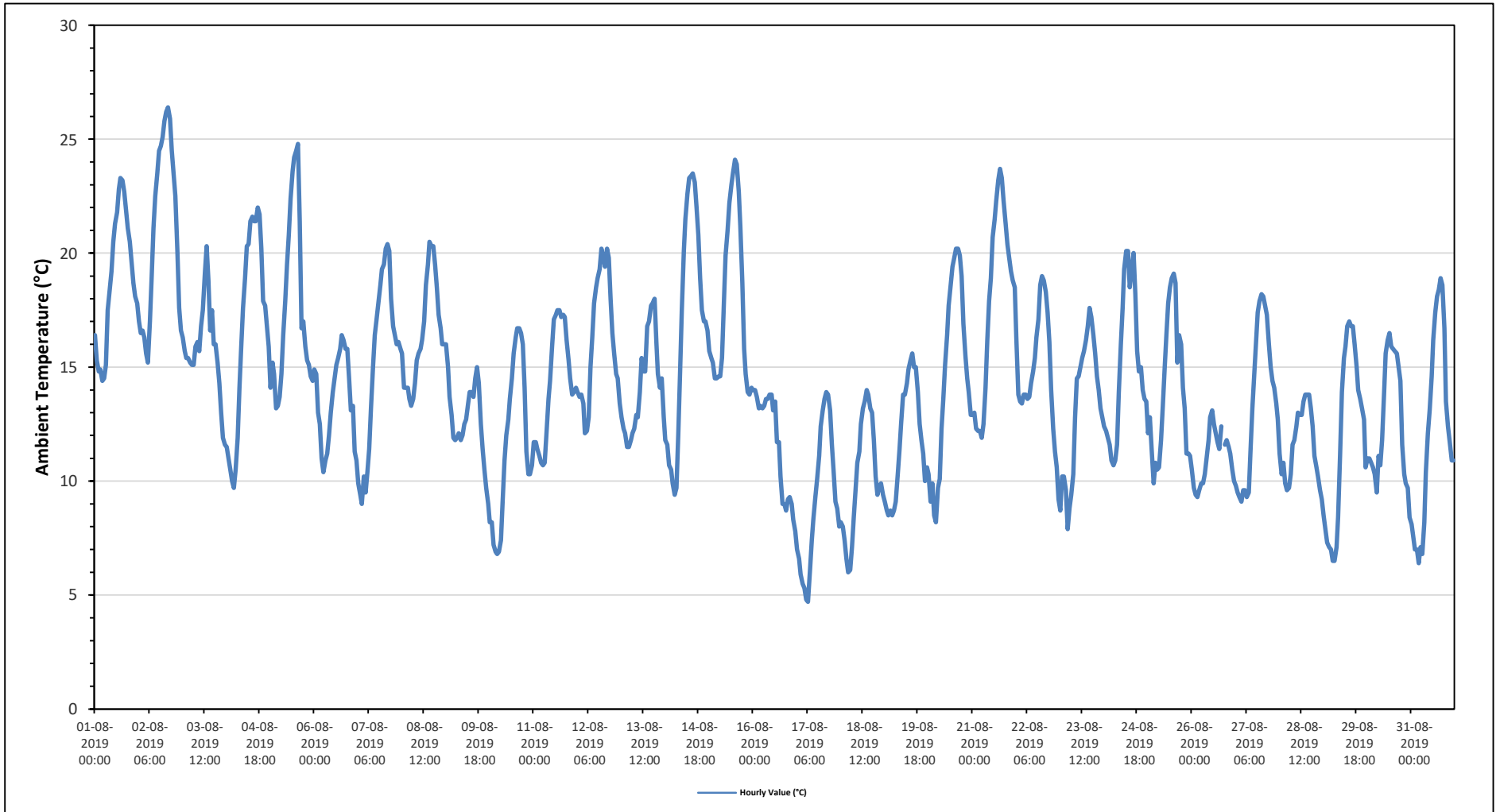
Maximum Hourly Value:	26.4 °C	on August 2 at hour 16	Hours in Service:	744
Maximum Daily Value:	21.0 °C	on August 2	Hours of Data:	743
Minimum Hourly Value:	4.7 °C	on August 17 at hour 6	Hours of Missing Data:	1
Minimum Daily Value:	9.2 °C	on August 17	Hours of Calibration:	0
Monthly Average:	14.3 °C		Operational Uptime:	99.9

Day	Hourly Period Starting at (MST)																							Daily Minimum	Daily Maximum	Daily Average	
	0	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22				23
Aug 1	16.4	15.3	14.8	14.9	14.4	14.5	15.1	17.5	18.4	19.2	20.5	21.3	21.8	22.8	23.3	23.2	22.7	21.9	21.1	20.5	19.6	18.7	18.1	17.8	14.4	23.3	18.9
Aug 2	17.0	16.5	16.6	16.3	15.6	15.2	17.0	19.0	21.1	22.5	23.5	24.5	24.7	25.1	25.8	26.2	26.4	25.9	24.5	23.5	22.5	20.1	17.6	16.6	15.2	26.4	21.0
Aug 3	16.3	15.7	15.4	15.4	15.2	15.1	15.1	15.9	16.1	15.7	16.8	17.5	19.1	20.3	18.8	16.6	17.5	16.0	16.0	15.2	14.3	13.0	11.9	11.6	11.6	20.3	15.9
Aug 4	11.5	11.0	10.5	10.0	9.7	10.5	11.9	14.1	15.9	17.6	18.9	20.3	20.4	21.4	21.6	21.4	21.4	22.0	21.7	20.2	17.9	17.7	16.8	15.9	9.7	22.0	16.7
Aug 5	14.1	15.2	14.7	13.2	13.3	13.7	14.7	16.4	17.9	19.5	20.8	22.4	23.6	24.2	24.5	24.8	21.4	16.7	17.0	15.9	15.3	15.1	14.6	14.4	13.2	24.8	17.6
Aug 6	14.9	14.7	13.0	12.5	11.0	10.4	10.9	11.2	12.0	13.0	13.9	14.5	15.1	15.4	15.8	16.4	16.2	15.8	15.8	14.5	13.1	13.3	11.3	10.9	10.4	16.4	13.6
Aug 7	9.9	9.4	9.0	10.2	9.5	10.4	11.4	13.2	15.0	16.4	17.1	17.8	18.6	19.3	19.5	20.2	20.4	20.1	18.0	16.8	16.4	16.0	16.1	15.8	9.0	20.4	15.3
Aug 8	15.6	14.1	14.1	14.1	13.6	13.3	13.6	14.3	15.3	15.6	15.8	16.2	17.0	18.6	19.5	20.5	20.3	20.3	19.5	18.5	17.3	16.7	16.0	16.0	13.3	20.5	16.5
Aug 9	16.0	15.0	13.7	12.9	11.9	11.8	11.9	12.1	11.8	12.0	12.5	12.7	13.4	13.9	13.9	13.7	14.5	15.0	14.3	12.5	11.4	10.5	9.7	9.0	9.0	16.0	12.8
Aug 10	8.2	8.2	7.2	6.9	6.8	6.9	7.4	9.2	10.9	12.0	12.7	13.6	14.5	15.6	16.3	16.7	16.7	16.5	16.0	14.1	11.3	10.3	10.3	10.7	6.8	16.7	11.6
Aug 11	11.7	11.7	11.4	11.1	10.8	10.7	10.8	12.1	13.6	14.4	15.9	17.1	17.3	17.5	17.5	17.2	17.3	17.2	16.2	15.3	14.5	13.8	13.9	14.1	10.7	17.5	14.3
Aug 12	13.9	13.7	13.8	13.4	12.1	12.2	12.8	15.0	16.3	17.8	18.5	18.9	19.3	20.2	19.8	19.4	20.2	19.8	18.0	16.5	15.6	14.7	14.5	13.4	12.1	20.2	16.2
Aug 13	12.8	12.3	12.1	11.5	11.5	11.8	12.1	12.3	12.9	12.8	13.9	15.4	14.8	14.8	16.8	17.0	17.7	17.8	18.0	16.1	14.7	14.1	14.5	12.8	11.5	18.0	14.2
Aug 14	11.8	11.6	10.7	10.5	9.9	9.4	9.7	12.0	14.7	17.5	20.1	21.5	22.6	23.3	23.4	23.5	23.1	22.0	20.8	18.9	17.5	17.0	17.0	16.6	9.4	23.5	16.9
Aug 15	15.7	15.4	15.2	14.5	14.5	14.6	14.6	15.4	18.0	19.9	21.0	22.2	23.0	23.5	24.1	23.9	22.7	21.2	18.7	15.8	14.7	13.9	13.8	14.1	13.8	24.1	17.9
Aug 16	14.0	14.0	13.7	13.2	13.3	13.2	13.3	13.6	13.6	13.8	13.8	13.1	13.5	11.7	11.7	10.2	9.0	9.0	8.7	9.2	9.3	9.0	8.3	7.8	7.8	14.0	11.7
Aug 17	7.0	6.6	5.9	5.5	5.3	4.8	4.7	6.1	7.4	8.3	9.3	10.1	11.1	12.4	13.1	13.6	13.9	13.8	13.1	11.6	10.4	9.1	8.8	8.0	4.7	13.9	9.2
Aug 18	8.2	8.0	7.4	6.6	6.0	6.1	7.1	8.4	9.6	10.8	11.3	12.5	13.2	13.5	14.0	13.8	13.2	13.0	11.8	10.2	9.4	9.8	9.9	9.4	6.0	14.0	10.1
Aug 19	9.1	8.7	8.5	8.7	8.5	8.7	9.1	10.3	11.4	12.5	13.8	13.8	14.3	14.9	15.3	15.6	15.0	15.0	13.9	12.5	11.8	11.2	10.0	10.6	8.5	15.6	11.8
Aug 20	10.3	9.1	9.9	8.5	8.2	9.7	10.1	12.3	13.6	15.1	16.4	17.7	18.6	19.4	19.8	20.2	20.2	19.9	19.0	16.9	15.5	14.5	13.9	12.9	8.2	20.2	14.7
Aug 21	12.9	13.0	12.3	12.2	12.2	11.9	12.5	14.1	16.2	17.9	18.9	20.7	21.5	22.3	23.2	23.7	23.3	22.3	21.3	20.4	19.8	19.2	18.8	18.5	11.9	23.7	17.9
Aug 22	16.3	13.8	13.5	13.4	13.8	13.8	13.6	13.7	14.3	14.8	15.4	16.3	17.1	18.6	19.0	18.8	18.3	17.4	16.1	14.0	12.3	11.3	10.6	9.2	9.2	19.0	14.8
Aug 23	8.7	10.2	10.2	9.6	7.9	8.8	9.4	10.3	12.8	14.5	14.6	15.0	15.4	15.7	16.2	16.8	17.6	17.2	16.4	15.6	14.6	14.0	13.2	12.8	7.9	17.6	13.2
Aug 24	12.4	12.2	11.9	11.6	10.9	10.7	10.9	11.6	13.9	16.0	17.6	19.3	20.1	20.1	18.5	19.2	20.0	18.2	15.7	14.8	15.0	14.0	13.6	13.5	10.7	20.1	15.1
Aug 25	12.1	12.8	11.4	9.9	10.8	10.5	10.6	11.8	13.3	14.9	16.4	17.8	18.5	18.9	19.1	18.7	15.2	16.4	16.0	14.1	13.2	11.2	11.2	11.1	9.9	19.1	14.0
Aug 26	10.5	9.7	9.4	9.3	9.6	9.9	9.9	10.3	11.0	11.8	12.8	13.1	12.5	12.1	11.7	11.4	12.4	Y	11.6	11.8	11.5	11.2	10.5	10.0	9.3	13.1	11.0
Aug 27	9.8	9.5	9.3	9.1	9.6	9.6	9.3	9.5	11.4	13.2	14.6	16.0	17.4	17.9	18.2	18.1	17.7	17.3	16.0	15.0	14.4	14.1	13.4	12.7	9.1	18.2	13.5
Aug 28	11.2	10.3	10.8	9.9	9.6	9.7	10.3	11.6	11.8	12.4	13.0	12.9	12.9	13.5	13.8	13.8	13.2	12.4	11.1	10.6	10.2	9.6	9.2	9.2	9.2	13.8	11.6
Aug 29	8.5	7.9	7.3	7.1	7.0	6.5	6.5	7.1	8.4	11.2	13.9	15.4	15.9	16.8	17.0	16.8	16.8	16.0	15.0	14.0	13.6	13.2	12.7	10.6	6.5	17.0	11.9
Aug 30	11.0	11.0	10.8	10.6	10.3	9.5	11.1	10.7	11.8	13.9	15.6	16.2	16.5	15.9	15.8	15.7	15.6	15.0	14.4	11.6	10.3	9.9	9.7	8.4	8.4	16.5	12.6
Aug 31	8.1	7.6	7.0	7.0	6.4	7.1	6.8	8.2	10.4	12.1	13.1	14.6	16.2	17.4	18.1	18.4	18.9	18.6	16.7	13.5	12.4	11.7	10.9	10.9	6.4	18.9	12.2
Diurnal Maximum	17.0	16.5	16.6	16.3	15.6	15.2	17.0	19.0	21.1	22.5	23.5	24.5	24.7	25.1	25.8	26.2	26.4	25.9	24.5	23.5	22.5	20.1	18.8	18.5			
Diurnal Average	12.1	11.7	11.3	11.0	10.6	10.7	11.1	12.2	13.6	14.8	15.9	16.8	17.4	18.0	18.2	18.2	18.0	17.7	16.6	15.2	14.2	13.5	12.9	12.4			

C	Calibration	S	Daily Zero/Span	Q	Quality Assurance	C1	Repeat Calibration	S1	Repeat Daily Zero/Span
G	Out for Repair	K	Collection Error	N	Not in Service	O	Operator Error	P	Power Failure
R	Recovery	X	Machine Malfunction	Y	Maintenance	T	Exceeds Temperature Limits	N	Not in Service

Daily Average is shown "-" if minimum data completeness criteria of 75% or 18 hours per day is not met.
 Monthly Average is shown "-" if minimum data completeness criteria of 75% of days per month is not met.

Timeseries Chart of Hourly Average for AT - St. Lina Site





LAKELAND INDUSTRY & COMMUNITY ASSOCIATION

St. Lina Site - August 2019
Summary of Hourly Averages

STATION TEMPERATURE (ST) in Degree Celsius

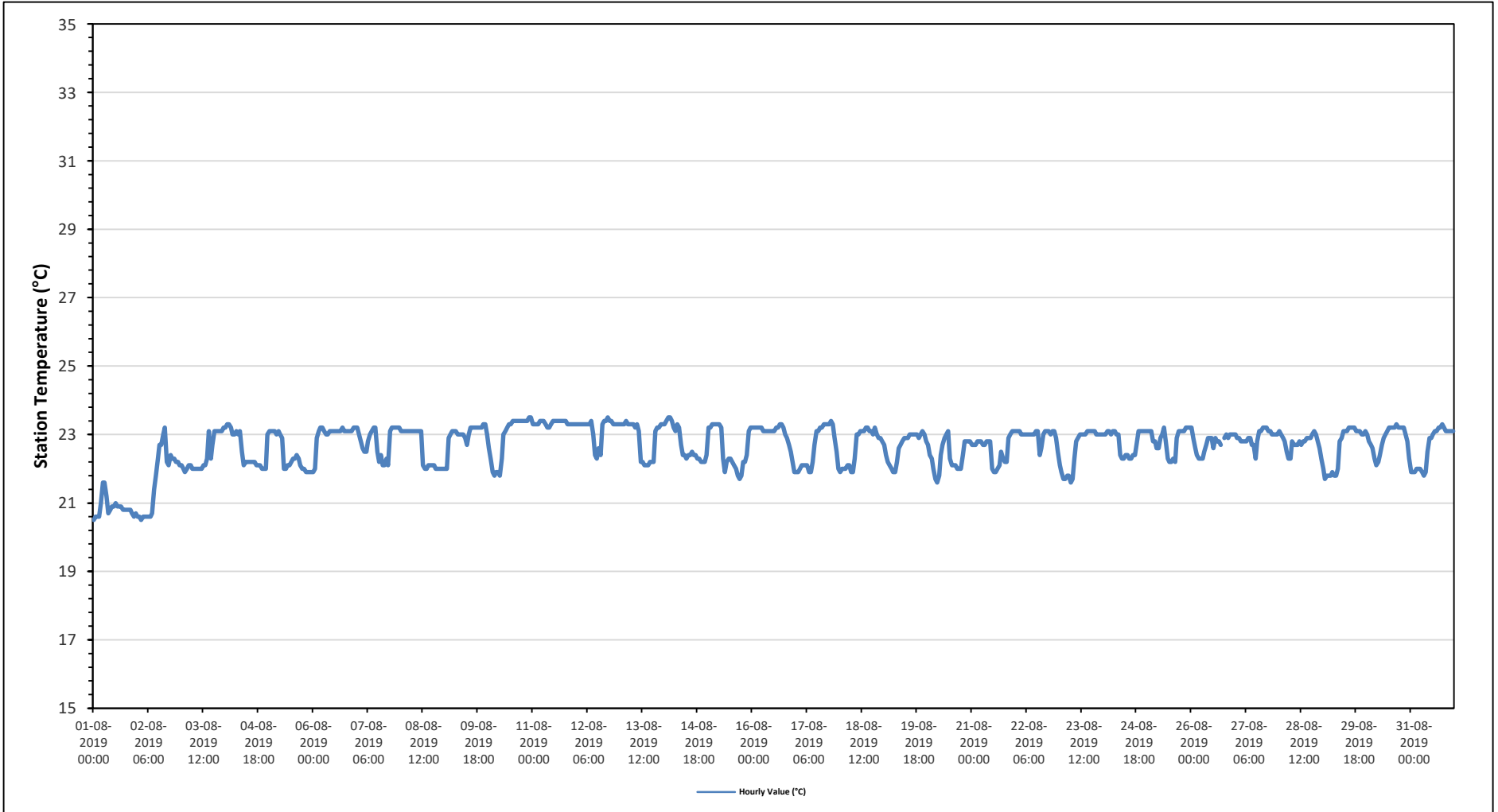
Maximum Hourly Value:	23.5 °C	on August 10 at hour 22	Hours in Service:	744
Maximum Daily Value:	23.3 °C	on August 11	Hours of Data:	743
Minimum Hourly Value:	20.5 °C	on August 1 at hour 0	Hours of Missing Data:	1
Minimum Daily Value:	20.9 °C	on August 1	Hours of Calibration:	0
Monthly Average:	22.7 °C		Operational Uptime:	99.9

Day	Hourly Period Starting at (MST)																							Daily Minimum	Daily Maximum	Daily Average	
	0	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22				23
Aug 1	20.5	20.6	20.6	20.6	21.0	21.6	21.6	21.2	20.7	20.8	20.9	20.9	21.0	20.9	20.9	20.9	20.8	20.8	20.8	20.8	20.8	20.7	20.6	20.7	20.5	21.6	20.9
Aug 2	20.6	20.6	20.5	20.6	20.6	20.6	20.6	20.6	20.7	21.4	21.8	22.3	22.7	22.7	23.0	23.2	22.2	22.1	22.4	22.3	22.3	22.2	22.2	22.1	20.5	23.2	21.7
Aug 3	22.1	22.0	21.9	22.0	22.1	22.1	22.0	22.0	22.0	22.0	22.0	22.0	22.1	22.1	22.3	23.1	22.3	22.7	23.1	23.1	23.1	23.1	23.1	23.1	21.9	23.2	22.4
Aug 4	23.2	23.3	23.3	23.2	23.0	23.0	23.1	23.0	23.1	22.5	22.1	22.2	22.2	22.2	22.2	22.2	22.1	22.1	22.1	22.0	22.0	22.0	23.0	22.0	23.3	22.6	22.6
Aug 5	23.1	23.1	23.1	23.1	23.0	23.1	23.0	22.9	22.0	22.0	22.1	22.1	22.2	22.3	22.3	22.4	22.3	22.1	22.0	22.0	21.9	21.9	21.9	21.9	21.9	23.1	22.4
Aug 6	21.9	22.0	22.9	23.1	23.2	23.2	23.1	23.0	23.0	23.1	23.1	23.1	23.1	23.1	23.1	23.1	23.2	23.1	23.1	23.1	23.1	23.1	23.2	23.2	21.9	23.2	23.0
Aug 7	23.2	23.0	22.8	22.6	22.5	22.5	22.8	23.0	23.1	23.2	23.2	22.5	22.2	22.4	22.1	22.1	22.3	22.1	23.1	23.2	23.2	23.2	23.2	23.2	22.1	23.2	22.8
Aug 8	23.1	23.1	23.1	23.1	23.1	23.1	23.1	23.1	23.1	23.1	23.1	23.1	22.1	22.0	22.0	22.1	22.1	22.1	22.1	22.0	22.0	22.0	22.0	22.0	22.0	23.1	22.6
Aug 9	22.0	22.0	22.9	23.0	23.1	23.1	23.1	23.0	23.0	23.0	23.0	22.9	22.7	23.0	23.2	23.2	23.2	23.2	23.2	23.2	23.2	23.3	23.3	23.0	22.0	23.3	23.0
Aug 10	22.6	22.3	21.9	21.8	21.9	21.9	21.8	22.3	23.0	23.1	23.2	23.3	23.3	23.4	23.4	23.4	23.4	23.4	23.4	23.4	23.4	23.4	23.5	23.5	21.8	23.5	22.9
Aug 11	23.3	23.3	23.3	23.3	23.4	23.4	23.4	23.3	23.2	23.2	23.3	23.4	23.4	23.4	23.4	23.4	23.4	23.4	23.4	23.4	23.3	23.3	23.3	23.3	23.2	23.4	23.3
Aug 12	23.3	23.3	23.3	23.3	23.3	23.3	23.3	23.3	23.4	23.0	22.4	22.3	22.6	22.4	23.3	23.4	23.4	23.5	23.4	23.4	23.3	23.3	23.3	23.3	22.3	23.5	23.2
Aug 13	23.3	23.3	23.3	23.4	23.3	23.3	23.3	23.3	23.2	23.3	23.1	22.2	22.2	22.1	22.1	22.1	22.2	22.2	22.2	23.1	23.2	23.2	23.3	23.3	22.1	23.4	22.9
Aug 14	23.3	23.4	23.5	23.5	23.4	23.2	23.1	23.3	23.2	22.7	22.4	22.4	22.3	22.4	22.4	22.5	22.4	22.4	22.3	22.3	22.2	22.2	22.2	22.2	22.2	23.5	22.7
Aug 15	23.2	23.2	23.3	23.3	23.3	23.3	23.3	23.2	22.3	21.9	22.2	22.3	22.3	22.2	22.1	22.0	21.8	21.7	21.8	22.2	22.2	22.4	23.1	23.2	21.7	23.3	22.6
Aug 16	23.2	23.2	23.2	23.2	23.2	23.2	23.1	23.1	23.1	23.1	23.1	23.1	23.1	23.2	23.2	23.3	23.3	23.2	23.0	22.9	22.7	22.5	22.2	21.9	21.9	23.3	23.0
Aug 17	21.9	21.9	22.0	22.1	22.1	22.1	22.1	21.9	21.9	22.2	22.7	23.1	23.1	23.2	23.2	23.3	23.3	23.3	23.3	23.4	23.3	22.9	22.5	22.0	21.9	23.4	22.6
Aug 18	21.9	22.0	22.0	22.0	22.1	22.1	21.9	21.9	22.3	23.0	23.0	23.1	23.1	23.1	23.2	23.2	23.1	23.1	23.0	23.2	23.0	22.9	22.9	22.8	21.9	23.2	22.7
Aug 19	22.7	22.4	22.2	22.1	22.0	21.9	21.9	22.2	22.6	22.7	22.8	22.9	22.9	22.9	23.0	23.0	23.0	23.0	23.0	23.0	22.9	23.0	23.1	23.0	21.9	23.1	22.7
Aug 20	22.7	22.4	22.3	22.0	21.7	21.6	21.8	22.4	22.7	22.9	23.0	23.1	22.3	22.1	22.1	22.0	22.1	22.0	22.0	22.4	22.8	22.8	22.8	22.8	21.6	23.1	22.4
Aug 21	22.7	22.7	22.7	22.8	22.8	22.8	22.7	22.7	22.8	22.8	22.8	22.0	21.9	21.9	22.0	22.1	22.5	22.3	22.2	22.2	22.9	23.0	23.1	23.1	21.9	23.1	22.6
Aug 22	23.1	23.1	23.1	23.0	23.0	23.0	23.0	23.0	23.0	23.0	23.0	23.1	23.1	22.4	22.6	23.0	23.1	23.1	23.1	23.0	23.1	23.1	22.9	22.5	22.4	23.1	23.0
Aug 23	22.1	21.9	21.7	21.7	21.8	21.8	21.6	21.7	22.3	22.8	22.9	23.0	23.0	23.0	23.1	23.1	23.1	23.1	23.1	23.1	23.0	23.0	23.0	21.6	23.1	22.6	
Aug 24	23.0	23.0	23.1	23.1	23.0	23.1	23.1	23.0	23.0	22.4	22.3	22.4	22.3	22.4	22.3	22.3	22.4	22.4	22.7	23.1	23.1	23.1	23.1	22.3	23.1	22.8	
Aug 25	23.1	23.1	23.1	22.8	22.8	22.6	22.6	22.9	23.0	23.2	22.8	22.3	22.2	22.2	22.3	22.2	22.9	23.1	23.1	23.1	23.1	23.2	23.2	22.2	23.2	22.8	
Aug 26	23.2	22.9	22.6	22.4	22.3	22.3	22.3	22.5	22.7	22.9	22.9	22.9	22.6	22.9	22.8	22.8	22.7	Y	22.9	23.0	22.9	23.0	23.0	22.3	23.2	22.8	
Aug 27	23.0	22.9	22.9	22.8	22.8	22.8	22.8	22.9	22.9	22.7	22.7	22.3	22.8	23.1	23.1	23.2	23.2	23.2	23.1	23.1	23.0	23.0	23.0	22.3	23.2	22.9	
Aug 28	23.1	23.0	22.9	22.8	22.5	22.3	22.3	22.8	22.7	22.7	22.7	22.8	22.7	22.8	22.9	22.9	22.9	23.0	23.1	23.0	22.8	22.6	22.3	22.3	23.1	22.8	
Aug 29	22.0	21.7	21.8	21.8	21.8	21.9	21.8	21.8	22.0	22.8	22.9	23.1	23.1	23.1	23.2	23.2	23.2	23.2	23.1	23.1	23.0	23.0	23.1	21.7	23.2	22.6	
Aug 30	23.0	22.8	22.7	22.6	22.3	22.1	22.2	22.4	22.7	22.9	23.0	23.1	23.2	23.2	23.2	23.2	23.3	23.2	23.2	23.2	23.2	23.2	22.8	22.3	22.1	23.3	22.9
Aug 31	21.9	21.9	21.9	22.0	22.0	22.0	21.9	21.8	21.9	22.5	22.9	23.0	23.1	23.1	23.2	23.2	23.3	23.2	23.1	23.1	23.1	23.1	23.1	21.8	23.3	22.6	
Diurnal Maximum	23.3	23.4	23.5	23.5	23.4	23.4	23.4	23.3	23.4	23.3	23.3	23.4	23.4	23.4	23.4	23.4	23.5	23.4	23.4	23.4	23.4	23.5	23.5				
Diurnal Average	22.6	22.6	22.6	22.6	22.5	22.5	22.5	22.6	22.6	22.7	22.7	22.6	22.6	22.6	22.7	22.7	22.7	22.7	22.8	22.8	22.8	22.8	22.8				

C	Calibration	S	Daily Zero/Span	Q	Quality Assurance	C1	Repeat Calibration	S1	Repeat Daily Zero/Span
G	Out for Repair	K	Collection Error	N	Not in Service	O	Operator Error	P	Power Failure
R	Recovery	X	Machine Malfunction	Y	Maintenance	T	Exceeds Temperature Limits	N	Not in Service

Daily Average is shown "-" if minimum data completeness criteria of 75% or 18 hours per day is not met.
 Monthly Average is shown "-" if minimum data completeness criteria of 75% of days per month is not met.

Timeseries Chart of Hourly Average for ST - St. Lina Site





LAKELAND INDUSTRY & COMMUNITY ASSOCIATION

St. Lina Site - August 2019
Summary of Hourly Averages

PRECIPITATION in mm

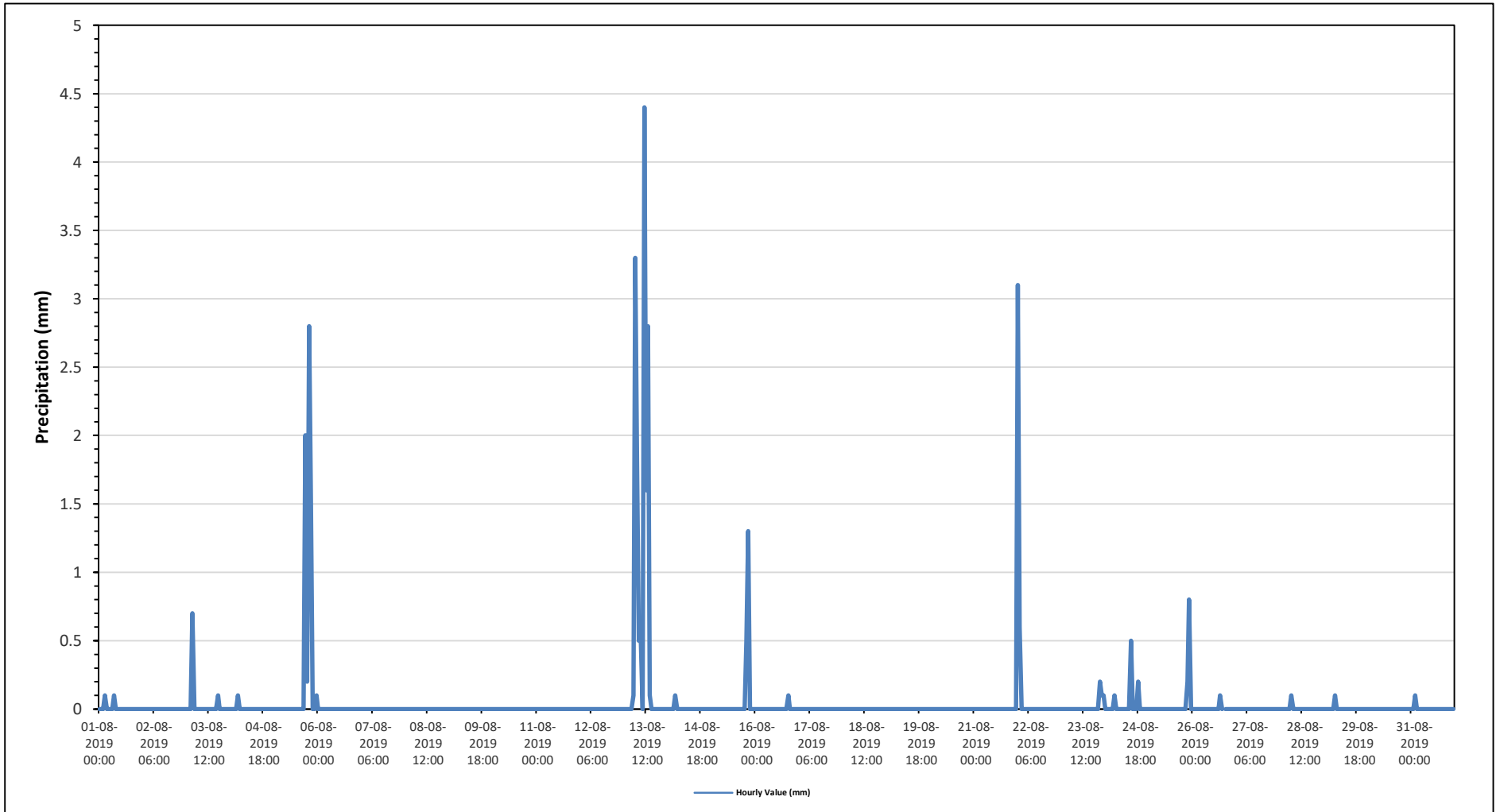
Maximum Hourly Value:	4.4 mm on August 13 at hour 11	Hours in Service:	744
Maximum Daily Value:	15.1 mm on August 13	Hours of Data:	743
Minimum Hourly Value:	0.0 mm on August 1 at hour 0	Hours of Missing Data:	1
Minimum Daily Value:	0.0 mm on August 2	Hours of Calibration:	0
Monthly Total:	31.1 mm	Operational Uptime:	99.9

Day	Hourly Period Starting at (MST)																							Daily	Daily	Daily			
	0	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	Minimum	Maximum	Total		
Aug 1	0.0	0.0	0.0	0.1	0.0	0.0	0.0	0.0	0.1	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.1	0.2
Aug 2	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Aug 3	0.0	0.0	0.0	0.7	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.1	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.7	0.8	
Aug 4	0.0	0.0	0.0	0.0	0.1	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.1	0.1	
Aug 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	2.0	0.2	2.8	1.5	0.0	0.0	0.1	0.0	0.0	2.8	6.6		
Aug 6	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	
Aug 7	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	
Aug 8	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	
Aug 9	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	
Aug 10	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	
Aug 11	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	
Aug 12	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	
Aug 13	0.0	0.0	0.0	0.0	0.0	0.1	3.3	1.8	0.5	0.5	0.0	4.4	1.6	2.8	0.1	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	4.4	15.1	
Aug 14	0.0	0.0	0.0	0.0	0.1	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.1	0.1	
Aug 15	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.5	1.3	0.0	0.0	0.0	0.0	0.0	0.0	1.3	1.8	
Aug 16	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.1	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.1	0.1	
Aug 17	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	
Aug 18	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	
Aug 19	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	
Aug 20	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	
Aug 21	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	
Aug 22	3.1	0.6	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	3.1	3.7	
Aug 23	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.2	0.1	0.1	0.0	0.0	0.2	0.4		
Aug 24	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	0.5	0.0	0.0	0.0	0.2	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.5	0.8	
Aug 25	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.2	0.8	0.0	0.0	0.0	0.8	1.0		
Aug 26	0.0	0.0	0.0	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	Y	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.1	0.1	
Aug 27	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	
Aug 28	0.0	0.0	0.0	0.0	0.0	0.0	0.1	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.1	0.1	
Aug 29	0.0	0.0	0.0	0.0	0.0	0.0	0.1	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.1	0.1	
Aug 30	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	
Aug 31	0.0	0.0	0.1	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.1	
Diurnal Maximum	3.1	0.6	0.1	0.7	0.1	0.1	3.3	1.8	0.5	0.5	0.0	4.4	1.6	2.8	0.5	0.1	0.0	2.0	0.2	2.8	1.5	0.2	0.8	0.1	0.0	0.0	0.0	0.1	
Daiurnal Average	0.1	0.0	0.0	0.0	0.0	0.0	0.1	0.1	0.0	0.0	0.0	0.1	0.1	0.1	0.0	0.0	0.0	0.1	0.0	0.1	0.1	0.0	0.0	0.0	0.0	0.0	0.0	0.0	

C	Calibration	S	Daily Zero/Span	Q	Quality Assurance	C1	Repeat Calibration	S1	Repeat Daily Zero/Span
G	Out for Repair	K	Collection Error	N	Not in Service	O	Operator Error	P	Power Failure
R	Recovery	X	Machine Malfunction	Y	Maintenance	T	Exceeds Temperature Limits	N	Not in Service

Daily Average is shown "-" if minimum data completeness criteria of 75% or 18 hours per day is not met.
Monthly Average is shown "-" if minimum data completeness criteria of 75% of days per month is not met.

Timeseries Chart of Hourly Average for Precipitation - St. Lina Site





LAKELAND INDUSTRY & COMMUNITY ASSOCIATION

St. Lina Site - August 2019
Summary of Hourly Averages

VECTOR WIND SPEED (VWS) in km/hr

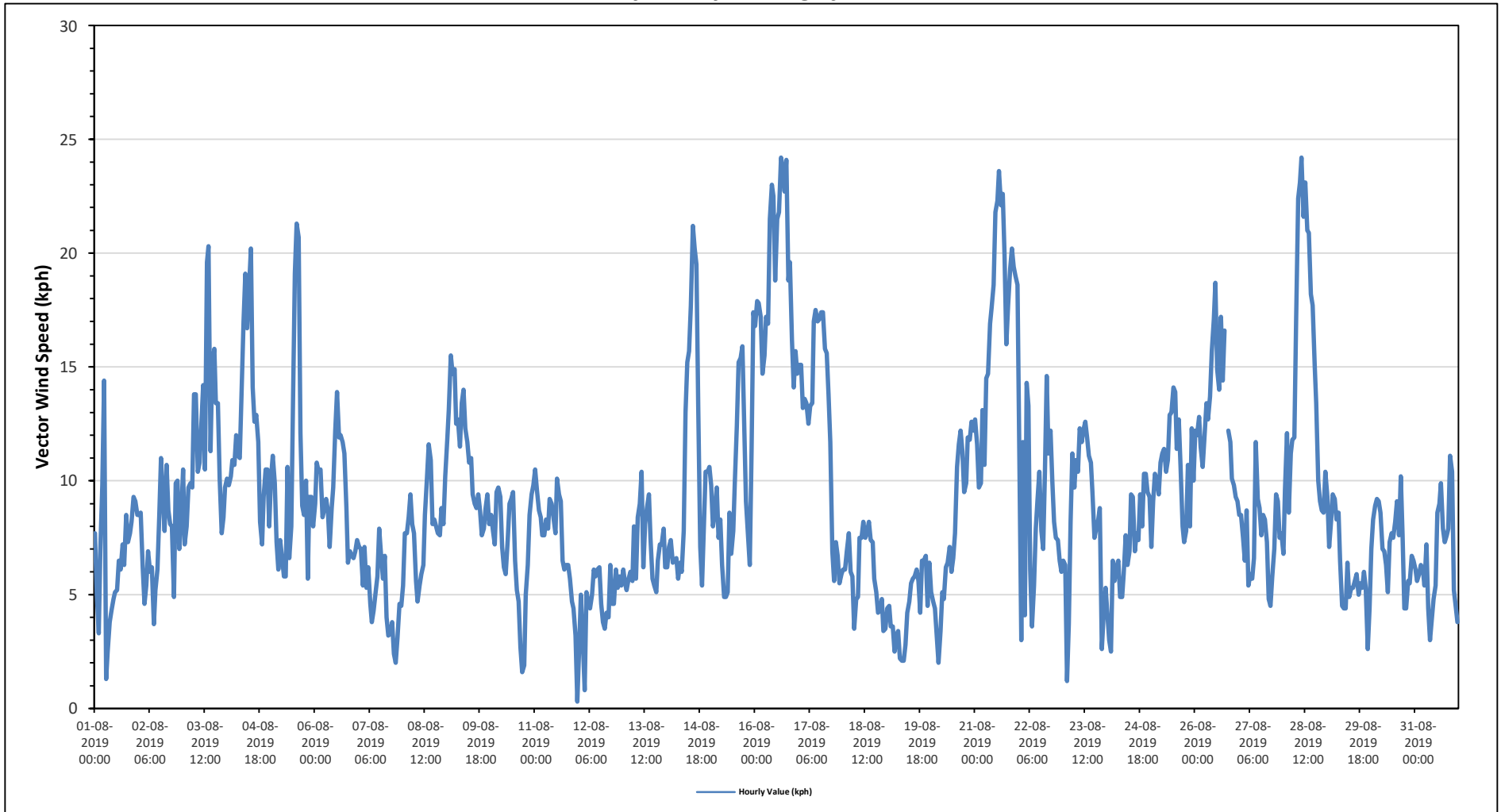
Maximum Hourly Value: 24.2 kph on August 16 at hour 14	Hours in Service: 744
Maximum Daily Value: 19.0 kph on August 16	Hours of Data: 743
Minimum Hourly Value: 0.3 kph on August 11 at hour 23	Hours of Missing Data: 1
Minimum Daily Value: 4.5 kph on August 19	Hours of Calibration: 0
Monthly Average: 3.9 kph	Operational Uptime: 99.9

Day	Hourly Period Starting at (MST)																							Daily	Daily	Daily	
	0	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	Minimum	Maximum	Average
Aug 1	7.7	5.1	3.3	6.9	9.8	14.4	1.3	2.5	3.8	4.3	4.8	5.1	5.2	6.5	6.1	7.2	6.3	8.5	7.3	7.7	8.2	9.3	9.1	8.5	1.3	14.4	6.6
Aug 2	8.5	8.6	6.2	4.6	5.4	6.9	6	6.2	3.7	5.2	6.1	8.4	11	9.4	7.8	10.7	8.7	8.1	8	4.9	9.9	10	7	8.6	3.7	11.0	7.5
Aug 3	10.5	7.2	8	9.7	9.9	9.7	13.8	13.8	10.4	10.8	12.5	14.2	10.5	19.6	20.3	11.3	15.2	15.8	13.4	13.4	10.1	7.7	8.4	9.7	7.2	20.3	11.9
Aug 4	10.1	9.8	10.2	10.9	10.7	12	11.1	11	14.2	17	19.1	16.7	18.3	20.2	14.1	12.6	12.9	11.7	8.2	7.2	9.3	10.5	10.5	8	7.2	20.2	12.3
Aug 5	10.1	11.1	9.9	7.3	6.1	7.4	6.6	5.8	5.8	10.6	6.6	8	13.7	19.1	21.3	20.7	12.1	8.9	8.5	10	5.7	9.3	9.3	8	5.7	21.3	10.1
Aug 6	9	10.8	10.4	10.5	8.4	8.7	9.2	8.7	7.1	8.8	9.7	12.2	13.9	11.9	12	11.7	11.2	8.8	6.4	6.9	6.7	6.6	6.9	7.4	6.4	13.9	9.3
Aug 7	7.1	7	5.4	7.1	5.3	6.2	4.6	3.8	4.3	5.1	5.8	7.9	6.8	5.7	6.7	4	3.2	3.3	3.8	2.4	2	3.1	4.6	4.5	2.0	7.9	5.0
Aug 8	5.4	7.7	7.7	8.4	9.4	8.1	7.7	5.6	4.7	5.4	5.9	6.3	8.5	10.1	11.6	10.9	8.1	8.3	8	7.7	7.6	8.8	8.1	10.2	4.7	11.6	7.9
Aug 9	11.8	13.1	15.5	14.7	14.9	12.5	12.7	11.5	13.4	14	12.3	11.7	10.8	11	9.4	9	8.8	9.4	8.7	7.6	7.9	8.8	9.4	8.1	7.6	15.5	11.1
Aug 10	8.5	7.8	7.2	9.5	9.7	9.3	7.1	6.2	5.9	7.4	9	9.2	9.5	6.5	5.2	4.7	2.7	1.6	1.9	5	6.3	8.5	9.4	9.8	1.6	9.8	7.0
Aug 11	10.5	9.6	8.7	8.4	7.6	7.6	8.3	7.9	9.2	9	8.4	7.7	10.1	9.4	9.1	6.5	6.1	6.3	6.3	5.7	4.7	4.4	3.2	0.3	0.3	10.5	7.3
Aug 12	2.9	5	2.9	0.8	5.1	4.7	4.4	5	6.1	5.8	6.1	6.2	4.6	3.8	3.5	4.2	4	6.3	4.6	4.6	6.1	5.3	5.8	5.4	0.8	6.3	4.7
Aug 13	6.1	5.5	5.2	5.7	6	5.6	8	5.7	8.4	9	10.4	6.2	8.1	8.8	9.4	7.5	5.7	5.4	5.1	6.5	7.2	7.2	7.9	6.2	5.1	10.4	7.0
Aug 14	6.2	7.1	7.4	6.4	6.5	6.6	5.7	6.4	6	7.8	13	15.2	15.7	17.7	21.2	20.2	19.5	13.3	7.1	5.4	7.9	10.4	10.4	10.6	5.4	21.2	10.6
Aug 15	9.8	8	8.6	9.7	7.5	8.3	6.3	4.9	4.9	5.1	8.6	6.8	7.8	9.9	12.4	15.2	15.4	15.9	12.5	9.1	7.6	6.3	11.3	17.4	4.9	17.4	9.6
Aug 16	16.8	17.9	17.8	17.2	14.7	15.5	17.2	16.9	21.5	23	22.5	18.8	21.5	21.8	24.2	23.8	22.7	24.1	18.8	19.6	16.2	14.1	15.7	14.7	14.1	24.2	19.0
Aug 17	15.1	15.1	13.2	13.6	13.4	12.5	13.3	13.4	17	17.5	17	17.1	17.4	17.4	15.8	15.6	13.8	11.7	6.9	5.6	7.3	6.7	5.5	5.9	5.5	17.5	12.8
Aug 18	6.1	6.1	6.9	7.7	6	5.8	3.5	4.8	4.9	7.5	7.5	8.2	7.5	7.7	8.2	7.4	7.3	5.7	5.1	4.2	4.3	4.8	3.4	3.5	3.4	8.2	6.0
Aug 19	4.4	4.5	3.6	3.6	2.5	3.2	3.4	2.2	2.1	2.1	2.8	4.2	4.7	5.5	5.7	5.8	6.1	5.6	4.2	6.5	6.5	6.7	4.5	6.4	2.1	6.7	4.5
Aug 20	5.1	4.7	4.4	3.2	2	3.4	5.1	4.8	6.2	6.4	7.1	6	6.6	7.7	10.6	11.6	12.2	11.3	9.5	9.9	11.9	11.8	12.6	12.2	2.0	12.6	7.8
Aug 21	12.7	11.6	9.7	9.9	13.1	10.7	14.5	14.7	16.9	17.6	18.6	21.8	22.3	23.6	22.1	22.6	19.9	16	17.7	19.3	20.2	19.4	19	18.6	9.7	23.6	17.2
Aug 22	11.4	3	11.7	4.1	14.3	13.3	6.1	3.6	5.4	7.9	9.2	10.4	7.8	7	10.4	14.6	11.2	12.2	10	8.2	7.5	7.4	6.5	6	3.0	14.6	8.7
Aug 23	6.5	6.3	1.2	3.7	8.2	11.2	9.7	10.9	10.4	12.3	11.7	12.2	12.6	11.9	11.1	10.8	9.5	7.5	7.9	8.3	8.8	2.6	4.1	5.3	1.2	12.6	8.5
Aug 24	4.3	3	2.5	6.5	5.6	6.2	6.5	4.9	4.9	5.9	7.6	6.3	6.9	9.4	9.3	6.9	7.7	7.4	9.4	8	10.3	10.3	9.5	9.3	2.5	10.3	7.0
Aug 25	7.1	9.1	10.3	10.1	9.4	10.8	11.2	11.4	10.4	10.9	12.9	13	14.1	13.9	11.4	12.7	10.6	8	7.3	7.8	10.7	8	12.3	10	7.1	14.1	10.6
Aug 26	12.2	12	12.8	11.5	10.6	11.9	13.4	12.7	13.7	15.7	17.1	18.7	14.9	14	17.2	14.4	16.6	Y	12.2	11.7	10.1	9.8	9.3	9.1	9.1	18.7	13.1
Aug 27	8.5	8.5	7.5	6.5	8.7	5.4	5.9	5.7	6.6	11.7	9.2	8.8	7.6	8.5	8.3	7.3	4.8	4.5	5.8	7	9.4	9.1	7.5	7.7	4.5	11.7	7.5
Aug 28	6.8	9.6	12.1	8.6	11.2	11.8	11.9	17.1	22.4	23.1	24.2	21.6	23.1	21	20.9	18.2	17.7	15.1	13.4	10	9.1	8.7	8.6	10.4	6.8	24.2	14.9
Aug 29	9.3	7.1	8.3	9.4	9.2	8.3	8.6	6.5	4.5	4.4	4.4	6.4	4.9	5.3	5.3	5.6	5.9	5	5.5	5.3	6	5.3	2.6	4.4	2.6	9.4	6.1
Aug 30	7	8.3	8.9	9.2	9.1	8.6	7	6.9	6.3	5.1	7.3	7.7	7.5	8.2	9.1	7.6	10.2	7.6	4.4	4.4	5.6	5.5	6.7	6.5	4.4	10.2	7.3
Aug 31	6.1	5.6	5.9	6.3	6.1	5.4	7.2	4.4	3	3.9	4.8	5.4	8.6	9	9.9	7.9	7.3	7.6	7.9	11.1	10.4	5.2	4.5	3.8	3.0	11.1	6.6
Diurnal Maximum	17	18	18	17	15	16	17	17	22	23	24	22	23	24	24	24	23	24	19	20	20	19	19	19			
Diurnal Average	8.5	8.3	8.2	8.1	8.6	8.8	8.3	7.9	8.5	9.7	10.4	10.6	11.0	11.7	11.9	11.3	10.4	9.4	8.3	8.1	8.4	8.1	8.2	8.3			

C Calibration	S Daily Zero/Span	Q Quality Assurance	C1 Repeat Calibration	S1 Repeat Daily Zero/Span
G Out for Repair	K Collection Error	N Not in Service	O Operator Error	P Power Failure
R Recovery	X Machine Malfunction	Y Maintenance	T Exceeds Temperature Limits	N Not in Service

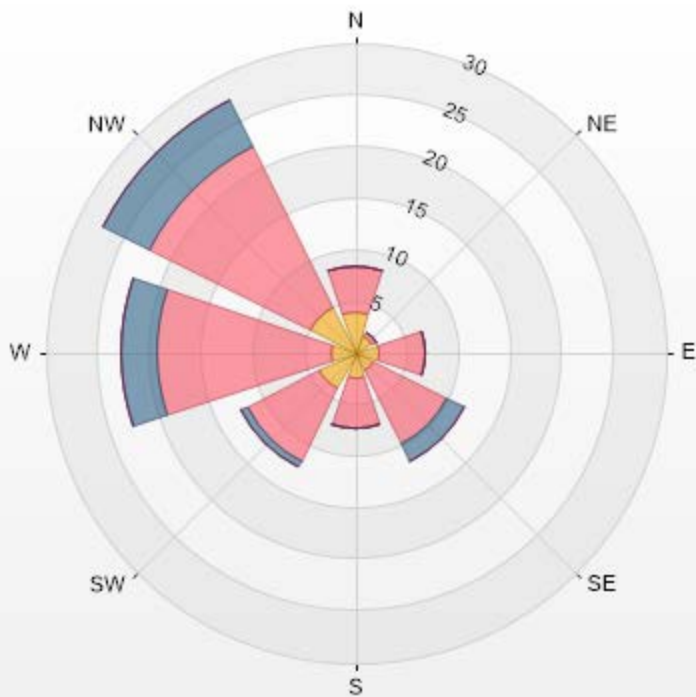
Daily Average is shown "-" if minimum data completeness criteria of 75% or 18 hours per day is not met.
 Monthly Average is shown "-" if minimum data completeness criteria of 75% of days per month is not met.

Timeseries Chart of Hourly Average for VWS - St. Lina Site



Wind: St. Lina Poll.: St. Lina-WDS[kph] Monthly: 08-2019 Type: PollutionRose Direction: Blowing From (Wind Frequency) Based On 1 Hr.
 Calm: 0.68% Valid Data: 99.46% Calm Avg: 1.02 [kph]

Direction	0-6	6-15	15-29	29-39	>39.0	Total
N	3.92	4.46	0	0	0	8.38
NE	1.76	0.54	0	0	0	2.3
E	2.3	4.46	0	0	0	6.76
SE	1.89	7.97	2.03	0	0	11.89
S	2.43	4.86	0.14	0	0	7.43
SW	3.92	7.84	0.68	0	0	12.44
W	2.43	16.76	3.51	0	0	22.7
NW	4.86	17.57	5	0	0	27.43
Summary	23.51	64.46	11.36	0	0	99.33



LICA-201908-Revision 1

% Icon Classes (kph)	24	64	197	367	0	0
0-6	24	64	197	367	0	0
7-14	0	0	0	0	0	0
15-29	0	0	0	0	0	0
29-39	0	0	0	0	0	0
>39.0	0	0	0	0	0	0



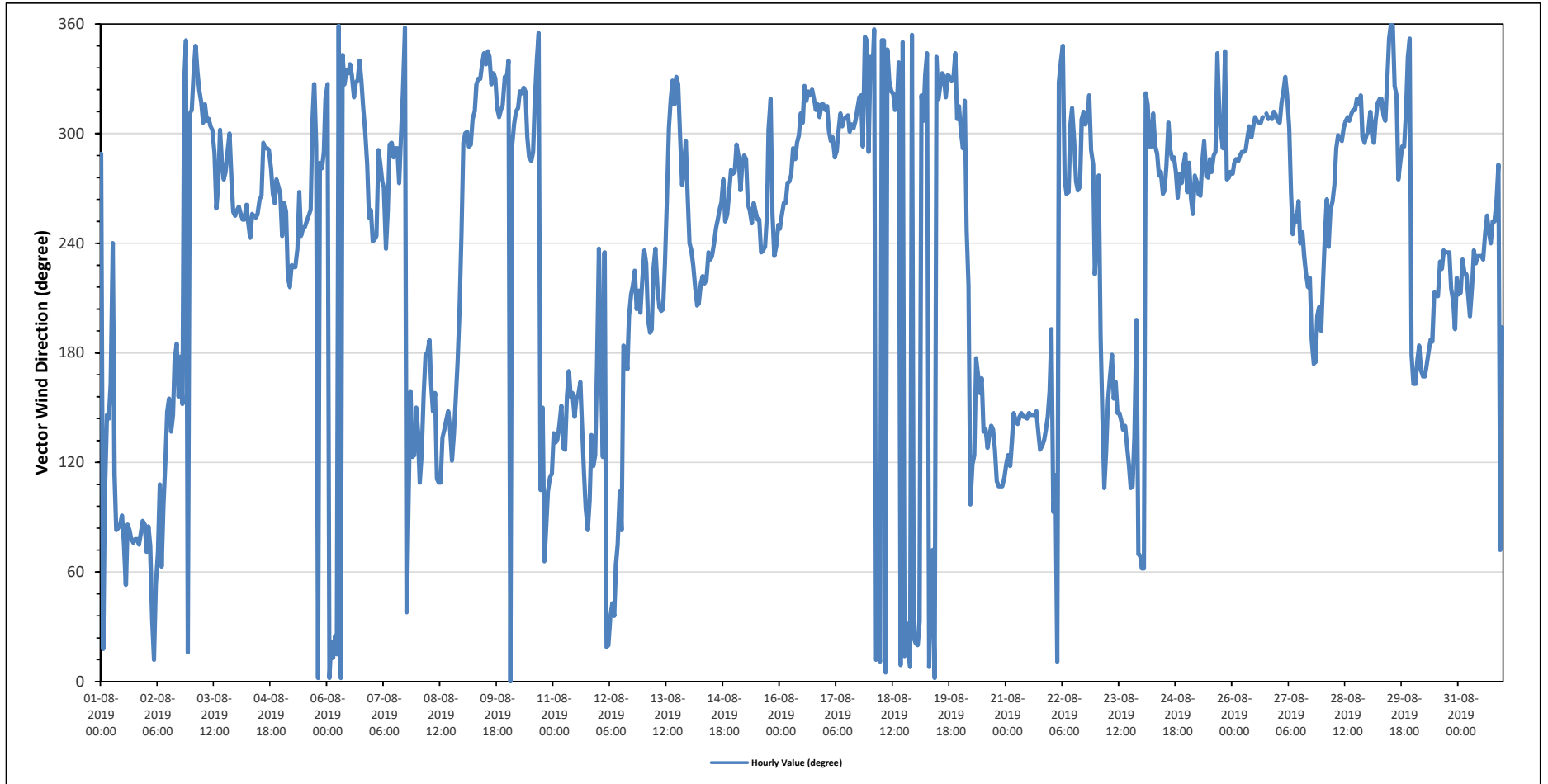
LAKELAND INDUSTRY & COMMUNITY ASSOCIATION

St. Lina Site - August 2019
Summary of Hourly Averages

WIND DIRECTION (VWD) in sector

Monthly Average:		277 (W) degree														Hours in Service:		744									
																Hours of Data:		743									
																Hours of Missing Data:		1									
																Hours of Calibration:		0									
																Operational Uptime:		99.9									
Day	Hourly Period Starting at (MST)																							Daily Average			
	0	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	Degree	Quadrant	
Aug 1	WNW	NNE	E	SE	SE	SSE	WSW	ESE	E	E	E	E	ENE	NE	E	E	ENE	ENE	ENE	ENE	ENE	E	E	E	92	E	
Aug 2	ENE	E	ENE	NE	NNE	NE	ENE	ESE	ENE	E	ESE	SE	SSE	SE	SE	S	S	SSE	S	SSE	NW	N	NNE	NW	108	ESE	
Aug 3	NW	NNW	NNW	NNW	NW	NW	NW	NW	NW	NW	WNW	WNW	WNW	WSW	W	WNW	WNW	W	W	WNW	WNW	W	WSW	WSW	295	WNW	
Aug 4	WSW	WSW	WSW	WSW	WSW	W	WSW	WSW	WSW	WSW	WSW	WSW	W	W	WNW	WNW	WNW	WNW	W	W	W	W	W	W	265	W	
Aug 5	WSW	W	WSW	SW	SW	SW	SW	SW	SW	W	WSW	WSW	WSW	WSW	WSW	NW	NW	WNW	N	WNW	W	WNW	NW	264	W		
Aug 6	NW	N	NNE	NNE	NNE	NNE	N	N	NNW	NW	NNW	NNW	NNW	NNW	NW	NNW	NNW	NNW	NNW	NW	WNW	W	WSW	WSW	337	NNW	
Aug 7	WSW	WSW	WSW	WNW	W	W	W	SW	WSW	WNW	WNW	WNW	WNW	WNW	W	WNW	NW	N	NE	E	SSE	ESE	ESE	SSE	273	W	
Aug 8	SE	ESE	ESE	SSE	S	S	S	SSE	SE	SSE	ESE	ESE	ESE	SE	SE	SE	SE	SE	ESE	SE	SSE	S	SSW	WSW	150	SSE	
Aug 9	WNW	WNW	WNW	WNW	WNW	NW	NW	NW	NNW	NNW	NNW	NNW	NNW	NNW	NNW	NNW	NNW	NNW	NW	NW	NW	NW	NNW	NNW	320	NW	
Aug 10	NNW	N	WNW	WNW	NW	NW	NW	NW	NW	NW	WNW	WNW	WNW	WNW	NW	NNW	N	ESE	SSE	ENE	E	ESE	ESE	ESE	328	NNW	
Aug 11	SE	SE	SE	SE	SSE	SE	SE	SSE	SSE	SSE	SSE	SE	SSE	SSE	SSE	SE	ESE	E	E	E	SE	ESE	ESE	S	139	SE	
Aug 12	SW	SSE	ESE	SW	NNE	NNE	NE	NE	NE	ENE	ENE	ESE	E	S	S	S	SSW	SSW	SW	SSW	SSW	SSW	SSW	SW	156	SSE	
Aug 13	SW	SW	SSW	S	S	SW	SW	SSW	SSW	SSW	SSW	SW	W	WNW	NW	NNW	NW	NNW	NW	WNW	W	W	WNW	W	256	WSW	
Aug 14	WSW	SW	SW	SSW	SSW	SSW	SW	SW	SW	SW	SW	SW	SW	WSW	WSW	WSW	WSW	W	W	WSW	WSW	W	W	W	244	WSW	
Aug 15	W	WNW	WNW	W	WNW	WNW	WNW	W	WSW	WSW	W	WSW	WSW	WSW	SW	SW	SW	WSW	WNW	NW	WSW	SW	WSW	WSW	262	W	
Aug 16	WSW	WSW	W	W	W	W	W	WNW	WNW	WNW	WNW	NW	NW	NW	NW	NW	NW	NW	NW	NW	NW	NW	NW	NW	300	WNW	
Aug 17	NW	NW	WNW	WNW	WNW	WNW	WNW	WNW	NW	WNW	NW	NW	NW	WNW	WNW	WNW	NW	NW	NW	NW	WNW	N	N	WNW	306	NW	
Aug 18	NNW	NNW	N	NNE	NNE	NNE	N	N	N	NNW	NNW	NW	NW	NNW	NNW	N	N	NNE	NNE	NNE	N	N	NNE	N	350	N	
Aug 19	NNE	NNE	NNE	NW	NW	NNW	NNW	N	ENE	ENE	N	NNW	NW	NW	NNW	NNW	NW	NNW	NNW	NNW	NNW	NNW	NW	NW	338	NNW	
Aug 20	WNW	WNW	NW	WSW	SW	E	ESE	ESE	S	SSE	SSE	SSE	SE	SE	SE	SE	SE	SE	SE	ESE	ESE	ESE	ESE	ESE	131	SE	
Aug 21	ESE	ESE	ESE	SE	SE	SE	SE	SE	SE	SE	SE	SE	SE	SE	SE	SE	SE	SE	SE	SE	ESE	ESE	ESE	ESE	141	SE	
Aug 22	S	E	ESE	NNE	NNW	NNW	NNW	W	W	W	WNW	NW	WNW	W	W	W	NW	NW	WNW	NW	NW	WNW	W	SW	298	WNW	
Aug 23	WSW	W	S	SE	ESE	SE	SSE	SSE	S	SSE	SSE	SE	SE	SE	SE	SE	SE	ESE	ESE	ESE	SE	SSW	ENE	ENE	143	SE	
Aug 24	ENE	ENE	NW	NW	WNW	WNW	NW	WNW	WNW	W	W	W	W	NW	WNW	WNW	WNW	W	W	W	W	W	W	WNW	288	WNW	
Aug 25	W	WNW	W	WSW	W	W	W	W	WNW	WNW	W	W	WNW	W	WNW	WNW	NNW	NW	WNW	WNW	NNW	W	W	W	284	WNW	
Aug 26	W	WNW	WNW	WNW	WNW	WNW	WNW	WNW	WNW	WNW	WNW	NW	NW	NW	NW	NW	Y	NW	NW	NW	NW	NW	NW	NW	300	WNW	
Aug 27	NW	NW	NW	NW	NNW	NNW	WNW	W	WSW	WSW	WSW	W	WSW	WSW	SW	SW	SW	SW	S	S	S	SSW	SSW	S	249	WSW	
Aug 28	SW	WSW	W	SW	WSW	W	W	WNW	WNW	WNW	WNW	NW	NW	NW	NW	NW	NW	NW	NW	NW	NW	WNW	WNW	WNW	296	WNW	
Aug 29	WNW	NW	WNW	WNW	NW	NW	NW	NW	NW	NW	N	N	N	NW	NW	W	WNW	WNW	WNW	NW	NNW	N	S	313	NW		
Aug 30	SSE	SSE	S	S	SSE	SSE	SSE	S	S	S	S	S	SSW	SSW	SSW	SW	SW	SW	SW	SSW	SSW	S	SW	198	SSW		
Aug 31	SSW	SSW	SW	SW	SW	SSW	SSW	SW	SW	SW	SW	SW	SW	WSW	WSW	WSW	WSW	WSW	WSW	WSW	WSW	W	W	ENE	SSW	235	SW
C	Calibration				S	Daily Zero/Span				Q	Quality Assurance				C1	Repeat Calibration				S1	Repeat Daily Zero/Span						
G	Out for Repair				K	Collection Error				N	Not in Service				O	Operator Error				P	Power Failure						
R	Recovery				X	Machine Malfunction				Y	Maintenance				T	Exceeds Temperature Limits				N	Not in Service						
Daily Average is shown "-" if minimum data completeness criteria of 75% or 18 hours per day is not met.																											
Monthly Average is shown "-" if minimum data completeness criteria of 75% of days per month is not met.																											

Timeseries Chart of Hourly Average for VWD - St. Lina Site





LAKELAND INDUSTRY & COMMUNITY ASSOCIATION

St. Lina Site - August 2019

Summary of Hour Standard Deviations

STANDARD DEVIATION WIND DIRECTION (STDWD) in Degree

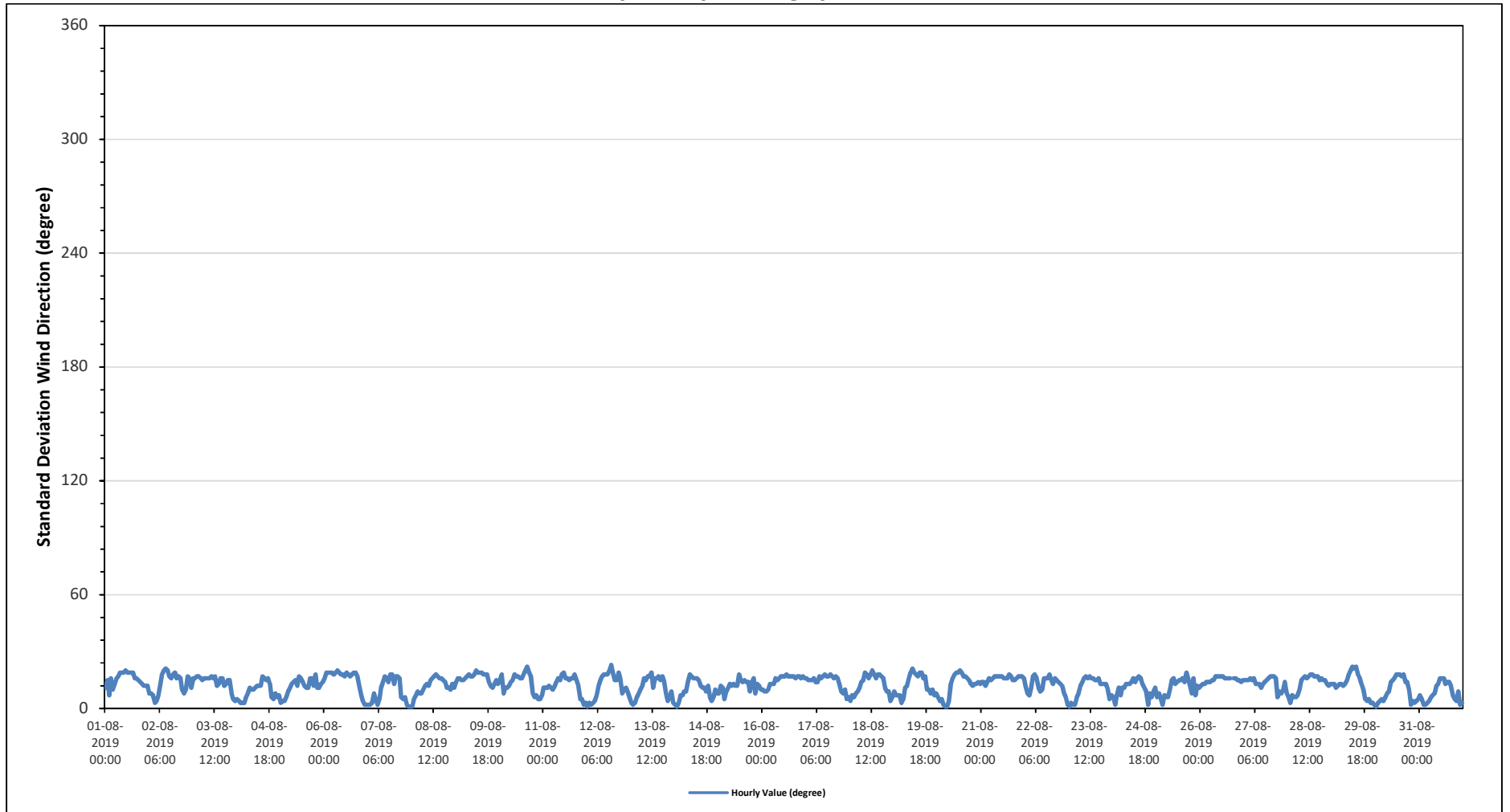
Maximum Hourly Value:	23 degree on August 12 at hour 13	Hours in Service:	744
Minimum Hourly Value:	1 degree on August 7 at hour 22	Hours of Data:	743
		Hours of Missing Data:	1
		Hours of Calibration:	0
		Operational Uptime:	99.9

Day	Hourly Period Starting at (MST)																							Daily	Daily		
	0	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	Minimum	Maximum	
Aug 1	11	15	7	16	10	13	16	17	19	19	19	20	19	19	19	19	16	16	15	14	13	12	12	12	7	20	
Aug 2	8	8	7	3	4	7	13	18	20	21	20	17	16	18	19	16	17	16	10	8	10	17	16	11	3	21	
Aug 3	16	16	17	17	16	15	16	16	16	16	17	16	17	12	13	16	16	12	13	15	15	8	5	4	4	17	
Aug 4	5	4	3	3	3	6	8	11	10	10	11	12	12	12	17	16	15	16	13	6	5	8	6	7	3	17	
Aug 5	3	4	4	6	9	11	13	14	15	12	17	16	14	12	11	11	16	16	12	18	11	11	13	14	3	18	
Aug 6	16	19	19	19	19	18	19	20	19	18	18	17	19	18	17	18	19	19	17	12	7	4	2	2	2	20	
Aug 7	2	2	3	8	5	2	5	11	14	17	16	14	18	18	13	17	17	16	6	5	6	2	1	1	1	18	
Aug 8	1	5	7	9	8	8	10	12	13	12	15	16	17	18	17	16	16	15	14	11	11	10	13	11	1	18	
Aug 9	14	16	16	15	15	16	17	18	17	17	18	20	19	19	19	18	18	18	14	12	11	13	15	13	11	20	
Aug 10	15	18	8	11	11	12	14	15	18	17	17	16	16	18	20	22	19	17	8	6	7	5	5	7	5	22	
Aug 11	11	11	11	12	11	10	12	14	16	15	18	19	16	16	15	16	16	18	15	12	5	5	2	3	2	19	
Aug 12	1	3	2	3	4	7	12	15	17	18	18	18	20	23	18	15	15	19	16	8	10	11	9	6	1	23	
Aug 13	3	2	3	6	8	10	12	16	15	17	17	19	11	16	16	17	15	17	14	8	4	6	9	3	2	19	
Aug 14	2	1	3	7	7	9	9	14	18	17	16	16	16	15	12	11	11	9	12	6	4	6	10	8	1	18	
Aug 15	8	12	11	5	9	11	13	12	13	12	12	18	15	14	15	14	14	9	14	16	8	13	12	10	5	18	
Aug 16	10	9	9	10	13	13	13	16	15	16	17	17	17	18	17	17	17	17	16	17	17	16	17	16	9	18	
Aug 17	16	15	15	15	16	14	14	17	16	17	18	17	17	18	17	16	17	16	13	9	8	10	5	6	5	18	
Aug 18	4	7	6	8	9	11	14	15	19	18	16	18	20	18	16	18	18	17	16	11	9	9	4	6	4	20	
Aug 19	9	7	7	7	3	5	11	12	16	19	21	19	18	17	19	19	16	17	10	10	8	10	7	8	3	21	
Aug 20	6	4	5	2	1	4	13	16	18	19	19	20	19	17	17	16	15	13	12	13	13	14	13	1	20		
Aug 21	14	14	12	14	16	15	16	17	17	17	17	17	16	16	16	18	17	15	15	16	17	17	17	16	12	18	
Aug 22	12	8	7	11	17	18	16	11	9	10	16	16	16	18	15	13	16	15	14	13	12	8	6	2	2	18	
Aug 23	1	3	2	2	6	8	12	14	16	17	16	17	16	16	15	16	13	13	13	13	10	5	7	1	17		
Aug 24	6	2	7	11	7	11	11	13	13	14	16	14	16	17	16	13	11	9	2	8	6	9	11	2	17		
Aug 25	6	8	5	2	7	6	6	10	15	16	13	14	15	15	16	14	19	16	12	8	16	7	12	11	2	19	
Aug 26	12	13	13	14	14	14	15	15	17	17	17	17	17	16	16	16	16	16	16	16	16	15	15	14	15	12	17
Aug 27	15	15	15	16	15	16	13	13	11	13	14	15	16	17	17	17	16	6	9	8	10	14	8	6	17		
Aug 28	6	3	7	6	6	7	10	15	16	17	16	17	18	18	17	17	15	16	15	15	13	12	13	3	18		
Aug 29	13	13	11	12	13	13	12	13	15	18	20	22	21	22	18	16	13	10	5	4	5	3	3	2	2	22	
Aug 30	1	3	4	5	4	6	8	9	14	15	16	18	18	18	17	18	14	14	10	2	4	3	4	5	1	18	
Aug 31	7	5	2	2	3	4	6	7	8	12	13	16	16	16	13	14	14	12	7	5	4	9	2	3	2	16	
Diurnal Minimum	1	1	2	2	1	1	4	7	8	10	11	12	11	12	11	11	11	9	5	2	4	2	1	1			
Diurnal Maximum	16	19	19	19	19	18	19	20	20	21	21	22	21	23	20	22	19	19	17	18	17	17	17	16			

C	Calibration	S	Daily Zero/Span	Q	Quality Assurance	C1	Repeat Calibration	S1	Repeat Daily Zero/Span
G	Out for Repair	K	Collection Error	N	Not in Service	O	Operator Error	P	Power Failure
R	Recovery	X	Machine Malfunction	Y	Maintenance	T	Exceeds Temperature Limits	N	Not in Service

Daily Average is shown "-" if minimum data completeness criteria of 75% or 18 hours per day is not met.
 Monthly Average is shown "-" if minimum data completeness criteria of 75% of days per month is not met.

Timeseries Chart of Hourly Average for STDWD - St. Lina Site



BONNYVILLE -EAST STATION



LAKELAND INDUSTRY & COMMUNITY ASSOCIATION

Bonnyville - East Site - August 2019

Summary of Hourly Averages

SULPHUR DIOXIDE (SO₂) in ppb

Alberta Ambient Air Quality Objectives (AAAQO): 1-Hour 172 ppb, 24-Hour 48 ppb, 30-Day 11 ppb

Number of 1-Hour Exceedences: 0 Number of 24-Hour Exceedences: 0 30-Day Exceedence: 0

Maximum Hourly Value: 2 ppb on August 8 at hour 9 Hours in Service: 744
 Maximum Daily Value: 0.5 ppb on August 8 Hours of Data: 705
 Minimum Hourly Value: 0 ppb on August 1 at hour 0 Hours of Missing Data: 1
 Minimum Daily Value: 0.0 ppb on August 1 Hours of Calibration: 38
 Monthly Average: 0.1 ppb Operational Uptime: 99.9

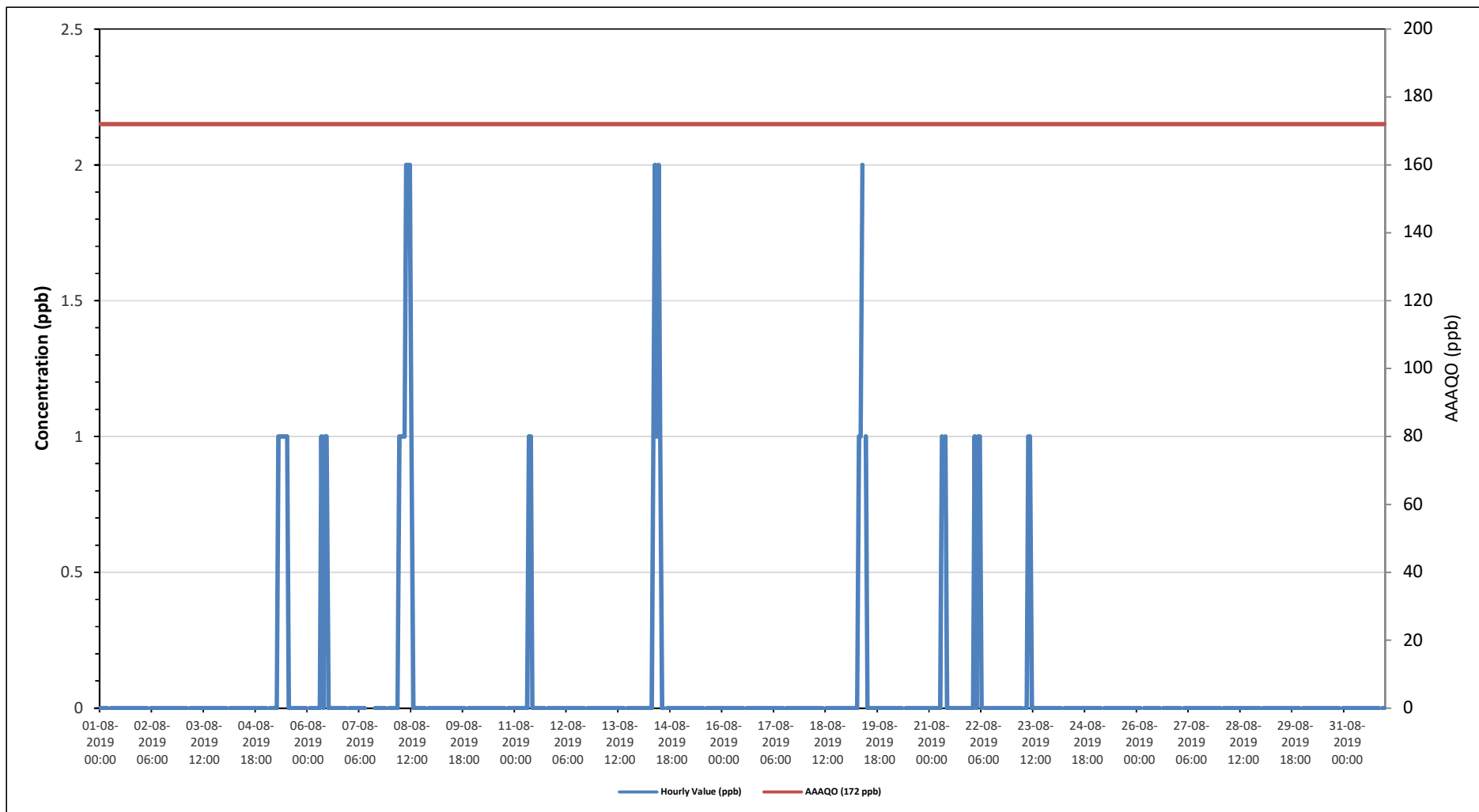
Day	Hourly Period Starting at (MST)																							Daily Minimum	Daily Maximum	Daily Average																
	0	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22				23															
Aug 1	0	0	0	0	0	S	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0						
Aug 2	0	0	0	0	S	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0					
Aug 3	0	0	0	S	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0					
Aug 4	0	0	S	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0					
Aug 5	0	S	0	0	0	0	0	0	0	1	1	1	1	1	1	1	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1	0.3			
Aug 6	S	0	0	0	0	0	0	0	0	1	0	1	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1	0.1				
Aug 7	0	0	0	0	0	0	0	0	0	0	0	C	C	C	C	C	0	0	0	0	0	0	0	0	0	0	0	S	0	0	0	0	0	0	0	0	0	0				
Aug 8	0	0	0	0	0	1	1	1	1	2	2	2	1	0	0	0	0	0	0	0	0	0	0	0	S	0	0	0	0	0	0	0	0	0	0	0	0	2	0.5			
Aug 9	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	S	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0			
Aug 10	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	S	S	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0			
Aug 11	0	0	0	0	0	0	0	0	0	1	1	0	0	0	0	0	0	0	0	0	0	0	S	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1	0.1		
Aug 12	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	S	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0			
Aug 13	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	S	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0		
Aug 14	0	0	0	0	0	0	0	0	0	1	2	1	2	1	0	0	0	S	S	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	2	0.3	
Aug 15	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	S	S	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0		
Aug 16	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	S	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0		
Aug 17	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	S	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0		
Aug 18	0	0	0	0	0	0	0	0	0	0	0	0	0	S	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0		
Aug 19	0	0	0	0	0	0	0	0	1	1	2	S	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	2	0.2	
Aug 20	0	0	0	0	0	0	0	0	0	0	0	S	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0		
Aug 21	0	0	0	0	0	0	0	0	1	S	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1	0.1	
Aug 22	0	0	1	0	1	1	0	S	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1	0.1	
Aug 23	0	0	0	0	0	0	0	S	0	0	1	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1	0.1	
Aug 24	0	0	0	0	0	S	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	
Aug 25	0	0	0	0	S	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	
Aug 26	0	0	0	S	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	
Aug 27	0	0	S	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	
Aug 28	0	S	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	
Aug 29	S	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	
Aug 30	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Aug 31	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Diurnal Maximum	0	0	1	0	1	1	1	1	1	2	2	2	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Daiurnal Average	0.0	0.0	0.0	0.0	0.0	0.1	0.0	0.1	0.2	0.3	0.2	0.2	0.1	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0

C	Calibration	S	Daily Zero/Span	Q	Quality Assurance	C1	Repeat Calibration	S1	Repeat Daily Zero/Span
G	Out for Repair	K	Collection Error	N	Not in Service	O	Operator Error	P	Power Failure
R	Recovery	X	Machine Malfunction	Y	Maintenance	T	Exceeds Temperature Limits	N	Not in Service

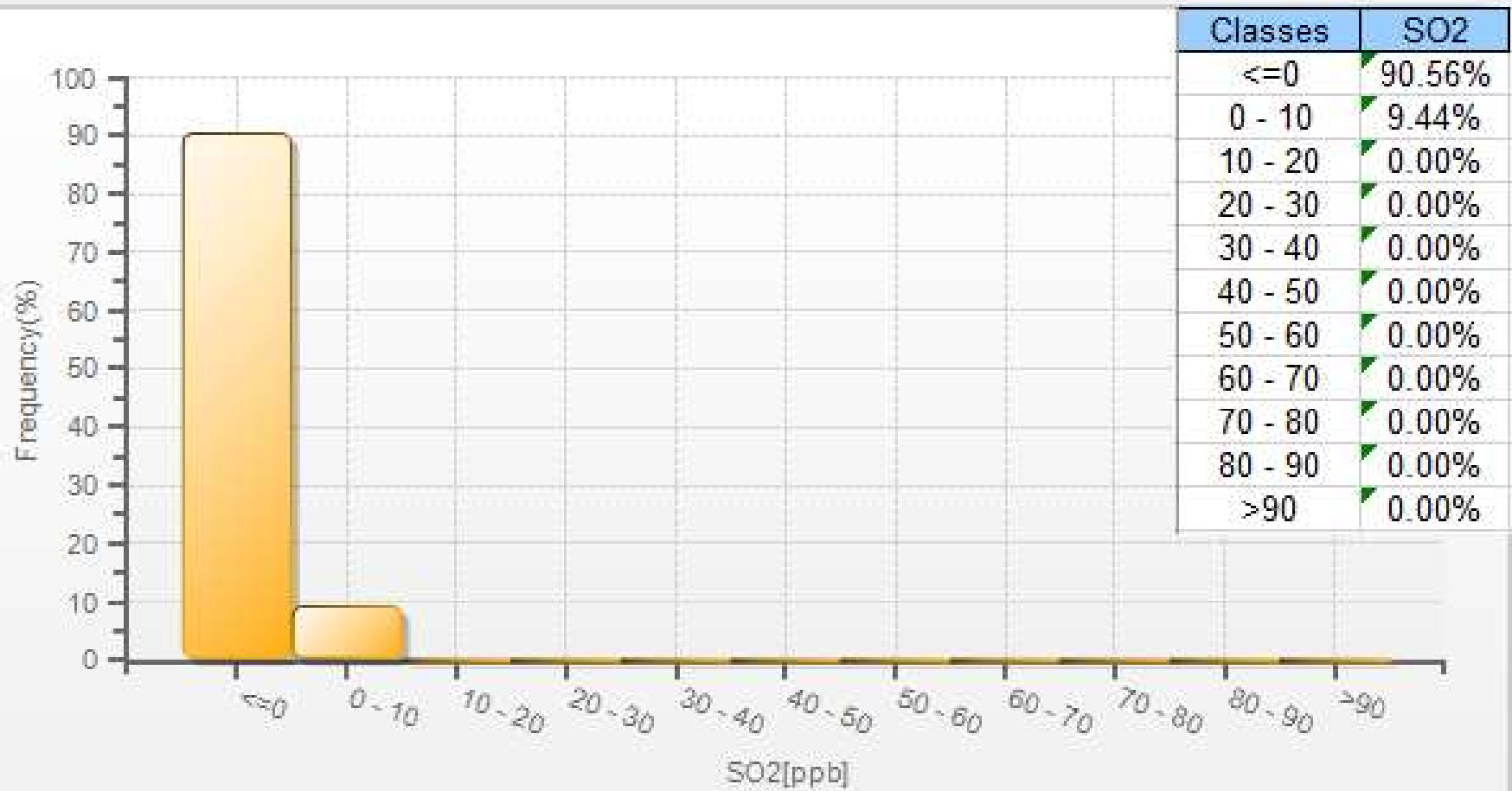
Daily Average is shown "-" if minimum data completeness criteria of 75% or 18 hours per day is not met.

Monthly Average is shown "-" if minimum data completeness criteria of 75% of days per month is not met.

Timeseries Chart of Hourly Average for SO2 - Bonnyville - East Site

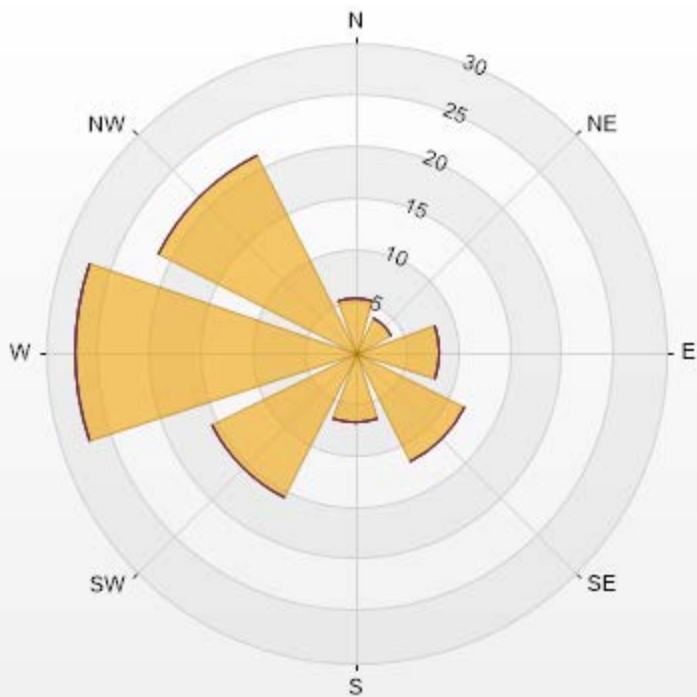


SO2[ppb] Histogram: Bonnyville East Monthly: 08-2019 1 Hr.



Wind: Bonnyville East Poll.: Bonnyville East-SO2[ppb] Monthly: 08-2019 Type: PollutionRose Direction: Blowing From (Wind Frequency) Based On 1 Hr.
 Calm: 0.00% Valid Data: 93.95% Calm Avg: 0.00 [ppb]

Direction	0-10	10-50	50-100	100-172	>172.0	Total
N	5.29	0	0	0	0	5.29
NE	3.86	0	0	0	0	3.86
E	8.15	0	0	0	0	8.15
SE	11.73	0	0	0	0	11.73
S	6.87	0	0	0	0	6.87
SW	15.59	0	0	0	0	15.59
W	27.18	0	0	0	0	27.18
NW	21.32	0	0	0	0	21.32
Summary	100	0	0	0	0	100



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% Icon Classes (ppb)

100 0-10

0 10-30

0 50-100

0 100-172

0 >172.0



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Bonnyville - East Site - August 2019

Summary of Hourly Averages

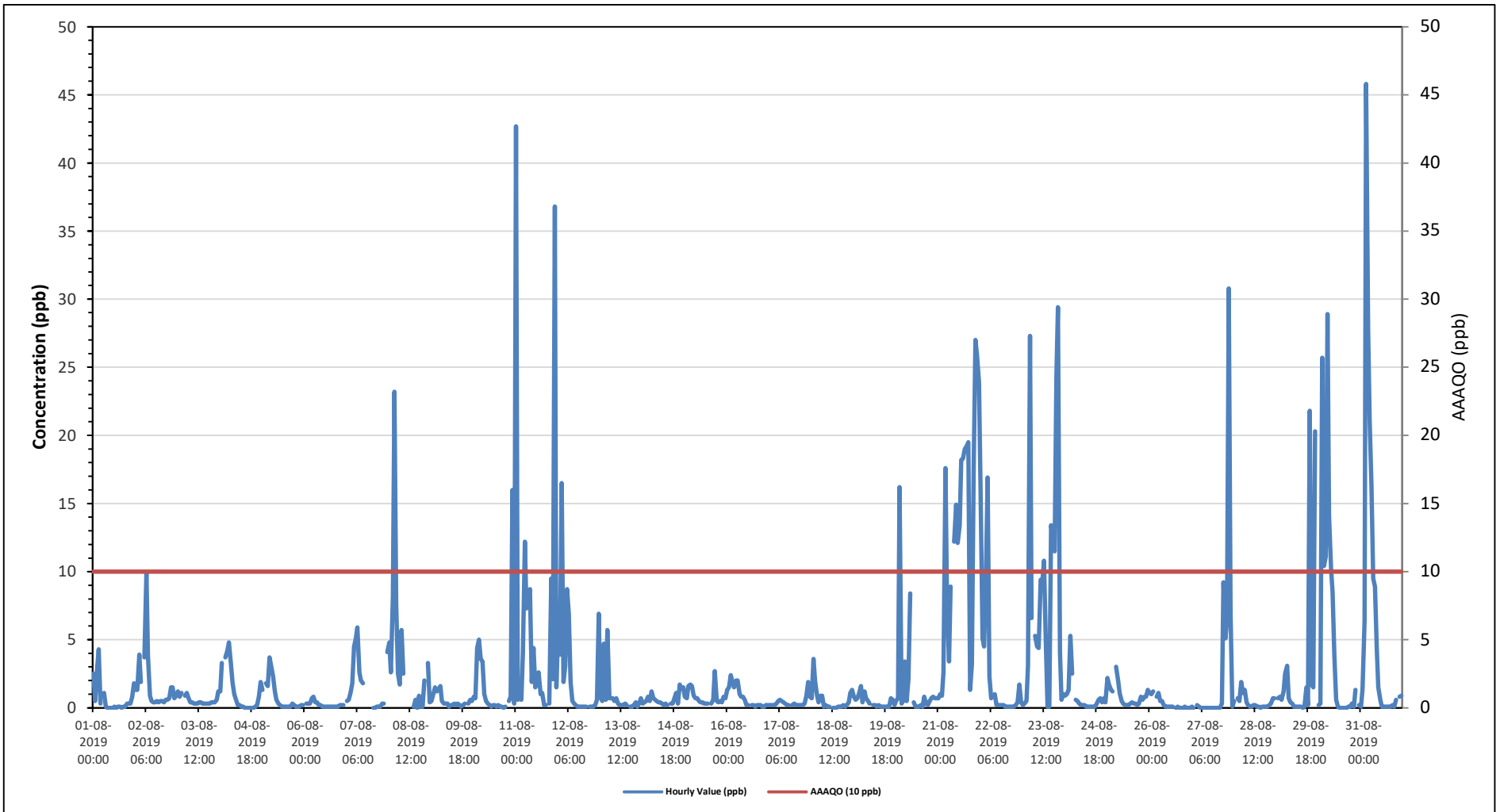
HYDROGEN SULPHIDE (H₂S) in ppb

Alberta Ambient Air Quality Objectives (AAAQO): 1-Hour 10 ppb, 24-Hour 3 ppb																													
Number of 1-Hour Exceedences: 43					Number of 24-Hour Exceedences: 6																								
Maximum Hourly Value: 46 ppb on August 31 at hour 3					Hours in Service: 744																								
Maximum Daily Value: 12.5 ppb on August 21					Hours of Data: 700																								
Minimum Hourly Value: 0 ppb on August 1 at hour 8					Hours of Missing Data: 6																								
Minimum Daily Value: 0.2 ppb on August 6					Hours of Calibration: 38																								
Monthly Average: 2.3 ppb					Operational Uptime: 99.2																								
Day	Hourly Period Starting at (MST)																							Daily Minimum	Daily Maximum	Daily Average			
	0	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22				23		
Aug 1	2.5	0.5	2.7	4.3	0.3	S	1.1	0.1	0	0	0	0	0.1	0	0.1	0.1	0	0.1	0.1	0.3	0.3	0.3	0.8	1.8	0	4	0.7		
Aug 2	1.3	1.3	3.9	1.9	S	3.7	9.9	3.8	0.9	0.5	0.4	0.4	0.5	0.4	0.5	0.5	0.4	0.6	0.6	0.7	1.5	1.5	0.7	0.9	0	10	1.6		
Aug 3	1.2	0.8	1.1	S	0.9	1.1	0.7	0.4	0.4	0.3	0.3	0.3	0.4	0.4	0.3	0.3	0.3	0.3	0.4	0.4	0.4	0.6	1.2	0	1	0.6			
Aug 4	1.2	3.3	S	3.7	4.2	4.8	3.2	1.9	1	0.6	0.2	0.2	0.1	0.1	0	0	0	0	0	0	0.1	0.2	0.8	1.9	0	5	1.2		
Aug 5	1.3	S	1.8	1.6	3.7	3	2.3	1.2	0.6	0.3	0.2	0.1	0.1	0.1	0.1	0.1	0.1	0.3	0.2	0.1	0.1	0.1	0.2	0.2	0	4	0.8		
Aug 6	S	0.3	0.3	0.3	0.7	0.8	0.4	0.4	0.2	0.2	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.2	0.2	0.2	S	0	1	0.2		
Aug 7	0.5	0.6	1.1	1.8	4.5	5.1	5.9	2.6	2	1.8	Y	Y	Y	Y	Y	0	0	0.1	0.1	0.1	0.1	0.3	0.3	S	4.1	0	6	1.7	
Aug 8	4.8	2.6	8.2	23.2	7.6	2.5	1.7	5.7	2.5	C	C	C	C	C	0.1	0.6	0	0.9	0.1	0.1	2	S	3.3	0.4	0	23	3.7		
Aug 9	0.5	1	1.5	1.2	1.3	1.6	0.5	0.3	0.3	0.3	0.1	0.2	0.2	0.3	0.2	0.3	0.2	0.1	0.2	0.3	S	0.3	0.6	0.5	0	2	0.5		
Aug 10	0.8	0.7	4.4	5	3.6	3.4	1	0.5	0.3	0.2	0.1	0.2	0.2	0.1	0.2	0.1	0.1	0	0.1	0.2	S	0.3	0.5	0.8	16	0.3	0	16	1.7
Aug 11	42.7	0.6	0.7	0.6	3.9	12.2	7.3	8.2	8.7	1.9	4.4	1.5	2	2.6	1	1.1	0.2	0.2	S	0.3	9.5	2.1	36.8	1.5	0	43	6.5		
Aug 12	5.7	3.9	16.5	1.9	3.1	8.7	6.9	1.9	0.5	0.3	0.2	0.1	0.1	0.1	0.1	0.1	0.1	S	0.1	0.1	0.1	0.2	0.6	6.9	0	17	2.5		
Aug 13	0.8	0.5	4.7	0.6	5.7	0.7	0.7	0.5	0.7	0.3	0.2	0.2	0.2	0.3	0.2	0.3	0.2	S	0.1	0.1	0.2	0.4	0.1	0.3	0.7	0	6	0.8	
Aug 14	0.3	0.4	0.5	0.8	0.5	1.2	0.7	0.6	0.5	0.4	0.4	0.3	0.2	0.3	0.2	S	0.3	0.3	0.7	1.1	0.3	1.7	1.4	1.5	0	2	0.6		
Aug 15	0.8	0.7	1.6	1.7	1.6	0.9	0.7	0.7	0.5	0.4	0.4	0.3	0.3	0.3	S	0.3	0.6	2.7	0.5	0.4	0.5	0.4	0.8	0.7	0	3	0.8		
Aug 16	1.3	1.5	2.4	1.9	1.5	2	2	1	0.8	0.8	0.6	0.2	0.2	S	0.2	0.2	0.1	0.2	0.2	0.2	0.2	0.1	0.1	0.2	0.2	0	2	0.8	
Aug 17	0.2	0.2	0.2	0.2	0.3	0.5	0.6	0.5	0.4	0.3	0.2	0.2	S	0.2	0.3	0.2	0.2	0.2	0.2	0.2	0.2	0.3	0.9	1.9	0.8	0	2	0.4	
Aug 18	0.7	3.6	2	0.9	0.4	0.9	0.9	0.1	0.2	0.1	0.1	S	0	0	0	0.1	0.1	0.1	0.2	0.1	0.2	0.4	1.1	1.3	0	4	0.6		
Aug 19	0.8	0.6	0.7	1.1	1.6	0.4	1.2	0.7	0.5	0.3	S	0.2	0.2	0.1	0.2	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.7	0.6	0.2	0	2	0.5	
Aug 20	0.5	0.7	16.2	0.3	0.5	3.4	0.5	2.1	8.4	S	0.4	0.1	0.1	0.1	0.2	0.1	0.8	0.3	0.2	0.5	0.7	0.8	0.7	0.7	0	16	1.7		
Aug 21	0.7	1	0.9	2.6	17.6	7.6	3.4	8.9	S	12.2	14.9	12.1	13.4	18.2	18.3	19	19.2	19.5	1.3	3.2	17.6	27	25.9	23.9	1	27	12.5		
Aug 22	16.2	5.1	4.5	9.2	16.9	2.3	0.7	S	1	0.2	0.2	0.2	0.2	0.2	0.1	0.1	0.1	0.1	0.1	0.1	0.2	0.4	1.7	0.4	0	17	2.6		
Aug 23	0.2	0.3	0.5	3.1	27.3	6.6	S	5.3	4.5	4.4	9.4	9.1	10.8	5	0.1	0.1	13.4	12.4	11.5	24.4	29.4	4.1	0.6	1	0	29	8.0		
Aug 24	0.9	1	1.3	5.3	2.5	S	0.6	0.5	0.3	0.2	0.2	0.2	0.1	0.1	0.1	0.1	0.1	0.1	0.3	0.6	0.7	0.4	0.7	0.4	0	5	0.7		
Aug 25	2.2	1.7	1.3	1.2	S	3	2	1.1	0.5	0.3	0.2	0.2	0.2	0.3	0.4	0.3	0.3	0.2	0.3	0.8	0.6	0.8	0.8	1.3	0	3	0.9		
Aug 26	1.1	1	1.2	S	0.8	1.1	0.5	0.5	0.2	0.1	0.1	0.1	0.1	0.1	Y	0	0.1	0	0	0	0.1	0	0	0	0	1	0.3		
Aug 27	0.1	0	S	0.2	0.1	0	0	0	0	0	0	0	0	0	0	0	0.3	9.2	5.1	6.4	30.8	7	0.1	0	31	2.6			
Aug 28	0.5	S	0.7	0.5	1.9	1.1	1.3	0.4	0.2	0.1	0.1	0.2	0.2	0.1	0.1	0	0.1	0.1	0.1	0.1	0.2	0.3	0.7	0.7	0	2	0.4		
Aug 29	S	0.7	0.8	0.6	1.2	2.5	3.1	0.7	0.4	0.3	0.1	0.1	0.1	0.1	0.1	0	0.1	1.5	0.2	21.8	1.7	1.5	20.3	S	0	22	2.6		
Aug 30	0.2	0.3	25.7	10.4	11.1	28.9	14.1	10.2	8.5	3.8	0.6	0.1	0	0	0	0	0	0.1	0.1	0.3	0.1	1.3	S	0.2	0	29	5.0		
Aug 31	0.1	1.4	6.4	45.8	27.8	21.1	16.4	9.5	8.9	4.4	1.5	0.6	0.1	0.1	0.1	0.1	0.1	0.1	0.2	0.1	0.6	S	0.8	0.9	0	46	6.4		
Diurnal Maximum	43	5	26	46	28	29	16	10	9	12	15	12	13	18	18	19	19	20	12	24	29	31	37	24					
Diurnal Average	3.1	1.3	3.9	4.5	5.3	4.5	3.0	2.4	1.8	1.2	1.3	1.0	1.1	1.1	0.8	0.8	1.2	1.4	0.9	2.1	2.5	2.7	4.3	1.9					
C	Calibration				S	Daily Zero/Span				Q	Quality Assurance				C1	Repeat Calibration				S1	Repeat Daily Zero/Span								
G	Out for Repair				K	Collection Error				N	Not in Service				O	Operator Error				P	Power Failure								
R	Recovery				X	Machine Malfunction				Y	Maintenance				T	Exceeds Temperature Limits				N	Not in Service								

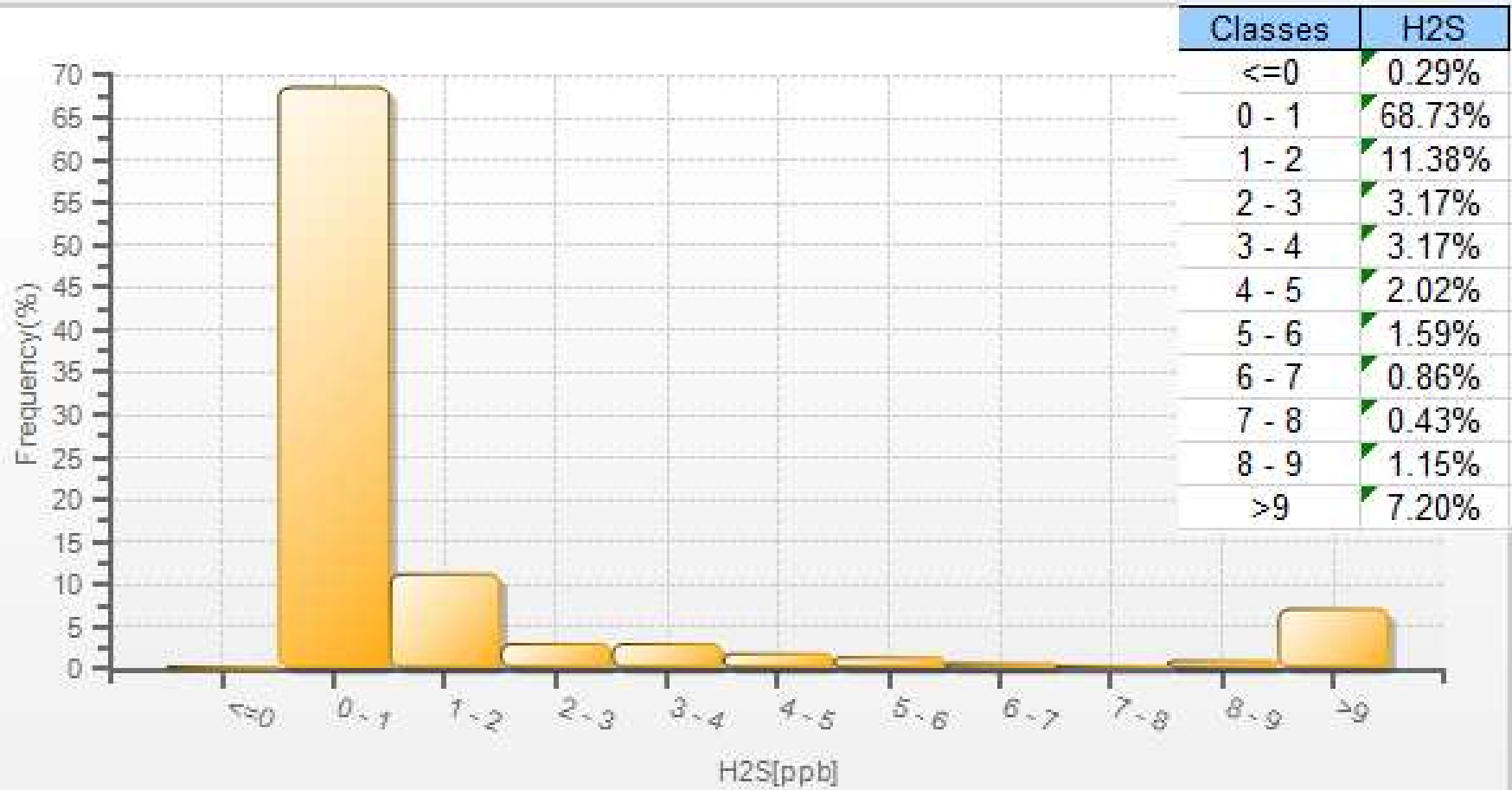
Daily Average is shown "-" if minimum data completeness criteria of 75% or 18 hours per day is not met.

Monthly Average is shown "-" if minimum data completeness criteria of 75% of days per month is not met.

Timeseries Chart of Hourly Average for H2S - Bonnyville - East Site

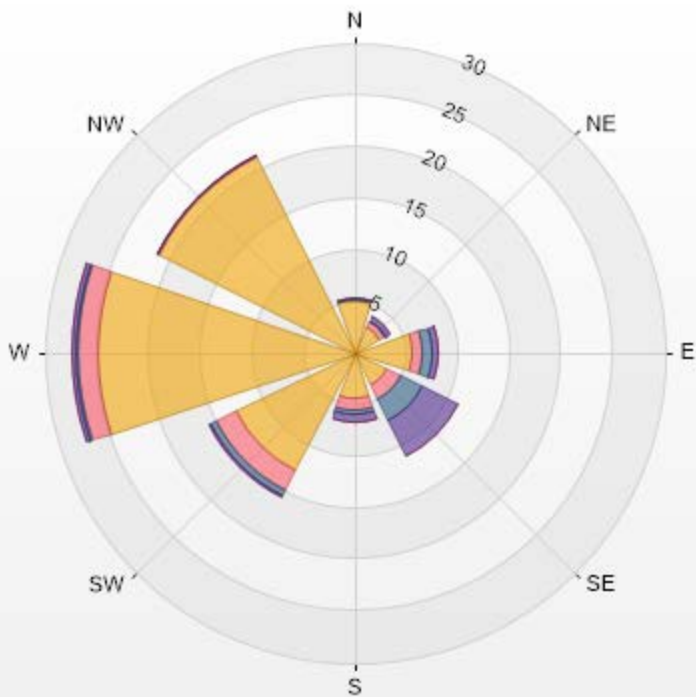


H2S[ppb] Histogram: Bonnyville East Monthly: 08-2019 1 Hr.



Wind: Bonnyville East Poll.: Bonnyville East-H2S[ppb] Monthly: 08-2019 Type: PollutionRose Direction: Blowing From (Wind Frequency) Based On 1 Hr.
 Calm: 0.00% Valid Data: 93.28% Calm Avg: 0.00 [ppb]

Direction	0-2	2-5	5-10	10-50	>50.0	Total
N	5.04	0	0.29	0	0	5.33
NE	2.74	0.58	0.14	0.43	0	3.89
E	5.62	1.01	0.86	0.72	0	8.21
SE	3.46	1.59	2.31	3.89	0	11.25
S	4.47	1.15	0.43	0.72	0	6.77
SW	12.82	2.16	0.58	0.14	0	15.7
W	24.93	1.87	0.29	0.29	0	27.38
NW	21.18	0.14	0.14	0	0	21.46
Summary	80.26	8.5	5.04	6.19	0	100



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% Icon	Classes (ppb)	80	0-2	9	2-9	367	5-10	6	10-50	0	>50.0



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Bonnyville - East Site - August 2019

Summary of Hourly Averages

OXIDES OF NITROGEN (NOx) in ppb

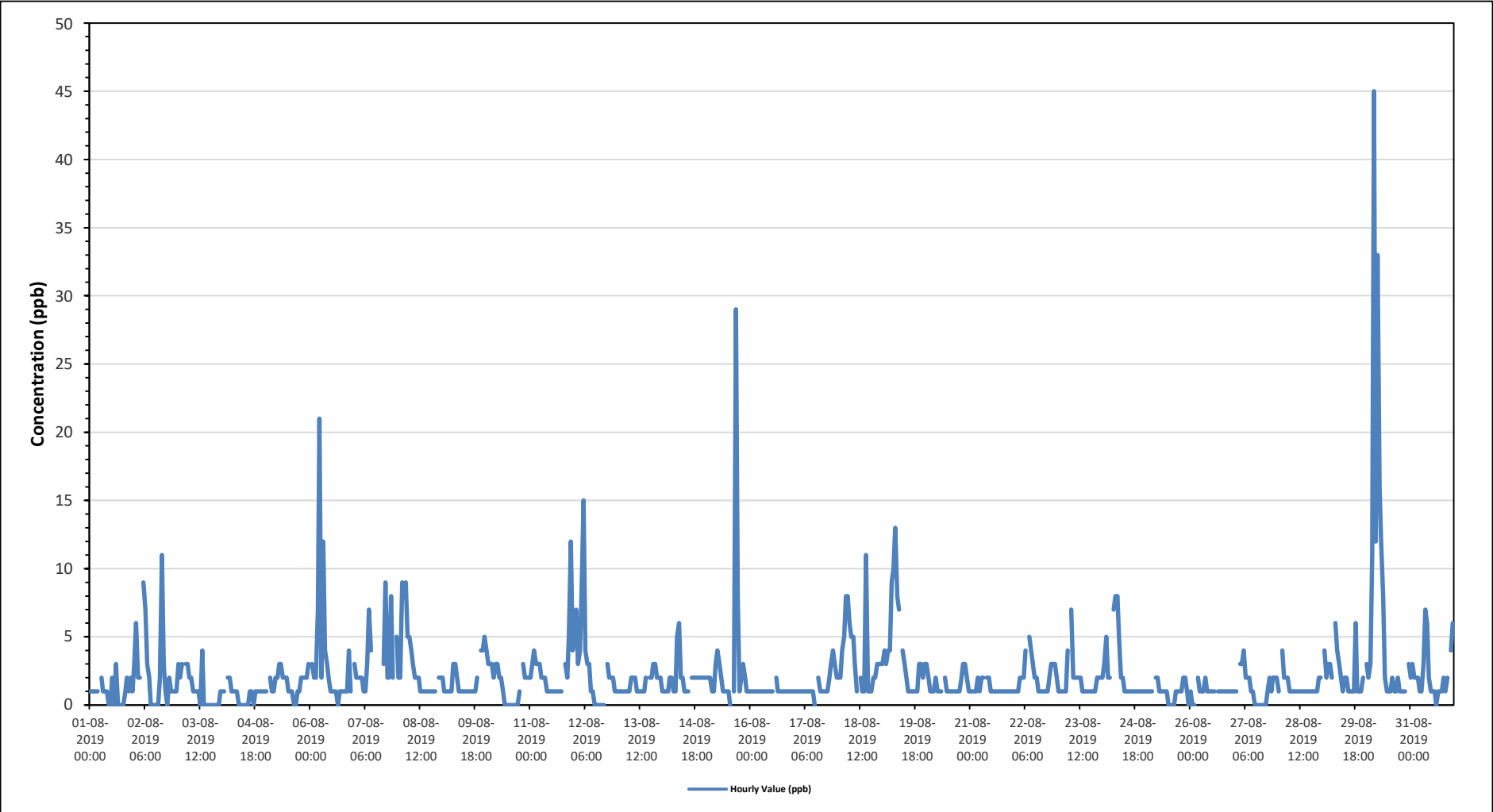
Maximum Hourly Value:	45 ppb on August 30 at hour 4	Hours in Service:	744
Maximum Daily Value:	7.1 ppb on August 30	Hours of Data:	703
Minimum Hourly Value:	0 ppb on August 1 at hour 10	Hours of Missing Data:	2
Minimum Daily Value:	0.8 ppb on August 4	Hours of Calibration:	39
Monthly Average:	2.2 ppb	Operational Uptime:	99.7

Day	Hourly Period Starting at (MST)																								Daily Minimum	Daily Maximum	Daily Average	
	0	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23				
Aug 1	1	1	1	1	1	S	2	1	1	1	0	0	2	0	3	0	0	0	0	1	2	1	2	1	0	3	1.0	
Aug 2	3	6	2	2	S	9	7	3	2	0	0	0	0	2	11	3	1	0	2	1	1	1	1	1	0	11	2.5	
Aug 3	3	2	3	S	3	3	2	2	1	1	1	0	4	0	0	0	0	0	0	0	0	0	0	1	0	4	1.2	
Aug 4	1	1	S	2	2	1	1	1	1	0	0	0	0	0	1	1	0	1	1	1	1	1	1	1	0	2	0.8	
Aug 5	1	S	2	1	1	2	2	3	3	2	2	1	1	1	0	0	1	1	1	2	2	2	2	3	0	3	1.6	
Aug 6	S	3	2	2	7	21	2	12	4	3	2	1	1	1	0	1	1	1	1	1	1	4	1	S	0	21	3.3	
Aug 7	3	2	2	2	2	1	1	3	7	4	C	C	C	C	C	C	3	9	2	2	8	2	S	5	1	9	-	
Aug 8	2	2	9	8	9	5	5	4	3	2	2	2	1	1	1	1	1	1	1	1	1	S	2	2	1	9	2.9	
Aug 9	2	1	1	1	1	1	3	3	2	1	1	1	1	1	1	1	1	1	1	1	S	4	4	5	1	5	1.7	
Aug 10	4	3	3	3	2	3	3	2	2	1	0	0	0	0	0	0	0	0	1	S	3	2	2	2	0	4	1.6	
Aug 11	2	3	4	3	3	3	2	2	2	1	1	1	1	1	1	1	1	1	S	3	2	5	12	4	1	12	2.6	
Aug 12	5	7	3	4	9	15	4	3	3	1	1	0	0	0	0	0	S	3	2	2	2	2	1	1	0	15	2.9	
Aug 13	1	1	1	1	1	1	1	2	2	2	1	1	1	1	1	2	S	2	2	3	3	2	2	2	1	3	1.6	
Aug 14	1	1	1	1	2	2	1	1	5	6	2	2	1	1	1	S	2	2	2	2	2	2	2	2	2	1	6	1.9
Aug 15	2	2	2	1	1	3	4	3	2	1	1	1	1	0	S	1	29	8	1	2	3	2	1	1	0	29	3.1	
Aug 16	1	1	1	1	1	1	1	1	1	1	1	1	1	S	2	1	1	1	1	1	1	1	1	1	1	2	1.0	
Aug 17	1	1	1	1	1	1	1	1	1	1	1	0	S	2	1	1	1	1	1	1	2	3	4	3	2	0	4	1.4
Aug 18	2	2	4	5	8	8	6	5	5	3	1	S	2	1	1	11	1	1	1	2	2	3	3	3	1	11	3.5	
Aug 19	3	4	3	4	4	9	10	13	8	7	S	4	3	2	1	1	1	1	1	1	3	3	2	3	1	13	4.0	
Aug 20	3	2	1	1	1	2	1	1	1	S	2	1	1	1	1	1	1	1	1	1	2	3	3	2	1	3	1.5	
Aug 21	1	1	1	1	2	1	2	2	S	2	2	1	1	1	1	1	1	1	1	1	1	1	1	1	1	2	1.2	
Aug 22	1	1	1	2	2	2	4	S	5	4	3	2	2	1	1	1	1	1	1	1	2	3	3	3	2	1	5	2.1
Aug 23	1	1	1	1	1	4	S	7	2	2	2	2	2	1	1	1	1	1	1	1	1	2	2	2	1	7	1.7	
Aug 24	2	3	5	2	2	S	7	8	8	5	2	2	1	1	1	1	1	1	1	1	1	1	1	1	1	8	2.5	
Aug 25	1	1	1	1	S	2	2	1	1	1	1	1	0	0	0	0	1	1	1	1	2	2	1	0	0	2	1.0	
Aug 26	1	0	0	S	2	1	1	1	2	1	1	1	1	1	1	Y	1	1	1	1	1	1	1	1	0	2	1.0	
Aug 27	1	1	S	3	3	4	2	2	2	1	1	0	0	0	0	0	0	0	1	2	1	2	2	2	0	4	1.3	
Aug 28	1	S	4	2	2	2	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	2	2	1	4	1.3	
Aug 29	S	4	2	3	3	2	S1	6	4	3	2	1	2	2	1	1	1	1	6	1	1	1	2	S	1	6	2.3	
Aug 30	3	2	3	11	45	12	33	16	12	8	2	1	1	1	2	1	1	2	1	1	1	1	S	3	1	45	7.1	
Aug 31	2	3	2	2	2	1	1	3	7	6	2	1	1	1	0	1	1	1	2	1	1	2	S	4	6	0	7	2.3
Diurnal Maximum	5	7	9	11	45	21	33	16	12	8	3	4	3	4	3	11	29	9	6	3	8	5	12	6				
Diurnal Average	1.9	2.1	2.3	2.5	4.2	4.2	3.9	3.8	3.3	2.4	1.3	1.1	1.0	0.9	0.9	1.4	1.9	1.4	1.3	1.5	1.9	2.0	2.2	2.1				

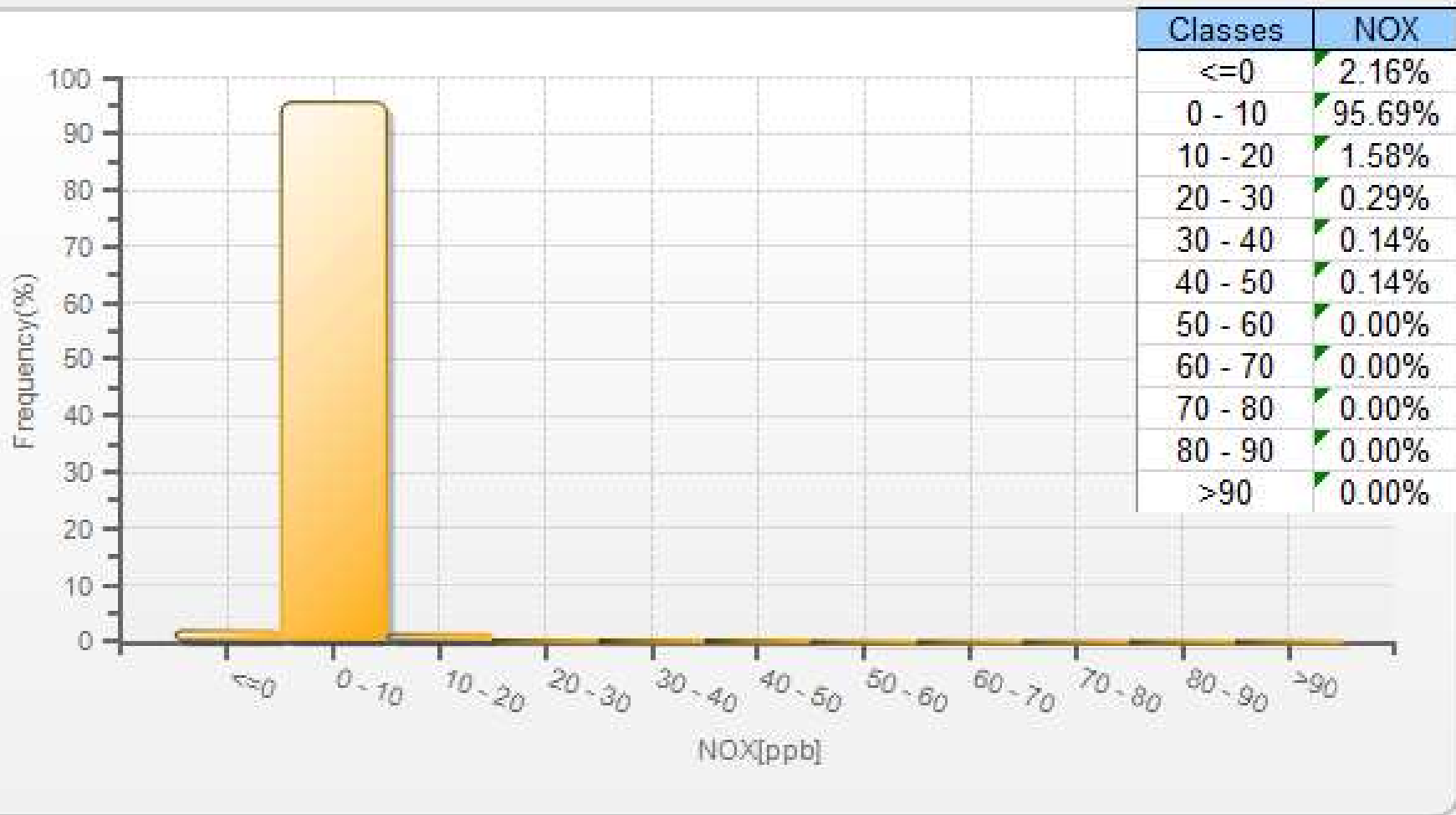
C	Calibration	S	Daily Zero/Span	Q	Quality Assurance	C1	Repeat Calibration	S1	Repeat Daily Zero/Span
G	Out for Repair	K	Collection Error	N	Not in Service	O	Operator Error	P	Power Failure
R	Recovery	X	Machine Malfunction	Y	Maintenance	T	Exceeds Temperature Limits	N	Not in Service

Daily Average is shown "-" if minimum data completeness criteria of 75% or 18 hours per day is not met.
 Monthly Average is shown "-" if minimum data completeness criteria of 75% of days per month is not met.

Timeseries Chart of Hourly Average for NOx - Bonnyville - East Site



NOX[ppb] Histogram: Bonnyville East Monthly: 08-2019 1 Hr.



