



Lakeland Industry & Community Association

APRIL 2019

Monthly Ambient Air Quality Monitoring Report

LICA-201904

Operation and Maintenance:

Maxxam Analytics

Data Validation and Report:

Maxxam Analytics

June 6, 2019

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Lakeland Industry & Community Association

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June 6, 2019

Alberta Environment and Parks (AEP)

11th Floor, Oxbridge Place

9820 106 Street

Edmonton, AB, T5K 2J6

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

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

Enclosed is the April 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, Technical Program Manager

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This report has been prepared by Maxxam Analytics, and has been reviewed and submitted by Michael Bisaga & Lily Lin of the LICA Airshed

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	Maxxam Analytics	Maxxam Analytics
Intermittent (VOCs/PAHs)	Maxxam Analytics	InnoTech Alberta Inc	InnoTech Alberta Inc	Maxxam Analytics
Partisol	Maxxam Analytics	InnoTech Alberta Inc	InnoTech Alberta Inc	Maxxam Analytics
Passive	Maxxam Analytics	Maxxam Analytics	Maxxam Analytics	Maxxam Analytics
NMHC Canister	Maxxam Analytics	InnoTech Alberta Inc	InnoTech Alberta Inc	Not Applicable

Monitoring Notes during the Month of April 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, with an exception of NO_x/NO/NO₂ (78.8%). AEP Ref #: 354247.
- **NO_x/NO/NO₂:** An AEP audit was performed on May 8. The analyzer failed the initial audit attempt due to a compressed O-ring. The audit was successfully completed following a replacement of the sample filter holder. Based on AEP's recommendation, data was invalidated back to the last valid monthly calibration, which occurred on April 24. 153 hours of downtime were recorded in April due to this event.
- **Wind System:** Anomalous spikes in WS minute concentrations were recorded between April 6 and April 7. Impacted WS minute data were excluded and hourly averages were re-calculated. The corresponding WD and STDWD data, were invalidated as a result. Two hours of downtime were incurred due to this event.
- The VOCs, PAHs and Partisol samples were processed for analysis by InnoTech and the results will be provided in the 2019, Q2 Integrated Report.
- The passive samples were processed for analysis by Maxxam Analytics and the results will be provided in the 2019, Q2 Integrated Report.

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.
- **THC/CH4/NMHC:** The analyzer failed due to the carrier gas (N2) depletion on April 29. The gas bottle was replaced on April 30. Fifteen hours of downtime were recorded due to this event.

St. Lina Station:

- Measured parameters were below Alberta Ambient Air Quality Objectives (AAQOs) where applicable.
- All parameters met the 90% operational uptime requirement.
- The requirements outlined in the AMD 2016 were contravened on April 25 for all gas parameters. The scheduled automated daily zero-span check was not executed on April 25 due to a datalogger programming error. AEP reference number: 354246.
- **O3:** Three hours of downtime were recorded on April 16 due to additional quality checks and corrective action performed to address a zero-span system pump failure.

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 (AAQOs) where applicable, with exceptions of H2S. Ten 1-hr and one 24-hr exceedances were recorded this month.

Date	Time	Parameter	Avg. Period	Reading (ppb)	AEP Ref #
April 13	19:00	H2S	1-hr	18	352013
April 13	20:00	H2S	1-hr	21	352013
April 14	04:00	H2S	1-hr	14	352014
April 18	22:00	H2S	1-hr	34	352234
April 19	00:00	H2S	1-hr	20	352235
April 21	18:00	H2S	1-hr	19	352276
April 21	19:00	H2S	1-hr	89	352276
April 21	20:00	H2S	1-hr	12	352276
April 21	-	H2S	24-hr	6	352276
April 22	03:00	H2S	1-hr	14	352276
April 29	02:00	H2S	1-hr	23	352557

- **SO2/NOx/NO/NO2:** The initial attempt at the routine monthly calibration on April 8 was unsuccessful due to a calibrator error. The calibration was subsequently completed, using an alternate calibrator. Four hours of downtime were incurred due to the failed calibration attempt.
- **H2S:** One hour of downtime was recorded on April 6 due to an additional quality check, performed to assess a biased high drift in span response.

- **NO_x/NO/NO₂:** hour of downtime was recorded on April 22 due to an additional quality check, performed to assess a biased low drift in span response.
- **NMHC Canister System:** One canister event was recorded this month: On April 26 at 02:25, at initial concentration of 0.76 ppm. The sample was processed for analysis by InnoTech and the results will be provided in the 2019, Q2 Integrated Sampling Report.

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.

Certification

As the LICA Environmental Program Manager and Data & Reporting Specialist, we 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. We also verify all air data that are required by the AMD to be electronically submitted to AEP and Alberta's Ambient Air Quality Data Warehouse have been submitted by the time of this report submission, 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 2019 Q2 integrated sampling report.

Should you have any questions, please don't hesitate to contact us.

Respectfully,



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Lily Lin
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APRIL 1 - 30, 2019

MONTHLY AMBIENT AIR QUALITY MONITORING REPORT

AEP Ambient Station ID: 1174

Project #: 2833-2019-04-23-C

LICA-201904

Prepared for:

Lakeland Industry & Community Association

Mike Bisaga

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Monitoring Station

**Cold Lake South Continuous Monitoring
Station**

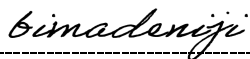
Date of Report Issuance: May 29, 2019

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LICA-201904

Page 9 of 350

Lakeland Industry & Community Association

5107 50 St.
Bonnyville, Alberta T9N 2J7

Attention: Mike Bisaga

Date: May 29, 2019

Subject: MONTHLY AMBIENT AIR QUALITY MONITORING REPORT for APRIL 1 - 30, 2019

In April 2019, Maxxam Analytics was contracted to manage the ambient air quality monitoring and maintenance activities at the Cold Lake South Continuous Monitoring Station near Cold Lake, Alberta. The monitoring program provides measurements of ambient air pollutants and meteorological data to satisfy the reporting requirements of the Alberta airshed.

Network Parameters for Continuous Monitoring:

This monthly report, where applicable, was prepared in accordance with Chapter 9 of the Air Monitoring Directive (AMD, 2016). The report summarizes the continuous monitoring results for pollutant and meteorological parameters and presents the hourly statistics, graphs and rose charts for the month. Calibration records are provided in a separate PDF document in order to comply with AMD requirements Chapter 9, 13.1.7, RC 13-R. The station is equipped with analyzers to measure SO₂, TRS, THC, CH₄, NMHC, NO_x, NO, NO₂, PM_{2.5} and O₃. The meteorological sensors and equipment capture data for WS, WD, RH, AmbTPX and STDWD.

Exceedance & Performance Reporting:

Non-Conformance: The operational time of 78.8% for NO_x/NO/NO₂ did not meet the equipment uptime specifications as per AMD, Chapter 9, 4.0, RC 4-C. This contravention was reported to AEP under reference number: 354247. For all the remaining parameters, the data capture rates for all continuous ambient air analyzers, meteorological systems and data acquisition systems were above the 90% requirement, as per the Alberta Air Monitoring Directive (AMD, Chapter 6, DQ 4-C, 2016).

All measured ambient air concentrations were below the Alberta Ambient Air Quality Objectives and Guidelines (AAAQO, January 2019). Comparisons of these concentrations to the corresponding AAAQOs were done in accordance with Chapter 9, 15.3.2, RC 15-P. Accordingly, the averaging specifications and data completeness criteria, as defined in the Alberta Ambient Air Quality Objective Calculation Guidelines, were applied (Chapter 9, Appendix A, AMD 2016).

Monthly Monitoring Overview:

In relation to the previous month, there were no changes made to the scope or management of the ambient air monitoring program.

The evaluation of data collected in the month of April did not reveal any errors or omissions that would require resubmission of air data to AEP's airdata warehouse.

During this monitoring period, there were no scheduled audits that Maxxam Analytics was privy to.

NO_x/NO/NO₂: An AEP audit was performed on May 8, but the analyzer failed the initial audit attempt due to a compressed internal O-ring in the stainless steel sample inlet filter holder. The audit was successfully completed once the stainless steel unit was replaced with an inert Teflon Thermo style filter holder. Based on AEP's recommendation and Maxxam's internal review, data was invalidated back to the last valid monthly calibration, which occurred on April 24. 153 hours of downtime were recorded in April, due to this event.

Wind System: Anomalous spikes in WS minute concentrations were recorded between April 6 and April 7. Impacted WS minute data were excluded and hourly averages were re-calculated. The corresponding WD and STDWD data, were invalidated as a result. Two hours of downtime were incurred due to this event.

Should you have any questions concerning the results or if we can be of further assistance, please contact your Maxxam representative indicated below.

Reviewed by:



Wunmi Adekanmbi, M.Sc., EPT, PMP
Project Team Lead, Customer Service, Air Services
403-219-3661

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. Certification of submitted information is specific to the contents of this report and is not intended to represent the onus of the Person Responsible, as outlined in Chapter 9, RC 12-E.

TABLE OF CONTENTS

TITLE PAGE	1
COVER LETTER	2
TABLE OF CONTENTS	3
ABBREVIATIONS	4
AAAQO EXCEEDANCE SUMMARY	5
MONTHLY CONTINUOUS DATA SUMMARY	6
OPERATIONAL SUMMARY	7
SUMMARY TABLES, GRAPHS AND ROSES	9
Sulphur Dioxide	10
Total Reduced Sulphur	14
Total Hydrocarbon	18
Methane	22
Non-Methane Hydrocarbon	26
Oxides of Nitrogen	30
Nitric Oxide	34
Nitrogen Dioxide	38
Ozone	42
Particulate Matter _{2.5}	46
Wind Speed	50
Wind Direction	53
Standard Deviation Wind Direction	56
Relative Humidity	58
Ambient Temperature	60
MAXIMUM INSTANTANEOUS DATA	62
1.0 Quality Control Activities	82
2.0 Data Verification and Validation	83
Validation Certificate Form	86
End of Report	87

List of Acronyms

AAAQO	Alberta Ambient Air Quality Objectives and Guidelines Summary
AEP	Alberta Environment and Parks
AMBTPX	Ambient Temperature
AMD	Air Monitoring Directive
CH₄	Methane
DAS	Data acquisition system
hr	Hour
hrs	Hours
IZS	Internal zero-span
kph	Kilometers per hour
NO	Nitric Oxide
NO₂	Nitrogen dioxide
NO_x	Total oxides of nitrogen
O₃	Ozone
NMHC	Non-Methane Hydrocarbon
PM_{2.5}	Particulate matter less than or equal to 2.5 microns in diameter
ppb	Parts per billion
ppm	Parts per million
QA	Quality Assurance
QC	Quality Control
RH	Relative Humidity
SHARP	Synchronized Hybrid Ambient Real-time Particulate Monitor
SOP	Standard Operating Procedure
SO₂	Sulphur Dioxide
STDWD	Standard Deviation Wind Direction
THC	Total hydrocarbons
TRS	Total Reduced Sulphur
µg/m³	Microgram per cubic meter
WS	Wind Speed
WD	Wind Direction
°C	Degrees Celsius

AAAQO Exceedance Summary Report

SO₂ 1-Hour Exceedances

Measured concentrations of sulphur dioxide were below the 1-hour AAAQO of 172 ppb.

SO₂ 24-Hour Exceedances

Measured concentrations of sulphur dioxide were below the 24-hour AAAQO of 48.0 ppb.

NO₂ 1-Hour Exceedances

Measured concentrations of nitrogen dioxide were below the 1-hour AAAQO of 159 ppb.

PM_{2.5} 1-Hour Exceedances

Measured concentrations of fine particulate matter were below the 1-hour AAAQO of 80 µg/m³.

PM_{2.5} 24-Hour Exceedances

Measured concentrations of fine particulate matter were below the 24-hour AAAQO of 29 µg/m³.

O₃ 1-Hour Exceedances

Measured concentrations of ozone were below the 1-hour AAAQO of 76 ppb.

In accordance with EPEA and the Substance Release Regulation

In accordance with A Guide to Release Reporting and the Alberta Ambient Air Quality Objectives and Guidelines Summary

MONTHLY CONTINUOUS DATA SUMMARY

Lakeland Industry & Community Association						MAXIMUM VALUES							OPERATIONAL TIME (%)
Cold Lake South Continuous Monitoring Station						1-HOUR					24-HOUR		
PARAMETER	OBJECTIVES		EXCEEDANCES		MONTHLY AVERAGE	READING	DAY	HOUR	WIND SPEED (kph)	WIND DIRECTION (sector)	READING	DAY	
	1-hr	24-hr	1-hr	24-hr									
SO ₂ (ppb)	172	48	0	0	0	1	1	0	8.8	W	0	1	100.0
TRS (ppb)	-	-	-	-	0	2	18	19	1.2	SSW	1	18	100.0
THC (ppm)	-	-	-	-	2.00	2.35	26	4	0.5	WSW	2.10	26	100.0
CH ₄ (ppm)	-	-	-	-	2.00	2.35	26	4	0.5	WSW	2.10	26	100.0
NMHC (ppm)	-	-	-	-	0.00	0.00	1	0	8.8	W	0.00	1	100.0
NO ₂ (ppb)	159	-	0	-	2	17	12	6	1.5	E	4	15	78.8
NO (ppb)	-	-	-	-	0	14	16	6	0.1	N	1	12	78.8
NO _x (ppb)	-	-	-	-	3	29	16	6	0.1	N	5	16	78.8
O ₃ (ppb)	76	-	0	-	36.6	64.5	22	15	10.5	SW	49.1	22	100.0
PM _{2.5} (µg/m ³)	80	29	0	0	2	12	16	0	0.5	NW	4	4	100.0
RELATIVE HUMIDITY (%)	-	-	-	-	55	100	6	22	5.3	WSW	88	6	100.0
AMBIENT TEMPERATURE (°C)	-	-	-	-	4.1	19.2	22	14	9.2	SW	12.2	22	100.0
VECTOR WS (kph)	-	-	-	-	1.4	21.5	24	17	-	NW	12.2	24	99.7
VECTOR WD (sec)	-	-	-	-	304 (WNW)	-	-	-	-	-	-	-	99.7

OPERATIONAL SUMMARY

Parameter	Equipment	Method & Procedure	Operational Notes
SULPHUR DIOXIDE (SO ₂)	Thermo 43i TLE Pulsed Fluorescence Analyzer	Maxxam AIR SOP-00209: Ambient Sulphur Monitoring	<ul style="list-style-type: none"> Operational time was 100% and there were no performance issues identified. The routine monthly calibration was performed on April 24, between the hours of 08:00 and 11:00.
TOTAL REDUCED SULPHUR (TRS)	Thermo 450i UV Fluorescence Analyzer	Maxxam AIR SOP-00209: Ambient Sulphur Monitoring	<ul style="list-style-type: none"> Operational time was 100% and there were no performance issues identified. The routine monthly calibration was performed on April 24, between the hours of 08:00 and 12:00.
TOTAL HYDROCARBONS (THC), METHANE (CH ₄) & NON-METHANE HYDROCARBONS (NMHC)	Thermo 55i FID Analyzer	Maxxam AIR SOP-00001: Methane, Non-Methane Hydrocarbon Analyzer Monitoring	<ul style="list-style-type: none"> Operational time was 100%. The routine monthly calibration was performed on April 24, between the hours of 14:00 and 16:00. The analyzer exhibited poor sample injections on April 6 and April 28, as demonstrated by sporadic minute data recorded at concentrations lower than 1.80 ppm. CH₄ minute concentrations < 1.80 ppm, along with the corresponding THC and NMHC values, were excluded; and the respective hourly averages were re-calculated. The following hourly averages were impacted: April 6, hour 11:00 and April 28, hour 16:00.
OXIDES OF NITROGEN (NO _x), NITRIC OXIDE (NO) & NITROGEN DIOXIDE (NO ₂)	Thermo 42i Chemiluminescent Analyzer	Maxxam AIR SOP-00213: Ambient NO/NO ₂ /NO _x Monitoring	<ul style="list-style-type: none"> Operational time for the monitoring period was 78.8%, equivalent to 153 hours of downtime. Equipment uptime did not meet AMD's 90% requirement this month. During an AEP audit on May 8, it was discovered that the stainless steel sample inlet filter holder had a faulty O-ring, causing the analyzer to fail low. Initially, the filter holder was bypassed to perform a successful response check directly from the sample manifold. Subsequently, the stainless steel unit was replaced with an inert Teflon Thermo style filter holder and the audit was completed successfully. Based on AEP's recommendation and Maxxam's internal review, data was invalidated back to the last valid monthly calibration, which occurred on April 24. 153 hours of downtime were recorded in April due to this event.
OZONE (O ₃)	Thermo 49i Photometric Analyzer	Maxxam AIR SOP-00212: Ambient O ₃ Monitoring	<ul style="list-style-type: none"> Operational time was 100% and there were no performance issues identified. The routine monthly calibration was performed on April 24, between the hours of 12:00 and 15:00.
PARTICULATE MATTER < 2.5 MICRONS (PM _{2.5})	Thermo SHARP 5030 Unit	Maxxam AIR SOP-00014: Measurement of Particulate Concentration Using the THERMO SHARP	<ul style="list-style-type: none"> Operational time was 100% and there were no performance issues identified. The routine monthly check was performed on April 30, at the hour 10:00.

OPERATIONAL SUMMARY

Parameter	Equipment	Method & Procedure	Operational Notes
WIND SPEED (WS), WIND DIRECTION (WD) & STANDARD DEVIATION WIND DIRECTION (STDWD)	Met One Unit	Maxxam AIR SOP-00013: RM Young Wind Monitor Calibration	<ul style="list-style-type: none"> Operational time for the monitoring period was 99.7%, equivalent to 2 hours of downtime For undetermined reasons, some minutes of anomalous WS spikes were recorded between April 6 and April 7. WS minute data readings > 80 kph were excluded and hourly averages were re-calculated. Hourly averages that failed to meet the 75% AMD data completeness criteria were rejected, along with the corresponding WD and STDWD data. Two hours of downtime were incurred due to this event. Wind data is reported as vector wind speed and vector wind direction. Wind direction is defined as the direction from which the wind is blowing and is measured in degrees from true north.
RELATIVE HUMIDITY (RH)	Rotronic Hygroclip Unit	Operations Manual	<ul style="list-style-type: none"> Operational time was 100% and there were no performance issues identified.
AMBIENT TEMPERATURE (AmbTPX)	Rotronic Hygroclip Unit	Operations Manual	<ul style="list-style-type: none"> Operational time was 100% and there were no performance issues identified.
Datalogger	EnvistaUltimate Unit	Operations Manual	<ul style="list-style-type: none"> There were no performance issues identified.

SUMMARY TABLES, GRAPHS AND ROSES

SULPHUR DIOXIDE Hourly Averages (SO₂ ppb)

HR START (MST)	0:00	1:00	2:00	3:00	4:00	5:00	6:00	7:00	8:00	9:00	10:00	11:00	12:00	13:00	14:00	15:00	16:00	17:00	18:00	19:00	20:00	21:00	22:00	23:00	DAILY	DAILY	24-HR	RDGS.
HR END (MST)	0:59	1:59	2:59	3:59	4:59	5:59	6:59	7:59	8:59	9:59	10:59	11:59	12:59	13:59	14:59	15:59	16:59	17:59	18:59	19:59	20:59	21:59	22:59	23:59	MIN.	MAX.	AVG.	
DAY 1	1	0	0	0	0	0	0	S	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1	0	24
DAY 2	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	24
DAY 3	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	24
DAY 4	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	24
DAY 5	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	24
DAY 6	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	24
DAY 7	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	24
DAY 8	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	24
DAY 9	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	24
DAY 10	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	1	0	24
DAY 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	24
DAY 12	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	24
DAY 13	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	24
DAY 14	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	S	0	1	1	1	0	0	0	1	0	24
DAY 15	0	0	0	0	0	0	1	0	0	1	1	1	1	0	1	0	S	0	0	0	0	0	0	0	0	1	0	24
DAY 16	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	24
DAY 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	24
DAY 18	0	0	0	0	0	0	0	0	0	0	0	0	0	S	1	0	0	0	0	0	0	0	0	0	0	1	0	24
DAY 19	0	0	0	0	0	1	0	0	0	0	0	0	S	0	0	0	0	0	0	0	0	0	0	0	0	1	0	24
DAY 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	24
DAY 21	0	0	0	0	0	0	0	0	0	0	0	S	0	0	0	0	0	1	1	0	0	0	0	0	0	1	0	24
DAY 22	0	0	0	0	0	0	1	1	S	1	0	0	0	0	0	1	0	0	0	0	0	0	0	0	0	1	0	24
DAY 23	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	24
DAY 24	0	0	0	0	0	0	0	S	C	C	C	C	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	24
DAY 25	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	24
DAY 26	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	24
DAY 27	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	24
DAY 28	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	24
DAY 29	0	0	S	0	0	0	0	0	0	0	0	0	0	0	1	0	0	0	0	0	0	0	0	0	0	1	0	24
DAY 30	0	S	0	0	0	0	0	0	0	0	0	0	0	0	1	0	0	0	0	0	0	0	0	0	0	1	0	24
HOURLY MAX	1	0	0	0	0	1	1	1	1	1	1	1	1	0	1	1	0	1	1	1	1	1	0	0				
HOURLY AVG	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0				

STATUS FLAG CODES

C	- MONTHLY CALIBRATION	Q	- QUALITY ASSURANCE
C1	- REPEAT CALIBRATION	R	- RECOVERY
Y	- MAINTENANCE	X	- MACHINE MALFUNCTION
S	- DAILY ZERO/SPAN CHECK	G	- OUT FOR REPAIR
S1	- REPEAT ZERO/SPAN CHECK	P	- POWER FAILURE

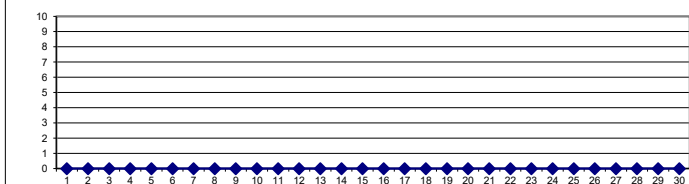
OBJECTIVE LIMIT:

ALBERTA ENVIRONMENT:	1-HR	172	ppb	24-HR	48	ppb
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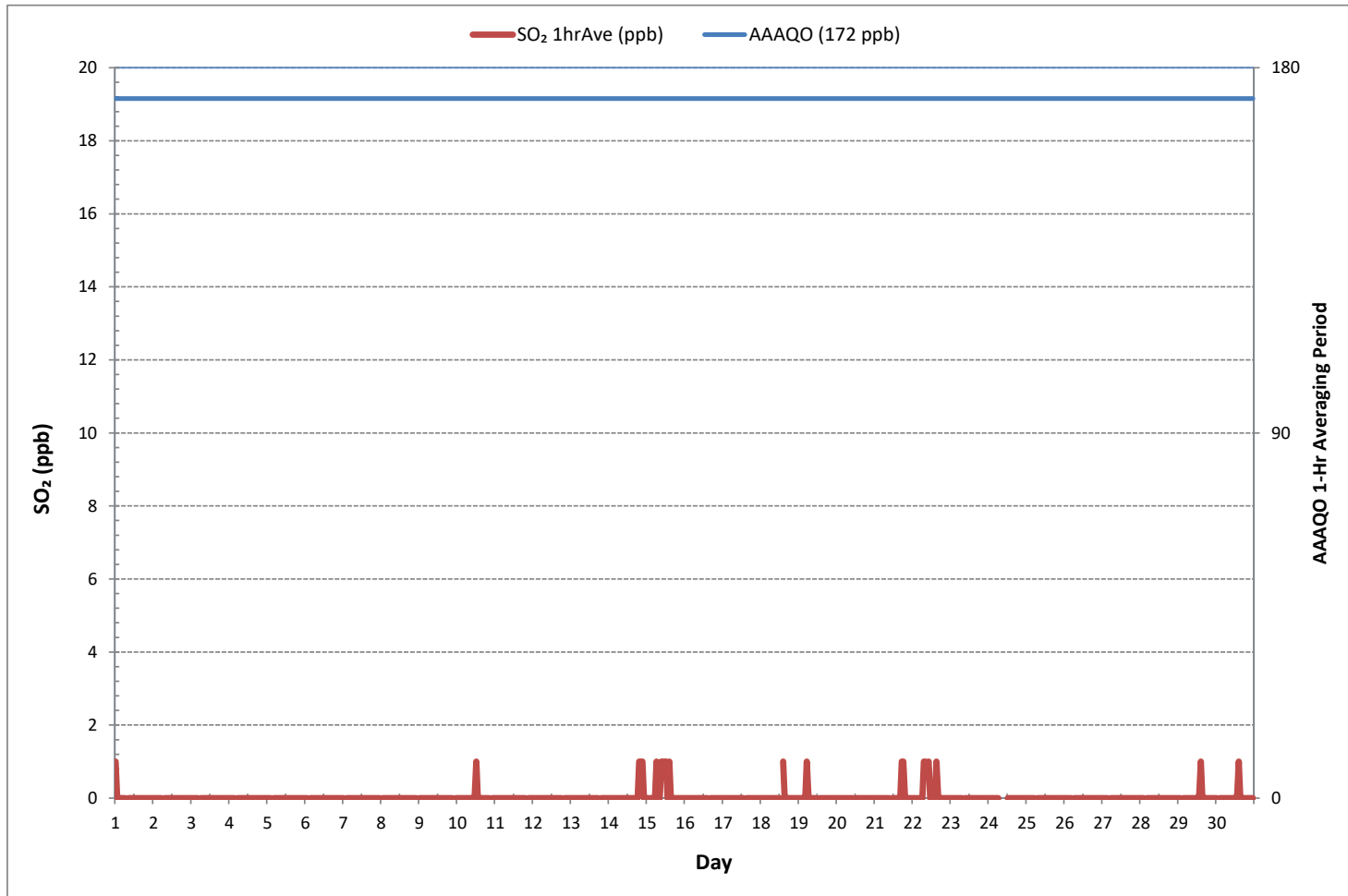
MONTHLY SUMMARY

NUMBER OF 1-HR EXCEEDANCES:	0
NUMBER OF 24-HR EXCEEDANCES:	0
NUMBER OF NON-ZERO READINGS:	21
MINIMUM 1-HR AVERAGE:	0 ppb @ HOUR 1 ON DAY 1
MAXIMUM 1-HR AVERAGE:	1 ppb @ HOUR 0 ON DAY 1
MAXIMUM 24-HR AVERAGE:	0 ppb ON DAY 1
IZS CALIBRATION TIME:	31 hrs
MONTHLY CALIBRATION TIME:	4 hrs
OPERATIONAL TIME:	720 hrs
AMD OPERATION UPTIME:	100.0 %
STANDARD DEVIATION:	0
MONTHLY AVERAGE:	0 ppb

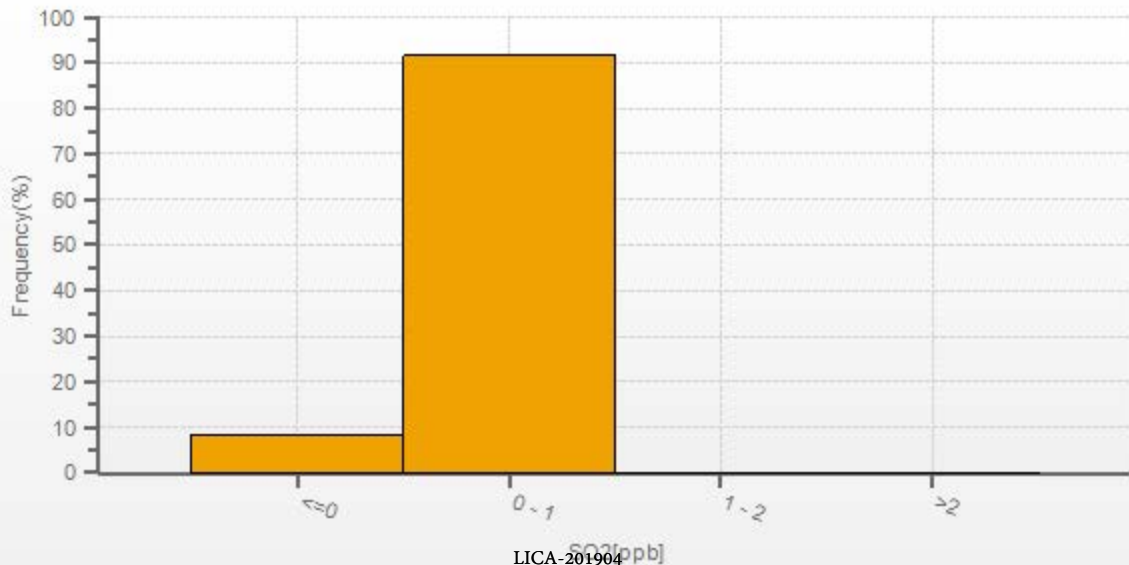
24 HR AVERAGES April 2019



SULPHUR DIOXIDE Hourly Averages (SO₂ ppb)



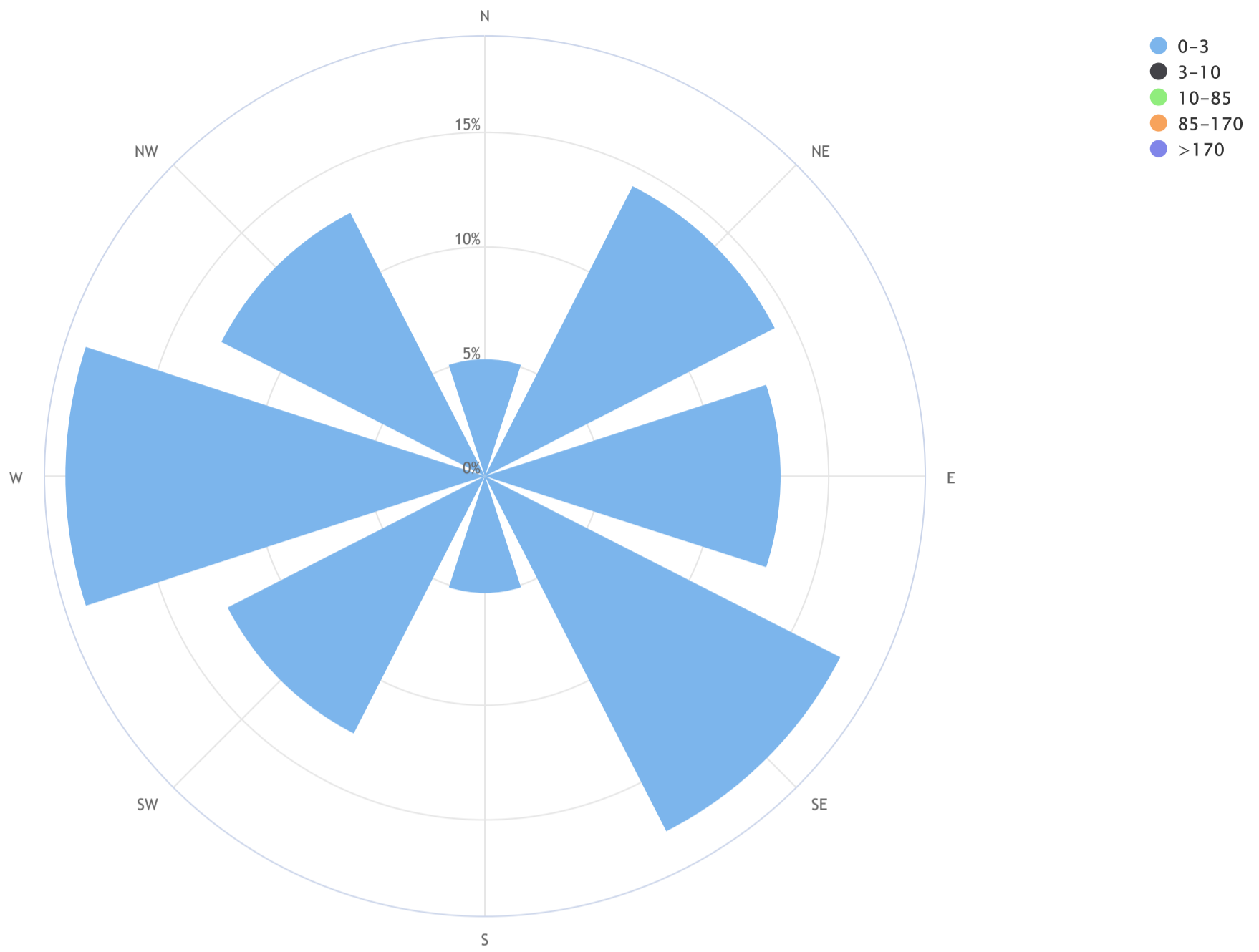
SO₂[ppb] Histogram: LICA COLD LAKE SOUTH Monthly: 19/04 1 Hr.



LICA-201904
Page 20 of 350

Lakeland Industry & Community Association_Cold Lake South Continuous Monitoring Station_SO₂ (ppb)_19/04

Pollutant Rose_Wind Frequency (Blowing From)_ CALM Avg = 0.0, CALM % = 1.5%



Direction	0-3	3-10	10-85	85-170	>170	TOTAL
N	5.1	0.0	0.0	0.0	0.0	5.1
NE	14.2	0.0	0.0	0.0	0.0	14.2
E	12.9	0.0	0.0	0.0	0.0	12.9
SE	17.4	0.0	0.0	0.0	0.0	17.4
S	5.1	0.0	0.0	0.0	0.0	5.1
SW	12.6	0.0	0.0	0.0	0.0	12.6
W	18.3	0.0	0.0	0.0	0.0	18.3
NW	12.9	0.0	0.0	0.0	0.0	12.9
Summary	98.5	0.0	0.0	0.0	0.0	98.5
CALM	1.5	0.0	0.0	0.0	0.0	1.5

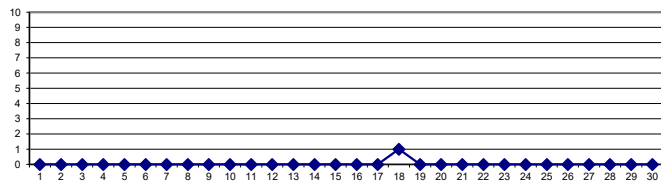
TOTAL REDUCED SULPHUR Hourly Averages (TRS ppb)

HR START (MST)	0:00	1:00	2:00	3:00	4:00	5:00	6:00	7:00	8:00	9:00	10:00	11:00	12:00	13:00	14:00	15:00	16:00	17:00	18:00	19:00	20:00	21:00	22:00	23:00	DAILY MIN.	DAILY MAX.	24-HR AVG.	RDGS.
DAY 1	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	24
2	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	24
3	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	24
4	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	24
5	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	24
6	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	24
7	1	S	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1	0	24
8	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	24
9	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	24
10	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	24
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	24
12	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	24
13	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	24
14	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	24
15	0	0	0	0	0	0	0	0	0	1	1	1	0	0	0	0	S	0	0	0	0	0	0	0	0	1	0	24
16	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	24
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	24
18	0	0	0	0	0	0	1	1	0	0	0	0	0	S	0	0	0	0	1	2	2	1	1	0	0	2	1	24
19	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	24
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	24
21	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	24
22	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	24
23	0	0	0	0	1	0	0	0	S	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1	0	24
24	0	0	0	0	0	0	0	S	C	C	C	C	C	0	0	0	0	0	0	0	0	0	0	0	0	0	0	24
25	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	24
26	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	24
27	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	24
28	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	24
29	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	24
30	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	24
HOURLY MAX	1	0	0	0	1	0	1	1	0	1	1	1	0	0	0	0	0	0	1	2	2	1	1	0				
HOURLY AVG	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0				

STATUS FLAG CODES

C	- MONTHLY CALIBRATION	Q	- QUALITY ASSURANCE
C1	- REPEAT CALIBRATION	R	- RECOVERY
Y	- MAINTENANCE	X	- MACHINE MALFUNCTION
S	- DAILY ZERO/SPAN CHECK	G	- OUT FOR REPAIR
S1	- REPEAT ZERO/SPAN CHECK	P	- POWER FAILURE

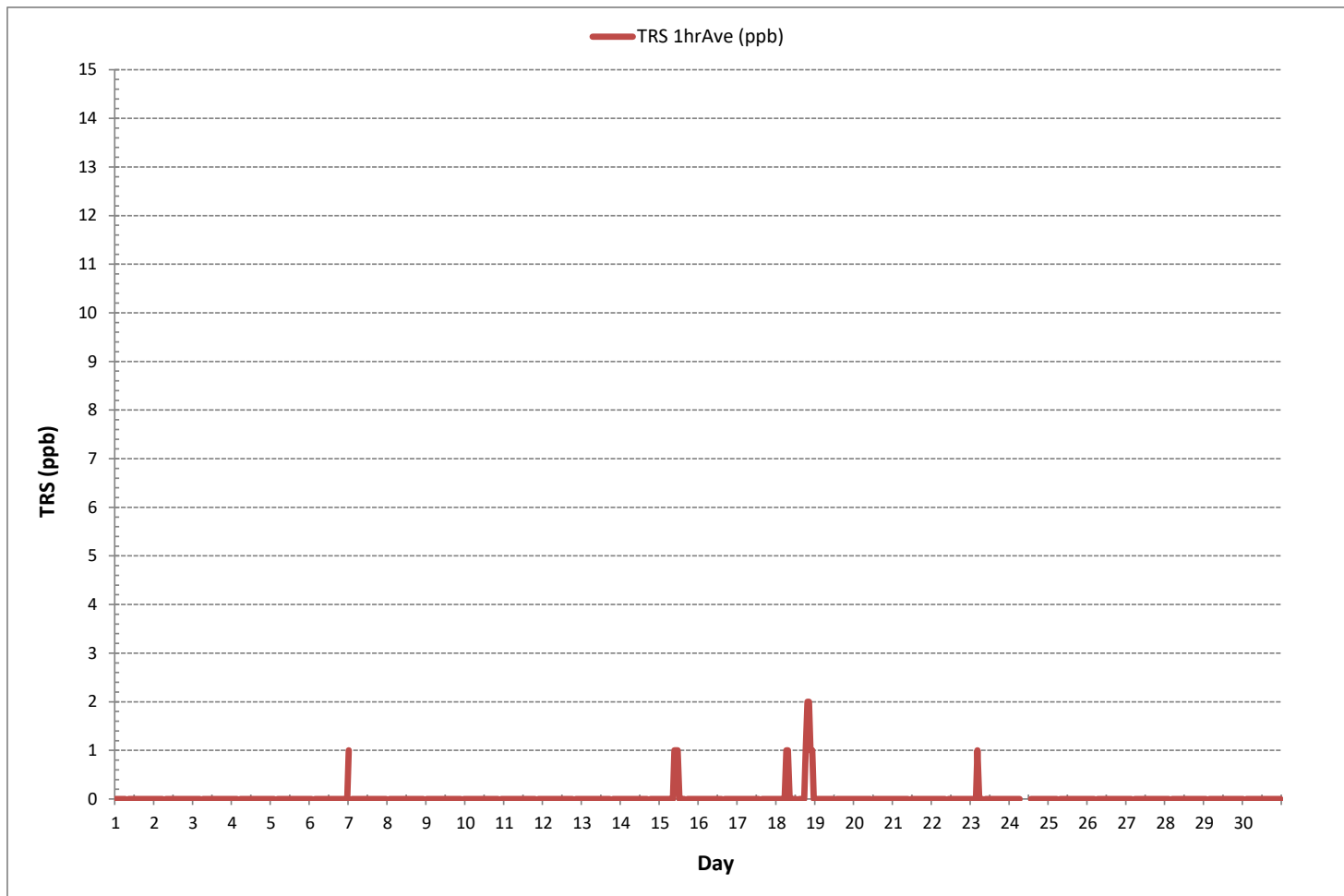
24 HR AVERAGES April 2019



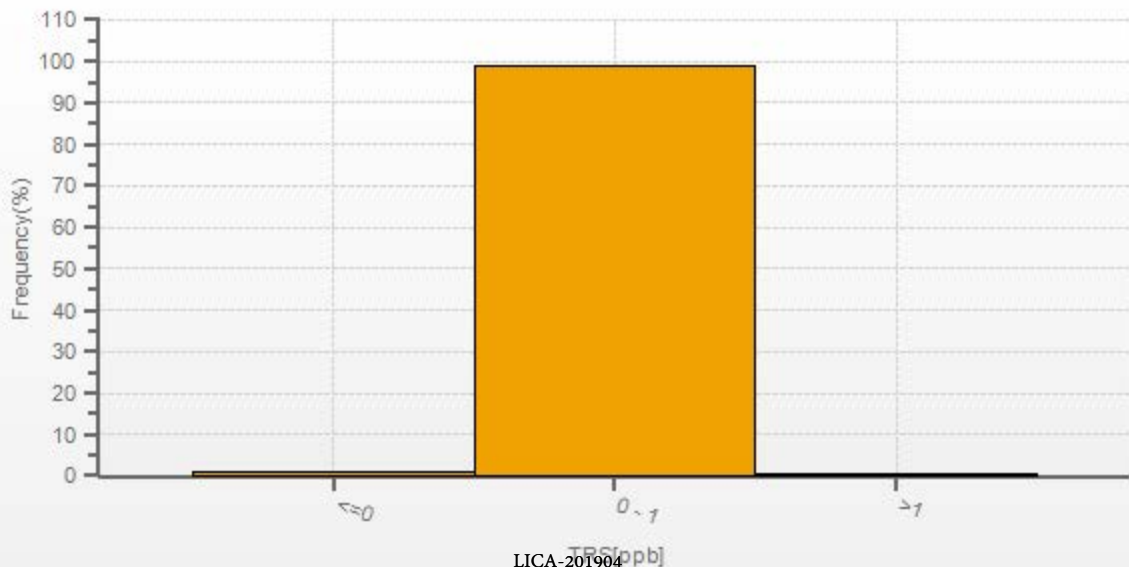
MONTHLY SUMMARY

NUMBER OF NON-ZERO READINGS:	12
MINIMUM 1-HR AVERAGE:	0 ppb @ HOUR 0 ON DAY 1
MAXIMUM 1-HR AVERAGE:	2 ppb @ HOUR 19 ON DAY 18
MAXIMUM 24-HR AVERAGE:	1 ppb ON DAY 18
IZS CALIBRATION TIME:	31 hrs
MONTHLY CALIBRATION TIME:	5 hrs
OPERATIONAL TIME:	720 hrs
AMD OPERATION UPTIME:	100.0 %
STANDARD DEVIATION:	0
MONTHLY AVERAGE:	0 ppb

TOTAL REDUCED SULPHUR Hourly Averages (TRS ppb)



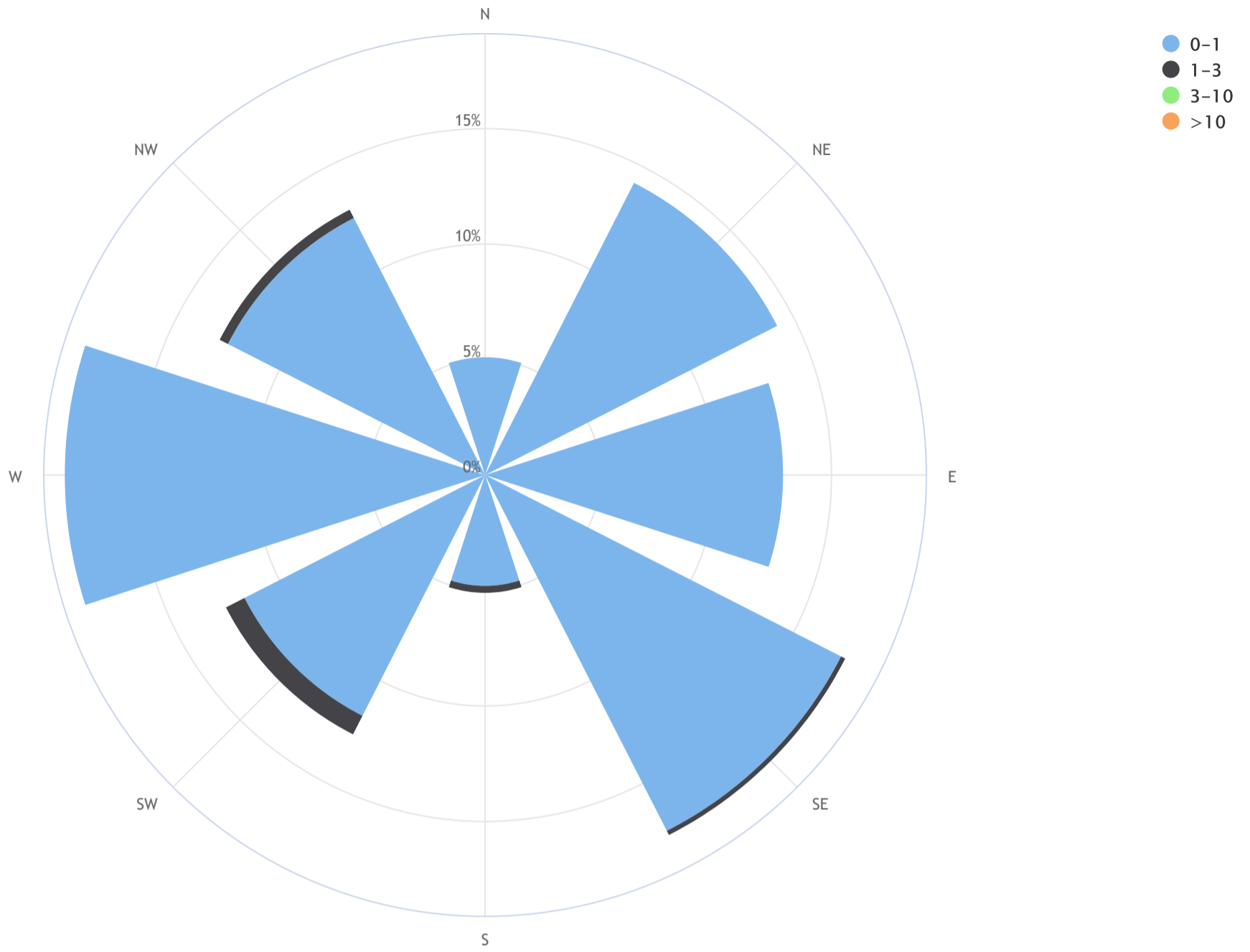
TRS[ppb] Histogram: LICA COLD LAKE SOUTH Monthly: 19/04 1 Hr.



LICA-201904
Page 24 of 350

Lakeland Industry & Community Association_Cold Lake South Continuous Monitoring Station_TRS (ppb)_19/04

Pollutant Rose_Wind Frequency (Blowing From)_ CALM Avg = 0.0, CALM % = 1.5%



Direction	0-1	1-3	3-10	>10	TOTAL
N	5.1	0.0	0.0	0.0	5.1
NE	14.2	0.0	0.0	0.0	14.2
E	12.9	0.0	0.0	0.0	12.9
SE	17.3	0.2	0.0	0.0	17.5
S	4.8	0.3	0.0	0.0	5.1
SW	11.7	0.9	0.0	0.0	12.6
W	18.2	0.0	0.0	0.0	18.2
NW	12.5	0.4	0.0	0.0	12.9
Summary	96.8	1.8	0.0	0.0	98.5
CALM	1.5	0.0	0.0	0.0	1.5



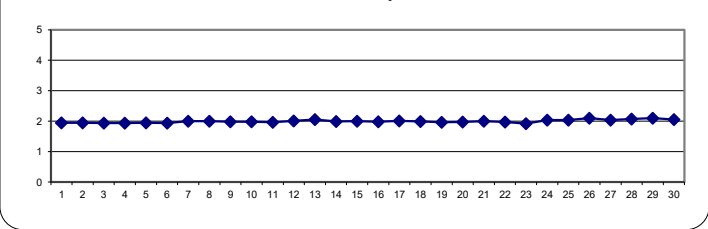
TOTAL HYDROCARBONS Hourly Averages (THC ppm)

HR START (MST)	0:00	1:00	2:00	3:00	4:00	5:00	6:00	7:00	8:00	9:00	10:00	11:00	12:00	13:00	14:00	15:00	16:00	17:00	18:00	19:00	20:00	21:00	22:00	23:00	DAILY	DAILY	24-HR	RDGS.	
HR END (MST)	0:59	1:59	2:59	3:59	4:59	5:59	6:59	7:59	8:59	9:59	10:59	11:59	12:59	13:59	14:59	15:59	16:59	17:59	18:59	19:59	20:59	21:59	22:59	23:59	MIN.	MAX.	AVG.		
DAY																													
1	2.05	2.05	2.02	2.00	2.01	2.00	2.00	S	1.95	1.92	1.91	1.92	1.92	1.92	1.92	1.91	1.92	1.92	1.92	1.92	1.93	1.93	1.96	1.95	1.91	2.05	1.95	24	
2	2.00	2.05	2.00	2.01	1.95	1.94	S	1.93	1.93	1.93	1.92	1.92	1.92	1.92	1.92	1.92	1.92	1.92	1.92	1.93	2.01	2.01	1.98	1.94	1.92	2.05	1.95	24	
3	1.94	1.95	1.95	1.95	1.95	S	1.95	1.95	1.95	1.94	1.94	1.94	1.94	1.94	1.94	1.94	1.94	1.94	1.94	1.94	1.94	1.94	1.94	1.94	1.93	1.95	1.94	24	
4	1.94	1.94	1.94	1.94	S	1.94	1.94	1.95	1.95	1.94	1.94	1.94	1.94	1.94	1.94	1.94	1.94	1.94	1.94	1.94	1.94	1.94	1.94	1.95	1.94	1.95	1.94	24	
5	1.94	1.94	1.95	S	1.96	1.95	1.95	1.95	1.95	1.96	1.95	1.95	1.95	1.95	1.95	1.95	1.95	1.95	1.96	1.97	1.96	1.95	1.95	1.95	1.94	1.97	1.95	24	
6	1.95	1.96	S	1.95	1.95	1.95	1.94	1.94	1.94	1.94	1.94	1.94	1.93	1.93	1.94	1.94	1.94	1.94	1.94	1.94	1.94	1.94	1.94	1.93	1.93	1.96	1.94	24	
7	1.93	S	1.93	1.94	1.94	1.97	1.97	2.00	2.03	2.05	2.04	2.02	2.03	2.04	2.03	1.98	1.94	1.95	1.96	1.97	2.02	2.06	2.13	2.07	1.93	2.13	2.00	24	
8	S	2.16	2.15	2.12	2.10	2.11	2.09	2.09	2.02	1.97	1.94	1.92	1.92	1.92	1.91	1.91	1.92	1.92	1.93	1.93	1.93	1.99	2.00	S	1.91	2.16	2.00	24	
9	1.95	1.96	1.95	1.96	1.95	1.94	1.94	1.94	1.94	1.94	1.94	1.94	1.93	1.93	1.94	1.94	1.94	1.94	1.94	1.95	1.96	1.97	1.96	S	2.00	1.93	2.02	1.98	24
10	2.00	2.02	2.05	2.04	2.00	1.99	2.00	1.99	2.00	1.99	1.98	1.98	1.99	1.98	1.98	1.97	1.93	1.94	1.92	1.93	1.95	S	1.98	1.99	1.92	2.05	1.98	24	
11	2.03	2.02	1.99	1.99	1.96	1.96	1.96	1.95	1.95	1.94	1.95	1.94	1.94	1.94	1.94	1.94	1.94	1.94	1.94	1.95	1.96	S	1.97	1.95	1.96	1.94	2.03	1.96	24
12	2.07	1.99	2.01	2.05	2.10	2.14	2.11	2.06	2.03	2.01	1.96	1.92	1.92	1.92	1.92	1.92	1.92	1.96	1.96	S	1.97	2.00	2.03	2.09	1.92	2.14	2.01	24	
13	2.10	2.11	2.11	2.15	2.20	2.23	2.23	2.19	2.05	2.01	1.99	1.97	1.97	1.95	1.95	1.94	1.94	1.94	S	1.97	1.97	1.98	1.99	2.11	1.94	2.23	2.05	24	
14	2.05	2.01	2.04	2.12	2.09	2.08	2.15	2.00	1.97	1.94	1.93	1.93	1.91	1.91	1.91	1.90	1.91	S	1.93	1.94	1.96	2.00	1.96	2.12	1.90	2.15	1.99	24	
15	2.19	2.13	2.09	2.11	2.09	2.04	2.01	1.96	1.92	1.92	1.92	1.92	1.92	1.92	S	1.92	1.92	S	1.93	1.94	1.98	2.05	2.05	2.08	1.92	2.19	2.00	24	
16	2.12	2.10	1.99	2.03	2.00	2.05	2.06	2.02	1.94	1.93	1.95	1.94	1.94	1.95	1.94	S	1.92	1.91	1.92	1.94	1.94	1.96	1.96	2.02	1.91	2.12	1.98	24	
17	2.05	2.11	2.11	2.09	2.12	2.16	2.16	2.09	2.04	2.04	2.03	1.98	1.97	1.96	S	1.91	1.91	1.91	1.91	1.91	1.92	1.93	1.95	1.92	1.94	1.91	2.16	2.01	24
18	2.01	2.10	2.12	2.08	2.07	2.08	2.02	1.95	1.95	1.92	1.90	1.90	S	1.91	1.91	1.91	1.91	1.91	1.92	1.95	1.98	1.93	2.02	2.16	1.90	2.16	1.99	24	
19	2.22	2.22	2.10	2.03	1.92	1.90	1.89	1.91	1.92	1.90	1.90	1.90	S	1.90	1.90	1.90	1.90	1.90	1.91	1.92	1.94	1.96	2.00	2.00	1.89	2.22	1.96	24	
20	2.07	2.11	2.15	2.19	2.14	2.04	2.01	2.02	1.95	1.90	1.89	S	1.88	1.88	1.88	1.88	1.89	1.88	1.88	1.89	1.90	1.92	1.93	1.94	1.88	2.19	1.97	24	
21	1.97	2.04	2.10	2.15	2.17	2.19	2.14	2.05	2.01	1.99	S	1.90	1.90	1.90	1.91	1.91	1.92	1.92	1.93	1.93	1.98	2.02	1.99	1.98	1.90	2.19	2.00	24	
22	2.00	2.00	2.02	2.02	2.03	2.02	2.02	2.05	2.04	S	2.01	2.02	1.98	1.94	1.93	1.92	1.91	1.91	1.91	1.91	1.91	1.92	1.92	1.91	1.91	2.05	1.97	24	
23	1.94	1.90	1.90	1.93	1.96	1.94	1.94	1.92	S	1.90	1.89	1.90	1.90	1.89	1.90	1.90	1.89	1.90	1.90	1.91	1.91	1.92	1.92	2.03	1.89	2.03	1.92	24	
24	2.05	2.07	2.11	2.22	2.23	2.14	2.09	S	1.96	1.94	1.92	1.96	1.97	1.93	C	C	C	2.02	2.02	2.02	2.02	2.02	2.02	2.02	1.92	2.23	2.04	24	
25	2.01	2.01	2.01	2.02	2.03	2.11	S	2.09	2.04	2.03	2.03	2.03	2.03	2.03	2.03	2.02	2.03	2.03	2.03	2.03	2.03	2.06	2.06	2.08	2.13	2.01	2.13	2.04	24
26	2.17	2.22	2.22	2.29	2.35	S	2.30	2.15	2.11	2.07	2.03	2.03	2.02	2.02	2.02	2.03	2.03	2.02	2.03	2.03	2.04	2.03	2.03	2.03	2.02	2.35	2.10	24	
27	2.04	2.04	2.05	2.08	S	2.04	2.04	2.04	2.04	2.04	2.04	2.03	2.02	2.02	2.02	2.03	2.03	2.03	2.03	2.03	2.03	2.03	2.03	2.04	2.05	2.02	2.08	2.04	24
28	2.07	2.15	2.12	S	2.11	2.13	2.14	2.08	2.03	2.03	2.03	2.04	2.03	2.03	2.03	2.03	2.03	2.03	2.03	2.04	2.04	2.06	2.09	2.10	2.20	2.03	2.20	2.07	24
29	2.18	2.16	S	2.31	2.29	2.33	2.30	2.15	2.04	2.04	2.04	2.03	2.04	2.04	2.04	2.03	2.04	2.04	2.04	2.04	2.04	2.04	2.03	2.02	2.03	2.02	2.33	2.10	24
30	2.04	S	2.07	2.13	2.05	2.03	2.03	2.03	2.04	2.03	2.03	2.03	2.04	2.04	2.04	2.04	2.04	2.04	2.03	2.04	2.04	2.05	2.06	2.07	2.03	2.13	2.05	24	
HOURLY MAX	2.22	2.22	2.22	2.31	2.35	2.33	2.30	2.19	2.11	2.07	2.04	2.04	2.04	2.04	2.04	2.04	2.04	2.04	2.04	2.04	2.06	2.09	2.13	2.20					
HOURLY AVG	2.04	2.05	2.04	2.07	2.06	2.05	2.05	2.02	1.99	1.97	1.97	1.96	1.96	1.96	1.96	1.95	1.95	1.95	1.96	1.96	1.96	1.99	1.99	2.02					

STATUS FLAG CODES

C	- MONTHLY CALIBRATION	Q	- QUALITY ASSURANCE
C1	- REPEAT CALIBRATION	R	- RECOVERY
Y	- MAINTENANCE	X	- MACHINE MALFUNCTION
S	- DAILY ZERO/SPAN CHECK	G	- OUT FOR REPAIR
S1	- REPEAT ZERO/SPAN CHECK	P	- POWER FAILURE

24 HR AVERAGES April 2019



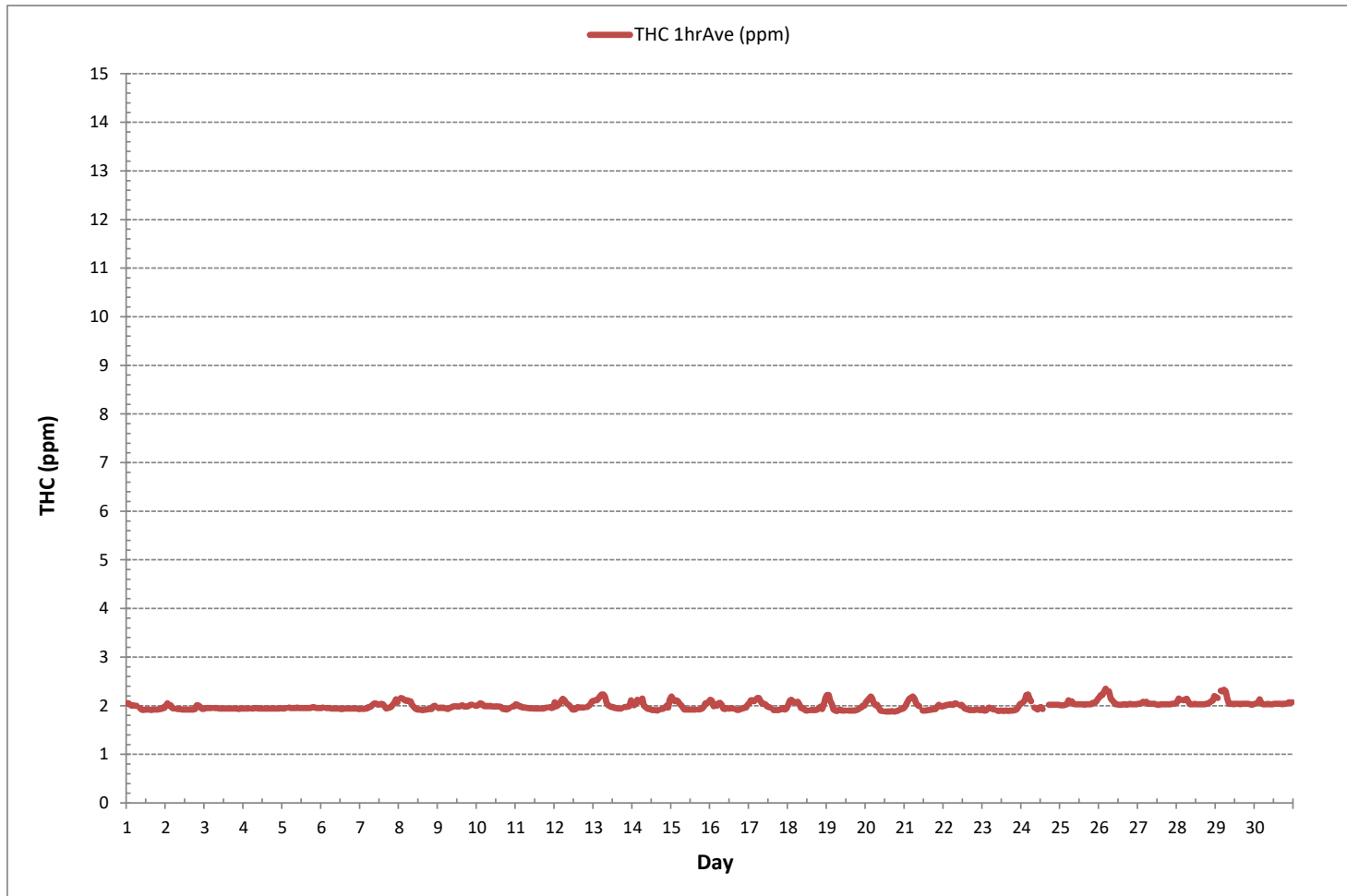
MONTHLY SUMMARY

NUMBER OF NON-ZERO READINGS:	686
MINIMUM 1-HR AVERAGE:	1.88 ppm @ HOUR 12 ON DAY 20
MAXIMUM 1-HR AVERAGE:	2.35 ppm @ HOUR 4 ON DAY 26
MAXIMUM 24-HR AVERAGE:	2.10 ppm ON DAY 26
IZS CALIBRATION TIME:	31 hrs OPERATIONAL TIME: 720 hrs
MONTHLY CALIBRATION TIME:	3 hrs AMD OPERATION UPTIME: 100.0 %
STANDARD DEVIATION:	0.08 MONTHLY AVERAGE: 2.00 ppm

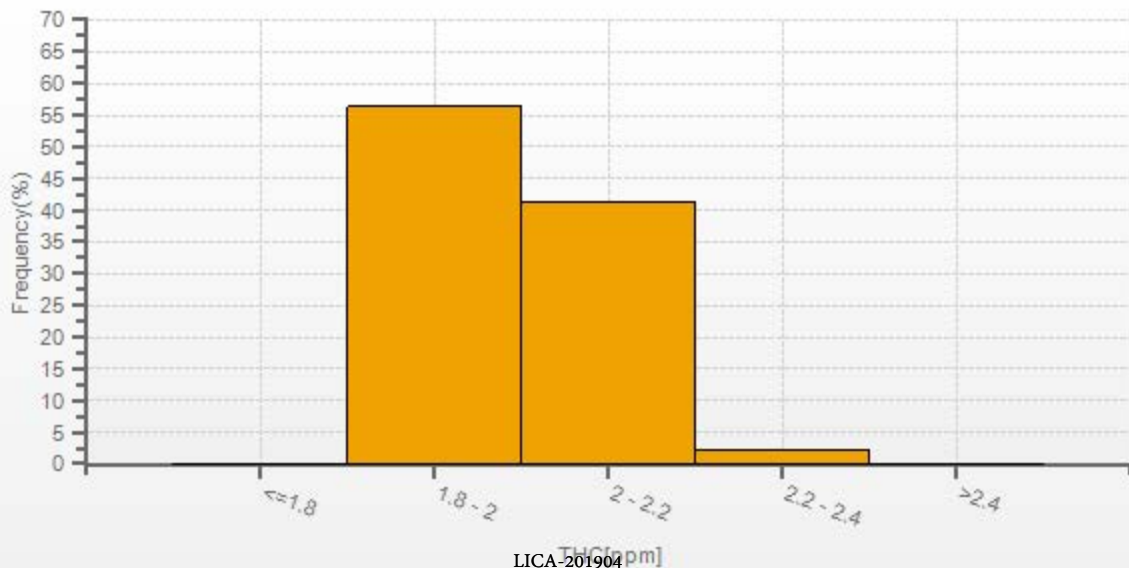


LAKELAND INDUSTRY & COMMUNITY ASSOCIATION
Cold Lake South Continuous Monitoring Station - April 2019

TOTAL HYDROCARBONS Hourly Averages (THC ppm)



THC[ppm] Histogram: LICA COLD LAKE SOUTH Monthly: 19/04 1 Hr.

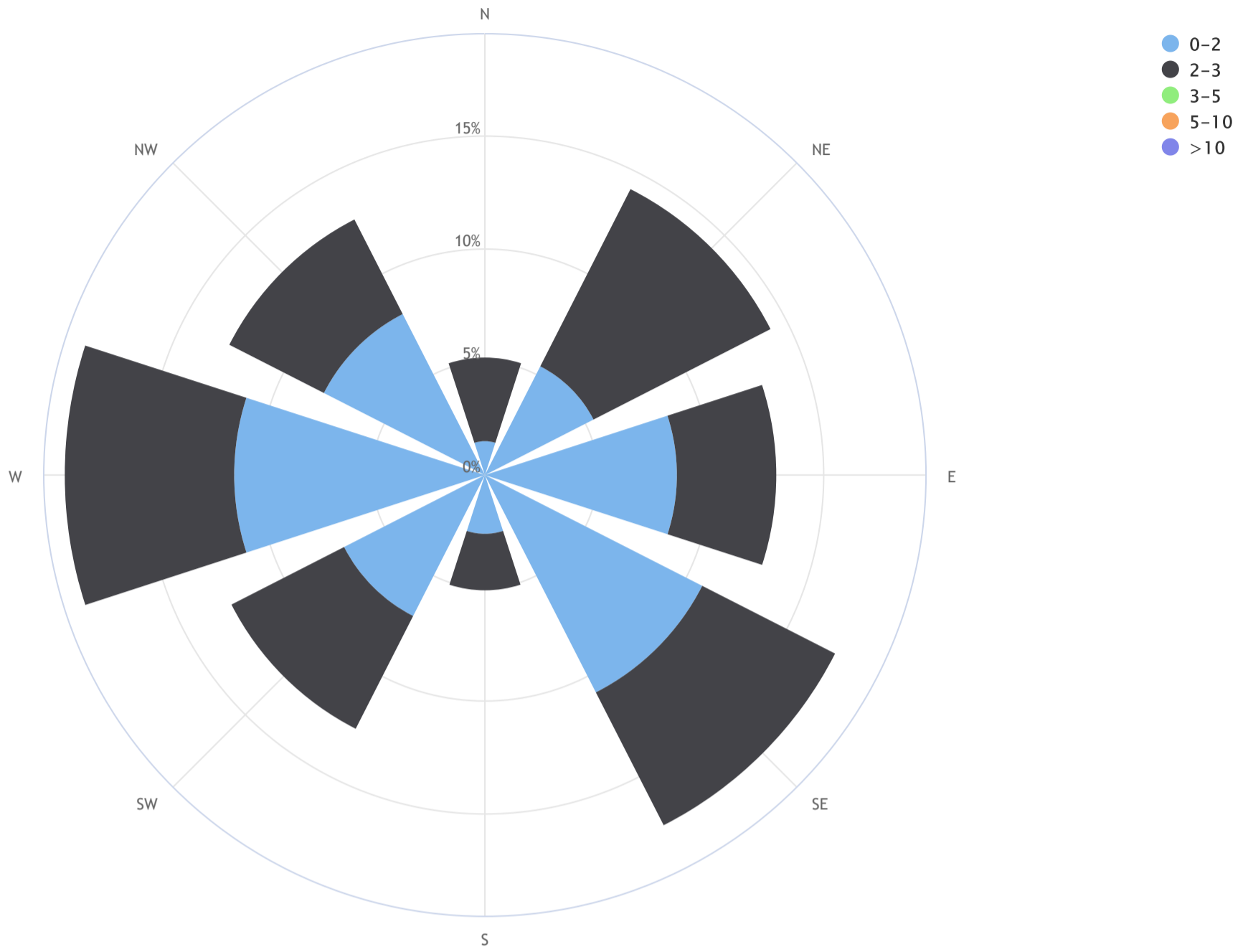


LICA-201904

Page 28 of 350

Lakeland Industry & Community Association_Cold Lake South Continuous Monitoring Station_THC (ppm)_19/04

Pollutant Rose_Wind Frequency (Blowing From)_ CALM Avg = 2.2, CALM % = 1.5%



Direction	0-2	2-3	3-5	5-10	>10	TOTAL
N	1.5	3.7	0.0	0.0	0.0	5.1
NE	5.4	8.8	0.0	0.0	0.0	14.2
E	8.5	4.4	0.0	0.0	0.0	12.9
SE	10.8	6.6	0.0	0.0	0.0	17.4
S	2.6	2.5	0.0	0.0	0.0	5.1
SW	7.0	5.6	0.0	0.0	0.0	12.6
W	11.1	7.5	0.0	0.0	0.0	18.6
NW	8.0	4.7	0.0	0.0	0.0	12.7
Summary	55.0	43.6	0.0	0.0	0.0	98.6
CALM	0.0	1.5	0.0	0.0	0.0	1.5



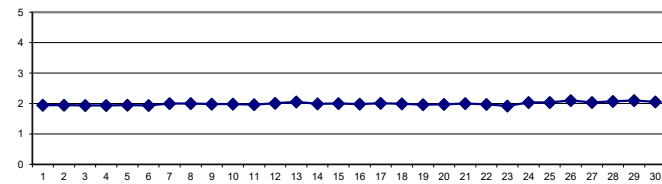
METHANE Hourly Averages (CH₄ ppm)

HR START (MST)	0:00	1:00	2:00	3:00	4:00	5:00	6:00	7:00	8:00	9:00	10:00	11:00	12:00	13:00	14:00	15:00	16:00	17:00	18:00	19:00	20:00	21:00	22:00	23:00	DAILY	DAILY	24-HR	RDGS.					
HR END (MST)	0:59	1:59	2:59	3:59	4:59	5:59	6:59	7:59	8:59	9:59	10:59	11:59	12:59	13:59	14:59	15:59	16:59	17:59	18:59	19:59	20:59	21:59	22:59	23:59	MIN.	MAX.	AVG.						
DAY 1	2.05	2.05	2.02	2.00	2.01	2.00	2.00	S	1.95	1.92	1.91	1.92	1.92	1.92	1.92	1.91	1.92	1.92	1.92	1.92	1.93	1.93	1.96	1.95	1.91	2.05	1.95	24					
2	2.00	2.05	2.00	2.01	1.95	1.94	S	1.93	1.93	1.93	1.92	1.92	1.92	1.92	1.92	1.92	1.92	1.92	1.92	1.93	2.01	2.01	1.98	1.94	1.92	2.05	1.95	24					
3	1.94	1.95	1.95	1.95	1.95	S	1.95	1.95	1.95	1.94	1.94	1.94	1.94	1.94	1.94	1.94	1.94	1.94	1.94	1.94	1.94	1.94	1.94	1.94	1.93	1.95	1.94	24					
4	1.94	1.94	1.94	1.94	S	1.94	1.94	1.95	1.95	1.94	1.94	1.94	1.94	1.94	1.94	1.94	1.94	1.94	1.94	1.94	1.94	1.94	1.94	1.95	1.94	1.95	1.94	24					
5	1.94	1.94	1.95	S	1.96	1.95	1.95	1.95	1.95	1.96	1.95	1.95	1.95	1.95	1.95	1.95	1.95	1.95	1.96	1.97	1.96	1.95	1.95	1.95	1.94	1.97	1.95	24					
6	1.95	1.96	S	1.95	1.95	1.95	1.94	1.94	1.94	1.94	1.94	1.94	1.93	1.93	1.94	1.94	1.94	1.94	1.94	1.94	1.94	1.94	1.94	1.93	1.93	1.96	1.94	24					
7	1.93	S	1.93	1.94	1.94	1.97	1.97	2.00	2.03	2.05	2.04	2.02	2.03	2.04	2.03	1.98	1.94	1.95	1.96	1.97	2.02	2.06	2.13	2.07	1.93	2.13	2.00	24					
8	S	2.16	2.15	2.12	2.10	2.11	2.09	2.09	2.02	1.97	1.94	1.92	1.92	1.92	1.91	1.91	1.92	1.92	1.93	1.93	1.93	1.99	2.00	S	1.91	2.16	2.00	24					
9	1.95	1.96	1.95	1.96	1.95	1.94	1.94	1.94	1.94	1.94	1.94	1.94	1.93	1.93	1.94	1.94	1.94	1.94	1.98	1.98	2.00	2.01	1.98	1.98	2.00	2.02	2.02	S	2.00	1.93	2.02	1.98	24
10	2.00	2.02	2.05	2.04	2.00	1.99	2.00	1.99	2.00	1.99	1.98	1.98	1.99	1.98	1.98	1.97	1.93	1.94	1.92	1.93	1.95	S	1.98	1.99	1.92	2.05	1.98	24					
11	2.03	2.02	1.99	1.99	1.96	1.96	1.96	1.95	1.95	1.94	1.95	1.94	1.94	1.94	1.94	1.94	1.94	1.94	1.94	1.95	1.96	S	1.97	1.95	1.96	1.94	2.03	1.96	24				
12	2.07	1.99	2.01	2.05	2.10	2.14	2.11	2.06	2.03	2.01	1.96	1.92	1.92	1.92	1.92	1.92	1.96	1.96	1.96	S	1.97	2.00	2.03	2.09	1.92	2.14	2.01	24					
13	2.10	2.11	2.11	2.15	2.20	2.23	2.23	2.19	2.05	2.01	1.99	1.97	1.97	1.95	1.95	1.94	1.94	1.94	S	1.97	1.97	1.98	1.99	2.11	1.94	2.23	2.05	24					
14	2.05	2.01	2.04	2.12	2.09	2.08	2.15	2.00	1.97	1.94	1.93	1.93	1.91	1.91	1.91	1.90	1.91	S	1.93	1.94	1.96	2.00	1.96	2.12	1.90	2.15	1.99	24					
15	2.19	2.13	2.09	2.11	2.09	2.04	2.01	1.96	1.92	1.92	1.92	1.92	1.92	1.92	S	1.92	1.93	1.94	1.98	2.05	2.05	2.08	1.92	1.92	2.19	2.00	24						
16	2.12	2.10	1.99	2.03	2.00	2.05	2.06	2.02	1.94	1.93	1.95	1.94	1.94	1.95	1.94	S	1.92	1.91	1.92	1.94	1.94	1.96	1.96	2.02	1.91	2.12	1.98	24					
17	2.05	2.11	2.11	2.09	2.12	2.16	2.16	2.09	2.04	2.04	2.03	1.98	1.97	1.96	S	1.91	1.91	1.91	1.91	1.91	1.92	1.93	1.95	1.92	1.94	1.91	2.16	2.01	24				
18	2.01	2.10	2.12	2.08	2.07	2.07	2.08	2.02	1.95	1.95	1.92	1.90	1.90	S	1.91	1.91	1.91	1.91	1.92	1.95	1.98	1.93	2.02	2.16	1.90	2.16	1.99	24					
19	2.22	2.22	2.10	2.03	1.92	1.90	1.89	1.91	1.92	1.90	1.90	1.90	S	1.90	1.90	1.90	1.90	1.90	1.91	1.92	1.94	1.96	2.00	2.00	1.89	2.22	1.96	24					
20	2.07	2.11	2.15	2.19	2.14	2.04	2.01	2.02	1.95	1.90	1.89	S	1.88	1.88	1.88	1.88	1.89	1.88	1.88	1.89	1.90	1.92	1.93	1.94	1.88	2.19	1.97	24					
21	1.97	2.04	2.10	2.15	2.17	2.19	2.14	2.05	2.01	1.99	S	1.90	1.90	1.90	1.91	1.91	1.92	1.92	1.93	1.93	1.98	2.02	1.99	1.98	1.90	2.19	2.00	24					
22	2.00	2.00	2.02	2.02	2.03	2.02	2.02	2.05	2.04	S	2.01	2.02	1.98	1.94	1.93	1.92	1.91	1.91	1.91	1.91	1.91	1.92	1.92	1.91	1.91	2.05	1.97	24					
23	1.94	1.90	1.90	1.93	1.96	1.94	1.94	1.92	S	1.90	1.89	1.90	1.90	1.89	1.90	1.90	1.89	1.90	1.90	1.91	1.91	1.92	1.92	2.03	1.89	2.03	1.92	24					
24	2.05	2.07	2.11	2.22	2.23	2.14	2.09	S	1.96	1.94	1.92	1.96	1.97	1.93	C	C	C	2.02	2.02	2.02	2.02	2.02	2.02	2.02	1.92	2.23	2.04	24					
25	2.01	2.01	2.01	2.02	2.03	2.11	S	2.09	2.04	2.03	2.03	2.03	2.03	2.03	2.03	2.02	2.03	2.03	2.03	2.03	2.03	2.06	2.06	2.08	2.13	2.01	2.13	2.04	24				
26	2.17	2.22	2.22	2.29	2.35	S	2.30	2.15	2.11	2.07	2.03	2.03	2.02	2.02	2.02	2.03	2.03	2.02	2.03	2.03	2.04	2.03	2.03	2.03	2.02	2.35	2.10	24					
27	2.04	2.04	2.05	2.08	S	2.04	2.04	2.04	2.04	2.04	2.03	2.03	2.02	2.02	2.02	2.03	2.03	2.03	2.03	2.03	2.03	2.03	2.03	2.04	2.05	2.02	2.08	2.04	24				
28	2.07	2.15	2.12	S	2.11	2.13	2.14	2.08	2.03	2.03	2.03	2.04	2.03	2.03	2.03	2.03	2.03	2.03	2.03	2.04	2.04	2.06	2.09	2.10	2.20	2.03	2.20	2.07	24				
29	2.18	2.16	S	2.31	2.29	2.33	2.30	2.15	2.04	2.04	2.04	2.03	2.04	2.04	2.04	2.03	2.04	2.04	2.04	2.04	2.04	2.04	2.03	2.02	2.02	2.33	2.10	24					
30	2.04	S	2.07	2.13	2.05	2.03	2.03	2.03	2.04	2.03	2.03	2.03	2.04	2.04	2.04	2.04	2.04	2.04	2.03	2.04	2.04	2.05	2.07	2.06	2.07	2.03	2.13	2.05	24				
HOURLY MAX	2.22	2.22	2.22	2.31	2.35	2.33	2.30	2.19	2.11	2.07	2.04	2.04	2.04	2.04	2.04	2.04	2.04	2.04	2.04	2.04	2.06	2.09	2.13	2.20									
HOURLY AVG	2.04	2.05	2.04	2.07	2.06	2.05	2.05	2.02	1.99	1.97	1.97	1.96	1.96	1.96	1.95	1.95	1.95	1.95	1.96	1.96	1.96	1.98	1.99	1.99	2.02								

STATUS FLAG CODES

C	- MONTHLY CALIBRATION	Q	- QUALITY ASSURANCE
C1	- REPEAT CALIBRATION	R	- RECOVERY
Y	- MAINTENANCE	X	- MACHINE MALFUNCTION
S	- DAILY ZERO/SPAN CHECK	G	- OUT FOR REPAIR
S1	- REPEAT ZERO/SPAN CHECK	P	- POWER FAILURE

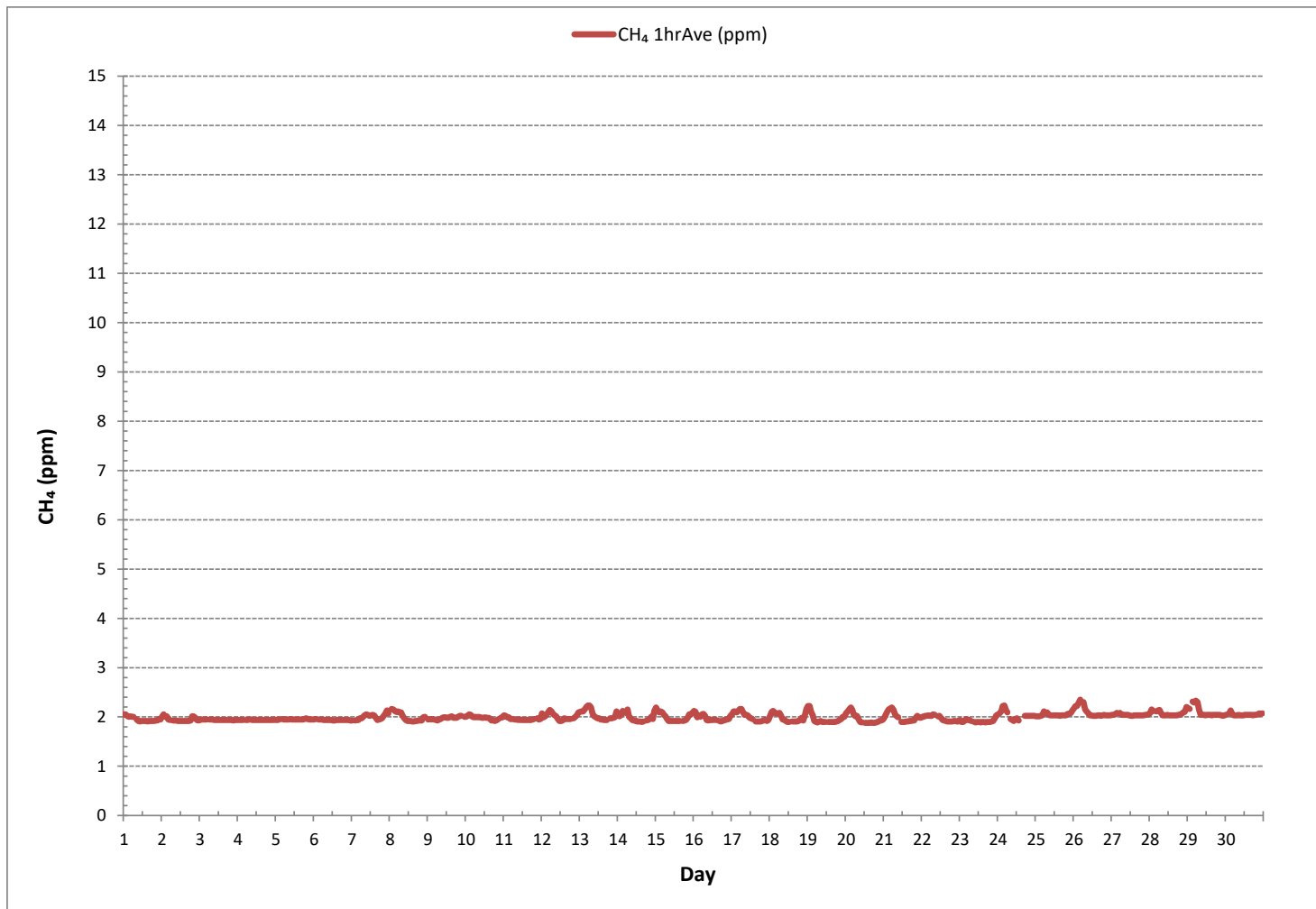
24 HR AVERAGES April 2019



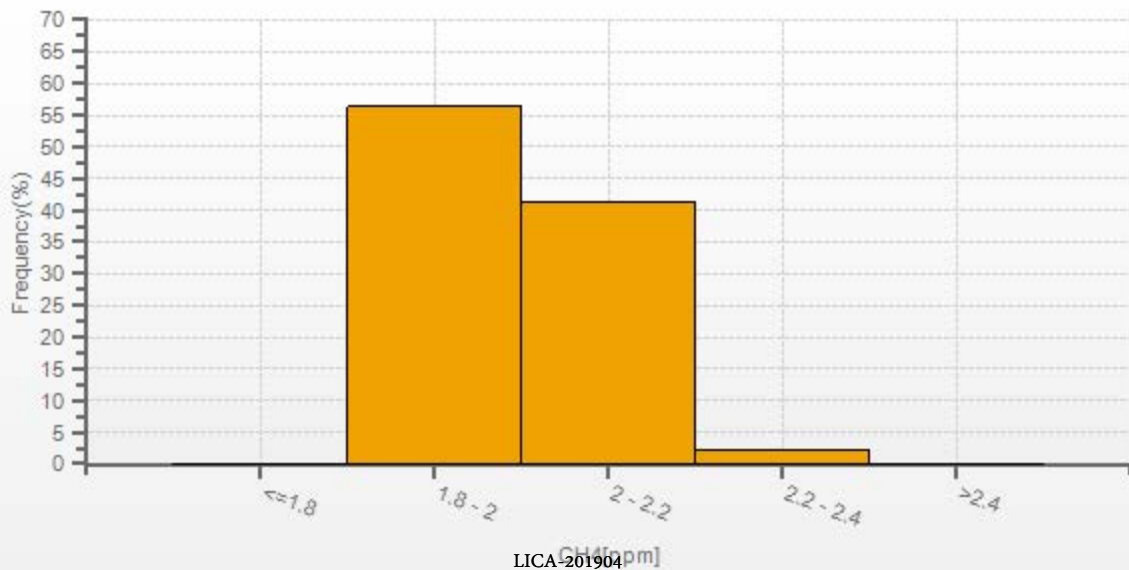
MONTHLY SUMMARY

NUMBER OF NON-ZERO READINGS:	686			
MINIMUM 1-HR AVERAGE:	1.88 ppm	@ HOUR	12	ON DAY 20
MAXIMUM 1-HR AVERAGE:	2.35 ppm	@ HOUR	4	ON DAY 26
MAXIMUM 24-HR AVERAGE:	2.10 ppm			ON DAY 26
IZS CALIBRATION TIME:	31 hrs	OPERATIONAL TIME:	720 hrs	
MONTHLY CALIBRATION TIME:	3 hrs	AMD OPERATION UPTIME:	100.0 %	
STANDARD DEVIATION:	0.08	MONTHLY AVERAGE:	2.00 ppm	

METHANE Hourly Averages (CH₄ ppm)



CH4[ppm] Histogram: LICA COLD LAKE SOUTH Monthly: 19/04 1 Hr.

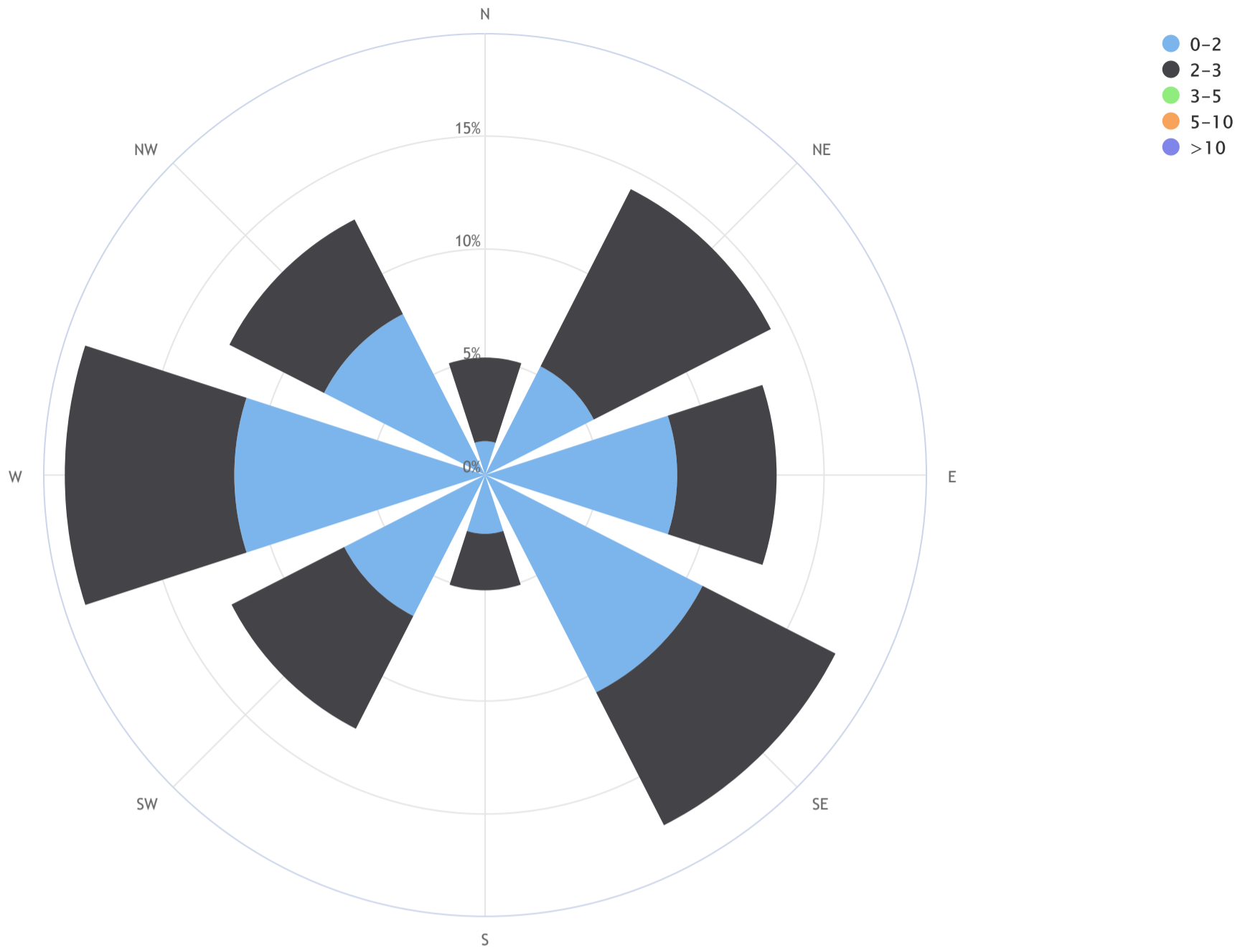


LICA-201904

Page 32 of 350

Lakeland Industry & Community Association_Cold Lake South Continuous Monitoring Station_CH4 (ppm)_19/04

Pollutant Rose_Wind Frequency (Blowing From)_ CALM Avg = 2.2, CALM % = 1.5%



Direction	0-2	2-3	3-5	5-10	>10	TOTAL
N	1.5	3.7	0.0	0.0	0.0	5.1
NE	5.4	8.8	0.0	0.0	0.0	14.2
E	8.5	4.4	0.0	0.0	0.0	12.9
SE	10.8	6.6	0.0	0.0	0.0	17.4
S	2.6	2.5	0.0	0.0	0.0	5.1
SW	7.0	5.6	0.0	0.0	0.0	12.6
W	11.1	7.5	0.0	0.0	0.0	18.6
NW	8.0	4.7	0.0	0.0	0.0	12.7
Summary	55.0	43.6	0.0	0.0	0.0	98.6
CALM	0.0	1.5	0.0	0.0	0.0	1.5



NON-METHANE HYDROCARBONS Hourly Averages (NMHC ppm)

HR START (MST)	0:00	1:00	2:00	3:00	4:00	5:00	6:00	7:00	8:00	9:00	10:00	11:00	12:00	13:00	14:00	15:00	16:00	17:00	18:00	19:00	20:00	21:00	22:00	23:00	DAILY	DAILY	24-HR	RDGS.
HR END (MST)	0:59	1:59	2:59	3:59	4:59	5:59	6:59	7:59	8:59	9:59	10:59	11:59	12:59	13:59	14:59	15:59	16:59	17:59	18:59	19:59	20:59	21:59	22:59	23:59	MIN.	MAX.	AVG.	
DAY 1	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	24
2	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	24
3	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	24
4	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	24
5	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	24
6	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	24
7	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	24
8	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	S	0.00	0.00	0.00	24
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	S	0.00	0.00	0.00	24
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	24
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	24
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	24
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	S	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	24
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	S	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	24
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	S	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	24
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	S	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	24
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	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	24
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	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	24
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	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	24
20	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	24
21	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	24
22	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	24
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	24
24	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	C	C	C	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	24
25	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	24
26	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	24
27	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	24
28	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	24
29	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	24
30	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	24
HOURLY MAX	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00				
HOURLY AVG	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00				

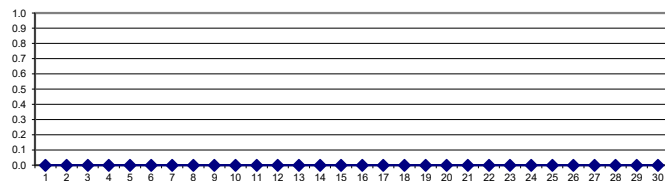
STATUS FLAG CODES

C	- MONTHLY CALIBRATION	Q	- QUALITY ASSURANCE
C1	- REPEAT CALIBRATION	R	- RECOVERY
Y	- MAINTENANCE	X	- MACHINE MALFUNCTION
S	- DAILY ZERO/SPAN CHECK	G	- OUT FOR REPAIR
S1	- REPEAT ZERO/SPAN CHECK	P	- POWER FAILURE

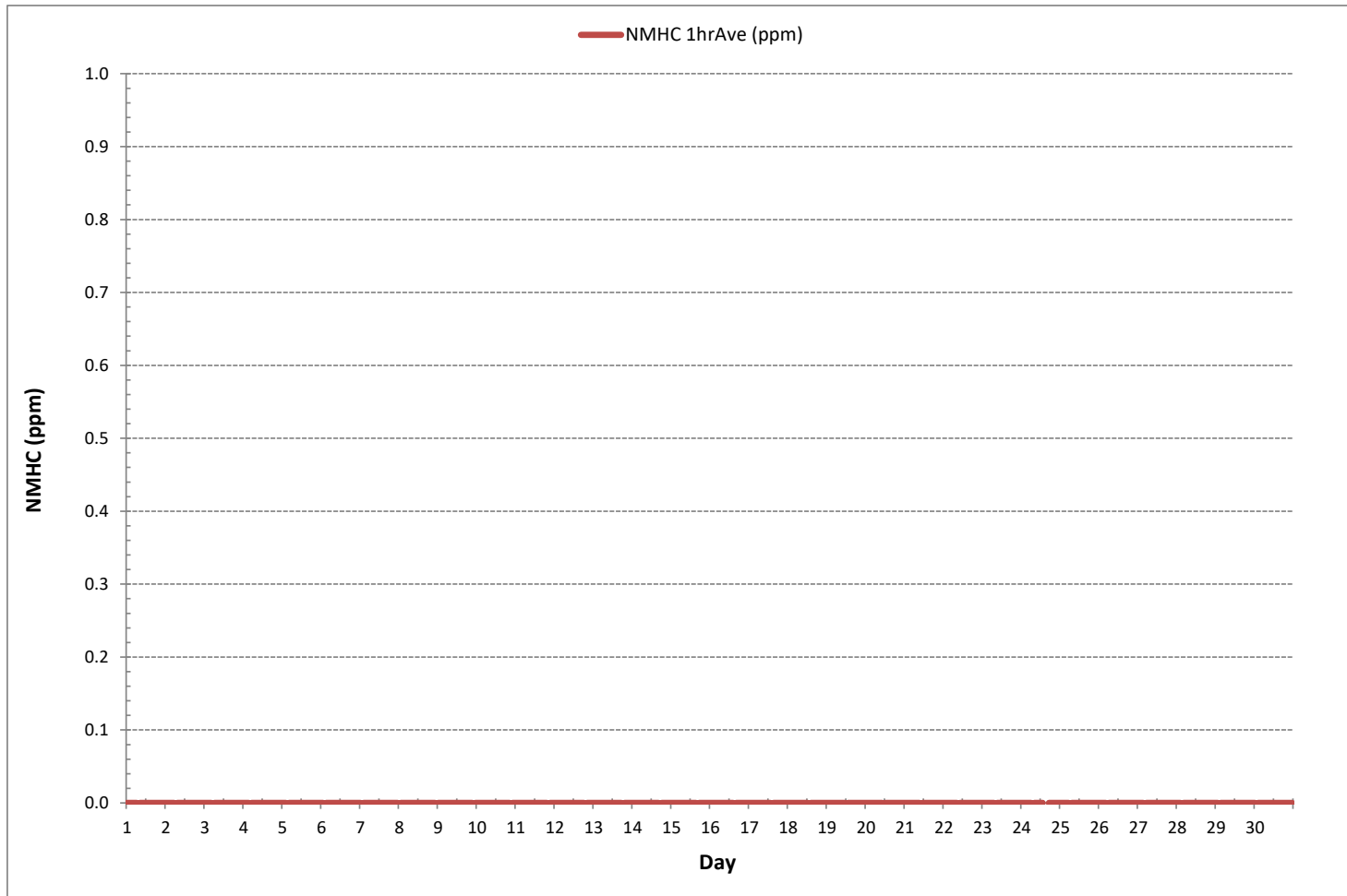
MONTHLY SUMMARY

NUMBER OF NON-ZERO READINGS:	0
MINIMUM 1-HR AVERAGE:	0.00 ppm @ HOUR 0 ON DAY 1
MAXIMUM 1-HR AVERAGE:	0.00 ppm @ HOUR 0 ON DAY 1
MAXIMUM 24-HR AVERAGE:	0.00 ppm ON DAY 1
IZS CALIBRATION TIME:	31 hrs OPERATIONAL TIME: 720 hrs
MONTHLY CALIBRATION TIME:	3 hrs AMD OPERATION UPTIME: 100.0 %
STANDARD DEVIATION:	0.00 MONTHLY AVERAGE: 0.00 ppm

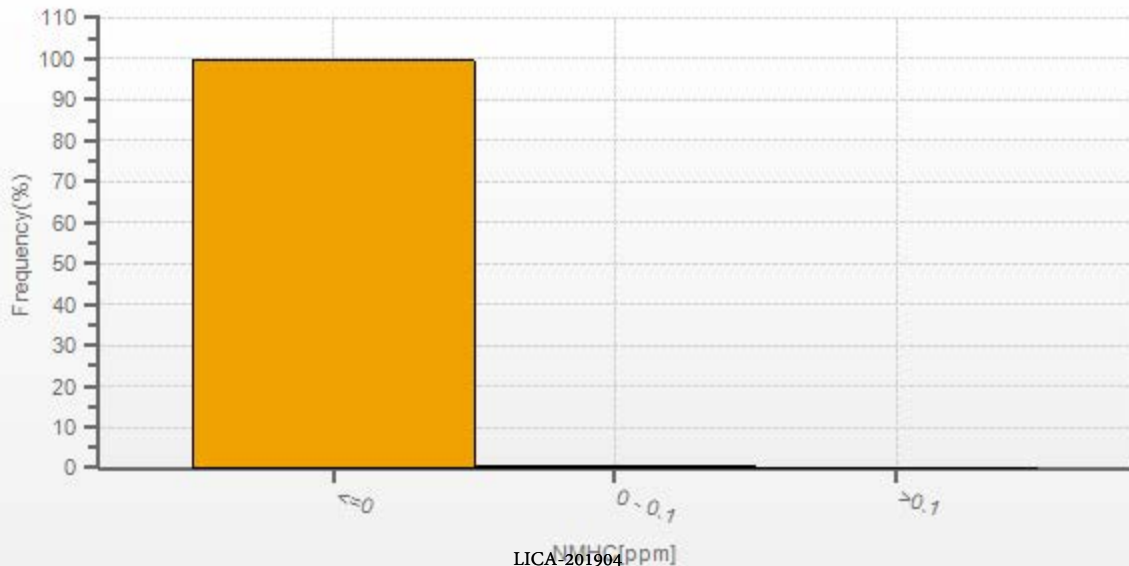
24 HR AVERAGES April 2019



NON-METHANE HYDROCARBONS Hourly Averages (NMHC ppm)



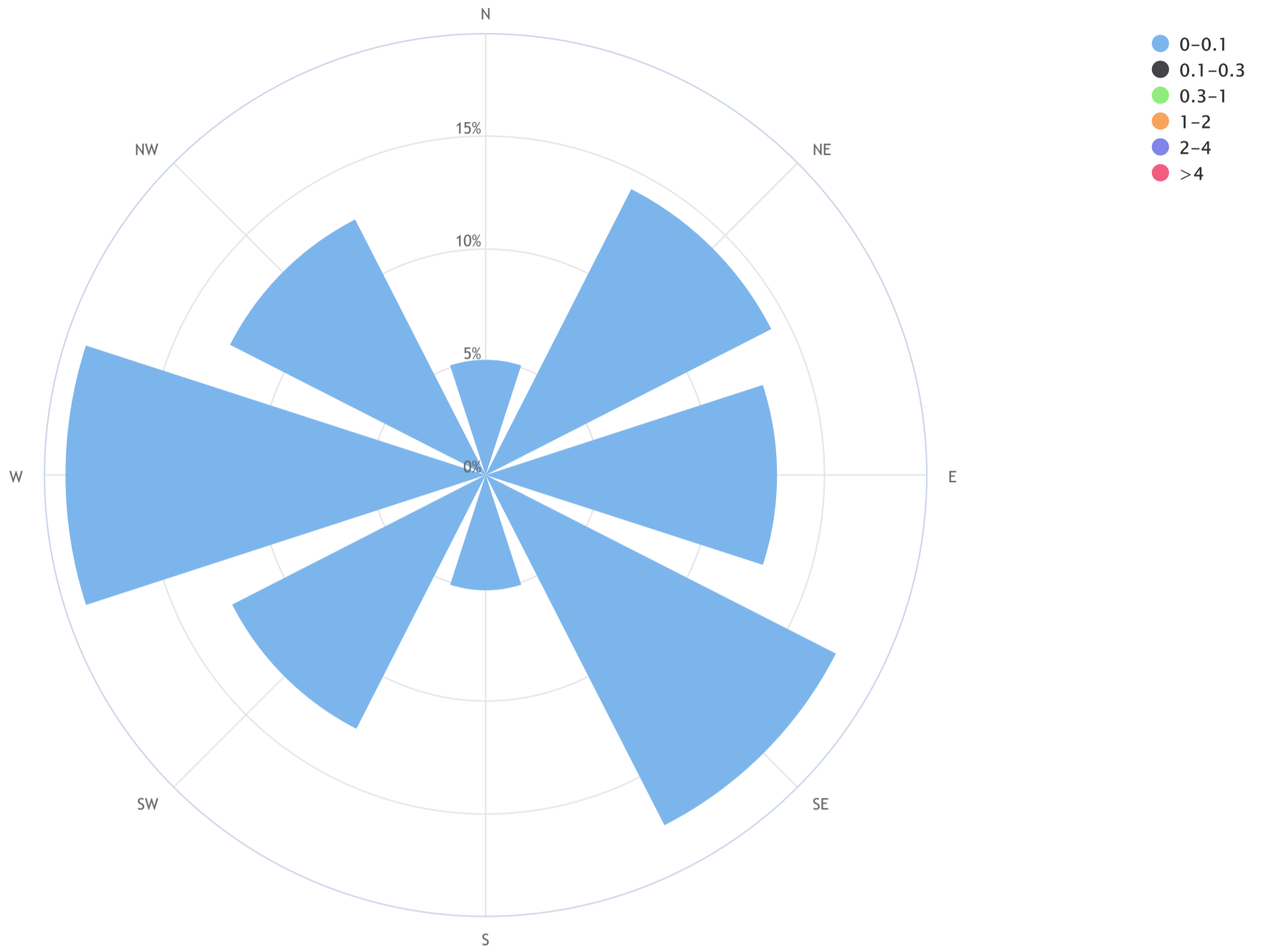
NMHC[ppm] Histogram: LICA COLD LAKE SOUTH Monthly: 19/04 1 Hr.



LICA-201904
Page 36 of 350

Lakeland Industry & Community Association_Cold Lake South Continuous Monitoring Station_NMHC (ppm)_19/04

Pollutant Rose_Wind Frequency (Blowing From)_ CALM Avg = 0.0, CALM % = 1.5%



Direction	0-0.1	0.1-0.3	0.3-1	1-2	2-4	>4	TOTAL
N	5.1	0.0	0.0	0.0	0.0	0.0	5.1
NE	14.2	0.0	0.0	0.0	0.0	0.0	14.2
E	12.9	0.0	0.0	0.0	0.0	0.0	12.9
SE	17.4	0.0	0.0	0.0	0.0	0.0	17.4
S	5.1	0.0	0.0	0.0	0.0	0.0	5.1
SW	12.6	0.0	0.0	0.0	0.0	0.0	12.6
W	18.6	0.0	0.0	0.0	0.0	0.0	18.6
NW	12.7	0.0	0.0	0.0	0.0	0.0	12.7
Summary	98.6	0.0	0.0	0.0	0.0	0.0	98.6
CALM	1.5	0.0	0.0	0.0	0.0	0.0	1.5



OXIDES OF NITROGEN Hourly Averages (NO_x ppb)

HR START (MST)	0:00	1:00	2:00	3:00	4:00	5:00	6:00	7:00	8:00	9:00	10:00	11:00	12:00	13:00	14:00	15:00	16:00	17:00	18:00	19:00	20:00	21:00	22:00	23:00	DAILY	DAILY	24-HR	RDGS.	
HR END (MST)	0:59	1:59	2:59	3:59	4:59	5:59	6:59	7:59	8:59	9:59	10:59	11:59	12:59	13:59	14:59	15:59	16:59	17:59	18:59	19:59	20:59	21:59	22:59	23:59	MIN.	MAX.	AVG.		
DAY																													
1	4	4	4	3	3	3	3	S	2	1	1	1	1	1	1	2	2	2	1	1	1	3	2	1	4	2	24		
2	2	2	3	2	1	2	S	2	2	1	1	1	2	1	1	1	1	1	1	3	5	12	4	2	1	12	2	24	
3	2	2	2	2	2	S	5	3	2	2	2	2	2	2	2	1	2	2	3	3	2	2	2	3	1	5	2	24	
4	2	2	2	2	S	2	3	2	1	2	1	1	1	1	1	2	1	2	2	2	2	2	2	3	1	3	1	24	
5	3	2	2	S	4	2	5	2	1	1	1	1	1	1	1	1	1	2	2	4	2	2	2	2	1	5	2	24	
6	1	2	S	2	2	2	2	2	2	2	2	2	2	2	2	2	3	3	2	2	2	2	2	2	1	3	2	24	
7	2	S	1	2	2	3	2	2	3	3	3	3	2	3	3	2	1	2	4	6	3	1	2	1	1	6	2	24	
8	S	4	5	4	4	4	5	5	4	3	2	1	1	1	1	1	1	1	1	2	3	4	5	S	1	5	3	24	
9	3	5	4	6	5	2	2	2	2	2	2	2	2	2	2	1	2	1	2	2	2	2	S	2	1	6	2	24	
10	2	4	5	6	2	2	2	2	4	3	2	1	2	1	1	1	1	1	1	2	3	S	2	1	1	6	2	24	
11	2	2	2	2	3	3	3	2	2	2	1	1	1	1	1	1	1	1	1	1	S	2	2	1	1	3	1	24	
12	1	1	1	3	2	13	24	4	2	2	3	2	1	1	1	1	1	1	1	1	S	3	3	2	2	1	24	3	24
13	2	2	2	2	4	6	17	9	2	2	2	2	2	1	1	1	1	1	S	4	4	3	4	4	1	17	3	24	
14	6	6	7	8	6	5	4	5	3	1	1	1	1	1	2	1	1	S	3	3	5	5	2	5	1	8	3	24	
15	6	5	4	3	4	6	10	5	2	3	3	3	3	2	2	S	2	2	6	7	9	8	9	2	10	4	24		
16	10	9	6	11	9	16	29	12	2	1	1	1	2	2	1	S	1	1	1	3	3	2	3	6	1	29	5	24	
17	8	8	9	10	15	9	20	10	6	3	2	2	1	3	S	1	1	1	1	1	2	2	1	2	1	20	5	24	
18	2	3	2	4	4	4	4	4	4	3	2	2	2	S	2	1	1	1	1	2	4	3	5	6	1	6	3	24	
19	8	5	3	3	2	2	3	2	1	1	1	1	S	1	1	0	0	0	1	1	2	2	3	2	0	8	2	24	
20	3	5	3	4	4	3	3	3	2	1	1	S	1	1	1	1	1	1	2	1	1	2	2	2	1	5	2	24	
21	3	4	5	5	5	6	5	4	3	3	S	1	1	1	1	1	1	1	1	1	3	5	4	2	1	6	3	24	
22	1	2	5	2	2	4	3	3	3	S	2	2	2	1	1	1	1	1	1	1	2	2	2	1	1	5	2	24	
23	2	1	2	2	2	2	2	S	1	1	1	1	1	1	1	1	1	1	1	1	1	1	2	3	1	3	1	24	
24	4	4	4	7	6	5	6	S	C	C	C	C	C	C	C	X	X	X	X	X	X	X	X	X	4	7	-	15	
25	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	-	-	-	0
26	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	-	-	-	0
27	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	-	-	-	0
28	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	-	-	-	0
29	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	-	-	-	0
30	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	-	-	-	0
HOURLY MAX	10	9	9	11	15	16	29	12	6	3	3	3	3	3	3	2	3	3	4	6	7	12	8	9					
HOURLY AVG	3	4	4	4	4	5	7	4	3	2	2	2	2	1	1	1	1	1	2	2	3	3	3	3					

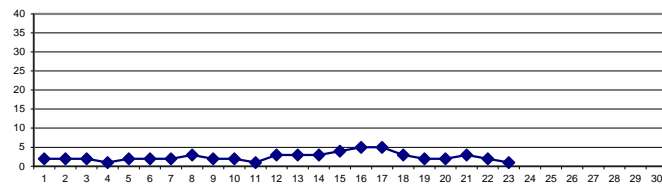
STATUS FLAG CODES

C	- MONTHLY CALIBRATION	Q	- QUALITY ASSURANCE
C1	- REPEAT CALIBRATION	R	- RECOVERY
Y	- MAINTENANCE	X	- MACHINE MALFUNCTION
S	- DAILY ZERO/SPAN CHECK	G	- OUT FOR REPAIR
S1	- REPEAT ZERO/SPAN CHECK	P	- POWER FAILURE

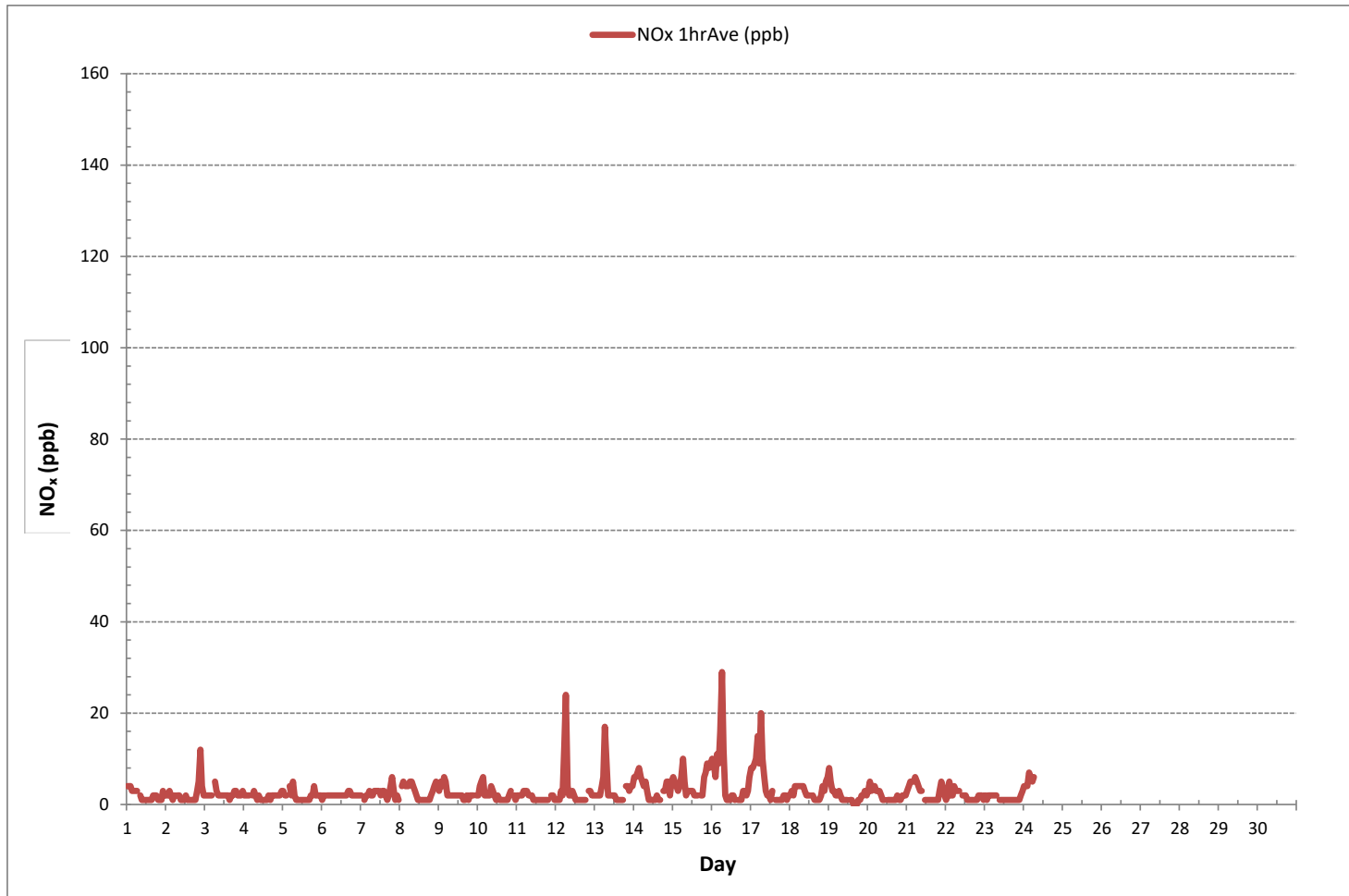
MONTHLY SUMMARY

NUMBER OF NON-ZERO READINGS:	532			
MINIMUM 1-HR AVERAGE:	0	ppb @ HOUR	15	ON DAY 19
MAXIMUM 1-HR AVERAGE:	29	ppb @ HOUR	6	ON DAY 16
MAXIMUM 24-HR AVERAGE:	5	ppb		ON DAY 16
IZS CALIBRATION TIME:	25	hrs	OPERATIONAL TIME:	567 hrs
MONTHLY CALIBRATION TIME:	7	hrs	AMD OPERATION UPTIME:	78.8 %
STANDARD DEVIATION:	3		MONTHLY AVERAGE:	3 ppb

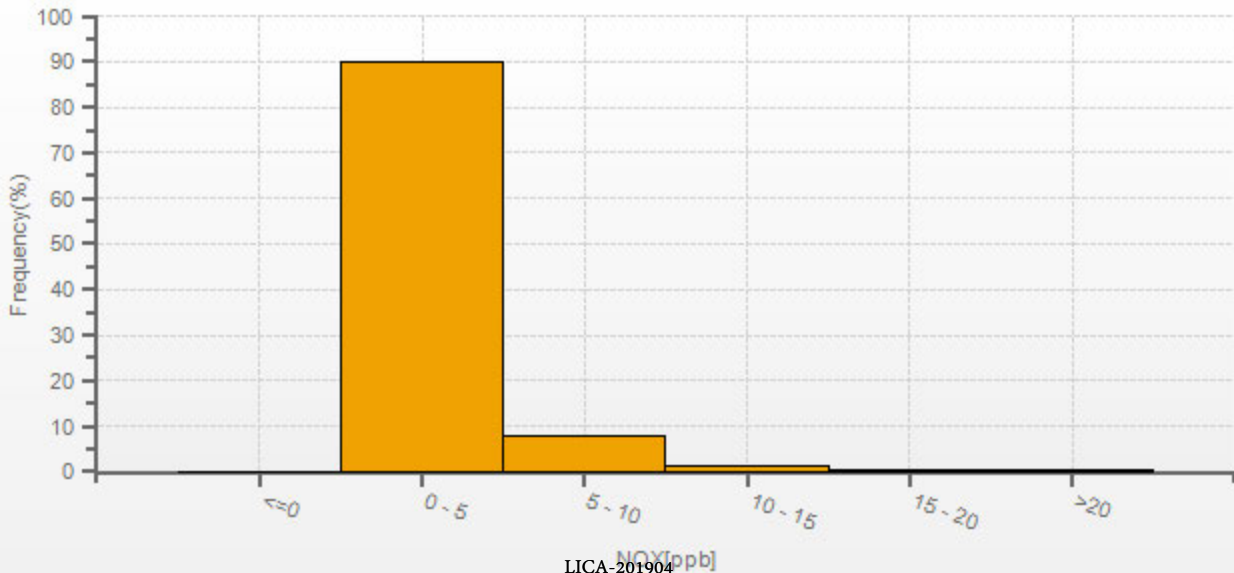
24 HR AVERAGES April 2019



OXIDES OF NITROGEN Hourly Averages (NO_x ppb)



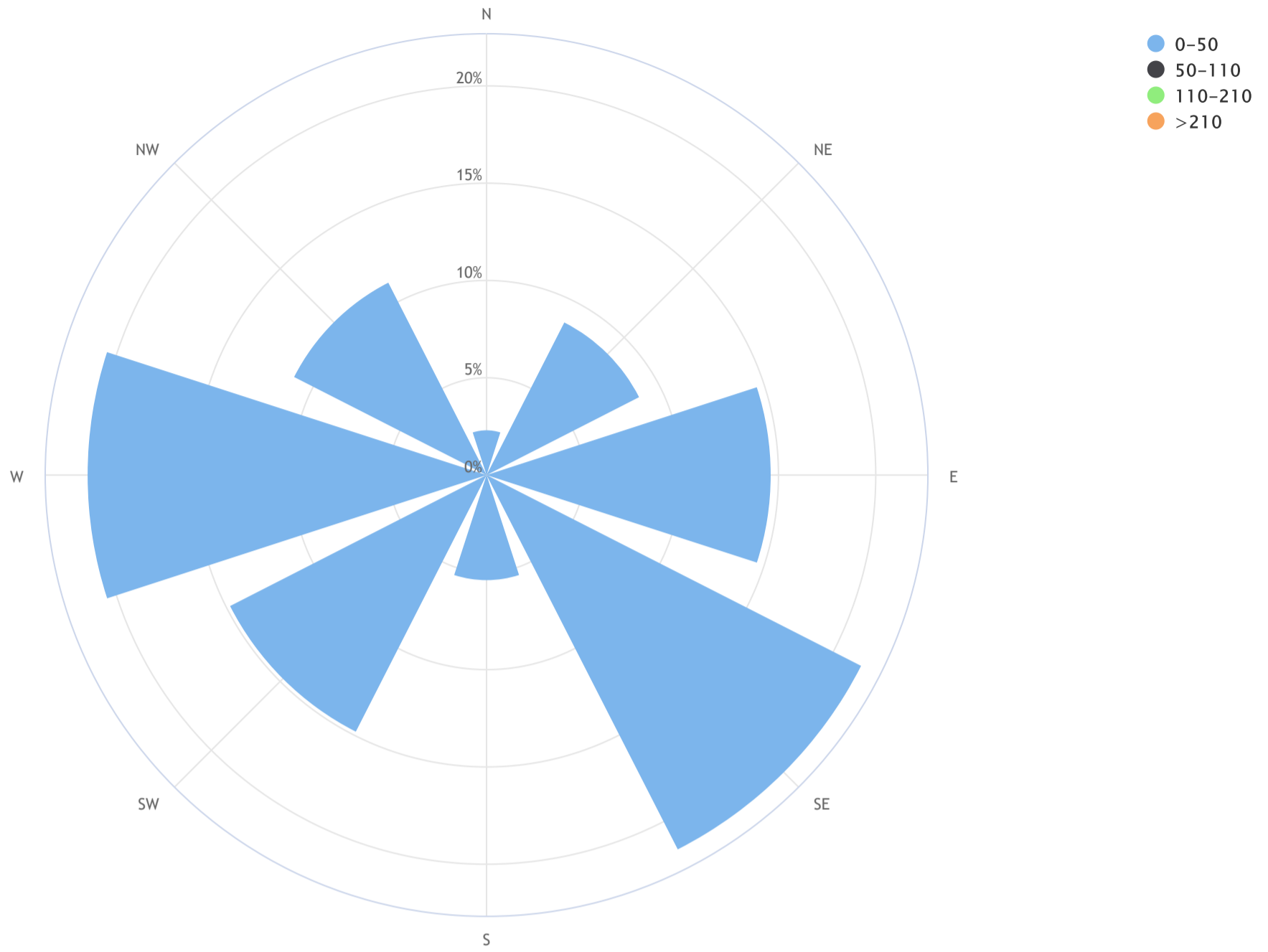
NOX[ppb] Histogram: LICA COLD LAKE SOUTH Monthly: 19/04 1 Hr.



LICA-201904
Page 40 of 350

Lakeland Industry & Community Association_Cold Lake South Continuous Monitoring Station_NO_x (ppb)_19/04

Pollutant Rose_Wind Frequency (Blowing From)_ CALM Avg = 9.4, CALM % = 0.9%



Direction	0-50	50-110	110-210	>210	TOTAL
N	2.3	0.0	0.0	0.0	2.3
NE	8.8	0.0	0.0	0.0	8.8
E	14.6	0.0	0.0	0.0	14.6
SE	21.6	0.0	0.0	0.0	21.6
S	5.4	0.0	0.0	0.0	5.4
SW	14.8	0.0	0.0	0.0	14.8
W	20.5	0.0	0.0	0.0	20.5
NW	11.1	0.0	0.0	0.0	11.1
Summary	99.1	0.0	0.0	0.0	99.1
CALM	0.9	0.0	0.0	0.0	0.9



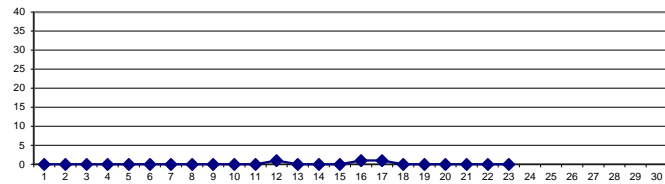
NITRIC OXIDE Hourly Averages (NO ppb)

HR START (MST)	0:00	1:00	2:00	3:00	4:00	5:00	6:00	7:00	8:00	9:00	10:00	11:00	12:00	13:00	14:00	15:00	16:00	17:00	18:00	19:00	20:00	21:00	22:00	23:00	DAILY MIN.	DAILY MAX.	24-HR AVG.	RDGS.	
HR END (MST)	0:59	1:59	2:59	3:59	4:59	5:59	6:59	7:59	8:59	9:59	10:59	11:59	12:59	13:59	14:59	15:59	16:59	17:59	18:59	19:59	20:59	21:59	22:59	23:59					
DAY 1	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	24	
DAY 2	0	0	0	0	0	0	S	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1	0	0	0	1	0	24	
DAY 3	0	0	0	0	0	S	1	1	0	1	0	0	0	1	0	0	0	0	0	0	0	0	0	1	0	0	1	0	24
DAY 4	0	0	0	0	S	0	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1	0	0	1	0	24
DAY 5	0	0	0	S	1	0	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1	0	24
DAY 6	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	24
DAY 7	0	S	0	0	0	0	0	0	1	1	1	1	0	1	1	0	0	0	0	0	0	0	0	0	0	0	1	0	24
DAY 8	S	0	0	0	0	0	1	1	1	1	1	0	0	0	0	0	0	0	0	0	0	0	S	0	0	1	0	24	
DAY 9	1	1	0	1	1	0	0	1	1	1	1	1	0	0	0	0	0	0	0	1	0	0	S	0	0	1	0	24	
DAY 10	0	0	0	0	0	0	0	1	2	2	1	0	0	0	0	0	0	0	0	0	0	S	0	0	0	2	0	24	
DAY 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	24	
DAY 12	0	0	0	0	0	2	7	1	0	0	1	0	0	0	0	0	0	0	0	S	0	1	0	0	0	0	7	1	24
DAY 13	0	0	0	0	0	0	3	2	0	0	0	0	0	0	0	0	0	0	S	0	0	0	0	0	0	0	3	0	24
DAY 14	1	0	0	0	0	0	0	1	0	0	0	0	0	0	0	0	0	S	0	0	0	0	0	0	0	0	1	0	24
DAY 15	0	0	0	0	0	0	1	1	0	1	1	1	0	0	0	0	S	0	0	0	0	1	0	0	0	0	1	0	24
DAY 16	0	1	1	1	2	4	14	4	0	0	0	0	0	0	0	S	0	0	0	0	0	0	0	0	0	0	14	1	24
DAY 17	0	0	1	1	1	1	8	2	2	1	0	0	0	1	S	0	0	0	0	0	0	0	0	0	0	0	8	1	24
DAY 18	0	0	0	0	0	1	1	1	1	1	0	0	0	0	S	0	0	0	0	0	0	0	0	0	0	0	1	0	24
DAY 19	0	0	0	0	0	0	1	0	0	0	0	0	0	S	0	0	0	0	0	0	0	0	0	0	0	0	1	0	24
DAY 20	0	0	0	0	0	0	0	1	0	0	0	0	S	0	0	0	0	0	0	0	0	0	0	0	0	0	1	0	24
DAY 21	0	0	0	0	0	0	1	1	1	1	S	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1	0	24
DAY 22	0	0	0	0	0	0	0	1	1	S	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1	0	24
DAY 23	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	24
DAY 24	0	0	0	0	0	0	1	S	C	C	C	C	C	C	C	C	X	X	X	X	X	X	X	X	X	0	1	-	15
DAY 25	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	-	-	-	0
DAY 26	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	-	-	-	0
DAY 27	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	-	-	-	0
DAY 28	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	-	-	-	0
DAY 29	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	-	-	-	0
DAY 30	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	-	-	-	0
HOURLY MAX	1	1	1	1	2	4	14	4	2	2	1	1	0	1	1	0	0	0	0	1	0	1	0	1	1				
HOURLY AVG	0	0	0	0	0	0	2	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0				

STATUS FLAG CODES

C	- MONTHLY CALIBRATION	Q	- QUALITY ASSURANCE
C1	- REPEAT CALIBRATION	R	- RECOVERY
Y	- MAINTENANCE	X	- MACHINE MALFUNCTION
S	- DAILY ZERO/SPAN CHECK	G	- OUT FOR REPAIR
S1	- REPEAT ZERO/SPAN CHECK	P	- POWER FAILURE

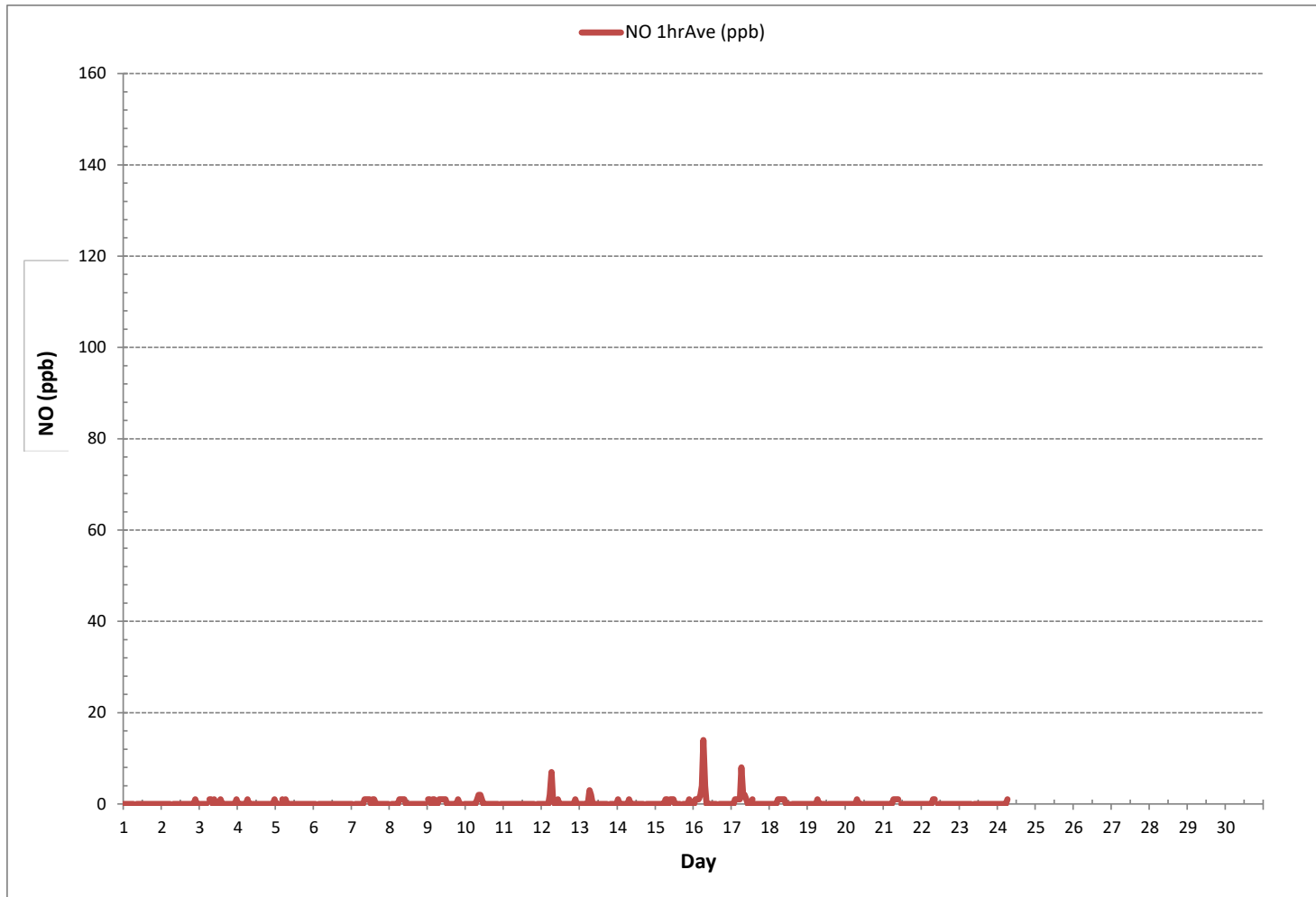
24 HR AVERAGES April 2019



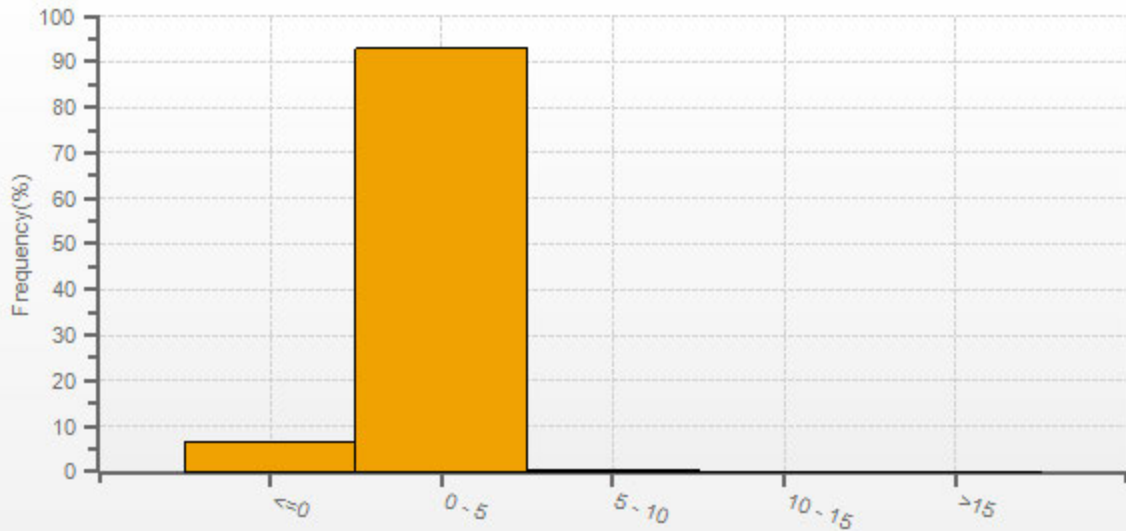
MONTHLY SUMMARY

NUMBER OF NON-ZERO READINGS:	79				
MINIMUM 1-HR AVERAGE:	0 ppb	@ HOUR	0	ON DAY	1
MAXIMUM 1-HR AVERAGE:	14 ppb	@ HOUR	6	ON DAY	16
MAXIMUM 24-HR AVERAGE:	1 ppb			ON DAY	12
IZS CALIBRATION TIME:	25 hrs	OPERATIONAL TIME:	567 hrs		
MONTHLY CALIBRATION TIME:	7 hrs	AMD OPERATION UPTIME:	78.8 %		
STANDARD DEVIATION:	1	MONTHLY AVERAGE:	0 ppb		

NITRIC OXIDE Hourly Averages (NO ppb)



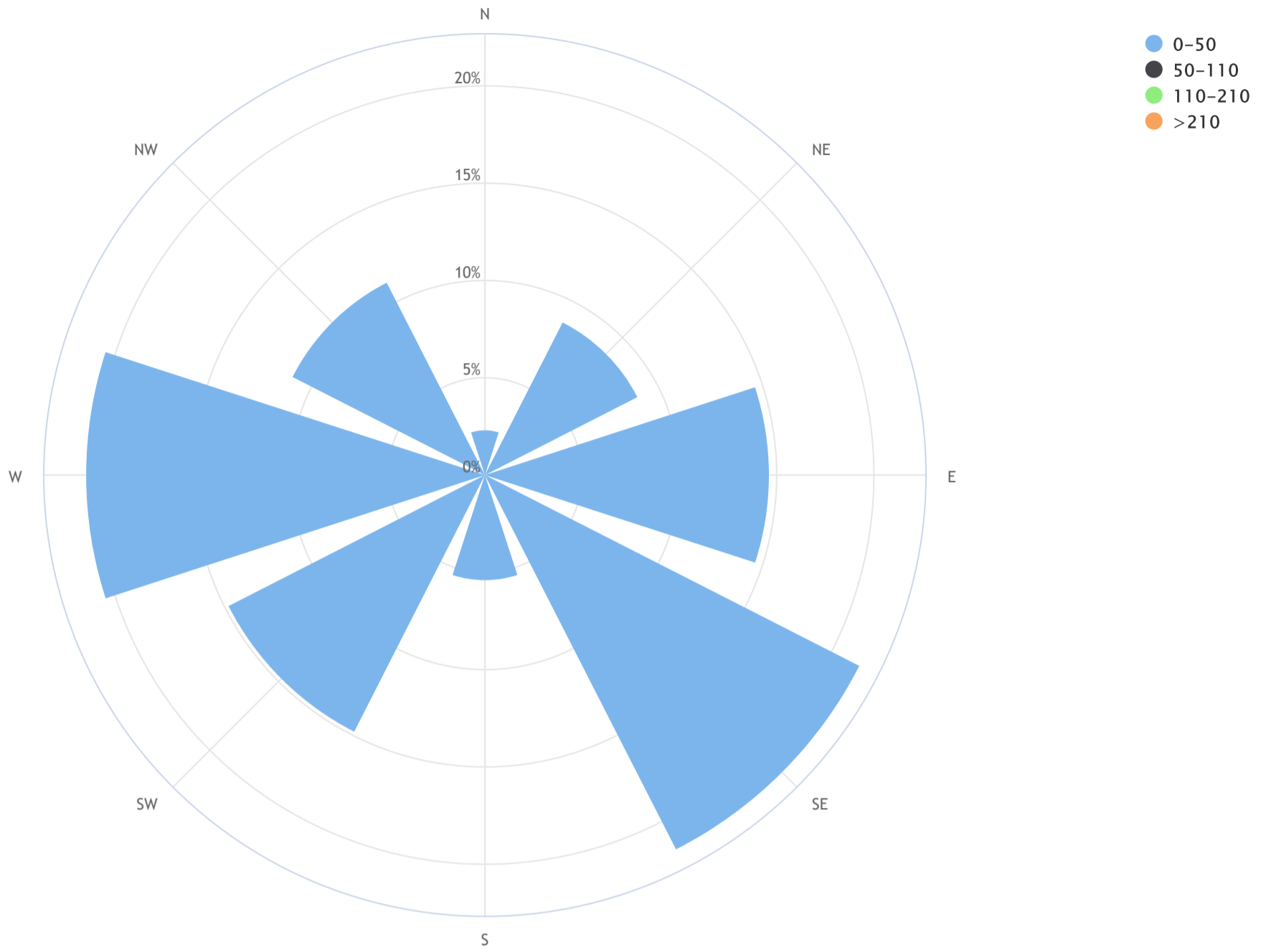
NO[ppb] Histogram: LICA COLD LAKE SOUTH Monthly: 19/04 1 Hr.



LICA-201904
Page 44 of 350

Lakeland Industry & Community Association_Cold Lake South Continuous Monitoring Station_NO (ppb)_19/04

Pollutant Rose_Wind Frequency (Blowing From)_ CALM Avg = 2.8, CALM % = 0.9%



Direction	0-50	50-110	110-210	>210	TOTAL
N	2.3	0.0	0.0	0.0	2.3
NE	8.8	0.0	0.0	0.0	8.8
E	14.6	0.0	0.0	0.0	14.6
SE	21.6	0.0	0.0	0.0	21.6
S	5.4	0.0	0.0	0.0	5.4
SW	14.8	0.0	0.0	0.0	14.8
W	20.5	0.0	0.0	0.0	20.5
NW	11.1	0.0	0.0	0.0	11.1
Summary	99.1	0.0	0.0	0.0	99.1
CALM	0.9	0.0	0.0	0.0	0.9

NITROGEN DIOXIDE Hourly Averages (NO₂ ppb)

HR START (MST)	0:00	1:00	2:00	3:00	4:00	5:00	6:00	7:00	8:00	9:00	10:00	11:00	12:00	13:00	14:00	15:00	16:00	17:00	18:00	19:00	20:00	21:00	22:00	23:00	DAILY MIN.	DAILY MAX.	24-HR AVG.	RDGS.	
HR END (MST)	0:59	1:59	2:59	3:59	4:59	5:59	6:59	7:59	8:59	9:59	10:59	11:59	12:59	13:59	14:59	15:59	16:59	17:59	18:59	19:59	20:59	21:59	22:59	23:59					
DAY 1	4	4	3	3	3	3	3	S	2	1	1	1	1	1	1	1	1	2	2	1	1	1	3	2	1	4	2	24	
2	2	2	3	2	1	2	S	2	1	1	1	1	1	1	1	1	1	1	1	3	5	12	3	2	1	12	2	24	
3	2	2	2	2	2	S	4	3	2	1	1	1	1	2	1	1	1	2	2	3	2	2	2	2	1	4	2	24	
4	1	1	1	2	S	2	2	2	1	1	1	1	1	1	1	1	1	2	2	2	2	1	1	2	1	2	1	24	
5	2	2	2	S	3	2	3	2	1	1	1	1	1	1	1	1	1	2	3	2	2	2	2	1	1	3	2	24	
6	1	2	S	2	2	2	2	2	2	2	2	2	2	2	1	1	2	2	2	2	2	2	2	2	1	2	2	24	
7	1	S	1	2	2	2	1	1	2	2	2	2	2	2	2	1	1	2	4	5	2	1	2	1	1	5	2	24	
8	S	3	5	3	3	4	4	4	3	2	1	1	1	1	1	1	1	1	1	2	3	4	5	S	1	5	2	24	
9	3	4	3	5	4	2	2	2	1	1	1	1	1	1	1	1	1	1	1	2	2	1	S	2	1	5	2	24	
10	2	4	4	6	2	2	2	1	2	2	1	1	1	1	1	1	1	1	1	2	3	S	2	1	1	6	2	24	
11	2	2	2	2	3	3	3	2	1	1	1	1	1	1	1	1	1	1	1	1	S	2	2	1	1	3	1	24	
12	1	1	1	3	2	12	17	4	2	1	2	1	1	1	1	1	1	1	1	S	3	3	2	2	1	17	3	24	
13	2	2	2	2	4	6	14	7	2	2	2	2	1	1	1	1	1	1	S	4	4	3	4	3	1	14	3	24	
14	5	6	7	8	6	5	3	5	3	1	1	1	1	1	1	1	1	S	3	3	5	4	2	5	1	8	3	24	
15	6	5	4	3	6	4	6	8	4	1	3	3	2	2	2	1	S	2	2	6	7	8	8	9	1	9	4	24	
16	9	9	5	10	8	12	14	8	2	1	1	1	1	1	1	S	1	1	1	3	3	2	3	5	1	14	4	24	
17	8	8	8	9	13	8	13	8	4	3	2	1	1	2	S	1	1	1	1	1	1	2	1	1	1	13	4	24	
18	2	3	2	4	3	3	3	3	3	2	2	1	1	S	1	1	1	1	1	2	4	3	5	6	1	6	2	24	
19	8	4	3	3	2	2	2	1	1	1	1	1	0	S	1	1	0	0	0	1	1	2	2	3	2	0	8	2	24
20	3	5	3	3	4	3	3	3	1	1	1	S	1	1	1	1	1	1	2	1	1	2	2	2	1	5	2	24	
21	2	4	5	5	5	4	3	2	2	S	1	1	1	1	1	1	1	1	1	1	3	5	4	2	1	5	3	24	
22	1	2	5	2	2	4	3	2	2	S	2	2	2	1	1	1	1	1	1	1	1	1	1	2	1	5	2	24	
23	2	1	1	2	2	2	2	1	S	1	1	1	1	1	1	1	0	1	1	1	1	1	2	3	0	3	1	24	
24	4	4	4	7	6	5	5	S	C	C	C	C	C	C	C	X	X	X	X	X	X	X	X	X	4	7	-	15	
25	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	-	-	-	0
26	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	-	-	-	0
27	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	-	-	-	0
28	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	-	-	-	0
29	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	-	-	-	0
30	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	-	-	-	0
HOURLY MAX	9	9	8	10	13	12	17	8	4	3	3	2	2	2	2	1	2	2	4	6	7	12	8	9					
HOURLY AVG	3	3	3	4	4	4	5	3	2	2	1	1	1	1	1	1	1	1	2	2	3	3	3	3					

STATUS FLAG CODES

C	- MONTHLY CALIBRATION	Q	- QUALITY ASSURANCE
C1	- REPEAT CALIBRATION	R	- RECOVERY
Y	- MAINTENANCE	X	- MACHINE MALFUNCTION
S	- DAILY ZERO/SPAN CHECK	G	- OUT FOR REPAIR
S1	- REPEAT ZERO/SPAN CHECK	P	- POWER FAILURE

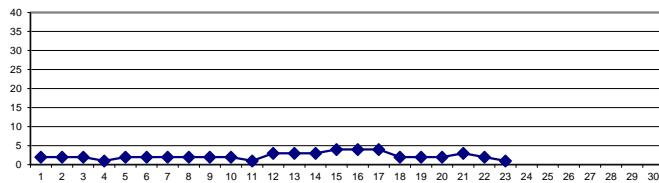
OBJECTIVE LIMIT:

ALBERTA ENVIRONMENT: 1-HR 159 ppb

MONTHLY SUMMARY

NUMBER OF 1-HR EXCEEDANCES:	0			
NUMBER OF NON-ZERO READINGS:	530			
MINIMUM 1-HR AVERAGE:	0	ppb @ HOUR	11	ON DAY
MAXIMUM 1-HR AVERAGE:	17	ppb @ HOUR	6	ON DAY
MAXIMUM 24-HR AVERAGE:	4	ppb		ON DAY
IZS CALIBRATION TIME:	25	hrs	OPERATIONAL TIME:	567
MONTHLY CALIBRATION TIME:	7	hrs	AMD OPERATION UPTIME:	78.8
STANDARD DEVIATION:	2		MONTHLY AVERAGE:	2
				ppb

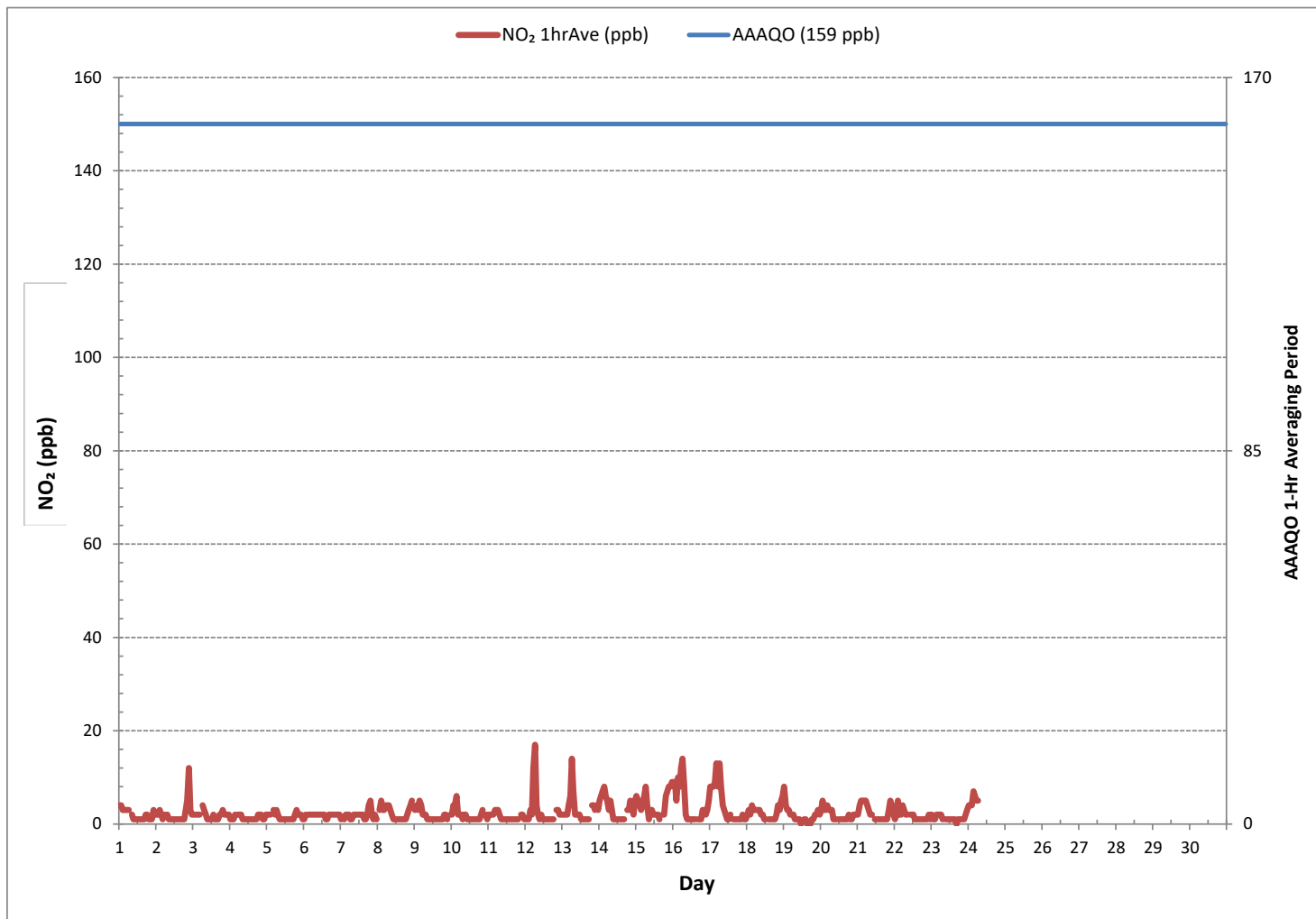
24 HR AVERAGES April 2019



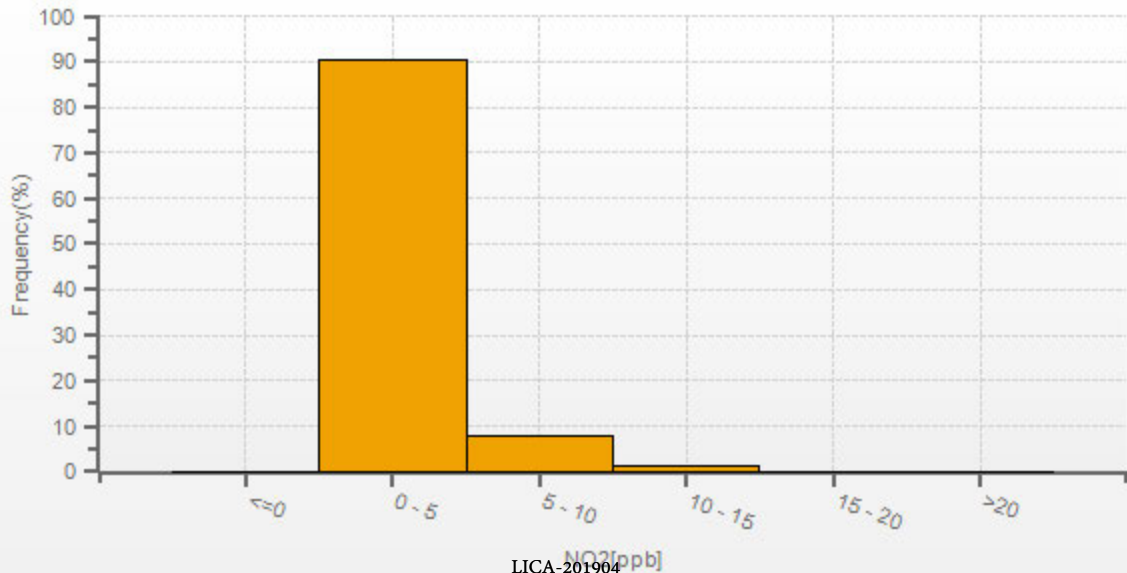


LAKELAND INDUSTRY & COMMUNITY ASSOCIATION
Cold Lake South Continuous Monitoring Station - April 2019

NITROGEN DIOXIDE Hourly Averages (NO₂ ppb)



NO2[ppb] Histogram: LICA COLD LAKE SOUTH Monthly: 19/04 1 Hr.

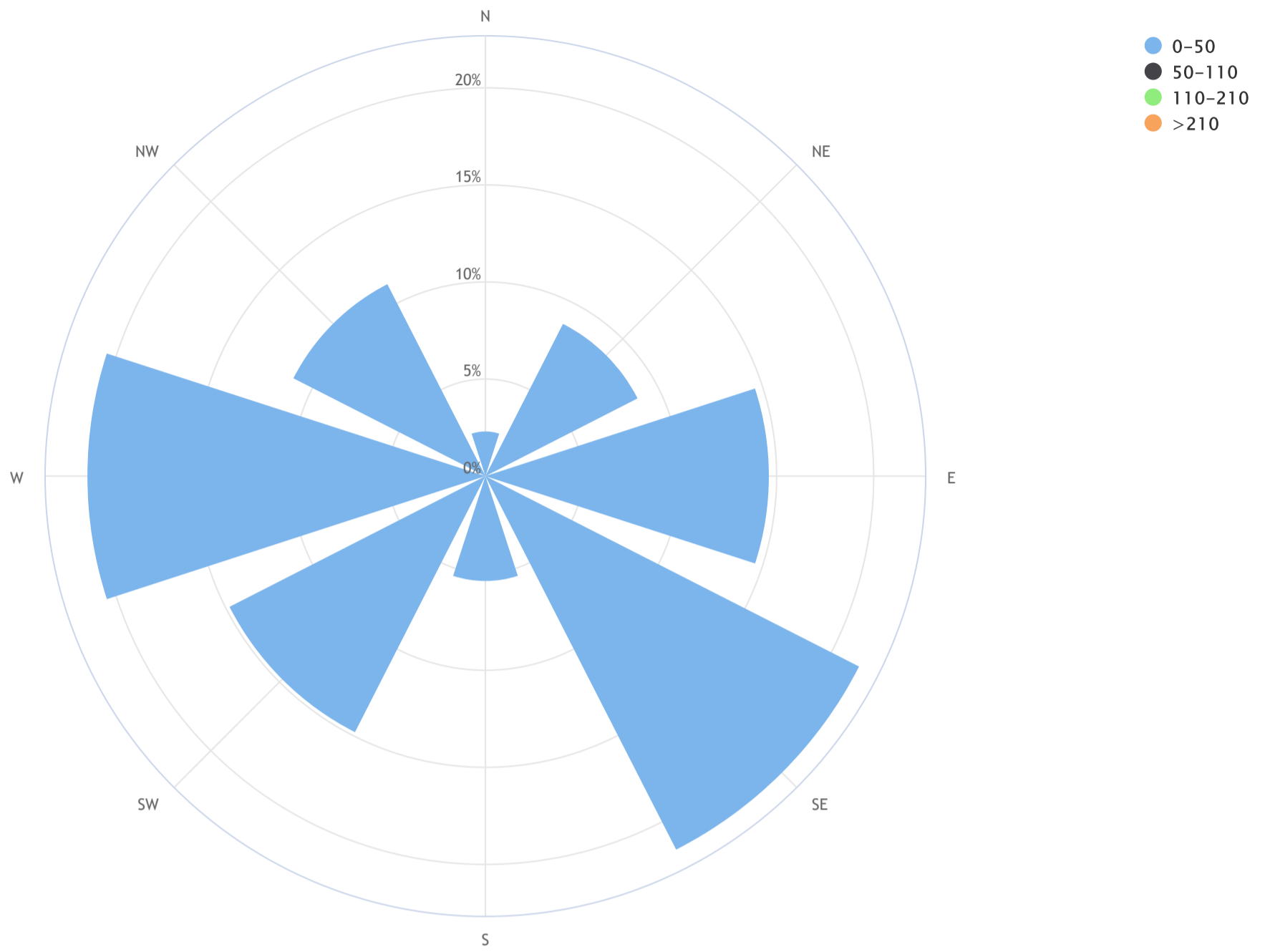


LICA-201904

Page 48 of 350

Lakeland Industry & Community Association_Cold Lake South Continuous Monitoring Station_NO₂ (ppb)_19/04

Pollutant Rose_Wind Frequency (Blowing From)_ CALM Avg = 6.4, CALM % = 0.9%



Direction	0-50	50-110	110-210	>210	TOTAL
N	2.3	0.0	0.0	0.0	2.3
NE	8.8	0.0	0.0	0.0	8.8
E	14.6	0.0	0.0	0.0	14.6
SE	21.6	0.0	0.0	0.0	21.6
S	5.4	0.0	0.0	0.0	5.4
SW	14.8	0.0	0.0	0.0	14.8
W	20.5	0.0	0.0	0.0	20.5
NW	11.1	0.0	0.0	0.0	11.1
Summary	99.1	0.0	0.0	0.0	99.1
CALM	0.9	0.0	0.0	0.0	0.9

OZONE Hourly Averages (O₃ ppb)

HR START (MST)	0:00	1:00	2:00	3:00	4:00	5:00	6:00	7:00	8:00	9:00	10:00	11:00	12:00	13:00	14:00	15:00	16:00	17:00	18:00	19:00	20:00	21:00	22:00	23:00	DAILY	DAILY	24-HR	RDGS.
HR END (MST)	0:59	1:59	2:59	3:59	4:59	5:59	6:59	7:59	8:59	9:59	10:59	11:59	12:59	13:59	14:59	15:59	16:59	17:59	18:59	19:59	20:59	21:59	22:59	23:59	MIN.	MAX.	AVG.	
DAY 1	33.2	32.4	32.3	33.6	32.8	32.3	33.8	S	38.8	48.5	52.5	50.7	49.6	47.9	46.9	46.9	45.2	44.5	45.0	45.2	42.9	43.9	39.1	37.8	32.3	52.5	41.5	24
2	36.7	34.1	34.5	33.4	38.6	40.3	S	41.9	43.1	43.7	44.2	45.0	44.9	44.8	45.3	45.1	46.1	46.5	45.0	35.5	28.1	23.2	39.0	41.1	23.2	46.5	40.0	24
3	40.6	39.4	38.9	39.5	39.8	S	37.7	39.0	39.5	40.4	40.7	40.9	40.7	40.9	41.2	41.6	41.5	41.8	40.4	38.6	39.4	39.3	38.6	38.2	37.7	41.8	39.9	24
4	38.5	38.1	37.0	34.1	S	32.6	33.2	33.8	34.6	34.9	35.4	36.7	36.9	37.5	38.0	38.3	38.6	39.0	40.3	40.8	42.0	40.7	39.3	38.4	32.6	42.0	37.3	24
5	38.3	37.0	36.5	S	36.4	36.1	35.2	35.1	35.6	36.0	36.3	37.1	38.4	39.9	40.1	40.2	40.2	38.7	37.1	35.3	35.9	36.7	36.4	35.6	35.1	40.2	37.1	24
6	35.3	34.6	S	33.3	32.3	32.5	32.0	31.5	31.3	30.3	29.0	28.8	28.9	29.3	29.6	27.4	26.4	24.6	26.0	26.5	26.7	27.3	26.4	26.3	24.6	35.3	29.4	24
7	26.2	S	25.9	24.6	23.5	22.2	21.0	17.9	14.0	16.3	21.7	27.1	29.9	30.2	32.9	37.8	41.8	37.4	32.9	23.1	15.9	11.6	6.2	10.0	6.2	41.8	23.9	24
8	S	25.4	15.2	19.1	23.9	24.3	26.3	31.0	35.3	38.1	41.4	45.4	46.3	47.2	49.2	49.5	49.2	48.5	47.2	43.2	32.8	27.5	27.2	S	15.2	49.5	36.1	24
9	20.8	19.8	20.1	14.6	17.8	20.0	19.6	19.5	20.1	20.7	21.9	23.0	25.5	28.3	30.2	31.8	33.7	35.4	36.4	34.7	33.3	31.4	S	27.4	14.6	36.4	25.5	24
10	25.3	20.0	13.3	12.0	18.1	18.6	18.9	19.7	21.1	23.1	28.2	37.6	36.6	39.4	41.1	41.5	45.8	43.6	46.4	37.0	35.2	S	38.5	34.8	12.0	46.4	30.3	24
11	34.1	34.7	34.5	33.2	31.3	30.8	30.3	30.4	30.0	30.4	33.6	39.9	43.0	42.4	43.5	44.5	43.8	44.5	40.9	36.5	S	32.8	32.8	34.7	30.0	44.5	36.2	24
12	35.0	35.1	33.7	29.0	21.6	10.8	10.4	31.6	34.2	36.6	40.7	44.3	46.5	47.3	48.2	49.6	50.0	49.9	49.0	S	40.7	41.3	44.3	43.2	10.4	50.0	38.0	24
13	42.6	40.5	39.8	38.0	28.7	20.6	16.4	29.4	41.0	42.3	43.7	46.1	48.7	50.8	51.0	50.5	50.5	49.5	S	41.7	40.2	41.3	40.3	29.4	16.4	51.0	40.1	24
14	31.0	32.2	24.0	19.9	22.9	25.3	23.1	31.8	36.9	39.9	42.0	45.5	50.1	50.6	51.5	50.7	50.1	S	45.8	44.1	37.4	35.1	37.8	34.9	19.9	51.5	37.5	24
15	32.2	32.9	28.0	25.6	25.1	20.9	18.3	27.4	32.7	31.6	34.1	36.7	38.9	41.4	40.4	41.9	S	43.8	43.4	33.0	23.9	17.0	14.8	10.8	10.8	43.8	30.2	24
16	8.1	14.2	21.1	12.0	11.2	5.5	5.2	17.5	31.8	35.1	35.2	38.1	38.5	42.4	45.6	S	47.4	47.1	45.7	40.4	39.2	43.8	39.7	30.0	5.2	47.4	30.2	24
17	19.3	14.9	15.1	11.5	8.4	7.7	6.8	20.5	30.4	39.0	42.5	48.1	49.7	49.4	S	50.0	47.1	46.7	46.7	44.7	41.9	38.9	34.7	29.2	6.8	50.0	32.3	24
18	29.4	22.3	13.9	8.6	7.8	13.3	26.0	29.2	32.4	35.1	39.1	40.5	42.4	S	47.4	49.2	49.7	50.3	48.2	41.0	30.2	29.5	23.8	18.5	7.8	50.3	31.6	24
19	16.3	23.7	27.9	36.9	41.9	43.1	40.2	39.8	39.9	42.6	43.8	45.9	S	48.3	48.5	49.5	50.9	52.1	50.7	48.4	44.1	36.3	26.8	25.4	16.3	52.1	40.1	24
20	20.7	16.4	18.9	20.4	25.7	28.8	32.4	37.2	40.0	43.1	45.5	S	47.3	48.3	48.0	46.5	47.0	47.6	43.8	42.1	39.8	35.5	31.8	34.8	16.4	48.3	36.6	24
21	31.2	25.2	22.9	20.8	20.0	18.7	24.6	28.8	35.2	40.2	S	47.8	48.7	51.0	53.4	54.9	55.1	54.6	53.0	49.4	38.6	38.8	41.7	45.0	18.7	55.1	39.1	24
22	45.5	45.1	39.7	43.7	42.8	40.2	39.5	40.2	40.9	S	43.8	46.4	51.3	58.4	62.5	64.5	62.8	60.2	58.2	55.0	52.8	50.8	46.9	44.8	39.5	64.5	49.4	24
23	39.7	43.6	42.4	38.0	35.0	36.1	39.8	44.3	S	47.1	47.5	49.0	49.7	50.5	52.5	52.1	51.1	53.3	55.2	54.9	54.8	53.0	46.7	39.9	35.0	55.2	46.8	24
24	33.8	32.1	36.4	34.3	31.0	36.5	38.2	S	45.7	49.7	53.0	54.1	C	C	C	C	50.5	49.9	48.5	47.3	47.7	46.3	45.5	44.9	31.0	54.1	43.4	24
25	44.7	45.3	44.3	44.0	40.9	36.0	S	39.8	42.9	45.7	46.8	47.0	47.7	47.5	48.2	48.6	48.6	48.5	47.7	45.9	33.8	29.4	31.4	21.1	21.1	48.6	42.4	24
26	18.4	16.5	14.3	7.4	2.7	S	16.1	29.6	36.5	39.6	44.3	44.9	46.4	46.7	45.9	44.1	43.9	43.5	42.2	40.4	39.5	38.0	37.0	37.0	2.7	46.7	33.7	24
27	36.4	36.0	33.0	28.1	S	30.2	33.9	32.2	32.6	32.3	34.8	37.2	37.9	38.0	39.3	39.7	40.6	41.3	43.8	48.2	47.1	45.4	41.6	36.6	28.1	48.2	37.7	24
28	33.0	20.0	23.5	S	19.6	17.3	23.8	35.0	43.7	45.4	45.8	46.0	46.3	46.3	46.4	46.2	45.8	45.5	44.3	40.1	32.9	26.3	23.3	12.7	12.7	46.4	35.2	24
29	12.7	14.1	S	3.2	9.3	8.7	20.5	30.5	39.4	42.0	45.0	45.1	45.1	44.7	45.6	48.6	49.4	49.1	47.1	45.3	45.1	44.0	45.2	42.8	3.2	49.4	35.8	24
30	36.6	S	30.6	30.4	38.7	44.6	44.6	43.8	44.2	43.5	43.9	44.0	44.7	45.6	44.7	44.6	44.7	43.4	42.2	40.7	36.8	33.9	33.9	30.1	30.1	45.6	40.4	24
HOURLY MAX	45.5	45.3	44.3	44.0	42.8	44.6	44.6	44.3	45.7	49.7	53.0	54.1	51.3	58.4	62.5	64.5	62.8	60.2	58.2	55.0	54.8	53.0	46.9	45.0				
HOURLY AVG	30.9	29.5	28.5	26.0	26.0	26.2	26.7	31.7	35.3	37.7	39.9	42.0	42.9	44.1	44.9	45.6	46.1	45.5	44.6	41.3	37.9	35.8	34.9	32.3				

STATUS FLAG CODES

C	- MONTHLY CALIBRATION	Q	- QUALITY ASSURANCE
C1	- REPEAT CALIBRATION	R	- RECOVERY
Y	- MAINTENANCE	X	- MACHINE MALFUNCTION
S	- DAILY ZERO/SPAN CHECK	G	- OUT FOR REPAIR
S1	- REPEAT ZERO/SPAN CHECK	P	- POWER FAILURE

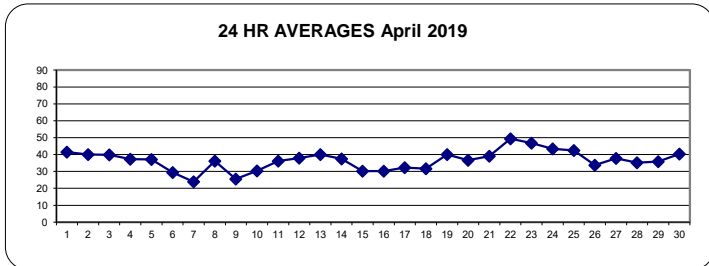
OBJECTIVE LIMIT:

ALBERTA ENVIRONMENT: 1-HR 76 ppb

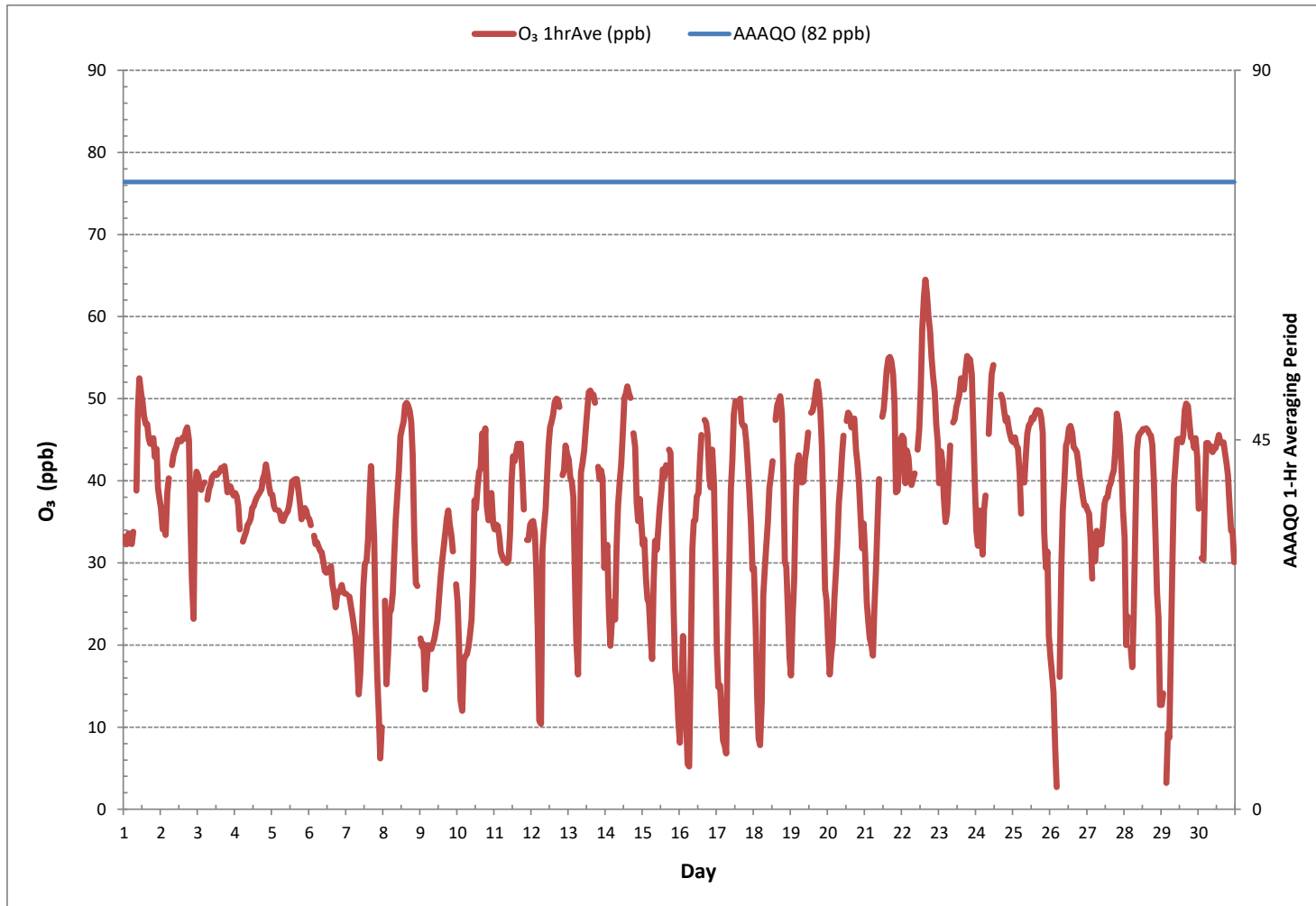
MONTHLY SUMMARY

NUMBER OF 1-HR EXCEEDANCES:	0				
NUMBER OF NON-ZERO READINGS:	685				
MINIMUM 1-HR AVERAGE:	2.7	ppb	@ HOUR	4	ON DAY 26
MAXIMUM 1-HR AVERAGE:	64.5	ppb	@ HOUR	15	ON DAY 22
MAXIMUM 24-HR AVERAGE:	49.4	ppb			ON DAY 22
IZS CALIBRATION TIME:	31	hrs	OPERATIONAL TIME:	720	hrs
MONTHLY CALIBRATION TIME:	4	hrs	AMD OPERATION UPTIME:	100.0	%
STANDARD DEVIATION:	11.0		MONTHLY AVERAGE:	36.6	ppb

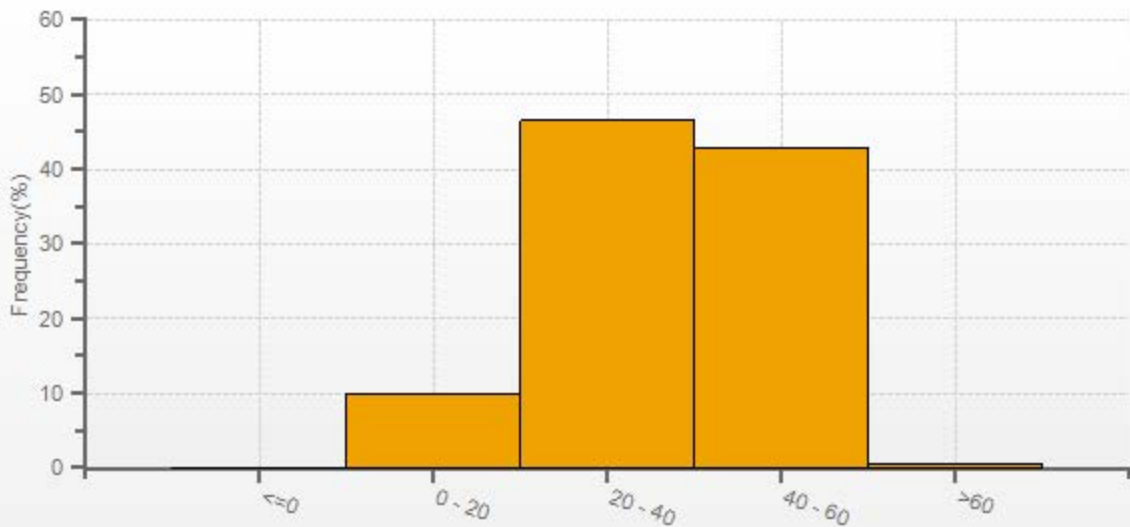
24 HR AVERAGES April 2019



OZONE Hourly Averages (O₃ ppb)



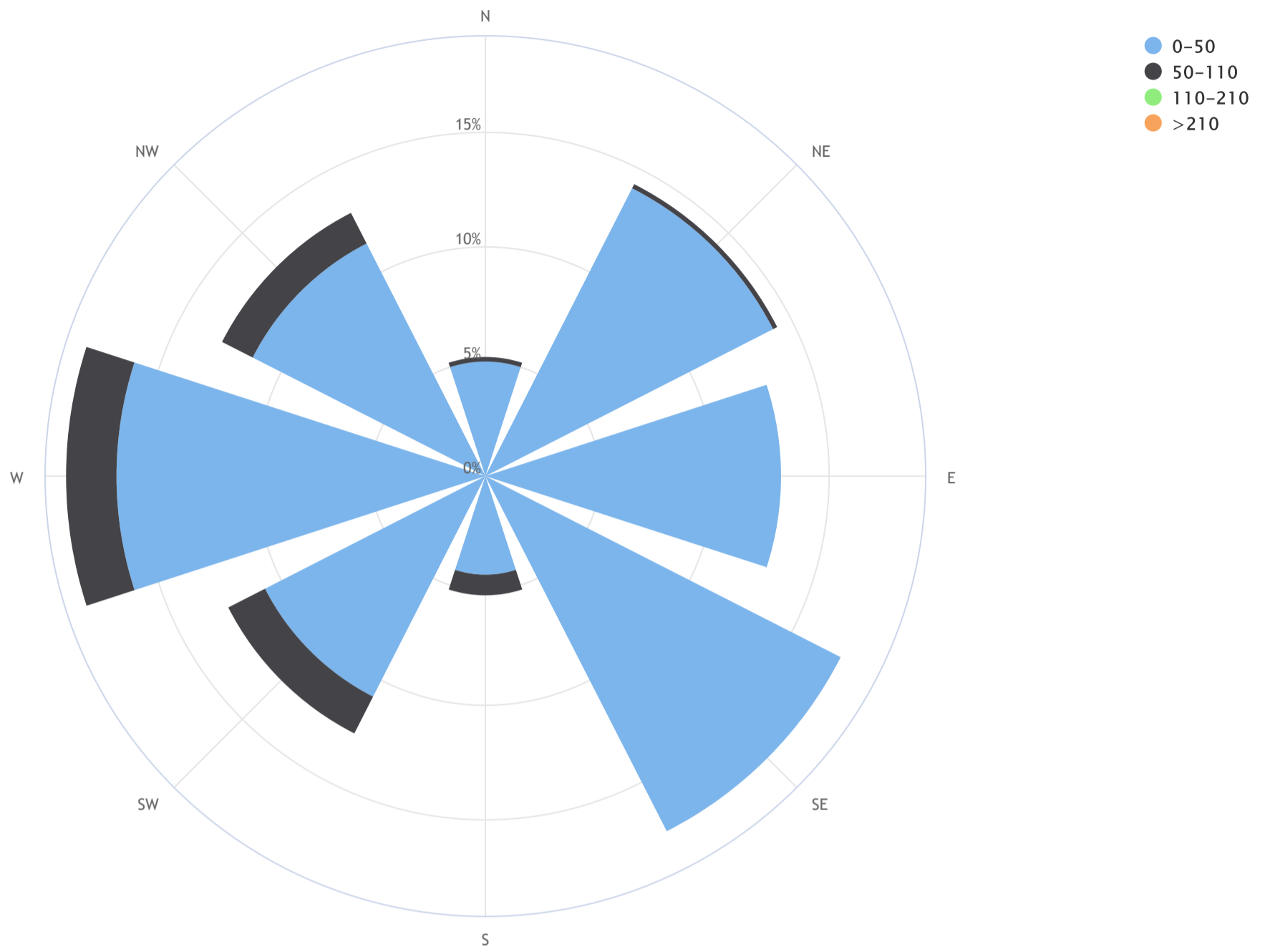
O3[ppb] Histogram: LICA COLD LAKE SOUTH Monthly: 19/04 1 Hr.



LICA-201904
Page 52 of 350

Lakeland Industry & Community Association_Cold Lake South Continuous Monitoring Station_O₃ (ppb)_19/04

Pollutant Rose_Wind Frequency (Blowing From)_ CALM Avg = 15.9, CALM % = 1.5%



Direction	0-50	50-110	110-210	>210	TOTAL
N	5.0	0.2	0.0	0.0	5.1
NE	14.1	0.2	0.0	0.0	14.2
E	12.9	0.0	0.0	0.0	12.9
SE	17.4	0.0	0.0	0.0	17.4
S	4.3	0.9	0.0	0.0	5.1
SW	10.8	1.8	0.0	0.0	12.6
W	16.1	2.2	0.0	0.0	18.3
NW	11.4	1.5	0.0	0.0	12.9
Summary	92.0	6.6	0.0	0.0	98.6
CALM	1.5	0.0	0.0	0.0	1.5



PARTICULATE MATTER < 2.5 MICRONS Hourly Averages (PM_{2.5} µg/m³)

HR START (MST)	0:00	1:00	2:00	3:00	4:00	5:00	6:00	7:00	8:00	9:00	10:00	11:00	12:00	13:00	14:00	15:00	16:00	17:00	18:00	19:00	20:00	21:00	22:00	23:00	DAILY MIN.	DAILY MAX.	24-HR AVG.	RDGS.
DAY 1	7	6	5	3	3	3	2	3	2	1	1	1	1	1	1	1	1	1	0	1	1	1	1	1	0	7	2	24
DAY 2	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	2	3	3	1	2	1	3	1	24
DAY 3	3	4	4	4	4	4	4	4	4	3	3	3	3	3	3	2	3	3	3	4	4	4	4	4	4	4	3	24
DAY 4	4	4	4	5	6	6	5	5	4	4	4	4	4	5	5	5	4	4	3	3	3	3	3	4	3	6	4	24
DAY 5	4	4	4	4	4	4	4	4	4	4	3	3	3	3	3	3	3	4	5	5	5	5	4	4	3	5	4	24
DAY 6	5	5	5	6	6	8	7	6	6	5	5	5	5	5	3	2	2	1	1	1	1	0	0	0	0	8	4	24
DAY 7	0	0	0	0	1	1	1	1	2	3	4	4	5	7	6	3	1	1	2	3	3	2	2	2	0	7	2	24
DAY 8	2	3	4	3	3	2	2	1	1	1	1	1	0	0	0	0	0	0	0	1	2	2	2	4	0	4	1	24
DAY 9	6	7	7	7	8	5	2	2	3	4	4	3	2	1	1	1	1	2	2	2	1	3	3	3	1	8	3	24
DAY 10	3	3	3	5	3	3	3	3	3	2	2	1	1	1	1	1	1	1	1	1	1	1	1	2	1	5	2	24
DAY 11	2	2	3	4	4	3	3	3	2	2	2	2	1	1	1	1	1	1	1	1	2	2	2	3	1	4	2	24
DAY 12	3	3	3	3	3	4	7	3	2	2	1	1	1	1	1	1	1	1	1	2	3	4	3	3	1	7	2	24
DAY 13	3	3	3	3	3	3	4	3	2	2	4	9	3	1	1	1	1	2	2	3	3	4	5	3	1	9	3	24
DAY 14	2	3	3	3	3	3	3	3	2	2	2	1	1	1	1	1	1	1	1	1	1	1	1	1	1	3	2	24
DAY 15	2	2	2	2	2	3	2	2	3	2	2	2	2	2	2	3	5	3	4	7	11	10	9	11	2	11	4	24
DAY 16	12	8	3	4	3	5	7	5	2	2	3	3	3	3	2	2	1	2	2	4	3	2	2	3	1	12	4	24
DAY 17	4	4	3	3	4	3	6	4	3	2	1	1	1	1	1	0	0	0	0	0	0	1	1	0	0	6	2	24
DAY 18	0	0	0	0	0	0	0	0	0	1	1	0	0	0	0	0	0	0	1	1	1	2	4	6	0	6	1	24
DAY 19	9	6	3	2	1	1	1	1	1	0	1	1	3	2	1	1	1	1	1	1	1	2	3	2	0	9	2	24
DAY 20	2	2	1	1	2	2	2	2	3	2	2	2	1	1	1	1	3	2	4	2	2	2	2	1	1	4	2	24
DAY 21	1	2	2	2	2	2	2	2	2	2	2	2	1	1	1	2	2	2	3	3	5	6	7	4	1	7	2	24
DAY 22	3	3	5	4	4	4	3	3	3	2	2	3	5	5	5	5	4	3	3	3	3	2	1	1	1	5	3	24
DAY 23	1	2	2	2	2	2	2	2	1	1	1	1	1	1	1	1	1	1	1	1	1	1	2	2	1	2	1	24
DAY 24	2	2	2	2	2	2	2	2	2	2	2	1	1	1	2	1	1	1	1	1	1	1	1	0	0	2	2	24
DAY 25	0	0	0	0	0	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	0	1	1	24
DAY 26	1	1	1	2	3	3	3	2	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	2	1	3	1	24
DAY 27	2	2	2	2	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	2	3	2	3	1	3	2	24
DAY 28	2	2	2	2	2	2	2	3	1	2	2	2	2	2	2	2	2	2	3	3	5	6	6	6	1	6	3	24
DAY 29	8	7	8	9	8	8	7	4	2	3	3	7	3	3	2	2	1	2	1	1	1	1	1	1	1	9	4	24
DAY 30	1	1	1	1	1	1	1	1	1	1	C	2	2	2	2	2	2	2	1	1	1	1	1	1	1	2	1	24
HOURLY MAX	12	8	8	9	8	8	7	6	6	5	5	9	5	7	6	5	5	4	5	7	11	10	9	11				
HOURLY AVG	3	3	3	3	3	3	3	3	2	2	2	2	2	2	2	2	2	2	2	2	2	3	3	3				

STATUS FLAG CODES

C	- MONTHLY CALIBRATION	Q	- QUALITY ASSURANCE
C1	- REPEAT CALIBRATION	R	- RECOVERY
Y	- MAINTENANCE	X	- MACHINE MALFUNCTION
S	- DAILY ZERO/SPAN CHECK	G	- OUT FOR REPAIR
S1	- REPEAT ZERO/SPAN CHECK	P	- POWER FAILURE

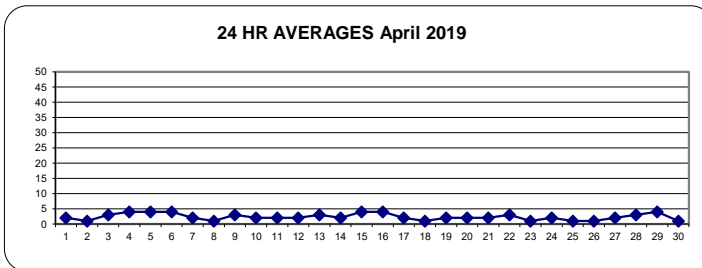
OBJECTIVE LIMIT:

ALBERTA ENVIRONMENT:	1-HR	80 µg/m ³	24-HR	29 µg/m ³
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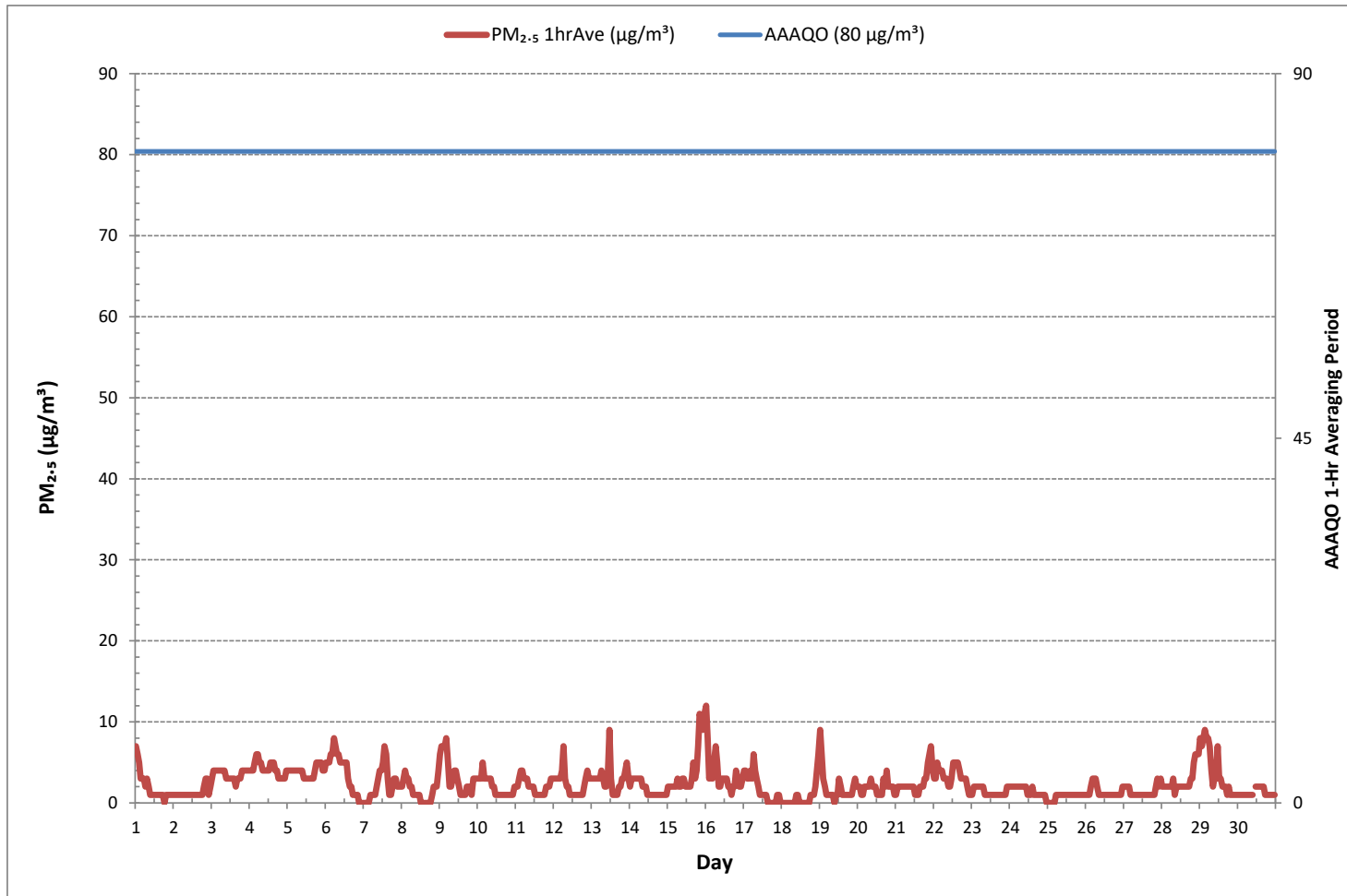
MONTHLY SUMMARY

NUMBER OF 1-HR EXCEEDANCES:	0		
NUMBER OF 24-HR EXCEEDANCES:	0		
NUMBER OF NON-ZERO READINGS:	674		
MINIMUM 1-HR AVERAGE:	0 µg/m ³ @ HOUR	18 ON DAY	1
MAXIMUM 1-HR AVERAGE:	12 µg/m ³ @ HOUR	0 ON DAY	16
MAXIMUM 24-HR AVERAGE:	4 µg/m ³	ON DAY	4
MONTHLY CALIBRATION TIME:	1 hrs	OPERATIONAL TIME:	720 hrs
STANDARD DEVIATION:	2	AMD OPERATION UPTIME:	100.0 %
		MONTHLY AVERAGE:	2 µg/m ³

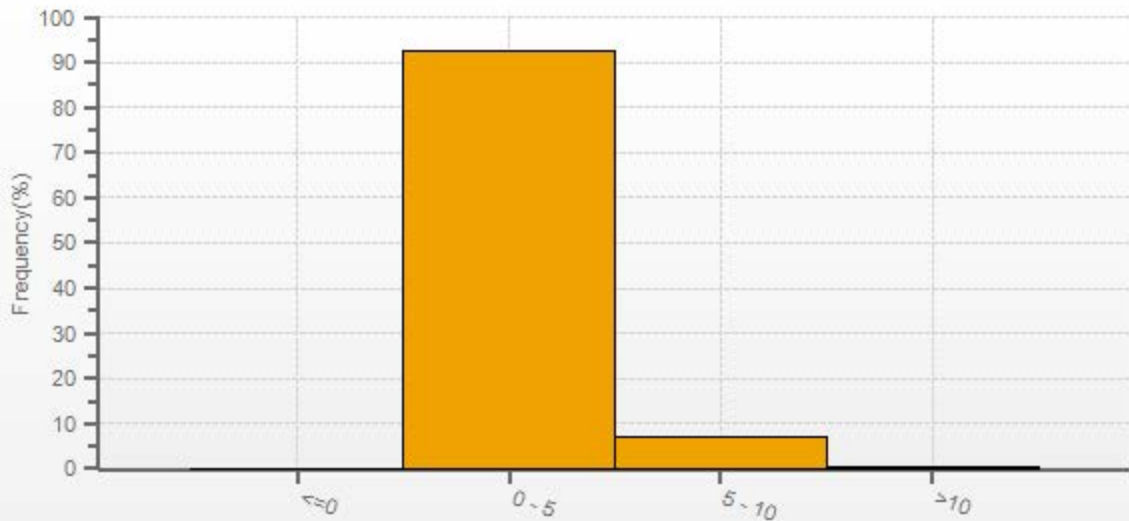
24 HR AVERAGES April 2019



PARTICULATE MATTER < 2.5 MICRONS Hourly Averages (PM_{2.5} µg/m³)



PM2.5_2[ug/m3(L)] Histogram: LICA COLD LAKE SOUTH Monthly: 19/04 1 Hr.



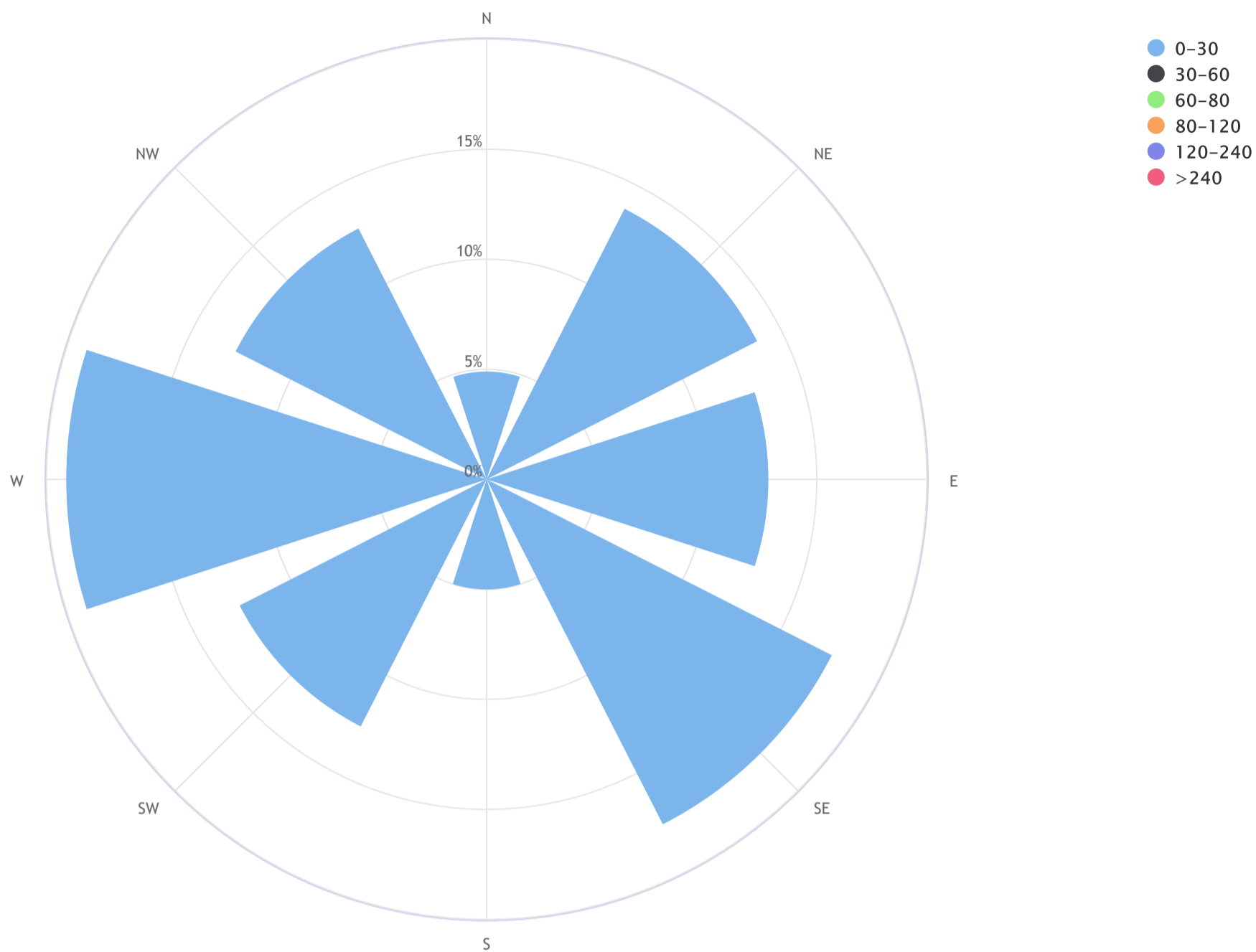
PM2.5_2[ug/m3(L)]

LICA-201904

Page 56 of 350

Lakeland Industry & Community Association_Cold Lake South Continuous Monitoring Station_PM_{2.5} (µg/m³)_19/04

Pollutant Rose_Wind Frequency (Blowing From)_ CALM Avg = 4.9, CALM % = 1.4%



Direction	0-30	30-60	60-80	80-120	120-240	>240	TOTAL
N	4.9	0.0	0.0	0.0	0.0	0.0	4.9
NE	13.8	0.0	0.0	0.0	0.0	0.0	13.8
E	12.8	0.0	0.0	0.0	0.0	0.0	12.8
SE	17.6	0.0	0.0	0.0	0.0	0.0	17.6
S	5.0	0.0	0.0	0.0	0.0	0.0	5.0
SW	12.6	0.0	0.0	0.0	0.0	0.0	12.6
W	19.1	0.0	0.0	0.0	0.0	0.0	19.1
NW	12.8	0.0	0.0	0.0	0.0	0.0	12.8
Summary	98.6	0.0	0.0	0.0	0.0	0.0	98.6
CALM	1.4	0.0	0.0	0.0	0.0	0.0	1.4



LAKELAND INDUSTRY & COMMUNITY ASSOCIATION
Cold Lake South Continuous Monitoring Station - April 2019

WIND SPEED Hourly Averages (WS kph)

HR START (MST)	0:00	1:00	2:00	3:00	4:00	5:00	6:00	7:00	8:00	9:00	10:00	11:00	12:00	13:00	14:00	15:00	16:00	17:00	18:00	19:00	20:00	21:00	22:00	23:00	DAILY MIN.	DAILY MAX.	24-HR AVG.	RDGS.
HR END (MST)	0:59	1:59	2:59	3:59	4:59	5:59	6:59	7:59	8:59	9:59	10:59	11:59	12:59	13:59	14:59	15:59	16:59	17:59	18:59	19:59	20:59	21:59	22:59	23:59				
DAY 1	8.8	6.1	7.0	6.4	6.6	7.4	9.8	11.4	10.6	17.2	19.7	19.2	18.5	16.9	16.0	16.1	9.3	9.2	18.0	11.4	5.7	8.8	3.8	4.4	3.8	19.7	10.1	24
2	3.0	3.1	4.4	4.4	7.0	11.5	12.6	17.2	20.0	20.1	20.0	19.5	17.4	18.0	17.3	14.2	12.0	10.5	5.5	0.5	0.6	2.5	7.6	5.3	0.5	20.1	9.4	24
3	7.6	8.1	7.5	8.7	10.3	10.5	10.2	12.2	13.2	13.2	13.5	11.9	11.4	12.8	11.2	11.6	11.3	10.5	9.3	8.2	9.1	8.1	6.9	6.9	6.9	13.5	10.0	24
4	9.1	9.0	6.7	5.6	8.3	8.6	11.6	11.1	10.0	10.4	11.8	12.8	10.1	11.5	10.8	10.7	9.8	9.2	9.3	8.6	9.2	7.9	5.6	4.4	4.4	12.8	9.2	24
5	3.8	4.6	5.5	5.6	4.5	4.8	6.7	7.2	8.2	5.9	4.6	6.8	8.6	7.2	8.7	7.8	8.8	7.6	4.5	3.8	6.5	6.6	6.6	5.4	3.8	8.8	6.0	24
6	5.8	6.3	9.2	10.6	10.0	10.7	10.2	12.0	10.8	12.1	12.0	10.4	12.1	11.4	13.4	10.5	7.6	7.6	X	X	2.3	8.1	5.3	14.3	2.3	14.3	7.4	22
7	2.5	2.8	2.8	2.5	2.0	2.4	2.0	3.1	5.4	7.0	8.2	7.3	9.4	7.1	4.7	8.0	8.9	5.8	3.5	1.1	1.6	1.4	0.6	3.2	0.6	9.4	2.4	24
8	5.2	3.8	0.3	6.4	7.0	6.4	7.3	8.6	10.2	9.1	10.1	13.9	14.5	12.2	13.2	11.6	10.7	10.2	7.3	2.2	1.1	0.7	3.3	5.9	0.3	14.5	6.3	24
9	4.3	3.0	2.6	2.2	4.5	5.7	6.1	5.1	4.8	6.4	7.2	6.9	7.0	6.9	7.0	9.0	10.3	8.2	4.8	5.8	8.5	11.0	6.9	4.1	2.2	11.0	5.9	24
10	3.4	2.1	1.3	2.9	8.2	10.3	10.8	11.4	13.0	9.7	9.6	11.6	9.9	8.5	6.6	9.8	9.1	9.5	6.7	1.1	5.7	7.9	10.4	8.5	1.1	13.0	6.3	24
11	6.0	4.3	5.7	5.3	4.6	6.4	7.4	9.9	10.0	10.6	11.8	10.2	12.7	12.4	13.2	12.7	11.1	9.9	9.8	9.1	4.6	5.3	4.3	6.0	4.3	13.2	8.4	24
12	6.4	7.6	4.4	1.7	0.2	0.7	1.5	2.9	2.6	3.9	6.2	7.6	6.4	8.8	8.5	6.6	8.3	7.6	5.9	2.7	2.6	4.8	5.6	4.6	0.2	8.8	3.8	24
13	4.2	4.0	4.0	3.0	0.7	0.1	1.4	2.2	5.8	4.9	7.5	8.9	8.8	10.0	7.9	8.3	7.7	5.6	5.8	2.7	2.9	3.4	2.9	1.6	0.1	10.0	3.6	24
14	2.9	2.1	1.1	0.5	1.7	0.3	1.3	2.1	2.3	6.6	7.6	7.9	8.8	11.5	13.6	19.3	6.4	6.8	11.1	6.6	2.8	4.4	4.7	5.8	0.3	19.3	4.0	24
15	7.0	5.2	0.7	4.1	4.1	4.3	2.8	6.2	8.2	9.2	9.3	6.5	5.6	10.9	13.2	14.6	12.2	6.4	4.3	1.4	0.4	0.7	0.8	0.8	0.4	14.6	4.5	24
16	0.5	1.9	2.5	1.3	1.2	1.0	0.1	1.4	7.9	8.2	5.7	4.3	5.7	1.7	6.0	1.9	10.0	11.6	4.0	1.9	3.3	2.4	2.4	0.5	0.1	11.6	0.9	24
17	1.0	0.7	1.6	0.9	1.0	0.7	0.8	2.6	2.2	2.6	2.5	4.9	6.5	8.5	13.6	9.4	13.5	9.3	11.5	10.2	6.5	7.8	2.4	4.1	0.7	13.6	4.1	24
18	4.8	4.3	1.7	0.6	1.1	2.8	5.9	8.3	7.8	8.6	11.6	12.5	14.6	13.6	13.3	14.5	13.0	11.0	7.7	1.2	0.8	1.7	1.1	1.6	0.6	14.6	6.5	24
19	1.1	2.1	2.7	9.6	10.8	7.9	4.9	7.6	12.0	12.4	12.8	15.3	16.0	16.3	15.7	16.2	20.7	12.8	9.3	8.2	4.8	2.9	1.8	2.4	1.1	20.7	8.6	24
20	0.9	1.1	3.5	5.3	5.0	4.8	6.2	10.5	12.5	12.6	14.7	15.6	13.4	13.3	13.0	13.3	8.4	11.2	7.8	2.9	3.5	3.5	3.8	5.5	0.9	15.6	6.3	24
21	5.9	2.1	3.6	4.5	2.4	3.2	7.1	8.0	7.2	9.1	9.5	6.0	5.3	5.8	8.5	6.8	7.2	7.0	2.8	3.3	2.5	3.9	3.3	6.4	2.1	9.5	3.8	24
22	6.2	5.7	3.8	7.8	6.1	4.3	5.3	11.4	13.6	12.8	10.7	8.0	8.3	8.9	9.2	10.5	7.4	5.2	6.1	1.7	8.1	6.1	8.4	6.6	1.7	13.6	4.5	24
23	5.6	13.8	4.9	7.0	7.4	9.6	12.7	15.7	18.4	15.0	18.8	17.5	18.6	18.0	17.7	16.8	18.2	15.4	14.4	11.5	9.2	5.2	5.7	3.7	3.7	18.8	12.1	24
24	3.4	4.7	6.0	5.9	4.7	7.7	8.4	10.6	10.2	11.8	16.4	16.6	16.5	16.5	17.3	17.6	20.9	21.5	16.6	11.9	13.9	14.6	17.7	19.8	3.4	21.5	12.2	24
25	18.4	20.9	19.0	17.9	7.2	8.3	9.4	11.2	12.4	17.2	20.3	17.8	17.1	17.0	17.2	17.4	13.1	12.2	10.8	6.2	1.0	0.5	1.4	0.7	0.5	20.9	11.8	24
26	0.7	0.5	0.3	0.6	0.5	1.2	0.4	1.7	2.5	5.4	8.2	6.4	7.6	11.1	7.7	11.7	9.6	11.2	5.7	6.6	9.0	7.8	6.2	6.6	0.3	11.7	4.5	24
27	5.4	5.6	3.3	3.1	3.2	4.1	7.2	9.8	10.0	12.0	12.7	13.8	16.6	14.7	14.3	14.5	13.9	13.5	11.2	9.1	6.1	3.9	2.7	2.0	2.0	16.6	8.5	24
28	1.0	1.2	1.3	0.5	1.0	0.7	0.6	2.5	3.8	5.4	6.3	4.9	6.2	4.5	1.6	8.1	8.1	6.7	5.6	2.2	1.1	0.3	0.4	0.2	0.2	8.1	2.5	24
29	0.6	0.0	1.2	0.2	0.7	0.9	0.4	4.8	7.8	9.7	8.3	6.0	4.9	8.1	4.5	6.7	7.5	6.5	6.2	7.3	7.6	9.4	7.8	1.9	0.0	9.7	3.1	24
30	1.2	1.2	1.4	3.6	13.2	14.1	10.5	9.5	10.0	10.2	9.3	4.7	7.0	8.3	6.8	9.8	11.1	8.8	8.6	6.0	4.6	3.2	2.8	2.6	1.2	14.1	6.0	24
HOURLY MAX	18.4	20.9	19.0	17.9	13.2	14.1	12.7	17.2	20.0	20.1	20.3	19.5	18.6	18.0	17.7	19.3	20.9	21.5	18.0	11.9	13.9	14.6	17.7	19.8				

STATUS FLAG CODES

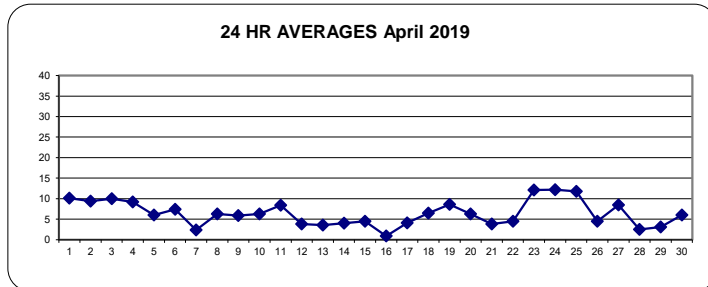
C	- MONTHLY CALIBRATION	Q	- QUALITY ASSURANCE
C1	- REPEAT CALIBRATION	R	- RECOVERY
Y	- MAINTENANCE	X	- MACHINE MALFUNCTION
S	- DAILY ZERO/SPAN CHECK	G	- OUT FOR REPAIR
S1	- REPEAT ZERO/SPAN CHECK	P	- POWER FAILURE

LAST CALIBRATION:	November 9, 2017
DECLINATION:	MAGNETIC DECLINATION 19 DEGREE EAST

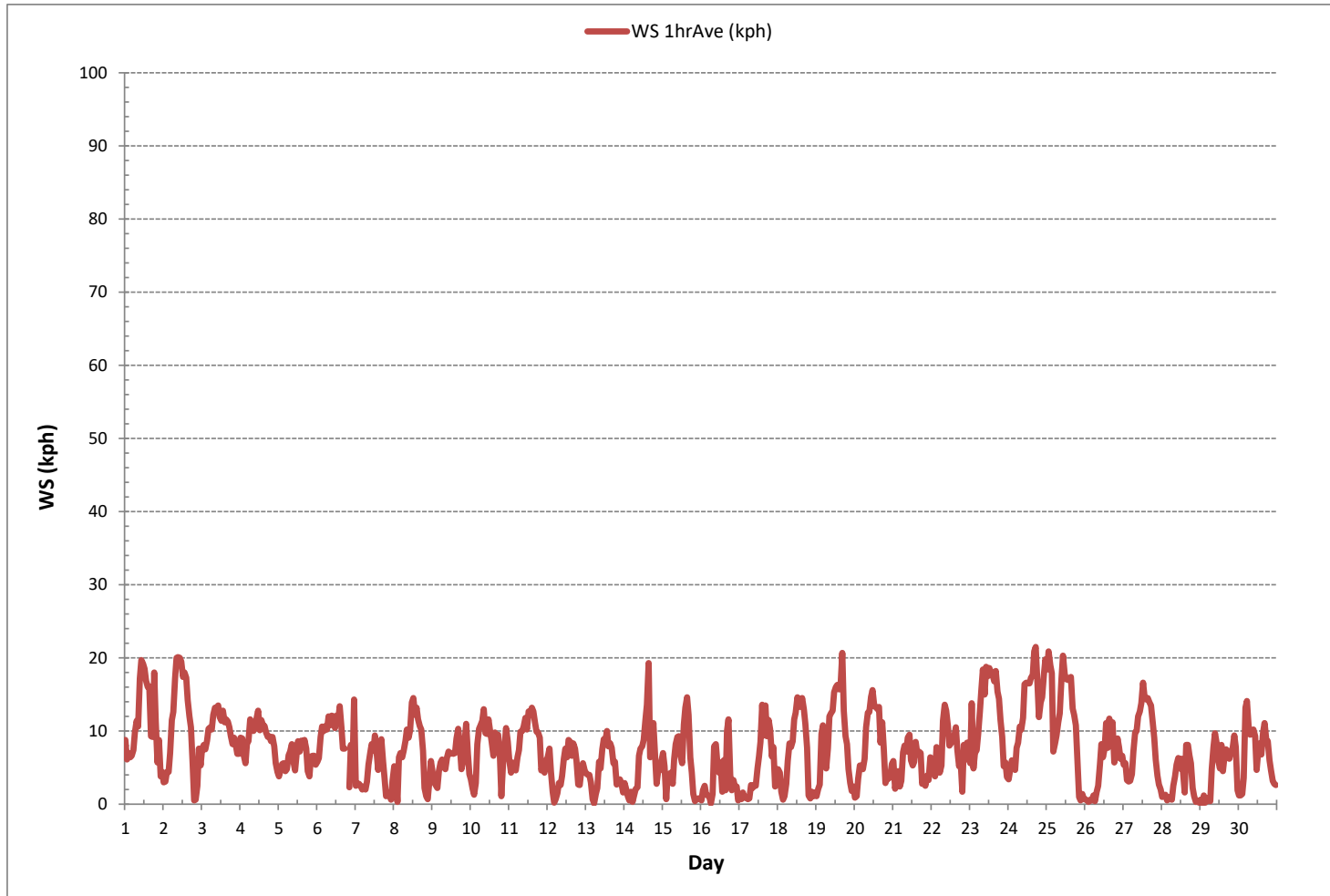
MONTHLY SUMMARY

NUMBER OF NON-ZERO READINGS:	717
MINIMUM 1-HR AVERAGE:	0.0 kph @ HOUR 1 ON DAY 29
MAXIMUM 1-HR AVERAGE:	21.5 kph @ HOUR 17 ON DAY 24
MAXIMUM 24-HR AVERAGE:	12.2 kph ON DAY 24
MONTHLY CALIBRATION TIME:	0 hrs
OPERATIONAL TIME:	718 hrs
AMT OPERATION UPTIME:	99.7 %
STANDARD DEVIATION:	4.8
MONTHLY AVERAGE:	1.4 kph

24 HR AVERAGES April 2019

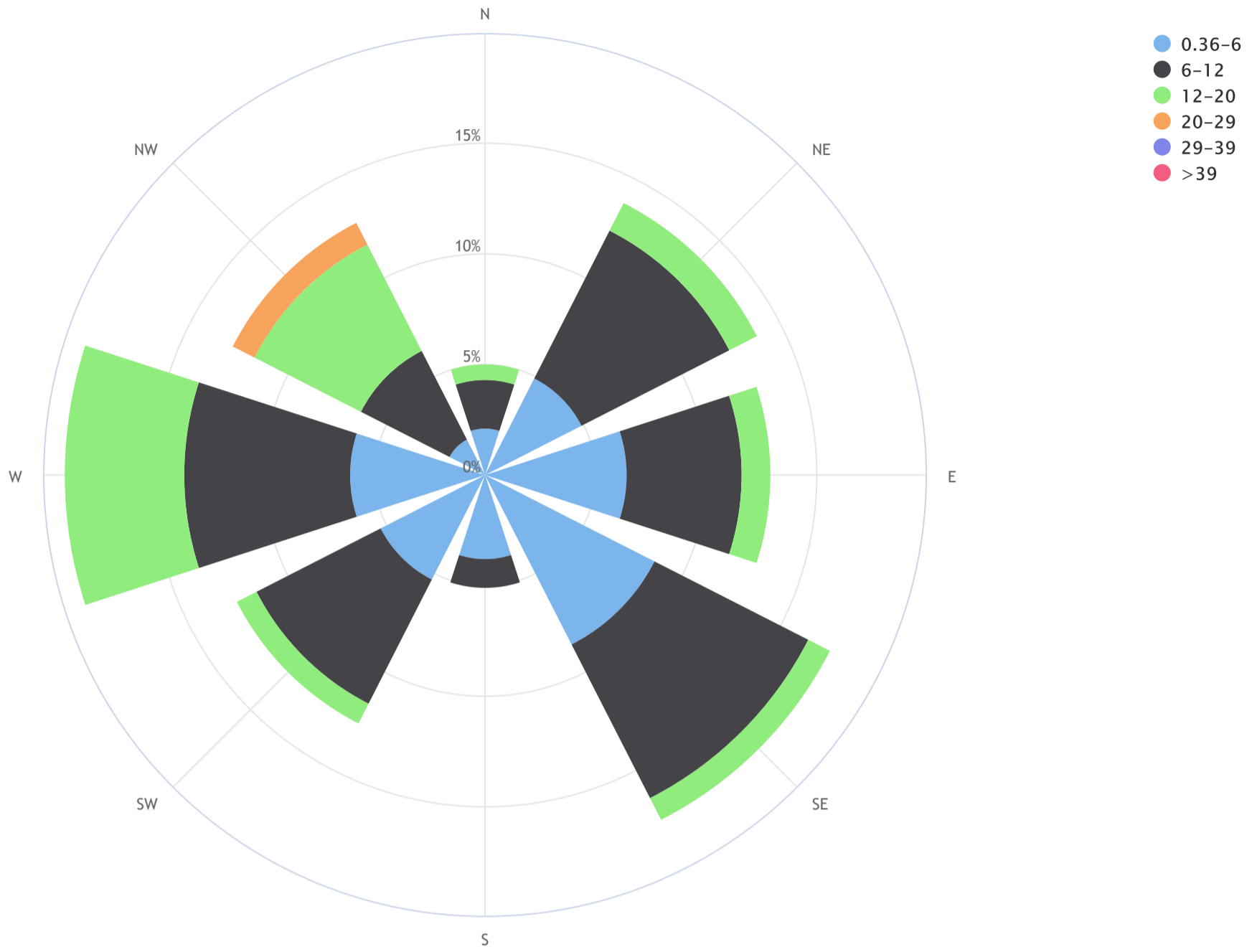


WIND SPEED Hourly Averages (WS kph)



Lakeland Industry & Community Association_Cold Lake South Continuous Monitoring Station_19/04

Wind Rose_Wind Frequency (Blowing From)_CALM Avg = 0.2_CALM % = 1.4%



Direction	0.36-6	6-12	12-20	20-29	29-39	>39	TOTAL
N	2.1	2.2	0.7	0.0	0.0	0.0	5.0
NE	4.9	7.5	1.4	0.0	0.0	0.0	13.8
E	6.4	5.2	1.3	0.0	0.0	0.0	12.8
SE	8.6	7.8	1.1	0.0	0.0	0.0	17.6
S	3.8	1.3	0.0	0.0	0.0	0.0	5.0
SW	5.3	6.3	1.0	0.0	0.0	0.0	12.5
W	6.1	7.5	5.4	0.0	0.0	0.0	19.1
NW	1.8	4.5	5.4	1.1	0.0	0.0	12.8
Summary	39.0	42.2	16.3	1.1	0.0	0.0	98.6
CALM	1.4	0.0	0.0	0.0	0.0	0.0	1.4



LAKELAND INDUSTRY & COMMUNITY ASSOCIATION
Cold Lake South Continuous Monitoring Station - April 2019

WIND DIRECTION Hourly Averages (WD)

HR START (MST)	0:00	1:00	2:00	3:00	4:00	5:00	6:00	7:00	8:00	9:00	10:00	11:00	12:00	13:00	14:00	15:00	16:00	17:00	18:00	19:00	20:00	21:00	22:00	23:00	24-HOUR AVG	24-HR		
HR END (MST)	0:59	1:59	2:59	3:59	4:59	5:59	6:59	7:59	8:59	9:59	10:59	11:59	12:59	13:59	14:59	15:59	16:59	17:59	18:59	19:59	20:59	21:59	22:59	23:59	QUADRANT	RDGS.		
DAY																												
1	W	W	W	W	W	WSW	W	W	WNW	NW	WNW	WNW	WNW	WNW	NW	NNW	N	NW	NNW	NNW	NNW	NW	WNW	WNW	WNW	24		
2	W	WSW	W	WNW	WNW	NW	NW	NW	NW	NNW	NW	NW	NW	NNW	NW	NW	NW	NW	NW	ESE	ESE	NE	ENE	E	NW	24		
3	ESE	E	E	E	E	E	E	E	E	ESE	E	E	E	ESE	ESE	ESE	E	E	E	E	E	ENE	ENE	NE	E	24		
4	NE	NE	NE	NE	NNE	NNE	NE	NE	NE	NE	NE	NE	NE	NE	NE	NE	NE	NE	NE	NE	NE	NE	NE	ENE	NE	24		
5	E	E	E	E	ESE	ESE	SE	SE	SE	SE	SE	SE	SE	SE	SE	ESE	SE	SE	ESE	ESE	ESE	ESE	E	ESE	ESE	24		
6	ESE	E	E	E	E	E	E	E	E	ESE	ESE	ESE	ESE	ESE	SE	E	E	X	X	SW	S	WSW	W	ESE	ESE	22		
7	SSW	SSW	S	ESE	ESE	SE	S	SSE	SW	SW	SW	W	W	WSW	W	WNW	WNW	NE	ENE	SE	SSW	SW	WSW	WSW	WSW	24		
8	WSW	WSW	W	WSW	WSW	WSW	WSW	W	W	W	WSW	W	W	WNW	WNW	W	W	W	W	NE	SSE	SSE	ENE	ESE	W	24		
9	E	E	E	ENE	E	ESE	ESE	ESE	ESE	ESE	ESE	E	ESE	E	ESE	SE	ESE	SE	SE	SE	SE	SE	ESE	ESE	24			
10	SE	ESE	ESE	SE	SE	SE	SE	SE	SE	SE	SE	SE	SSW	SSW	S	SW	SW	SW	S	SE	SE	SE	SE	SE	SSE	24		
11	SSE	SE	SE	ESE	ESE	ESE	SE	SE	SE	SE	SE	SSE	SE	SE	SE	SE	SE	SE	SE	SE	SE	SE	SE	SE	SE	24		
12	SE	SE	SE	SE	S	E	E	SE	S	SSW	SW	SSW	S	SW	SW	SSW	SW	SW	SW	SSE	SE	SE	SE	SE	S	24		
13	SE	SE	SE	SE	SSE	W	ESE	SSE	SSE	S	SW	SW	SSW	SSW	S	SSE	SSE	SE	ESE	ESE	E	NNE	E	S	24			
14	ENE	NE	ENE	NE	NE	WSW	WSW	ENE	ENE	NNE	NNE	NE	NE	N	NW	NNW	NW	WNW	NW	NW	NW	WSW	WNW	W	NNW	24		
15	WSW	WSW	WNW	WSW	WSW	WSW	WSW	NNW	NNW	NW	NNW	NNW	NNW	NNW	NNW	N	N	N	NE	SW	E	E	SSE	NW	24			
16	NW	NE	NE	ENE	E	E	N	S	SE	ESE	ESE	ENE	NNE	SE	WSW	WSW	WSW	W	SE	SSW	SSW	SE	E	S	24			
17	ENE	ENE	ENE	E	ENE	WSW	NE	NNW	ESE	SSW	SE	W	WSW	W	WSW	W	W	SW	W	W	WSW	WNW	WSW	WSW	WSW	24		
18	WSW	WSW	SW	SSW	S	SW	SW	WSW	SW	SW	WSW	WSW	WSW	WSW	WSW	SW	SW	SW	SW	SSW	S	SSE	SE	ESE	SW	24		
19	E	NNW	NNW	NNW	NNW	NW	WSW	WSW	W	WNW	W	WNW	W	WNW	WNW	WNW	NNW	NNW	NNW	W	WSW	WSW	SW	SW	WNW	24		
20	WSW	SSW	SW	SW	SW	SW	WSW	W	W	W	W	W	W	W	N	NNW	WNW	NNW	NE	NW	WNW	WSW	WSW	WSW	WNW	24		
21	WSW	W	WSW	WSW	WSW	SW	WSW	WSW	WSW	W	WNW	WNW	WNW	W	W	WSW	SW	SW	S	SE	SE	SE	SE	SE	WSW	24		
22	SE	SE	E	SE	SE	ESE	ESE	SE	SE	SE	SE	SSW	SSW	SSW	SW	SW	SW	WSW	SW	S	W	W	WSW	W	S	24		
23	WSW	WNW	WSW	SW	WSW	WSW	W	W	WNW	W	WNW	WNW	W	WNW	WNW	WNW	WNW	W	WNW	WNW	W	WSW	W	W	W	24		
24	WSW	WSW	WSW	WSW	WSW	WSW	W	WNW	WNW	W	WNW	W	W	W	W	WNW	NW	NW	NW	WNW	NW	WNW	NW	WNW	24			
25	WNW	NW	NW	NW	W	WSW	W	WNW	WNW	WNW	NW	WNW	WNW	WNW	WNW	NW	WNW	NW	NW	WNW	SSW	SE	WSW	S	WNW	24		
26	WNW	WSW	NW	E	WSW	WSW	N	S	W	NNE	NE	NE	NNE	NNE	NNE	NE	NE	ENE	ENE	NE	NE	ENE	E	E	NE	24		
27	ESE	ESE	E	NE	NE	NNE	NE	NE	NE	NE	NE	NE	NE	NE	NE	NE	NE	NNE	NNE	NNE	NE	NE	NE	NNE	NE	24		
28	NNE	NNE	SW	SSE	SW	SW	SE	ESE	NNE	NNE	ENE	NNE	NE	NE	E	NE	NE	NE	NE	NNE	SSE	SSE	S	NW	NE	24		
29	WSW	N	ESE	NNW	W	NE	NNW	N	NNE	NNE	NNE	NNE	N	SE	NNW	WNW	WNW	WNW	W	WNW	NW	NNW	N	N	NNW	24		
30	SSW	SSW	WSW	WNW	N	NNE	NNE	NNE	NNE	NNE	N	NE	NNE	NNE	NNE	NNW	NNW	N	NE	ENE	ENE	NE	ENE	ENE	NNE	24		

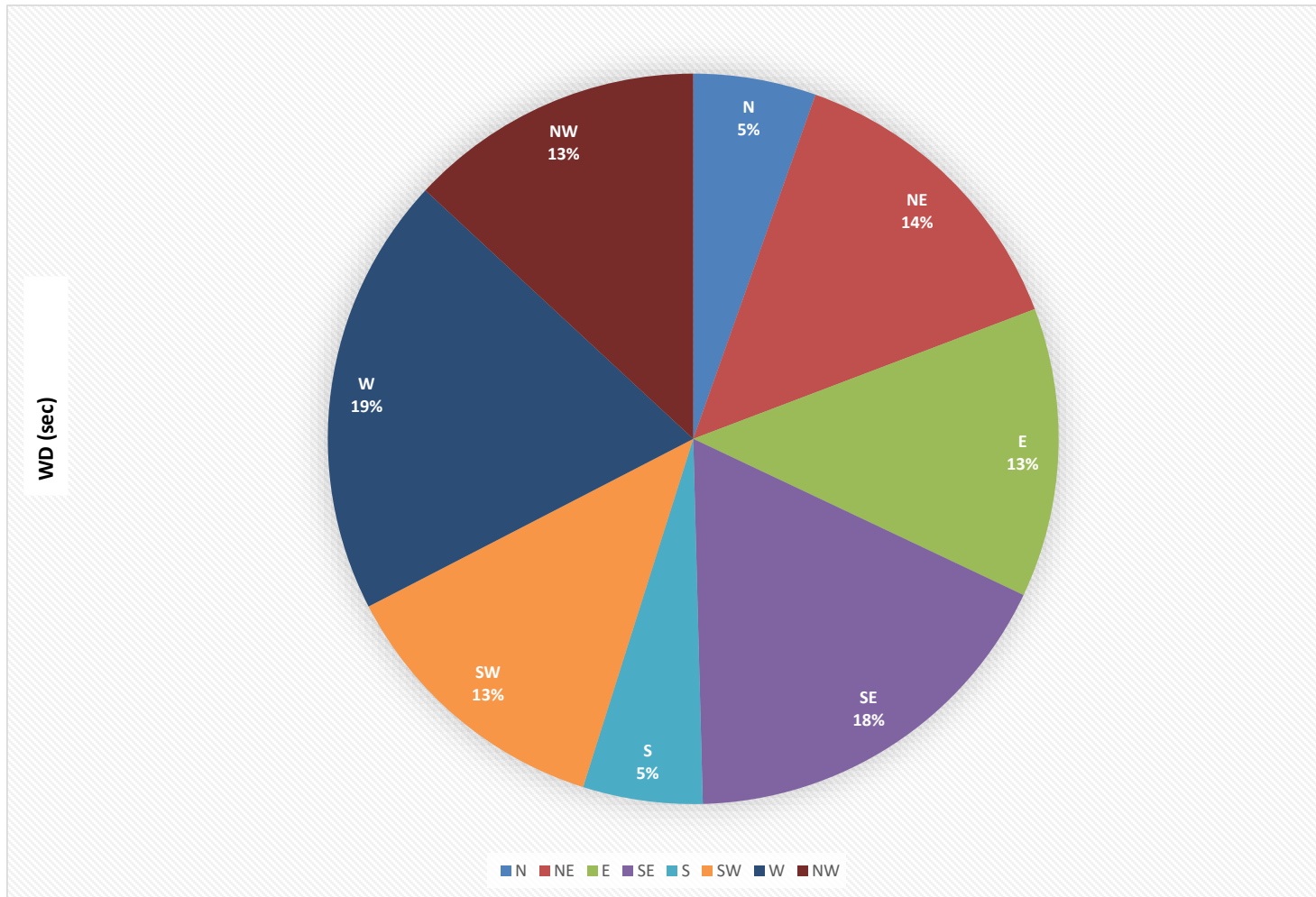
STATUS FLAG CODES

C	- MONTHLY CALIBRATION	Q	- QUALITY ASSURANCE
C1	- REPEAT CALIBRATION	R	- RECOVERY
Y	- MAINTENANCE	X	- MACHINE MALFUNCTION
S	- DAILY ZERO/SPAN CHECK	G	- OUT FOR REPAIR
S1	- REPEAT ZERO/SPAN CHECK	P	- POWER FAILURE

LAST CALIBRATION:	November 9, 2017
DECLINATION:	MAGNETIC DECLINATION 19 DEGREE EAST

MONTHLY CALIBRATION TIME:	0	hrs	OPERATIONAL TIME:	718	hrs
STANDARD DEVIATION:	99		AMD OPERATION UPTIME:	99.7	%
			MONTHLY AVERAGE:	304	(WNW)

WIND DIRECTION Hourly Averages (WD)



WDR[degwdr] Station: LICA COLD LAKE SOUTH Monthly: 19/04 Type: AVG 1 Hr. [1 Hr.]