Wind: Bonnyville East Poll.: Bonnyville East-NOX[ppb] Monthly: 08-2019 Type: PollutionRose Direction: Blowing From (Wind Frequency) Based On 1 Hr.
 Calm: 0.00% Valid Data: 93.55% Calm Avg: 0.00 [ppb]

Direction	0-30	30-50	50-82	82-159	>159.0	Total
N	5.32	0	0	0	0	5.32
NE	3.74	0.14	0	0	0	3.88
E	8.19	0	0	0	0	8.19
SE	11.78	0	0	0	0	11.78
S	6.9	0	0	0	0	6.9
SW	15.66	0	0	0	0	15.66
W	26.72	0.14	0	0	0	26.86
NW	21.41	0	0	0	0	21.41
Summary	100	0.28	0	0	0	100



LAKELAND INDUSTRY & COMMUNITY ASSOCIATION

Bonnyville - East Site - August 2019

Summary of Hourly Averages

NITRIC OXIDE (NO) in ppb

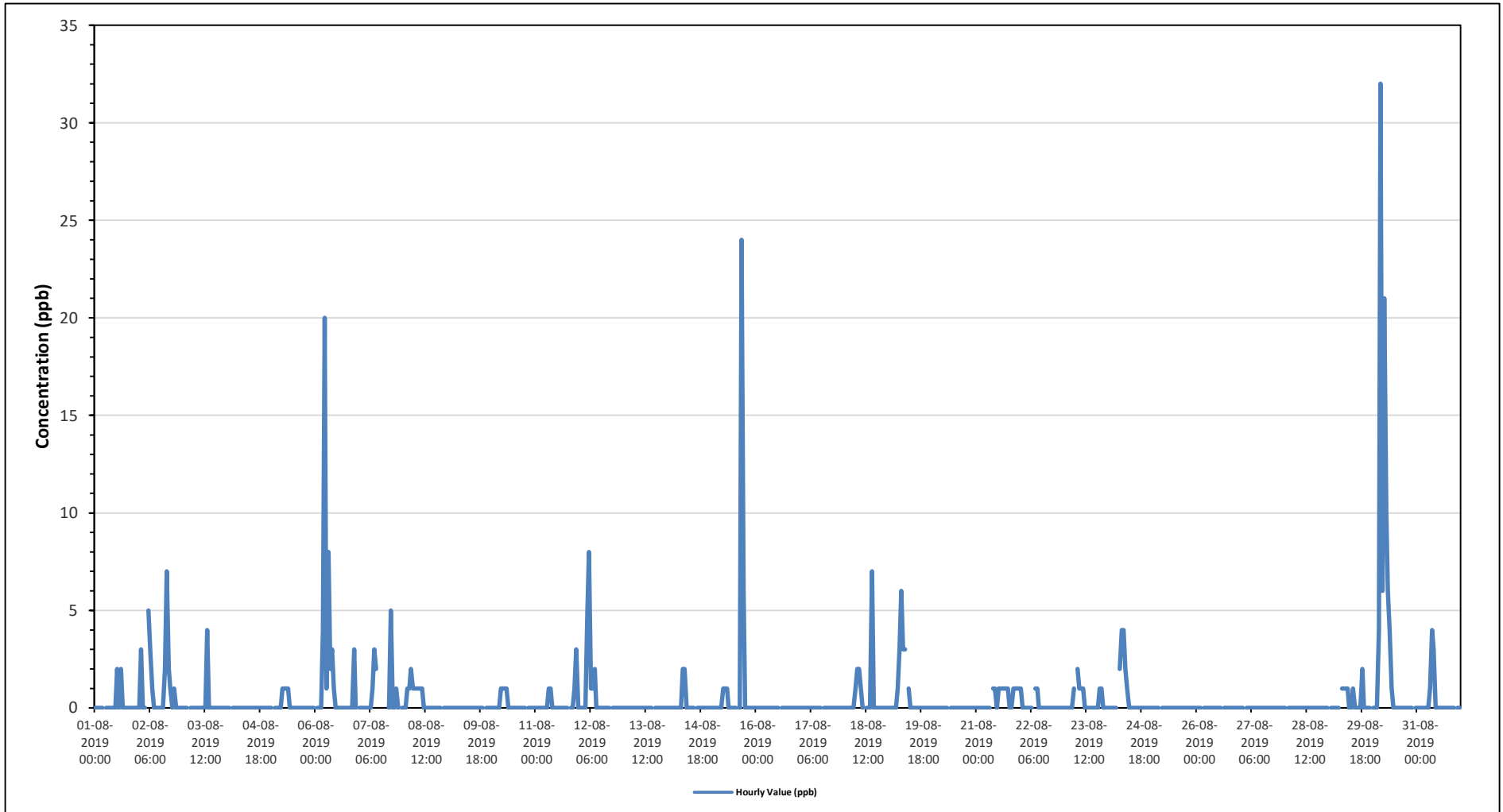
Maximum Hourly Value:	32 ppb on August 30 at hour 4	Hours in Service:	744
Maximum Daily Value:	3.7 ppb on August 30	Hours of Data:	703
Minimum Hourly Value:	0 ppb on August 1 at hour 0	Hours of Missing Data:	2
Minimum Daily Value:	0.0 ppb on August 4	Hours of Calibration:	39
Monthly Average:	0.5 ppb	Operational Uptime:	99.7

Day	Hourly Period Starting at (MST)																								Daily Minimum	Daily Maximum	Daily Average								
	0	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23											
Aug 1	0	0	0	0	0	S	0	0	0	0	0	2	0	2	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	2	0.2
Aug 2	0	3	0	0	S	5	3	1	0	0	0	0	0	2	7	2	1	0	1	0	0	0	0	0	0	0	0	0	0	0	0	7	1.1		
Aug 3	0	0	0	S	0	0	0	0	0	0	0	0	0	4	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	4	0.2			
Aug 4	0	0	S	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0.0		
Aug 5	0	S	0	0	0	0	1	1	1	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1	0.2			
Aug 6	S	0	0	0	4	20	1	8	2	3	1	0	0	0	0	0	0	0	0	0	0	0	3	0	0	0	0	0	0	0	20	1.9			
Aug 7	0	0	0	0	0	0	0	1	3	2	C	C	C	C	C	C	0	5	0	0	1	0	S	0	0	0	0	0	0	0	5	-			
Aug 8	0	0	1	1	2	1	1	1	1	1	1	0	0	0	0	0	0	0	0	0	0	0	S	0	0	0	0	0	0	0	2	0.4			
Aug 9	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	S	0	0	0	0	0	0	0	0	0	0.0			
Aug 10	0	0	0	0	0	1	1	1	1	0	0	0	0	0	0	0	0	0	0	0	0	S	0	0	0	0	0	0	0	0	1	0.2			
Aug 11	0	0	0	0	0	0	1	1	0	0	0	0	0	0	0	0	0	0	0	0	S	0	0	1	3	0	0	0	0	3	0.3				
Aug 12	0	0	0	0	5	8	1	1	2	0	0	0	0	0	0	0	0	0	0	0	S	0	0	0	0	0	0	0	0	8	0.7				
Aug 13	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	S	0	0	0	0	0	0	0	0	0	0	0.0			
Aug 14	0	0	0	0	0	0	0	0	2	2	0	0	0	0	0	0	S	0	0	0	0	0	0	0	0	0	0	0	0	0	2	0.2			
Aug 15	0	0	0	0	0	0	1	1	1	0	0	0	0	0	S	0	24	6	0	0	0	0	0	0	0	0	0	0	0	24	1.4				
Aug 16	0	0	0	0	0	0	0	0	0	0	0	0	0	S	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0.0			
Aug 17	0	0	0	0	0	0	0	0	0	0	0	S	S	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0.0			
Aug 18	0	0	0	0	0	0	1	2	2	1	0	S	0	0	0	7	0	0	0	0	0	0	0	0	0	0	0	0	0	0	7	0.6			
Aug 19	0	0	0	0	0	1	3	6	3	3	S	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	6	0.7			
Aug 20	0	0	0	0	0	0	0	0	0	S	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0.0			
Aug 21	0	0	0	0	0	0	0	0	S	1	1	1	1	1	1	1	1	1	1	0	0	1	1	1	1	1	1	1	1	1	1	0.5			
Aug 22	1	0	0	0	0	0	0	S	1	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1	0.1				
Aug 23	0	0	0	0	0	1	S	2	1	1	1	0	0	0	0	0	0	0	0	0	1	1	0	0	0	0	0	0	0	2	0.3				
Aug 24	0	0	0	0	S	2	4	4	2	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	4	0.6				
Aug 25	0	0	0	0	S	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0.0			
Aug 26	0	0	0	S	0	0	0	0	0	0	0	0	0	0	Y	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0.0			
Aug 27	0	0	S	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0.0			
Aug 28	0	S	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0.0			
Aug 29	S	0	0	0	0	0	S1	1	1	1	1	0	0	1	0	0	0	0	0	2	0	0	0	0	0	0	0	0	0	2	0.3				
Aug 30	0	0	0	4	32	6	21	10	6	4	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	32	3.7				
Aug 31	0	0	0	0	0	0	0	1	4	3	0	0	0	0	0	0	0	0	0	0	0	S	0	0	0	0	0	0	0	4	0.3				
Diurnal Maximum	1	3	1	4	32	20	21	10	6	4	1	1	2	4	2	7	24	6	2	1	1	3	3	1											
Diurnal Average	0.0	0.1	0.0	0.2	1.5	1.5	1.2	1.4	1.2	0.9	0.2	0.0	0.1	0.2	0.2	0.5	0.9	0.4	0.1	0.1	0.1	0.2	0.1	0.0											

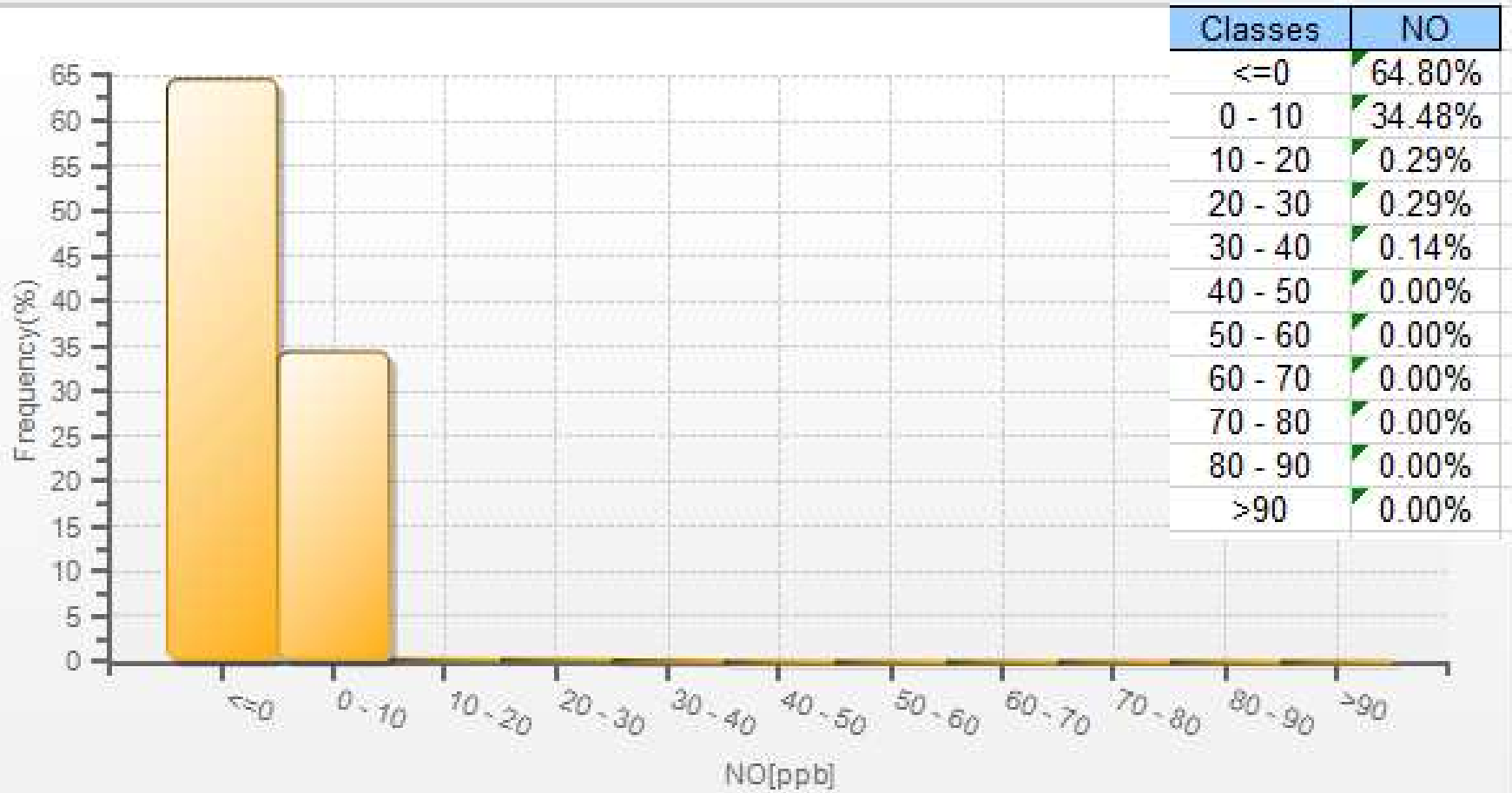
C	Calibration	S	Daily Zero/Span	Q	Quality Assurance	C1	Repeat Calibration	S1	Repeat Daily Zero/Span
G	Out for Repair	K	Collection Error	N	Not in Service	O	Operator Error	P	Power Failure
R	Recovery	X	Machine Malfunction	Y	Maintenance	T	Exceeds Temperature Limits	N	Not in Service

Daily Average is shown "-" if minimum data completeness criteria of 75% or 18 hours per day is not met.
 Monthly Average is shown "-" if minimum data completeness criteria of 75% of days per month is not met.

Timeseries Chart of Hourly Average for NO - Bonnyville - East Site

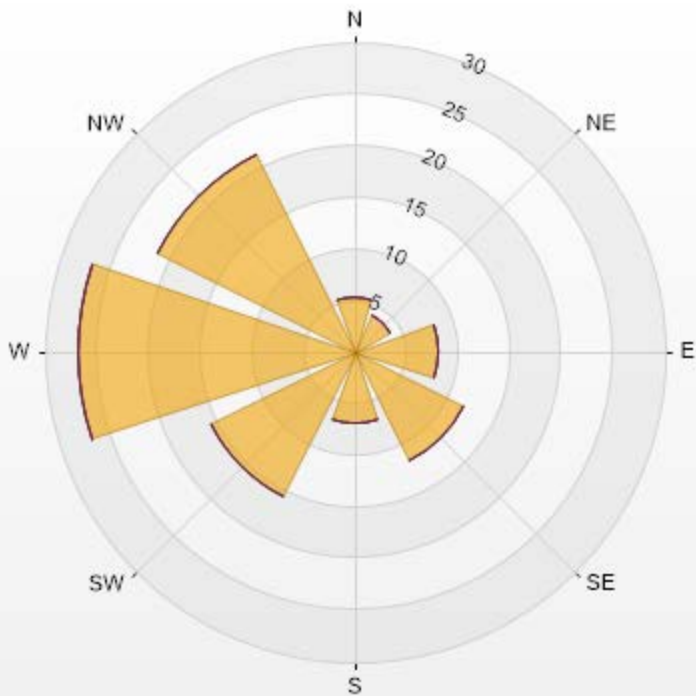


NO[ppb] Histogram: Bonnyville East Monthly: 08-2019 1 Hr.



Wind: Bonnyville East Poll.: Bonnyville East-NO[ppb] Monthly: 08-2019 Type: PollutionRose Direction: Blowing From (Wind Frequency) Based On 1 Hr.
 Calm: 0.00% Valid Data: 93.55% Calm Avg: 0.00 [ppb]

Direction	0-30	30-50	50-82	82-159	>159.0	Total
N	5.32	0	0	0	0	5.32
NE	3.88	0	0	0	0	3.88
E	8.19	0	0	0	0	8.19
SE	11.78	0	0	0	0	11.78
S	6.9	0	0	0	0	6.9
SW	15.66	0	0	0	0	15.66
W	26.72	0.14	0	0	0	26.86
NW	21.41	0	0	0	0	21.41
Summary	100	0.14	0	0	0	100



LICA-201908-Revision 1

% Icon Classes (ppb)	100	0-30	0	30-50	50-82	0	82-159	0	>159.0



LAKELAND INDUSTRY & COMMUNITY ASSOCIATION

Bonnyville - East Site - August 2019

Summary of Hourly Averages

NITROGEN DIOXIDE (NO₂) in ppb

Alberta Ambient Air Quality Objectives (AAAQO): 1-Hour 159 ppb

Number of 1-Hour Exceedences: 0

Maximum Hourly Value: 13 ppb on August 30 at hour 4

Hours in Service: 744

Maximum Daily Value: 3.3 ppb on August 30

Hours of Data: 703

Minimum Hourly Value: 0 ppb on August 1 at hour 13

Hours of Missing Data: 2

Minimum Daily Value: 0.6 ppb on August 4

Hours of Calibration: 39

Monthly Average: 1.6 ppb

Operational Uptime: 99.7

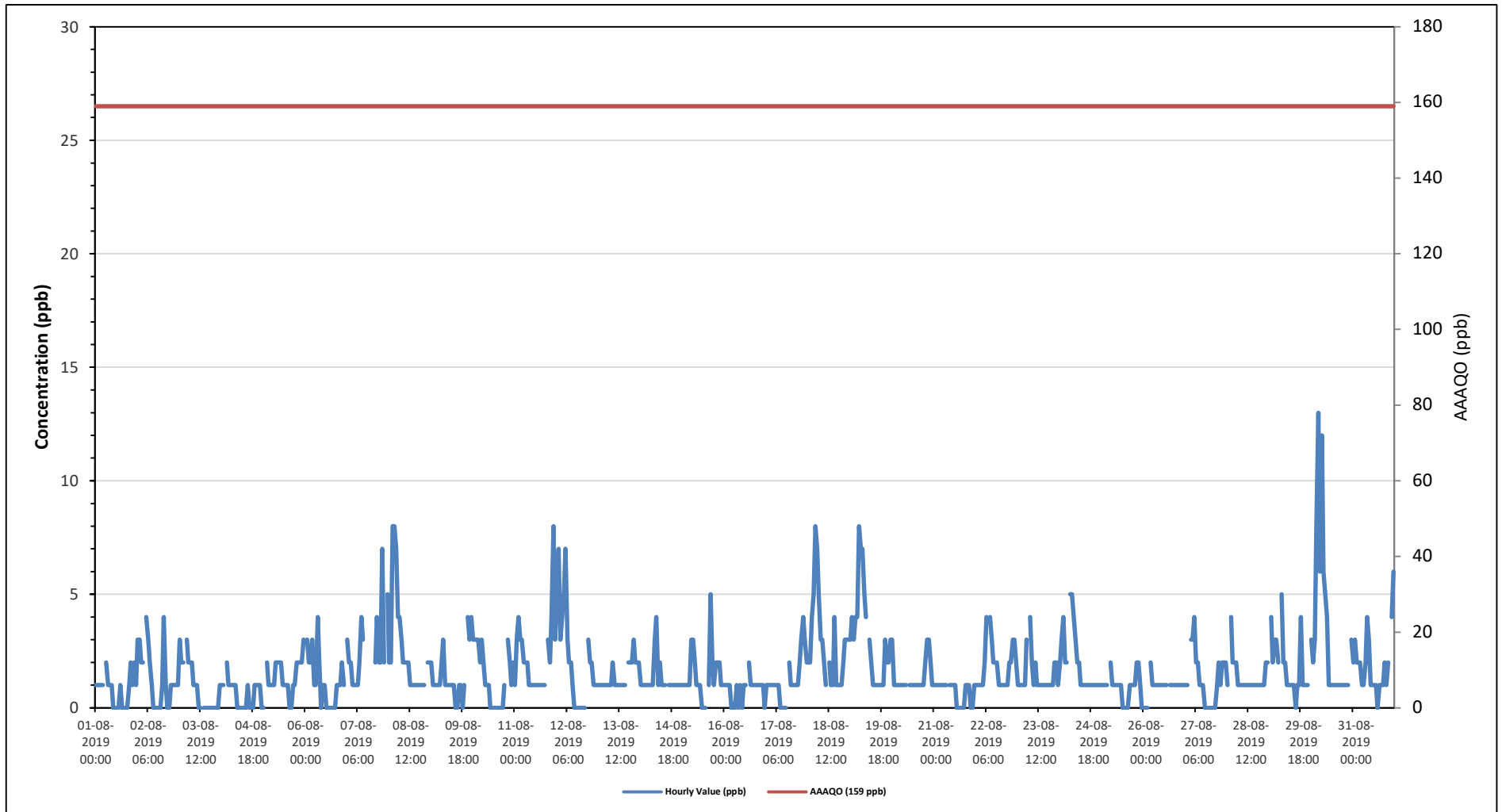
Day	Hourly Period Starting at (MST)																							Daily Minimum	Daily Maximum	Daily Average		
	0	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22				23	
Aug 1	1	1	1	1	1	S	2	1	1	1	0	0	0	0	1	0	0	0	0	1	2	1	2	1	0	2	0.8	
Aug 2	3	3	2	2	S	4	3	2	1	0	0	0	0	1	4	1	0	0	1	1	1	1	1	1	0	4	1.3	
Aug 3	3	2	2	S	3	2	2	2	1	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1	0	3	0.9
Aug 4	1	1	S	2	1	1	1	1	1	0	0	0	0	0	1	0	0	0	0	1	1	1	1	0	0	2	0.6	
Aug 5	0	S	2	1	1	1	1	2	2	2	2	1	1	1	0	0	1	1	2	2	2	2	2	3	0	3	1.3	
Aug 6	S	3	2	2	3	1	1	4	2	0	1	1	0	0	0	0	0	1	1	1	1	2	1	S	5	0	4	1.2
Aug 7	3	2	2	1	1	1	1	2	4	3	C	C	C	C	C	C	2	4	2	2	7	2	S	S	1	7	-	
Aug 8	2	2	8	8	7	4	4	3	2	2	2	2	1	1	1	1	1	1	1	1	1	S	2	2	1	8	2.6	
Aug 9	2	1	1	1	1	1	2	3	1	1	1	1	1	0	0	1	1	0	1	0	S	4	3	4	0	4	1.4	
Aug 10	3	3	3	3	2	3	2	1	1	1	0	0	0	0	0	0	0	0	1	S	3	2	1	2	0	3	1.3	
Aug 11	1	3	4	3	3	2	2	2	1	1	1	1	1	1	1	1	1	1	S	3	2	4	8	3	1	8	2.2	
Aug 12	5	7	3	4	5	7	3	2	2	1	0	0	0	0	0	0	0	S	3	2	2	1	1	1	0	7	2.1	
Aug 13	1	1	1	1	1	1	1	1	2	1	1	1	1	1	1	S	2	2	2	2	3	2	2	2	1	3	1.4	
Aug 14	1	1	1	1	1	1	1	1	3	4	1	2	1	1	1	S	1	1	1	1	1	1	1	1	1	1	4	1.3
Aug 15	1	1	1	1	1	3	3	2	1	1	1	0	0	0	S	1	5	2	1	2	2	2	1	1	0	5	1.4	
Aug 16	1	1	1	1	0	0	0	1	0	1	0	1	1	S	2	1	1	1	1	1	1	1	1	0	0	2	0.8	
Aug 17	1	1	1	1	1	1	1	0	0	0	0	0	S	2	1	1	1	1	1	1	2	3	4	3	2	0	4	1.3
Aug 18	2	2	4	5	8	7	5	3	3	2	1	S	2	1	1	4	1	1	1	1	1	2	3	3	3	1	8	2.8
Aug 19	3	4	3	4	4	8	7	7	5	4	S	3	2	1	1	1	1	1	1	1	3	2	2	3	1	8	3.1	
Aug 20	3	1	1	1	1	1	1	1	1	S	1	1	1	1	1	1	1	1	1	2	3	3	2	1	1	3	1.3	
Aug 21	1	1	1	1	1	1	1	1	S	1	1	1	0	0	0	0	0	1	1	1	1	0	0	1	0	1	0.7	
Aug 22	1	1	1	1	1	2	4	S	4	3	2	2	2	1	1	1	1	1	1	2	2	3	3	2	1	4	1.8	
Aug 23	1	1	1	1	1	3	S	4	2	1	2	1	1	1	1	1	1	1	1	1	1	2	2	1	1	4	1.4	
Aug 24	2	3	4	2	2	S	5	5	4	3	2	2	1	1	1	1	1	1	1	1	1	1	1	1	1	5	2.0	
Aug 25	1	1	1	1	S	2	1	1	1	1	1	0	0	0	0	1	1	1	1	1	2	2	1	0	0	2	0.9	
Aug 26	0	0	0	S	2	1	1	1	1	1	1	1	1	1	Y	1	1	1	1	1	1	1	1	1	0	2	0.9	
Aug 27	1	1	S	3	3	4	2	2	1	1	1	0	0	0	0	0	0	0	1	2	1	2	2	2	0	4	1.3	
Aug 28	1	S	4	2	2	2	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	4	1.3	
Aug 29	S	4	2	3	3	2	S1	5	2	2	1	1	1	1	1	0	1	1	4	1	1	1	1	1	0	5	1.8	
Aug 30	3	2	3	8	13	6	12	6	5	4	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	13	3.3	
Aug 31	2	3	2	2	2	1	1	2	4	3	1	1	1	0	1	1	1	2	1	2	S	4	6	0	6	1.9		
Diurnal Maximum	5	7	8	8	13	8	12	7	5	4	2	3	2	2	4	5	4	4	3	7	4	8	6					
Diurnal Average	1.7	2.0	2.1	2.3	2.6	2.5	2.4	2.3	2.0	1.6	0.9	0.9	0.8	0.7	0.7	0.8	0.9	0.9	1.1	1.3	1.8	1.8	1.9	1.9				

C	Calibration	S	Daily Zero/Span	Q	Quality Assurance	C1	Repeat Calibration	S1	Repeat Daily Zero/Span
G	Out for Repair	K	Collection Error	N	Not in Service	O	Operator Error	P	Power Failure
R	Recovery	X	Machine Malfunction	Y	Maintenance	T	Exceeds Temperature Limits	N	Not in Service

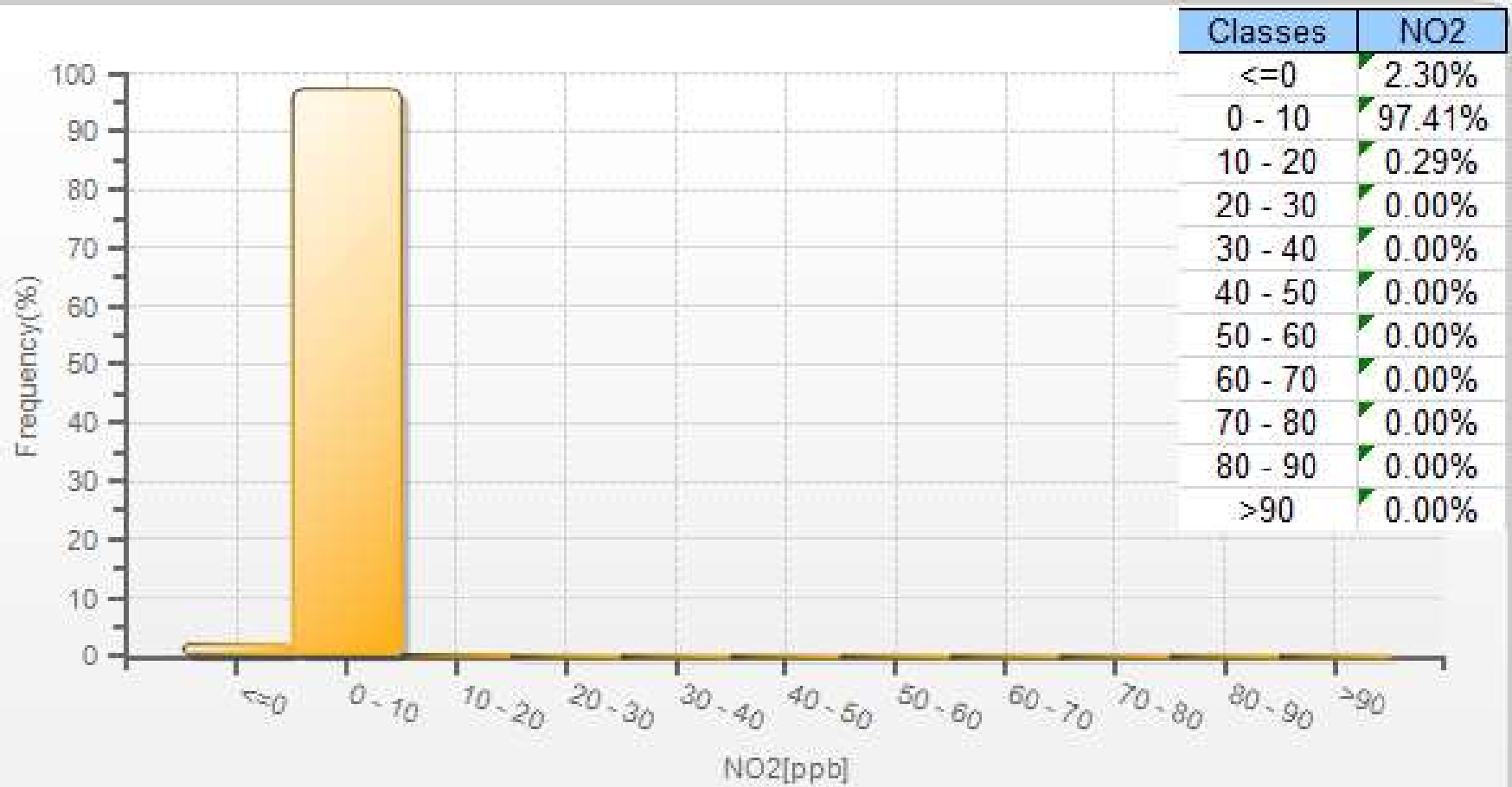
Daily Average is shown "-" if minimum data completeness criteria of 75% or 18 hours per day is not met.

Monthly Average is shown "-" if minimum data completeness criteria of 75% of days per month is not met.

Timeseries Chart of Hourly Average for NO2 - Bonnyville - East Site

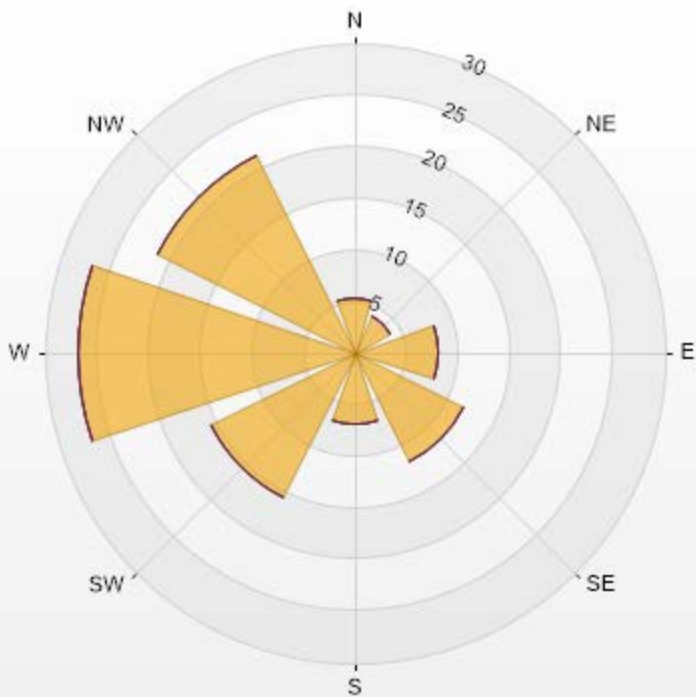


NO2[ppb] Histogram: Bonnyville East Monthly: 08-2019 1 Hr.



Wind: Bonnyville East Poll.: Bonnyville East-NO2[ppb] Monthly: 08-2019 Type: PollutionRose Direction: Blowing From (Wind Frequency) Based On 1 Hr.
 Calm: 0.00% Valid Data: 93.55% Calm Avg: 0.00 [ppb]

Direction	0-30	30-50	50-82	82-159	>159.0	Total
N	5.32	0	0	0	0	5.32
NE	3.88	0	0	0	0	3.88
E	8.19	0	0	0	0	8.19
SE	11.78	0	0	0	0	11.78
S	6.9	0	0	0	0	6.9
SW	15.66	0	0	0	0	15.66
W	26.87	0	0	0	0	26.87
NW	21.41	0	0	0	0	21.41
Summary	100	0	0	0	0	100



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% Icon Classes (ppb)	100	0-30	0	Page 247 of 367	50-82	0	82-159	0	>159.0



LAKELAND INDUSTRY & COMMUNITY ASSOCIATION

Bonnyville - East Site - August 2019

Summary of Hourly Averages

OZONE (O₃) in ppb

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

Number of 1-Hour Exceedences: 0

Maximum Hourly Value:	41.1 ppb on August 14 at hour 16	Hours in Service:	744
Maximum Daily Value:	30.4 ppb on August 21	Hours of Data:	705
Minimum Hourly Value:	0.7 ppb on August 30 at hour 3	Hours of Missing Data:	1
Minimum Daily Value:	16.6 ppb on August 19	Hours of Calibration:	38
Monthly Average:	21.8 ppb	Operational Uptime:	99.9

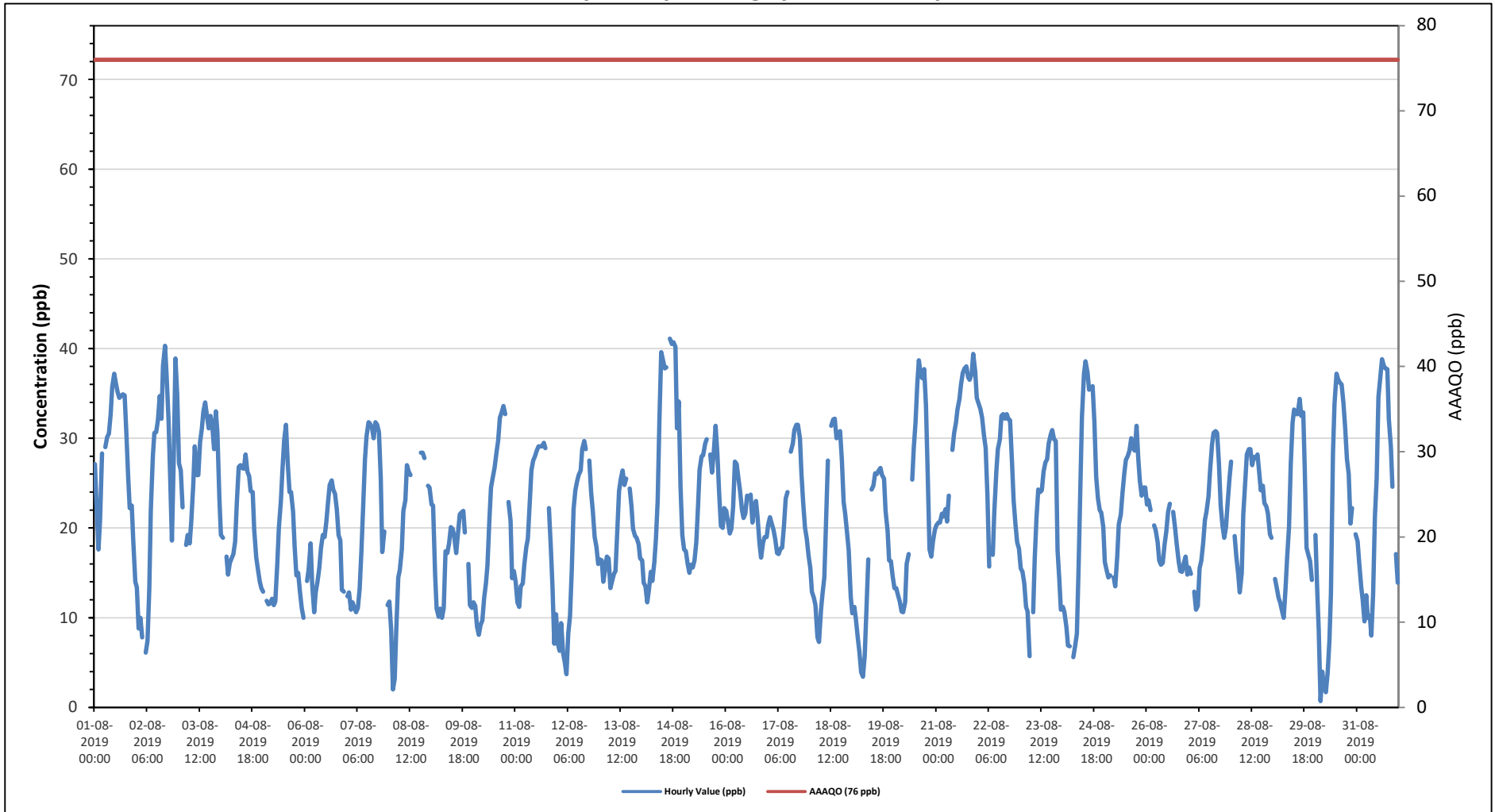
Day	Hourly Period Starting at (MST)																							Daily Minimum	Daily Maximum	Daily Average		
	0	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22				23	
Aug 1	27.1	22.8	17.6	20.7	28.3	S	29	30.1	30.5	32.7	35.7	37.2	36.2	35.2	34.5	34.7	34.9	34.8	30.4	25.6	22.2	22.5	18.5	14	14.0	37.2	28.5	
Aug 2	13.4	8.8	10	7.8	S	6.1	7.4	13.2	22	28	30.6	30.7	32	34.7	32.2	38.1	40.3	37.1	31.9	25.9	18.6	27.5	38.9	34.8	6.1	40.3	24.8	
Aug 3	27.2	26.4	22.3	S	18.1	19.2	18.3	20.6	24.8	29.1	25.9	25.9	29.6	31.1	33	34	32.5	31.1	32.5	31.4	28.8	33	30.7	23.2	18.1	34.0	27.3	
Aug 4	19.2	18.9	S	16.8	14.8	16.1	16.6	17.1	18.5	23.1	26.8	27	26.7	26.6	28.2	26.3	25.8	24.1	24	19.8	16.7	15.5	14	13.3	13.3	28.2	20.7	
Aug 5	12.9	S	11.9	11.5	11.6	12.1	11.4	11.8	16.1	20	23	26.4	29.8	31.5	27.2	24	24	21.8	18	14.7	15	12.9	11.1	10	10.0	31.5	17.8	
Aug 6	S	14.1	15.3	18.3	13.8	10.6	12.8	14	15.5	17.8	19.2	19	20.7	23	24.8	25.3	24.3	23.8	22.1	19.2	18.6	13.1	12.9	S	10.6	25.3	18.1	
Aug 7	12.4	12.8	10.9	11.7	11.1	10.6	11.1	13.2	17.5	21.8	27.7	30.2	31.8	31.6	31.1	30	31.8	31.5	30.7	25.6	17.3	19.6	S	11.4	10.6	31.8	21.0	
Aug 8	11.8	8.6	2	3.2	8.6	14.5	15.3	17.6	21.9	23.1	27	26.3	25.9	C	C	C	C	C	28.4	28.4	27.8	S	24.7	24.5	2.0	28.4	18.9	
Aug 9	22.6	22.5	14.8	11	10.1	11	10	11.1	17.4	17.2	18.3	20.1	19.9	19.1	17.2	19.1	21.5	21.7	21.9	19.5	S	16	11.4	11.1	10.0	22.6	16.7	
Aug 10	11.7	11.3	9	8.1	9.2	9.7	12.2	13.8	15.8	21.1	24.5	25.8	26.7	28.5	29.7	32.3	32.9	33.6	32.7	S	22.2	22.9	20.8	14.4	15.2	8.1	33.6	20.1
Aug 11	14	11.7	11.2	13.5	13.8	15.9	17.9	18.8	23.1	26.4	27.5	28	28.6	29.1	29.1	29.1	29.5	28.9	S	22.2	17.5	13.5	7.1	10.4	7.1	29.5	20.3	
Aug 12	7.1	6.3	9.4	6	5.1	3.7	8.2	10.2	15.4	22.1	24.2	25.2	25.9	26.4	28.8	29.7	28.8	S	27.5	24	21.8	19	17.9	16	3.7	29.7	17.8	
Aug 13	16.5	16.4	14	15.3	16.8	16.6	13.3	14	14.9	15.2	20.3	24.1	25.5	26.4	24.8	25.5	S	24.4	22.4	19.9	19.1	18.9	18.2	16.6	13.3	26.4	19.1	
Aug 14	16.4	13.9	13.5	11.7	13.2	15.1	14.1	16.2	18.7	23	32.2	39.6	38.7	37.8	37.9	S	41.1	40.5	40.7	40.2	31.1	34.1	24.5	19.2	11.7	41.1	26.7	
Aug 15	17.6	17.4	16	15	15.9	15.6	16.4	18.4	22.5	26.5	28	28.1	29.4	29.9	S	28.2	26.2	28.5	31.4	28.3	23.9	20.2	20	22.2	15.0	31.4	22.9	
Aug 16	21.9	20.8	19.4	19.9	22.3	27.4	27.1	25.5	24.2	22	21.1	21.6	23.6	S	23.7	20.6	22.3	23	21.3	18.2	16.7	18.4	19	19	16.7	27.4	21.7	
Aug 17	20.4	21.2	20.5	19.8	18.7	17.2	17.1	17.7	17.8	20.2	23.3	24	S	28.5	29.4	30.9	31.5	31.5	30	26	22.7	20	18.8	16.9	16.9	31.5	22.8	
Aug 18	15.5	12.9	12.2	11.4	7.8	7.3	10.9	12.7	14.5	20.9	27.5	S	31.4	32.1	32.2	30	30.3	30.8	27.6	22.9	21.6	19.3	17.5	12.3	7.3	32.2	20.1	
Aug 19	10.5	11.2	9.9	7.9	6.2	3.9	3.4	5.8	11.1	16.5	S	24.3	24.7	26.1	26	26.4	26.7	25.9	25.5	21.9	19.7	16.4	16.3	14.6	3.4	26.7	16.6	
Aug 20	13.3	13.3	12.5	11.8	10.7	10.6	11.7	16	17.1	S	25.4	28.9	31.8	36.1	38.7	37	36.7	37.7	33.7	25.9	17.6	16.8	18.6	19.8	10.6	38.7	22.7	
Aug 21	20.3	20.6	20.6	21.6	21.3	22.1	20.7	23.6	S	28.7	30.6	31.7	33.2	34.4	36	37.3	37.8	38	36.8	36.5	37.2	39.4	37.4	34.5	20.3	39.4	30.4	
Aug 22	33.8	33.3	32.3	30.4	28.9	23.6	15.7	S	17	21.8	26.3	28.8	29.9	32.5	32.7	32.2	32.7	32.1	32	27.1	23.1	20.5	18.4	17.7	15.7	33.8	27.1	
Aug 23	15.5	15.1	13.8	11.2	10.7	5.7	S	10.6	16.5	21.1	24.3	24	24.2	26.3	27.3	27.7	29.4	30.4	30.9	29.9	29.7	17.5	14.2	10.9	5.7	30.9	20.3	
Aug 24	11.2	10.6	8.9	6.9	6.8	S	5.6	6.8	8.2	15.9	24.9	32.4	37.2	38.6	37.3	35.4	35.6	35.8	31.8	25.7	23.3	22	21.7	20.1	5.6	38.6	21.9	
Aug 25	16.2	15.3	14.5	14.7	S	14.5	13.5	16.9	20.4	21.5	23.7	26.2	27.6	28	28.6	30	28.9	28.6	31.4	27.6	25.2	23.6	24.5	24.5	13.5	31.4	22.9	
Aug 26	22.6	23.1	22	S	20.3	19.8	18.4	16.4	15.9	16.1	18.1	19.6	21.8	22.7	Y	21.8	19.9	18.2	16.2	15.2	15.1	16.1	16.8	14.8	14.8	23.1	18.7	
Aug 27	15.6	14.9	S	12.9	10.9	11.3	15.5	16.4	18.3	20.9	21.8	23.5	26.3	29.3	30.6	30.8	30.6	27.3	22.5	20.3	18.9	20.1	22.6	25.6	10.9	30.8	21.2	
Aug 28	27.4	S	19.1	16.7	14.9	12.8	15	21.5	25.3	28.2	28.8	28.8	27	27.9	27.8	28.2	26.1	24.2	24.7	22.8	22.4	21.6	19.3	18.9	12.8	28.8	23.0	
Aug 29	S	14.3	13.3	12.2	11.7	10.7	10	13.1	16.9	20.1	27.2	31.7	33.2	32.7	32.7	34.4	32.5	32.9	26.5	17.8	17	16.3	14.2	S	10.0	34.4	21.4	
Aug 30	19.2	13.1	8.6	0.7	4	2.2	1.7	3.8	7.4	12.7	28.3	33.8	37.2	36.6	36.2	36	34	31.2	27.7	26	20.5	22.2	S	19.3	0.7	37.2	20.1	
Aug 31	18.5	16.2	13.5	12	9.6	12.5	10	10.2	8	12.6	21.2	25.5	34.6	36.7	38.8	38.1	37.8	37.7	32.1	29	24.6	S	17.1	13.9	8.0	38.8	22.2	
Diurnal Maximum	34	33	32	30	29	27	29	30	31	33	36	40	39	39	38	41	41	41	41	40	37	39	39	35				
Diurnal Average	17.6	16.1	14.4	13.1	13.6	13.0	13.7	15.2	17.8	21.5	25.4	27.3	29.0	30.3	30.6	30.1	30.6	29.9	28.2	24.6	21.9	20.6	19.3	18.1				

C	Calibration	S	Daily Zero/Span	Q	Quality Assurance	C1	Repeat Calibration	S1	Repeat Daily Zero/Span
G	Out for Repair	K	Collection Error	N	Not in Service	O	Operator Error	P	Power Failure
R	Recovery	X	Machine Malfunction	Y	Maintenance	T	Exceeds Temperature Limits	N	Not in Service

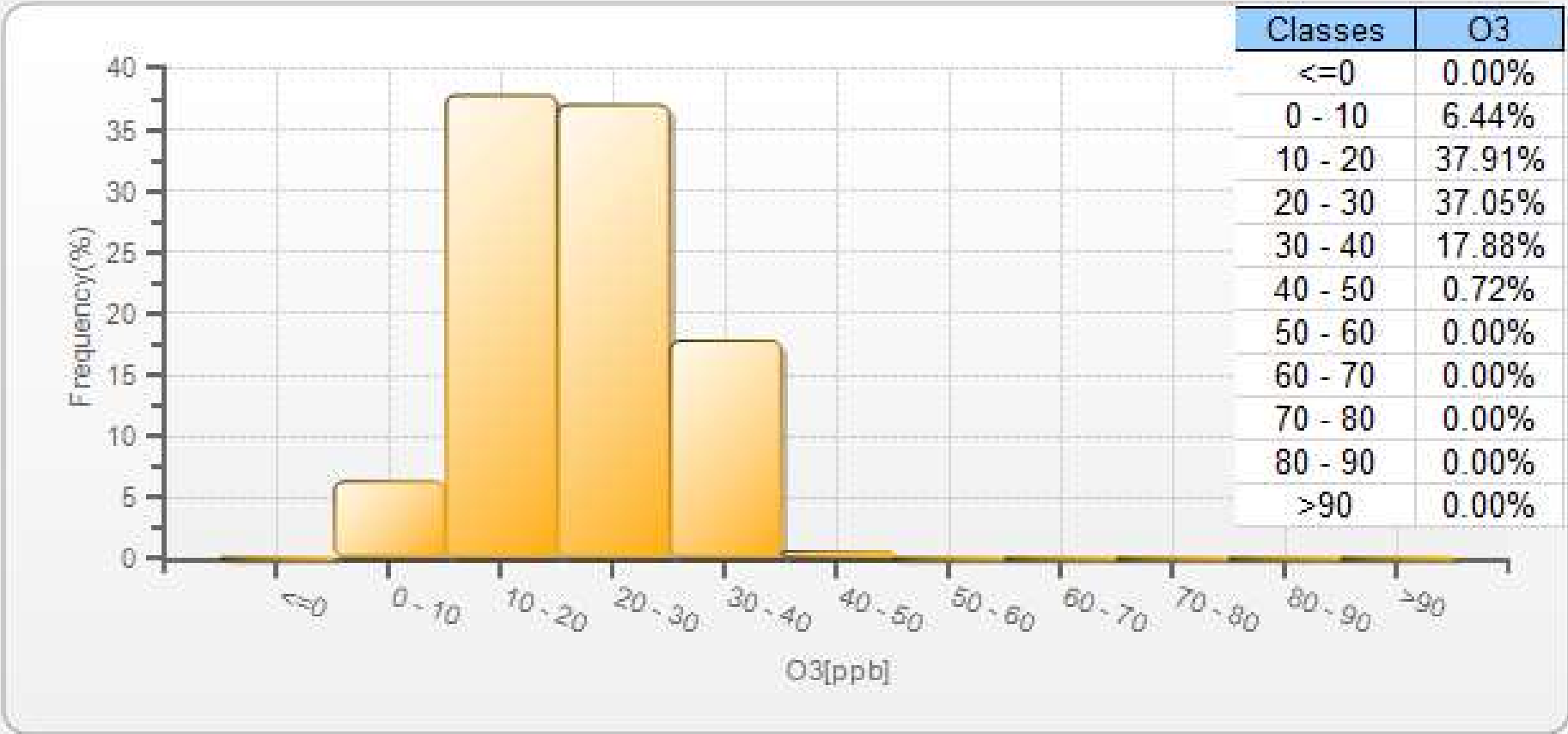
Daily Average is shown "-" if minimum data completeness criteria of 75% or 18 hours per day is not met.

Monthly Average is shown "-" if minimum data completeness criteria of 75% of days per month is not met.

Timeseries Chart of Hourly Average for O3 - Bonnyville - East Site

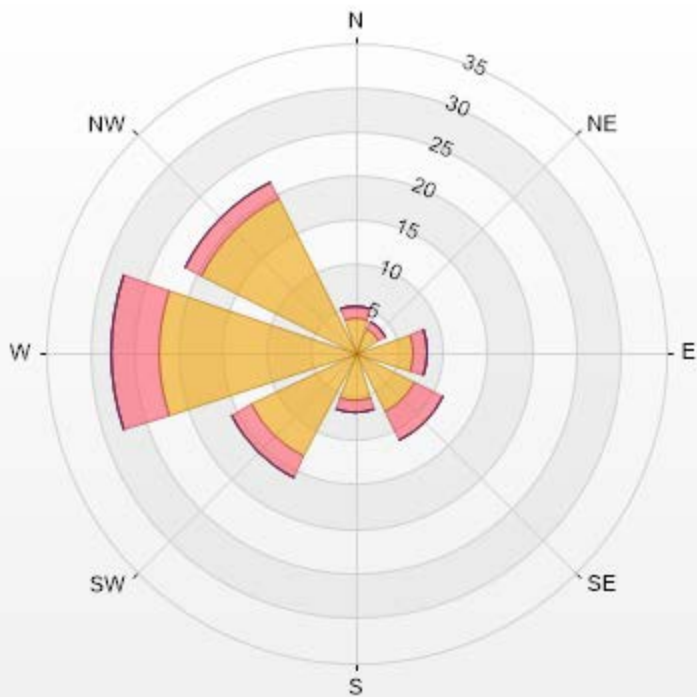


O3[ppb] Histogram: Bonnyville East Monthly: 08-2019 1 Hr.



Wind: Bonnyville East Poll.: Bonnyville East-O3[ppb] Monthly: 08-2019 Type: PollutionRose Direction: Blowing From (Wind Frequency) Based On 1 Hr.
 Calm: 0.00% Valid Data: 93.95% Calm Avg: 0.00 [ppb]

Direction	0-30	30-50	50-82	82-159	>159.0	Total
N	4.01	1.29	0	0	0	5.3
NE	3	0.86	0	0	0	3.86
E	6.44	1.72	0	0	0	8.16
SE	7.44	3.58	0	0	0	11.02
S	5.44	1.43	0	0	0	6.87
SW	13.16	2.58	0	0	0	15.74
W	22.32	5.29	0	0	0	27.61
NW	19.6	1.86	0	0	0	21.46
Summary	81.41	18.61	0	0	0	100



LICA-201908-Revision 1

%	Icon	Classes (ppb)	81	19	0	0
81		0-30	19			0
19		30-50	0			0
0		50-82	0			0
0		82-159	0			0
0		>159.0	0			0



LAKELAND INDUSTRY & COMMUNITY ASSOCIATION

Bonnyville - East Site - August 2019

Summary of Hourly Averages

TOTAL HYDROCARBONS (THC) in ppm

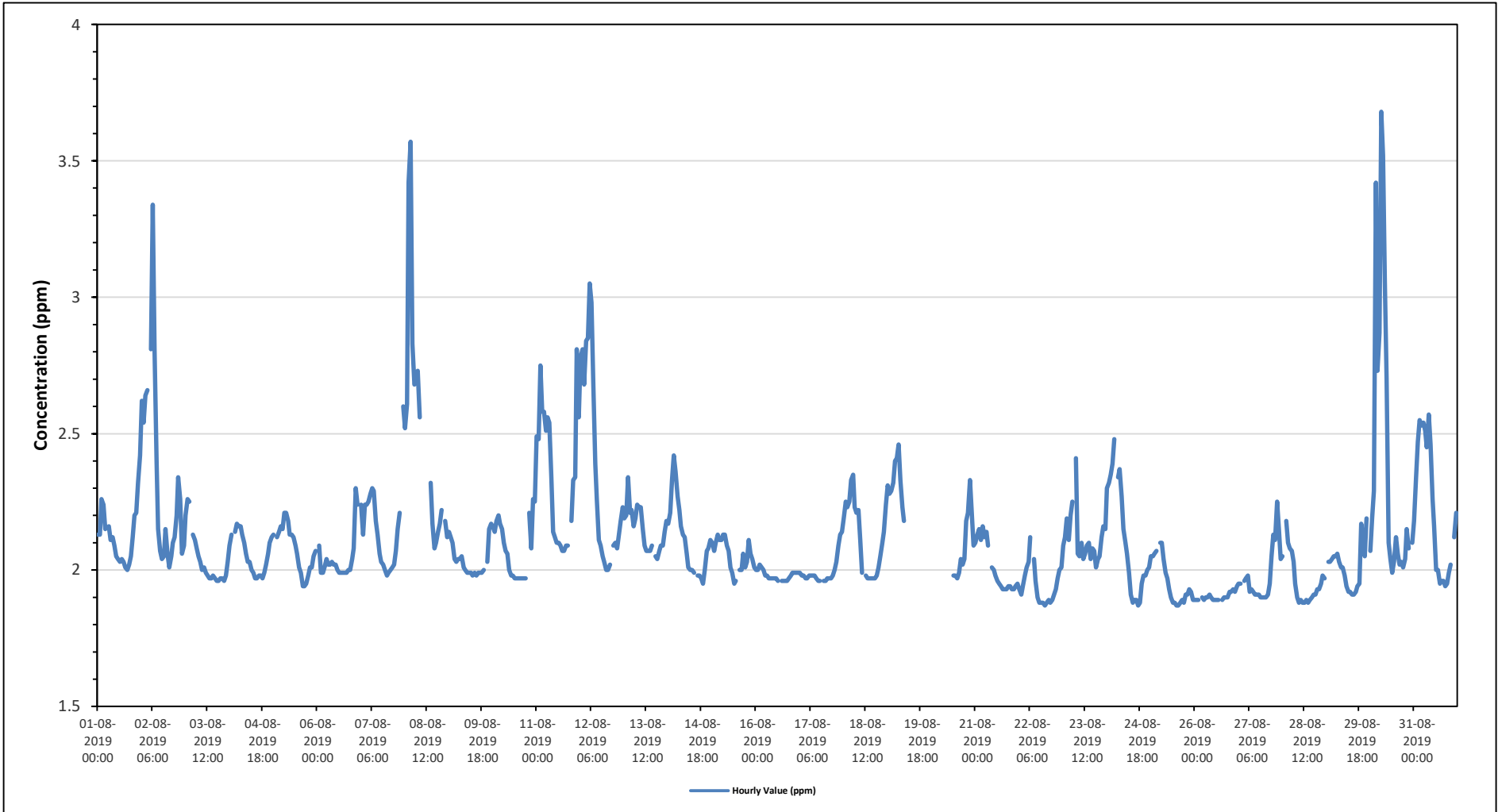
Maximum Hourly Value: 3.68 ppm on August 30 at hour 6	Hours in Service: 744
Maximum Daily Value: 2.51 ppm on August 8	Hours of Data: 682
Minimum Hourly Value: 1.87 ppm on August 22 at hour 14	Hours of Missing Data: 25
Minimum Daily Value: 1.90 ppm on August 26	Hours of Calibration: 37
Monthly Average: 2.11 ppm	Operational Uptime: 96.6

Day	Hourly Period Starting at (MST)																							Daily Minimum	Daily Maximum	Daily Average	
	0	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22				23
Aug 1	2.13	2.13	2.26	2.24	2.15	S	2.16	2.11	2.12	2.09	2.05	2.04	2.03	2.04	2.03	2.01	2.00	2.02	2.05	2.12	2.20	2.21	2.32	2.42	2.00	2.42	2.13
Aug 2	2.62	2.54	2.64	2.66	S	2.81	3.34	2.81	2.40	2.15	2.07	2.04	2.05	2.15	2.06	2.01	2.05	2.10	2.12	2.20	2.34	2.26	2.06	2.09	2.01	3.34	2.33
Aug 3	2.20	2.26	2.25	S	2.13	2.11	2.08	2.05	2.03	2.00	2.01	1.99	1.98	1.97	1.97	1.98	1.97	1.96	1.96	1.97	1.96	1.98	2.03	1.96	2.26	2.04	
Aug 4	2.09	2.13	S	2.14	2.17	2.16	2.16	2.13	2.10	2.06	2.03	2.03	2.00	1.99	1.97	1.97	1.98	1.98	1.97	1.99	2.02	2.06	2.10	2.12	1.97	2.17	2.06
Aug 5	2.13	S	2.12	2.14	2.16	2.15	2.21	2.21	2.18	2.13	2.13	2.12	2.09	2.06	2.01	1.99	1.94	1.94	1.95	1.98	2.01	2.01	2.05	2.07	1.94	2.21	2.08
Aug 6	S	2.09	1.99	1.99	2.01	2.04	2.02	2.02	2.03	2.02	2.02	2.00	1.99	1.99	1.99	1.99	1.99	2.00	2.04	2.08	2.30	2.24	S	1.99	2.30	2.04	
Aug 7	2.24	2.13	2.24	2.24	2.25	2.28	2.30	2.29	2.18	2.13	2.06	2.03	2.02	2.00	1.98	1.99	2.00	2.01	2.02	2.07	2.15	2.21	S	2.60	1.98	2.60	2.15
Aug 8	2.52	2.61	3.42	3.57	2.83	2.68	2.69	2.73	2.56	C	C	C	C	C	2.32	2.17	2.08	2.10	2.14	2.17	2.22	S	2.18	2.12	2.08	3.57	2.51
Aug 9	2.14	2.12	2.10	2.04	2.03	2.04	2.04	2.05	2.01	2.00	1.99	1.99	1.99	1.98	1.99	1.98	1.99	1.99	1.99	2.00	S	2.03	2.15	2.17	1.98	2.17	2.04
Aug 10	2.16	2.14	2.18	2.20	2.17	2.15	2.10	2.07	2.06	2.00	1.98	1.98	1.97	1.97	1.97	1.97	1.97	1.97	1.97	S	2.21	2.08	2.26	2.25	1.97	2.26	2.08
Aug 11	2.49	2.48	2.75	2.58	2.58	2.51	2.56	2.54	2.34	2.14	2.12	2.10	2.10	2.09	2.07	2.07	2.09	2.09	S	2.18	2.33	2.34	2.81	2.56	2.07	2.81	2.34
Aug 12	2.78	2.81	2.68	2.84	2.85	3.05	2.98	2.69	2.39	2.26	2.11	2.09	2.05	2.03	2.00	2.00	2.02	S	2.09	2.10	2.08	2.13	2.18	2.23	2.00	3.05	2.37
Aug 13	2.19	2.20	2.34	2.21	2.22	2.16	2.19	2.24	2.23	2.23	2.15	2.09	2.07	2.07	2.07	2.09	S	2.05	2.04	2.07	2.09	2.09	2.14	2.18	2.04	2.34	2.15
Aug 14	2.17	2.21	2.33	2.42	2.36	2.27	2.22	2.16	2.13	2.12	2.06	2.01	2.00	2.00	1.99	S	1.98	1.98	1.97	1.95	2.00	2.07	2.08	2.11	1.95	2.42	2.11
Aug 15	2.10	2.07	2.10	2.13	2.11	2.11	2.13	2.13	2.09	2.07	2.01	1.99	1.95	1.96	S	2.00	2.00	2.06	2.01	2.03	2.11	2.06	2.04	2.01	1.95	2.13	2.06
Aug 16	2.00	2.00	2.02	2.01	2.00	1.98	1.98	1.97	1.97	1.97	1.97	1.97	1.96	S	1.96	1.96	1.96	1.96	1.97	1.98	1.99	1.99	1.99	1.99	1.96	2.02	1.98
Aug 17	1.99	1.98	1.98	1.97	1.97	1.98	1.98	1.98	1.98	1.97	1.96	1.96	S	1.96	1.96	1.97	1.97	1.97	1.98	2.00	2.03	2.09	2.13	2.14	1.96	2.14	2.00
Aug 18	2.19	2.25	2.23	2.25	2.33	2.35	2.23	2.21	2.22	2.11	1.99	S	1.98	1.97	1.97	1.97	1.97	1.97	1.98	2.01	2.05	2.10	2.14	2.24	1.97	2.35	2.12
Aug 19	2.31	2.28	2.29	2.32	2.40	2.41	2.46	2.33	2.23	2.18	S	2.01	X	X	X	X	X	X	X	X	X	X	X	X	2.01	2.46	-
Aug 20	X	X	X	X	X	X	X	X	X	X	X	X	1.98	1.98	1.97	1.99	2.04	2.02	2.04	2.18	2.21	2.33	2.21	2.09	1.97	2.33	-
Aug 21	2.10	2.13	2.15	2.11	2.16	2.12	2.14	2.09	S	2.01	2.00	1.98	1.96	1.95	1.94	1.93	1.93	1.94	1.94	1.94	1.93	1.93	1.94	1.95	1.93	2.16	2.01
Aug 22	1.93	1.91	1.94	1.98	2.01	2.03	2.12	S	2.04	1.96	1.90	1.88	1.88	1.88	1.87	1.88	1.89	1.88	1.89	1.91	1.93	1.97	2.00	2.01	1.87	2.12	1.94
Aug 23	2.09	2.12	2.19	2.11	2.20	2.25	S	2.41	2.06	2.05	2.10	2.04	2.06	2.09	2.10	2.04	2.08	2.07	2.01	2.04	2.05	2.12	2.16	2.15	2.01	2.41	2.11
Aug 24	2.30	2.32	2.35	2.39	2.48	S	2.34	2.37	2.27	2.15	2.10	2.06	1.99	1.91	1.88	1.89	1.87	1.88	1.89	1.88	1.95	1.98	2.00	2.01	1.87	2.48	2.10
Aug 25	2.05	2.05	2.06	2.07	S	2.10	2.10	2.04	1.99	1.97	1.93	1.90	1.88	1.88	1.87	1.87	1.88	1.89	1.88	1.91	1.91	1.93	1.92	1.89	1.87	2.10	1.96
Aug 26	1.89	1.89	1.89	S	1.90	1.89	1.90	1.90	1.91	1.90	1.89	1.89	1.89	1.89	Y	1.89	1.90	1.90	1.90	1.92	1.92	1.93	1.92	1.94	1.89	1.94	1.90
Aug 27	2.95	1.95	S	1.96	1.97	1.98	1.92	1.93	1.92	1.91	1.91	1.91	1.90	1.90	1.90	1.91	1.95	2.05	2.13	2.11	2.25	2.15	2.04	1.90	2.25	1.98	
Aug 28	2.05	S	2.18	2.10	2.08	2.07	2.03	1.95	1.90	1.88	1.89	1.88	1.88	1.89	1.88	1.89	1.90	1.91	1.91	1.93	1.93	1.95	1.98	1.97	1.88	2.18	1.96
Aug 29	S	2.03	2.03	2.04	2.05	2.05	2.06	2.03	2.01	2.01	1.98	1.94	1.92	1.92	1.91	1.91	1.92	1.94	1.95	2.17	2.12	2.05	2.19	S	1.91	2.19	2.01
Aug 30	2.07	2.19	2.29	3.42	2.73	2.87	3.68	3.52	3.06	2.70	2.10	2.04	1.99	2.03	2.12	2.06	2.02	2.03	2.01	2.04	2.15	2.08	S	2.10	1.99	3.68	2.40
Aug 31	2.18	2.34	2.47	2.55	2.53	2.54	2.51	2.45	2.57	2.46	2.26	2.16	2.00	2.00	1.95	1.96	1.96	1.94	1.95	1.99	2.02	S	2.12	2.21	1.94	2.57	2.22
Diurnal Maximum	2.78	2.81	3.42	3.57	2.85	3.05	3.68	3.52	3.06	2.70	2.26	2.16	2.10	2.15	2.32	2.17	2.09	2.10	2.14	2.20	2.34	2.34	2.81	2.60			
Diurnal Average	2.18	2.19	2.27	2.31	2.24	2.26	2.30	2.26	2.17	2.09	2.03	2.00	1.98	1.98	1.99	1.98	1.98	1.98	1.99	2.03	2.07	2.09	2.12	2.13			

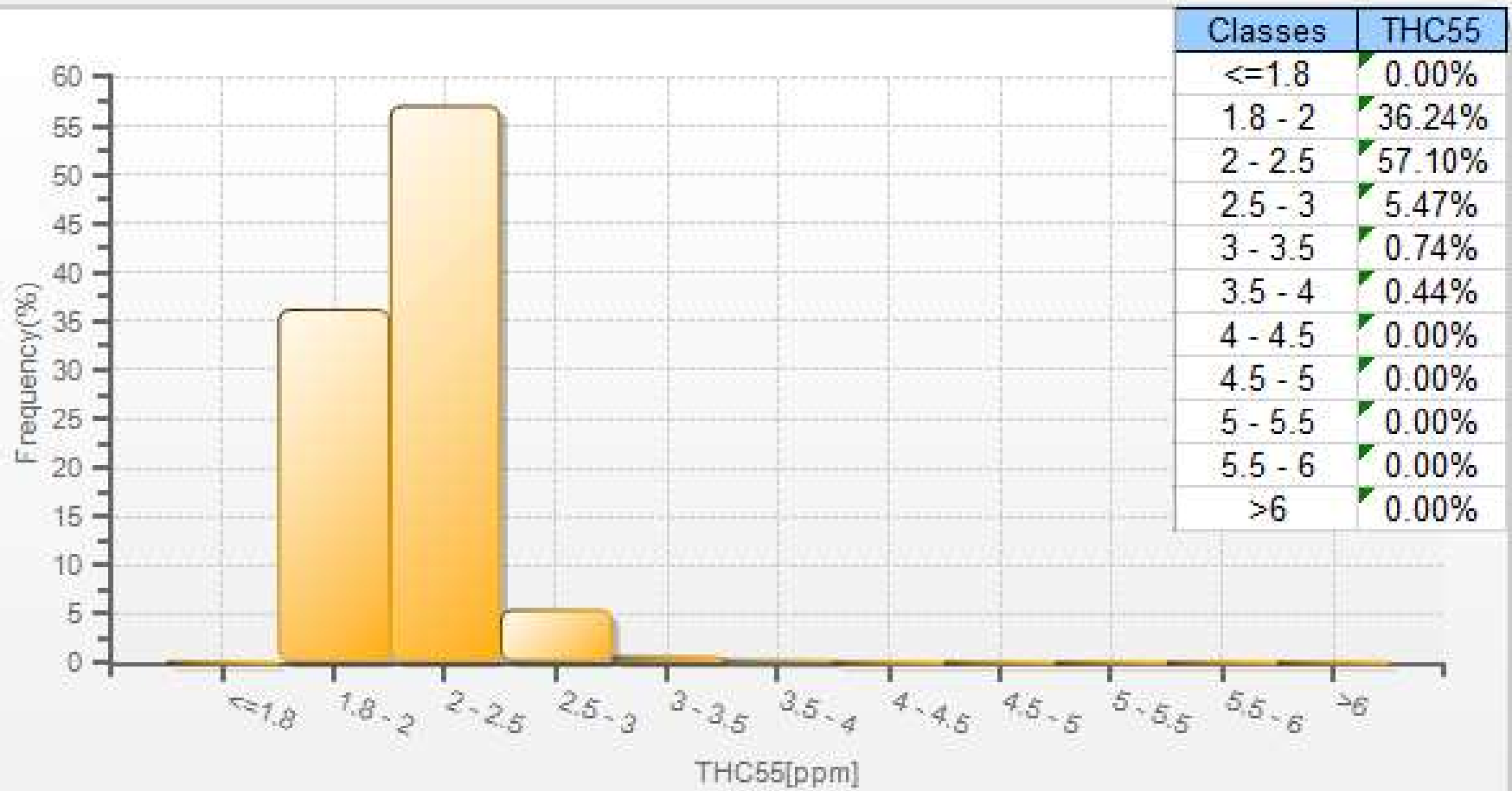
C Calibration	S Daily Zero/Span	Q Quality Assurance	C1 Repeat Calibration	S1 Repeat Daily Zero/Span
G Out for Repair	K Collection Error	N Not in Service	O Operator Error	P Power Failure
R Recovery	X Machine Malfunction	Y Maintenance	T Exceeds Temperature Limits	N Not in Service

Daily Average is shown "-" if minimum data completeness criteria of 75% or 18 hours per day is not met.
 Monthly Average is shown "-" if minimum data completeness criteria of 75% of days per month is not met.

Timeseries Chart of Hourly Average for THC - Bonnyville - East Site

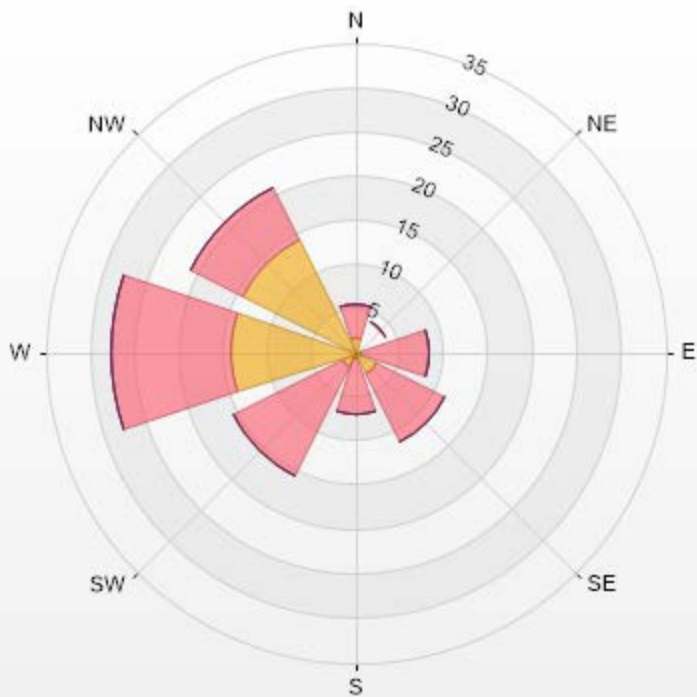


THC55[ppm] Histogram: Bonnyville East Monthly: 08-2019 1 Hr.



Wind: Bonnyville East Poll.: Bonnyville East-THC55[ppm] Monthly: 08-2019 Type: PollutionRose Direction: Blowing From (Wind Frequency) Based On 1 Hr.
 Calm: 0.00% Valid Data: 90.86% Calm Avg: 0.00 [ppm]

Direction	0-2	2-5	5-10	10-40	>40.0	Total
N	1.78	3.7	0	0	0	5.48
NE	0.15	3.7	0	0	0	3.85
E	0.59	7.69	0	0	0	8.28
SE	2.81	8.58	0	0	0	11.39
S	0.74	6.21	0	0	0	6.95
SW	1.78	13.76	0	0	0	15.54
W	14.05	13.61	0	0	0	27.66
NW	14.35	6.51	0	0	0	20.86
Summary	36.25	63.76	0	0	0	100



LICA-201908-Revision 1

% Icon Classes (ppm)	36	0-2	64	2-5	367	5-10	0	10-40	0	>40.0



LAKELAND INDUSTRY & COMMUNITY ASSOCIATION

Bonnyville - East Site - August 2019

Summary of Hourly Averages

METHANE (CH4) in ppm

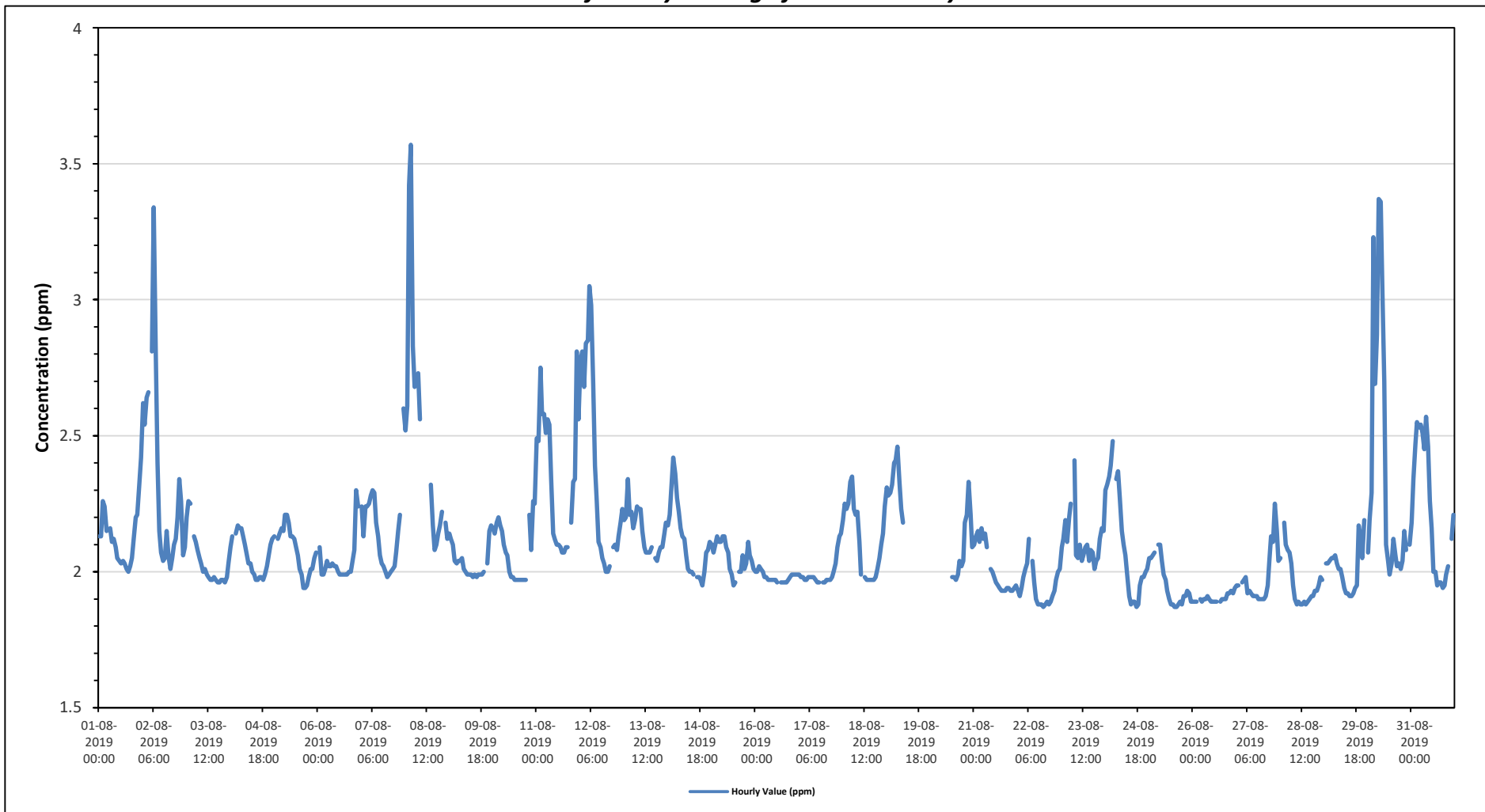
Maximum Hourly Value:	3.57 ppm on August 8 at hour 3	Hours in Service:	744
Maximum Daily Value:	2.51 ppm on August 8	Hours of Data:	682
Minimum Hourly Value:	1.87 ppm on August 22 at hour 14	Hours of Missing Data:	25
Minimum Daily Value:	1.90 ppm on August 26	Hours of Calibration:	37
Monthly Average:	2.11 ppm	Operational Uptime:	96.6

Day	Hourly Period Starting at (MST)																							Daily Minimum	Daily Maximum	Daily Average	
	0	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22				23
Aug 1	2.13	2.13	2.26	2.24	2.15	S	2.16	2.11	2.12	2.09	2.05	2.04	2.03	2.04	2.03	2.01	2.00	2.02	2.05	2.12	2.20	2.21	2.32	2.42	2.00	2.42	2.13
Aug 2	2.62	2.54	2.64	2.66	S	2.81	3.34	2.81	2.40	2.15	2.07	2.04	2.05	2.15	2.06	2.01	2.05	2.10	2.12	2.20	2.34	2.26	2.06	2.09	2.01	3.34	2.33
Aug 3	2.20	2.26	2.25	S	2.13	2.11	2.08	2.05	2.03	2.00	2.01	1.99	1.98	1.97	1.97	1.98	1.97	1.96	1.96	1.97	1.96	1.98	2.03	1.96	2.26	2.04	
Aug 4	2.09	2.13	S	2.14	2.17	2.16	2.16	2.13	2.10	2.06	2.03	2.03	2.00	1.99	1.97	1.97	1.98	1.98	1.97	1.99	2.02	2.06	2.10	2.12	1.97	2.17	2.06
Aug 5	2.13	S	2.12	2.14	2.16	2.15	2.21	2.21	2.18	2.13	2.13	2.12	2.09	2.06	2.01	1.99	1.94	1.94	1.95	1.98	2.01	2.01	2.05	2.07	1.94	2.21	2.08
Aug 6	S	2.09	1.99	1.99	2.01	2.04	2.02	2.02	2.03	2.02	2.02	2.00	1.99	1.99	1.99	1.99	2.00	2.00	2.04	2.08	2.30	2.24	S	1.99	2.30	2.04	
Aug 7	2.24	2.13	2.24	2.24	2.25	2.28	2.30	2.29	2.18	2.13	2.06	2.03	2.02	2.00	1.98	1.99	2.00	2.01	2.02	2.07	2.15	2.21	S	2.60	1.98	2.60	2.15
Aug 8	2.52	2.61	3.42	3.57	2.83	2.68	2.69	2.73	2.56	C	C	C	C	C	2.32	2.17	2.08	2.10	2.14	2.17	2.22	S	2.18	2.12	2.08	3.57	2.51
Aug 9	2.14	2.12	2.10	2.04	2.03	2.04	2.04	2.05	2.01	2.00	1.99	1.99	1.99	1.98	1.99	1.98	1.99	1.99	1.99	2.00	S	2.03	2.15	2.17	1.98	2.17	2.04
Aug 10	2.16	2.14	2.18	2.20	2.17	2.15	2.10	2.07	2.06	2.00	1.98	1.98	1.97	1.97	1.97	1.97	1.97	1.97	1.97	S	2.21	2.08	2.26	2.25	1.97	2.26	2.08
Aug 11	2.49	2.48	2.75	2.58	2.58	2.51	2.56	2.54	2.34	2.14	2.12	2.10	2.10	2.09	2.07	2.07	2.09	2.09	S	2.18	2.33	2.34	2.81	2.56	2.07	2.81	2.34
Aug 12	2.78	2.81	2.68	2.84	2.85	3.05	2.98	2.69	2.39	2.26	2.11	2.09	2.05	2.03	2.00	2.00	2.02	S	2.09	2.10	2.08	2.13	2.18	2.23	2.00	3.05	2.37
Aug 13	2.19	2.20	2.34	2.21	2.22	2.16	2.19	2.24	2.23	2.23	2.15	2.09	2.07	2.07	2.07	2.09	S	2.05	2.04	2.07	2.09	2.09	2.14	2.18	2.04	2.34	2.15
Aug 14	2.17	2.21	2.33	2.42	2.36	2.27	2.22	2.16	2.13	2.12	2.06	2.01	2.00	2.00	1.99	S	1.98	1.98	1.97	1.95	2.00	2.07	2.08	2.11	1.95	2.42	2.11
Aug 15	2.10	2.07	2.10	2.13	2.11	2.11	2.13	2.13	2.09	2.07	2.01	1.99	1.95	1.96	S	2.00	2.00	2.06	2.01	2.03	2.11	2.06	2.04	2.01	1.95	2.13	2.06
Aug 16	2.00	2.00	2.02	2.01	2.00	1.98	1.98	1.97	1.97	1.97	1.97	1.97	1.96	S	1.96	1.96	1.96	1.96	1.97	1.98	1.99	1.99	1.99	1.99	1.96	2.02	1.98
Aug 17	1.99	1.98	1.98	1.97	1.97	1.98	1.98	1.98	1.98	1.97	1.96	1.96	S	1.96	1.96	1.97	1.97	1.97	1.98	2.00	2.03	2.09	2.13	2.14	1.96	2.14	2.00
Aug 18	2.19	2.25	2.23	2.25	2.33	2.35	2.23	2.21	2.22	2.11	1.99	S	1.98	1.97	1.97	1.97	1.97	1.97	1.98	2.01	2.05	2.10	2.14	2.24	1.97	2.35	2.12
Aug 19	2.31	2.28	2.29	2.32	2.40	2.41	2.46	2.33	2.23	2.18	S	2.01	X	X	X	X	X	X	X	X	X	X	X	X	2.01	2.46	-
Aug 20	X	X	X	X	X	X	X	X	X	X	X	X	1.98	1.98	1.97	1.99	2.04	2.02	2.04	2.18	2.21	2.33	2.21	2.09	1.97	2.33	-
Aug 21	2.10	2.13	2.15	2.11	2.16	2.12	2.14	2.09	S	2.01	2.00	1.98	1.96	1.95	1.94	1.93	1.93	1.94	1.94	1.93	1.93	1.94	1.95	1.95	1.93	2.16	2.01
Aug 22	1.93	1.91	1.94	1.98	2.01	2.03	2.12	S	2.04	1.96	1.90	1.88	1.88	1.88	1.87	1.88	1.89	1.88	1.89	1.91	1.93	1.97	2.00	2.01	1.87	2.12	1.94
Aug 23	2.09	2.12	2.19	2.11	2.20	2.25	S	2.41	2.06	2.05	2.10	2.04	2.06	2.09	2.10	2.04	2.08	2.07	2.01	2.04	2.05	2.12	2.16	2.15	2.01	2.41	2.11
Aug 24	2.30	2.32	2.35	2.39	2.48	S	2.34	2.37	2.27	2.15	2.10	2.06	1.99	1.91	1.88	1.89	1.87	1.88	1.89	1.88	1.95	1.98	2.00	2.01	1.87	2.48	2.10
Aug 25	2.05	2.05	2.06	2.07	S	2.10	2.10	2.04	1.99	1.97	1.93	1.90	1.88	1.88	1.87	1.87	1.88	1.89	1.88	1.91	1.91	1.93	1.92	1.89	1.87	2.10	1.96
Aug 26	1.89	1.89	1.89	S	1.90	1.89	1.90	1.90	1.91	1.90	1.89	1.89	1.89	1.89	Y	1.89	1.90	1.90	1.90	1.92	1.92	1.93	1.92	1.94	1.89	1.94	1.90
Aug 27	1.95	1.95	S	1.96	1.97	1.98	1.92	1.93	1.92	1.91	1.91	1.91	1.90	1.90	1.90	1.91	1.91	1.95	2.05	2.13	2.11	2.25	2.15	2.04	1.90	2.25	1.98
Aug 28	2.05	S	2.18	2.10	2.08	2.07	2.03	1.95	1.90	1.88	1.89	1.88	1.88	1.89	1.88	1.89	1.90	1.91	1.91	1.93	1.93	1.95	1.98	1.97	1.88	2.18	1.96
Aug 29	S	2.03	2.03	2.04	2.05	2.05	2.06	2.03	2.01	2.01	1.98	1.94	1.92	1.92	1.91	1.91	1.92	1.94	1.95	2.17	2.12	2.05	2.19	S	1.91	2.19	2.01
Aug 30	2.07	2.19	2.29	3.23	2.69	2.87	3.37	3.36	3.06	2.70	2.10	2.04	1.99	2.03	2.12	2.06	2.02	2.03	2.01	2.04	2.15	2.08	S	2.10	1.99	3.37	2.37
Aug 31	2.18	2.34	2.47	2.55	2.53	2.54	2.51	2.45	2.57	2.46	2.26	2.16	2.00	2.00	1.95	1.96	1.96	1.94	1.95	1.99	2.02	S	2.12	2.21	1.94	2.57	2.22
Diurnal Maximum	2.78	2.81	3.42	3.57	2.85	3.05	3.37	3.36	3.06	2.70	2.26	2.16	2.10	2.15	2.32	2.17	2.09	2.10	2.14	2.20	2.34	2.34	2.81	2.60			
Diurnal Average	2.18	2.19	2.27	2.30	2.24	2.26	2.29	2.25	2.17	2.09	2.03	2.00	1.98	1.98	1.99	1.98	1.98	1.98	1.99	2.03	2.07	2.09	2.12	2.13			

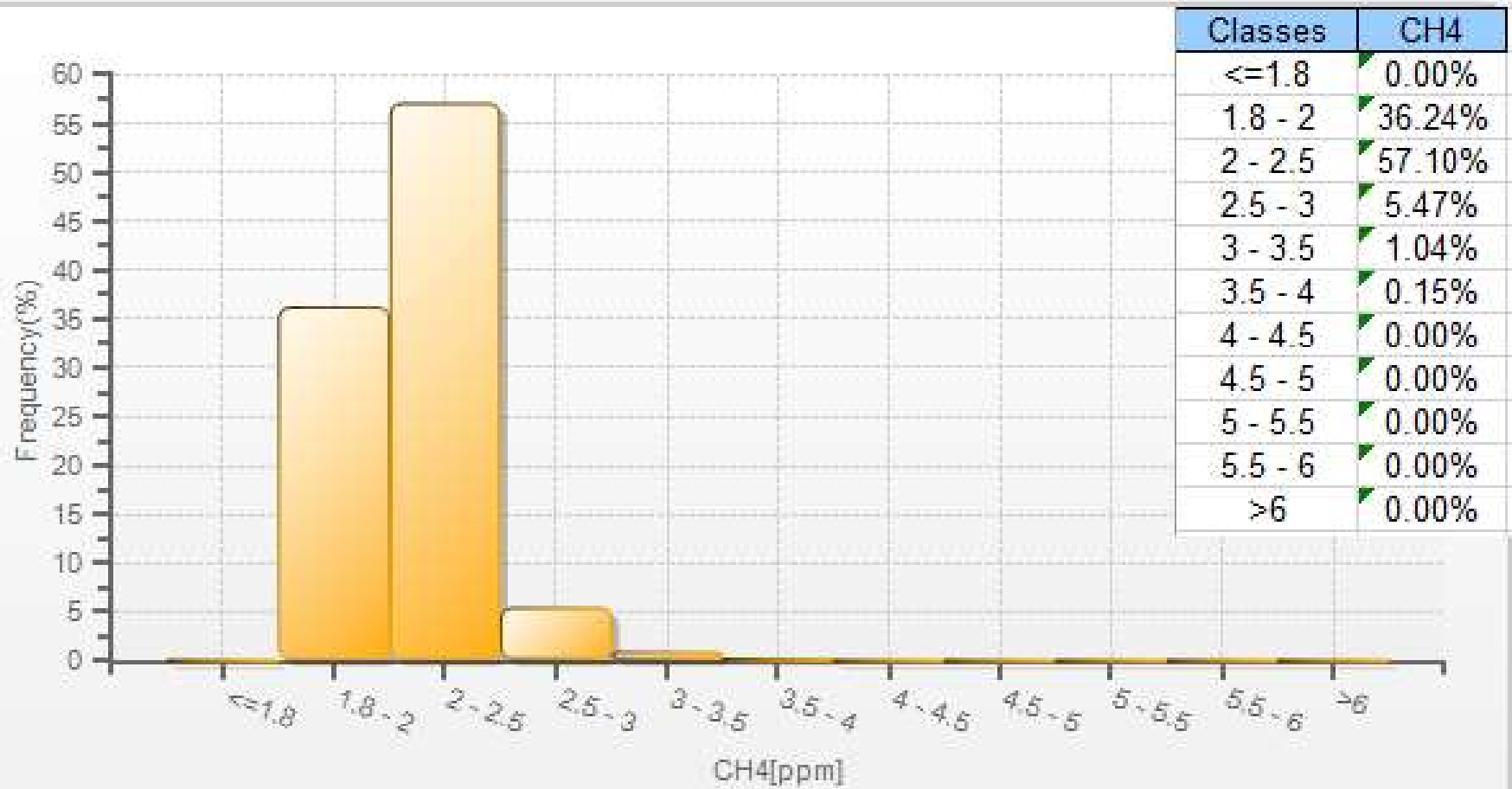
C	Calibration	S	Daily Zero/Span	Q	Quality Assurance	C1	Repeat Calibration	S1	Repeat Daily Zero/Span
G	Out for Repair	K	Collection Error	N	Not in Service	O	Operator Error	P	Power Failure
R	Recovery	X	Machine Malfunction	Y	Maintenance	T	Exceeds Temperature Limits	N	Not in Service

Daily Average is shown "-" if minimum data completeness criteria of 75% or 18 hours per day is not met.
 Monthly Average is shown "-" if minimum data completeness criteria of 75% of days per month is not met.

Timeseries Chart of Hourly Average for CH4 - Bonnyville - East Site

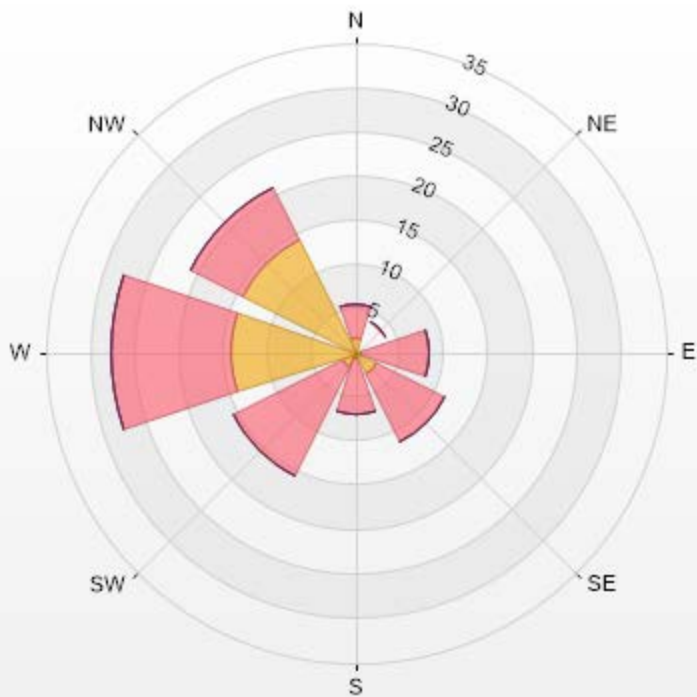


CH4[ppm] Histogram: Bonnyville East Monthly: 08-2019 1 Hr.



Wind: Bonnyville East Poll.: Bonnyville East-CH4[ppm] Monthly: 08-2019 Type: PollutionRose Direction: Blowing From (Wind Frequency) Based On 1 Hr.
 Calm: 0.00% Valid Data: 90.86% Calm Avg: 0.00 [ppm]

Direction	0-2	2-5	5-10	10-20	>20.0	Total
N	1.78	3.7	0	0	0	5.48
NE	0.15	3.7	0	0	0	3.85
E	0.59	7.69	0	0	0	8.28
SE	2.81	8.58	0	0	0	11.39
S	0.74	6.21	0	0	0	6.95
SW	1.78	13.76	0	0	0	15.54
W	14.05	13.61	0	0	0	27.66
NW	14.35	6.51	0	0	0	20.86
Summary	36.25	63.76	0	0	0	100



LICA-201908-Revision 1

% Icon	Classes (ppm)	36	64	205	367	0	0
	0-2						
	2-5						
	5-10						
	10-20						
	>20.0						



LAKELAND INDUSTRY & COMMUNITY ASSOCIATION

Bonnyville - East Site - August 2019
Summary of Hourly Averages

NON-METHANE HYDROCARBONS (NMHC) in ppm

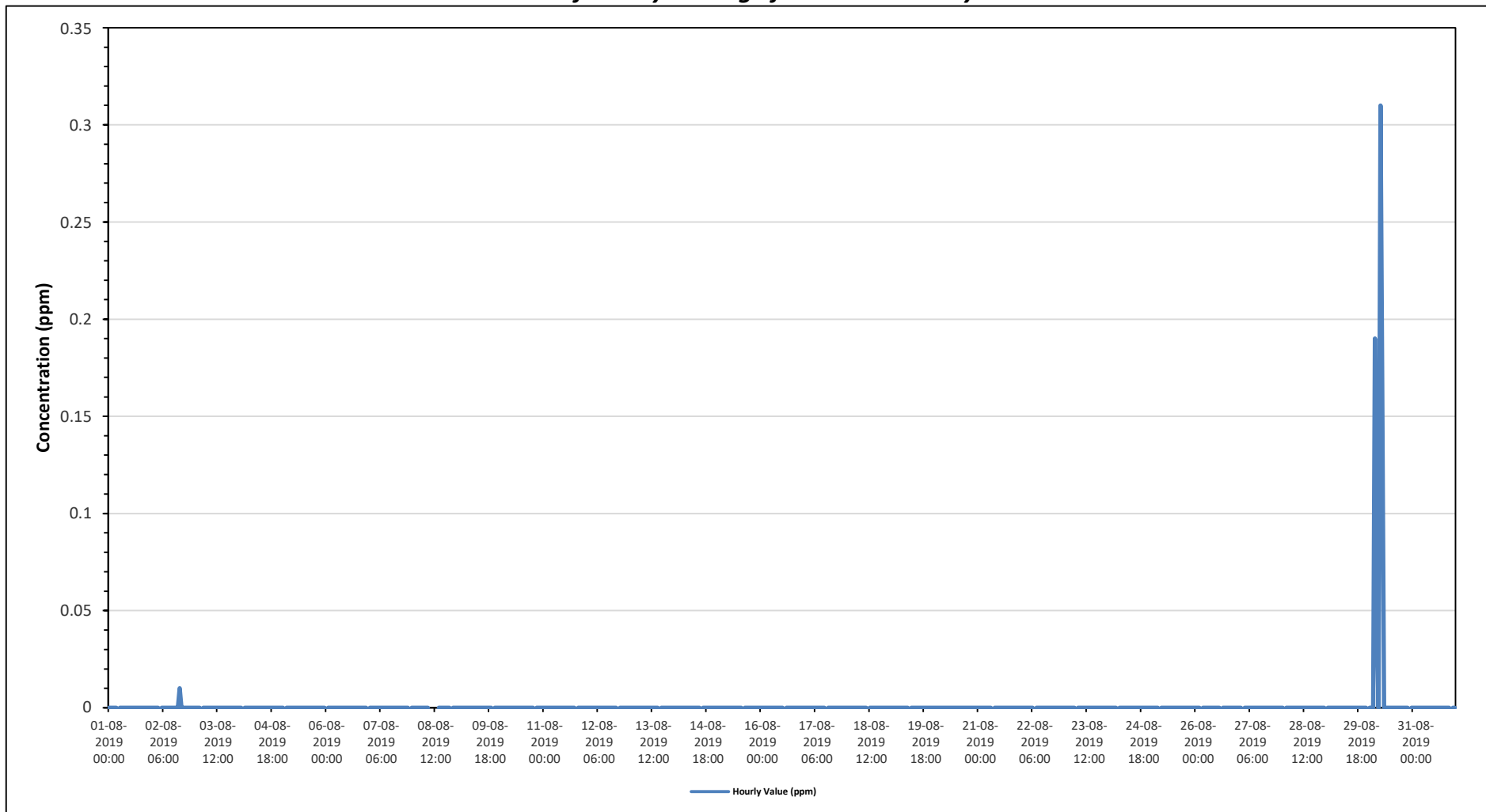
Maximum Hourly Value:	0.31 ppm on August 30 at hour 6	Hours in Service:	744
Maximum Daily Value:	0.03 ppm on August 30	Hours of Data:	682
Minimum Hourly Value:	0.00 ppm on August 1 at hour 0	Hours of Missing Data:	25
Minimum Daily Value:	0.00 ppm on August 1	Hours of Calibration:	37
Monthly Average:	0.00 ppm	Operational Uptime:	96.6

Day	Hourly Period Starting at (MST)																							Daily Minimum	Daily Maximum	Daily Average						
	0	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22				23					
Aug 1	0.00	0.00	0.00	0.00	0.00	S	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00		
Aug 2	0.00	0.00	0.00	0.00	S	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.01	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.01		
Aug 3	0.00	0.00	0.00	S	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00		
Aug 4	0.00	0.00	S	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00		
Aug 5	0.00	S	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00		
Aug 6	S	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	S	0.00	0.00	0.00		
Aug 7	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	S	0.00	0.00	0.00	0.00		
Aug 8	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	C	C	C	C	C	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	S	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	
Aug 9	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	S	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	
Aug 10	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	S	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	
Aug 11	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	S	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	
Aug 12	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	S	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	
Aug 13	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	S	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	
Aug 14	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	S	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	
Aug 15	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	S	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	
Aug 16	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	S	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	
Aug 17	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	S	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	
Aug 18	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	S	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	
Aug 19	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	S	0.00	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	0.00	
Aug 20	X	X	X	X	X	X	X	X	X	X	X	X	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	
Aug 21	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	S	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	
Aug 22	0.00	0.00	0.00	0.00	0.00	0.00	0.00	S	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	
Aug 23	0.00	0.00	0.00	0.00	0.00	0.00	S	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	
Aug 24	0.00	0.00	0.00	0.00	0.00	S	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	
Aug 25	0.00	0.00	0.00	0.00	S	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	
Aug 26	0.00	0.00	0.00	S	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	Y	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	
Aug 27	0.00	0.00	S	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	
Aug 28	0.00	S	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	
Aug 29	S	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	S	0.00	0.00	0.00	
Aug 30	0.00	0.00	0.00	0.19	0.04	0.00	0.31	0.16	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	S	0.00	0.00	0.00	0.00	
Aug 31	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	S	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Diurnal Maximum	0.00	0.00	0.00	0.19	0.04	0.00	0.31	0.16	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	
Diurnal Average	0.00	0.00	0.00	0.01	0.00	0.00	0.01	0.01	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	

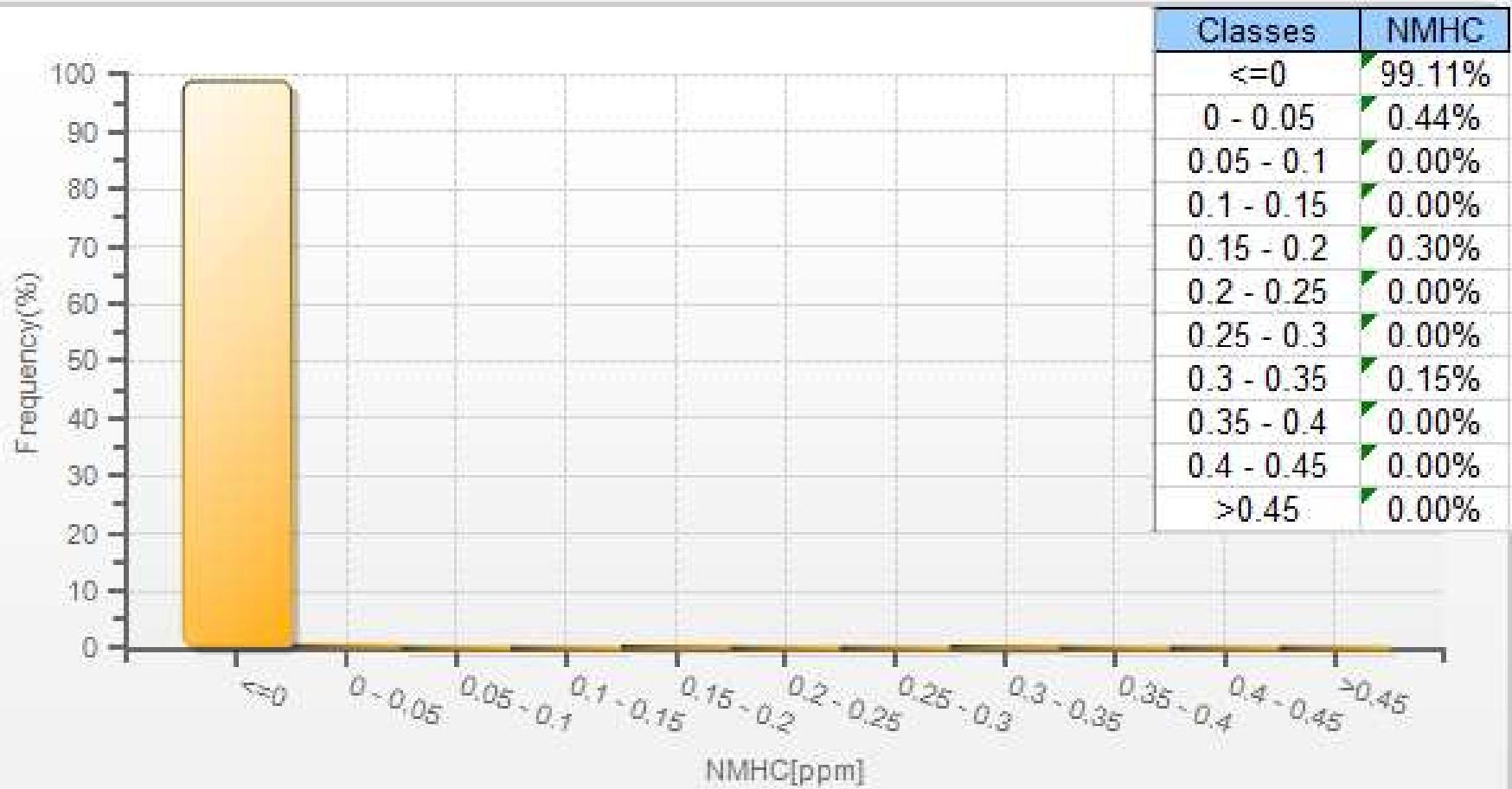
C	Calibration	S	Daily Zero/Span	Q	Quality Assurance	C1	Repeat Calibration	S1	Repeat Daily Zero/Span
G	Out for Repair	K	Collection Error	N	Not in Service	O	Operator Error	P	Power Failure
R	Recovery	X	Machine Malfunction	Y	Maintenance	T	Exceeds Temperature Limits	N	Not in Service

Daily Average is shown "-" if minimum data completeness criteria of 75% or 18 hours per day is not met.
 Monthly Average is shown "-" if minimum data completeness criteria of 75% of days per month is not met.

Timeseries Chart of Hourly Average for NMHC - Bonnyville - East Site

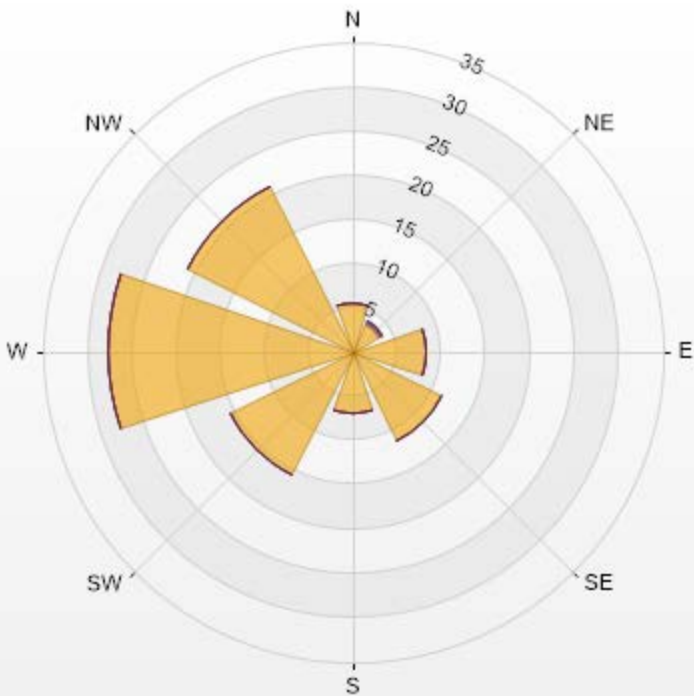


NMHC[ppm] Histogram: Bonnyville East Monthly: 08-2019 1 Hr.



Wind: Bonnyville East Poll.: Bonnyville East-NMHC[ppm] Monthly: 08-2019 Type: PollutionRose Direction: Blowing From (Wind Frequency) Based On 1 Hr.
 Calm: 0.00% Valid Data: 90.86% Calm Avg: 0.00 [ppm]

Direction	0-0.1	0.1-0.3	0.3-0.9	0.9-2	>2.0	Total
N	5.47	0	0	0	0	5.47
NE	3.4	0.3	0.15	0	0	3.85
E	8.28	0	0	0	0	8.28
SE	11.39	0	0	0	0	11.39
S	6.95	0	0	0	0	6.95
SW	15.53	0	0	0	0	15.53
W	27.66	0	0	0	0	27.66
NW	20.86	0	0	0	0	20.86
Summary	100	0.3	0.15	0	0	100



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% Icon Classes (ppm)	100	0-0.1	0.1-0.3	0.3-0.9	0.9-2	>2.0
	0	0	0	0	0	0



LAKELAND INDUSTRY & COMMUNITY ASSOCIATION

Bonnyville - East Site - August 2019

Summary of Hourly Averages

PARTICULATE MATTER 2.5 (PM_{2.5}) in µg/m³

Alberta Ambient Air Quality Objectives (AAAQO): 1-Hour 80 µg/m³, 24-Hour 29 µg/m³			
Number of 1-Hour Exceedences:	0	Number of 24-Hour Exceedences:	0

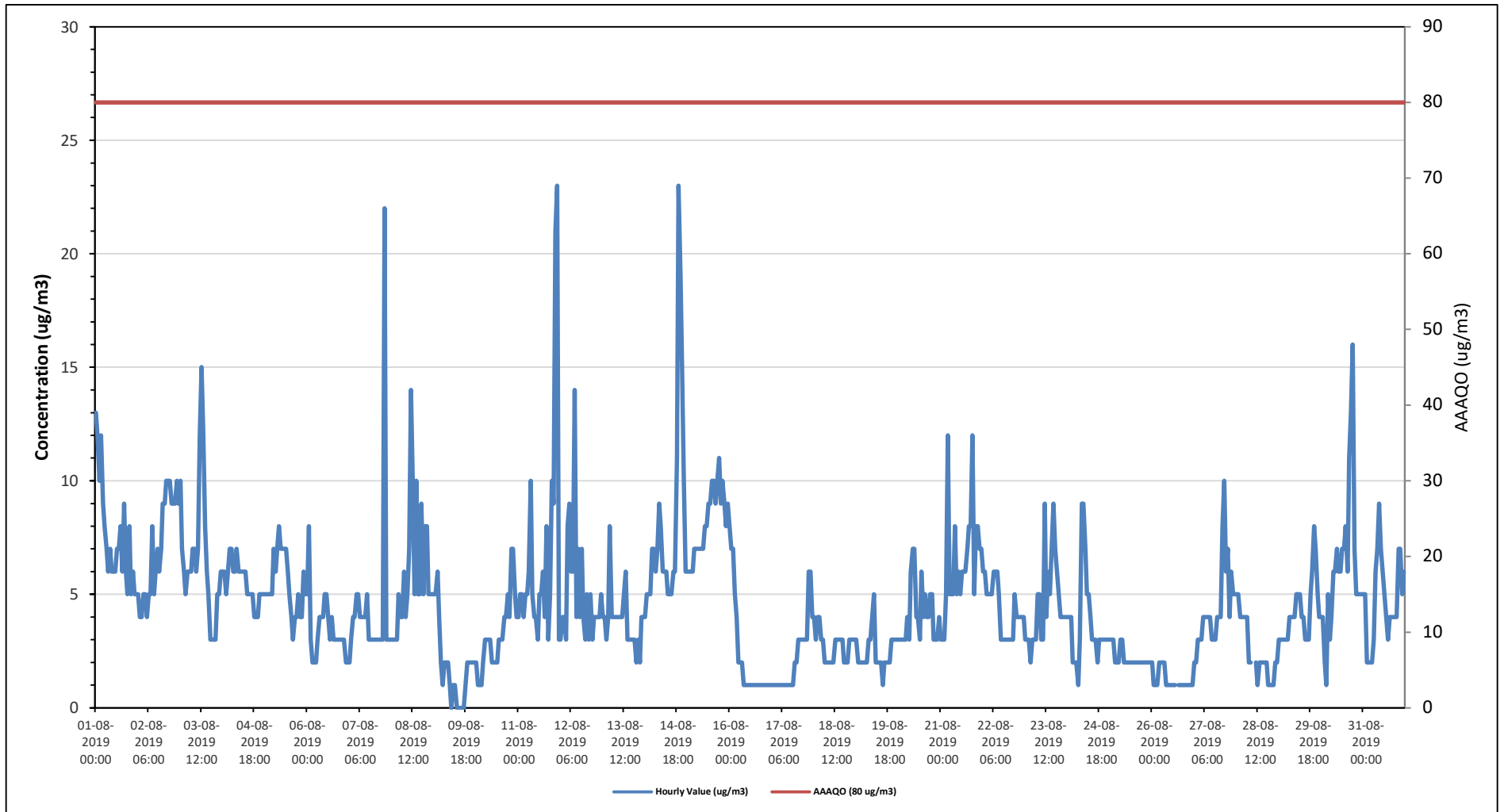
Maximum Hourly Value:	23 µg/m ³ on August 11 at hour 22	Hours in Service:	744
Maximum Daily Value:	8 µg/m ³ on August 15	Hours of Data:	741
Minimum Hourly Value:	0 µg/m ³ on August 9 at hour 10	Hours of Missing Data:	1
Minimum Daily Value:	1 µg/m ³ on August 26	Hours of Calibration:	2
Monthly Average:	4.5 µg/m ³	Operational Uptime:	99.9

Day	Hourly Period Starting at (MST)																							Daily	Daily	Daily		
	0	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	Minimum	Maximum	Average	
Aug 1	13	12	10	12	9	8	7	6	7	6	6	6	7	7	8	6	9	6	5	8	5	6	5	5	5	5	13	7.5
Aug 2	5	4	4	5	5	4	5	5	8	5	6	7	6	7	9	9	10	10	10	9	9	9	10	9	9	4	10	7.1
Aug 3	10	7	6	5	6	6	6	7	7	6	7	12	15	12	8	6	5	3	3	3	3	5	5	6	6	3	15	6.6
Aug 4	6	6	5	6	7	7	6	6	7	6	6	6	6	6	5	5	5	5	4	4	4	5	5	5	5	4	7	5.5
Aug 5	5	5	5	5	5	7	6	7	8	7	7	7	7	7	6	5	4	3	4	4	5	4	4	6	5	3	8	5.5
Aug 6	5	8	3	2	2	2	3	4	4	4	5	5	4	3	4	3	3	3	3	3	3	3	2	2	2	2	8	3.5
Aug 7	2	3	4	4	5	5	4	4	4	4	5	3	3	3	3	3	3	3	3	3	22	3	3	3	2	2	22	4.3
Aug 8	3	3	3	3	5	4	4	6	4	5	7	14	10	5	10	5	5	9	5	8	8	5	5	5	5	3	14	5.9
Aug 9	5	5	6	4	2	1	2	2	2	1	0	1	1	0	0	0	0	0	1	2	2	2	2	2	0	6	1.8	
Aug 10	2	1	1	1	2	3	3	3	3	2	2	2	3	3	3	4	4	4	5	4	7	7	5	4	1	7	3.2	
Aug 11	4	5	5	4	5	5	6	10	5	4	4	3	2	5	6	4	8	3	5	10	9	21	23	3	3	23	6.8	
Aug 12	3	4	4	3	8	9	6	6	14	4	7	4	7	4	3	5	3	5	3	4	4	4	4	5	3	14	5.1	
Aug 13	4	4	3	4	8	4	4	4	4	4	4	5	6	3	3	3	3	3	2	3	2	4	4	4	2	8	3.8	
Aug 14	4	5	5	5	7	7	6	7	9	8	6	6	6	5	5	6	6	11	23	19	15	10	6	4	23	8.0		
Aug 15	6	6	6	6	7	7	7	7	7	7	8	8	9	9	10	10	9	10	11	9	10	9	8	9	6	11	8.1	
Aug 16	8	7	7	5	4	2	2	2	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	8	2.2	
Aug 17	1	1	1	1	1	1	1	1	1	1	1	1	1	2	2	3	3	3	3	3	3	6	6	4	1	6	2.1	
Aug 18	4	3	4	4	3	3	2	2	2	2	2	3	3	3	3	3	3	2	2	2	3	3	3	3	2	4	2.8	
Aug 19	3	2	2	2	2	2	2	3	3	4	5	2	2	2	1	2	2	2	2	2	3	3	3	3	1	5	2.5	
Aug 20	3	3	3	3	3	4	3	6	7	7	4	4	3	6	4	5	4	4	5	5	3	3	3	4	3	7	4.1	
Aug 21	3	3	3	5	12	5	5	5	8	5	6	5	6	6	6	7	8	8	12	5	8	8	7	7	3	12	6.4	
Aug 22	6	6	5	5	5	5	6	6	6	5	3	3	3	3	3	3	3	3	5	4	4	4	4	4	3	6	4.3	
Aug 23	3	3	3	2	3	3	3	5	5	3	3	9	4	6	5	7	9	7	6	5	4	4	4	4	2	9	4.6	
Aug 24	4	4	4	2	2	2	1	3	9	9	7	5	5	4	3	3	3	2	3	3	3	3	3	3	1	9	3.8	
Aug 25	3	3	3	2	2	2	3	3	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2	3	2.2	
Aug 26	2	1	1	1	2	2	2	2	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	2	1.2	
Aug 27	2	2	3	3	3	4	4	4	4	4	3	3	3	4	4	4	8	10	6	7	4	6	5	5	2	10	4.4	
Aug 28	5	5	4	4	4	4	4	2	2	C	C	2	1	2	2	2	2	2	1	1	1	1	2	2	1	5	2.5	
Aug 29	3	3	3	3	3	3	4	4	4	4	4	5	5	4	4	3	3	3	5	6	8	7	5	4	3	8	4.2	
Aug 30	4	4	2	1	5	3	4	6	6	7	6	6	7	7	8	6	11	13	16	7	5	5	5	5	1	16	6.2	
Aug 31	5	5	2	2	2	2	3	6	7	9	7	6	5	4	3	4	4	4	4	4	7	7	5	6	2	9	4.7	
Diurnal Maximum	13	12	10	12	12	9	7	10	14	9	8	14	15	12	10	10	11	13	16	23	22	21	23	9				
Daiurnal Average	4.4	4.3	3.9	3.7	4.5	4.1	4.0	4.6	5.2	4.6	4.5	4.7	4.5	4.5	4.5	4.1	4.6	4.5	4.8	5.0	5.5	5.3	5.0	4.2				

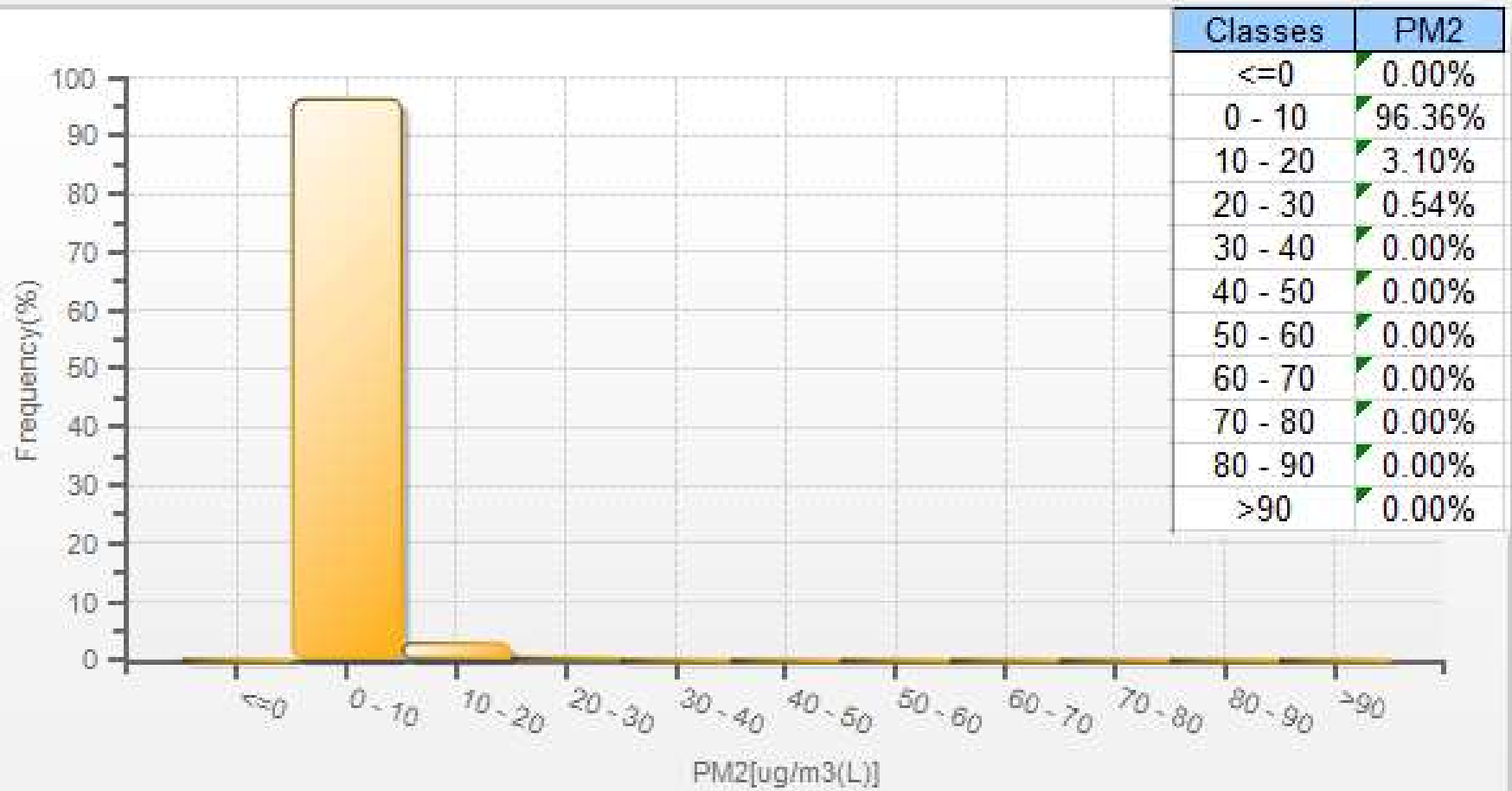
C	Calibration	S	Daily Zero/Span	Q	Quality Assurance	C1	Repeat Calibration	S1	Repeat Daily Zero/Span
G	Out for Repair	K	Collection Error	N	Not in Service	O	Operator Error	P	Power Failure
R	Recovery	X	Machine Malfunction	Y	Maintenance	T	Exceeds Temperature Limits	N	Not in Service

Daily Average is shown "-" if minimum data completeness criteria of 75% or 18 hours per day is not met.
 Monthly Average is shown "-" if minimum data completeness criteria of 75% of days per month is not met.

Timeseries Chart of Hourly Average for PM2.5 - Bonnyville - East Site

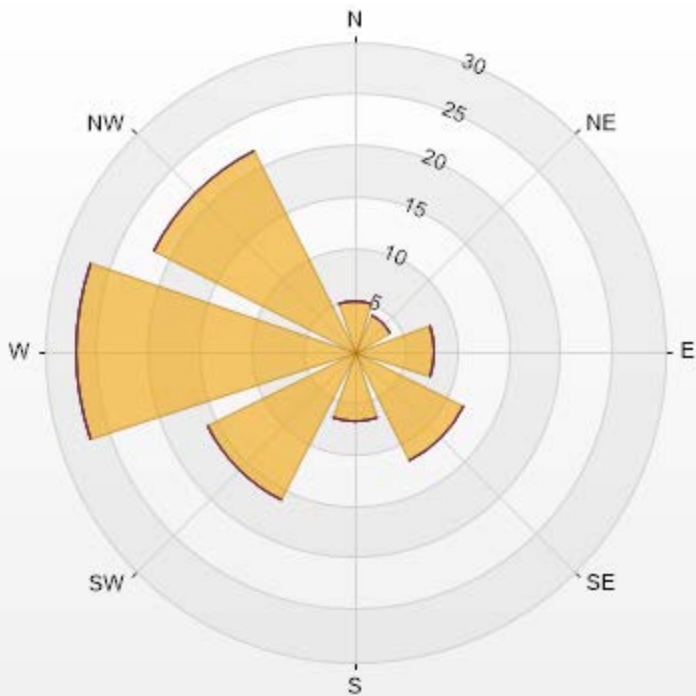


PM2[ug/m3(L)] Histogram: Bonnyville East Monthly: 08-2019 1 Hr.



Wind: Bonnyville East Poll.: Bonnyville East-PM2[ug/m3(L)] Monthly: 08-2019 Type: PollutionRose Direction: Blowing From (Wind Frequency) Based On 1 Hr.
 Calm: 0.00% Valid Data: 99.60% Calm Avg: 0.00 [ug/m3(L)]

Direction	0-50	50-80	80-120	120-240	>240.0	Total
N	4.99	0	0	0	0	4.99
NE	3.91	0	0	0	0	3.91
E	7.83	0	0	0	0	7.83
SE	11.74	0	0	0	0	11.74
S	6.75	0	0	0	0	6.75
SW	16.06	0	0	0	0	16.06
W	26.99	0	0	0	0	26.99
NW	21.73	0	0	0	0	21.73
Summary	100	0	0	0	0	100



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% Icon Classes (ug/m3(L))	100	0-50	0	80-120	0	120-240	0	>240.0
	0	0	0	0	0	0	0	0



LAKELAND INDUSTRY & COMMUNITY ASSOCIATION

Bonnyville - East Site - August 2019

Summary of Hourly Averages

STATION TEMPERATURE (ST) in Degree Celsius

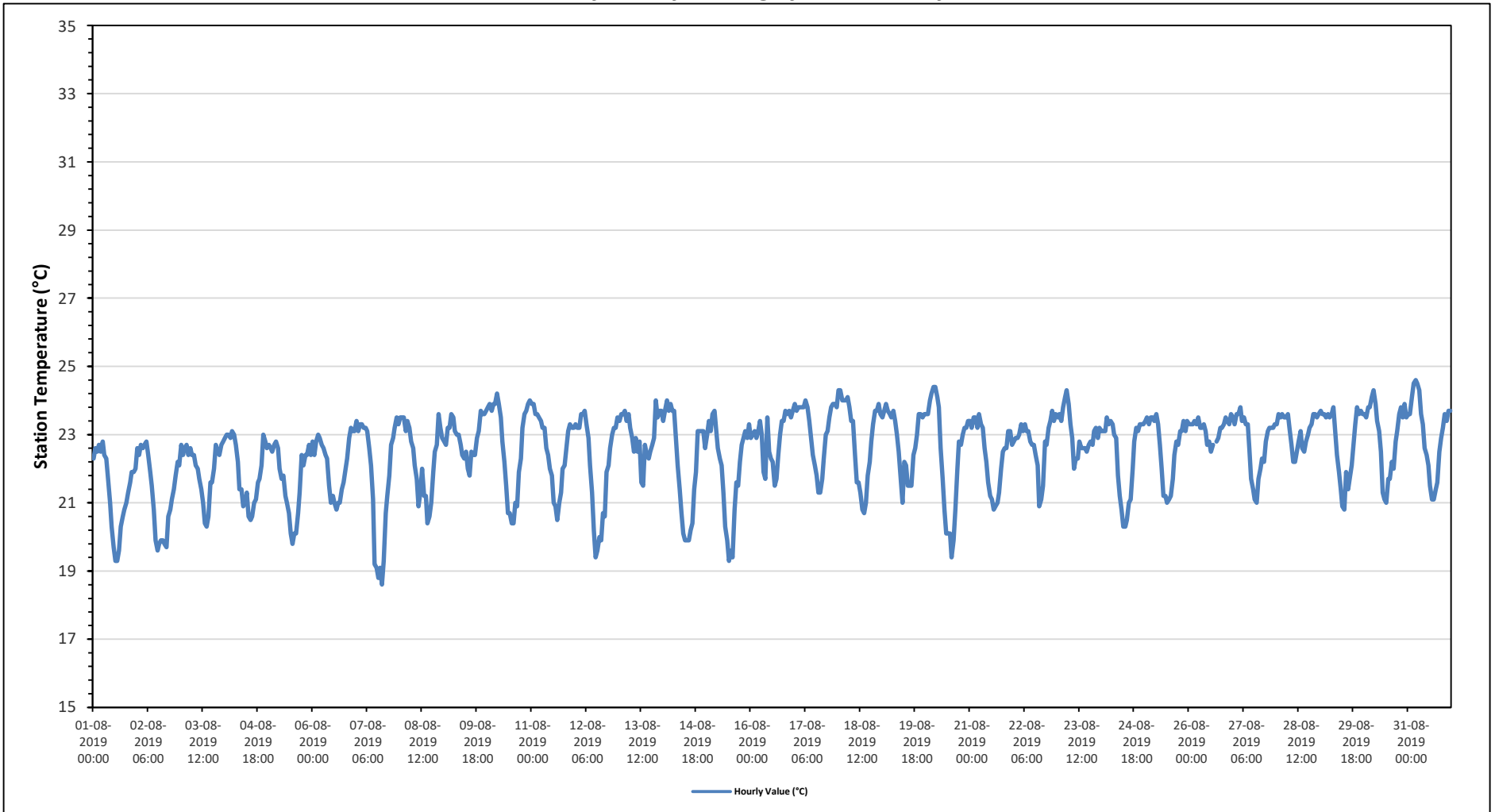
Maximum Hourly Value:	24.6 °C	on August 31 at hour 4	Hours in Service:	744
Maximum Daily Value:	23.2 °C	on August 26	Hours of Data:	743
Minimum Hourly Value:	18.6 °C	on August 7 at hour 14	Hours of Missing Data:	1
Minimum Daily Value:	21.3 °C	on August 2	Hours of Calibration:	0
Monthly Average:	22.5 °C		Operational Uptime:	99.9

Day	Hourly Period Starting at (MST)																							Daily Minimum	Daily Maximum	Daily Average		
	0	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22				23	
Aug 1	22.3	22.6	22.5	22.7	22.5	22.8	22.4	22.3	21.7	21.0	20.3	19.7	19.3	19.3	19.6	20.3	20.6	20.8	21.0	21.3	21.6	21.9	21.9	22.0	19.3	22.8	21.4	
Aug 2	22.6	22.4	22.7	22.6	22.7	22.8	22.4	21.9	21.5	20.8	19.9	19.6	19.8	19.9	19.9	19.8	19.7	20.6	20.8	21.1	21.4	21.8	22.2	22.1	19.6	22.8	21.3	
Aug 3	22.7	22.4	22.6	22.7	22.4	22.6	22.4	22.4	22.1	22.0	21.7	21.4	21.0	20.4	20.3	20.6	21.6	21.6	22.0	22.7	22.5	22.4	22.7	22.8	20.3	22.8	22.0	
Aug 4	22.9	23.0	23.0	22.9	23.1	23.0	22.7	22.2	21.4	21.4	20.9	21.0	21.3	20.6	20.5	20.6	21.0	21.1	21.6	21.7	22.1	23.0	22.8	22.6	20.5	23.1	21.9	
Aug 5	22.7	22.6	22.5	22.7	22.8	22.6	22.0	21.7	21.8	21.2	21.0	20.7	20.1	19.8	20.1	20.1	20.7	21.3	22.4	22.1	22.4	22.7	22.4	19.8	22.8	21.7		
Aug 6	22.8	22.4	22.8	23.0	22.9	22.7	22.6	22.4	22.3	21.5	21.0	21.2	21.0	20.8	21.0	21.0	21.4	21.6	22.0	22.3	22.9	23.2	23.1	23.1	20.8	23.2	22.1	
Aug 7	23.4	23.1	23.3	23.3	23.2	23.2	23.1	22.6	22.1	21.1	19.2	19.1	18.8	19.1	18.6	19.3	20.7	21.2	21.8	22.7	22.9	23.2	23.5	23.3	18.6	23.5	21.7	
Aug 8	23.5	23.5	23.5	23.1	23.4	23.2	22.8	22.6	22.1	21.7	20.9	21.3	22.0	21.2	21.2	20.4	20.6	21.0	21.9	22.5	22.7	23.6	23.2	22.9	20.4	23.6	22.3	
Aug 9	22.8	22.7	23.2	23.2	23.6	23.5	23.1	23.0	23.0	22.7	22.4	22.3	22.5	22.0	21.8	22.5	22.4	22.4	22.9	23.1	23.7	23.6	23.6	23.7	21.8	23.7	22.9	
Aug 10	23.8	23.9	23.7	23.9	23.9	24.2	23.9	23.5	23.8	22.2	21.5	20.7	20.7	20.4	20.4	21.0	20.9	21.9	22.3	23.2	23.6	23.7	23.9	24.0	20.4	24.2	22.7	
Aug 11	23.9	23.9	23.6	23.6	23.5	23.4	23.2	23.2	22.6	22.4	22.0	21.8	21.0	20.9	20.5	21.0	21.3	22.0	22.1	22.6	23.1	23.3	23.2	23.2	20.5	23.9	22.6	
Aug 12	23.3	23.2	23.2	23.6	23.6	23.7	23.3	22.9	22.1	21.3	20.2	19.4	19.6	20.0	19.9	20.7	20.6	21.9	22.1	22.6	23.0	23.2	23.2	23.5	19.4	23.7	22.1	
Aug 13	23.4	23.6	23.6	23.7	23.4	23.6	23.2	22.9	22.5	22.9	22.5	22.8	21.6	21.5	22.7	22.2	22.3	22.5	22.7	22.9	24.0	23.5	23.7	23.7	21.5	24.0	23.0	
Aug 14	23.4	23.7	24.0	23.7	23.9	23.7	23.7	22.9	22.1	21.4	20.7	20.1	19.9	19.9	19.9	20.2	20.4	21.4	21.9	23.1	23.1	23.1	22.6	19.9	24.0	22.2		
Aug 15	23.0	23.4	23.1	23.6	23.7	23.1	22.6	22.3	22.1	21.3	20.3	19.9	19.3	19.6	19.4	20.8	21.6	21.5	22.2	22.7	22.9	23.1	22.9	23.3	19.3	23.7	22.0	
Aug 16	22.9	23.0	23.1	22.9	23.1	23.4	23.0	21.9	21.7	23.5	22.5	22.3	22.2	21.5	21.7	22.4	23.0	23.4	23.4	23.7	23.6	23.7	23.5	23.7	21.5	23.7	22.9	
Aug 17	23.9	23.7	23.8	23.8	23.8	24.0	23.8	24.0	23.8	23.4	22.9	22.4	22.1	21.8	21.3	21.3	21.7	22.3	23.0	23.1	23.5	23.8	23.9	23.9	23.8	21.3	24.0	23.1
Aug 18	24.3	24.3	24.0	24.0	24.0	24.1	23.8	23.4	23.4	22.4	21.6	21.6	21.3	20.8	20.7	21.0	21.8	22.2	22.8	23.3	23.7	23.7	23.9	23.6	20.7	24.3	22.9	
Aug 19	23.5	23.7	23.9	23.7	23.6	23.5	23.7	23.4	23.0	22.5	21.8	21.0	22.2	22.1	21.5	21.5	21.5	22.4	22.6	23.0	23.6	23.6	23.5	23.6	21.0	23.9	22.9	
Aug 20	23.6	23.6	24.0	24.2	24.4	24.4	24.1	23.8	22.6	21.7	20.8	20.1	20.1	20.1	19.4	19.9	20.8	22.0	22.8	22.7	23.0	23.2	23.2	23.4	19.4	24.4	22.4	
Aug 21	23.4	23.2	23.5	23.5	23.2	23.6	23.3	23.2	22.6	22.2	21.6	21.2	21.1	20.8	20.9	21.0	21.3	22.0	22.5	22.6	22.6	23.1	23.1	22.7	20.8	23.6	22.4	
Aug 22	22.8	22.9	22.9	23.0	23.3	23.1	23.3	23.1	23.1	22.8	22.7	22.7	22.4	22.1	20.9	21.1	21.5	22.8	22.7	23.2	23.4	23.7	23.4	23.6	20.9	23.7	22.8	
Aug 23	23.5	23.6	23.4	23.8	24.1	24.3	23.9	23.3	22.9	22.0	22.3	22.3	22.8	22.6	22.6	22.5	22.7	22.8	22.7	23.1	23.2	22.9	23.2	22.0	24.3	23.0		
Aug 24	23.1	23.1	23.1	23.5	23.3	23.4	23.3	23.0	22.9	21.8	21.2	20.8	20.3	20.3	20.5	21.0	21.1	22.0	22.8	23.2	23.1	23.3	23.3	23.3	20.3	23.5	22.4	
Aug 25	23.4	23.5	23.3	23.5	23.5	23.4	23.6	23.3	22.7	22.0	21.2	21.2	21.0	21.1	21.2	21.7	22.4	22.8	22.7	23.1	23.1	23.4	23.1	23.4	21.0	23.6	22.7	
Aug 26	23.3	23.3	23.3	23.4	23.3	23.5	23.2	23.2	23.3	23.1	22.7	22.8	22.5	22.7	Y	22.8	22.9	23.2	23.2	23.3	23.5	23.4	23.3	23.6	22.5	23.6	23.2	
Aug 27	23.5	23.3	23.6	23.6	23.8	23.4	23.5	23.3	23.3	22.6	21.7	21.4	21.1	21.0	21.7	22.0	22.3	22.2	22.8	23.1	23.2	23.2	23.2	23.3	21.0	23.8	22.8	
Aug 28	23.3	23.6	23.5	23.6	23.5	23.5	23.6	23.2	22.7	22.2	22.2	22.5	22.8	23.1	22.6	22.5	22.8	23.0	23.2	23.3	23.6	23.6	23.5	23.6	22.2	23.6	23.1	
Aug 29	23.7	23.6	23.6	23.5	23.6	23.5	23.6	23.8	23.1	22.4	21.9	21.4	20.9	20.8	21.9	21.4	21.7	22.1	22.7	23.3	23.8	23.6	23.7	23.6	20.8	23.8	22.8	
Aug 30	23.6	23.5	23.8	23.8	24.1	24.3	23.9	23.4	23.1	22.5	21.3	21.1	21.0	21.7	21.7	22.2	22.0	22.8	23.1	23.6	23.8	23.5	23.9	23.5	21.0	24.3	23.0	
Aug 31	23.6	23.6	24.1	24.5	24.6	24.5	24.3	23.6	23.3	22.6	22.4	22.1	21.5	21.1	21.1	21.4	21.6	22.5	22.9	23.2	23.6	23.4	23.7	23.7	21.1	24.6	23.0	
Diurnal Maximum	24.3	24.3	24.1	24.5	24.6	24.5	24.3	23.8	23.4	23.5	22.7	22.8	22.8	23.1	22.7	22.8	23.0	23.4	23.4	23.7	24.0	23.9	23.9	24.0				
Diurnal Average	23.3	23.3	23.4	23.4	23.5	23.5	23.3	23.0	22.6	22.1	21.4	21.2	21.1	20.9	20.9	21.2	21.5	22.1	22.4	22.8	23.1	23.2	23.3	23.3				

C	Calibration	S	Daily Zero/Span	Q	Quality Assurance	C1	Repeat Calibration	S1	Repeat Daily Zero/Span
G	Out for Repair	K	Collection Error	N	Not in Service	O	Operator Error	P	Power Failure
R	Recovery	X	Machine Malfunction	Y	Maintenance	T	Exceeds Temperature Limits	N	Not in Service

Daily Average is shown "-" if minimum data completeness criteria of 75% or 18 hours per day is not met.
 Monthly Average is shown "-" if minimum data completeness criteria of 75% of days per month is not met.