— WDR[degwdr]



LICA-201904

Page 63 of 350



LAKELAND INDUSTRY & COMMUNITY ASSOCIATION
Cold Lake South Continuous Monitoring Station - April 2019

STANDARD DEVIATION WIND DIRECTION Hourly Averages (STDWD deg)

HR START (MST)	0:00	1:00	2:00	3:00	4:00	5:00	6:00	7:00	8:00	9:00	10:00	11:00	12:00	13:00	14:00	15:00	16:00	17:00	18:00	19:00	20:00	21:00	22:00	23:00	RDGS.	
HR END (MST)	0:59	1:59	2:59	3:59	4:59	5:59	6:59	7:59	8:59	9:59	10:59	11:59	12:59	13:59	14:59	15:59	16:59	17:59	18:59	19:59	20:59	21:59	22:59	23:59		
DAY																										
1	9	9	7	6	6	6	8	8	11	9	11	13	11	11	23	20	22	10	8	12	26	10	19	9	24	
2	13	10	12	17	8	8	6	10	11	13	13	14	12	12	15	13	14	14	14	60	55	9	6	15	24	
3	12	7	8	7	7	7	8	7	9	12	10	10	11	8	14	14	11	7	7	8	7	9	10	8	24	
4	4	5	7	10	7	9	7	8	12	18	14	12	18	10	11	15	12	8	8	9	6	8	13	13	24	
5	18	11	10	11	12	13	15	14	9	18	32	24	18	26	15	18	12	9	9	11	10	9	5	10	24	
6	11	7	6	5	6	7	6	6	7	6	10	9	7	8	12	12	8	11	X	X	71	48	49	44	22	
7	72	45	39	24	29	21	40	21	11	8	10	30	14	17	30	21	13	23	12	59	37	30	58	10	24	
8	7	25	76	5	5	5	10	9	14	16	11	13	23	18	15	17	10	6	47	36	67	35	18	24	24	
9	14	16	22	25	15	17	16	20	24	15	21	19	26	15	20	19	15	12	19	8	3	4	6	10	24	
10	12	18	28	12	3	3	4	6	6	13	17	13	30	23	25	18	14	19	26	63	7	5	4	5	24	
11	10	12	6	9	11	6	7	8	8	11	11	19	10	12	10	14	11	6	5	4	5	4	4	3	24	
12	3	3	5	24	72	42	34	22	32	30	22	29	40	28	20	30	19	20	18	11	11	5	5	6	24	
13	6	6	6	20	67	77	29	32	21	38	16	22	28	24	26	32	30	34	8	6	8	9	12	40	24	
14	11	25	38	68	46	76	48	33	55	18	20	26	20	25	13	13	39	17	5	16	32	7	15	14	24	
15	4	14	63	8	8	8	26	18	15	14	16	30	42	19	21	15	20	22	25	23	67	45	42	55	24	
16	69	24	12	23	43	36	74	52	8	17	27	40	24	64	31	69	19	10	59	56	23	26	14	66	24	
17	34	51	19	50	43	64	54	42	49	44	55	39	30	36	15	27	13	11	9	6	7	24	46	14	24	
18	12	5	21	64	46	19	6	6	11	12	9	12	9	13	11	11	8	9	9	58	66	33	38	29	24	
19	44	28	21	6	7	14	11	18	14	21	17	16	15	12	16	18	10	12	10	8	8	34	47	38	24	
20	56	56	6	5	4	5	9	11	9	14	18	16	18	20	28	24	25	36	11	54	32	17	12	9	24	
21	5	40	14	11	45	18	10	10	18	21	24	30	40	37	35	28	17	11	29	7	7	8	11	6	24	
22	4	12	8	6	25	17	14	6	6	9	18	36	26	21	19	14	14	17	24	46	31	31	6	7	24	
23	15	13	30	8	9	4	5	10	10	13	13	14	14	16	21	19	13	17	10	9	6	20	6	11	24	
24	17	6	7	5	9	8	7	9	16	21	19	17	18	14	14	12	13	5	10	7	8	14	7	8	24	
25	8	5	7	8	15	5	11	12	14	16	14	18	16	19	17	12	17	10	12	9	41	62	21	66	24	
26	66	71	73	53	55	41	73	54	46	37	20	33	35	35	44	13	14	7	10	6	7	8	7	11	24	
27	9	11	28	26	32	12	9	9	7	6	9	9	8	10	10	8	15	10	6	6	8	11	13	22	24	
28	26	20	32	33	31	43	56	32	39	37	33	49	38	43	69	30	25	16	12	31	52	70	65	74	24	
29	61	80	58	77	63	64	72	33	23	21	22	31	58	16	49	30	36	40	11	23	15	8	11	32	24	
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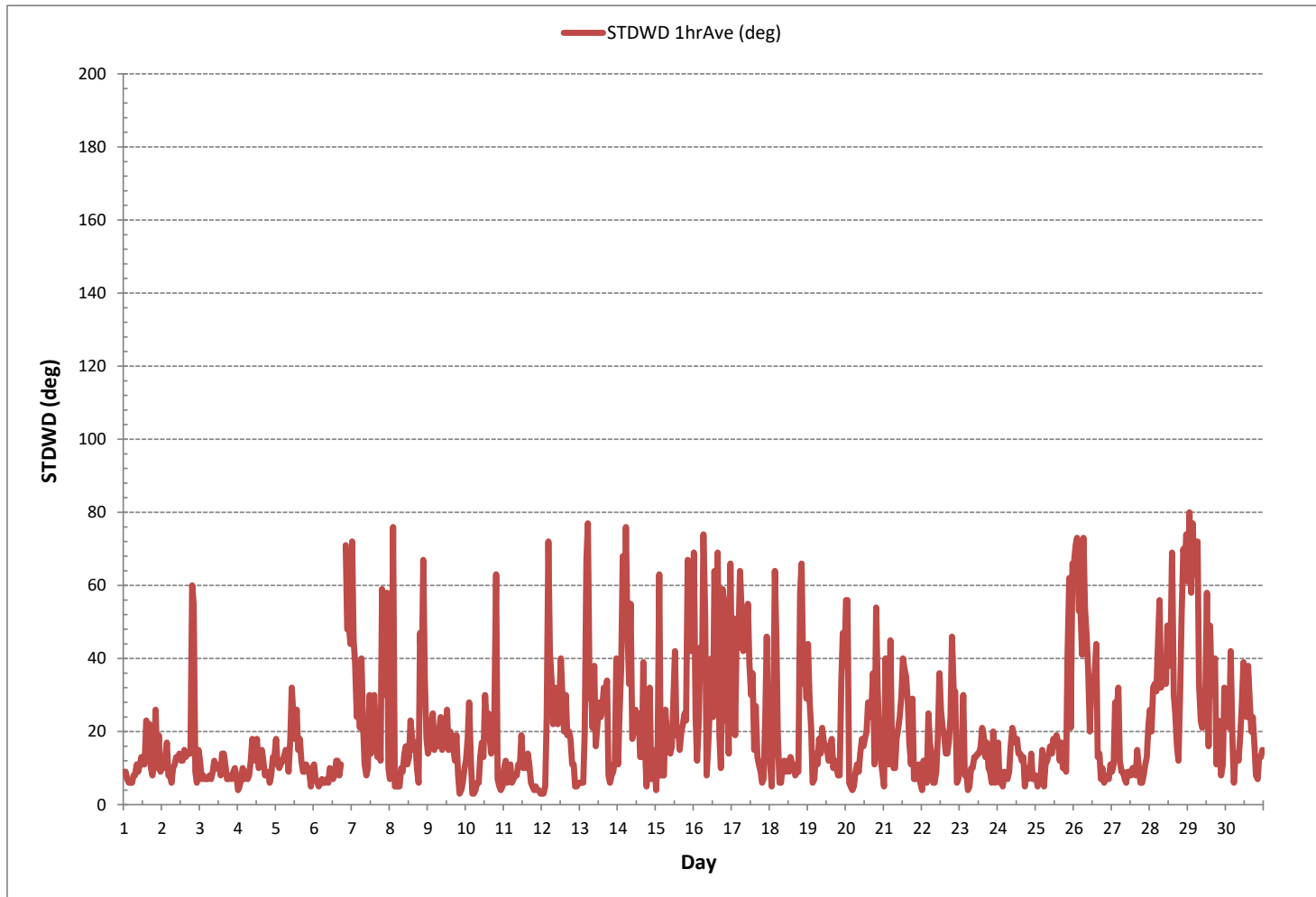
STATUS FLAG CODES

C	- MONTHLY CALIBRATION	Q	- QUALITY ASSURANCE
C1	- REPEAT CALIBRATION	R	- RECOVERY
Y	- MAINTENANCE	X	- MACHINE MALFUNCTION
S	- DAILY ZERO/SPAN CHECK	G	- OUT FOR REPAIR
S1	- REPEAT ZERO/SPAN CHECK	P	- POWER FAILURE

LAST CALIBRATION: November 9, 2017

CALIBRATION TIME: 0 hrs OPERATIONAL TIME: 718 hrs

STANDARD DEVIATION WIND DIRECTION Hourly Averages (STDWD deg)





RELATIVE HUMIDITY Hourly Averages (RH %)

HR START (MST)	0:00	1:00	2:00	3:00	4:00	5:00	6:00	7:00	8:00	9:00	10:00	11:00	12:00	13:00	14:00	15:00	16:00	17:00	18:00	19:00	20:00	21:00	22:00	23:00	DAILY	DAILY	24-HR	RDGS.
HR END (MST)	0:59	1:59	2:59	3:59	4:59	5:59	6:59	7:59	8:59	9:59	10:59	11:59	12:59	13:59	14:59	15:59	16:59	17:59	18:59	19:59	20:59	21:59	22:59	23:59	MIN.	MAX.	AVG.	
DAY 1	70	73	76	76	78	78	74	70	62	57	61	63	62	59	69	87	78	69	66	77	79	74	79	80	57	87	72	24
2	79	82	81	82	79	68	59	52	44	40	38	36	35	34	31	30	26	25	27	39	49	51	41	39	25	82	48	24
3	47	52	56	56	55	55	58	62	61	53	48	45	46	45	42	41	41	45	51	58	68	72	73	76	41	76	54	24
4	76	78	79	80	81	80	79	77	75	70	66	63	63	65	68	72	65	61	62	63	66	68	69	70	61	81	71	24
5	69	69	70	70	70	70	70	69	67	64	61	55	52	49	47	45	46	47	49	53	55	56	58	60	45	70	59	24
6	62	63	66	74	78	79	83	84	85	88	92	93	91	93	94	95	96	97	99	99	99	99	100	99	62	100	88	24
7	99	99	100	100	100	100	100	100	100	100	97	86	80	78	70	61	54	62	68	80	89	94	94	96	54	100	88	24
8	91	89	93	94	89	85	80	64	53	47	42	36	34	32	26	25	25	25	26	40	57	68	70	83	25	94	57	24
9	87	90	92	94	96	99	100	100	100	99	82	71	60	52	46	44	42	41	43	50	58	65	72	76	41	100	73	24
10	79	82	87	92	91	88	84	78	70	61	49	38	43	43	43	58	64	66	72	80	78	71	63	59	38	92	68	24
11	56	56	59	61	65	67	66	61	59	53	44	35	32	32	31	29	30	36	44	50	53	55	56	29	67	48	24	
12	58	60	62	67	76	78	70	54	49	42	34	30	26	25	24	23	23	23	25	31	37	37	35	36	23	78	43	24
13	37	40	41	43	56	68	57	46	33	30	30	33	30	26	27	29	28	29	30	37	40	41	41	56	26	68	39	24
14	57	61	67	71	72	72	56	47	43	38	34	33	35	35	58	68	67	66	71	74	78	78	76	33	78	60	24	
15	78	82	85	89	90	91	91	86	83	79	69	62	56	52	51	45	42	42	53	65	72	74	81	42	91	70	24	
16	86	87	89	91	92	92	86	83	75	61	56	50	49	40	36	34	25	25	32	51	57	61	69	76	25	92	63	24
17	82	84	86	87	88	89	85	79	71	50	41	33	28	26	29	29	44	43	46	52	58	66	86	92	26	92	61	24
18	92	93	94	95	96	95	77	65	55	47	37	33	31	30	25	24	25	24	29	39	50	52	54	59	24	96	55	24
19	62	64	63	54	64	68	73	69	54	41	37	29	27	24	23	22	19	17	18	19	26	37	53	62	17	73	43	24
20	65	68	75	71	65	64	55	45	40	35	31	27	27	25	37	49	45	36	59	65	67	73	76	76	25	76	53	24
21	81	84	85	86	86	87	80	69	53	40	31	27	23	19	17	15	17	21	22	28	38	39	38	39	15	87	47	24
22	40	41	44	43	43	44	44	40	37	35	31	29	25	18	13	12	14	16	18	21	28	38	51	61	12	61	33	24
23	70	68	73	79	81	71	56	44	38	35	33	30	28	26	24	24	25	22	20	22	24	29	37	50	20	81	42	24
24	56	65	59	56	64	60	53	43	35	26	21	19	18	19	20	20	26	34	35	38	43	50	51	54	18	65	40	24
25	58	60	71	68	73	62	48	39	30	20	15	14	13	13	12	11	13	14	15	18	36	40	54	59	11	73	36	24
26	63	64	69	70	74	80	65	51	37	31	27	27	22	21	20	25	22	24	25	32	42	45	47	47	20	80	43	24
27	50	52	57	64	64	69	64	61	55	53	46	39	35	35	33	33	30	31	34	30	31	42	51	55	30	69	46	24
28	62	69	77	79	81	81	62	44	29	24	23	22	21	20	21	20	22	23	26	37	49	58	62	68	20	81	45	24
29	71	75	77	79	80	77	65	55	43	41	36	44	48	54	34	25	24	23	26	30	36	51	65	69	23	80	51	24
30	74	79	79	76	75	81	82	85	63	54	49	46	41	35	31	29	30	33	35	38	42	47	49	52	29	85	54	24
HOURLY MAX	99	99	100	100	100	100	100	100	100	100	97	93	91	93	94	95	96	97	99	99	99	99	100	99				
HOURLY AVG	69	71	74	75	77	77	71	64	57	51	46	42	39	38	36	37	37	37	40	47	53	58	62	65				

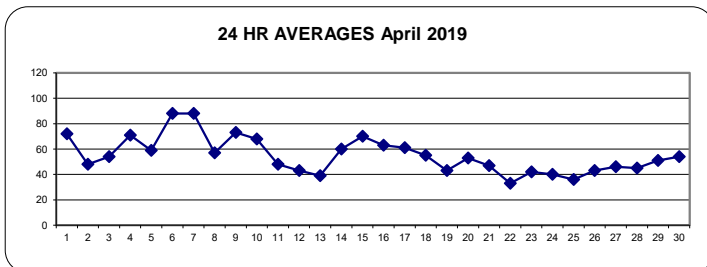
STATUS FLAG CODES

C	- MONTHLY CALIBRATION	Q	- QUALITY ASSURANCE
C1	- REPEAT CALIBRATION	R	- RECOVERY
Y	- MAINTENANCE	X	- MACHINE MALFUNCTION
S	- DAILY ZERO/SPAN CHECK	G	- OUT FOR REPAIR
S1	- REPEAT ZERO/SPAN CHECK	P	- POWER FAILURE

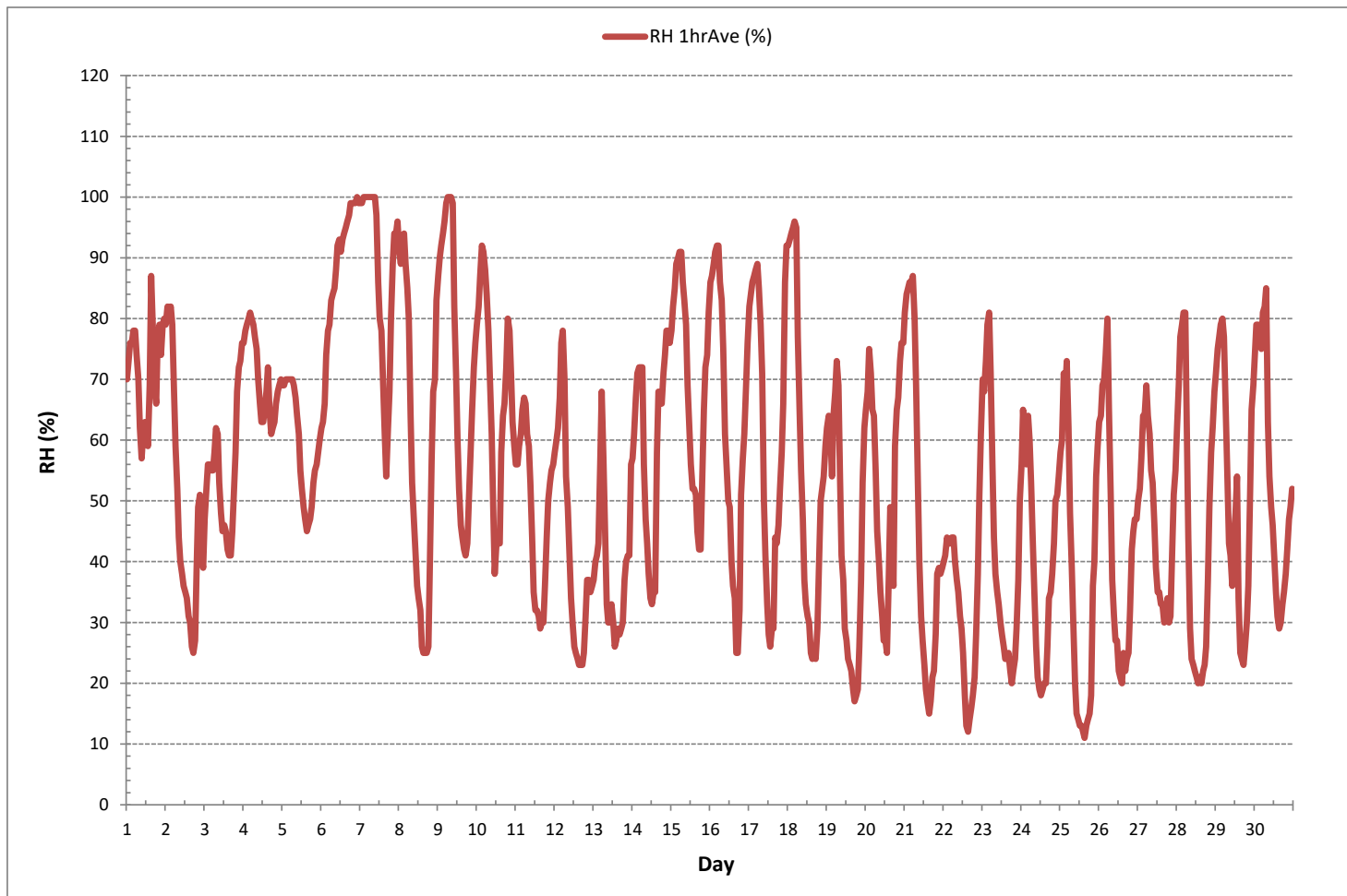
MONTHLY SUMMARY

MINIMUM 1-HR AVERAGE:	11	%	@ HOUR	15	ON DAY	25
MAXIMUM 1-HR AVERAGE:	100	%	@ HOUR	22	ON DAY	6
MAXIMUM 24-HR AVERAGE:	88	%			ON DAY	6
OPERATIONAL TIME:						720 hrs
AMD OPERATION UPTIME:						100.0 %
STANDARD DEVIATION:	23					MONTHLY AVERAGE: 55 %

24 HR AVERAGES April 2019



RELATIVE HUMIDITY Hourly Averages (RH %)





AMBIENT TEMPERATURE Hourly Averages (AmbTPX °C)

HR START (MST)	0:00	1:00	2:00	3:00	4:00	5:00	6:00	7:00	8:00	9:00	10:00	11:00	12:00	13:00	14:00	15:00	16:00	17:00	18:00	19:00	20:00	21:00	22:00	23:00	DAILY	DAILY	24-HR	RDGS.
HR END (MST)	0:59	1:59	2:59	3:59	4:59	5:59	6:59	7:59	8:59	9:59	10:59	11:59	12:59	13:59	14:59	15:59	16:59	17:59	18:59	19:59	20:59	21:59	22:59	23:59	MIN.	MAX.	AVG.	
DAY 1	1.7	1.3	1.2	1.2	0.5	0.1	0.5	1.0	2.3	3.8	3.8	4.0	4.1	4.7	3.7	1.2	1.2	1.6	1.1	-0.6	-1.2	-1.4	-1.9	-2.5	-2.5	4.7	1.3	24
2	-2.6	-3.1	-3.1	-3.5	-3.3	-3.0	-2.9	-2.5	-2.4	-1.8	-1.5	-1.0	-0.3	0.3	0.9	1.8	2.0	1.9	1.1	-1.1	-2.2	-2.2	-1.8	-2.0	-3.5	2.0	-1.3	24
3	-3.4	-4.3	-5.2	-5.6	-5.9	-6.1	-6.2	-6.3	-5.5	-4.3	-3.3	-2.2	-1.7	-0.8	0.7	1.7	2.2	2.3	1.1	-0.3	-1.1	-1.6	-2.1	-2.9	-6.3	2.3	-2.5	24
4	-3.9	-4.4	-5.1	-6.1	-7.1	-7.6	-7.4	-6.5	-5.5	-4.0	-2.9	-2.3	-1.9	-1.9	-2.1	-2.4	-2.1	-1.9	-2.2	-2.7	-3.1	-3.3	-3.4	-3.5	-7.6	-1.9	-3.9	24
5	-3.4	-3.6	-3.8	-3.9	-3.9	-4.1	-4.1	-3.8	-3.0	-1.6	-0.3	1.7	3.0	4.3	5.1	5.8	5.7	5.6	5.2	4.5	3.8	3.0	2.5	2.4	-4.1	5.8	0.7	24
6	2.3	2.1	1.7	1.0	0.7	0.6	0.8	0.7	0.8	0.9	1.1	1.5	2.2	2.7	2.7	1.6	1.2	0.7	0.5	0.4	0.4	0.3	0.3	0.3	0.3	2.7	1.1	24
7	0.2	0.0	0.1	0.2	0.1	0.2	0.2	0.6	0.7	1.4	2.5	4.2	5.2	5.8	7.4	9.1	9.9	8.8	7.0	4.4	1.8	0.5	0.1	0.0	0.0	9.9	2.9	24
8	1.5	0.9	-0.7	-0.3	0.2	0.1	0.8	3.9	6.1	8.3	10.4	11.7	12.6	13.5	13.9	13.8	14.3	13.8	12.6	9.5	5.2	2.6	2.2	2.6	-0.7	14.3	6.6	24
9	1.4	0.2	-0.4	-1.3	-1.2	-1.2	-1.2	-0.9	-0.5	0.6	2.7	5.2	7.7	9.8	11.5	12.3	13.0	12.9	11.4	9.1	7.3	5.9	4.3	3.4	-1.3	13.0	4.7	24
10	2.6	1.6	-0.1	-1.3	-0.8	-0.9	-0.4	0.9	2.7	5.1	8.1	10.1	10.8	11.4	11.6	9.7	8.5	7.9	7.3	6.4	5.7	6.3	5.9	5.2	-1.3	11.6	5.2	24
11	4.9	4.0	3.2	2.5	1.6	0.6	0.2	1.1	2.0	4.0	6.9	8.8	9.5	9.6	9.6	9.7	9.5	8.8	7.3	5.6	4.2	3.2	2.4	1.9	0.2	9.7	5.0	24
12	1.3	0.7	-0.2	-1.5	-2.7	-3.2	-1.7	0.9	2.7	5.0	7.1	8.2	9.1	9.6	10.0	10.4	10.6	10.2	9.4	7.5	5.8	5.0	4.6	3.6	-3.2	10.6	4.7	24
13	2.7	1.5	1.0	0.5	-1.3	-2.7	-0.7	2.2	5.7	8.4	10.2	11.7	12.4	13.0	12.7	12.4	12.6	12.2	11.6	9.2	8.1	7.8	7.5	4.2	-2.7	13.0	6.8	24
14	3.4	3.1	1.9	1.4	1.2	1.6	2.2	5.0	7.1	7.3	9.3	11.0	11.8	12.0	12.2	8.8	7.3	7.9	7.5	6.4	5.7	4.6	4.5	4.8	1.2	12.2	6.2	24
15	4.2	3.2	2.1	1.1	0.5	0.0	0.7	2.2	5.8	3.6	5.2	6.9	8.3	8.8	9.3	8.7	9.1	9.4	8.4	5.6	3.0	1.8	0.9	-0.7	-0.7	9.4	4.4	24
16	-1.7	-1.7	-1.4	-2.3	-2.7	-3.2	-0.9	0.9	2.7	5.8	7.8	8.7	8.8	10.7	11.2	12.0	12.7	12.2	10.6	7.0	5.7	5.8	3.8	1.8	-3.2	12.7	4.8	24
17	-0.4	-1.5	-1.9	-2.2	-2.1	-2.1	-0.4	2.4	4.6	8.9	11.2	13.0	14.3	15.2	14.4	13.8	11.2	10.8	9.8	8.7	7.2	6.0	4.2	2.4	-2.2	15.2	6.2	24
18	1.7	0.8	-0.5	-1.3	-1.9	-1.5	2.0	4.7	7.3	9.9	11.7	12.2	12.4	13.2	14.5	15.1	15.3	15.8	14.5	11.4	8.3	8.0	8.4	7.7	-1.9	15.8	7.9	24
19	7.3	6.8	6.5	8.8	8.5	8.2	7.7	8.8	10.7	12.2	13.2	13.8	14.2	14.1	14.5	14.4	13.7	13.1	12.4	11.0	8.5	5.6	2.7	1.2	1.2	14.5	9.9	24
20	0.0	-1.1	-1.7	-1.2	-0.1	0.1	2.7	5.6	7.5	9.6	10.6	11.5	11.6	11.9	10.1	8.5	9.7	10.4	6.5	5.7	5.1	3.8	3.4	3.1	-1.7	11.9	5.6	24
21	1.8	1.3	1.1	0.9	1.1	0.5	1.6	3.7	6.2	8.7	10.3	10.7	11.3	12.2	13.1	13.5	13.1	12.4	12.3	10.4	7.2	6.1	6.1	6.0	0.5	13.5	7.1	24
22	5.8	5.5	4.6	4.8	4.7	4.5	5.4	7.3	9.4	11.5	13.7	15.3	16.9	18.5	19.2	19.2	19.1	18.8	18.3	17.0	15.9	14.6	12.6	10.9	4.5	19.2	12.2	24
23	8.8	9.4	8.1	6.8	5.9	6.8	8.9	10.7	11.6	12.9	13.6	14.7	15.3	15.8	15.8	15.6	15.2	14.9	13.9	12.2	11.0	9.4	7.2	4.5	4.5	15.8	11.2	24
24	3.0	1.8	2.3	2.4	1.0	1.7	3.8	6.2	8.7	11.0	11.7	12.1	12.4	11.8	11.8	11.5	10.3	8.6	7.8	6.5	5.8	5.1	4.7	4.2	1.0	12.4	6.9	24
25	3.7	3.4	2.2	2.2	1.1	0.1	1.3	3.3	5.6	7.1	7.9	8.2	8.5	8.8	9.4	9.0	9.0	8.7	8.6	6.8	2.5	-0.3	-1.8	-2.6	-2.6	9.4	4.7	24
26	-3.1	-3.3	-4.3	-5.2	-5.5	-5.1	-1.6	2.0	5.2	7.0	7.7	7.5	8.4	8.3	8.7	7.6	8.0	7.5	7.0	5.1	3.6	3.0	2.3	1.5	-5.5	8.7	3.0	24
27	0.6	0.1	-0.8	-2.1	-2.1	-2.1	-0.7	-0.1	1.3	2.0	3.6	4.5	4.9	5.1	5.0	4.8	5.1	4.8	3.1	2.0	1.2	-0.1	-1.5	-2.6	-2.6	5.1	1.5	24
28	-3.9	-4.9	-6.0	-6.8	-7.4	-6.9	-2.1	0.9	3.3	4.3	5.2	5.4	5.8	5.3	5.7	6.2	5.5	5.3	4.5	2.4	-0.2	-1.8	-3.0	-4.1	-7.4	6.2	0.5	24
29	-4.7	-4.9	-5.5	-5.7	-5.3	-4.6	-1.4	1.3	2.6	3.9	5.0	4.2	4.0	3.6	5.7	6.3	6.7	7.0	6.1	5.0	4.1	2.4	1.5	0.9	-5.7	7.0	1.6	24
30	0.0	-1.1	-1.1	-1.0	-1.4	-4.1	-4.7	-5.5	-4.8	-4.2	-3.1	-2.0	-1.5	-0.6	-0.2	0.2	-0.3	-0.7	-1.4	-2.1	-2.9	-3.9	-4.5	-5.1	-5.5	0.2	-2.3	24
HOURLY MAX	8.8	9.4	8.1	8.8	8.5	8.2	8.9	10.7	11.6	12.9	13.7	15.3	16.9	18.5	19.2	19.2	19.1	18.8	18.3	17.0	15.9	14.6	12.6	10.9				
HOURLY AVG	1.1	0.5	-0.2	-0.6	-0.9	-1.1	0.1	1.7	3.3	4.9	6.3	7.3	8.0	8.6	8.9	8.7	8.6	8.4	7.4	5.8	4.2	3.2	2.4	1.6				

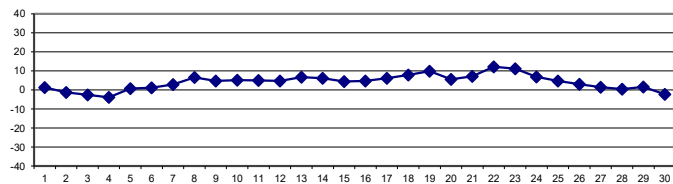
STATUS FLAG CODES

C	- MONTHLY CALIBRATION	Q	- QUALITY ASSURANCE
C1	- REPEAT CALIBRATION	R	- RECOVERY
Y	- MAINTENANCE	X	- MACHINE MALFUNCTION
S	- DAILY ZERO/SPAN CHECK	G	- OUT FOR REPAIR
S1	- REPEAT ZERO/SPAN CHECK	P	- POWER FAILURE

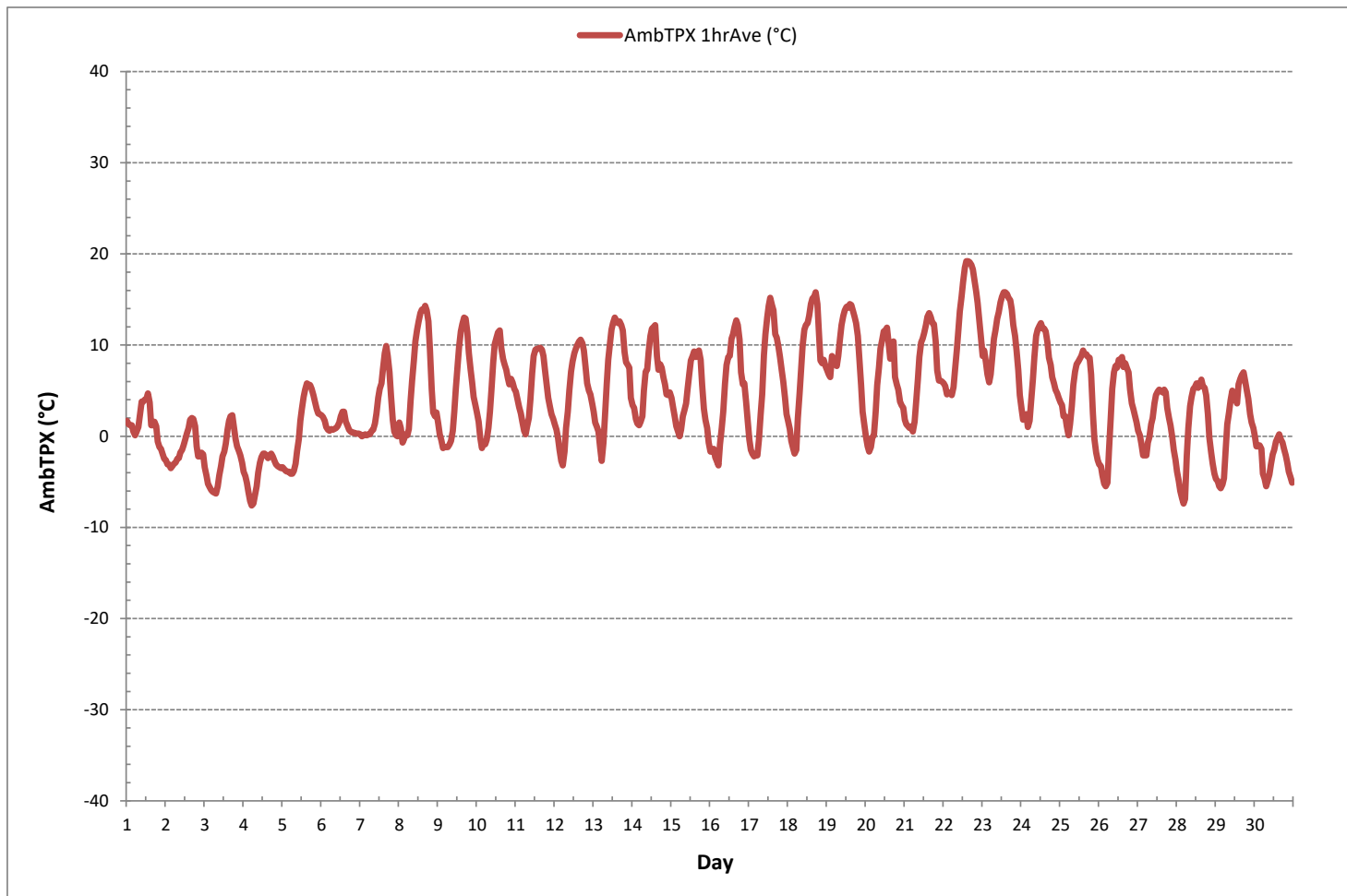
MONTHLY SUMMARY

MINIMUM 1-HR AVERAGE:	-7.6 °C	@ HOUR	5	ON DAY	4
MAXIMUM 1-HR AVERAGE:	19.2 °C	@ HOUR	14	ON DAY	22
MAXIMUM 24-HR AVERAGE:	12.2 °C			ON DAY	22
OPERATIONAL TIME:					720 hrs
AMD OPERATION UPTIME:					100.0 %
STANDARD DEVIATION:	5.6	MONTHLY AVERAGE:			4.1 °C

24 HR AVERAGES April 2019



AMBIENT TEMPERATURE Hourly Averages (AmbTPX °C)





SULPHUR DIOXIDE Instantaneous Maximum (SO₂ ppb)

HR START (MST)	0:00	1:00	2:00	3:00	4:00	5:00	6:00	7:00	8:00	9:00	10:00	11:00	12:00	13:00	14:00	15:00	16:00	17:00	18:00	19:00	20:00	21:00	22:00	23:00	DAILY MIN.	DAILY MAX.	24-HR AVG.	RDGS.
HR END (MST)	0:59	1:59	2:59	3:59	4:59	5:59	6:59	7:59	8:59	9:59	10:59	11:59	12:59	13:59	14:59	15:59	16:59	17:59	18:59	19:59	20:59	21:59	22:59	23:59				
DAY 1	1	1	0	0	0	0	0	S	0	0	0	0	0	0	0	0	0	1	1	0	0	0	0	0	0	1	0	24
2	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	24
3	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	24
4	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	24
5	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	24
6	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	24
7	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	24
8	S	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	24
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	24
10	0	0	0	0	0	0	0	0	0	0	0	0	1	0	0	0	0	0	0	0	0	0	S	0	0	1	0	24
11	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	24
12	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	24
13	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	24
14	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	S	1	1	2	1	0	0	0	2	0	24
15	0	0	0	0	0	0	1	1	0	1	1	1	1	1	1	1	S	0	0	0	0	0	0	0	0	1	0	24
16	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	24
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	24
18	0	0	0	0	0	0	0	0	0	0	0	0	0	S	1	0	0	0	0	0	0	0	0	0	0	1	0	24
19	0	0	0	0	0	1	0	0	0	0	0	0	S	0	0	0	0	0	0	0	0	0	0	0	0	1	0	24
20	0	0	0	0	0	0	0	0	0	0	0	S	0	0	0	0	0	1	0	0	0	0	0	0	0	1	0	24
21	0	0	0	0	0	0	0	0	0	0	S	0	0	0	0	0	0	1	1	1	0	0	0	0	0	1	0	24
22	0	0	0	0	0	0	0	1	1	S	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1	0	24
23	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	24
24	0	0	0	0	0	0	S	C	C	C	C	C	C	0	0	0	0	0	0	0	0	0	0	0	0	0	0	24
25	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	24
26	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	24
27	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	24
28	0	0	0	S	0	0	0	0	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1	0	24
29	0	0	S	0	0	0	0	0	0	0	0	0	0	1	1	0	0	0	0	0	0	0	0	0	0	1	0	24
30	0	S	0	0	0	0	0	0	0	0	0	0	0	1	0	0	0	0	0	0	0	0	0	0	0	0	1	24
HOURLY MAX	1	1	0	0	0	1	1	1	1	1	1	1	1	1	1	0	0	1	1	1	2	1	0	0				
HOURLY AVG	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0				

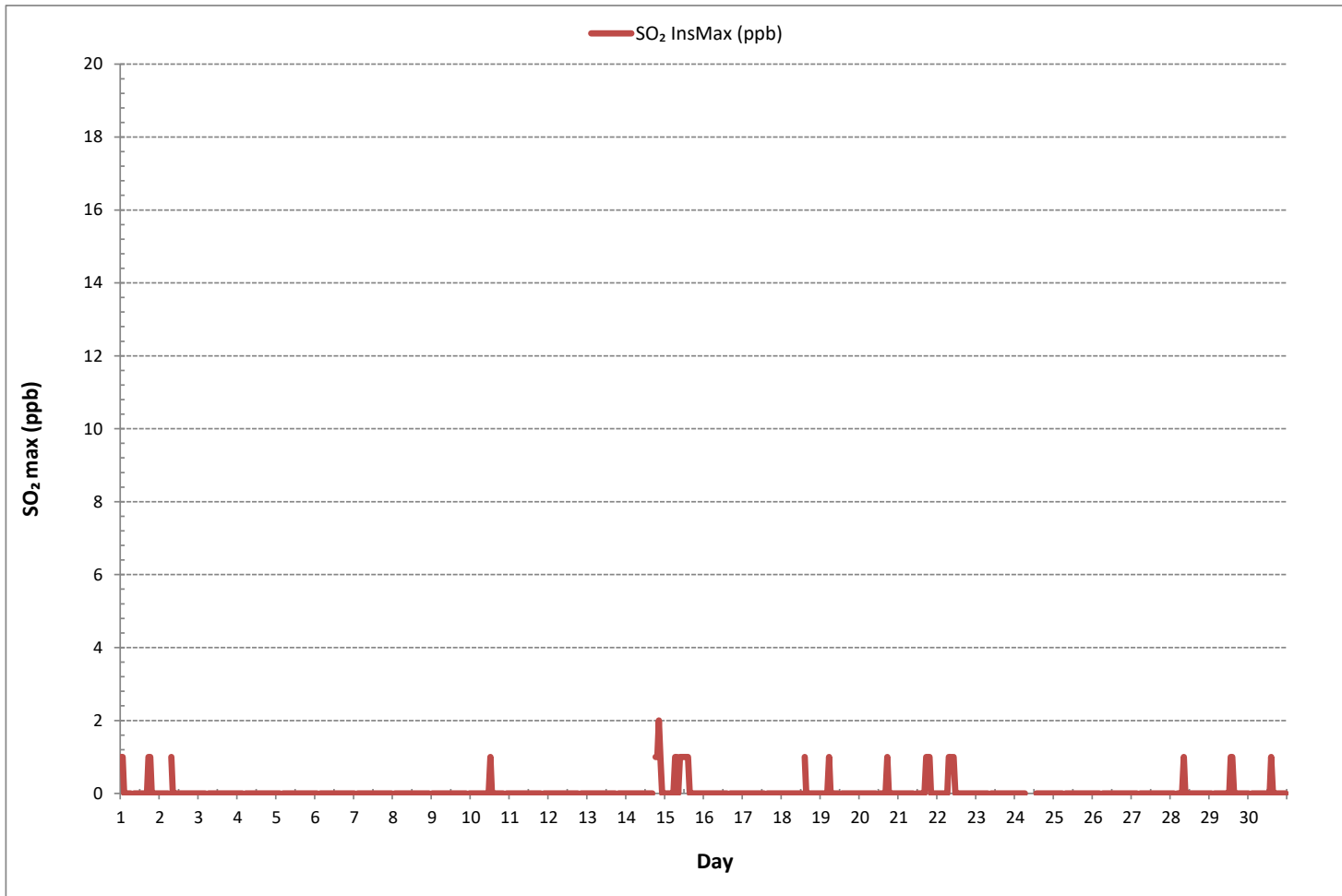
STATUS FLAG CODES

C	- MONTHLY CALIBRATION	Q	- QUALITY ASSURANCE
C1	- REPEAT CALIBRATION	R	- RECOVERY
Y	- MAINTENANCE	X	- MACHINE MALFUNCTION
S	- DAILY ZERO/SPAN CHECK	G	- OUT FOR REPAIR
S1	- REPEAT ZERO/SPAN CHECK	P	- POWER FAILURE

MONTHLY SUMMARY

NUMBER OF NON-ZERO READINGS:	31
MAXIMUM INSTANTANEOUS VALUE:	2 ppb @ HOUR 20 ON DAY 14
IZS CALIBRATION TIME:	31 hrs
MONTHLY CALIBRATION TIME:	5 hrs
STANDARD DEVIATION:	0
OPERATIONAL TIME:	720 hrs

SULPHUR DIOXIDE Instantaneous Maximum (SO₂ ppb)





TOTAL REDUCED SULPHUR Instantaneous Maximum (TRS ppb)

HR START (MST)	0:00	1:00	2:00	3:00	4:00	5:00	6:00	7:00	8:00	9:00	10:00	11:00	12:00	13:00	14:00	15:00	16:00	17:00	18:00	19:00	20:00	21:00	22:00	23:00	DAILY MIN.	DAILY MAX.	24-HR AVG.	RDGS.
HR END (MST)	0:59	1:59	2:59	3:59	4:59	5:59	6:59	7:59	8:59	9:59	10:59	11:59	12:59	13:59	14:59	15:59	16:59	17:59	18:59	19:59	20:59	21:59	22:59	23:59				
DAY 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	24	
2	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	24	
3	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	24	
4	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	24	
5	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	24	
6	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	24	
7	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	1	24	
8	S	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	S	1	1	24	
9	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	S	1	1	1	24	
10	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	S	1	1	1	1	24	
11	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	S	1	1	1	1	24	
12	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	S	1	1	1	1	1	24	
13	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	S	1	1	1	1	1	1	1	24	
14	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	S	1	1	1	1	1	1	1	1	1	24	
15	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	S	1	1	1	1	1	1	1	1	1	1	24	
16	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	S	1	1	1	1	1	1	1	1	1	1	24	
17	1	1	1	1	1	1	1	1	1	1	1	1	1	1	S	1	1	1	1	1	1	1	1	1	1	1	24	
18	1	1	1	1	1	1	2	2	1	1	1	1	1	S	1	1	1	1	2	3	3	2	1	1	1	3	24	
19	1	1	1	1	1	1	1	1	1	1	1	1	S	1	1	1	1	1	1	1	1	1	1	1	1	1	24	
20	1	1	1	1	1	1	1	1	1	1	1	S	1	1	1	1	1	1	1	1	1	1	1	1	1	1	24	
21	1	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	24	
22	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	24	
23	1	1	1	1	2	1	1	1	S	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	24	
24	1	1	1	1	1	1	1	S	C	C	C	C	C	1	1	1	1	0	1	1	1	1	1	1	0	1	24	
25	1	1	1	0	1	1	S	1	1	1	1	1	0	1	1	1	1	1	1	1	1	1	1	1	1	0	1	24
26	1	1	1	1	1	1	S	1	1	1	1	1	0	1	1	1	1	1	1	1	0	0	0	1	1	0	1	24
27	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	24
28	1	1	1	S	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	0	1	1	1	0	0	1	24
29	1	1	S	1	1	1	1	1	1	1	1	0	1	1	1	1	1	1	1	1	0	0	1	1	1	0	1	24
30	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	1	24	
HOURLY MAX	1	1	1	1	2	1	2	2	1	1	1	1	1	1	1	1	1	1	2	3	3	2	1	1	1	1		
HOURLY AVG	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1		

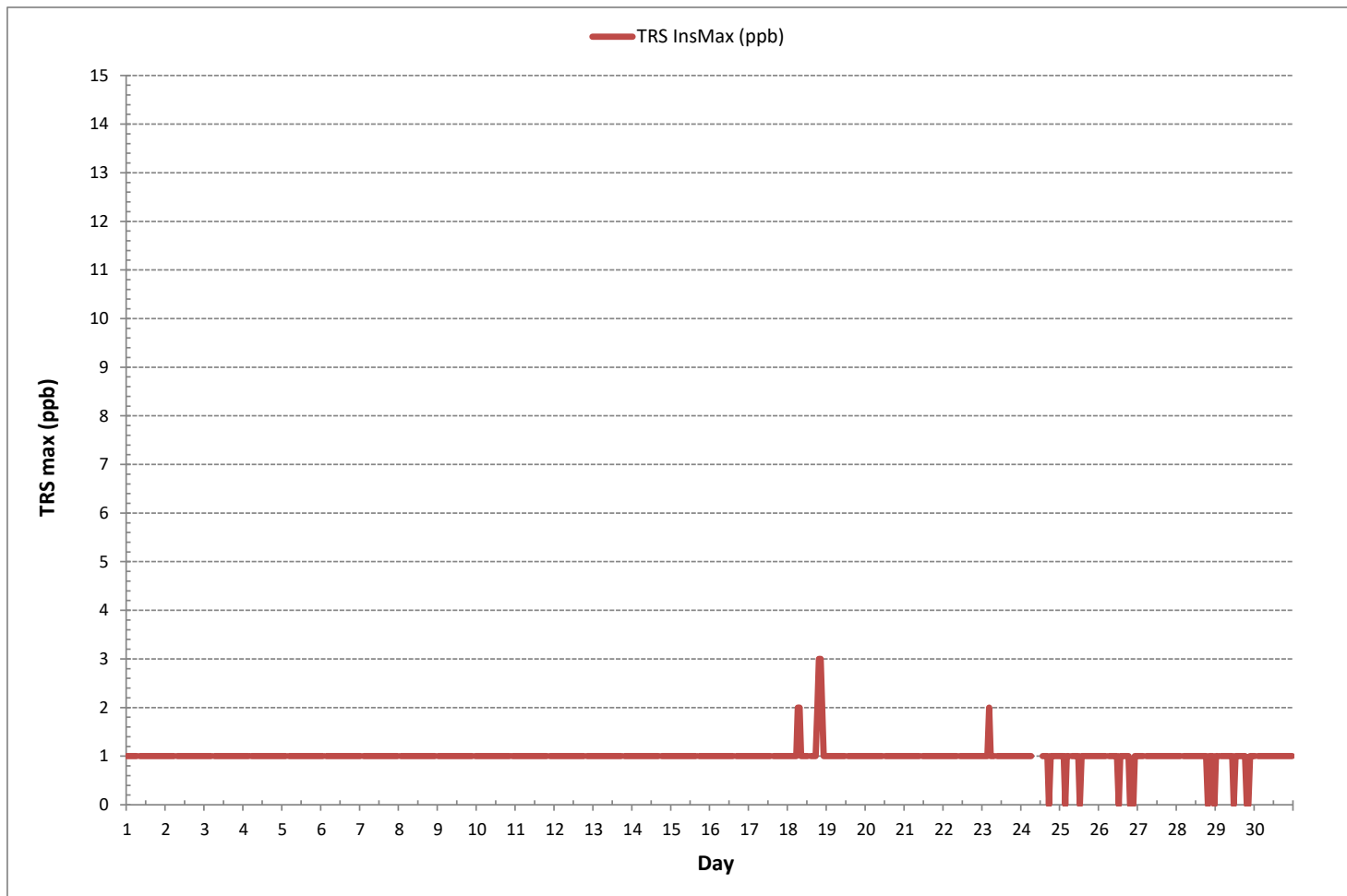
STATUS FLAG CODES

C	- MONTHLY CALIBRATION	Q	- QUALITY ASSURANCE
C1	- REPEAT CALIBRATION	R	- RECOVERY
Y	- MAINTENANCE	X	- MACHINE MALFUNCTION
S	- DAILY ZERO/SPAN CHECK	G	- OUT FOR REPAIR
S1	- REPEAT ZERO/SPAN CHECK	P	- POWER FAILURE

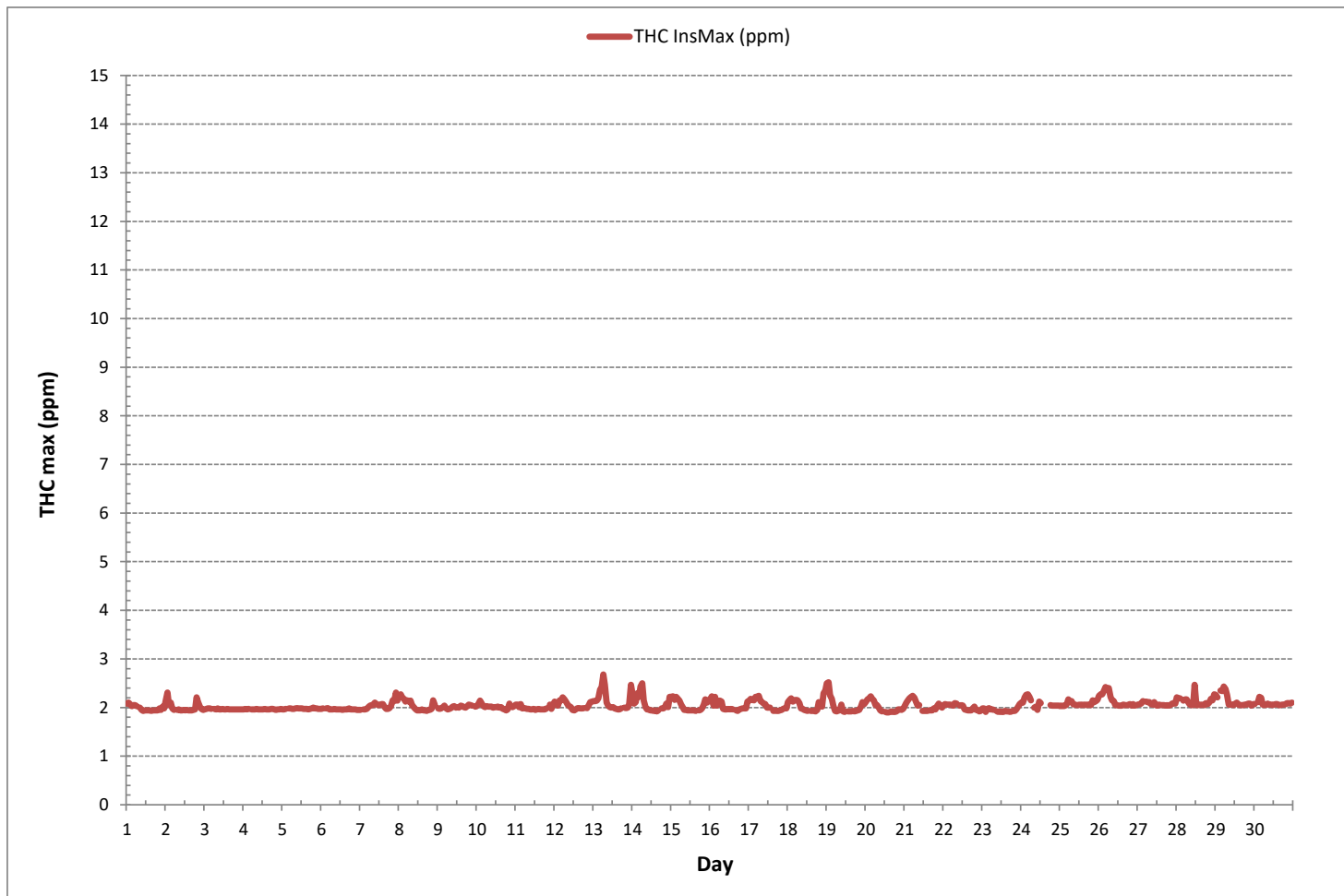
MONTHLY SUMMARY

NUMBER OF NON-ZERO READINGS:	672
MAXIMUM INSTANTANEOUS VALUE:	3 ppb @ HOUR 19 ON DAY 18
IZS CALIBRATION TIME:	31 hrs
MONTHLY CALIBRATION TIME:	5 hrs
STANDARD DEVIATION:	0
OPERATIONAL TIME:	720 hrs

TOTAL REDUCED SULPHUR Instantaneous Maximum (TRS ppb)



TOTAL HYDROCARBONS Instantaneous Maximum (THC ppm)





LAKELAND INDUSTRY & COMMUNITY ASSOCIATION
Cold Lake South Continuous Monitoring Station - April 2019

METHANE MAX Instantaneous Maximum (CH₄ ppm)

HR START (MST)	0:00	1:00	2:00	3:00	4:00	5:00	6:00	7:00	8:00	9:00	10:00	11:00	12:00	13:00	14:00	15:00	16:00	17:00	18:00	19:00	20:00	21:00	22:00	23:00	DAILY	DAILY	24-HR	RDGS.		
HR END (MST)	0:59	1:59	2:59	3:59	4:59	5:59	6:59	7:59	8:59	9:59	10:59	11:59	12:59	13:59	14:59	15:59	16:59	17:59	18:59	19:59	20:59	21:59	22:59	23:59	MIN.	MAX.	AVG.			
DAY																														
1	2.08	2.10	2.07	2.03	2.05	2.05	2.03	S	2.00	1.95	1.93	1.94	1.94	1.94	1.94	1.93	1.94	1.94	1.94	1.94	1.98	1.95	2.02	1.98	1.93	2.10	1.98	24		
2	2.14	2.31	2.05	2.10	1.98	1.95	S	1.95	1.96	1.94	1.94	1.95	1.94	1.95	1.94	1.94	1.94	1.95	1.96	2.21	2.11	2.02	1.97	1.95	1.94	2.31	2.01	24		
3	1.96	1.97	1.98	1.98	1.97	S	1.97	1.96	1.98	1.96	1.96	1.97	1.96	1.96	1.97	1.96	1.96	1.96	1.96	1.96	1.96	1.96	1.96	1.96	1.96	1.96	1.97	1.97	24	
4	1.96	1.97	1.96	1.97	S	1.96	1.96	1.96	1.97	1.96	1.96	1.96	1.96	1.96	1.97	1.96	1.96	1.96	1.97	1.97	1.96	1.95	1.96	1.96	1.97	1.95	1.97	1.96	24	
5	1.96	1.96	1.97	S	1.98	1.98	1.97	1.97	1.98	1.99	1.98	1.98	1.98	1.97	1.97	1.97	1.96	1.97	1.98	2.00	1.98	1.98	1.97	1.97	1.96	2.00	1.97	24		
6	1.97	1.98	S	1.98	1.99	1.96	1.96	1.96	1.97	1.96	1.96	1.96	1.96	1.95	1.96	1.96	1.96	1.98	1.96	1.96	1.96	1.96	1.95	1.95	1.95	1.99	1.96	24		
7	1.95	S	1.96	1.96	1.97	2.01	2.04	2.05	2.05	2.10	2.07	2.05	2.05	2.07	2.07	2.01	1.97	1.97	1.99	2.03	2.15	2.13	2.31	2.14	1.95	2.31	2.05	24		
8	S	2.27	2.20	2.18	2.12	2.15	2.13	2.14	2.05	2.01	1.97	1.94	1.94	1.94	1.96	1.94	1.94	1.93	1.95	1.95	1.97	2.15	2.05	S	1.93	2.27	2.04	24		
9	1.98	1.97	1.98	2.01	2.04	1.98	1.96	1.97	1.99	2.02	2.03	2.00	2.01	2.00	2.04	2.03	2.01	2.00	2.03	2.06	2.05	2.04	S	2.02	1.96	2.06	2.01	24		
10	2.03	2.08	2.14	2.08	2.03	2.01	2.03	2.02	2.02	2.00	2.01	2.01	2.01	2.02	2.00	2.01	1.97	1.96	1.94	1.96	2.08	S	2.01	2.03	1.94	2.14	2.02	24		
11	2.06	2.06	2.01	2.07	1.98	1.99	1.98	1.97	1.97	1.96	1.96	1.97	1.95	1.96	1.97	1.96	1.96	1.96	1.96	1.98	S	2.06	1.97	2.06	1.95	2.07	1.99	24		
12	2.12	2.07	2.04	2.15	2.15	2.21	2.17	2.12	2.06	2.03	2.01	1.95	1.94	1.96	1.99	1.99	1.98	1.98	1.99	S	1.99	2.05	2.11	2.12	1.94	2.21	2.05	24		
13	2.13	2.13	2.14	2.19	2.37	2.41	2.68	2.47	2.10	2.04	2.01	2.00	2.01	1.98	1.97	1.96	1.96	1.98	S	2.00	1.99	2.00	2.07	2.47	1.96	2.68	2.13	24		
14	2.28	2.08	2.11	2.29	2.22	2.43	2.50	2.14	2.01	1.96	1.96	1.94	1.94	1.93	1.94	1.92	1.94	S	1.98	1.98	2.01	2.08	2.01	2.22	1.92	2.50	2.08	24		
15	2.22	2.23	2.16	2.22	2.18	2.14	2.06	2.01	1.95	1.95	1.94	1.94	1.94	1.94	1.94	1.93	S	1.94	1.95	1.98	2.06	2.17	2.10	2.14	1.93	2.23	2.05	24		
16	2.18	2.23	2.04	2.22	2.04	2.11	2.14	2.12	1.97	1.96	1.96	1.97	1.96	1.97	1.96	S	1.94	1.93	1.96	1.97	1.98	1.98	1.98	2.12	1.93	2.23	2.03	24		
17	2.14	2.18	2.16	2.15	2.22	2.22	2.24	2.13	2.11	2.08	2.07	2.00	2.00	2.00	S	1.93	1.94	1.93	1.93	1.94	1.95	1.97	1.99	1.98	1.93	2.24	2.05	24		
18	2.11	2.16	2.19	2.12	2.15	2.16	2.15	2.09	1.98	1.97	1.95	1.94	1.93	S	1.93	1.93	1.93	1.92	1.95	2.11	2.06	2.02	2.29	2.35	1.92	2.35	2.06	24		
19	2.50	2.52	2.25	2.18	2.04	1.93	1.92	1.94	1.94	2.06	1.92	1.91	S	1.92	1.92	1.92	1.93	1.92	1.93	1.94	1.95	2.02	2.11	2.07	1.91	2.52	2.03	24		
20	2.11	2.17	2.19	2.23	2.18	2.15	2.05	2.05	2.00	1.94	1.92	S	1.91	1.90	1.90	1.91	1.92	1.91	1.91	1.92	1.96	1.96	1.95	1.97	1.90	2.23	2.01	24		
21	2.03	2.10	2.15	2.19	2.22	2.24	2.20	2.12	2.04	2.05	S	1.93	1.93	1.93	1.94	1.94	1.94	1.94	1.98	1.96	2.03	2.08	2.03	2.00	1.93	2.24	2.04	24		
22	2.05	2.07	2.06	2.06	2.06	2.05	2.04	2.09	2.08	S	2.04	2.05	2.04	1.96	1.95	1.94	1.94	1.94	1.98	2.02	1.95	1.95	1.92	1.93	1.92	2.09	2.01	24		
23	1.98	1.98	1.91	1.97	1.99	1.96	1.96	1.95	S	1.92	1.91	1.92	1.91	1.91	1.93	1.92	1.92	1.91	1.92	1.93	1.93	1.96	2.02	2.07	1.91	2.07	1.95	24		
24	2.10	2.10	2.21	2.26	2.27	2.22	2.15	S	2.00	2.02	1.95	2.12	2.09	C	C	C	C	C	C	2.05	2.04	2.04	2.04	2.04	1.95	2.27	2.10	24		
25	2.03	2.04	2.03	2.04	2.06	2.17	S	2.13	2.07	2.06	2.05	2.05	2.06	2.05	2.06	2.05	2.06	2.05	2.06	2.05	2.15	2.11	2.13	2.16	2.03	2.17	2.07	24		
26	2.24	2.27	2.27	2.35	2.42	S	2.40	2.22	2.15	2.13	2.05	2.05	2.04	2.04	2.04	2.06	2.05	2.05	2.05	2.07	2.04	2.07	2.04	2.05	2.04	2.42	2.14	24		
27	2.06	2.07	2.08	2.13	S	2.12	2.11	2.11	2.07	2.06	2.11	2.05	2.04	2.06	2.05	2.05	2.05	2.04	2.05	2.04	2.05	2.04	2.05	2.08	2.09	2.08	2.04	2.13	2.07	24
28	2.21	2.19	2.19	S	2.14	2.17	2.17	2.11	2.06	2.05	2.05	2.47	2.05	2.05	2.06	2.05	2.06	2.05	2.09	2.07	2.10	2.18	2.15	2.27	2.05	2.47	2.13	24		
29	2.26	2.21	S	2.35	2.34	2.43	2.38	2.26	2.06	2.06	2.06	2.05	2.08	2.10	2.06	2.05	2.05	2.05	2.06	2.06	2.08	2.08	2.04	2.07	2.04	2.43	2.14	24		
30	2.07	S	2.11	2.22	2.20	2.06	2.05	2.06	2.08	2.06	2.06	2.05	2.06	2.07	2.07	2.05	2.05	2.06	2.06	2.06	2.07	2.09	2.08	2.10	2.05	2.22	2.08	24		
HOURLY MAX	2.50	2.52	2.27	2.35	2.42	2.43	2.68	2.47	2.15	2.13	2.11	2.47	2.09	2.10	2.07	2.06	2.06	2.06	2.09	2.21	2.15	2.18	2.31	2.47						
HOURLY AVG	2.10	2.12	2.09	2.13	2.12	2.12	2.12	2.07	2.02	2.01	1.99	2.00	1.99	1.98	1.98	1.97	1.97	1.97	1.98	2.01	2.02	2.04	2.05	2.08						

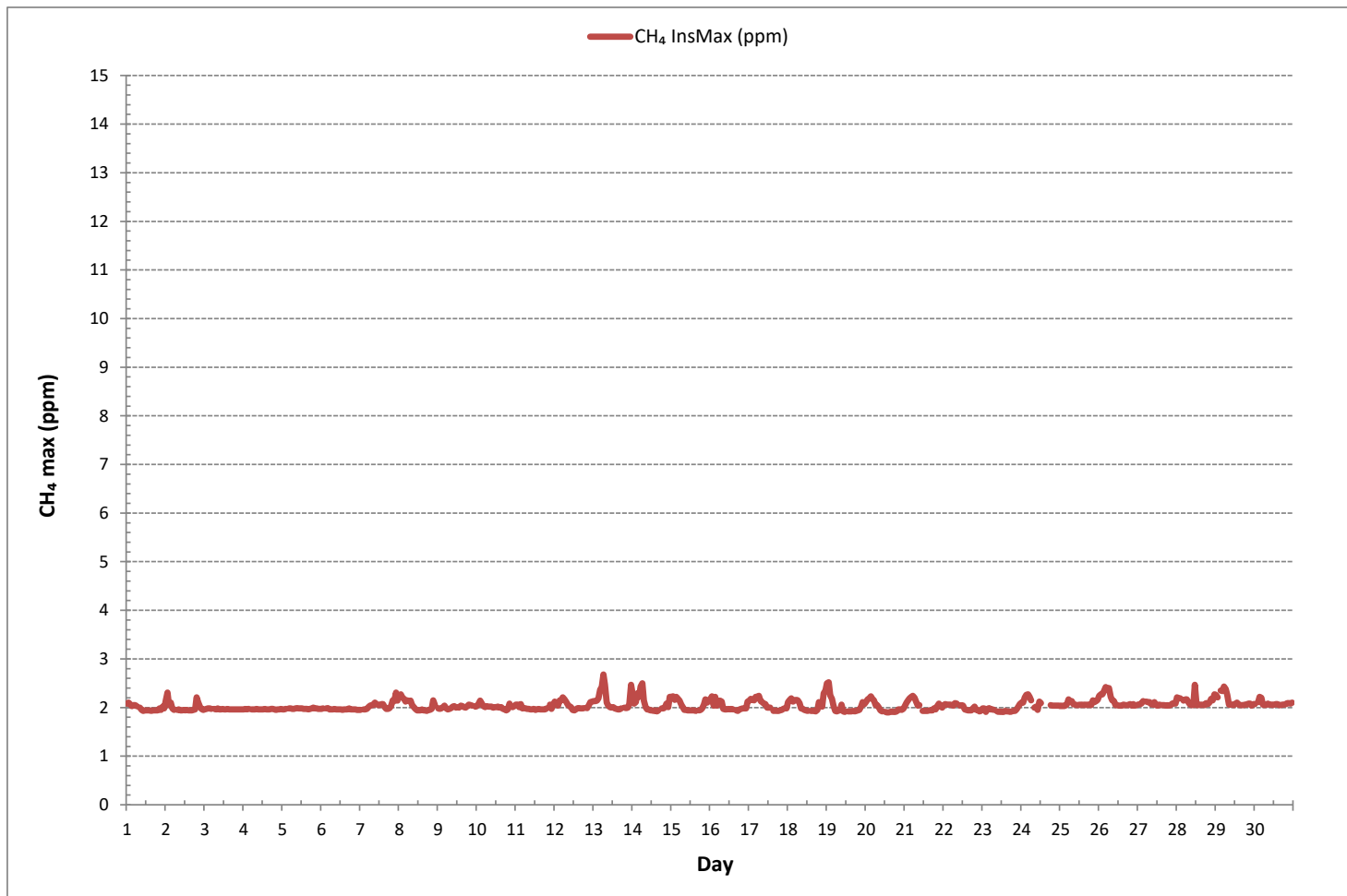
STATUS FLAG CODES

C	- MONTHLY CALIBRATION	Q	- QUALITY ASSURANCE
C1	- REPEAT CALIBRATION	R	- RECOVERY
Y	- MAINTENANCE	X	- MACHINE MALFUNCTION
S	- DAILY ZERO/SPAN CHECK	G	- OUT FOR REPAIR
S1	- REPEAT ZERO/SPAN CHECK	P	- POWER FAILURE

MONTHLY SUMMARY

NUMBER OF NON-ZERO READINGS:	684
MAXIMUM INSTANTANEOUS VALUE:	2.68 ppm @ HOUR 6 ON DAY 13
IZS CALIBRATION TIME:	31 hrs
MONTHLY CALIBRATION TIME:	5 hrs
STANDARD DEVIATION:	0.11
OPERATIONAL TIME:	720 hrs

METHANE MAX Instantaneous Maximum (CH₄ ppm)





LAKELAND INDUSTRY & COMMUNITY ASSOCIATION
Cold Lake South Continuous Monitoring Station - April 2019

NON-METHANE HYDROCARBONS Instantaneous Maximum (NMHC ppm)

HR START (MST)	0:00	1:00	2:00	3:00	4:00	5:00	6:00	7:00	8:00	9:00	10:00	11:00	12:00	13:00	14:00	15:00	16:00	17:00	18:00	19:00	20:00	21:00	22:00	23:00	DAILY MIN.	DAILY MAX.	24-HR AVG.	RDGS.
HR END (MST)	0:59	1:59	2:59	3:59	4:59	5:59	6:59	7:59	8:59	9:59	10:59	11:59	12:59	13:59	14:59	15:59	16:59	17:59	18:59	19:59	20:59	21:59	22:59	23:59				
DAY 1	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	24
2	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	24
3	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	24
4	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	24
5	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	24
6	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	24
7	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	24
8	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	24
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	S	0.00	0.00	0.00	24
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	S	0.00	0.00	0.00	0.00	24
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	24
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	S	0.00	0.00	0.00	0.00	0.00	0.00	0.00	24
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	S	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	24
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	24
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	S	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	24
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	S	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	24
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	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	24
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	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	24
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	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	24
20	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	24
21	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	24
22	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	24
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	24
24	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	C	C	C	C	C	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	24
25	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	24
26	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	24
27	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	24
28	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	24
29	0.00	0.00	S	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	0.01	0.00	24
30	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	24
HOURLY MAX	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	
HOURLY AVG	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	

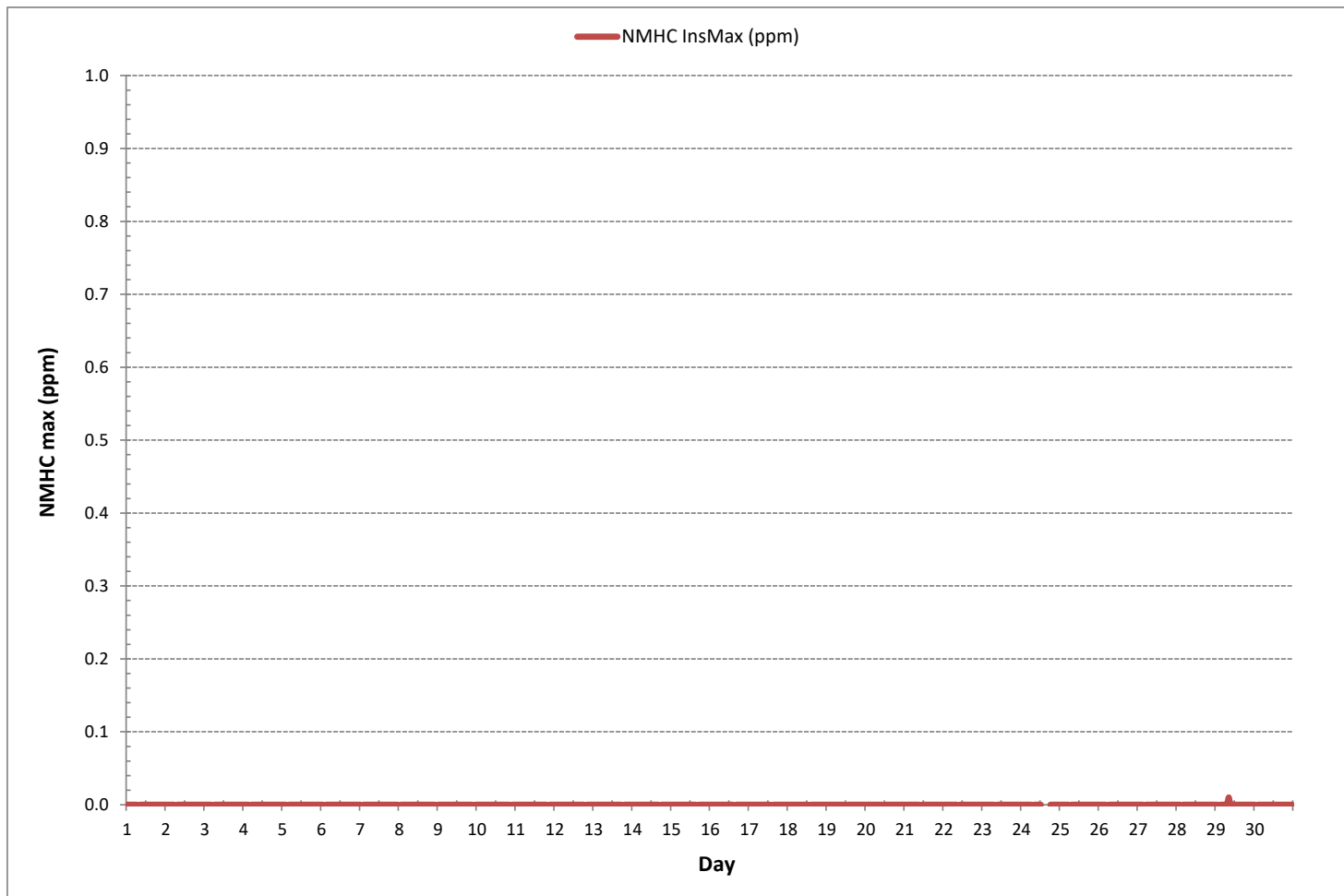
STATUS FLAG CODES

C	- MONTHLY CALIBRATION	Q	- QUALITY ASSURANCE
C1	- REPEAT CALIBRATION	R	- RECOVERY
Y	- MAINTENANCE	X	- MACHINE MALFUNCTION
S	- DAILY ZERO/SPAN CHECK	G	- OUT FOR REPAIR
S1	- REPEAT ZERO/SPAN CHECK	P	- POWER FAILURE

MONTHLY SUMMARY

NUMBER OF NON-ZERO READINGS:	1
MAXIMUM INSTANTANEOUS VALUE:	0.01 ppm @ HOUR 8 ON DAY 29
IZS CALIBRATION TIME:	31 hrs
MONTHLY CALIBRATION TIME:	5 hrs
STANDARD DEVIATION:	0.00
OPERATIONAL TIME:	720 hrs

NON-METHANE HYDROCARBONS Instantaneous Maximum (NMHC ppm)





LAKELAND INDUSTRY & COMMUNITY ASSOCIATION
Cold Lake South Continuous Monitoring Station - April 2019

OXIDES OF NITROGEN Instantaneous Maximum (NO_x ppb)

HR START (MST)	0:00	1:00	2:00	3:00	4:00	5:00	6:00	7:00	8:00	9:00	10:00	11:00	12:00	13:00	14:00	15:00	16:00	17:00	18:00	19:00	20:00	21:00	22:00	23:00	DAILY MIN.	DAILY MAX.	24-HR AVG.	RDGS.	
HR END (MST)	0:59	1:59	2:59	3:59	4:59	5:59	6:59	7:59	8:59	9:59	10:59	11:59	12:59	13:59	14:59	15:59	16:59	17:59	18:59	19:59	20:59	21:59	22:59	23:59					
DAY 1	6	7	5	4	5	5	4	S	3	1	1	1	1	3	2	4	3	3	2	1	2	6	5	1	7	3	24		
2	8	4	5	5	2	2	S	2	2	3	1	2	4	5	1	1	1	1	3	6	6	19	13	4	1	19	4	24	
3	4	3	3	3	2	S	8	5	3	8	2	3	2	9	2	3	15	2	6	6	4	4	6	8	2	15	5	24	
4	4	3	2	6	S	3	6	3	2	5	2	5	3	4	2	4	3	8	3	6	4	4	4	8	2	8	4	24	
5	8	5	3	S	59	4	23	4	3	1	1	3	1	1	1	1	6	7	4	11	3	5	3	3	1	59	7	24	
6	2	4	S	3	3	2	3	4	4	3	3	3	3	3	7	2	5	4	3	3	4	5	3	2	2	7	3	24	
7	2	S	3	8	3	5	3	4	4	3	3	3	3	3	3	3	1	4	6	15	8	2	5	2	1	15	4	24	
8	S	8	8	5	6	6	7	8	6	4	7	1	2	2	1	1	1	1	1	6	6	6	7	S	1	8	4	24	
9	7	11	7	16	18	5	6	4	4	5	4	3	2	3	2	5	5	3	2	9	2	3	S	4	2	18	6	24	
10	4	6	10	11	6	2	2	18	28	21	4	2	4	2	2	2	2	1	4	6	6	S	2	1	1	28	6	24	
11	2	3	3	4	5	4	5	9	3	2	2	2	1	2	5	3	6	1	2	3	S	4	3	2	1	9	3	24	
12	2	2	2	6	5	26	40	9	5	2	30	32	3	7	2	1	1	3	1	S	16	29	2	2	1	40	10	24	
13	3	3	2	5	7	19	24	21	3	2	3	4	2	2	2	7	1	S	21	11	8	6	7	1	24	7	24		
14	19	9	10	13	11	9	8	6	4	2	2	2	3	2	2	1	1	S	3	4	6	6	3	7	1	19	6	24	
15	7	6	7	7	7	9	12	11	2	4	4	4	5	3	3	2	S	3	4	14	19	33	10	15	2	33	8	24	
16	13	13	12	22	44	43	55	30	9	2	2	4	10	8	1	S	2	1	3	6	7	5	10	22	1	55	14	24	
17	19	17	16	19	20	18	31	20	10	8	3	2	3	21	S	3	2	1	2	2	3	3	4	4	1	31	10	24	
18	5	5	3	15	12	9	5	4	9	5	3	3	5	S	4	3	1	1	2	3	7	13	11	9	1	15	6	24	
19	13	9	10	4	3	2	22	2	2	2	3	0	S	1	1	1	0	0	1	2	2	5	12	6	0	22	5	24	
20	6	12	4	5	4	3	4	3	3	1	1	S	1	1	1	5	2	3	9	3	2	8	2	3	1	12	4	24	
21	5	6	9	7	8	7	6	5	4	3	S	1	1	1	0	1	1	1	1	2	8	10	11	5	0	11	4	24	
22	2	5	8	3	4	7	8	12	7	S	2	2	3	4	2	2	4	1	2	3	7	2	2	3	1	12	4	24	
23	3	3	2	3	3	4	3	2	S	1	1	1	1	2	1	1	0	0	1	0	1	2	4	3	0	4	2	24	
24	7	4	7	10	6	6	7	S	C	C	C	C	C	C	C	X	X	X	X	X	X	X	X	X	4	10	-	15	
25	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	-	-	-	0
26	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	-	-	-	0
27	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	-	-	-	0
28	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	-	-	-	0
29	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	-	-	-	0
30	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	-	-	-	0
HOURLY MAX	19	17	16	22	59	43	55	30	28	21	30	32	10	21	7	5	15	8	9	21	19	33	13	22					
HOURLY AVG	7	6	6	8	11	9	13	8	5	4	4	4	3	4	2	2	3	2	3	6	6	8	6	6					

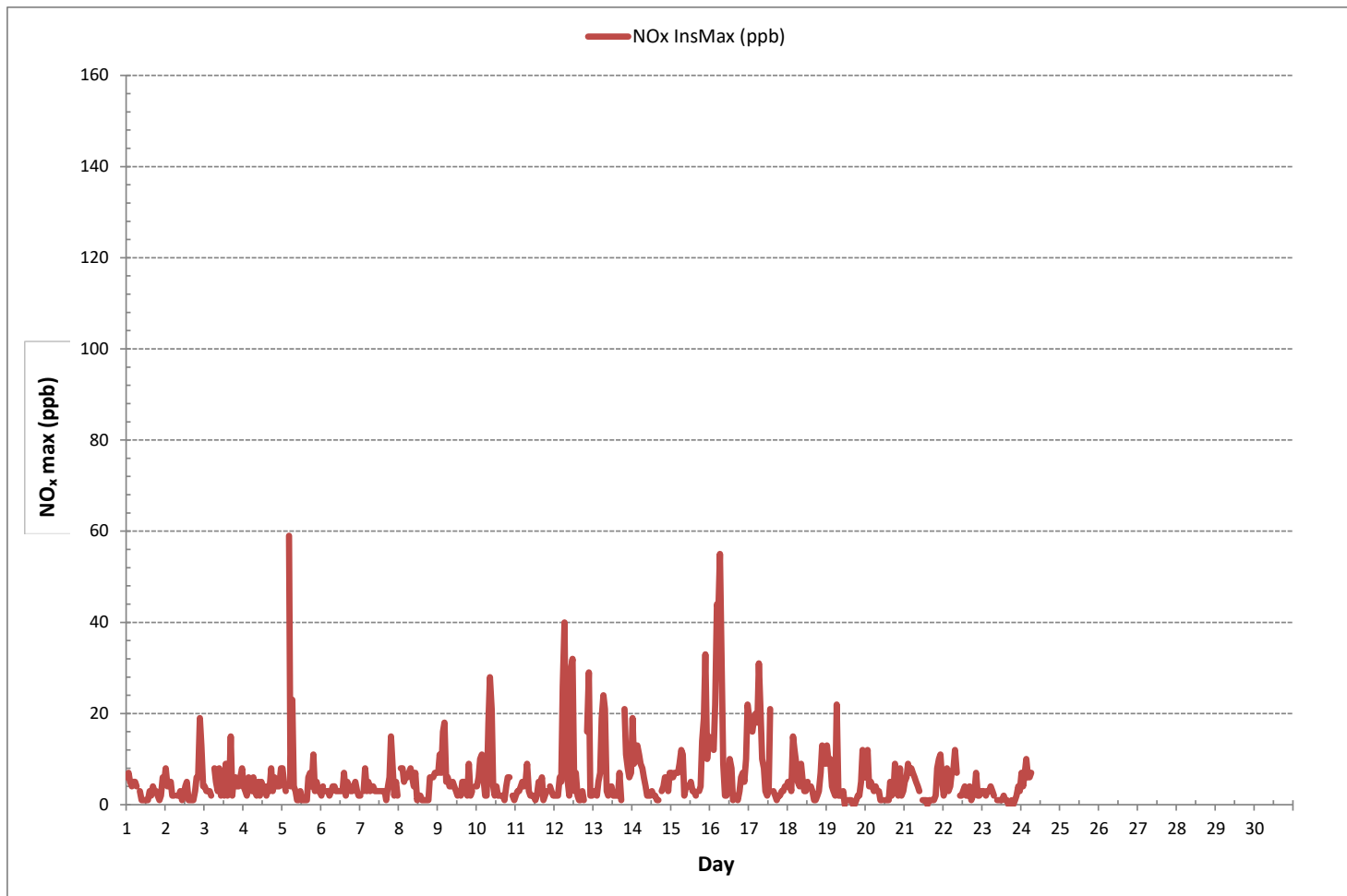
STATUS FLAG CODES

C	- MONTHLY CALIBRATION	Q	- QUALITY ASSURANCE
C1	- REPEAT CALIBRATION	R	- RECOVERY
Y	- MAINTENANCE	X	- MACHINE MALFUNCTION
S	- DAILY ZERO/SPAN CHECK	G	- OUT FOR REPAIR
S1	- REPEAT ZERO/SPAN CHECK	P	- POWER FAILURE

MONTHLY SUMMARY

NUMBER OF NON-ZERO READINGS:	528
MAXIMUM INSTANTANEOUS VALUE:	59 ppb @ HOUR 4 ON DAY 5
IZS CALIBRATION TIME:	25 hrs
MONTHLY CALIBRATION TIME:	7 hrs
STANDARD DEVIATION:	7
OPERATIONAL TIME:	567 hrs

OXIDES OF NITROGEN Instantaneous Maximum (NO_x ppb)





LAKELAND INDUSTRY & COMMUNITY ASSOCIATION
Cold Lake South Continuous Monitoring Station - April 2019

NITRIC OXIDE Instantaneous Maximum (NO ppb)

HR START (MST)	0:00	1:00	2:00	3:00	4:00	5:00	6:00	7:00	8:00	9:00	10:00	11:00	12:00	13:00	14:00	15:00	16:00	17:00	18:00	19:00	20:00	21:00	22:00	23:00	DAILY	DAILY	24-HR	RDGS.		
HR END (MST)	0:59	1:59	2:59	3:59	4:59	5:59	6:59	7:59	8:59	9:59	10:59	11:59	12:59	13:59	14:59	15:59	16:59	17:59	18:59	19:59	20:59	21:59	22:59	23:59	MIN.	MAX.	AVG.			
DAY 1	1	2	2	1	1	1	1	S	1	0	0	0	0	0	1	0	2	0	0	0	0	0	1	2	0	2	1	24		
2	4	1	1	1	1	0	S	0	1	1	0	0	1	2	0	0	0	0	1	1	1	0	3	3	2	0	4	1	24	
3	1	1	1	1	1	S	2	1	1	7	1	1	1	6	1	2	8	1	2	2	1	1	2	4	1	8	2	24		
4	1	1	1	2	S	1	2	1	1	4	1	9	2	2	1	1	1	3	1	2	1	1	2	3	1	9	2	24		
5	4	1	1	S	36	1	8	2	2	1	1	2	0	0	1	1	1	1	2	0	2	0	1	0	36	3	24			
6	1	1	S	1	1	1	1	2	1	1	1	1	1	1	3	1	2	1	1	1	1	1	2	2	1	1	3	1	24	
7	1	S	1	2	1	1	1	1	2	2	1	1	1	1	1	1	0	1	1	5	1	0	1	0	0	5	1	24		
8	S	2	1	1	2	1	2	2	2	1	1	0	1	1	0	0	0	0	0	4	0	0	2	S	0	4	1	24		
9	2	3	1	7	7	1	2	2	2	4	2	2	2	2	1	3	3	3	0	9	1	1	S	1	0	9	3	24		
10	1	1	1	2	1	0	1	8	18	22	4	0	1	3	1	1	1	0	8	1	1	S	1	0	0	22	3	24		
11	0	0	0	1	2	1	2	3	2	1	1	0	1	2	1	3	1	1	1	S	1	0	0	0	0	3	1	24		
12	0	0	0	1	0	6	22	2	3	1	13	15	1	3	0	1	0	0	S	8	15	0	0	0	0	22	4	24		
13	0	0	0	0	1	3	6	9	1	1	1	1	0	2	3	1	1	0	S	9	2	1	1	2	0	9	2	24		
14	6	1	0	1	2	1	1	2	0	1	1	1	0	0	0	0	S	0	0	0	1	1	1	1	0	6	1	24		
15	1	1	1	2	0	1	3	2	0	1	1	1	1	1	1	S	0	0	4	5	16	1	2	0	16	2	24			
16	1	3	4	4	31	22	34	13	1	1	0	1	2	2	0	S	0	0	1	3	0	0	4	6	0	34	6	24		
17	3	5	4	14	4	2	14	7	12	3	1	0	1	11	S	0	0	0	0	1	1	1	0	4	0	14	4	24		
18	2	1	0	3	2	3	2	1	4	1	1	0	4	S	1	3	0	0	0	0	1	2	1	0	0	4	1	24		
19	1	0	1	0	0	0	10	0	1	0	1	0	S	0	0	0	0	0	0	1	0	0	4	1	0	10	1	24		
20	0	1	0	1	0	0	1	1	1	0	0	S	0	0	1	0	0	1	2	0	0	2	0	1	0	2	1	24		
21	2	0	2	1	2	1	2	2	1	1	S	0	0	0	0	0	0	0	0	0	1	3	1	1	0	3	1	24		
22	0	1	1	0	0	2	1	5	5	S	1	1	1	1	0	0	1	0	0	0	3	0	1	1	0	5	1	24		
23	1	0	0	1	1	1	1	0	S	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1	0	24		
24	1	0	1	1	0	1	1	S	C	C	C	C	C	C	C	X	X	X	X	X	X	X	X	X	X	0	1	-	15	
25	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	-	-	-	0
26	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	-	-	-	0
27	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	-	-	-	0
28	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	-	-	-	0
29	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	-	-	-	0
30	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	-	-	-	0
HOURLY MAX	6	5	4	14	36	22	34	13	18	22	13	15	4	11	3	3	8	3	8	9	8	16	4	6						
HOURLY AVG	1	1	1	2	4	2	5	3	3	2	2	2	1	2	1	1	1	1	1	2	1	2	1	2						

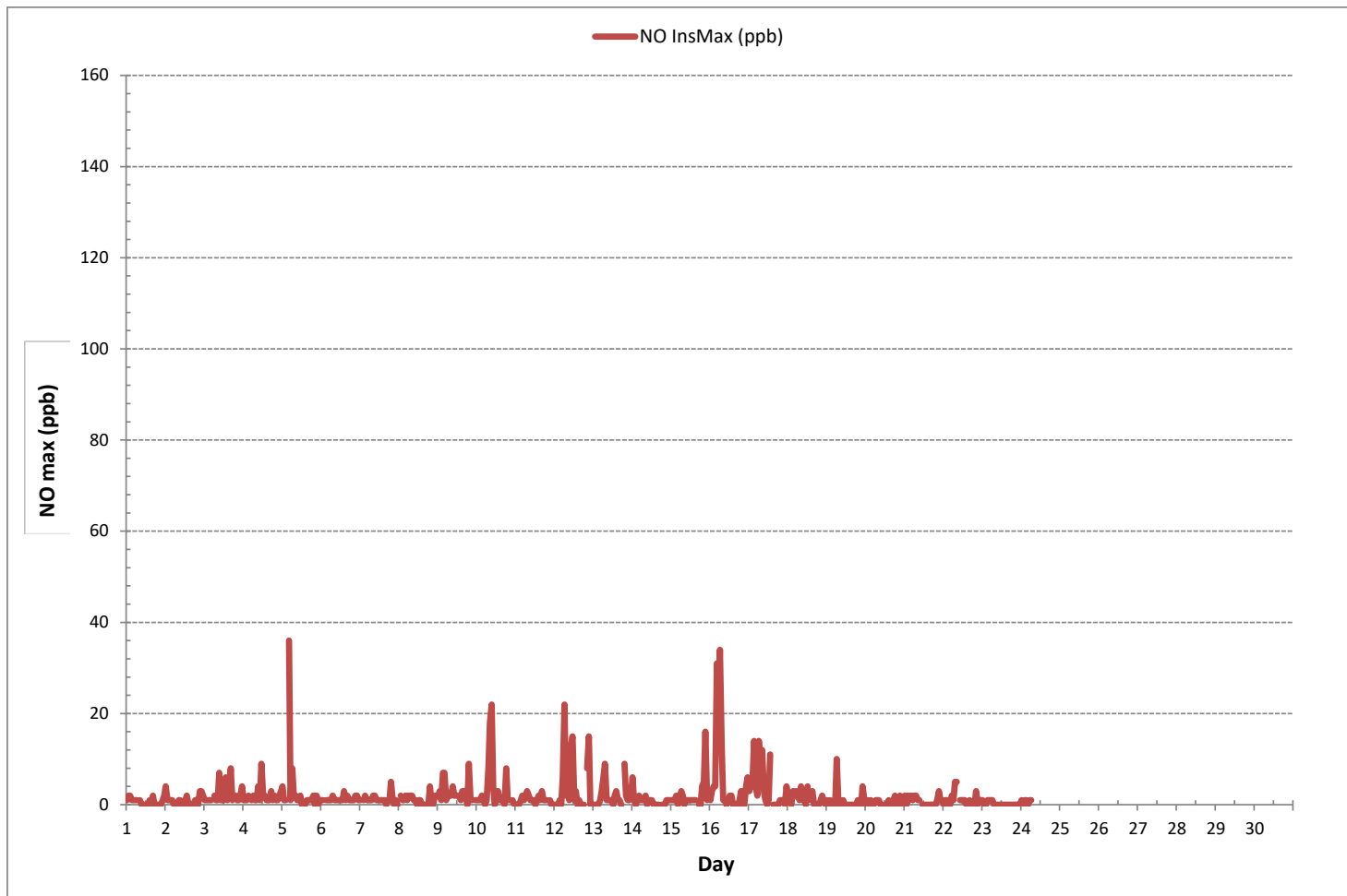
STATUS FLAG CODES

C	- MONTHLY CALIBRATION	Q	- QUALITY ASSURANCE
C1	- REPEAT CALIBRATION	R	- RECOVERY
Y	- MAINTENANCE	X	- MACHINE MALFUNCTION
S	- DAILY ZERO/SPAN CHECK	G	- OUT FOR REPAIR
S1	- REPEAT ZERO/SPAN CHECK	P	- POWER FAILURE

MONTHLY SUMMARY

NUMBER OF NON-ZERO READINGS:	373
MAXIMUM INSTANTANEOUS VALUE:	36 ppb @ HOUR 4 ON DAY 5
IZS CALIBRATION TIME:	25 hrs
MONTHLY CALIBRATION TIME:	7 hrs
OPERATIONAL TIME:	567 hrs
STANDARD DEVIATION:	4

NITRIC OXIDE Instantaneous Maximum (NO ppb)





LAKELAND INDUSTRY & COMMUNITY ASSOCIATION
Cold Lake South Continuous Monitoring Station - April 2019

NITROGEN DIOXIDE Instantaneous Maximum (NO₂ ppb)

HR START (MST)	0:00	1:00	2:00	3:00	4:00	5:00	6:00	7:00	8:00	9:00	10:00	11:00	12:00	13:00	14:00	15:00	16:00	17:00	18:00	19:00	20:00	21:00	22:00	23:00	DAILY MIN.	DAILY MAX.	24-HR AVG.	RDGS.	
HR END (MST)	0:59	1:59	2:59	3:59	4:59	5:59	6:59	7:59	8:59	9:59	10:59	11:59	12:59	13:59	14:59	15:59	16:59	17:59	18:59	19:59	20:59	21:59	22:59	23:59					
DAY 1	5	6	4	3	4	4	4	S	3	1	1	1	1	1	2	1	3	3	2	2	1	2	5	4	1	6	3	24	
2	5	2	4	4	2	2	S	2	2	2	1	1	3	3	1	1	1	1	3	6	6	17	12	3	1	17	4	24	
3	3	2	3	2	2	S	7	4	2	3	2	2	2	4	2	1	7	2	5	4	3	3	4	4	1	7	3	24	
4	2	2	2	4	S	2	4	2	1	2	2	4	1	2	2	3	2	6	2	4	2	3	3	3	6	1	6	3	24
5	5	3	3	S	24	3	17	4	2	1	1	1	1	1	1	1	6	5	3	10	2	3	2	3	1	24	4	24	
6	2	3	S	2	2	2	2	3	3	3	2	2	2	2	3	2	4	3	2	2	3	3	3	2	2	4	3	24	
7	2	S	2	6	3	4	2	3	2	2	2	2	2	2	2	2	1	3	5	11	7	2	5	2	1	11	3	24	
8	S	6	7	5	4	6	6	6	4	3	6	1	1	1	1	1	1	1	1	5	6	6	6	S	1	7	4	24	
9	5	8	6	9	11	4	4	2	2	2	2	2	1	2	2	3	3	1	2	5	2	2	S	3	1	11	4	24	
10	3	6	9	10	5	2	2	10	14	5	3	1	3	1	1	2	1	1	1	5	5	S	2	1	1	14	4	24	
11	2	3	2	4	4	3	4	6	2	1	1	1	1	1	3	2	3	1	1	3	S	4	2	2	1	6	2	24	
12	2	2	2	5	5	21	24	7	3	2	17	18	2	5	1	1	1	3	1	S	11	15	2	2	1	24	7	24	
13	2	3	2	4	7	16	18	15	2	2	2	2	2	1	1	6	1	S	13	9	7	6	7	1	18	6	24		
14	13	8	10	13	10	8	7	5	3	1	2	1	2	1	2	1	1	S	3	4	6	6	3	7	1	13	5	24	
15	7	6	6	5	6	8	10	9	2	3	3	3	4	2	2	S	2	4	10	14	17	10	15	2	17	7	24		
16	13	13	9	18	17	22	22	17	7	1	2	3	8	6	1	S	1	1	2	4	7	5	8	16	1	22	9	24	
17	15	13	12	14	16	16	17	13	6	5	2	2	2	16	S	3	2	1	1	1	2	3	4	4	1	17	7	24	
18	3	4	3	12	10	7	3	3	5	3	2	2	S	4	2	1	1	2	3	7	11	10	9	1	12	5	24		
19	13	9	9	4	3	2	13	2	2	2	0	S	1	1	1	0	0	1	2	2	5	8	6	0	13	4	24		
20	6	11	4	4	4	3	3	3	2	1	1	S	1	1	1	5	1	2	7	3	2	6	2	2	1	11	3	24	
21	4	6	8	6	7	7	5	4	2	2	S	1	1	0	1	1	1	1	1	2	8	7	10	4	0	10	4	24	
22	2	4	8	2	4	5	7	8	4	S	2	2	2	3	1	2	4	1	2	3	4	2	2	2	1	8	3	24	
23	3	3	2	2	2	3	2	2	S	1	1	1	1	2	1	0	0	0	0	0	1	2	3	3	0	3	2	24	
24	7	4	6	10	6	5	6	S	C	C	C	C	C	C	C	X	X	X	X	X	X	X	X	X	4	10	-	15	
25	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	-	-	-	0
26	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	-	-	-	0
27	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	-	-	-	0
28	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	-	-	-	0
29	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	-	-	-	0
30	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	-	-	-	0
HOURLY MAX	15	13	12	18	24	22	24	17	14	5	17	18	8	16	4	5	7	6	7	13	14	17	12	16					
HOURLY AVG	5	6	5	6	7	7	8	6	3	2	3	2	2	3	2	2	2	2	2	5	5	6	5	5					

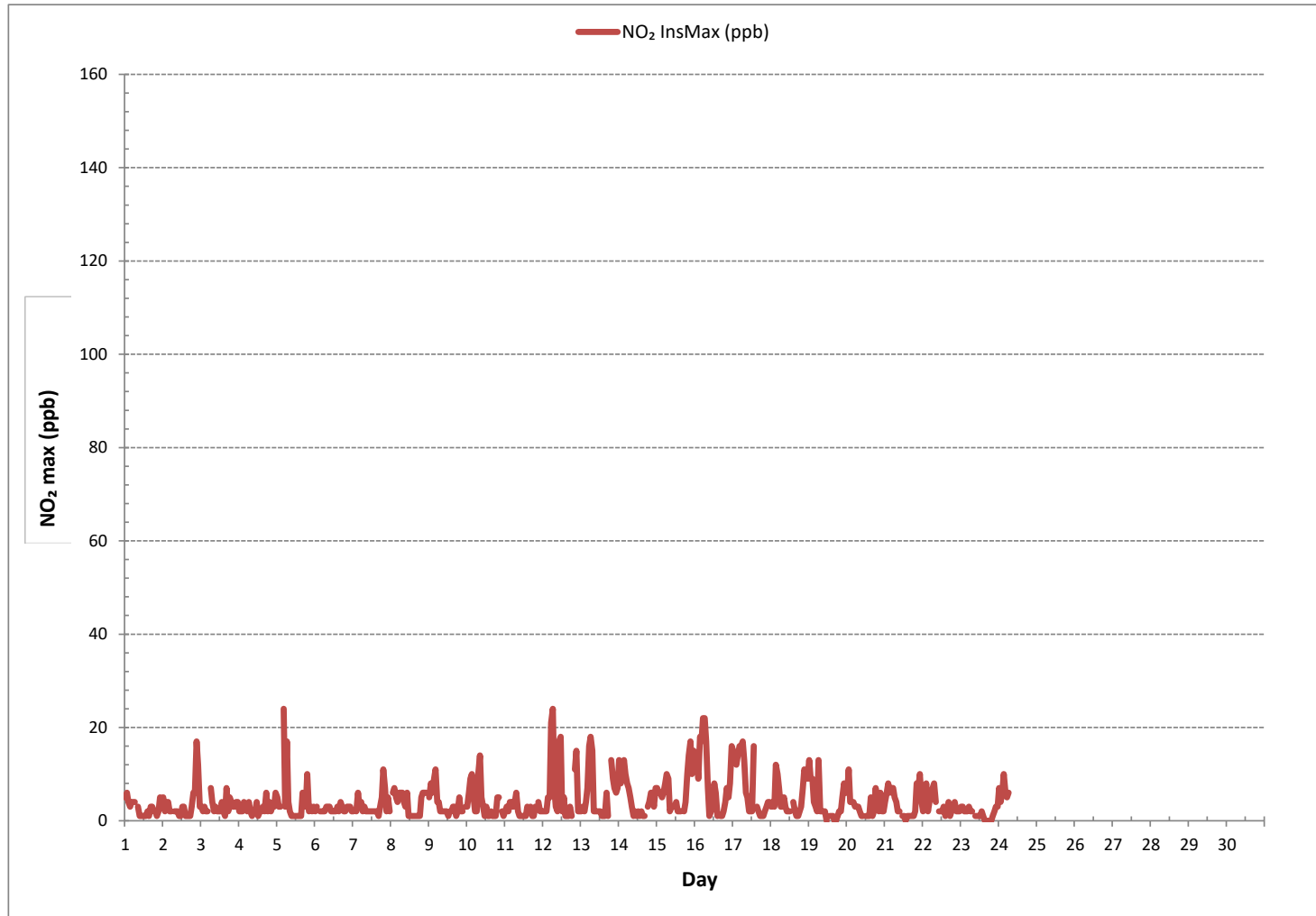
STATUS FLAG CODES

C	- MONTHLY CALIBRATION	Q	- QUALITY ASSURANCE
C1	- REPEAT CALIBRATION	R	- RECOVERY
Y	- MAINTENANCE	X	- MACHINE MALFUNCTION
S	- DAILY ZERO/SPAN CHECK	G	- OUT FOR REPAIR
S1	- REPEAT ZERO/SPAN CHECK	P	- POWER FAILURE

MONTHLY SUMMARY

NUMBER OF NON-ZERO READINGS:	526
MAXIMUM INSTANTANEOUS VALUE:	24 ppb @ HOUR 4 ON DAY 5
	VAR-VARIOUS
IZS CALIBRATION TIME:	25 hrs
MONTHLY CALIBRATION TIME:	7 hrs
STANDARD DEVIATION:	4
OPERATIONAL TIME:	567 hrs

NITROGEN DIOXIDE Instantaneous Maximum (NO₂ ppb)





LAKELAND INDUSTRY & COMMUNITY ASSOCIATION
Cold Lake South Continuous Monitoring Station - April 2019

OZONE Instantaneous Maximum (O₃ ppb)

HR START (MST)	0:00	1:00	2:00	3:00	4:00	5:00	6:00	7:00	8:00	9:00	10:00	11:00	12:00	13:00	14:00	15:00	16:00	17:00	18:00	19:00	20:00	21:00	22:00	23:00	DAILY	DAILY	24-HR	RDGS.
HR END (MST)	0:59	1:59	2:59	3:59	4:59	5:59	6:59	7:59	8:59	9:59	10:59	11:59	12:59	13:59	14:59	15:59	16:59	17:59	18:59	19:59	20:59	21:59	22:59	23:59	MIN.	MAX.	AVG.	
DAY																												
1	34.3	33.1	32.9	34.3	34.1	32.9	35.5	S	42.6	53.8	54.0	51.4	50.4	48.6	49.0	47.6	46.1	45.6	46.6	46.3	44.0	45.1	41.3	38.6	32.9	54.0	43.0	24
2	37.9	36.5	35.1	35.6	39.7	40.8	S	44.0	43.8	44.7	45.4	45.7	45.9	46.1	46.1	46.0	46.7	47.4	47.1	43.0	33.3	28.8	42.4	42.2	28.8	47.4	41.9	24
3	41.1	39.9	39.5	40.2	40.5	S	39.0	39.7	40.1	41.1	41.3	41.5	41.2	41.6	41.9	42.0	42.0	42.3	42.3	39.5	39.8	39.8	39.3	39.2	39.0	42.3	40.6	24
4	39.1	38.6	38.2	35.3	S	33.3	33.9	34.6	35.0	35.5	36.1	37.1	37.3	38.1	38.5	38.8	39.3	40.0	40.9	41.7	43.0	41.8	40.3	39.9	33.3	43.0	38.1	24
5	39.9	38.3	37.3	S	38.6	37.0	36.8	36.3	36.3	36.6	36.8	38.1	40.7	40.5	40.5	40.8	41.4	39.6	39.2	36.7	37.1	37.2	36.8	36.1	36.1	41.4	38.2	24
6	35.7	34.8	S	34.3	32.8	32.8	32.6	32.0	32.8	31.1	29.7	29.4	29.5	29.6	30.3	29.1	27.3	25.8	27.0	27.0	27.2	28.3	26.8	26.9	25.8	35.7	30.1	24
7	26.6	S	26.5	25.9	24.2	23.5	23.0	19.7	16.5	19.6	23.2	30.1	31.6	30.9	37.0	41.2	42.3	41.8	36.4	29.3	21.6	14.6	10.5	22.7	10.5	42.3	26.9	24
8	S	29.2	23.0	23.7	25.1	25.6	28.6	34.0	36.6	39.8	44.1	46.5	46.7	48.7	50.1	50.0	49.7	49.2	48.7	45.9	39.8	32.0	30.6	S	23.0	50.1	38.5	24
9	22.4	21.6	22.3	17.6	21.5	21.1	20.5	20.4	21.0	21.7	23.0	23.7	27.9	29.2	30.8	32.5	35.5	37.3	38.4	35.8	34.7	32.3	S	28.3	17.6	38.4	26.9	24
10	26.2	23.3	17.4	14.6	19.4	19.0	19.4	20.7	22.3	23.7	34.4	41.0	40.5	41.1	42.2	43.6	50.9	46.1	47.7	44.6	39.6	S	40.4	36.3	14.6	50.9	32.8	24
11	34.7	35.7	35.1	34.0	32.9	31.3	31.0	31.0	30.7	31.4	36.3	42.9	44.0	43.6	44.9	46.5	45.3	45.4	43.4	38.1	S	33.8	33.4	35.3	30.7	46.5	37.4	24
12	35.3	35.3	35.1	33.0	26.8	23.5	26.8	35.1	35.2	39.3	43.1	46.5	47.3	48.2	48.7	50.5	50.7	50.5	50.0	S	44.5	44.0	45.4	44.1	23.5	50.7	40.8	24
13	43.9	42.6	41.7	39.8	37.7	27.9	28.7	39.8	41.8	43.3	44.7	48.4	50.5	52.6	53.5	51.9	51.7	50.7	S	45.9	42.6	43.9	43.9	37.4	27.9	53.5	43.7	24
14	34.4	34.8	30.7	28.9	28.8	28.3	27.1	36.4	38.9	40.5	45.6	47.2	51.3	53.2	53.2	53.0	51.1	S	47.6	46.8	41.5	38.7	39.5	38.4	27.1	53.2	40.7	24
15	33.1	35.3	33.8	30.3	28.8	24.5	19.8	33.3	33.6	32.7	36.2	40.4	42.5	44.9	42.5	43.2	S	45.0	45.2	41.7	28.1	23.7	18.5	13.5	13.5	45.2	33.5	24
16	10.5	20.0	23.9	16.3	16.4	9.5	6.6	29.4	33.3	36.1	37.1	39.5	40.6	45.5	46.0	S	48.9	47.4	47.0	43.7	46.3	46.1	43.1	43.7	6.6	48.9	33.8	24
17	24.4	18.1	19.7	16.2	14.6	12.9	12.5	25.2	34.2	41.1	47.6	50.0	50.9	50.7	S	51.2	50.0	48.9	47.8	45.8	44.1	42.5	42.8	34.6	12.5	51.2	35.9	24
18	34.6	27.8	19.2	12.9	11.2	26.0	29.1	32.0	33.8	37.4	40.2	42.7	43.2	S	49.3	50.0	50.6	50.9	50.5	46.9	37.1	36.6	38.8	24.3	11.2	50.9	35.9	24
19	26.6	32.2	32.7	38.7	44.5	43.9	42.4	40.6	40.7	44.2	45.1	48.1	S	49.2	49.5	50.0	52.4	53.7	52.0	49.9	46.9	42.8	32.3	29.8	26.6	53.7	43.0	24
20	26.9	21.0	23.9	26.9	28.6	31.5	35.5	38.7	41.8	44.5	46.6	S	48.1	49.3	49.3	48.6	48.0	49.2	44.9	43.8	42.3	38.1	35.2	36.6	21.0	49.3	39.1	24
21	35.4	28.7	26.3	22.8	22.4	22.0	27.1	33.4	38.1	43.5	S	48.5	49.3	53.8	54.4	55.8	55.9	55.4	54.4	54.0	46.3	45.8	46.4	47.0	22.0	55.9	42.0	24
22	46.9	46.5	42.9	44.5	44.1	42.5	41.0	40.9	41.6	S	45.7	47.2	55.9	61.5	64.7	65.3	64.8	62.1	61.0	58.2	56.1	52.4	48.9	45.7	40.9	65.3	51.3	24
23	43.2	45.4	44.7	42.6	35.4	36.7	42.9	45.9	S	47.6	48.5	49.8	50.4	51.1	53.5	53.3	51.7	54.8	55.6	55.7	55.4	55.0	50.4	43.8	35.4	55.7	48.4	24
24	39.9	38.0	40.5	36.0	34.1	38.5	40.9	44.0	48.1	53.3	54.8	C	C	C	C	C	52.1	51.4	49.3	48.2	48.5	47.3	46.5	45.4	34.1	54.8	45.1	24
25	45.3	45.8	44.7	44.7	42.9	37.9	S	41.9	44.6	47.1	47.6	47.5	49.1	48.5	49.0	49.1	49.1	49.2	48.7	48.8	39.7	33.6	36.2	28.8	28.8	49.2	44.3	24
26	22.4	21.1	19.2	10.0	11.6	S	21.7	36.1	38.4	41.9	45.0	45.9	47.6	47.9	46.8	45.5	44.6	44.0	43.7	41.8	40.1	39.1	37.8	37.9	10.0	47.9	36.1	24
27	37.6	36.7	35.7	29.9	S	32.4	34.9	33.5	33.7	33.4	36.2	38.1	38.6	39.3	39.8	40.4	41.8	41.9	47.0	49.3	48.4	46.2	44.1	41.2	29.9	49.3	39.1	24
28	41.2	26.4	32.0	S	23.9	20.5	31.5	40.3	45.2	46.1	46.4	46.7	47.0	47.0	47.1	47.1	46.6	46.5	45.9	42.3	37.5	34.3	29.6	18.5	18.5	47.1	38.7	24
29	20.5	20.6	S	6.1	14.5	17.0	26.2	36.2	41.0	44.1	45.7	46.5	46.5	45.6	48.1	50.2	50.4	50.3	48.2	46.6	47.1	46.0	46.2	44.8	6.1	50.4	38.6	24
30	41.1	S	33.9	35.2	42.8	45.8	45.1	44.6	44.8	44.6	44.9	44.9	45.8	48.0	46.3	45.6	45.6	44.2	43.4	42.1	39.6	36.4	36.8	35.1	33.9	48.0	42.5	24
HOURLY MAX	46.9	46.5	44.7	44.7	44.5	45.8	45.1	45.9	48.1	53.8	54.8	51.4	55.9	61.5	64.7	65.3	64.8	62.1	61.0	58.2	56.1	55.0	50.4	47.0				
HOURLY AVG	33.8	32.4	31.7	28.9	29.2	29.2	30.0	35.2	36.8	39.3	41.6	43.0	44.3	45.5	46.2	46.7	47.3	46.8	46.2	44.1	41.1	38.8	38.1	35.7				

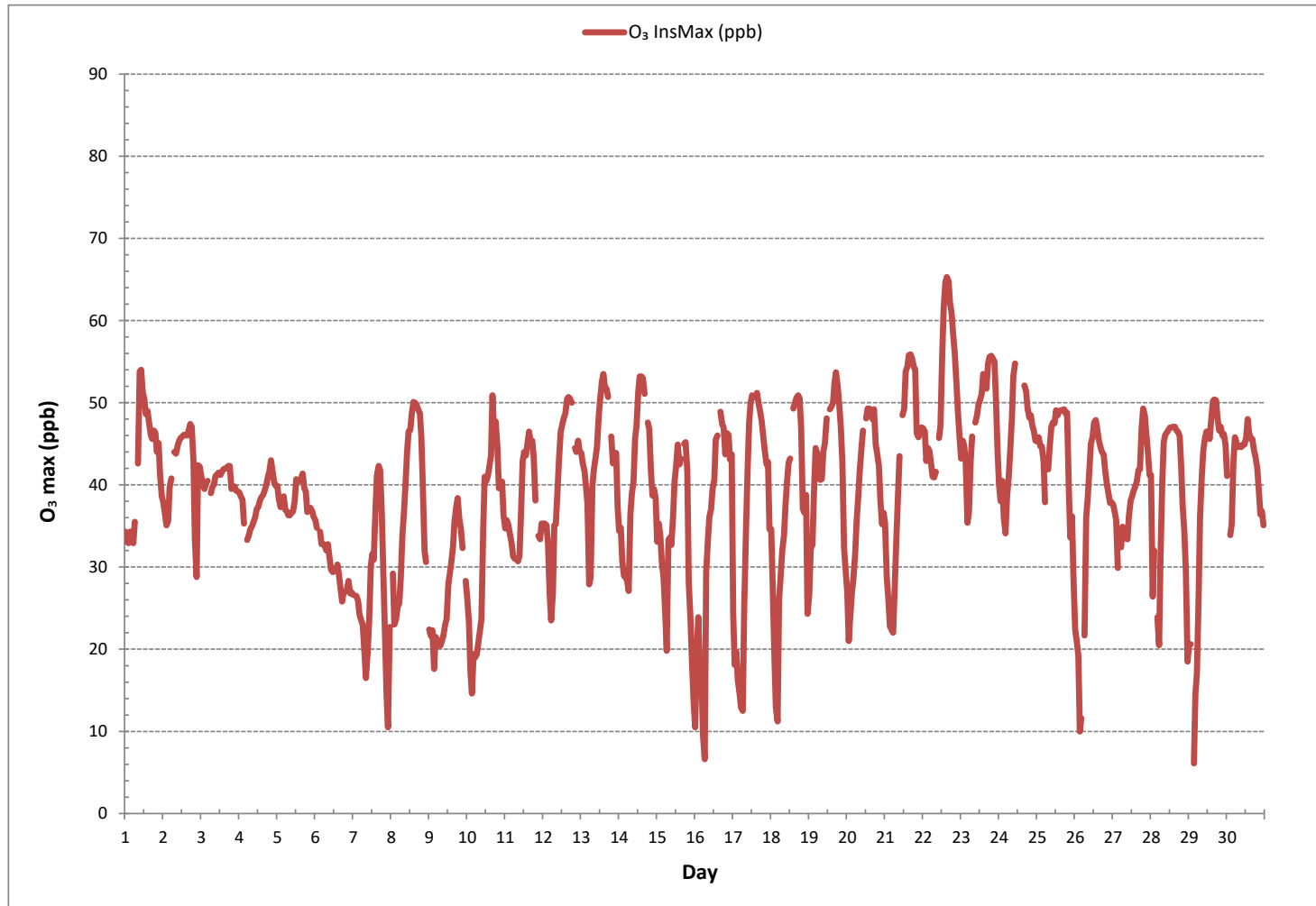
STATUS FLAG CODES

C	- MONTHLY CALIBRATION	Q	- QUALITY ASSURANCE
C1	- REPEAT CALIBRATION	R	- RECOVERY
Y	- MAINTENANCE	X	- MACHINE MALFUNCTION
S	- DAILY ZERO/SPAN CHECK	G	- OUT FOR REPAIR
S1	- REPEAT ZERO/SPAN CHECK	P	- POWER FAILURE

MONTHLY SUMMARY

NUMBER OF NON-ZERO READINGS:	685
MAXIMUM INSTANTANEOUS VALUE:	65.3 ppb @ HOUR 15 ON DAY 22
IZS CALIBRATION TIME:	30 hrs
MONTHLY CALIBRATION TIME:	5 hrs
STANDARD DEVIATION:	10.1
OPERATIONAL TIME:	720 hrs

OZONE Instantaneous Maximum (O₃ ppb)





LAKELAND INDUSTRY & COMMUNITY ASSOCIATION
Cold Lake South Continuous Monitoring Station - April 2019

WIND SPEED Instantaneous Maximum (WS kph)

HR START (MST)	0:00	1:00	2:00	3:00	4:00	5:00	6:00	7:00	8:00	9:00	10:00	11:00	12:00	13:00	14:00	15:00	16:00	17:00	18:00	19:00	20:00	21:00	22:00	23:00	DAILY	DAILY	24-HR	RDGS.	
HR END (MST)	0:59	1:59	2:59	3:59	4:59	5:59	6:59	7:59	8:59	9:59	10:59	11:59	12:59	13:59	14:59	15:59	16:59	17:59	18:59	19:59	20:59	21:59	22:59	23:59	MIN.	MAX.	AVG.		
DAY 1	31.0	17.6	17.9	19.8	16.7	17.6	32.6	36.9	32.5	52.5	52.3	51.5	50.8	61.3	53.5	45.9	30.1	28.3	61.0	38.2	25.7	36.9	10.6	12.3	10.6	61.3	34.7	24	
2	9.2	8.6	13.5	15.4	21.5	27.1	32.0	43.4	51.3	71.1	60.1	57.4	47.4	44.5	51.8	46.4	38.8	31.2	19.6	4.0	3.2	6.2	19.1	16.9	3.2	71.1	30.8	24	
3	30.8	32.5	24.3	28.8	32.0	42.0	39.1	43.0	50.1	43.6	45.2	49.3	40.6	38.9	37.1	37.6	38.1	36.7	29.0	22.7	28.3	21.5	21.0	16.2	16.2	50.1	34.5	24	
4	24.5	24.3	18.9	17.4	26.7	29.6	29.1	26.2	29.3	28.3	31.9	41.0	30.8	30.8	27.6	30.6	29.6	23.6	24.7	25.2	21.9	18.6	17.2	12.5	12.5	41.0	25.8	24	
5	12.7	14.0	14.2	14.1	18.1	15.2	20.1	20.8	20.1	18.1	14.9	23.2	25.2	26.9	25.2	27.1	22.5	19.8	14.0	14.9	24.9	26.9	19.0	19.6	12.7	27.1	19.6	24	
6	19.6	17.6	31.0	33.3	32.5	42.3	39.8	44.3	35.0	37.1	47.9	42.8	52.5	37.6	40.1	36.4	20.3	27.1	X	X	X	X	34.0	51.4	17.6	52.5	36.1	20	
7	58.0	25.7	19.2	8.6	5.5	9.1	28.8	X	26.9	18.6	24.9	37.4	30.8	19.0	19.1	30.1	27.4	16.9	12.3	8.6	6.7	5.3	4.2	13.2	4.2	58.0	19.8	23	
8	13.7	14.0	9.3	17.1	17.6	15.8	17.4	24.5	28.6	30.3	49.3	49.1	53.5	37.6	46.6	51.8	34.5	44.9	23.7	16.4	10.6	24.8	17.0	20.6	9.3	53.5	27.9	24	
9	15.7	8.1	8.9	6.9	14.2	16.9	17.6	14.5	15.2	19.6	21.3	19.8	20.6	20.8	23.0	25.2	27.9	24.5	21.3	12.5	18.2	24.6	17.1	14.2	6.9	27.9	17.9	24	
10	10.1	7.0	5.2	7.2	20.1	23.7	26.4	29.1	31.5	32.0	35.2	43.5	34.7	34.7	33.0	51.4	35.9	42.0	35.0	12.1	17.9	19.6	27.1	21.0	5.2	51.4	26.5	24	
11	19.9	16.7	21.0	16.9	16.5	20.2	21.8	28.9	29.1	27.6	35.3	32.0	40.3	33.2	35.2	33.4	29.6	26.4	29.3	24.6	12.3	11.6	9.8	13.7	9.8	40.3	24.4	24	
12	12.7	17.6	12.5	8.2	2.6	3.3	6.2	12.7	12.7	16.9	23.2	28.1	32.3	34.2	44.0	23.7	29.7	26.2	23.5	11.8	7.3	14.1	14.7	13.0	2.6	44.0	18.0	24	
13	12.0	12.0	12.5	10.1	9.6	4.5	5.9	14.2	20.1	23.7	24.1	35.0	35.4	36.0	31.3	50.5	25.7	28.1	16.7	7.6	8.4	11.5	10.3	5.4	4.5	50.5	18.8	24	
14	8.0	7.1	4.3	5.8	8.8	6.4	6.2	8.4	15.4	16.5	19.1	21.5	51.5	34.3	37.6	55.0	39.3	19.1	26.0	19.3	10.6	11.0	15.5	17.5	4.3	55.0	19.4	24	
15	16.7	13.5	5.4	9.6	9.3	9.3	7.6	19.1	25.7	22.0	31.8	24.7	29.8	49.3	35.2	45.9	36.9	19.8	15.0	5.3	3.9	2.6	4.2	4.5	2.6	49.3	18.6	24	
16	11.4	5.3	6.7	4.3	4.5	5.3	2.6	10.7	19.3	26.9	18.9	16.2	15.9	23.0	21.1	25.7	35.4	47.6	32.8	17.0	17.4	12.7	9.1	5.4	2.6	47.6	16.5	24	
17	3.2	3.2	4.2	6.2	4.7	4.9	6.9	21.4	11.5	14.0	16.9	19.3	30.1	40.1	59.1	33.2	63.2	51.3	58.8	43.5	17.1	42.0	24.5	14.9	3.2	63.2	24.8	24	
18	10.1	10.2	8.1	6.4	7.9	13.7	19.8	22.3	17.6	24.5	47.9	47.6	48.8	53.9	49.8	55.2	44.4	30.1	28.6	8.2	8.5	6.3	7.6	4.5	4.5	55.2	24.2	24	
19	5.9	5.7	15.7	28.5	28.8	24.5	14.0	26.9	46.6	40.5	56.1	49.3	59.6	50.1	46.4	56.2	47.7	40.5	28.3	23.7	14.2	8.6	7.9	11.8	5.7	59.6	30.7	24	
20	8.0	7.4	8.8	12.0	13.0	13.6	22.0	48.6	40.5	56.9	56.0	57.4	46.9	49.6	43.0	51.8	32.3	34.7	26.5	21.0	13.2	12.1	10.6	14.4	7.4	57.4	29.2	24	
21	16.2	8.1	14.0	11.8	8.9	10.3	16.7	21.1	19.3	25.7	28.3	23.1	41.5	31.8	28.1	32.3	24.2	24.0	13.7	8.4	8.6	9.9	9.1	16.0	8.1	41.5	18.8	24	
22	14.2	15.2	11.3	21.8	22.3	14.0	18.6	29.6	33.0	32.3	29.6	32.8	34.2	35.7	30.8	35.4	19.6	18.1	49.1	19.1	40.3	24.9	21.8	20.3	11.3	49.1	26.0	24	
23	40.3	42.5	15.2	19.1	25.9	23.5	58.3	55.2	56.9	61.5	57.8	69.8	62.6	63.7	56.6	71.8	53.9	56.6	48.1	35.9	33.2	17.5	15.7	9.3	9.3	71.8	43.8	24	
24	10.1	10.4	15.4	15.7	10.6	19.3	24.5	34.7	32.3	47.1	58.3	56.9	59.4	56.4	60.1	61.5	61.5	60.8	52.7	31.5	47.4	53.0	54.7	59.1	10.1	61.5	41.4	24	
25	50.1	56.4	46.4	52.2	29.6	20.3	34.0	33.2	40.3	58.3	56.3	58.8	55.9	57.4	54.7	47.6	44.9	40.8	31.5	25.4	10.3	10.9	10.8	13.2	10.3	58.8	39.1	24	
26	16.4	15.7	11.1	10.1	3.5	3.3	5.3	10.6	11.3	21.4	28.3	27.4	35.4	42.3	36.2	33.2	29.3	32.0	22.7	18.4	22.5	24.2	20.3	22.0	3.3	42.3	21.0	24	
27	18.9	18.6	10.6	8.6	15.3	12.4	22.0	23.7	25.4	29.4	31.8	35.9	46.2	41.0	42.0	38.6	40.1	37.4	33.3	32.3	23.5	14.5	7.6	13.2	7.6	46.2	25.9	24	
28	11.0	11.6	3.3	2.3	2.5	2.3	5.8	8.1	14.9	24.7	27.4	35.7	34.0	29.1	24.2	37.9	28.1	18.9	18.1	9.5	4.6	10.6	3.7	3.2	2.3	37.9	15.5	24	
29	3.8	9.6	12.0	10.8	12.7	10.6	7.1	27.7	28.8	30.1	23.0	35.7	36.9	19.8	36.9	21.3	35.3	37.4	27.4	29.8	24.7	32.0	34.2	9.3	3.8	37.4	23.2	24	
30	3.7	3.1	5.4	24.0	40.6	45.2	37.4	27.1	30.1	31.0	34.5	25.9	30.3	30.6	34.6	34.5	38.8	32.5	29.6	15.8	14.9	9.3	9.1	8.1	3.1	45.2	24.8	24	
HOURLY MAX	58.0	56.4	46.4	52.2	40.6	45.2	58.3	55.2	56.9	71.1	60.1	69.8	62.6	63.7	60.1	71.8	63.2	60.8	61.0	43.5	47.4	53.0	54.7	59.1					

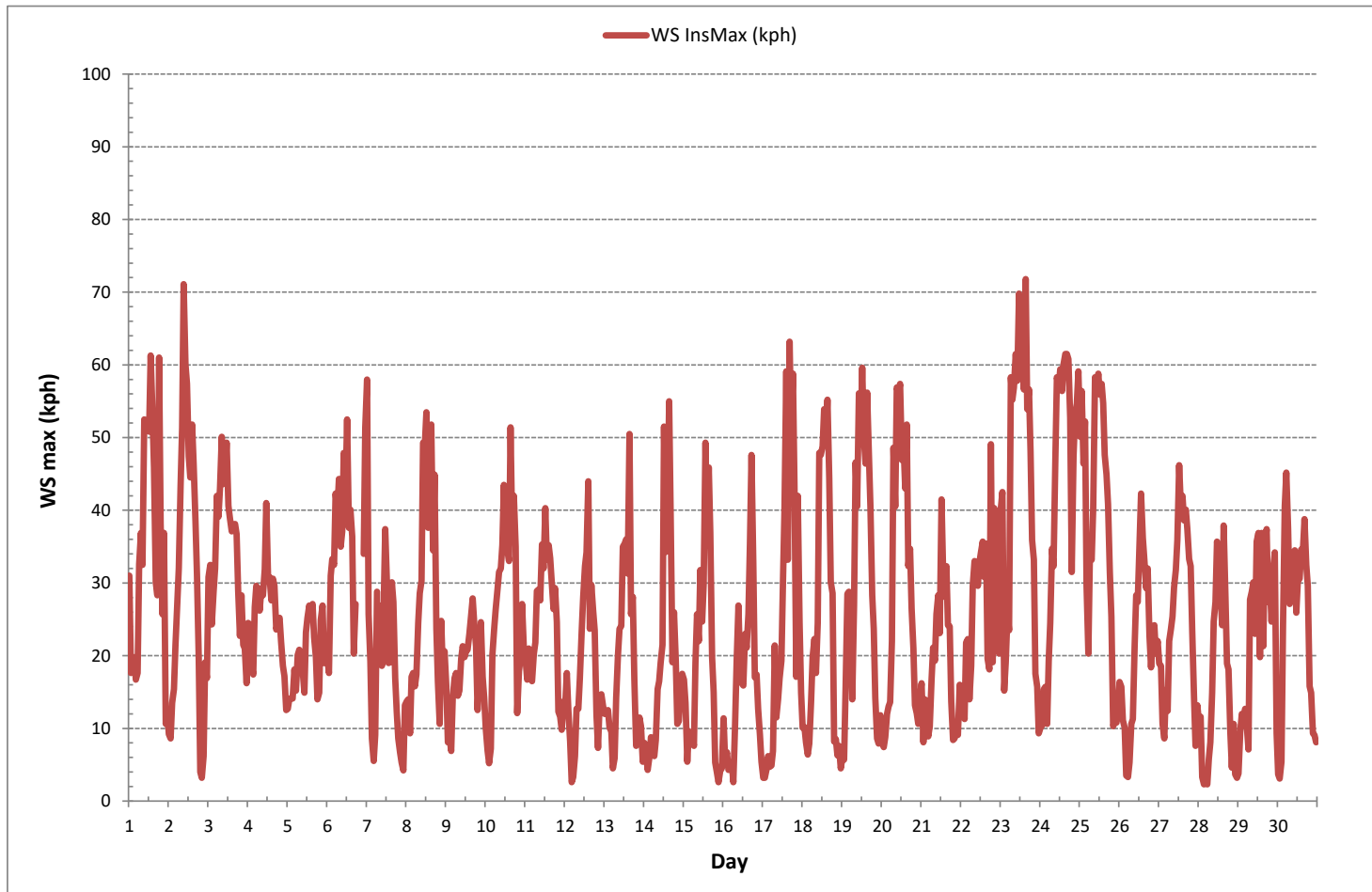
STATUS FLAG CODES

C	- MONTHLY CALIBRATION	Q	- QUALITY ASSURANCE
C1	- REPEAT CALIBRATION	R	- RECOVERY
Y	- MAINTENANCE	X	- MACHINE MALFUNCTION
S	- DAILY ZERO/SPAN CHECK	G	- OUT FOR REPAIR
S1	- REPEAT ZERO/SPAN CHECK	P	- POWER FAILURE

MONTHLY SUMMARY

MAXIMUM INSTANTANEOUS VALUE:	71.8	kph	@ HOUR	15	ON DAY	23	
OPERATIONAL TIME:						715	hrs

WIND SPEED Instantaneous Maximum (WS kph)



1.0 Quality Control Activities

Quality control procedures are established to govern the performance of the monitoring equipment and to protect operational uptime. Data collected during QC/QA activities are assigned a data validation code to comply with the requirements outlined in Chapter 6, 4.1.1, DQ 4-A (AMD, 2016). Calibrations are deemed successful only if the AMD calibration acceptance limits are met (Chapter 7, 9.0, AMD 2016).

A daily zero-span test procedure is performed for each gaseous parameter by challenging the analyzer with a zero-air source and span gas. Daily review of the data ensures the zero and span check are within the required acceptance limits and do not deviate more than $\pm 10\%$ from the expected value. The total zero-span cycle is complete within an hour with the zero phase commencing at the beginning of the scheduled hour. This QC activity is conducted in accordance with Chapter 7, 4.0, Cal 4-A (AMD, 2016).

The allowable time for a zero-span check is one hour per calendar day. The time allotted for the zero-span check does not contribute to downtime and is identified with a data validation code of "S". If any additional zero-span response checks are performed, the time accrued during the QC activity is considered downtime and is identified with a data validation code of "S1". The initiation of an additional zero-span check may be warranted during the investigation of operational issues or suspect data.

Each month, a scheduled multipoint calibration is performed on each gas analyzer. Prior to any adjustments, an as-found response test is completed to obtain the zero reading of the analyzer and the response to the highest span concentration. The zero and high point test gases are then re-introduced into the analyzer to establish the zero and high set-points. Once these adjustments are satisfactory, a mid-point and a low-point test concentration is introduced. Additional multi-point calibrations are required if any of the conditions, outlined in Chapter 7, 2.1, Cal 2G (AMD, 2016) exist.

The time allotted for the first multi-point calibration is not considered downtime and is identified with a data validation code of "C". If any additional as-found response checks or multipoint calibrations are performed, the time accrued during the QC activity is considered downtime and is identified with a data validation code of "C1".

A mechanical wind system undergoes annual calibration, as a minimum, while an ultrasonic wind system is factory calibrated every two years (Chapter 6, 6.0, Cal 6-A, AMD 2016). Supplementary to this, a visual inspection of the equipment is performed during each scheduled monthly site visit.

The time allotted for the wind system calibration is not considered downtime and is identified with a data validation code of "C". If function checks or additional calibrations are performed, the time accrued during the QC activity is not considered downtime and is identified with a data validation code of "Q" and "C", respectively. If QC activity goes beyond 10% of the monthly operating time, the time exceeding 10% is considered downtime and is assigned a data validation code of "C1". Data identified with a data validation code of "Q" is in accordance with Chapter 6, 4.1.3 (AMD, 2016) which states QA/QC activities are not included when calculating data completeness.

High volume samplers are calibrated every three months, as a minimum, in accordance with Chapter 7, 7.0, Cal 7-B (AMD, 2016).

Where passive sampling is in practice, quality control samples will be deployed in accordance with Chapter 4, 3.0, 3.1.3. Method blanks, replicate samples and spiked blanks are exposed and handled in the same manner as each passive sample. To comply with the data submission requirements in Chapter 9, 3.1, the replicate and corresponding passive sample concentrations are reportable data values and have not been averaged.

As recommended in Chapter 6, 4.2 (AMD 2016), daily data review is conducted to verify data and avoid significant data losses. Automated flags, originating from the data-logger, and data anomalies are reviewed and may prompt the need to dispatch a technician for investigation and/or corrective action. Additionally, there are several automated alarm scenarios that serve to screen raw data, alert technicians and elicit investigation or corrective action.

Comparisons of the measured ambient concentrations to the corresponding AAAQO are assessed using the significant figures protocol in Chapter 9, 3.1.2. If the measurement is near the set objective, raw data may undergo necessary data adjustments to confirm a true exceedance. Should an exceedance occur, Maxxam will formally notify the client; however, the reporting protocol to AEP is defined by the client and may not involve Maxxam. Exceedance events are acknowledged in the report, based on the information available at the time.

2.0 Data Verification and Validation

The data validation procedures, outlined in Chapter 6, 4.0, AMD 2016, are used to accept, reject and qualify data. The data verification and validation process, and the current Data Collection and Management Process Flow Chart have been compiled from sections 4.2 to 4.6 (AMD, 2016) and are shown below.

Baseline adjustments are applied by interpolation between two valid zero checks, as determined by the Data Acquisition System. In the event that zero check results are not reliable, data may be adjusted by applying a constant offset to data collected between two adjacent zero checks. Both adjustment approaches are deemed acceptable by the AMD.

Table 1 (Chapter 6) outlines the quantitative parameter relationships to be considered and dictates that data adjustments are applied equally for NO/NO₂/NO_x and CH₄/NMHC/THC parameters. Below zero adjustments are applied to 1-hour averages, in accordance with Table 2 (Chapter 6), and are done after baseline corrections.

Instantaneous data, where provided, is provided for reference purposes and has not undergone zero correction. The minimum and maximum statistics are highlighted in the data table and are for reference only. The highlighted cells are based on the software's interpretation of the exact position of the minimum or maximum value. The visual presentation of these statistics may not be the obvious choice in a data range due to rounding, truncating or analyzer specifications.

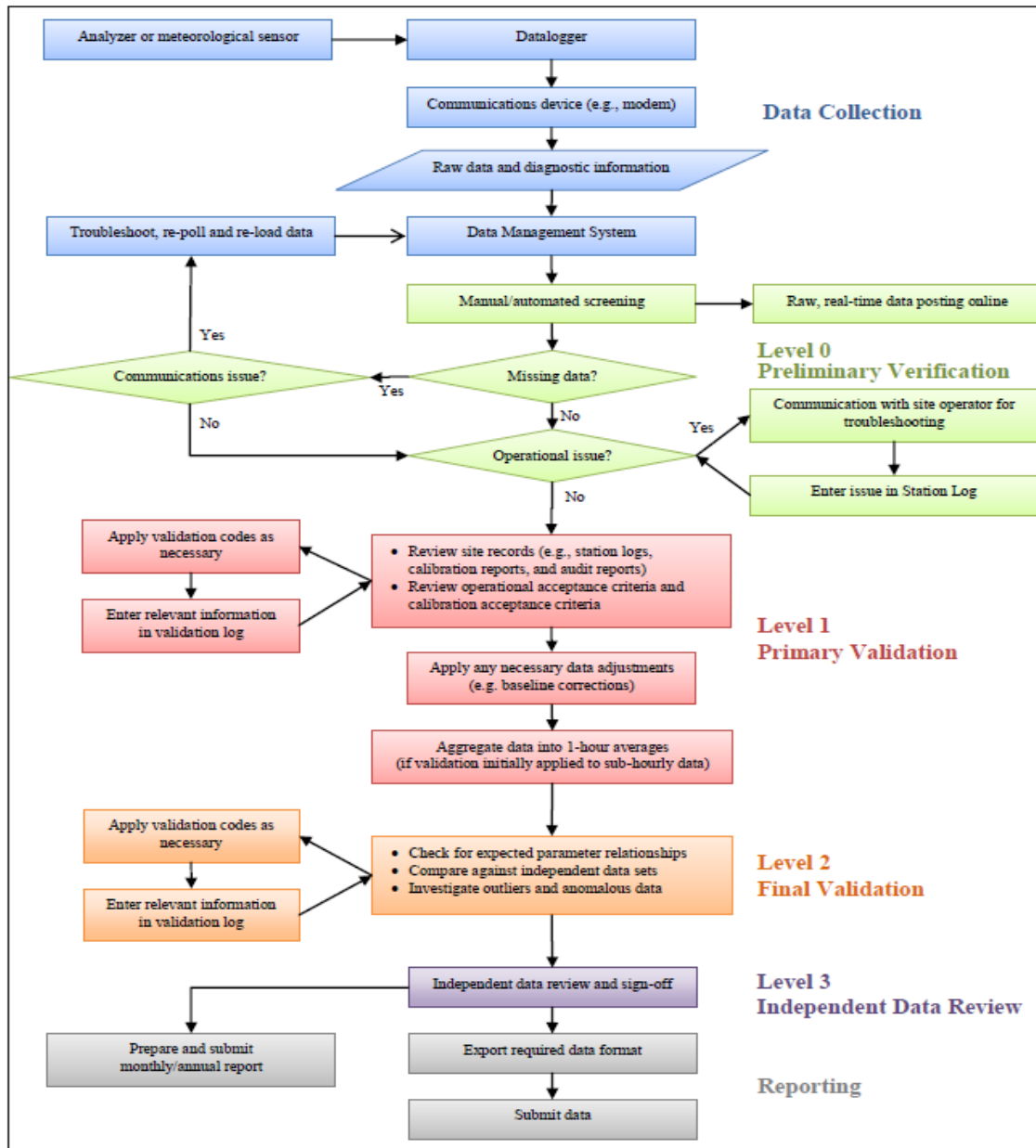
All calculations and reporting of results follow the methods described in the AMD, 2016.

There were no deviations from the prescribed methods.

AMD Data Verification and Validation Process

The following steps were used to complete the data verification and validation process:

<p>Level 0 Preliminary Verification</p>	<p>Level 0 data are raw data obtained directly from the data acquisition system (DAS). At this level, data undergoes a certain amount of manual or automated screening and flagging. Screening checks include: a) identification of periods of missing data; b) verification of time stamps against reference time; c) verification that instrument diagnostics/data-logger flags indicate normal operation; d) comparison of data to upper and lower limits; e) rate of change flagging indicating that data changed too rapidly or not at all; and f) verification that zero, span and multipoint performance checks are within specifications. This level of verification is performed on a daily basis.</p>
<p>Level 1 Primary Validation</p>	<p>Primary validation involves more thorough evaluation and documentation of issues identified during data screening, along with appropriate application of data validation codes. Level 1 activities include: a) review of all screening flags assigned during preliminary verification; b) review of all supporting site information and documentation; c) review of operational acceptance limits for each parameter/analyzer; d) review of daily zero/span and monthly calibration results for all gaseous parameters; and e) application of any necessary adjustments to data (e.g. baseline adjustments, below zero adjustments). This level of validation is performed on a monthly basis.</p>
<p>Level 2 Final Validation</p>	<p>The purpose of Level 2 validation is to verify that there are no inconsistencies among related data, or among regional data measured at nearby sites. At this level of review, some general knowledge of pollutant and meteorological behavior can be used to determine if data is suspect.</p>
<p>Level 3 Independent Data Review</p>	<p>Level 3 validation involves a final cursory review of validated data, and is completed by an individual independent of both field operations and primary data validation. At this level, a final independent QA review/endorsement is performed before data is submitted to Alberta Environment and Parks.</p>
<p>Post-Final Validation</p>	<p>The Post-Final Validation step serves to re-evaluate validated data for errors or omissions discovered and/or suspected after the initial monthly data submittal. This level of validation is performed on an annual basis, when annual reporting is required or requested.</p>



Source: Air Monitoring Directive (December 2016), Chapter 6, Ambient Data Quality
Figure 1 Data Collection and Management Process Flow Chart



Validation Certificate Form

Client: <u>Lakeland Industry & Community Association</u>	Project #: <u>2833-2019-04-23-C</u>
Site: <u>Cold Lake South Continuous Monitoring Station</u>	Contact: <u>Mike Bisaga</u>

Level 0 Preliminary Verification	<u><i>bimadeniji</i></u>	Date <u>23-May-2019</u>
Level 1 Primary Validation	<u><i>bimadeniji</i></u>	Date <u>23-May-2019</u>
Level 2 Final Validation	<u><i>bimadeniji</i></u>	Date <u>28-May-2019</u>
Level 3 Independent Data Review	<u><i>CSA/mbq</i></u>	Date <u>28-May-2019</u>
Post-Final Validation	<u>NA</u>	Date <u>NA</u>

Notes

The Post-Final Validation step serves to re-evaluate the data that errors or omissions are discovered and/or suspected after the initial submittal of data. This validation is performed on an annual basis.

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APRIL 1 - 30, 2019

MONTHLY AMBIENT AIR QUALITY MONITORING REPORT

AEP Ambient Station ID: 1248

Project #: 2833-2019-04-24-C

LICA-201904

Prepared for:

Lakeland Industry & Community Association

Mike Bisaga

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Monitoring Station

Maskwa Continuous Monitoring Station

Date of Report Issuance: May 23, 2019

Report Preparation By:

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Project Manager, Customer Service, Air Services

Reviewed By:

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#1 - 2080 39 Avenue NE, Calgary AB, T2E 6P7

LICA-201904

Page 96 of 350

Lakeland Industry & Community Association

5107 50 St.
Bonnyville, Alberta T9N 2J7

Attention: Mike Bisaga

Date: May 23, 2019

Subject: MONTHLY AMBIENT AIR QUALITY MONITORING REPORT for APRIL 1 - 30, 2019

In April 2019, Maxxam Analytics was contracted to manage the ambient air quality monitoring and maintenance activities at the Maskwa Continuous Monitoring Station near Cold Lake, Alberta. The monitoring program provides measurements of ambient air pollutants and meteorological data to satisfy the reporting requirements of the Alberta airshed.

Network Parameters for Continuous Monitoring:

This monthly report, where applicable, was prepared in accordance with Chapter 9 of the Air Monitoring Directive (AMD, 2016). The report summarizes the continuous monitoring results for pollutant and meteorological parameters and presents the hourly statistics, graphs and rose charts for the month. Calibration records are provided in a separate PDF document in order to comply with AMD requirements Chapter 9, 13.1.7, RC 13-R. The station is equipped with analyzers to measure SO₂, H₂S, THC, CH₄, NMHC, NO_x, NO and NO₂. The meteorological sensors and equipment capture data for WS, WD, RH, BP, PRECIP, AmbTPX and STDWD.

Exceedance & Performance Reporting:

The operational time for all continuous ambient air analyzers, meteorological systems and data acquisition systems were above the 90% requirement, as per the AMD, Chapter 6, DQ 4-C, 2016.

All measured ambient air concentrations were below the Alberta Ambient Air Quality Objectives and Guidelines (AAAQO, January 2019). Comparisons of these concentrations to the corresponding AAAQOs were done in accordance with Chapter 9, 15.3.2, RC 15-P. Accordingly, the averaging specifications and data completeness criteria, as defined in the Alberta Ambient Air Quality Objective Calculation Guidelines, were applied (Chapter 9, Appendix A, AMD 2016).

Specific to the content and purpose of this report, there were no instances where the requirements of the AMD (2016) were contravened.

Monthly Monitoring Overview:

In relation to the previous month, there were no changes made to the scope or management of the ambient air monitoring program.

The evaluation of data collected in the month of April did not reveal any errors or omissions that would require resubmission of air data to AEP's airdata warehouse.

During this monitoring period, there were no scheduled audits that Maxxam Analytics was privy to.

THC/CH₄/NMHC: The carrier gas (N₂) was depleted on April 29 and was replaced on April 30. Fifteen hours of downtime were recorded between hour 18:00 on April 29 and hour 08:00 on April 30, due to this event.

Should you have any questions concerning the results or if we can be of further assistance, please contact your Maxxam representative indicated below.

Reviewed by:



Wunmi Adekanmbi, M.Sc., EPt, PMP
Project Team Lead, Customer Service, Air Services
403-219-3661

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. Certification of submitted information is specific to the contents of this report and is not intended to represent the onus of the Person Responsible, as outlined in Chapter 9, RC 12-E.

TABLE OF CONTENTS

TITLE PAGE	1
COVER LETTER	2
TABLE OF CONTENTS	3
ABBREVIATIONS	4
AAAQO EXCEEDANCE SUMMARY	5
MONTHLY CONTINUOUS DATA SUMMARY	6
OPERATIONAL SUMMARY	7
SUMMARY TABLES, GRAPHS AND ROSES	8
Sulphur Dioxide	9
Hydrogen Sulphide	13
Total Hydrocarbon	17
Methane	21
Non-Methane Hydrocarbon	25
Oxides of Nitrogen	29
Nitric Oxide	33
Nitrogen Dioxide	37
Wind Speed	41
Wind Direction	44
Standard Deviation Wind Direction	47
Relative Humidity	49
Barometric Pressure	51
Ambient Temperature	53
Precipitation	55
MAXIMUM INSTANTANEOUS DATA	57
1.0 Quality Control Activities	75
2.0 Data Verification and Validation	76
Validation Certificate Form	79
End of Report	80

List of Acronyms

AAAQO	Alberta Ambient Air Quality Objectives and Guidelines Summary
AEP	Alberta Environment and Parks
AMBTPX	Ambient Temperature
AMD	Air Monitoring Directive
BP	Barometric Pressure
CH₄	Methane
DAS	Data acquisition system
hr	Hour
hrs	Hours
H₂S	Hydrogen Sulphide
IZS	Internal zero-span
kph	Kilometers per hour
NO	Nitric Oxide
NO₂	Nitrogen dioxide
NO_x	Total oxides of nitrogen
NMHC	Non-Methane Hydrocarbon
Precip	Precipitation
ppb	Parts per billion
ppm	Parts per million
QA	Quality Assurance
QC	Quality Control
RH	Relative Humidity
SOP	Standard Operating Procedure
SO₂	Sulphur Dioxide
STDWD	Standard Deviation Wind Direction
THC	Total hydrocarbons
WS	Wind Speed
WD	Wind Direction
°C	Degrees Celsius

AAAQO Exceedance Summary Report

SO₂ 1-Hour Exceedances

Measured concentrations of sulphur dioxide were below the 1-hour AAAQO of 172 ppb.

SO₂ 24-Hour Exceedances

Measured concentrations of sulphur dioxide were below the 24-hour AAAQO of 48.0 ppb.

H₂S 1-Hour Exceedances

Measured concentrations of hydrogen sulphide were below the 1-hour AAAQO of 10 ppb.

H₂S 24-Hour Exceedances

Measured concentrations of hydrogen sulphide were below the 24-hour AAAQO of 3 ppb.

NO₂ 1-Hour Exceedances

Measured concentrations of nitrogen dioxide were below the 1-hour AAAQO of 159 ppb.

In accordance with EPEA and the Substance Release Regulation

In accordance with A Guide to Release Reporting and the Alberta Ambient Air Quality Objectives and Guidelines Summary

MONTHLY CONTINUOUS DATA SUMMARY

Lakeland Industry & Community Association Maskwa Continuous Monitoring Station						MAXIMUM VALUES							OPERATIONAL TIME (%)
PARAMETER	OBJECTIVES		EXCEEDANCES		MONTHLY AVERAGE	1-HOUR					24-HOUR		
	1-hr	24-hr	1-hr	24-hr		READING	DAY	HOUR	WIND SPEED (kph)	WIND DIRECTION (sector)	READING	DAY	
SO ₂ (ppb)	172	48	0	0	1	11	1	8	9.2	WNW	2	1	100.0
H ₂ S (ppb)	10	3	0	0	0	1	5	20	6.1	ESE	0	1	100.0
THC (ppm)	-	-	-	-	2.00	2.37	29	1	0.6	E	2.08	29	97.9
CH ₄ (ppm)	-	-	-	-	2.00	2.24	29	1	0.6	E	2.07	29	97.9
NMHC (ppm)	-	-	-	-	0.00	0.13	29	1	0.6	E	0.02	29	97.9
NO ₂ (ppb)	159	-	0	-	3	18	1	22	4.4	WNW	6	1	100.0
NO (ppb)	-	-	-	-	0	7	1	8	9.2	WNW	2	25	100.0
NO _x (ppb)	-	-	-	-	3	24	1	8	9.2	WNW	8	25	100.0
RELATIVE HUMIDITY (%)	-	-	-	-	60	100	6	10	7.4	E	94	6	100.0
BAROMETRIC PRESSURE (millibar)	-	-	-	-	935	948	28	8	3.7	NW	946	28	100.0
AMBIENT TEMPERATURE (°C)	-	-	-	-	3.3	18.0	22	15	9.4	SSW	10.2	23	100.0
PRECIPITATION (mm)	-	-	-	-	14.2	1.9	6	12	8.1	E	10.3	6	100.0
VECTOR WS (kph)	-	-	-	-	0.9	15.5	24	16	-	WNW	8.8	24	100.0
VECTOR WD (sec)	-	-	-	-	318 (NW)	-	-	-	-	-	-	-	100.0

* Precipitation: data represents the total (sum) for the indicated time frame

OPERATIONAL SUMMARY

Parameter	Equipment	Method & Procedure	Operational Notes
SULPHUR DIOXIDE (SO ₂)	Thermo 43i TLE Pulsed Fluorescence Analyzer	Maxxam AIR SOP-00209: Ambient Sulphur Monitoring	<ul style="list-style-type: none"> Operational time was 100% and there were no performance issues identified. The routine monthly calibration was performed on April 17, between the hours of 08:00 and 12:00.
HYDROGEN SULPHIDE (H ₂ S)	Thermo 450i UV Fluorescence Analyzer	Maxxam AIR SOP-00209: Ambient Sulphur Monitoring	<ul style="list-style-type: none"> Operational time was 100% and there were no performance issues identified. The routine monthly calibration was performed on April 17, between the hours of 12:00 and 16:00.
TOTAL HYDROCARBONS (THC), METHANE (CH ₄) & NON-METHANE HYDROCARBONS (NMHC)	Thermo 55i FID Analyzer	Maxxam AIR SOP-00001: Methane, Non-Methane Hydrocarbon Analyzer Monitoring	<ul style="list-style-type: none"> Operational time for the monitoring period was 97.9%, equivalent to 15 hours of downtime. The routine monthly calibration was performed on April 17, between the hours of 08:00 and 12:00. The carrier gas (N₂) was depleted on April 29 and was replaced on April 30. Fifteen hours of downtime were recorded between hour 18:00 on April 29 and hour 08:00 on April 30, due to this event.
OXIDES OF NITROGEN (NO _x), NITRIC OXIDE (NO) & NITROGEN DIOXIDE (NO ₂)	Thermo 42i Chemiluminescent Analyzer	Maxxam AIR SOP-00213: Ambient NO/NO ₂ /NO _x Monitoring	<ul style="list-style-type: none"> Operational time was 100% and there were no performance issues identified. The routine monthly calibration was performed on April 17, between the hours of 08:00 and 14:00.
WIND SPEED (WS), WIND DIRECTION (WD) & STANDARD DEVIATION WIND DIRECTION (STDWD)	RM Young Unit	Maxxam AIR SOP-00013: RM Young Wind Monitor Calibration	<ul style="list-style-type: none"> Operational time was 100% and there were no performance issues identified. Wind data is reported as vector wind speed and vector wind direction. Wind direction is defined as the direction from which the wind is blowing from and is measured in degrees from true north.
RELATIVE HUMIDITY (RH)	Rotronic Hygroclip Unit	Operations Manual	<ul style="list-style-type: none"> Operational time was 100% and there were no performance issues identified.
BAROMETRIC PRESSURE (BP)	Met One Unit	Operations Manual	<ul style="list-style-type: none"> Operational time was 100% and there were no performance issues identified.
PRECIPITATION (PRECIP)	Met One Unit	Maxxam AIR SOP-00242: Precipitation Collector Installation/Maintenance	<ul style="list-style-type: none"> Operational time was 100% and there were no performance issues identified.
AMBIENT TEMPERATURE (AmbTPX)	Rotronic Hygroclip Unit	Operations Manual	<ul style="list-style-type: none"> Operational time was 100% and there were no performance issues identified.
Datalogger	Envidas Ultimate Unit	Operations Manual	<ul style="list-style-type: none"> There were no performance issues identified.

SUMMARY TABLES, GRAPHS AND ROSES

SULPHUR DIOXIDE Hourly Averages (SO₂ ppb)

HR START (MST)	0:00	1:00	2:00	3:00	4:00	5:00	6:00	7:00	8:00	9:00	10:00	11:00	12:00	13:00	14:00	15:00	16:00	17:00	18:00	19:00	20:00	21:00	22:00	23:00	DAILY	DAILY	24-HR	RDGS.	
HR END (MST)	0:59	1:59	2:59	3:59	4:59	5:59	6:59	7:59	8:59	9:59	10:59	11:59	12:59	13:59	14:59	15:59	16:59	17:59	18:59	19:59	20:59	21:59	22:59	23:59	MIN.	MAX.	AVG.		
DAY																													
1	2	1	1	1	S	0	0	1	11	8	4	0	0	1	3	0	0	0	0	0	1	1	9	9	0	11	2	24	
2	0	1	4	S	8	3	7	2	1	2	6	5	1	2	2	2	1	1	0	0	0	0	0	0	0	0	8	2	24
3	0	0	S	0	0	0	0	0	0	1	0	1	1	1	1	1	1	0	0	0	0	0	0	0	0	0	1	0	24
4	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	24
5	S	0	0	0	0	1	0	1	1	1	0	1	1	0	0	0	1	2	0	2	3	3	6	S	0	6	1	24	
6	3	3	3	1	0	0	0	0	1	1	0	1	0	0	1	3	1	1	1	2	3	1	S	2	0	3	1	24	
7	1	2	1	0	0	0	0	0	0	1	0	0	0	0	2	1	0	0	0	0	0	S	0	1	0	2	1	24	
8	1	0	0	0	0	0	0	0	1	1	0	1	1	0	0	0	0	0	0	0	S	0	0	0	0	1	0	24	
9	0	0	0	0	0	0	0	2	1	1	3	4	4	1	1	1	0	0	3	S	0	0	0	0	0	4	1	24	
10	0	0	0	1	1	0	1	1	1	1	1	1	1	1	1	0	0	0	S	0	0	0	1	3	0	3	1	24	
11	1	0	0	0	0	0	0	0	0	1	0	0	1	1	0	0	0	S	0	2	2	1	0	1	0	2	1	24	
12	3	3	2	1	1	0	0	0	0	0	0	0	0	0	0	0	S	0	0	0	0	0	0	0	0	3	0	24	
13	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	S	0	1	0	0	0	0	0	0	0	1	0	24	
14	0	0	0	0	0	0	0	0	0	0	0	0	0	1	S	0	1	2	3	1	2	2	1	2	1	0	3	1	24
15	0	3	3	4	3	1	1	1	0	1	1	4	3	S	1	1	1	1	0	0	0	0	0	0	0	4	1	24	
16	0	0	0	0	0	0	0	0	1	2	1	1	S	0	0	1	0	1	0	0	0	0	1	0	0	2	0	24	
17	0	0	0	0	0	0	0	0	C	C	C	C	C	0	0	2	1	0	0	3	1	3	0	0	0	3	0	24	
18	0	0	0	0	0	0	0	0	0	2	S	0	0	1	1	0	0	1	0	0	0	0	0	0	0	2	0	24	
19	0	0	0	0	0	3	1	1	2	S	0	0	0	0	1	0	0	0	0	0	0	1	0	0	0	3	0	24	
20	0	1	0	0	0	0	0	0	S	0	0	0	0	0	0	3	3	1	0	5	2	4	2	3	0	5	1	24	
21	2	4	1	0	0	0	1	S	2	3	1	0	1	0	0	2	0	1	1	0	0	1	1	0	0	4	1	24	
22	0	0	0	0	0	0	S	1	1	1	1	0	0	0	0	0	0	0	0	0	2	1	0	0	0	2	0	24	
23	2	4	1	1	1	S	0	0	0	0	0	0	1	0	0	0	0	0	0	0	0	0	4	0	4	1	24		
24	1	0	0	0	S	1	1	1	1	1	1	1	0	0	1	0	5	7	7	2	6	5	10	0	10	2	24		
25	2	6	8	S	2	0	0	2	4	2	3	3	1	2	5	2	2	2	1	5	1	1	1	0	0	8	2	24	
26	0	0	S	0	0	0	1	2	0	0	1	1	2	1	0	0	0	0	0	0	0	0	0	0	0	2	0	24	
27	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	24	
28	S	0	0	0	0	0	0	1	1	0	1	0	0	0	1	0	0	0	0	0	0	0	0	0	S	0	1	0	24
29	0	0	0	0	0	0	0	0	1	1	1	1	1	1	1	1	1	1	1	0	0	S	0	0	0	1	0	24	
30	0	0	0	1	0	0	0	0	0	0	1	0	1	0	0	0	0	0	0	0	0	S	0	0	0	0	1	0	24
HOURLY MAX	3	6	8	4	8	3	7	2	11	8	6	5	4	2	5	3	3	5	7	7	3	6	9	10					
HOURLY AVG	1	1	1	0	1	0	0	1	1	1	1	1	1	1	1	1	0	1	1	1	1	1	1	1					

STATUS FLAG CODES

C	- MONTHLY CALIBRATION	Q	- QUALITY ASSURANCE
C1	- REPEAT CALIBRATION	R	- RECOVERY
Y	- MAINTENANCE	X	- MACHINE MALFUNCTION
S	- DAILY ZERO/SPAN CHECK	G	- OUT FOR REPAIR
S1	- REPEAT ZERO/SPAN CHECK	P	- POWER FAILURE

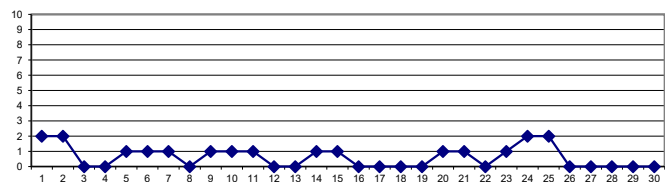
OBJECTIVE LIMIT:

ALBERTA ENVIRONMENT:	1-HR	172	ppb	24-HR	48	ppb
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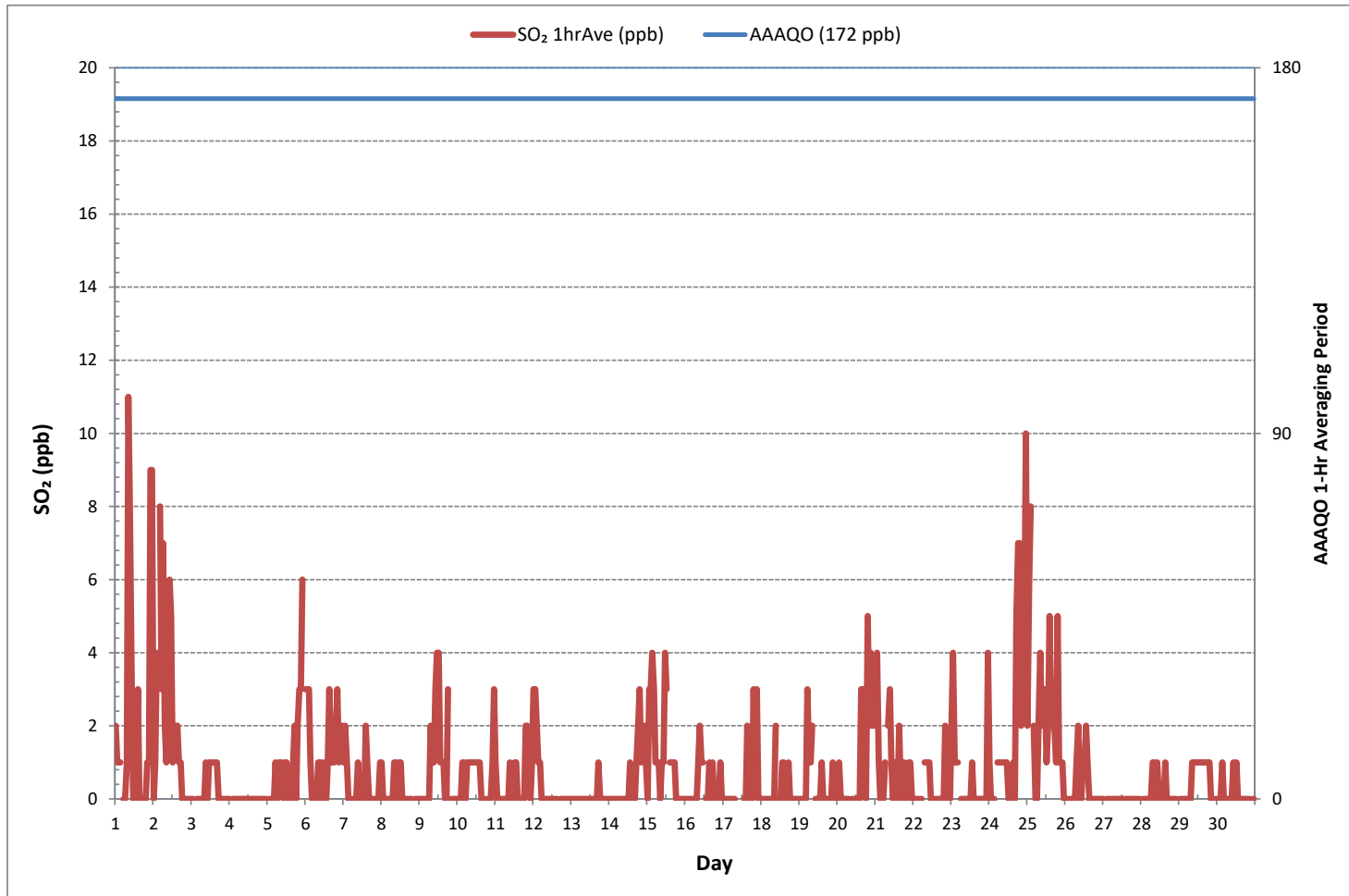
MONTHLY SUMMARY

NUMBER OF 1-HR EXCEEDANCES:	0				
NUMBER OF 24-HR EXCEEDANCES:	0				
NUMBER OF NON-ZERO READINGS:	255				
MINIMUM 1-HR AVERAGE:	0 ppb @ HOUR	5	ON DAY	1	
MAXIMUM 1-HR AVERAGE:	11 ppb @ HOUR	8	ON DAY	1	
MAXIMUM 24-HR AVERAGE:	2 ppb		ON DAY	1	
IZS CALIBRATION TIME:	31	hrs	OPERATIONAL TIME:	720	hrs
MONTHLY CALIBRATION TIME:	5	hrs	AMD OPERATION UPTIME:	100.0	%
STANDARD DEVIATION:	1		MONTHLY AVERAGE:	1	ppb

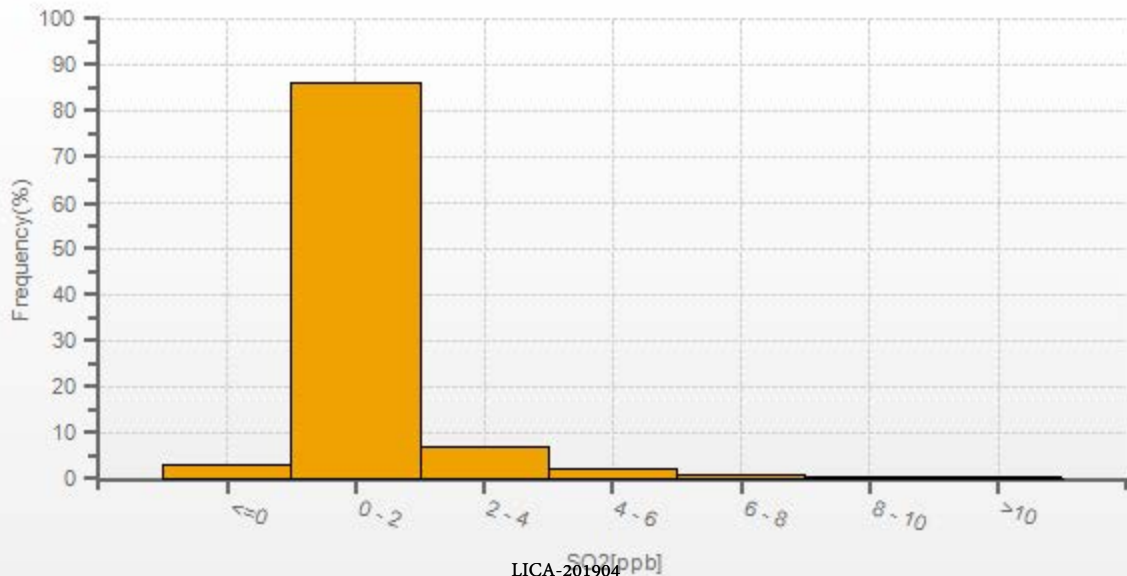
24 HR AVERAGES April 2019



SULPHUR DIOXIDE Hourly Averages (SO₂ ppb)



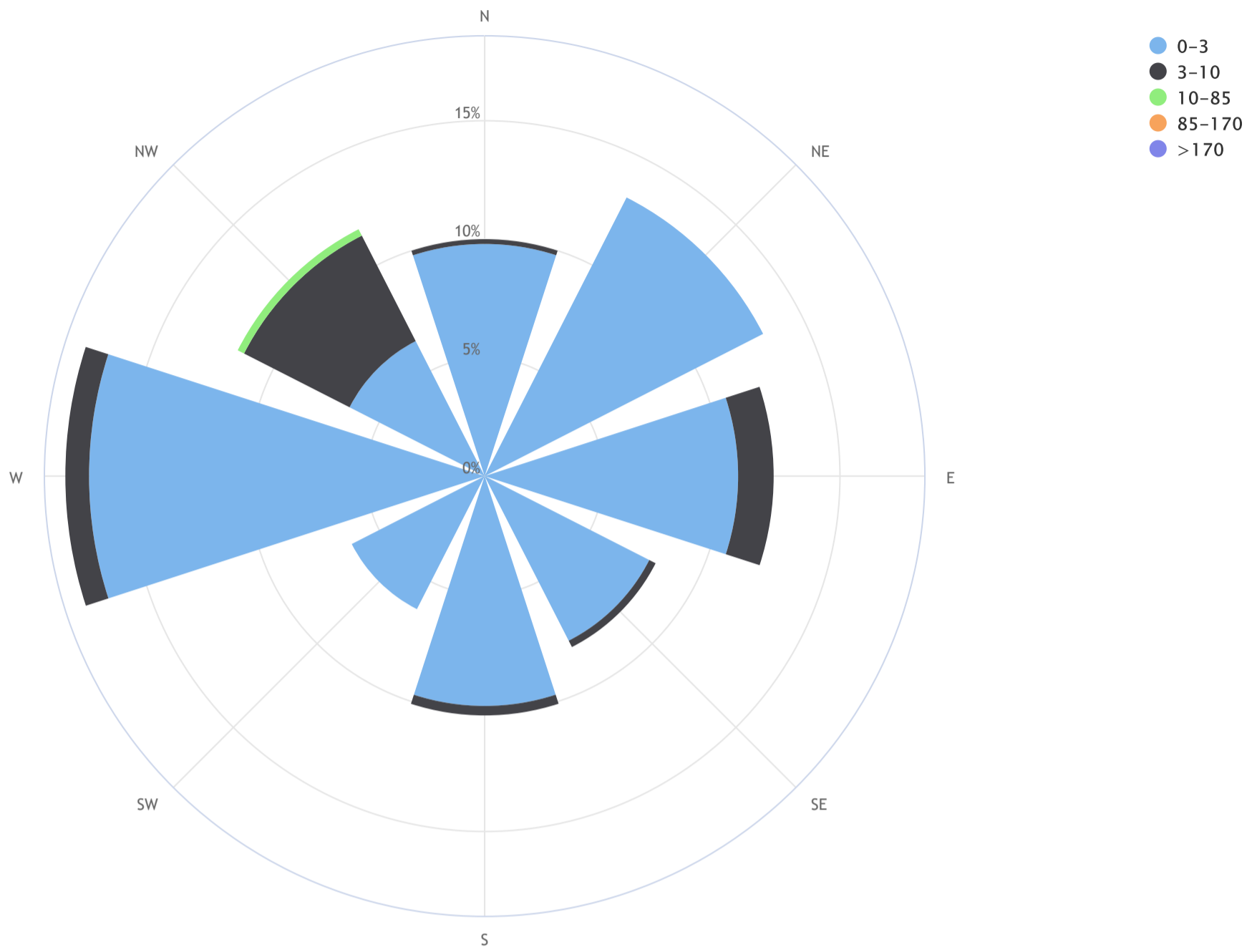
SO2[ppb] Histogram: LICA MASKWA Monthly: 19/04 1 Hr.



LICA-201904
Page 106 of 350

Lakeland Industry & Community Association_Maskwa Continuous Monitoring Station_SO₂ (ppb)_19/04

Pollutant Rose_Wind Frequency (Blowing From)_ CALM Avg = 0.1, CALM % = 11.0%



Direction	0-3	3-10	10-85	85-170	>170	TOTAL
N	9.8	0.2	0.0	0.0	0.0	10.0
NE	13.2	0.0	0.0	0.0	0.0	13.2
E	10.7	1.5	0.0	0.0	0.0	12.1
SE	7.8	0.3	0.0	0.0	0.0	8.0
S	9.7	0.4	0.0	0.0	0.0	10.1
SW	6.3	0.0	0.0	0.0	0.0	6.3
W	16.7	1.0	0.0	0.0	0.0	17.7
NW	6.4	5.0	0.3	0.0	0.0	11.7
Summary	80.4	8.3	0.3	0.0	0.0	89.0
CALM	11.0	0.0	0.0	0.0	0.0	11.0



HYDROGEN SULPHIDE Hourly Averages (H₂S ppb)

HR START (MST)	0:00	1:00	2:00	3:00	4:00	5:00	6:00	7:00	8:00	9:00	10:00	11:00	12:00	13:00	14:00	15:00	16:00	17:00	18:00	19:00	20:00	21:00	22:00	23:00	DAILY MIN.	DAILY MAX.	24-HR AVG.	RDGS.	
HR END (MST)	0:59	1:59	2:59	3:59	4:59	5:59	6:59	7:59	8:59	9:59	10:59	11:59	12:59	13:59	14:59	15:59	16:59	17:59	18:59	19:59	20:59	21:59	22:59	23:59					
DAY 1	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	24	
2	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	24	
3	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	24	
4	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	24	
5	S	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1	1	S	0	1	0	24	
6	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	S	0	0	1	0	24	
7	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	24	
8	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	24	
9	0	0	0	0	0	0	0	0	0	0	0	1	1	0	0	0	0	0	0	0	0	S	0	0	0	0	1	0	24
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	24	
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	24	
12	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	24	
13	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	24	
14	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	24	
15	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	24	
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	24	
17	0	0	0	0	0	0	0	0	0	0	0	0	0	C	C	C	C	C	0	0	0	0	0	0	0	0	0	24	
18	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	24	
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	24	
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	24	
21	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	24	
22	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	24	
23	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	24	
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	24	
25	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	24	
26	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	24	
27	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	24	
28	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	24	
29	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	24	
30	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	24	
HOURLY MAX	1	0	0	0	0	0	0	0	0	0	0	1	1	0	0	0	0	0	0	0	0	1	1	0	0				
HOURLY AVG	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0				

STATUS FLAG CODES

C	- MONTHLY CALIBRATION	Q	- QUALITY ASSURANCE
C1	- REPEAT CALIBRATION	R	- RECOVERY
Y	- MAINTENANCE	X	- MACHINE MALFUNCTION
S	- DAILY ZERO/SPAN CHECK	G	- OUT FOR REPAIR
S1	- REPEAT ZERO/SPAN CHECK	P	- POWER FAILURE

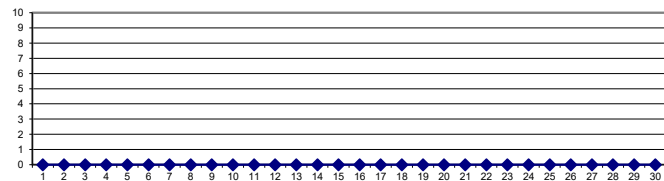
OBJECTIVE LIMIT:

ALBERTA ENVIRONMENT:	1-HR	10	ppb	24-HR	3	ppb
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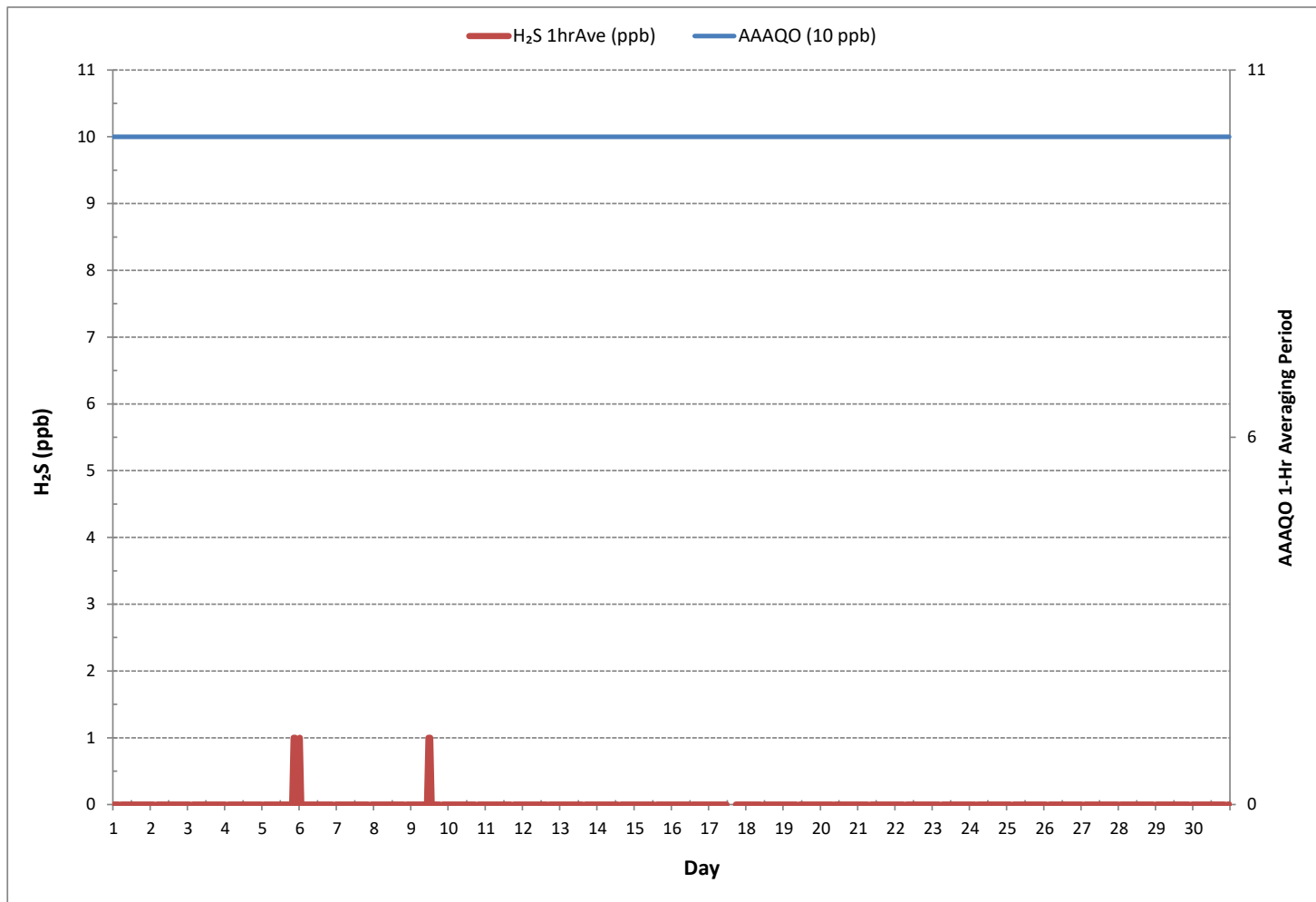
MONTHLY SUMMARY

NUMBER OF 1-HR EXCEEDANCES:	0				
NUMBER OF 24-HR EXCEEDANCES:	0				
NUMBER OF NON-ZERO READINGS:	5				
MINIMUM 1-HR AVERAGE:	0 ppb @ HOUR	0	ON DAY	1	
MAXIMUM 1-HR AVERAGE:	1 ppb @ HOUR	20	ON DAY	5	
MAXIMUM 24-HR AVERAGE:	0 ppb		ON DAY	1	
IZS CALIBRATION TIME:	31	hrs	OPERATIONAL TIME:	720	hrs
MONTHLY CALIBRATION TIME:	5	hrs	AMD OPERATION UPTIME:	100.0	%
STANDARD DEVIATION:	0		MONTHLY AVERAGE:	0	ppb

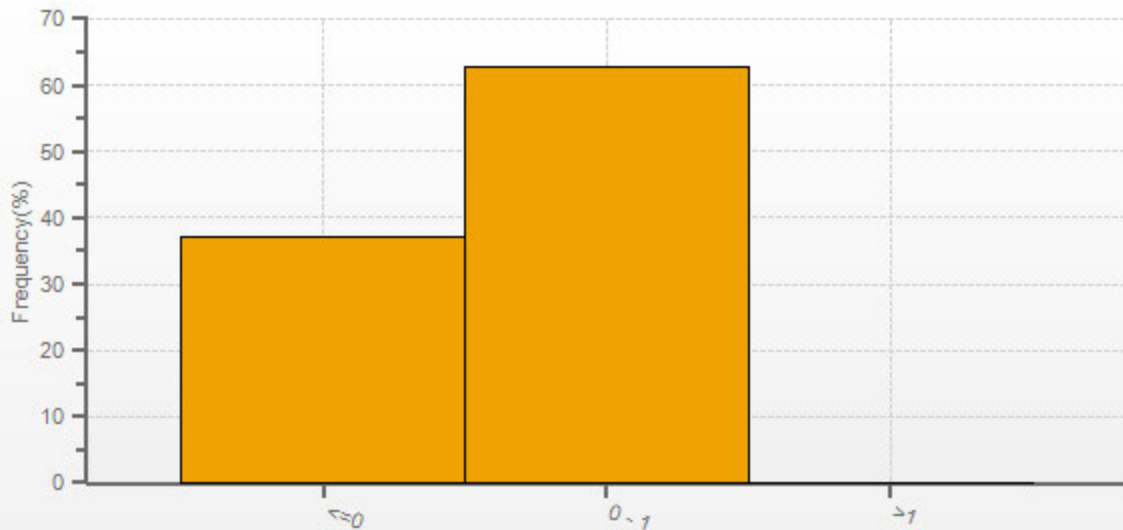
24 HR AVERAGES April 2019



HYDROGEN SULPHIDE Hourly Averages (H₂S ppb)



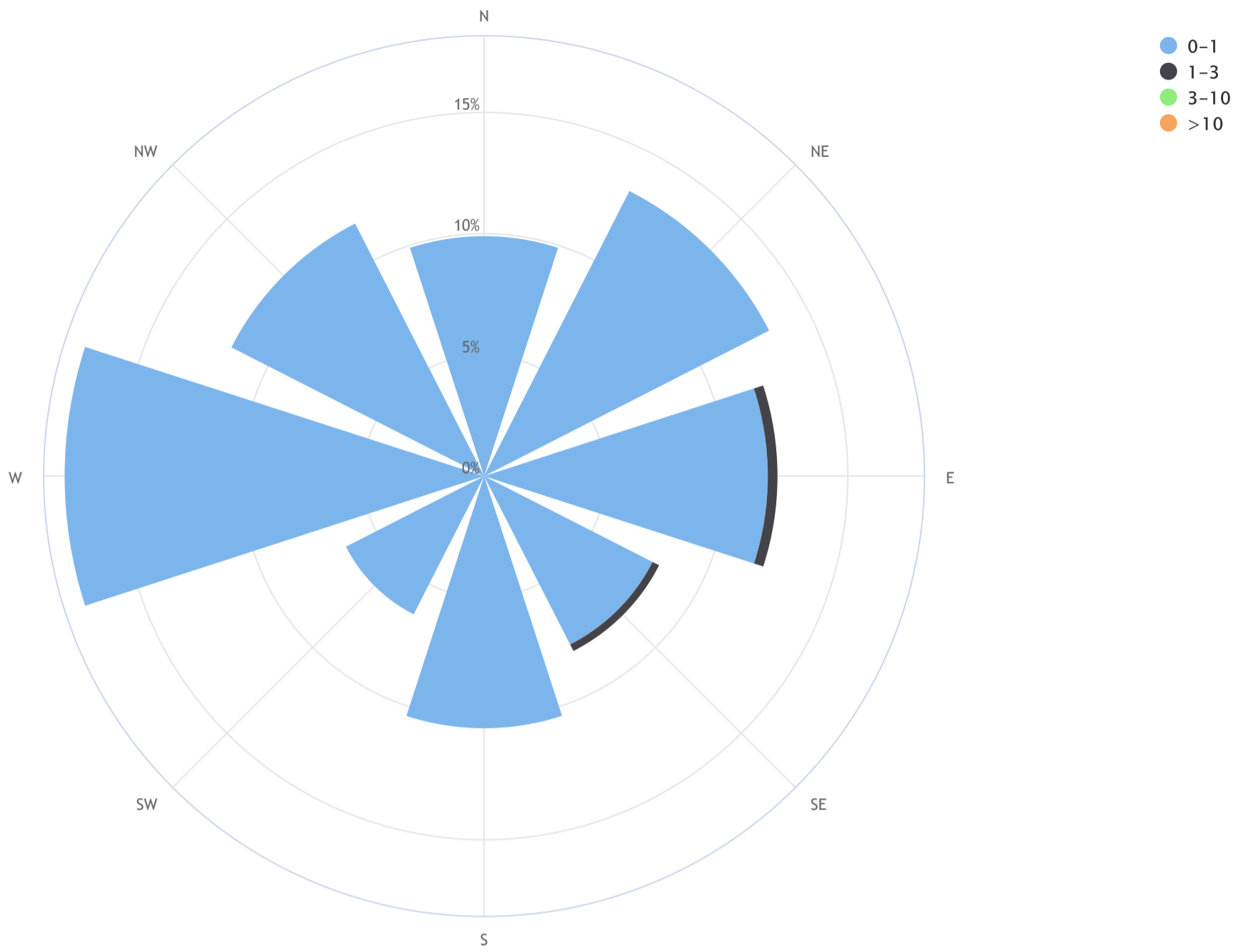
H2S[ppb] Histogram: LICA MASKWA Monthly: 19/04 1 Hr.



LICA-201904
Page 110 of 350

Lakeland Industry & Community Association_Maskwa Continuous Monitoring Station_H₂S (ppb)_19/04

Pollutant Rose_Wind Frequency (Blowing From)_ CALM Avg = 0.0, CALM % = 11.0%



Direction	0-1	1-3	3-10	>10	TOTAL
N	9.9	0.0	0.0	0.0	9.9
NE	13.2	0.0	0.0	0.0	13.2
E	11.7	0.4	0.0	0.0	12.1
SE	7.8	0.3	0.0	0.0	8.0
S	10.4	0.0	0.0	0.0	10.4
SW	6.4	0.0	0.0	0.0	6.4
W	17.3	0.0	0.0	0.0	17.3
NW	11.7	0.0	0.0	0.0	11.7
Summary	88.3	0.7	0.0	0.0	89.0
CALM	11.0	0.0	0.0	0.0	11.0



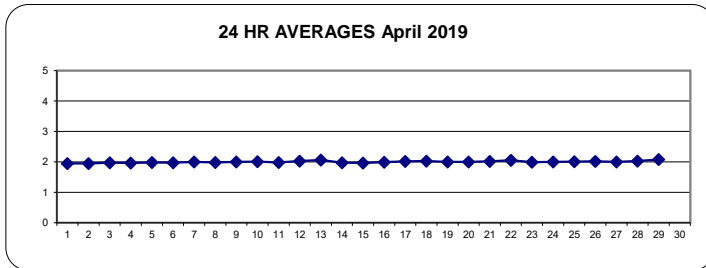
TOTAL HYDROCARBONS Hourly Averages (THC ppm)

HR START (MST)	0:00	1:00	2:00	3:00	4:00	5:00	6:00	7:00	8:00	9:00	10:00	11:00	12:00	13:00	14:00	15:00	16:00	17:00	18:00	19:00	20:00	21:00	22:00	23:00	DAILY	DAILY	24-HR	RDGS.		
HR END (MST)	0:59	1:59	2:59	3:59	4:59	5:59	6:59	7:59	8:59	9:59	10:59	11:59	12:59	13:59	14:59	15:59	16:59	17:59	18:59	19:59	20:59	21:59	22:59	23:59	MIN.	MAX.	AVG.			
DAY 1	1.97	1.96	1.96	1.95	S	1.95	1.96	1.95	1.97	1.95	1.95	1.93	1.93	1.94	1.94	1.93	1.94	1.93	1.93	1.93	1.93	1.93	1.96	1.95	1.93	1.97	1.95	24		
2	1.95	1.96	1.97	S	1.96	1.94	1.95	1.93	1.94	1.94	1.95	1.95	1.94	1.94	1.94	1.95	1.94	1.94	1.95	1.95	1.95	1.96	1.96	1.96	1.96	1.93	1.97	1.95	24	
3	1.96	1.96	S	1.97	1.97	1.97	1.97	1.97	1.97	1.97	1.97	1.97	1.97	1.99	1.98	1.98	1.98	1.97	1.96	1.96	1.96	1.96	1.96	1.98	1.97	1.96	1.99	1.97	24	
4	1.97	S	1.98	1.96	1.96	1.97	1.97	1.97	1.97	1.97	1.96	1.96	1.96	1.95	1.95	1.95	1.95	1.96	1.95	1.95	1.95	1.95	1.96	1.96	1.96	1.95	1.98	1.96	24	
5	S	1.96	1.95	1.95	1.95	1.97	1.97	1.98	1.99	1.99	1.99	1.99	1.99	1.98	1.98	1.98	1.98	1.99	1.98	2.00	1.98	1.99	2.02	S	1.95	2.02	1.98	24		
6	1.99	2.00	2.00	1.98	1.97	1.97	1.96	1.95	1.97	1.96	1.96	1.96	1.95	1.95	1.96	1.97	1.96	1.95	1.96	1.98	1.99	1.96	S	1.99	1.95	2.00	1.97	24		
7	1.98	1.97	1.97	1.96	1.97	1.97	1.97	1.98	2.02	2.09	2.10	2.02	2.00	2.00	1.99	1.97	1.97	1.97	1.97	1.97	1.97	2.09	S	2.03	2.08	1.96	2.10	2.00	24	
8	2.13	2.14	2.13	2.09	1.99	1.95	1.95	1.95	1.96	1.95	1.94	1.94	1.94	1.94	1.93	1.93	1.95	1.94	1.94	1.94	S	1.99	1.97	1.97	1.93	2.14	1.98	24		
9	1.98	1.98	1.98	1.97	2.06	1.98	1.95	1.97	1.97	1.98	1.99	2.05	2.03	2.01	2.03	2.03	2.02	2.02	2.00	S	2.00	2.03	2.03	2.03	2.05	1.95	2.06	2.00	24	
10	2.03	2.03	2.04	2.04	2.03	2.06	2.04	2.03	2.02	2.00	2.01	2.00	2.03	2.04	2.05	2.02	1.97	1.95	S	1.95	1.96	1.97	2.00	2.04	1.95	2.06	2.01	24		
11	2.03	2.01	2.00	2.02	2.00	1.98	1.99	1.98	1.98	1.97	1.97	1.97	1.97	1.96	1.96	1.95	1.96	S	1.97	1.98	1.99	2.00	1.99	1.99	1.95	2.03	1.98	24		
12	1.99	2.01	2.03	2.07	2.09	2.08	2.12	2.11	2.08	2.05	2.04	2.00	1.97	1.98	2.01	1.98	S	1.97	1.97	1.97	2.00	2.02	2.01	2.01	1.99	2.03	1.97	24		
13	2.07	2.10	2.14	2.19	2.19	2.19	2.20	2.16	2.10	2.09	2.04	2.01	1.98	1.99	1.97	S	1.95	1.95	1.95	1.96	2.07	2.06	1.98	2.00	1.95	2.20	2.06	24		
14	1.99	2.01	2.02	2.00	2.02	2.02	2.01	1.98	1.96	1.96	1.96	1.94	1.93	1.93	S	1.93	1.94	1.95	1.95	1.97	1.97	1.96	1.97	1.97	1.93	2.02	1.97	24		
15	1.96	1.97	1.96	1.97	1.97	1.96	1.96	1.94	1.95	1.95	1.95	1.96	1.96	S	1.95	1.95	1.95	1.95	1.95	1.95	1.94	1.96	2.02	2.02	2.06	1.94	2.06	1.96	24	
16	2.04	2.01	2.02	2.01	2.00	2.03	2.01	2.00	1.97	1.95	1.95	1.96	S	1.95	1.95	1.95	1.96	1.95	1.94	1.95	1.98	2.00	2.07	2.07	1.94	2.07	1.99	24		
17	2.05	2.06	2.08	2.05	2.07	2.08	2.06	2.11	C	C	C	C	C	2.03	1.98	1.98	1.98	1.98	1.97	1.98	1.99	1.98	1.99	1.99	2.02	1.97	2.11	2.02	24	
18	2.04	2.05	2.04	2.05	2.03	2.11	2.06	2.03	2.09	2.12	S	2.03	1.99	1.99	1.97	1.97	1.97	1.98	1.98	1.99	2.01	2.03	2.04	2.12	1.97	2.12	2.03	24		
19	2.16	2.16	2.05	1.97	1.95	1.96	1.96	1.97	1.97	S	1.97	1.97	1.97	1.97	1.97	1.96	1.95	1.95	1.96	1.97	2.01	2.04	2.06	2.02	1.95	2.16	2.00	24		
20	2.07	2.07	2.13	2.08	2.03	2.00	1.98	1.99	S	1.98	1.98	1.97	1.97	1.97	1.96	1.97	1.99	1.98	1.97	1.99	1.98	1.97	1.99	1.98	1.96	2.13	2.00	24		
21	2.01	2.01	2.01	2.05	2.06	2.16	2.19	S	2.00	2.00	2.00	1.99	1.99	1.98	1.98	1.98	1.98	1.98	1.99	2.00	2.02	2.04	2.05	2.05	1.98	2.19	2.02	24		
22	2.05	2.07	2.08	2.09	2.09	2.11	S	2.10	2.10	2.11	2.09	2.09	2.12	2.07	2.02	1.99	2.00	1.99	1.99	2.01	2.00	1.98	1.97	1.97	1.97	2.12	2.05	24		
23	2.00	1.98	1.98	2.02	S	1.99	2.01	1.99	2.00	1.98	1.98	1.99	1.99	2.00	1.98	1.98	1.98	1.98	1.98	1.98	1.98	1.99	1.99	2.00	1.98	2.05	1.99	24		
24	2.01	2.08	2.05	2.02	S	1.99	1.98	1.99	1.99	1.99	1.99	1.99	1.99	1.98	1.98	1.99	2.00	2.00	1.99	2.00	2.00	2.02	2.02	2.01	1.98	2.08	2.00	24		
25	2.01	2.02	2.02	S	2.00	2.01	2.00	2.00	2.01	2.00	2.00	2.01	2.00	2.01	2.00	2.01	2.00	2.01	2.01	2.00	2.02	2.02	2.01	2.04	2.08	2.00	2.08	2.01	24	
26	2.10	2.08	S	2.04	2.06	2.08	2.07	2.11	2.05	2.00	1.99	1.99	1.99	1.99	1.98	1.98	1.98	1.98	1.98	1.98	1.98	1.98	1.98	1.99	2.01	1.98	2.11	2.02	24	
27	2.01	S	2.02	2.03	2.02	2.01	2.00	2.00	1.99	1.98	1.98	1.98	1.98	1.98	1.99	1.98	1.98	1.99	1.98	1.98	1.98	1.98	1.98	1.99	2.01	1.98	2.03	2.00	24	
28	S	2.01	2.02	2.05	2.06	2.06	2.14	2.07	2.00	1.99	1.99	2.00	2.00	2.00	2.00	2.01	2.00	2.00	2.00	2.00	2.00	2.01	2.02	2.07	2.08	S	1.99	2.14	2.03	24
29	2.19	2.37	2.30	2.10	2.07	2.13	2.12	2.01	2.00	2.00	2.01	2.03	2.05	2.05	2.04	2.02	1.99	X	X	X	X	X	X	X	1.99	2.37	2.08	18		
30	X	X	X	X	X	X	X	X	X	X	2.02	2.02	2.02	2.01	2.01	2.01	2.00	2.00	2.00	2.00	2.00	2.00	S	2.00	2.00	2.00	2.02	-	15	
HOURLY MAX	2.19	2.37	2.30	2.19	2.19	2.19	2.20	2.16	2.10	2.12	2.10	2.09	2.12	2.07	2.05	2.04	2.02	2.02	2.00	2.02	2.09	2.07	2.08	2.12						
HOURLY AVG	2.03	2.04	2.03	2.03	2.02	2.03	2.02	2.01	2.00	2.00	1.99	1.99	1.99	1.99	1.98	1.98	1.98	1.97	1.97	1.98	1.99	2.00	2.01	2.02						

STATUS FLAG CODES

C	- MONTHLY CALIBRATION	Q	- QUALITY ASSURANCE
C1	- REPEAT CALIBRATION	R	- RECOVERY
Y	- MAINTENANCE	X	- MACHINE MALFUNCTION
S	- DAILY ZERO/SPAN CHECK	G	- OUT FOR REPAIR
S1	- REPEAT ZERO/SPAN CHECK	P	- POWER FAILURE

24 HR AVERAGES April 2019

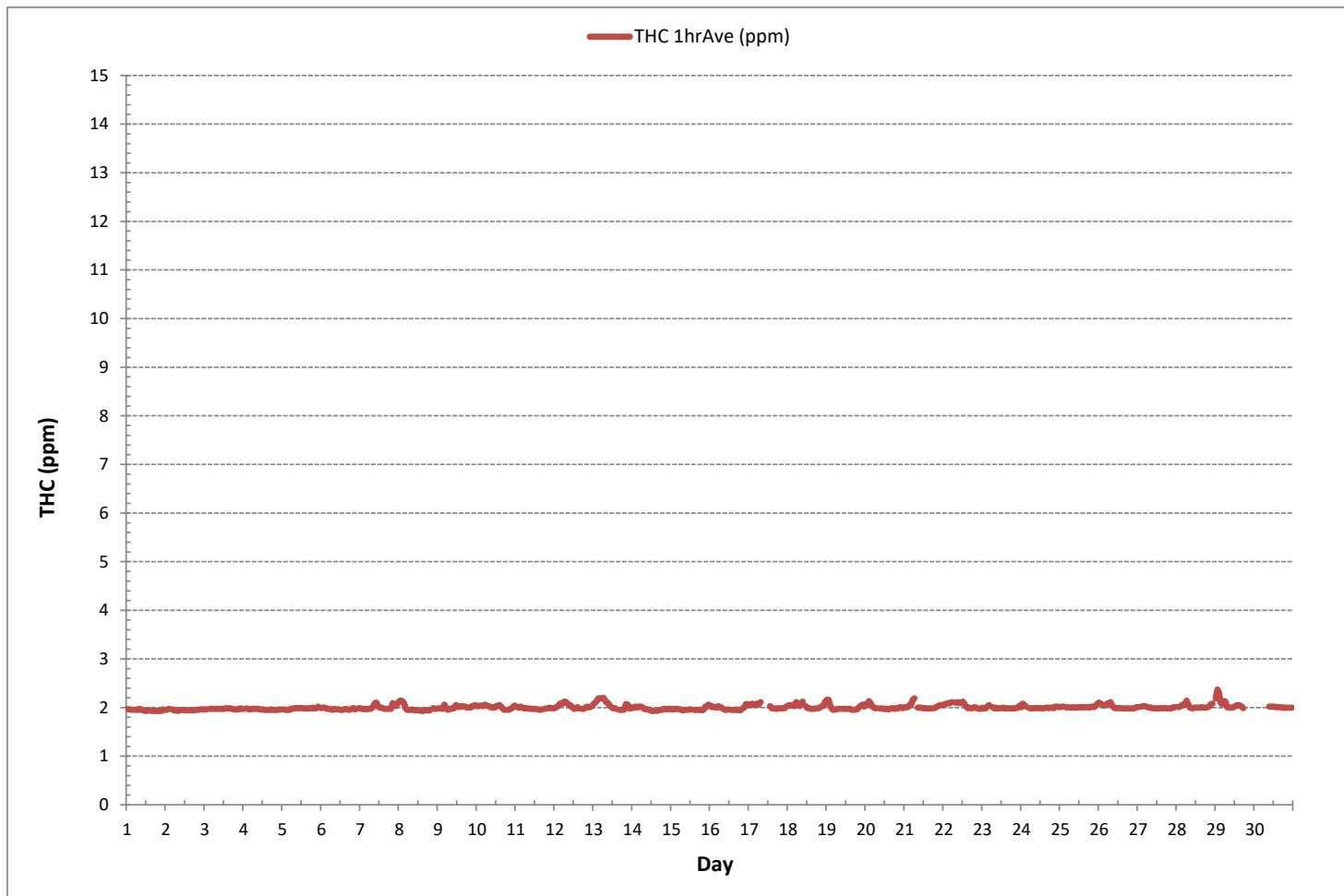


MONTHLY SUMMARY

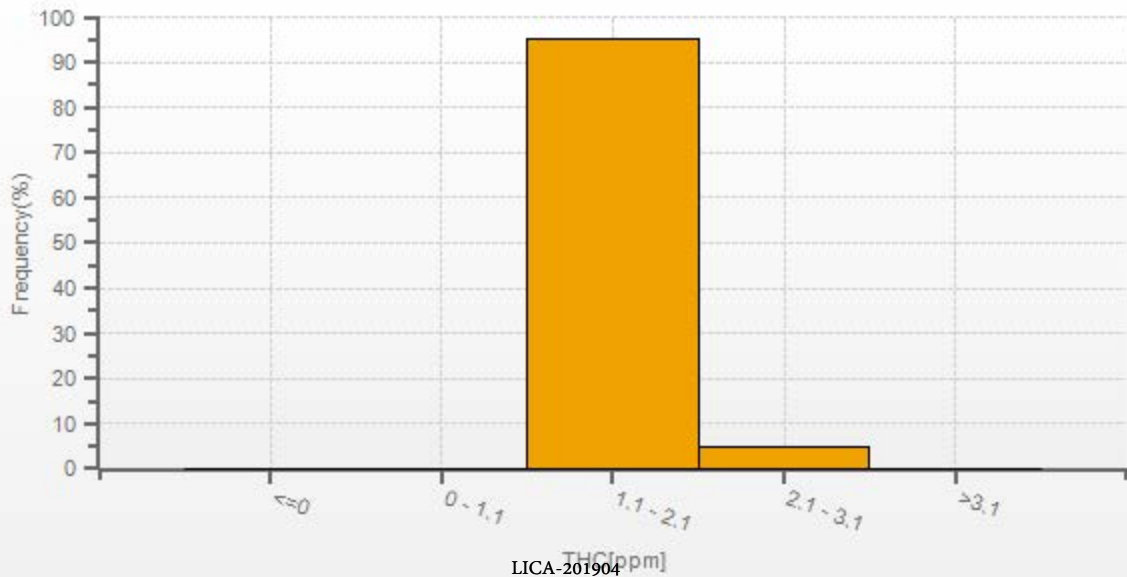
NUMBER OF NON-ZERO READINGS:	670			
MINIMUM 1-HR AVERAGE:	1.93 ppm	@ HOUR	11	ON DAY 1
MAXIMUM 1-HR AVERAGE:	2.37 ppm	@ HOUR	1	ON DAY 29
MAXIMUM 24-HR AVERAGE:	2.08 ppm			ON DAY 29
IZS CALIBRATION TIME:	30 hrs	OPERATIONAL TIME:	705 hrs	
MONTHLY CALIBRATION TIME:	5 hrs	AMD OPERATION UPTIME:	97.9 %	
STANDARD DEVIATION:	0.05	MONTHLY AVERAGE:	2.00 ppm	



TOTAL HYDROCARBONS Hourly Averages (THC ppm)



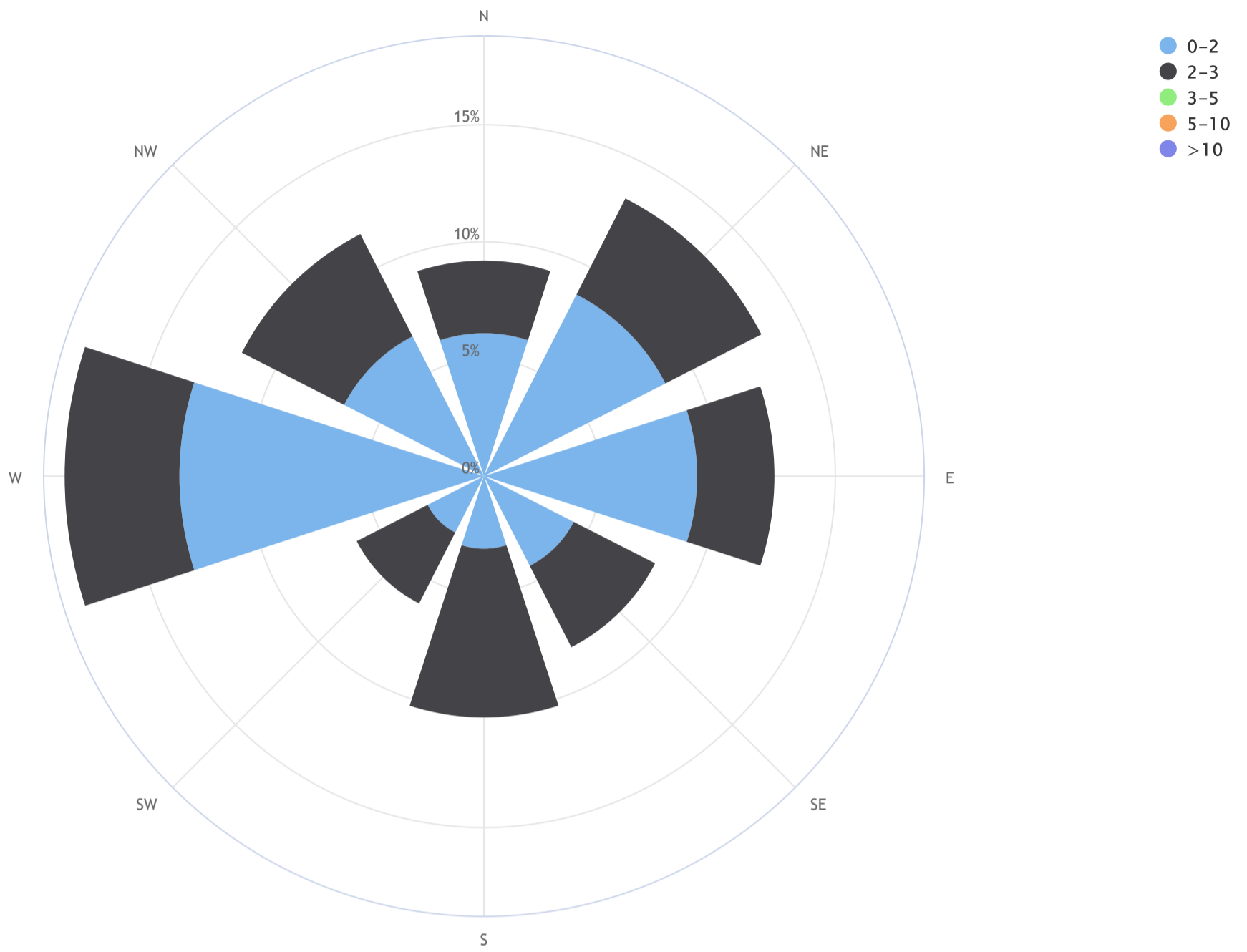
THC[ppm] Histogram: LICA MASKWA Monthly: 19/04 1 Hr.



LICA-201904
Page 114 of 350

Lakeland Industry & Community Association_Maskwa Continuous Monitoring Station_THC (ppm)_19/04

Pollutant Rose_Wind Frequency (Blowing From)_ CALM Avg = 2.0, CALM % = 10.9%



Direction	0-2	2-3	3-5	5-10	>10	TOTAL
N	6.1	3.1	0.0	0.0	0.0	9.3
NE	8.7	4.6	0.0	0.0	0.0	13.3
E	9.1	3.3	0.0	0.0	0.0	12.4
SE	4.3	3.9	0.0	0.0	0.0	8.2
S	3.1	7.2	0.0	0.0	0.0	10.3
SW	2.7	3.4	0.0	0.0	0.0	6.1
W	13.0	4.9	0.0	0.0	0.0	17.9
NW	6.7	4.9	0.0	0.0	0.0	11.7
Summary	53.7	35.4	0.0	0.0	0.0	89.1
CALM	2.8	8.1	0.0	0.0	0.0	10.9



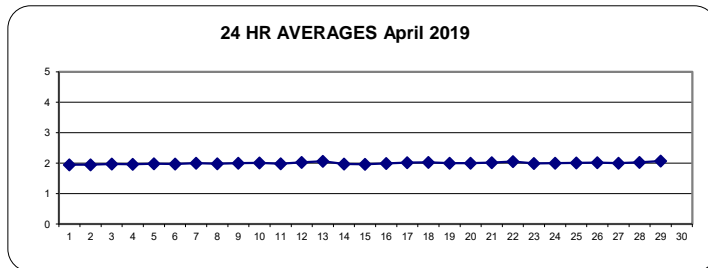
METHANE Hourly Averages (CH₄ ppm)

HR START (MST)	0:00	1:00	2:00	3:00	4:00	5:00	6:00	7:00	8:00	9:00	10:00	11:00	12:00	13:00	14:00	15:00	16:00	17:00	18:00	19:00	20:00	21:00	22:00	23:00	DAILY	DAILY	24-HR	RDGS.	
HR END (MST)	0:59	1:59	2:59	3:59	4:59	5:59	6:59	7:59	8:59	9:59	10:59	11:59	12:59	13:59	14:59	15:59	16:59	17:59	18:59	19:59	20:59	21:59	22:59	23:59	MIN.	MAX.	AVG.		
DAY 1	1.97	1.96	1.96	1.95	S	1.95	1.95	1.95	1.96	1.95	1.95	1.93	1.93	1.94	1.94	1.93	1.94	1.93	1.93	1.93	1.93	1.93	1.96	1.95	1.93	1.97	1.95	24	
2	1.95	1.96	1.97	S	1.96	1.94	1.95	1.93	1.94	1.94	1.95	1.95	1.94	1.94	1.94	1.94	1.95	1.94	1.94	1.95	1.95	1.95	1.96	1.96	1.93	1.97	1.95	24	
3	1.96	1.96	S	1.97	1.97	1.97	1.97	1.97	1.97	1.97	1.97	1.97	1.97	1.99	1.98	1.98	1.98	1.97	1.96	1.96	1.96	1.96	1.96	1.98	1.97	1.96	1.99	24	
4	1.97	S	1.98	1.96	1.96	1.97	1.97	1.97	1.97	1.96	1.96	1.96	1.96	1.95	1.95	1.95	1.95	1.96	1.95	1.95	1.95	1.95	1.96	1.96	1.95	1.98	1.96	24	
5	S	1.96	1.95	1.95	1.95	1.97	1.97	1.98	1.99	1.99	1.99	1.99	1.99	1.98	1.98	1.98	1.98	1.99	1.98	2.00	1.98	1.99	2.02	S	1.95	2.02	1.98	24	
6	1.99	2.00	2.00	1.98	1.97	1.97	1.96	1.95	1.97	1.96	1.96	1.96	1.95	1.95	1.96	1.97	1.96	1.95	1.96	1.98	1.99	1.96	S	1.99	1.95	2.00	1.97	24	
7	1.98	1.97	1.97	1.96	1.97	1.97	1.97	1.98	2.02	2.09	2.10	2.02	2.00	2.00	1.99	1.97	1.97	1.97	1.97	1.97	1.97	2.09	S	2.03	2.08	1.96	2.10	2.00	24
8	2.13	2.14	2.13	2.09	1.99	1.95	1.95	1.95	1.96	1.95	1.94	1.94	1.94	1.93	1.93	1.93	1.95	1.94	1.94	1.94	S	1.99	1.97	1.97	1.93	2.14	1.98	24	
9	1.98	1.98	1.98	1.97	2.06	1.98	1.95	1.97	1.97	1.98	1.99	2.04	2.03	2.01	2.03	2.03	2.02	2.02	2.00	S	2.00	2.03	2.03	2.05	1.95	2.06	2.00	24	
10	2.03	2.03	2.04	2.04	2.03	2.06	2.04	2.03	2.02	2.00	2.01	2.00	2.03	2.04	2.05	2.02	1.97	1.95	S	1.95	1.96	1.97	2.00	2.04	1.95	2.06	2.01	24	
11	2.03	2.01	2.00	2.02	2.00	1.98	1.99	1.98	1.98	1.97	1.97	1.97	1.96	1.96	1.95	1.96	S	1.97	1.98	1.99	2.00	1.99	1.99	1.99	1.95	2.03	1.98	24	
12	1.99	2.01	2.03	2.07	2.09	2.08	2.12	2.11	2.08	2.05	2.04	2.00	1.97	1.98	2.01	1.98	S	1.97	1.97	1.97	2.00	2.02	2.01	2.03	1.97	2.12	2.03	24	
13	2.07	2.10	2.14	2.19	2.19	2.19	2.20	2.16	2.10	2.09	2.04	2.01	1.98	1.99	1.97	S	1.95	1.95	1.95	1.96	2.07	2.06	1.98	2.00	1.95	2.20	2.06	24	
14	1.99	2.01	2.02	2.00	2.02	2.02	2.01	1.98	1.96	1.96	1.96	1.94	1.93	1.93	S	1.93	1.94	1.95	1.95	1.97	1.97	1.96	1.97	1.97	1.93	2.02	1.97	24	
15	1.96	1.97	1.96	1.97	1.97	1.96	1.96	1.94	1.95	1.95	1.95	1.96	1.96	S	1.95	1.95	1.95	1.95	1.95	1.94	1.96	2.02	2.02	2.06	1.94	2.06	1.96	24	
16	2.04	2.01	2.02	2.01	2.00	2.03	2.01	2.00	1.97	1.95	1.95	1.96	S	1.95	1.95	1.95	1.96	1.95	1.94	1.95	1.98	2.00	2.07	2.07	1.94	2.07	1.99	24	
17	2.05	2.06	2.08	2.05	2.07	2.08	2.06	2.09	C	C	C	C	C	2.03	1.98	1.98	1.98	1.98	1.97	1.98	1.99	1.98	1.99	2.02	1.97	2.09	2.02	24	
18	2.04	2.05	2.04	2.05	2.03	2.11	2.06	2.03	2.09	2.12	S	2.03	1.99	1.99	1.97	1.97	1.97	1.98	1.98	1.99	2.01	2.03	2.04	2.12	1.97	2.12	2.03	24	
19	2.16	2.16	2.05	1.97	1.95	1.96	1.96	1.97	1.97	S	1.97	1.97	1.97	1.97	1.96	1.95	1.95	1.96	1.97	2.01	2.03	2.06	2.02	1.95	2.16	2.00	24		
20	2.07	2.06	2.13	2.08	2.03	2.00	1.98	1.99	S	1.98	1.98	1.97	1.97	1.97	1.96	1.97	1.99	1.98	1.97	1.99	1.98	2.01	2.00	1.99	1.96	2.13	2.00	24	
21	2.01	2.01	2.01	2.05	2.06	2.16	2.19	S	2.00	2.00	2.00	1.99	1.99	1.98	1.98	1.98	1.98	1.98	1.99	2.00	2.02	2.04	2.05	2.05	1.98	2.19	2.02	24	
22	2.05	2.07	2.08	2.09	2.09	2.11	S	2.10	2.10	2.11	2.09	2.09	2.12	2.07	2.02	1.99	2.00	1.99	1.99	2.01	2.00	1.98	1.97	1.97	1.97	2.12	2.05	24	
23	2.00	1.98	1.98	2.02	2.05	S	1.99	2.01	1.99	2.00	1.98	1.98	1.99	1.99	2.00	1.98	1.98	1.98	1.98	1.98	1.99	1.99	2.00	2.04	1.98	2.05	1.99	24	
24	2.01	2.08	2.05	2.02	S	1.99	1.98	1.99	1.99	1.99	1.99	1.99	1.99	1.98	1.98	1.99	2.00	2.00	1.99	2.00	2.00	2.02	2.02	2.01	1.98	2.08	2.00	24	
25	2.01	2.02	2.02	S	2.00	2.01	2.00	2.00	2.01	2.00	2.00	2.01	2.00	2.01	2.00	2.01	2.00	2.01	2.01	2.00	2.02	2.02	2.01	2.04	2.08	2.00	2.01	24	
26	2.10	2.08	S	2.04	2.06	2.08	2.07	2.11	2.04	2.00	1.99	1.99	1.99	1.99	1.98	1.98	1.98	1.98	1.98	1.98	1.98	1.98	1.99	2.01	1.98	2.11	2.02	24	
27	2.01	S	2.02	2.03	2.02	2.01	2.00	1.99	1.98	1.98	1.98	1.98	1.98	1.98	1.99	1.98	1.98	1.98	1.98	1.98	1.98	1.99	2.01	2.01	1.98	2.03	2.00	24	
28	S	2.01	2.02	2.05	2.06	2.06	2.13	2.07	2.00	1.99	1.99	2.00	2.00	2.00	2.00	2.01	2.00	2.00	2.00	2.00	2.01	2.02	2.07	2.08	S	1.99	2.13	2.03	24
29	2.13	2.24	2.21	2.10	2.07	2.13	2.12	2.01	2.00	2.00	2.01	2.03	2.05	2.05	2.04	2.02	1.99	X	X	X	X	X	X	1.99	2.24	2.07	18		
30	X	X	X	X	X	X	X	X	X	X	2.02	2.02	2.02	2.01	2.01	2.01	2.01	2.00	2.00	2.00	2.00	2.00	S	2.00	2.00	-	15		
HOURLY MAX	2.16	2.24	2.21	2.19	2.19	2.19	2.20	2.16	2.10	2.12	2.10	2.09	2.12	2.07	2.05	2.04	2.02	2.02	2.00	2.02	2.09	2.07	2.08	2.12					
HOURLY AVG	2.03	2.03	2.03	2.03	2.02	2.03	2.02	2.01	2.00	2.00	1.99	1.99	1.99	1.99	1.98	1.98	1.98	1.97	1.97	1.98	1.99	2.00	2.01	2.02					

STATUS FLAG CODES

C	- MONTHLY CALIBRATION	Q	- QUALITY ASSURANCE
C1	- REPEAT CALIBRATION	R	- RECOVERY
Y	- MAINTENANCE	X	- MACHINE MALFUNCTION
S	- DAILY ZERO/SPAN CHECK	G	- OUT FOR REPAIR
S1	- REPEAT ZERO/SPAN CHECK	P	- POWER FAILURE

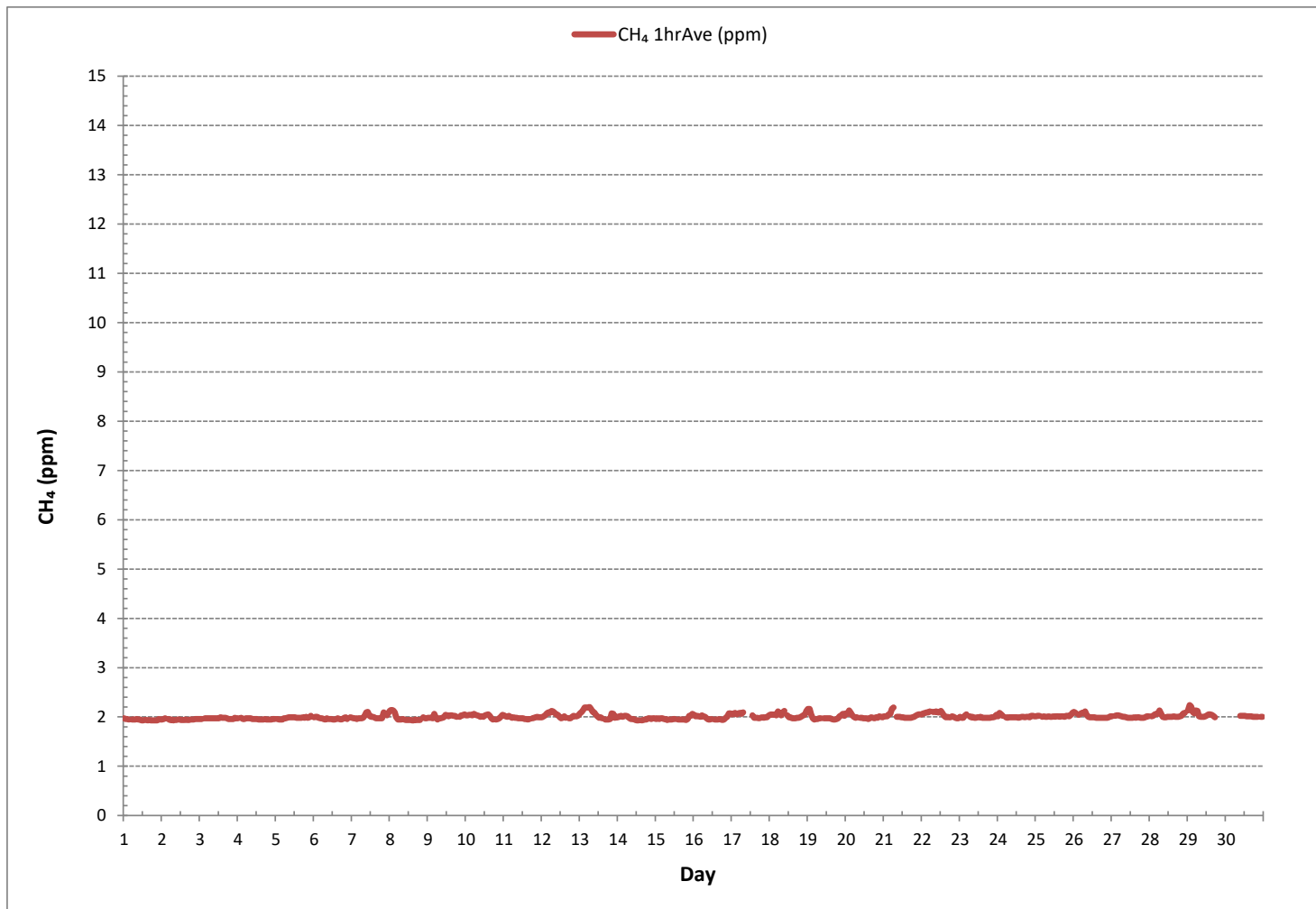
24 HR AVERAGES April 2019



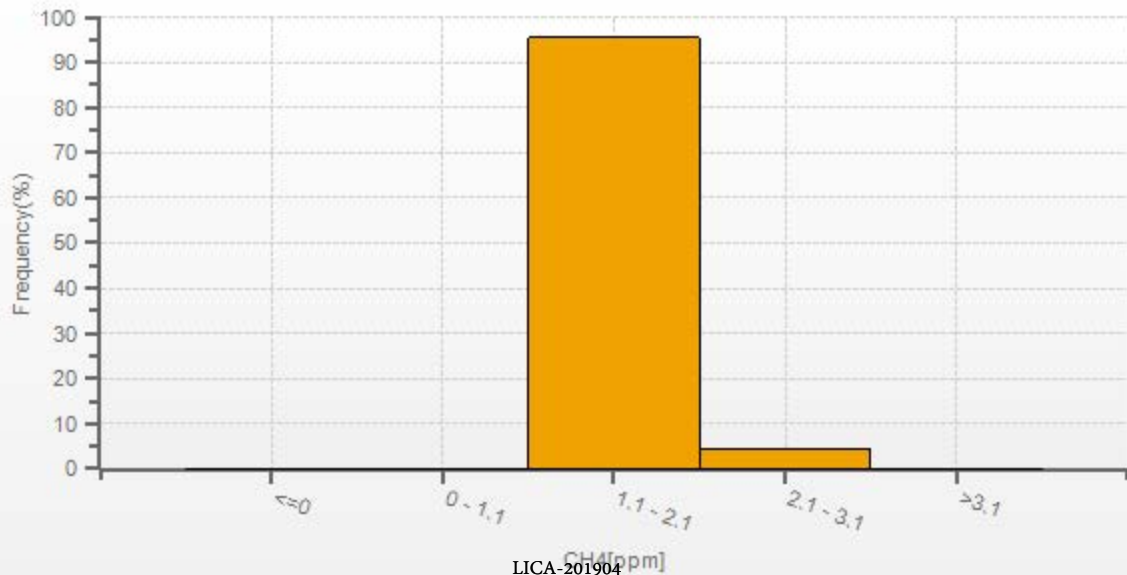
MONTHLY SUMMARY

NUMBER OF NON-ZERO READINGS:	670
MINIMUM 1-HR AVERAGE:	1.93 ppm @ HOUR 11 ON DAY 1
MAXIMUM 1-HR AVERAGE:	2.24 ppm @ HOUR 1 ON DAY 29
MAXIMUM 24-HR AVERAGE:	2.07 ppm ON DAY 29
IZS CALIBRATION TIME:	30 hrs
MONTHLY CALIBRATION TIME:	5 hrs
OPERATIONAL TIME:	705 hrs
AMD OPERATION UPTIME:	97.9 %
STANDARD DEVIATION:	0.05
MONTHLY AVERAGE:	2.00 ppm

METHANE Hourly Averages (CH₄ ppm)



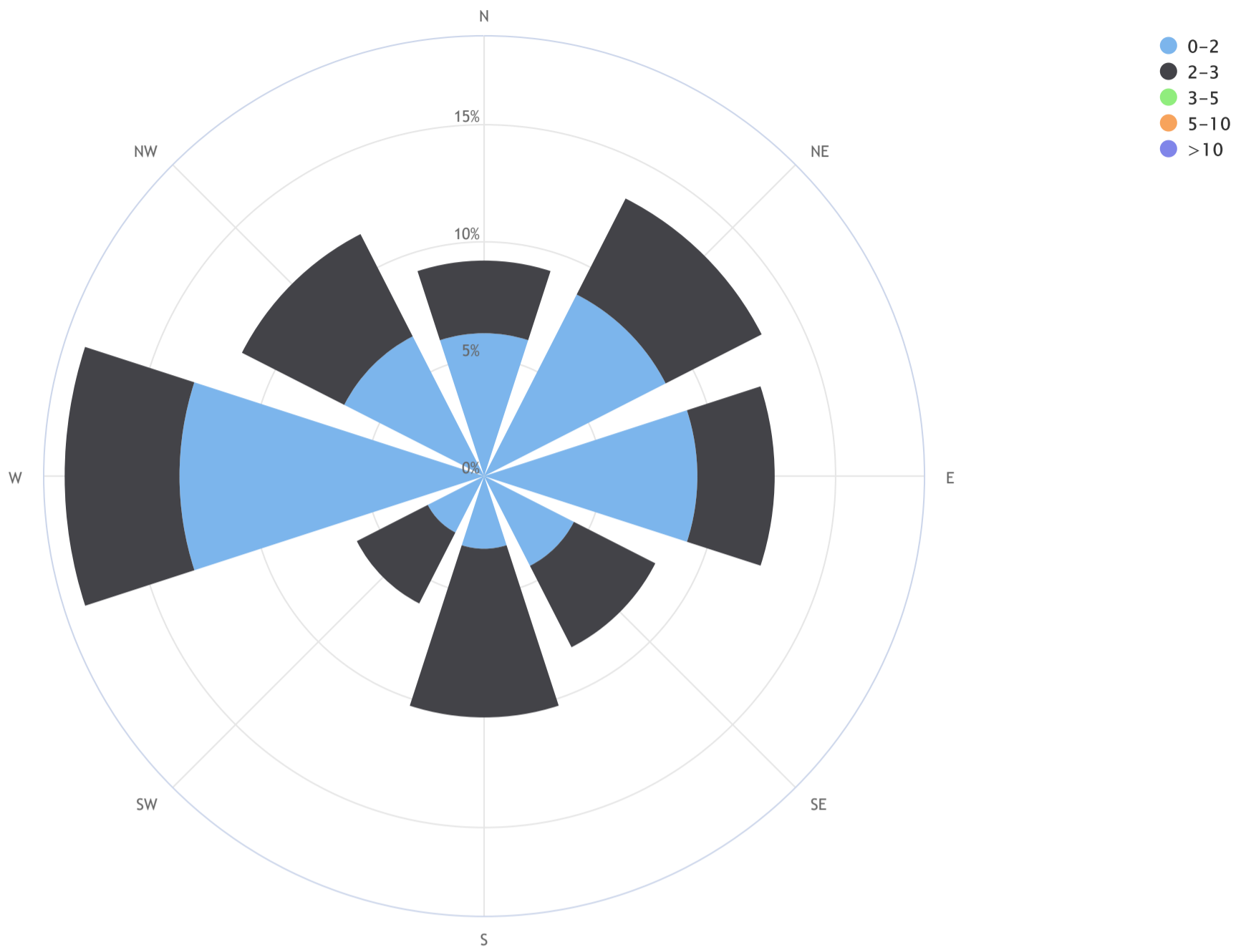
CH4[ppm] Histogram: LICA MASKWA Monthly: 19/04 1 Hr.



LICA-201904
Page 118 of 350

Lakeland Industry & Community Association_Maskwa Continuous Monitoring Station_CH₄ (ppm)_19/04

Pollutant Rose_Wind Frequency (Blowing From)_ CALM Avg = 2.0, CALM % = 10.9%



Direction	0-2	2-3	3-5	5-10	>10	TOTAL
N	6.1	3.1	0.0	0.0	0.0	9.3
NE	8.7	4.6	0.0	0.0	0.0	13.3
E	9.1	3.3	0.0	0.0	0.0	12.4
SE	4.3	3.9	0.0	0.0	0.0	8.2
S	3.1	7.2	0.0	0.0	0.0	10.3
SW	2.7	3.4	0.0	0.0	0.0	6.1
W	13.0	4.9	0.0	0.0	0.0	17.9
NW	6.7	4.9	0.0	0.0	0.0	11.7
Summary	53.7	35.4	0.0	0.0	0.0	89.1
CALM	2.8	8.1	0.0	0.0	0.0	10.9



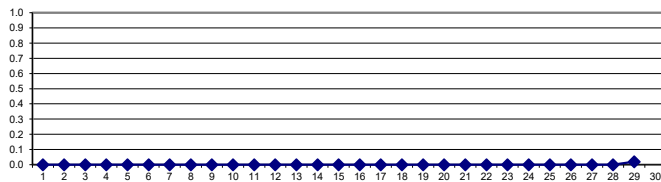
NON-METHANE HYDROCARBONS Hourly Averages (NMHC ppm)

HR START (MST)	0:00	1:00	2:00	3:00	4:00	5:00	6:00	7:00	8:00	9:00	10:00	11:00	12:00	13:00	14:00	15:00	16:00	17:00	18:00	19:00	20:00	21:00	22:00	23:00	DAILY	DAILY	24-HR	RDGS.
HR END (MST)	0:59	1:59	2:59	3:59	4:59	5:59	6:59	7:59	8:59	9:59	10:59	11:59	12:59	13:59	14:59	15:59	16:59	17:59	18:59	19:59	20:59	21:59	22:59	23:59	MIN.	MAX.	AVG.	
DAY 1	0.00	0.00	0.00	0.00	S	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	0.01	0.00	24
2	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	24
3	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	24
4	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	24
5	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	S	0.00	0.00	0.00	24
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	0.00	0.00	S	0.00	0.00	0.00	0.00	24
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	S	0.00	0.00	0.00	0.00	0.00	24
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	24
9	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	S	0.00	0.00	0.00	0.00	0.00	0.01	0.00	24
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	S	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	24
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	S	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	24
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	S	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	24
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	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	24
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	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	24
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	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	24
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	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	24
17	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.02	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	24
18	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	24
19	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	0.01	0.00	0.00	0.00	0.01	0.00	24
20	0.01	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	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.01	0.00	24
21	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	24
22	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	24
23	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	24
24	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	24
25	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	24
26	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	24
27	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	24
28	S	0.00	0.00	0.00	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	S	0.00	0.00	0.01	0.00	24
29	0.06	0.13	0.09	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	X	X	X	X	X	X	0.00	0.13	0.02	18
30	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	S	0.00	0.00	0.00	0.00	-	15
HOURLY MAX	0.06	0.13	0.09	0.00	0.00	0.00	0.01	0.02	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	0.00	0.00				
HOURLY AVG	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	0.00	0.00	0.00				

STATUS FLAG CODES

C	- MONTHLY CALIBRATION	Q	- QUALITY ASSURANCE
C1	- REPEAT CALIBRATION	R	- RECOVERY
Y	- MAINTENANCE	X	- MACHINE MALFUNCTION
S	- DAILY ZERO/SPAN CHECK	G	- OUT FOR REPAIR
S1	- REPEAT ZERO/SPAN CHECK	P	- POWER FAILURE

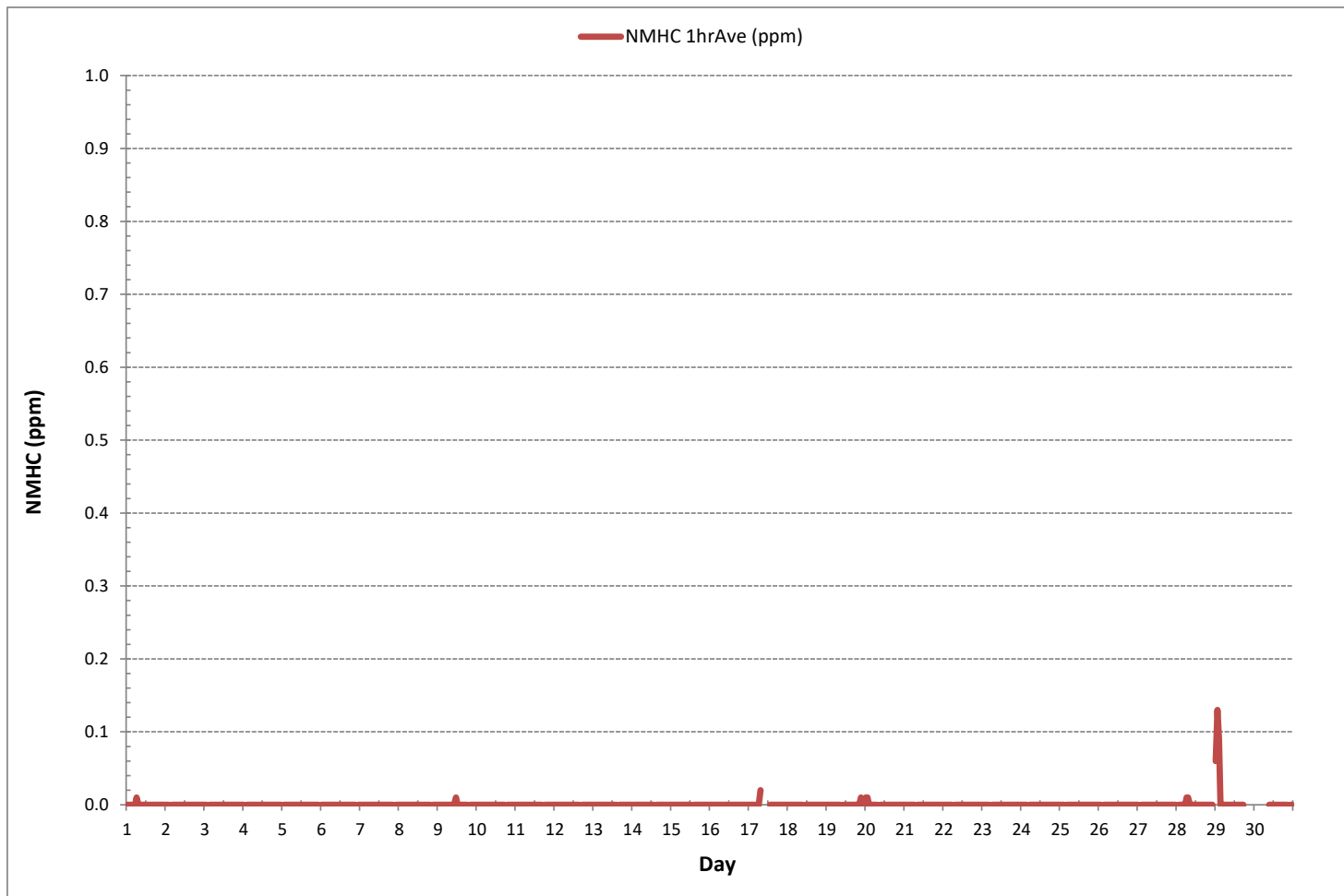
24 HR AVERAGES April 2019



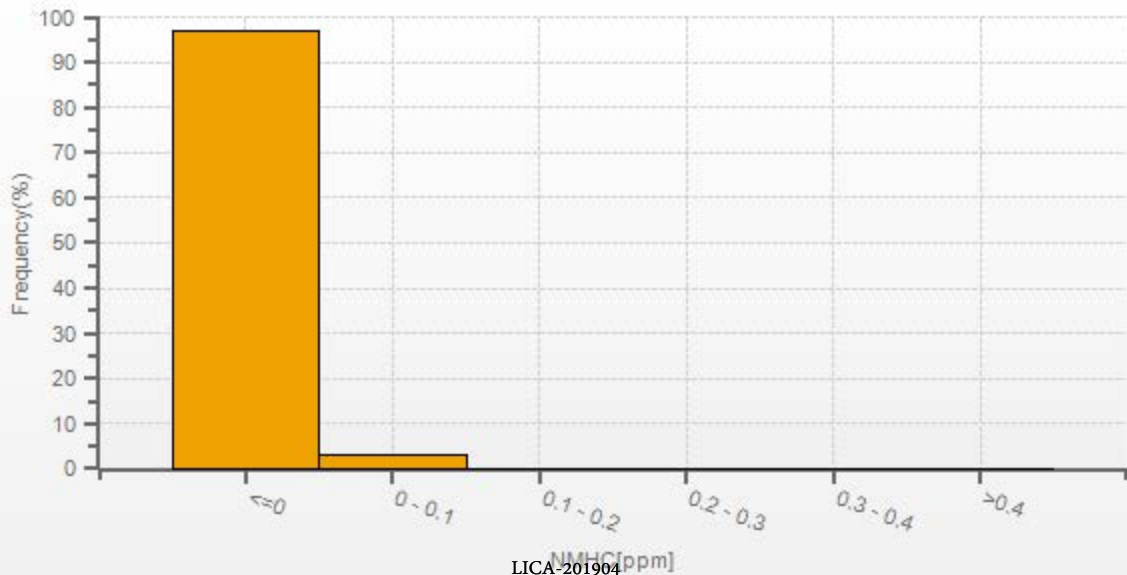
MONTHLY SUMMARY

NUMBER OF NON-ZERO READINGS:	11
MINIMUM 1-HR AVERAGE:	0.00 ppm @ HOUR 0 ON DAY 1
MAXIMUM 1-HR AVERAGE:	0.13 ppm @ HOUR 1 ON DAY 29
MAXIMUM 24-HR AVERAGE:	0.02 ppm ON DAY 29
IZS CALIBRATION TIME:	30 hrs
MONTHLY CALIBRATION TIME:	5 hrs
OPERATIONAL TIME:	705 hrs
AMD OPERATION UPTIME:	97.9 %
STANDARD DEVIATION:	0.01
MONTHLY AVERAGE:	0.00 ppm

NON-METHANE HYDROCARBONS Hourly Averages (NMHC ppm)



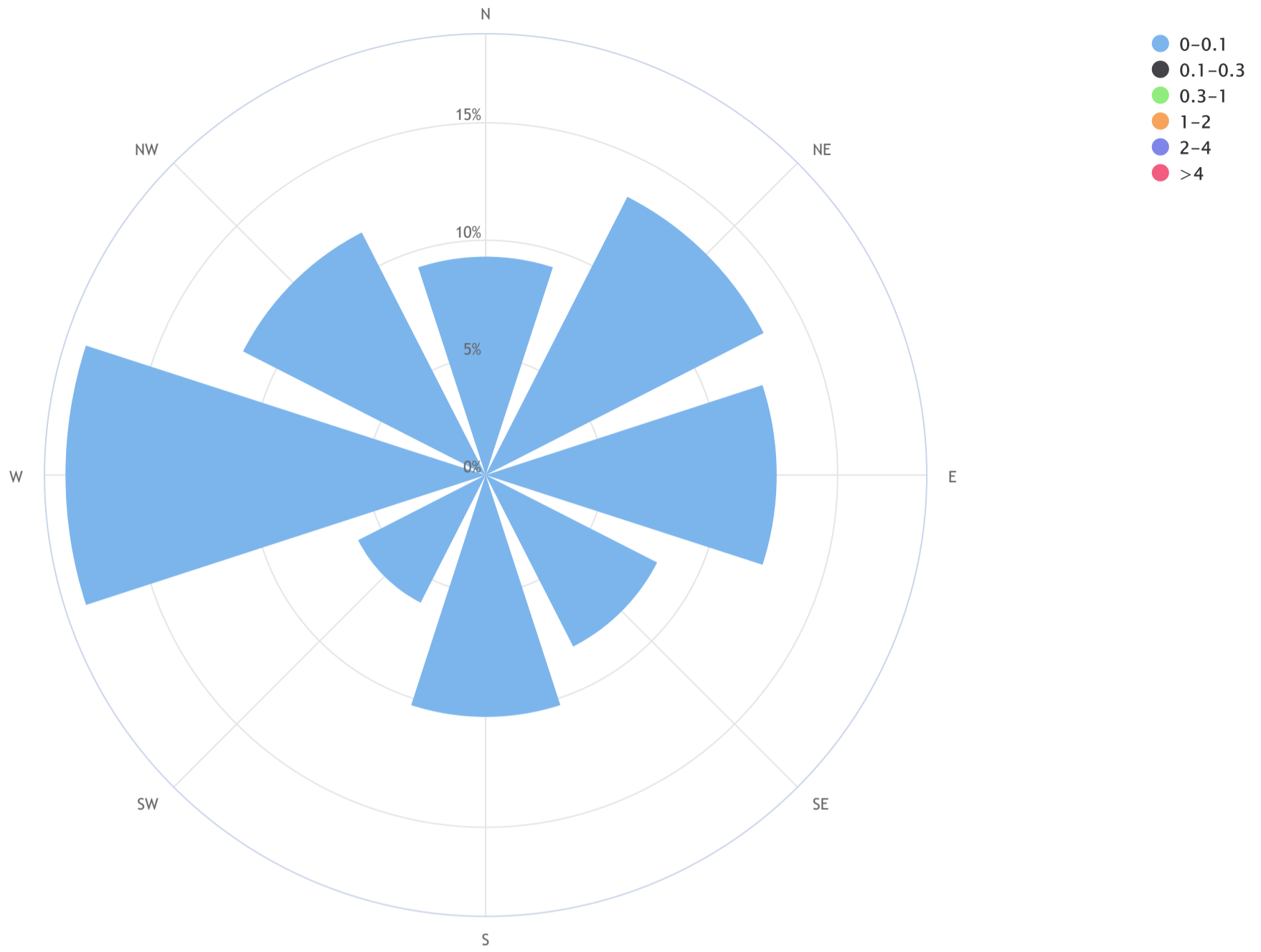
NMHC[ppm] Histogram: LICA MASKWA Monthly: 19/04 1 Hr.



LICA-201904
Page 122 of 350

Lakeland Industry & Community Association_Maskwa Continuous Monitoring Station_NMHC (ppm)_19/04

Pollutant Rose_Wind Frequency (Blowing From)_ CALM Avg = 0.0, CALM % = 10.9%



Direction	0-0.1	0.1-0.3	0.3-1	1-2	2-4	>4	TOTAL
N	9.3	0.0	0.0	0.0	0.0	0.0	9.3
NE	13.3	0.0	0.0	0.0	0.0	0.0	13.3
E	12.4	0.0	0.0	0.0	0.0	0.0	12.4
SE	8.2	0.0	0.0	0.0	0.0	0.0	8.2
S	10.3	0.0	0.0	0.0	0.0	0.0	10.3
SW	6.1	0.0	0.0	0.0	0.0	0.0	6.1
W	17.9	0.0	0.0	0.0	0.0	0.0	17.9
NW	11.6	0.0	0.0	0.0	0.0	0.0	11.6
Summary	89.1	0.0	0.0	0.0	0.0	0.0	89.1
CALM	10.8	0.2	0.0	0.0	0.0	0.0	10.9



OXIDES OF NITROGEN Hourly Averages (NO_x ppb)

HR START (MST)	0:00	1:00	2:00	3:00	4:00	5:00	6:00	7:00	8:00	9:00	10:00	11:00	12:00	13:00	14:00	15:00	16:00	17:00	18:00	19:00	20:00	21:00	22:00	23:00	DAILY MIN.	DAILY MAX.	24-HR AVG.	RDGS.
HR END (MST)	0:59	1:59	2:59	3:59	4:59	5:59	6:59	7:59	8:59	9:59	10:59	11:59	12:59	13:59	14:59	15:59	16:59	17:59	18:59	19:59	20:59	21:59	22:59	23:59				
DAY 1	8	5	7	11	S	1	1	6	24	17	12	2	3	5	8	1	1	1	1	1	2	3	20	16	1	24	7	24
DAY 2	1	2	13	S	15	6	13	4	2	3	11	10	3	3	3	3	3	2	0	1	1	1	1	1	0	15	4	24
DAY 3	1	1	S	1	1	1	1	1	0	3	1	5	3	6	4	3	4	1	1	1	1	1	1	1	0	6	2	24
DAY 4	0	S	1	0	0	0	0	0	1	1	1	2	2	1	1	1	0	0	0	0	3	5	0	0	0	5	1	24
DAY 5	S	0	0	0	0	3	1	2	2	2	1	2	2	1	1	1	3	6	1	7	9	8	17	S	0	17	3	24
DAY 6	9	11	10	3	1	1	1	1	4	3	3	3	1	1	6	11	4	3	3	6	9	2	S	6	1	11	4	24
DAY 7	4	5	2	1	1	1	1	2	2	5	4	2	1	3	7	2	1	1	1	1	1	S	2	4	1	7	2	24
DAY 8	6	5	3	3	2	1	1	1	7	4	1	2	3	1	1	1	2	1	1	1	S	1	1	0	0	7	2	24
DAY 9	0	0	0	0	0	0	2	9	5	5	10	14	11	2	2	2	1	1	8	S	2	3	2	1	0	14	4	24
DAY 10	1	2	1	2	3	3	4	2	3	2	3	3	2	2	3	3	2	1	S	1	1	2	3	4	1	4	2	24
DAY 11	1	1	1	2	1	1	1	1	1	2	2	2	2	3	1	1	1	S	1	2	2	1	2	2	1	3	2	24
DAY 12	4	5	4	3	3	3	3	4	3	2	2	1	1	1	1	1	S	1	1	1	1	1	1	1	1	5	2	24
DAY 13	1	2	2	2	2	3	3	4	3	3	3	3	2	2	2	S	2	2	1	2	3	1	1	1	1	4	2	24
DAY 14	1	1	1	1	1	1	1	4	2	1	1	1	1	3	S	1	2	6	10	10	4	7	10	9	1	10	3	24
DAY 15	3	12	8	11	9	4	6	2	2	2	10	8	S	3	2	3	4	2	2	2	2	2	2	1	1	12	4	24
DAY 16	1	1	0	0	0	0	0	2	5	6	4	2	S	1	1	3	1	2	1	1	2	2	3	2	0	6	2	24
DAY 17	2	2	1	1	1	1	2	4	C	C	C	C	C	C	C	6	3	0	1	13	5	11	7	3	0	13	-	24
DAY 18	2	2	2	6	2	3	6	5	4	7	S	2	2	2	1	1	1	1	2	2	2	2	2	3	1	7	3	24
DAY 19	3	3	4	3	1	10	3	4	8	S	1	1	0	1	1	0	0	0	0	0	2	6	2	2	0	10	2	24
DAY 20	5	6	5	1	1	1	2	3	S	2	1	1	2	1	1	9	9	2	1	13	6	10	6	9	1	13	4	24
DAY 21	14	11	4	4	2	1	7	S	11	9	3	1	2	1	1	3	1	1	2	1	1	3	2	1	1	14	4	24
DAY 22	1	1	1	1	1	1	S	3	2	2	2	2	2	2	2	1	1	1	1	1	9	4	1	1	1	9	2	24
DAY 23	7	8	7	3	4	S	2	2	1	1	1	1	4	1	1	1	0	0	1	0	0	3	18	0	0	18	3	24
DAY 24	5	1	1	1	S	4	3	3	6	3	2	2	1	2	2	3	2	12	17	17	7	18	14	23	1	23	6	24
DAY 25	12	18	22	S	5	2	2	9	13	8	8	9	3	7	13	4	5	5	3	12	5	3	4	3	2	22	8	24
DAY 26	4	3	S	2	1	1	2	4	8	1	1	4	3	6	1	1	0	1	1	0	0	0	0	0	0	8	2	24
DAY 27	0	S	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	24
DAY 28	S	1	1	1	2	1	4	4	3	1	2	1	1	1	1	2	1	0	0	2	2	2	3	S	0	4	2	24
DAY 29	3	4	3	1	1	1	1	2	2	1	1	2	3	3	2	4	3	2	3	4	1	2	S	1	1	4	2	24
DAY 30	3	2	1	4	1	1	1	1	1	1	2	1	4	1	1	1	1	0	0	1	1	S	1	0	0	4	1	24
HOURLY MAX	14	18	22	11	15	10	13	9	24	17	12	14	11	7	13	11	9	12	17	17	9	18	20	23				
HOURLY AVG	4	4	4	2	2	2	3	3	4	3	3	3	2	2	3	2	2	2	2	4	3	4	4	4				

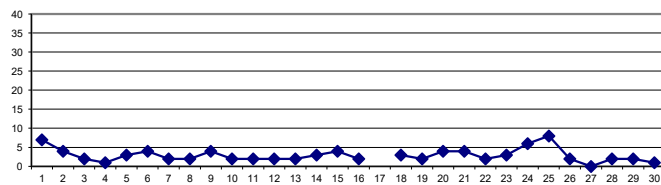
STATUS FLAG CODES

C	- MONTHLY CALIBRATION	Q	- QUALITY ASSURANCE
C1	- REPEAT CALIBRATION	R	- RECOVERY
Y	- MAINTENANCE	X	- MACHINE MALFUNCTION
S	- DAILY ZERO/SPAN CHECK	G	- OUT FOR REPAIR
S1	- REPEAT ZERO/SPAN CHECK	P	- POWER FAILURE

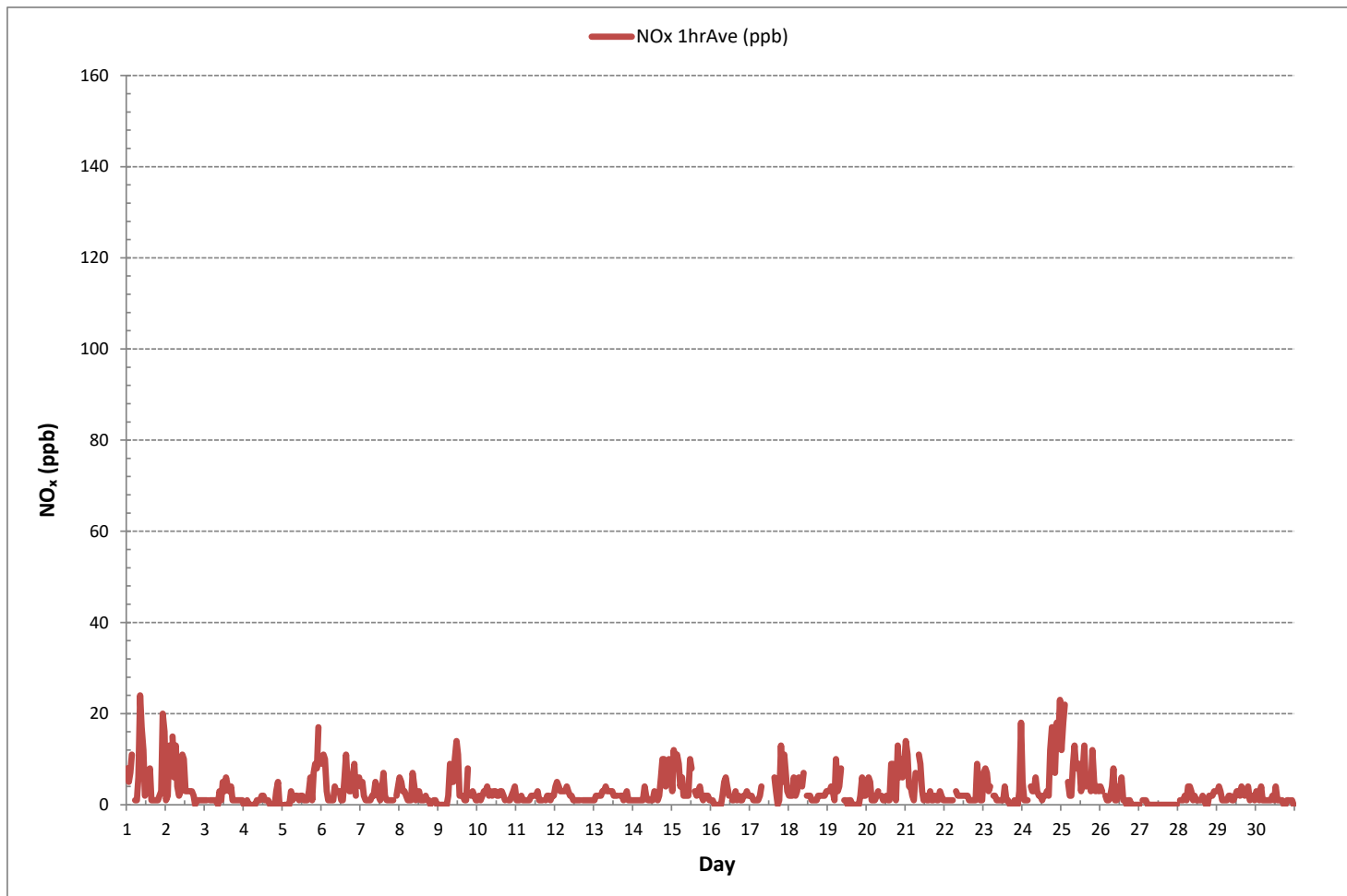
MONTHLY SUMMARY

NUMBER OF NON-ZERO READINGS:	608			
MINIMUM 1-HR AVERAGE:	0	ppb @ HOUR	18	ON DAY 2
MAXIMUM 1-HR AVERAGE:	24	ppb @ HOUR	8	ON DAY 1
MAXIMUM 24-HR AVERAGE:	8	ppb		ON DAY 25
IZS CALIBRATION TIME:	31	hrs	OPERATIONAL TIME:	720 hrs
MONTHLY CALIBRATION TIME:	7	hrs	AMD OPERATION UPTIME:	100.0 %
STANDARD DEVIATION:	4		MONTHLY AVERAGE:	3 ppb

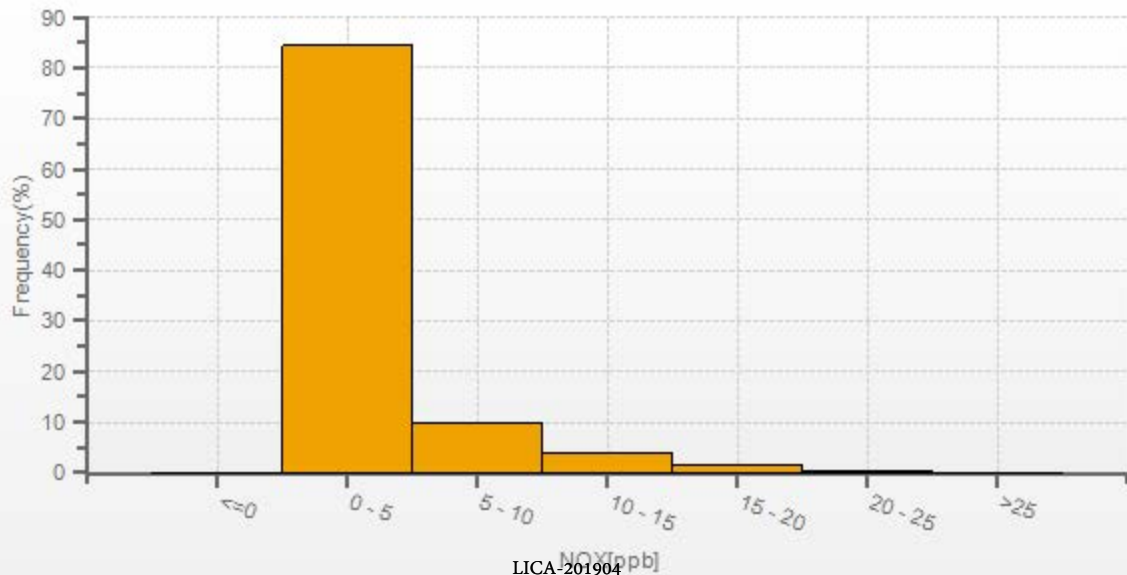
24 HR AVERAGES April 2019



OXIDES OF NITROGEN Hourly Averages (NO_x ppb)



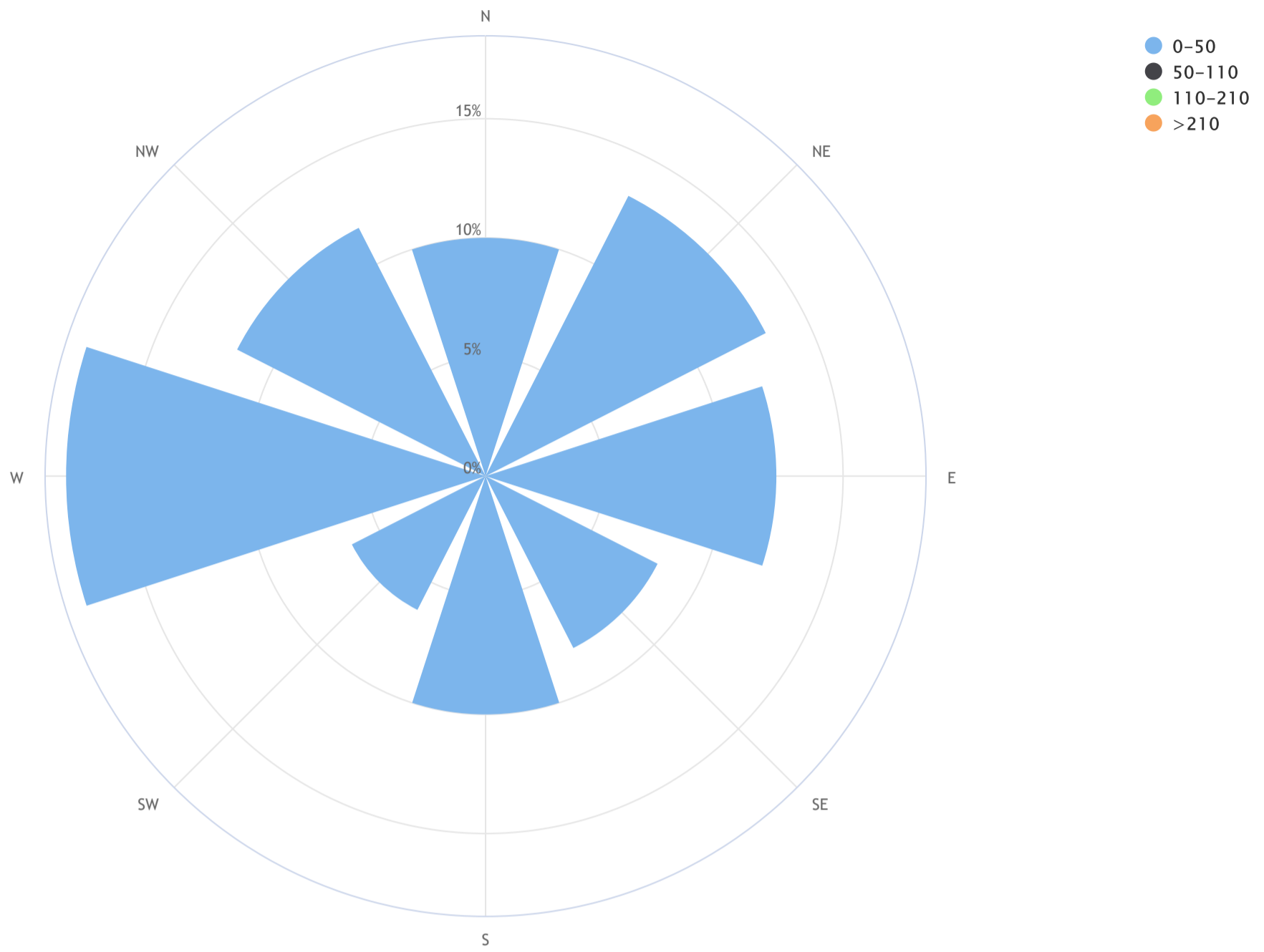
NOX[ppb] Histogram: LICA MASKWA Monthly: 19/04 1 Hr.



LICA-201904
Page 126 of 350

Lakeland Industry & Community Association_Maskwa Continuous Monitoring Station_NO_x (ppb)_19/04

Pollutant Rose_Wind Frequency (Blowing From)_ CALM Avg = 2.1, CALM % = 11.0%



Direction	0-50	50-110	110-210	>210	TOTAL
N	10.0	0.0	0.0	0.0	10.0
NE	13.2	0.0	0.0	0.0	13.2
E	12.2	0.0	0.0	0.0	12.2
SE	8.1	0.0	0.0	0.0	8.1
S	10.0	0.0	0.0	0.0	10.0
SW	6.3	0.0	0.0	0.0	6.3
W	17.6	0.0	0.0	0.0	17.6
NW	11.7	0.0	0.0	0.0	11.7
Summary	89.0	0.0	0.0	0.0	89.0
CALM	11.0	0.0	0.0	0.0	11.0



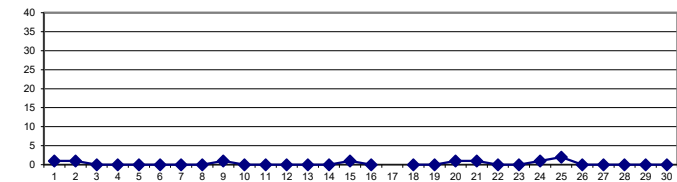
NITRIC OXIDE Hourly Averages (NO ppb)

HR START (MST)	0:00	1:00	2:00	3:00	4:00	5:00	6:00	7:00	8:00	9:00	10:00	11:00	12:00	13:00	14:00	15:00	16:00	17:00	18:00	19:00	20:00	21:00	22:00	23:00	DAILY	DAILY	24-HR	RDGS.
HR END (MST)	0:59	1:59	2:59	3:59	4:59	5:59	6:59	7:59	8:59	9:59	10:59	11:59	12:59	13:59	14:59	15:59	16:59	17:59	18:59	19:59	20:59	21:59	22:59	23:59	MIN.	MAX.	AVG.	
DAY 1	0	0	0	0	S	0	0	1	7	5	3	0	1	1	2	0	0	0	0	0	0	0	2	2	0	7	1	24
DAY 2	0	0	1	S	3	1	2	1	1	1	5	4	1	1	1	1	1	0	0	0	0	0	0	0	0	5	1	24
DAY 3	0	0	S	0	0	0	0	0	0	1	0	1	1	2	1	1	1	0	0	0	0	0	0	0	0	2	0	24
DAY 4	0	S	0	0	0	0	0	0	0	0	0	0	1	0	0	0	0	0	0	0	1	2	0	0	0	2	0	24
DAY 5	S	0	0	0	0	0	0	0	0	0	0	1	0	0	0	0	0	0	0	0	0	0	1	S	0	1	0	24
DAY 6	0	1	1	0	0	0	0	0	0	1	1	0	0	0	1	2	0	0	0	1	1	0	S	0	0	2	0	24
DAY 7	0	0	0	0	0	0	0	0	1	2	1	0	0	1	2	0	0	0	0	0	0	S	0	0	0	2	0	24
DAY 8	0	0	0	0	0	0	0	0	2	1	0	1	1	0	0	0	0	0	0	0	S	0	0	0	0	2	0	24
DAY 9	0	0	0	0	0	0	0	2	1	2	4	7	5	1	1	1	0	0	1	S	0	0	0	0	0	7	1	24
DAY 10	0	0	0	0	0	0	1	1	1	1	1	1	1	0	0	0	0	0	S	0	0	0	0	0	0	1	0	24
DAY 11	0	0	0	0	0	0	0	0	0	1	0	0	1	1	0	0	0	S	0	0	0	0	0	0	0	1	0	24
DAY 12	0	0	0	0	0	0	0	1	1	1	0	0	0	0	0	0	S	0	0	0	0	0	0	0	0	1	0	24
DAY 13	0	0	0	0	0	0	0	1	1	1	1	0	0	0	0	S	0	0	0	0	0	0	0	0	0	1	0	24
DAY 14	0	0	0	0	0	0	0	1	0	0	0	0	0	1	S	0	0	0	1	0	0	0	0	0	0	1	0	24
DAY 15	0	0	0	1	1	0	1	0	0	0	4	3	S	1	0	0	0	0	0	0	0	0	0	0	0	4	1	24
DAY 16	0	0	0	0	0	0	0	2	2	1	0	S	0	0	0	0	0	0	0	0	0	0	0	0	0	2	0	24
DAY 17	0	0	0	0	0	1	0	1	C	C	C	C	C	C	C	1	1	0	0	0	0	1	1	0	0	1	-	24
DAY 18	0	0	0	0	0	0	2	1	2	2	S	0	0	0	0	0	0	0	0	0	0	0	0	0	0	2	0	24
DAY 19	0	0	0	0	0	1	0	1	2	S	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	2	0	24
DAY 20	0	0	0	0	0	0	0	0	S	0	0	0	0	0	0	2	2	0	0	3	1	1	0	1	0	3	1	24
DAY 21	1	1	0	0	0	0	2	S	3	3	1	0	0	0	0	1	0	0	0	0	0	0	0	0	0	3	1	24
DAY 22	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	24
DAY 23	1	1	0	0	0	S	0	0	0	0	0	0	0	1	0	0	0	0	0	0	0	0	0	0	0	1	0	24
DAY 24	0	0	0	0	S	0	0	0	1	1	1	0	0	1	1	1	0	3	3	3	1	3	2	5	0	5	1	24
DAY 25	0	3	5	S	0	0	0	3	4	3	3	2	1	2	4	1	1	1	0	1	0	0	0	0	0	5	2	24
DAY 26	0	0	S	0	0	0	0	1	2	0	0	1	1	2	0	0	0	0	0	0	0	0	0	0	0	2	0	24
DAY 27	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	24
DAY 28	S	0	0	0	0	0	1	1	1	0	0	0	0	0	0	0	0	0	0	0	0	0	S	0	0	1	0	24
DAY 29	0	0	0	0	0	0	0	0	0	0	0	0	1	1	0	1	0	0	0	1	0	S	0	0	0	1	0	24
DAY 30	0	0	0	0	0	0	0	0	0	0	1	0	1	0	0	0	0	0	0	0	0	S	0	0	0	1	0	24
HOURLY MAX	1	3	5	1	3	1	2	3	7	5	5	7	5	2	4	2	2	3	3	3	1	3	2	5				
HOURLY AVG	0	0	0	0	0	0	0	1	1	1	1	1	1	1	1	0	0	0	0	0	0	0	0	0				

STATUS FLAG CODES

C	- MONTHLY CALIBRATION	Q	- QUALITY ASSURANCE
C1	- REPEAT CALIBRATION	R	- RECOVERY
Y	- MAINTENANCE	X	- MACHINE MALFUNCTION
S	- DAILY ZERO/SPAN CHECK	G	- OUT FOR REPAIR
S1	- REPEAT ZERO/SPAN CHECK	P	- POWER FAILURE

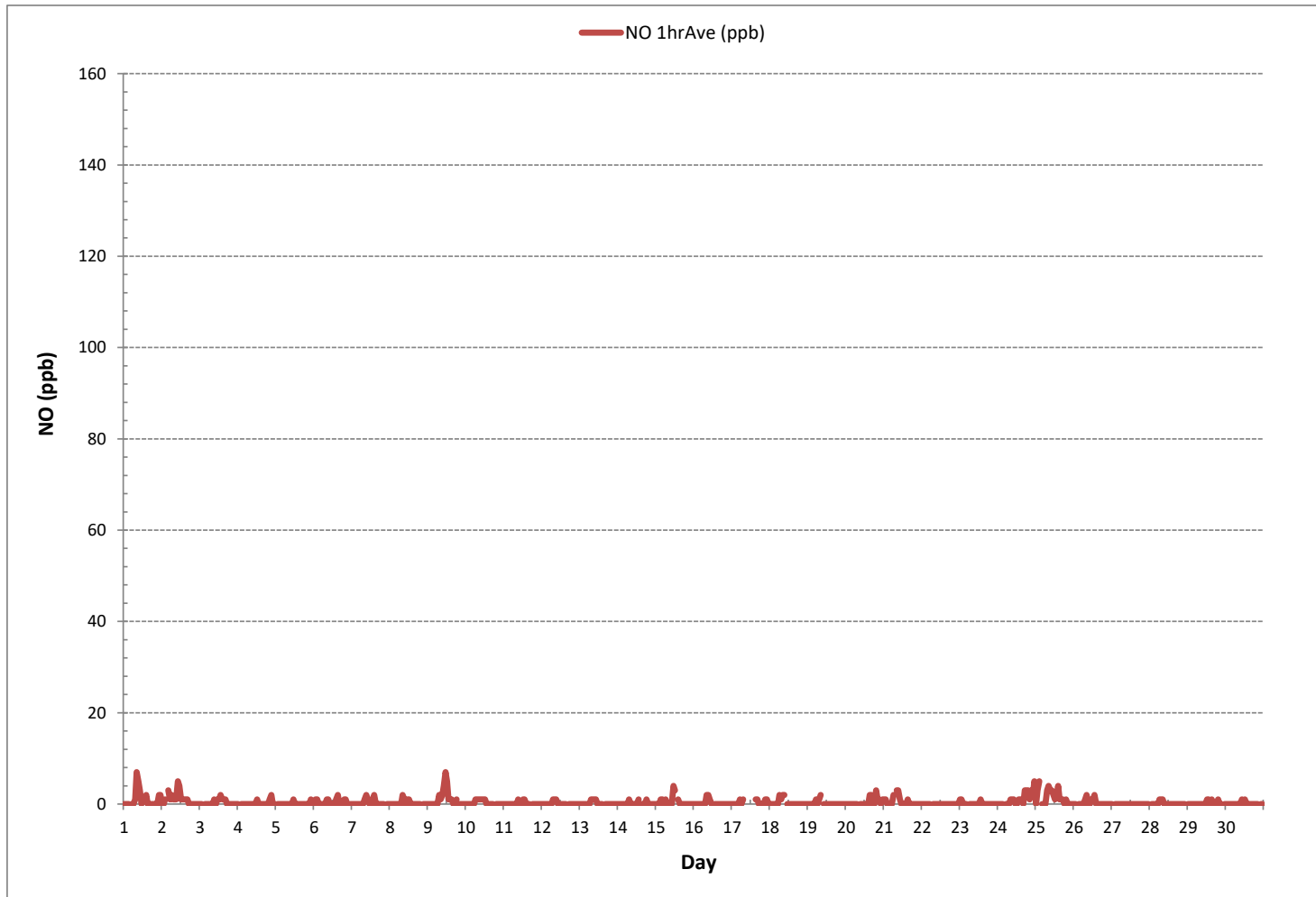
24 HR AVERAGES April 2019



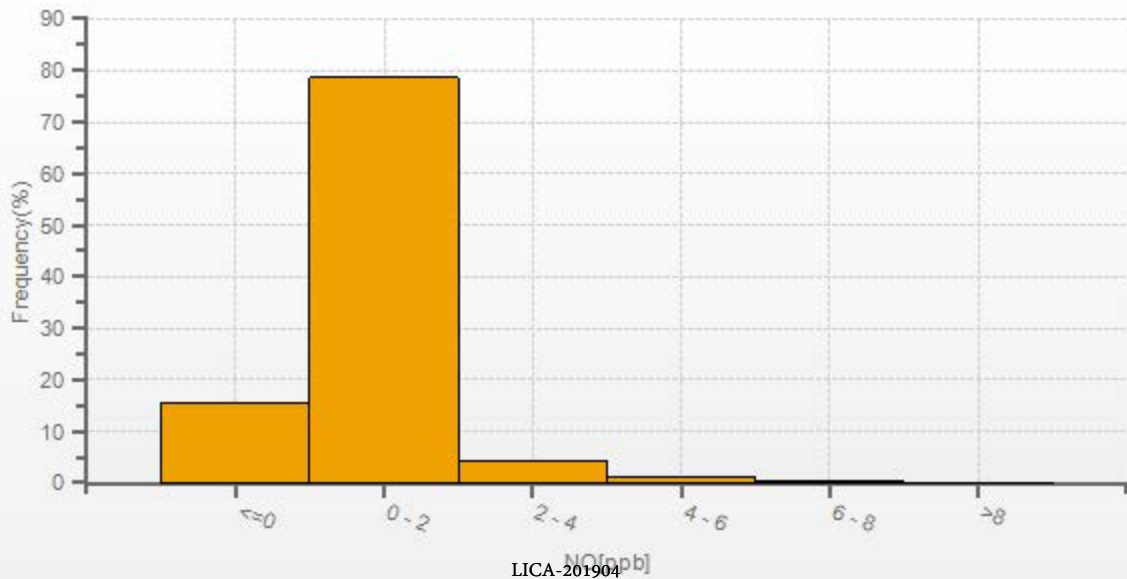
MONTHLY SUMMARY

NUMBER OF NON-ZERO READINGS:	161			
MINIMUM 1-HR AVERAGE:	0	ppb @ HOUR	0	ON DAY 1
MAXIMUM 1-HR AVERAGE:	7	ppb @ HOUR	8	ON DAY 1
MAXIMUM 24-HR AVERAGE:	2	ppb		ON DAY 25
IZS CALIBRATION TIME:	31	hrs	OPERATIONAL TIME:	720 hrs
MONTHLY CALIBRATION TIME:	7	hrs	AMD OPERATION UPTIME:	100.0 %
STANDARD DEVIATION:	1		MONTHLY AVERAGE:	0 ppb

NITRIC OXIDE Hourly Averages (NO ppb)



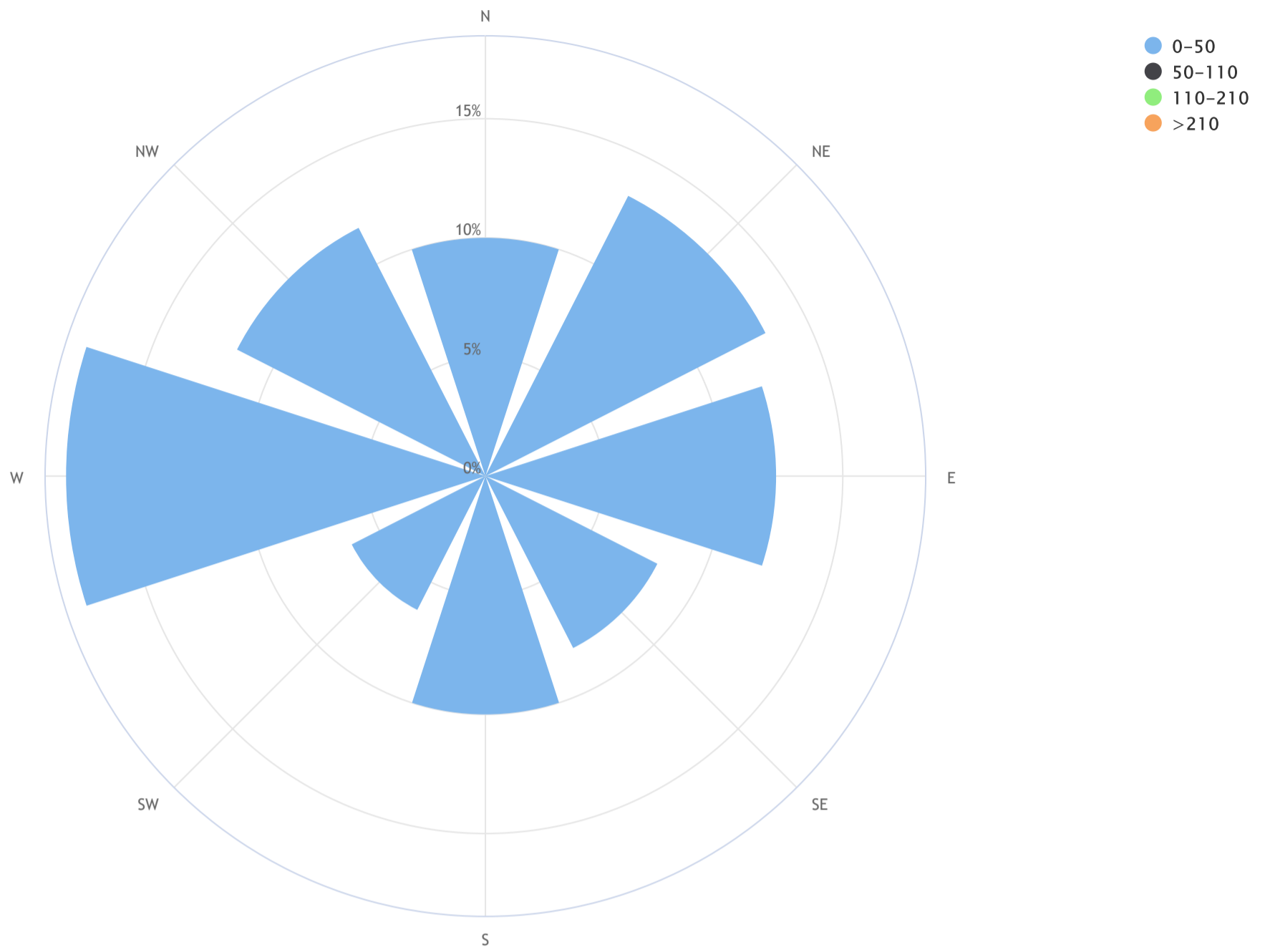
NO[ppb] Histogram: LICAMASKWA Monthly: 19/04 1 Hr.



LICA-201904
Page 130 of 350

Lakeland Industry & Community Association_Maskwa Continuous Monitoring Station_NO (ppb)_19/04

Pollutant Rose_Wind Frequency (Blowing From)_ CALM Avg = 0.1, CALM % = 11.0%



Direction	0-50	50-110	110-210	>210	TOTAL
N	10.0	0.0	0.0	0.0	10.0
NE	13.2	0.0	0.0	0.0	13.2
E	12.2	0.0	0.0	0.0	12.2
SE	8.1	0.0	0.0	0.0	8.1
S	10.0	0.0	0.0	0.0	10.0
SW	6.3	0.0	0.0	0.0	6.3
W	17.6	0.0	0.0	0.0	17.6
NW	11.7	0.0	0.0	0.0	11.7
Summary	89.0	0.0	0.0	0.0	89.0
CALM	11.0	0.0	0.0	0.0	11.0

NITROGEN DIOXIDE Hourly Averages (NO₂ ppb)

HR START (MST)	0:00	1:00	2:00	3:00	4:00	5:00	6:00	7:00	8:00	9:00	10:00	11:00	12:00	13:00	14:00	15:00	16:00	17:00	18:00	19:00	20:00	21:00	22:00	23:00	DAILY	DAILY	24-HR	RDGS.
HR END (MST)	0:59	1:59	2:59	3:59	4:59	5:59	6:59	7:59	8:59	9:59	10:59	11:59	12:59	13:59	14:59	15:59	16:59	17:59	18:59	19:59	20:59	21:59	22:59	23:59	MIN.	MAX.	AVG.	
DAY 1	7	5	7	11	S	1	1	5	17	12	9	2	2	4	6	1	1	1	1	1	2	3	18	14	1	18	6	24
2	0	2	12	S	12	5	10	3	1	2	7	6	2	2	2	2	2	2	0	1	1	1	1	1	0	12	3	24
3	1	1	S	1	1	1	1	0	0	2	1	3	2	4	3	2	3	1	1	1	1	1	1	0	0	4	1	24
4	0	S	1	0	0	0	0	0	1	1	1	1	2	1	1	1	0	0	0	0	2	3	0	0	0	3	1	24
5	S	0	0	0	0	2	1	2	1	2	1	1	1	1	1	1	2	5	1	7	8	8	16	S	0	16	3	24
6	8	10	9	3	1	1	1	1	4	3	2	2	1	1	5	9	3	2	3	6	8	2	S	6	1	10	4	24
7	4	5	2	1	1	1	1	1	2	3	2	2	1	2	5	2	1	1	1	1	1	S	2	4	1	5	2	24
8	6	5	3	3	2	1	1	1	5	3	1	2	2	1	0	1	1	1	0	0	S	1	1	0	0	6	2	24
9	0	0	0	0	0	0	2	7	3	3	5	6	5	2	2	2	1	1	7	S	2	3	2	1	0	7	2	24
10	1	2	1	2	3	3	3	2	2	2	2	2	2	2	3	2	1	1	S	1	1	1	3	4	1	4	2	24
11	1	1	1	2	1	1	1	1	1	2	1	1	1	2	1	1	1	S	1	2	2	1	1	2	1	2	1	24
12	4	5	4	3	2	3	3	2	2	1	1	1	1	1	1	1	S	1	1	1	1	1	1	1	1	5	2	24
13	1	2	2	2	2	3	3	3	2	2	2	2	2	2	2	S	2	2	1	2	3	1	1	1	1	3	2	24
14	1	1	1	1	1	1	1	3	2	1	1	1	1	1	S	1	2	6	9	9	4	7	9	9	1	9	3	24
15	3	11	7	10	8	3	5	2	2	2	1	6	5	S	2	2	3	3	2	1	2	2	2	1	1	11	4	24
16	1	1	0	0	0	0	0	1	4	4	3	1	S	1	1	3	1	2	1	1	2	2	3	2	0	4	1	24
17	2	2	1	1	1	1	2	3	C	C	C	C	C	C	C	5	3	0	1	13	5	9	6	3	0	13	-	24
18	2	2	2	6	2	3	5	3	3	4	S	2	1	1	1	1	1	1	2	2	2	2	2	3	1	6	2	24
19	3	3	4	2	0	9	3	3	6	S	1	1	0	0	1	0	0	0	0	0	0	2	6	2	0	9	2	24
20	5	6	5	1	1	1	1	2	S	1	1	0	1	1	1	7	7	2	1	9	5	10	6	9	0	10	4	24
21	13	10	4	4	2	1	5	S	8	6	3	1	1	1	1	3	1	1	2	1	1	3	2	1	1	13	3	24
22	1	1	1	1	1	1	S	2	2	2	2	2	2	2	1	1	1	1	1	1	9	4	1	1	1	9	2	24
23	6	7	7	3	4	S	1	1	1	0	0	1	1	3	1	0	0	0	1	0	0	3	18	0	18	3	24	
24	5	1	1	1	S	3	3	2	5	2	2	1	1	1	1	2	2	9	14	14	6	15	12	18	1	18	5	24
25	11	15	17	S	4	2	2	7	9	5	5	7	2	5	9	3	3	4	2	11	5	3	4	3	2	17	6	24
26	4	3	S	2	1	1	1	3	5	1	1	3	1	4	1	1	0	1	1	0	0	0	0	0	0	5	2	24
27	0	S	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	24
28	S	1	1	1	2	1	3	3	2	1	2	1	1	1	1	2	1	0	0	2	2	2	3	S	0	3	1	24
29	3	4	3	1	1	1	1	1	1	1	1	2	2	2	3	3	2	3	4	1	2	S	1	1	1	4	2	24
30	3	2	1	3	1	1	1	1	1	1	2	1	3	1	1	1	1	0	0	1	1	S	1	0	0	3	1	24
HOURLY MAX	13	15	17	11	12	9	10	7	17	12	9	7	5	5	9	9	7	9	14	14	9	15	18	18				
HOURLY AVG	3	4	4	2	2	2	2	2	3	3	2	2	2	2	2	2	2	2	2	3	3	3	4	4				

STATUS FLAG CODES

C	- MONTHLY CALIBRATION	Q	- QUALITY ASSURANCE
C1	- REPEAT CALIBRATION	R	- RECOVERY
Y	- MAINTENANCE	X	- MACHINE MALFUNCTION
S	- DAILY ZERO/SPAN CHECK	G	- OUT FOR REPAIR
S1	- REPEAT ZERO/SPAN CHECK	P	- POWER FAILURE

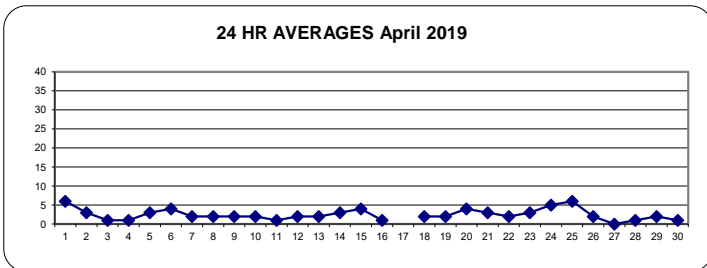
OBJECTIVE LIMIT:

ALBERTA ENVIRONMENT: 1-HR 159 ppb

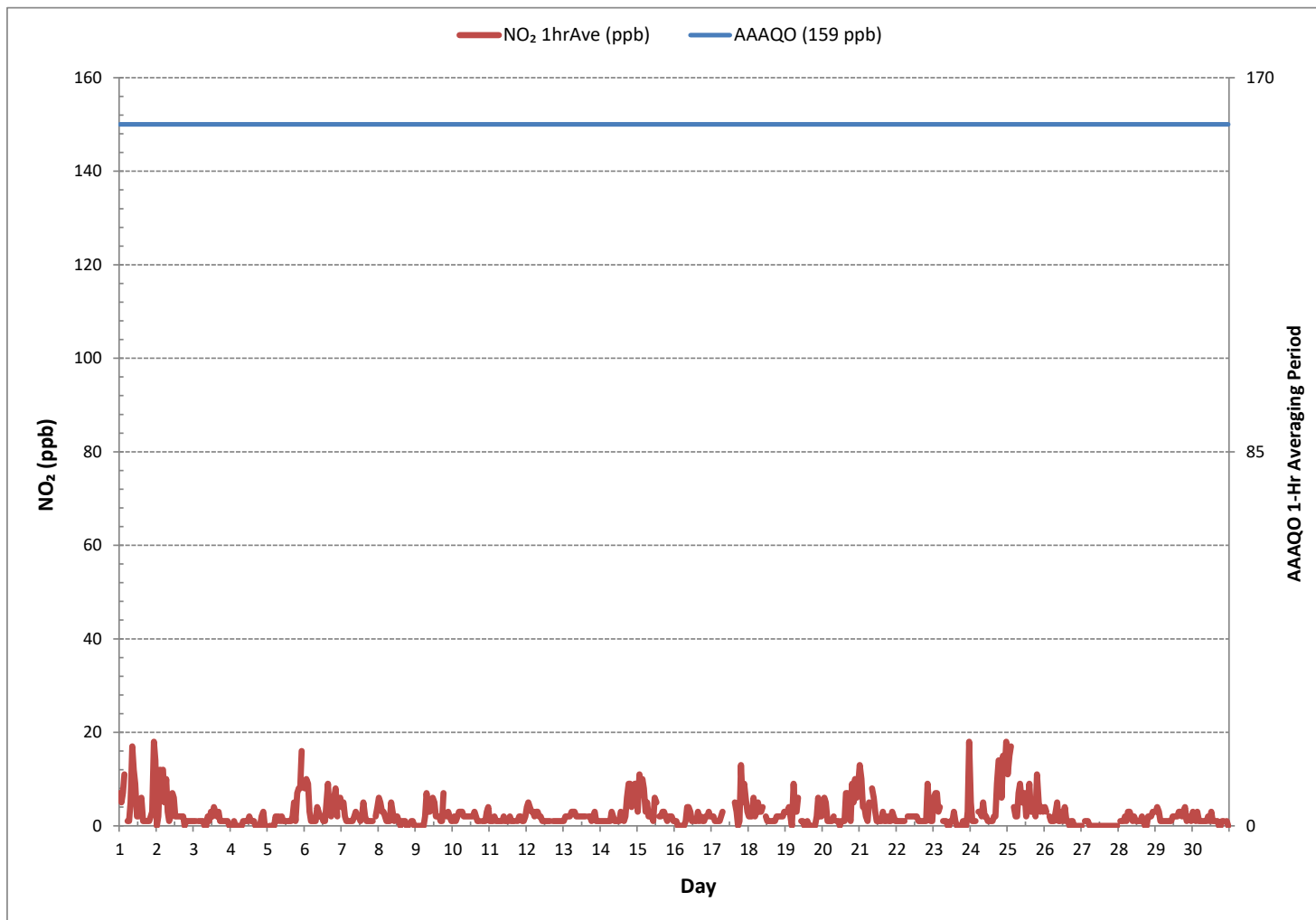
MONTHLY SUMMARY

NUMBER OF 1-HR EXCEEDANCES:	0			
NUMBER OF NON-ZERO READINGS:	597			
MINIMUM 1-HR AVERAGE:	0	ppb @ HOUR	0	ON DAY 2
MAXIMUM 1-HR AVERAGE:	18	ppb @ HOUR	22	ON DAY 1
MAXIMUM 24-HR AVERAGE:	6	ppb		ON DAY 1
IZS CALIBRATION TIME:	31	hrs	OPERATIONAL TIME:	720 hrs
MONTHLY CALIBRATION TIME:	7	hrs	AMD OPERATION UPTIME:	100.0 %
STANDARD DEVIATION:	3		MONTHLY AVERAGE:	3 ppb

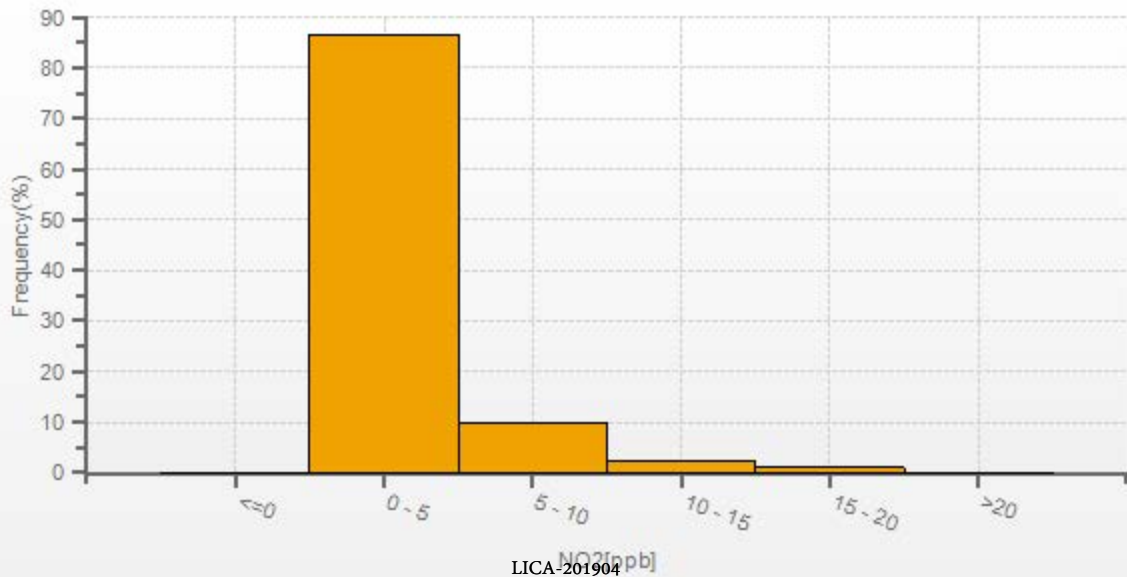
24 HR AVERAGES April 2019



NITROGEN DIOXIDE Hourly Averages (NO₂ ppb)



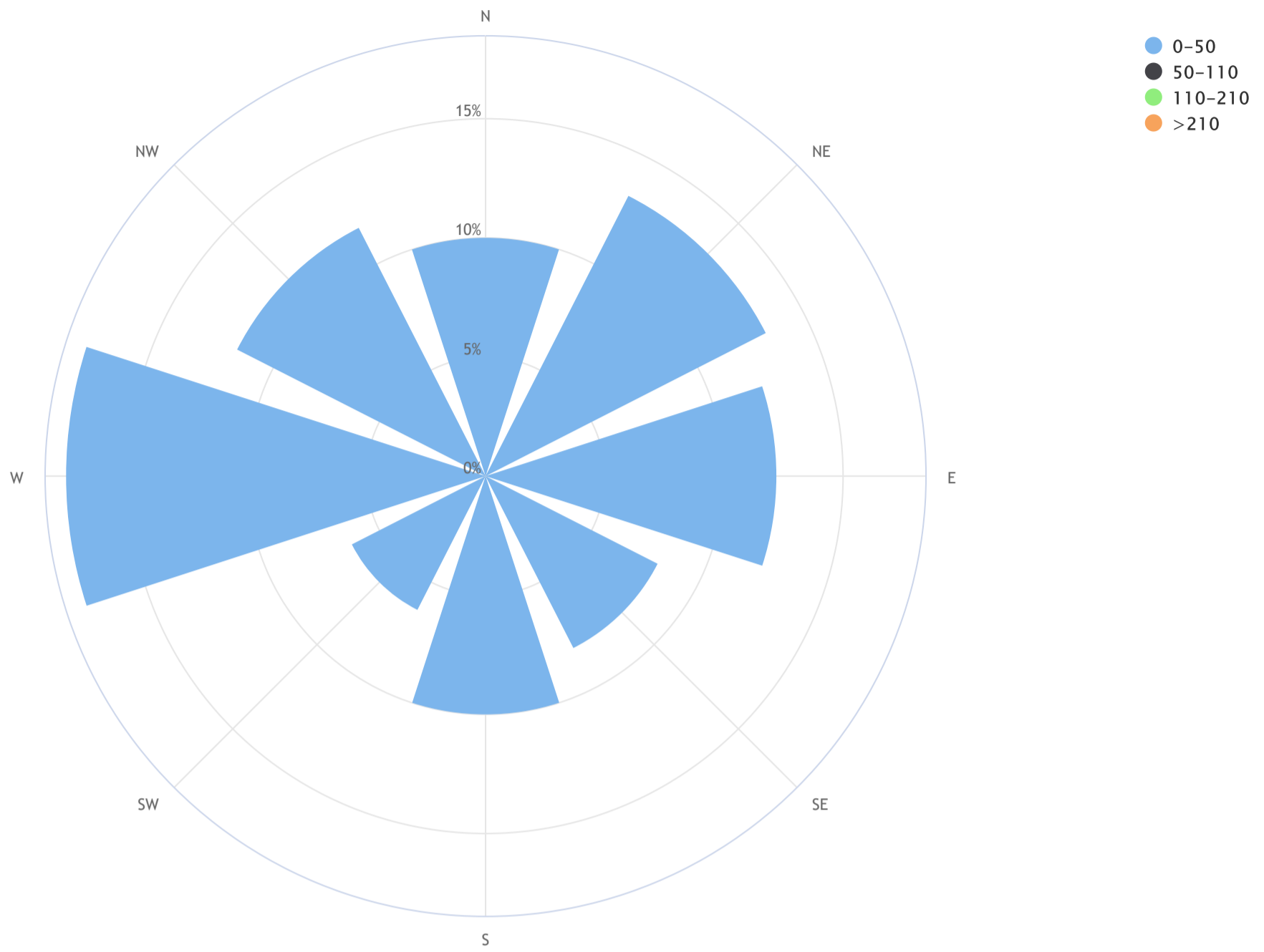
NO2[ppb] Histogram: LICA MASKWA Monthly: 19/04 1 Hr.



LICA-201904
Page 134 of 350

Lakeland Industry & Community Association_Maskwa Continuous Monitoring Station_NO₂ (ppb)_19/04

Pollutant Rose_Wind Frequency (Blowing From)_ CALM Avg = 2.0, CALM % = 11.0%



Direction	0-50	50-110	110-210	>210	TOTAL
N	10.0	0.0	0.0	0.0	10.0
NE	13.2	0.0	0.0	0.0	13.2
E	12.2	0.0	0.0	0.0	12.2
SE	8.1	0.0	0.0	0.0	8.1
S	10.0	0.0	0.0	0.0	10.0
SW	6.3	0.0	0.0	0.0	6.3
W	17.6	0.0	0.0	0.0	17.6
NW	11.7	0.0	0.0	0.0	11.7
Summary	89.0	0.0	0.0	0.0	89.0
CALM	11.0	0.0	0.0	0.0	11.0

WIND SPEED Hourly Averages (WS kph)

HR START (MST)	0:00	1:00	2:00	3:00	4:00	5:00	6:00	7:00	8:00	9:00	10:00	11:00	12:00	13:00	14:00	15:00	16:00	17:00	18:00	19:00	20:00	21:00	22:00	23:00	DAILY MIN.	DAILY MAX.	24-HR AVG.	RDGS.
HR END (MST)	0:59	1:59	2:59	3:59	4:59	5:59	6:59	7:59	8:59	9:59	10:59	11:59	12:59	13:59	14:59	15:59	16:59	17:59	18:59	19:59	20:59	21:59	22:59	23:59				
DAY 1	6.1	5.9	5.8	5.2	5.3	5.2	8.0	8.4	9.2	11.9	10.4	10.2	12.4	7.3	7.8	8.3	5.8	5.6	8.6	6.4	5.8	2.5	4.4	3.6	2.5	12.4	6.2	24
2	0.7	1.7	4.0	5.9	6.2	5.7	7.2	7.9	10.0	10.0	10.4	10.0	9.1	9.8	8.3	8.1	6.8	5.6	3.5	1.7	0.8	1.3	5.1	6.5	0.7	10.4	5.5	24
3	4.4	4.5	5.8	7.0	7.9	7.7	6.9	8.9	10.4	9.7	9.6	8.1	7.9	9.2	9.2	8.8	8.2	7.6	6.2	6.6	6.1	5.3	4.1	5.6	4.1	10.4	7.1	24
4	5.9	6.4	5.2	7.0	8.6	6.3	6.0	6.9	8.3	8.1	9.8	10.1	9.3	7.6	8.5	6.0	6.2	6.8	6.4	7.8	5.6	4.8	3.7	2.7	2.7	10.1	6.6	24
5	3.3	4.5	3.8	3.9	3.4	3.3	3.3	3.5	5.0	4.9	6.1	5.9	5.7	6.1	6.5	6.5	4.8	3.4	3.9	6.1	6.3	6.3	4.5	3.3	6.5	4.2	24	
6	5.1	5.8	5.7	6.9	6.2	6.6	7.3	7.9	7.4	8.8	7.4	7.4	8.1	6.4	5.3	5.4	4.0	5.5	5.6	6.2	6.3	5.2	4.7	3.8	3.8	8.8	6.1	24
7	2.4	3.3	0.6	0.1	0.1	0.1	0.1	0.1	5.6	3.7	4.7	5.3	5.4	6.0	4.7	4.1	4.9	3.5	1.9	0.9	4.3	4.7	5.9	6.3	0.1	6.3	1.4	24
8	2.0	0.3	1.7	4.0	4.6	5.9	6.8	8.7	7.5	7.1	7.3	8.6	8.0	7.8	7.8	7.5	6.7	6.6	4.3	1.3	1.5	3.2	4.1	4.9	0.3	8.7	4.1	24
9	3.5	2.6	3.2	3.1	3.5	3.6	3.4	3.0	3.2	4.2	3.6	5.8	3.8	4.2	5.7	6.0	7.0	6.3	4.9	4.6	3.3	2.0	1.7	2.3	1.7	7.0	3.5	24
10	3.9	3.3	2.8	3.0	2.5	2.4	3.3	3.7	5.9	5.7	5.3	5.9	12.0	9.1	4.0	6.2	9.0	8.7	7.5	3.3	5.6	4.6	5.9	6.9	2.4	12.0	4.5	24
11	7.9	5.3	2.3	2.9	3.3	4.8	5.1	5.6	6.1	7.2	7.4	7.1	7.6	7.3	8.4	7.8	6.0	7.8	6.3	6.4	7.1	6.1	5.5	6.1	2.3	8.4	5.8	24
12	5.9	4.8	4.0	2.5	1.5	1.3	0.7	4.7	5.8	6.3	8.4	8.5	10.5	8.8	9.5	9.3	8.1	8.5	6.7	5.4	4.4	4.0	5.7	4.9	0.7	10.5	5.7	24
13	5.1	4.8	4.4	5.9	5.2	4.2	4.6	7.2	6.7	5.0	6.1	7.9	11.4	11.4	10.7	7.0	6.8	4.0	3.5	2.9	2.5	2.1	2.4	3.2	2.1	11.4	4.8	24
14	2.9	3.0	2.9	2.3	1.7	2.7	1.4	2.4	4.0	4.8	5.2	5.5	8.0	3.5	6.8	7.9	2.3	4.6	4.5	1.8	2.1	2.8	2.3	2.7	1.4	8.0	2.3	24
15	5.2	4.6	2.6	3.0	2.8	1.6	3.5	6.2	5.3	4.9	7.2	6.8	6.6	7.5	8.6	6.3	4.8	3.3	3.1	0.1	1.5	0.6	1.1	1.0	0.1	8.6	3.3	24
16	3.0	3.0	2.8	2.9	2.2	3.0	1.5	2.2	3.0	6.0	3.2	5.0	5.0	6.9	6.8	2.3	6.6	4.8	4.0	1.3	1.4	5.1	5.4	4.8	1.3	6.9	1.2	24
17	1.8	1.3	1.1	2.2	1.1	1.1	2.0	2.3	2.6	3.6	4.1	5.1	6.3	6.1	5.6	7.1	12.5	10.7	5.9	5.4	3.4	5.6	1.9	2.1	1.1	12.5	2.5	24
18	2.4	2.3	2.8	2.5	2.3	2.6	3.0	2.1	4.2	7.2	7.9	7.2	7.5	7.6	8.8	10.0	8.0	6.8	5.0	2.4	4.0	5.0	3.8	2.7	2.1	10.0	4.7	24
19	0.8	0.4	1.9	5.4	5.4	3.3	3.3	7.1	9.3	8.6	9.9	12.5	10.6	10.8	10.9	11.2	9.0	5.9	7.3	4.4	1.6	1.7	1.4	1.7	0.4	12.5	5.6	24
20	0.6	1.6	2.0	2.6	2.9	2.6	6.1	8.5	7.8	8.4	8.3	9.8	8.7	9.6	6.8	5.2	7.4	7.5	8.3	5.1	3.6	3.3	2.6	3.3	0.6	9.8	4.5	24
21	2.7	2.0	0.5	1.7	1.1	1.9	1.8	4.2	6.3	6.3	5.8	4.8	4.1	4.7	4.5	3.5	4.3	3.2	4.4	3.4	4.1	4.5	3.7	3.1	0.5	6.3	2.1	24
22	1.7	1.5	3.0	2.4	2.7	3.3	3.3	4.5	5.1	7.0	8.8	10.0	9.5	8.4	9.8	9.4	5.0	5.2	1.6	2.5	6.4	6.5	7.5	6.4	1.5	10.0	2.5	24
23	7.7	6.7	2.5	5.5	5.4	4.9	7.9	12.5	12.8	11.4	9.2	13.4	14.5	14.4	11.2	9.7	11.5	10.4	10.1	7.8	5.7	4.4	4.9	2.8	2.5	14.5	8.3	24
24	2.1	2.2	3.3	4.9	7.1	6.3	8.2	8.6	8.3	8.9	10.4	11.4	12.1	11.7	10.8	13.1	15.5	10.5	9.6	8.6	9.1	10.1	11.5	10.9	2.1	15.5	8.8	24
25	11.0	11.8	11.5	8.4	5.0	3.2	6.5	9.2	9.6	11.4	11.8	9.6	10.8	8.6	10.1	8.7	9.1	8.3	7.9	3.8	1.8	2.0	0.9	1.4	0.9	11.8	7.3	24
26	1.5	1.6	0.9	0.8	0.1	0.3	1.4	1.3	3.9	6.0	7.2	6.8	6.8	6.7	7.2	8.4	7.1	6.8	5.2	6.3	5.8	4.7	4.1	3.5	0.1	8.4	3.5	24
27	1.8	2.6	3.3	3.2	3.7	4.6	7.3	7.4	9.8	9.3	10.6	12.8	11.1	11.0	11.9	10.6	10.6	9.6	9.1	6.9	2.9	1.8	3.1	1.3	1.3	12.8	6.9	24
28	0.6	0.4	1.0	0.8	1.1	0.2	0.7	1.6	3.7	4.5	4.1	6.5	4.8	7.1	7.3	3.6	4.1	5.9	6.2	3.3	1.6	0.7	0.1	1.3	0.1	7.3	1.8	24
29	0.5	0.6	1.8	0.7	0.8	1.6	5.0	8.8	7.1	5.0	4.2	5.4	5.6	5.5	5.6	6.3	3.5	5.5	4.5	7.3	4.9	5.7	3.9	1.2	0.5	8.8	3.3	24
30	1.3	2.6	2.6	5.7	10.8	12.2	13.2	9.0	10.2	6.6	6.1	6.1	6.5	6.9	7.3	5.4	6.2	6.1	5.7	4.6	3.6	3.2	3.0	3.0	1.3	13.2	5.2	24
HOURLY MAX	11.0	11.8	11.5	8.4	10.8	12.2	13.2	12.5	12.8	11.9	11.8	13.4	14.5	14.4	11.9	13.1	15.5	10.7	10.1	8.6	9.1	10.1	11.5	10.9				

STATUS FLAG CODES

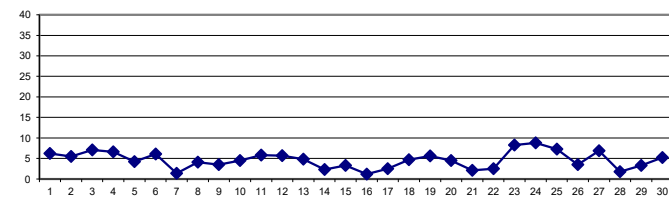
C	- MONTHLY CALIBRATION	Q	- QUALITY ASSURANCE
C1	- REPEAT CALIBRATION	R	- RECOVERY
Y	- MAINTENANCE	X	- MACHINE MALFUNCTION
S	- DAILY ZERO/SPAN CHECK	G	- OUT FOR REPAIR
S1	- REPEAT ZERO/SPAN CHECK	P	- POWER FAILURE

LAST CALIBRATION:	September 17, 2018
DECLINATION:	MAGNETIC DECLINATION 19 DEGREE EAST

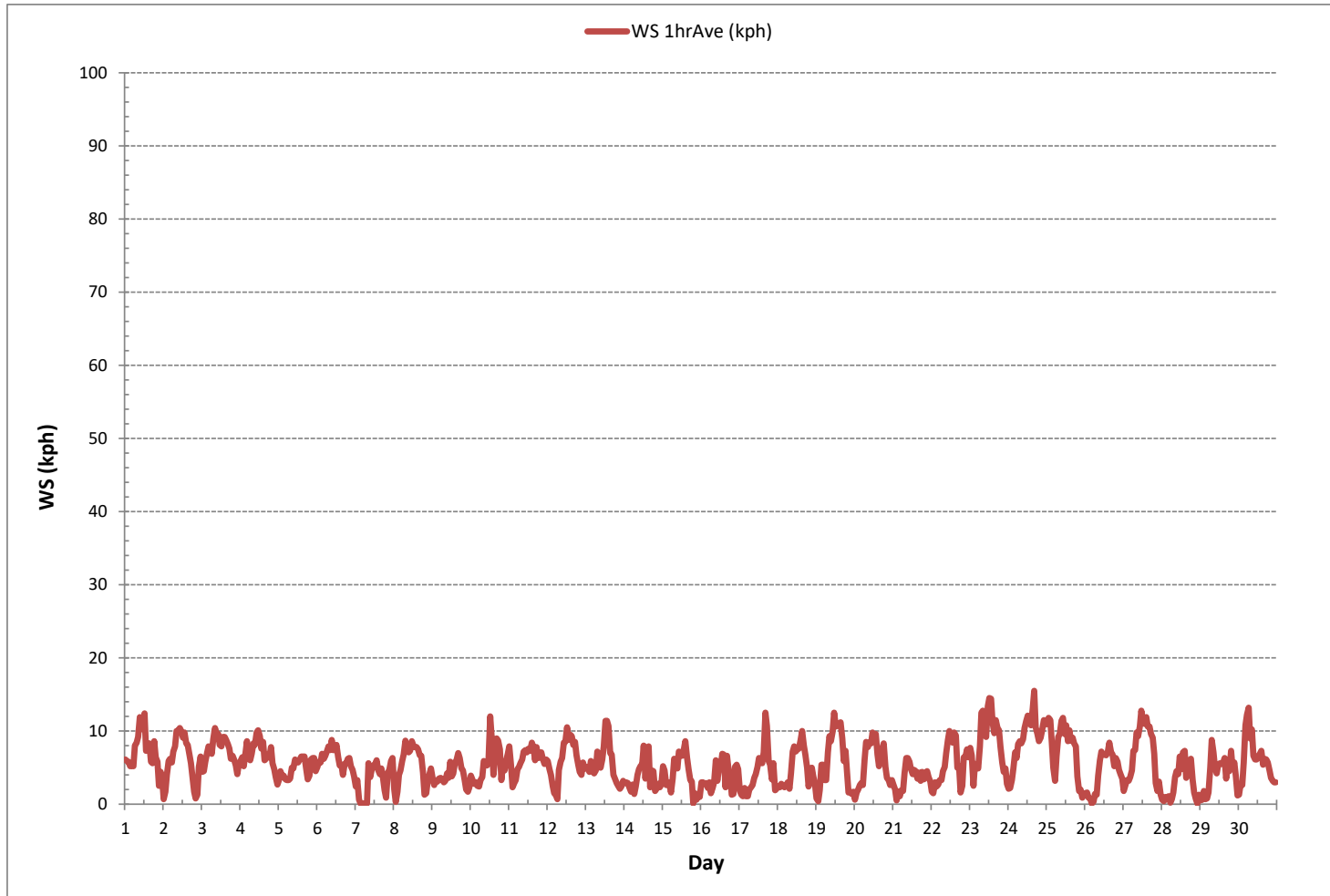
MONTHLY SUMMARY

NUMBER OF NON-ZERO READINGS:	720
MINIMUM 1-HR AVERAGE:	0.1 kph @ HOUR 3 ON DAY 7
MAXIMUM 1-HR AVERAGE:	15.5 kph @ HOUR 16 ON DAY 24
MAXIMUM 24-HR AVERAGE:	8.8 kph ON DAY 24
MONTHLY CALIBRATION TIME:	0 hrs
OPERATIONAL TIME:	720 hrs
AMT OPERATION UPTIME:	100.0 %
STANDARD DEVIATION:	3.0
MONTHLY AVERAGE:	0.9 kph

24 HR AVERAGES April 2019

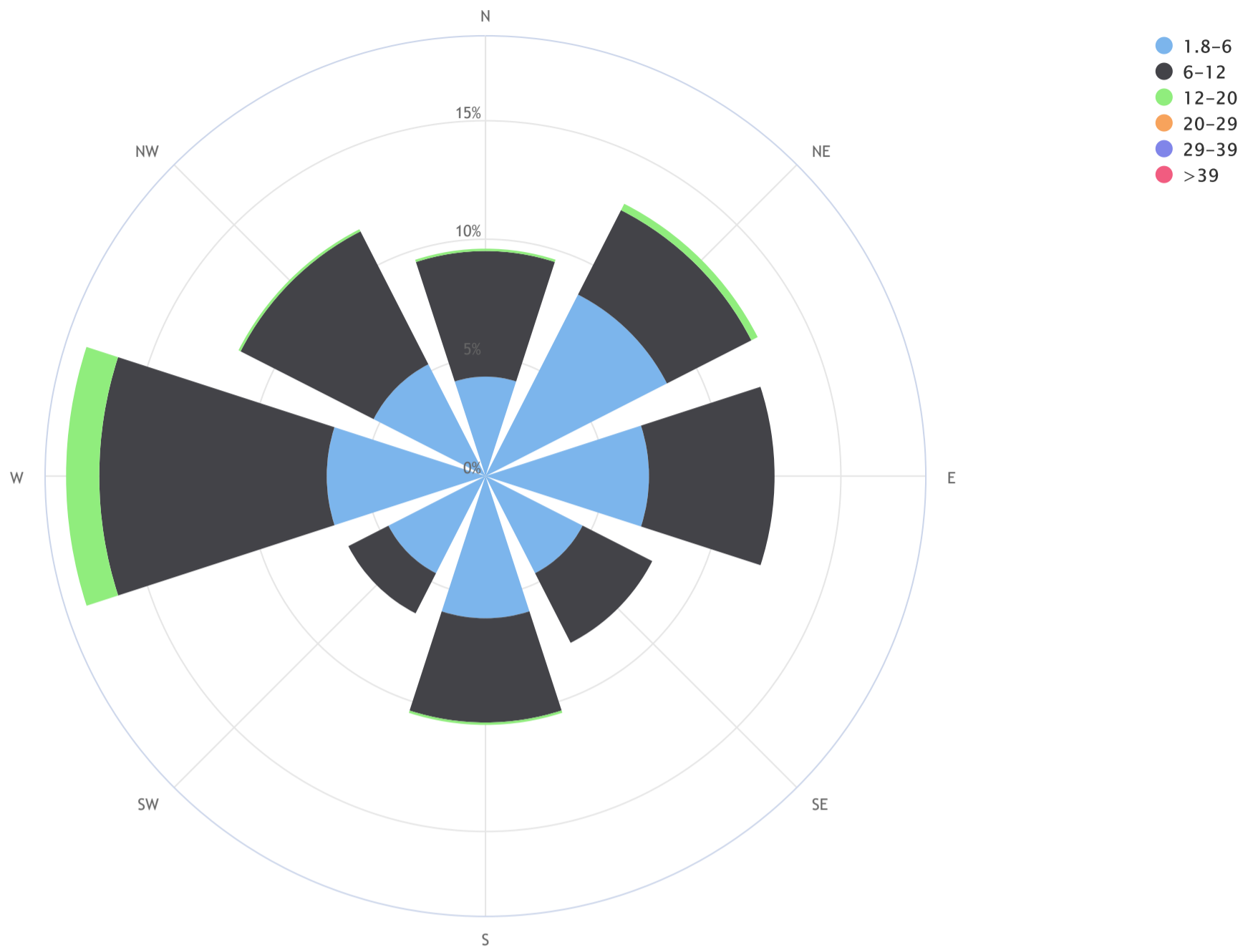


WIND SPEED Hourly Averages (WS kph)



Lakeland Industry & Community Association_Maskwa Continuous Monitoring Station_19/04

Wind Rose_Wind Frequency (Blowing From)_CALM Avg = 1.0_CALM % = 11.0%



Direction	1.8-6	6-12	12-20	20-29	29-39	>39	TOTAL
N	4.2	5.3	0.1	0.0	0.0	0.0	9.6
NE	8.6	4.0	0.3	0.0	0.0	0.0	12.9
E	6.9	5.3	0.0	0.0	0.0	0.0	12.2
SE	4.6	3.3	0.0	0.0	0.0	0.0	7.9
S	6.0	4.4	0.1	0.0	0.0	0.0	10.6
SW	4.6	1.9	0.0	0.0	0.0	0.0	6.5
W	6.7	9.6	1.4	0.0	0.0	0.0	17.6
NW	5.3	6.3	0.1	0.0	0.0	0.0	11.7
Summary	46.8	40.1	2.1	0.0	0.0	0.0	89.0
CALM	11.0	0.0	0.0	0.0	0.0	0.0	11.0



LAKELAND INDUSTRY & COMMUNITY ASSOCIATION
Maskwa Continuous Monitoring Station - April 2019

WIND DIRECTION Hourly Averages (WD)

HR START (MST)	0:00	1:00	2:00	3:00	4:00	5:00	6:00	7:00	8:00	9:00	10:00	11:00	12:00	13:00	14:00	15:00	16:00	17:00	18:00	19:00	20:00	21:00	22:00	23:00	24-HOUR AVG	24-HR		
HR END (MST)	0:59	1:59	2:59	3:59	4:59	5:59	6:59	7:59	8:59	9:59	10:59	11:59	12:59	13:59	14:59	15:59	16:59	17:59	18:59	19:59	20:59	21:59	22:59	23:59	QUADRANT	RDGS.		
DAY																												
1	W	W	W	W	W	W	W	WNW	WNW	WNW	WNW	WNW	WNW	NNW	NNW	N	N	NNW	NNW	N	N	NW	WNW	NW	NW	NW	24	
2	NNW	WSW	WNW	WNW	NW	NW	NW	NNW	NNW	NW	NW	NW	NNW	NW	NW	NW	NW	NNW	N	NNE	NNE	ENE	NE	NE	NNW	NNW	24	
3	ENE	ENE	E	ENE	E	ENE	ENE	ENE	E	E	E	E	E	ESE	ESE	E	E	E	ENE	E	ENE	NE	NE	NE	E	E	24	
4	NE	NE	NE	NE	NNE	NE	NE	NE	NNE	NNE	NNE	NNE	NNE	NNE	NNE	ENE	ENE	ENE	NE	NE	NE	NE	NE	ENE	NE	NE	24	
5	ENE	ENE	ENE	E	E	E	E	SE	SE	SSE	S	S	SE	SSE	SE	SE	SE	ESE	ENE	E	ESE	ESE	E	E	ESE	ESE	24	
6	ESE	E	E	ENE	ENE	ENE	ENE	E	E	E	E	E	E	E	ESE	E	E	E	E	E	E	E	E	E	E	E	E	24
7	E	ESE	E	S	S	S	S	S	SSW	SW	WSW	W	W	WNW	WNW	NW	N	NNE	SSE	S	S	SSW	SSW	WSW	WSW	WSW	24	
8	SW	SSE	SSW	W	W	W	W	W	WNW	WNW	WNW	WNW	WNW	WNW	W	WNW	WNW	W	NNW	SSW	S	ENE	E	ENE	WNW	WNW	24	
9	NE	NE	NE	NE	NE	ENE	E	E	E	ESE	E	ENE	ESE	E	SE	SE	ESE	ESE	ESE	ESE	ESE	ENE	ENE	ENE	E	E	24	
10	ESE	ESE	ESE	SE	ESE	ENE	E	ESE	SE	SSE	SE	SSE	S	SSW	WSW	S	SSW	S	S	SSE	S	SSE	SSE	SSE	SSE	SSE	24	
11	S	S	SE	ENE	ESE	ESE	ESE	ESE	SE	ESE	SE	SE	SE	SE	SE	SE	SE	SE	SE	SE	SSE	SSE	SE	SE	SSE	SE	24	
12	SSE	SSE	S	S	S	SSE	SSE	S	SSW	SSW	SSW	SSW	SSW	SSW	S	S	SSW	SSW	S	S	S	S	SSE	SSE	S	S	24	
13	S	S	S	S	S	S	S	SSW	SSW	S	SSE	S	SSW	SSW	SSW	SSW	SSE	SE	SSE	ESE	ESE	ENE	ENE	NE	S	S	24	
14	NE	NNE	NE	ENE	NNE	NE	ENE	NNE	NE	NE	NE	NE	NE	NW	NNW	NE	ENE	WNW	WNW	WNW	W	WSW	WNW	W	NNE	NNE	24	
15	W	WNW	NW	NW	NW	NNW	N	N	N	N	N	NW	NW	N	N	NNW	NNW	NNE	ENE	SE	SE	SE	E	NNW	NNW	NNW	24	
16	ENE	ENE	ENE	NE	NE	NE	NE	NNE	E	SE	SSE	SSW	SSW	SSW	SSW	NNE	NNE	NNE	ESE	S	S	S	S	SE	SE	SE	24	
17	S	ENE	E	E	NE	NE	NW	ESE	S	SSW	SW	SSW	SSW	SSW	WSW	WNW	WNW	WNW	W	WNW	W	WNW	SW	SW	WSW	WSW	24	
18	SW	WSW	SW	WSW	SW	WSW	W	W	SSW	SSW	SSW	SW	SW	SW	SW	SW	SW	SW	SSW	SW	SSW	SSW	S	S	SW	SW	24	
19	NE	NNE	NNW	NNW	NNW	WNW	WSW	W	WNW	WNW	WNW	WNW	WNW	WNW	W	WNW	WNW	W	W	W	W	WSW	W	WSW	WNW	WNW	24	
20	SW	SW	WSW	WSW	WSW	WSW	W	WNW	WNW	W	WNW	WNW	WNW	NNW	N	NNW	WNW	N	NNE	WNW	NNW	WNW	WNW	WNW	WNW	WNW	24	
21	W	NW	S	SW	S	SSW	WSW	W	WNW	WNW	WNW	SW	WSW	SW	SW	SW	SW	W	SW	SSW	S	SSE	SSE	SE	ESE	SW	24	
22	E	NE	NNE	NE	NE	NE	E	ESE	ESE	SSE	SSE	S	S	SSW	SSW	SSW	SSW	SSW	SSW	SSE	SSE	WNW	WNW	WNW	W	S	24	
23	WNW	NW	SW	SW	SW	WSW	W	WNW	WNW	WNW	W	WNW	WNW	WNW	WNW	W	W	W	WNW	W	W	W	WNW	W	W	W	24	
24	WSW	SW	WSW	W	W	W	WNW	WNW	WNW	WNW	WNW	WNW	WNW	WNW	WNW	W	WNW	WNW	WNW	WNW	WNW	WNW	WNW	WNW	WNW	WNW	WNW	24
25	WNW	WNW	WNW	NW	W	WSW	WNW	WNW	WNW	WNW	WNW	WNW	WNW	WNW	WNW	WNW	WNW	WNW	WNW	WNW	WNW	WNW	SSW	SSE	S	WNW	WNW	24
26	ENE	NE	NE	E	NE	NE	NE	NW	NNW	N	N	NW	NW	NW	N	NNE	N	NNE	NNE	ENE	NE	ENE	NE	NE	NNE	NNE	24	
27	ENE	NE	NE	NE	NE	NE	NE	NE	NE	NE	NE	NE	NE	NE	NE	NE	NE	NE	NE	NE	NE	NE	NE	NE	NE	NE	NE	24
28	E	SW	SSW	S	SE	SSW	WNW	NNW	NW	NW	NNW	N	N	NNE	NNE	ENE	NE	ENE	SE	ESE	ESE	SE	S	NNE	NNE	NNE	24	
29	ESE	E	ENE	ESE	NNE	ESE	NNE	NNE	N	N	N	N	NW	NW	NW	WNW	NW	NW	WNW	WNW	N	N	N	NNW	NNW	NNW	24	
30	SW	SSW	SW	NW	NNE	NNE	NNE	NNE	NNE	N	NNW	NNW	NNW	NNW	N	NNW	NNW	N	N	NNE	NE	ENE	ENE	ENE	N	N	24	

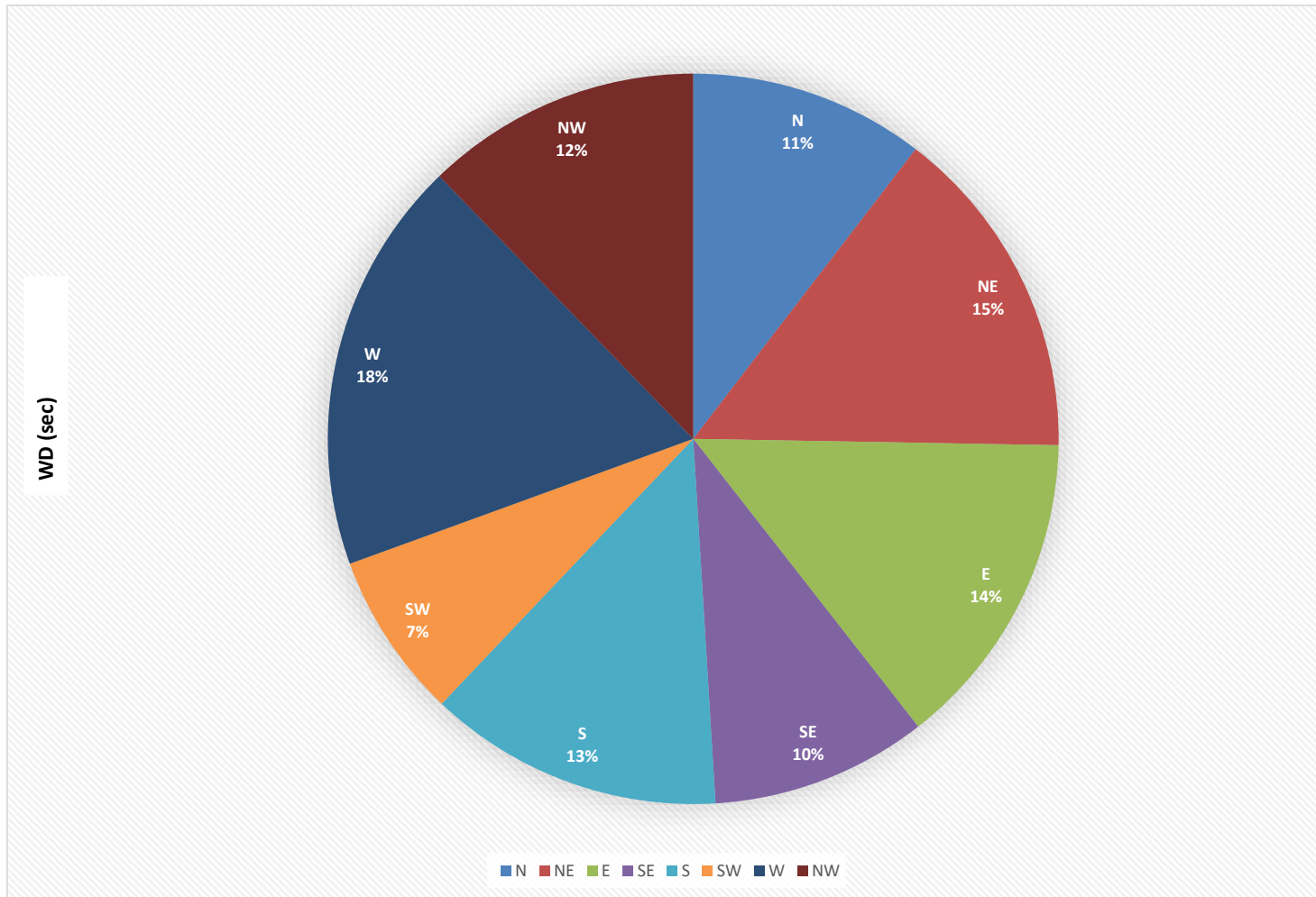
STATUS FLAG CODES

C	- MONTHLY CALIBRATION	Q	- QUALITY ASSURANCE
C1	- REPEAT CALIBRATION	R	- RECOVERY
Y	- MAINTENANCE	X	- MACHINE MALFUNCTION
S	- DAILY ZERO/SPAN CHECK	G	- OUT FOR REPAIR
S1	- REPEAT ZERO/SPAN CHECK	P	- POWER FAILURE

LAST CALIBRATION:	September 17, 2018
DECLINATION:	MAGNETIC DECLINATION 19 DEGREE EAST

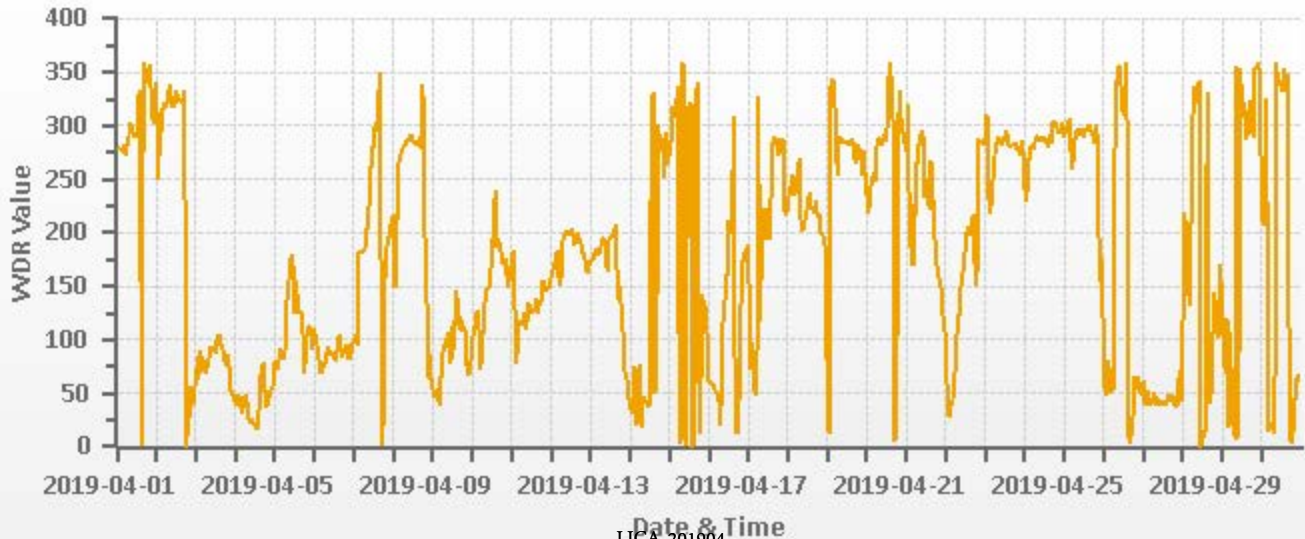
MONTHLY CALIBRATION TIME:	0	hrs	OPERATIONAL TIME:	720	hrs
STANDARD DEVIATION:	106		AMD OPERATION UPTIME:	100.0	%
			MONTHLY AVERAGE:	318	(NW)

WIND DIRECTION Hourly Averages (WD)



WDR[degwdr] Station: LICA MASKWA Monthly: 19/04 Type: AVG 1 Hr. [1 Hr.]

— WDR[degwdr]





LAKELAND INDUSTRY & COMMUNITY ASSOCIATION
Maskwa Continuous Monitoring Station - April 2019

STANDARD DEVIATION WIND DIRECTION Hourly Averages (STDWD deg)

HR START (MST)	0:00	1:00	2:00	3:00	4:00	5:00	6:00	7:00	8:00	9:00	10:00	11:00	12:00	13:00	14:00	15:00	16:00	17:00	18:00	19:00	20:00	21:00	22:00	23:00	RDGS.
HR END (MST)	0:59	1:59	2:59	3:59	4:59	5:59	6:59	7:59	8:59	9:59	10:59	11:59	12:59	13:59	14:59	15:59	16:59	17:59	18:59	19:59	20:59	21:59	22:59	23:59	
DAY																									
1	8	8	8	8	11	9	7	8	11	10	11	10	7	35	28	15	21	16	20	13	13	38	12	15	24
2	56	28	16	13	14	15	13	17	14	18	20	18	18	20	19	17	23	22	18	12	14	15	11	11	24
3	15	14	17	14	14	12	13	12	14	14	15	17	16	18	18	13	14	17	11	10	11	14	8	10	24
4	8	8	11	8	6	9	12	15	8	11	13	11	12	10	8	29	21	19	18	10	14	14	15	17	24
5	17	14	13	14	16	18	22	19	21	28	31	25	34	29	21	20	13	14	14	12	8	11	8	9	24
6	12	12	12	10	12	10	12	8	14	11	12	14	13	15	18	16	20	14	12	12	11	12	11	17	24
7	25	19	25	0	0	0	7	15	7	14	25	15	11	24	19	24	25	21	20	60	10	9	5	4	24
8	49	77	32	10	9	5	5	6	10	12	13	14	17	15	17	19	22	15	34	21	15	27	20	14	24
9	14	11	12	8	7	14	25	26	35	38	41	27	34	39	23	24	13	12	9	8	14	43	43	39	24
10	7	8	13	16	24	31	25	19	17	24	28	22	12	13	30	20	11	16	8	18	10	18	9	7	24
11	8	9	39	9	14	12	11	15	14	16	21	27	24	22	22	17	19	17	10	8	5	6	6	6	24
12	6	7	8	12	17	24	56	14	11	14	15	17	17	20	16	16	18	12	12	6	8	7	6	6	24
13	8	7	8	5	6	9	8	9	18	25	27	17	12	16	14	15	26	20	14	10	9	28	49	36	24
14	12	10	13	32	37	23	43	27	26	23	25	35	30	36	46	29	42	30	15	26	18	28	36	15	24
15	8	10	30	10	12	23	12	11	14	21	25	22	16	19	22	19	26	24	17	58	37	65	26	32	24
16	11	9	8	8	11	8	24	16	47	24	48	38	28	22	22	58	27	33	22	19	36	11	5	6	24
17	39	35	17	11	33	49	45	33	32	27	37	32	27	19	27	19	8	7	14	14	26	24	19	16	24
18	10	12	15	16	10	22	17	24	29	11	9	13	20	23	16	14	14	16	9	12	13	7	14	43	24
19	55	64	21	14	13	25	16	11	9	15	14	11	14	13	13	9	10	17	9	13	44	30	47	17	24
20	49	19	16	20	9	16	9	9	12	16	14	12	18	34	20	30	17	28	10	37	43	19	21	22	24
21	20	38	71	20	59	20	37	17	12	24	25	30	43	34	43	44	30	33	12	5	6	6	21	37	24
22	55	43	7	23	28	19	32	17	22	20	22	21	22	21	16	13	24	16	40	26	10	9	7	5	24
23	11	14	21	8	7	16	9	7	8	9	16	9	9	8	12	16	10	8	8	6	7	8	9	22	24
24	15	13	12	11	6	7	6	7	11	12	15	10	10	10	12	11	8	15	14	15	16	8	8	10	24
25	6	8	9	11	16	15	9	10	11	11	12	18	10	19	13	28	18	17	10	16	36	8	31	55	24
26	52	33	30	27	19	54	40	41	27	34	29	28	30	29	26	21	26	14	11	10	9	10	10	10	24
27	25	14	10	17	14	15	10	14	10	14	14	13	15	17	16	20	12	14	11	8	8	17	9	12	24
28	14	32	11	26	11	44	25	36	29	37	40	31	36	19	24	42	35	36	11	11	52	58	77	38	24
29	52	55	27	52	62	46	17	8	16	28	32	25	29	35	30	20	37	33	27	20	13	13	13	52	24
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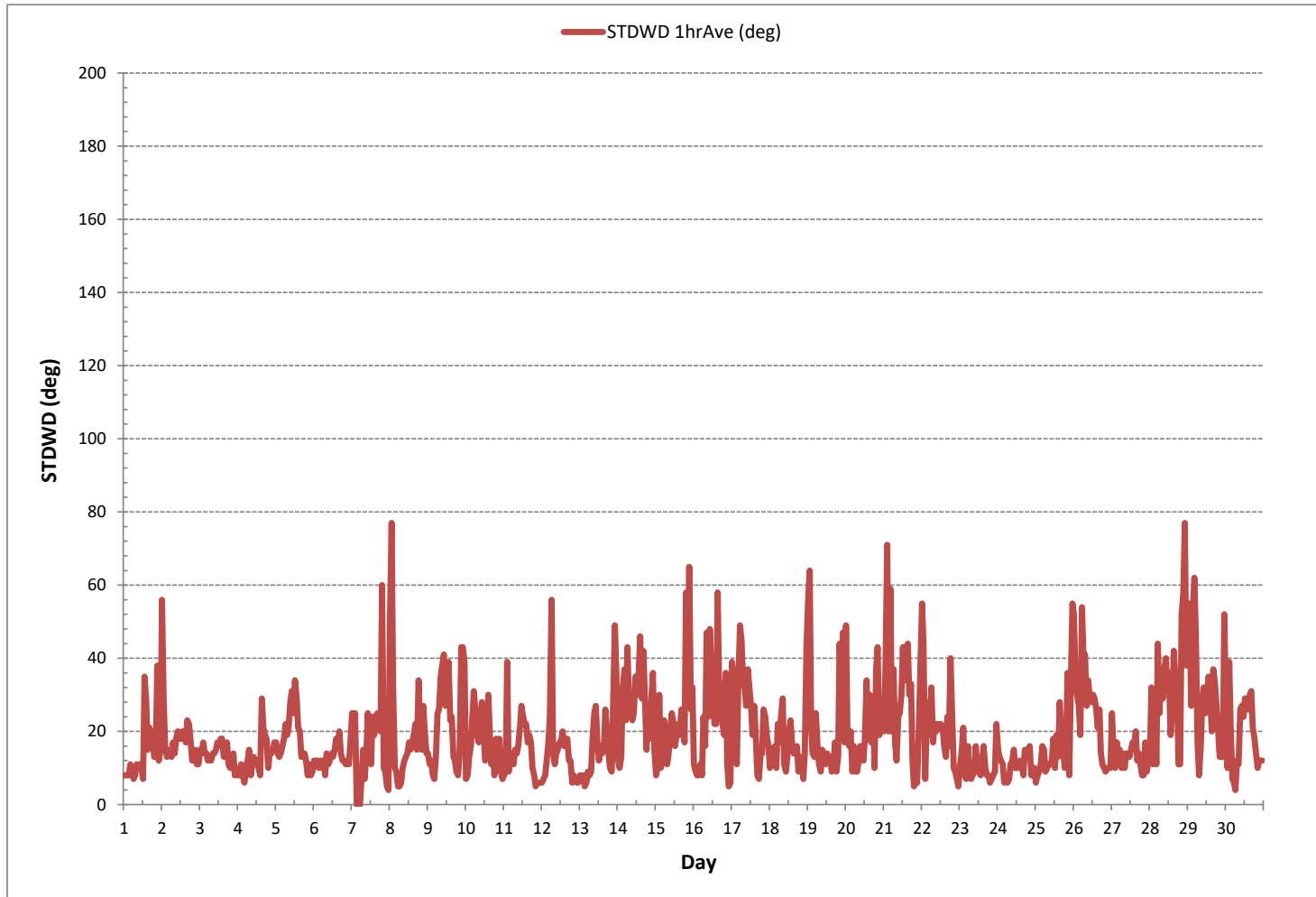
STATUS FLAG CODES

C	- MONTHLY CALIBRATION	Q	- QUALITY ASSURANCE
C1	- REPEAT CALIBRATION	R	- RECOVERY
Y	- MAINTENANCE	X	- MACHINE MALFUNCTION
S	- DAILY ZERO/SPAN CHECK	G	- OUT FOR REPAIR
S1	- REPEAT ZERO/SPAN CHECK	P	- POWER FAILURE

LAST CALIBRATION: September 17, 2018

CALIBRATION TIME: 0 hrs OPERATIONAL TIME: 720 hrs

STANDARD DEVIATION WIND DIRECTION Hourly Averages (STDWD deg)



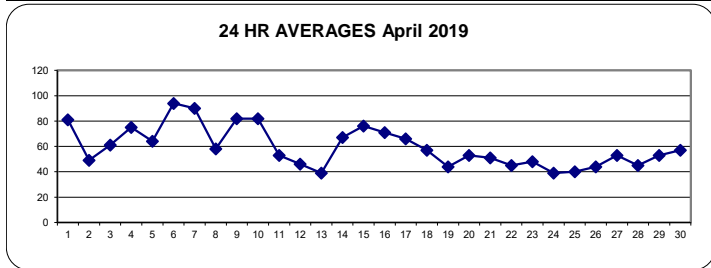


RELATIVE HUMIDITY Hourly Averages (RH %)

HR START (MST)	0:00	1:00	2:00	3:00	4:00	5:00	6:00	7:00	8:00	9:00	10:00	11:00	12:00	13:00	14:00	15:00	16:00	17:00	18:00	19:00	20:00	21:00	22:00	23:00	DAILY	DAILY	24-HR	RDGS.				
HR END (MST)	0:59	1:59	2:59	3:59	4:59	5:59	6:59	7:59	8:59	9:59	10:59	11:59	12:59	13:59	14:59	15:59	16:59	17:59	18:59	19:59	20:59	21:59	22:59	23:59	MIN.	MAX.	AVG.					
DAY																																
1	76	80	79	80	83	77	73	69	62	71	80	84	76	84	96	95	84	79	81	84	89	94	86	84	62	96	81	24				
2	90	91	89	85	78	62	66	55	46	43	40	37	34	32	30	26	25	25	28	37	41	42	40	46	25	91	49	24				
3	46	47	55	62	60	65	86	87	79	69	62	58	53	48	45	45	44	46	52	61	70	74	77	77	44	87	61	24				
4	81	85	89	89	88	87	88	84	76	65	63	63	64	67	81	74	68	67	69	70	71	72	72	74	63	89	75	24				
5	75	74	74	74	75	76	77	77	74	68	62	57	53	50	49	51	53	57	62	64	63	65	67	49	77	64	24					
6	69	71	73	85	91	92	91	92	94	97	100	100	100	100	100	100	100	100	100	100	100	100	100	100	69	100	94	24				
7	100	100	100	100	100	100	100	100	100	100	96	94	93	83	73	65	65	64	81	90	97	91	89	91	64	100	90	24				
8	95	100	100	96	87	76	69	56	48	42	36	35	33	29	26	24	23	25	34	48	59	65	85	96	23	100	58	24				
9	100	100	100	100	100	100	100	100	100	100	92	81	64	54	44	44	46	46	54	68	78	90	98	97	44	100	82	24				
10	96	99	100	100	100	100	97	87	75	67	64	53	50	52	65	88	84	89	94	90	81	80	83	75	50	100	82	24				
11	67	67	71	82	78	75	74	66	59	54	49	44	38	32	30	31	30	31	34	41	49	54	57	58	30	82	53	24				
12	57	59	63	70	78	83	81	59	51	43	40	34	29	28	28	26	27	27	29	32	37	39	37	38	26	83	46	24				
13	38	40	41	43	45	45	43	39	38	36	34	33	31	30	27	25	32	32	33	42	49	55	55	58	25	58	39	24				
14	64	66	61	61	73	72	65	55	45	42	37	36	51	43	52	89	83	79	82	85	92	91	89	90	36	92	67	24				
15	91	90	90	93	97	98	98	96	92	83	67	65	66	62	58	56	46	45	44	56	66	79	91	96	44	98	76	24				
16	91	94	97	100	100	100	100	98	76	62	56	50	46	37	36	41	40	45	57	73	76	72	72	78	36	100	71	24				
17	85	97	100	100	100	99	95	85	65	56	46	38	34	31	24	25	32	31	41	48	67	87	100	100	24	100	66	24				
18	100	100	100	100	100	99	91	73	64	55	46	40	36	30	28	26	27	26	30	38	40	40	42	46	26	100	57	24				
19	57	62	60	71	80	84	86	70	53	44	35	29	27	24	22	20	20	19	20	25	34	37	37	42	19	86	44	24				
20	50	56	56	54	57	58	51	45	40	35	32	28	25	31	43	58	38	40	67	74	82	80	87	90	25	90	53	24				
21	96	92	100	100	100	100	97	70	51	35	27	23	20	17	16	18	21	25	30	34	35	40	47	16	100	100	51	24				
22	55	65	76	82	82	79	65	41	39	35	33	31	30	24	17	13	15	18	24	29	41	49	61	71	13	82	45	24				
23	78	86	96	96	88	80	60	46	42	40	37	33	30	28	28	28	27	26	25	27	29	33	36	43	25	96	48	24				
24	49	53	52	47	48	50	46	40	33	26	22	20	19	20	20	23	31	38	39	41	50	54	60	69	19	69	39	24				
25	75	83	88	79	83	82	58	40	30	22	18	18	16	15	13	13	15	16	18	22	27	36	44	51	13	88	40	24				
26	56	57	66	74	79	83	71	55	33	25	23	22	20	21	20	20	19	23	25	35	46	52	62	70	19	83	44	24				
27	76	76	76	80	85	84	82	74	66	59	54	49	44	38	31	30	29	29	28	29	34	40	42	48	28	85	53	24				
28	58	62	76	83	89	85	68	42	28	24	24	20	19	18	19	21	23	24	34	41	48	53	59	68	18	89	45	24				
29	69	72	77	82	82	81	66	53	50	47	47	37	33	29	23	24	27	26	27	37	55	71	79	83	23	83	53	24				
30	87	88	84	88	92	91	83	75	61	54	46	39	33	31	32	34	34	35	37	41	45	50	53	55	31	92	57	24				
HOURLY MAX	100	100	100	100	100	100	100	100	100	100	100	100	100	100	100	100	100	100	100	100	100	100	100	100								
HOURLY AVG	74	77	80	82	83	82	78	68	59	53	49	45	42	40	39	41	40	41	46	52	58	63	67	70								

STATUS FLAG CODES

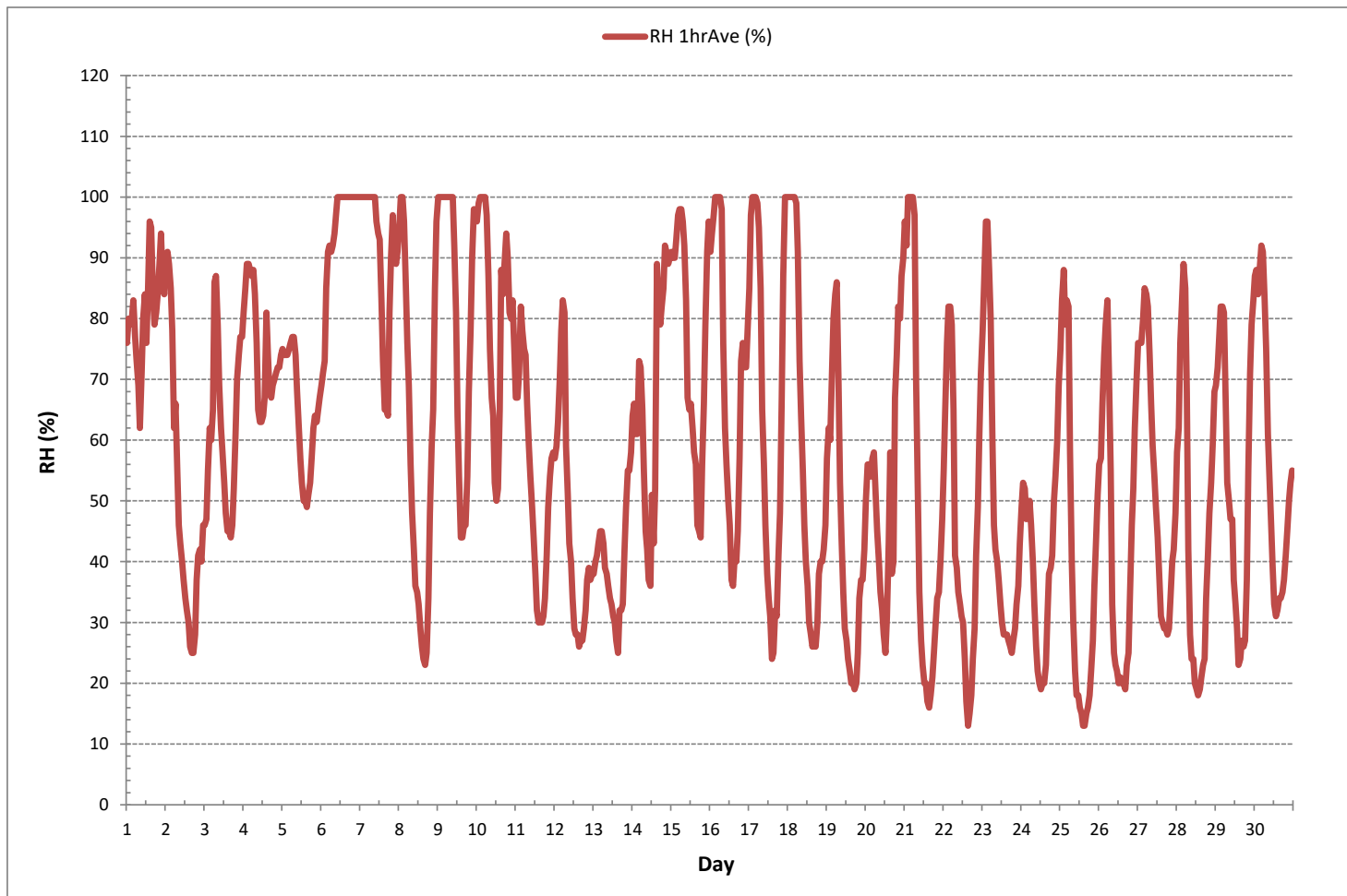
C	- MONTHLY CALIBRATION	Q	- QUALITY ASSURANCE
C1	- REPEAT CALIBRATION	R	- RECOVERY
Y	- MAINTENANCE	X	- MACHINE MALFUNCTION
S	- DAILY ZERO/SPAN CHECK	G	- OUT FOR REPAIR
S1	- REPEAT ZERO/SPAN CHECK	P	- POWER FAILURE



MONTHLY SUMMARY

MINIMUM 1-HR AVERAGE:	13	%	@ HOUR	15	ON DAY	22
MAXIMUM 1-HR AVERAGE:	100	%	@ HOUR	10	ON DAY	6
MAXIMUM 24-HR AVERAGE:	94	%			ON DAY	6
OPERATIONAL TIME:						720 hrs
AMD OPERATION UPTIME:						100.0 %
STANDARD DEVIATION:	26		MONTHLY AVERAGE:			60 %

RELATIVE HUMIDITY Hourly Averages (RH %)



BAROMETRIC PRESSURE Hourly Averages (BP mbar)

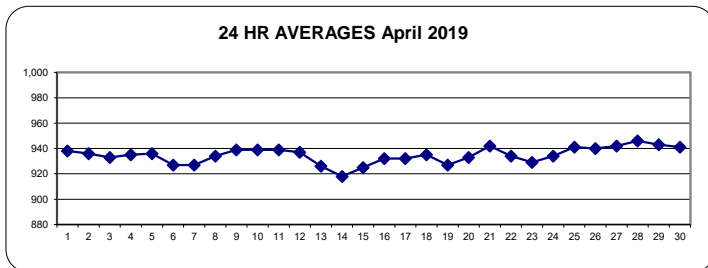
HR START (MST)	0:00	1:00	2:00	3:00	4:00	5:00	6:00	7:00	8:00	9:00	10:00	11:00	12:00	13:00	14:00	15:00	16:00	17:00	18:00	19:00	20:00	21:00	22:00	23:00	DAILY	DAILY	24-HR	RDGS.					
HR END (MST)	0:59	1:59	2:59	3:59	4:59	5:59	6:59	7:59	8:59	9:59	10:59	11:59	12:59	13:59	14:59	15:59	16:59	17:59	18:59	19:59	20:59	21:59	22:59	23:59	MIN.	MAX.	AVG.						
DAY																																	
1	941	941	940	940	940	939	939	939	939	939	939	938	937	937	936	937	937	937	937	937	937	937	937	937	937	936	941	938	24				
2	937	937	936	936	936	936	936	936	937	937	937	937	937	937	936	936	936	935	935	935	935	935	935	935	935	935	935	936	24				
3	936	936	936	936	936	936	936	936	936	935	935	935	934	934	933	932	932	931	930	930	930	930	930	929	929	929	929	936	24				
4	929	930	930	930	931	932	932	933	934	934	935	935	936	936	937	937	938	938	938	938	938	938	938	938	938	929	938	935	24				
5	939	938	938	938	938	938	938	938	938	938	938	938	937	937	936	935	935	934	934	933	933	933	932	932	932	932	932	939	24				
6	932	931	930	930	929	929	928	928	927	927	926	926	925	925	925	925	924	924	924	924	925	925	925	925	925	924	932	927	24				
7	925	925	925	925	925	925	925	925	925	926	927	927	927	927	928	928	928	929	928	928	928	929	929	929	929	925	929	927	24				
8	929	930	930	930	931	931	932	933	934	934	935	935	935	936	936	936	936	936	936	935	936	936	935	936	936	929	936	934	24				
9	937	937	936	937	937	937	938	938	938	939	939	940	940	940	940	940	940	940	939	939	939	939	940	940	940	936	940	939	24				
10	940	940	940	940	940	940	940	940	940	940	940	940	940	939	939	939	939	939	938	938	939	939	939	939	938	940	939	24					
11	939	939	939	938	938	939	939	939	940	940	940	940	940	940	940	940	940	940	940	940	940	940	940	939	938	940	939	24					
12	939	939	939	939	939	938	938	939	939	939	939	938	938	937	937	936	935	935	934	933	933	932	931	931	931	931	939	937	24				
13	931	930	930	929	928	928	928	928	928	928	928	927	927	926	925	925	924	924	923	922	921	920	920	919	919	919	931	926	24				
14	918	918	918	918	917	917	917	917	917	917	918	918	918	918	918	919	919	919	919	919	919	920	920	920	917	920	918	24					
15	920	920	920	921	921	921	922	923	923	924	925	925	926	926	927	927	927	927	927	928	928	929	929	929	929	929	929	925	24				
16	930	930	931	931	931	932	932	933	933	934	934	934	934	934	933	933	933	933	933	932	932	932	932	932	931	930	934	932	24				
17	931	931	930	930	930	930	930	931	931	932	932	932	931	931	931	931	932	932	933	933	934	934	935	935	930	935	932	24					
18	935	936	936	936	936	936	937	938	938	938	938	938	938	937	936	935	934	933	932	931	930	929	929	928	928	928	938	935	24				
19	927	927	926	927	927	927	928	927	928	928	928	928	928	928	927	927	927	927	927	927	927	927	927	927	928	926	928	927	24				
20	928	928	928	928	929	929	930	931	932	932	933	933	933	933	933	934	935	935	936	936	937	937	938	938	928	938	933	24					
21	938	939	939	940	940	940	941	942	943	943	944	944	944	944	943	943	943	942	942	942	942	942	942	942	938	944	942	24					
22	941	941	940	939	939	938	938	938	938	937	936	935	934	934	932	931	931	929	928	927	927	927	927	927	927	927	941	934	24				
23	927	928	927	927	927	928	928	929	929	929	930	930	930	930	930	930	930	930	930	930	931	931	931	931	927	931	929	24					
24	931	931	931	932	932	933	933	934	934	934	934	934	934	934	934	934	935	935	936	936	937	938	938	939	931	939	934	24					
25	939	939	940	940	941	940	941	942	942	942	942	942	942	942	942	942	942	941	941	941	940	940	940	939	942	941	24						
26	940	940	939	939	940	940	941	941	941	941	941	941	941	941	941	940	940	940	940	941	941	941	941	940	939	941	940	24					
27	940	940	940	940	941	941	941	941	941	941	942	942	942	942	942	942	943	942	943	943	944	944	944	945	940	945	942	24					
28	945	945	945	945	946	946	946	947	948	948	947	947	947	947	947	947	947	947	946	946	946	946	946	945	948	946	24						
29	946	946	945	945	945	945	945	945	945	945	945	944	944	944	943	943	942	942	941	941	941	941	941	940	940	946	943	24					
30	940	939	939	939	940	940	941	941	942	942	942	942	942	942	942	942	942	942	941	941	941	941	941	941	939	943	941	24					
HOURLY MAX	946	946	945	945	946	946	946	947	948	948	947	947	947	947	947	947	947	947	947	946	946	946	946	946									
HOURLY AVG	934	934	934	934	934	934	935	935	935	935	936	935	935	935	935	935	935	935	934	934	934	934	934	934									

STATUS FLAG CODES

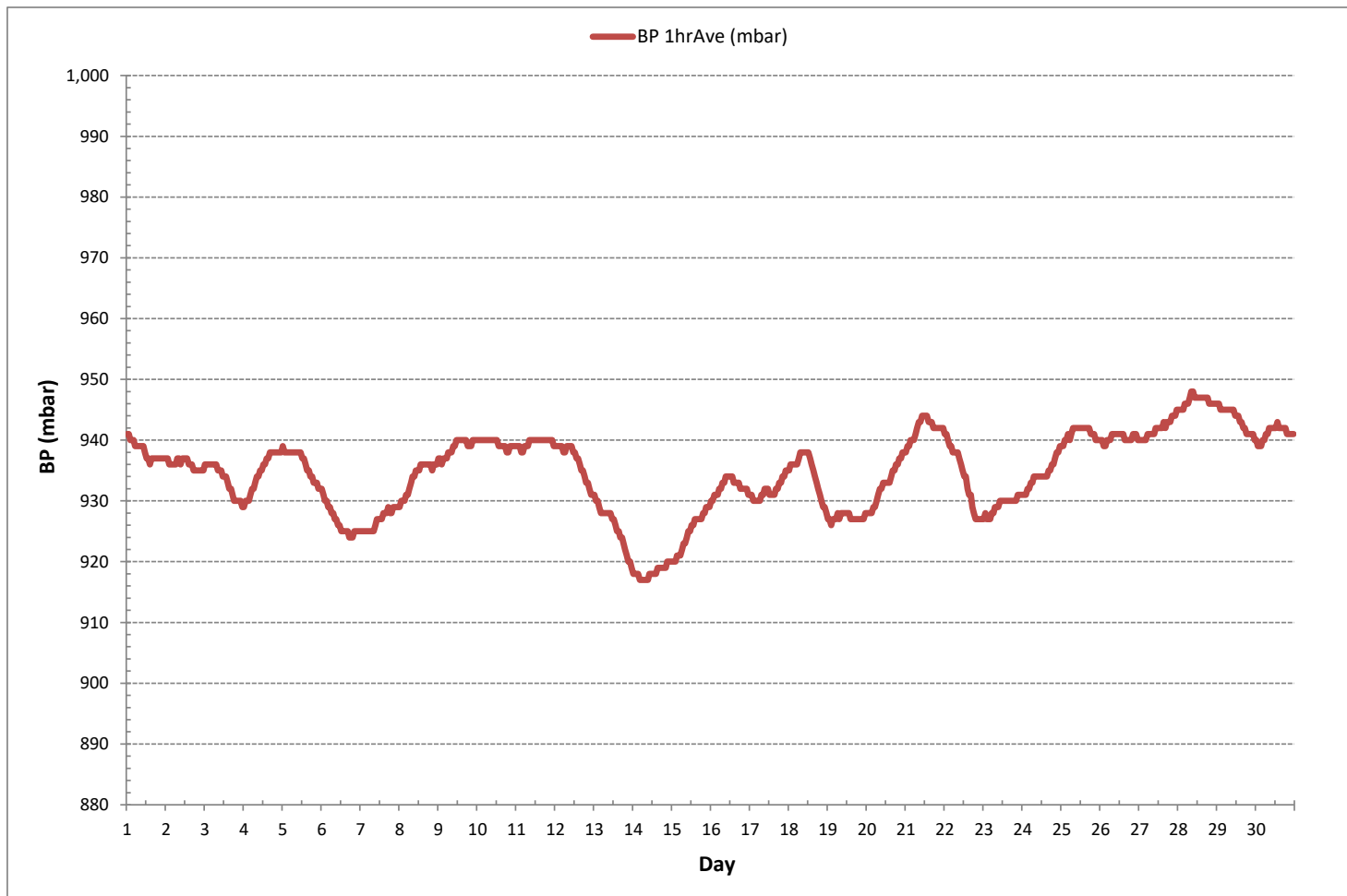
C	- MONTHLY CALIBRATION	Q	- QUALITY ASSURANCE
C1	- REPEAT CALIBRATION	R	- RECOVERY
Y	- MAINTENANCE	X	- MACHINE MALFUNCTION
S	- DAILY ZERO/SPAN CHECK	G	- OUT FOR REPAIR
S1	- REPEAT ZERO/SPAN CHECK	P	- POWER FAILURE

MONTHLY SUMMARY

MINIMUM 1-HR AVERAGE:	917	mbar	@ HOUR	4	ON DAY	14
MAXIMUM 1-HR AVERAGE:	948	mbar	@ HOUR	8	ON DAY	28
MAXIMUM 24-HR AVERAGE:	946	mbar			ON DAY	28
OPERATIONAL TIME:						720 hrs
AMD OPERATION UPTIME:						100.0 %
STANDARD DEVIATION:	7					
MONTHLY AVERAGE:						935 mbar



BAROMETRIC PRESSURE Hourly Averages (BP mbar)





AMBIENT TEMPERATURE Hourly Averages (AmbTPX °C)

HR START (MST)	0:00	1:00	2:00	3:00	4:00	5:00	6:00	7:00	8:00	9:00	10:00	11:00	12:00	13:00	14:00	15:00	16:00	17:00	18:00	19:00	20:00	21:00	22:00	23:00	DAILY	DAILY	24-HR	RDGS.
HR END (MST)	0:59	1:59	2:59	3:59	4:59	5:59	6:59	7:59	8:59	9:59	10:59	11:59	12:59	13:59	14:59	15:59	16:59	17:59	18:59	19:59	20:59	21:59	22:59	23:59	MIN.	MAX.	AVG.	
DAY 1	1.5	1.0	1.1	0.5	-0.4	-0.2	0.4	1.1	2.5	2.7	2.3	2.5	3.1	2.5	1.2	0.5	0.8	0.7	-0.4	-1.5	-2.0	-3.0	-2.9	-3.0	-3.0	3.1	0.5	24
2	-4.1	-4.0	-4.3	-3.9	-3.5	-3.9	-4.0	-3.8	-3.1	-2.7	-2.2	-1.5	-0.7	0.0	0.7	1.2	1.3	0.8	-0.3	-2.0	-2.9	-2.9	-2.5	-3.7	-4.3	1.3	-2.2	24
3	-4.3	-4.6	-5.3	-6.3	-6.5	-6.9	-7.5	-7.4	-6.8	-5.5	-4.9	-4.0	-3.2	-1.7	-0.4	0.1	0.7	0.4	-0.7	-1.6	-2.0	-2.6	-3.6	-4.3	-7.5	0.7	-3.7	24
4	-5.0	-5.7	-6.7	-7.5	-7.8	-7.4	-7.5	-6.4	-4.6	-2.5	-2.0	-1.6	-1.4	-1.6	-2.4	-1.9	-1.9	-2.3	-3.0	-3.7	-4.1	-4.4	-4.6	-4.7	-7.8	-1.4	-4.2	24
5	-4.7	-4.8	-5.0	-5.0	-5.2	-5.3	-5.2	-4.5	-3.5	-2.0	-0.2	1.5	2.9	4.0	4.2	4.7	4.2	3.7	2.9	2.3	2.4	2.1	1.5	1.2	-5.3	4.7	-0.3	24
6	1.4	1.3	1.0	0.3	0.0	-0.1	0.1	0.6	1.1	1.0	0.4	0.5	0.4	0.8	1.4	1.3	0.6	0.3	0.2	0.1	0.0	-0.1	-0.2	-0.2	-0.2	1.4	0.5	24
7	-0.3	-0.5	-0.5	-0.4	-0.4	-0.4	-0.3	-0.2	0.2	1.3	3.1	4.0	4.6	6.1	7.5	8.9	8.4	7.7	5.0	3.1	1.7	3.0	3.5	3.2	-0.5	8.9	2.8	24
8	1.8	-0.7	-1.8	-0.4	0.4	1.7	2.4	4.7	6.8	8.8	10.5	11.6	12.7	13.6	14.0	14.4	14.1	13.3	10.9	6.3	3.2	2.4	2.2	1.1	-1.8	14.4	6.4	24
9	-0.3	-1.3	-1.7	-2.1	-2.6	-2.1	-1.4	-1.2	-0.7	0.0	1.7	3.6	6.8	8.9	11.2	11.9	11.5	11.3	9.2	6.2	4.1	1.5	0.4	0.3	-2.6	11.9	3.1	24
10	0.7	-0.6	-1.8	-1.2	-1.0	-2.1	-0.8	0.8	3.0	4.5	5.3	7.8	9.2	9.7	8.7	7.1	7.0	6.1	5.3	5.2	5.8	5.6	5.1	4.7	-2.1	9.7	3.9	24
11	4.2	3.4	2.1	0.2	0.5	0.5	0.2	1.2	2.7	4.3	5.8	7.9	9.5	10.5	10.4	9.2	9.6	9.0	7.2	5.4	4.1	3.0	2.3	1.9	0.2	10.5	4.8	24
12	1.7	1.1	0.2	-0.9	-2.2	-3.1	-2.5	0.4	1.9	4.2	5.8	7.3	8.2	8.8	8.6	9.3	9.0	9.2	8.3	6.6	5.4	4.4	4.3	3.5	-3.1	9.3	4.1	24
13	2.7	1.8	1.2	0.8	0.2	0.1	1.0	2.4	4.1	6.4	9.2	10.5	11.4	11.9	12.1	12.0	11.3	11.1	10.1	6.8	5.3	4.1	3.9	3.2	0.1	12.1	6.0	24
14	1.6	1.4	2.0	1.7	0.2	0.5	1.8	4.3	6.7	7.8	9.9	10.8	8.8	10.0	8.5	5.3	6.9	6.5	5.6	4.7	3.6	4.1	3.9	3.3	0.2	10.8	5.0	24
15	2.8	2.5	2.0	1.2	0.4	0.0	0.7	1.7	2.2	3.5	6.4	6.9	6.6	7.4	7.5	7.3	8.3	7.6	7.5	4.7	2.7	0.8	-1.2	-2.5	-2.5	8.3	3.6	24
16	-2.1	-2.1	-2.7	-3.1	-3.7	-4.2	-3.2	-1.0	2.8	5.0	6.7	8.4	8.7	10.1	10.7	9.6	9.7	8.9	6.8	3.6	2.8	3.8	4.2	3.3	-4.2	10.7	3.5	24
17	1.7	-1.4	-2.4	-2.5	-2.4	-2.0	-0.5	2.3	5.9	7.5	10.1	11.8	12.3	12.8	14.3	13.8	11.8	11.2	10.1	8.1	6.2	4.6	1.8	1.0	-2.5	14.3	5.7	24
18	0.3	0.1	0.1	-0.1	-0.5	-0.5	1.5	5.1	7.6	9.1	9.8	10.9	11.5	12.9	14.0	14.3	14.5	14.9	13.3	10.5	9.9	10.5	10.3	9.5	-0.5	14.9	7.9	24
19	7.4	6.7	7.7	8.0	7.3	6.7	6.6	8.3	10.0	11.3	12.4	12.8	13.2	13.8	13.7	12.7	12.6	12.4	12.1	9.9	6.6	5.3	5.1	3.4	3.4	13.8	9.4	24
20	1.2	-0.3	-0.2	0.3	0.6	1.0	3.5	5.5	7.4	8.9	10.2	10.7	11.5	10.2	8.1	7.5	10.1	9.5	6.2	5.5	4.6	4.2	3.1	2.6	-0.3	11.5	5.5	24
21	1.1	1.5	-0.4	-0.2	-0.6	-1.9	-0.1	4.0	6.6	8.7	10.1	11.0	11.2	11.5	12.3	12.9	12.3	11.6	11.0	8.9	7.5	6.9	5.4	3.7	-1.9	12.9	6.5	24
22	1.8	0.3	-1.3	-1.7	-1.8	-1.3	1.8	6.9	9.1	11.2	12.9	14.1	15.0	16.8	17.6	18.0	17.6	17.4	15.9	13.7	13.9	12.9	11.2	9.4	-1.8	18.0	9.7	24
23	8.6	8.0	5.6	5.4	5.9	6.0	8.1	9.7	10.4	11.6	12.9	13.7	13.9	14.2	14.8	15.2	14.7	13.9	12.7	11.0	9.2	7.6	6.5	4.7	4.7	15.2	10.2	24
24	2.9	2.1	2.6	3.6	3.9	3.4	4.5	6.3	8.2	9.9	11.0	11.4	11.4	11.2	11.0	10.9	9.4	7.4	7.2	6.0	4.9	4.4	3.7	3.1	2.1	11.4	6.7	24
25	2.3	1.8	1.3	1.5	0.3	-0.9	0.4	3.0	5.1	6.4	7.2	7.0	7.8	8.0	8.2	9.1	9.2	8.6	7.4	6.0	3.0	-0.8	-2.5	-3.2	-3.2	9.2	4.0	24
26	-3.9	-4.4	-5.2	-6.0	-6.2	-6.0	-2.7	1.9	5.6	6.9	7.9	7.3	8.3	8.0	8.0	8.0	7.7	7.0	6.1	4.1	2.4	1.2	-0.3	-1.6	-6.2	8.3	2.2	24
27	-2.4	-3.3	-3.7	-4.2	-4.9	-4.7	-3.2	-1.7	-0.6	0.9	1.8	2.5	3.3	3.8	4.6	4.5	4.0	3.6	2.7	1.2	-1.0	-2.9	-3.0	-4.4	-4.9	4.6	-0.3	24
28	-6.0	-6.6	-7.6	-8.2	-8.7	-7.8	-3.5	0.8	3.0	4.1	4.0	4.8	5.2	5.3	5.6	5.4	5.1	5.0	3.3	0.9	-1.8	-3.0	-3.5	-4.6	-8.7	5.6	-0.4	24
29	-4.6	-4.6	-5.3	-6.3	-5.8	-5.3	-2.0	0.9	2.6	3.3	3.3	3.7	4.9	5.3	6.2	6.3	5.7	5.7	5.4	4.0	2.1	0.7	-0.2	-1.3	-6.3	6.3	1.0	24
30	-2.0	-1.8	-1.6	-1.8	-3.6	-5.5	-6.0	-5.9	-5.7	-4.7	-3.0	-2.1	-1.3	-1.2	-1.2	-1.5	-1.5	-1.7	-2.1	-3.2	-4.3	-5.2	-5.6	-5.8	-6.0	-1.2	-3.3	24
HOURLY MAX	8.6	8.0	7.7	8.0	7.3	6.7	8.1	9.7	10.4	11.6	12.9	14.1	15.0	16.8	17.6	18.0	17.6	17.4	15.9	13.7	13.9	12.9	11.2	9.5				
HOURLY AVG	0.2	-0.5	-1.0	-1.3	-1.6	-1.7	-0.6	1.3	3.0	4.4	5.6	6.5	7.2	7.8	8.0	7.9	7.8	7.4	6.2	4.4	3.1	2.3	1.6	0.8				

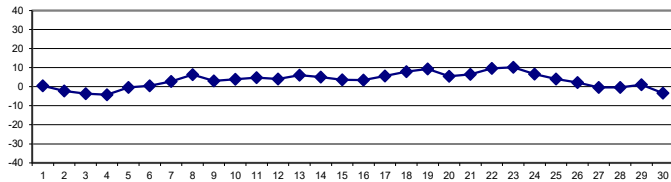
STATUS FLAG CODES

C	- MONTHLY CALIBRATION	Q	- QUALITY ASSURANCE
C1	- REPEAT CALIBRATION	R	- RECOVERY
Y	- MAINTENANCE	X	- MACHINE MALFUNCTION
S	- DAILY ZERO/SPAN CHECK	G	- OUT FOR REPAIR
S1	- REPEAT ZERO/SPAN CHECK	P	- POWER FAILURE

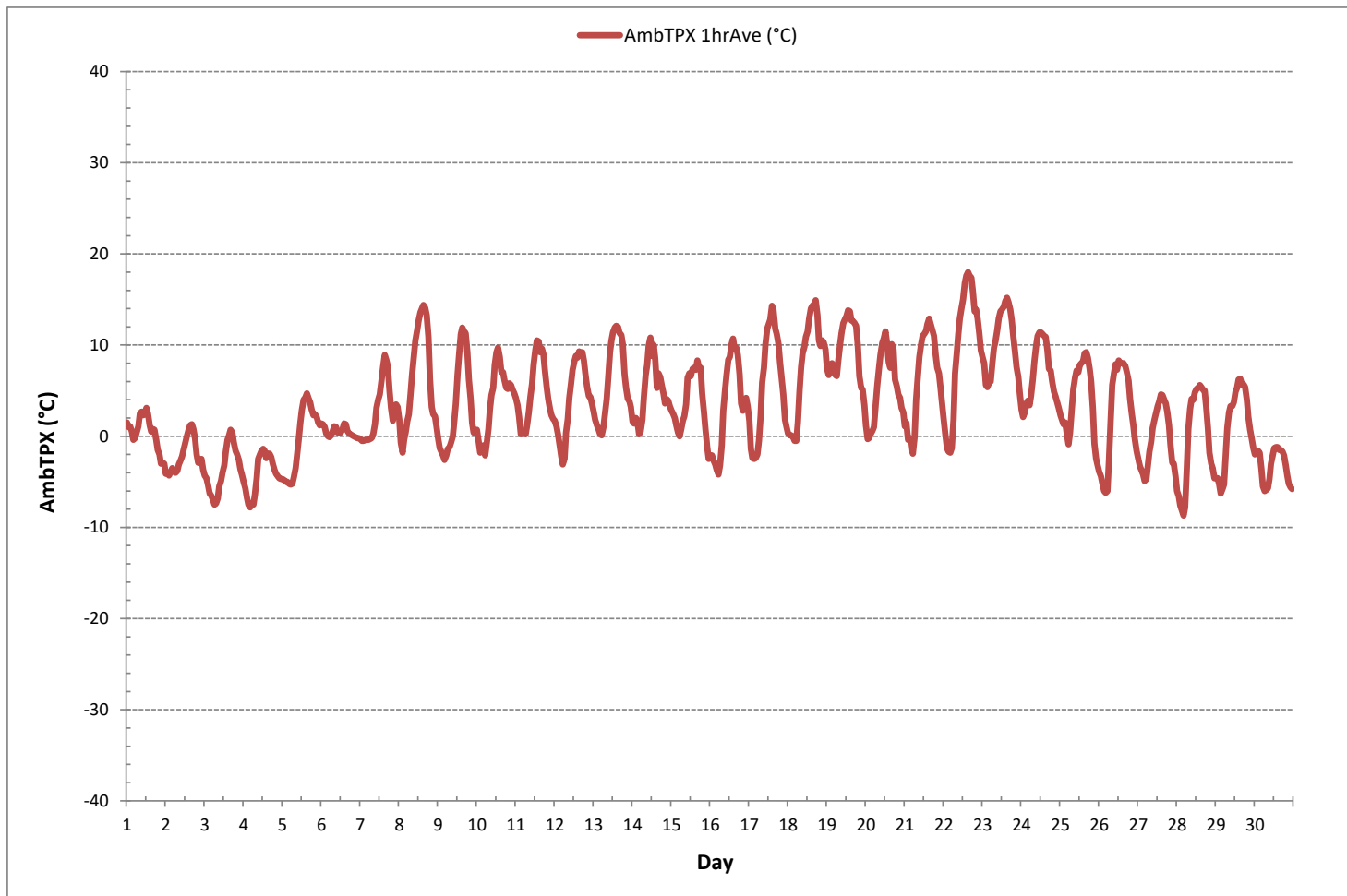
MONTHLY SUMMARY

MINIMUM 1-HR AVERAGE:	-8.7 °C	@ HOUR	4	ON DAY	28
MAXIMUM 1-HR AVERAGE:	18.0 °C	@ HOUR	15	ON DAY	22
MAXIMUM 24-HR AVERAGE:	10.2 °C			ON DAY	23
STANDARD DEVIATION:	5.6				
OPERATIONAL TIME:				720 hrs	
AMD OPERATION UPTIME:				100.0 %	
MONTHLY AVERAGE:	3.3 °C				

24 HR AVERAGES April 2019



AMBIENT TEMPERATURE Hourly Averages (AmbTPX °C)





PRECIPITATION Hourly TOTALS (mm)

HR START (MST)	0:00	1:00	2:00	3:00	4:00	5:00	6:00	7:00	8:00	9:00	10:00	11:00	12:00	13:00	14:00	15:00	16:00	17:00	18:00	19:00	20:00	21:00	22:00	23:00	DAILY	DAILY	24-HR	RDGS.
HR END (MST)	0:59	1:59	2:59	3:59	4:59	5:59	6:59	7:59	8:59	9:59	10:59	11:59	12:59	13:59	14:59	15:59	16:59	17:59	18:59	19:59	20:59	21:59	22:59	23:59	MIN.	MAX.	SUM	
DAY 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	0.2	0.3	0.3	0.0	0.0	0.1	0.0	0.0	0.0	0.0	0.0	0.0	0.3	0.9	24
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	24
3	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	24
4	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	24
5	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	24
6	0.0	0.0	0.0	0.2	0.1	0.1	0.0	0.0	0.0	0.4	1.4	0.4	1.9	0.2	0.1	0.8	1.7	0.5	0.4	0.3	0.9	0.7	0.1	0.1	0.0	1.9	10.3	24
7	0.1	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	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	24
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	24
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	24
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	0.2	0.7	0.0	0.5	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.7	1.4	24
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	24
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	24
13	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	24
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	0.1	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.1	0.1	24
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	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	24
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	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	24
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	0.1	0.8	0.0	0.0	0.0	0.8	0.9	24
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	24
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	24
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	0.2	0.0	0.0	0.1	0.1	0.0	0.0	0.0	0.0	0.0	0.0	0.2	0.4	24
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	24
22	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	24
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	0.0	0.0	0.0	0.0	0.0	0.0	0.0	24
24	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	24
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	0.0	0.0	0.0	0.0	0.0	0.0	0.0	24
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	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	24
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	24
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	24
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	24
30	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	24
HOURLY MAX	0.1	0.0	0.0	0.2	0.1	0.1	0.0	0.0	0.0	0.4	1.4	0.4	1.9	0.2	0.3	0.8	1.7	0.5	0.4	0.3	0.9	0.8	0.1	0.1				
HOURLY SUM	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.1	0.0	0.0	0.1	0.1	0.0	0.0	0.0	0.0	0.1	0.0	0.0				

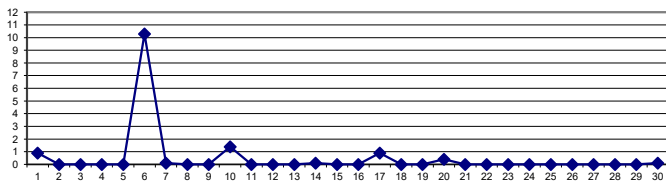
STATUS FLAG CODES

C	- MONTHLY CALIBRATION	Q	- QUALITY ASSURANCE
C1	- REPEAT CALIBRATION	R	- RECOVERY
Y	- MAINTENANCE	X	- MACHINE MALFUNCTION
S	- DAILY ZERO/SPAN CHECK	G	- OUT FOR REPAIR
S1	- REPEAT ZERO/SPAN CHECK	P	- POWER FAILURE

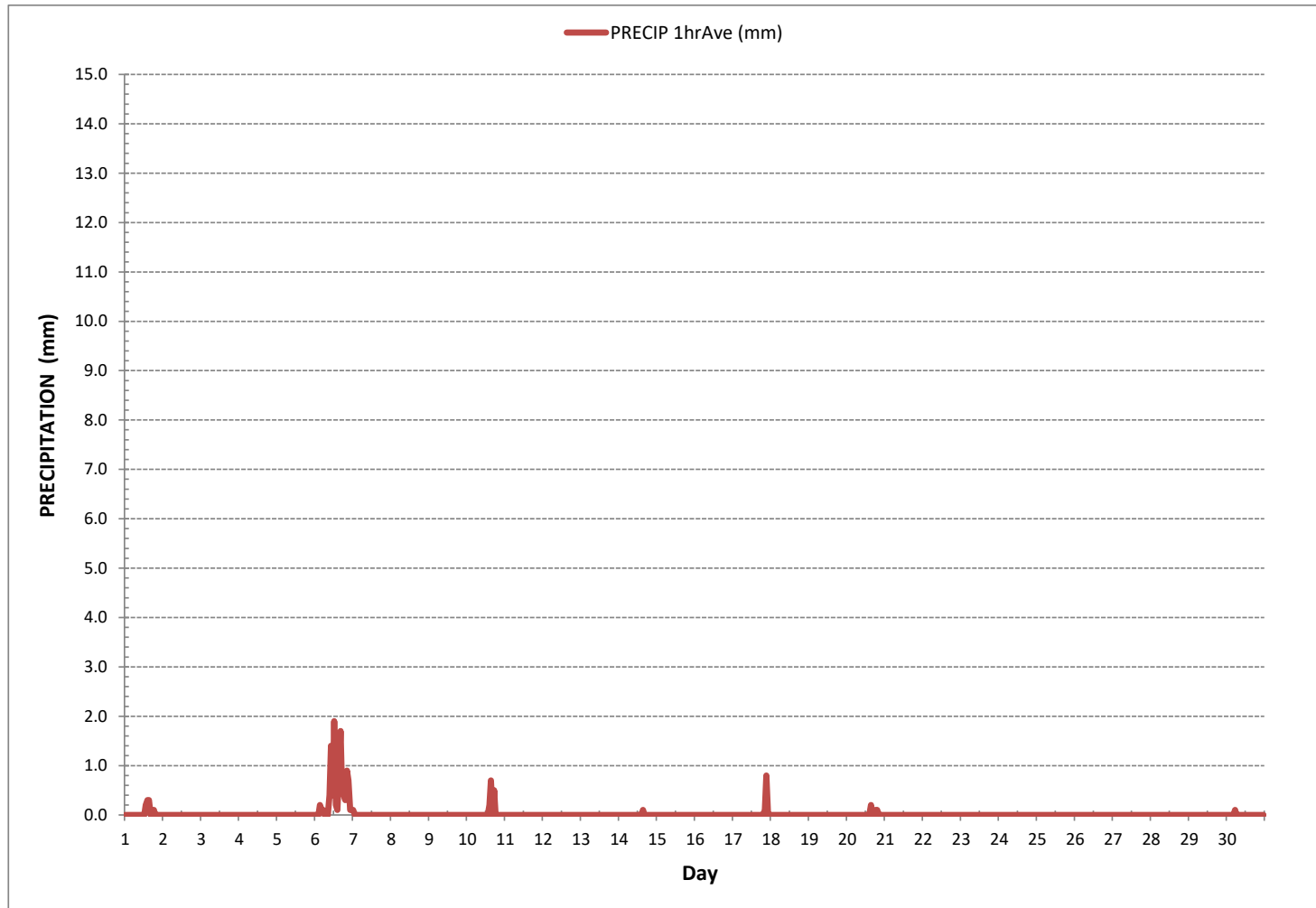
MONTHLY SUMMARY

MINIMUM 1-HR TOTAL:	0.0	mm	@ HOUR	0	ON DAY	1
MAXIMUM 1-HR TOTAL:	1.9	mm	@ HOUR	12	ON DAY	6
MAXIMUM 24-HR TOTAL:	10.3	mm			ON DAY	6
OPERATIONAL TIME:						720 hrs
AMD OPERATION UPTIME:						100.0 %
STANDARD DEVIATION:	0.1		MONTHLY TOTAL:			14.2 mm

24 HR TOTALS April 2019



PRECIPITATION Hourly TOTALS (mm)





SULPHUR DIOXIDE Instantaneous Maximum (SO₂ ppb)

HR START (MST)	0:00	1:00	2:00	3:00	4:00	5:00	6:00	7:00	8:00	9:00	10:00	11:00	12:00	13:00	14:00	15:00	16:00	17:00	18:00	19:00	20:00	21:00	22:00	23:00	DAILY MIN.	DAILY MAX.	24-HR AVG.	RDGS.
HR END (MST)	0:59	1:59	2:59	3:59	4:59	5:59	6:59	7:59	8:59	9:59	10:59	11:59	12:59	13:59	14:59	15:59	16:59	17:59	18:59	19:59	20:59	21:59	22:59	23:59				
DAY 1	4	1	1	2	S	1	0	3	20	17	16	1	1	6	15	0	1	0	0	0	1	3	15	17	0	20	5	24
2	0	1	9	S	19	10	16	13	13	9	16	17	9	10	8	6	9	7	0	0	0	0	0	0	0	19	7	24
3	0	0	S	0	0	0	0	0	0	2	1	3	4	4	2	4	4	1	0	0	0	0	0	0	0	4	1	24
4	0	S	0	0	0	0	0	0	0	0	1	0	1	1	0	0	0	0	0	0	0	0	0	0	0	1	0	24
5	S	0	0	0	0	3	1	2	2	1	0	3	1	1	1	1	3	5	1	5	6	7	8	S	0	8	2	24
6	4	6	7	1	0	1	0	0	3	2	1	2	0	1	4	4	2	1	1	3	4	1	S	2	0	7	2	24
7	3	3	1	0	0	0	0	0	0	1	1	0	0	1	8	2	1	3	0	0	0	S	1	1	0	8	1	24
8	2	1	0	0	0	0	0	0	5	1	0	5	4	2	0	2	2	1	1	0	S	0	0	0	0	5	1	24
9	0	0	0	0	0	0	2	3	3	2	5	8	10	1	1	4	3	1	6	S	0	0	0	0	0	10	2	24
10	0	0	0	1	1	0	1	1	1	1	2	1	1	1	1	1	0	0	S	0	0	1	3	4	0	4	1	24
11	1	0	1	1	0	0	0	0	0	2	4	2	2	3	0	0	1	S	0	4	3	3	1	3	0	4	1	24
12	3	3	3	1	1	0	0	0	0	0	0	0	0	0	0	0	S	0	0	0	0	0	0	0	0	3	1	24
13	0	0	0	0	0	1	0	1	0	0	0	0	0	0	0	S	1	2	0	1	1	0	0	0	0	2	0	24
14	0	0	0	0	0	0	0	0	0	0	0	0	0	3	S	0	1	3	8	11	4	6	5	3	0	11	2	24
15	0	4	12	16	14	2	1	1	0	0	2	16	13	S	6	2	4	7	0	0	0	0	0	0	0	16	4	24
16	0	0	0	0	0	0	0	0	4	4	3	1	S	0	0	5	2	7	0	0	0	1	0	0	0	7	1	24
17	0	0	0	0	0	0	0	1	C	C	C	C	C	0	0	10	7	0	0	7	3	9	0	0	0	10	2	24
18	0	0	0	0	0	0	0	0	0	4	S	0	0	1	1	1	0	2	2	0	1	0	0	0	0	4	1	24
19	0	0	0	1	0	10	2	6	8	S	0	5	0	0	6	1	0	0	0	0	1	1	0	0	0	10	2	24
20	1	1	1	0	0	0	0	1	S	0	0	0	5	1	1	13	12	6	0	29	12	10	6	7	0	29	5	24
21	7	12	1	0	0	0	5	S	3	10	4	0	6	0	0	7	0	1	1	0	0	2	1	0	0	12	3	24
22	0	0	0	0	0	0	S	2	1	1	1	1	0	0	0	0	0	0	0	0	4	5	0	0	0	5	1	24
23	13	13	5	2	2	S	0	0	1	0	0	2	2	9	3	0	0	0	0	0	0	0	3	5	0	13	3	24
24	3	0	0	1	S	3	2	1	3	2	10	4	1	0	0	5	3	17	15	17	10	20	18	20	0	20	7	24
25	6	14	15	S	9	0	1	11	13	15	14	13	4	11	15	15	10	15	6	12	2	1	1	0	0	15	9	24
26	0	0	S	0	0	0	0	2	7	1	1	7	10	11	4	0	0	0	0	0	0	0	0	0	0	11	2	24
27	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	24
28	S	0	0	0	0	0	0	2	4	2	4	2	1	0	0	8	2	0	0	0	5	0	0	S	0	8	1	24
29	0	0	0	0	0	0	0	0	1	1	1	4	5	4	3	11	5	3	3	17	1	1	S	0	0	17	3	24
30	0	0	0	6	0	1	0	0	0	0	5	1	10	2	0	2	3	0	0	0	0	S	0	0	0	10	1	24
HOURLY MAX	13	14	15	16	19	10	16	13	20	17	16	17	13	11	15	15	12	17	15	29	12	20	18	20				
HOURLY AVG	2	2	2	1	2	1	1	2	3	3	3	3	3	3	3	4	3	3	2	4	2	3	2	2				

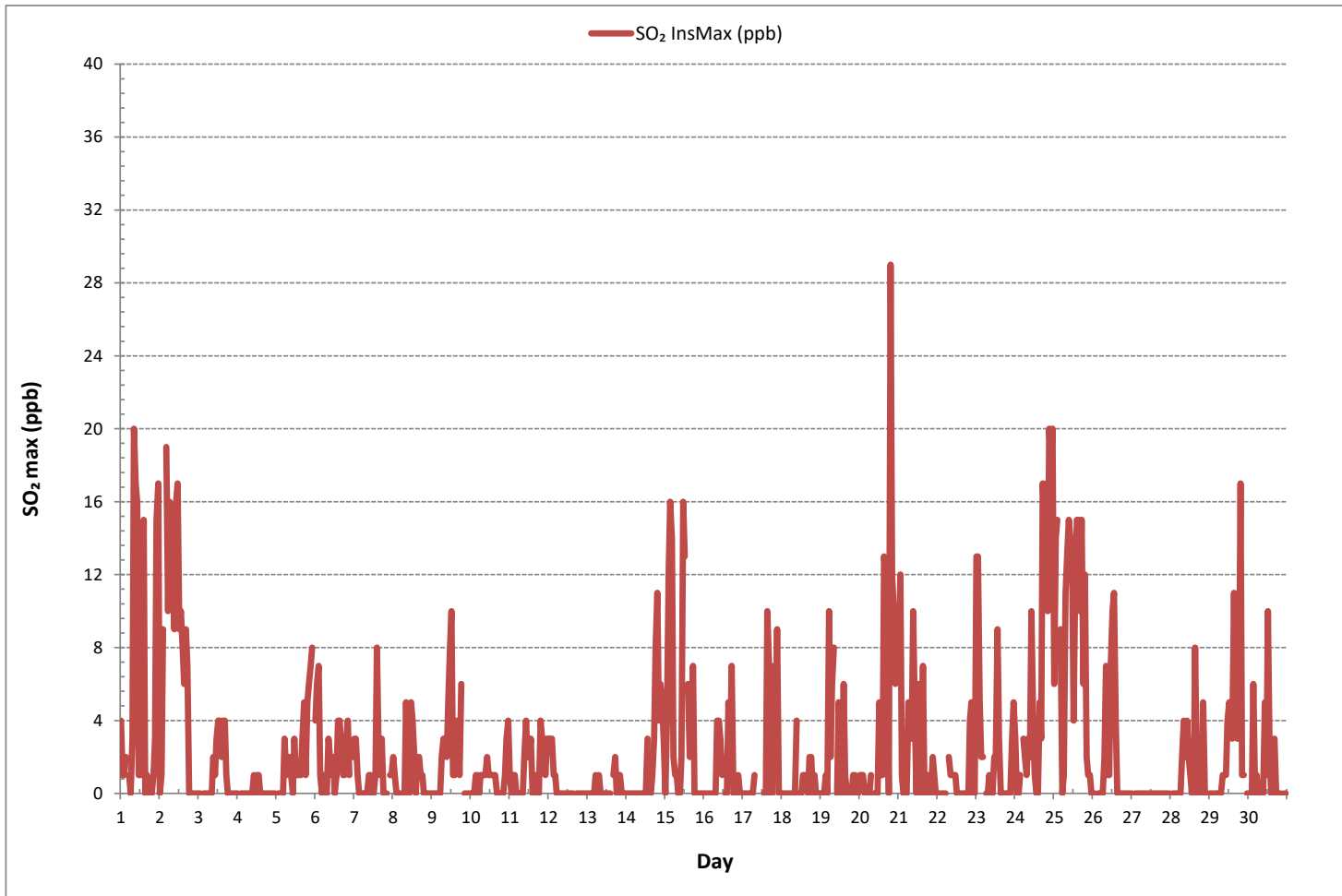
STATUS FLAG CODES

C	- MONTHLY CALIBRATION	Q	- QUALITY ASSURANCE
C1	- REPEAT CALIBRATION	R	- RECOVERY
Y	- MAINTENANCE	X	- MACHINE MALFUNCTION
S	- DAILY ZERO/SPAN CHECK	G	- OUT FOR REPAIR
S1	- REPEAT ZERO/SPAN CHECK	P	- POWER FAILURE

MONTHLY SUMMARY

NUMBER OF NON-ZERO READINGS:	338
MAXIMUM INSTANTANEOUS VALUE:	29 ppb @ HOUR 19 ON DAY 20
IZS CALIBRATION TIME:	31 hrs
MONTHLY CALIBRATION TIME:	5 hrs
STANDARD DEVIATION:	4
OPERATIONAL TIME:	720 hrs

SULPHUR DIOXIDE Instantaneous Maximum (SO₂ ppb)





HYDROGEN SULPHIDE Instantaneous Maximum (H₂S ppb)

HR START (MST)	0:00	1:00	2:00	3:00	4:00	5:00	6:00	7:00	8:00	9:00	10:00	11:00	12:00	13:00	14:00	15:00	16:00	17:00	18:00	19:00	20:00	21:00	22:00	23:00	DAILY MIN.	DAILY MAX.	24-HR AVG.	RDGS.	
HR END (MST)	0:59	1:59	2:59	3:59	4:59	5:59	6:59	7:59	8:59	9:59	10:59	11:59	12:59	13:59	14:59	15:59	16:59	17:59	18:59	19:59	20:59	21:59	22:59	23:59					
DAY 1	1	1	1	1	S	1	1	1	2	2	2	1	1	1	2	1	1	2	1	1	1	1	1	1	1	2	1	24	
2	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	24	
3	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	1	24	
4	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	1	1	24	
5	S	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	2	2	1	S	1	2	24	
6	2	2	1	1	1	1	1	1	1	1	1	1	1	1	1	1	2	1	1	1	1	1	1	S	1	1	2	24	
7	1	2	2	1	1	1	1	1	1	1	1	1	1	1	2	1	1	2	1	1	1	1	S	1	1	1	2	24	
8	1	1	1	1	1	1	2	1	1	1	1	1	1	1	1	1	1	1	1	1	1	S	1	1	1	1	2	24	
9	1	1	1	1	1	1	2	1	1	2	2	2	2	2	1	2	2	2	2	2	S	2	2	1	1	1	2	24	
10	1	1	2	2	1	1	2	2	1	1	1	1	1	1	2	2	1	2	S	1	1	1	1	1	1	1	2	24	
11	1	1	1	1	2	1	1	1	2	1	1	2	1	2	1	2	1	S	1	2	1	1	1	1	1	1	2	24	
12	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	S	1	1	1	1	1	1	1	1	1	1	1	24	
13	1	1	1	1	1	1	1	1	1	1	1	1	1	1	S	1	1	1	1	1	1	1	1	1	1	1	1	24	
14	1	1	1	1	1	1	1	1	1	1	1	1	1	1	S	1	2	1	2	1	1	1	2	2	1	1	2	24	
15	1	2	1	1	1	1	1	1	1	1	2	2	2	S	1	1	2	1	1	1	1	3	3	1	1	1	3	24	
16	1	1	1	1	1	1	1	1	2	2	1	1	S	2	1	1	1	2	1	1	1	1	1	1	1	1	2	24	
17	1	1	1	2	2	1	1	1	1	2	1	C	C	C	C	C	C	0	1	1	1	1	1	1	1	0	2	24	
18	1	1	1	1	1	1	1	1	1	1	S	1	1	1	1	1	0	1	1	1	1	1	1	1	0	1	1	24	
19	1	1	1	0	1	1	1	1	1	S	1	0	1	0	1	0	0	1	0	0	0	0	0	0	0	0	1	1	24
20	1	1	1	0	0	0	0	1	S	0	0	0	0	0	0	0	0	0	1	1	1	1	0	1	0	1	0	24	
21	1	1	0	1	1	1	1	S	1	1	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1	0	24
22	1	1	0	0	0	0	S	1	1	0	0	1	0	0	1	0	1	0	0	0	0	1	0	0	1	0	1	0	24
23	1	1	1	1	1	S	1	1	0	0	0	1	0	0	0	0	0	0	0	0	0	1	0	1	0	1	0	24	
24	0	0	0	0	S	0	0	0	0	0	0	0	0	0	1	1	0	1	0	1	1	1	1	1	0	1	0	24	
25	1	1	1	S	1	1	0	1	1	1	0	1	0	0	1	0	0	1	0	0	0	0	0	0	0	0	1	1	24
26	0	0	S	0	1	1	0	0	1	0	0	1	1	1	0	0	1	1	0	0	0	0	0	0	0	0	1	0	24
27	0	S	0	0	0	1	1	1	1	0	0	1	1	1	0	0	1	0	0	0	0	0	0	0	0	0	1	0	24
28	S	0	0	1	1	0	1	1	0	0	0	1	0	1	0	1	0	0	0	0	1	0	1	1	S	0	1	0	24
29	1	1	1	1	1	1	0	1	0	0	0	0	1	0	0	0	0	0	0	0	0	0	0	S	0	0	1	1	24
30	0	0	0	1	1	1	0	0	0	1	0	0	1	0	1	0	1	0	1	1	0	0	S	1	0	0	1	1	24
HOURLY MAX	2	2	2	2	2	1	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2	3	3	2	1				
HOURLY AVG	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1				

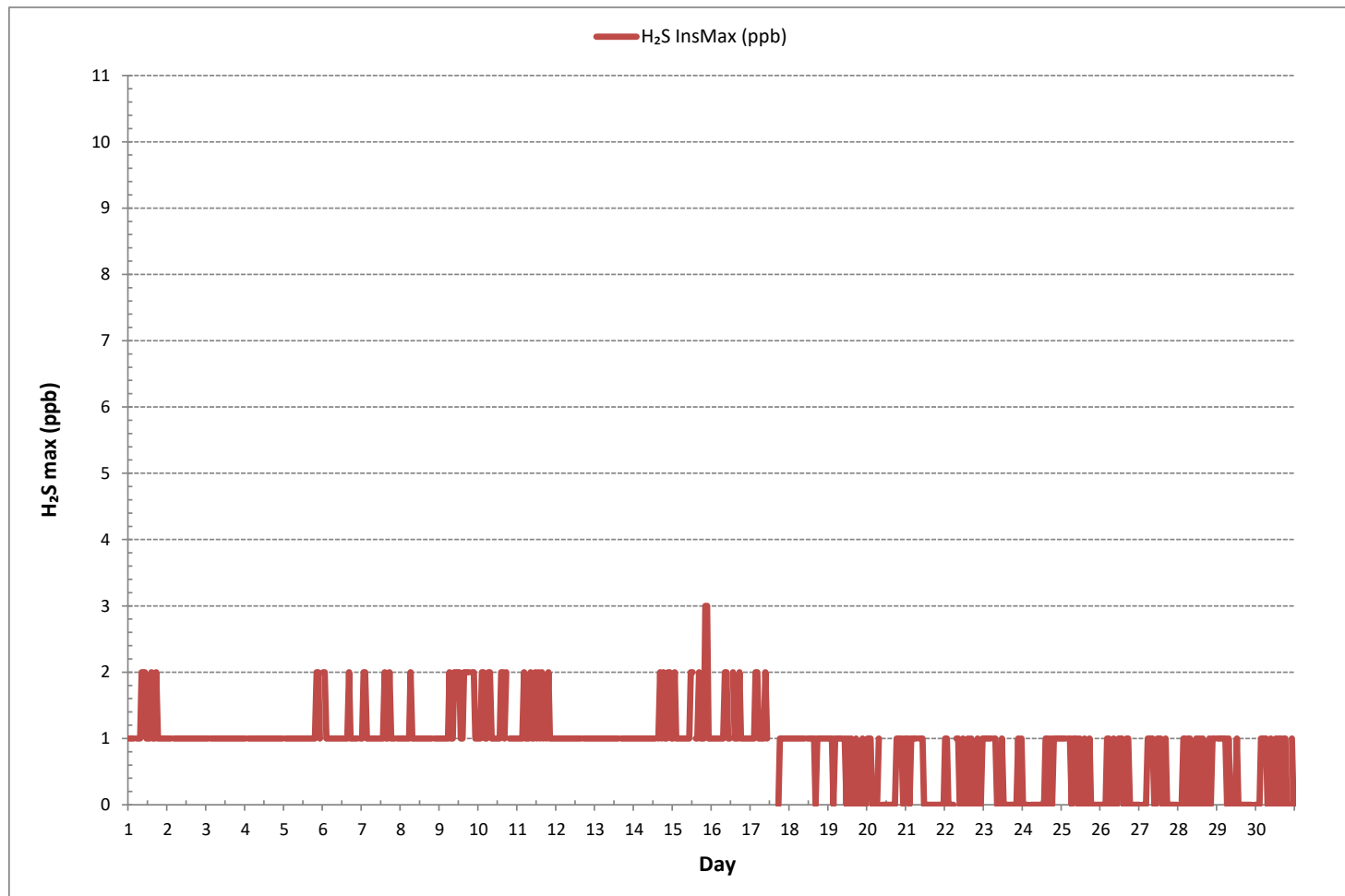
STATUS FLAG CODES

C	- MONTHLY CALIBRATION	Q	- QUALITY ASSURANCE
C1	- REPEAT CALIBRATION	R	- RECOVERY
Y	- MAINTENANCE	X	- MACHINE MALFUNCTION
S	- DAILY ZERO/SPAN CHECK	G	- OUT FOR REPAIR
S1	- REPEAT ZERO/SPAN CHECK	P	- POWER FAILURE

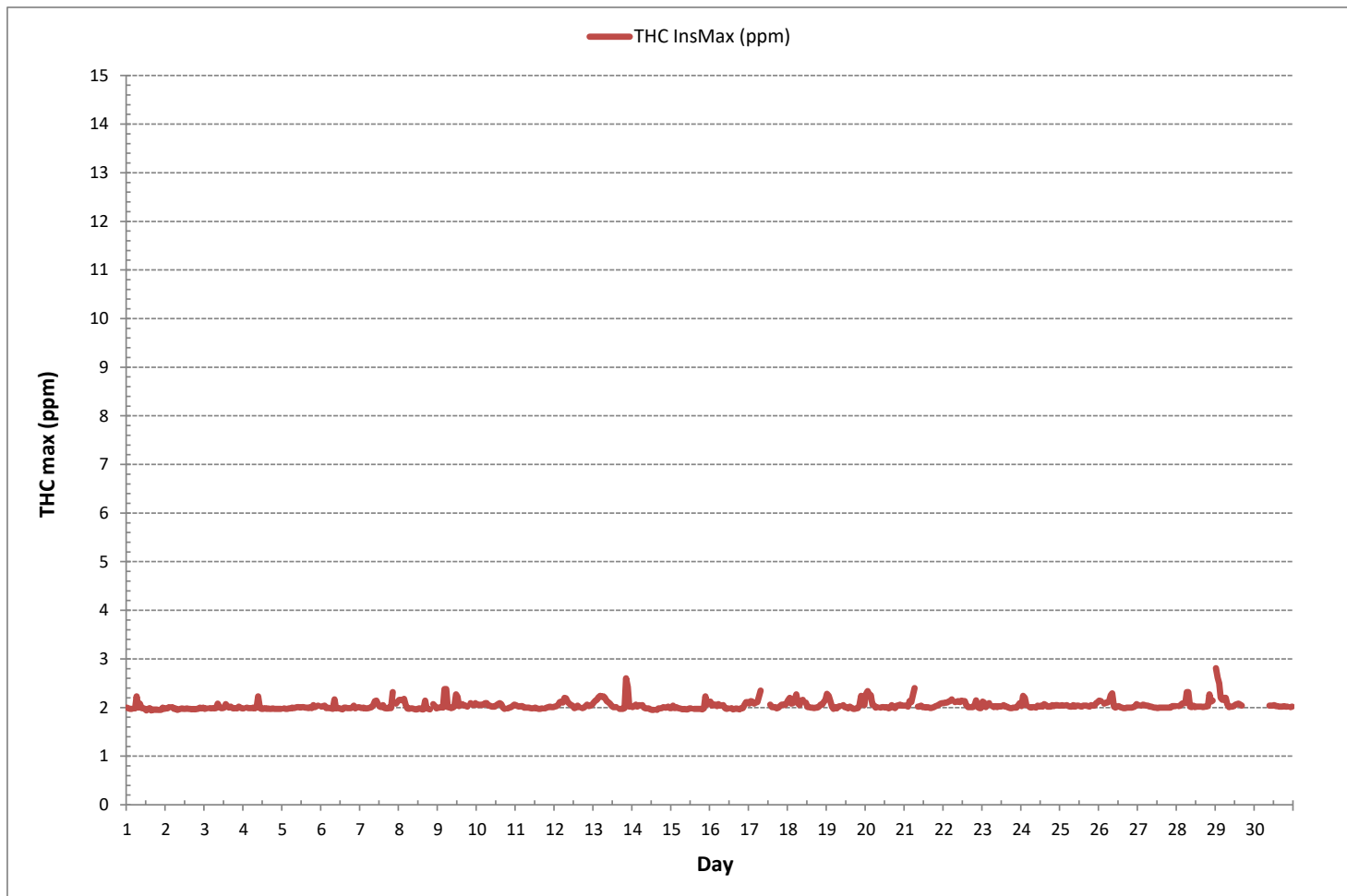
MONTHLY SUMMARY

NUMBER OF NON-ZERO READINGS:	520
MAXIMUM INSTANTANEOUS VALUE:	3 ppb @ HOUR 20 ON DAY 15
IZS CALIBRATION TIME:	31 hrs
MONTHLY CALIBRATION TIME:	6 hrs
STANDARD DEVIATION:	1
OPERATIONAL TIME:	720 hrs

HYDROGEN SULPHIDE Instantaneous Maximum (H₂S ppb)



TOTAL HYDROCARBONS Instantaneous Maximum (THC ppm)





METHANE MAX Instantaneous Maximum (CH₄ ppm)

HR START (MST)	0:00	1:00	2:00	3:00	4:00	5:00	6:00	7:00	8:00	9:00	10:00	11:00	12:00	13:00	14:00	15:00	16:00	17:00	18:00	19:00	20:00	21:00	22:00	23:00	DAILY	DAILY	24-HR	RDGS.	
HR END (MST)	0:59	1:59	2:59	3:59	4:59	5:59	6:59	7:59	8:59	9:59	10:59	11:59	12:59	13:59	14:59	15:59	16:59	17:59	18:59	19:59	20:59	21:59	22:59	23:59	MIN.	MAX.	AVG.		
DAY 1	2.00	1.98	1.97	1.97	S	1.98	1.97	2.00	2.00	1.99	1.99	1.97	1.94	1.97	1.99	1.94	1.96	1.95	1.96	1.95	1.95	1.95	2.00	1.97	1.94	2.00	1.97	24	
2	1.98	1.98	2.01	S	2.01	1.97	1.98	1.95	1.96	1.97	1.98	1.97	1.97	1.98	1.97	1.97	1.96	1.97	1.96	1.97	1.97	2.00	1.98	2.00	1.95	2.01	1.98	24	
3	1.97	1.98	S	1.99	1.98	1.99	1.98	1.99	1.99	2.02	1.99	1.99	2.00	2.07	2.02	2.00	2.02	1.99	1.98	1.99	1.98	2.02	2.00	1.98	1.97	2.07	2.00	24	
4	1.98	S	2.00	1.99	1.99	1.99	2.00	1.98	2.01	1.98	1.99	1.97	1.97	1.99	1.97	1.98	1.97	1.97	1.98	1.97	1.97	1.97	1.97	1.97	1.97	2.01	1.98	24	
5	S	1.98	1.97	1.97	1.98	1.98	2.00	1.99	2.00	2.01	2.01	2.00	2.01	2.01	2.00	2.00	1.99	2.01	1.99	2.05	2.01	2.03	2.04	S	1.97	2.05	2.00	24	
6	2.02	2.03	2.04	1.99	2.00	1.99	1.98	1.97	2.06	1.98	1.99	1.99	1.97	1.96	2.00	2.00	1.99	1.99	1.99	2.00	2.04	1.98	S	2.01	1.96	2.06	2.00	24	
7	2.00	1.99	2.00	1.98	1.98	1.99	2.00	2.01	2.05	2.13	2.14	2.06	2.02	2.01	2.05	1.99	1.98	1.98	2.01	1.99	2.32	S	2.08	2.12	1.98	2.32	2.04	24	
8	2.16	2.16	2.15	2.18	2.06	1.98	1.97	1.98	1.98	1.97	1.96	1.96	1.98	1.98	1.96	1.96	2.00	1.99	1.97	1.96	S	2.07	2.03	1.98	1.96	2.18	2.02	24	
9	2.00	2.00	2.01	2.00	2.38	2.38	2.01	2.01	1.99	2.00	2.02	2.16	2.14	2.03	2.06	2.07	2.04	2.04	2.02	S	2.09	2.06	2.05	2.09	1.99	2.38	2.07	24	
10	2.06	2.05	2.06	2.05	2.06	2.09	2.09	2.04	2.04	2.02	2.02	2.02	2.05	2.07	2.09	2.07	2.00	1.97	S	1.98	2.00	2.01	2.03	2.06	1.97	2.09	2.04	24	
11	2.05	2.03	2.02	2.03	2.03	2.00	2.00	2.00	2.00	1.99	1.98	1.99	2.00	1.98	1.97	1.97	1.98	S	1.98	2.00	2.01	2.02	2.01	2.01	1.97	2.05	2.00	24	
12	2.02	2.03	2.05	2.11	2.12	2.10	2.20	2.19	2.11	2.08	2.05	2.04	1.99	2.00	2.04	2.01	S	1.99	2.00	2.03	2.06	2.03	2.04	2.06	1.99	2.20	2.06	24	
13	2.10	2.14	2.16	2.21	2.24	2.22	2.23	2.20	2.13	2.11	2.08	2.04	2.01	2.01	S	1.97	1.97	1.97	1.97	1.99	2.60	2.42	2.02	2.03	1.97	2.60	2.12	24	
14	2.01	2.03	2.06	2.02	2.05	2.04	2.05	2.00	1.98	1.98	1.98	1.96	1.95	1.95	S	1.95	1.98	1.98	1.99	2.01	2.00	2.00	2.02	1.99	1.95	2.06	2.00	24	
15	1.99	2.02	1.99	2.01	1.99	1.98	1.97	1.96	1.97	1.96	1.96	1.98	1.98	S	1.97	1.97	1.97	1.97	1.97	1.96	1.98	2.23	2.06	2.09	1.96	2.23	2.00	24	
16	2.12	2.04	2.06	2.06	2.03	2.07	2.04	2.04	2.05	1.99	1.97	1.98	S	1.99	1.96	1.97	1.98	1.97	1.96	1.99	1.99	2.05	2.11	2.11	1.96	2.12	2.02	24	
17	2.08	2.13	2.12	2.08	2.10	2.11	2.13	2.23	C	C	C	C	C	C	2.06	2.01	2.01	2.01	1.98	2.00	2.03	2.05	2.06	2.05	2.09	1.98	2.23	2.07	24
18	2.15	2.20	2.08	2.09	2.16	2.27	2.09	2.05	2.14	2.16	S	2.10	2.01	2.01	2.00	2.00	1.99	2.00	2.00	2.02	2.06	2.06	2.11	2.16	1.99	2.27	2.08	24	
19	2.28	2.24	2.14	2.02	1.97	2.01	1.98	2.02	2.03	S	2.05	2.01	2.01	1.98	2.02	2.00	1.97	1.97	1.98	1.99	2.04	2.09	2.10	2.05	1.97	2.28	2.04	24	
20	2.17	2.19	2.27	2.25	2.06	2.05	2.00	2.01	S	2.00	2.01	2.01	2.00	2.01	1.98	2.00	2.05	2.01	1.99	2.04	2.04	2.06	2.04	2.04	1.98	2.27	2.06	24	
21	2.04	2.04	2.02	2.13	2.11	2.25	2.40	S	2.02	2.02	2.04	2.01	2.01	2.00	2.01	2.00	1.99	2.00	2.01	2.03	2.04	2.06	2.08	2.09	1.99	2.40	2.06	24	
22	2.09	2.10	2.10	2.12	2.13	2.17	S	2.11	2.12	2.13	2.11	2.14	2.13	2.13	2.05	2.01	2.01	2.01	2.01	2.05	2.15	2.01	1.99	1.99	1.99	2.17	2.08	24	
23	2.12	2.10	2.01	2.06	2.09	S	2.03	2.01	2.03	2.01	2.03	2.02	2.03	2.05	2.02	2.02	2.00	1.99	1.99	2.00	2.00	2.00	2.05	2.09	1.99	2.12	2.03	24	
24	2.03	2.24	2.20	2.05	S	2.01	2.00	2.01	2.01	2.00	2.04	2.02	2.04	2.02	2.07	2.05	2.02	2.02	2.02	2.05	2.03	2.05	2.05	2.04	2.00	2.24	2.05	24	
25	2.04	2.05	2.04	S	2.05	2.03	2.02	2.02	2.05	2.02	2.04	2.04	2.03	2.02	2.04	2.04	2.04	2.03	2.02	2.05	2.04	2.04	2.09	2.11	2.02	2.11	2.04	24	
26	2.14	2.13	S	2.08	2.10	2.10	2.12	2.17	2.15	2.02	2.00	2.02	2.03	2.01	2.00	1.99	1.99	2.00	2.00	2.00	2.00	2.01	2.02	2.07	1.99	2.17	2.05	24	
27	2.05	S	2.04	2.06	2.05	2.04	2.04	2.02	2.02	2.01	2.00	2.00	1.99	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.03	2.03	2.03	1.99	2.06	2.02	24	
28	S	2.03	2.04	2.08	2.09	2.09	2.20	2.21	2.02	2.01	2.04	2.01	2.02	2.02	2.02	2.02	2.01	2.02	2.02	2.03	2.14	2.12	2.14	S	2.01	2.21	2.06	24	
29	2.47	2.36	2.29	2.20	2.16	2.20	2.20	2.07	2.01	2.02	2.02	2.03	2.06	2.07	2.08	2.06	2.04	X	X	X	X	X	X	X	2.01	2.47	-	17	
30	X	X	X	X	X	X	X	X	X	2.04	2.04	2.04	2.05	2.03	2.03	2.02	2.02	2.02	2.03	2.02	2.02	S	2.01	2.02	2.01	2.05	-	15	
HOURLY MAX	2.47	2.36	2.29	2.25	2.38	2.38	2.40	2.23	2.15	2.16	2.14	2.16	2.14	2.13	2.09	2.07	2.05	2.04	2.03	2.05	2.60	2.42	2.14	2.16					
HOURLY AVG	2.08	2.08	2.07	2.07	2.07	2.07	2.06	2.04	2.03	2.02	2.02	2.02	2.01	2.01	2.01	2.00	2.00	1.99	1.99	2.01	2.06	2.05	2.04	2.05					

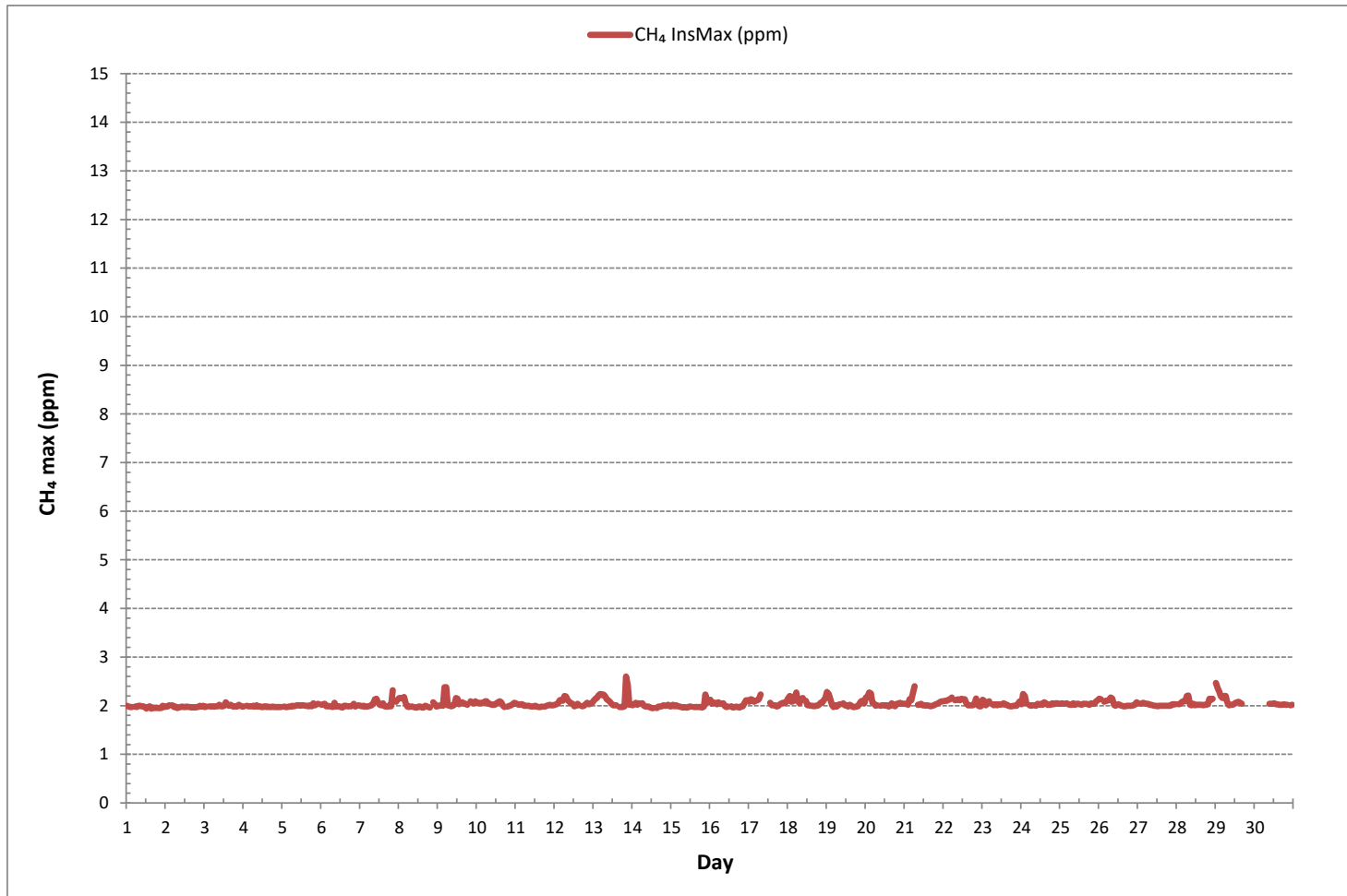
STATUS FLAG CODES

C	- MONTHLY CALIBRATION	Q	- QUALITY ASSURANCE
C1	- REPEAT CALIBRATION	R	- RECOVERY
Y	- MAINTENANCE	X	- MACHINE MALFUNCTION
S	- DAILY ZERO/SPAN CHECK	G	- OUT FOR REPAIR
S1	- REPEAT ZERO/SPAN CHECK	P	- POWER FAILURE

MONTHLY SUMMARY

NUMBER OF NON-ZERO READINGS:	669
MAXIMUM INSTANTANEOUS VALUE:	2.60 ppm @ HOUR 20 ON DAY 13
IZS CALIBRATION TIME:	30 hrs
MONTHLY CALIBRATION TIME:	5 hrs
STANDARD DEVIATION:	0.07
OPERATIONAL TIME:	704 hrs

METHANE MAX Instantaneous Maximum (CH₄ ppm)





NON-METHANE HYDROCARBONS Instantaneous Maximum (NMHC ppm)

HR START (MST)	0:00	1:00	2:00	3:00	4:00	5:00	6:00	7:00	8:00	9:00	10:00	11:00	12:00	13:00	14:00	15:00	16:00	17:00	18:00	19:00	20:00	21:00	22:00	23:00	DAILY MIN.	DAILY MAX.	24-HR AVG.	RDGS.	
HR END (MST)	0:59	1:59	2:59	3:59	4:59	5:59	6:59	7:59	8:59	9:59	10:59	11:59	12:59	13:59	14:59	15:59	16:59	17:59	18:59	19:59	20:59	21:59	22:59	23:59					
DAY 1	0.00	0.00	0.00	0.00	S	0.00	0.28	0.00	0.09	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.28	0.02	24
2	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	24
3	0.00	0.00	S	0.00	0.00	0.00	0.00	0.00	0.10	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	0.10	0.00	24
4	0.00	S	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.25	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	0.25	0.01	24
5	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	S	0.00	0.00	0.00	24	
6	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	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	S	0.00	0.00	0.11	0.00	24	
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	S	0.00	0.00	0.00	0.00	0.00	0.00	24
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	0.15	0.00	0.00	0.00	S	0.00	0.00	0.00	0.00	0.15	0.01	24	
9	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.12	0.10	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	0.12	0.01	24	
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	S	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	24
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	S	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	24
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	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	24
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	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	24
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	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	24
15	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	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.02	0.00	24
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	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	24
17	0.00	0.00	0.00	0.00	0.00	0.00	0.08	0.13	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	0.00	0.13	0.01	24
18	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	24
19	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	0.15	0.00	0.00	0.00	0.15	0.01	24	
20	0.11	0.14	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	0.14	0.01	24	
21	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	24
22	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	24
23	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	24
24	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	24
25	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	24
26	0.00	0.00	S	0.00	0.00	0.00	0.00	0.09	0.14	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	0.14	0.01	24	
27	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	24
28	S	0.00	0.00	0.00	0.00	0.00	0.12	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	0.13	0.00	0.00	S	0.00	0.13	0.02	24	
29	0.34	0.25	0.21	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	X	X	X	X	X	X	X	X	0.00	0.34	-	17	
30	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	S	0.00	0.00	0.00	0.00	0.00	-	15
HOURLY MAX	0.34	0.25	0.21	0.00	0.00	0.00	0.28	0.13	0.14	0.25	0.00	0.12	0.10	0.00	0.00	0.15	0.00	0.00	0.00	0.13	0.15	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
HOURLY AVG	0.02	0.02	0.01	0.00	0.00	0.00	0.02	0.01	0.02	0.01	0.00	0.00	0.00	0.00	0.00	0.01	0.00	0.00	0.00	0.00	0.00	0.01	0.00	0.00	0.00	0.00	0.00	0.00	0.00

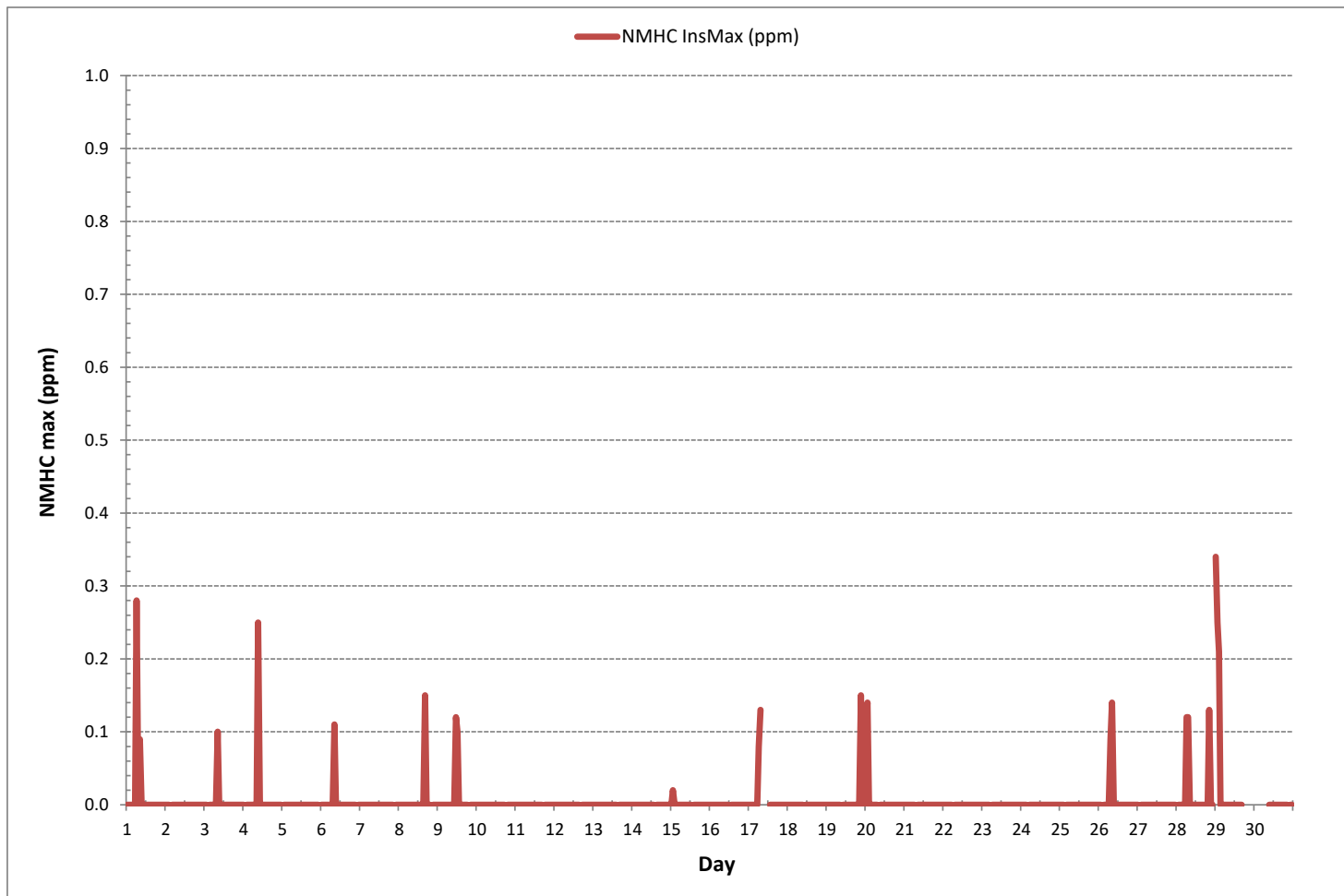
STATUS FLAG CODES

C	- MONTHLY CALIBRATION	Q	- QUALITY ASSURANCE
C1	- REPEAT CALIBRATION	R	- RECOVERY
Y	- MAINTENANCE	X	- MACHINE MALFUNCTION
S	- DAILY ZERO/SPAN CHECK	G	- OUT FOR REPAIR
S1	- REPEAT ZERO/SPAN CHECK	P	- POWER FAILURE