Timeseries Chart of Hourly Average for ST - Bonnyville - East Site





LAKELAND INDUSTRY & COMMUNITY ASSOCIATION

Bonnyville - East Site - August 2019

Summary of Hourly Averages

VECTOR WIND SPEED (VWS) in km/hr

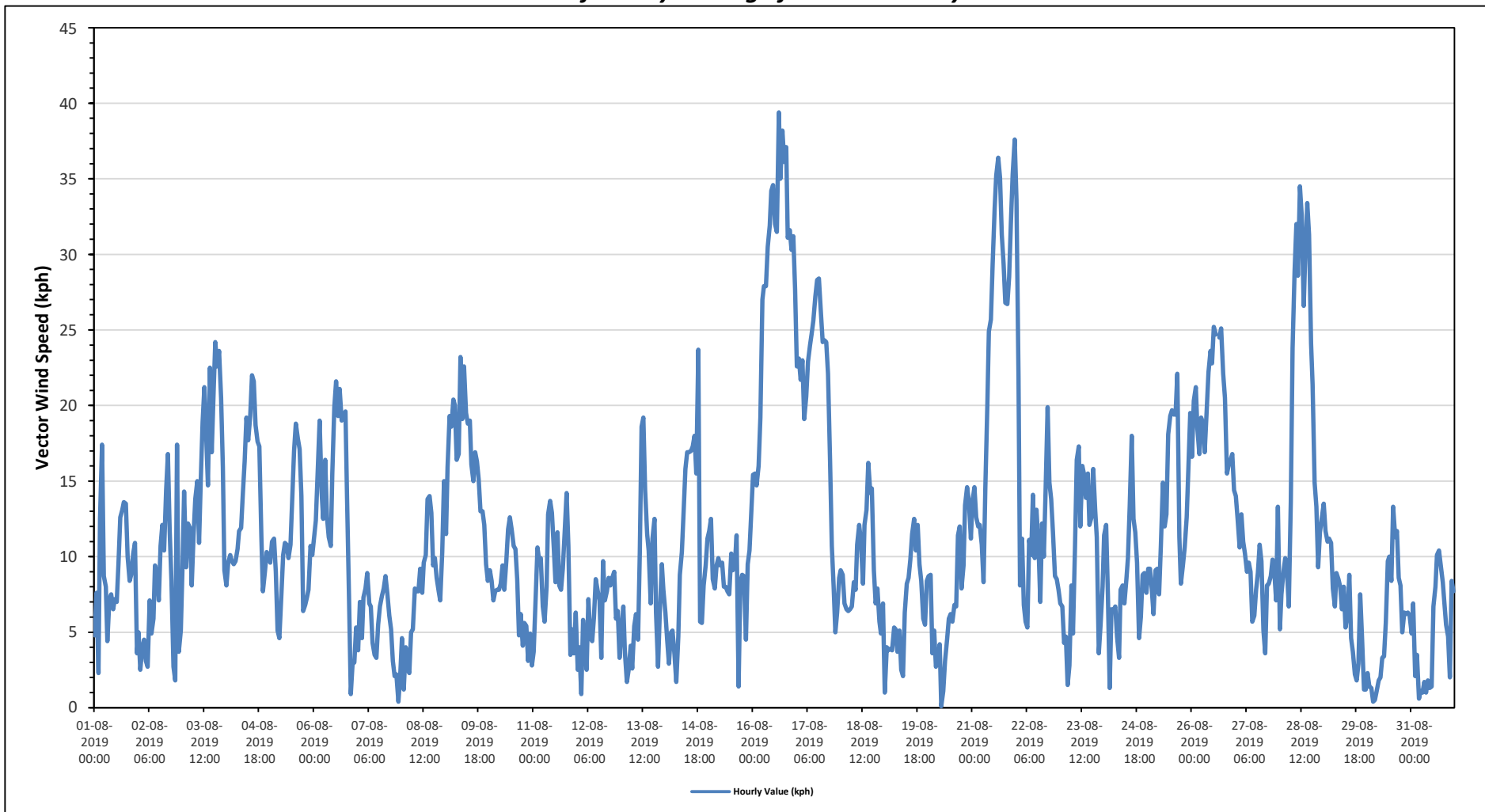
Maximum Hourly Value:	39.4 kph	on August 16 at hour 14	Hours in Service:	744
Maximum Daily Value:	29.0 kph	on August 16	Hours of Data:	743
Minimum Hourly Value:	0.1 kph	on August 20 at hour 7	Hours of Missing Data:	1
Minimum Daily Value:	4.8 kph	on August 31	Hours of Calibration:	0
Monthly Average:	5.2 kph		Operational Uptime:	99.9

Day	Hourly Period Starting at (MST)																							Daily Minimum	Daily Maximum	Daily Average	
	0	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22				23
Aug 1	4.8	7.6	2.3	12.5	17.4	8.7	8	4.4	7.2	7.5	6.5	7.2	7	9.6	12.6	13.1	13.6	13.5	10	8.4	8.8	10.2	10.9	3.6	2.3	17.4	9.0
Aug 2	5	2.5	4	4.5	3.1	2.7	7.1	4.9	5.9	9.4	8.9	7.1	10.7	12.1	10.4	14.4	16.8	11.7	8.4	2.7	1.8	17.4	3.7	5.1	1.8	17.4	7.5
Aug 3	9.6	14.3	9.3	12.2	11.9	8.1	11.3	13.8	15	10.9	15.2	18.9	21.2	17.6	14.7	22.5	16.9	21.2	24.2	22.6	23.6	20.5	15.9	9.1	8.1	24.2	15.9
Aug 4	8.1	9.6	10.1	9.7	9.5	9.7	10.5	11.7	11.9	14.2	16.3	19.2	17.7	19.3	22	21.6	18.7	17.6	17.3	11.3	7.7	9	10.3	10.1	7.7	22.0	13.5
Aug 5	9.6	11	11.2	9	5.1	4.6	7.5	10.1	10.9	10.8	9.9	10.8	13.9	17	18.8	17.8	17.1	14	6.4	6.8	7.3	7.8	10.7	10.1	4.6	18.8	10.8
Aug 6	11.4	12.4	15.9	19	14.2	12.5	16.4	12.6	11.3	10.7	15.5	19.9	21.6	19.3	21.1	19	19.2	19.6	14.1	7.3	0.9	2.9	3	5.3	0.9	21.6	13.5
Aug 7	3.8	7	4.6	7.3	7.9	8.9	6.9	6.7	4.3	3.5	3.3	5.5	6.7	7.4	7.9	8.7	7.6	6.1	5.2	3.1	2.1	2.2	0.4	2.1	0.4	8.9	5.4
Aug 8	4.6	1.2	4	2.6	2.3	5	5.2	7.9	7.7	7.7	9.2	7.6	9.6	10.1	13.8	14	12.9	9.4	9.9	8.6	7.7	7.1	10.3	15	1.2	15.0	8.1
Aug 9	11.5	15.9	19.3	18.6	20.4	20	16.4	16.8	23.2	19.1	22.6	19.5	18.8	19	16.1	15	16.9	16.3	15.1	13	13	12.1	9.5	8.4	8.4	23.2	16.5
Aug 10	9.1	8.4	7.1	7.7	7.8	7.8	8.2	9.4	7.8	9.7	11.8	12.6	11.8	10.7	10.5	8.5	4.8	6.2	4.1	5.6	5.4	3.1	4.9	2.8	2.8	12.6	7.7
Aug 11	3.7	6.9	10.6	9.7	9.9	6.7	5.7	8	12.8	13.7	12.9	10.4	8.3	11.6	8.1	7.8	9.2	11.5	14.2	10.7	3.5	5.2	3.6	6.3	3.5	14.2	8.8
Aug 12	2.5	4	0.9	5.8	3.9	2.5	7.2	4.6	4.4	6	8.5	7.7	7.1	3.3	9.7	7.1	7.7	8.6	8.1	8.6	9	5.9	6.4	3.3	0.9	9.7	6.0
Aug 13	5.2	6.7	3.7	1.7	2.5	4.1	2.6	5.4	6.2	4.5	10.3	18.6	19.2	14.4	11.5	10.4	6.9	11.2	12.5	6.3	2.7	6.4	9.5	7.8	1.7	19.2	7.9
Aug 14	6.3	4.5	2.9	5	5.1	3.5	1.7	4.7	8.8	10.3	13	15.8	16.9	16.9	17	17.3	18	15.5	23.7	5.7	5.6	8.1	9.4	11.2	1.7	23.7	10.3
Aug 15	11.7	12.5	8.5	7.9	9.4	9.9	9.4	9.6	8	8	7.7	7.5	10.2	9.1	9.4	11.4	1.4	8.3	8.8	8.7	4.5	9.5	10.4	12.9	1.4	12.9	8.9
Aug 16	15.4	15.5	14.7	16	19.2	27	27.9	27.9	30.5	31.9	34.2	34.6	32	31.5	39.4	35	38.2	36.1	37.1	31.1	31.6	30.3	31.2	27.7	14.7	39.4	29.0
Aug 17	22.6	23.1	21.7	23	19.1	20.6	22.9	24	24.7	25.6	27.2	28.3	28.4	26.4	24.2	24.3	24.2	22.1	16.4	10.7	8.1	5	6.3	8.6	5.0	28.4	20.3
Aug 18	9.1	8.8	6.9	6.5	6.4	6.5	6.7	8.3	7.8	10.8	12.1	11	8.2	12.1	13.1	16.2	14.2	14.5	9.1	6.9	7.9	5.7	4.9	6.9	4.9	16.2	9.2
Aug 19	1	4	3.8	3.9	3.8	5.3	5.2	3.7	5.1	2.5	2.1	6.3	8.2	8.6	9.8	11.5	12.5	10.4	12.1	9.5	8.4	5.9	5.5	8.4	1.0	12.5	6.6
Aug 20	8.7	8.8	3.6	5.1	2.7	3.3	4.2	0.1	1.1	3.1	4.5	5.9	6.2	5.7	6.8	6.7	11.4	12	7.9	9.4	13.4	14.6	13.7	11.2	0.1	14.6	7.1
Aug 21	13.6	14.6	12.6	12	12.1	10.8	8.3	14.5	20	24.9	25.7	29.4	33.1	35.2	36.4	35.1	31.3	29.4	26.8	26.7	28.5	32.1	35.3	37.6	8.3	37.6	24.4
Aug 22	33.6	21.9	8.1	11.2	6.8	5.7	5.3	11.1	10.1	14.1	9.9	13.1	10.7	7	12.2	10	14.4	19.9	14.9	13.8	11.6	8.7	8.5	7.8	5.3	33.6	12.1
Aug 23	6.9	6.7	4.3	4.7	1.5	2.8	8.1	4.9	10.6	16.4	17.3	12	16	15.4	13.9	15.5	12.1	12.6	15.8	13	11.3	3.6	5.5	8	1.5	17.3	10.0
Aug 24	11.4	12.1	7.4	1.3	6.5	6.4	6.7	4.7	3.3	7.8	8.1	6.9	8.5	9.9	13.3	18	12.5	11.6	9.6	4.6	6	8.8	8.9	7.6	1.3	18.0	8.4
Aug 25	9.2	9.2	7.9	6.2	9.1	9.2	7.5	10.7	14.9	12	12.8	18.1	19.3	19.7	19.4	19.4	22.1	11.3	8.2	9.4	10.6	12.6	16	19.5	6.2	22.1	13.1
Aug 26	16.6	20.3	21.2	18.5	16.8	19.2	18.8	16.9	19.7	22.2	23.6	22.8	25.2	24.7	Y	24.5	25.1	22.1	20.5	15.5	16	16.4	16.8	14.4	14.4	25.2	19.9
Aug 27	14	12.5	10.6	12.8	11	10.2	9	9.6	9	5.7	6.1	7.8	8.9	10.8	9.7	5.1	3.6	8.1	8.2	8.7	9.8	9	7.1	13.3	3.6	14.0	9.2
Aug 28	5.2	7.5	9	9.9	8.7	6.7	13.6	23.8	28.9	32	28.6	34.5	32.6	26.6	30	33.4	31.3	24.1	21.4	14.9	13.3	9.3	11.6	12.5	5.2	34.5	19.6
Aug 29	13.5	11.7	11	11.2	10.9	7.9	6.7	8.9	8.5	8	6.5	8	5.3	6.2	8.8	4.6	3.7	2.2	1.8	2.9	7.5	4.7	1.2	1.2	1.2	13.5	6.8
Aug 30	2.3	1.4	1.3	0.4	0.5	1.1	1.8	2	3.3	3.4	5.6	9.7	10	8.4	13.3	11.3	11.7	8.6	8.1	5	6.3	6.2	6.3	6.1	0.4	13.3	5.6
Aug 31	4.9	6.9	2.1	3.5	0.6	1.1	1	1.7	1	1.8	1.3	1.4	6.7	8	10.1	10.4	9.4	8.3	7	5.5	4.7	2	8.4	7.7	0.6	10.4	4.8
Diurnal Maximum	34	23	22	23	20	27	28	28	31	32	34	35	33	35	39	35	38	36	37	31	32	32	35	38			
Diurnal Average	9.5	10.0	8.4	9.0	8.6	8.3	9.0	9.8	11.1	11.9	12.8	14.1	14.8	14.6	15.5	15.8	15.0	14.3	13.1	10.2	9.6	9.8	9.9	10.1			

C	Calibration	S	Daily Zero/Span	Q	Quality Assurance	C1	Repeat Calibration	S1	Repeat Daily Zero/Span
G	Out for Repair	K	Collection Error	N	Not in Service	O	Operator Error	P	Power Failure
R	Recovery	X	Machine Malfunction	Y	Maintenance	T	Exceeds Temperature Limits	N	Not in Service

Daily Average is shown "-" if minimum data completeness criteria of 75% or 18 hours per day is not met.
 Monthly Average is shown "-" if minimum data completeness criteria of 75% of days per month is not met.

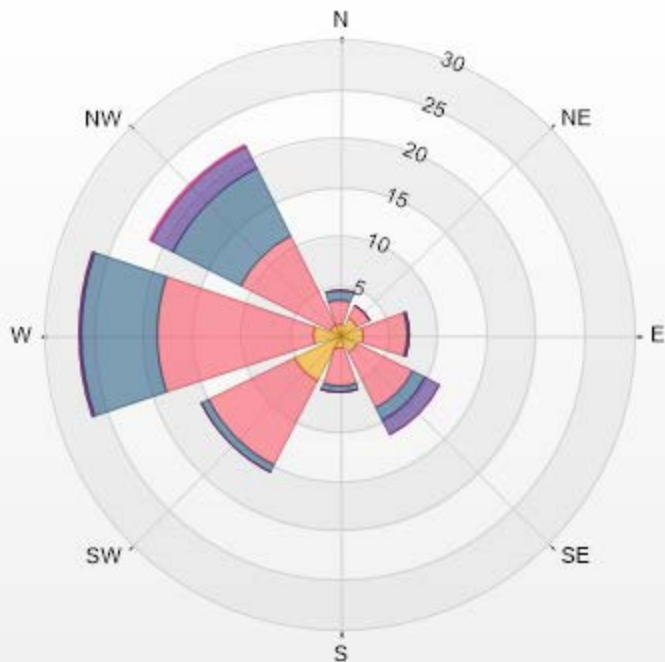
Timeseries Chart of Hourly Average for VWS - Bonnyville - East Site



Wind: Bonnyville East Poll.: Bonnyville East-WDS[kph] Monthly: 08-2019 Type: PollutionRose Direction: Blowing From (Wind Frequency) Based On 1 Hr.
 Calm: 3.77% Valid Data: 99.87% Calm Avg: 1.15 [kph]

Direction	0-6	6-15	15-29	29-39	>39.0	Total
N	1.08	2.42	1.08	0	0	4.58
NE	2.02	1.35	0	0	0	3.37
E	2.42	4.58	0.13	0	0	7.13
SE	2.02	6.33	1.48	1.48	0	11.31
S	1.48	3.77	0.67	0	0	5.92
SW	5.25	9.69	0.81	0	0	15.75
W	2.83	15.75	7.67	0.27	0	26.52
NW	1.21	10.09	7.81	2.42	0.13	21.66
Summary	18.31	53.98	19.65	4.17	0.13	96.24

Bonnyville East Poll.: Bonnyville East-WDS[kph] 01-08-2019 00:00 - 31-08-2019 23:00 Calm: 3.77% Calm Poll
 Avg: 1.15[kph]



LICA-201908-Revision 1

% Icon Classes (kph)	18	54	27	4	0
	0-6	7-14	15-29	29-39	>39.0



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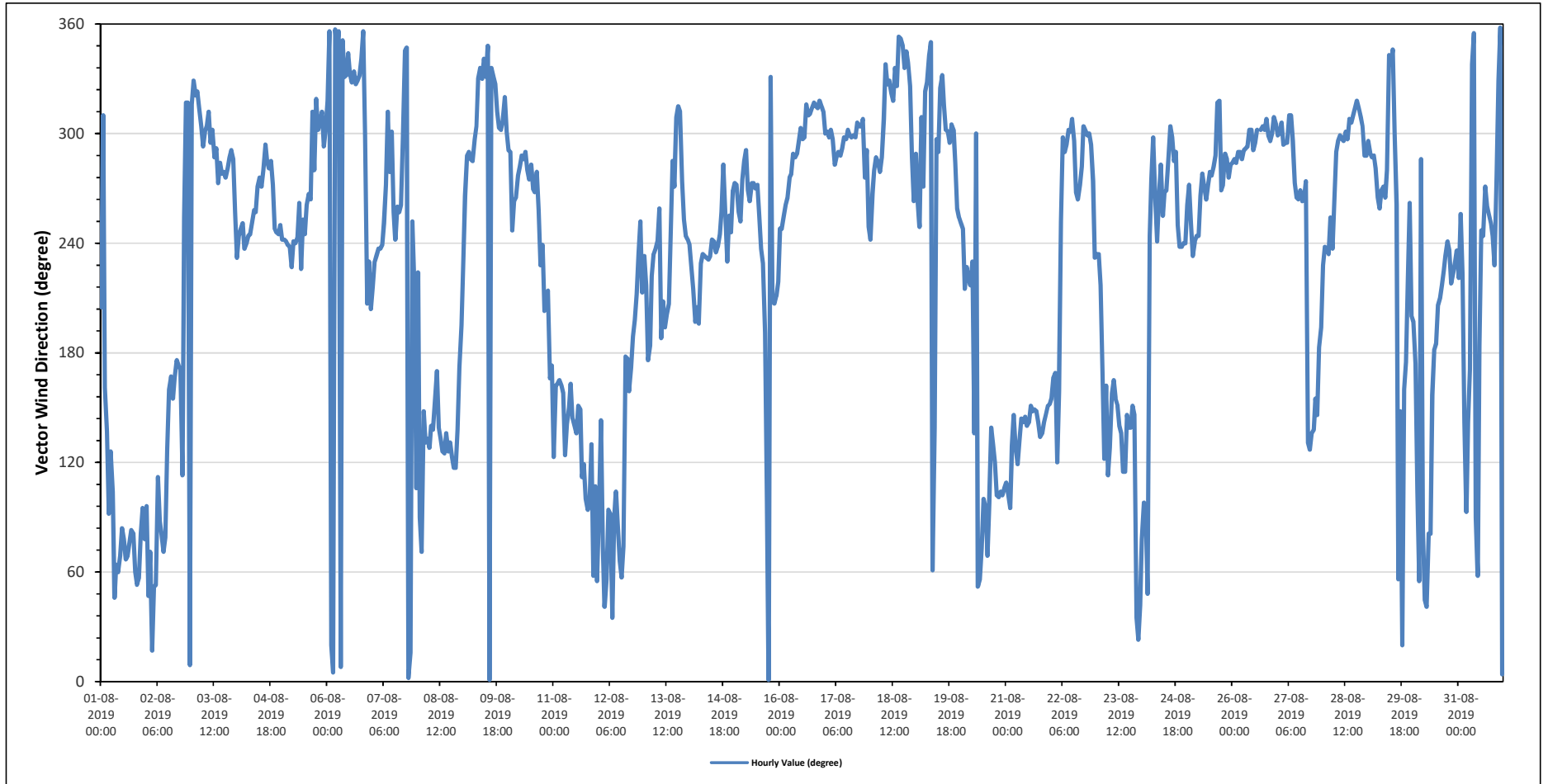
Bonnyville - East Site - August 2019

Summary of Hourly Averages

WIND DIRECTION (VWD) in sector

Monthly Average:		277 (W) degree														Hours in Service:		744									
																Hours of Data:		743									
																Hours of Missing Data:		1									
																Hours of Calibration:		0									
																Operational Uptime:		99.9									
Day	Hourly Period Starting at (MST)																							Daily Average			
	0	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	Degree	Quadrant	
Aug 1	SSW	NW	SSE	SE	E	SE	ESE	NE	ENE	ENE	ENE	E	ENE	ENE	ENE	E	E	ENE	NE	ENE	E	E	ENE	81	E		
Aug 2	E	NE	ENE	NNE	NE	NE	ESE	E	E	ENE	ENE	SE	SSE	SSE	SSE	S	S	S	ESE	WSW	NW	NW	N	131	SE		
Aug 3	NW	NNW	NW	NW	NW	WNW	WNW	WNW	WNW	WNW	WNW	WNW	WNW	WNW	W	WNW	W	W	W	WNW	WNW	WNW	WSW	293	WNW		
Aug 4	SW	WSW	WSW	WSW	SW	WSW	WSW	WSW	WSW	WSW	W	W	W	W	WNW	WNW	W	WNW	W	WSW	WSW	WSW	WSW	264	W		
Aug 5	WSW	WSW	WSW	WSW	SW	SW	WSW	WSW	WSW	W	SW	WSW	WSW	W	W	NW	W	NW	WNW	NW	NW	WNW	WNW	265	W		
Aug 6	NW	N	NNE	N	N	NNW	N	N	N	NNW	NNW	NNW	NNW	NNW	NW	NNW	NNW	NNW	N	WNW	SSW	SSW	SSW	341	NNW		
Aug 7	SW	SW	SW	SW	SW	WSW	WSW	W	NW	W	WNW	WSW	WSW	WSW	WSW	W	WNW	NNW	NNW	N	NNE	WSW	SW	ESE	264	W	
Aug 8	SW	E	ENE	SE	SE	SE	SE	SE	SE	SSE	SSE	SE	SE	SE	SE	SE	SE	ESE	ESE	ESE	SE	S	SSW	140	SE		
Aug 9	SW	W	WNW	WNW	WNW	WNW	WNW	WNW	NNW	NNW	NNW	NNW	NNW	NNW	N	NNW	NNW	NW	WNW	WNW	NW	NW	WNW	313	NW		
Aug 10	WNW	WNW	WSW	W	W	W	W	WNW	WNW	WNW	W	W	W	W	W	W	WSW	SW	WSW	SSW	SSW	SSW	SSE	S	267	W	
Aug 11	ESE	SSE	SSE	SSE	SSE	SSE	ESE	SE	SSE	SSE	SE	SE	SE	SSE	SSE	ESE	E	E	E	ENE	ESE	NE	ESE	134	SE		
Aug 12	E	SE	ENE	NE	NE	E	E	NE	E	ESE	E	ENE	ENE	ENE	S	SSE	S	S	SSW	SSW	SW	WSW	SSW	139	SE		
Aug 13	SW	SW	S	S	SW	SW	SW	WSW	WSW	S	SSW	SSW	SSW	SSW	WSW	WNW	W	NW	NW	NW	W	WSW	WSW	WSW	238	SW	
Aug 14	WSW	SW	SSW	SSW	SSW	SSW	SW	SW	SW	SW	SW	SW	WSW	WSW	SW	WSW	WSW	WSW	W	WSW	SW	WSW	WSW	W	243	WSW	
Aug 15	W	W	WSW	WSW	W	WNW	WNW	W	W	W	W	W	W	WSW	SW	SW	S	E	N	NNW	SSW	SSW	SSW	SW	260	WSW	
Aug 16	WSW	WSW	WSW	W	W	W	W	WNW	WNW	WNW	WNW	WNW	WNW	WNW	NW	NW	NW	NW	NW	NW	NW	NW	NW	NW	299	WNW	
Aug 17	WNW	WNW	WNW	WNW	WNW	W	WNW	WNW	WNW	WNW	WNW	WNW	WNW	WNW	WNW	WNW	WNW	WNW	WNW	WNW	NW	W	WNW	WSW	296	WNW	
Aug 18	WSW	W	W	WNW	WNW	W	WNW	NW	NNW	NW	NNW	NW	NW	NNW	NW	N	N	NNW	NNW	NNW	NW	WNW	W	319	NW		
Aug 19	WNW	W	WSW	NW	W	NW	NNW	NNW	N	ENE	SE	WNW	WNW	NW	NNW	NW	WNW	WNW	WNW	WNW	WNW	WNW	WSW	WSW	302	WNW	
Aug 20	WSW	WSW	SSW	SW	SW	SW	SW	SE	WNW	NE	NE	ENE	E	E	ENE	E	SE	SE	ESE	E	E	ESE	E	ESE	118	ESE	
Aug 21	ESE	ESE	E	SE	SE	SE	ESE	SE	SE	SE	SE	SE	SE	SE	SSE	SE	SE	SE	SE	SE	SE	SE	SSE	SSE	141	SE	
Aug 22	SSE	SSE	SSE	ESE	SSE	WSW	WNW	WNW	WNW	WNW	WNW	NW	WNW	W	W	W	W	WNW	WNW	WNW	WNW	WNW	W	SW	268	W	
Aug 23	SW	SW	SW	S	ESE	SSE	ESE	SE	SSE	SSE	SSE	SE	SE	SE	ESE	ESE	SE	SE	SE	SSE	SE	NE	NNE	NE	142	SE	
Aug 24	ENE	E	E	NE	WSW	W	WNW	W	WSW	W	W	WSW	W	W	WNW	WNW	WNW	WNW	WNW	WSW	SW	SW	WSW	WSW	273	W	
Aug 25	W	W	WSW	SW	WSW	WSW	WSW	W	W	W	W	W	W	W	W	WNW	NW	NW	W	W	WNW	WNW	W	W	277	W	
Aug 26	WNW	WNW	WNW	WNW	WNW	WNW	WNW	WNW	WNW	WNW	WNW	WNW	WNW	WNW	Y	WNW	WNW	WNW	WNW	NW	WNW	WNW	NW	WNW	296	WNW	
Aug 27	WNW	WNW	NW	WNW	WNW	WNW	NW	NW	WNW	W	W	W	W	W	W	W	SE	SE	SE	SSE	SE	S	SSW	265	W		
Aug 28	SW	SW	SW	SW	WSW	SW	W	WNW	WNW	WNW	WNW	WNW	WNW	WNW	NW	NW	NW	NW	NW	NW	NW	WNW	WNW	WNW	296	WNW	
Aug 29	WNW	WNW	WNW	WNW	W	W	WSW	W	W	W	W	NNW	NNW	NNW	WNW	W	NE	SE	NNE	SSE	S	SW	W	SSW	283	W	
Aug 30	SSW	S	ESE	NE	WNW	E	NE	NE	E	E	SSE	S	S	SSW	SSW	SW	SW	WSW	WSW	SW	SW	SW	SW	209	SSW		
Aug 31	SW	WSW	SW	SE	E	SE	S	NNW	N	E	ENE	S	WSW	WSW	W	WSW	WSW	WSW	WSW	SW	W	NNW	N	N	261	W	
C	Calibration				S	Daily Zero/Span				Q	Quality Assurance				C1	Repeat Calibration				S1	Repeat Daily Zero/Span						
G	Out for Repair				K	Collection Error				N	Not in Service				O	Operator Error				P	Power Failure						
R	Recovery				X	Machine Malfunction				Y	Maintenance				T	Exceeds Temperature Limits				N	Not in Service						
Daily Average is shown "-" if minimum data completeness criteria of 75% or 18 hours per day is not met.																											
Monthly Average is shown "-" if minimum data completeness criteria of 75% of days per month is not met.																											

Timeseries Chart of Hourly Average for VWD - Bonnyville - East Site





LAKELAND INDUSTRY & COMMUNITY ASSOCIATION

Bonnyville - East Site - August 2019

Summary of Hour Standard Deviations

STANDARD DEVIATION WIND DIRECTION (STDWD) in Degree

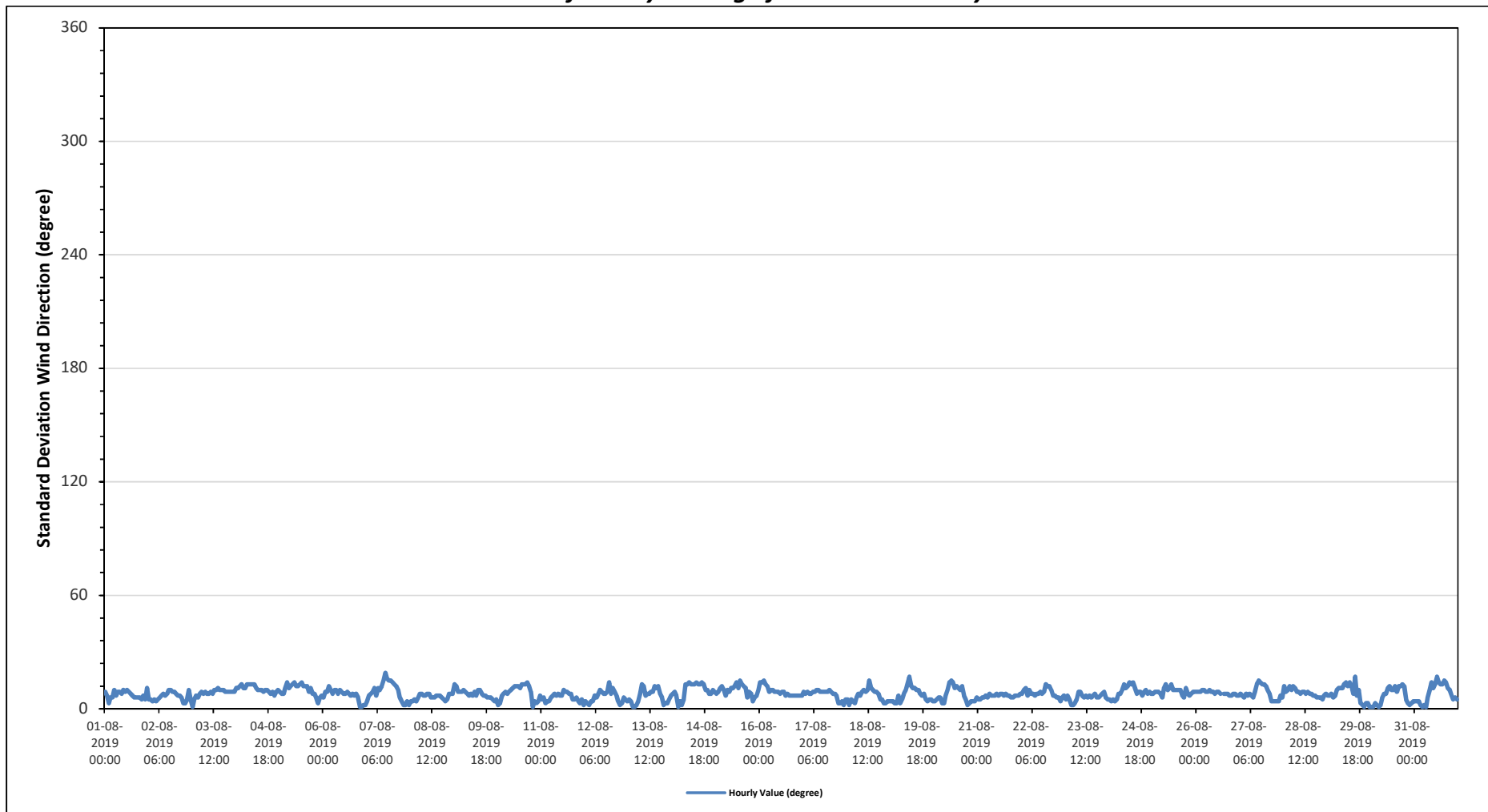
Maximum Hourly Value:	19 degree on August 7 at hour 10	Hours in Service:	744
Minimum Hourly Value:	1 degree on August 3 at hour 0	Hours of Data:	743
		Hours of Missing Data:	1
		Hours of Calibration:	0
		Operational Uptime:	99.9

Day	Hourly Period Starting at (MST)																							Daily	Daily		
	0	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	Minimum	Maximum	
Aug 1	9	7	3	6	6	10	7	9	9	8	10	9	10	9	8	7	6	6	6	6	5	7	5	11	3	11	
Aug 2	5	5	4	5	4	5	6	7	8	7	8	10	10	9	9	8	7	7	6	3	3	5	10	5	3	10	
Aug 3	1	5	7	6	8	9	8	9	8	8	9	8	10	10	11	10	10	10	9	9	9	9	9	9	1	11	
Aug 4	11	11	12	13	11	11	13	13	13	13	13	11	10	10	10	9	10	10	9	8	9	7	9	10	7	13	
Aug 5	9	8	8	11	14	11	12	13	14	12	12	13	14	12	12	12	9	11	8	8	6	3	6	7	3	14	
Aug 6	6	9	9	12	10	8	10	10	8	10	9	8	8	9	8	7	8	7	8	6	1	1	2	2	1	12	
Aug 7	4	7	8	9	11	7	11	10	12	15	19	16	15	15	14	13	12	10	6	4	2	2	4	2	2	19	
Aug 8	4	4	5	4	6	8	8	7	7	8	8	6	6	6	7	7	7	6	5	4	5	8	8	8	4	8	
Aug 9	13	12	9	9	9	10	9	8	7	8	7	9	7	10	10	8	7	7	6	6	6	5	4	5	4	13	
Aug 10	2	3	7	8	9	8	9	10	11	12	12	12	11	13	13	13	14	12	9	1	4	3	4	7	1	14	
Aug 11	5	6	3	4	4	6	7	8	7	8	7	7	10	9	9	8	8	5	5	6	4	3	5	2	2	10	
Aug 12	4	3	2	4	4	7	6	8	10	9	8	8	9	14	8	11	9	7	4	2	3	6	5	4	2	14	
Aug 13	5	4	1	1	2	4	8	13	12	7	8	8	9	9	12	11	12	8	6	2	3	3	5	7	1	13	
Aug 14	8	9	7	1	4	2	5	13	13	14	13	13	13	14	13	13	14	13	10	10	8	8	10	9	1	14	
Aug 15	8	9	11	12	10	7	10	9	11	11	12	14	11	15	13	12	11	6	9	8	4	6	7	10	4	15	
Aug 16	14	14	15	13	12	9	10	10	9	9	9	8	9	9	7	8	7	7	7	7	7	7	7	7	7	7	15
Aug 17	9	8	9	8	8	9	9	10	10	9	9	9	9	9	10	9	8	8	7	3	3	4	2	5	2	10	
Aug 18	5	2	5	4	3	6	8	7	9	10	9	10	15	11	10	9	9	8	5	5	3	3	4	4	2	15	
Aug 19	4	4	3	3	7	3	5	8	10	13	17	12	11	11	10	10	8	7	8	5	4	5	5	4	3	17	
Aug 20	4	5	6	6	3	3	7	10	14	15	14	11	12	11	10	12	7	5	2	3	4	4	4	6	2	15	
Aug 21	5	5	6	6	7	6	8	7	7	7	8	7	8	8	7	8	7	7	6	6	7	7	7	8	5	8	
Aug 22	8	10	11	7	10	8	8	7	8	8	9	8	9	13	12	12	10	7	7	6	6	4	6	7	4	13	
Aug 23	5	7	5	2	2	3	5	9	9	7	6	7	6	7	6	7	8	6	6	7	8	9	6	5	2	9	
Aug 24	5	4	5	4	5	8	8	10	13	11	12	14	13	14	11	8	9	9	7	9	10	8	9	8	4	14	
Aug 25	8	9	9	9	8	6	11	13	10	11	13	10	10	10	10	7	6	11	8	7	8	9	9	9	6	13	
Aug 26	9	9	9	10	10	9	9	10	9	9	8	9	9	8	Y	8	8	8	7	7	8	8	7	7	7	10	
Aug 27	8	7	6	8	7	8	7	6	9	13	15	14	13	13	12	10	8	4	4	4	4	4	7	6	4	15	
Aug 28	12	9	10	12	10	12	11	9	9	8	9	9	8	9	8	8	7	7	6	6	6	5	7	8	5	12	
Aug 29	7	7	8	6	7	10	11	11	11	13	14	12	14	12	8	17	7	10	3	2	1	3	3	1	1	17	
Aug 30	1	1	3	2	1	2	6	8	8	11	12	10	10	12	9	12	12	13	12	5	3	2	3	4	1	13	
Aug 31	4	4	4	2	1	2	1	6	10	14	11	13	17	14	13	13	15	14	11	10	7	5	6	5	1	17	
Diurnal Minimum	1	1	1	1	1	2	1	6	7	7	6	6	6	6	6	7	6	4	2	1	1	1	2	1			
Diurnal Maximum	14	14	15	13	14	12	13	13	14	15	19	16	17	15	14	17	15	14	12	10	10	9	10	11			

C	Calibration	S	Daily Zero/Span	Q	Quality Assurance	C1	Repeat Calibration	S1	Repeat Daily Zero/Span
G	Out for Repair	K	Collection Error	N	Not in Service	O	Operator Error	P	Power Failure
R	Recovery	X	Machine Malfunction	Y	Maintenance	T	Exceeds Temperature Limits	N	Not in Service

Daily Average is shown "-" if minimum data completeness criteria of 75% or 18 hours per day is not met.
 Monthly Average is shown "-" if minimum data completeness criteria of 75% of days per month is not met.

Timeseries Chart of Hourly Average for STDWD - Bonnyville - East Site



REFERENCE DOCUMENTS

HOURLY INSTANTANEOUS DATA

COLD LAKE SOUTH STATION



LAKELAND INDUSTRY & COMMUNITY ASSOCIATION

Cold Lake South Station - August 2019

Summary of Hourly Instantaneous Maximums

SULPHUR DIOXIDE (SO₂) in ppb

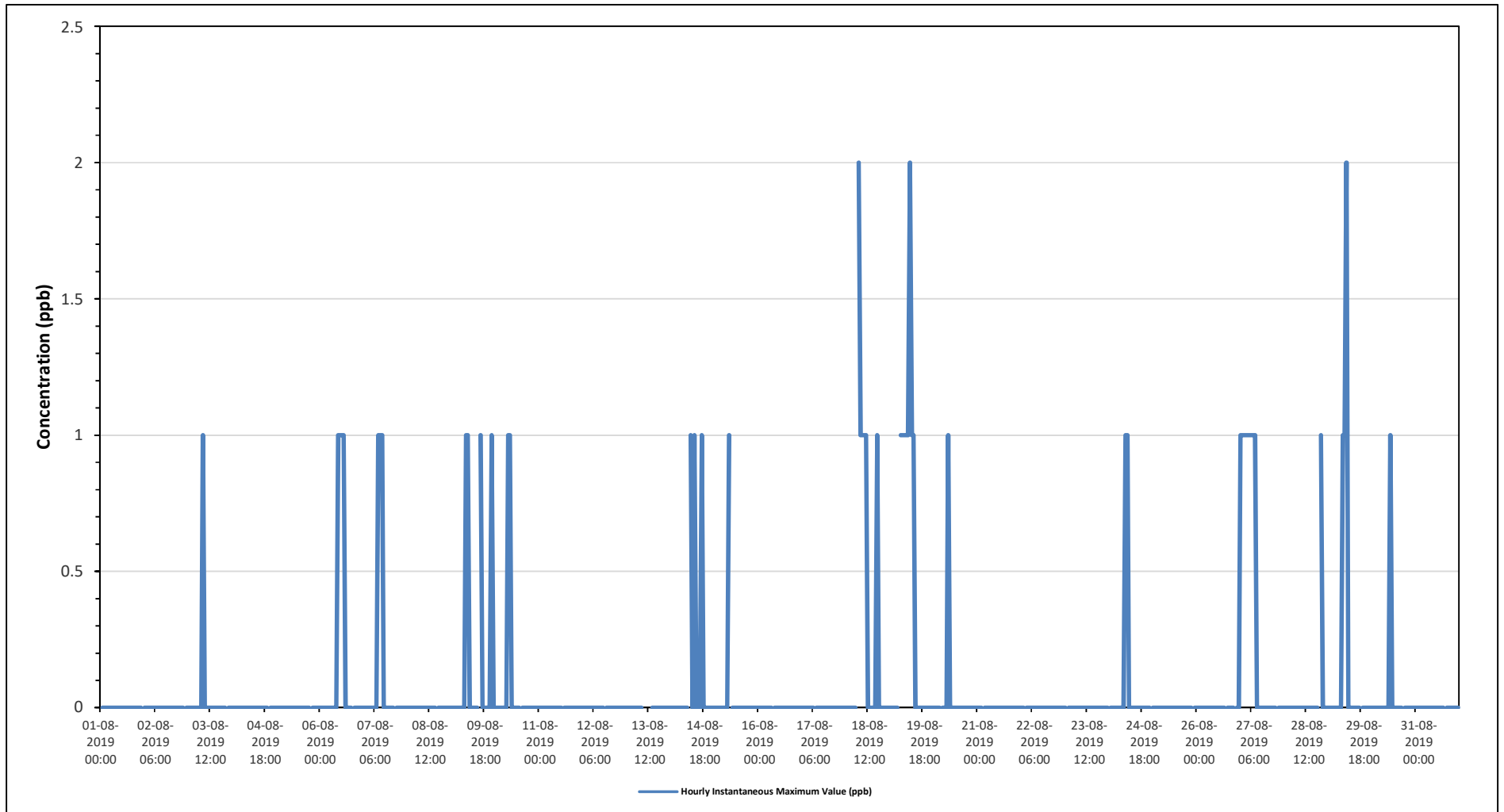
Maximum Hourly Value:	2 ppb on August 18 at hour 11	Hours in Service:	744
Maximum Daily Value:	0.4 ppb on August 19	Hours of Data:	706
Minimum Hourly Value:	0 ppb on August 1 at hour 1	Hours of Missing Data:	1
Minimum Daily Value:	0.0 ppb on August 1	Hours of Calibration:	37
Monthly Average:	0.1 ppb	Operational Uptime:	99.9

Day	Hourly Period Starting at (MST)																							Daily Minimum	Daily Maximum	Daily Average		
	0	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22				23	
Aug 1	S	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	S	0	0	0.0		
Aug 2	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	S	0	0	0.0		
Aug 3	0	0	0	0	0	0	0	0	1	0	0	0	0	0	0	0	0	0	0	0	0	S	0	0	1	0.0		
Aug 4	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	S	0	0	0	0.0		
Aug 5	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	S	0	0	0	0	0.0		
Aug 6	0	0	0	0	0	0	0	0	0	0	1	1	1	1	0	0	0	0	0	S	0	0	0	0	0	1	0.2	
Aug 7	0	0	0	0	0	0	0	0	1	1	1	0	0	0	0	0	0	0	S	0	0	0	0	0	0	1	0.1	
Aug 8	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	S	0	0	0	0	0	0	0	0.0	
Aug 9	0	0	0	0	0	0	0	0	1	1	1	0	0	0	0	0	0	0	S	1	0	0	0	0	1	0	0.2	
Aug 10	0	0	0	0	0	0	0	1	1	0	0	0	0	0	0	S	0	0	0	0	0	0	0	0	0	1	0.1	
Aug 11	0	0	0	0	0	0	0	0	0	0	0	0	0	0	S	0	0	0	0	0	0	0	0	0	0	0	0.0	
Aug 12	0	0	0	0	0	0	0	0	0	0	0	0	0	S	0	0	0	0	0	0	0	0	0	0	0	0	0.0	
Aug 13	0	0	0	0	0	0	0	0	0	C	C	C	C	0	0	0	0	0	0	0	0	0	0	0	0	0	0.0	
Aug 14	0	0	0	0	0	0	0	0	0	0	S	1	0	1	0	0	0	1	0	0	0	0	0	0	0	0	1	0.1
Aug 15	0	0	0	0	0	0	0	0	1	S	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1	0.0
Aug 16	0	0	0	0	0	0	0	0	0	S	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0.0
Aug 17	0	0	0	0	0	0	0	0	0	S	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0.0
Aug 18	0	0	0	0	0	0	0	S	2	1	1	1	1	0	0	0	0	1	0	0	0	0	0	0	0	0	2	0.3
Aug 19	0	0	0	0	0	S	1	1	1	1	1	2	1	1	0	0	0	0	0	0	0	0	0	0	0	0	2	0.4
Aug 20	0	0	0	0	0	S	0	0	0	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1	0.0
Aug 21	0	0	0	0	S	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0.0
Aug 22	0	0	S	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0.0
Aug 23	0	S	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0.0
Aug 24	S	0	0	0	0	0	0	0	0	0	1	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1	0.1
Aug 25	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	S	0	0.0
Aug 26	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	S	0	0	0	0	0.0
Aug 27	1	1	1	1	1	1	1	1	1	0	0	0	0	0	0	0	0	0	0	0	0	S	0	0	0	0	1	0.4
Aug 28	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	S	1	0	0	0	1	0.0
Aug 29	0	0	0	0	0	0	0	0	0	1	1	2	0	0	0	0	0	0	0	0	0	S	0	0	0	0	2	0.2
Aug 30	0	0	0	0	0	0	0	0	0	0	0	1	0	0	0	0	0	0	0	0	0	S	0	0	0	0	1	0.0
Aug 31	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	S	0	0	0	0	0	0.0
Diurnal Maximum	1	1	1	1	1	1	1	2	1	1	2	2	1	1	0	0	1	1	0	0	0	1	0	0	1	0	0	0
Daiurnal Average	0.0	0.0	0.0	0.0	0.0	0.0	0.1	0.2	0.3	0.2	0.3	0.2	0.1	0.1	0.0	0.0	0.0	0.1	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0

C	Calibration	S	Daily Zero/Span	Q	Quality Assurance	C1	Repeat Calibration	S1	Repeat Daily Zero/Span
G	Out for Repair	K	Collection Error	N	Not in Service	O	Operator Error	P	Power Failure
R	Recovery	X	Machine Malfunction	Y	Maintenance	T	Exceeds Temperature Limits	N	Not in Service

Daily Average is shown "-" if minimum data completeness criteria of 75% or 18 hours per day is not met.
 Monthly Average is shown "-" if minimum data completeness criteria of 75% of days per month is not met.

Timeseries Chart of Hourly Instantaneous Maximum for SO2 - Cold Lake South Station





LAKELAND INDUSTRY & COMMUNITY ASSOCIATION

Cold Lake South Station - August 2019 Summary of Hourly Instantaneous Maximums

TOTAL REDUCED SULPHUR (TRS) in ppb

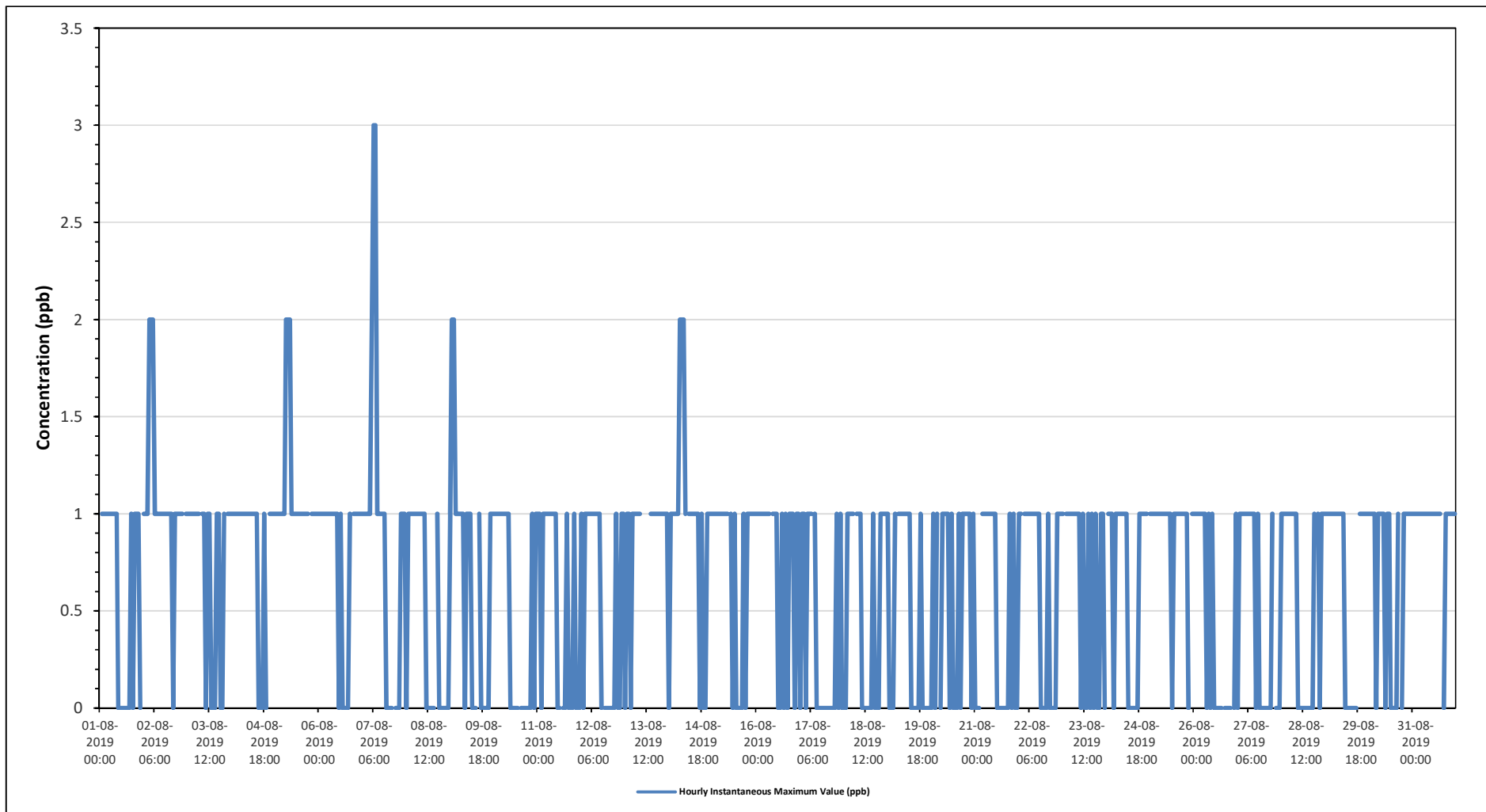
Maximum Hourly Value:	3 ppb on August 7 at hour 6	Hours in Service:	744
Maximum Daily Value:	1 ppb on August 5	Hours of Data:	705
Minimum Hourly Value:	0 ppb on August 1 at hour 10	Hours of Missing Data:	2
Minimum Daily Value:	0 ppb on August 17	Hours of Calibration:	37
Monthly Average:	0.69 ppb	Operational Uptime:	99.7

Day	Hourly Period Starting at (MST)																							Daily Minimum	Daily Maximum	Daily Average				
	0	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22				23			
Aug 1	S	1	1	1	1	1	1	1	1	1	0	0	0	0	0	0	0	1	0	1	1	1	0	S	0	1	0.59			
Aug 2	1	1	1	2	2	2	1	1	1	1	1	1	1	1	1	1	0	1	1	1	1	1	1	S	1	0	2	1.09		
Aug 3	1	1	1	1	1	1	1	S1	1	1	0	1	1	0	0	0	1	1	0	0	1	1	S	1	1	0	1	0.73		
Aug 4	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	0	0	0	0	1	0	S	1	1	1	1	0	1	0.83	
Aug 5	1	1	1	1	1	1	2	2	2	1	1	1	1	1	1	1	1	1	1	S	1	1	1	1	1	1	2	1.13		
Aug 6	1	1	1	1	1	1	1	1	1	1	1	0	1	0	0	0	0	0	1	S	1	1	1	1	1	0	1	0.78		
Aug 7	1	1	1	1	1	2	3	3	1	1	1	1	1	0	0	0	0	S	1	0	0	0	1	1	1	0	3	0.91		
Aug 8	0	1	1	1	1	1	1	1	1	1	1	0	0	0	0	0	S	1	0	0	0	0	0	0	0	0	1	0.48		
Aug 9	1	2	2	1	1	1	1	1	0	1	1	1	0	0	0	S	1	0	0	0	0	0	0	1	1	0	2	0.70		
Aug 10	1	1	1	1	1	1	1	1	1	0	0	0	0	0	S	0	0	0	0	0	0	0	1	0	1	0	1	0.48		
Aug 11	1	1	0	1	1	1	1	1	1	1	1	0	0	S	0	0	1	0	0	0	0	1	0	0	0	0	1	0.52		
Aug 12	1	0	1	1	1	1	1	1	1	1	1	0	S	0	0	0	0	0	0	0	1	0	0	1	1	0	1	0.57		
Aug 13	0	1	1	0	1	1	1	1	1	C	C	C	C	1	1	1	1	1	1	1	1	1	1	1	1	1	0	1	0.89	
Aug 14	0	1	1	1	1	1	2	2	2	1	S	1	1	1	1	1	1	0	1	0	0	1	1	1	1	1	0	2	0.96	
Aug 15	1	1	1	1	1	1	1	1	1	S	1	0	1	0	0	0	0	0	1	0	1	1	1	1	1	1	0	1	0.74	
Aug 16	1	1	1	1	1	1	1	1	S	1	1	1	0	0	1	0	1	0	1	1	1	1	0	1	1	0	1	0.78		
Aug 17	0	1	1	0	1	1	1	S	1	0	0	0	0	0	0	0	0	0	0	0	0	1	0	1	0	0	1	0.35		
Aug 18	0	0	1	1	1	1	S	1	1	1	0	0	0	0	0	0	0	1	0	0	0	1	1	1	1	0	1	0.52		
Aug 19	1	0	0	0	1	S	1	1	1	1	1	1	1	0	0	0	0	0	0	1	0	0	0	0	0	0	0	1	0.43	
Aug 20	0	1	0	1	S	0	1	1	1	1	1	0	1	0	0	1	0	1	1	1	1	1	1	0	1	0	1	0.61		
Aug 21	0	0	0	S	1	1	1	1	1	1	1	1	0	0	0	0	0	0	0	0	1	0	1	0	0	0	0	1	0.43	
Aug 22	1	1	S	1	1	1	1	1	1	1	1	1	0	0	0	0	1	0	0	0	0	0	1	1	1	1	0	1	0.65	
Aug 23	1	S	1	1	1	1	1	1	1	1	1	0	1	0	1	0	1	0	1	0	0	1	0	1	1	0	0	1	0.65	
Aug 24	S	1	1	1	0	1	1	1	1	1	1	1	0	0	0	0	0	0	0	1	1	1	1	1	1	S	0	1	0.68	
Aug 25	1	1	1	1	1	1	1	1	1	1	1	1	0	1	1	1	1	1	1	1	1	1	1	1	1	S	1	0	1	0.91
Aug 26	1	1	1	1	1	1	1	0	1	0	1	0	0	0	0	0	0	0	0	0	0	0	S	0	0	0	1	0	1	0.45
Aug 27	0	1	1	1	1	1	1	1	1	1	0	1	0	0	0	0	0	0	0	0	1	S	0	0	0	0	0	1	0.48	
Aug 28	1	1	1	1	1	1	1	1	1	0	0	0	0	0	0	0	0	0	0	1	S	1	0	1	1	1	0	1	0.57	
Aug 29	1	1	1	1	1	1	1	1	1	1	1	0	0	0	0	0	0	0	0	0	S	1	1	1	1	1	0	1	0.70	
Aug 30	1	1	1	1	0	1	1	1	1	0	1	1	0	0	0	0	1	S	0	1	1	1	1	1	1	0	1	0.70		
Aug 31	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	S	0	1	1	1	1	1	1	1	0	1	0.96		
Diurnal Maximum	1.00	2.00	2.00	2.00	2.00	2.00	3.00	3.00	2.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	
Diurnal Average	0.72	0.90	0.90	0.93	0.97	1.03	1.13	1.10	1.03	0.83	0.69	0.60	0.34	0.21	0.30	0.23	0.43	0.34	0.45	0.52	0.62	0.66	0.69	0.76						

C	Calibration	S	Daily Zero/Span	Q	Quality Assurance	C1	Repeat Calibration	S1	Repeat Daily Zero/Span
G	Out for Repair	K	Collection Error	N	Not in Service	O	Operator Error	P	Power Failure
R	Recovery	X	Machine Malfunction	Y	Maintenance	T	Exceeds Temperature Limits	N	Not in Service

Daily Average is shown "-" if minimum data completeness criteria of 75% or 18 hours per day is not met.
 Monthly Average is shown "-" if minimum data completeness criteria of 75% of days per month is not met.

Timeseries Chart of Hourly Instantaneous Maximum for TRS - Cold Lake South Station





LAKELAND INDUSTRY & COMMUNITY ASSOCIATION

Cold Lake South Station - August 2019
Summary of Hourly Instantaneous Maximums

OXIDES OF NITROGEN (NOx) in ppb

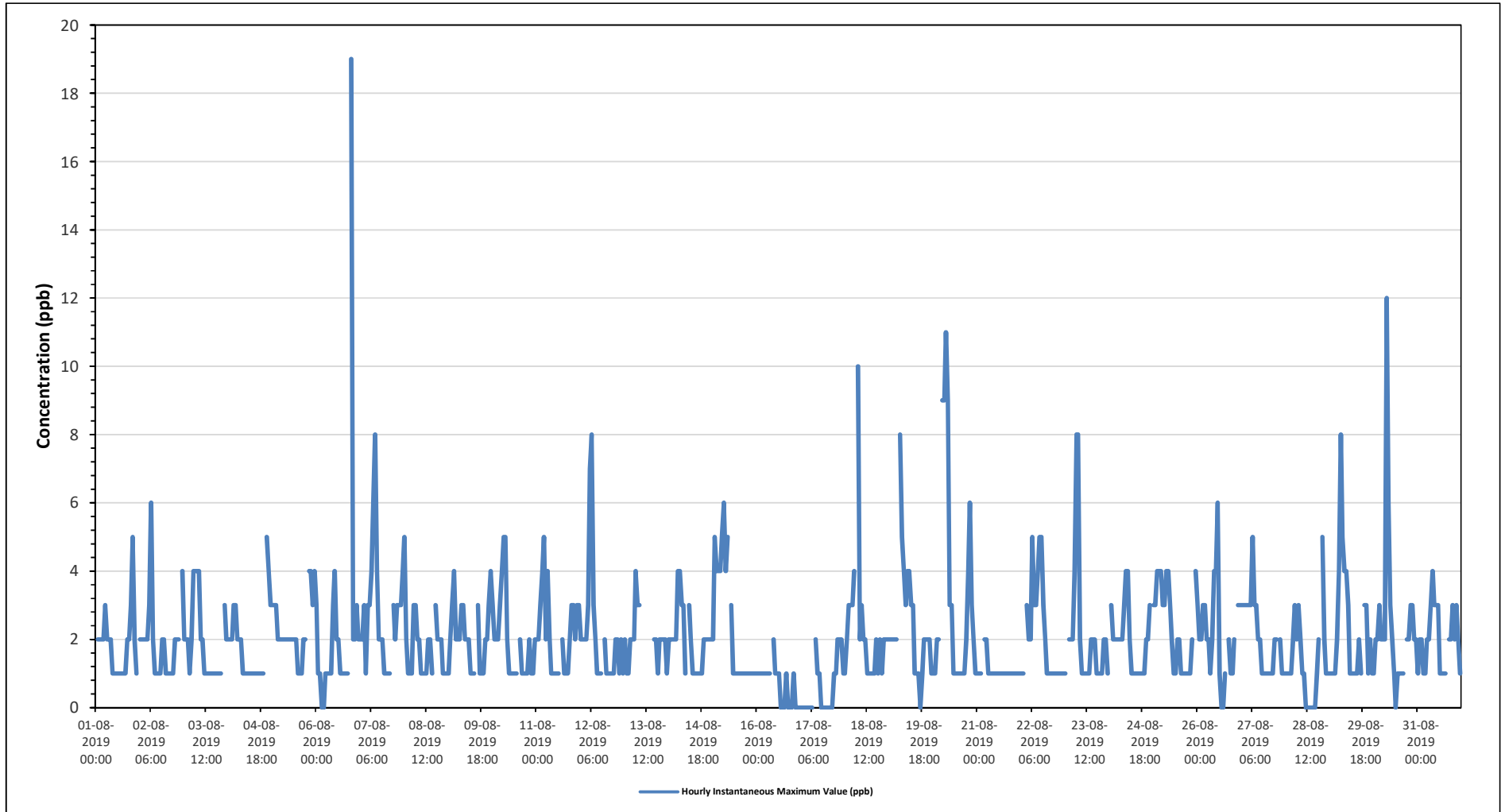
Maximum Hourly Value:	19 ppb on August 6 at hour 19	Hours in Service:	744
Maximum Daily Value:	3.3 ppb on August 20	Hours of Data:	704
Minimum Hourly Value:	0 ppb on August 6 at hour 3	Hours of Missing Data:	1
Minimum Daily Value:	0.6 ppb on August 17	Hours of Calibration:	39
Monthly Average:	2.0 ppb	Operational Uptime:	99.9

Day	Hourly Period Starting at (MST)																							Daily Minimum	Daily Maximum	Daily Average			
	0	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22				23		
Aug 1	S	2	2	2	2	3	2	2	2	1	1	1	1	1	1	1	1	2	2	3	5	2	1	S	1	5	1.8		
Aug 2	2	2	2	2	2	3	6	2	1	1	1	1	2	2	1	1	1	1	1	2	2	2	S	S	4	1	6	1.9	
Aug 3	2	2	2	1	2	4	4	4	4	2	2	1	1	1	1	1	1	1	1	1	1	S	S	3	2	1	4	1.9	
Aug 4	2	2	2	3	3	2	2	2	1	1	1	1	1	1	1	1	1	1	1	1	S	S	5	4	3	1	5	1.8	
Aug 5	3	3	3	2	2	2	2	2	2	2	2	2	2	2	1	1	1	2	2	S	S	4	4	3	4	1	4	2.3	
Aug 6	3	1	1	0	0	1	1	1	1	1	3	4	2	2	1	1	1	1	2	S	S	19	2	2	3	2	0	19	2.3
Aug 7	2	2	3	1	3	3	4	6	8	4	2	2	2	1	1	1	1	S	S	3	2	3	3	3	4	1	8	2.8	
Aug 8	5	2	1	1	1	3	3	2	2	1	1	1	1	2	2	1	S	S	3	2	2	2	1	1	1	1	5	1.8	
Aug 9	1	2	3	4	2	2	2	3	3	2	2	2	1	1	1	S	S	3	1	1	1	2	2	3	4	1	4	2.1	
Aug 10	3	2	2	2	3	4	5	5	2	1	1	1	1	1	S	S	2	1	1	1	1	2	1	1	2	1	5	2.0	
Aug 11	2	2	3	4	5	2	4	2	1	1	1	1	1	S	S	2	1	1	1	2	3	3	2	3	3	1	5	2.2	
Aug 12	2	2	2	2	3	7	8	3	2	1	1	1	S	S	2	1	1	1	1	1	2	2	1	2	1	1	8	2.1	
Aug 13	2	1	1	2	2	2	4	3	3	C	C	C	C	C	C	C	2	2	1	2	2	2	2	2	1	1	4	-	
Aug 14	2	2	2	2	2	4	4	3	3	1	S	S	3	2	1	1	1	1	1	1	2	2	2	2	2	1	4	2.0	
Aug 15	2	5	4	4	4	5	6	4	5	S	S	3	1	1	1	1	1	1	1	1	1	1	1	1	1	1	6	2.4	
Aug 16	1	1	1	1	1	1	1	1	S	S	2	1	1	1	0	0	0	0	0	0	0	0	0	0	0	0	2	0.7	
Aug 17	0	0	0	0	0	0	0	S	S	2	1	1	0	0	0	0	0	0	0	0	1	2	2	2	1	0	2	0.6	
Aug 18	1	2	3	3	3	4	S	10	2	3	2	2	1	1	1	1	1	1	2	1	2	1	2	2	2	1	10	2.3	
Aug 19	2	2	2	2	2	S	8	5	4	3	4	4	3	3	1	1	1	1	0	1	2	2	2	2	1	0	8	2.5	
Aug 20	1	1	2	2	S	9	9	11	9	3	3	1	1	1	1	1	1	1	2	4	6	3	2	1	1	11	3.3		
Aug 21	1	1	1	S	2	2	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	2	1.1	
Aug 22	1	1	S	3	2	2	5	3	3	4	5	5	3	2	1	1	1	1	1	1	1	1	1	1	1	1	5	2.1	
Aug 23	1	S	2	2	2	4	8	8	2	1	1	1	1	1	2	2	2	1	1	1	1	1	2	2	1	1	8	2.1	
Aug 24	S	3	2	2	2	2	2	3	4	4	2	1	1	1	1	1	1	1	1	1	1	2	2	3	S	1	4	2.0	
Aug 25	3	3	4	4	4	3	3	4	4	3	2	1	1	2	2	1	1	1	1	1	1	1	2	2	S	4	1	4	2.4
Aug 26	3	2	2	3	3	2	2	1	2	4	4	6	1	0	0	1	Y	2	1	1	2	S	3	3	3	0	6	2.2	
Aug 27	3	3	3	3	3	5	3	3	2	2	1	1	1	1	1	1	1	1	2	2	S	2	1	1	1	1	5	2.1	
Aug 28	1	1	1	1	2	3	2	3	2	1	0	0	0	0	0	0	0	0	1	2	S	5	2	1	1	0	5	1.3	
Aug 29	1	1	1	1	2	4	8	5	4	4	3	1	1	1	1	1	1	2	1	S	3	3	1	2	1	1	8	2.3	
Aug 30	1	2	2	3	2	2	2	12	6	3	2	1	0	1	1	1	1	1	S	2	2	3	3	2	2	0	12	2.4	
Aug 31	1	2	2	1	1	2	2	3	4	3	3	3	1	1	1	1	S	2	2	3	2	3	2	2	1	1	4	2.0	
Diurnal Maximum	5	5	4	4	5	9	9	12	9	4	5	6	3	3	2	2	3	3	3	3	19	6	5	4	4				
Diurnal Average	1.9	1.9	2.0	2.1	2.2	3.0	3.8	3.9	3.0	2.2	2.1	1.7	1.2	1.1	1.0	1.0	1.1	1.2	1.3	2.3	2.3	2.0	2.0	1.9					

C	Calibration	S	Daily Zero/Span	Q	Quality Assurance	C1	Repeat Calibration	S1	Repeat Daily Zero/Span
G	Out for Repair	K	Collection Error	N	Not in Service	O	Operator Error	P	Power Failure
R	Recovery	X	Machine Malfunction	Y	Maintenance	T	Exceeds Temperature Limits	N	Not in Service

Daily Average is shown "-" if minimum data completeness criteria of 75% or 18 hours per day is not met.
Monthly Average is shown "-" if minimum data completeness criteria of 75% of days per month is not met.

Timeseries Chart of Hourly Instantaneous Maximum for NOx - Cold Lake South Station





LAKELAND INDUSTRY & COMMUNITY ASSOCIATION

Cold Lake South Station - August 2019

Summary of Hourly Instantaneous Maximums

NITRIC OXIDE (NO) in ppb

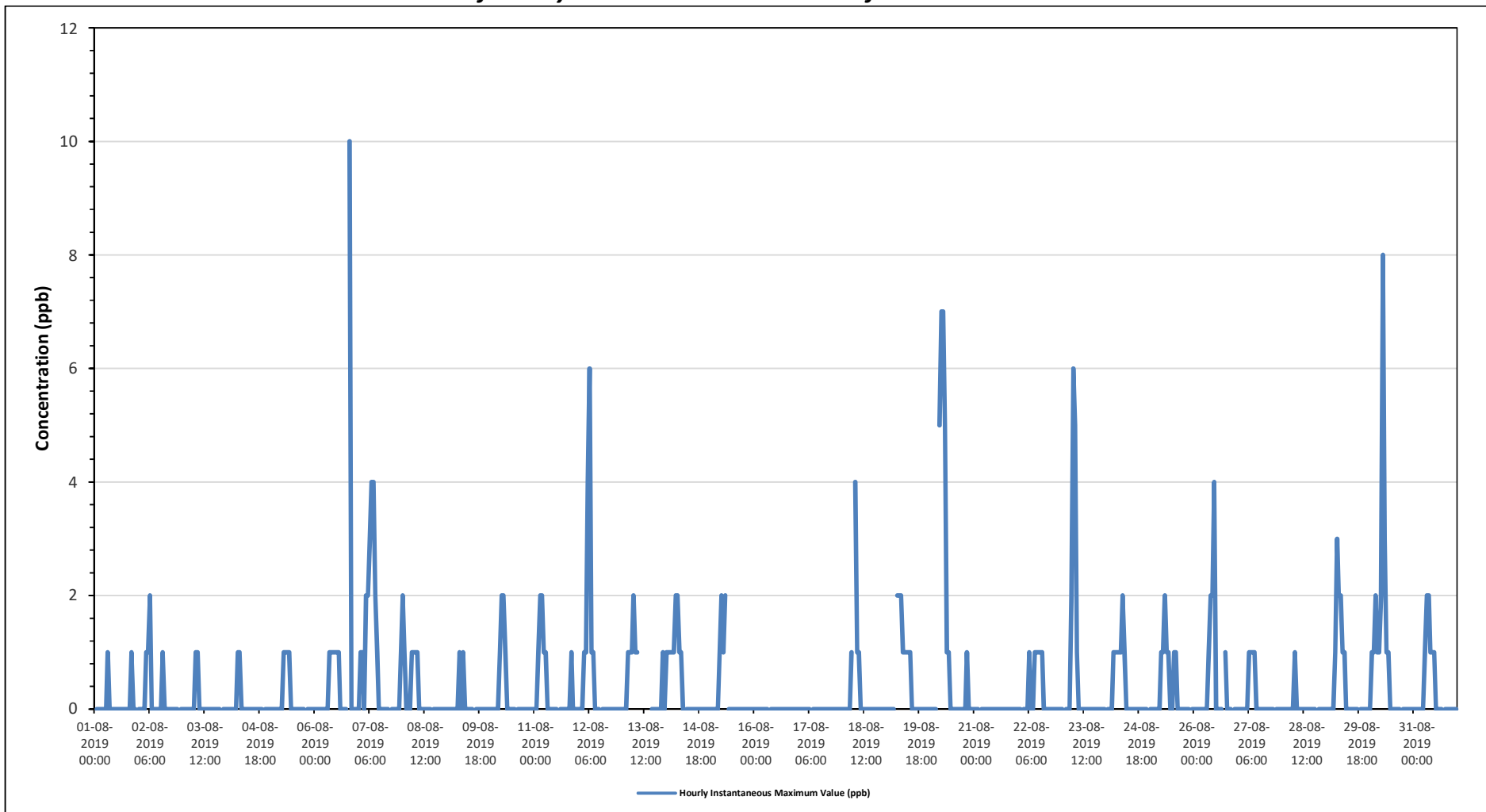
Maximum Hourly Value:	10 ppb on August 6 at hour 19	Hours in Service:	744
Maximum Daily Value:	1.2 ppb on August 20	Hours of Data:	704
Minimum Hourly Value:	0 ppb on August 1 at hour 1	Hours of Missing Data:	1
Minimum Daily Value:	0.0 ppb on August 16	Hours of Calibration:	39
Monthly Average:	0.4 ppb	Operational Uptime:	99.9

Day	Hourly Period Starting at (MST)																							Daily Minimum	Daily Maximum	Daily Average		
	0	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22				23	
Aug 1	S	0	0	0	0	0	0	1	0	0	0	0	0	0	0	0	0	0	0	0	1	0	0	S	0	1	0.1	
Aug 2	0	0	0	0	1	1	2	0	0	0	0	0	1	0	0	0	0	0	0	0	0	0	S	S	0	0	2	0.2
Aug 3	0	0	0	0	0	0	0	1	1	0	0	0	0	0	0	0	0	0	0	0	0	0	S	S	0	0	1	0.1
Aug 4	0	0	0	0	0	0	1	1	0	0	0	0	0	0	0	0	0	0	0	0	0	S	S	0	0	0	1	0.1
Aug 5	0	0	0	0	0	0	0	1	1	1	1	1	0	0	0	0	0	0	0	0	S	S	0	0	0	0	1	0.2
Aug 6	0	0	0	0	0	0	0	0	1	1	1	1	1	1	1	0	0	0	0	S	10	0	0	0	0	0	10	0.7
Aug 7	0	1	1	0	2	2	3	4	4	2	1	0	0	0	0	0	0	S	0	0	0	0	0	0	0	1	4	0.9
Aug 8	2	1	0	0	0	1	1	1	1	0	0	0	0	0	0	0	S	0	0	0	0	0	0	0	0	0	2	0.3
Aug 9	0	0	0	0	0	0	0	1	0	1	0	0	0	0	0	S	0	0	0	0	0	0	0	0	0	0	1	0.1
Aug 10	0	0	0	0	0	1	2	2	1	0	0	0	0	0	S	0	0	0	0	0	0	0	0	0	0	0	2	0.3
Aug 11	0	0	1	2	2	1	1	0	0	0	0	0	0	S	0	0	0	0	0	0	0	1	0	0	0	0	2	0.3
Aug 12	0	0	0	1	1	4	6	1	1	0	0	0	S	0	0	0	0	0	0	0	0	0	0	0	0	0	6	0.6
Aug 13	0	0	0	1	1	1	2	1	1	C	C	C	C	C	C	0	0	0	0	0	0	0	1	0	0	0	2	-
Aug 14	1	1	1	1	1	2	2	1	1	0	S	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	2	0.5
Aug 15	0	0	0	0	0	1	2	1	2	S	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	2	0.3
Aug 16	0	0	0	0	0	0	0	0	S	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0.0
Aug 17	0	0	0	0	0	0	0	S	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0.0
Aug 18	0	0	0	0	0	1	S	4	1	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	4	0.3
Aug 19	0	0	0	0	0	S	2	2	2	1	1	1	1	1	0	0	0	0	0	0	0	0	0	0	0	0	2	0.5
Aug 20	0	0	0	0	S	5	7	7	5	1	1	0	0	0	0	0	0	0	0	0	0	1	0	0	0	7	1.2	
Aug 21	0	0	0	S	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0.0
Aug 22	0	0	S	0	0	0	1	0	0	1	1	1	1	1	0	0	0	0	0	0	0	0	0	0	0	0	1	0.3
Aug 23	0	S	0	0	0	2	6	5	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	6	0.6	
Aug 24	S	0	0	0	1	1	1	1	1	2	1	0	0	0	0	0	0	0	0	0	0	0	0	0	S	2	0.4	
Aug 25	0	0	0	0	0	0	1	1	2	1	1	0	0	1	1	0	0	0	0	0	0	0	0	S	0	2	0.3	
Aug 26	0	0	0	0	0	0	0	0	1	2	2	4	0	0	0	0	0	0	0	0	0	0	S	0	0	4	0.5	
Aug 27	0	0	0	0	0	0	1	1	1	0	0	0	0	0	0	0	0	0	0	0	0	S	0	0	0	1	0.2	
Aug 28	0	0	0	0	0	0	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	S	S	0	0	1	0.0	
Aug 29	0	0	0	0	0	1	3	2	2	1	1	0	0	0	0	0	0	0	0	0	S	0	0	0	0	3	0.4	
Aug 30	0	1	1	2	1	1	2	8	3	1	1	0	0	0	0	0	0	0	0	S	0	0	0	0	0	8	0.9	
Aug 31	0	0	0	0	0	1	2	2	1	1	0	0	0	0	0	S	0	0	0	0	0	0	0	0	0	2	0.3	
Diurnal Maximum	2	1	1	2	2	5	7	8	5	2	2	4	1	1	1	0	0	0	0	0	10	1	0	1	1			
Diurnal Average	0.1	0.1	0.1	0.2	0.3	0.8	1.6	1.7	1.2	0.6	0.4	0.3	0.1	0.2	0.0	0.0	0.0	0.0	0.0	0.0	0.3	0.1	0.0	0.0	0.0			

C	Calibration	S	Daily Zero/Span	Q	Quality Assurance	C1	Repeat Calibration	S1	Repeat Daily Zero/Span
G	Out for Repair	K	Collection Error	N	Not in Service	O	Operator Error	P	Power Failure
R	Recovery	X	Machine Malfunction	Y	Maintenance	T	Exceeds Temperature Limits	N	Not in Service

Daily Average is shown "-" if minimum data completeness criteria of 75% or 18 hours per day is not met.
 Monthly Average is shown "-" if minimum data completeness criteria of 75% of days per month is not met.

Timeseries Chart of Hourly Instantaneous Maximum for NO - Cold Lake South Station





LAKELAND INDUSTRY & COMMUNITY ASSOCIATION

Cold Lake South Station - August 2019
Summary of Hourly Instantaneous Maximums

NITROGEN DIOXIDE (NO₂) in ppb

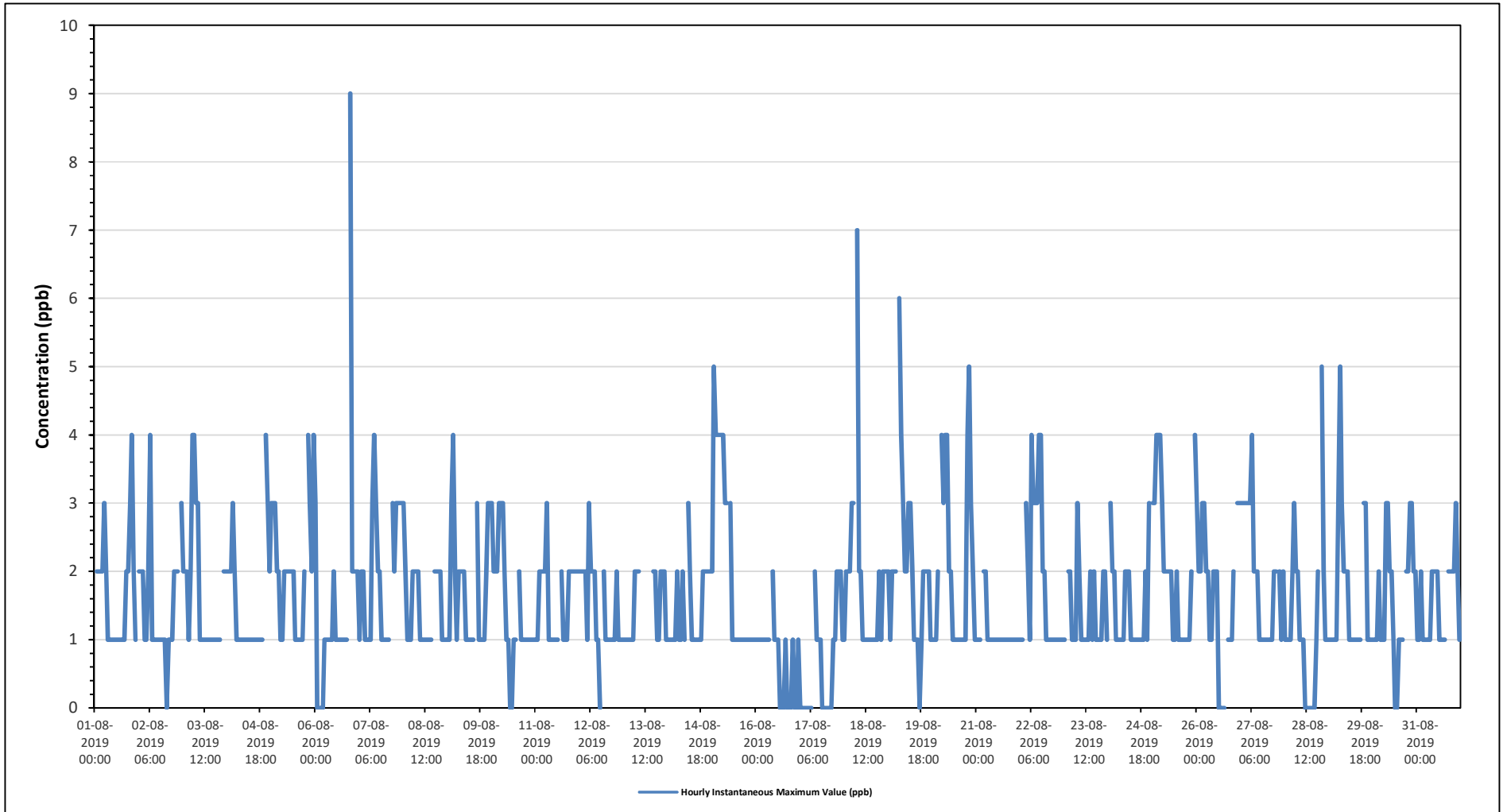
Maximum Hourly Value:	9 ppb on August 6 at hour 19	Hours in Service:	744
Maximum Daily Value:	2.1 ppb on August 15	Hours of Data:	704
Minimum Hourly Value:	0 ppb on August 2 at hour 15	Hours of Missing Data:	1
Minimum Daily Value:	0.6 ppb on August 17	Hours of Calibration:	39
Monthly Average:	1.6 ppb	Operational Uptime:	99.9

Day	Hourly Period Starting at (MST)																							Daily Minimum	Daily Maximum	Daily Average		
	0	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22				23	
Aug 1	S	2	2	2	2	3	2	1	1	1	1	1	1	1	1	1	1	2	2	3	4	2	1	S	1	4	1.7	
Aug 2	2	2	2	1	1	2	4	1	1	1	1	1	1	1	1	0	1	1	1	2	2	2	S	S	0	4	1.5	
Aug 3	2	2	2	1	2	4	4	3	3	1	1	1	1	1	1	1	1	1	1	1	1	S	2	2	1	4	1.7	
Aug 4	2	2	2	3	2	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	S	4	3	2	1	4	1.5	
Aug 5	3	3	3	2	2	1	1	2	2	2	2	2	2	1	1	1	1	1	2	S	4	3	2	4	1	4	2.0	
Aug 6	3	0	0	0	0	1	1	1	1	1	2	1	1	1	1	1	1	1	S	9	2	2	2	2	0	9	1.5	
Aug 7	1	2	2	1	1	1	1	3	4	3	2	2	1	1	1	1	1	S	3	2	3	3	3	3	1	4	2.0	
Aug 8	3	2	1	1	1	2	2	2	2	1	1	1	1	1	1	1	S	2	2	2	2	1	1	1	1	3	1.5	
Aug 9	1	1	3	4	2	1	2	2	2	1	1	1	1	1	S	3	1	1	1	1	1	2	3	3	1	4	1.7	
Aug 10	3	2	2	2	3	3	3	2	1	0	0	1	1	S	2	1	1	1	1	1	1	1	1	1	0	3	1.5	
Aug 11	1	1	2	2	2	2	3	1	1	1	1	1	S	2	1	1	1	2	2	2	2	2	2	2	1	3	1.6	
Aug 12	2	2	2	2	1	3	2	2	2	1	1	0	S	2	1	1	1	1	1	1	2	1	1	1	0	3	1.4	
Aug 13	1	1	1	1	1	1	2	2	2	C	C	C	C	C	C	2	2	1	1	2	2	2	2	1	2	-	-	
Aug 14	1	1	1	1	1	2	1	1	2	1	S	3	2	1	1	1	1	1	1	2	2	2	2	2	1	3	1.4	
Aug 15	2	5	4	4	4	4	4	3	3	S	3	1	1	1	1	1	1	1	1	1	1	1	1	1	1	5	2.1	
Aug 16	1	1	1	1	1	1	1	1	S	2	1	1	1	0	0	0	0	0	0	0	0	0	0	1	0	2	0.7	
Aug 17	0	0	0	0	0	0	0	S	2	1	1	1	0	0	0	0	0	0	0	1	1	2	2	1	0	2	0.6	
Aug 18	1	2	2	2	3	3	S	7	2	2	1	1	1	1	1	1	1	1	1	2	1	2	2	2	1	7	1.8	
Aug 19	2	1	2	2	2	S	6	4	3	2	2	3	3	2	1	1	1	0	1	2	2	2	2	1	0	6	2.0	
Aug 20	1	1	1	2	S	4	3	4	4	2	2	1	1	1	1	1	1	1	1	4	5	3	2	1	1	5	2.0	
Aug 21	1	1	1	S	2	2	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	2	1.1	
Aug 22	1	1	S	3	2	1	4	3	3	3	4	4	2	2	1	1	1	1	1	1	1	1	1	1	1	4	1.9	
Aug 23	1	S	2	2	1	1	1	3	2	1	1	1	1	1	2	1	2	1	1	1	1	2	2	1	1	3	1.4	
Aug 24	S	3	2	2	1	1	1	1	1	2	2	2	1	1	1	1	1	1	1	1	2	1	3	S	1	3	1.5	
Aug 25	3	3	4	4	4	3	2	2	2	2	2	1	2	1	2	1	1	1	1	1	1	2	S	4	1	4	2.1	
Aug 26	3	2	2	3	3	2	2	1	1	2	2	2	0	0	0	0	Y	1	1	1	2	S	3	3	0	3	1.6	
Aug 27	3	3	3	3	3	3	4	2	2	2	1	1	1	1	1	1	1	1	2	2	S	2	1	2	1	4	2.0	
Aug 28	1	1	1	1	2	3	2	2	1	1	0	0	0	0	0	0	0	0	1	2	S	5	2	1	1	0	5	1.2
Aug 29	1	1	1	1	1	3	5	3	2	2	2	1	1	1	1	1	1	1	S	3	3	1	1	1	1	1	5	1.7
Aug 30	1	1	1	2	1	1	1	3	3	2	2	1	0	0	1	1	1	S	2	2	3	3	2	2	0	3	1.6	
Aug 31	1	1	2	1	1	1	1	1	2	2	2	2	1	1	1	S	2	2	2	2	2	3	2	1	1	3	1.5	
Diurnal Maximum	3	5	4	4	4	6	7	4	3	4	4	3	2	2	2	3	2	3	2	3	9	5	4	3	4			
Diurnal Average	1.7	1.7	1.8	1.9	1.7	2.0	2.2	2.2	2.0	1.6	1.5	1.3	1.0	1.0	0.9	0.9	1.1	1.0	1.3	1.8	2.1	1.9	1.8	1.8				

C	Calibration	S	Daily Zero/Span	Q	Quality Assurance	C1	Repeat Calibration	S1	Repeat Daily Zero/Span
G	Out for Repair	K	Collection Error	N	Not in Service	O	Operator Error	P	Power Failure
R	Recovery	X	Machine Malfunction	Y	Maintenance	T	Exceeds Temperature Limits	N	Not in Service

Daily Average is shown "-" if minimum data completeness criteria of 75% or 18 hours per day is not met.
Monthly Average is shown "-" if minimum data completeness criteria of 75% of days per month is not met.

Timeseries Chart of Hourly Instantaneous Maximum for NO2 - Cold Lake South Station





LAKELAND INDUSTRY & COMMUNITY ASSOCIATION

Cold Lake South Station - August 2019
Summary of Hourly Instantaneous Maximums

OZONE (O₃) in ppb

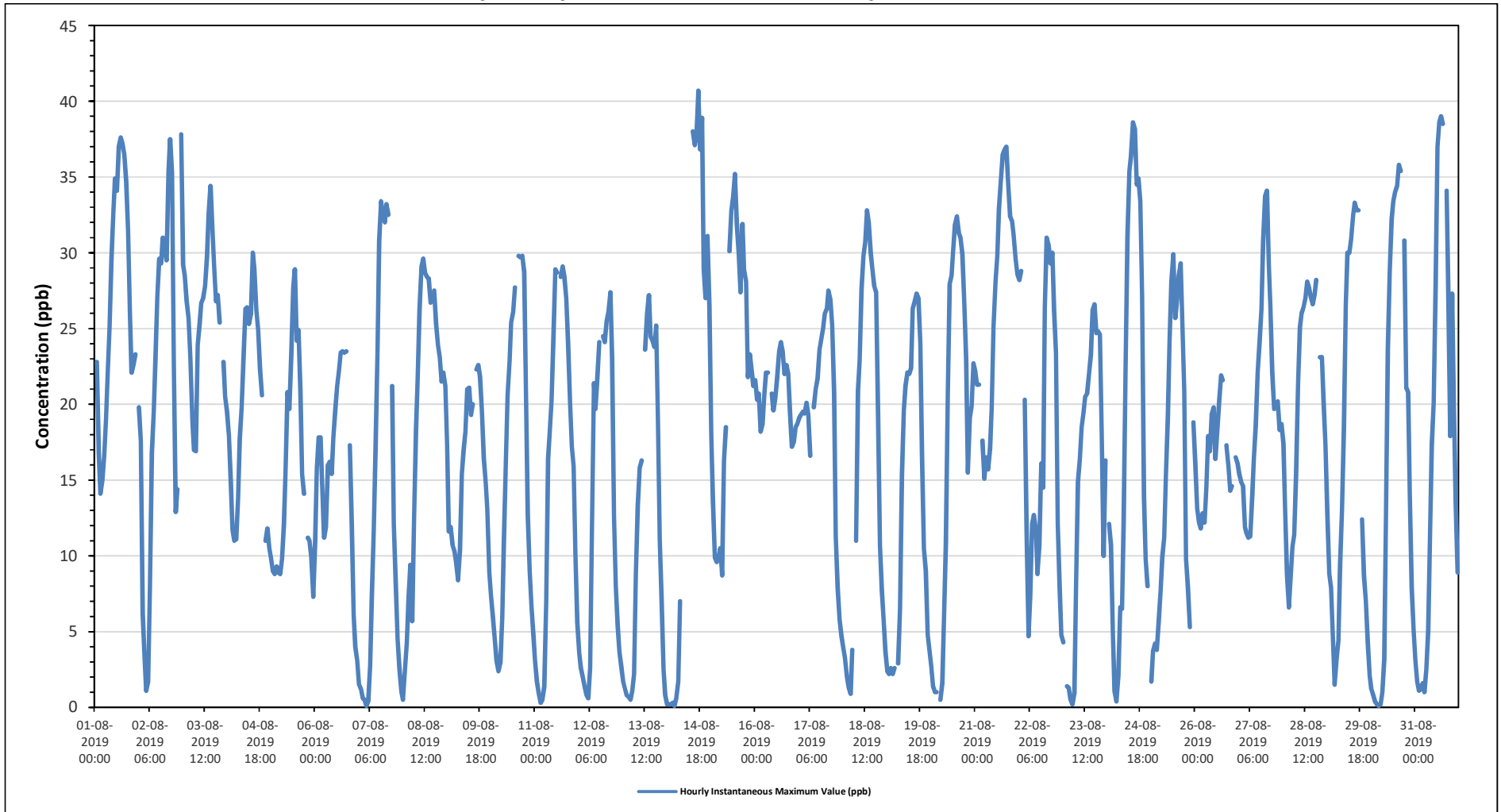
Maximum Hourly Value:	40.7 ppb	on August 14 at hour 17	Hours in Service:	744
Maximum Daily Value:	26.9 ppb	on August 1	Hours of Data:	705
Minimum Hourly Value:	0.1 ppb	on August 7 at hour 4	Hours of Missing Data:	1
Minimum Daily Value:	12.1 ppb	on August 13	Hours of Calibration:	38
Monthly Average:	18.1 ppb		Operational Uptime:	99.9

Day	Hourly Period Starting at (MST)																							Daily Minimum	Daily Maximum	Daily Average		
	0	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22				23	
Aug 1	S	22.8	16.8	14.1	15	16.6	19	22.2	25.1	29.6	32.7	34.9	34.1	37	37.6	37.2	36.5	34.7	31.4	26.1	22.1	22.6	23.3	S	14.1	37.6	26.9	
Aug 2	19.8	17.6	6.2	3.2	1.1	1.7	8	16.8	19.5	22.9	27.1	29.6	29.3	31	30.4	29.5	35.4	37.5	35.3	22.7	12.9	14.4	S	37.8	1.1	37.8	21.3	
Aug 3	29.2	28.5	26.8	25.7	23.1	18.9	17	16.9	23.9	25.3	26.7	27	27.8	29.7	32.6	34.4	31.6	29	26.8	27.2	25.4	S	22.8	20.5	16.9	34.4	25.9	
Aug 4	19.5	17.9	14.8	11.7	11	11.1	13.8	17.7	19.8	23.1	26.3	26.4	25.3	25.9	30	29	26.2	24.9	22.3	20.6	S	11	11.8	10.5	10.5	30.0	19.6	
Aug 5	9.9	9	8.8	9.3	8.9	8.8	9.8	12.1	15.7	20.8	19.7	23.3	27.7	28.9	24.2	24.9	20.8	15.4	14.1	S	11.2	11	9.9	7.3	7.3	28.9	15.3	
Aug 6	11	15.8	17.8	17.8	14.2	11.2	11.9	16	16.2	15.4	17.8	19.6	21.2	22.2	23.4	23.5	23.4	23.5	S	17.3	12.1	6.1	4	3.1	3.1	23.5	15.8	
Aug 7	1.5	1.2	0.6	0.5	0.1	0.4	2.8	7.3	11.6	17.3	23.6	30.8	33.4	32.5	32	33.2	32.5	S	21.2	12.1	8.3	4.5	2.5	1	0.1	33.4	13.5	
Aug 8	0.5	2.5	4.2	7.3	9.4	5.7	12.6	18.3	21.7	26.3	29.1	29.6	28.7	28.4	28.3	26.7	S	27.5	25.3	23.9	23.1	21.5	22.1	21.2	0.5	29.6	19.3	
Aug 9	17.3	11.6	11.9	10.7	10.3	9.6	8.4	10.4	15.4	16.9	18.2	21	21.1	19.3	20	S	22.3	22.6	21.8	19.5	16.4	14.8	13.1	8.9	8.4	22.6	15.7	
Aug 10	7.3	5.9	4.6	3.1	2.4	2.9	5.9	11	16.1	20.6	22.9	25.4	26.1	27.7	S	29.8	29.7	29.8	28.7	21.2	12.7	9	6.7	4.8	2.4	29.8	15.4	
Aug 11	3.1	1.7	0.9	0.3	0.5	1.4	6.9	16.4	18.2	20.2	24.4	28.9	28.7	S	28.4	29.1	28.4	27	23.9	20.1	17.2	15.9	10.1	5.6	0.3	29.1	15.5	
Aug 12	3.6	2.6	2	1.4	0.8	0.6	2.6	11.6	21.4	19.7	21.8	24.1	S	24.5	24.1	25.5	26.1	27.4	23	12.6	8	5.4	3.7	2.7	0.6	27.4	12.8	
Aug 13	1.7	1.2	0.8	0.7	0.5	1.1	2.2	8.8	13.3	15.8	16.3	S	23.6	26	27.2	24.5	24.2	23.8	25.2	18.9	11.1	7	2.5	0.8	0.5	27.2	12.1	
Aug 14	0.2	0.2	0.2	0.3	0.1	0.6	1.7	7	C	C	C	C	C	C	C	38	37.1	37.6	40.7	36.8	38.9	28.9	27	31.1	26.5	0.1	40.7	19.6
Aug 15	17.9	13.6	9.9	9.6	9.9	10.5	8.7	16.3	18.5	S	30.1	32.8	33.7	35.2	31.9	29.9	27.4	31.9	28.9	28.1	21.8	23.3	22.4	21.2	8.7	35.2	22.3	
Aug 16	21.6	20.3	20.7	18.2	18.7	20.7	22.1	S	20.7	19.6	20.4	21.8	23.5	24.1	23.5	22	22.6	22	19.6	17.2	17.5	18.5	18.7	17.2	17.2	24.1	20.7	
Aug 17	19.1	19.3	19.5	19.4	20.1	19.3	16.6	S	19.8	21	21.7	23.6	24.2	25	26	26.3	27.5	26.9	25.2	20.8	11.3	7.9	5.8	4.7	4.7	27.5	19.6	
Aug 18	4	3.3	2	1.3	0.9	3.8	S	11	20.9	22.9	27.6	29.8	30.7	32.8	32	30	28.8	27.8	27.4	19.4	10.7	7.7	5.9	3.7	0.9	32.8	16.7	
Aug 19	2.4	2.2	2.6	2.2	2.6	S	2.9	6.5	15.3	19.6	21.2	22.1	22	22.4	26.3	26.8	27.3	27	24	16.7	10.5	9	4.8	3.9	2.2	27.3	13.9	
Aug 20	2.7	1.4	1	1	S	0.5	1.6	5.8	10.8	20.6	27.9	28.5	30.1	31.9	32.4	31.3	31	29.9	26.7	22.9	15.5	19.1	19.9	22.7	0.5	32.4	18.1	
Aug 21	22.2	21.3	21.3	S	17.6	15.1	16.5	15.7	17.1	19.8	25.1	28.1	29.8	32.9	34.8	36.5	36.8	37	34.5	32.4	32.1	31.2	29.6	28.6	15.1	37.0	26.8	
Aug 22	28.2	28.8	S	20.3	11.6	4.7	7.4	12.1	12.7	11.7	8.8	10.7	16.1	14.5	26.4	31	30.5	29.3	30	26.2	23.4	12.1	7.9	4.8	4.7	31.0	17.8	
Aug 23	4.3	S	1.4	1.3	0.5	0.2	0.9	8	14.9	16.4	18.5	19.4	20.5	20.7	22	23.3	26.2	26.6	24.7	24.8	24.6	18.1	10	16.3	0.2	26.6	14.9	
Aug 24	S	12.1	10.7	4.9	1.1	0.4	2.1	6.6	6.5	12.3	22.4	31.1	35.4	36.4	38.6	38.2	34.5	34.9	33.4	27.2	13.9	9.8	8	S	0.4	38.6	19.1	
Aug 25	1.7	3.7	4.2	3.8	5.7	7.7	9.9	11.2	15.4	19.2	24.1	28.1	29.9	25.7	26.7	28.5	29.3	25.1	20.9	9.8	7.9	5.3	S	18.8	1.7	29.9	15.8	
Aug 26	16.1	13.1	12.2	11.8	12.8	12.2	14.5	17.9	16.9	19.4	19.8	16.4	18.2	20.2	21.9	21.6	Y	17.3	15.9	14.3	14.6	S	16.5	16.1	11.8	21.9	16.4	
Aug 27	15.4	14.9	14.6	11.9	11.5	11.2	11.3	13.9	16.4	18.6	22.1	24.1	26.3	30.7	33.7	34.1	29.2	26.5	22.1	19.7	S	20.2	18.3	18.7	11.2	34.1	20.2	
Aug 28	17.4	13.1	8.8	6.6	8.6	10.6	11.4	15.5	21.3	25.1	26	26.4	27	28.1	27.7	27.1	26.6	27.2	28.2	S	23.1	23.1	20.2	17.3	6.6	28.2	20.3	
Aug 29	12.7	8.8	7.9	4.7	1.5	3.2	4.4	9.4	13	18.4	26.6	30	30.9	32.5	33.3	32.8	32.8	S	12.4	8.7	7	4.3	2.1	1.5	33.3	16.0		
Aug 30	1.2	0.8	0.4	0.2	0.1	0.2	1	3.2	12.4	23.6	28.8	32.2	33.4	34	34.4	35.8	35.4	S	30.8	21.1	20.8	14	7.9	5.1	0.1	35.8	16.4	
Aug 31	3.1	1.7	1.1	1.2	1.6	1	2.5	5.1	11.7	17.3	20.1	27.6	37	38.6	39	38.5	S	34.1	27.5	17.9	27.3	19.5	13.7	8.9	1.0	39.0	17.2	
Diurnal Maximum	29	29	27	26	23	21	22	22	25	30	33	35	37	39	39	39	38	41	37	39	32	31	31	38				
Diurnal Average	10.8	10.6	8.5	7.5	7.4	7.1	8.5	12.4	16.6	20.0	23.2	25.9	27.3	28.2	29.6	30.0	29.3	28.3	26.1	21.2	17.0	14.3	13.0	12.5				

C	Calibration	S	Daily Zero/Span	Q	Quality Assurance	C1	Repeat Calibration	S1	Repeat Daily Zero/Span
G	Out for Repair	K	Collection Error	N	Not in Service	O	Operator Error	P	Power Failure
R	Recovery	X	Machine Malfunction	Y	Maintenance	T	Exceeds Temperature Limits	N	Not in Service

Daily Average is shown "-" if minimum data completeness criteria of 75% or 18 hours per day is not met.
Monthly Average is shown "-" if minimum data completeness criteria of 75% of days per month is not met.

Timeseries Chart of Hourly Instantaneous Maximum for O3 - Cold Lake South Station





LAKELAND INDUSTRY & COMMUNITY ASSOCIATION

Cold Lake South Station - August 2019 Summary of Hourly Instantaneous Maximums

TOTAL HYDROCARBONS (THC) in ppm

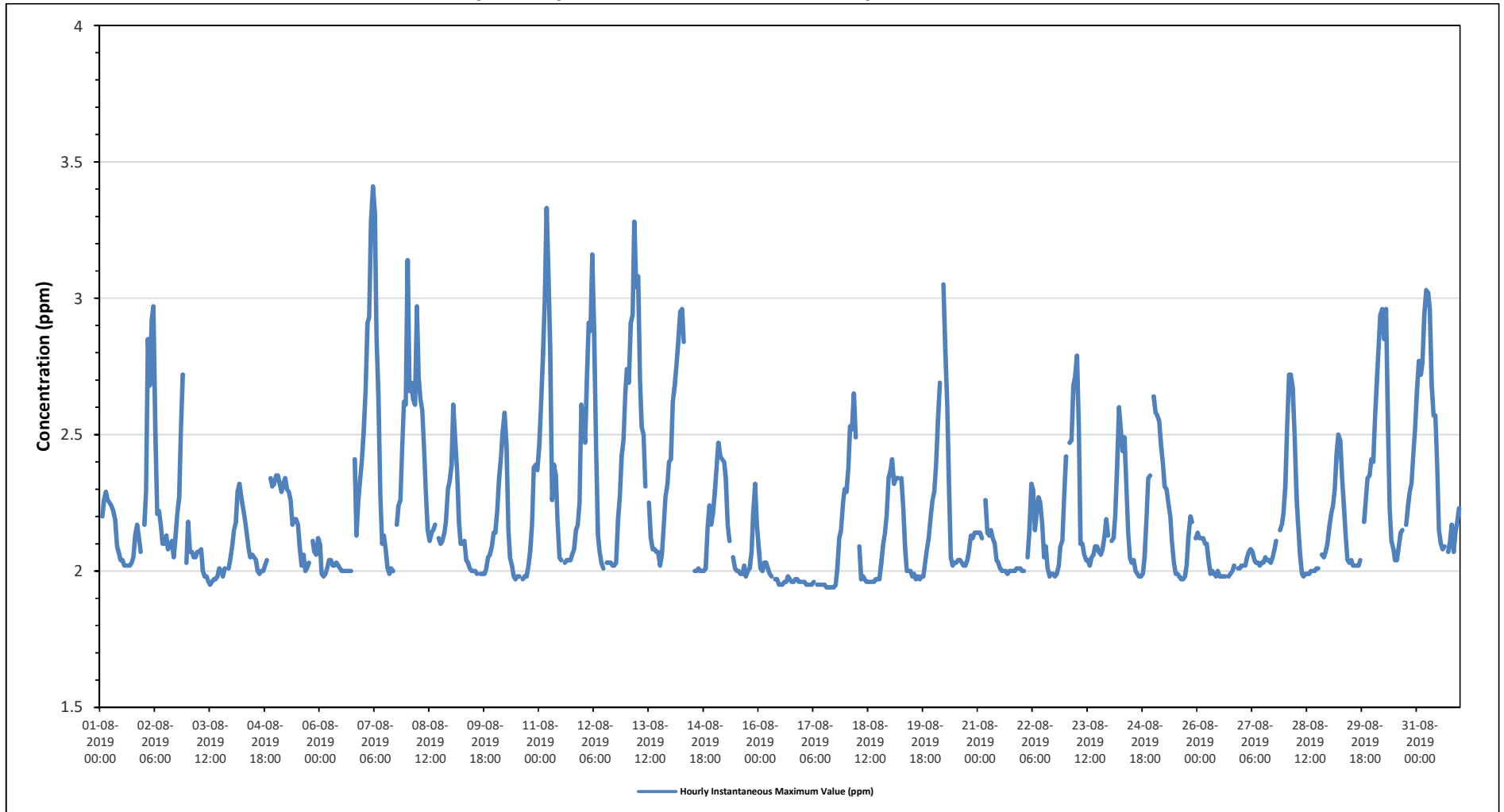
Maximum Hourly Value: 3.41 ppm on August 7 at hour 5	Hours in Service: 744
Maximum Daily Value: 2.50 ppm on August 7	Hours of Data: 706
Minimum Hourly Value: 1.94 ppm on August 17 at hour 13	Hours of Missing Data: 1
Minimum Daily Value: 1.98 ppm on August 16	Hours of Calibration: 37
Monthly Average: 2.21 ppm	Operational Uptime: 99.9

Day	Hourly Period Starting at (MST)																							Daily Minimum	Daily Maximum	Daily Average		
	0	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22				23	
Aug 1	S	2.20	2.26	2.29	2.26	2.25	2.24	2.22	2.19	2.09	2.07	2.04	2.04	2.02	2.02	2.02	2.03	2.05	2.13	2.17	2.13	2.07	S	2.02	2.29	2.13		
Aug 2	2.17	2.29	2.85	2.68	2.92	2.97	2.52	2.21	2.22	2.17	2.10	2.10	2.13	2.08	2.09	2.11	2.05	2.12	2.21	2.27	2.51	2.72	S	2.03	2.03	2.97	2.33	
Aug 3	2.18	2.07	2.07	2.05	2.05	2.07	2.07	2.08	2.00	1.98	1.98	1.96	1.95	1.96	1.97	1.97	1.98	2.01	2.00	1.98	2.01	S	2.01	2.04	1.95	2.18	2.02	
Aug 4	2.09	2.15	2.18	2.29	2.32	2.27	2.23	2.19	2.14	2.08	2.05	2.06	2.05	2.04	2.00	1.99	2.00	2.00	2.02	2.04	S	2.34	2.31	2.32	1.99	2.34	2.14	
Aug 5	2.35	2.35	2.32	2.29	2.32	2.34	2.30	2.29	2.26	2.17	2.19	2.19	2.17	2.09	2.02	2.06	2.00	2.01	2.03	S	2.11	2.07	2.06	2.12	2.00	2.35	2.18	
Aug 6	2.10	1.99	1.98	1.99	2.01	2.04	2.04	2.02	2.02	2.03	2.02	2.01	2.00	2.00	2.00	2.00	2.00	2.00	2.00	S	2.41	2.13	2.25	2.34	2.40	1.98	2.41	2.08
Aug 7	2.51	2.66	2.91	2.93	3.28	3.41	3.31	2.86	2.64	2.28	2.10	2.13	2.08	2.01	1.99	2.01	2.00	S	2.17	2.24	2.26	2.45	2.62	2.61	1.99	3.41	2.50	
Aug 8	3.14	2.66	2.69	2.63	2.61	2.97	2.71	2.63	2.59	2.43	2.29	2.15	2.11	2.14	2.15	2.17	S	2.12	2.10	2.11	2.14	2.18	2.30	2.33	2.10	3.14	2.41	
Aug 9	2.39	2.61	2.48	2.37	2.18	2.10	2.10	2.11	2.04	2.03	2.01	2.00	2.00	1.99	S	1.99	1.99	1.99	1.99	2.01	2.05	2.06	2.09	2.14	1.99	2.61	2.12	
Aug 10	2.14	2.22	2.34	2.42	2.51	2.58	2.46	2.15	2.05	2.02	1.98	1.97	1.98	1.98	S	1.97	1.98	1.98	2.02	2.07	2.17	2.38	2.39	2.37	1.97	2.58	2.18	
Aug 11	2.46	2.62	2.80	2.99	3.33	3.08	2.81	2.26	2.39	2.35	2.19	2.05	2.04	S	2.03	2.04	2.04	2.04	2.06	2.08	2.15	2.17	2.25	2.61	2.03	3.33	2.38	
Aug 12	2.55	2.47	2.69	2.91	2.88	3.16	2.87	2.46	2.13	2.07	2.03	2.01	S	2.03	2.03	2.03	2.02	2.02	2.03	2.19	2.28	2.42	2.48	2.65	2.01	3.16	2.37	
Aug 13	2.74	2.69	2.91	2.94	3.28	3.04	3.08	2.70	2.53	2.50	2.31	S	2.25	2.12	2.08	2.08	2.07	2.02	2.02	2.06	2.16	2.27	2.32	2.40	2.02	3.28	2.46	
Aug 14	2.41	2.62	2.68	2.75	2.84	2.95	2.96	2.84	C	C	C	C	C	C	2.00	2.00	2.01	2.00	2.00	2.01	2.16	2.24	2.17	2.21	2.00	2.96	2.36	
Aug 15	2.29	2.39	2.47	2.42	2.41	2.40	2.34	2.17	2.11	S	2.05	2.01	2.00	2.00	1.99	1.99	2.02	1.98	2.00	2.01	2.07	2.21	2.32	2.17	1.98	2.47	2.17	
Aug 16	2.08	2.01	2.00	2.03	2.03	2.01	1.99	1.98	S	1.97	1.97	1.95	1.95	1.95	1.95	1.96	1.96	1.98	1.97	1.96	1.96	1.97	1.96	1.96	1.95	2.08	1.98	
Aug 17	1.96	1.96	1.95	1.95	1.95	1.95	1.96	S	1.95	1.95	1.95	1.95	1.95	1.95	1.94	1.94	1.94	1.94	1.94	1.95	2.01	2.12	2.15	2.25	2.30	1.94	2.30	2.00
Aug 18	2.29	2.38	2.53	2.52	2.65	2.49	S	2.09	1.97	1.98	1.97	1.96	1.96	1.96	1.96	1.96	1.97	1.97	1.97	1.97	2.03	2.10	2.14	2.21	2.34	1.96	2.65	2.15
Aug 19	2.37	2.41	2.32	2.34	2.34	S	2.34	2.23	2.08	2.00	2.00	2.00	1.98	1.99	1.97	1.98	1.97	1.98	1.98	1.98	2.03	2.08	2.12	2.20	2.26	1.97	2.41	2.13
Aug 20	2.29	2.39	2.55	2.69	S	3.05	2.81	2.61	2.33	2.05	2.02	2.03	2.03	2.04	2.04	2.03	2.02	2.02	2.04	2.07	2.13	2.12	2.14	2.14	2.02	3.05	2.25	
Aug 21	2.14	2.14	2.12	S	2.26	2.14	2.13	2.15	2.12	2.10	2.04	2.03	2.01	2.00	2.00	2.00	1.99	2.00	2.00	2.00	2.00	2.01	2.01	2.01	1.99	2.26	2.06	
Aug 22	2.00	2.00	S	2.05	2.15	2.32	2.30	2.15	2.21	2.27	2.25	2.17	2.05	2.09	2.01	1.98	1.99	1.99	1.98	1.99	2.02	2.09	2.11	2.27	1.98	2.32	2.11	
Aug 23	2.42	S	2.47	2.48	2.68	2.71	2.79	2.52	2.10	2.10	2.06	2.04	2.04	2.02	2.05	2.06	2.09	2.09	2.07	2.06	2.08	2.12	2.19	2.13	2.02	2.79	2.23	
Aug 24	S	2.11	2.12	2.20	2.38	2.60	2.51	2.44	2.49	2.31	2.14	2.05	2.03	2.04	2.00	1.99	1.98	1.98	1.99	2.05	2.19	2.34	2.35	S	1.98	2.60	2.20	
Aug 25	2.64	2.58	2.57	2.55	2.46	2.39	2.31	2.30	2.25	2.20	2.11	2.03	1.99	1.99	1.98	1.97	1.97	1.98	2.02	2.13	2.20	2.18	S	2.12	1.97	2.64	2.21	
Aug 26	2.14	2.12	2.12	2.12	2.10	2.10	2.04	1.99	2.00	1.99	1.98	1.98	1.98	1.98	1.98	1.98	1.98	1.98	1.99	2.00	2.02	S	2.01	2.01	1.98	2.14	2.03	
Aug 27	2.02	2.02	2.02	2.05	2.07	2.08	2.07	2.04	2.03	2.03	2.02	2.03	2.03	2.05	2.04	2.04	2.03	2.05	2.08	2.11	S	2.15	2.17	2.21	2.02	2.21	2.06	
Aug 28	2.31	2.54	2.72	2.72	2.67	2.50	2.28	2.17	2.06	1.99	1.98	1.99	1.99	1.99	2.00	2.00	2.00	2.01	2.01	S	2.06	2.05	2.07	2.10	1.98	2.72	2.18	
Aug 29	2.16	2.21	2.24	2.30	2.43	2.50	2.48	2.34	2.23	2.13	2.04	2.03	2.04	2.02	2.02	2.02	2.02	2.04	S	2.18	2.27	2.34	2.35	2.41	2.02	2.50	2.21	
Aug 30	2.40	2.55	2.69	2.83	2.94	2.96	2.85	2.96	2.59	2.23	2.11	2.08	2.04	2.04	2.09	2.14	2.15	S	2.17	2.24	2.29	2.32	2.44	2.52	2.04	2.96	2.42	
Aug 31	2.66	2.77	2.72	2.76	2.94	3.03	3.02	2.96	2.68	2.57	2.57	2.39	2.15	2.10	2.08	2.09	S	2.07	2.11	2.17	2.07	2.14	2.18	2.23	2.07	3.03	2.45	
Diurnal Maximum	3.14	2.77	2.91	2.99	3.33	3.41	3.31	2.96	2.68	2.57	2.57	2.39	2.25	2.14	2.15	2.17	2.15	2.12	2.21	2.41	2.51	2.72	2.62	2.65				
Diurnal Average	2.32	2.34	2.43	2.45	2.51	2.55	2.46	2.34	2.22	2.14	2.09	2.05	2.04	2.02	2.02	2.02	2.01	2.02	2.04	2.09	2.14	2.21	2.22	2.26				

C	Calibration	S	Daily Zero/Span	Q	Quality Assurance	C1	Repeat Calibration	S1	Repeat Daily Zero/Span
G	Out for Repair	K	Collection Error	N	Not in Service	O	Operator Error	P	Power Failure
R	Recovery	X	Machine Malfunction	Y	Maintenance	T	Exceeds Temperature Limits	N	Not in Service

Daily Average is shown "-" if minimum data completeness criteria of 75% or 18 hours per day is not met.
 Monthly Average is shown "-" if minimum data completeness criteria of 75% of days per month is not met.

Timeseries Chart of Hourly Instantaneous Maximum for THC - Cold Lake South Station





LAKELAND INDUSTRY & COMMUNITY ASSOCIATION

Cold Lake South Station - August 2019
 Summary of Hourly Instantaneous Maximums

METHANE (CH4) in ppm

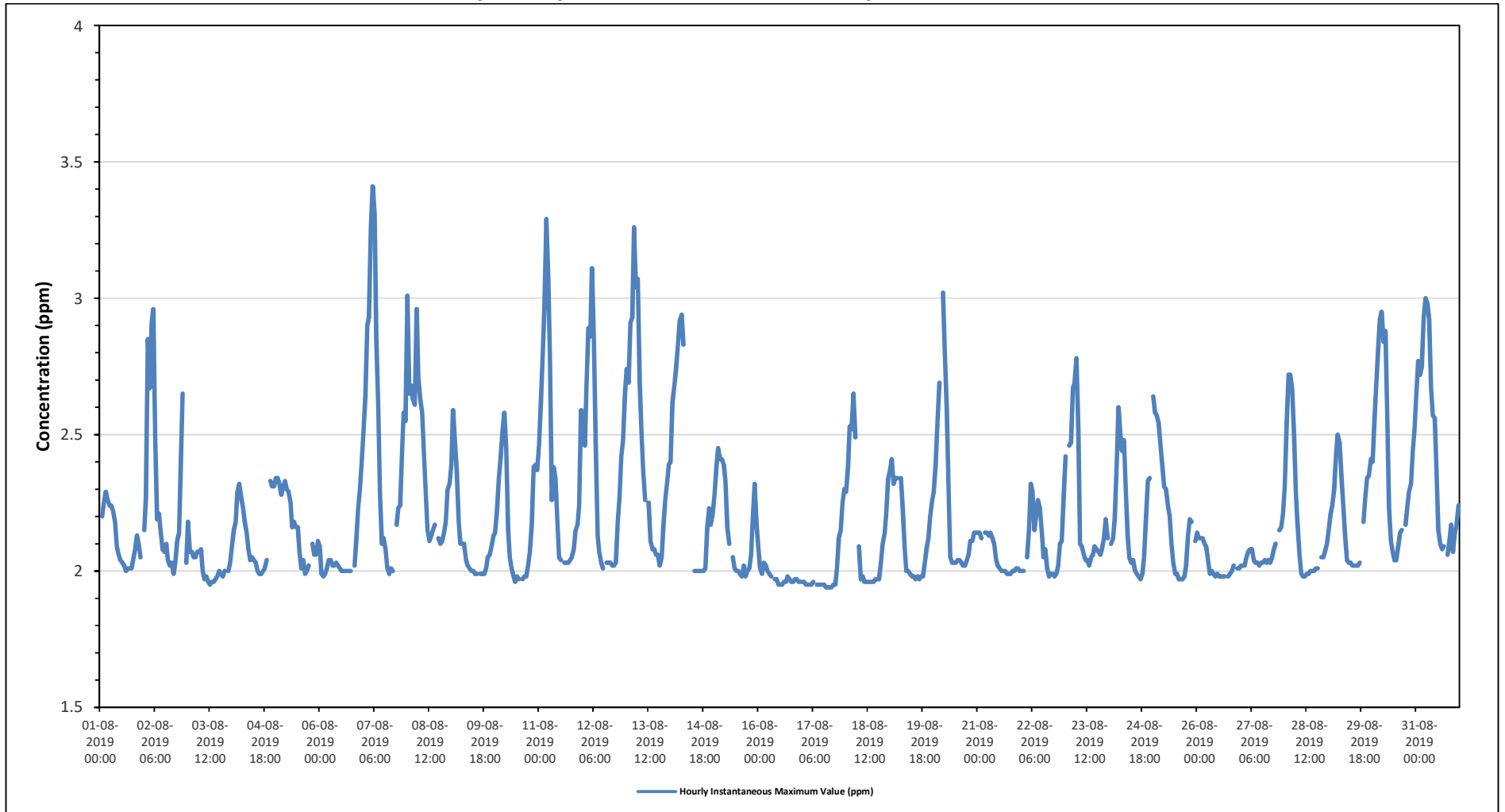
Maximum Hourly Value:	3.41 ppm on August 7 at hour 5	Hours in Service:	744
Maximum Daily Value:	2.49 ppm on August 7	Hours of Data:	706
Minimum Hourly Value:	1.94 ppm on August 17 at hour 13	Hours of Missing Data:	1
Minimum Daily Value:	1.98 ppm on August 16	Hours of Calibration:	37
Monthly Average:	2.20 ppm	Operational Uptime:	99.9

Day	Hourly Period Starting at (MST)																							Daily Minimum	Daily Maximum	Daily Average		
	0	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22				23	
Aug 1	S	2.20	2.25	2.29	2.26	2.24	2.24	2.22	2.18	2.09	2.06	2.04	2.03	2.02	2.00	2.01	2.01	2.01	2.04	2.08	2.13	2.10	2.05	S	2.00	2.29	2.12	
Aug 2	2.15	2.27	2.85	2.67	2.91	2.96	2.49	2.19	2.21	2.15	2.08	2.07	2.10	2.04	2.02	2.03	1.99	2.03	2.11	2.14	2.38	2.65	S	2.03	1.99	2.96	2.28	
Aug 3	2.18	2.07	2.07	2.05	2.05	2.07	2.07	2.08	2.00	1.97	1.98	1.96	1.95	1.96	1.96	1.97	1.98	2.00	1.99	1.98	2.00	S	2.00	2.03	1.95	2.18	2.02	
Aug 4	2.09	2.15	2.18	2.29	2.32	2.27	2.23	2.18	2.14	2.08	2.04	2.05	2.04	2.03	2.00	1.99	1.99	2.00	2.01	2.04	S	2.33	2.31	2.31	1.99	2.33	2.13	
Aug 5	2.34	2.34	2.32	2.28	2.31	2.33	2.30	2.29	2.25	2.16	2.18	2.16	2.16	2.07	2.01	2.04	1.99	2.00	2.02	S	2.10	2.06	2.06	2.11	1.99	2.34	2.17	
Aug 6	2.09	1.99	1.98	1.99	2.01	2.04	2.04	2.02	2.02	2.03	2.02	2.01	2.00	2.00	2.00	2.00	2.00	2.00	2.02	S	2.02	2.11	2.23	2.30	2.40	1.98	2.40	2.06
Aug 7	2.51	2.64	2.90	2.93	3.26	3.41	3.31	2.85	2.61	2.28	2.10	2.12	2.08	2.01	1.99	2.01	2.00	S	2.17	2.23	2.24	2.44	2.58	2.55	1.99	3.41	2.49	
Aug 8	3.01	2.65	2.68	2.63	2.61	2.96	2.71	2.63	2.58	2.43	2.29	2.15	2.11	2.13	2.15	2.17	S	2.12	2.10	2.11	2.14	2.18	2.30	2.32	2.10	3.01	2.40	
Aug 9	2.39	2.59	2.48	2.36	2.18	2.10	2.10	2.10	2.04	2.02	2.01	2.00	1.99	1.99	S	1.99	1.99	1.99	1.99	2.01	2.05	2.06	2.09	2.13	1.99	2.59	2.12	
Aug 10	2.14	2.22	2.34	2.42	2.51	2.58	2.45	2.15	2.05	2.01	1.98	1.96	1.98	1.97	S	1.97	1.98	1.98	2.02	2.07	2.17	2.38	2.39	2.37	1.96	2.58	2.18	
Aug 11	2.46	2.62	2.80	2.97	3.29	3.07	2.79	2.26	2.38	2.34	2.19	2.05	2.04	S	2.03	2.03	2.03	2.04	2.05	2.08	2.15	2.17	2.24	2.59	2.03	3.29	2.38	
Aug 12	2.55	2.46	2.68	2.89	2.86	3.11	2.85	2.46	2.13	2.07	2.03	2.01	S	2.03	2.03	2.02	2.02	2.03	2.18	2.27	2.42	2.48	2.65	2.01	3.11	2.36		
Aug 13	2.74	2.69	2.91	2.93	3.26	3.04	3.07	2.69	2.52	2.37	2.26	S	2.25	2.11	2.08	2.08	2.06	2.06	2.02	2.05	2.16	2.26	2.32	2.39	2.02	3.26	2.45	
Aug 14	2.40	2.62	2.68	2.74	2.83	2.92	2.94	2.83	C	C	C	C	S	2.00	2.00	2.00	2.00	2.00	2.00	2.01	2.16	2.23	2.17	2.21	2.00	2.94	2.35	
Aug 15	2.28	2.38	2.45	2.41	2.41	2.39	2.33	2.16	2.10	S	2.05	2.01	2.00	2.00	1.99	1.98	2.02	1.98	2.00	2.01	2.06	2.20	2.32	2.17	1.98	2.45	2.16	
Aug 16	2.08	2.01	1.99	2.03	2.02	2.00	1.99	1.98	S	1.97	1.97	1.95	1.95	1.95	1.95	1.96	1.96	1.98	1.97	1.96	1.96	1.97	1.96	1.96	1.95	2.08	1.98	
Aug 17	1.96	1.96	1.95	1.95	1.95	1.95	1.96	S	1.95	1.95	1.95	1.95	1.95	1.95	1.94	1.94	1.94	1.94	1.95	1.95	2.01	2.12	2.15	2.25	2.30	1.94	2.30	2.00
Aug 18	2.29	2.38	2.53	2.52	2.65	2.49	S	2.09	1.97	1.98	1.96	1.96	1.96	1.96	1.96	1.96	1.96	1.97	1.97	1.97	2.03	2.10	2.14	2.21	2.34	1.96	2.65	2.15
Aug 19	2.37	2.41	2.32	2.34	2.34	S	2.34	2.22	2.08	2.00	2.00	1.99	1.98	1.98	1.97	1.98	1.97	1.98	1.98	1.98	2.03	2.08	2.12	2.20	2.26	1.97	2.41	2.13
Aug 20	2.29	2.39	2.55	2.69	S	3.02	2.79	2.59	2.32	2.05	2.03	2.03	2.03	2.04	2.04	2.03	2.02	2.02	2.04	2.06	2.11	2.11	2.14	2.14	2.02	3.02	2.24	
Aug 21	2.14	2.14	2.12	S	2.14	2.14	2.13	2.14	2.12	2.10	2.04	2.02	2.01	2.00	2.00	2.00	1.99	1.99	1.99	2.00	2.00	2.01	2.01	2.00	1.99	2.14	2.05	
Aug 22	2.00	2.00	S	2.05	2.15	2.32	2.29	2.15	2.21	2.26	2.23	2.15	2.05	2.08	2.01	1.98	1.99	1.99	1.98	1.99	2.02	2.10	2.11	2.27	1.98	2.32	2.10	
Aug 23	2.42	S	2.46	2.47	2.67	2.69	2.78	2.51	2.10	2.09	2.06	2.04	2.04	2.02	2.05	2.06	2.09	2.08	2.07	2.06	2.08	2.12	2.19	2.12	2.02	2.78	2.23	
Aug 24	S	2.10	2.12	2.19	2.38	2.60	2.50	2.44	2.48	2.30	2.13	2.05	2.03	2.04	2.00	1.99	1.98	1.97	1.99	2.05	2.19	2.33	2.34	S	1.97	2.60	2.19	
Aug 25	2.64	2.58	2.57	2.54	2.46	2.38	2.31	2.30	2.24	2.20	2.10	2.03	1.99	1.99	1.97	1.97	1.97	1.98	2.02	2.13	2.19	2.18	S	2.11	1.97	2.64	2.21	
Aug 26	2.14	2.12	2.12	2.12	2.10	2.09	2.04	1.99	2.00	1.99	1.98	1.98	1.98	1.98	1.98	1.98	1.98	1.98	1.98	1.99	2.00	2.02	S	2.01	2.01	1.98	2.14	2.03
Aug 27	2.02	2.02	2.02	2.05	2.07	2.08	2.08	2.04	2.03	2.03	2.02	2.03	2.03	2.04	2.03	2.04	2.03	2.05	2.08	2.10	S	2.15	2.16	2.21	2.02	2.21	2.06	
Aug 28	2.31	2.54	2.72	2.72	2.67	2.50	2.28	2.17	2.06	1.99	1.98	1.98	1.99	1.99	2.00	2.00	2.00	2.01	2.01	S	2.05	2.05	2.07	2.10	1.98	2.72	2.18	
Aug 29	2.15	2.21	2.24	2.30	2.43	2.50	2.47	2.34	2.23	2.13	2.04	2.03	2.03	2.02	2.02	2.02	2.02	2.03	S	2.18	2.27	2.34	2.35	2.41	2.02	2.50	2.21	
Aug 30	2.40	2.54	2.68	2.81	2.92	2.95	2.84	2.88	2.59	2.23	2.11	2.07	2.04	2.04	2.09	2.14	2.15	S	2.17	2.24	2.29	2.32	2.44	2.52	2.04	2.95	2.41	
Aug 31	2.65	2.77	2.72	2.75	2.93	3.00	2.98	2.92	2.67	2.57	2.56	2.38	2.15	2.10	2.08	2.09	S	2.06	2.11	2.17	2.07	2.14	2.17	2.24	2.06	3.00	2.45	
Diurnal Maximum	3.01	2.77	2.91	2.97	3.29	3.41	3.31	2.92	2.67	2.57	2.56	2.38	2.25	2.13	2.15	2.17	2.15	2.12	2.17	2.24	2.38	2.65	2.58	2.65				
Diurnal Average	2.32	2.34	2.42	2.45	2.50	2.54	2.46	2.33	2.22	2.13	2.08	2.04	2.03	2.02	2.01	2.02	2.01	2.01	2.03	2.07	2.13	2.20	2.21	2.25				

C	Calibration	S	Daily Zero/Span	Q	Quality Assurance	C1	Repeat Calibration	S1	Repeat Daily Zero/Span
G	Out for Repair	K	Collection Error	N	Not in Service	O	Operator Error	P	Power Failure
R	Recovery	X	Machine Malfunction	Y	Maintenance	T	Exceeds Temperature Limits	N	Not in Service

Daily Average is shown "-" if minimum data completeness criteria of 75% or 18 hours per day is not met.
 Monthly Average is shown "-" if minimum data completeness criteria of 75% of days per month is not met.