MONTHLY SUMMARY

NUMBER OF NON-ZERO READINGS:	22
MAXIMUM INSTANTANEOUS VALUE:	0.34 ppm @ HOUR 0 ON DAY 29
IZS CALIBRATION TIME:	30 hrs
MONTHLY CALIBRATION TIME:	5 hrs
STANDARD DEVIATION:	0.03
OPERATIONAL TIME:	704 hrs

NON-METHANE HYDROCARBONS Instantaneous Maximum (NMHC ppm)





OXIDES OF NITROGEN Instantaneous Maximum (NO_x ppb)

HR START (MST)	0:00	1:00	2:00	3:00	4:00	5:00	6:00	7:00	8:00	9:00	10:00	11:00	12:00	13:00	14:00	15:00	16:00	17:00	18:00	19:00	20:00	21:00	22:00	23:00	DAILY MIN.	DAILY MAX.	24-HR AVG.	RDGS.	
HR END (MST)	0:59	1:59	2:59	3:59	4:59	5:59	6:59	7:59	8:59	9:59	10:59	11:59	12:59	13:59	14:59	15:59	16:59	17:59	18:59	19:59	20:59	21:59	22:59	23:59					
DAY 1	19	7	10	15	S	2	4	17	44	33	35	8	12	23	40	3	2	2	1	1	4	11	32	31	1	44	16	24	
2	1	3	22	S	39	21	35	29	29	17	33	36	18	21	17	12	17	14	0	1	1	1	1	1	0	39	16	24	
3	1	1	S	1	1	0	0	0	0	9	4	11	11	17	8	13	10	4	1	1	1	1	1	0	0	17	4	24	
4	0	S	1	0	0	0	0	0	2	1	2	4	8	2	2	1	0	0	1	0	19	36	0	0	0	36	4	24	
5	S	1	0	1	1	9	3	6	3	3	1	4	2	2	3	4	6	12	4	17	17	23	21	S	0	23	6	24	
6	16	21	19	6	2	3	1	1	10	7	8	8	2	4	17	15	8	7	7	12	18	4	S	9	1	21	9	24	
7	8	9	4	1	1	1	1	4	3	10	5	3	1	8	20	6	3	7	1	1	1	S	3	5	1	20	5	24	
8	8	6	5	6	4	3	8	2	18	12	3	14	19	7	3	5	14	2	2	0	S	2	1	0	0	19	6	24	
9	0	0	0	0	0	11	16	13	10	17	25	29	5	3	9	5	2	15	S	5	4	4	2	2	0	29	7	24	
10	1	2	2	3	3	3	7	3	3	4	4	5	3	5	4	3	1	S	1	1	3	5	6	1	7	3	24		
11	2	1	3	2	2	1	1	1	2	5	8	6	9	9	4	1	2	S	1	4	2	2	2	2	1	9	3	24	
12	5	5	5	4	3	3	5	7	3	2	2	2	1	1	2	2	S	1	1	1	1	2	1	1	1	7	3	24	
13	1	2	2	2	2	4	5	5	4	3	3	3	2	2	2	S	2	2	1	3	5	1	1	2	1	5	3	24	
14	1	1	1	1	3	4	1	11	7	1	1	1	1	9	S	1	5	23	23	28	9	16	21	21	1	28	8	24	
15	10	20	27	40	34	5	23	6	2	4	6	33	24	S	14	5	9	16	3	3	3	2	2	2	2	40	13	24	
16	2	0	0	0	0	0	1	5	14	15	11	2	S	2	4	12	4	15	1	1	3	4	3	4	0	15	5	24	
17	2	4	2	1	1	27	5	11	C	C	C	C	C	C	C	23	20	1	9	25	24	27	30	5	1	30	-	24	
18	3	3	3	13	4	3	15	15	13	11	S	4	11	4	2	1	5	3	14	7	4	2	3	3	1	15	6	24	
19	3	4	6	8	1	28	12	27	22	S	1	10	1	3	18	1	1	4	2	0	4	10	3	3	0	28	8	24	
20	10	10	7	2	1	2	15	8	S	4	1	1	11	3	4	33	26	13	1	79	33	25	19	20	1	79	14	24	
21	33	30	9	4	3	2	35	S	19	21	9	2	12	1	1	15	1	1	2	1	1	4	2	1	1	35	9	24	
22	1	1	1	1	1	1	S	6	4	4	3	3	2	3	4	2	4	8	2	1	18	17	1	1	1	18	4	24	
23	36	33	26	8	5	S	5	25	3	1	1	5	8	24	9	1	0	0	1	3	0	0	16	24	0	36	10	24	
24	18	2	1	7	S	16	11	4	12	6	28	10	5	34	14	16	12	38	34	44	28	52	44	44	1	52	21	24	
25	23	37	40	S	25	9	5	27	32	39	33	50	14	24	37	34	24	31	15	25	8	5	5	4	4	50	24	24	
26	4	4	S	3	1	1	10	9	18	2	2	17	29	23	10	22	1	1	1	0	0	1	0	1	0	29	7	24	
27	0	S	1	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1	0	24
28	S	1	1	2	2	2	6	7	9	7	9	5	4	2	1	15	5	1	0	4	4	3	4	S	0	15	4	24	
29	6	5	4	2	3	2	1	2	2	2	3	10	12	12	7	23	12	10	11	38	3	4	S	3	1	38	8	24	
30	4	3	2	29	2	1	4	1	1	1	14	4	22	4	9	7	6	0	1	1	1	S	1	0	0	29	5	24	
HOURLY MAX	36	37	40	40	39	28	35	29	44	39	35	50	29	34	40	34	26	38	34	79	33	52	44	44					
HOURLY AVG	8	8	7	6	5	5	8	9	10	8	9	10	10	9	9	10	7	8	5	10	7	9	8	7					

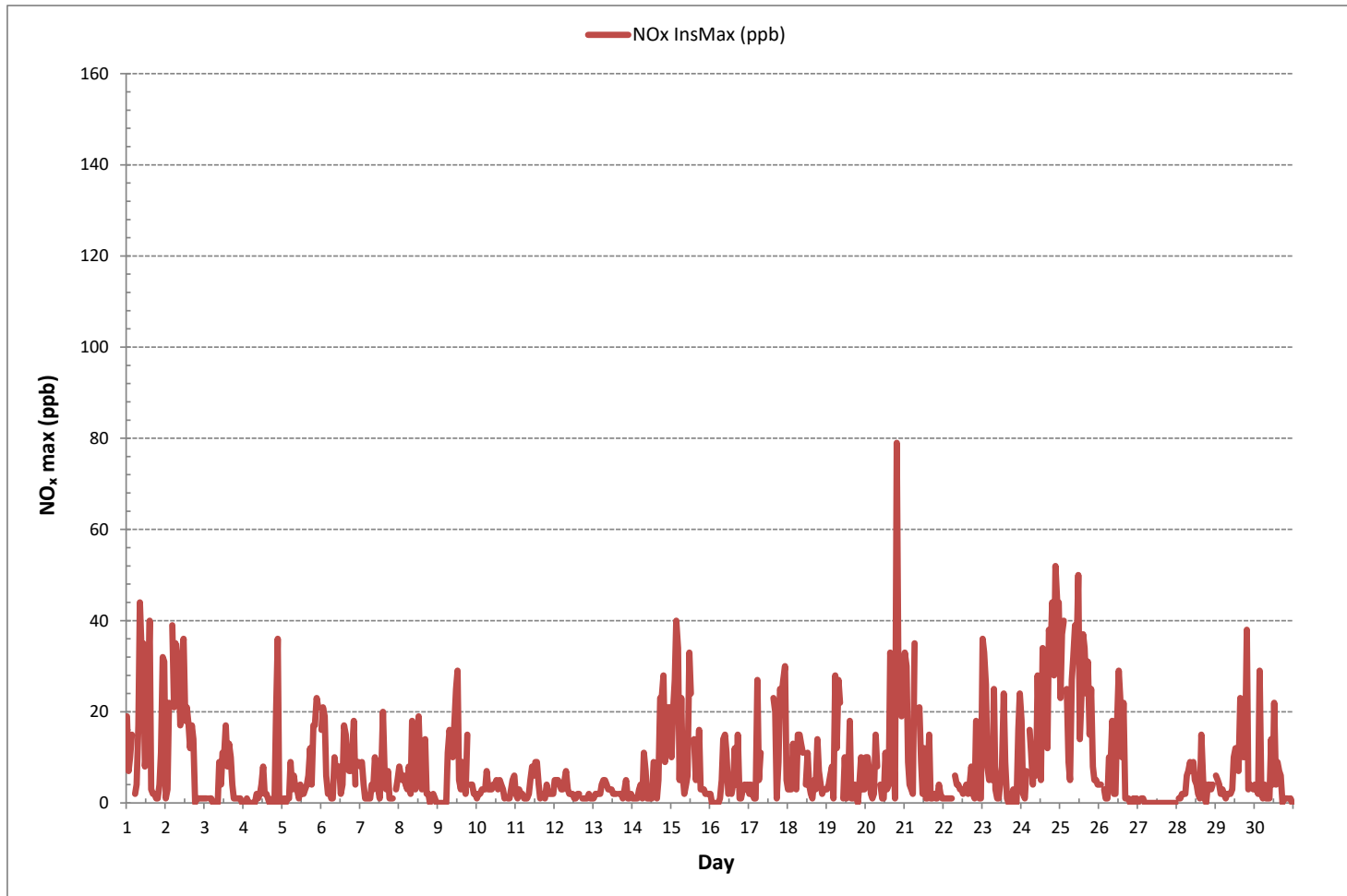
STATUS FLAG CODES

C	- MONTHLY CALIBRATION	Q	- QUALITY ASSURANCE
C1	- REPEAT CALIBRATION	R	- RECOVERY
Y	- MAINTENANCE	X	- MACHINE MALFUNCTION
S	- DAILY ZERO/SPAN CHECK	G	- OUT FOR REPAIR
S1	- REPEAT ZERO/SPAN CHECK	P	- POWER FAILURE

MONTHLY SUMMARY

NUMBER OF NON-ZERO READINGS:	619
MAXIMUM INSTANTANEOUS VALUE:	79 ppb @ HOUR 19 ON DAY 20
IZS CALIBRATION TIME:	31 hrs
MONTHLY CALIBRATION TIME:	7 hrs
STANDARD DEVIATION:	10
OPERATIONAL TIME:	720 hrs

OXIDES OF NITROGEN Instantaneous Maximum (NO_x ppb)





NITRIC OXIDE Instantaneous Maximum (NO ppb)

HR START (MST)	0:00	1:00	2:00	3:00	4:00	5:00	6:00	7:00	8:00	9:00	10:00	11:00	12:00	13:00	14:00	15:00	16:00	17:00	18:00	19:00	20:00	21:00	22:00	23:00	DAILY	DAILY	24-HR	RDGS.	
HR END (MST)	0:59	1:59	2:59	3:59	4:59	5:59	6:59	7:59	8:59	9:59	10:59	11:59	12:59	13:59	14:59	15:59	16:59	17:59	18:59	19:59	20:59	21:59	22:59	23:59	MIN.	MAX.	AVG.		
DAY 1	0	0	0	1	S	0	1	4	17	12	12	1	6	7	11	0	0	0	0	0	0	0	6	5	0	17	4	24	
2	0	0	3	S	10	3	9	10	10	7	15	18	6	9	6	5	5	3	0	0	0	0	0	0	0	18	5	24	
3	0	0	S	0	0	0	0	0	0	2	1	3	3	5	3	4	3	0	0	0	0	0	0	0	0	5	1	24	
4	0	S	0	0	0	0	0	0	0	0	1	1	4	0	0	0	0	0	0	0	0	8	22	0	0	22	2	24	
5	S	0	0	0	0	0	0	0	0	1	0	1	1	0	0	1	1	1	0	1	1	1	2	2	S	0	2	1	24
6	1	2	1	1	0	0	0	0	2	1	2	2	0	0	3	3	1	1	1	1	2	3	0	S	1	0	3	1	24
7	0	0	0	0	0	0	0	2	1	5	2	1	0	2	7	1	1	1	0	0	0	S	0	0	0	0	7	1	24
8	0	0	0	0	0	0	3	1	6	4	1	5	12	2	2	1	4	0	0	S	0	0	0	0	0	12	2	24	
9	0	0	0	0	0	0	2	5	5	4	9	14	16	2	1	3	1	0	2	S	0	0	0	0	0	16	3	24	
10	0	0	0	0	0	0	2	1	1	1	1	2	2	0	1	1	0	0	S	0	0	0	0	0	0	2	0	24	
11	0	0	0	0	0	0	0	0	2	3	2	3	3	1	0	0	S	0	0	0	0	0	0	0	0	3	1	24	
12	0	0	0	0	0	0	1	2	0	1	0	1	0	0	0	0	S	0	0	0	0	0	0	0	0	2	0	24	
13	0	0	0	0	0	0	0	1	1	1	1	1	0	0	0	S	0	0	0	0	0	0	0	0	0	1	0	24	
14	0	0	0	0	0	0	2	1	0	0	0	3	S	0	0	2	2	3	2	3	2	1	1	0	0	3	1	24	
15	0	1	5	12	8	0	5	1	0	1	2	14	11	S	5	1	2	3	0	0	0	0	0	0	0	14	3	24	
16	0	0	0	0	0	0	0	2	5	5	4	1	S	0	1	2	0	3	0	0	0	0	0	0	0	5	1	24	
17	0	0	0	0	0	21	3	2	C	C	C	C	C	C	C	9	5	0	4	2	1	6	11	0	0	21	-	24	
18	0	0	0	1	0	0	6	8	7	5	S	1	6	1	1	0	7	0	5	0	0	0	0	0	0	8	2	24	
19	0	0	0	1	0	6	0	10	8	S	0	4	1	2	6	0	0	1	0	0	0	0	0	0	0	10	2	24	
20	0	0	0	0	0	0	7	2	S	1	0	0	4	1	0	11	8	3	0	39	9	3	3	2	0	39	4	24	
21	12	5	0	0	0	0	14	S	6	7	3	0	4	0	0	4	0	0	0	0	0	0	0	0	0	14	2	24	
22	0	0	0	0	0	0	S	1	1	1	1	0	0	1	1	0	0	2	0	0	0	0	0	0	0	2	0	24	
23	9	7	0	1	0	S	2	12	1	0	0	2	2	8	3	0	0	0	0	0	0	0	0	3	0	12	2	24	
24	0	0	0	1	S	4	2	1	3	1	9	3	1	15	8	5	3	10	9	10	5	15	13	13	0	15	6	24	
25	3	10	11	S	4	3	2	10	13	26	14	12	7	10	13	12	8	11	2	3	0	0	0	0	0	26	8	24	
26	0	0	S	0	0	0	4	3	6	1	0	5	23	8	3	13	0	0	0	0	0	0	0	0	0	23	3	24	
27	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	24	
28	S	0	0	0	0	0	2	2	2	4	2	1	1	0	0	4	1	0	0	0	0	0	0	0	S	0	4	1	24
29	0	0	0	0	0	0	0	0	0	0	1	2	4	4	2	5	3	1	1	10	0	0	S	0	0	10	1	24	
30	0	0	0	6	0	0	1	0	0	0	5	1	9	1	6	1	1	0	0	0	0	0	S	0	0	9	1	24	
HOURLY MAX	12	10	11	12	10	21	14	12	17	26	15	18	23	15	13	13	8	11	9	39	9	22	13	13					
HOURLY AVG	1	1	1	1	1	1	2	3	3	3	3	3	5	3	3	3	2	1	1	2	1	2	1	1					

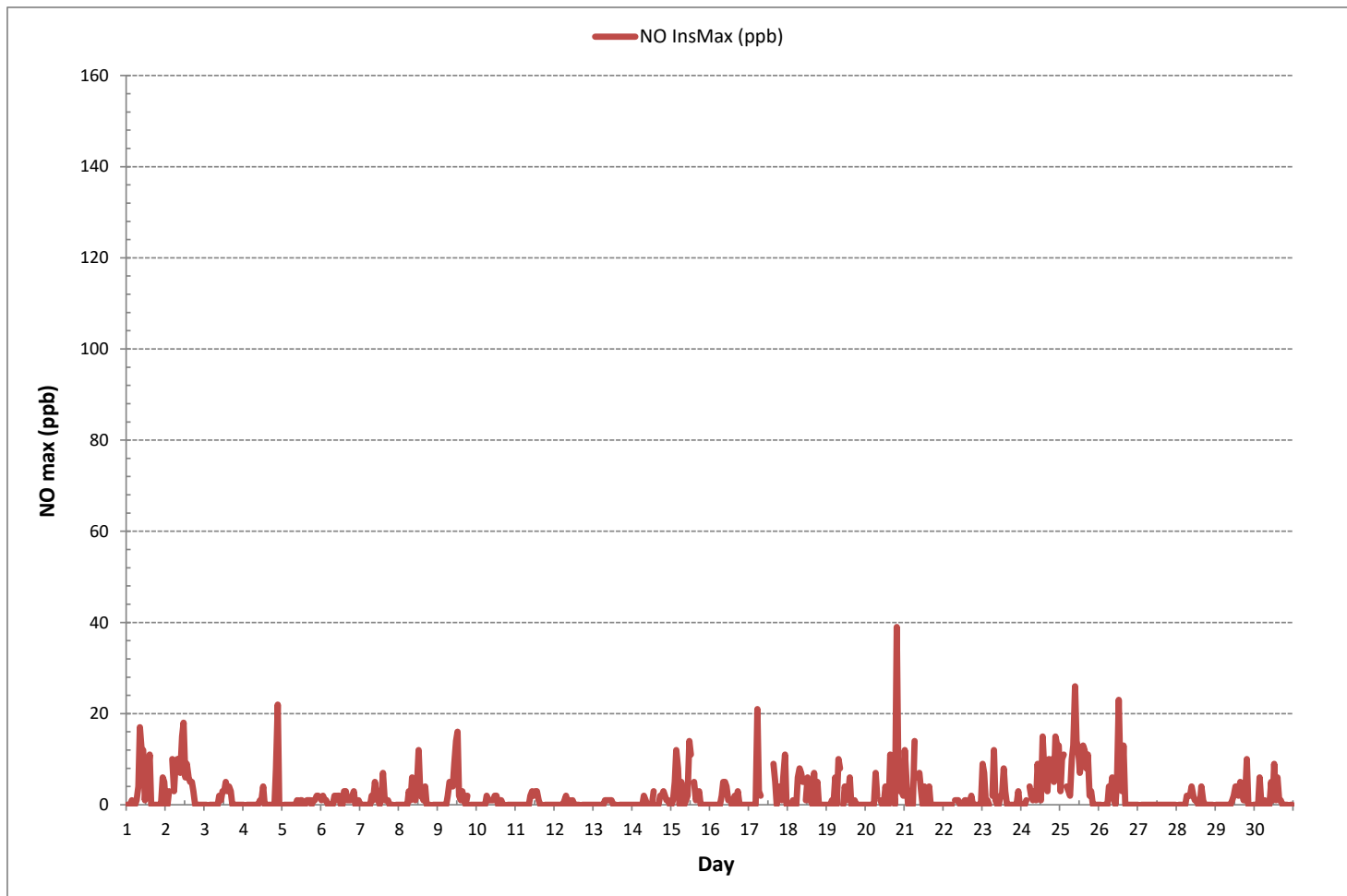
STATUS FLAG CODES

C	- MONTHLY CALIBRATION	Q	- QUALITY ASSURANCE
C1	- REPEAT CALIBRATION	R	- RECOVERY
Y	- MAINTENANCE	X	- MACHINE MALFUNCTION
S	- DAILY ZERO/SPAN CHECK	G	- OUT FOR REPAIR
S1	- REPEAT ZERO/SPAN CHECK	P	- POWER FAILURE

MONTHLY SUMMARY

NUMBER OF NON-ZERO READINGS:	298
MAXIMUM INSTANTANEOUS VALUE:	39 ppb @ HOUR 19 ON DAY 20
IZS CALIBRATION TIME:	31 hrs
MONTHLY CALIBRATION TIME:	7 hrs
STANDARD DEVIATION:	4
OPERATIONAL TIME:	720 hrs

NITRIC OXIDE Instantaneous Maximum (NO ppb)





NITROGEN DIOXIDE Instantaneous Maximum (NO₂ ppb)

HR START (MST)	0:00	1:00	2:00	3:00	4:00	5:00	6:00	7:00	8:00	9:00	10:00	11:00	12:00	13:00	14:00	15:00	16:00	17:00	18:00	19:00	20:00	21:00	22:00	23:00	DAILY MIN.	DAILY MAX.	24-HR AVG.	RDGS.	
HR END (MST)	0:59	1:59	2:59	3:59	4:59	5:59	6:59	7:59	8:59	9:59	10:59	11:59	12:59	13:59	14:59	15:59	16:59	17:59	18:59	19:59	20:59	21:59	22:59	23:59					
DAY 1	19	7	10	15	S	2	3	15	28	22	24	7	6	16	30	2	2	2	2	1	4	11	28	26	1	30	12	24	
2	1	3	20	S	31	18	26	19	19	10	18	19	12	12	11	8	12	10	1	1	1	1	1	1	1	1	31	11	24
3	1	1	S	1	1	1	1	1	1	6	3	8	8	12	6	9	8	3	1	1	1	1	1	1	1	1	12	3	24
4	1	S	1	1	0	0	0	0	2	1	2	3	4	2	2	1	1	0	1	0	12	15	0	0	0	15	2	24	
5	S	1	1	1	1	9	3	6	2	2	1	3	2	2	2	4	5	11	4	17	17	20	20	S	1	20	6	24	
6	16	19	18	6	2	3	1	1	9	6	7	7	2	3	14	13	7	6	6	10	15	4	S	8	1	19	8	24	
7	7	9	4	1	1	1	1	2	2	5	3	2	1	6	13	4	2	6	1	1	1	S	3	5	1	13	4	24	
8	8	7	5	6	4	3	5	1	12	8	2	9	8	5	2	4	10	2	2	0	S	2	1	0	0	12	5	24	
9	1	0	0	0	0	0	9	12	8	7	9	11	13	3	2	6	4	2	13	S	4	4	2	2	0	13	5	24	
10	1	3	2	3	4	3	5	3	2	3	3	3	3	2	4	4	2	1	S	1	1	4	6	6	1	6	3	24	
11	2	1	3	3	2	1	2	1	2	4	5	4	6	6	3	1	2	S	1	4	2	2	2	2	1	6	3	24	
12	5	5	5	4	3	3	4	5	2	2	2	1	1	1	2	2	S	1	1	2	1	2	1	1	1	5	2	24	
13	2	2	2	2	3	4	4	4	3	2	2	3	2	2	2	S	2	2	2	3	5	2	2	2	2	5	3	24	
14	1	1	1	1	3	4	1	9	6	1	1	1	1	7	S	1	4	21	21	25	8	16	20	20	1	25	8	24	
15	10	19	22	29	26	5	19	5	2	3	4	19	13	S	9	4	7	13	3	3	3	2	2	2	2	29	10	24	
16	2	1	0	0	0	0	1	4	9	10	7	2	S	2	3	10	4	12	1	1	3	4	3	4	0	12	4	24	
17	2	4	2	1	1	7	4	8	C	C	C	C	C	C	C	18	16	1	5	25	23	22	20	5	1	25	-	24	
18	3	3	3	12	4	3	9	7	6	7	S	3	5	3	2	1	2	3	10	7	4	2	3	4	1	12	5	24	
19	3	4	6	7	1	25	12	17	15	S	1	6	1	1	11	1	1	3	1	1	4	10	3	3	1	25	6	24	
20	10	10	7	2	2	2	9	6	S	3	1	1	7	2	4	23	19	10	1	41	25	21	16	19	1	41	10	24	
21	20	25	9	5	3	2	21	S	13	14	7	2	8	1	1	11	1	1	2	1	2	4	2	2	1	25	7	24	
22	1	1	1	1	2	1	S	5	3	3	2	2	2	3	3	2	3	7	2	1	18	17	1	1	1	18	4	24	
23	27	26	25	7	5	S	3	14	3	1	1	4	6	16	7	1	0	0	1	2	1	0	16	24	0	27	8	24	
24	18	2	1	7	S	16	9	3	10	5	19	7	4	20	6	11	10	28	26	34	24	37	32	33	1	37	16	24	
25	22	28	30	S	22	6	4	17	19	22	19	37	10	15	24	23	16	21	13	22	8	5	5	4	4	37	17	24	
26	4	4	S	3	1	1	6	6	13	2	2	11	14	16	8	9	1	1	1	1	0	1	0	1	0	16	5	24	
27	1	S	1	1	1	0	0	0	0	0	0	0	0	0	0	1	0	0	0	0	0	0	0	0	0	1	0	24	
28	S	1	1	2	2	2	5	5	7	5	7	4	3	1	1	11	4	1	0	5	4	3	4	S	0	11	4	24	
29	6	5	4	3	3	2	1	2	2	2	2	9	8	8	5	17	10	9	10	28	3	4	S	3	1	28	6	24	
30	4	3	2	23	2	1	3	1	1	1	9	3	13	3	3	5	5	0	1	1	1	S	1	0	0	23	4	24	
HOURLY MAX	27	28	30	29	31	25	26	19	28	22	24	37	14	20	30	23	19	28	26	41	25	37	32	33					
HOURLY AVG	7	7	7	5	5	4	6	6	7	6	6	7	6	6	6	7	6	6	5	8	7	8	7	6					

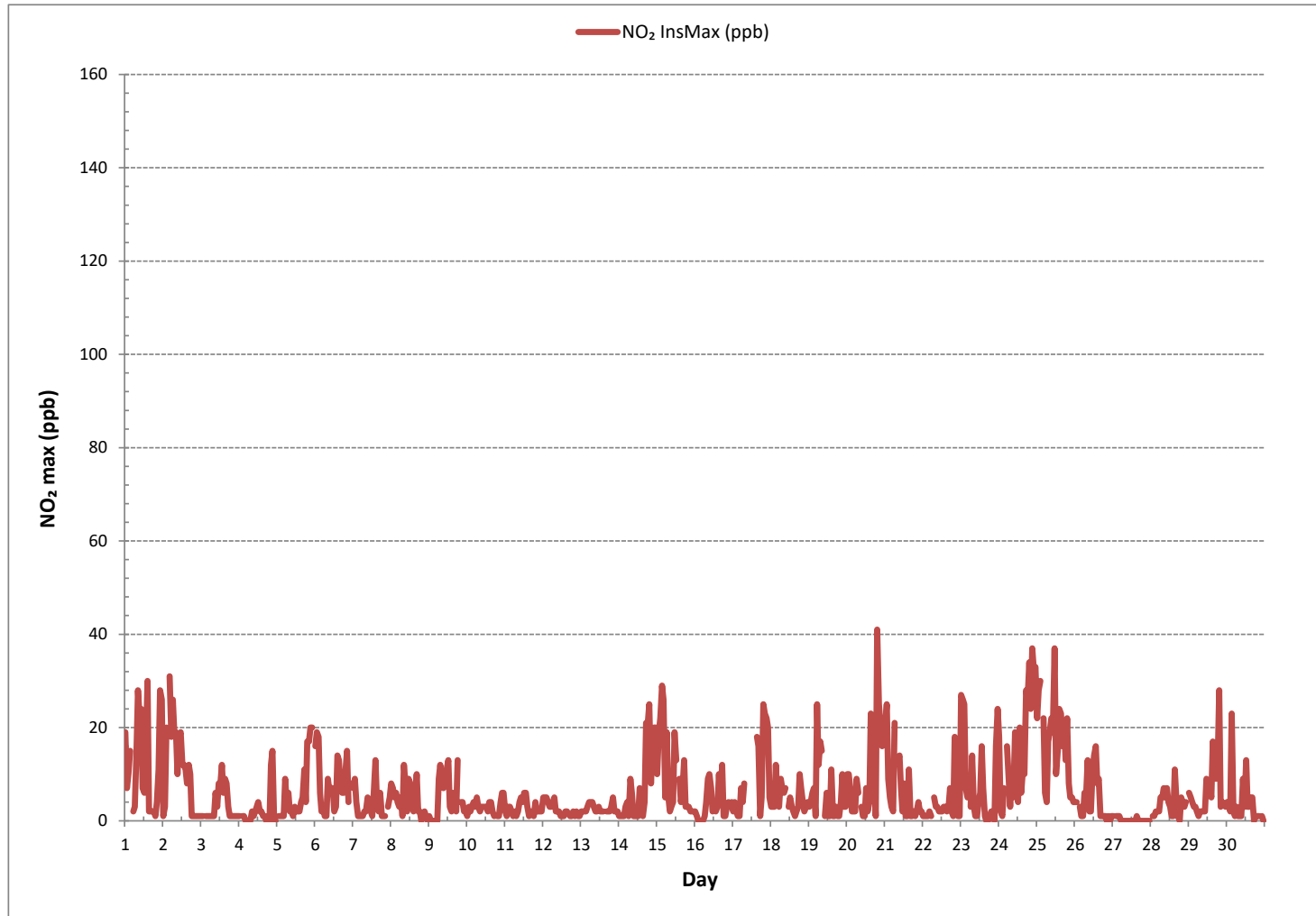
STATUS FLAG CODES

C	- MONTHLY CALIBRATION	Q	- QUALITY ASSURANCE
C1	- REPEAT CALIBRATION	R	- RECOVERY
Y	- MAINTENANCE	X	- MACHINE MALFUNCTION
S	- DAILY ZERO/SPAN CHECK	G	- OUT FOR REPAIR
S1	- REPEAT ZERO/SPAN CHECK	P	- POWER FAILURE

MONTHLY SUMMARY

NUMBER OF NON-ZERO READINGS:	637
MAXIMUM INSTANTANEOUS VALUE:	41 ppb @ HOUR 19 ON DAY 20
	VAR-VARIOUS
IZS CALIBRATION TIME:	31 hrs
MONTHLY CALIBRATION TIME:	7 hrs
STANDARD DEVIATION:	7
OPERATIONAL TIME:	720 hrs

NITROGEN DIOXIDE Instantaneous Maximum (NO₂ ppb)





WIND SPEED Instantaneous Maximum (WS kph)

HR START (MST)	0:00	1:00	2:00	3:00	4:00	5:00	6:00	7:00	8:00	9:00	10:00	11:00	12:00	13:00	14:00	15:00	16:00	17:00	18:00	19:00	20:00	21:00	22:00	23:00	DAILY	DAILY	24-HR	RDGS.	
HR END (MST)	0:59	1:59	2:59	3:59	4:59	5:59	6:59	7:59	8:59	9:59	10:59	11:59	12:59	13:59	14:59	15:59	16:59	17:59	18:59	19:59	20:59	21:59	22:59	23:59	MIN.	MAX.	AVG.		
DAY 1	10.9	9.6	9.0	9.8	7.4	10.4	13.3	14.7	17.5	20.2	17.9	21.4	20.3	16.1	20.4	12.9	10.9	13.5	23.4	13.4	12.1	7.1	8.7	9.3	7.1	23.4	13.7	24	
2	4.6	5.7	6.9	13.1	11.4	11.2	14.5	16.9	19.9	21.5	20.7	20.4	17.5	17.8	17.2	14.1	13.4	11.6	7.1	3.7	2.3	3.1	11.6	8.7	2.3	21.5	12.3	24	
3	9.1	7.8	8.4	11.0	13.2	14.0	10.9	15.2	16.2	15.2	14.9	15.0	15.5	14.1	13.5	14.4	14.7	11.4	8.7	12.2	10.2	8.2	5.6	8.0	5.6	16.2	12.0	24	
4	9.4	8.4	7.6	8.5	11.1	8.8	8.3	9.4	10.2	11.4	13.4	13.6	11.6	8.8	8.9	9.1	9.6	9.2	8.9	9.0	8.4	7.0	6.2	4.3	4.3	13.6	9.2	24	
5	5.1	7.2	6.2	6.1	6.4	5.3	5.4	6.8	8.2	8.3	9.7	7.9	8.5	10.5	11.8	10.5	8.9	8.4	5.1	6.3	10.1	10.1	11.1	7.9	5.1	11.8	8.0	24	
6	8.7	10.2	9.9	11.2	9.7	10.0	10.2	12.6	13.7	14.4	12.8	12.7	12.2	11.6	11.2	9.8	8.1	12.4	9.4	10.4	10.9	9.9	7.1	7.1	7.1	14.4	10.7	24	
7	7.0	5.9	3.3	0.0	0.0	0.0	0.0	6.8	6.6	7.6	9.8	11.2	13.8	9.5	11.3	8.7	6.5	3.0	2.3	5.5	5.2	6.3	7.1	0.0	13.8	5.7	24		
8	4.6	2.7	3.5	7.4	8.9	9.1	11.8	13.7	13.2	11.1	11.2	14.6	14.7	14.6	14.2	12.6	12.3	10.1	10.8	2.9	2.7	9.5	6.5	8.1	2.7	14.7	9.6	24	
9	4.7	3.7	4.0	3.7	3.8	6.5	5.6	6.0	5.8	6.8	6.7	7.7	8.0	7.3	9.0	11.0	9.4	9.6	7.4	5.5	5.0	4.7	4.3	4.3	3.7	11.0	6.3	24	
10	5.2	3.9	4.7	4.4	4.4	3.3	5.5	7.5	8.9	8.9	9.5	11.1	17.8	13.1	6.9	13.5	12.4	14.3	11.3	9.5	9.0	6.6	8.3	10.5	3.3	17.8	8.8	24	
11	12.4	7.4	4.7	3.5	4.9	9.0	8.8	9.5	9.7	11.8	11.6	13.0	13.1	13.5	15.3	13.6	9.9	11.9	9.5	11.5	9.1	7.2	8.3	7.7	3.5	15.3	9.9	24	
12	9.4	7.4	6.3	5.3	4.5	2.9	3.7	6.0	6.6	8.1	10.7	12.2	15.2	13.7	14.2	12.5	10.7	11.4	8.4	8.6	5.0	5.4	8.8	6.6	2.9	15.2	8.5	24	
13	6.8	6.6	6.3	6.7	6.1	6.4	7.4	8.5	7.6	7.8	9.5	11.3	15.8	15.4	15.5	12.1	17.1	7.1	5.9	3.4	3.7	2.9	5.2	5.9	2.9	17.1	8.4	24	
14	3.6	3.0	3.0	3.7	4.1	4.0	5.0	4.3	6.5	6.4	8.2	12.3	18.1	16.8	18.5	15.7	5.8	9.3	7.9	5.1	5.3	5.4	5.9	5.8	3.0	18.5	7.7	24	
15	8.5	7.6	7.1	5.8	5.7	4.4	6.8	9.6	8.9	8.0	10.7	11.2	9.5	15.1	14.4	11.9	9.4	7.8	6.4	1.9	2.8	2.8	1.8	1.9	1.8	15.1	7.5	24	
16	4.2	3.8	3.8	3.4	3.4	3.9	2.5	3.3	7.6	8.5	7.8	10.1	8.0	11.1	11.7	11.1	11.3	11.7	8.1	2.6	9.8	7.1	6.8	6.1	2.5	11.7	7.0	24	
17	4.9	3.0	2.0	2.6	2.4	2.6	5.2	4.1	4.6	5.5	7.0	9.4	10.4	9.0	13.2	15.5	22.5	17.9	12.2	16.1	6.3	19.6	3.5	4.4	2.0	22.5	8.5	24	
18	3.1	4.0	4.9	4.5	4.8	4.3	6.6	4.4	5.7	8.4	10.2	14.3	11.8	15.9	17.1	16.0	14.4	13.6	8.4	3.8	4.3	5.1	4.2	4.9	3.1	17.1	8.1	24	
19	2.3	3.3	4.4	11.3	13.3	8.0	7.8	12.2	15.5	17.8	18.1	19.0	18.7	18.3	16.9	20.8	17.0	13.2	12.9	11.9	4.3	3.1	4.3	3.4	2.3	20.8	11.6	24	
20	2.0	3.1	5.6	4.4	5.0	6.1	12.3	16.4	13.5	14.3	14.2	18.7	19.0	16.6	15.6	13.0	13.3	13.3	12.8	14.7	10.6	10.8	5.0	7.1	2.0	19.0	11.1	24	
21	6.5	4.8	3.2	2.8	3.4	2.3	5.2	6.6	10.1	11.7	9.3	9.2	9.4	10.6	11.6	9.4	9.7	6.4	6.5	3.9	4.2	6.4	5.6	6.1	2.3	11.7	6.9	24	
22	5.4	2.9	2.8	3.1	3.5	4.5	7.0	8.6	9.5	12.5	13.2	16.0	16.0	14.0	14.7	14.3	9.9	10.7	3.4	2.9	14.9	12.3	13.0	8.8	2.8	16.0	9.3	24	
23	18.7	20.4	4.4	7.5	10.3	11.9	14.8	19.5	23.5	18.4	15.7	24.5	21.5	22.1	18.5	16.9	18.1	17.4	17.7	12.1	10.2	6.8	6.7	6.0	4.4	24.5	15.2	24	
24	4.4	3.7	6.2	8.6	10.8	9.6	14.0	13.9	13.3	15.9	17.6	18.0	20.7	21.6	16.9	24.1	25.4	19.3	19.1	18.6	19.4	20.3	18.8	19.8	3.7	25.4	15.8	24	
25	21.3	18.2	20.0	18.4	9.9	7.2	10.9	13.3	14.3	18.8	20.8	18.7	20.5	17.3	19.4	19.8	19.3	12.7	16.0	7.1	6.8	2.6	1.7	11.1	1.7	21.3	14.4	24	
26	7.0	2.2	2.5	2.2	1.1	1.5	2.5	2.9	10.5	11.9	16.7	15.2	15.9	12.9	12.1	12.5	11.5	13.4	10.5	12.0	8.0	6.7	5.4	4.0	1.1	16.7	8.4	24	
27	3.5	3.1	3.8	4.3	4.0	5.7	10.5	9.3	11.3	12.3	15.2	16.9	14.7	14.5	16.6	17.5	16.4	13.9	13.7	10.5	6.0	3.6	3.5	2.1	2.1	17.5	9.7	24	
28	1.3	1.2	1.2	1.3	1.6	1.1	2.1	4.7	8.0	11.8	9.1	12.0	12.0	11.4	13.0	9.2	10.8	14.7	9.3	3.7	3.5	2.4	3.4	2.5	1.1	14.7	6.3	24	
29	2.4	1.9	3.2	2.2	3.0	3.2	5.1	10.2	9.8	9.3	8.2	10.4	10.3	13.1	11.5	10.7	12.8	11.1	10.5	14.5	9.1	16.1	7.6	3.5	1.9	16.1	8.3	24	
30	2.7	3.0	6.7	11.7	14.2	15.0	13.4	11.1	12.8	12.2	11.9	11.4	11.9	12.1	11.7	11.7	10.6	9.1	7.8	5.6	4.9	4.5	5.0	6.1	2.7	15.0	9.4	24	
HOURLY MAX	21.3	20.4	20.0	18.4	14.2	15.0	14.8	19.5	23.5	21.5	20.8	24.5	21.5	22.1	20.4	24.1	25.4	19.3	23.4	18.6	19.4	20.3	18.8	19.8					

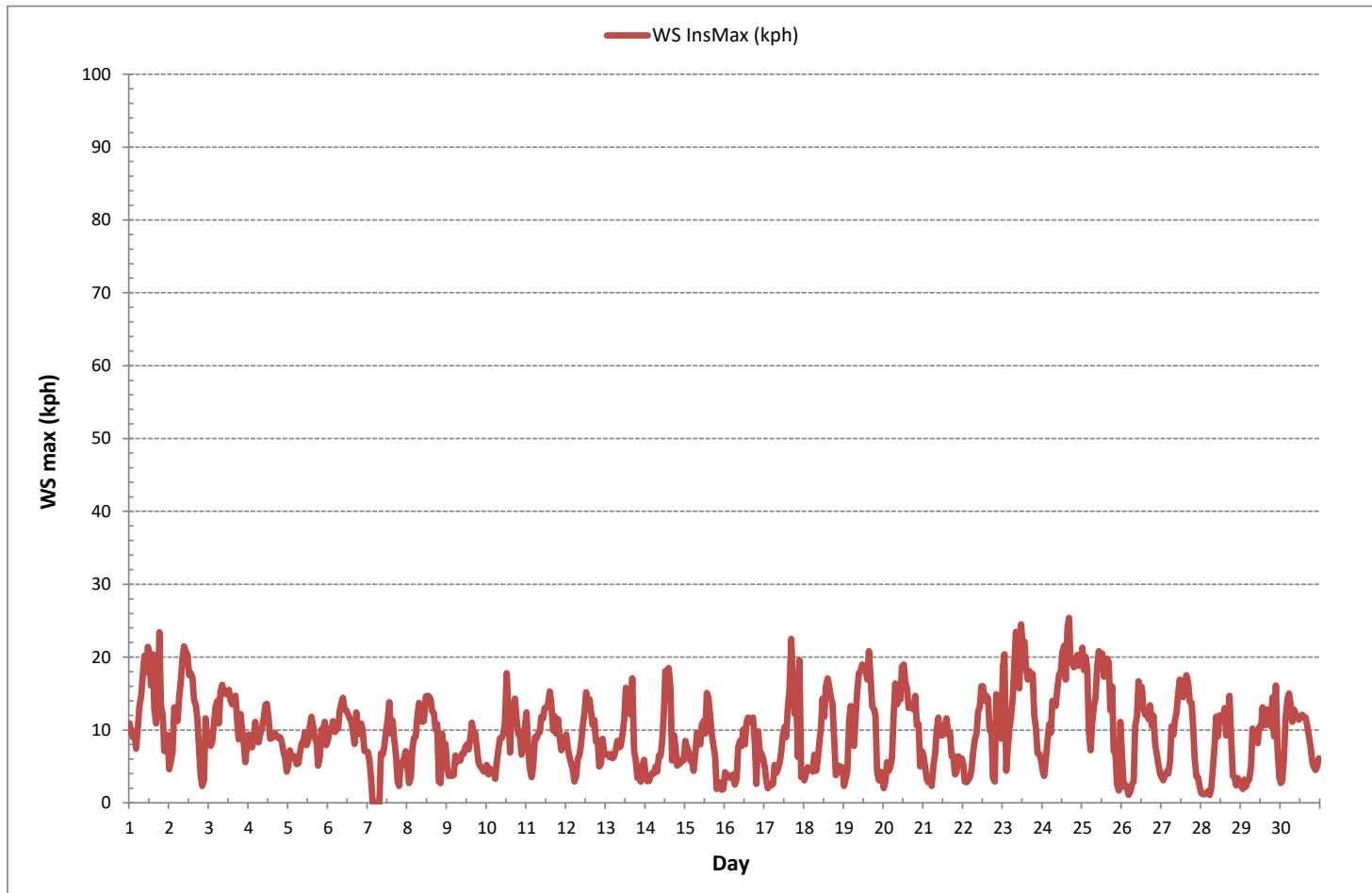
STATUS FLAG CODES

C	- MONTHLY CALIBRATION	Q	- QUALITY ASSURANCE
C1	- REPEAT CALIBRATION	R	- RECOVERY
Y	- MAINTENANCE	X	- MACHINE MALFUNCTION
S	- DAILY ZERO/SPAN CHECK	G	- OUT FOR REPAIR
S1	- REPEAT ZERO/SPAN CHECK	P	- POWER FAILURE

MONTHLY SUMMARY

MAXIMUM INSTANTANEOUS VALUE:	25.4	kph	@ HOUR	16	ON DAY	24	
OPERATIONAL TIME:						720	hrs

WIND SPEED Instantaneous Maximum (WS kph)



1.0 Quality Control Activities

Quality control procedures are established to govern the performance of the monitoring equipment and to protect operational uptime. Data collected during QC/QA activities are assigned a data validation code to comply with the requirements outlined in Chapter 6, 4.1.1, DQ 4-A (AMD, 2016). Calibrations are deemed successful only if the AMD calibration acceptance limits are met (Chapter 7, 9.0, AMD 2016).

A daily zero-span test procedure is performed for each gaseous parameter by challenging the analyzer with a zero-air source and span gas. Daily review of the data ensures the zero and span check are within the required acceptance limits and do not deviate more than $\pm 10\%$ from the expected value. The total zero-span cycle is complete within an hour with the zero phase commencing at the beginning of the scheduled hour. This QC activity is conducted in accordance with Chapter 7, 4.0, Cal 4-A (AMD, 2016).

The allowable time for a zero-span check is one hour per calendar day. The time allotted for the zero-span check does not contribute to downtime and is identified with a data validation code of "S". If any additional zero-span response checks are performed, the time accrued during the QC activity is considered downtime and is identified with a data validation code of "S1". The initiation of an additional zero-span check may be warranted during the investigation of operational issues or suspect data.

Each month, a scheduled multipoint calibration is performed on each gas analyzer. Prior to any adjustments, an as-found response test is completed to obtain the zero reading of the analyzer and the response to the highest span concentration. The zero and high point test gases are then re-introduced into the analyzer to establish the zero and high set-points. Once these adjustments are satisfactory, a mid-point and a low-point test concentration is introduced. Additional multi-point calibrations are required if any of the conditions, outlined in Chapter 7, 2.1, Cal 2G (AMD, 2016) exist.

The time allotted for the first multi-point calibration is not considered downtime and is identified with a data validation code of "C". If any additional as-found response checks or multipoint calibrations are performed, the time accrued during the QC activity is considered downtime and is identified with a data validation code of "C1".

A mechanical wind system undergoes annual calibration, as a minimum, while an ultrasonic wind system is factory calibrated every two years (Chapter 6, 6.0, Cal 6-A, AMD 2016). Supplementary to this, a visual inspection of the equipment is performed during each scheduled monthly site visit.

The time allotted for the wind system calibration is not considered downtime and is identified with a data validation code of "C". If function checks or additional calibrations are performed, the time accrued during the QC activity is not considered downtime and is identified with a data validation code of "Q" and "C", respectively. If QC activity goes beyond 10% of the monthly operating time, the time exceeding 10% is considered downtime and is assigned a data validation code of "C1". Data identified with a data validation code of "Q" is in accordance with Chapter 6, 4.1.3 (AMD, 2016) which states QA/QC activities are not included when calculating data completeness.

High volume samplers are calibrated every three months, as a minimum, in accordance with Chapter 7, 7.0, Cal 7-B (AMD, 2016).

Where passive sampling is in practice, quality control samples will be deployed in accordance with Chapter 4, 3.0, 3.1.3. Method blanks, replicate samples and spiked blanks are exposed and handled in the same manner as each passive sample. To comply with the data submission requirements in Chapter 9, 3.1, the replicate and corresponding passive sample concentrations are reportable data values and have not been averaged.

As recommended in Chapter 6, 4.2 (AMD 2016), daily data review is conducted to verify data and avoid significant data losses. Automated flags, originating from the data-logger, and data anomalies are reviewed and may prompt the need to dispatch a technician for investigation and/or corrective action. Additionally, there are several automated alarm scenarios that serve to screen raw data, alert technicians and elicit investigation or corrective action.

Comparisons of the measured ambient concentrations to the corresponding AAAQO are assessed using the significant figures protocol in Chapter 9, 3.1.2. If the measurement is near the set objective, raw data may undergo necessary data adjustments to confirm a true exceedance. Should an exceedance occur, Maxxam will formally notify the client; however, the reporting protocol to AEP is defined by the client and may not involve Maxxam. Exceedance events are acknowledged in the report, based on the information available at the time.

2.0 Data Verification and Validation

The data validation procedures, outlined in Chapter 6, 4.0, AMD 2016, are used to accept, reject and qualify data. The data verification and validation process, and the current Data Collection and Management Process Flow Chart have been compiled from sections 4.2 to 4.6 (AMD, 2016) and are shown below.

Baseline adjustments are applied by interpolation between two valid zero checks, as determined by the Data Acquisition System. In the event that zero check results are not reliable, data may be adjusted by applying a constant offset to data collected between two adjacent zero checks. Both adjustment approaches are deemed acceptable by the AMD.

Table 1 (Chapter 6) outlines the quantitative parameter relationships to be considered and dictates that data adjustments are applied equally for NO/NO₂/NO_x and CH₄/NMHC/THC parameters. Below zero adjustments are applied to 1-hour averages, in accordance with Table 2 (Chapter 6), and are done after baseline corrections.

Instantaneous data, where provided, is provided for reference purposes and has not undergone zero correction. The minimum and maximum statistics are highlighted in the data table and are for reference only. The highlighted cells are based on the software's interpretation of the exact position of the minimum or maximum value. The visual presentation of these statistics may not be the obvious choice in a data range due to rounding, truncating or analyzer specifications.

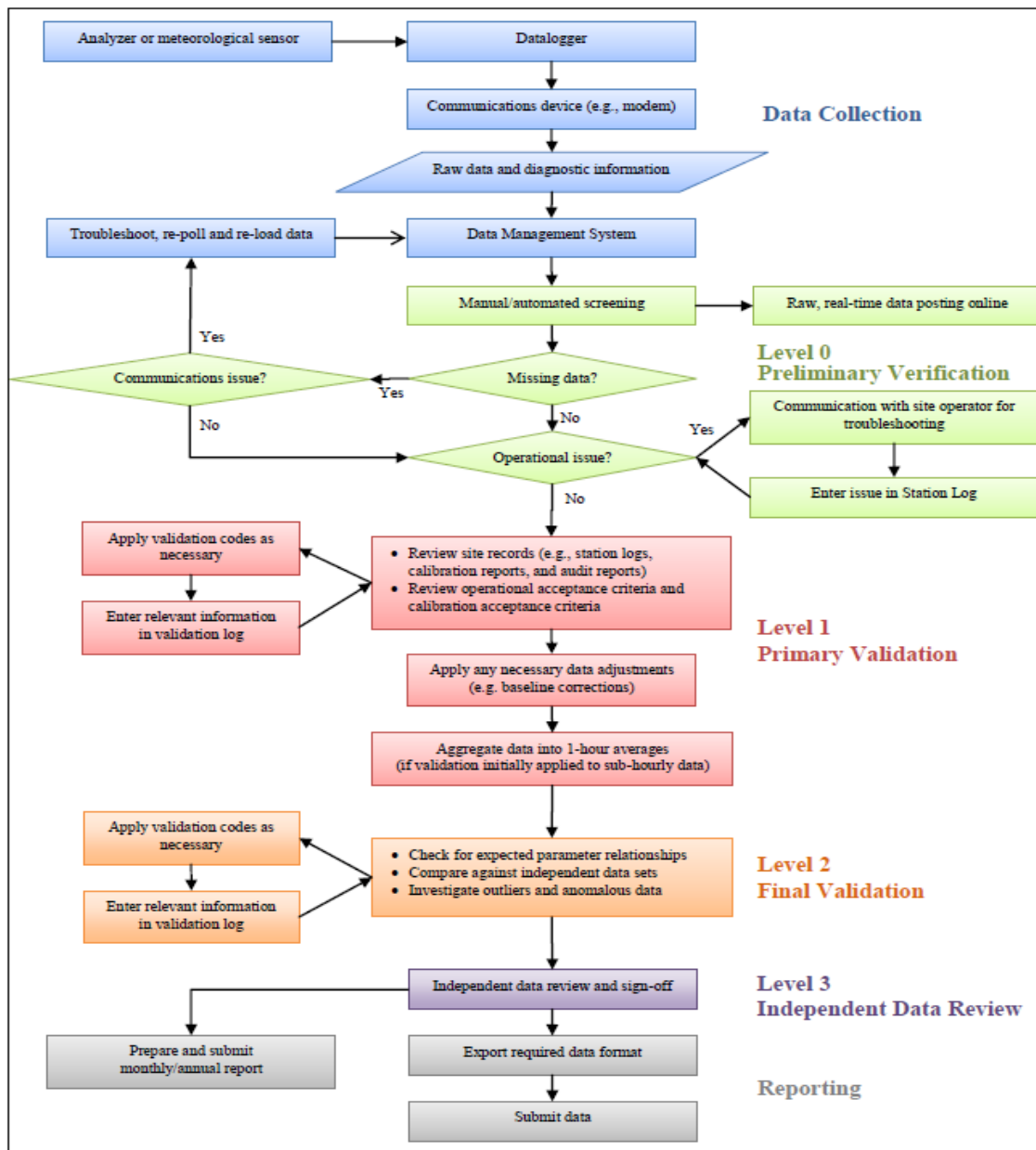
All calculations and reporting of results follow the methods described in the AMD, 2016.

There were no deviations from the prescribed methods.

AMD Data Verification and Validation Process

The following steps were used to complete the data verification and validation process:

<p>Level 0 Preliminary Verification</p>	<p>Level 0 data are raw data obtained directly from the data acquisition system (DAS). At this level, data undergoes a certain amount of manual or automated screening and flagging. Screening checks include: a) identification of periods of missing data; b) verification of time stamps against reference time; c) verification that instrument diagnostics/data-logger flags indicate normal operation; d) comparison of data to upper and lower limits; e) rate of change flagging indicating that data changed too rapidly or not at all; and f) verification that zero, span and multipoint performance checks are within specifications. This level of verification is performed on a daily basis.</p>
<p>Level 1 Primary Validation</p>	<p>Primary validation involves more thorough evaluation and documentation of issues identified during data screening, along with appropriate application of data validation codes. Level 1 activities include: a) review of all screening flags assigned during preliminary verification; b) review of all supporting site information and documentation; c) review of operational acceptance limits for each parameter/analyzer; d) review of daily zero/span and monthly calibration results for all gaseous parameters; and e) application of any necessary adjustments to data (e.g. baseline adjustments, below zero adjustments). This level of validation is performed on a monthly basis.</p>
<p>Level 2 Final Validation</p>	<p>The purpose of Level 2 validation is to verify that there are no inconsistencies among related data, or among regional data measured at nearby sites. At this level of review, some general knowledge of pollutant and meteorological behavior can be used to determine if data is suspect.</p>
<p>Level 3 Independent Data Review</p>	<p>Level 3 validation involves a final cursory review of validated data, and is completed by an individual independent of both field operations and primary data validation. At this level, a final independent QA review/endorsement is performed before data is submitted to Alberta Environment and Parks.</p>
<p>Post-Final Validation</p>	<p>The Post-Final Validation step serves to re-evaluate validated data for errors or omissions discovered and/or suspected after the initial monthly data submittal. This level of validation is performed on an annual basis, when annual reporting is required or requested.</p>



Source: Air Monitoring Directive (December 2016), Chapter 6, Ambient Data Quality
Figure 1 Data Collection and Management Process Flow Chart



Validation Certificate Form

Client: <u>Lakeland Industry & Community Association</u>	Project #: <u>2833-2019-04-24-C</u>
Site: <u>Maskwa Continuous Monitoring Station</u>	Contact: <u>Mike Bisaga</u>

Level 0 Preliminary Verification	<u><i>bimadeniji</i></u>	Date <u>14-May-2019</u>
Level 1 Primary Validation	<u><i>bimadeniji</i></u>	Date <u>14-May-2019</u>
Level 2 Final Validation	<u><i>bimadeniji</i></u>	Date <u>15-May-2019</u>
Level 3 Independent Data Review	<u><i>msalmbg</i></u>	Date <u>21-May-2019</u>
Post-Final Validation	<u>NA</u>	Date <u>NA</u>

Notes
The Post-Final Validation step serves to re-evaluate the data that errors or omissions are discovered and/or suspected after the initial submittal of data. This validation is performed on an annual basis.

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APRIL 1 - 30, 2019

MONTHLY AMBIENT AIR QUALITY MONITORING REPORT

AEP Ambient Station ID: 1250

Project #: 2833-2019-04-25-C

LICA-201904

Prepared for:

Lakeland Industry & Community Association

Mike Bisaga

5107 50 St.

Bonnyville, Alberta T9N 2J7

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Monitoring Station

St. Lina Continuous Monitoring Station

Date of Report Issuance: May 24, 2019

Report Preparation By:

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Project Manager, Customer Service, Air Services

Reviewed By:

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Project Team Lead, Customer Service, Air Services



#1 - 2080 39 Avenue NE, Calgary AB, T2E 6P7

LICA-201904

Page 176 of 350

Lakeland Industry & Community Association

5107 50 St.
Bonnyville, Alberta T9N 2J7

Attention: Mike Bisaga

Date: June 03, 2019

Subject: MONTHLY AMBIENT AIR QUALITY MONITORING REPORT for APRIL 1 - 30, 2019

In April 2019, Maxxam Analytics was contracted to manage the ambient air quality monitoring and maintenance activities at the St. Lina Continuous Monitoring Station near St. Lina, Alberta. The monitoring program provides measurements of ambient air pollutants and meteorological data to satisfy the reporting requirements of the Alberta airshed.

Network Parameters for Continuous Monitoring:

This monthly report, where applicable, was prepared in accordance with Chapter 9 of the Air Monitoring Directive (AMD, 2016). The report summarizes the continuous monitoring results for pollutant and meteorological parameters and presents the hourly statistics, graphs and rose charts for the month. Calibration records are provided in a separate PDF document in order to comply with AMD requirements Chapter 9, 13.1.7, RC 13-R. The station is equipped with analyzers to measure SO₂, H₂S, THC, CH₄, NMHC, NO_x, NO, NO₂, PM_{2.5} and O₃. The meteorological sensors and equipment capture data for WS, WD, RH, BP, PRECIP, AmbTPX and STDWD.

Exceedance & Performance Reporting:

The operational time for all continuous ambient air analyzers, meteorological systems and data acquisition systems were above the 90% requirement, as per the AMD, Chapter 6, DQ 4-C, 2016.

All measured ambient air concentrations were below the Alberta Ambient Air Quality Objectives and Guidelines (AAAQO, January 2019). Comparisons of these concentrations to the corresponding AAAQOs were done in accordance with Chapter 9, 15.3.2, RC 15-P. Accordingly, the averaging specifications and data completeness criteria, as defined in the Alberta Ambient Air Quality Objective Calculation Guidelines, were applied (Chapter 9, Appendix A, AMD 2016).

Contravention: The scheduled automated daily zero-span check was not executed on April 25, due to a datalogger programming error. This was reported to the AEP under reference number: **354246**

Monthly Monitoring Overview:

In relation to the previous month, there were no changes made to the scope or management of the ambient air monitoring program.

The evaluation of data collected in the month of April did not reveal any errors or omissions that would require resubmission of air data to AEP's airdata warehouse.

During this monitoring period, there were no scheduled audits that Maxxam Analytics was privy to.

Gas Parameters: The automated zero-span check scheduled for hour 11:00 on April 25 was not executed, due to a datalogger programming error. The Ultimate datalogger was manually rebooted onsite on April 26 and the next scheduled zero-span check was successfully completed at hour 10:00. Analyzer diagnostics revealed that performance was not impacted in any parameter, therefore, no downtime was incurred due to this event.

O₃: Three hours of downtime were recorded on April 16, due to additional quality checks and corrective action performed to address a zero-span system pump failure.

Should you have any questions concerning the results or if we can be of further assistance, please contact your Maxxam representative indicated below.

Reviewed by:



Wunmi Adekanmbi, M.Sc., EPT, PMP
Project Team Lead, Customer Service, Air Services
403-219-3661

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. Certification of submitted information is specific to the contents of this report and is not intended to represent the onus of the Person Responsible, as outlined in Chapter 9, RC 12-E.

TABLE OF CONTENTS

TITLE PAGE	1
COVER LETTER	2
TABLE OF CONTENTS	3
ABBREVIATIONS	4
AAAQO EXCEEDANCE SUMMARY	5
MONTHLY CONTINUOUS DATA SUMMARY	6
OPERATIONAL SUMMARY	7
SUMMARY TABLES, GRAPHS AND ROSES	9
Sulphur Dioxide	10
Hydrogen Sulphide	14
Total Hydrocarbon	18
Methane	22
Non-Methane Hydrocarbon	26
Oxides of Nitrogen	30
Nitric Oxide	34
Nitrogen Dioxide	38
Ozone	42
Particulate Matter _{2.5}	46
Wind Speed	50
Wind Direction	53
Standard Deviation Wind Direction	56
Relative Humidity	58
Barometric Pressure	60
Ambient Temperature	62
Precipitation	64
MAXIMUM INSTANTANEOUS DATA	66
1.0 Quality Control Activities	86
2.0 Data Verification and Validation	87
Validation Certificate Form	90
End of Report	91

List of Acronyms

AAAQO	Alberta Ambient Air Quality Objectives and Guidelines Summary
AEP	Alberta Environment and Parks
AMBTPX	Ambient Temperature
AMD	Air Monitoring Directive
BP	Barometric Pressure
CH₄	Methane
DAS	Data acquisition system
ESRD	Environment and Sustainable Resource Development
ET	External temperature
GPT	Gas Phase Titration
hr	Hour
hrs	Hours
HVAC	Heating, ventilation and Air Conditioning
H₂S	Hydrogen Sulphide
IZS	Internal zero-span
kph	Kilometers per hour
NO	Nitric Oxide
NO₂	Nitrogen dioxide
NO_x	Total oxides of nitrogen
O₃	Ozone
NAPS	National Air Pollution Surveillance Program
NMHC	Non-Methane Hydrocarbon
PAH	Polycyclic Aromatic Hydrocarbons
PM_{2.5}	Particulate matter less than or equal to 2.5 microns in diameter
PM₁₀	Particulate matter between 2.5 and 10 microns in diameter
Precip	Precipitation
ppb	Parts per billion
ppm	Parts per million
PUF	Poly-Urethane Foam
QA	Quality Assurance
QC	Quality Control
RH	Relative Humidity
SHARP	Synchronized Hybrid Ambient Real-time Particulate Monitor
SOP	Standard Operating Procedure
SO₂	Sulphur Dioxide
STDWD	Standard Deviation Wind Direction
STNTPX	Station Temperature
TEOM	Tapered Element Oscillating Microbalance
THC	Total hydrocarbons
TSP	Total Suspended Particulate
µg/m³	Microgram per cubic meter
VOC	Volatile Organic Compounds
WS	Wind Speed
WD	Wind Direction
°C	Degrees Celsius

AAAQO Exceedance Summary Report

SO₂ 1-Hour Exceedances

Measured concentrations of sulphur dioxide were below the 1-hour AAAQO of 172 ppb.

SO₂ 24-Hour Exceedances

Measured concentrations of sulphur dioxide were below the 24-hour AAAQO of 48.0 ppb.

H₂S 1-Hour Exceedances

Measured concentrations of hydrogen sulphide were below the 1-hour AAAQO of 10 ppb.

H₂S 24-Hour Exceedances

Measured concentrations of hydrogen sulphide were below the 24-hour AAAQO of 3 ppb.

NO₂ 1-Hour Exceedances

Measured concentrations of nitrogen dioxide were below the 1-hour AAAQO of 159 ppb.

PM_{2.5} 1-Hour Exceedances

Measured concentrations of fine particulate matter were below the 1-hour AAAQG of 80 µg/m³.

PM_{2.5} 24-Hour Exceedances

Measured concentrations of fine particulate matter were below the 24-hour AAAQO of 29 µg/m³.

O₃ 1-Hour Exceedances

Measured concentrations of ozone were below the 1-hour AAAQO of 76 ppb.

In accordance with EPEA and the Substance Release Regulation

In accordance with A Guide to Release Reporting and the Alberta Ambient Air Quality Objectives and Guidelines Summary

MONTHLY CONTINUOUS DATA SUMMARY

Lakeland Industry & Community Association						MAXIMUM VALUES							OPERATIONAL TIME (%)
St. Lina Continuous Monitoring Station						1-HOUR					24-HOUR		
PARAMETER	OBJECTIVES		EXCEEDANCES		MONTHLY AVERAGE	READING	DAY	HOUR	WIND SPEED (kph)	WIND DIRECTION (sector)	READING	DAY	
	1-hr	24-hr	1-hr	24-hr									
SO ₂ (ppb)	172	48	0	0	0	4	13	10	13.3	SSW	1	18	100.0
H ₂ S (ppb)	10	3	0	0	0	1	19	7	13.8	WNW	0	1	100.0
THC (ppm)	-	-	-	-	1.98	2.35	14	6	8.8	NE	2.09	14	100.0
CH ₄ (ppm)	-	-	-	-	1.98	2.35	14	6	8.8	NE	2.09	14	100.0
NMHC (ppm)	-	-	-	-	0.00	0.00	1	0	8.9	WNW	0.00	1	100.0
NO ₂ (ppb)	159	-	0	-	1	7	14	6	8.8	NE	2	4	100.0
NO (ppb)	-	-	-	-	0	2	10	10	10.1	S	0	1	100.0
NO _x (ppb)	-	-	-	-	1	8	14	7	7.6	NE	3	14	100.0
O ₃ (ppb)	76	-	0	-	41.4	61.2	22	13	18.3	SSW	50.4	24	99.6
PM _{2.5} (µg/m ³)	80	29	0	0	3	15	15	14	14.7	NNW	6	5	100.0
RELATIVE HUMIDITY (%)	-	-	-	-	55	100	6	8	16.3	E	97	6	100.0
BAROMETRIC PRESSURE (millibar)	-	-	-	-	926	940	28	10	6.5	NNW	938	28	100.0
AMBIENT TEMPERATURE (°C)	-	-	-	-	4.4	18.5	22	14	16.8	SSW	11.0	22	100.0
PRECIPITATION (mm)	-	-	-	-	13.4	1.4	6	19	8.3	E	7.8	6	100.0
VECTOR WS (kph)	-	-	-	-	2.3	26.3	3	7	-	E	17.9	24	100.0
VECTOR WD (sec)	-	-	-	-	283 (W)	-	-	-	-	-	-	-	100.0

* Precipitation: data represents the total (sum) for the indicated time frame

OPERATIONAL SUMMARY

Parameter	Equipment	Method & Procedure	Operational Notes
SULPHUR DIOXIDE (SO ₂)	Thermo 43i TLE Pulsed Fluorescence Analyzer	Maxxam AIR SOP-00209: Ambient Sulphur Monitoring	<ul style="list-style-type: none"> Operational time for the monitoring period was 100%. The routine monthly calibration was performed on April 12, between the hours of 08:00 and 12:00. The automated zero-span check scheduled for hour 11:00 on April 25 was not executed, due to a datalogger programming error. The Ultimate datalogger was manually rebooted onsite on April 26 and the next scheduled zero-span check was successfully completed at hour 10:00. Diagnostic information revealed that analyzer performance was not impacted, therefore, no downtime was incurred due to this event.
HYDROGEN SULPHIDE (H ₂ S)	Thermo 450i UV Fluorescence Analyzer	Maxxam AIR SOP-00209: Ambient Sulphur Monitoring	<ul style="list-style-type: none"> Operational time for the monitoring period was 100%. Beginning on April 6, the analyzer exhibited a biased high drift in span response. The routine monthly calibration was performed on April 12, between the hours of 08:00 and 12:00. The calibration addressed the span drift and no further issues were identified. The automated zero-span check scheduled for hour 11:00 on April 25 was not executed, due to a datalogger programming error. The Ultimate datalogger was manually rebooted onsite on April 26 and the next scheduled zero-span check was successfully completed at hour 10:00. Diagnostic information revealed that analyzer performance was not impacted, therefore, no downtime was incurred due to this event.
TOTAL HYDROCARBONS (THC), METHANE (CH ₄) & NON-METHANE HYDROCARBONS (NMHC)	Thermo 55i FID Analyzer	Maxxam AIR SOP-00001: Methane, Non-Methane Hydrocarbon Analyzer Monitoring	<ul style="list-style-type: none"> Operational time for the monitoring period was 100%. The routine monthly calibration was performed on April 12, between the hours of 12:00 and 15:00. The fuel gas (H₂) cylinder was replaced during this site visit. The automated zero-span check scheduled for hour 11:00 on April 25 was not executed, due to a datalogger programming error. The Ultimate datalogger was manually rebooted onsite on April 26 and the next scheduled zero-span check was successfully completed at hour 10:00. Diagnostic information revealed that analyzer performance was not impacted, therefore, no downtime was incurred due to this event.
OXIDES OF NITROGEN (NO _x), NITRIC OXIDE (NO) & NITROGEN DIOXIDE (NO ₂)	Thermo 42i Chemiluminescent Analyzer	Maxxam AIR SOP-00213: Ambient NO/NO ₂ /NO _x Monitoring	<ul style="list-style-type: none"> Operational time for the monitoring period was 100%. The routine monthly calibration was performed on April 12, between the hours of 08:00 and 14:00. The automated zero-span check scheduled for hour 11:00 on April 25 was not executed, due to a datalogger programming error. The Ultimate datalogger was manually rebooted onsite on April 26 and the next scheduled zero-span check was successfully completed at hour 10:00. Diagnostic information revealed that analyzer performance was not impacted, therefore, no downtime was incurred due to this event.

OPERATIONAL SUMMARY

Parameter	Equipment	Method & Procedure	Operational Notes
OZONE (O ₃)	Thermo 49i Photometric Analyzer	Maxxam AIR SOP-00212: Ambient O ₃ Monitoring	<ul style="list-style-type: none"> Operational time for the monitoring period was 99.6%, equivalent to 3 hours of downtime The routine monthly calibration was performed on April 12, between the hours of 13:00 and 17:00. The analyzer spanned outside the upper acceptance limit on April 15. The result of a repeat span check performed on April 16, at hour 7:00, drifted further outside limit. This prompted an immediate site visit where it was discovered that the pump of the zero-span system had failed. The pump diaphragm was replaced and a successful zero-span check was completed afterwards. As the issue was isolated to the zero-span system without impacting analyzer performance, no data was discarded due to the span drift. Three hours of downtime were, however, recorded due to the additional quality checks and corrective actions. The automated zero-span check scheduled for hour 11:00 on April 25 was not executed, due to a datalogger programming error. The Ultimate datalogger was manually rebooted onsite on April 26 and the next scheduled zero-span check was successfully completed at hour 10:00. Diagnostic information revealed that analyzer performance was not impacted, therefore, no downtime was incurred due to this event.
PARTICULATE MATTER < 2.5 MICRONS (PM _{2.5})	Thermo SHARP 5030i Unit	Maxxam AIR SOP-00014: Measurement of Particulate Concentration Using the THERMO SHARP	<ul style="list-style-type: none"> Operational time was 100% and there were no performance issues identified. The routine monthly check was performed on April 26, between the hours of 9:00 and 10:00. The flow measurement check was not completed during this visit as the flow cell was sent for manufacturer's annual certification. The flow check was subsequently conducted on April 30, impacting only a few minutes at hour 12:00.
WIND SPEED (WS), WIND DIRECTION (WD) & STANDARD DEVIATION WIND DIRECTION (STDWD)	Met One Unit	Maxxam AIR SOP-00013: RM Young Wind Monitor Calibration	<ul style="list-style-type: none"> Operational time was 100% and there were no performance issues identified. Wind data is reported as vector wind speed and vector wind direction. Wind direction is defined as the direction from which the wind is blowing and is measured in degrees from true north.
RELATIVE HUMIDITY (RH)	Rotronic Hygroclip Unit	Operations Manual	<ul style="list-style-type: none"> Operational time was 100% and there were no performance issues identified.
BAROMETRIC PRESSURE (BP)	Met One Unit	Operations Manual	<ul style="list-style-type: none"> Operational time was 100% and there were no performance issues identified.
PRECIPITATION (PRECIP)	Met One Unit	Maxxam AIR SOP-00242: Precipitation Collector Installation/Maintenance	<ul style="list-style-type: none"> Operational time was 100% and there were no performance issues identified.
AMBIENT TEMPERATURE (AmbTPX)	Rotronic Hygroclip Unit	Operations Manual	<ul style="list-style-type: none"> Operational time was 100% and there were no performance issues identified.
Datalogger	Envista Ultimate Unit	Operations Manual	<ul style="list-style-type: none"> There were no performance issues identified.

SUMMARY TABLES, GRAPHS AND ROSES

SULPHUR DIOXIDE Hourly Averages (SO₂ ppb)

HR START (MST)	0:00	1:00	2:00	3:00	4:00	5:00	6:00	7:00	8:00	9:00	10:00	11:00	12:00	13:00	14:00	15:00	16:00	17:00	18:00	19:00	20:00	21:00	22:00	23:00	DAILY	DAILY	24-HR	RDGS.				
HR END (MST)	0:59	1:59	2:59	3:59	4:59	5:59	6:59	7:59	8:59	9:59	10:59	11:59	12:59	13:59	14:59	15:59	16:59	17:59	18:59	19:59	20:59	21:59	22:59	23:59	MIN.	MAX.	AVG.					
DAY																																
1	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	24
2	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	24
3	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	24
4	0	0	0	1	1	0	0	0	0	S	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1	0	24
5	0	0	0	0	0	0	0	0	S	0	0	0	0	0	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1	0	24
6	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	24
7	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	24
8	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	24
9	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	24
10	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	24
11	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	24
12	0	S	0	0	0	0	0	0	C	C	C	C	C	1	0	0	0	0	1	1	1	1	1	1	1	0	0	0	0	1	0	24
13	S	0	0	0	0	0	0	0	0	1	4	1	0	0	0	0	0	0	0	0	0	0	0	S	0	0	0	0	0	4	0	24
14	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	24
15	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	24
16	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	24
17	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	24
18	0	0	0	0	0	0	0	0	0	0	1	1	1	1	0	0	0	0	S	1	2	1	1	1	1	0	0	0	0	2	1	24
19	1	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	1	0	24
20	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	24
21	0	0	0	0	0	0	0	0	0	0	0	0	0	1	1	S	0	0	0	0	0	0	0	0	0	0	0	0	0	1	0	24
22	0	0	0	0	0	0	0	0	0	0	0	0	1	1	S	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1	0	24
23	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	24
24	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	24
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	24
26	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	24
27	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	24
28	0	1	1	1	1	1	1	0	S	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1	0	24
29	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	24
30	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	24
HOURLY MAX	1	1	1	1	1	1	0	0	1	4	1	1	1	1	0	0	0	0	1	1	2	1	1	1	0	0	0	0				
HOURLY AVG	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0				

STATUS FLAG CODES

C	- MONTHLY CALIBRATION	Q	- QUALITY ASSURANCE
C1	- REPEAT CALIBRATION	R	- RECOVERY
Y	- MAINTENANCE	X	- MACHINE MALFUNCTION
S	- DAILY ZERO/SPAN CHECK	G	- OUT FOR REPAIR
S1	- REPEAT ZERO/SPAN CHECK	P	- POWER FAILURE

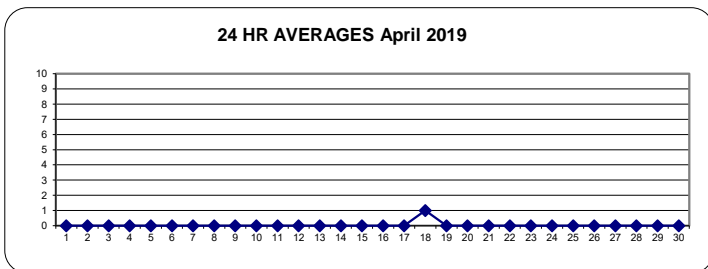
OBJECTIVE LIMIT:

ALBERTA ENVIRONMENT:	1-HR	172	ppb	24-HR	48	ppb
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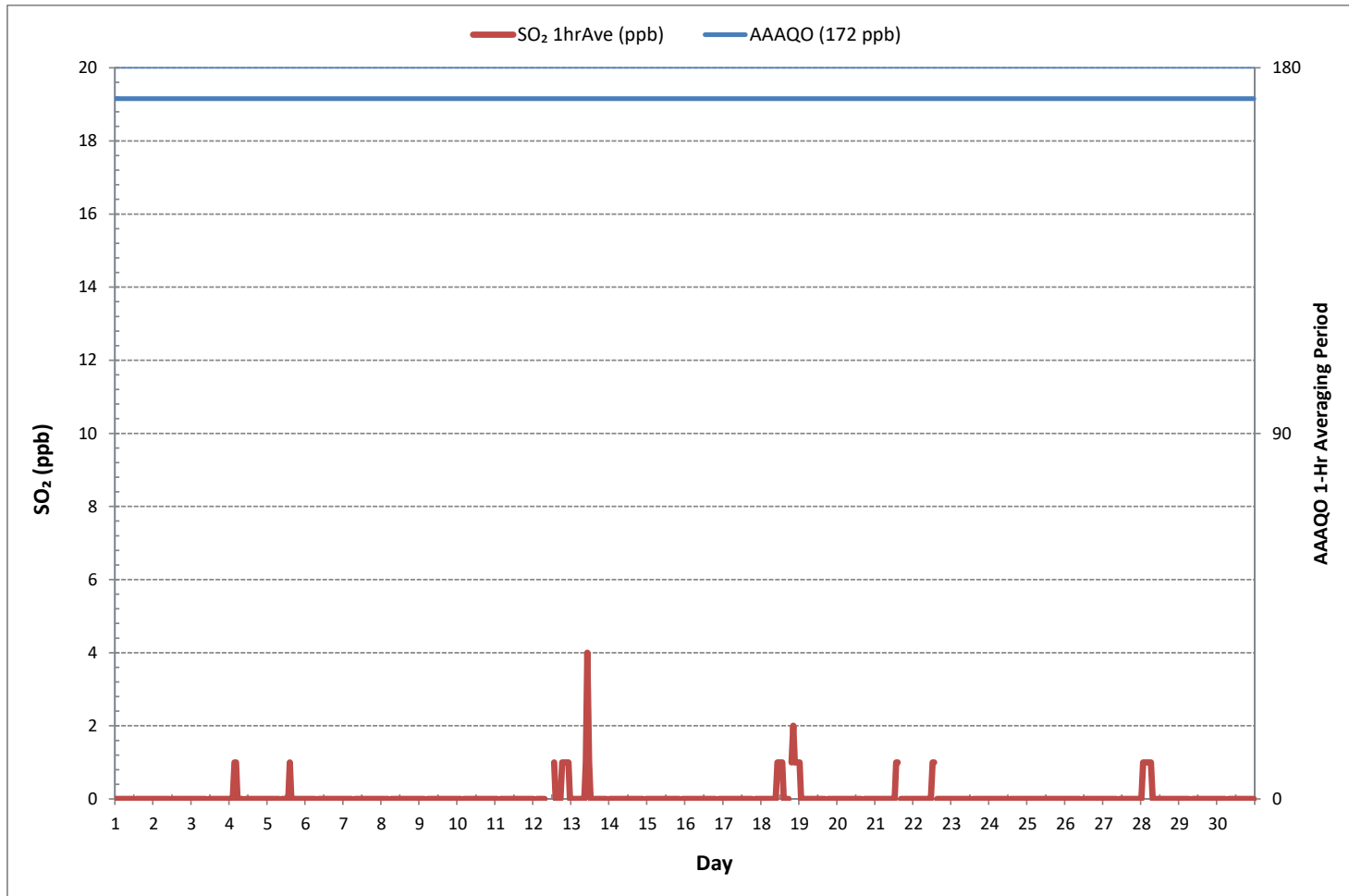
MONTHLY SUMMARY

NUMBER OF 1-HR EXCEEDANCES:	0
NUMBER OF 24-HR EXCEEDANCES:	0
NUMBER OF NON-ZERO READINGS:	32
MINIMUM 1-HR AVERAGE:	0 ppb @ HOUR 0 ON DAY 1
MAXIMUM 1-HR AVERAGE:	4 ppb @ HOUR 10 ON DAY 13
MAXIMUM 24-HR AVERAGE:	1 ppb ON DAY 18
IZS CALIBRATION TIME:	30 hrs
MONTHLY CALIBRATION TIME:	5 hrs
OPERATIONAL TIME:	720 hrs
AMD OPERATION UPTIME:	100.0 %
STANDARD DEVIATION:	0
MONTHLY AVERAGE:	0 ppb

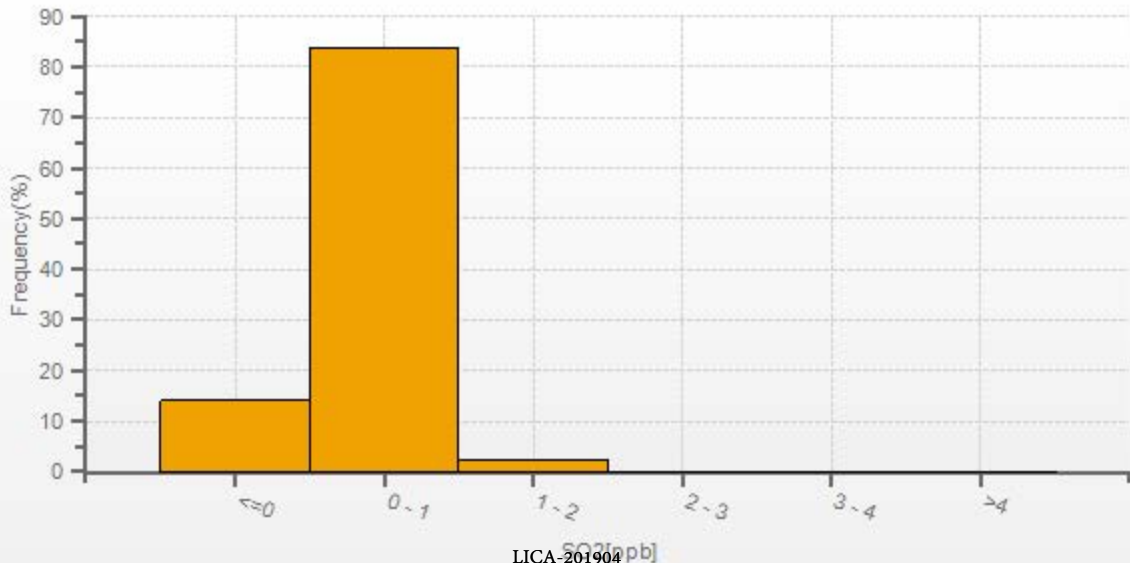
24 HR AVERAGES April 2019



SULPHUR DIOXIDE Hourly Averages (SO₂ ppb)



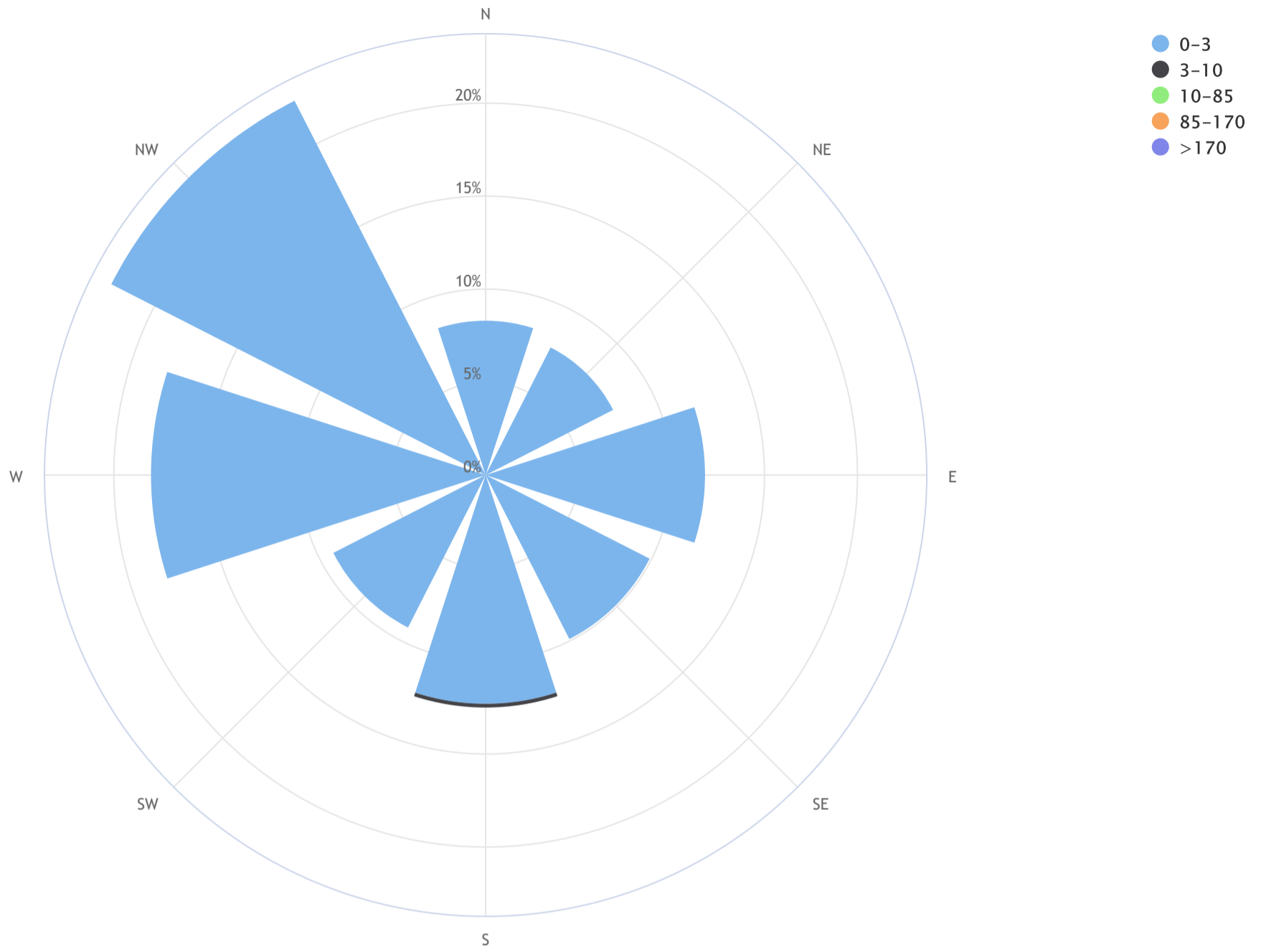
SO2[ppb] Histogram: LICA ST. LINA Monthly: 19/04 1 Hr.



LICA-201904
Page 187 of 350

Lakeland Industry & Community Association_St. Lina Continuous Monitoring Station_SO₂ (ppb)_19/04

Pollutant Rose_Wind Frequency (Blowing From)_ CALM Avg = N/A, CALM % = 0.0%



Direction	0-3	3-10	10-85	85-170	>170	TOTAL
N	8.3	0.0	0.0	0.0	0.0	8.3
NE	7.7	0.0	0.0	0.0	0.0	7.7
E	11.8	0.0	0.0	0.0	0.0	11.8
SE	9.9	0.0	0.0	0.0	0.0	9.9
S	12.3	0.2	0.0	0.0	0.0	12.4
SW	9.2	0.0	0.0	0.0	0.0	9.2
W	18.0	0.0	0.0	0.0	0.0	18.0
NW	22.6	0.0	0.0	0.0	0.0	22.6
Summary	99.9	0.2	0.0	0.0	0.0	100.0
CALM	0.0	0.0	0.0	0.0	0.0	0.0

HYDROGEN SULPHIDE Hourly Averages (H₂S ppb)

HR START (MST)	0:00	1:00	2:00	3:00	4:00	5:00	6:00	7:00	8:00	9:00	10:00	11:00	12:00	13:00	14:00	15:00	16:00	17:00	18:00	19:00	20:00	21:00	22:00	23:00	DAILY	DAILY	24-HR	RDGS.
HR END (MST)	0:59	1:59	2:59	3:59	4:59	5:59	6:59	7:59	8:59	9:59	10:59	11:59	12:59	13:59	14:59	15:59	16:59	17:59	18:59	19:59	20:59	21:59	22:59	23:59	MIN.	MAX.	AVG.	
DAY																												
1	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	24
2	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	24
3	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	24
4	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	24
5	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	24
6	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	24
7	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	24
8	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	24
9	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	24
10	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	24
11	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	24
12	S	0	0	0	0	0	0	C	C	C	C	C	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	24
13	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	24
14	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	24
15	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	24
16	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	24
17	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	24
18	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	24
19	0	0	0	0	0	0	0	1	1	0	0	0	0	0	0	0	0	S	0	0	0	0	0	0	0	1	0	24
20	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	24
21	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	24
22	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	24
23	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	24
24	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	24
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	24
26	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	24
27	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	24
28	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	24
29	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	24
30	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	24
HOURLY MAX	0	0	0	0	0	0	0	1	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0				
HOURLY AVG	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0				

STATUS FLAG CODES

C	- MONTHLY CALIBRATION	Q	- QUALITY ASSURANCE
C1	- REPEAT CALIBRATION	R	- RECOVERY
Y	- MAINTENANCE	X	- MACHINE MALFUNCTION
S	- DAILY ZERO/SPAN CHECK	G	- OUT FOR REPAIR
S1	- REPEAT ZERO/SPAN CHECK	P	- POWER FAILURE

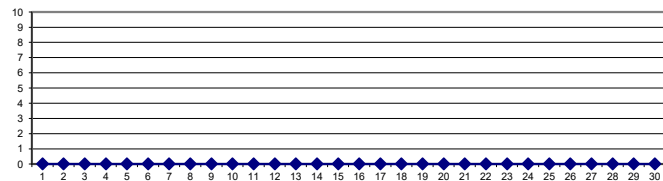
OBJECTIVE LIMIT:

ALBERTA ENVIRONMENT:	1-HR	10	ppb	24-HR	3	ppb
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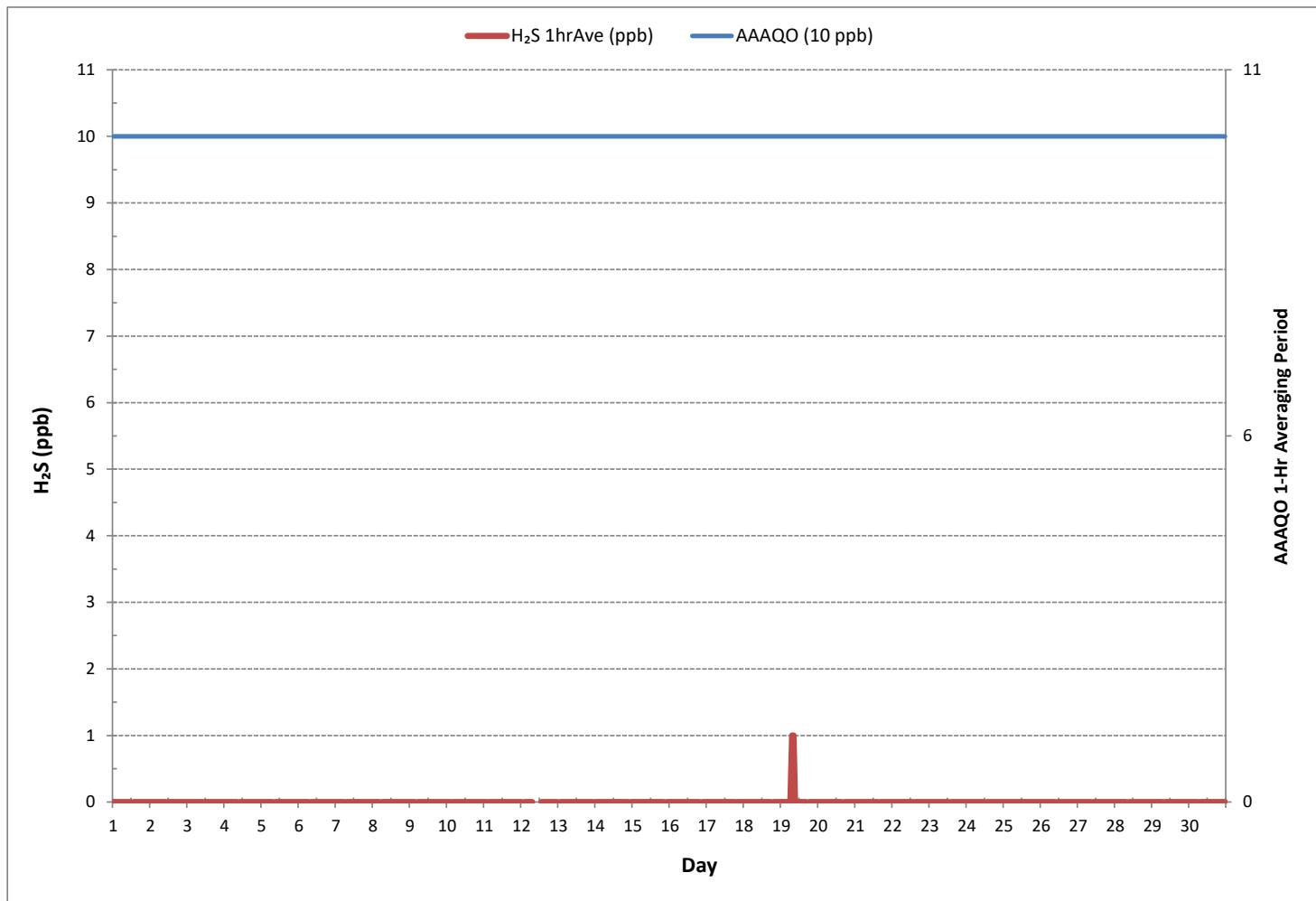
MONTHLY SUMMARY

NUMBER OF 1-HR EXCEEDANCES:	0				
NUMBER OF 24-HR EXCEEDANCES:	0				
NUMBER OF NON-ZERO READINGS:	2				
MINIMUM 1-HR AVERAGE:	0 ppb @ HOUR	0	ON DAY	1	
MAXIMUM 1-HR AVERAGE:	1 ppb @ HOUR	7	ON DAY	19	
MAXIMUM 24-HR AVERAGE:	0 ppb		ON DAY	1	
IZS CALIBRATION TIME:	30	hrs	OPERATIONAL TIME:	720	hrs
MONTHLY CALIBRATION TIME:	5	hrs	AMD OPERATION UPTIME:	100.0	%
STANDARD DEVIATION:	0		MONTHLY AVERAGE:	0	ppb

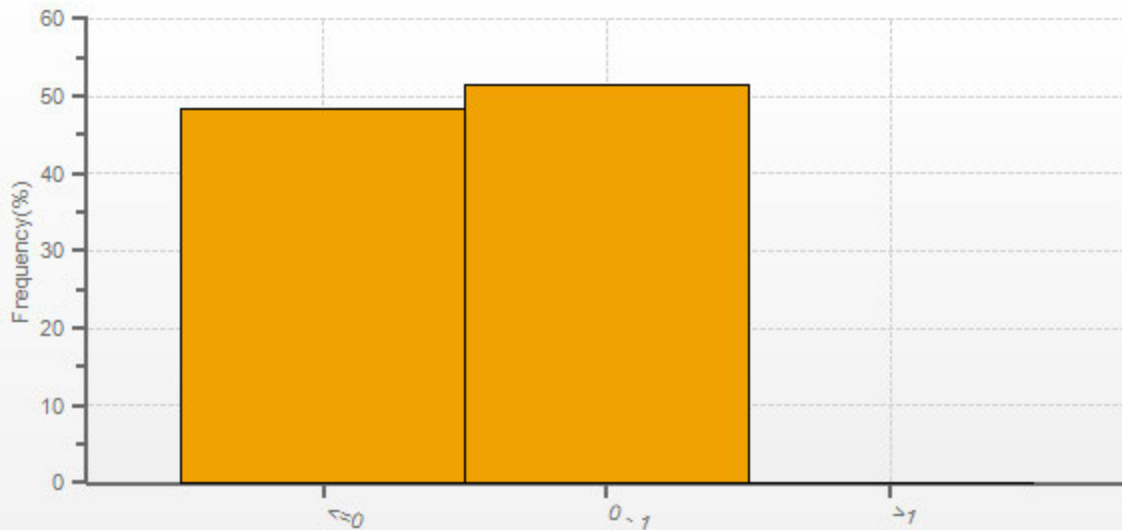
24 HR AVERAGES April 2019



HYDROGEN SULPHIDE Hourly Averages (H₂S ppb)



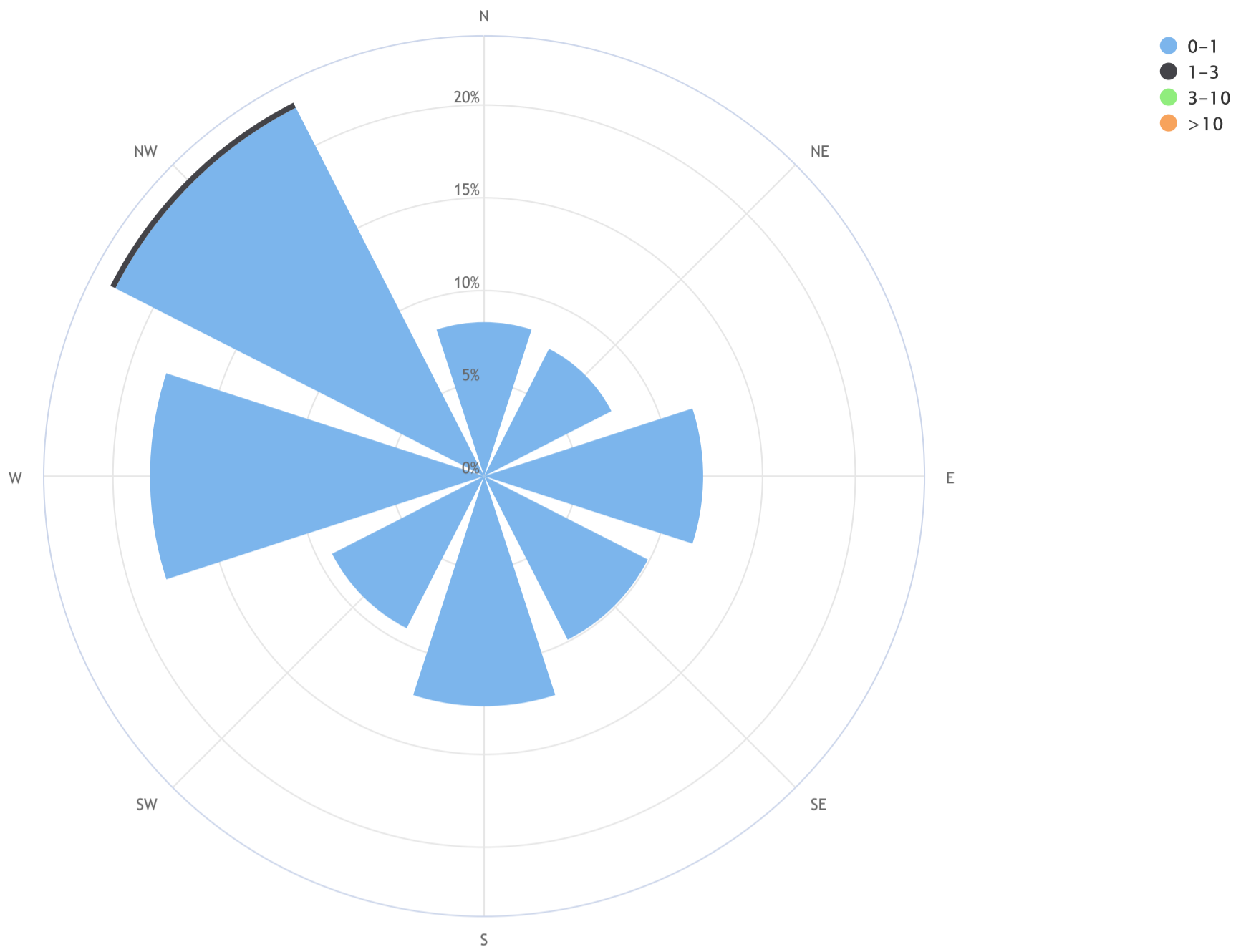
H2S[ppb] Histogram: LICA ST. LINA Monthly: 19/04 1 Hr.



LICA-201904
Page 191 of 350

Lakeland Industry & Community Association_St. Lina Continuous Monitoring Station_H2S (ppb)_19/04

Pollutant Rose_Wind Frequency (Blowing From)_ CALM Avg = N/A, CALM % = 0.0%



Direction	0-1	1-3	3-10	>10	TOTAL
N	8.3	0.0	0.0	0.0	8.3
NE	7.7	0.0	0.0	0.0	7.7
E	11.8	0.0	0.0	0.0	11.8
SE	9.9	0.0	0.0	0.0	9.9
S	12.4	0.0	0.0	0.0	12.4
SW	9.2	0.0	0.0	0.0	9.2
W	18.0	0.0	0.0	0.0	18.0
NW	22.3	0.3	0.0	0.0	22.6
Summary	99.7	0.3	0.0	0.0	100.0
CALM	0.0	0.0	0.0	0.0	0.0



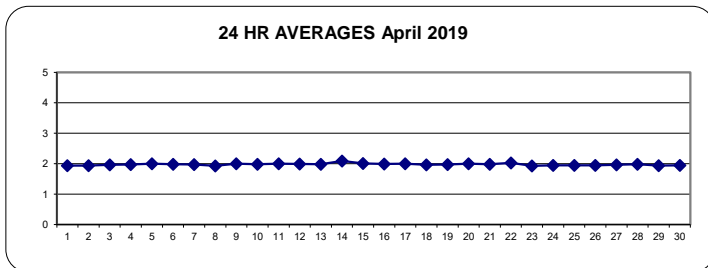
TOTAL HYDROCARBONS Hourly Averages (THC ppm)

HR START (MST)	0:00	1:00	2:00	3:00	4:00	5:00	6:00	7:00	8:00	9:00	10:00	11:00	12:00	13:00	14:00	15:00	16:00	17:00	18:00	19:00	20:00	21:00	22:00	23:00	DAILY	DAILY	24-HR	RDGS.	
HR END (MST)	0:59	1:59	2:59	3:59	4:59	5:59	6:59	7:59	8:59	9:59	10:59	11:59	12:59	13:59	14:59	15:59	16:59	17:59	18:59	19:59	20:59	21:59	22:59	23:59	MIN.	MAX.	AVG.		
DAY 1	1.94	1.95	1.95	1.93	1.94	1.93	1.93	1.93	1.95	1.99	1.96	1.95	S	1.96	1.95	1.94	1.94	1.91	1.91	1.91	1.91	1.93	1.97	1.91	1.91	1.99	1.94	24	
2	1.94	1.93	1.93	1.95	1.91	1.91	1.92	1.92	1.92	1.93	1.95	S	1.95	1.96	1.95	1.96	1.96	1.92	1.92	1.92	1.93	1.94	1.99	1.98	1.91	1.99	1.94	24	
3	1.94	1.95	1.93	1.96	1.96	1.95	1.95	1.95	1.95	1.95	S	1.96	1.96	1.96	1.96	1.97	1.96	1.96	1.97	1.97	1.96	1.96	1.97	1.95	1.93	1.97	1.96	24	
4	1.94	1.94	1.98	1.99	1.99	2.01	2.03	1.99	1.98	S	2.00	1.97	1.94	1.94	1.94	1.97	1.98	1.97	1.96	1.96	1.95	1.95	1.96	1.96	1.94	2.03	1.97	24	
5	1.96	1.97	1.97	1.97	1.98	2.00	2.01	2.04	S	2.05	2.03	2.05	2.04	2.04	2.04	2.02	2.00	1.99	1.98	1.99	2.00	1.99	1.99	1.98	1.96	2.05	2.00	24	
6	1.98	1.99	1.98	1.97	1.98	1.98	1.96	S	1.96	1.97	1.97	1.96	1.95	1.96	1.96	1.98	1.96	1.96	1.97	1.98	1.99	2.00	2.01	2.08	1.95	2.08	1.98	24	
7	1.99	1.98	2.00	2.01	2.00	2.00	S	2.01	2.00	1.99	1.98	1.98	1.97	1.97	1.93	1.91	1.91	1.92	1.94	1.94	1.94	1.94	1.94	1.95	1.96	1.91	2.01	1.97	24
8	1.97	1.97	1.97	1.95	1.94	S	1.92	1.91	1.91	1.91	1.91	1.93	1.94	1.91	1.92	1.91	1.99	1.97	1.89	1.90	1.91	1.91	1.92	1.92	1.89	1.99	1.93	24	
9	1.93	1.96	1.93	1.95	S	2.17	2.18	2.11	2.06	2.02	2.01	1.98	1.91	1.90	1.94	1.95	1.99	1.96	1.96	2.00	2.04	2.03	2.04	2.02	1.90	2.18	2.00	24	
10	2.02	2.00	2.00	S	2.00	2.02	2.03	2.04	2.07	2.05	2.03	2.01	1.99	1.95	1.94	1.92	1.91	1.93	1.93	1.91	1.92	1.97	1.97	1.95	1.91	2.07	1.98	24	
11	2.04	2.04	S	2.03	2.04	2.03	2.04	2.04	2.05	2.05	2.04	2.02	1.99	1.95	1.94	1.94	1.95	1.95	1.95	1.95	1.96	1.96	1.98	2.02	1.94	2.05	2.00	24	
12	2.05	S	2.02	2.03	2.07	2.05	2.03	1.99	1.98	1.97	1.95	1.92	C	C	C	C	1.95	1.95	1.95	1.95	1.97	1.97	2.01	2.00	1.92	2.07	1.99	24	
13	S	2.00	2.01	2.00	2.01	2.01	2.01	2.01	2.02	2.01	1.98	1.96	1.94	1.93	1.94	1.94	1.94	1.94	1.94	1.94	1.95	1.96	1.98	2.02	S	1.93	2.02	1.98	24
14	2.07	2.07	2.07	2.12	2.21	2.27	2.35	2.34	2.22	2.24	2.24	2.12	1.99	1.96	1.99	1.98	1.96	1.96	1.97	1.98	2.01	1.98	S	1.95	1.95	2.12	2.01	24	
15	1.96	1.97	1.97	2.01	2.05	2.03	2.03	2.01	2.02	2.00	2.01	2.02	1.99	2.00	1.99	2.00	2.00	2.04	2.03	2.12	2.02	S	1.98	1.99	1.96	2.12	2.01	24	
16	1.98	2.00	2.13	2.01	1.98	2.05	2.11	2.05	2.00	2.01	1.97	1.97	1.97	1.96	1.96	1.95	1.94	1.95	1.95	1.95	S	1.96	1.97	1.98	1.94	2.13	1.99	24	
17	2.02	2.01	2.06	2.08	2.09	2.08	2.09	2.05	2.03	2.00	1.96	1.96	1.96	1.94	1.95	2.01	2.00	1.94	1.94	S	1.96	1.95	1.95	1.96	1.94	2.09	2.00	24	
18	1.96	1.96	1.97	1.98	1.97	1.98	1.99	2.01	2.00	1.97	1.97	1.96	1.95	1.94	1.94	1.93	1.93	1.93	S	2.04	1.96	1.95	1.94	1.94	1.93	2.04	1.96	24	
19	1.96	1.95	1.94	1.95	1.99	2.01	1.96	2.00	1.98	1.93	1.93	1.93	1.95	1.94	1.96	1.96	1.99	S	2.11	1.97	1.95	1.95	1.96	2.01	1.93	2.11	1.97	24	
20	1.99	1.98	1.99	1.98	1.98	1.98	1.97	1.98	1.96	1.96	1.96	1.95	1.95	1.94	1.98	1.96	S	1.99	2.04	2.06	2.19	2.03	2.05	2.05	1.94	2.19	2.00	24	
21	1.97	1.98	1.99	1.98	1.98	1.98	1.98	1.98	2.00	1.98	1.95	1.95	1.95	1.94	1.95	S	1.94	1.95	1.95	2.05	1.99	2.00	2.02	2.03	1.94	2.05	1.98	24	
22	2.07	2.11	2.17	2.15	2.17	2.18	2.18	2.15	2.13	2.12	2.08	2.02	1.98	1.95	S	1.93	1.93	1.93	1.93	1.93	1.93	1.91	1.91	1.92	1.91	2.18	2.03	24	
23	1.94	1.93	1.94	1.94	1.94	1.94	1.95	1.94	1.93	1.92	1.92	1.92	S	1.92	1.92	1.92	1.92	1.92	1.92	1.93	1.93	1.94	1.95	1.97	1.92	1.97	1.93	24	
24	1.97	1.97	1.97	1.97	1.96	1.95	1.94	1.94	1.94	1.94	1.93	1.93	S	1.93	1.93	1.93	1.93	1.93	1.94	1.95	1.95	1.95	1.95	1.95	1.93	1.97	1.95	24	
25	1.96	1.96	1.95	1.96	1.96	1.96	1.96	1.95	1.95	1.96	1.95	1.95	1.95	1.95	1.94	1.94	1.94	1.94	1.94	1.95	1.95	1.95	1.96	1.95	1.96	1.94	1.96	1.95	24
26	1.96	1.96	1.95	1.95	1.97	1.98	1.99	2.00	1.97	1.95	S	1.94	1.93	1.93	1.94	1.93	1.92	1.93	1.94	1.94	1.96	1.96	1.96	1.96	1.92	2.00	1.95	24	
27	1.95	1.95	1.96	1.97	1.99	1.99	1.98	1.97	1.97	S	1.95	1.94	1.94	1.94	1.94	1.94	1.94	1.94	1.94	1.94	1.94	1.96	1.97	1.97	1.94	1.99	1.96	24	
28	2.01	2.02	2.05	2.08	2.09	2.06	2.01	1.98	S	1.94	1.94	1.94	1.94	1.94	1.94	1.94	1.94	1.94	1.94	1.94	1.94	1.95	1.96	1.95	1.96	1.94	2.09	1.98	24
29	1.96	1.96	1.96	1.96	1.95	1.95	1.94	S	1.94	1.94	1.94	1.94	1.94	1.93	1.93	1.93	1.93	1.94	1.93	1.93	1.93	1.94	1.94	1.93	1.93	1.96	1.94	24	
30	1.94	1.95	1.96	1.95	1.93	1.94	S	1.93	1.94	1.94	1.94	1.94	1.95	1.94	1.93	1.93	1.94	1.94	1.93	1.94	1.94	1.96	1.97	1.99	1.93	1.99	1.95	24	
HOURLY MAX	2.07	2.11	2.17	2.15	2.21	2.27	2.35	2.34	2.22	2.24	2.24	2.12	2.04	2.04	2.04	2.02	2.00	2.04	2.11	2.12	2.19	2.03	2.05	2.08					
HOURLY AVG	1.98	1.98	1.99	1.99	2.00	2.01	2.02	2.01	1.99	1.99	1.98	1.97	1.96	1.95	1.95	1.95	1.95	1.95	1.95	1.96	1.97	1.96	1.97	1.97					

STATUS FLAG CODES

C	- MONTHLY CALIBRATION	Q	- QUALITY ASSURANCE
C1	- REPEAT CALIBRATION	R	- RECOVERY
Y	- MAINTENANCE	X	- MACHINE MALFUNCTION
S	- DAILY ZERO/SPAN CHECK	G	- OUT FOR REPAIR
S1	- REPEAT ZERO/SPAN CHECK	P	- POWER FAILURE

24 HR AVERAGES April 2019

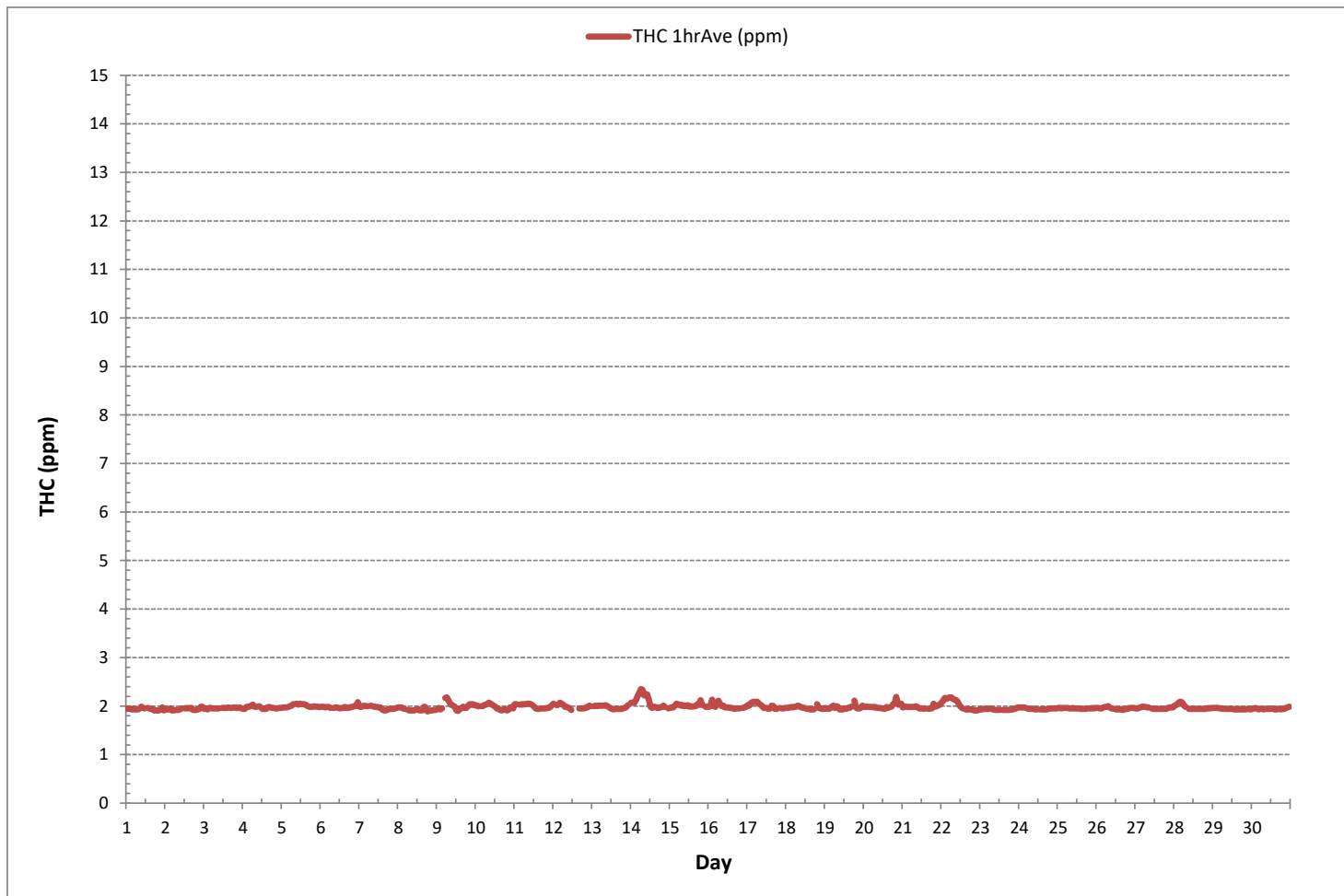


MONTHLY SUMMARY

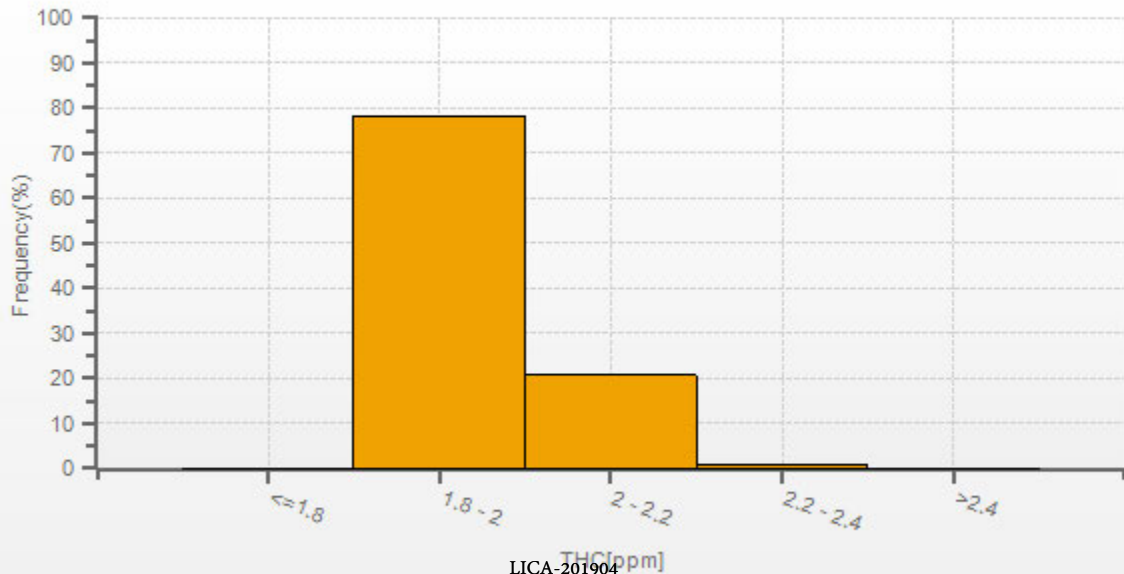
NUMBER OF NON-ZERO READINGS:	686			
MINIMUM 1-HR AVERAGE:	1.89 ppm	@ HOUR	18	ON DAY 8
MAXIMUM 1-HR AVERAGE:	2.35 ppm	@ HOUR	6	ON DAY 14
MAXIMUM 24-HR AVERAGE:	2.09 ppm			ON DAY 14
IZS CALIBRATION TIME:	30 hrs	OPERATIONAL TIME:	720 hrs	
MONTHLY CALIBRATION TIME:	4 hrs	AMD OPERATION UPTIME:	100.0 %	
STANDARD DEVIATION:	0.06	MONTHLY AVERAGE:	1.98 ppm	



TOTAL HYDROCARBONS Hourly Averages (THC ppm)



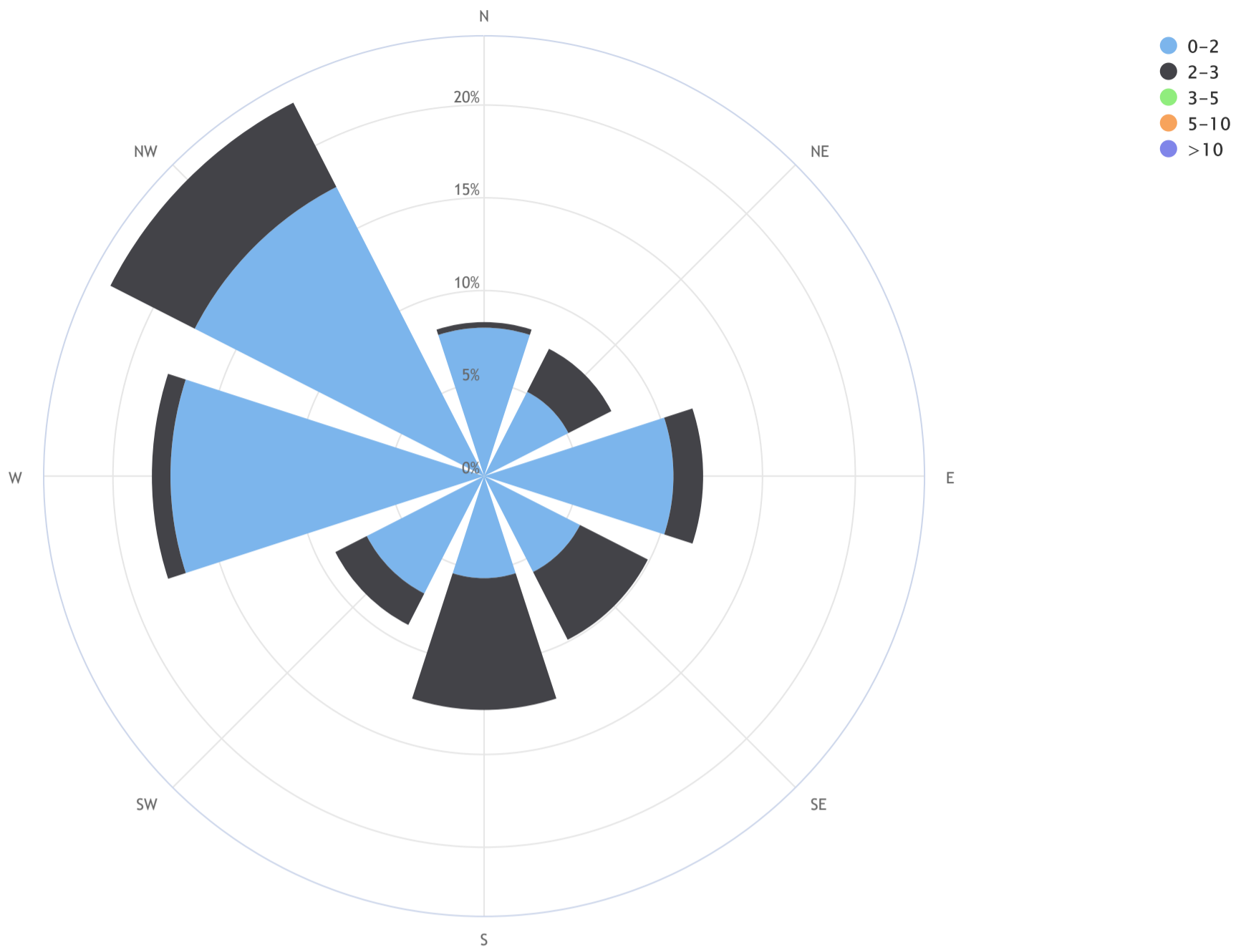
THC[ppm] Histogram: LICA ST. LINA Monthly: 19/04 1 Hr.



LICA-201904
Page 195 of 350

Lakeland Industry & Community Association_St. Lina Continuous Monitoring Station_THC (ppm)_19/04

Pollutant Rose_Wind Frequency (Blowing From)_ CALM Avg = N/A, CALM % = 0.0%



Direction	0-2	2-3	3-5	5-10	>10	TOTAL
N	8.0	0.3	0.0	0.0	0.0	8.3
NE	5.1	2.6	0.0	0.0	0.0	7.7
E	10.2	1.6	0.0	0.0	0.0	11.8
SE	5.8	4.1	0.0	0.0	0.0	9.9
S	5.5	7.1	0.0	0.0	0.0	12.7
SW	7.1	1.9	0.0	0.0	0.0	9.0
W	16.9	1.0	0.0	0.0	0.0	17.9
NW	17.5	5.1	0.0	0.0	0.0	22.6
Summary	76.2	23.8	0.0	0.0	0.0	100.0
CALM	0.0	0.0	0.0	0.0	0.0	0.0

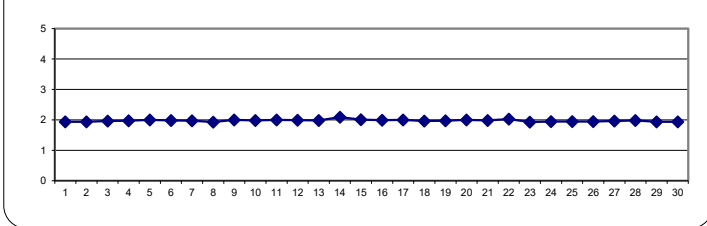
METHANE Hourly Averages (CH₄ ppm)

HR START (MST)	0:00	1:00	2:00	3:00	4:00	5:00	6:00	7:00	8:00	9:00	10:00	11:00	12:00	13:00	14:00	15:00	16:00	17:00	18:00	19:00	20:00	21:00	22:00	23:00	DAILY	DAILY	24-HR	RDGS.	
HR END (MST)	0:59	1:59	2:59	3:59	4:59	5:59	6:59	7:59	8:59	9:59	10:59	11:59	12:59	13:59	14:59	15:59	16:59	17:59	18:59	19:59	20:59	21:59	22:59	23:59	MIN.	MAX.	AVG.		
DAY																													
1	1.94	1.95	1.95	1.93	1.94	1.93	1.93	1.93	1.95	1.99	1.96	1.95	S	1.96	1.95	1.94	1.94	1.91	1.91	1.91	1.91	1.93	1.97	1.91	1.91	1.91	1.99	1.94	24
2	1.94	1.93	1.93	1.95	1.91	1.91	1.92	1.92	1.92	1.93	1.95	S	1.95	1.96	1.95	1.96	1.96	1.92	1.92	1.92	1.93	1.94	1.99	1.98	1.91	1.99	1.94	24	
3	1.94	1.95	1.93	1.96	1.96	1.95	1.95	1.95	1.95	1.95	S	1.96	1.96	1.96	1.96	1.97	1.96	1.96	1.97	1.97	1.96	1.96	1.97	1.95	1.93	1.99	1.96	24	
4	1.94	1.94	1.98	1.99	1.99	2.01	2.03	1.99	1.98	S	2.00	1.97	1.94	1.94	1.94	1.97	1.98	1.97	1.96	1.96	1.95	1.95	1.96	1.96	1.94	2.03	1.97	24	
5	1.96	1.97	1.97	1.97	1.98	2.00	2.01	2.04	S	2.05	2.03	2.05	2.04	2.04	2.04	2.02	2.00	1.99	1.98	1.99	2.00	1.99	1.99	1.98	1.96	2.05	2.00	24	
6	1.98	1.99	1.98	1.97	1.98	1.98	1.96	S	1.96	1.97	1.97	1.96	1.95	1.96	1.96	1.98	1.96	1.96	1.97	1.98	1.99	2.00	2.01	2.08	1.95	2.08	1.98	24	
7	1.99	1.98	2.00	2.01	2.00	2.00	S	2.01	2.00	1.99	1.98	1.98	1.97	1.97	1.93	1.91	1.91	1.92	1.94	1.94	1.94	1.94	1.95	1.96	1.91	2.01	1.97	24	
8	1.97	1.97	1.97	1.95	1.94	S	1.92	1.91	1.91	1.91	1.91	1.93	1.94	1.91	1.92	1.91	1.99	1.97	1.89	1.90	1.91	1.91	1.92	1.92	1.89	1.99	1.93	24	
9	1.93	1.96	1.93	1.95	S	2.17	2.18	2.11	2.06	2.02	2.01	1.98	1.91	1.90	1.94	1.95	1.99	1.96	1.96	2.00	2.04	2.03	2.04	2.02	1.90	2.18	2.00	24	
10	2.02	2.00	2.00	S	2.00	2.02	2.03	2.04	2.07	2.05	2.03	2.01	1.99	1.95	1.94	1.92	1.91	1.93	1.93	1.91	1.92	1.97	1.97	1.95	1.91	2.07	1.98	24	
11	2.04	2.04	S	2.03	2.04	2.03	2.04	2.04	2.05	2.05	2.04	2.02	1.99	1.95	1.94	1.94	1.95	1.95	1.95	1.95	1.96	1.96	1.98	2.02	1.94	2.05	2.00	24	
12	2.05	S	2.02	2.03	2.07	2.05	2.03	1.99	1.98	1.97	1.95	1.92	C	C	C	C	1.95	1.95	1.95	1.95	1.97	1.97	2.01	2.00	1.92	2.07	1.99	24	
13	S	2.00	2.01	2.00	2.01	2.01	2.01	2.01	2.02	2.01	1.98	1.96	1.94	1.93	1.94	1.94	1.94	1.94	1.94	1.94	1.95	1.96	1.98	2.02	S	1.93	2.02	1.98	24
14	2.07	2.07	2.07	2.12	2.21	2.27	2.35	2.34	2.22	2.24	2.24	2.12	1.99	1.96	1.99	1.98	1.96	1.96	1.97	1.98	2.01	1.98	S	1.95	1.95	2.12	2.01	24	
15	1.96	1.97	1.97	2.01	2.05	2.03	2.03	2.01	2.02	2.00	2.01	2.02	1.99	2.00	1.99	2.00	2.04	2.03	2.12	2.02	S	1.98	1.99	1.96	2.12	2.01	24		
16	1.98	2.00	2.13	2.01	1.98	2.05	2.11	2.05	2.00	2.01	1.97	1.96	1.97	1.96	1.96	1.95	1.94	1.95	1.95	1.95	S	1.96	1.97	1.98	1.94	2.13	1.99	24	
17	2.02	2.01	2.06	2.08	2.09	2.08	2.09	2.05	2.03	2.00	1.96	1.96	1.96	1.94	1.95	2.01	2.00	1.94	1.94	S	1.96	1.95	1.95	1.96	1.94	2.09	2.00	24	
18	1.96	1.96	1.97	1.98	1.97	1.98	1.99	2.01	2.00	1.97	1.97	1.96	1.95	1.94	1.94	1.93	1.93	1.93	S	2.04	1.96	1.95	1.94	1.94	1.93	2.04	1.96	24	
19	1.96	1.95	1.94	1.95	1.99	2.01	1.96	2.00	1.98	1.93	1.93	1.93	1.95	1.94	1.96	1.96	1.99	S	2.11	1.97	1.95	1.95	1.96	2.01	1.93	2.11	1.97	24	
20	1.99	1.98	1.99	1.98	1.98	1.98	1.97	1.98	1.96	1.96	1.96	1.95	1.95	1.94	1.98	1.96	S	1.99	2.04	2.06	2.19	2.03	2.05	2.05	1.94	2.19	2.00	24	
21	1.97	1.98	1.99	1.98	1.98	1.98	1.98	1.98	2.00	1.98	1.95	1.95	1.95	1.94	1.95	S	1.94	1.95	1.95	2.05	1.99	2.00	2.02	2.03	1.94	2.05	1.98	24	
22	2.07	2.11	2.17	2.15	2.17	2.18	2.18	2.15	2.13	2.12	2.07	2.02	1.98	1.95	S	1.93	1.93	1.93	1.93	1.93	1.93	1.91	1.91	1.92	1.91	2.18	2.03	24	
23	1.94	1.93	1.94	1.94	1.94	1.94	1.95	1.94	1.93	1.92	1.92	1.92	S	1.92	1.92	1.92	1.92	1.92	1.92	1.93	1.93	1.94	1.95	1.97	1.92	1.97	1.93	24	
24	1.97	1.97	1.97	1.97	1.96	1.95	1.94	1.94	1.94	1.93	1.93	1.93	S	1.93	1.93	1.93	1.93	1.93	1.94	1.95	1.95	1.95	1.95	1.95	1.93	1.97	1.95	24	
25	1.96	1.96	1.95	1.96	1.96	1.96	1.96	1.95	1.95	1.96	1.95	1.95	1.95	1.95	1.94	1.94	1.94	1.94	1.94	1.95	1.95	1.95	1.96	1.95	1.96	1.94	1.96	1.95	24
26	1.96	1.96	1.95	1.95	1.97	1.98	1.99	2.00	1.97	1.95	S	1.94	1.93	1.93	1.94	1.93	1.92	1.93	1.94	1.94	1.96	1.96	1.96	1.96	1.92	2.00	1.95	24	
27	1.95	1.95	1.96	1.97	1.99	1.99	1.98	1.97	1.97	S	1.95	1.94	1.94	1.94	1.94	1.94	1.94	1.94	1.94	1.94	1.94	1.96	1.97	1.97	1.94	1.99	1.96	24	
28	2.01	2.02	2.05	2.08	2.09	2.06	2.01	1.98	S	1.94	1.94	1.94	1.94	1.94	1.94	1.94	1.94	1.94	1.94	1.94	1.94	1.95	1.96	1.95	1.96	1.94	2.09	1.98	24
29	1.96	1.96	1.96	1.96	1.95	1.95	1.94	S	1.94	1.94	1.94	1.94	1.94	1.93	1.93	1.93	1.93	1.94	1.93	1.93	1.93	1.94	1.94	1.94	1.93	1.96	1.94	24	
30	1.94	1.95	1.96	1.95	1.93	1.94	S	1.93	1.94	1.94	1.94	1.94	1.94	1.95	1.94	1.93	1.93	1.94	1.94	1.93	1.94	1.94	1.96	1.97	1.99	1.93	1.99	1.94	24
HOURLY MAX	2.07	2.11	2.17	2.15	2.21	2.27	2.35	2.34	2.22	2.24	2.24	2.12	2.04	2.04	2.04	2.02	2.00	2.04	2.11	2.12	2.19	2.03	2.05	2.08					
HOURLY AVG	1.98	1.98	1.99	1.99	2.00	2.01	2.02	2.01	1.99	1.99	1.98	1.97	1.96	1.95	1.95	1.95	1.95	1.95	1.95	1.96	1.97	1.96	1.97	1.97					

STATUS FLAG CODES

C	- MONTHLY CALIBRATION	Q	- QUALITY ASSURANCE
C1	- REPEAT CALIBRATION	R	- RECOVERY
Y	- MAINTENANCE	X	- MACHINE MALFUNCTION
S	- DAILY ZERO/SPAN CHECK	G	- OUT FOR REPAIR
S1	- REPEAT ZERO/SPAN CHECK	P	- POWER FAILURE

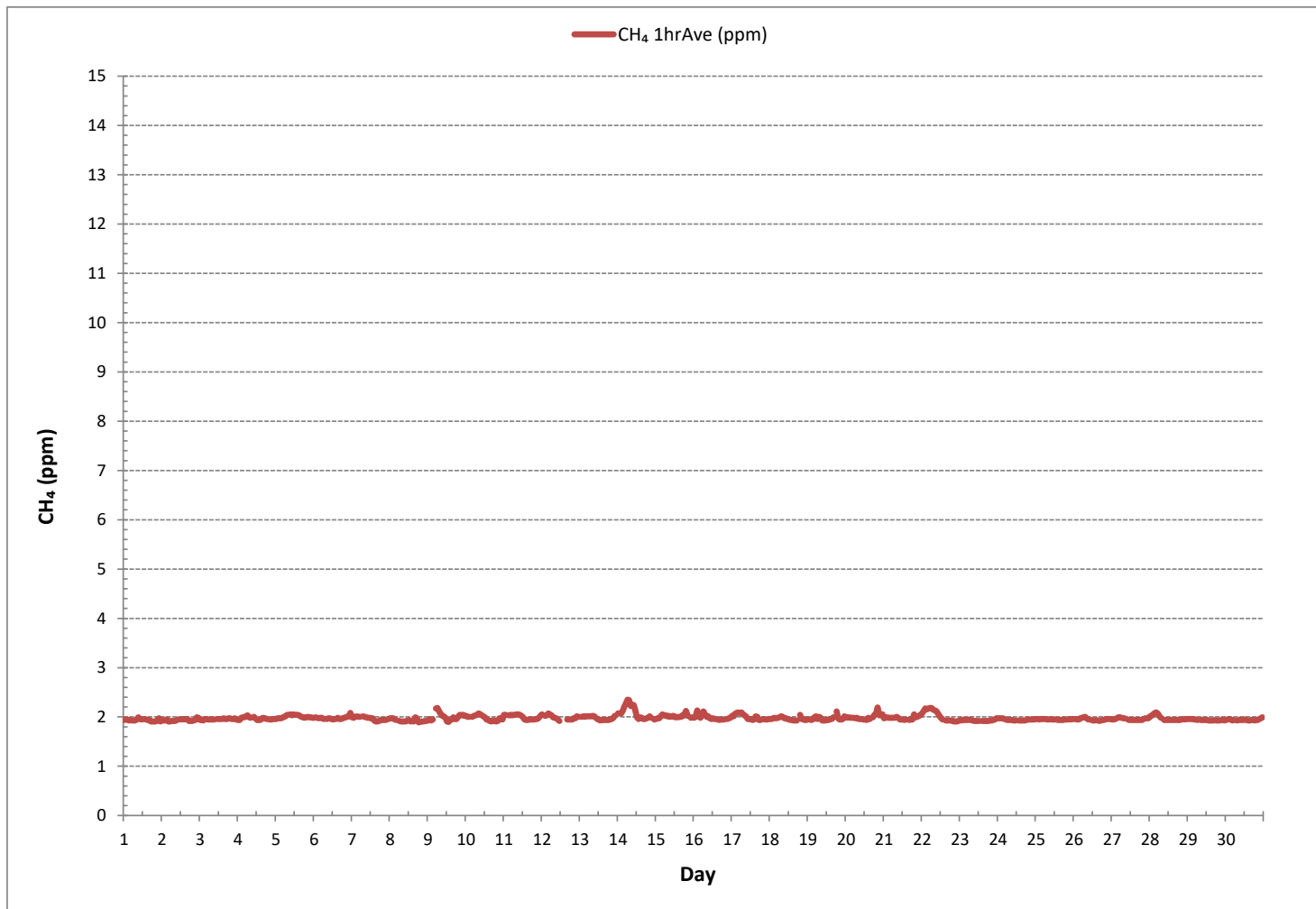
24 HR AVERAGES April 2019



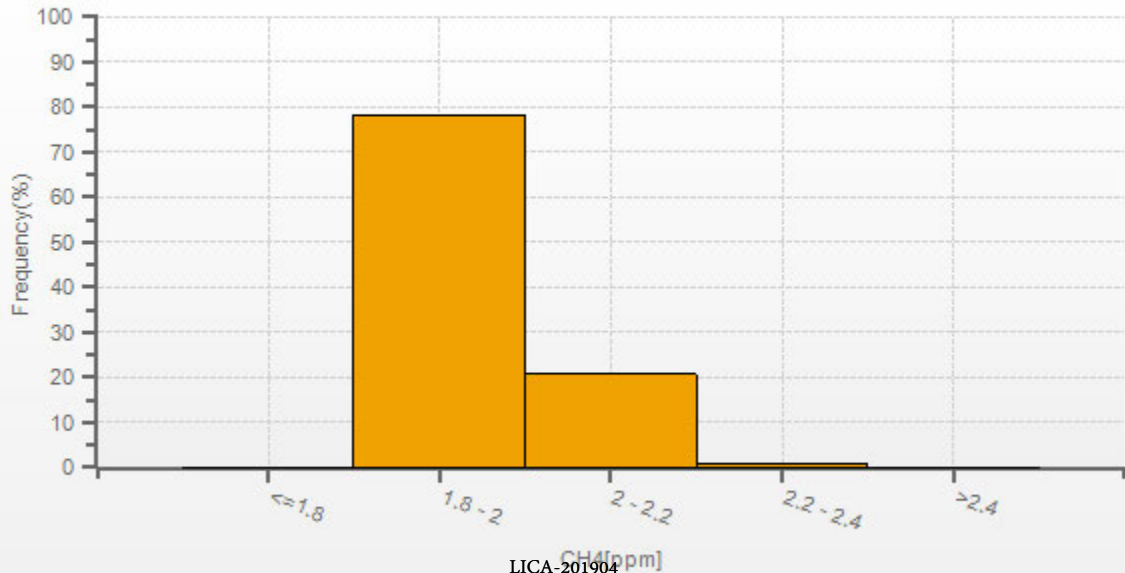
MONTHLY SUMMARY

NUMBER OF NON-ZERO READINGS:	686			
MINIMUM 1-HR AVERAGE:	1.89 ppm	@ HOUR	18	ON DAY 8
MAXIMUM 1-HR AVERAGE:	2.35 ppm	@ HOUR	6	ON DAY 14
MAXIMUM 24-HR AVERAGE:	2.09 ppm			ON DAY 14
IZS CALIBRATION TIME:	30 hrs	OPERATIONAL TIME:	720	hrs
MONTHLY CALIBRATION TIME:	4 hrs	AMD OPERATION UPTIME:	100.0	%
STANDARD DEVIATION:	0.06	MONTHLY AVERAGE:	1.98	ppm

METHANE Hourly Averages (CH₄ ppm)

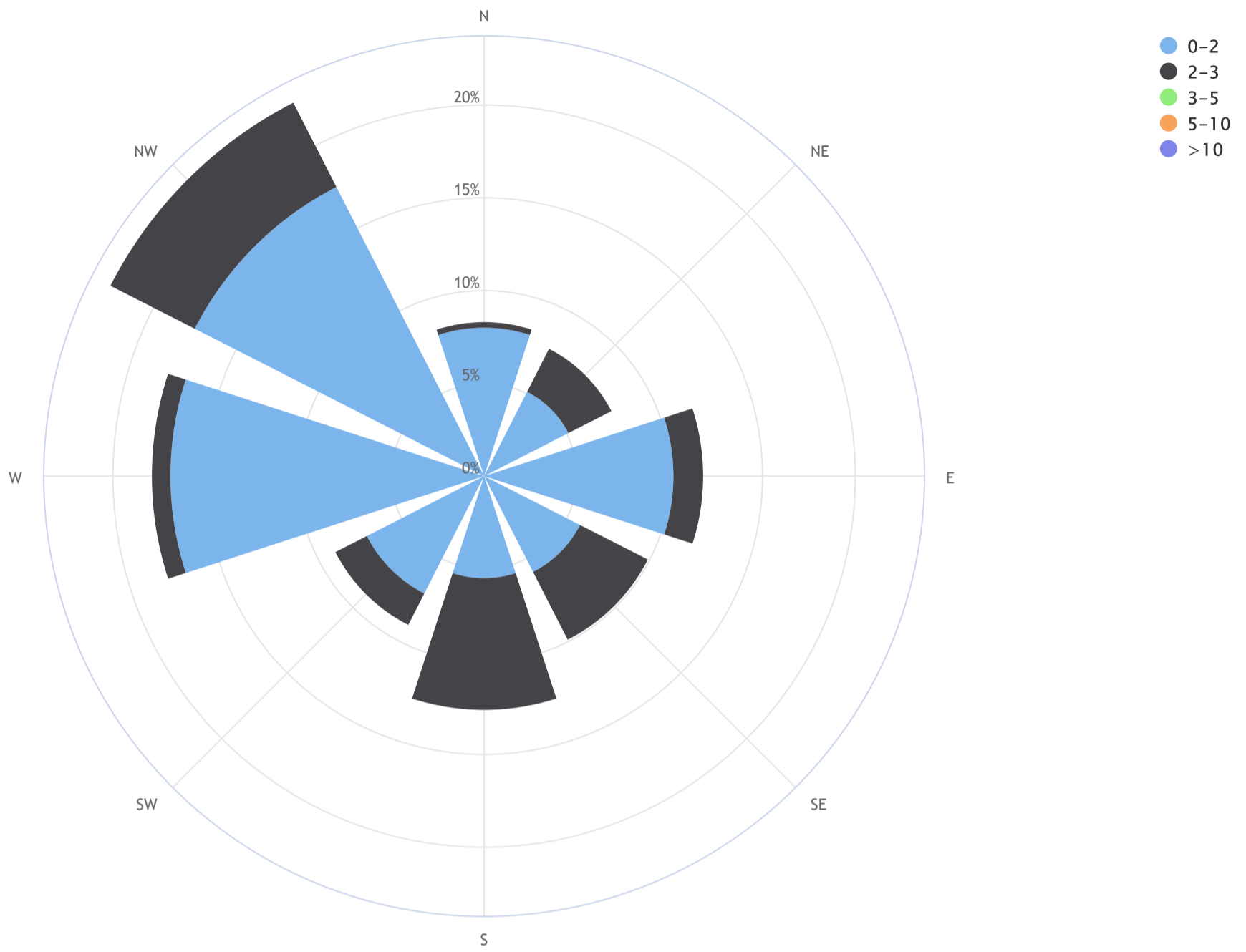


CH4[ppm] Histogram: LICA ST. LINA Monthly: 19/04 1 Hr.



Lakeland Industry & Community Association_St. Lina Continuous Monitoring Station_CH4 (ppm)_19/04

Pollutant Rose_Wind Frequency (Blowing From)_ CALM Avg = N/A, CALM % = 0.0%



Direction	0-2	2-3	3-5	5-10	>10	TOTAL
N	8.0	0.3	0.0	0.0	0.0	8.3
NE	5.1	2.6	0.0	0.0	0.0	7.7
E	10.2	1.6	0.0	0.0	0.0	11.8
SE	5.8	4.1	0.0	0.0	0.0	9.9
S	5.5	7.1	0.0	0.0	0.0	12.7
SW	7.1	1.9	0.0	0.0	0.0	9.0
W	16.9	1.0	0.0	0.0	0.0	17.9
NW	17.5	5.1	0.0	0.0	0.0	22.6
Summary	76.2	23.8	0.0	0.0	0.0	100.0
CALM	0.0	0.0	0.0	0.0	0.0	0.0



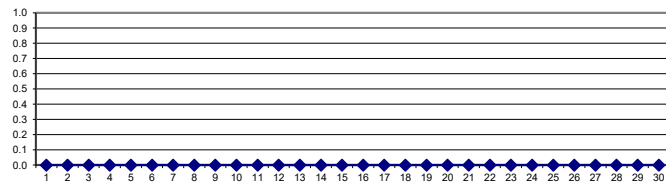
NON-METHANE HYDROCARBONS Hourly Averages (NMHC ppm)

HR START (MST)	0:00	1:00	2:00	3:00	4:00	5:00	6:00	7:00	8:00	9:00	10:00	11:00	12:00	13:00	14:00	15:00	16:00	17:00	18:00	19:00	20:00	21:00	22:00	23:00	DAILY	DAILY	24-HR	RDGS.	
HR END (MST)	0:59	1:59	2:59	3:59	4:59	5:59	6:59	7:59	8:59	9:59	10:59	11:59	12:59	13:59	14:59	15:59	16:59	17:59	18:59	19:59	20:59	21:59	22:59	23:59	MIN.	MAX.	AVG.		
DAY 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	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	24
2	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	24
3	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	24
4	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	24
5	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	24
6	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	24
7	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	24
8	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	24
9	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	24
10	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	24
11	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	24
12	0.00	S	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	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	24
13	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	S	0.00	0.00	0.00	0.00	24
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	S	0.00	0.00	0.00	0.00	0.00	24
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	S	0.00	0.00	0.00	0.00	0.00	24
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	S	0.00	0.00	0.00	0.00	0.00	0.00	24
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	S	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	24
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	S	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	24
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	S	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	24
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	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	24
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	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	24
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	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	24
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	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	24
24	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	24
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	0.00	0.00	0.00	0.00	0.00	0.00	0.00	24
26	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	24
27	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	24
28	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	24
29	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	24
30	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	24
HOURLY MAX	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00				
HOURLY AVG	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00				

STATUS FLAG CODES

C	- MONTHLY CALIBRATION	Q	- QUALITY ASSURANCE
C1	- REPEAT CALIBRATION	R	- RECOVERY
Y	- MAINTENANCE	X	- MACHINE MALFUNCTION
S	- DAILY ZERO/SPAN CHECK	G	- OUT FOR REPAIR
S1	- REPEAT ZERO/SPAN CHECK	P	- POWER FAILURE

24 HR AVERAGES April 2019

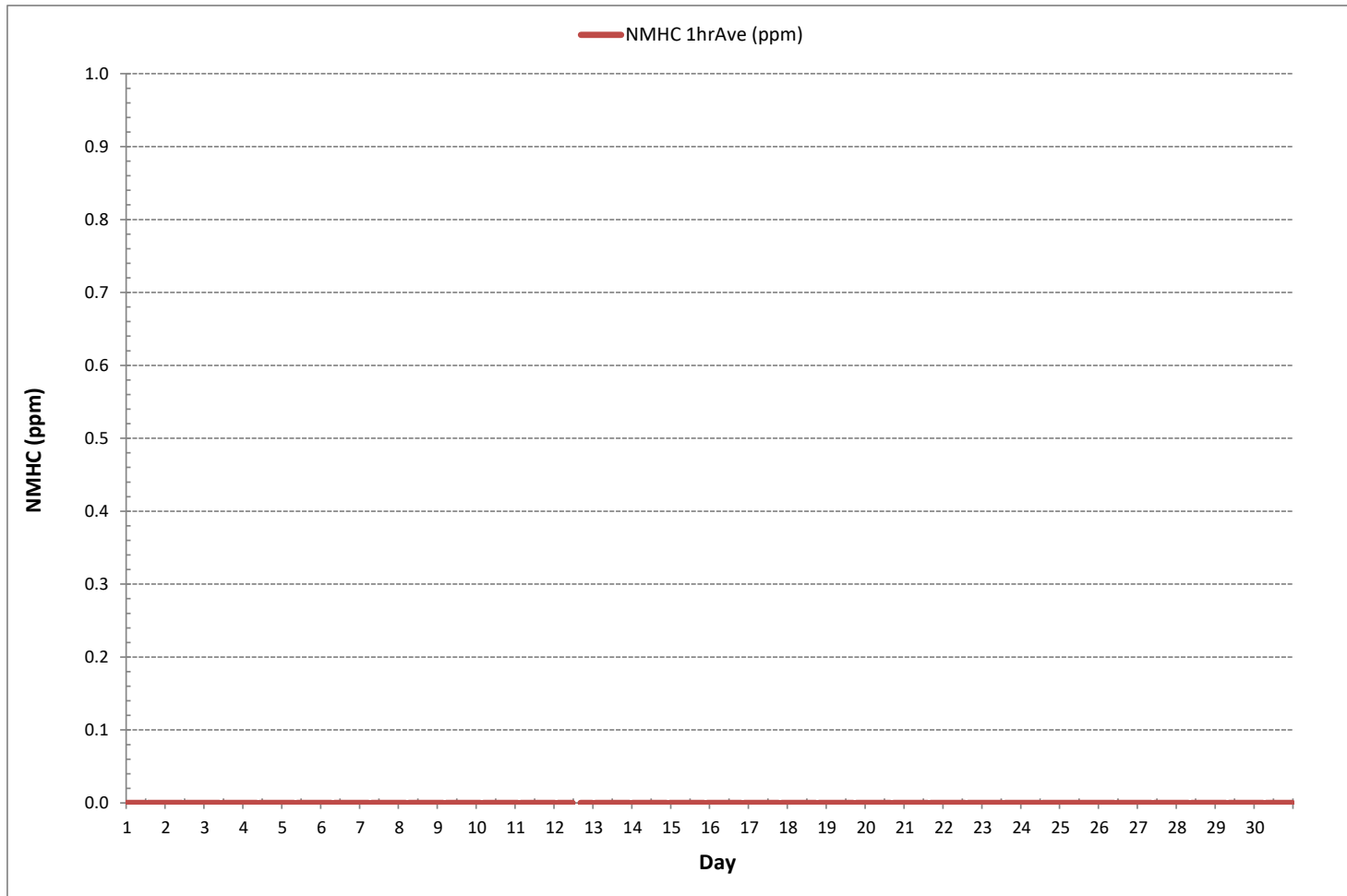


MONTHLY SUMMARY

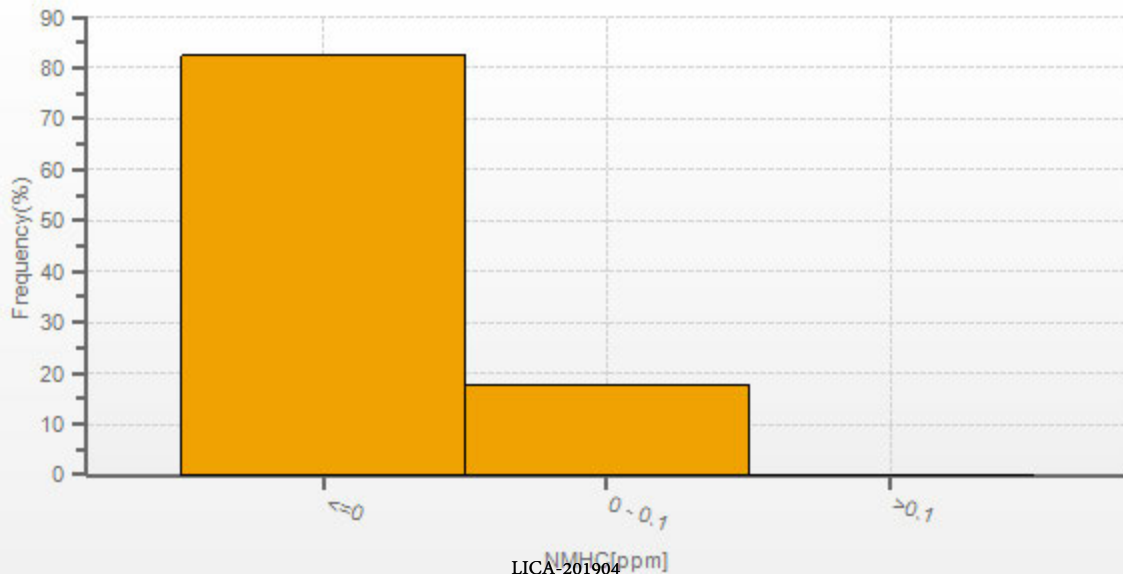
NUMBER OF NON-ZERO READINGS:	0
MINIMUM 1-HR AVERAGE:	0.00 ppm @ HOUR 0 ON DAY 1
MAXIMUM 1-HR AVERAGE:	0.00 ppm @ HOUR 0 ON DAY 1
MAXIMUM 24-HR AVERAGE:	0.00 ppm ON DAY 1
IZS CALIBRATION TIME:	30 hrs
MONTHLY CALIBRATION TIME:	4 hrs
OPERATIONAL TIME:	720 hrs
AMD OPERATION UPTIME:	100.0 %
STANDARD DEVIATION:	0.00
MONTHLY AVERAGE:	0.00 ppm



NON-METHANE HYDROCARBONS Hourly Averages (NMHC ppm)

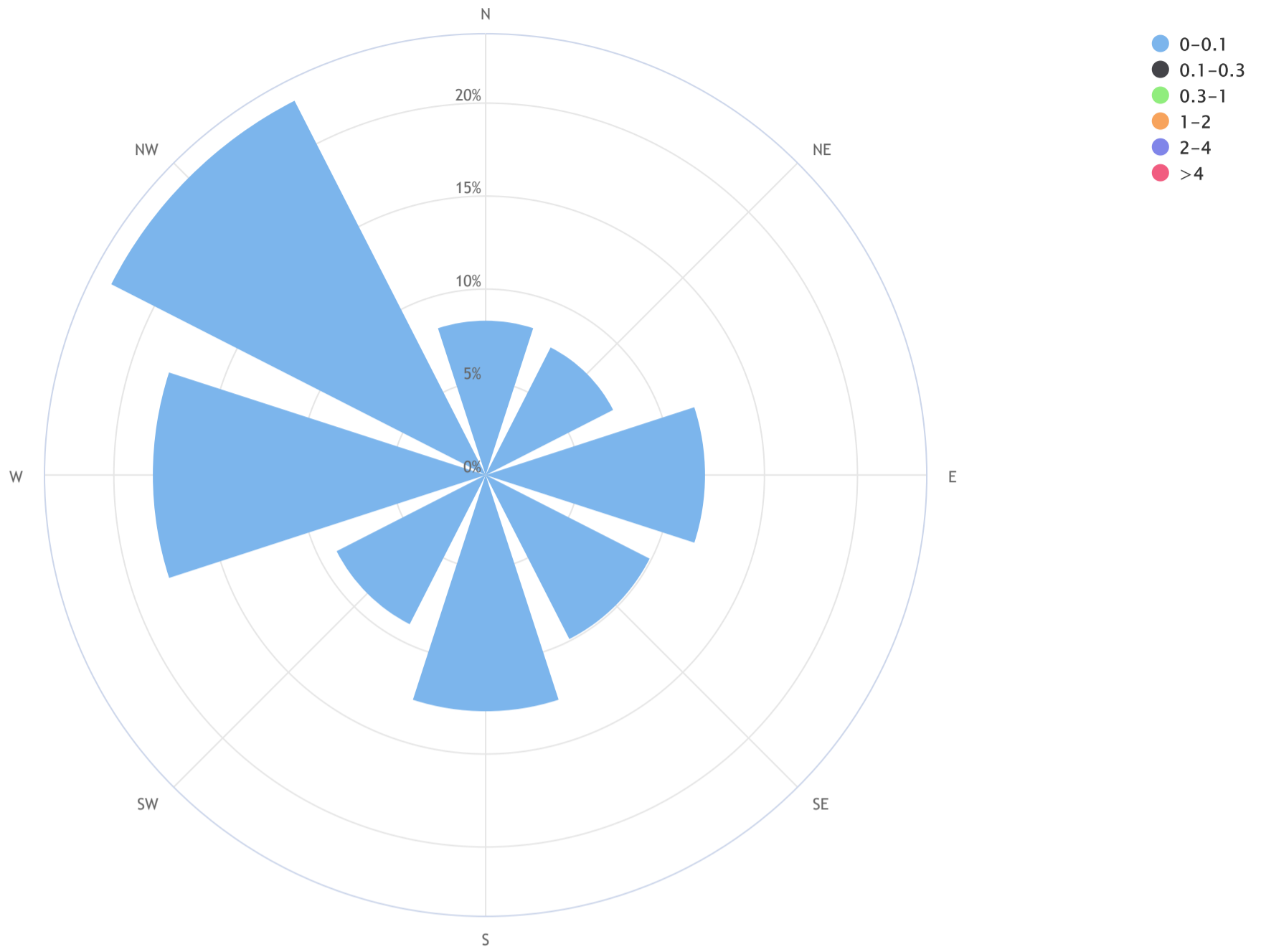


NMHC[ppm] Histogram: LICA ST. LINA Monthly: 19/04 1 Hr.



Lakeland Industry & Community Association_St. Lina Continuous Monitoring Station_NMHC (ppm)_19/04

Pollutant Rose_Wind Frequency (Blowing From)_ CALM Avg = N/A, CALM % = 0.0%



Direction	0-0.1	0.1-0.3	0.3-1	1-2	2-4	>4	TOTAL
N	8.3	0.0	0.0	0.0	0.0	0.0	8.3
NE	7.7	0.0	0.0	0.0	0.0	0.0	7.7
E	11.8	0.0	0.0	0.0	0.0	0.0	11.8
SE	9.9	0.0	0.0	0.0	0.0	0.0	9.9
S	12.7	0.0	0.0	0.0	0.0	0.0	12.7
SW	9.0	0.0	0.0	0.0	0.0	0.0	9.0
W	17.9	0.0	0.0	0.0	0.0	0.0	17.9
NW	22.6	0.0	0.0	0.0	0.0	0.0	22.6
Summary	100.0	0.0	0.0	0.0	0.0	0.0	100.0
CALM	0.0	0.0	0.0	0.0	0.0	0.0	0.0



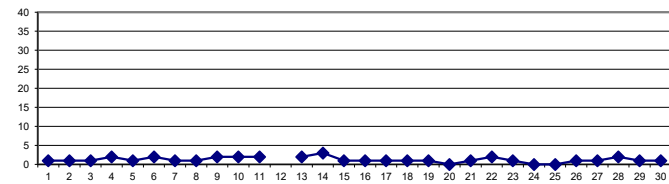
OXIDES OF NITROGEN Hourly Averages (NO_x ppb)

HR START (MST)	0:00	1:00	2:00	3:00	4:00	5:00	6:00	7:00	8:00	9:00	10:00	11:00	12:00	13:00	14:00	15:00	16:00	17:00	18:00	19:00	20:00	21:00	22:00	23:00	DAILY MIN.	DAILY MAX.	24-HR AVG.	RDGS.	
HR END (MST)	0:59	1:59	2:59	3:59	4:59	5:59	6:59	7:59	8:59	9:59	10:59	11:59	12:59	13:59	14:59	15:59	16:59	17:59	18:59	19:59	20:59	21:59	22:59	23:59					
DAY 1	2	2	2	1	1	1	1	1	1	1	1	1	S	1	1	1	1	1	1	1	0	0	0	0	0	2	1	24	
2	0	0	0	0	0	0	0	0	0	0	0	S	1	1	1	0	1	0	1	0	0	1	1	2	0	2	1	24	
3	1	1	1	1	1	1	1	1	1	1	1	S	1	1	1	1	2	2	2	2	1	2	2	1	1	2	1	24	
4	1	1	3	4	4	4	4	4	4	S	4	3	1	1	1	2	2	2	2	2	1	1	1	1	1	4	2	24	
5	1	1	1	1	1	1	1	1	2	S	2	1	2	2	2	2	1	2	1	1	1	1	1	1	1	2	1	24	
6	1	1	1	1	1	1	1	S	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2	1	2	2	24
7	2	2	2	1	1	1	S	2	1	1	1	2	2	2	1	1	1	1	1	1	1	2	1	1	1	2	1	24	
8	1	1	1	1	1	S	1	1	1	2	1	1	0	1	1	0	1	1	2	2	1	1	1	1	0	2	1	24	
9	1	1	1	1	S	4	4	3	2	2	2	2	2	1	1	1	1	1	1	1	2	2	2	2	1	4	2	24	
10	2	2	2	S	2	2	2	2	2	2	3	2	2	2	2	2	1	1	1	1	2	1	1	1	1	3	2	24	
11	2	1	S	2	2	2	2	2	2	2	2	2	2	2	1	1	1	1	1	1	2	2	2	2	1	2	2	24	
12	2	S	2	2	2	2	2	2	C	C	C	C	C	C	2	1	1	1	1	2	2	1	1	1	2	-	24		
13	S	1	1	1	1	2	2	2	3	4	7	3	2	1	1	2	1	1	1	1	1	1	1	S	1	7	2	24	
14	2	2	2	2	4	5	7	8	5	4	3	2	1	1	1	1	1	1	1	2	1	1	S	1	8	3	24		
15	1	1	1	1	1	1	1	1	3	2	2	1	1	1	1	1	1	1	1	1	1	S	1	1	3	1	24		
16	1	1	1	1	1	3	2	1	2	1	1	1	2	2	1	1	1	2	2	1	S	1	1	1	1	3	1	24	
17	1	1	2	2	2	1	2	2	2	2	2	1	1	1	1	1	1	1	1	S	1	1	1	1	2	1	24		
18	1	1	1	1	1	1	1	2	1	1	3	2	1	1	1	1	1	1	S	3	3	3	2	1	1	3	1	24	
19	1	1	1	1	1	0	0	0	0	0	0	0	0	1	0	0	0	S	1	0	0	1	1	0	0	1	1	24	
20	0	0	1	1	1	1	1	0	0	0	0	0	0	0	0	S	1	1	0	0	0	0	0	0	0	1	0	24	
21	0	0	0	0	1	1	1	1	0	0	1	0	1	2	1	S	1	1	1	1	1	1	1	1	0	2	1	24	
22	1	2	2	2	2	3	3	3	3	3	3	2	2	2	S	1	1	1	1	1	1	1	1	1	1	3	2	24	
23	1	1	1	1	1	1	1	1	0	1	1	1	1	S	1	1	1	1	1	1	1	1	1	1	0	1	1	24	
24	1	1	1	1	1	1	1	0	1	0	0	0	S	1	0	1	0	0	0	0	0	0	0	0	0	1	0	24	
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	24	
26	1	1	1	0	1	1	1	1	1	1	S	1	0	0	0	0	0	0	0	0	1	1	1	1	0	1	1	24	
27	1	0	0	1	1	1	1	1	1	S	1	0	0	0	1	1	1	1	1	1	1	1	2	2	0	2	1	24	
28	3	4	4	5	5	6	5	2	S	1	1	0	0	0	0	0	1	0	1	1	1	1	1	1	0	6	2	24	
29	1	1	1	1	1	1	1	S	1	1	1	1	0	0	0	0	0	0	0	0	1	1	1	1	0	1	1	24	
30	1	1	1	1	0	0	S	1	1	1	1	1	1	1	1	1	1	1	1	0	1	0	1	1	0	1	1	24	
HOURLY MAX	3	4	4	5	5	6	7	8	5	4	7	3	2	2	2	2	2	2	2	3	3	3	2	2					
HOURLY AVG	1	1	1	1	1	2	2	2	1	1	2	1	1	1	1	1	1	1	1	1	1	1	1	1					

STATUS FLAG CODES

C	- MONTHLY CALIBRATION	Q	- QUALITY ASSURANCE
C1	- REPEAT CALIBRATION	R	- RECOVERY
Y	- MAINTENANCE	X	- MACHINE MALFUNCTION
S	- DAILY ZERO/SPAN CHECK	G	- OUT FOR REPAIR
S1	- REPEAT ZERO/SPAN CHECK	P	- POWER FAILURE

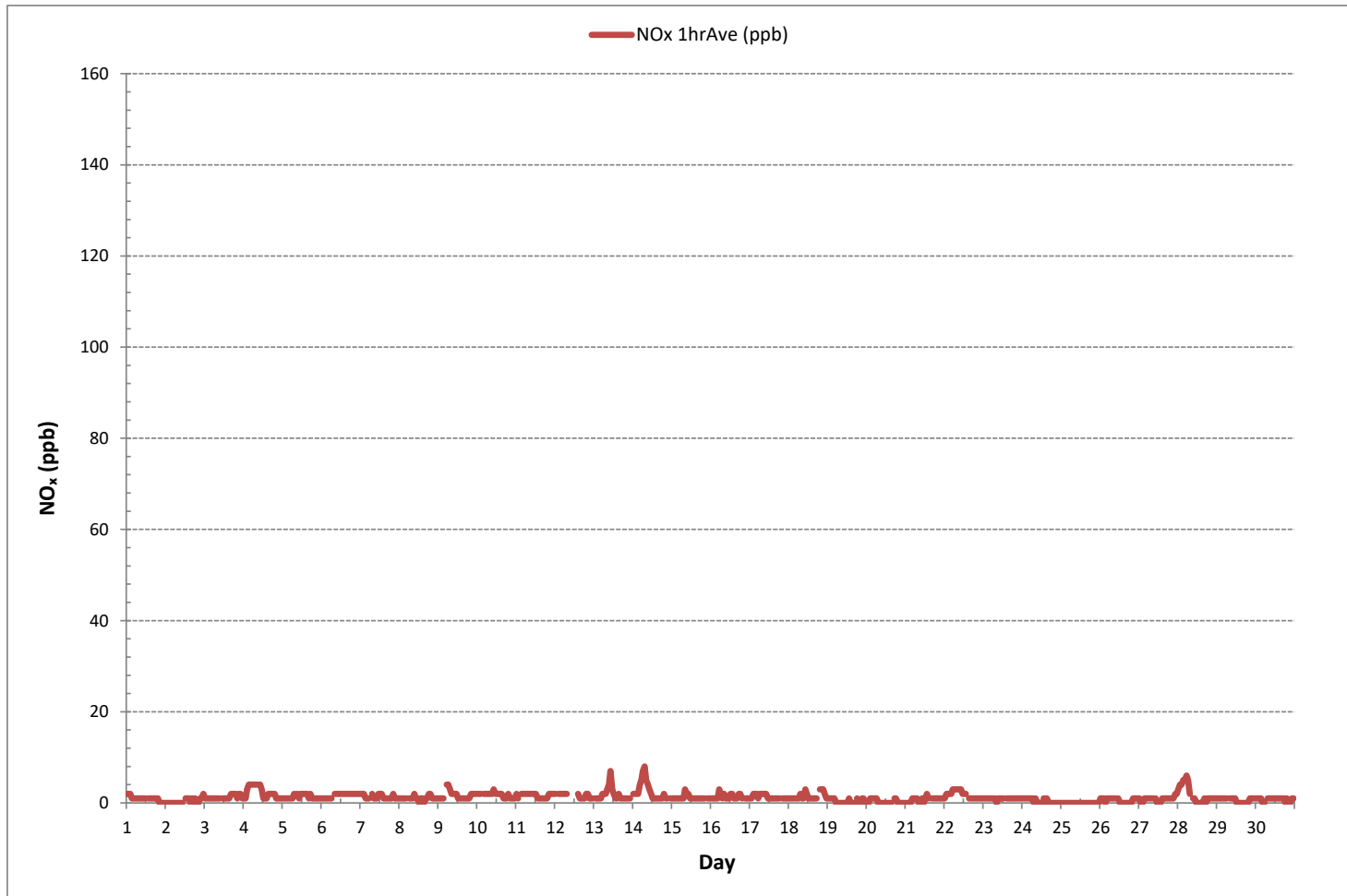
24 HR AVERAGES April 2019



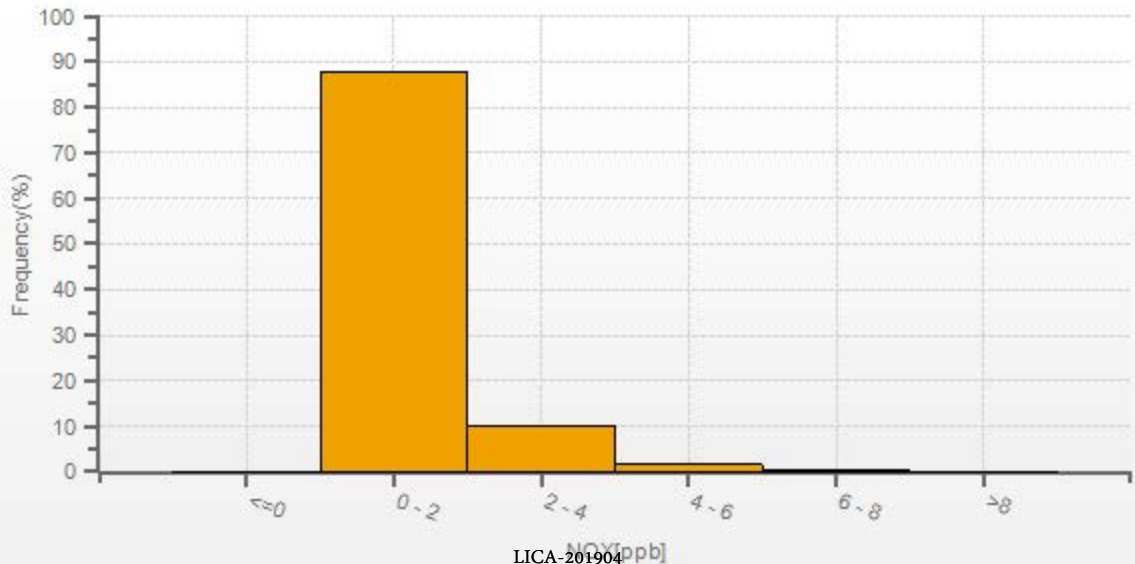
MONTHLY SUMMARY

NUMBER OF NON-ZERO READINGS:	555			
MINIMUM 1-HR AVERAGE:	0 ppb	@ HOUR	20	ON DAY 1
MAXIMUM 1-HR AVERAGE:	8 ppb	@ HOUR	7	ON DAY 14
MAXIMUM 24-HR AVERAGE:	3 ppb			ON DAY 14
I2S CALIBRATION TIME:	30 hrs	OPERATIONAL TIME:	720 hrs	
MONTHLY CALIBRATION TIME:	6 hrs	AMD OPERATION UPTIME:	100.0 %	
STANDARD DEVIATION:	1	MONTHLY AVERAGE:	1	ppb

OXIDES OF NITROGEN Hourly Averages (NO_x ppb)

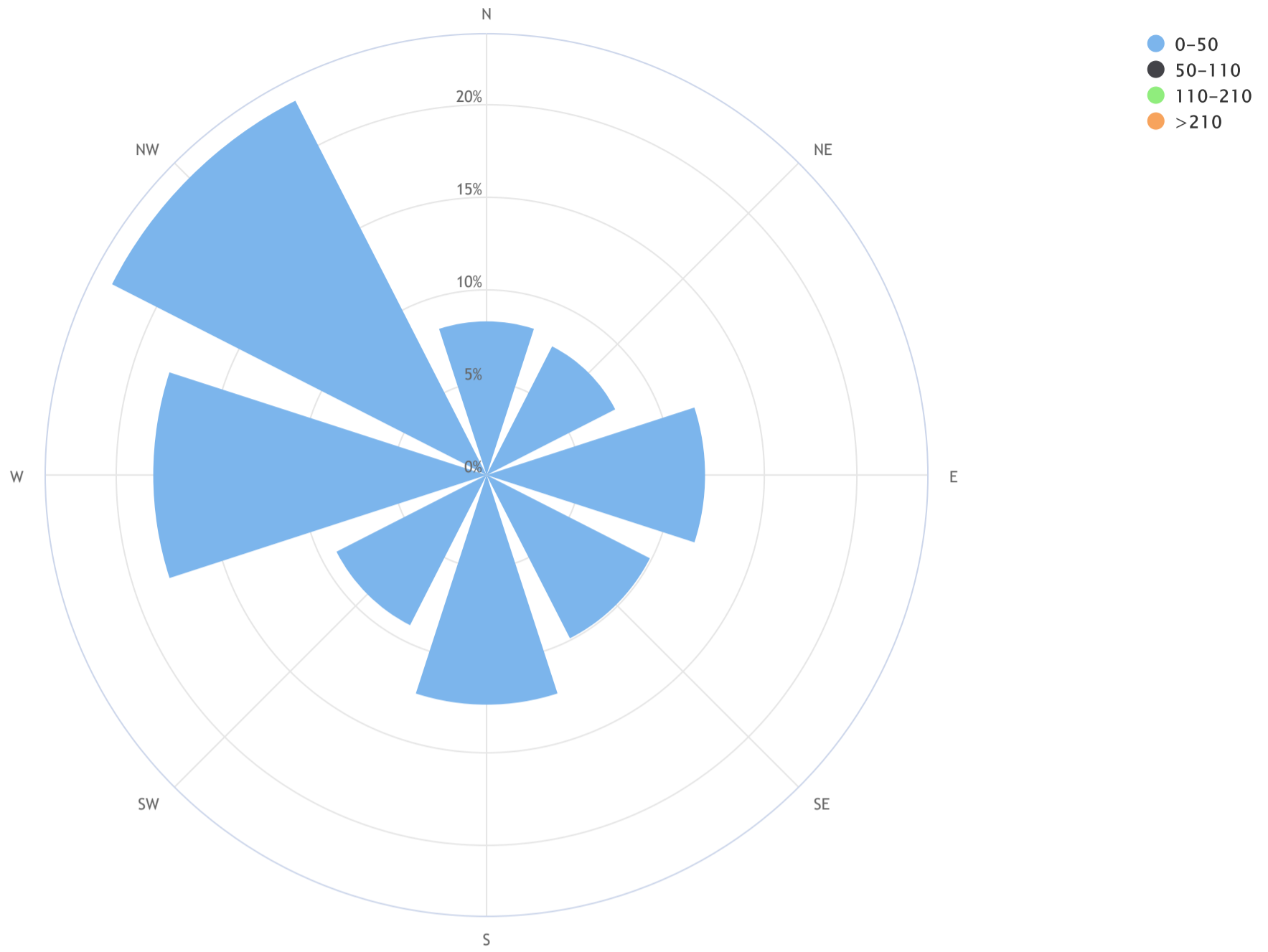


NOX[ppb] Histogram: LICA ST. LINA Monthly: 19/04 1 Hr.



Lakeland Industry & Community Association_St. Lina Continuous Monitoring Station_NO_x (ppb)_19/04

Pollutant Rose_Wind Frequency (Blowing From)_ CALM Avg = N/A, CALM % = 0.0%



Direction	0-50	50-110	110-210	>210	TOTAL
N	8.3	0.0	0.0	0.0	8.3
NE	7.8	0.0	0.0	0.0	7.8
E	11.8	0.0	0.0	0.0	11.8
SE	9.9	0.0	0.0	0.0	9.9
S	12.4	0.0	0.0	0.0	12.4
SW	9.1	0.0	0.0	0.0	9.1
W	18.0	0.0	0.0	0.0	18.0
NW	22.7	0.0	0.0	0.0	22.7
Summary	100.0	0.0	0.0	0.0	100.0
CALM	0.0	0.0	0.0	0.0	0.0

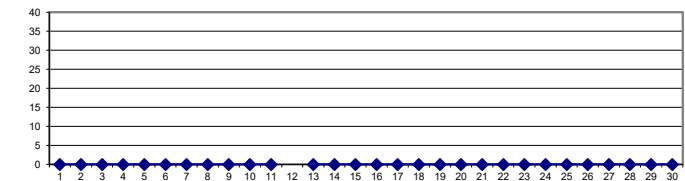
NITRIC OXIDE Hourly Averages (NO ppb)

HR START (MST)	0:00	1:00	2:00	3:00	4:00	5:00	6:00	7:00	8:00	9:00	10:00	11:00	12:00	13:00	14:00	15:00	16:00	17:00	18:00	19:00	20:00	21:00	22:00	23:00	DAILY MIN.	DAILY MAX.	24-HR AVG.	RDGS.	
DAY 1	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	24
DAY 2	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	24
DAY 3	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	24
DAY 4	0	0	0	0	0	0	0	0	1	S	1	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1	0	24
DAY 5	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	24
DAY 6	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	24
DAY 7	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	24
DAY 8	0	0	0	0	0	S	0	0	0	1	0	0	0	0	0	0	0	0	1	1	0	0	0	0	0	0	1	0	24
DAY 9	0	0	0	0	S	0	0	1	1	1	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1	0	24
DAY 10	0	0	0	S	0	0	0	0	0	1	2	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	2	0	24
DAY 11	0	0	S	0	0	0	0	0	0	1	1	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1	0	24
DAY 12	0	S	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	-	24
DAY 13	S	0	0	0	0	0	0	0	1	1	2	1	1	0	0	1	0	0	0	0	0	0	0	S	0	0	2	0	24
DAY 14	0	0	0	0	0	0	0	1	1	1	1	1	0	0	0	0	0	0	0	0	0	0	S	0	0	0	1	0	24
DAY 15	0	0	0	0	0	0	0	0	0	1	0	0	0	0	0	0	0	0	0	0	0	0	S	0	0	0	0	1	0
DAY 16	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
DAY 17	0	0	0	0	0	0	0	0	1	0	0	0	0	0	0	0	0	0	0	0	S	0	0	0	0	0	0	0	0
DAY 18	0	0	0	0	0	0	0	1	0	0	1	0	0	0	0	0	0	0	0	S	0	0	0	0	0	0	0	1	0
DAY 19	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
DAY 20	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
DAY 21	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
DAY 22	0	0	0	0	0	0	0	0	1	1	1	0	0	0	0	0	S	0	0	0	0	0	0	0	0	0	1	0	0
DAY 23	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
DAY 24	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
DAY 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
DAY 26	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
DAY 27	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
DAY 28	0	0	0	0	0	0	1	0	S	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1	0	0
DAY 29	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
DAY 30	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
HOURLY MAX	0	0	0	0	0	0	1	1	1	1	2	1	1	0	0	1	0	0	1	1	0	0	0	0	0				
HOURLY AVG	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0				

STATUS FLAG CODES

C	- MONTHLY CALIBRATION	Q	- QUALITY ASSURANCE
C1	- REPEAT CALIBRATION	R	- RECOVERY
Y	- MAINTENANCE	X	- MACHINE MALFUNCTION
S	- DAILY ZERO/SPAN CHECK	G	- OUT FOR REPAIR
S1	- REPEAT ZERO/SPAN CHECK	P	- POWER FAILURE

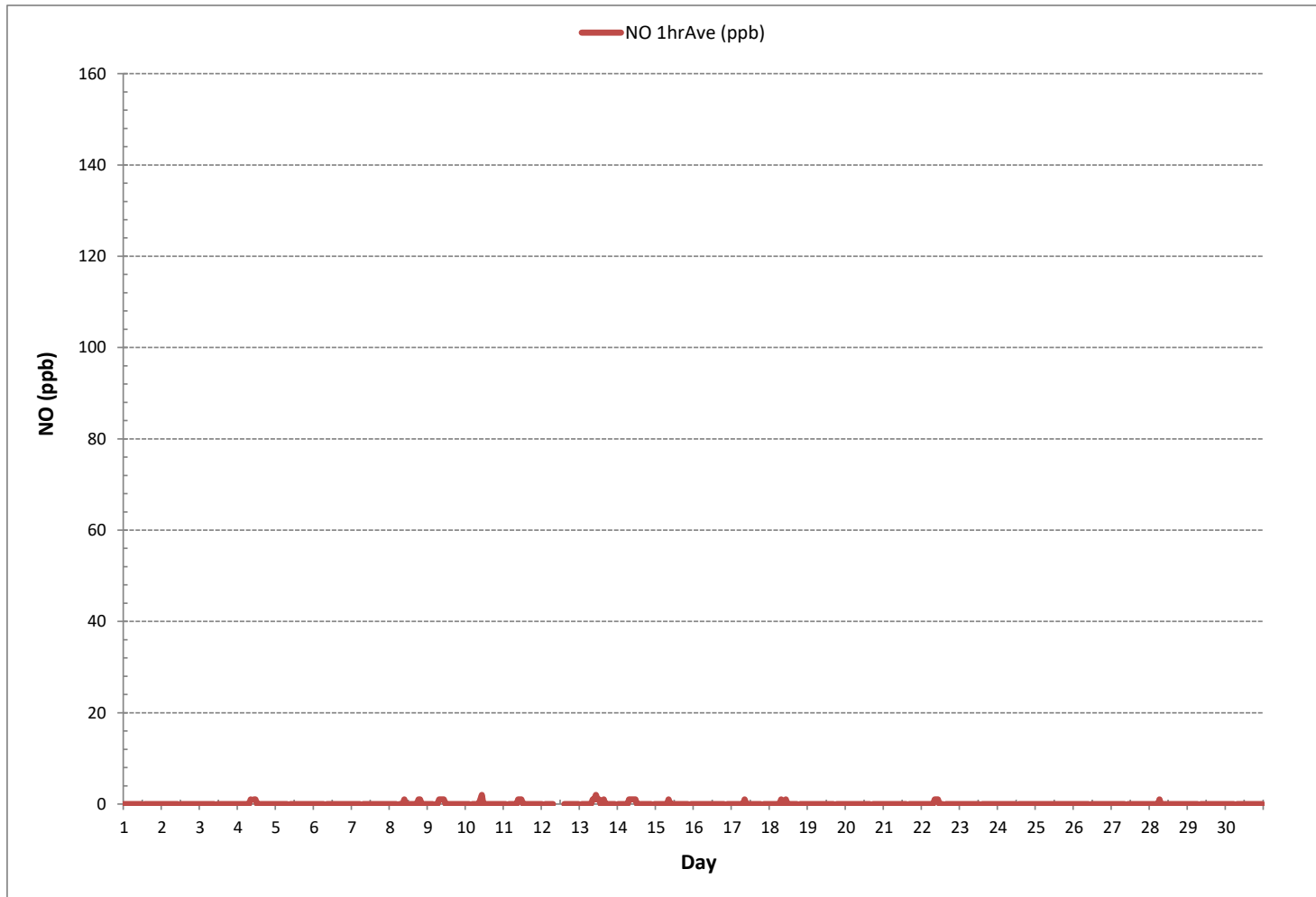
24 HR AVERAGES April 2019



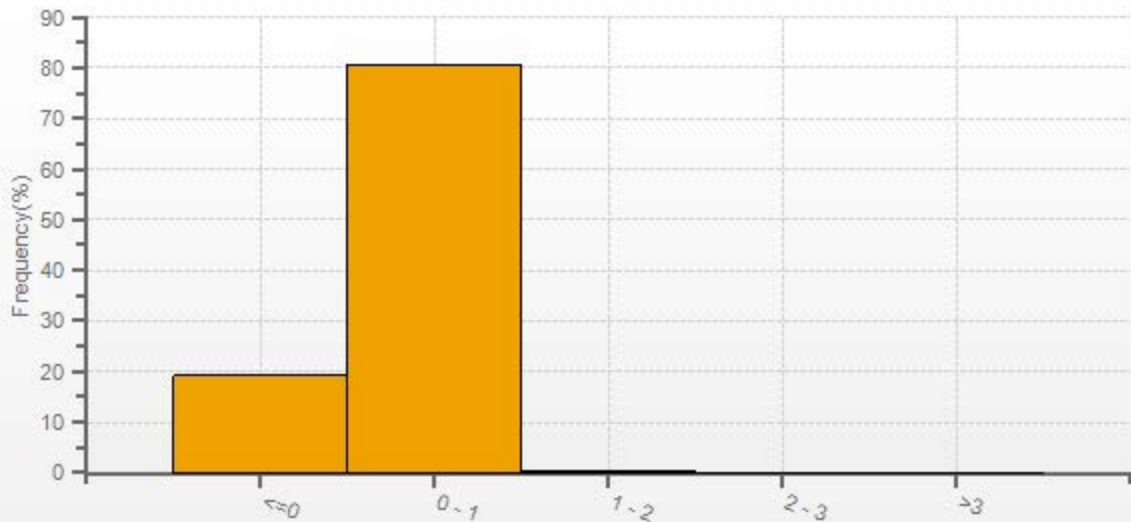
MONTHLY SUMMARY

NUMBER OF NON-ZERO READINGS:	34			
MINIMUM 1-HR AVERAGE:	0	ppb @ HOUR	0	ON DAY 1
MAXIMUM 1-HR AVERAGE:	2	ppb @ HOUR	10	ON DAY 10
MAXIMUM 24-HR AVERAGE:	0	ppb		ON DAY 1
IZS CALIBRATION TIME:	30	hrs	OPERATIONAL TIME:	720 hrs
MONTHLY CALIBRATION TIME:	6	hrs	AMD OPERATION UPTIME:	100.0 %
STANDARD DEVIATION:	0		MONTHLY AVERAGE:	0 ppb

NITRIC OXIDE Hourly Averages (NO ppb)



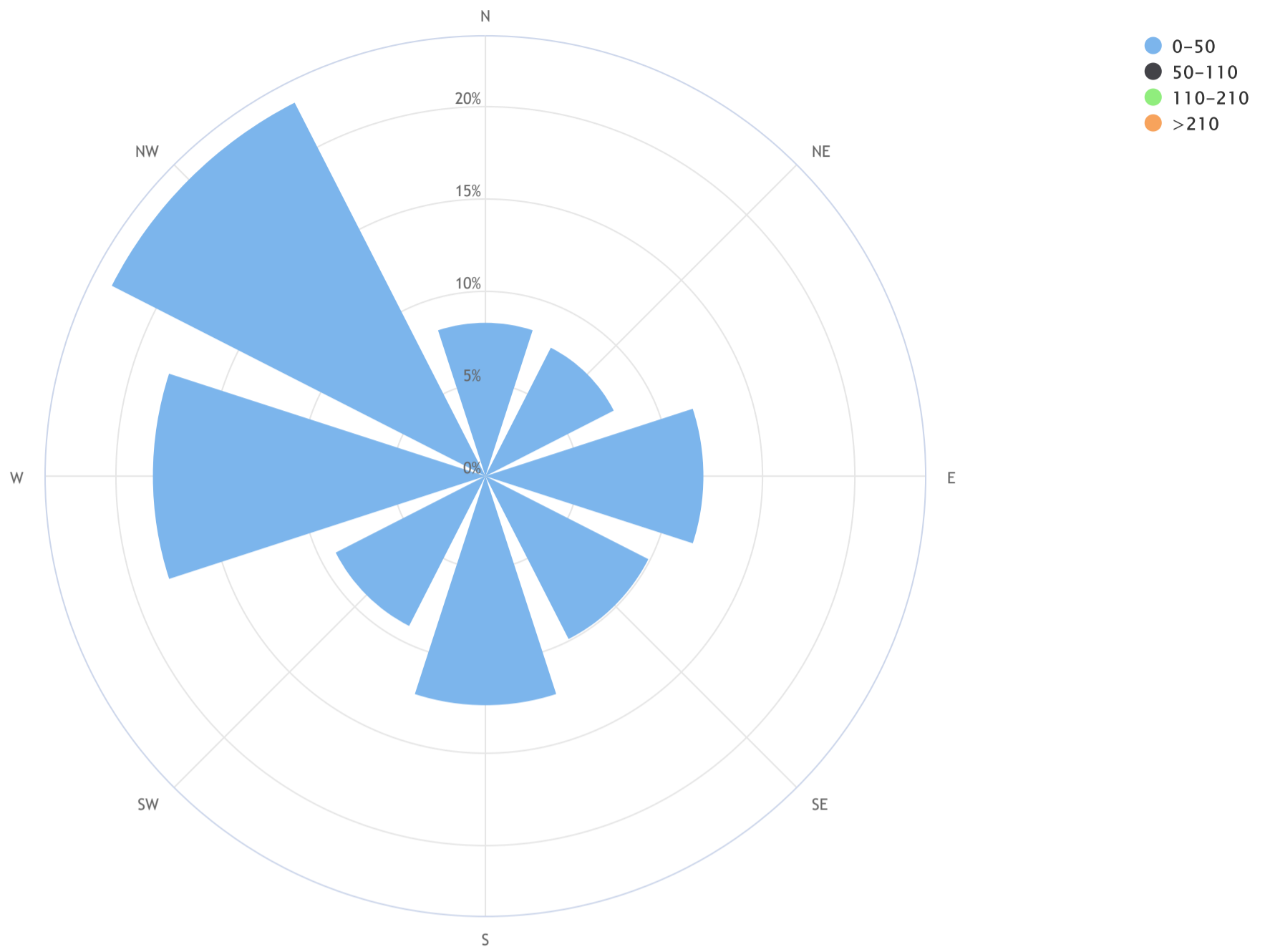
NO[ppb] Histogram: LICA ST. LINA Monthly: 19/04 1 Hr.



LICA-201904
Page 211 of 350

Lakeland Industry & Community Association_St. Lina Continuous Monitoring Station_NO (ppb)_19/04

Pollutant Rose_Wind Frequency (Blowing From)_ CALM Avg = N/A, CALM % = 0.0%



Direction	0-50	50-110	110-210	>210	TOTAL
N	8.3	0.0	0.0	0.0	8.3
NE	7.8	0.0	0.0	0.0	7.8
E	11.8	0.0	0.0	0.0	11.8
SE	9.9	0.0	0.0	0.0	9.9
S	12.4	0.0	0.0	0.0	12.4
SW	9.1	0.0	0.0	0.0	9.1
W	18.0	0.0	0.0	0.0	18.0
NW	22.7	0.0	0.0	0.0	22.7
Summary	100.0	0.0	0.0	0.0	100.0
CALM	0.0	0.0	0.0	0.0	0.0

NITROGEN DIOXIDE Hourly Averages (NO₂ ppb)

HR START (MST)	0:00	1:00	2:00	3:00	4:00	5:00	6:00	7:00	8:00	9:00	10:00	11:00	12:00	13:00	14:00	15:00	16:00	17:00	18:00	19:00	20:00	21:00	22:00	23:00	DAILY MIN.	DAILY MAX.	24-HR AVG.	RDGS.	
HR END (MST)	0:59	1:59	2:59	3:59	4:59	5:59	6:59	7:59	8:59	9:59	10:59	11:59	12:59	13:59	14:59	15:59	16:59	17:59	18:59	19:59	20:59	21:59	22:59	23:59					
DAY 1	2	2	2	1	1	1	1	1	1	1	1	1	S	1	1	1	1	1	1	1	0	0	0	0	0	2	1	24	
2	0	0	0	0	0	0	0	0	0	0	0	S	0	1	0	0	0	0	1	0	0	1	1	2	0	2	0	24	
3	1	1	1	1	1	1	1	1	1	1	1	S	1	1	1	1	1	1	2	2	1	2	2	1	1	2	1	24	
4	1	1	3	4	4	4	4	3	4	S	3	3	1	1	1	2	2	2	2	2	1	1	1	1	1	4	2	24	
5	1	1	1	1	1	1	1	1	2	S	1	1	2	2	2	2	2	1	1	1	1	1	1	1	1	2	1	24	
6	1	1	1	1	1	1	1	S	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2	1	2	24	
7	2	2	1	1	1	1	S	1	1	1	1	2	2	1	1	1	1	1	1	1	2	1	1	1	1	2	1	24	
8	1	1	1	1	1	S	1	1	1	1	0	0	0	0	0	0	1	1	1	1	1	1	1	1	0	1	1	24	
9	1	1	1	1	S	4	3	2	2	1	2	2	1	1	1	1	1	1	1	1	2	2	2	2	1	4	1	24	
10	2	2	2	S	2	2	2	2	2	2	2	1	2	2	2	1	1	1	1	2	1	1	1	1	1	2	2	24	
11	2	1	S	2	2	2	2	2	2	2	2	2	2	1	1	1	1	1	1	1	2	2	2	2	1	2	2	24	
12	2	S	2	2	2	2	2	2	C	C	C	C	C	C	C	1	1	1	1	2	2	1	1	1	1	2	-	24	
13	S	1	1	1	1	2	2	2	2	3	5	2	2	1	1	1	1	1	1	1	1	1	1	S	1	5	1	24	
14	2	2	2	2	4	5	7	7	4	3	3	2	1	1	1	1	1	1	1	2	1	1	S	1	1	7	2	24	
15	1	1	1	1	1	1	1	1	2	1	1	1	1	1	1	1	1	1	1	1	1	S	1	1	1	2	1	24	
16	1	1	1	1	1	3	2	1	1	1	1	1	1	1	1	1	2	2	1	S	1	1	1	1	1	3	1	24	
17	1	1	2	2	1	1	2	2	1	1	1	1	1	1	1	1	1	1	1	S	1	1	1	1	1	2	1	24	
18	1	1	1	1	1	1	1	1	1	1	2	1	1	1	1	1	1	1	S	3	3	2	2	1	1	3	1	24	
19	1	1	1	1	1	0	0	0	0	0	0	0	0	0	0	0	0	S	1	0	0	1	1	0	0	1	0	24	
20	0	0	1	1	1	1	1	0	0	0	0	0	0	0	0	0	S	1	0	0	0	0	0	0	0	1	0	24	
21	0	0	0	0	1	1	1	1	0	0	0	0	1	1	1	S	1	1	1	1	1	1	1	1	1	0	1	1	24
22	1	2	2	2	2	2	3	2	2	2	2	2	2	1	S	1	1	1	1	1	1	1	1	1	1	3	2	24	
23	1	1	1	1	1	1	1	1	0	0	0	1	1	S	1	1	1	0	0	1	1	1	1	1	0	1	1	24	
24	1	1	1	1	1	1	1	0	1	0	0	0	S	1	0	0	0	0	0	0	0	0	0	0	0	1	0	24	
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	24	
26	1	1	1	0	1	1	1	1	1	0	S	1	0	0	0	0	0	0	0	0	1	1	1	1	0	1	1	24	
27	1	0	0	1	1	1	1	1	1	S	1	0	0	0	0	1	1	1	1	1	1	1	2	2	0	2	1	24	
28	3	4	4	5	5	6	4	1	S	1	0	0	0	0	0	0	1	0	0	1	1	1	1	1	0	6	2	24	
29	1	1	1	0	0	1	S	1	1	1	1	1	0	0	0	0	0	0	0	0	0	0	1	1	0	1	1	24	
30	0	0	1	1	0	0	S	1	1	1	1	1	1	0	0	0	0	0	0	1	0	0	1	1	0	1	1	24	
HOURLY MAX	3	4	4	5	5	6	7	7	4	3	5	3	2	2	2	2	2	2	2	3	3	3	2	2	2				
HOURLY AVG	1	1	1	1	1	2	2	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1				

STATUS FLAG CODES

C	- MONTHLY CALIBRATION	Q	- QUALITY ASSURANCE
C1	- REPEAT CALIBRATION	R	- RECOVERY
Y	- MAINTENANCE	X	- MACHINE MALFUNCTION
S	- DAILY ZERO/SPAN CHECK	G	- OUT FOR REPAIR
S1	- REPEAT ZERO/SPAN CHECK	P	- POWER FAILURE

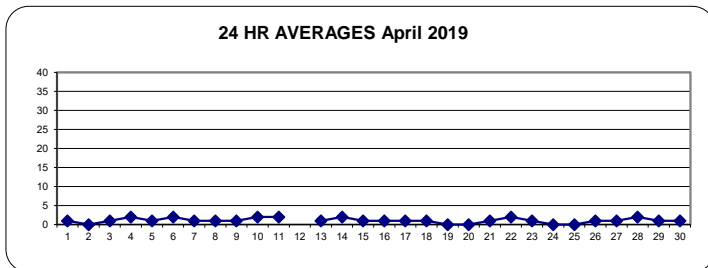
OBJECTIVE LIMIT:

ALBERTA ENVIRONMENT: 1-HR 159 ppb

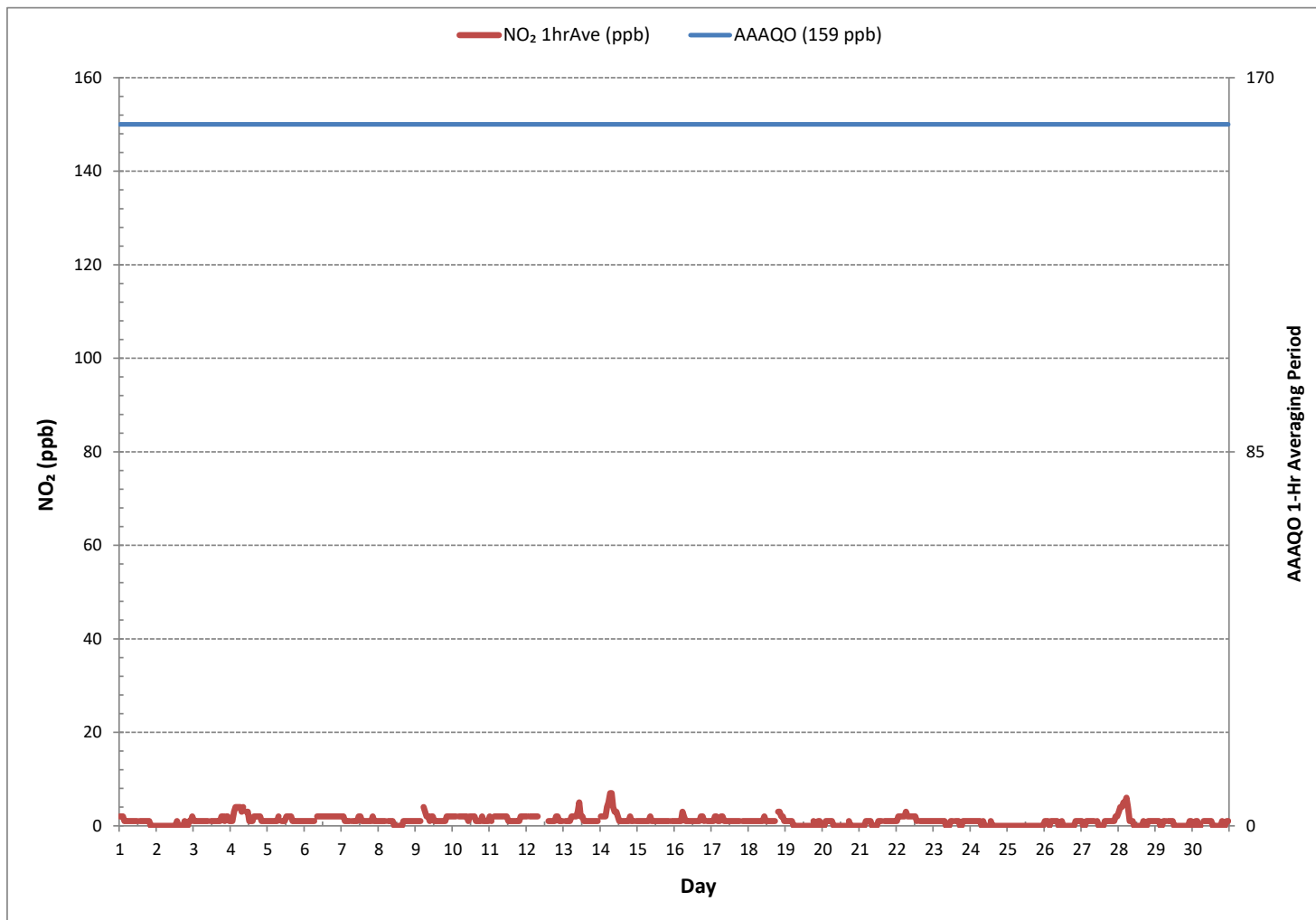
MONTHLY SUMMARY

NUMBER OF 1-HR EXCEEDANCES:	0				
NUMBER OF NON-ZERO READINGS:	525				
MINIMUM 1-HR AVERAGE:	0	ppb @ HOUR	20	ON DAY 1	
MAXIMUM 1-HR AVERAGE:	7	ppb @ HOUR	6	ON DAY 14	
MAXIMUM 24-HR AVERAGE:	2	ppb		ON DAY 4	
IZS CALIBRATION TIME:	30	hrs	OPERATIONAL TIME:	720	hrs
MONTHLY CALIBRATION TIME:	6	hrs	AMD OPERATION UPTIME:	100.0	%
STANDARD DEVIATION:	1		MONTHLY AVERAGE:	1	ppb

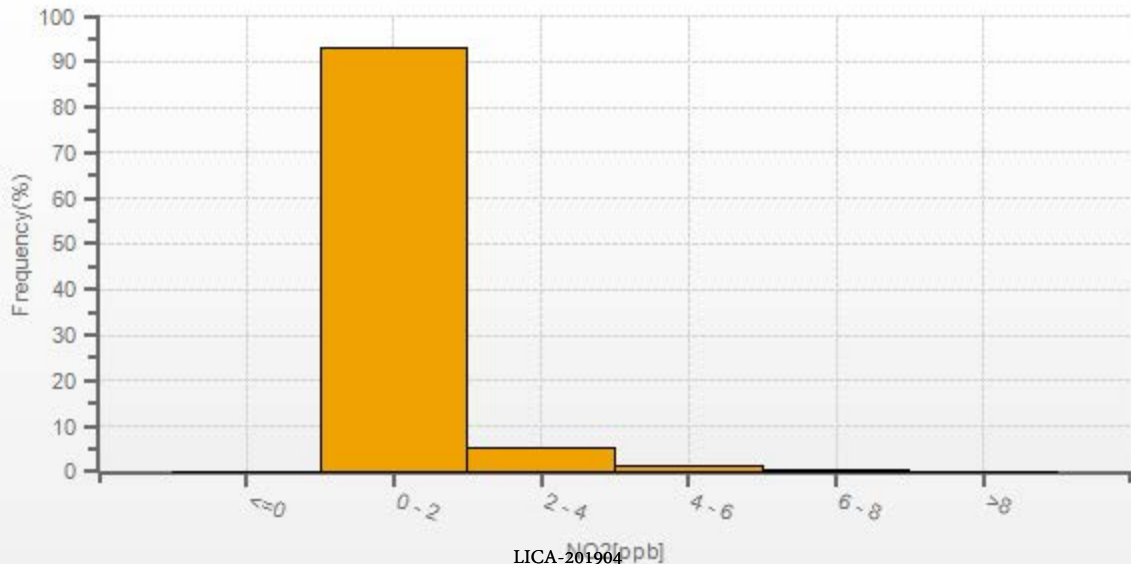
24 HR AVERAGES April 2019



NITROGEN DIOXIDE Hourly Averages (NO₂ ppb)



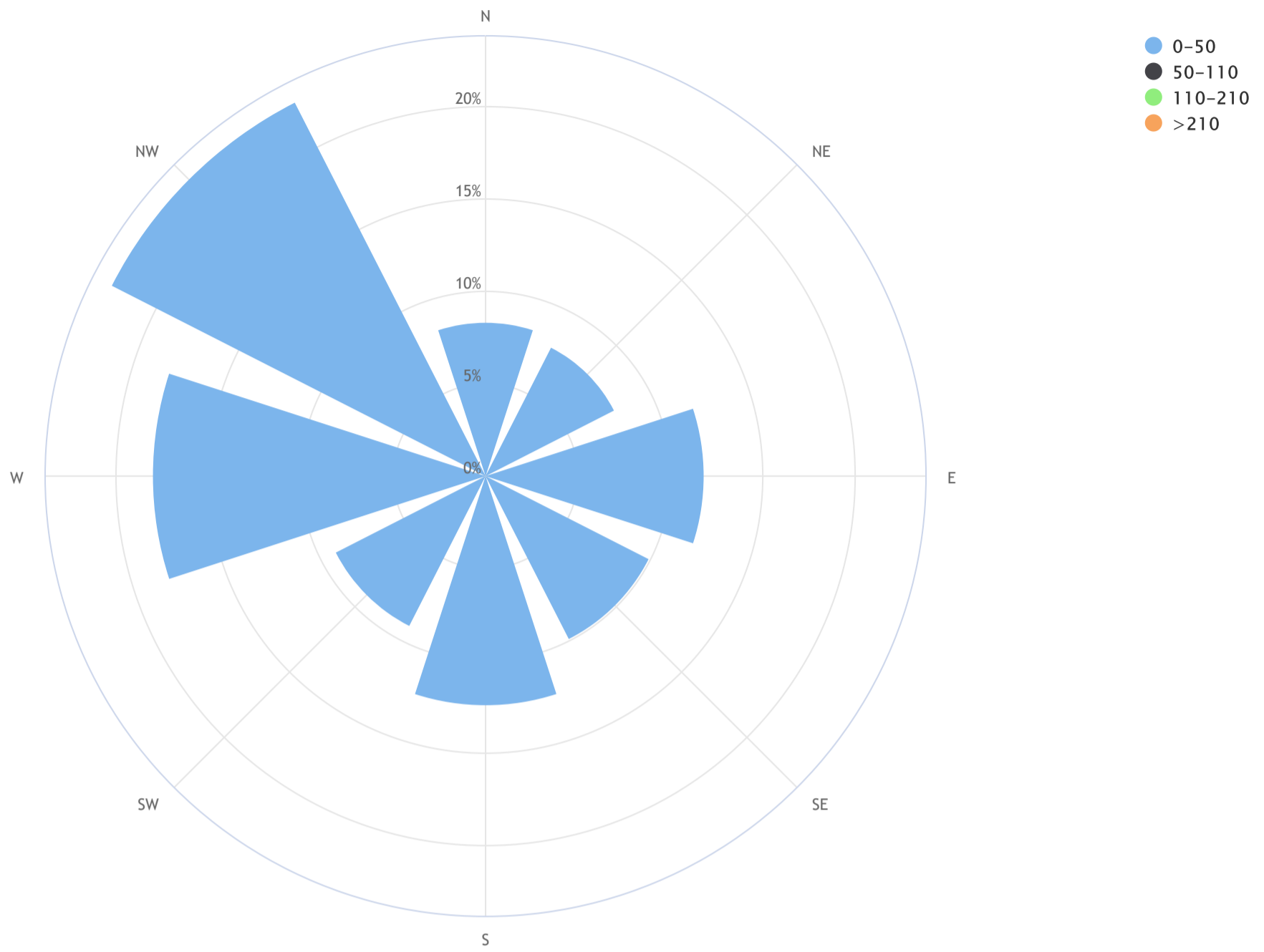
NO2[ppb] Histogram: LICA ST. LINA Monthly: 19/04 1 Hr.



LICA-201904
Page 215 of 350

Lakeland Industry & Community Association_St. Lina Continuous Monitoring Station_NO₂ (ppb)_19/04

Pollutant Rose_Wind Frequency (Blowing From)_ CALM Avg = N/A, CALM % = 0.0%



Direction	0-50	50-110	110-210	>210	TOTAL
N	8.3	0.0	0.0	0.0	8.3
NE	7.8	0.0	0.0	0.0	7.8
E	11.8	0.0	0.0	0.0	11.8
SE	9.9	0.0	0.0	0.0	9.9
S	12.4	0.0	0.0	0.0	12.4
SW	9.1	0.0	0.0	0.0	9.1
W	18.0	0.0	0.0	0.0	18.0
NW	22.7	0.0	0.0	0.0	22.7
Summary	100.0	0.0	0.0	0.0	100.0
CALM	0.0	0.0	0.0	0.0	0.0

OZONE Hourly Averages (O₃ ppb)

HR START (MST)	0:00	1:00	2:00	3:00	4:00	5:00	6:00	7:00	8:00	9:00	10:00	11:00	12:00	13:00	14:00	15:00	16:00	17:00	18:00	19:00	20:00	21:00	22:00	23:00	DAILY MIN.	DAILY MAX.	24-HR AVG.	RDGS.	
HR END (MST)	0:59	1:59	2:59	3:59	4:59	5:59	6:59	7:59	8:59	9:59	10:59	11:59	12:59	13:59	14:59	15:59	16:59	17:59	18:59	19:59	20:59	21:59	22:59	23:59					
DAY 1	39.5	39.4	38.4	37.8	38.6	38.5	37.8	39.6	41.7	47.7	47.4	46.8	S	47.5	50.0	51.8	52.3	52.2	48.2	46.3	46.2	45.2	45.0	45.4	37.8	52.3	44.5	24	
2	45.0	45.5	46.0	45.4	44.3	45.0	44.8	44.2	44.3	44.7	44.9	S	46.3	46.6	46.7	47.9	48.6	49.2	48.2	46.6	44.9	44.3	43.1	39.8	39.8	49.2	45.5	24	
3	41.5	41.4	42.5	39.4	38.2	39.4	39.1	39.3	39.6	39.5	S	39.8	40.0	40.6	42.8	44.0	44.0	43.7	42.1	40.7	40.2	36.9	36.4	37.6	36.4	44.0	40.4	24	
4	37.9	38.1	35.5	32.9	32.6	31.9	31.4	32.5	33.1	S	33.9	34.0	34.5	34.7	35.0	35.5	35.6	35.6	36.5	34.6	34.8	36.7	37.0	36.2	31.4	38.1	34.8	24	
5	35.3	36.7	35.7	35.1	33.7	32.5	31.1	29.7	S	33.2	34.8	34.4	36.9	38.5	41.5	43.1	42.9	43.0	41.5	40.4	39.5	37.9	37.0	36.9	29.7	43.1	37.0	24	
6	36.2	34.6	33.9	33.2	32.4	31.2	29.8	S	24.5	22.2	21.5	21.1	19.4	17.7	16.6	16.2	17.1	17.3	17.1	16.2	15.2	14.3	14.0	12.2	12.2	36.2	22.3	24	
7	12.1	11.5	12.4	13.6	16.2	16.2	S	14.7	15.0	19.8	28.7	30.1	32.2	36.6	41.1	45.6	45.4	45.5	43.7	41.4	42.2	41.9	41.0	39.4	11.5	45.6	29.8	24	
8	40.5	39.6	40.3	41.5	40.4	S	41.7	41.7	43.5	45.6	46.4	47.5	48.8	49.4	49.7	50.1	50.1	50.8	49.0	48.3	48.4	48.4	48.1	47.8	39.6	50.8	46.0	24	
9	47.5	47.2	47.8	47.6	S	27.5	22.7	21.5	23.6	27.3	27.8	37.6	50.8	52.5	52.3	53.7	49.6	40.8	44.8	40.8	36.4	32.6	28.3	27.2	21.5	53.7	38.9	24	
10	25.6	23.8	22.9	S	20.4	19.8	19.3	19.4	19.0	19.3	20.1	24.0	30.3	36.4	37.6	45.4	48.3	46.7	45.7	49.0	47.1	45.4	44.8	43.6	19.0	49.0	32.8	24	
11	39.6	34.1	S	30.0	30.1	30.4	30.5	30.3	29.6	29.1	29.0	30.4	35.5	41.2	43.7	44.3	44.2	44.3	43.0	39.1	36.7	34.2	32.0	31.9	29.0	44.3	35.3	24	
12	32.3	S	32.7	31.9	30.0	29.7	29.9	29.8	32.5	33.2	34.7	39.6	41.8	C	C	C	C	C	C	45.8	44.9	44.8	44.3	43.7	42.3	29.7	45.8	36.9	24
13	S	41.0	39.4	38.0	36.3	34.5	34.7	32.6	32.5	34.4	38.4	45.5	50.4	52.1	53.7	54.2	54.9	55.4	54.9	54.8	54.5	54.1	51.2	S	32.5	55.4	45.3	24	
14	44.2	44.6	43.9	40.4	36.2	33.7	31.5	31.4	36.6	37.1	37.2	44.3	52.8	54.4	54.9	54.5	52.4	51.5	50.5	48.6	48.6	49.9	S	47.6	31.4	54.9	44.6	24	
15	43.1	38.0	35.1	37.1	36.5	35.4	34.3	33.8	32.9	33.5	34.7	37.1	39.3	41.7	41.5	42.2	39.9	36.9	37.5	36.8	37.0	S	35.3	34.4	32.9	43.1	37.1	24	
16	35.1	34.9	36.3	36.3	35.3	30.2	25.2	S1	32.0	29.9	37.3	39.3	38.9	39.0	Y	S1	45.9	45.1	47.3	46.8	S	45.5	44.6	43.1	25.2	47.3	38.4	21	
17	41.1	41.3	37.7	35.7	34.8	35.0	34.5	35.5	36.5	40.6	45.3	49.0	49.5	50.1	49.6	47.1	48.1	42.0	44.7	S	44.2	44.2	43.5	41.7	34.5	50.1	42.2	24	
18	39.7	38.9	39.1	37.5	37.0	34.9	32.8	29.1	30.0	35.5	38.5	41.0	44.1	46.4	49.0	49.8	49.2	46.8	S	42.8	42.8	42.5	43.7	44.4	29.1	49.8	40.7	24	
19	44.5	43.1	42.9	41.9	43.4	46.2	43.6	41.6	43.8	43.6	43.8	46.2	47.3	46.9	48.0	49.9	51.1	S	50.0	50.0	49.2	48.1	46.6	46.2	41.6	51.1	46.0	24	
20	45.2	43.1	42.3	42.4	41.4	40.1	40.0	41.5	44.2	46.2	48.0	49.1	49.7	49.7	48.9	51.6	S	46.4	44.1	43.2	42.3	41.5	41.0	41.4	40.0	51.6	44.5	24	
21	41.3	39.6	39.9	40.2	40.5	41.3	43.0	43.8	45.2	50.2	52.6	53.6	53.3	52.3	53.6	S	54.9	55.3	54.8	54.4	54.1	51.5	49.3	49.7	39.6	55.3	48.4	24	
22	50.5	47.6	44.0	42.4	40.2	37.2	36.0	35.7	35.6	35.4	36.6	42.6	54.3	61.2	S	60.7	59.8	59.6	57.2	53.5	49.6	47.2	46.2	45.2	35.4	61.2	46.9	24	
23	41.3	42.1	40.5	41.7	41.9	42.6	42.8	45.9	49.9	49.9	51.2	53.3	55.9	S	55.9	55.4	56.5	55.8	54.9	54.1	53.0	53.4	53.7	52.9	40.5	56.5	49.8	24	
24	53.3	52.7	51.0	49.0	48.9	48.0	47.6	49.2	50.9	53.2	55.0	54.6	S	51.2	51.3	50.5	50.9	50.2	51.8	49.6	48.5	48.3	47.6	46.7	46.7	55.0	50.4	24	
25	46.5	46.0	45.9	45.1	44.3	43.6	43.6	44.6	45.5	46.4	47.5	48.2	48.9	49.1	49.6	50.4	50.6	50.9	50.7	50.1	50.5	50.4	49.9	49.9	43.6	50.9	47.8	24	
26	48.7	48.7	49.1	49.2	45.5	42.4	41.8	40.1	42.6	45.2	S	47.1	48.3	47.9	48.6	47.8	47.3	46.0	44.3	42.7	41.3	39.8	38.0	36.8	36.8	49.2	44.8	24	
27	36.5	36.7	36.5	35.3	33.9	32.8	32.4	33.1	34.2	S	36.2	38.0	37.8	37.9	38.7	39.6	40.6	40.3	39.9	39.4	38.5	38.1	39.7	42.6	32.4	42.6	37.3	24	
28	40.8	40.3	40.0	38.4	38.0	38.4	40.2	42.9	S	45.8	46.1	46.3	46.3	46.4	46.4	46.3	46.7	47.0	46.7	45.5	43.9	43.5	44.0	42.5	38.0	47.0	43.6	24	
29	41.8	41.3	39.9	39.4	40.2	39.3	38.7	S	41.7	41.8	43.0	44.4	44.7	46.1	47.9	48.9	48.1	47.8	47.1	46.7	46.0	44.7	42.6	43.4	38.7	48.9	43.7	24	
30	42.4	42.8	40.4	41.0	44.2	44.3	S	46.5	45.1	44.1	45.0	44.7	44.7	46.2	47.2	47.3	47.3	46.9	45.7	44.4	44.4	42.3	41.2	38.5	38.5	47.3	44.2	24	
HOURLY MAX	53.3	52.7	51.0	49.2	48.9	48.0	47.6	49.2	50.9	53.2	55.0	54.6	55.9	61.2	55.9	60.7	59.8	59.6	57.2	54.8	54.5	54.1	53.7	52.9					
HOURLY AVG	40.3	39.8	39.0	38.6	37.1	35.9	35.7	35.9	36.6	38.4	39.5	41.7	43.7	45.0	46.0	47.2	47.2	46.4	45.8	44.5	43.6	43.0	41.7	40.9					

STATUS FLAG CODES

C	- MONTHLY CALIBRATION	Q	- QUALITY ASSURANCE
C1	- REPEAT CALIBRATION	R	- RECOVERY
Y	- MAINTENANCE	X	- MACHINE MALFUNCTION
S	- DAILY ZERO/SPAN CHECK	G	- OUT FOR REPAIR
S1	- REPEAT ZERO/SPAN CHECK	P	- POWER FAILURE

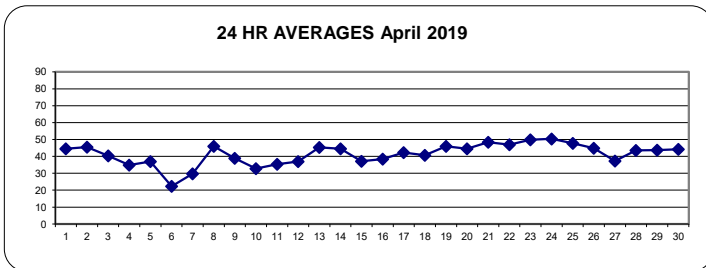
OBJECTIVE LIMIT:

ALBERTA ENVIRONMENT: 1-HR 76 ppb

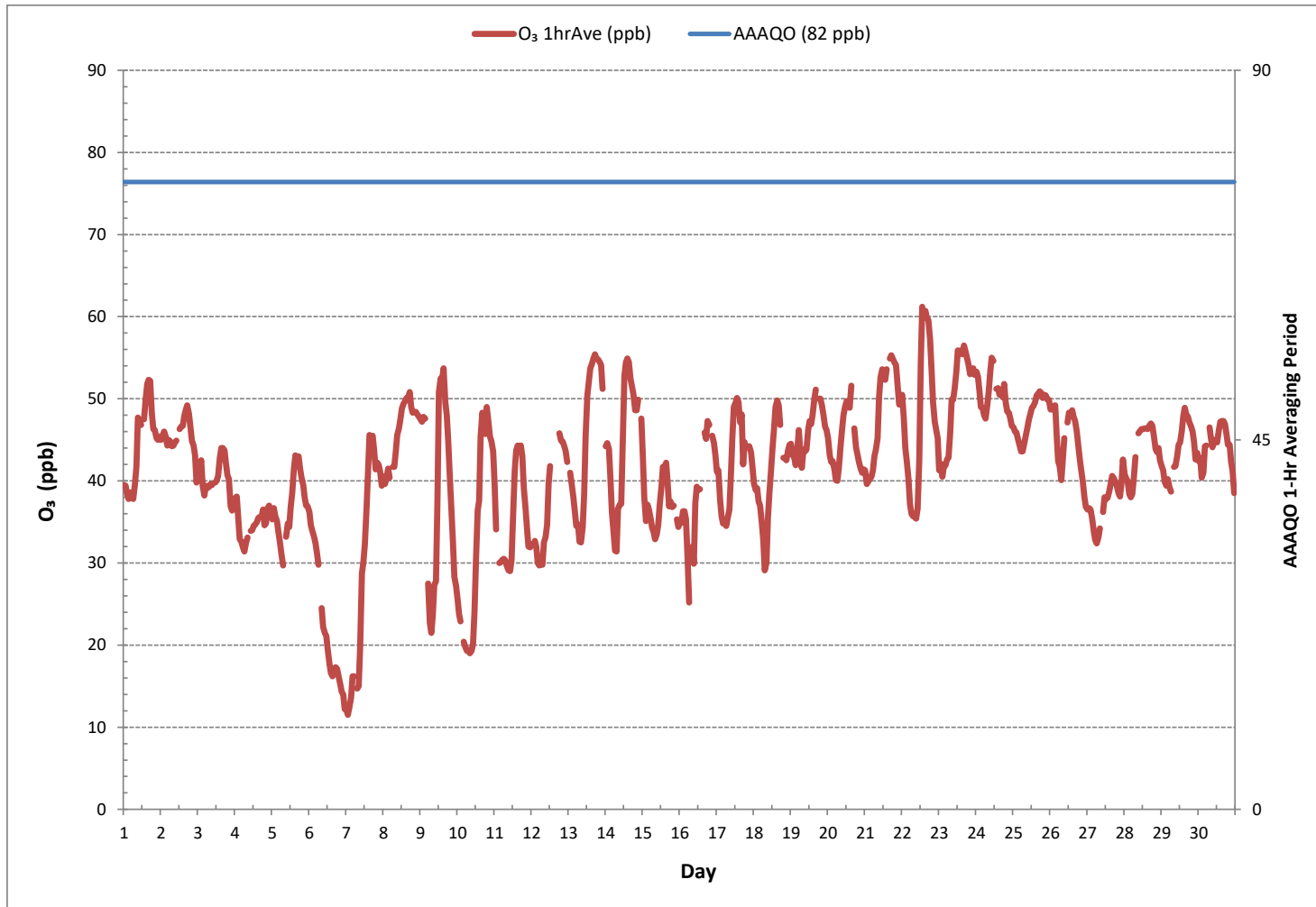
MONTHLY SUMMARY

NUMBER OF 1-HR EXCEEDANCES:	0				
NUMBER OF NON-ZERO READINGS:	682				
MINIMUM 1-HR AVERAGE:	11.5	ppb	@ HOUR	1	ON DAY 7
MAXIMUM 1-HR AVERAGE:	61.2	ppb	@ HOUR	13	ON DAY 22
MAXIMUM 24-HR AVERAGE:	50.4	ppb			ON DAY 24
IZS CALIBRATION TIME:	30	hrs	OPERATIONAL TIME:	717	hrs
MONTHLY CALIBRATION TIME:	5	hrs	AMD OPERATION UPTIME:	99.6	%
STANDARD DEVIATION:	8.6		MONTHLY AVERAGE:	41.4	ppb

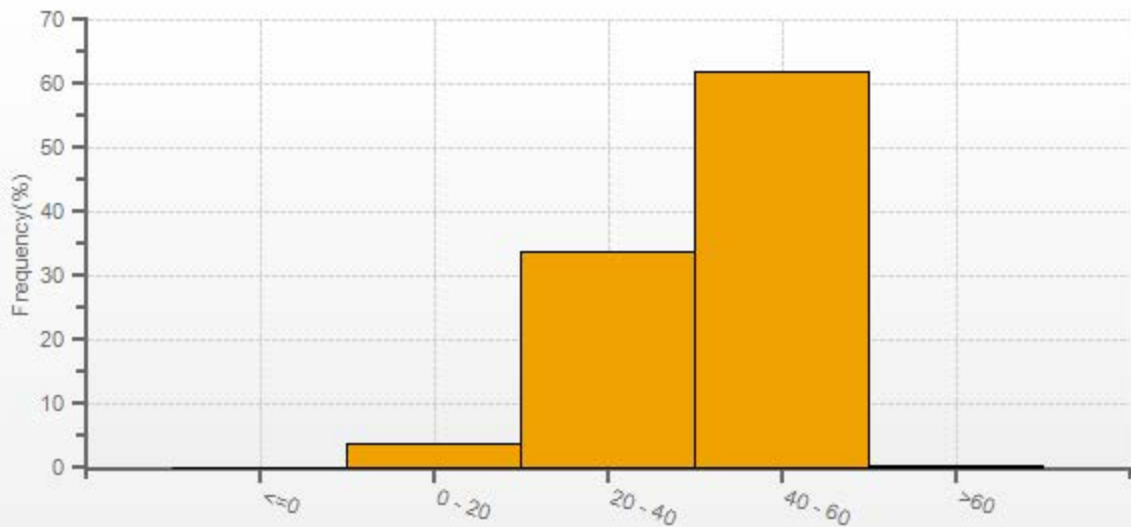
24 HR AVERAGES April 2019



OZONE Hourly Averages (O₃ ppb)



O3[ppb] Histogram: LICA ST. LINA Monthly: 19/04 1 Hr.

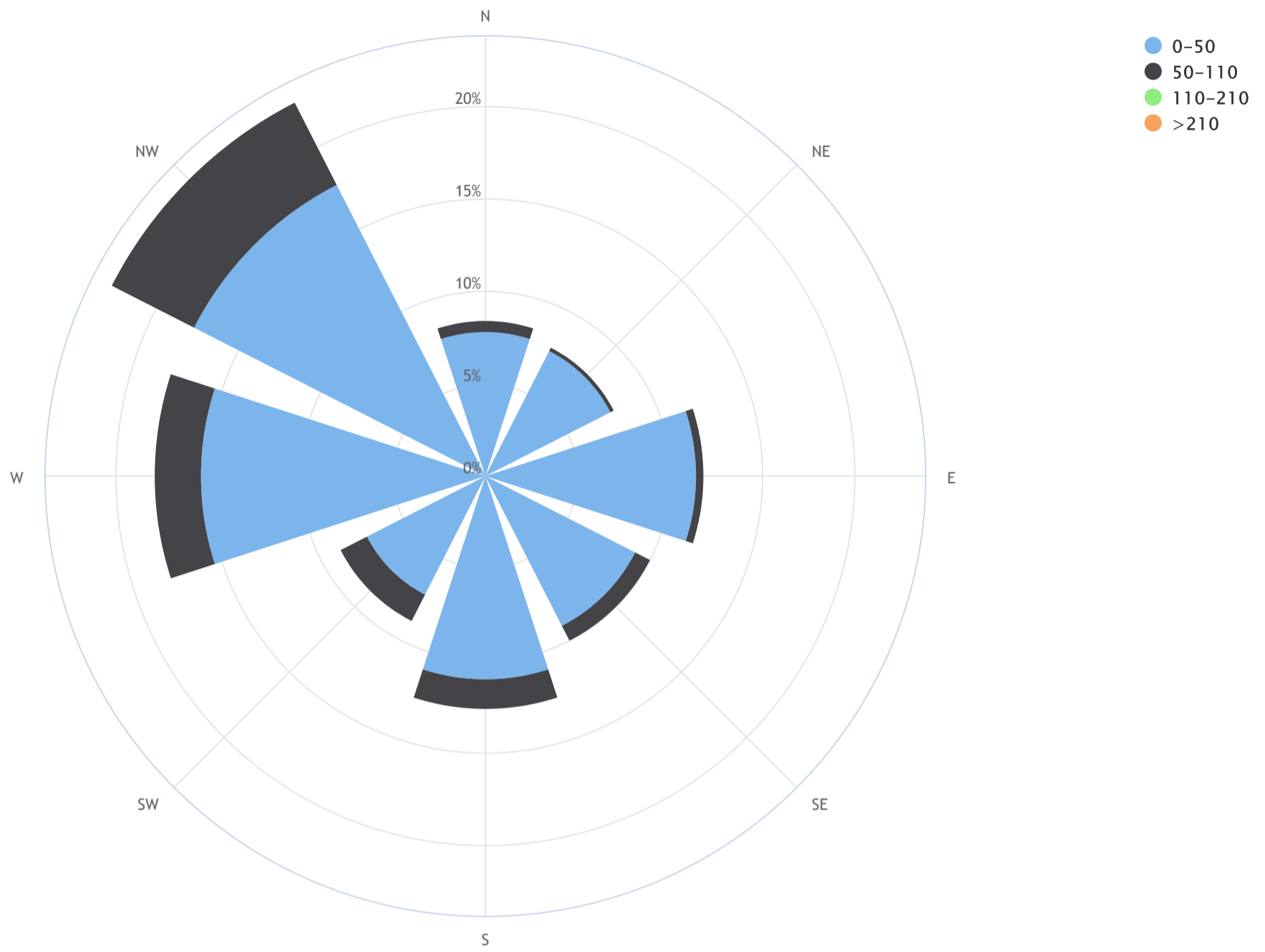


LICA-201904

Page 219 of 350

Lakeland Industry & Community Association_St. Lina Continuous Monitoring Station_O₃ (ppb)_19/04

Pollutant Rose_Wind Frequency (Blowing From)_ CALM Avg = N/A, CALM % = 0.0%



Direction	0-50	50-110	110-210	>210	TOTAL
N	7.8	0.6	0.0	0.0	8.4
NE	7.6	0.2	0.0	0.0	7.8
E	11.4	0.4	0.0	0.0	11.9
SE	9.1	0.9	0.0	0.0	10.0
S	11.0	1.6	0.0	0.0	12.6
SW	7.2	1.6	0.0	0.0	8.8
W	15.4	2.5	0.0	0.0	17.9
NW	17.7	5.0	0.0	0.0	22.7
Summary	87.2	12.8	0.0	0.0	100.0
CALM	0.0	0.0	0.0	0.0	0.0



PARTICULATE MATTER < 2.5 MICRONS Hourly Averages (PM_{2.5} µg/m³)

HR START (MST)	0:00	1:00	2:00	3:00	4:00	5:00	6:00	7:00	8:00	9:00	10:00	11:00	12:00	13:00	14:00	15:00	16:00	17:00	18:00	19:00	20:00	21:00	22:00	23:00	DAILY	DAILY	24-HR	RDGS.
HR END (MST)	0:59	1:59	2:59	3:59	4:59	5:59	6:59	7:59	8:59	9:59	10:59	11:59	12:59	13:59	14:59	15:59	16:59	17:59	18:59	19:59	20:59	21:59	22:59	23:59	MIN.	MAX.	AVG.	
DAY	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	0	0	6	2	24
1	6	5	4	4	3	3	2	2	2	2	2	2	1	2	2	2	1	1	1	1	0	1	1	1	0	6	2	24
2	1	0	0	0	0	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	2	2	0	2	1	24
3	1	1	1	1	2	3	3	3	3	3	3	3	4	5	6	6	6	6	6	5	5	4	4	3	1	6	4	24
4	4	3	3	4	4	4	4	4	5	4	5	6	6	7	7	8	7	7	6	7	7	6	6	5	3	8	5	24
5	5	4	5	4	4	5	5	6	7	6	7	7	7	7	7	7	6	6	5	5	5	5	5	6	4	7	6	24
6	6	6	7	7	7	6	6	6	7	9	7	7	9	10	7	5	2	1	1	1	0	0	0	0	0	10	5	24
7	0	0	1	1	1	1	1	2	1	6	9	14	12	7	6	4	3	3	4	4	4	3	4	4	0	14	4	24
8	3	3	2	1	1	1	0	0	0	0	1	1	1	1	1	0	1	1	1	1	1	1	1	1	0	3	1	24
9	1	1	2	1	2	2	3	4	4	3	4	3	1	1	1	1	2	2	3	2	3	4	5	5	1	5	3	24
10	5	5	5	6	6	6	6	7	7	7	8	7	6	5	5	3	2	2	2	2	2	2	2	2	2	8	5	24
11	2	2	3	4	4	4	5	5	4	4	4	4	4	4	3	3	4	3	3	3	3	3	3	3	2	5	3	24
12	3	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2	3	2	24
13	2	2	2	2	2	2	2	3	3	4	4	3	2	2	2	2	2	1	1	1	2	2	2	2	1	4	2	24
14	2	3	3	3	3	3	3	3	3	2	3	3	3	2	2	2	2	2	2	2	2	2	2	2	2	3	2	24
15	2	2	2	2	2	2	2	2	3	4	8	7	10	11	15	13	10	7	6	5	5	5	4	2	2	15	6	24
16	3	3	3	3	3	4	4	4	3	4	4	8	12	10	8	3	5	6	1	1	1	1	1	1	1	12	4	24
17	2	2	2	3	3	3	3	3	3	2	2	1	1	1	0	0	1	1	1	1	1	1	1	1	0	3	2	24
18	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	2	2	2	2	3	3	2	1	3	1	24
19	2	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	2	2	2	2	2	2	2	1	2	1	24
20	3	3	2	3	3	3	3	3	3	2	2	2	2	2	2	2	2	2	2	2	2	2	1	1	1	3	2	24
21	1	2	2	2	2	2	2	2	2	2	2	2	3	3	4	3	3	4	4	5	5	5	4	1	5	5	3	24
22	4	4	4	4	5	6	6	6	6	6	7	9	12	11	8	5	5	6	5	4	3	4	3	3	3	12	6	24
23	3	2	2	2	3	2	2	2	1	2	1	2	2	2	2	2	2	3	3	3	2	4	5	1	5	2	24	
24	3	3	3	4	4	4	4	4	5	4	4	4	3	3	2	2	1	2	2	1	1	2	2	1	1	5	3	24
25	1	1	1	1	1	1	1	2	2	1	2	1	1	1	1	2	2	2	3	3	3	2	2	2	1	3	2	24
26	9	9	3	2	4	5	5	5	3	C	C	1	1	1	1	1	1	1	1	1	2	2	2	2	1	9	3	24
27	3	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2	3	2	24
28	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2	3	3	3	3	2	3	2	24
29	3	4	4	3	3	3	3	3	3	3	3	2	2	2	2	2	3	3	2	3	3	3	3	3	2	4	3	24
30	3	2	3	3	2	1	2	2	3	3	3	3	4	3	3	3	3	2	2	2	2	2	2	2	1	4	2	24
HOURLY MAX	9	9	7	7	7	6	6	7	7	9	9	14	12	11	15	13	10	7	6	7	7	6	6	6				
HOURLY AVG	3	3	3	3	3	3	3	3	3	3	4	4	4	4	4	3	3	3	3	3	3	3	3	3				

STATUS FLAG CODES

C	- MONTHLY CALIBRATION	Q	- QUALITY ASSURANCE
C1	- REPEAT CALIBRATION	R	- RECOVERY
Y	- MAINTENANCE	X	- MACHINE MALFUNCTION
S	- DAILY ZERO/SPAN CHECK	G	- OUT FOR REPAIR
S1	- REPEAT ZERO/SPAN CHECK	P	- POWER FAILURE

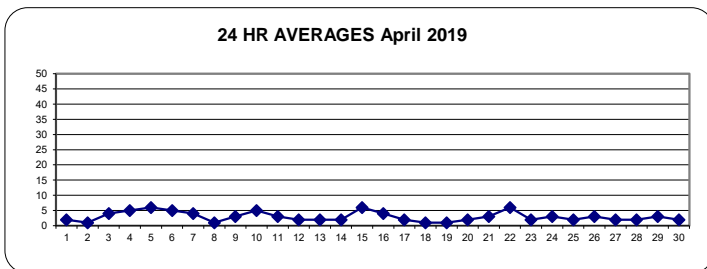
OBJECTIVE LIMIT:

ALBERTA ENVIRONMENT:	1-HR	80	µg/m ³	24-HR	29	µg/m ³
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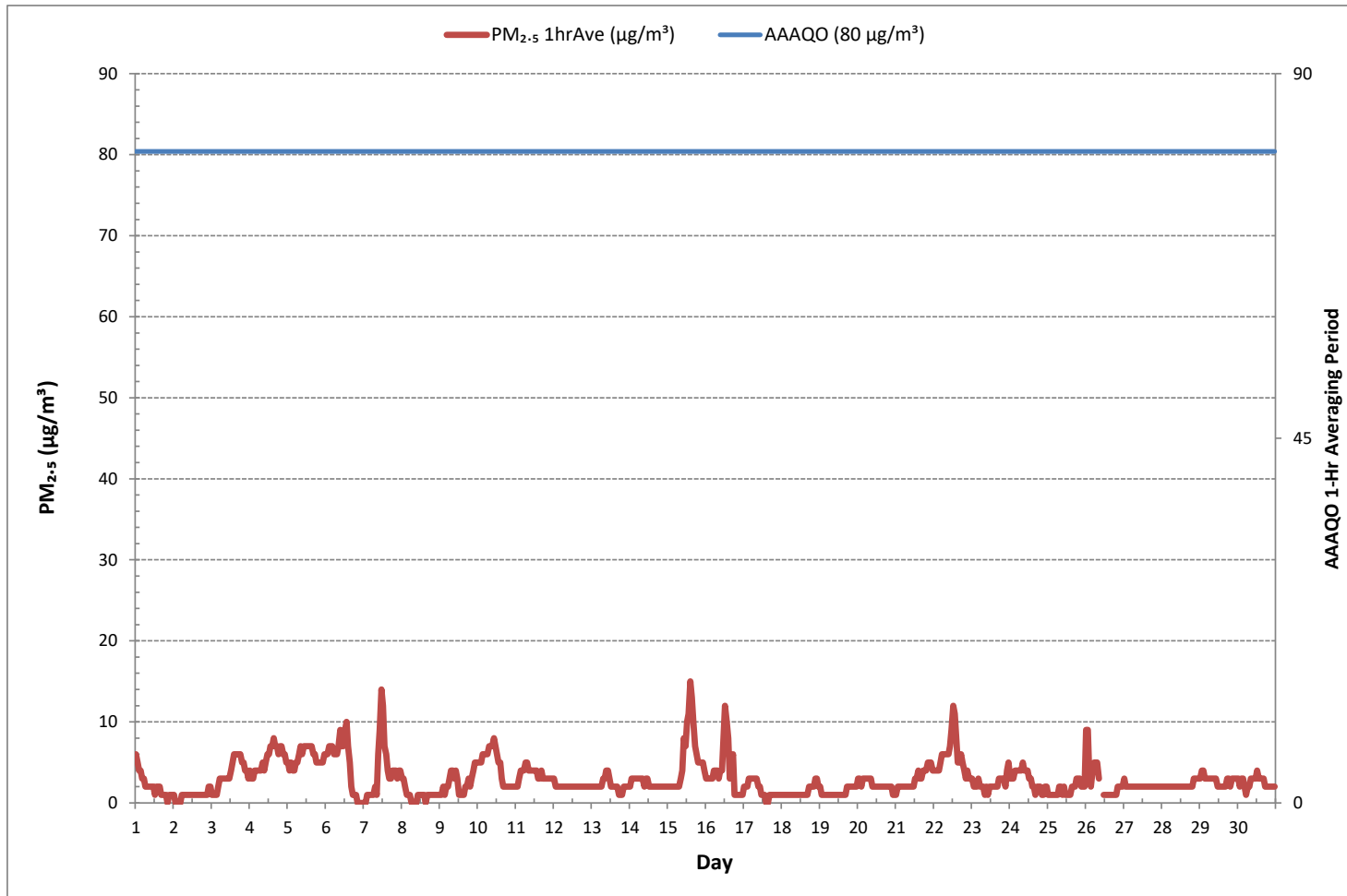
MONTHLY SUMMARY

NUMBER OF 1-HR EXCEEDANCES:	0				
NUMBER OF 24-HR EXCEEDANCES:	0				
NUMBER OF NON-ZERO READINGS:	700				
MINIMUM 1-HR AVERAGE:	0 µg/m ³ @ HOUR	20	ON DAY	1	
MAXIMUM 1-HR AVERAGE:	15 µg/m ³ @ HOUR	14	ON DAY	15	
MAXIMUM 24-HR AVERAGE:	6 µg/m ³		ON DAY	5	
MONTHLY CALIBRATION TIME:	2	hrs	OPERATIONAL TIME:	720	hrs
STANDARD DEVIATION:	2		AMD OPERATION UPTIME:	100.0	%
			MONTHLY AVERAGE:	3	µg/m ³

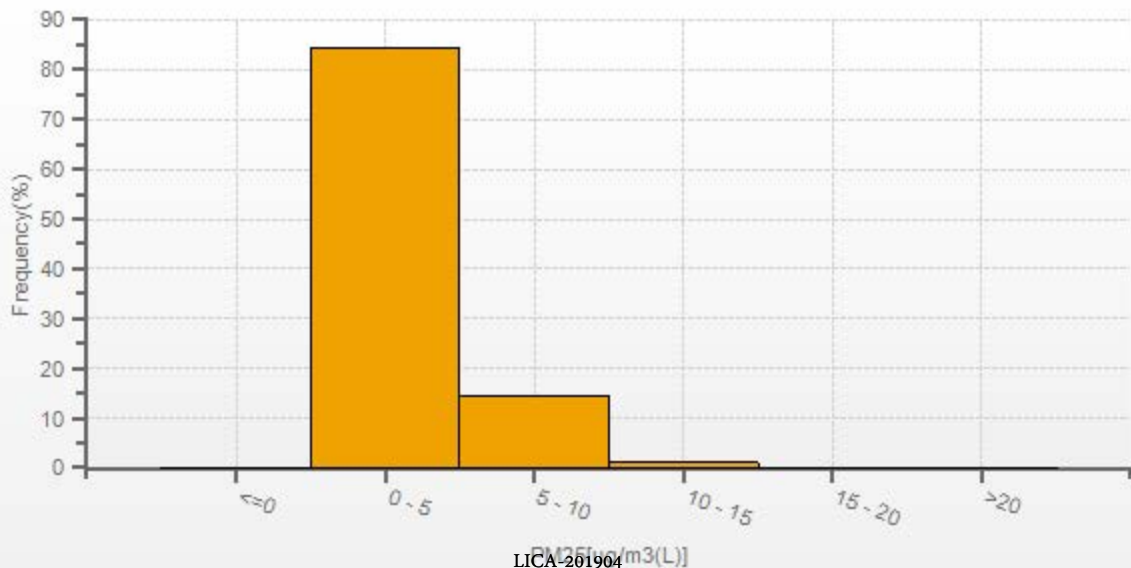
24 HR AVERAGES April 2019



PARTICULATE MATTER < 2.5 MICRONS Hourly Averages (PM_{2.5} µg/m³)



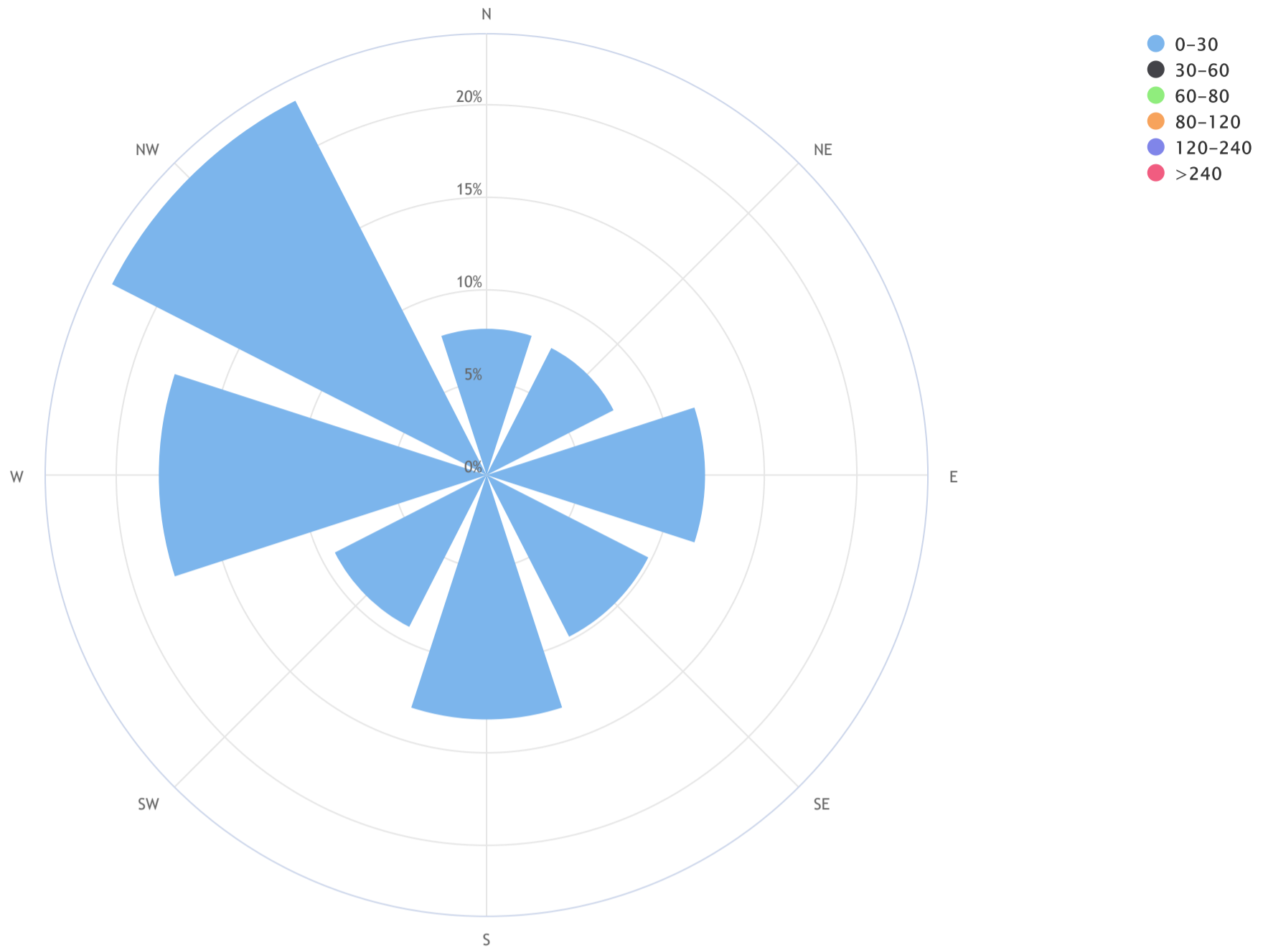
PM25[ug/m3(L)] Histogram: LICA ST. LINA Monthly: 19/04 1 Hr.



LICA-201904
Page 223 of 350

Lakeland Industry & Community Association_St. Lina Continuous Monitoring Station_PM2.5 (µg/m³)_19/04

Pollutant Rose_Wind Frequency (Blowing From)_ CALM Avg = N/A, CALM % = 0.0%



Direction	0-30	30-60	60-80	80-120	120-240	>240	TOTAL
N	7.9	0.0	0.0	0.0	0.0	0.0	7.9
NE	7.7	0.0	0.0	0.0	0.0	0.0	7.7
E	11.8	0.0	0.0	0.0	0.0	0.0	11.8
SE	9.8	0.0	0.0	0.0	0.0	0.0	9.8
S	13.2	0.0	0.0	0.0	0.0	0.0	13.2
SW	9.2	0.0	0.0	0.0	0.0	0.0	9.2
W	17.7	0.0	0.0	0.0	0.0	0.0	17.7
NW	22.7	0.0	0.0	0.0	0.0	0.0	22.7
Summary	100.0	0.0	0.0	0.0	0.0	0.0	100.0
CALM	0.0	0.0	0.0	0.0	0.0	0.0	0.0



WIND SPEED Hourly Averages (WS kph)

HR START (MST)	0:00	1:00	2:00	3:00	4:00	5:00	6:00	7:00	8:00	9:00	10:00	11:00	12:00	13:00	14:00	15:00	16:00	17:00	18:00	19:00	20:00	21:00	22:00	23:00	DAILY MIN.	DAILY MAX.	24-HR AVG.	RDGS.
HR END (MST)	0:59	1:59	2:59	3:59	4:59	5:59	6:59	7:59	8:59	9:59	10:59	11:59	12:59	13:59	14:59	15:59	16:59	17:59	18:59	19:59	20:59	21:59	22:59	23:59				
DAY 1	8.9	11.7	10.8	11.0	12.4	11.6	11.5	13.7	14.0	17.1	18.9	16.4	20.4	23.1	24.6	22.4	21.9	21.4	14.3	14.1	13.5	8.1	7.1	7.3	7.1	24.6	13.4	24
2	9.9	14.1	14.7	10.3	12.4	14.9	14.0	12.4	12.8	17.1	19.8	19.4	19.6	18.3	13.8	14.2	11.5	8.3	6.0	6.1	6.7	5.5	4.8	10.4	4.8	19.8	10.4	24
3	13.2	14.5	15.5	17.1	16.7	21.7	22.8	26.3	24.6	20.5	18.7	18.4	19.2	18.6	18.7	16.5	14.1	15.9	14.3	10.1	12.0	13.4	16.2	14.7	10.1	26.3	16.8	24
4	15.8	15.0	15.4	15.4	12.6	11.2	9.5	10.4	12.1	15.2	7.9	8.3	9.8	9.4	10.6	10.1	9.0	8.6	6.7	8.6	9.0	8.0	5.8	5.7	5.7	15.8	9.3	24
5	7.0	8.3	7.1	7.7	7.4	7.4	7.9	8.5	10.2	10.0	9.6	11.3	14.4	14.8	14.9	15.1	15.0	15.2	14.9	15.5	16.8	16.6	15.5	15.1	7.0	16.8	11.6	24
6	15.8	17.4	17.8	16.8	15.2	15.8	15.9	15.8	16.3	18.6	19.5	19.8	19.6	16.9	14.6	16.7	15.8	14.1	11.1	8.3	6.0	6.6	2.8	4.8	2.8	19.8	13.5	24
7	5.8	7.0	7.6	8.9	6.8	3.1	2.0	5.2	4.7	2.6	4.8	5.3	4.6	4.8	6.8	7.9	0.9	6.9	6.1	8.2	7.8	9.1	9.6	12.5	0.9	12.5	4.1	24
8	12.0	11.9	11.9	11.0	11.9	12.2	13.0	13.2	11.6	14.3	15.2	15.9	15.4	17.7	14.7	14.3	11.9	10.7	11.0	9.9	6.4	5.3	6.3	5.4	5.3	17.7	10.9	24
9	5.3	7.9	1.2	5.5	3.8	9.2	8.4	6.1	7.0	6.7	7.0	4.6	7.4	7.2	8.4	10.7	15.3	14.9	14.4	14.1	13.8	15.5	17.4	15.2	1.2	17.4	7.5	24
10	14.0	14.7	13.3	13.7	13.8	13.0	14.7	13.5	11.5	12.5	10.1	11.7	11.0	14.5	8.7	10.6	13.2	17.8	15.1	18.3	9.5	4.6	9.8	11.3	4.6	18.3	12.0	24
11	11.8	12.8	12.7	12.5	14.1	13.2	13.8	16.5	14.1	14.2	14.8	13.6	15.0	16.1	17.0	16.7	14.8	14.3	16.4	12.4	13.4	12.8	12.2	12.1	11.8	17.0	13.8	24
12	11.0	9.4	11.6	10.7	11.4	12.7	11.8	11.0	12.6	11.2	11.0	14.4	15.4	15.5	15.7	15.8	16.5	11.7	10.7	6.5	5.8	7.6	9.9	10.8	5.8	16.5	11.4	24
13	11.9	11.8	11.5	11.2	11.9	11.1	10.1	12.6	11.6	11.1	13.3	15.3	15.1	14.0	9.4	13.4	12.0	12.3	7.6	7.2	8.7	9.6	9.6	10.3	7.2	15.3	9.8	24
14	11.3	9.6	7.2	8.7	7.8	6.9	8.8	7.6	5.4	4.9	10.4	7.7	10.0	10.0	10.4	9.6	8.1	4.7	5.2	10.1	6.9	13.1	12.1	12.3	4.7	13.1	4.5	24
15	12.4	12.4	12.7	12.2	11.3	13.1	11.9	10.4	10.4	12.1	11.7	10.4	11.7	13.0	14.7	17.0	15.2	13.1	12.9	9.2	8.9	8.4	7.7	8.0	7.7	17.0	11.1	24
16	8.9	9.2	8.0	7.3	7.2	5.8	5.8	4.9	5.7	8.0	9.1	11.9	12.2	14.1	15.9	17.5	18.3	14.7	15.6	10.4	10.9	11.0	12.1	11.2	4.9	18.3	7.8	24
17	12.2	12.9	12.9	13.0	11.3	12.6	3.4	3.2	4.4	3.8	5.9	9.3	14.1	23.8	18.4	14.3	20.4	8.5	18.0	14.1	12.3	10.9	10.5	12.3	3.2	23.8	8.3	24
18	9.3	12.0	11.1	12.1	12.5	12.3	10.4	9.6	11.0	14.9	16.7	17.2	20.7	22.9	23.7	22.7	20.7	18.3	12.9	8.2	5.4	4.3	0.6	4.8	0.6	23.7	12.1	24
19	5.2	10.2	11.5	14.1	16.2	9.0	10.1	13.8	17.4	15.6	16.2	18.9	17.4	17.7	18.2	15.9	17.1	16.4	12.6	7.7	7.5	8.9	9.2	9.5	5.2	18.9	12.3	24
20	10.0	9.5	10.3	11.3	11.7	11.7	13.5	13.7	19.2	18.4	16.6	20.9	19.2	20.3	17.9	15.3	9.0	13.6	9.4	7.7	9.3	10.7	8.8	7.3	7.3	20.9	12.4	24
21	7.1	9.6	11.4	11.5	12.3	13.6	11.8	11.5	9.3	10.6	14.6	10.2	12.7	15.6	14.0	15.2	11.1	9.0	4.4	5.8	6.1	9.6	11.9	13.2	4.4	15.6	8.5	24
22	13.1	12.8	11.9	10.5	11.5	11.8	11.4	10.6	9.7	9.8	11.2	14.3	14.1	18.3	16.8	13.5	11.8	16.0	14.6	14.4	15.4	10.6	9.5	7.9	7.9	18.3	7.8	24
23	11.1	5.4	8.0	12.3	15.6	16.5	19.8	18.9	22.2	23.8	23.5	22.9	21.8	20.6	21.0	19.7	20.7	18.2	16.1	11.4	9.1	10.4	8.8	10.7	5.4	23.8	15.3	24
24	11.3	11.3	9.4	11.0	10.7	11.1	10.7	13.3	15.7	21.3	24.3	24.7	25.2	24.0	22.6	26.1	25.6	22.0	25.3	22.5	21.6	19.8	14.1	15.0	9.4	26.1	17.9	24
25	15.7	14.4	12.8	11.1	11.0	12.1	12.5	14.1	16.6	18.9	20.8	20.7	20.5	18.7	17.2	18.2	16.4	13.5	12.5	8.4	5.9	6.8	7.7	6.1	5.9	20.8	13.3	24
26	4.5	6.4	7.7	7.3	8.4	5.9	8.4	8.1	7.7	9.8	8.8	10.8	11.2	13.0	10.3	10.9	8.8	10.2	8.7	10.0	12.1	14.7	18.3	16.7	4.5	18.3	6.7	24
27	18.9	17.4	17.4	17.0	14.1	14.8	15.9	17.3	18.4	20.3	19.3	23.4	23.5	21.0	21.3	19.3	17.1	16.4	13.7	9.5	9.8	7.9	8.6	8.1	7.9	23.5	15.8	24
28	8.3	8.7	7.0	6.8	6.9	5.8	2.5	2.3	3.5	4.3	6.5	7.6	7.8	6.4	6.9	8.2	6.6	5.8	5.7	6.0	9.4	8.7	8.2	6.6	2.3	9.4	3.8	24
29	6.9	4.2	10.6	9.5	7.8	7.1	8.9	10.3	10.3	11.0	10.1	12.2	8.8	11.1	11.0	13.2	6.5	8.6	11.9	9.6	8.1	7.3	7.5	3.7	3.7	13.2	7.9	24
30	6.0	7.9	8.1	7.9	16.5	14.2	16.5	13.0	10.5	10.6	12.1	13.1	15.3	13.1	14.0	10.4	9.3	9.1	8.9	7.0	4.2	5.2	6.2	6.5	4.2	16.5	7.5	24
HOURLY MAX	18.9	17.4	17.8	17.1	16.7	21.7	22.8	26.3	24.6	23.8	24.3	24.7	25.2	24.0	24.6	26.1	25.6	22.0	25.3	22.5	21.6	19.8	18.3	16.7				

STATUS FLAG CODES

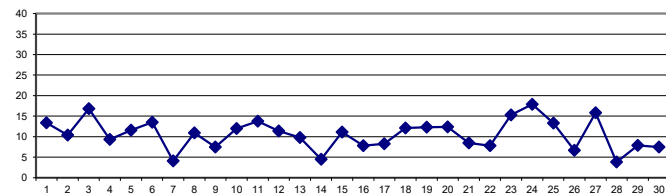
C	- MONTHLY CALIBRATION	Q	- QUALITY ASSURANCE
C1	- REPEAT CALIBRATION	R	- RECOVERY
Y	- MAINTENANCE	X	- MACHINE MALFUNCTION
S	- DAILY ZERO/SPAN CHECK	G	- OUT FOR REPAIR
S1	- REPEAT ZERO/SPAN CHECK	P	- POWER FAILURE

LAST CALIBRATION:	May 25, 2017
DECLINATION:	MAGNETIC DECLINATION 19 DEGREE EAST

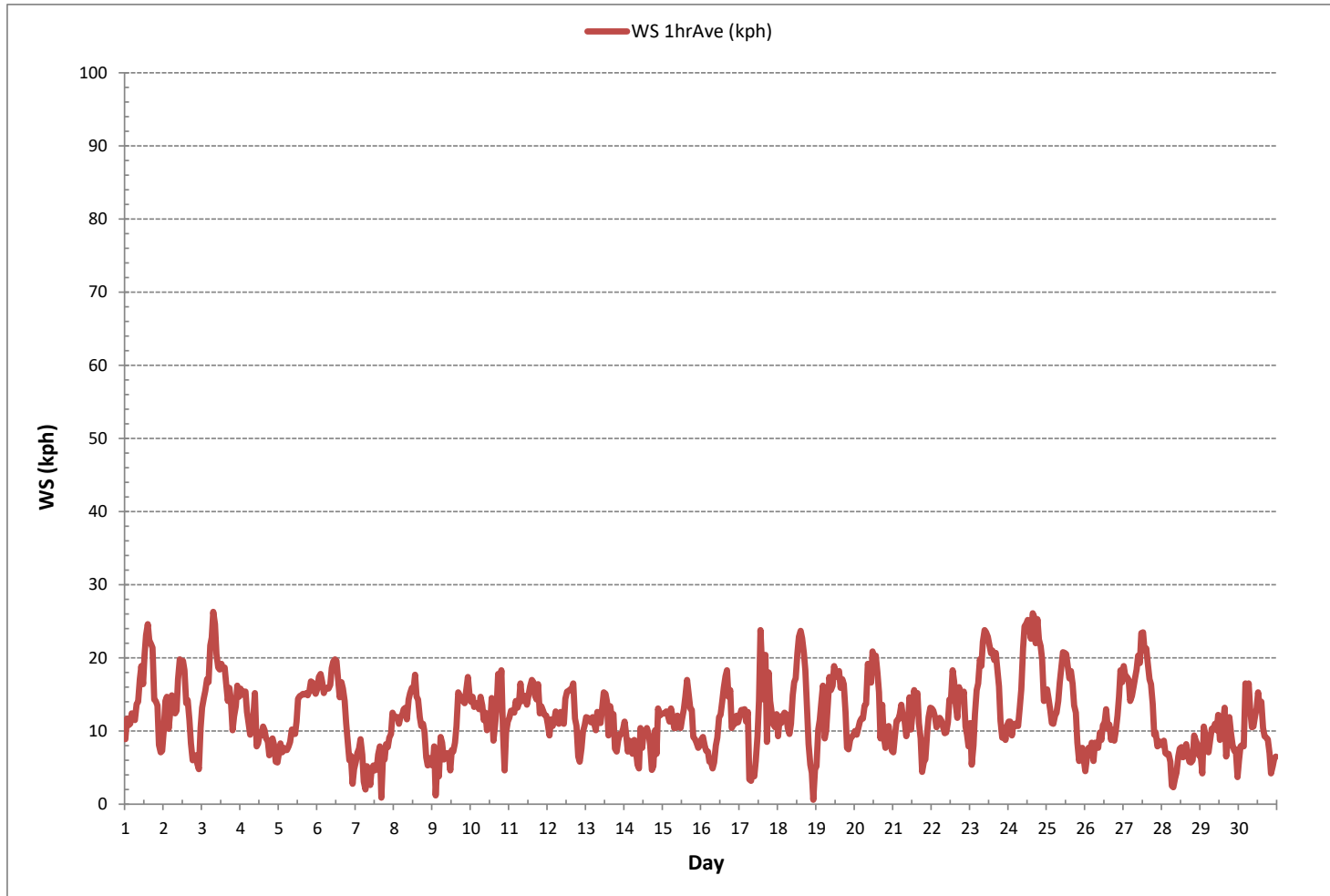
MONTHLY SUMMARY

NUMBER OF NON-ZERO READINGS:	720
MINIMUM 1-HR AVERAGE:	0.6 kph @ HOUR 22 ON DAY 18
MAXIMUM 1-HR AVERAGE:	26.3 kph @ HOUR 7 ON DAY 3
MAXIMUM 24-HR AVERAGE:	17.9 kph ON DAY 24
MONTHLY CALIBRATION TIME:	0 hrs
OPERATIONAL TIME:	720 hrs
AMT OPERATION UPTIME:	100.0 %
STANDARD DEVIATION:	4.7
MONTHLY AVERAGE:	2.3 kph

24 HR AVERAGES April 2019

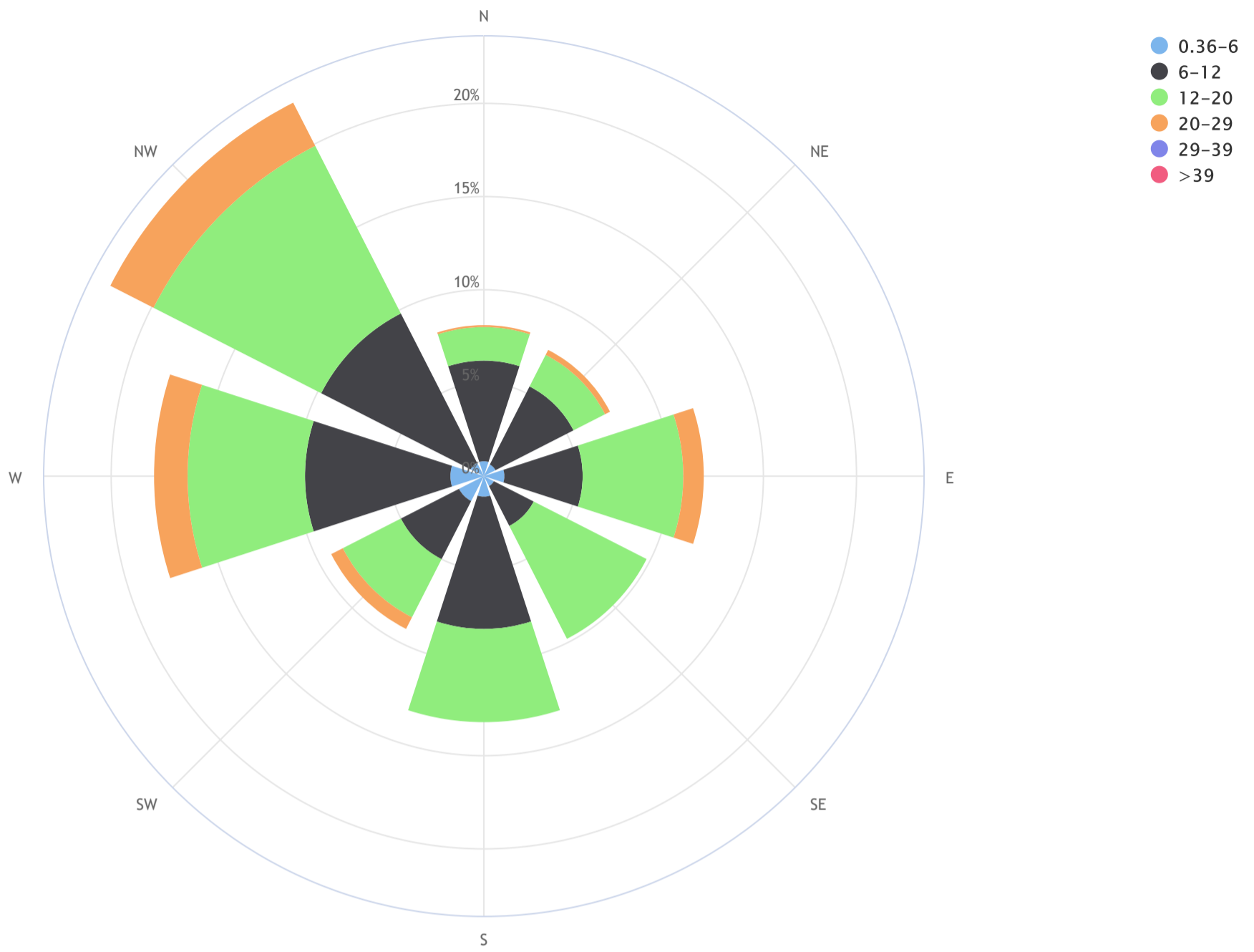


WIND SPEED Hourly Averages (WS kph)



Lakeland Industry & Community Association_St. Lina Continuous Monitoring Station_19/04

Wind Rose_Wind Frequency (Blowing From)_CALM Avg = N/A_CALM % = 0.0%



Direction	0.36-6	6-12	12-20	20-29	29-39	>39	TOTAL
N	0.8	5.4	1.8	0.1	0.0	0.0	8.2
NE	0.7	4.7	1.9	0.3	0.0	0.0	7.6
E	1.1	4.2	5.4	1.1	0.0	0.0	11.8
SE	0.6	2.4	6.8	0.0	0.0	0.0	9.7
S	1.1	7.1	5.0	0.0	0.0	0.0	13.2
SW	1.5	3.5	3.5	0.7	0.0	0.0	9.2
W	1.8	7.8	6.3	1.8	0.0	0.0	17.7
NW	0.8	9.0	10.1	2.6	0.0	0.0	22.6
Summary	8.5	44.0	40.8	6.7	0.0	0.0	100.0
CALM	0.0	0.0	0.0	0.0	0.0	0.0	0.0



LAKELAND INDUSTRY & COMMUNITY ASSOCIATION
St. Lina Continuous Monitoring Station - April 2019

WIND DIRECTION Hourly Averages (WD)

HR START (MST)	0:00	1:00	2:00	3:00	4:00	5:00	6:00	7:00	8:00	9:00	10:00	11:00	12:00	13:00	14:00	15:00	16:00	17:00	18:00	19:00	20:00	21:00	22:00	23:00	24-HOUR AVG	24-HR		
HR END (MST)	0:59	1:59	2:59	3:59	4:59	5:59	6:59	7:59	8:59	9:59	10:59	11:59	12:59	13:59	14:59	15:59	16:59	17:59	18:59	19:59	20:59	21:59	22:59	23:59	QUADRANT	RDGS.		
DAY																												
1	WNW	WNW	WNW	WNW	WNW	WNW	W	WNW	NW	NW	WNW	WNW	WNW	WNW	WNW	NW	NNW	NNW	NNE	NNE	N	N	NW	WNW		NW	24	
2	WNW	NW	NW	NW	NNW	NNW	NNW	NNW	NNW	NNW	NNW	NNW	NW	NNW	NNW	NW	NW	NW	NNW	NE	ENE	ESE	ESE	ENE	ENE		NNW	24
3	E	E	E	E	E	ENE	ENE	E	E	E	E	E	E	ESE	ESE	ESE	ESE	ESE	ESE	E	ENE	ENE	ENE	ENE		E	24	
4	ENE	ENE	NE	ENE	NE	NE	NE	NE	ENE	NE	NNE	N	N	NNE	NNE	NE	NE	ENE	ENE	E	ESE	ESE	ESE	ESE		NE	24	
5	ESE	ESE	E	E	ESE	E	ESE	ESE	SE	SSE	SE	SE	SE	SE	SE	SE	ESE	SE	ESE	ESE	ESE	ESE	SE	SE		ESE	24	
6	ESE	E	E	E	E	E	E	E	E	ESE	ESE	ESE	ESE	SE	SE	ESE	ESE	ESE	ESE	E	ENE	ENE	ENE	ENE	WSW		ESE	24
7	W	WSW	W	SW	SW	SW	W	WSW	SW	SSW	SW	W	N	N	NNE	N	W	S	SSW	SSW	SSW	SSW	SW	WSW		WSW	24	
8	W	WSW	W	W	W	W	W	W	W	WNW	WNW	WNW	WNW	WNW	WNW	NW	NW	WNW	WSW	WSW	WSW	SW	SW	SW		W	24	
9	SW	SSW	ESE	S	SSE	ENE	ENE	ENE	E	E	SE	ESE	SSW	S	SE	SSE	SE	SE	SE	SSE	SSE	SSE	S	S		SSE	24	
10	S	S	S	S	SSE	SSE	SSE	SSE	S	S	S	S	S	S	SSW	SSW	S	SSE	S	SSW	SW	SSE	SSE	SSE		S	24	
11	SE	SSE	SSE	SSE	SSE	SSE	SE	SE	SE	SE	SE	SE	SSE	SE	SE	SE	SE	SE	SE	SE	SE	SE	SE	SE		SE	24	
12	SSE	SSE	S	S	S	S	S	S	SSW	SSW	SSW	SSW	SSW	SSW	SSW	SSW	SSW	SSW	SSW	S	SSE	SSW	SSW	S	S		S	24
13	S	S	S	S	S	SSW	S	S	SSW	SSW	SSW	SSW	SSW	S	S	SSW	SSW	S	S	SE	SE	ESE	ESE				S	24
14	ESE	ESE	E	ENE	NE	ENE	NE	NE	NE	WNW	WNW	NW	NW	NNW	NNW	NNW	NNE	E	E	ENE	NW	NNW	WNW	WNW		N	24	
15	W	W	WNW	WNW	NW	NW	NW	NW	NW	NNW	NNW	NNW	NNW	NNW	NNW	NW	NNW	NW	NW	NW	WNW	WNW	W	WSW		NW	24	
16	W	WNW	WNW	NNW	NE	E	S	SSW	SW	SW	SW	SW	SW	SW	SW	WSW	WSW	SW	SSW	SSW	S	S	S	S		SW	24	
17	SSE	S	SSE	S	S	SSW	NW	SW	SW	W	WNW	WNW	W	WSW	WNW	NW	WNW	SW	W	W	WSW	WSW	W	W		WSW	24	
18	W	W	W	WSW	WNW	W	WSW	SW	SW	SW	WSW	SW	SW	SW	SW	WSW	WSW	WSW	WSW	W	WSW	S	E	ESE		WSW	24	
19	N	NNW	NNW	NNW	NNW	WNW	WNW	WNW	NW	WNW	WNW	W	WNW	NW	NW	WNW	NW	NW	WNW	W	W	W	WNW	WNW		NW	24	
20	WNW	W	W	W	W	W	W	WNW	W	W	WNW	W	WNW	W	NW	WNW	NNW	NNW	NNW	WNW	NW	NW	NW	WNW		WNW	24	
21	W	W	W	W	W	W	WNW	W	WNW	W	W	WSW	WSW	WSW	WSW	SW	SSW	SSW	SSW	S	S	S	SSE			WSW	24	
22	SSE	SE	SE	SE	SSE	SSE	SSE	SSE	S	S	S	S	SSW	SSW	SSW	SW	SW	WSW	WNW	WNW	WNW	WNW	WNW	WSW		SSW	24	
23	W	W	SW	W	W	W	W	WNW	WNW	W	WNW	W	WNW	WNW	WNW	NW	NW	NW	NW	NNW	NNW	NW	WNW	WNW		WNW	24	
24	W	WNW	W	W	WNW	W	WNW	NW	WNW	WNW	WNW	W	WNW	W	W	NW	WNW	NW	WNW	WNW	WNW	NW	WNW	WNW		WNW	24	
25	WNW	WNW	WNW	WNW	WNW	W	WNW	WNW	WNW	WNW	NW	NW	NW	NW	NW	WNW	WNW	NW	NW	WNW	NW	N	N	N		WNW	24	
26	W	WNW	NW	WNW	NNW	NNW	NW	NW	N	N	N	NNW	NNW	N	NNW	N	N	NNE	NE	ENE	ENE	ENE	E	ENE		N	24	
27	E	E	E	E	E	ENE	ENE	ENE	ENE	ENE	ENE	ENE	ENE	ENE	NE	NE	NE	ENE	ENE	NE	NE	NNE	NE	NE		ENE	24	
28	NE	ENE	NE	NE	NE	NE	N	WNW	NW	NNW	NNW	NNW	NNW	NNE	NNE	N	NW	NNW	NNE	ENE	E	ESE	S	WSW		NNE	24	
29	WSW	W	WNW	NW	NW	WNW	NW	N	NNW	NNW	NNW	NW	NNW	NW	NNW	NW	NNW	NNW	NNW	W	WSW	NNW	NNE	NNE		NW	24	
30	SW	SW	SW	NNW	N	N	NNE	NNE	N	N	N	NNW	NNW	NNW	NNW	NNW	NNW	NW	N	NNE	NE	E	E	ENE		N	24	

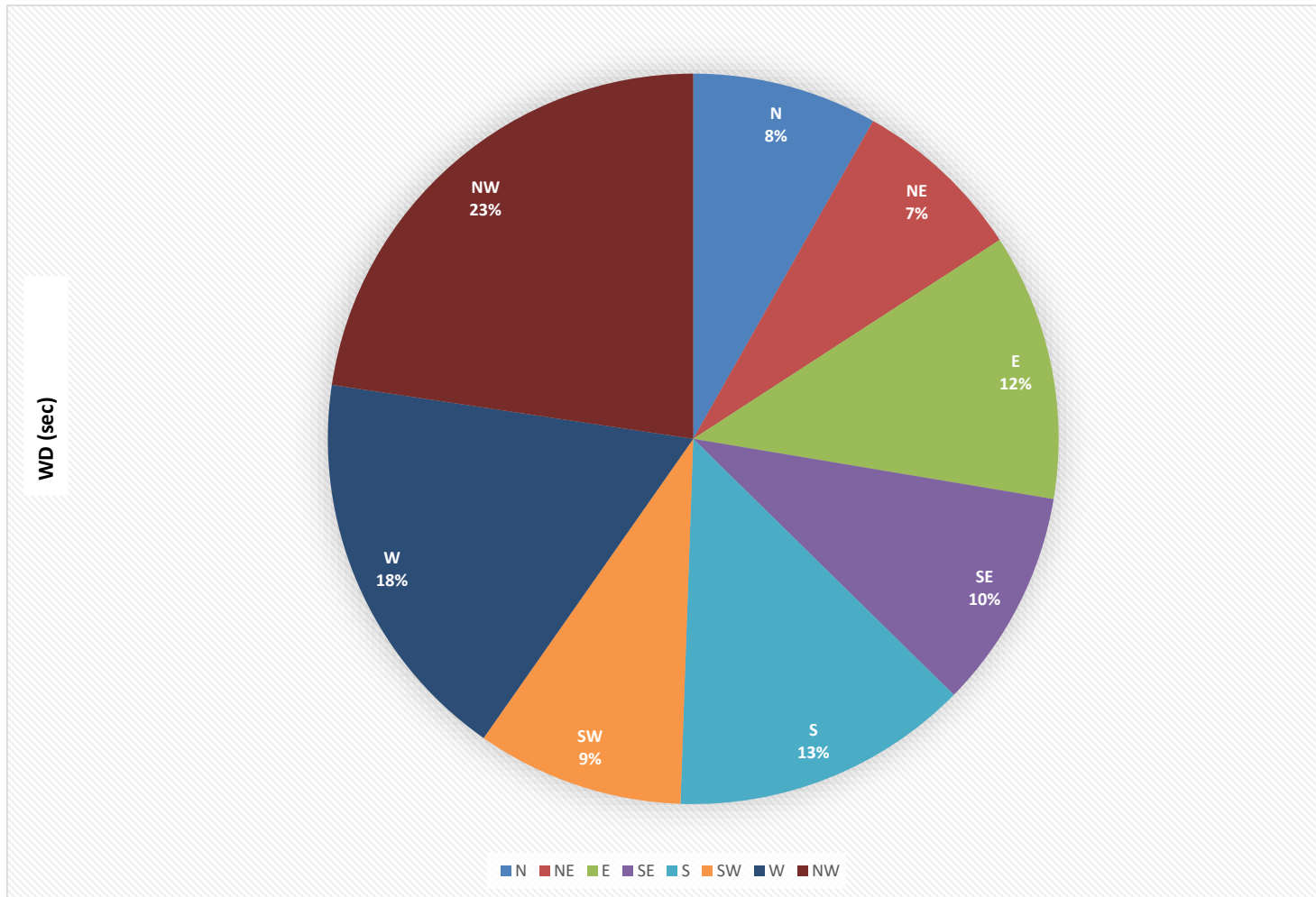
STATUS FLAG CODES

C	- MONTHLY CALIBRATION	Q	- QUALITY ASSURANCE
C1	- REPEAT CALIBRATION	R	- RECOVERY
Y	- MAINTENANCE	X	- MACHINE MALFUNCTION
S	- DAILY ZERO/SPAN CHECK	G	- OUT FOR REPAIR
S1	- REPEAT ZERO/SPAN CHECK	P	- POWER FAILURE

LAST CALIBRATION:	May 25, 2017
DECLINATION:	MAGNETIC DECLINATION 19 DEGREE EAST

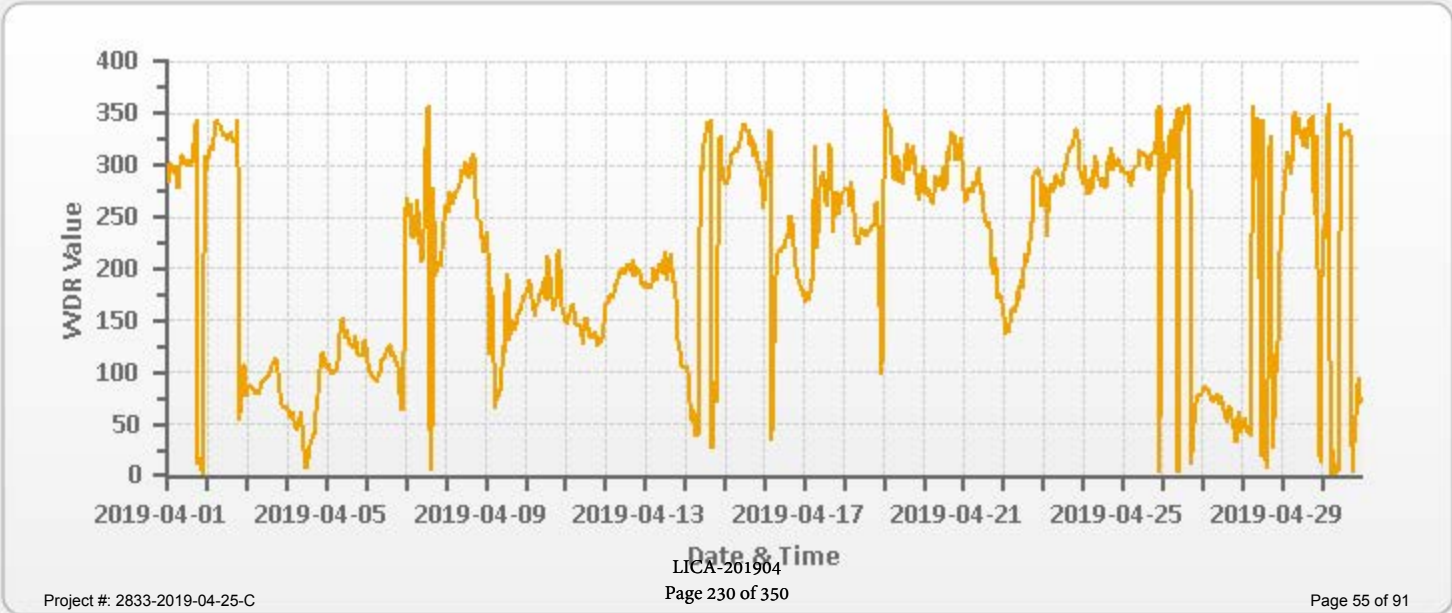
MONTHLY CALIBRATION TIME:	0	hrs	OPERATIONAL TIME:	720	hrs
STANDARD DEVIATION:	99		AMD OPERATION UPTIME:	100.0	%
			MONTHLY AVERAGE:	283	(W)

WIND DIRECTION Hourly Averages (WD)



WDR[degwdr] Station: LICA ST. LINA Monthly: 19/04 Type: AVG 1 Hr. [1 Hr.]

— WDR[degwdr]





LAKELAND INDUSTRY & COMMUNITY ASSOCIATION
St. Lina Continuous Monitoring Station - April 2019

STANDARD DEVIATION WIND DIRECTION Hourly Averages (STDWD deg)

HR START (MST)	0:00	1:00	2:00	3:00	4:00	5:00	6:00	7:00	8:00	9:00	10:00	11:00	12:00	13:00	14:00	15:00	16:00	17:00	18:00	19:00	20:00	21:00	22:00	23:00	RDGS.
HR END (MST)	0:59	1:59	2:59	3:59	4:59	5:59	6:59	7:59	8:59	9:59	10:59	11:59	12:59	13:59	14:59	15:59	16:59	17:59	18:59	19:59	20:59	21:59	22:59	23:59	
DAY																									
1	6	6	5	4	5	5	4	8	8	9	8	8	8	8	7	10	17	12	25	14	7	19	16	14	24
2	8	6	6	9	5	8	7	7	11	11	9	10	10	11	12	14	15	22	17	10	8	22	15	8	24
3	6	5	4	5	4	5	6	6	6	6	8	8	7	7	9	8	12	8	3	10	12	4	3	3	24
4	3	5	3	4	6	5	9	8	9	10	21	13	14	15	9	10	12	14	12	14	11	8	9	8	24
5	7	8	7	8	6	6	6	18	12	18	13	17	12	12	11	8	7	8	5	4	3	4	7	5	24
6	9	4	5	3	5	4	5	3	6	7	6	6	7	7	9	7	5	4	4	6	11	7	28	8	24
7	10	7	13	7	8	47	63	23	15	20	19	34	41	24	21	17	76	18	7	7	3	6	7	8	24
8	7	3	3	7	9	5	4	6	10	15	12	16	16	13	19	16	11	14	8	7	14	4	14	12	24
9	19	12	66	28	56	8	13	15	10	11	20	46	28	31	24	23	13	7	4	8	7	5	4	3	24
10	3	6	6	8	5	6	7	4	6	10	22	17	22	20	27	12	29	8	16	6	19	30	10	9	24
11	5	5	4	6	4	12	5	6	10	12	9	14	16	13	11	8	11	6	6	4	4	5	4	7	24
12	6	7	4	2	4	2	3	4	7	13	19	18	17	17	17	12	13	10	8	10	21	19	4	6	24
13	3	2	3	4	5	6	7	6	7	12	13	20	16	23	31	14	24	17	17	8	4	8	4	4	24
14	4	7	12	12	7	15	10	10	21	41	11	29	24	23	28	39	28	34	19	15	48	9	11	5	24
15	4	4	6	5	5	4	6	6	8	9	12	22	21	15	21	12	11	14	6	8	5	8	9	7	24
16	8	16	7	14	20	22	18	11	17	16	24	22	15	13	18	15	10	8	9	8	5	5	6	24	24
17	10	7	4	9	11	13	32	32	21	38	33	26	26	10	33	14	18	15	7	15	6	12	6	3	24
18	6	7	10	5	11	4	10	4	8	8	7	7	9	11	10	8	11	9	6	14	17	27	66	9	24
19	37	12	8	6	10	14	8	11	8	17	16	15	18	18	11	20	11	8	11	7	11	4	7	15	24
20	7	15	9	4	5	4	4	12	9	14	17	14	20	17	18	26	22	20	14	12	4	13	8	10	24
21	15	9	3	4	3	3	5	6	17	18	20	32	25	16	24	16	15	21	15	15	11	6	3	4	24
22	5	6	5	6	5	3	5	8	16	21	16	13	22	12	15	16	15	13	21	7	7	5	7	25	24
23	30	23	9	7	6	6	6	9	11	15	11	14	17	14	18	12	9	10	10	8	4	8	6	3	24
24	5	10	14	8	9	4	9	11	13	13	15	14	13	15	14	9	12	7	12	6	7	5	9	6	24
25	4	6	5	6	7	5	5	11	10	9	14	16	11	16	23	17	24	16	12	11	21	5	5	13	24
26	20	8	6	6	17	37	6	11	22	22	26	29	22	23	26	19	28	17	10	7	7	7	3	3	24
27	4	4	4	5	5	5	4	4	6	8	9	10	12	10	10	11	12	9	8	7	9	8	7	4	24
28	5	7	6	4	4	9	22	42	35	48	42	32	36	49	31	36	25	26	43	41	8	11	24	22	24
29	15	38	17	10	15	6	8	18	17	16	25	18	26	24	24	22	33	24	16	14	8	26	11	13	24
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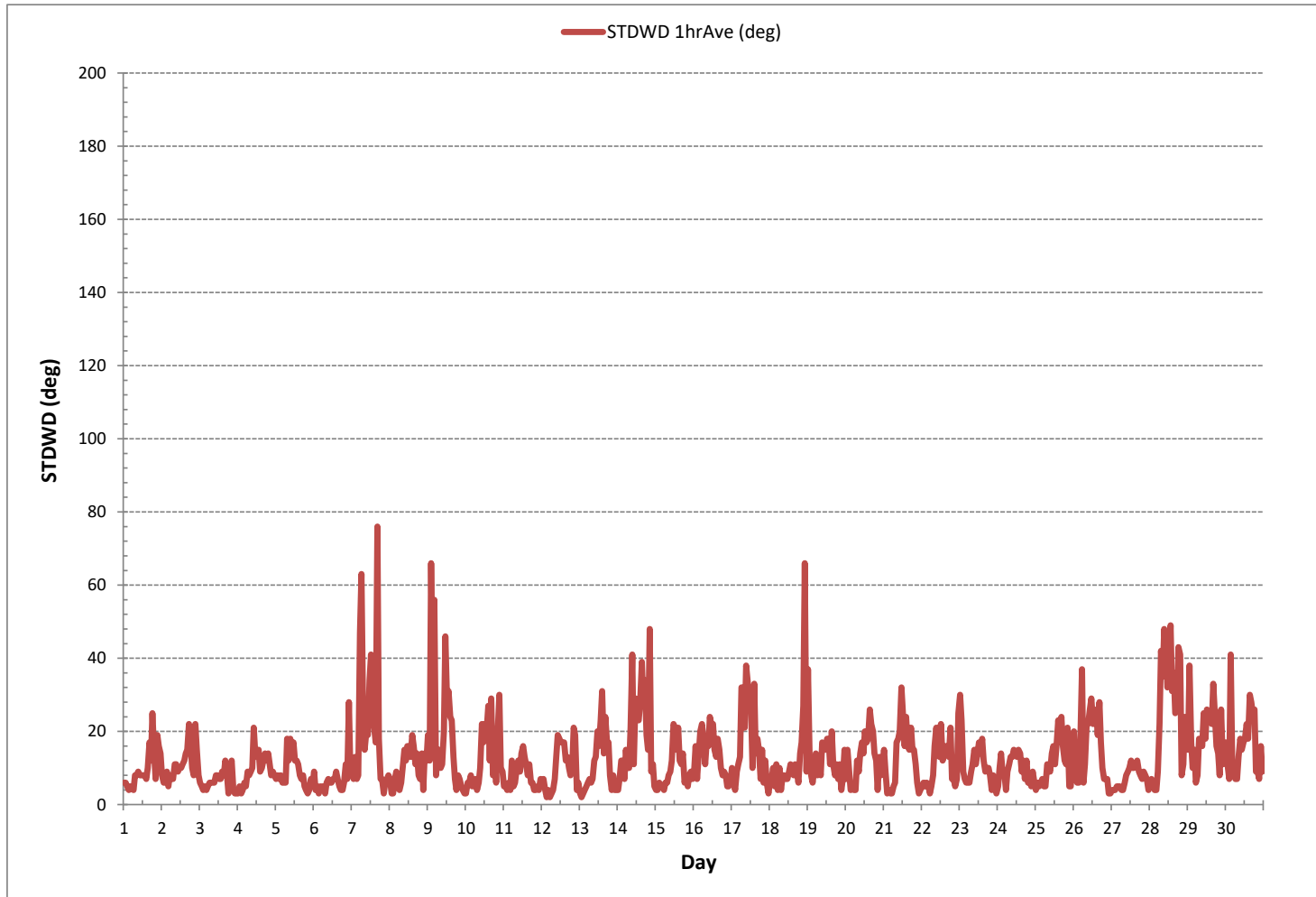
STATUS FLAG CODES

C	- MONTHLY CALIBRATION	Q	- QUALITY ASSURANCE
C1	- REPEAT CALIBRATION	R	- RECOVERY
Y	- MAINTENANCE	X	- MACHINE MALFUNCTION
S	- DAILY ZERO/SPAN CHECK	G	- OUT FOR REPAIR
S1	- REPEAT ZERO/SPAN CHECK	P	- POWER FAILURE

LAST CALIBRATION: May 25, 2017

CALIBRATION TIME: 0 hrs OPERATIONAL TIME: 720 hrs

STANDARD DEVIATION WIND DIRECTION Hourly Averages (STDWD deg)





RELATIVE HUMIDITY Hourly Averages (RH %)

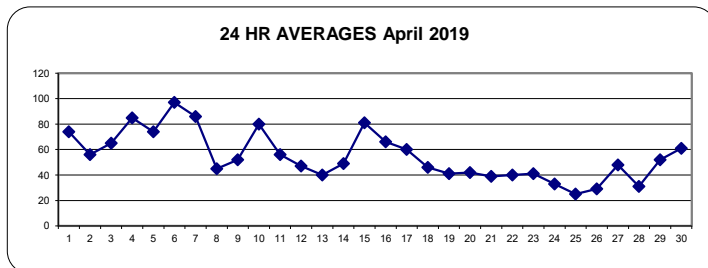
HR START (MST)	0:00	1:00	2:00	3:00	4:00	5:00	6:00	7:00	8:00	9:00	10:00	11:00	12:00	13:00	14:00	15:00	16:00	17:00	18:00	19:00	20:00	21:00	22:00	23:00	DAILY	DAILY	24-HR	RDGS.				
HR END (MST)	0:59	1:59	2:59	3:59	4:59	5:59	6:59	7:59	8:59	9:59	10:59	11:59	12:59	13:59	14:59	15:59	16:59	17:59	18:59	19:59	20:59	21:59	22:59	23:59	MIN.	MAX.	AVG.					
DAY																																
1	83	84	87	88	86	86	84	74	68	69	82	90	71	56	45	43	38	43	72	85	85	84	81	82	38	90	74	24				
2	85	81	84	80	82	86	80	77	70	62	56	49	43	40	38	34	30	28	31	38	44	45	45	48	28	86	56	24				
3	45	46	47	57	63	64	66	66	64	62	59	58	59	59	60	61	61	66	72	78	81	86	83	86	45	86	65	24				
4	90	91	91	89	90	91	90	88	85	80	76	89	90	87	85	83	80	79	77	83	86	80	78	79	76	91	85	24				
5	82	82	84	86	88	89	90	89	79	71	70	70	65	60	59	58	59	61	65	68	69	70	72	89	58	90	74	24				
6	86	88	88	92	93	95	97	98	100	100	100	100	100	100	100	100	100	100	100	100	100	100	100	100	86	100	97	24				
7	100	100	100	100	100	100	100	100	100	100	95	85	75	66	57	52	55	66	70	85	88	90	88	81	52	100	86	24				
8	73	78	74	67	69	63	59	55	47	39	36	33	29	26	25	26	26	24	29	35	37	39	41	43	24	78	45	24				
9	46	48	49	49	58	85	88	80	69	61	57	42	27	24	24	22	26	29	36	47	58	68	77	81	22	88	52	24				
10	84	88	90	91	94	95	92	87	86	82	74	67	69	71	63	54	59	73	79	77	85	89	85	81	54	95	80	24				
11	74	65	69	73	75	75	73	69	67	63	58	53	46	38	35	35	36	37	40	43	51	62	71	76	29	85	49	24				
12	60	63	64	67	71	72	69	65	54	47	41	34	31	29	29	28	30	30	31	35	39	42	42	43	28	72	47	24				
13	44	44	48	52	55	59	56	54	52	49	45	37	32	29	25	25	25	26	28	31	32	32	36	40	25	59	40	24				
14	43	44	47	53	57	58	59	56	48	44	44	36	31	30	29	32	37	40	43	51	62	71	76	85	29	85	49	24				
15	93	97	98	98	99	100	100	98	95	86	76	67	64	58	56	55	58	63	69	75	77	80	85	90	55	100	81	24				
16	86	82	81	85	91	94	95	87	76	71	59	58	55	48	40	31	31	36	46	52	57	65	72	76	31	95	66	24				
17	77	72	81	83	81	76	73	62	56	44	35	28	25	24	29	45	67	86	65	63	65	67	65	67	24	86	60	24				
18	65	63	62	66	63	68	68	67	62	50	42	38	31	27	25	26	27	30	35	38	39	40	39	41	25	68	46	24				
19	42	52	66	74	76	75	74	61	49	45	39	32	27	25	24	22	20	21	20	22	25	26	28	28	20	76	41	24				
20	32	38	42	45	49	53	50	46	41	37	31	28	27	27	36	33	40	42	40	44	48	54	65	68	27	68	42	24				
21	74	79	70	66	65	64	56	50	41	28	22	20	21	22	22	23	22	22	23	26	28	31	35	34	20	79	39	24				
22	32	35	41	46	50	55	54	51	48	46	41	34	21	15	15	16	17	19	26	43	54	61	68	75	15	75	40	24				
23	79	80	86	76	70	62	55	45	36	34	30	26	23	21	20	21	19	20	23	27	31	33	36	39	19	86	41	24				
24	40	41	47	50	45	47	44	35	29	23	19	19	21	22	22	27	25	27	26	31	35	38	39	39	19	50	33	24				
25	37	39	38	40	42	39	35	30	27	22	17	15	13	13	14	16	17	16	17	20	22	21	22	21	13	42	25	24				
26	28	26	25	25	36	44	43	41	31	22	20	20	18	18	17	18	18	20	22	26	30	38	47	55	17	55	29	24				
27	60	61	62	66	69	71	72	68	61	52	45	39	36	36	33	31	29	32	34	36	37	41	42	39	29	72	48	24				
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30	67	67	72	73	84	92	97	93	85	78	61	56	54	47	39	37	36	36	39	43	44	51	50	53	36	97	61	24				
HOURLY MAX	100	100	100	100	100	100	100	100	100	100	100	100	100	100	100	100	100	100	100	100	100	100	100	100								
HOURLY AVG	63	64	66	68	71	73	71	67	61	55	50	46	42	39	37	37	38	41	44	49	53	56	58	61								

STATUS FLAG CODES

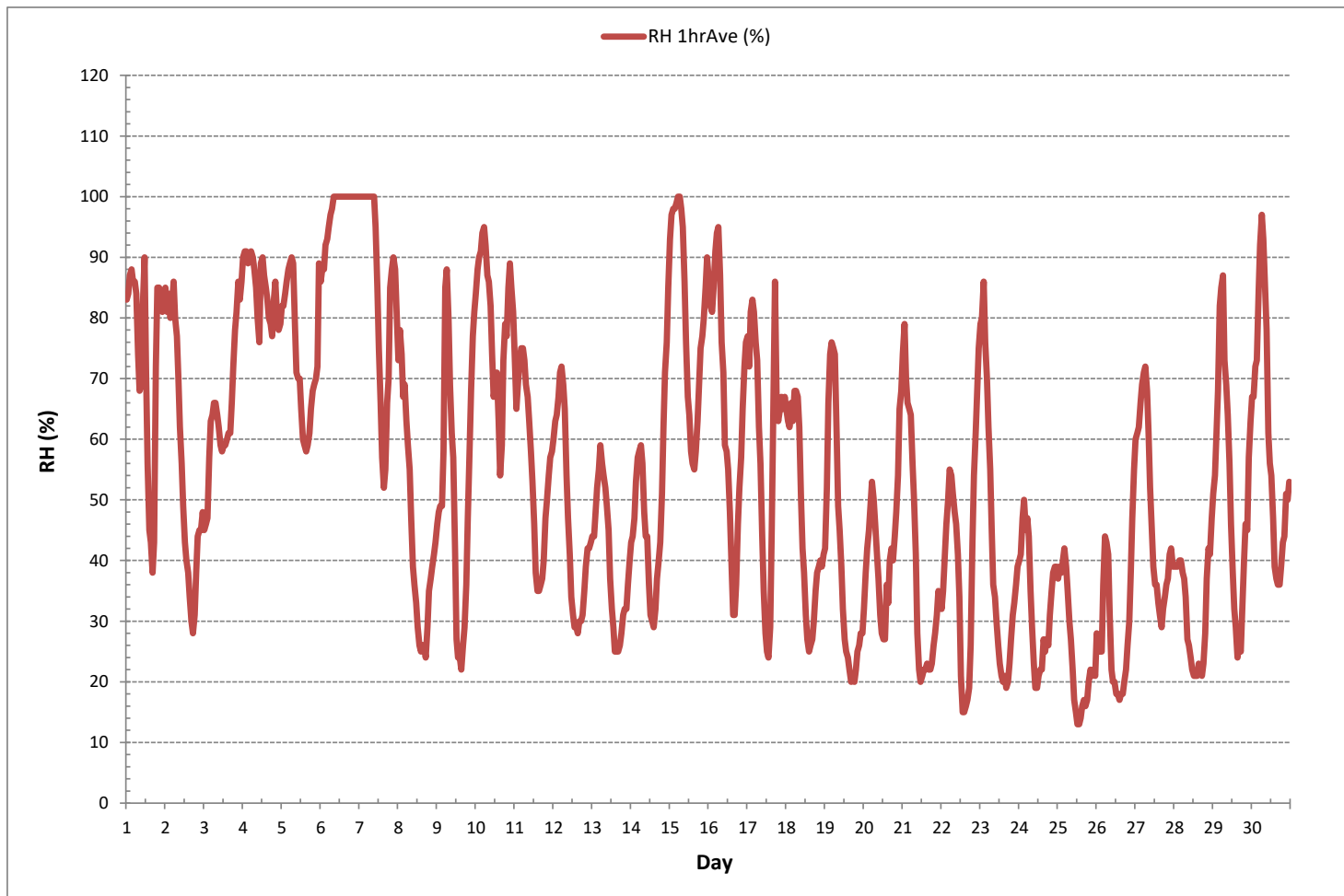
C	- MONTHLY CALIBRATION	Q	- QUALITY ASSURANCE
C1	- REPEAT CALIBRATION	R	- RECOVERY
Y	- MAINTENANCE	X	- MACHINE MALFUNCTION
S	- DAILY ZERO/SPAN CHECK	G	- OUT FOR REPAIR
S1	- REPEAT ZERO/SPAN CHECK	P	- POWER FAILURE

MONTHLY SUMMARY

MINIMUM 1-HR AVERAGE:	13	%	@ HOUR	12	ON DAY	25
MAXIMUM 1-HR AVERAGE:	100	%	@ HOUR	8	ON DAY	6
MAXIMUM 24-HR AVERAGE:	97	%			ON DAY	6
OPERATIONAL TIME:						720 hrs
AMD OPERATION UPTIME:						100.0 %
STANDARD DEVIATION:	24					MONTHLY AVERAGE: 55 %



RELATIVE HUMIDITY Hourly Averages (RH %)





BAROMETRIC PRESSURE Hourly Averages (BP mbar)

HR START (MST)	0:00	1:00	2:00	3:00	4:00	5:00	6:00	7:00	8:00	9:00	10:00	11:00	12:00	13:00	14:00	15:00	16:00	17:00	18:00	19:00	20:00	21:00	22:00	23:00	DAILY	DAILY	24-HR	RDGS.		
HR END (MST)	0:59	1:59	2:59	3:59	4:59	5:59	6:59	7:59	8:59	9:59	10:59	11:59	12:59	13:59	14:59	15:59	16:59	17:59	18:59	19:59	20:59	21:59	22:59	23:59	MIN.	MAX.	AVG.			
DAY 1	934	933	933	933	932	932	932	932	932	932	932	931	931	930	930	929	929	929	929	929	930	929	929	929	929	929	934	931	24	
2	929	929	929	928	928	928	928	928	928	928	928	928	928	928	928	928	928	928	928	928	927	926	926	925	925	926	925	929	928	24
3	926	925	925	924	924	924	924	924	923	923	924	924	923	923	922	922	922	921	920	920	920	920	919	919	919	919	926	922	24	
4	919	919	920	920	920	921	922	923	924	924	926	927	927	927	927	928	928	928	928	928	928	928	929	929	929	919	929	925	24	
5	929	928	928	928	928	928	927	928	928	928	928	928	927	927	926	926	925	925	924	923	923	923	923	922	922	922	929	926	24	
6	921	920	919	919	918	918	917	917	916	916	915	915	915	915	914	914	914	914	914	914	915	915	915	915	915	914	921	916	24	
7	916	916	916	917	916	916	916	916	917	917	919	919	920	920	920	920	921	921	921	921	921	921	921	922	922	916	922	919	24	
8	922	922	923	923	924	924	925	926	927	927	928	928	929	929	929	930	930	930	930	930	929	928	928	928	928	922	930	927	24	
9	928	928	928	928	928	928	928	929	930	930	931	932	932	932	932	932	932	932	932	931	931	931	931	931	931	928	932	930	24	
10	931	931	930	930	930	930	930	930	930	930	930	931	931	931	930	931	931	931	930	930	930	930	930	930	930	930	931	930	24	
11	930	930	929	928	928	928	928	929	929	930	930	931	931	931	931	931	931	931	931	931	931	931	931	930	928	931	930	24		
12	930	930	929	929	929	929	929	929	930	930	930	930	929	929	929	928	928	927	926	925	924	923	923	922	922	922	930	928	24	
13	922	921	920	920	919	919	918	918	919	919	919	919	919	918	917	917	917	916	915	914	913	912	912	911	911	922	917	24		
14	910	910	909	909	908	908	908	908	909	910	910	910	911	911	911	911	912	912	912	912	913	913	913	913	908	913	910	24		
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16	921	922	922	922	922	922	923	924	925	925	926	926	926	926	926	926	926	925	925	924	924	924	923	923	921	926	924	24		
17	922	922	922	921	921	921	922	923	924	925	925	925	925	925	924	926	925	926	926	927	927	927	927	928	921	928	924	24		
18	928	929	929	929	929	929	929	930	930	931	931	931	930	930	929	928	927	926	925	924	923	922	921	920	920	920	931	928	24	
19	920	920	920	920	921	921	921	921	921	921	922	922	921	921	921	921	921	921	921	921	920	920	920	921	920	922	921	24		
20	921	922	921	922	922	923	924	925	925	926	926	927	927	927	928	929	929	929	929	929	929	930	930	930	921	930	926	24		
21	930	930	931	931	932	932	933	934	935	936	936	936	936	937	936	935	935	935	934	934	934	934	933	930	937	934	24			
22	933	932	931	930	930	929	929	929	929	929	928	928	927	927	925	924	923	923	922	921	921	920	920	920	920	920	933	926	24	
23	921	921	921	921	921	922	922	923	923	924	924	924	924	924	925	925	925	924	924	924	924	924	924	924	921	925	923	24		
24	924	925	925	925	925	926	926	927	927	927	928	928	928	928	929	929	929	930	930	931	931	931	932	924	932	928	24			
25	932	932	932	933	933	933	934	934	935	935	935	935	935	935	935	935	935	935	935	933	933	932	932	932	932	932	935	934	24	
26	932	932	932	932	932	931	931	932	933	933	934	934	933	933	933	933	932	932	931	931	931	931	931	931	931	931	934	932	24	
27	931	931	930	930	930	930	930	930	931	931	932	932	932	933	933	934	934	934	934	934	935	935	935	936	930	936	932	24		
28	936	936	936	936	936	937	938	939	939	939	940	940	939	939	939	939	939	939	940	939	938	938	938	937	936	940	938	24		
29	937	937	936	936	936	936	936	937	937	937	937	937	936	936	936	935	935	934	934	933	932	932	932	932	932	932	937	935	24	
30	932	931	930	930	931	931	931	932	932	933	933	933	933	933	933	933	933	933	933	932	931	931	930	930	930	930	933	932	24	
HOURLY MAX	937	937	936	936	936	937	938	939	939	939	940	940	939	939	939	939	939	939	940	939	938	938	938	937						
HOURLY AVG	926	926	926	926	926	926	926	926	927	927	927	928	927	927	927	927	927	927	927	926	926	926	926	926						

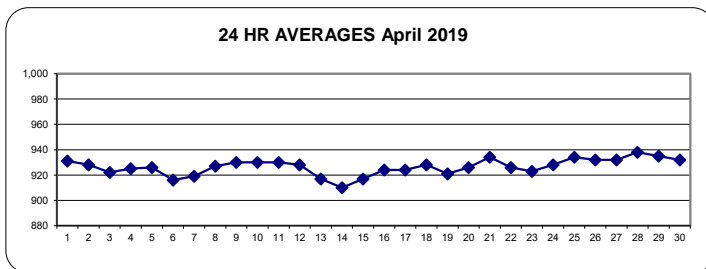
STATUS FLAG CODES

C	- MONTHLY CALIBRATION	Q	- QUALITY ASSURANCE
C1	- REPEAT CALIBRATION	R	- RECOVERY
Y	- MAINTENANCE	X	- MACHINE MALFUNCTION
S	- DAILY ZERO/SPAN CHECK	G	- OUT FOR REPAIR
S1	- REPEAT ZERO/SPAN CHECK	P	- POWER FAILURE

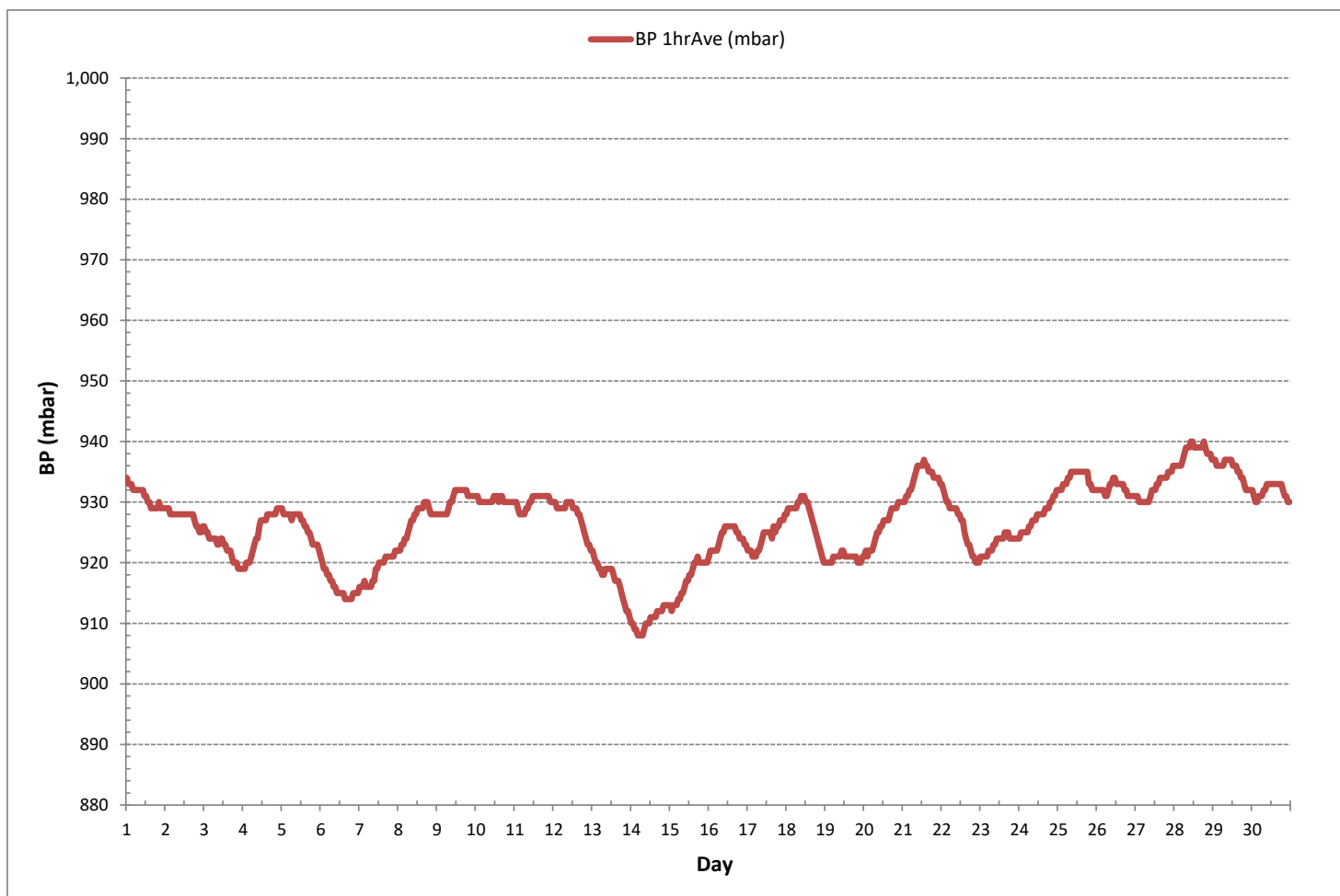
MONTHLY SUMMARY

MINIMUM 1-HR AVERAGE:	908	mbar	@ HOUR	4	ON DAY	14
MAXIMUM 1-HR AVERAGE:	940	mbar	@ HOUR	10	ON DAY	28
MAXIMUM 24-HR AVERAGE:	938	mbar			ON DAY	28
OPERATIONAL TIME:						720 hrs
AMD OPERATION UPTIME:						100.0 %
STANDARD DEVIATION:	7					
MONTHLY AVERAGE:						926 mbar

24 HR AVERAGES April 2019



BAROMETRIC PRESSURE Hourly Averages (BP mbar)





AMBIENT TEMPERATURE Hourly Averages (AmbTPX °C)

HR START (MST)	0:00	1:00	2:00	3:00	4:00	5:00	6:00	7:00	8:00	9:00	10:00	11:00	12:00	13:00	14:00	15:00	16:00	17:00	18:00	19:00	20:00	21:00	22:00	23:00	DAILY	DAILY	24-HR	RDGS.
HR END (MST)	0:59	1:59	2:59	3:59	4:59	5:59	6:59	7:59	8:59	9:59	10:59	11:59	12:59	13:59	14:59	15:59	16:59	17:59	18:59	19:59	20:59	21:59	22:59	23:59	MIN.	MAX.	AVG.	
DAY 1	1.7	1.6	1.0	0.6	0.1	-0.6	-0.8	0.3	1.7	2.7	1.7	1.6	3.3	5.2	6.0	5.7	5.9	4.7	1.8	0.5	-0.8	-1.5	-1.5	-1.9	-1.9	6.0	1.6	24
2	-2.0	-1.9	-2.5	-2.7	-2.9	-3.5	-3.9	-4.0	-3.4	-2.5	-2.0	-1.2	-0.1	0.6	1.5	2.4	2.9	2.7	1.5	0.0	-0.8	-1.1	-1.1	-1.6	-4.0	2.9	-1.1	24
3	-2.1	-2.6	-3.2	-3.9	-4.6	-5.4	-5.9	-6.0	-5.5	-4.5	-2.9	-1.6	-0.9	0.2	1.9	2.8	3.5	3.0	2.0	0.8	-0.1	-1.6	-2.6	-3.3	-6.0	3.5	-1.8	24
4	-3.7	-4.1	-4.6	-5.1	-5.4	-5.7	-5.6	-5.0	-3.8	-2.8	-1.8	-2.4	-2.5	-2.2	-1.8	-1.6	-1.3	-1.4	-1.7	-2.1	-2.9	-3.2	-3.2	-3.4	-5.7	-1.3	-3.2	24
5	-3.5	-3.8	-3.9	-4.0	-4.0	-4.0	-3.9	-3.2	-1.8	-0.1	0.2	0.7	2.2	3.7	4.3	4.6	4.7	4.5	3.8	3.1	2.8	2.6	2.4	1.1	-4.0	4.7	0.4	24
6	1.2	0.9	1.1	0.7	0.8	0.5	0.2	0.5	1.1	1.5	1.6	1.5	1.6	1.7	1.8	1.9	1.8	1.5	1.1	0.5	0.2	0.1	0.1	0.0	0.0	1.9	1.0	24
7	0.0	0.1	0.3	-0.1	-0.7	-1.3	-1.6	-0.5	-0.6	2.3	3.8	5.3	7.4	8.6	9.9	9.5	9.0	7.7	7.0	5.5	4.9	4.0	3.7	3.7	-1.6	9.9	3.7	24
8	3.8	2.9	2.9	3.1	2.1	2.3	2.9	4.5	6.8	8.8	10.3	11.3	12.2	12.7	13.1	13.0	12.7	12.7	11.8	9.4	8.4	8.1	7.3	6.5	2.1	13.1	7.9	24
9	5.6	4.8	4.3	4.5	2.6	-1.2	-0.4	2.2	4.6	6.2	8.3	11.7	13.2	13.6	14.3	14.4	13.7	12.6	10.6	8.6	7.3	6.2	4.9	4.1	-1.2	14.4	7.4	24
10	3.2	2.3	1.6	1.3	0.5	0.1	0.6	1.7	1.7	2.8	4.6	6.5	7.4	7.2	9.3	9.8	9.7	8.1	7.2	6.5	4.9	4.4	4.9	5.2	0.1	9.8	4.6	24
11	5.1	4.0	2.6	1.7	1.1	0.4	0.5	1.3	1.7	3.1	5.1	7.1	8.8	9.9	9.7	8.9	8.5	8.2	6.8	5.2	4.1	3.1	2.5	2.0	0.4	9.9	4.6	24
12	1.4	0.7	0.1	-0.5	-1.1	-1.5	-1.3	-0.4	2.1	4.4	6.3	7.5	8.3	9.0	9.3	9.0	8.9	8.4	8.1	6.6	5.3	4.4	3.4	2.4	-1.5	9.3	4.2	24
13	1.6	1.1	0.7	0.2	-0.2	-0.7	-0.2	1.7	3.9	6.5	8.9	10.9	11.2	11.3	11.5	11.7	12.2	11.8	10.9	9.6	8.7	8.3	7.3	6.7	-0.7	12.2	6.5	24
14	5.9	5.3	4.7	3.6	3.1	2.8	2.7	4.1	6.4	8.1	8.2	10.3	11.2	11.6	11.4	10.7	10.4	9.9	9.1	7.9	6.9	6.0	5.3	4.5	2.7	11.6	7.1	24
15	3.4	2.6	2.2	1.8	1.5	1.4	1.6	2.4	3.1	4.3	5.4	6.6	7.2	8.0	8.1	8.2	7.6	6.6	5.2	3.7	3.2	2.7	1.8	0.8	0.8	8.2	4.1	24
16	1.1	1.3	1.6	1.3	0.0	-1.0	-0.7	1.6	3.9	5.4	7.5	8.3	8.6	9.2	10.4	11.0	11.2	10.5	9.0	7.5	6.3	5.1	4.3	4.0	-1.0	11.2	5.3	24
17	3.8	4.1	2.8	2.4	2.6	2.7	3.3	5.5	7.1	9.6	11.7	12.7	13.1	13.9	12.2	10.2	7.1	6.5	7.5	6.2	5.6	5.3	5.3	4.7	2.4	13.9	6.9	24
18	4.3	4.1	3.8	2.7	3.0	1.9	2.4	3.9	6.0	8.2	9.4	10.4	12.0	13.4	14.3	14.4	14.9	14.8	13.5	12.7	12.4	11.9	11.9	11.3	1.9	14.9	9.1	24
19	11.0	9.5	8.1	7.6	7.2	6.8	6.9	8.1	9.2	10.2	11.2	12.3	13.2	13.4	13.1	13.1	12.9	11.9	11.9	10.8	9.1	8.2	7.6	7.2	6.8	13.4	10.0	24
20	6.1	4.8	4.1	3.5	2.5	1.6	2.8	4.7	6.6	7.8	8.7	9.3	9.6	10.3	8.6	8.7	8.5	8.6	8.8	7.4	5.9	4.7	4.1	3.6	1.6	10.3	6.3	24
21	2.7	1.3	1.1	0.6	0.3	0.0	1.4	3.3	5.8	8.2	9.3	10.2	11.2	11.7	12.3	12.2	12.3	11.7	10.6	9.9	8.9	7.7	7.2	0.0	0.0	12.3	7.2	24
22	7.1	6.3	5.1	4.3	3.4	3.1	4.4	6.4	7.9	9.3	11.5	13.4	16.6	17.4	18.5	18.1	18.2	18.5	17.2	14.1	12.6	11.0	9.8	8.6	3.1	18.5	11.0	24
23	7.5	7.6	6.7	7.3	7.6	7.8	8.4	9.4	10.6	11.4	12.3	13.2	13.9	14.6	15.0	15.1	14.9	14.5	13.6	11.7	9.9	8.9	7.9	6.7	6.7	15.1	10.7	24
24	6.0	5.5	4.2	3.4	3.8	3.3	4.3	6.5	8.1	9.4	10.2	10.4	9.7	9.8	9.6	9.1	8.8	7.5	6.9	5.6	4.7	3.8	3.1	2.5	2.5	10.4	6.5	24
25	2.4	1.8	1.2	0.4	-0.3	-0.4	1.0	3.2	4.5	5.6	6.5	7.3	7.4	8.1	8.4	8.3	8.3	8.6	8.0	6.5	5.4	4.9	4.4	4.0	-0.4	8.6	4.8	24
26	2.6	2.9	3.0	2.6	1.2	0.5	1.0	2.5	5.0	7.1	8.0	7.8	8.2	9.0	8.8	8.5	8.2	7.6	6.8	5.3	4.1	2.9	1.8	0.8	0.5	9.0	4.8	24
27	0.2	-0.2	-0.6	-1.3	-1.6	-1.9	-1.7	-1.1	0.1	2.1	3.8	4.4	4.9	5.4	5.5	5.4	5.1	4.2	3.5	2.4	1.2	-0.1	-0.9	-1.3	-1.9	5.5	1.6	24
28	-1.6	-2.2	-2.5	-2.7	-2.8	-2.2	-0.5	1.3	2.7	3.4	4.5	5.1	5.4	5.8	6.1	5.2	5.8	6.1	6.2	4.4	2.2	1.4	1.4	0.6	-2.8	6.2	2.2	24
29	0.2	-0.2	-0.9	-1.0	-1.2	-1.6	-1.3	0.5	1.1	2.1	2.6	2.9	4.0	4.8	5.2	6.0	5.3	5.8	4.6	3.5	2.4	2.4	0.9	0.4	-1.6	6.0	2.0	24
30	-0.2	-0.1	-0.6	-1.0	-2.8	-3.8	-5.1	-5.4	-4.5	-3.8	-2.7	-2.5	-2.4	-1.7	-0.8	-0.6	-0.4	-0.4	-1.2	-2.3	-3.2	-3.7	-4.1	-4.6	-5.4	-0.1	-2.4	24
HOURLY MAX	11.0	9.5	8.1	7.6	7.6	7.8	8.4	9.4	10.6	11.4	12.3	13.4	16.6	17.4	18.5	18.1	18.2	18.5	17.2	14.1	12.6	11.9	11.9	11.3				
HOURLY AVG	2.5	2.0	1.5	1.0	0.5	0.0	0.4	1.7	3.1	4.6	5.7	6.7	7.5	8.2	8.6	8.5	8.4	7.9	7.1	5.7	4.7	3.9	3.3	2.8				

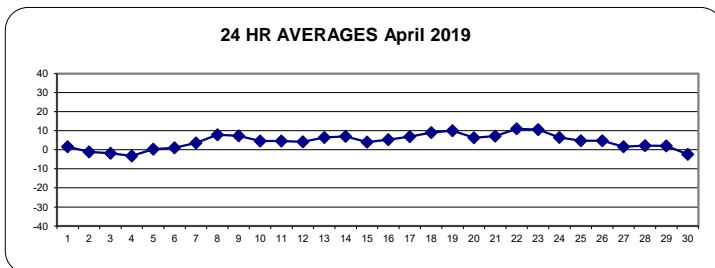
STATUS FLAG CODES

C	- MONTHLY CALIBRATION	Q	- QUALITY ASSURANCE
C1	- REPEAT CALIBRATION	R	- RECOVERY
Y	- MAINTENANCE	X	- MACHINE MALFUNCTION
S	- DAILY ZERO/SPAN CHECK	G	- OUT FOR REPAIR
S1	- REPEAT ZERO/SPAN CHECK	P	- POWER FAILURE

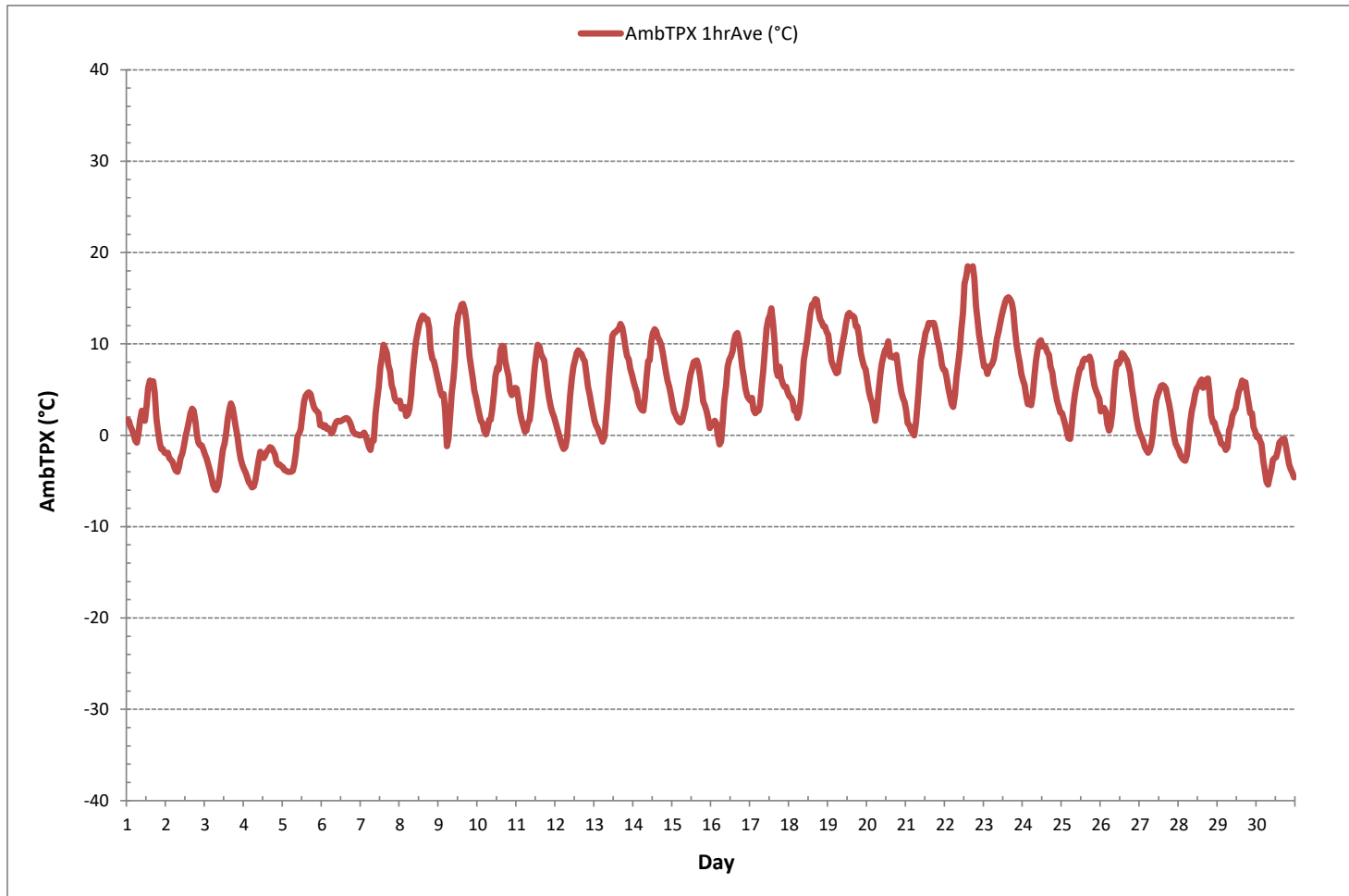
MONTHLY SUMMARY

MINIMUM 1-HR AVERAGE:	-6.0 °C	@ HOUR	7	ON DAY	3
MAXIMUM 1-HR AVERAGE:	18.5 °C	@ HOUR	14	ON DAY	22
MAXIMUM 24-HR AVERAGE:	11.0 °C			ON DAY	22
OPERATIONAL TIME:					720 hrs
AMD OPERATION UPTIME:					100.0 %
STANDARD DEVIATION:	5.0	MONTHLY AVERAGE:			4.4 °C

24 HR AVERAGES April 2019



AMBIENT TEMPERATURE Hourly Averages (AmbTPX °C)



PRECIPITATION Hourly TOTALS (mm)

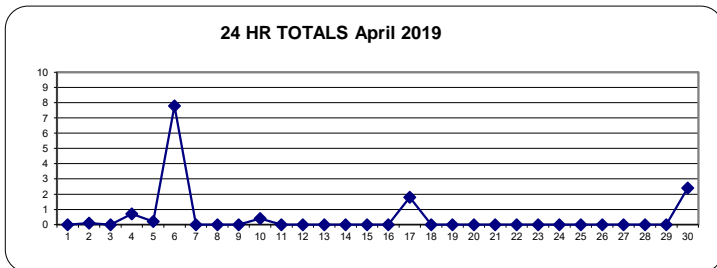
HR START (MST)	0:00	1:00	2:00	3:00	4:00	5:00	6:00	7:00	8:00	9:00	10:00	11:00	12:00	13:00	14:00	15:00	16:00	17:00	18:00	19:00	20:00	21:00	22:00	23:00	DAILY MIN.	DAILY MAX.	24-HR SUM	RDGS.	
HR END (MST)	0:59	1:59	2:59	3:59	4:59	5:59	6:59	7:59	8:59	9:59	10:59	11:59	12:59	13:59	14:59	15:59	16:59	17:59	18:59	19:59	20:59	21:59	22:59	23:59					
DAY 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	24	
2	0.0	0.0	0.0	0.0	0.0	0.1	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.1	0.1	24
3	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	24
4	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.5	0.1	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	0.5	0.7	24
5	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.2	0.0	0.2	0.2	24	
6	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.2	0.9	0.9	0.1	0.7	0.0	0.0	0.0	0.6	0.7	0.5	1.4	1.1	0.4	0.3	0.0	0.0	0.0	1.4	7.8	24	
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	24
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	24
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	24
10	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.1	0.3	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.3	0.4	24
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	24
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	24
13	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	24
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	24
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	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	24
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	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	24
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	0.2	0.2	1.4	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	1.4	1.8	24
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	24
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	24
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	24
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	24
22	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	24
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	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	24
24	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	24
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	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	24
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	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	24
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	24
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	24
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	24
30	0.0	0.0	0.0	0.0	0.0	0.2	0.9	0.2	1.1	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	1.1	2.4	24
HOURLY MAX	0.0	0.0	0.0	0.0	0.0	0.2	0.9	0.2	1.1	0.9	0.1	0.7	0.1	0.3	0.2	0.2	1.4	0.7	0.5	1.4	1.1	0.4	0.3	0.2					
HOURLY SUM	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.1	0.0	0.0	0.0	0.0	0.0	0.0	0.1	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0					

STATUS FLAG CODES

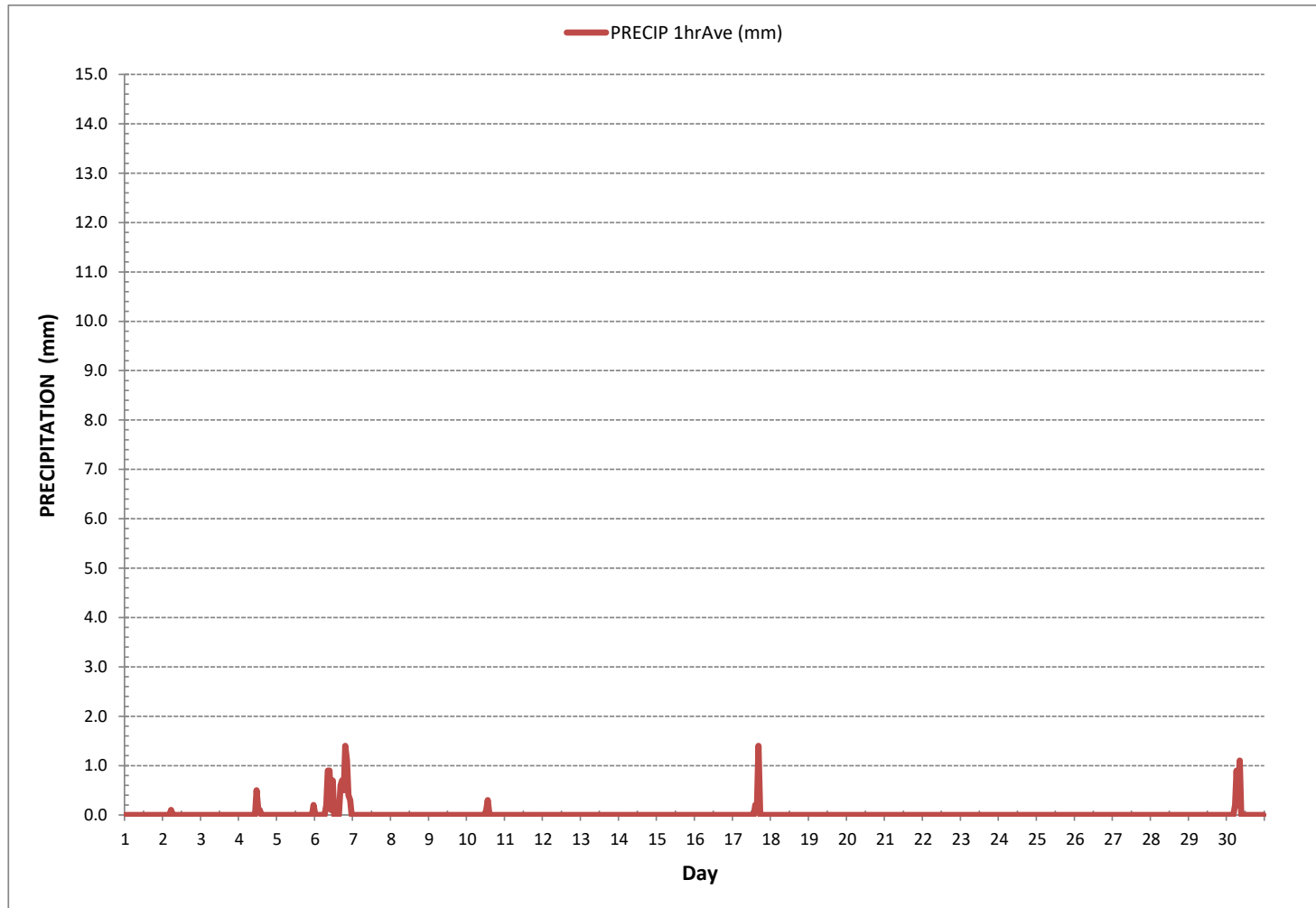
C	- MONTHLY CALIBRATION	Q	- QUALITY ASSURANCE
C1	- REPEAT CALIBRATION	R	- RECOVERY
Y	- MAINTENANCE	X	- MACHINE MALFUNCTION
S	- DAILY ZERO/SPAN CHECK	G	- OUT FOR REPAIR
S1	- REPEAT ZERO/SPAN CHECK	P	- POWER FAILURE

MONTHLY SUMMARY

MINIMUM 1-HR TOTAL:	0.0 mm	@ HOUR	0	ON DAY	1
MAXIMUM 1-HR TOTAL:	1.4 mm	@ HOUR	19	ON DAY	6
MAXIMUM 24-HR TOTAL:	7.8 mm			ON DAY	6
OPERATIONAL TIME:					720 hrs
AMD OPERATION UPTIME:					100.0 %
STANDARD DEVIATION:	0.1	MONTHLY TOTAL:			13.4 mm



PRECIPITATION Hourly TOTALS (mm)





SULPHUR DIOXIDE Instantaneous Maximum (SO₂ ppb)

HR START (MST)	0:00	1:00	2:00	3:00	4:00	5:00	6:00	7:00	8:00	9:00	10:00	11:00	12:00	13:00	14:00	15:00	16:00	17:00	18:00	19:00	20:00	21:00	22:00	23:00	DAILY MIN.	DAILY MAX.	24-HR AVG.	RDGS.	
HR END (MST)	0:59	1:59	2:59	3:59	4:59	5:59	6:59	7:59	8:59	9:59	10:59	11:59	12:59	13:59	14:59	15:59	16:59	17:59	18:59	19:59	20:59	21:59	22:59	23:59					
DAY 1	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	24	
2	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	24	
3	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	24	
4	0	0	0	1	1	0	0	0	0	S	0	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1	0	24
5	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	24	
6	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	24	
7	0	0	0	0	0	0	S	0	0	0	0	1	1	0	0	0	0	0	0	0	0	0	0	0	0	0	1	0	24
8	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	24	
9	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	24	
10	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	24	
11	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	24	
12	0	S	0	0	0	0	0	0	C	C	C	C	C	1	0	0	0	0	1	1	1	1	1	1	0	1	0	24	
13	S	0	0	0	0	0	0	0	0	1	5	3	0	0	0	0	0	0	0	0	0	0	0	S	0	5	1	24	
14	0	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	0	24	
15	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	24	
16	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	24	
17	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	24	
18	0	0	0	0	0	0	0	0	0	1	2	1	2	1	0	0	0	0	1	S	1	1	1	1	1	0	2	1	24
19	1	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	1	0	24
20	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	24
21	0	0	0	0	0	0	0	0	0	0	0	0	1	1	1	S	0	0	0	0	0	0	0	0	0	0	1	0	24
22	0	0	0	0	0	0	0	0	0	0	0	0	1	2	S	0	0	0	0	0	0	0	0	0	0	0	2	0	24
23	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	24
24	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	24
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	24
26	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	24
27	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	24
28	1	1	1	1	1	2	2	0	S	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	2	0	24
29	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	24
30	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	24
HOURLY MAX	1	1	1	1	1	2	2	0	0	1	5	3	2	2	1	0	0	1	1	1	1	1	1	1	1	0	0	0	24
HOURLY AVG	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	24

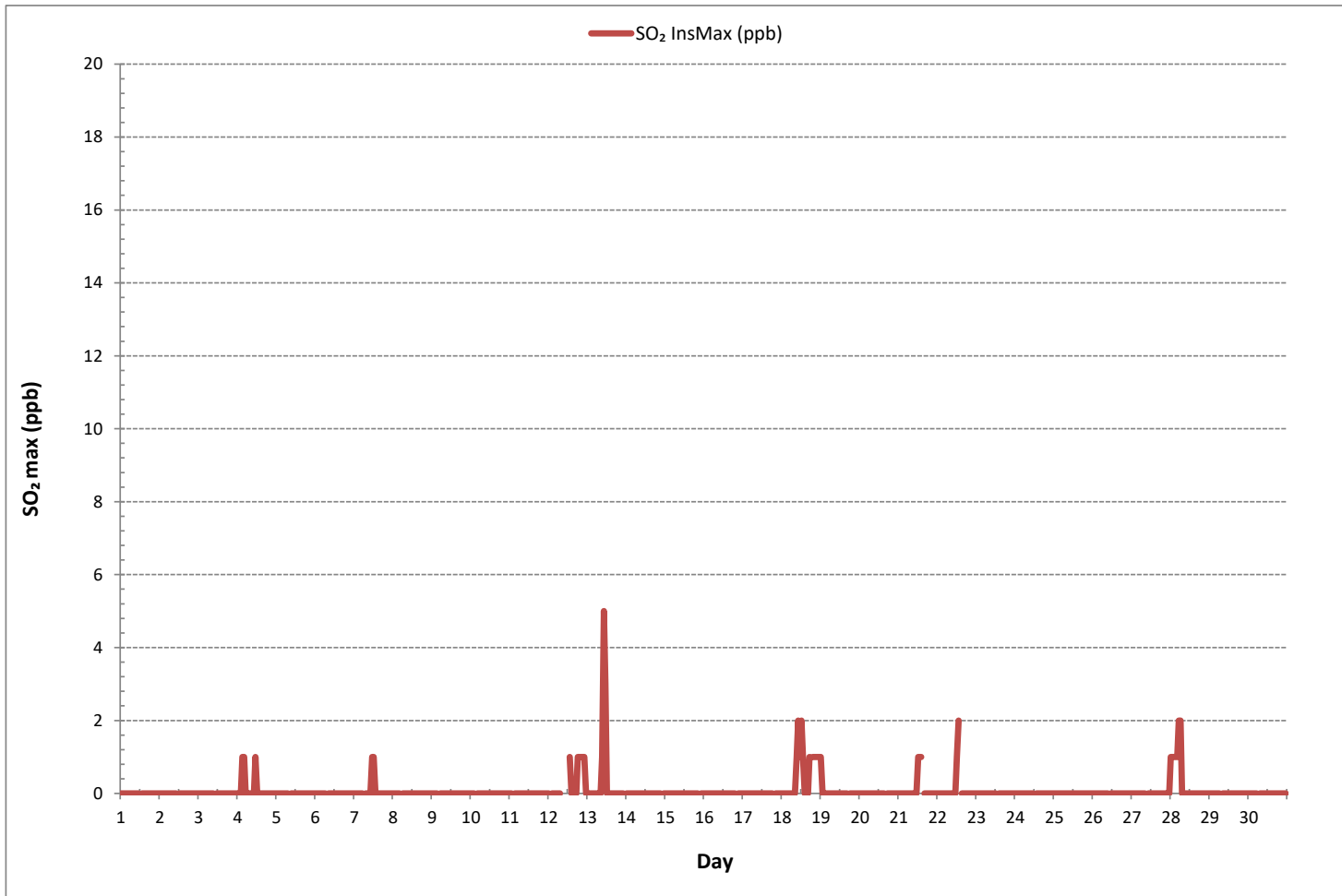
STATUS FLAG CODES

C	- MONTHLY CALIBRATION	Q	- QUALITY ASSURANCE
C1	- REPEAT CALIBRATION	R	- RECOVERY
Y	- MAINTENANCE	X	- MACHINE MALFUNCTION
S	- DAILY ZERO/SPAN CHECK	G	- OUT FOR REPAIR
S1	- REPEAT ZERO/SPAN CHECK	P	- POWER FAILURE

MONTHLY SUMMARY

NUMBER OF NON-ZERO READINGS:	38
MAXIMUM INSTANTANEOUS VALUE:	5 ppb @ HOUR 10 ON DAY 13
IZS CALIBRATION TIME:	30 hrs
MONTHLY CALIBRATION TIME:	5 hrs
STANDARD DEVIATION:	0
OPERATIONAL TIME:	720 hrs

SULPHUR DIOXIDE Instantaneous Maximum (SO₂ ppb)





HYDROGEN SULPHIDE Instantaneous Maximum (H₂S ppb)

HR START (MST)	0:00	1:00	2:00	3:00	4:00	5:00	6:00	7:00	8:00	9:00	10:00	11:00	12:00	13:00	14:00	15:00	16:00	17:00	18:00	19:00	20:00	21:00	22:00	23:00	DAILY MIN.	DAILY MAX.	24-HR AVG.	RDGS.		
HR END (MST)	0:59	1:59	2:59	3:59	4:59	5:59	6:59	7:59	8:59	9:59	10:59	11:59	12:59	13:59	14:59	15:59	16:59	17:59	18:59	19:59	20:59	21:59	22:59	23:59						
DAY 1	2	2	2	2	2	2	2	2	2	2	2	2	S	2	2	2	2	2	2	2	2	2	2	2	2	2	2	24		
2	2	2	2	2	2	2	2	2	2	2	2	S	2	2	2	2	2	2	1	2	2	2	2	2	2	1	2	2	24	
3	1	2	1	2	2	1	1	1	1	2	S	1	1	2	2	2	1	2	2	2	2	2	2	2	2	1	2	2	24	
4	2	2	2	2	2	2	2	2	2	S	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2	24	
5	2	2	2	2	2	2	2	2	S	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2	24	
6	2	2	2	2	2	2	2	S	2	2	3	3	3	3	3	3	3	3	3	3	3	3	2	2	2	2	3	3	24	
7	2	2	2	3	3	2	S	2	2	2	3	3	3	3	3	2	3	3	3	3	3	3	3	3	3	3	3	3	24	
8	3	3	3	2	3	S	2	2	2	2	2	3	2	2	2	2	2	2	2	2	2	2	2	3	2	2	3	2	24	
9	2	3	2	2	S	2	2	2	2	3	2	3	2	3	2	2	2	3	2	2	2	3	3	3	3	2	3	2	24	
10	2	3	3	S	3	3	3	3	3	3	3	3	3	3	3	3	3	3	3	3	3	3	3	3	3	3	2	3	24	
11	3	3	S	3	3	3	3	3	3	3	3	3	3	3	3	3	3	3	3	3	3	3	2	3	3	2	3	3	24	
12	3	S	3	3	3	3	3	2	C	C	C	C	C	1	0	0	0	0	0	1	1	1	0	1	0	1	0	3	1	24
13	S	1	1	1	0	1	0	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	0	S	0	1	1	1	24	
14	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	S	1	1	1	1	24	
15	1	1	1	1	1	1	1	1	1	1	2	1	2	2	2	1	2	2	1	1	1	S	1	1	1	1	2	1	24	
16	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	S	1	1	1	1	1	1	24	
17	1	1	1	1	2	1	1	2	2	1	1	1	1	1	1	1	1	2	1	S	2	1	1	1	1	1	2	1	24	
18	2	2	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	S	S	1	1	1	1	1	1	1	2	1	24	
19	1	1	1	1	1	2	2	2	2	2	1	1	2	2	1	1	S	1	1	1	1	1	1	1	1	1	2	1	24	
20	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	S	1	1	1	1	1	1	1	1	1	1	1	1	24	
21	1	1	1	1	1	1	1	1	1	1	1	1	1	1	S	1	1	1	1	1	1	1	1	1	1	1	1	1	24	
22	1	1	1	1	1	1	1	1	1	1	1	1	2	1	S	1	1	1	1	1	1	1	2	2	1	1	2	1	24	
23	2	2	2	2	2	2	2	2	2	2	1	1	2	S	1	1	1	1	1	1	1	1	2	1	1	1	2	2	24	
24	1	2	1	1	1	1	1	1	1	1	1	1	S	1	1	1	1	1	1	1	1	1	1	1	1	1	2	1	24	
25	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	0	0	1	1	1	1	0	1	1	24	
26	1	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	24	
27	1	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	24	
28	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	24	
29	1	1	1	1	2	1	1	S	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	2	1	24	
30	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	1	24	
HOURLY MAX	3	3	3	3	3	3	3	3	3	3	3	3	3	3	3	3	3	3	3	3	3	3	3	3	3	3	3	3	24	
HOURLY AVG	2	2	1	2	2	2	2	2	2	2	2	2	2	2	2	1	1	2	1	1	2	2	2	2	2	2	2	2	24	

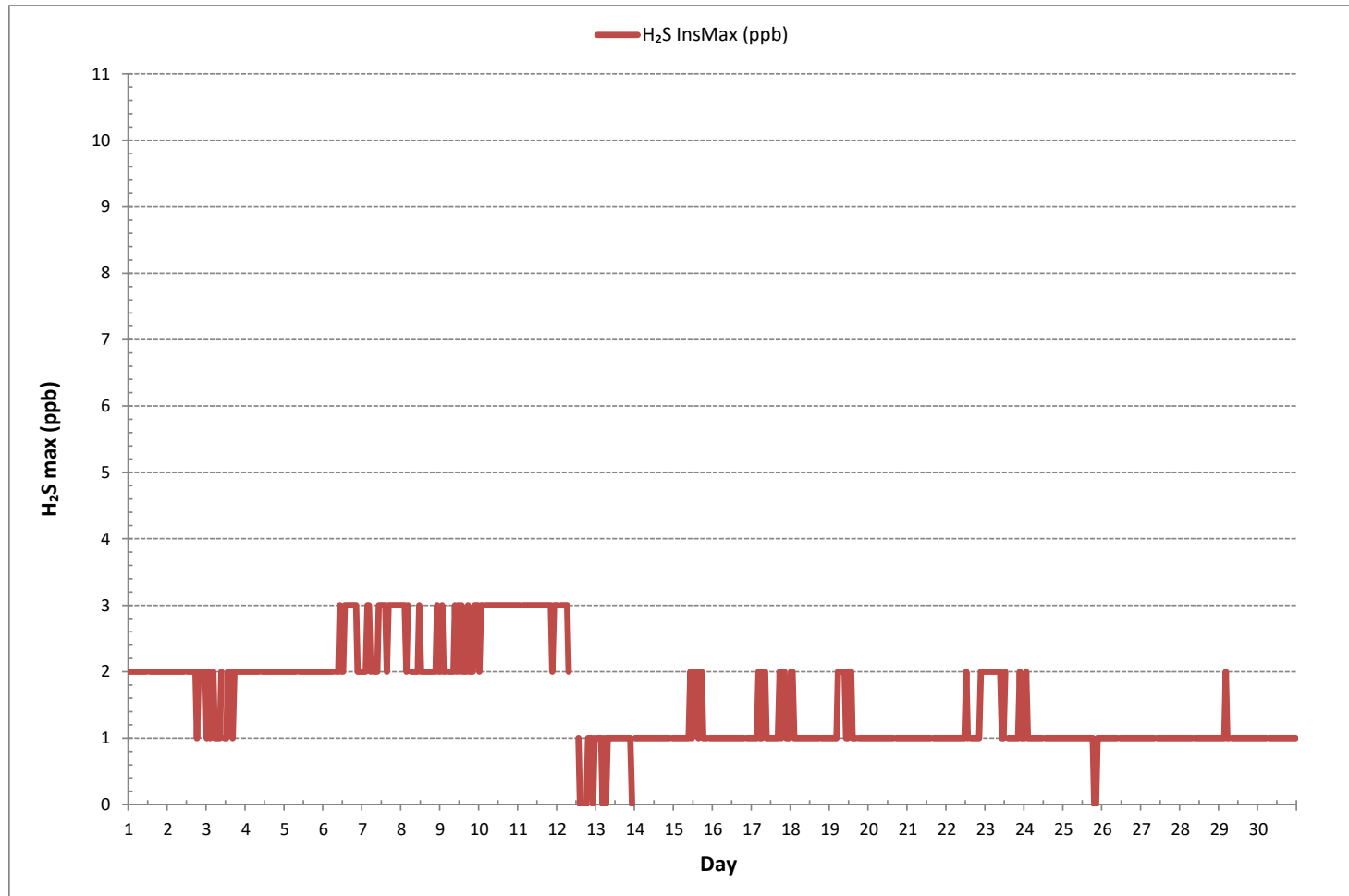
STATUS FLAG CODES

C	- MONTHLY CALIBRATION	Q	- QUALITY ASSURANCE
C1	- REPEAT CALIBRATION	R	- RECOVERY
Y	- MAINTENANCE	X	- MACHINE MALFUNCTION
S	- DAILY ZERO/SPAN CHECK	G	- OUT FOR REPAIR
S1	- REPEAT ZERO/SPAN CHECK	P	- POWER FAILURE

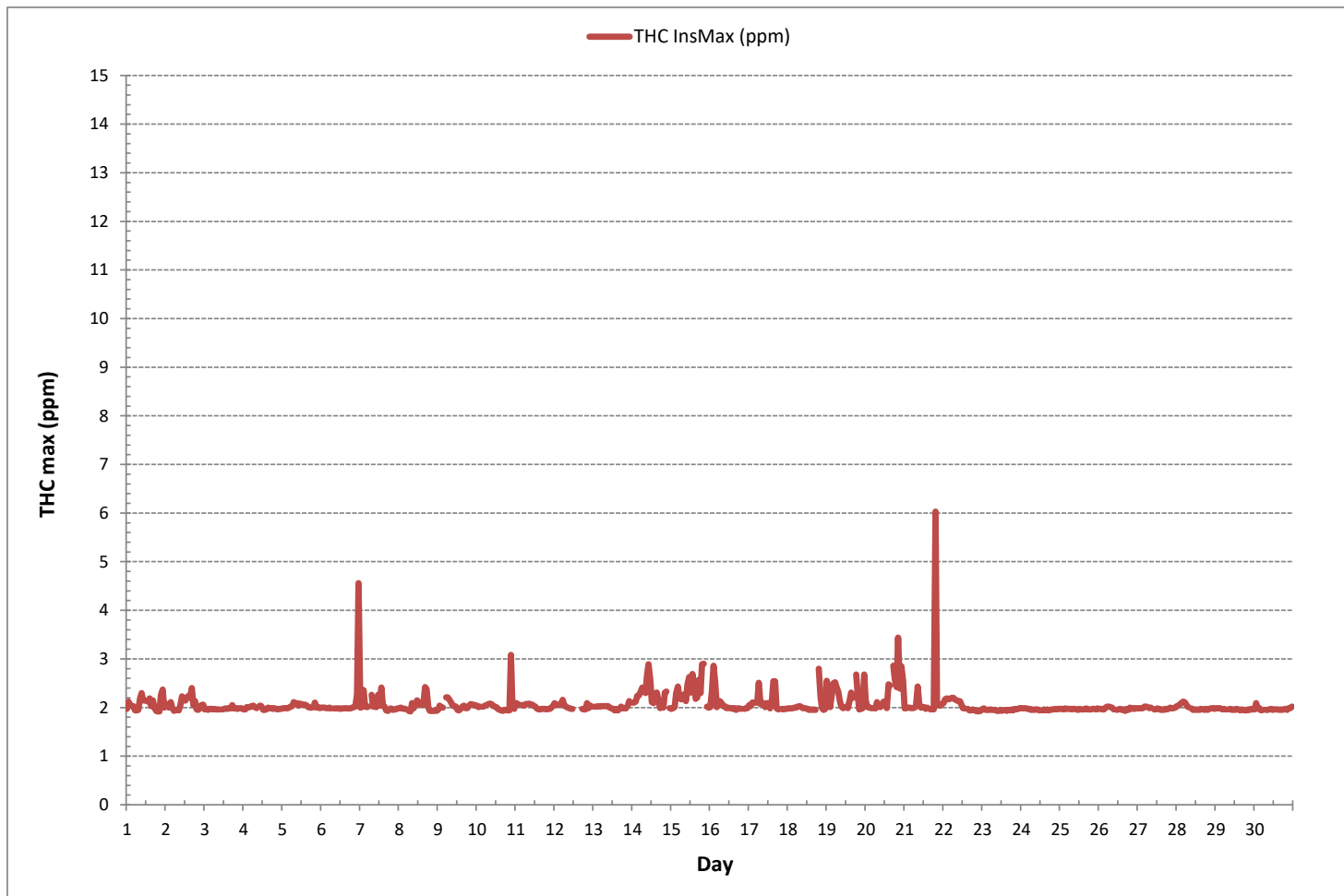
MONTHLY SUMMARY

NUMBER OF NON-ZERO READINGS:	674
MAXIMUM INSTANTANEOUS VALUE:	3 ppb @ HOUR 10 ON DAY 6
IZS CALIBRATION TIME:	30 hrs
MONTHLY CALIBRATION TIME:	5 hrs
STANDARD DEVIATION:	1
OPERATIONAL TIME:	720 hrs

HYDROGEN SULPHIDE Instantaneous Maximum (H₂S ppb)



TOTAL HYDROCARBONS Instantaneous Maximum (THC ppm)





METHANE MAX Instantaneous Maximum (CH₄ ppm)

HR START (MST)	0:00	1:00	2:00	3:00	4:00	5:00	6:00	7:00	8:00	9:00	10:00	11:00	12:00	13:00	14:00	15:00	16:00	17:00	18:00	19:00	20:00	21:00	22:00	23:00	DAILY MIN.	DAILY MAX.	24-HR AVG.	RDGS.	
HR END (MST)	0:59	1:59	2:59	3:59	4:59	5:59	6:59	7:59	8:59	9:59	10:59	11:59	12:59	13:59	14:59	15:59	16:59	17:59	18:59	19:59	20:59	21:59	22:59	23:59					
DAY 1	1.97	2.12	2.05	2.03	2.03	1.94	1.94	1.95	2.17	2.30	2.15	2.14	S	2.12	2.19	2.03	2.15	2.00	1.93	1.92	1.92	2.26	2.37	2.00	1.92	2.37	2.07	24	
2	2.08	2.03	2.00	2.11	2.00	1.93	1.95	1.95	1.94	2.04	2.23	S	2.14	2.21	2.24	2.20	2.40	2.05	2.13	1.96	1.95	1.98	2.05	2.06	1.93	2.40	2.07	24	
3	1.96	1.97	1.95	1.97	1.97	1.96	1.97	1.96	1.96	1.96	S	1.96	1.97	1.98	1.97	1.99	1.98	2.05	1.98	1.99	1.97	1.98	1.99	1.98	1.95	2.05	1.97	24	
4	1.96	1.96	2.01	2.01	2.01	2.03	2.04	2.01	1.99	S	2.04	2.03	1.95	1.95	1.96	2.00	1.99	1.99	1.97	1.99	1.97	1.96	1.97	1.97	1.95	2.04	1.99	24	
5	1.98	1.99	1.99	1.98	2.00	2.02	2.03	2.11	S	2.09	2.04	2.08	2.06	2.06	2.06	2.04	2.01	2.00	2.00	2.01	2.10	2.00	2.01	1.99	1.98	2.11	2.03	24	
6	2.00	2.00	2.00	1.99	1.99	2.00	1.98	S	1.98	1.98	1.98	1.98	1.97	1.98	1.98	1.99	1.98	1.98	1.98	2.00	2.01	2.02	2.27	4.56	1.97	4.56	2.11	24	
7	2.00	2.01	2.36	2.03	2.01	2.02	S	2.26	2.02	2.02	2.01	2.26	2.04	2.41	2.04	2.02	1.94	1.93	1.96	1.98	1.95	1.96	1.96	1.98	1.93	2.41	2.05	24	
8	1.99	2.00	1.98	1.97	1.97	S	1.93	1.92	2.09	1.99	2.06	2.15	2.11	2.05	2.09	2.06	2.42	2.38	2.00	1.93	1.93	1.93	1.94	1.93	1.92	2.42	2.04	24	
9	1.95	2.04	2.01	2.00	S	2.21	2.21	2.16	2.11	2.04	2.03	2.02	1.95	1.94	1.97	2.02	2.04	1.99	1.99	2.03	2.07	2.06	2.06	2.04	1.94	2.21	2.04	24	
10	2.04	2.01	2.02	S	2.02	2.04	2.05	2.07	2.08	2.07	2.04	2.02	2.01	1.97	1.95	1.94	1.93	1.95	1.95	1.94	1.94	3.08	2.01	1.97	1.93	3.08	2.05	24	
11	2.09	2.08	S	2.05	2.05	2.04	2.07	2.07	2.08	2.07	2.06	2.04	2.02	1.98	1.96	1.96	1.97	1.97	1.97	1.96	1.97	1.97	2.00	2.04	1.96	2.09	2.02	24	
12	2.07	S	2.05	2.06	2.09	2.16	2.04	2.02	2.00	1.99	1.97	1.97	C	C	C	C	C	1.97	1.96	1.96	2.09	1.99	2.04	2.02	1.96	2.16	2.03	24	
13	S	2.02	2.02	2.03	2.02	2.03	2.03	2.03	2.03	2.00	1.98	1.97	1.94	1.97	1.94	1.97	2.02	1.98	1.99	1.98	2.04	2.13	S	1.94	2.13	2.01	24		
14	2.10	2.10	2.12	2.24	2.25	2.32	2.41	2.36	2.30	2.67	2.89	2.56	2.11	2.09	2.29	2.31	2.15	1.99	2.05	2.00	2.31	2.33	S	1.99	1.99	2.89	2.26	24	
15	1.97	1.99	2.01	2.30	2.43	2.20	2.17	2.25	2.27	2.13	2.48	2.63	2.31	2.69	2.48	2.18	2.21	2.57	2.30	2.89	2.90	S	2.02	2.00	1.97	2.90	2.32	24	
16	2.01	2.32	2.86	2.55	2.01	2.12	2.13	2.09	2.03	2.03	1.99	2.00	1.99	1.99	1.97	1.99	1.95	1.98	1.98	1.97	S	1.97	1.98	1.99	1.95	2.86	2.08	24	
17	2.05	2.03	2.10	2.10	2.10	2.10	2.51	2.07	2.07	2.09	2.01	2.09	2.09	1.98	2.11	2.54	2.54	1.98	1.96	S	1.97	1.96	1.97	1.97	1.96	2.54	2.10	24	
18	1.98	1.98	1.98	1.99	2.00	2.00	2.02	2.03	2.02	1.99	1.99	1.98	1.97	1.95	1.96	1.95	1.96	S	2.80	2.22	1.99	1.95	1.97	1.95	2.80	2.03	24		
19	2.55	2.22	2.01	2.26	2.50	2.52	2.42	2.32	2.13	2.02	1.99	2.00	2.02	1.99	2.15	2.31	2.20	S	2.68	2.27	1.96	1.97	1.98	2.68	1.96	2.68	2.22	24	
20	2.14	2.01	2.01	1.99	1.99	1.99	1.98	2.11	2.02	2.01	2.05	2.12	2.10	1.99	2.48	2.45	S	2.86	2.58	2.42	3.44	2.39	2.85	2.54	1.98	3.44	2.28	24	
21	1.98	1.99	2.00	2.00	1.99	1.99	2.00	2.02	2.43	2.08	2.00	2.01	2.01	1.97	1.97	S	1.96	1.97	1.96	5.99	2.05	2.05	2.04	2.07	1.96	5.99	2.20	24	
22	2.09	2.17	2.19	2.17	2.18	2.20	2.20	2.17	2.15	2.13	2.11	2.06	1.99	1.98	S	1.97	1.94	1.94	1.96	1.94	1.93	1.92	1.94	1.93	1.92	2.20	2.06	24	
23	1.97	1.94	1.95	1.95	1.95	1.96	1.95	1.95	1.95	1.93	1.93	1.95	1.93	S	1.95	1.93	1.95	1.94	1.96	1.94	1.97	1.96	1.97	1.99	1.93	1.99	1.95	24	
24	1.99	1.98	1.99	1.98	1.97	1.97	1.95	1.96	1.95	1.96	1.96	1.94	S	1.94	1.96	1.94	1.96	1.94	1.95	1.96	1.96	1.97	1.96	1.97	1.94	1.99	1.96	24	
25	1.97	1.97	1.96	1.98	1.97	1.97	1.97	1.96	1.97	1.97	1.96	1.95	1.97	1.96	1.96	1.96	1.98	1.96	1.96	1.97	1.97	1.96	1.97	1.96	1.98	1.95	1.98	1.97	24
26	1.97	1.97	1.96	1.96	2.00	2.02	2.03	2.01	2.00	1.96	S	1.95	1.96	1.97	1.95	1.96	1.93	1.97	1.95	2.00	1.97	1.99	1.97	1.99	1.93	2.03	1.98	24	
27	1.98	1.99	1.98	1.99	2.02	2.02	2.01	1.99	2.00	S	1.96	1.96	1.98	1.97	1.95	1.96	1.95	1.97	1.96	1.98	2.00	1.98	1.99	2.00	1.95	2.02	1.98	24	
28	2.03	2.04	2.07	2.10	2.12	2.10	2.05	2.01	S	1.98	1.95	1.96	1.95	1.96	1.95	1.97	1.96	1.95	1.97	1.95	1.97	1.98	1.99	1.97	1.95	2.12	2.00	24	
29	1.99	1.98	1.99	1.98	1.96	1.97	1.96	S	1.96	1.97	1.95	1.96	1.95	1.97	1.96	1.94	1.96	1.95	1.94	1.94	1.96	1.95	1.97	1.96	1.94	1.99	1.96	24	
30	1.96	1.99	1.97	1.99	1.94	1.95	S	1.95	1.95	1.96	1.97	1.95	1.96	1.96	1.96	1.95	1.96	1.95	1.96	1.95	1.96	1.99	1.99	1.99	2.02	1.94	2.02	1.96	24
HOURLY MAX	2.55	2.32	2.86	2.55	2.50	2.52	2.51	2.36	2.43	2.67	2.89	2.63	2.31	2.69	2.48	2.54	2.54	2.86	2.68	5.99	3.44	3.08	2.85	4.56					
HOURLY AVG	2.03	2.03	2.05	2.06	2.05	2.06	2.07	2.06	2.06	2.05	2.06	2.06	2.02	2.03	2.05	2.05	2.05	2.04	2.03	2.19	2.08	2.06	2.05	2.12					

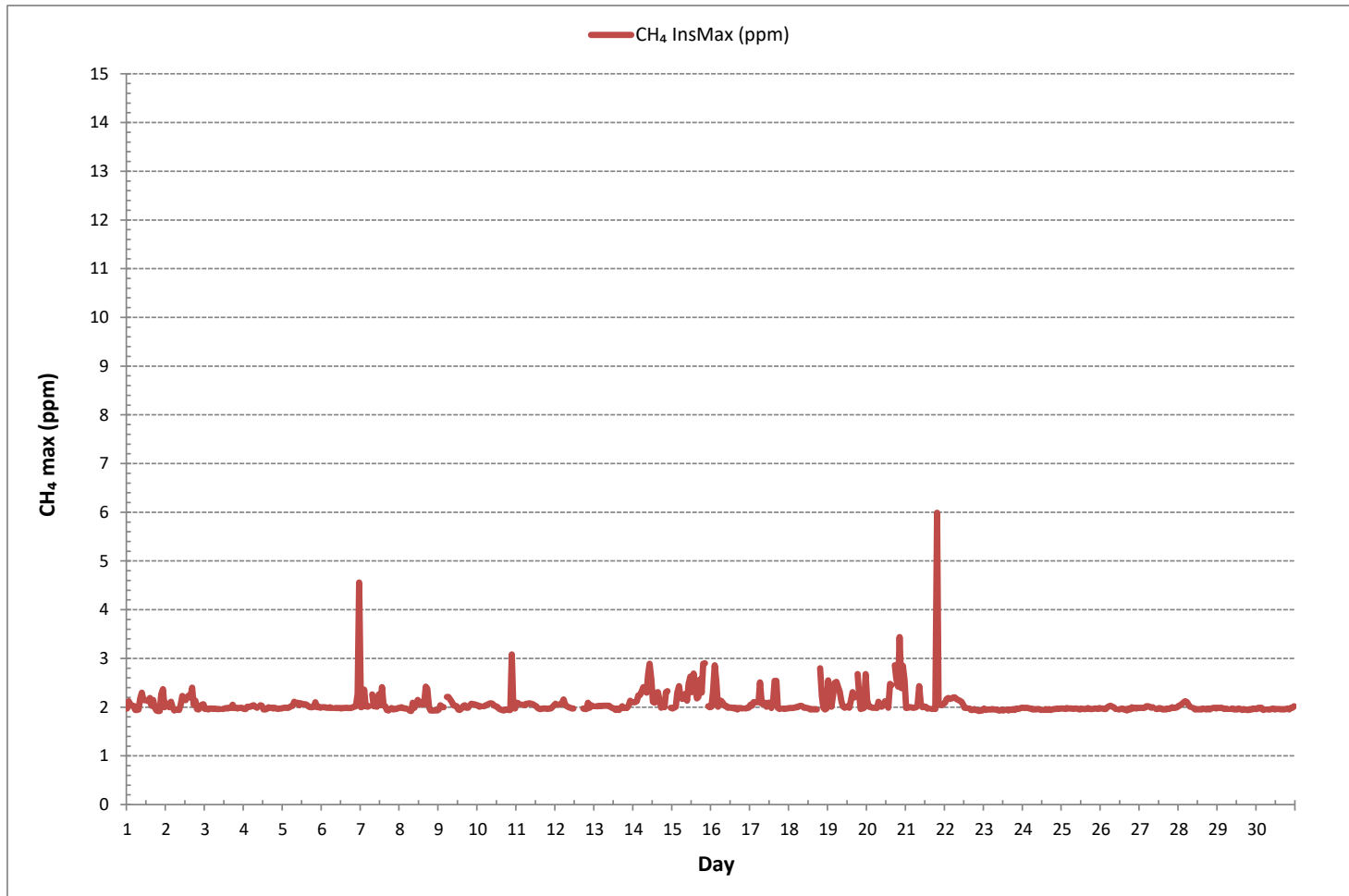
STATUS FLAG CODES

C	- MONTHLY CALIBRATION	Q	- QUALITY ASSURANCE
C1	- REPEAT CALIBRATION	R	- RECOVERY
Y	- MAINTENANCE	X	- MACHINE MALFUNCTION
S	- DAILY ZERO/SPAN CHECK	G	- OUT FOR REPAIR
S1	- REPEAT ZERO/SPAN CHECK	P	- POWER FAILURE

MONTHLY SUMMARY

NUMBER OF NON-ZERO READINGS:	685
MAXIMUM INSTANTANEOUS VALUE:	5.99 ppm @ HOUR 19 ON DAY 21
IZS CALIBRATION TIME:	30 hrs
MONTHLY CALIBRATION TIME:	5 hrs
OPERATIONAL TIME:	720 hrs
STANDARD DEVIATION:	0.25

METHANE MAX Instantaneous Maximum (CH₄ ppm)





NON-METHANE HYDROCARBONS Instantaneous Maximum (NMHC ppm)

HR START (MST)	0:00	1:00	2:00	3:00	4:00	5:00	6:00	7:00	8:00	9:00	10:00	11:00	12:00	13:00	14:00	15:00	16:00	17:00	18:00	19:00	20:00	21:00	22:00	23:00	DAILY MIN.	DAILY MAX.	24-HR AVG.	RDGS.
HR END (MST)	0:59	1:59	2:59	3:59	4:59	5:59	6:59	7:59	8:59	9:59	10:59	11:59	12:59	13:59	14:59	15:59	16:59	17:59	18:59	19:59	20:59	21:59	22:59	23:59				
DAY 1	0.00	0.00	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	0.00	0.01	0.00	0.00	0.00	0.00	0.01	0.00	24
2	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	24
3	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	24
4	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	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.01	0.00	24
5	0.00	0.00	0.00	0.00	0.00	0.00	0.00	S	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	0.01	0.00	24
6	0.00	0.00	0.00	0.00	0.00	0.00	S	0.00	0.02	0.00	0.01	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	0.02	0.00	24
7	0.00	0.00	0.00	0.00	0.00	S	0.00	0.00	0.00	0.01	0.00	0.00	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	0.01	0.00	24
8	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	24
9	0.00	0.00	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	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.03	0.00	24
10	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	24
11	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	24
12	0.03	S	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	0.01	0.00	0.00	0.00	0.00	0.00	0.00	0.03	0.00	24
13	S	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	S	0.00	0.01	0.00	24
14	0.00	0.00	0.00	0.07	0.01	0.00	0.00	0.00	0.00	0.03	0.00	0.00	0.01	0.00	0.02	0.01	0.01	0.00	0.00	0.00	0.00	0.00	0.00	S	0.00	0.07	0.01	24
15	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.01	0.00	0.03	0.00	0.01	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	S	0.01	0.00	0.00	0.03	0.00	24
16	0.00	0.00	0.00	0.00	0.00	0.01	0.02	0.01	0.00	0.00	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	0.02	0.00	24
17	0.00	0.00	0.00	0.00	0.01	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	S	0.00	0.00	0.00	0.00	0.00	0.01	0.00	24
18	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	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.01	0.00	24
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	S	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	24
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	S	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	24
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	0.06	S	0.00	0.00	0.00	0.00	0.04	0.00	0.00	0.00	0.00	0.00	0.06	0.00	24
22	0.00	0.00	0.00	0.00	0.00	0.01	0.00	0.00	0.00	0.03	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	0.03	0.00	24
23	0.00	0.05	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	0.05	0.00	24
24	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	24
25	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	0.01	0.00	0.01	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.01	0.00	24
26	0.00	0.00	0.00	0.00	0.00	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	0.00	0.01	0.00	24
27	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	0.00	0.00	0.00	0.00	0.01	0.00	24
28	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	0.01	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.01	0.00	24
29	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	24
30	0.00	0.15	0.00	0.00	0.00	S	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	0.15	0.01	24
HOURLY MAX	0.03	0.15	0.03	0.07	0.01	0.01	0.02	0.01	0.01	0.03	0.03	0.01	0.01	0.01	0.06	0.01	0.01	0.00	0.00	0.04	0.01	0.00	0.01	0.00	0.00	0.00	0.00	24
HOURLY AVG	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	0.00	0.00	0.00	0.00	0.00	0.00	24

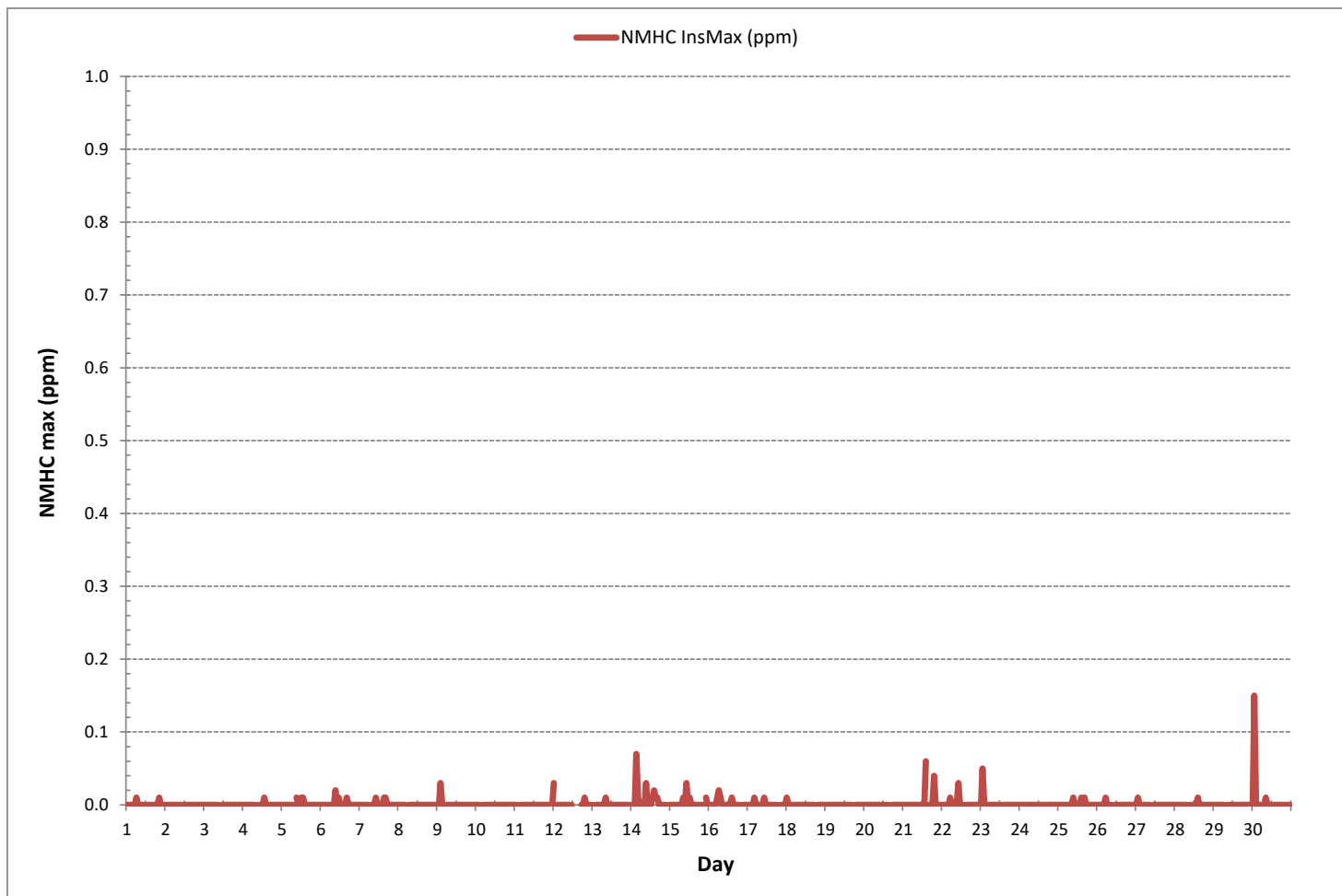
STATUS FLAG CODES

C	- MONTHLY CALIBRATION	Q	- QUALITY ASSURANCE
C1	- REPEAT CALIBRATION	R	- RECOVERY
Y	- MAINTENANCE	X	- MACHINE MALFUNCTION
S	- DAILY ZERO/SPAN CHECK	G	- OUT FOR REPAIR
S1	- REPEAT ZERO/SPAN CHECK	P	- POWER FAILURE

MONTHLY SUMMARY

NUMBER OF NON-ZERO READINGS:	47
MAXIMUM INSTANTANEOUS VALUE:	0.15 ppm @ HOUR 1 ON DAY 30
IZS CALIBRATION TIME:	30 hrs
MONTHLY CALIBRATION TIME:	5 hrs
STANDARD DEVIATION:	0.01
OPERATIONAL TIME:	720 hrs

NON-METHANE HYDROCARBONS Instantaneous Maximum (NMHC ppm)





OXIDES OF NITROGEN Instantaneous Maximum (NO_x ppb)

HR START (MST)	0:00	1:00	2:00	3:00	4:00	5:00	6:00	7:00	8:00	9:00	10:00	11:00	12:00	13:00	14:00	15:00	16:00	17:00	18:00	19:00	20:00	21:00	22:00	23:00	DAILY MIN.	DAILY MAX.	24-HR AVG.	RDGS.	
HR END (MST)	0:59	1:59	2:59	3:59	4:59	5:59	6:59	7:59	8:59	9:59	10:59	11:59	12:59	13:59	14:59	15:59	16:59	17:59	18:59	19:59	20:59	21:59	22:59	23:59					
DAY 1	2	2	2	2	1	2	2	2	8	3	2	8	S	2	9	1	1	2	1	1	0	1	0	0	0	9	2	24	
2	1	0	0	0	0	0	1	0	1	1	3	S	1	6	4	1	1	0	3	1	0	1	1	2	0	6	1	24	
3	2	1	1	1	1	1	1	1	1	1	S	1	1	1	1	1	1	2	2	2	2	1	2	2	1	1	2	1	24
4	1	1	4	5	5	4	4	4	4	S	5	16	3	2	1	2	2	2	2	2	2	1	1	1	1	1	16	3	24
5	1	1	1	1	1	1	1	2	S	2	2	2	2	2	2	2	2	2	1	1	1	1	1	1	2	1	2	2	24
6	2	2	1	1	2	1	1	S	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2	1	2	2	24
7	2	2	2	1	1	1	S	5	1	2	2	2	2	2	2	1	6	1	1	6	2	5	2	1	1	1	6	2	24
8	1	1	1	1	1	S	5	1	1	30	1	5	1	6	3	3	9	7	20	40	1	1	1	1	1	1	40	6	24
9	1	1	1	2	S	4	4	3	3	2	2	3	1	1	1	1	1	1	2	1	2	2	2	2	1	4	2	24	
10	2	2	2	S	2	2	2	2	2	2	18	3	2	2	3	2	2	2	1	2	1	2	1	1	1	1	18	3	24
11	2	2	S	2	2	2	2	2	3	3	3	3	2	1	1	1	1	1	1	2	2	2	2	2	1	3	2	24	
12	2	S	2	2	2	2	2	2	C	C	C	C	C	C	C	12	4	2	1	11	29	6	1	1	1	29	-	24	
13	S	2	1	1	2	2	2	3	3	8	8	6	25	7	3	28	8	1	3	1	1	1	1	S	1	28	5	24	
14	2	2	2	2	4	6	10	8	6	5	4	9	2	2	1	1	1	1	1	2	2	1	S	1	1	10	3	24	
15	1	1	1	1	1	1	2	2	22	2	3	4	6	2	2	2	2	2	3	4	2	S	1	1	1	22	3	24	
16	1	1	1	1	1	4	4	2	8	6	1	2	2	2	3	2	2	2	14	3	S	2	1	1	1	1	14	3	24
17	1	1	2	1	2	1	2	8	15	5	13	1	1	1	4	0	1	3	3	S	1	1	1	1	0	15	3	24	
18	1	0	0	1	1	1	2	14	1	2	4	2	3	12	1	14	2	3	S	8	4	3	2	1	0	14	4	24	
19	1	1	1	1	2	0	0	1	1	0	2	0	3	1	1	1	0	S	1	0	0	3	1	0	0	3	1	24	
20	1	1	1	1	1	1	1	0	0	1	1	0	1	1	1	0	S	1	1	1	1	0	0	0	0	1	1	24	
21	0	0	0	0	1	1	1	1	0	1	6	0	3	2	1	S	1	1	2	5	3	1	1	1	0	6	1	24	
22	1	2	2	2	2	3	3	3	7	3	7	3	2	5	2	S	2	1	2	2	1	2	1	1	1	1	7	2	24
23	1	1	1	1	1	1	2	1	1	5	4	7	9	S	11	2	2	1	0	0	3	1	1	1	0	11	2	24	
24	0	0	0	1	0	4	1	1	4	2	1	3	S	2	0	5	2	2	0	0	0	0	0	0	0	5	1	24	
25	0	0	0	0	0	0	2	1	0	1	1	1	0	0	2	2	0	0	1	1	0	0	0	0	0	2	1	24	
26	1	2	2	0	1	2	2	3	6	1	S	1	0	1	1	1	0	1	0	1	1	1	1	1	0	6	1	24	
27	1	0	0	1	1	1	1	1	1	S	1	1	0	0	1	1	1	1	1	1	1	2	3	3	0	3	1	24	
28	4	4	5	7	7	8	7	2	S	1	1	1	1	1	0	2	3	0	1	1	1	1	1	1	0	8	2	24	
29	1	1	1	0	1	2	2	S	2	2	3	1	1	0	1	0	2	2	1	0	3	0	1	1	0	3	1	24	
30	0	0	1	1	0	0	S	1	1	3	1	1	4	2	2	1	1	2	0	1	0	1	1	1	0	4	1	24	
HOURLY MAX	4	4	5	7	7	8	10	14	22	30	18	16	25	12	11	28	9	7	20	40	29	6	3	3					
HOURLY AVG	1	1	1	1	2	2	2	3	4	4	4	3	3	2	2	3	2	2	3	3	2	1	1	1					

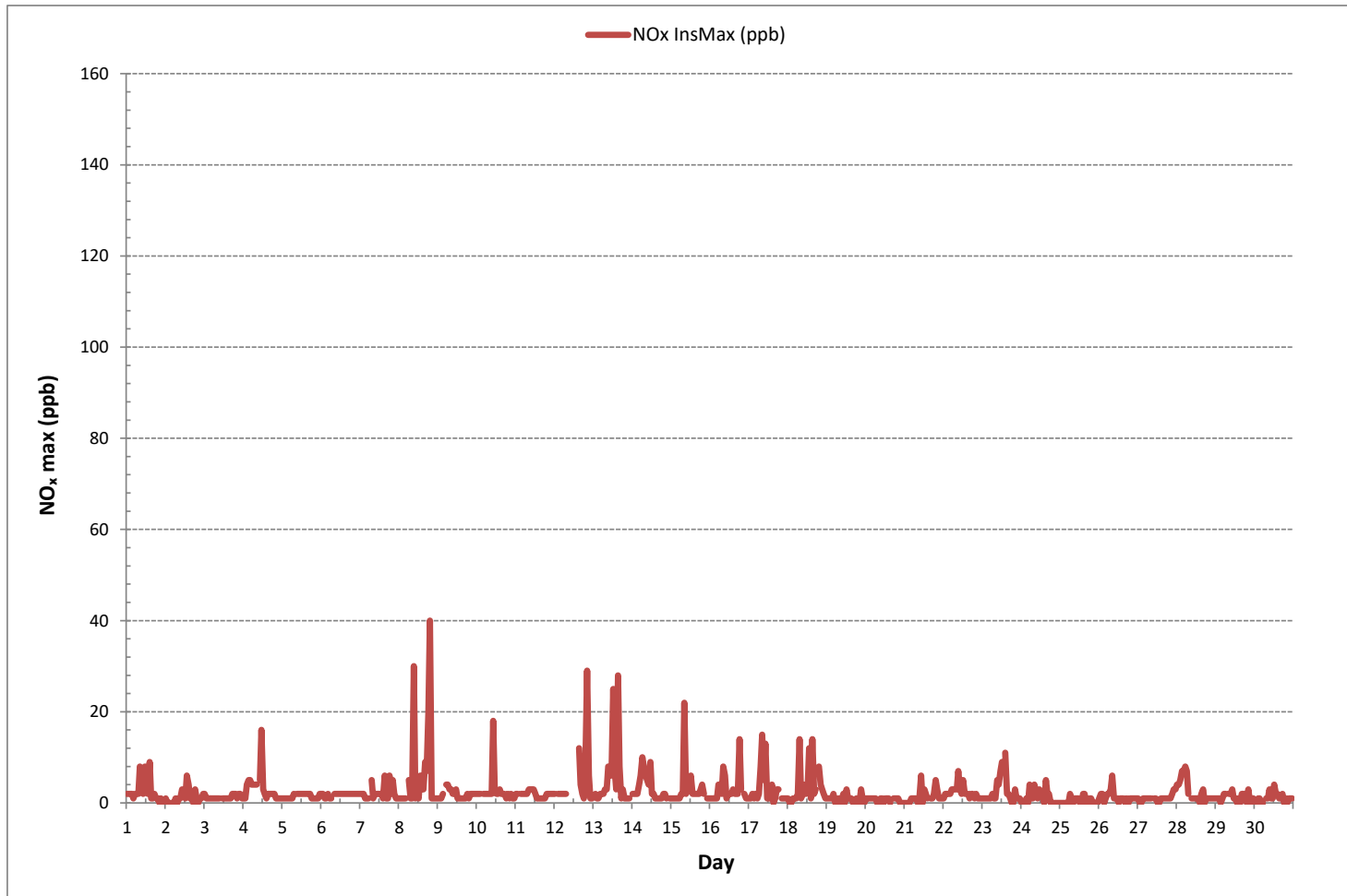
STATUS FLAG CODES

C	- MONTHLY CALIBRATION	Q	- QUALITY ASSURANCE
C1	- REPEAT CALIBRATION	R	- RECOVERY
Y	- MAINTENANCE	X	- MACHINE MALFUNCTION
S	- DAILY ZERO/SPAN CHECK	G	- OUT FOR REPAIR
S1	- REPEAT ZERO/SPAN CHECK	P	- POWER FAILURE

MONTHLY SUMMARY

NUMBER OF NON-ZERO READINGS:	599
MAXIMUM INSTANTANEOUS VALUE:	40 ppb @ HOUR 19 ON DAY 8
IZS CALIBRATION TIME:	30 hrs
MONTHLY CALIBRATION TIME:	7 hrs
STANDARD DEVIATION:	3
OPERATIONAL TIME:	720 hrs

OXIDES OF NITROGEN Instantaneous Maximum (NO_x ppb)





NITRIC OXIDE Instantaneous Maximum (NO ppb)

HR START (MST)	0:00	1:00	2:00	3:00	4:00	5:00	6:00	7:00	8:00	9:00	10:00	11:00	12:00	13:00	14:00	15:00	16:00	17:00	18:00	19:00	20:00	21:00	22:00	23:00	DAILY	DAILY	24-HR	RDGS.				
HR END (MST)	0:59	1:59	2:59	3:59	4:59	5:59	6:59	7:59	8:59	9:59	10:59	11:59	12:59	13:59	14:59	15:59	16:59	17:59	18:59	19:59	20:59	21:59	22:59	23:59	MIN.	MAX.	AVG.					
DAY																																
1	0	0	0	0	0	0	1	0	9	1	1	3	S	1	3	0	0	1	0	0	0	0	0	0	0	0	0	0	9	1	24	
2	0	0	0	0	0	0	1	0	0	0	1	S	0	3	2	0	0	0	0	0	0	0	0	0	0	0	0	0	3	0	24	
3	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	24	
4	0	0	0	0	0	0	0	0	1	S	1	6	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	6	0	24	
5	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	24	
6	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	24	
7	0	0	0	0	0	0	S	5	0	0	0	0	0	0	0	0	1	0	0	0	0	0	0	0	0	0	0	0	5	0	24	
8	0	0	0	0	0	S	2	0	0	8	0	3	0	7	1	1	3	3	10	19	0	0	0	0	0	0	0	0	19	3	24	
9	0	0	0	0	S	0	1	1	1	1	1	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1	0	24	
10	0	0	0	S	0	0	0	0	0	1	29	1	0	0	1	0	0	0	0	0	0	0	0	0	0	0	0	0	29	1	24	
11	0	0	S	0	0	0	0	0	0	1	1	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1	0	24	
12	0	S	0	0	0	0	0	0	C	C	C	C	C	C	C	9	4	3	0	2	11	0	0	0	0	0	0	0	11	-	24	
13	S	0	0	0	0	0	0	2	1	3	3	1	9	4	1	27	3	0	0	0	0	0	0	0	S	0	0	0	27	2	24	
14	0	0	0	0	0	0	1	1	1	1	1	5	0	0	0	0	0	0	0	0	0	0	0	S	0	0	0	0	5	0	24	
15	0	0	0	0	0	0	1	1	13	0	2	9	2	1	1	1	1	0	1	1	0	S	0	0	0	0	0	0	13	1	24	
16	0	0	0	0	0	0	1	0	5	5	0	0	0	0	2	1	1	0	8	1	S	0	0	0	0	0	0	0	8	1	24	
17	0	0	0	0	0	0	0	4	10	2	9	0	0	0	1	0	0	1	2	S	0	0	0	0	0	0	0	0	10	1	24	
18	0	0	0	0	0	0	1	13	0	0	1	0	1	7	0	8	1	1	S	3	0	0	0	0	0	0	0	0	13	2	24	
19	0	0	0	0	1	0	0	0	1	0	1	0	2	0	0	0	0	S	0	0	0	0	1	0	0	0	0	0	2	0	24	
20	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	24	
21	0	0	0	0	0	0	0	0	0	0	3	0	1	0	0	S	0	0	0	0	0	0	0	0	0	0	0	0	3	0	24	
22	0	0	0	0	0	0	0	1	1	3	1	0	2	0	S	0	0	0	0	0	0	0	0	0	0	0	0	0	3	0	24	
23	0	0	0	0	0	0	2	0	1	6	2	1	4	S	7	1	1	0	0	0	0	0	0	0	0	0	0	0	7	1	24	
24	0	0	0	0	0	3	0	0	2	0	0	2	S	3	0	4	0	1	0	0	0	0	0	0	0	0	0	0	4	1	24	
25	0	0	0	0	0	0	1	1	0	1	0	0	0	0	1	1	0	0	0	0	0	0	0	0	0	0	0	0	1	0	24	
26	0	0	0	0	0	0	0	2	2	0	S	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	2	0	24	
27	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	24	
28	0	0	0	0	0	0	1	0	S	0	0	0	0	0	0	1	1	0	0	0	0	0	0	0	0	0	0	0	1	0	24	
29	0	0	0	0	0	0	1	S	0	0	1	0	0	0	1	0	0	1	0	0	2	0	0	0	0	0	0	0	2	0	24	
30	0	0	0	0	0	0	S	0	0	2	0	0	1	1	1	0	1	1	0	0	0	0	0	0	0	0	0	0	2	0	24	
HOURLY MAX	0	0	0	0	1	3	2	13	13	8	29	9	9	7	7	27	4	3	10	19	11	1	0	0	0	0	0					
HOURLY AVG	0	0	0	0	0	0	1	1	2	1	2	1	1	1	1	2	1	0	1	1	0	0	0	0	0	0	0					

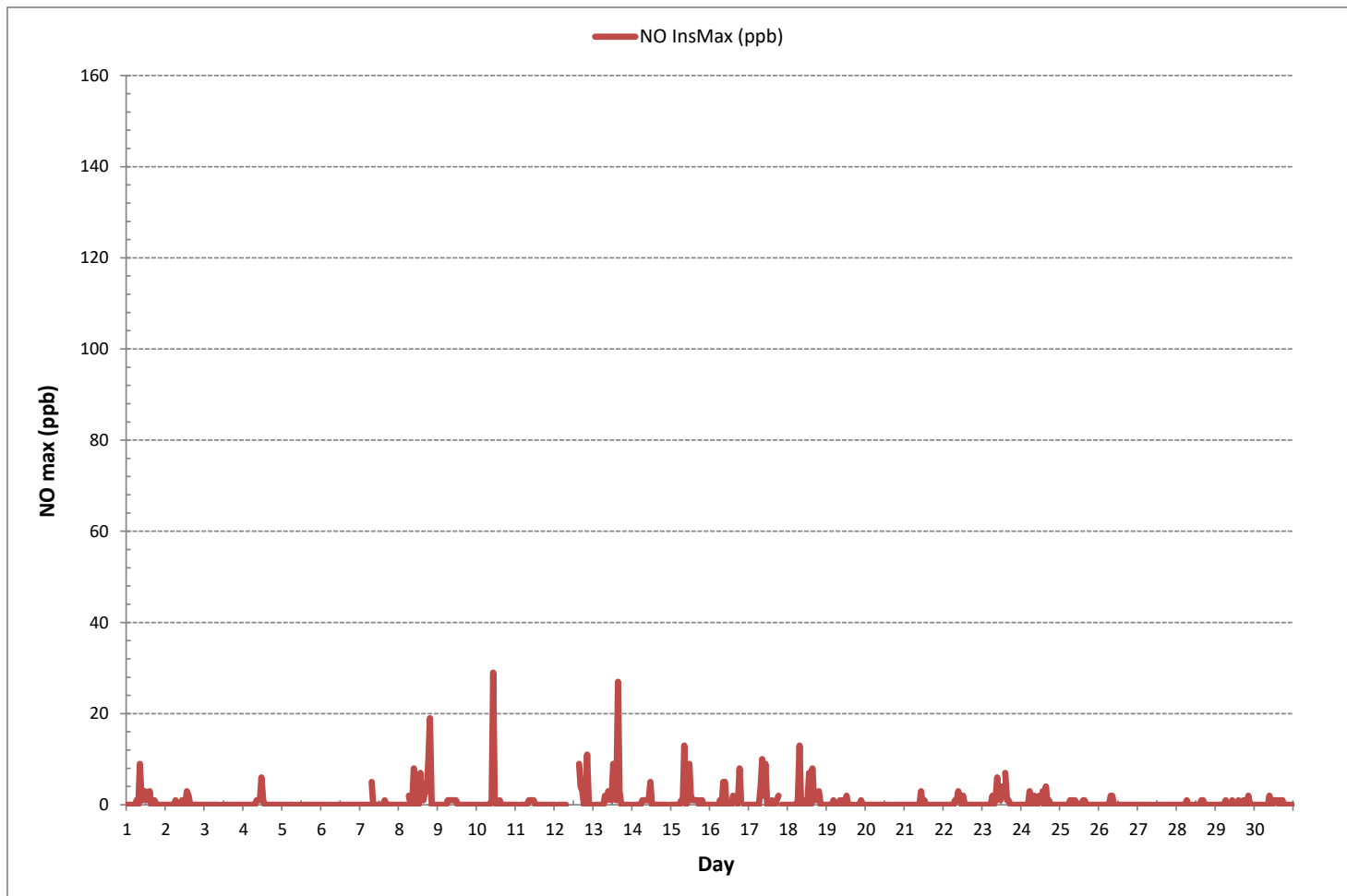
STATUS FLAG CODES

C	- MONTHLY CALIBRATION	Q	- QUALITY ASSURANCE
C1	- REPEAT CALIBRATION	R	- RECOVERY
Y	- MAINTENANCE	X	- MACHINE MALFUNCTION
S	- DAILY ZERO/SPAN CHECK	G	- OUT FOR REPAIR
S1	- REPEAT ZERO/SPAN CHECK	P	- POWER FAILURE

MONTHLY SUMMARY

NUMBER OF NON-ZERO READINGS:	147
MAXIMUM INSTANTANEOUS VALUE:	29 ppb @ HOUR 10 ON DAY 10
IZS CALIBRATION TIME:	30 hrs
MONTHLY CALIBRATION TIME:	7 hrs
STANDARD DEVIATION:	2
OPERATIONAL TIME:	720 hrs

NITRIC OXIDE Instantaneous Maximum (NO ppb)





LAKELAND INDUSTRY & COMMUNITY ASSOCIATION
St. Lina Continuous Monitoring Station - April 2019

NITROGEN DIOXIDE Instantaneous Maximum (NO₂ ppb)

HR START (MST)	0:00	1:00	2:00	3:00	4:00	5:00	6:00	7:00	8:00	9:00	10:00	11:00	12:00	13:00	14:00	15:00	16:00	17:00	18:00	19:00	20:00	21:00	22:00	23:00	DAILY MIN.	DAILY MAX.	24-HR AVG.	RDGS.	
HR END (MST)	0:59	1:59	2:59	3:59	4:59	5:59	6:59	7:59	8:59	9:59	10:59	11:59	12:59	13:59	14:59	15:59	16:59	17:59	18:59	19:59	20:59	21:59	22:59	23:59					
DAY 1	2	2	2	2	1	1	2	1	5	2	1	5	S	2	6	1	1	2	1	1	1	1	1	1	1	1	6	2	24
2	1	1	1	1	1	0	1	1	1	1	2	S	1	4	3	1	1	1	2	1	1	1	1	2	0	4	1	24	
3	2	1	1	1	1	1	1	1	1	1	S	1	1	1	1	2	2	2	2	2	2	2	2	1	1	2	1	24	
4	1	1	4	5	5	4	4	4	4	S	4	10	2	2	1	2	2	2	2	2	2	1	1	1	1	1	10	3	24
5	1	1	1	1	1	1	1	2	S	2	1	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2	24
6	2	2	2	2	2	2	2	S	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2	24
7	2	2	2	2	2	1	S	2	1	1	1	2	2	2	1	5	1	1	6	2	4	2	2	1	1	1	6	2	24
8	1	1	1	1	1	S	3	1	1	22	1	3	1	4	2	2	6	5	11	23	1	1	1	1	1	1	23	4	24
9	1	1	1	2	S	4	4	2	2	2	2	2	1	1	1	1	1	2	2	2	2	2	2	2	2	1	4	2	24
10	2	2	2	S	2	2	2	2	2	2	3	3	2	2	3	2	2	2	2	2	2	2	2	1	1	1	3	2	24
11	2	2	S	2	2	2	2	2	2	2	2	2	2	1	1	1	1	1	1	2	2	2	2	2	2	1	2	2	24
12	2	S	2	2	2	2	2	2	C	C	C	C	C	C	C	4	2	1	1	9	19	5	1	1	1	19	-	24	
13	S	2	1	2	2	2	2	2	2	6	6	4	16	4	2	6	6	1	3	1	1	1	1	1	S	1	16	3	24
14	2	2	2	2	4	6	9	7	5	4	4	4	1	2	1	1	1	1	1	2	2	1	S	1	1	1	9	3	24
15	1	1	1	1	1	1	1	1	9	1	2	2	4	1	1	1	1	1	2	3	2	S	1	1	1	1	9	2	24
16	1	1	1	1	1	4	4	2	4	3	1	1	2	2	1	2	2	5	2	S	2	1	1	1	1	1	5	2	24
17	1	1	2	2	2	2	2	6	6	3	6	1	1	1	3	1	1	2	2	S	1	1	1	1	1	1	6	2	24
18	1	1	1	1	1	1	1	2	1	2	3	2	2	6	1	6	2	S	6	4	3	2	2	2	1	6	2	24	
19	1	1	1	1	1	1	0	0	0	0	1	0	1	1	1	1	0	S	1	0	0	2	1	1	0	2	1	24	
20	1	1	1	1	1	1	1	1	0	1	1	1	1	0	1	0	S	1	1	1	1	1	1	1	1	0	1	1	24
21	0	0	1	1	1	1	1	1	1	1	3	0	2	2	1	S	1	1	2	4	3	1	1	1	0	4	1	24	
22	2	2	2	2	2	3	3	3	2	4	2	2	4	2	S	2	1	2	1	2	1	1	1	1	1	1	4	2	24
23	1	1	1	1	1	1	1	1	1	1	2	5	6	S	6	1	1	1	1	1	3	1	1	1	1	1	6	2	24
24	1	1	1	1	1	2	1	1	2	2	1	2	S	1	1	2	1	1	0	0	0	0	0	0	0	0	2	1	24
25	0	0	0	0	0	1	2	1	0	0	1	1	0	0	1	1	0	0	1	1	0	0	0	0	0	0	2	1	24
26	2	2	2	1	1	1	1	1	4	1	S	1	0	1	1	1	0	1	0	1	1	1	1	1	1	0	4	1	24
27	1	1	0	1	1	1	1	1	1	S	1	1	0	1	1	1	1	1	1	1	1	1	2	3	3	0	3	1	24
28	4	4	5	7	7	7	6	2	S	1	1	1	1	1	1	1	2	1	1	1	1	1	1	1	1	1	7	2	24
29	1	1	1	1	1	2	1	S	2	1	3	1	1	0	1	0	1	1	1	0	1	1	1	1	1	0	3	1	24
30	1	1	1	1	0	0	S	1	1	1	1	1	3	1	1	1	1	1	0	1	0	1	1	1	1	0	3	1	24
HOURLY MAX	4	4	5	7	7	7	9	7	9	22	6	10	16	6	6	6	6	5	11	23	19	5	3	3					
HOURLY AVG	1	1	1	2	2	2	2	2	2	3	2	2	2	2	2	2	2	1	2	3	2	1	1	1					

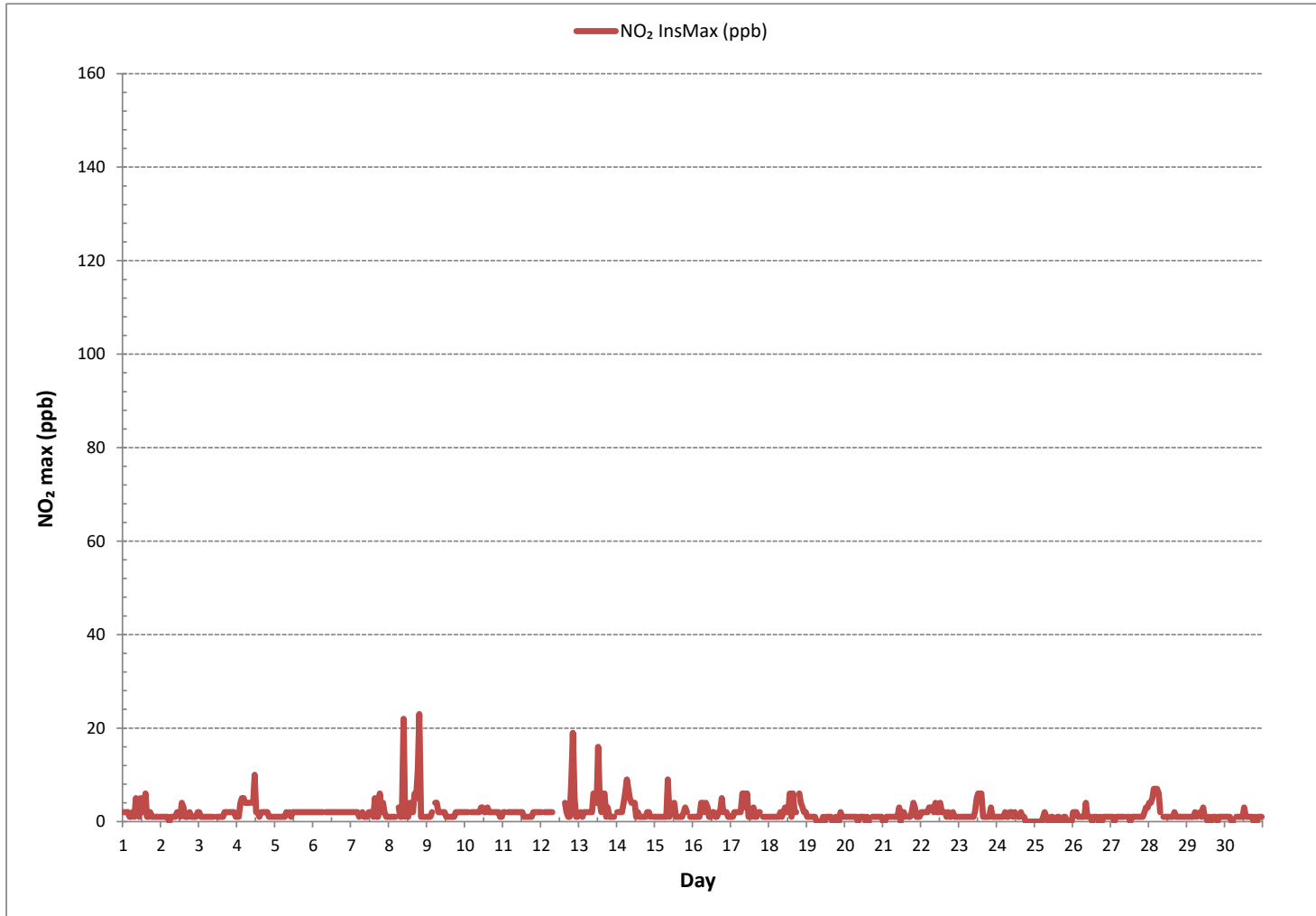
STATUS FLAG CODES

C	- MONTHLY CALIBRATION	Q	- QUALITY ASSURANCE
C1	- REPEAT CALIBRATION	R	- RECOVERY
Y	- MAINTENANCE	X	- MACHINE MALFUNCTION
S	- DAILY ZERO/SPAN CHECK	G	- OUT FOR REPAIR
S1	- REPEAT ZERO/SPAN CHECK	P	- POWER FAILURE

MONTHLY SUMMARY

NUMBER OF NON-ZERO READINGS:	635
MAXIMUM INSTANTANEOUS VALUE:	23 ppb @ HOUR 19 ON DAY 8
	VAR-VARIOUS
IZS CALIBRATION TIME:	30 hrs
MONTHLY CALIBRATION TIME:	7 hrs
STANDARD DEVIATION:	2
OPERATIONAL TIME:	720 hrs

NITROGEN DIOXIDE Instantaneous Maximum (NO₂ ppb)





OZONE Instantaneous Maximum (O₃ ppb)

HR START (MST)	0:00	1:00	2:00	3:00	4:00	5:00	6:00	7:00	8:00	9:00	10:00	11:00	12:00	13:00	14:00	15:00	16:00	17:00	18:00	19:00	20:00	21:00	22:00	23:00	DAILY MIN.	DAILY MAX.	24-HR AVG.	RDGS.	
HR END (MST)	0:59	1:59	2:59	3:59	4:59	5:59	6:59	7:59	8:59	9:59	10:59	11:59	12:59	13:59	14:59	15:59	16:59	17:59	18:59	19:59	20:59	21:59	22:59	23:59					
DAY 1	40.3	40.1	39.0	38.5	39.1	39.0	38.8	41.3	43.8	49.4	48.8	47.6	S	48.6	51.4	52.4	53.8	53.1	53.0	47.1	47.0	45.9	45.6	46.1	38.5	53.8	45.6	24	
2	45.6	46.8	46.6	45.9	44.8	45.9	45.6	44.8	45.0	45.4	45.6	S	47.0	47.5	47.4	48.8	49.6	49.8	49.5	48.0	46.6	45.4	44.8	44.0	44.0	49.8	46.5	24	
3	42.1	42.6	43.5	41.5	39.1	39.9	39.9	39.8	40.5	40.2	S	40.2	40.6	41.3	44.8	44.9	45.0	44.5	43.4	41.8	41.5	37.9	37.7	38.5	37.7	45.0	41.4	24	
4	38.7	38.7	38.3	33.7	34.0	32.6	32.4	33.4	34.3	S	36.2	36.0	35.3	35.6	35.7	36.1	37.3	36.8	37.6	36.9	36.2	38.0	37.9	37.4	32.4	38.7	36.0	24	
5	36.7	37.6	36.7	36.4	34.8	33.4	32.2	30.7	S	34.9	36.0	35.4	38.6	41.4	42.2	44.1	44.0	43.6	42.8	41.2	40.3	39.6	37.6	37.5	30.7	44.1	38.2	24	
6	37.4	35.3	34.8	33.8	33.6	31.8	31.2	S	26.0	23.9	22.3	21.9	20.7	18.7	17.4	16.9	17.9	17.9	18.0	16.9	16.0	15.2	14.6	14.1	14.1	37.4	23.3	24	
7	13.0	13.0	16.2	15.7	17.1	17.2	S	23.5	16.1	26.1	31.4	32.0	36.2	40.9	44.0	48.3	45.9	46.6	45.7	42.6	43.0	43.1	41.9	40.0	13.0	48.3	32.1	24	
8	41.8	40.8	41.3	42.2	41.4	S	42.6	43.3	45.2	46.5	47.2	48.5	50.0	50.4	50.4	50.5	50.8	51.6	50.5	49.8	48.9	48.9	49.0	48.3	40.8	51.6	47.0	24	
9	48.5	49.2	48.6	49.2	S	36.9	24.5	23.5	28.7	29.0	33.1	49.2	53.5	53.3	53.8	54.8	51.3	49.2	47.8	42.5	39.0	35.0	30.3	27.7	23.5	54.8	41.7	24	
10	26.8	24.9	23.3	S	21.0	20.4	19.8	20.1	19.5	20.0	21.8	26.4	36.5	38.5	42.5	49.4	50.8	48.1	49.1	50.2	48.3	47.1	46.6	44.4	19.5	50.8	34.6	24	
11	43.9	35.8	S	30.4	30.5	31.0	31.0	30.9	30.6	29.5	30.0	32.6	40.0	44.0	44.5	45.5	45.5	44.9	44.8	41.5	37.5	36.0	32.9	32.6	29.5	45.5	36.8	24	
12	32.8	S	33.2	33.0	31.3	30.4	30.6	31.2	34.0	34.6	37.9	42.1	44.0	C	C	C	C	C	47.3	47.0	46.9	45.8	45.4	43.9	30.4	47.3	38.4	24	
13	S	42.7	40.9	39.5	38.4	36.2	36.0	34.4	34.3	37.3	41.9	50.3	53.2	54.1	55.8	56.1	57.1	56.9	56.7	55.9	55.9	56.0	54.2	S	34.3	57.1	47.4	24	
14	45.7	46.0	45.9	42.4	40.0	36.8	33.3	33.8	41.5	46.3	42.6	51.1	55.3	56.4	56.6	56.7	55.1	54.1	52.3	51.2	52.1	52.1	S	50.1	33.3	56.7	47.7	24	
15	46.0	41.8	36.9	38.5	38.1	37.0	35.9	35.2	34.9	36.1	36.7	41.7	42.8	44.7	43.9	44.8	42.6	39.8	39.8	38.2	38.6	S	37.2	36.0	34.9	46.0	39.4	24	
16	36.9	38.0	38.3	38.1	37.9	34.6	S1	S1	37.1	34.6	41.8	44.7	42.5	42.0	Y	S1	47.5	46.8	49.2	48.4	S	46.8	46.3	44.3	34.6	49.2	41.9	20	
17	43.1	43.1	40.5	37.3	37.1	36.7	36.7	38.4	38.7	45.3	49.7	50.5	51.4	51.5	51.3	49.7	51.0	46.8	49.2	S	46.8	46.2	45.3	44.1	36.7	51.5	44.8	24	
18	41.2	40.4	40.8	40.2	39.0	37.6	35.5	31.8	33.9	38.6	40.9	42.8	46.7	48.7	50.5	51.5	50.8	49.0	S	44.6	43.9	43.5	45.6	45.6	31.8	51.5	42.7	24	
19	46.1	45.9	44.5	43.4	46.5	47.6	46.9	44.3	45.0	45.0	46.3	48.1	48.7	48.8	50.7	51.7	52.7	S	51.7	51.7	50.5	49.6	47.8	47.8	43.4	52.7	47.9	24	
20	46.5	46.1	44.3	43.6	42.8	42.2	41.3	44.2	46.3	48.2	50.7	51.6	52.1	52.0	50.9	54.2	S	48.2	46.6	44.6	43.6	43.3	42.3	42.6	41.3	54.2	46.4	24	
21	42.9	41.6	41.6	41.8	42.0	43.4	44.7	45.8	48.4	53.4	54.8	54.9	54.6	54.5	55.5	S	56.5	56.9	56.9	56.0	56.0	53.9	50.8	51.5	41.6	56.9	50.4	24	
22	52.0	50.0	47.8	44.4	42.3	39.6	37.4	36.9	36.9	37.1	39.1	49.2	60.6	63.6	S	62.7	61.8	61.6	60.3	55.0	53.0	49.3	47.7	46.8	36.9	63.6	49.4	24	
23	43.7	43.6	42.9	43.9	43.3	44.9	45.7	49.9	51.2	51.2	52.9	57.2	57.4	S	57.9	57.0	58.0	57.3	56.9	56.5	54.4	55.1	55.2	54.4	42.9	58.0	51.7	24	
24	54.6	53.9	52.7	50.4	50.5	49.4	48.9	51.7	52.9	56.1	57.0	56.6	S	53.2	53.1	51.7	52.9	51.9	53.3	51.3	50.0	49.4	48.9	48.0	48.0	57.0	52.1	24	
25	47.6	47.1	47.1	46.5	45.6	44.9	44.7	46.5	46.7	48.3	48.7	49.9	50.4	50.9	51.2	51.9	52.5	52.2	52.2	51.7	51.6	51.7	51.5	51.0	44.7	52.5	49.3	24	
26	50.8	50.3	50.5	50.5	50.4	47.2	45.1	43.9	45.5	48.5	S	48.9	50.2	49.8	50.0	49.7	48.9	48.0	46.5	44.7	43.2	41.7	39.8	38.3	38.3	50.8	47.1	24	
27	37.7	37.8	38.0	37.2	35.9	34.7	33.8	34.8	36.2	S	38.0	40.2	39.3	39.3	40.2	41.5	42.4	41.7	41.4	41.4	39.9	39.3	43.0	44.2	33.8	44.2	39.0	24	
28	42.7	41.5	41.4	40.1	39.9	40.8	43.8	46.2	S	47.2	47.4	47.5	47.5	47.5	47.7	47.6	47.9	47.9	48.3	48.3	47.9	45.1	45.0	46.2	44.9	39.9	48.3	45.3	24
29	43.4	43.9	41.8	41.4	43.4	41.8	40.1	S	43.8	44.1	45.5	46.0	46.8	49.0	50.1	50.4	49.7	49.2	48.6	48.0	47.3	46.9	44.3	45.5	40.1	50.4	45.7	24	
30	46.0	44.7	42.5	43.4	47.1	46.2	S	48.2	47.0	46.1	46.4	46.2	46.9	48.1	48.8	49.0	48.8	48.7	48.0	46.4	45.8	45.3	42.9	41.2	41.2	49.0	46.2	24	
HOURLY MAX	54.6	53.9	52.7	50.5	50.5	49.4	48.9	51.7	52.9	56.1	57.0	57.2	60.6	63.6	63.6	62.7	61.8	61.6	60.3	56.5	56.0	56.0	55.2	54.4					
HOURLY AVG	41.9	41.5	40.7	40.1	38.9	37.9	37.7	38.1	38.7	40.8	41.8	44.5	46.0	46.9	47.7	48.8	48.9	48.0	47.8	46.2	45.1	44.6	43.2	42.4					

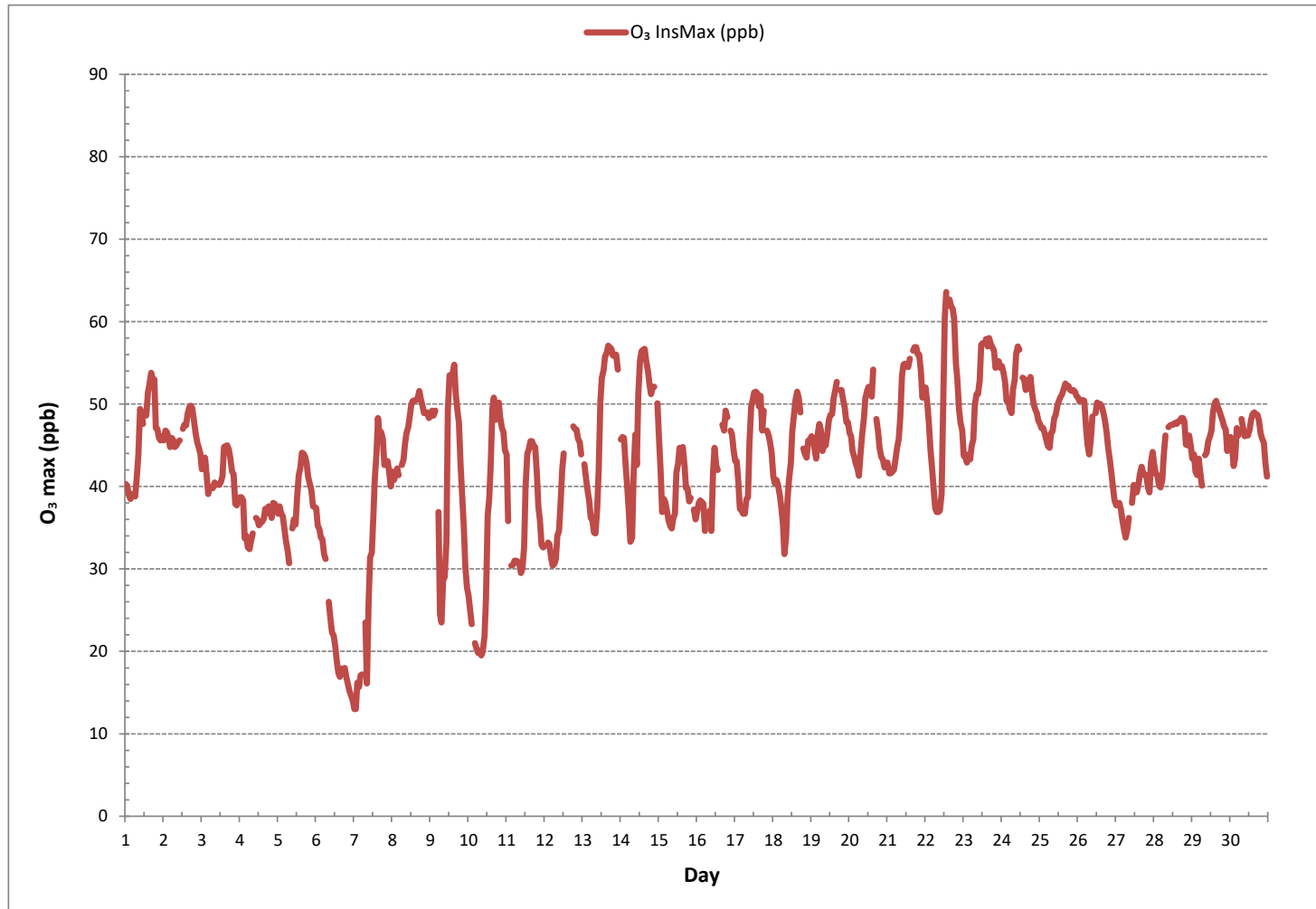
STATUS FLAG CODES

C	- MONTHLY CALIBRATION	Q	- QUALITY ASSURANCE
C1	- REPEAT CALIBRATION	R	- RECOVERY
Y	- MAINTENANCE	X	- MACHINE MALFUNCTION
S	- DAILY ZERO/SPAN CHECK	G	- OUT FOR REPAIR
S1	- REPEAT ZERO/SPAN CHECK	P	- POWER FAILURE

MONTHLY SUMMARY

NUMBER OF NON-ZERO READINGS:	681
MAXIMUM INSTANTANEOUS VALUE:	63.6 ppb @ HOUR 13 ON DAY 22
IZS CALIBRATION TIME:	30 hrs
MONTHLY CALIBRATION TIME:	5 hrs
STANDARD DEVIATION:	8.7
OPERATIONAL TIME:	716 hrs

OZONE Instantaneous Maximum (O₃ ppb)





LAKELAND INDUSTRY & COMMUNITY ASSOCIATION
St. Lina Continuous Monitoring Station - April 2019

WIND SPEED Instantaneous Maximum (WS kph)

HR START (MST)	0:00	1:00	2:00	3:00	4:00	5:00	6:00	7:00	8:00	9:00	10:00	11:00	12:00	13:00	14:00	15:00	16:00	17:00	18:00	19:00	20:00	21:00	22:00	23:00	DAILY MIN.	DAILY MAX.	24-HR AVG.	RDGS.	
HR END (MST)	0:59	1:59	2:59	3:59	4:59	5:59	6:59	7:59	8:59	9:59	10:59	11:59	12:59	13:59	14:59	15:59	16:59	17:59	18:59	19:59	20:59	21:59	22:59	23:59					
DAY 1	17.6	25.0	22.1	22.1	25.7	23.3	20.8	33.6	31.1	41.6	48.9	43.4	47.3	50.9	65.7	51.0	62.6	54.5	53.5	38.6	35.9	31.8	22.8	16.7	16.7	65.7	36.9	24	
2	23.5	39.9	35.1	25.9	26.7	38.8	39.2	29.8	35.3	42.3	43.8	47.6	48.9	41.2	37.9	35.5	31.8	21.7	13.4	9.7	9.0	12.3	12.6	24.6	9.0	48.9	30.3	24	
3	28.5	41.6	43.4	45.8	44.0	58.3	58.7	62.0	64.8	59.6	49.3	51.9	50.9	52.1	45.4	44.3	41.6	31.4	32.2	24.8	34.4	23.9	39.0	40.1	23.9	64.8	44.5	24	
4	30.0	30.3	29.2	29.0	25.7	25.9	19.5	21.7	24.8	32.7	25.4	26.1	25.3	24.1	21.5	20.7	19.3	17.6	15.1	17.6	18.0	16.0	13.6	13.4	13.4	32.7	22.6	24	
5	17.1	16.0	16.1	16.1	13.8	16.0	15.6	19.1	21.7	21.7	19.1	29.4	30.0	32.7	30.9	34.8	29.8	32.5	26.1	30.0	31.1	34.8	32.7	34.8	13.8	34.8	25.1	24	
6	35.7	42.9	44.5	40.6	42.3	40.8	48.0	42.9	39.5	51.0	48.2	42.7	41.2	35.6	34.3	33.8	40.1	25.7	24.9	17.6	12.7	12.7	12.5	11.0	11.0	51.0	34.2	24	
7	11.4	12.3	12.5	13.6	11.5	11.2	11.9	8.6	9.5	9.9	12.3	14.7	16.7	15.8	21.9	20.0	20.6	14.9	11.4	13.2	10.1	13.6	17.1	18.0	8.6	21.9	13.9	24	
8	17.4	16.7	16.7	16.0	19.7	19.8	21.3	23.9	27.8	31.8	35.9	41.2	39.0	44.9	42.3	31.1	30.0	30.2	19.5	17.6	12.7	8.8	9.2	7.5	7.5	44.9	24.2	24	
9	8.4	11.2	9.0	12.1	12.3	11.0	11.0	11.4	13.2	12.9	14.7	17.8	26.1	20.8	27.8	34.9	36.4	29.2	27.6	30.3	30.0	36.4	35.9	37.3	8.4	37.3	21.6	24	
10	30.3	30.9	28.9	27.2	28.5	26.3	33.5	31.8	29.4	29.2	32.0	29.8	31.8	33.8	33.5	30.5	41.4	40.4	44.1	42.1	20.6	11.6	21.9	26.1	11.6	44.1	30.7	24	
11	24.5	27.8	28.3	28.5	30.7	33.6	29.2	31.0	26.7	29.2	29.9	31.3	38.1	34.6	39.4	33.8	30.5	31.0	37.9	24.1	25.4	25.7	23.7	24.1	23.7	39.4	30.0	24	
12	24.3	15.8	22.4	21.7	22.4	26.1	25.3	24.6	26.7	28.3	28.9	36.8	35.7	39.0	38.8	36.4	33.8	28.1	28.3	11.0	10.1	16.7	16.2	16.5	10.1	39.0	25.6	24	
13	23.7	23.7	23.7	23.9	25.4	20.0	19.7	27.8	20.8	20.9	29.2	36.1	31.4	35.0	30.9	28.3	30.0	33.1	18.4	11.6	15.6	14.9	14.5	16.7	11.6	36.1	24.0	24	
14	17.1	14.7	12.3	11.9	12.3	12.5	12.5	15.4	13.9	16.2	18.9	27.2	32.2	33.1	36.1	40.3	33.5	16.2	12.1	32.9	23.9	29.8	29.1	26.3	11.9	40.3	22.1	24	
15	21.3	23.2	26.1	23.2	23.9	26.9	24.3	20.8	21.5	27.4	26.5	29.6	34.8	37.2	41.8	35.9	32.9	31.8	28.0	20.2	16.9	15.8	12.7	11.0	11.0	41.8	25.6	24	
16	12.9	17.6	14.5	15.1	15.4	14.9	14.9	12.3	12.5	19.3	26.5	33.5	28.5	28.1	33.1	40.8	46.2	27.8	35.7	22.1	19.1	19.2	27.6	20.4	12.3	46.2	23.3	24	
17	29.2	32.7	25.5	29.4	27.0	27.4	12.1	11.2	13.4	18.6	20.4	31.6	47.8	51.5	57.6	38.0	60.2	20.2	50.8	31.8	24.8	21.5	18.9	19.3	11.2	60.2	30.0	24	
18	15.4	18.9	18.7	17.1	21.9	18.4	14.0	15.6	17.3	29.2	27.2	29.6	39.2	41.0	42.6	40.8	45.6	33.3	24.4	14.7	9.9	6.4	4.4	9.0	4.4	45.6	23.1	24	
19	16.7	30.7	28.3	36.0	39.4	22.1	20.2	38.8	38.3	37.9	48.2	46.9	42.9	44.0	45.3	49.9	45.3	37.2	32.2	22.2	12.7	13.2	15.2	16.7	12.7	49.9	32.5	24	
20	18.9	19.3	17.1	17.6	17.8	16.5	31.4	30.9	49.5	47.1	46.6	55.0	54.1	59.1	47.3	55.6	41.6	38.6	23.7	17.8	20.2	25.6	18.6	12.3	12.3	59.1	32.6	24	
21	11.0	16.3	17.8	18.7	18.4	21.0	22.4	21.7	22.6	25.6	36.4	33.8	35.3	37.0	49.5	43.6	24.5	26.1	11.5	9.9	10.5	16.0	26.7	25.9	9.9	49.5	24.3	24	
22	27.4	24.3	20.6	21.3	21.3	20.6	22.6	21.3	21.9	30.5	29.2	37.9	31.6	42.3	44.9	35.5	29.1	35.5	42.9	38.3	36.4	22.4	18.6	14.9	14.9	44.9	28.8	24	
23	42.5	12.9	12.1	22.1	45.6	45.3	50.4	55.2	55.0	59.6	64.2	61.5	70.5	56.5	63.9	46.0	48.0	41.0	44.2	25.2	17.3	20.8	16.0	18.6	12.1	70.5	41.4	24	
24	18.9	23.9	18.2	18.4	22.1	20.8	26.3	30.7	45.6	53.5	61.3	62.4	67.7	61.1	57.6	62.0	61.2	56.6	64.6	55.6	54.5	54.1	33.6	33.1	18.2	67.7	44.3	24	
25	35.3	33.4	27.9	25.0	22.1	23.9	25.7	37.9	37.7	41.6	48.6	53.0	52.3	60.7	55.2	52.6	51.9	33.5	30.5	22.1	10.1	9.9	12.3	8.8	8.8	60.7	33.8	24	
26	6.9	11.0	12.5	10.8	19.5	19.3	16.7	14.9	29.6	28.5	37.9	28.5	32.7	34.6	33.3	39.2	25.4	28.5	21.9	20.8	26.9	47.5	52.3	42.9	6.9	52.3	26.8	24	
27	50.2	45.1	46.2	44.0	39.9	35.5	42.7	48.0	50.6	49.8	47.1	59.8	67.0	54.1	47.8	46.7	48.2	40.8	31.6	25.7	19.7	14.0	14.2	13.0	13.0	67.0	40.9	24	
28	13.6	12.5	9.5	7.7	8.0	7.3	11.4	10.8	13.4	28.7	26.1	21.7	26.5	27.2	22.8	38.8	18.2	19.1	23.2	25.9	18.9	16.2	13.0	13.8	7.3	38.8	18.1	24	
29	11.3	14.7	21.3	20.4	20.2	14.7	19.5	27.4	24.1	27.6	27.8	35.9	43.8	42.3	39.9	32.0	27.6	27.6	39.2	22.4	13.0	18.6	22.1	15.4	11.3	43.8	25.4	24	
30	9.9	12.1	14.0	33.8	39.7	36.4	37.7	37.9	31.1	27.0	35.7	37.5	41.0	37.7	39.5	32.2	31.6	29.6	28.1	16.7	8.8	15.2	14.9	14.5	8.8	41.0	27.6	24	
HOURLY MAX	50.2	45.1	46.2	45.8	45.6	58.3	58.7	62.0	64.8	59.6	64.2	62.4	70.5	61.1	65.7	62.0	62.6	56.6	64.6	55.6	54.5	54.1	52.3	42.9					

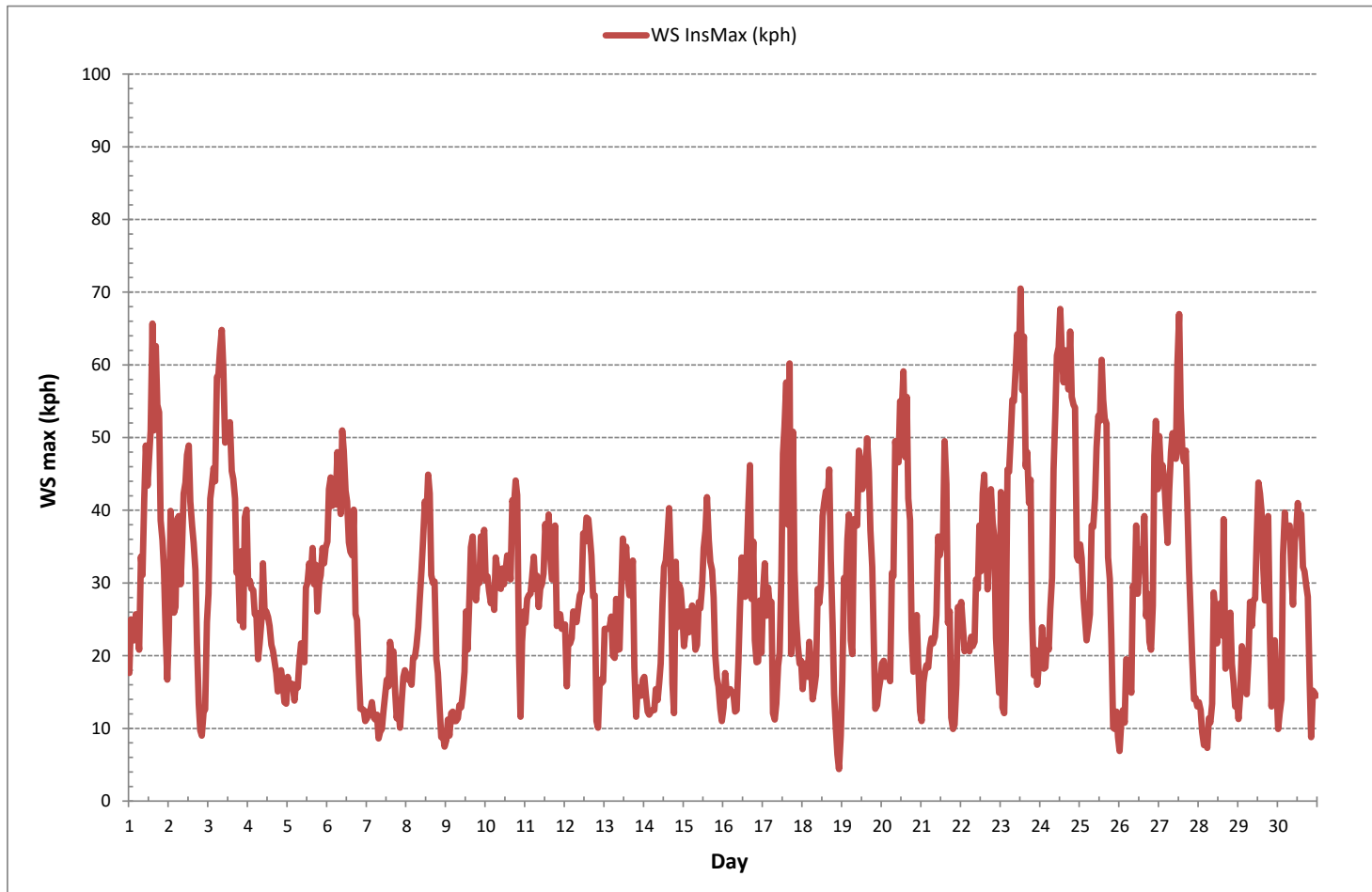
STATUS FLAG CODES

C	- MONTHLY CALIBRATION	Q	- QUALITY ASSURANCE
C1	- REPEAT CALIBRATION	R	- RECOVERY
Y	- MAINTENANCE	X	- MACHINE MALFUNCTION
S	- DAILY ZERO/SPAN CHECK	G	- OUT FOR REPAIR
S1	- REPEAT ZERO/SPAN CHECK	P	- POWER FAILURE

MONTHLY SUMMARY

MAXIMUM INSTANTANEOUS VALUE:	70.5 kph	@ HOUR	12	ON DAY	23
OPERATIONAL TIME:		720 hrs			

WIND SPEED Instantaneous Maximum (WS kph)



1.0 Quality Control Activities

Quality control procedures are established to govern the performance of the monitoring equipment and to protect operational uptime. Data collected during QC/QA activities are assigned a data validation code to comply with the requirements outlined in Chapter 6, 4.1.1, DQ 4-A (AMD, 2016). Calibrations are deemed successful only if the AMD calibration acceptance limits are met (Chapter 7, 9.0, AMD 2016).