Timeseries Chart of Hourly Instantaneous Maximum for CH4 - Cold Lake South Station





LAKELAND INDUSTRY & COMMUNITY ASSOCIATION

Cold Lake South Station - August 2019

Summary of Hourly Instantaneous Maximums

NON-METHANE HYDROCARBONS (NMHC) in ppm

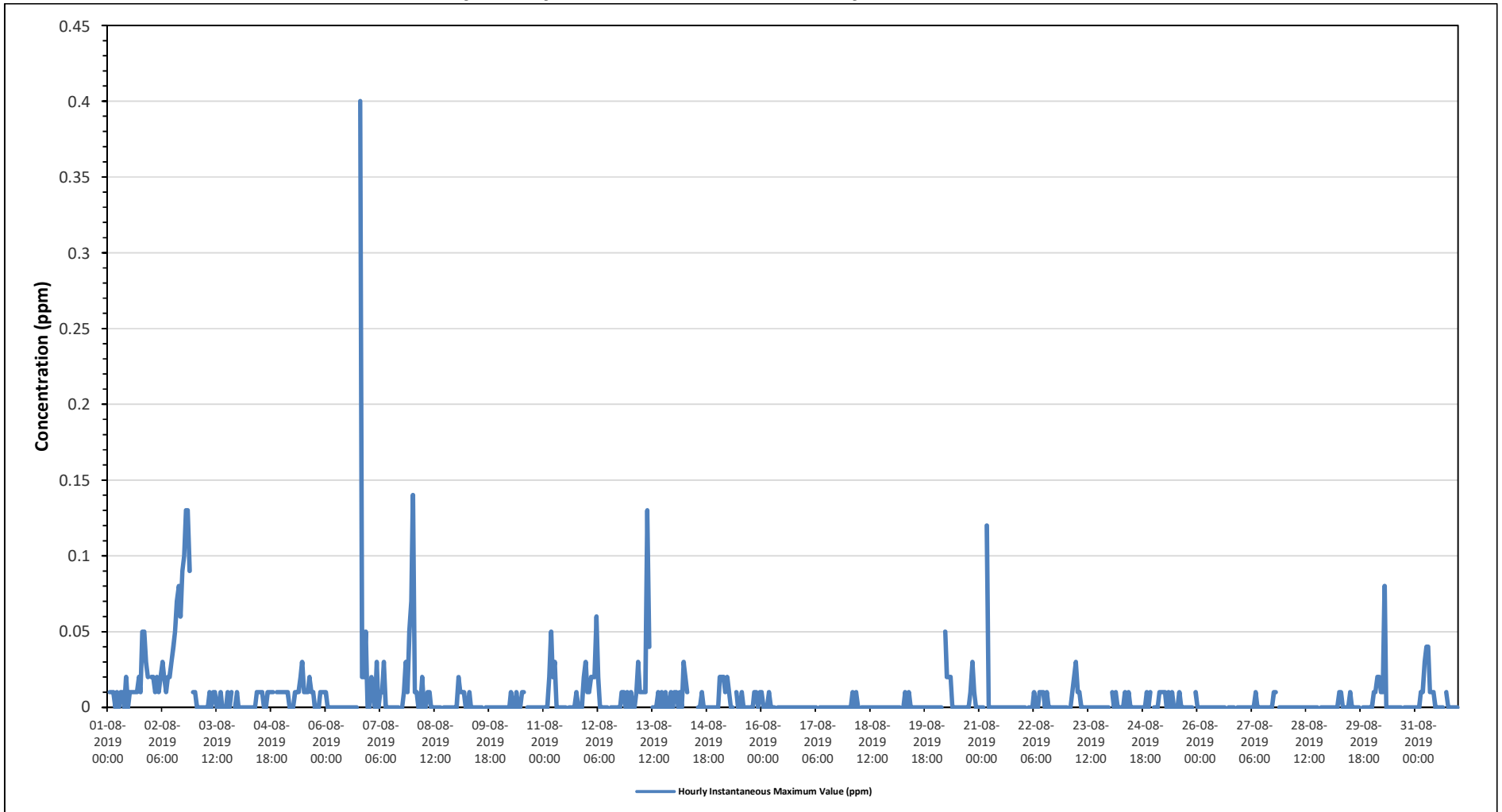
Maximum Hourly Value:	0.40 ppm on August 6 at hour 19	Hours in Service:	744
Maximum Daily Value:	0.05 ppm on August 2	Hours of Data:	706
Minimum Hourly Value:	0.00 ppm on August 1 at hour 4	Hours of Missing Data:	1
Minimum Daily Value:	0.00 ppm on August 17	Hours of Calibration:	37
Monthly Average:	0.01 ppm	Operational Uptime:	99.9

Day	Hourly Period Starting at (MST)																							Daily Minimum	Daily Maximum	Daily Average		
	0	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22				23	
Aug 1	S	0.01	0.01	0.01	0.00	0.01	0.00	0.01	0.01	0.00	0.02	0.00	0.01	0.01	0.01	0.01	0.01	0.02	0.01	0.05	0.05	0.03	0.02	S	0.00	0.05	0.01	
Aug 2	0.02	0.02	0.01	0.02	0.01	0.02	0.03	0.02	0.01	0.02	0.02	0.03	0.04	0.05	0.07	0.08	0.06	0.09	0.10	0.13	0.13	0.09	S	0.01	0.01	0.13	0.05	
Aug 3	0.01	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.01	0.00	0.01	0.01	0.00	0.00	0.01	0.00	0.00	0.00	0.01	0.00	0.01	S	0.00	0.01	0.00	0.01	0.00	
Aug 4	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.01	0.01	0.01	0.01	0.00	0.00	0.01	0.01	0.01	0.01	0.01	S	0.01	0.01	0.01	0.01	0.00	
Aug 5	0.01	0.01	0.01	0.01	0.00	0.00	0.00	0.01	0.01	0.01	0.02	0.03	0.01	0.01	0.01	0.02	0.01	0.01	0.00	S	0.00	0.01	0.01	0.01	0.01	0.00	0.01	
Aug 6	0.01	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	S	0.02	0.02	0.02	0.05	0.00	0.00	0.40	0.02	
Aug 7	0.00	0.02	0.01	0.00	0.03	0.00	0.01	0.01	0.03	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	S	0.00	0.01	0.03	0.01	0.05	0.07	0.00	0.07	0.01	
Aug 8	0.14	0.01	0.01	0.00	0.00	0.02	0.00	0.00	0.01	0.01	0.01	0.00	0.00	0.00	0.00	0.00	S	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.14	0.01
Aug 9	0.00	0.02	0.01	0.01	0.01	0.00	0.01	0.00	0.00	0.00	0.00	0.00	0.00	0.00	S	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.02	0.00
Aug 10	0.00	0.00	0.00	0.00	0.00	0.00	0.01	0.00	0.00	0.00	0.01	0.00	0.00	0.01	S	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.01	0.00
Aug 11	0.00	0.00	0.00	0.02	0.05	0.02	0.03	0.00	0.00	0.00	0.00	0.00	0.00	S	0.00	0.00	0.00	0.00	0.01	0.00	0.00	0.00	0.02	0.03	0.00	0.05	0.01	
Aug 12	0.01	0.01	0.02	0.02	0.02	0.06	0.02	0.00	0.00	0.00	0.00	0.00	S	0.00	0.00	0.00	0.00	0.00	0.00	0.01	0.01	0.00	0.01	0.00	0.00	0.06	0.01	
Aug 13	0.01	0.00	0.00	0.01	0.03	0.01	0.01	0.01	0.01	0.13	0.04	S	0.00	0.00	0.00	0.01	0.00	0.01	0.00	0.01	0.00	0.00	0.01	0.00	0.00	0.13	0.01	
Aug 14	0.01	0.01	0.00	0.01	0.00	0.03	0.02	0.01	C	C	C	C	C	0.00	0.00	0.01	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.03	0.01
Aug 15	0.00	0.02	0.02	0.02	0.01	0.02	0.01	0.00	0.00	S	0.01	0.00	0.00	0.01	0.00	0.00	0.00	0.00	0.00	0.00	0.01	0.01	0.00	0.01	0.00	0.02	0.01	
Aug 16	0.01	0.00	0.00	0.00	0.01	0.00	0.00	0.00	S	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.01	0.00	
Aug 17	0.00	0.00	0.00	0.00	0.00	0.00	0.00	S	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	
Aug 18	0.00	0.00	0.01	0.00	0.01	0.00	S	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.01	0.00	
Aug 19	0.00	0.00	0.00	0.00	0.00	S	0.00	0.01	0.00	0.01	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.01	0.00	
Aug 20	0.00	0.00	0.00	0.00	S	0.05	0.02	0.02	0.02	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.01	0.03	0.01	0.00	0.00	0.00	0.05	0.01	0.01	
Aug 21	0.00	0.00	0.00	S	0.12	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.12	0.01	
Aug 22	0.00	0.00	S	0.00	0.00	0.00	0.01	0.00	0.00	0.01	0.01	0.01	0.00	0.01	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.01	0.00	
Aug 23	0.00	S	0.00	0.01	0.02	0.03	0.01	0.01	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.03	0.00	
Aug 24	S	0.01	0.00	0.01	0.00	0.00	0.00	0.00	0.01	0.00	0.01	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.01	0.00	0.01	S	0.00	0.01	0.00	
Aug 25	0.00	0.00	0.00	0.01	0.01	0.01	0.01	0.01	0.00	0.01	0.00	0.01	0.00	0.00	0.01	0.00	0.00	0.00	0.00	0.00	0.00	0.00	S	0.01	0.00	0.01	0.00	
Aug 26	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	S	0.00	0.00	0.00	0.00	0.00	
Aug 27	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.01	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.01	0.01	S	0.00	0.00	0.00	0.01	0.00	0.00	
Aug 28	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	S	S	0.00	0.00	0.00	0.00	0.00	0.00	
Aug 29	0.00	0.00	0.00	0.00	0.00	0.00	0.01	0.01	0.00	0.00	0.00	0.00	0.01	0.00	0.00	0.00	0.00	0.00	S	0.00	0.00	0.00	0.00	0.00	0.00	0.01	0.00	
Aug 30	0.00	0.01	0.01	0.02	0.02	0.01	0.01	0.08	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	S	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.08	0.01	
Aug 31	0.00	0.00	0.00	0.01	0.01	0.03	0.04	0.04	0.01	0.01	0.01	0.00	0.00	0.00	0.00	S	0.01	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.04	0.01	
Diurnal Maximum	0.14	0.02	0.02	0.02	0.12	0.06	0.04	0.08	0.03	0.13	0.04	0.03	0.04	0.05	0.07	0.08	0.06	0.09	0.10	0.40	0.13	0.09	0.05	0.07	0.00	0.04	0.01	
Diurnal Average	0.01	0.01	0.00	0.01	0.01	0.01	0.01	0.01	0.01	0.01	0.01	0.00	0.00	0.00	0.00	0.00	0.00	0.01	0.01	0.02	0.01	0.01	0.01	0.01	0.00	0.04	0.01	

C	Calibration	S	Daily Zero/Span	Q	Quality Assurance	C1	Repeat Calibration	S1	Repeat Daily Zero/Span
G	Out for Repair	K	Collection Error	N	Not in Service	O	Operator Error	P	Power Failure
R	Recovery	X	Machine Malfunction	Y	Maintenance	T	Exceeds Temperature Limits	N	Not in Service

Daily Average is shown "-" if minimum data completeness criteria of 75% or 18 hours per day is not met.
 Monthly Average is shown "-" if minimum data completeness criteria of 75% of days per month is not met.

Timeseries Chart of Hourly Instantaneous Maximum for NMHC - Cold Lake South Station





LAKELAND INDUSTRY & COMMUNITY ASSOCIATION

Cold Lake South Station - August 2019 Summary of Hourly Instantaneous Maximums

WIND SPEED (WS) in km/h

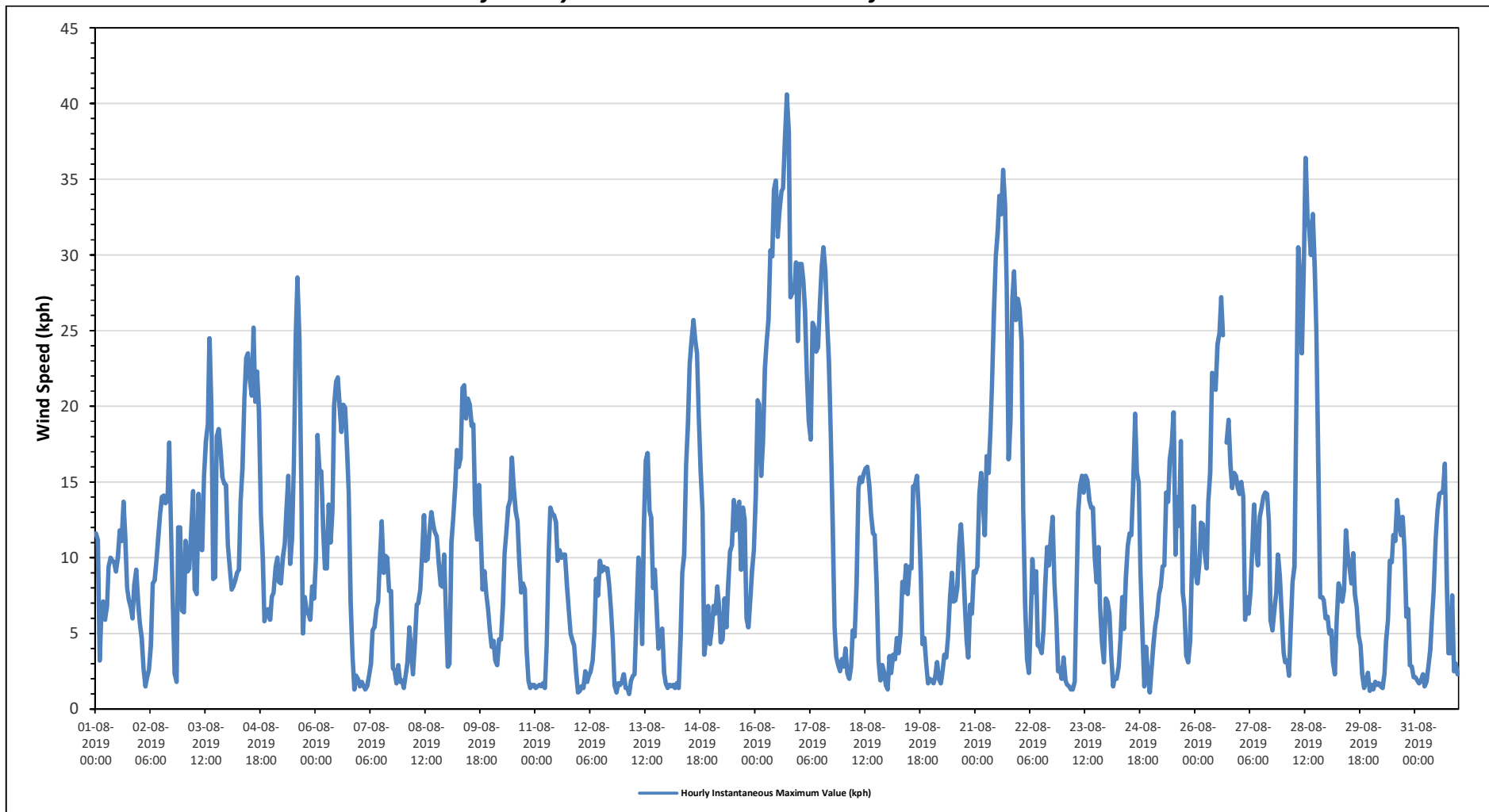
Maximum Hourly Value:	40.6 kph	on August 16 at hour 17	Hours in Service:	744
Maximum Daily Value:	28.1 kph	on August 16	Hours of Data:	743
Minimum Hourly Value:	1.0 kph	on August 13 at hour 3	Hours of Missing Data:	1
Minimum Daily Value:	4.6 kph	on August 12	Hours of Calibration:	0
Monthly Average:	10.6 kph		Operational Uptime:	99.9

Day	Hourly Period Starting at (MST)																							Daily	Daily	Daily	
	0	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	Minimum	Maximum	Average
Aug 1	11.6	11.2	3.2	6.4	7.1	5.9	6.8	9.4	10.0	9.8	9.7	9.1	10.0	11.8	11.1	13.7	11.4	8.0	7.2	6.7	6.0	8.2	9.2	7.0	3.2	13.7	8.8
Aug 2	5.7	4.7	2.6	1.5	2.1	2.6	4.2	8.3	8.5	9.7	11.3	12.9	14.0	14.1	13.6	13.8	17.6	11.9	7.0	2.3	1.8	12.0	12.0	6.5	1.5	17.6	8.4
Aug 3	6.4	11.1	9.1	9.3	11.7	14.4	7.9	7.6	14.2	10.6	10.5	15.4	17.7	18.8	24.5	20.0	8.6	8.7	18.0	18.5	17.2	15.3	14.9	14.8	6.4	24.5	13.6
Aug 4	10.8	9.4	7.9	8.1	8.5	9.0	9.2	13.7	15.9	20.5	23.2	23.5	21.8	20.7	25.2	20.3	22.3	19.6	12.9	10.0	5.8	6.5	6.6	5.9	5.8	25.2	14.1
Aug 5	7.4	7.7	9.4	10.0	8.4	8.3	10.0	10.9	13.0	15.4	9.6	11.3	16.3	24.6	28.5	24.5	15.0	5.0	7.4	6.4	6.3	5.9	8.1	7.3	5.0	28.5	11.5
Aug 6	10.0	18.1	15.7	15.7	11.9	9.3	9.3	13.5	11.0	13.1	20.0	21.6	21.9	19.9	18.3	20.1	19.9	17.1	14.3	7.1	3.5	1.3	2.2	2.0	1.3	21.9	13.2
Aug 7	1.5	1.8	1.5	1.3	1.5	2.2	3.0	5.2	5.4	6.6	7.1	10.0	12.4	9.0	10.1	10.0	7.8	7.8	2.7	2.6	1.7	2.9	1.8	1.9	1.3	12.4	4.9
Aug 8	1.4	2.2	3.1	5.4	3.9	2.3	4.4	6.9	7.0	7.9	10.2	12.8	9.8	9.9	11.7	13.0	12.2	11.7	11.4	9.7	8.2	8.1	10.2	6.3	1.4	13.0	7.9
Aug 9	2.8	3.0	11.0	12.7	14.7	17.1	16.0	16.6	21.2	21.4	19.2	20.5	20.1	18.7	18.8	12.8	11.2	14.8	11.6	7.9	9.1	7.6	6.6	5.2	2.8	21.4	13.4
Aug 10	4.1	4.5	3.2	2.9	4.6	4.6	6.9	10.3	11.7	13.4	13.8	16.6	14.7	13.1	12.4	9.9	7.7	8.3	7.9	4.0	1.9	1.4	1.6	1.6	1.4	16.6	7.5
Aug 11	1.4	1.5	1.6	1.5	1.7	1.4	4.3	10.5	13.3	12.9	12.8	12.3	9.8	10.5	10.0	10.2	10.2	8.2	6.5	5.0	4.5	4.2	2.5	1.1	1.1	13.3	6.6
Aug 12	1.2	1.5	1.4	2.5	1.8	2.2	2.5	3.2	5.1	8.6	7.5	9.8	9.1	9.4	9.2	9.3	8.2	6.6	4.6	1.6	1.1	1.7	1.6	1.8	1.1	9.8	4.6
Aug 13	2.3	1.4	1.4	1.0	1.9	2.2	2.3	6.0	10.0	9.1	4.3	11.9	16.4	16.9	13.1	12.7	8.0	9.2	6.5	4.0	4.9	5.3	2.4	1.7	1.0	16.9	6.5
Aug 14	1.4	1.6	1.5	1.6	1.4	1.7	1.4	4.8	9.0	10.2	16.1	18.9	22.8	24.3	25.7	24.4	23.5	19.3	15.7	13.0	3.6	4.7	6.8	4.3	1.4	25.7	10.7
Aug 15	5.4	6.8	6.3	8.1	6.8	4.4	4.6	7.3	5.4	8.1	10.4	10.8	13.8	11.8	13.1	13.7	9.2	13.3	12.5	6.0	5.4	7.2	9.1	10.5	4.4	13.8	8.8
Aug 16	14.1	20.4	20.1	15.4	17.6	22.5	24.2	25.7	30.3	29.9	34.3	34.9	31.2	32.9	34.2	34.4	37.6	40.6	38.1	27.2	27.5	27.6	29.5	24.3	14.1	40.6	28.1
Aug 17	29.4	29.4	28.3	26.3	21.9	19.0	17.8	25.5	25.2	23.6	23.9	26.8	29.2	30.5	28.9	25.5	23.0	18.1	12.2	5.4	3.5	2.9	2.5	3.3	2.5	30.5	20.1
Aug 18	2.8	4.0	2.4	2.0	2.8	5.2	4.8	8.2	14.6	15.3	15.0	15.6	15.9	16.0	14.8	12.8	11.6	11.5	8.3	3.2	1.9	2.9	2.5	1.6	1.6	16.0	8.2
Aug 19	1.3	3.5	2.4	3.6	3.3	4.7	3.7	5.0	8.4	7.7	9.5	7.6	9.4	9.3	14.7	14.8	15.4	13.0	8.9	4.3	4.7	3.0	1.7	2.0	1.3	15.4	6.7
Aug 20	1.9	1.7	2.2	3.1	2.0	1.7	2.6	3.6	3.4	4.8	7.5	9.0	7.1	7.2	8.1	11.0	12.2	10.2	7.2	4.5	3.4	6.9	6.3	9.1	1.7	12.2	5.7
Aug 21	9.0	9.4	14.2	15.6	13.7	11.5	16.7	15.6	18.4	21.4	26.1	29.9	31.5	33.9	32.7	35.6	33.2	27.9	16.5	19.0	27.1	28.9	25.7	27.1	9.0	35.6	22.5
Aug 22	26.4	24.3	13.2	7.0	3.3	2.4	5.5	9.9	7.7	9.1	4.2	4.1	3.7	5.2	8.1	10.7	9.5	11.4	12.7	8.3	6.2	2.5	2.7	2.0	2.0	26.4	8.3
Aug 23	3.4	1.9	1.6	1.5	1.3	1.3	1.8	7.0	13.0	14.8	15.4	14.3	15.4	15.1	13.8	13.3	13.3	9.9	8.4	10.7	6.7	4.4	3.1	7.3	1.3	15.4	8.3
Aug 24	7.1	6.3	3.5	1.5	2.1	2.0	2.8	4.6	7.4	5.3	8.7	10.8	11.6	11.5	14.9	19.5	15.6	15.0	9.0	5.1	1.5	4.1	2.4	1.1	1.1	19.5	7.2
Aug 25	2.7	4.2	5.5	6.2	7.6	8.1	9.4	9.5	14.3	13.7	16.5	17.5	19.6	10.2	14.0	12.1	17.7	7.7	6.7	3.5	3.1	4.5	9.7	13.4	2.7	19.6	9.9
Aug 26	9.0	8.3	9.6	12.3	12.2	10.3	9.3	13.7	15.6	22.2	22.1	21.1	24.1	24.8	27.2	24.7	Y	17.6	19.1	16.1	14.6	15.6	15.4	14.6	8.3	27.2	16.5
Aug 27	14.2	15.0	14.0	5.9	7.4	6.3	7.8	10.9	13.5	10.8	9.5	12.7	13.3	14.0	14.3	14.2	12.3	5.8	5.2	6.6	7.7	10.2	8.8	6.2	5.2	15.0	10.3
Aug 28	3.7	3.1	3.2	2.2	5.7	8.4	9.4	19.9	30.5	28.5	23.5	28.8	36.4	32.5	31.8	30.0	32.7	29.1	24.8	16.1	7.4	7.4	7.2	6.0	2.2	36.4	17.8
Aug 29	6.1	5.0	5.2	3.1	2.3	5.9	8.3	7.9	7.1	7.9	11.8	10.3	9.4	8.3	10.3	7.6	6.7	4.8	4.2	2.3	1.4	1.9	2.4	1.2	1.2	11.8	5.9
Aug 30	1.6	1.3	1.8	1.6	1.7	1.5	1.4	2.3	4.5	5.9	9.8	9.7	11.5	11.1	13.8	12.2	11.5	12.7	10.6	6.1	6.6	2.9	2.8	2.1	1.3	13.8	6.1
Aug 31	2.1	1.9	1.7	1.9	2.3	1.5	1.8	2.8	3.9	5.9	7.8	11.3	13.1	14.2	14.3	14.3	16.2	8.6	3.7	3.7	7.5	2.5	3.0	2.3	1.5	16.2	6.2
Diurnal Maximum	29.4	29.4	28.3	26.3	21.9	22.5	24.2	25.7	30.5	29.9	34.3	34.9	36.4	33.9	34.2	35.6	37.6	40.6	38.1	27.2	27.5	28.9	29.5	27.1			
Diurnal Average	6.7	7.3	6.7	6.4	6.3	6.4	7.1	9.9	12.2	13.0	13.9	15.5	16.5	16.5	17.5	16.8	15.4	13.3	11.0	8.0	6.8	7.1	7.1	6.5			

C	Calibration	S	Daily Zero/Span	Q	Quality Assurance	C1	Repeat Calibration	S1	Repeat Daily Zero/Span
G	Out for Repair	K	Collection Error	N	Not in Service	O	Operator Error	P	Power Failure
R	Recovery	X	Machine Malfunction	Y	Maintenance	T	Exceeds Temperature Limits	N	Not in Service

Daily Average is shown "-" if minimum data completeness criteria of 75% or 18 hours per day is not met.
 Monthly Average is shown "-" if minimum data completeness criteria of 75% of days per month is not met.

Timeseries Chart of Hourly Instantaneous Maximum for WS - Cold Lake South Station



MASKWA STATION



LAKELAND INDUSTRY & COMMUNITY ASSOCIATION

Maskwa Site - August 2019

Summary of Hourly Instantaneous Maximums

SULPHUR DIOXIDE (SO₂) in ppb

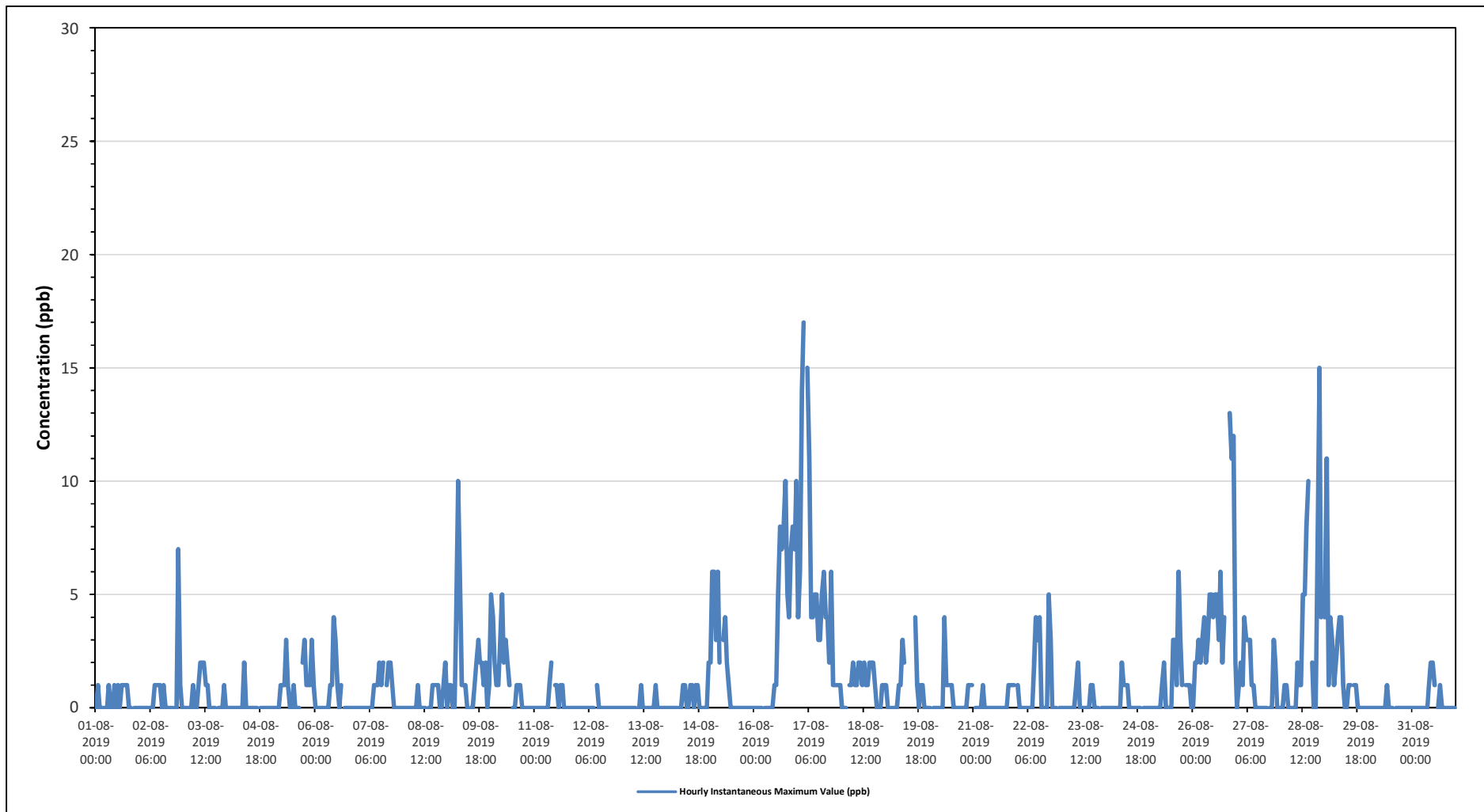
Maximum Hourly Value:	17 ppb on August 17 at hour 3	Hours in Service:	744
Maximum Daily Value:	5.3 ppb on August 17	Hours of Data:	706
Minimum Hourly Value:	0 ppb on August 1 at hour 0	Hours of Missing Data:	1
Minimum Daily Value:	0.0 ppb on August 12	Hours of Calibration:	37
Monthly Average:	1.1 ppb	Operational Uptime:	99.9

Day	Hourly Period Starting at (MST)																							Daily Minimum	Daily Maximum	Daily Average	
	0	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22				23
Aug 1	0	1	0	0	0	0	0	1	0	0	1	0	1	0	1	1	1	1	0	0	S	0	0	0	0	1	0.3
Aug 2	0	0	0	0	0	0	0	0	1	1	1	1	0	1	0	0	0	0	0	0	S	0	7	1	0	0	0.6
Aug 3	0	0	0	0	0	1	0	0	1	2	2	2	1	1	0	0	0	0	0	S	0	0	1	0	0	0	0.5
Aug 4	0	0	0	0	0	0	0	0	0	2	0	0	0	0	0	0	0	0	S	0	0	0	0	0	0	0	0.1
Aug 5	0	0	0	0	0	1	1	1	3	1	0	0	1	0	0	0	S	2	3	1	1	1	3	1	0	0.9	
Aug 6	0	0	0	0	0	0	0	0	1	1	4	3	1	0	1	S	0	0	0	0	0	0	0	0	0	0	0.5
Aug 7	0	0	0	0	0	0	0	0	1	1	1	2	1	2	S	1	2	2	1	0	0	0	0	0	0	0	0.6
Aug 8	0	0	0	0	0	0	0	0	1	0	0	0	0	S	0	0	1	1	1	1	0	0	1	2	0	0.3	
Aug 9	0	1	1	0	0	4	10	6	1	1	1	0	S	0	0	1	2	3	2	2	1	2	0	1	0	1.7	
Aug 10	5	4	2	1	1	3	5	2	3	2	1	S	0	0	1	1	1	0	0	0	0	0	0	0	0	1.4	
Aug 11	0	0	0	0	0	0	0	0	1	2	S	1	1	0	1	1	0	0	0	0	0	0	0	0	0	0.3	
Aug 12	0	0	0	0	0	0	0	0	0	S	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0.0	
Aug 13	0	0	0	0	0	0	0	0	S	0	1	0	0	0	0	0	0	0	0	1	0	0	0	0	0	0.1	
Aug 14	0	0	0	0	0	0	0	S	0	1	1	0	0	1	1	0	1	1	0	0	0	0	0	2	0	0.3	
Aug 15	2	6	6	3	6	2	S	3	4	2	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1.5	
Aug 16	0	0	0	0	0	S	0	0	0	0	0	1	1	5	8	7	8	10	5	4	7	8	7	10	0	3.5	
Aug 17	4	6	14	17	S	15	11	4	4	5	5	3	3	5	6	4	4	2	6	1	1	1	1	1	1	5.3	
Aug 18	0	0	0	S	1	1	2	1	1	2	2	1	2	1	1	2	2	2	1	0	0	0	1	1	0	1.0	
Aug 19	1	0	S	0	0	0	0	1	1	3	2	C	C	C	C	C	4	1	0	1	1	0	0	0	0	0.8	
Aug 20	0	S	0	0	0	0	0	0	4	1	1	1	1	0	0	0	0	0	0	0	0	1	1	1	0	0.5	
Aug 21	S	0	0	0	0	1	0	0	0	0	0	0	0	0	0	0	0	0	0	1	1	1	1	1	0	0.2	
Aug 22	1	0	0	0	0	0	0	0	0	2	4	3	4	0	0	0	0	0	5	3	0	0	0	S	0	1.0	
Aug 23	0	0	0	0	0	0	0	0	1	2	0	0	0	0	0	0	1	1	0	0	0	S	0	0	0	0.2	
Aug 24	0	0	0	0	0	0	0	0	0	2	1	1	1	0	0	0	0	0	0	0	S	0	0	0	0	0.2	
Aug 25	0	0	0	0	0	0	0	1	2	0	0	0	0	3	3	1	6	3	1	S	1	1	1	0	0	1.0	
Aug 26	0	2	2	3	2	3	4	2	3	5	5	4	5	5	3	6	2	4	S	Y	13	11	12	2	0	4.5	
Aug 27	0	1	2	1	4	3	3	3	1	1	0	0	0	0	0	0	0	S	0	0	3	2	0	0	0	1.0	
Aug 28	0	0	1	1	0	0	0	0	0	2	1	1	5	5	8	10	S	2	0	0	0	7	15	4	5	2.9	
Aug 29	4	11	1	4	3	1	2	3	4	4	1	0	0	1	1	S	1	1	0	0	0	0	0	0	0	1.8	
Aug 30	0	0	0	0	0	0	0	0	0	0	1	0	0	0	0	S	0	0	0	0	0	0	0	0	0	0.0	
Aug 31	0	0	0	0	0	0	0	0	0	1	2	2	1	S	0	1	0	0	0	0	0	0	0	0	0	0.3	
Diurnal Maximum	5	11	14	17	6	15	11	6	4	5	5	4	5	5	8	10	8	10	6	4	13	15	12	10			
Diurnal Average	0.6	1.1	1.0	1.0	0.6	1.2	1.3	0.9	1.3	1.5	1.3	0.9	1.0	1.1	1.3	1.3	1.2	1.4	0.8	0.4	1.2	1.7	1.1	0.9			

C	Calibration	S	Daily Zero/Span	Q	Quality Assurance	C1	Repeat Calibration	S1	Repeat Daily Zero/Span
G	Out for Repair	K	Collection Error	N	Not in Service	O	Operator Error	P	Power Failure
R	Recovery	X	Machine Malfunction	Y	Maintenance	T	Exceeds Temperature Limits	N	Not in Service

Daily Average is shown "-" if minimum data completeness criteria of 75% or 18 hours per day is not met.
 Monthly Average is shown "-" if minimum data completeness criteria of 75% of days per month is not met.

Timeseries Chart of Hourly Instantaneous Maximum for SO2 - Maskwa Site





LAKELAND INDUSTRY & COMMUNITY ASSOCIATION

Maskwa Site - August 2019

Summary of Hourly Instantaneous Maximums

HYDROGEN SULPHIDE (H₂S) in ppb

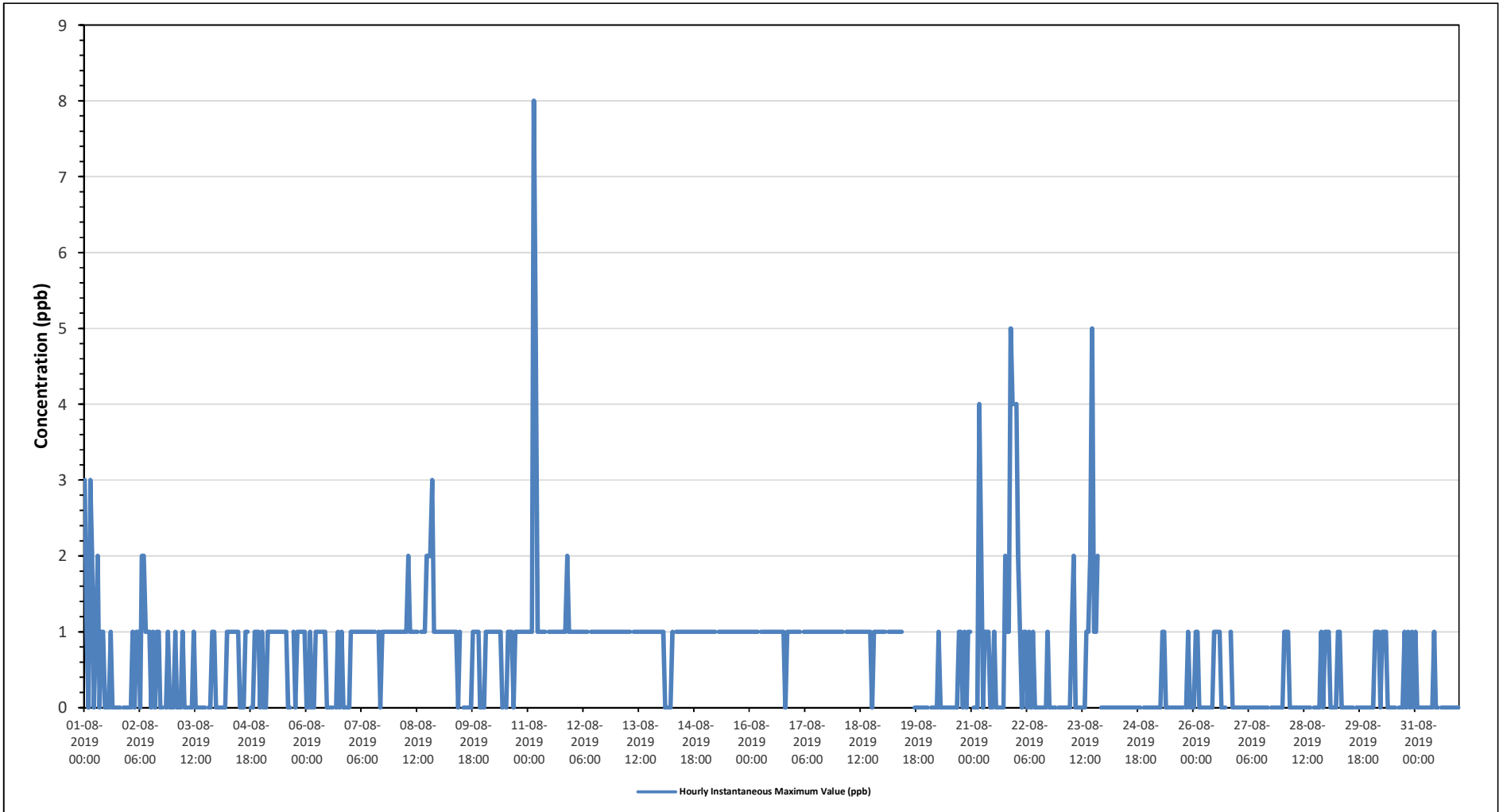
Maximum Hourly Value:	8 ppb on August 11 at hour 3	Hours in Service:	744
Maximum Daily Value:	1.5 ppb on August 11	Hours of Data:	705
Minimum Hourly Value:	0 ppb on August 1 at hour 2	Hours of Missing Data:	1
Minimum Daily Value:	0.0 ppb on August 24	Hours of Calibration:	38
Monthly Average:	0.6 ppb	Operational Uptime:	99.9

Day	Hourly Period Starting at (MST)																							Daily Minimum	Daily Maximum	Daily Average		
	0	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22				23	
Aug 1	3	1	0	3	2	0	1	2	0	1	1	0	0	0	1	0	0	0	0	0	0	S	0	0	0	0	3	0.7
Aug 2	0	0	1	0	1	1	0	2	2	1	1	1	0	1	0	1	0	0	0	0	S	0	1	0	0	0	2	0.6
Aug 3	0	1	0	0	0	1	0	0	0	0	0	1	0	0	0	0	0	0	0	S	0	0	1	1	0	0	1	0.2
Aug 4	0	0	0	0	0	1	1	1	1	1	1	1	0	0	0	1	1	S	0	0	0	1	1	1	0	0	1	0.5
Aug 5	1	0	0	1	1	1	1	1	1	1	1	1	1	0	0	S	1	0	1	1	1	1	1	1	1	0	1	0.8
Aug 6	0	0	1	0	0	1	1	1	1	1	1	0	0	0	S	0	1	0	1	0	1	0	0	0	0	0	1	0.4
Aug 7	1	1	1	1	1	1	1	1	1	1	1	1	1	S	1	0	1	1	1	1	1	1	1	1	1	0	1	1.0
Aug 8	1	1	1	1	1	1	1	2	1	1	1	1	S	1	1	1	2	2	2	3	1	1	1	1	1	1	3	1.3
Aug 9	1	1	1	1	1	1	1	1	1	0	1	S	0	0	0	0	0	1	1	1	1	1	0	0	0	1	0.7	
Aug 10	0	1	1	1	1	1	1	1	1	1	0	S	0	1	1	0	0	1	1	1	1	1	1	1	1	0	1	0.8
Aug 11	1	1	1	8	5	1	1	1	1	1	S	1	1	1	1	1	1	1	1	1	1	1	2	1	1	1	8	1.5
Aug 12	1	1	1	1	1	1	1	1	1	S	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1.0
Aug 13	1	1	1	1	1	1	1	1	S	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1.0
Aug 14	1	1	0	0	0	0	1	S	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	0	1	0.8
Aug 15	1	1	1	1	1	1	S	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1.0
Aug 16	1	1	1	1	1	S	1	1	1	1	1	1	1	1	1	1	1	1	1	0	1	1	1	1	1	0	1	1.0
Aug 17	1	1	1	1	S	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1.0
Aug 18	1	1	1	S	1	1	1	1	1	1	1	1	1	1	1	1	1	1	0	1	1	1	1	1	1	0	1	1.0
Aug 19	1	1	S	1	1	1	1	1	1	1	1	C	C	C	C	C	C	0	0	0	0	0	0	0	0	0	1	-
Aug 20	0	S	0	0	0	0	1	0	0	0	0	0	0	0	0	0	0	1	1	0	1	0	0	0	0	0	1	0.3
Aug 21	S	0	0	0	4	2	0	1	1	0	0	1	0	0	0	0	0	0	2	1	1	5	4	S	0	0	5	1.0
Aug 22	4	2	1	0	1	1	0	1	0	1	0	0	0	0	0	0	0	1	0	0	0	0	0	S	0	0	4	0.5
Aug 23	0	0	0	0	0	0	1	2	0	0	0	0	0	0	1	1	2	5	1	1	2	S	0	0	0	0	5	0.7
Aug 24	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	S	0	0	0	0	0	0	0.0
Aug 25	0	0	0	0	0	0	0	1	1	0	0	0	0	0	0	0	0	0	0	0	S	0	1	0	0	0	0	0.1
Aug 26	0	1	1	0	0	0	0	0	0	0	0	1	1	1	0	0	0	0	0	S	Y	1	0	0	0	0	0	0.3
Aug 27	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	S	0	0	0	0	0	0	0	0.0
Aug 28	0	1	1	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	S	0	0	0	0	0	0	1	0.2
Aug 29	1	1	0	0	0	0	1	1	0	0	0	0	0	0	0	0	0	0	S	0	0	0	0	0	0	0	0	0.2
Aug 30	0	0	1	1	1	0	1	1	0	0	0	0	0	0	0	S	0	0	0	0	0	1	0	1	0	0	1	0.4
Aug 31	1	0	0	0	0	0	0	0	0	0	0	0	S	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0.1
Diurnal Maximum	4	2	1	8	5	2	1	2	2	1	1	1	1	1	1	1	2	5	2	2	3	5	4	1				
Diurnal Average	0.7	0.7	0.6	0.8	0.8	0.6	0.7	0.9	0.7	0.6	0.5	0.6	0.4	0.5	0.5	0.5	0.5	0.5	0.7	0.6	0.6	0.8	0.8	0.7	0.5			

C	Calibration	S	Daily Zero/Span	Q	Quality Assurance	C1	Repeat Calibration	S1	Repeat Daily Zero/Span
G	Out for Repair	K	Collection Error	N	Not in Service	O	Operator Error	P	Power Failure
R	Recovery	X	Machine Malfunction	Y	Maintenance	T	Exceeds Temperature Limits	N	Not in Service

Daily Average is shown "-" if minimum data completeness criteria of 75% or 18 hours per day is not met.
 Monthly Average is shown "-" if minimum data completeness criteria of 75% of days per month is not met.

Timeseries Chart of Hourly Instantaneous Maximum for H2S - Maskwa Site





LAKELAND INDUSTRY & COMMUNITY ASSOCIATION

Maskwa Site - August 2019

Summary of Hourly Instantaneous Maximums

OXIDES OF NITROGEN (NOx) in ppb

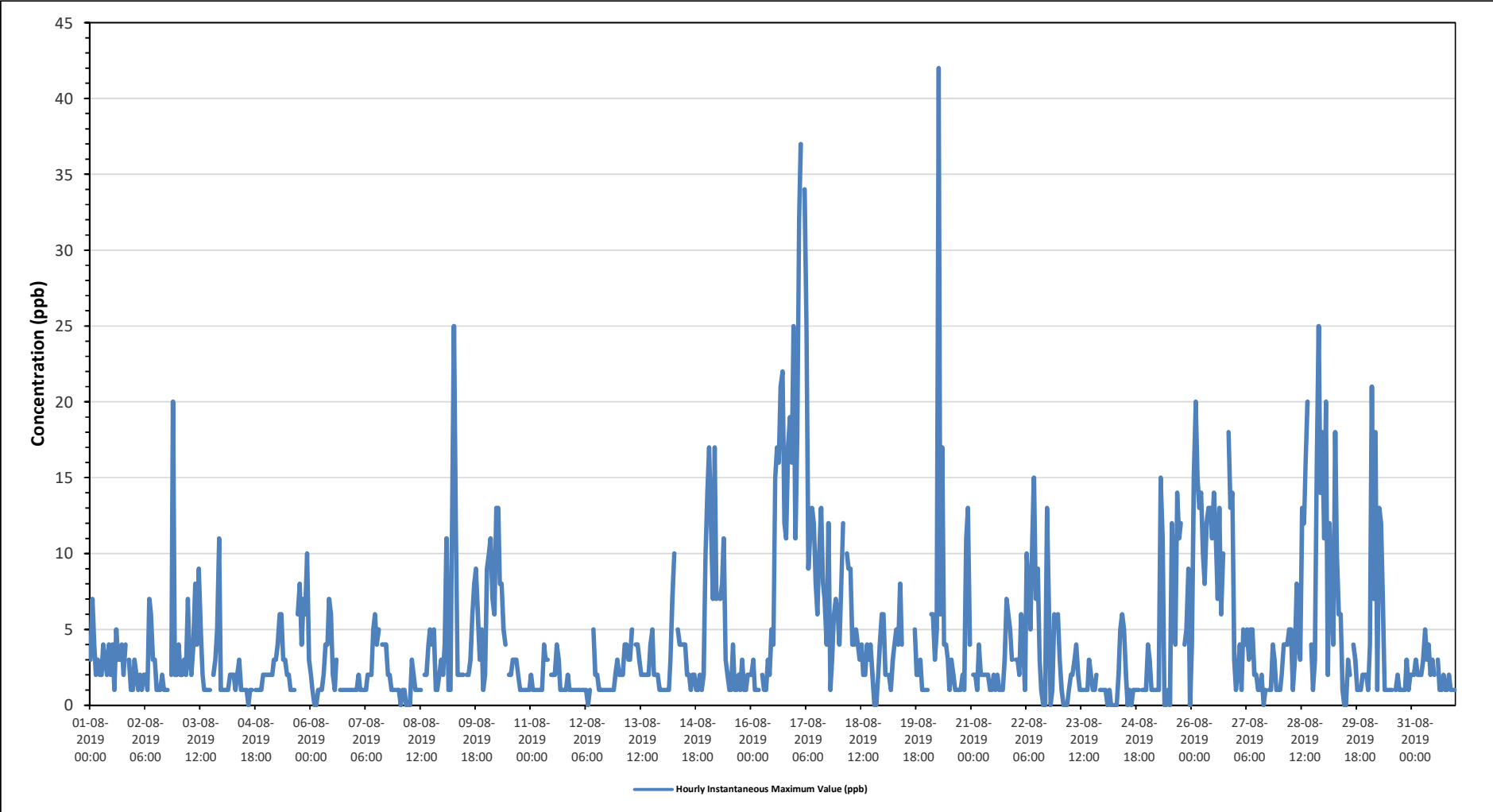
Maximum Hourly Value:	42 ppb	on August 20 at hour 6	Hours in Service:	744
Maximum Daily Value:	12.7 ppb	on August 17	Hours of Data:	705
Minimum Hourly Value:	0 ppb	on August 4 at hour 14	Hours of Missing Data:	1
Minimum Daily Value:	1.3 ppb	on August 4	Hours of Calibration:	38
Monthly Average:	4.2 ppb		Operational Uptime:	99.9

Day	Hourly Period Starting at (MST)																							Daily Minimum	Daily Maximum	Daily Average		
	0	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22				23	
Aug 1	3	7	4	2	3	2	2	4	3	2	4	2	4	1	5	3	3	4	2	4	S	3	1	1	1	7	3.0	
Aug 2	3	2	1	2	1	2	2	1	7	6	3	3	1	1	1	2	1	1	1	1	S	2	20	2	2	1	20	2.9
Aug 3	4	2	2	3	2	7	3	2	4	8	4	9	5	2	1	1	1	1	S	2	3	5	11	1	1	11	3.6	
Aug 4	1	1	1	1	2	2	2	1	2	3	1	1	1	1	0	1	1	S	1	1	1	1	2	2	0	3	1.3	
Aug 5	2	2	2	2	3	3	4	6	6	3	3	2	2	1	1	S	6	8	4	7	6	10	3	1	10	3.8		
Aug 6	2	1	0	0	1	1	1	2	4	4	7	6	2	1	3	S	1	1	1	1	1	1	1	1	0	7	1.9	
Aug 7	1	1	2	1	1	1	1	2	2	2	5	6	4	5	S	4	4	4	2	2	1	1	1	1	1	6	2.3	
Aug 8	1	0	1	1	0	0	0	3	2	1	1	1	1	S	2	2	4	5	4	5	1	1	2	3	0	5	1.8	
Aug 9	2	4	11	1	1	12	25	12	2	2	2	S	2	2	3	6	8	9	6	3	5	1	2	1	25	5.3		
Aug 10	9	10	11	7	6	13	13	8	8	5	4	S	2	2	3	3	3	2	1	1	1	1	1	1	1	13	5.0	
Aug 11	2	1	1	1	1	1	1	4	3	3	S	2	2	2	4	3	1	1	1	1	2	1	1	1	4	1.7		
Aug 12	1	1	1	1	1	1	1	0	1	S	5	2	2	1	1	1	1	1	1	1	1	1	2	3	0	5	1.3	
Aug 13	2	2	2	4	4	3	3	5	S	4	4	3	2	2	2	2	4	5	2	2	2	1	1	1	1	5	2.7	
Aug 14	1	1	1	1	3	7	10	S	5	4	4	4	4	2	2	1	2	2	1	1	2	1	2	10	1	10	3.1	
Aug 15	14	17	12	7	17	7	S	7	8	11	3	2	1	1	4	1	1	2	1	3	1	1	2	2	1	17	5.4	
Aug 16	2	3	1	1	1	S	2	1	1	3	2	5	4	15	17	16	21	22	12	11	17	19	16	25	1	25	9.4	
Aug 17	11	18	32	37	S	34	25	9	11	13	12	8	6	10	13	8	7	4	12	1	3	6	7	6	1	37	12.7	
Aug 18	4	8	12	S	10	9	9	4	4	5	4	3	4	2	2	4	3	4	2	0	0	2	4	6	0	12	4.6	
Aug 19	6	2	S	2	1	3	4	5	4	8	4	C	C	C	C	C	C	5	2	2	3	1	1	1	1	8	-	
Aug 20	1	S	6	6	3	5	42	6	17	4	4	3	1	3	2	1	1	1	1	2	1	11	13	4	1	42	6.0	
Aug 21	S	2	2	1	4	2	2	2	2	2	1	1	2	1	2	1	1	1	3	7	6	5	3	S	1	7	2.4	
Aug 22	3	3	2	6	4	1	10	8	5	11	15	7	9	3	1	0	0	13	7	0	1	6	S	6	0	15	5.3	
Aug 23	3	1	0	0	0	1	2	2	3	4	2	1	1	1	1	1	3	2	1	1	2	S	1	1	0	4	1.5	
Aug 24	1	1	0	1	0	0	0	0	2	5	6	5	2	0	1	0	1	1	1	1	S	1	1	1	0	6	1.3	
Aug 25	4	3	1	1	1	1	1	15	11	0	0	1	0	12	9	4	14	11	12	S	4	5	9	0	0	15	5.2	
Aug 26	4	15	20	15	13	14	10	8	12	13	13	11	14	11	7	13	6	10	S	Y	18	13	14	3	3	20	11.7	
Aug 27	1	2	4	1	5	4	5	3	5	5	2	2	1	1	2	0	1	S	1	1	4	3	1	1	0	5	2.4	
Aug 28	1	2	4	4	4	5	5	1	3	8	4	3	13	12	16	20	S	4	1	3	16	25	14	18	1	25	8.1	
Aug 29	11	20	2	12	7	4	18	10	6	6	1	0	0	3	2	S	4	3	1	1	1	2	2	2	0	20	5.1	
Aug 30	1	4	21	7	18	1	13	12	7	1	1	1	1	S	1	2	1	1	1	1	1	3	1	2	1	21	4.4	
Aug 31	2	2	3	2	2	2	3	5	3	4	2	3	2	S	3	1	1	2	1	1	2	1	1	1	1	5	2.1	
Diurnal Maximum	14	20	32	37	18	34	42	15	17	13	15	11	14	15	17	20	21	22	12	11	18	25	16	25				
Diurnal Average	3.4	4.6	5.4	4.3	4.0	4.9	7.3	4.9	5.1	5.0	4.1	3.4	3.2	3.5	3.9	3.5	3.4	4.3	3.3	2.4	3.7	5.1	4.3	3.7				

C	Calibration	S	Daily Zero/Span	Q	Quality Assurance	C1	Repeat Calibration	S1	Repeat Daily Zero/Span
G	Out for Repair	K	Collection Error	N	Not in Service	O	Operator Error	P	Power Failure
R	Recovery	X	Machine Malfunction	Y	Maintenance	T	Exceeds Temperature Limits	N	Not in Service

Daily Average is shown "-" if minimum data completeness criteria of 75% or 18 hours per day is not met.
 Monthly Average is shown "-" if minimum data completeness criteria of 75% of days per month is not met.

Timeseries Chart of Hourly Instantaneous Maximum for NOx - Maskwa Site





LAKELAND INDUSTRY & COMMUNITY ASSOCIATION

Maskwa Site - August 2019

Summary of Hourly Instantaneous Maximums

NITRIC OXIDE (NO) in ppb

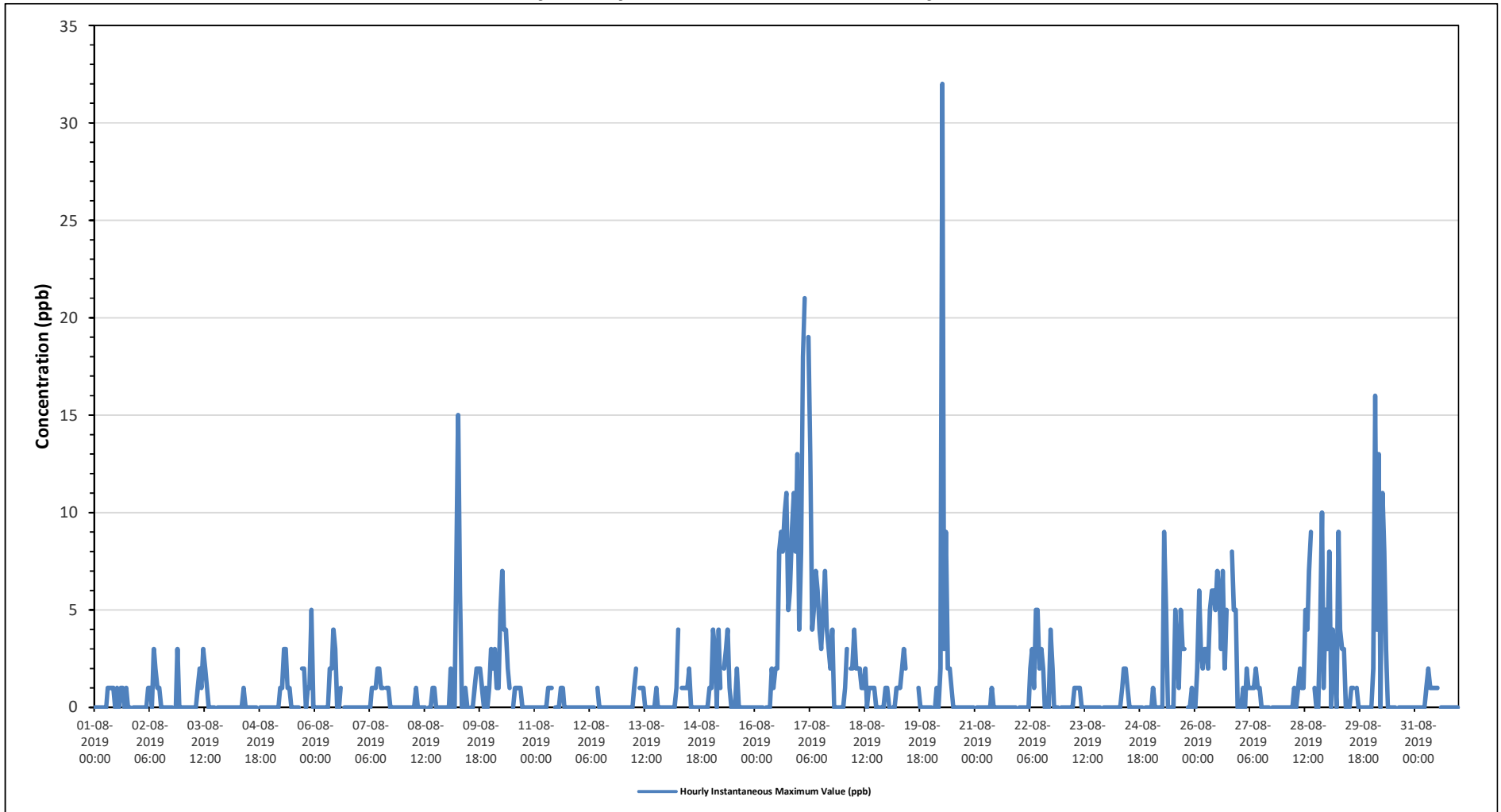
Maximum Hourly Value:	32 ppb on August 20 at hour 6	Hours in Service:	744
Maximum Daily Value:	6.0 ppb on August 17	Hours of Data:	705
Minimum Hourly Value:	0 ppb on August 1 at hour 0	Hours of Missing Data:	1
Minimum Daily Value:	0.0 ppb on August 4	Hours of Calibration:	38
Monthly Average:	1.2 ppb	Operational Uptime:	99.9

Day	Hourly Period Starting at (MST)																							Daily Minimum	Daily Maximum	Daily Average	
	0	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22				23
Aug 1	0	0	0	0	0	0	0	1	1	1	1	0	1	0	1	1	0	1	0	0	S	0	0	0	0	1	0.3
Aug 2	0	0	0	0	0	1	1	0	3	2	1	1	0	0	0	0	0	0	0	S	0	3	0	0	0	3	0.5
Aug 3	0	0	0	0	0	0	0	0	1	2	1	3	2	1	0	0	0	0	S	0	0	0	0	0	0	3	0.4
Aug 4	0	0	0	0	0	0	0	0	0	1	0	0	0	0	0	0	0	S	0	0	0	0	0	0	0	1	0.0
Aug 5	0	0	0	0	0	1	1	3	3	1	1	0	0	0	0	0	S	2	2	0	1	1	5	0	5	0.9	
Aug 6	0	0	0	0	0	0	0	0	2	2	4	3	0	0	1	S	0	0	0	0	0	0	0	0	0	4	0.5
Aug 7	0	0	0	0	0	0	0	1	1	1	2	2	1	1	S	1	1	0	0	0	0	0	0	0	0	2	0.5
Aug 8	0	0	0	0	0	0	0	1	0	0	0	0	0	S	0	0	1	1	0	0	0	0	0	0	0	1	0.1
Aug 9	0	0	2	0	7	15	6	0	0	1	0	S	0	0	1	2	2	2	1	0	1	0	1	0	1	15	1.8
Aug 10	3	2	3	1	1	5	7	4	4	2	1	S	0	1	1	1	1	0	0	0	0	0	0	0	0	7	1.6
Aug 11	0	0	0	0	0	0	0	1	1	1	S	0	0	0	1	1	0	0	0	0	0	0	0	0	0	1	0.2
Aug 12	0	0	0	0	0	0	0	0	0	S	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1	0.0
Aug 13	0	0	0	0	0	1	2	S	1	1	1	0	0	0	0	0	0	0	1	0	0	0	0	0	0	2	0.3
Aug 14	0	0	0	0	0	1	4	S	1	1	1	1	2	0	0	0	0	0	0	0	0	0	0	0	1	4	0.5
Aug 15	1	4	3	0	4	1	S	2	3	4	1	0	0	0	2	0	0	0	0	0	0	0	0	0	0	4	1.1
Aug 16	0	0	0	0	0	S	0	0	0	2	1	2	2	8	9	8	10	11	5	6	9	11	8	13	0	13	4.6
Aug 17	4	8	18	21	S	19	13	4	5	7	6	4	3	5	7	4	3	2	4	0	0	0	0	0	0	21	6.0
Aug 18	0	1	3	S	2	2	4	2	2	2	1	1	2	0	1	1	1	1	0	0	0	0	0	1	0	4	1.2
Aug 19	1	0	S	0	0	1	1	1	2	3	2	C	C	C	C	C	C	1	0	0	0	0	0	0	0	3	-
Aug 20	0	S	0	1	0	2	32	3	9	2	2	1	0	0	0	0	0	0	0	0	0	0	0	0	0	32	2.3
Aug 21	S	0	0	0	0	0	0	0	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1	0.0
Aug 22	0	0	0	0	0	0	2	3	1	5	5	2	3	2	0	0	0	4	2	0	0	0	0	S	0	5	1.3
Aug 23	0	0	0	0	0	0	1	1	1	1	0	0	0	0	0	0	0	0	0	0	0	S	0	0	0	1	0.2
Aug 24	0	0	0	0	0	0	0	0	1	2	2	1	0	0	0	0	0	0	0	0	S	0	0	0	0	2	0.3
Aug 25	0	1	0	0	0	0	0	9	5	0	0	0	0	5	3	1	5	3	3	S	0	0	1	0	0	9	1.6
Aug 26	0	2	6	3	2	3	3	2	5	6	6	5	7	6	3	7	2	5	S	Y	8	5	5	0	0	8	4.1
Aug 27	0	0	1	0	2	1	1	1	1	2	1	1	0	0	0	0	0	S	0	0	0	0	0	0	0	2	0.5
Aug 28	0	0	0	0	0	1	0	1	2	1	1	5	4	7	9	S	1	0	0	0	4	10	1	5	0	10	2.3
Aug 29	3	8	0	4	2	0	9	4	3	3	0	0	0	1	1	S	1	0	0	0	0	0	0	0	0	9	1.7
Aug 30	0	2	16	4	13	0	11	8	3	0	0	0	0	0	S	0	0	0	0	0	0	0	0	0	0	16	2.5
Aug 31	0	0	0	0	0	0	1	2	1	1	1	1	S	0	0	0	0	0	0	0	0	0	0	0	0	2	0.3
Diurnal Maximum	4	8	18	21	13	19	32	9	9	7	6	5	7	8	9	9	10	11	5	6	9	11	8	13			
Diurnal Average	0.4	0.9	1.7	1.1	0.9	1.5	3.6	2.0	2.0	1.9	1.5	1.0	1.0	1.2	1.3	1.3	1.0	1.2	0.7	0.3	0.8	1.0	0.7	0.7			

C	Calibration	S	Daily Zero/Span	Q	Quality Assurance	C1	Repeat Calibration	S1	Repeat Daily Zero/Span
G	Out for Repair	K	Collection Error	N	Not in Service	O	Operator Error	P	Power Failure
R	Recovery	X	Machine Malfunction	Y	Maintenance	T	Exceeds Temperature Limits	N	Not in Service

Daily Average is shown "-" if minimum data completeness criteria of 75% or 18 hours per day is not met.
 Monthly Average is shown "-" if minimum data completeness criteria of 75% of days per month is not met.

Timeseries Chart of Hourly Instantaneous Maximum for NO - Maskwa Site





LAKELAND INDUSTRY & COMMUNITY ASSOCIATION

Maskwa Site - August 2019

Summary of Hourly Instantaneous Maximums

NITROGEN DIOXIDE (NO₂) in ppb

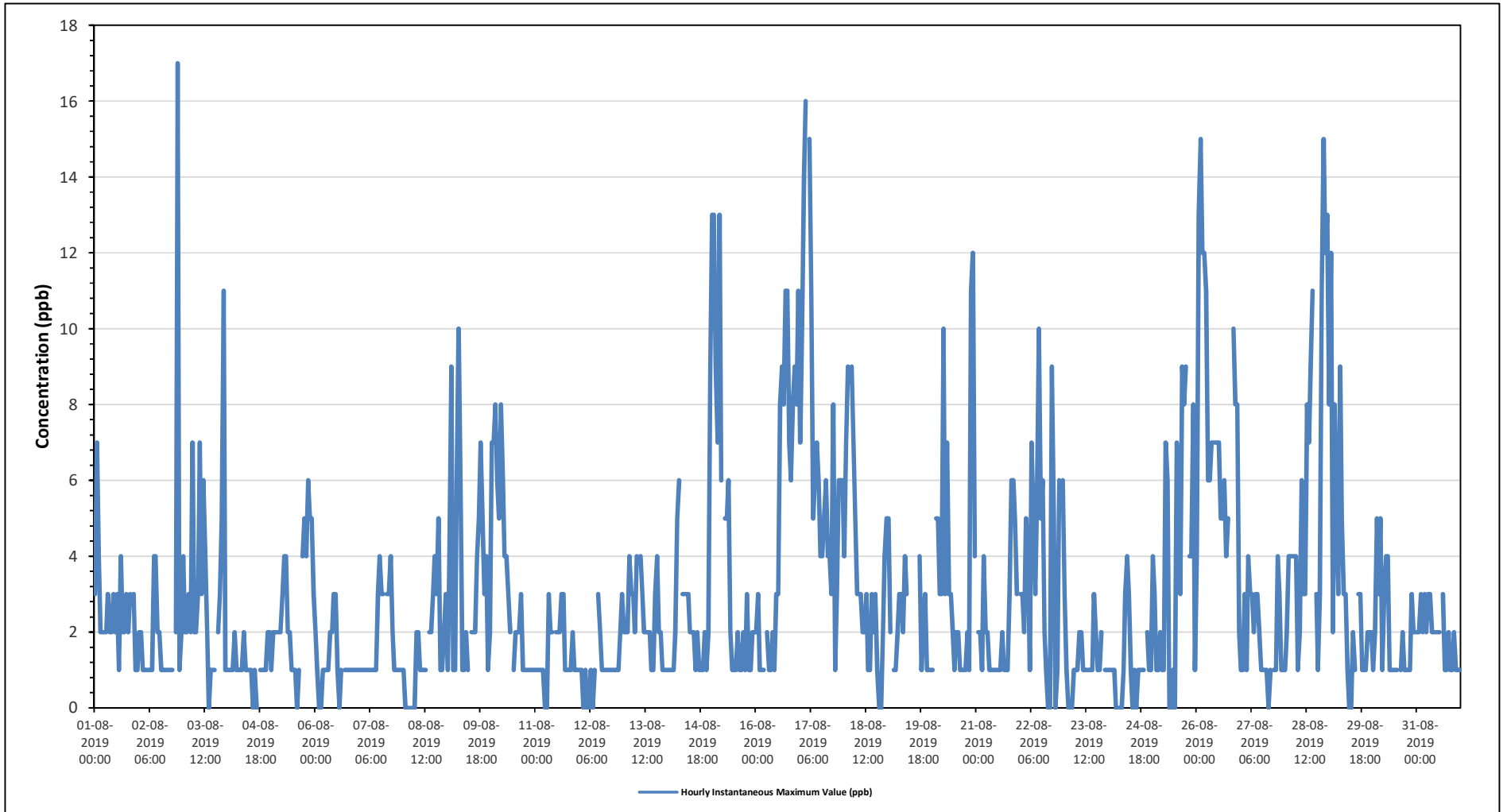
Maximum Hourly Value:	17 ppb on August 2 at hour 21	Hours in Service:	744
Maximum Daily Value:	7.6 ppb on August 26	Hours of Data:	705
Minimum Hourly Value:	0 ppb on August 3 at hour 14	Hours of Missing Data:	1
Minimum Daily Value:	1.1 ppb on August 4	Hours of Calibration:	38
Monthly Average:	2.9 ppb	Operational Uptime:	99.9

Day	Hourly Period Starting at (MST)																							Daily Minimum	Daily Maximum	Daily Average		
	0	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22				23	
Aug 1	3	7	4	2	2	2	2	3	2	2	3	2	3	1	4	2	2	3	2	3	S	3	1	1	1	7	2.6	
Aug 2	2	2	1	1	1	1	1	1	4	4	2	2	1	1	1	1	1	1	1	S	2	17	1	2	1	17	2.2	
Aug 3	4	2	2	3	2	7	2	2	3	7	3	6	4	2	0	1	1	1	S	2	3	5	11	1	0	11	3.2	
Aug 4	1	1	1	1	2	1	1	1	1	2	1	1	1	1	0	1	0	S	1	1	1	1	2	2	0	2	1.1	
Aug 5	1	2	2	2	2	2	3	4	4	2	2	1	1	1	0	1	S	4	5	4	6	5	5	3	0	6	2.7	
Aug 6	2	1	0	0	1	1	1	1	4	2	2	3	3	1	0	1	S	1	1	1	1	1	1	1	0	3	1.2	
Aug 7	1	1	1	1	1	1	1	1	1	1	3	4	3	3	S	3	3	3	4	2	1	1	1	1	1	4	1.7	
Aug 8	1	0	0	0	0	0	0	2	2	1	1	1	1	S	2	2	3	4	3	5	1	1	2	3	0	5	1.5	
Aug 9	1	4	9	1	1	6	10	6	1	1	2	1	S	2	2	2	4	5	7	5	3	4	1	2	1	10	3.5	
Aug 10	7	7	8	6	5	8	6	4	4	3	2	S	1	2	2	2	3	1	1	1	1	1	1	1	1	8	3.3	
Aug 11	1	1	1	1	1	0	0	3	2	2	S	2	2	2	3	3	1	1	1	1	2	1	1	1	0	3	1.4	
Aug 12	1	1	0	1	0	0	1	0	1	S	3	2	1	1	1	1	1	1	1	1	1	1	2	3	0	3	1.1	
Aug 13	2	2	2	4	3	3	2	4	S	4	3	2	2	2	2	1	1	3	4	2	2	1	1	1	1	4	2.3	
Aug 14	1	1	1	1	2	5	6	S	3	3	3	3	2	2	2	1	2	1	1	1	2	1	2	9	1	9	2.4	
Aug 15	13	13	9	7	13	6	S	5	5	6	2	1	1	1	2	1	1	2	1	3	1	1	2	2	1	13	4.3	
Aug 16	2	3	1	1	1	S	2	1	1	2	1	3	3	8	9	8	11	11	7	6	8	9	8	11	1	11	5.1	
Aug 17	7	10	14	16	S	15	11	5	6	7	6	4	4	5	6	4	4	3	8	1	3	6	6	6	1	16	6.8	
Aug 18	4	7	9	S	9	7	5	3	3	3	2	2	3	1	1	3	2	3	1	0	0	2	4	5	0	9	3.4	
Aug 19	5	2	S	1	1	2	3	3	2	4	3	C	C	C	C	C	C	4	1	2	3	1	1	1	1	5	-	
Aug 20	1	S	5	5	3	3	10	3	7	3	3	2	1	2	2	1	1	1	1	2	1	11	12	4	1	12	3.7	
Aug 21	S	2	2	1	4	2	2	1	1	1	1	1	1	1	2	1	1	1	3	6	6	5	3	S	1	6	2.2	
Aug 22	3	3	2	5	4	1	7	5	3	6	10	5	6	2	1	0	0	9	5	0	1	6	S	6	0	10	3.9	
Aug 23	3	1	0	0	0	1	1	1	2	2	1	1	1	1	1	3	2	1	1	2	1	1	S	1	1	0	3	1.2
Aug 24	1	1	1	1	0	0	0	1	3	4	3	1	0	1	1	0	1	1	1	1	S	2	1	1	0	4	1.1	
Aug 25	4	3	1	1	2	1	1	7	6	0	0	1	0	7	6	3	9	8	9	S	4	4	8	1	0	9	3.7	
Aug 26	4	13	15	12	12	11	6	6	7	7	7	7	7	5	5	6	4	5	S	Y	10	8	8	2	2	15	7.6	
Aug 27	1	1	3	1	4	3	3	2	3	3	2	1	1	1	0	1	S	1	1	1	4	3	1	1	0	4	1.8	
Aug 28	1	2	4	4	4	4	4	1	2	6	3	3	8	7	9	11	S	3	1	3	11	15	12	13	1	15	5.7	
Aug 29	8	12	2	8	5	3	9	5	3	3	1	0	0	2	1	S	3	3	1	1	1	2	2	2	0	12	3.3	
Aug 30	1	2	5	3	5	1	3	4	4	1	1	1	1	1	S	1	2	1	1	1	1	3	2	2	1	5	2.0	
Aug 31	2	2	3	2	3	2	3	3	2	2	2	2	S	3	1	1	2	1	1	1	2	1	1	1	1	3	1.9	
Diurnal Maximum	13	13	15	16	13	15	11	7	7	7	10	7	8	8	9	11	11	11	9	6	11	17	12	13				
Diurnal Average	2.9	3.6	3.6	3.1	3.1	3.3	3.5	2.9	2.9	3.1	2.7	2.3	2.2	2.3	2.5	2.2	2.4	3.1	2.5	2.0	2.9	4.1	3.5	3.0				

C	Calibration	S	Daily Zero/Span	Q	Quality Assurance	C1	Repeat Calibration	S1	Repeat Daily Zero/Span
G	Out for Repair	K	Collection Error	N	Not in Service	O	Operator Error	P	Power Failure
R	Recovery	X	Machine Malfunction	Y	Maintenance	T	Exceeds Temperature Limits	N	Not in Service

Daily Average is shown "-" if minimum data completeness criteria of 75% or 18 hours per day is not met.
 Monthly Average is shown "-" if minimum data completeness criteria of 75% of days per month is not met.

Timeseries Chart of Hourly Instantaneous Maximum for NO2 - Maskwa Site





LAKELAND INDUSTRY & COMMUNITY ASSOCIATION

Maskwa Site - August 2019

Summary of Hourly Instantaneous Maximums

TOTAL HYDROCARBONS (THC) in ppm

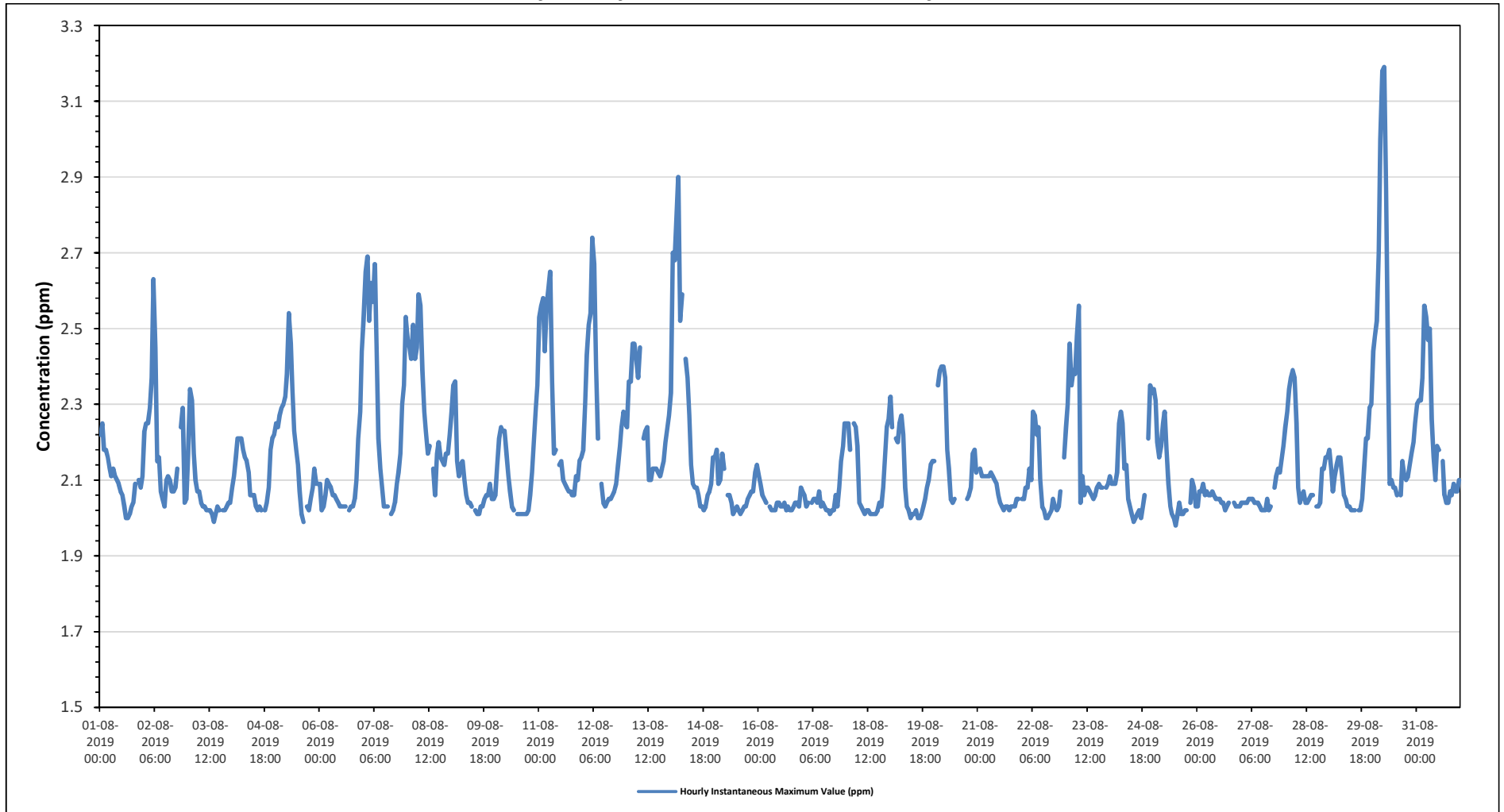
Maximum Hourly Value:	3.19 ppm on August 30 at hour 6	Hours in Service:	744
Maximum Daily Value:	2.37 ppm on August 30	Hours of Data:	705
Minimum Hourly Value:	1.98 ppm on August 25 at hour 12	Hours of Missing Data:	1
Minimum Daily Value:	2.04 ppm on August 16	Hours of Calibration:	38
Monthly Average:	2.15 ppm	Operational Uptime:	99.9

Day	Hourly Period Starting at (MST)																							Daily Minimum	Daily Maximum	Daily Average	
	0	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22				23
Aug 1	2.22	2.25	2.18	2.18	2.16	2.13	2.11	2.13	2.11	2.10	2.09	2.07	2.06	2.03	2.00	2.00	2.01	2.03	2.04	2.09	S	2.10	2.08	2.11	2.00	2.25	2.10
Aug 2	2.23	2.25	2.25	2.29	2.37	2.63	2.45	2.15	2.16	2.07	2.05	2.03	2.10	2.11	2.10	2.07	2.07	2.08	2.13	S	2.24	2.29	2.04	2.05	2.03	2.63	2.18
Aug 3	2.17	2.34	2.31	2.17	2.10	2.07	2.07	2.04	2.03	2.03	2.02	2.02	2.02	2.01	1.99	2.01	2.03	2.02	S	2.02	2.02	2.03	2.04	2.04	1.99	2.34	2.07
Aug 4	2.08	2.11	2.16	2.21	2.21	2.21	2.18	2.16	2.15	2.12	2.06	2.06	2.06	2.03	2.02	2.03	2.02	S	2.02	2.04	2.08	2.18	2.21	2.22	2.02	2.22	2.11
Aug 5	2.25	2.24	2.27	2.29	2.30	2.32	2.38	2.54	2.46	2.34	2.23	2.18	2.14	2.07	2.01	1.99	S	2.03	2.02	2.05	2.08	2.13	2.09	2.09	1.99	2.54	2.20
Aug 6	2.09	2.02	2.03	2.06	2.10	2.09	2.08	2.06	2.06	2.05	2.04	2.03	2.03	2.03	2.03	S	2.02	2.03	2.03	2.05	2.10	2.21	2.28	2.44	2.02	2.44	2.09
Aug 7	2.53	2.65	2.69	2.52	2.62	2.57	2.67	2.46	2.21	2.13	2.08	2.03	2.03	2.03	S	2.01	2.02	2.04	2.09	2.12	2.17	2.30	2.35	2.53	2.01	2.69	2.30
Aug 8	2.47	2.45	2.42	2.51	2.42	2.45	2.59	2.56	2.39	2.28	2.23	2.17	2.19	S	2.13	2.06	2.17	2.20	2.16	2.15	2.14	2.17	2.17	2.22	2.06	2.59	2.29
Aug 9	2.28	2.35	2.36	2.15	2.11	2.14	2.15	2.10	2.06	2.04	2.04	2.03	S	2.02	2.01	2.01	2.03	2.03	2.05	2.06	2.06	2.09	2.05	2.05	2.01	2.36	2.10
Aug 10	2.06	2.14	2.21	2.24	2.23	2.23	2.17	2.11	2.07	2.03	2.02	S	2.01	2.01	2.01	2.01	2.01	2.01	2.02	2.06	2.12	2.20	2.29	2.35	2.01	2.35	2.11
Aug 11	2.53	2.56	2.58	2.44	2.56	2.61	2.65	2.36	2.17	2.18	S	2.14	2.15	2.10	2.09	2.08	2.07	2.07	2.06	2.06	2.11	2.10	2.15	2.16	2.06	2.65	2.26
Aug 12	2.18	2.30	2.43	2.51	2.54	2.74	2.67	2.40	2.21	S	2.09	2.04	2.03	2.04	2.05	2.05	2.06	2.07	2.09	2.14	2.19	2.24	2.28	2.25	2.03	2.74	2.24
Aug 13	2.24	2.36	2.36	2.46	2.46	2.42	2.37	2.45	S	2.21	2.23	2.24	2.10	2.10	2.13	2.13	2.12	2.11	2.13	2.15	2.20	2.24	2.27	2.10	2.46	2.24	
Aug 14	2.33	2.70	2.68	2.79	2.90	2.52	2.59	S	2.42	2.37	2.27	2.14	2.09	2.08	2.06	2.03	2.03	2.02	2.03	2.06	2.07	2.09	2.16	2.02	2.90	2.28	
Aug 15	2.16	2.18	2.09	2.10	2.17	2.13	S	2.06	2.06	2.04	2.01	2.02	2.03	2.02	2.01	2.02	2.03	2.03	2.05	2.06	2.07	2.12	2.14	2.01	2.18	2.07	
Aug 16	2.11	2.09	2.06	2.05	2.04	S	2.03	2.02	2.02	2.02	2.04	2.04	2.03	2.03	2.04	2.02	2.03	2.02	2.02	2.03	2.04	2.03	2.08	2.02	2.11	2.04	
Aug 17	2.07	2.06	2.03	2.04	S	2.04	2.05	2.05	2.04	2.07	2.03	2.04	2.03	2.02	2.02	2.01	2.02	2.02	2.06	2.03	2.08	2.15	2.19	2.25	2.01	2.25	2.06
Aug 18	2.25	2.25	2.18	S	2.25	2.24	2.19	2.04	2.03	2.02	2.01	2.02	2.02	2.01	2.01	2.01	2.01	2.02	2.04	2.03	2.08	2.16	2.24	2.26	2.01	2.26	2.10
Aug 19	2.32	2.24	S	2.21	2.20	2.25	2.27	2.22	2.08	2.03	2.02	2.00	2.01	2.01	2.02	2.00	2.00	2.01	2.03	2.05	2.08	2.10	2.14	2.15	2.00	2.32	2.11
Aug 20	2.15	S	2.35	2.39	2.40	2.40	2.37	2.18	2.13	2.05	2.04	2.05	C	C	C	C	C	C	2.05	2.06	2.08	2.17	2.18	2.12	2.04	2.40	-
Aug 21	S	2.13	2.11	2.11	2.11	2.11	2.11	2.12	2.11	2.10	2.09	2.06	2.04	2.03	2.02	2.03	2.02	2.02	2.03	2.03	2.03	2.05	2.05	S	2.02	2.13	2.07
Aug 22	2.05	2.05	2.08	2.08	2.13	2.10	2.28	2.27	2.22	2.24	2.10	2.03	2.02	2.00	2.00	2.01	2.02	2.05	2.03	2.02	2.03	2.07	S	2.16	2.00	2.28	2.09
Aug 23	2.24	2.30	2.46	2.35	2.39	2.38	2.48	2.56	2.04	2.11	2.06	2.08	2.08	2.07	2.06	2.05	2.06	2.08	2.09	2.08	2.08	S	2.08	2.09	2.04	2.56	2.19
Aug 24	2.11	2.09	2.09	2.09	2.12	2.25	2.28	2.25	2.13	2.14	2.05	2.03	2.01	1.99	2.00	2.01	2.02	2.00	2.03	2.06	S	2.21	2.35	2.33	1.99	2.35	2.11
Aug 25	2.34	2.31	2.20	2.16	2.19	2.25	2.28	2.18	2.09	2.03	2.01	2.00	1.98	2.01	2.04	2.01	2.01	2.02	2.02	S	2.04	2.10	2.08	2.03	1.98	2.34	2.10
Aug 26	2.03	2.07	2.07	2.09	2.06	2.07	2.06	2.06	2.07	2.06	2.05	2.05	2.05	2.04	2.04	2.02	2.03	2.04	S	2.04	2.03	2.03	2.03	2.02	2.09	2.05	2.05
Aug 27	2.04	2.04	2.04	2.04	2.05	2.05	2.05	2.04	2.04	2.04	2.03	2.02	2.02	2.02	2.05	2.02	2.03	S	2.08	2.11	2.13	2.12	2.16	2.19	2.02	2.19	2.06
Aug 28	2.24	2.28	2.34	2.37	2.39	2.37	2.25	2.08	2.04	2.06	2.07	2.04	2.04	2.05	2.06	2.06	S	2.03	2.03	2.04	2.13	2.13	2.16	2.16	2.03	2.39	2.15
Aug 29	2.18	2.13	2.07	2.11	2.14	2.16	2.16	2.11	2.06	2.05	2.03	2.03	2.02	2.02	2.02	S	2.02	2.02	2.05	2.13	2.21	2.21	2.29	2.30	2.02	2.30	2.11
Aug 30	2.44	2.48	2.52	2.70	3.00	3.18	3.19	2.87	2.48	2.09	2.10	2.08	2.08	2.06	S	2.06	2.15	2.11	2.10	2.11	2.14	2.17	2.20	2.25	2.06	3.19	2.37
Aug 31	2.30	2.31	2.31	2.37	2.56	2.53	2.47	2.50	2.26	2.16	2.10	2.19	2.18	S	2.15	2.06	2.04	2.04	2.07	2.06	2.09	2.07	2.10	2.04	2.56	2.22	2.10
Diurnal Maximum	2.53	2.70	2.69	2.79	3.00	3.18	3.19	2.87	2.48	2.37	2.27	2.24	2.19	2.11	2.15	2.13	2.17	2.20	2.16	2.15	2.24	2.30	2.35	2.53			
Diurnal Average	2.22	2.26	2.26	2.27	2.31	2.32	2.32	2.24	2.15	2.11	2.08	2.07	2.06	2.04	2.04	2.03	2.04	2.05	2.06	2.07	2.10	2.14	2.16	2.19			

C	Calibration	S	Daily Zero/Span	Q	Quality Assurance	C1	Repeat Calibration	S1	Repeat Daily Zero/Span
G	Out for Repair	K	Collection Error	N	Not in Service	O	Operator Error	P	Power Failure
R	Recovery	X	Machine Malfunction	Y	Maintenance	T	Exceeds Temperature Limits	N	Not in Service

Daily Average is shown "-" if minimum data completeness criteria of 75% or 18 hours per day is not met.
 Monthly Average is shown "-" if minimum data completeness criteria of 75% of days per month is not met.

Timeseries Chart of Hourly Instantaneous Maximum for THC - Maskwa Site





LAKELAND INDUSTRY & COMMUNITY ASSOCIATION

Maskwa Site - August 2019

Summary of Hourly Instantaneous Maximums

METHANE (CH4) in ppm

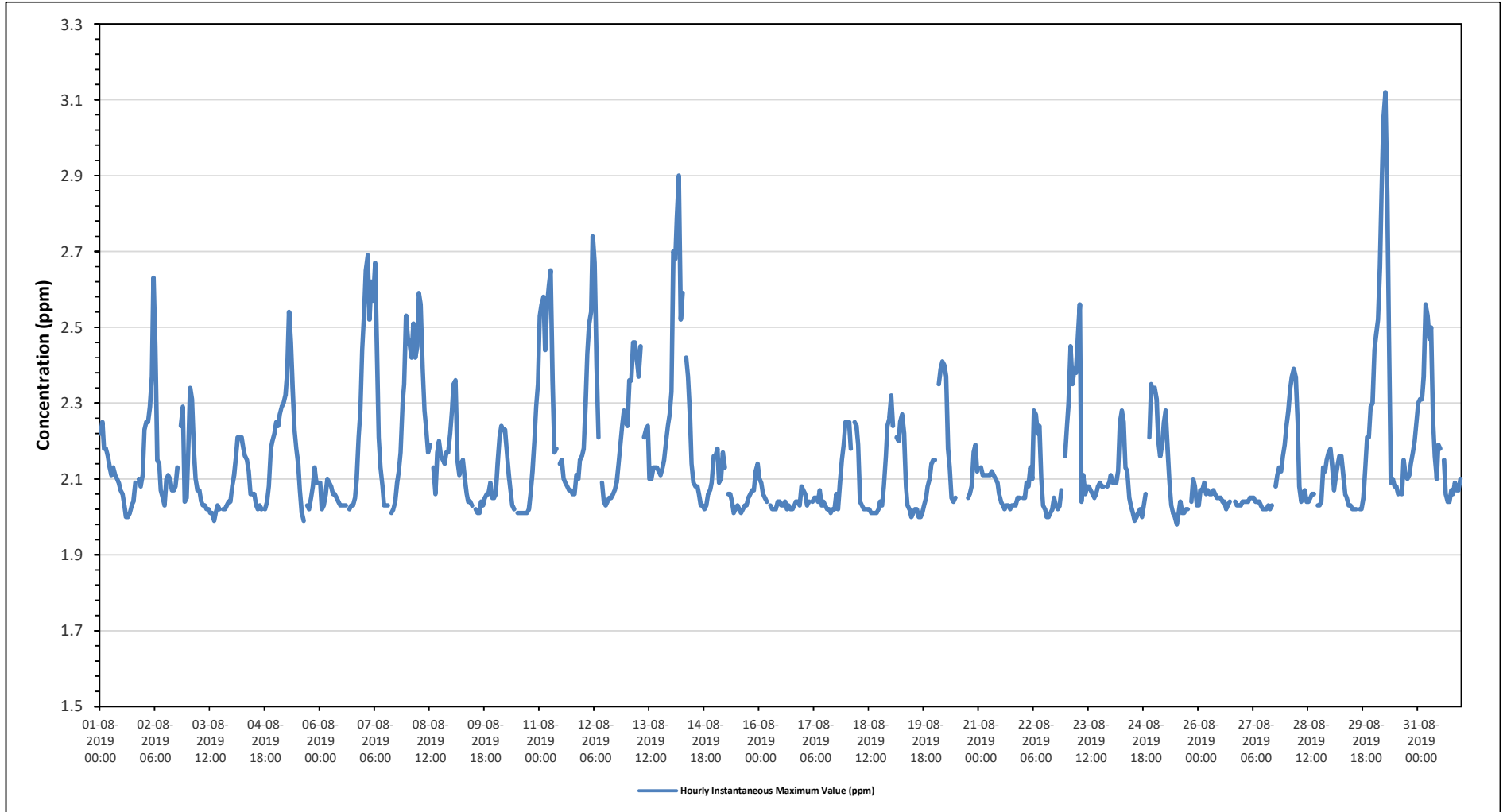
Maximum Hourly Value:	3.12 ppm on August 30 at hour 6	Hours in Service:	744
Maximum Daily Value:	2.35 ppm on August 30	Hours of Data:	705
Minimum Hourly Value:	1.98 ppm on August 25 at hour 12	Hours of Missing Data:	1
Minimum Daily Value:	2.04 ppm on August 16	Hours of Calibration:	38
Monthly Average:	2.15 ppm	Operational Uptime:	99.9

Day	Hourly Period Starting at (MST)																							Daily Minimum	Daily Maximum	Daily Average		
	0	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22				23	
Aug 1	2.22	2.25	2.18	2.18	2.16	2.13	2.11	2.13	2.11	2.10	2.09	2.07	2.06	2.03	2.00	2.00	2.01	2.03	2.04	2.09	S	2.10	2.08	2.11	2.00	2.25	2.10	
Aug 2	2.23	2.25	2.25	2.29	2.37	2.63	2.45	2.15	2.14	2.07	2.05	2.03	2.10	2.11	2.10	2.07	2.07	2.08	2.13	S	2.24	2.29	2.04	2.05	2.03	2.63	2.18	
Aug 3	2.17	2.34	2.31	2.17	2.10	2.07	2.07	2.04	2.03	2.03	2.02	2.02	2.01	2.01	1.99	2.01	2.03	2.02	S	2.02	2.02	2.03	2.04	2.04	1.99	2.34	2.07	
Aug 4	2.08	2.11	2.16	2.21	2.21	2.21	2.18	2.16	2.15	2.12	2.06	2.06	2.06	2.03	2.02	2.03	2.02	S	2.02	2.04	2.08	2.18	2.20	2.22	2.02	2.22	2.11	
Aug 5	2.25	2.24	2.27	2.29	2.30	2.32	2.38	2.54	2.46	2.34	2.23	2.18	2.14	2.07	2.01	1.99	S	2.03	2.02	2.05	2.08	2.13	2.09	2.09	1.99	2.54	2.20	
Aug 6	2.09	2.02	2.03	2.06	2.10	2.09	2.08	2.06	2.06	2.05	2.04	2.03	2.03	2.03	2.03	S	2.02	2.03	2.03	2.05	2.10	2.21	2.28	2.44	2.02	2.44	2.09	
Aug 7	2.53	2.65	2.69	2.52	2.62	2.57	2.67	2.46	2.21	2.13	2.08	2.03	2.03	2.03	S	2.01	2.02	2.04	2.09	2.12	2.17	2.30	2.35	2.53	2.01	2.69	2.30	
Aug 8	2.47	2.45	2.42	2.51	2.42	2.45	2.59	2.56	2.39	2.28	2.23	2.17	2.19	S	2.13	2.06	2.17	2.20	2.16	2.15	2.14	2.17	2.17	2.22	2.06	2.59	2.29	
Aug 9	2.28	2.35	2.36	2.15	2.11	2.14	2.15	2.10	2.06	2.04	2.04	2.03	S	2.02	2.01	2.01	2.04	2.03	2.05	2.06	2.06	2.09	2.05	2.05	2.01	2.36	2.10	
Aug 10	2.06	2.14	2.21	2.24	2.23	2.23	2.17	2.11	2.07	2.03	2.02	S	2.01	2.01	2.01	2.01	2.01	2.01	2.02	2.06	2.12	2.20	2.29	2.35	2.01	2.35	2.11	
Aug 11	2.53	2.56	2.58	2.44	2.56	2.61	2.65	2.36	2.17	2.18	S	2.14	2.15	2.10	2.09	2.08	2.07	2.07	2.06	2.06	2.11	2.10	2.15	2.16	2.06	2.65	2.26	
Aug 12	2.18	2.30	2.43	2.51	2.54	2.74	2.67	2.40	2.21	S	2.09	2.04	2.03	2.04	2.05	2.05	2.06	2.07	2.09	2.14	2.19	2.24	2.28	2.25	2.03	2.74	2.24	
Aug 13	2.24	2.36	2.36	2.46	2.46	2.42	2.37	2.45	S	2.21	2.23	2.24	2.10	2.10	2.13	2.13	2.12	2.11	2.13	2.15	2.20	2.24	2.27	2.10	2.46	2.24		
Aug 14	2.33	2.70	2.68	2.79	2.90	2.52	2.59	S	2.42	2.37	2.27	2.14	2.09	2.08	2.06	2.03	2.03	2.02	2.03	2.06	2.07	2.09	2.16	2.02	2.90	2.28		
Aug 15	2.16	2.18	2.09	2.10	2.17	2.13	S	2.06	2.06	2.04	2.01	2.02	2.03	2.02	2.01	2.02	2.03	2.03	2.05	2.06	2.07	2.12	2.14	2.01	2.18	2.07		
Aug 16	2.10	2.09	2.06	2.05	2.04	S	2.03	2.02	2.02	2.02	2.04	2.04	2.03	2.03	2.04	2.02	2.03	2.02	2.02	2.03	2.04	2.03	2.08	2.02	2.10	2.04		
Aug 17	2.07	2.06	2.03	2.04	S	2.04	2.05	2.05	2.04	2.07	2.03	2.04	2.03	2.02	2.02	2.01	2.02	2.02	2.06	2.02	2.09	2.15	2.19	2.25	2.01	2.25	2.06	
Aug 18	2.25	2.25	2.18	S	2.25	2.24	2.19	2.04	2.03	2.02	2.02	2.02	2.02	2.01	2.01	2.01	2.01	2.02	2.04	2.03	2.08	2.16	2.24	2.26	2.01	2.26	2.10	
Aug 19	2.32	2.24	S	2.21	2.20	2.25	2.27	2.22	2.08	2.03	2.02	2.00	2.01	2.02	2.02	2.00	2.00	2.01	2.03	2.05	2.08	2.10	2.14	2.15	2.00	2.32	2.11	
Aug 20	2.15	S	2.35	2.39	2.41	2.40	2.37	2.18	2.13	2.05	2.04	2.05	C	C	C	C	C	C	2.05	2.06	2.08	2.17	2.19	2.12	2.04	2.41	-	
Aug 21	S	2.13	2.11	2.11	2.11	2.11	2.11	2.12	2.11	2.10	2.09	2.06	2.04	2.03	2.02	2.03	2.02	2.02	2.03	2.03	2.03	2.05	2.05	S	2.02	2.13	2.07	
Aug 22	2.05	2.05	2.09	2.08	2.13	2.10	2.28	2.27	2.22	2.24	2.10	2.03	2.02	2.00	2.00	2.01	2.02	2.05	2.03	2.02	2.03	2.07	S	2.16	2.00	2.28	2.09	
Aug 23	2.24	2.30	2.45	2.35	2.39	2.38	2.48	2.56	2.04	2.11	2.06	2.08	2.08	2.07	2.06	2.05	2.06	2.08	2.09	2.08	2.08	S	2.08	2.09	2.04	2.56	2.19	
Aug 24	2.11	2.09	2.09	2.09	2.12	2.25	2.28	2.25	2.13	2.12	2.05	2.03	2.01	1.99	2.00	2.01	2.02	2.00	2.03	2.06	S	2.21	2.35	2.33	1.99	2.35	2.11	
Aug 25	2.34	2.31	2.20	2.16	2.19	2.25	2.28	2.18	2.09	2.03	2.01	2.00	1.98	2.01	2.04	2.01	2.01	2.02	2.02	S	2.04	2.10	2.08	2.03	1.98	2.34	2.10	
Aug 26	2.03	2.07	2.07	2.09	2.06	2.07	2.06	2.06	2.07	2.06	2.05	2.05	2.05	2.04	2.04	2.02	2.03	2.04	S	2.04	2.03	2.03	2.03	2.02	2.09	2.05	2.05	
Aug 27	2.04	2.04	2.04	2.04	2.05	2.05	2.05	2.04	2.04	2.04	2.03	2.02	2.02	2.02	2.03	2.02	2.03	2.02	S	2.08	2.11	2.13	2.12	2.16	2.19	2.02	2.19	2.06
Aug 28	2.24	2.28	2.34	2.37	2.39	2.37	2.25	2.08	2.04	2.06	2.07	2.04	2.04	2.05	2.06	2.06	S	2.03	2.03	2.04	2.13	2.12	2.15	2.17	2.03	2.39	2.15	
Aug 29	2.18	2.13	2.07	2.11	2.14	2.16	2.16	2.11	2.06	2.05	2.03	2.03	2.02	2.02	2.02	S	2.02	2.02	2.05	2.13	2.21	2.21	2.29	2.30	2.02	2.30	2.11	
Aug 30	2.44	2.48	2.52	2.66	2.86	3.05	3.12	2.84	2.48	2.09	2.10	2.08	2.08	2.06	S	2.06	2.15	2.11	2.10	2.11	2.14	2.17	2.20	2.25	2.06	3.12	2.35	
Aug 31	2.30	2.31	2.31	2.37	2.56	2.53	2.47	2.50	2.26	2.16	2.10	2.19	2.18	S	2.15	2.06	2.04	2.04	2.07	2.06	2.09	2.07	2.10	2.04	2.56	2.22	2.10	
Diurnal Maximum	2.53	2.70	2.69	2.79	2.90	3.05	3.12	2.84	2.48	2.37	2.27	2.24	2.19	2.11	2.15	2.13	2.17	2.20	2.16	2.15	2.24	2.30	2.35	2.53				
Diurnal Average	2.22	2.26	2.26	2.27	2.31	2.32	2.32	2.24	2.15	2.11	2.08	2.07	2.06	2.04	2.04	2.03	2.04	2.05	2.06	2.07	2.10	2.14	2.16	2.19				

C	Calibration	S	Daily Zero/Span	Q	Quality Assurance	C1	Repeat Calibration	S1	Repeat Daily Zero/Span
G	Out for Repair	K	Collection Error	N	Not in Service	O	Operator Error	P	Power Failure
R	Recovery	X	Machine Malfunction	Y	Maintenance	T	Exceeds Temperature Limits	N	Not in Service

Daily Average is shown "-" if minimum data completeness criteria of 75% or 18 hours per day is not met.
 Monthly Average is shown "-" if minimum data completeness criteria of 75% of days per month is not met.

Timeseries Chart of Hourly Instantaneous Maximum for CH4 - Maskwa Site





LAKELAND INDUSTRY & COMMUNITY ASSOCIATION

Maskwa Site - August 2019

Summary of Hourly Instantaneous Maximums

NON-METHANE HYDROCARBONS (NMHC) in ppm

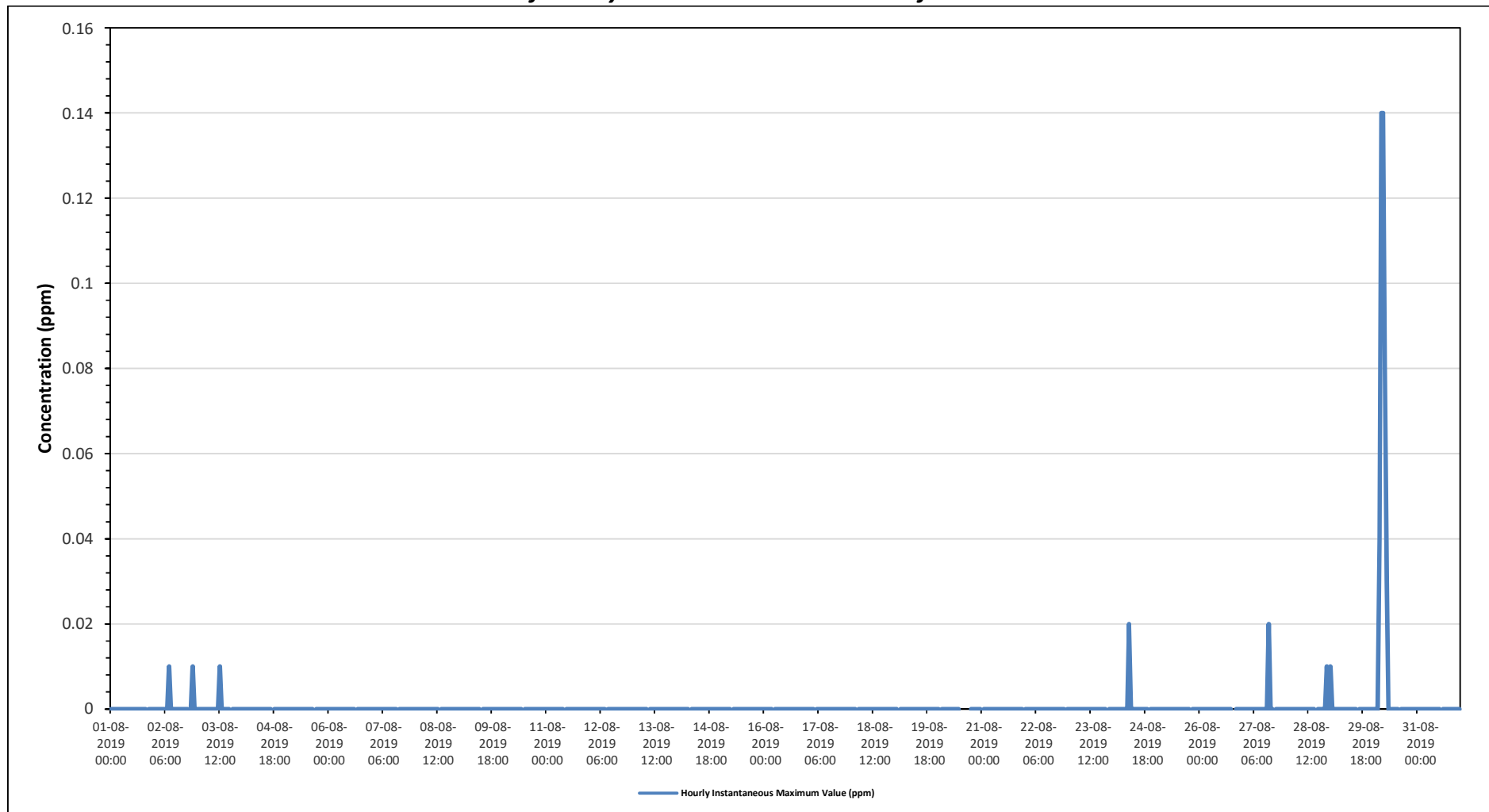
Maximum Hourly Value:	0.14 ppm on August 30 at hour 4	Hours in Service:	744
Maximum Daily Value:	0.02 ppm on August 30	Hours of Data:	705
Minimum Hourly Value:	0.00 ppm on August 1 at hour 0	Hours of Missing Data:	1
Minimum Daily Value:	0.00 ppm on August 1	Hours of Calibration:	38
Monthly Average:	0.00 ppm	Operational Uptime:	99.9

Day	Hourly Period Starting at (MST)																							Daily Minimum	Daily Maximum	Daily Average	
	0	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22				23
Aug 1	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	S	0.00	0.00	0.00	0.00	0.00	0.00
Aug 2	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.01	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	S	0.00	0.01	0.00	0.00	0.00	0.00
Aug 3	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.01	0.00	0.00	0.00	0.00	0.00	0.00	S	0.00	0.00	0.00	0.00	0.00	0.00
Aug 4	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	S	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Aug 5	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	S	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Aug 6	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	S	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Aug 7	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	S	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Aug 8	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	S	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Aug 9	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	S	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Aug 10	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	S	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Aug 11	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	S	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Aug 12	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	S	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Aug 13	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	S	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Aug 14	0.00	0.00	0.00	0.00	0.00	0.00	0.00	S	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Aug 15	0.00	0.00	0.00	0.00	0.00	0.00	S	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Aug 16	0.00	0.00	0.00	0.00	0.00	S	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Aug 17	0.00	0.00	0.00	0.00	S	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Aug 18	0.00	0.00	0.00	S	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Aug 19	0.00	0.00	S	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Aug 20	0.00	S	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	C	C	C	C	C	C	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	
Aug 21	S	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	S	0.00	0.00
Aug 22	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	S	0.00	0.00	0.00	0.00
Aug 23	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	S	0.00	0.00	0.00	0.00	0.00
Aug 24	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.02	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	S	0.00	0.00	0.00	0.00	0.00	0.00
Aug 25	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	S	0.00	0.00	0.00	0.00	0.00	0.00
Aug 26	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	S	0.00	Y	0.00	0.00	0.00	0.00	0.00	0.00
Aug 27	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.02	0.00	0.00	S	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Aug 28	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	S	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.01	0.00	0.00
Aug 29	0.01	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	S	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Aug 30	0.00	0.00	0.00	0.04	0.14	0.14	0.08	0.03	0.00	0.00	0.00	0.00	0.00	0.00	S	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Aug 31	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	S	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Diurnal Maximum	0.01	0.00	0.00	0.04	0.14	0.14	0.08	0.03	0.01	0.02	0.00	0.01	0.00	0.02	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.01	0.01	0.00	0.00
Diurnal Average	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00

C	Calibration	S	Daily Zero/Span	Q	Quality Assurance	C1	Repeat Calibration	S1	Repeat Daily Zero/Span
G	Out for Repair	K	Collection Error	N	Not in Service	O	Operator Error	P	Power Failure
R	Recovery	X	Machine Malfunction	Y	Maintenance	T	Exceeds Temperature Limits	N	Not in Service

Daily Average is shown "-" if minimum data completeness criteria of 75% or 18 hours per day is not met.
 Monthly Average is shown "-" if minimum data completeness criteria of 75% of days per month is not met.

Timeseries Chart of Hourly Instantaneous Maximum for NMHC - Maskwa Site





LAKELAND INDUSTRY & COMMUNITY ASSOCIATION

Maskwa Site - August 2019

Summary of Hourly Instantaneous Maximums

WIND SPEED (WS) in km/h

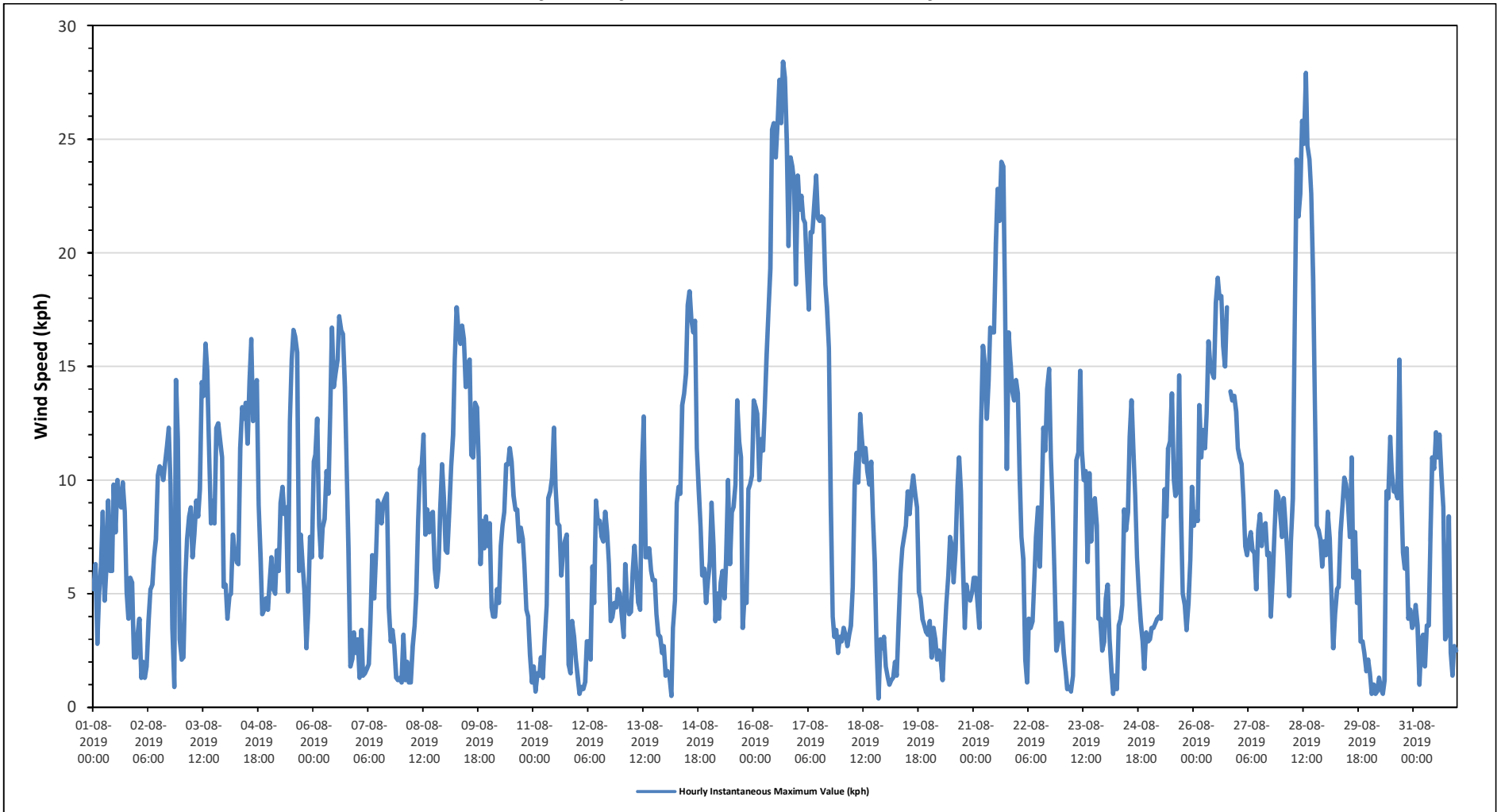
Maximum Hourly Value:	28.4 kph	on August 16 at hour 16	Hours in Service:	744
Maximum Daily Value:	20.1 kph	on August 16	Hours of Data:	743
Minimum Hourly Value:	0.4 kph	on August 18 at hour 20	Hours of Missing Data:	1
Minimum Daily Value:	4.5 kph	on August 7	Hours of Calibration:	0
Monthly Average:	8.4 kph		Operational Uptime:	99.9

Day	Hourly Period Starting at (MST)																							Daily	Daily	Daily		
	0	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	Minimum	Maximum	Average	
Aug 1	5.2	6.3	2.8	5.0	6.2	8.6	4.7	6.0	9.1	6.0	6.0	9.8	7.7	10.0	9.0	8.8	9.9	8.6	5.1	3.9	5.7	5.5	2.2	2.2	2.2	2.2	10.0	6.4
Aug 2	3.2	3.9	1.3	2.0	1.3	1.8	3.8	5.2	5.4	6.6	7.4	10.2	10.6	10.5	10.0	10.8	11.5	12.3	9.8	3.5	0.9	14.4	11.8	3.0	0.9	14.4	6.7	
Aug 3	2.1	2.2	5.6	7.4	8.4	8.8	6.6	7.6	9.1	8.4	9.6	14.3	13.7	16.0	14.8	11.2	8.1	9.1	8.1	12.3	12.5	11.7	11.0	5.3	2.1	16.0	9.3	
Aug 4	5.4	3.9	4.9	5.0	7.6	6.8	6.4	6.3	11.4	13.2	12.7	13.4	11.6	14.4	16.2	12.6	13.9	14.4	8.9	6.6	4.1	4.3	4.8	4.3	3.9	16.2	8.9	
Aug 5	5.5	6.6	5.2	5.0	6.9	6.0	9.0	9.7	8.5	8.8	5.1	12.6	15.3	16.6	16.3	15.6	6.0	7.6	6.3	5.1	2.6	4.2	7.5	6.6	2.6	16.6	8.3	
Aug 6	10.8	11.1	12.7	8.0	6.6	7.9	8.3	10.4	9.4	13.1	16.7	14.1	14.7	15.3	17.2	16.6	16.4	14.1	10.8	7.0	1.8	2.1	3.3	2.4	1.8	17.2	10.5	
Aug 7	3.0	1.3	3.4	1.4	1.5	1.7	1.9	3.7	6.7	4.8	6.7	9.1	8.9	8.1	9.0	9.2	9.4	4.4	2.9	3.4	2.7	1.3	1.2	1.3	1.2	9.4	4.5	
Aug 8	1.1	3.2	1.2	2.0	1.1	1.1	2.7	3.6	5.0	8.3	10.5	10.7	12.0	7.6	8.7	7.7	8.5	8.6	6.1	5.3	6.1	8.6	10.7	9.3	1.1	12.0	6.2	
Aug 9	6.9	6.8	8.7	10.6	12.0	15.3	17.6	16.5	16.0	16.8	16.2	14.1	15.0	15.3	11.1	11.0	13.4	13.2	11.0	6.3	8.2	7.0	8.4	7.1	6.3	17.6	11.9	
Aug 10	8.1	4.4	4.0	4.0	5.2	4.6	7.1	8.0	8.6	10.7	10.7	11.4	10.8	9.3	8.7	8.7	7.3	7.9	7.4	6.3	4.3	4.0	2.3	1.1	1.1	11.4	6.9	
Aug 11	1.8	0.7	1.5	1.4	2.2	1.3	2.9	4.5	9.2	9.5	10.1	12.3	9.7	8.1	8.0	5.8	6.8	7.3	7.6	1.9	1.5	3.8	3.1	2.1	0.7	12.3	5.1	
Aug 12	1.3	0.6	0.9	0.8	1.1	2.9	2.9	2.1	6.2	4.6	9.1	8.1	8.2	7.5	7.3	8.6	7.7	6.3	3.8	4.0	4.6	4.4	5.2	5.0	0.6	9.1	4.7	
Aug 13	4.1	3.1	6.3	4.6	4.1	4.2	5.9	7.1	5.9	4.6	4.3	10.3	12.8	6.6	6.6	7.0	6.0	5.6	5.6	4.1	3.2	3.1	2.4	2.7	2.4	12.8	5.4	
Aug 14	1.4	1.6	1.4	0.5	3.5	4.7	9.0	9.7	9.4	13.3	13.8	14.7	17.7	18.3	17.0	16.5	17.0	11.4	9.6	7.9	5.8	6.1	4.6	5.6	0.5	18.3	9.2	
Aug 15	6.4	9.0	7.1	3.8	5.0	3.9	5.5	6.0	4.8	6.5	10.0	6.3	8.6	8.8	9.8	13.5	11.7	11.0	3.5	4.9	4.6	9.6	9.8	10.2	3.5	13.5	7.5	
Aug 16	13.5	13.2	12.9	10.0	11.8	11.3	13.0	15.4	17.4	19.3	25.4	25.7	24.2	25.7	27.6	25.7	28.4	27.7	24.8	20.3	24.2	23.8	23.0	18.6	10.0	28.4	20.1	
Aug 17	23.4	21.9	22.5	21.5	21.3	19.3	17.5	20.9	20.9	22.1	23.4	21.5	21.4	21.6	21.5	18.6	17.6	15.8	8.9	4.0	3.1	3.4	2.4	3.1	2.4	23.4	16.6	
Aug 18	2.9	3.5	3.2	2.7	3.2	3.6	5.3	9.8	11.2	9.9	12.9	11.8	10.8	11.4	10.4	9.8	10.8	8.5	6.4	2.5	0.4	3.0	2.6	3.1	0.4	12.9	6.7	
Aug 19	1.8	1.3	1.0	1.2	1.3	2.0	1.4	3.7	5.9	7.0	7.5	8.0	9.5	8.5	9.5	10.2	9.4	8.8	5.1	4.8	3.9	3.6	3.3	3.2	1.0	10.2	5.1	
Aug 20	3.8	2.2	3.5	3.0	2.1	2.5	2.0	1.2	3.0	4.5	5.8	7.5	7.1	5.5	6.9	9.7	11.0	9.5	6.4	3.5	5.4	4.9	4.7	5.1	1.2	11.0	5.0	
Aug 21	5.7	5.7	4.6	3.5	12.4	15.9	15.1	12.7	14.4	16.7	16.5	16.5	20.4	22.8	21.4	24.0	23.8	18.3	10.5	16.5	15.2	13.9	13.5	14.4	3.5	24.0	14.8	
Aug 22	13.8	10.0	7.5	6.5	2.1	1.1	3.9	3.5	3.8	5.7	7.5	8.8	6.2	9.2	12.3	11.3	14.0	14.9	11.0	8.8	5.9	2.5	2.9	3.7	1.1	14.9	7.4	
Aug 23	3.7	2.4	1.6	0.8	0.9	0.7	1.4	5.0	10.9	11.2	14.8	11.3	10.0	10.4	6.4	10.3	7.3	9.0	9.2	8.0	3.9	3.9	2.5	2.9	0.7	14.8	6.2	
Aug 24	4.8	5.4	3.0	1.6	0.6	1.4	0.8	3.6	3.9	4.5	8.7	7.8	8.6	11.9	13.5	11.3	9.3	6.6	5.1	3.8	2.9	1.7	3.3	2.9	0.6	13.5	5.3	
Aug 25	3.0	3.5	3.5	3.7	3.9	4.0	3.9	6.6	9.6	8.4	11.4	11.7	13.8	10.0	9.3	9.5	14.6	8.4	5.0	4.5	3.4	4.6	6.5	9.7	3.0	14.6	7.2	
Aug 26	8.0	8.6	8.2	13.3	11.0	12.2	11.4	12.9	16.1	15.0	14.7	14.5	17.8	18.9	18.0	18.1	15.9	15.0	17.6	Y	13.9	13.5	13.7	13.0	8.0	18.9	14.0	
Aug 27	11.4	11.0	10.7	9.2	7.1	6.7	7.3	7.7	6.9	6.8	5.2	7.8	8.5	7.1	7.9	8.1	6.7	6.8	4.0	5.8	7.9	9.5	9.3	8.6	4.0	11.4	7.8	
Aug 28	7.5	9.2	8.0	6.7	4.9	7.3	9.2	16.9	24.1	21.6	22.6	25.8	24.8	27.9	24.7	24.1	22.6	18.8	13.6	8.0	7.8	7.4	6.2	7.3	4.9	27.9	14.9	
Aug 29	6.7	8.6	7.4	5.2	2.6	4.1	5.2	5.3	7.7	8.9	10.1	9.8	9.1	7.5	11.0	5.7	7.7	4.6	6.0	2.9	2.9	2.4	1.6	2.1	1.6	11.0	6.0	
Aug 30	1.5	0.6	1.0	0.6	0.7	1.3	0.8	0.6	1.2	9.5	9.2	11.9	10.4	9.5	9.5	9.2	15.3	9.8	6.8	6.1	7.0	3.9	4.3	3.5	0.6	15.3	5.6	
Aug 31	3.7	4.5	3.6	1.0	3.0	3.2	1.8	3.6	3.6	7.3	11.0	10.5	12.1	11.0	12.0	10.2	8.8	3.0	3.2	8.4	2.4	1.4	2.7	2.5	1.0	12.1	5.6	
Diurnal Maximum	23.4	21.9	22.5	21.5	21.3	19.3	17.6	20.9	24.1	22.1	25.4	25.8	24.8	27.9	27.6	25.7	28.4	27.7	24.8	20.3	24.2	23.8	23.0	18.6				
Diurnal Average	5.9	5.7	5.5	4.9	5.2	5.7	6.3	7.6	9.2	10.1	11.5	12.3	12.6	12.6	12.6	12.2	12.2	10.6	8.1	6.3	5.8	6.2	6.2	5.5				

C	Calibration	S	Daily Zero/Span	Q	Quality Assurance	C1	Repeat Calibration	S1	Repeat Daily Zero/Span
G	Out for Repair	K	Collection Error	N	Not in Service	O	Operator Error	P	Power Failure
R	Recovery	X	Machine Malfunction	Y	Maintenance	T	Exceeds Temperature Limits	N	Not in Service

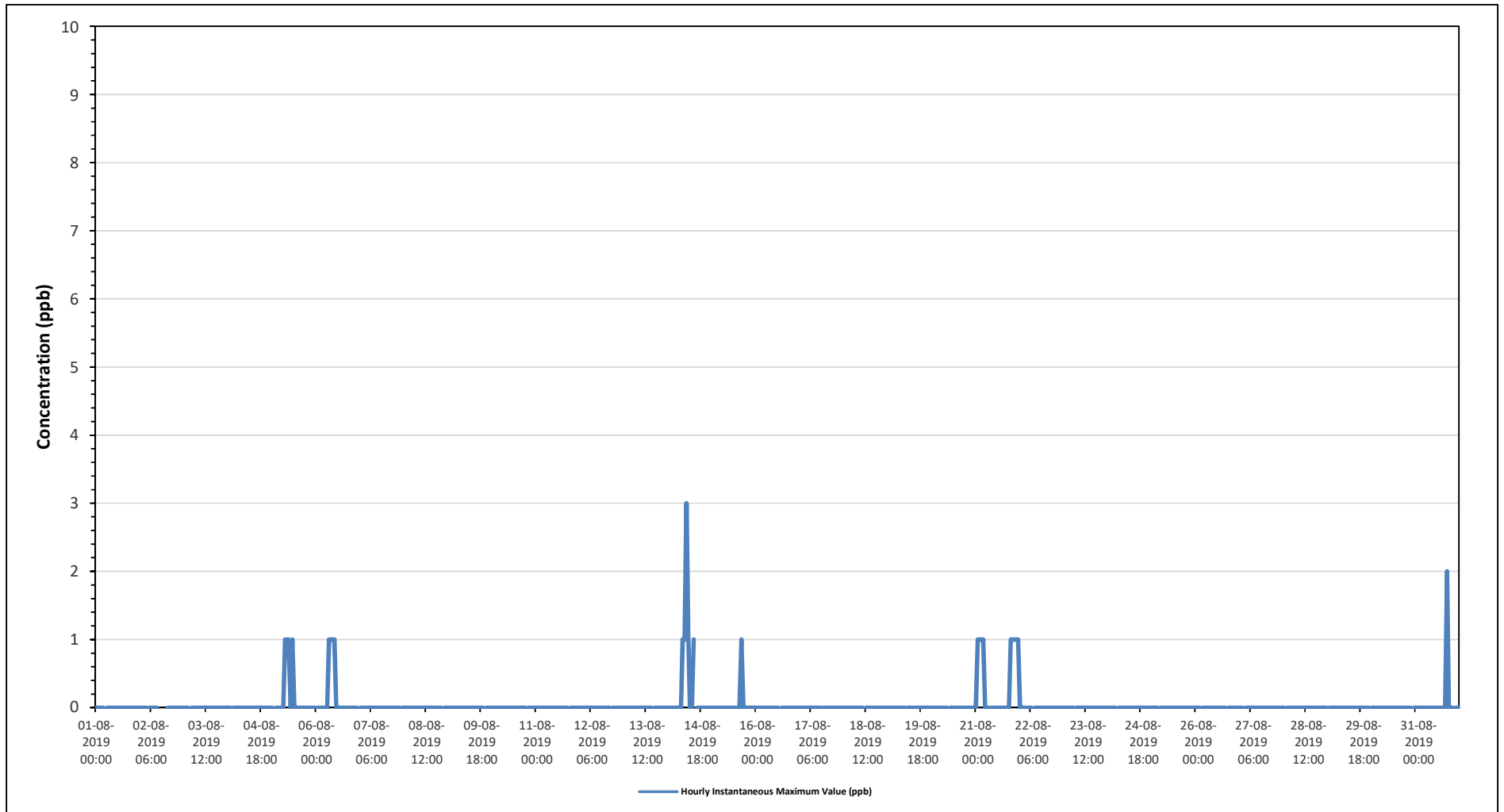
Daily Average is shown "-" if minimum data completeness criteria of 75% or 18 hours per day is not met.
 Monthly Average is shown "-" if minimum data completeness criteria of 75% of days per month is not met.