A daily zero-span test procedure is performed for each gaseous parameter by challenging the analyzer with a zero-air source and span gas. Daily review of the data ensures the zero and span check are within the required acceptance limits and do not deviate more than $\pm 10\%$ from the expected value. The total zero-span cycle is complete within an hour with the zero phase commencing at the beginning of the scheduled hour. This QC activity is conducted in accordance with Chapter 7, 4.0, Cal 4-A (AMD, 2016).

The allowable time for a zero-span check is one hour per calendar day. The time allotted for the zero-span check does not contribute to downtime and is identified with a data validation code of "S". If any additional zero-span response checks are performed, the time accrued during the QC activity is considered downtime and is identified with a data validation code of "S1". The initiation of an additional zero-span check may be warranted during the investigation of operational issues or suspect data.

Each month, a scheduled multipoint calibration is performed on each gas analyzer. Prior to any adjustments, an as-found response test is completed to obtain the zero reading of the analyzer and the response to the highest span concentration. The zero and high point test gases are then re-introduced into the analyzer to establish the zero and high set-points. Once these adjustments are satisfactory, a mid-point and a low-point test concentration is introduced. Additional multi-point calibrations are required if any of the conditions, outlined in Chapter 7, 2.1, Cal 2G (AMD, 2016) exist.

The time allotted for the first multi-point calibration is not considered downtime and is identified with a data validation code of "C". If any additional as-found response checks or multipoint calibrations are performed, the time accrued during the QC activity is considered downtime and is identified with a data validation code of "C1".

A mechanical wind system undergoes annual calibration, as a minimum, while an ultrasonic wind system is factory calibrated every two years (Chapter 6, 6.0, Cal 6-A, AMD 2016). Supplementary to this, a visual inspection of the equipment is performed during each scheduled monthly site visit.

The time allotted for the wind system calibration is not considered downtime and is identified with a data validation code of "C". If function checks or additional calibrations are performed, the time accrued during the QC activity is not considered downtime and is identified with a data validation code of "Q" and "C", respectively. If QC activity goes beyond 10% of the monthly operating time, the time exceeding 10% is considered downtime and is assigned a data validation code of "C1". Data identified with a data validation code of "Q" is in accordance with Chapter 6, 4.1.3 (AMD, 2016) which states QA/QC activities are not included when calculating data completeness.

High volume samplers are calibrated every three months, as a minimum, in accordance with Chapter 7, 7.0, Cal 7-B (AMD, 2016).

Where passive sampling is in practice, quality control samples will be deployed in accordance with Chapter 4, 3.0, 3.1.3. Method blanks, replicate samples and spiked blanks are exposed and handled in the same manner as each passive sample. To comply with the data submission requirements in Chapter 9, 3.1, the replicate and corresponding passive sample concentrations are reportable data values and have not been averaged.

As recommended in Chapter 6, 4.2 (AMD 2016), daily data review is conducted to verify data and avoid significant data losses. Automated flags, originating from the data-logger, and data anomalies are reviewed and may prompt the need to dispatch a technician for investigation and/or corrective action. Additionally, there are several automated alarm scenarios that serve to screen raw data, alert technicians and elicit investigation or corrective action.

Comparisons of the measured ambient concentrations to the corresponding AAAQO are assessed using the significant figures protocol in Chapter 9, 3.1.2. If the measurement is near the set objective, raw data may undergo necessary data adjustments to confirm a true exceedance. Should an exceedance occur, Maxxam will formally notify the client; however, the reporting protocol to AEP is defined by the client and may not involve Maxxam. Exceedance events are acknowledged in the report, based on the information available at the time.

2.0 Data Verification and Validation

The data validation procedures, outlined in Chapter 6, 4.0, AMD 2016, are used to accept, reject and qualify data. The data verification and validation process, and the current Data Collection and Management Process Flow Chart have been compiled from sections 4.2 to 4.6 (AMD, 2016) and are shown below.

Baseline adjustments are applied by interpolation between two valid zero checks, as determined by the Data Acquisition System. In the event that zero check results are not reliable, data may be adjusted by applying a constant offset to data collected between two adjacent zero checks. Both adjustment approaches are deemed acceptable by the AMD.

Table 1 (Chapter 6) outlines the quantitative parameter relationships to be considered and dictates that data adjustments are applied equally for NO/NO₂/NO_x and CH₄/NMHC/THC parameters. Below zero adjustments are applied to 1-hour averages, in accordance with Table 2 (Chapter 6), and are done after baseline corrections.

Instantaneous data, where provided, is provided for reference purposes and has not undergone zero correction. The minimum and maximum statistics are highlighted in the data table and are for reference only. The highlighted cells are based on the software's interpretation of the exact position of the minimum or maximum value. The visual presentation of these statistics may not be the obvious choice in a data range due to rounding, truncating or analyzer specifications.

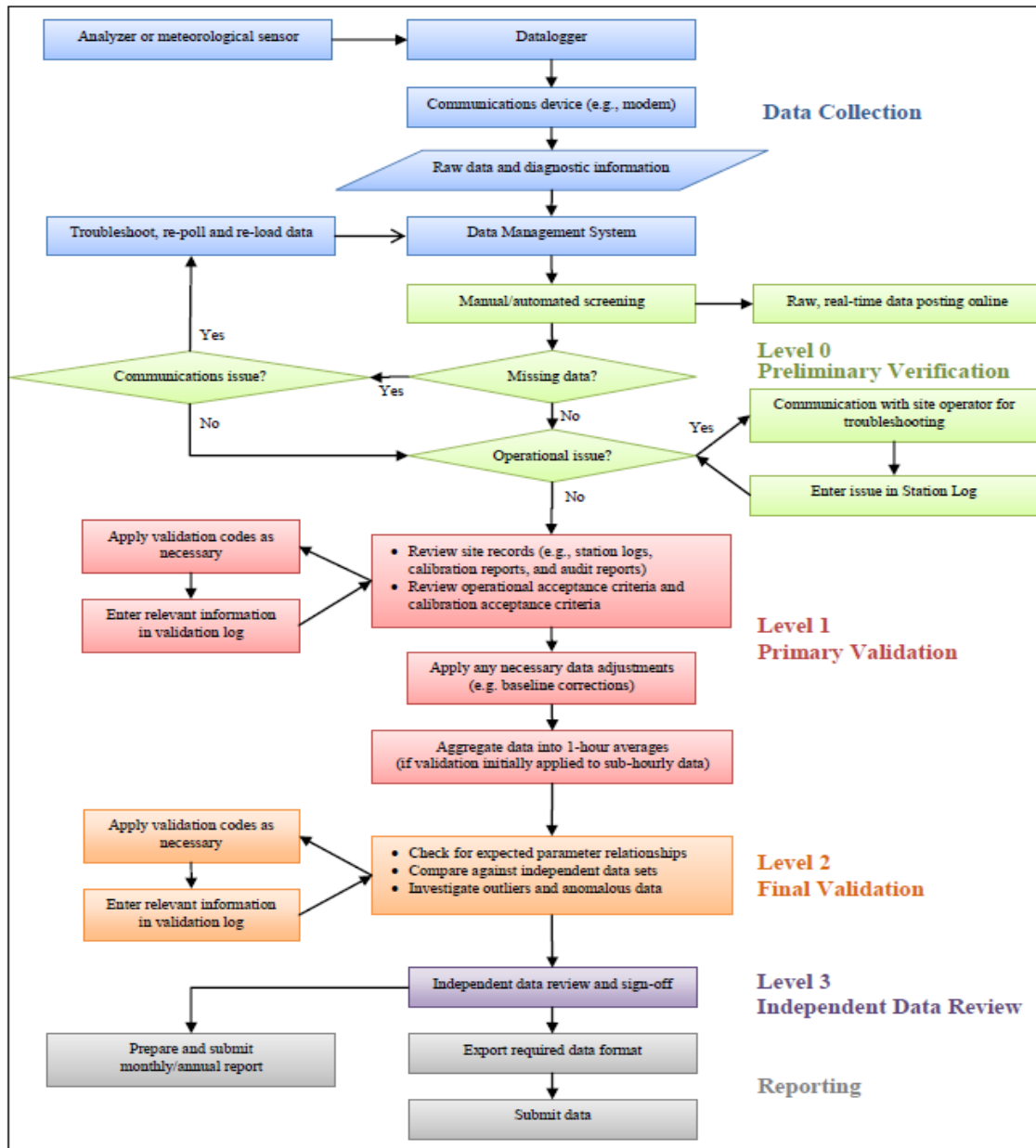
All calculations and reporting of results follow the methods described in the AMD, 2016.

There were no deviations from the prescribed methods.

AMD Data Verification and Validation Process

The following steps were used to complete the data verification and validation process:

Level 0 Preliminary Verification	Level 0 data are raw data obtained directly from the data acquisition system (DAS). At this level, data undergoes a certain amount of manual or automated screening and flagging. Screening checks include: a) identification of periods of missing data; b) verification of time stamps against reference time; c) verification that instrument diagnostics/data-logger flags indicate normal operation; d) comparison of data to upper and lower limits; e) rate of change flagging indicating that data changed too rapidly or not at all; and f) verification that zero, span and multipoint performance checks are within specifications. This level of verification is performed on a daily basis.
Level 1 Primary Validation	Primary validation involves more thorough evaluation and documentation of issues identified during data screening, along with appropriate application of data validation codes. Level 1 activities include: a) review of all screening flags assigned during preliminary verification; b) review of all supporting site information and documentation; c) review of operational acceptance limits for each parameter/analyzer; d) review of daily zero/span and monthly calibration results for all gaseous parameters; and e) application of any necessary adjustments to data (e.g. baseline adjustments, below zero adjustments). This level of validation is performed on a monthly basis.
Level 2 Final Validation	The purpose of Level 2 validation is to verify that there are no inconsistencies among related data, or among regional data measured at nearby sites. At this level of review, some general knowledge of pollutant and meteorological behavior can be used to determine if data is suspect.
Level 3 Independent Data Review	Level 3 validation involves a final cursory review of validated data, and is completed by an individual independent of both field operations and primary data validation. At this level, a final independent QA review/endorsement is performed before data is submitted to Alberta Environment and Parks.
Post-Final Validation	The Post-Final Validation step serves to re-evaluate validated data for errors or omissions discovered and/or suspected after the initial monthly data submittal. This level of validation is performed on an annual basis, when annual reporting is required or requested.



Source: Air Monitoring Directive (December 2016), Chapter 6, Ambient Data Quality
Figure 1 Data Collection and Management Process Flow Chart



Validation Certificate Form

Client: <u>Lakeland Industry & Community Association</u>	Project #: <u>2833-2019-04-25-C</u>
Site: <u>St. Lina Continuous Monitoring Station</u>	Contact: <u>Mike Bisaga</u>

Level 0 Preliminary Verification	<u><i>bimadeniji</i></u>	Date <u>16- May- 2019</u>
Level 1 Primary Validation	<u><i>bimadeniji</i></u>	Date <u>16- May- 2019</u>
Level 2 Final Validation	<u><i>bimadeniji</i></u>	Date <u>21- May- 2019</u>
Level 3 Independent Data Review	<u><i>crashmha</i></u>	Date <u>23- May- 2019</u>
Post-Final Validation	<u>NA</u>	Date <u>NA</u>

Notes
The Post-Final Validation step serves to re-evaluate the data that errors or omissions are discovered and/or suspected after the initial submittal of data. This validation is performed on an annual basis.

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APRIL 1 - 30, 2019

MONTHLY AMBIENT AIR QUALITY MONITORING REPORT

AEP Ambient Station ID: 1608

Project #: 2833-2019-04-39-C

LICA--201904

Prepared for:

Lakeland Industry & Community Association

Mike Bisaga

5107 50 St.

Bonnyville, Alberta T9N 2J5

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780-266-7068

Facility:

**Bonnyville East Site Continuous Monitoring
Station**

Date of Report Issuance: May 31, 2019

Report Preparation By:

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Project Manager, Customer Service, Air Services

Reviewed By:

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Project Team Lead, Customer Service, Air Services



#1 - 2080 39 Avenue NE, Calgary AB, T2E 6P7

LICA-201904

Page 267 of 350

Lakeland Industry & Community Association

5107 50 St.
Bonnyville, Alberta T9N 2J5

Attention: Mike Bisaga

Date: May 31, 2019

Subject: MONTHLY AMBIENT AIR QUALITY MONITORING REPORT for APRIL 1 - 30, 2019

In April 2019, Maxxam Analytics was contracted to manage the ambient air quality monitoring and maintenance activities at the Bonnyville East Continuous Monitoring Station near Bonnyville, Alberta. The monitoring program provides measurements of ambient air pollutants and meteorological data to satisfy the reporting requirements of the Alberta airshed.

Network Parameters for Continuous Monitoring:

This monthly report, where applicable, was prepared in accordance with Chapter 9 of the Air Monitoring Directive (AMD, 2016). The report summarizes the continuous monitoring results for pollutant and meteorological parameters and presents the hourly statistics, graphs and rose charts for the month. Calibration records are provided in a separate PDF document in order to comply with AMD requirements Chapter 9, 13.1.7, RC 13-R. The station is equipped with analyzers to measure SO₂, H₂S, THC, CH₄, NMHC, NO_x, NO, NO₂, PM_{2.5} and O₃. The meteorological sensors and equipment capture data for WS, WD and STDWD.

Exceedance & Performance Reporting:

The operational time for all continuous ambient air analyzers, meteorological systems and data acquisition systems were above the 90% requirement, as per the AMD, Chapter 6, DQ 4-C, 2016.

Non- Conformance: Comparisons of the measured ambient air concentrations to the corresponding AAAQOs were done in accordance with Appendix A, Alberta Ambient Air Quality Objective Calculation Guidelines (AMD, Chapter 9, Appendix A, 2016). For H₂S, there were concentrations recorded in excess of the Alberta Ambient Air Quality Objectives and Guidelines (AAAQO, January 2019). Ten 1-hr and one 24-hr exceedances were recorded for H₂S this month. Details of the exceedance are recorded in the AAAQO Exceedance Summary Report (Page 5).

For all the remaining parameters, there were no ambient concentrations in excess of the AAAQOs.

Monthly Monitoring Overview:

In relation to the previous month, there were no changes made to the scope or management of the ambient air monitoring program.

The evaluation of data collected in the month of April did not reveal any errors or omissions that would require resubmission of air data to AEP's airdata warehouse.

During this monitoring period, there were no scheduled audits, to which Maxxam Analytics was privy to.

Gas Parameters: For undetermined reasons, the automated zero-span check scheduled for hour 08:00 on April 5 was interrupted few minutes after it was initiated. A zero-span check was manually triggered immediately, and was successfully completed. Diagnostic information revealed that the analyzers were performing optimally, therefore, ambient data quality was not impacted by this event.

SO₂/NO_x/NO/NO₂: The initial attempt at the routine monthly calibration on April 8 was unsuccessful, due to a calibrator error. The calibration was subsequently completed, using an alternate calibrator. Four hours of downtime were incurred due to the failed calibration attempt.

H₂S: One hour of downtime was recorded on April 6, due to an additional quality check, performed to assess a biased high drift in span response.

NO_x/NO/NO₂: One hour of downtime was recorded on April 22, due to an additional quality check, performed to assess a biased low drift in span response.

Canister System: A canister event was recorded on April 26 at 02:25, at an initial concentration of 0.76 ppm. The sample was processed for analysis by InnoTech and the results will be provided in the 2019, Q2 integrated report.

Should you have any questions concerning the results or if we can be of further assistance, please contact your Maxxam representative indicated below.

Reviewed by:



Wunmi Adekanmbi, M.Sc., EPT, PMP
Project Team Lead, Customer Service, Air Services
403-219-3661

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. Certification of submitted information is specific to the contents of this report and is not intended to represent the onus of the Person Responsible, as outlined in Chapter 9, RC 12-E.

TABLE OF CONTENTS

TITLE PAGE	1
COVER LETTER	2
TABLE OF CONTENTS	3
ABBREVIATIONS	4
AAAQO EXCEEDANCE SUMMARY	5
MONTHLY CONTINUOUS DATA SUMMARY	6
OPERATIONAL SUMMARY	7
SUMMARY TABLES, GRAPHS AND ROSES	10
Sulphur Dioxide	11
Hydrogen Sulphide	15
Total Hydrocarbon	19
Methane	23
Non-Methane Hydrocarbon	27
Oxides of Nitrogen	31
Nitric Oxide	35
Nitrogen Dioxide	39
Ozone	43
Particulate Matter _{2.5}	47
Wind Speed	51
Wind Direction	54
Standard Deviation Wind Direction	57
MAXIMUM INSTANTANEOUS DATA	59
1.0 Quality Control Activities	79
2.0 Data Verification and Validation	80
Validation Certificate Form	83
End of Report	84

List of Acronyms

AAAQO	Alberta Ambient Air Quality Objectives and Guidelines Summary
AEP	Alberta Environment and Parks
AMD	Air Monitoring Directive
CH₄	Methane
DAS	Data acquisition system
hr	Hour
hrs	Hours
H₂S	Hydrogen Sulphide
IZS	Internal zero-span
kph	Kilometers per hour
NO	Nitric Oxide
NO₂	Nitrogen dioxide
NO_x	Total oxides of nitrogen
O₃	Ozone
NMHC	Non-Methane Hydrocarbon
PM_{2.5}	Particulate matter less than or equal to 2.5 microns in diameter
ppb	Parts per billion
ppm	Parts per million
QA	Quality Assurance
QC	Quality Control
SHARP	Synchronized Hybrid Ambient Real-time Particulate Monitor
SOP	Standard Operating Procedure
SO₂	Sulphur Dioxide
STDWD	Standard Deviation Wind Direction
THC	Total hydrocarbons
µg/m³	Microgram per cubic meter
WS	Wind Speed
WD	Wind Direction
°C	Degrees Celsius

AAAQO Exceedance Summary Report

SO₂ 1-Hour Exceedances

Measured concentrations of sulphur dioxide were below the 1-hour AAAQO of 172 ppb.

SO₂ 24-Hour Exceedances

Measured concentrations of sulphur dioxide were below the 24-hour AAAQO of 48.0 ppb.

H₂S 1-Hour Exceedances

DATE	TIME (MST)	READING (ppb)	WS (kph)	WD (deg)	AEP Reference #
April 13	19:00	18	9.9	SE	352013
April 13	20:00	21	7.3	SE	352013
April 14	04:00	14	5.1	E	352014
April 18	22:00	34	6.1	SE	352234
April 19	00:00	20	9.2	SSE	352235
April 21	18:00	19	9.4	SSE	352276
April 21	19:00	89	8.8	SE	352276
April 21	20:00	12	8.1	SE	352276
April 22	03:00	14	13.7	SE	352276
April 29	02:00	23	5.6	S	352557

H₂S 24-Hour Exceedances

DATE	READING (ppb)	WS (kph)	WD (deg)	AEP Reference #
April 21	6	7.7	N	352276

NO₂ 1-Hour Exceedances

Measured concentrations of nitrogen dioxide were below the 1-hour AAAQO of 159 ppb.

PM_{2.5} 1-Hour Exceedances

Measured concentrations of fine particulate matter were below the 1-hour AAAQG of 80 µg/m³.

PM_{2.5} 24-Hour Exceedances

Measured concentrations of fine particulate matter were below the 24-hour AAAQO of 29 µg/m³.

O₃ 1-Hour Exceedances

Measured concentrations of ozone were below the 1-hour AAAQO of 76 ppb.

In accordance with EPEA and the Substance Release Regulation

In accordance with A Guide to Release Reporting and the Alberta Ambient Air Quality Objectives and Guidelines Summary

MONTHLY CONTINUOUS DATA SUMMARY

Lakeland Industry & Community Association						MAXIMUM VALUES							OPERATIONAL TIME (%)
Bonnyville East Site Continuous Monitoring Station						1-HOUR					24-HOUR		
PARAMETER	OBJECTIVES		EXCEEDANCES		MONTHLY AVERAGE	READING	DAY	HOUR	WIND SPEED (kph)	WIND DIRECTION (sector)	READING	DAY	
	1-hr	24-hr	1-hr	24-hr									
SO ₂ (ppb)	172	48	0	0	0	3	21	22	16.4	SSE	1	17	99.4
H ₂ S (ppb)	10	3	10	1	1	89	21	19	8.8	SE	6	21	99.9
THC (ppm)	-	-	-	-	2.04	2.80	14	5	6.1	E	2.15	14	100.0
CH ₄ (ppm)	-	-	-	-	2.04	2.80	14	5	6.1	E	2.15	14	100.0
NMHC (ppm)	-	-	-	-	0.00	0.32	26	2	3.5	S	0.01	26	100.0
NO ₂ (ppb)	159	-	0	-	2	20	26	6	2.7	W	4	26	99.3
NO (ppb)	-	-	-	-	0	65	15	17	15.9	WSW	3	15	99.3
NO _x (ppb)	-	-	-	-	2	73	15	17	15.9	WSW	5	15	99.3
O ₃ (ppb)	76	-	0	-	38.5	61.3	22	15	18.1	SSW	47.5	24	100.0
PM _{2.5} (µg/m ³)	80	29	0	0	3	18	21	19	8.8	SE	6	4	100.0
VECTOR WS (kph)	-	-	-	-	3.0	34.7	1	13	-	WNW	22.9	24	100.0
VECTOR WD (sec)	-	-	-	-	246 (WSW)	-	-	-	-	-	-	-	100.0

OPERATIONAL SUMMARY

Parameter	Equipment	Method & Procedure	Operational Notes
SULPHUR DIOXIDE (SO ₂)	Thermo 43I-TLE Pulsed Fluorescence Analyzer	Maxxam AIR SOP-00209: Ambient Sulphur Monitoring	<ul style="list-style-type: none"> Operational time for the monitoring period was 99.4%, equivalent to 4 hours of downtime. For undetermined reasons, the automated zero-span check scheduled for hour 08:00, on April 5 was interrupted few minutes after it was initiated. A zero-span check was manually triggered immediately, and was successfully completed. Diagnostic information revealed that the analyzer was performing optimally, therefore, ambient data quality was not impacted by this event. The initial attempt at the routine monthly calibration on April 8 was unsuccessful, due to a calibrator malfunction. The analyzer was reset to as-found background settings and the calibration was successfully completed between hours 16:00 - 19:00, using an alternate calibrator. Four hours of downtime were incurred due to the failed calibration attempt.
HYDROGEN SULPHIDE (H ₂ S)	Thermo 450i UV Fluorescence Analyzer	Maxxam AIR SOP-00209: Ambient Sulphur Monitoring	<ul style="list-style-type: none"> Operational time for the monitoring period was 99.9%, equivalent to 1 hour of downtime. For undetermined reasons, the automated zero-span check scheduled for hour 08:00, on April 5 was interrupted few minutes after it was initiated. A zero-span check was manually triggered immediately, and was successfully completed. Diagnostic information revealed that the analyzer was performing optimally, therefore, ambient data quality was not impacted by this event. The daily span result exceeded the upper acceptance limit on April 6. The result of a repeat span check performed immediately afterwards and subsequent scheduled span checks, exhibited similar response. This prompted a site visit on April 8 where the routine monthly calibration was successfully completed between hours 12:00 - 17:00. No further issues were identified. The expected span value was updated following the scheduled zero-span check on April 9. As the monthly calibration met AMD requirements, no data was discarded due to the span drift. One hour of downtime was, however, recorded due to the additional quality check. There were ten 1-hr and one 24-hr exceedances recorded this month. Details of the exceedance are recorded in the AAAQO Exceedance Summary Report (Page 5).

OPERATIONAL SUMMARY

Parameter	Equipment	Method & Procedure	Operational Notes
TOTAL HYDROCARBONS (THC), METHANE (CH ₄) & NON-METHANE HYDROCARBONS (NMHC)	Thermo 55i FID Analyzer	<p>Maxxam AIR SOP-00001: Methane, Non-Methane Hydrocarbon Analyzer Monitoring</p> <p>Maxxam AIR SOP-00225: The Collection of VOCs in Ambient Air Using Canisters and Xontech</p>	<ul style="list-style-type: none"> Operational time was 100%. For undetermined reasons, the automated zero-span check scheduled for hour 08:00, on April 5 was interrupted few minutes after it was initiated. A zero-span check was manually triggered immediately, and was successfully completed. Diagnostic information revealed that the analyzer was performing optimally, therefore, ambient data quality was not impacted by this event. The routine monthly calibration was performed on April 9, between the hours of 09:00 and 12:00. The canister sampler is programmed to draw in a whole air sample when the 5-minute average concentration of NMHC is above 0.30 ppm. A representative sample of ambient air is collected over a one-hour period when the canister event is triggered. A canister event was recorded on April 26 at 02:25, at an initial concentration of 0.76 ppm. The sample was processed for analysis by InnoTech and the results will be provided in the 2019, Q2 integrated report.
OXIDES OF NITROGEN (NO _x), NITRIC OXIDE (NO) & NITROGEN DIOXIDE (NO ₂)	Thermo 42i Chemiluminescent Analyzer	Maxxam AIR SOP-00213: Ambient NO/NO₂/NO_x Monitoring	<ul style="list-style-type: none"> Operational time for the monitoring period was 99.3%, equivalent to 5 hours of downtime. For undetermined reasons, the automated zero-span check scheduled for hour 08:00, on April 5 was interrupted few minutes after it was initiated. A zero-span check was manually triggered immediately, and was successfully completed. Diagnostic information revealed that the analyzer was performing optimally, therefore, ambient data quality was not impacted by this event. The initial attempt at the routine monthly calibration on April 8 was unsuccessful, due to a calibrator malfunction. The analyzer was reset to as-found background settings and the calibration was successfully completed between hours 16:00 - 20:00, using an alternate calibrator. Four hours of downtime were incurred due to the failed calibration attempt. The analyzer began to exhibit a gradual biased low drift in span response at about mid-month. An additional zero-span check performed at hour 06:00 on April 22 demonstrated an improved response. No further action was taken. The cause of the instability in span response could not be determined at this time. One hour of downtime was attributed to the additional quality check.
OZONE (O ₃)	Thermo 49i Photometric Analyzer	Maxxam AIR SOP-00212: Ambient O₃ Monitoring	<ul style="list-style-type: none"> Operational time was 100%. For undetermined reasons, the automated zero-span check scheduled for hour 08:00, on April 5 was interrupted few minutes after it was initiated. A zero-span check was manually triggered immediately, and was successfully completed. Diagnostic information revealed that the analyzer was performing optimally, therefore, ambient data quality was not impacted by this event. The routine monthly calibration was performed on April 9, between the hours of 09:00 and 13:00.

OPERATIONAL SUMMARY

Parameter	Equipment	Method & Procedure	Operational Notes
PARTICULATE MATTER < 2.5 MICRONS (PM _{2.5})	Thermo SHARP 5030i Unit	Maxxam AIR SOP-00014: Measurement of Particulate Concentration Using the THERMO SHARP	<ul style="list-style-type: none"> Operational time was 100% and there were no performance issues identified. The routine quarterly calibration was performed on April 26, between the hours of 12:00 and 14:00.
WIND SPEED (WS), WIND DIRECTION (WD) & STANDARD DEVIATION WIND DIRECTION (STDWD)	RM Young Unit	Maxxam AIR SOP-00013: RM Young Wind Monitor Calibration	<ul style="list-style-type: none"> Operational time was 100% and there were no performance issues identified. Wind data is reported as vector wind speed and vector wind direction. Wind direction is defined as the direction from which the wind is blowing from and is measured in degrees from true north.
Datalogger	Envista Ultimate Unit	Operations Manual	<ul style="list-style-type: none"> There were no performance issues identified.

SUMMARY TABLES, GRAPHS AND ROSES

SULPHUR DIOXIDE Hourly Averages (SO₂ ppb)

HR START (MST)	0:00	1:00	2:00	3:00	4:00	5:00	6:00	7:00	8:00	9:00	10:00	11:00	12:00	13:00	14:00	15:00	16:00	17:00	18:00	19:00	20:00	21:00	22:00	23:00	DAILY	DAILY	24-HR	RDGS.	
HR END (MST)	0:59	1:59	2:59	3:59	4:59	5:59	6:59	7:59	8:59	9:59	10:59	11:59	12:59	13:59	14:59	15:59	16:59	17:59	18:59	19:59	20:59	21:59	22:59	23:59	MIN.	MAX.	AVG.		
DAY 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	1	0	24
DAY 2	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	24
DAY 3	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	24
DAY 4	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	24
DAY 5	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	1	0	24
DAY 6	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	24
DAY 7	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	24
DAY 8	0	0	0	0	0	S	0	0	0	0	0	0	0	Y	Y	Y	Y	C	C	C	C	0	0	0	0	0	0	-	20
DAY 9	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	24
DAY 10	1	1	1	S	0	0	0	0	0	1	1	0	1	1	0	0	0	0	0	0	0	0	0	0	0	0	1	0	24
DAY 11	0	0	S	0	0	0	0	0	0	0	0	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1	0	24
DAY 12	0	S	0	1	1	1	1	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1	0	0	1	0	24
DAY 13	S	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	24
DAY 14	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	24
DAY 15	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1	0	0	0	S	0	0	0	0	1	0	24
DAY 16	0	0	0	0	0	0	0	0	0	0	1	0	0	0	0	0	0	0	0	0	S	0	1	1	0	0	1	0	24
DAY 17	2	1	2	2	1	1	1	0	0	0	0	0	0	0	0	0	0	0	0	S	0	0	0	0	0	0	2	1	24
DAY 18	0	0	0	0	0	0	0	0	0	0	0	0	0	1	1	0	0	0	0	S	0	0	0	0	0	0	1	0	24
DAY 19	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	24
DAY 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	24
DAY 21	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	S	1	0	0	0	0	0	0	3	3	0	3	0	24
DAY 22	2	0	1	1	0	0	0	0	1	1	1	1	0	0	S	0	0	0	0	0	0	0	0	0	0	0	2	0	24
DAY 23	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	24
DAY 24	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	24
DAY 25	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	24
DAY 26	0	0	0	0	0	0	0	1	1	0	S	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1	0	24
DAY 27	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	24
DAY 28	0	0	0	0	1	1	1	2	S	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	2	0	24
DAY 29	0	0	0	0	0	0	S	2	1	1	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	2	0	24
DAY 30	0	0	0	0	0	S	1	1	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1	0	24
HOURLY MAX	2	1	2	2	1	1	1	2	2	1	1	1	1	1	0	0	1	1	0	0	0	0	3	3					
HOURLY AVG	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0				

STATUS FLAG CODES

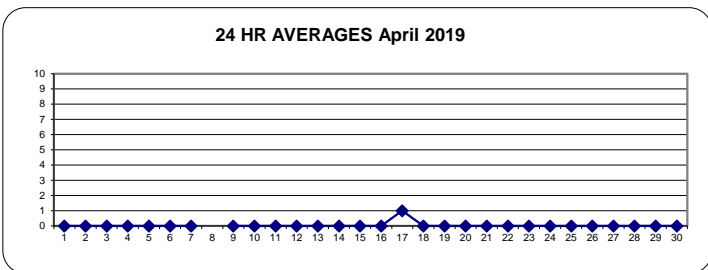
C	- MONTHLY CALIBRATION	Q	- QUALITY ASSURANCE
C1	- REPEAT CALIBRATION	R	- RECOVERY
Y	- MAINTENANCE	X	- MACHINE MALFUNCTION
S	- DAILY ZERO/SPAN CHECK	G	- OUT FOR REPAIR
S1	- REPEAT ZERO/SPAN CHECK	P	- POWER FAILURE

OBJECTIVE LIMIT:

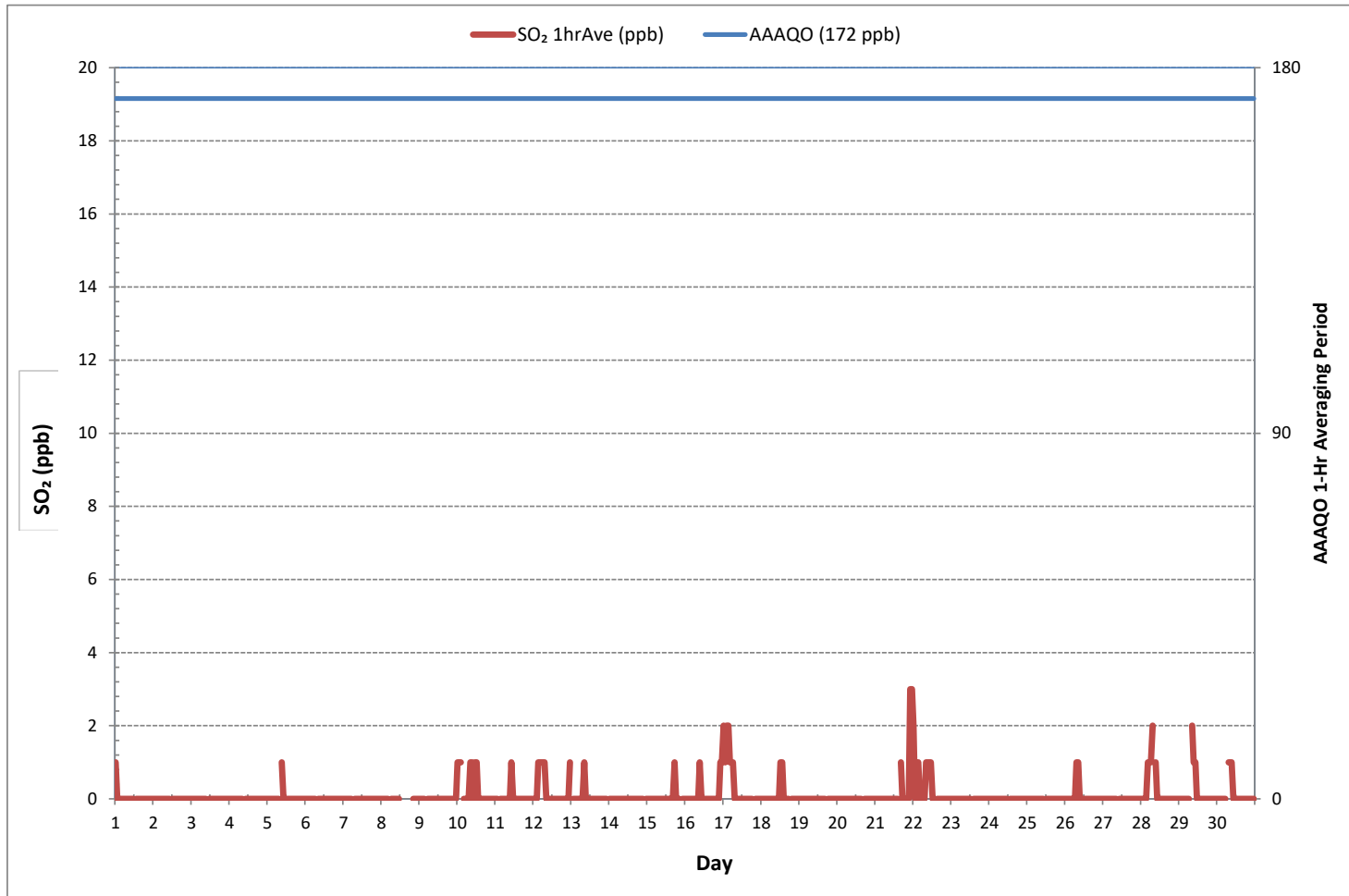
ALBERTA ENVIRONMENT:	1-HR	172	ppb	24-HR	48	ppb
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MONTHLY SUMMARY

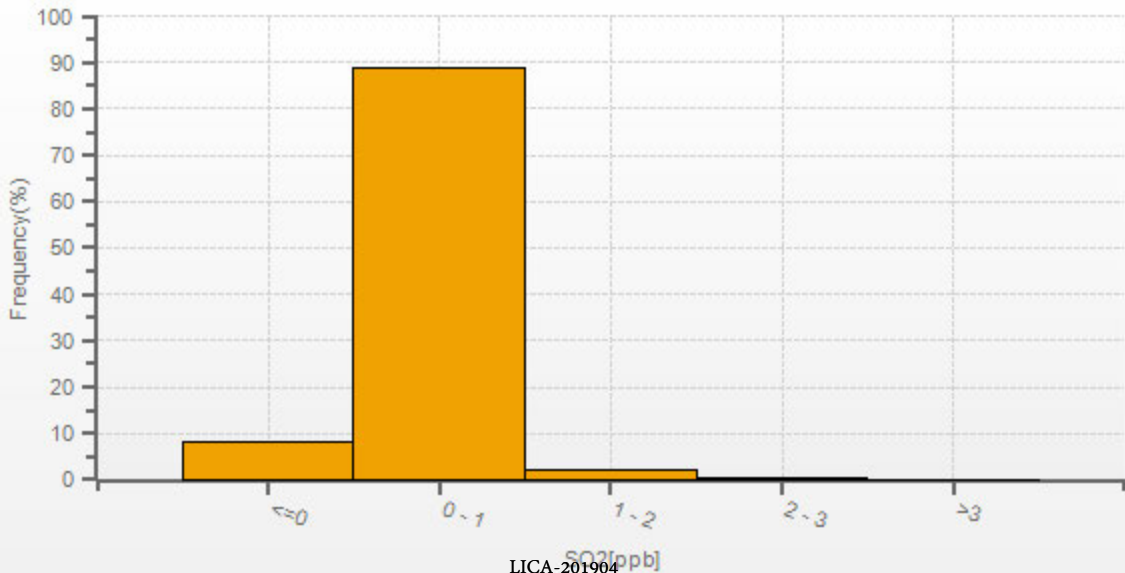
NUMBER OF 1-HR EXCEEDANCES:	0		
NUMBER OF 24-HR EXCEEDANCES:	0		
NUMBER OF NON-ZERO READINGS:	53		
MINIMUM 1-HR AVERAGE:	0 ppb @ HOUR 1 ON DAY 1		
MAXIMUM 1-HR AVERAGE:	3 ppb @ HOUR 22 ON DAY 21		
MAXIMUM 24-HR AVERAGE:	1 ppb ON DAY 17		
IZS CALIBRATION TIME:	31 hrs	OPERATIONAL TIME:	716 hrs
MONTHLY CALIBRATION TIME:	4 hrs	AMD OPERATION UPTIME:	99.4 %
STANDARD DEVIATION:	0	MONTHLY AVERAGE:	0 ppb



SULPHUR DIOXIDE Hourly Averages (SO₂ ppb)

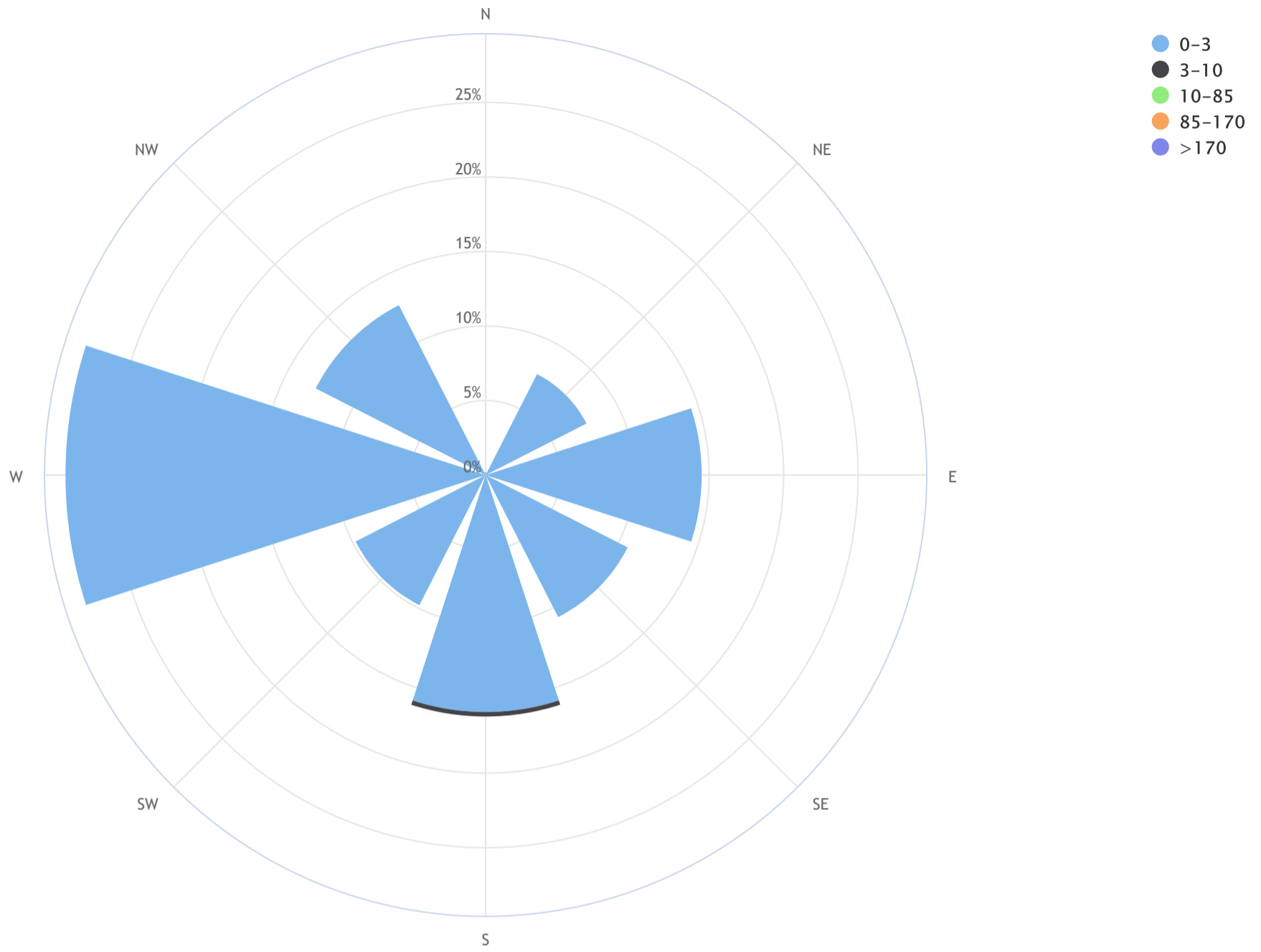


SO₂[ppb] Histogram: LICA Bonnyville East Monthly: 19/04 1 Hr.



Lakeland Industry & Community Association_Bonnyville East Site Continuous Monitoring Station_SO₂ (ppb)_19/04

Pollutant Rose_Wind Frequency (Blowing From)_ CALM Avg = N/A, CALM % = 0.0%



Direction	0-3	3-10	10-85	85-170	>170	TOTAL
N	0.2	0.0	0.0	0.0	0.0	0.2
NE	7.6	0.0	0.0	0.0	0.0	7.6
E	14.5	0.0	0.0	0.0	0.0	14.5
SE	10.7	0.0	0.0	0.0	0.0	10.7
S	15.9	0.3	0.0	0.0	0.0	16.2
SW	9.8	0.0	0.0	0.0	0.0	9.8
W	28.2	0.0	0.0	0.0	0.0	28.2
NW	12.8	0.0	0.0	0.0	0.0	12.8
Summary	99.7	0.3	0.0	0.0	0.0	100.0
CALM	0.0	0.0	0.0	0.0	0.0	0.0

HYDROGEN SULPHIDE Hourly Averages (H₂S ppb)

HR START (MST)	0:00	1:00	2:00	3:00	4:00	5:00	6:00	7:00	8:00	9:00	10:00	11:00	12:00	13:00	14:00	15:00	16:00	17:00	18:00	19:00	20:00	21:00	22:00	23:00	DAILY	DAILY	24-HR	RDGS.	
HR END (MST)	0:59	1:59	2:59	3:59	4:59	5:59	6:59	7:59	8:59	9:59	10:59	11:59	12:59	13:59	14:59	15:59	16:59	17:59	18:59	19:59	20:59	21:59	22:59	23:59	MIN.	MAX.	AVG.		
DAY																													
1	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	24	
2	0	0	0	0	0	0	0	0	0	0	0	S	0	0	0	0	0	0	0	0	0	2	1	1	0	2	0	24	
3	0	0	0	0	0	0	0	0	0	0	S	0	0	0	0	1	0	0	0	0	0	0	0	0	0	1	0	24	
4	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	24	
5	0	0	0	0	0	0	0	0	S	0	0	0	0	0	0	0	1	1	0	0	0	0	0	0	0	1	0	24	
6	0	0	0	0	0	0	S	S1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	23	
7	0	1	0	0	0	S	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1	0	24	
8	0	0	0	0	S	0	0	0	0	0	0	0	C	C	C	C	C	C	0	0	0	1	0	0	0	1	-	24	
9	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	24	
10	0	2	2	S	3	4	2	1	1	0	0	0	0	0	0	1	0	0	1	4	0	2	5	2	0	5	1	24	
11	2	0	S	0	1	1	1	1	1	1	1	2	1	1	1	0	1	0	1	7	1	1	2	2	0	7	1	24	
12	4	S	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	2	0	0	0	0	0	4	0	24	
13	S	0	0	0	1	2	2	0	0	0	0	0	0	0	0	1	1	4	18	21	4	2	S	0	21	3	24		
14	0	0	0	0	14	10	2	1	0	0	0	0	0	0	0	0	0	0	0	0	0	S	0	0	0	14	1	24	
15	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1	0	0	0	S	0	0	0	0	1	0	24	
16	0	0	0	10	3	4	0	1	0	0	0	0	0	0	0	0	0	0	0	0	S	0	0	0	0	10	1	24	
17	0	0	1	0	1	8	8	0	0	1	0	0	0	0	0	3	8	9	S	0	0	0	0	0	0	9	2	24	
18	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	S	2	8	10	34	3	0	0	34	3	24	
19	20	6	1	0	0	0	0	0	0	0	0	0	0	0	0	0	S	0	0	0	0	0	0	0	0	20	1	24	
20	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	24	
21	0	0	0	0	0	0	0	0	0	0	0	0	0	0	S	0	0	19	89	12	7	0	0	0	0	89	6	24	
22	0	2	4	14	4	1	4	4	7	1	2	0	0	S	0	0	0	0	0	0	0	0	0	0	0	14	2	24	
23	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	24	
24	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	24	
25	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	24	
26	1	1	1	1	0	0	0	1	0	0	S	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1	0	24	
27	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	24	
28	0	0	0	0	0	0	0	0	0	S	0	0	0	0	0	0	0	0	0	0	0	1	3	5	10	0	10	1	24
29	4	0	23	9	0	0	S	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	23	2	24	
30	0	0	0	0	0	S	0	0	0	0	0	0	0	0	0	0	0	0	0	0	9	3	0	0	0	9	1	24	
HOURLY MAX	20	6	23	14	14	10	8	4	7	1	2	2	1	1	1	1	3	8	19	89	21	10	34	10					
HOURLY AVG	1	0	1	1	1	1	1	0	0	0	0	0	0	0	0	0	0	0	1	4	2	1	2	1					

STATUS FLAG CODES

C	- MONTHLY CALIBRATION	Q	- QUALITY ASSURANCE
C1	- REPEAT CALIBRATION	R	- RECOVERY
Y	- MAINTENANCE	X	- MACHINE MALFUNCTION
S	- DAILY ZERO/SPAN CHECK	G	- OUT FOR REPAIR
S1	- REPEAT ZERO/SPAN CHECK	P	- POWER FAILURE

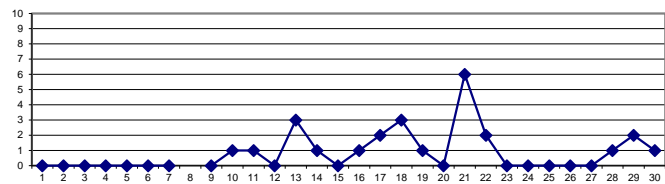
OBJECTIVE LIMIT:

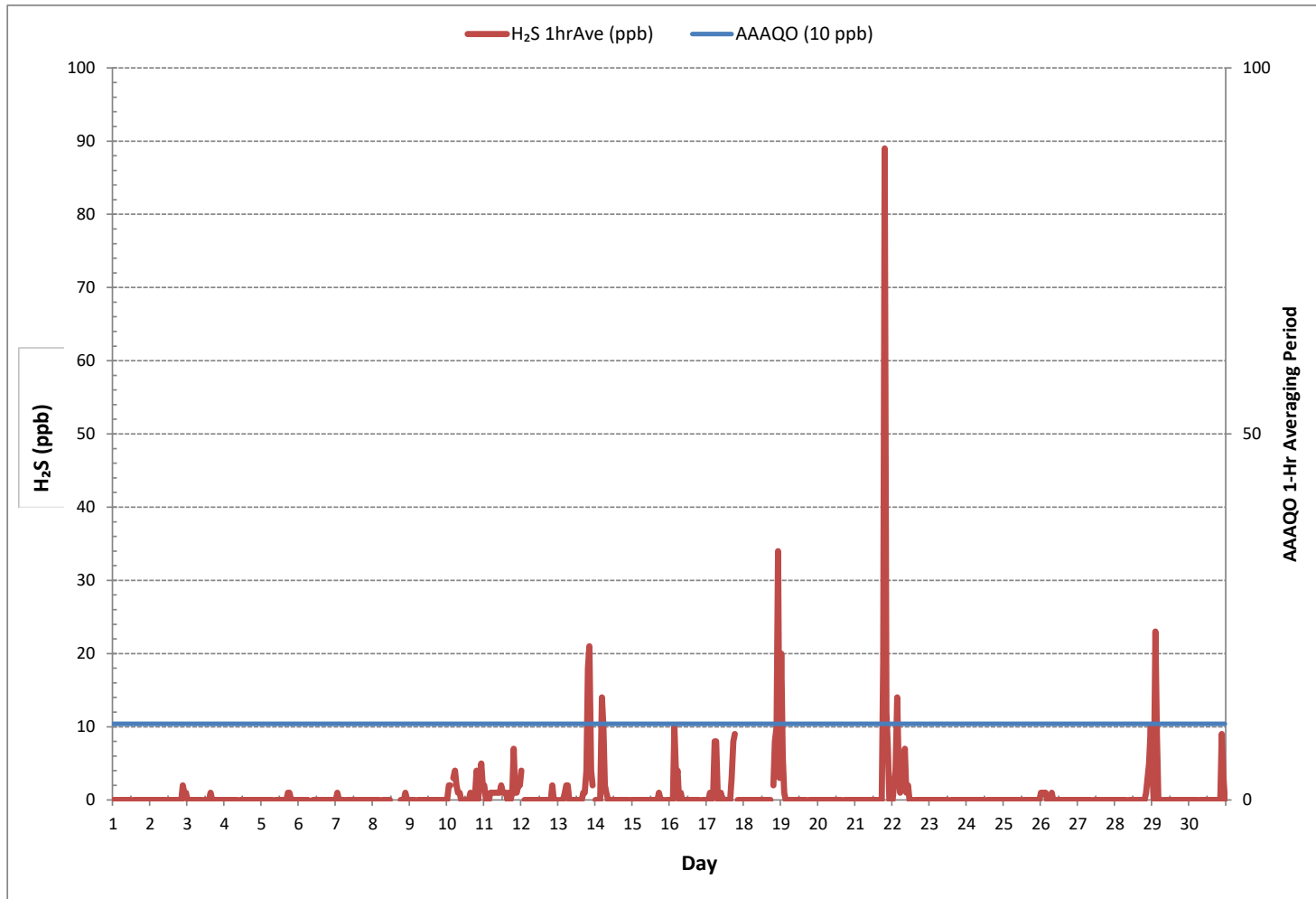
ALBERTA ENVIRONMENT:	1-HR	10	ppb	24-HR	3	ppb
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MONTHLY SUMMARY

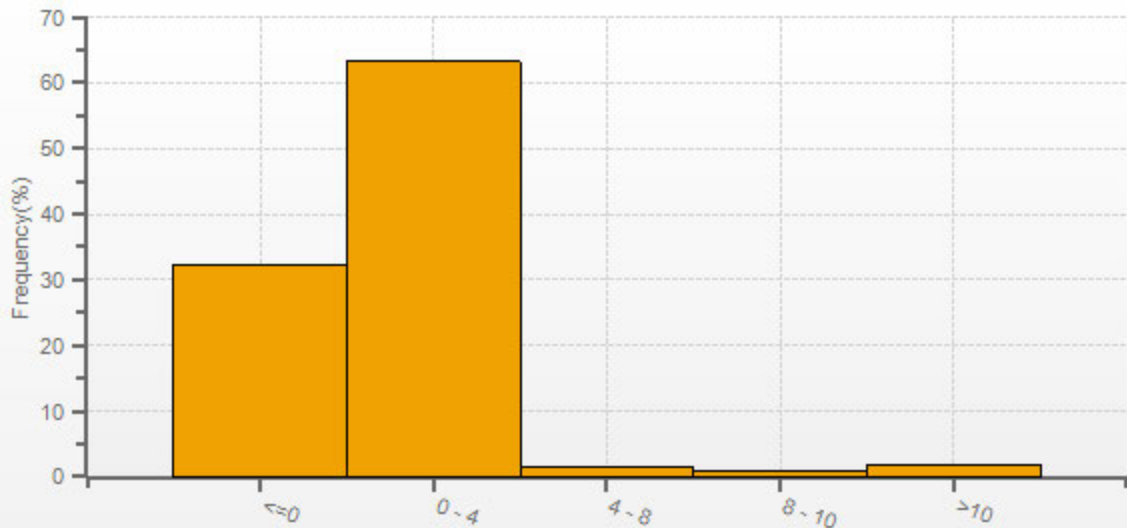
NUMBER OF 1-HR EXCEEDANCES:	10		
NUMBER OF 24-HR EXCEEDANCES:	1		
NUMBER OF NON-ZERO READINGS:	105		
MINIMUM 1-HR AVERAGE:	0 ppb @ HOUR	ON DAY	1
MAXIMUM 1-HR AVERAGE:	89 ppb @ HOUR	ON DAY	21
MAXIMUM 24-HR AVERAGE:	6 ppb	ON DAY	21
I2S CALIBRATION TIME:	31 hrs	OPERATIONAL TIME:	719 hrs
MONTHLY CALIBRATION TIME:	6 hrs	AMD OPERATION UPTIME:	99.9 %
STANDARD DEVIATION:	4	MONTHLY AVERAGE:	1 ppb

24 HR AVERAGES April 2019





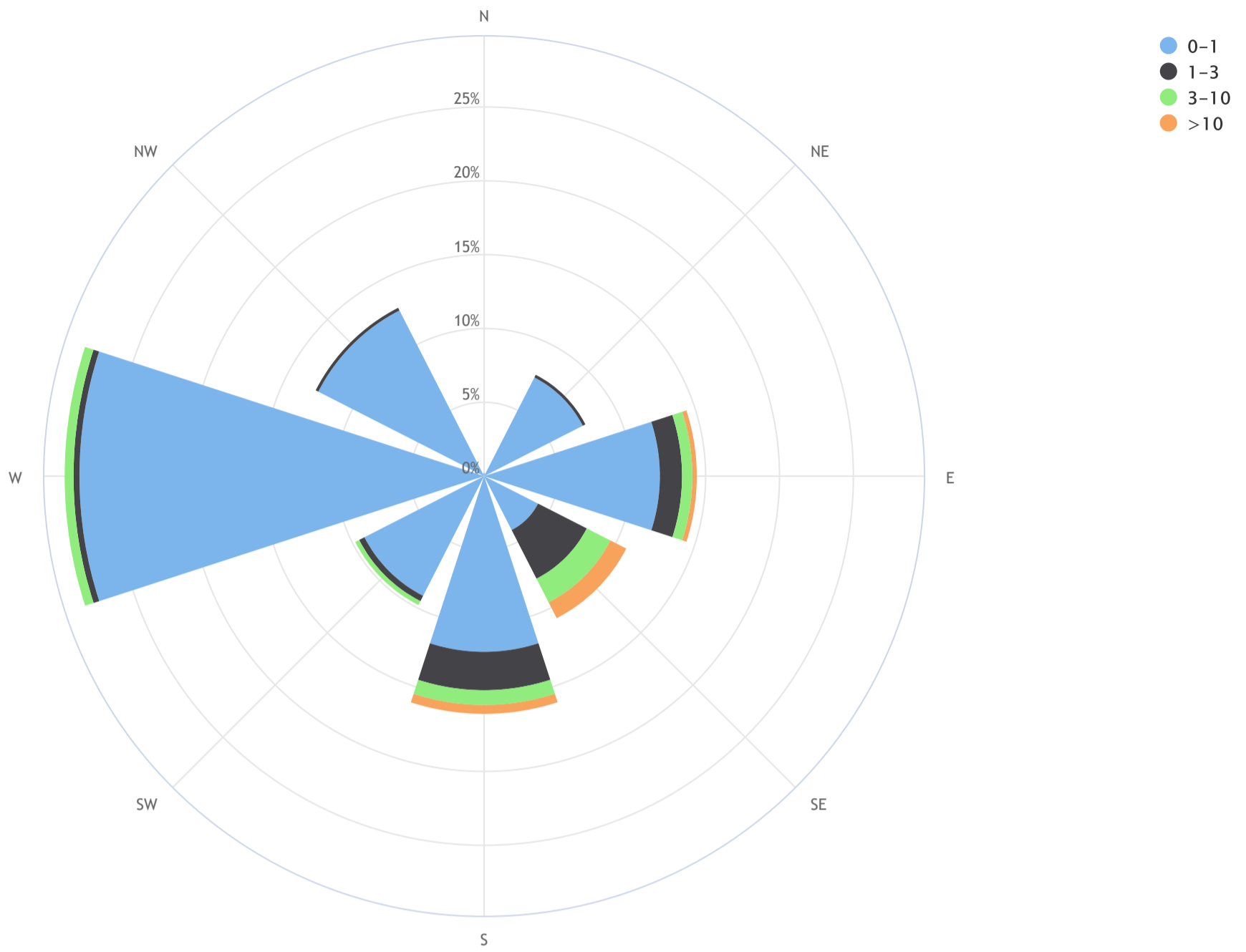
H2S[ppb] Histogram: LICA Bonnyville East Monthly: 19/04 1 Hr.



LICA-201904

Lakeland Industry & Community Association_Bonnyville East Site Continuous Monitoring Station_H₂S (ppb)_19/04

Pollutant Rose_Wind Frequency (Blowing From)_ CALM Avg = N/A, CALM % = 0.0%



Direction	0-1	1-3	3-10	>10	TOTAL
N	0.2	0.0	0.0	0.0	0.2
NE	7.5	0.2	0.0	0.0	7.6
E	11.9	1.5	0.7	0.3	14.4
SE	4.1	3.7	1.8	1.2	10.7
S	11.9	2.6	1.0	0.6	16.1
SW	9.1	0.4	0.3	0.0	9.8
W	27.4	0.4	0.6	0.0	28.5
NW	12.6	0.2	0.0	0.0	12.8
Summary	84.6	9.0	4.4	2.1	100.0
CALM	0.0	0.0	0.0	0.0	0.0



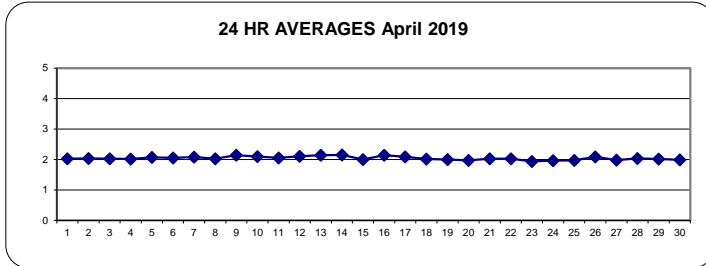
TOTAL HYDROCARBONS Hourly Averages (THC ppm)

HR START (MST)	0:00	1:00	2:00	3:00	4:00	5:00	6:00	7:00	8:00	9:00	10:00	11:00	12:00	13:00	14:00	15:00	16:00	17:00	18:00	19:00	20:00	21:00	22:00	23:00	DAILY	DAILY	24-HR	RDGS.	
HR END (MST)	0:59	1:59	2:59	3:59	4:59	5:59	6:59	7:59	8:59	9:59	10:59	11:59	12:59	13:59	14:59	15:59	16:59	17:59	18:59	19:59	20:59	21:59	22:59	23:59	MIN.	MAX.	AVG.		
DAY 1	2.07	2.06	2.06	2.06	2.05	2.05	2.04	2.03	2.04	2.01	2.01	2.01	S	2.00	2.00	2.01	2.01	2.00	2.01	2.01	2.02	2.02	2.02	2.04	2.00	2.07	2.03	24	
2	2.05	2.03	2.03	2.05	2.04	2.04	2.02	2.02	2.02	2.00	2.00	S	1.99	1.99	1.99	1.99	1.99	2.00	2.02	2.03	2.14	2.08	2.18	2.17	1.99	2.18	2.04	24	
3	2.13	2.06	2.05	2.05	2.03	2.02	2.02	2.01	2.02	2.02	S	2.03	2.03	2.02	2.02	2.01	2.00	2.00	2.06	2.06	2.05	2.03	2.02	2.02	2.00	2.13	2.03	24	
4	2.02	2.01	2.01	2.00	2.02	2.00	2.01	2.00	2.01	S	2.02	2.02	2.03	2.03	2.04	2.04	2.03	2.03	2.03	2.03	2.03	2.04	2.04	2.04	2.00	2.04	2.02	24	
5	2.05	2.11	2.06	2.09	2.10	2.12	2.09	2.06	S	2.10	2.09	2.06	2.05	2.03	2.05	2.06	2.08	2.06	2.06	2.06	2.07	2.05	2.05	2.07	2.03	2.12	2.07	24	
6	2.06	2.13	2.10	2.05	2.04	2.03	2.03	S	2.03	2.02	2.02	2.03	2.00	2.00	2.00	2.01	2.05	2.06	2.05	2.04	2.07	2.11	2.09	2.11	2.00	2.13	2.05	24	
7	2.17	2.30	2.22	2.08	2.06	2.07	S	2.07	2.07	2.06	2.05	2.03	2.03	2.01	2.00	2.01	2.01	2.00	2.00	2.07	2.19	2.23	2.08	2.05	2.00	2.30	2.08	24	
8	2.08	2.06	2.05	2.04	2.04	S	2.06	2.04	2.01	1.99	1.97	1.96	1.96	1.97	1.97	1.97	1.97	1.97	1.98	2.00	2.05	2.17	2.10	2.21	1.96	2.21	2.03	24	
9	2.60	2.43	2.20	2.18	S	2.16	2.14	2.14	2.15	C	C	C	C	2.15	2.15	2.05	1.97	1.98	1.99	2.05	2.06	2.07	2.08	2.12	1.97	2.60	2.14	24	
10	2.17	2.20	2.18	S	2.18	2.20	2.18	2.17	2.15	2.14	2.11	2.11	2.06	2.03	2.02	2.00	1.98	1.98	1.98	2.03	2.02	2.04	2.24	2.17	1.98	2.24	2.10	24	
11	2.10	2.07	S	2.07	2.08	2.07	2.06	2.06	2.04	2.03	2.02	2.02	2.03	2.01	2.00	2.01	2.00	1.99	2.01	2.07	2.08	2.13	2.13	2.16	1.99	2.16	2.05	24	
12	2.18	S	2.22	2.25	2.24	2.25	2.25	2.20	2.13	2.09	2.04	1.99	2.03	1.99	1.99	1.98	1.97	1.97	1.98	1.99	2.07	2.21	2.20	2.21	1.97	2.25	2.11	24	
13	S	2.21	2.20	2.17	2.19	2.20	2.19	2.16	2.13	2.11	2.11	2.08	2.03	1.99	1.97	1.96	1.96	1.97	2.02	2.25	2.35	2.35	2.56	S	1.96	2.56	2.14	24	
14	2.38	2.22	2.37	2.40	2.65	2.80	2.49	2.27	2.20	2.09	2.03	1.99	1.96	1.94	1.94	1.93	1.93	1.95	1.95	1.96	2.00	2.01	S	2.01	1.93	2.80	2.15	24	
15	1.99	1.99	2.01	2.00	2.00	2.03	2.08	2.06	2.03	1.99	1.97	1.96	1.96	1.96	1.96	1.97	1.96	1.96	1.96	1.98	2.00	2.03	S	2.04	2.04	1.96	2.08	2.00	24
16	2.06	2.21	2.21	2.23	2.56	2.77	2.73	2.35	2.11	2.06	2.00	1.98	1.97	1.96	1.97	1.96	1.95	1.95	1.97	1.99	S	2.07	2.05	2.04	1.95	2.77	2.14	24	
17	2.12	2.16	2.15	2.21	2.24	2.27	2.27	2.34	2.28	2.21	2.14	2.09	2.00	1.96	1.94	1.94	1.94	1.95	1.95	S	1.97	1.97	2.00	1.98	1.94	2.34	2.09	24	
18	1.99	1.99	2.01	1.99	2.00	1.99	1.99	1.98	1.96	1.96	1.95	1.95	1.96	1.94	1.94	1.93	1.94	1.94	S	1.99	2.17	2.00	2.24	2.61	1.93	2.61	2.02	24	
19	2.65	2.15	2.08	2.20	2.14	1.93	1.94	1.93	1.92	1.92	1.92	1.92	1.93	1.92	1.91	1.91	1.91	S	1.92	1.92	1.97	1.97	1.98	2.00	1.91	2.65	2.00	24	
20	2.01	2.01	1.98	1.99	1.99	1.98	1.98	1.97	1.95	1.95	1.95	1.94	1.94	1.94	1.95	1.96	S	1.95	1.96	1.97	1.97	1.98	2.03	2.04	1.94	2.04	1.97	24	
21	2.09	2.13	2.08	2.06	2.07	2.04	2.03	2.00	2.01	1.98	1.96	1.96	1.95	1.95	1.95	S	1.95	1.96	2.01	2.13	2.09	2.17	2.06	2.08	1.95	2.17	2.03	24	
22	2.08	2.11	2.14	2.12	2.13	2.15	2.17	2.12	2.10	2.09	2.09	2.05	2.02	1.96	S	1.94	1.92	1.93	1.93	1.95	1.94	1.93	1.94	1.92	1.92	2.17	2.03	24	
23	1.93	1.94	1.96	1.94	1.94	1.94	1.93	1.93	1.92	1.92	1.92	1.92	1.91	S	1.92	1.92	1.93	1.93	1.93	1.94	1.95	1.97	1.98	2.01	1.91	2.01	1.94	24	
24	2.01	1.97	1.98	2.00	1.97	1.97	1.98	1.96	1.97	1.95	1.94	1.93	S	1.93	1.93	1.93	1.94	1.94	1.94	1.94	1.95	1.97	1.97	1.97	1.93	2.01	1.96	24	
25	1.97	1.98	1.98	1.99	1.98	1.97	1.97	1.97	1.97	1.96	1.95	S	1.95	1.96	1.95	1.96	1.95	1.95	1.95	1.96	1.97	1.99	1.99	1.99	1.95	1.99	1.97	24	
26	2.01	2.09	2.43	2.12	2.15	2.23	2.65	2.51	2.30	2.05	S	1.94	1.94	1.93	1.93	1.93	1.94	1.95	1.97	2.03	1.98	1.98	1.97	1.93	2.65	2.09	24		
27	1.98	2.03	2.01	2.04	2.08	2.05	1.99	1.97	1.96	S	1.95	1.95	1.94	1.94	1.95	1.94	1.94	1.94	1.94	1.95	1.97	2.00	2.01	1.94	2.08	1.98	24		
28	2.03	2.04	2.07	2.08	2.12	2.16	2.22	2.19	S	2.01	1.97	1.96	1.95	1.95	1.95	1.96	1.96	1.96	1.96	1.97	2.09	2.13	2.10	2.14	1.95	2.22	2.04	24	
29	2.07	2.02	2.14	2.11	2.07	2.11	2.31	S	2.18	1.98	1.98	1.96	1.96	1.96	1.95	1.96	1.96	1.96	1.96	1.97	2.09	2.13	2.10	2.14	1.95	2.22	2.04	24	
30	1.97	1.97	2.07	2.05	2.02	1.96	S	1.97	1.97	1.97	1.97	1.96	1.96	1.96	1.96	1.95	1.95	1.96	1.96	1.96	1.98	2.03	2.08	2.05	1.95	2.08	1.99	24	
HOURLY MAX	2.65	2.43	2.43	2.40	2.65	2.80	2.73	2.51	2.30	2.21	2.14	2.11	2.06	2.15	2.15	2.06	2.08	2.08	2.06	2.25	2.35	2.35	2.56	2.61					
HOURLY AVG	2.10	2.09	2.11	2.09	2.11	2.12	2.14	2.09	2.06	2.02	2.00	1.99	1.98	1.98	1.98	1.97	1.97	1.97	1.98	2.01	2.04	2.06	2.08	2.08					

STATUS FLAG CODES

C	- MONTHLY CALIBRATION	Q	- QUALITY ASSURANCE
C1	- REPEAT CALIBRATION	R	- RECOVERY
Y	- MAINTENANCE	X	- MACHINE MALFUNCTION
S	- DAILY ZERO/SPAN CHECK	G	- OUT FOR REPAIR
S1	- REPEAT ZERO/SPAN CHECK	P	- POWER FAILURE

24 HR AVERAGES April 2019

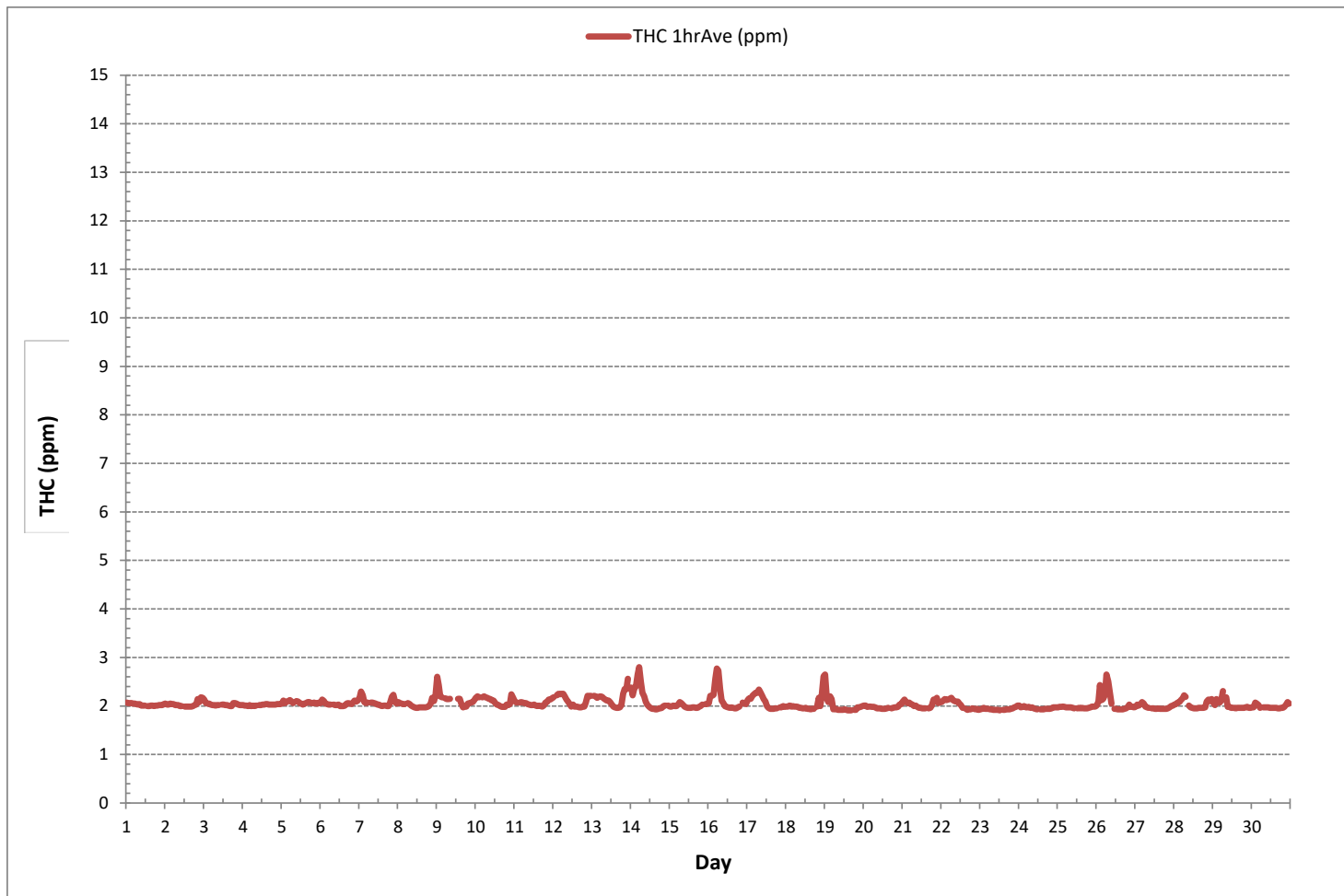


MONTHLY SUMMARY

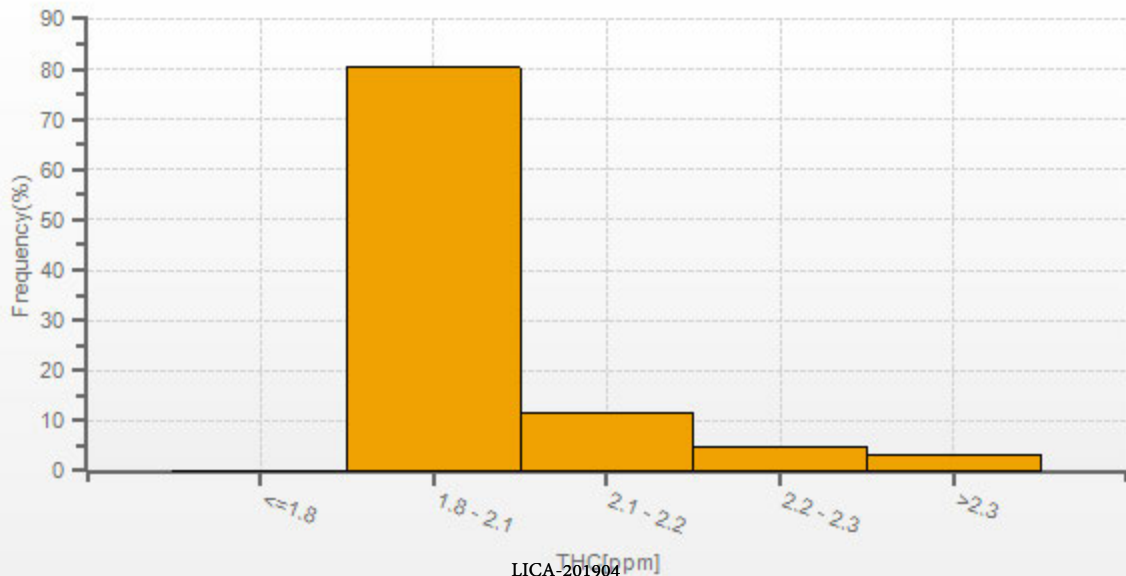
NUMBER OF NON-ZERO READINGS:	685		
MINIMUM 1-HR AVERAGE:	1.91 ppm	@ HOUR	14 ON DAY
MAXIMUM 1-HR AVERAGE:	2.80 ppm	@ HOUR	5 ON DAY
MAXIMUM 24-HR AVERAGE:	2.15 ppm		ON DAY
IZS CALIBRATION TIME:	31 hrs	OPERATIONAL TIME:	720 hrs
MONTHLY CALIBRATION TIME:	4 hrs	AMD OPERATION UPTIME:	100.0 %
STANDARD DEVIATION:	0.12	MONTHLY AVERAGE:	2.04 ppm



TOTAL HYDROCARBONS Hourly Averages (THC ppm)

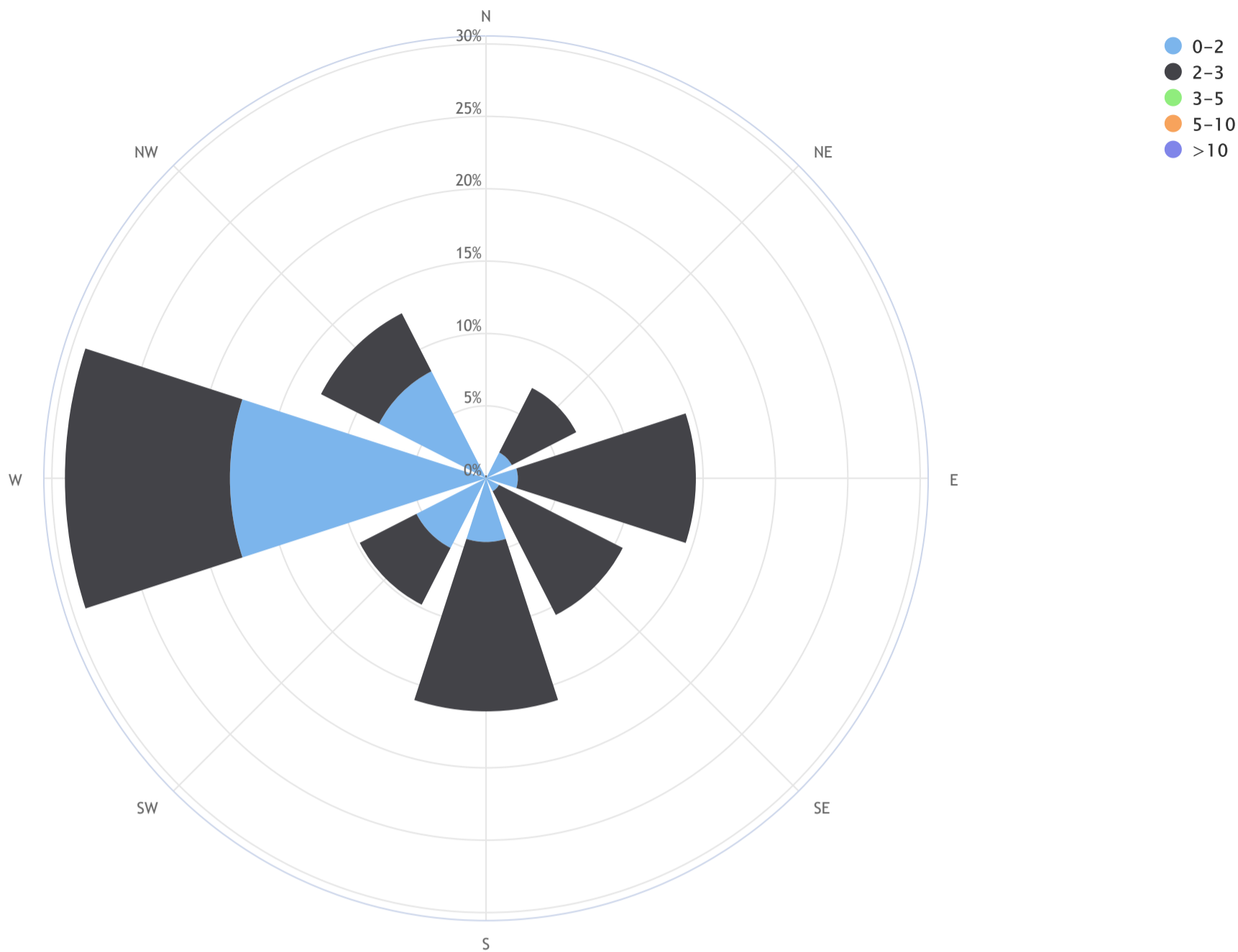


THC[ppm] Histogram: LICA Bonnyville East Monthly: 19/04 1 Hr.



Lakeland Industry & Community Association_Bonnyville East Site Continuous Monitoring Station_THC (ppm)_19/04

Pollutant Rose_Wind Frequency (Blowing From)_ CALM Avg = N/A, CALM % = 0.0%



Direction	0-2	2-3	3-5	5-10	>10	TOTAL
N	0.0	0.2	0.0	0.0	0.0	0.2
NE	2.0	5.0	0.0	0.0	0.0	7.0
E	2.2	12.3	0.0	0.0	0.0	14.5
SE	1.0	9.6	0.0	0.0	0.0	10.7
S	4.4	11.7	0.0	0.0	0.0	16.1
SW	5.4	4.4	0.0	0.0	0.0	9.8
W	17.7	11.4	0.0	0.0	0.0	29.1
NW	8.3	4.5	0.0	0.0	0.0	12.9
Summary	41.0	59.0	0.0	0.0	0.0	100.0
CALM	0.0	0.0	0.0	0.0	0.0	0.0



METHANE Hourly Averages (CH₄ ppm)

HR START (MST)	0:00	1:00	2:00	3:00	4:00	5:00	6:00	7:00	8:00	9:00	10:00	11:00	12:00	13:00	14:00	15:00	16:00	17:00	18:00	19:00	20:00	21:00	22:00	23:00	DAILY MIN.	DAILY MAX.	24-HR AVG.	RDGS.	
HR END (MST)	0:59	1:59	2:59	3:59	4:59	5:59	6:59	7:59	8:59	9:59	10:59	11:59	12:59	13:59	14:59	15:59	16:59	17:59	18:59	19:59	20:59	21:59	22:59	23:59					
DAY 1	2.07	2.06	2.06	2.06	2.05	2.05	2.04	2.03	2.04	2.01	2.01	2.01	S	2.00	2.00	2.01	2.01	2.00	2.01	2.01	2.02	2.02	2.02	2.04	2.00	2.07	2.03	24	
2	2.05	2.03	2.03	2.05	2.04	2.04	2.02	2.02	2.02	2.00	2.00	S	1.99	1.99	1.99	1.99	1.99	2.00	2.02	2.03	2.14	2.08	2.18	2.17	1.99	2.18	2.04	24	
3	2.13	2.06	2.05	2.05	2.03	2.02	2.02	2.01	2.02	2.02	S	2.03	2.03	2.02	2.02	2.01	2.00	2.00	2.06	2.06	2.05	2.03	2.02	2.02	2.00	2.13	2.03	24	
4	2.02	2.01	2.01	2.00	2.02	2.00	2.01	2.00	2.01	S	2.02	2.02	2.03	2.03	2.04	2.04	2.03	2.03	2.03	2.03	2.03	2.04	2.04	2.04	2.00	2.04	2.02	24	
5	2.05	2.11	2.06	2.09	2.10	2.12	2.09	2.06	S	2.10	2.09	2.06	2.05	2.03	2.05	2.06	2.08	2.08	2.06	2.06	2.06	2.07	2.05	2.05	2.07	2.03	2.12	2.07	24
6	2.06	2.13	2.10	2.05	2.04	2.03	2.03	S	2.03	2.02	2.02	2.03	2.00	2.00	2.00	2.01	2.05	2.06	2.05	2.04	2.07	2.11	2.09	2.11	2.00	2.13	2.05	24	
7	2.17	2.30	2.22	2.08	2.06	2.07	S	2.07	2.07	2.06	2.05	2.03	2.03	2.01	2.00	2.01	2.01	2.00	2.00	2.07	2.19	2.23	2.08	2.05	2.00	2.30	2.08	24	
8	2.08	2.06	2.05	2.04	2.04	S	2.06	2.04	2.01	1.99	1.97	1.96	1.96	1.97	1.97	1.97	1.97	1.97	1.98	2.00	2.05	2.17	2.10	2.21	1.96	2.21	2.03	24	
9	2.60	2.43	2.20	2.18	S	2.16	2.14	2.14	2.15	C	C	C	C	2.15	2.15	2.05	1.97	1.98	1.99	2.05	2.06	2.07	2.08	2.12	1.97	2.60	2.14	24	
10	2.17	2.20	2.18	S	2.18	2.20	2.18	2.17	2.15	2.14	2.11	2.11	2.06	2.03	2.02	2.00	1.98	1.98	1.98	2.03	2.02	2.04	2.24	2.17	1.98	2.24	2.10	24	
11	2.10	2.07	S	2.07	2.08	2.07	2.06	2.06	2.04	2.03	2.02	2.02	2.03	2.01	2.00	2.01	2.00	1.99	2.01	2.07	2.08	2.13	2.13	2.16	1.99	2.16	2.05	24	
12	2.18	S	2.22	2.25	2.24	2.25	2.25	2.20	2.13	2.09	2.04	1.99	2.03	1.99	1.99	1.98	1.97	1.97	1.98	1.99	2.07	2.21	2.20	2.21	1.97	2.25	2.11	24	
13	S	2.21	2.20	2.17	2.19	2.20	2.19	2.16	2.13	2.11	2.11	2.08	2.03	1.99	1.97	1.96	1.96	1.97	2.02	2.25	2.35	2.35	2.56	S	1.96	2.56	2.14	24	
14	2.38	2.22	2.37	2.40	2.65	2.80	2.49	2.27	2.20	2.09	2.03	1.99	1.96	1.94	1.94	1.93	1.93	1.95	1.95	1.96	2.00	2.01	S	2.01	1.93	2.80	2.15	24	
15	1.99	1.99	2.01	2.00	2.00	2.03	2.08	2.06	2.03	1.99	1.97	1.96	1.96	1.96	1.97	1.96	1.96	1.96	1.96	2.00	2.03	S	2.04	2.04	1.96	2.08	2.00	24	
16	2.06	2.21	2.21	2.23	2.56	2.77	2.73	2.35	2.11	2.06	2.00	1.98	1.97	1.96	1.97	1.96	1.95	1.95	1.97	1.99	S	2.07	2.05	2.04	1.95	2.77	2.14	24	
17	2.12	2.16	2.15	2.21	2.24	2.27	2.27	2.34	2.28	2.21	2.14	2.09	2.00	1.96	1.94	1.94	1.94	1.95	1.95	S	1.97	1.97	2.00	1.98	1.94	2.34	2.09	24	
18	1.99	1.99	2.01	1.99	2.00	1.99	1.99	1.98	1.96	1.96	1.95	1.95	1.96	1.94	1.94	1.93	1.94	1.94	S	1.99	2.17	2.00	2.24	2.61	1.93	2.61	2.02	24	
19	2.65	2.15	2.08	2.20	2.14	1.93	1.94	1.93	1.92	1.92	1.92	1.92	1.93	1.92	1.91	1.91	1.91	S	1.92	1.92	1.97	1.97	1.98	2.00	1.91	2.65	2.00	24	
20	2.01	2.01	1.98	1.99	1.99	1.98	1.98	1.97	1.95	1.95	1.95	1.94	1.94	1.94	1.95	1.96	S	1.95	1.96	1.97	1.97	1.98	2.03	2.04	1.94	2.04	1.97	24	
21	2.09	2.13	2.08	2.06	2.07	2.04	2.03	2.00	2.01	1.98	1.96	1.96	1.95	1.95	1.95	S	1.95	1.96	2.01	2.13	2.09	2.17	2.06	2.08	1.95	2.17	2.03	24	
22	2.08	2.11	2.14	2.12	2.13	2.15	2.17	2.12	2.10	2.09	2.09	2.05	2.02	1.96	S	1.94	1.92	1.93	1.93	1.95	1.94	1.93	1.94	1.92	1.92	2.17	2.03	24	
23	1.93	1.94	1.96	1.94	1.94	1.94	1.93	1.93	1.92	1.92	1.92	1.92	1.91	S	1.92	1.92	1.93	1.93	1.93	1.94	1.95	1.97	1.98	2.01	1.91	2.01	1.94	24	
24	2.01	1.97	1.98	2.00	1.97	1.97	1.98	1.96	1.97	1.95	1.94	1.93	S	1.93	1.93	1.93	1.94	1.94	1.94	1.94	1.95	1.97	1.97	1.97	1.93	2.01	1.96	24	
25	1.97	1.98	1.98	1.99	1.98	1.97	1.97	1.97	1.97	1.96	1.95	S	1.95	1.96	1.95	1.96	1.95	1.95	1.95	1.96	1.97	1.99	1.99	1.99	1.95	1.99	1.97	24	
26	2.01	2.09	2.11	2.12	2.15	2.23	2.65	2.51	2.30	2.05	S	1.94	1.94	1.93	1.93	1.93	1.94	1.95	1.97	2.03	1.98	1.98	1.97	1.93	2.65	2.07	24		
27	1.98	2.03	2.01	2.04	2.08	2.05	1.99	1.97	1.96	S	1.95	1.95	1.94	1.94	1.95	1.94	1.94	1.94	1.94	1.94	1.95	1.97	2.00	2.01	1.94	2.08	1.98	24	
28	2.03	2.04	2.07	2.08	2.12	2.16	2.22	2.19	S	2.01	1.97	1.96	1.95	1.95	1.95	1.96	1.96	1.96	1.96	1.96	1.97	2.09	2.13	2.10	1.95	2.22	2.04	24	
29	2.07	2.02	2.14	2.11	2.07	2.11	S	2.18	1.98	1.98	1.96	1.96	1.96	1.96	1.95	1.96	1.96	1.96	1.96	1.96	1.97	1.98	1.96	1.96	1.95	2.31	2.02	24	
30	1.97	1.97	2.07	2.05	2.02	1.96	S	1.97	1.97	1.97	1.97	1.96	1.96	1.96	1.96	1.95	1.95	1.96	1.96	1.96	1.98	2.03	2.08	2.05	1.95	2.08	1.99	24	
HOURLY MAX	2.65	2.43	2.37	2.40	2.65	2.80	2.73	2.51	2.30	2.21	2.14	2.11	2.06	2.15	2.15	2.06	2.08	2.08	2.06	2.25	2.35	2.35	2.56	2.61					
HOURLY AVG	2.10	2.09	2.09	2.09	2.11	2.12	2.14	2.09	2.06	2.02	2.00	1.99	1.98	1.98	1.98	1.97	1.97	1.97	1.98	2.01	2.04	2.06	2.08	2.08					

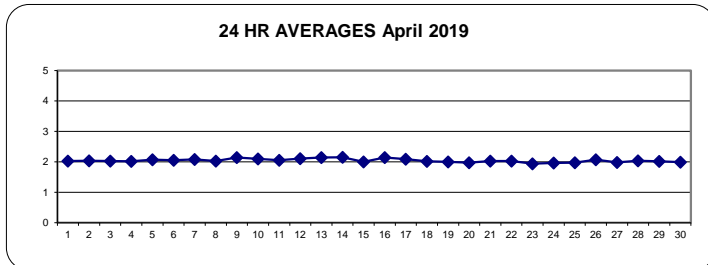
STATUS FLAG CODES

C	- MONTHLY CALIBRATION	Q	- QUALITY ASSURANCE
C1	- REPEAT CALIBRATION	R	- RECOVERY
Y	- MAINTENANCE	X	- MACHINE MALFUNCTION
S	- DAILY ZERO/SPAN CHECK	G	- OUT FOR REPAIR
S1	- REPEAT ZERO/SPAN CHECK	P	- POWER FAILURE

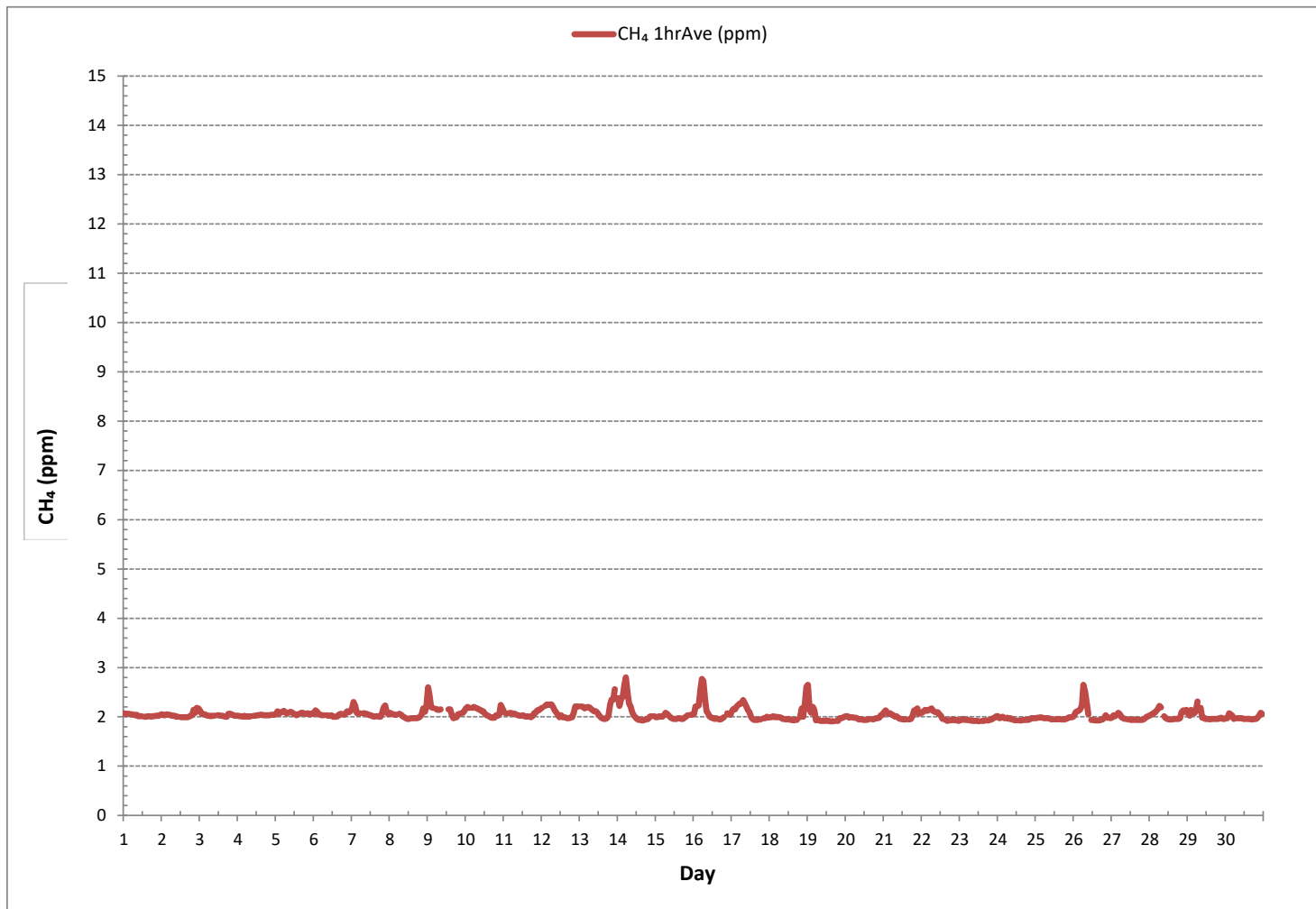
MONTHLY SUMMARY

NUMBER OF NON-ZERO READINGS:	685			
MINIMUM 1-HR AVERAGE:	1.91 ppm	@ HOUR	14	ON DAY 19
MAXIMUM 1-HR AVERAGE:	2.80 ppm	@ HOUR	5	ON DAY 14
MAXIMUM 24-HR AVERAGE:	2.15 ppm			ON DAY 14
IZS CALIBRATION TIME:	31 hrs	OPERATIONAL TIME:	720 hrs	
MONTHLY CALIBRATION TIME:	4 hrs	AMD OPERATION UPTIME:	100.0 %	
STANDARD DEVIATION:	0.12	MONTHLY AVERAGE:	2.04 ppm	

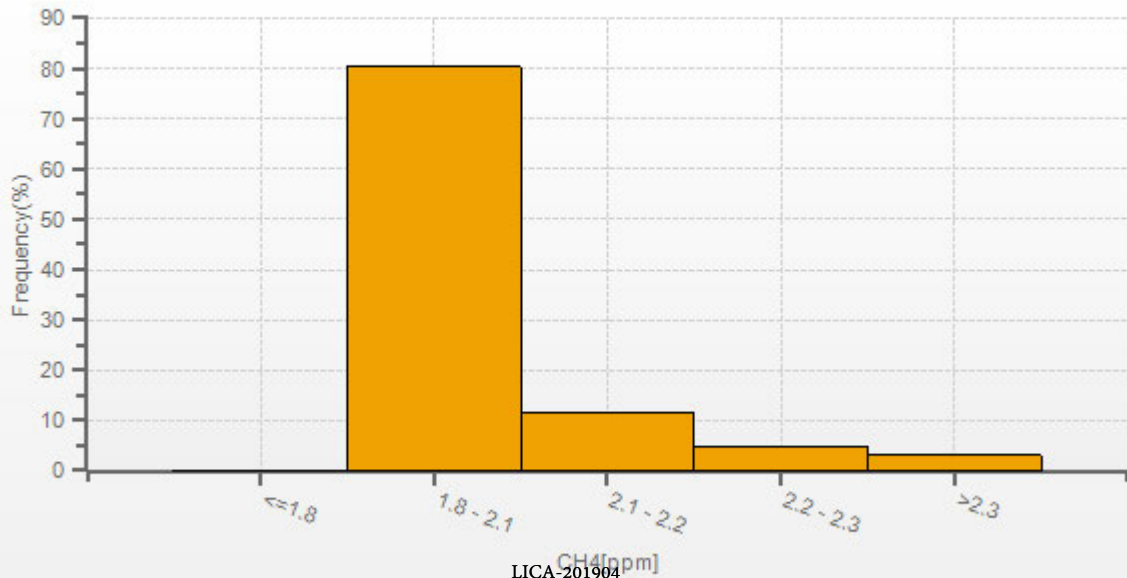
24 HR AVERAGES April 2019



METHANE Hourly Averages (CH₄ ppm)

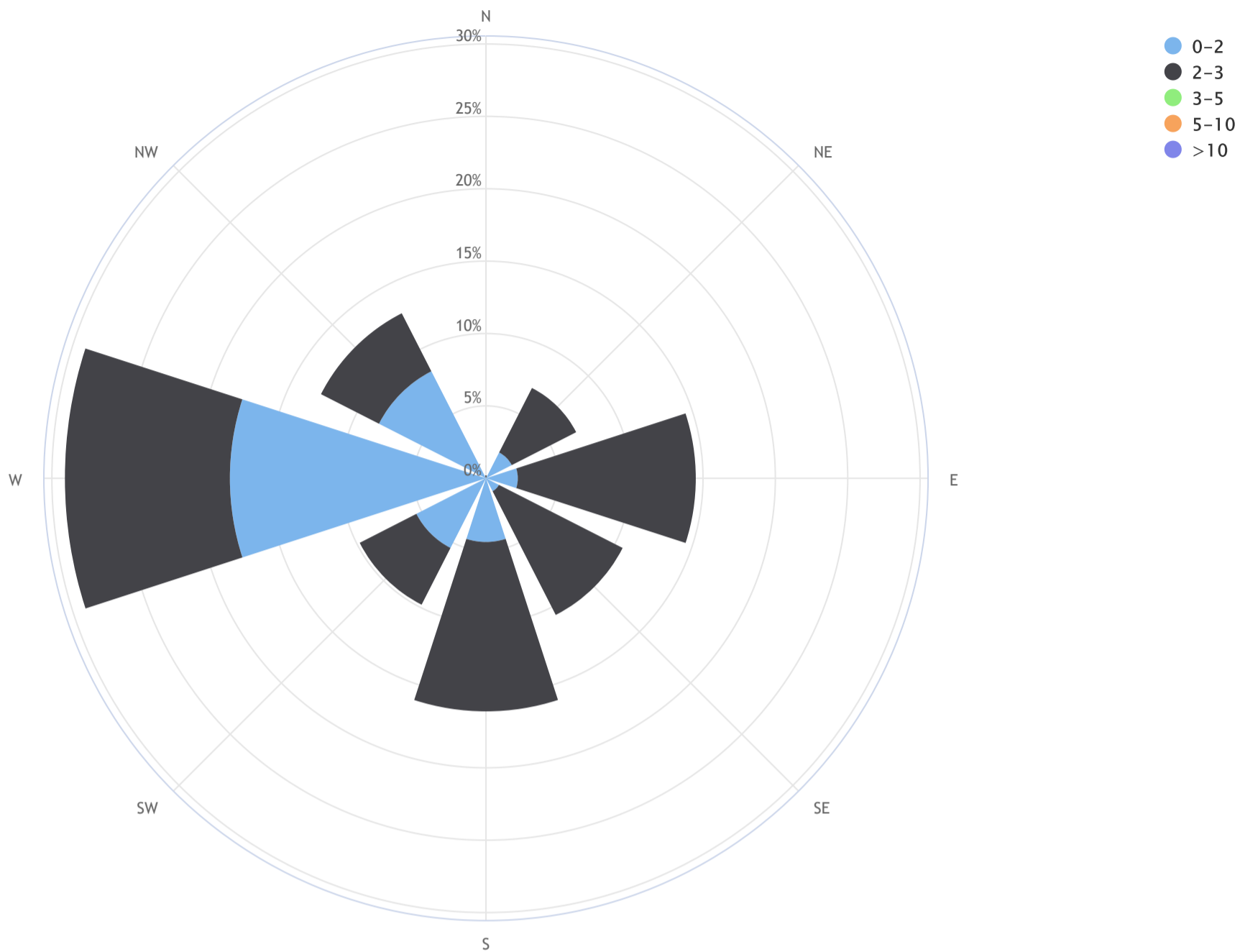


CH4[ppm] Histogram: LICA Bonnyville East Monthly: 19/04 1 Hr.



Lakeland Industry & Community Association_Bonnyville East Site Continuous Monitoring Station_CH4 (ppm)_19/04

Pollutant Rose_Wind Frequency (Blowing From)_ CALM Avg = N/A, CALM % = 0.0%



Direction	0-2	2-3	3-5	5-10	>10	TOTAL
N	0.0	0.2	0.0	0.0	0.0	0.2
NE	2.0	5.0	0.0	0.0	0.0	7.0
E	2.2	12.3	0.0	0.0	0.0	14.5
SE	1.0	9.6	0.0	0.0	0.0	10.7
S	4.4	11.7	0.0	0.0	0.0	16.1
SW	5.4	4.4	0.0	0.0	0.0	9.8
W	17.7	11.4	0.0	0.0	0.0	29.1
NW	8.3	4.5	0.0	0.0	0.0	12.9
Summary	41.0	59.0	0.0	0.0	0.0	100.0
CALM	0.0	0.0	0.0	0.0	0.0	0.0



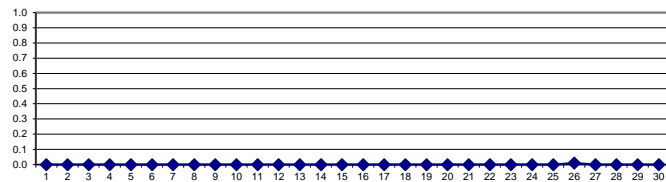
NON-METHANE HYDROCARBONS Hourly Averages (NMHC ppm)

HR START (MST)	0:00	1:00	2:00	3:00	4:00	5:00	6:00	7:00	8:00	9:00	10:00	11:00	12:00	13:00	14:00	15:00	16:00	17:00	18:00	19:00	20:00	21:00	22:00	23:00	DAILY	DAILY	24-HR	RDGS.
HR END (MST)	0:59	1:59	2:59	3:59	4:59	5:59	6:59	7:59	8:59	9:59	10:59	11:59	12:59	13:59	14:59	15:59	16:59	17:59	18:59	19:59	20:59	21:59	22:59	23:59	MIN.	MAX.	AVG.	
DAY 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	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	24
2	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	24
3	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	24
4	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	24
5	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	24
6	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	24
7	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	24
8	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	24
9	0.00	0.00	0.00	0.00	S	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	24
10	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	24
11	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	24
12	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	24
13	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	S	0.00	0.00	0.00	24
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	S	0.00	0.00	0.00	0.00	24
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	S	0.00	0.00	0.00	0.00	0.00	24
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	24
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	S	0.00	0.00	0.00	0.00	0.00	0.00	0.00	24
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	S	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	24
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	S	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	24
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	S	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	24
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	S	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	24
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	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	24
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	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	24
24	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	24
25	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	24
26	0.00	0.00	0.32	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	0.32	0.01	24
27	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	24
28	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	24
29	0.00	0.00	0.00	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	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.01	0.00	24
30	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	24
HOURLY MAX	0.00	0.00	0.32	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				
HOURLY AVG	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	0.00	0.00				

STATUS FLAG CODES

C	- MONTHLY CALIBRATION	Q	- QUALITY ASSURANCE
C1	- REPEAT CALIBRATION	R	- RECOVERY
Y	- MAINTENANCE	X	- MACHINE MALFUNCTION
S	- DAILY ZERO/SPAN CHECK	G	- OUT FOR REPAIR
S1	- REPEAT ZERO/SPAN CHECK	P	- POWER FAILURE

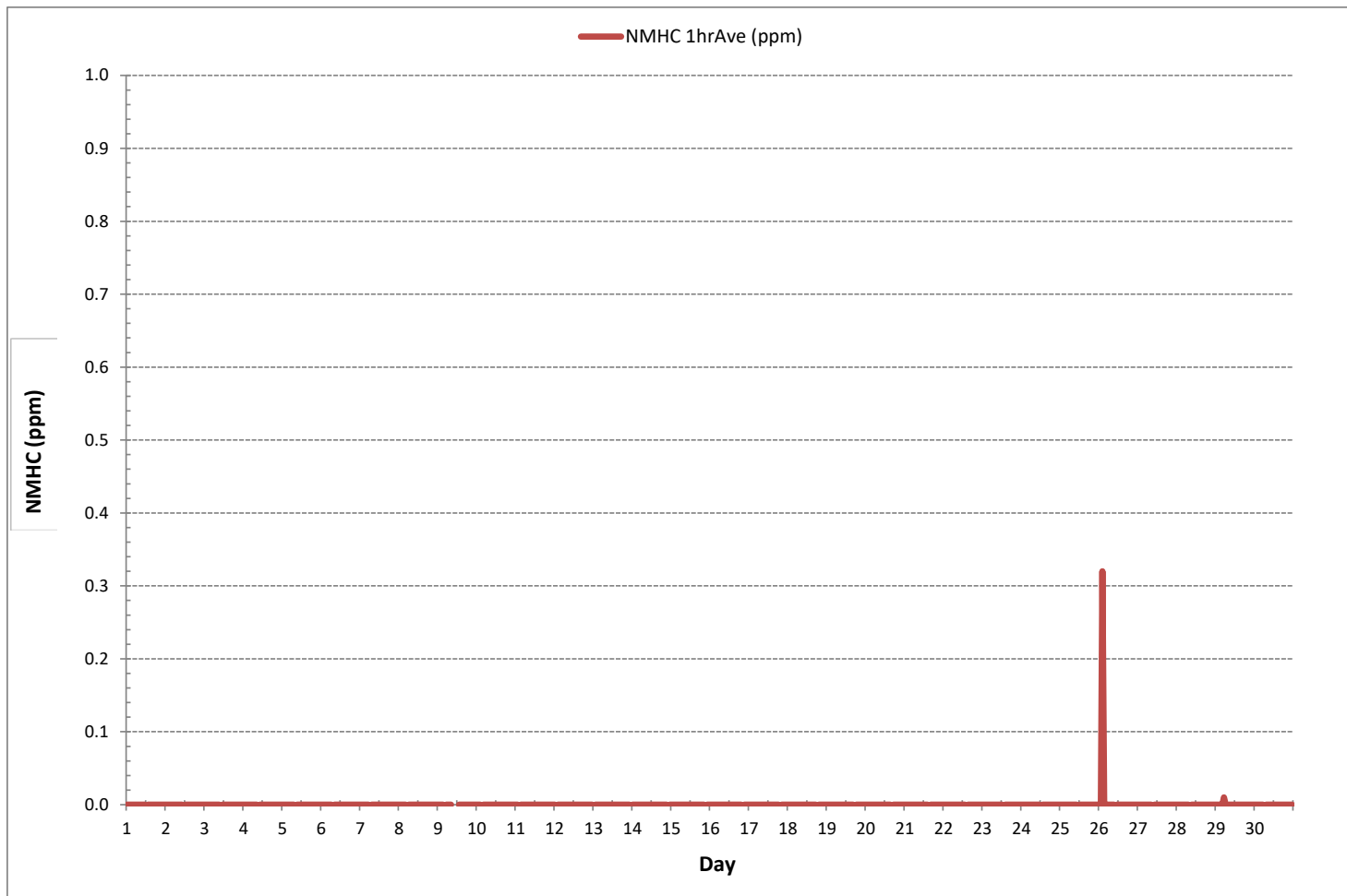
24 HR AVERAGES April 2019



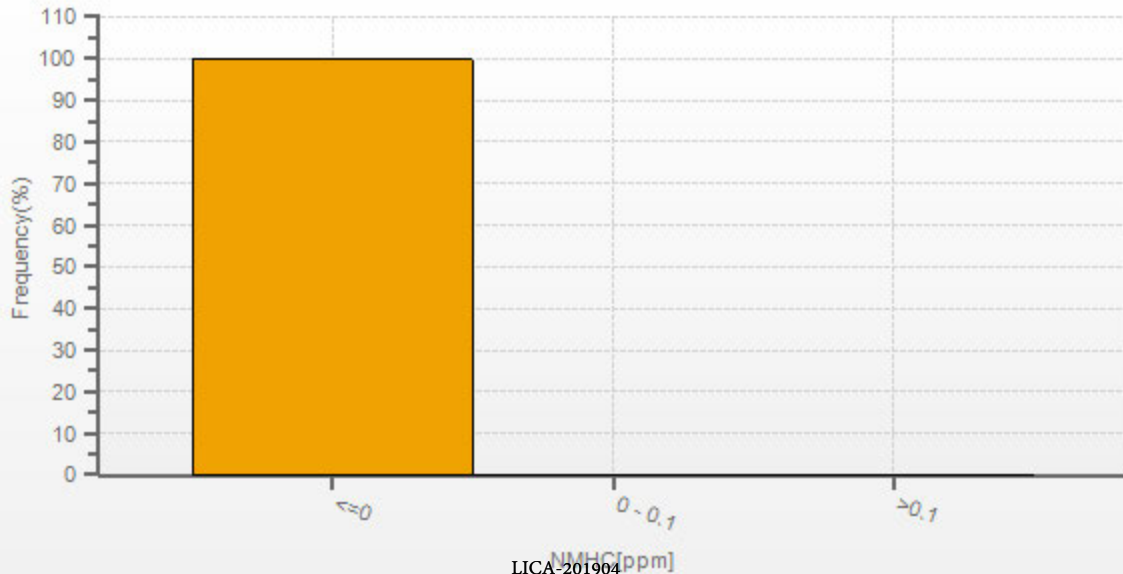
MONTHLY SUMMARY

NUMBER OF NON-ZERO READINGS:	2
MINIMUM 1-HR AVERAGE:	0.00 ppm @ HOUR 0 ON DAY 1
MAXIMUM 1-HR AVERAGE:	0.32 ppm @ HOUR 2 ON DAY 26
MAXIMUM 24-HR AVERAGE:	0.01 ppm ON DAY 26
I2S CALIBRATION TIME:	31 hrs OPERATIONAL TIME: 720 hrs
MONTHLY CALIBRATION TIME:	4 hrs AMD OPERATION UPTIME: 100.0 %
STANDARD DEVIATION:	0.01 MONTHLY AVERAGE: 0.00 ppm

NON-METHANE HYDROCARBONS Hourly Averages (NMHC ppm)

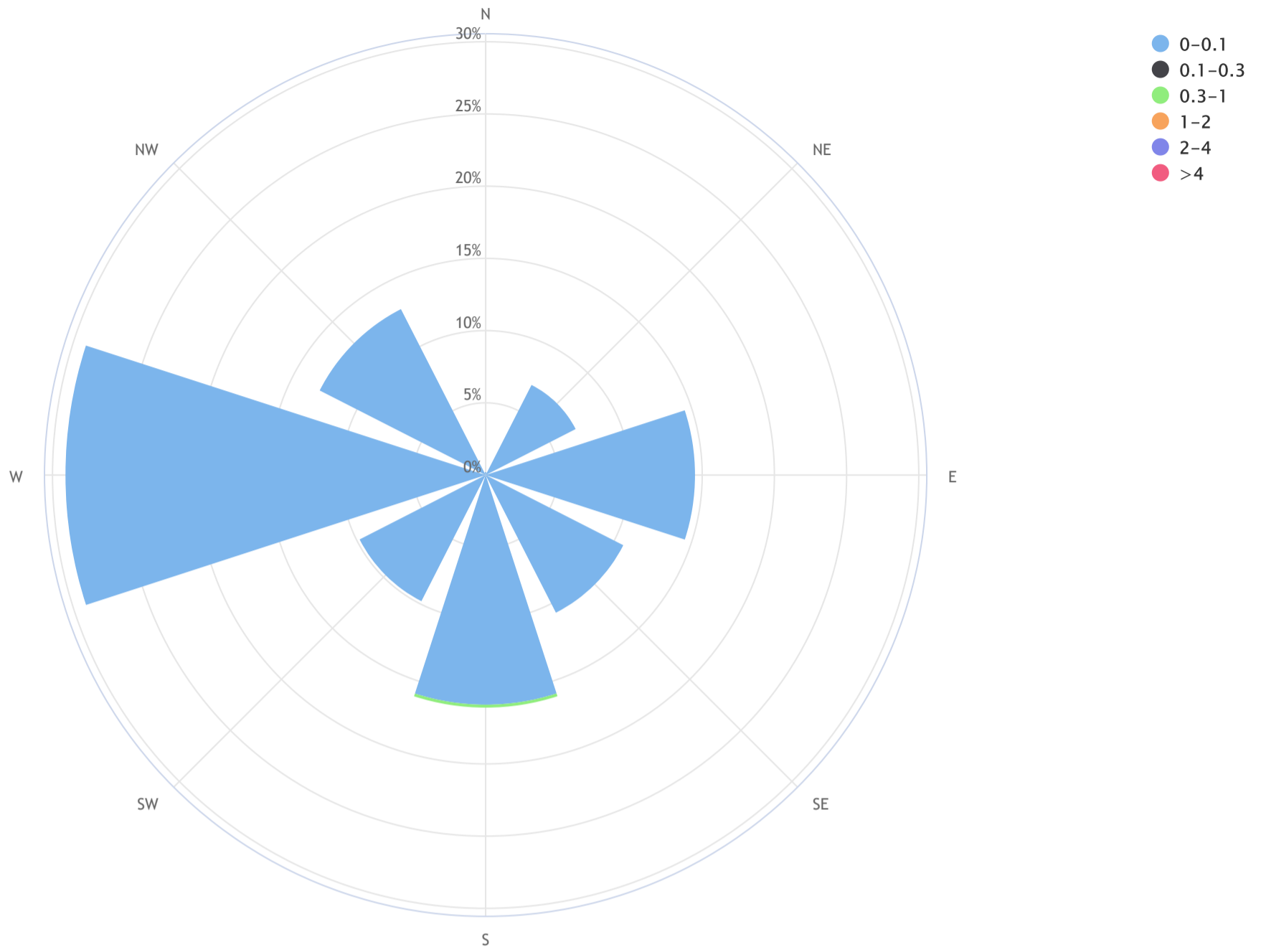


NMHC[ppm] Histogram: LICA Bonnyville East Monthly: 19/04 1 Hr.



Lakeland Industry & Community Association_Bonnyville East Site Continuous Monitoring Station_NMHC (ppm)_19/04

Pollutant Rose_Wind Frequency (Blowing From)_ CALM Avg = N/A, CALM % = 0.0%



Direction	0-0.1	0.1-0.3	0.3-1	1-2	2-4	>4	TOTAL
N	0.2	0.0	0.0	0.0	0.0	0.0	0.2
NE	7.0	0.0	0.0	0.0	0.0	0.0	7.0
E	14.5	0.0	0.0	0.0	0.0	0.0	14.5
SE	10.7	0.0	0.0	0.0	0.0	0.0	10.7
S	15.9	0.0	0.2	0.0	0.0	0.0	16.1
SW	9.8	0.0	0.0	0.0	0.0	0.0	9.8
W	29.1	0.0	0.0	0.0	0.0	0.0	29.1
NW	12.9	0.0	0.0	0.0	0.0	0.0	12.9
Summary	99.9	0.0	0.2	0.0	0.0	0.0	100.0
CALM	0.0	0.0	0.0	0.0	0.0	0.0	0.0

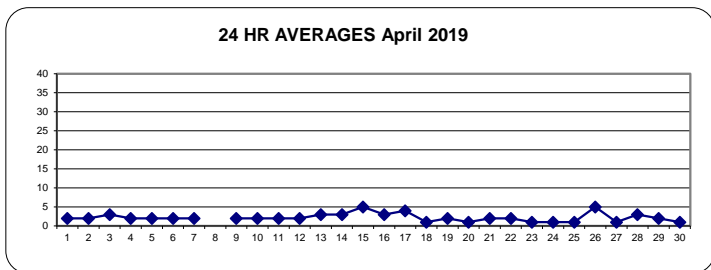


OXIDES OF NITROGEN Hourly Averages (NO_x ppb)

HR START (MST)	0:00	1:00	2:00	3:00	4:00	5:00	6:00	7:00	8:00	9:00	10:00	11:00	12:00	13:00	14:00	15:00	16:00	17:00	18:00	19:00	20:00	21:00	22:00	23:00	DAILY MIN.	DAILY MAX.	24-HR AVG.	RDGS.	
HR END (MST)	0:59	1:59	2:59	3:59	4:59	5:59	6:59	7:59	8:59	9:59	10:59	11:59	12:59	13:59	14:59	15:59	16:59	17:59	18:59	19:59	20:59	21:59	22:59	23:59					
DAY 1	3	3	2	2	3	2	1	2	2	1	1	1	S	1	1	1	1	1	1	1	1	1	1	1	1	3	2	24	
2	2	1	2	3	3	3	1	1	1	1	1	S	1	1	1	1	1	1	2	2	2	2	2	2	2	1	3	2	24
3	2	1	1	1	9	1	1	1	1	1	S	1	1	1	8	32	1	1	2	2	2	1	1	1	1	1	32	3	24
4	1	1	1	1	2	3	4	8	7	S	1	1	1	2	2	1	1	1	1	1	1	1	1	1	1	1	8	2	24
5	1	1	1	2	17	2	1	1	S	3	2	1	1	1	1	1	1	2	1	2	1	1	1	2	1	17	2	24	
6	1	3	2	2	12	1	2	S	2	2	1	2	1	1	1	2	2	2	2	2	2	2	2	1	2	1	12	2	24
7	4	4	3	2	1	2	S	2	2	2	2	2	2	2	2	2	2	2	1	1	1	1	1	1	1	1	4	2	24
8	1	1	1	1	1	S	1	1	2	1	1	1	Y	Y	Y	Y	C	C	C	C	C	C	2	1	5	1	5	-	20
9	6	4	4	2	S	2	2	2	4	2	2	2	1	1	2	1	1	1	1	1	1	1	1	2	2	1	6	2	24
10	3	3	3	S	3	3	3	3	3	3	2	3	2	1	1	1	1	1	2	3	1	1	3	2	1	3	2	2	24
11	1	2	S	2	2	2	2	2	2	2	1	1	1	1	1	1	1	1	2	1	1	2	2	2	1	2	2	2	24
12	2	S	3	4	4	4	4	3	3	2	1	1	1	1	1	1	1	1	1	1	1	1	4	3	4	1	4	2	24
13	S	4	4	3	3	3	4	3	4	4	4	3	2	2	1	1	1	1	1	2	2	4	10	S	1	10	3	24	
14	6	3	3	3	12	7	5	3	4	3	2	2	2	1	1	1	1	1	2	3	3	2	S	2	1	12	3	24	
15	1	1	1	1	2	6	6	5	3	2	2	2	1	1	2	1	1	73	2	4	2	S	3	2	1	73	5	24	
16	2	1	3	2	6	8	8	5	3	3	1	1	1	1	1	1	1	1	1	1	S	2	3	3	1	8	3	24	
17	3	3	4	4	3	4	52	6	5	4	3	2	1	1	1	1	1	1	1	S	1	1	1	1	1	52	4	24	
18	1	1	1	1	1	1	1	1	1	1	1	1	2	1	1	1	1	1	1	S	1	2	2	1	5	1	5	1	24
19	6	4	3	5	4	2	1	1	1	1	1	1	0	0	0	0	1	S	1	1	1	1	1	1	1	0	6	2	24
20	1	1	1	1	1	1	1	1	1	1	0	0	0	0	0	0	S	1	1	2	2	2	2	2	0	2	1	24	
21	2	3	2	1	1	1	1	1	1	1	1	1	0	0	1	S	1	1	1	1	3	3	4	5	0	5	2	24	
22	3	2	2	2	2	2	S1	3	3	3	3	2	2	1	S	1	1	1	1	2	2	1	1	1	1	3	2	23	
23	1	2	2	1	1	1	1	1	1	1	1	1	1	S	1	1	1	1	1	2	2	2	2	1	1	2	1	24	
24	2	1	2	1	1	1	1	2	2	1	1	1	1	S	1	1	1	1	1	1	1	1	1	1	1	2	1	24	
25	1	1	2	1	1	1	1	2	1	1	1	S	1	1	1	1	1	1	1	2	3	2	1	1	1	3	1	24	
26	1	2	5	2	2	19	29	19	15	5	S	1	1	0	1	2	0	1	1	1	2	2	1	1	0	29	5	24	
27	1	1	1	2	2	1	1	1	4	S	1	0	0	1	0	0	0	0	0	0	1	1	2	0	4	1	24		
28	2	3	6	5	6	8	14	14	S	4	1	1	1	1	0	0	0	0	1	1	2	3	3	2	0	14	3	24	
29	2	1	1	1	1	4	11	S	10	3	2	1	1	1	1	1	1	1	1	1	2	2	1	1	1	11	2	24	
30	2	2	1	1	2	1	S	3	4	2	1	1	1	1	1	1	0	1	1	1	1	2	2	1	0	4	1	24	
HOURLY MAX	6	4	6	5	17	19	52	19	15	5	4	3	2	2	8	32	2	73	2	4	3	4	10	5					
HOURLY AVG	2	2	2	2	4	3	6	3	3	2	1	1	1	1	1	2	1	4	1	2	2	2	2	2					

STATUS FLAG CODES

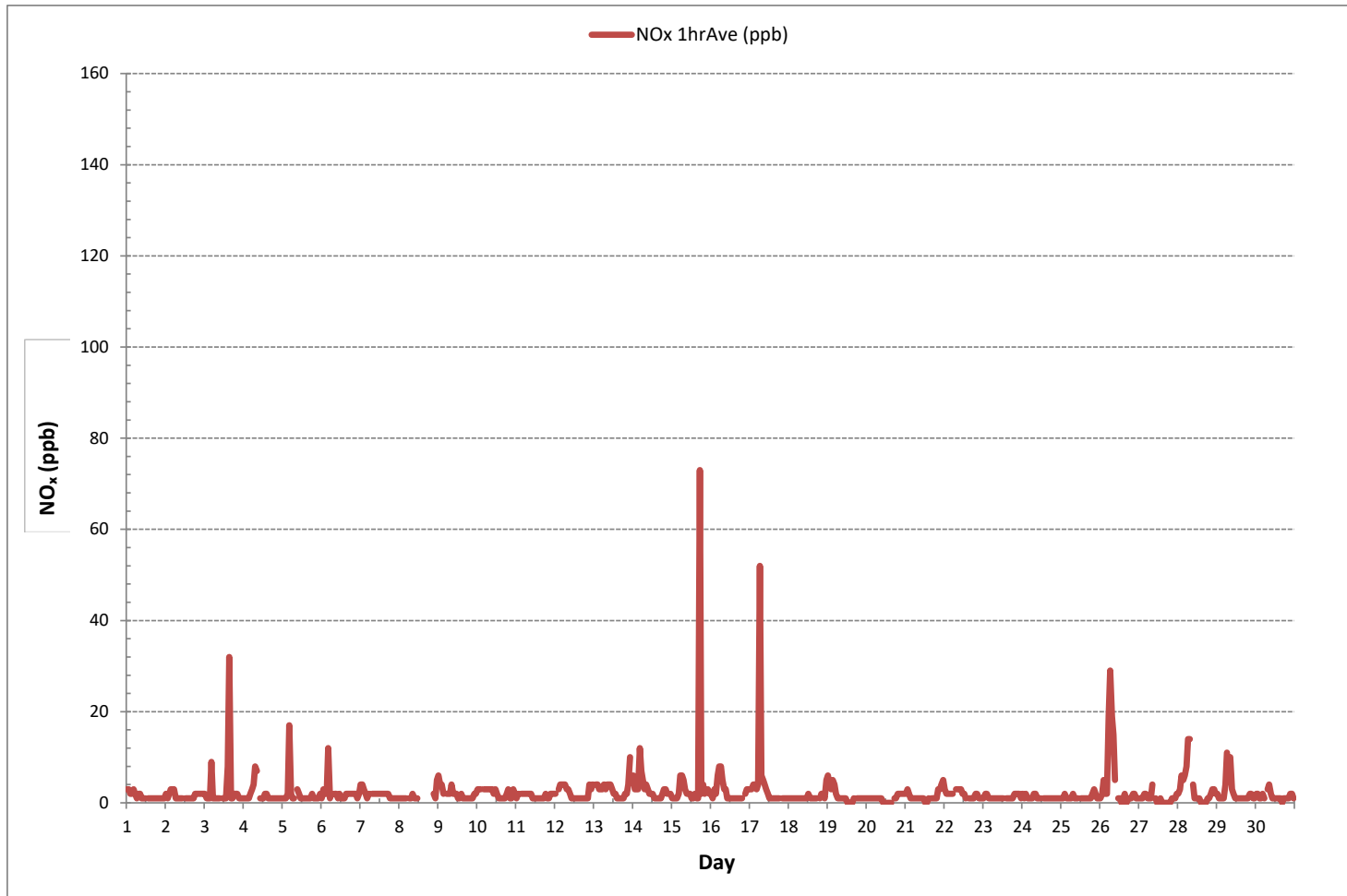
C	- MONTHLY CALIBRATION	Q	- QUALITY ASSURANCE
C1	- REPEAT CALIBRATION	R	- RECOVERY
Y	- MAINTENANCE	X	- MACHINE MALFUNCTION
S	- DAILY ZERO/SPAN CHECK	G	- OUT FOR REPAIR
S1	- REPEAT ZERO/SPAN CHECK	P	- POWER FAILURE



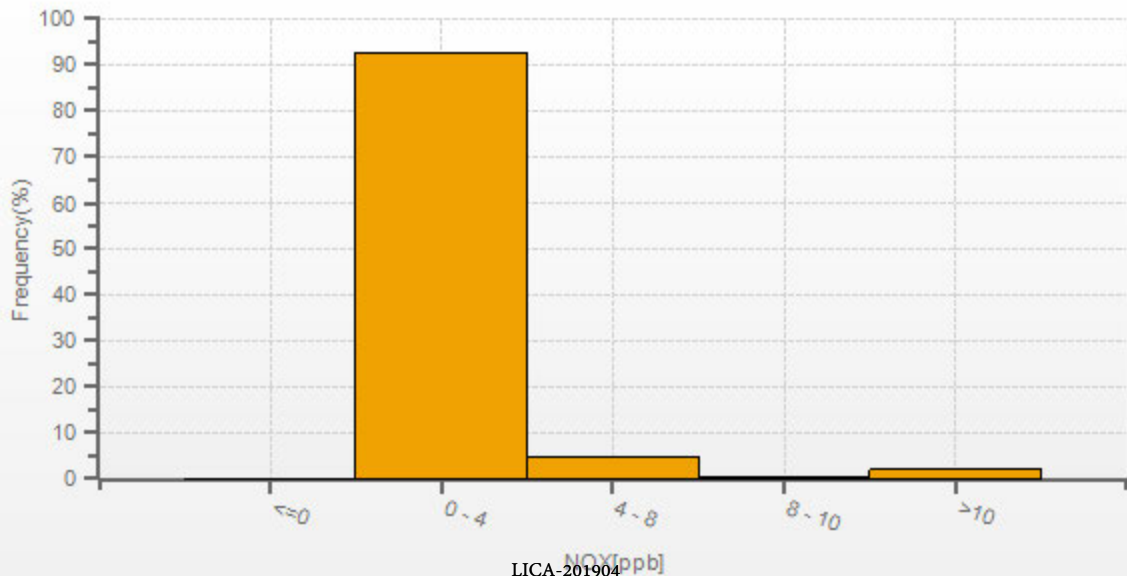
MONTHLY SUMMARY

NUMBER OF NON-ZERO READINGS:	0	652		
MINIMUM 1-HR AVERAGE:	0	ppb @ HOUR	12	ON DAY 19
MAXIMUM 1-HR AVERAGE:	73	ppb @ HOUR	17	ON DAY 15
MAXIMUM 24-HR AVERAGE:	5	ppb		ON DAY 15
IZS CALIBRATION TIME:	31	hrs	OPERATIONAL TIME:	715 hrs
MONTHLY CALIBRATION TIME:	5	hrs	AMD OPERATION UPTIME:	99.3 %
STANDARD DEVIATION:	4		MONTHLY AVERAGE:	2 ppb

OXIDES OF NITROGEN Hourly Averages (NO_x ppb)

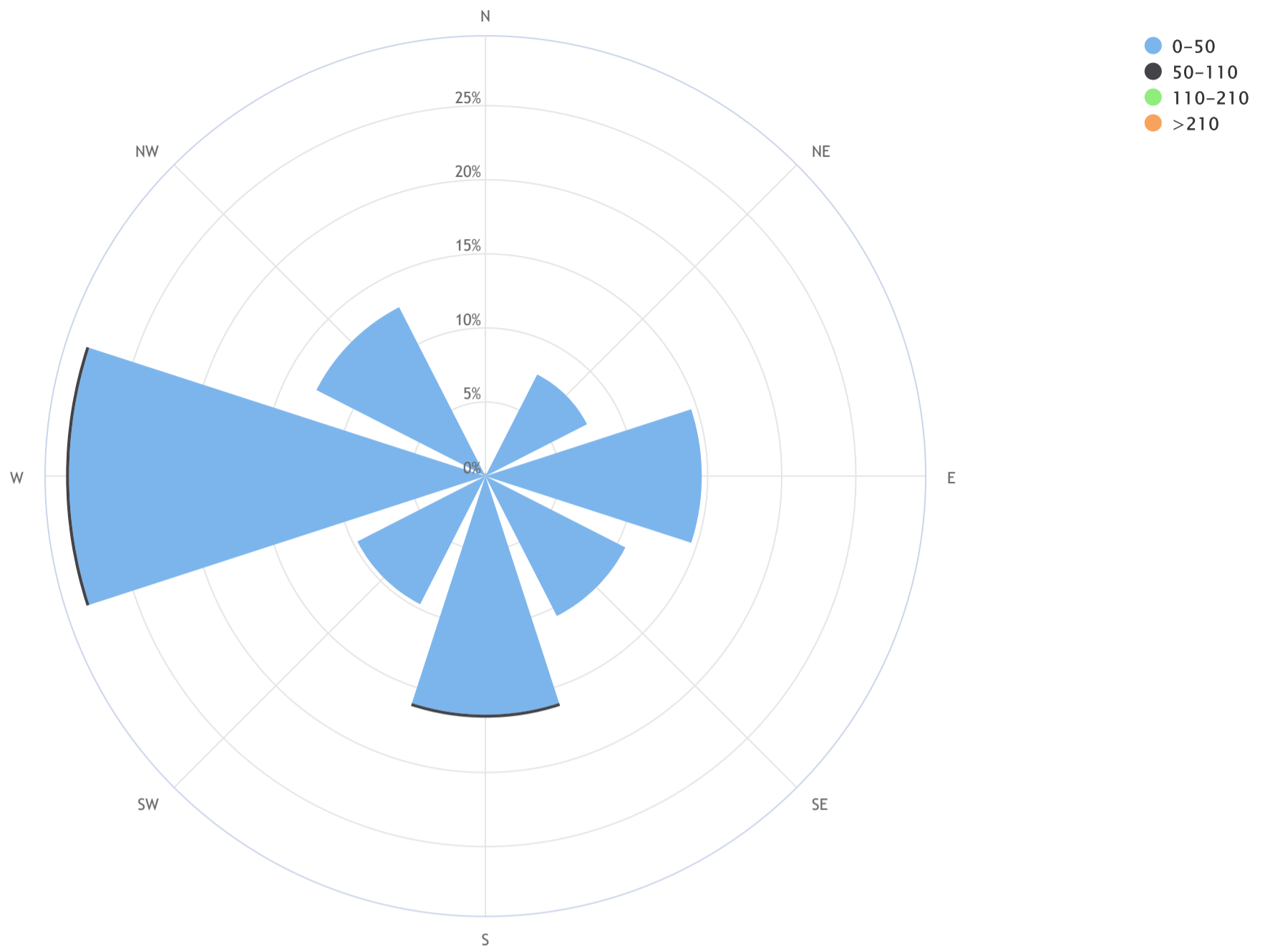


NOX[ppb] Histogram: LICA Bonnyville East Monthly: 19/04 1 Hr.



Lakeland Industry & Community Association_Bonnyville East Site Continuous Monitoring Station_NOx (ppb)_19/04

Pollutant Rose_Wind Frequency (Blowing From)_ CALM Avg = N/A, CALM % = 0.0%



Direction	0-50	50-110	110-210	>210	TOTAL
N	0.2	0.0	0.0	0.0	0.2
NE	7.7	0.0	0.0	0.0	7.7
E	14.6	0.0	0.0	0.0	14.6
SE	10.6	0.0	0.0	0.0	10.6
S	16.1	0.2	0.0	0.0	16.2
SW	9.7	0.0	0.0	0.0	9.7
W	28.1	0.2	0.0	0.0	28.3
NW	12.8	0.0	0.0	0.0	12.8
Summary	99.7	0.3	0.0	0.0	100.0
CALM	0.0	0.0	0.0	0.0	0.0

NITRIC OXIDE Hourly Averages (NO ppb)

HR START (MST)	0:00	1:00	2:00	3:00	4:00	5:00	6:00	7:00	8:00	9:00	10:00	11:00	12:00	13:00	14:00	15:00	16:00	17:00	18:00	19:00	20:00	21:00	22:00	23:00	DAILY	DAILY	24-HR	RDGS.
HR END (MST)	0:59	1:59	2:59	3:59	4:59	5:59	6:59	7:59	8:59	9:59	10:59	11:59	12:59	13:59	14:59	15:59	16:59	17:59	18:59	19:59	20:59	21:59	22:59	23:59	MIN.	MAX.	AVG.	
DAY 1	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	24
DAY 2	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	24
DAY 3	0	0	0	0	4	0	0	0	0	0	S	0	0	0	5	20	0	0	0	0	0	0	0	0	0	20	1	24
DAY 4	0	0	0	0	0	1	2	5	5	S	0	0	0	0	0	1	0	0	0	0	0	0	0	0	0	5	1	24
DAY 5	0	0	0	0	9	0	0	0	S	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	9	1	24
DAY 6	0	0	0	0	6	0	0	S	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	6	0	24
DAY 7	0	0	0	0	0	S	0	1	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1	0	24
DAY 8	0	0	0	0	0	S	0	0	0	0	0	0	Y	Y	Y	Y	C	C	C	C	C	0	1	0	1	-	20	
DAY 9	1	0	0	0	S	0	0	0	2	1	1	1	0	0	1	0	0	0	0	0	0	0	0	0	0	2	0	24
DAY 10	0	0	0	S	0	0	1	1	1	1	1	1	0	0	0	0	0	0	0	0	0	0	0	0	0	1	0	24
DAY 11	0	0	S	0	0	0	0	0	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1	0	24
DAY 12	0	S	0	0	0	0	0	1	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1	0	24
DAY 13	S	0	0	0	0	0	0	1	1	1	1	1	0	0	0	0	0	0	0	0	0	0	0	S	0	1	0	24
DAY 14	0	0	0	0	5	0	0	0	1	1	0	0	0	0	0	0	0	0	0	0	0	0	S	0	0	5	0	24
DAY 15	0	0	0	0	0	0	0	1	0	0	0	0	0	0	0	0	0	65	0	0	0	S	0	0	65	3	24	
DAY 16	0	0	0	0	0	1	2	2	1	1	0	0	0	0	0	0	0	0	0	0	S	0	0	0	0	2	0	24
DAY 17	0	0	0	0	0	0	34	1	1	1	1	0	0	0	0	0	0	0	0	S	0	0	0	0	34	2	24	
DAY 18	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	24
DAY 19	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	24
DAY 20	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	24
DAY 21	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	24
DAY 22	0	0	0	0	0	0	S1	0	1	1	1	0	0	0	S	0	0	0	0	0	0	0	0	0	0	1	0	23
DAY 23	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	24
DAY 24	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	24
DAY 25	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	24
DAY 26	0	0	0	0	0	2	10	7	6	2	S	0	0	0	0	1	0	0	0	0	0	0	0	0	0	10	1	24
DAY 27	0	0	0	0	0	0	0	0	2	S	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	2	0	24
DAY 28	0	0	0	0	0	1	3	4	S	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	4	0	24
DAY 29	0	0	0	0	0	0	2	S	3	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	3	0	24
DAY 30	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	1	0	24
HOURLY MAX	1	0	0	0	9	2	34	7	6	2	1	1	0	0	5	20	0	65	0	0	0	0	0	1				
HOURLY AVG	0	0	0	0	1	0	2	1	1	0	0	0	0	0	0	1	0	2	0	0	0	0	0	0				

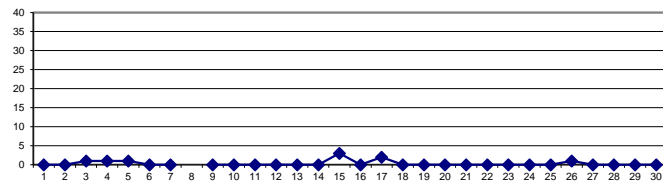
STATUS FLAG CODES

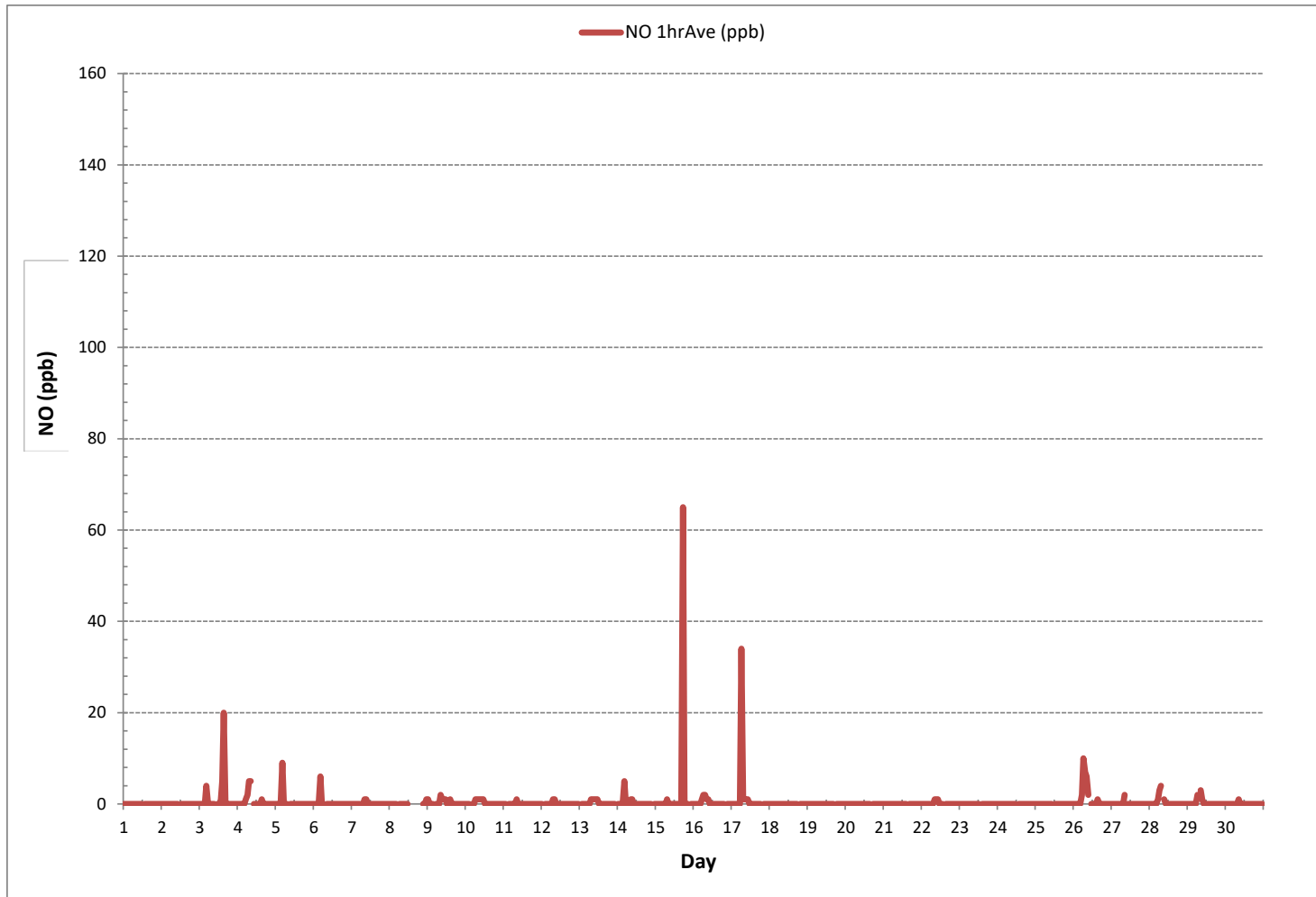
C	- MONTHLY CALIBRATION	Q	- QUALITY ASSURANCE
C1	- REPEAT CALIBRATION	R	- RECOVERY
Y	- MAINTENANCE	X	- MACHINE MALFUNCTION
S	- DAILY ZERO/SPAN CHECK	G	- OUT FOR REPAIR
S1	- REPEAT ZERO/SPAN CHECK	P	- POWER FAILURE

MONTHLY SUMMARY

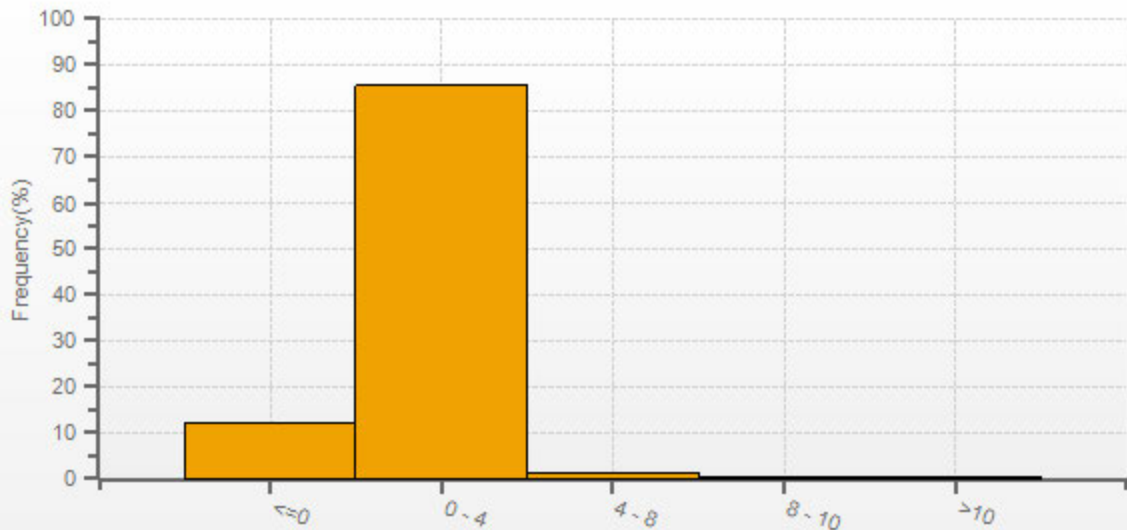
NUMBER OF NON-ZERO READINGS:	66			
MINIMUM 1-HR AVERAGE:	0	ppb @ HOUR	0	ON DAY 1
MAXIMUM 1-HR AVERAGE:	65	ppb @ HOUR	17	ON DAY 15
MAXIMUM 24-HR AVERAGE:	3	ppb		ON DAY 15
IZS CALIBRATION TIME:	31	hrs	OPERATIONAL TIME:	715 hrs
MONTHLY CALIBRATION TIME:	5	hrs	AMD OPERATION UPTIME:	99.3 %
STANDARD DEVIATION:	3		MONTHLY AVERAGE:	0 ppb

24 HR AVERAGES April 2019





NO[ppb] Histogram: LICA Bonnyville East Monthly: 19/04 1 Hr.

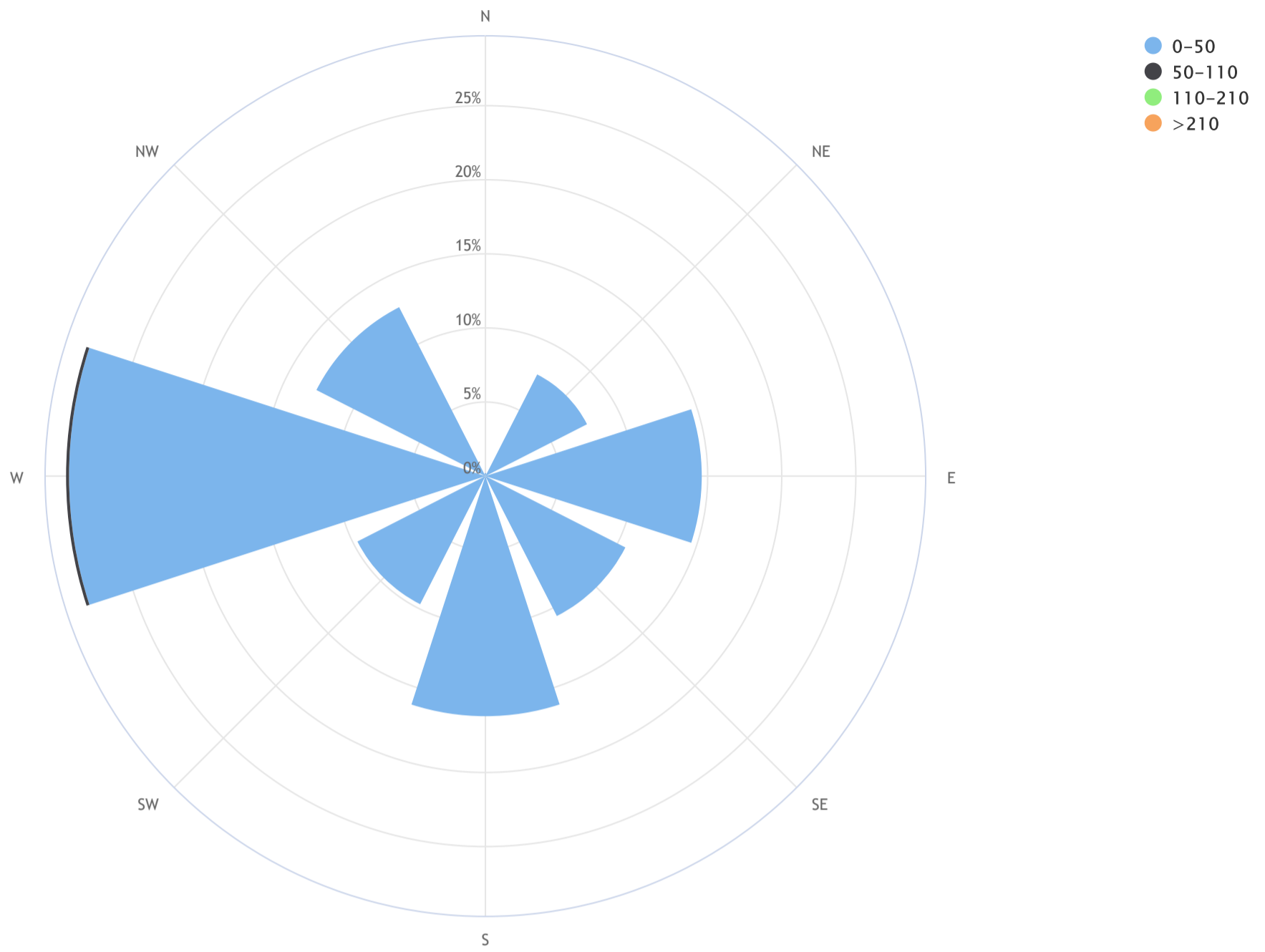


LICA-201904

Page 303 of 350

Lakeland Industry & Community Association_Bonnyville East Site Continuous Monitoring Station_NO (ppb)_19/04

Pollutant Rose_Wind Frequency (Blowing From)_ CALM Avg = N/A, CALM % = 0.0%



Direction	0-50	50-110	110-210	>210	TOTAL
N	0.2	0.0	0.0	0.0	0.2
NE	7.7	0.0	0.0	0.0	7.7
E	14.6	0.0	0.0	0.0	14.6
SE	10.6	0.0	0.0	0.0	10.6
S	16.2	0.0	0.0	0.0	16.2
SW	9.7	0.0	0.0	0.0	9.7
W	28.1	0.2	0.0	0.0	28.3
NW	12.8	0.0	0.0	0.0	12.8
Summary	99.9	0.2	0.0	0.0	100.0
CALM	0.0	0.0	0.0	0.0	0.0

NITROGEN DIOXIDE Hourly Averages (NO₂ ppb)

HR START (MST)	0:00	1:00	2:00	3:00	4:00	5:00	6:00	7:00	8:00	9:00	10:00	11:00	12:00	13:00	14:00	15:00	16:00	17:00	18:00	19:00	20:00	21:00	22:00	23:00	DAILY	DAILY	24-HR	RDGS.	
HR END (MST)	0:59	1:59	2:59	3:59	4:59	5:59	6:59	7:59	8:59	9:59	10:59	11:59	12:59	13:59	14:59	15:59	16:59	17:59	18:59	19:59	20:59	21:59	22:59	23:59	MIN.	MAX.	AVG.		
DAY 1	3	2	2	2	3	1	1	2	2	1	1	1	S	1	1	1	1	1	1	1	1	1	1	1	1	3	1	24	
2	2	1	2	3	3	3	1	1	1	1	0	S	1	1	1	1	1	1	2	2	2	2	2	2	0	3	2	24	
3	2	1	1	1	4	1	1	1	1	1	S	1	1	1	3	12	1	1	2	2	2	1	1	1	1	12	2	24	
4	1	1	1	1	1	2	2	3	2	S	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	3	1	24	
5	1	1	1	2	8	2	1	1	S	2	1	1	1	1	1	1	1	1	1	1	1	1	1	2	1	8	2	24	
6	1	3	2	2	5	1	2	S	1	1	1	1	1	1	1	1	2	2	2	2	2	2	1	2	1	5	2	24	
7	4	4	3	2	1	2	S	1	2	2	1	1	2	2	2	2	2	2	1	1	1	1	1	1	1	4	2	24	
8	1	1	1	1	1	S	1	1	1	1	1	1	Y	Y	Y	Y	C	C	C	C	C	2	1	4	1	4	-	20	
9	6	4	4	2	S	2	2	2	2	1	1	1	1	1	1	1	1	1	1	1	1	1	1	2	2	1	6	2	24
10	3	3	3	S	3	2	2	2	2	2	2	2	2	1	1	1	1	1	1	2	1	1	3	2	1	3	2	24	
11	1	1	S	2	2	2	2	2	1	1	1	1	1	1	1	1	1	1	2	1	1	2	2	2	1	2	1	24	
12	2	S	3	4	4	4	3	3	2	2	1	1	1	1	1	1	1	1	1	1	1	3	3	4	1	4	2	24	
13	S	4	4	3	3	3	3	3	3	3	3	3	2	2	1	1	1	1	1	2	2	4	10	S	1	10	3	24	
14	5	3	3	3	7	7	5	3	3	2	2	2	1	1	1	1	1	1	2	3	3	2	S	2	1	7	3	24	
15	1	1	1	1	2	5	6	5	3	2	1	1	1	1	1	1	8	2	4	2	S	3	2	1	8	2	24		
16	1	1	3	2	5	7	6	3	2	2	1	1	1	1	1	1	1	1	1	1	S	2	3	3	1	7	2	24	
17	3	3	4	4	3	3	18	5	4	3	2	2	1	1	1	1	1	1	1	S	1	1	1	1	1	18	3	24	
18	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	S	1	2	2	1	5	1	5	1	24	
19	6	4	3	5	4	1	1	1	1	0	1	0	0	0	0	0	0	S	1	1	1	1	1	1	0	6	2	24	
20	1	1	1	1	1	1	0	1	1	0	0	0	0	0	0	0	S	1	1	2	2	2	2	2	0	2	1	24	
21	2	3	2	1	1	1	1	1	1	1	0	0	0	0	0	S	1	1	1	2	3	4	4	0	4	1	24		
22	3	2	2	1	2	2	S1	2	2	2	2	2	2	1	S	1	1	1	1	2	2	1	1	1	1	3	2	23	
23	1	2	2	1	1	1	1	1	1	1	0	0	0	S	1	1	1	1	1	2	2	2	2	1	0	2	1	24	
24	2	1	1	1	1	1	1	2	2	1	1	1	S	1	1	1	1	1	1	1	1	1	1	1	1	2	1	24	
25	1	1	1	1	1	1	1	1	1	1	1	S	1	1	1	1	1	1	1	2	3	2	1	1	1	3	1	24	
26	1	2	5	2	2	17	20	12	10	4	S	1	1	0	1	1	0	1	1	1	2	2	1	1	0	20	4	24	
27	1	1	1	2	2	1	1	1	2	S	1	0	0	1	0	0	0	0	0	0	1	1	1	2	0	2	1	24	
28	2	3	6	5	5	7	11	10	S	3	1	1	1	1	0	0	0	0	1	1	2	3	3	2	0	11	3	24	
29	2	1	1	1	1	4	9	S	7	2	2	1	1	1	1	1	1	1	1	1	2	2	1	1	1	9	2	24	
30	2	2	1	1	2	1	S	3	3	1	1	1	1	1	1	1	0	1	1	1	1	1	1	1	0	3	1	24	
HOURLY MAX	6	4	6	5	8	17	20	12	10	4	3	3	2	2	3	12	2	8	2	4	3	4	10	5					
HOURLY AVG	2	2	2	2	3	3	4	3	2	2	1	1	1	1	1	1	1	1	1	1	2	2	2	2					

STATUS FLAG CODES

C	- MONTHLY CALIBRATION	Q	- QUALITY ASSURANCE
C1	- REPEAT CALIBRATION	R	- RECOVERY
Y	- MAINTENANCE	X	- MACHINE MALFUNCTION
S	- DAILY ZERO/SPAN CHECK	G	- OUT FOR REPAIR
S1	- REPEAT ZERO/SPAN CHECK	P	- POWER FAILURE

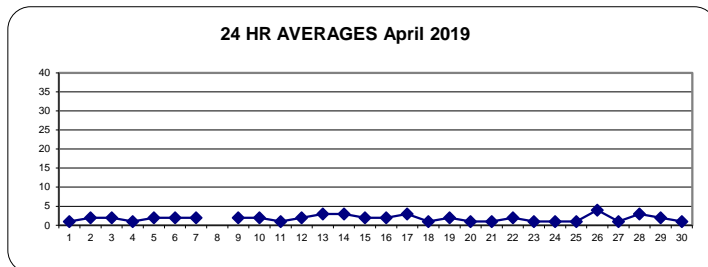
OBJECTIVE LIMIT:

ALBERTA ENVIRONMENT: 1-HR 159 ppb

MONTHLY SUMMARY

NUMBER OF 1-HR EXCEEDANCES:	0			
NUMBER OF NON-ZERO READINGS:	641			
MINIMUM 1-HR AVERAGE:	0	ppb @ HOUR	10	ON DAY
MAXIMUM 1-HR AVERAGE:	20	ppb @ HOUR	6	ON DAY
MAXIMUM 24-HR AVERAGE:	4	ppb		ON DAY
IZS CALIBRATION TIME:	31	hrs	OPERATIONAL TIME:	715
MONTHLY CALIBRATION TIME:	5	hrs	AMD OPERATION UPTIME:	99.3
STANDARD DEVIATION:	2		MONTHLY AVERAGE:	2
				ppb

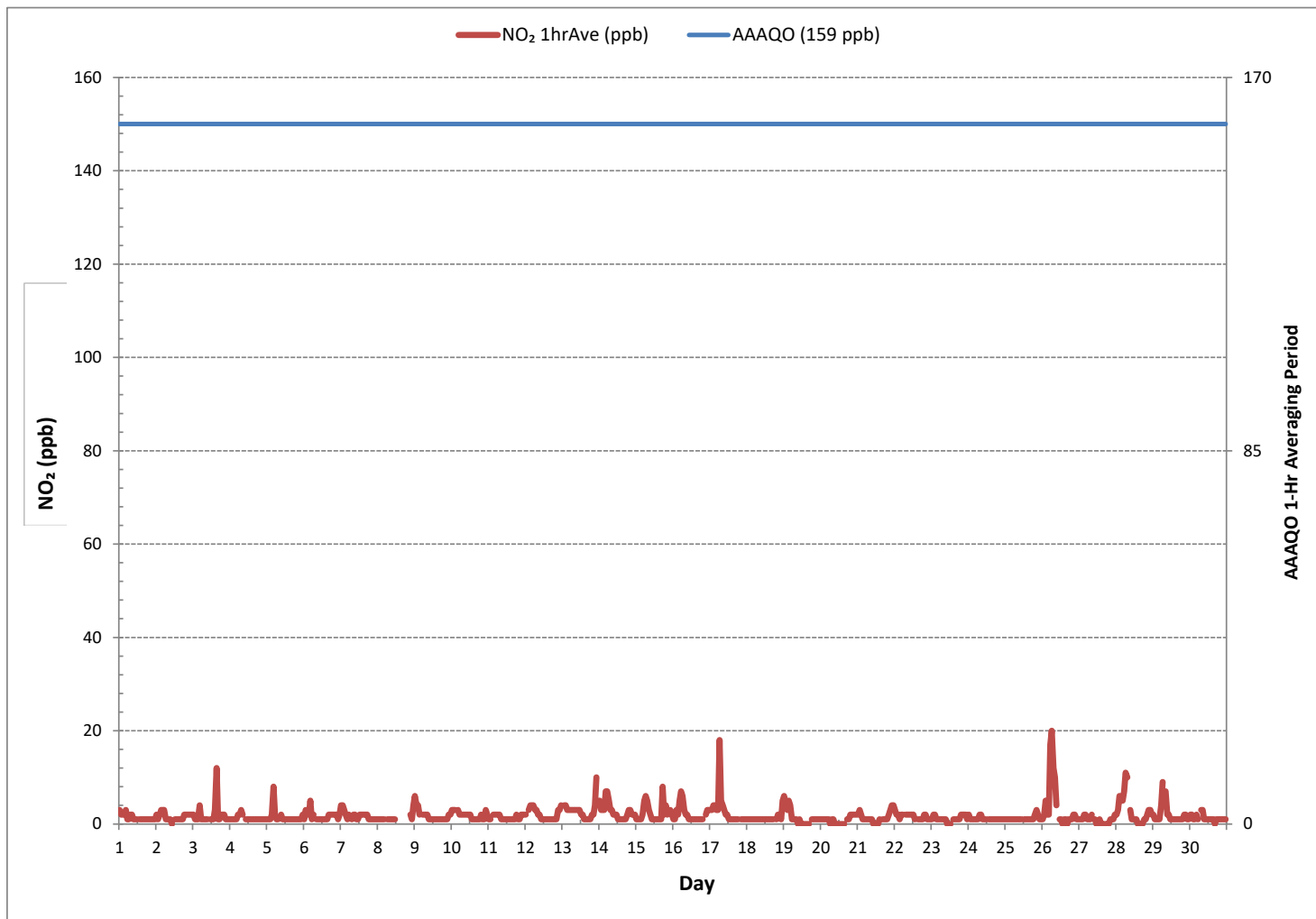
24 HR AVERAGES April 2019



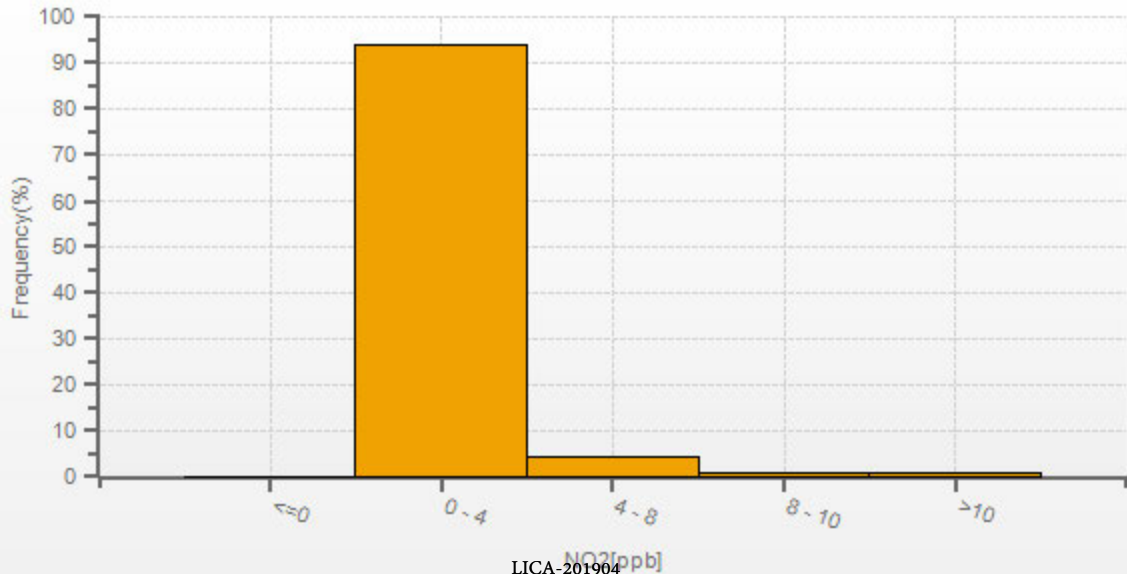


LAKELAND INDUSTRY & COMMUNITY ASSOCIATION
Bonnyville East Site Continuous Monitoring Station - April 2019

NITROGEN DIOXIDE Hourly Averages (NO₂ ppb)

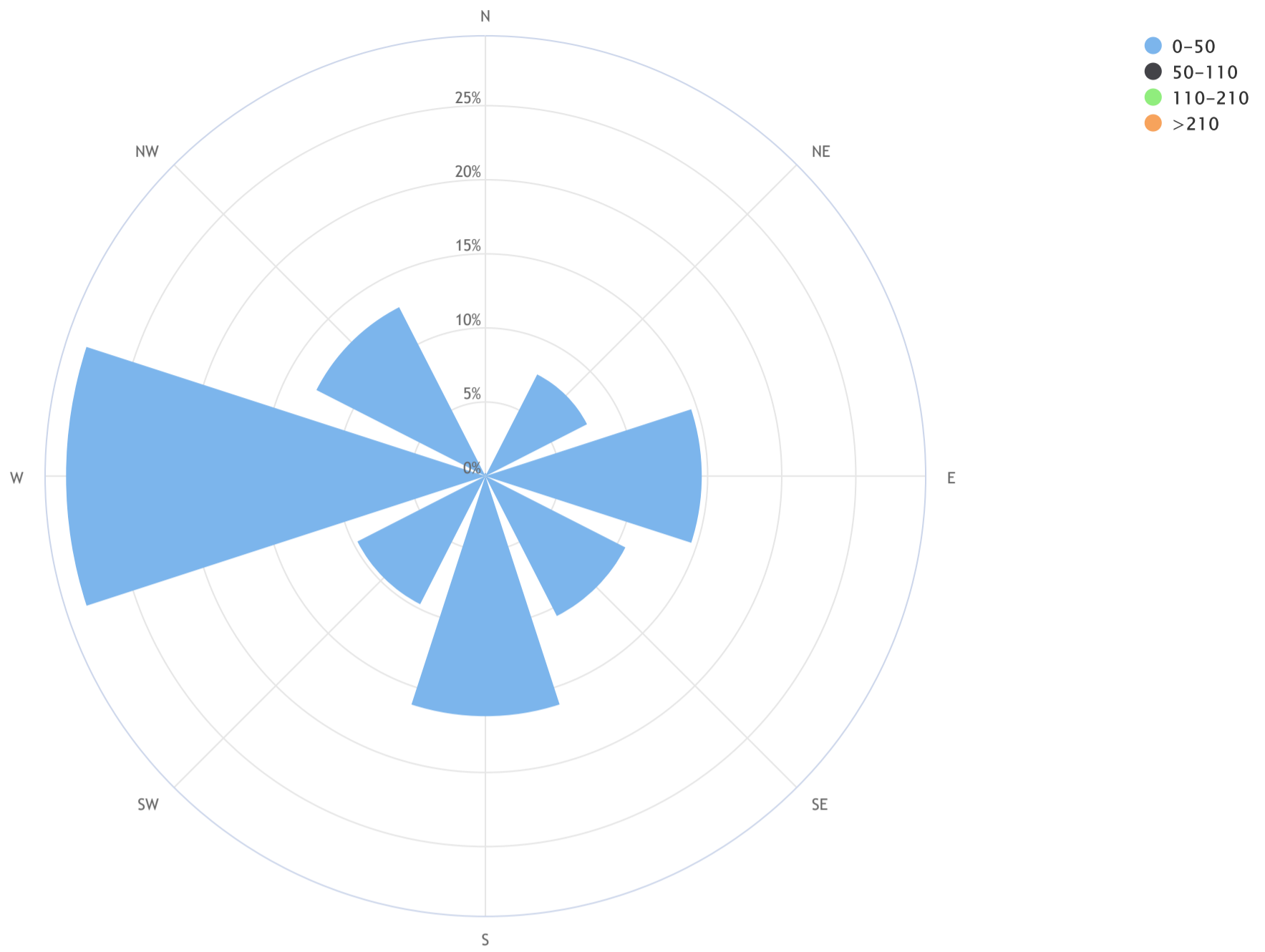


NO2[ppb] Histogram: LICA Bonnyville East Monthly: 19/04 1 Hr.



Lakeland Industry & Community Association_Bonnyville East Site Continuous Monitoring Station_NO₂ (ppb)_19/04

Pollutant Rose_Wind Frequency (Blowing From)_ CALM Avg = N/A, CALM % = 0.0%



Direction	0-50	50-110	110-210	>210	TOTAL
N	0.2	0.0	0.0	0.0	0.2
NE	7.7	0.0	0.0	0.0	7.7
E	14.6	0.0	0.0	0.0	14.6
SE	10.6	0.0	0.0	0.0	10.6
S	16.2	0.0	0.0	0.0	16.2
SW	9.7	0.0	0.0	0.0	9.7
W	28.3	0.0	0.0	0.0	28.3
NW	12.8	0.0	0.0	0.0	12.8
Summary	100.0	0.0	0.0	0.0	100.0
CALM	0.0	0.0	0.0	0.0	0.0

OZONE Hourly Averages (O₃ ppb)

HR START (MST)	0:00	1:00	2:00	3:00	4:00	5:00	6:00	7:00	8:00	9:00	10:00	11:00	12:00	13:00	14:00	15:00	16:00	17:00	18:00	19:00	20:00	21:00	22:00	23:00	DAILY MIN.	DAILY MAX.	24-HR AVG.	RDGS.	
HR END (MST)	0:59	1:59	2:59	3:59	4:59	5:59	6:59	7:59	8:59	9:59	10:59	11:59	12:59	13:59	14:59	15:59	16:59	17:59	18:59	19:59	20:59	21:59	22:59	23:59					
DAY 1	34.4	35.2	35.0	34.6	34.9	35.6	35.2	37.2	39.7	46.5	48.3	47.9	S	46.8	48.3	46.0	46.3	44.4	43.5	44.2	44.0	42.6	41.8	41.0	34.4	48.3	41.5	24	
2	40.3	42.6	40.5	39.1	37.7	39.1	41.9	43.2	44.1	44.6	44.7	S	44.7	45.9	46.5	46.6	46.8	46.9	44.6	40.7	37.1	33.3	37.0	37.1	33.3	46.9	42.0	24	
3	35.8	38.7	39.6	40.3	38.5	40.1	40.1	40.7	40.9	40.8	S	41.1	41.3	41.4	42.0	42.6	45.4	45.9	43.7	41.0	37.8	36.0	35.6	36.5	35.6	45.9	40.3	24	
4	36.2	34.6	35.9	36.3	32.0	32.1	32.7	32.8	33.4	S	35.6	36.5	37.5	37.1	36.2	36.6	37.2	37.6	38.3	38.5	39.8	40.5	40.1	38.0	32.0	40.5	36.3	24	
5	37.8	36.2	37.7	36.3	33.1	33.5	33.1	33.1	S	34.0	35.0	36.5	39.0	41.6	43.0	43.2	42.7	42.6	41.4	40.6	39.8	39.2	38.3	37.0	33.1	43.2	38.0	24	
6	37.9	33.8	33.6	34.4	30.6	31.8	30.9	S	30.8	29.9	29.7	28.3	24.7	22.2	21.3	20.8	20.0	18.6	18.3	18.5	18.1	18.2	17.3	17.0	17.0	37.9	25.5	24	
7	13.8	12.5	11.0	13.1	12.1	11.5	S	16.0	16.4	18.9	24.4	28.9	29.6	33.6	35.1	37.0	39.1	40.4	39.2	42.6	41.5	40.1	38.3	35.4	11.0	42.6	27.4	24	
8	34.5	33.5	33.9	34.8	34.9	S	34.8	36.6	40.5	43.0	45.2	46.5	47.1	47.6	47.8	47.2	47.6	47.4	45.5	45.1	44.0	36.6	38.4	29.7	29.7	47.8	41.0	24	
9	26.0	26.5	19.2	16.7	S	16.7	18.7	19.3	19.2	C	C	C	C	C	C	31.1	42.3	49.1	46.9	43.5	35.6	31.6	29.7	29.1	26.1	16.7	49.1	29.3	24
10	22.4	19.5	18.1	S	17.0	16.8	16.8	18.7	20.5	21.3	23.3	24.7	31.7	38.8	37.3	38.9	42.0	45.0	42.6	38.3	41.1	39.3	33.5	29.8	16.8	45.0	29.5	24	
11	28.7	31.6	S	31.8	31.3	31.3	31.6	30.8	30.4	31.2	34.4	36.4	35.8	38.6	41.8	42.4	43.7	42.5	36.8	34.2	32.7	31.4	29.2	27.2	27.2	43.7	34.2	24	
12	27.8	S	30.5	28.7	28.1	27.1	28.0	30.3	34.2	36.5	39.5	43.4	43.8	47.0	47.1	46.6	47.0	47.4	45.4	42.6	37.7	34.8	35.7	35.5	27.1	47.4	37.6	24	
13	S	35.1	34.0	33.8	35.3	33.2	34.8	37.2	37.8	38.7	40.2	42.7	47.0	50.3	50.3	51.0	50.9	50.8	47.4	41.5	35.4	32.4	26.6	S	26.6	51.0	40.3	24	
14	29.8	31.1	28.9	28.2	24.5	23.1	24.2	29.3	31.5	34.9	39.5	47.7	52.5	53.0	51.6	50.4	50.9	47.9	45.8	44.4	39.9	38.2	S	41.2	23.1	53.0	38.6	24	
15	39.0	37.8	35.0	33.5	30.0	25.8	27.2	27.9	30.6	32.9	35.2	38.7	41.9	41.6	39.9	41.5	44.1	41.4	42.3	36.9	32.3	S	27.7	25.2	25.2	44.1	35.1	24	
16	27.4	24.5	20.9	18.8	14.3	16.4	16.2	23.0	29.5	32.5	37.0	41.2	41.6	43.8	44.5	44.4	46.6	46.4	45.6	44.9	S	37.9	38.3	38.2	14.3	46.6	33.6	24	
17	34.9	34.2	35.6	35.3	34.4	31.8	29.5	27.9	32.0	34.9	38.1	42.1	48.6	49.0	50.0	48.2	45.7	46.5	45.4	S	38.3	39.9	37.4	38.2	27.9	50.0	39.0	24	
18	32.7	33.0	30.9	31.0	30.0	30.7	31.9	34.4	37.1	37.1	39.1	40.1	39.8	45.5	47.9	49.5	50.3	48.8	S	43.2	37.0	30.9	32.0	26.3	26.3	50.3	37.4	24	
19	28.0	28.0	31.0	28.3	34.1	41.0	40.1	41.0	40.0	42.2	43.4	45.0	45.5	47.1	47.0	48.0	49.3	S	49.3	47.2	42.5	41.8	39.5	38.2	28.0	49.3	40.8	24	
20	37.2	38.2	38.0	35.9	35.2	36.5	37.5	39.3	42.4	43.2	45.0	47.3	48.3	47.3	48.1	47.5	S	47.8	45.8	40.5	38.0	38.1	31.3	32.6	31.3	48.3	40.9	24	
21	32.0	30.0	31.8	28.8	27.9	29.3	33.0	37.9	39.5	44.4	47.4	49.1	52.1	54.2	54.5	S	54.4	53.2	52.8	47.5	46.6	41.7	44.2	43.4	27.9	54.5	42.4	24	
22	45.2	46.4	45.9	45.3	42.8	40.7	39.6	39.3	39.2	39.1	40.0	42.8	51.8	61.2	S	61.3	60.1	56.5	56.1	52.3	49.3	47.9	42.8	41.1	39.1	61.3	47.2	24	
23	37.3	40.5	35.9	35.1	37.8	38.9	41.2	45.2	47.9	48.7	48.1	47.8	49.9	S	53.2	53.7	54.6	54.4	53.5	48.8	47.8	48.9	46.5	46.3	35.1	54.6	46.2	24	
24	45.3	45.9	44.4	44.0	44.1	43.7	43.7	45.3	47.4	49.7	52.9	54.7	S	51.7	51.2	50.5	50.1	48.1	48.5	49.2	47.3	45.7	44.1	43.8	43.7	54.7	47.5	24	
25	43.5	43.0	41.8	41.6	41.8	41.8	41.5	42.1	43.2	45.3	47.1	S	48.2	48.7	48.8	49.2	48.8	49.9	49.9	46.0	44.4	45.2	46.7	46.5	41.5	49.9	45.4	24	
26	42.3	33.5	27.9	30.9	31.2	15.2	14.0	22.9	28.3	39.7	S	47.7	46.6	47.7	46.3	45.7	45.6	43.6	42.3	40.4	34.9	35.7	36.1	37.7	14.0	47.7	36.4	24	
27	36.8	35.8	32.5	33.1	28.9	30.7	33.2	34.3	33.5	S	37.5	38.5	38.4	37.7	38.3	39.1	39.5	40.2	41.0	41.2	42.8	42.4	40.4	40.8	28.9	42.8	37.2	24	
28	42.3	40.9	34.6	33.4	30.5	28.1	26.3	29.7	S	42.3	45.2	45.8	45.8	46.1	44.9	45.9	45.6	45.4	43.5	42.7	39.7	38.1	36.7	34.5	26.3	46.1	39.5	24	
29	33.6	37.6	34.8	34.8	32.8	28.3	26.8	S	31.1	41.0	42.8	45.2	44.4	45.1	46.7	47.5	49.1	48.6	45.9	44.5	41.8	41.9	44.1	42.4	26.8	49.1	40.5	24	
30	41.6	40.0	37.2	35.9	37.4	42.7	S	43.3	41.5	42.9	43.2	43.9	45.1	46.7	47.0	46.6	45.6	45.8	44.7	41.9	39.0	40.0	39.9	36.4	35.9	47.0	42.1	24	
HOURLY MAX	45.3	46.4	45.9	45.3	44.1	43.7	43.7	45.3	47.9	49.7	52.9	54.7	52.5	61.2	54.5	61.3	60.1	56.5	56.1	52.3	49.3	48.9	46.7	46.5					
HOURLY AVG	34.6	34.5	33.0	32.9	31.8	30.8	31.6	33.5	35.1	38.4	40.1	41.9	43.1	44.9	44.4	45.2	46.1	45.5	44.2	41.9	39.4	38.2	36.8	36.0					

STATUS FLAG CODES

C	- MONTHLY CALIBRATION	Q	- QUALITY ASSURANCE
C1	- REPEAT CALIBRATION	R	- RECOVERY
Y	- MAINTENANCE	X	- MACHINE MALFUNCTION
S	- DAILY ZERO/SPAN CHECK	G	- OUT FOR REPAIR
S1	- REPEAT ZERO/SPAN CHECK	P	- POWER FAILURE

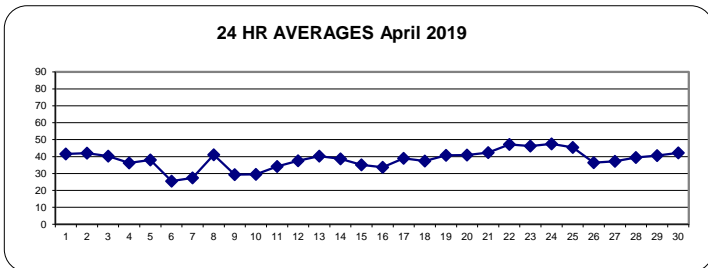
OBJECTIVE LIMIT:

ALBERTA ENVIRONMENT: 1-HR 76 ppb

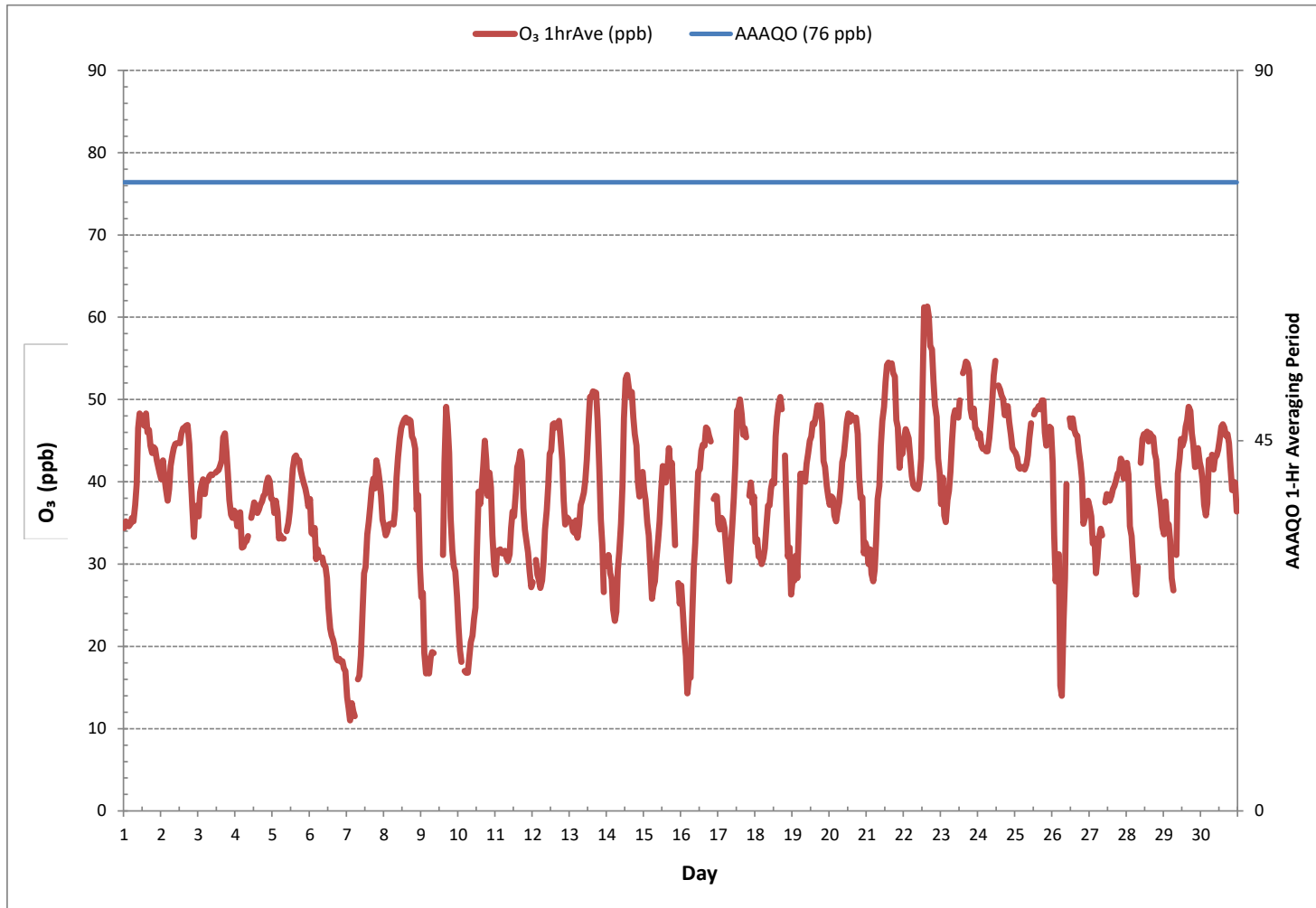
MONTHLY SUMMARY

NUMBER OF 1-HR EXCEEDANCES:	0			
NUMBER OF NON-ZERO READINGS:	684			
MINIMUM 1-HR AVERAGE:	11.0 ppb	@ HOUR	2	ON DAY
MAXIMUM 1-HR AVERAGE:	61.3 ppb	@ HOUR	15	ON DAY
MAXIMUM 24-HR AVERAGE:	47.5 ppb			ON DAY
IZS CALIBRATION TIME:	31 hrs	OPERATIONAL TIME:	720 hrs	
MONTHLY CALIBRATION TIME:	5 hrs	AMD OPERATION UPTIME:	100.0 %	
STANDARD DEVIATION:	8.7	MONTHLY AVERAGE:	38.5 ppb	

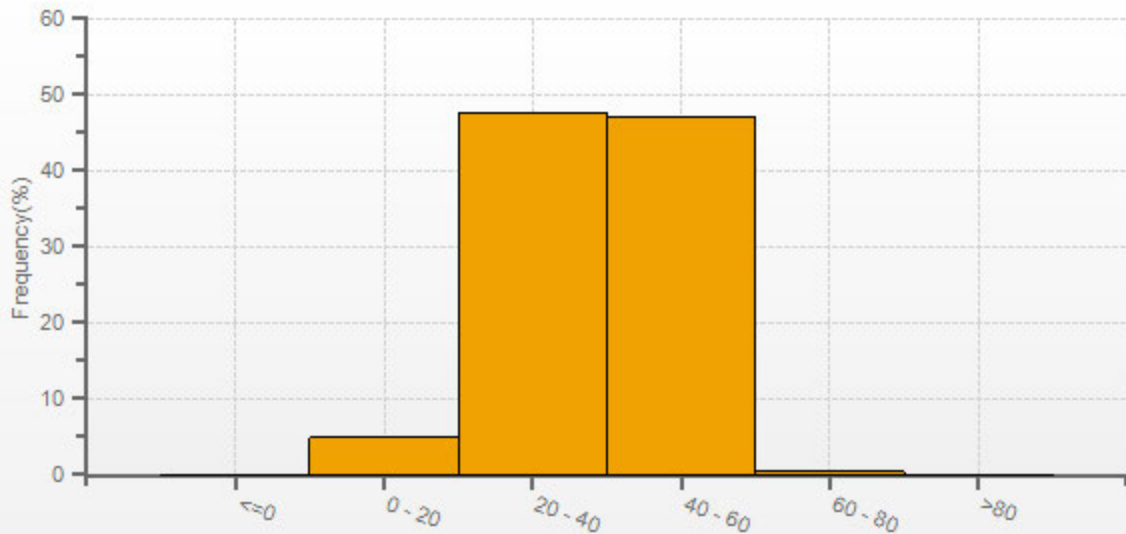
24 HR AVERAGES April 2019



OZONE Hourly Averages (O₃ ppb)



O3[ppb] Histogram: LICA Bonnyville East Monthly: 19/04 1 Hr.

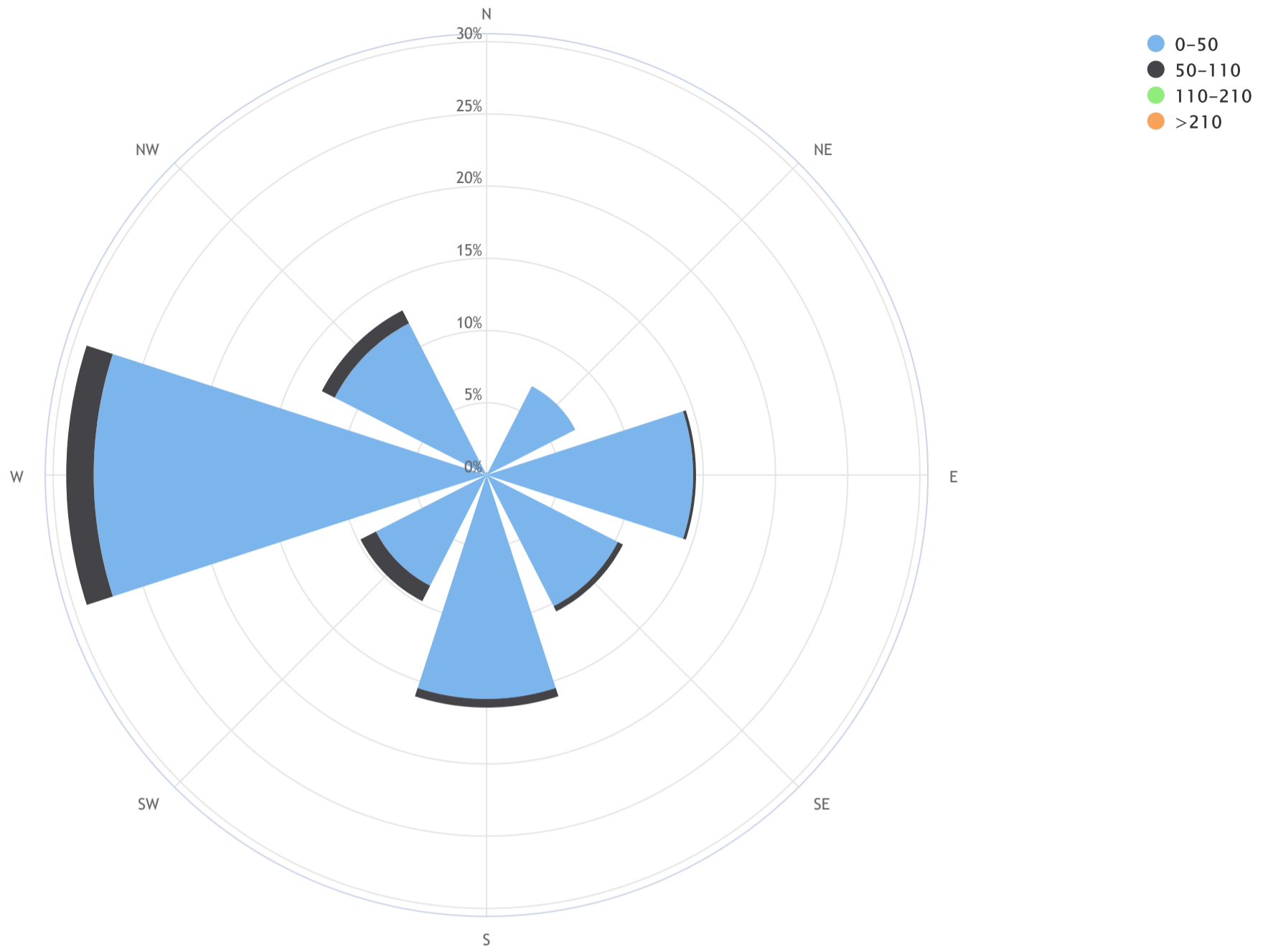


LICA-201904

Page 311 of 350

Lakeland Industry & Community Association_Bonnyville East Site Continuous Monitoring Station_O₃ (ppb)_19/04

Pollutant Rose_Wind Frequency (Blowing From)_ CALM Avg = N/A, CALM % = 0.0%



Direction	0-50	50-110	110-210	>210	TOTAL
N	0.2	0.0	0.0	0.0	0.2
NE	6.9	0.0	0.0	0.0	6.9
E	14.3	0.2	0.0	0.0	14.5
SE	10.2	0.4	0.0	0.0	10.7
S	15.5	0.6	0.0	0.0	16.1
SW	8.6	1.2	0.0	0.0	9.8
W	27.2	1.9	0.0	0.0	29.1
NW	11.8	1.0	0.0	0.0	12.9
Summary	94.7	5.3	0.0	0.0	100.0
CALM	0.0	0.0	0.0	0.0	0.0

PARTICULATE MATTER < 2.5 MICRONS Hourly Averages (PM_{2.5} µg/m³)

HR START (MST)	0:00	1:00	2:00	3:00	4:00	5:00	6:00	7:00	8:00	9:00	10:00	11:00	12:00	13:00	14:00	15:00	16:00	17:00	18:00	19:00	20:00	21:00	22:00	23:00	DAILY MIN.	DAILY MAX.	24-HR AVG.	RDGS.	
HR END (MST)	0:59	1:59	2:59	3:59	4:59	5:59	6:59	7:59	8:59	9:59	10:59	11:59	12:59	13:59	14:59	15:59	16:59	17:59	18:59	19:59	20:59	21:59	22:59	23:59					
DAY 1	4	3	2	2	1	1	1	1	1	1	1	1	1	1	1	0	0	0	0	0	0	0	0	0	0	0	4	1	24
2	0	0	0	0	0	0	0	0	0	0	1	0	0	0	0	0	1	1	1	1	1	1	1	1	1	0	1	1	24
3	1	1	1	2	2	2	2	1	2	2	2	2	5	6	9	6	5	4	4	6	7	5	4	4	4	1	9	3	24
4	4	4	4	5	8	8	7	5	7	8	7	6	6	6	6	6	7	6	6	4	3	3	5	5	3	8	6	24	
5	4	4	4	7	6	5	5	6	7	6	7	6	7	6	6	11	7	7	9	5	6	5	7	6	4	11	6	24	
6	6	5	5	5	5	5	6	6	5	5	5	5	5	3	2	2	2	2	1	0	0	1	0	0	0	6	3	24	
7	1	1	1	1	2	3	3	2	3	5	8	14	14	13	11	9	7	5	4	2	1	1	2	3	1	14	5	24	
8	3	3	3	3	2	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	4	1	4	1	24	
9	2	1	3	5	6	5	3	2	4	7	8	7	5	5	7	3	2	2	3	3	4	5	5	5	1	8	4	24	
10	6	7	6	7	9	7	6	5	6	6	5	5	4	3	3	2	1	1	2	1	1	1	1	2	2	1	9	4	24
11	3	3	4	5	6	5	4	4	4	4	4	4	4	4	5	4	6	4	4	2	3	3	3	3	3	2	6	4	24
12	3	3	2	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	24
13	3	3	3	3	2	2	2	3	3	6	5	12	10	4	3	2	2	2	2	2	5	5	4	3	3	2	12	4	24
14	4	3	3	3	4	4	6	4	5	4	3	2	2	2	2	2	2	3	3	3	4	4	4	4	2	6	3	24	
15	3	3	3	3	3	4	5	6	5	7	7	6	5	5	6	7	8	9	8	9	7	5	6	5	3	9	6	24	
16	6	5	5	5	8	8	7	5	6	5	3	3	3	4	3	3	3	3	2	1	1	1	1	1	1	8	4	24	
17	2	2	2	3	3	4	7	5	9	8	5	4	2	2	2	2	1	1	0	1	1	1	1	1	0	9	3	24	
18	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	2	2	2	2	5	2	3	1	5	1	24	
19	3	3	3	3	2	1	1	1	2	1	1	1	1	1	1	1	2	2	2	3	3	2	2	2	2	1	3	2	24
20	2	2	2	2	2	2	3	3	3	2	2	3	3	3	3	3	2	3	3	3	2	2	3	3	2	3	2	3	24
21	2	2	2	2	1	2	2	2	2	2	2	2	2	2	3	3	4	3	6	18	5	5	3	3	1	18	3	24	
22	2	2	2	2	2	3	4	6	5	5	8	9	7	8	7	5	4	3	3	3	2	1	1	1	1	9	4	24	
23	1	1	1	1	1	1	1	1	1	1	1	1	1	1	2	2	2	2	2	1	2	1	1	1	1	2	1	24	
24	1	1	1	2	2	2	2	3	2	2	2	2	2	2	2	2	2	1	1	1	1	1	1	1	1	3	2	24	
25	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	4	2	1	1	1	1	4	1	24	
26	1	1	2	2	2	4	3	2	3	1	1	1	C	C	C	1	1	2	3	2	4	3	2	1	1	4	2	24	
27	1	1	1	1	1	3	1	1	3	2	1	1	1	1	2	2	1	2	1	1	7	1	1	1	1	7	2	24	
28	1	2	1	1	2	2	2	2	2	1	1	1	2	1	2	1	1	1	1	6	3	2	2	6	1	6	2	24	
29	2	2	2	2	2	3	3	3	3	3	3	3	3	3	2	2	2	2	3	3	3	2	2	2	2	3	3	24	
30	2	2	2	3	2	2	2	3	2	2	3	3	3	3	3	3	2	2	2	4	3	4	3	2	2	4	3	24	
HOURLY MAX	6	7	6	7	9	8	7	6	9	8	8	14	14	13	11	11	8	9	9	18	7	5	7	6					
HOURLY AVG	3	2	2	3	3	3	3	3	3	3	3	4	4	3	3	3	3	3	3	3	3	2	2	3					

STATUS FLAG CODES

C	- MONTHLY CALIBRATION	Q	- QUALITY ASSURANCE
C1	- REPEAT CALIBRATION	R	- RECOVERY
Y	- MAINTENANCE	X	- MACHINE MALFUNCTION
S	- DAILY ZERO/SPAN CHECK	G	- OUT FOR REPAIR
S1	- REPEAT ZERO/SPAN CHECK	P	- POWER FAILURE

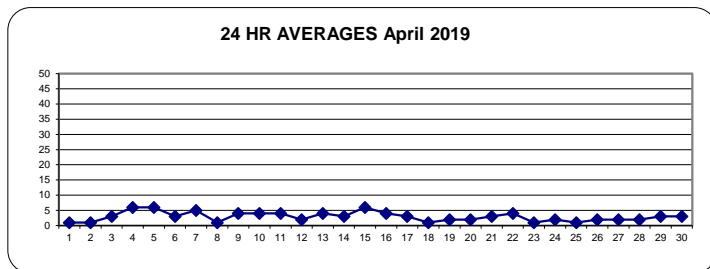
OBJECTIVE LIMIT:

ALBERTA ENVIRONMENT:	1-HR	80	µg/m ³	24-HR	29	µg/m ³
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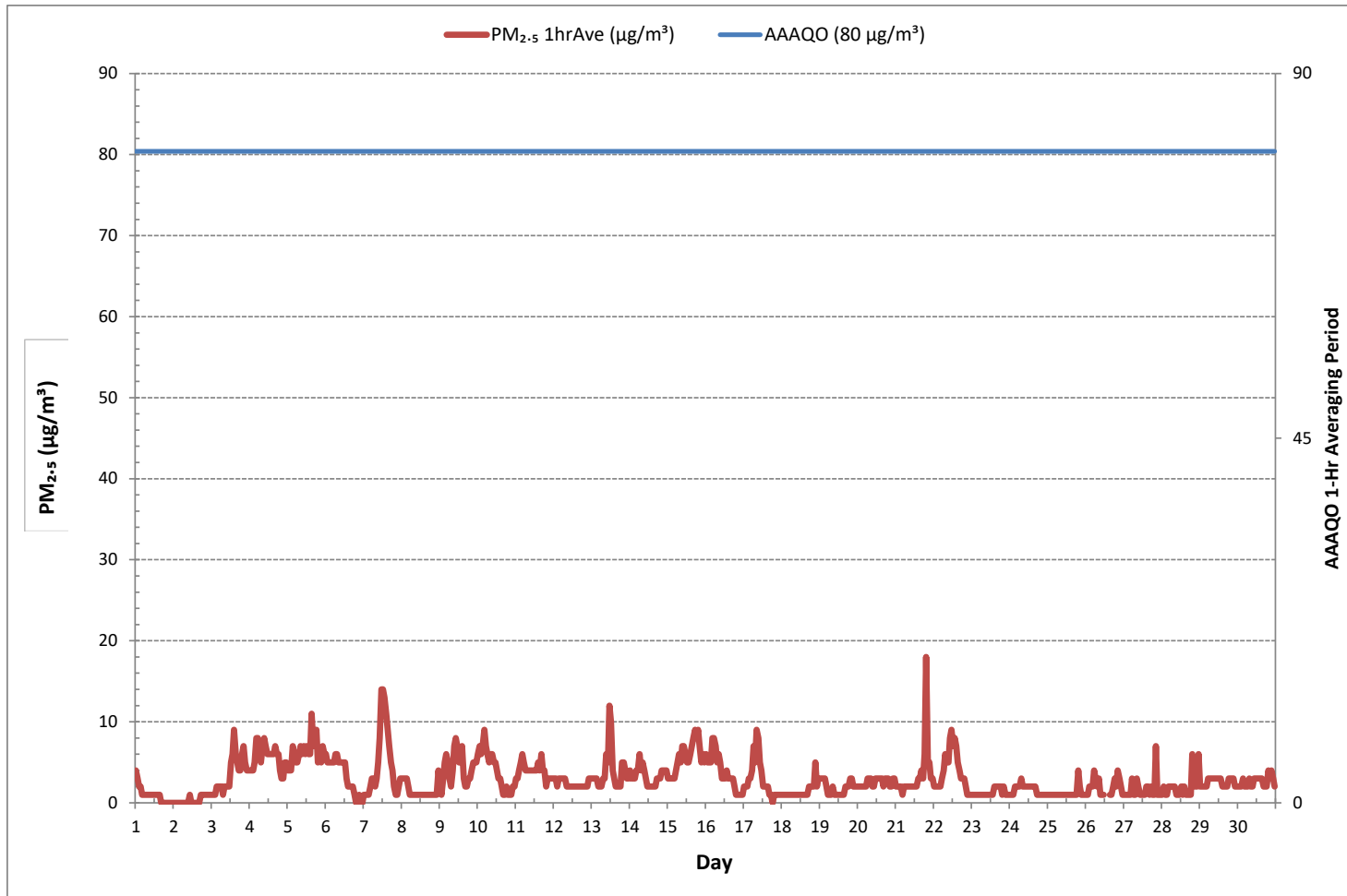
MONTHLY SUMMARY

NUMBER OF 1-HR EXCEEDANCES:	0				
NUMBER OF 24-HR EXCEEDANCES:	0				
NUMBER OF NON-ZERO READINGS:	688				
MINIMUM 1-HR AVERAGE:	0 µg/m ³ @ HOUR	16	ON DAY	1	
MAXIMUM 1-HR AVERAGE:	18 µg/m ³ @ HOUR	19	ON DAY	21	
MAXIMUM 24-HR AVERAGE:	6 µg/m ³		ON DAY	4	
MONTHLY CALIBRATION TIME:	3	hrs	OPERATIONAL TIME:	720	hrs
STANDARD DEVIATION:	2		AMD OPERATION UPTIME:	100.0	%
			MONTHLY AVERAGE:	3	µg/m ³

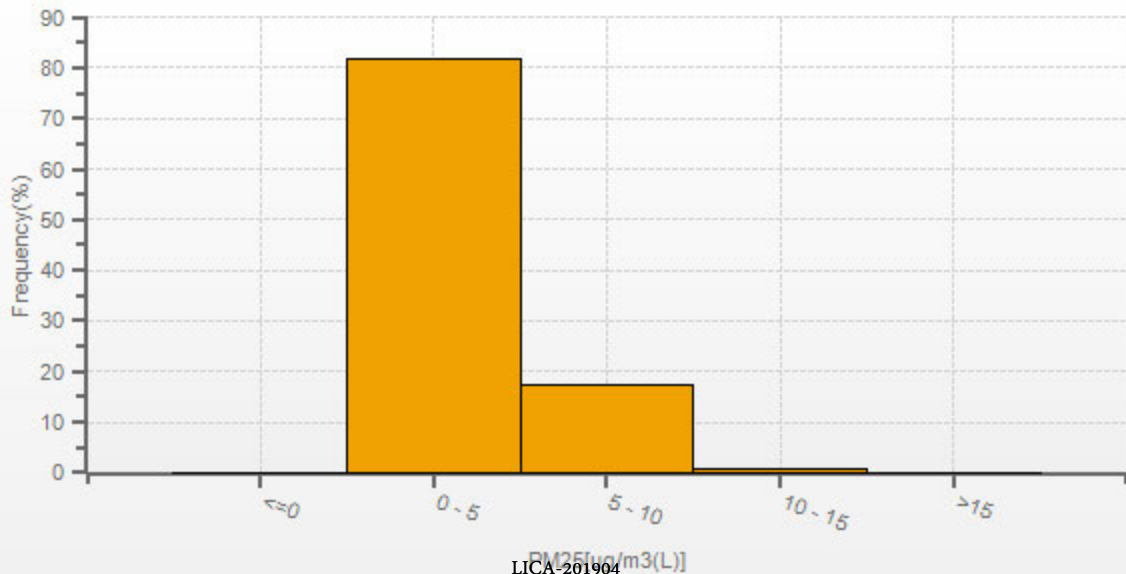
24 HR AVERAGES April 2019



PARTICULATE MATTER < 2.5 MICRONS Hourly Averages (PM_{2.5} µg/m³)

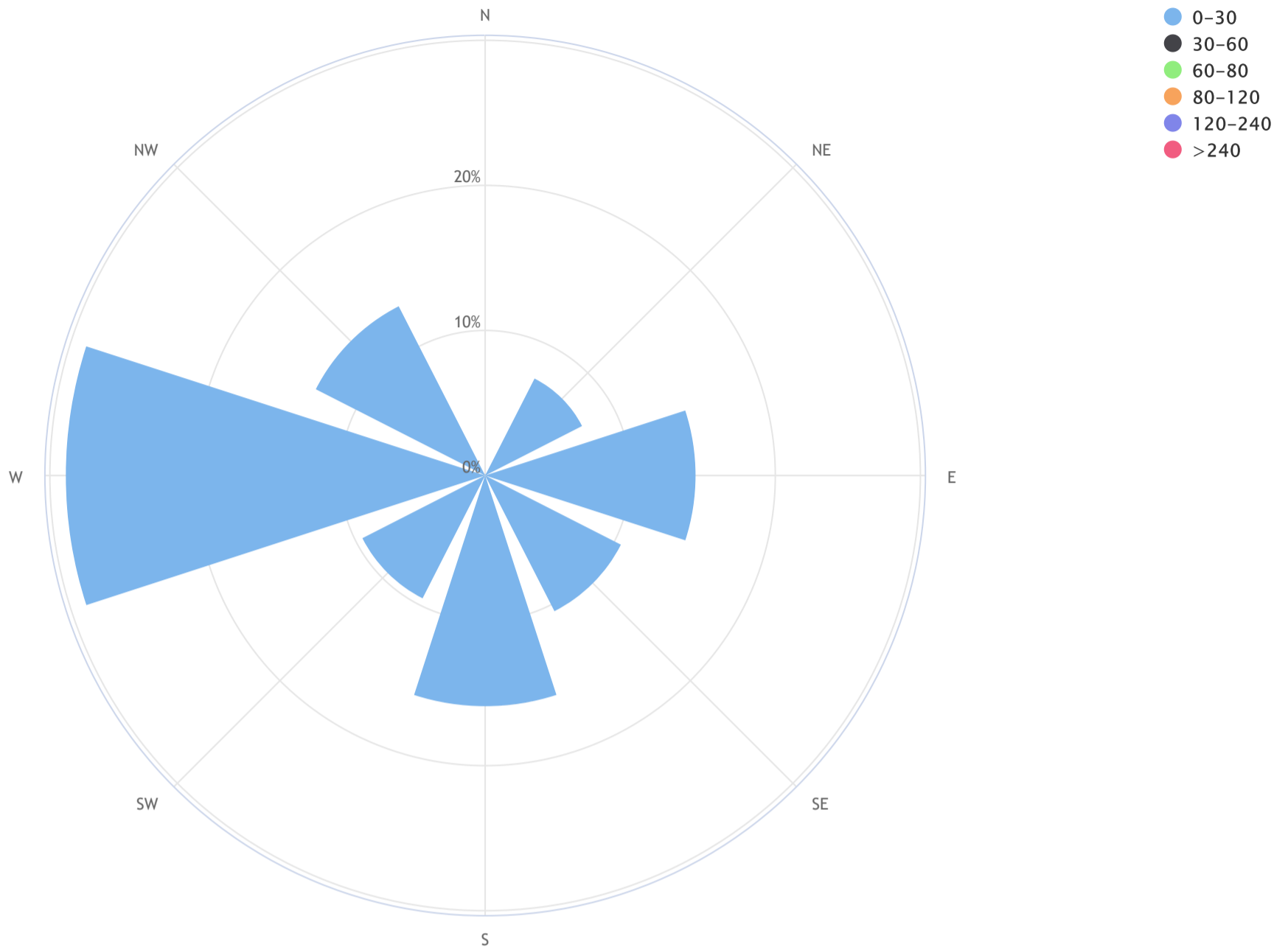


PM25[ug/m3(L)] Histogram: LICA Bonnyville East Monthly: 19/04 1 Hr.



Lakeland Industry & Community Association_Bonnyville East Site Continuous Monitoring Station_PM2.5
(µg/m³)_19/04

Pollutant Rose_Wind Frequency (Blowing From)_ CALM Avg = N/A, CALM % = 0.0%



Direction	0-30	30-60	60-80	80-120	120-240	>240	TOTAL
N	0.1	0.0	0.0	0.0	0.0	0.0	0.1
NE	7.5	0.0	0.0	0.0	0.0	0.0	7.5
E	14.5	0.0	0.0	0.0	0.0	0.0	14.5
SE	10.5	0.0	0.0	0.0	0.0	0.0	10.5
S	15.9	0.0	0.0	0.0	0.0	0.0	15.9
SW	9.5	0.0	0.0	0.0	0.0	0.0	9.5
W	28.9	0.0	0.0	0.0	0.0	0.0	28.9
NW	13.1	0.0	0.0	0.0	0.0	0.0	13.1
Summary	100.0	0.0	0.0	0.0	0.0	0.0	100.0
CALM	0.0	0.0	0.0	0.0	0.0	0.0	0.0



WIND SPEED Hourly Averages (WS kph)

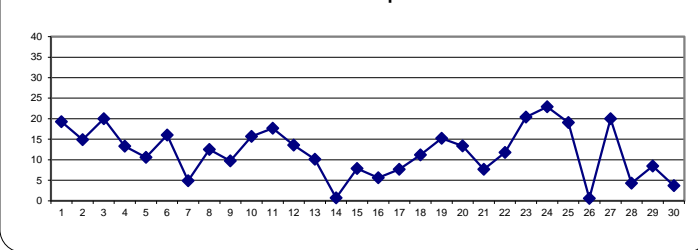
HR START (MST)	0:00	1:00	2:00	3:00	4:00	5:00	6:00	7:00	8:00	9:00	10:00	11:00	12:00	13:00	14:00	15:00	16:00	17:00	18:00	19:00	20:00	21:00	22:00	23:00	DAILY	DAILY	24-HR	RDGS.
HR END (MST)	0:59	1:59	2:59	3:59	4:59	5:59	6:59	7:59	8:59	9:59	10:59	11:59	12:59	13:59	14:59	15:59	16:59	17:59	18:59	19:59	20:59	21:59	22:59	23:59	MIN.	MAX.	AVG.	
DAY 1	12.6	13.8	14.1	14.5	15.1	15.0	16.8	18.2	18.9	29.4	27.5	23.7	25.8	34.7	32.4	29.8	24.7	20.6	19.6	25.1	20.9	16.5	14.6	13.2	12.6	34.7	19.3	24
DAY 2	13.3	15.8	13.7	12.8	10.7	15.3	21.6	25.7	27.2	31.2	27.5	25.3	22.0	26.9	25.6	20.5	16.3	13.7	10.1	4.9	3.2	6.9	10.3	6.9	3.2	31.2	14.9	24
DAY 3	10.7	15.3	19.6	20.9	24.1	23.6	26.1	27.6	29.5	27.8	24.4	23.4	23.1	22.6	20.5	21.1	18.9	20.1	16.1	16.8	14.5	16.8	15.8	17.8	10.7	29.5	20.0	24
DAY 4	13.6	12.6	14.5	12.7	10.7	15.2	18.9	17.3	12.1	15.7	18.6	12.3	9.3	8.8	10.4	14.5	15.8	14.9	15.3	13.5	15.0	15.4	11.6	8.9	8.8	18.9	13.3	24
DAY 5	10.3	9.1	10.5	11.2	11.0	12.4	11.0	10.9	12.3	9.1	8.2	10.1	11.0	15.1	14.3	12.5	12.2	14.5	14.9	14.2	13.4	15.1	13.5	9.5	8.2	15.1	10.6	24
DAY 6	14.8	13.4	16.4	19.6	19.4	18.3	20.2	22.0	20.4	20.1	23.6	18.4	23.7	23.2	19.0	9.3	15.8	13.4	11.5	12.7	11.7	11.8	10.5	11.8	9.3	23.7	16.0	24
DAY 7	8.3	3.5	6.0	8.4	7.4	5.3	5.8	5.0	2.1	4.0	5.3	10.0	11.3	8.6	5.9	5.7	5.6	5.3	8.7	7.1	8.4	9.2	9.4	9.5	2.1	11.3	4.9	24
DAY 8	11.4	11.6	12.6	12.6	12.5	15.7	14.9	14.3	16.5	17.8	20.9	22.6	24.2	21.4	18.5	18.0	17.4	14.8	9.1	5.6	8.8	4.7	6.6	9.4	4.7	24.2	12.5	24
DAY 9	6.4	11.2	9.2	10.9	11.8	10.8	14.3	12.7	10.0	11.5	12.7	11.9	11.8	13.9	12.4	13.0	17.7	13.3	16.3	18.0	23.9	22.0	27.2	29.5	6.4	29.5	9.7	24
DAY 10	21.2	13.4	4.9	12.3	17.5	21.0	16.7	19.2	12.3	15.8	16.7	15.6	20.7	21.1	15.0	22.5	22.7	28.0	14.7	11.6	12.1	9.5	15.9	18.6	4.9	28.0	15.7	24
DAY 11	14.6	24.5	29.1	29.0	26.7	14.5	17.3	17.5	15.1	17.5	21.6	25.9	20.3	20.5	21.7	18.7	18.6	19.4	18.9	11.8	8.8	9.5	9.8	6.5	6.5	29.1	17.7	24
DAY 12	10.0	13.1	17.6	17.6	13.1	11.4	11.6	8.0	11.4	11.1	13.2	18.1	18.5	17.3	18.2	15.2	16.7	16.3	13.4	10.9	9.7	12.5	13.8	15.8	8.0	18.5	13.6	24
DAY 13	16.4	17.1	15.6	11.6	9.1	6.7	4.9	10.7	10.1	11.1	12.7	17.8	22.6	17.8	16.7	7.6	3.8	10.2	9.4	9.9	7.3	5.7	8.4	7.8	3.8	22.6	10.1	24
DAY 14	8.7	5.4	4.4	6.2	5.1	6.1	3.2	3.4	4.2	3.1	5.0	11.6	13.8	15.6	18.2	19.3	19.8	10.0	11.7	7.1	10.5	9.2	9.2	13.5	3.1	19.8	0.7	24
DAY 15	14.0	14.4	13.7	13.0	10.6	9.2	10.8	9.5	9.6	13.1	12.2	11.8	10.4	13.6	12.3	17.9	18.2	15.9	8.2	9.6	10.6	9.4	5.5	7.1	5.5	18.2	7.9	24
DAY 16	6.9	2.9	3.1	5.0	8.6	8.8	4.4	5.2	7.4	7.7	8.2	8.0	8.2	7.2	13.5	14.0	16.8	13.5	15.6	13.6	12.5	13.3	16.5	15.6	2.9	16.8	5.6	24
DAY 17	12.4	9.6	17.7	19.6	16.5	6.6	8.0	8.5	4.9	5.4	5.0	6.6	9.7	14.1	8.7	24.8	13.2	23.4	17.2	14.8	12.1	13.8	7.5	11.2	4.9	24.8	7.7	24
DAY 18	10.1	13.2	11.6	11.6	10.9	10.8	11.1	10.4	10.1	11.7	12.3	19.0	16.2	18.0	18.4	21.9	19.8	18.1	10.1	8.4	3.9	9.0	6.1	7.0	3.9	21.9	11.2	24
DAY 19	9.2	8.6	14.7	16.0	14.8	12.8	10.1	13.4	20.4	20.7	23.0	23.7	22.5	23.1	22.7	21.3	23.5	25.8	19.2	11.8	10.7	10.6	11.7	12.5	8.6	25.8	15.2	24
DAY 20	13.4	14.7	11.8	12.9	12.8	12.8	16.9	20.4	21.3	21.5	19.8	19.7	19.8	20.1	20.5	20.7	24.1	21.3	20.9	12.4	6.0	3.1	7.4	6.7	3.1	24.1	13.4	24
DAY 21	8.6	9.3	8.3	7.4	10.4	12.0	13.0	14.3	11.5	11.5	13.8	10.1	11.4	10.7	12.4	11.2	9.6	6.1	9.4	8.8	8.1	12.3	16.4	15.5	6.1	16.4	7.7	24
DAY 22	16.9	16.8	16.4	13.7	14.6	22.6	18.9	21.7	16.9	17.6	19.7	19.1	20.3	18.2	19.0	18.1	14.2	7.5	7.8	11.5	14.5	15.3	13.7	13.6	7.5	22.6	11.8	24
DAY 23	14.1	15.6	9.0	11.1	17.0	20.5	24.0	27.4	29.8	30.0	27.3	26.7	28.7	28.7	27.5	31.7	31.8	29.8	23.9	13.8	11.4	12.5	12.0	13.8	9.0	31.8	20.4	24
DAY 24	12.5	14.6	13.6	14.1	16.4	20.4	19.6	20.1	21.4	20.7	25.5	26.1	29.1	29.5	27.1	31.3	33.6	31.0	32.0	28.7	30.5	25.0	22.3	22.4	12.5	33.6	22.9	24
DAY 25	19.8	19.8	19.4	18.1	18.2	23.1	23.2	22.3	21.6	26.3	30.9	32.0	28.5	29.2	24.0	24.4	20.3	20.8	20.0	10.8	4.9	3.0	4.7	7.0	3.0	32.0	19.1	24
DAY 26	7.2	5.5	3.5	5.6	3.5	5.9	2.7	1.8	6.0	9.0	11.5	16.7	17.2	19.4	18.7	15.6	14.8	16.6	17.0	17.2	14.4	16.6	21.7	25.6	1.8	25.6	0.6	24
DAY 27	21.3	19.1	16.4	18.2	15.9	17.5	23.0	25.4	22.7	28.0	27.4	29.1	27.3	28.9	29.8	27.9	24.8	21.9	23.0	17.3	12.5	10.3	9.6	8.6	8.6	29.8	20.0	24
DAY 28	6.2	3.3	4.6	5.3	4.9	5.0	4.4	3.0	4.7	6.7	11.1	10.9	13.2	11.3	15.1	11.2	13.2	10.2	8.9	7.1	6.2	3.3	2.7	5.4	2.7	15.1	4.3	24
DAY 29	9.1	6.5	5.6	7.3	9.1	8.5	9.0	7.8	8.5	10.2	15.6	11.7	16.0	13.7	14.2	11.0	13.3	15.8	13.0	14.8	10.2	13.9	13.0	7.7	5.6	16.0	8.5	24
DAY 30	5.4	5.3	6.4	7.8	19.3	22.9	18.7	16.1	15.7	15.2	11.0	11.0	17.1	19.2	17.6	15.3	14.4	13.0	14.7	11.1	12.9	12.9	12.0	14.9	5.3	22.9	3.7	24
HOURLY MAX	21.3	24.5	29.1	29.0	26.7	23.6	26.1	27.6	29.8	31.2	30.9	32.0	29.1	34.7	32.4	31.7	33.6	31.0	32.0	28.7	30.5	25.0	27.2	29.5				

STATUS FLAG CODES

C	- MONTHLY CALIBRATION	Q	- QUALITY ASSURANCE
C1	- REPEAT CALIBRATION	R	- RECOVERY
Y	- MAINTENANCE	X	- MACHINE MALFUNCTION
S	- DAILY ZERO/SPAN CHECK	G	- OUT FOR REPAIR
S1	- REPEAT ZERO/SPAN CHECK	P	- POWER FAILURE

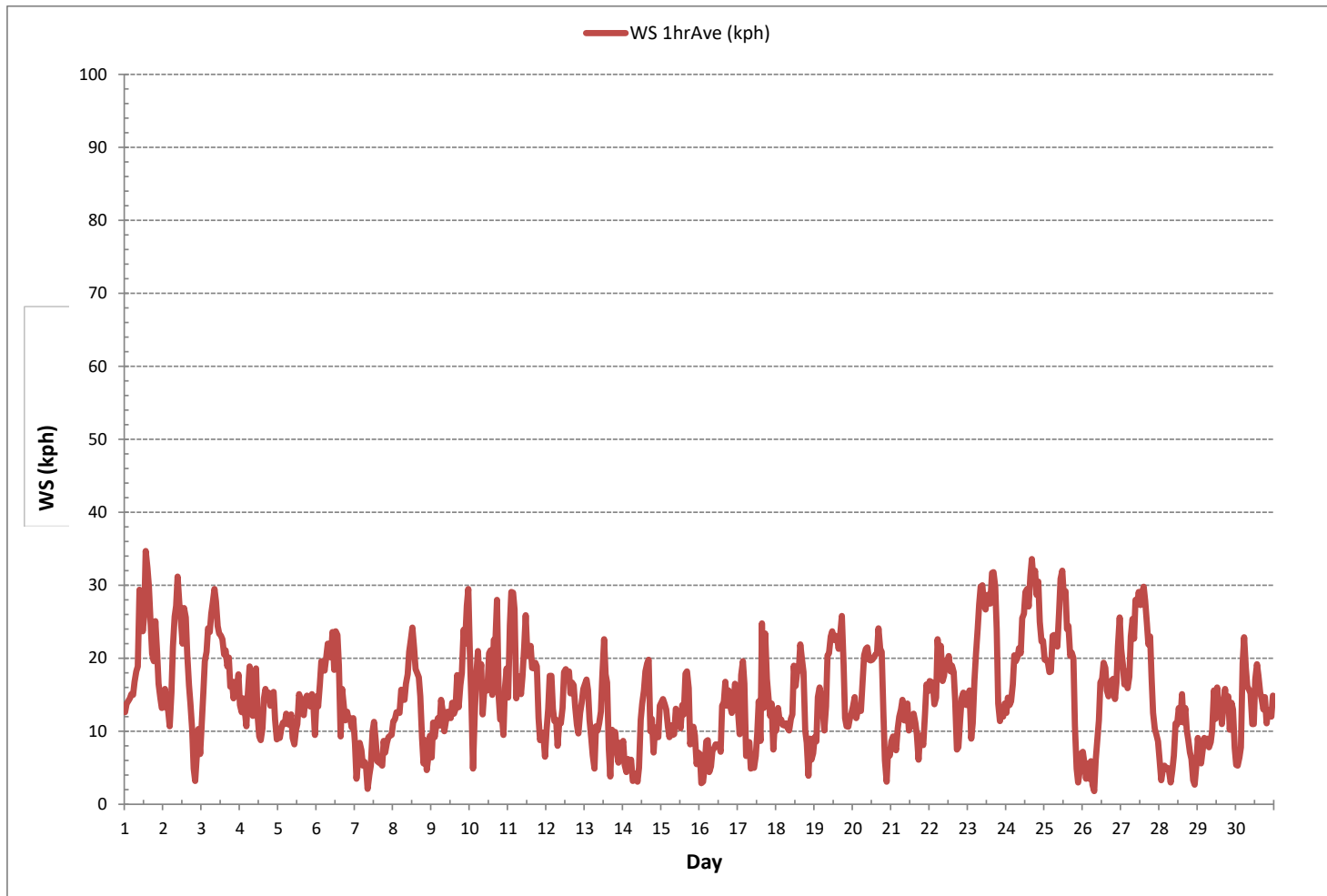
LAST CALIBRATION:	October 24, 2018
DECLINATION:	MAGNETIC DECLINATION 13 DEGREE EAST

24 HR AVERAGES April 2019



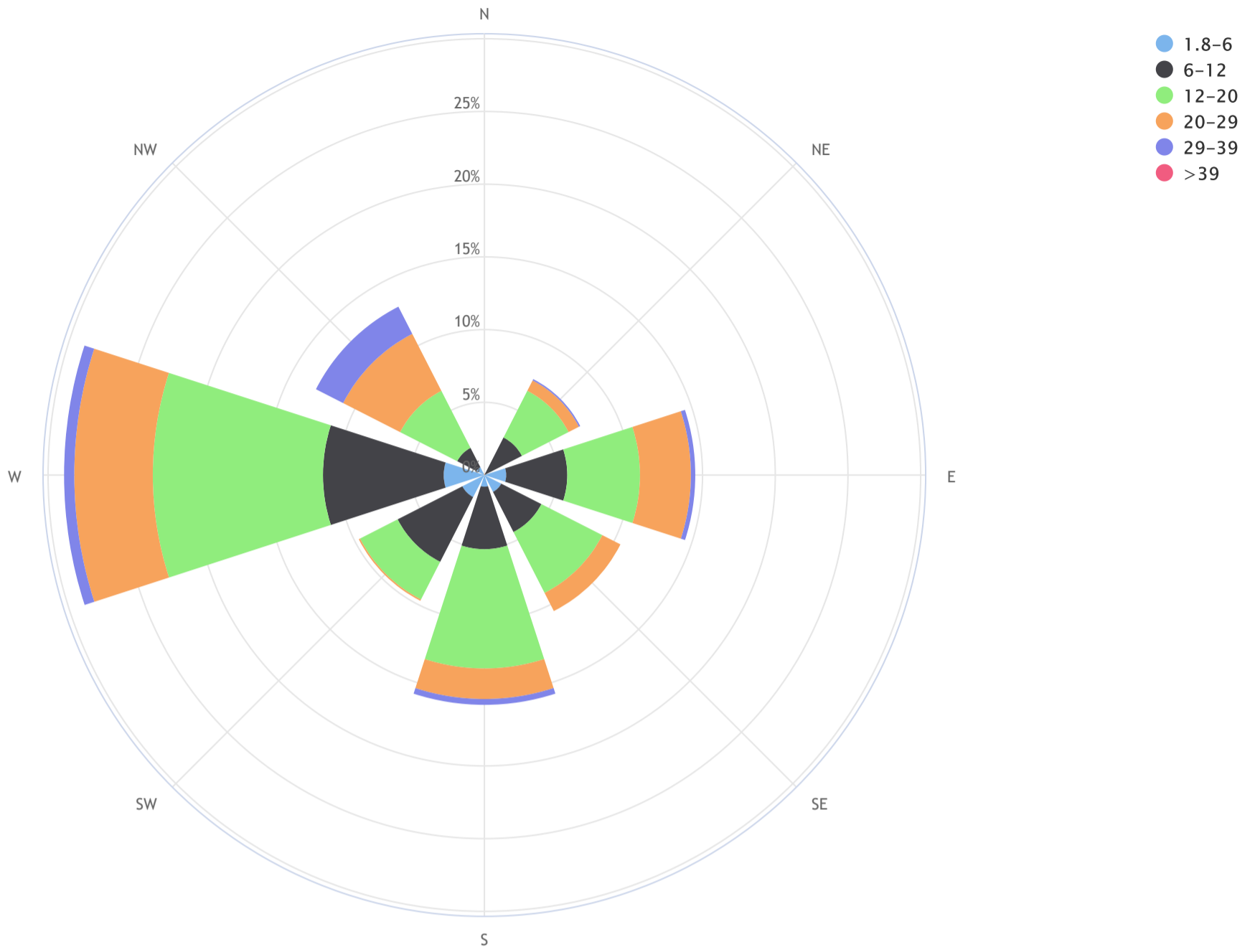
MONTHLY SUMMARY

NUMBER OF NON-ZERO READINGS:	720
MINIMUM 1-HR AVERAGE:	1.8 kph @ HOUR 7 ON DAY 26
MAXIMUM 1-HR AVERAGE:	34.7 kph @ HOUR 13 ON DAY 1
MAXIMUM 24-HR AVERAGE:	22.9 kph ON DAY 24
MONTHLY CALIBRATION TIME:	0 hrs
OPERATIONAL TIME:	720 hrs
AMT OPERATION UPTIME:	100.0 %
STANDARD DEVIATION:	6.7
MONTHLY AVERAGE:	3.0 kph



Lakeland Industry & Community Association_Bonnyville East Site Continuous Monitoring Station_19/04

Wind Rose_Wind Frequency (Blowing From)_CALM Avg = N/A_CALM % = 0.0%



Direction	1.8-6	6-12	12-20	20-29	29-39	>39	TOTAL
N	0.0	0.0	0.0	0.1	0.0	0.0	0.1
NE	0.0	2.9	3.6	0.8	0.1	0.0	7.5
E	1.5	4.2	5.0	3.5	0.3	0.0	14.5
SE	1.3	3.1	4.7	1.4	0.0	0.0	10.4
S	0.8	4.3	8.2	2.1	0.4	0.0	15.8
SW	1.7	5.0	2.9	0.1	0.0	0.0	9.7
W	2.8	8.3	11.7	5.4	0.7	0.0	28.9
NW	0.6	1.5	4.4	4.4	2.1	0.0	13.1
Summary	8.6	29.3	40.6	17.9	3.6	0.0	100.0
CALM	0.0	0.0	0.0	0.0	0.0	0.0	0.0



LAKELAND INDUSTRY & COMMUNITY ASSOCIATION
Bonnyville East Site Continuous Monitoring Station - April 2019

WIND DIRECTION Hourly Averages (WD)

HR START (MST)	0:00	1:00	2:00	3:00	4:00	5:00	6:00	7:00	8:00	9:00	10:00	11:00	12:00	13:00	14:00	15:00	16:00	17:00	18:00	19:00	20:00	21:00	22:00	23:00	24-HOUR AVG	24-HR	
HR END (MST)	0:59	1:59	2:59	3:59	4:59	5:59	6:59	7:59	8:59	9:59	10:59	11:59	12:59	13:59	14:59	15:59	16:59	17:59	18:59	19:59	20:59	21:59	22:59	23:59	QUADRANT	RDGS.	
DAY																											
1	W	W	W	W	W	W	W	W	WNW	NW	WNW	WNW	WNW	WNW	W	WNW	NNW	NNW	NNW	NNW	NNW	NW	NW	WNW	WNW	WNW	24
2	WNW	WNW	WNW	WNW	WNW	NW	NNW	NNW	NNW	NW	NNW	NNW	NW	NW	NW	NW	NW	NW	WNW	WNW	SW	ENE	E	ESE	NW	WNW	24
3	NE	ENE	E	E	E	E	E	E	E	E	E	E	E	E	E	E	ESE	ESE	E	E	ENE	ENE	NE	ENE	E	ENE	24
4	ENE	NE	NE	ENE	NE	NE	NE	ENE	NE	NE	NE	NNE	NE	NE	ENE	ENE	ENE	ENE	ENE	ENE	ENE	ENE	NE	ENE	NE	ENE	24
5	ENE	E	E	E	E	E	ESE	ESE	SSE	SSE	SE	E	SE	S	SSE	SE	SE	SSE	SSE	ESE	ESE	ESE	ESE	ESE	ESE	ESE	24
6	SE	E	E	E	E	E	E	E	E	E	E	ESE	ESE	SE	ESE	ENE	E	ENE	ENE	ENE	ENE	ENE	ENE	ENE	E	ENE	24
7	E	E	WSW	W	W	W	W	WSW	WSW	SW	WSW	W	W	SE	SE	SSW	WSW	SW	SW	SW	WSW	WSW	WSW	WSW	WSW	WSW	24
8	WSW	WSW	WSW	WSW	WSW	W	W	W	W	W	W	W	W	W	W	W	WNW	WNW	W	WSW	SW	ESE	S	SE	W	WSW	24
9	E	ENE	E	ENE	ENE	ENE	ENE	E	ENE	ENE	ENE	ENE	ENE	ENE	ENE	SE	S	S	S	S	SSE	SSE	S	S	ESE	W	24
10	SSE	SSE	SE	SE	SSE	SE	SSE	SE	SSE	S	SSE	S	S	S	SW	SSE	S	S	S	S	SSW	SE	SSE	SSE	SSE	SSE	24
11	SSE	SSE	S	SSE	SSE	SE	SE	SE	SE	SE	SSE	SE	SSE	SSE	SSE	SSE	SSE	SSE	SSE	SSE	SE	SE	ESE	SE	SE	SSE	24
12	SSE	SSE	SSE	SSE	SSE	S	S	S	S	S	S	S	S	S	S	SSW	SSW	SSW	S	S	SSE	SSE	SSE	SSE	SSE	S	24
13	SSE	SSE	S	S	SSE	SE	S	SSE	S	SSE	S	S	S	S	S	SSW	SW	SE	SE	SE	E	E	E	E	E	SSE	24
14	ENE	ENE	ESE	ENE	E	E	SE	E	SSW	ESE	SSW	WNW	WNW	WSW	W	E	SE	ENE	NE	W	W	W	W	W	WNW	W	24
15	W	W	W	W	W	W	WNW	WNW	SSW	NNW	NNW	W	NW	SSE	W	SE	WSW	WSW	NNW	WNW	WSW	SW	SW	SW	W	WSW	24
16	SW	WSW	SSE	SE	ENE	E	ENE	E	SE	SSW	W	WSW	WSW	SSW	W	W	W	SW	SSW	S	S	SSE	SSE	SSW	SSW	SSW	24
17	SSE	S	SSE	SSE	S	S	S	WSW	ESE	E	ESE	W	W	WSW	WSW	WNW	WSW	W	W	W	WSW	W	WSW	W	SW	WSW	24
18	SW	WSW	W	WSW	WSW	WSW	WSW	W	WSW	WSW	WSW	WSW	WSW	WSW	SW	WSW	WSW	SW	SW	SSW	S	SE	E	WSW	WSW	WSW	24
19	SSE	WNW	NW	NW	NW	WNW	W	W	W	W	W	W	W	W	WNW	WNW	NW	NW	WNW	W	WSW	WSW	WSW	WSW	WNW	WNW	24
20	W	W	WSW	WSW	WSW	WSW	WSW	W	W	W	W	W	W	W	W	SSW	NW	NW	NW	SSW	ESE	SW	W	WSW	W	WSW	24
21	WSW	W	WSW	W	WSW	SW	WSW	W	W	W	W	WSW	W	WSW	W	W	SSW	SSE	SE	SE	SSE	SSE	SSE	SSE	SW	WSW	24
22	SSE	SSE	SSE	SE	SSE	SSE	SSE	SSE	SSE	SSE	SSE	S	S	SW	SSW	SSW	W	SSW	W	WNW	W	W	WSW	W	WSW	S	24
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24	W	W	W	W	W	W	W	WNW	WNW	W	WNW	WNW	WNW	WNW	W	WNW	WNW	NW	NW	WNW	WNW	WNW	WNW	WNW	WNW	WNW	24
25	WNW	WNW	WNW	W	W	W	W	WNW	WNW	WNW	WNW	WNW	WNW	WNW	WNW	NW	NW	WNW	WNW	NW	W	W	WSW	WSW	WNW	WNW	24
26	WSW	WSW	S	SW	WSW	NW	W	S	WNW	SW	WNW	W	WSW	W	SW	S	NE	ENE	ENE	ENE	ENE	NE	ENE	E	ENE	ENE	24
27	E	E	ENE	E	ENE	ENE	ENE	ENE	ENE	E	ENE	ENE	ENE	NE	NE	NE	NE	NE	NNE	NE	NE	NE	NE	NE	NE	ENE	24
28	NE	WNW	WNW	W	W	W	W	W	W	W	S	SSW	SSW	S	ESE	WSW	S	SSW	SSE	SE	E	S	SSW	SSW	SSW	SSW	24
29	S	WSW	S	SW	WSW	W	WNW	NW	WNW	SSE	W	W	W	NW	WNW	SW	WNW	WNW	NW	NW	WNW	WNW	SSW	SW	W	WSW	24
30	WNW	WSW	SW	WSW	WNW	WNW	NE	SSW	SE	ENE	SSW	WSW	WNW	NW	NW	NW	W	WNW	NW	S	ENE	ESE	E	ENE	WNW	WNW	24

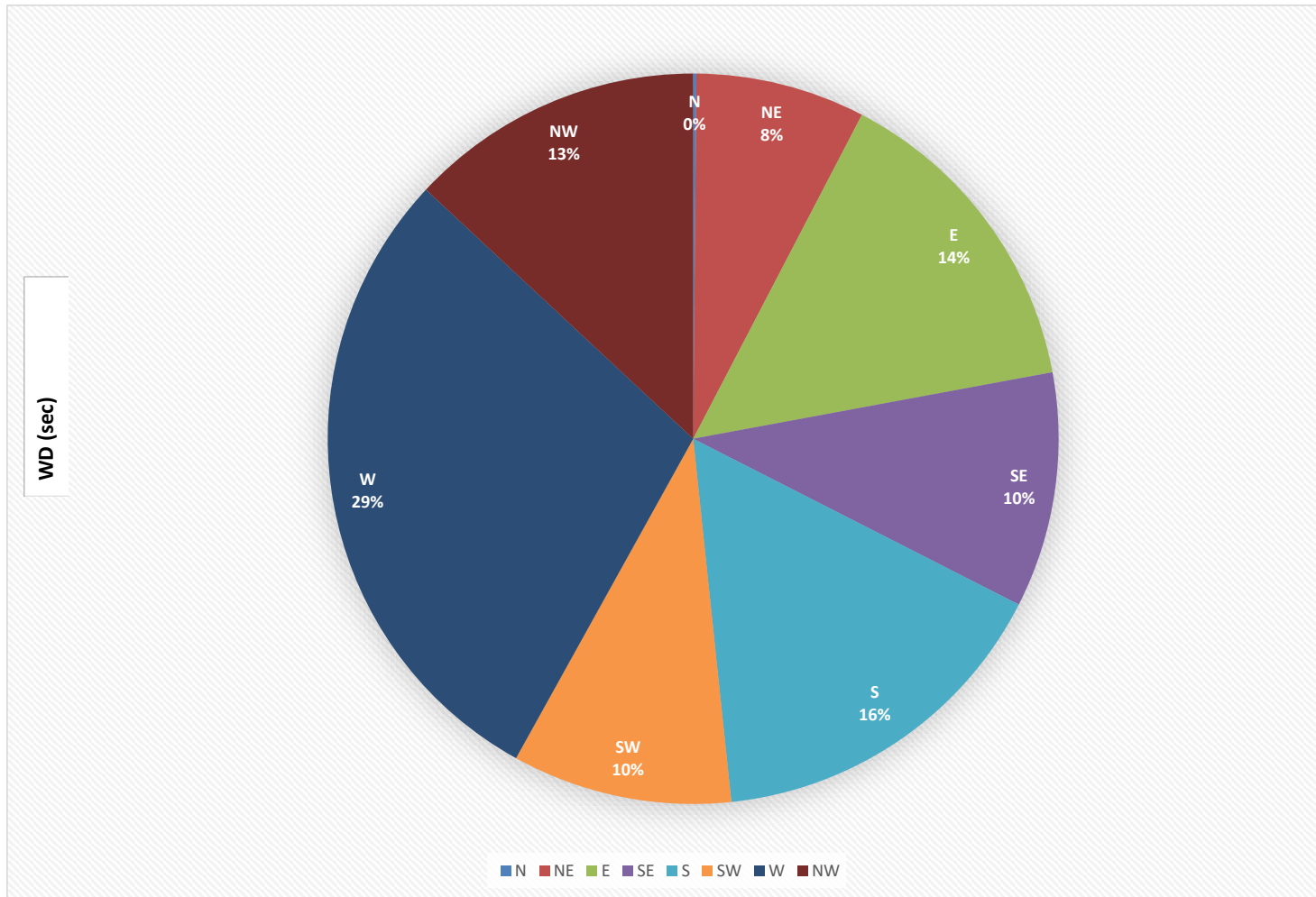
STATUS FLAG CODES

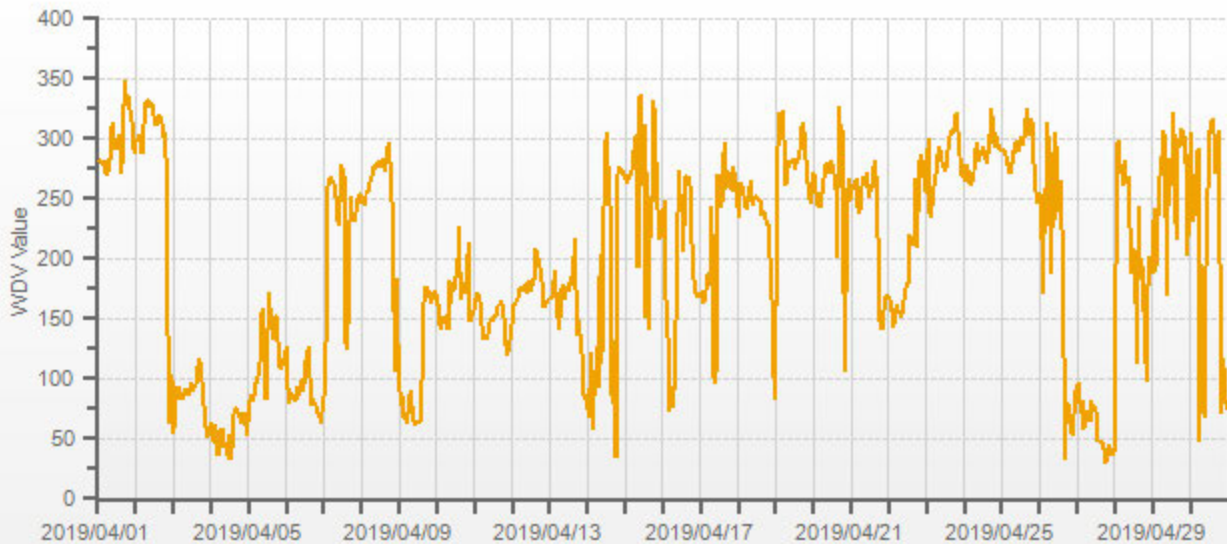
C	- MONTHLY CALIBRATION	Q	- QUALITY ASSURANCE
C1	- REPEAT CALIBRATION	R	- RECOVERY
Y	- MAINTENANCE	X	- MACHINE MALFUNCTION
S	- DAILY ZERO/SPAN CHECK	G	- OUT FOR REPAIR
S1	- REPEAT ZERO/SPAN CHECK	P	- POWER FAILURE

LAST CALIBRATION:	October 24, 2018
DECLINATION :	MAGNETIC DECLINATION 13 DEGREE EAST

MONTHLY CALIBRATION TIME:	0	hrs	OPERATIONAL TIME:	720	hrs
STANDARD DEVIATION:	85		AMD OPERATION UPTIME:	100.0	%
			MONTHLY AVERAGE:	246	(WSW)

WIND DIRECTION Hourly Averages (WD)





LICA-201904

Page 322 of 350



LAKELAND INDUSTRY & COMMUNITY ASSOCIATION
Bonnyville East Site Continuous Monitoring Station - April 2019

STANDARD DEVIATION WIND DIRECTION Hourly Averages (STDWD deg)

HR START (MST)	0:00	1:00	2:00	3:00	4:00	5:00	6:00	7:00	8:00	9:00	10:00	11:00	12:00	13:00	14:00	15:00	16:00	17:00	18:00	19:00	20:00	21:00	22:00	23:00	RDGS.	
HR END (MST)	0:59	1:59	2:59	3:59	4:59	5:59	6:59	7:59	8:59	9:59	10:59	11:59	12:59	13:59	14:59	15:59	16:59	17:59	18:59	19:59	20:59	21:59	22:59	23:59		
DAY																										
1	8	7	7	7	8	7	6	8	8	7	8	8	8	8	8	10	8	7	7	7	6	6	7	24		
2	7	8	6	6	7	8	7	7	7	7	7	7	8	8	8	8	8	7	6	3	4	5	4	3	24	
3	4	5	5	5	5	5	5	5	6	5	5	7	6	10	9	13	9	7	7	6	14	3	3	3	24	
4	2	5	2	7	6	5	5	4	11	10	9	15	33	15	25	8	5	8	7	4	4	4	7	8	24	
5	5	11	4	5	7	5	3	5	12	15	31	17	18	11	25	17	12	11	7	9	3	3	6	8	24	
6	8	17	5	3	3	4	3	3	4	10	9	8	7	4	6	17	6	3	2	2	3	4	3	6	24	
7	4	24	18	6	11	14	9	9	10	11	9	10	10	11	8	9	9	8	9	7	6	4	3	2	24	
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19	2	3	4	4	6	6	7	9	9	9	9	9	9	9	10	9	8	6	8	7	3	2	3	2	24	
20	4	4	8	6	5	9	8	8	8	9	9	10	10	11	10	10	8	7	7	5	3	3	4	4	24	
21	4	4	3	6	4	5	9	9	10	10	10	13	13	13	13	11	10	9	4	1	1	2	3	4	24	
22	5	5	6	9	7	5	6	6	7	8	8	8	8	9	11	9	9	11	8	8	5	7	7	5	7	24
23	8	7	6	7	8	7	7	9	8	8	8	8	9	9	8	8	8	8	6	4	3	5	4	5	24	
24	5	7	7	6	8	7	7	8	8	10	9	9	8	9	9	8	8	7	7	8	7	8	8	8	24	
25	7	8	8	8	7	7	8	8	9	9	8	9	9	8	8	8	8	8	7	3	4	6	2	1	24	
26	2	3	3	5	4	2	7	17	12	13	11	10	12	10	10	11	8	8	5	5	5	6	5	5	24	
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28	3	3	4	4	4	5	9	17	17	17	14	17	14	13	10	13	13	10	7	5	7	6	4	4	24	
29	4	6	6	5	5	8	8	11	11	13	9	12	10	9	11	12	12	10	6	6	5	5	8	7	24	
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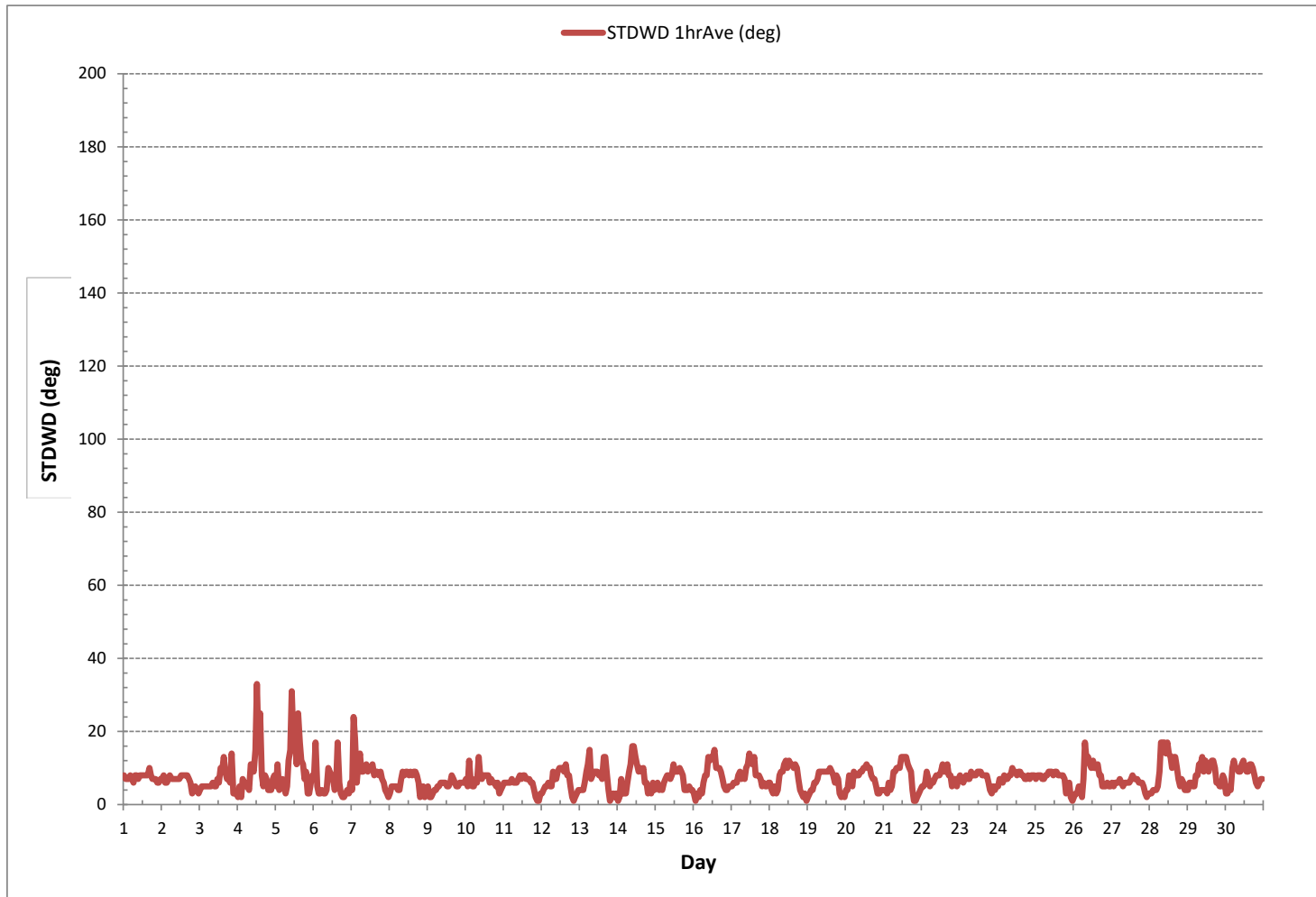
STATUS FLAG CODES

C	- MONTHLY CALIBRATION	Q	- QUALITY ASSURANCE
C1	- REPEAT CALIBRATION	R	- RECOVERY
Y	- MAINTENANCE	X	- MACHINE MALFUNCTION
S	- DAILY ZERO/SPAN CHECK	G	- OUT FOR REPAIR
S1	- REPEAT ZERO/SPAN CHECK	P	- POWER FAILURE

LAST CALIBRATION: October 24, 2018

CALIBRATION TIME: 0 hrs OPERATIONAL TIME: 720 hrs

STANDARD DEVIATION WIND DIRECTION Hourly Averages (STDWD deg)





LAKELAND INDUSTRY & COMMUNITY ASSOCIATION
Bonnyville East Site Continuous Monitoring Station - April 2019

SULPHUR DIOXIDE Instantaneous Maximum (SO₂ ppb)

HR START (MST)	0:00	1:00	2:00	3:00	4:00	5:00	6:00	7:00	8:00	9:00	10:00	11:00	12:00	13:00	14:00	15:00	16:00	17:00	18:00	19:00	20:00	21:00	22:00	23:00	DAILY MIN.	DAILY MAX.	24-HR AVG.	RDGS.		
HR END (MST)	0:59	1:59	2:59	3:59	4:59	5:59	6:59	7:59	8:59	9:59	10:59	11:59	12:59	13:59	14:59	15:59	16:59	17:59	18:59	19:59	20:59	21:59	22:59	23:59						
DAY 1	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	24		
2	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	24		
3	0	0	0	0	0	0	0	0	0	0	S	0	0	0	1	1	0	0	0	0	0	0	0	0	0	0	1	0	24	
4	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	24	
5	0	0	0	0	1	0	0	0	S	S	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1	0	24	
6	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	24	
7	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	24	
8	0	0	0	0	0	S	0	0	0	0	0	0	Y	Y	Y	Y	C	C	C	C	0	0	0	0	0	0	-	20		
9	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	24	
10	1	1	0	S	0	0	0	0	1	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1	0	24	
11	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	24	
12	0	S	0	1	1	1	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1	0	0	24	
13	S	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	24	
14	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	24	
15	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	24	
16	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	S	0	1	1	0	1	0	24	
17	1	1	2	2	1	1	1	0	0	0	0	0	0	0	0	0	0	0	0	S	S	0	0	0	0	0	0	2	0	24
18	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	1	0	24	
19	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	24
20	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	24
21	0	0	0	0	0	0	0	0	0	0	0	0	0	0	S	0	0	0	0	0	0	0	0	2	3	0	3	0	24	
22	2	0	0	0	0	0	0	0	0	1	1	0	0	0	S	0	0	0	0	0	0	0	0	0	0	0	0	2	0	24
23	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	24
24	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	24
25	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	24
26	0	0	0	0	0	0	0	0	1	0	S	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1	0	24
27	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	24
28	0	0	0	0	0	1	1	2	S	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	2	0	24
29	0	0	0	0	0	0	0	S	2	1	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	2	0	24
30	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	0	1	0	24
HOURLY MAX	2	1	2	2	1	1	1	2	2	1	1	0	0	1	1	1	0	0	0	0	0	0	0	2	3					
HOURLY AVG	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	

STATUS FLAG CODES

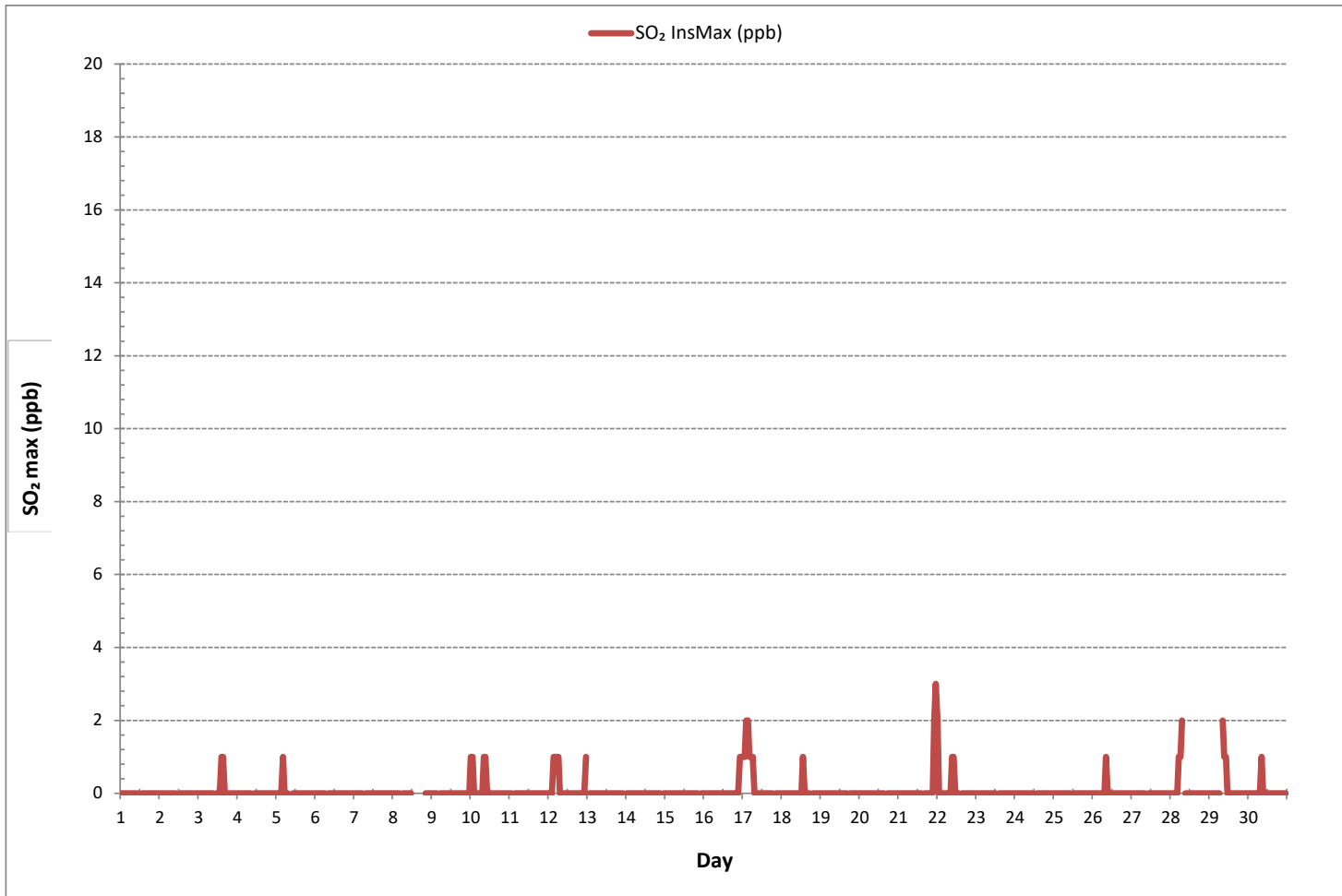
C	- MONTHLY CALIBRATION	Q	- QUALITY ASSURANCE
C1	- REPEAT CALIBRATION	R	- RECOVERY
Y	- MAINTENANCE	X	- MACHINE MALFUNCTION
S	- DAILY ZERO/SPAN CHECK	G	- OUT FOR REPAIR
S1	- REPEAT ZERO/SPAN CHECK	P	- POWER FAILURE

MONTHLY SUMMARY

NUMBER OF NON-ZERO READINGS:	35
MAXIMUM INSTANTANEOUS VALUE:	3 ppb @ HOUR 23 ON DAY 21
IZS CALIBRATION TIME:	32 hrs
MONTHLY CALIBRATION TIME:	4 hrs
STANDARD DEVIATION:	0
OPERATIONAL TIME:	716 hrs



LAKELAND INDUSTRY & COMMUNITY ASSOCIATION
Bonnyville East Site Continuous Monitoring Station - April 2019
SULPHUR DIOXIDE Instantaneous Maximum (SO₂ ppb)





LAKELAND INDUSTRY & COMMUNITY ASSOCIATION
Bonnyville East Site Continuous Monitoring Station - April 2019

HYDROGEN SULPHIDE Instantaneous Maximum (H₂S ppb)

HR START (MST)	0:00	1:00	2:00	3:00	4:00	5:00	6:00	7:00	8:00	9:00	10:00	11:00	12:00	13:00	14:00	15:00	16:00	17:00	18:00	19:00	20:00	21:00	22:00	23:00	DAILY MIN.	DAILY MAX.	24-HR AVG.	RDGS.	
HR END (MST)	0:59	1:59	2:59	3:59	4:59	5:59	6:59	7:59	8:59	9:59	10:59	11:59	12:59	13:59	14:59	15:59	16:59	17:59	18:59	19:59	20:59	21:59	22:59	23:59					
DAY 1	0	0	1	0	0	0	0	0	0	0	0	0	S	1	0	1	1	1	0	0	1	0	0	0	0	1	0	24	
2	0	0	0	0	0	0	0	0	0	0	0	S	0	0	0	0	0	0	0	0	1	2	1	2	0	2	0	24	
3	0	0	0	0	0	0	0	0	1	1	S	1	1	1	2	3	1	1	1	1	1	1	1	1	1	0	3	1	24
4	1	1	1	1	1	1	1	1	1	S	1	1	2	1	1	1	1	1	1	1	1	1	1	1	1	1	2	1	24
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7	1	3	2	1	1	1	S	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	3	1	24	
8	1	1	1	1	1	S	1	1	1	1	1	1	C	C	C	C	C	C	0	0	0	2	0	0	0	2	-	24	
9	1	0	0	0	S	0	0	0	0	0	0	0	0	0	0	0	1	0	0	0	0	0	0	0	0	1	0	24	
10	0	2	2	S	4	4	3	1	1	1	1	1	0	0	0	2	1	1	1	4	1	3	6	2	0	6	2	24	
11	2	1	S	1	1	1	1	1	1	1	2	2	1	1	1	1	1	0	1	8	1	2	2	3	0	8	2	24	
12	4	S	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	3	1	0	0	0	4	1	24	
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16	1	1	1	12	4	6	1	1	1	1	1	1	1	1	1	1	1	1	1	1	S	1	1	1	1	12	2	24	
17	1	1	2	1	1	10	10	1	1	2	1	1	1	1	1	1	4	10	10	S	1	1	1	1	1	10	3	24	
18	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	S	3	86	16	55	60	1	86	10	24	
19	43	7	2	1	1	1	1	1	1	1	1	1	1	1	1	1	S	1	1	1	1	1	1	1	1	43	3	24	
20	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	S	1	1	1	1	1	1	1	1	1	1	1	24	
21	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	S	1	1	21	97	24	9	1	1	1	97	7	24	
22	1	3	5	16	5	1	5	5	8	2	2	1	1	1	S	1	1	1	1	1	1	1	1	1	1	16	3	24	
23	1	1	1	1	1	1	1	1	1	1	1	1	1	S	1	1	1	1	1	1	1	1	1	1	1	1	1	24	
24	1	1	1	1	1	1	1	1	1	1	1	1	S	1	1	1	1	1	1	1	1	1	1	1	1	1	1	24	
25	1	1	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	24	
26	1	2	2	1	1	1	1	1	1	1	S	1	1	1	1	1	1	1	1	1	1	1	1	1	1	2	1	24	
27	1	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	24	
28	1	1	1	1	1	1	1	1	S	1	1	1	1	1	1	1	1	1	1	1	2	4	7	12	1	12	2	24	
29	5	1	28	10	1	1	1	S	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	28	3	24	
30	1	1	1	1	1	1	S	1	1	1	1	1	1	1	1	1	1	1	1	1	1	10	4	1	1	10	1	24	
HOURLY MAX	43	7	28	16	15	12	10	5	8	2	2	2	2	1	2	3	4	10	21	97	86	16	55	60					
HOURLY AVG	3	1	2	2	2	2	1	1	1	1	1	1	1	1	1	1	1	1	2	5	6	2	3	3					

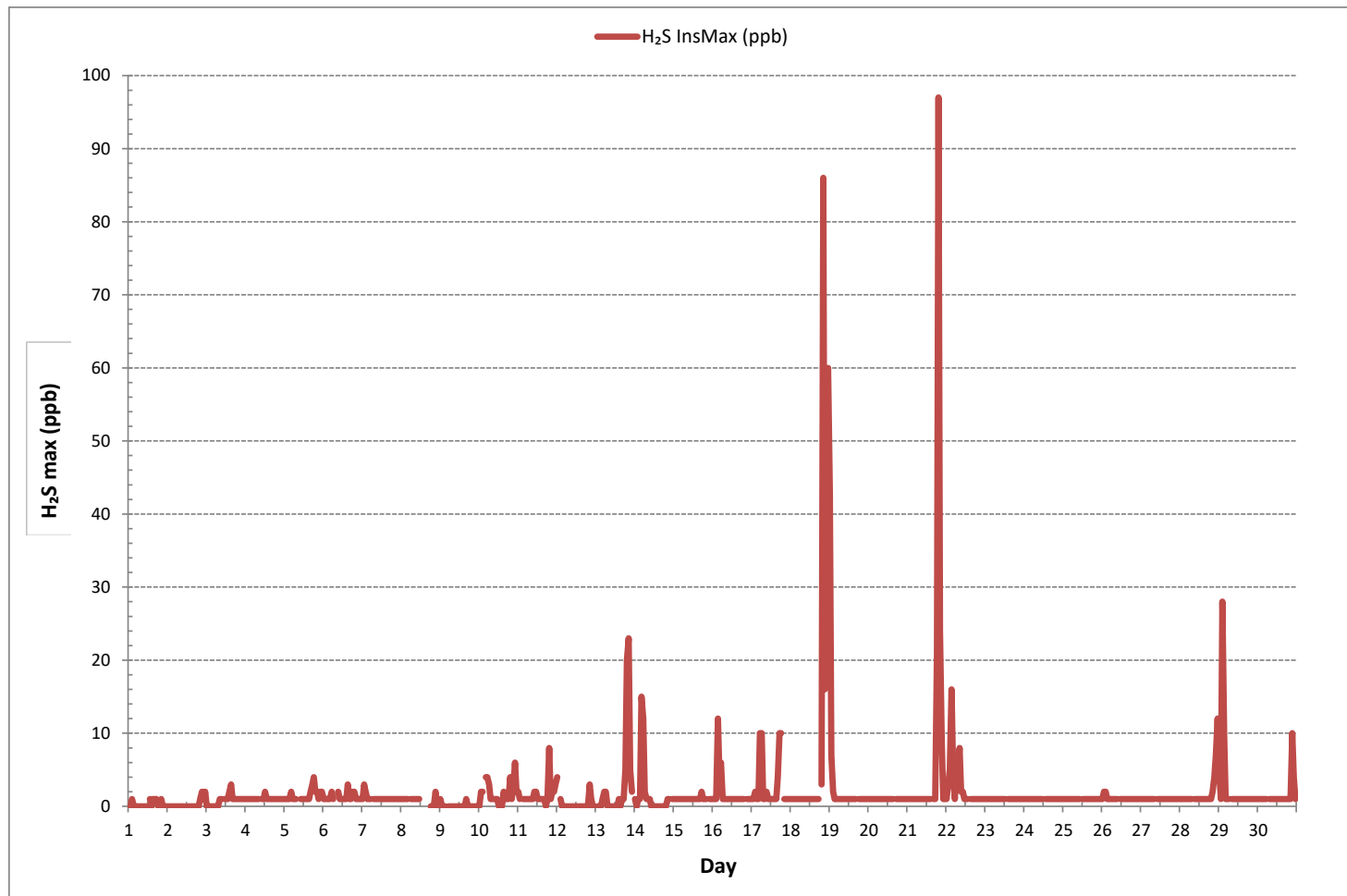
STATUS FLAG CODES

C	- MONTHLY CALIBRATION	Q	- QUALITY ASSURANCE
C1	- REPEAT CALIBRATION	R	- RECOVERY
Y	- MAINTENANCE	X	- MACHINE MALFUNCTION
S	- DAILY ZERO/SPAN CHECK	G	- OUT FOR REPAIR
S1	- REPEAT ZERO/SPAN CHECK	P	- POWER FAILURE

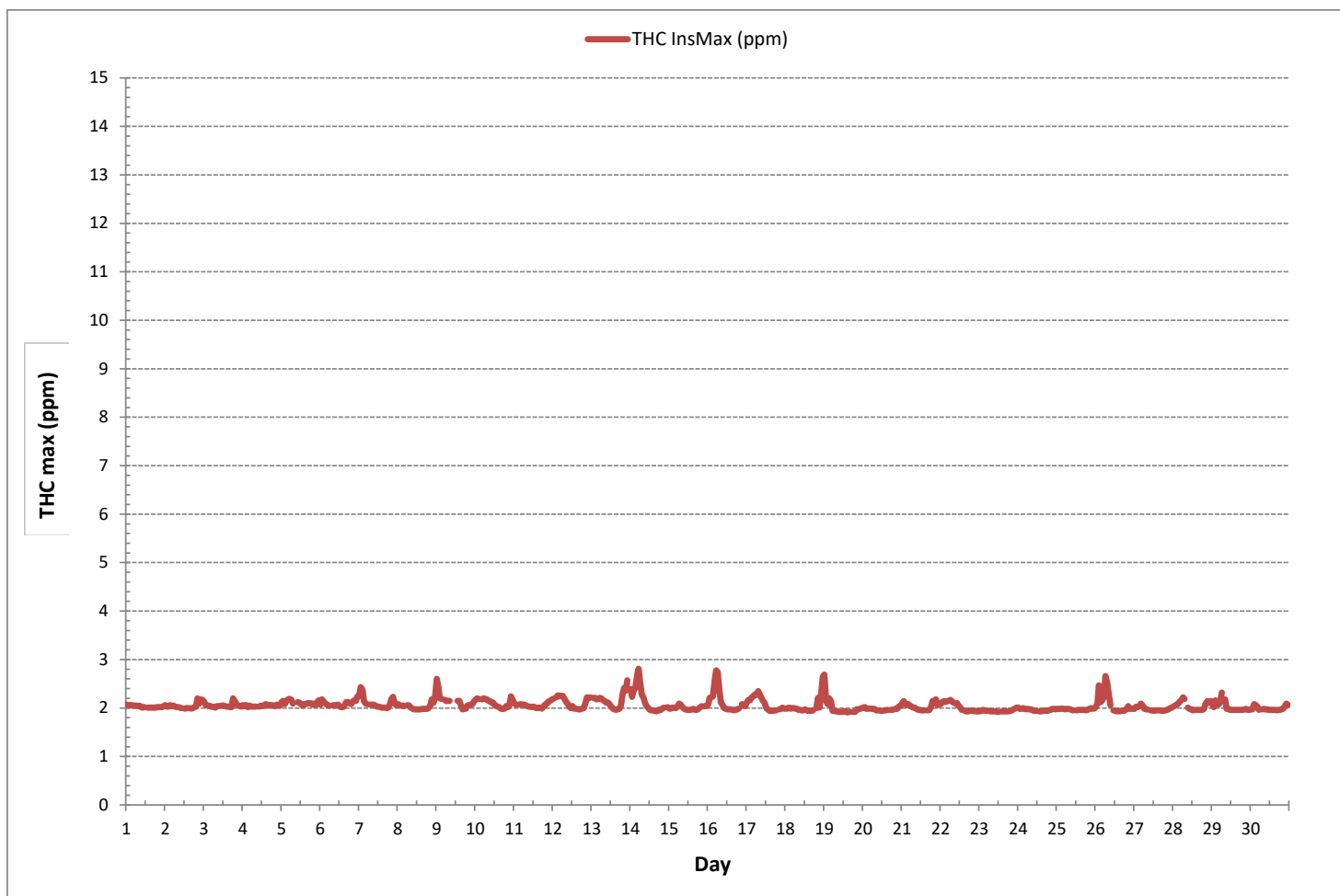
MONTHLY SUMMARY

NUMBER OF NON-ZERO READINGS:	655
MAXIMUM INSTANTANEOUS VALUE:	97 ppb @ HOUR 19 ON DAY 21
IZS CALIBRATION TIME:	32 hrs
MONTHLY CALIBRATION TIME:	6 hrs
STANDARD DEVIATION:	6
OPERATIONAL TIME:	719 hrs

HYDROGEN SULPHIDE Instantaneous Maximum (H₂S ppb)



TOTAL HYDROCARBONS Instantaneous Maximum (THC ppm)





LAKELAND INDUSTRY & COMMUNITY ASSOCIATION
Bonnyville East Site Continuous Monitoring Station - April 2019

METHANE MAX Instantaneous Maximum (CH₄ ppm)

HR START (MST)	0:00	1:00	2:00	3:00	4:00	5:00	6:00	7:00	8:00	9:00	10:00	11:00	12:00	13:00	14:00	15:00	16:00	17:00	18:00	19:00	20:00	21:00	22:00	23:00	DAILY MIN.	DAILY MAX.	24-HR AVG.	RDGS.	
HR END (MST)	0:59	1:59	2:59	3:59	4:59	5:59	6:59	7:59	8:59	9:59	10:59	11:59	12:59	13:59	14:59	15:59	16:59	17:59	18:59	19:59	20:59	21:59	22:59	23:59					
DAY 1	2.07	2.06	2.06	2.06	2.05	2.05	2.05	2.04	2.05	2.02	2.01	2.02	S	2.01	2.01	2.01	2.01	2.01	2.01	2.01	2.02	2.02	2.02	2.04	2.01	2.07	2.03	24	
2	2.06	2.03	2.03	2.06	2.04	2.05	2.03	2.02	2.02	2.01	2.00	S	1.99	2.00	2.00	2.00	1.99	2.00	2.02	2.03	2.20	2.09	2.18	2.17	1.99	2.20	2.04	24	
3	2.13	2.06	2.05	2.05	2.03	2.03	2.02	2.01	2.04	2.04	S	2.05	2.05	2.04	2.03	2.03	2.02	2.02	2.20	2.14	2.09	2.05	2.04	2.03	2.01	2.20	2.05	24	
4	2.06	2.04	2.06	2.02	2.05	2.03	2.03	2.03	2.03	S	2.03	2.05	2.04	2.05	2.08	2.07	2.05	2.06	2.06	2.05	2.04	2.07	2.06	2.05	2.02	2.08	2.05	24	
5	2.12	2.15	2.08	2.15	2.18	2.19	2.17	2.09	S	S	2.12	2.11	2.08	2.05	2.08	2.08	2.10	2.10	2.10	2.07	2.09	2.06	2.11	2.16	2.05	2.19	2.11	24	
6	2.07	2.18	2.13	2.10	2.07	2.07	2.05	S	2.06	2.05	2.06	2.07	2.03	2.02	2.02	2.06	2.12	2.12	2.10	2.08	2.13	2.16	2.15	2.24	2.02	2.24	2.09	24	
7	2.25	2.43	2.38	2.14	2.09	2.08	S	2.07	2.07	2.07	2.05	2.03	2.03	2.02	2.01	2.01	2.01	2.01	2.01	2.07	2.19	2.23	2.09	2.06	2.00	2.43	2.10	24	
8	2.08	2.06	2.05	2.05	2.04	S	2.06	2.05	2.01	1.99	1.97	1.97	1.97	1.97	1.97	1.98	1.98	1.98	1.98	2.00	2.05	2.18	2.11	2.22	1.97	2.22	2.03	24	
9	2.60	2.43	2.20	2.19	S	2.17	2.14	2.15	2.15	C	C	C	C	2.15	2.15	2.06	1.97	1.98	1.99	2.05	2.06	2.07	2.08	2.13	1.97	2.60	2.14	24	
10	2.17	2.20	2.19	S	2.18	2.20	2.19	2.18	2.15	2.14	2.11	2.11	2.06	2.04	2.03	2.01	1.98	1.98	1.99	2.04	2.02	2.05	2.24	2.17	1.98	2.24	2.11	24	
11	2.10	2.07	S	2.07	2.08	2.07	2.07	2.06	2.04	2.03	2.03	2.02	2.03	2.01	2.00	2.01	2.01	1.99	2.02	2.07	2.08	2.13	2.14	2.17	1.99	2.17	2.06	24	
12	2.19	S	2.22	2.26	2.24	2.25	2.25	2.20	2.13	2.09	2.04	2.00	2.04	1.99	1.99	1.98	1.97	1.97	1.99	2.00	2.09	2.22	2.20	2.22	1.97	2.26	2.11	24	
13	S	2.21	2.21	2.18	2.19	2.21	2.20	2.16	2.14	2.11	2.11	2.08	2.03	1.99	1.97	1.96	1.97	1.98	2.04	2.28	2.41	2.36	2.57	S	1.96	2.57	2.15	24	
14	2.39	2.23	2.38	2.41	2.66	2.81	2.50	2.27	2.21	2.10	2.04	2.00	1.96	1.95	1.95	1.94	1.93	1.96	1.95	1.97	2.00	2.01	S	2.02	1.93	2.81	2.16	24	
15	1.99	1.99	2.01	2.01	2.00	2.03	2.09	2.07	2.03	1.99	1.98	1.96	1.96	1.96	1.97	1.98	1.96	1.96	1.98	2.01	2.04	S	2.04	2.04	1.96	2.09	2.00	24	
16	2.07	2.21	2.22	2.24	2.57	2.78	2.74	2.36	2.11	2.06	2.00	1.98	1.97	1.97	1.97	1.96	1.95	1.96	1.97	1.99	S	2.07	2.05	2.04	1.95	2.78	2.14	24	
17	2.12	2.17	2.16	2.22	2.24	2.28	2.27	2.35	2.28	2.21	2.15	2.10	2.00	1.97	1.94	1.94	1.94	1.95	1.95	S	1.97	1.98	2.01	1.99	1.94	2.35	2.10	24	
18	1.99	1.99	2.01	1.99	2.00	2.00	1.99	1.98	1.96	1.96	1.95	1.95	1.97	1.95	1.94	1.94	1.94	1.95	S	2.00	2.21	2.01	2.27	2.64	1.94	2.64	2.03	24	
19	2.69	2.16	2.08	2.20	2.15	1.94	1.94	1.93	1.93	1.92	1.92	1.92	1.93	1.93	1.91	1.92	1.92	S	1.92	1.92	1.97	1.97	1.98	2.00	1.91	2.69	2.01	24	
20	2.01	2.02	1.98	1.99	1.99	1.99	1.98	1.98	1.95	1.95	1.95	1.94	1.94	1.95	1.95	1.96	S	1.96	1.96	1.97	1.98	1.98	2.03	2.04	1.94	2.04	1.98	24	
21	2.09	2.14	2.09	2.06	2.08	2.05	2.03	2.01	2.01	1.98	1.96	1.96	1.95	1.95	1.95	S	1.95	1.96	2.02	2.14	2.10	2.18	2.06	2.08	1.95	2.18	2.03	24	
22	2.08	2.12	2.14	2.12	2.14	2.15	2.17	2.13	2.11	2.09	2.10	2.05	2.02	1.96	S	1.94	1.93	1.93	1.94	1.96	1.94	1.93	1.94	1.93	1.93	2.17	2.04	24	
23	1.93	1.94	1.96	1.95	1.94	1.94	1.94	1.93	1.93	1.93	1.93	1.92	1.92	S	1.93	1.93	1.93	1.93	1.93	1.94	1.95	1.97	1.99	2.01	1.92	2.01	1.94	24	
24	2.01	1.98	1.99	2.00	1.98	1.97	1.98	1.97	1.97	1.95	1.94	1.94	S	1.93	1.93	1.94	1.94	1.95	1.94	1.95	1.96	1.98	1.98	1.97	1.93	2.01	1.96	24	
25	1.98	1.98	1.98	1.99	1.98	1.97	1.98	1.98	1.97	1.96	1.95	S	1.95	1.96	1.96	1.96	1.96	1.96	1.95	1.96	1.98	2.00	1.99	1.99	1.95	2.00	1.97	24	
26	2.02	2.09	2.12	2.12	2.16	2.23	2.66	2.52	2.30	2.06	S	1.95	1.94	1.93	1.94	1.93	1.94	1.94	1.95	1.98	2.04	1.98	1.99	1.98	1.93	2.66	2.08	24	
27	1.98	2.03	2.02	2.05	2.09	2.05	1.99	1.97	1.97	S	1.95	1.95	1.94	1.95	1.95	1.95	1.95	1.95	1.94	1.94	1.95	1.96	1.97	2.00	2.01	1.94	2.09	1.98	24
28	2.03	2.05	2.07	2.09	2.13	2.17	2.22	2.19	S	2.01	1.98	1.97	1.95	1.96	1.96	1.96	1.96	1.96	1.96	1.98	2.09	2.14	2.11	2.15	1.95	2.22	2.05	24	
29	2.08	2.02	2.16	2.12	2.07	2.11	2.32	S	2.18	1.98	1.98	1.96	1.96	1.96	1.96	1.96	1.96	1.96	1.96	1.96	1.97	1.98	1.96	1.96	1.96	2.32	2.02	24	
30	1.97	1.97	2.08	2.06	2.03	1.96	S	1.97	1.98	1.97	1.97	1.96	1.96	1.96	1.96	1.96	1.95	1.96	1.96	1.97	1.99	2.04	2.09	2.06	1.95	2.09	1.99	24	
HOURLY MAX	2.69	2.43	2.38	2.41	2.66	2.81	2.74	2.52	2.30	2.21	2.15	2.11	2.08	2.15	2.15	2.08	2.12	2.12	2.20	2.28	2.41	2.36	2.57	2.64					
HOURLY AVG	2.11	2.10	2.11	2.10	2.12	2.13	2.15	2.10	2.06	2.03	2.01	2.00	1.99	1.99	1.98	1.98	1.98	1.98	1.99	2.02	2.06	2.06	2.09	2.09					

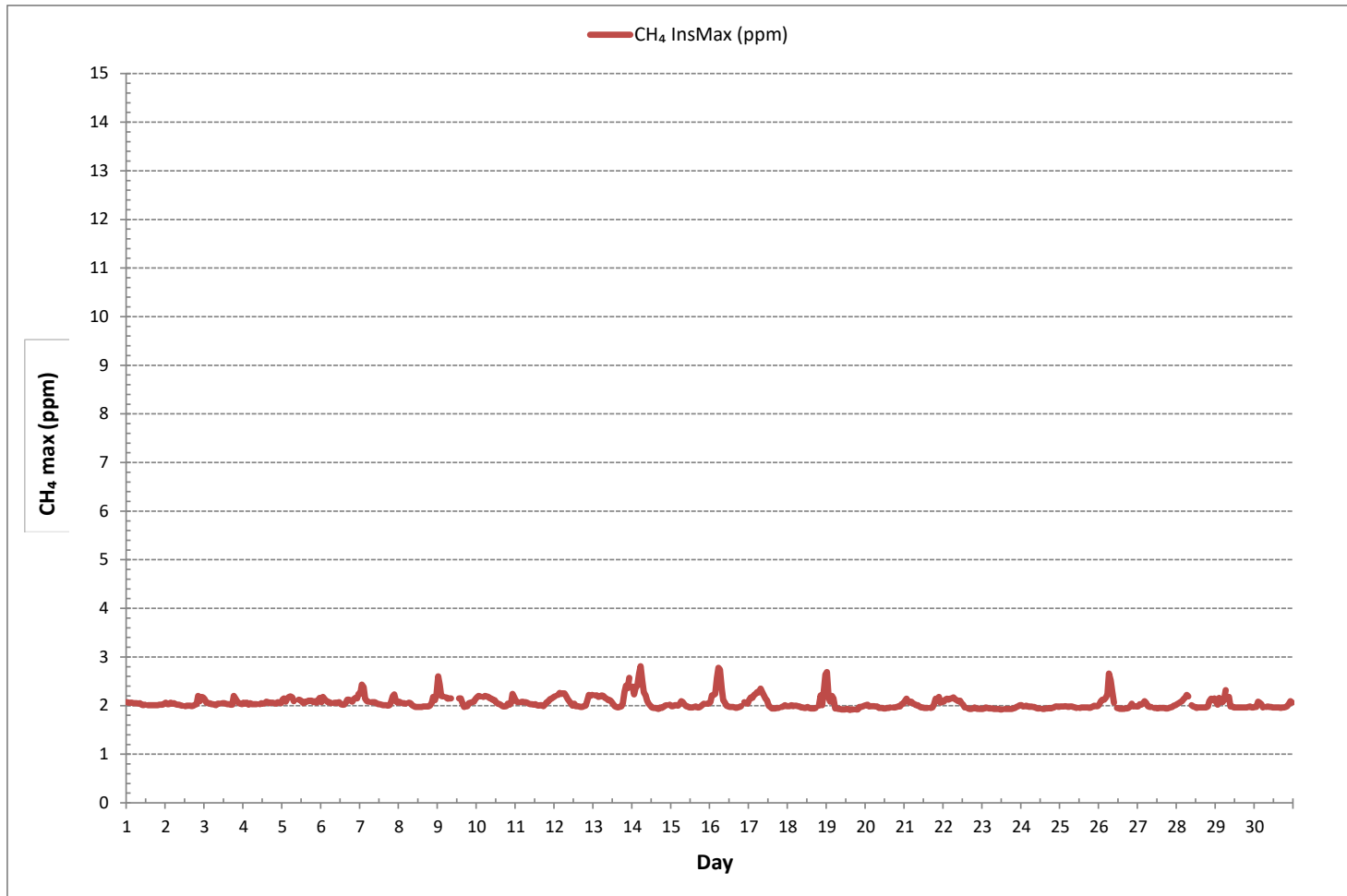
STATUS FLAG CODES

C	- MONTHLY CALIBRATION	Q	- QUALITY ASSURANCE
C1	- REPEAT CALIBRATION	R	- RECOVERY
Y	- MAINTENANCE	X	- MACHINE MALFUNCTION
S	- DAILY ZERO/SPAN CHECK	G	- OUT FOR REPAIR
S1	- REPEAT ZERO/SPAN CHECK	P	- POWER FAILURE

MONTHLY SUMMARY

NUMBER OF NON-ZERO READINGS:	684
MAXIMUM INSTANTANEOUS VALUE:	2.81 ppm @ HOUR 5 ON DAY 14
IZS CALIBRATION TIME:	32 hrs
MONTHLY CALIBRATION TIME:	4 hrs
STANDARD DEVIATION:	0.12
OPERATIONAL TIME:	720 hrs

METHANE MAX Instantaneous Maximum (CH₄ ppm)





LAKELAND INDUSTRY & COMMUNITY ASSOCIATION
Bonnyville East Site Continuous Monitoring Station - April 2019

NON-METHANE HYDROCARBONS Instantaneous Maximum (NMHC ppm)

HR START (MST)	0:00	1:00	2:00	3:00	4:00	5:00	6:00	7:00	8:00	9:00	10:00	11:00	12:00	13:00	14:00	15:00	16:00	17:00	18:00	19:00	20:00	21:00	22:00	23:00	DAILY MIN.	DAILY MAX.	24-HR AVG.	RDGS.
HR END (MST)	0:59	1:59	2:59	3:59	4:59	5:59	6:59	7:59	8:59	9:59	10:59	11:59	12:59	13:59	14:59	15:59	16:59	17:59	18:59	19:59	20:59	21:59	22:59	23:59				
DAY 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	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	24
2	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	24
3	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	24
4	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	24
5	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	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	24
6	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	24
7	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	24
8	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	24
9	0.00	0.00	0.00	0.00	S	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	24
10	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	24
11	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	24
12	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	24
13	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	24
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	S	0.00	0.00	0.00	24
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	S	0.00	0.00	0.00	0.00	0.00	24
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	S	0.00	0.00	0.00	0.00	0.00	24
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	S	0.00	0.00	0.00	0.00	0.00	0.00	0.00	24
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	S	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	24
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	S	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	24
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	S	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	24
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	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	24
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	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	24
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	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	24
24	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	24
25	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	24
26	0.00	0.00	0.36	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	0.36	0.02	24
27	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	24
28	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	24
29	0.00	0.00	0.00	0.00	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	0.01	0.00	24
30	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	24
HOURLY MAX	0.00	0.00	0.36	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	0.00	0.00	
HOURLY AVG	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	0.00	0.00	0.00	0.00	0.00	

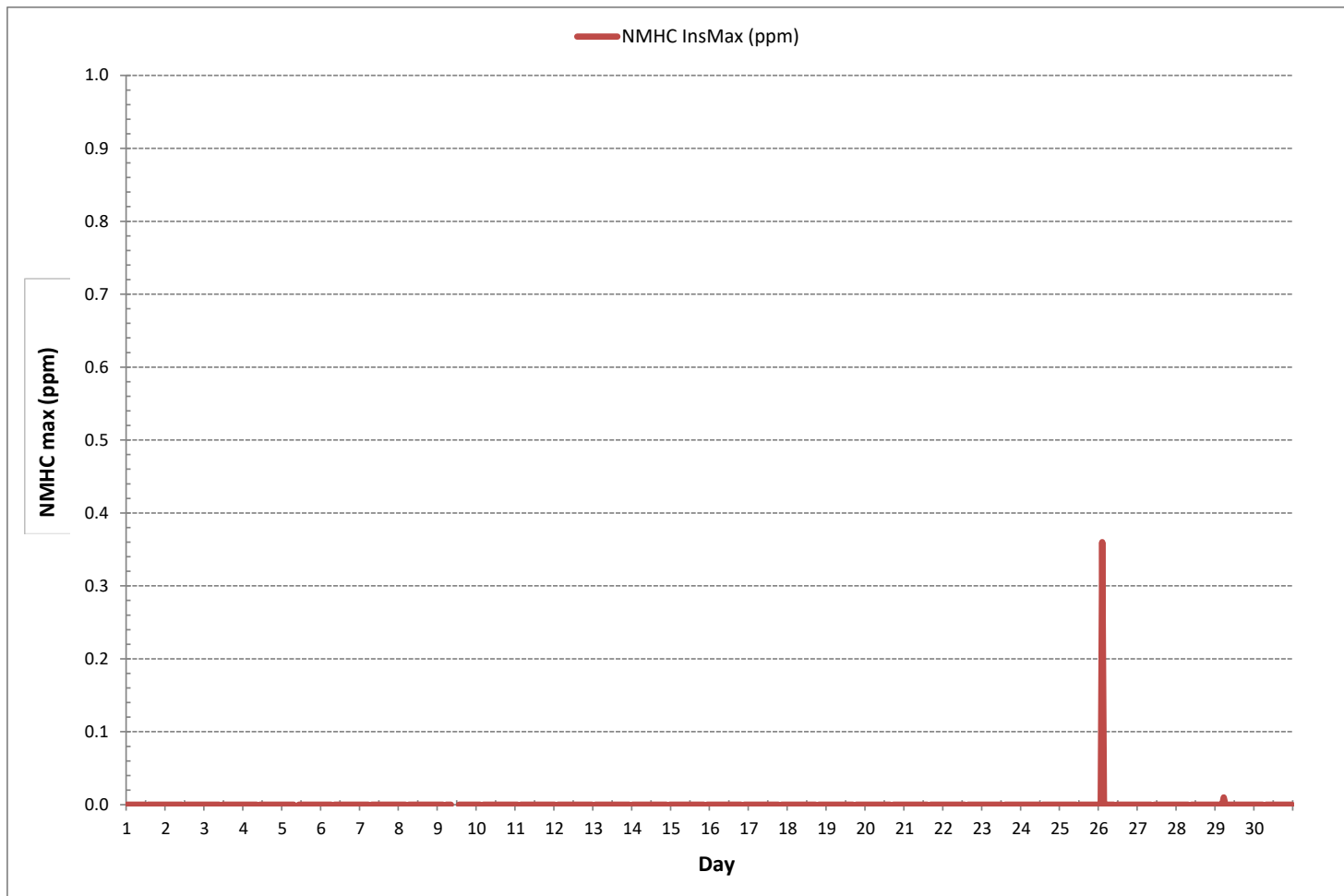
STATUS FLAG CODES

C	- MONTHLY CALIBRATION	Q	- QUALITY ASSURANCE
C1	- REPEAT CALIBRATION	R	- RECOVERY
Y	- MAINTENANCE	X	- MACHINE MALFUNCTION
S	- DAILY ZERO/SPAN CHECK	G	- OUT FOR REPAIR
S1	- REPEAT ZERO/SPAN CHECK	P	- POWER FAILURE

MONTHLY SUMMARY

NUMBER OF NON-ZERO READINGS:	2
MAXIMUM INSTANTANEOUS VALUE:	0.36 ppm @ HOUR 2 ON DAY 26
IZS CALIBRATION TIME:	32 hrs
MONTHLY CALIBRATION TIME:	4 hrs
STANDARD DEVIATION:	0.01
OPERATIONAL TIME:	720 hrs

NON-METHANE HYDROCARBONS Instantaneous Maximum (NMHC ppm)





LAKELAND INDUSTRY & COMMUNITY ASSOCIATION
Bonnyville East Site Continuous Monitoring Station - April 2019

OXIDES OF NITROGEN Instantaneous Maximum (NO_x ppb)

HR START (MST)	0:00	1:00	2:00	3:00	4:00	5:00	6:00	7:00	8:00	9:00	10:00	11:00	12:00	13:00	14:00	15:00	16:00	17:00	18:00	19:00	20:00	21:00	22:00	23:00	DAILY MIN.	DAILY MAX.	24-HR AVG.	RDGS.	
HR END (MST)	0:59	1:59	2:59	3:59	4:59	5:59	6:59	7:59	8:59	9:59	10:59	11:59	12:59	13:59	14:59	15:59	16:59	17:59	18:59	19:59	20:59	21:59	22:59	23:59					
DAY 1	3	2	2	2	3	2	1	2	2	1	1	1	S	1	1	1	1	1	1	1	1	1	1	1	1	1	3	2	24
2	2	1	2	3	3	3	1	1	1	1	0	S	1	1	0	0	0	1	2	2	2	2	2	2	2	0	3	1	24
3	2	1	1	1	9	1	1	1	1	2	S	2	2	6	183	287	1	1	3	2	3	2	1	1	1	287	22	24	
4	1	1	1	1	20	25	28	20	32	S	6	4	1	8	6	13	6	1	1	1	1	1	6	13	1	32	9	24	
5	1	2	2	16	186	9	2	1	S	S	2	3	3	1	1	7	1	1	9	1	1	1	2	3	1	186	12	24	
6	2	4	3	2	72	2	2	S	2	7	2	5	2	1	1	4	4	4	7	2	3	3	2	3	1	72	6	24	
7	5	5	5	2	2	2	S	2	2	2	2	1	2	2	2	2	2	2	2	1	1	1	1	1	1	5	2	24	
8	1	1	1	1	1	S	1	1	2	1	1	1	Y	Y	Y	Y	C	C	C	C	C	C	C	1	6	1	6	-	20
9	7	4	4	2	S	2	2	2	5	2	2	2	1	1	2	1	1	1	1	1	1	1	2	2	1	7	2	24	
10	3	3	3	S	3	3	3	3	2	3	3	2	3	2	1	1	1	1	2	3	1	1	3	2	1	3	2	24	
11	1	1	S	2	2	2	2	2	2	2	1	1	1	1	1	1	1	1	2	1	1	1	2	2	1	2	1	24	
12	2	S	3	4	4	4	4	3	3	2	1	1	1	1	1	1	1	1	1	1	1	3	3	4	1	4	2	24	
13	S	4	4	3	3	3	3	3	3	3	4	3	2	2	1	1	1	1	1	2	2	4	10	S	1	10	3	24	
14	5	3	3	3	14	7	5	3	4	2	2	2	2	1	1	1	1	1	2	3	3	2	S	1	1	14	3	24	
15	1	1	1	1	2	6	6	5	3	2	2	1	1	1	1	1	1	92	2	4	2	S	3	2	1	92	6	24	
16	1	1	3	2	6	8	8	5	3	3	1	1	1	1	1	0	1	1	1	1	S	2	3	2	0	8	2	24	
17	3	3	3	4	3	3	63	6	5	4	3	2	1	1	1	1	1	0	0	S	1	1	1	1	0	63	5	24	
18	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	S	1	2	2	1	5	1	5	1	24	
19	6	4	3	5	4	1	1	1	1	1	0	0	0	0	0	0	S	1	1	1	1	1	1	1	0	6	1	24	
20	1	1	1	1	1	0	0	1	1	0	0	0	0	0	0	0	S	1	1	1	2	2	2	2	0	2	1	24	
21	2	3	2	1	1	1	1	1	1	1	0	0	0	0	0	S	1	1	1	1	2	3	4	4	0	4	1	24	
22	3	2	2	1	2	2	S1	S1	2	3	3	2	2	1	S	1	1	1	1	1	1	1	1	1	1	3	2	22	
23	1	1	1	1	1	1	1	1	1	1	0	0	0	S	1	1	1	1	1	1	2	2	1	1	0	2	1	24	
24	2	1	1	1	1	1	1	2	2	1	0	0	S	1	0	1	0	1	1	1	1	1	1	1	0	2	1	24	
25	1	1	1	1	1	1	1	1	1	1	0	S	1	0	0	0	0	0	1	2	3	2	1	1	0	3	1	24	
26	1	2	5	2	2	19	29	19	15	5	S	1	0	0	1	2	0	1	1	1	2	2	1	1	0	29	5	24	
27	1	1	1	1	2	1	1	1	5	S	1	0	0	1	0	0	0	0	0	0	1	1	1	2	0	5	1	24	
28	1	3	6	5	6	8	14	14	S	3	1	1	0	0	0	0	0	0	0	1	2	3	3	2	0	14	3	24	
29	2	1	1	1	1	4	11	S	10	3	2	1	1	1	1	1	1	1	1	1	2	2	1	1	1	11	2	24	
30	2	2	1	1	2	1	S	3	4	2	1	1	1	1	1	0	0	0	0	1	1	2	2	1	0	4	1	24	
HOURLY MAX	7	5	6	16	186	25	63	20	32	7	6	5	3	8	183	287	6	92	9	4	3	4	10	13					
HOURLY AVG	2	2	2	2	12	4	7	4	4	2	2	1	1	1	7	12	1	4	2	1	2	2	2	2					

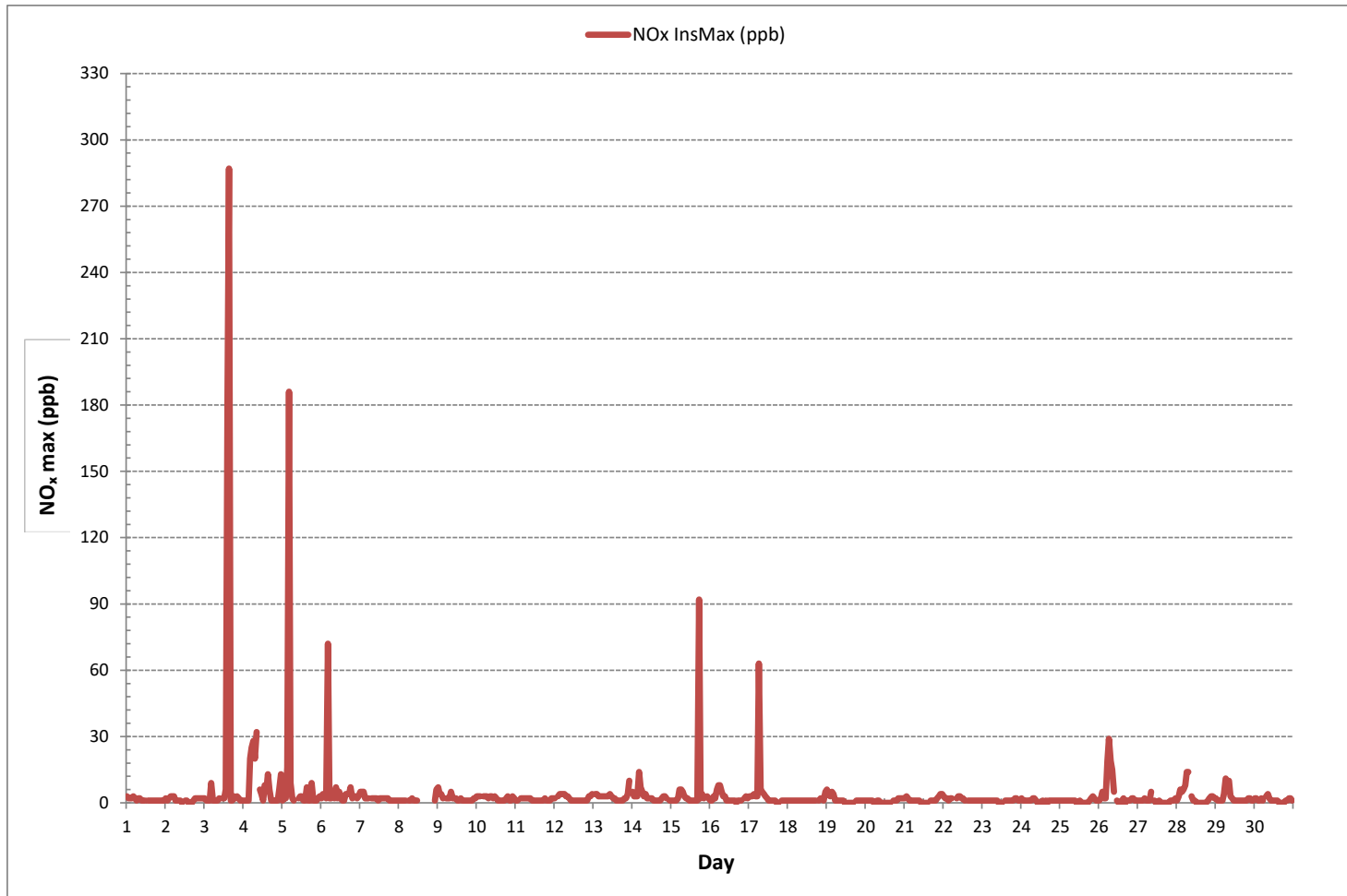
STATUS FLAG CODES

C	- MONTHLY CALIBRATION	Q	- QUALITY ASSURANCE
C1	- REPEAT CALIBRATION	R	- RECOVERY
Y	- MAINTENANCE	X	- MACHINE MALFUNCTION
S	- DAILY ZERO/SPAN CHECK	G	- OUT FOR REPAIR
S1	- REPEAT ZERO/SPAN CHECK	P	- POWER FAILURE

MONTHLY SUMMARY

NUMBER OF NON-ZERO READINGS:	614
MAXIMUM INSTANTANEOUS VALUE:	287 ppb @ HOUR 15 ON DAY 3
IZS CALIBRATION TIME:	32 hrs
MONTHLY CALIBRATION TIME:	6 hrs
STANDARD DEVIATION:	16
OPERATIONAL TIME:	714 hrs

OXIDES OF NITROGEN Instantaneous Maximum (NO_x ppb)





LAKELAND INDUSTRY & COMMUNITY ASSOCIATION
Bonnyville East Site Continuous Monitoring Station - April 2019

NITRIC OXIDE Instantaneous Maximum (NO ppb)

HR START (MST)	0:00	1:00	2:00	3:00	4:00	5:00	6:00	7:00	8:00	9:00	10:00	11:00	12:00	13:00	14:00	15:00	16:00	17:00	18:00	19:00	20:00	21:00	22:00	23:00	DAILY	DAILY	24-HR	RDGS.	
HR END (MST)	0:59	1:59	2:59	3:59	4:59	5:59	6:59	7:59	8:59	9:59	10:59	11:59	12:59	13:59	14:59	15:59	16:59	17:59	18:59	19:59	20:59	21:59	22:59	23:59	MIN.	MAX.	AVG.		
DAY 1	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	24	
2	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	24	
3	0	0	0	0	4	0	0	0	0	1	S	1	1	2	134	195	0	0	0	0	0	0	0	0	0	0	195	15	24
4	0	0	0	0	7	11	19	14	31	S	4	2	0	2	2	16	4	0	0	0	0	0	3	5	0	31	5	24	
5	0	0	0	8	114	3	0	0	S	S	1	2	2	0	0	3	0	0	3	0	0	0	0	0	0	114	6	24	
6	0	0	0	0	50	0	0	S	0	4	0	2	0	0	0	1	0	1	5	1	0	0	0	0	0	50	3	24	
7	0	0	0	0	0	0	S	0	0	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1	0	24	
8	0	0	0	0	0	S	0	0	0	0	0	0	0	Y	Y	Y	Y	C	C	C	C	C	C	0	1	0	1	20	
9	1	0	0	0	S	0	0	0	3	1	1	1	1	0	0	1	0	0	0	0	0	0	0	0	0	0	3	0	24
10	0	0	0	0	S	0	0	1	1	1	1	1	1	0	0	0	0	0	0	0	0	0	0	0	0	1	0	24	
11	0	0	S	0	0	0	0	0	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1	0	24	
12	0	S	0	0	0	0	0	1	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1	0	24	
13	S	0	0	0	0	0	0	1	1	1	1	1	1	0	0	0	0	0	0	0	0	0	0	0	S	0	1	0	24
14	0	0	0	0	7	0	0	0	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	S	0	0	7	0	24
15	0	0	0	0	0	0	0	1	0	0	0	0	0	0	0	0	0	82	0	0	0	S	0	0	0	0	82	4	24
16	0	0	0	0	0	0	2	2	1	1	0	0	0	0	0	0	0	0	0	0	0	S	0	0	0	0	2	0	24
17	0	0	0	0	0	0	42	1	1	1	1	0	0	0	0	0	0	0	0	0	S	0	0	0	0	42	2	24	
18	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	24
19	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	24
20	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	24
21	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	24
22	0	0	0	0	0	0	S1	S1	0	1	1	0	0	0	S	0	0	0	0	0	0	0	0	0	0	0	1	0	22
23	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	24
24	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	24
25	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	24
26	0	0	0	0	0	2	10	7	6	1	S	0	0	0	0	1	0	0	0	0	0	0	0	0	0	10	1	24	
27	0	0	0	0	0	0	0	0	3	S	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	3	0	24	
28	0	0	0	0	0	0	3	4	S	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	4	0	24	
29	0	0	0	0	0	0	2	S	3	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	3	0	24	
30	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	1	0	24	
HOURLY MAX	1	0	0	8	114	11	42	14	31	4	4	2	2	2	134	195	4	82	5	1	0	0	3	5					
HOURLY AVG	0	0	0	0	6	1	3	1	2	1	0	0	0	0	5	8	0	3	0	0	0	0	0	0					

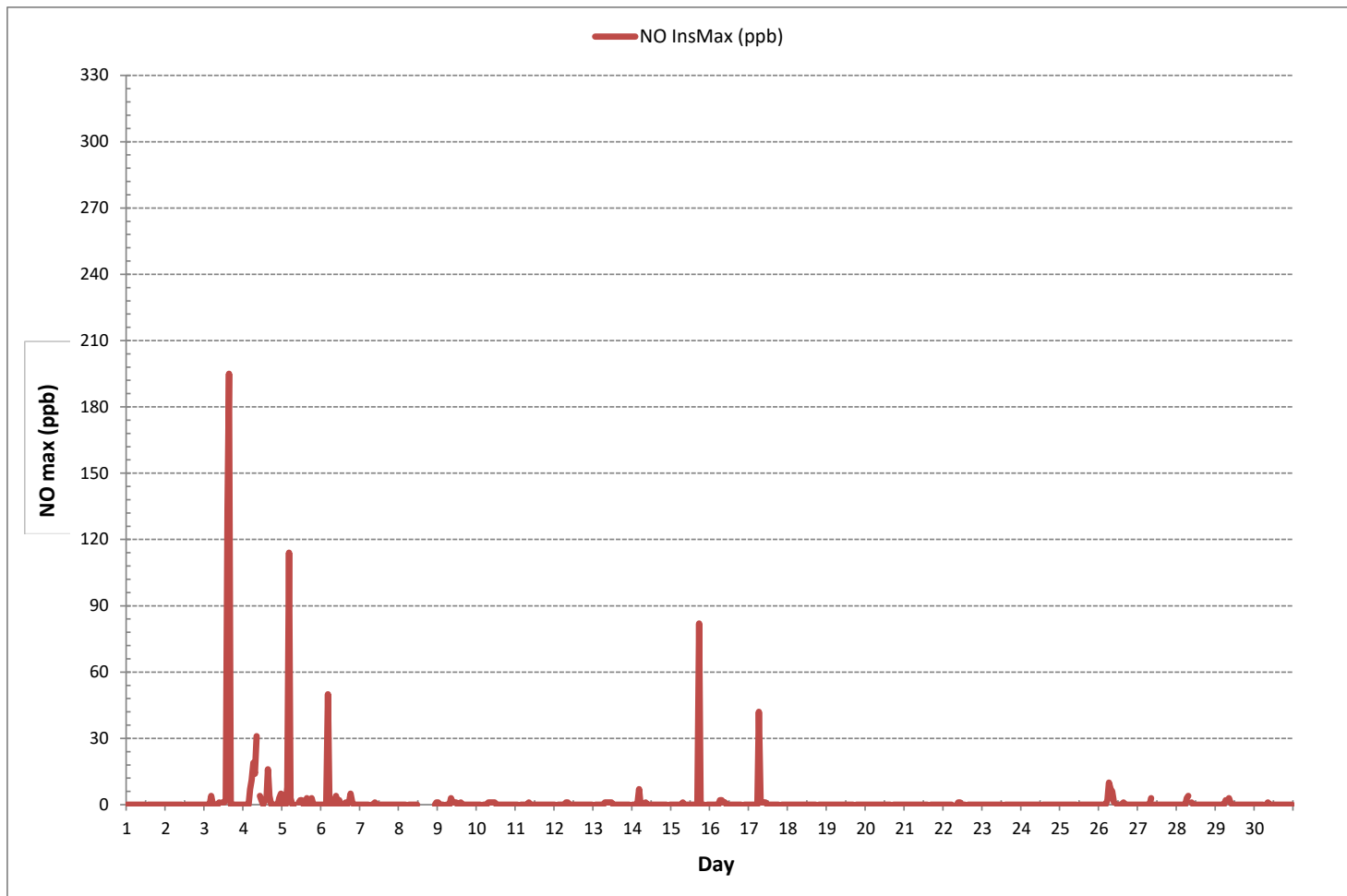
STATUS FLAG CODES

C	- MONTHLY CALIBRATION	Q	- QUALITY ASSURANCE
C1	- REPEAT CALIBRATION	R	- RECOVERY
Y	- MAINTENANCE	X	- MACHINE MALFUNCTION
S	- DAILY ZERO/SPAN CHECK	G	- OUT FOR REPAIR
S1	- REPEAT ZERO/SPAN CHECK	P	- POWER FAILURE

MONTHLY SUMMARY

NUMBER OF NON-ZERO READINGS:	85
MAXIMUM INSTANTANEOUS VALUE:	195 ppb @ HOUR 15 ON DAY 3
IZS CALIBRATION TIME:	32 hrs
MONTHLY CALIBRATION TIME:	6 hrs
STANDARD DEVIATION:	11
OPERATIONAL TIME:	714 hrs

NITRIC OXIDE Instantaneous Maximum (NO ppb)





LAKELAND INDUSTRY & COMMUNITY ASSOCIATION
Bonnyville East Site Continuous Monitoring Station - April 2019

NITROGEN DIOXIDE Instantaneous Maximum (NO₂ ppb)

HR START (MST)	0:00	1:00	2:00	3:00	4:00	5:00	6:00	7:00	8:00	9:00	10:00	11:00	12:00	13:00	14:00	15:00	16:00	17:00	18:00	19:00	20:00	21:00	22:00	23:00	DAILY MIN.	DAILY MAX.	24-HR AVG.	RDGS.	
HR END (MST)	0:59	1:59	2:59	3:59	4:59	5:59	6:59	7:59	8:59	9:59	10:59	11:59	12:59	13:59	14:59	15:59	16:59	17:59	18:59	19:59	20:59	21:59	22:59	23:59					
DAY 1	3	3	2	2	3	2	1	2	2	1	1	1	S	1	1	1	1	1	1	1	1	1	1	2	1	3	2	24	
2	2	1	2	3	3	3	1	1	1	1	1	S	1	1	1	1	1	1	2	2	2	2	2	2	1	3	2	24	
3	2	1	1	1	5	1	1	1	1	1	S	2	1	4	61	131	1	1	3	3	3	2	1	1	1	131	10	24	
4	2	1	1	1	13	15	10	8	16	S	4	2	1	6	5	2	2	1	1	1	1	1	3	9	1	16	5	24	
5	1	2	2	9	79	5	2	1	S	S	2	2	2	1	1	4	1	1	6	1	1	1	2	3	1	79	6	24	
6	2	5	3	2	24	2	2	S	2	3	2	2	2	1	1	3	3	4	4	2	3	3	2	3	1	24	3	24	
7	5	5	5	2	2	2	S	1	2	2	1	1	2	2	2	2	2	2	1	1	1	1	1	1	1	5	2	24	
8	1	1	1	1	1	S	1	1	1	1	1	1	Y	Y	Y	Y	C	C	C	C	C	C	C	1	4	1	4	-	20
9	6	4	4	2	S	2	2	2	3	1	1	1	1	1	1	1	1	1	1	1	1	1	2	2	1	6	2	24	
10	3	3	3	S	3	3	3	2	2	2	2	2	2	1	1	1	1	1	2	3	1	1	3	2	1	3	2	24	
11	2	1	S	2	2	2	2	2	1	1	1	1	1	1	1	1	1	1	2	1	1	2	2	2	1	2	1	24	
12	2	S	3	4	4	4	3	3	2	2	1	1	1	1	1	1	1	1	1	1	1	3	4	1	4	2	24		
13	S	4	4	3	3	3	3	3	3	3	3	3	2	2	1	1	1	1	1	2	2	4	10	S	1	10	3	24	
14	5	3	3	3	8	7	5	3	3	2	2	2	1	1	1	1	1	1	2	3	3	2	S	2	1	8	3	24	
15	1	1	1	1	2	6	6	5	3	2	1	1	1	1	1	1	1	17	2	4	2	S	3	2	1	17	3	24	
16	1	1	3	2	5	7	7	4	2	2	1	1	1	1	1	1	1	1	1	1	S	2	3	2	1	7	2	24	
17	3	3	4	4	3	3	26	5	4	3	2	2	1	1	1	1	1	0	0	S	1	1	1	1	0	26	3	24	
18	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	S	1	2	2	1	5	1	5	1	24	
19	6	4	3	5	4	1	1	1	1	0	1	0	0	0	0	0	0	S	1	1	1	1	1	1	0	6	2	24	
20	1	1	1	1	1	1	1	1	1	0	0	0	0	0	0	1	S	1	1	2	2	2	2	2	0	2	1	24	
21	2	3	2	1	1	1	1	1	1	1	0	0	0	0	0	S	1	1	1	1	2	3	4	4	0	4	1	24	
22	3	2	2	1	2	2	S1	S1	2	2	2	2	2	1	S	1	1	1	1	2	2	1	1	1	1	3	2	22	
23	1	2	2	1	1	1	1	1	1	1	0	0	0	S	1	1	1	1	1	2	2	2	1	1	0	2	1	24	
24	2	1	1	1	1	1	1	1	2	1	0	0	S	1	1	1	1	1	1	1	1	1	1	1	0	2	1	24	
25	1	1	1	1	1	1	1	1	1	1	0	S	1	1	1	0	1	1	1	2	3	2	1	1	0	3	1	24	
26	1	2	5	2	2	17	20	12	10	4	S	1	1	0	1	0	1	1	1	1	2	2	1	1	0	20	4	24	
27	1	1	1	2	2	1	1	1	3	S	1	0	0	1	0	0	0	0	0	0	1	1	1	2	0	3	1	24	
28	2	3	6	5	6	7	11	10	S	3	1	1	1	1	1	0	0	0	1	1	2	3	3	2	0	11	3	24	
29	2	1	1	1	1	4	9	S	7	2	2	1	1	1	1	1	1	1	1	1	2	2	1	1	1	9	2	24	
30	2	2	1	1	2	1	S	3	3	1	1	1	1	1	1	0	1	0	1	0	1	1	1	1	0	3	1	24	
HOURLY MAX	6	5	6	9	79	17	26	12	16	4	4	3	2	6	61	131	3	17	6	4	3	4	10	9					
HOURLY AVG	2	2	2	2	6	4	5	3	3	2	1	1	1	1	3	6	1	2	1	2	2	2	2	2					

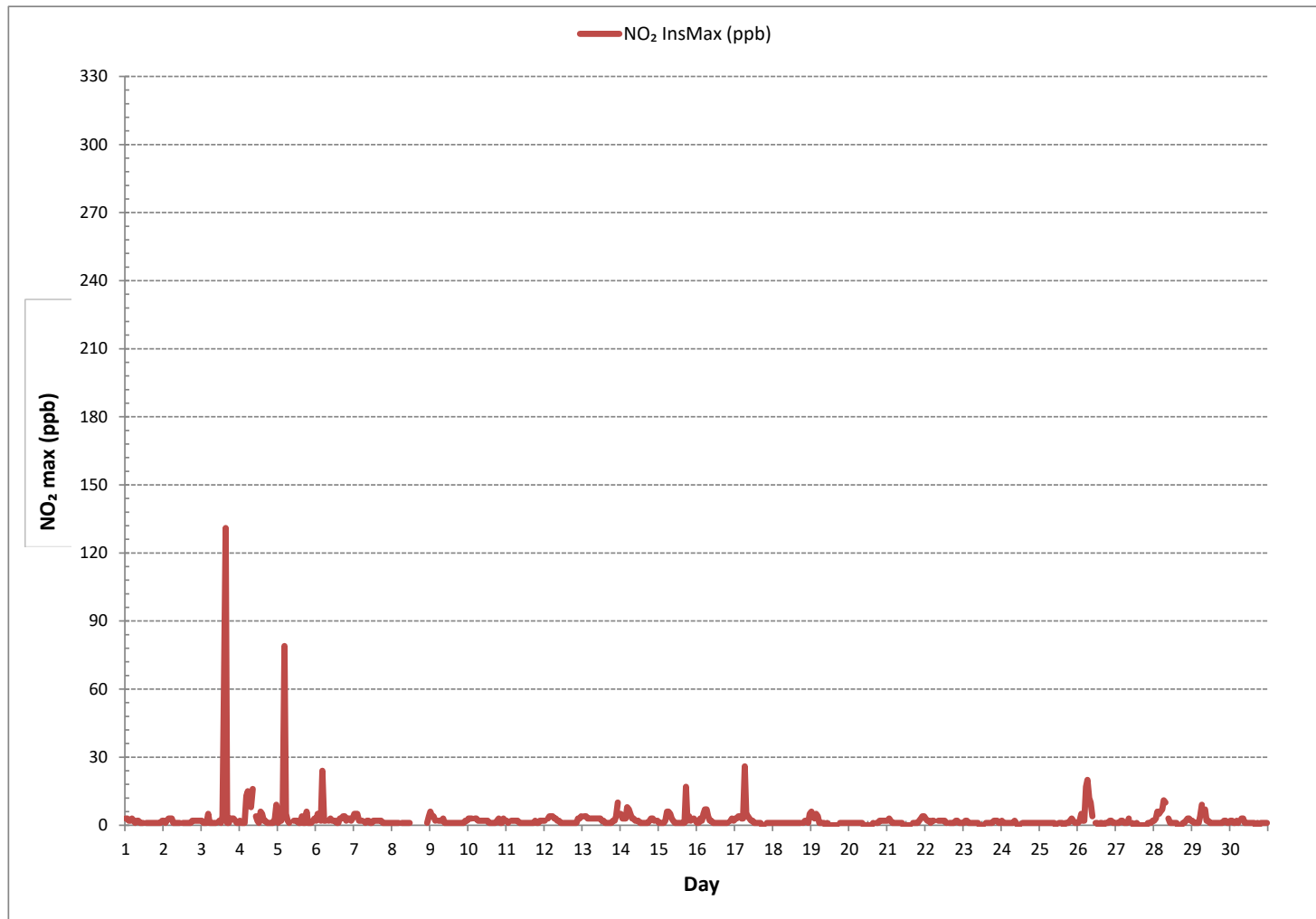
STATUS FLAG CODES

C	- MONTHLY CALIBRATION	Q	- QUALITY ASSURANCE
C1	- REPEAT CALIBRATION	R	- RECOVERY
Y	- MAINTENANCE	X	- MACHINE MALFUNCTION
S	- DAILY ZERO/SPAN CHECK	G	- OUT FOR REPAIR
S1	- REPEAT ZERO/SPAN CHECK	P	- POWER FAILURE

MONTHLY SUMMARY

NUMBER OF NON-ZERO READINGS:	634
MAXIMUM INSTANTANEOUS VALUE:	131 ppb @ HOUR 15 ON DAY 3
	VAR-VARIOUS
IZS CALIBRATION TIME:	32 hrs
MONTHLY CALIBRATION TIME:	6 hrs
STANDARD DEVIATION:	7
OPERATIONAL TIME:	714 hrs

NITROGEN DIOXIDE Instantaneous Maximum (NO₂ ppb)





LAKELAND INDUSTRY & COMMUNITY ASSOCIATION
Bonnyville East Site Continuous Monitoring Station - April 2019

OZONE Instantaneous Maximum (O₃ ppb)

HR START (MST)	0:00	1:00	2:00	3:00	4:00	5:00	6:00	7:00	8:00	9:00	10:00	11:00	12:00	13:00	14:00	15:00	16:00	17:00	18:00	19:00	20:00	21:00	22:00	23:00	DAILY MIN.	DAILY MAX.	24-HR AVG.	RDGS.
HR END (MST)	0:59	1:59	2:59	3:59	4:59	5:59	6:59	7:59	8:59	9:59	10:59	11:59	12:59	13:59	14:59	15:59	16:59	17:59	18:59	19:59	20:59	21:59	22:59	23:59				
DAY 1	34.9	35.6	35.5	35.0	35.4	36.1	35.7	37.6	40.3	47.0	48.8	48.5	S	47.3	48.8	46.6	46.8	45.0	44.1	44.7	44.4	43.0	42.3	41.4	34.9	48.8	42.0	24
2	40.7	43.0	40.9	39.6	38.1	39.5	42.3	43.5	44.4	44.9	45.0	S	45.0	46.2	46.7	46.9	47.1	47.1	44.8	41.0	37.7	33.8	37.3	37.4	33.8	47.1	42.3	24
3	36.1	39.0	39.8	40.5	38.9	40.3	40.4	41.0	41.7	41.5	S	41.8	42.1	42.6	44.3	45.4	46.8	46.8	45.9	43.2	40.6	37.4	36.7	37.9	36.1	46.8	41.3	24
4	37.7	35.7	37.1	37.6	34.3	33.5	35.3	35.6	35.8	S	36.8	37.5	38.7	38.2	37.0	37.6	38.3	38.3	39.0	39.5	41.3	41.7	41.9	39.8	33.5	41.9	37.7	24
5	38.9	37.5	38.7	37.9	36.3	34.5	34.0	33.8	S	S	36.2	38.2	40.6	43.2	44.2	44.2	43.9	43.8	42.9	42.0	40.6	40.0	39.0	38.1	33.8	44.2	39.5	24
6	38.6	38.2	34.7	35.5	33.8	32.4	31.7	S	31.8	30.8	30.4	29.8	26.6	23.6	22.2	21.4	21.2	20.1	19.5	19.3	19.4	19.3	17.9	18.3	17.9	38.6	26.8	24
7	15.7	16.4	13.7	14.1	12.8	13.3	S	16.2	16.7	19.2	24.8	29.2	30.0	33.9	35.4	37.3	39.5	40.8	39.7	43.0	41.9	40.4	38.7	35.8	12.8	43.0	28.2	24
8	34.9	33.9	34.3	35.1	35.2	S	35.2	36.9	40.9	43.4	45.5	46.9	47.4	47.9	48.2	47.6	47.9	47.8	45.9	45.5	44.5	37.3	38.9	30.7	30.7	48.2	41.4	24
9	26.7	26.9	19.6	17.1	S	17.0	18.9	19.5	19.5	C	C	C	C	C	C	42.6	49.1	47.0	43.6	35.5	31.6	29.7	29.0	26.0	17.0	49.1	-	24
10	22.3	19.4	18.0	S	16.9	16.7	16.6	18.6	20.5	21.2	23.2	24.6	31.7	38.8	37.4	39.0	42.1	45.1	42.8	38.7	41.3	39.4	33.5	29.9	16.6	45.1	29.5	24
11	28.8	31.7	S	31.8	31.4	31.3	31.6	30.8	30.4	31.2	34.5	36.5	35.8	38.7	41.9	42.4	43.7	42.5	36.9	34.2	32.6	31.3	29.2	27.2	27.2	43.7	34.2	24
12	27.8	S	30.4	28.7	28.0	27.0	28.0	30.3	34.2	36.5	39.5	43.4	43.9	47.0	47.1	46.6	47.1	47.4	45.5	42.7	37.8	34.9	35.7	35.5	27.0	47.4	37.6	24
13	S	35.2	34.0	33.9	35.4	33.3	34.8	37.2	37.9	38.7	40.2	42.7	47.1	50.4	50.3	51.0	51.0	50.9	47.4	41.7	35.5	32.5	26.6	S	26.6	51.0	40.4	24
14	29.8	31.2	28.9	28.2	25.0	23.1	24.3	29.3	31.5	34.9	39.5	48.0	52.5	53.0	51.5	50.4	50.8	47.9	45.8	44.4	39.9	38.1	S	41.1	23.1	53.0	38.7	24
15	38.8	37.6	34.9	33.4	29.8	25.7	27.1	27.9	30.5	32.7	35.1	38.6	41.9	41.6	39.8	41.4	44.0	41.8	42.1	36.8	32.2	S	27.7	25.1	25.1	44.0	35.1	24
16	27.3	24.5	20.8	18.7	14.3	16.3	16.1	22.8	29.3	32.4	36.9	41.1	41.5	43.6	44.4	44.2	46.4	46.3	45.5	44.8	S	37.8	38.2	38.1	14.3	46.4	33.5	24
17	34.7	34.0	35.4	35.1	34.2	31.8	29.7	27.8	31.8	34.8	38.0	41.9	48.5	48.9	49.9	48.1	45.6	46.4	45.2	S	38.1	39.8	37.4	38.1	27.8	49.9	38.9	24
18	32.7	32.9	30.7	30.9	29.9	30.7	31.8	34.3	37.0	37.0	39.0	40.1	39.8	45.5	47.8	49.4	50.3	48.9	S	43.2	37.4	31.2	32.1	26.5	26.5	50.3	37.3	24
19	28.2	28.3	31.1	28.5	34.3	41.1	40.2	41.1	40.1	42.3	43.5	45.1	45.7	47.2	47.2	48.1	49.5	S	49.5	47.3	42.7	42.0	39.8	38.4	28.2	49.5	40.9	24
20	37.4	38.4	38.2	36.1	35.3	36.7	37.6	39.5	42.5	43.3	45.1	47.4	48.5	47.5	48.2	47.8	S	48.0	46.0	40.7	38.1	38.3	31.6	32.8	31.6	48.5	41.1	24
21	32.2	30.2	32.0	28.9	28.1	29.4	33.1	38.1	39.6	44.5	47.5	49.2	52.2	54.3	54.6	S	54.5	53.4	52.9	47.7	46.8	41.9	44.3	43.5	28.1	54.6	42.6	24
22	45.3	46.5	46.0	45.4	42.9	40.7	39.6	39.3	39.3	39.2	40.1	42.9	51.9	61.3	S	61.4	60.2	56.7	56.3	52.5	49.4	48.0	42.9	41.1	39.2	61.4	47.3	24
23	37.4	40.6	36.1	35.3	37.9	39.0	41.3	45.3	48.0	48.8	48.1	47.9	50.0	S	53.3	53.7	54.6	54.5	53.6	48.9	47.8	48.9	46.6	46.3	35.3	54.6	46.3	24
24	45.3	45.9	44.4	44.1	44.1	43.6	43.7	45.2	47.4	49.7	52.8	54.7	S	51.6	51.2	50.5	50.0	48.1	48.5	49.1	47.2	45.6	44.0	43.7	43.6	54.7	47.4	24
25	43.4	42.9	41.7	41.4	41.7	41.7	41.4	42.0	43.1	45.2	47.0	S	48.1	48.6	48.7	49.1	48.8	49.8	49.8	45.9	44.3	45.2	46.7	46.4	41.4	49.8	45.4	24
26	42.3	33.7	28.0	31.0	31.2	15.4	14.0	22.8	28.3	39.8	S	47.6	46.6	47.7	46.3	45.6	45.5	43.5	42.2	40.3	34.8	35.5	36.0	37.6	14.0	47.7	36.3	24
27	36.6	35.7	32.5	33.0	28.8	30.6	33.0	34.1	33.4	S	37.3	38.3	38.2	37.6	38.2	38.9	39.3	40.0	40.8	41.1	42.7	42.3	40.3	40.7	28.8	42.7	37.1	24
28	42.3	40.8	34.5	33.3	30.5	28.1	26.3	29.7	S	42.3	45.2	45.8	45.8	46.1	44.9	45.9	45.6	45.4	43.5	42.8	39.8	38.2	36.9	34.9	26.3	46.1	39.5	24
29	33.8	37.8	35.2	35.1	32.9	28.4	27.0	S	31.2	41.1	42.9	45.3	44.5	45.2	46.7	47.6	49.2	48.7	45.9	44.5	41.8	41.9	44.1	42.5	27.0	49.2	40.6	24
30	41.6	40.1	37.3	36.0	37.5	42.7	S	43.3	41.5	42.9	43.3	44.0	45.1	46.8	47.1	46.7	45.7	45.9	44.8	42.0	39.1	40.2	40.1	36.6	36.0	47.1	42.2	24
HOURLY MAX	45.3	46.5	46.0	45.4	44.1	43.6	43.7	45.3	48.0	49.7	52.8	54.7	52.5	61.3	54.6	61.4	60.2	56.7	56.3	52.5	49.4	48.9	48.9	46.7	46.4			
HOURLY AVG	34.9	35.0	33.3	33.1	32.2	31.0	31.8	33.7	35.3	38.7	40.2	42.1	43.3	45.2	45.1	45.4	46.4	45.8	44.5	42.2	39.7	38.5	37.1	36.3				

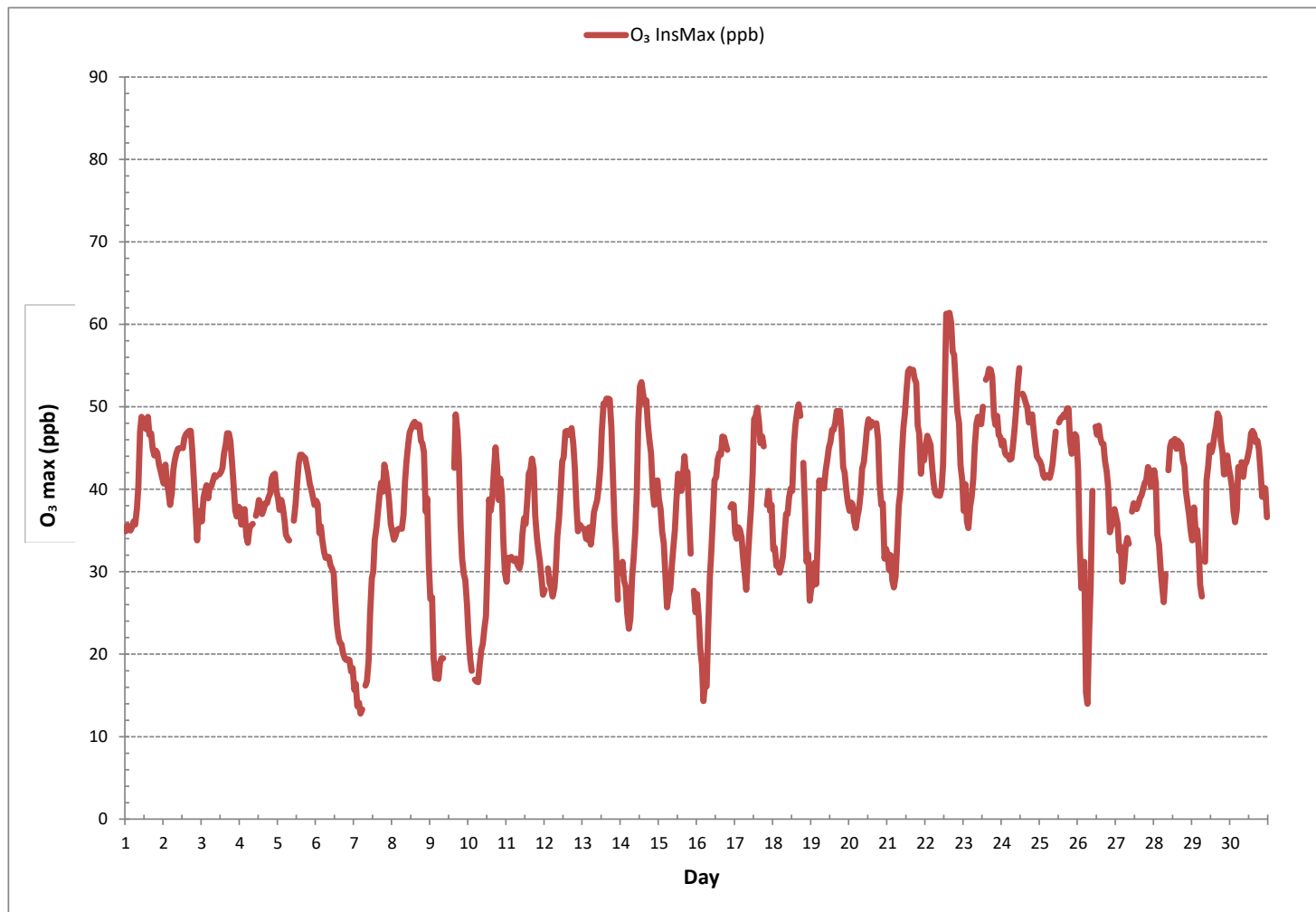
STATUS FLAG CODES

C	- MONTHLY CALIBRATION	Q	- QUALITY ASSURANCE
C1	- REPEAT CALIBRATION	R	- RECOVERY
Y	- MAINTENANCE	X	- MACHINE MALFUNCTION
S	- DAILY ZERO/SPAN CHECK	G	- OUT FOR REPAIR
S1	- REPEAT ZERO/SPAN CHECK	P	- POWER FAILURE

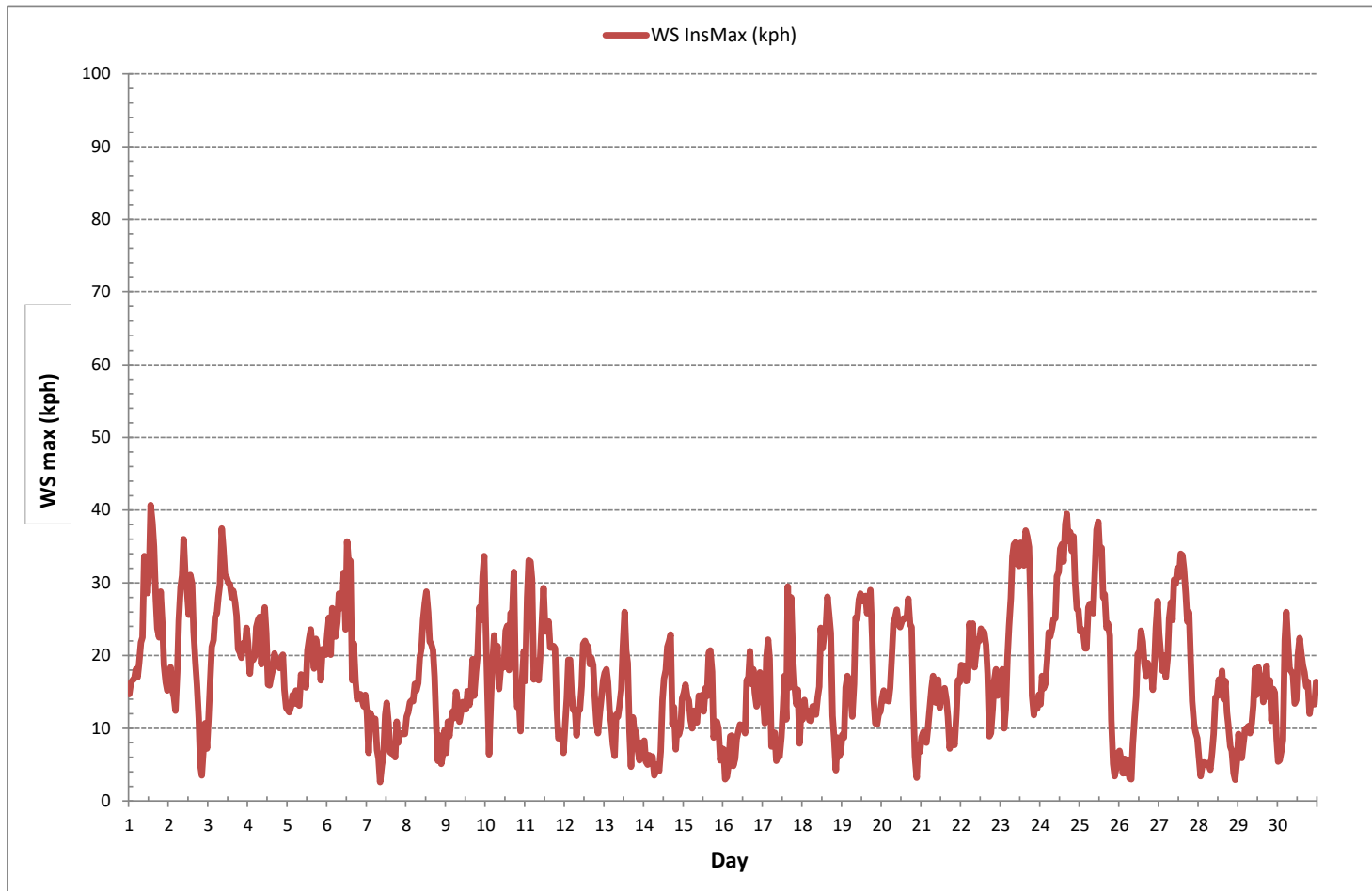
MONTHLY SUMMARY

NUMBER OF NON-ZERO READINGS:	682
MAXIMUM INSTANTANEOUS VALUE:	61.4 ppb @ HOUR 15 ON DAY 22
IZS CALIBRATION TIME:	32 hrs
MONTHLY CALIBRATION TIME:	6 hrs
STANDARD DEVIATION:	8.6
OPERATIONAL TIME:	720 hrs

OZONE Instantaneous Maximum (O₃ ppb)



WIND SPEED Instantaneous Maximum (WS kph)



1.0 Quality Control Activities

Quality control procedures are established to govern the performance of the monitoring equipment and to protect operational uptime. Data collected during QC/QA activities are assigned a data validation code to comply with the requirements outlined in Chapter 6, 4.1.1, DQ 4-A (AMD, 2016). Calibrations are deemed successful only if the AMD calibration acceptance limits are met (Chapter 7, 9.0, AMD 2016).

A daily zero-span test procedure is performed for each gaseous parameter by challenging the analyzer with a zero-air source and span gas. Daily review of the data ensures the zero and span check are within the required acceptance limits and do not deviate more than $\pm 10\%$ from the expected value. The total zero-span cycle is complete within an hour with the zero phase commencing at the beginning of the scheduled hour. This QC activity is conducted in accordance with Chapter 7, 4.0, Cal 4-A (AMD, 2016).

The allowable time for a zero-span check is one hour per calendar day. The time allotted for the zero-span check does not contribute to downtime and is identified with a data validation code of "S". If any additional zero-span response checks are performed, the time accrued during the QC activity is considered downtime and is identified with a data validation code of "S1". The initiation of an additional zero-span check may be warranted during the investigation of operational issues or suspect data.

Each month, a scheduled multipoint calibration is performed on each gas analyzer. Prior to any adjustments, an as-found response test is completed to obtain the zero reading of the analyzer and the response to the highest span concentration. The zero and high point test gases are then re-introduced into the analyzer to establish the zero and high set-points. Once these adjustments are satisfactory, a mid-point and a low-point test concentration is introduced. Additional multi-point calibrations are required if any of the conditions, outlined in Chapter 7, 2.1, Cal 2G (AMD, 2016) exist.

The time allotted for the first multi-point calibration is not considered downtime and is identified with a data validation code of "C". If any additional as-found response checks or multipoint calibrations are performed, the time accrued during the QC activity is considered downtime and is identified with a data validation code of "C1".

A mechanical wind system undergoes annual calibration, as a minimum, while an ultrasonic wind system is factory calibrated every two years (Chapter 6, 6.0, Cal 6-A, AMD 2016). Supplementary to this, a visual inspection of the equipment is performed during each scheduled monthly site visit.

The time allotted for the wind system calibration is not considered downtime and is identified with a data validation code of "C". If function checks or additional calibrations are performed, the time accrued during the QC activity is not considered downtime and is identified with a data validation code of "Q" and "C", respectively. If QC activity goes beyond 10% of the monthly operating time, the time exceeding 10% is considered downtime and is assigned a data validation code of "C1". Data identified with a data validation code of "Q" is in accordance with Chapter 6, 4.1.3 (AMD, 2016) which states QA/QC activities are not included when calculating data completeness.

High volume samplers are calibrated every three months, as a minimum, in accordance with Chapter 7, 7.0, Cal 7-B (AMD, 2016).

Where passive sampling is in practice, quality control samples will be deployed in accordance with Chapter 4, 3.0, 3.1.3. Method blanks, replicate samples and spiked blanks are exposed and handled in the same manner as each passive sample. To comply with the data submission requirements in Chapter 9, 3.1, the replicate and corresponding passive sample concentrations are reportable data values and have not been averaged.

As recommended in Chapter 6, 4.2 (AMD 2016), daily data review is conducted to verify data and avoid significant data losses. Automated flags, originating from the data-logger, and data anomalies are reviewed and may prompt the need to dispatch a technician for investigation and/or corrective action. Additionally, there are several automated alarm scenarios that serve to screen raw data, alert technicians and elicit investigation or corrective action.

Comparisons of the measured ambient concentrations to the corresponding AAAQO are assessed using the significant figures protocol in Chapter 9, 3.1.2. If the measurement is near the set objective, raw data may undergo necessary data adjustments to confirm a true exceedance. Should an exceedance occur, Maxxam will formally notify the client; however, the reporting protocol to AEP is defined by the client and may not involve Maxxam. Exceedance events are acknowledged in the report, based on the information available at the time.

2.0 Data Verification and Validation

The data validation procedures, outlined in Chapter 6, 4.0, AMD 2016, are used to accept, reject and qualify data. The data verification and validation process, and the current Data Collection and Management Process Flow Chart have been compiled from sections 4.2 to 4.6 (AMD, 2016) and are shown below.

Baseline adjustments are applied by interpolation between two valid zero checks, as determined by the Data Acquisition System. In the event that zero check results are not reliable, data may be adjusted by applying a constant offset to data collected between two adjacent zero checks. Both adjustment approaches are deemed acceptable by the AMD.

Table 1 (Chapter 6) outlines the quantitative parameter relationships to be considered and dictates that data adjustments are applied equally for NO/NO₂/NO_x and CH₄/NMHC/THC parameters. Below zero adjustments are applied to 1-hour averages, in accordance with Table 2 (Chapter 6), and are done after baseline corrections.

Instantaneous data, where provided, is provided for reference purposes and has not undergone zero correction. The minimum and maximum statistics are highlighted in the data table and are for reference only. The highlighted cells are based on the software's interpretation of the exact position of the minimum or maximum value. The visual presentation of these statistics may not be the obvious choice in a data range due to rounding, truncating or analyzer specifications.

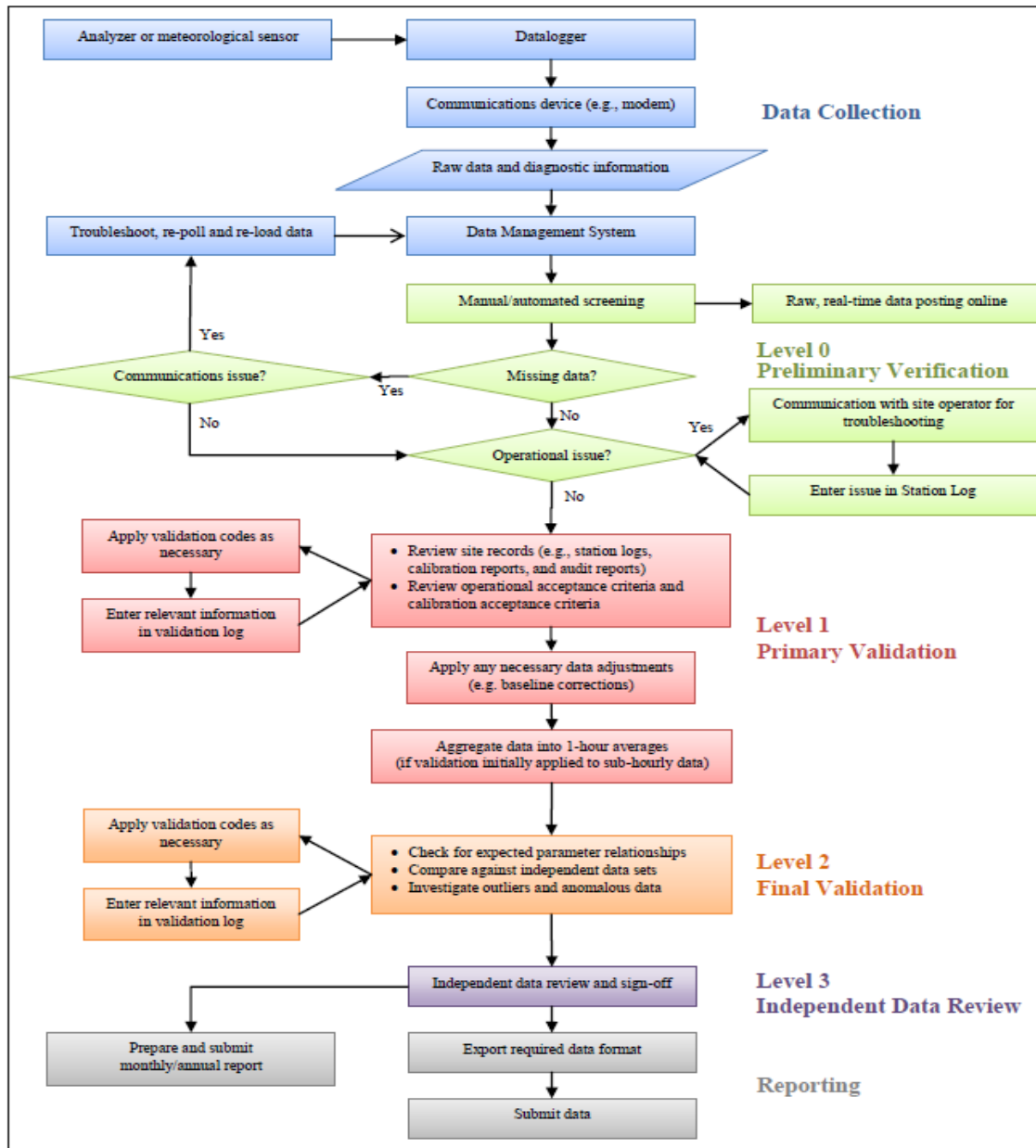
All calculations and reporting of results follow the methods described in the AMD, 2016.

There were no deviations from the prescribed methods.

AMD Data Verification and Validation Process

The following steps were used to complete the data verification and validation process:

Level 0 Preliminary Verification	Level 0 data are raw data obtained directly from the data acquisition system (DAS). At this level, data undergoes a certain amount of manual or automated screening and flagging. Screening checks include: a) identification of periods of missing data; b) verification of time stamps against reference time; c) verification that instrument diagnostics/data-logger flags indicate normal operation; d) comparison of data to upper and lower limits; e) rate of change flagging indicating that data changed too rapidly or not at all; and f) verification that zero, span and multipoint performance checks are within specifications. This level of verification is performed on a daily basis.
Level 1 Primary Validation	Primary validation involves more thorough evaluation and documentation of issues identified during data screening, along with appropriate application of data validation codes. Level 1 activities include: a) review of all screening flags assigned during preliminary verification; b) review of all supporting site information and documentation; c) review of operational acceptance limits for each parameter/analyzer; d) review of daily zero/span and monthly calibration results for all gaseous parameters; and e) application of any necessary adjustments to data (e.g. baseline adjustments, below zero adjustments). This level of validation is performed on a monthly basis.
Level 2 Final Validation	The purpose of Level 2 validation is to verify that there are no inconsistencies among related data, or among regional data measured at nearby sites. At this level of review, some general knowledge of pollutant and meteorological behavior can be used to determine if data is suspect.
Level 3 Independent Data Review	Level 3 validation involves a final cursory review of validated data, and is completed by an individual independent of both field operations and primary data validation. At this level, a final independent QA review/endorsement is performed before data is submitted to Alberta Environment and Parks.
Post-Final Validation	The Post-Final Validation step serves to re-evaluate validated data for errors or omissions discovered and/or suspected after the initial monthly data submittal. This level of validation is performed on an annual basis, when annual reporting is required or requested.



Source: Air Monitoring Directive (December 2016), Chapter 6, Ambient Data Quality
Figure 1 Data Collection and Management Process Flow Chart



Validation Certificate Form

Client: <u>Lakeland Industry & Community Association</u>	Project #: <u>2833-2019-04-39-C</u>
Site: <u>Bonnyville East Continuous Monitoring Station</u>	Contact: <u>Mike Bisaga</u>

Level 0 Preliminary Verification	<u><i>bimadeniji</i></u>	Date <u>28- May- 2019</u>
Level 1 Primary Validation	<u><i>bimadeniji</i></u>	Date <u>28- May- 2019</u>
Level 2 Final Validation	<u><i>bimadeniji</i></u>	Date <u>29- May- 2019</u>
Level 3 Independent Data Review	<u><i>msalmbg</i></u>	Date <u>31- May- 2019</u>
Post-Final Validation	<u>NA</u>	Date <u>NA</u>

Notes
The Post-Final Validation step serves to re-evaluate the data that errors or omissions are discovered and/or suspected after the initial submittal of data. This validation is performed on an annual basis.

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Lakeland Industry & Community Association

APRIL 2019
Ambient Air Monitoring Calibration Report
- COLD LAKE SOUTH STATION-
CAL-LICA-201904-01174

Station Operation and Maintenance:
Maxxam Analytics

Data Validation and Report:
Maxxam Analytics

June 4, 2019

Alberta Environment and Parks (AEP)
Air.Reporting@gov.ab.ca

June 4, 2019

Subject:

April 2019 Ambient Air Monitoring Calibration Report Submission for the LICA Cold Lake South station

Lakeland Industry & Community Association (LICA) is pleased to submit the ambient air monitoring calibration report for the LICA Cold Lake South AQM Station in the month of April 2019. This calibration report includes equipment calibration records, calibrator performance audit records and calibration gas audit records for the equipment that were used this month. This calibration report is prepared by the LICA network contractor.

Should you have any questions, please don't hesitate to contact us.

Respectfully,



Michael Bisaga
Technical Program Manager
Lakeland Industry & Community Association
780-266-7068
monitoring@lica.ca



Lily Lin
Data & Reporting Specialist
587-225-2248
monitoring@lica.ca

APRIL 1 - 30, 2019
MONTHLY CALIBRATION REPORT
Project #: 2833-2019-04-23-C
LICA-201904

Prepared for:

Lakeland Industry & Community Association

Mike Bisaga

5107 50 St.

Bonnyville, Alberta T9N 2J7

monitoring@lica.ca

780-266-7068

Monitoring Station

**Cold Lake South Continuous Monitoring
Station**

Date of Report Issuance: May 29, 2019



#1 - 2080 39 Avenue NE, Calgary AB, T2E 6P7

CAL-LICA-201904-01174

Page 3 of 31



Thermo 431-TLE Sulphur Dioxide Analyzer Calibration

Date:	April 24, 2019	Barometer/B.P./units:	F.S. #05544, expires Jan 17, 2020	940	millibars
Company/Airshed:	LICA	Thermometer/Station Temp:	F.S. 160348895, expires June 19, 2020	24	°C
Location/Station Name:	Cold Lake South	Weather Conditions:	Mainly sunny		
Parameter:	Sulphur Dioxide	Calibration Purpose:	routine monthly		
Start Time 24 hr. (mst):	7:50	Performed By/Reviewer:	Alex Yakupov	Rob Fisher	
End Time 24 hr. (mst):	12:12	Cal Gas Expiry Date:	August 20, 2026		
Calibration Method:	Gas Dilution	Converter Model & s/n (if applicable):	n/a		
Analyzer:		Range ppb:	500		
Serial Number/Owner:	11800260018 LICA	As Found C.F.:	0.993		
Last Calibration Date:	March 14, 2019	New C.F.:	1.001		
Previous C.F.:	1.000				

Calibration Standards: Low Flow Meter ID/Expiry Date: N/A High Flow Meter ID/Expiry Date: N/A Calibrator ID/Expiry Date: API id# 690 expires April 16, 2020 Cal Gas Cylinder I.D. #: LL 107918 Cal Gas Conc. (ppm): 49.5	Standard Calibration Points for Ranges <table border="1"> <tr><td>Point</td><td>ppb</td></tr> <tr><td>High</td><td>380</td></tr> <tr><td>Mid</td><td>180</td></tr> <tr><td>Low</td><td>90</td></tr> </table>	Point	ppb	High	380	Mid	180	Low	90
Point	ppb								
High	380								
Mid	180								
Low	90								

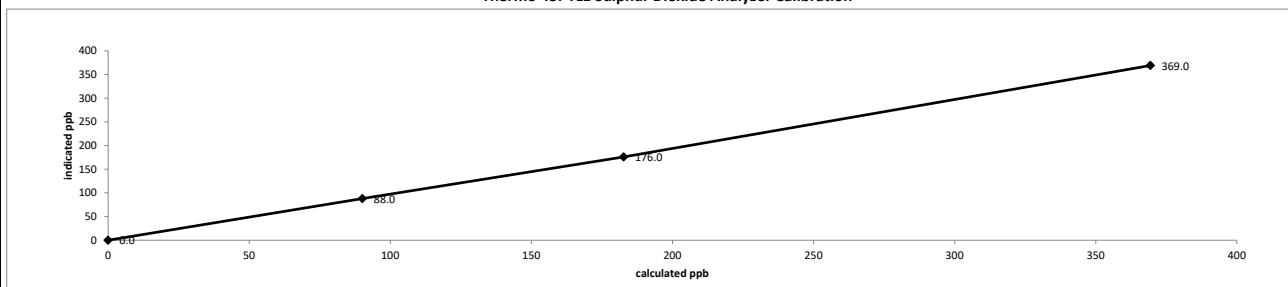
ALL POINTS ARE 15 MINUTES OF STABILITY AS OF SEPTEMBER 23, 2015

Calibrator Flow Rates (cc/min)				Calculated Concentration (ppb):	Indicated Concentration (ppb):	Correction Factors (C.F.):
Point	Diluent	Cal Gas	Total			
as found zero	4896	0.00	4896	0.0	0	n/a
as found high	5028	37.80	5066	369.3	372	0.993
adjusted zero	4896	0.00	4896	0.0	0	n/a
adjusted high	5028	37.80	5066	369.3	369	1.001
mid	4859	18.00	4877	182.7	176	1.038
low	4879	8.90	4888	90.1	88	1.024
calibrator zero	4896	0.00	4896	0.0	0	n/a
Average C.F. =						1.021

Linear Regression/Calibration Results:

Correlation Coefficient =	1.000	LIMITS	> or = 0.995
Slope =	1.001		0.95-1.05
b (Intercept as % of full scale) =	0.44%		± 3% F.S.
% change in C.F. from last cal =	0.71%		± 10%

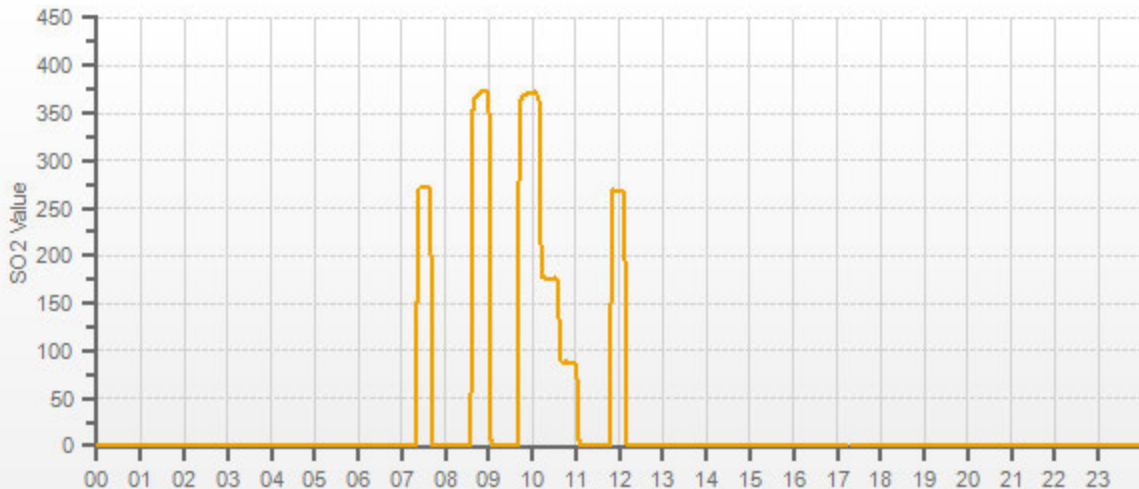
Thermo 431-TLE Sulphur Dioxide Analyzer Calibration



As found:	As left:		
Bkg:	2.01	Bkg:	1.97
Coef:	1.032	Coef:	1.019
Pmt:	-690.8	Pmt:	-690.8
Flash:	1043	Flash:	1044
Internal:	33.1	Internal:	31.8
Chamber:	44.8	Chamber:	44.8
Perm Oven Gas:	45.01	Perm Oven Gas:	45.00
Perm Oven Heater:	44.30	Perm Oven Heater:	44.29
Pressure:	682.8	Pressure:	682.8
Sample Flow:	0.449	Sample Flow:	0.488
Lamp Intensity:	91	Lamp Intensity:	91
Converter:	n/a	Converter:	n/a
Converter Set:	n/a	Converter Set:	n/a
Averaging Time:	120	Averaging Time:	120
Expected Value:	265.0	Expected Value:	268.0

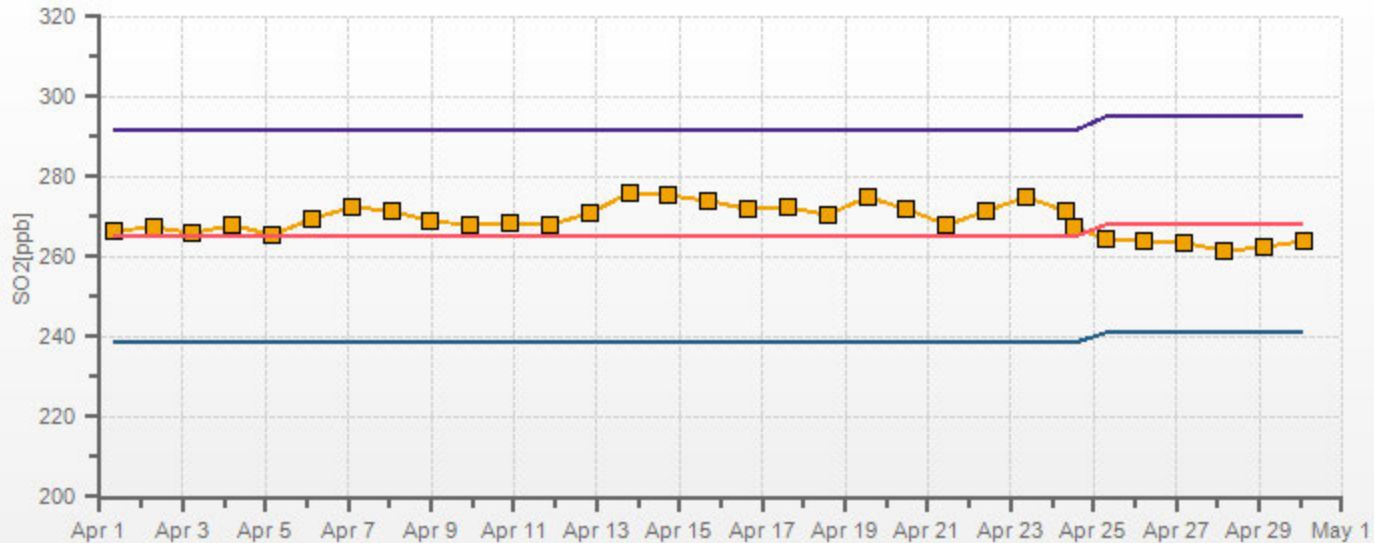
Comments:
 The analyzer sample inlet filter was changed.
 The analyzer cooling fan filter(s) were cleaned.
 The manifold blower was found to be working normally.

SO2[ppb]



CAL-LICA-2019-04-17

SO2[ppb] Calibration: LICA COLD LAKE SOUTH Monthly: 19/04 Type: Span



CAL-LICA-201904-01174

Page 6 of 31



Thermo 450i Total Reduced Sulphur Analyzer Calibration

Date:	April 24, 2019	Barometer/B.P./units:	F.S. #05544, expires Jan 17, 2020	940	millibars
Company/Airshed:	LICA	Thermometer/Station Temp:	F.S. 160348895, expires June 19, 2020	24.0	°C
Location/Station Name:	Cold Lake South	Weather Conditions:	Mainly sunny		
Parameter:	Total Reduced Sulphur	Calibration Purpose:	routine monthly		
Start Time 24 hr. (mst):	7:50	Performed By/Reviewer:	Alex Yakupov	Rob Fisher	
End Time 24 hr. (mst):	12:31	Cal Gas Expiry Date:	October 20, 2020		
Calibration Method:	Gas Dilution	Converter Model & s/n (if applicable):	CDNOVA / Model CDN 101 / #501		
Analyzer:					
Serial Number/Owner:	812728560 LICA	Range ppb:	100		
Last Calibration Date:	March 14, 2019	As Found C.F.:	1.002		
Previous C.F.:	0.999	New C.F.:	0.999		

Calibration Standards: Low Flow Meter ID/Expiry Date: N/A High Flow Meter ID/Expiry Date: N/A Calibrator ID/Expiry Date: Sabio id# 11900613 expires April 16, 2020 Cal Gas Cylinder I.D. #: EY 0001003 Cal Gas Conc. (ppm): 9.55	Standard Calibration Points for Ranges <table border="1"> <tr><th>Point</th><th>ppb</th></tr> <tr><td>High</td><td>78</td></tr> <tr><td>Mid</td><td>38</td></tr> <tr><td>Low</td><td>19</td></tr> </table>	Point	ppb	High	78	Mid	38	Low	19	SO2 Scrubber Check (10 minutes): Start/End Time 24 hr.: 08:11 / 08:27 SO2 Analyzer Range: 500 Target Concentration (ppb): 380 As Found Zero: 0.3 Analyzer Response (ppb): 0.3 Zero Corrected Result (ppb): 0.0
Point	ppb									
High	78									
Mid	38									
Low	19									

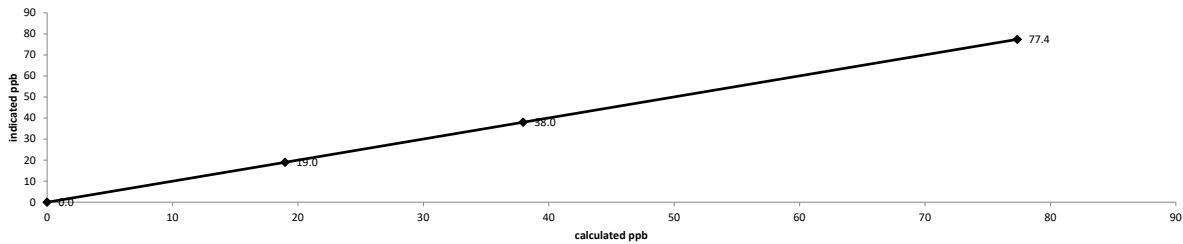
ALL POINTS ARE 15 MINUTES OF STABILITY AS OF SEPTEMBER 23, 2015

Calibrator Flow Rates (cc/min)				Calculated Concentration (ppb):	Indicated Concentration (ppb):	Correction Factors (C.F.):
Point	Diluent	Cal Gas	Total			
as found zero	7499	0.00	7499	0.0	0.3	n/a
as found high	7482	61.10	7543	77.4	77.5	1.002
adjusted zero	7499	0.00	7499	0.0	0	n/a
adjusted high	7482	61.10	7543	77.4	77.4	0.999
mid	7469	29.80	7499	38.0	38	0.999
low	7485	14.90	7500	19.0	19	0.999
calibrator zero	7499	0.00	7499	0.0	0	n/a
Average C.F. =						0.999

Linear Regression/Calibration Results:

Correlation Coefficient =	1.000	LIMITS	> or = 0.995
Slope =	0.999		0.95-1.05
b (Intercept as % of full scale) =	-0.01%		± 3% F.S.
% change in C.F. from last cal =	-0.30%		± 10%

Thermo 450i Total Reduced Sulphur Analyzer Calibration

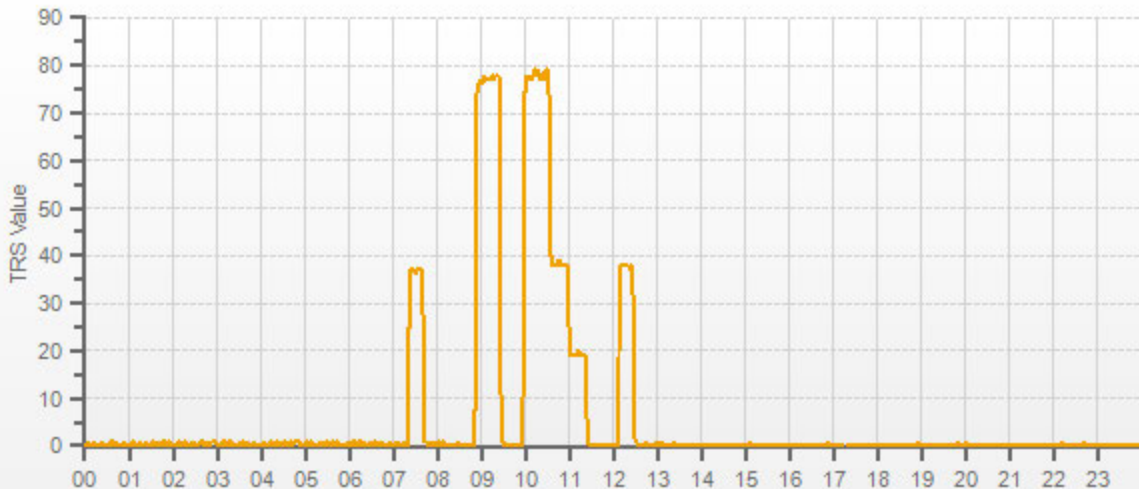


As found:		As left:	
Bkg:	15.4	Bkg:	15.8
Coef:	0.906	Coef:	0.910
Pmt:	-650.8	Pmt:	-650.8
Flash:	748	Flash:	745
Internal:	34.5	Internal:	33.3
Chamber:	45.2	Chamber:	45.0
Converter Temp:	825	Converter Temp:	825
Converter Set:	825	Converter Set:	825
Perm Oven Gas:	45.01	Perm Oven Gas:	45.00
Perm Oven Htr:	44.38	Perm Oven Htr:	44.37
Pressure:	630.4	Pressure:	630.1
Sample Flow:	0.486	Sample Flow:	0.488
Lamp Intensity:	91	Lamp Intensity:	91
Averaging Time:	120	Averaging Time:	120
Expected Value:	36.5	Expected Value:	37.7

Comments:

The analyzer sample inlet filter was changed.
 The analyzer cooling fan filter(s) were cleaned.
 The manifold blower was found to be working normally.

— TRS[ppb]



CAL-LICA-2019-04-01174

TRS[ppb] Calibration: LICA COLD LAKE SOUTH Monthly: 19/04 Type: Span



CAL-LICA-201904-01174

Page 9 of 31



Thermo 55i Methane/Non-Methane Analyzer Calibration

Date:	April 24, 2019	Barometer/B.P./units:	F.S. #05544, expires Jan 17, 2020	940	millibars
Company/Airshed:	LICA	Thermometer/Station Temp:	F.S. 160348895, expires June 19, 2020	24	°C
Location/Station Name:	Cold Lake South	Weather Conditions:	Mainly sunny		
Parameter:	CH4 / NMHC / THC	Calibration Purpose:	routine monthly		
Start/End Time 24 hr. (mst):	13:48 / 17:13	Performed By/Reviewer:	Alex Yakupov	Rob Fisher	
Calibration Method:	Gas Dilution	Cal Gas Expiry Date:	August 1, 2026		

Analyzer:		Correction Factors:			
Serial Number/Owner:	1236656188 Maxxam	Previous C.F.:	As Found C.F.:	New C.F.:	
Measured Flow:	1114	CH ₄ =	1.000	1.060	1.000
Last Calibration Date:	March 27, 2019	NMHC =	1.000	1.049	1.000
Range ppm:	20 CH4/20 NMHC/40 THC	THC =	1.000	1.055	1.000

Calibration Standards:		Standard Calibration Points for Analyzer Range of 20/20/40 ppm			
Low Flow Meter ID/Expiry Date:	N/A	Point	CH4	NMHC	THC
High Flow Meter ID/Expiry Date:	N/A	High	13.00	13.00	26.00
Calibrator ID/Expiry Date:	API id# 690 expires April 16, 2020	Mid	7.00	7.00	14.00
Cal Gas Cylinder I.D. #:	LL 29687	Low	3.00	3.00	6.00
CH4 Cylinder Conc. =	598.0 198.0 = C ₂ H ₆ Cylinder Conc.				
CH ₄ expressed as C ₂ H ₆ =	544.5 1142.5 = total CH4 equivalent				

ALL POINTS ARE 15 MINUTES OF STABILITY AS OF SEPTEMBER 23, 2015

Point	Calibrator Flow Rates (cc/min)			Calculated CH ₄ (ppm)	Calculated NMHC (ppm)	Calculated THC (ppm)	Indicated CH ₄ (ppm)	Indicated NMHC (ppm)	Indicated THC (ppm)	Correction Factors:		
	Diluent	Cal Gas	Total Flow							CH ₄	NMHC	THC
as found zero	2500	0.00	2500	0.00	0.00	0.00	0.00	0.00	0.00	n/a	n/a	n/a
as found high	2442	58.00	2500	13.87	12.63	26.51	13.09	12.04	25.13	1.060	1.049	1.055
adjusted zero	2500	0.00	2500	0.00	0.00	0.00	0.00	0.00	0.00	n/a	n/a	n/a
adjusted high	2442	58.00	2500	13.87	12.63	26.51	13.87	12.63	26.50	1.000	1.000	1.000
mid	2469	31.00	2500	7.42	6.75	14.17	7.51	6.82	14.34	0.987	0.990	0.988
low	2486	14.00	2500	3.35	3.05	6.40	3.42	3.00	6.43	0.979	1.016	0.995
calibrator zero	2500	0.00	2500	0.00	0.00	0.00	0.00	0.00	0.00	n/a	n/a	n/a
Average C.F. =										0.989	1.002	0.994

Linear Regression/Calibration Results:				
Correlation Coefficient =	CH ₄	NMHC	THC	LIMITS
	1.000	1.000	1.000	> or = 0.995
Slope =	0.999	1.002	1.000	0.95-1.05
b (Intercept as % of full scale) =	0.23%	-0.04%	0.11%	± 3% F.S.
% change in C.F. from last cal =	-5.99%	-4.92%	-5.48%	± 10%

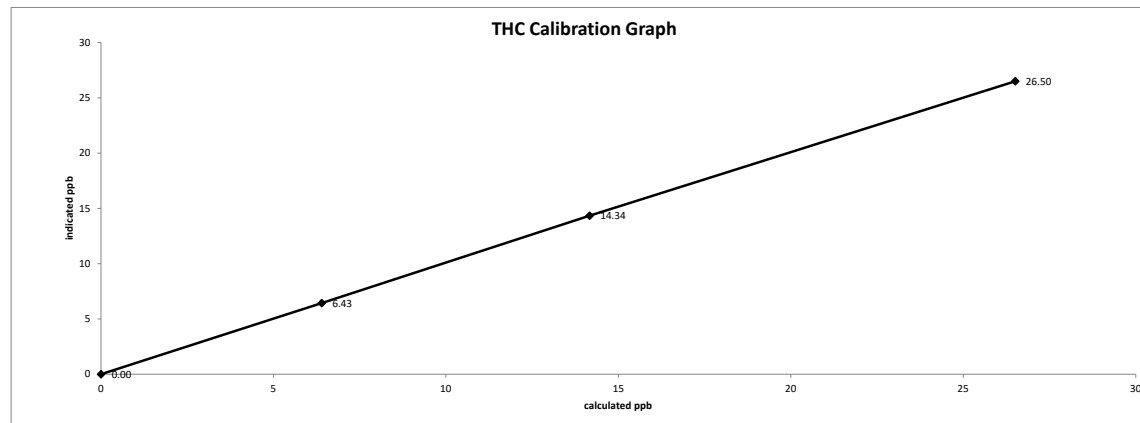
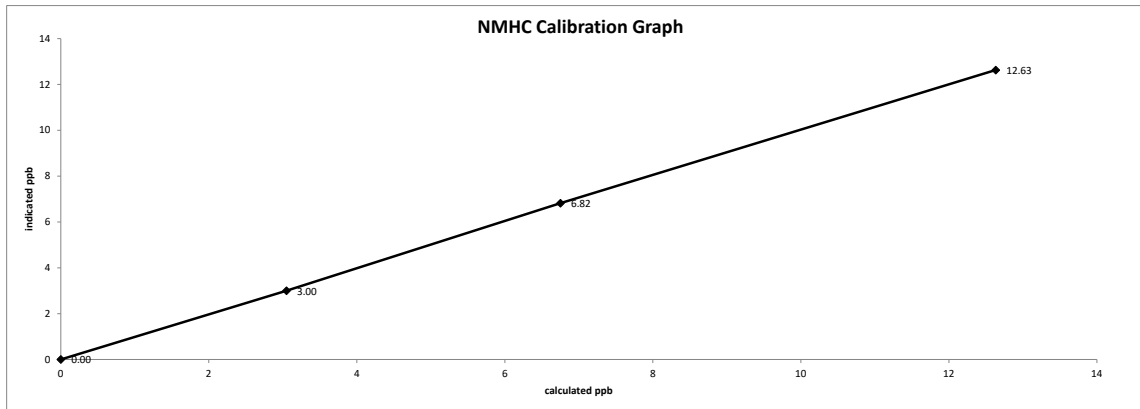
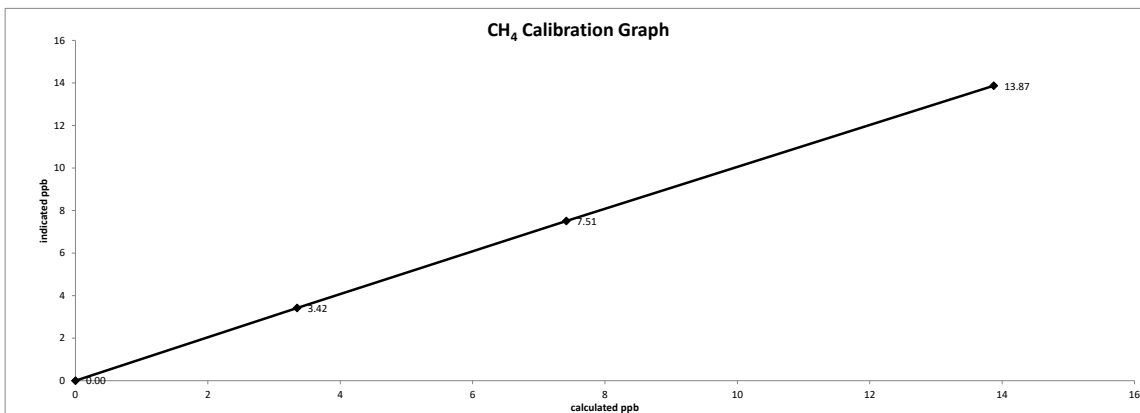
As Left Instrument Diagnostics:

Interface Board Voltages:	Bias Supply: -288.2	Calibration History cnt'd:	NM Peak Area: 92132
Temperatures:	Detector Oven: 175.0	Crucial Settings:	Methane Start: n/a
	Filter: 175.0		Methane End: n/a
Cylinder Pressures/reg.:	Column Oven: 75.0		Backflush: n/a
	Internal: 33.9		NMHV Start: n/a
	Carrier: 1700 50	Run History>1:	NMHC End: n/a
	Fuel: 2000 50		Date: Apr 24, 2019
Internal Pressures:	Span Gas: 1200 10		Time: 15:06
	Zero Air Generator: 50		CH ₄ PK HT: 17931
	Carrier: 29.2		CH ₄ RT: 12.6
FID Status:	Fuel: 44.9		CH ₄ Baseline: 2935
	Air: 31.7		CH ₄ LOD: 55
	Status: LIT		CH ₄ SD: 18
	Counts: 32855		CH ₄ CONC: 13.89
Flame and Power Stats:	Flame: 369.1		NM PK HT: 3089
	Det Base: 175.0		NM Peak Area: 83351
	Last Power On: Mar 26, 2019 / 07:53		NM CONC: 12.67
	Flameouts: 1		NM Base Start: 2872
Calibration History:	Det Oven at Start: 167.9		NM Base End: 2892
	Col Oven at Start: 74.4		NM LOD: 34
	Time: 09:48		NM Start IDX: 12
	Type: SPAN		NM End IDX: 92
	Status: GOOD		NM Max Slope: 1.8e+02
	Check/Adjust: ADJUST		NM Min Slope: -1.4e+02
	CH ₄ Span Conc: 14.59		NM PT Count: 74
	CH ₄ SP Ratio: 0.00073	Expected Values:	Previous CH ₄ : 10.06
	CH ₄ RT: 12.6		Previous NMHC: 10.55
	CH ₄ PK IDX: 23		Previous THC: 20.61
CH ₄ PK HT: 19986		New CH ₄ : 10.56	
NM Span Conc: 13.28		New NMHC: 11.03	
NM SP Ratio: 0.000144		New THC: 21.59	

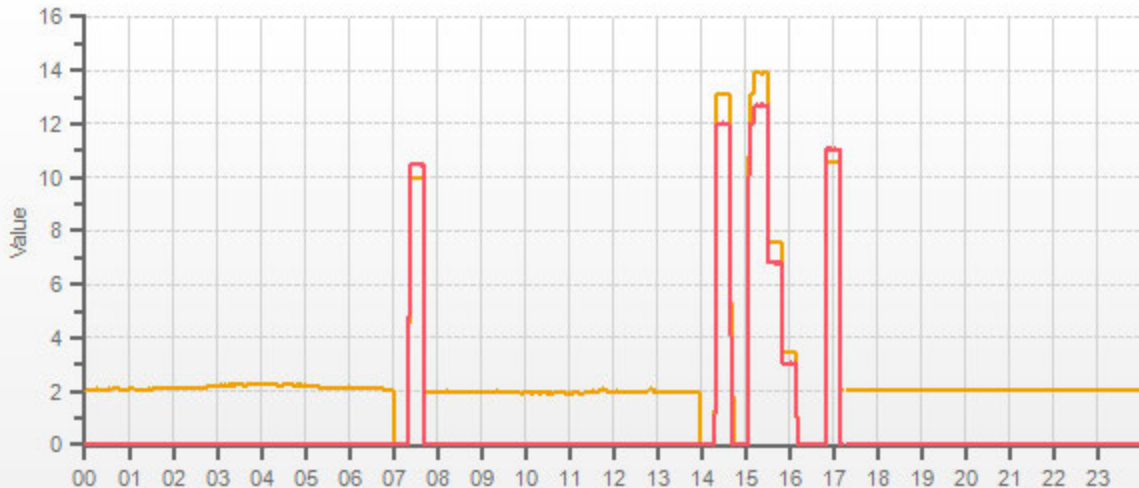
Comments:
 The analyzer sample inlet filter was changed.
 No zero adjustment was required/made.
 The analyzer cooling fan filter(s) were cleaned.
 The manifold blower was found to be working normally.

Date: April 24, 2019
Company/Airshed: LICA
Location/Station Name: Cold Lake South

Start/End Time 24 hr. (mst): 13:48 / 17:13
Calibration Purpose: routine monthly
Calibration Method: Gas Dilution

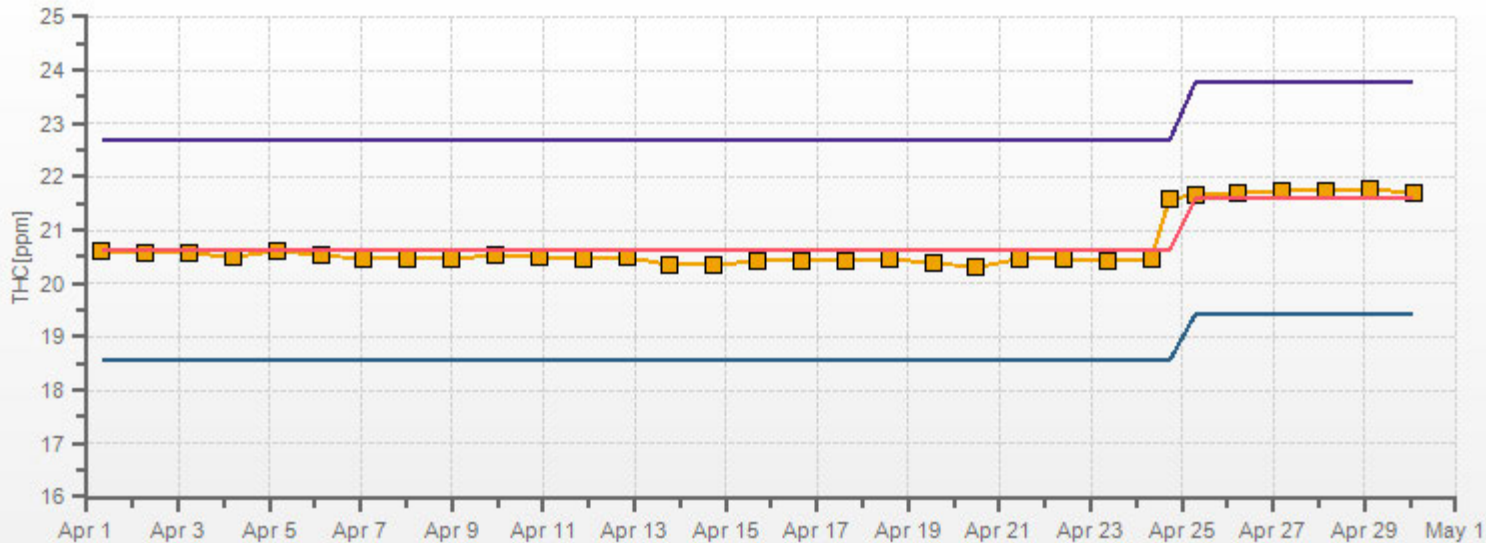


CH4[ppm] NMHC[ppm]



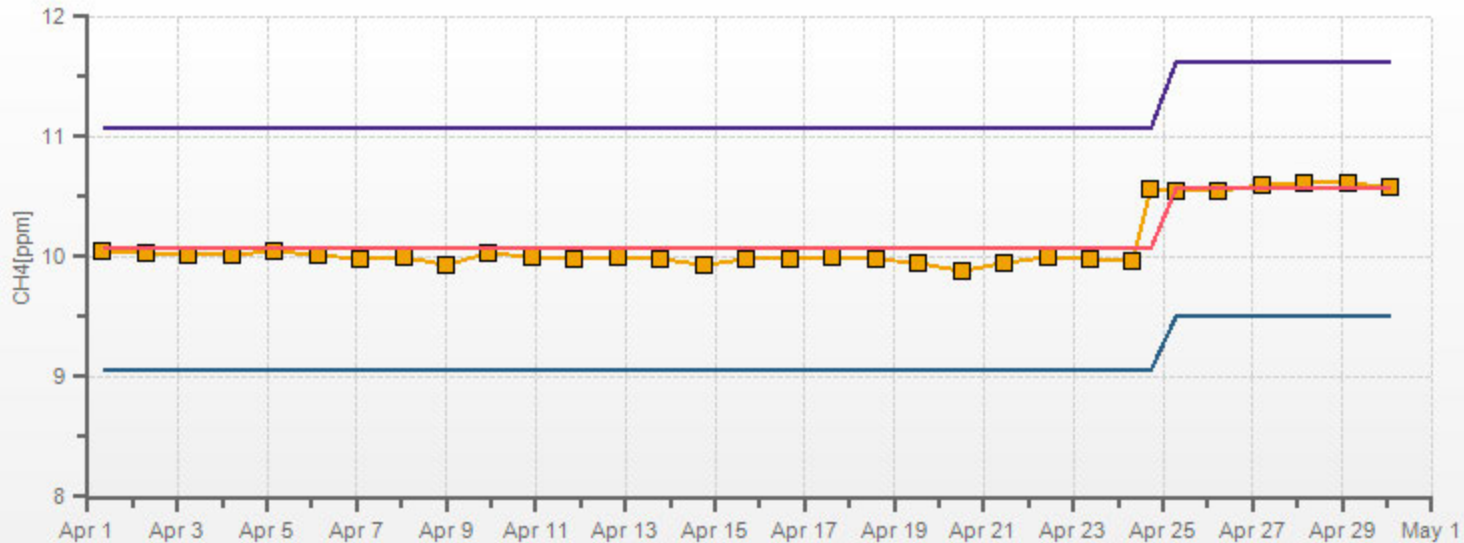
CAL-LICA-2019-04-01174

THC[ppm] Calibration: LICA COLD LAKE SOUTH Monthly: 19/04 Type: Span

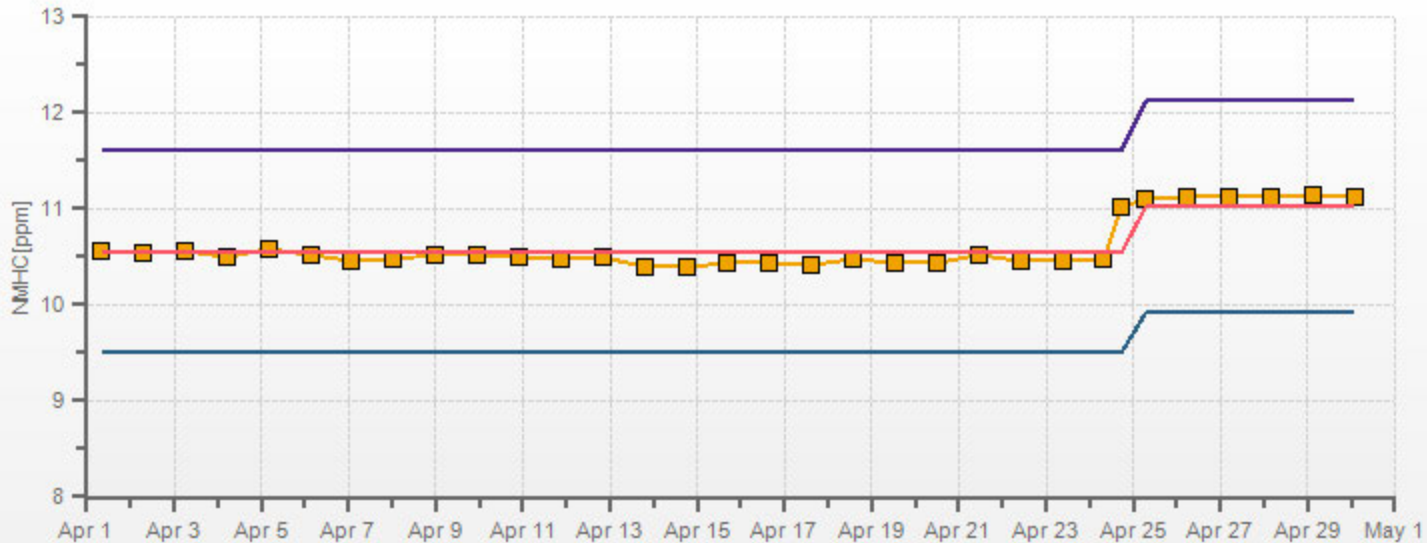


CAL-LICA-201904-01174

CH4[ppm] Calibration: LICA COLD LAKE SOUTH Monthly: 19/04 Type: Span



CAL-LICA-201904-01174



CAL-LICA-201904-01174



Thermo 42i NO-NO2-NOx Analyzer Calibration

Date: April 24, 2019	Barometer/B.P./units: F.S. #05544, expires Jan 17, 2020	940	millibars
Company/Airshed: LICA	Thermometer/Station Temp: F.S. 160348895, expires June 19, 2020	24.0	°C
Location/Station Name: Cold Lake South	Weather Conditions: Mainly sunny		
Start/End Time 24 hr. (mst): 7:50 / 14:31	Calibration Purpose: routine monthly		
G.P.T. to be used for Ozone?: No	Performed By/Reviewer: Alex Yakupov	Rob Fisher	
Calibration Method: Gas Dilution & Gas Phase Titration	Cal Gas Expiry Date: August 20, 2026		

Analyzer: Serial Number/Owner: 1505664393 LICA Last Calibration Date: March 14, 2019 Range ppb: 500	Correction Factors: <table border="1" style="width: 100%; border-collapse: collapse;"> <thead> <tr> <th></th> <th>Previous C.F.:</th> <th>As Found C.F.:</th> <th>New C.F.:</th> </tr> </thead> <tbody> <tr> <td>NO =</td> <td>1.001</td> <td>1.000</td> <td>1.000</td> </tr> <tr> <td>NO₂ =</td> <td>1.000</td> <td>0.996</td> <td>1.000</td> </tr> <tr> <td>NOx =</td> <td>1.000</td> <td>0.999</td> <td>0.999</td> </tr> </tbody> </table>		Previous C.F.:	As Found C.F.:	New C.F.:	NO =	1.001	1.000	1.000	NO ₂ =	1.000	0.996	1.000	NOx =	1.000	0.999	0.999
	Previous C.F.:	As Found C.F.:	New C.F.:														
NO =	1.001	1.000	1.000														
NO ₂ =	1.000	0.996	1.000														
NOx =	1.000	0.999	0.999														

Calibration Standards: Low Flow Meter ID/Expiry Date: N/A High Flow Meter ID/Expiry Date: N/A Calibrator ID/Expiry Date: API id# 690 expires April 16, 2020 Cal Gas Cylinder I.D. #: LL 107918 Cal Gas Conc. (ppm): 50.1 50.2	Standard Calibration Points for a Range of: 500 ppb <table border="1" style="width: 100%; border-collapse: collapse;"> <thead> <tr> <th>Point</th> <th>Target NO (ppb)</th> <th>Target NO₂ (ppb)</th> <th>Cc Ozone ?</th> </tr> </thead> <tbody> <tr> <td>High</td> <td>380</td> <td>250</td> <td>n/a</td> </tr> <tr> <td>Mid</td> <td>180</td> <td>145</td> <td>n/a</td> </tr> <tr> <td>Low</td> <td>90</td> <td>50</td> <td>n/a</td> </tr> <tr> <td>Extra Point #1</td> <td>n/a</td> <td>n/a</td> <td>n/a</td> </tr> <tr> <td>Extra Point #2</td> <td>n/a</td> <td>n/a</td> <td>n/a</td> </tr> </tbody> </table>	Point	Target NO (ppb)	Target NO ₂ (ppb)	Cc Ozone ?	High	380	250	n/a	Mid	180	145	n/a	Low	90	50	n/a	Extra Point #1	n/a	n/a	n/a	Extra Point #2	n/a	n/a	n/a
Point	Target NO (ppb)	Target NO ₂ (ppb)	Cc Ozone ?																						
High	380	250	n/a																						
Mid	180	145	n/a																						
Low	90	50	n/a																						
Extra Point #1	n/a	n/a	n/a																						
Extra Point #2	n/a	n/a	n/a																						

ALL POINTS ARE 15 MINUTES OF STABILITY AS OF SEPTEMBER 23, 2015

Calibrator Flow Rates (cc/min)				Calculated NO	Calculated NOx	Indicated NO	Indicated NOx	NO C.F.	NOx C.F.
Point	Diluent	Cal Gas	Total Flow	(ppb)	(ppb)	(ppb)	(ppb)		
as found zero	4896	0.0	4896	0	0	0.0	0.0	n/a	n/a
as found high	5028	37.8	5066	373.8	374.6	374.0	375.0	1.000	0.999
adjusted zero	4896	0.00	4896	0.0	0.0	0.0	0.0	n/a	n/a
adjusted high	5028	37.80	5066	373.8	374.6	374.0	375.0	1.000	0.999
mid	4859	18.00	4877	184.9	185.3	178.0	178.0	1.039	1.041
low	4879	8.90	4888	91.2	91.4	90.0	90.0	1.014	1.016
calibrator zero	4896	0.00	4896	0	0	0.0	0.0	n/a	n/a
Average C.F.=								1.017	1.018

ALL POINTS ARE 15 MINUTES OF STABILITY AS OF SEPTEMBER 23, 2015

Calibrator Flow Rates (cc/min)				Calibrator Setting	Indicated NO	Indicated NOx	Indicated NO ₂	NO drop	NO ₂ gain	NO ₂ C.F.
Point	Diluent	Cal Gas	Total Flow	volts or ppb	(ppb)	(ppb)	(ppb)	(ppb)	(ppb)	(ppb)
NOx reference	5028	37.80	5066	0.0	376.0	376.0	0.0	0.0	0.0	
as found high NO2	5028	37.80	5066	250.0	120.0	377.0	257.0	256.0	257.0	0.996
adjusted high NO2	5028	37.80	5066	250.0	120.0	376.0	256.0	256.0	256.0	1.000
gpt mid	5028	37.80	5066	145.0	229.0	376.0	147.0	147.0	147.0	1.000
gpt low	5028	37.80	5066	45.0	325.0	376.0	51.0	51.0	51.0	1.000
Average NO ₂ C.F.=										1.000

Linear Regression/Calibration Results:

	NO	NOx	NO ₂	LIMITS
Correlation Coefficient =	1.000	1.000	1.000	> or = 0.995
Slope =	1.000	0.999	1.000	0.95-1.05
b (Intercept as % of full scale)=	-0.38%	-0.42%	0.00%	± 3% F.S.
% change in C.F. from last cal=	0.15%	0.12%	0.39%	± 10%
NO2 converter efficiency			1.00	0.96 to 1.04

As found:		As left:	
NO Bkg:	4.6	NO Bkg:	4.6
NOx Bkg:	5.0	NOx Bkg:	4.8
NO Coef:	1.093	NO Coef:	1.090
NO2 Coef:	0.993	NO2 Coef:	0.998
NOx Coef:	1.001	NOx Coef:	1.000
PMT:	-854.7	PMT:	-855.1
Internal:	30.0	Internal:	29.9
Chamber:	50.1	Chamber:	50.1
Cooler:	-2.8	Cooler:	-2.8
NO2 Converter:	324.2	NO2 Converter:	326.8
NO2 Converter Set:	325.0	NO2 Converter Set:	325.0
Perm Oven Gas:	35.02	Perm Oven Gas:	35.00
Perm Oven Heater:	34.32	Perm Oven Heater:	34.27
Pressure:	182.3	Pressure:	182.3
Flow:	0.719	Flow:	0.717
Ozonator Flow:	OK	Ozonator Flow:	OK
Expected Value NO:	2	Expected Value NO:	2
Expected Value NO2:	297	Expected Value NO2:	290
Expected Value NOx:	299	Expected Value NOx:	292

Comments:

The analyzer sample inlet filter was changed.

The manifold blower was found to be working normally.

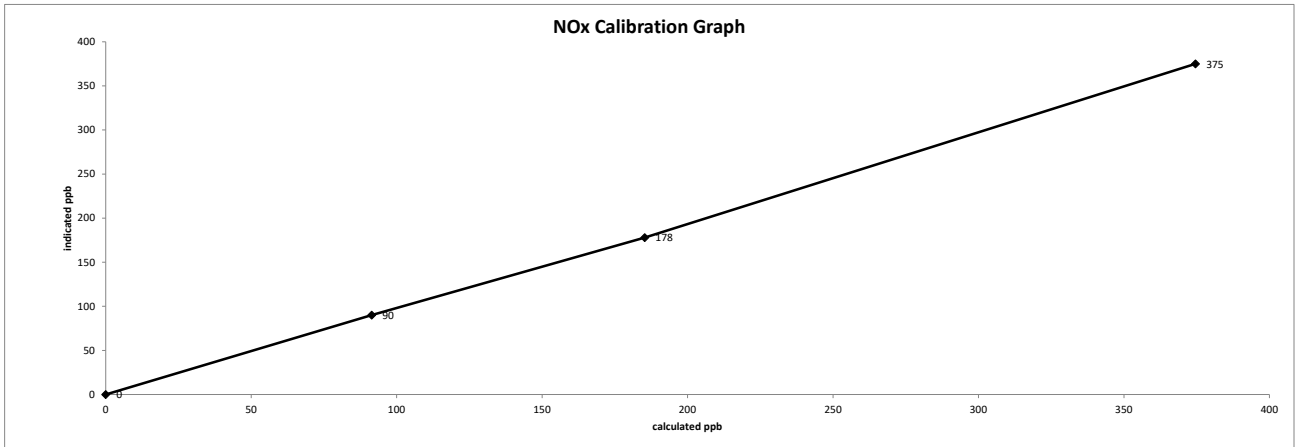
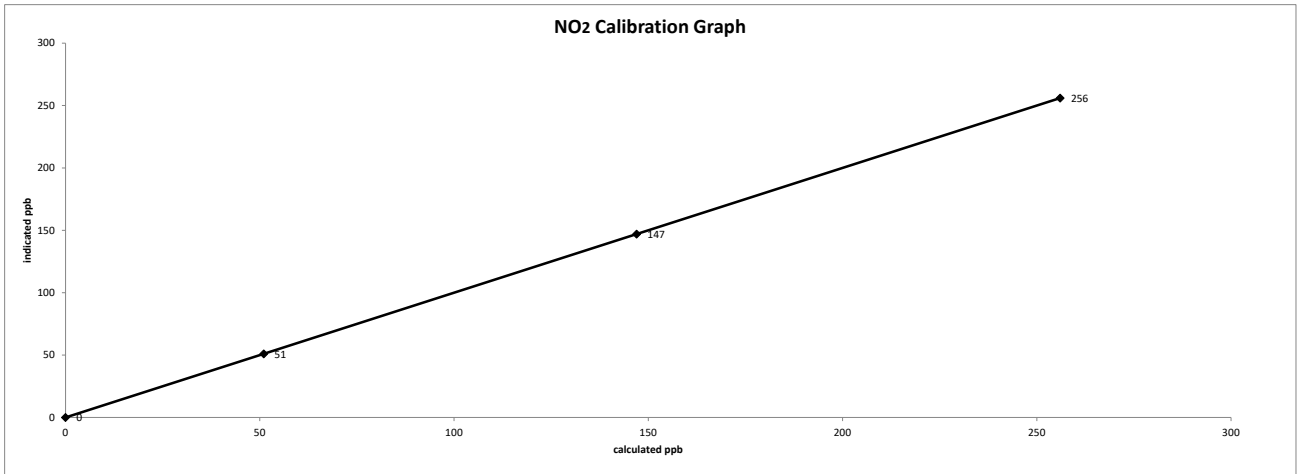
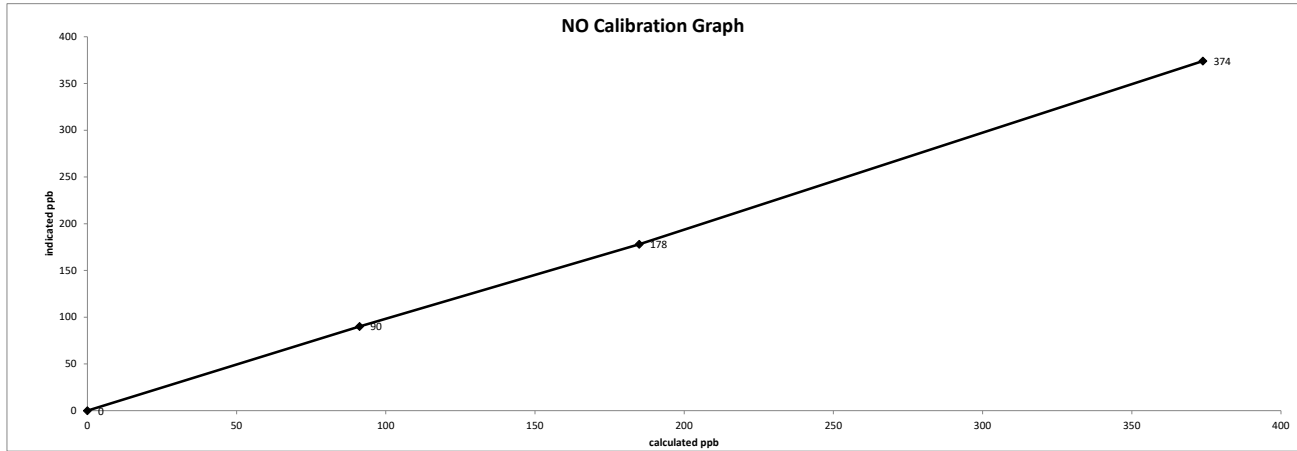
The converter cooling fan filter was cleaned.

The analyzer cooling fan filter(s) were cleaned.

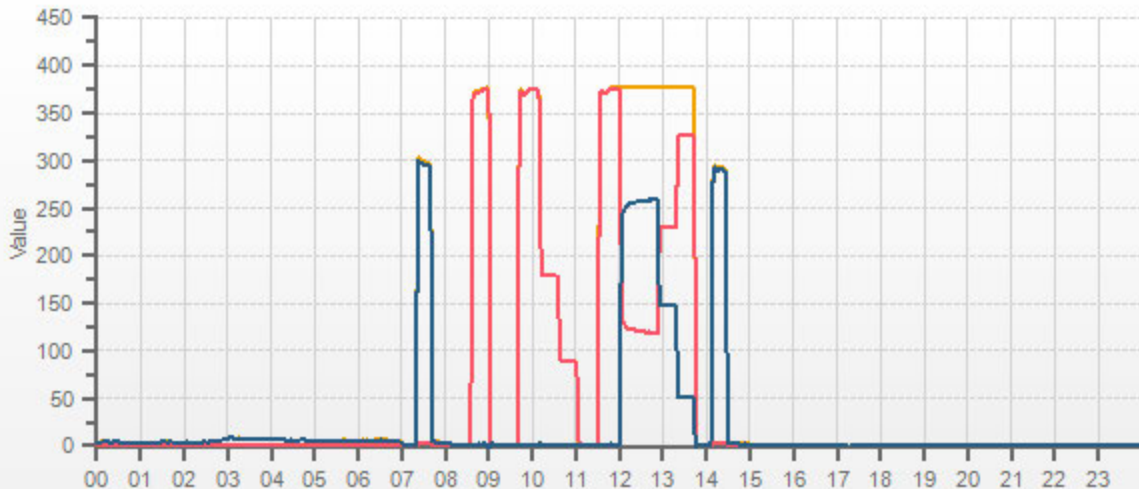
Date: April 24, 2019
Company/Airshed: LICA
Location/Station Name: Cold Lake South

Start/End Time 24 hr. (mst): 7:50 / 14:31
Calibration Purpose: routine monthly
Calibration Method: Gas Dilution & Gas Phase Titration

Thermo 42i NO-NO2-NOx Analyzer Calibration

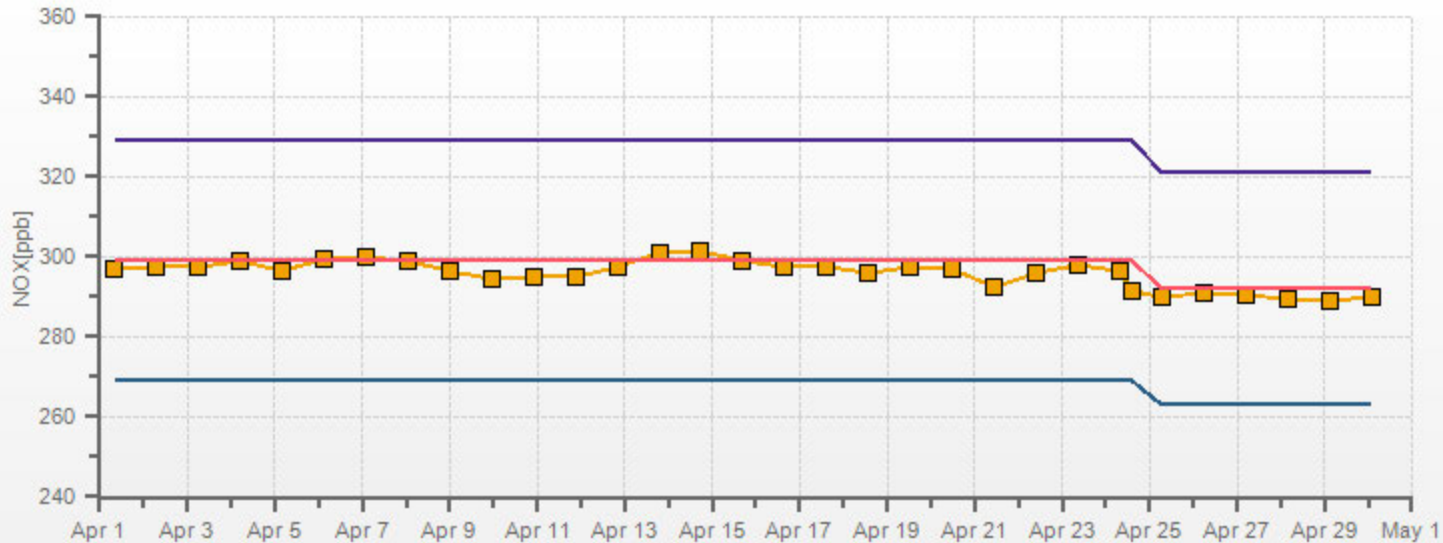


NOX[ppb] NO[ppb] NO2[ppb]



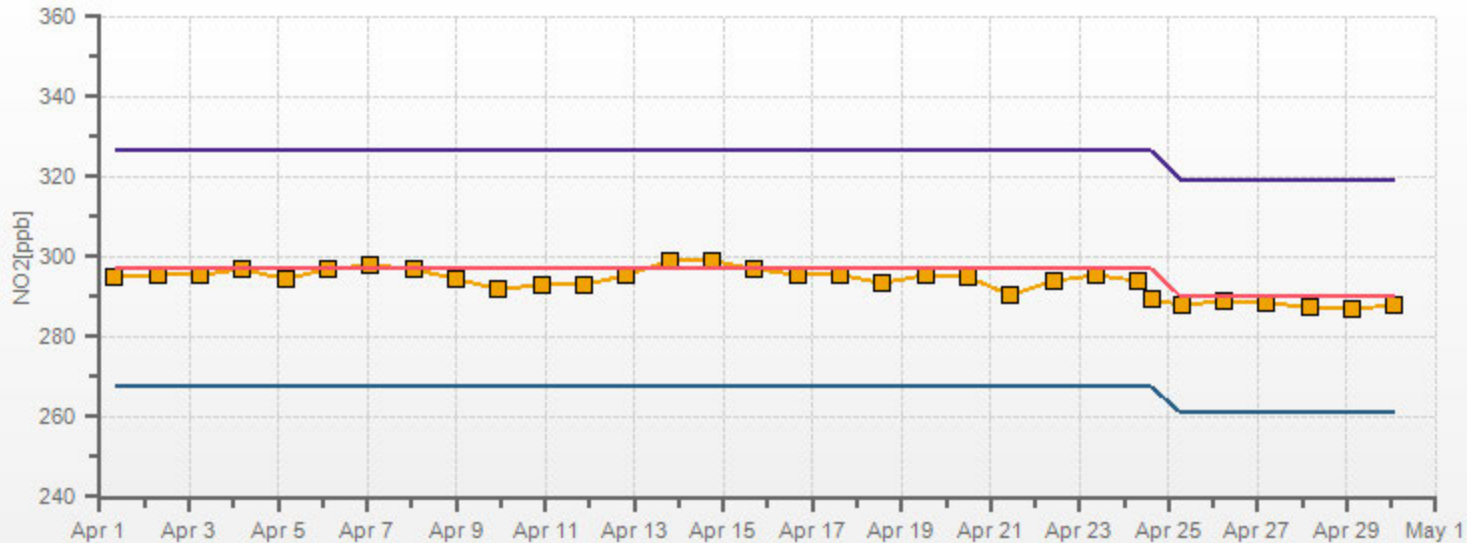
CAL-LICA-2019-04-17

NOX[ppb] Calibration: LICA COLD LAKE SOUTH Monthly: 19/04 Type: Span



CAL-LICA-201904-01174

NO2[ppb] Calibration: LICA COLD LAKE SOUTH Monthly: 19/04 Type: Span



CAL-LICA-201904-01174



Thermo 49i Ozone Analyzer Calibration

Date: April 24, 2019 Company/Airshed: LICA Location/Station Name: Cold Lake South Start/End Time 24 hr. (mst): 11:51 / 15:58 Ozone Calibration Method: Varying UV Lamp Power G.P.T. Date: n/a-done by Varying UV Lamp Power Analyzer: Serial Number/Owner: 700419951 LICA Last Calibration Date: March 15, 2019 Previous Cal High Point C.F.: 1.000	Barometer/B.P./units: F.S. #05544, expires Jan 17, 2020 940 millibars Thermometer/Station Temp: F.S. 160348895, expires June 19, 2020 24 °C Weather Conditions: Mainly sunny Calibration Purpose: routine monthly Performed By/Reviewer: Alex Yakupov Rob Fisher Cal Gas Expiry Date: n/a-done by Varying UV Lamp Power Ozone Range ppb: 500 As Found C.F.: 1.000 New C.F.: 1.000
--	--

Calibration Standards:	
Low Flow Meter ID/Expiry Date:	N/A
High Flow Meter ID/Expiry Date:	N/A
Calibrator ID/Expiry Date:	Sabio id# 11900613 expires April 16, 2020
Cal Gas Cylinder I.D. #:	N/A

Point	AMD Required Range of Ozone Calibration Points
High	300-400 ppb
Mid	150-200 ppb
Low	50-75 ppb

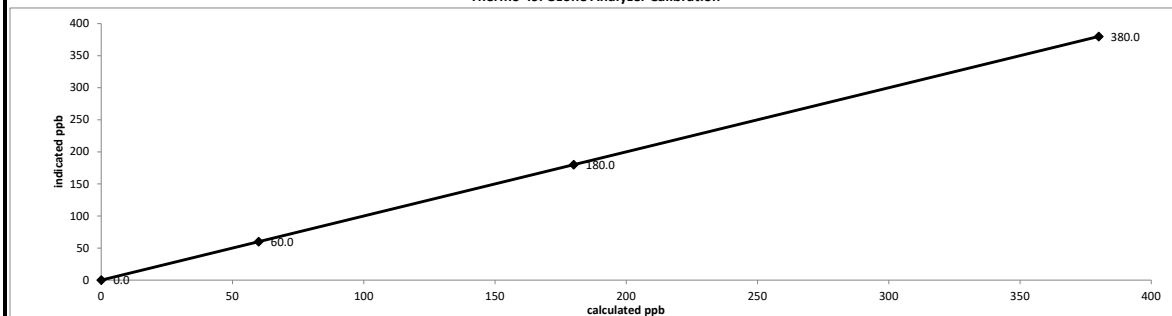
ALL POINTS ARE 15 MINUTES OF STABILITY AS OF SEPTEMBER 23, 2015

Point	Calibrator Flow Rate (cc/min)		Calculated Concentration:	Corrected Calculated Concentration:	Indicated Concentration:	Correction Factors:
	Total Flow @ Point Start	Total Flow @ Point Finish	(ppb)	(ppb)	(ppb)	
as found zero	5000	5000	0.0	n/a	0.0	n/a
as found high	5000	5000	380.0	380.0	380.0	1.000
adjusted zero	5000	5000	0.0	0.0	0.0	n/a
adjusted high	5000	5000	380.0	380.0	380.0	1.000
mid	5000	5000	180.0	180.0	180.0	1.000
low	5000	5000	60.0	60.0	60.0	1.000
calibrator zero	5000	5000	0.0	n/a	0.0	n/a
Average C.F.=						1.000

Linear Regression/Calibration Results:

Correlation Coefficient =	1.000	LIMITS
Slope =	1.000	> or = 0.995
b (Intercept as % of full scale)=	0.00%	0.95-1.05
% change in C.F. from last cal=	0.00%	± 3% F.S.
		± 10%

Thermo 49i Ozone Analyzer Calibration



As found:

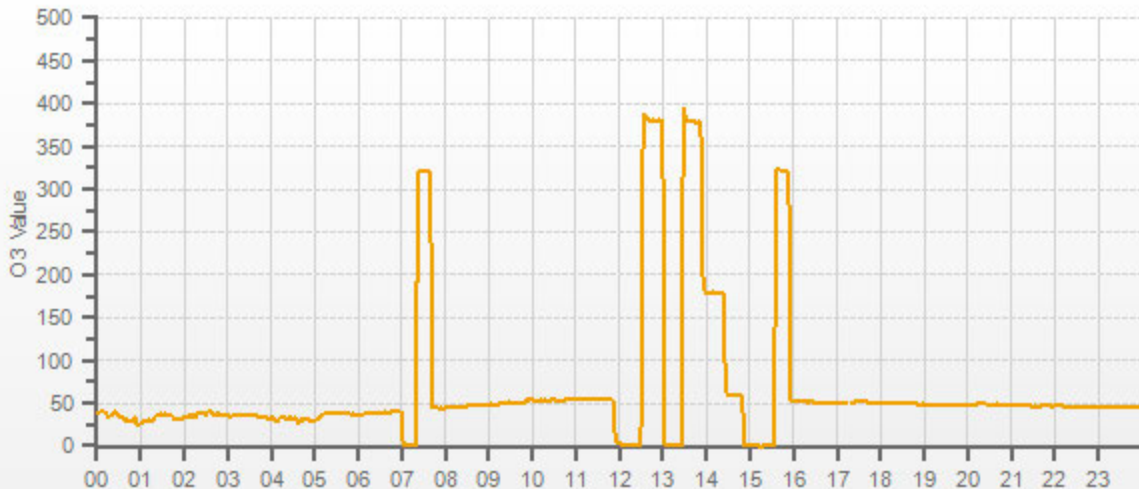
O3 Bkg:	0.0
O3 Coef:	1.036
Photo Lamp:	9.6
O3 Lamp:	9.3
Bench:	30.6
Bench Lamp:	53.5
O3 Lamp:	67.4
Pressure:	700.8
Cell A lpm:	0.705
Cell B lpm:	0.747
O3 ppb:	4.2
Cell A ppb:	-0.5
Cell B ppb:	8.8
Cell A int (Hz):	74900
Cell B int (Hz):	77242
Expected Value:	322.0

As left:

O3 Bkg:	0.0
O3 Coef:	1.036
Photo Lamp:	9.6
O3 Lamp:	9.3
Bench:	29.9
Bench Lamp:	53.3
O3 Lamp:	67.4
Pressure:	700.8
Cell A lpm:	0.705
Cell B lpm:	0.748
O3 ppb:	0.4
Cell A ppb:	4.1
Cell B ppb:	-3.3
Cell A int (Hz):	74888
Cell B int (Hz):	77202
Expected Value:	320.0

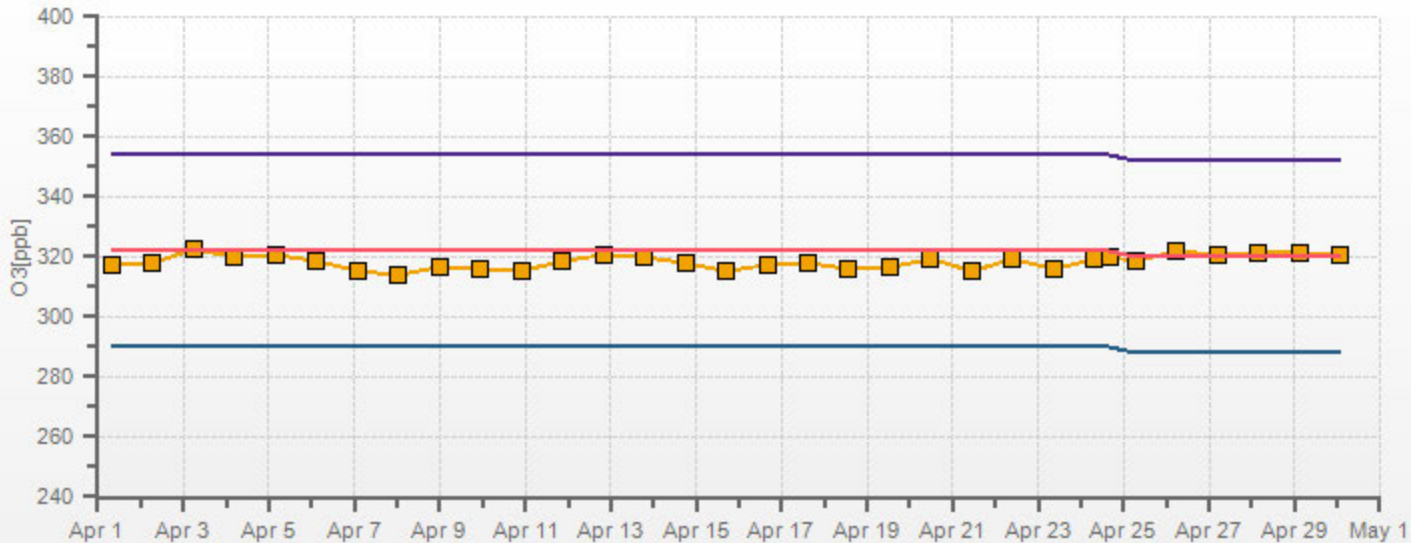
Comments:
 The analyzer sample inlet filter was changed. No zero adjustment was required/made.
 The analyzer cooling fan filter(s) were cleaned. No high point adjustment was required/made..
 The manifold blower was found to be working normally.

O3[ppb]



CAL-LICA-2019-04-17

O3[ppb] Calibration: LICA COLD LAKE SOUTH Monthly: 19/04 Type: Span



CAL-LICA-201904-01174

Page 23 of 31



Thermo 5030 SHARP Monitor Monthly Check

Date: April 30, 2019
Company: LICA
Station Name/Location: Cold Lake South
Previous Audit Date: March 8, 2019
Parameter: PM 2.5

Performed By/Reviewer: Alex Yakupov | Rob Fisher
Start Time (mst): 9:48
End Time (mst): 10:22
Calibration Purpose: routine monthly
Weather Conditions: A few clouds

SHARP Information and Status:

Serial Number: CM-2209 **Status:** 0.00
Approx Tape remaining: 4/10 **Error Code:** 0.00

Reference Standards:

Air Flow

	Manometer	Orifice	Pressure:		Temperature:	
Make:	Dwyer	Chinook	Fisher Scientific		Fisher Scientific	
Model:	475 Mk. III	170101	FB61291		11-661-7B	11745843
Serial Number:	#3	#4	130168457	17-Jan-20	160348895	
Calibration Expiration Date:	January 17, 2020	January 31, 2020	January 17, 2020		June 19, 2020	

As found temperature and pressure:

<p style="text-align: center;">Tolerance +/- 4°C</p> <p>SHARP T1 °C: <u>-4.0</u></p> <p>Reference °C: <u>-4.1</u></p> <p>Difference °C: <u>-0.1</u></p>	<p style="text-align: center;">Tolerance +/- 13.33 hPa</p> <p>SHARP P3 (hPa): <u>954.000</u></p> <p>Reference (hPa): <u>954.000</u></p> <p>Difference (hPa): <u>0.000</u></p>
---	---

As left temperature and pressure (same as above if as found adequate):

<p style="text-align: center;">Tolerance +/- 4°C</p> <p>SHARP T1 °C: <u>-4.0</u></p> <p>Reference °C: <u>-4.1</u></p> <p>Difference °C: <u>-0.1</u></p>	<p style="text-align: center;">Tolerance +/- 13.33 hPa</p> <p>SHARP P3 (hPa): <u>954.000</u></p> <p>Reference (hPa): <u>954.000</u></p> <p>Difference: <u>0.000</u></p>
---	---

As found flows:

<p>Targets: 1000 l/hr / <90%</p> <p>SHARP AirFlow l/hr: <u>1000.00</u></p> <p>Pump Voltage (%): <u>49.90</u></p>	<p>Flow Tolerance 16.67 lpm +/- 0.67 lpm</p> <p>SHARP Airflow (l/min): <u>16.67</u></p> <p>Reference AirFlow (l/min): <u>16.70</u></p> <p>Difference (l/min): <u>0.03</u></p>
---	---

As left flows (same as above if as found adequate):

<p>Targets: 1000 l/hr / <90%</p> <p>SHARP AirFlow l/hr: <u>1000.00</u></p> <p>Pump Voltage (%): <u>49.90</u></p>	<p>Flow Tolerance 16.67 lpm +/- 0.67 lpm</p> <p>SHARP Airflow (l/min): <u>16.67</u></p> <p>Reference AirFlow (l/min): <u>16.70</u></p> <p>Difference (l/min): <u>0.03</u></p>
---	---

Inlet Assembly:

	Yes/No?	If No, give reason
PM10 Inlet Cleaned	yes	
PM2.5 Cyclone Cleaned	yes	

Comments:

Leak check: 16.63 vs 16.65, 0.02 < 0.42 lpm, passed.

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

Calibrator Performance Audit

OZONE

File No. 2019-049A

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>
Oven Temperature	<u>N/A</u>	Temperature (°C)	<u>24.4 C</u>
Last Verification Date	<u>August 2018</u>	Barometric Pressure	<u>699 mmHg</u>

Flow Measurements

Pt. No. 1 N/A **Pt. No. 2** N/A **Pt. No. 3** N/A

Calibrator Flow (sccm)	Calculated Concentration (ppm)	Indicated Concentration (ppm)	% Difference	
			vs Audit Gas	% Diff. Limit
Zero Air	0.000	0.000		
5001	0.400	0.407	2%	± 10%
4999	0.200	0.208	4%	± 10%
5001	0.100	0.104	4%	± 10%
Absolute Average Percent Difference			3%	± 10%

LINEAR REGRESSION ANALYSIS

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

<u>O₃</u>	<u>LIMITS</u>
Correlation= 0.9999	≥ 0.995
m (Slope)= 1.0169	0.90-1.10
b (Intercept % of FS)= 0.3600	± 3% F.S.

AENV Standards

Audit Calibrator

Make/Model	<u>Teco 49i PS</u>
Serial/AMU Number	<u>AMU 1808</u>
Ozone Standard	<u>Primary Standard</u>

Ozone Analyzer

Make/Model	<u>Teco 49i</u>
Serial/AMU Number	<u>AMU 1843</u>
Last Calibration Date	<u>April 15, 2019</u>
Full Scale (ppm)	<u>0.5</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. 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	0.00000	0.00000	0.00000
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: [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



Lakeland Industry & Community Association

APRIL 2019
Ambient Air Monitoring Calibration Report
- MASKWA STATION-
CAL-LICA-201904-01248

Station Operation and Maintenance:
Maxxam Analytics

Data Validation and Report:
Maxxam Analytics

June 4, 2019

Alberta Environment and Parks (AEP)
Air.Reporting@gov.ab.ca

June 4, 2019

Subject:

April 2019 Ambient Air Monitoring Calibration Report Submission for the LICA Maskwa station

Lakeland Industry & Community Association (LICA) is pleased to submit the ambient air monitoring calibration report for the LICA Maskwa AQM Station in the month of April 2019. This calibration report includes equipment calibration records, calibrator performance audit records and calibration gas audit records for the equipment that were used this month. This calibration report is prepared by the LICA network contractor.

Should you have any questions, please don't hesitate to contact us.

Respectfully,



Michael Bisaga
Technical Program Manager
Lakeland Industry & Community Association
780-266-7068
monitoring@lica.ca



Lily Lin
Data & Reporting Specialist
587-225-2248
monitoring@lica.ca



April 1 - 30, 2019

MONTHLY CALIBRATION REPORT

Project #: 2833-2019-04-24-C

LICA-201904

Prepared for:

Lakeland Industry & Community Association

Mike Bisaga

5107 50 St.

Bonnyville, Alberta T9N 2J7

monitoring@lica.ca

780-266-7068

Monitoring Station

Maskwa Continuous Monitoring Station

Date of Report Issuance: May 23, 2019



#1 - 2080 39 Avenue NE, Calgary AB, T2E 6P7

CAL-LICA-201904-01248

Page 2 of 27



Thermo 431-TLE Sulphur Dioxide Analyzer Calibration

Date: April 17, 2019	Barometer/B.P./units: Brunton #05490	936	millibars
Company/Airshed: LICA	Thermometer/Station Temp: Station Probe	22.9	°C
Location/Station Name: Maskwa	Weather Conditions: Mix of sun and clouds		
Parameter: Sulphur Dioxide	Calibration Purpose: routine monthly		
Start Time 24 hr. (mst): 8:21	Performed By/Reviewer: Chris Wesson		Rob Fisher
End Time 24 hr. (mst): 12:37	Cal Gas Expiry Date: October 24, 2020		
Calibration Method: Gas Dilution	Converter Model & s/n (if applicable): n/a		
Analzer:	Serial Number/Owner: 1180930031 LICA	Range ppb: 1000	
	Last Calibration Date: March 21, 2019	As Found C.F.: 0.958	
	Previous C.F.: 1.000	New C.F.: 1.000	

Calibration Standards:	Standard Calibration Points for Ranges								
Low Flow Meter ID/Expiry Date: N/A	<table border="1"> <tr><th>Point</th><th>ppb</th></tr> <tr><td>High</td><td>780</td></tr> <tr><td>Mid</td><td>380</td></tr> <tr><td>Low</td><td>190</td></tr> </table>	Point	ppb	High	780	Mid	380	Low	190
Point	ppb								
High	780								
Mid	380								
Low	190								
High Flow Meter ID/Expiry Date: N/A									
Calibrator ID/Expiry Date: Sabio2010 #26801218 expires January 15, 2020									
Cal Gas Cylinder I.D. #: LL108015									
Cal Gas Conc. (ppm): 47.9									

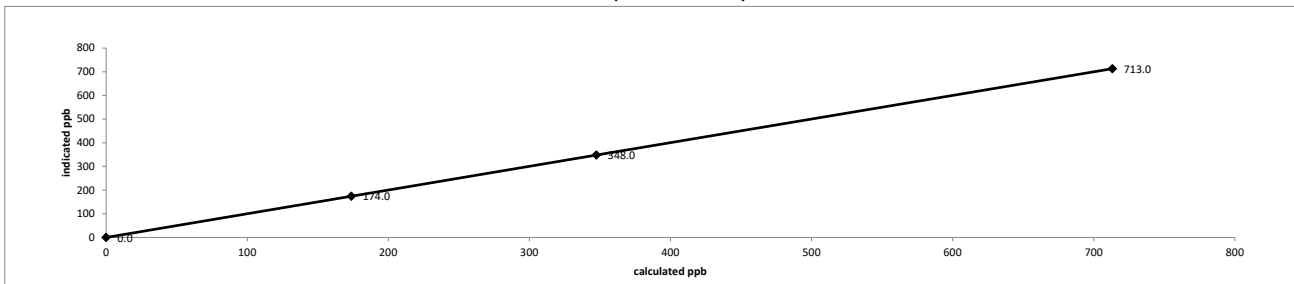
ALL POINTS ARE 15 MINUTES OF STABILITY AS OF SEPTEMBER 23, 2015

Point	Diluent	Cal Gas	Total	Calculated Concentration (ppb):	Indicated Concentration (ppb):	Correction Factors (C.F.):
as found zero	5016	0.00	5016	0.0	-0.2	n/a
as found high	4943	74.70	5018	713.1	744	0.958
adjusted zero	5016	0.00	5016	0.0	0	n/a
adjusted high	4942	74.70	5017	713.2	713	1.000
mid	4981	36.40	5017	347.5	348	0.999
low	4998	18.20	5016	173.8	174	0.999
calibrator zero	5016	0.00	5016	0.0	0.2	n/a
Average C.F. =						0.999

Linear Regression/Calibration Results:

Correlation Coefficient = 1.000	LIMITS
Slope = 1.000	> or = 0.995
b (Intercept as % of full scale) = -0.02%	0.95-1.05
% change in C.F. from last cal = 4.18%	± 3% F.S.
	± 10%

Thermo 431-TLE Sulphur Dioxide Analyzer Calibration



As found:	As left:
Bkg: 2.29	Bkg: 2.21
Coef: 0.952	Coef: 0.911
Pmt: -701.5	Pmt: -700.8
Flash: 998	Flash: 996
Internal: 29.9	Internal: 29.7
Chamber: 45.2	Chamber: 45.0
Perm Oven Gas: 35.01	Perm Oven Gas: 35.00
Perm Oven Heater: 34.26	Perm Oven Heater: 34.25
Pressure: 665.2	Pressure: 664.9
Sample Flow: 0.455	Sample Flow: 0.455
Lamp Intensity: 90	Lamp Intensity: 91
Averaging Time: 120	Averaging Time: 120
Expected Value: 422.0	Expected Value: 411.0

Comments:

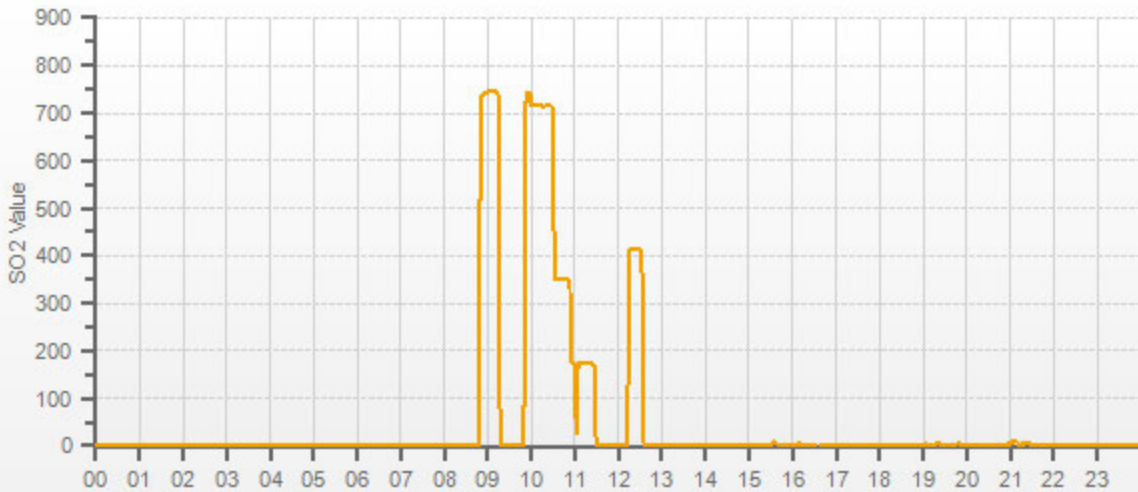
The analyzer sample inlet filter was changed.

The analyzer cooling fan filter(s) were cleaned.

The manifold blower was found to be working normally.

The automated daily IZS interrupted the calibration at 11:00. The low point was restarted.

SO2[ppb]



CAL-LICA-2019-04-24-C

SO2[ppb] Calibration: LICA MASKWA Monthly: 19/04 Type: Span

■ Span Meas
 — Span Ref
 — Span Low
 — Span High



CAL-LICA-2019-04-01248



Thermo 450i Hydrogen Sulphide Analyzer Calibration

Date: April 17, 2019	Barometer/B.P./units: Brunton #05490	936	millibars
Company/Airshed: LICA	Thermometer/Station Temp: Station Probe	22.4	°C
Location/Station Name: Maskwa	Weather Conditions: Mainly sunny		
Parameter: Hydrogen Sulphide	Calibration Purpose: routine monthly		
Start Time 24 hr. (mst): 11:54	Performed By/Reviewer: Chris Wesson	Rob Fisher	
End Time 24 hr. (mst): 16:32	Cal Gas Expiry Date: November 7, 2020		
Calibration Method: Gas Dilution	Converter Model & s/n (if applicable): Internal		
Analyzer: Serial Number/Owner: CM17360005 LICA	Range ppb: 100		
Last Calibration Date: March 21, 2019	As Found C.F.: 1.020		
Previous C.F.: 1.000	New C.F.: 0.999		

Calibration Standards: Low Flow Meter ID/Expiry Date: N/A High Flow Meter ID/Expiry Date: N/A Calibrator ID/Expiry Date: EnviroNics 2000 #1991 expires February 13, 2020 Cal Gas Cylinder I.D. #: LL119432 Cal Gas Conc. (ppm): 10.3	Standard Calibration Points for Ranges <table border="1" style="margin: auto;"> <tr><th>Point</th><th>ppb</th></tr> <tr><td>High</td><td>78</td></tr> <tr><td>Mid</td><td>38</td></tr> <tr><td>Low</td><td>19</td></tr> </table>	Point	ppb	High	78	Mid	38	Low	19	SO2 Scrubber Check (10 minutes): Start/End Time 24 hr.: 12:21/12:36 SO2 Analyzer Range: 1000 Target Concentration (ppb): 780 As Found Zero: 1.4 Analyzer Response: (ppb): 0.9 Zero Corrected Result (ppb): -0.5
Point	ppb									
High	78									
Mid	38									
Low	19									

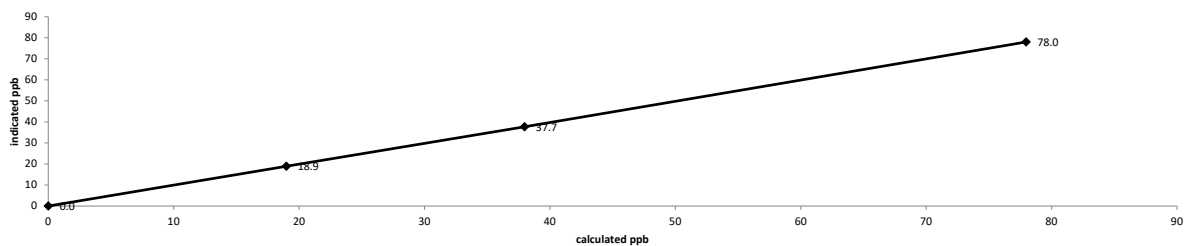
ALL POINTS ARE 15 MINUTES OF STABILITY AS OF SEPTEMBER 23, 2015

Calibrator Flow Rates (cc/min)				Calculated Concentration (ppb):	Indicated Concentration (ppb):	Correction Factors (C.F.):
Point	Diluent	Cal Gas	Total			
as found zero	7499	0.00	7499	0.0	1.4	n/a
as found high	7441	56.86	7498	78.0	77.8	1.020
adjusted zero	7499	0.00	7499	0.0	0	n/a
adjusted high	7441	56.86	7498	78.0	78	0.999
mid	7472	27.70	7500	38.0	37.7	1.007
low	7484	13.84	7498	19.0	18.9	1.004
calibrator zero	7500	0.00	7500	0.0	0.2	n/a
Average C.F. =						1.004

Linear Regression/Calibration Results:

Correlation Coefficient =	1.000	LIMITS	> or = 0.995
Slope =	0.999		0.95-1.05
b (Intercept as % of full scale) =	0.09%		± 3% F.S.
% change in C.F. from last cal =	-2.04%		± 10%

Thermo 450i Hydrogen Sulphide Analyzer Calibration

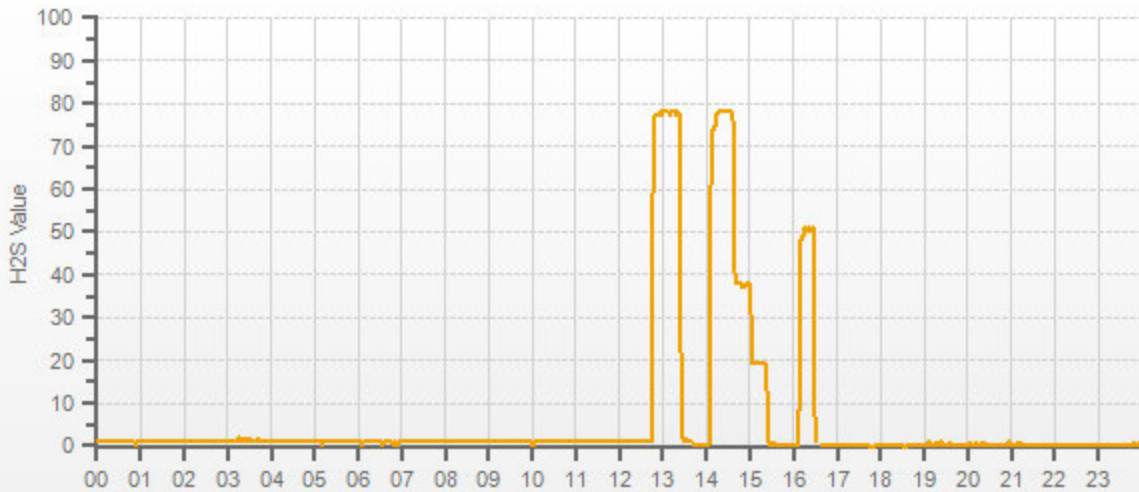


As found: Bkg: 18.9 Coef: 0.786 Pmt: -601.6 Flash: 812 Internal: 33.9 Chamber: 45.0 Converter Temp: 324.7 Converter Set: 325.0 Perm Oven Gas: 35.00 Perm Oven Htr: 34.28 Pressure: 557.6 Sample Flow: 0.937 Lamp Intensity: 91 Averaging Time: 120 Expected Value: 48.1	As left: Bkg: 20.2 Coef: 0.803 Pmt: -602.0 Flash: 810 Internal: 33.7 Chamber: 45.2 Converter Temp: 325.4 Converter Set: 325.0 Perm Oven Gas: 35.00 Perm Oven Htr: 34.32 Pressure: 560.0 Sample Flow: 0.938 Lamp Intensity: 91 Averaging Time: 120 Expected Value: 50.6
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Comments:

The analyzer sample inlet filter was changed.
 The analyzer cooling fan filter(s) were cleaned.
 The manifold blower was found to be working normally.