Timeseries Chart of Hourly Instantaneous Maximum for WS - Maskwa Site



ST. LINA STATION

Timeseries Chart of Hourly Instantaneous Maximum for SO₂ - St. Lina Site





LAKELAND INDUSTRY & COMMUNITY ASSOCIATION

Bonnyville - East Site - August 2019

Summary of Hourly Instantaneous Maximums

HYDROGEN SULPHIDE (H₂S) in ppb

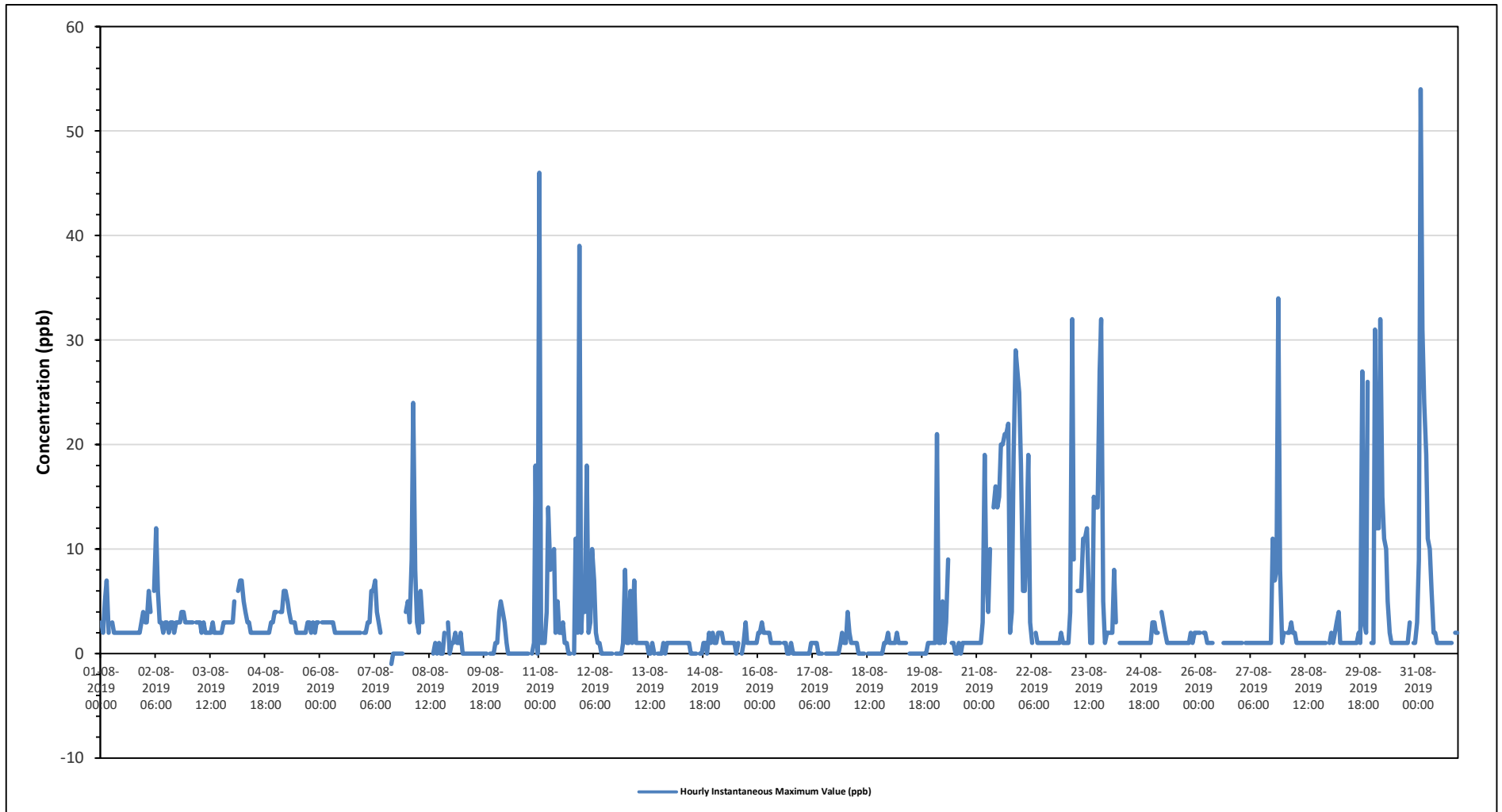
Maximum Hourly Value:	54 ppb on August 31 at hour 3	Hours in Service:	744
Maximum Daily Value:	13.7 ppb on August 21	Hours of Data:	697
Minimum Hourly Value:	-1 ppb on August 7 at hour 15	Hours of Missing Data:	9
Minimum Daily Value:	0.3 ppb on August 9	Hours of Calibration:	38
Monthly Average:	3.2 ppb	Operational Uptime:	98.8

Day	Hourly Period Starting at (MST)																								Daily Minimum	Daily Maximum	Daily Average	
	0	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23				
Aug 1	3	2	5	7	2	S	3	2	2	2	2	2	2	2	2	2	2	2	2	2	2	3	4	2	7	2.6		
Aug 2	3	3	6	4	S	6	12	6	3	3	2	3	3	2	3	3	2	2	3	3	4	4	3	3	2	12	3.8	
Aug 3	3	3	3	S	3	3	3	2	3	2	2	2	2	3	2	2	2	2	2	3	3	3	3	3	2	3	2.6	
Aug 4	3	5	S	6	7	7	5	4	3	3	2	2	2	2	2	2	2	2	2	2	2	3	3	4	2	7	3.3	
Aug 5	4	S	4	4	6	6	5	4	3	3	3	2	2	2	2	2	2	3	3	2	3	2	3	3	2	6	3.2	
Aug 6	S	3	3	3	3	3	3	3	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2	3	2	3	2.3	
Aug 7	2	2	3	3	6	6	7	4	3	2	Y	Y	Y	Y	Y	-1	0	0	0	0	0	0	0	S	4	-1	7	2.3
Aug 8	5	3	9	24	8	3	2	6	3	C	C	C	C	C	0	1	0	1	0	0	2	S	3	0	0	24	3.9	
Aug 9	1	1	2	1	1	2	0	0	0	0	0	0	0	0	0	0	0	0	0	0	S	0	0	0	0	2	0.3	
Aug 10	1	1	4	5	4	3	1	0	0	0	0	0	0	0	0	0	0	0	0	0	S	0	1	18	0	18	1.7	
Aug 11	46	1	1	1	4	14	8	9	10	2	5	2	2	3	1	1	0	0	S	0	11	2	39	2	0	46	7.1	
Aug 12	6	4	18	2	3	10	7	2	1	1	0	0	0	0	0	0	0	S	0	0	0	0	1	8	0	18	2.7	
Aug 13	1	1	6	1	7	1	1	1	1	1	1	1	0	1	0	1	S	0	0	0	1	0	1	1	0	7	1.2	
Aug 14	1	1	1	1	1	1	1	1	1	1	1	0	0	0	0	S	0	0	0	1	0	2	1	2	0	2	0.8	
Aug 15	1	1	2	2	2	1	1	1	1	1	1	1	0	1	S	0	1	3	1	1	1	1	1	1	1	0	3	1.1
Aug 16	2	2	3	2	2	2	2	1	1	1	1	1	S	1	1	0	0	0	1	0	0	0	0	0	0	3	1.0	
Aug 17	0	0	0	0	1	1	1	1	0	0	S	S	0	0	0	0	0	0	0	0	0	1	2	1	0	2	0.3	
Aug 18	1	4	2	1	1	1	1	0	0	0	S	0	0	0	0	0	0	0	0	0	0	1	1	2	0	4	0.7	
Aug 19	1	1	1	1	2	1	1	1	1	1	S	0	0	0	0	0	0	0	0	0	0	1	1	1	0	2	0.6	
Aug 20	1	1	21	1	1	5	1	3	9	S	1	1	0	0	1	0	1	1	1	1	1	1	1	1	0	21	2.3	
Aug 21	1	1	1	3	19	8	4	10	S	14	16	14	15	20	20	21	21	22	2	4	19	29	27	25	1	29	13.7	
Aug 22	18	6	6	10	19	3	1	S	2	1	1	1	1	1	1	1	1	1	1	1	1	1	2	1	1	19	3.5	
Aug 23	1	1	1	4	32	9	S	6	6	6	11	11	12	7	1	1	15	14	14	27	32	5	1	2	1	32	9.5	
Aug 24	2	2	2	8	3	S	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	8	1.5	
Aug 25	3	3	2	2	S	4	3	2	1	1	1	1	1	1	1	1	1	1	1	1	1	2	1	2	1	4	1.6	
Aug 26	2	2	2	S	2	2	1	1	1	1	Y	Y	Y	1	Y	1	1	1	1	1	1	1	1	1	1	2	1.3	
Aug 27	1	1	S	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	11	7	8	34	8	1	34	3.7	
Aug 28	2	S	2	2	3	2	2	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	3	1.3	
Aug 29	S	1	2	1	2	3	4	1	1	1	1	1	1	1	1	1	1	1	2	1	27	3	2	26	S	27	3.8	
Aug 30	1	1	31	12	12	32	15	11	10	5	2	1	1	1	1	1	1	1	1	1	1	1	3	S	1	32	6.3	
Aug 31	1	3	9	54	31	24	19	11	10	6	2	2	1	1	1	1	1	1	1	1	1	S	2	2	1	54	8.0	
Diurnal Maximum	46	6	31	54	32	32	19	11	10	14	16	14	15	20	20	21	21	22	14	27	32	34	39	25				
Diurnal Average	4.0	2.1	5.2	5.7	6.4	5.7	3.9	3.2	2.7	2.2	2.2	2.0	1.9	1.9	1.6	1.5	2.0	2.2	1.8	3.0	3.4	3.6	5.4	2.7				

C	Calibration	S	Daily Zero/Span	Q	Quality Assurance	C1	Repeat Calibration	S1	Repeat Daily Zero/Span
G	Out for Repair	K	Collection Error	N	Not in Service	O	Operator Error	P	Power Failure
R	Recovery	X	Machine Malfunction	Y	Maintenance	T	Exceeds Temperature Limits	N	Not in Service

Daily Average is shown "-" if minimum data completeness criteria of 75% or 18 hours per day is not met.
 Monthly Average is shown "-" if minimum data completeness criteria of 75% of days per month is not met.

Timeseries Chart of Hourly Instantaneous Maximum for H2S - Bonnyville - East Site





LAKELAND INDUSTRY & COMMUNITY ASSOCIATION

Bonnyville - East Site - August 2019

Summary of Hourly Instantaneous Maximums

OXIDES OF NITROGEN (NOx) in ppb

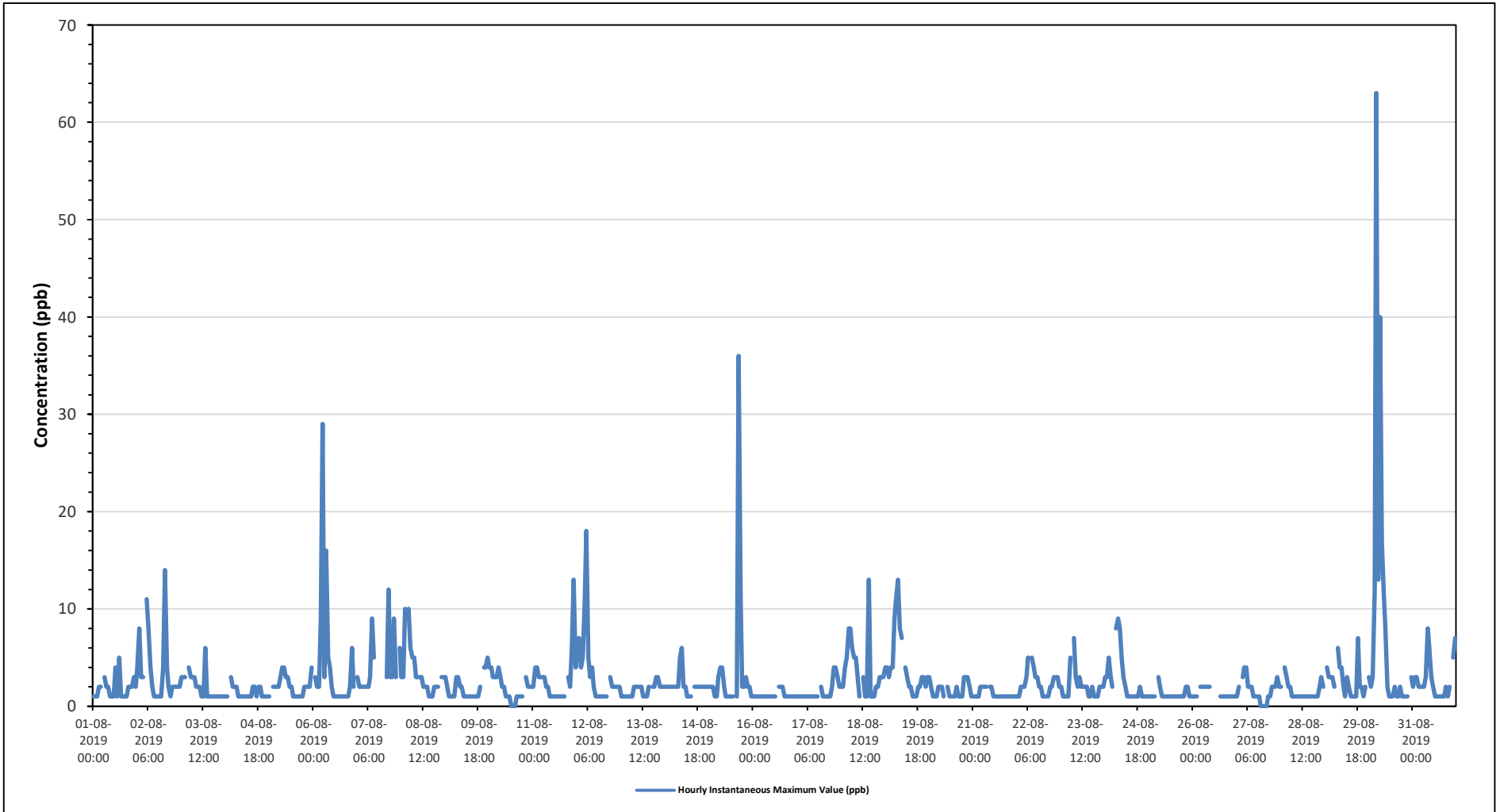
Maximum Hourly Value:	63 ppb on August 30 at hour 4	Hours in Service:	744
Maximum Daily Value:	8.3 ppb on August 30	Hours of Data:	700
Minimum Hourly Value:	0 ppb on August 10 at hour 12	Hours of Missing Data:	5
Minimum Daily Value:	1.1 ppb on August 16	Hours of Calibration:	39
Monthly Average:	2.6 ppb	Operational Uptime:	99.3

Day	Hourly Period Starting at (MST)																							Daily Minimum	Daily Maximum	Daily Average	
	0	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22				23
Aug 1	1	1	1	2	2	S	3	2	2	1	1	1	4	1	5	1	1	1	1	2	2	2	3	2	1	5	1.8
Aug 2	4	8	3	3	S	11	8	4	2	1	1	1	1	1	4	14	4	2	1	2	2	2	2	2	1	14	3.6
Aug 3	3	3	3	S	4	3	3	3	2	2	2	1	1	6	1	1	1	1	1	1	1	1	1	1	1	6	2.0
Aug 4	1	1	S	3	2	2	2	1	1	1	1	1	1	1	2	2	1	2	2	1	1	1	1	1	1	3	1.4
Aug 5	1	S	2	2	2	2	3	4	4	3	3	2	2	1	1	1	1	1	1	2	2	2	2	4	1	4	2.1
Aug 6	S	3	2	2	9	29	3	16	5	4	2	1	1	1	1	1	1	1	1	1	2	6	2	S	1	29	4.3
Aug 7	3	2	2	2	2	2	2	3	9	5	C	C	C	C	C	C	3	12	3	3	9	3	S	6	2	12	-
Aug 8	3	3	10	9	10	6	5	5	3	3	3	3	2	2	2	1	1	1	2	2	2	S	3	3	1	10	3.7
Aug 9	3	2	1	1	1	1	3	3	2	2	1	1	1	1	1	1	1	1	1	2	S	4	4	5	1	5	1.9
Aug 10	4	4	3	3	3	4	3	2	2	1	1	1	0	0	0	1	1	1	1	1	S	3	2	2	0	4	1.9
Aug 11	2	4	4	3	3	3	3	2	2	1	1	1	1	1	1	1	1	1	S	3	2	6	13	4	1	13	2.7
Aug 12	6	7	4	5	11	18	5	3	4	2	1	1	1	1	1	1	1	S	3	2	2	2	2	2	1	18	3.7
Aug 13	1	1	1	1	1	1	1	2	2	2	2	1	1	1	1	2	S	2	2	3	3	2	2	2	1	3	1.7
Aug 14	2	2	2	2	2	2	2	2	5	6	2	2	1	1	1	S	2	2	2	2	2	2	2	2	1	6	2.2
Aug 15	2	2	2	1	1	3	4	4	2	1	1	1	1	1	S	1	36	11	2	2	3	2	2	1	1	36	3.7
Aug 16	1	1	1	1	1	1	1	1	1	1	1	1	1	S	2	2	2	1	1	1	1	1	1	1	1	2	1.1
Aug 17	1	1	1	1	1	1	1	1	1	1	1	1	S	2	1	1	1	1	1	2	4	4	3	2	1	4	1.5
Aug 18	2	2	4	5	8	8	6	5	5	3	1	S	3	1	1	13	1	1	1	2	2	3	3	3	1	13	3.6
Aug 19	4	4	3	4	4	9	11	13	8	7	S	4	3	2	2	1	1	1	2	2	3	3	2	3	1	13	4.2
Aug 20	3	2	1	1	1	2	2	2	1	S	2	1	1	1	1	2	1	1	1	3	3	3	2	1	1	3	1.7
Aug 21	1	1	1	1	2	2	2	2	S	2	2	1	1	1	1	1	1	1	1	1	1	1	1	1	1	2	1.3
Aug 22	1	1	2	2	2	3	5	S	5	4	3	3	2	2	1	1	1	1	2	2	3	3	3	2	1	5	2.3
Aug 23	2	1	1	1	1	5	S	7	3	2	3	2	2	2	2	1	1	2	1	1	1	2	2	2	1	7	2.0
Aug 24	3	3	5	3	2	S	8	9	8	5	3	2	1	1	1	1	1	1	1	2	1	1	1	1	1	9	2.8
Aug 25	1	1	1	1	S	3	2	1	1	1	1	1	1	1	1	1	1	1	1	1	2	2	1	1	1	3	1.2
Aug 26	1	1	1	S	2	2	2	2	2	2	Y	Y	Y	2	Y	1	1	1	1	1	1	1	1	1	1	2	1.4
Aug 27	1	2	S	3	4	4	2	2	2	1	1	1	1	0	0	0	0	1	1	2	2	2	3	2	0	4	1.6
Aug 28	2	S	4	3	2	2	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	2	3	2	1	4	1.5
Aug 29	S	4	3	3	3	2	S1	6	4	4	2	1	3	2	1	1	1	1	1	7	2	2	1	2	S	7	2.6
Aug 30	3	2	3	12	63	13	40	17	12	8	2	1	1	1	2	1	1	2	1	1	1	1	1	1	1	63	8.3
Aug 31	2	3	3	2	2	2	2	3	8	6	3	2	1	1	1	1	1	1	2	1	2	S	5	7	1	8	2.7
Diurnal Maximum	6	8	10	12	63	29	40	17	12	8	3	4	4	6	5	14	36	12	7	3	9	6	13	7			
Diurnal Average	2.2	2.5	2.6	2.8	5.2	5.0	4.7	4.3	3.6	2.8	1.7	1.5	1.4	1.3	1.4	2.0	2.4	1.9	1.6	1.8	2.2	2.3	2.6	2.4			

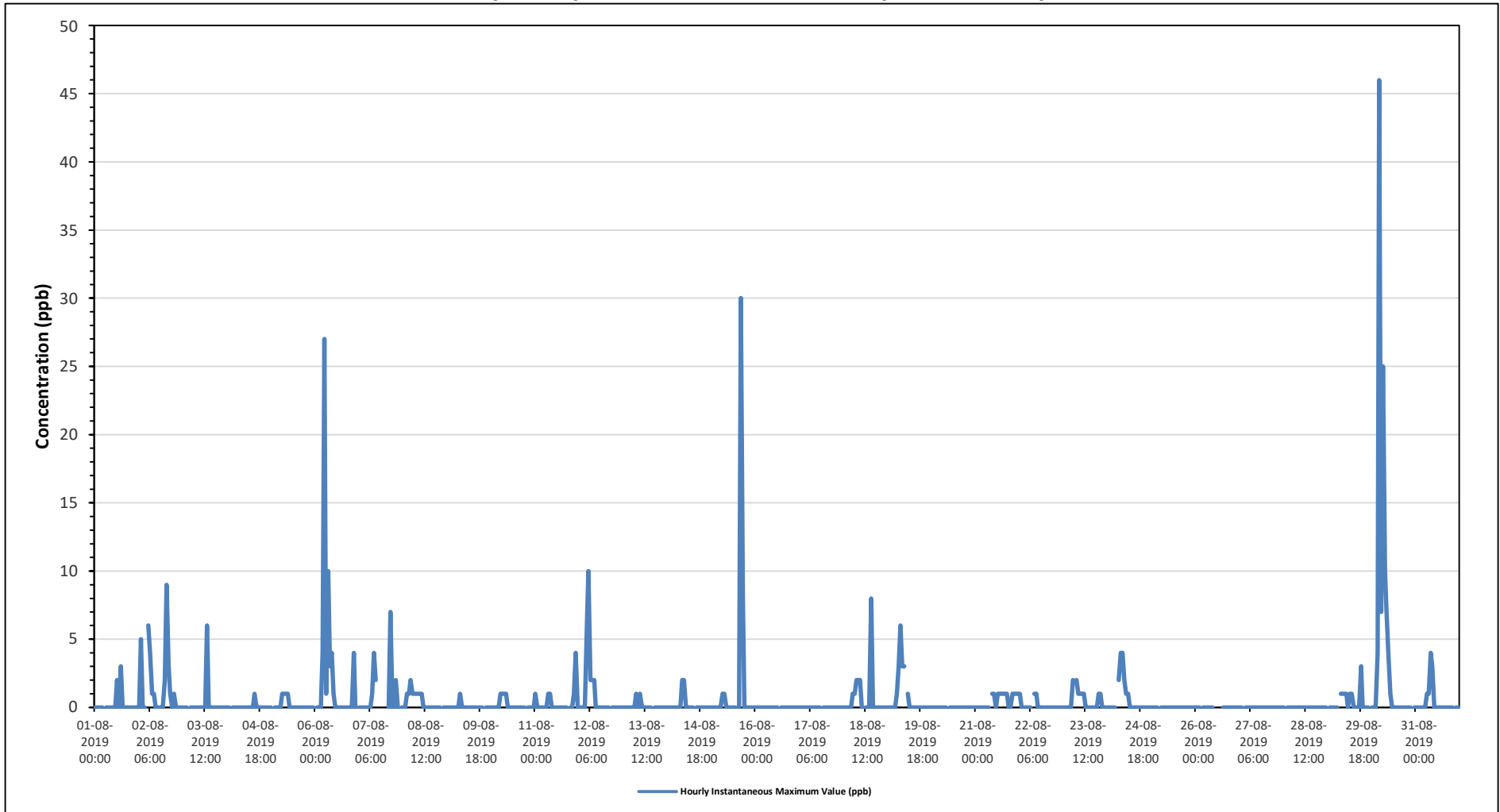
C	Calibration	S	Daily Zero/Span	Q	Quality Assurance	C1	Repeat Calibration	S1	Repeat Daily Zero/Span
G	Out for Repair	K	Collection Error	N	Not in Service	O	Operator Error	P	Power Failure
R	Recovery	X	Machine Malfunction	Y	Maintenance	T	Exceeds Temperature Limits	N	Not in Service

Daily Average is shown "-" if minimum data completeness criteria of 75% or 18 hours per day is not met.
 Monthly Average is shown "-" if minimum data completeness criteria of 75% of days per month is not met.

Timeseries Chart of Hourly Instantaneous Maximum for NOx - Bonnyville - East Site



Timeseries Chart of Hourly Instantaneous Maximum for NO - Bonnyville - East Site





LAKELAND INDUSTRY & COMMUNITY ASSOCIATION

Bonnyville - East Site - August 2019

Summary of Hourly Instantaneous Maximums

NITROGEN DIOXIDE (NO₂) in ppb

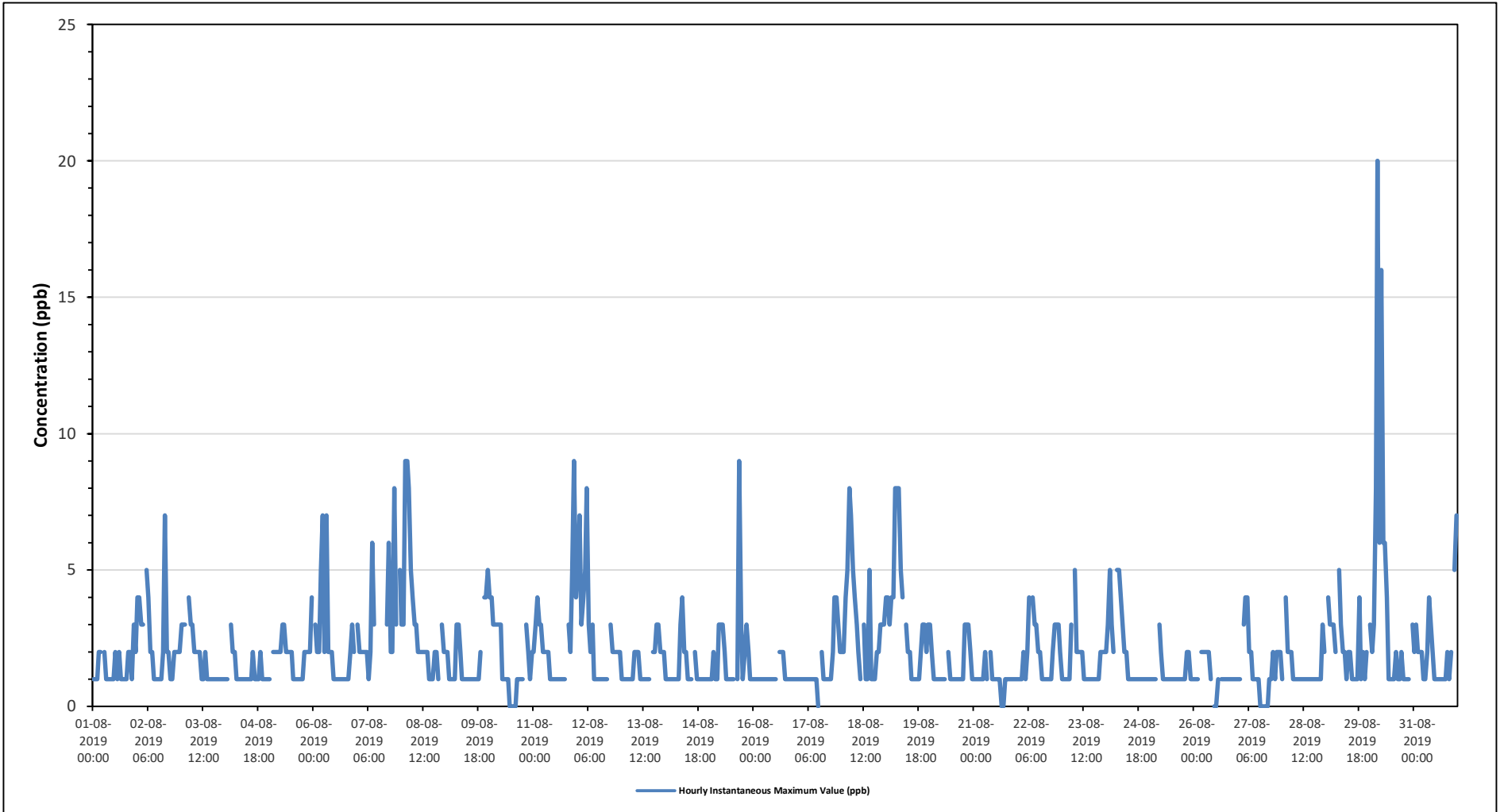
Maximum Hourly Value:	20 ppb on August 30 at hour 4	Hours in Service:	744
Maximum Daily Value:	4.0 ppb on August 30	Hours of Data:	700
Minimum Hourly Value:	0 ppb on August 10 at hour 11	Hours of Missing Data:	5
Minimum Daily Value:	1.0 ppb on August 21	Hours of Calibration:	39
Monthly Average:	2.0 ppb	Operational Uptime:	99.3

Day	Hourly Period Starting at (MST)																							Daily Minimum	Daily Maximum	Daily Average		
	0	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22				23	
Aug 1	1	1	1	2	2	S	2	1	1	1	1	1	2	1	2	1	1	1	1	2	2	1	3	2	1	3	1.4	
Aug 2	4	4	3	3	S	5	4	2	2	1	1	1	1	1	2	7	2	2	1	1	2	2	2	2	2	1	7	2.4
Aug 3	3	3	3	S	4	3	3	2	2	2	2	1	1	2	1	1	1	1	1	1	1	1	1	1	1	1	4	1.8
Aug 4	1	1	S	3	2	2	1	1	1	1	1	1	1	1	2	1	1	1	1	2	1	1	1	1	1	1	3	1.3
Aug 5	1	S	2	2	2	2	2	3	3	2	2	2	2	1	1	1	1	1	1	2	2	2	2	4	1	4	1.9	
Aug 6	S	3	2	2	5	7	2	7	2	2	2	1	1	1	1	1	1	1	1	1	2	3	2	S	1	7	2.3	
Aug 7	3	2	2	2	2	2	1	2	6	3	C	C	C	C	C	C	3	6	2	2	8	3	S	5	1	8	-	
Aug 8	3	3	9	9	8	5	4	3	3	2	2	2	2	2	2	1	1	1	2	2	1	S	3	2	1	9	3.1	
Aug 9	2	2	1	1	1	1	3	3	2	1	1	1	1	1	1	1	1	1	1	2	S	4	4	5	1	5	1.8	
Aug 10	4	4	3	3	3	3	3	1	1	1	1	0	0	0	0	1	1	1	1	1	S	3	2	1	2	0	4	1.7
Aug 11	2	3	4	3	3	2	2	2	2	1	1	1	1	1	1	1	1	1	S	3	2	5	9	4	1	9	2.4	
Aug 12	5	7	3	4	5	8	3	2	3	1	1	1	1	1	1	1	1	S	3	2	2	2	2	2	1	8	2.7	
Aug 13	1	1	1	1	1	1	1	2	2	2	1	1	1	1	1	1	1	S	2	2	3	3	2	2	1	3	1.5	
Aug 14	1	1	1	1	1	1	1	1	3	4	2	2	1	1	1	S	2	1	1	1	1	1	1	1	1	1	4	1.3
Aug 15	1	1	2	1	1	3	3	3	2	1	1	1	1	1	S	1	9	3	1	2	3	2	1	1	1	1	9	2.0
Aug 16	1	1	1	1	1	1	1	1	1	1	1	1	S	2	2	2	1	1	1	1	1	1	1	1	1	1	2	1.1
Aug 17	1	1	1	1	1	1	1	1	1	1	1	0	S	2	1	1	1	1	1	2	4	4	3	2	0	4	1.4	
Aug 18	2	2	4	5	8	7	5	4	3	2	1	S	3	1	1	5	1	1	1	2	2	3	3	3	1	8	3.0	
Aug 19	4	4	3	4	4	8	8	8	5	4	S	3	2	2	1	1	1	1	1	2	3	3	2	3	1	8	3.3	
Aug 20	3	2	1	1	1	1	1	1	1	S	2	1	1	1	1	1	1	1	1	3	3	3	2	1	1	3	1.5	
Aug 21	1	1	1	1	1	1	2	1	S	2	1	1	1	1	1	0	0	1	1	1	1	1	1	1	0	2	1.0	
Aug 22	1	1	1	2	1	2	4	S	4	3	3	2	2	1	1	1	1	1	1	2	3	3	3	2	1	4	2.0	
Aug 23	1	1	1	1	1	3	S	5	2	2	2	2	1	1	1	1	1	1	1	1	1	2	2	2	1	5	1.6	
Aug 24	2	3	5	3	2	S	5	5	4	3	2	2	1	1	1	1	1	1	1	1	1	1	1	1	1	5	2.1	
Aug 25	1	1	1	1	S	3	2	1	1	1	1	1	1	1	1	1	1	1	1	2	2	1	1	1	1	3	1.2	
Aug 26	1	1	1	S	2	2	2	2	2	1	Y	Y	Y	1	Y	1	1	1	1	1	1	1	1	1	1	2	1.3	
Aug 27	1	1	S	3	4	4	2	2	1	1	1	1	0	0	0	0	0	0	1	1	2	1	2	2	0	4	1.4	
Aug 28	1	S	4	2	2	2	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	3	2	1	4	1.4	
Aug 29	S	4	3	3	3	2	S1	5	3	2	2	2	2	1	1	1	1	1	4	1	2	1	2	S	1	5	2.2	
Aug 30	3	2	3	8	20	6	16	6	6	4	1	1	1	1	2	1	1	1	2	1	1	1	1	S	3	1	20	4.0
Aug 31	2	3	2	2	2	1	1	2	4	3	2	1	1	1	1	1	1	1	2	1	1	2	S	5	7	1	7	2.1
Diurnal Maximum	5	7	9	9	20	8	16	8	6	4	3	3	3	2	2	7	9	6	4	3	8	5	9	7				
Diurnal Average	2.0	2.2	2.4	2.6	3.2	3.1	3.0	2.7	2.5	1.9	1.4	1.2	1.2	1.1	1.1	1.3	1.4	1.3	1.3	1.6	2.1	2.1	2.3	2.3				

C	Calibration	S	Daily Zero/Span	Q	Quality Assurance	C1	Repeat Calibration	S1	Repeat Daily Zero/Span
G	Out for Repair	K	Collection Error	N	Not in Service	O	Operator Error	P	Power Failure
R	Recovery	X	Machine Malfunction	Y	Maintenance	T	Exceeds Temperature Limits	N	Not in Service

Daily Average is shown "-" if minimum data completeness criteria of 75% or 18 hours per day is not met.
 Monthly Average is shown "-" if minimum data completeness criteria of 75% of days per month is not met.

Timeseries Chart of Hourly Instantaneous Maximum for NO2 - Bonnyville - East Site





LAKELAND INDUSTRY & COMMUNITY ASSOCIATION

Bonnyville - East Site - August 2019

Summary of Hourly Instantaneous Maximums

OZONE (O₃) in ppb

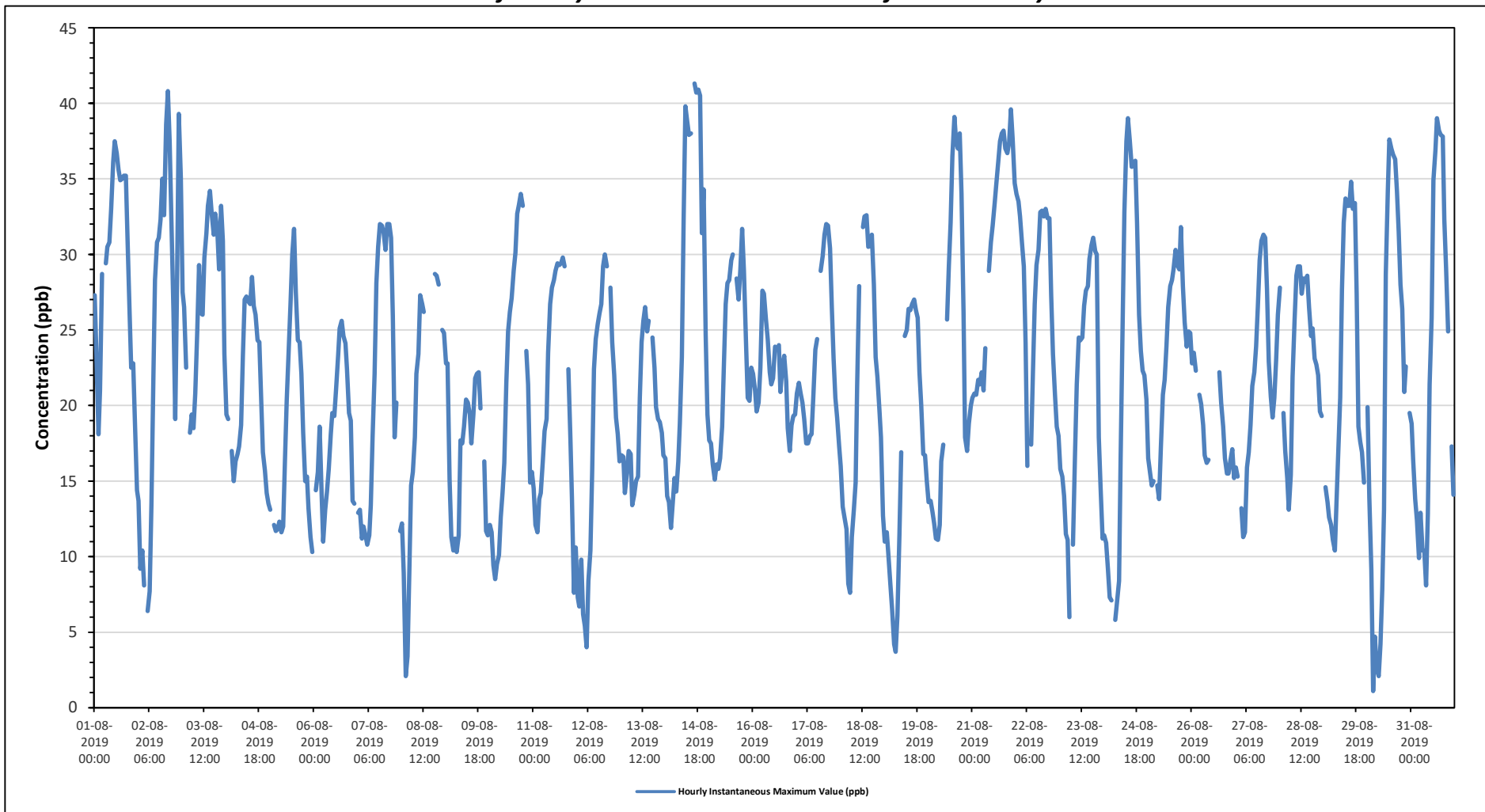
Maximum Hourly Value:	41.3 ppb	on August 14 at hour 16	Hours in Service:	744
Maximum Daily Value:	30.6 ppb	on August 21	Hours of Data:	702
Minimum Hourly Value:	1.1 ppb	on August 30 at hour 3	Hours of Missing Data:	4
Minimum Daily Value:	16.9 ppb	on August 19	Hours of Calibration:	38
Monthly Average:	22.1 ppb		Operational Uptime:	99.5

Day	Hourly Period Starting at (MST)																							Daily Minimum	Daily Maximum	Daily Average		
	0	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22				23	
Aug 1	27.3	23.2	18.1	21	28.7	S	29.4	30.5	30.8	33	36.1	37.5	36.7	35.6	34.9	35	35.2	35.2	30.8	26	22.5	22.8	18.8	14.4	14.4	37.5	28.8	
Aug 2	13.7	9.2	10.4	8.1	S	6.4	7.7	13.5	22.2	28.3	30.8	31.1	32.3	35	32.6	38.6	40.8	37.4	32.1	26.2	19.1	27.9	39.3	35.1	6.4	40.8	25.1	
Aug 3	27.5	26.5	22.5	S	18.2	19.4	18.5	20.8	25	29.3	26.1	26	29.8	31.4	33.2	34.2	32.7	31.3	32.7	31.6	29	33.2	30.9	23.4	18.2	34.2	27.5	
Aug 4	19.4	19.1	S	17	15	16.3	16.8	17.3	18.7	23.3	27	27.2	26.9	26.7	28.5	26.6	26	24.3	24.2	20	16.9	15.7	14.2	13.5	13.5	28.5	20.9	
Aug 5	13.1	S	12.1	11.7	11.8	12.3	11.6	12	16.3	20.3	23.3	26.7	30	31.7	27.5	24.3	24.2	22.1	18.2	15	15.3	13.2	11.3	10.3	10.3	31.7	18.0	
Aug 6	S	14.4	15.6	18.6	14.1	11	13.1	14.3	15.8	18.1	19.5	19.3	21.1	23.3	25.1	25.6	24.6	24.1	22.4	19.5	19	13.7	13.5	S	11.0	25.6	18.4	
Aug 7	12.9	13.1	11.2	12	11.4	10.8	11.4	13.4	17.9	22.1	28.1	30.5	32	31.9	31.4	30.3	32	32	31.1	25.9	17.9	20.2	S	11.7	10.8	32.0	21.4	
Aug 8	12.2	8.9	2.1	3.4	8.9	14.7	15.6	17.9	22.1	23.4	27.3	26.7	26.2	C	C	C	C	C	28.7	28.6	28	S	25	24.8	2.1	28.7	19.1	
Aug 9	22.8	22.8	15.1	11.3	10.4	11.2	10.3	11.4	17.7	17.5	18.6	20.4	20.2	19.4	17.5	19.4	21.8	22.1	22.2	19.8	S	16.3	11.7	11.4	10.3	22.8	17.0	
Aug 10	12.1	11.6	9.4	8.5	9.5	10.1	12.6	14.2	16.2	21.5	24.9	26.2	27.1	28.9	30.1	32.7	33.3	34	33.2	S	23.6	21.4	14.9	15.6	8.5	34.0	20.5	
Aug 11	14.5	12.1	11.6	13.8	14.2	16.3	18.3	19.1	23.5	26.7	27.8	28.3	28.9	29.4	29.3	29.4	29.8	29.2	S	22.4	17.8	13.9	7.6	10.6	7.6	29.8	20.6	
Aug 12	7.3	6.7	9.8	6.2	5.4	4	8.4	10.4	15.7	22.4	24.4	25.4	26.1	26.7	29.2	30	29.2	S	27.8	24.2	22	19.2	18.1	16.3	4.0	30.0	18.0	
Aug 13	16.7	16.6	14.2	15.5	17	16.8	13.4	14.1	15	15.3	20.5	24.2	25.6	26.5	24.9	25.6	S	24.5	22.5	19.9	19.1	18.9	18.2	16.7	13.4	26.5	19.2	
Aug 14	16.5	14	13.6	11.9	13.3	15.2	14.3	16.3	18.8	23.2	32.3	39.8	38.8	37.9	38	S	41.3	40.7	40.9	40.5	31.4	34.3	24.7	19.4	11.9	41.3	26.8	
Aug 15	17.7	17.5	16.1	15.1	16.1	15.8	16.5	18.6	22.7	26.7	28.1	28.3	29.6	30	S	28.4	27	29	31.7	28.9	24.3	20.5	20.3	22.5	15.1	31.7	23.1	
Aug 16	22.1	21	19.6	20.2	22.5	27.6	27.4	25.7	24.4	22.2	21.4	21.8	23.9	S	24	20.9	22.6	23.3	21.6	18.5	17	18.7	19.3	19.4	17.0	27.6	22.0	
Aug 17	20.8	21.5	20.8	20.2	19.1	17.5	17.5	18	18.1	20.6	23.7	24.4	S	28.9	29.9	31.3	32	31.9	30.4	26.5	23.1	20.5	19.2	17.3	17.3	32.0	23.2	
Aug 18	16	13.3	12.6	11.8	8.2	7.6	11.3	13.1	14.9	21.3	27.9	S	31.8	32.5	32.6	30.5	30.6	31.3	28	23.2	21.9	19.7	17.9	12.7	7.6	32.6	20.5	
Aug 19	11	11.6	10.2	8.2	6.5	4.2	3.7	6.1	11.5	16.9	S	24.6	25	26.4	26.3	26.7	27	26.3	25.8	22.2	20	16.8	16.7	15	3.7	27.0	16.9	
Aug 20	13.6	13.7	13	12.2	11.2	11.1	12.1	16.3	17.4	S	25.7	29.2	32.1	36.5	39.1	37.4	37	38	34	26.2	17.9	17	18.8	20	11.1	39.1	23.0	
Aug 21	20.5	20.8	20.7	21.7	21.4	22.2	21	23.8	S	28.9	30.8	31.9	33.4	34.6	36.1	37.5	38	38.2	37	36.7	37.4	39.6	37.6	34.7	20.5	39.6	30.6	
Aug 22	34	33.5	32.5	30.7	29.2	24.1	16	S	17.4	22.2	26.7	29.3	30.3	32.8	32.9	32.5	33	32.4	32.4	27.3	23.4	20.7	18.6	18	16.0	34.0	27.4	
Aug 23	15.8	15.3	14	11.5	11.1	6	S	10.8	16.7	21.4	24.5	24.3	24.5	26.6	27.6	27.9	29.7	30.6	31.1	30.2	30	17.9	14.6	11.2	6.0	31.1	20.6	
Aug 24	11.4	10.9	9.2	7.3	7.1	S	5.8	7	8.4	16.3	25.3	32.8	37.5	39	37.6	35.8	36	36.2	32.1	26	23.6	22.3	22	20.4	5.8	39.0	22.2	
Aug 25	16.5	15.6	14.7	15	S	14.7	13.8	17.2	20.7	21.7	23.9	26.5	27.9	28.3	29	30.3	29.3	29	31.8	27.9	25.5	23.9	24.9	24.8	13.8	31.8	23.2	
Aug 26	22.8	23.5	22.3	S	20.7	20.1	18.7	16.7	16.2	16.4	Y	Y	Y	23.1	Y	22.2	20.2	18.6	16.5	15.5	15.5	16.4	17.1	15.2	15.2	23.5	18.8	
Aug 27	15.9	15.3	S	13.2	11.3	11.6	15.9	16.9	18.7	21.3	22.2	23.9	26.6	29.6	30.9	31.3	31.1	27.7	22.9	20.6	19.2	20.5	23	26	11.3	31.3	21.5	
Aug 28	27.8	S	19.5	17	15.2	13.1	15.4	21.9	25.7	28.6	29.2	29.2	27.4	28.4	28.2	28.6	26.5	24.6	25.1	23.1	22.7	22	19.6	19.3	13.1	29.2	23.4	
Aug 29	S	14.6	13.6	12.6	12.1	11.1	10.4	13.4	17.2	20.5	27.7	32.1	33.7	33.2	33.2	34.8	33	33.4	27.4	18.6	17.6	16.9	14.9	S	10.4	34.8	21.9	
Aug 30	19.9	13.9	9.1	1.1	4.7	2.6	2.1	4.2	7.8	13.1	28.7	34.2	37.6	37	36.6	36.3	34.2	31.5	28	26.4	20.9	22.6	S	19.5	1.1	37.6	20.5	
Aug 31	18.8	16.4	13.8	12.4	9.9	12.9	10.4	10.4	8.1	12.8	21.4	25.8	34.9	36.9	39	38.2	37.9	37.8	32.3	29.1	24.9	S	17.3	14.1	8.1	39.0	22.4	
Diurnal Maximum	34	34	33	31	29	28	29	31	31	33	36	40	39	39	39	39	41	41	41	41	41	37	40	39	35			
Diurnal Average	18.0	16.4	14.7	13.4	13.9	13.3	14.0	15.5	18.1	21.8	26.0	27.8	29.6	30.6	30.9	30.4	30.9	30.2	28.5	24.9	22.2	20.9	19.7	18.4				

C	Calibration	S	Daily Zero/Span	Q	Quality Assurance	C1	Repeat Calibration	S1	Repeat Daily Zero/Span
G	Out for Repair	K	Collection Error	N	Not in Service	O	Operator Error	P	Power Failure
R	Recovery	X	Machine Malfunction	Y	Maintenance	T	Exceeds Temperature Limits	N	Not in Service

Daily Average is shown "-" if minimum data completeness criteria of 75% or 18 hours per day is not met.
 Monthly Average is shown "-" if minimum data completeness criteria of 75% of days per month is not met.

Timeseries Chart of Hourly Instantaneous Maximum for O3 - Bonnyville - East Site





LAKELAND INDUSTRY & COMMUNITY ASSOCIATION

Bonnyville - East Site - August 2019

Summary of Hourly Instantaneous Maximums

TOTAL HYDROCARBONS (THC) in ppm

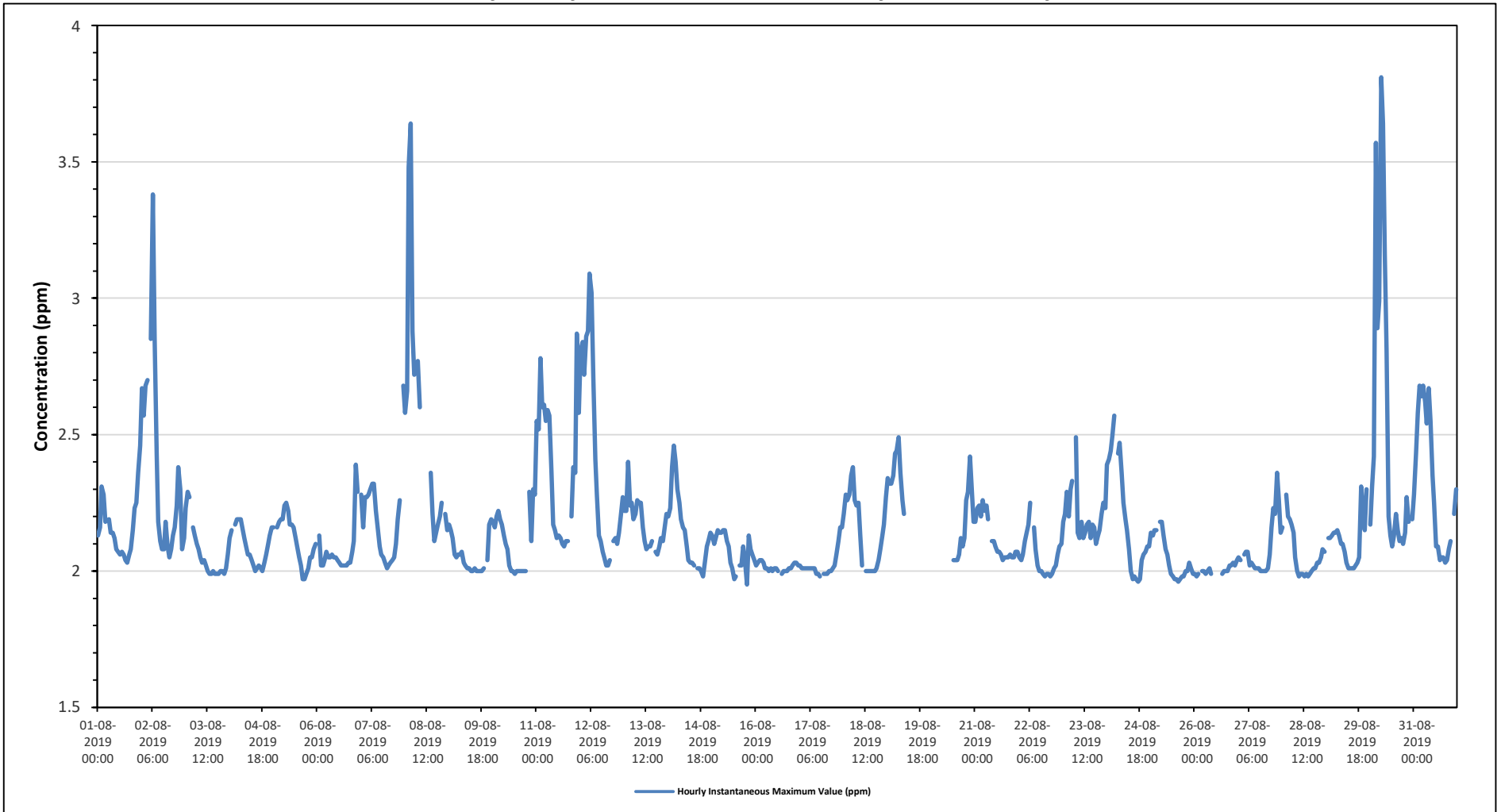
Maximum Hourly Value: 3.81 ppm on August 30 at hour 6	Hours in Service: 744
Maximum Daily Value: 2.55 ppm on August 8	Hours of Data: 679
Minimum Hourly Value: 1.95 ppm on August 15 at hour 19	Hours of Missing Data: 28
Minimum Daily Value: 2.00 ppm on August 26	Hours of Calibration: 37
Monthly Average: 2.17 ppm	Operational Uptime: 96.2

Day	Hourly Period Starting at (MST)																							Daily Minimum	Daily Maximum	Daily Average		
	0	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22				23	
Aug 1	2.13	2.16	2.31	2.28	2.18	S	2.19	2.14	2.14	2.12	2.08	2.07	2.06	2.07	2.06	2.04	2.03	2.06	2.08	2.15	2.23	2.25	2.36	2.46	2.03	2.46	2.16	
Aug 2	2.67	2.57	2.68	2.70	S	2.85	3.38	2.85	2.43	2.18	2.11	2.08	2.08	2.18	2.09	2.05	2.08	2.13	2.16	2.24	2.38	2.30	2.08	2.12	2.05	3.38	2.36	
Aug 3	2.23	2.29	2.27	S	2.16	2.13	2.10	2.08	2.05	2.03	2.04	2.02	2.00	1.99	1.99	2.00	1.99	1.99	1.99	2.00	2.00	1.99	2.01	2.06	1.99	2.29	2.06	
Aug 4	2.12	2.15	S	2.17	2.19	2.19	2.19	2.16	2.12	2.09	2.06	2.06	2.04	2.02	2.00	2.01	2.02	2.01	2.00	2.03	2.06	2.10	2.13	2.16	2.00	2.19	2.09	
Aug 5	2.16	S	2.16	2.18	2.19	2.19	2.24	2.25	2.22	2.17	2.17	2.16	2.12	2.09	2.05	2.02	1.97	1.97	1.99	2.01	2.05	2.05	2.08	2.10	1.97	2.25	2.11	
Aug 6	S	2.13	2.02	2.02	2.04	2.07	2.05	2.05	2.06	2.05	2.05	2.04	2.03	2.02	2.02	2.02	2.02	2.03	2.03	2.07	2.11	2.39	2.29	S	2.02	2.39	2.07	
Aug 7	2.28	2.16	2.27	2.27	2.28	2.30	2.32	2.32	2.22	2.16	2.09	2.06	2.05	2.03	2.01	2.02	2.03	2.04	2.05	2.10	2.19	2.26	S	2.68	2.01	2.68	2.18	
Aug 8	2.58	2.66	3.48	3.64	2.88	2.72	2.73	2.77	2.60	C	C	C	C	C	2.36	2.21	2.11	2.14	2.17	2.20	2.25	S	2.21	2.15	2.11	3.64	2.55	
Aug 9	2.17	2.15	2.12	2.06	2.05	2.06	2.06	2.07	2.03	2.02	2.01	2.01	2.00	2.00	2.01	2.00	2.00	2.00	2.00	2.01	S	2.04	2.17	2.19	2.00	2.19	2.05	
Aug 10	2.18	2.16	2.20	2.22	2.19	2.17	2.13	2.10	2.08	2.02	2.00	2.00	1.99	2.00	2.00	2.00	2.00	2.00	2.00	2.00	S	2.29	2.11	2.30	2.28	1.99	2.30	2.11
Aug 11	2.55	2.52	2.78	2.60	2.61	2.55	2.59	2.57	2.37	2.17	2.15	2.12	2.13	2.12	2.10	2.09	2.11	2.11	S	2.20	2.38	2.36	2.87	2.58	2.09	2.87	2.38	
Aug 12	2.81	2.84	2.72	2.86	2.88	3.09	3.02	2.71	2.41	2.28	2.13	2.11	2.07	2.05	2.02	2.02	2.04	S	2.11	2.12	2.10	2.14	2.20	2.27	2.02	3.09	2.39	
Aug 13	2.22	2.22	2.40	2.24	2.25	2.19	2.21	2.26	2.25	2.25	2.16	2.11	2.08	2.09	2.09	2.11	S	2.07	2.06	2.09	2.12	2.11	2.16	2.21	2.06	2.40	2.17	
Aug 14	2.20	2.23	2.38	2.46	2.40	2.30	2.25	2.19	2.16	2.15	2.09	2.04	2.03	2.03	2.02	S	2.01	2.01	2.00	1.98	2.03	2.09	2.11	2.14	1.98	2.46	2.14	
Aug 15	2.13	2.10	2.12	2.15	2.14	2.14	2.15	2.15	2.11	2.09	2.03	2.01	1.97	1.98	S	2.02	2.02	2.09	2.04	1.95	2.13	2.08	2.06	2.04	1.95	2.15	2.07	
Aug 16	2.02	2.03	2.04	2.04	2.03	2.01	2.01	2.00	2.01	2.00	2.01	2.01	2.00	S	1.99	2.00	2.00	2.00	2.01	2.01	2.02	2.03	2.03	2.02	1.99	2.04	2.01	
Aug 17	2.02	2.01	2.01	2.01	2.01	2.01	2.01	2.01	1.99	1.99	1.98	S	1.99	1.99	1.99	2.00	2.00	2.00	2.01	2.02	2.06	2.11	2.16	2.16	1.98	2.16	2.02	
Aug 18	2.21	2.28	2.26	2.28	2.35	2.38	2.26	2.24	2.25	2.13	2.02	S	2.00	2.00	2.00	2.00	2.00	2.00	2.01	2.04	2.08	2.13	2.17	2.27	2.00	2.38	2.15	
Aug 19	2.34	2.32	2.32	2.35	2.43	2.44	2.49	2.36	2.26	2.21	S	2.04	X	X	X	X	X	X	X	X	X	X	X	X	2.04	2.49	-	
Aug 20	X	X	X	X	X	X	X	X	X	X	X	X	X	2.04	2.04	2.04	2.06	2.12	2.09	2.12	2.26	2.29	2.42	2.30	2.18	2.04	2.42	-
Aug 21	2.18	2.23	2.24	2.20	2.26	2.22	2.24	2.19	S	2.11	2.11	2.09	2.07	2.07	2.06	2.04	2.05	2.05	2.05	2.06	2.05	2.05	2.07	2.07	2.04	2.26	2.12	
Aug 22	2.05	2.04	2.06	2.11	2.14	2.17	2.25	S	2.16	2.08	2.02	2.00	2.00	1.99	1.98	1.99	1.99	1.98	1.99	2.01	2.02	2.06	2.09	2.10	1.98	2.25	2.06	
Aug 23	2.18	2.21	2.29	2.20	2.30	2.33	S	2.49	2.14	2.12	2.18	2.12	2.14	2.17	2.18	2.12	2.17	2.16	2.10	2.13	2.15	2.21	2.25	2.23	2.10	2.49	2.20	
Aug 24	2.39	2.41	2.44	2.50	2.57	S	2.43	2.47	2.36	2.25	2.19	2.15	2.08	2.00	1.97	1.98	1.97	1.96	1.97	2.04	2.06	2.07	2.09	2.09	1.96	2.57	2.19	
Aug 25	2.14	2.13	2.15	2.15	S	2.18	2.18	2.13	2.08	2.06	2.02	1.99	1.98	1.97	1.97	1.96	1.97	1.98	1.98	2.00	2.00	2.03	2.01	1.99	1.96	2.18	2.05	
Aug 26	1.99	1.98	1.99	S	2.00	2.00	1.99	2.00	2.01	1.99	Y	Y	Y	1.99	Y	1.99	2.00	2.00	2.00	2.02	2.02	2.03	2.02	2.04	1.98	2.04	2.00	
Aug 27	2.05	2.04	S	2.06	2.07	2.07	2.02	2.03	2.02	2.01	2.01	2.01	2.00	2.00	2.00	2.00	2.01	2.06	2.16	2.23	2.21	2.36	2.26	2.14	2.00	2.36	2.08	
Aug 28	2.16	S	2.28	2.20	2.19	2.17	2.14	2.05	2.00	1.98	1.99	1.99	1.98	1.99	1.98	1.99	2.00	2.01	2.01	2.03	2.03	2.05	2.08	2.07	1.98	2.28	2.06	
Aug 29	S	2.12	2.12	2.13	2.14	2.14	2.15	2.13	2.10	2.10	2.07	2.03	2.01	2.01	2.01	2.01	2.02	2.03	2.05	2.31	2.22	2.15	2.30	S	2.01	2.31	2.11	
Aug 30	2.17	2.31	2.42	3.57	2.89	2.99	3.81	3.64	3.16	2.81	2.20	2.13	2.09	2.13	2.21	2.15	2.11	2.12	2.10	2.14	2.27	2.18	S	2.19	2.09	3.81	2.51	
Aug 31	2.28	2.43	2.58	2.68	2.64	2.68	2.62	2.54	2.67	2.55	2.35	2.25	2.09	2.09	2.04	2.05	2.05	2.03	2.04	2.08	2.11	S	2.21	2.30	2.03	2.68	2.32	
Diurnal Maximum	2.81	2.84	3.48	3.64	2.89	3.09	3.81	3.64	3.16	2.81	2.35	2.25	2.14	2.18	2.36	2.21	2.17	2.16	2.17	2.31	2.38	2.42	2.87	2.68				
Diurnal Average	2.24	2.25	2.33	2.37	2.30	2.31	2.35	2.31	2.22	2.14	2.09	2.06	2.04	2.04	2.04	2.03	2.03	2.04	2.04	2.09	2.13	2.15	2.18	2.19				

C	Calibration	S	Daily Zero/Span	Q	Quality Assurance	C1	Repeat Calibration	S1	Repeat Daily Zero/Span
G	Out for Repair	K	Collection Error	N	Not in Service	O	Operator Error	P	Power Failure
R	Recovery	X	Machine Malfunction	Y	Maintenance	T	Exceeds Temperature Limits	N	Not in Service

Daily Average is shown "-" if minimum data completeness criteria of 75% or 18 hours per day is not met.
 Monthly Average is shown "-" if minimum data completeness criteria of 75% of days per month is not met.

Timeseries Chart of Hourly Instantaneous Maximum for THC - Bonnyville - East Site





LAKELAND INDUSTRY & COMMUNITY ASSOCIATION

Bonnyville - East Site - August 2019

Summary of Hourly Instantaneous Maximums

METHANE (CH4) in ppm

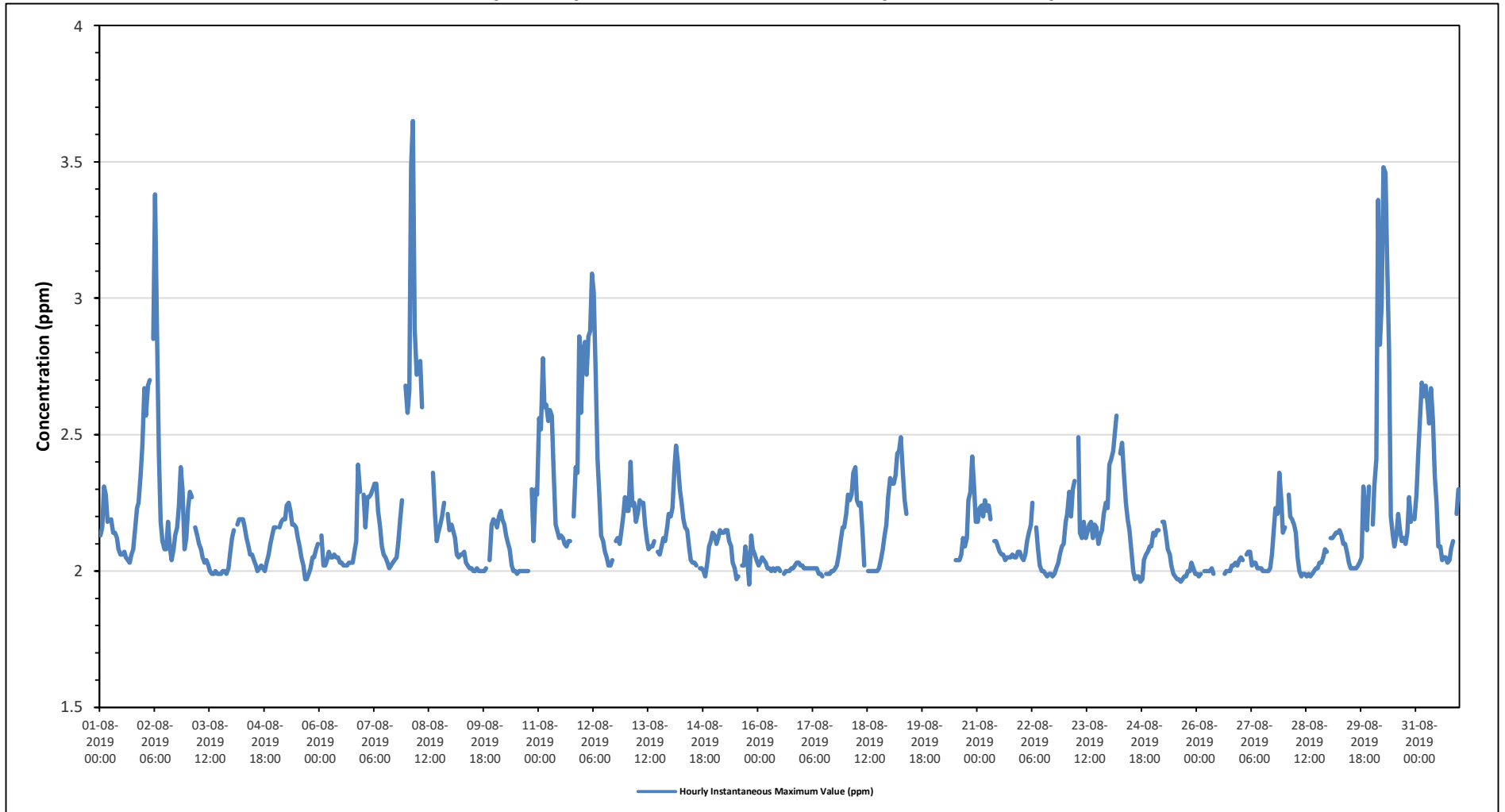
Maximum Hourly Value:	3.65 ppm on August 8 at hour 3	Hours in Service:	744
Maximum Daily Value:	2.55 ppm on August 8	Hours of Data:	679
Minimum Hourly Value:	1.95 ppm on August 15 at hour 19	Hours of Missing Data:	28
Minimum Daily Value:	2.00 ppm on August 26	Hours of Calibration:	37
Monthly Average:	2.16 ppm	Operational Uptime:	96.2

Day	Hourly Period Starting at (MST)																							Daily Minimum	Daily Maximum	Daily Average		
	0	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22				23	
Aug 1	2.13	2.16	2.31	2.28	2.18	S	2.19	2.14	2.14	2.12	2.08	2.06	2.06	2.07	2.05	2.04	2.03	2.06	2.08	2.15	2.23	2.25	2.35	2.46	2.03	2.46	2.16	
Aug 2	2.67	2.57	2.68	2.70	S	2.85	3.38	2.85	2.43	2.18	2.11	2.08	2.08	2.18	2.09	2.04	2.08	2.13	2.16	2.24	2.38	2.30	2.08	2.12	2.04	3.38	2.36	
Aug 3	2.23	2.29	2.27	S	2.16	2.13	2.10	2.08	2.05	2.03	2.04	2.02	2.00	1.99	1.99	2.00	1.99	1.99	1.99	2.00	2.00	1.99	2.01	2.06	1.99	2.29	2.06	
Aug 4	2.12	2.15	S	2.17	2.19	2.19	2.19	2.16	2.12	2.09	2.06	2.06	2.04	2.02	2.00	2.01	2.02	2.01	2.00	2.03	2.06	2.10	2.13	2.16	2.00	2.19	2.09	
Aug 5	2.16	S	2.16	2.18	2.19	2.19	2.24	2.25	2.22	2.17	2.17	2.16	2.12	2.09	2.05	2.02	1.97	1.97	1.99	2.01	2.05	2.05	2.08	2.10	1.97	2.25	2.11	
Aug 6	S	2.13	2.02	2.02	2.04	2.07	2.05	2.05	2.06	2.05	2.05	2.03	2.03	2.02	2.02	2.02	2.03	2.03	2.03	2.07	2.11	2.39	2.29	S	2.02	2.39	2.07	
Aug 7	2.28	2.16	2.27	2.27	2.28	2.30	2.32	2.32	2.22	2.16	2.09	2.06	2.05	2.03	2.01	2.02	2.03	2.04	2.05	2.10	2.19	2.26	S	2.68	2.01	2.68	2.18	
Aug 8	2.58	2.66	3.48	3.65	2.89	2.72	2.73	2.77	2.60	C	C	C	C	C	2.36	2.21	2.11	2.14	2.17	2.20	2.25	S	2.21	2.15	2.11	3.65	2.55	
Aug 9	2.17	2.15	2.12	2.06	2.05	2.06	2.06	2.07	2.03	2.02	2.01	2.01	2.00	2.00	2.01	2.00	2.00	2.00	2.00	2.01	S	2.04	2.17	2.19	2.00	2.19	2.05	
Aug 10	2.18	2.16	2.20	2.22	2.19	2.17	2.13	2.10	2.08	2.02	2.00	2.00	1.99	2.00	2.00	2.00	2.00	2.00	2.00	2.00	S	2.30	2.11	2.30	2.28	1.99	2.30	2.11
Aug 11	2.56	2.52	2.78	2.60	2.61	2.55	2.59	2.57	2.37	2.17	2.15	2.12	2.13	2.12	2.10	2.09	2.11	2.11	S	2.20	2.38	2.36	2.86	2.58	2.09	2.86	2.38	
Aug 12	2.81	2.84	2.72	2.86	2.88	3.09	3.02	2.71	2.41	2.28	2.13	2.11	2.07	2.05	2.02	2.02	2.04	S	2.11	2.12	2.10	2.14	2.20	2.27	2.02	3.09	2.39	
Aug 13	2.22	2.22	2.40	2.24	2.25	2.18	2.21	2.26	2.25	2.25	2.17	2.11	2.08	2.09	2.09	2.12	S	2.07	2.06	2.09	2.12	2.11	2.16	2.21	2.06	2.40	2.17	
Aug 14	2.20	2.23	2.38	2.46	2.40	2.30	2.25	2.19	2.16	2.15	2.09	2.04	2.03	2.03	2.02	S	2.01	2.01	2.00	1.98	2.03	2.09	2.11	2.14	1.98	2.46	2.14	
Aug 15	2.13	2.10	2.12	2.15	2.14	2.14	2.15	2.15	2.11	2.09	2.03	2.01	1.97	1.98	S	2.02	2.02	2.09	2.04	1.95	2.13	2.08	2.06	2.04	1.95	2.15	2.07	
Aug 16	2.02	2.03	2.05	2.04	2.03	2.01	2.01	2.00	2.01	2.00	2.01	2.01	2.00	S	1.99	2.00	2.00	2.00	2.01	2.01	2.02	2.03	2.03	2.02	1.99	2.05	2.01	
Aug 17	2.02	2.01	2.01	2.01	2.01	2.01	2.01	2.01	2.01	1.99	1.99	1.98	S	1.99	1.99	1.99	2.00	2.00	2.01	2.02	2.06	2.11	2.16	2.16	1.98	2.16	2.02	
Aug 18	2.21	2.28	2.26	2.28	2.36	2.38	2.26	2.24	2.25	2.13	2.02	S	2.00	2.00	2.00	2.00	2.00	2.00	2.01	2.04	2.08	2.13	2.17	2.27	2.00	2.38	2.15	
Aug 19	2.34	2.32	2.32	2.35	2.43	2.44	2.49	2.36	2.26	2.21	S	2.04	X	X	X	X	X	X	X	X	X	X	X	X	2.04	2.49	-	
Aug 20	X	X	X	X	X	X	X	X	X	X	X	X	X	2.04	2.04	2.04	2.06	2.12	2.09	2.12	2.26	2.29	2.42	2.30	2.18	2.04	2.42	-
Aug 21	2.18	2.23	2.24	2.20	2.26	2.22	2.24	2.19	S	2.11	2.11	2.09	2.07	2.06	2.06	2.04	2.05	2.05	2.05	2.06	2.05	2.05	2.07	2.07	2.04	2.26	2.12	
Aug 22	2.05	2.04	2.06	2.11	2.14	2.17	2.25	S	2.16	2.08	2.02	2.00	2.00	1.99	1.98	1.99	1.99	1.98	1.99	2.01	2.03	2.06	2.09	2.10	1.98	2.25	2.06	
Aug 23	2.18	2.21	2.29	2.20	2.30	2.33	S	2.49	2.14	2.12	2.18	2.12	2.14	2.17	2.18	2.12	2.17	2.16	2.10	2.13	2.15	2.21	2.25	2.23	2.10	2.49	2.20	
Aug 24	2.39	2.41	2.44	2.50	2.57	S	2.43	2.47	2.36	2.25	2.19	2.15	2.08	2.00	1.97	1.98	1.98	1.96	1.97	2.04	2.06	2.07	2.09	2.09	1.96	2.57	2.19	
Aug 25	2.14	2.13	2.15	2.15	S	2.18	2.18	2.13	2.08	2.06	2.02	1.99	1.98	1.97	1.97	1.96	1.97	1.98	1.98	2.00	2.00	2.03	2.01	1.99	1.96	2.18	2.05	
Aug 26	1.99	1.98	1.99	S	2.00	2.00	2.00	2.00	2.01	1.99	Y	Y	Y	1.99	Y	1.99	2.00	2.00	2.00	2.02	2.02	2.03	2.02	2.04	1.98	2.04	2.00	
Aug 27	2.05	2.04	S	2.06	2.07	2.07	2.02	2.03	2.03	2.01	2.01	2.01	2.00	2.00	2.00	2.00	2.01	2.06	2.16	2.23	2.21	2.36	2.26	2.14	2.00	2.36	2.08	
Aug 28	2.16	S	2.28	2.20	2.19	2.17	2.14	2.05	2.00	1.98	1.99	1.99	1.98	1.99	1.98	1.99	2.00	2.01	2.01	2.03	2.03	2.05	2.08	2.07	1.98	2.28	2.06	
Aug 29	S	2.12	2.12	2.13	2.14	2.14	2.15	2.13	2.10	2.10	2.07	2.03	2.01	2.01	2.01	2.01	2.02	2.03	2.05	2.31	2.22	2.15	2.31	S	2.01	2.31	2.11	
Aug 30	2.17	2.31	2.41	3.36	2.83	2.98	3.48	3.46	3.16	2.81	2.20	2.13	2.09	2.13	2.21	2.15	2.11	2.12	2.10	2.14	2.27	2.18	S	2.19	2.09	3.48	2.48	
Aug 31	2.28	2.43	2.58	2.69	2.64	2.68	2.62	2.54	2.67	2.55	2.35	2.25	2.09	2.09	2.04	2.05	2.05	2.03	2.04	2.08	2.11	S	2.21	2.30	2.03	2.69	2.32	
Diurnal Maximum	2.81	2.84	3.48	3.65	2.89	3.09	3.48	3.46	3.16	2.81	2.35	2.25	2.14	2.18	2.36	2.21	2.17	2.16	2.17	2.31	2.38	2.42	2.86	2.68				
Diurnal Average	2.24	2.25	2.33	2.36	2.30	2.31	2.34	2.30	2.22	2.14	2.09	2.06	2.04	2.04	2.04	2.03	2.03	2.04	2.04	2.09	2.14	2.15	2.18	2.19				

C	Calibration	S	Daily Zero/Span	Q	Quality Assurance	C1	Repeat Calibration	S1	Repeat Daily Zero/Span
G	Out for Repair	K	Collection Error	N	Not in Service	O	Operator Error	P	Power Failure
R	Recovery	X	Machine Malfunction	Y	Maintenance	T	Exceeds Temperature Limits	N	Not in Service

Daily Average is shown "-" if minimum data completeness criteria of 75% or 18 hours per day is not met.
 Monthly Average is shown "-" if minimum data completeness criteria of 75% of days per month is not met.

Timeseries Chart of Hourly Instantaneous Maximum for CH4 - Bonnyville - East Site





LAKELAND INDUSTRY & COMMUNITY ASSOCIATION

Bonnyville - East Site - August 2019

Summary of Hourly Instantaneous Maximums

NON-METHANE HYDROCARBONS (NMHC) in ppm

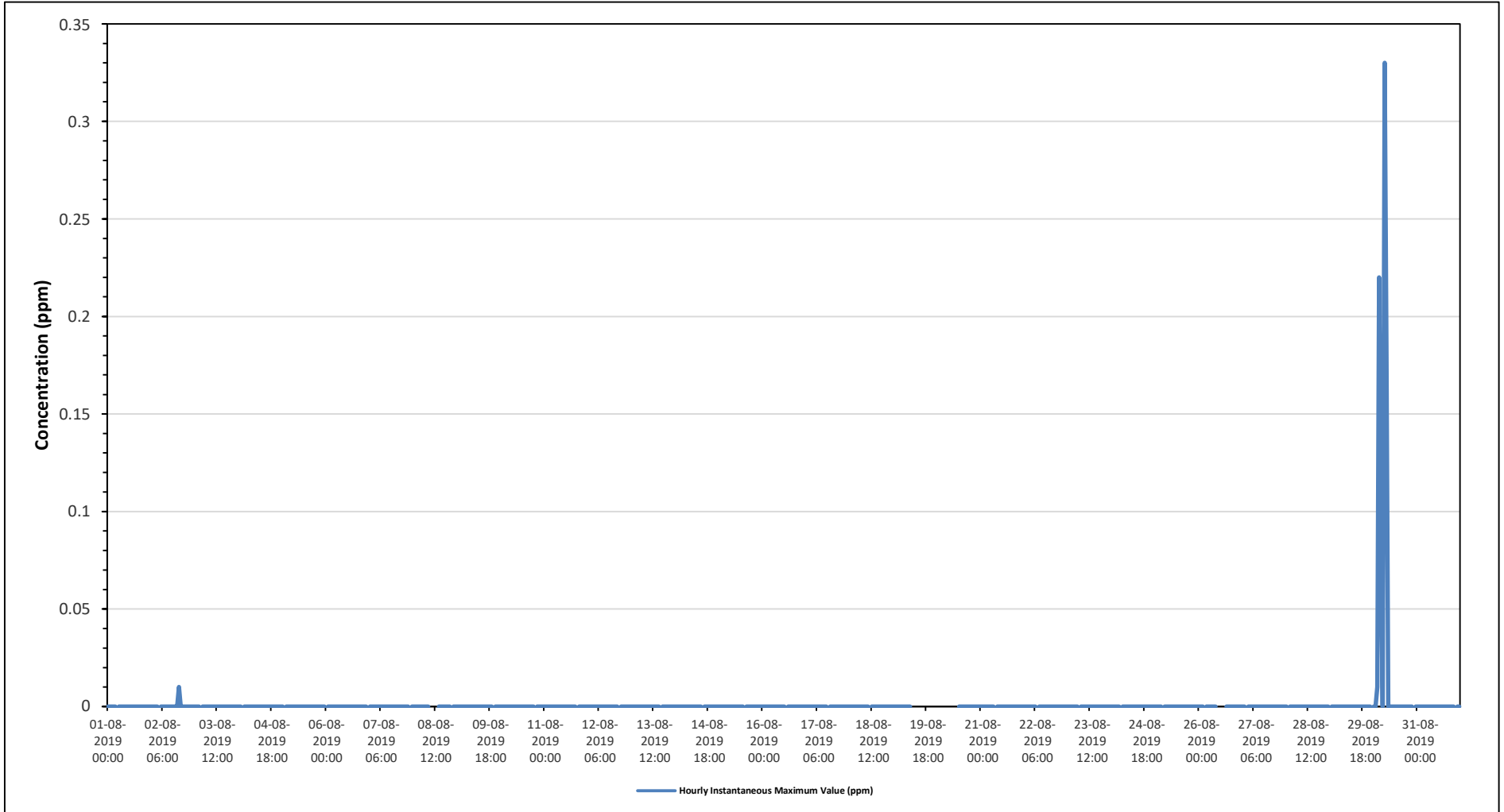
Maximum Hourly Value:	0.33 ppm on August 30 at hour 6	Hours in Service:	744
Maximum Daily Value:	0.04 ppm on August 30	Hours of Data:	679
Minimum Hourly Value:	0.00 ppm on August 1 at hour 0	Hours of Missing Data:	28
Minimum Daily Value:	0.00 ppm on August 1	Hours of Calibration:	37
Monthly Average:	0.00 ppm	Operational Uptime:	96.2

Day	Hourly Period Starting at (MST)																							Daily Minimum	Daily Maximum	Daily Average									
	0	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22				23								
Aug 1	0.00	0.00	0.00	0.00	0.00	S	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	
Aug 2	0.00	0.00	0.00	0.00	S	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.01	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	
Aug 3	0.00	0.00	0.00	S	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	
Aug 4	0.00	0.00	S	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	
Aug 5	0.00	S	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	
Aug 6	S	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	S	0.00	0.00	0.00	0.00		
Aug 7	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	S	0.00	0.00	0.00	0.00	0.00		
Aug 8	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	C	C	C	C	C	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	S	0.00	0.00	0.00	0.00	0.00	0.00	0.00	
Aug 9	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	S	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	
Aug 10	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	S	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	
Aug 11	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	S	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	
Aug 12	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	S	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	
Aug 13	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	S	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	
Aug 14	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	S	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	
Aug 15	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	S	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	
Aug 16	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	S	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	
Aug 17	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	S	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	
Aug 18	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	S	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	
Aug 19	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	S	0.00	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	0.00	
Aug 20	X	X	X	X	X	X	X	X	X	X	X	X	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	
Aug 21	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	
Aug 22	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	S	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Aug 23	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	S	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Aug 24	0.00	0.00	0.00	0.00	0.00	S	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Aug 25	0.00	0.00	0.00	0.00	S	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Aug 26	0.00	0.00	0.00	S	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Aug 27	0.00	0.00	S	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Aug 28	0.00	S	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Aug 29	S	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	S	0.00	0.00	0.00
Aug 30	0.00	0.00	0.01	0.22	0.07	0.00	0.33	0.18	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	S	0.00	0.00	0.00	
Aug 31	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	S	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Diurnal Maximum	0.00	0.00	0.01	0.22	0.07	0.00	0.33	0.18	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.01	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Diurnal Average	0.00	0.00	0.00	0.01	0.00	0.00	0.01	0.01	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00

C	Calibration	S	Daily Zero/Span	Q	Quality Assurance	C1	Repeat Calibration	S1	Repeat Daily Zero/Span
G	Out for Repair	K	Collection Error	N	Not in Service	O	Operator Error	P	Power Failure
R	Recovery	X	Machine Malfunction	Y	Maintenance	T	Exceeds Temperature Limits	N	Not in Service

Daily Average is shown "-" if minimum data completeness criteria of 75% or 18 hours per day is not met.
 Monthly Average is shown "-" if minimum data completeness criteria of 75% of days per month is not met.

Timeseries Chart of Hourly Instantaneous Maximum for NMHC - Bonnyville - East Site





LAKELAND INDUSTRY & COMMUNITY ASSOCIATION

Bonnyville - East Site - August 2019

Summary of Hourly Instantaneous Maximums

WIND SPEED (WS) in km/h

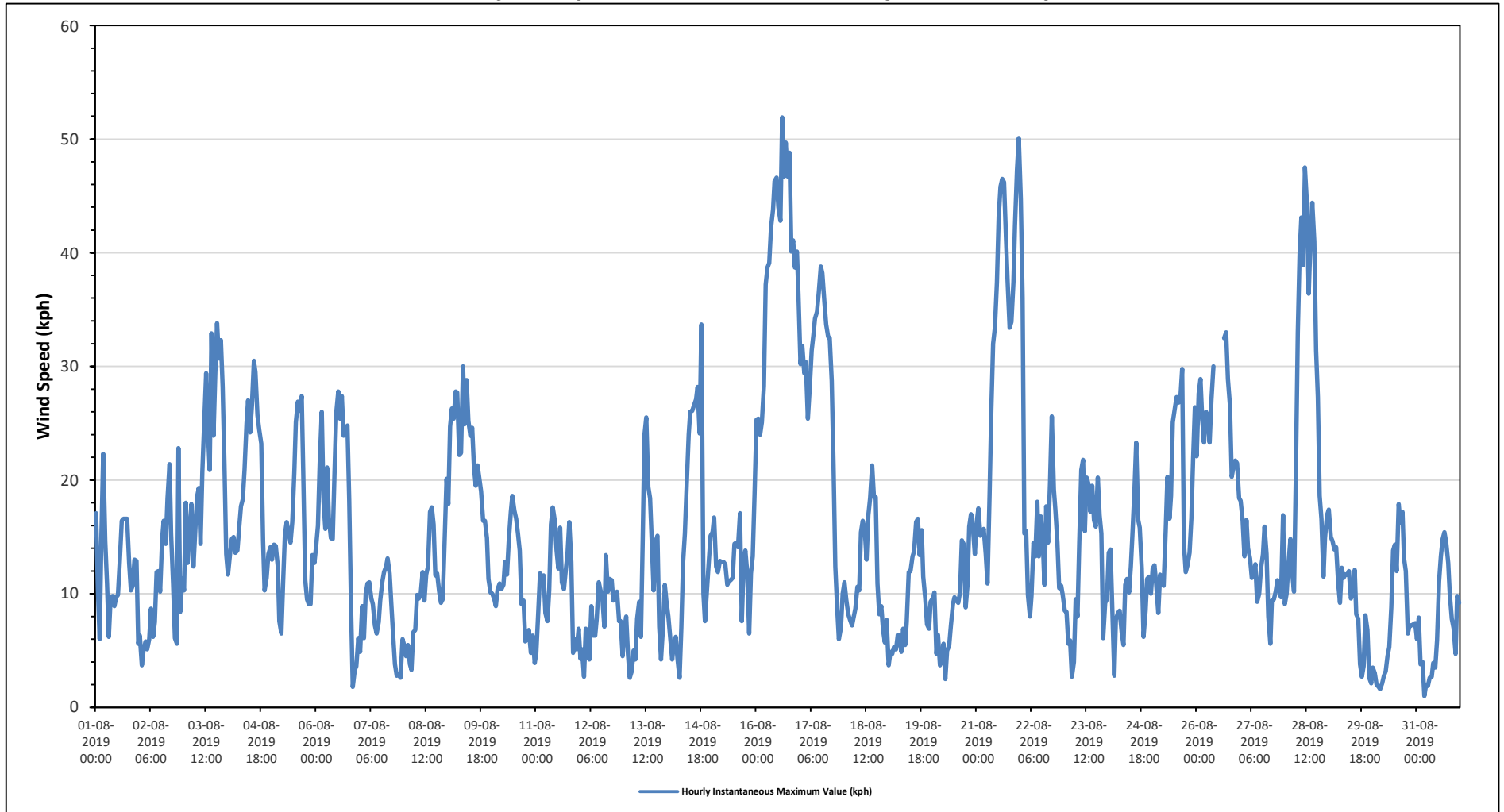
Maximum Hourly Value:	51.9 kph	on August 16 at hour 14	Hours in Service:	744
Maximum Daily Value:	39.5 kph	on August 16	Hours of Data:	740
Minimum Hourly Value:	1.0 kph	on August 31 at hour 4	Hours of Missing Data:	4
Minimum Daily Value:	7.3 kph	on August 31	Hours of Calibration:	0
Monthly Average:	15.5 kph		Operational Uptime:	99.5

Day	Hourly Period Starting at (MST)																							Daily Minimum	Daily Maximum	Daily Average	
	0	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22				23
Aug 1	17.1	10.5	6.0	15.2	22.3	14.6	10.9	6.2	9.6	9.8	8.9	9.7	9.9	12.8	16.4	16.6	16.6	16.6	12.7	10.3	10.7	13.0	12.9	5.6	5.6	22.3	12.3
Aug 2	6.3	3.7	5.1	5.8	5.1	6.0	8.7	6.2	7.5	11.9	12.0	10.2	14.9	16.4	14.4	18.4	21.4	15.3	10.9	6.1	5.6	22.8	8.4	11.3	3.7	22.8	10.6
Aug 3	10.3	18.0	12.7	15.5	17.9	12.4	15.0	18.5	19.3	14.4	20.7	24.8	29.4	24.3	20.9	32.9	23.9	29.4	33.8	30.7	32.3	28.2	21.4	13.5	10.3	33.8	21.7
Aug 4	11.7	13.5	14.8	15.0	13.6	13.8	15.8	17.7	18.3	20.9	25.0	27.0	24.2	26.5	30.5	29.5	25.7	24.4	23.2	14.7	10.3	11.4	13.5	14.1	10.3	30.5	19.0
Aug 5	13.0	14.3	14.2	12.4	7.6	6.5	11.1	15.2	16.3	15.4	14.5	16.3	20.7	25.1	26.9	26.1	27.4	20.8	11.2	9.5	9.1	9.1	13.4	12.7	6.5	27.4	15.4
Aug 6	14.2	16.0	21.5	26.0	18.1	15.7	21.1	16.6	14.9	14.8	20.5	25.9	27.8	25.4	27.4	23.9	24.3	24.8	18.3	9.1	1.8	3.3	3.6	6.1	1.8	27.8	17.5
Aug 7	4.9	8.9	6.1	10.0	10.9	11.0	9.6	9.1	7.2	6.5	7.5	9.4	11.0	11.9	12.4	13.1	11.8	9.0	6.3	3.8	2.8	2.9	2.6	6.0	2.6	13.1	8.1
Aug 8	5.5	4.5	5.5	3.8	3.3	6.6	6.8	9.9	9.6	9.9	11.9	9.4	11.7	12.4	17.2	17.6	16.1	11.6	11.8	10.2	9.2	9.5	14.3	20.1	3.3	20.1	10.4
Aug 9	17.9	24.7	26.3	25.4	27.8	27.7	22.2	22.4	30.0	24.9	28.8	25.2	23.9	24.6	21.1	19.5	21.3	20.0	19.0	16.4	16.4	14.9	11.3	10.1	10.1	30.0	21.7
Aug 10	10.0	9.5	8.9	10.4	10.9	10.4	10.8	12.8	11.7	14.7	17.2	18.6	17.3	16.6	15.3	13.8	9.1	9.4	5.8	6.0	6.8	4.8	6.3	3.9	3.9	18.6	10.9
Aug 11	4.7	8.4	11.8	11.4	11.6	8.3	7.6	10.3	16.1	17.6	16.4	13.8	12.2	15.8	11.0	10.4	11.8	13.5	16.3	12.8	4.8	6.0	5.1	6.9	4.7	17.6	11.0
Aug 12	4.3	5.1	2.7	6.9	5.3	4.2	8.9	6.3	6.3	7.8	11.0	10.3	9.7	7.1	13.4	10.2	11.3	11.2	9.4	9.5	10.2	7.6	7.6	4.5	2.7	13.4	8.0
Aug 13	6.9	8.0	4.7	2.6	3.2	5.0	4.2	7.8	9.3	6.2	14.7	24.0	25.5	19.4	18.4	14.4	10.3	14.6	15.1	7.1	4.2	7.1	10.8	9.4	2.6	25.5	10.5
Aug 14	8.0	6.2	4.2	5.7	6.2	4.3	2.6	7.0	12.8	15.3	19.5	24.0	26.0	26.1	26.6	27.1	28.2	24.1	33.7	10.0	7.6	10.4	12.8	15.1	2.6	33.7	15.1
Aug 15	15.4	16.7	12.4	11.9	12.9	12.8	12.8	12.6	10.8	11.1	11.2	11.4	14.4	14.5	14.1	17.1	7.6	13.1	13.8	11.7	6.5	11.8	13.3	18.6	6.5	18.6	12.9
Aug 16	25.3	25.4	24.0	25.1	28.3	37.2	38.7	39.1	42.2	43.8	46.3	46.6	44.0	42.8	51.9	46.7	49.7	46.7	48.8	40.1	41.1	38.7	40.1	36.3	24.0	51.9	39.5
Aug 17	30.2	31.8	29.4	30.4	25.4	28.0	31.4	32.8	34.2	34.8	36.5	38.8	38.2	35.7	33.7	32.6	32.5	28.7	21.3	12.4	8.9	6.0	7.0	10.0	6.0	38.8	27.1
Aug 18	11.0	9.5	8.2	7.7	7.2	7.9	8.7	10.6	10.3	15.4	16.4	15.6	13.0	16.9	18.4	21.3	18.5	18.5	10.9	8.2	8.9	6.8	5.7	7.7	5.7	21.3	11.8
Aug 19	3.7	4.9	4.7	5.3	5.1	6.4	6.3	4.9	6.9	5.5	7.5	11.9	12.0	13.3	13.7	16.3	16.6	13.4	15.6	11.5	9.6	7.3	6.9	9.3	3.7	16.6	9.1
Aug 20	9.6	10.1	4.7	6.4	3.7	4.5	5.6	2.5	5.0	5.4	7.2	9.1	9.7	9.4	9.2	10.2	14.7	14.4	8.8	10.7	15.9	17.0	15.7	13.5	2.5	17.0	9.3
Aug 21	16.2	17.5	15.1	15.3	15.7	13.5	10.9	18.6	26.2	32.0	33.4	37.4	43.2	45.8	46.5	46.2	41.1	37.5	33.4	33.9	37.4	42.4	47.3	50.1	10.9	50.1	31.5
Aug 22	44.7	36.0	15.3	15.5	9.9	8.0	9.8	14.5	13.3	18.1	13.3	16.8	14.9	10.8	17.7	14.5	19.8	25.6	19.2	17.4	14.5	10.5	10.7	9.9	8.0	44.7	16.7
Aug 23	8.5	8.4	5.6	5.9	2.7	4.0	9.5	8.0	14.5	20.9	21.8	15.5	20.2	19.7	17.2	19.5	16.5	15.9	20.2	16.9	15.3	6.1	9.2	9.5	2.7	21.8	13.0
Aug 24	13.6	13.9	8.7	2.8	7.7	8.3	8.5	6.6	5.5	10.8	11.3	10.1	12.4	15.1	19.0	23.3	16.5	15.8	12.2	6.2	8.5	11.3	11.5	10.0	2.8	23.3	11.2
Aug 25	12.2	12.5	10.8	8.3	11.7	11.0	10.7	15.5	20.3	16.6	18.6	25.1	26.3	27.3	26.8	26.9	29.8	14.3	11.9	12.5	13.6	16.6	21.9	26.4	8.3	29.8	17.8
Aug 26	22.1	27.6	28.9	25.3	23.3	26.0	25.5	23.3	27.0	30.0	Y	Y	Y	33.0	Y	32.5	33.0	28.9	26.6	20.3	21.2	21.7	21.5	18.4	18.4	33.0	25.8
Aug 27	18.2	16.4	13.3	16.5	14.0	13.1	11.4	11.8	12.6	9.3	10.0	12.2	13.5	15.9	13.5	8.0	5.6	9.4	9.5	10.2	11.2	10.6	9.7	16.9	5.6	18.2	12.2
Aug 28	9.1	10.0	12.6	14.8	11.8	10.2	20.0	33.0	39.8	43.1	38.9	47.5	44.3	36.4	41.2	44.4	41.0	31.4	27.3	18.6	16.6	11.5	14.9	16.9	9.1	47.5	26.5
Aug 29	17.4	15.0	14.6	13.9	14.1	10.9	9.2	12.3	11.4	11.7	11.7	12.0	9.6	10.0	12.1	8.2	7.8	3.8	2.7	3.6	8.1	6.8	2.6	2.1	2.1	17.4	9.7
Aug 30	3.5	3.0	2.0	1.8	1.6	2.1	2.8	3.2	4.5	5.3	8.8	13.8	14.3	12.0	17.9	16.2	17.2	13.1	12.0	6.5	7.2	7.2	7.3	7.4	1.6	17.9	7.9
Aug 31	6.0	7.9	3.8	4.0	1.0	2.0	1.9	2.6	2.7	3.9	3.5	5.9	11.1	13.3	14.8	15.4	14.5	12.7	10.0	7.8	7.0	4.7	9.8	9.2	1.0	15.4	7.3
Diurnal Maximum	44.7	36.0	29.4	30.4	28.3	37.2	38.7	39.1	42.2	43.8	46.3	47.5	44.3	45.8	51.9	46.7	49.7	46.7	48.8	40.1	41.1	42.4	47.3	50.1			
Diurnal Average	13.0	13.5	11.6	12.2	11.6	11.4	12.2	13.5	15.4	16.4	17.5	19.3	20.2	20.5	21.3	21.7	20.7	19.0	17.2	13.1	12.4	12.5	12.9	13.3			

C	Calibration	S	Daily Zero/Span	Q	Quality Assurance	C1	Repeat Calibration	S1	Repeat Daily Zero/Span
G	Out for Repair	K	Collection Error	N	Not in Service	O	Operator Error	P	Power Failure
R	Recovery	X	Machine Malfunction	Y	Maintenance	T	Exceeds Temperature Limits	N	Not in Service

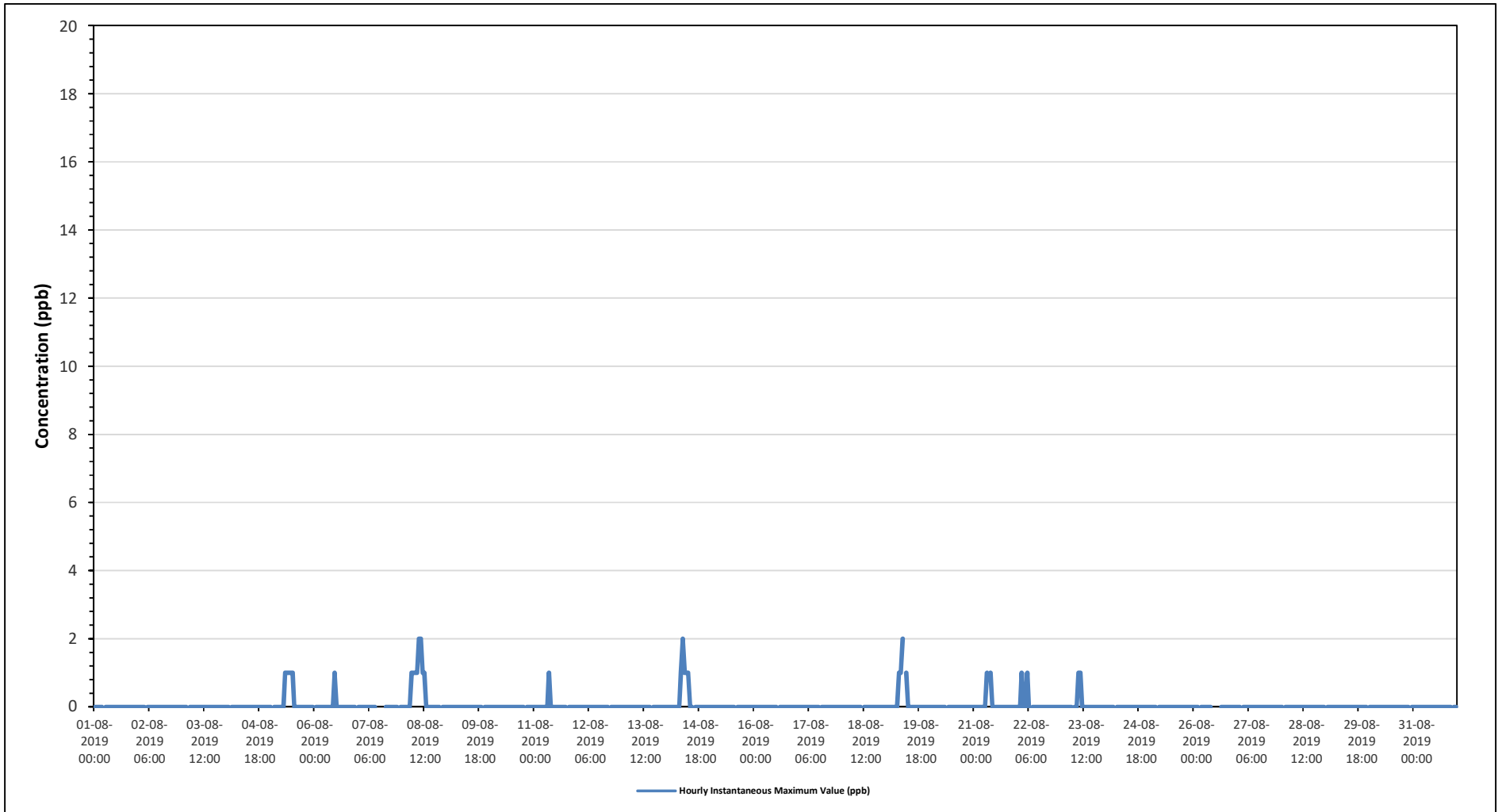
Daily Average is shown "-" if minimum data completeness criteria of 75% or 18 hours per day is not met.
 Monthly Average is shown "-" if minimum data completeness criteria of 75% of days per month is not met.

Timeseries Chart of Hourly Instantaneous Maximum for WS - Bonnyville - East Site



BONNYVILLE -EAST STATION

Timeseries Chart of Hourly Instantaneous Maximum for SO2 - Bonnyville - East Site





LAKELAND INDUSTRY & COMMUNITY ASSOCIATION

Bonnyville - East Site - August 2019

Summary of Hourly Instantaneous Maximums

HYDROGEN SULPHIDE (H₂S) in ppb

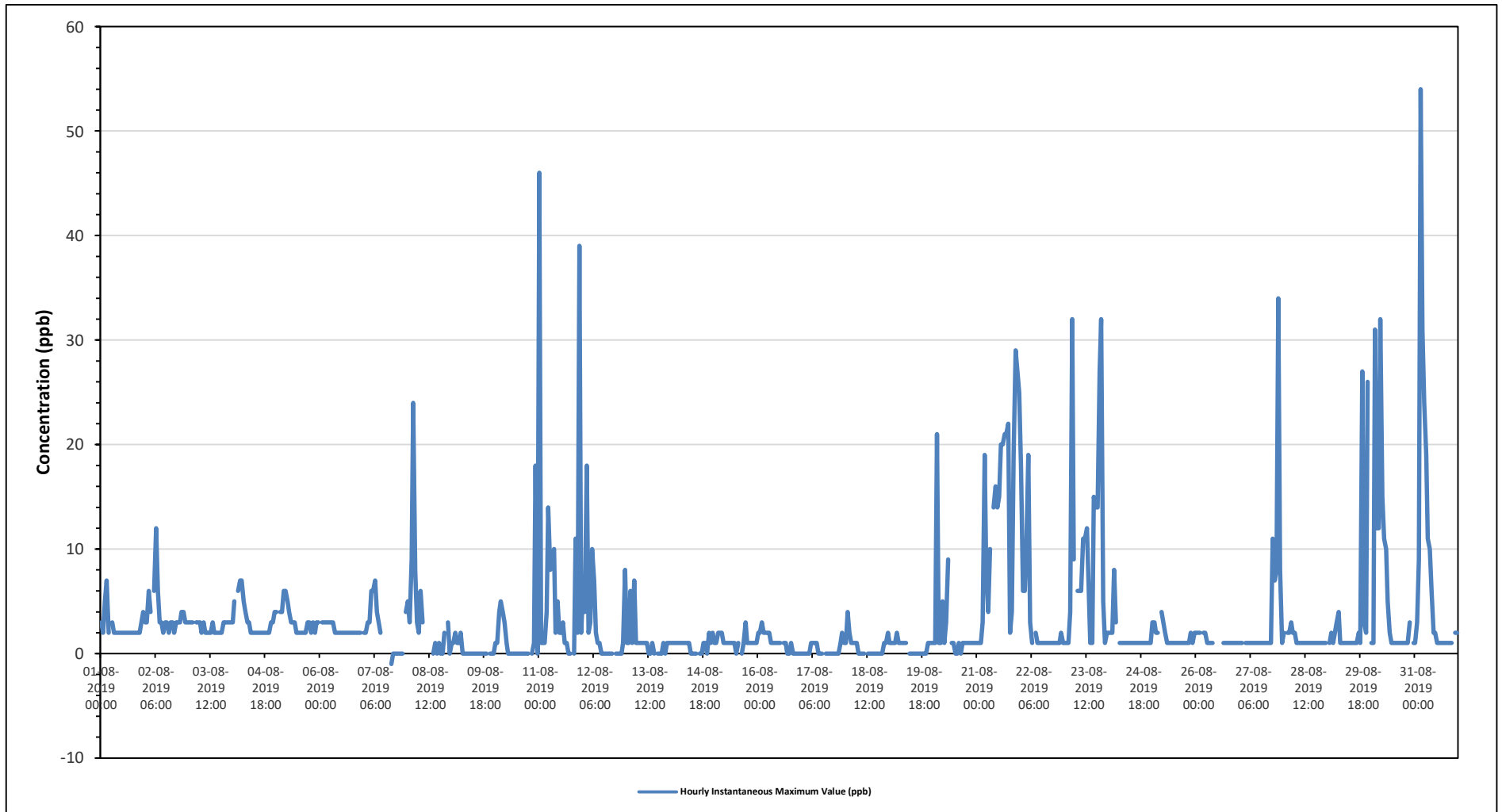
Maximum Hourly Value:	54 ppb on August 31 at hour 3	Hours in Service:	744
Maximum Daily Value:	13.7 ppb on August 21	Hours of Data:	697
Minimum Hourly Value:	-1 ppb on August 7 at hour 15	Hours of Missing Data:	9
Minimum Daily Value:	0.3 ppb on August 9	Hours of Calibration:	38
Monthly Average:	3.2 ppb	Operational Uptime:	98.8

Day	Hourly Period Starting at (MST)																							Daily Minimum	Daily Maximum	Daily Average		
	0	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22				23	
Aug 1	3	2	5	7	2	S	3	2	2	2	2	2	2	2	2	2	2	2	2	2	2	3	4	2	7	2.6		
Aug 2	3	3	6	4	S	6	12	6	3	3	2	3	3	2	3	3	2	2	3	3	4	4	3	3	2	12	3.8	
Aug 3	3	3	3	S	3	3	3	2	3	2	2	2	2	3	2	2	2	2	2	3	3	3	3	3	2	3	2.6	
Aug 4	3	5	S	6	7	7	5	4	3	3	2	2	2	2	2	2	2	2	2	2	2	3	3	4	2	7	3.3	
Aug 5	4	S	4	4	6	6	5	4	3	3	3	2	2	2	2	2	2	3	3	2	3	2	3	3	2	6	3.2	
Aug 6	S	3	3	3	3	3	3	3	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2	3	2	3	2.3	
Aug 7	2	2	3	3	6	6	7	4	3	2	Y	Y	Y	Y	Y	-1	0	0	0	0	0	0	0	S	4	-1	7	2.3
Aug 8	5	3	9	24	8	3	2	6	3	C	C	C	C	C	0	1	0	1	0	0	2	S	3	0	0	24	3.9	
Aug 9	1	1	2	1	1	2	0	0	0	0	0	0	0	0	0	0	0	0	0	0	S	0	0	0	0	2	0.3	
Aug 10	1	1	4	5	4	3	1	0	0	0	0	0	0	0	0	0	0	0	0	0	S	0	1	18	0	18	1.7	
Aug 11	46	1	1	1	4	14	8	9	10	2	5	2	2	3	1	1	0	0	S	0	11	2	39	2	0	46	7.1	
Aug 12	6	4	18	2	3	10	7	2	1	1	0	0	0	0	0	0	0	S	0	0	0	0	1	8	0	18	2.7	
Aug 13	1	1	6	1	7	1	1	1	1	1	1	1	0	1	0	1	S	0	0	0	1	0	1	1	0	7	1.2	
Aug 14	1	1	1	1	1	1	1	1	1	1	1	0	0	0	0	S	0	0	0	1	0	2	1	2	0	2	0.8	
Aug 15	1	1	2	2	2	1	1	1	1	1	1	1	0	1	S	0	1	3	1	1	1	1	1	1	1	0	3	1.1
Aug 16	2	2	3	2	2	2	2	1	1	1	1	1	1	S	1	1	0	0	1	0	0	0	0	0	0	3	1.0	
Aug 17	0	0	0	0	1	1	1	1	1	0	0	S	S	0	0	0	0	0	0	0	0	1	2	1	0	2	0.3	
Aug 18	1	4	2	1	1	1	1	0	0	0	0	S	0	0	0	0	0	0	0	0	0	1	1	2	0	4	0.7	
Aug 19	1	1	1	1	2	1	1	1	1	1	S	0	0	0	0	0	0	0	0	0	0	1	1	1	0	2	0.6	
Aug 20	1	1	21	1	1	5	1	3	9	S	1	1	0	0	1	0	1	1	1	1	1	1	1	1	0	21	2.3	
Aug 21	1	1	1	3	19	8	4	10	S	14	16	14	15	20	20	21	21	22	2	4	19	29	27	25	1	29	13.7	
Aug 22	18	6	6	10	19	3	1	S	2	1	1	1	1	1	1	1	1	1	1	1	1	1	1	2	1	19	3.5	
Aug 23	1	1	1	4	32	9	S	6	6	6	11	11	12	7	1	1	15	14	14	27	32	5	1	2	1	32	9.5	
Aug 24	2	2	2	8	3	S	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	8	1.5	
Aug 25	3	3	2	2	S	4	3	2	1	1	1	1	1	1	1	1	1	1	1	1	1	2	1	2	1	4	1.6	
Aug 26	2	2	2	S	2	2	1	1	1	1	Y	Y	Y	1	Y	1	1	1	1	1	1	1	1	1	1	2	1.3	
Aug 27	1	1	S	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	11	7	8	34	8	1	34	3.7	
Aug 28	2	S	2	2	3	2	2	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	3	1.3	
Aug 29	S	1	2	1	2	3	4	1	1	1	1	1	1	1	1	1	1	1	2	1	27	3	2	26	S	27	3.8	
Aug 30	1	1	31	12	12	32	15	11	10	5	2	1	1	1	1	1	1	1	1	1	1	1	3	S	1	32	6.3	
Aug 31	1	3	9	54	31	24	19	11	10	6	2	2	1	1	1	1	1	1	1	1	1	S	2	2	1	54	8.0	
Diurnal Maximum	46	6	31	54	32	32	19	11	10	14	16	14	15	20	20	21	21	22	14	27	32	34	39	25				
Diurnal Average	4.0	2.1	5.2	5.7	6.4	5.7	3.9	3.2	2.7	2.2	2.2	2.0	1.9	1.9	1.6	1.5	2.0	2.2	1.8	3.0	3.4	3.6	5.4	2.7				

C	Calibration	S	Daily Zero/Span	Q	Quality Assurance	C1	Repeat Calibration	S1	Repeat Daily Zero/Span
G	Out for Repair	K	Collection Error	N	Not in Service	O	Operator Error	P	Power Failure
R	Recovery	X	Machine Malfunction	Y	Maintenance	T	Exceeds Temperature Limits	N	Not in Service

Daily Average is shown "-" if minimum data completeness criteria of 75% or 18 hours per day is not met.
 Monthly Average is shown "-" if minimum data completeness criteria of 75% of days per month is not met.

Timeseries Chart of Hourly Instantaneous Maximum for H2S - Bonnyville - East Site





LAKELAND INDUSTRY & COMMUNITY ASSOCIATION

Bonnyville - East Site - August 2019

Summary of Hourly Instantaneous Maximums

OXIDES OF NITROGEN (NOx) in ppb

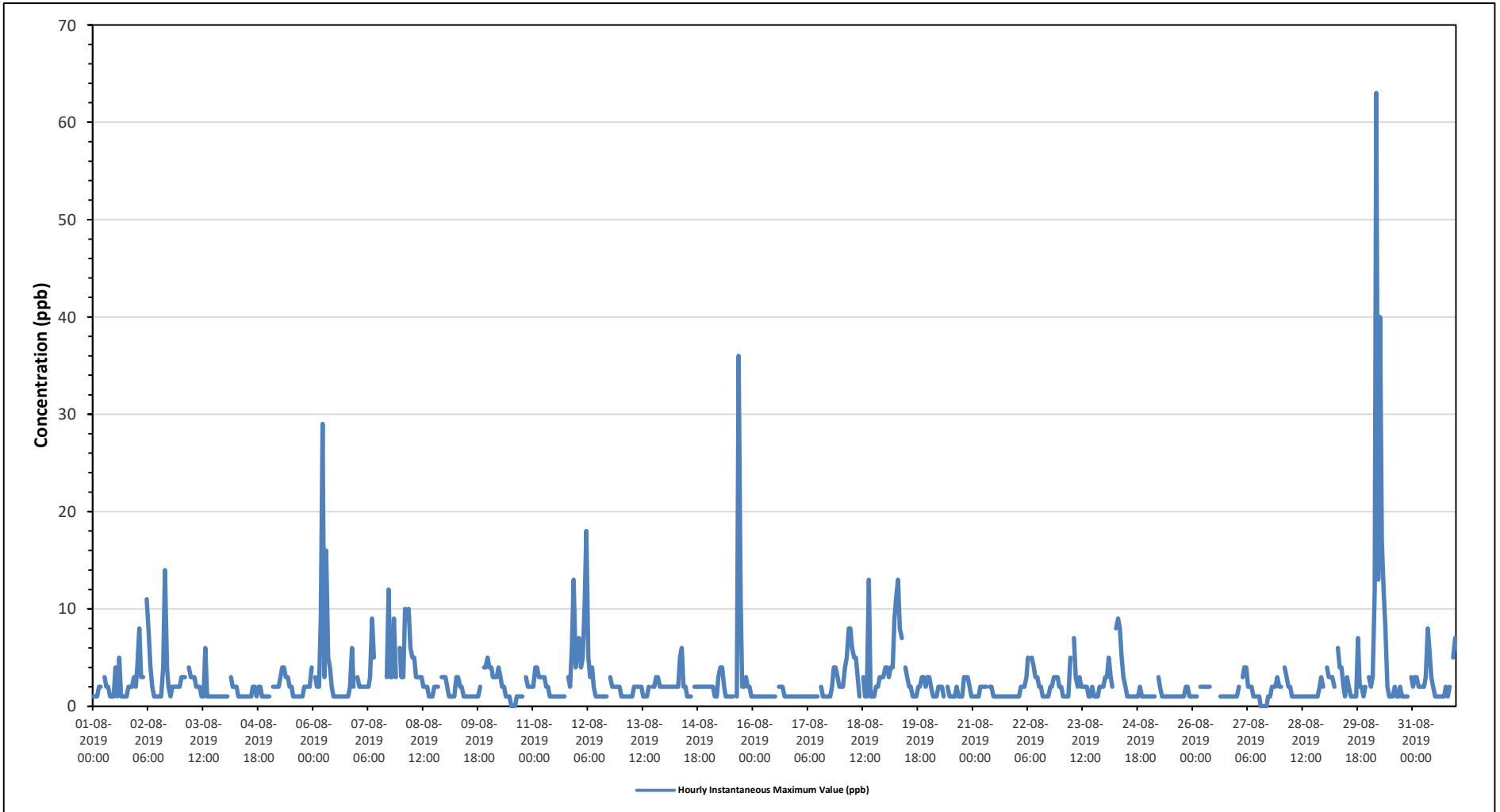
Maximum Hourly Value:	63 ppb on August 30 at hour 4	Hours in Service:	744
Maximum Daily Value:	8.3 ppb on August 30	Hours of Data:	700
Minimum Hourly Value:	0 ppb on August 10 at hour 12	Hours of Missing Data:	5
Minimum Daily Value:	1.1 ppb on August 16	Hours of Calibration:	39
Monthly Average:	2.6 ppb	Operational Uptime:	99.3

Day	Hourly Period Starting at (MST)																							Daily Minimum	Daily Maximum	Daily Average	
	0	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22				23
Aug 1	1	1	1	2	2	S	3	2	2	1	1	1	4	1	5	1	1	1	1	2	2	2	3	2	1	5	1.8
Aug 2	4	8	3	3	S	11	8	4	2	1	1	1	1	1	4	14	4	2	1	2	2	2	2	2	1	14	3.6
Aug 3	3	3	3	S	4	3	3	3	2	2	2	1	1	6	1	1	1	1	1	1	1	1	1	1	1	6	2.0
Aug 4	1	1	S	3	2	2	2	1	1	1	1	1	1	1	2	2	1	2	2	1	1	1	1	1	1	3	1.4
Aug 5	1	S	2	2	2	2	3	4	4	3	3	2	2	1	1	1	1	1	1	2	2	2	2	4	1	4	2.1
Aug 6	S	3	2	2	9	29	3	16	5	4	2	1	1	1	1	1	1	1	1	1	2	6	2	S	1	29	4.3
Aug 7	3	2	2	2	2	2	2	3	9	5	C	C	C	C	C	C	3	12	3	3	9	3	S	6	2	12	-
Aug 8	3	3	10	9	10	6	5	5	3	3	3	3	2	2	2	1	1	1	2	2	2	S	3	3	1	10	3.7
Aug 9	3	2	1	1	1	1	3	3	2	2	1	1	1	1	1	1	1	1	1	2	S	4	4	5	1	5	1.9
Aug 10	4	4	3	3	3	4	3	2	2	1	1	1	0	0	0	1	1	1	1	1	S	3	2	2	0	4	1.9
Aug 11	2	4	4	3	3	3	3	2	2	1	1	1	1	1	1	1	1	1	S	3	2	6	13	4	1	13	2.7
Aug 12	6	7	4	5	11	18	5	3	4	2	1	1	1	1	1	1	1	S	3	2	2	2	2	2	1	18	3.7
Aug 13	1	1	1	1	1	1	1	2	2	2	2	1	1	1	1	2	S	2	2	3	3	2	2	2	1	3	1.7
Aug 14	2	2	2	2	2	2	2	2	5	6	2	2	1	1	1	S	2	2	2	2	2	2	2	2	1	6	2.2
Aug 15	2	2	2	1	1	3	4	4	2	1	1	1	1	1	S	1	36	11	2	2	3	2	2	1	1	36	3.7
Aug 16	1	1	1	1	1	1	1	1	1	1	1	1	1	S	2	2	2	1	1	1	1	1	1	1	1	2	1.1
Aug 17	1	1	1	1	1	1	1	1	1	1	1	1	S	2	1	1	1	1	1	2	4	4	3	2	1	4	1.5
Aug 18	2	2	4	5	8	8	6	5	5	3	1	S	3	1	1	13	1	1	1	2	2	3	3	3	1	13	3.6
Aug 19	4	4	3	4	4	9	11	13	8	7	S	4	3	2	2	1	1	1	2	2	3	3	2	3	1	13	4.2
Aug 20	3	2	1	1	1	2	2	2	1	S	2	1	1	1	1	2	1	1	1	3	3	3	2	1	1	3	1.7
Aug 21	1	1	1	1	2	2	2	2	S	2	2	1	1	1	1	1	1	1	1	1	1	1	1	1	1	2	1.3
Aug 22	1	1	2	2	2	3	5	S	5	4	3	3	2	2	1	1	1	1	2	2	3	3	3	2	1	5	2.3
Aug 23	2	1	1	1	1	5	S	7	3	2	3	2	2	2	2	1	1	2	1	1	1	2	2	2	1	7	2.0
Aug 24	3	3	5	3	2	S	8	9	8	5	3	2	1	1	1	1	1	1	1	2	1	1	1	1	1	9	2.8
Aug 25	1	1	1	1	S	3	2	1	1	1	1	1	1	1	1	1	1	1	1	1	2	2	1	1	1	3	1.2
Aug 26	1	1	1	S	2	2	2	2	2	2	Y	Y	Y	2	Y	1	1	1	1	1	1	1	1	1	1	2	1.4
Aug 27	1	2	S	3	4	4	2	2	2	1	1	1	1	0	0	0	0	1	1	2	2	2	3	2	0	4	1.6
Aug 28	2	S	4	3	2	2	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	2	3	2	1	4	1.5
Aug 29	S	4	3	3	3	2	S1	6	4	4	2	1	3	2	1	1	1	1	1	7	2	2	1	2	S	7	2.6
Aug 30	3	2	3	12	63	13	40	17	12	8	2	1	1	1	2	1	1	2	1	1	1	1	1	1	1	63	8.3
Aug 31	2	3	3	2	2	2	2	3	8	6	3	2	1	1	1	1	1	1	2	1	2	1	2	S	5	7	2.7
Diurnal Maximum	6	8	10	12	63	29	40	17	12	8	3	4	4	6	5	14	36	12	7	3	9	6	13	7			
Diurnal Average	2.2	2.5	2.6	2.8	5.2	5.0	4.7	4.3	3.6	2.8	1.7	1.5	1.4	1.3	1.4	2.0	2.4	1.9	1.6	1.8	2.2	2.3	2.6	2.4			

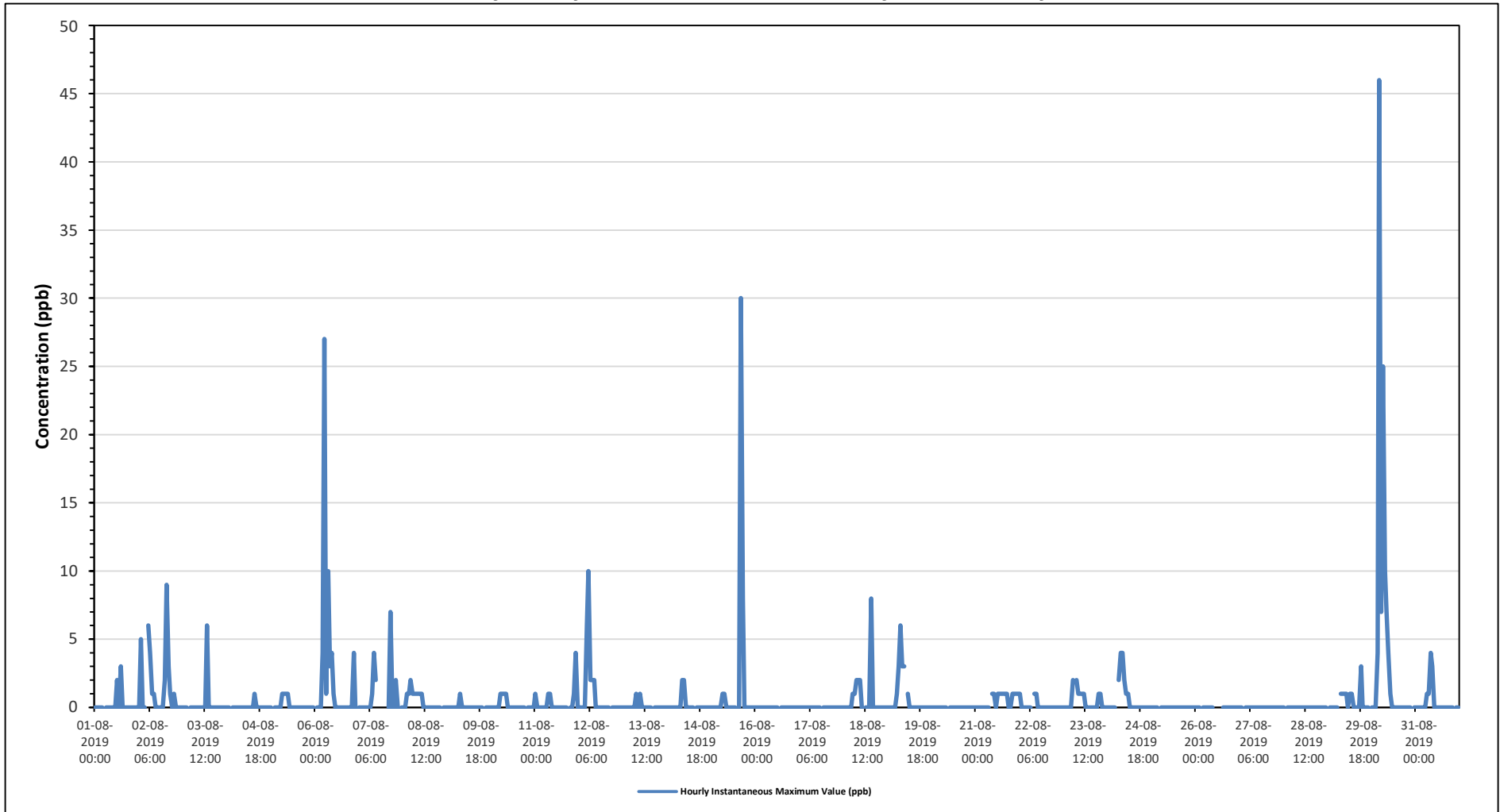
C	Calibration	S	Daily Zero/Span	Q	Quality Assurance	C1	Repeat Calibration	S1	Repeat Daily Zero/Span
G	Out for Repair	K	Collection Error	N	Not in Service	O	Operator Error	P	Power Failure
R	Recovery	X	Machine Malfunction	Y	Maintenance	T	Exceeds Temperature Limits	N	Not in Service

Daily Average is shown "-" if minimum data completeness criteria of 75% or 18 hours per day is not met.
 Monthly Average is shown "-" if minimum data completeness criteria of 75% of days per month is not met.