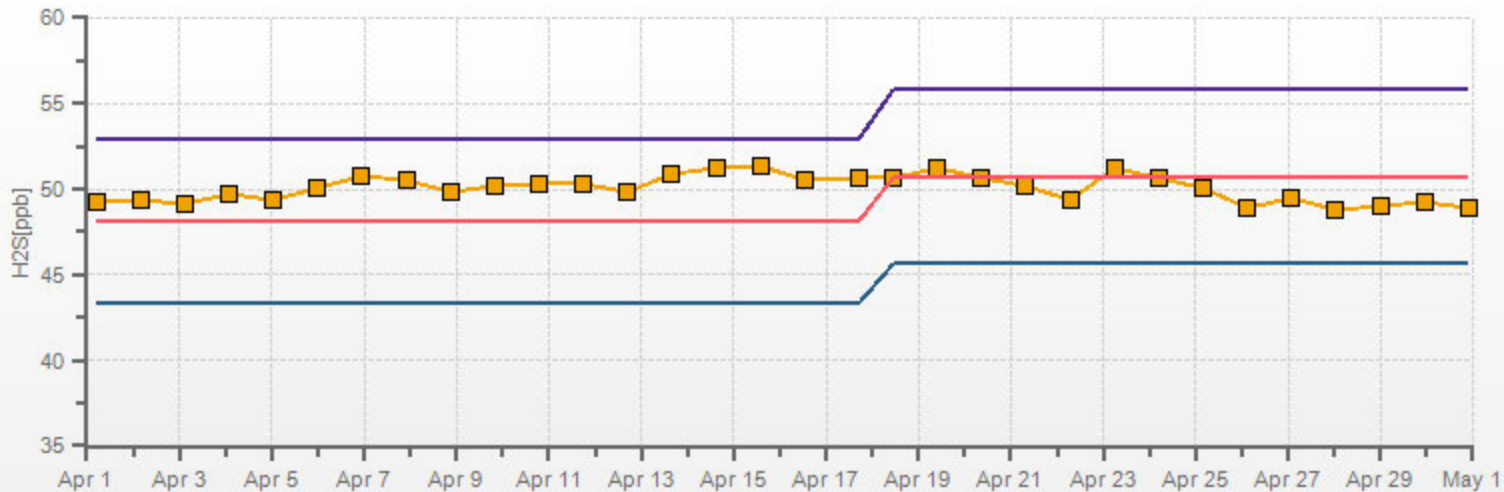
H2S[ppb]



CAL-LICA-2019-04-24-C

H2S[ppb] Calibration: LICA MASKWA Monthly: 19/04 Type: Span

Span Meas Span Ref Span Low Span High



CAL-LICA-2019-04-01248



Thermo 55i Methane/Non-Methane Analyzer Calibration

Date:	April 17, 2019	Barometer/B.P./units:	Brunton #05490	936	millibars
Company/Airshed:	LICA	Thermometer/Station Temp:	Station Probe	22.9	°C
Location/Station Name:	Maskwa	Weather Conditions:	Mix of sun and clouds		
Parameter:	CH4 / NMHC / THC	Calibration Purpose:	routine monthly		
Start/End Time 24 hr. (mst):	08:21 / 12:34	Performed By/Reviewer:	Chris Wesson	Rob Fisher	
Calibration Method:	Gas Dilution	Cal Gas Expiry Date:	October 18, 2025		

Analyzer:		Correction Factors:			
Serial Number/Owner:	1180930026 LICA	Previous C.F.:	As Found C.F.:	New C.F.:	
Measured Flow:	1.1 L/min	CH ₄ =	1.000	1.029	1.002
Last Calibration Date:	March 22, 2019	NMHC =	1.000	1.057	1.000
Range ppm:	20 CH4/20 NMHC/40 THC	THC =	1.000	1.042	1.001

Calibration Standards:		Standard Calibration Points for Analyzer Range of 20/20/40 ppm			
Low Flow Meter ID/Expiry Date:	N/A	Point	CH4	NMHC	THC
High Flow Meter ID/Expiry Date:	N/A	High	13.00	13.00	26.00
Calibrator ID/Expiry Date:	EnviroNics 2000 #1991 expires February 13, 2020	Mid	7.00	7.00	14.00
Cal Gas Cylinder I.D. #:	LL107207	Low	3.00	3.00	6.00
CH4 Cylinder Conc.:	600.0 207.0 = C ₂ H ₆ Cylinder Conc.				
CH ₄ expressed as C ₂ H ₆ =	569.3 1169.3 = total CH4 equivalent				

ALL POINTS ARE 15 MINUTES OF STABILITY AS OF SEPTEMBER 23, 2015

Point	Calibrator Flow Rates (cc/min)			Calculated CH ₄ (ppm)	Calculated NMHC (ppm)	Calculated THC (ppm)	Indicated CH ₄ (ppm)	Indicated NMHC (ppm)	Indicated THC (ppm)	Correction Factors:		
	Diluent	Cal Gas	Total Flow							CH ₄	NMHC	THC
as found zero	3003	0.00	3003	0.00	0.00	0.00	0.01	0.00	0.01	n/a	n/a	n/a
as found high	2930	71.80	3002	14.35	13.62	27.97	13.96	12.88	26.84	1.029	1.057	1.042
adjusted zero	3003	0.00	3003	0.00	0.00	0.00	0.00	0.00	0.00	n/a	n/a	n/a
adjusted high	2930	71.80	3002	14.35	13.62	27.97	14.32	13.62	27.95	1.002	1.000	1.001
mid	2965	35.89	3001	7.18	6.81	13.98	7.19	6.81	14.00	0.998	1.000	0.999
low	2983	17.93	3001	3.59	3.40	6.99	3.58	3.39	6.97	1.001	1.003	1.002
calibrator zero	3003	0.00	3003	0.00	0.00	0.00	0.00	0.00	0.00	n/a	n/a	n/a
Average C.F. =										1.001	1.001	1.001

Linear Regression/Calibration Results:

Correlation Coefficient =	CH ₄	NMHC	THC	LIMITS
	1.000	1.000	1.000	> or = 0.995
Slope =	0.998	1.001	1.000	0.95-1.05
b (Intercept as % of full scale) =	0.03%	-0.03%	0.00%	± 3% F.S.
% change in C.F. from last cal =	-2.87%	-5.71%	-4.24%	± 10%

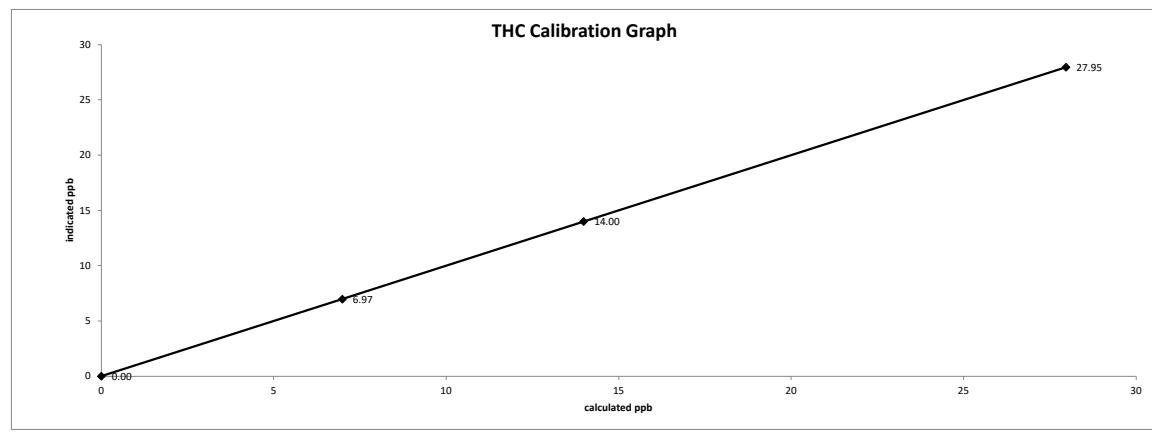
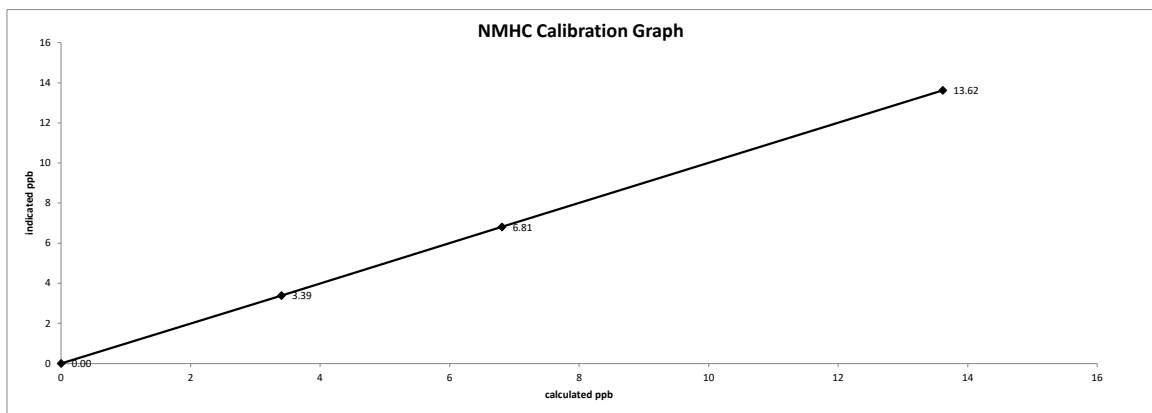
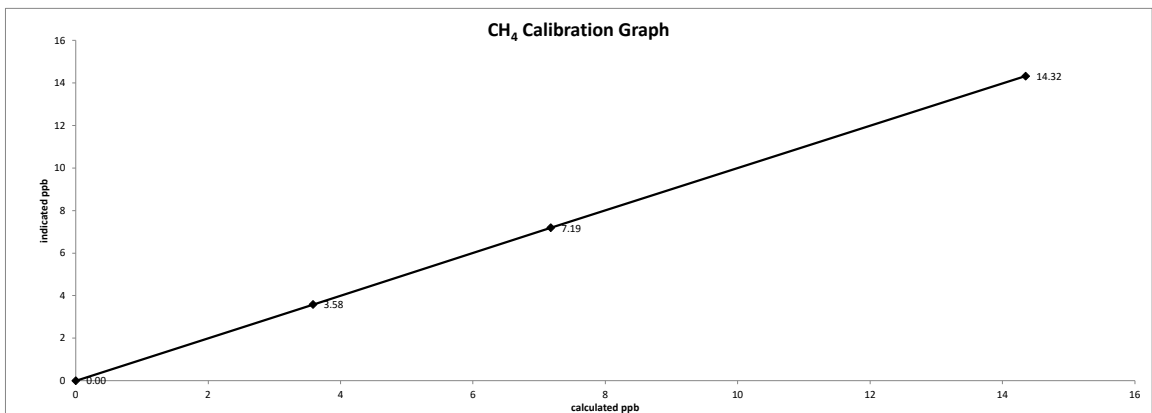
As Left Instrument Diagnostics:

Interface Board Voltages:	Bias Supply:	-300.9	Calibration History cnt'd:	NM Peak Area:	65724
Temperatures:	Detector Oven:	175.0	Crucial Settings:	Methane Start:	n/a
	Filter:	175.1		Methane End:	n/a
	Column Oven:	752		Backflush:	n/a
	Internal:	29.4		NMHV Start:	n/a
Cylinder Pressures/reg.:	Carrier:	400 50	Run History>1:	NMHC End:	n/a
	Fuel:	400 50		Date:	17Apr2019
	Span Gas:	800 13		Time:	11:28
	Zero Air Generator:	50		CH ₄ PK HT:	0
Internal Pressures:	Carrier:	28.5		CH ₄ RT:	13.6
	Fuel:	42.9		CH ₄ Baseline:	2
	Air:	30.5		CH ₄ LOD:	10
FID Status:	Status:	LIT		CH ₄ SD:	3
	Counts:	18479		CH ₄ CONC:	0.00
	Flame:	379.1		NM PK HT:	0
	Det Base:	175.0		NM Peak Area:	0
Flame and Power Stats:	Last Power On:	04Dec2018@12:07		NM CONC:	0.00
	Flameouts:	5		NM Base Start:	10
	Det Oven at Start:	22.7		NM Base End:	11
	Col Oven at Start:	21.6		NM LOD:	10
Calibration History:	Time:	17Apr2019@10:18		NM Start IDX:	69
	Type:	Span		NM End IDX:	90
	Status:	Good		NM Max Slope:	6.4e-01
	Check/Adjust:	Adjust		NM Min Slope:	-1.1e+00
	CH ₄ Span Conc:	14.35	Expected Values:	NM PT Count:	0
	CH ₄ SP Ratio:	0.000106		Previous CH ₄ :	10.07
	CH ₄ RT:	14.0		Previous NMHC:	10.63
	CH ₄ PK IDX:	30		Previous THC:	20.7
	CH ₄ PK HT:	13482		New CH ₄ :	10.31
	NM Span Conc:	13.62		New NMHC:	11.17
	NM SP Ratio:	0.000207		New THC:	21.48

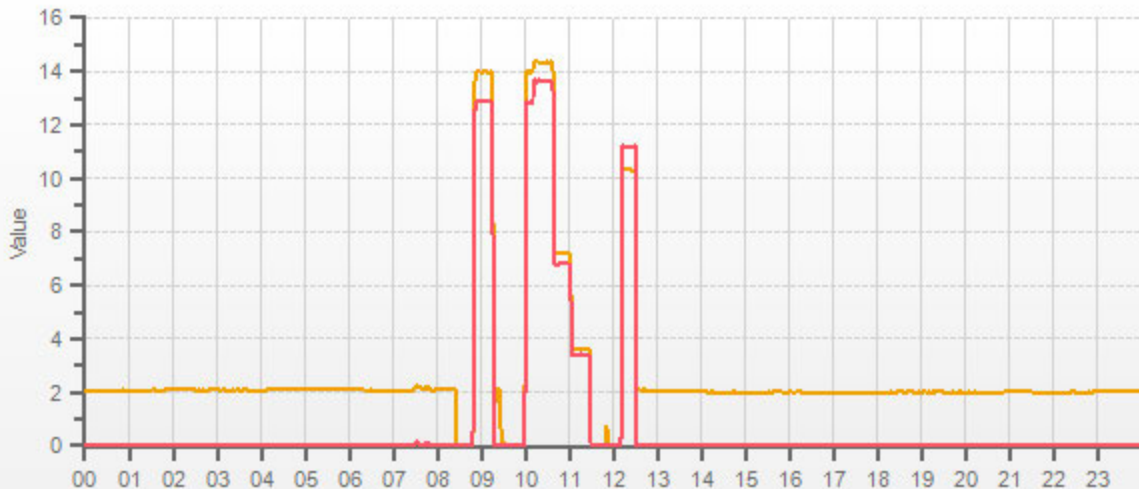
Comments:
 The analyzer sample inlet filter was changed.
 The analyzer cooling fan filter(s) were cleaned.
 The manifold blower was found to be working normally.

Date: April 17, 2019
Company/Airshed: LICA
Location/Station Name: Maskwa

Start/End Time 24 hr. (mst): 08:21 / 12:34
Calibration Purpose: routine monthly
Calibration Method: Gas Dilution



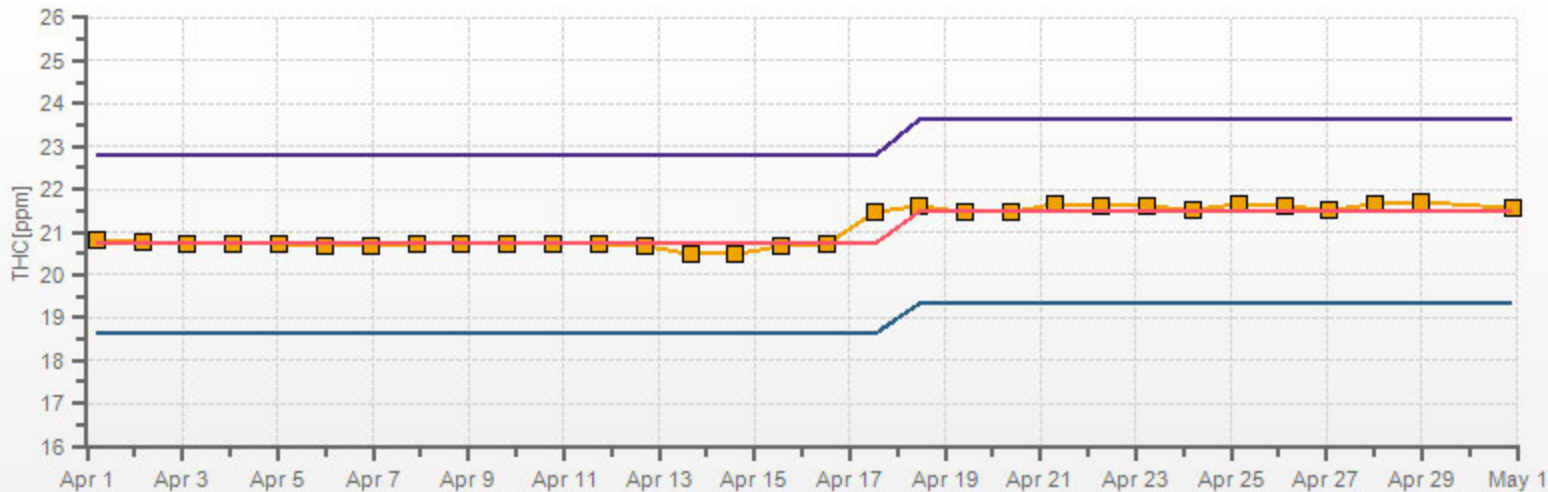
CH4[ppm] NMHC[ppm]



CAL-LICA-2019-04-01248

THC[ppm] Calibration: LICAMASKWA Monthly: 19/04 Type: Span

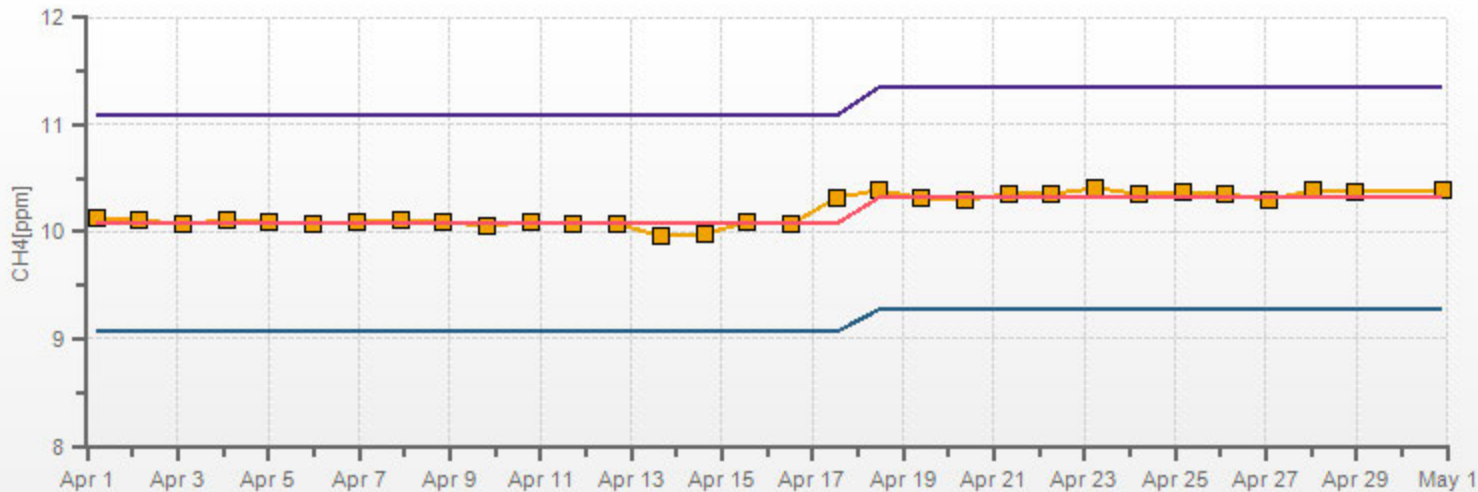
■ Span Meas
 — Span Ref
 — Span Low
 — Span High



CAL-LICA-2019-04-01248

CH4[ppm] Calibration: LICAMASKWA Monthly: 19/04 Type: Span

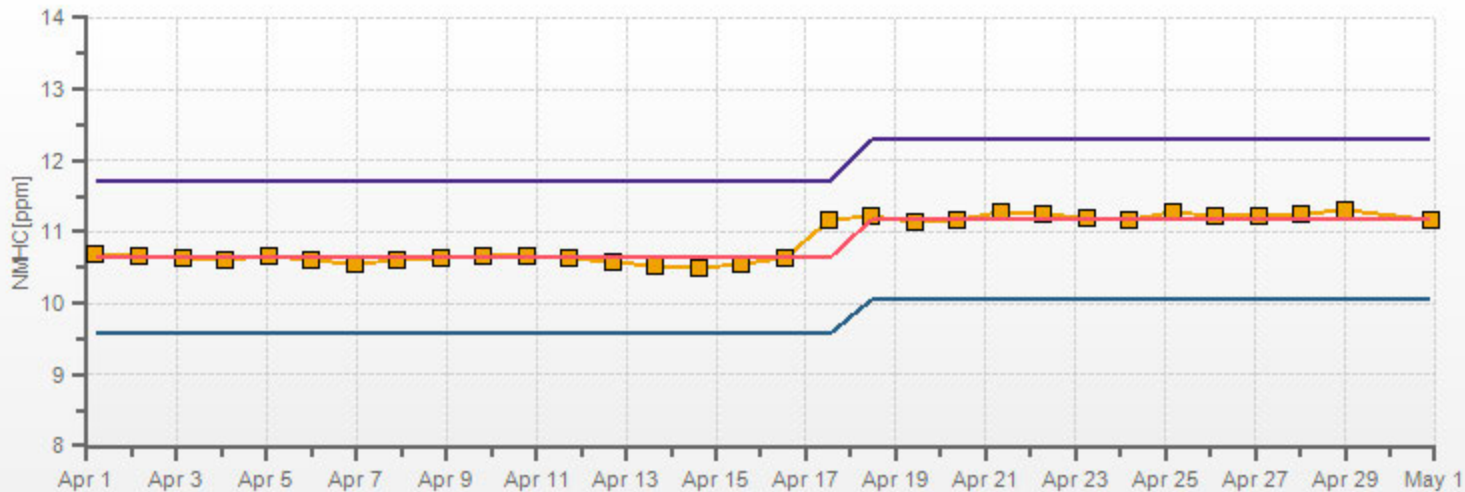
Span Meas Span Ref Span Low Span High



CAL-LICA-2019-04-01248

NMHC[ppm] Calibration: LICAMASKWA Monthly: 19/04 Type: Span

Span Meas Span Ref Span Low Span High



CAL-LICA-201904-01248



Thermo 42i NO-NO2-NOx Analyzer Calibration

Date: April 17, 2019	Barometer/B.P./units: Brunton #05490	936	millibars
Company/Airshed: LICA	Thermometer/Station Temp: Station Probe	23.0	°C
Location/Station Name: Maskwa	Weather Conditions: Mix of sun and clouds		
Start/End Time 24 hr. (mst): 08:20 / 14:44	Calibration Purpose: routine monthly		
G.P.T. to be used for Ozone?: No	Performed By/Reviewer: Chris Wesson	Rob Fisher	
Calibration Method: Gas Dilution & Gas Phase Titration	Cal Gas Expiry Date: October 24, 2020		

Analyzer: Serial Number/Owner: 1180930028 LICA Last Calibration Date: March 21, 2019 Range ppb: 1000	Correction Factors: <table border="1" style="width: 100%; border-collapse: collapse;"> <thead> <tr> <th></th> <th>Previous C.F.:</th> <th>As Found C.F.:</th> <th>New C.F.:</th> </tr> </thead> <tbody> <tr> <td>NO =</td> <td>1.000</td> <td>0.994</td> <td>1.000</td> </tr> <tr> <td>NO₂ =</td> <td>1.000</td> <td>1.000</td> <td>1.000</td> </tr> <tr> <td>NOx =</td> <td>1.000</td> <td>0.995</td> <td>1.000</td> </tr> </tbody> </table>		Previous C.F.:	As Found C.F.:	New C.F.:	NO =	1.000	0.994	1.000	NO ₂ =	1.000	1.000	1.000	NOx =	1.000	0.995	1.000
	Previous C.F.:	As Found C.F.:	New C.F.:														
NO =	1.000	0.994	1.000														
NO ₂ =	1.000	1.000	1.000														
NOx =	1.000	0.995	1.000														

Calibration Standards: Low Flow Meter ID/Expiry Date: N/A High Flow Meter ID/Expiry Date: N/A Calibrator ID/Expiry Date: Sabio2010 #26801218 expires January 15, 2020 Cal Gas Cylinder I.D. #: LL108015 Cal Gas Conc. (ppm): 52.2 52.3	<table border="1" style="width: 100%; border-collapse: collapse;"> <thead> <tr> <th colspan="4">Standard Calibration Points for a Range of: 1000 ppb</th> </tr> <tr> <th>Point</th> <th>Target NO (ppb)</th> <th>Target NO₂ (ppb)</th> <th>Cc Ozone ?</th> </tr> </thead> <tbody> <tr> <td>High</td> <td>780</td> <td>500</td> <td>n/a</td> </tr> <tr> <td>Mid</td> <td>380</td> <td>275</td> <td>n/a</td> </tr> <tr> <td>Low</td> <td>190</td> <td>100</td> <td>n/a</td> </tr> <tr> <td>Extra Point #1</td> <td>n/a</td> <td>n/a</td> <td>n/a</td> </tr> <tr> <td>Extra Point #2</td> <td>n/a</td> <td>n/a</td> <td>n/a</td> </tr> </tbody> </table>	Standard Calibration Points for a Range of: 1000 ppb				Point	Target NO (ppb)	Target NO ₂ (ppb)	Cc Ozone ?	High	780	500	n/a	Mid	380	275	n/a	Low	190	100	n/a	Extra Point #1	n/a	n/a	n/a	Extra Point #2	n/a	n/a	n/a
Standard Calibration Points for a Range of: 1000 ppb																													
Point	Target NO (ppb)	Target NO ₂ (ppb)	Cc Ozone ?																										
High	780	500	n/a																										
Mid	380	275	n/a																										
Low	190	100	n/a																										
Extra Point #1	n/a	n/a	n/a																										
Extra Point #2	n/a	n/a	n/a																										

ALL POINTS ARE 15 MINUTES OF STABILITY AS OF SEPTEMBER 23, 2015

Calibrator Flow Rates (cc/min)				Calculated NO	Calculated NOx	Indicated NO	Indicated NOx	NO C.F.	NOx C.F.
Point	Diluent	Cal Gas	Total Flow	(ppb)	(ppb)	(ppb)	(ppb)		
as found zero	5016	0.0	5016	0	0	-0.2	-0.2	n/a	n/a
as found high	4942	74.7	5017	777.2	778.7	781.6	782.3	0.994	0.995
adjusted zero	5016	0.00	5016	0.0	0.0	0.0	0.0	n/a	n/a
adjusted high	4942	74.70	5017	777.2	778.7	777.0	779.0	1.000	1.000
mid	4981	36.40	5017	378.7	379.5	381.0	382.0	0.994	0.993
low	4998	18.20	5016	189.4	189.8	192.0	193.0	0.986	0.983
calibrator zero	5016	0.00	5016	0	0	0.2	0.1	n/a	n/a
Average C.F.=								0.994	0.992

ALL POINTS ARE 15 MINUTES OF STABILITY AS OF SEPTEMBER 23, 2015

Calibrator Flow Rates (cc/min)				Calibrator Setting	Indicated NO	Indicated NOx	Indicated NO ₂	NO drop	NO ₂ gain	NO ₂ C.F.
Point	Diluent	Cal Gas	Total Flow	volts or ppb	(ppb)	(ppb)	(ppb)	(ppb)	(ppb)	(ppb)
NOx reference	4942	74.70	5017	0.0	777.9	779.5	1.6	0.0	1.6	
as found high NO2	4942	74.70	5017	500.0	245.0	779.5	534.5	532.9	532.9	1.000
adjusted high NO2	4942	74.70	5017	500.0	245.0	779.5	534.5	532.9	532.9	1.000
gpt mid	4942	74.70	5017	250.0	517.1	780.2	263.1	260.8	261.5	0.997
gpt low	4942	74.70	5017	85.0	692.5	780.5	88.1	85.4	86.5	0.987
Average NO ₂ C.F.=										0.995

Linear Regression/Calibration Results:

	NO	NOx	NO ₂	LIMITS
Correlation Coefficient =	1.000	1.000	1.000	> or = 0.995
Slope =	1.001	1.001	1.003	0.95-1.05
b (Intercept as % of full scale)=	0.16%	0.18%	0.15%	± 3% F.S.
% change in C.F. from last cal=	0.59%	0.48%	0.00%	± 10%
NO ₂ converter efficiency			1.00	0.96 to 1.04

As found:		As left:	
NO Bkg:	2.7	NO Bkg:	2.6
NOx Bkg:	2.8	NOx Bkg:	2.7
NO Coef:	0.935	NO Coef:	0.930
NO ₂ Coef:	1.000	NO ₂ Coef:	1.000
NOx Coef:	1.000	NOx Coef:	1.001
PMT:	-866.5	PMT:	-866.9
Internal:	29.3	Internal:	28.6
Chamber:	50.0	Chamber:	50.0
Cooler:	-3.1	Cooler:	-2.9
NO ₂ Converter:	325.3	NO ₂ Converter:	325.8
NO ₂ Converter Set:	325.0	NO ₂ Converter Set:	325.0
Perm Oven Gas:	45.02	Perm Oven Gas:	45.00
Perm Oven Heater:	44.19	Perm Oven Heater:	44.16
Pressure:	258.8	Pressure:	258.2
Flow:	0.536	Flow:	0.539
Ozonator Flow:	OK	Ozonator Flow:	OK
Expected Value NO:	3	Expected Value NO:	3
Expected Value NO ₂ :	403	Expected Value NO ₂ :	403
Expected Value NOx:	406	Expected Value NOx:	406

Comments:

The analyzer sample inlet filter was changed.

The manifold blower was found to be working normally.

No high point NO₂ adjustment was required/made. As found values were copied to adjusted high values for linearity calculation purposes.

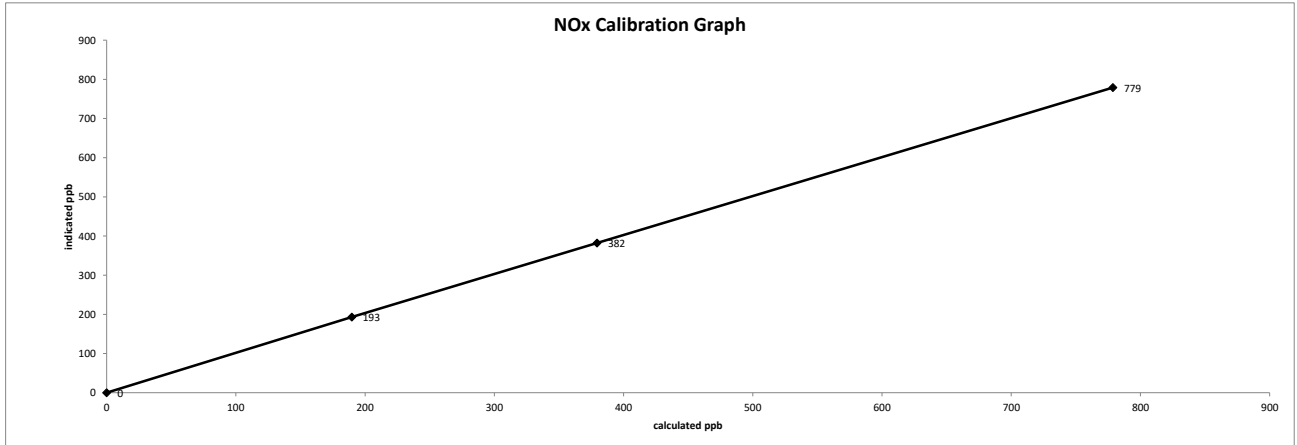
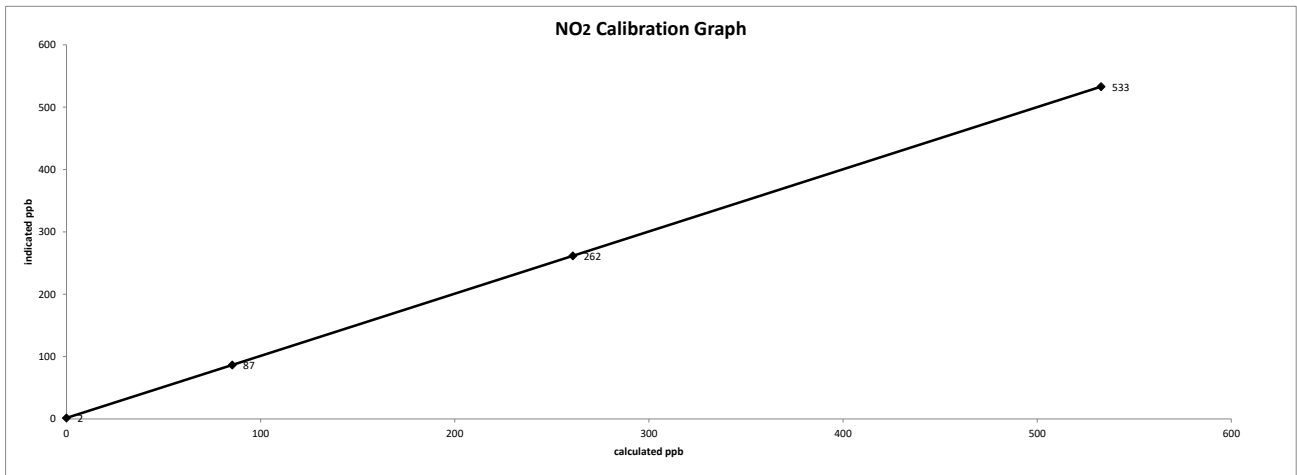
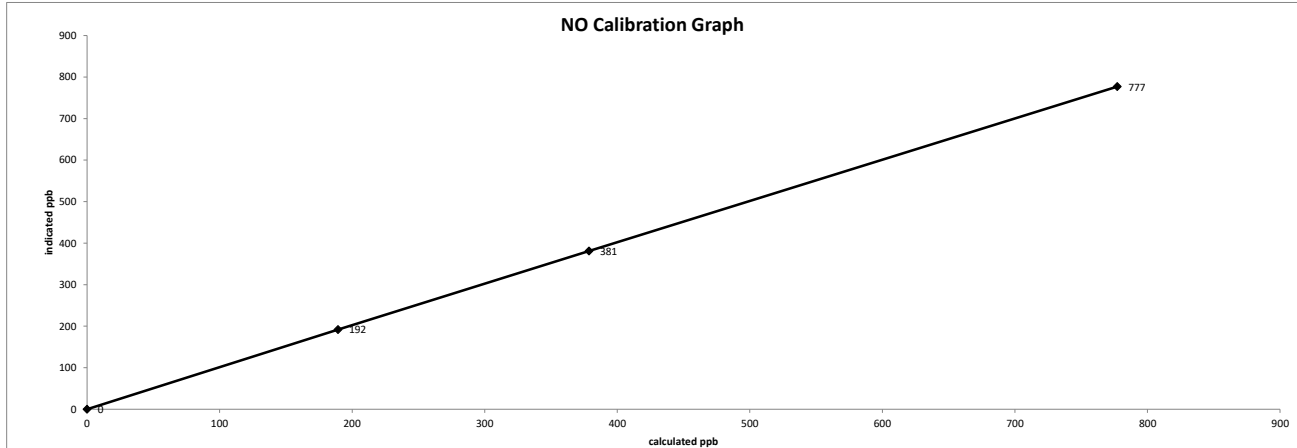
The analyzer cooling fan filter(s) were cleaned.

The automated daily IZS interrupted the calibration at 11:00. The low point was restarted.

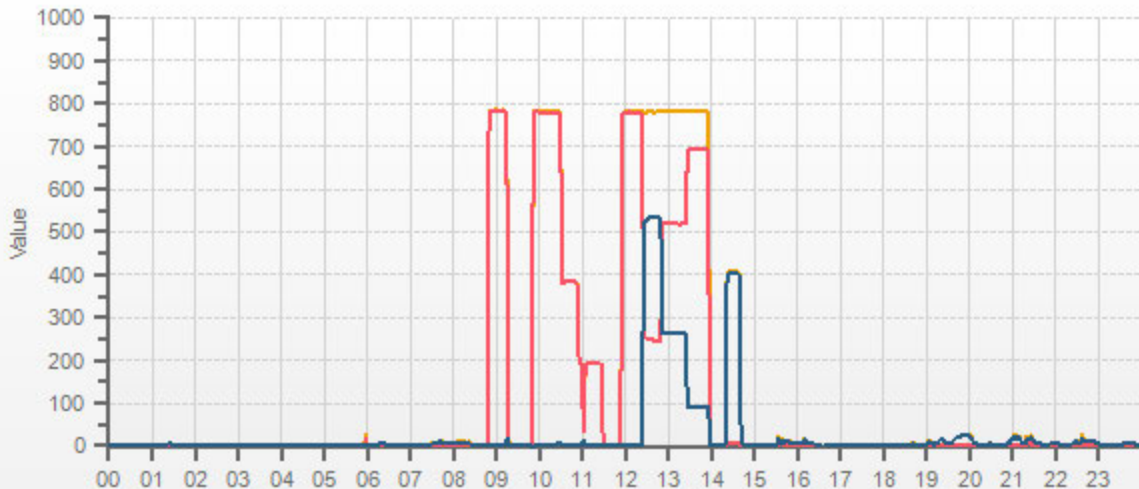
Date: April 17, 2019
 Company/Airshed: LICA
 Location/Station Name: Maskwa

Start/End Time 24 hr. (mst): 08:20 / 14:44
 Calibration Purpose: routine monthly
 Calibration Method: Gas Dilution & Gas Phase Titration

Thermo 42i NO-NO2-NOx Analyzer Calibration



NOX[ppb] NO[ppb] NO2[ppb]



CAL-LICA-201904-01248e

NOX[ppb] Calibration: LICA MASKWA Monthly: 19/04 Type: Span

Span Meas Span Ref Span Low Span High



CAL-LICA-2019-04-01248

NO2[ppb] Calibration: LICA MASKWA Monthly: 19/04 Type: Span

Span Meas Span Ref Span Low Span High



CAL-LICA-201904-01248



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:

Company <u>Maxxam</u>		Operator: <u>Alex</u>	
Calibrator:		Flow Measurement Device:	
Make/Model	<u>Sabio 2010</u>	Make/Model	<u>N/A</u>
Serial Number	<u>26801218</u>	Serial Number	<u>N/A</u>
Last Verification Date	<u>New</u>	Temperature (°C)	<u>N/A</u>
NO Cylinder S/N	<u>LL48147</u>	Barometric Pressure	<u>N/A</u>
NO [PPM]	<u>50.5</u>	NOx [PPM]	<u>50.6</u>
Expiry Date	<u>August 2026</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	0.000	0.000	Limit ± 10%	
5015	79.1	0.797	0.798	0.793	0.001	0.794	0%	-1%
5015	39.6	0.399	0.400	0.395	0.001	0.396	-1%	-1%
5017	19.8	0.199	0.200	0.197	0.000	0.197	-1%	-1%
Absolute Average Percent Difference							1%	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)= 0.9959	0.90-1.10	m (Slope)= 0.9954
b (Intercept % of FS)= -0.0968	± 3% F.S.	b (Intercept % of FS)= -0.0969

Flow	O ₃ Conc	NO Decrease	NO	NO ₂	NOX	% Diff. Vs Audit gas	
5015	0.000	0.000	0.792	0.001	0.793	NO ₂	% Diff. Limit
5015	0.500	0.496	0.296	0.493	0.791	-1%	± 10%
5015	0.250	0.246	0.546	0.245	0.793	-1%	± 10%
5015	0.100	0.098	0.694	0.098	0.793	-1%	± 10%
Absolute Average Percent Difference						1%	± 10%


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

NO₂	LIMITS	
Correlation= 1.0000	≥ 0.995	
m (Slope)= 0.9921	0.90-1.10	
b (Intercept % of FS)= 0.0909	± 3% F.S.	

AENV Standards	NO_x Analyzer
Audit Calibrator	Make/Model <u>Teco 42i</u>
Make/Model <u>Teco 146i</u>	Serial/AMU Number <u>AMU 1868</u>
Serial/AMU Number <u>AMU 1809</u>	Last Calibration Date <u>January 14, 2019</u>
SRM Gas Cylinder No. <u>APEX1236645</u>	Full Scale (ppm) <u>1.0</u>
Cylinder Conc. (ppm) <u>50.05</u>	Cylinder Gas Expiry Date <u>June 2021</u>

COMMENTS: _____

Auditor: Al Clark Date: January 15, 2019

Operator Signature:  Location: McIntyre Center Edmonton

Company: Maxxam **Operator:** C. Wesson

Calibrator:		Flow Measurement Device:	
Make/Model	<u>Envionics 2000</u>	Make/Model	<u>N/A</u>
Serial Number	<u>1991</u>	Serial Number	<u>N/A</u>
Last Verification Date	<u>March 1, 2018</u>	Temperature (°C)	<u>N/A</u>
SO ₂ Cylinder Conc.	<u>49.5</u>	Barometric Pressure	<u>N/A</u>
SO ₂ Cylinder S/N	<u>LL48147</u>		
Expiry Date	<u>August 2026</u>		

Flow Measurements

Pt. No. 1 78.8 **Pt. No. 2** 38.4 **Pt. No. 3** 19.2

Calibrator Flow (sccm)	Calculated Concentration (ppm)	Indicated Concentration (ppm)	% Difference	
			vs Audit Gas	% Diff. Limit
Zero Air	0.000	0.000		
5000	0.780	0.763	-2%	± 10%
4999	0.380	0.371	-2%	± 10%
5000	0.190	0.183	-4%	± 10%
Absolute Average Percent Difference			3%	± 10%

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

SO₂		LIMITS
Correlation=	1.0000	≥ 0.995
m (Slope)=	0.9792	0.90-1.10
b (Intercept % of FS)=	-0.1346	± 3% F.S.

AENV Standards		SO₂ Analyzer	
Audit Calibrator		Make/Model	<u>Teco 43i</u>
Make/Model	<u>Sabio 2010</u>	Serial/AMU Number	<u>AMU 2195</u>
Serial/AMU Number	<u>AMU 2092</u>	Last Calibration Date	<u>February 8, 2019</u>
SO ₂		Full Scale (ppm)	<u>1.0</u>
SRM Gas Cylinder No.	<u>FF28071</u>	Expiry Date	<u>March 2020</u>
Cylinder Conc. (ppm)	<u>50.3</u>		

COMMENTS:

Auditor: Al Clark

Date: February 13, 2019

Operator Signature: 

Location: McIntyre Center Edmonton



Calibration Gas Audit

CH₄ / C₃H₈ Cylinder Gas

File No. 2017-484CGA

Company: Maxxam **Operators name:** Mike
Cylinder #: LL107207 **Conc CH₄ (PPM)** 600/207 **Tolerance (%)** 2 **Certified By:** Praxair
Expiry Date: October 2025

Reference Calibrator and Gas:				Flow Measurement Device:	
Make/Model	<u>R&R MFC 201</u>			Make/Model	<u>Mesa Definer 220</u>
Serial Number	<u>AMU 1690</u>			Serial Number	<u>H-133034 / L-132702</u>
Last Verification Date	<u>December 13, 2017</u>			Temp. °C	<u>23.1 C</u>
Gas Type	<u>CH₄</u>	Conc.	<u>990.4</u>	B.P.	<u>707 mmHg</u>
Cylinder Number	<u>5604875</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:** 2108
Instrument Settings **Zero:** N/A **Span:** N/A **Range:** 20.0
Last Calibration: **Date:** Dec 12/17 **C.F.** 1.000 **Done By:** Al Clark

Calibrator Flows (sccm)		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
3500	0.0	0.00	0.00				
3618	80.4	13.28	12.77	0.02	45.00	598	209
3547	39.8	6.71	6.47	0.01	89.12	598	210
3560	19.8	3.35	3.26	0.01	179.80	602	213
Average Cylinder Concentration:						599	211

	CH₄		C₃H₈
Previous Stated Concentration PPM:	<u>600</u>		<u>207</u>
Percent variance from Stated:	<u>0</u>		<u>2</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:** December 13, 2017
Operator Signature: **Location:** McIntyre Center Edmonton



Calibration Gas Audit

NO Cylinder Gas

File No. 2017-487CGA

Company: Maxxam **Operators name:** Mike
Cylinder #: LL108015 **Conc (PPM)** 52.2/52.3 **Tolerance (%)** 2 **Certified By:** Praxair
Expiry Date: October 2020

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>December 13, 2017</u>			Temp. °C	<u>23.4 C</u>
Gas Type	<u>NO</u>	Conc.	<u>50.03</u>	B.P.	<u>707 mmHg</u>
Cylinder Number	<u>APEX 1223938</u>				
Expiry Date	<u>June 2020</u>				

Reference Analyzer:

Make/Model Teco 42i Serial/AMU Number: 1868
Instrument Settings Zero: 4.7 Span: 1.004 Range: 1.0
Last Calibration: Date: Dec12/17 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	X	X	X	X
4989	79.5	0.833	0.831	0.016	62.755	52.3	52.1
4995	39.6	0.417	0.417	0.008	126.136	52.6	52.6
4992	19.6	0.209	0.209	0.004	254.694	53.2	53.2
Average Cylinder Concentration:						52.7	52.7

<u>NO</u>	<u>NOx</u>
Previous Stated Concentration PPM: <u>52.2</u>	<u>52.3</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: December 13, 2017
Operator Signature: *Al Clark* Location: McIntyre Center Edmonton



Lakeland Industry & Community Association

APRIL 2019

Ambient Air Monitoring Calibration Report

- ST. LINA STATION-

CAL-LICA-201904-01250

Station Operation and Maintenance:

Maxxam Analytics

Data Validation and Report:

Maxxam Analytics

June 4, 2019

Alberta Environment and Parks (AEP)
Air.Reporting@gov.ab.ca

June 4, 2019

Subject:

April 2019 Ambient Air Monitoring Calibration Report Submission for the LICA St. Lina station

Lakeland Industry & Community Association (LICA) is pleased to submit the ambient air monitoring calibration report for the LICA St. Lina AQM Station in the month of April 2019. This calibration report includes equipment calibration records, calibrator performance audit records and calibration gas audit records for the equipment that were used this month. This calibration report is prepared by the LICA network contractor.

Should you have any questions, please don't hesitate to contact us.

Respectfully,



Michael Bisaga
Technical Program Manager
Lakeland Industry & Community Association
780-266-7068
monitoring@lica.ca



Lily Lin
Data & Reporting Specialist
587-225-2248
monitoring@lica.ca

April 1 - 30, 2019

MONTHLY CALIBRATION REPORT

Project #: 2833-2019-04-25-C

LICA-201904

Prepared for:

Lakeland Industry & Community Association

Mike Bisaga

5107 50 St.

Bonnyville, Alberta T9N 2J7

monitoring@lica.ca

780-266-7068

St. Lina Continuous Monitoring Station

Date of Report Issuance: May 24, 2019



#1 - 2080 39 Avenue NE, Calgary AB, T2E 6P7

CAL-LICA-201904-01250

Page 3 of 31



Thermo 431-TLE Sulphur Dioxide Analyzer Calibration

Date:	April 12, 2019	Barometer/B.P./units:	Brunton #05490	935.6	millibars
Company/Airshed:	LICA	Thermometer/Station Temp:	Station Probe	22.9	°C
Location/Station Name:	St Lina	Weather Conditions:	Mix of sun and clouds		
Parameter:	Sulphur Dioxide	Calibration Purpose:	routine monthly		
Start Time 24 hr. (mst):	8:30	Performed By/Reviewer:	Chris Wesson	Rob Fisher	
End Time 24 hr. (mst):	12:25	Cal Gas Expiry Date:	October 24, 2020		
Calibration Method:	Gas Dilution	Converter Model & s/n (if applicable):	n/a		
Analyst:		Range ppb:	1000		
Serial Number/Owner:	1180930030 LICA	As Found C.F.:	0.961		
Last Calibration Date:	March 19, 2019	New C.F.:	1.000		
Previous C.F.:	1.000				

Calibration Standards:		Standard Calibration Points for Ranges	
Low Flow Meter ID/Expiry Date:	N/A	Point	ppb
High Flow Meter ID/Expiry Date:	N/A	High	780
Calibrator ID/Expiry Date:	Sabio2010 #26801218 expires January 15, 2020	Mid	380
Cal Gas Cylinder I.D. #:	LL108015	Low	190
Cal Gas Conc. (ppm):	47.9		

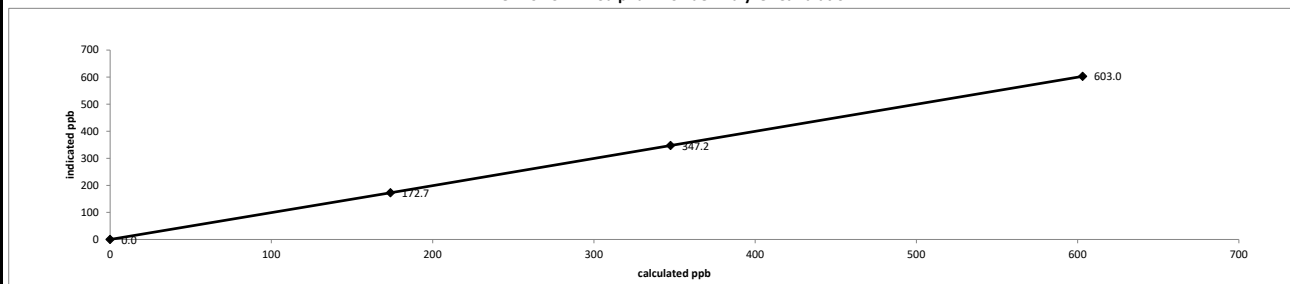
ALL POINTS ARE 15 MINUTES OF STABILITY AS OF SEPTEMBER 23, 2015

Point	Calibrator Flow Rates (cc/min)			Calculated Concentration (ppb):	Indicated Concentration (ppb):	Correction Factors (C.F.):
	Diluent	Cal Gas	Total			
as found zero	5016	0.00	5016	0.0	-0.2	n/a
as found high	4940	63.00	5003	603.2	627.3	0.961
adjusted zero	5016	0.00	5016	0.0	0	n/a
adjusted high	4940	63.00	5003	603.2	603	1.000
mid	4981	36.40	5017	347.5	347.2	1.001
low	4997	18.20	5015	173.8	172.7	1.007
calibrator zero	5016	0.00	5016	0.0	0.2	n/a
Average C.F. =						1.003

Linear Regression/Calibration Results:

Correlation Coefficient =	1.000	LIMITS
Slope =	1.000	> or = 0.995
b (Intercept as % of full scale) =	0.05%	0.95-1.05
% change in C.F. from last cal =	3.88%	± 3% F.S.
		± 10%

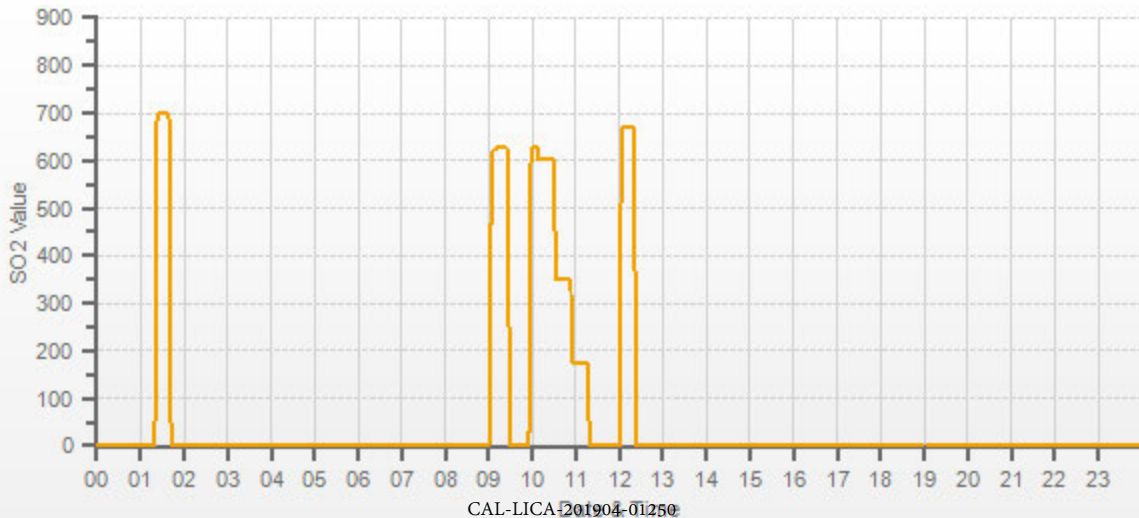
Thermo 431-TLE Sulphur Dioxide Analyzer Calibration



As found:		As left:	
Bkg:	4.02	Bkg:	3.85
Coef:	1.087	Coef:	1.042
Pmt:	-696.7	Pmt:	-696.7
Flash:	989	Flash:	990
Internal:	30.2	Internal:	30.7
Chamber:	45.2	Chamber:	44.9
Perm Oven Gas:	45.00	Perm Oven Gas:	45.00
Perm Oven Heater:	44.15	Perm Oven Heater:	44.15
Pressure:	668.4	Pressure:	667.5
Sample Flow:	0.437	Sample Flow:	0.436
Lamp Intensity:	91	Lamp Intensity:	90
Averaging Time:	120	Averaging Time:	120
Expected Value:	694.0	Expected Value:	670.0

Comments:
 The analyzer sample inlet filter was changed.
 The analyzer cooling fan filter(s) were cleaned.
 The manifold blower was found to be working normally.

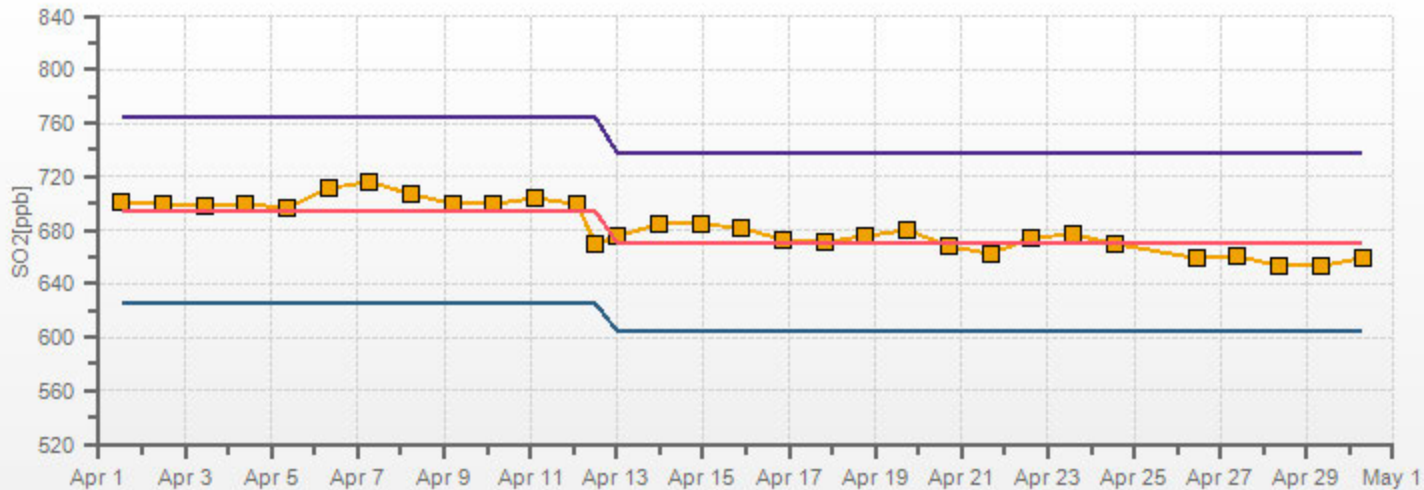
— SO2[ppb]



CAL-LICA-2019-04-12

SO2[ppb] Calibration: LICA ST. LINA Monthly: 19/04 Type: Span

■ Span Meas
 — Span Ref
 — Span Low
 — Span High



CAL-LICA-2019-04-01250



Thermo 450i Hydrogen Sulphide Analyzer Calibration

Date:	April 12, 2019	Barometer/B.P./units:	Brunton #05490	935.6	millibars
Company/Airshed:	LICA	Thermometer/Station Temp:	Station Probe	22.4	°C
Location/Station Name:	St Lina	Weather Conditions:	Mix of sun and clouds		
Parameter:	Hydrogen Sulphide	Calibration Purpose:	routine monthly		
Start Time 24 hr. (mst):	8:30	Performed By/Reviewer:	Chris Wesson	Rob Fisher	
End Time 24 hr. (mst):	12:47	Cal Gas Expiry Date:	November 7, 2020		
Calibration Method:	Gas Dilution	Converter Model & s/n (if applicable):	Internal		
Analyzer:					
Serial Number/Owner:	CM 18010058 LICA	Range ppb:	100		
Last Calibration Date:	March 19, 2019	As Found C.F.:	1.016		
Previous C.F.:	0.998	New C.F.:	0.999		

Calibration Standards:	Standard Calibration Points for Ranges	SO2 Scrubber Check (10 minutes):
Low Flow Meter ID/Expiry Date:	N/A	Start/End Time 24 hr.:
High Flow Meter ID/Expiry Date:	N/A	SO2 Analyzer Range:
Calibrator ID/Expiry Date:	EnviroNics 2000 #1991 expires February 13, 2020	Target Concentration (ppb):
Cal Gas Cylinder I.D. #:	LL119432	As Found Zero:
Cal Gas Conc. (ppm):	10.28	Analyzer Response: (ppb):
		Zero Corrected Result (ppb):

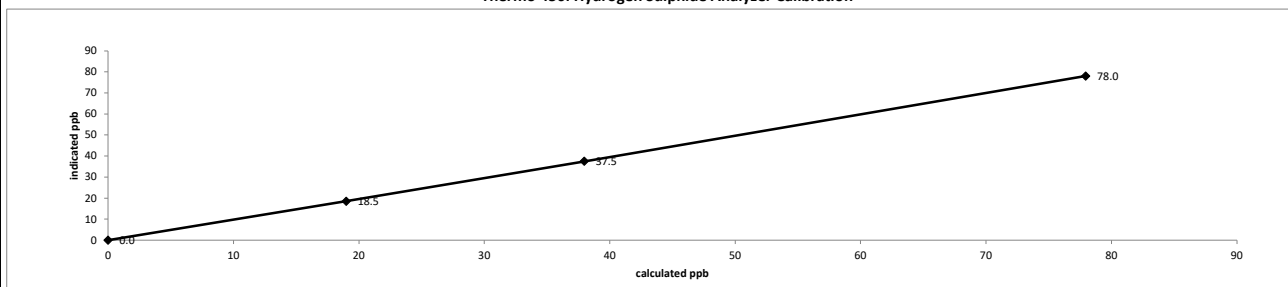
ALL POINTS ARE 15 MINUTES OF STABILITY AS OF SEPTEMBER 23, 2015

Calibrator Flow Rates (cc/min)				Calculated Concentration (ppb):	Indicated Concentration (ppb):	Correction Factors (C.F.):
Point	Diluent	Cal Gas	Total			
as found zero	7506	0.00	7506	0.0	1.8	n/a
as found high	7448	56.91	7505	78.0	78.5	1.016
adjusted zero	7506	0.00	7506	0.0	0	n/a
adjusted high	7448	56.91	7505	78.0	78	0.999
mid	7478	27.73	7506	38.0	37.5	1.013
low	7494	13.87	7508	19.0	18.5	1.026
calibrator zero	7506	0.00	7506	0.0	0.3	n/a
Average C.F. =						1.013

Linear Regression/Calibration Results:

Correlation Coefficient =	1.000	LIMITS	> or = 0.995
Slope =	0.998		0.95-1.05
b (Intercept as % of full scale) =	0.30%		± 3% F.S.
% change in C.F. from last cal =	-1.84%		± 10%

Thermo 450i Hydrogen Sulphide Analyzer Calibration

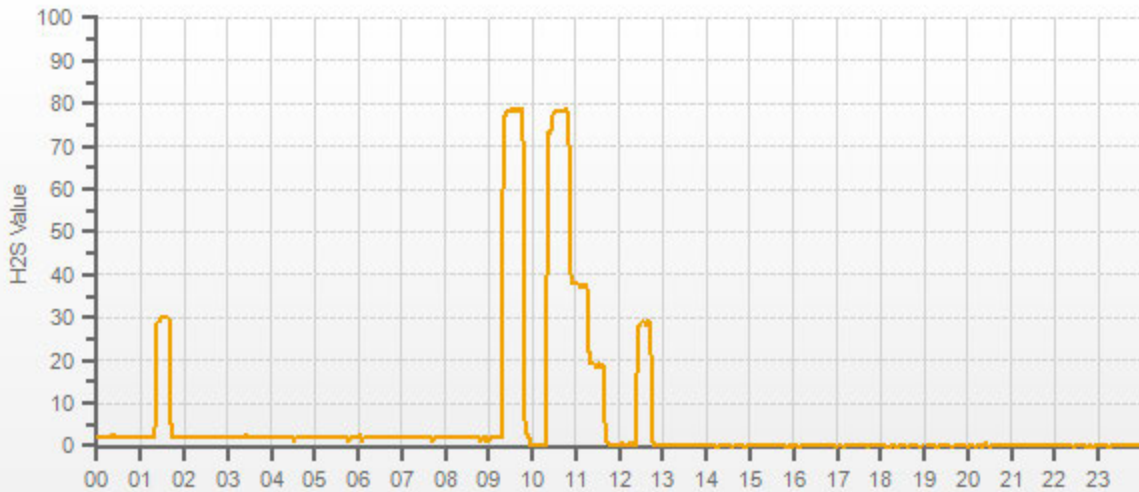


As found:		As left:	
Bkg:	33.4	Bkg:	35.7
Coef:	0.820	Coef:	0.834
Pmt:	-634.9	Pmt:	-634.6
Flash:	906	Flash:	908
Internal:	32.3	Internal:	34.0
Chamber:	45.1	Chamber:	45.0
Converter Temp:	325.7	Converter Temp:	326.8
Converter Set:	325.0	Converter Set:	325.0
Perm Oven Gas:	45.00	Perm Oven Gas:	45.00
Perm Oven Htr:	44.09	Perm Oven Htr:	44.12
Pressure:	583.0	Pressure:	580.9
Sample Flow:	0.824	Sample Flow:	0.820
Lamp Intensity:	90	Lamp Intensity:	89
Averaging Time:	120	Averaging Time:	120
Expected Value:	28.1	Expected Value:	28.7

Comments:

The analyzer sample inlet filter was changed.
 The analyzer cooling fan filter(s) were cleaned.
 The manifold blower was found to be working normally.

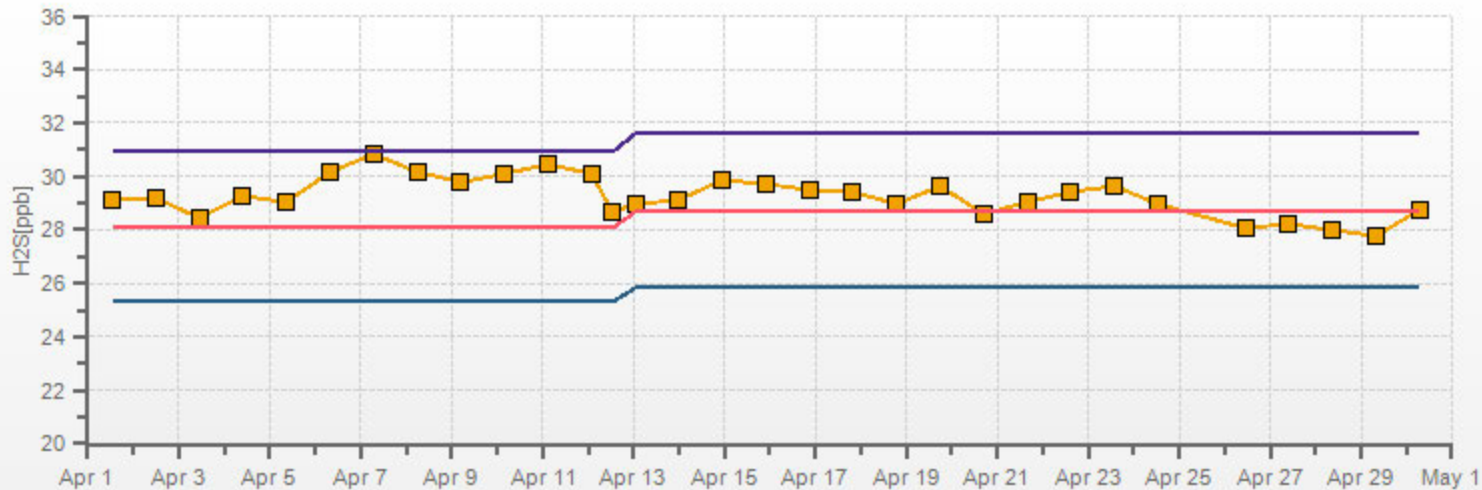
H2S[ppb]



CAL-LICA-2019-04-12

H2S[ppb] Calibration: LICA ST. LINA Monthly: 19/04 Type: Span

Span Meas Span Ref Span Low Span High



CAL-LICA-2019-04-01250



Thermo 55i Methane/Non-Methane Analyzer Calibration

Date:	April 12, 2019	Barometer/B.P./units:	Brunton #05490	935.6	millibars
Company/Airshed:	LICA	Thermometer/Station Temp:	Station Probe	22.9	°C
Location/Station Name:	St Lina	Weather Conditions:	Mix of sun and clouds		
Parameter:	CH4 / NMHC / THC	Calibration Purpose:	routine monthly		
Start/End Time 24 hr. (mst):	12:11 / 16:05	Performed By/Reviewer:	Chris Wesson	Rob Fisher	
Calibration Method:	Gas Dilution	Cal Gas Expiry Date:	October 18, 2025		

Analyzer:		Correction Factors:			
Serial Number/Owner:	1180320044 LICA	Previous C.F.:	As Found C.F.:	New C.F.:	
Measured Flow:	1.2 L/min	CH ₄ =	1.000	1.022	0.999
Last Calibration Date:	March 20, 2019	NMHC =	1.000	1.054	0.999
Range ppm:	20 CH4/20 NMHC/40 THC	THC =	1.000	1.037	0.998

Calibration Standards:		Standard Calibration Points for Analyzer Range of 20/20/40 ppm			
Low Flow Meter ID/Expiry Date:	N/A	Point	CH4	NMHC	THC
High Flow Meter ID/Expiry Date:	N/A	High	13.00	13.00	26.00
Calibrator ID/Expiry Date:	EnviroNics 2000 #1991 expires February 13, 2020	Mid	7.00	7.00	14.00
Cal Gas Cylinder I.D. #:	LL107207	Low	3.00	3.00	6.00
CH4 Cylinder Conc. =	600.0 207.0 = C ₂ H ₆ Cylinder Conc.				
CH ₄ expressed as C ₂ H ₆ =	569.3 1169.3 = total CH4 equivalent				

ALL POINTS ARE 15 MINUTES OF STABILITY AS OF SEPTEMBER 23, 2015

Point	Calibrator Flow Rates (cc/min)			Calculated CH ₄ (ppm)	Calculated NMHC (ppm)	Calculated THC (ppm)	Indicated CH ₄ (ppm)	Indicated NMHC (ppm)	Indicated THC (ppm)	Correction Factors:		
	Diluent	Cal Gas	Total Flow							CH ₄	NMHC	THC
as found zero	3000	0.00	3000	0.00	0.00	0.00	0.00	0.00	0.00	n/a	n/a	n/a
as found high	2931	71.81	3003	14.35	13.61	27.96	14.04	12.92	26.95	1.022	1.054	1.037
adjusted zero	3000	0.00	3000	0.00	0.00	0.00	0.00	0.00	0.00	n/a	n/a	n/a
adjusted high	2931	71.81	3003	14.35	13.61	27.96	14.36	13.63	28.00	0.999	0.999	0.998
mid	2966	35.87	3002	7.17	6.80	13.97	7.12	6.87	13.99	1.007	0.990	0.999
low	2982	17.50	2999	3.50	3.32	6.82	3.56	3.49	7.04	0.983	0.951	0.969
calibrator zero	3000	0.00	3000	0.00	0.00	0.00	0.00	0.00	0.00	n/a	n/a	n/a
Average C.F. =										0.996	0.980	0.989

Linear Regression/Calibration Results:

Correlation Coefficient =	CH ₄	NMHC	THC	LIMITS
Slope =	1.000	1.000	1.000	> or = 0.995
b (Intercept as % of full scale) =	0.999	0.998	0.999	0.95-1.05
% change in C.F. from last cal =	0.06%	0.39%	0.21%	± 3% F.S.
	-2.18%	-5.35%	-3.74%	± 10%

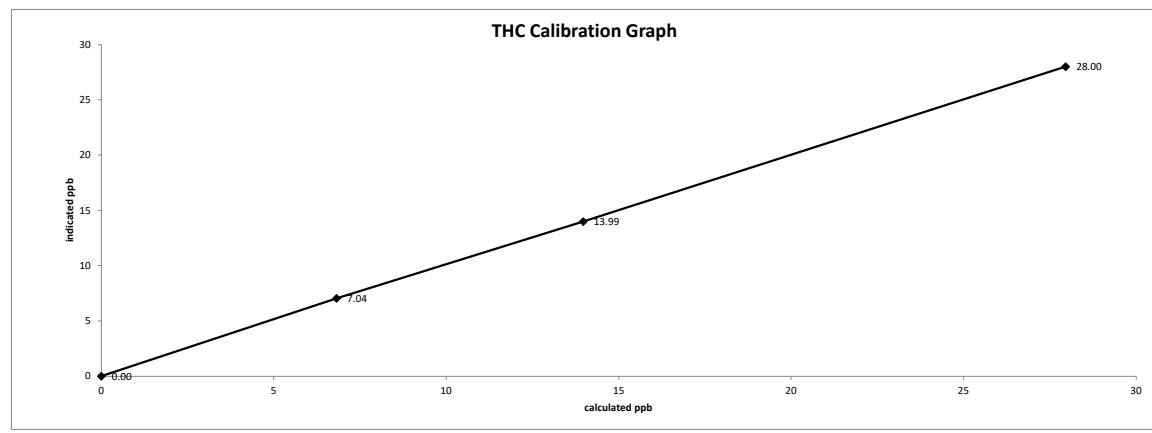
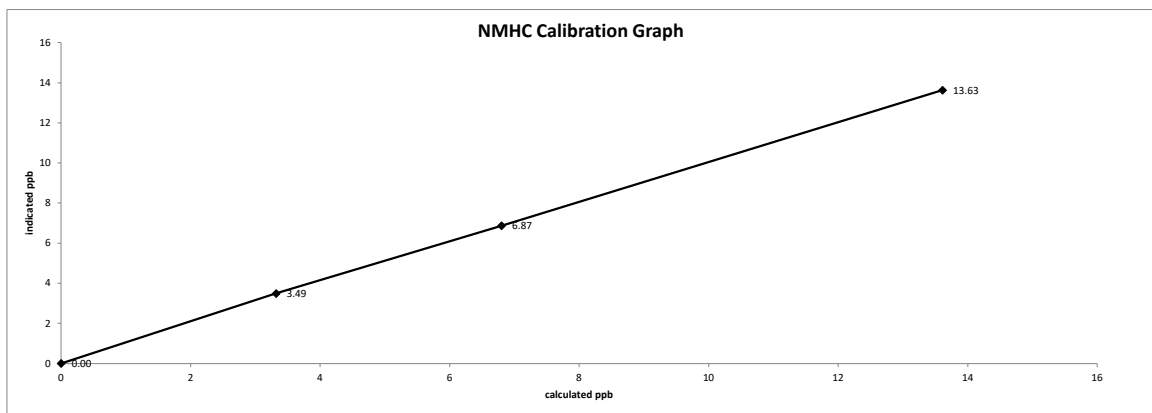
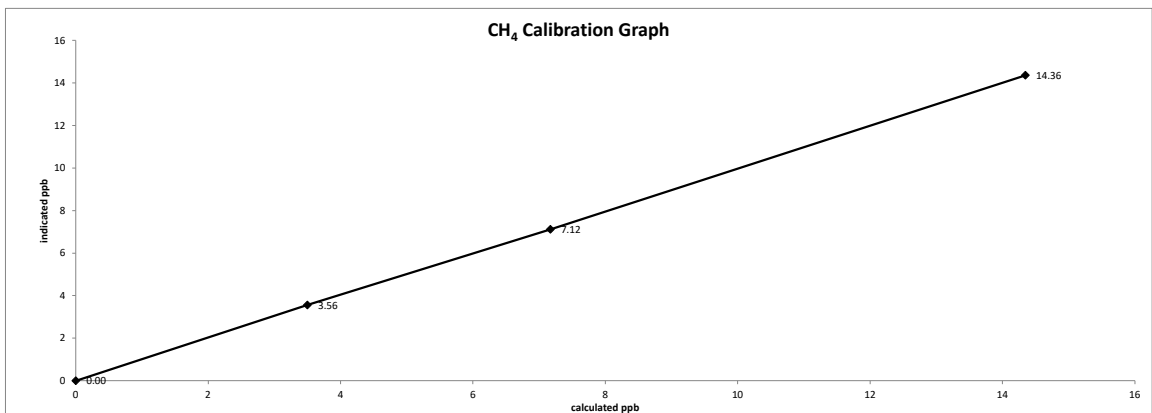
As Left Instrument Diagnostics:

Interface Board Voltages:	Bias Supply:	-297.0	Calibration History cnt'd:	NM Peak Area:	87159
Temperatures:	Detector Oven:	175.0	Crucial Settings:	Methane Start:	n/a
	Filter:	175.1		Methane End:	n/a
	Column Oven:	75.1		Backflush:	n/a
	Internal:	30.6		NMHV Start:	n/a
Cylinder Pressures/reg.:	Carrier:	700 50	Run History>1:	NMHC End:	n/a
	Fuel:	2500 50		Date:	12Apr2019
	Span Gas:	900 7		Time:	14:58
	Zero Air Generator:	50		CH ₄ PK HT:	0
Internal Pressures:	Carrier:	32.0		CH ₄ RT:	12.4
	Fuel:	48.1		CH ₄ Baseline:	3734
	Air:	36.2		CH ₄ LOD:	50
FID Status:	Status:	LIT		CH ₄ SD:	13
	Counts:	41225		CH ₄ CONC:	0.000
	Flame:	405.0		NM PK HT:	0
	Det Base:	175.0		NM Peak Area:	0
Flame and Power Stats:	Last Power On:	20Dec2018@14:07		NM CONC:	0.00
	Flameouts:	302		NM Base Start:	3680
	Det Oven at Start:	166.9		NM Base End:	3746
	Col Oven at Start:	73.6		NM LOD:	51
Calibration History:	Time:	12Apr2019@13:44		NM Start IDX:	4
	Type:	Span		NM End IDX:	78
	Status:	Good		NM Max Slope:	3.0e+00
	Check/Adjust:	Adjust		NM Min Slope:	-5.9e01
	CH ₄ Span Conc:	14.35	Expected Values:	NM PT Count:	0
	CH ₄ SP Ratio:	0.000707		Previous CH ₄ :	10.06
	CH ₄ RT:	13.2		Previous NMHC:	10.78
	CH ₄ PK IDX:	26		Previous THC:	20.83
	CH ₄ PK HT:	20298		New CH ₄ :	10.21
	NM Span Conc:	13.61		New NMHC:	11.31
	NM SP Ratio:	0.000156		New THC:	21.52

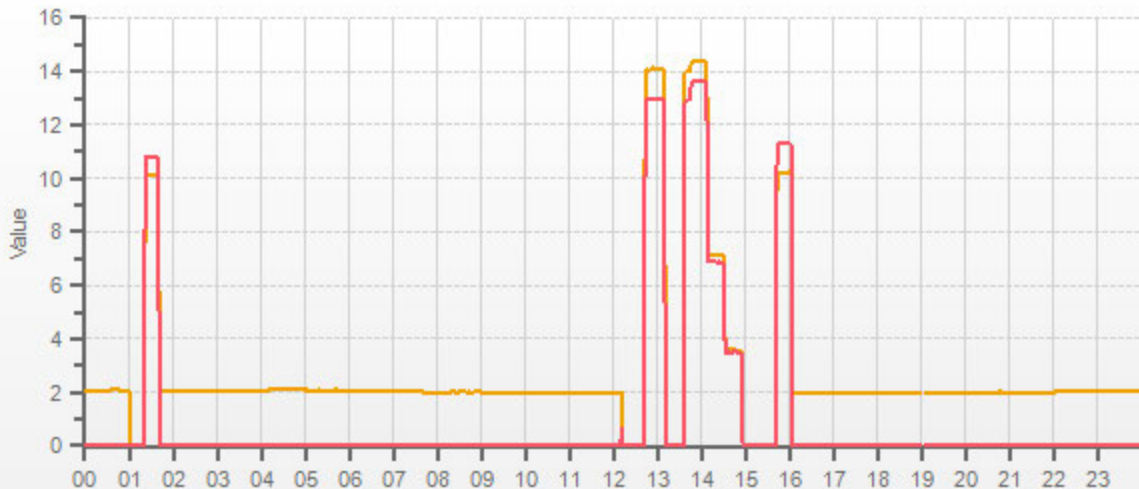
Comments:
 The analyzer sample inlet filter was changed.
 The analyzer cooling fan filter(s) were cleaned.
 The manifold blower was found to be working normally.

Date: April 12, 2019
Company/Airshed: LICA
Location/Station Name: St Lina

Start/End Time 24 hr. (mst): 12:11 / 16:05
Calibration Purpose: routine monthly
Calibration Method: Gas Dilution



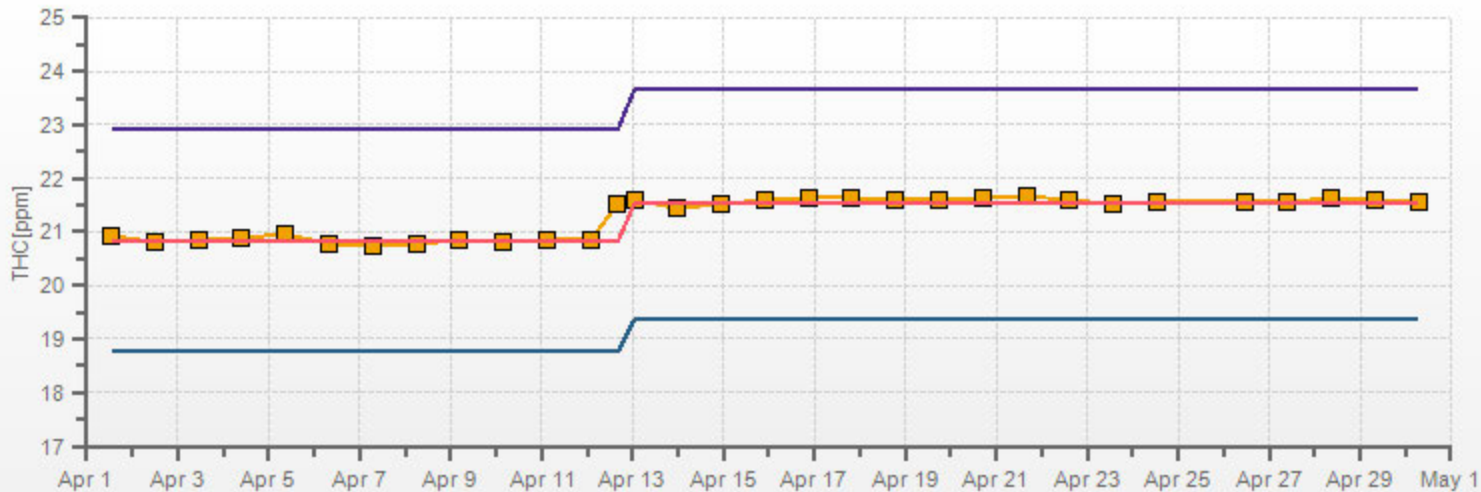
CH4[ppm] NMHC[ppm]



CAL-LICA-2019-04-01250

THC[ppm] Calibration: LICA ST. LINA Monthly: 19/04 Type: Span

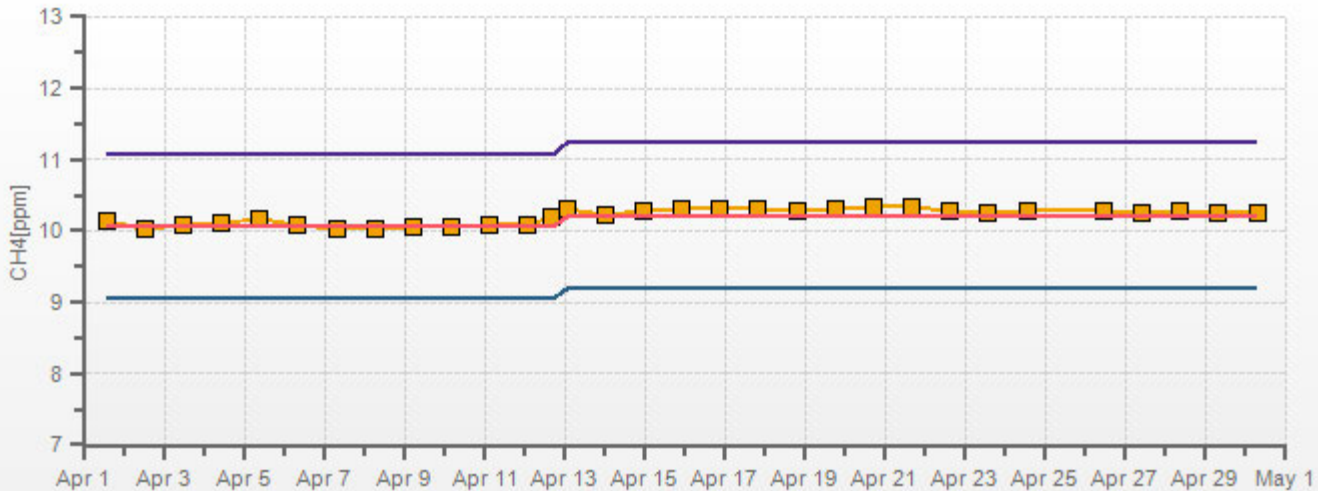
■ Span Meas
 — Span Ref
 — Span Low
 — Span High



CAL-LICA-201904-01250

CH4[ppm] Calibration: LICA ST. LINA Monthly: 19/04 Type: Span

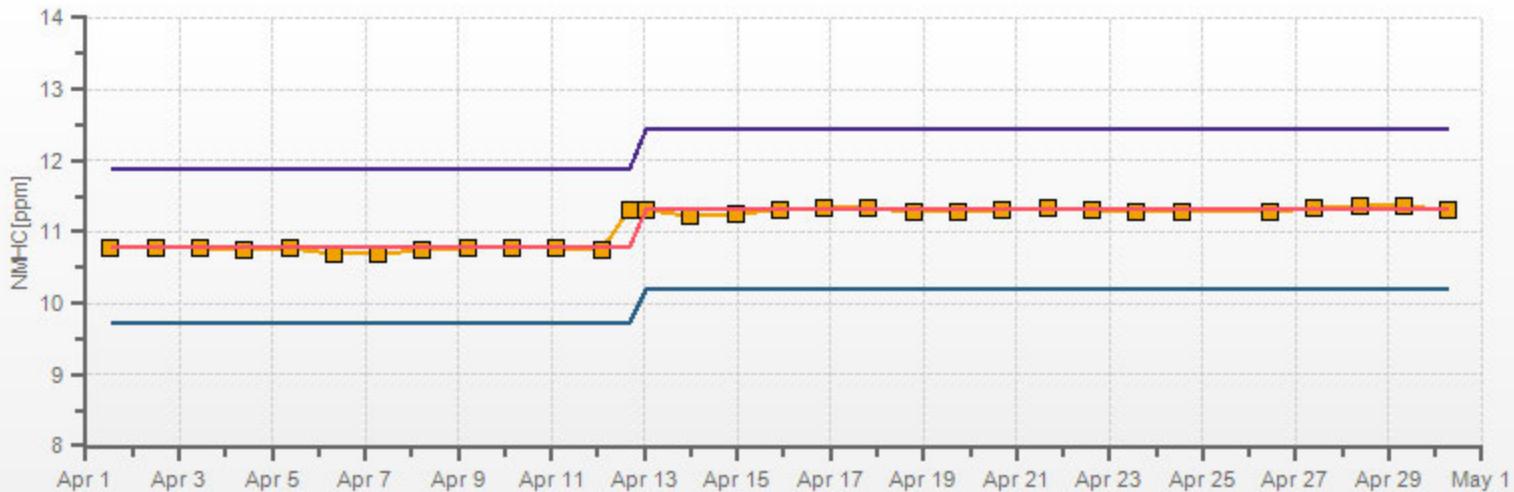
Span Meas Span Ref Span Low Span High



CAL-LICA-2019-04-01250

NMHC[ppm] Calibration: LICA ST. LINA Monthly: 19/04 Type: Span

■ Span Meas
 — Span Ref
 — Span Low
 — Span High



CAL-LICA-2019-04-01250



Thermo 42i NO-NO2-NOx Analyzer Calibration

Date: April 12, 2019	Barometer/B.P./units: Brunton #05490	935.6	millibars
Company/Airshed: LICA	Thermometer/Station Temp: Station Probe	23.4	°C
Location/Station Name: St Lina	Weather Conditions: Mix of sun and clouds		
Start/End Time 24 hr. (mst): 08:30 / 14:04	Calibration Purpose: routine monthly		
G.P.T. to be used for Ozone? Yes with 1000 ppb NOx full scale	Performed By/Reviewer: Chris Wesson	Rob Fisher	
Calibration Method: Gas Dilution & Gas Phase Titration	Cal Gas Expiry Date: October 24, 2020		

Analyzer: Serial Number/Owner: 1180930029 LICA Last Calibration Date: March 19, 2019 Range ppb: 1000	Correction Factors: <table border="1" style="width: 100%; border-collapse: collapse;"> <thead> <tr> <th></th> <th>Previous C.F.:</th> <th>As Found C.F.:</th> <th>New C.F.:</th> </tr> </thead> <tbody> <tr> <td>NO =</td> <td>1.000</td> <td>0.989</td> <td>1.000</td> </tr> <tr> <td>NO₂ =</td> <td>1.000</td> <td>1.003</td> <td>1.003</td> </tr> <tr> <td>NOx =</td> <td>1.000</td> <td>0.989</td> <td>0.999</td> </tr> </tbody> </table>		Previous C.F.:	As Found C.F.:	New C.F.:	NO =	1.000	0.989	1.000	NO ₂ =	1.000	1.003	1.003	NOx =	1.000	0.989	0.999
	Previous C.F.:	As Found C.F.:	New C.F.:														
NO =	1.000	0.989	1.000														
NO ₂ =	1.000	1.003	1.003														
NOx =	1.000	0.989	0.999														

Calibration Standards: Low Flow Meter ID/Expiry Date: N/A High Flow Meter ID/Expiry Date: N/A Calibrator ID/Expiry Date: Sabio2010 #26801218 expires January 15, 2020 Cal Gas Cylinder I.D. #: LL108015 Cal Gas Conc. (ppm): 52.2 52.3	<table border="1" style="width: 100%; border-collapse: collapse;"> <thead> <tr> <th colspan="4">Standard Calibration Points for a Range of: 1000 ppb</th> </tr> <tr> <th>Point</th> <th>Target NO (ppb)</th> <th>Target NO₂ (ppb)</th> <th>Cc Ozone ?</th> </tr> </thead> <tbody> <tr> <td>High</td> <td>610</td> <td>375</td> <td><-high ozone</td> </tr> <tr> <td>Mid</td> <td>380</td> <td>190</td> <td><-mid ozone</td> </tr> <tr> <td>Low</td> <td>190</td> <td>70</td> <td><-low ozone</td> </tr> <tr> <td>Extra Point #1</td> <td>n/a</td> <td>n/a</td> <td>n/a</td> </tr> <tr> <td>Extra Point #2</td> <td>n/a</td> <td>n/a</td> <td>n/a</td> </tr> </tbody> </table>	Standard Calibration Points for a Range of: 1000 ppb				Point	Target NO (ppb)	Target NO ₂ (ppb)	Cc Ozone ?	High	610	375	<-high ozone	Mid	380	190	<-mid ozone	Low	190	70	<-low ozone	Extra Point #1	n/a	n/a	n/a	Extra Point #2	n/a	n/a	n/a
Standard Calibration Points for a Range of: 1000 ppb																													
Point	Target NO (ppb)	Target NO ₂ (ppb)	Cc Ozone ?																										
High	610	375	<-high ozone																										
Mid	380	190	<-mid ozone																										
Low	190	70	<-low ozone																										
Extra Point #1	n/a	n/a	n/a																										
Extra Point #2	n/a	n/a	n/a																										

ALL POINTS ARE 15 MINUTES OF STABILITY AS OF SEPTEMBER 23, 2015

Calibrator Flow Rates (cc/min)				Calculated NO	Calculated NOx	Indicated NO	Indicated NOx	NO C.F.	NOx C.F.
Point	Diluent	Cal Gas	Total Flow	(ppb)	(ppb)	(ppb)	(ppb)		
as found zero	5016	0.0	5016	0	0	-0.2	0.0	n/a	n/a
as found high	4940	63.0	5003	657.3	658.6	664.3	666.1	0.989	0.989
adjusted zero	5016	0.00	5016	0.0	0.0	0.0	0.0	n/a	n/a
adjusted high	4940	63.00	5003	657.3	658.6	657.0	659.0	1.000	0.999
mid	4981	36.40	5017	378.7	379.5	379.6	381.3	0.998	0.995
low	4997	18.20	5015	189.4	189.8	190.3	191.3	0.995	0.992
calibrator zero	5016	0.00	5016	0	0	0.1	0.1	n/a	n/a
Average C.F.=								0.998	0.996

ALL POINTS ARE 15 MINUTES OF STABILITY AS OF SEPTEMBER 23, 2015

Calibrator Flow Rates (cc/min)				Calibrator Setting	Indicated NO	Indicated NOx	Indicated NO ₂	NO drop	NO ₂ gain	NO ₂ C.F.
Point	Diluent	Cal Gas	Total Flow	volts or ppb	(ppb)	(ppb)	(ppb)	(ppb)	(ppb)	(ppb)
NOx reference	4940	63.00	5003	0.0	654.0	657.0	3.0	0.0	3.0	
as found high NO2	4940	63.00	5003	370.0	265.0	657.0	391.0	389.0	388.0	1.003
adjusted high NO2	4940	63.00	5003	370.0	265.0	657.0	391.0	389.0	388.0	1.003
gpt mid	4940	63.00	5003	188.0	459.0	657.0	198.0	195.0	195.0	1.000
gpt low	4940	63.00	5003	85.0	567.0	656.0	89.0	87.0	86.0	1.012
Average NO ₂ C.F.=										1.005

Linear Regression/Calibration Results:

	NO	NOx	NO ₂	LIMITS
Correlation Coefficient =	1.000	1.000	1.000	> or = 0.995
Slope =	1.001	1.000	1.008	0.95-1.05
b (Intercept as % of full scale)=	0.05%	0.08%	0.15%	± 3% F.S.
% change in C.F. from last cal=	1.08%	1.13%	-0.26%	± 10%
NO2 converter efficiency			1.00	0.96 to 1.04

As found:		As left:	
NO Bkg:	5.5	NO Bkg:	5.4
NOx Bkg:	5.6	NOx Bkg:	5.6
NO Coef:	1.179	NO Coef:	1.167
NO2 Coef:	0.999	NO2 Coef:	0.999
NOx Coef:	1.003	NOx Coef:	1.004
PMT:	-824.4	PMT:	-824.4
Internal:	29.7	Internal:	29.9
Chamber:	50.4	Chamber:	50.5
Cooler:	-3.1	Cooler:	-2.9
NO2 Converter:	327.1	NO2 Converter:	324.5
NO2 Converter Set:	325.0	NO2 Converter Set:	325.0
Perm Oven Gas:	45.02	Perm Oven Gas:	45.00
Perm Oven Heater:	44.18	Perm Oven Heater:	44.16
Pressure:	257.8	Pressure:	256.0
Flow:	0.526	Flow:	0.519
Ozonator Flow:	OK	Ozonator Flow:	OK
Expected Value NO:	4	Expected Value NO:	3
Expected Value NO2:	391	Expected Value NO2:	393
Expected Value NOx:	395	Expected Value NOx:	396

Comments:

The analyzer sample inlet filter was changed.

The manifold blower was found to be working normally.

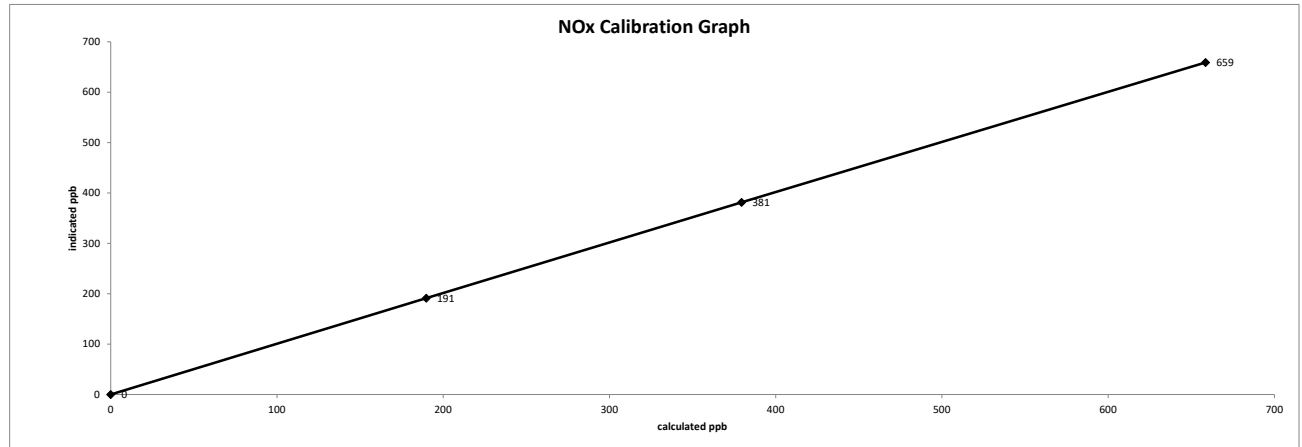
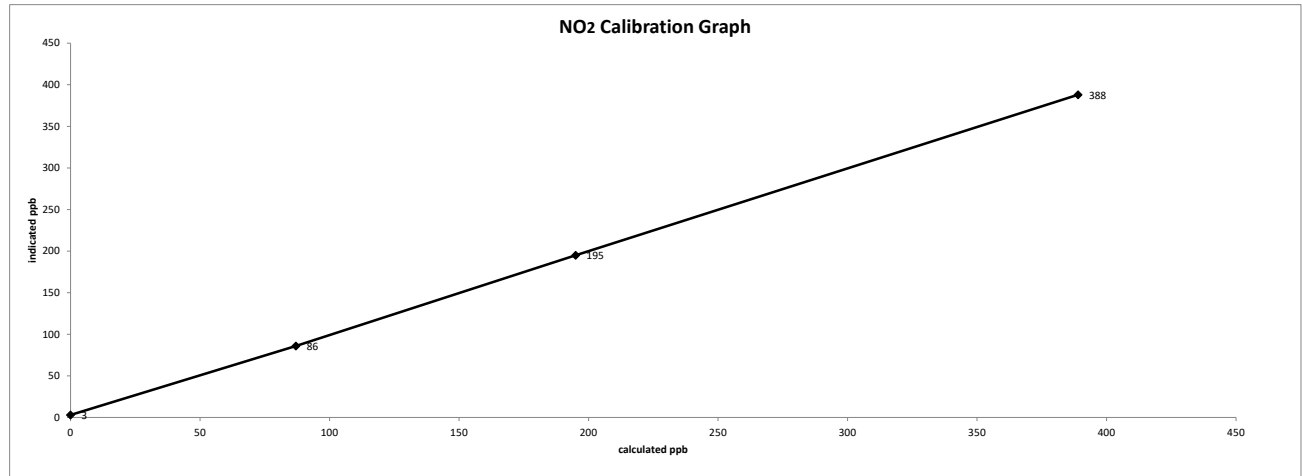
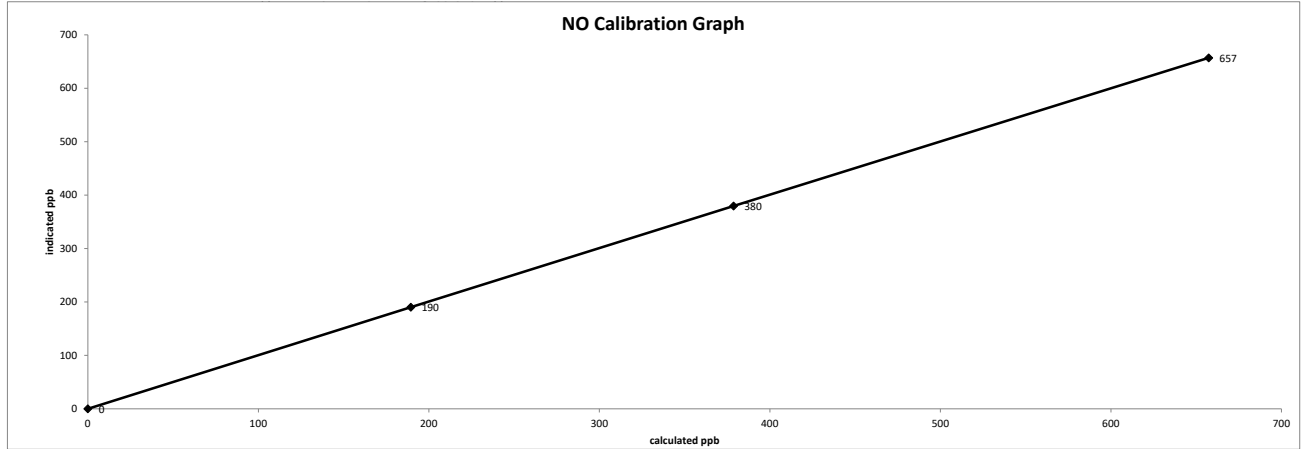
The analyzer cooling fan filter(s) were cleaned.

No high point NO2 adjustment was required/made. As found values were copied to adjusted high values for linearity calculation purposes.

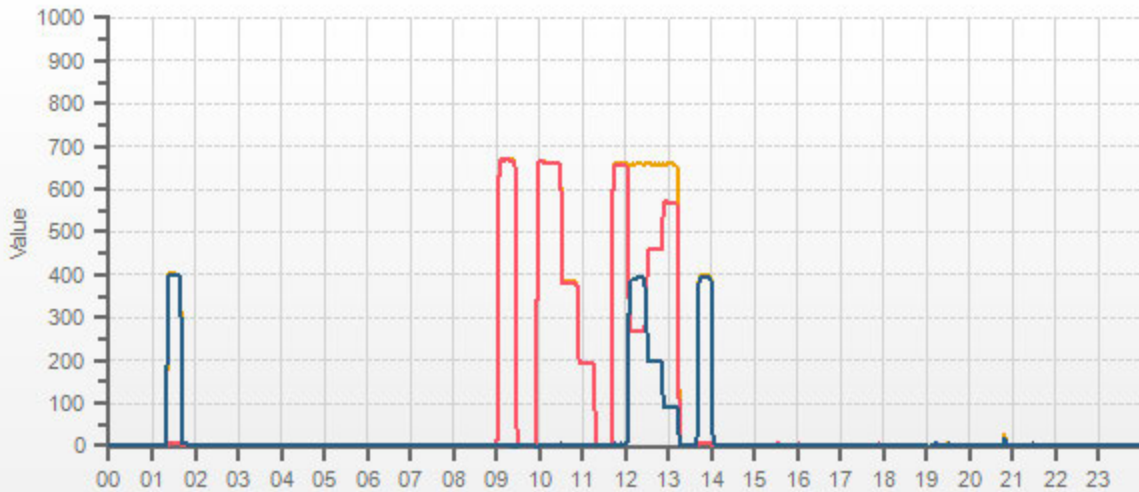
Date: April 12, 2019
Company/Airshed: LICA
Location/Station Name: St Lina

Start/End Time 24 hr. (mst): 08:30 / 14:04
Calibration Purpose: routine monthly
Calibration Method: Gas Dilution & Gas Phase Titration

Thermo 42i NO-NO2-NOx Analyzer Calibration



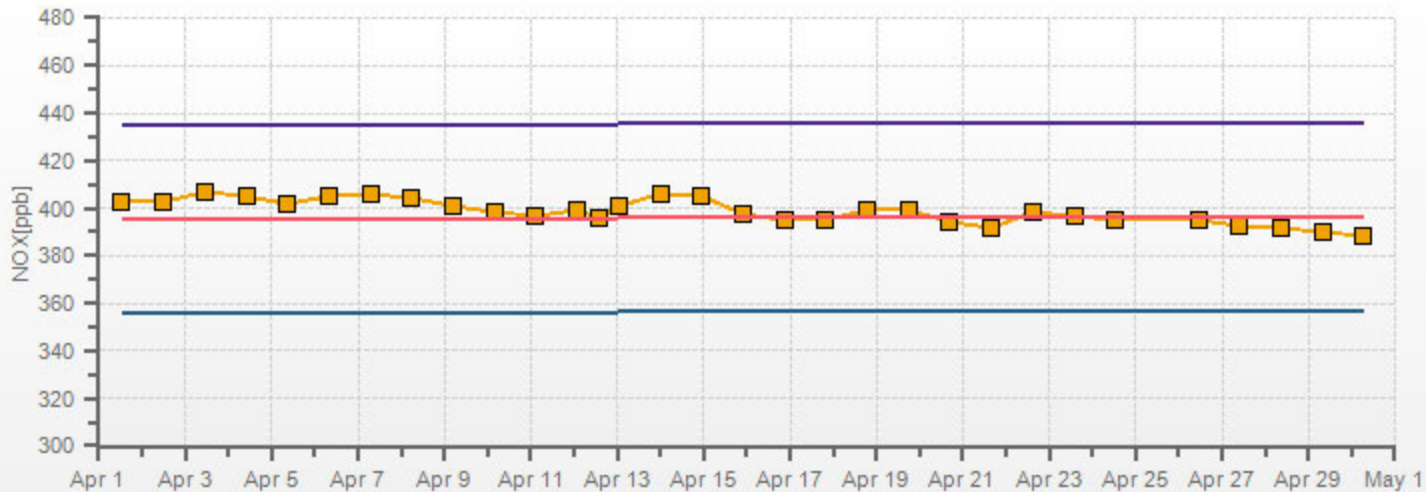
NOX[ppb] NO[ppb] NO2[ppb]



CAL-LICA-2019-04-25-C

NOX[ppb] Calibration: LICA ST. LINA Monthly: 19/04 Type: Span

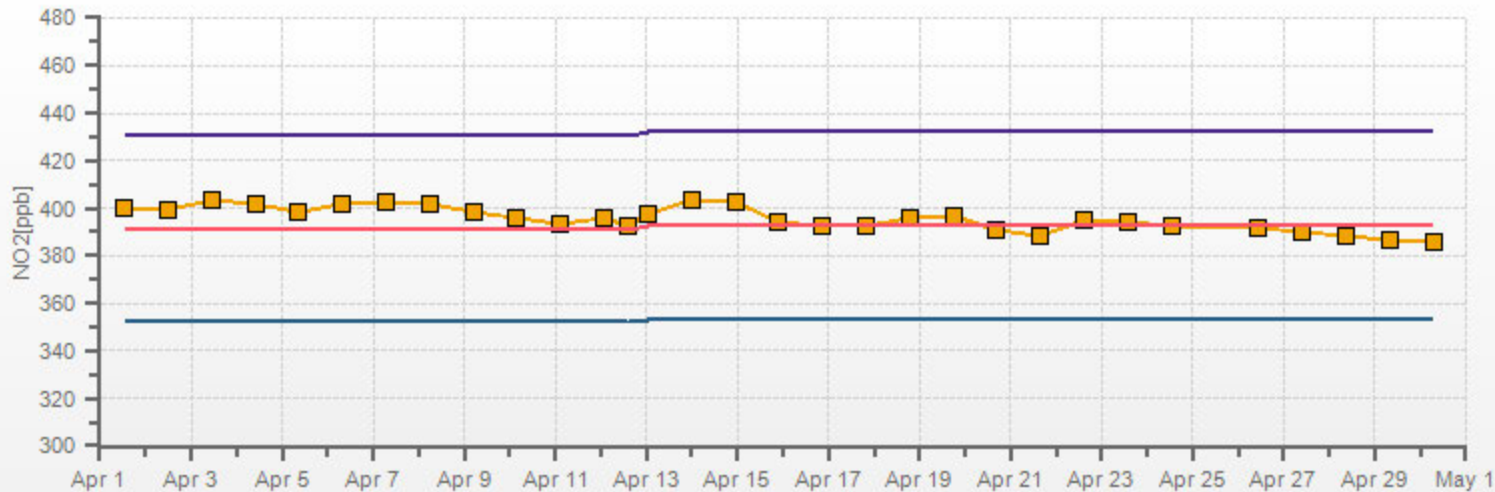
Span Meas Span Ref Span Low Span High



CAL-LICA-2019-04-01250

NO2[ppb] Calibration: LICA ST. LINA Monthly: 19/04 Type: Span

Span Meas Span Ref Span Low Span High



CAL-LICA-201904-01250

Page 20 of 31



Thermo 49i Ozone Analyzer Calibration

Date: April 12, 2019 Company/Airshed: LICA Location/Station Name: St Lina Start/End Time 24 hr. (mst): 13:23 /17:48 Ozone Calibration Method: Direct G.P.T. G.P.T. Date: April 12, 2019 Analyzer: Serial Number/Owner: 1002240371 LICA Last Calibration Date: April 20, 2019 Previous Cal High Point C.F.: 1.000	Barometer/B.P./units: Brunton #05490 935.6 millibars Thermometer/Station Temp: Station Probe 22.9 °C Weather Conditions: Mix of sun and clouds Calibration Purpose: routine monthly Performed By/Reviewer: Chris Wesson Rob Fisher Cal Gas Expiry Date: October 24, 2020 Ozone Range ppb: 500 As Found C.F.: 0.976 New C.F.: 1.000
---	---

Calibration Standards:	
Low Flow Meter ID/Expiry Date: N/A	
High Flow Meter ID/Expiry Date: N/A	
Calibrator ID/Expiry Date: Sabio2010 #26801218 expires January 15, 2020	
Cal Gas Cylinder I.D. #: LL108015	

Point	AMD Required Range of Ozone Calibration Points
High	300-400 ppb
Mid	150-200 ppb
Low	50-100 ppb

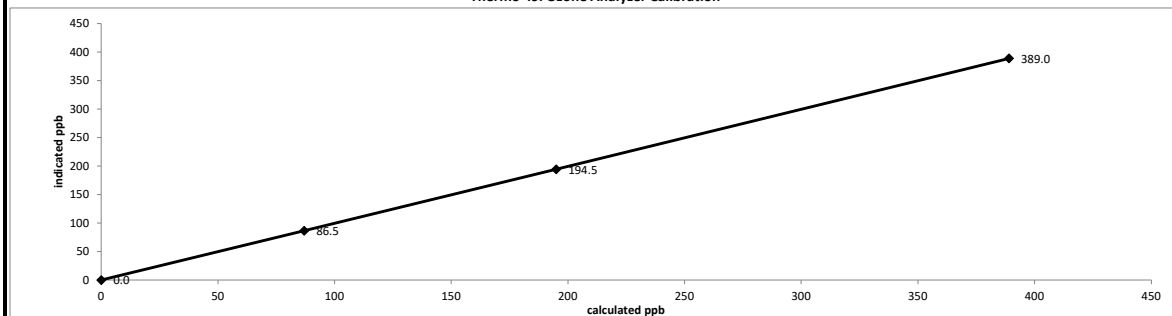
ALL POINTS ARE 15 MINUTES OF STABILITY AS OF SEPTEMBER 23, 2015

Point	Calibrator Flow Rate (cc/min)		Calculated Concentration:	Corrected Calculated Concentration:	Indicated Concentration:	Correction Factors:
	Total Flow @ Point Start	Total Flow @ Point Finish	(ppb)	(ppb)	(ppb)	
as found zero	5016	5016	0.0	n/a	-1.5	n/a
as found high	5016	5016	389.0	389.0	397.0	0.976
adjusted zero	5016	5016	0.0	0.0	0.0	n/a
adjusted high	5016	5016	389.0	389.0	389.0	1.000
mid	5016	5016	195.0	195.0	194.5	1.003
low	5016	5016	87.0	87.0	86.5	1.006
calibrator zero	5016	5016	0.0	n/a	0.5	n/a
Average C.F.=						1.003

Linear Regression/Calibration Results:

Correlation Coefficient = 1.000	LIMITS
Slope = 1.000	> or = 0.995
b (Intercept as % of full scale)= 0.06%	0.95-1.05
% change in C.F. from last cal= 2.38%	± 3% F.S.
	± 10%

Thermo 49i Ozone Analyzer Calibration

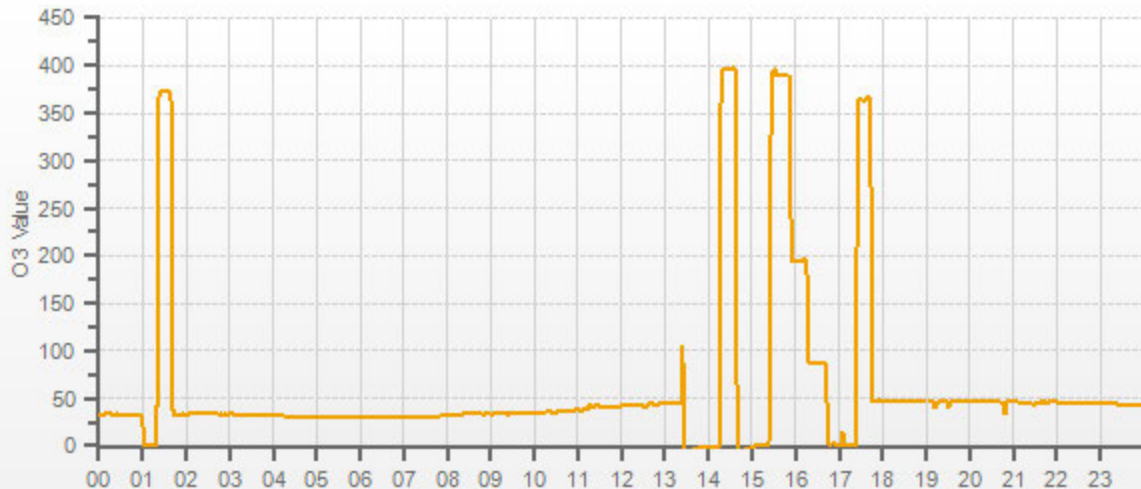


As found:	As left:
O3 Bkg: -0.1	O3 Bkg: -0.8
O3 Coef: 1.015	O3 Coef: 0.992
Photo Lamp: 10.7	Photo Lamp: 10.7
O3 Lamp: 8.2	O3 Lamp: 8.2
Bench: 29.5	Bench: 29.5
Bench Lamp: 53.5	Bench Lamp: 53.6
O3 Lamp: 67.8	O3 Lamp: 67.8
Pressure: 677.6	Pressure: 675.8
Cell A lpm: 0.730	Cell A lpm: 0.728
Cell B lpm: 0.771	Cell B lpm: 0.773
O3 ppb: -7.3	O3 ppb: 0.8
Cell A ppb: -8.4	Cell A ppb: 1.3
Cell B ppb: -6.2	Cell B ppb: 0.4
Cell A int (Hz): 70372	Cell A int (Hz): 70376
Cell B int (Hz): 89483	Cell B int (Hz): 89490
Expected Value: 370.0	Expected Value: 370.0

Comments:

The analyzer sample inlet filter was changed.
 The analyzer cooling fan filter(s) were cleaned.
 The manifold blower was found to be working normally.

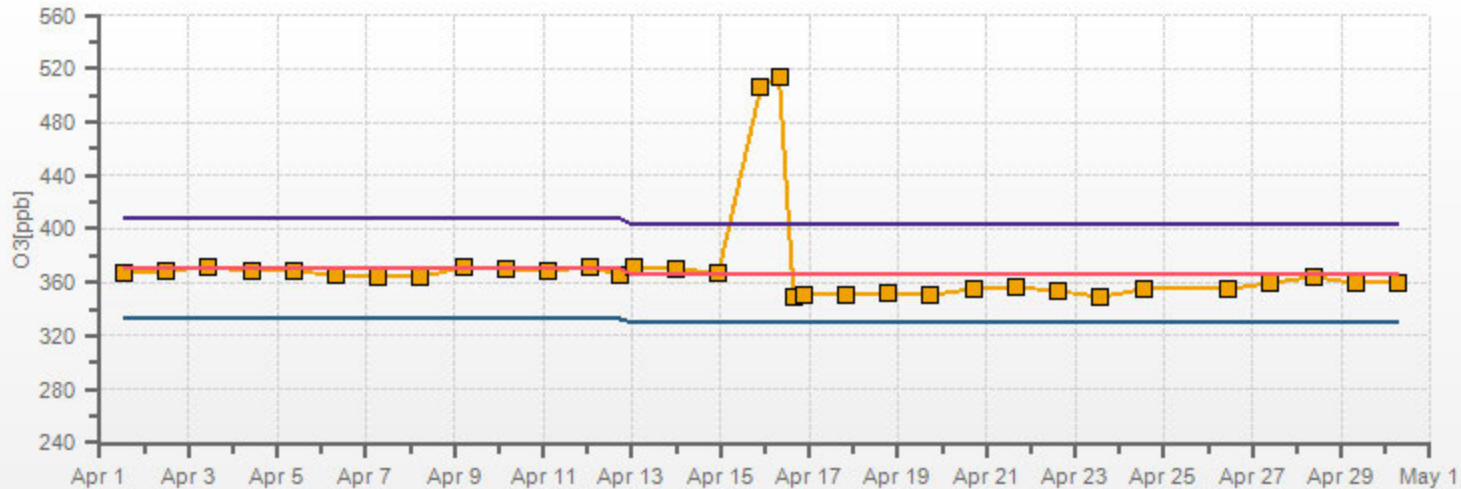
O3[ppb]



CAL-LICA-2019-04-12-20

O3[ppb] Calibration: LICA ST. LINA Monthly: 19/04 Type: Span

Span Meas Span Ref Span Low Span High



CAL-LICA-2019-04-01250



Thermo 5030i SHARP Monitor Monthly Check

Date: April 26, 2019
Company: LICA
Station Name/Location: Cold Lake South
Previous Audit Date: March 20, 2019
Parameter: PM 2.5

Performed By/Reviewer: Alex Yakupov | Rob Fisher
Start Time (mst): 9:43
End Time (mst): 10:21
Calibration Purpose: routine monthly
Weather Conditions: Mainly sunny

SHARP 5030i Information and Status:

Serial Number: CM 17091001 **Filter Tape Counter** 95

Reference Standards:

Air Flow

	Manometer	Orifice	Pressure:	Temp / RH:
Make:	Dwyer	Chinook	Fisher Scientific	Fisher Scientific
Model:	475 Mk. III	170101	Jan 17, 2020	11-661-7B 11745843
Serial Number:	#3	#4	130168457	160348895
Calibration Expiration Date:	January 17, 2020	January 31, 2020	January 17, 2020	June 19, 2020

Ambient Temperature (°C)

Reference	SHARP	Difference	Range	Action	
#1	7.50	8.1	-0.6	< ± 2°C 2-3 °C > 3°C	OK Recalibrate Fail

Ambient Relative Humidity (%RH)

As Found:	Reference	SHARP	Difference	Range	Action
#1	20.70	20.9	-0.2	< ± 2 %RH 2-5 %RH > 5 %RH	OK Recalibrate Fail

Barometric Pressure (mmHg)

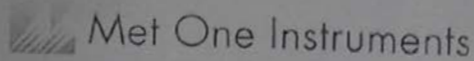
As Found:	Reference	SHARP	Difference	Range	Action
#1	700.0	700.0	0.0	< ± 10 mmHg 10-12 mmHg > 12 mmHg	OK Recalibrate Fail

Flow Audit (L/min)

As Found:	Reference	SHARP	% Difference	Range	Action
#1	16.66	16.66		< ± 4%	OK
#2	16.65	16.66		4-5%	Recalibrate
#3	16.66	16.67		>5%	Fail
Average	16.66	16.66	0.040024014		

Leak Check (L/min)

	Without Leak Check Adapter			With leak Check Adapter			
	Reference	SHARP	Difference	Reference	SHARP	Difference	
#1	16.66	16.67	-0.01	16.63	16.66	-0.03	Leak Limit: 0.80 L/min
					LEAK RATE:	-0.02	



Sonic Wind Sensor Certificate of Calibration

Sensor Model No.: 50.5H
 Sensor Output Swing: 0V - 1.0V
 Customer: MAXXAM Analytics
 Tested per PO: 35-67600
 Calibrated by: David Frith *DF*

Sensor Serial No.: H12635
 Sensor Output Range: 0 - 50.0 MPS
 Sales Order No.: 122618
 Calibration Date: 05/25/2017

QC Inspection *Chris Paul*

Instrument Condition Within Tolerance: As Found As Left
 Corrective Action: No Adjustment Adjust Repair
 Preventative Maintenance

As Found Test Date: N/A As Left Test Date: 05/25/2017

Quality Control Manual Revision: September 16, 2013 MP42201 Rev. G.
 All Work Performed per Customer Purchase Order Requirements.
 Calibration Document No. 50.5-6100

Test Equipment Used for Calibration of Instruments

Description	Manufacturer	Model No.	Serial No.	Cal Date	Cal Due	Voltage Accuracy	Time Base Accuracy
Data Acquisition	Campbell Scientific	CR1000	6569	4/06/2015	4/06/2018	+/- 3mV	< 6 ppm
NIST Cupset	Met One Instruments	170-41	3309	1/26/2017	1/26/2022	Accuracy < 0.15 mph or 1% WS	

Environmental Data: Temperature 65 to 80 Deg F Vibration none
 Humidity 20 to 70% Radiation none

Firmware Version: 3194-01 R2.62

The standards used for calibration have accuracies equal to or greater than the instruments tested. These standards are on record and are traceable to NIST to the extent allowed by the institute's calibration facility. Unless otherwise stated heron, all instruments are calibrated to meet the manufacturer's published specifications. The calibration system complies with MIL-STD-45662A (8/1/88). Instrument's accuracy meets the requirements of Regulatory Guide 1.23 (2/72). Compliant with IS) 9001:2008 requirements

Company <u>Maxxam</u>		Operator: <u>Alex</u>	
Calibrator:		Flow Measurement Device:	
Make/Model	<u>Sabio 2010</u>	Make/Model	<u>N/A</u>
Serial Number	<u>26801218</u>	Serial Number	<u>N/A</u>
Last Verification Date	<u>New</u>	Temperature (°C)	<u>N/A</u>
NO Cylinder S/N	<u>LL48147</u>	Barometric Pressure	<u>N/A</u>
NO [PPM]	<u>50.5</u>	NOx [PPM]	<u>50.6</u>
Expiry Date	<u>August 2026</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	0.000	0.000	Limit ± 10%	
5015	79.1	0.797	0.798	0.793	0.001	0.794	0%	-1%
5015	39.6	0.399	0.400	0.395	0.001	0.396	-1%	-1%
5017	19.8	0.199	0.200	0.197	0.000	0.197	-1%	-1%
Absolute Average Percent Difference							1%	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)= 0.9959	0.90-1.10	m (Slope)= 0.9954
b (Intercept % of FS)= -0.0968	± 3% F.S.	b (Intercept % of FS)= -0.0969

Flow	O ₃ Conc	NO Decrease	NO	NO ₂	NOX	% Diff. Vs Audit gas	
5015	0.000	0.000	0.792	0.001	0.793	NO ₂	% Diff. Limit
5015	0.500	0.496	0.296	0.493	0.791	-1%	± 10%
5015	0.250	0.246	0.546	0.245	0.793	-1%	± 10%
5015	0.100	0.098	0.694	0.098	0.793	-1%	± 10%
Absolute Average Percent Difference						1%	± 10%

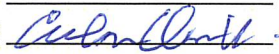
LINEAR REGRESSION ANALYSIS *y=mx+b (where x=calculated concentration, y=indicated concentration)*

NO₂	LIMITS	
Correlation= 1.0000	≥ 0.995	
m (Slope)= 0.9921	0.90-1.10	
b (Intercept % of FS)= 0.0909	± 3% F.S.	

AENV Standards	NO_x Analyzer
Audit Calibrator	Make/Model <u>Teco 42i</u>
Make/Model <u>Teco 146i</u>	Serial/AMU Number <u>AMU 1868</u>
Serial/AMU Number <u>AMU 1809</u>	Last Calibration Date <u>January 14, 2019</u>
SRM Gas Cylinder No. <u>APEX1236645</u>	Full Scale (ppm) <u>1.0</u>
Cylinder Conc. (ppm) <u>50.05</u>	Cylinder Gas Expiry Date <u>June 2021</u>

COMMENTS: _____

Auditor: Al Clark Date: January 15, 2019

Operator Signature:  Location: McIntyre Center Edmonton

Company: Maxxam **Operator:** C. Wesson

Calibrator:		Flow Measurement Device:	
Make/Model	<u>Envionics 2000</u>	Make/Model	<u>N/A</u>
Serial Number	<u>1991</u>	Serial Number	<u>N/A</u>
Last Verification Date	<u>March 1, 2018</u>	Temperature (°C)	<u>N/A</u>
SO ₂ Cylinder Conc.	<u>49.5</u>	Barometric Pressure	<u>N/A</u>
SO ₂ Cylinder S/N	<u>LL48147</u>		
Expiry Date	<u>August 2026</u>		

Flow Measurements

Pt. No. 1 78.8 **Pt. No. 2** 38.4 **Pt. No. 3** 19.2

Calibrator Flow (sccm)	Calculated Concentration (ppm)	Indicated Concentration (ppm)	% Difference	
			vs Audit Gas	% Diff. Limit
Zero Air	0.000	0.000		
5000	0.780	0.763	-2%	± 10%
4999	0.380	0.371	-2%	± 10%
5000	0.190	0.183	-4%	± 10%
Absolute Average Percent Difference			3%	± 10%

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

SO₂		LIMITS
Correlation=	1.0000	≥ 0.995
m (Slope)=	0.9792	0.90-1.10
b (Intercept % of FS)=	-0.1346	± 3% F.S.

AENV Standards		SO₂ Analyzer	
Audit Calibrator		Make/Model	<u>Teco 43i</u>
Make/Model	<u>Sabio 2010</u>	Serial/AMU Number	<u>AMU 2195</u>
Serial/AMU Number	<u>AMU 2092</u>	Last Calibration Date	<u>February 8, 2019</u>
SO ₂		Full Scale (ppm)	<u>1.0</u>
SRM Gas Cylinder No.	<u>FF28071</u>	Expiry Date	<u>March 2020</u>
Cylinder Conc. (ppm)	<u>50.3</u>		

COMMENTS:

Auditor: Al Clark
Operator Signature: 

Date: February 13, 2019
Location: McIntyre Center Edmonton



Calibration Gas Audit

Single Component Cylinder Gas

File No. 2017-486CGA

Company: Maxxam **Operator's Name:** Mike
Cylinder #: LL108015 **Concentration PPM:** 47.9 **Tolerance(%)** 2 **Certified By:** Praxair
Expiry Date: October 2020

Reference Calibrator and Gas:

Make/Model: R&R MFC 201
Serial Number: AMU 1690
Last Verification Date: December 13, 2017
Gas Type: SO2 **Conc.** 98.07
Cylinder Number: CAL016625
Expiry Date: January 2019

Flow Measurement Device:

Make/Model: Mesa Definer 220
Serial Number: H-133034 / L-132702
Temp. °C: 23.4 C
B.P. 707 mmHg

Reference Analyzer:

Make/Model: Teco 43C **Serial/AMU Number:** 1623
Instrument Settings: **Zero:** 10.0 **Span:** 1.006 **Range:** 1.0
Last Calibration: **Date:** Dec12/17 **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	0.000	0.000	0.000	0.000
4989	79.5	0.760	0.01594	62.755	47.7
4995	39.6	0.374	0.00793	126.136	47.2
4992	19.6	0.183	0.00393	254.694	46.6
Average Cylinder Concentration:					47.2

Previous Stated Concentration PPM: 47.9

Percent variance from Stated: 2

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: *Al Clark*

Date: December 13, 2017
Location: McIntyre Center Edmonton



Calibration Gas Audit

Single Component Cylinder Gas

File No. 2017-485CGA

Company: Maxxam **Operator's Name:** Mike
Cylinder #: LL119432 **Concentration PPM:** 10.28 **Tolerance(%)** 2 **Certified By:** Praxair
Expiry Date: November 2020

Reference Calibrator and Gas:	Flow Measurement Device:
Make/Model: <u>R&R MFC 201</u>	Make/Model: <u>Mesa Definer 220</u>
Serial Number: <u>AMU 1690</u>	Serial Number: <u>H-133034 / L-132702</u>
Last Verification Date: <u>December 13, 2017</u>	Temp. °C: <u>22.8 C</u>
Gas Type: <u>H2S</u> Conc. <u>20.43</u>	B.P. <u>705 mmHg</u>
Cylinder Number: <u>CAL015272</u>	
Expiry Date: <u>January 2019</u>	

Reference Analyzer:
 Make/Model: Teco 450i Serial/AMU Number: 1980
 Instrument Settings: Zero: 22.3 Span: 1.090 Range: 0.1
 Last Calibration: Date: Dec12/17 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			
5134	39.4	0.0763	0.00767	130.305	9.94
5104	18.3	0.0349	0.00359	278.907	9.73
5097	9.4	0.0169	0.00184	542.234	9.16
Average Cylinder Concentration:					9.61

Previous Stated Concentration PPM: 10.28
 Percent variance from Stated: 6

Meets Manufacturer Tolerance. Use manufacturers stated concentration **COMMENTS:** _____
 < =5% Outside Manufacturer Tolerance. Use manufacturers concentration Gas trends downward suspect moisture in cylinder.
 > 5% Outside Manufacturer Tolerance. **DO NOT USE** this cylinder Suggest replacing gas as it passes but its marginal.

Auditor: Al Clark Date: December 13, 2017
 Operator Signature: Location: McIntyre Center Edmonton



Calibration Gas Audit

CH4 / C3H8 Cylinder Gas

File No. 2017-484CGA

Company: Maxxam **Operators name:** Mike
Cylinder #: LL107207 **Conc CH4 (PPM)** 600/207 **Tolerance (%)** 2 **Certified By:** Praxair
Expiry Date: October 2025

Reference Calibrator and Gas:				Flow Measurement Device:	
Make/Model	<u>R&R MFC 201</u>			Make/Model	<u>Mesa Definer 220</u>
Serial Number	<u>AMU 1690</u>			Serial Number	<u>H-133034 / L-132702</u>
Last Verification Date	<u>December 13, 2017</u>			Temp. °C	<u>23.1 C</u>
Gas Type	<u>CH4</u>	Conc.	<u>990.4</u>	B.P.	<u>707 mmHg</u>
Cylinder Number	<u>5604875</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:** 2108
Instrument Settings **Zero:** N/A **Span:** N/A **Range:** 20.0
Last Calibration: **Date:** Dec 12/17 **C.F.** 1.000 **Done By:** Al Clark

Calibrator Flows (sccm)		Indicated Conc. (ppm)		Gas Flow/ Dilution Flow	Concentration Factor	Cylinder Concentration	
Dilution	Gas	CH4	C3H8			CH4	C3H8
3500	0.0	0.00	0.00				
3618	80.4	13.28	12.77	0.02	45.00	598	209
3547	39.8	6.71	6.47	0.01	89.12	598	210
3560	19.8	3.35	3.26	0.01	179.80	602	213
Average Cylinder Concentration:						599	211

	CH4		C3H8
Previous Stated Concentration PPM:	<u>600</u>		<u>207</u>
Percent variance from Stated:	<u>0</u>		<u>2</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:** December 13, 2017
Operator Signature: **Location:** McIntyre Center Edmonton



Calibration Gas Audit

NO Cylinder Gas

File No. 2017-487CGA

Company: Maxxam **Operators name:** Mike
Cylinder #: LL108015 **Conc (PPM)** 52.2/52.3 **Tolerance (%)** 2 **Certified By:** Praxair
Expiry Date: October 2020

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>December 13, 2017</u>			Temp. °C	<u>23.4 C</u>
Gas Type	<u>NO</u>	Conc.	<u>50.03</u>	B.P.	<u>707 mmHg</u>
Cylinder Number	<u>APEX 1223938</u>				
Expiry Date	<u>June 2020</u>				

Reference Analyzer:

Make/Model Teco 42i Serial/AMU Number: 1868
Instrument Settings Zero: 4.7 Span: 1.004 Range: 1.0
Last Calibration: Date: Dec12/17 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	0.016	62.755	52.3	52.1
4989	79.5	0.833	0.831	0.016	62.755	52.3	52.1
4995	39.6	0.417	0.417	0.008	126.136	52.6	52.6
4992	19.6	0.209	0.209	0.004	254.694	53.2	53.2
Average Cylinder Concentration:						52.7	52.7

<u>NO</u>	<u>NOx</u>
Previous Stated Concentration PPM: <u>52.2</u>	<u>52.3</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: December 13, 2017
Operator Signature: *Al Clark* Location: McIntyre Center Edmonton



Lakeland Industry & Community Association

APRIL 2019

Ambient Air Monitoring Calibration Report

- BONNYVILLE EAST STATION-

CAL-LICA-201904-01608

Station Operation and Maintenance:

Maxxam Analytics

Data Validation and Report:

Maxxam Analytics

June 4, 2019

Alberta Environment and Parks (AEP)
Air.Reporting@gov.ab.ca

June 4, 2019

Subject:

April 2019 Ambient Air Monitoring Calibration Report Submission for the LICA Bonnyville East station

Lakeland Industry & Community Association (LICA) is pleased to submit the ambient air monitoring calibration report for the LICA Bonnyville East AQM Station in the month of April 2019. This calibration report includes equipment calibration records, calibrator performance audit records and calibration gas audit records for the equipment that were used this month. This calibration report is prepared by the LICA network contractor.

Should you have any questions, please don't hesitate to contact us.


Respectfully,



Michael Bisaga
Technical Program Manager
Lakeland Industry & Community Association
780-266-7068
monitoring@lica.ca



Lily Lin
Data & Reporting Specialist
587-225-2248
monitoring@lica.ca



April 1 - 30, 2019

MONTHLY CALIBRATION REPORT

Project #: 2833-2019-04-39-C

LICA-201904

Prepared for:

Lakeland Industry & Community Association

Mike Bisaga

5107 50 St.

Bonnyville, Alberta T9N 2J7

monitoring@lica.ca

780-266-7068

Monitoring Station

**Bonnyville East Continuous Monitoring
Station**

Date of Report Issuance: May 31, 2019



#1 - 2080 39 Avenue NE, Calgary AB, T2E 6P7

CAL-LICA-201904-01608

Page 3 of 31



Thermo 431-TLE Sulphur Dioxide Analyzer Calibration

Date: April 8, 2019 Company/Airshed: LICA Location/Station Name: Bonnyville East Parameter: Sulphur Dioxide Start Time 24 hr. (mst): 16:21 End Time 24 hr. (mst): 19:37 Calibration Method: Gas Dilution Analyzer: Serial Number/Owner: 1180320043 LICA Last Calibration Date: March 5, 2019 Previous C.F.: 0.999	Barometer/B.P./units: Brunton #05490 946 millibars Thermometer/Station Temp: Station Probe 23.3 °C Weather Conditions: Sunny Calibration Purpose: routine monthly Performed By/Reviewer: Chris Wesson Rob Fisher Cal Gas Expiry Date: October 24, 2020 Converter Model & s/n (if applicable): n/a Range ppb: 1000 As Found C.F.: 0.948 New C.F.: 1.000
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Calibration Standards: Low Flow Meter ID/Expiry Date: N/A High Flow Meter ID/Expiry Date: N/A Calibrator ID/Expiry Date: Sabio2010 #26801218 expires January 15, 2020 Cal Gas Cylinder I.D. #: LL108015 Cal Gas Conc. (ppm): 47.9	Standard Calibration Points for Ranges <table border="1" style="width: 100%; border-collapse: collapse;"> <tr><th>Point</th><th>ppb</th></tr> <tr><td>High</td><td>780</td></tr> <tr><td>Mid</td><td>380</td></tr> <tr><td>Low</td><td>190</td></tr> </table>	Point	ppb	High	780	Mid	380	Low	190
Point	ppb								
High	780								
Mid	380								
Low	190								

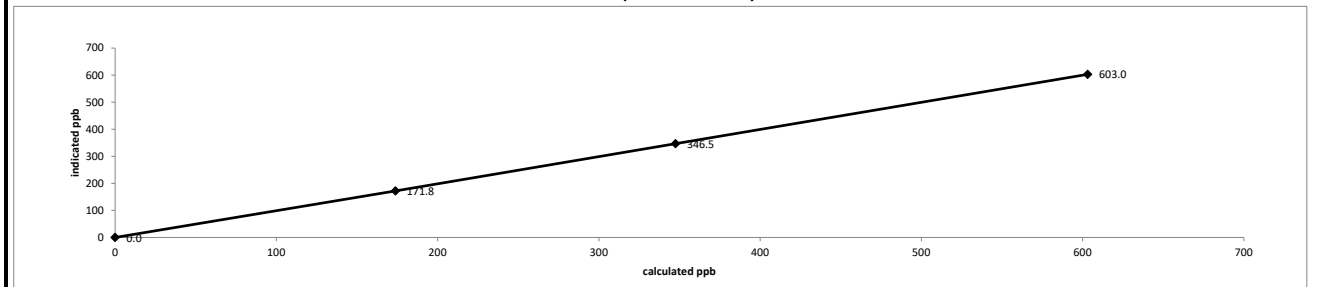
ALL POINTS ARE 15 MINUTES OF STABILITY AS OF SEPTEMBER 23, 2015

Point	Calibrator Flow Rates (cc/min)			Calculated Concentration (ppb):	Indicated Concentration (ppb):	Correction Factors (C.F.):
	Diluent	Cal Gas	Total			
as found zero	5016	0.00	5016	0.0	-0.6	n/a
as found high	4940	63.00	5003	603.2	635.7	0.948
adjusted zero	5016	0.00	5016	0.0	0	n/a
adjusted high	4940	63.00	5003	603.2	603	1.000
mid	4981	36.40	5017	347.5	346.5	1.003
low	4997	18.20	5015	173.8	171.8	1.012
calibrator zero	5016	0.00	5016	0.0	0.2	n/a
Average C.F. =						1.005

Linear Regression/Calibration Results:

Correlation Coefficient = 1.000 Slope = 1.000 b (Intercept as % of full scale) = 0.09% % change in C.F. from last cal = 5.11%	LIMITS > or = 0.995 0.95-1.05 ± 3% F.S. ± 10%
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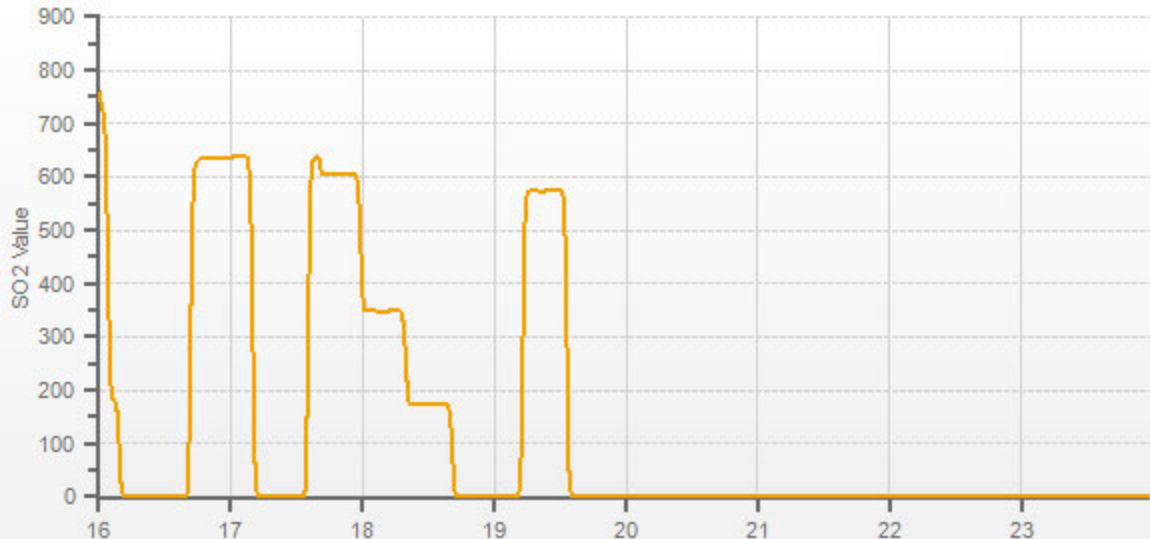
Thermo 431-TLE Sulphur Dioxide Analyzer Calibration



As found: Bkg: 4.97 Coef: 0.980 Pmt: -677.8 Flash: 1082 Internal: 32.1 Chamber: 45.0 Perm Oven Gas: 45.00 Perm Oven Heater: 44.24 Pressure: 677.4 Sample Flow: 0.455 Lamp Intensity: 90 Averaging Time: 120 Expected Value: 591.0	As left: Bkg: 4.58 Coef: 0.928 Pmt: -676.7 Flash: 1081 Internal: 33.0 Chamber: 45.2 Perm Oven Gas: 45.00 Perm Oven Heater: 44.25 Pressure: 677.4 Sample Flow: 0.456 Lamp Intensity: 90 Averaging Time: 120 Expected Value: 571.9
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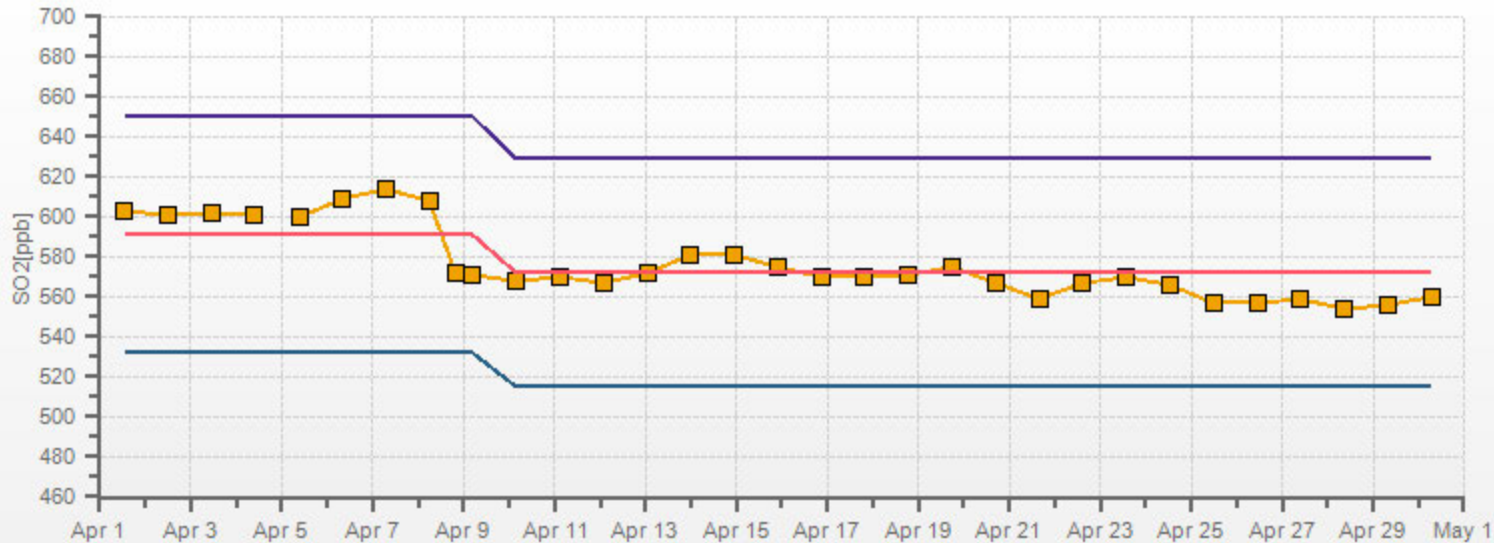
Comments:
 The analyzer sample inlet filter was changed.
 The analyzer cooling fan filter(s) were cleaned.
 The manifold blower was found to be working normally.

An issue occurred with calibrator during the first attempt. The analyzer was reset to As-Found conditions and the calibration was repeated using an alternate calibrator.



CAL-LICA-201904-01608

SO2[ppb] Calibration: LICA Bonnyville East Monthly: 19/04 Type: Span



CAL-LICA-201904-01608



Thermo 450i Hydrogen Sulphide Analyzer Calibration

Date:	April 8, 2019	Barometer/B.P./units:	Brunton #05490	946	millibars
Company/Airshed:	LICA	Thermometer/Station Temp:	Station Probe	22.7	°C
Location/Station Name:	Bonnyville East	Weather Conditions:	Sunny		
Parameter:	Hydrogen Sulphide	Calibration Purpose:	routine monthly		
Start Time 24 hr. (mst):	12:23	Performed By/Reviewer:	Chris Wesson	Rob Fisher	
End Time 24 hr. (mst):	17:21	Cal Gas Expiry Date:	November 7, 2020		
Calibration Method:	Gas Dilution	Converter Model & s/n (if applicable):	Internal		
Analyzer:					
Serial Number/Owner:	CM 17360002 LICA	Range ppb:	100		
Last Calibration Date:	March 25, 2019	As Found C.F.:	1.018		
Previous C.F.:	1.000	New C.F.:	1.000		

Calibration Standards:	Standard Calibration Points for Ranges	SO2 Scrubber Check (10 minutes):
Low Flow Meter ID/Expiry Date:	N/A	Start/End Time 24 hr.:
High Flow Meter ID/Expiry Date:	N/A	SO2 Analyzer Range:
Calibrator ID/Expiry Date:	Sabio2010 #26801218 expires January 15, 2020	Target Concentration (ppb):
Cal Gas Cylinder I.D. #:	LL119432	As Found Zero:
Cal Gas Conc. (ppm):	10.28	Analyzer Response: (ppb):
		Zero Corrected Result (ppb):

Point	ppb
High	78
Mid	38
Low	19

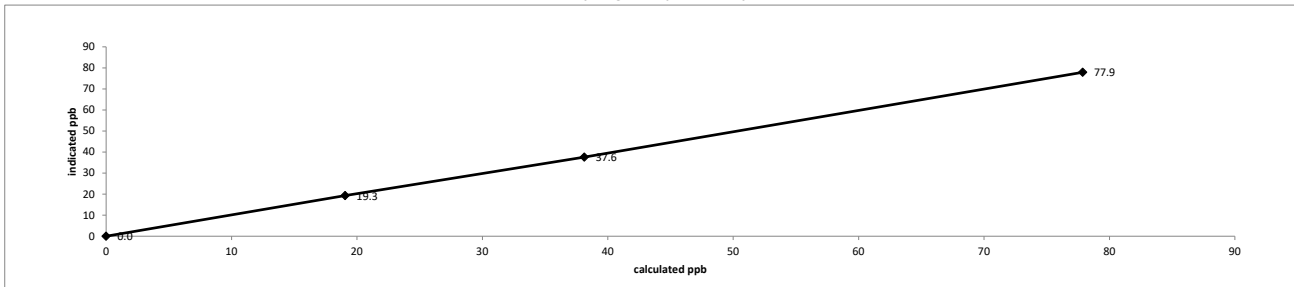
ALL POINTS ARE 15 MINUTES OF STABILITY AS OF SEPTEMBER 23, 2015

Calibrator Flow Rates (cc/min)				Calculated Concentration (ppb):	Indicated Concentration (ppb):	Correction Factors (C.F.):
Point	Diluent	Cal Gas	Total			
as found zero	5015	0.00	5015	0.0	0.6	n/a
as found high	4978	38.00	5016	77.9	77.1	1.018
adjusted zero	5015	0.00	5015	0.0	0	n/a
adjusted high	4979	38.00	5017	77.9	77.9	1.000
mid	4996	18.60	5015	38.1	37.6	1.014
low	5007	9.30	5016	19.1	19.3	0.988
calibrator zero	5016	0.00	5016	0.0	0.5	n/a
Average C.F. =						1.000

Linear Regression/Calibration Results:

Correlation Coefficient =	1.000	LIMITS	> or = 0.995
Slope =	1.001		0.95-1.05
b (Intercept as % of full scale) =	0.02%		± 3% F.S.
% change in C.F. from last cal =	-1.80%		± 10%

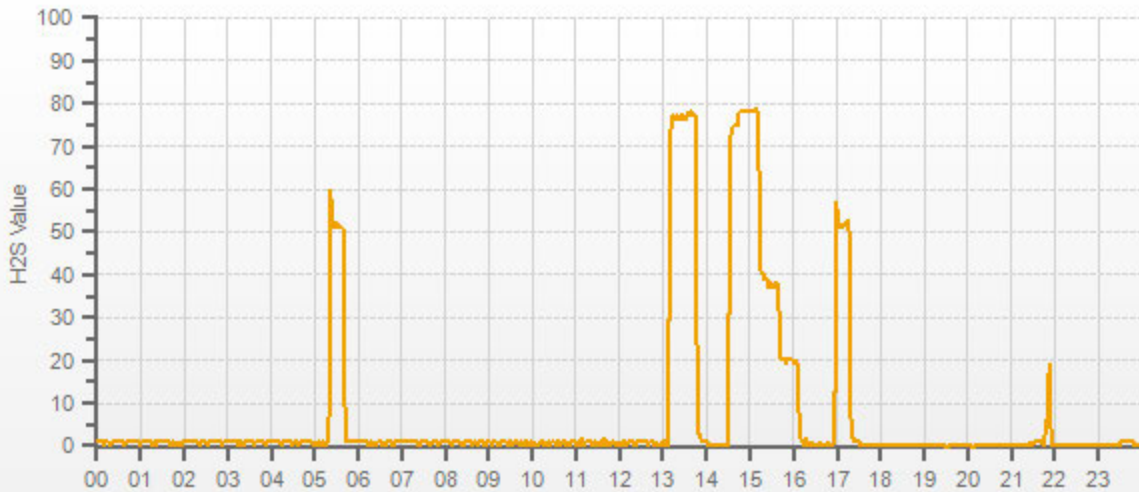
Thermo 450i Hydrogen Sulphide Analyzer Calibration



As found:		As left:	
Bkg:	20.6	Bkg:	21.6
Coef:	1.128	Coef:	1.151
Pmt:	-638.6	Pmt:	-639.0
Flash:	774	Flash:	773
Internal:	32.4	Internal:	32.1
Chamber:	45.3	Chamber:	45.3
Converter Temp:	325.7	Converter Temp:	327.3
Converter Set:	325.0	Converter Set:	325.0
Perm Oven Gas:	45.00	Perm Oven Gas:	45.00
Perm Oven Htr:	43.91	Perm Oven Htr:	43.91
Pressure:	559.2	Pressure:	559.2
Sample Flow:	0.947	Sample Flow:	0.949
Lamp Intensity:	92	Lamp Intensity:	91
Averaging Time:	120	Averaging Time:	120
Expected Value:	46.1	Expected Value:	52.1

Comments:
 The analyzer sample inlet filter was changed.
 The analyzer cooling fan filter(s) were cleaned.
 The manifold blower was found to be working normally.

H2S[ppb]



CAL-LICA-2019-04-01-08

H2S[ppb] Calibration: LICA Bonnyville East Monthly: 19/04 Type: Span



CAL-LICA-201904-01608



Thermo 55i Methane/Non-Methane Analyzer Calibration

Date:	April 9, 2019	Barometer/B.P./units:	Brunton #05490	950	millibars
Company/Airshed:	LICA	Thermometer/Station Temp:	Station Probe	23.3	°C
Location/Station Name:	Bonnyville East	Weather Conditions:	Fog		
Parameter:	CH4 / NMHC / THC	Calibration Purpose:	routine monthly		
Start/End Time 24 hr. (mst):	09:12 / 12:49	Performed By/Reviewer:	Chris Wesson	Rob Fisher	
Calibration Method:	Gas Dilution	Cal Gas Expiry Date:	October 18, 2025		

Analyzer:	Serial Number/Owner:	1180320044	LICA	Correction Factors:	Previous C.F.:	As Found C.F.:	New C.F.:
	Measured Flow:	1.15 L/min			CH ₄ = 1.000	0.992	1.000
	Last Calibration Date:	March 6, 2019			NMHC = 1.000	1.015	1.000
	Range ppm:	20 CH4/20 NMHC/40 THC			THC = 1.000	1.003	1.000

Calibration Standards:	Low Flow Meter ID/Expiry Date:	N/A	Standard Calibration Points for Analyzer Range of 20/20/40 ppm
	High Flow Meter ID/Expiry Date:	N/A	
	Calibrator ID/Expiry Date:	EnviroNics 2000 #1991 expires February 13, 2020	
	Cal Gas Cylinder I.D. #:	LL107207	
	CH4 Cylinder Conc.:	600.0 207.0 =C ₂ H ₆ Cylinder Conc.	
	CH ₄ expressed as C ₂ H ₆ =	569.3 1169.3 =total CH4 equivalent	

Point	CH4	NMHC	THC
High	13.00	13.00	26.00
Mid	7.00	7.00	14.00
Low	3.00	3.00	6.00

ALL POINTS ARE 15 MINUTES OF STABILITY AS OF SEPTEMBER 23, 2015

Point	Calibrator Flow Rates (cc/min)			Calculated CH ₄ (ppm)	Calculated NMHC (ppm)	Calculated THC (ppm)	Indicated CH ₄ (ppm)	Indicated NMHC (ppm)	Indicated THC (ppm)	Correction Factors:		
	Diluent	Cal Gas	Total Flow							CH ₄	NMHC	THC
as found zero	3005	0.00	3005	0.00	0.00	0.00	0.00	0.00	0.00	n/a	n/a	n/a
as found high	2932	71.91	3004	14.36	13.63	27.99	14.48	13.43	27.91	0.992	1.015	1.003
adjusted zero	3005	0.00	3005	0.00	0.00	0.00	0.00	0.00	0.00	n/a	n/a	n/a
adjusted high	2932	71.91	3004	14.36	13.63	27.99	14.36	13.62	27.98	1.000	1.000	1.000
mid	2970	35.94	3006	7.17	6.81	13.98	7.16	6.82	13.98	1.002	0.998	1.000
low	2987	17.95	3005	3.58	3.40	6.98	3.56	3.45	7.01	1.007	0.986	0.996
calibrator zero	3005	0.00	3005	0.00	0.00	0.00	0.00	0.00	0.00	n/a	n/a	n/a

Average C.F. = 1.003 0.995 0.999

Linear Regression/Calibration Results:

	CH ₄	NMHC	THC	LIMITS
Correlation Coefficient =	1.000	1.000	1.000	> or = 0.995
Slope =	1.000	0.998	0.999	0.95-1.05
b (Intercept as % of full scale) =	-0.06%	0.12%	0.03%	± 3% F.S.
% change in C.F. from last cal =	0.81%	-1.46%	-0.28%	± 10%

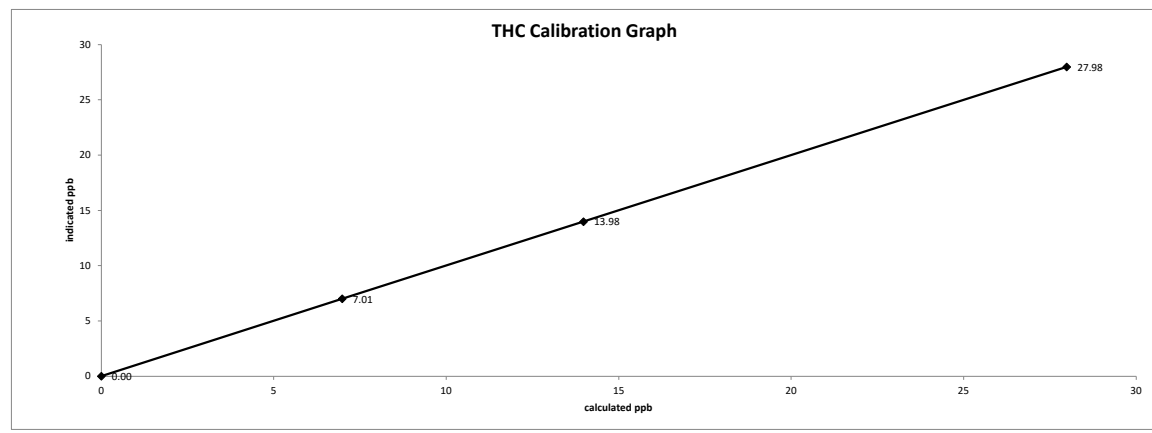
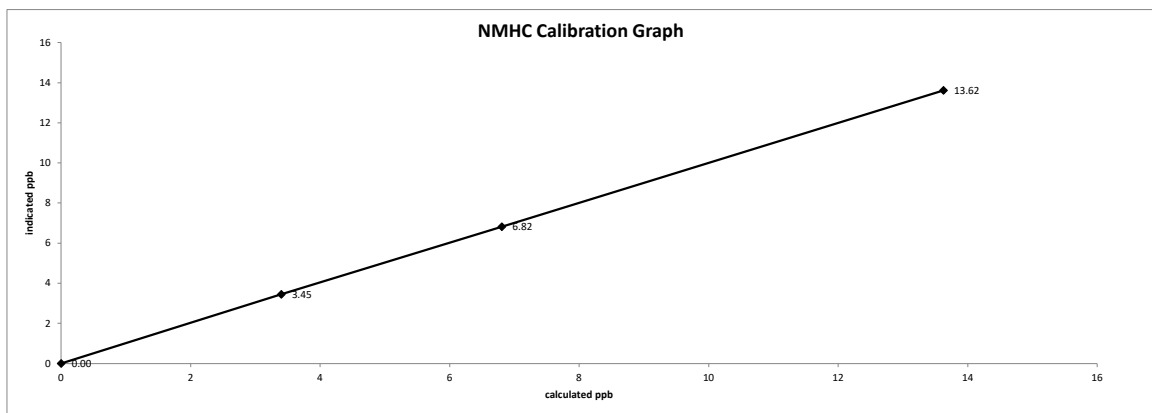
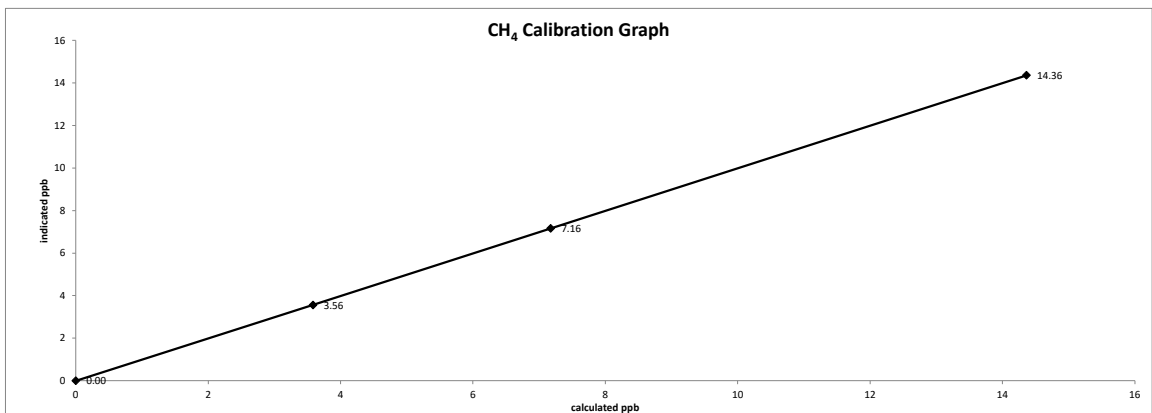
As Left Instrument Diagnostics:

Interface Board Voltages:	Bias Supply:	-296.4	Calibration History cnt'd:	NM Peak Area:	93471
Temperatures:	Detector Oven:	175.0	Crucial Settings:	Methane Start:	n/a
	Filter:	175.1		Methane End:	n/a
	Column Oven:	75.1		Backflush:	n/a
	Internal:	31.9		NMHV Start:	n/a
Cylinder Pressures/reg.:	Carrier:	550 50	Run History>1:	NMHC End:	n/a
	Fuel:	2100 50		Date:	09Apr2019
	Span Gas:	1400 24		Time:	11:47
	Zero Air Generator:	50		CH ₄ PK HT:	0
Internal Pressures:	Carrier:	29.4		CH ₄ RT:	12.4
	Fuel:	44.2		CH ₄ Baseline:	2395
	Air:	30.2		CH ₄ LOD:	39
FID Status:	Status:	LIT		CH ₄ SD:	13
	Counts:	27821		CH ₄ CONC:	0.000
	Flame:	337.5		NM PK HT:	0
	Det Base:	175.0		NM Peak Area:	0
Flame and Power Stats:	Last Power On:	23Feb2019@14:49		NM CONC:	0.00
	Flameouts:	1		NM Base Start:	2377
	Det Oven at Start:	17.3		NM Base End:	2407
	Col Oven at Start:	20.1		NM LOD:	13
Calibration History:	Time:	09Apr2019@10:33		NM Start IDX:	11
	Type:	Span		NM End IDX:	81
	Status:	Good		NM Max Slope:	1.6e+00
	Check/Adjust:	Adjust		NM Min Slope:	-4.5e-01
	CH ₄ Span Conc:	14.36		NM PT Count:	0
	CH ₄ SP Ratio:	0.000785	Expected Values:	Previous CH ₄ :	10.12
	CH ₄ RT:	13.2		Previous NMHC:	11.12
	CH ₄ PK IDX:	26		Previous THC:	21.24
	CH ₄ PK HT:	18288		New CH ₄ :	10.03
	NM Span Conc:	13.63		New NMHC:	11.19
	NM SP Ratio:	0.000146		New THC:	21.23

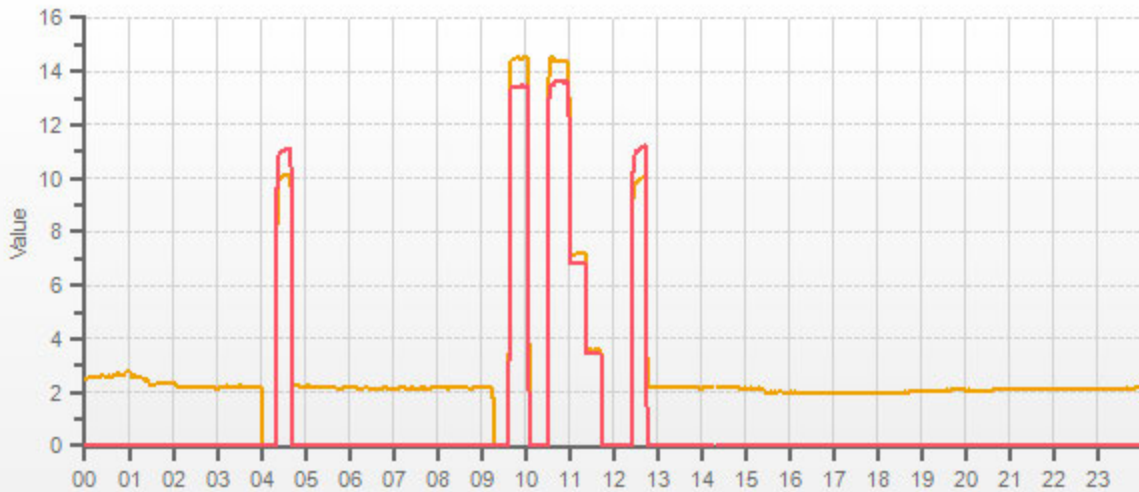
Comments:
 The analyzer sample inlet filter was changed.
 The analyzer cooling fan filter(s) were cleaned.
 The manifold blower was found to be working normally.

Date: April 9, 2019
Company/Airshed: LICA
Location/Station Name: Bonnyville East

Start/End Time 24 hr. (mst): 09:12 / 12:49
Calibration Purpose: routine monthly
Calibration Method: Gas Dilution

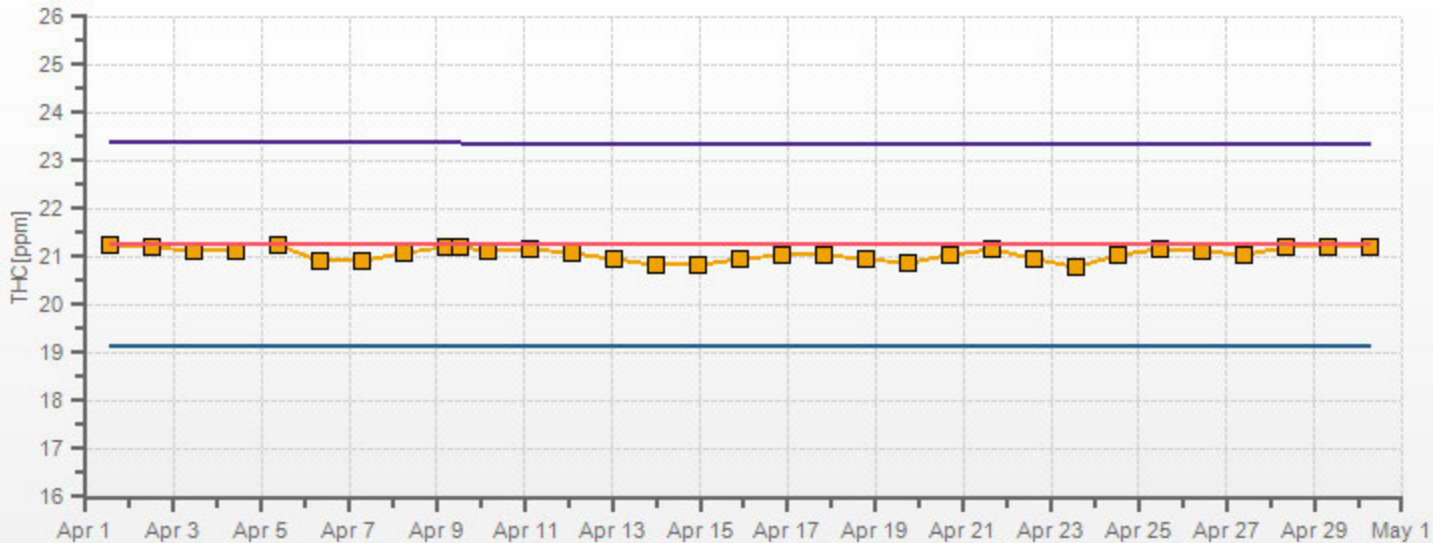


CH4[ppm] NMHC[ppm]



CAL-LICA-2019-04-01-608

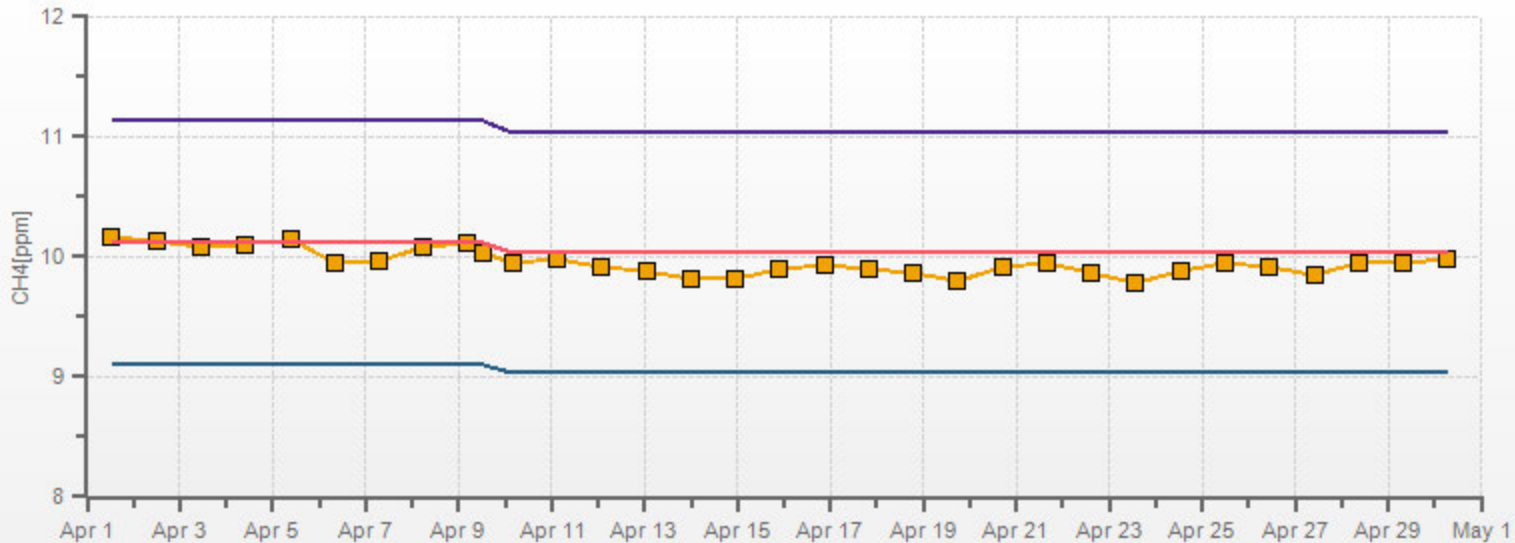
THC[ppm] Calibration: LICA Bonnyville East Monthly: 19/04 Type: Span



CAL-LICA-201904-01608

Page 13 of 31

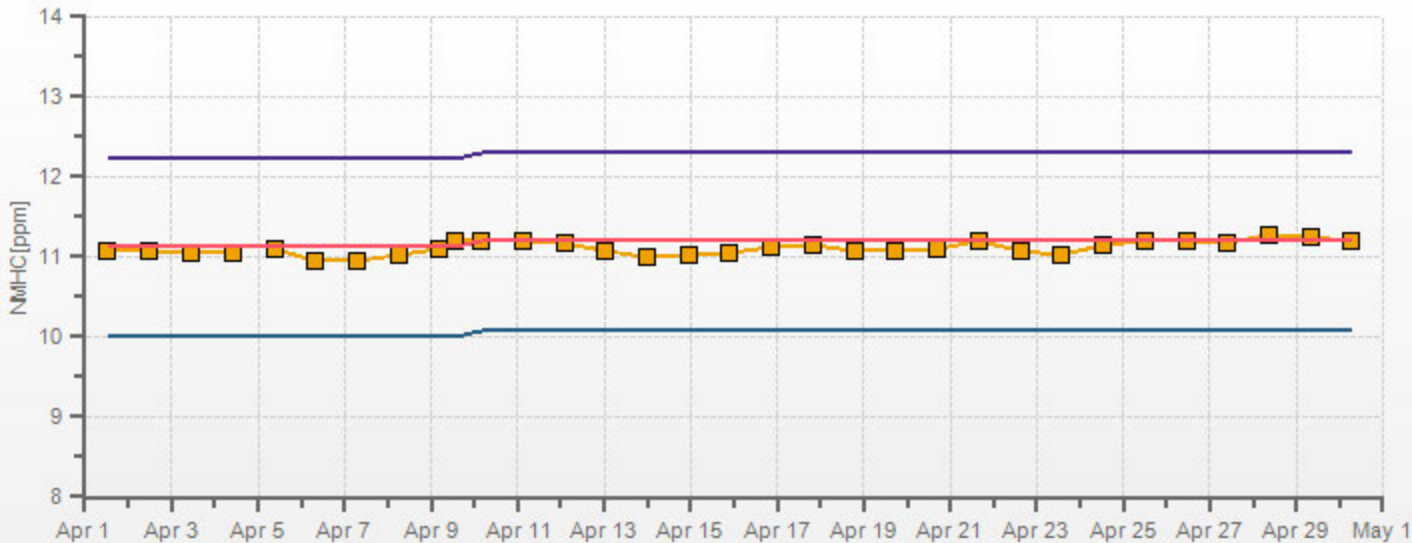
CH4[ppm] Calibration: LICA Bonnyville East Monthly: 19/04 Type: Span



CAL-LICA-201904-01608

Page 14 of 31

NMHC[ppm] Calibration: LICA Bonnyville East Monthly: 19/04 Type: Span



CAL-LICA-201904-01608

Page 15 of 31



Thermo 42i NO-NO2-NOx Analyzer Calibration

Date: April 8, 2019	Barometer/B.P./units: Brunton #05490	946	millibars
Company/Airshed: LICA	Thermometer/Station Temp: Station Probe	23.3	°C
Location/Station Name: Bonnyville East	Weather Conditions: Sunny		
Start/End Time 24 hr. (mst): 16:16 / 21:12	Calibration Purpose: routine monthly		
G.P.T. to be used for Ozone? Yes with 1000 ppb NOx full scale	Performed By/Reviewer: Chris Wesson	Rob Fisher	
Calibration Method: Gas Dilution & Gas Phase Titration	Cal Gas Expiry Date: October 24, 2020		

Analyzer: Serial Number/Owner: 1180930027 LICA Last Calibration Date: March 5, 2019 Range ppb: 1000	Correction Factors: <table border="1" style="width: 100%; border-collapse: collapse;"> <thead> <tr> <th></th> <th>Previous C.F.:</th> <th>As Found C.F.:</th> <th>New C.F.:</th> </tr> </thead> <tbody> <tr> <td>NO =</td> <td>1.000</td> <td>0.996</td> <td>1.000</td> </tr> <tr> <td>NO₂ =</td> <td>1.000</td> <td>1.000</td> <td>1.000</td> </tr> <tr> <td>NOx =</td> <td>1.000</td> <td>0.996</td> <td>0.999</td> </tr> </tbody> </table>		Previous C.F.:	As Found C.F.:	New C.F.:	NO =	1.000	0.996	1.000	NO ₂ =	1.000	1.000	1.000	NOx =	1.000	0.996	0.999
	Previous C.F.:	As Found C.F.:	New C.F.:														
NO =	1.000	0.996	1.000														
NO ₂ =	1.000	1.000	1.000														
NOx =	1.000	0.996	0.999														

Calibration Standards: Low Flow Meter ID/Expiry Date: N/A High Flow Meter ID/Expiry Date: N/A Calibrator ID/Expiry Date: Sabio2010 #26801218 expires January 15, 2020 Cal Gas Cylinder I.D. #: LL108015 Cal Gas Conc. (ppm): 52.2 52.3	<table border="1" style="width: 100%; border-collapse: collapse;"> <thead> <tr> <th colspan="4">Standard Calibration Points for a Range of: 1000 ppb</th> </tr> <tr> <th>Point</th> <th>Target NO (ppb)</th> <th>Target NO₂ (ppb)</th> <th>Cc Ozone ?</th> </tr> </thead> <tbody> <tr> <td>High</td> <td>610</td> <td>375</td> <td><-high ozone</td> </tr> <tr> <td>Mid</td> <td>380</td> <td>190</td> <td><-mid ozone</td> </tr> <tr> <td>Low</td> <td>190</td> <td>70</td> <td><-low ozone</td> </tr> <tr> <td>Extra Point #1</td> <td>n/a</td> <td>n/a</td> <td>n/a</td> </tr> <tr> <td>Extra Point #2</td> <td>n/a</td> <td>n/a</td> <td>n/a</td> </tr> </tbody> </table>	Standard Calibration Points for a Range of: 1000 ppb				Point	Target NO (ppb)	Target NO ₂ (ppb)	Cc Ozone ?	High	610	375	<-high ozone	Mid	380	190	<-mid ozone	Low	190	70	<-low ozone	Extra Point #1	n/a	n/a	n/a	Extra Point #2	n/a	n/a	n/a
Standard Calibration Points for a Range of: 1000 ppb																													
Point	Target NO (ppb)	Target NO ₂ (ppb)	Cc Ozone ?																										
High	610	375	<-high ozone																										
Mid	380	190	<-mid ozone																										
Low	190	70	<-low ozone																										
Extra Point #1	n/a	n/a	n/a																										
Extra Point #2	n/a	n/a	n/a																										

ALL POINTS ARE 15 MINUTES OF STABILITY AS OF SEPTEMBER 23, 2015

Calibrator Flow Rates (cc/min)				Calculated NO	Calculated NOx	Indicated NO	Indicated NOx	NO C.F.	NOx C.F.
Point	Diluent	Cal Gas	Total Flow	(ppb)	(ppb)	(ppb)	(ppb)		
as found zero	5016	0.0	5016	0	0	-0.2	0.0	n/a	n/a
as found high	4940	63.0	5003	657.3	658.6	660.0	661.0	0.996	0.996
adjusted zero	5016	0.00	5016	0.0	0.0	0.0	0.0	n/a	n/a
adjusted high	4940	63.00	5003	657.3	658.6	657.0	659.0	1.000	0.999
mid	4981	36.40	5017	378.7	379.5	379.0	380.0	0.999	0.999
low	4997	18.20	5015	189.4	189.8	189.0	190.0	1.002	0.999
calibrator zero	5016	0.00	5016	0	0	0.1	0.0	n/a	n/a
Average C.F.=								1.001	0.999

ALL POINTS ARE 15 MINUTES OF STABILITY AS OF SEPTEMBER 23, 2015

Calibrator Flow Rates (cc/min)				Calibrator Setting	Indicated NO	Indicated NOx	Indicated NO ₂	NO drop	NO ₂ gain	NO ₂ C.F.
Point	Diluent	Cal Gas	Total Flow	volts or ppb	(ppb)	(ppb)	(ppb)	(ppb)	(ppb)	(ppb)
NOx reference	4940	63.00	5003	0.0	655.0	657.0	2.0	0.0	2.0	
as found high NO2	4940	63.00	5003	370.0	257.0	658.0	400.0	398.0	398.0	1.000
adjusted high NO2	4940	63.00	5003	370.0	257.0	658.0	400.0	398.0	398.0	1.000
gpt mid	4940	63.00	5003	188.0	457.0	658.0	201.0	198.0	199.0	0.995
gpt low	4940	63.00	5003	85.0	567.0	657.0	90.0	88.0	88.0	1.000
Average NO ₂ C.F.=										0.998

Linear Regression/Calibration Results:

	NO	NOx	NO ₂	LIMITS
Correlation Coefficient =	1.000	1.000	1.000	> or = 0.995
Slope =	1.000	0.999	1.004	0.95-1.05
b (Intercept as % of full scale)=	-0.01%	0.01%	0.14%	± 3% F.S.
% change in C.F. from last cal=	0.44%	0.37%	0.00%	± 10%
NO2 converter efficiency			1.00	0.96 to 1.04

As found:		As left:	
NO Bkg:	7.1	NO Bkg:	7.0
NOx Bkg:	7.1	NOx Bkg:	7.2
NO Coef:	0.857	NO Coef:	0.852
NO2 Coef:	0.999	NO2 Coef:	0.999
NOx Coef:	1.001	NOx Coef:	1.002
PMT:	-906.5	PMT:	-906.5
Internal:	29.3	Internal:	31.2
Chamber:	49.9	Chamber:	50.1
Cooler:	-2.8	Cooler:	-2.7
NO2 Converter:	324.7	NO2 Converter:	324.7
NO2 Converter Set:	325.0	NO2 Converter Set:	325.0
Perm Oven Gas:	45.01	Perm Oven Gas:	45.01
Perm Oven Heater:	44.24	Perm Oven Heater:	44.24
Pressure:	202.8	Pressure:	203.1
Flow:	0.700	Flow:	0.701
Ozonator Flow:	OK	Ozonator Flow:	OK
Expected Value NO:	3	Expected Value NO:	3
Expected Value NO2:	360	Expected Value NO2:	345
Expected Value NOx:	363	Expected Value NOx:	348

Comments:

The analyzer sample inlet filter was changed.

The manifold blower was found to be working normally.

The analyzer cooling fan filter(s) were cleaned.

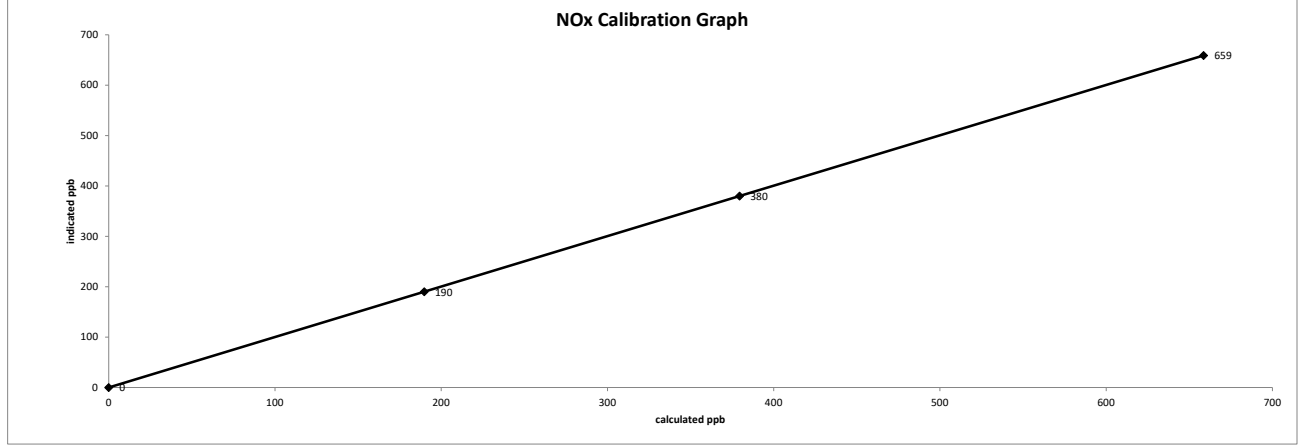
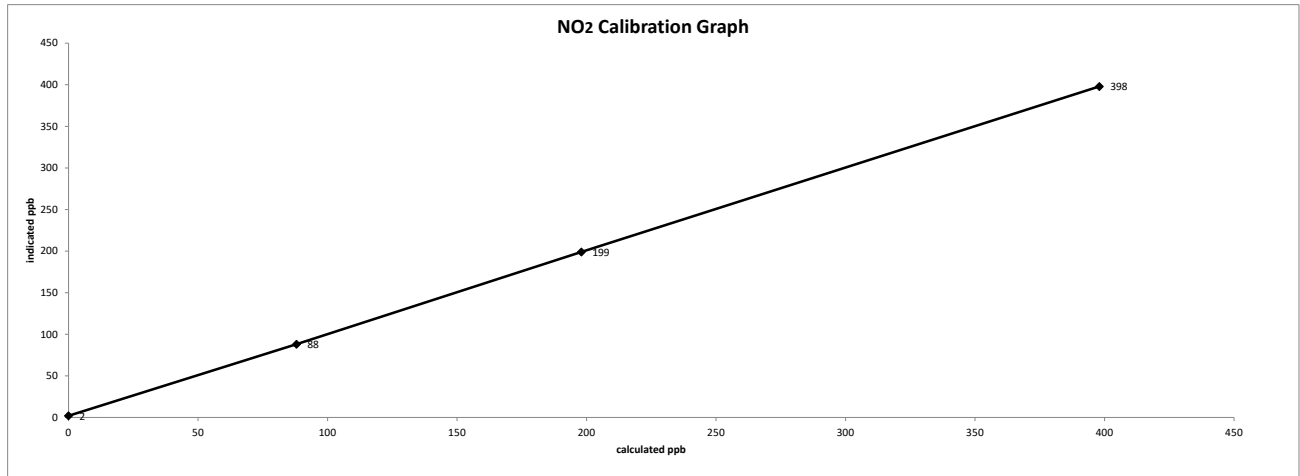
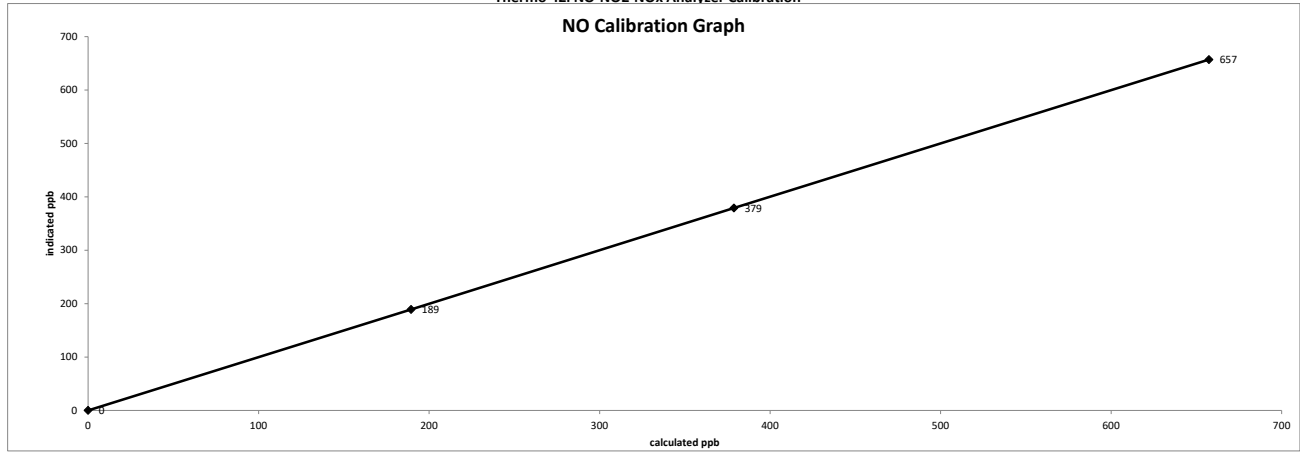
No high point NO2 adjustment was required/made. As found values were copied to adjusted high values for linearity calculation purposes.

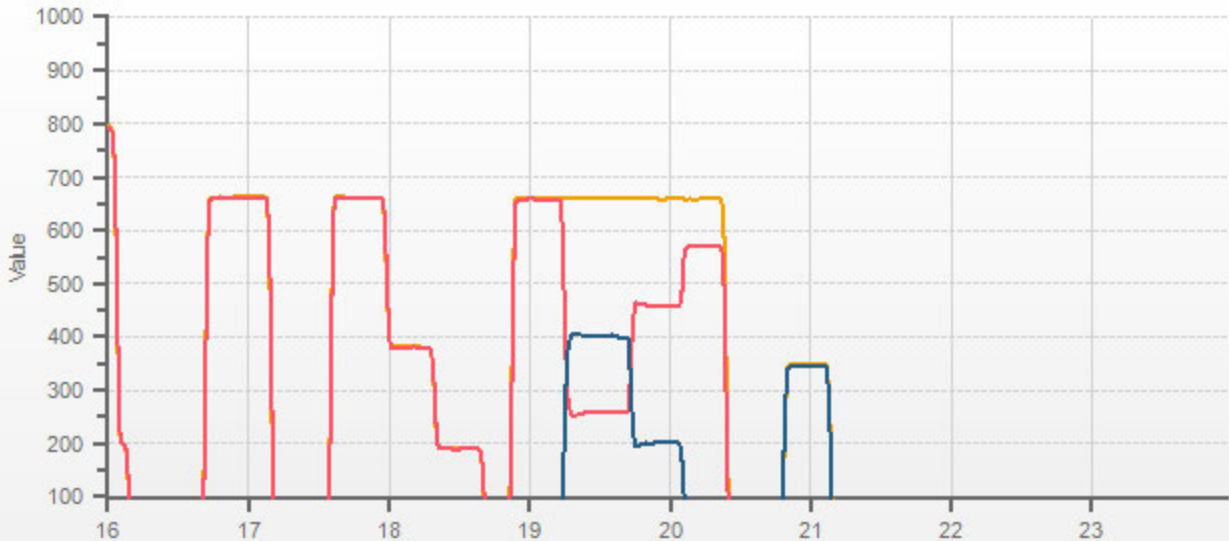
An issue occurred with calibrator during the first attempt. The analyzer was reset to As-Found conditions and the calibration was repeated using an alternate calibrator.

Date: April 8, 2019
 Company/Airshed: LICA
 Location/Station Name: Bonnyville East

Start/End Time 24 hr. (mst): 16:16 / 21:12
 Calibration Purpose: routine monthly
 Calibration Method: Gas Dilution & Gas Phase Titration

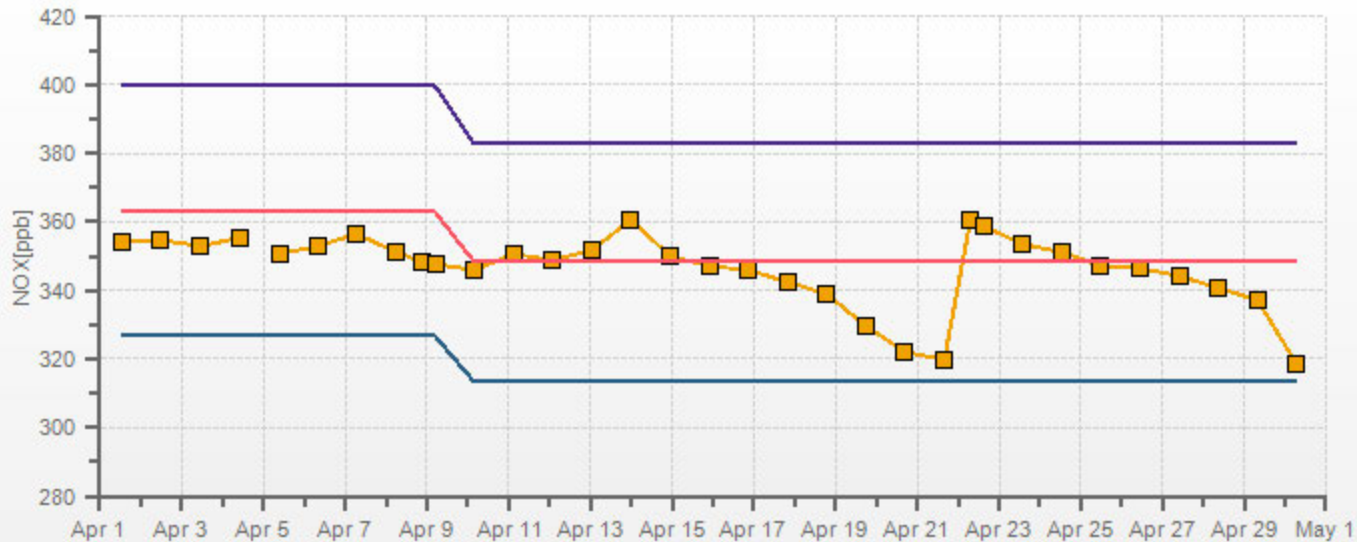
Thermo 42i NO-NO2-NOx Analyzer Calibration





CAL-LICA-201904-01608

NOX[ppb] Calibration: LICA Bonnyville East Monthly: 19/04 Type: Span



CAL-LICA-201904-01608

NO2[ppb] Calibration: LICA Bonnyville East Monthly: 19/04 Type: Span



CAL-LICA-201904-01608

Page 20 of 31



Thermo 49i Ozone Analyzer Calibration

Date: April 9, 2019 Company/Airshed: LICA Location/Station Name: Bonnyville East Start/End Time 24 hr. (mst): 9:12 / 14:04 Ozone Calibration Method: Direct G.P.T. G.P.T. Date: April 8, 2019 Analyzer: Serial Number/Owner: 1002240372 LICA Last Calibration Date: March 6, 2019 Previous Cal High Point C.F.: 1.000	Barometer/B.P./units: Brunton #05490 950 millibars Thermometer/Station Temp: Station Probe 23.3 °C Weather Conditions: Fog Calibration Purpose: routine monthly Performed By/Reviewer: Chris Wesson Rob Fisher Cal Gas Expiry Date: October 24, 2020 Ozone Range ppb: 500 As Found C.F.: 0.986 New C.F.: 1.000
--	---

Calibration Standards: Low Flow Meter ID/Expiry Date: N/A High Flow Meter ID/Expiry Date: N/A Calibrator ID/Expiry Date: Sabio2010 #26801218 expires January 15, 2020 Cal Gas Cylinder I.D. #: LL108015	<table border="1" style="width: 100%; border-collapse: collapse;"> <tr> <th>Point</th> <th>AMD Required Range of Ozone Calibration Points</th> </tr> <tr> <td>High</td> <td>300-400 ppb</td> </tr> <tr> <td>Mid</td> <td>150-200 ppb</td> </tr> <tr> <td>Low</td> <td>50-100 ppb</td> </tr> </table>	Point	AMD Required Range of Ozone Calibration Points	High	300-400 ppb	Mid	150-200 ppb	Low	50-100 ppb
Point	AMD Required Range of Ozone Calibration Points								
High	300-400 ppb								
Mid	150-200 ppb								
Low	50-100 ppb								

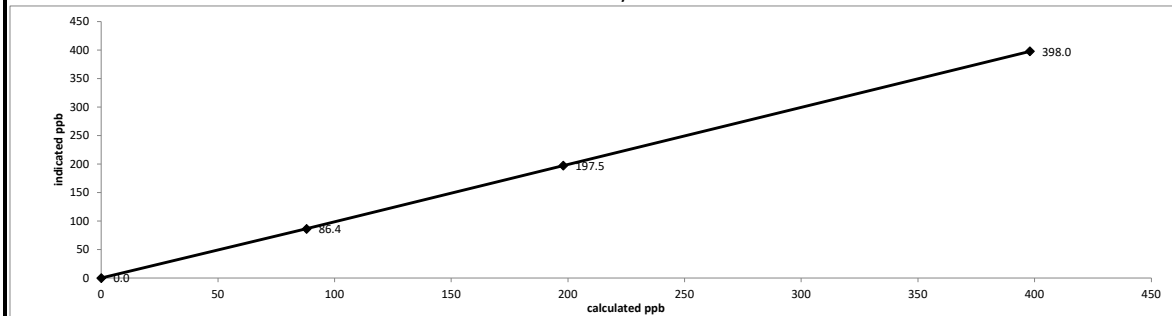
ALL POINTS ARE 15 MINUTES OF STABILITY AS OF SEPTEMBER 23, 2015

Point	Calibrator Flow Rate (cc/min)		Calculated Concentration:	Corrected Calculated Concentration:	Indicated Concentration:	Correction Factors:
	Total Flow @ Point Start	Total Flow @ Point Finish	(ppb)	(ppb)	(ppb)	
as found zero	5016	5016	0.0	n/a	0.4	n/a
as found high	5016	5016	398.0	398.0	404.0	0.986
adjusted zero	5016	5016	0.0	0.0	0.0	n/a
adjusted high	5016	5016	398.0	398.0	398.0	1.000
mid	5016	5016	198.0	198.0	197.5	1.003
low	5016	5016	88.0	88.0	86.4	1.019
calibrator zero	5016	5016	0.0	n/a	0.4	n/a
Average C.F.=						1.007

Linear Regression/Calibration Results:

Correlation Coefficient = <u>1.000</u>	LIMITS
Slope = <u>0.999</u>	> or = 0.995
b (Intercept as % of full scale) = <u>0.15%</u>	0.95-1.05
% change in C.F. from last cal = <u>1.39%</u>	± 3% F.S.
	± 10%

Thermo 49i Ozone Analyzer Calibration

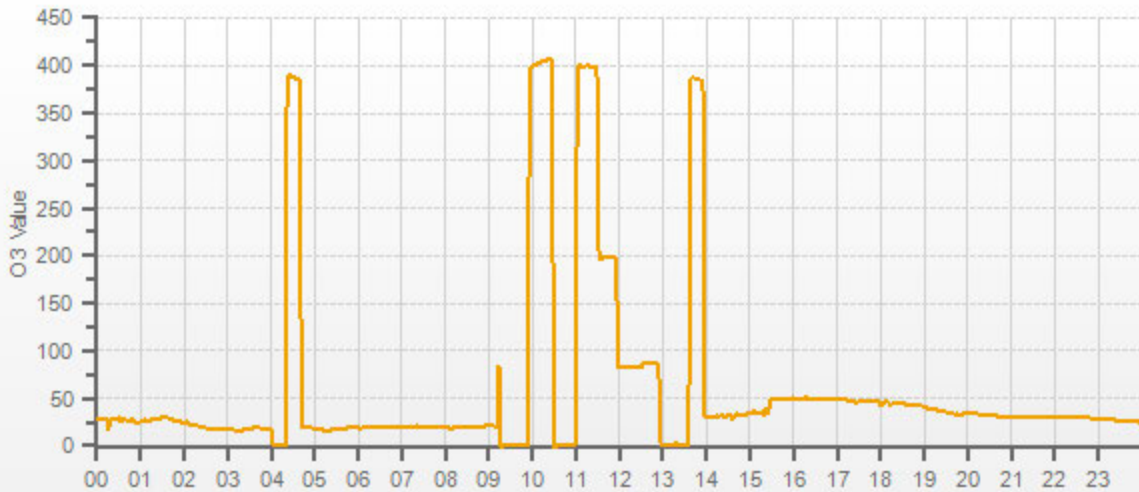


As found: O3 Bkg: <u>-0.3</u> O3 Coef: <u>1.036</u> Photo Lamp: <u>14.2</u> O3 Lamp: <u>9.3</u> Bench: <u>32.4</u> Bench Lamp: <u>54.1</u> O3 Lamp: <u>68.1</u> Pressure: <u>696.8</u> Cell A lpm: <u>0.756</u> Cell B lpm: <u>0.762</u> O3 ppb: <u>0.0</u> Cell A ppb: <u>0.8</u> Cell B ppb: <u>-0.7</u> Cell A int (Hz): <u>72909</u> Cell B int (Hz): <u>73034</u> Expected Value: <u>392.0</u>	As left: O3 Bkg: <u>0</u> O3 Coef: <u>1.015</u> Photo Lamp: <u>14.2</u> O3 Lamp: <u>9.3</u> Bench: <u>29.7</u> Bench Lamp: <u>54.0</u> O3 Lamp: <u>68.0</u> Pressure: <u>696.5</u> Cell A lpm: <u>0.757</u> Cell B lpm: <u>0.763</u> O3 ppb: <u>0.5</u> Cell A ppb: <u>-0.5</u> Cell B ppb: <u>1.4</u> Cell A int (Hz): <u>73043</u> Cell B int (Hz): <u>73274</u> Expected Value: <u>383.8</u>
--	--

Comments:
 The analyzer sample inlet filter was changed.
 The analyzer cooling fan filter(s) were cleaned.
 The manifold blower was found to be working normally.

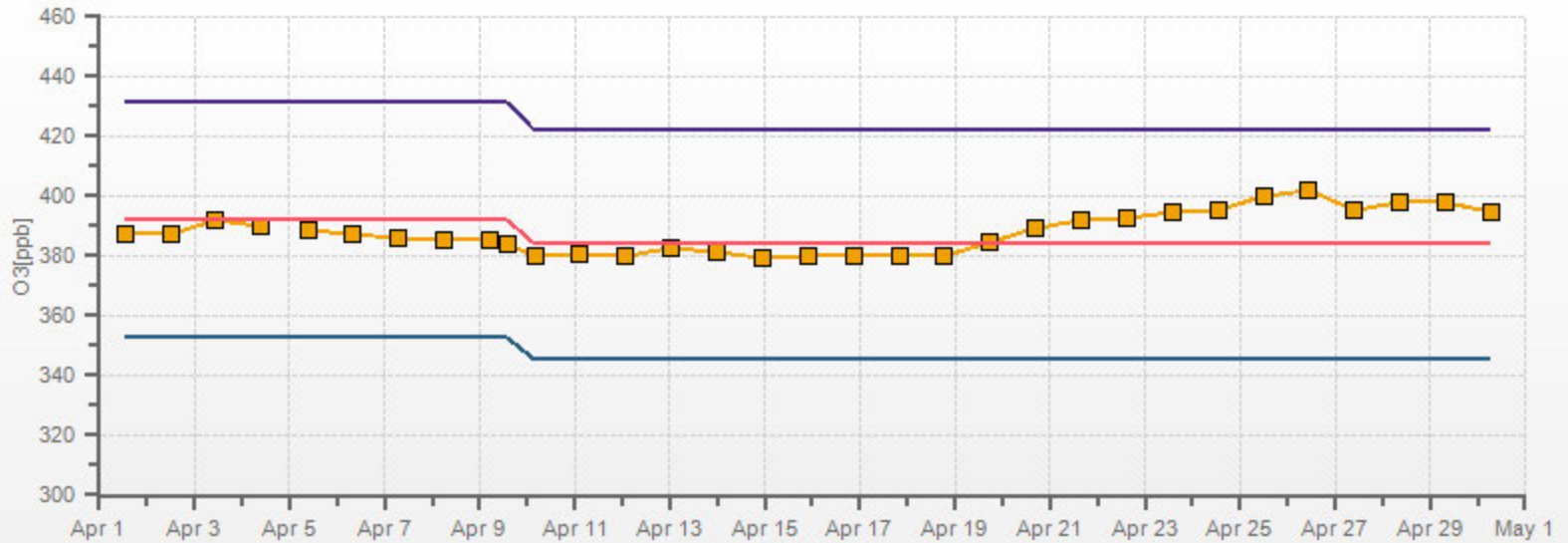
An incorrect setting made to calibrator for the low point. The point was repeated.

O3[ppb]



CAL-LICA-2019-04-01-608

O3[ppb] Calibration: LICA Bonnyville East Monthly: 19/04 Type: Span



CAL-LICA-201904-01608

Page 23 of 31



Thermo 5030i SHARP Monitor Calibration

Date:	April 26, 2019	Performed By/Reviewer:	Alex Yakupov Rob Fisher
Company:	LICA	Start Time (mst):	12:25
Station Name/Location:	Bonnyville - East	End Time (mst):	14:53
Previous Audit Date:	March 6, 2019	Calibration Purpose:	Quarterly
Parameter:	PM 2.5	Weather Conditions:	Mainly sunny

SHARP 5030i Information and Status:		
Serial Number:	CM 17071016	Filter Tape Counter: 83

Reference Standards: Air Flow						
	Manometer	Orifice	Pressure:		Temp / RH:	
Make:	Dwyer	Chinook	Fisher Scientific		Fisher Scientific	
Model:	475 Mk. III	170101	FB61291		11-661-7B	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	8.41	8.4	0.1	8.36	8.4	0.0
#2	8.40	8.4	0.0	8.36	8.4	0.0
#3	8.36	8.4	0.0	8.36	8.4	0.0
Average	8.4	8.4	0.0	8.4	8.4	0.0

Temp Limit: ± 2°C

Ambient Relative Humidity (%RH)						
As Found:			As Left: (same as found if acceptable)			
	Reference	SHARP	Offset (ZERO)	Reference	SHARP	Offset (ZERO)
#1	18.40	19.1	-0.7	18.40	18.4	0.0
#2	18.50	19.1	-0.6	18.40	18.4	0.0
#3	18.40	18.9	-0.5	18.40	18.4	0.0
Average	18.4	19.0	-0.6	18.4	18.4	0.0

RH Limit: ± 2 %RH

Flow Temperature (°C)						
As Found:			As Left: (same as found if acceptable)			
	Reference	SHARP	Difference	Reference	SHARP	Difference
#1	20.90	21.8	-0.9	22.00	22.0	0.0
#2	21.20	21.9	-0.7	21.80	21.9	-0.1
#3	21.40	22.0	-0.6	22.00	22.0	0.0
Average	21.2	21.9	-0.7	21.9	22.0	0.0

Temp Limit: ± 2°C

Barometric Pressure (mmHg)						
As Found:			As Left: (same as found if acceptable)			
	Reference	SHARP	Difference	Reference	SHARP	Difference
#1	707.1	707.6	-0.5	707.1	707.1	0.0

BP Limit: ± 2 mmHg

Nephelometer Relative Humidity (%RH)						
As Found:			As Left: (same as found if acceptable)			
	Reference	SHARP	Difference	Reference	SHARP	Difference
#1	9.10	8.4	0.7	9.00	9.0	0.0

RH Limit: ± 2 %RH

Nephelometer Temperature (%RH)						
As Found:			As Left: (same as found if acceptable)			
	Reference	SHARP	Difference	Reference	SHARP	Difference
#1	21.70	21.8	-0.1	21.70	21.7	0.0

Temp Limit: ± 2°C

Nephelometer Source Level						
As Found:			As Left: (same as found if acceptable)			
Variable	Value		Variable	Value		
IRED	67		IRED	67		
SRC LEVEL	48		SRC LEVEL	48		

IRED Limit (as found): 60-70 mA
Adjusted IRED Limit (as left): 65 mA

Detector Calibration (Auto)						
As Found:			As Left:			
Detector Auto Calibration Completed: YES			Variable	Value		
			HIGH VOLT	1410		
			BETA REF TH	360		
			ALPHA TH	910		
			DIFF HV	0		

Mass Coefficient (Auto)						
Zero			Span			
Variable	Value		Variable	Value		
MASS COEF	7016.6		MASS COEF	7031.8		
FOIL VALUE	0		FOIL VALUE	1328		
Beta Avg	9951		Beta Avg	8064		
difference	n/a		difference	0.2		

Foil Set: 9258

Flow Calibration (L/min)						
As Found:			As Left: (same as found if acceptable)			
	Reference	SHARP	Difference	Reference	SHARP	Difference
#1	16.37	16.67	-0.30	16.64	16.64	0.00
#2	16.37	16.67	-0.30	16.64	16.65	-0.01
#3	16.38	16.68	-0.30	16.67	16.67	0.00
Average	16.37	16.67	-0.30	16.65	16.65	0.00

Flow Limit: 16.67 ± 0.33 L/min

Leak Check (L/min)						
Without Leak Check Adapter			With leak Check Adapter			
	Reference	SHARP	Difference	Reference	SHARP	Difference
#1	16.65	16.65	0.00	16.65	16.62	0.03

Leak Limit: 0.08 L/min
LEAK RATE: 0.03



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: Alex

Calibrator:				Flow Measurement Device:			
Make/Model	<u>Sabio 2010</u>			Make/Model	<u>N/A</u>		
Serial Number	<u>26801218</u>			Serial Number	<u>N/A</u>		
Last Verification Date	<u>New</u>			Temperature (°C)	<u>N/A</u>		
NO Cylinder S/N	<u>LL48147</u>			Barometric Pressure	<u>N/A</u>		
NO [PPM]	<u>50.5</u>	NOx [PPM]	<u>50.6</u>				
Expiry Date	<u>August 2026</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	0.000	0.000	Limit ± 10%	
5015	79.1	0.797	0.798	0.793	0.001	0.794	0%	-1%
5015	39.6	0.399	0.400	0.395	0.001	0.396	-1%	-1%
5017	19.8	0.199	0.200	0.197	0.000	0.197	-1%	-1%
Absolute Average Percent Difference							1%	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)=	0.9959	0.90-1.10		m (Slope)=	0.9954
b (Intercept % of FS)=	-0.0968	± 3% F.S.		b (Intercept % of FS)=	-0.0969

Flow	O ₃ Conc	NO Decrease	NO	NO ₂	NOX	% Diff. Vs Audit gas	
5015	0.000	0.000	0.792	0.001	0.793	NO ₂	% Diff. Limit
5015	0.500	0.496	0.296	0.493	0.791	-1%	± 10%
5015	0.250	0.246	0.546	0.245	0.793	-1%	± 10%
5015	0.100	0.098	0.694	0.098	0.793	-1%	± 10%
Absolute Average Percent Difference						1%	± 10%

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

NO₂		LIMITS	
Correlation=	1.0000	≥ 0.995	
m (Slope)=	0.9921	0.90-1.10	
b (Intercept % of FS)=	0.0909	± 3% F.S.	

AENV Standards		NO_x Analyzer	
Audit Calibrator		Make/Model	<u>Teco 42i</u>
Make/Model	<u>Teco 146i</u>	Serial/AMU Number	<u>AMU 1868</u>
Serial/AMU Number	<u>AMU 1809</u>	Last Calibration Date	<u>January 14, 2019</u>
SRM Gas Cylinder No.	<u>APEX1236645</u>	Full Scale (ppm)	<u>1.0</u>
Cylinder Conc. (ppm)	<u>50.05</u>	Cylinder Gas Expiry Date	<u>June 2021</u>

COMMENTS: _____

Auditor: Al Clark Date: January 15, 2019

Operator Signature:  Location: McIntyre Center Edmonton

Company: Maxxam Operator: C. Wesson

Calibrator:		Flow Measurement Device:	
Make/Model	<u>Envionics 2000</u>	Make/Model	<u>N/A</u>
Serial Number	<u>1991</u>	Serial Number	<u>N/A</u>
Last Verification Date	<u>March 1, 2018</u>	Temperature (°C)	<u>N/A</u>
SO ₂ Cylinder Conc.	<u>49.5</u>	Barometric Pressure	<u>N/A</u>
SO ₂ Cylinder S/N	<u>LL48147</u>		
Expiry Date	<u>August 2026</u>		

Flow Measurements

Pt. No. 1 78.8 Pt. No. 2 38.4 Pt. No. 3 19.2

Calibrator Flow (sccm)	Calculated Concentration (ppm)	Indicated Concentration (ppm)	% Difference	
			vs Audit Gas	% Diff. Limit
Zero Air	0.000	0.000		
5000	0.780	0.763	-2%	± 10%
4999	0.380	0.371	-2%	± 10%
5000	0.190	0.183	-4%	± 10%
Absolute Average Percent Difference			3%	± 10%

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

SO ₂		LIMITS
Correlation=	1.0000	≥ 0.995
m (Slope)=	0.9792	0.90-1.10
b (Intercept % of FS)=	-0.1346	± 3% F.S.

AENV Standards		SO ₂ Analyzer	
Audit Calibrator		Make/Model	<u>Teco 43i</u>
Make/Model	<u>Sabio 2010</u>	Serial/AMU Number	<u>AMU 2195</u>
Serial/AMU Number	<u>AMU 2092</u>	Last Calibration Date	<u>February 8, 2019</u>
SO ₂		Full Scale (ppm)	<u>1.0</u>
SRM Gas Cylinder No.	<u>FF28071</u>	Expiry Date	<u>March 2020</u>
Cylinder Conc. (ppm)	<u>50.3</u>		

COMMENTS:

Auditor: Al Clark
Operator Signature: [Signature]

Date: February 13, 2019
Location: McIntyre Center Edmonton



Calibration Gas Audit

Single Component Cylinder Gas

File No. 2017-485CGA

Company: Maxxam **Operator's Name:** Mike
Cylinder #: LL119432 **Concentration PPM:** 10.28 **Tolerance(%)** 2 **Certified By:** Praxair
Expiry Date: November 2020

Reference Calibrator and Gas:	Flow Measurement Device:
Make/Model: <u>R&R MFC 201</u>	Make/Model: <u>Mesa Definer 220</u>
Serial Number: <u>AMU 1690</u>	Serial Number: <u>H-133034 / L-132702</u>
Last Verification Date: <u>December 13, 2017</u>	Temp. °C: <u>22.8 C</u>
Gas Type: <u>H2S</u> Conc. <u>20.43</u>	B.P. <u>705 mmHg</u>
Cylinder Number: <u>CAL015272</u>	
Expiry Date: <u>January 2019</u>	

Reference Analyzer:
 Make/Model: Teco 450i Serial/AMU Number: 1980
 Instrument Settings: Zero: 22.3 Span: 1.090 Range: 0.1
 Last Calibration: Date: Dec12/17 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			
5134	39.4	0.0763	0.00767	130.305	9.94
5104	18.3	0.0349	0.00359	278.907	9.73
5097	9.4	0.0169	0.00184	542.234	9.16
Average Cylinder Concentration:					9.61

Previous Stated Concentration PPM: 10.28
 Percent variance from Stated: 6

Meets Manufacturer Tolerance. Use manufacturers stated concentration **COMMENTS:** _____
 < =5% Outside Manufacturer Tolerance. Use manufacturers concentration Gas trends downward suspect moisture in cylinder.
 > 5% Outside Manufacturer Tolerance. **DO NOT USE** this cylinder Suggest replacing gas as it passes but its marginal.

Auditor: Al Clark Date: December 13, 2017
 Operator Signature: *Al Clark* Location: McIntyre Center Edmonton



Calibration Gas Audit

CH₄ / C₃H₈ Cylinder Gas

File No. 2017-484CGA

Company: Maxxam **Operators name:** Mike
Cylinder #: LL107207 **Conc CH₄ (PPM)** 600/207 **Tolerance (%)** 2 **Certified By:** Praxair
Expiry Date: October 2025

Reference Calibrator and Gas:				Flow Measurement Device:	
Make/Model	<u>R&R MFC 201</u>			Make/Model	<u>Mesa Definer 220</u>
Serial Number	<u>AMU 1690</u>			Serial Number	<u>H-133034 / L-132702</u>
Last Verification Date	<u>December 13, 2017</u>			Temp. °C	<u>23.1 C</u>
Gas Type	<u>CH₄</u>	Conc.	<u>990.4</u>	B.P.	<u>707 mmHg</u>
Cylinder Number	<u>5604875</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:** 2108
Instrument Settings **Zero:** N/A **Span:** N/A **Range:** 20.0
Last Calibration: **Date:** Dec 12/17 **C.F.** 1.000 **Done By:** Al Clark

Calibrator Flows (sccm)		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
3500	0.0	0.00	0.00				
3618	80.4	13.28	12.77	0.02	45.00	598	209
3547	39.8	6.71	6.47	0.01	89.12	598	210
3560	19.8	3.35	3.26	0.01	179.80	602	213
Average Cylinder Concentration:						599	211

	CH₄		C₃H₈
Previous Stated Concentration PPM:	<u>600</u>		<u>207</u>
Percent variance from Stated:	<u>0</u>		<u>2</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:** December 13, 2017
Operator Signature: **Location:** McIntyre Center Edmonton



Calibration Gas Audit

NO Cylinder Gas

File No. 2017-487CGA

Company: Maxxam **Operators name:** Mike
Cylinder #: LL108015 **Conc (PPM)** 52.2/52.3 **Tolerance (%)** 2 **Certified By:** Praxair
Expiry Date: October 2020

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>December 13, 2017</u>			Temp. °C	<u>23.4 C</u>
Gas Type	<u>NO</u>	Conc.	<u>50.03</u>	B.P.	<u>707 mmHg</u>
Cylinder Number	<u>APEX 1223938</u>				
Expiry Date	<u>June 2020</u>				

Reference Analyzer:

Make/Model Teco 42i Serial/AMU Number: 1868
Instrument Settings Zero: 4.7 Span: 1.004 Range: 1.0
Last Calibration: Date: Dec12/17 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				
4989	79.5	0.833	0.831	0.016	62.755	52.3	52.1
4995	39.6	0.417	0.417	0.008	126.136	52.6	52.6
4992	19.6	0.209	0.209	0.004	254.694	53.2	53.2
Average Cylinder Concentration:						52.7	52.7

<u>NO</u>	<u>NOx</u>
Previous Stated Concentration PPM: <u>52.2</u>	<u>52.3</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: December 13, 2017
Operator Signature: *Al Clark* Location: McIntyre Center Edmonton