Timeseries Chart of Hourly Instantaneous Maximum for NOx - Bonnyville - East Site



Timeseries Chart of Hourly Instantaneous Maximum for NO - Bonnyville - East Site





LAKELAND INDUSTRY & COMMUNITY ASSOCIATION

Bonnyville - East Site - August 2019

Summary of Hourly Instantaneous Maximums

NITROGEN DIOXIDE (NO₂) in ppb

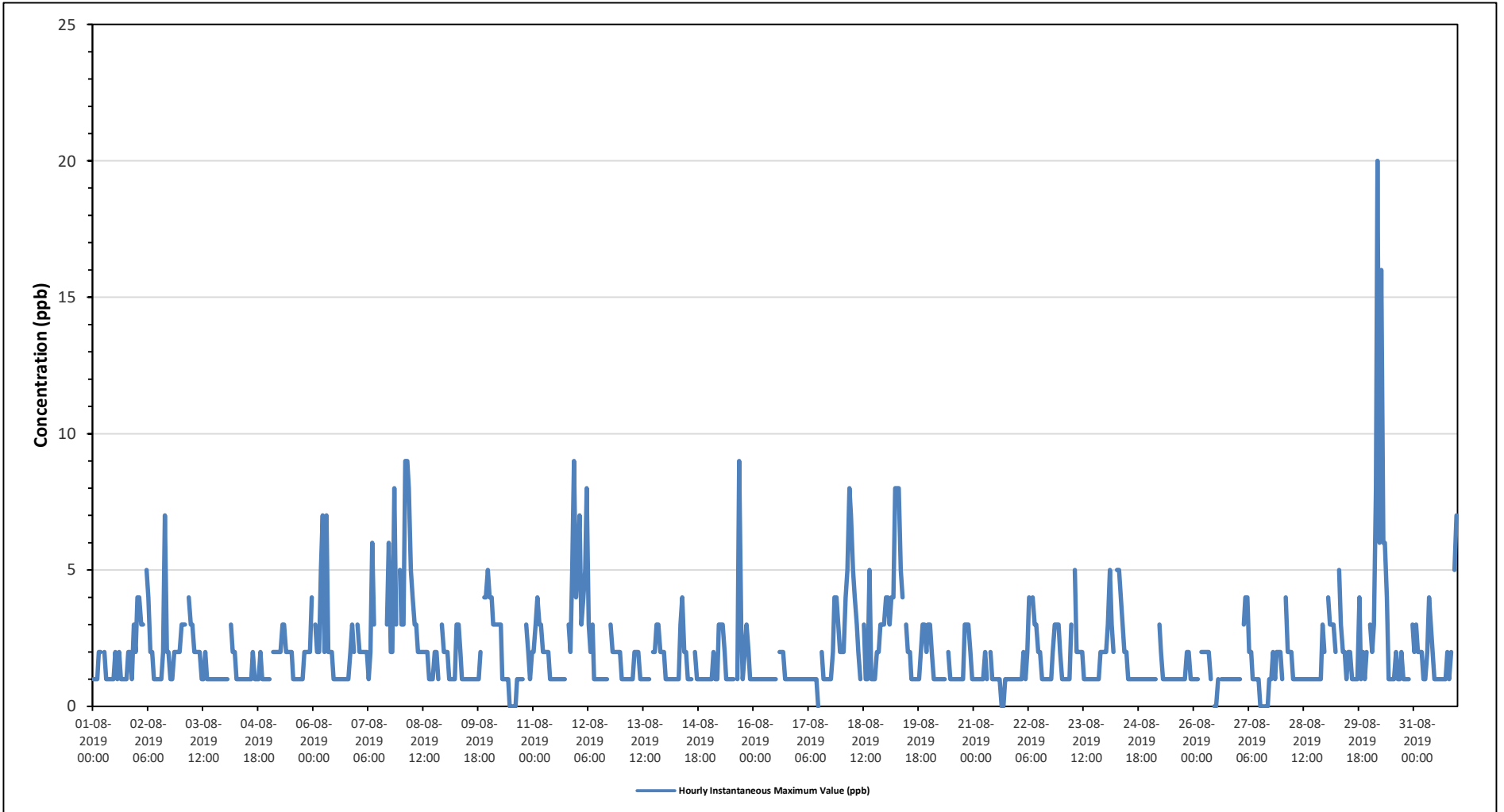
Maximum Hourly Value:	20 ppb on August 30 at hour 4	Hours in Service:	744
Maximum Daily Value:	4.0 ppb on August 30	Hours of Data:	700
Minimum Hourly Value:	0 ppb on August 10 at hour 11	Hours of Missing Data:	5
Minimum Daily Value:	1.0 ppb on August 21	Hours of Calibration:	39
Monthly Average:	2.0 ppb	Operational Uptime:	99.3

Day	Hourly Period Starting at (MST)																							Daily Minimum	Daily Maximum	Daily Average		
	0	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22				23	
Aug 1	1	1	1	2	2	S	2	1	1	1	1	1	2	1	2	1	1	1	1	2	2	1	3	2	1	3	1.4	
Aug 2	4	4	3	3	S	5	4	2	2	1	1	1	1	1	2	7	2	2	1	1	2	2	2	2	2	1	7	2.4
Aug 3	3	3	3	S	4	3	3	2	2	2	2	1	1	2	1	1	1	1	1	1	1	1	1	1	1	1	4	1.8
Aug 4	1	1	S	3	2	2	1	1	1	1	1	1	1	1	2	1	1	1	1	2	1	1	1	1	1	1	3	1.3
Aug 5	1	S	2	2	2	2	2	3	3	2	2	2	2	1	1	1	1	1	1	1	2	2	2	2	4	1	4	1.9
Aug 6	S	3	2	2	5	7	2	7	2	2	2	1	1	1	1	1	1	1	1	1	2	3	2	2	S	1	7	2.3
Aug 7	3	2	2	2	2	2	1	2	6	3	C	C	C	C	C	C	3	6	2	2	8	3	S	5	1	8	-	
Aug 8	3	3	9	9	8	5	4	3	3	2	2	2	2	2	2	1	1	1	2	2	1	S	3	2	1	9	3.1	
Aug 9	2	2	1	1	1	1	3	3	2	1	1	1	1	1	1	1	1	1	1	1	S	4	4	5	1	5	1.8	
Aug 10	4	4	3	3	3	3	3	1	1	1	1	0	0	0	0	1	1	1	1	1	S	3	2	1	2	0	4	1.7
Aug 11	2	3	4	3	3	2	2	2	2	1	1	1	1	1	1	1	1	1	S	3	2	5	9	4	1	9	2.4	
Aug 12	5	7	3	4	5	8	3	2	3	1	1	1	1	1	1	1	1	S	3	2	2	2	2	2	1	8	2.7	
Aug 13	1	1	1	1	1	1	1	2	2	2	1	1	1	1	1	1	1	S	2	2	3	3	2	2	1	3	1.5	
Aug 14	1	1	1	1	1	1	1	1	3	4	2	2	2	1	1	S	2	1	1	1	1	1	1	1	1	1	4	1.3
Aug 15	1	1	2	1	1	3	3	3	2	1	1	1	1	1	S	1	9	3	1	2	3	2	1	1	1	1	9	2.0
Aug 16	1	1	1	1	1	1	1	1	1	1	1	1	1	S	2	2	2	1	1	1	1	1	1	1	1	1	2	1.1
Aug 17	1	1	1	1	1	1	1	1	1	1	1	0	S	2	1	1	1	1	1	2	4	4	3	2	0	4	1.4	
Aug 18	2	2	4	5	8	7	5	4	3	2	1	S	3	1	1	5	1	1	1	2	2	3	3	3	1	8	3.0	
Aug 19	4	4	3	4	4	8	8	8	5	4	S	3	2	2	1	1	1	1	1	2	3	3	2	3	1	8	3.3	
Aug 20	3	2	1	1	1	1	1	1	1	S	2	1	1	1	1	1	1	1	1	3	3	3	2	1	1	3	1.5	
Aug 21	1	1	1	1	1	1	2	1	S	2	1	1	1	1	1	0	0	1	1	1	1	1	1	1	0	2	1.0	
Aug 22	1	1	1	2	1	2	4	S	4	3	3	2	2	1	1	1	1	1	1	2	3	3	3	2	1	4	2.0	
Aug 23	1	1	1	1	1	3	S	5	2	2	2	2	1	1	1	1	1	1	1	1	1	2	2	2	1	5	1.6	
Aug 24	2	3	5	3	2	S	5	5	4	3	2	2	1	1	1	1	1	1	1	1	1	1	1	1	1	5	2.1	
Aug 25	1	1	1	1	S	3	2	1	1	1	1	1	1	1	1	1	1	1	1	1	2	2	1	1	1	3	1.2	
Aug 26	1	1	1	S	2	2	2	2	2	1	Y	Y	Y	1	Y	1	1	1	1	1	1	1	1	1	1	2	1.3	
Aug 27	1	1	S	3	4	4	2	2	1	1	1	1	0	0	0	0	0	0	1	1	2	1	2	2	0	4	1.4	
Aug 28	1	S	4	2	2	2	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	3	2	1	4	1.4	
Aug 29	S	4	3	3	3	2	S1	5	3	2	2	2	2	1	1	1	1	1	4	1	2	1	2	S	1	5	2.2	
Aug 30	3	2	3	8	20	6	16	6	6	4	1	1	1	1	2	1	1	1	2	1	1	1	1	1	1	20	4.0	
Aug 31	2	3	2	2	2	1	1	2	4	3	2	1	1	1	1	1	1	1	2	1	2	S	5	7	1	7	2.1	
Diurnal Maximum	5	7	9	9	20	8	16	8	6	4	3	3	3	2	2	7	9	6	4	3	8	5	9	7				
Diurnal Average	2.0	2.2	2.4	2.6	3.2	3.1	3.0	2.7	2.5	1.9	1.4	1.2	1.2	1.1	1.1	1.3	1.4	1.3	1.3	1.6	2.1	2.1	2.3	2.3				

C	Calibration	S	Daily Zero/Span	Q	Quality Assurance	C1	Repeat Calibration	S1	Repeat Daily Zero/Span
G	Out for Repair	K	Collection Error	N	Not in Service	O	Operator Error	P	Power Failure
R	Recovery	X	Machine Malfunction	Y	Maintenance	T	Exceeds Temperature Limits	N	Not in Service

Daily Average is shown "-" if minimum data completeness criteria of 75% or 18 hours per day is not met.
 Monthly Average is shown "-" if minimum data completeness criteria of 75% of days per month is not met.

Timeseries Chart of Hourly Instantaneous Maximum for NO2 - Bonnyville - East Site





LAKELAND INDUSTRY & COMMUNITY ASSOCIATION

Bonnyville - East Site - August 2019

Summary of Hourly Instantaneous Maximums

OZONE (O₃) in ppb

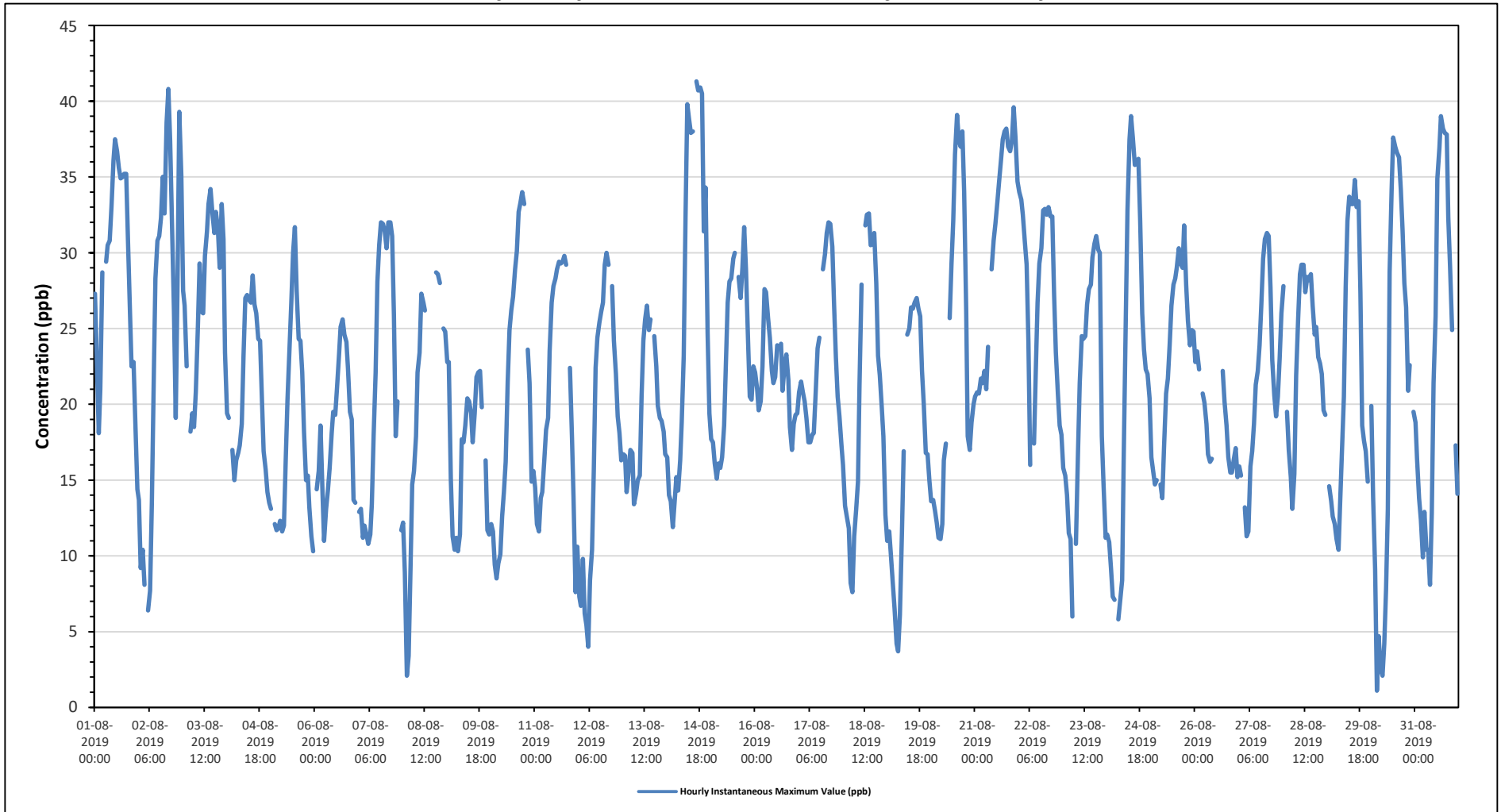
Maximum Hourly Value:	41.3 ppb on August 14 at hour 16	Hours in Service:	744
Maximum Daily Value:	30.6 ppb on August 21	Hours of Data:	702
Minimum Hourly Value:	1.1 ppb on August 30 at hour 3	Hours of Missing Data:	4
Minimum Daily Value:	16.9 ppb on August 19	Hours of Calibration:	38
Monthly Average:	22.1 ppb	Operational Uptime:	99.5

Day	Hourly Period Starting at (MST)																							Daily Minimum	Daily Maximum	Daily Average		
	0	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22				23	
Aug 1	27.3	23.2	18.1	21	28.7	S	29.4	30.5	30.8	33	36.1	37.5	36.7	35.6	34.9	35	35.2	35.2	30.8	26	22.5	22.8	18.8	14.4	14.4	37.5	28.8	
Aug 2	13.7	9.2	10.4	8.1	S	6.4	7.7	13.5	22.2	28.3	30.8	31.1	32.3	35	32.6	38.6	40.8	37.4	32.1	26.2	19.1	27.9	39.3	35.1	6.4	40.8	25.1	
Aug 3	27.5	26.5	22.5	S	18.2	19.4	18.5	20.8	25	29.3	26.1	26	29.8	31.4	33.2	34.2	32.7	31.3	32.7	31.6	29	33.2	30.9	23.4	18.2	34.2	27.5	
Aug 4	19.4	19.1	S	17	15	16.3	16.8	17.3	18.7	23.3	27	27.2	26.9	26.7	28.5	26.6	26	24.3	24.2	20	16.9	15.7	14.2	13.5	13.5	28.5	20.9	
Aug 5	13.1	S	12.1	11.7	11.8	12.3	11.6	12	16.3	20.3	23.3	26.7	30	31.7	27.5	24.3	24.2	22.1	18.2	15	15.3	13.2	11.3	10.3	10.3	31.7	18.0	
Aug 6	S	14.4	15.6	18.6	14.1	11	13.1	14.3	15.8	18.1	19.5	19.3	21.1	23.3	25.1	25.6	24.6	24.1	22.4	19.5	19	13.7	13.5	S	11.0	25.6	18.4	
Aug 7	12.9	13.1	11.2	12	11.4	10.8	11.4	13.4	17.9	22.1	28.1	30.5	32	31.9	31.4	30.3	32	32	31.1	25.9	17.9	20.2	S	11.7	10.8	32.0	21.4	
Aug 8	12.2	8.9	2.1	3.4	8.9	14.7	15.6	17.9	22.1	23.4	27.3	26.7	26.2	C	C	C	C	C	28.7	28.6	28	S	25	24.8	2.1	28.7	19.1	
Aug 9	22.8	22.8	15.1	11.3	10.4	11.2	10.3	11.4	17.7	17.5	18.6	20.4	20.2	19.4	17.5	19.4	21.8	22.1	22.2	19.8	S	16.3	11.7	11.4	10.3	22.8	17.0	
Aug 10	12.1	11.6	9.4	8.5	9.5	10.1	12.6	14.2	16.2	21.5	24.9	26.2	27.1	28.9	30.1	32.7	33.3	34	33.2	S	23.6	21.4	14.9	15.6	8.5	34.0	20.5	
Aug 11	14.5	12.1	11.6	13.8	14.2	16.3	18.3	19.1	23.5	26.7	27.8	28.3	28.9	29.4	29.3	29.4	29.8	29.2	S	22.4	17.8	13.9	7.6	10.6	7.6	29.8	20.6	
Aug 12	7.3	6.7	9.8	6.2	5.4	4	8.4	10.4	15.7	22.4	24.4	25.4	26.1	26.7	29.2	30	29.2	S	27.8	24.2	22	19.2	18.1	16.3	4.0	30.0	18.0	
Aug 13	16.7	16.6	14.2	15.5	17	16.8	13.4	14.1	15	15.3	20.5	24.2	25.6	26.5	24.9	25.6	S	24.5	22.5	19.9	19.1	18.9	18.2	16.7	13.4	26.5	19.2	
Aug 14	16.5	14	13.6	11.9	13.3	15.2	14.3	16.3	18.8	23.2	32.3	39.8	38.8	37.9	38	S	41.3	40.7	40.9	40.5	31.4	34.3	24.7	19.4	11.9	41.3	26.8	
Aug 15	17.7	17.5	16.1	15.1	16.1	15.8	16.5	18.6	22.7	26.7	28.1	28.3	29.6	30	S	28.4	27	29	31.7	28.9	24.3	20.5	20.3	22.5	15.1	31.7	23.1	
Aug 16	22.1	21	19.6	20.2	22.5	27.6	27.4	25.7	24.4	22.2	21.4	21.8	23.9	S	24	20.9	22.6	23.3	21.6	18.5	17	18.7	19.3	19.4	17.0	27.6	22.0	
Aug 17	20.8	21.5	20.8	20.2	19.1	17.5	17.5	18	18.1	20.6	23.7	24.4	S	28.9	29.9	31.3	32	31.9	30.4	26.5	23.1	20.5	19.2	17.3	17.3	32.0	23.2	
Aug 18	16	13.3	12.6	11.8	8.2	7.6	11.3	13.1	14.9	21.3	27.9	S	31.8	32.5	32.6	30.5	30.6	31.3	28	23.2	21.9	19.7	17.9	12.7	7.6	32.6	20.5	
Aug 19	11	11.6	10.2	8.2	6.5	4.2	3.7	6.1	11.5	16.9	S	24.6	25	26.4	26.3	26.7	27	26.3	25.8	22.2	20	16.8	16.7	15	3.7	27.0	16.9	
Aug 20	13.6	13.7	13	12.2	11.2	11.1	12.1	16.3	17.4	S	25.7	29.2	32.1	36.5	39.1	37.4	37	38	34	26.2	17.9	17	18.8	20	11.1	39.1	23.0	
Aug 21	20.5	20.8	20.7	21.7	21.4	22.2	21	23.8	S	28.9	30.8	31.9	33.4	34.6	36.1	37.5	38	38.2	37	36.7	37.4	39.6	37.6	34.7	20.5	39.6	30.6	
Aug 22	34	33.5	32.5	30.7	29.2	24.1	16	S	17.4	22.2	26.7	29.3	30.3	32.8	32.9	32.5	33	32.4	32.4	27.3	23.4	20.7	18.6	18	16.0	34.0	27.4	
Aug 23	15.8	15.3	14	11.5	11.1	6	S	10.8	16.7	21.4	24.5	24.3	24.5	26.6	27.6	27.9	29.7	30.6	31.1	30.2	30	17.9	14.6	11.2	6.0	31.1	20.6	
Aug 24	11.4	10.9	9.2	7.3	7.1	S	5.8	7	8.4	16.3	25.3	32.8	37.5	39	37.6	35.8	36	36.2	32.1	26	23.6	22.3	22	20.4	5.8	39.0	22.2	
Aug 25	16.5	15.6	14.7	15	S	14.7	13.8	17.2	20.7	21.7	23.9	26.5	27.9	28.3	29	30.3	29.3	29	31.8	27.9	25.5	23.9	24.9	24.8	13.8	31.8	23.2	
Aug 26	22.8	23.5	22.3	S	20.7	20.1	18.7	16.7	16.2	16.4	Y	Y	Y	23.1	Y	22.2	20.2	18.6	16.5	15.5	15.5	16.4	17.1	15.2	15.2	23.5	18.8	
Aug 27	15.9	15.3	S	13.2	11.3	11.6	15.9	16.9	18.7	21.3	22.2	23.9	26.6	29.6	30.9	31.3	31.1	27.7	22.9	20.6	19.2	20.5	23	26	11.3	31.3	21.5	
Aug 28	27.8	S	19.5	17	15.2	13.1	15.4	21.9	25.7	28.6	29.2	29.2	27.4	28.4	28.2	28.6	26.5	24.6	25.1	23.1	22.7	22	19.6	19.3	13.1	29.2	23.4	
Aug 29	S	14.6	13.6	12.6	12.1	11.1	10.4	13.4	17.2	20.5	27.7	32.1	33.7	33.2	33.2	34.8	33	33.4	27.4	18.6	17.6	16.9	14.9	S	10.4	34.8	21.9	
Aug 30	19.9	13.9	9.1	1.1	4.7	2.6	2.1	4.2	7.8	13.1	28.7	34.2	37.6	37	36.6	36.3	34.2	31.5	28	26.4	20.9	22.6	S	19.5	1.1	37.6	20.5	
Aug 31	18.8	16.4	13.8	12.4	9.9	12.9	10.4	10.4	8.1	12.8	21.4	25.8	34.9	36.9	39	38.2	37.9	37.8	32.3	29.1	24.9	S	17.3	14.1	8.1	39.0	22.4	
Diurnal Maximum	34	34	33	31	29	28	29	31	31	33	36	40	39	39	39	39	41	41	41	41	41	37	40	39	35			
Diurnal Average	18.0	16.4	14.7	13.4	13.9	13.3	14.0	15.5	18.1	21.8	26.0	27.8	29.6	30.6	30.9	30.4	30.9	30.2	28.5	24.9	22.2	20.9	19.7	18.4				

C	Calibration	S	Daily Zero/Span	Q	Quality Assurance	C1	Repeat Calibration	S1	Repeat Daily Zero/Span
G	Out for Repair	K	Collection Error	N	Not in Service	O	Operator Error	P	Power Failure
R	Recovery	X	Machine Malfunction	Y	Maintenance	T	Exceeds Temperature Limits	N	Not in Service

Daily Average is shown "-" if minimum data completeness criteria of 75% or 18 hours per day is not met.
 Monthly Average is shown "-" if minimum data completeness criteria of 75% of days per month is not met.

Timeseries Chart of Hourly Instantaneous Maximum for O3 - Bonnyville - East Site





LAKELAND INDUSTRY & COMMUNITY ASSOCIATION

Bonnyville - East Site - August 2019

Summary of Hourly Instantaneous Maximums

TOTAL HYDROCARBONS (THC) in ppm

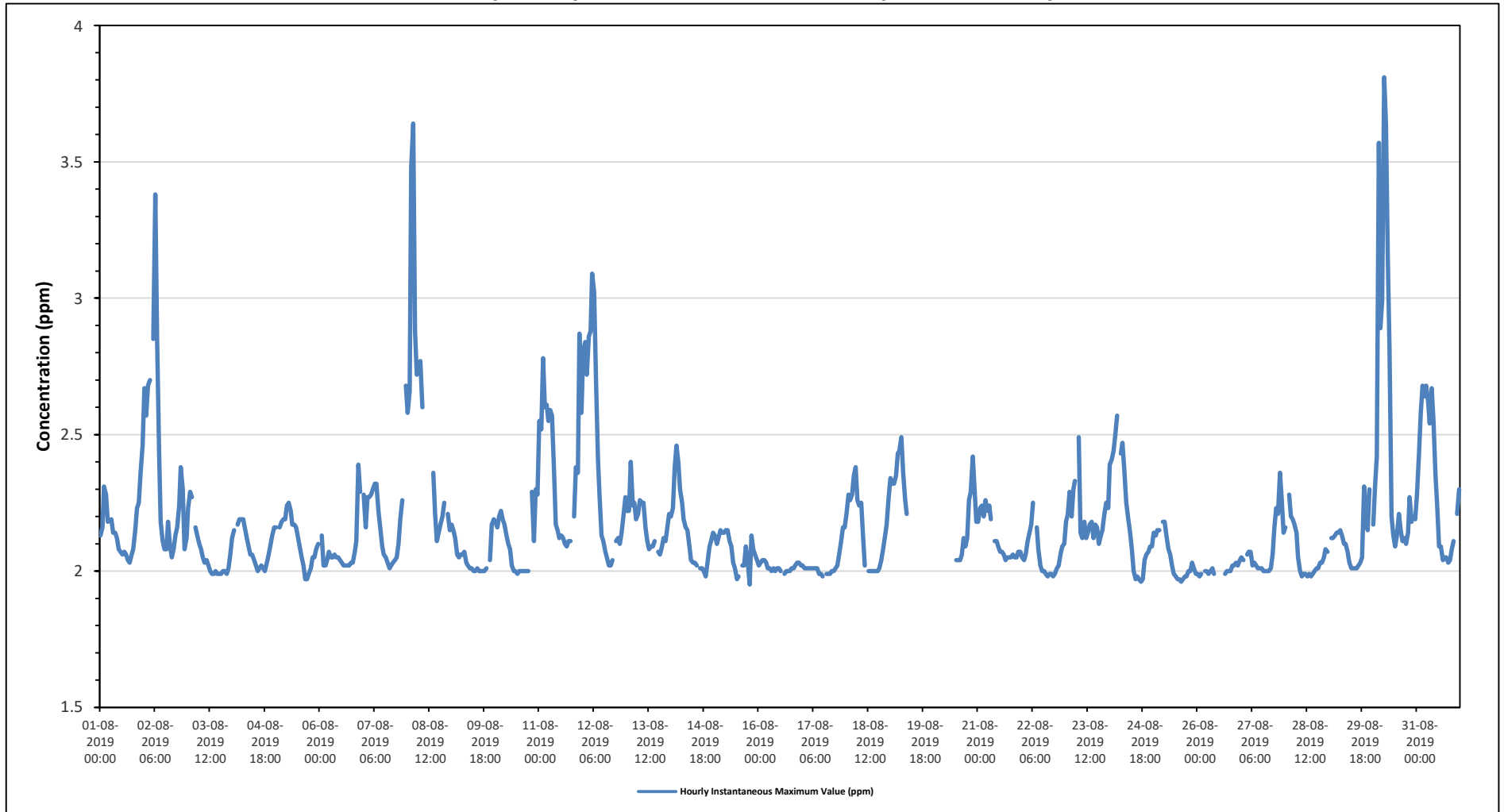
Maximum Hourly Value: 3.81 ppm on August 30 at hour 6	Hours in Service: 744
Maximum Daily Value: 2.55 ppm on August 8	Hours of Data: 679
Minimum Hourly Value: 1.95 ppm on August 15 at hour 19	Hours of Missing Data: 28
Minimum Daily Value: 2.00 ppm on August 26	Hours of Calibration: 37
Monthly Average: 2.17 ppm	Operational Uptime: 96.2

Day	Hourly Period Starting at (MST)																							Daily Minimum	Daily Maximum	Daily Average		
	0	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22				23	
Aug 1	2.13	2.16	2.31	2.28	2.18	S	2.19	2.14	2.14	2.12	2.08	2.07	2.06	2.07	2.06	2.04	2.03	2.06	2.08	2.15	2.23	2.25	2.36	2.46	2.03	2.46	2.16	
Aug 2	2.67	2.57	2.68	2.70	S	2.85	3.38	2.85	2.43	2.18	2.11	2.08	2.08	2.18	2.09	2.05	2.08	2.13	2.16	2.24	2.38	2.30	2.08	2.12	2.05	3.38	2.36	
Aug 3	2.23	2.29	2.27	S	2.16	2.13	2.10	2.08	2.05	2.03	2.04	2.02	2.00	1.99	1.99	2.00	1.99	1.99	1.99	2.00	2.00	1.99	2.01	2.06	1.99	2.29	2.06	
Aug 4	2.12	2.15	S	2.17	2.19	2.19	2.19	2.16	2.12	2.09	2.06	2.06	2.04	2.02	2.00	2.01	2.02	2.01	2.00	2.03	2.06	2.10	2.13	2.16	2.00	2.19	2.09	
Aug 5	2.16	S	2.16	2.18	2.19	2.19	2.24	2.25	2.22	2.17	2.17	2.16	2.12	2.09	2.05	2.02	1.97	1.97	1.99	2.01	2.05	2.05	2.08	2.10	1.97	2.25	2.11	
Aug 6	S	2.13	2.02	2.02	2.04	2.07	2.05	2.05	2.06	2.05	2.05	2.04	2.03	2.02	2.02	2.02	2.03	2.03	2.07	2.11	2.39	2.29	S	2.02	2.02	2.39	2.07	
Aug 7	2.28	2.16	2.27	2.27	2.28	2.30	2.32	2.32	2.22	2.16	2.09	2.06	2.05	2.03	2.01	2.02	2.03	2.04	2.05	2.10	2.19	2.26	S	2.68	2.01	2.68	2.18	
Aug 8	2.58	2.66	3.48	3.64	2.88	2.72	2.73	2.77	2.60	C	C	C	C	C	2.36	2.21	2.11	2.14	2.17	2.20	2.25	S	2.21	2.15	2.11	3.64	2.55	
Aug 9	2.17	2.15	2.12	2.06	2.05	2.06	2.06	2.07	2.03	2.02	2.01	2.01	2.00	2.00	2.01	2.00	2.00	2.00	2.00	2.01	S	2.04	2.17	2.19	2.00	2.19	2.05	
Aug 10	2.18	2.16	2.20	2.22	2.19	2.17	2.13	2.10	2.08	2.02	2.00	2.00	1.99	2.00	2.00	2.00	2.00	2.00	2.00	2.00	S	2.29	2.11	2.30	2.28	1.99	2.30	2.11
Aug 11	2.55	2.52	2.78	2.60	2.61	2.55	2.59	2.57	2.37	2.17	2.15	2.12	2.13	2.12	2.10	2.09	2.11	2.11	S	2.20	2.38	2.36	2.87	2.58	2.09	2.87	2.38	
Aug 12	2.81	2.84	2.72	2.86	2.88	3.09	3.02	2.71	2.41	2.28	2.13	2.11	2.07	2.05	2.02	2.02	2.04	S	2.11	2.12	2.10	2.14	2.20	2.27	2.02	3.09	2.39	
Aug 13	2.22	2.22	2.40	2.24	2.25	2.19	2.21	2.26	2.25	2.25	2.16	2.11	2.08	2.09	2.09	2.11	S	2.07	2.06	2.09	2.12	2.11	2.16	2.21	2.06	2.40	2.17	
Aug 14	2.20	2.23	2.38	2.46	2.40	2.30	2.25	2.19	2.16	2.15	2.09	2.04	2.03	2.03	2.02	S	2.01	2.01	2.00	1.98	2.03	2.09	2.11	2.14	1.98	2.46	2.14	
Aug 15	2.13	2.10	2.12	2.15	2.14	2.14	2.15	2.15	2.11	2.09	2.03	2.01	1.97	1.98	S	2.02	2.02	2.09	2.04	1.95	2.13	2.08	2.06	2.04	1.95	2.15	2.07	
Aug 16	2.02	2.03	2.04	2.04	2.03	2.01	2.01	2.00	2.01	2.00	2.01	2.01	2.00	S	1.99	2.00	2.00	2.00	2.01	2.01	2.02	2.03	2.03	2.02	1.99	2.04	2.01	
Aug 17	2.02	2.01	2.01	2.01	2.01	2.01	2.01	2.01	1.99	1.99	1.98	S	1.99	1.99	1.99	2.00	2.00	2.00	2.01	2.02	2.06	2.11	2.16	2.16	1.98	2.16	2.02	
Aug 18	2.21	2.28	2.26	2.28	2.35	2.38	2.26	2.24	2.25	2.13	2.02	S	2.00	2.00	2.00	2.00	2.00	2.00	2.01	2.04	2.08	2.13	2.17	2.27	2.00	2.38	2.15	
Aug 19	2.34	2.32	2.32	2.35	2.43	2.44	2.49	2.36	2.26	2.21	S	2.04	X	X	X	X	X	X	X	X	X	X	X	X	2.04	2.49	-	
Aug 20	X	X	X	X	X	X	X	X	X	X	X	X	X	2.04	2.04	2.04	2.06	2.12	2.09	2.12	2.26	2.29	2.42	2.30	2.18	2.04	2.42	-
Aug 21	2.18	2.23	2.24	2.20	2.26	2.22	2.24	2.19	S	2.11	2.11	2.09	2.07	2.07	2.06	2.04	2.05	2.05	2.05	2.06	2.05	2.05	2.07	2.07	2.04	2.26	2.12	
Aug 22	2.05	2.04	2.06	2.11	2.14	2.17	2.25	S	2.16	2.08	2.02	2.00	2.00	1.99	1.98	1.99	1.99	1.98	1.99	2.01	2.02	2.06	2.09	2.10	1.98	2.25	2.06	
Aug 23	2.18	2.21	2.29	2.20	2.30	2.33	S	2.49	2.14	2.12	2.18	2.12	2.14	2.17	2.18	2.12	2.17	2.16	2.10	2.13	2.15	2.21	2.25	2.23	2.10	2.49	2.20	
Aug 24	2.39	2.41	2.44	2.50	2.57	S	2.43	2.47	2.36	2.25	2.19	2.15	2.08	2.00	1.97	1.98	1.97	1.96	1.97	2.04	2.06	2.07	2.09	2.09	1.96	2.57	2.19	
Aug 25	2.14	2.13	2.15	2.15	S	2.18	2.18	2.13	2.08	2.06	2.02	1.99	1.98	1.97	1.97	1.96	1.97	1.98	1.98	2.00	2.00	2.03	2.01	1.99	1.96	2.18	2.05	
Aug 26	1.99	1.98	1.99	S	2.00	2.00	1.99	2.00	2.01	1.99	Y	Y	Y	1.99	Y	1.99	2.00	2.00	2.00	2.02	2.02	2.03	2.02	2.04	1.98	2.04	2.00	
Aug 27	2.05	2.04	S	2.06	2.07	2.07	2.02	2.03	2.02	2.01	2.01	2.01	2.00	2.00	2.00	2.00	2.01	2.06	2.16	2.23	2.21	2.36	2.26	2.14	2.00	2.36	2.08	
Aug 28	2.16	S	2.28	2.20	2.19	2.17	2.14	2.05	2.00	1.98	1.99	1.99	1.98	1.99	1.98	1.99	2.00	2.01	2.01	2.03	2.03	2.05	2.08	2.07	1.98	2.28	2.06	
Aug 29	S	2.12	2.12	2.13	2.14	2.14	2.15	2.13	2.10	2.10	2.07	2.03	2.01	2.01	2.01	2.01	2.02	2.03	2.05	2.31	2.22	2.15	2.30	S	2.01	2.31	2.11	
Aug 30	2.17	2.31	2.42	3.57	2.89	2.99	3.81	3.64	3.16	2.81	2.20	2.13	2.09	2.13	2.21	2.15	2.11	2.12	2.10	2.14	2.27	2.18	S	2.19	2.09	3.81	2.51	
Aug 31	2.28	2.43	2.58	2.68	2.64	2.68	2.62	2.54	2.67	2.55	2.35	2.25	2.09	2.09	2.04	2.05	2.05	2.03	2.04	2.08	2.11	S	2.21	2.30	2.03	2.68	2.32	
Diurnal Maximum	2.81	2.84	3.48	3.64	2.89	3.09	3.81	3.64	3.16	2.81	2.35	2.25	2.14	2.18	2.36	2.21	2.17	2.16	2.17	2.31	2.38	2.42	2.87	2.68				
Diurnal Average	2.24	2.25	2.33	2.37	2.30	2.31	2.35	2.31	2.22	2.14	2.09	2.06	2.04	2.04	2.04	2.03	2.03	2.04	2.04	2.09	2.13	2.15	2.18	2.19				

C	Calibration	S	Daily Zero/Span	Q	Quality Assurance	C1	Repeat Calibration	S1	Repeat Daily Zero/Span
G	Out for Repair	K	Collection Error	N	Not in Service	O	Operator Error	P	Power Failure
R	Recovery	X	Machine Malfunction	Y	Maintenance	T	Exceeds Temperature Limits	N	Not in Service

Daily Average is shown "-" if minimum data completeness criteria of 75% or 18 hours per day is not met.
 Monthly Average is shown "-" if minimum data completeness criteria of 75% of days per month is not met.

Timeseries Chart of Hourly Instantaneous Maximum for THC - Bonnyville - East Site





LAKELAND INDUSTRY & COMMUNITY ASSOCIATION

Bonnyville - East Site - August 2019

Summary of Hourly Instantaneous Maximums

METHANE (CH4) in ppm

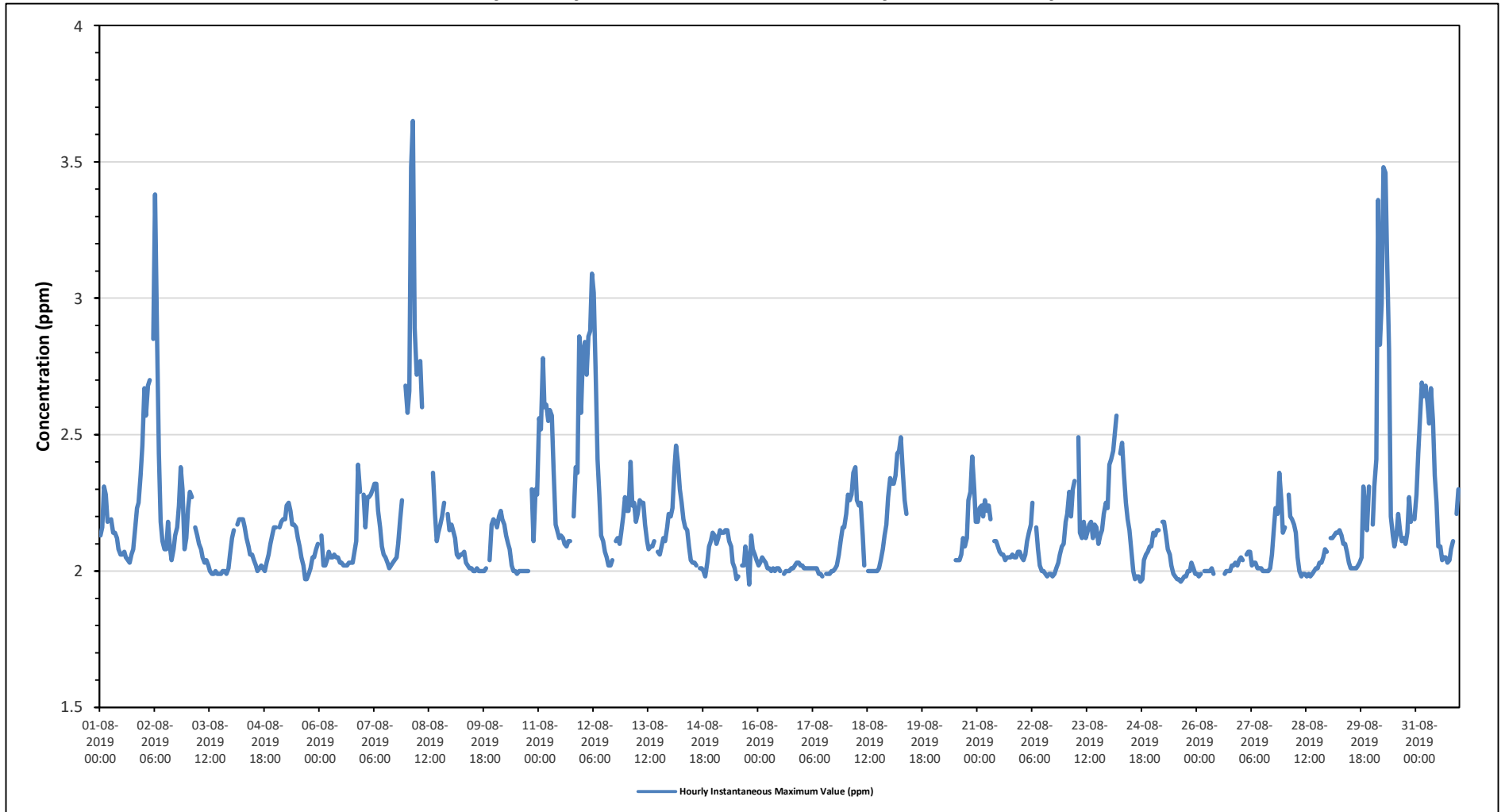
Maximum Hourly Value:	3.65 ppm on August 8 at hour 3	Hours in Service:	744
Maximum Daily Value:	2.55 ppm on August 8	Hours of Data:	679
Minimum Hourly Value:	1.95 ppm on August 15 at hour 19	Hours of Missing Data:	28
Minimum Daily Value:	2.00 ppm on August 26	Hours of Calibration:	37
Monthly Average:	2.16 ppm	Operational Uptime:	96.2

Day	Hourly Period Starting at (MST)																							Daily Minimum	Daily Maximum	Daily Average		
	0	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22				23	
Aug 1	2.13	2.16	2.31	2.28	2.18	S	2.19	2.14	2.14	2.12	2.08	2.06	2.06	2.07	2.05	2.04	2.03	2.06	2.08	2.15	2.23	2.25	2.35	2.46	2.03	2.46	2.16	
Aug 2	2.67	2.57	2.68	2.70	S	2.85	3.38	2.85	2.43	2.18	2.11	2.08	2.08	2.18	2.09	2.04	2.08	2.13	2.16	2.24	2.38	2.30	2.08	2.12	2.04	3.38	2.36	
Aug 3	2.23	2.29	2.27	S	2.16	2.13	2.10	2.08	2.05	2.03	2.04	2.02	2.00	1.99	1.99	2.00	1.99	1.99	1.99	2.00	2.00	1.99	2.01	2.06	1.99	2.29	2.06	
Aug 4	2.12	2.15	S	2.17	2.19	2.19	2.19	2.16	2.12	2.09	2.06	2.06	2.04	2.02	2.00	2.01	2.02	2.01	2.00	2.03	2.06	2.10	2.13	2.16	2.00	2.19	2.09	
Aug 5	2.16	S	2.16	2.18	2.19	2.19	2.24	2.25	2.22	2.17	2.17	2.16	2.12	2.09	2.05	2.02	1.97	1.97	1.99	2.01	2.05	2.05	2.08	2.10	1.97	2.25	2.11	
Aug 6	S	2.13	2.02	2.02	2.04	2.07	2.05	2.05	2.06	2.05	2.05	2.03	2.03	2.02	2.02	2.02	2.03	2.03	2.07	2.11	2.39	2.29	S	2.02	2.39	2.07		
Aug 7	2.28	2.16	2.27	2.27	2.28	2.30	2.32	2.32	2.22	2.16	2.09	2.06	2.05	2.03	2.01	2.02	2.03	2.04	2.05	2.10	2.19	2.26	S	2.68	2.01	2.68	2.18	
Aug 8	2.58	2.66	3.48	3.65	2.89	2.72	2.73	2.77	2.60	C	C	C	C	C	2.36	2.21	2.11	2.14	2.17	2.20	2.25	S	2.21	2.15	2.11	3.65	2.55	
Aug 9	2.17	2.15	2.12	2.06	2.05	2.06	2.06	2.07	2.03	2.02	2.01	2.01	2.00	2.00	2.01	2.00	2.00	2.00	2.00	2.01	S	2.04	2.17	2.19	2.00	2.19	2.05	
Aug 10	2.18	2.16	2.20	2.22	2.19	2.17	2.13	2.10	2.08	2.02	2.00	2.00	1.99	2.00	2.00	2.00	2.00	2.00	2.00	2.00	S	2.30	2.11	2.30	2.28	1.99	2.30	2.11
Aug 11	2.56	2.52	2.78	2.60	2.61	2.55	2.59	2.57	2.37	2.17	2.15	2.12	2.13	2.12	2.10	2.09	2.11	2.11	S	2.20	2.38	2.36	2.86	2.58	2.09	2.86	2.38	
Aug 12	2.81	2.84	2.72	2.86	2.88	3.09	3.02	2.71	2.41	2.28	2.13	2.11	2.07	2.05	2.02	2.02	2.04	S	2.11	2.12	2.10	2.14	2.20	2.27	2.02	3.09	2.39	
Aug 13	2.22	2.22	2.40	2.24	2.25	2.18	2.21	2.26	2.25	2.25	2.17	2.11	2.08	2.09	2.09	2.11	S	2.07	2.06	2.09	2.12	2.11	2.16	2.21	2.06	2.40	2.17	
Aug 14	2.20	2.23	2.38	2.46	2.40	2.30	2.25	2.19	2.16	2.15	2.09	2.04	2.03	2.03	2.02	S	2.01	2.01	2.00	1.98	2.03	2.09	2.11	2.14	1.98	2.46	2.14	
Aug 15	2.13	2.10	2.12	2.15	2.14	2.14	2.15	2.15	2.11	2.09	2.03	2.01	1.97	1.98	S	2.02	2.02	2.09	2.04	1.95	2.13	2.08	2.06	2.04	1.95	2.15	2.07	
Aug 16	2.02	2.03	2.05	2.04	2.03	2.01	2.01	2.00	2.01	2.00	2.01	2.01	2.00	S	1.99	2.00	2.00	2.00	2.01	2.01	2.02	2.03	2.03	2.02	1.99	2.05	2.01	
Aug 17	2.02	2.01	2.01	2.01	2.01	2.01	2.01	2.01	2.01	1.99	1.99	1.98	S	1.99	1.99	1.99	2.00	2.00	2.01	2.02	2.06	2.11	2.16	2.16	1.98	2.16	2.02	
Aug 18	2.21	2.28	2.26	2.28	2.36	2.38	2.26	2.24	2.25	2.13	2.02	S	2.00	2.00	2.00	2.00	2.00	2.00	2.01	2.04	2.08	2.13	2.17	2.27	2.00	2.38	2.15	
Aug 19	2.34	2.32	2.32	2.35	2.43	2.44	2.49	2.36	2.26	2.21	S	2.04	X	X	X	X	X	X	X	X	X	X	X	X	2.04	2.49	-	
Aug 20	X	X	X	X	X	X	X	X	X	X	X	X	X	2.04	2.04	2.04	2.06	2.12	2.09	2.12	2.26	2.29	2.42	2.30	2.18	2.04	2.42	-
Aug 21	2.18	2.23	2.24	2.20	2.26	2.22	2.24	2.19	S	2.11	2.11	2.09	2.07	2.06	2.06	2.04	2.05	2.05	2.05	2.06	2.05	2.05	2.07	2.07	2.04	2.26	2.12	
Aug 22	2.05	2.04	2.06	2.11	2.14	2.17	2.25	S	2.16	2.08	2.02	2.00	2.00	1.99	1.98	1.99	1.99	1.98	1.99	2.01	2.03	2.06	2.09	2.10	1.98	2.25	2.06	
Aug 23	2.18	2.21	2.29	2.20	2.30	2.33	S	2.49	2.14	2.12	2.18	2.12	2.14	2.17	2.18	2.12	2.17	2.16	2.10	2.13	2.15	2.21	2.25	2.23	2.10	2.49	2.20	
Aug 24	2.39	2.41	2.44	2.50	2.57	S	2.43	2.47	2.36	2.25	2.19	2.15	2.08	2.00	1.97	1.98	1.98	1.96	1.97	2.04	2.06	2.07	2.09	2.09	1.96	2.57	2.19	
Aug 25	2.14	2.13	2.15	2.15	S	2.18	2.18	2.13	2.08	2.06	2.02	1.99	1.98	1.97	1.97	1.96	1.97	1.98	1.98	2.00	2.00	2.03	2.01	1.99	1.96	2.18	2.05	
Aug 26	1.99	1.98	1.99	S	2.00	2.00	2.00	2.00	2.01	1.99	Y	Y	Y	1.99	Y	1.99	2.00	2.00	2.00	2.02	2.02	2.03	2.02	2.04	1.98	2.04	2.00	
Aug 27	2.05	2.04	S	2.06	2.07	2.07	2.02	2.03	2.03	2.01	2.01	2.01	2.00	2.00	2.00	2.00	2.01	2.06	2.16	2.23	2.21	2.36	2.26	2.14	2.00	2.36	2.08	
Aug 28	2.16	S	2.28	2.20	2.19	2.17	2.14	2.05	2.00	1.98	1.99	1.99	1.98	1.99	1.98	1.99	2.00	2.01	2.01	2.03	2.03	2.05	2.08	2.07	1.98	2.28	2.06	
Aug 29	S	2.12	2.12	2.13	2.14	2.14	2.15	2.13	2.10	2.10	2.07	2.03	2.01	2.01	2.01	2.01	2.02	2.03	2.05	2.31	2.22	2.15	2.31	S	2.01	2.31	2.11	
Aug 30	2.17	2.31	2.41	3.36	2.83	2.98	3.48	3.46	3.16	2.81	2.20	2.13	2.09	2.13	2.21	2.15	2.11	2.12	2.10	2.14	2.27	2.18	S	2.19	2.09	3.48	2.48	
Aug 31	2.28	2.43	2.58	2.69	2.64	2.68	2.62	2.54	2.67	2.55	2.35	2.25	2.09	2.09	2.04	2.05	2.05	2.03	2.04	2.08	2.11	S	2.21	2.30	2.03	2.69	2.32	
Diurnal Maximum	2.81	2.84	3.48	3.65	2.89	3.09	3.48	3.46	3.16	2.81	2.35	2.25	2.14	2.18	2.36	2.21	2.17	2.16	2.17	2.31	2.38	2.42	2.86	2.68				
Diurnal Average	2.24	2.25	2.33	2.36	2.30	2.31	2.34	2.30	2.22	2.14	2.09	2.06	2.04	2.04	2.04	2.03	2.03	2.04	2.04	2.09	2.14	2.15	2.18	2.19				

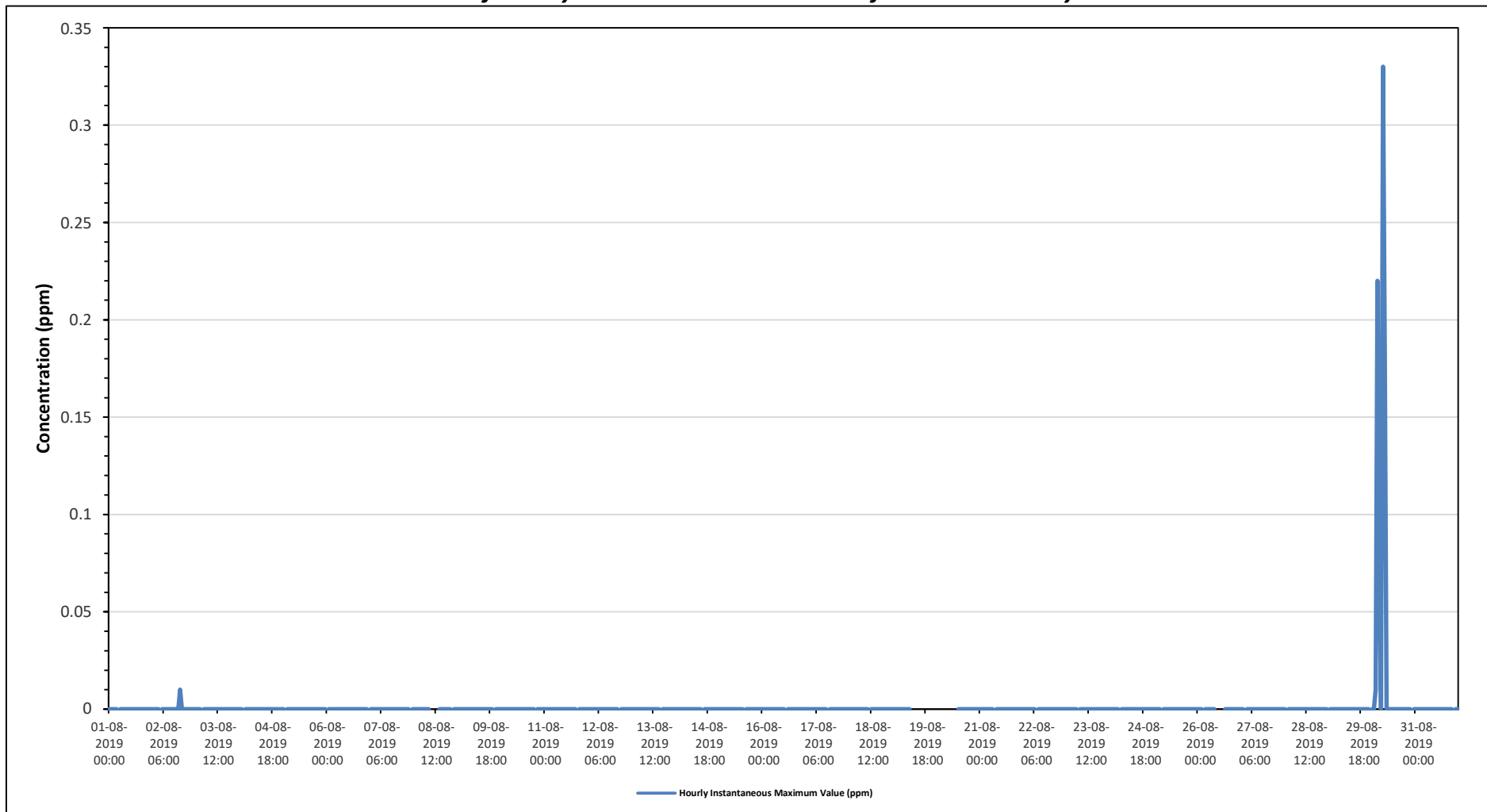
C	Calibration	S	Daily Zero/Span	Q	Quality Assurance	C1	Repeat Calibration	S1	Repeat Daily Zero/Span
G	Out for Repair	K	Collection Error	N	Not in Service	O	Operator Error	P	Power Failure
R	Recovery	X	Machine Malfunction	Y	Maintenance	T	Exceeds Temperature Limits	N	Not in Service

Daily Average is shown "-" if minimum data completeness criteria of 75% or 18 hours per day is not met.
 Monthly Average is shown "-" if minimum data completeness criteria of 75% of days per month is not met.

Timeseries Chart of Hourly Instantaneous Maximum for CH4 - Bonnyville - East Site



Timeseries Chart of Hourly Instantaneous Maximum for NMHC - Bonnyville - East Site





LAKELAND INDUSTRY & COMMUNITY ASSOCIATION

Bonnyville - East Site - August 2019

Summary of Hourly Instantaneous Maximums

WIND SPEED (WS) in km/h

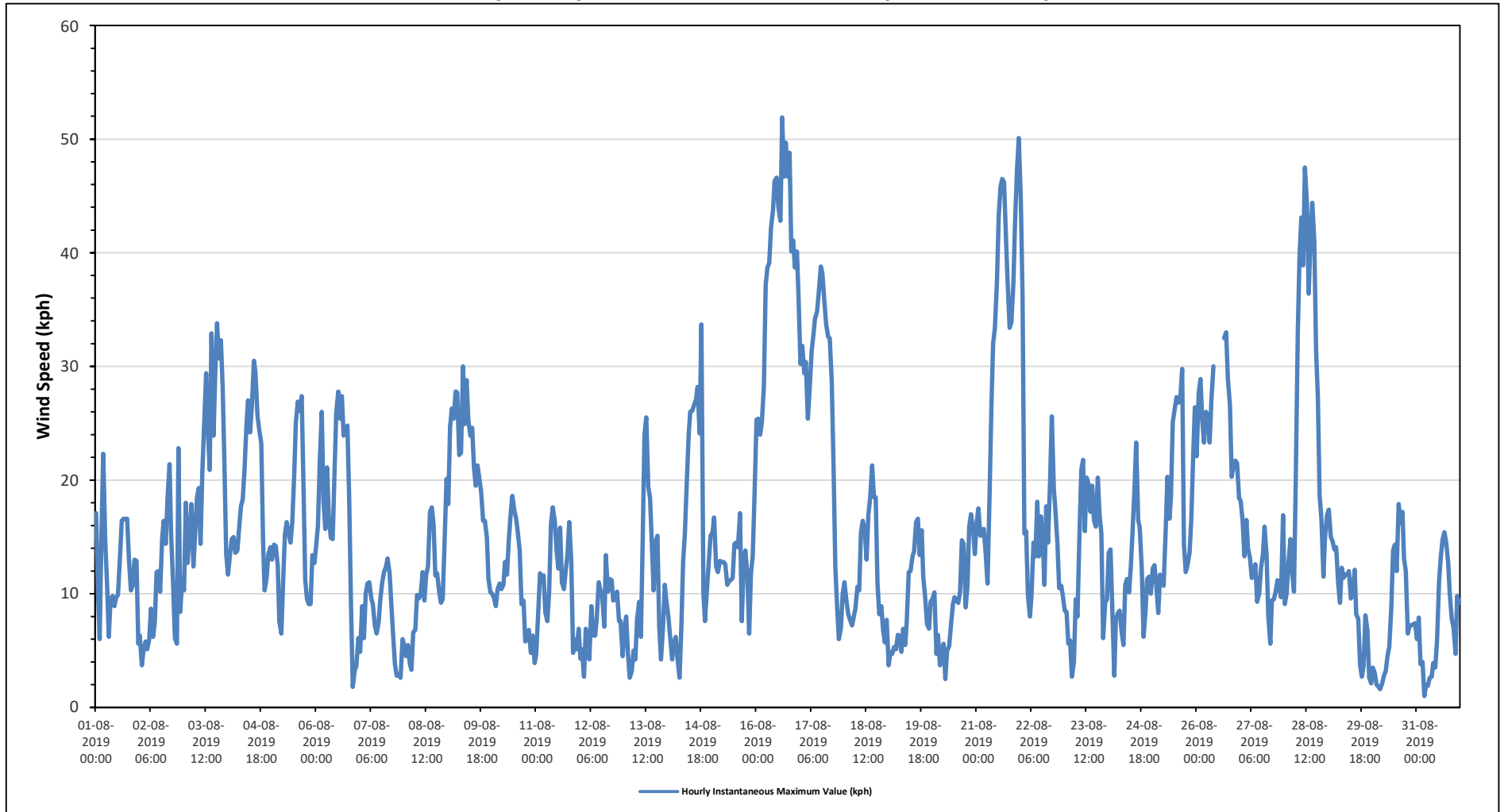
Maximum Hourly Value:	51.9 kph	on August 16 at hour 14	Hours in Service:	744
Maximum Daily Value:	39.5 kph	on August 16	Hours of Data:	740
Minimum Hourly Value:	1.0 kph	on August 31 at hour 4	Hours of Missing Data:	4
Minimum Daily Value:	7.3 kph	on August 31	Hours of Calibration:	0
Monthly Average:	15.5 kph		Operational Uptime:	99.5

Day	Hourly Period Starting at (MST)																							Daily Minimum	Daily Maximum	Daily Average	
	0	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22				23
Aug 1	17.1	10.5	6.0	15.2	22.3	14.6	10.9	6.2	9.6	9.8	8.9	9.7	9.9	12.8	16.4	16.6	16.6	16.6	12.7	10.3	10.7	13.0	12.9	5.6	5.6	22.3	12.3
Aug 2	6.3	3.7	5.1	5.8	5.1	6.0	8.7	6.2	7.5	11.9	12.0	10.2	14.9	16.4	14.4	18.4	21.4	15.3	10.9	6.1	5.6	22.8	8.4	11.3	3.7	22.8	10.6
Aug 3	10.3	18.0	12.7	15.5	17.9	12.4	15.0	18.5	19.3	14.4	20.7	24.8	29.4	24.3	20.9	32.9	23.9	29.4	33.8	30.7	32.3	28.2	21.4	13.5	10.3	33.8	21.7
Aug 4	11.7	13.5	14.8	15.0	13.6	13.8	15.8	17.7	18.3	20.9	25.0	27.0	24.2	26.5	30.5	29.5	25.7	24.4	23.2	14.7	10.3	11.4	13.5	14.1	10.3	30.5	19.0
Aug 5	13.0	14.3	14.2	12.4	7.6	6.5	11.1	15.2	16.3	15.4	14.5	16.3	20.7	25.1	26.9	26.1	27.4	20.8	11.2	9.5	9.1	9.1	13.4	12.7	6.5	27.4	15.4
Aug 6	14.2	16.0	21.5	26.0	18.1	15.7	21.1	16.6	14.9	14.8	20.5	25.9	27.8	25.4	27.4	23.9	24.3	24.8	18.3	9.1	1.8	3.3	3.6	6.1	1.8	27.8	17.5
Aug 7	4.9	8.9	6.1	10.0	10.9	11.0	9.6	9.1	7.2	6.5	7.5	9.4	11.0	11.9	12.4	13.1	11.8	9.0	6.3	3.8	2.8	2.9	2.6	6.0	2.6	13.1	8.1
Aug 8	5.5	4.5	5.5	3.8	3.3	6.6	6.8	9.9	9.6	9.9	11.9	9.4	11.7	12.4	17.2	17.6	16.1	11.6	11.8	10.2	9.2	9.5	14.3	20.1	3.3	20.1	10.4
Aug 9	17.9	24.7	26.3	25.4	27.8	27.7	22.2	22.4	30.0	24.9	28.8	25.2	23.9	24.6	21.1	19.5	21.3	20.0	19.0	16.4	16.4	14.9	11.3	10.1	10.1	30.0	21.7
Aug 10	10.0	9.5	8.9	10.4	10.9	10.4	10.8	12.8	11.7	14.7	17.2	18.6	17.3	16.6	15.3	13.8	9.1	9.4	5.8	6.0	6.8	4.8	6.3	3.9	3.9	18.6	10.9
Aug 11	4.7	8.4	11.8	11.4	11.6	8.3	7.6	10.3	16.1	17.6	16.4	13.8	12.2	15.8	11.0	10.4	11.8	13.5	16.3	12.8	4.8	6.0	5.1	6.9	4.7	17.6	11.0
Aug 12	4.3	5.1	2.7	6.9	5.3	4.2	8.9	6.3	6.3	7.8	11.0	10.3	9.7	7.1	13.4	10.2	11.3	11.2	9.4	9.5	10.2	7.6	7.6	4.5	2.7	13.4	8.0
Aug 13	6.9	8.0	4.7	2.6	3.2	5.0	4.2	7.8	9.3	6.2	14.7	24.0	25.5	19.4	18.4	14.4	10.3	14.6	15.1	7.1	4.2	7.1	10.8	9.4	2.6	25.5	10.5
Aug 14	8.0	6.2	4.2	5.7	6.2	4.3	2.6	7.0	12.8	15.3	19.5	24.0	26.0	26.1	26.6	27.1	28.2	24.1	33.7	10.0	7.6	10.4	12.8	15.1	2.6	33.7	15.1
Aug 15	15.4	16.7	12.4	11.9	12.9	12.8	12.8	12.6	10.8	11.1	11.2	11.4	14.4	14.5	14.1	17.1	7.6	13.1	13.8	11.7	6.5	11.8	13.3	18.6	6.5	18.6	12.9
Aug 16	25.3	25.4	24.0	25.1	28.3	37.2	38.7	39.1	42.2	43.8	46.3	46.6	44.0	42.8	51.9	46.7	49.7	46.7	48.8	40.1	41.1	38.7	40.1	36.3	24.0	51.9	39.5
Aug 17	30.2	31.8	29.4	30.4	25.4	28.0	31.4	32.8	34.2	34.8	36.5	38.8	38.2	35.7	33.7	32.6	32.5	28.7	21.3	12.4	8.9	6.0	7.0	10.0	6.0	38.8	27.1
Aug 18	11.0	9.5	8.2	7.7	7.2	7.9	8.7	10.6	10.3	15.4	16.4	15.6	13.0	16.9	18.4	21.3	18.5	18.5	10.9	8.2	8.9	6.8	5.7	7.7	5.7	21.3	11.8
Aug 19	3.7	4.9	4.7	5.3	5.1	6.4	6.3	4.9	6.9	5.5	7.5	11.9	12.0	13.3	13.7	16.3	16.6	13.4	15.6	11.5	9.6	7.3	6.9	9.3	3.7	16.6	9.1
Aug 20	9.6	10.1	4.7	6.4	3.7	4.5	5.6	2.5	5.0	5.4	7.2	9.1	9.7	9.4	9.2	10.2	14.7	14.4	8.8	10.7	15.9	17.0	15.7	13.5	2.5	17.0	9.3
Aug 21	16.2	17.5	15.1	15.3	15.7	13.5	10.9	18.6	26.2	32.0	33.4	37.4	43.2	45.8	46.5	46.2	41.1	37.5	33.4	33.9	37.4	42.4	47.3	50.1	10.9	50.1	31.5
Aug 22	44.7	36.0	15.3	15.5	9.9	8.0	9.8	14.5	13.3	18.1	13.3	16.8	14.9	10.8	17.7	14.5	19.8	25.6	19.2	17.4	14.5	10.5	10.7	9.9	8.0	44.7	16.7
Aug 23	8.5	8.4	5.6	5.9	2.7	4.0	9.5	8.0	14.5	20.9	21.8	15.5	20.2	19.7	17.2	19.5	16.5	15.9	20.2	16.9	15.3	6.1	9.2	9.5	2.7	21.8	13.0
Aug 24	13.6	13.9	8.7	2.8	7.7	8.3	8.5	6.6	5.5	10.8	11.3	10.1	12.4	15.1	19.0	23.3	16.5	15.8	12.2	6.2	8.5	11.3	11.5	10.0	2.8	23.3	11.2
Aug 25	12.2	12.5	10.8	8.3	11.7	11.0	10.7	15.5	20.3	16.6	18.6	25.1	26.3	27.3	26.8	26.9	29.8	14.3	11.9	12.5	13.6	16.6	21.9	26.4	8.3	29.8	17.8
Aug 26	22.1	27.6	28.9	25.3	23.3	26.0	25.5	23.3	27.0	30.0	Y	Y	Y	33.0	Y	32.5	33.0	28.9	26.6	20.3	21.2	21.7	21.5	18.4	18.4	33.0	25.8
Aug 27	18.2	16.4	13.3	16.5	14.0	13.1	11.4	11.8	12.6	9.3	10.0	12.2	13.5	15.9	13.5	8.0	5.6	9.4	9.5	10.2	11.2	10.6	9.7	16.9	5.6	18.2	12.2
Aug 28	9.1	10.0	12.6	14.8	11.8	10.2	20.0	33.0	39.8	43.1	38.9	47.5	44.3	36.4	41.2	44.4	41.0	31.4	27.3	18.6	16.6	11.5	14.9	16.9	9.1	47.5	26.5
Aug 29	17.4	15.0	14.6	13.9	14.1	10.9	9.2	12.3	11.4	11.7	11.7	12.0	9.6	10.0	12.1	8.2	7.8	3.8	2.7	3.6	8.1	6.8	2.6	2.1	2.1	17.4	9.7
Aug 30	3.5	3.0	2.0	1.8	1.6	2.1	2.8	3.2	4.5	5.3	8.8	13.8	14.3	12.0	17.9	16.2	17.2	13.1	12.0	6.5	7.2	7.2	7.3	7.4	1.6	17.9	7.9
Aug 31	6.0	7.9	3.8	4.0	1.0	2.0	1.9	2.6	2.7	3.9	3.5	5.9	11.1	13.3	14.8	15.4	14.5	12.7	10.0	7.8	7.0	4.7	9.8	9.2	1.0	15.4	7.3
Diurnal Maximum	44.7	36.0	29.4	30.4	28.3	37.2	38.7	39.1	42.2	43.8	46.3	47.5	44.3	45.8	51.9	46.7	49.7	46.7	48.8	40.1	41.1	42.4	47.3	50.1			
Diurnal Average	13.0	13.5	11.6	12.2	11.6	11.4	12.2	13.5	15.4	16.4	17.5	19.3	20.2	20.5	21.3	21.7	20.7	19.0	17.2	13.1	12.4	12.5	12.9	13.3			

C	Calibration	S	Daily Zero/Span	Q	Quality Assurance	C1	Repeat Calibration	S1	Repeat Daily Zero/Span
G	Out for Repair	K	Collection Error	N	Not in Service	O	Operator Error	P	Power Failure
R	Recovery	X	Machine Malfunction	Y	Maintenance	T	Exceeds Temperature Limits	N	Not in Service

Daily Average is shown "-" if minimum data completeness criteria of 75% or 18 hours per day is not met.
 Monthly Average is shown "-" if minimum data completeness criteria of 75% of days per month is not met.

Timeseries Chart of Hourly Instantaneous Maximum for WS - Bonnyville - East Site



END OF REPORT

This report, 367 of 367, ends the August 2019 Monthly Ambient Air Quality Monitoring Report.



Lakeland Industry & Community Association

AUGUST 2019

Ambient Air Monitoring Calibration Report

- COLD LAKE SOUTH STATION-

CAL-LICA-201908-01174

Station Operation and Maintenance:

Maxxam Analytics

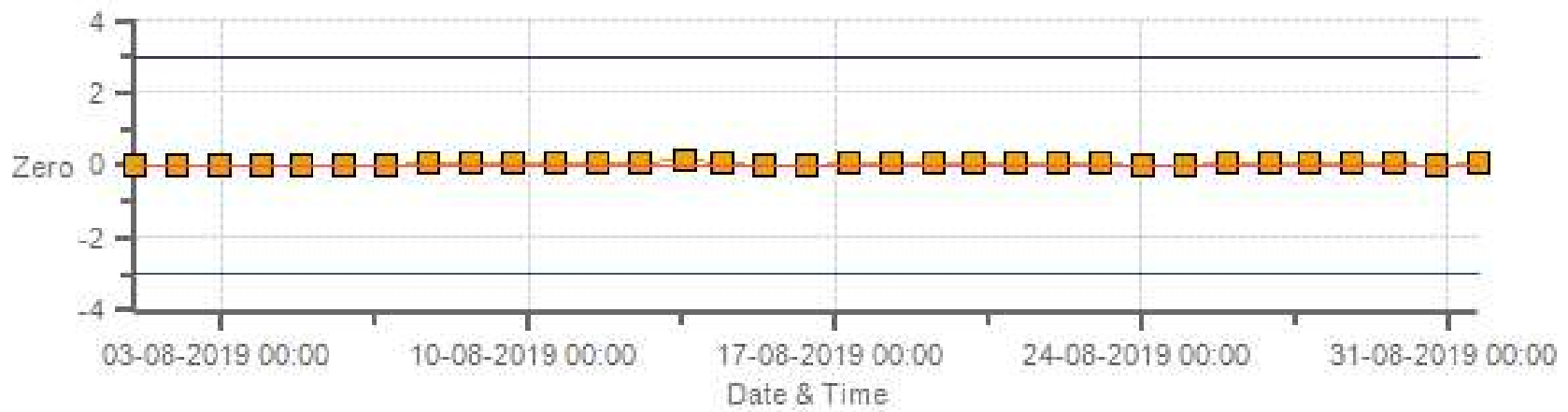
Data Validation and Report:

Maxxam Analytics

September 10, 2019

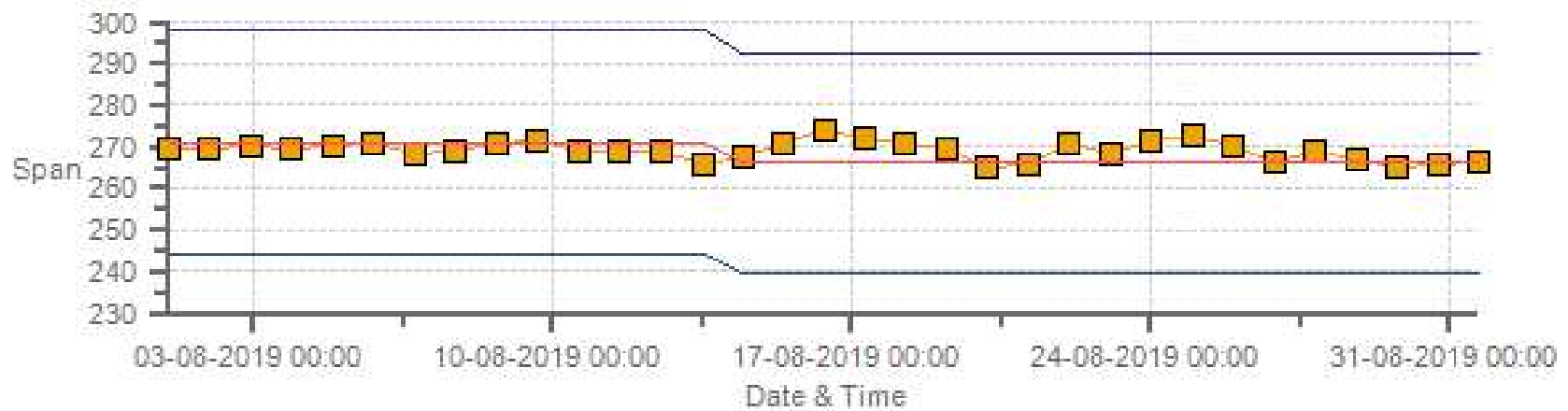
DAILY INTERNAL ZERO-SPAN CALIBRATION RECORDS

SO2 [ppb] Calibration: LICA Cold Lake South Monthly: 08-2019 Type: Zero



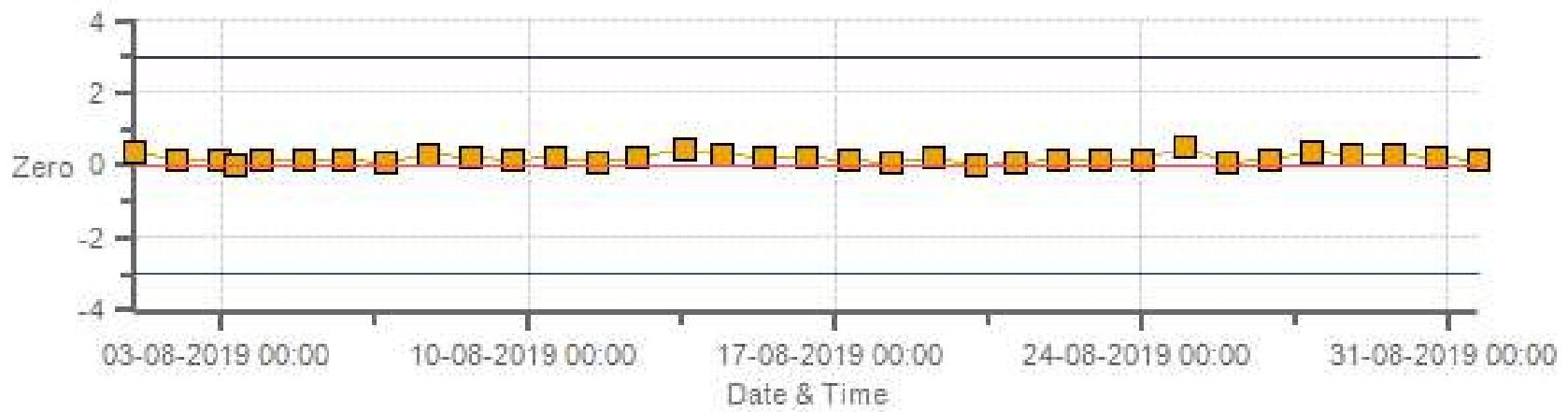
Zero Zero Ref Zero Low Zero High

SO2 [ppb] Calibration: LICA Cold Lake South Monthly: 08-2019 Type: Span



Span SpanRef Span Low Span High

TRS [ppb] Calibration: LICA Cold Lake South Monthly: 08-2019 Type: Zero



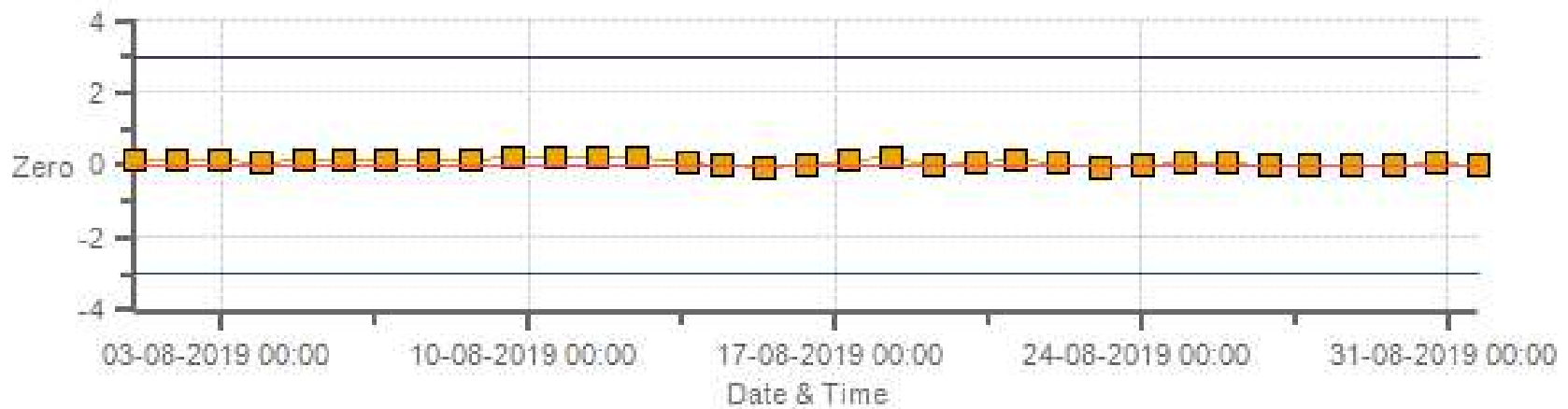
Zero Zero Ref Zero Low Zero High

TRS [ppb] Calibration: LICA Cold Lake South Monthly: 08-2019 Type: Span



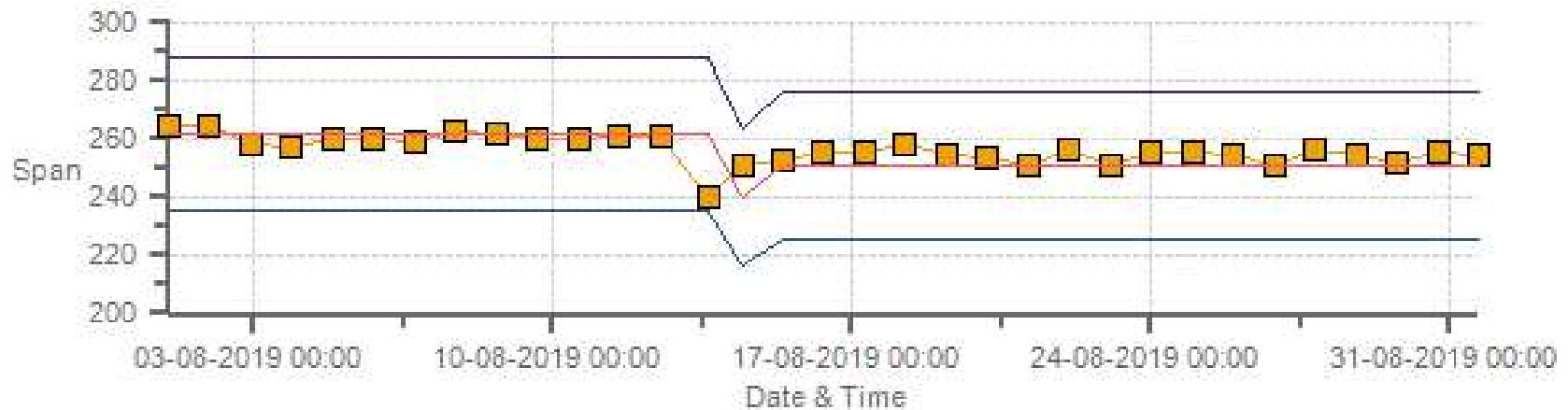
Span SpanRef Span Low Span High

NOx [ppb] Calibration: LICA Cold Lake South Monthly: 08-2019 Type: Zero



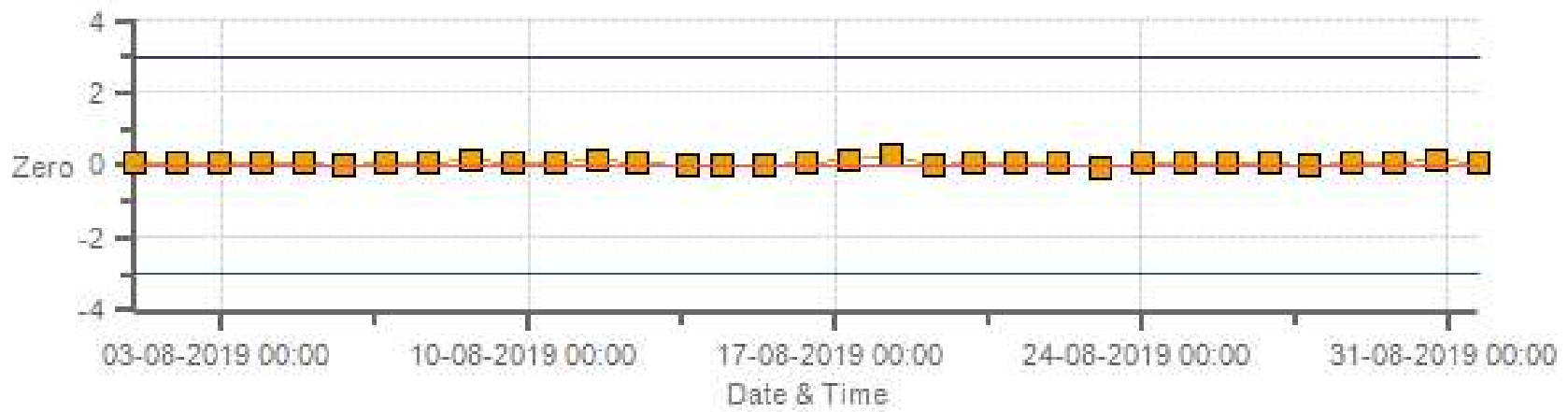
Zero Zero Ref Zero Low Zero High

NOx [ppb] Calibration: LICA Cold Lake South Monthly: 08-2019 Type: Span



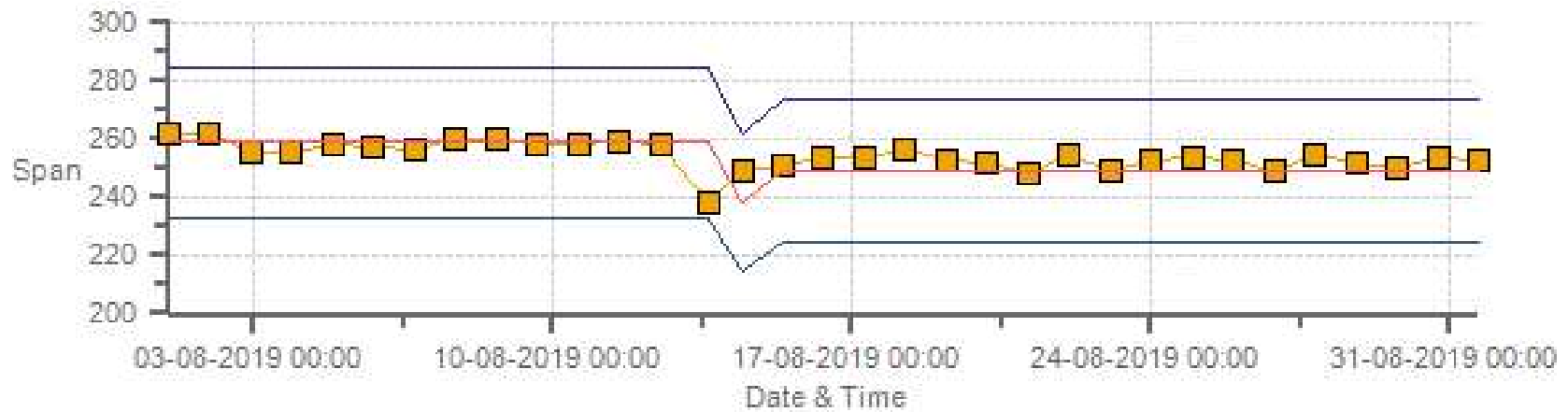
Span Span Ref Span Low Span High

NO2 [ppb] Calibration: LICA Cold Lake South Monthly: 08-2019 Type: Zero



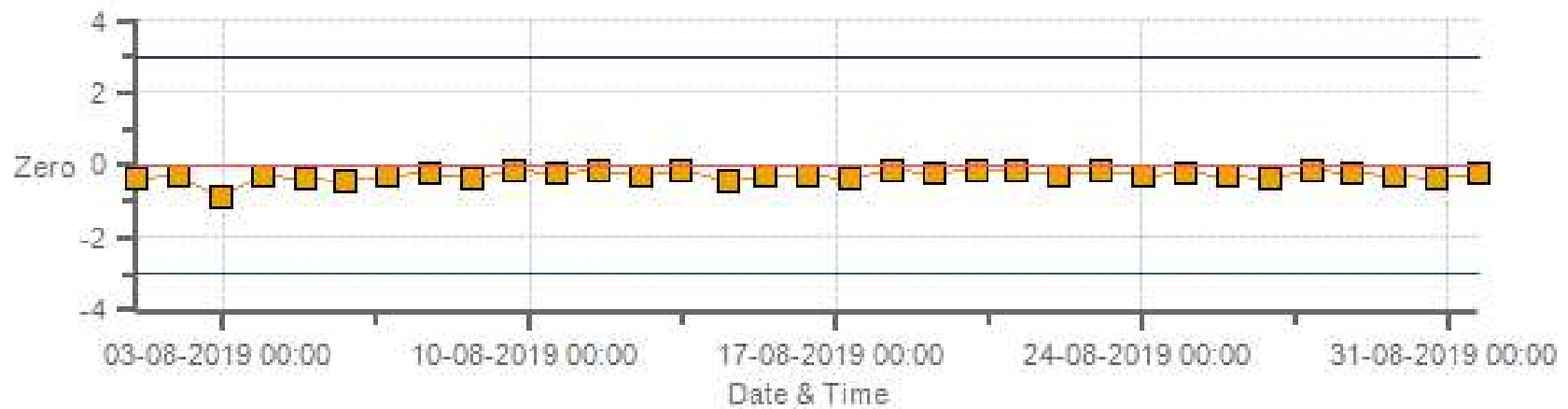
Zero Zero Ref Zero Low Zero High

SO2 [ppb] Calibration: LICA Cold Lake South Monthly: 08-2019 Type: Span



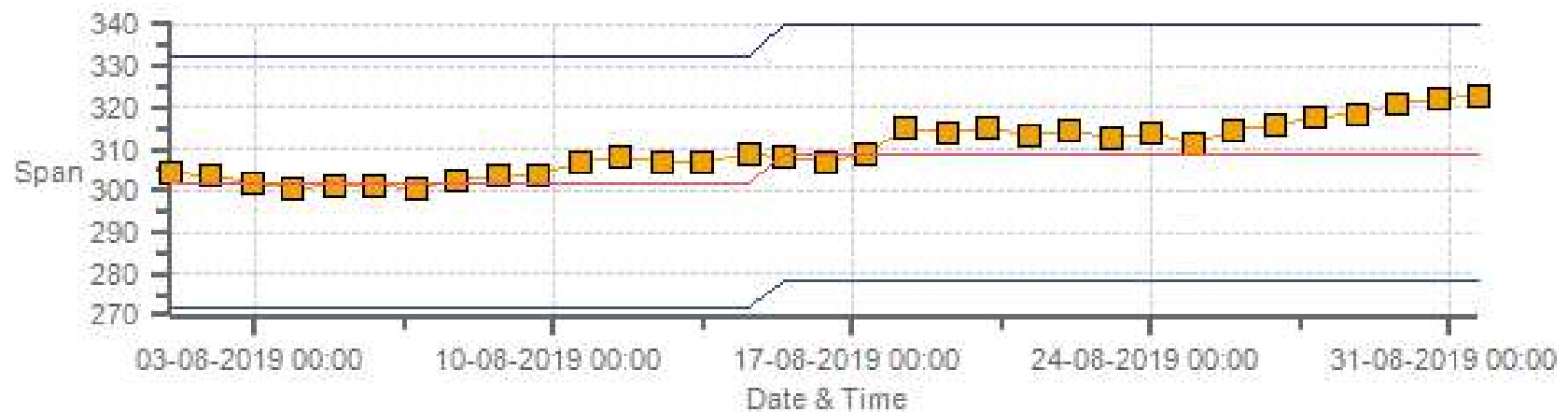
Span Span Ref Span Low Span High

O3 [ppb] Calibration: LICA Cold Lake South Monthly: 08-2019 Type: Zero



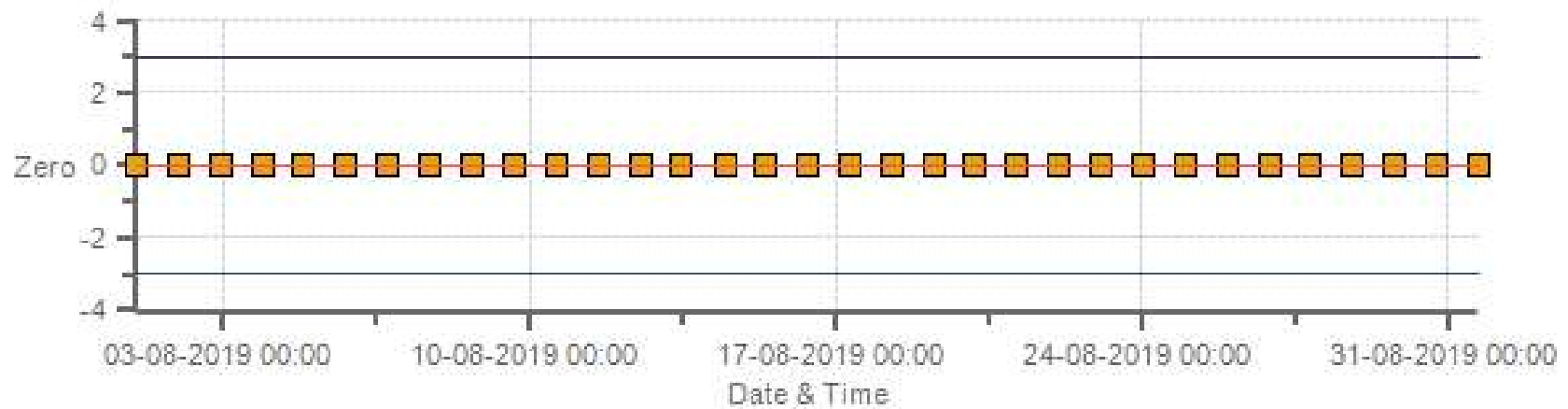
Zero Zero Ref Zero Low Zero High

O3 [ppb] Calibration: LICA Cold Lake South Monthly: 08-2019 Type: Span



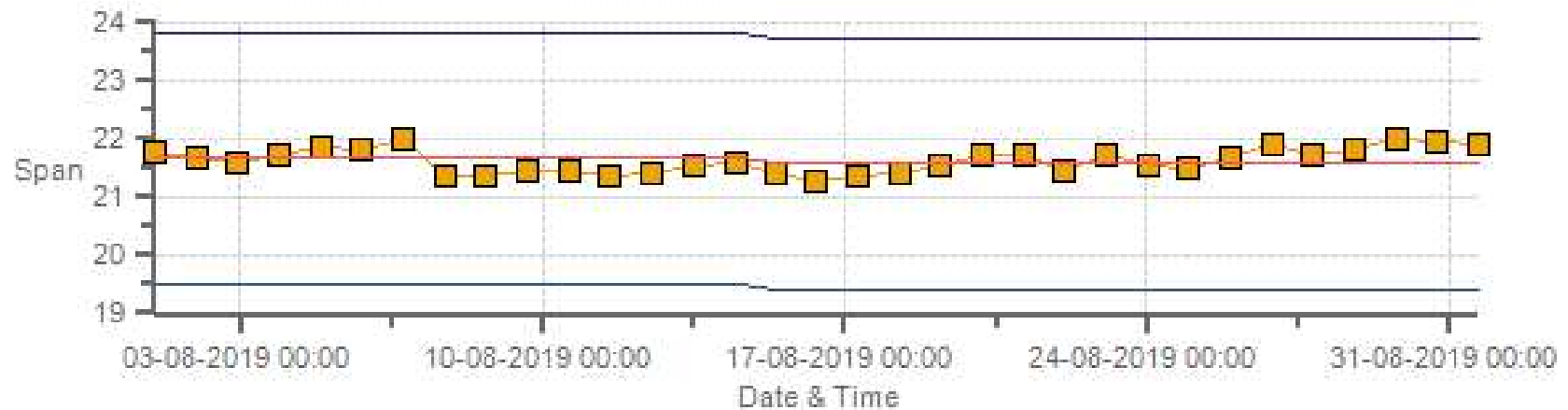
Span SpanRef Span Low Span High

THC [ppm] Calibration: LICA Cold Lake South Monthly: 08-2019 Type: Zero



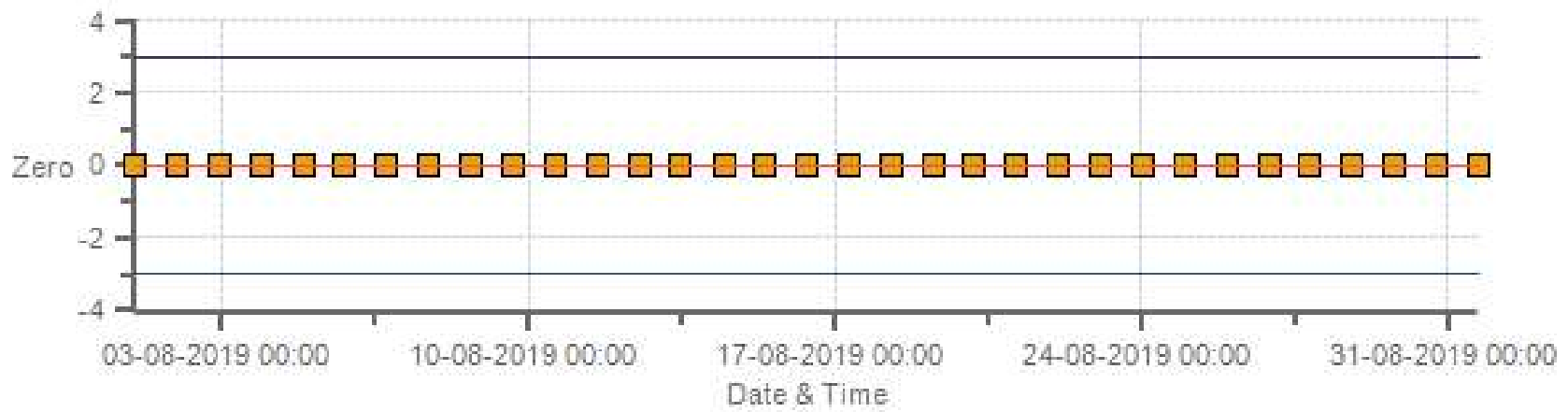
Zero Zero Ref Zero Low Zero High

THC [ppm] Calibration: LICA Cold Lake South Monthly: 08-2019 Type: Span



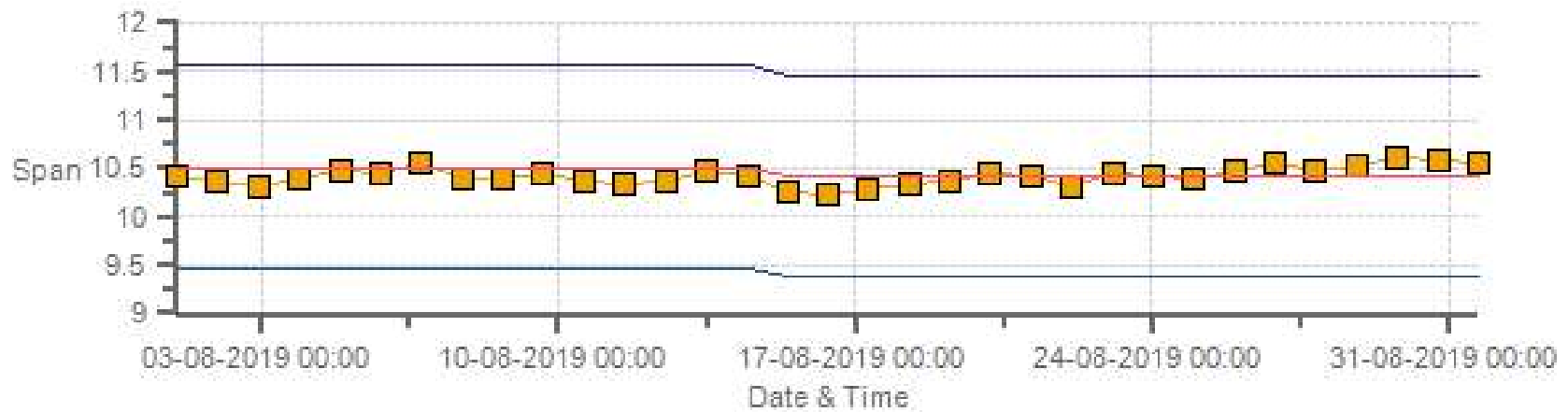
Span SpanRef Span Low Span High

CH4 [ppm] Calibration: LICA Cold Lake South Monthly: 08-2019 Type: Zero



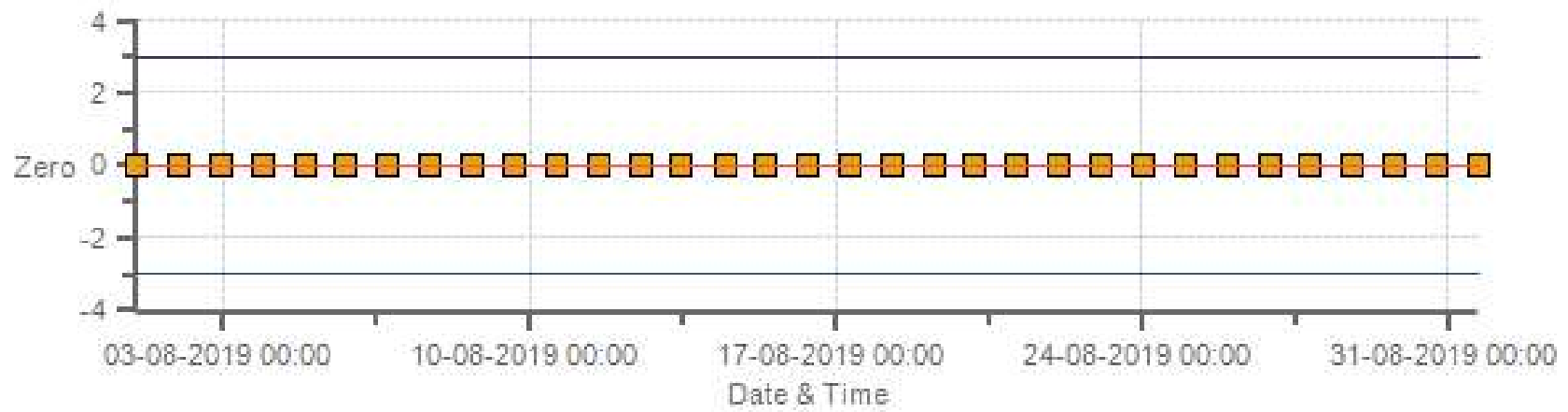
Zero Zero Ref Zero Low Zero High

CH4 [ppm] Calibration: LICA Cold Lake South Monthly: 08-2019 Type: Span



Span SpanRef Span Low Span High

NMHC [ppm] Calibration: LICA Cold Lake South Monthly: 08-2019 Type: Zero



Zero Zero Ref Zero Low Zero High

NMHC [ppm] Calibration: LICA Cold Lake South Monthly: 08-2019 Type: Span



Span SpanRef Span Low Span High

MULTI-POINT CALIBRATION RECORDS

SO2 Analyzer Calibration by Dilution



DATE:	13-Aug-2019	PREVIOUS CALIBRATION DATE:	16-Jul-2019
PARAMETER:	SO2	PREVIOUS CORRECTION FACTOR:	1.001
CLIENT:	LICA	TEMPERATURE (°C):	21.0
LOCATION:	Cold Lake South	BAROMETRIC (mBar):	954
PURPOSE:	Routine	START TIME (MST):	08:58
PERFORMED BY:	Alex Yakupov	END TIME (MST):	13:32

ANALYZER:

MAKE/MODEL	Thermo 43I-TLE	RANGE	500 ppb
SERIAL #	1180026018	FLOW (mL/min)	452
INITIAL		FINAL	
BKG/OFFSET	1.64	BKG/OFFSET	1.64
COEF/SLOPE	0.985	COEF/SLOPE	0.982
Expected (reference) Value	271	Expected (reference) Value	266

CALIBRATION SYSTEM:

CALIBRATOR:		ZERO AIR:	
MAKE:	API	MAKE:	Teledyne
MODEL:	700	MODEL:	T701
ID:	690	ID:	132
MFC CALIBRATION DATE:	16-Apr-2019	OXIDIZER ID:	n/a
CALIBRATION GAS:		FLOWMETERS (if applicable):	
CYLINDER ID:	LL 107918	HIGH ID	n/a
CONC (ppm):	49.50	EXPIRY DATE	n/a
CYLINDER (psi):	1300	LOW ID	n/a
EXPIRY DATE	20-Aug-2026	EXPIRY DATE	n/a

CALIBRATION PARAMETERS:

POINT	HIGH	MID	LOW
TARGET	390	190	95
RANGE	300 - 400	150 - 200	50 - 100

SCRUBBER CHECK (15 MINS; TRS/H2S ONLY):

START TIME:	n/a	SO2 Conc (ppb)	n/a
END TIME:	n/a	Analyzer Response (ppb)	n/a

CALIBRATION:

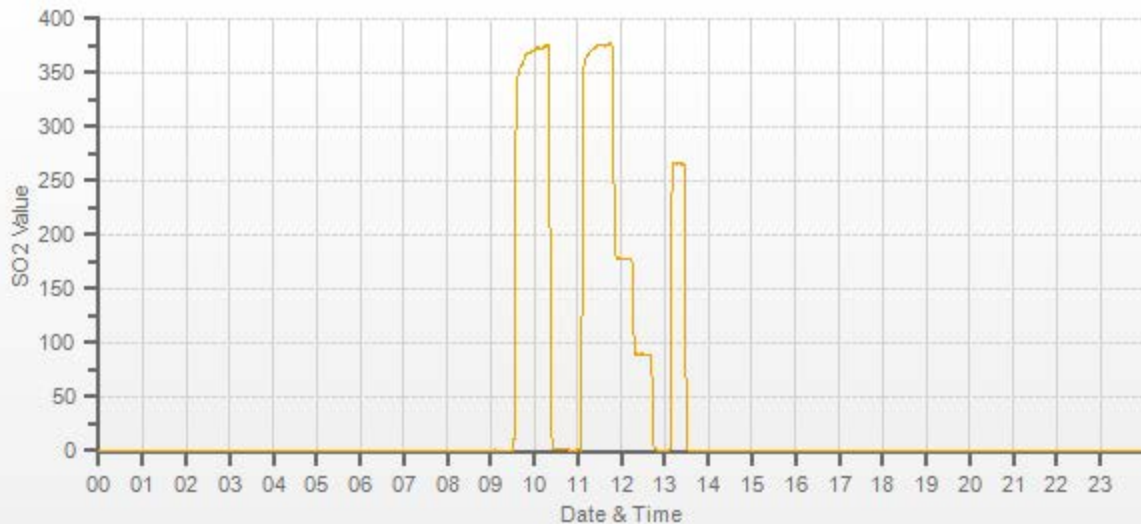
FLOW RATES (mL/min)			CONCENTRATION (ppb)			CORRECTION FACTOR	
DILUENT	GAS	TOTAL	ACTUAL	INDICATED		Initial	Final
				Initial	Final		
5000	37.90	5000	0.00	0	0	1.003	1.001
4962	37.90	5000	375.21	374	375	1.003	1.001
4982	18.00	5000	178.20	n/a	178	n/a	1.001
4991	8.90	5000	88.11	n/a	88	n/a	1.001

LINEAR REGRESSION ANALYSIS:

	CORRELATION	SLOPE	INTERCEPT
VALUE	1.000	0.999	0.0%

COMMENTS:

Sample inlet filter was changed.



TRS Analyzer Calibration by Dilution



DATE:	13-Aug-2019	PREVIOUS CALIBRATION DATE:	16-Jul-2019
PARAMETER:	TRS	PREVIOUS CORRECTION FACTOR:	1.000
CLIENT:	LICA	TEMPERATURE (°C):	21.0
LOCATION:	Cold Lake South	BAROMETRIC (mBar):	954
PURPOSE:	Routine	START TIME (MST):	08:58
PERFORMED BY:	Alex Yakupov	END TIME (MST):	13:32

ANALYZER:

MAKE/MODEL	Thermo 450i	RANGE	100 ppb
SERIAL #	812728560	FLOW (mL/min)	488
INITIAL		FINAL	
BKG/OFFSET	16.3	BKG/OFFSET	16.8
COEF/SLOPE	0.924	COEF/SLOPE	0.947
Expected (reference) Value	38.9	Expected (reference) Value	38.3

CALIBRATION SYSTEM:

CALIBRATOR:		ZERO AIR:	
MAKE:	SABIO	MAKE:	Teledyne
MODEL:	2010 D	MODEL:	T701
ID:	11900613	ID:	132
MFC CALIBRATION DATE:	16-Apr-2019	OXIDIZER ID:	n/a
CALIBRATION GAS:		FLOWMETERS (if applicable):	
CYLINDER ID:	EY 0001003	HIGH ID	n/a
CONC (ppm):	9.55	EXPIRY DATE	n/a
CYLINDER (psi):	600	LOW ID	n/a
EXPIRY DATE	20-Oct-2020	EXPIRY DATE	n/a

CALIBRATION PARAMETERS:

POINT	HIGH	MID	LOW
TARGET	78	38	19
RANGE	60 - 80	30 - 40	10 - 20

SCRUBBER CHECK (15 MINS; TRS/H2S ONLY):

START TIME:	09:11	SO2 Conc (ppb)	380
END TIME:	09:26	Analyzer Response (ppb)	0.0

CALIBRATION:

FLOW RATES (mL/min)			CONCENTRATION (ppb)			CORRECTION FACTOR	
DILUENT	GAS	TOTAL	ACTUAL	INDICATED		Initial	Final
				Initial	Final		
7500	61.20	7500	0.00	0	0	1.016	1.000
7439	61.20	7500	77.93	76.7	77.9	1.016	1.000
7470	29.80	7500	37.95	n/a	38	n/a	0.999
7485	14.90	7500	18.97	n/a	19	n/a	0.999

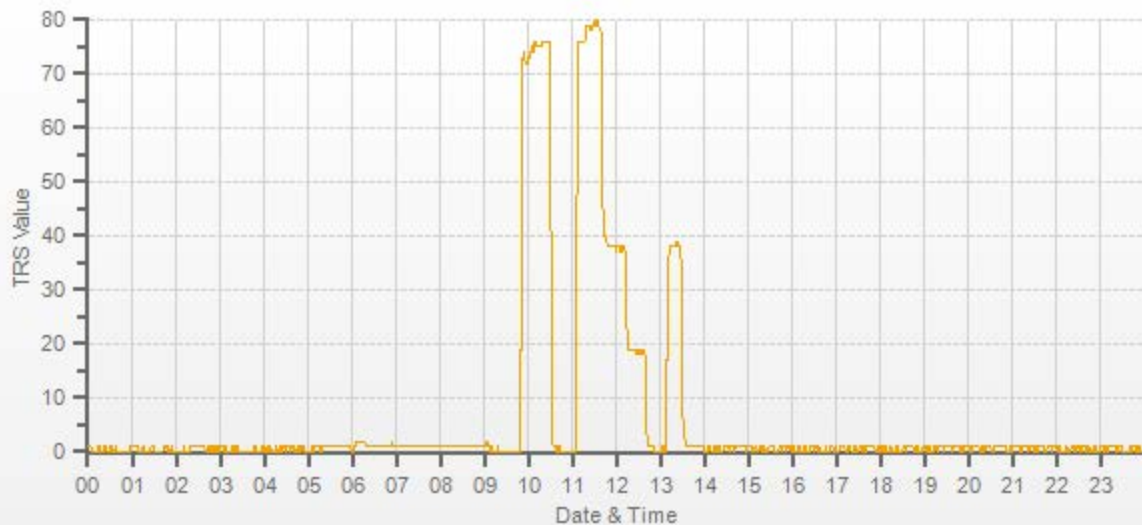
LINEAR REGRESSION ANALYSIS:

	CORRELATION	SLOPE	INTERCEPT
VALUE	1.000	1.000	0.0%

COMMENTS:

Sample inlet filter was changed.

TRS[ppb] Station: Cold Lake South Daily: 13-08-2019 Type: AVG 1 Min. [1 Min.]



CAL-LICA-201908-01174

NOx Calibration by Dilution/Gas-Phase Titration



CALIBRATION:				ANALYZER:			
DATE:	13-Aug-2019	PREVIOUS CALIBRATION DATE:	16-Jul-2019	MAKE/MODEL:	Thermo 42i	PREVIOUS CF.	
CLIENT:	LICA	TEMPERATURE (°C):	21.0	SERIAL #:	1505664393	NOx	0.999
LOCATION:	Cold Lake South	BAROMETRIC (mBar):	954.00	FLOW (mL/min)	774	NO	0.999
PURPOSE:	Routine	START TIME (MST):	08:58	RANGE (ppb)	500	NO2	1.000
PERFORMED BY:	Alex Yakupov	END TIME (MST):	15:30	GPT FOR O3?		No	

CALIBRATOR:		ZERO AIR:		CALIBRATION GAS:		FLOWMETERS (if applicable):	
MAKE:	API	MAKE:	Teledyne	CYLINDER ID:	LL 107918	HIGH ID:	n/a
MODEL:	700	MODEL:	T701	NO/NOx (PPM):	50.1 50.2	HIGH EXPIRY:	n/a
ID:	690	ID:	132	CYLINDER (psi):	1300	LOW ID:	n/a
MFC CALIBRATION DATE:	16-Apr-2019	OXIDIZER ID:	n/a	EXPIRY DATE	20-Aug-2026	LOW EXPIRY:	n/a

CALIBRATION SETTINGS:							
INITIAL	NOx	NO	NO2	FINAL	NOx	NO	NO2
BKG/OFFSET:	5	5	n/a	BKG/OFFSET:	5	5	n/a
SLOPE/COEF/CE:	1	1	1.0	SLOPE/COEF/CE:	1	1	1.0

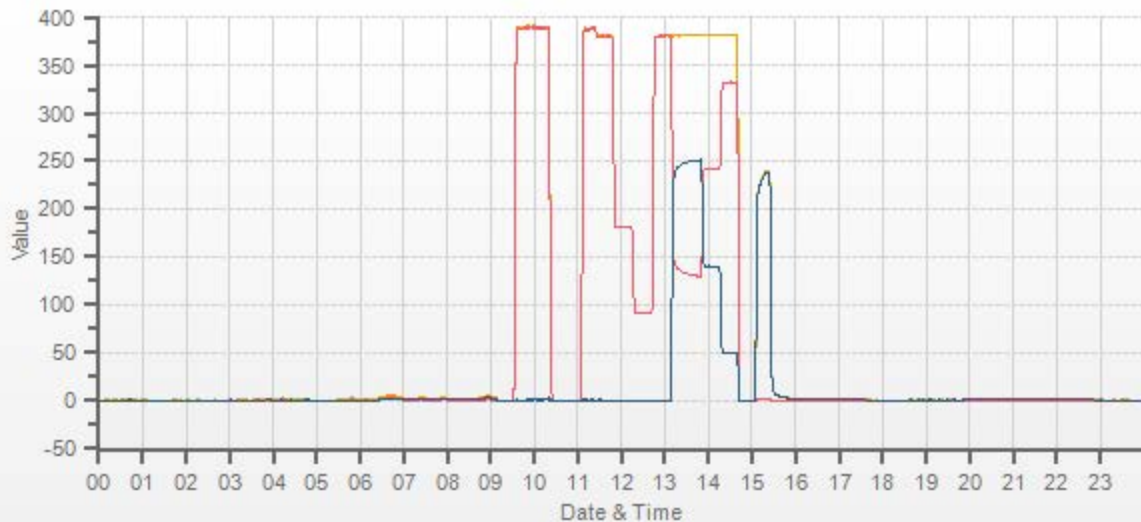
EXPECTED (REFERENCE) VALUE:							
INITIAL	NOx	NO	NO2	FINAL	NOx	NO	NO2
	262	2	259.0		251	2	249.0

POINT	NO TARGET (PPB)	NO2 TARGET (PPB)	NO2 RANGE	O3 POINT
HIGH	380	250	230-265	n/a
MID	180	125	115-150	n/a
LOW	90	45	40-55	n/a
EXTRA 1	n/a	n/a	n/a	n/a

FLOW RATE			CONCENTRATION (ppb)									CORRECTION FACTOR (CF.)					
(mL/min)			CALCULATED			INITIAL INDICATED			FINAL INDICATED			INITIAL			FINAL		
DILUENT	GAS	TOTAL	NO	NOx	NO2	NO	NOx	NO2	NO	NOx	NO2	NO	NOx	NO2	NO	NOx	NO2
5000	37.90	5000	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.976	0.976	0.999	0.999	0.999	0.999
4962	37.90	5000	379.8	380.5	0.8	389.0	390.0	1.0	380.0	381.0	1.0	0.976	0.976	0.999	0.999	0.999	0.999
4982	18.00	5000	180.4	180.7	0.4	n/a	n/a	n/a	181.0	181.0	0.0	n/a	n/a	0.996	0.998	0.998	0.998
4991	8.90	5000	89.2	89.4	0.2	n/a	n/a	n/a	91.0	91.0	0.0	n/a	n/a	0.980	0.982	0.982	0.982

Point	CALIBRATOR			INDICATED (ppb)			NO DROP / O3 Conc (ppb)	NO2 GAIN (ppb)	NO2 Corr. FACTOR	CONV. EFFICIENCY
	GAS	TOTAL	O3 SETPOINT	NO	NOx	NO2				
REFERENCE	37.90	5000	0	380.0	381.0	1.0	249	249	1.000	100.00%
AS-FOUND HIGH	37.90	5000	245	131.0	381.0	250.0	249	249	1.000	100.00%
ADJUSTED HIGH	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a
MID	37.90	5000	140	241.0	381.0	140.0	139	139	1.000	100.00%
LOW	37.90	5000	45	332.0	381.0	49.0	48	48	1.000	100.00%
NO2 adjustment not required.									AVERAGE:	100.00%

LINEAR REGRESSION ANALYSIS:				COMMENTS:
	CORRELATION	SLOPE	INTERCEPT	
NO	1.000	0.999	0.16%	
NOx	1.000	1.000	0.12%	
NO2	1.000	1.000	0.00%	



CAL-LICA-201908-01174

Methane/Non-Methane Analyzer Calibration by Dilution



CALIBRATION:				ANALYZER:			
DATE:	14-Aug-2019	PREVIOUS CALIBRATION DATE:	17-Jul-2019	VALUE	MAKE/MODEL	SERIAL	FLOW (mL/min)
CLIENT:	LICA	TEMPERATURE (°C):	20.0		Thermo 55i	1180030034	1120
LOCATION:	Cold Lake South	BAROMETRIC (mBar):	952	PARAMETER:	CH4	NMHC	THC
PURPOSE:	Routine	START TIME (MST):	08:40	RANGE (ppm):	20	20	40
PERFORMED BY:	Alex Yakupov	END TIME (MST):	12:12	PREVIOUS CF:	1.000	1.000	1.000

CALIBRATION SYSTEM:

CALIBRATOR:		ZERO AIR:		CALIBRATION GAS:		FLOWMETERS (if applicable):	
MAKE:	API	MAKE:	Teledyne	CYLINDER ID:	LL 29687	HIGH ID:	n/a
MODEL:	700	MODEL:	T701	CH ₄ /C ₃ H ₈ (ppm):	598.0 198.0	HIGH EXPIRY:	n/a
ID:	690	ID:	132	CYLINDER (psi):	1200	LOW ID:	n/a
MFC CALIBRATION DATE:	16-Apr-2019	OXIDIZER ID:	115	EXPIRY DATE	01-Aug-2026	LOW EXPIRY:	n/a

CALIBRATION PARAMETERS:

POINT (CH ₄ /NMHC)	HIGH	MID	LOW	CH ₄ EQUIVILANCE	
TARGET	14	7	3.5	C ₃ H ₈ as CH ₄	544.5
RANGE	12 - 16	6 - 8	2 - 4	THC as CH ₄	1142.5

EXPECTED (REFERENCE) VALUE:

INITIAL	CH ₄	NMHC	THC	FINAL	CH ₄	NMHC	THC
	10.50	11.17	21.66		10.42	11.16	21.58

CALIBRATION:

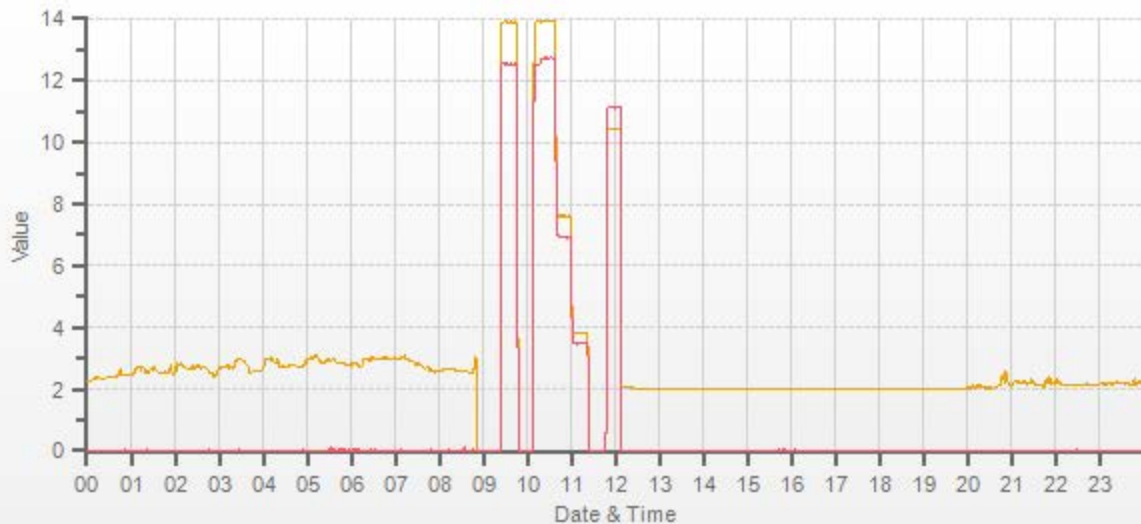
FLOW RATE			CONCENTRATION (PPM)									CORRECTION FACTOR (CF.)					
(mL/min)			CALCULATED			INITIAL INDICATED			FINAL INDICATED			INITIAL			FINAL		
DILUENT	GAS	TOTAL	CH ₄	NMHC	THC	CH ₄	NMHC	THC	CH ₄	NMHC	THC	CH ₄	NMHC	THC	CH ₄	NMHC	THC
3000	X	3000	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	X	X	X	X	X	X
2930	70.00	3000	13.95	12.71	26.66	13.90	12.51	26.41	13.95	12.71	26.66	1.004	1.016	1.009	1.000	1.000	1.000
2962	38.00	3000	7.57	6.90	14.47	n/a	n/a	n/a	7.60	6.91	14.52	n/a	n/a	n/a	0.997	0.998	0.997
2981	19.00	3000	3.79	3.45	7.24	n/a	n/a	n/a	3.83	3.45	7.29	n/a	n/a	n/a	0.989	1.000	0.993

LINEAR REGRESSION ANALYSIS:

	CORRELATION	SLOPE	INTERCEPT
CH ₄	1.000	0.999	0.1%
NMHC	1.000	1.000	0.0%
THC	1.000	1.000	0.1%

COMMENTS:

Sample inlet filter was changed.



CAL-LICA-201908-01174

Ozone Calibration by Photometer (Varying UV Lamp)



DATE:	14-Aug-2019	PREVIOUS CALIBRATION DATE:	17-Jul-2019
PARAMETER:	Ozone	PREVIOUS CORRECTION FACTOR:	1.000
CLIENT:	LICA	TEMPERATURE (°C):	20.0
LOCATION:	Cold Lake South	BAROMETRIC (mBar):	952
PURPOSE:	Routine	START TIME (MST):	08:40
PERFORMED BY:	Alex Yakupov	END TIME (MST):	13:46

ANALYZER:

MAKE/MODEL	Thermo 49i	RANGE	500 ppb
SERIAL #	700419951	FLOW (mL/min)	1462
INITIAL		FINAL	
BKG/OFFSET	0	BKG/OFFSET	0
COEF/SLOPE	1.04	COEF/SLOPE	1.045
Expected (reference) Value	302	Expected (reference) Value	309

CALIBRATION SYSTEM:

CALIBRATOR:		ZERO AIR:	
MAKE:	SABIO	MAKE:	Teledyne
MODEL:	2010 D	MODEL:	T701
ID:	11900613	ID:	132
MFC CALIBRATION DATE:	16-Apr-2019	OXIDIZER ID:	n/a
CALIBRATION METHOD:		Photometer (Varying UV Lamp)	
GPT DATE:	n/a	GPT END TIME:	n/a

CALIBRATION PARAMETERS:

POINT	HIGH	MID	LOW
RANGE	300 - 400	150 - 200	50 - 100

CALIBRATION:

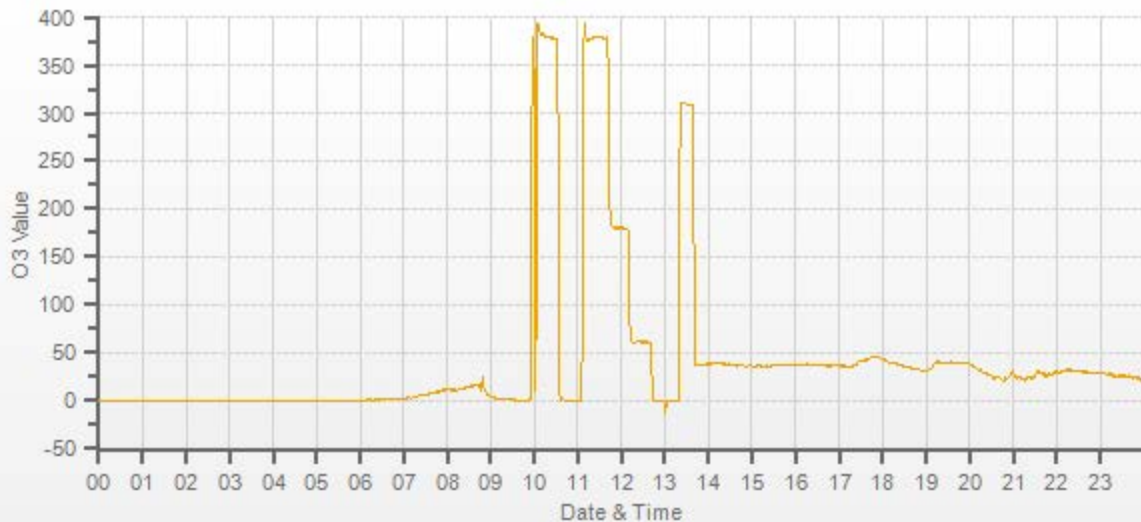
FLOW RATES (mL/min)			CONCENTRATION (ppb)			CORRECTION FACTOR	
DILUENT	GAS	TOTAL	ACTUAL	INDICATED		Initial	Final
				Initial	Final		
5000	5000	5000	0.0	1.0	0.0	1.000	1.000
5000	5000	5000	379.0	379.0	379.0	1.003	1.000
5000	5000	5000	180.0	n/a	180.0	n/a	1.000
5000	5000	5000	61.0	n/a	61.0	n/a	1.000

LINEAR REGRESSION ANALYSIS:

	CORRELATION	SLOPE	INTERCEPT
VALUE	1.000	1.000	0.0%

COMMENTS:

Sample inlet filter was changed. 10:00 - scheduled ZS check interfered with the calibration. As Found High point was restarted.



Company <u>Maxxam</u>		Operator: <u>Tom Bourque</u>	
Calibrator:		Flow Measurement Device:	
Make/Model	<u>API 700</u>	Make/Model	<u>N/A</u>
Serial Number	<u>690</u>	Serial Number	<u>N/A</u>
Last Verification Date	<u>March 2018</u>	Temperature (°C)	<u>24.4 C</u>
NO Cylinder S/N	<u>EY0000769</u>	Barometric Pressure	<u>699 mmHg</u>
NO [PPM]	<u>51.1</u>	NOx [PPM]	<u>51.2</u>
Expiry Date	<u>December 2019</u>		

Dilution Flow (sccm)			
Pt. #1	<u>5000</u>	Pt. #2	<u>5000</u>
Pt. #3	<u>5000</u>		
Gas Flow (sccm)			
Pt. #1	<u>80</u>	Pt. #2	<u>40</u>
Pt. #3	<u>20</u>		

Calibrator Flow (sccm)		Calculated Conc.(ppm)		Indicated Conc.(ppm)			% Difference vs Audit Gas	
Dilution	Gas	NO	NOx	NO	NO ₂	NOx	NO	NOx
5000	0.0	0.000	0.000	0.000	-0.001	-0.001	Limit ± 10%	
5083	80.0	0.804	0.806	0.802	-0.011	0.791	0%	-2%
5044	40.0	0.405	0.406	0.403	-0.006	0.397	-1%	-2%
5022	20.0	0.204	0.204	0.202	-0.004	0.198	-1%	-2%
Absolute Average Percent Difference							1%	2%

LINEAR REGRESSION ANALYSIS *y=mx+b (where x=calculated concentration, y=indicated concentration)*

NO	LIMITS	NOx
Correlation= 1.0000	≥ 0.990	Correlation= 1.0000
m (Slope)= 0.9974	0.90-1.10	m (Slope)= 0.9833
b (Intercept % of FS)= -0.0592	± 3% F.S.	b (Intercept % of FS)= -0.1772

Flow	O ₃ Conc	NO Decrease	NO	NO ₂	NOX	% Diff. Vs Audit gas	
5083	0.000	0.000	0.802	-0.011	0.791	NO ₂	% Diff. Limit
5083	0.500	0.518	0.284	0.488	0.771	-4%	± 10%
5083	0.300	0.323	0.479	0.294	0.774	-6%	± 10%
5083	0.150	0.167	0.635	0.142	0.777	-8%	± 10%
						6%	± 10%

LINEAR REGRESSION ANALYSIS *y=mx+b (where x=calculated concentration, y=indicated concentration)*

NO₂	LIMITS	
Correlation= 0.9998	≥ 0.995	Big shift down in NOx when entering GPT function. Possible flow change.
m (Slope)= 0.9649	0.90-1.10	
b (Intercept % of FS)= -1.4907	± 3% F.S.	

AENV Standards	NO_x Analyzer
Audit Calibrator	
Make/Model <u>Teco 146i</u>	Make/Model <u>Teco 42i</u>
Serial/AMU Number <u>AMU 1809</u>	Serial/AMU Number <u>AMU 2265</u>
SRM Gas Cylinder No. <u>APEX1236646</u>	Last Calibration Date <u>April 15, 2019</u>
Cylinder Conc. (ppm) <u>50.04</u>	Full Scale (ppm) <u>1.0</u>
	Cylinder Gas Expiry Date <u>June 2021</u>

 COMMENTS: With ZAG Teledyne 701 Maxxam ID 11986.

Auditor: <u>Al Clark</u>	Date: <u>April 16, 2019</u>
Operator Signature:	Location: <u>McIntyre Center Edmonton</u>

Company Maxxam Operator: Tom Bourque

Calibrator:				Flow Measurement Device:			
Make/Model	<u>Sabio 2010</u>			Make/Model	<u>N/A</u>		
Serial Number	<u>11900613</u>			Serial Number	<u>N/A</u>		
Last Verification Date	<u>August 2018</u>			Temperature (°C)	<u>24.4 C</u>		
NO Cylinder S/N	<u>EY0000769</u>			Barometric Pressure	<u>699 mmHg</u>		
NO [PPM]	<u>51.1</u>	NOx [PPM]	<u>51.2</u>				
Expiry Date	<u>December 2019</u>						

Dilution Flow (sccm)					
Pt. #1	<u>5000</u>	Pt. #2	<u>5000</u>	Pt. #3	<u>5000</u>
Gas Flow (sccm)					
Pt. #1	<u>80</u>	Pt. #2	<u>40</u>	Pt. #3	<u>20</u>

Calibrator Flow (sccm)		Calculated Conc.(ppm)		Indicated Conc.(ppm)			% Difference vs Audit Gas	
Dilution	Gas	NO	NOx	NO	NO ₂	NOx	NO	NOx
5000	0.0	0.000	0.000	0.000	-0.002	-0.002	Limit ± 10%	
5080	80.0	0.805	0.806	0.815	-0.007	0.808	1%	0%
5041	40.0	0.405	0.406	0.414	-0.004	0.410	2%	1%
5019	20.0	0.204	0.204	0.210	-0.004	0.206	3%	2%
Absolute Average Percent Difference							2%	1%

LINEAR REGRESSION ANALYSIS

y=mx+b (where x=calculated concentration, y=indicated concentration)

NO	LIMITS	NO _x
Correlation= 1.0000	≥ 0.990	Correlation= 1.0000
m (Slope)= 1.0117	0.90-1.10	m (Slope)= 1.0039
b (Intercept % of FS)= 0.2171	± 3% F.S.	b (Intercept % of FS)= -0.0020

Flow	O ₃ Conc	NO Decrease	NO	NO ₂	NOX	% Diff. Vs Audit gas	
5080	0.000	0.000	0.815	-0.009	0.806	NO ₂	% Diff. Limit
5080	1.400	0.517	0.298	0.511	0.809	1%	± 10%
5080	0.900	0.308	0.507	0.299	0.806	0%	± 10%
5080	0.500	0.140	0.675	0.130	0.805	-1%	± 10%
						0%	± 10%

LINEAR REGRESSION ANALYSIS

y=mx+b (where x=calculated concentration, y=indicated concentration)

NO ₂	LIMITS
Correlation= 1.0000	≥ 0.995
m (Slope)= 1.0062	0.90-1.10
b (Intercept % of FS)= -1.0004	± 3% F.S.

AENV Standards Audit Calibrator	NO _x Analyzer
Make/Model <u>Teco 146i</u>	Make/Model <u>Teco 42i</u>
Serial/AMU Number <u>AMU 1809</u>	Serial/AMU Number <u>AMU 2265</u>
SRM Gas Cylinder No. <u>APEX1236646</u>	Last Calibration Date <u>April 15, 2019</u>
Cylinder Conc. (ppm) <u>50.04</u>	Full Scale (ppm) <u>1.0</u>
	Cylinder Gas Expiry Date <u>June 2021</u>

COMMENTS: With ZAG Teledyne 701 Maxxam ID: 11981. Should have Maxxam ID 11986 instead

Auditor: Al Clark Date: April 16, 2019
 Operator Signature: Location: McIntyre Center Edmonton



Calibration Gas Audit

Single Component Cylinder Gas

File No. 2017-493CGA

Company: Maxxam Operator's Name: Mike
 Cylinder #: EY0001003 Concentration PPM: 9.55 Tolerance(%) 2 Certified By: Praxair
 Expiry Date: October 2020

Reference Calibrator and Gas:
 Make/Model: Sabio 2010
 Serial Number: AMU 2092
 Last Verification Date: January 17, 2018
 Gas Type: H2S Conc. 20.43
 Cylinder Number: CAL015272
 Expiry Date: January 2019

Flow Measurement Device:
 Make/Model: Mesa Defender 530
 Serial Number: H-153961 / L-153874
 Temp. °C: 23.0 C
 B.P.: 697 mmHg

Reference Analyzer:
 Make/Model: Teco 450i Serial/AMU Number: 1980
 Instrument Settings: Zero: 12.9 Span: 0.955 Range: 0.1
 Last Calibration: Date: Jan 17/18 C.F.: 1.000 Done By: Al Clark

Calibrator Flows (sccm)		Indicated Concentration (PPM)	Gas Flow/ Dilution Flow	Concentration Factor	Cylinder Concentration
Dilution	Gas				
5000	0.0	0.0000			
5051	39.6	0.0753	0.00784	127.551	9.60
5028	20.2	0.0387	0.00402	248.911	9.63
5033	10.5	0.0198	0.00209	479.333	9.49
Average Cylinder Concentration:					9.58

Previous Stated Concentration PPM: 9.55
 Percent variance from Stated: 0

Meets Manufacturer Tolerance. Use manufacturers stated concentration COMMENTS: Used AEP regulator
 <=5% Outside Manufacturer Tolerance. Use manufacturers concentration
 > 5% Outside Manufacturer Tolerance. **DO NOT USE** this cylinder

Auditor: Al Clark Date: January 18, 2018
 Operator Signature: [Signature] Location: McIntyre Center Edmonton



Calibration Gas Audit

NO Cylinder Gas

File No. 2019-391CGA

Company: Maxxam **Operators name:** Alex

Cylinder #: LL107918 Conc (PPM) 50.1/50.2 Tolerance (%) 1 Certified By: Praxair

Expiry Date: August 2026

Reference Calibrator and Gas:				Flow Measurement Device:	
Make/Model	<u>Teco 146i</u>			Make/Model	<u>Mesa Definer 220</u>
Serial Number	<u>AMU 1809</u>			Serial Number	<u>H-133034 / L-132702</u>
Last Verification Date	<u>January 14, 2019</u>			Temp. °C	<u>22.7 C</u>
Gas Type	<u>NO</u>	Conc.	<u>50.05</u>	B.P.	<u>707 mmHg</u>
Cylinder Number	<u>APEX1236645</u>				
Expiry Date	<u>June 2021</u>				

Reference Analyzer:

Make/Model Teco 42i Serial/AMU Number: 2268

Instrument Settings Zero: 9.2 Span: 1.223 Range: 1.0

Last Calibration: Date: Jan 14/19 C.F. 1.000 Done By: Al Clark

Calibrator Flows (sccm)		Indicated Conc. (ppm)		Gas Flow/ Dilution Flow	Concentration Factor	Cylinder Concentration	
Dilution	Gas	NO	NOX			NO	NOX
5000	0.0	0.000	0.000				
4898	78.1	0.792	0.793	0.016	62.714	49.7	49.7
4893	38.7	0.395	0.395	0.008	126.434	49.9	49.9
4894	19.3	0.195	0.195	0.004	253.575	49.4	49.4
Average Cylinder Concentration:						49.7	49.7

NO	NOx
Previous Stated Concentration PPM: <u>50.1</u>	Previous Stated Concentration PPM: <u>50.2</u>
Percent variance from Stated: <u>1</u>	Percent variance from Stated: <u>1</u>

Cylinder gas tolerances based on NO only

Meets Manufacturer Tolerance. Use manufacturers stated concentration **COMMENTS:**

< =5% Outside Manufacturer Tolerance. Use manufacturers concentration

> 5% Outside Manufacturer Tolerance. **DO NOT USE** this cylinder

Auditor: Al Clark Date: Janaury 15, 2019

Operator Signature: *Al Clark* Location: McIntyre Center Edmonton

End of Report



Lakeland Industry & Community Association

AUGUST 2019

Ambient Air Monitoring Calibration Report

- MASKWA STATION-

CAL-LICA-201908-01248

Station Operation and Maintenance:

Maxxam Analytics

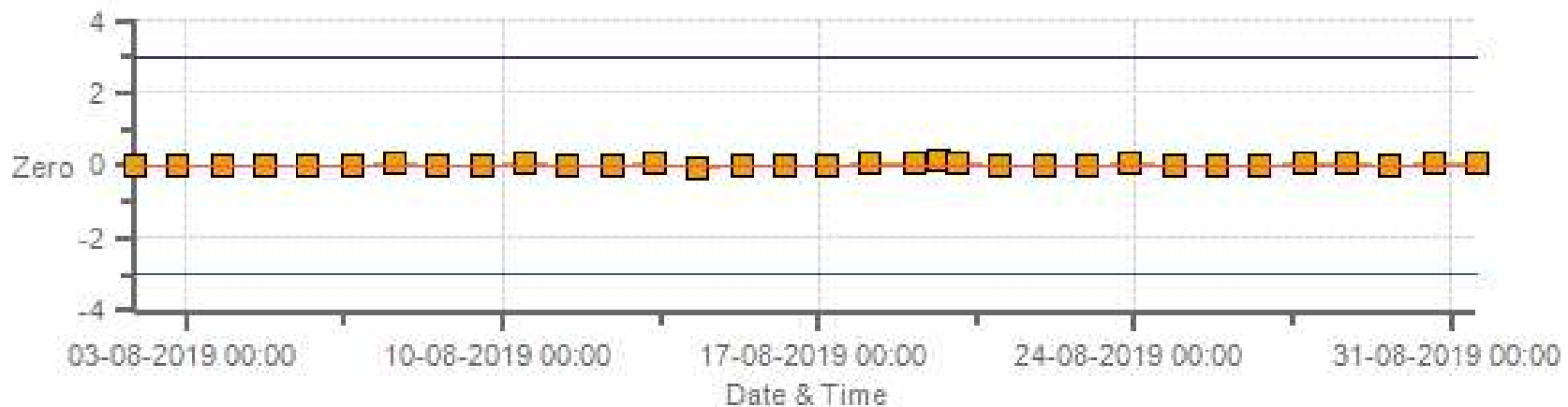
Data Validation and Report:

Maxxam Analytics

September 10, 2019

DAILY INTERNAL ZERO-SPAN CALIBRATION RECORDS

SO2 [ppb] Calibration: LICA Maskwa Monthly: 08-2019 Type: Zero



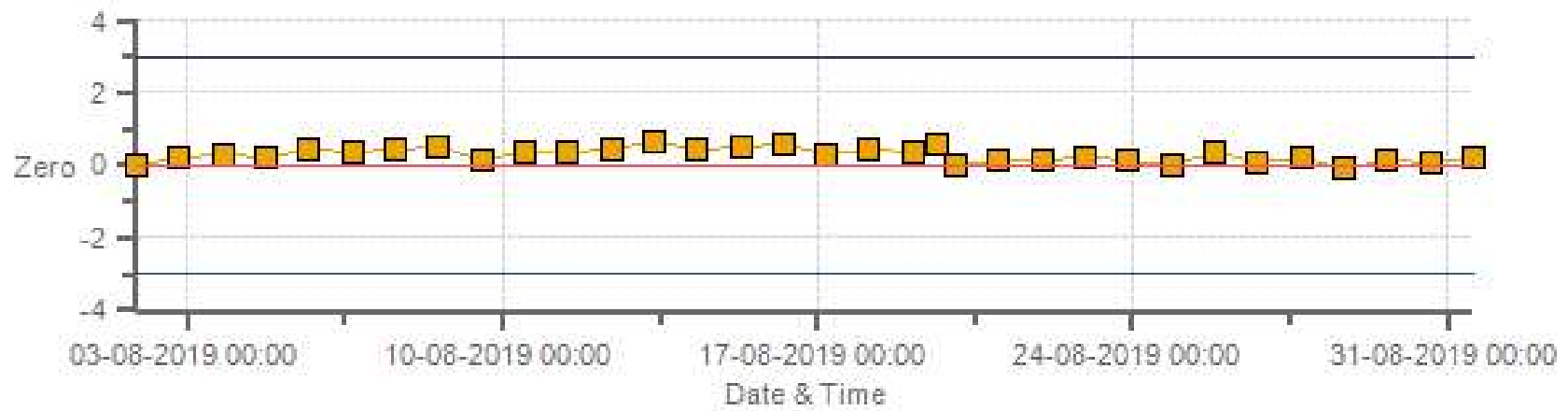
Zero Zero Ref Zero Low Zero High

SO2 [ppb] Calibration: LICA Maskwa Monthly: 08-2019 Type: Span



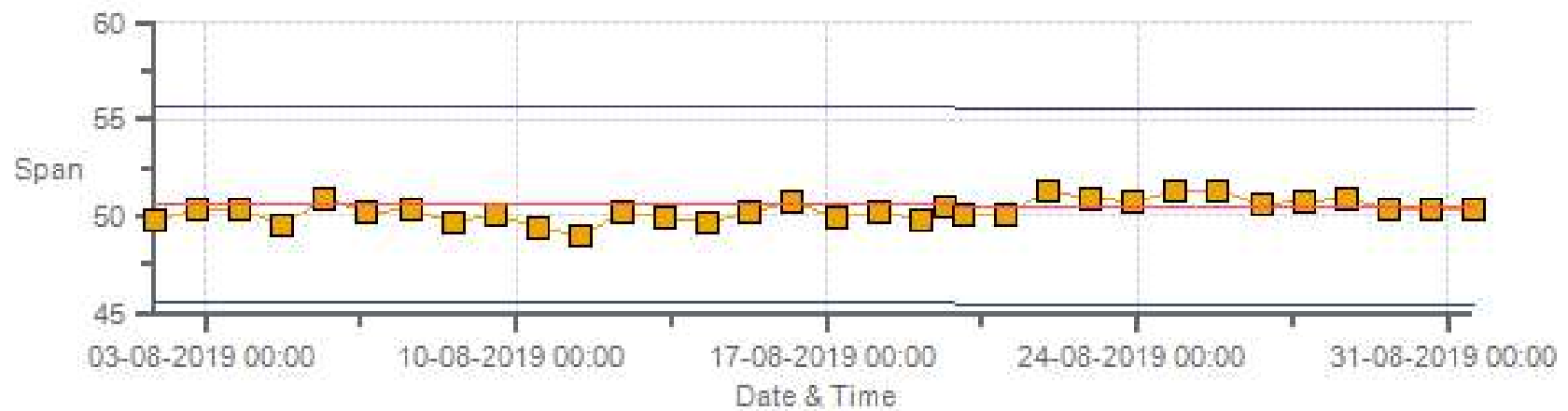
Span SpanRef Span Low Span High

H2S [ppb] Calibration: LICA Maskwa Monthly: 08-2019 Type: Zero



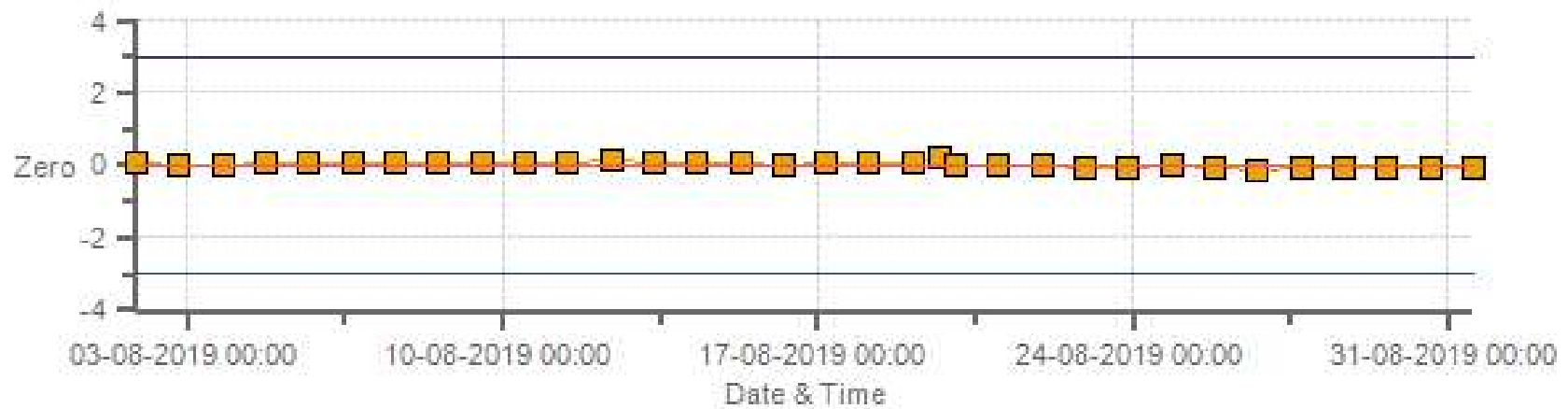
Zero Zero Ref Zero Low Zero High

H2S [ppb] Calibration: LICA Maskwa Monthly: 08-2019 Type: Span



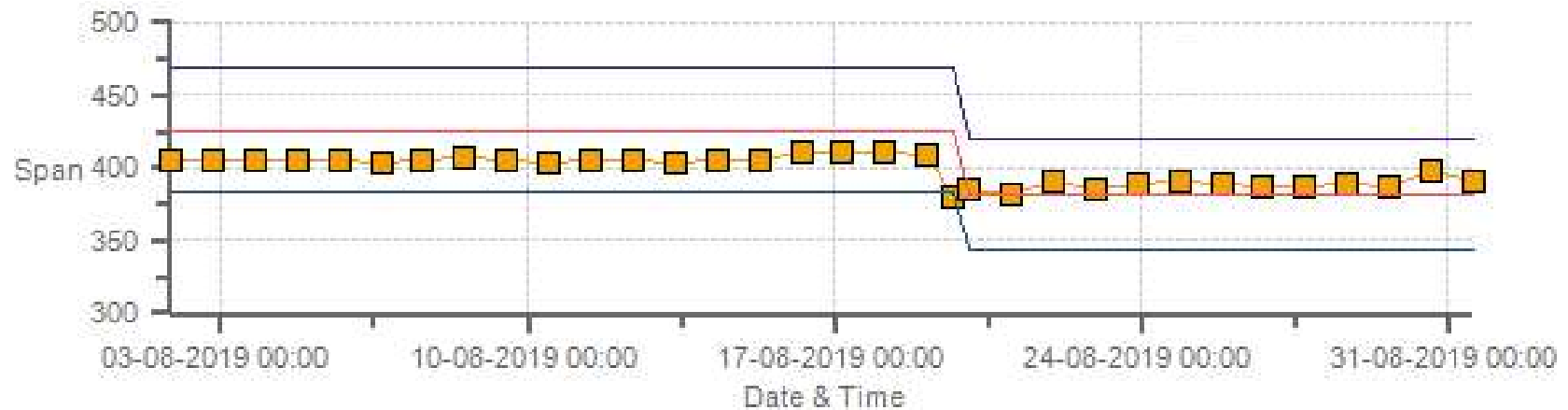
Span SpanRef Span Low Span High

NOx [ppb] Calibration: LICA Maskwa Monthly: 08-2019 Type: Zero



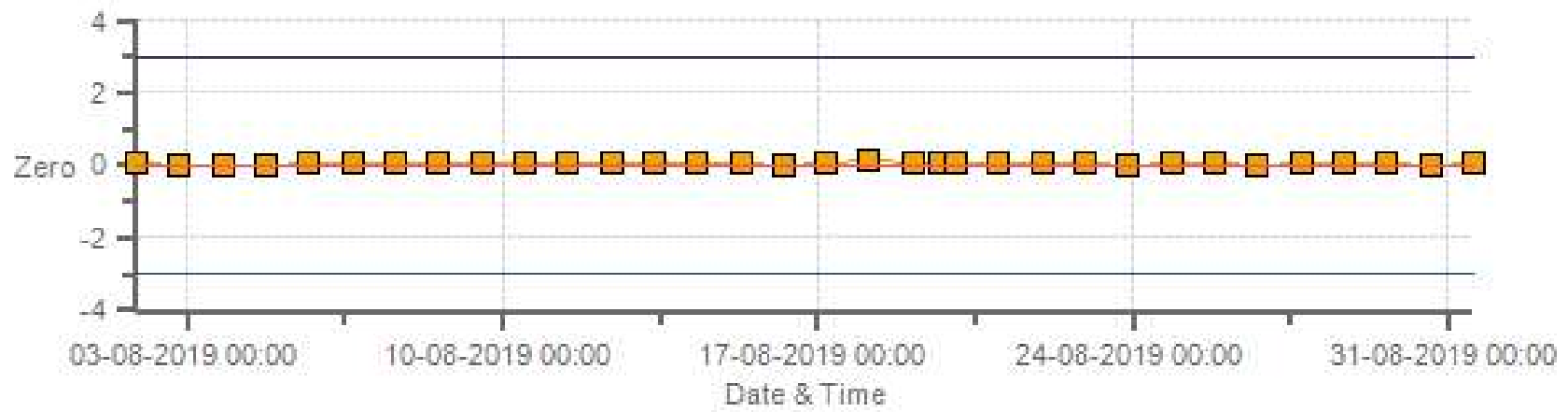
Zero Zero Ref Zero Low Zero High

NOx [ppb] Calibration: LICA Maskwa Monthly: 08-2019 Type: Span



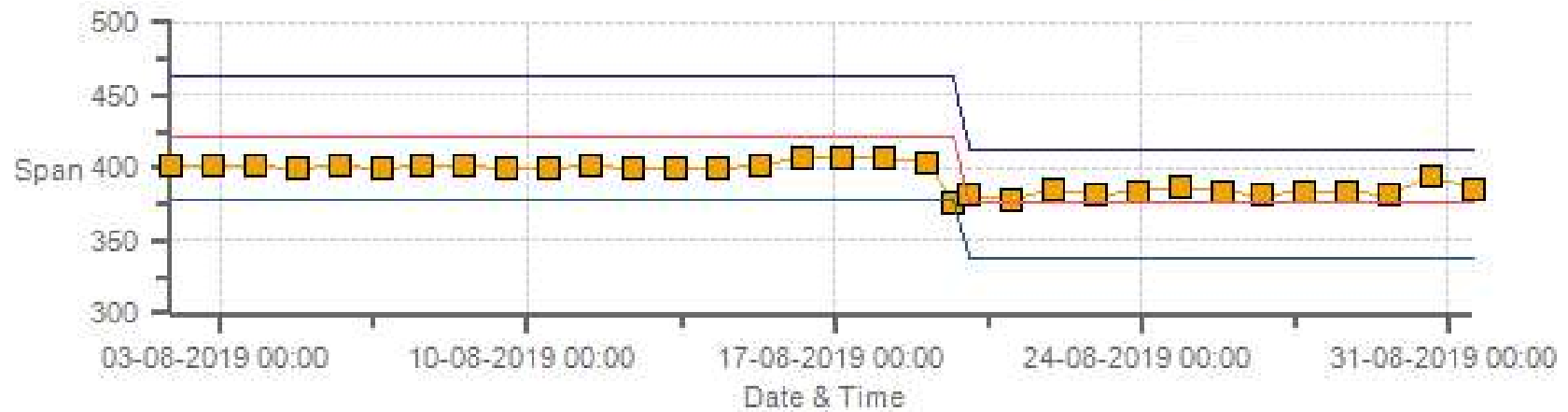
Span SpanRef Span Low Span High

NO2 [ppb] Calibration: LICA Maskwa Monthly: 08-2019 Type: Zero



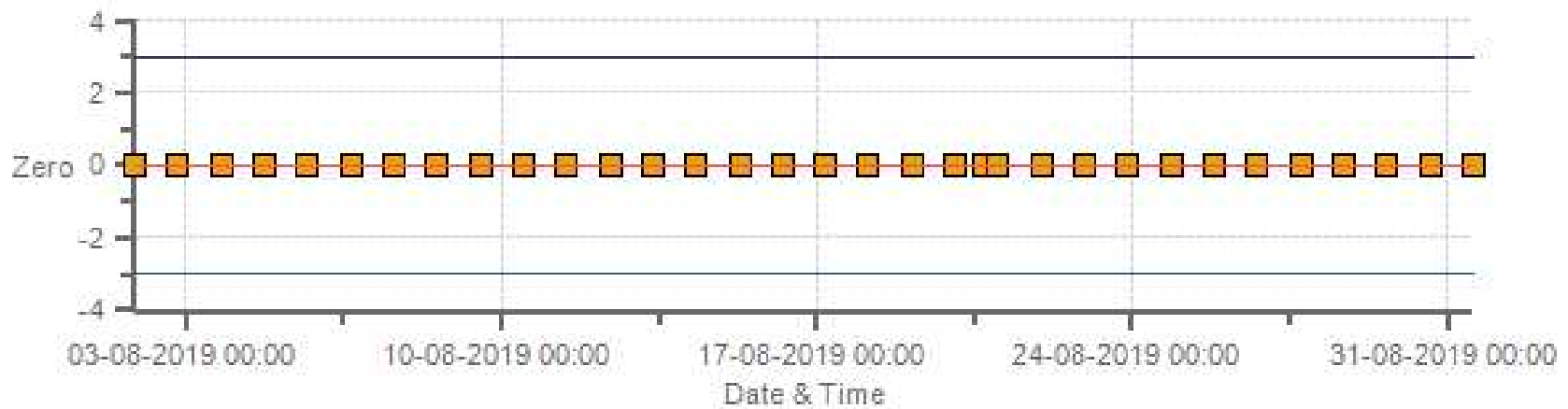
Zero Zero Ref Zero Low Zero High

NO2 [ppb] Calibration: LICA Maskwa Monthly: 08-2019 Type: Span



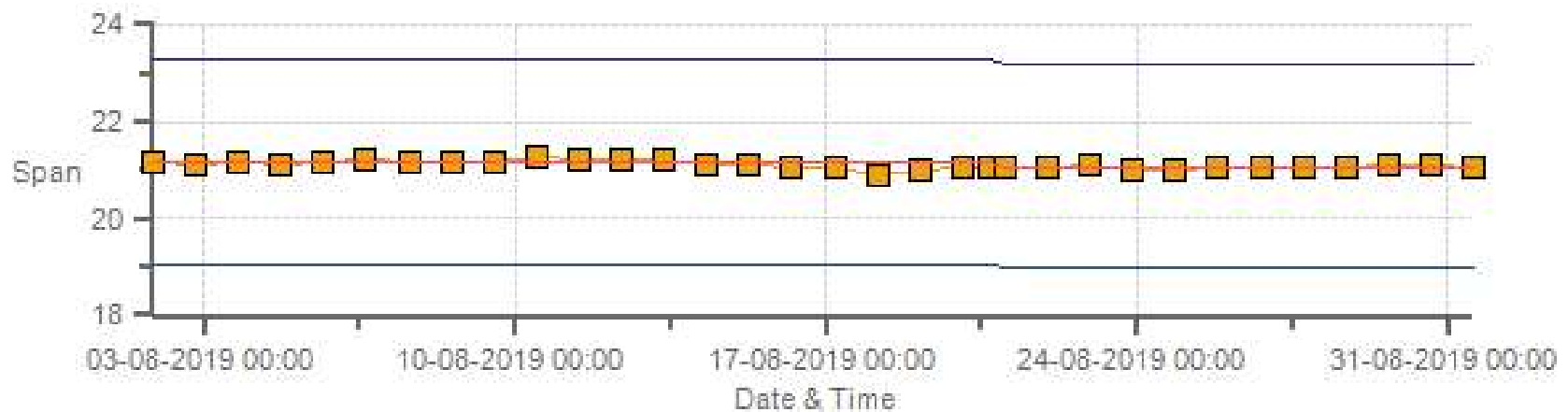
Span SpanRef Span Low Span High

THC [ppm] Calibration: LICA Maskwa Monthly: 08-2019 Type: Zero



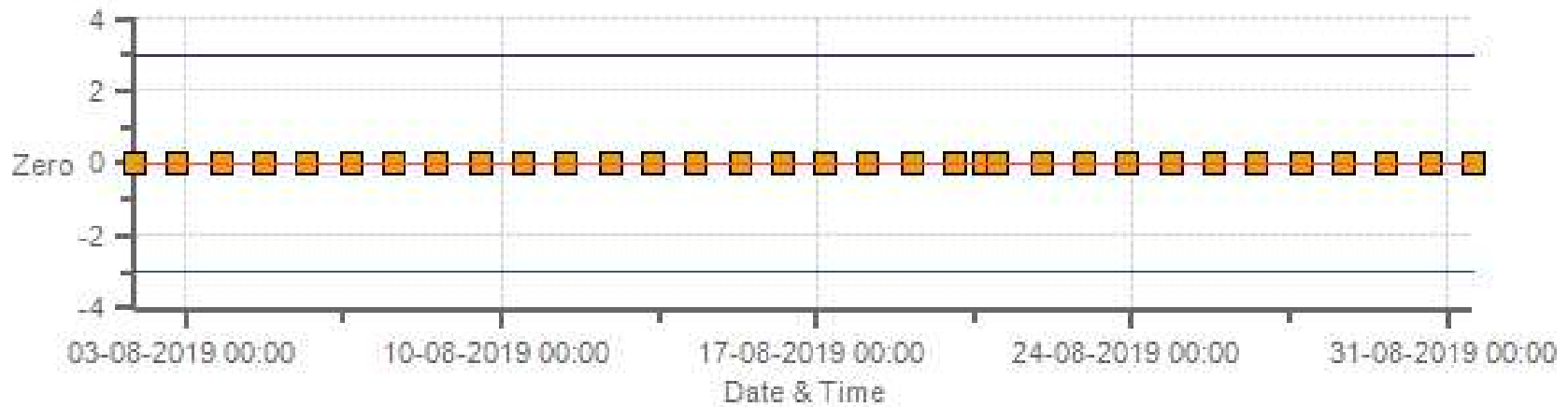
Zero Zero Ref Zero Low Zero High

THC [ppm] Calibration: LICA Maskwa Monthly: 08-2019 Type: Span



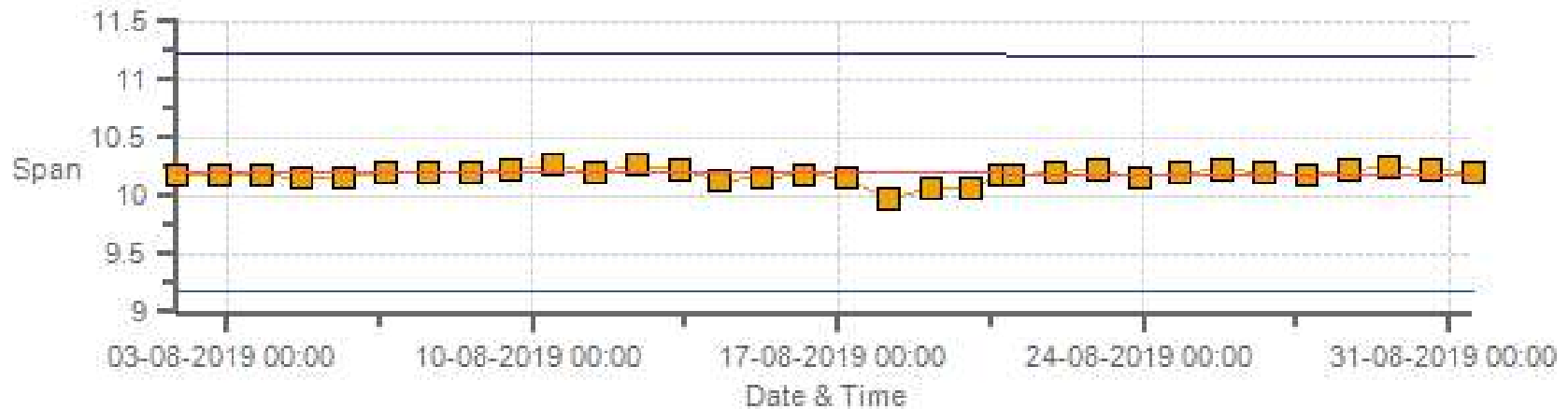
Span SpanRef Span Low Span High

CH4 [ppm] Calibration: LICA Maskwa Monthly: 08-2019 Type: Zero



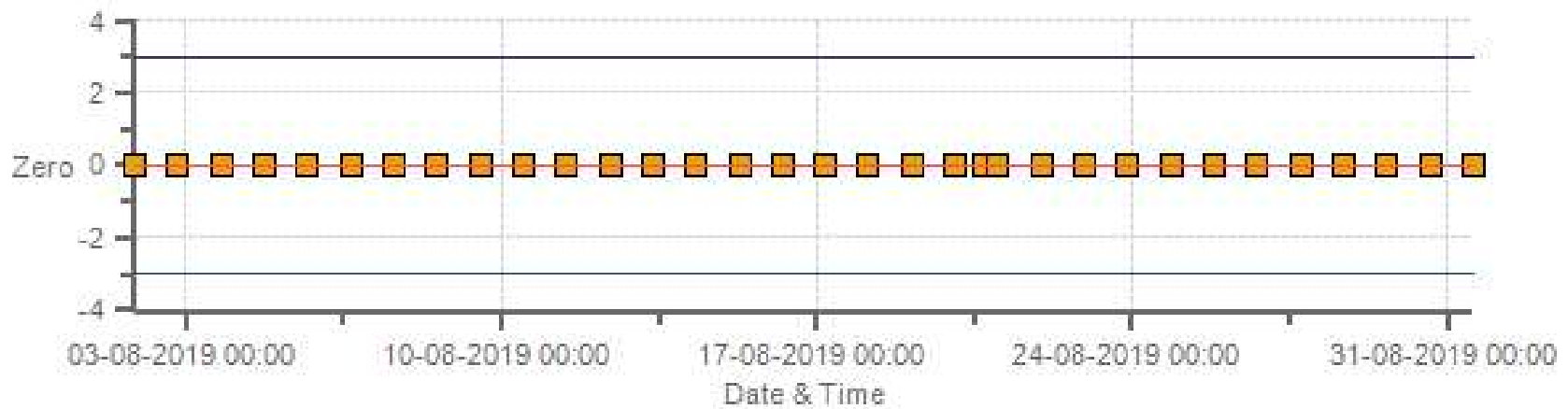
Zero Zero Ref Zero Low Zero High

CH4 [ppm] Calibration: LICA Maskwa Monthly: 08-2019 Type: Span



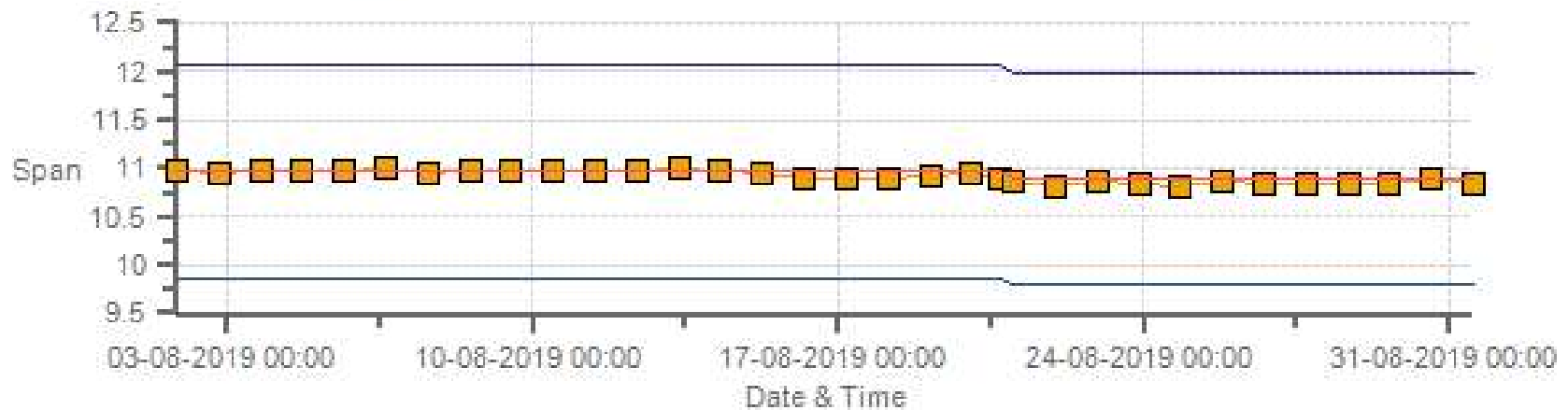
Span SpanRef Span Low Span High

NMHC [ppm] Calibration: LICA Maskwa Monthly: 08-2019 Type: Zero



Zero Zero Ref Zero Low Zero High

NMHC [ppm] Calibration: LICA Maskwa Monthly: 08-2019 Type: Span



Span SpanRef Span Low Span High

MULTI-POINT CALIBRATION RECORDS

SO2 Analyzer Calibration by Dilution



DATE:	19-Aug-2019	PREVIOUS CALIBRATION DATE:	18-Jul-2019
PARAMETER:	SO2	PREVIOUS CORRECTION FACTOR:	1.000
CLIENT:	LICA	TEMPERATURE (°C):	22.0
LOCATION:	Maskwa	BAROMETRIC (mBar):	937
PURPOSE:	Routine	START TIME (MST):	11:09
PERFORMED BY:	Alex Yakupov	END TIME (MST):	15:10

ANALYZER:

MAKE/MODEL	Thermo 43I-TLE	RANGE	1000 ppb
SERIAL #	1180930031	FLOW (mL/min)	455
INITIAL		FINAL	
BKG/OFFSET	2.1	BKG/OFFSET	2.09
COEF/SLOPE	0.956	COEF/SLOPE	0.96
Expected (reference) Value	436	Expected (reference) Value	423

CALIBRATION SYSTEM:

CALIBRATOR:		ZERO AIR:	
MAKE:	API	MAKE:	Teledyne
MODEL:	700	MODEL:	T701
ID:	690	ID:	132
MFC CALIBRATION DATE:	16-Apr-2019	OXIDIZER ID:	n/a
CALIBRATION GAS:		FLOWMETERS (if applicable):	
CYLINDER ID:	LL 107918	HIGH ID	n/a
CONC (ppm):	49.50	EXPIRY DATE	n/a
CYLINDER (psi):	1200	LOW ID	n/a
EXPIRY DATE	20-Aug-2026	EXPIRY DATE	n/a

CALIBRATION PARAMETERS:

POINT	HIGH	MID	LOW
TARGET	780	380	190
RANGE	600 - 800	300 - 400	100 - 200

SCRUBBER CHECK (15 MINS; TRS/H2S ONLY):

START TIME:	n/a	SO2 Conc (ppb)	n/a
END TIME:	n/a	Analyzer Response (ppb)	n/a

CALIBRATION:

FLOW RATES (mL/min)			CONCENTRATION (ppb)			CORRECTION FACTOR	
DILUENT	GAS	TOTAL	ACTUAL	INDICATED		Initial	Final
				Initial	Final		
5000	77.80	5000	0.00	0	0	1.009	1.000
4922	77.80	5000	770.22	763	770	1.009	1.000
4962	37.90	5000	375.21	n/a	375	n/a	1.001
4981	18.90	5000	187.11	n/a	186	n/a	1.006

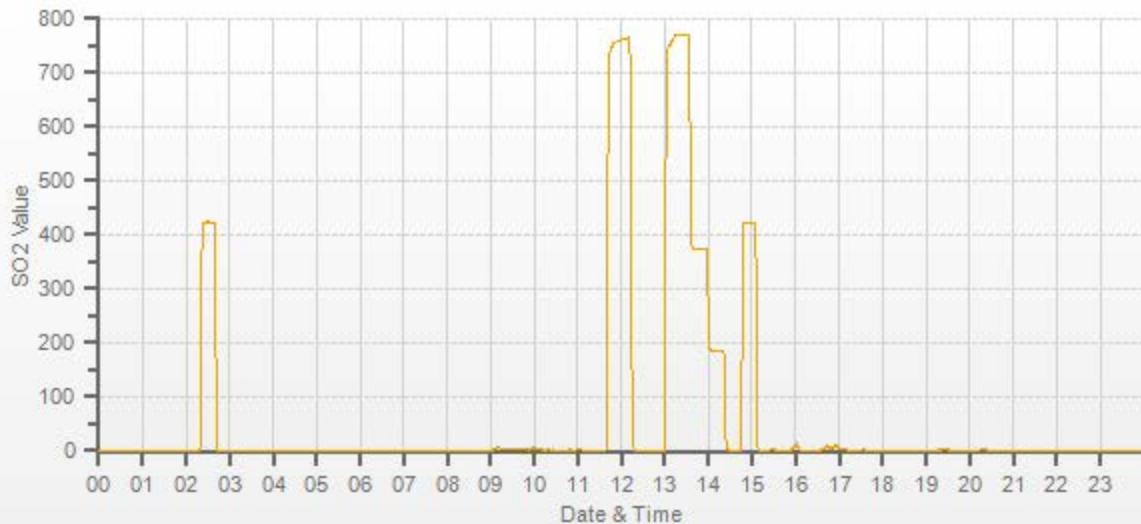
LINEAR REGRESSION ANALYSIS:

	CORRELATION	SLOPE	INTERCEPT
VALUE	1.000	1.000	0.0%

COMMENTS:

Sample inlet filter was changed.

SO2[ppb] Station: Maskwa Daily: 19-08-2019 Type: AVG 1 Min. [1 Min.]



CAL-LICA-201908-01248

H2S Analyzer Calibration by Dilution



DATE:	19-Aug-2019	PREVIOUS CALIBRATION DATE:	18-Jul-2019
PARAMETER:	H2S	PREVIOUS CORRECTION FACTOR:	1.000
CLIENT:	LICA	TEMPERATURE (°C):	22.0
LOCATION:	Maskwa	BAROMETRIC (mBar):	937
PURPOSE:	Routine	START TIME (MST):	11:09
PERFORMED BY:	Alex Yakupov	END TIME (MST):	16:05

ANALYZER:

MAKE/MODEL	Thermo 450i	RANGE	100 ppb
SERIAL #	CM 17360005	FLOW (mL/min)	909
INITIAL		FINAL	
BKG/OFFSET	21.6	BKG/OFFSET	22.3
COEF/SLOPE	0.779	COEF/SLOPE	0.799
Expected (reference) Value	50.6	Expected (reference) Value	50.4

CALIBRATION SYSTEM:

CALIBRATOR:		ZERO AIR:	
MAKE:	SABIO	MAKE:	Teledyne
MODEL:	2010 D	MODEL:	T701
ID:	11900613	ID:	132
MFC CALIBRATION DATE:	16-Apr-2019	OXIDIZER ID:	n/a
CALIBRATION GAS:		FLOWMETERS (if applicable):	
CYLINDER ID:	EY 0001003	HIGH ID	n/a
CONC (ppm):	9.55	EXPIRY DATE	n/a
CYLINDER (psi):	600	LOW ID	n/a
EXPIRY DATE	20-Oct-2020	EXPIRY DATE	n/a

CALIBRATION PARAMETERS:

POINT	HIGH	MID	LOW
TARGET	78	38	19
RANGE	60 - 80	30 - 40	10 - 20

SCRUBBER CHECK (15 MINS; TRS/H2S ONLY):

START TIME:	11:16	SO2 Conc (ppb)	780
END TIME:	11:31	Analyzer Response (ppb)	0.0

CALIBRATION:

FLOW RATES (mL/min)			CONCENTRATION (ppb)			CORRECTION FACTOR	
DILUENT	GAS	TOTAL	ACTUAL	INDICATED		Initial	Final
				Initial	Final		
7500	61.20	7500	0.00	0.5	0	1.002	1.000
7439	61.20	7500	77.93	78.3	77.9	1.002	1.000
7470	29.80	7500	37.95	n/a	38	n/a	0.999
7485	14.90	7500	18.97	n/a	19	n/a	0.999

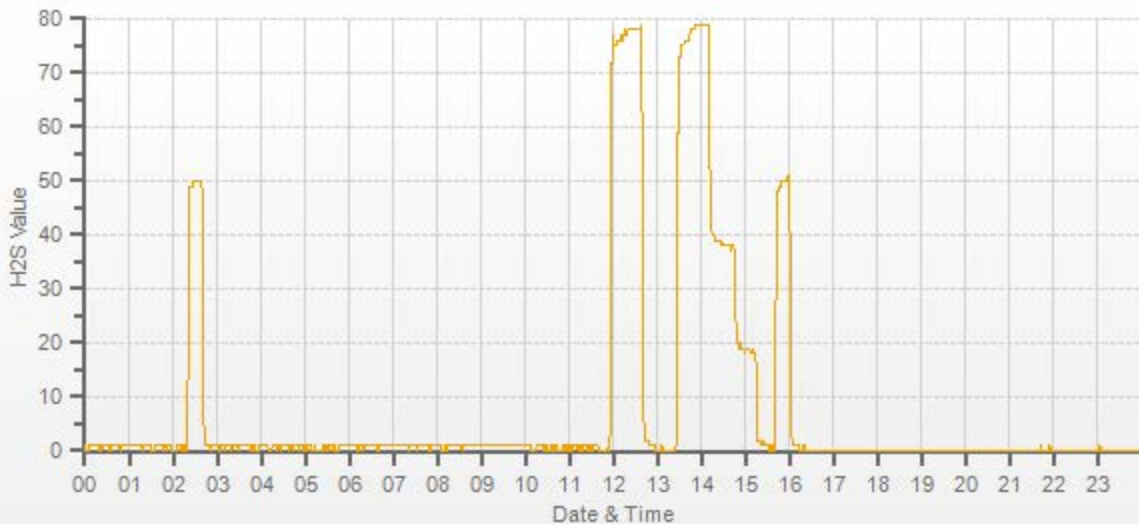
LINEAR REGRESSION ANALYSIS:

	CORRELATION	SLOPE	INTERCEPT
VALUE	1.000	1.000	0.0%

COMMENTS:

Sample inlet filter was changed.

H2S[ppb] Station: Maskwa Daily: 19-08-2019 Type: AVG 1 Min. [1 Min.]



CAL-LICA-201908-01248

NOx Calibration by Dilution/Gas-Phase Titration



CALIBRATION:				ANALYZER:			
DATE:	19-Aug-2019	PREVIOUS CALIBRATION DATE:	18-Jul-2019	MAKE/MODEL:	Thermo 42i	PREVIOUS CF.	
CLIENT:	LICA	TEMPERATURE (°C):	22.0	SERIAL #:	1180930028	NOx	1.000
LOCATION:	Maskwa	BAROMETRIC (mBar):	937.00	FLOW (mL/min)	535	NO	0.999
PURPOSE:	Routine	START TIME (MST):	11:09	RANGE (ppb)	1000	NO2	1.000
PERFORMED BY:	Alex Yakupov	END TIME (MST):	16:55	GPT FOR O3?		No	

CALIBRATOR:		ZERO AIR:		CALIBRATION GAS:		FLOWMETERS (if applicable):	
MAKE:	API	MAKE:	Teledyne	CYLINDER ID:	LL 107918	HIGH ID:	n/a
MODEL:	700	MODEL:	T701	NO/NOx (PPM):	50.1 50.2	HIGH EXPIRY:	n/a
ID:	690	ID:	132	CYLINDER (psi):	1200	LOW ID:	n/a
MFC CALIBRATION DATE:	16-Apr-2019	OXIDIZER ID:	n/a	EXPIRY DATE	20-Aug-2026	LOW EXPIRY:	n/a

CALIBRATION SETTINGS:							
INITIAL	NOx	NO	NO2	FINAL	NOx	NO	NO2
BKG/OFFSET:	3	3	n/a	BKG/OFFSET:	3	3	n/a
SLOPE/COEF/CE:	1	1	1.0	SLOPE/COEF/CE:	1	1	1.0

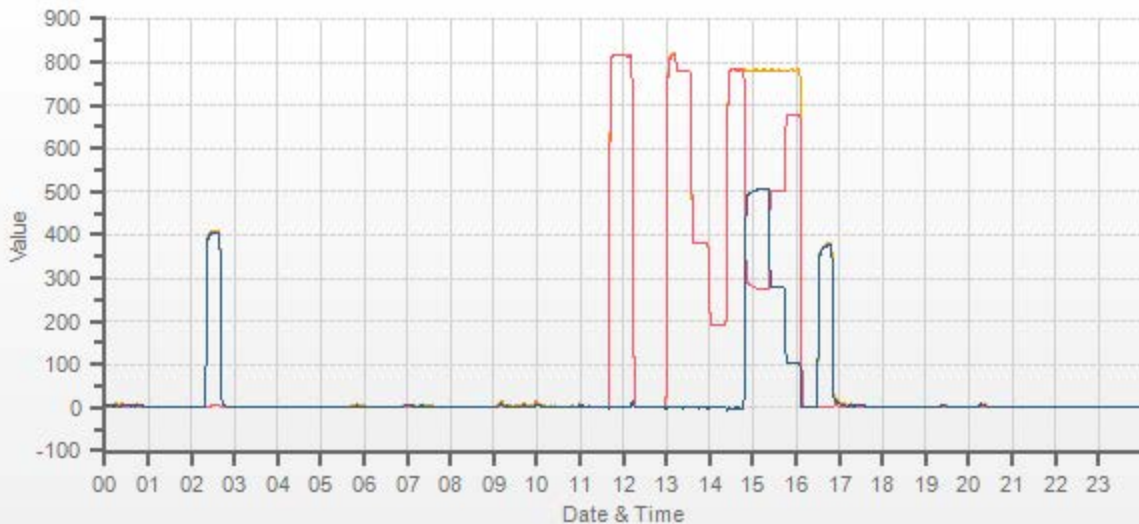
EXPECTED (REFERENCE) VALUE:							
INITIAL	NOx	NO	NO2	FINAL	NOx	NO	NO2
	426	5	421.0		381	4	376.0

POINT	NO TARGET (PPB)	NO2 TARGET (PPB)	NO2 RANGE	O3 POINT
HIGH	780	500	470-540	n/a
MID	380	275	235-310	n/a
LOW	190	90	80-115	n/a
EXTRA 1	n/a	n/a	n/a	n/a

FLOW RATE			CONCENTRATION (ppb)									CORRECTION FACTOR (CF.)					
(mL/min)			CALCULATED			INITIAL INDICATED			FINAL INDICATED			INITIAL			FINAL		
DILUENT	GAS	TOTAL	NO	NOx	NO2	NO	NOx	NO2	NO	NOx	NO2	NO	NOx	NO2	NO	NOx	NO2
5000	77.80	5000	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.954	0.955	0.999	1.000	0.999	1.000
4922	77.80	5000	779.6	781.1	1.6	817.0	818.0	1.0	780.0	781.0	1.0	0.954	0.955	0.999	1.000	0.999	1.000
4962	37.90	5000	379.8	380.5	0.8	n/a	n/a	n/a	381.0	381.0	0.0	n/a	n/a	0.997	0.999	0.999	1.000
4981	18.90	5000	189.4	189.8	0.4	n/a	n/a	n/a	192.0	192.0	0.0	n/a	n/a	0.986	0.988	0.988	1.000

Point	CALIBRATOR			INDICATED (ppb)			NO DROP / O3 Conc (ppb)	NO2 GAIN (ppb)	NO2 Corr. FACTOR	CONV. EFFICIENCY
	GAS	TOTAL	O3 SETPOINT	NO	NOx	NO2				
REFERENCE	77.80	5000	0	782.0	781.0	-1.0	505	505	1.000	100.00%
AS-FOUND HIGH	77.80	5000	490	277.0	781.0	504.0	505	505	1.000	100.00%
ADJUSTED HIGH	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a
MID	77.80	5000	270	500.0	781.0	281.0	282	282	1.000	100.00%
LOW	77.80	5000	100	678.0	781.0	103.0	104	104	1.000	100.00%
NO2 adjustment not required.									AVERAGE:	100.00%

LINEAR REGRESSION ANALYSIS:				COMMENTS:
	CORRELATION	SLOPE	INTERCEPT	
NO	1.000	1.000	0.12%	
NOx	1.000	1.000	0.10%	
NO2	1.000	1.000	0.00%	



Methane/Non-Methane Analyzer Calibration by Dilution



CALIBRATION:				ANALYZER:			
DATE:	20-Aug-2019	PREVIOUS CALIBRATION DATE:	19-Jul-2019	VALUE	MAKE/MODEL	SERIAL	FLOW (mL/min)
CLIENT:	LICA	TEMPERATURE (°C):	22.0		Thermo 55i	1180930026	1110
LOCATION:	Maskwa	BAROMETRIC (mBar):	946	PARAMETER:	CH4	NMHC	THC
PURPOSE:	Routine	START TIME (MST):	12:58	RANGE (ppm):	20	20	40
PERFORMED BY:	Alex Yakupov	END TIME (MST):	16:40	PREVIOUS CF:	1.000	1.000	1.000

CALIBRATION SYSTEM:

CALIBRATOR:		ZERO AIR:		CALIBRATION GAS:		FLOWMETERS (if applicable):	
MAKE:	API	MAKE:	Teledyne	CYLINDER ID:	LL 29687	HIGH ID:	n/a
MODEL:	700	MODEL:	T701	CH ₄ /C ₃ H ₈ (ppm):	598.0 198.0	HIGH EXPIRY:	n/a
ID:	690	ID:	132	CYLINDER (psi):	1200	LOW ID:	n/a
MFC CALIBRATION DATE:	16-Apr-2019	OXIDIZER ID:	115	EXPIRY DATE	01-Aug-2026	LOW EXPIRY:	n/a

CALIBRATION PARAMETERS:

POINT (CH ₄ /NMHC)	HIGH	MID	LOW	CH ₄ EQUIVILANCE	
TARGET	14	7	3.5	C ₃ H ₈ as CH ₄	544.5
RANGE	12 - 16	6 - 8	2 - 4	THC as CH ₄	1142.5

EXPECTED (REFERENCE) VALUE:

INITIAL	CH ₄	NMHC	THC	FINAL	CH ₄	NMHC	THC
	10.21	10.96	21.17		10.19	10.89	21.08

CALIBRATION:

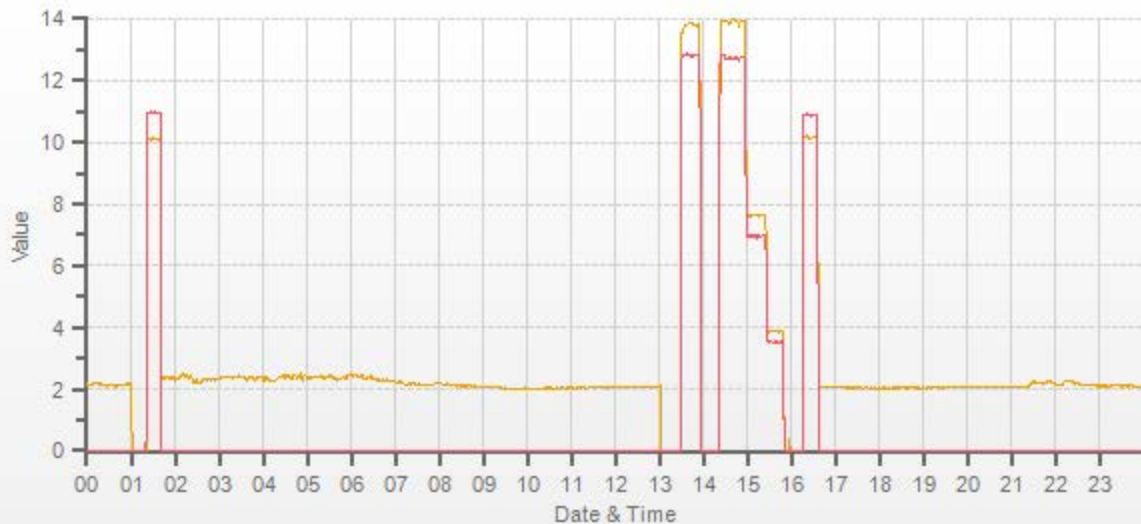
FLOW RATE			CONCENTRATION (PPM)									CORRECTION FACTOR (CF.)					
(mL/min)			CALCULATED			INITIAL INDICATED			FINAL INDICATED			INITIAL			FINAL		
DILUENT	GAS	TOTAL	CH ₄	NMHC	THC	CH ₄	NMHC	THC	CH ₄	NMHC	THC	CH ₄	NMHC	THC	CH ₄	NMHC	THC
3000	X	3000	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	X	X	X	X	X	X
2930	70.00	3000	13.95	12.71	26.66	13.54	12.85	26.39	13.95	12.71	26.66	1.031	0.989	1.010	1.000	1.000	1.000
2962	38.00	3000	7.57	6.90	14.47	n/a	n/a	n/a	7.61	6.97	14.59	n/a	n/a	n/a	0.995	0.990	0.992
2981	19.00	3000	3.79	3.45	7.24	n/a	n/a	n/a	3.86	3.49	7.36	n/a	n/a	n/a	0.981	0.988	0.983

LINEAR REGRESSION ANALYSIS:

	CORRELATION	SLOPE	INTERCEPT
CH ₄	1.000	0.998	0.2%
NMHC	1.000	1.000	0.1%
THC	1.000	0.999	0.2%

COMMENTS:

Sample inlet filter was changed.



CAL-LICA-201908-01248

Page 18 of 27
CH4 [ppm] NMHC [ppm]



Meteorological Sensor Audit/Calibration

Location Information

Company:	LICA	Performed By:	Alex Yakupov
Audit Location:	Maskwa	Reviewed By:	Rob Fisher
Audit Date:	September 17, 2018	Start/End Time (mst):	9:36 / 12:48
Calibration Purpose:	installation	Weather Conditions:	Cloudy/Overcast

Wind Sensor Information

Sensor ID Data:		Sensor Outputs:	
Sensor Make:	RM Young	Velocity Voltage Output Range:	0-1 V
Sensor Model:	05305VK	Velocity Unit Output Range:	0-200 km/h
Serial #:	161465	Direction Voltage Output Range:	0-1 V
Previous Cal/Audit Date:	May 17, 2018	Direction Unit Output Range:	0-360 degrees

Wind Calibrator Information

Calibrator I.D. and Expiry Date: Model 18860-90/18802 SN: CA 4744; expiration May 18, 2019

Wind Speed Audit Data ****+/- 2% of the average correction factor is the limit****

RPM	Wind Speed Generated kph	Clockwise Wind Speed kph	Counter Clockwise Wind Speed kph	Correction Factor
0	0	0.1	0.1	-
1000	18.4	18.5	18.5	0.995
2000	36.9	36.9	36.9	1.000
3000	55.3	55.4	55.4	0.998
4000	73.7	73.8	73.8	0.999
5000	92.2	92.3	92.3	0.999
6000	110.6	110.8	110.8	0.998
7000	129.0	129.3	129.3	0.998
8000	147.4	147.7	147.7	0.998
9000	165.9	166.1	166.1	0.999
10000	184.3	184.9	184.9	0.997
The audit meets AMD requirements.			Average Correction Factor=	0.998

Wind Direction Audit Data ****+/- 3° of the absolute average degrees difference for all points is the limit****

Generated Wind Direction 0-360 (Up)	Generated Wind Direction 360-0 (Down)	Indicated Wind Direction 0-360 (Up)	Indicated Wind Direction 360-0 (Down)	Degrees Difference 0-360 (Up)	Degrees Difference 360-0 (Down)	Average Absolute Degrees Difference
0	355	0	355	0.3	0.1	0.2
30	330	30	329	-0.4	0.7	0.5
60	300	62	300	-1.9	-0.3	1.1
90	270	91	270	-1.3	-0.3	0.8
120	240	121	241	-1.0	-0.8	0.9
150	210	152	212	-1.7	-1.7	1.7
180	180	181	182	-1.1	-2.0	1.6
210	150	211	152	-1.1	-1.8	1.5
240	120	241	122	-0.5	-1.8	1.2
270	90	270	91	-0.1	-0.8	0.5
300	60	300	61	0.4	-0.6	0.5
330	30	330	31	-0.1	-0.7	0.4
355	0	354	0	0.6	0.3	0.5
The audit meets AMD requirements.			Average Absolute Degrees Difference=		0.9	

Comments:



Meteorological System Checklist

Date:	August 20, 2019
Technician:	Alex Yakupov
Reviewer:	Adewunmi Adekanmbi
Station:	Maskwa

Unit:	Make:	Model:	Serial #:
Precipitation Sampler:	Met One	Part 387 - Heated Rain Gauge	F 4481

PRECIPITATION SENSOR CHECK

Checklist:	Reply:	Comments:
Previous check date:	May 28, 2019	n/a
Is the sensor Level?	yes	n/a
Is the heater operating properly?	yes	n/a
Are the bucket drain holes clean?	yes	n/a
Is the screen on the housing? (screen should be on between July and September)	yes	n/a
Is the housing clean?	yes	n/a
Is the area around the housing clean and free from obstacles?	yes	n/a

TIP TEST - Slowly pour water until 10 tip are heard. (10 tips = 1 ml)

# of Tips	Data Logger Response (ml):	Manual Specification = +/- 0.1 ml
	1.00	

Comments

14:05 - 14:10 - "M" mode for water test. No issues.

Company Maxxam Operator: Tom Bourque

Calibrator:				Flow Measurement Device:			
Make/Model	<u>API 700</u>			Make/Model	<u>N/A</u>		
Serial Number	<u>690</u>			Serial Number	<u>N/A</u>		
Last Verification Date	<u>March 2018</u>			Temperature (°C)	<u>24.4 C</u>		
NO Cylinder S/N	<u>EY0000769</u>			Barometric Pressure	<u>699 mmHg</u>		
NO [PPM]	<u>51.1</u>	NOx [PPM]	<u>51.2</u>				
Expiry Date	<u>December 2019</u>						

Dilution Flow (sccm)					
Pt. #1	<u>5000</u>	Pt. #2	<u>5000</u>	Pt. #3	<u>5000</u>
Gas Flow (sccm)					
Pt. #1	<u>80</u>	Pt. #2	<u>40</u>	Pt. #3	<u>20</u>

Calibrator Flow (sccm)		Calculated Conc.(ppm)		Indicated Conc.(ppm)			% Difference vs Audit Gas	
Dilution	Gas	NO	NOx	NO	NO ₂	NOx	NO	NOx
5000	0.0	0.000	0.000	0.000	-0.001	-0.001	Limit ± 10%	
5083	80.0	0.804	0.806	0.802	-0.011	0.791	0%	-2%
5044	40.0	0.405	0.406	0.403	-0.006	0.397	-1%	-2%
5022	20.0	0.204	0.204	0.202	-0.004	0.198	-1%	-2%
Absolute Average Percent Difference							1%	2%

LINEAR REGRESSION ANALYSIS *y=mx+b (where x=calculated concentration, y=indicated concentration)*

<u>NO</u>	<u>LIMITS</u>	<u>NOx</u>
Correlation= 1.0000	≥ 0.990	Correlation= 1.0000
m (Slope)= 0.9974	0.90-1.10	m (Slope)= 0.9833
b (Intercept % of FS)= -0.0592	± 3% F.S.	b (Intercept % of FS)= -0.1772

Flow	O ₃ Conc	NO Decrease	NO	NO ₂	NOX	% Diff. Vs Audit gas	
5083	0.000	0.000	0.802	-0.011	0.791	NO ₂	% Diff. Limit
5083	0.500	0.518	0.284	0.488	0.771	-4%	± 10%
5083	0.300	0.323	0.479	0.294	0.774	-6%	± 10%
5083	0.150	0.167	0.635	0.142	0.777	-8%	± 10%
						6%	± 10%

LINEAR REGRESSION ANALYSIS *y=mx+b (where x=calculated concentration, y=indicated concentration)*

<u>NO₂</u>	<u>LIMITS</u>	
Correlation= 0.9998	≥ 0.995	Big shift down in NOx when entering GPT function. Possible flow change.
m (Slope)= 0.9649	0.90-1.10	
b (Intercept % of FS)= -1.4907	± 3% F.S.	

AENV Standards Audit Calibrator	NO _x Analyzer
Make/Model <u>Teco 146i</u>	Make/Model <u>Teco 42i</u>
Serial/AMU Number <u>AMU 1809</u>	Serial/AMU Number <u>AMU 2265</u>
SRM Gas Cylinder No. <u>APEX1236646</u>	Last Calibration Date <u>April 15, 2019</u>
Cylinder Conc. (ppm) <u>50.04</u>	Full Scale (ppm) <u>1.0</u>
	Cylinder Gas Expiry Date <u>June 2021</u>

COMMENTS: With ZAG Teledyne 701 Maxxam ID 11986.

Auditor: Al Clark Date: April 16, 2019
 Operator Signature: Location: McIntyre Center Edmonton

Company Maxxam Operator: Tom Bourque

Calibrator:				Flow Measurement Device:			
Make/Model	<u>Sabio 2010</u>			Make/Model	<u>N/A</u>		
Serial Number	<u>11900613</u>			Serial Number	<u>N/A</u>		
Last Verification Date	<u>August 2018</u>			Temperature (°C)	<u>24.4 C</u>		
NO Cylinder S/N	<u>EY0000769</u>			Barometric Pressure	<u>699 mmHg</u>		
NO [PPM]	<u>51.1</u>	NOx [PPM]	<u>51.2</u>				
Expiry Date	<u>December 2019</u>						

Dilution Flow (sccm)					
Pt. #1	<u>5000</u>	Pt. #2	<u>5000</u>	Pt. #3	<u>5000</u>
Gas Flow (sccm)					
Pt. #1	<u>80</u>	Pt. #2	<u>40</u>	Pt. #3	<u>20</u>

Calibrator Flow (sccm)		Calculated Conc.(ppm)		Indicated Conc.(ppm)			% Difference vs Audit Gas	
Dilution	Gas	NO	NOx	NO	NO ₂	NOx	NO	NOx
5000	0.0	0.000	0.000	0.000	-0.002	-0.002	Limit ± 10%	
5080	80.0	0.805	0.806	0.815	-0.007	0.808	1%	0%
5041	40.0	0.405	0.406	0.414	-0.004	0.410	2%	1%
5019	20.0	0.204	0.204	0.210	-0.004	0.206	3%	2%
Absolute Average Percent Difference							2%	1%

LINEAR REGRESSION ANALYSIS				<i>y=mx+b (where x=calculated concentration, y=indicated concentration)</i>			
NO		LIMITS		NO_x			
Correlation=	1.0000	≥ 0.990		Correlation=	1.0000		
m (Slope)=	1.0117	0.90-1.10		m (Slope)=	1.0039		
b (Intercept % of FS)=	0.2171	± 3% F.S.		b (Intercept % of FS)=	-0.0020		

Flow	O ₃ Conc	NO Decrease	NO	NO ₂	NOX	% Diff. Vs Audit gas	
5080	0.000	0.000	0.815	-0.009	0.806	NO ₂	% Diff. Limit
5080	1.400	0.517	0.298	0.511	0.809	1%	± 10%
5080	0.900	0.308	0.507	0.299	0.806	0%	± 10%
5080	0.500	0.140	0.675	0.130	0.805	-1%	± 10%
						0%	± 10%

LINEAR REGRESSION ANALYSIS				<i>y=mx+b (where x=calculated concentration, y=indicated concentration)</i>			
NO₂		LIMITS					
Correlation=	1.0000	≥ 0.995					
m (Slope)=	1.0062	0.90-1.10					
b (Intercept % of FS)=	-1.0004	± 3% F.S.					

AENV Standards		NO _x Analyzer	
Audit Calibrator			
Make/Model	<u>Teco 146i</u>	Make/Model	<u>Teco 42i</u>
Serial/AMU Number	<u>AMU 1809</u>	Serial/AMU Number	<u>AMU 2265</u>
SRM Gas Cylinder No.	<u>APEX1236646</u>	Last Calibration Date	<u>April 15, 2019</u>
Cylinder Conc. (ppm)	<u>50.04</u>	Full Scale (ppm)	<u>1.0</u>
		Cylinder Gas Expiry Date	<u>June 2021</u>

COMMENTS: With ZAG Teledyne 701 Maxxam ID: 11981. Should have Maxxam ID 11986 instead

Auditor: Al Clark Date: April 16, 2019
 Operator Signature: *Al Clark* Location: McIntyre Center Edmonton



Calibration Gas Audit

Single Component Cylinder Gas

File No. 2019-392CGA

Company: Maxxam **Operator's Name:** Alex

Cylinder #: LL107918 Concentration PPM: 49.5 Tolerance(%) 1 Certified By: Praxair

Expiry Date: August 2026

Reference Calibrator and Gas:	Flow Measurement Device:
Make/Model: <u>Sabio 2010</u>	Make/Model: <u>Mesa Definer 220</u>
Serial Number: <u>AMU 2092</u>	Serial Number: <u>H-133034 / L-132702</u>
Last Verification Date: <u>January 14, 2019</u>	Temp. °C: <u>22.7 C</u>
Gas Type: <u>SO2</u> Conc. <u>50.26</u>	B.P. <u>707 mmHg</u>
Cylinder Number: <u>FF28071</u>	
Expiry Date: <u>March 2020</u>	

Reference Analyzer:

Make/Model: Teco 43i Serial/AMU Number: 2195

Instrument Settings: Zero: 11.8 Span: 0.980 Range: 1.0

Last Calibration: Date: Jan 14/19 C.F. 1.000 Done By: Shea Beaton

Calibrator Flows (sccm)		Indicated Concentration (PPM)	Gas Flow/ Dilution Flow	Concentration Factor	Cylinder Concentration
Dilution	Gas				
5000	0.0	0.000	0.00394	126.434	49.2
4898	78.1	0.790	0.01595	62.714	49.5
4893	38.7	0.389	0.00791	126.434	49.2
4894	19.3	0.192	0.00394	253.575	48.7
Average Cylinder Concentration:					49.1

Previous Stated Concentration PPM: 49.5

Percent variance from Stated: 1

Meets Manufacturer Tolerance. Use manufacturers stated concentration **COMMENTS:** _____

< =5% Outside Manufacturer Tolerance. Use manufacturers concentration _____

> 5% Outside Manufacturer Tolerance. **DO NOT USE** this cylinder _____

Auditor: Al Clark

Operator Signature:

Date: January 15, 2019

Location: McIntyre Center Edmonton



Calibration Gas Audit

Single Component Cylinder Gas

File No. 2017-493CGA

Company: Maxxam Operator's Name: Mike
 Cylinder #: EY0001003 Concentration PPM: 9.55 Tolerance(%) 2 Certified By: Praxair
 Expiry Date: October 2020

Reference Calibrator and Gas:
 Make/Model: Sabio 2010
 Serial Number: AMU 2092
 Last Verification Date: January 17, 2018
 Gas Type: H2S Conc. 20.43
 Cylinder Number: CAL015272
 Expiry Date: January 2019

Flow Measurement Device:
 Make/Model: Mesa Defender 530
 Serial Number: H-153961 / L-153874
 Temp. °C: 23.0 C
 B.P.: 697 mmHg

Reference Analyzer:
 Make/Model: Teco 450i Serial/AMU Number: 1980
 Instrument Settings: Zero: 12.9 Span: 0.955 Range: 0.1
 Last Calibration: Date: Jan 17/18 C.F. 1.000 Done By: Al Clark

Calibrator Flows (sccm)		Indicated Concentration (PPM)	Gas Flow/ Dilution Flow	Concentration Factor	Cylinder Concentration
Dilution	Gas				
5000	0.0	0.0000	0.0000	0.0000	0.0000
5051	39.6	0.0753	0.00784	127.551	9.60
5028	20.2	0.0387	0.00402	248.911	9.63
5033	10.5	0.0198	0.00209	479.333	9.49
Average Cylinder Concentration:					9.58

Previous Stated Concentration PPM: 9.55
 Percent variance from Stated: 0

Meets Manufacturer Tolerance. Use manufacturers stated concentration COMMENTS: Used AEP regulator
 <=5% Outside Manufacturer Tolerance. Use manufacturers concentration
 > 5% Outside Manufacturer Tolerance. **DO NOT USE** this cylinder

Auditor: Al Clark Date: January 18, 2018
 Operator Signature: [Signature] Location: McIntyre Center Edmonton



Calibration Gas Audit

NO Cylinder Gas

File No. 2019-391CGA

Company: Maxxam **Operators name:** Alex

Cylinder #: LL107918 Conc (PPM) 50.1/50.2 Tolerance (%) 1 Certified By: Praxair

Expiry Date: August 2026

Reference Calibrator and Gas:				Flow Measurement Device:	
Make/Model	<u>Teco 146i</u>			Make/Model	<u>Mesa Definer 220</u>
Serial Number	<u>AMU 1809</u>			Serial Number	<u>H-133034 / L-132702</u>
Last Verification Date	<u>January 14, 2019</u>			Temp. °C	<u>22.7 C</u>
Gas Type	<u>NO</u>	Conc.	<u>50.05</u>	B.P.	<u>707 mmHg</u>
Cylinder Number	<u>APEX1236645</u>				
Expiry Date	<u>June 2021</u>				

Reference Analyzer:

Make/Model Teco 42i Serial/AMU Number: 2268

Instrument Settings Zero: 9.2 Span: 1.223 Range: 1.0

Last Calibration: Date: Jan 14/19 C.F. 1.000 Done By: Al Clark

Calibrator Flows (sccm)		Indicated Conc. (ppm)		Gas Flow/ Dilution Flow	Concentration Factor	Cylinder Concentration	
Dilution	Gas	NO	NOX			NO	NOX
5000	0.0	0.000	0.000				
4898	78.1	0.792	0.793	0.016	62.714	49.7	49.7
4893	38.7	0.395	0.395	0.008	126.434	49.9	49.9
4894	19.3	0.195	0.195	0.004	253.575	49.4	49.4
Average Cylinder Concentration:						49.7	49.7

	<u>NO</u>		<u>NOx</u>
Previous Stated Concentration PPM:	<u>50.1</u>		<u>50.2</u>
Percent variance from Stated:	<u>1</u>		<u>1</u>

Cylinder gas tolerances based on NO only

Meets Manufacturer Tolerance. Use manufacturers stated concentration **COMMENTS:**

< =5% Outside Manufacturer Tolerance. Use manufacturers concentration

> 5% Outside Manufacturer Tolerance. **DO NOT USE** this cylinder

Auditor: Al Clark Date: Janaury 15, 2019

Operator Signature: *Al Clark* Location: McIntyre Center Edmonton

End of Report



Lakeland Industry & Community Association

AUGUST 2019

Ambient Air Monitoring Calibration Report

- ST. LINA STATION-

CAL-LICA-201908-01250

Station Operation and Maintenance:

Maxxam Analytics

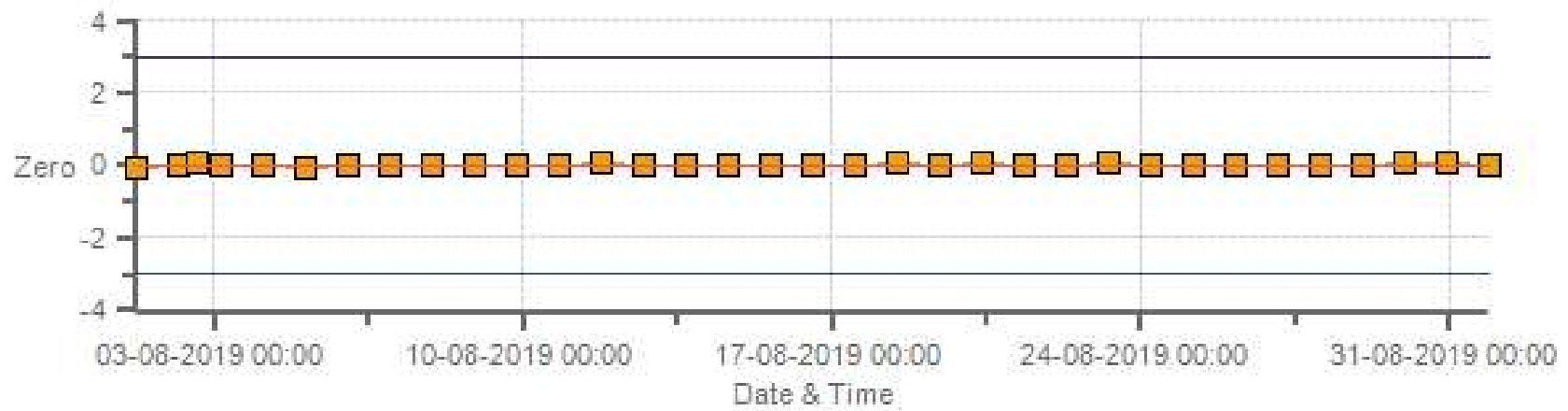
Data Validation and Report:

Maxxam Analytics

September 10, 2019

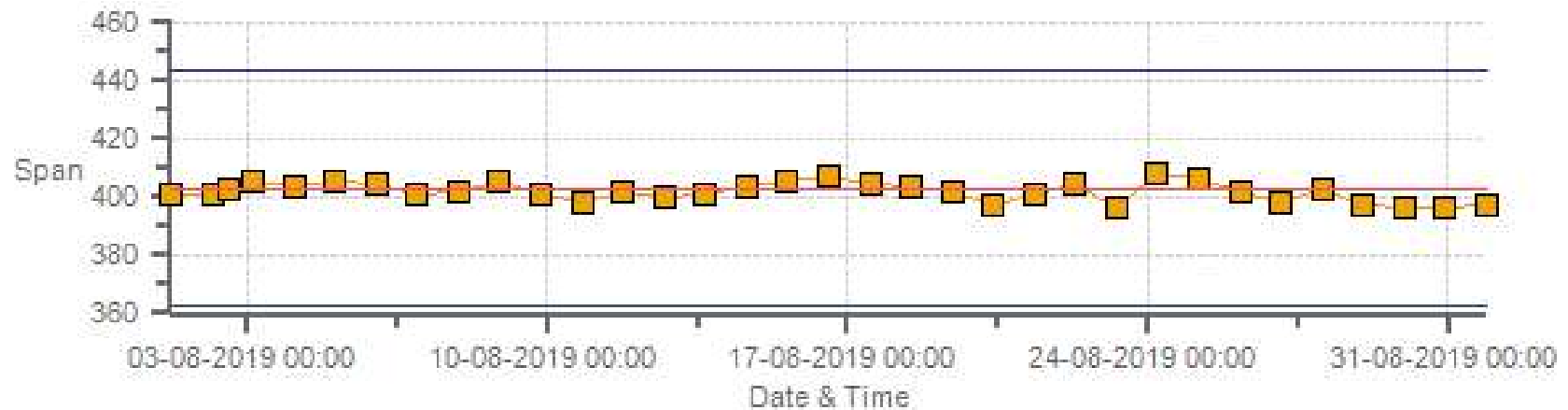
DAILY INTERNAL ZERO-SPAN CALIBRATION RECORDS

SO2 [ppb] Calibration: LICA St. Lina Monthly: 08-2019 Type: Zero



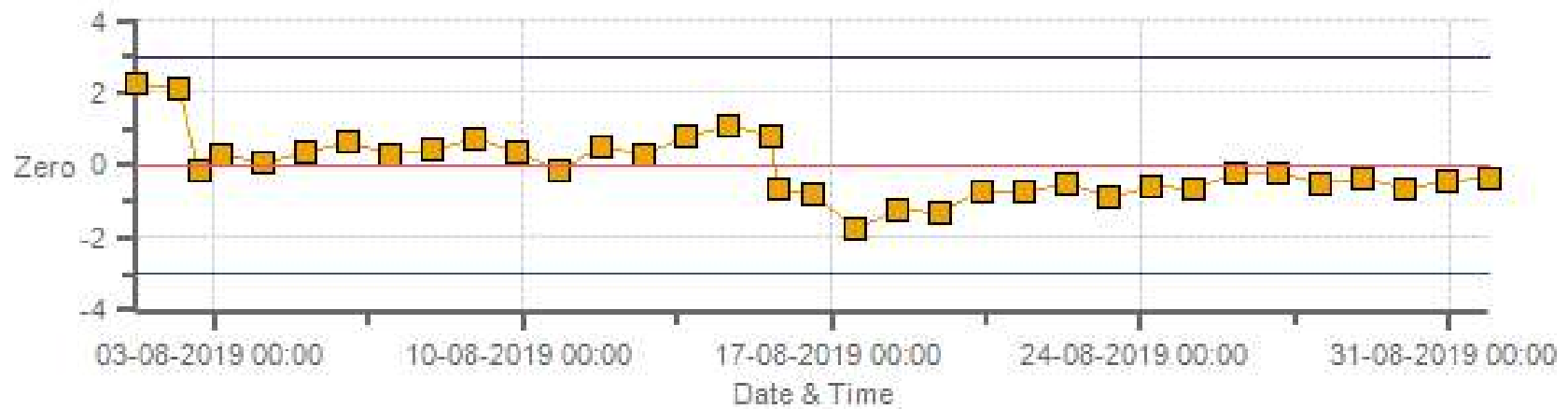
Zero Zero Ref Zero Low Zero High

SO2 [ppb] Calibration: LICA St. Lina Monthly: 08-2019 Type: Span



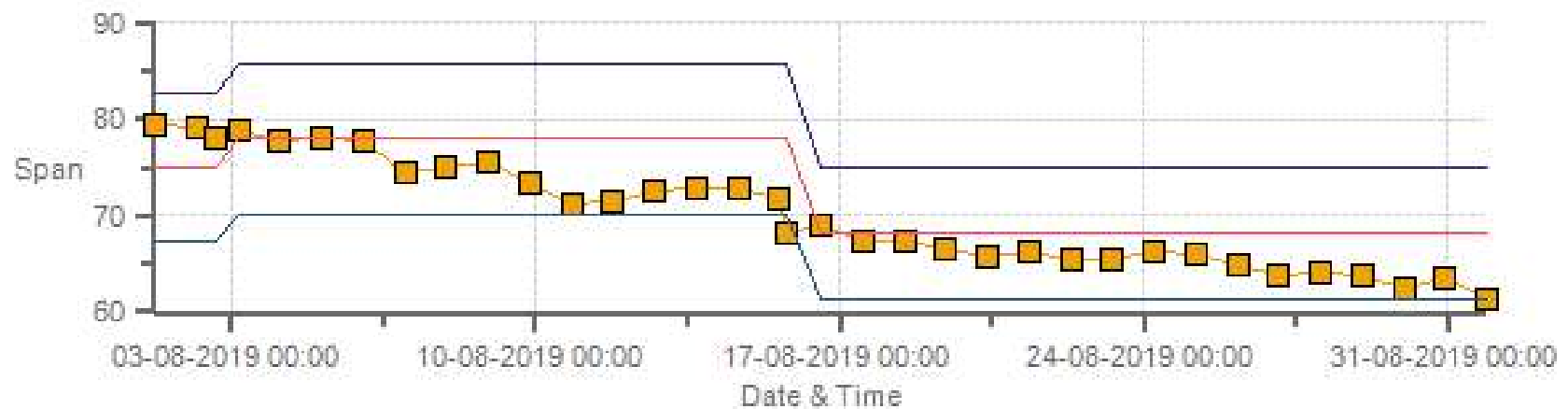
Span SpanRef Span Low Span High

H2S [ppb] Calibration: LICA St. Lina Monthly: 08-2019 Type: Zero



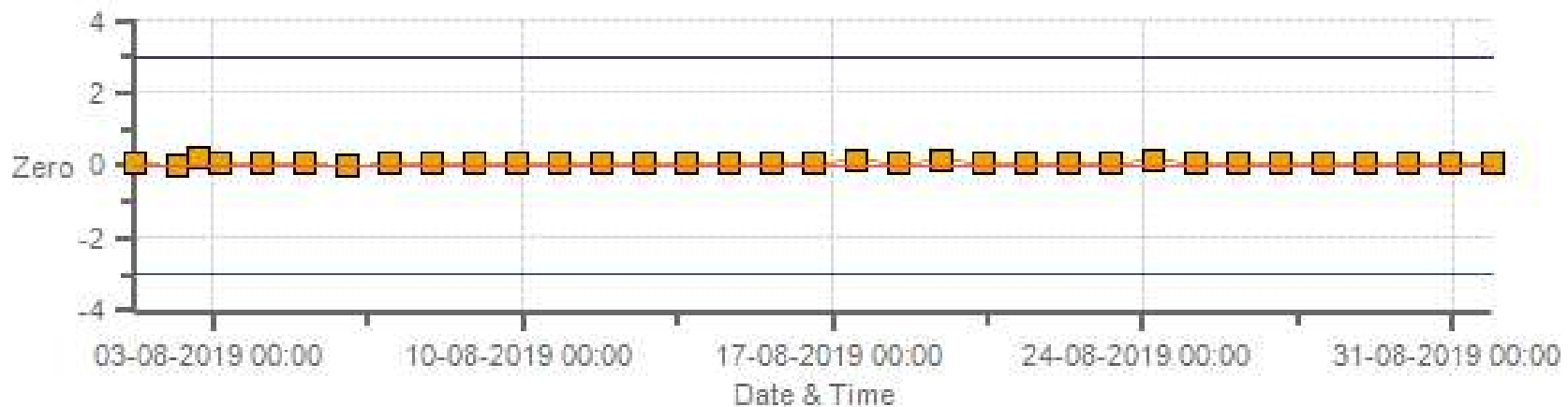
Zero Zero Ref Zero Low Zero High

H2S [ppb] Calibration: LICA St. Lina Monthly: 08-2019 Type: Span



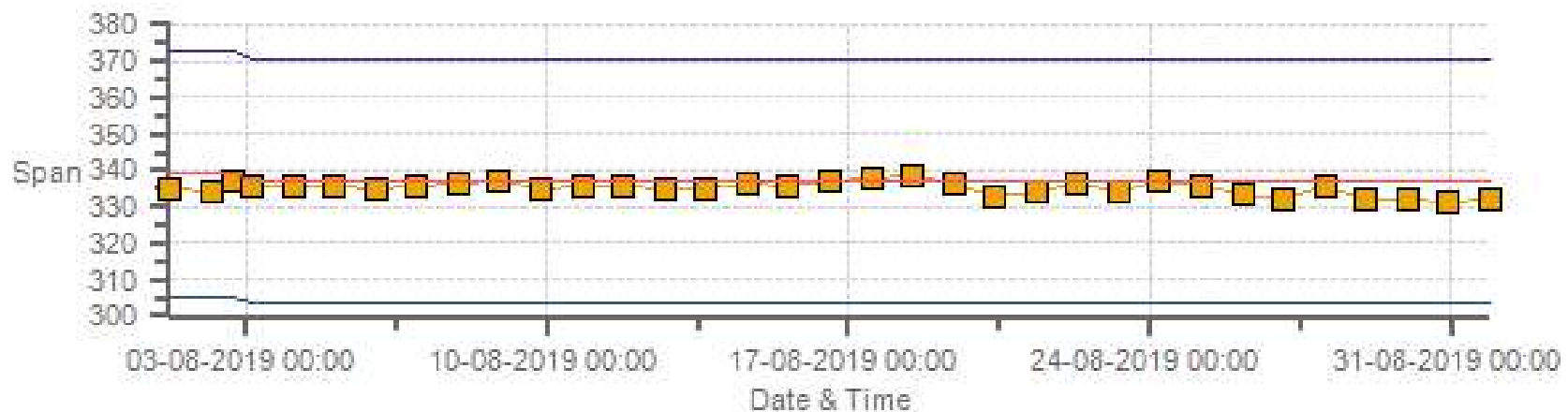
Span SpanRef Span Low Span High

NOx [ppb] Calibration: LICA St. Lina Monthly: 08-2019 Type: Zero



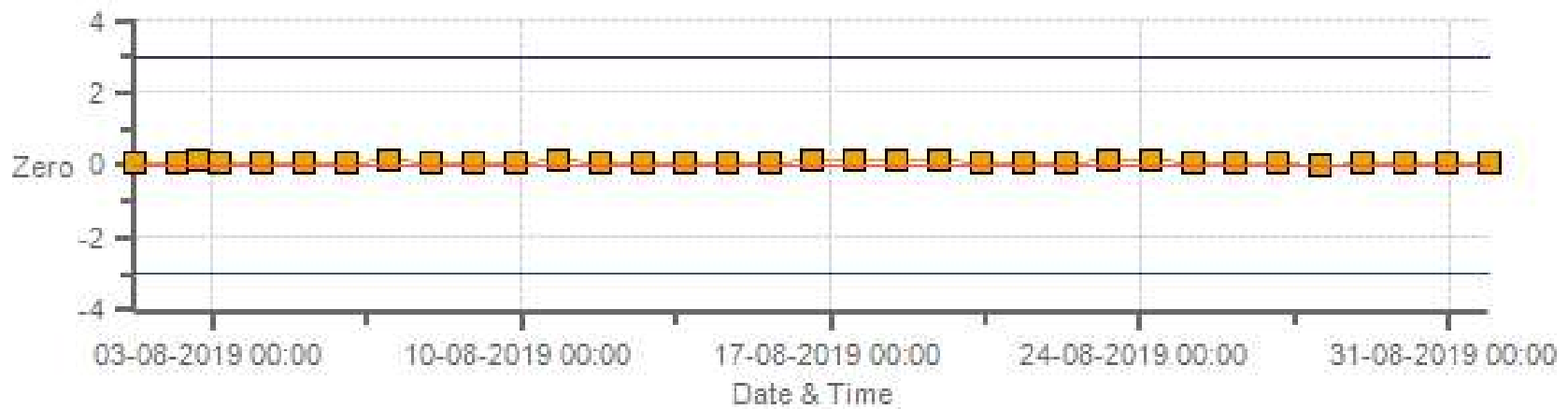
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NOx [ppb] Calibration: LICA St. Lina Monthly: 08-2019 Type: Span



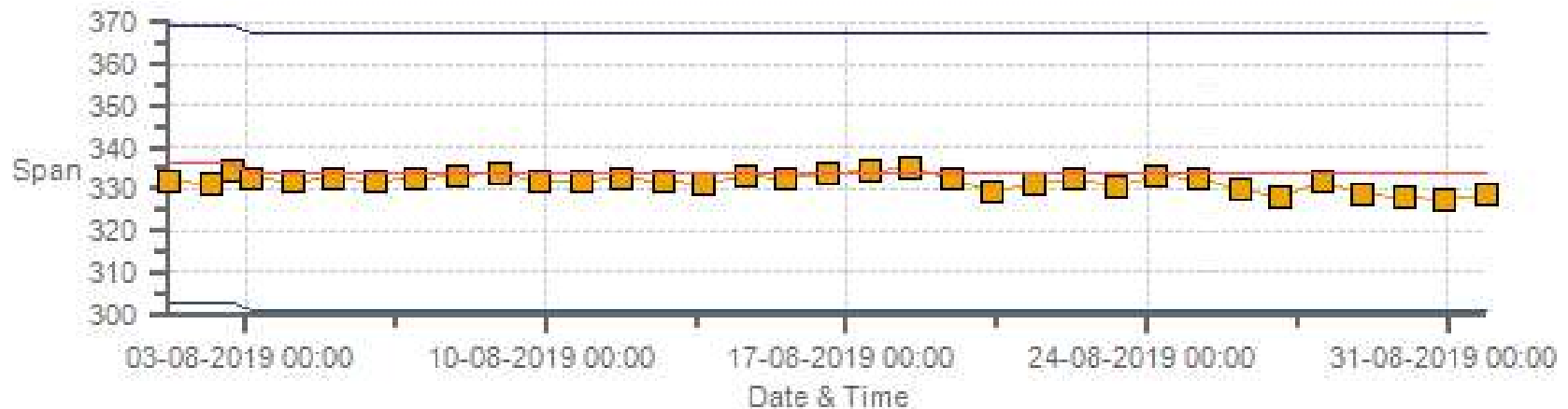
Span Span Ref Span Low Span High

NO2 [ppb] Calibration: LICA St. Lina Monthly: 08-2019 Type: Zero



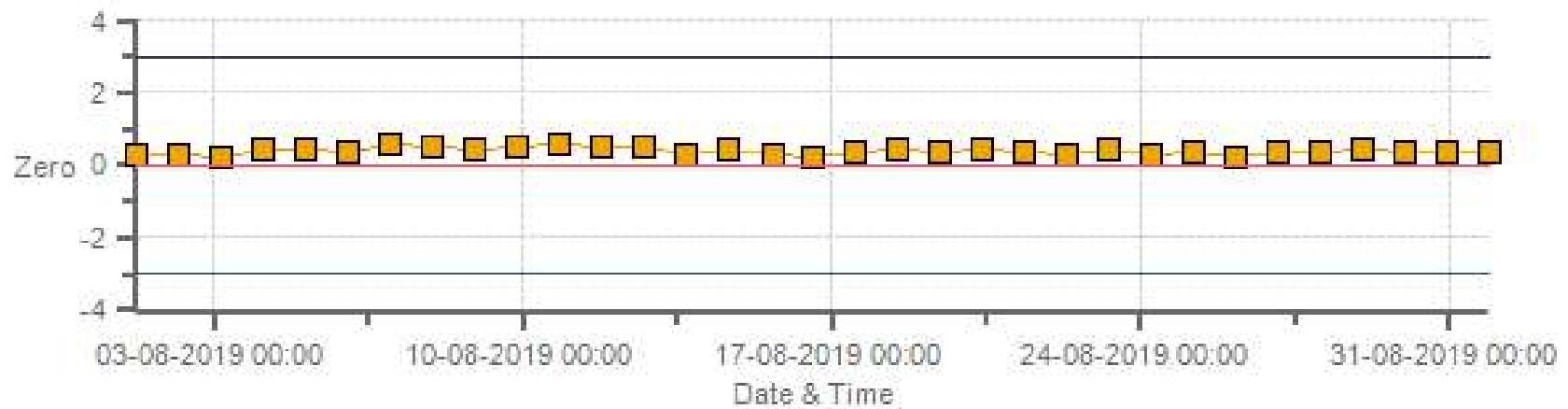
Zero Zero Ref Zero Low Zero High

NO2 [ppb] Calibration: LICA St. Lina Monthly: 08-2019 Type: Span



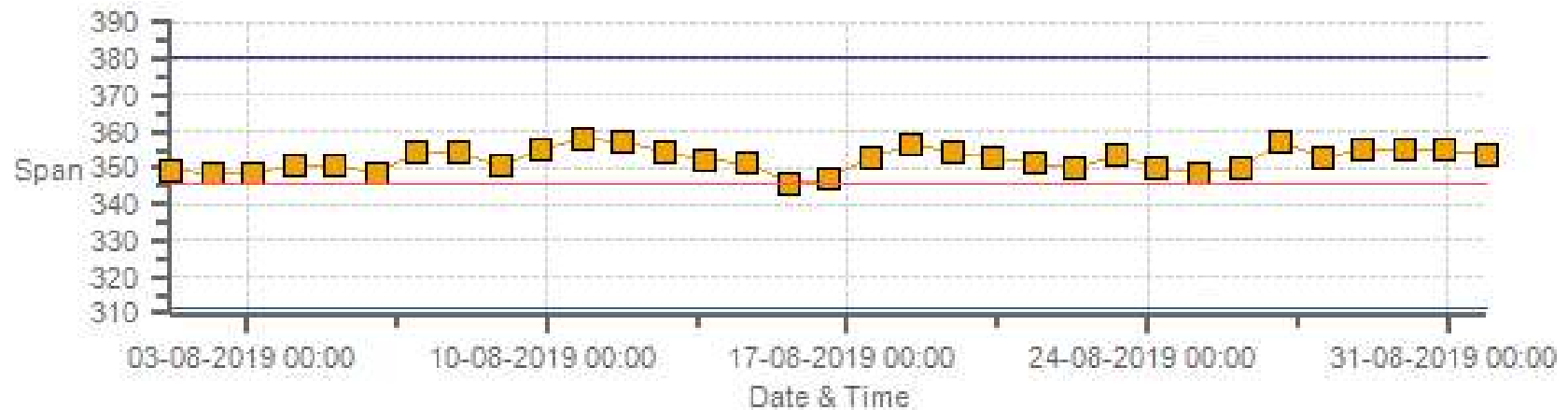
Span Span Ref Span Low Span High

O3 [ppb] Calibration: LICA St. Lina Monthly: 08-2019 Type: Zero



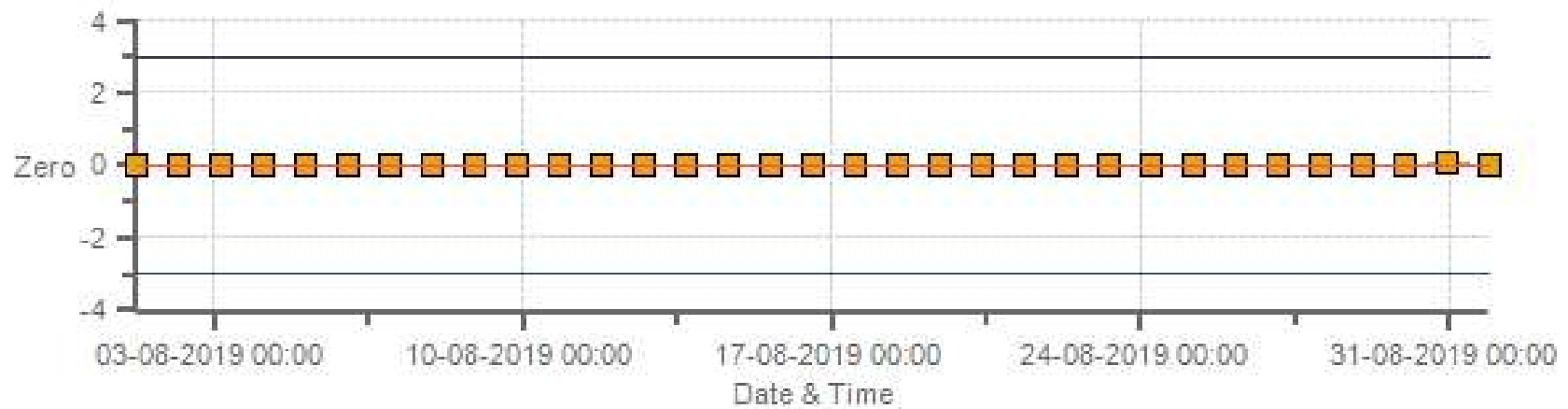
Zero Zero Ref Zero Low Zero High

O3 [ppb] Calibration: LICA St. Lina Monthly: 08-2019 Type: Span



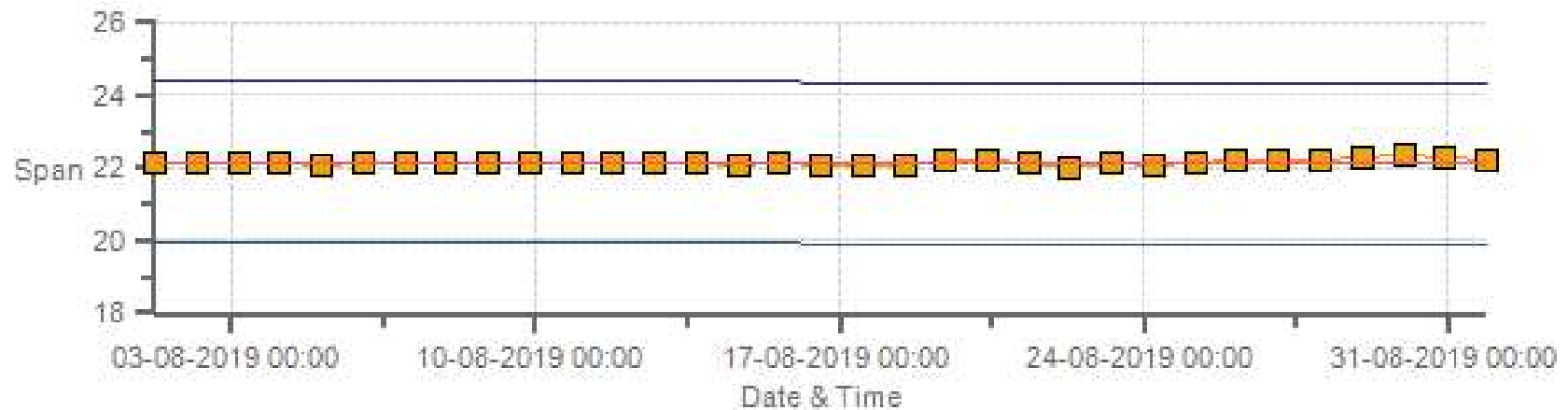
Span SpanRef Span Low Span High

THC [ppm] Calibration: LICA St. Lina Monthly: 08-2019 Type: Zero



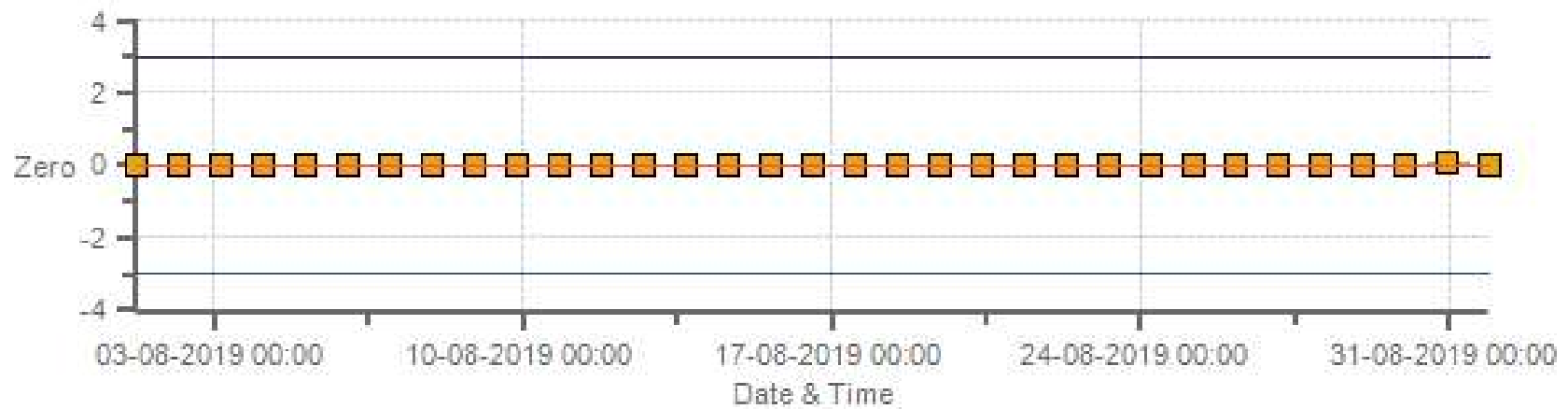
Zero Zero Ref Zero Low Zero High

THC [ppm] Calibration: LICA St. Lina Monthly: 08-2019 Type: Span



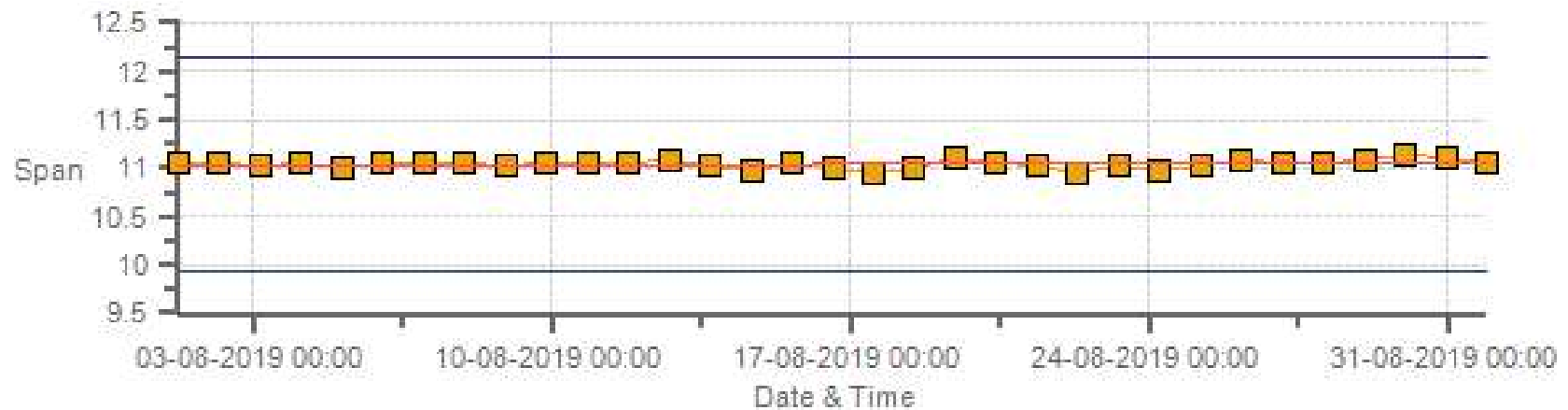
Span Span Ref Span Low Span High

CH4 [ppm] Calibration: LICA St. Lina Monthly: 08-2019 Type: Zero



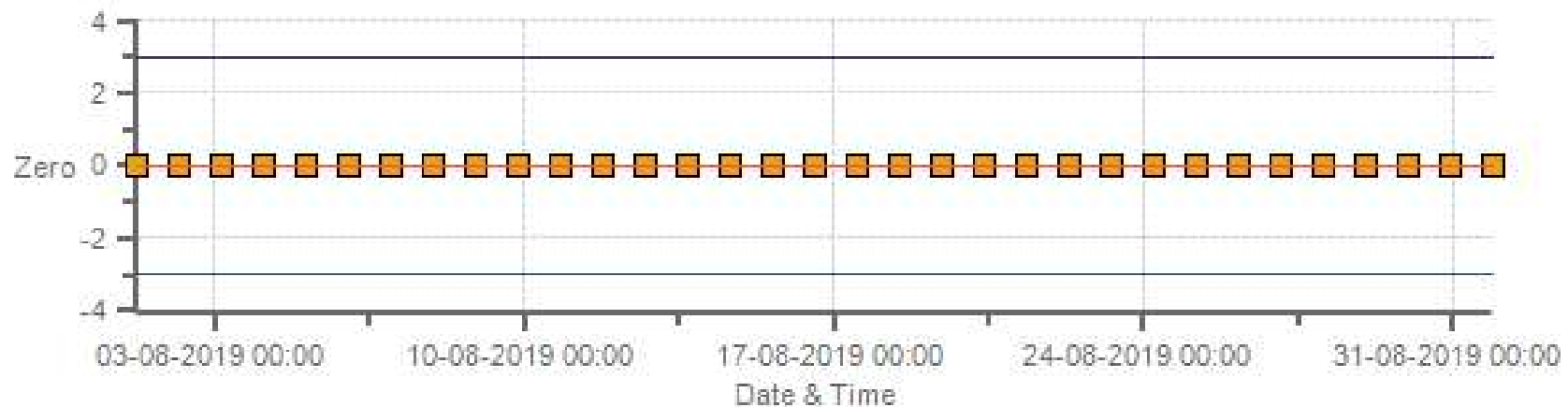
Zero Zero Ref Zero Low Zero High

CH4 [ppm] Calibration: LICA St. Lina Monthly: 08-2019 Type: Span



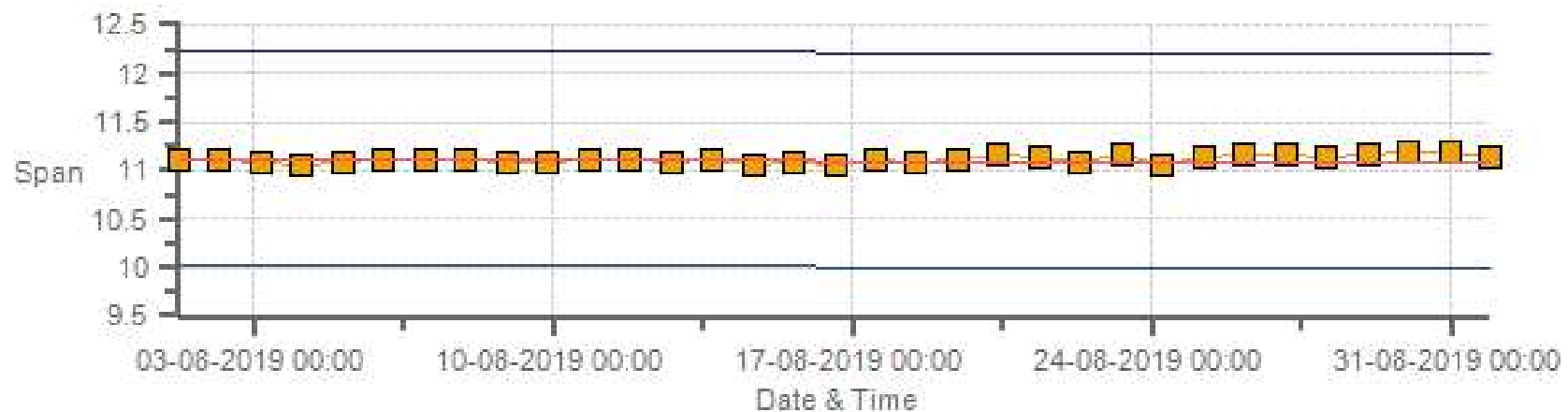
Span SpanRef Span Low Span High

NMHC [ppm] Calibration: LICA St. Lina Monthly: 08-2019 Type: Zero



Zero Zero Ref Zero Low Zero High

NMHC [ppm] Calibration: LICA St. Lina Monthly: 08-2019 Type: Span



Span SpanRef Span Low Span High

MULTI-POINT CALIBRATION RECORDS

SO2 Analyzer Calibration by Dilution



DATE:	02-Aug-2019	PREVIOUS CALIBRATION DATE:	12-Jul-2019
PARAMETER:	SO2	PREVIOUS CORRECTION FACTOR:	1.000
CLIENT:	LICA	TEMPERATURE (°C):	21.0
LOCATION:	St. Lina	BAROMETRIC (mBar):	916
PURPOSE:	Routine	START TIME (MST):	10:18
PERFORMED BY:	Alex Yakupov	END TIME (MST):	14:50

ANALYZER:

MAKE/MODEL	Thermo 43I-TLE	RANGE	1000 ppb
SERIAL #	1180930030	FLOW (mL/min)	438
INITIAL		FINAL	
BKG/OFFSET	3.63	BKG/OFFSET	3.64
COEF/SLOPE	1.085	COEF/SLOPE	1.09
Expected (reference) Value	403	Expected (reference) Value	403

CALIBRATION SYSTEM:

CALIBRATOR:		ZERO AIR:	
MAKE:	API	MAKE:	Teledyne
MODEL:	700	MODEL:	T701
ID:	690	ID:	132
MFC CALIBRATION DATE:	16-Apr-2019	OXIDIZER ID:	n/a
CALIBRATION GAS:		FLOWMETERS (if applicable):	
CYLINDER ID:	LL 107918	HIGH ID	n/a
CONC (ppm):	49.50	EXPIRY DATE	n/a
CYLINDER (psi):	1300	LOW ID	n/a
EXPIRY DATE	20-Aug-2026	EXPIRY DATE	n/a

CALIBRATION PARAMETERS:

POINT	HIGH	MID	LOW
TARGET	780	380	190
RANGE	600 - 800	300 - 400	100 - 200

SCRUBBER CHECK (15 MINS; TRS/H2S ONLY):

START TIME:	n/a	SO2 Conc (ppb)	n/a
END TIME:	n/a	Analyzer Response (ppb)	n/a

CALIBRATION:

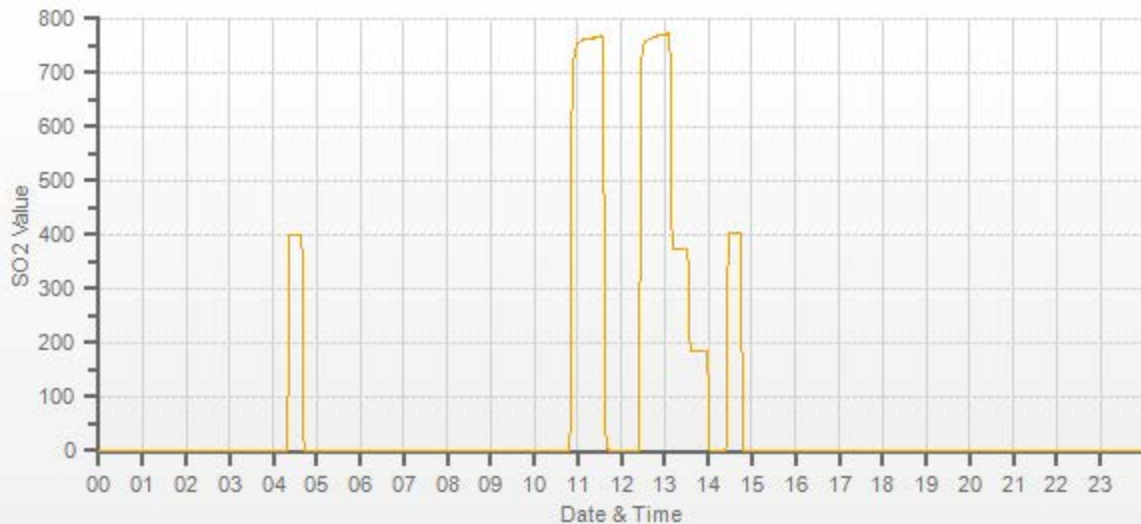
FLOW RATES (mL/min)			CONCENTRATION (ppb)			CORRECTION FACTOR	
DILUENT	GAS	TOTAL	ACTUAL	INDICATED		Initial	Final
				Initial	Final		
5000	77.80	5000	0.00	0	0	1.004	1.000
4922	77.80	5000	770.22	767	770	1.004	1.000
4962	37.90	5000	375.21	n/a	375	n/a	1.001
4981	18.90	5000	187.11	n/a	186	n/a	1.006

LINEAR REGRESSION ANALYSIS:

	CORRELATION	SLOPE	INTERCEPT
VALUE	1.000	1.000	0.0%

COMMENTS:

Sample inlet filter was changed.



H2S Analyzer Calibration by Dilution



DATE:	02-Aug-2019	PREVIOUS CALIBRATION DATE:	12-Jul-2019
PARAMETER:	H2S	PREVIOUS CORRECTION FACTOR:	1.000
CLIENT:	LICA	TEMPERATURE (°C):	21.0
LOCATION:	St. Lina	BAROMETRIC (mBar):	916
PURPOSE:	Routine	START TIME (MST):	10:18
PERFORMED BY:	Alex Yakupov	END TIME (MST):	15:38

ANALYZER:

MAKE/MODEL	Thermo 450i	RANGE	100 ppb
SERIAL #	CM 18010058	FLOW (mL/min)	819
INITIAL		FINAL	
BKG/OFFSET	43.6	BKG/OFFSET	47.2
COEF/SLOPE	0.832	COEF/SLOPE	0.865
Expected (reference) Value	75	Expected (reference) Value	77.9

CALIBRATION SYSTEM:

CALIBRATOR:		ZERO AIR:	
MAKE:	SABIO	MAKE:	Teledyne
MODEL:	2010 D	MODEL:	T701
ID:	11900613	ID:	132
MFC CALIBRATION DATE:	16-Apr-2019	OXIDIZER ID:	n/a
CALIBRATION GAS:		FLOWMETERS (if applicable):	
CYLINDER ID:	EY 0001003	HIGH ID	n/a
CONC (ppm):	9.55	EXPIRY DATE	n/a
CYLINDER (psi):	600	LOW ID	n/a
EXPIRY DATE	20-Oct-2020	EXPIRY DATE	n/a

CALIBRATION PARAMETERS:

POINT	HIGH	MID	LOW
TARGET	78	38	19
RANGE	60 - 80	30 - 40	10 - 20

SCRUBBER CHECK (15 MINS; TRS/H2S ONLY):

START TIME:	10:30	SO2 Conc (ppb)	780
END TIME:	10:45	Analyzer Response (ppb)	0.0

CALIBRATION:

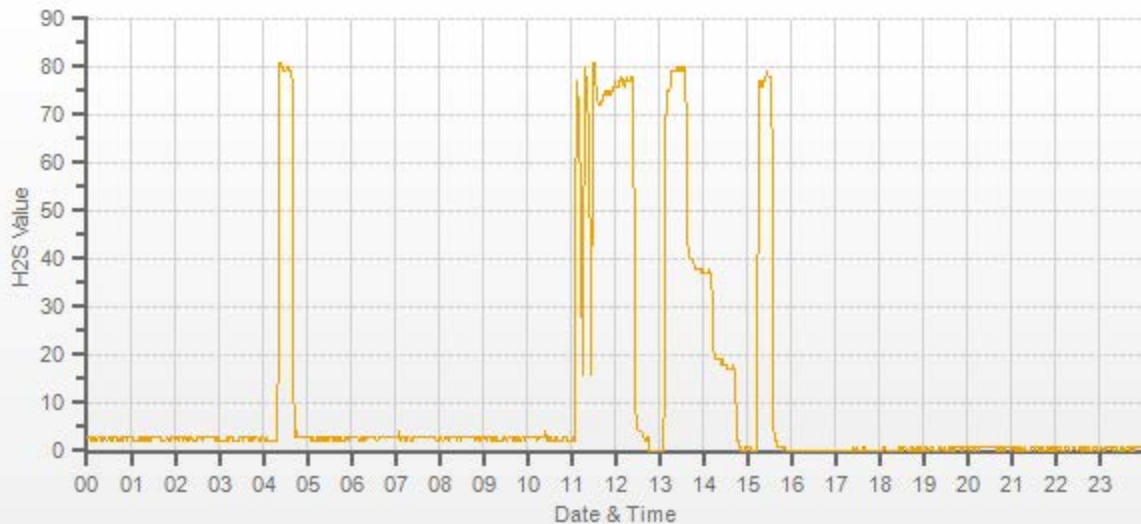
FLOW RATES (mL/min)			CONCENTRATION (ppb)			CORRECTION FACTOR	
DILUENT	GAS	TOTAL	ACTUAL	INDICATED		Initial	Final
				Initial	Final		
7500	61.20	7500	0.00	2.1	0	1.032	1.000
7439	61.20	7500	77.93	77.6	77.9	1.032	1.000
7470	29.80	7500	37.95	n/a	38	n/a	0.999
7485	14.90	7500	18.97	n/a	18.5	n/a	1.026

LINEAR REGRESSION ANALYSIS:

	CORRELATION	SLOPE	INTERCEPT
VALUE	1.000	1.002	-0.2%

COMMENTS:

Sample inlet filter was changed. The early monthly visit was scheduled to correct ZERO drift of the analyzer. 11:08 - agitating of the gas cylinder to even gas concentration mixture and extra purging was completed for H2S gas cylinder regulator. The High As Found point starts from beginning at 12:06. (reason - gas mixture settled as the gas cylinder was not used for the last three weeks)



H2S Analyzer Calibration by Dilution



DATE:	15-Aug-2019	PREVIOUS CALIBRATION DATE:	02-Aug-2019
PARAMETER:	H2S	PREVIOUS CORRECTION FACTOR:	1.000
CLIENT:	LICA	TEMPERATURE (°C):	22.0
LOCATION:	St. Lina	BAROMETRIC (mBar):	916
PURPOSE:	Repeat	START TIME (MST):	14:58
PERFORMED BY:	Alex Yakupov	END TIME (MST):	18:50

ANALYZER:

MAKE/MODEL	Thermo 450i	RANGE	100 ppb
SERIAL #	CM 18010058	FLOW (mL/min)	819
INITIAL		FINAL	
BKG/OFFSET	47.2	BKG/OFFSET	48
COEF/SLOPE	0.865	COEF/SLOPE	0.848
Expected (reference) Value	77.9	Expected (reference) Value	68.3

CALIBRATION SYSTEM:

CALIBRATOR:		ZERO AIR:	
MAKE:	SABIO	MAKE:	Teledyne
MODEL:	2010 D	MODEL:	T701
ID:	11900613	ID:	132
MFC CALIBRATION DATE:	16-Apr-2019	OXIDIZER ID:	n/a
CALIBRATION GAS:		FLOWMETERS (if applicable):	
CYLINDER ID:	EY 0001003	HIGH ID	n/a
CONC (ppm):	9.55	EXPIRY DATE	n/a
CYLINDER (psi):	600	LOW ID	n/a
EXPIRY DATE	20-Oct-2020	EXPIRY DATE	n/a

CALIBRATION PARAMETERS:

POINT	HIGH	MID	LOW
TARGET	78	38	19
RANGE	60 - 80	30 - 40	10 - 20

SCRUBBER CHECK (15 MINS; TRS/H2S ONLY):

START TIME:	n/a	SO2 Conc (ppb)	n/a
END TIME:	n/a	Analyzer Response (ppb)	n/a

CALIBRATION:

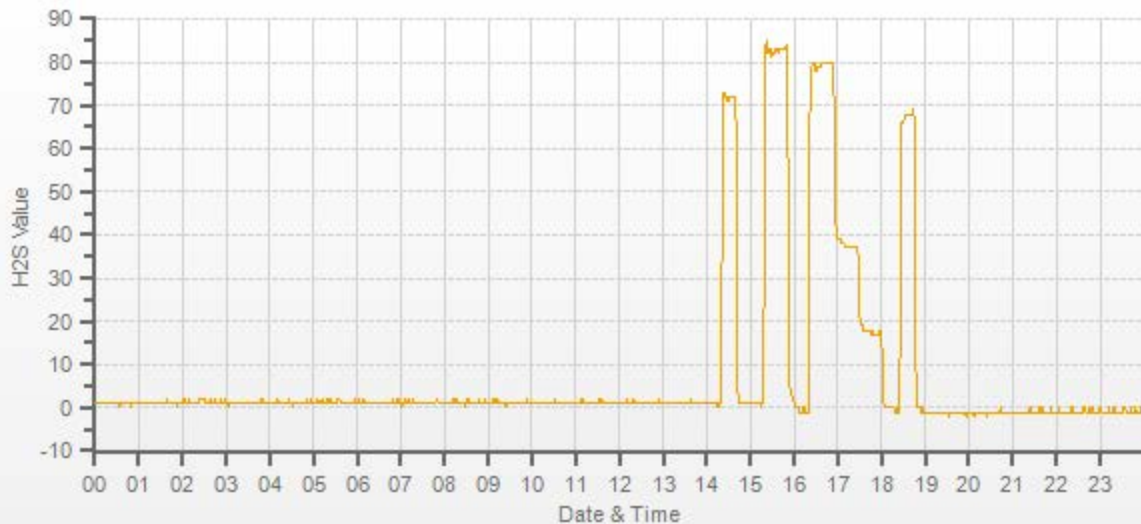
FLOW RATES (mL/min)			CONCENTRATION (ppb)			CORRECTION FACTOR	
DILUENT	GAS	TOTAL	ACTUAL	INDICATED		Initial	Final
				Initial	Final		
7500	61.20	7500	0.00	1	0	0.953	0.999
7439	61.20	7500	77.93	82.8	78	0.953	0.999
7470	29.80	7500	37.95	n/a	37.4	n/a	1.015
7485	14.90	7500	18.97	n/a	18.5	n/a	1.026

LINEAR REGRESSION ANALYSIS:

	CORRELATION	SLOPE	INTERCEPT
VALUE	1.000	1.002	-0.3%

COMMENTS:

Sample inlet filter change and SO2 scrubber test were completed during monthly calibration on Aug 2, 2019. Repeat calibration was completed to correct SPAN EV.



NOx Calibration by Dilution/Gas-Phase Titration



CALIBRATION:				ANALYZER:			
DATE:	02-Aug-2019	PREVIOUS CALIBRATION DATE:	12-Jul-2019	MAKE/MODEL:	Thermo 42i	PREVIOUS CF.	
CLIENT:	LICA	TEMPERATURE (°C):	21.0	SERIAL #:	1180930029	NOx	1.000
LOCATION:	St. Lina	BAROMETRIC (mBar):	916.00	FLOW (mL/min)	511	NO	0.999
PURPOSE:	Routine	START TIME (MST):	10:18	RANGE (ppb)	1000	NO2	1.000
PERFORMED BY:	Alex Yakupov	END TIME (MST):	16:45	GPT FOR O3?		No	

CALIBRATOR:		ZERO AIR:		CALIBRATION GAS:		FLOWMETERS (if applicable):	
MAKE:	API	MAKE:	Teledyne	CYLINDER ID:	LL 107918	HIGH ID:	n/a
MODEL:	700	MODEL:	T701	NO/NOx (PPM):	50.1 50.2	HIGH EXPIRY:	n/a
ID:	690	ID:	132	CYLINDER (psi):	1300	LOW ID:	n/a
MFC CALIBRATION DATE:	16-Apr-2019	OXIDIZER ID:	n/a	EXPIRY DATE	20-Aug-2026	LOW EXPIRY:	n/a

CALIBRATION SETTINGS:							
INITIAL	NOx	NO	NO2	FINAL	NOx	NO	NO2
BKG/OFFSET:	6	6	n/a	BKG/OFFSET:	6	6	n/a
SLOPE/COEF/CE:	1	1	1.0	SLOPE/COEF/CE:	1	1	1.0

EXPECTED (REFERENCE) VALUE:							
INITIAL	NOx	NO	NO2	FINAL	NOx	NO	NO2
	339	3	336.0		337	3	334.0

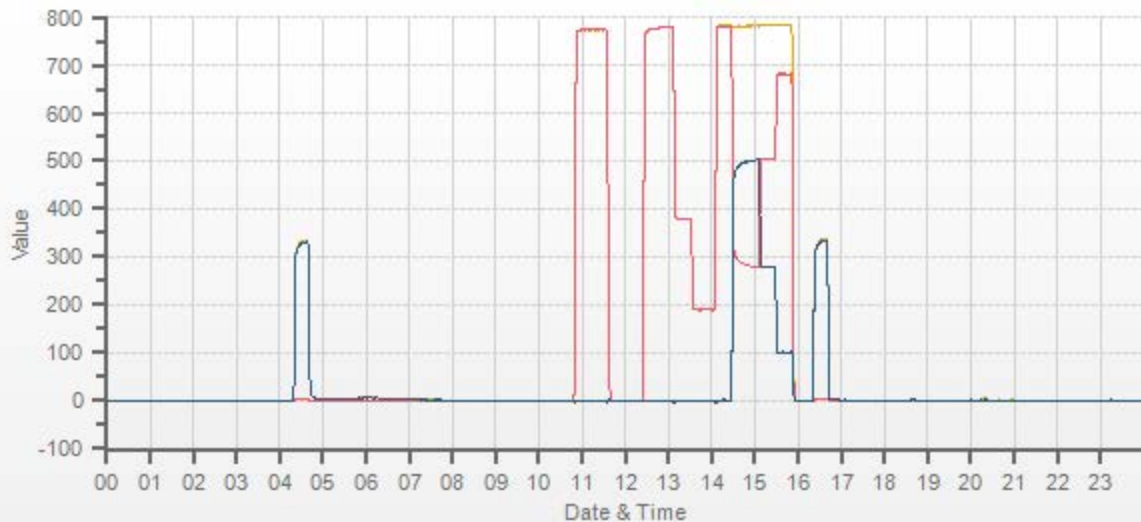
POINT	NO TARGET (PPB)	NO2 TARGET (PPB)	NO2 RANGE	O3 POINT
HIGH	780	500	470-540	n/a
MID	380	275	235-310	n/a
LOW	190	90	80-115	n/a
EXTRA 1	n/a	n/a	n/a	n/a

FLOW RATE			CONCENTRATION (ppb)									CORRECTION FACTOR (CF.)					
(mL/min)			CALCULATED			INITIAL INDICATED			FINAL INDICATED			INITIAL			FINAL		
DILUENT	GAS	TOTAL	NO	NOx	NO2	NO	NOx	NO2	NO	NOx	NO2	NO	NOx	NO2	NO	NOx	NO2
5000	77.80	5000	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	1.008	1.010	0.999	1.000	0.999	0.999
4922	77.80	5000	779.6	781.1	1.6	773.0	773.0	0.0	780.0	781.0	1.0	1.008	1.010	0.999	1.000	0.999	0.999
4962	37.90	5000	379.8	380.5	0.8	n/a	n/a	n/a	380.0	381.0	1.0	n/a	n/a	0.999	0.999	0.999	0.999
4981	18.90	5000	189.4	189.8	0.4	n/a	n/a	n/a	190.0	190.0	0.0	n/a	n/a	0.997	0.999	0.999	0.999

Point	CALIBRATOR			INDICATED (ppb)			NO DROP / O3 Conc (ppb)	NO2 GAIN (ppb)	NO2 Corr. FACTOR	CONV. EFFICIENCY
	GAS	TOTAL	O3 SETPOINT	NO	NOx	NO2				
REFERENCE	77.80	5000	0	780.0	781.0	1.0	494	494	1.000	100.00%
AS-FOUND HIGH	77.80	5000	490	286.0	781.0	495.0	494	494	1.000	100.00%
ADJUSTED HIGH	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a
MID	77.80	5000	270	504.0	783.0	279.0	276	278	0.993	100.72%
LOW	77.80	5000	100	681.0	783.0	102.0	99	101	0.980	102.02%
NO2 adjustment not required.									AVERAGE:	100.91%

LINEAR REGRESSION ANALYSIS:				COMMENTS:
	CORRELATION	SLOPE	INTERCEPT	
NO	1.000	1.000	0.02%	
NOx	1.000	1.000	0.02%	
NO2	1.000	0.995	0.28%	

Station: St. Lina Daily: 02-08-2019 Type: AVG 1 Min. [1 Min.]



CAL-LICA-201908-01250

— NOX[ppb] — NO[ppb] — NO2[ppb]

Methane/Non-Methane Analyzer Calibration by Dilution



CALIBRATION:				ANALYZER:			
DATE:	15-Aug-2019	PREVIOUS CALIBRATION DATE:	11-Jul-2019	VALUE	MAKE/MODEL	SERIAL	FLOW (mL/min)
CLIENT:	LICA	TEMPERATURE (°C):	22.0		Thermo 55i	1180930025	1210
LOCATION:	St. Lina	BAROMETRIC (mBar):	916	PARAMETER:	CH4	NMHC	THC
PURPOSE	Routine	START TIME (MST):	11:02	RANGE (ppm):	20	20	40
PERFORMED BY:	Alex Yakupov	END TIME (MST):	14:45	PREVIOUS CF:	1.000	1.000	1.000

CALIBRATION SYSTEM:

CALIBRATOR:		ZERO AIR:		CALIBRATION GAS:		FLOWMETERS (if applicable):	
MAKE:	API	MAKE:	Teledyne	CYLINDER ID:	LL 29687	HIGH ID:	n/a
MODEL:	700	MODEL:	T701	CH ₄ /C ₃ H ₈ (ppm):	598.0 198.0	HIGH EXPIRY:	n/a
ID:	690	ID:	132	CYLINDER (psi):	1200	LOW ID:	n/a
MFC CALIBRATION DATE:	16-Apr-2019	OXIDIZER ID:	115	EXPIRY DATE	01-Aug-2026	LOW EXPIRY:	n/a

CALIBRATION PARAMETERS:

POINT (CH ₄ /NMHC)	HIGH	MID	LOW	CH ₄ EQUIVILANCE	
TARGET	14	7	3.5	C ₃ H ₈ as CH ₄	544.5
RANGE	12 - 16	6 - 8	2 - 4	THC as CH ₄	1142.5

EXPECTED (REFERENCE) VALUE:

INITIAL	CH ₄	NMHC	THC	FINAL	CH ₄	NMHC	THC
	11.04	11.12	22.16		11.05	11.09	22.14

CALIBRATION:

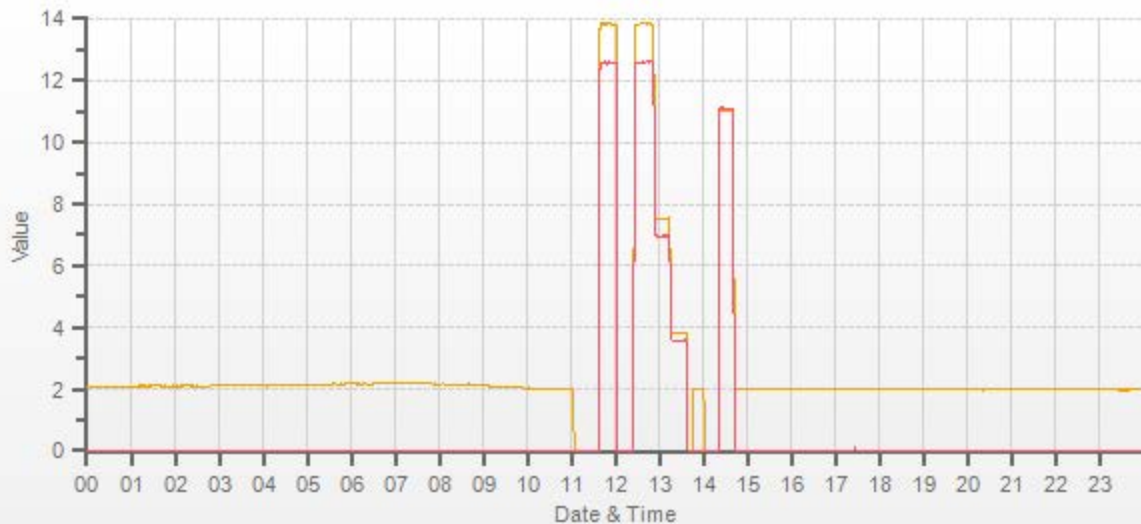
FLOW RATE			CONCENTRATION (PPM)									CORRECTION FACTOR (CF.)					
(mL/min)			CALCULATED			INITIAL INDICATED			FINAL INDICATED			INITIAL			FINAL		
DILUENT	GAS	TOTAL	CH ₄	NMHC	THC	CH ₄	NMHC	THC	CH ₄	NMHC	THC	CH ₄	NMHC	THC	CH ₄	NMHC	THC
3025	X	3025	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	X	X	X	X	X	X
2955	70.00	3025	13.84	12.60	26.44	13.82	12.57	26.40	13.84	12.60	26.44	1.001	1.002	1.001	1.000	1.000	1.000
2987	38.00	3025	7.51	6.84	14.35	n/a	n/a	n/a	7.55	6.96	14.51	n/a	n/a	n/a	0.995	0.983	0.989
3006	19.00	3025	3.76	3.42	7.18	n/a	n/a	n/a	3.79	3.55	7.34	n/a	n/a	n/a	0.991	0.963	0.978

LINEAR REGRESSION ANALYSIS:

	CORRELATION	SLOPE	INTERCEPT
CH ₄	1.000	1.000	0.1%
NMHC	1.000	1.000	0.4%
THC	1.000	0.999	0.2%

COMMENTS:

Sample inlet filter was changed.



CAL-LICA-201908-01250

Ozone Calibration by Photometer (Varying UV Lamp)



DATE:	15-Aug-2019	PREVIOUS CALIBRATION DATE:	11-Jul-2019
PARAMETER:	Ozone	PREVIOUS CORRECTION FACTOR:	1.000
CLIENT:	LICA	TEMPERATURE (°C):	22.0
LOCATION:	St. Lina	BAROMETRIC (mBar):	916
PURPOSE:	Routine	START TIME (MST):	11:02
PERFORMED BY:	Alex Yakupov	END TIME (MST):	15:40

ANALYZER:

MAKE/MODEL	Thermo 49i	RANGE	500 ppb
SERIAL #	1002240371	FLOW (mL/min)	1476
INITIAL		FINAL	
BKG/OFFSET	-0.7	BKG/OFFSET	-0.5
COEF/SLOPE	1.009	COEF/SLOPE	1.009
Expected (reference) Value	346	Expected (reference) Value	346

CALIBRATION SYSTEM:

CALIBRATOR:		ZERO AIR:	
MAKE:	SABIO	MAKE:	Teledyne
MODEL:	2010 D	MODEL:	T701
ID:	11900613	ID:	132
MFC CALIBRATION DATE:	16-Apr-2019	OXIDIZER ID:	n/a
CALIBRATION METHOD:		Photometer (Varying UV Lamp)	
GPT DATE:	n/a	GPT END TIME:	n/a

CALIBRATION PARAMETERS:

POINT	HIGH	MID	LOW
RANGE	300 - 400	150 - 200	50 - 100

CALIBRATION:

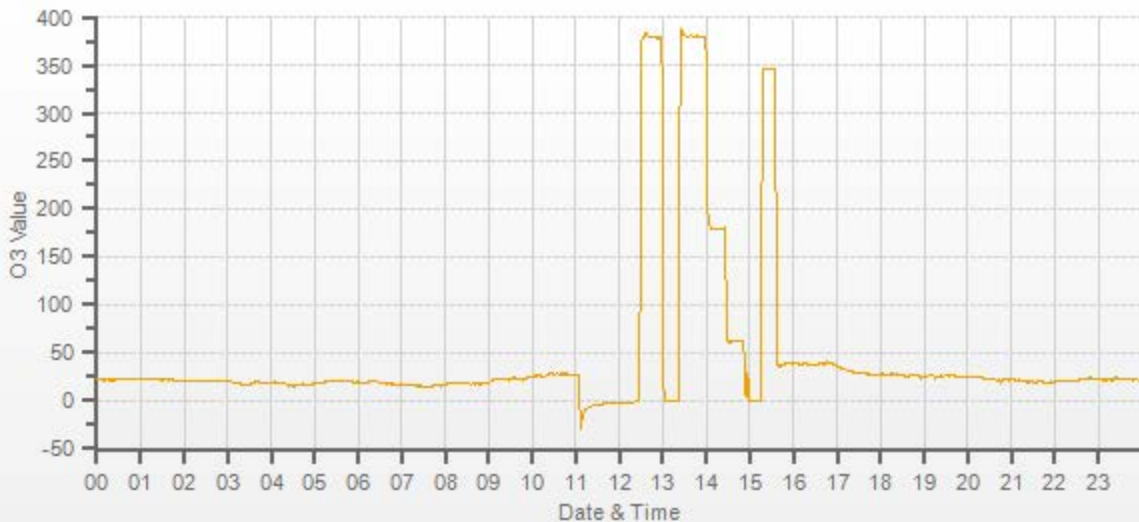
FLOW RATES (mL/min)			CONCENTRATION (ppb)			CORRECTION FACTOR	
DILUENT	GAS	TOTAL	ACTUAL	INDICATED		Initial	Final
				Initial	Final		
5000	 	5000	0.0	-0.7	0.0	 	
5000	 	5000	380.0	380.0	380.0	0.998	1.000
5000	 	5000	180.0	n/a	180.0	n/a	1.000
5000	 	5000	62.0	n/a	62.0	n/a	1.000

LINEAR REGRESSION ANALYSIS:

	CORRELATION	SLOPE	INTERCEPT
VALUE	1.000	1.000	0.0%

COMMENTS:

Sample inlet filter was changed. No EV adjustments were required.



Thermo 5030i SHARP Monitor Calibration

Date: August 9, 2019	Performed By/Reviewer: Alex Yakupov Wunmi Adekanmbi
Company: LICA	Start Time (mst): 11:04
Station Name/Location: St. Lina	End Time (mst): 12:35
Previous Audit Date: July 25, 2019	Calibration Purpose: Quarterly
Parameter: PM 2.5	Weather Conditions: A few clouds

SHARP 5030i Information and Status:		
Serial Number: CM 17091001	Filter Tape Counter	400

Reference Standards: Air Flow						
	Manometer	Orifice	Pressure:		Temp / RH:	
Make:	Dwyer	Chinook	Fisher Scientific	Fisher Scientific	11745843	
Model:	475 Mk. III	CHN0901	FB61291	11-661-7A	11745843	
Serial Number:	#3	#4	130168457	160348895		
Expiry Date:	January 17, 2020	January 31, 2020	January 17, 2020	June 19, 2020		

Ambient Temperature (°C)						
As Found:			As Left: (same as found if acceptable)			
	Reference	SHARP	Difference	Reference	SHARP	Difference
#1	12.40	12.6	-0.2	12.40	12.6	-0.2
#2	12.46	12.6	-0.1	12.46	12.6	-0.1
#3	12.51	12.7	-0.2	12.51	12.7	-0.2
Average	12.5	12.6	-0.2	12.5	12.6	-0.2
<i>Temp Limit: ± 2°C</i>						

Ambient Relative Humidity (%RH)						
As Found:			As Left: (same as found if acceptable)			
	Reference	SHARP	Offset (ZERO)	Reference	SHARP	Offset (ZERO)
#1	79.10	78.9	0.2	79.10	78.9	0.2
#2	78.40	78.2	0.2	78.40	78.2	0.2
#3	78.60	78.6	0.0	78.60	78.6	0.0
Average	78.7	78.6	0.1	78.7	78.6	0.1
<i>RH Limit: ± 2 %RH</i>						

Flow Temperature (°C)						
As Found:			As Left: (same as found if acceptable)			
	Reference	SHARP	Difference	Reference	SHARP	Difference
#1	23.60	24.6	-1.0	23.60	24.6	-1.0
#2	23.64	24.6	-1.0	23.64	24.6	-1.0
#3	23.74	24.7	-1.0	23.74	24.7	-1.0
Average	23.7	24.6	-1.0	23.7	24.6	-1.0
<i>Temp Limit: ± 2°C</i>						

Barometric Pressure (mmHg)						
As Found:			As Left: (same as found if acceptable)			
	Reference	SHARP	Difference	Reference	SHARP	Difference
#1	690.0	689.4	0.6	690.0	689.4	0.6
<i>BP Limit: ± 2 mmHg</i>						

Nephelometer Relative Humidity (%RH)						
As Found:			As Left: (same as found if acceptable)			
	Reference	SHARP	Difference	Reference	SHARP	Difference
#1	40.10	39.6	0.5	40.10	39.6	0.5
<i>RH Limit: ± 2 %RH</i>						

Nephelometer Temperature (%RH)						
As Found:			As Left: (same as found if acceptable)			
	Reference	SHARP	Difference	Reference	SHARP	Difference
#1	23.70	23.2	0.5	23.70	23.2	0.5
<i>Temp Limit: ± 2°C</i>						

Nephelometer Source Level						
As Found:			As Left: (same as found if acceptable)			
	Variable	Value		Variable	Value	
	IRE D	67		IRE D	67	
	SRC LEVEL	47		SRC LEVEL	47	
<i>IRE D Limit (as found): 60-70 mA Adjusted IRE D Limit (as left): 65 mA</i>						

Detector Calibration (Auto)						
As Found:			As Left:			
Detector Auto Calibration Completed: YES			Variable	Value		
			HIGH VOLT	n/a		
			BETA REF TH	n/a		
			ALPHA TH	n/a		
			DIFF HV	n/a		

Mass Coefficient (Auto)						
Zero			Span			
	Variable	Value		Variable	Value	
	MASS COEF	7097.0		MASS COEF	6979.9	
	FOIL VALUE	0		FOIL VALUE	1045	
	Beta Avg	9072		Beta Avg	7810	
	difference	Foil set # 4804		difference	-1.7	
Foil Set: CM1597						

Flow Calibration (L/min)						
As Found:			As Left: (same as found if acceptable)			
	Reference	SHARP	Difference	Reference	SHARP	Difference
#1	16.67	16.68	-0.01	16.67	16.68	-0.01
#2	16.69	16.68	0.01	16.69	16.68	0.01
#3	16.67	16.67	0.00	16.67	16.67	0.00
Average	16.68	16.68	0.00	16.68	16.68	0.00
<i>Flow Limit: 16.67 ± 0.33 L/min</i>						

Leak Check (L/min)						
Without Leak Check Adapter			With leak Check Adapter			
	Reference	SHARP	Difference	Reference	SHARP	Difference
#1	16.67	16.67	0.00	16.63	16.64	-0.01
<i>Leak Limit: 0.08 L/min</i>						
						LEAK RATE: -0.01



Meteorological System Checklist

Date:	August 15, 2019
Technician:	Alex Yakupov
Reviewer:	Adewunmi Adekanmbi
Station:	St. Lina

Unit:	Make:	Model:	Serial #:
Precipitation Sampler:	Met One - Heated Rain Gauge	Part 387	n/a

PRECIPITATION SENSOR CHECK

Checklist:	Reply:	Comments:
Previous check date:	May 27, 2019	n/a
Is the sensor Level?	yes	n/a
Is the heater operating properly?	yes	n/a
Are the bucket drain holes clean?	yes	n/a
Is the screen on the housing? (screen should be on between July and September)	yes	n/a
Is the housing clean?	yes	n/a
Is the area around the housing clean and free from obstacles?	yes	n/a

TIP TEST - Slowly pour water until 10 tip are heard. (10 tips = 1 ml)

# of Tips	Data Logger Response (ml):	Manual Specification = +/- 0.1 ml
	1.00	

Comments

13:08 - 13:18 - "M" mode for water test. No issues.



Meteorological Sensor Audit/Calibration

Location Information

Company:	N/A	Performed By:	Chris Wesson
Audit Location:	Edm Shop	Reviewed By:	Rob Fisher
Audit Date:	May 17, 2019	Start/End Time (mst):	08:10 / 08:51
Calibration Purpose:	shut down	Weather Conditions:	Mainly sunny

Wind Sensor Information

Sensor ID Data:		Sensor Outputs:	
Sensor Make:	RM Young	Velocity Voltage Output Range:	0-1V
Sensor Model:	05305VK	Velocity Unit Output Range:	0-200 kph
Serial #:	65521	Direction Voltage Output Range:	0-1V
Previous Cal/Audit Date:	March 20, 2018	Direction Unit Output Range:	0-360 DEG

Wind Calibrator Information

Calibrator I.D. and Expiry Date: RM Young 18802 id# CA03309 expires October 3, 2019

Wind Speed Audit Data ****+/- 2% of the average correction factor is the limit****

RPM	Wind Speed Generated kph	Clockwise Wind Speed kph	Counter Clockwise Wind Speed kph	Correction Factor
0	0	0.1	0.1	-
1000	18.4	18.4	18.4	1.002
2000	36.9	36.8	36.9	1.000
3000	55.3	55.2	55.2	1.002
4000	73.7	73.6	73.6	1.002
5000	92.2	92.0	92.0	1.002
6000	110.6	110.4	110.4	1.002
7000	129.0	128.8	128.7	1.002
8000	147.4	147.2	147.2	1.002
9000	165.9	165.5	165.6	1.002
10000	184.3	183.9	183.9	1.002
The audit meets AMD requirements.			Average Correction Factor=	1.002

Wind Direction Audit Data ****+/- 3° of the absolute average degrees difference for all points is the limit****

Generated Wind Direction 0-360 (Up)	Generated Wind Direction 360-0 (Down)	Indicated Wind Direction 0-360 (Up)	Indicated Wind Direction 360-0 (Down)	Degrees Difference 0-360 (Up)	Degrees Difference 360-0 (Down)	Average Absolute Degrees Difference
0	355	355	353	5.0	2.1	3.6
30	330	27	328	2.6	1.8	2.2
60	300	58	299	2.2	1.1	1.7
90	270	88	270	1.9	0.3	1.1
120	240	119	240	1.4	0.1	0.8
150	210	149	210	0.6	0.2	0.4
180	180	180	179	0.4	0.6	0.5
210	150	210	149	-0.2	0.9	0.5
240	120	240	119	0.0	1.3	0.6
270	90	271	88	-0.6	1.8	1.2
300	60	300	58	0.3	1.8	1.1
330	30	328	27	2.1	2.6	2.4
355	0	353	355	2.4	4.7	3.5
The audit meets AMD requirements.			Average Absolute Degrees Difference=		1.5	

Comments:

Physical inspection completed. No issues. Completed at Edm shop.

Company Maxxam Operator: Tom Bourque

Calibrator:				Flow Measurement Device:			
Make/Model	<u>API 700</u>			Make/Model	<u>N/A</u>		
Serial Number	<u>690</u>			Serial Number	<u>N/A</u>		
Last Verification Date	<u>March 2018</u>			Temperature (°C)	<u>24.4 C</u>		
NO Cylinder S/N	<u>EY0000769</u>			Barometric Pressure	<u>699 mmHg</u>		
NO [PPM]	<u>51.1</u>	NOx [PPM]	<u>51.2</u>				
Expiry Date	<u>December 2019</u>						

Dilution Flow (sccm)					
Pt. #1	<u>5000</u>	Pt. #2	<u>5000</u>	Pt. #3	<u>5000</u>
Gas Flow (sccm)					
Pt. #1	<u>80</u>	Pt. #2	<u>40</u>	Pt. #3	<u>20</u>

Calibrator Flow (sccm)		Calculated Conc.(ppm)		Indicated Conc.(ppm)			% Difference vs Audit Gas	
Dilution	Gas	NO	NOx	NO	NO ₂	NOx	NO	NOx
5000	0.0	0.000	0.000	0.000	-0.001	-0.001	Limit ± 10%	
5083	80.0	0.804	0.806	0.802	-0.011	0.791	0%	-2%
5044	40.0	0.405	0.406	0.403	-0.006	0.397	-1%	-2%
5022	20.0	0.204	0.204	0.202	-0.004	0.198	-1%	-2%
Absolute Average Percent Difference							1%	2%

LINEAR REGRESSION ANALYSIS *y=mx+b (where x=calculated concentration, y=indicated concentration)*

<u>NO</u>	<u>LIMITS</u>	<u>NOx</u>
Correlation= 1.0000	≥ 0.990	Correlation= 1.0000
m (Slope)= 0.9974	0.90-1.10	m (Slope)= 0.9833
b (Intercept % of FS)= -0.0592	± 3% F.S.	b (Intercept % of FS)= -0.1772

Flow	O ₃ Conc	NO Decrease	NO	NO ₂	NOX	% Diff. Vs Audit gas	
5083	0.000	0.000	0.802	-0.011	0.791	NO ₂	% Diff. Limit
5083	0.500	0.518	0.284	0.488	0.771	-4%	± 10%
5083	0.300	0.323	0.479	0.294	0.774	-6%	± 10%
5083	0.150	0.167	0.635	0.142	0.777	-8%	± 10%
						6%	± 10%

LINEAR REGRESSION ANALYSIS *y=mx+b (where x=calculated concentration, y=indicated concentration)*

<u>NO₂</u>	<u>LIMITS</u>	
Correlation= 0.9998	≥ 0.995	Big shift down in NOx when entering GPT function. Possible flow change.
m (Slope)= 0.9649	0.90-1.10	
b (Intercept % of FS)= -1.4907	± 3% F.S.	

AENV Standards Audit Calibrator	NO _x Analyzer
Make/Model <u>Teco 146i</u>	Make/Model <u>Teco 42i</u>
Serial/AMU Number <u>AMU 1809</u>	Serial/AMU Number <u>AMU 2265</u>
SRM Gas Cylinder No. <u>APEX1236646</u>	Last Calibration Date <u>April 15, 2019</u>
Cylinder Conc. (ppm) <u>50.04</u>	Full Scale (ppm) <u>1.0</u>
	Cylinder Gas Expiry Date <u>June 2021</u>

COMMENTS: With ZAG Teledyne 701 Maxxam ID 11986.

Auditor: Al Clark Date: April 16, 2019
 Operator Signature: Location: McIntyre Center Edmonton

Company Maxxam Operator: Tom Bourque

Calibrator:				Flow Measurement Device:			
Make/Model	<u>Sabio 2010</u>			Make/Model	<u>N/A</u>		
Serial Number	<u>11900613</u>			Serial Number	<u>N/A</u>		
Last Verification Date	<u>August 2018</u>			Temperature (°C)	<u>24.4 C</u>		
NO Cylinder S/N	<u>EY0000769</u>			Barometric Pressure	<u>699 mmHg</u>		
NO [PPM]	<u>51.1</u>	NOx [PPM]	<u>51.2</u>				
Expiry Date	<u>December 2019</u>						

Dilution Flow (sccm)					
Pt. #1	<u>5000</u>	Pt. #2	<u>5000</u>	Pt. #3	<u>5000</u>
Gas Flow (sccm)					
Pt. #1	<u>80</u>	Pt. #2	<u>40</u>	Pt. #3	<u>20</u>

Calibrator Flow (sccm)		Calculated Conc.(ppm)		Indicated Conc.(ppm)			% Difference vs Audit Gas	
Dilution	Gas	NO	NOx	NO	NO ₂	NOx	NO	NOx
5000	0.0	0.000	0.000	0.000	-0.002	-0.002	Limit ± 10%	
5080	80.0	0.805	0.806	0.815	-0.007	0.808	1%	0%
5041	40.0	0.405	0.406	0.414	-0.004	0.410	2%	1%
5019	20.0	0.204	0.204	0.210	-0.004	0.206	3%	2%
Absolute Average Percent Difference							2%	1%

LINEAR REGRESSION ANALYSIS *y=mx+b (where x=calculated concentration, y=indicated concentration)*

NO	LIMITS	NOx
Correlation= 1.0000	≥ 0.990	Correlation= 1.0000
m (Slope)= 1.0117	0.90-1.10	m (Slope)= 1.0039
b (Intercept % of FS)= 0.2171	± 3% F.S.	b (Intercept % of FS)= -0.0020

Flow	O ₃ Conc	NO Decrease	NO	NO ₂	NOX	% Diff. Vs Audit gas	
5080	0.000	0.000	0.815	-0.009	0.806	NO ₂	% Diff. Limit
5080	1.400	0.517	0.298	0.511	0.809	1%	± 10%
5080	0.900	0.308	0.507	0.299	0.806	0%	± 10%
5080	0.500	0.140	0.675	0.130	0.805	-1%	± 10%
						0%	± 10%

LINEAR REGRESSION ANALYSIS *y=mx+b (where x=calculated concentration, y=indicated concentration)*

NO ₂	LIMITS
Correlation= 1.0000	≥ 0.995
m (Slope)= 1.0062	0.90-1.10
b (Intercept % of FS)= -1.0004	± 3% F.S.

AENV Standards Audit Calibrator	NO _x Analyzer
Make/Model <u>Teco 146i</u>	Make/Model <u>Teco 42i</u>
Serial/AMU Number <u>AMU 1809</u>	Serial/AMU Number <u>AMU 2265</u>
SRM Gas Cylinder No. <u>APEX1236646</u>	Last Calibration Date <u>April 15, 2019</u>
Cylinder Conc. (ppm) <u>50.04</u>	Full Scale (ppm) <u>1.0</u>
	Cylinder Gas Expiry Date <u>June 2021</u>

COMMENTS: With ZAG Teledyne 701 Maxxam ID: 11981. Should have Maxxam ID 11986 instead

Auditor: Al Clark Date: April 16, 2019
 Operator Signature: *Al Clark* Location: McIntyre Center Edmonton



Calibration Gas Audit

Single Component Cylinder Gas

File No. 2017-493CGA

Company: Maxxam Operator's Name: Mike
 Cylinder #: EY0001003 Concentration PPM: 9.55 Tolerance(%) 2 Certified By: Praxair
 Expiry Date: October 2020

Reference Calibrator and Gas:
 Make/Model: Sabio 2010
 Serial Number: AMU 2092
 Last Verification Date: January 17, 2018
 Gas Type: H2S Conc. 20.43
 Cylinder Number: CAL015272
 Expiry Date: January 2019

Flow Measurement Device:
 Make/Model: Mesa Defender 530
 Serial Number: H-153961 / L-153874
 Temp. °C: 23.0 C
 B.P.: 697 mmHg

Reference Analyzer:
 Make/Model: Teco 450i Serial/AMU Number: 1980
 Instrument Settings: Zero: 12.9 Span: 0.955 Range: 0.1
 Last Calibration: Date: Jan 17/18 C.F. 1.000 Done By: Al Clark

Calibrator Flows (sccm)		Indicated Concentration (PPM)	Gas Flow/ Dilution Flow	Concentration Factor	Cylinder Concentration
Dilution	Gas				
5000	0.0	0.0000			
5051	39.6	0.0753	0.00784	127.551	9.60
5028	20.2	0.0387	0.00402	248.911	9.63
5033	10.5	0.0198	0.00209	479.333	9.49
Average Cylinder Concentration:					9.58

Previous Stated Concentration PPM: 9.55

Percent variance from Stated: 0

Meets Manufacturer Tolerance. Use manufacturers stated concentration COMMENTS: Used AEP regulator
 <=5% Outside Manufacturer Tolerance. Use manufacturers concentration
 > 5% Outside Manufacturer Tolerance. **DO NOT USE** this cylinder

Auditor: Al Clark

Date: January 18, 2018

Operator Signature: *Al Clark*

Location: McIntyre Center Edmonton



Calibration Gas Audit

CH₄ / C₃H₈ Cylinder Gas

File No. 2019-393CGA

Company: Maxxam **Operators name:** Alex
Cylinder #: LL29687 **Conc CH₄ (PPM)** 598/198 **Tolerance (%)** 1 **Certified By:** Praxair
Expiry Date: August 2026

Reference Calibrator and Gas:				Flow Measurement Device:	
Make/Model	<u>Sabio 2010</u>	Make/Model	<u>Mesa Definer 220</u>		
Serial Number	<u>AMU 2092</u>	Serial Number	<u>H-133034 / L-132702</u>		
Last Verification Date	<u>January 14, 2019</u>	Temp. °C	<u>23.8 C</u>		
Gas Type	<u>CH₄</u>	Conc.	<u>990.4</u>		
Cylinder Number	<u>05604875</u>	Expiry Date	<u>July 2021</u>		
Gas Type	<u>C₃H₈</u>	Conc.	<u>246.5</u>		
Cylinder Number	<u>XF003845B</u>	Expiry Date	<u>July 2022</u>		

Reference Analyzer:
Make/Model Teco 55i **Serial/AMU Number:** 2221
Instrument Settings **Zero:** N/A **Span:** N/A **Range:** 20.0
Last Calibration: **Date:** Jan 14/19 **C.F.** 1.000 **Done By:** Shea Beaton

Calibrator Flows (scem)		Indicated Conc. (ppm)		Gas Flow/ Dilution Flow	Concentration Factor	Cylinder Concentration	
Dilution	Gas	CH ₄	C ₃ H ₈			CH ₄	C ₃ H ₈
5000	0.0	0.00	0.00	0.02	51.48	603	209
3990	77.5	11.71	11.18	0.02	51.48	603	209
3976	39.1	5.87	5.71	0.01	101.69	597	211
3986	20.0	2.96	2.86	0.01	199.30	590	207
Average Cylinder Concentration:						597	209

<u>CH₄</u>	<u>C₃H₈</u>
Previous Stated Concentration PPM: <u>598</u>	Previous Stated Concentration PPM: <u>198</u>
Percent variance from Stated: <u>0</u>	Percent variance from Stated: <u>6</u>

Cylinder gas tolerances based on CH₄ only
 Meets Manufacturer Tolerance. Use manufacturers stated concentration **COMMENTS:**
 <=5% Outside Manufacturer Tolerance. Use manufacturers concentration
 > 5% Outside Manufacturer Tolerance. **DO NOT USE** this cylinder

Auditor: Al Clark **Date:** January 15, 2019
Operator Signature: **Location:** McIntyre Center Edmonton



Calibration Gas Audit

NO Cylinder Gas

File No. 2019-391CGA

Company: Maxxam **Operators name:** Alex

Cylinder #: LL107918 Conc (PPM) 50.1/50.2 Tolerance (%) 1 Certified By: Praxair

Expiry Date: August 2026

Reference Calibrator and Gas:				Flow Measurement Device:	
Make/Model	<u>Teco 146i</u>			Make/Model	<u>Mesa Definer 220</u>
Serial Number	<u>AMU 1809</u>			Serial Number	<u>H-133034 / L-132702</u>
Last Verification Date	<u>January 14, 2019</u>			Temp. °C	<u>22.7 C</u>
Gas Type	<u>NO</u>	Conc.	<u>50.05</u>	B.P.	<u>707 mmHg</u>
Cylinder Number	<u>APEX1236645</u>				
Expiry Date	<u>June 2021</u>				

Reference Analyzer:

Make/Model Teco 42i Serial/AMU Number: 2268

Instrument Settings Zero: 9.2 Span: 1.223 Range: 1.0

Last Calibration: Date: Jan 14/19 C.F. 1.000 Done By: Al Clark

Calibrator Flows (sccm)		Indicated Conc. (ppm)		Gas Flow/ Dilution Flow	Concentration Factor	Cylinder Concentration	
Dilution	Gas	NO	NOX			NO	NOX
5000	0.0	0.000	0.000				
4898	78.1	0.792	0.793	0.016	62.714	49.7	49.7
4893	38.7	0.395	0.395	0.008	126.434	49.9	49.9
4894	19.3	0.195	0.195	0.004	253.575	49.4	49.4
Average Cylinder Concentration:						49.7	49.7

NO	NOx
Previous Stated Concentration PPM: <u>50.1</u>	Previous Stated Concentration PPM: <u>50.2</u>
Percent variance from Stated: <u>1</u>	Percent variance from Stated: <u>1</u>

Cylinder gas tolerances based on NO only

Meets Manufacturer Tolerance. Use manufacturers stated concentration **COMMENTS:**

< =5% Outside Manufacturer Tolerance. Use manufacturers concentration

> 5% Outside Manufacturer Tolerance. **DO NOT USE** this cylinder

Auditor: Al Clark Date: Janaury 15, 2019

Operator Signature: *Al Clark* Location: McIntyre Center Edmonton

End of Report



Lakeland Industry & Community Association

AUGUST 2019

Ambient Air Monitoring Calibration Report

- BONNYVILLE EAST STATION-

CAL-LICA-201908-01608

Station Operation and Maintenance:

Maxxam Analytics

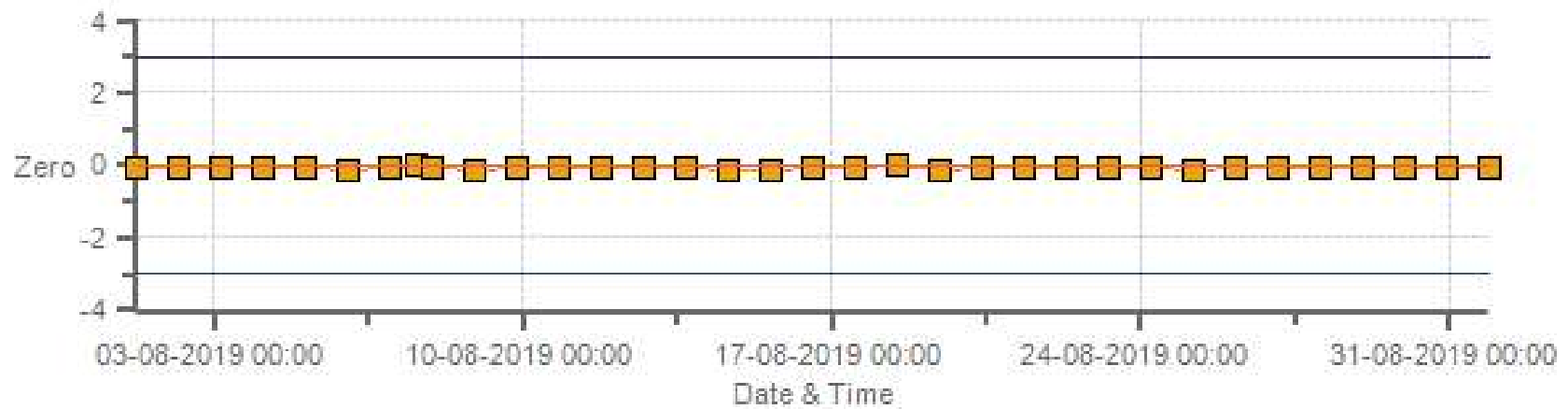
Data Validation and Report:

Maxxam Analytics

September 10, 2019

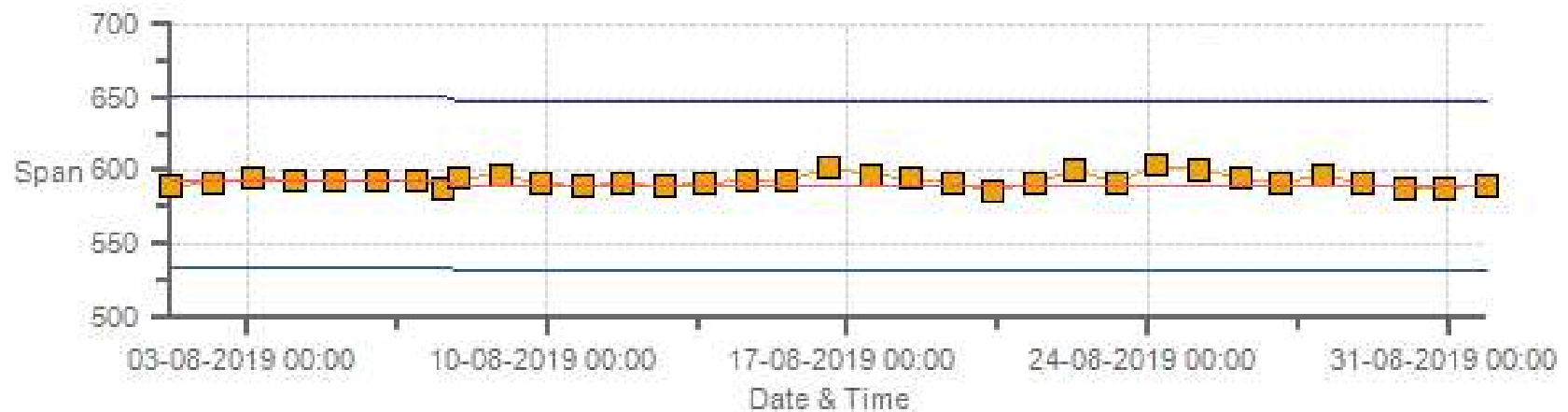
DAILY INTERNAL ZERO-SPAN CALIBRATION RECORDS

SO2 [ppb] Calibration: LICA Bonnyville-East Monthly: 08-2019 Type: Zero



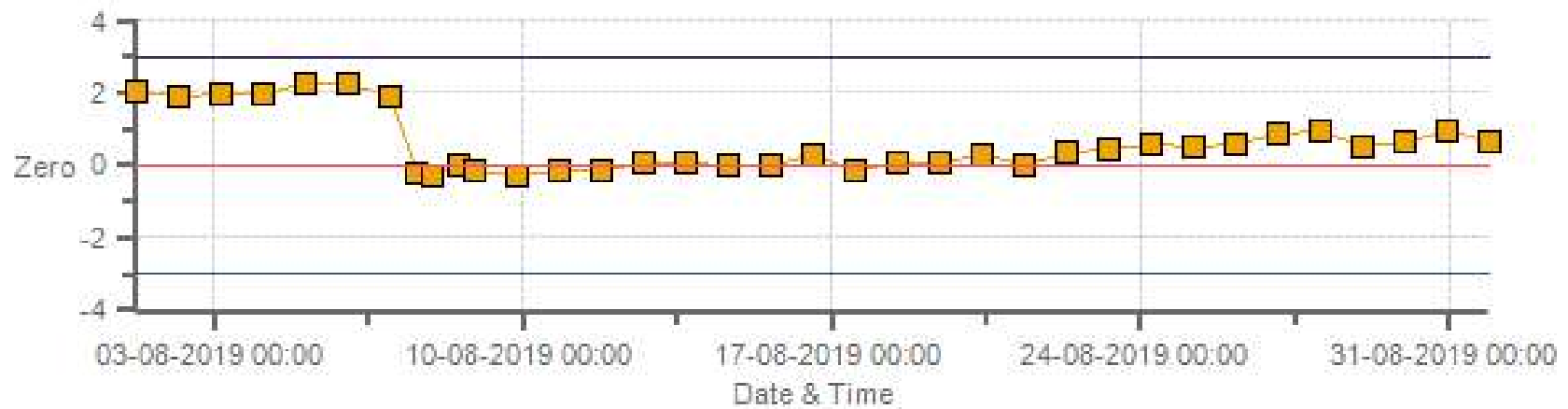
Zero Zero Ref Zero Low Zero High

SO2 [ppb] Calibration: LICA Bonnyville-East Monthly: 08-2019 Type: Span



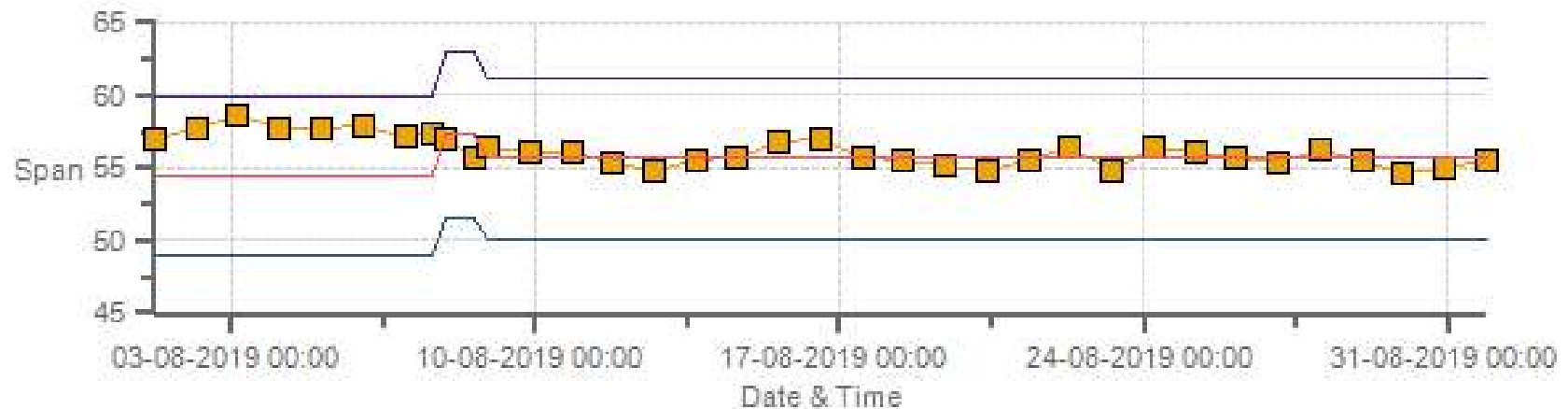
Span SpanRef Span Low Span High

H2S [ppb] Calibration: LICA Bonnyville-East Monthly: 08-2019 Type: Zero



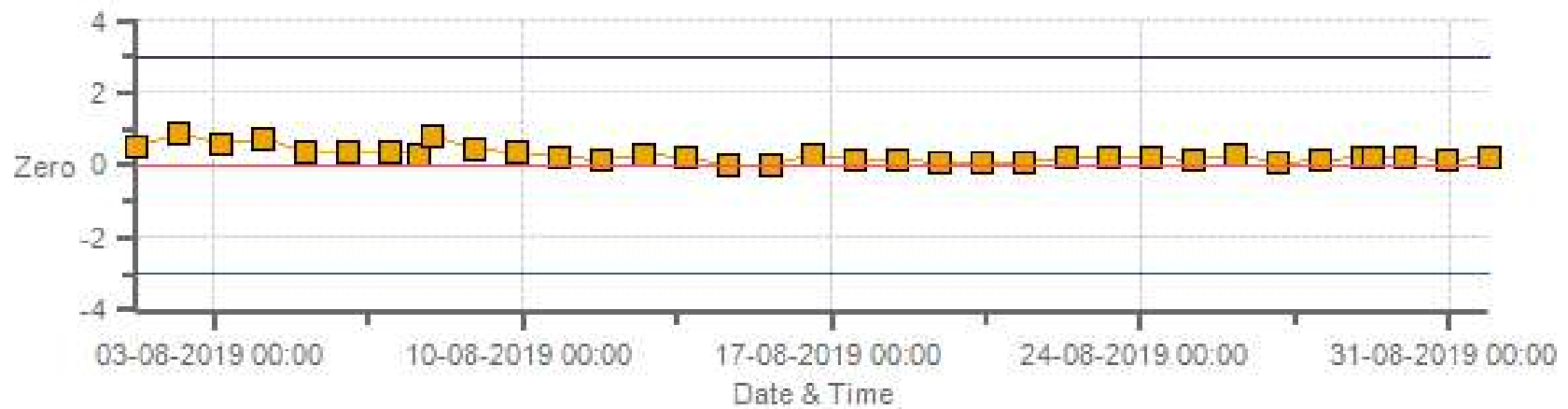
Zero Zero Ref Zero Low Zero High

H2S [ppb] Calibration: LICA Bonnyville-East Monthly: 08-2019 Type: Span



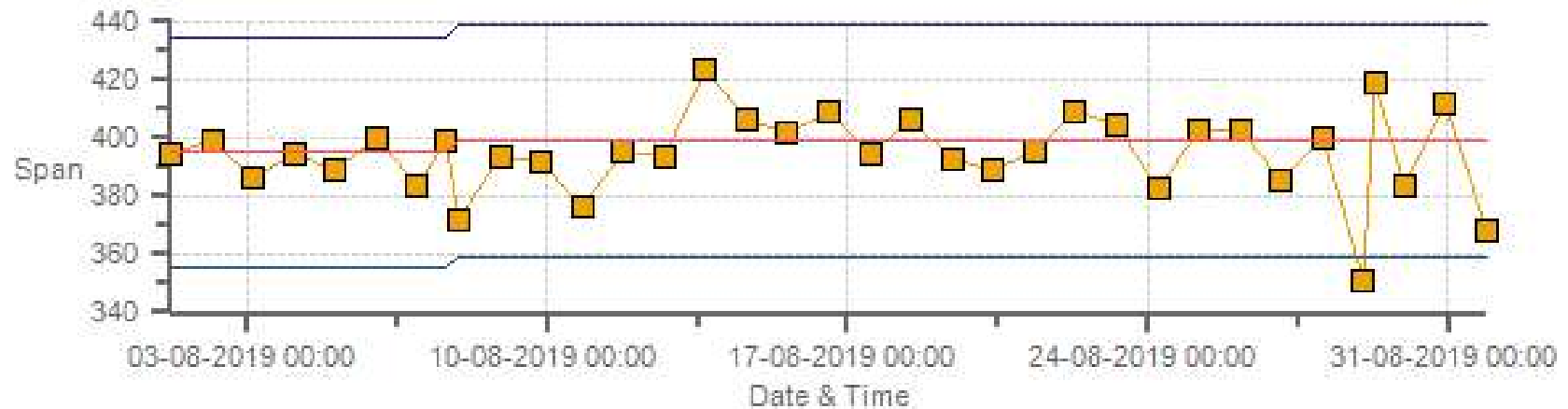
Span SpanRef Span Low Span High

NOx [ppb] Calibration: LICA Bonnyville-East Monthly: 08-2019 Type: Zero



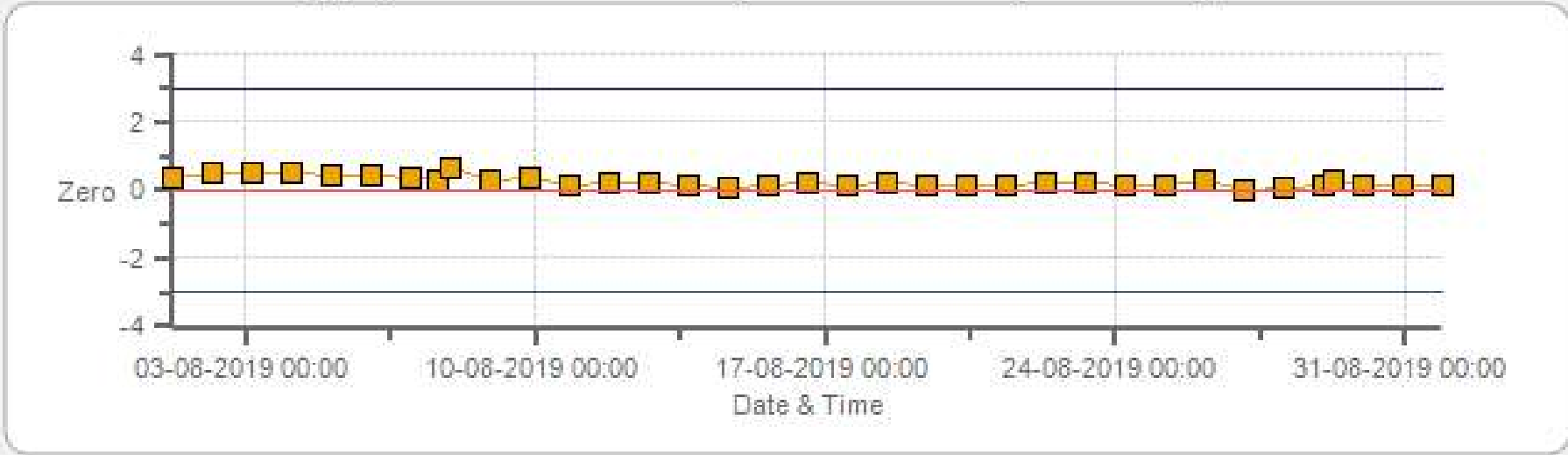
Zero Zero Ref Zero Low Zero High

NOx [ppb] Calibration: LICA Bonnyville-East Monthly: 08-2019 Type: Span



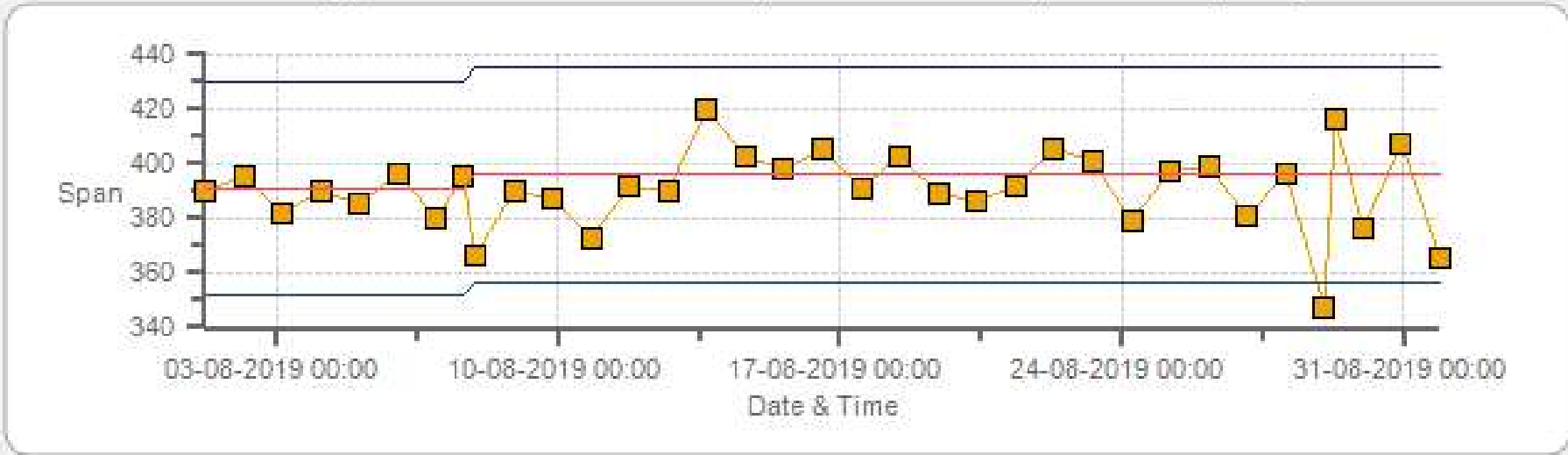
Span SpanRef Span Low Span High

NO2 [ppb] Calibration: LICA Bonnyville-East Monthly: 08-2019 Type: Zero



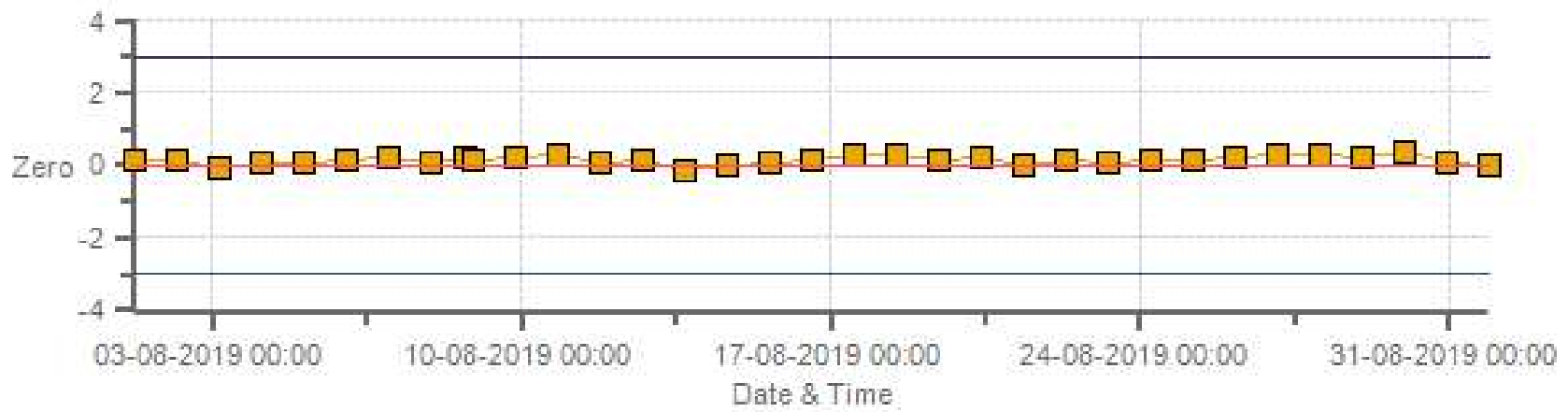
Zero Zero Ref Zero Low Zero High

NO2 [ppb] Calibration: LICA Bonnyville-East Monthly: 08-2019 Type: Span



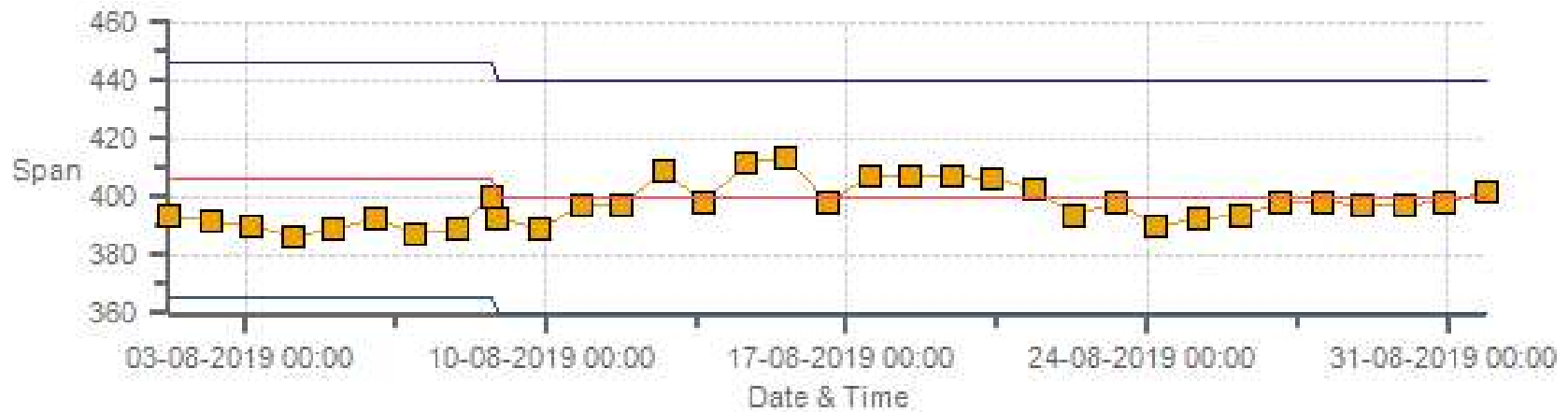
Span SpanRef Span Low Span High

O3 [ppb] Calibration: LICA Bonnyville-East Monthly: 08-2019 Type: Zero



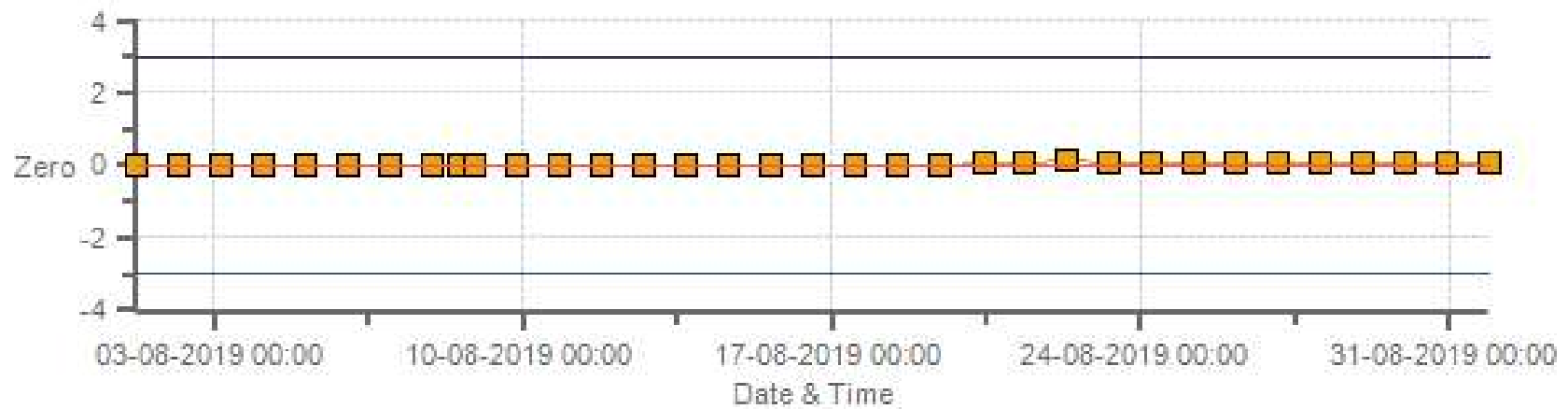
Zero Zero Ref Zero Low Zero High

O3 [ppb] Calibration: LICA Bonnyville-East Monthly: 08-2019 Type: Span



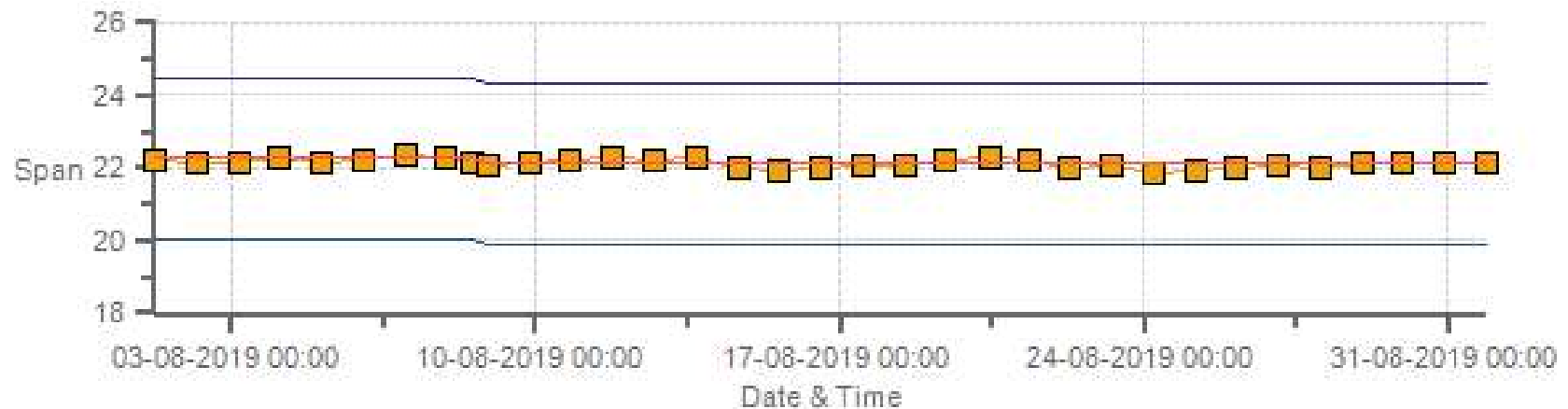
Span Span Ref Span Low Span High

THC [ppm] Calibration: LICA Bonnyville-East Monthly: 08-2019 Type: Zero



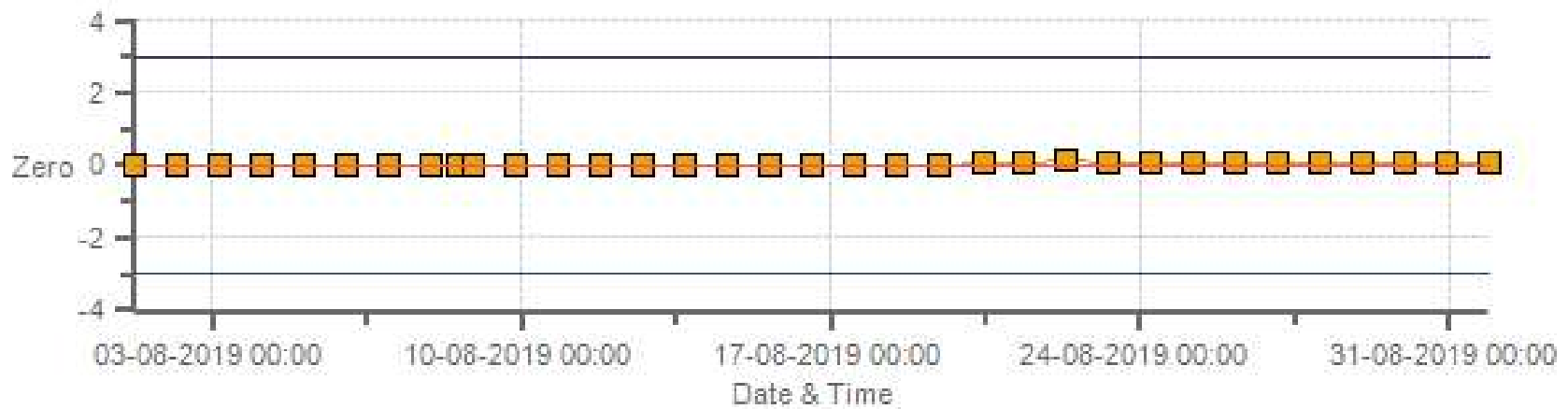
Zero Zero Ref Zero Low Zero High

THC [ppm] Calibration: LICA Bonnyville-East Monthly: 08-2019 Type: Span



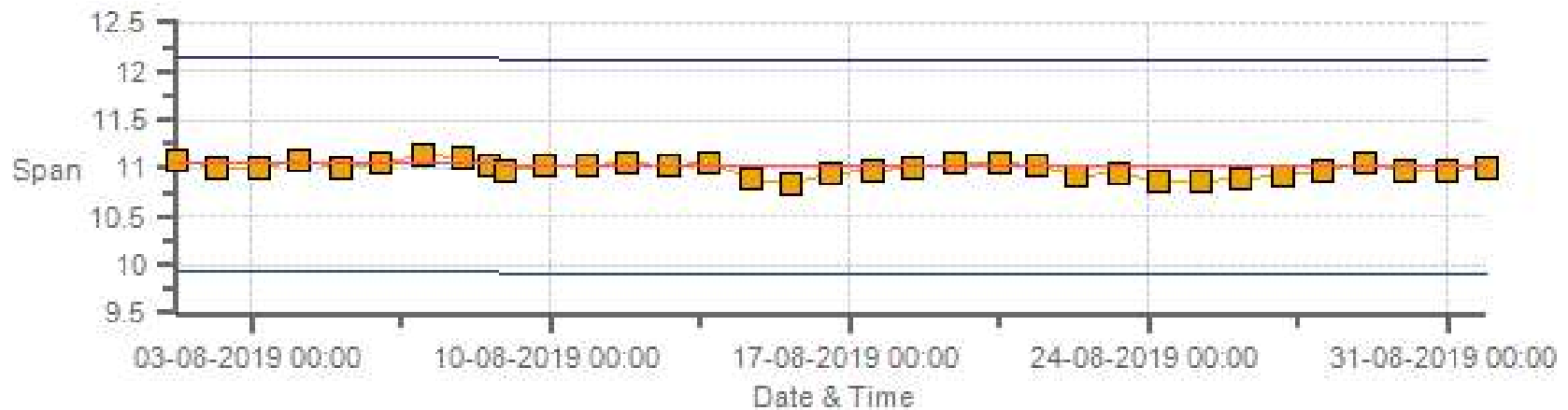
Span SpanRef Span Low Span High

CH4 [ppm] Calibration: LICA Bonnyville-East Monthly: 08-2019 Type: Zero



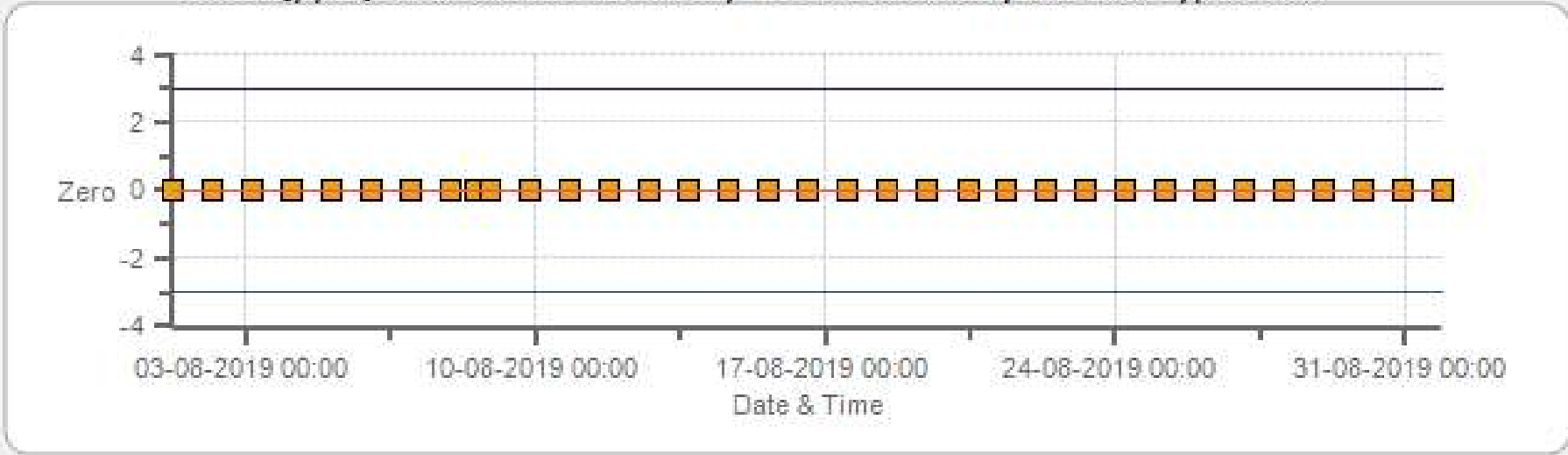
Zero Zero Ref Zero Low Zero High

CH4 [ppm] Calibration: LICA Bonnyville-East Monthly: 08-2019 Type: Span



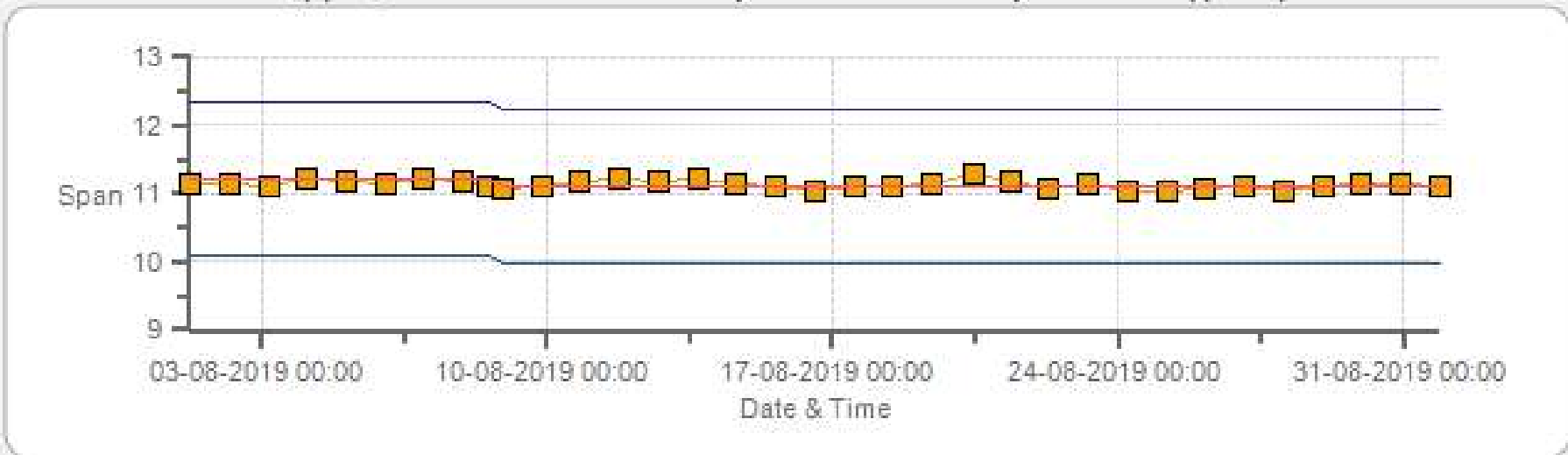
Span SpanRef Span Low Span High

NMHC [ppm] Calibration: LICA Bonnyville-East Monthly: 08-2019 Type: Zero



Zero Zero Ref Zero Low Zero High

NMHC [ppm] Calibration: LICA Bonnyville-East Monthly: 08-2019 Type: Span



Span SpanRef Span Low Span High

MULTI-POINT CALIBRATION RECORDS

SO2 Analyzer Calibration by Dilution



DATE:	07-Aug-2019	PREVIOUS CALIBRATION DATE:	08-Jul-2019
PARAMETER:	SO2	PREVIOUS CORRECTION FACTOR:	1.000
CLIENT:	LICA	TEMPERATURE (°C):	20.0
LOCATION:	Bonnyville - East	BAROMETRIC (mBar):	946
PURPOSE:	Routine	START TIME (MST):	10:08
PERFORMED BY:	Alex Yakupov	END TIME (MST):	14:03

ANALYZER:

MAKE/MODEL	Thermo 43I-TLE	RANGE	1000 ppb
SERIAL #	1180320043	FLOW (mL/min)	455
INITIAL		FINAL	
BKG/OFFSET	4.72	BKG/OFFSET	4.77
COEF/SLOPE	0.934	COEF/SLOPE	0.939
Expected (reference) Value	592	Expected (reference) Value	589

CALIBRATION SYSTEM:

CALIBRATOR:		ZERO AIR:	
MAKE:	API	MAKE:	Teledyne
MODEL:	700	MODEL:	T701
ID:	690	ID:	132
MFC CALIBRATION DATE:	16-Apr-2019	OXIDIZER ID:	n/a
CALIBRATION GAS:		FLOWMETERS (if applicable):	
CYLINDER ID:	LL 107918	HIGH ID	n/a
CONC (ppm):	49.50	EXPIRY DATE	n/a
CYLINDER (psi):	1300	LOW ID	n/a
EXPIRY DATE	20-Aug-2026	EXPIRY DATE	n/a

CALIBRATION PARAMETERS:

POINT	HIGH	MID	LOW
TARGET	780	380	190
RANGE	600 - 800	300 - 400	100 - 200

SCRUBBER CHECK (15 MINS; TRS/H2S ONLY):

START TIME:	n/a	SO2 Conc (ppb)	n/a
END TIME:	n/a	Analyzer Response (ppb)	n/a

CALIBRATION:

FLOW RATES (mL/min)			CONCENTRATION (ppb)			CORRECTION FACTOR	
DILUENT	GAS	TOTAL	ACTUAL	INDICATED		Initial	Final
				Initial	Final		
5000	77.80	5000	0.00	0	0	1.007	1.000
4922	77.80	5000	770.22	765	770	1.007	1.000
4962	37.90	5000	375.21	n/a	375	n/a	1.001
4981	18.90	5000	187.11	n/a	187	n/a	1.001

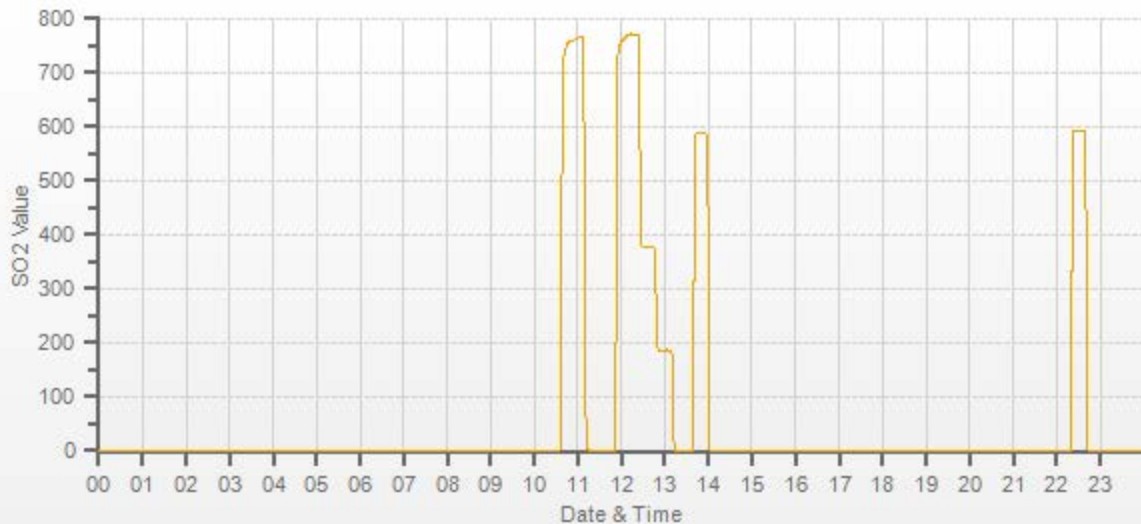
LINEAR REGRESSION ANALYSIS:

	CORRELATION	SLOPE	INTERCEPT
VALUE	1.000	1.000	0.0%

COMMENTS:

Sample inlet filter was changed.

SO2[ppb] Station: Bonnyville East Daily: 07-08-2019 Type: AVG 1 Min. [1 Min.]



CAL-LICA-201908-01608

H2S Analyzer Calibration by Dilution



DATE:	07-Aug-2019	PREVIOUS CALIBRATION DATE:	08-Jul-2019
PARAMETER:	H2S	PREVIOUS CORRECTION FACTOR:	1.000
CLIENT:	LICA	TEMPERATURE (°C):	20.0
LOCATION:	Bonnyville - East	BAROMETRIC (mBar):	946
PURPOSE:	Routine	START TIME (MST):	10:08
PERFORMED BY:	Alex Yakupov	END TIME (MST):	14:49

ANALYZER:

MAKE/MODEL	Thermo 450i	RANGE	100 ppb
SERIAL #	CM 17360002	FLOW (mL/min)	955
INITIAL		FINAL	
BKG/OFFSET	26.9	BKG/OFFSET	30.1
COEF/SLOPE	1.139	COEF/SLOPE	1.178
Expected (reference) Value	54.5	Expected (reference) Value	57.3

CALIBRATION SYSTEM:

CALIBRATOR:		ZERO AIR:	
MAKE:	SABIO	MAKE:	Teledyne
MODEL:	2010 D	MODEL:	T701
ID:	11900613	ID:	132
MFC CALIBRATION DATE:	16-Apr-2019	OXIDIZER ID:	n/a
CALIBRATION GAS:		FLOWMETERS (if applicable):	
CYLINDER ID:	EY 0001003	HIGH ID	n/a
CONC (ppm):	9.55	EXPIRY DATE	n/a
CYLINDER (psi):	600	LOW ID	n/a
EXPIRY DATE	20-Oct-2020	EXPIRY DATE	n/a

CALIBRATION PARAMETERS:

POINT	HIGH	MID	LOW
TARGET	78	38	19
RANGE	60 - 80	30 - 40	10 - 20

SCRUBBER CHECK (15 MINS; TRS/H2S ONLY):

START TIME:	10:16	SO2 Conc (ppb)	780
END TIME:	10:31	Analyzer Response (ppb)	0.0

CALIBRATION:

FLOW RATES (mL/min)			CONCENTRATION (ppb)			CORRECTION FACTOR	
DILUENT	GAS	TOTAL	ACTUAL	INDICATED		Initial	Final
				Initial	Final		
7500	61.20	7500	0.00	2	0	1.004	1.000
7439	61.20	7500	77.93	79.6	77.9	1.004	1.000
7470	29.80	7500	37.95	n/a	38	n/a	0.999
7485	14.90	7500	18.97	n/a	19	n/a	0.999

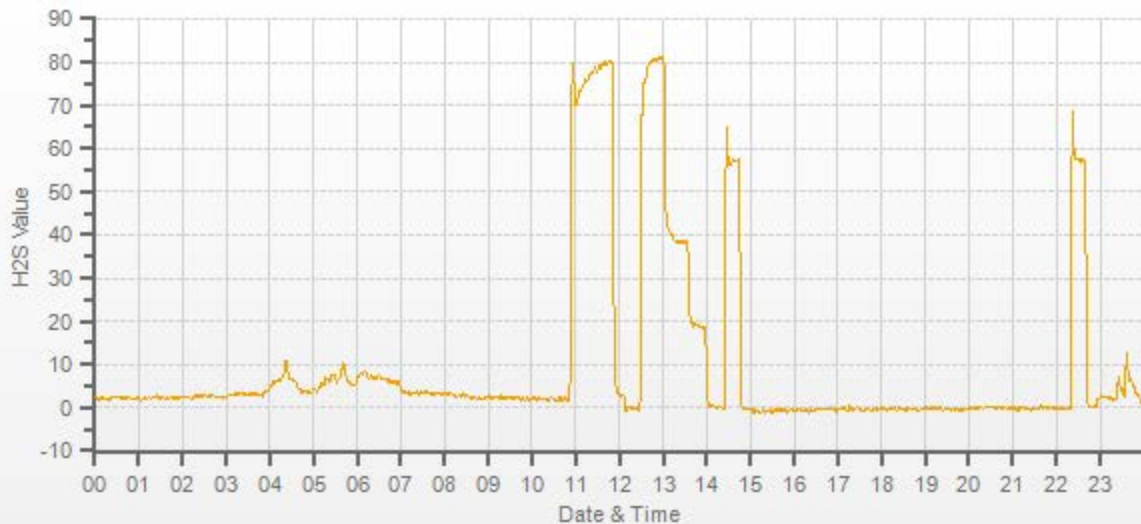
LINEAR REGRESSION ANALYSIS:

	CORRELATION	SLOPE	INTERCEPT
VALUE	1.000	1.000	0.0%

COMMENTS:

Sample inlet filter was changed.

H2S[ppb] Station: Bonnyville East Daily: 07-08-2019 Type: AVG 1 Min. [1 Min.]



CAL-LICA-201908-01608

H2S Analyzer Calibration by Dilution



DATE:	08-Aug-2019	PREVIOUS CALIBRATION DATE:	07-Aug-2019
PARAMETER:	H2S	PREVIOUS CORRECTION FACTOR:	1.000
CLIENT:	LICA	TEMPERATURE (°C):	22.0
LOCATION:	Bonnyville - East	BAROMETRIC (mBar):	934
PURPOSE:	Repeat	START TIME (MST):	09:28
PERFORMED BY:	Alex Yakupov	END TIME (MST):	13:47

ANALYZER:

MAKE/MODEL	Thermo 450i	RANGE	100 ppb
SERIAL #	CM 17360002	FLOW (mL/min)	955
INITIAL		FINAL	
BKG/OFFSET	30.1	BKG/OFFSET	29.2
COEF/SLOPE	1.178	COEF/SLOPE	1.15
Expected (reference) Value	57.3	Expected (reference) Value	55.7

CALIBRATION SYSTEM:

CALIBRATOR:		ZERO AIR:	
MAKE:	SABIO	MAKE:	Teledyne
MODEL:	2010 D	MODEL:	T701
ID:	11900613	ID:	132
MFC CALIBRATION DATE:	16-Apr-2019	OXIDIZER ID:	n/a
CALIBRATION GAS:		FLOWMETERS (if applicable):	
CYLINDER ID:	EY 0001003	HIGH ID	n/a
CONC (ppm):	9.55	EXPIRY DATE	n/a
CYLINDER (psi):	600	LOW ID	n/a
EXPIRY DATE	20-Oct-2020	EXPIRY DATE	n/a

CALIBRATION PARAMETERS:

POINT	HIGH	MID	LOW
TARGET	78	38	19
RANGE	60 - 80	30 - 40	10 - 20

SCRUBBER CHECK (15 MINS; TRS/H2S ONLY):

START TIME:	n/a	SO2 Conc (ppb)	780
END TIME:	n/a	Analyzer Response (ppb)	0.0

CALIBRATION:

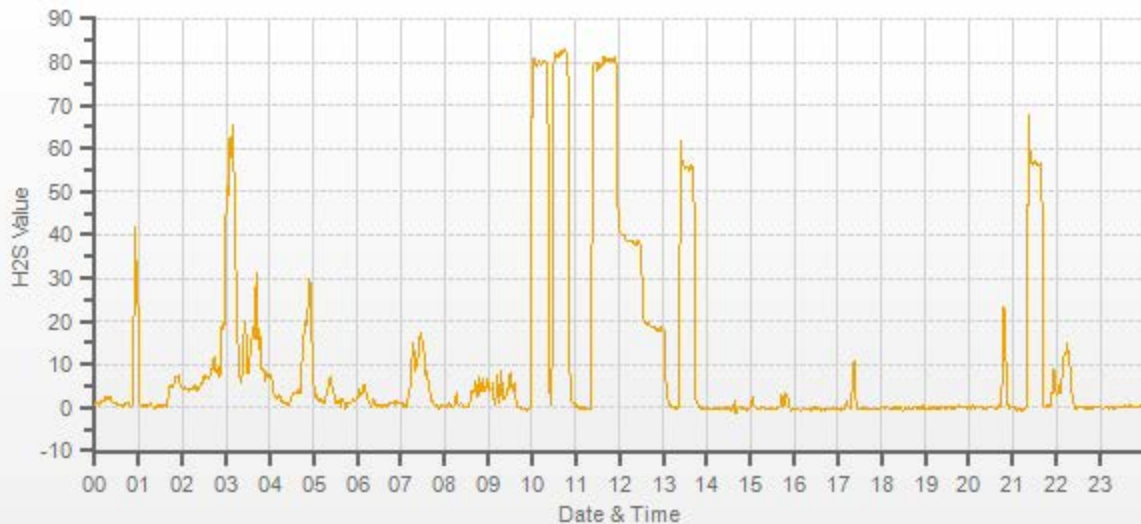
FLOW RATES (mL/min)			CONCENTRATION (ppb)			CORRECTION FACTOR	
DILUENT	GAS	TOTAL	ACTUAL	INDICATED		Initial	Final
				Initial	Final		
7500	61.20	7500	0.00	0	0	0.962	1.000
7439	61.20	7500	77.93	81	77.9	0.962	1.000
7470	29.80	7500	37.95	n/a	38	n/a	0.999
7485	14.90	7500	18.97	n/a	18.6	n/a	1.020

LINEAR REGRESSION ANALYSIS:

	CORRELATION	SLOPE	INTERCEPT
VALUE	1.000	1.001	-0.1%

COMMENTS:

The repeat calibration was required as the 20 min stabilizing period requirement for the as-found high point was exceeded during the Aug 7 calibration. This is because the calibration gas had settled from lack of use, and therefore required longer time to reach certified concentration. To demonstrate that the analyzer is fine, the repeat calibration will be conducted. Because the gas cylinder was used just a day ago, the required concentration was reached faster this time. As-found High starts at 10:28.



NOx Calibration by Dilution/Gas-Phase Titration



CALIBRATION:				ANALYZER:			
DATE:	07-Aug-2019	PREVIOUS CALIBRATION DATE:	08-Jul-2019	MAKE/MODEL:	Thermo 42i	PREVIOUS CF.	
CLIENT:	LICA	TEMPERATURE (°C):	20.0	SERIAL #:	1180930027	NOx	1.000
LOCATION:	Bonnyville - East	BAROMETRIC (mBar):	946.00	FLOW (mL/min)	687	NO	0.999
PURPOSE:	Routine	START TIME (MST):	10:08	RANGE (ppb)	1000	NO2	1.000
PERFORMED BY:	Alex Yakupov	END TIME (MST):	15:41	GPT FOR O3?		No	

CALIBRATOR:		ZERO AIR:		CALIBRATION GAS:		FLOWMETERS (if applicable):	
MAKE:	API	MAKE:	Teledyne	CYLINDER ID:	LL107918	HIGH ID:	n/a
MODEL:	700	MODEL:	700	NO/NOx (PPM):	50.1 50.2	HIGH EXPIRY:	n/a
ID:	690	ID:	132	CYLINDER (psi):	1300	LOW ID:	n/a
MFC CALIBRATION DATE:	16-Apr-2019	OXIDIZER ID:	n/a	EXPIRY DATE	20-Aug-2026	LOW EXPIRY:	n/a

CALIBRATION SETTINGS:							
INITIAL	NOx	NO	NO2	FINAL	NOx	NO	NO2
BKG/OFFSET:	7	7	n/a	BKG/OFFSET:	7	7	n/a
SLOPE/COEF/CE:	1	1	1.0	SLOPE/COEF/CE:	1	1	1.0

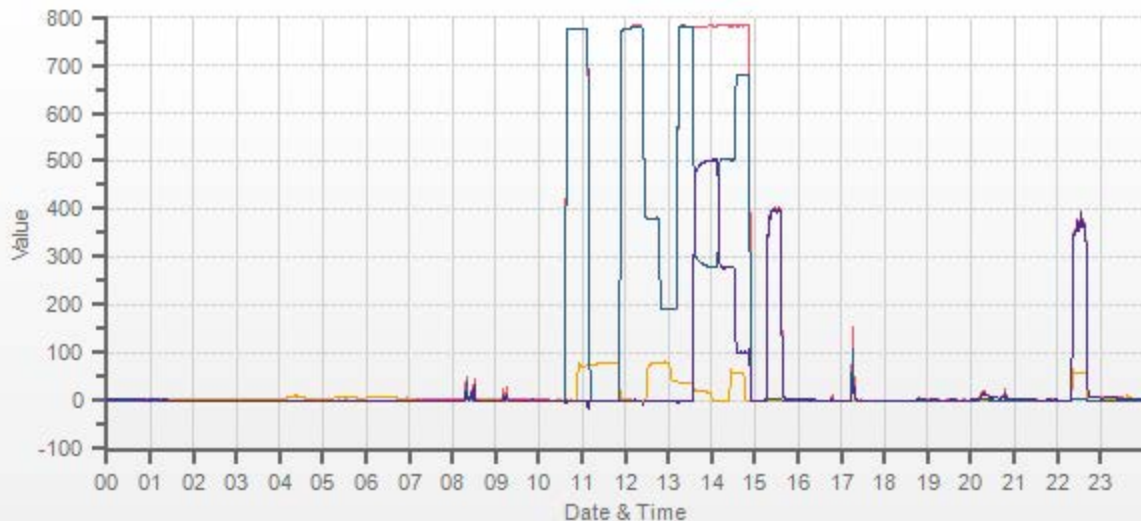
EXPECTED (REFERENCE) VALUE:							
INITIAL	NOx	NO	NO2	FINAL	NOx	NO	NO2
	395	4	391.0		399	4	396.0

POINT	NO TARGET (PPB)	NO2 TARGET (PPB)	NO2 RANGE	O3 POINT
HIGH	780	500	470-540	n/a
MID	380	275	235-310	n/a
LOW	190	90	80-115	n/a
EXTRA 1	n/a	n/a	n/a	n/a

FLOW RATE			CONCENTRATION (ppb)									CORRECTION FACTOR (CF.)					
(mL/min)			CALCULATED			INITIAL INDICATED			FINAL INDICATED			INITIAL			FINAL		
DILUENT	GAS	TOTAL	NO	NOx	NO2	NO	NOx	NO2	NO	NOx	NO2	NO	NOx	NO2	NO	NOx	NO2
5000	77.80	5000	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	1.006	1.008	0.999	1.000	0.999	1.000
4922	77.80	5000	779.6	781.1	1.6	775.0	775.0	0.0	780.0	781.0	1.0	1.006	1.008	0.999	1.000	0.999	1.000
4962	37.90	5000	379.8	380.5	0.8	n/a	n/a	n/a	381.0	381.0	0.0	n/a	n/a	0.997	0.999	0.999	1.000
4981	18.90	5000	189.4	189.8	0.4	n/a	n/a	n/a	191.0	191.0	0.0	n/a	n/a	0.992	0.993	0.993	1.000

Point	CALIBRATOR			INDICATED (ppb)			NO DROP / O3 Conc (ppb)	NO2 GAIN (ppb)	NO2 Corr. FACTOR	CONV. EFFICIENCY
	GAS	TOTAL	O3 SETPOINT	NO	NOx	NO2				
REFERENCE	77.80	5000	0	780.0	781.0	1.0	499	499	1.000	100.00%
AS-FOUND HIGH	77.80	5000	490	281.0	781.0	500.0	499	499	1.000	100.00%
ADJUSTED HIGH	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a
MID	77.80	5000	270	502.0	781.0	279.0	278	278	1.000	100.00%
LOW	77.80	5000	100	679.0	782.0	102.0	101	101	1.000	100.00%
NO2 adjustment not required.									AVERAGE:	100.00%

LINEAR REGRESSION ANALYSIS:				COMMENTS:
	CORRELATION	SLOPE	INTERCEPT	
NO	1.000	1.000	0.08%	
NOx	1.000	1.000	0.06%	
NO2	1.000	1.000	0.00%	



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H2S[ppb] NOx[ppb] NO[ppb] NO2[ppb]

Methane/Non-Methane Analyzer Calibration by Dilution



CALIBRATION:				ANALYZER:			
DATE:	08-Aug-2019	PREVIOUS CALIBRATION DATE:	09-Jul-2019	VALUE	MAKE/MODEL	SERIAL	FLOW (mL/min)
CLIENT:	LICA	TEMPERATURE (°C):	20.0		Thermo 55i	1180320044	1050
LOCATION:	Bonnyville - East	BAROMETRIC (mBar):	934	PARAMETER:	CH4	NMHC	THC
PURPOSE:	Routine	START TIME (MST):	09:28	RANGE (ppm):	20	20	40
PERFORMED BY:	Alex Yakupov	END TIME (MST):	13:15	PREVIOUS CF:	1.000	1.000	1.000

CALIBRATION SYSTEM:

CALIBRATOR:		ZERO AIR:		CALIBRATION GAS:		FLOWMETERS (if applicable):	
MAKE:	API	MAKE:	Teledyne	CYLINDER ID:	LL 29687	HIGH ID:	n/a
MODEL:	700	MODEL:	T701	CH ₄ /C ₃ H ₈ (ppm):	598.0 198.0	HIGH EXPIRY:	n/a
ID:	690	ID:	132	CYLINDER (psi):	1300	LOW ID:	n/a
MFC CALIBRATION DATE:	16-Apr-2019	OXIDIZER ID:	115	EXPIRY DATE	01-Aug-2026	LOW EXPIRY:	n/a

CALIBRATION PARAMETERS:

POINT (CH ₄ /NMHC)	HIGH	MID	LOW	CH ₄ EQUIVILANCE	
TARGET	14	7	3.5	C ₃ H ₈ as CH ₄	544.5
RANGE	12 - 16	6 - 8	2 - 4	THC as CH ₄	1142.5

EXPECTED (REFERENCE) VALUE:

INITIAL	CH ₄	NMHC	THC	FINAL	CH ₄	NMHC	THC
	11.05	11.22	22.27		11.02	11.11	22.12

CALIBRATION:

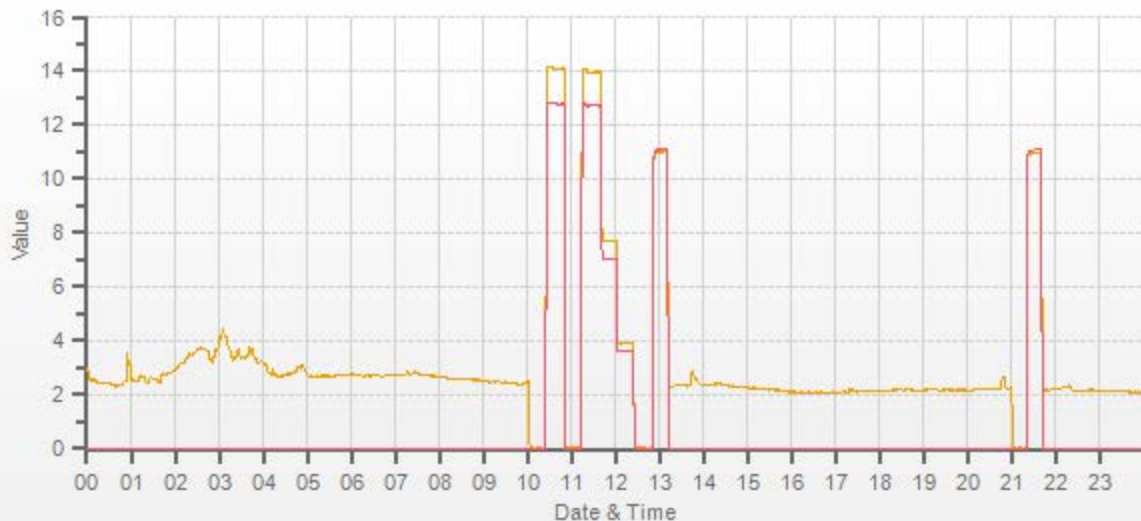
FLOW RATE			CONCENTRATION (PPM)									CORRECTION FACTOR (CF.)					
(mL/min)			CALCULATED			INITIAL INDICATED			FINAL INDICATED			INITIAL			FINAL		
DILUENT	GAS	TOTAL	CH ₄	NMHC	THC	CH ₄	NMHC	THC	CH ₄	NMHC	THC	CH ₄	NMHC	THC	CH ₄	NMHC	THC
3000	X	3000	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	X	X	X	X	X	X
2930	70.00	3000	13.95	12.71	26.66	14.09	12.76	26.86	13.95	12.71	26.67	0.990	0.996	0.992	1.000	1.000	1.000
2962	38.00	3000	7.57	6.90	14.47	n/a	n/a	n/a	7.68	7.03	14.71	n/a	n/a	n/a	0.986	0.981	0.984
2981	19.00	3000	3.79	3.45	7.24	n/a	n/a	n/a	3.91	3.60	7.51	n/a	n/a	n/a	0.969	0.958	0.963

LINEAR REGRESSION ANALYSIS:

	CORRELATION	SLOPE	INTERCEPT
CH ₄	1.000	0.998	0.3%
NMHC	1.000	1.000	0.4%
THC	1.000	0.998	0.4%

COMMENTS:

Sample inlet filter was changed.



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CH4[ppm] NMHC[ppm]

Ozone Calibration by Photometer (Varying UV Lamp)



DATE:	08-Aug-2019	PREVIOUS CALIBRATION DATE:	09-Jul-2019
PARAMETER:	Ozone	PREVIOUS CORRECTION FACTOR:	1.000
CLIENT:	LICA	TEMPERATURE (°C):	21.0
LOCATION:	Bonnyville - East	BAROMETRIC (mBar):	934
PURPOSE:	Routine	START TIME (MST):	13:37
PERFORMED BY:	Alex Yakupov	END TIME (MST):	17:44

ANALYZER:

MAKE/MODEL	Thermo 49i	RANGE	500 ppb
SERIAL #	1002240372	FLOW (mL/min)	1516
INITIAL		FINAL	
BKG/OFFSET	-0.3	BKG/OFFSET	-0.3
COEF/SLOPE	1.033	COEF/SLOPE	1.028
Expected (reference) Value	406	Expected (reference) Value	400

CALIBRATION SYSTEM:

CALIBRATOR:		ZERO AIR:	
MAKE:	SABIO	MAKE:	Teledyne
MODEL:	2010 D	MODEL:	T701
ID:	11900613	ID:	132
MFC CALIBRATION DATE:	16-Apr-2019	OXIDIZER ID:	n/a
CALIBRATION METHOD:		Photometer (Varying UV Lamp)	
GPT DATE:	n/a	GPT END TIME:	n/a

CALIBRATION PARAMETERS:

POINT	HIGH	MID	LOW
RANGE	300 - 400	150 - 200	50 - 100

CALIBRATION:

FLOW RATES (mL/min)			CONCENTRATION (ppb)			CORRECTION FACTOR	
DILUENT	GAS	TOTAL	ACTUAL	INDICATED		Initial	Final
				Initial	Final		
5000	5000	5000	0.0	0.0	0.0	1.000	1.000
5000	5000	5000	380.0	380.0	380.0	1.000	1.000
5000	5000	5000	180.0	n/a	180.0	n/a	1.000
5000	5000	5000	61.0	n/a	61.0	n/a	1.000

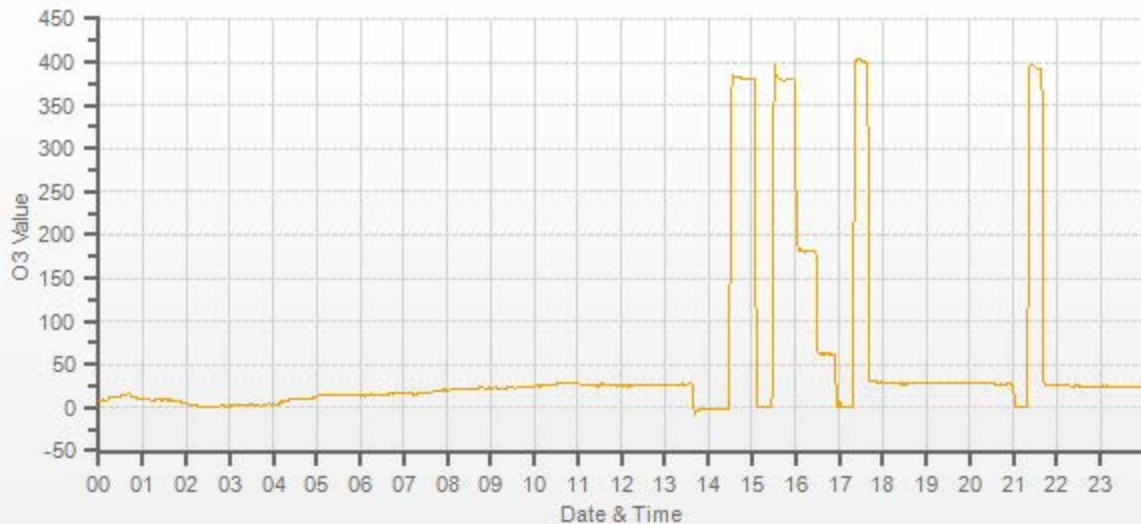
LINEAR REGRESSION ANALYSIS:

	CORRELATION	SLOPE	INTERCEPT
VALUE	1.000	1.000	0.0%

COMMENTS:

n/a

O3[ppb] Station: Bonnyville East Daily: 08-08-2019 Type: AVG 1 Min. [1 Min.]



CAL-LICA-201908-01608

Thermo 5030i SHARP Monitor Monthly Check

Date: August 28, 2019
Company: LICA
Station Name/Location: Bonnyville - East
Previous Audit Date: July 24, 2019
Parameter: PM 2.5

Performed By/Reviewer: Alex Yakupov | Adewunmi Adekanmbi
Start Time (mst): 9:22
End Time (mst): 10:29
Calibration Purpose: routine monthly
Weather Conditions: Overcast

SHARP 5030i Information and Status:

Serial Number: CM 17071016 **Filter Tape Counter:** 1

Reference Standards:

		Air Flow			
	Manometer	Orifice	Pressure:		Temp / RH:
Make:	Dwyer	chinook	Fisher Scientific		Fisher Scientific
Model:	475 Mk. III	CHN0901	FB61291		11-661-7B 11745843
Serial Number:	#3	#2	130168457		160348895
Calibration Expiration Date:	January 17, 2020	January 31, 2020	January 17, 2020		June 19, 2020

Ambient Temperature (°C)				Range	Action
	Reference	SHARP	Difference	< ± 2°C	OK
#1	13.10	12.5	0.6	2-3 °C	Recalibrate
				> 3°C	Fail

Ambient Relative Humidity (%RH)				Range	Action
As Found:					
	Reference	SHARP	Difference	< ± 2 %RH	OK
#1	73.10	74.0	-0.9	2-5 %RH	Recalibrate
				> 5 %RH	Fail

Barometric Pressure (mmHg)				Range	Action
As Found:					
	Reference	SHARP	Difference	< ± 10 mmHg	OK
#1	705.0	705.2	-0.2	10-12 mmHg	Recalibrate
				> 12 mmHg	Fail

Flow Audit (L/min)						Range	Action
As Found:						< ± 4%	OK
	Reference	SHARP		% Difference	0.100120144	4-5%	Recalibrate
#1	16.65	16.67				>5%	Fail
#2	16.64	16.66					
#3	16.65	16.66					
Average	16.65	16.66					

Leak Check (L/min)						
Without Leak Check Adapter			With leak Check Adapter			
	Reference	SHARP	Difference	Reference	SHARP	Difference
#1	16.65	16.67	-0.02	16.61	16.64	-0.03
LEAK RATE:						-0.01
<i>Leak Limit: 0.80 L/min</i>						



Meteorological Sensor Audit/Calibration

Location Information

Company:	LICA	Performed By:	Alex Yakupov
Audit Location:	Bonnyville East	Reviewed By:	Rob Fisher
Audit Date:	October 24, 2018	Start/End Time (mst):	12:56 / 14:01
Calibration Purpose:	installation	Weather Conditions:	Mainly sunny

Wind Sensor Information

Sensor ID Data:		Sensor Outputs:	
Sensor Make:	RM Young	Velocity Voltage Output Range:	0-1 V
Sensor Model:	05305VK	Velocity Unit Output Range:	0-200 km/h
Serial #:	56778	Direction Voltage Output Range:	0-1 V
Previous Cal/Audit Date:	n/a or unknown	Direction Unit Output Range:	0-360 degrees

Wind Calibrator Information

Calibrator I.D. and Expiry Date: Model 18860-90/18802 SN: CA 4744, calibrated on May 18, 2018

Wind Speed Audit Data ****+/- 2% of the average correction factor is the limit****

RPM	Wind Speed Generated kph	Clockwise Wind Speed kph	Counter Clockwise Wind Speed kph	Correction Factor
0	0	0.0	0.0	-
1000	18.4	18.4	18.4	1.000
2000	36.9	36.8	36.8	1.003
3000	55.3	55.4	55.4	0.998
4000	73.7	73.8	73.8	0.999
5000	92.2	92.2	92.2	1.000
6000	110.6	110.6	110.6	1.000
7000	129.0	129.0	129.0	1.000
8000	147.4	147.4	147.4	1.000
9000	165.9	165.8	166.0	1.000
10000	184.3	184.0	184.4	1.001
The audit meets AMD requirements.			Average Correction Factor=	1.000

Wind Direction Audit Data ****+/- 3° of the absolute average degrees difference for all points is the limit****

Generated Wind Direction 0-360 (Up)	Generated Wind Direction 360-0 (Down)	Indicated Wind Direction 0-360 (Up)	Indicated Wind Direction 360-0 (Down)	Degrees Difference 0-360 (Up)	Degrees Difference 360-0 (Down)	Average Absolute Degrees Difference
0	355	0	355	0.0	0.0	0.0
30	330	30	331	0.0	-0.6	0.3
60	300	60	301	0.0	-0.8	0.4
90	270	90	271	0.0	-1.0	0.5
120	240	121	241	-0.6	-0.8	0.7
150	210	151	211	-0.8	-1.3	1.1
180	180	181	182	-0.9	-1.8	1.4
210	150	211	152	-1.0	-2.3	1.7
240	120	240	121	-0.3	-1.4	0.9
270	90	270	92	0.0	-2.0	1.0
300	60	300	62	0.1	-1.6	0.9
330	30	330	31	-0.1	-1.0	0.6
355	0	355	0	0.0	0.3	0.2
The audit meets AMD requirements.			Average Absolute Degrees Difference=		0.7	

Comments:

Company Maxxam Operator: Tom Bourque

Calibrator:				Flow Measurement Device:			
Make/Model	<u>API 700</u>			Make/Model	<u>N/A</u>		
Serial Number	<u>690</u>			Serial Number	<u>N/A</u>		
Last Verification Date	<u>March 2018</u>			Temperature (°C)	<u>24.4 C</u>		
NO Cylinder S/N	<u>EY0000769</u>			Barometric Pressure	<u>699 mmHg</u>		
NO [PPM]	<u>51.1</u>	NOx [PPM]	<u>51.2</u>				
Expiry Date	<u>December 2019</u>						

Dilution Flow (sccm)					
Pt. #1	<u>5000</u>	Pt. #2	<u>5000</u>	Pt. #3	<u>5000</u>
Gas Flow (sccm)					
Pt. #1	<u>80</u>	Pt. #2	<u>40</u>	Pt. #3	<u>20</u>

Calibrator Flow (sccm)		Calculated Conc.(ppm)		Indicated Conc.(ppm)			% Difference vs Audit Gas	
Dilution	Gas	NO	NOx	NO	NO ₂	NOx	NO	NOx
5000	0.0	0.000	0.000	0.000	-0.001	-0.001	Limit ± 10%	
5083	80.0	0.804	0.806	0.802	-0.011	0.791	0%	-2%
5044	40.0	0.405	0.406	0.403	-0.006	0.397	-1%	-2%
5022	20.0	0.204	0.204	0.202	-0.004	0.198	-1%	-2%
Absolute Average Percent Difference							1%	2%

LINEAR REGRESSION ANALYSIS *y=mx+b (where x=calculated concentration, y=indicated concentration)*

<u>NO</u>		<u>LIMITS</u>		<u>NOx</u>
Correlation=	1.0000	≥ 0.990		Correlation= 1.0000
m (Slope)=	0.9974	0.90-1.10		m (Slope)= 0.9833
b (Intercept % of FS)=	-0.0592	± 3% F.S.		b (Intercept % of FS)= -0.1772

Flow	O ₃ Conc	NO Decrease	NO	NO ₂	NOX	% Diff. Vs Audit gas	
5083	0.000	0.000	0.802	-0.011	0.791	NO ₂	% Diff. Limit
5083	0.500	0.518	0.284	0.488	0.771	-4%	± 10%
5083	0.300	0.323	0.479	0.294	0.774	-6%	± 10%
5083	0.150	0.167	0.635	0.142	0.777	-8%	± 10%
						6%	± 10%

LINEAR REGRESSION ANALYSIS *y=mx+b (where x=calculated concentration, y=indicated concentration)*

<u>NO₂</u>		<u>LIMITS</u>	
Correlation=	0.9998	≥ 0.995	Big shift down in NOx when entering GPT function.
m (Slope)=	0.9649	0.90-1.10	Possible flow change.
b (Intercept % of FS)=	-1.4907	± 3% F.S.	

AENV Standards		NO _x Analyzer	
Audit Calibrator			
Make/Model	<u>Teco 146i</u>	Make/Model	<u>Teco 42i</u>
Serial/AMU Number	<u>AMU 1809</u>	Serial/AMU Number	<u>AMU 2265</u>
SRM Gas Cylinder No.	<u>APEX1236646</u>	Last Calibration Date	<u>April 15, 2019</u>
Cylinder Conc. (ppm)	<u>50.04</u>	Full Scale (ppm)	<u>1.0</u>
		Cylinder Gas Expiry Date	<u>June 2021</u>

COMMENTS: With ZAG Teledyne 701 Maxxam ID 11986.

Auditor: Al Clark Date: April 16, 2019
 Operator Signature: Location: McIntyre Center Edmonton

Company <u>Maxxam</u>		Operator: <u>Tom Bourque</u>	
Calibrator:		Flow Measurement Device:	
Make/Model	<u>Sabio 2010</u>	Make/Model	<u>N/A</u>
Serial Number	<u>11900613</u>	Serial Number	<u>N/A</u>
Last Verification Date	<u>August 2018</u>	Temperature (°C)	<u>24.4 C</u>
NO Cylinder S/N	<u>EY0000769</u>	Barometric Pressure	<u>699 mmHg</u>
NO [PPM]	<u>51.1</u>	NOx [PPM]	<u>51.2</u>
Expiry Date	<u>December 2019</u>		

Dilution Flow (sccm)			
Pt. #1	<u>5000</u>	Pt. #2	<u>5000</u>
Pt. #3	<u>5000</u>		
Gas Flow (sccm)			
Pt. #1	<u>80</u>	Pt. #2	<u>40</u>
Pt. #3	<u>20</u>		

Calibrator Flow (sccm)		Calculated Conc.(ppm)		Indicated Conc.(ppm)			% Difference vs Audit Gas	
Dilution	Gas	NO	NOx	NO	NO ₂	NOx	NO	NOx
5000	0.0	0.000	0.000	0.000	-0.002	-0.002	Limit ± 10%	
5080	80.0	0.805	0.806	0.815	-0.007	0.808	1%	0%
5041	40.0	0.405	0.406	0.414	-0.004	0.410	2%	1%
5019	20.0	0.204	0.204	0.210	-0.004	0.206	3%	2%
Absolute Average Percent Difference							2%	1%

LINEAR REGRESSION ANALYSIS				<i>y=mx+b (where x=calculated concentration, y=indicated concentration)</i>			
NO		LIMITS		NO_x			
Correlation=	1.0000	≥ 0.990		Correlation=	1.0000		
m (Slope)=	1.0117	0.90-1.10		m (Slope)=	1.0039		
b (Intercept % of FS)=	0.2171	± 3% F.S.		b (Intercept % of FS)=	-0.0020		

Flow	O ₃ Conc	NO Decrease	NO	NO ₂	NOX	% Diff. Vs Audit gas	
5080	0.000	0.000	0.815	-0.009	0.806	NO ₂	% Diff. Limit
5080	1.400	0.517	0.298	0.511	0.809	1%	± 10%
5080	0.900	0.308	0.507	0.299	0.806	0%	± 10%
5080	0.500	0.140	0.675	0.130	0.805	-1%	± 10%
						0%	± 10%

LINEAR REGRESSION ANALYSIS				<i>y=mx+b (where x=calculated concentration, y=indicated concentration)</i>			
NO₂		LIMITS					
Correlation=	1.0000	≥ 0.995					
m (Slope)=	1.0062	0.90-1.10					
b (Intercept % of FS)=	-1.0004	± 3% F.S.					

AENV Standards		NO_x Analyzer	
Audit Calibrator			
Make/Model	<u>Teco 146i</u>	Make/Model	<u>Teco 42i</u>
Serial/AMU Number	<u>AMU 1809</u>	Serial/AMU Number	<u>AMU 2265</u>
SRM Gas Cylinder No.	<u>APEX1236646</u>	Last Calibration Date	<u>April 15, 2019</u>
Cylinder Conc. (ppm)	<u>50.04</u>	Full Scale (ppm)	<u>1.0</u>
		Cylinder Gas Expiry Date	<u>June 2021</u>

COMMENTS: With ZAG Teledyne 701 Maxxam ID: 11981. Should have Maxxam ID 11986 instead

Auditor: Al Clark Date: April 16, 2019
 Operator Signature: *Al Clark* Location: McIntyre Center Edmonton



Calibration Gas Audit

Single Component Cylinder Gas

File No. 2019-392CGA

Company: Maxxam **Operator's Name:** Alex

Cylinder #: LL107918 Concentration PPM: 49.5 Tolerance(%) 1 Certified By: Praxair

Expiry Date: August 2026

Reference Calibrator and Gas:	Flow Measurement Device:
Make/Model: <u>Sabio 2010</u>	Make/Model: <u>Mesa Definer 220</u>
Serial Number: <u>AMU 2092</u>	Serial Number: <u>H-133034 / L-132702</u>
Last Verification Date: <u>January 14, 2019</u>	Temp. °C: <u>22.7 C</u>
Gas Type: <u>SO2</u> Conc. <u>50.26</u>	B.P. <u>707 mmHg</u>
Cylinder Number: <u>FF28071</u>	
Expiry Date: <u>March 2020</u>	

Reference Analyzer:

Make/Model: Teco 43i Serial/AMU Number: 2195

Instrument Settings: Zero: 11.8 Span: 0.980 Range: 1.0

Last Calibration: Date: Jan 14/19 C.F. 1.000 Done By: Shea Beaton

Calibrator Flows (scem)		Indicated Concentration (PPM)	Gas Flow/ Dilution Flow	Concentration Factor	Cylinder Concentration
Dilution	Gas				
5000	0.0	0.000	0.0000	0.0000	0.0000
4898	78.1	0.790	0.01595	62.714	49.5
4893	38.7	0.389	0.00791	126.434	49.2
4894	19.3	0.192	0.00394	253.575	48.7
Average Cylinder Concentration:					49.1

Previous Stated Concentration PPM: 49.5

Percent variance from Stated: 1

Meets Manufacturer Tolerance. Use manufacturers stated concentration **COMMENTS:** _____

< =5% Outside Manufacturer Tolerance. Use manufacturers concentration _____

> 5% Outside Manufacturer Tolerance. **DO NOT USE** this cylinder _____

Auditor: Al Clark

Operator Signature:

Date: January 15, 2019

Location: McIntyre Center Edmonton



Calibration Gas Audit

Single Component Cylinder Gas

File No. 2017-493CGA

Company: Maxxam Operator's Name: Mike
 Cylinder #: EY0001003 Concentration PPM: 9.55 Tolerance(%) 2 Certified By: Praxair
 Expiry Date: October 2020

Reference Calibrator and Gas:
 Make/Model: Sabio 2010
 Serial Number: AMU 2092
 Last Verification Date: January 17, 2018
 Gas Type: H2S Conc. 20.43
 Cylinder Number: CAL015272
 Expiry Date: January 2019

Flow Measurement Device:
 Make/Model: Mesa Defender 530
 Serial Number: H-153961 / L-153874
 Temp. °C: 23.0 C
 B.P.: 697 mmHg

Reference Analyzer:
 Make/Model: Teco 450i Serial/AMU Number: 1980
 Instrument Settings: Zero: 12.9 Span: 0.955 Range: 0.1
 Last Calibration: Date: Jan 17/18 C.F. 1.000 Done By: Al Clark

Calibrator Flows (sccm)		Indicated Concentration (PPM)	Gas Flow/ Dilution Flow	Concentration Factor	Cylinder Concentration
Dilution	Gas				
5000	0.0	0.0000			
5051	39.6	0.0753	0.00784	127.551	9.60
5028	20.2	0.0387	0.00402	248.911	9.63
5033	10.5	0.0198	0.00209	479.333	9.49
Average Cylinder Concentration:					9.58

Previous Stated Concentration PPM: 9.55

Percent variance from Stated: 0

Meets Manufacturer Tolerance. Use manufacturers stated concentration COMMENTS: Used AEP regulator
 <=5% Outside Manufacturer Tolerance. Use manufacturers concentration
 > 5% Outside Manufacturer Tolerance. **DO NOT USE** this cylinder

Auditor: Al Clark

Date: January 18, 2018

Operator Signature: *Al Clark*

Location: McIntyre Center Edmonton



Calibration Gas Audit

NO Cylinder Gas

File No. 2019-391CGA

Company: Maxxam **Operators name:** Alex

Cylinder #: LL107918 Conc (PPM) 50.1/50.2 Tolerance (%) 1 Certified By: Praxair

Expiry Date: August 2026

Reference Calibrator and Gas:				Flow Measurement Device:	
Make/Model	<u>Teco 146i</u>			Make/Model	<u>Mesa Definer 220</u>
Serial Number	<u>AMU 1809</u>			Serial Number	<u>H-133034 / L-132702</u>
Last Verification Date	<u>January 14, 2019</u>			Temp. °C	<u>22.7 C</u>
Gas Type	<u>NO</u>	Conc.	<u>50.05</u>	B.P.	<u>707 mmHg</u>
Cylinder Number	<u>APEX1236645</u>				
Expiry Date	<u>June 2021</u>				

Reference Analyzer:

Make/Model Teco 42i Serial/AMU Number: 2268

Instrument Settings Zero: 9.2 Span: 1.223 Range: 1.0

Last Calibration: Date: Jan 14/19 C.F. 1.000 Done By: Al Clark

Calibrator Flows (sccm)		Indicated Conc. (ppm)		Gas Flow/ Dilution Flow	Concentration Factor	Cylinder Concentration	
Dilution	Gas	NO	NOX			NO	NOX
5000	0.0	0.000	0.000				
4898	78.1	0.792	0.793	0.016	62.714	49.7	49.7
4893	38.7	0.395	0.395	0.008	126.434	49.9	49.9
4894	19.3	0.195	0.195	0.004	253.575	49.4	49.4
Average Cylinder Concentration:						49.7	49.7

NO	NOx
Previous Stated Concentration PPM: <u>50.1</u>	Previous Stated Concentration PPM: <u>50.2</u>
Percent variance from Stated: <u>1</u>	Percent variance from Stated: <u>1</u>

Cylinder gas tolerances based on NO only

Meets Manufacturer Tolerance. Use manufacturers stated concentration **COMMENTS:**

< =5% Outside Manufacturer Tolerance. Use manufacturers concentration

> 5% Outside Manufacturer Tolerance. **DO NOT USE** this cylinder

Auditor: Al Clark Date: Janaury 15, 2019

Operator Signature: *Al Clark* Location: McIntyre Center Edmonton



Calibration Gas Audit

CH₄ / C₃H₈ Cylinder Gas

File No. 2019-393CGA

Company: <u>Maxxam</u>	Operators name: <u>Alex</u>
Cylinder #: <u>LL29687</u> Conc CH ₄ (PPM) <u>598/198</u> Tolerance (%) <u>1</u> Certified By: <u>Praxair</u>	
Expiry Date: <u>August 2026</u>	

Reference Calibrator and Gas: Make/Model <u>Sabio 2010</u> Serial Number <u>AMU 2092</u> Last Verification Date <u>January 14, 2019</u> Gas Type <u>CH₄</u> Conc. <u>990.4</u> Cylinder Number <u>05604875</u> Expiry Date <u>July 2021</u> Gas Type <u>C₃H₈</u> Conc. <u>246.5</u> Cylinder Number <u>XF003845B</u> Expiry Date <u>July 2022</u>	Flow Measurement Device: Make/Model <u>Mesa Definer 220</u> Serial Number <u>H-133034 / L-132702</u> Temp. °C <u>23.8 C</u> B.P. <u>707 mmHg</u>
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Reference Analyzer:			
Make/Model <u>Teco 55i</u>	Serial/AMU Number: <u>2221</u>		
Instrument Settings <u>Zero: N/A</u>	Span: <u>N/A</u>	Range: <u>20.0</u>	
Last Calibration: <u>Date: Jan 14/19</u>	C.F. <u>1.000</u>	Done By: <u>Shea Beaton</u>	

Calibrator Flows (scem)		Indicated Conc. (ppm)		Gas Flow/ Dilution Flow	Concentration Factor	Cylinder Concentration	
Dilution	Gas	CH ₄	C ₃ H ₈			CH ₄	C ₃ H ₈
5000	0.0	0.00	0.00	0.02	51.48	603	209
3990	77.5	11.71	11.18	0.02	51.48	603	209
3976	39.1	5.87	5.71	0.01	101.69	597	211
3986	20.0	2.96	2.86	0.01	199.30	590	207
Average Cylinder Concentration:						597	209

<u>CH₄</u>	<u>C₃H₈</u>
Previous Stated Concentration PPM: <u>598</u>	<u>198</u>
Percent variance from Stated: <u>0</u>	<u>6</u>

Cylinder gas tolerances based on CH₄ only

Meets Manufacturer Tolerance. Use manufacturers stated concentration **COMMENTS:**

< =5% Outside Manufacturer Tolerance. Use manufacturers concentration

> 5% Outside Manufacturer Tolerance. **DO NOT USE** this cylinder

Auditor: Al Clark Date: January 15, 2019

Operator Signature: Location: McIntyre Center Edmonton

End of Report